TECHNICAL MEMORANDUM
RCRA FACILITY INVESTIGATION (RFI)

Work Plan Addendum No. 9
East Plant Area

GENERAL MOTORS POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA
U.S. EPA ID NO. IND 006036099

JULY 2006
REF. NO. 013968 (174)
This report is printed on recycled paper.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
1.1	GENERAL	1
1.2	RFI APPROACH	1
1.3	GOALS AND OBJECTIVES	1
1.4	RFI WORK PLAN	2
1.5	TECHNICAL MEMORANDUM CONTENT	3
2.0	SCOPE OF WORK – METHODOLOGY	4
2.1	SUBSURFACE SAMPLE COLLECTION	4
2.1.1	OVERBURDEN	4
2.1.1.1	ENVIRONMENTAL SAMPLES	4
2.1.1.2	GEOTECHNICAL	5
2.1.1.3	ANALYTICAL RESULTS	5
2.1.2	BEDROCK	5
2.1.2.1	BEDROCK CORING	5
2.1.2.2	COREHOLE ABANDONMENT	6
2.1.2.3	BEDROCK CORE SAMPLES	6
2.2	DOWNHOLE GEOPHYSICAL LOGGING	6
2.3	SURFACE GEOPHYSICS	7
2.4	LOCATION AND ELEVATION SURVEY	8
3.0	ENVIRONMENTAL SETTING AND INVESTIGATION RESULTS	9
3.1	REGIONAL GEOLOGY	9
3.2	LOCAL GEOLOGY	10
4.0	REFERENCES	14

LIST OF FIGURES
(Following Text)

FIGURE 1.1 SITE LOCATION

FIGURE 1.2 SITE PLAN

FIGURE 2.1 SOIL SAMPLE LOCATIONS

FIGURE 2.2 BEDROCK COREHOLE LOCATIONS

FIGURE 2.3 ELECTRICAL RESISTIVITY SURVEY LINES

FIGURE 3.1 GLACIAL FEATURES OF SOUTH-CENTRAL INDIANA

FIGURE 3.2 BEDROCK STRUCTURAL FEATURES OF INDIANA

FIGURE 3.3 BEDROCK GEOLOGY OF INDIANA

FIGURE 3.4 GENERALIZED STRATIGRAPHIC COLUMN FOR PALEOZOIC ROCKS IN INDIANA

FIGURE 3.5 BEDROCK ELEVATION ON-SITE

FIGURE 3.6 ST. LOUIS FORMATION STRUCTURE MAP

FIGURE 3.7 SALEM FORMATION STRUCTURE MAP

FIGURE 3.8 HARRODSBURG FORMATION STRUCTURE MAP

FIGURE 3.9 GEOLOGICAL CROSS-SECTION LOCATIONS

FIGURE 3.10 GEOLOGICAL CROSS-SECTIONS A-A'

FIGURE 3.11 GEOLOGICAL CROSS-SECTIONS B-B'

FIGURE 3.12 GEOLOGICAL CROSS-SECTIONS C-C'

FIGURE 3.13 GEOLOGICAL CROSS-SECTIONS D-D'

FIGURE 3.14 GEOLOGICAL CROSS-SECTIONS E-E'

LIST OF FIGURES
(Following Text)

FIGURE 3.15 GEOLOGICAL CROSS-SECTIONS F-F'

FIGURE 3.16 GEOLOGICAL CROSS-SECTIONS G-G'

LIST OF TABLES
(Following Text)

TABLE 2.1 SUMMARY OF RFI ADDENDUM NO. 9 SAMPLES

TABLE 2.2 SUMMARY OF GEOTECHNICAL SAMPLE RESULTS

TABLE 2.3 SUMMARY OF SOIL ANALYTICAL RESULTS

TABLE 2.4 BOREHOLE/WELL CONSTRUCTION DETAILS

TABLE 2.5 SUMMARY OF UNIAXIAL COMPRESSION TESTING RESULTS

LIST OF APPENDICES

APPENDIX A	OVERBURDEN AND BEDROCK BORING LOGS
APPENDIX B1	GEOTECHNICAL SOIL TESTING REPORT
APPENDIX B2	GEOTECHNICAL BEDROCK TESTING REPORTS
APPENDIX C	DOWNHOLE GEOPHYSICAL LOGGING REPORT (CD)
APPENDIX D1	GEOPHYSICAL INVESTIGATION – EAST PLANT AREA
APPENDIX D2	GEOPHYSICAL INVESTIGATION – AOI 7 POST-EXCAVATION
APPENDIX E	DATABOX DRAWING

LIST OF ACRONYMS AND SHORT FORMS

Agreement	RCRA Corrective Action Agreement
AOI	Area of Interest
CRA	Conestoga-Rovers & Associates, Inc.
CSM	Conceptual Site Model
Facility	GM Powertrain Bedford Facility
ft bgs	feet below ground surface
ft	feet
GM	General Motors Corporation
HSA	hollow-stem auger
mg/kg	miligrams per kilogram
PCBs	polychlorinated biphenyls
PID	Photoionization Detector
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
SPT	standard penetration techniques
U.S. EPA	United States Environmental Protection Agency

1.0 INTRODUCTION

1.1 GENERAL

The General Motors Corporation (GM) Powertrain Bedford Facility (Facility) is located at 105 GM Drive, Bedford (Lawrence County), Indiana, 47421 (Figure 1.1). The Facility produces aluminum casting products, such as transmission cases, pistons, and engine blocks. Major aluminum production processes include die casting & permanent molding. The Facility has been operating as an aluminum foundry since 1942, with major facility modifications completed in 1950, 1953, 1966, 1971, 1974, 1977, 1979, and 1980.

The Facility, located on 152.5 acres, contains approximately 915,000 square feet of floor space and employs approximately 1,000 people (Figure 1.2).

1.2 RFI APPROACH

General Motors signed a Performance-Based Corrective Action Agreement (Agreement) with the United States Environmental Protection Agency (U.S. EPA) for the Facility on March 20, 2001, and modified on October 1, 2002. The signed Agreement states that GM will work voluntarily (with the U.S. EPA) to identify and define the nature and extent of releases of hazardous waste and/or hazardous constituents at or from the Facility.

To meet these requirements, GM is investigating those Areas of Interest (AOIs) that may be associated with a release of hazardous waste and/or hazardous constituents. These AOIs were identified in the Current Conditions Report (CCR) (CRA, May 25, 2001).

1.3 GOALS AND OBJECTIVES

The overall goal of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) is to characterize the nature and extent of any releases of hazardous waste and/or hazardous constituents at or from the Facility, which may pose an unacceptable risk to human health and the environment.

The sampling plan for the investigations discussed in this TM was presented in the Addendum No. 9 Work Plan (CRA, April 2005). This work plan was prepared to supplement the existing RFI investigations and to address the following additional specific East Plant Area Interim Measure (IM) pre-design objectives:

- further delineate areas with ≥50 milligrams per kilogram (mg/kg) polychlorinated biphenyls (PCBs) in the East Plant Area;
- provide further geologic information for the support of the containment vault at AOI 7;
- further define the topographic surface and compressive strength of the bedrock in the East Plant Area;
- further identify bedrock valleys/potential preferential groundwater flow pathways to assist in designing groundwater collection systems for the East Plant Area; and
- provide stratigraphic definition primarily along the northern and eastern sides of the East Plant Area to support the design of a downgradient perimeter groundwater collection system.

1.4 RFI WORK PLAN

This Technical Memorandum (TM) describes the RFI Work Plan: Addendum No. 9 (Addendum No. 9) (CRA, April 2005) activities and results from March to October 2005 at the Facility. Specifically, this TM includes geophysical survey results, perimeter surface (0-4 feet below ground surface (ft bgs)) soil PCB delineation sample results, overburden PCB delineation sample results, investigative coreholes (to competent bedrock) (including geotechnical sampling and geophysical analysis) results collected from the East Plant Area of the Bedford Facility during the investigation.

To meet these goals, the objective of the RFI is to collect data of sufficient quality and quantity to support an assessment of potential risks to human health and the environment associated with releases of hazardous waste and/or hazardous constituents under current and reasonably expected future land use. Specifically, the RFI will:

- determine whether a release of hazardous waste/constituents to soil, groundwater, surface water, or sediment has occurred at AOIs identified in the CCR as requiring investigation;
- characterize the source(s) of a release and determine the nature and extent of constituents in environmental media to the extent necessary to support an assessment of risks to human health and the environment;
- characterize current and potential migration pathways, and potential human and environmental receptors under current and reasonably expected future land use;

- assess potential risk to human health and the environment associated with releases of hazardous waste/constituents to the environment;
- determine whether interim corrective measures are necessary to control unacceptable current human exposures, if any, or to control migration of any contaminated groundwater;
- provide sufficient data to support a demonstration that current human exposures to contamination above risk-based levels are under control, and that the migration of groundwater contaminated above acceptable levels is stabilized; and
- determine if final corrective measures are necessary to mitigate unacceptable risks, if any, to human health and the environment under current and reasonably expected future land use.

1.5 TECHNICAL MEMORANDUM CONTENT

Section 1.0 This Section provides an Introduction to the project, including the overall RFI Approach, and the RFI goals and objectives. This Section also references the work plans followed to obtain the data contained herein.

Section 2.0 This Section describes the types of activities completed and the methods employed to obtain the data included in this TM.

Section 3.0 This Section presents the updated Environmental Setting for the project site. This Section includes a discussion on the regional and local geology and includes revisions to this Section based on the results obtained from implementation of the Addendum No. 9.

Section 4.0 This Section lists the references used in compiling this report.

2.0 SCOPE OF WORK – METHODOLOGY

All sampling was completed in accordance with procedures and protocols in the Scope of Work and Field Sampling Plan presented in the initial RFI Work Plan and the Quality Assurance Project Plan (CRA, 2001). This Section briefly describes the methodology employed during sample collection during implementation of the field work completed under this Addendum No. 9.

2.1 SUBSURFACE SAMPLE COLLECTION

The field geologist recorded the subsurface conditions at each boring and surface sample location in the field at the time of collection. Boring logs for all borings are provided in Appendix A. All sampling locations are presented on Figure 2.1.

2.1.1 OVERBURDEN

All overburden samples were collected through 4.25-inch, inside diameter (ID), hollow-stem augers (HSA) via standard penetration (split-barrel) techniques (SPT), through hydraulic-push equipment and polyethylene tubing, or by stainless-steel hand augers. For locations where the bedrock was drilled, the overburden was sampled as described above.

2.1.1.1 ENVIRONMENTAL SAMPLES

At every soil boring and surface soil sample location, samples for laboratory analysis were collected from the surface (e.g., 0 to 2 ft bgs). If paving was present, surface samples were collected immediately beneath the pavement and undercourse. For every soil boring extending to depth, samples for laboratory analysis were additionally collected from a two-foot interval within the "construction worker" zone interval (six to ten ft bgs), if bedrock was not encountered prior to that depth. A third sample was collected from each soil boring extending to depth either immediately above bedrock, or immediately above saturation, if encountered. At some locations, a fourth sample was collected if visual, olfactory, or photoionization detector (PID) readings indicated potential contamination. Some locations were sampled every four feet (ft) to the top of the bedrock surface. Table 2.1 presents a summary of all borehole samples collected and the analyses for which they were submitted. PID measurements can be found on the soil boring logs in Appendix A.

2.1.1.2 GEOTECHNICAL

At select locations, soil samples for geotechnical analysis (e.g., grain size, Atterberg Limits, vertical permeability, etc.) were collected. All samples collected for vertical permeability were collected via Shelby tube, so as to provide a minimally disturbed sample for analysis. Samples for other parameters were also collected by hand auger, or by SPT, as described above. Table 2.2 presents a summary of these results. Figure 2.1 presents the sampling locations.

The reports for these analyses can be found in Appendix B1.

2.1.1.3 ANALYTICAL RESULTS

All soil sampling results are presented in Table 2.3. Results are also presented in data box figures in Appendix E.

2.1.2 BEDROCK

2.1.2.1 BEDROCK CORING

The overburden soil was drilled using a 4 1/4-inch HSAs or 7 7/8-inch tricone bit in order to set a 4-inch steel outer casing into place at approximately 2 ft into the top of the bedrock surface. This outer casing was cement-grouted into place and allowed to cure prior to further advancing the boring into bedrock. Once the outer casing was set and cured, further advancement into the bedrock was accomplished using an HQ-size (approximately 3.8-inch outer diameter) core barrel and wireline techniques. At each bedrock boring location, core runs of five to ten ft were initially used to check the competency of the upper bedrock. Once competent rock was reached, core runs were generally ten feet in length until total depth was reached. Each core was visually inspected and described (recorded) by the field geologist in the field at the time of collection (boring logs are presented in Appendix A). Where the bedrock was heavily fractured or drilling fluids (water) circulation was lost, the boring was terminated at the next competent interval. These locations were then completed as open hole, shallow bedrock monitoring wells.

Bedrock cores were retrieved from the core barrel and immediately placed into wooden core boxes. Core boxes were 4 ft in length and consisted of three rows for core placement, thus allowing for each 10 ft core run in each box. The top of the retrieved core was always placed in the upper left-hand corner (i.e., laid out from left to right, and from top to bottom). All cores were oriented to north and marked as such with a permanent marker. Where necessary, cores were manually broken only to allow for placement into the core boxes or for inspection (these breaks were noted directly on the cores). Each core box was labeled as to contents on the top and front, photographed, and placed into a storage container located on site.

Each completed corehole was left as an open hole and was completed at the ground surface with a hinged, locking lid. Table 2.4 presents the completion details for each of the coreholes advanced (labeled as CH-##) during completion of this work plan.

2.1.2.2 COREHOLE ABANDONMENT

At several locations where the bedrock drilling could not be completed due to an incomplete seal, the corehole was abandoned by filling the outer casing with a cement-bentonite grout and cutting off the top of the casing at approximately two ft bgs. In addition, at select locations, it was necessary to abandon the completed coreholes to accommodate site conditions (e.g., Grading Area 2 Expansion Area). The bedrock at these coreholes was filled with a cement-bentonite grout to approximately two ft above the top of the bedrock surface. The outer, steel casings will be removed or sealed with grout during future activities. Figure 2.2 and Table 2.4 present which coreholes were abandoned.

2.1.2.3 BEDROCK CORE SAMPLES

Select portions of the cores were broken out and submitted to the geotechnical laboratory for uniaxial compression testing. These results are summarized on Table 2.5. The laboratory reports are presented in Appendix B2.

2.2 DOWNHOLE GEOPHYSICAL LOGGING

Upon completion of the bedrock coring, select coreholes were selected for downhole geophysical testing. A full suite of logs was run to the total depth of each corehole

logged. COLOG, a Division of Layne-Christensen Company, of Golden, Colorado provided the equipment and engineer/operator for all downhole geophysical logging.

The geophysical logging consisted of measurements of the borehole diameter (caliper), the rock's natural radioactivity (natural gamma-ray), the rock's natural resistivity (short and long-normal), single-point resistance (spr), fluid spontaneous (or self) potential (sp), fluid temperature and specific conductance. Additionally, logging runs also utilized a digital acoustic televiewer (ATV) and an optical televiewer. Logs from each run were printed in the field upon completion and reviewed by the field geologist.

Final geophysical logs are presented on CD in Appendix C.

2.3 SURFACE GEOPHYSICS

In order to supplement the subsurface investigation throughout the East Plant Area, surface geophysical surveys were conducted in order to supplement the subsurface data. Several electrical resistivity survey (ERS) lines were completed throughout AOI 7 and the remainder of the East Plant Area (Figure 2.3). In addition, several ground penetrating radar (GPR) lines were completed at AOI 7.

An initial 13 ERS lines were completed through the overburden material. Seven of these lines specifically targeted the subsurface conditions at AOI 7, and the remaining six lines were completed throughout the East Plant Area where additional data were needed to support Interim Measures designs. These lines were completed during April 2005. Five bedrock coreholes were advanced along two of the completed ERS lines within the East Plant Area to verify potential anomalies in the geophysical data (these are presented on Figure 2.1 as 9-1, 9-2, 9-3, 9-4, and CH-13A). Appendix A presents the logs for these coreholes.

After the overburden soil was removed for the construction of the proposed vault underdrain, additional ERS and several GPR lines were completed directly on the bedrock surface at AOI 7. These survey lines were completed in September 2005.

The results of the geophysical survey are provided in Appendices D.1 and D.2.

2.4 LOCATION AND ELEVATION SURVEY

Upon completion of soil borings and bedrock coreholes, each location was surveyed to determine its map coordinates and ground and reference elevations. The map coordinates were based on the 1983 North American Datum (NAD '83) coordinate system and were surveyed to the nearest 1.0 foot. Ground and reference (e.g., top of casing) elevations were surveyed to the nearest 0.1 and 0.01 foot, respectively. All elevations were surveyed to the United States Geologic Survey datum (1988 North American Vertical Datum (NAVD)).

3.0 ENVIRONMENTAL SETTING AND INVESTIGATION RESULTS

The following descriptions were compiled based on published data and from data obtained during the implementation of the investigations at the Facility.

3.1 REGIONAL GEOLOGY

The Facility lies within an area of Indiana that was not glaciated (driftless area). The maximum progression of the Illinoisan Glacial advance (the furthest advance of the Laurentide Ice Sheet) lies to the west, north, and east of the immediate region surrounding the Facility (Figure 3.1). Consequently, the surficial geology of the area generally consists of a relatively thin layer of unconsolidated deposits of sand, clay, and chert produced by the weathering of limestone bedrock (regolith), and wind-deposited silty material, known as loess. Due to its reddish color, the soil in this region is commonly referred to as terra rosa. Thicker deposits of proglacial outwash, lake sediment, and recent alluvium occur along the major stream valleys (Figure 3.1). The surficial deposits range in thickness from zero ft along bedrock outcrops to approximately 100 ft thick along Salt Creek and the East Fork of the White River (Gray, 1974).

The bedrock within the region is near the eastern margin of a structure known as the Illinois Basin. The bedrock formations in this area generally dip to the west - southwest at approximately 20 to 25 ft per mile. The Cincinnati Arch lies to the east of the Illinois Basin and covers much of Indiana (Figure 3.2).

Two regional structures are located within the vicinity of the Facility; the Leesward Anticline and the Mt. Carmel fault (Figure 3.2). The Leesward Anticline is located to the north and east of Bedford and plunges to the south-southeast. The Mt. Carmel fault is a normal fault with the downthrown side located to the west of the fault. This fault is located to the north and east of the Facility and truncates the Leesward Anticline on its western side. The Mt. Carmel fault generally acts as a hinge line, with gentler dips to the west of the fault and slightly steeper dips to the east (Melhorn and Smith, 1959).

Bedrock within the immediate vicinity of the Facility is Middle to Early Mississippian and consists of the following formations from youngest to oldest (or near surface to depth): the St. Louis Formation (the oldest formation within the Blue River Group); the Sanders Group, consisting of the Salem Formation, the Harrodsburg Formation, and the Ramp Creek Formations, and the youngest formation of the Borden Group (the Edwardsville Formation-Melhorn and Smith, 1959). Figure 3.3 presents the bedrock

geology of Indiana and Figure 3.4 presents a generalized stratigraphic column for Paleozoic formations in Indiana (e.g., those formation found within the area of the Facility). It is the Salem Formation that is locally quarried as fine building stone material in this region of Indiana.

The regional geology is characterized by karst topography. Several geomorphic features, such as sinkholes, characterize the land surface near Bedford. This is especially prominent along the western portion of Lawrence County, with much less surface expression through the mid and eastern portions of the county. The City of Bedford lies within the physiographic province known as the Mitchell Plain, or Plateau (karst plain). The Mitchell Plain extends from near Bloomington south to the Ohio River within the State of Indiana. Several caverns are known to exist in the area, including one of the largest mapped caverns in the world; Blue Springs Caverns, which is located approximately five miles southwest of the City of Bedford.

3.2 LOCAL GEOLOGY

The surficial geology of the area generally consists of a relatively thin layer of unconsolidated deposits of sand, clay, and chert produced by the weathering of limestone bedrock (regolith), and loess. Thicker deposits of proglacial outwash and lake sediment, and recent alluvium occur along the major stream valleys (Figure 3.1).

During implementation of this Addendum No. 9, forty-one additional borings were advanced into the upper bedrock surface. Each bedrock boring was cored after setting an outer surface casing within the upper two ft of competent rock. Bedrock cores were examined and collected in the field at the time of retrieval by the on-site geologist. Each core was advanced through the upper, shallow weather zone and was terminated within competent rock. The majority of these bedrock cores were completed along the proposed alignment for a future groundwater collection trench to be located within the shallow groundwater flow system. A few bedrock cores were completed within the interior of the East Plant Area to fill in data gaps from previous investigations (Figure 2.2 presents the locations of the bedrock coreholes).

Additional subsurface boring were also conducted throughout the East Plant Area during implementation of this Addendum No. 9. Borings were completed for the purpose of defining the limit of a future proposed cover system and several were completed for the purpose of additional delineation of PCB concentrations, as well as field verification of apparent geophysical anomalies. Figure 2.1 presents all of these

locations completed under this Addendum No. 9. Appendix A presents all of the boring logs for these locations.

The revised elevation of the bedrock surface is presented on Figure 3.5. This figure is similar to that previously presented, however, the additional coring completed under this Addendum No. 9 has provided further definition of the bedrock valleys present beneath the Facility. In particular, there are two identified bedrock valleys within the northern portions of the Facility (one running beneath AOI 7 and one running beneath the Hourly Parking Lot). Both valleys are fairly narrow and are likely the result of solution-widened joints or fractures.

Through physical removal of the overburden material within AOI 7, the upper bedrock surface was exposed and surveyed (Figure 3.5). This excavation provided an excellent view into the development of the epi-karst system that is likely present beneath much of the remaining Facility. The epi-karst system is the weathered transition zone between the bedrock and overburden and consists of clay, weathered rock, and solid bedrock. Several clay lenses were noted along the upper bedding planes as well as several clay-filled vertical fractures. These clay lenses appear to be authogenic (weathering of the bedrock and in-situ deposition within solution-widened bedding planes and fractures). This is supported by the observation of an increase in the degree of weathering away from the parent material and the lack of apparent larger grained sediments or inclusions within the clay seams.

Based on the information obtained during this investigation, previously constructed geologic structure maps were revised for each of the upper three formations encountered during drilling (St. Louis, Salem, and Harrodsburg Formations). These figures are presented as Figure 3.6, 3.7, and 3.8, respectively.

Most of the coreholes completed under this investigation were advanced to evaluate the upper bedrock conditions, as related to the proposed perimeter groundwater trench collector system. Geologic cross-sections were prepared utilizing this new information. The location of each geologic cross-section is presented on Figure 3.9. The geologic cross-sections are presented as Figures 3.10 through 3.16.

The following provides a brief discussion of each of these upper three formations encountered during this investigation, beginning with the upper-most formation:

Blue River Group

St. Louis Formation: The St. Louis Formation consists mostly of thinly-bedded, generally micritic, limestone (becoming more of a calcarenite at its base). This formation was observed to contain very thin, interbeds of calcareous shale at all locations where encountered. The St. Louis Formation has been eroded away (was not present) to the north-northeast beneath the site (the approximate location of the contact is presented on Figures 3.6). The base of this formation grades into and conformably overlies the Salem Formation. The mapped contact between the St. Louis Formation and the underlying Salem Formation was approximated through field observation and a change in the rock's measured natural radioactivity.

Figure 3.6 presents the elevation of the bedrock surface where the St. Louis Formation is the upper-most formation present. This figure was prepared from all borings reaching the top of bedrock. Figure 3.6 shows the erosional surface of the bedrock rather than being representative of the actual strike and dip of the formation (i.e., the bedrock surface does not correlate to the top of the Formation). This figure also presents the approximate extent of the St. Louis Formation across the site. The St. Louis Formation is present throughout much of the Site as the upper-most bedrock unit. However, this unit appears to have been eroded away along the northeast portion of the Site, where the uppermost bedrock surface is the underlying Salem Formation.

Sanders Group

Salem Formation: The youngest of the Sanders Group consists of the Salem Formation, which is a more massively bedded limestone (also known as the Indiana Limestone, the Bedford Limestone, or the Oolitic Limestone). The Salem Formation consists of medium to coarse-grained, calcarenite, grading into a biocalcirudite near its base. The individual grains consist of microfossils and grains of broken fossils, cemented with calcite. The Salem Formation is the uppermost bedrock unit to the north-northeast of the site (where the St. Louis Formation is not present). The base of this formation grades into and conformably overlies the Harrodsburg Formation. The mapped contact between the Salem Formation and the Harrodsburg Formation was approximated through field observation and to some degree, a noted change in the rock's measured resistivity.

Figure 3.7 shows the structure map for the top of the Salem Formation. The Salem Formation is the uppermost bedrock in the north and northeast portions of the Facility and corresponds to the top of the bedrock surface in this area. The Salem is present beneath the St. Louis Formation through the remainder of the property at an approximate elevation of over 660 feet above mean sea level (ft amsl) to slightly less than

630 ft amsl in the southwest corner of the Facility. The portion of this figure that corresponds to where the Salem is the uppermost bedrock unit, represents the erosional surface. However, where the Salem is underlying the St. Louis Formation throughout the remainder of the Site, the Salem Formation slopes to the southwest at an approximate gradient of 0.031 ft/ft (or 3 percent).

Harrodsburg Formation: The Harrodsburg Formation generally consists of medium to coarsely-grained limestone with beds of variable thickness. The upper portion of the Harrodsburg Formation consists of coarse-grained biocalcirudite and bioclastic calcarenite. At some locations the upper part of the formation closely resembled the lower portion of the Salem Formation. Individual grains consisted of well cemented broken fossils and microfossils (including the presence of abundant fan-like bryozoans, as well as brachiopods and crinoids).

Figure 3.8 presents the structure map of the Harrodsburg Formation. The Harrodsburg contact was identified at an approximate elevation of 605 ft amsl to the northeast of the Site to approximately 574 ft along the western portion of the Site. The slope of the surface of the Harrodsburg Formation is to the southwest at an approximate gradient of 0.012 ft/ft (or 1 percent).

4.0 REFERENCES

Publications Cited:

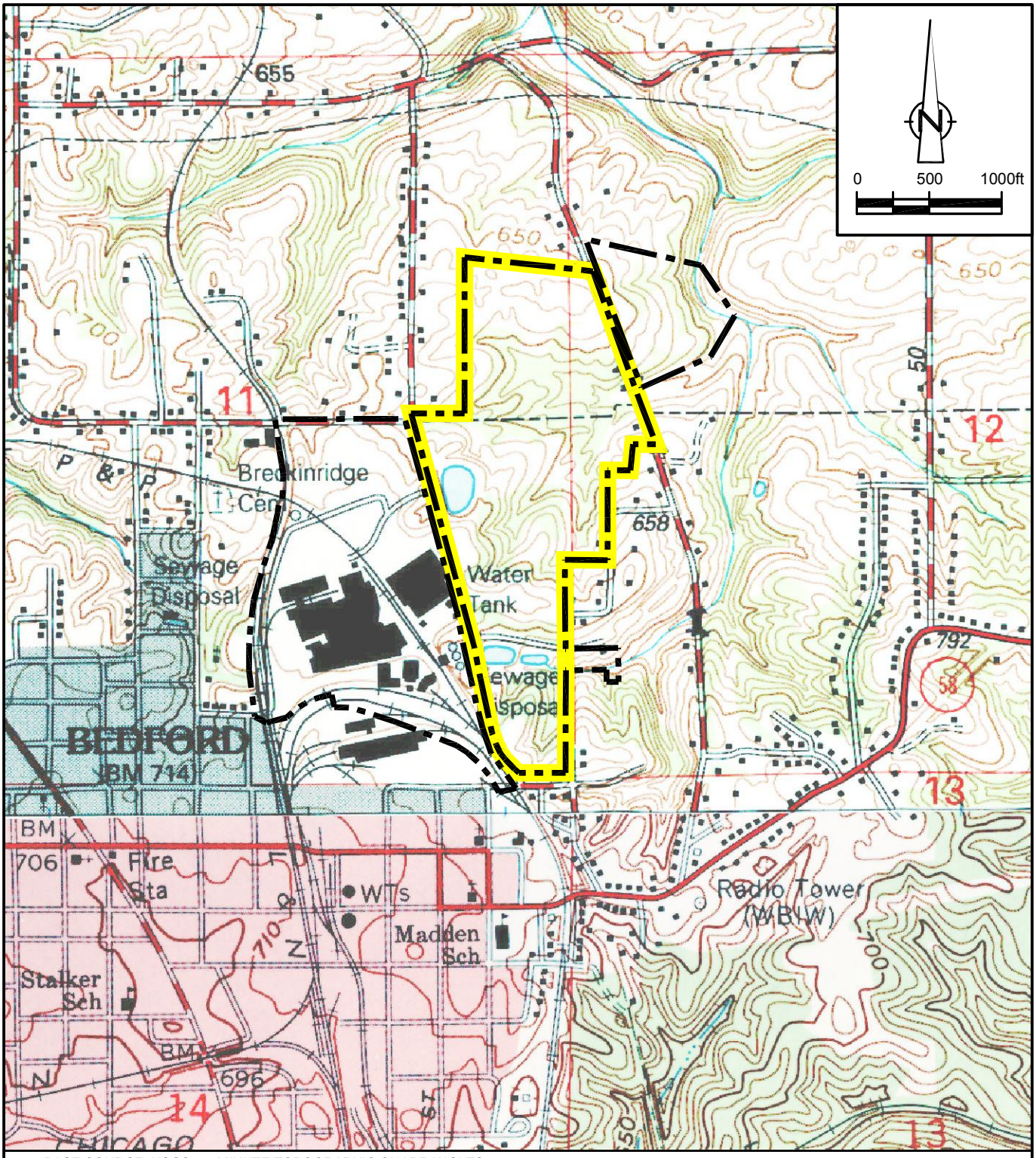
Conestoga-Rovers & Associates (CRA), 2001a, Current Conditions Report, GM Powertrain, Bedford Plant, Bedford, Indiana.

- 2001b, RCRA Facility Investigation (RFI) Work Plan, GM Powertrain, Bedford Plant, Bedford, Indiana.
- 2005, RCRA Facility Investigation Work Plan Addendum No. 9, GM Powertrain, Bedford Plant, Bedford Indiana.

Gray, H.H., 1974, Glacial Lake Sediments in Salt Creek Valley near Bedford, Indiana, Department of Natural Resources, Geological Survey Occasional Paper 1.

- 1982, Map of Indiana Showing Topography of the Bedrock Surface, Indiana Geological Survey and Indiana Department of Natural Resources, Miscellaneous Map 36.
- 1983, Map of Indiana Showing Thickness of Unconsolidated Deposits, Indiana Geological Survey and Indiana Department of Natural Resources, Miscellaneous Map 37.

Melhorn, W.N., and N.M. Smith, 1959, The Mt. Carmel Fault and Related Structural Features in South-Central Indiana, Indiana Department of Conservation, Geological Survey, Report of Progress No. 16.



BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES;
BARTLETTSVILLE, INDIANA 1994
BEDFORD EAST, INDIANA 1978
BEDFORD WEST, INDIANA 1993
OOLITIC, INDIANA 1987

LEGEND

FACILITY BOUNDARY

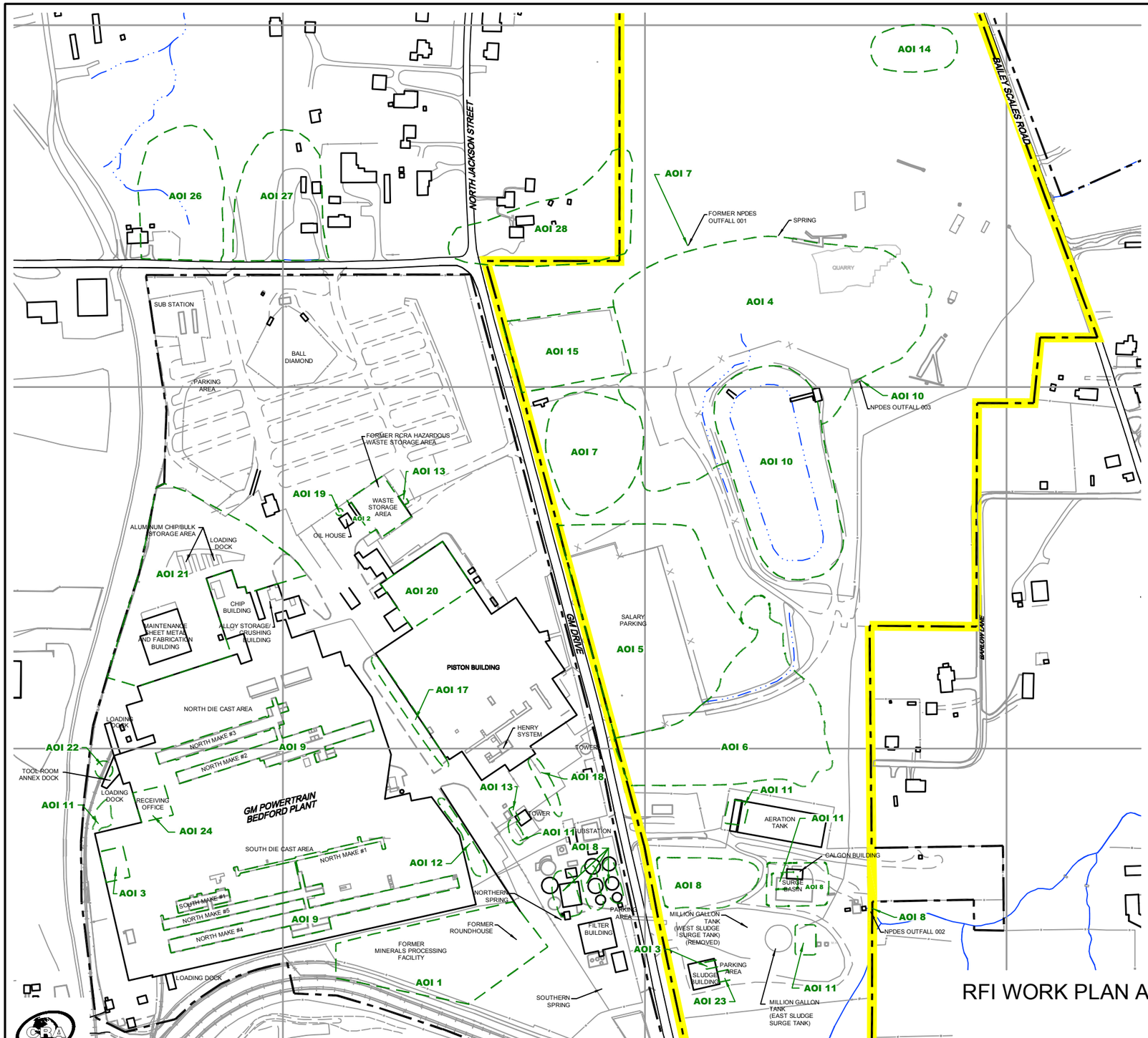
EAST PLANT AREA



figure 1.1

SITE LOCATION
RFI WORK PLAN ADDENDUM NO.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(174)GN-WA012 JUL 20/2006



AOI SUMMARY

AOI ID Description

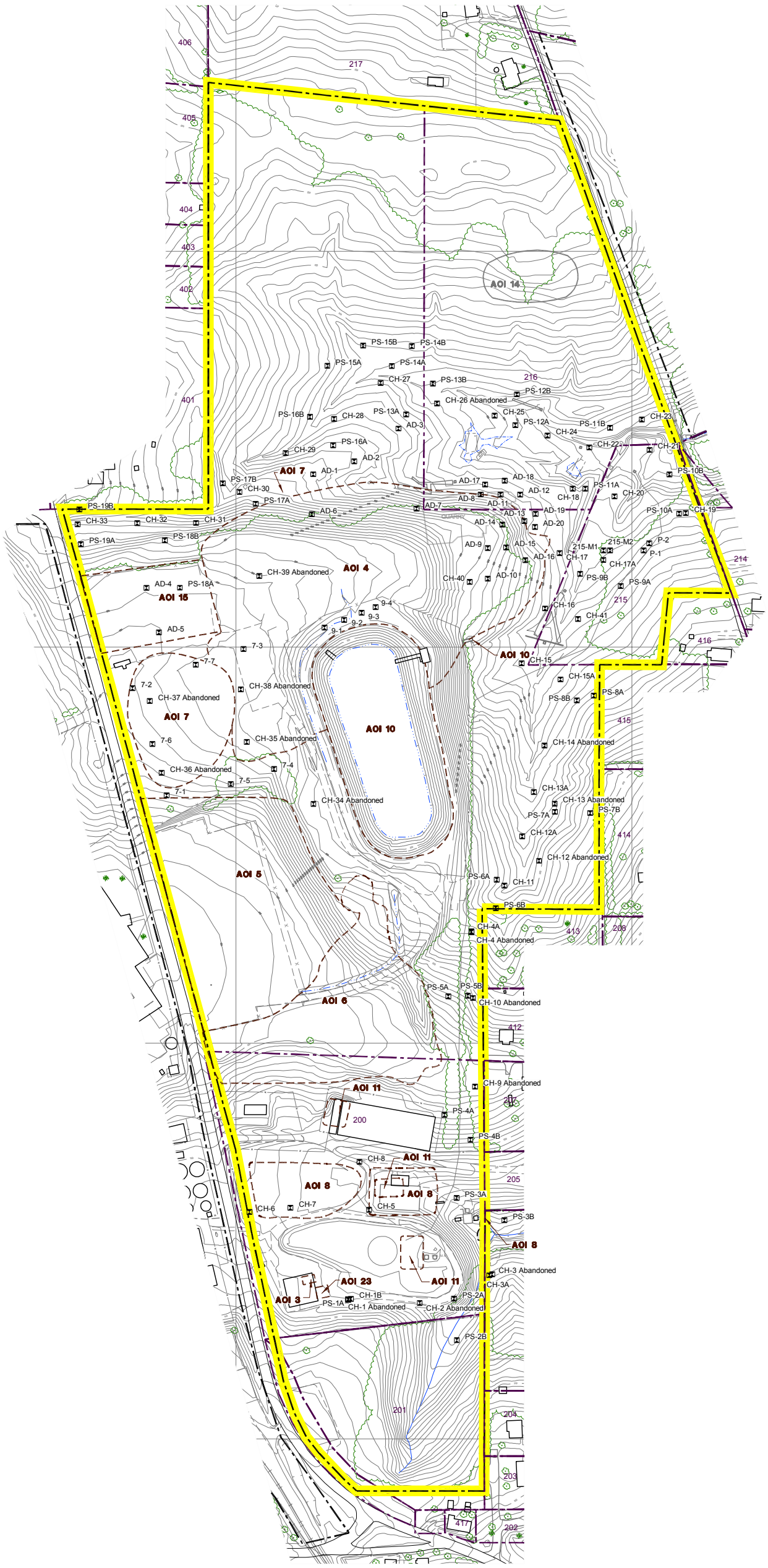
AOI 1 Former Railroad Operations and Minerals Processing Facility
AOI 2 Waste Storage Area
AOI 3 PCB Storage Areas
AOI 4 Former North Disposal Area
AOI 5 Former East Sand Disposal Area
AOI 6 Former Sludge Disposal and Fire Training Area
AOI 7 Former North Lagoon and Outfall 001
AOI 8 Former South Lagoons and Outfall 002
AOI 9 Service Tunnels
AOI 10 Existing Stormwater Lagoon and Outfall 003
AOI 11 Aboveground Storage Tanks
AOI 12 Area Affected by the Reclaimed Hydraulic Fluid Release
AOI 13 Underground Storage Tanks
AOI 14 McBride Cows Disposal Area
AOI 15 Former Equipment Storage Area
AOI 17 Piston Building Oil Accumulations
AOI 18 Area Affected by the Henry System Discharge
AOI 19 Area Affected by Paint and Thinner Spill
AOI 20 Northern Portion of the Piston Building
AOI 21 Filled Ravine North of Die Cast Building
AOI 22 Tool Room Annex Dock Release
AOI 23 Area Affected by the 1996 Wastewater Treatment Filter Cake Release
AOI 24 Area Affected by the June 2000 Die Lube 5150 Release
AOI 26 Off-Site Fill Area - Parcels 384 & 386
AOI 27 Off-Site Fill Area - Parcels 381 & 382
AOI 28 Off-Site Fill Area - Parcel 401

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001. AND CRA SURVEYS 2002 - 2005

figure 1.2

SITE PLAN
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(174)GN-WA013 JUL 20/2006



AOI SUMMARY

AOI ID	Description
AOI 3	PCB Storage Areas
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area
AOI 23	Area Affected by the 1996 Wastewater Treatment Filter Cake Release

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

RFI WORK PLAN ADDENDUM NO.9 TECHINICAL MEMORANDUM

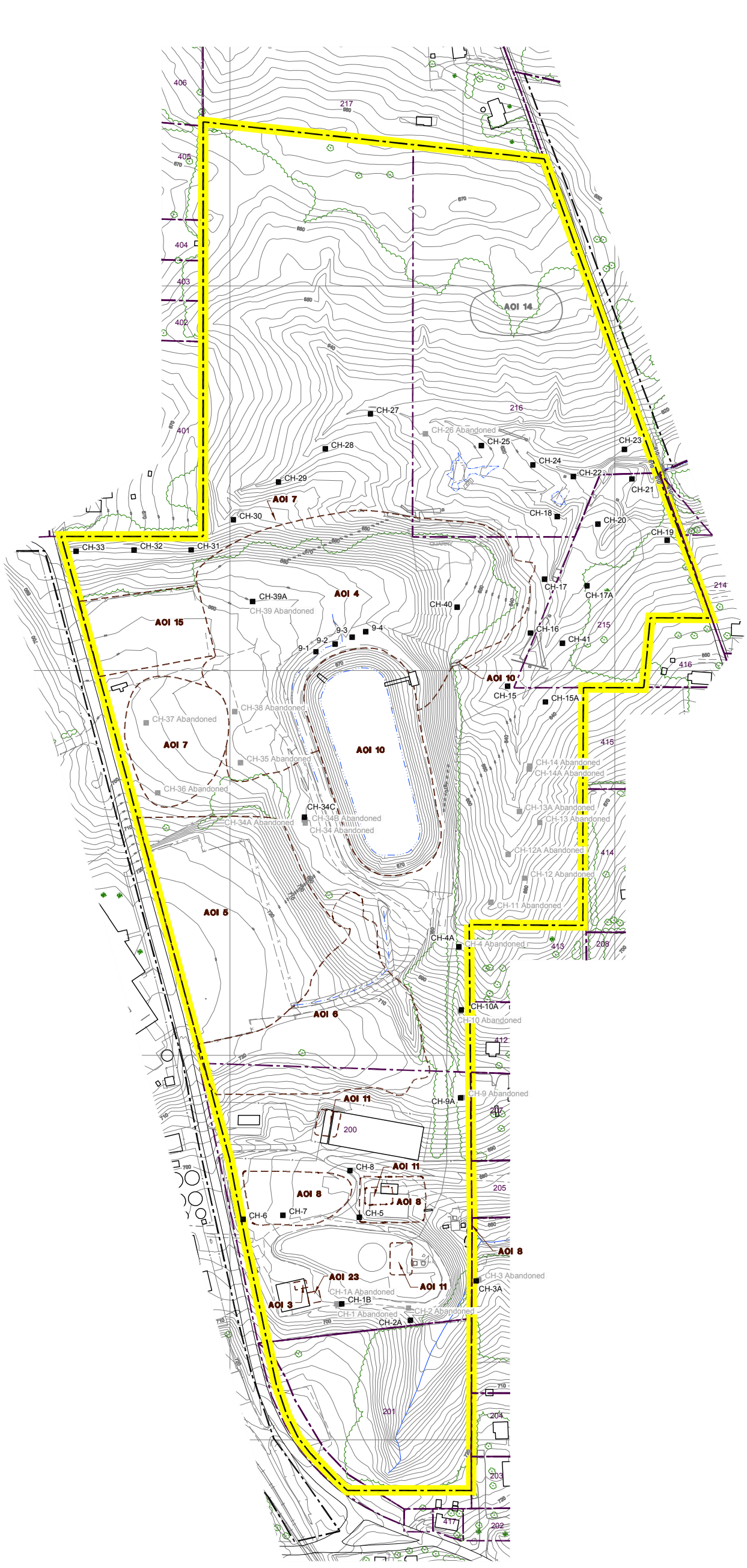
SOIL SAMPLE LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.

Project Manager:	Reviewed By:	Date:	
J.M.	M.K.	JANUARY 2006	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 174	Drawing Nº: figure 2.1

13968-00(174)GN-WA014 JUL 20/2006



AOI SUMMARY

AOI ID	Description
AOI 3	PCB Storage Areas
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area
AOI 23	Area Affected by the 1996 Wastewater Treatment Filter Cake Release

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

RFI WORK PLAN ADDENDUM NO.9 TECHINICAL MEMORANDUM

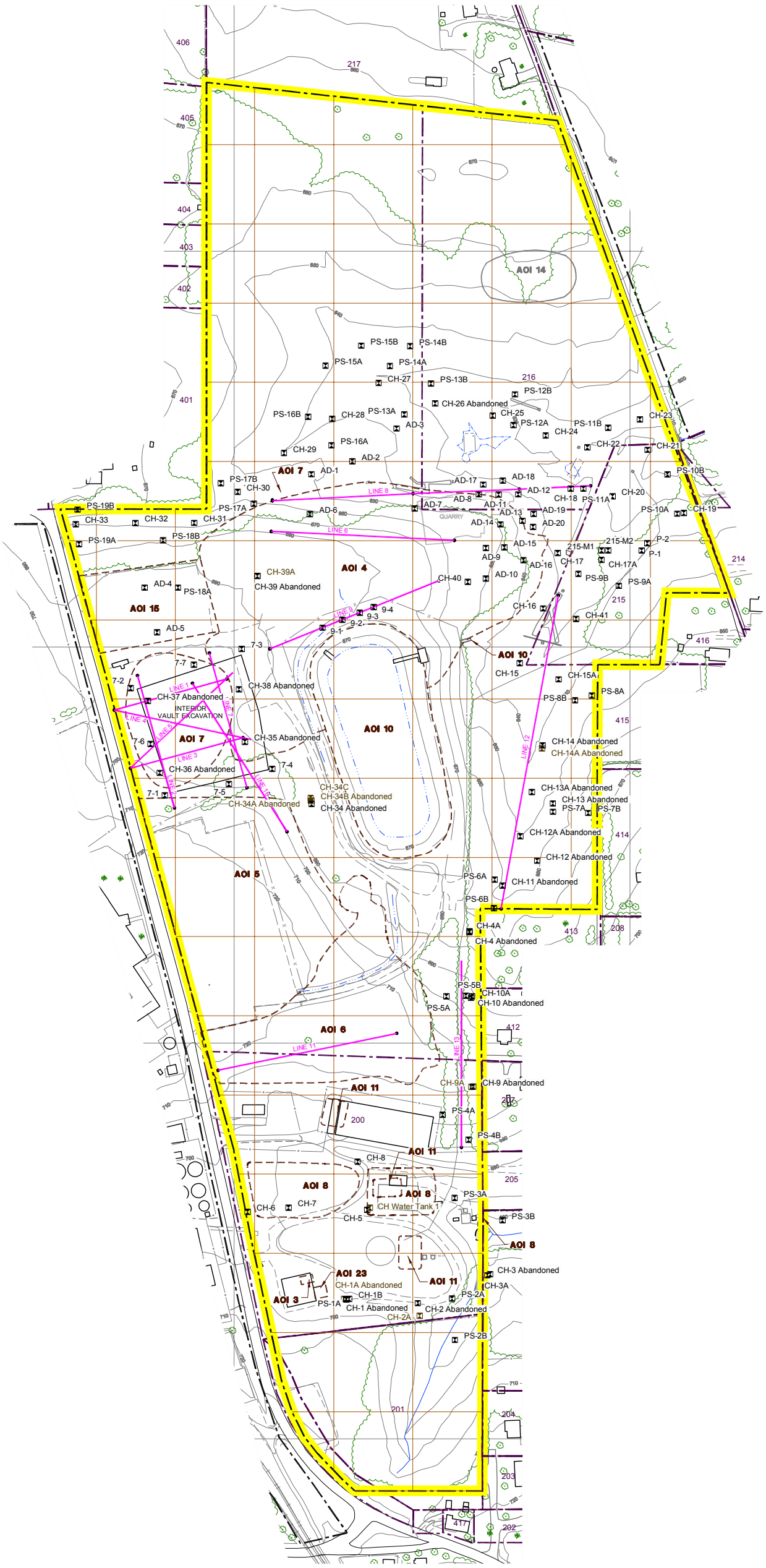
BEDROCK COREHOLE LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001. AND CRA SURVEYS 2002 - 2005

Project Manager:	Reviewed By:	Date:	
J.M.	M.K.	JANUARY 2006	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 174	Drawing Nº: figure 2.2

13968-00(174)GN-WA015 JUL 21/2006



N

0 50 150ft

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- AOI BOUNDARY
- EAST PLANT AREA
- 200 X 200 GRID
- LINE 1 — ELECTRICAL RESISTIVITY SURVEY LINE
- SURVEY POINT AND ELEVATION
- SOIL SAMPLE LOCATION (RFI 9)
- LOCATION WITHOUT PCB ANALYSIS (RFI 9)

AOI SUMMARY

AOI ID	Description
AOI 3	PCB Storage Areas
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area
AOI 23	Area Affected by the 1996 Wastewater Treatment Filter Cake Release

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

RFI WORK PLAN ADDENDUM NO.9 TECHINICAL MEMORANDUM

ELECTRICAL RESISTIVITY SURVEY

CONESTOGA-ROVERS & ASSOCIATES

Source Reference:
BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.
AND CRA SURVEYS 2002 - 2005

Project Manager:	Reviewed By:	Date:	
J.M.	M.K.	JANUARY 2006	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 174	Drawing Nº: figure 2.3

13968-00(174)GN-WA023 JUL 20/2006

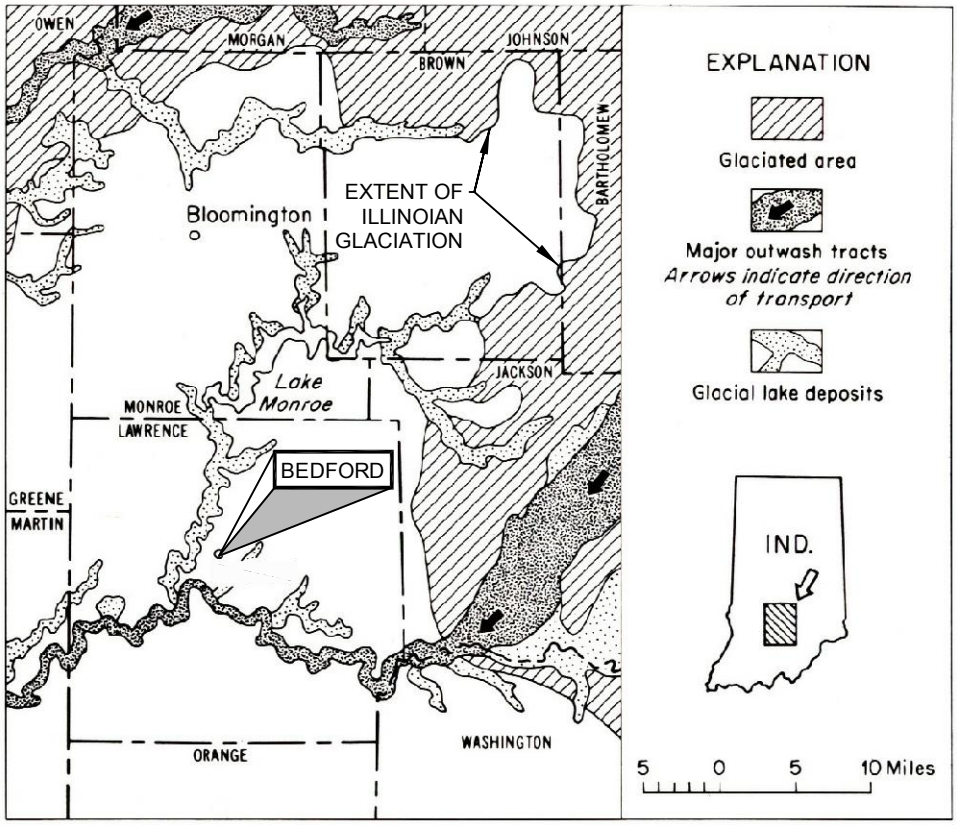


figure 3.1

GLACIAL FEATURES OF SOUTH-CENTRAL INDIANA
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOURCE: GRAY, 1974

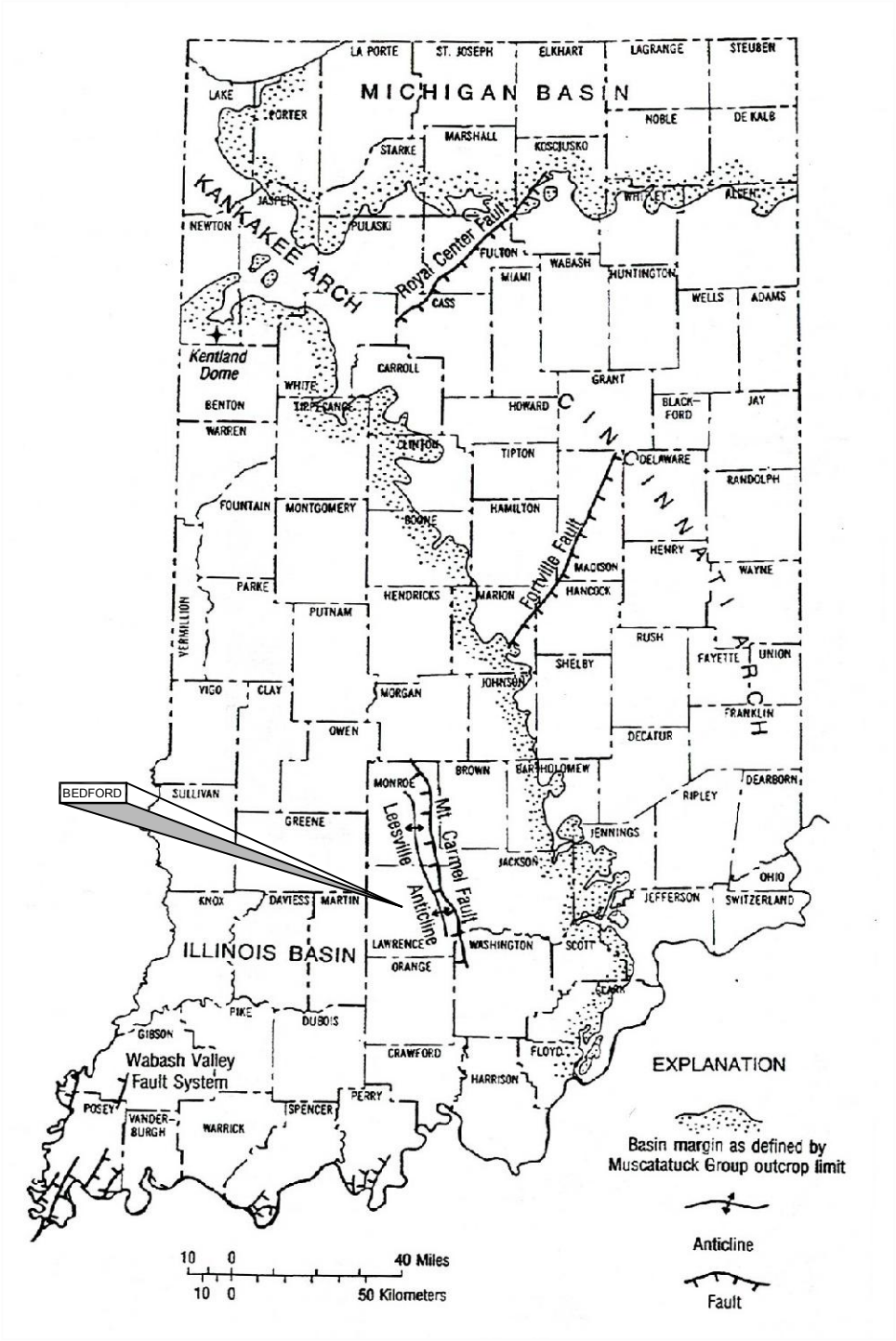


figure 3.2

BEDROCK STRUCTURAL FEATURES OF INDIANA
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOURCE: RUPP, 1991

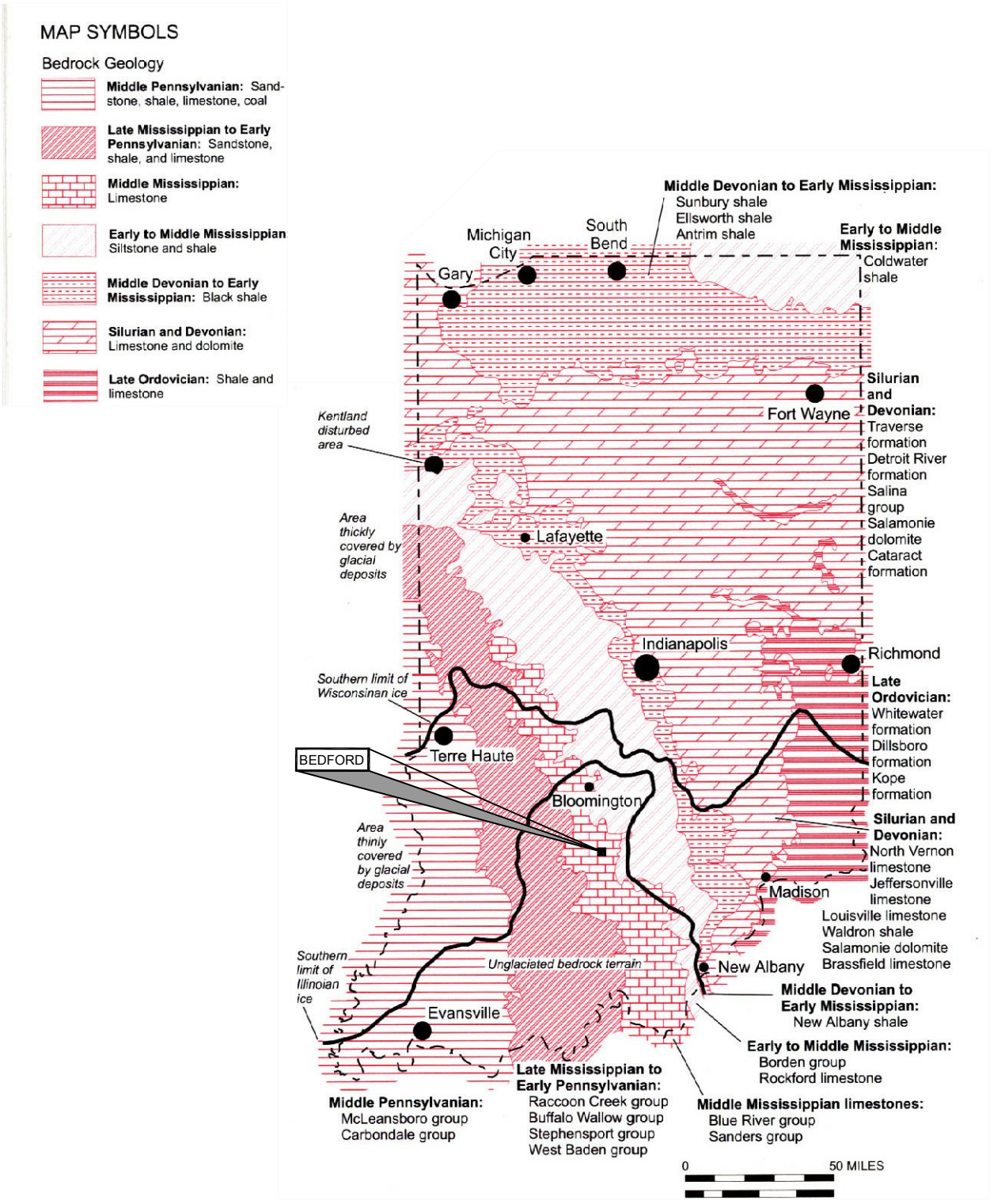


figure 3.3

BEDROCK GEOLOGY OF INDIANA
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOURCE: CAMP AND RICHARDSON, 1999

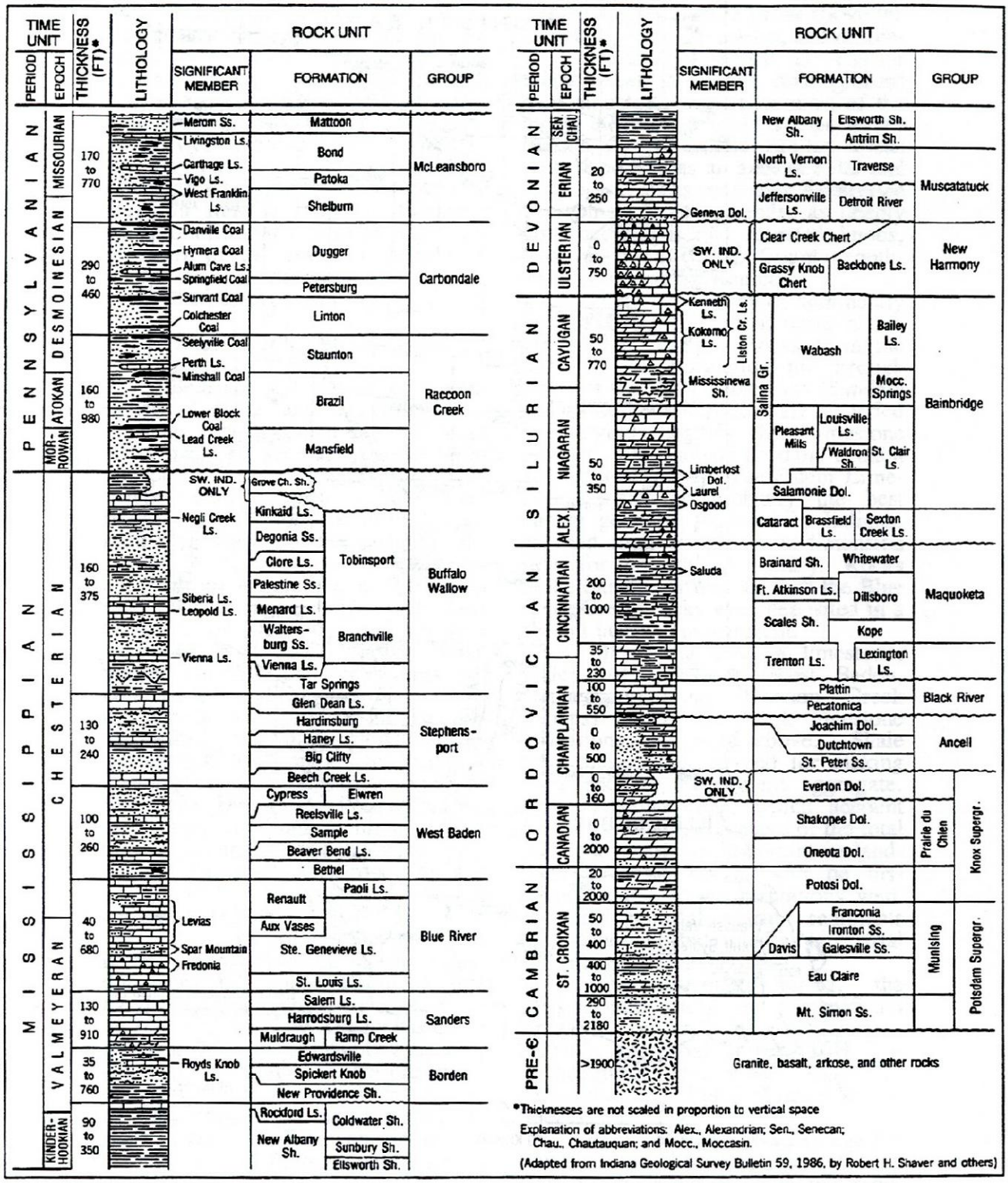


figure 3.4

GENERALIZED STRATIGRAPHIC COLUMN FOR PALEOZOIC ROCKS IN INDIANA
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOURCE: HILL, UNDATED

0 100 300ft

NORTH JACKSON STREET

BRECKENRIDGE ROAD

BAILEY SCALES ROAD

GM DRIVE

GM POWERTRAIN BEDFORD PLANT

INSET 1

LEGEND

- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- RFI SOIL BORING SAMPLE LOCATION
- 660 BEDROCK ELEVATION CONTOUR (ft AMSL)

INSET 1

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.
AND CRA SURVEYS 2002 - 2005

figure 3.5

BEDROCK ELEVATION ON-SITE
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(174)GN-WA021 JUL 21/2006

0 100 300ft

NORTH JACKSON STREET

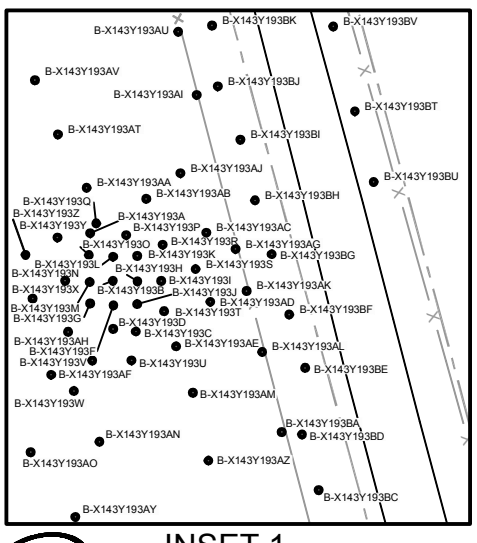
BRECKENRIDGE ROAD

BAILEY SCALES ROAD

GM DRIVE

GM POWERTRAIN BEDFORD PLANT

INSET 1



LEGEND

- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- RFI SOIL BORING SAMPLE LOCATION
- 700 ST. LOUIS CONTOUR
- APPROXIMATE SUBCROP CONTACT BETWEEN ST. LOUIS AND SALEM FORMATIONS

DRAFT

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 3.6

ST. LOUIS FORMATION STRUCTURE MAP
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.
AND CRA SURVEYS 2002 - 2005

13968-00(174)GN-WA009 JUL 24/2006

0 100 300ft

NORTH JACKSON STREET

BAILEY SCALES ROAD

BRECKENRIDGE ROAD

GM DRIVE

GM POWERTRAIN BEDFORD PLANT

660

650

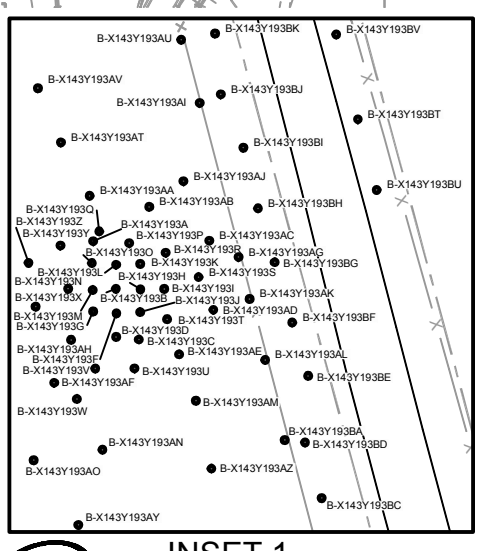
640

630

620

610

INSET 1



LEGEND

- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- RFI SOIL BORING SAMPLE LOCATION
- 650 SALEM CONTOUR
- APPROXIMATE SUBCROP CONTACT BETWEEN ST. LOUIS AND SALEM FORMATIONS
- APPROXIMATE SUBCROP CONTACT BETWEEN SALEM AND HARRODSBURG FORMATIONS

DRAFT

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 3.7

SALEM FORMATION STRUCTURE MAP
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

INSET 1

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.
AND CRA SURVEYS 2002 - 2005

13968-00(174)GN-WA010 JUL 24/2006

0 100 300ft

NORTH JACKSON STREET

BRECKENRIDGE ROAD

BAILEY SCALES ROAD

GM DRIVE

GM POWERTRAIN BEDFORD PLANT

605 600 595 590 585 580 575 570

INSET 1

LEGEND

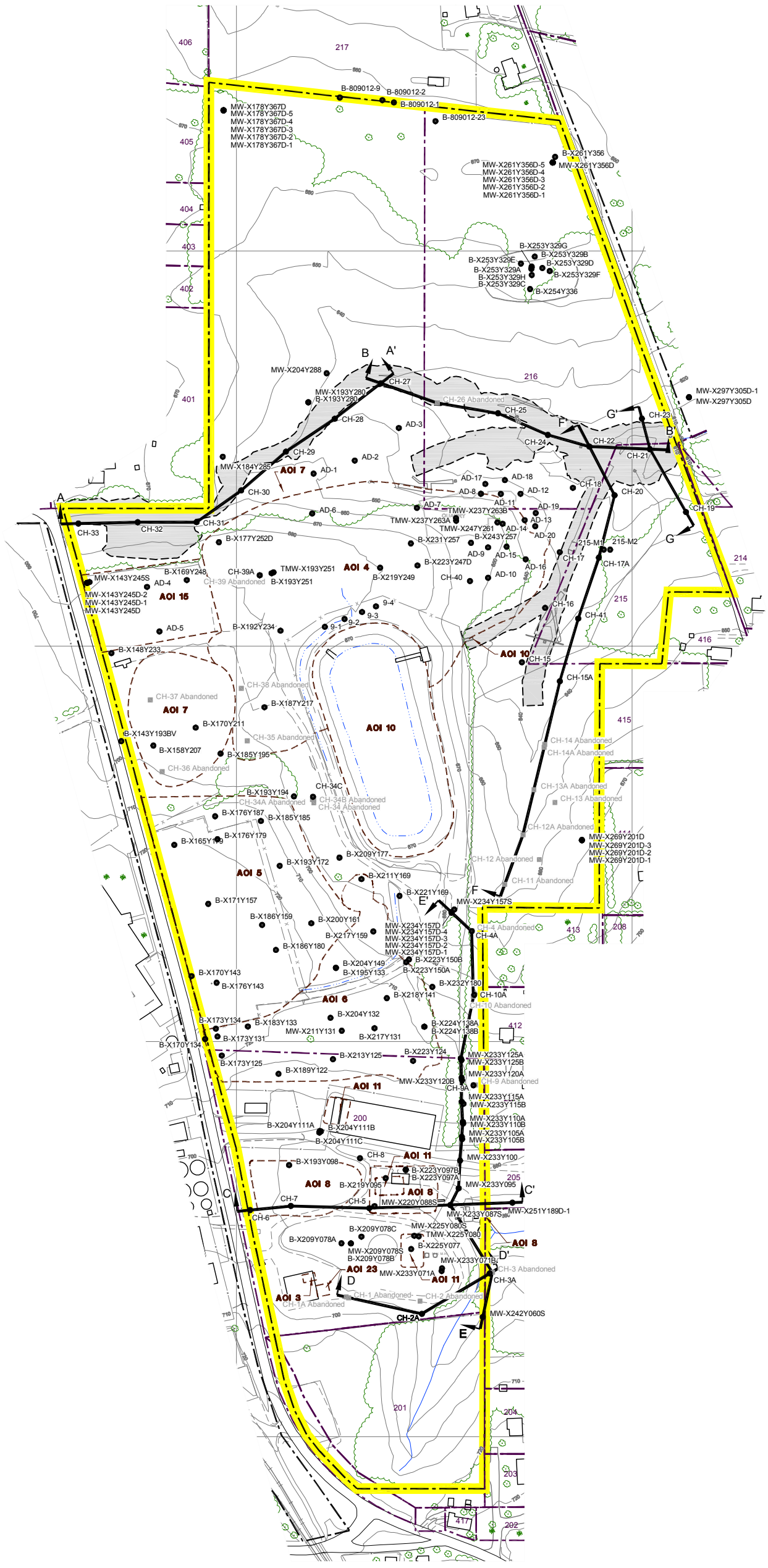
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- RFI SOIL BORING SAMPLE LOCATION
- 585 HARRODSBURG CONTOUR
- APPROXIMATE SUBCROP CONTACT BETWEEN SALEM AND HARRODSBURG FORMATIONS

SOURCE: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001. AND CRA SURVEYS 2002 - 2005

figure 3.8

HARRODSBURG FORMATION STRUCTURE MAP
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(174)GN-WA011 JUL 20/2006



N

0 50 150ft

LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- AOI BOUNDARY
- EAST PLANT AREA
- REMOVAL ACTION EXCAVATION AREA NOT INCLUDED IN EAST PLANT AREA IM
- ABANDONED COREHOLE LOCATION
- COREHOLE AND BOREHOLE LOCATION
- CROSS SECTION LOCATION

AOI SUMMARY

AOI ID	Description
AOI 3	PCB Storage Areas
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area
AOI 23	Area Affected by the 1996 Wastewater Treatment Filter Cake Release

NOTE: PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM

GEOLOGICAL CROSS SECTION LOCATIONS

CONESTOGA-ROVERS & ASSOCIATES

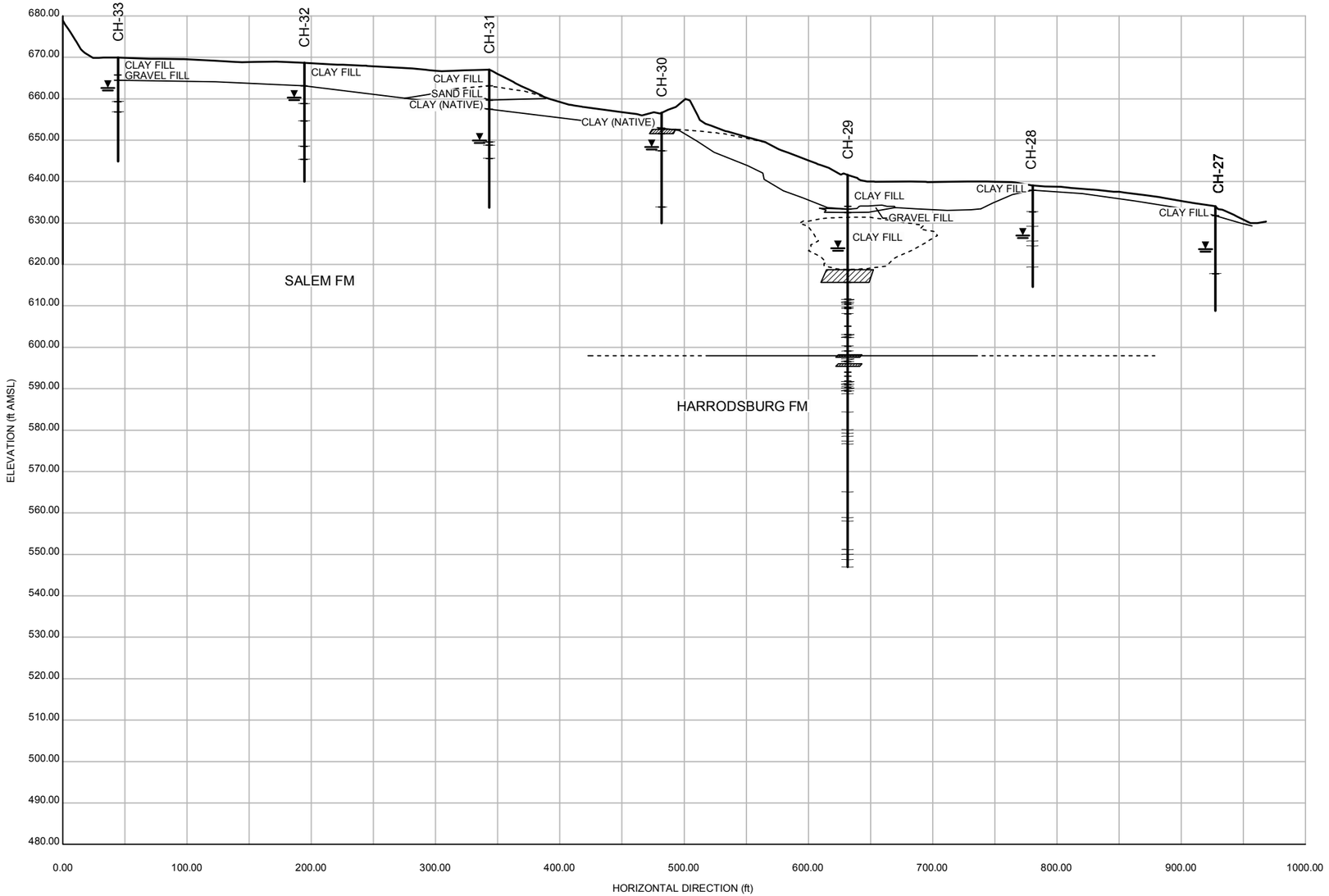
Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001. AND CRA SURVEYS 2002 - 2005

Project Manager:	Reviewed By:	Date:	
J.M.	M.K.	OCTOBER 2005	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 174	Drawing Nº: figure 3.9

13968-00(174)GN-WA001 JUL 20/2006

WEST
A

EAST
A'



BEDROCK KEY

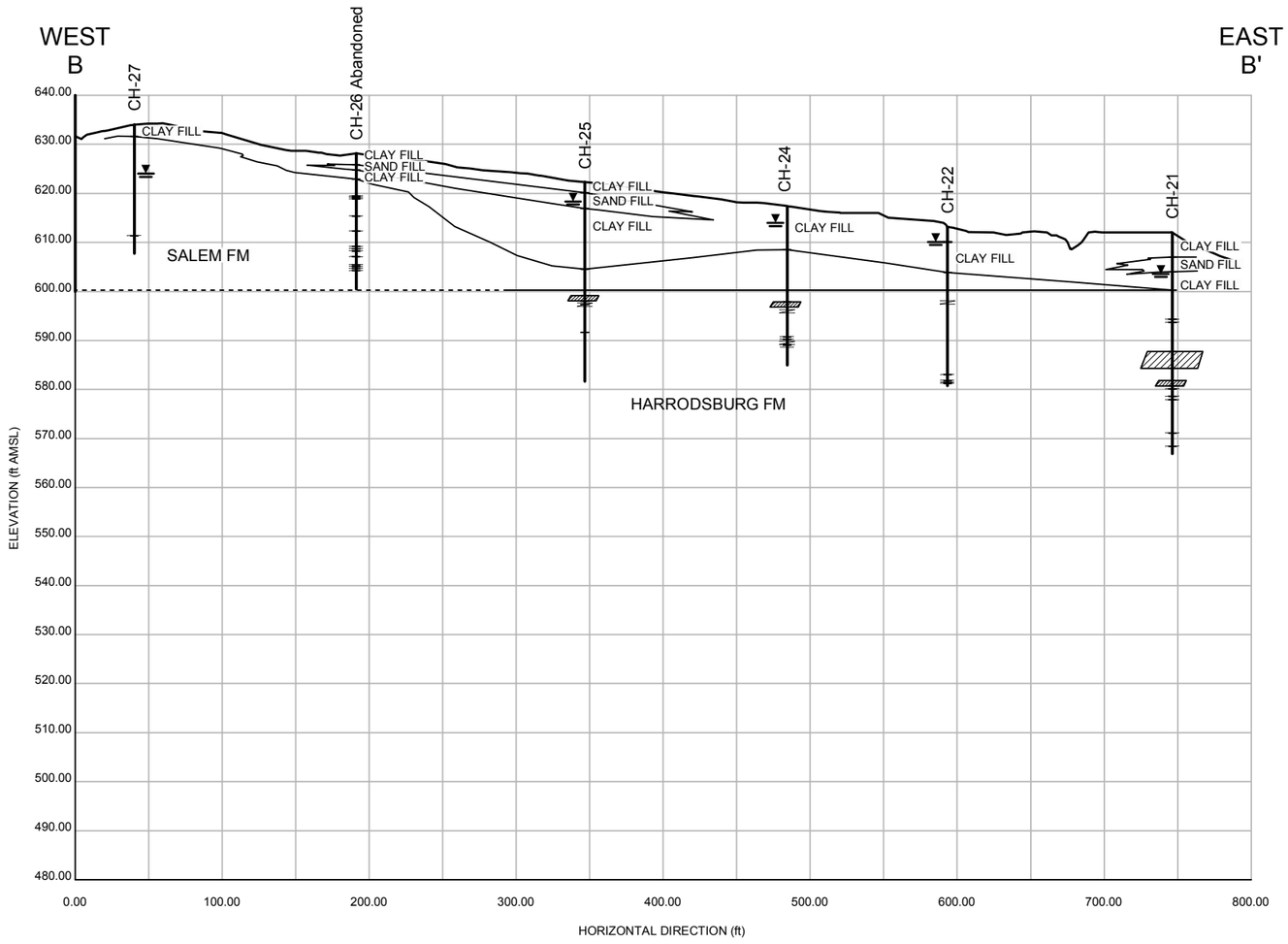
- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.10

GEOLOGICAL CROSS SECTION A - A'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



BEDROCK KEY

- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY
  -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

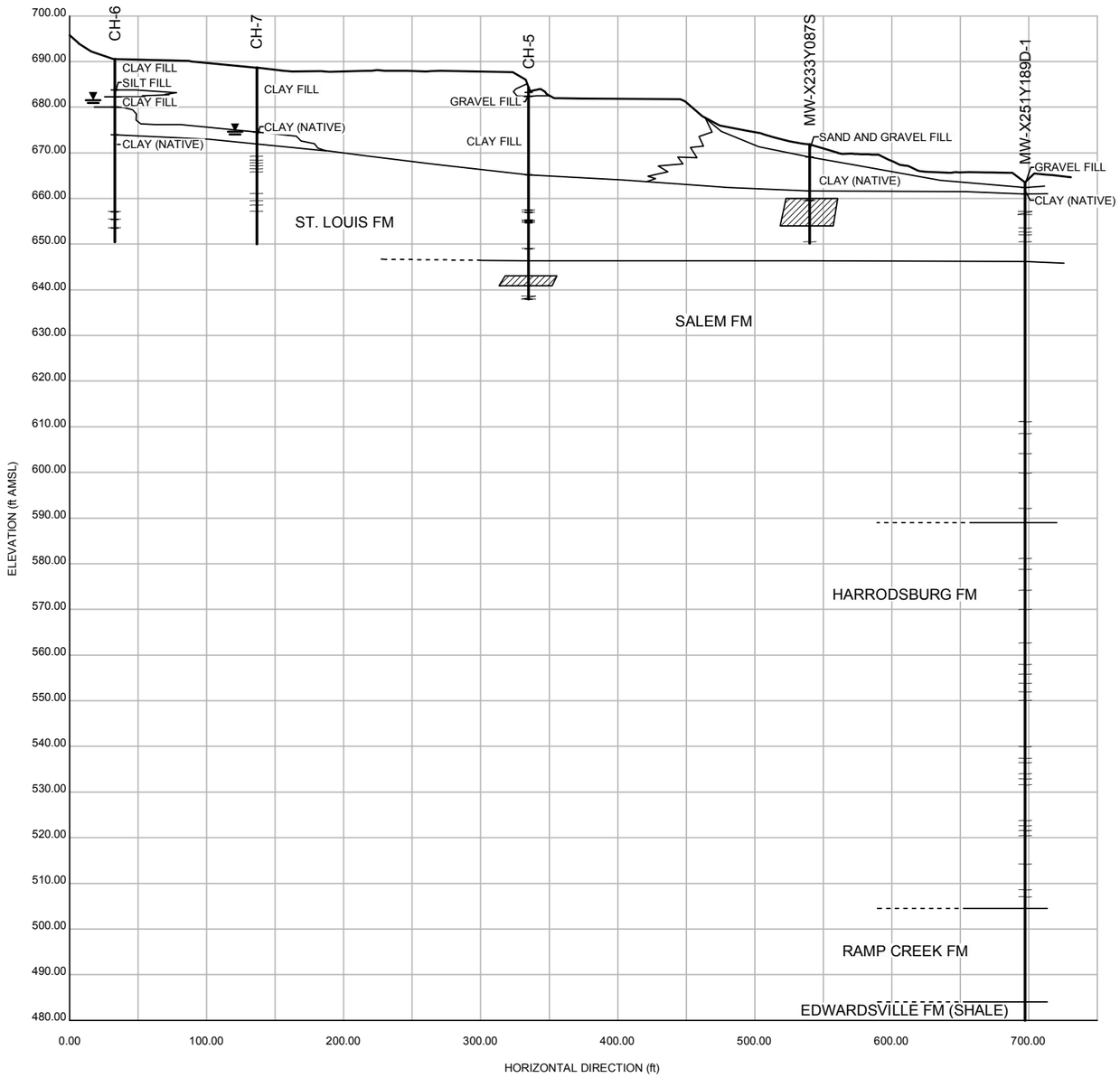
1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.11

GEOLOGICAL CROSS SECTION B - B'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

WEST
C

EAST
C'



BEDROCK KEY

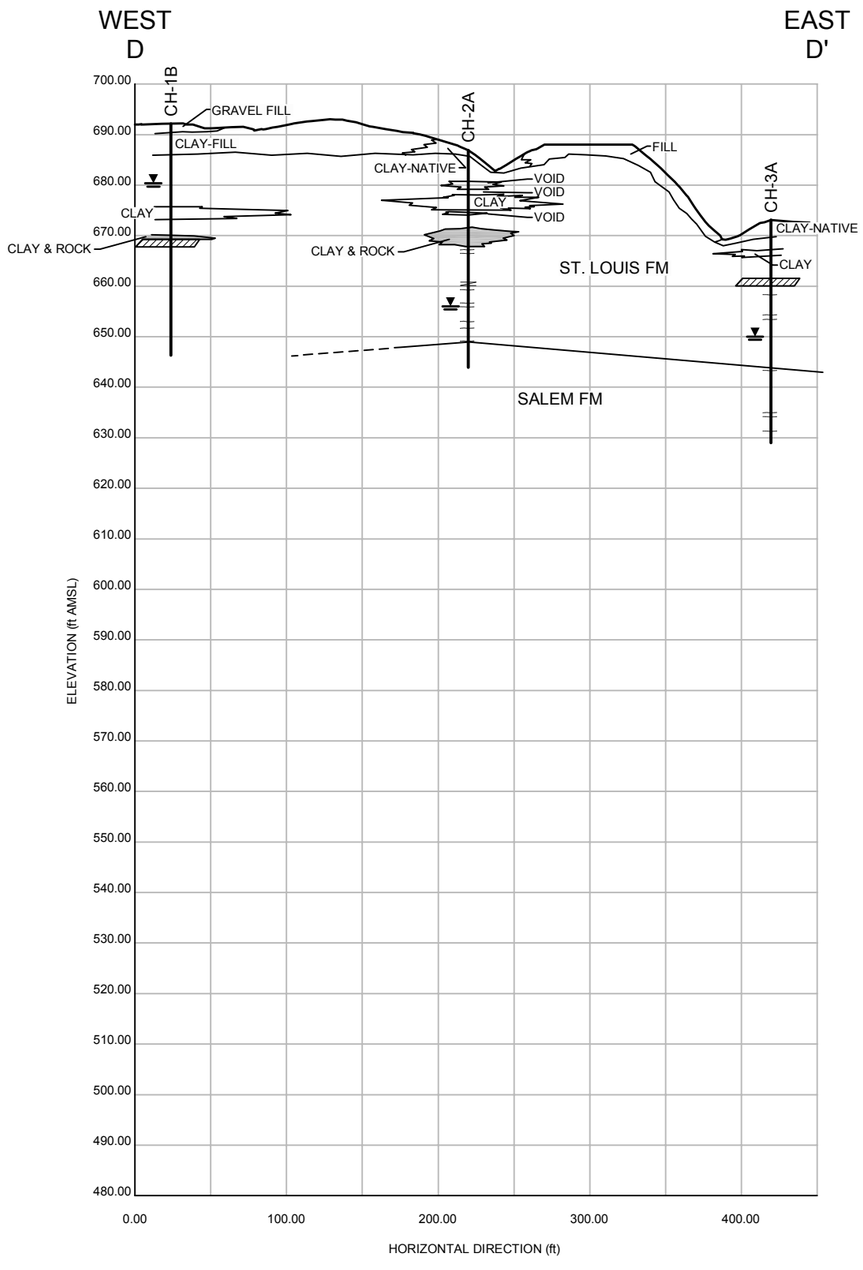
- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY
  -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.12

GEOLOGICAL CROSS SECTION C - C'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



BEDROCK KEY

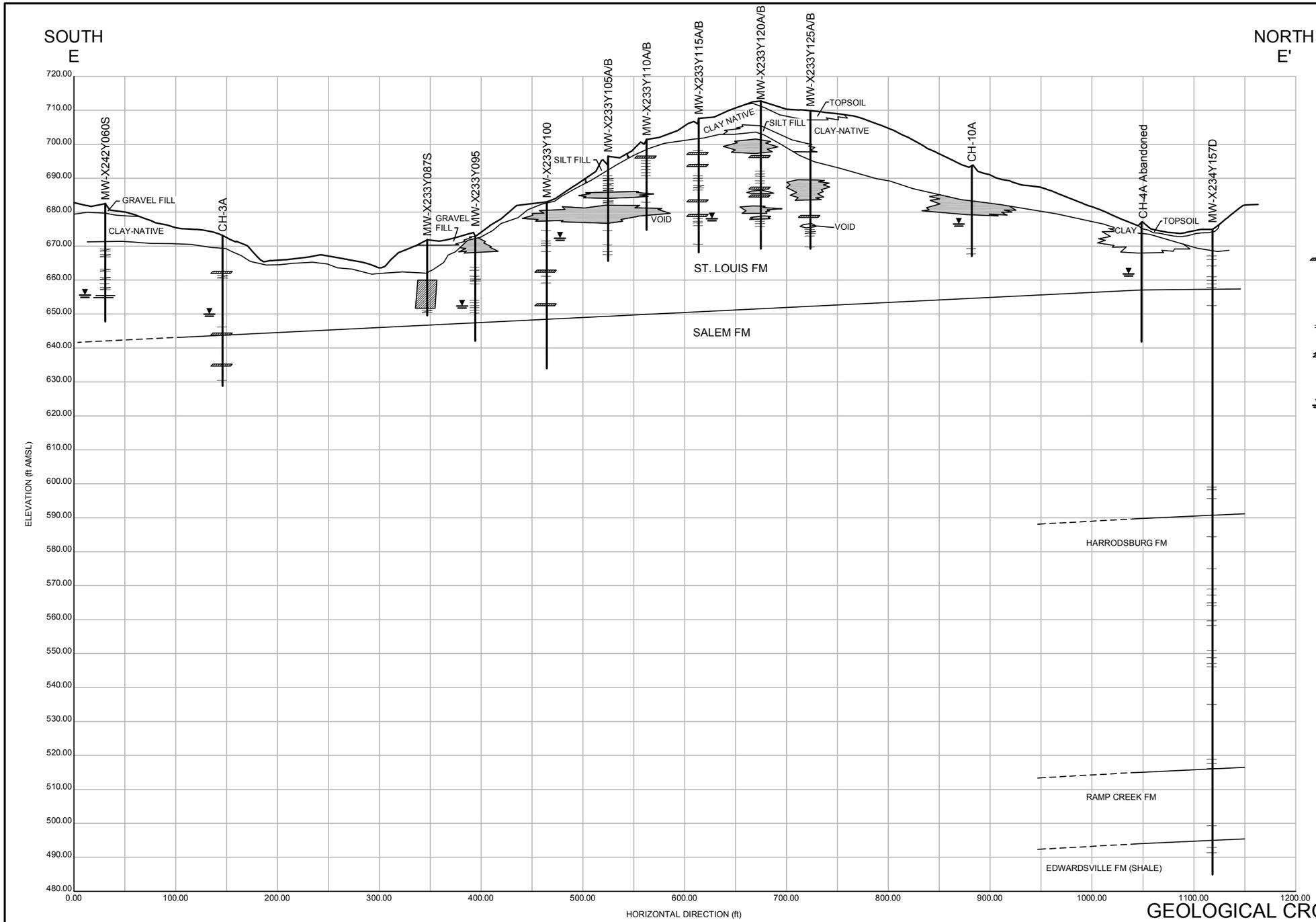
- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY
  -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.13

GEOLOGICAL CROSS SECTION D - D'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



BEDROCK KEY

- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.14

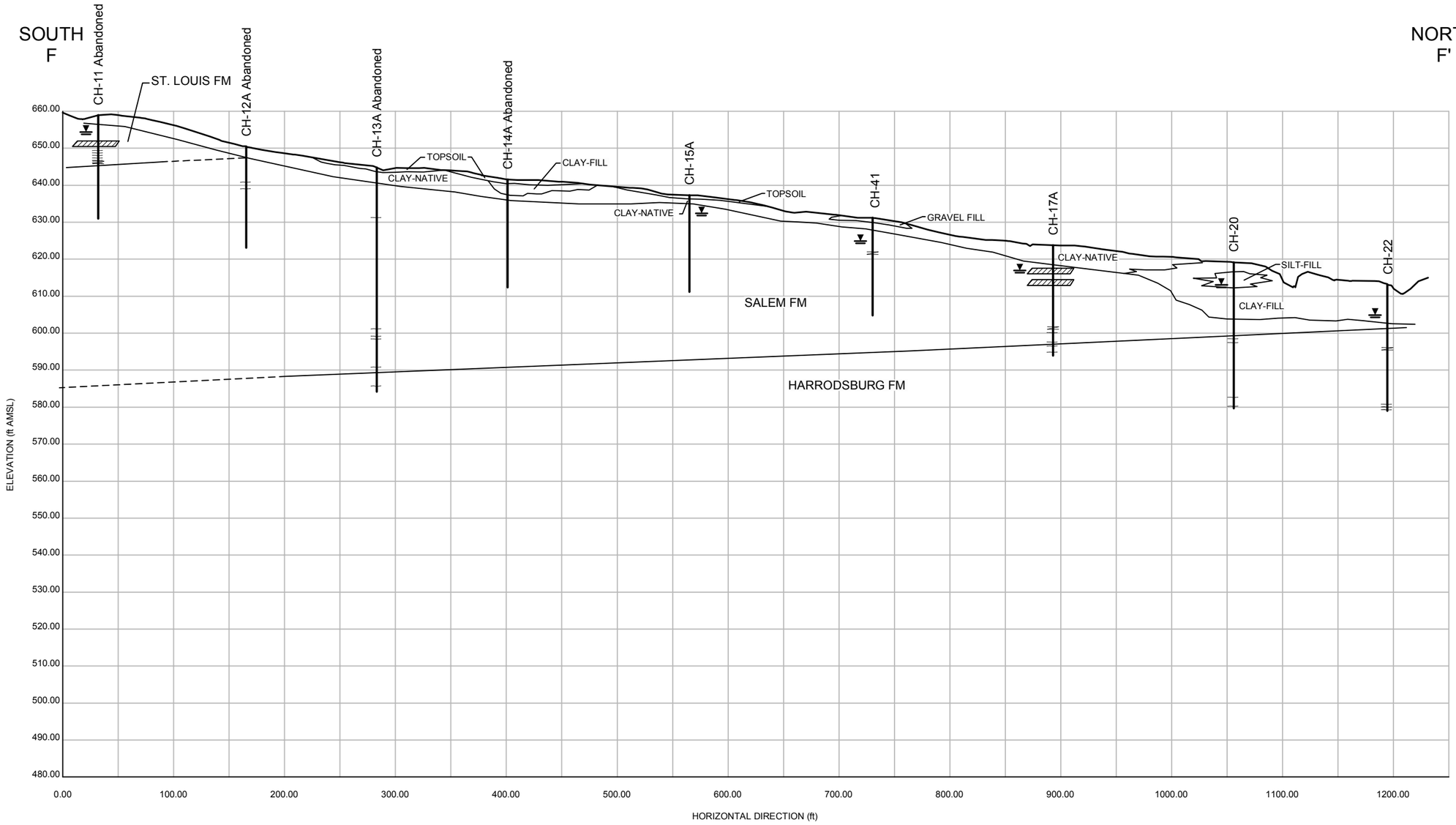
GEOLOGICAL CROSS SECTION E - E'

RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM

GM POWERTRAIN BEDFORD FACILITY

Bedford, Indiana

13968-00(174)GN-WA006 JUL 20/2006



BEDROCK KEY

- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

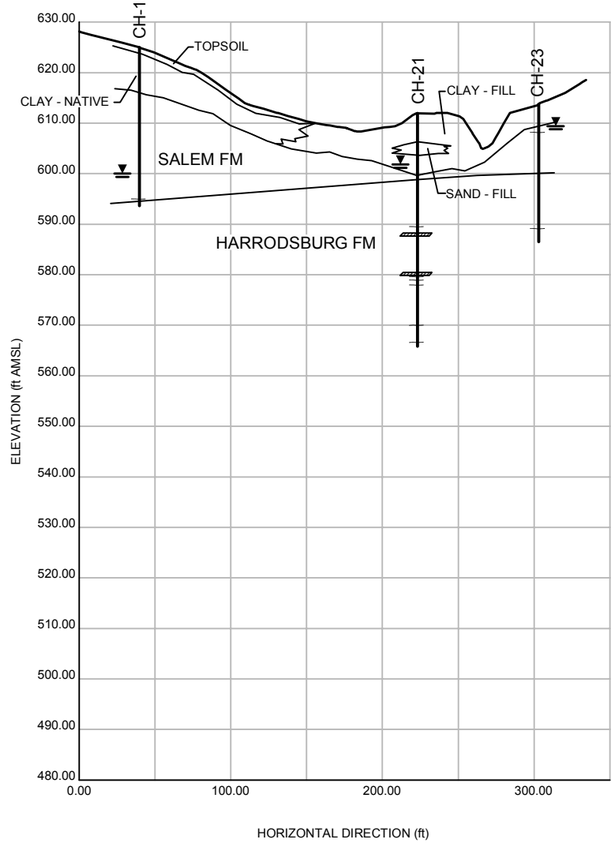
1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.15

GEOLOGICAL CROSS SECTION F - F'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

SOUTH
G

NORTH
G'



BEDROCK KEY

- ZONE OF HIGHLY FRACTURED ROCK
- HORIZONTAL FRACTURE
- VERTICAL FRACTURE
- ZONE OF INTERBEDDED ROCK AND CLAY -VOID = VOID IN ROCK
- GROUNDWATER ELEVATION 10/4/05 TO 10/5/05

NOTES:

1. DEPICTION OF FRACTURES WITHIN THE BEDROCK ARE APPROXIMATE AND ARE PROVIDED FOR GRAPHICAL REPRESENTATION ONLY. REFER TO THE BORING LOGS FOR ADDITIONAL DETAIL.
2. GEOLOGIC CONTACTS BETWEEN FORMATIONS ARE APPROXIMATE. THE ACTUAL CONTACTS ARE GRADATIONAL (DASHED WHERE INFERRED).

figure 3.16

GEOLOGICAL CROSS SECTION G - G'
RFI WORK PLAN ADDENDUM No.9 TECHNICAL MEMORANDUM
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-215-062205-DD-885	215-M1	22-Jun-05	N	NA	0	2	N
S-215-062205-DD-886	215-M1	22-Jun-05	N	NA	2	4	N
S-215-062205-DD-887	215-M2	22-Jun-05	N	NA	0	2	N
S-215-062205-DD-888	215-M2	22-Jun-05	N	NA	2	3.4	N
S-041405-JL-1143	7-1	14-Apr-05	N	NA	0	2	N
S-041405-JL-1144	7-1	14-Apr-05	N	NA	4	6	N
S-041405-JL-1145	7-1	14-Apr-05	N	NA	8	10	N
S-041405-JL-1146	7-1	14-Apr-05	N	NA	10	12	N
S-041405-JL-1147	7-1	14-Apr-05	N	NA	12	14	N
S-041405-JL-1148	7-1	14-Apr-05	N	NA	16	18	N
S-041405-JL-1149	7-1	14-Apr-05	N	NA	20	22	N
S-041405-JL-1150	7-1	14-Apr-05	N	NA	24	24.5	N
S-041405-JL-1151	7-2	14-Apr-05	N	NA	2	4	N
S-041405-JL-1152	7-2	14-Apr-05	N	NA	6	8	N
S-041405-JL-1153	7-2	14-Apr-05	N	NA	10	12	N
S-041405-JL-1154	7-2	14-Apr-05	N	NA	12	14	N
S-041405-JL-1155	7-2	14-Apr-05	N	NA	14	16	N
S-041405-JL-1156	7-2	14-Apr-05	N	NA	18	20	N
S-041405-JL-1157	7-2	14-Apr-05	N	NA	20	21	N
S-041505-JL-1158	7-3	15-Apr-05	N	NA	2	4	N
S-041505-JL-1159	7-3	15-Apr-05	N	NA	6	8	N
S-041505-JL-1160	7-3	15-Apr-05	N	NA	8	10	N
S-041505-JL-1161	7-3	15-Apr-05	N	NA	10	12	N
S-041505-JL-1162	7-3	15-Apr-05	N	NA	14	16	N
S-041505-JL-1163	7-3	15-Apr-05	N	NA	18	20	N
S-041505-JL-1164	7-4	15-Apr-05	N	NA	0	2	N
S-041505-JL-1165	7-4	15-Apr-05	N	NA	4	6	N
S-041505-JL-1166	7-4	15-Apr-05	N	NA	8	10	N
S-041505-JL-1167	7-4	15-Apr-05	N	NA	10	12	N
S-041505-JL-1168	7-4	15-Apr-05	N	NA	12	14	N
S-041505-JL-1169	7-4	15-Apr-05	N	NA	16	18	N
S-041805-KMV-1151	7-5	18-Apr-05	N	NA	0	2	N
S-041805-KMV-1152	7-5	18-Apr-05	N	NA	4	6	N
S-041805-KMV-1153	7-5	18-Apr-05	N	NA	8	10	N
S-041805-KMV-1154	7-5	18-Apr-05	N	NA	12	14	N
S-041805-KMV-1155	7-5	18-Apr-05	N	NA	16	18	N
S-041805-KMV-1156	7-5	18-Apr-05	N	NA	20	22	N
S-041905-KMV-1166	7-6	19-Apr-05	N	NA	0	2	N
S-041905-KMV-1167	7-6	19-Apr-05	N	NA	4	6	N
S-041905-KMV-1168	7-6	19-Apr-05	N	NA	8	10	N
S-041905-KMV-1169	7-6	19-Apr-05	N	NA	12	14	N
S-041905-KMV-1170	7-6	19-Apr-05	N	NA	16	18	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-041905-KMV-1171	7-6	19-Apr-05	N	NA	20	22	N
S-042005-KMV-1172	7-7	20-Apr-05	N	NA	0	2	N
S-042005-KMV-1173	7-7	20-Apr-05	N	NA	4	6	N
S-042005-KMV-1174	7-7	20-Apr-05	N	NA	8	10	N
S-042005-KMV-1175	7-7	20-Apr-05	N	NA	12	14	N
S-042005-KMV-1176	7-7	20-Apr-05	N	NA	16	18	N
S-042005-KMV-1177	7-7	20-Apr-05	N	NA	20	22	N
S-042005-KMV-1178	7-7	20-Apr-05	N	NA	24	26	N
S-062305-DD-894	9-1	23-Jun-05	FD	S-062305-DD-893	0	2	N
S-062305-DD-893	9-1	23-Jun-05	N	NA	0	2	N
S-062305-DD-895	9-1	23-Jun-05	N	NA	5	7	N
S-062305-DD-896	9-1	23-Jun-05	N	NA	10	11.8	N
RO-092205-KMV-1202	9-1	22-Sep-05	N	NA	18.8	19.6	N
S-062305-DD-897	9-2	23-Jun-05	N	NA	0	2	N
S-062305-DD-898	9-2	23-Jun-05	N	NA	5	7	N
S-062305-DD-899	9-2	23-Jun-05	N	NA	10	12	N
S-062305-DD-900	9-2	23-Jun-05	N	NA	15	16.7	N
S-062305-DD-901	9-3	23-Jun-05	N	NA	0	2	N
S-062305-DD-902	9-3	23-Jun-05	N	NA	5	7	N
S-062305-DD-903	9-3	23-Jun-05	N	NA	10	12	N
S-062305-DD-904	9-3	23-Jun-05	N	NA	15	17	N
S-062305-DD-905	9-3	23-Jun-05	N	NA	18	20	N
S-062305-DD-906	9-4	23-Jun-05	N	NA	0	2	N
S-062305-DD-907	9-4	23-Jun-05	FD	S-062305-DD-906	0	2	N
S-062305-DD-908	9-4	23-Jun-05	N	NA	5	7	N
S-062305-DD-909	9-4	23-Jun-05	N	NA	10	12	N
S-062305-DD-910	9-4	23-Jun-05	N	NA	15	17	N
S-062305-DD-911	9-4	23-Jun-05	N	NA	19.3	21.3	N
S-060205-JL-1255	AD-1	02-Jun-05	N	NA	0	2	N
S-060805-JL-1287	AD-10	08-Jun-05	N	NA	0	2	N
S-060805-JL-1288	AD-10	08-Jun-05	N	NA	5	7	N
S-061405-DD-854	AD-11	14-Jun-05	N	NA	0	2	N
S-061405-DD-855	AD-11	14-Jun-05	FD	S-061405-DD-854	0	2	N
S-061405-DD-856	AD-11	14-Jun-05	N	NA	2	4	N
S-061405-DD-857	AD-12	14-Jun-05	N	NA	0	2	N
S-061405-DD-858	AD-12	14-Jun-05	N	NA	2	4	N
S-061405-DD-859	AD-13	14-Jun-05	N	NA	0	2	N
S-061405-DD-860	AD-13	14-Jun-05	N	NA	3.5	5.5	N
S-061405-DD-861	AD-14	14-Jun-05	N	NA	0	2	N
S-061405-DD-862	AD-14	14-Jun-05	N	NA	5	7	N
S-061405-DD-863	AD-14	14-Jun-05	N	NA	10	12	N
S-061405-DD-864	AD-14	14-Jun-05	N	NA	15	17	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-061405-DD-865	AD-15	14-Jun-05	N	NA	0	2	N
S-061405-DD-866	AD-15	14-Jun-05	N	NA	3	5	N
S-061405-DD-867	AD-16	14-Jun-05	N	NA	0	2	N
S-061405-DD-868	AD-16	14-Jun-05	FD	S-061405-DD-867	0	2	N
S-061405-DD-869	AD-16	14-Jun-05	N	NA	3.5	5.5	N
S-062105-DD-883	AD-17	21-Jun-05	N	NA	0	2	N
S-062105-DD-884	AD-17	21-Jun-05	N	NA	2.5	4.5	N
S-062105-DD-881	AD-18	21-Jun-05	N	NA	0	2	N
S-062105-DD-882	AD-18	21-Jun-05	N	NA	4	6	N
S-062105-DD-879	AD-19	21-Jun-05	N	NA	0	2	N
S-062105-DD-880	AD-19	21-Jun-05	N	NA	2	4	N
S-060205-JL-1256	AD-2	02-Jun-05	N	NA	0	2	N
S-060205-JL-1257	AD-2	02-Jun-05	FD	S-060205-JL-1256	0	2	N
S-062105-DD-878	AD-20	21-Jun-05	FD	S-062105-DD-877	0	2	N
S-062105-DD-877	AD-20	21-Jun-05	N	NA	0	2	N
S-060205-JL-1258	AD-3	02-Jun-05	N	NA	0	2	N
S-060705-JL-1263	AD-4	07-Jun-05	N	NA	0	2	N
S-060705-JL-1264	AD-4	07-Jun-05	N	NA	5	7	N
S-060705-JL-1265	AD-4	07-Jun-05	N	NA	10	12	N
S-060705-JL-1266	AD-4	07-Jun-05	N	NA	15	17	N
S-060705-JL-1267	AD-5	07-Jun-05	N	NA	0	2	N
S-060705-JL-1269	AD-5	07-Jun-05	FD	S-060705-JL-1268	5	7	N
S-060705-JL-1268	AD-5	07-Jun-05	N	NA	5	7	N
S-060705-JL-1270	AD-5	07-Jun-05	N	NA	10	12	N
S-060705-JL-1271	AD-5	07-Jun-05	N	NA	15	17	N
S-060705-JL-1272	AD-5	07-Jun-05	N	NA	20	21.5	N
S-060705-JL-1273	AD-6	07-Jun-05	N	NA	5	7	N
S-060705-JL-1274	AD-6	07-Jun-05	N	NA	10	12	N
S-060705-JL-1275	AD-6	07-Jun-05	N	NA	15	17	N
S-060705-JL-1276	AD-6	07-Jun-05	N	NA	18	19.5	N
S-060805-JL-1277	AD-7	08-Jun-05	N	NA	0	2	N
S-060805-JL-1278	AD-7	08-Jun-05	N	NA	5	7	N
S-060805-JL-1279	AD-7	08-Jun-05	N	NA	10	12	N
S-060805-JL-1280	AD-8	08-Jun-05	N	NA	0	2	N
S-060805-JL-1281	AD-8	08-Jun-05	FD	S-060805-JL-1280	0	2	N
S-060805-JL-1282	AD-8	08-Jun-05	N	NA	5	7	N
S-060805-JL-1283	AD-9	08-Jun-05	N	NA	0	2	N
S-060805-JL-1284	AD-9	08-Jun-05	N	NA	5	7	N
S-060805-JL-1285	AD-9	08-Jun-05	N	NA	10	12	N
S-060805-JL-1286	AD-9	08-Jun-05	N	NA	15	17	N
S-032905-DD-785	CH-1	29-Mar-05	N	NA	4	6	N
S-041905-KMV-1159	CH-10	19-Apr-05	N	NA	4	6	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-041905-KMV-1160	CH-10	19-Apr-05	N	NA	9.5	9.5	N
S-041105-JL-1142	CH-11	11-Apr-05	N	NA	0	2	N
RO-092205-KMV-1197	CH-11	22-Sep-05	N	NA	9.3	10.3	N
S-040805-KMV-1150	CH-12	08-Apr-05	N	NA	0	2	N
S-061505-DD-874	CH-12A	15-Jun-05	N	NA	0	2	N
S-061505-DD-875	CH-12A	15-Jun-05	N	NA	2	4	N
S-032905-KMV-1137	CH-13	29-Mar-05	N	NA	0	2	N
S-061505-DD-872	CH-13A	15-Jun-05	N	NA	0	2	N
S-061505-DD-873	CH-13A	15-Jun-05	N	NA	2	4	N
RO-092205-KMV-1201	CH-13A	22-Sep-05	N	NA	15.7	16.5	N
S-033105-KMV-1141	CH-14	31-Mar-05	N	NA	0	2	N
S-033105-KMV-1142	CH-14	31-Mar-05	N	NA	2	4	N
S-040505-DD-789	CH-15	05-Apr-05	N	NA	0	2	N
S-040505-DD-790	CH-15	05-Apr-05	N	NA	2.5	4.5	N
S-061505-DD-871	CH-15A	15-Jun-05	N	NA	0	2	N
RO-092205-KMV-1198	CH-15A	22-Sep-05	N	NA	23.1	23.9	N
S-040605-KMV-1143	CH-16	06-Apr-05	N	NA	0	2	N
S-040605-KMV-1144	CH-16	06-Apr-05	N	NA	5	7	N
S-040605-KMV-1145	CH-16	06-Apr-05	N	NA	10	12	N
S-040605-KMV-1146	CH-16	06-Apr-05	N	NA	13	14	N
S-040705-KMV-1147	CH-17	07-Apr-05	N	NA	0	2	N
S-040705-KMV-1148	CH-17	07-Apr-05	FD	S-040705-KMV-1147	0	2	N
S-040705-KMV-1149	CH-17	07-Apr-05	N	NA	6	8	N
S-061505-DD-870	CH-17A	15-Jun-05	N	NA	0	2	N
RO-092205-KMV-1204	CH-17A	22-Sep-05	N	NA	27.6	28.4	N
S-041405-KMV-1138	CH-18	14-Apr-05	N	NA	0	2	N
S-041405-KMV-1139	CH-18	14-Apr-05	N	NA	5	7	N
S-041405-KMV-1140	CH-18	14-Apr-05	N	NA	10	12	N
S-041405-KMV-1141	CH-18	14-Apr-05	N	NA	15	17	N
S-041805-KMV-1157	CH-19	18-Apr-05	N	NA	0	2	N
S-041805-KMV-1158	CH-19	18-Apr-05	N	NA	5	7	N
RO-092205-KMV-1207	CH-1B	22-Sep-05	N	NA	33	33.7	N
S-033005-KMV-1138	CH-2	30-Mar-05	N	NA	0	2	N
S-033005-KMV-1139	CH-2	30-Mar-05	N	NA	4	6	N
S-033005-KMV-1140	CH-2	30-Mar-05	N	NA	10	11.5	N
S-041905-KMV-1161	CH-20	19-Apr-05	N	NA	0	2	N
S-041905-KMV-1162	CH-20	19-Apr-05	N	NA	5	7	N
S-041905-KMV-1163	CH-20	19-Apr-05	N	NA	10	12	N
S-041905-KMV-1165	CH-20	19-Apr-05	FD	S-041905-KMV-1163	10	12	N
S-041905-KMV-1164	CH-20	19-Apr-05	N	NA	13.5	13.5	N
S-042005-JL-1170	CH-21	20-Apr-05	N	NA	0	2	N
S-042005-JL-1171	CH-21	20-Apr-05	N	NA	5	7	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-042005-JL-1172	CH-21	20-Apr-05	N	NA	10	11.5	N
RO-092205-KMV-1196	CH-21	22-Sep-05	N	NA	25.5	35.3	N
S-042005-KMV-1181	CH-22	20-Apr-05	N	NA	0	2	N
S-042005-KMV-1182	CH-22	20-Apr-05	N	NA	5	7	N
S-042005-KMV-1183	CH-22	20-Apr-05	N	NA	9	9	N
S-042105-JL-1173	CH-23	21-Apr-05	N	NA	0	2	N
S-042105-JL-1174	CH-24	21-Apr-05	N	NA	0	2	N
S-042105-JL-1176	CH-24	21-Apr-05	FD	S-042105-JL-1175	5	7	N
S-042105-JL-1175	CH-24	21-Apr-05	N	NA	5	7	N
S-042105-JL-1177	CH-24	21-Apr-05	N	NA	9	9.5	N
RO-092205-KMV-1195	CH-24	22-Sep-05	N	NA	12.5	13.3	N
S-042105-JL-1178	CH-25	21-Apr-05	N	NA	0	2	N
S-042105-JL-1179	CH-25	21-Apr-05	N	NA	5	7	N
S-042105-JL-1180	CH-25	21-Apr-05	N	NA	10	12	N
S-042105-JL-1181	CH-25	21-Apr-05	N	NA	14	16	N
S-042105-JL-1182	CH-26	21-Apr-05	N	NA	0	2	N
S-042105-JL-1183	CH-26	21-Apr-05	N	NA	4	5	N
S-042205-JL-1184	CH-27	22-Apr-05	N	NA	0	2	N
S-042205-JL-1185	CH-28	22-Apr-05	N	NA	0	1	N
RO-092205-KMV-1200	CH-28	22-Sep-05	N	NA	23	23.8	N
S-042505-JL-1186	CH-29	25-Apr-05	N	NA	0	2	N
RO-092205-KMV-1194	CH-29	22-Sep-05	N	NA	32	32.8	N
S-042005-KMV-1179	CH-3	20-Apr-05	N	NA	0	2	N
S-042005-KMV-1180	CH-3	20-Apr-05	N	NA	3.5	3.5	N
RO-092205-KMV-1206	CH-3	22-Sep-05	N	NA	9.5	10.3	N
S-042505-JL-1187	CH-30	25-Apr-05	N	NA	0	2	N
S-042505-JL-1188	CH-31	25-Apr-05	N	NA	0	2	N
S-042505-JL-1189	CH-31	25-Apr-05	N	NA	5	7	N
S-042505-JL-1190	CH-32	25-Apr-05	N	NA	0	2	N
S-042505-JL-1191	CH-32	25-Apr-05	N	NA	5	5.5	N
RO-092205-KMV-1199	CH-32	22-Sep-05	N	NA	11.4	12.2	N
S-042505-JL-1192	CH-33	25-Apr-05	N	NA	0	2	N
S-040505-JL-1110	CH-34	05-Apr-05	N	NA	0	2	N
S-040505-JL-1111	CH-34	05-Apr-05	N	NA	5	7	N
S-040505-JL-1112	CH-34	05-Apr-05	N	NA	10	12	N
S-040505-JL-1113	CH-34	05-Apr-05	N	NA	14	15	N
S-040405-JL-1107	CH-35	04-Apr-05	N	NA	0	2	N
S-060605-JL-1261	CH-35	06-Jun-05	N	NA	4	6	N
S-040405-JL-1108	CH-35	04-Apr-05	N	NA	5	7	N
S-040405-JL-1109	CH-35	04-Apr-05	N	NA	7	7	N
S-040405-JL-1099	CH-36	04-Apr-05	N	NA	0	2	N
S-040405-JL-1100	CH-36	04-Apr-05	N	NA	5	7	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-040405-JL-1101	CH-36	04-Apr-05	N	NA	10	12	N
S-040405-JL-1103	CH-36	04-Apr-05	FD	S-040405-JL-1102	15	17	N
S-040405-JL-1102	CH-36	04-Apr-05	N	NA	15	17	N
S-040405-JL-1104	CH-36	04-Apr-05	N	NA	20	22	N
S-040405-JL-1105	CH-36	04-Apr-05	N	NA	25	27	N
S-060305-JL-1259	CH-36	03-Jun-05	N	NA	25	27	N
S-040405-JL-1106	CH-36	04-Apr-05	N	NA	27	28	N
RO-062805-KMV-1184	CH-36	28-Jun-05	N	NA	40.2	40.8	N
RO-062805-KMV-1185	CH-36	28-Jun-05	N	NA	40.8	41.4	N
RO-062805-KMV-1186	CH-36	28-Jun-05	N	NA	46.8	47.4	N
RO-062805-KMV-1187	CH-36	28-Jun-05	N	NA	47.4	48	N
S-040405-JL-1093	CH-37	04-Apr-05	N	NA	0	2	N
S-040405-JL-1094	CH-37	04-Apr-05	N	NA	5	7	N
S-040405-JL-1095	CH-37	04-Apr-05	N	NA	10	12	N
S-040405-JL-1096	CH-37	04-Apr-05	N	NA	15	17	N
S-060605-JL-1260	CH-37	06-Jun-05	N	NA	17	19	N
S-040405-JL-1097	CH-37	04-Apr-05	N	NA	20	22	N
S-040405-JL-1098	CH-37	04-Apr-05	N	NA	22	23	N
RO-062805-KMV-1188	CH-37	28-Jun-05	N	NA	23.8	24.9	N
RO-062805-KMV-1189	CH-37	28-Jun-05	N	NA	39.3	40.1	N
S-040505-JL-1114	CH-38	05-Apr-05	N	NA	0	2	N
S-040505-JL-1115	CH-38	05-Apr-05	N	NA	5	7	N
S-040505-JL-1116	CH-38	05-Apr-05	N	NA	10	12	N
S-060605-JL-1262	CH-38	06-Jun-05	N	NA	12	14	N
S-040505-JL-1117	CH-38	05-Apr-05	N	NA	14	15	N
S-040605-JL-1118	CH-39	06-Apr-05	N	NA	0	2	N
S-040605-JL-1119	CH-39	06-Apr-05	N	NA	5	7	N
S-040605-JL-1120	CH-39	06-Apr-05	N	NA	10	12	N
S-040605-JL-1121	CH-39	06-Apr-05	N	NA	15	17	N
S-040605-JL-1122	CH-39	06-Apr-05	N	NA	20	22	N
S-040605-JL-1123	CH-39	06-Apr-05	N	NA	25	27	N
S-040605-JL-1124	CH-39	06-Apr-05	N	NA	27	28	N
S-072105-DD-912	CH-3A	21-Jul-05	N	NA	2	4	N
RO-092205-KMV-1208	CH-3A	22-Sep-05	N	NA	38.7	39.5	N
S-062105-DD-876	CH-4	21-Jun-05	N	NA	0	2	N
S-040605-JL-1127	CH-40	06-Apr-05	N	NA	0	2	N
S-040605-JL-1128	CH-40	06-Apr-05	N	NA	5	7	N
S-040605-JL-1129	CH-40	06-Apr-05	N	NA	7	8	N
S-040605-JL-1125	CH-41	06-Apr-05	N	NA	0	2	N
S-040605-JL-1126	CH-41	06-Apr-05	N	NA	2	3	N
S-081205-KMV-1190	CH-4A	12-Aug-05	N	NA	2	3	N
S-040705-JL-1134	CH-5	07-Apr-05	N	NA	0	2	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-040705-JL-1135	CH-5	07-Apr-05	N	NA	5	7	N
S-040705-JL-1136	CH-5	07-Apr-05	N	NA	10	12	N
S-040705-JL-1137	CH-5	07-Apr-05	N	NA	15	17	N
S-040705-JL-1138	CH-5	07-Apr-05	N	NA	17	18.5	N
RO-092205-KMV-1203	CH-5	22-Sep-05	N	NA	29.4	30.2	N
S-040405-DD-786	CH-6	04-Apr-05	N	NA	0	2	N
S-040405-DD-787	CH-6	04-Apr-05	N	NA	5	7	N
S-040405-DD-788	CH-6	04-Apr-05	N	NA	10	12	N
S-040505-DD-791	CH-6	05-Apr-05	N	NA	14.5	16.5	N
S-040605-DD-792	CH-7	06-Apr-05	N	NA	0	2	N
S-040605-DD-793	CH-7	06-Apr-05	N	NA	5	7	N
S-040605-DD-794	CH-7	06-Apr-05	N	NA	10	12	N
S-040605-DD-795	CH-7	06-Apr-05	FD	S-040605-DD-794	10	12	N
S-040605-DD-796	CH-7	06-Apr-05	N	NA	15	17	N
S-040705-JL-1131	CH-8	07-Apr-05	FD	S-040705-JL-1130	0	2	N
S-040705-JL-1130	CH-8	07-Apr-05	N	NA	0	2	N
S-040705-JL-1132	CH-8	07-Apr-05	N	NA	5	6	N
S-040705-JL-1133	CH-8	07-Apr-05	N	NA	6	7	N
S-040705-JL-1139	CH-9	07-Apr-05	N	NA	0	2	N
S-040705-JL-1140	CH-9	07-Apr-05	N	NA	5	7	N
S-040705-JL-1141	CH-9	07-Apr-05	N	NA	9	10	N
RO-092205-KMV-1205	CH-9	22-Sep-05	N	NA	15.5	16.3	N
S-215-062205-DD-889	P-1	22-Jun-05	N	NA	0	2	N
S-215-062205-DD-890	P-1	22-Jun-05	N	NA	2	4	N
S-215-062205-DD-891	P-2	22-Jun-05	N	NA	0	2	N
S-215-062205-DD-892	P-2	22-Jun-05	N	NA	2	4	N
S-031705-JC-977	PS-10A	17-Mar-05	N	NA	0	2	N
S-031705-JC-978	PS-10A	17-Mar-05	N	NA	2	4	Y
S-031805-JC-979	PS-10B	18-Mar-05	N	NA	0	2	N
S-031805-JC-980	PS-10B	18-Mar-05	N	NA	2	4	Y
S-032105-JC-1014	PS-11A	21-Mar-05	N	NA	0	2	N
S-032105-JC-1015	PS-11A	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1010	PS-11B	21-Mar-05	N	NA	0	2	N
S-032105-JC-1011	PS-11B	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1012	PS-12A	21-Mar-05	N	NA	0	2	N
S-032105-JC-1013	PS-12A	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1008	PS-12B	21-Mar-05	N	NA	0	2	N
S-032105-JC-1009	PS-12B	21-Mar-05	N	NA	2	4	Y
S-032105-JC-995	PS-13A	21-Mar-05	FD	S-032105-JC-994	0	2	N
S-032105-JC-994	PS-13A	21-Mar-05	N	NA	0	2	N
S-032105-JC-996	PS-13A	21-Mar-05	N	NA	2	4	Y
S-032105-JC-997	PS-13B	21-Mar-05	N	NA	0	2	N

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-032105-JC-998	PS-13B	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1006	PS-14A	21-Mar-05	FD	S-032105-JC-1005	0	2	N
S-032105-JC-1005	PS-14A	21-Mar-05	N	NA	0	2	N
S-032105-JC-1007	PS-14A	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1003	PS-14B	21-Mar-05	N	NA	0	2	N
S-032105-JC-1004	PS-14B	21-Mar-05	N	NA	2	4	Y
S-032105-JC-999	PS-15A	21-Mar-05	N	NA	0	2	N
S-032105-JC-1000	PS-15A	21-Mar-05	N	NA	2	4	Y
S-032105-JC-1001	PS-15B	21-Mar-05	N	NA	0	2	N
S-032105-JC-1002	PS-15B	21-Mar-05	N	NA	2	4	Y
S-032105-JC-992	PS-16A	21-Mar-05	N	NA	0	2	N
S-032105-JC-993	PS-16A	21-Mar-05	N	NA	2	4	Y
S-031805-JC-990	PS-16B	18-Mar-05	N	NA	0	2	N
S-031805-JC-991	PS-16B	18-Mar-05	N	NA	2	4	Y
S-031805-JC-986	PS-17A	18-Mar-05	N	NA	0	2	N
S-031805-JC-987	PS-17A	18-Mar-05	N	NA	2	4	Y
S-031805-JC-988	PS-17B	18-Mar-05	N	NA	0	2	N
S-031805-JC-989	PS-17B	18-Mar-05	N	NA	2	4	Y
S-032205-JC-1019	PS-18A	22-Mar-05	FD	S-032205-JC-1018	0	2	N
S-032205-JC-1018	PS-18A	22-Mar-05	N	NA	0	2	N
S-032205-JC-1020	PS-18A	22-Mar-05	N	NA	2	4	Y
S-031805-JC-983	PS-18B	18-Mar-05	N	NA	0	2	N
S-031805-JC-984	PS-18B	18-Mar-05	FD	S-031805-JC-983	0	2	N
S-031805-JC-985	PS-18B	18-Mar-05	N	NA	2	4	Y
S-031805-JC-981	PS-19A	18-Mar-05	N	NA	0	2	N
S-031805-JC-982	PS-19A	18-Mar-05	N	NA	2	4	Y
S-032205-JC-1021	PS-19B	22-Mar-05	N	NA	0	2	N
S-032205-JC-1022	PS-19B	22-Mar-05	N	NA	2	4	Y
S-032205-JC-1030	PS-1A	22-Mar-05	FD	S-032205-JC-1029	0	2	N
S-032205-JC-1029	PS-1A	22-Mar-05	N	NA	0	2	N
S-032205-JC-1031	PS-1A	22-Mar-05	N	NA	2	4	Y
S-032205-JC-1032	PS-2A	22-Mar-05	N	NA	0	2	N
S-032205-JC-1033	PS-2A	22-Mar-05	N	NA	2	4	Y
S-032205-JC-1027	PS-2B	22-Mar-05	N	NA	0	2	N
S-032205-JC-1028	PS-2B	22-Mar-05	N	NA	2	4	Y
S-031605-JC-952	PS-3A	16-Mar-05	N	NA	0	2	N
S-031605-JC-953	PS-3A	16-Mar-05	N	NA	2	4	Y
S-031605-JC-955	PS-3B	16-Mar-05	FD	S-031605-JC-954	0	2	N
S-031605-JC-954	PS-3B	16-Mar-05	N	NA	0	2	N
S-031605-JC-956	PS-3B	16-Mar-05	N	NA	2	4	Y
S-031605-JC-957	PS-4A	16-Mar-05	N	NA	0	2	N
S-031605-JC-958	PS-4A	16-Mar-05	N	NA	2	4	Y

TABLE 2.1

SUMMARY OF SAMPLES
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Identification	*Location Name*	*Sample Date*	*Sample Type*	*Parent Sample Identification*	*Top Depth*	*Bottom Depth*	*Hold*
S-032205-JC-1025	PS-4B	22-Mar-05	N	NA	0	2	N
S-032205-JC-1026	PS-4B	22-Mar-05	N	NA	2	4	Y
S-031605-JC-959	PS-5A	16-Mar-05	N	NA	0	2	N
S-031605-JC-960	PS-5A	16-Mar-05	N	NA	2	4	Y
S-032205-JC-1023	PS-5B	22-Mar-05	N	NA	0	2	N
S-032205-JC-1024	PS-5B	22-Mar-05	N	NA	2	4	Y
S-031605-JC-961	PS-6A	16-Mar-05	N	NA	0	2	N
S-031605-JC-962	PS-6A	16-Mar-05	N	NA	2	4	Y
S-031605-JC-963	PS-6B	16-Mar-05	N	NA	0	2	N
S-031605-JC-964	PS-6B	16-Mar-05	N	NA	2	4	Y
S-031705-JC-965	PS-7A	17-Mar-05	N	NA	0	2	N
S-031705-JC-966	PS-7A	17-Mar-05	N	NA	2	4	Y
S-031705-JC-967	PS-7B	17-Mar-05	N	NA	0	2	N
S-031705-JC-968	PS-7B	17-Mar-05	FD	S-031705-JC-967	0	2	N
S-031705-JC-969	PS-7B	17-Mar-05	N	NA	2	4	Y
S-031705-JC-970	PS-8A	17-Mar-05	N	NA	0	2	N
S-031705-JC-971	PS-8A	17-Mar-05	N	NA	2	4	Y
S-031705-JC-972	PS-8B	17-Mar-05	N	NA	0	2	N
S-031705-JC-973	PS-8B	17-Mar-05	FD	S-031705-JC-972	0	2	N
S-031705-JC-974	PS-8B	17-Mar-05	N	NA	2	4	Y
S-031705-JC-975	PS-9A	17-Mar-05	N	NA	0	2	N
S-031705-JC-976	PS-9A	17-Mar-05	N	NA	2	4	Y
S-032105-JC-1016	PS-9B	21-Mar-05	N	NA	0	2	N
S-032105-JC-1017	PS-9B	21-Mar-05	N	NA	2	4	Y

TABLE 2.2

SUMMARY OF GEOTECHNICAL SAMPLE RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*CH- 36*	*CH- 37*	*CH- 35*	*CH- 38*	*7-1*	*7-2*	*7-3*	*7-4*
Sample ID:		*S-060305-JL-1259*	*S-060605-JL-1260*	*S-060605-JL-1261*	*S-060605-JL-1262*	*S-041405-JL-1146*	*S-041405-JL-1154*	*S-041505-JL-1160*	*S-041505-JL-1167*
Sample Date:		*6/3/05*	*6/6/05*	*6/6/05*	*6/6/05*	*4/14/05*	*4/14/05*	*4/15/05*	*4/15/05*
Sample Depth:		*25-27*	*17-19*	*4-6*	*12-14*	*10-12*	*12-14*	*8-10*	*10-12*
Parameters	***Units***								
Natural Moisture Content	%	29.5	24.5	12.2	27.2	30.6	25.7	14.2	25.4
Atterberg Limits									
Liquid Limit (LL)		67	49	35	75	69	51	Non Plastic[1]	47
Plastic Limit (PL)		32	26	21	33	35	25	Non Plastic[1]	22
Plasticity Index (PI)		36	23	15	42	34	27	Non Plastic[1]	26
Particle Size Distribution									
Gravel	%	0.0	3.0	0.0	0.0	0.0	15.0	NA	0.0
Sand	%	0.0	10.0	1.0	2.0	0.0	9.0	NA	2.0
Silt	%	50	48	77	36	100	76	NA	98
Passing No. 200 Mesh	%	100	90	99	98	99.6	76	NA	98
< 0.002 mm (clay)	%	50	42	22	62	50	4	NA	38
Unconfined Compressive Strength	lbs/ft2	NA	NA	NA	NA	600	NA	NA	800
Unified Soil Classification ASTM D 2487		CH	CL/CH	CL	CH	MH	CH	SP[1]	CL
Dry Density	lbs/ft3	90.6	98.5	94.6	NA	NA	NA	NA	NA
Coefficient of permeability	cm/sec	8.0x10-9	8.1x10-9	1.8x10-7	NA	NA	NA	NA	NA

Notes:
(1) Based on visual inspection
NA - not analyzed
lbs/ft2 - pounds per square feet
lbs/ft3 - pounds per cubic feet
cm/sec - centimeters per second

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*P215 East Plant Area*	*P215 East Plant Area*	*P215 East Plant Area*	*P215 East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*215-M1*	*215-M1*	*215-M2*	*215-M2*	*9-1*	*9-1*	*9-1*	*9-1*	*9-2*	*9-2*
Sample ID:		*S-215-062205-DD-885*	*S-215-062205-DD-886*	*S-215-062205-DD-887*	*S-215-062205-DD-888*	*S-062305-DD-893*	*S-062305-DD-894*	*S-062305-DD-895*	*S-062305-DD-896*	*S-062305-DD-897*	*S-062305-DD-898*
Sample Date:		*6/22/2005*	*6/22/2005*	*6/22/2005*	*6/22/2005*	*6/23/2005*	*6/23/2005*	*6/23/2005*	*6/23/2005*	*6/23/2005*	*6/23/2005*
							Duplicate				
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	44 U	18000 U	44 U	18000 U	3600 U	3700 U	3700 U	43 U	1600 U	1800 U
Aroclor-1221 (PCB-1221)	ug/kg	44 U	18000 U	44 U	18000 U	3600 U	3700 U	3700 U	43 U	1600 U	1800 U
Aroclor-1232 (PCB-1232)	ug/kg	44 U	18000 U	44 U	18000 U	3600 U	3700 U	3700 U	43 U	1600 U	1800 U
Aroclor-1242 (PCB-1242)	ug/kg	44 U	280000	44 U	200000	3600 U	3700 U	3700 U	43 U	1600 U	1800 U
Aroclor-1248 (PCB-1248)	ug/kg	330	18000 U	220	18000 U	55000	45000	47000	55	15000	28000
Aroclor-1254 (PCB-1254)	ug/kg	44 U	18000 U	44 U	18000 U	3600 U	3700 U	3700 U	43 U	1600 U	1800 U
Aroclor-1260 (PCB-1260)	ug/kg	44 U	4500 J	44 U	18000 U	6200	5000	18000	16 J	1000 J	1700 J
Total PCBs		330	284500 J	220	200000	61200	50000	65000	71 J	16000 J	29700 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***
Sample Location:		***9-2***	***9-2***	***9-3***	***9-3***	***9-3***	***9-3***	***9-3***	***9-4***	***9-4***	***9-4***	***9-4***
Sample ID:		***S-062305-DD-899***	***S-062305-DD-900***	***S-062305-DD-901***	***S-062305-DD-902***	***S-062305-DD-903***	***S-062305-DD-904***	***S-062305-DD-905***	***S-062305-DD-906***	***S-062305-DD-907***	***S-062305-DD-908***	***S-062305-DD-909***
Sample Date:		***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***	***6/23/2005***
										Duplicate		
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	370 U	48000 U	3600 U	2100 U	1900 U	360 U	83 U	3600 U	3500 U	3800 U	18000 U
Aroclor-1221 (PCB-1221)	ug/kg	370 U	48000 U	3600 U	2100 U	1900 U	360 U	83 U	3600 U	3500 U	3800 U	18000 U
Aroclor-1232 (PCB-1232)	ug/kg	370 U	48000 U	3600 U	2100 U	1900 U	360 U	83 U	3600 U	3500 U	3800 U	18000 U
Aroclor-1242 (PCB-1242)	ug/kg	370 U	89000	3600 U	24000	21000	360 U	1500	3600 U	3500 U	3800 U	330000
Aroclor-1248 (PCB-1248)	ug/kg	1500	48000 U	27000	2100 U	1900 U	5100	83 U	50000	53000	56000	18000 U
Aroclor-1254 (PCB-1254)	ug/kg	370 U	48000 U	3600 U	2100 U	1900 U	360 U	83 U	3600 U	3500 U	3800 U	18000 U
Aroclor-1260 (PCB-1260)	ug/kg	190 J	48000 U	3000 J	1100 J	560 J	93 J	83 U	3300 J	3500	2200 J	18000 U
Total PCBs		1690 J	89000	30000 J	25100 J	21560 J	5193 J	1500	53300 J	56500	58200 J	330000

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*9-4*	*9-4*	*AD-1*	*AD-2*	*AD-2*	*AD-3*	*AD-4*	*AD-4*	*AD-4*	*AD-4*	*AD-5*
Sample ID:		*S-062305-DD-910*	*S-062305-DD-911*	*S-060205-JL-1255*	*S-060205-JL-1256*	*S-060205-JL-1257*	*S-060205-JL-1258*	*S-060705-JL-1263*	*S-060705-JL-1264*	*S-060705-JL-1265*	*S-060705-JL-1266*	*S-060705-JL-1267*
Sample Date:		*6/23/2005*	*6/23/2005*	*6/2/2005*	*6/2/2005*	*6/2/2005*	*6/2/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*
						Duplicate						
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	7700 U	42 U	46 U	41 U	40 U	41 U	17000 U	40 U	41 U	41 U	1700 U
Aroclor-1221 (PCB-1221)	ug/kg	7700 U	42 U	46 U	41 U	40 U	41 U	17000 U	40 U	41 U	41 U	1700 U
Aroclor-1232 (PCB-1232)	ug/kg	7700 U	42 U	46 U	41 U	40 U	41 U	17000 U	40 U	41 U	41 U	1700 U
Aroclor-1242 (PCB-1242)	ug/kg	100000	74	46 U	41 U	40 U	41 U	17000 U	40 U	41 U	41 U	1700 U
Aroclor-1248 (PCB-1248)	ug/kg	7700 U	42 U	46 U	580	40 U	41 U	220000	37 J	250	41 U	14000
Aroclor-1254 (PCB-1254)	ug/kg	7700 U	42 U	46 U	41 U	40 U	41 U	17000 U	40 U	41 U	41 U	1700 U
Aroclor-1260 (PCB-1260)	ug/kg	7700 U	42 U	46 U	80	40 U	41 U	45000	13 J	56	41 U	1700
Total PCBs		100000	74	ND	660	ND	ND	265000	50 J	306	ND	15700

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*AD-5*	*AD-5*	*AD-5*	*AD-5*	*AD-5*	*AD-6*	*AD-6*	*AD-6*	*AD-6*	*AD-7*	*AD-7*
Sample ID:		*S-060705-JL-1268*	*S-060705-JL-1269*	*S-060705-JL-1270*	*S-060705-JL-1271*	*S-060705-JL-1272*	*S-060705-JL-1273*	*S-060705-JL-1274*	*S-060705-JL-1275*	*S-060705-JL-1276*	*S-060805-JL-1277*	*S-060805-JL-1278*
Sample Date:		*6/7/2005*	*6/7/2005* *Duplicate*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/7/2005*	*6/8/2005*	*6/8/2005*
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	35 U	180 U	48 U	43 U	49 U	35 U	35 U	36 U	44 U	42 U	3600 U
Aroclor-1221 (PCB-1221)	ug/kg	35 U	180 U	48 U	43 U	49 U	35 U	35 U	36 U	44 U	42 U	3600 U
Aroclor-1232 (PCB-1232)	ug/kg	35 U	180 U	48 U	43 U	49 U	35 U	35 U	36 U	44 U	42 U	3600 U
Aroclor-1242 (PCB-1242)	ug/kg	35 U	180 U	48 U	43 U	49 U	35 U	35 U	36 U	44 U	130	3600 U
Aroclor-1248 (PCB-1248)	ug/kg	35 U	180 U	10 J	43 U	49 U	200	460	59	43 J	42 U	18000
Aroclor-1254 (PCB-1254)	ug/kg	36	3500	48 U	43 U	49 U	35 U	35 U	36 U	44 U	42 U	3600 U
Aroclor-1260 (PCB-1260)	ug/kg	35 U	180 U	18 J	43 U	49 U	28 J	63	10 J	44 U	42 U	2300 J
Total PCBs		36	3500	28 J	ND	ND	228 J	523	69 J	43 J	130	20300 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*AD-7*	*AD-8*	*AD-8*	*AD-8*	*AD-9*	*AD-9*	*AD-9*	*AD-9*	*AD-10*	*AD-10*	*AD-11*
Sample ID:		*S-060805-JL-1279*	*S-060805-JL-1280*	*S-060805-JL-1281*	*S-060805-JL-1282*	*S-060805-JL-1283*	*S-060805-JL-1284*	*S-060805-JL-1285*	*S-060805-JL-1286*	*S-060805-JL-1287*	*S-060805-JL-1288*	*S-061405-DD-854*
Sample Date:		*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/8/2005*	*6/14/2005*
				Duplicate								
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	760 U	210 U	41 U	840000 U	40 U	38000 U	41 U	41 U	2100 U	4400 U	9300 U
Aroclor-1221 (PCB-1221)	ug/kg	760 U	210 U	41 U	840000 U	40 U	38000 U	41 U	41 U	2100 U	4400 U	9300 U
Aroclor-1232 (PCB-1232)	ug/kg	760 U	210 U	41 U	840000 U	40 U	38000 U	41 U	41 U	2100 U	4400 U	9300 U
Aroclor-1242 (PCB-1242)	ug/kg	760 U	660	41 U	7600000	97	200000	35 J	65	2100 U	31000	9300 U
Aroclor-1248 (PCB-1248)	ug/kg	8200	210 U	52	840000 U	40 U	38000 U	41 U	41 U	37000	4400 U	110000
Aroclor-1254 (PCB-1254)	ug/kg	760 U	210 U	41 U	840000 U	40 U	38000 U	41 U	41 U	2100 U	4400 U	9300 U
Aroclor-1260 (PCB-1260)	ug/kg	720 J	210 U	41 U	840000 U	40 U	38000 U	41 U	41 U	3800	2400 J	11000
Total PCBs		8920 J	660	52	7600000	97	200000	35 J	65	40800	33400 J	121000

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***
Sample Location:		***AD-11***	***AD-11***	***AD-12***	***AD-12***	***AD-13***	***AD-13***	***AD-14***	***AD-14***	***AD-14***	***AD-14***	***AD-15***
Sample ID:		***S-061405-DD-855***	***S-061405-DD-856***	***S-061405-DD-857***	***S-061405-DD-858***	***S-061405-DD-859***	***S-061405-DD-860***	***S-061405-DD-861***	***S-061405-DD-862***	***S-061405-DD-863***	***S-061405-DD-864***	***S-061405-DD-865***
Sample Date:		***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***	***6/14/2005***
		Duplicate										
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	4300 U	43 U	420 U	41 U	2000 U	16000 U	45 U	20000 U	21000 U	4200 U	42 U
Aroclor-1221 (PCB-1221)	ug/kg	4300 U	43 U	420 U	41 U	2000 U	16000 U	45 U	20000 U	21000 U	4200 U	42 U
Aroclor-1232 (PCB-1232)	ug/kg	4300 U	43 U	420 U	41 U	2000 U	16000 U	45 U	20000 U	21000 U	4200 U	42 U
Aroclor-1242 (PCB-1242)	ug/kg	4300 U	250	420 U	40 J	2000 U	16000 U	45 U	190000	120000	50000	51
Aroclor-1248 (PCB-1248)	ug/kg	73000	43 U	3800	41 U	33000	250000	130	20000 U	21000 U	4200 U	42 U
Aroclor-1254 (PCB-1254)	ug/kg	4300 U	43 U	420 U	41 U	2000 U	16000 U	45 U	20000 U	21000 U	4200 U	42 U
Aroclor-1260 (PCB-1260)	ug/kg	6800	13 J	420 U	41 U	3400	16000	28 J	4800 J	21000 U	1300 J	42 U
Total PCBs		79800	263 J	3800	40 J	36400	266000	158 J	194800 J	120000	51300 J	51

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*AD-15*	*AD-16*	*AD-16*	*AD-16*	*AD-17*	*AD-17*	*AD-18*	*AD-18*	*AD-19*	*AD-19*	*AD-20*
Sample ID:		*S-061405-DD-866*	*S-061405-DD-867*	*S-061405-DD-868*	*S-061405-DD-869*	*S-062105-DD-883*	*S-062105-DD-884*	*S-062105-DD-881*	*S-062105-DD-882*	*S-062105-DD-879*	*S-062105-DD-880*	*S-062105-DD-877*
Sample Date:		*6/14/2005*	*6/14/2005*	*6/14/2005*	*6/14/2005*	*6/21/2005*	*6/21/2005*	*6/21/2005*	*6/21/2005*	*6/21/2005*	*6/21/2005*	*6/21/2005*
				Duplicate								
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	4100 U	41 U	41 U	4000 U	42 U	45 U	43 U	41 U	42 U	42 U	2000 U
Aroclor-1221 (PCB-1221)	ug/kg	4100 U	41 U	41 U	4000 U	42 U	45 U	43 U	41 U	42 U	42 U	2000 U
Aroclor-1232 (PCB-1232)	ug/kg	4100 U	41 U	41 U	4000 U	42 U	45 U	43 U	41 U	42 U	42 U	2000 U
Aroclor-1242 (PCB-1242)	ug/kg	54000	700	34 J	4000 U	42 U	45 U	43 U	41 U	42 U	42 U	2000 U
Aroclor-1248 (PCB-1248)	ug/kg	4100 U	41 U	41 U	39000	14 J	45 U	43 U	41 U	42 U	42 U	2000 U
Aroclor-1254 (PCB-1254)	ug/kg	4100 U	41 U	41 U	4000 U	42 U	45 U	81	41 U	55	42 U	12000
Aroclor-1260 (PCB-1260)	ug/kg	5500	41 U	41 U	3200 J	42 U	45 U	43 U	41 U	42 U	42 U	2000 U
Total PCBs		59500	700	34 J	42200 J	14 J	ND	81	ND	55	ND	12000

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*AD-20*	*CH-1 Abandoned*	*CH-2*	*CH-2*	*CH-2*	*CH-3 Abandoned*	*CH-3 Abandoned*	*CH-4 Abandoned*	*CH-5*	*CH-5*
Sample ID:		*S-062105-DD-878*	*S-032905-DD-785*	*S-033005-KMV-1138*	*S-033005-KMV-1139*	*S-033005-KMV-1140*	*S-042005-KMV-1179*	*S-042005-KMV-1180*	*S-062105-DD-876*	*S-040705-JL-1134*	*S-040705-JL-1135*
Sample Date:		*6/21/2005*	*3/29/2005*	*3/30/2005*	*3/30/2005*	*3/30/2005*	*4/20/2005*	*4/20/2005*	*6/21/2005*	*4/7/2005*	*4/7/2005*
		Duplicate									
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	2000 U	44 U	43 U	42 U	46 U	41 U	45 U	39 U	45 U	860 U
Aroclor-1221 (PCB-1221)	ug/kg	2000 U	44 U	43 U	42 U	46 U	41 U	45 U	39 U	45 U	860 U
Aroclor-1232 (PCB-1232)	ug/kg	2000 U	44 U	43 U	42 U	46 U	41 U	45 U	39 U	45 U	860 U
Aroclor-1242 (PCB-1242)	ug/kg	2000 U	44 U	43 U	42 U	46 U	41 U	45 U	39 U	45 U	860 U
Aroclor-1248 (PCB-1248)	ug/kg	2000 U	150	100	42 U	46 U	37 J	45 U	39 U	74	4200
Aroclor-1254 (PCB-1254)	ug/kg	6300	44 U	43 U	42 U	46 U	41 U	45 U	150	45 U	860 U
Aroclor-1260 (PCB-1260)	ug/kg	2000 U	44 U	17 J	42 U	46 U	41 U	45 U	39 U	45 U	860 U
Total PCBs		6300	150	117 J	ND	ND	37 J	ND	150	74	4200

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***
Sample Location:		***CH-5***	***CH-5***	***CH-5***	***CH-6***	***CH-6***	***CH-6***	***CH-6***	***CH-7***	***CH-7***	***CH-7***
Sample ID:		***S-040705-JL-1136***	***S-040705-JL-1137***	***S-040705-JL-1138***	***S-040405-DD-786***	***S-040405-DD-787***	***S-040405-DD-788***	***S-040505-DD-791***	***S-040605-DD-792***	***S-040605-DD-793***	***S-040605-DD-794***
Sample Date:		***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/4/2005***	***4/4/2005***	***4/4/2005***	***4/5/2005***	***4/6/2005***	***4/6/2005***	***4/6/2005***
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	4100 U	2200 U	21000 U	830 U	880 U	43 U	2100 U	210 U	43 U	45 U
Aroclor-1221 (PCB-1221)	ug/kg	4100 U	2200 U	21000 U	830 U	880 U	43 U	2100 U	210 U	43 U	45 U
Aroclor-1232 (PCB-1232)	ug/kg	4100 U	2200 U	21000 U	830 U	880 U	43 U	2100 U	210 U	43 U	45 U
Aroclor-1242 (PCB-1242)	ug/kg	26000	10000	87000	830 U	3700	66	8200	210 U	140	45 U
Aroclor-1248 (PCB-1248)	ug/kg	4100 U	2200 U	21000 U	5100	880 U	43 U	2100 U	620	43 U	45 U
Aroclor-1254 (PCB-1254)	ug/kg	4100 U	2200 U	21000 U	830 U	880 U	43 U	2100 U	210 U	43 U	45 U
Aroclor-1260 (PCB-1260)	ug/kg	4100 U	2200 U	21000 U	830 U	880 U	43 U	2100 U	210 U	43 U	45 U
Total PCBs		26000	10000	87000	5100	3700	66	8200	620	140	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***
Sample Location:		***CH-7***	***CH-7***	***CH-8***	***CH-8***	***CH-8***	***CH-8***	***CH-9 Abandoned***	***CH-9 Abandoned***	***CH-9 Abandoned***	***CH-10 Abandoned***
Sample ID:		***S-040605-DD-795***	***S-040605-DD-796***	***S-040705-JL-1130***	***S-040705-JL-1131***	***S-040705-JL-1132***	***S-040705-JL-1133***	***S-040705-JL-1139***	***S-040705-JL-1140***	***S-040705-JL-1141***	***S-041905-KMV-1159***
Sample Date:		***4/6/2005***	***4/6/2005***	***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/7/2005***	***4/19/2005***
		Duplicate			***Duplicate***						
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	42 U	85 U	410 U	8400 U	41 U	42 U	86 U	41 U	38 U	47 U
Aroclor-1221 (PCB-1221)	ug/kg	42 U	85 U	410 U	8400 U	41 U	42 U	86 U	41 U	38 U	47 U
Aroclor-1232 (PCB-1232)	ug/kg	42 U	85 U	410 U	8400 U	41 U	42 U	86 U	41 U	38 U	47 U
Aroclor-1242 (PCB-1242)	ug/kg	42 U	340	410 U	49000	41 U	42 U	86 U	38 J	20 J	47 U
Aroclor-1248 (PCB-1248)	ug/kg	42 U	85 U	2500	8400 U	370	63	240	41 U	38 U	47 U
Aroclor-1254 (PCB-1254)	ug/kg	42 U	85 U	410 U	8400 U	41 U	42 U	86 U	41 U	38 U	47 U
Aroclor-1260 (PCB-1260)	ug/kg	42 U	85 U	410 U	8400 U	41 U	42 U	86 U	41 U	38 U	47 U
Total PCBs		ND	340	2500	49000	370	63	240	38 J	20 J	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*East Plant Area*	*East Plant Area*	*A007 East Plant Area*	*East Plant Area*	*East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-10 Abandoned*	*CH-11*	*CH-12 Abandoned*	*CH-12A*	*CH-12A*	*CH-13 Abandoned*	*CH-13A*	*CH-13A*	*CH-14 Abandoned*	*CH-14 Abandoned*
Sample ID:		*S-041905-KMV-1160*	*S-041105-JL-1142*	*S-040805-KMV-1150*	*S-061505-DD-874*	*S-061505-DD-875*	*S-032905-KMV-1137*	*S-061505-DD-872*	*S-061505-DD-873*	*S-033105-KMV-1141*	*S-033105-KMV-1142*
Sample Date:		*4/19/2005*	*4/11/2005*	*4/8/2005*	*6/15/2005*	*6/15/2005*	*3/29/2005*	*6/15/2005*	*6/15/2005*	*3/31/2005*	*3/31/2005*
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	38 U	47 U	43 U	220 U	43 U	45 U	210 U	43 U	43 U	43 U
Aroclor-1221 (PCB-1221)	ug/kg	38 U	47 U	43 U	220 U	43 U	45 U	210 U	43 U	43 U	43 U
Aroclor-1232 (PCB-1232)	ug/kg	38 U	47 U	43 U	220 U	43 U	45 U	210 U	43 U	43 U	43 U
Aroclor-1242 (PCB-1242)	ug/kg	12 J	47 U	43 U	220 U	43 U	45 U	210 U	43 U	43 U	43 U
Aroclor-1248 (PCB-1248)	ug/kg	38 U	31 J	43 U	750	150	33 J	600	20 J	43 U	32 J
Aroclor-1254 (PCB-1254)	ug/kg	38 U	47 U	43 U	220 U	43 U	45 U	210 U	43 U	43 U	43 U
Aroclor-1260 (PCB-1260)	ug/kg	38 U	47 U	43 U	58 J	43 U	45 U	210 U	43 U	43 U	43 U
Total PCBs		12 J	31 J	ND	808 J	150	33 J	600	20 J	ND	32 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-15*	*CH-15*	*CH-15A*	*CH-16*	*CH-16*	*CH-16*	*CH-16*	*CH-17*	*CH-17*	*CH-17*
Sample ID:		*S-040505-DD-789*	*S-040505-DD-790*	*S-061505-DD-871*	*S-040605-KMV-1143*	*S-040605-KMV-1144*	*S-040605-KMV-1145*	*S-040605-KMV-1146*	*S-040705-KMV-1147*	*S-040705-KMV-1148*	*S-040705-KMV-1149*
Sample Date:		*4/5/2005*	*4/5/2005*	*6/15/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/7/2005*	*4/7/2005*	*4/7/2005*
										Duplicate	
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	42 U	91 U	42 U	210 U	420 U	900 U	4400 U	41 U	41 U	45 U
Aroclor-1221 (PCB-1221)	ug/kg	42 U	91 U	42 U	210 U	420 U	900 U	4400 U	41 U	41 U	45 U
Aroclor-1232 (PCB-1232)	ug/kg	42 U	91 U	42 U	210 U	420 U	900 U	4400 U	41 U	41 U	45 U
Aroclor-1242 (PCB-1242)	ug/kg	18 J	91 U	42 U	1000	2400	6000	26000	41 U	44	45 U
Aroclor-1248 (PCB-1248)	ug/kg	42 U	680	27 J	210 U	420 U	900 U	4400 U	39 J	41 U	15 J
Aroclor-1254 (PCB-1254)	ug/kg	42 U	91 U	42 U	210 U	420 U	900 U	4400 U	41 U	41 U	45 U
Aroclor-1260 (PCB-1260)	ug/kg	42 U	91 U	42 U	210 U	420 U	900 U	4400 U	41 U	41 U	45 U
Total PCBs		18 J	680	27 J	1000	2400	6000	26000	39 J	44	15 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-17A*	*CH-18*	*CH-18*	*CH-18*	*CH-18*	*CH-19*	*CH-19*	*CH-20*	*CH-20*	*CH-20*
Sample ID:		*S-061505-DD-870*	*S-041405-KMV-1138*	*S-041405-KMV-1139*	*S-041405-KMV-1140*	*S-041405-KMV-1141*	*S-041805-KMV-1157*	*S-041805-KMV-1158*	*S-041905-KMV-1161*	*S-041905-KMV-1162*	*S-041905-KMV-1163*
Sample Date:		*6/15/2005*	*4/14/2005*	*4/14/2005*	*4/14/2005*	*4/14/2005*	*4/18/2005*	*4/18/2005*	*4/19/2005*	*4/19/2005*	*4/19/2005*
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	840 U	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Aroclor-1221 (PCB-1221)	ug/kg	840 U	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Aroclor-1232 (PCB-1232)	ug/kg	840 U	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Aroclor-1242 (PCB-1242)	ug/kg	840 U	41 U	42 U	59	270	41 U	42 U	40 U	26 J	46 U
Aroclor-1248 (PCB-1248)	ug/kg	5900	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Aroclor-1254 (PCB-1254)	ug/kg	840 U	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Aroclor-1260 (PCB-1260)	ug/kg	480 J	41 U	42 U	42 U	44 U	41 U	42 U	40 U	45 U	46 U
Total PCBs		6380 J	ND	ND	59	270	ND	ND	ND	26 J	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-20*	*CH-20*	*CH-21*	*CH-21*	*CH-21*	*CH-22*	*CH-22*	*CH-22*	*CH-23*	*CH-24*
Sample ID:		*S-041905-KMV-1165*	*S-041905-KMV-1164*	*S-042005-JL-1170*	*S-042005-JL-1171*	*S-042005-JL-1172*	*S-042005-KMV-1181*	*S-042005-KMV-1182*	*S-042005-KMV-1183*	*S-042105-JL-1173*	*S-042105-JL-1174*
Sample Date:		*4/19/2005*	*4/19/2005*	*4/20/2005*	*4/20/2005*	*4/20/2005*	*4/20/2005*	*4/20/2005*	*4/20/2005*	*4/21/2005*	*4/21/2005*
		Duplicate									
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	41 U
Aroclor-1221 (PCB-1221)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	41 U
Aroclor-1232 (PCB-1232)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	41 U
Aroclor-1242 (PCB-1242)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	41 U
Aroclor-1248 (PCB-1248)	ug/kg	45 U	45 U	340	41 U	44 U	41 U	50	12 J	42 U	400
Aroclor-1254 (PCB-1254)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	41 U
Aroclor-1260 (PCB-1260)	ug/kg	45 U	45 U	42 U	41 U	44 U	41 U	43 U	43 U	42 U	130
Total PCBs		ND	ND	340	ND	ND	ND	50	12 J	ND	530

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-24*	*CH-24*	*CH-24*	*CH-25*	*CH-25*	*CH-25*	*CH-25*	*CH-26 Abandoned*	*CH-26 Abandoned*	*CH-27*
Sample ID:		*S-042105-JL-1175*	*S-042105-JL-1176*	*S-042105-JL-1177*	*S-042105-JL-1178*	*S-042105-JL-1179*	*S-042105-JL-1180*	*S-042105-JL-1181*	*S-042105-JL-1182*	*S-042105-JL-1183*	*S-042205-JL-1184*
Sample Date:		*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/21/2005*	*4/22/2005*
			Duplicate								
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	41 U	43 U	43 U
Aroclor-1221 (PCB-1221)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	41 U	43 U	43 U
Aroclor-1232 (PCB-1232)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	41 U	43 U	43 U
Aroclor-1242 (PCB-1242)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	41 U	43 U	43 U
Aroclor-1248 (PCB-1248)	ug/kg	41 J	44 U	7.0 J	13 J	42 U	40 U	43 U	84	43 U	47
Aroclor-1254 (PCB-1254)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	41 U	43 U	43 U
Aroclor-1260 (PCB-1260)	ug/kg	44 U	44 U	40 U	43 U	42 U	40 U	43 U	30 J	43 U	13 J
Total PCBs		41 J	ND	7 J	13 J	ND	ND	ND	114 J	ND	60 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-28*	*CH-29*	*CH-30*	*CH-31*	*CH-31*	*CH-32*	*CH-32*	*CH-33*	*CH-34 Abandoned*	*CH-34 Abandoned*
Sample ID:		*S-042205-JL-1185*	*S-042505-JL-1186*	*S-042505-JL-1187*	*S-042505-JL-1188*	*S-042505-JL-1189*	*S-042505-JL-1190*	*S-042505-JL-1191*	*S-042505-JL-1192*	*S-040505-JL-1110*	*S-040505-JL-1111*
Sample Date:		*4/22/2005*	*4/25/2005*	*4/25/2005*	*4/25/2005*	*4/25/2005*	*4/25/2005*	*4/25/2005*	*4/25/2005*	*4/5/2005*	*4/5/2005*
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	44 U	8700 U	4000 U	40 U	1900 U	210000 U	43 U	210 U	44 U	430 U
Aroclor-1221 (PCB-1221)	ug/kg	44 U	8700 U	4000 U	40 U	1900 U	210000 U	43 U	210 U	44 U	430 U
Aroclor-1232 (PCB-1232)	ug/kg	44 U	8700 U	4000 U	40 U	1900 U	210000 U	43 U	210 U	44 U	430 U
Aroclor-1242 (PCB-1242)	ug/kg	44 U	100000	4000 U	40 U	1900 U	210000 U	43 U	210 U	69	1600
Aroclor-1248 (PCB-1248)	ug/kg	10 J	8700 U	19000	9.6 J	8800	840000	190	1400	44 U	430 U
Aroclor-1254 (PCB-1254)	ug/kg	44 U	8700 U	4000 U	40 U	1900 U	210000 U	43 U	210 U	44 U	430 U
Aroclor-1260 (PCB-1260)	ug/kg	44 U	19000	4000 U	40 U	1900 U	140000 J	33 J	210 U	44 U	430 U
Total PCBs		10 J	119000	19000	9.6 J	8800	980000 J	223 J	1400	69	1600

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-34 Abandoned*	*CH-34 Abandoned*	*CH-35 Abandoned*	*CH-35 Abandoned*	*CH-35 Abandoned*	*CH-36 Abandoned*	*CH-36 Abandoned*	*CH-36 Abandoned*	*CH-36 Abandoned*	*CH-36 Abandoned*
Sample ID:		*S-040505-JL-1112*	*S-040505-JL-1113*	*S-040405-JL-1107*	*S-040405-JL-1108*	*S-040405-JL-1109*	*S-040405-JL-1099*	*S-040405-JL-1100*	*S-040405-JL-1101*	*S-040405-JL-1102*	*S-040405-JL-1103*
Sample Date:		*4/5/2005*	*4/5/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*
											Duplicate
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	450 U	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Aroclor-1221 (PCB-1221)	ug/kg	450 U	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Aroclor-1232 (PCB-1232)	ug/kg	450 U	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Aroclor-1242 (PCB-1242)	ug/kg	1400	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Aroclor-1248 (PCB-1248)	ug/kg	450 U	40 U	26 J	43 U	42 U	43 U	43 U	40 J	42 U	43 U
Aroclor-1254 (PCB-1254)	ug/kg	450 U	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Aroclor-1260 (PCB-1260)	ug/kg	450 U	40 U	46 U	43 U	42 U	43 U	43 U	42 U	42 U	43 U
Total PCBs		1400	ND	26 J	ND	ND	ND	ND	40 J	ND	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-36 Abandoned*	*CH-36 Abandoned*	*CH-36 Abandoned*	*CH-37 Abandoned*	*CH-37 Abandoned*	*CH-37 Abandoned*	*CH-37 Abandoned*	*CH-37 Abandoned*	*CH-37 Abandoned*	*CH-38 Abandoned*
Sample ID:		*S-040405-JL-1104*	*S-040405-JL-1105*	*S-040405-JL-1106*	*S-040405-JL-1093*	*S-040405-JL-1094*	*S-040405-JL-1095*	*S-040405-JL-1096*	*S-040405-JL-1097*	*S-040405-JL-1098*	*S-040505-JL-1114*
Sample Date:		*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/4/2005*	*4/5/2005*
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	43 U	43 U	460 U	41 U	42 U	43 U	44 U	43 U	42 U	43 U
Aroclor-1221 (PCB-1221)	ug/kg	43 U	43 U	460 U	41 U	42 U	43 U	44 U	43 U	42 U	43 U
Aroclor-1232 (PCB-1232)	ug/kg	43 U	43 U	460 U	41 U	42 U	43 U	44 U	43 U	42 U	43 U
Aroclor-1242 (PCB-1242)	ug/kg	43 U	43 U	460 U	41 U	42 U	43 U	44 U	43 U	20 J	43 U
Aroclor-1248 (PCB-1248)	ug/kg	43 U	43 U	2500	41 U	42 U	43 U	44 U	43 U	42 U	43 U
Aroclor-1254 (PCB-1254)	ug/kg	43 U	43 U	460 U	6.0 J	42 U	43 U	44 U	43 U	42 U	43 U
Aroclor-1260 (PCB-1260)	ug/kg	43 U	43 U	460 U	41 U	42 U	43 U	44 U	43 U	42 U	43 U
Total PCBs		ND	ND	2500	6 J	ND	ND	ND	ND	20 J	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*	*A007 East Plant Area*
Sample Location:		*CH-38 Abandoned*	*CH-38 Abandoned*	*CH-38 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*	*CH-39 Abandoned*
Sample ID:		*S-040505-JL-1115*	*S-040505-JL-1116*	*S-040505-JL-1117*	*S-040605-JL-1118*	*S-040605-JL-1119*	*S-040605-JL-1120*	*S-040605-JL-1121*	*S-040605-JL-1122*	*S-040605-JL-1123*	*S-040605-JL-1124*
Sample Date:		*4/5/2005*	*4/5/2005*	*4/5/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*	*4/6/2005*
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	43 U	43 U	40 U	81 U	41 U	18000 U	6900 U	1700 U	1700 U	3600 U
Aroclor-1221 (PCB-1221)	ug/kg	43 U	43 U	40 U	81 U	41 U	18000 U	6900 U	1700 U	1700 U	3600 U
Aroclor-1232 (PCB-1232)	ug/kg	43 U	43 U	40 U	81 U	41 U	18000 U	6900 U	1700 U	1700 U	3600 U
Aroclor-1242 (PCB-1242)	ug/kg	43 U	43 U	40 U	81 U	41 U	130000	48000	18000	13000	29000
Aroclor-1248 (PCB-1248)	ug/kg	43 U	43 U	40 U	81 U	27 J	18000 U	6900 U	1700 U	1700 U	3600 U
Aroclor-1254 (PCB-1254)	ug/kg	43 U	43 U	40 U	300	41 U	18000 U	6900 U	1700 U	1700 U	3600 U
Aroclor-1260 (PCB-1260)	ug/kg	43 U	43 U	40 U	81 U	41 U	18000 U	4700 J	2900	1100 J	3200 J
Total PCBs		ND	ND	ND	300	27 J	130000	52700 J	20900	14100 J	32200 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***NA***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***A007 East Plant Area***	***NA***	***P215 East Plant Area***	***P215 East Plant Area***	***P215 East Plant Area***
Sample Location:		***CH-3A***	***CH-40***	***CH-40***	***CH-40***	***CH-41***	***CH-41***	***CH-4A***	***P-1***	***P-1***	***P-2***
Sample ID:		***S-072105-DD-912***	***S-040605-JL-1127***	***S-040605-JL-1128***	***S-040605-JL-1129***	***S-040605-JL-1125***	***S-040605-JL-1126***	***S-081205-KMV-1190***	***S-215-062205-DD-889***	***S-215-062205-DD-890***	***S-215-062205-DD-891***
Sample Date:		***7/21/2005***	***4/6/2005***	***4/6/2005***	***4/6/2005***	***4/6/2005***	***4/6/2005***	***8/12/2005***	***6/22/2005***	***6/22/2005***	***6/22/2005***
Parameters	***Units***										
PCBs											
Aroclor-1016 (PCB-1016)	ug/kg	-	39 U	42000 U	22000 U	87 U	200 U	-	43 U	41 U	39 U
Aroclor-1221 (PCB-1221)	ug/kg	-	39 U	42000 U	22000 U	87 U	200 U	-	43 U	41 U	39 U
Aroclor-1232 (PCB-1232)	ug/kg	-	39 U	42000 U	22000 U	87 U	200 U	-	43 U	41 U	39 U
Aroclor-1242 (PCB-1242)	ug/kg	-	39 U	180000	130000	87 U	200 U	-	43 U	41 U	39 U
Aroclor-1248 (PCB-1248)	ug/kg	-	8.3 J	42000 U	22000 U	270	840	-	43 U	41 U	39 U
Aroclor-1254 (PCB-1254)	ug/kg	-	39 U	42000 U	22000 U	87 U	200 U	-	43 U	41 U	39 U
Aroclor-1260 (PCB-1260)	ug/kg	-	39 U	19000 J	22000 U	87 U	200 U	-	43 U	41 U	39 U
Total PCBs		N/A	8.3 J	199000 J	130000	270	840	N/A	ND	ND	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*P215 East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*P-2*	*PS-1A*	*PS-1A*	*PS-2A*	*PS-2B*	*PS-3A*	*PS-3B*	*PS-3B*	*PS-4A*	*PS-4B*	*PS-5A*
Sample ID:		*S-215-062205-DD-892*	*S-032205-JC-1029*	*S-032205-JC-1030*	*S-032205-JC-1032*	*S-032205-JC-1027*	*S-031605-JC-952*	*S-031605-JC-954*	*S-031605-JC-955*	*S-031605-JC-957*	*S-032205-JC-1025*	*S-031605-JC-959*
Sample Date:		*6/22/2005*	*3/22/2005*	*3/22/2005*	*3/22/2005*	*3/22/2005*	*3/16/2005*	*3/16/2005*	*3/16/2005*	*3/16/2005*	*3/22/2005*	*3/16/2005*
				Duplicate					*Duplicate*			
Parameters	***Units***											
PCBs												
Aroclor-1016 (PCB-1016)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	42 U	440 U	44 U	41 U
Aroclor-1221 (PCB-1221)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	42 U	440 U	44 U	41 U
Aroclor-1232 (PCB-1232)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	42 U	440 U	44 U	41 U
Aroclor-1242 (PCB-1242)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	30 J	440 U	44 U	41 U
Aroclor-1248 (PCB-1248)	ug/kg	38 U	60	50	42 U	46 U	6200 B	41 B	42 U	2400 B	44 U	41 J B
Aroclor-1254 (PCB-1254)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	42 U	440 U	44 U	41 U
Aroclor-1260 (PCB-1260)	ug/kg	38 U	43 U	45 U	42 U	46 U	2100 U	41 U	42 U	440 U	44 U	41 U
Total PCBs		ND	60	50	ND	ND	6200 B	41 B	30 J	2400 B	ND	41 J B

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*PS-5B*	*PS-6A*	*PS-6B*	*PS-7A*	*PS-7B*	*PS-7B*	*PS-8A*	*PS-8B*	*PS-8B*	*PS-9A*	*PS-9B*	*PS-9B*
Sample ID:		*S-032205-JC-1023*	*S-031605-JC-961*	*S-031605-JC-963*	*S-031705-JC-965*	*S-031705-JC-967*	*S-031705-JC-968*	*S-031705-JC-970*	*S-031705-JC-972*	*S-031705-JC-973*	*S-031705-JC-975*	*S-032105-JC-1016*	*S-032105-JC-1017*
Sample Date:		*3/22/2005*	*3/16/2005*	*3/16/2005*	*3/17/2005*	*3/17/2005*	*3/17/2005*	*3/17/2005*	*3/17/2005*	*3/17/2005*	*3/17/2005*	*3/21/2005*	*3/21/2005*
							Duplicate			*Duplicate*			
Parameters	***Units***												
PCBs													
Aroclor-1016 (PCB-1016)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Aroclor-1221 (PCB-1221)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Aroclor-1232 (PCB-1232)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Aroclor-1242 (PCB-1242)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Aroclor-1248 (PCB-1248)	ug/kg	26 J	43 J B	43 J B	18 J	42 U	42 U	41 U	13 J	44 U	44 U	16000	910
Aroclor-1254 (PCB-1254)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Aroclor-1260 (PCB-1260)	ug/kg	42 U	43 U	43 U	44 U	42 U	42 U	41 U	42 U	44 U	44 U	2100 U	210 U
Total PCBs		26 J	43 J B	43 J B	18 J	ND	ND	ND	13 J	ND	ND	16000	910

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*PS-10A*	*PS-10B*	*PS-11A*	*PS-11B*	*PS-12A*	*PS-12B*	*PS-13A*	*PS-13A*	*PS-13B*	*PS-14A*	*PS-14A*	*PS-14A*
Sample ID:		*S-031705-JC-977*	*S-031805-JC-979*	*S-032105-JC-1014*	*S-032105-JC-1010*	*S-032105-JC-1012*	*S-032105-JC-1008*	*S-032105-JC-994*	*S-032105-JC-995*	*S-032105-JC-997*	*S-032105-JC-1005*	*S-032105-JC-1006*	*S-032105-JC-1007*
Sample Date:		*3/17/2005*	*3/18/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*	*3/21/2005*
									Duplicate			*Duplicate*	
Parameters	***Units***												
PCBs													
Aroclor-1016 (PCB-1016)	ug/kg	42 U	41 U	43 U	41 U	380 U	41 U	42 U	43 U	42 U	8000 U	8900 U	40 U
Aroclor-1221 (PCB-1221)	ug/kg	42 U	41 U	43 U	41 U	380 U	41 U	42 U	43 U	42 U	8000 U	8900 U	40 U
Aroclor-1232 (PCB-1232)	ug/kg	42 U	41 U	43 U	41 U	380 U	41 U	42 U	43 U	42 U	8000 U	8900 U	40 U
Aroclor-1242 (PCB-1242)	ug/kg	42 U	41 U	43 U	41 U	380 U	41 U	42 U	43 U	42 U	8000 U	8900 U	40 U
Aroclor-1248 (PCB-1248)	ug/kg	22 J	41 U	43 U	41 U	870	8.0 J	42 U	43 U	56	31000	48000	40 U
Aroclor-1254 (PCB-1254)	ug/kg	42 U	41 U	43 U	41 U	380 U	41 U	42 U	43 U	42 U	8000 U	8900 U	14 J
Aroclor-1260 (PCB-1260)	ug/kg	42 U	41 U	43 U	41 U	180 J	41 U	42 U	43 U	17 J	10000	15000	40 U
Total PCBs		22 J	ND	ND	ND	1050 J	8 J	ND	ND	73 J	41000	63000	14 J

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***
Sample Location:		***PS-14B***	***PS-15A***	***PS-15B***	***PS-16A***	***PS-16B***	***PS-17A***	***PS-17B***
Sample ID:		***S-032105-JC-1003***	***S-032105-JC-999***	***S-032105-JC-1001***	***S-032105-JC-992***	***S-031805-JC-990***	***S-031805-JC-986***	***S-031805-JC-988***
Sample Date:		***3/21/2005***	***3/21/2005***	***3/21/2005***	***3/21/2005***	***3/18/2005***	***3/18/2005***	***3/18/2005***
Parameters	***Units***							
PCBs								
Aroclor-1016 (PCB-1016)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Aroclor-1221 (PCB-1221)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Aroclor-1232 (PCB-1232)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Aroclor-1242 (PCB-1242)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Aroclor-1248 (PCB-1248)	ug/kg	42 U	42 U	45 U	42 U	19 J	25 J	43 U
Aroclor-1254 (PCB-1254)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Aroclor-1260 (PCB-1260)	ug/kg	42 U	42 U	45 U	42 U	40 U	43 U	43 U
Total PCBs		ND	ND	ND	ND	19 J	25 J	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.3

SUMMARY OF SOIL ANALYTICAL RESULTS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***	***East Plant Area***
Sample Location:		***PS-18A***	***PS-18A***	***PS-18A***	***PS-18B***	***PS-18B***	***PS-19A***	***PS-19B***
Sample ID:		***S-032205-JC-1018***	***S-032205-JC-1019***	***S-032205-JC-1020***	***S-031805-JC-983***	***S-031805-JC-984***	***S-031805-JC-981***	***S-032205-JC-1021***
Sample Date:		***3/22/2005***	***3/22/2005***	***3/22/2005***	***3/18/2005***	***3/18/2005***	***3/18/2005***	***3/22/2005***
			Duplicate			***Duplicate***		
Parameters	***Units***							
PCBs								
Aroclor-1016 (PCB-1016)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Aroclor-1221 (PCB-1221)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Aroclor-1232 (PCB-1232)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Aroclor-1242 (PCB-1242)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Aroclor-1248 (PCB-1248)	ug/kg	5800	26000	22000	41 U	41 U	41 U	39 U
Aroclor-1254 (PCB-1254)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Aroclor-1260 (PCB-1260)	ug/kg	840 U	3900 U	3400 U	41 U	41 U	41 U	39 U
Total PCBs		5800	26000	22000	ND	ND	ND	ND

Notes:
mg/kg - milligram per kilogram
ND - Non Detect
PCBs - Polychlorinated Biphenyls
J - Estimated
U - Non-detect at associated value
B - Method Blank Contamination

TABLE 2.4

BOREHOLE/WELL CONSTRUCTION DETAILS
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Corehole ID	*Revised Corehole ID*	*Top Casing Elevation*	*Ground Surface Elevation*	*Casing Depth*	*Open Hole Interval*		*Open Hole Elevation*		*Sump Depth Interval*		*Total Hole Depth*	*Date Completed*	*Well Abandonment*
CH-1	**CH-1 Abandoned**	---	692.23	10.0	---	---	---	---	---	---	10.0	3/29/2005	X
CH-1A	**CH-1A Abandoned**	---	692.04	15.0	15.0	18.0	677.04	674.04	---	---	18.0	6/7/2005	X
CH-1B		693.75	691.71	26.0	26.0	45.6	665.71	646.11	---	---	45.6	6/13/2005	
CH-2	**CH-2 Abandoned**	---	688.73	---	---	---	---	---	---	---	22.1	5/26/2005	X
CH-2A		690.57	687.95	22.0	22.0	42.9	665.95	645.05	---	---	42.9	8/15/2005	
CH-3	**CH-3 Abandoned**	---	673.34	9.0	9.0	20.2	664.34	653.14	---	---	20.2	6/9/2005	X
CH-3A		675.40	673.13	23.0	23.0	43.8	650.13	629.33	---	---	43.8	8/17/2005	
CH-4	**CH-4 Abandoned**	---	677.21	10.5	10.5	15.7	666.71	661.51	---	---	15.7	8/5/2005	X
CH-4A		679.60	676.77	14.5	14.5	34.8	662.27	641.97	---	---	34.8	8/22/2005	
CH-5		685.68	683.53	21.0	21.0	46.1	662.53	637.43	44.1	46.1	46.1	6/6/2005	
CH-6		692.08	690.51	19.0	19.0	40.3	671.51	650.21	---	---	40.3	6/1/2005	
CH-7		690.28	688.66	19.2	19.2	39.3	669.46	649.36	---	---	39.3	6/1/2005	
CH-8		688.11	684.72	11.5	11.5	35.2	673.22	649.52	---	---	35.2	6/2/2005	
CH-9	**CH-9 Abandoned**	---	710.18	15.0	15.0	30.5	695.18	679.68	---	---	30.5	8/18/2005	X
CH-9A		712.14	709.94	38.0	38.0	48.4	671.94	661.54	---	---	48.4	8/29/2005	
CH-10	**CH-10 Abandoned**	---	693.93	---	---	---	---	---	---	---	14.0	---	X
CH-10A		696.48	693.34	16.0	16.0	26.5	677.34	666.84	---	---	26.5	8/29/2005	
CH-11	**CH-11 Abandoned**	661.45	658.95	6.0	6.0	27.1	652.95	631.85	---	---	27.1	6/17/2005	X
CH-12	**CH-12 Abandoned**	---	660.37	6.0	---	---	---	---	---	---	6.0	4/8/2005	X
CH-12A	**CH-12A Abandoned**	---	650.43	6.0	6.0	27.1	644.43	623.33	---	---	27.1	6/20/2005	X
CH-13	**CH-13 Abandoned**	---	653.64	6.5	---	---	---	---	---	---	6.5	3/29/2005	X
CH-13A	**CH-13A Abandoned**	---	645.14	8.0	8.0	58.7	637.14	586.44	---	---	58.7	8/3/2005	X
CH-14	**CH-14 Abandoned**	---	641.51	6.0	6.0	12.1	635.51	629.41	---	---	12.1	6/16/2005	X
CH-14A	**CH-14A Abandoned**	---	641.98	7.4	7.4	28.1	634.58	613.88	---	---	28.1	8/4/2005	X
CH-15		636.16	633.64	8.0	8.0	28.5	625.64	605.14	---	---	28.5	6/10/2005	X
CH-15A		639.89	637.26	5.0	5.0	25.9	632.26	611.36	---	---	25.9	8/5/2005	X
CH-16		635.37	632.91	15.5	15.5	36.4	617.41	596.51	---	---	36.4	6/13/2005	
CH-17		631.59	628.83	10.0	10.0	20.8	618.83	608.03	---	---	20.8	6/9/2005	
CH-17A		624.41	620.96	7.4	7.4	28.4	613.56	592.56	---	---	28.4	8/8/2005	
CH-18		627.40	625.48	19.0	19.0	39.7	606.48	585.78	---	---	39.7	6/8/2005	
CH-19		627.79	625.03	11.0	11.0	31.7	614.03	593.33	---	---	31.7	6/15/2005	
CH-20		621.77	619.20	17.0	17.0	38.0	602.20	581.20	---	---	38.0	6/7/2005	
CH-21		614.47	612.14	14.0	14.0	45.5	598.14	566.64	---	---	45.5	6/6/2005	
CH-22		615.90	613.37	12.0	12.0	32.6	601.37	580.77	---	---	32.6	6/1/2005	
CH-23		616.33	613.50	6.0	6.0	26.9	607.50	586.60	---	---	26.9	6/1/2005	
CH-24		619.74	617.44	12.0	12.0	32.7	605.44	584.74	---	---	32.7	5/27/2005	
CH-25		625.77	622.76	20.0	20.0	40.9	602.76	581.86	---	---	40.9	5/26/2005	
CH-26	**CH-26 Abandoned**	---	627.85	7.0	---	---	---	---	---	---	27.6	5/24/2005	X
CH-27		635.83	633.15	5.5	5.5	26.0	627.65	607.15	---	---	26.0	5/24/2005	
CH-28		641.59	638.92	4.0	4.0	24.7	634.92	614.22	---	---	24.7	5/23/2005	
CH-29		645.00	641.56	28.5	28.5	71.2	613.06	570.36	---	---	71.2	5/18/2005	
CH-30		659.16	656.78	6.5	6.5	26.6	650.28	630.18	---	---	26.6	5/23/2005	
CH-31		671.15	668.42	12.5	12.5	33.3	655.92	635.12	---	---	33.3	8/11/2005	
CH-32		672.46	669.43	8.0	8.0	28.5	661.43	640.93	---	---	28.5	8/10/2005	
CH-33		672.30	669.74	8.5	8.5	25.2	661.24	644.54	---	---	25.2	8/9/2005	
CH-34	**CH-34 Abandoned**	---	681.99	19.0	---	---	---	---	---	---	19.0	4/5/2005	X
CH-34A	**CH-34A Abandoned**	---	681.55	---	---	---	---	---	---	---	20.0	6/28/2005	X
CH-34B	**CH-34B Abandoned**	---	681.40	14.4	14.4	15.0	667.00	666.40	---	---	15.0	7/29/2005	X
CH-34C		684.45	681.92	22.0	22.0	42.0	659.92	639.92	---	---	42.0	8/8/2005	
CH-35	**CH-35 Abandoned**	---	690.74	11.0	---	---	---	---	---	---	30.3	5/24/2005	X
CH-36	**CH-36 Abandoned**	---	699.61	39.0	---	---	---	---	---	---	49.8	5/19/2005	X
CH-37	**CH-37 Abandoned**	---	695.23	23.0	---	---	---	---	---	---	43.2	5/19/2005	X
CH-38	**CH-38 Abandoned**	---	690.53	17.0	---	---	---	---	---	---	37.5	5/25/2005	X
CH-39	**CH-39 Abandoned**	---	688.25	37.0	---	---	---	---	---	---	37.0	5/11/2005	X
CH-39A		689.53	686.90	39.0	39.0	55.6	647.90	631.30	---	---	55.6	5/25/2005	
CH-40		654.56	651.86	11.0	11.0	30.3	640.86	621.56	---	---	30.3	6/10/2005	
CH-41		633.78	631.14	5.5	5.5	26.2	625.64	604.94	---	---	26.2	6/14/2005	
9-1		680.98	678.39	14.0	14.0	51.8	664.39	626.59	---	---	51.8	7/26/2005	
9-2		681.57	678.58	18.0	18.0	52.8	660.58	625.78	---	---	52.8	7/25/2005	
9-3		682.82	680.33	22.2	22.2	52.3	658.13	628.03	---	---	52.3	7/21/2005	
9-4		681.79	679.19	24.0	24.0	54.1	655.19	625.09	---	---	54.1	7/19/2005	

TABLE 2.5

SUMMARY OF UNIAXIAL COMPRESSION TESTING
RFI WORK PLAN: ADDENDUM NO. 9
GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*CH- 36*	*CH- 36*	*CH- 36*	*CH- 36*	*CH- 37*	*CH- 37*	*CH- 29*	*CH- 24*
Sample ID:		*RO-062805-KMV-1184*	*RO-062805-KMV-1185*	*RO-062805-KMV-1186*	*RO-062805-KMV-1187*	*RO-062805-KMV-1188*	*RO-062805-KMV-1189*	*RO-092205-KMV-1194*	*RO-092205-KMV-1195*
Sample Date:		*6/28/05*	*6/28/05*	*6/28/05*	*6/28/05*	*6/28/05*	*6/28/05*	*9/22/05*	*9/22/05*
Sample Depth:		*40.2-40.8*	*40.8-41.4*	*46.8-47.4*	*47.4-48*	*23.8-24.9*	*39.3-40.1*	*32.0-32.8*	*12.5-13.3*
Parameters	***Units***								
Compressive Strength	MPa	94.0	135.9	128.1	98.0	163.1	105.1	48.8	90.1

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*CH- 21*	*CH- 11*	*CH- 15A*	*CH- 32*	*CH- 28*	*CH- 13A*	*9-1*	*CH- 5*
Sample ID:		*RO-092205-KMV-1196*	*RO-092205-KMV-1197*	*RO-092205-KMV-1198*	*RO-092205-KMV-1199*	*RO-092205-KMV-1200*	*RO-092205-KMV-1201*	*RO-092205-KMV-1202*	*RO-092205-KMV-1203*
Sample Date:		*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*
Sample Depth:		*25.5-35.5*	*9.3-10.3*	*23.1-23.9*	*11.4-12.2*	*23.0-23.8*	*15.7-16.5*	*18.8-19.6*	*29.4-30.2*
Parameters	***Units***								
Compressive Strength	MPa	72.6	108.0	67.8	110.2	71.9	98.0	121.5	147.0

Sample Area:		*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*	*East Plant Area*
Sample Location:		*CH- 17A*	*CH- 9*	*CH- 3*	*CH- 1B*	*CH- 3A*
Sample ID:		*RO-092205-KMV-1204*	*RO-092205-KMV-1205*	*RO-092205-KMV-1206*	*RO-092205-KMV-1207*	*RO-092205-KMV-1208*
Sample Date:		*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*	*9/22/05*
Sample Depth:		*27.6-28.4*	*15.5-16.3*	*9.5-10.3*	*33.0-33.7*	*38.7-39.5*
Parameters	***Units***					
Compressive Strength	MPa	63.1	45.8	45.3	166.5	68.4

APPENDIX A

OVERBURDEN AND BEDROCK BORING LOGS

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-10A
DATE COMPLETED: March 17, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	626.3						
0	TOPSOIL	626.0						
	CL-CLAY, trace silt, soft-firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	622.3						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-10B
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	609.3						
2	ML-SILT, trace medium grained sand, compact, brown-dark brown, moist		BENTONITE SEAL	1	P/S	4.0		0.0
	CL-CLAY, trace silt, soft to firm, low plasticity, moist	607.3						
4	END OF BOREHOLE @ 4.0ft BGS	605.3						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-11A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	623.0						
2	CL-CLAY, soft to firm, low plasticity, brown-strong brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
	- rock fragments at 2.7ft BGS							
4	END OF BOREHOLE @ 4.0ft BGS	619.0						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-11B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	615.4						
2	CL-CLAY, soft to firm, low plasticity, strong brown, damp - rock fragments at 2.0ft BGS	612.9	BENTONITE SEAL	1	P/S	3.0		0.0
4	- Refusal-rock at 3.0ft BGS END OF BOREHOLE @ 3.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-12A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	620.6						
0	CL-CLAY, stiff, low plasticity, strong brown, dry							
		619.1						
2	SP-SAND, compact, fine grained, poorly graded, tan/yellow, moist		BENTONITE SEAL	1	P/S	3.5		0.0
		616.6						
4	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-12B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	625.9						
0	ML-SILT, trace clay, soft, brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
3.0	- Refusal at 3.0ft BGS	622.9						
	END OF BOREHOLE @ 3.0ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-13A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	633.0						
0	TOPSOIL	632.8						
	ML-SILT, dense, brown-strong brown, damp							
2	CL-CLAY, trace silt, firm, low plasticity, strong brown, dry	631.0	BENTONITE SEAL	1	P/S	4.0		0.0
4	- Rock at 4.0ft BGS	629.0						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-13B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	627.7						
2	CL-CLAY, trace fine gravel, firm, low plasticity		BENTONITE SEAL	1	P/S	3.0		0.0
	SM-SILTY SAND, compact, fine grained, poorly graded, yellow/tan, moist	624.9						
4	END OF BOREHOLE @ 4.0ft BGS	623.7						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-14A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	632.3						
2	SM-SILTY SAND, compact, fine grained, poorly graded, dark brown, moist		BENTONITE SEAL	1	P/S	3.5		0.0
	SP-SAND, loose, fine grained, poorly graded	630.3						
	ML-SILT, trace clay, loose, brown, damp - with fine sand at 3.1ft BGS	629.8						
4	END OF BOREHOLE @ 3.5ft BGS	628.8						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-14B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	635.1						
0	TOPSOIL	634.8						
	ML-SILT, loose, brown-strong brown, damp	634.1						
2	CL-CLAY, soft to firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
	END OF BOREHOLE @ 3.0ft BGS	632.1						
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-15A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	642.5						
0	TOPSOIL	642.2						
	ML-SILT, compact, brown, damp	641.5						
2	CL-CLAY, firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	638.5						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-15B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	634.4						
0	TOPSOIL	634.1						
	CL-CLAY,firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
2								
	ROCK FRAGMENTS	631.7						
	- Refusal at 3.0ft BGS	631.4						
4	END OF BOREHOLE @ 3.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-16A
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	645.2						
0	TOPSOIL CL-CLAY, firm, low plasticity, strong brown, dry	645.0	BENTONITE SEAL	1	P/S	4.0		0.0
4	Rock	641.4						
	END OF BOREHOLE @ 4.0ft BGS	641.2						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-16B
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	639.2						
2	CL-CLAY, trace silt, firm, low plasticity, brown, dry - strong brown in color at 2.0ft BGS		BENTONITE SEAL	1	P/S	3.8		0.0
4	END OF BOREHOLE @ 4.0ft BGS	635.2						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-17A
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	662.1						
2	CL-CLAY, trace gravel, firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
		659.4						
4	SM-SILTY SAND, compact, fine grained, poorly graded, dark brown, damp							
		658.1						
	END OF BOREHOLE @ 4.0ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-17B
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	655.2						
2	CL-CLAY, trace silt, soft to firm, low plasticity, brown, damp - dark gray in color at 2.0ft BGS - strong brown in color at 2.7ft BGS		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	651.2						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-18A
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	691.9						
2	Gravel drive	691.3	BENTONITE SEAL	1	P/S	4.0		0.0
	SW-SAND, compact, fine to medium grained, well graded, dark brown, damp	690.9						
	Rock fragments	690.4						
	CL-CLAY, firm, low plasticity, strong brown, damp							
4	SP-SAND, loose, medium grained, poorly graded, dark brown, dry	688.4						
	END OF BOREHOLE @ 4.0ft BGS	687.9						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-18B
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	680.2						
2	CL-CLAY, firm, low plasticity		BENTONITE SEAL	1	P/S	4.0		0.0
		677.0						
4	SP-SAND, loose, medium grained, poorly graded, brown, dry, rock fragments	676.2						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-19A
DATE COMPLETED: March 18, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	679.1						
2	CL-CLAY, trace silt, firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
	- dark brown/dark gray in color at 3.0ft BGS							
4	END OF BOREHOLE @ 4.0ft BGS	675.1						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-19B
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	677.5						
2	CL-CLAY, trace sand, firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	673.5						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-1A
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	692.2						
2	CL-CLAY, soft to firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	3.5		0.0
4	- Rock fragments at 3.5ft BGS	688.7						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-2A
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	688.6						
0	Gravel drive	688.3						
	CL-CLAY, firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	684.6						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-2B
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	675.4						
0	ML-SILT, dense, dark brown to tan, wet	675.1						
2	CL-CLAY, firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	671.4						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-3A
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	671.3						
0	Gravel drive	670.7						
	CL-CLAY, trace coarse gravel, firm, low plasticity, brown, damp							
2	- strong brown in color at 2.0ft BGS		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	667.3						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-3B
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	658.4						
2	CL-CLAY, soft to firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	- fine and coarse gravel at 4.0ft BGS	654.4						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-4A
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	704.7						
0	Gravel drive	703.9						
	CL-CLAY, trace silt, low plasticity, dark brow-dark gray, damp		BENTONITE SEAL	1	P/S	3.8		0.0
4	END OF BOREHOLE @ 4.0ft BGS	700.7						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-4B
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	695.7						
2	CL-CLAY, soft to firm, brown, damp		BENTONITE SEAL	1	P/S	3.0		0.0
	- Refusal-rock at 3.0ft BGS	692.7						
4	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-5A
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	700.2						
0	TOPSOIL	699.9						
	CL-CLAY, soft, low plasticity, brown, damp							
	- wood fragments at 1.0ft BGS		BENTONITE SEAL	1	P/S	3.8		0.0
2								
	- firm, strong brown in color at 3.5ft BGS							
4	END OF BOREHOLE @ 4.0ft BGS	696.2						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-5B
DATE COMPLETED: March 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	695.6						
0	TOPSOIL	695.0						
	CL-CLAY, soft to firm, low plasticity, strong brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	691.6						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-6A
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	662.7						
2	CL-CLAY, soft, low plasticity, dark brown, damp - brown in color at 1.4ft BGS - rock fragments at 1.8ft BGS - strong brown in color at 2.0ft BGS		BENTONITE SEAL	1	P/S	3.5		0.0
4	- Rock at 4.0ft BGS	658.7						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-6B
DATE COMPLETED: March 16, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	665.6						
0	TOPSOIL	665.2						
	ML-SILT, trace clay, dark brown, damp	664.8						
2	CL-CLAY, soft to firm, low plasticity, brown, damp - wood fragments at 2.0ft BGS		BENTONITE SEAL	1	P/S	4.0		0.0
4	- rock fragments at 3.5ft BGS							
	END OF BOREHOLE @ 4.0ft BGS	661.6						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-7A
DATE COMPLETED: March 17, 2004
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	654.8						
0	TOPSOIL	654.5						
	CL-CLAY, soft to firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	650.8						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-7B
DATE COMPLETED: March 17, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	666.6						
0	TOPSOIL	666.4						
	CL-CLAY, trace silt, soft to firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	662.6						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-8A
DATE COMPLETED: March 17, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	646.2						
0	TOPSOIL	645.9						
	CL-CLAY, trace silt, soft to firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	642.2						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-8B
DATE COMPLETED: March 17, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	644.5						
0	TOPSOIL	644.2						
	CL-CLAY, trace silt, soft to firm, low plasticity, brown, damp		BENTONITE SEAL	1	P/S	3.2		0.0
4	END OF BOREHOLE @ 4.0ft BGS	640.5						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-9A
DATE COMPLETED: March 17, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	632.4						
0	TOPSOIL	632.1						
	CL-CLAY, trace silt, soft to firm, low plasticity, strong brown, damp-dry		BENTONITE SEAL	1	P/S	4.0		0.0
4	END OF BOREHOLE @ 4.0ft BGS	628.4						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: PS-9B
DATE COMPLETED: March 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. CLOSE

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	623.6						
2	CL-CLAY (FILL), soft to firm, low plasticity, brown-dark gray, damp	622.6	BENTONITE SEAL	1	P/S	3.5		0.0
	SP-SAND, loose, fine grained, poorly graded, light brown, wet	620.6						
4	ML-SILT, dense, light brown, moist	620.3						
	SP-SAND, loose, fine grained, poorly graded, light brown, wet	619.6						
6	END OF BOREHOLE @ 4.0ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 215-M1
DATE COMPLETED: June 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	620.3						
2	CL-CLAY, with silt, very soft, low plasticity, light brown, very moist to wet		BENTONITE SEAL	1	P/S	3.2		0.0
4	- brown and black, faint odor at 3.5ft BGS - Refusal at 4.0ft BGS	616.3						
	END OF BOREHOLE @ 4.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 215-M2
DATE COMPLETED: June 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	620.6						
2	CL-CLAY, with silt, very soft, low plasticity, light brown, very moist		BENTONITE SEAL	1	P/S	2.8		0.0
	- brown and black in color at 3.0ft BGS							
4	- Refusal at 3.4ft BGS	617.2						
	END OF BOREHOLE @ 3.4ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: P-1
DATE COMPLETED: June 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	630.2						
0	ML-SILT, with clay, compact, medium brown, moist							
2	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	628.0	BENTONITE SEAL	1	P/S	3.2		0.0
4				2	P/S	1.0		0.0
5	LIMESTONE, weathered	625.3						
6	- Refusal at 5.3ft BGS END OF BOREHOLE @ 5.3ft BGS	624.9						
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: P-2
DATE COMPLETED: June 22, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	630.4						
2	ML-SILT, with clay, compact, medium brown, moist			1	P/S	2.7		0.0
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	628.3	BENTONITE SEAL					
4	- Refusal at 4.3ft BGS	626.1		2	P/S	0.3		0.0
	END OF BOREHOLE @ 4.3ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-1
DATE COMPLETED: July 26, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	678.4						
2	SP-SAND (FILL), with silt, trace 1/4-inch clay lens, trace fine subgrade gravel, compact, fine grained, poorly graded, medium brown, moist - trace green pieces (1/4-inch lens) at 1.9ft BGS - 3-inch sandy clay at 2.0ft BGS - 1/4-inch yellow staining lens at 2.3ft BGS - white sand at 2.4ft BGS - medium brown in color at 2.6ft BGS - black, light brown, white and yellow layers (1/2-inch thick) at 4.3ft BGS			1	P/S	2.2		0.0
4								
6				2	P/S	2.5		0.0
8	- black in color at 7.8ft BGS - moist to very moist at 9.0ft BGS		4" DIA. STEEL CASING					
10	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	668.4		3	P/S	2.8		0.0
12	END OF OVERBURDEN HOLE @ 11.2ft BGS		CEMENT / BENTONITE SEAL					
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-1
DATE COMPLETED: July 26, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	668.4	CEMENT / BENTONITE SEAL			
	LIMESTONE (ST. LOUIS FORMATION), weathered, fine grained, thin bedded, gray	667.2				
12						
14	- set 4" steel casing at 14.0ft BGS - stylolite at 14.5ft BGS					
	- stylolite at 15.3ft BGS	663.3				
16	LIMESTONE (SALEM FORMATION), medium grained, calcite content, gray - stylolite at 15.4ft BGS - stylolite at 15.7ft BGS					
18	- stylolite at 16.3ft BGS - stylolite at 17.2ft BGS - stylolite at 17.4ft BGS			1	100	100
20						
	- horizontal fracture at 21.3ft BGS					
22						
24						
26						
	- stylolite at 26.5ft BGS - open stylolite at 27.2ft BGS					
28	- horizontal fracture at 28.3ft BGS			2	100	100
30			4" DIA. COREHOLE			
32						
	- horizontal fracture at 32.4ft BGS - stylolite at 32.5ft BGS - calcite content at 32.9ft BGS					
34	- open stylolite at 33.2ft BGS - stylolite at 33.3ft BGS					
	- medium grained, gray, calcite content at 35.4ft BGS					
36	- stylolite at 35.8ft BGS - stylolite at 36.1ft BGS - open stylolite at 36.7ft BGS			3	100	100

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-1
DATE COMPLETED: July 26, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
40	- horizontal fracture at 37.4ft BGS - horizontal fracture at 38.1ft BGS					
42	- open stylolite at 41.3ft BGS - stylolite at 41.4ft BGS - stylolite at 41.6ft BGS - stylolite at 41.7ft BGS - stylolite at 41.8ft BGS					
44	- stylolite at 43.2ft BGS					
46	- stylolite at 44.9ft BGS - stylolite at 45.5ft BGS		4" DIA. COREHOLE	4	100	100
48	- stylolite at 46.8ft BGS					
50						
52	END OF BOREHOLE @ 51.8ft BGS	626.6				
54						
56						
58						
60						
62						
64						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-2
DATE COMPLETED: July 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	678.6						
0	TOPSOIL, sandy silt, loose, fine grained, poorly graded, light brown, dry	678.4						
2	CL-CLAY (FILL), trace fine sand, firm, low plasticity, medium brown, moist			1	P/S	2.3		0.0
4	- 1/4-inch foundry sand lens at 3.7ft BGS							
	SP-SAND (FILL), compact, fine grained, poorly graded, black/white and gray, moist	674.1	CEMENT / BENTONITE SEAL					
6				2	P/S	2.5		0.0
8	- increase in moisture content at 8.0ft BGS - black, faint odor at 8.5ft BGS							
10			4" DIA. STEEL CASING	3	P/S	2.0		0.0
	- 2-inch piece of wood at 11.3ft BGS	667.1						
12	CL-CLAY, with silt, stiff, low plasticity, light brown, moist							
14	Weathered Limestone	664.6		4	P/S	3.1		0.0
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	664.2						
16	- light beige with black staining, trace limestone fragments, moist to very moist, faint odor at 15.9ft BGS							
	END OF OVERBURDEN HOLE @ 16.0ft BGS							
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-2
DATE COMPLETED: July 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	RUN NUMBER	CORE RECOVERY %	RQD %
	Weathered Limestone	664.6			
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	664.2			
16	- light beige with black staining, trace limestone fragments, moist to very moist, faint odor at 15.9ft BGS	662.6			
	LIMESTONE (SALEM FORMATION), fine grained, thin bedded, light gray				
18	- Refusal at 16.7ft BGS - set 4" steel casing at 18.0ft BGS - 1/2-inch grayish brown section at 18.8ft BGS				
20	- 1/2-inch vug with trace calcite (2-inch deep) at 20.9ft BGS				
22			1	100	100
24					
26					
28					
30	- horizontal fracture at 30.1ft BGS				
32	- horizontal fracture at 32.3ft BGS		2	100	100
34	- stylolite at 34.1ft BGS - medium grained, gray at 34.9ft BGS - horizontal fracture at 35.3ft BGS				
36					
38	- fine to medium grained, gray at 37.9ft BGS - 4.7-feet slightly porous section at 38.0ft BGS - stylolite at 38.3ft BGS - stylolite at 39.2ft BGS				
40					

COREHOLE: ← 4" DIA. COREHOLE

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-2
DATE COMPLETED: July 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
44	- stylolite at 42.0ft BGS - horizontal fracture at 43.0ft BGS - open stylolite at 43.7ft BGS - stylolite at 44.2ft BGS - 3.5-feet slightly porous section at 44.3ft BGS		4" DIA. COREHOLE	3	100	100
46						
48	- calcite content at 47.9ft BGS - open stylolite at 48.8ft BGS					
50	- vertical fracture at 50.7ft BGS			4	100	100
52	END OF BOREHOLE @ 52.8ft BGS	625.8				
54						
56						
58						
60						
62						
64						
66						
68						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-3
DATE COMPLETED: July 21, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	680.3						
2	SM-SILTY SAND (FILL), with silt, loose, fine grained, poorly graded, light brown, dry			1	P/S	2.0		0.0
	CONCRETE	678.1						
	SM-SILTY SAND (FILL), with silt, loose, fine grained, poorly graded, dark brown, moist	677.8						
4	CONCRETE	676.5						
	CL-CLAY (FILL), with silt, trace sand lens, firm, low plasticity, brown/black, moist	676.1						
	GP-GRAVEL (FILL), loose, fine grained, poorly graded, subround, gray, dry	675.2						
6	SP-SAND (FILL), compact, fine grained, poorly graded, black with light brown/dark brown and gray, moist, faint odor	674.9		2	P/S	2.5		0.0
8			4" DIA. STEEL CASING					
10	- 1/4" to 1/2" yellow staining lens at 9.5ft BGS		CEMENT / BENTONITE SEAL	3	P/S	2.5		0.0
	- 3-inch grayish white lens at 11.3ft BGS							
12	- increase in moisture content at 12.0ft BGS							
14	- 6-feet of metal cuttings at 14.0ft BGS			4	P/S	2.0		0.0
	- trace brown in color at 15.0ft BGS							
16								
18				5	P/S	2.0		0.0
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	661.5						
20	- trace rock fragment, light gray at 19.8ft BGS END OF OVERBURDEN HOLE @ 20.0ft BGS							
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-3
DATE COMPLETED: July 21, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, with silt, stiff, low plasticity, medium brown, moist	661.5				
20	- trace rock fragment, light gray at 19.8ft BGS	660.3				
	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, gray					
22	- set 4" steel casing at 22.2ft BGS					
24	- horizontal fracture at 24.1ft BGS					
	- horizontal fracture at 25.0ft BGS					
26	- horizontal fracture at 26.7ft BGS					
	- horizontal fracture at 27.4ft BGS			1	100	100
28						
30						
32						
	- 1.5-feet of vertical fracture at 33.6ft BGS					
34	- horizontal fracture at 34.1ft BGS					
	- horizontal fracture at 34.4ft BGS					
	- horizontal fracture at 34.6ft BGS					
36	- horizontal fracture at 36.6ft BGS					
	- 2-inch highly fractured section at 37.5ft BGS			2	100	95
38	- medium grained, gray at 37.6ft BGS		4" DIA. COREHOLE			
	- 4-inch open vertical fracture at 37.8ft BGS					
	- stylolite at 38.5ft BGS					
	- open stylolite at 39.3ft BGS					
40	- open stylolite at 40.7ft BGS					
42						
	- stylolite at 43.5ft BGS					
44	- stylolite at 44.5ft BGS					
	- stylolite at 45.7ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-3
DATE COMPLETED: July 21, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
48	- 3-feet slightly porous section at 47.0ft BGS		4" DIA. COREHOLE	3	100	100
50	- stylolite at 50.7ft BGS					
52	END OF BOREHOLE @ 52.3ft BGS	628.0				
54						
56						
58						
60						
62						
64						
66						
68						
70						
72						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-4
DATE COMPLETED: July 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	679.2						
2	ML-SILT (FILL), with fine grained sand, with clay, trace fine round gravel, loose, light brown, dry			1	P/S	2.4		0.0
		676.2						
4	CL-CLAY (FILL), with silt, soft, low plasticity, black, moist - 2-inches of concrete at 4.2ft BGS - trace silty clay sand at 4.4ft BGS							
6		673.0		2	P/S	2.4		0.0
8	SP-SAND (FILL), compact, fine grained, poorly graded, black, moist - 2.5-inches of silty clay at 6.6ft BGS - trace fine round gravel, dark gray at 7.7ft BGS - 1/2-inch light gray lens at 8.6ft BGS - odor present at 8.7ft BGS - 1/2-inch light gray at 9.2ft BGS							
10			4" DIA. STEEL CASING	3	P/S	2.5		0.0
12	- 2.5-inches of wood debris at 11.6ft BGS							
14	- 7.3 feet of metal, plastic and wood debris observed in soil cuttings during drilling at 14.0ft BGS - 1/2-inch yellow staining lens at 15.1ft BGS			4	P/S	1.8		0.0
16	- 1/2-inch yellow staining at 15.3ft BGS							
18	- strong odor at 18.0ft BGS			5	P/S	2.2		0.0
		660.7						
	CL-CLAY (FILL), with silt, trace fine grained sand, soft, low plasticity, black, moist, moderate odor	660.2						
20	CL-CLAY, with silt, stiff, low plasticity, brown, moist			6	P/S	1.3		0.0
	END OF OVERBURDEN HOLE @ 21.3ft BGS		CEMENT / BENTONITE SEAL					
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-4
DATE COMPLETED: July 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
22	LIMESTONE (SALEM FORMATION), weathered and fractured, thin bedded, gray, medium grained	657.9	CEMENT / BENTONITE SEAL			
	- no longer fractured rock at 21.9ft BGS					
24	- set 4" steel casing at 24.0ft BGS					
26	- horizontal fracture at 26.1ft BGS					
28				1	100	100
30						
32	- horizontal fracture at 32.2ft BGS					
34						
	- horizontal fracture at 35.0ft BGS					
	- open stylolite at 35.4ft BGS					
36	- open stylolite at 36.2ft BGS					
	- stylolite at 36.7ft BGS					
	- stylolite at 37.0ft BGS					
38	- medium grained, gray, calcite content at 37.6ft BGS		4" DIA. COREHOLE			
	- open stylolite at 38.2ft BGS					
	- 5-feet of porous section at 39.0ft BGS			2	100	100
40	- stylolite at 39.2ft BGS					
42						
	- stylolite at 42.7ft BGS					
	- stylolite at 43.1ft BGS					
44						
	- stylolite at 44.9ft BGS					
	- stylolite at 45.7ft BGS					
46	- open stylolite at 45.9ft BGS					

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 9-4
DATE COMPLETED: July 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
50	- open stylolite at 49.3ft BGS		4" DIA. COREHOLE	3	100	98
54	END OF BOREHOLE @ 54.1ft BGS	625.1				

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1
DATE COMPLETED: March 29, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	692.2						
0	GM-SILTY GRAVEL (FILL), loose, medium gravel, poorly graded, light brown, moist							
		691.2		1	P/S	2.0		0.0
2	CL-CLAY (FILL) with silt, firm, low plasticity, strong brown with light brown, moist							
				2		1.0		0.0
4	- light yellowish brown in color at 4.0ft BGS							
			BENTONITE SEAL	3		1.5		0.1
6	- trace limestone at 5.9ft BGS							
		685.7						
	LIMESTONE (ST. LOUIS FORMATION), 1.5 feet of highly fractured rock							
8	- competent rock at 8.0ft BGS							
10	- set 4" steel casing at 10.0ft BGS	682.2						
	END OF BOREHOLE @ 10.0ft BGS							
	Hole later abandoned							
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1
DATE COMPLETED: March 29, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	692.2				
0	GM-SILTY GRAVEL (FILL), loose, medium gravel, poorly graded, light brown, moist					
		691.2				
2	CL-CLAY (FILL) with silt, firm, low plasticity, strong brown with light brown, moist					
4	- light yellowish brown in color at 4.0ft BGS		BENTONITE SEAL			
6	- trace limestone at 5.9ft BGS					
		685.7				
8	LIMESTONE (ST. LOUIS FORMATION), 1.5 feet of highly fractured rock - competent rock at 8.0ft BGS					
10	- set 4" steel casing at 10.0ft BGS	682.2				
	END OF BOREHOLE @ 10.0ft BGS Hole later abandoned					
12						
14						
16						
18						
20						
22						
24						
26						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1A
DATE COMPLETED: June 7, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	692.0					
0	Same stratigraphy as CH-1						
6.5	END OF OVERBURDEN HOLE @ 6.5ft BGS						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1A
DATE COMPLETED: June 7, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
6	LIMESTONE (ST. LOUIS FORMATION), thin bedded, fine grained, light gray	685.5	BENTONITE SEAL			
8						
10						
12						
14						
16	- 4" steel casing set at 15.0ft BGS - horizontal fracture at 15.7ft BGS - horizontal fracture, oxidized at 16.2ft BGS - clay infilling in fracture at 16.5ft BGS - gray in color at 16.7ft BGS	675.4		1	72	55
18	CL-CLAY, with silt, firm, orange/brown, moist END OF BOREHOLE @ 18.0ft BGS Hole later abandoned	674.0				
20						
22						
24						
26						
28						
30						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1B
DATE COMPLETED: June 13, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING	693.8					
	GROUND SURFACE	691.7					
	See previous log						
14	LIMESTONE	678.2	CEMENT / BENTONITE SEAL				
16	CL-CLAY, with silt	675.2					
18	LIMESTONE, fractured rock, wet	672.7					
22	LIMESTONE & CLAY MIXTURE	669.2	4" DIA. STEEL CASING				
	LIMESTONE, fractured	668.2					
24	END OF OVERBURDEN HOLE @ 24.0ft BGS						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-1B
DATE COMPLETED: June 13, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	LIMESTONE & CLAY MIXTURE	669.2	4" DIA. STEEL CASING			
	LIMESTONE, fractured	668.2				
24	LIMESTONE (ST. LOUIS FORMATION), thin bedded, gray, fine grained	667.7				
26	- set 4" steel casing at 26.0ft BGS - 2-feet section of interbedded with shale, gray, thin bedded, fine grained at 26.5ft BGS - horizontal fracture at 26.7ft BGS					
28						
30	- 2-feet section of interbedded shale at 29.1ft BGS - horizontal fracture with silt infilling at 29.2ft BGS - shale at 29.7ft BGS - shale at 29.8ft BGS		4" DIA. COREHOLE	1	100	99
32	- 1-inch porous section at 31.7ft BGS - 2-inch porous section at 32.4ft BGS - horizontal fracture with silt infilling at 32.9ft BGS					
34	- horizontal fracture at 33.7ft BGS - stylolite at 34.2ft BGS					
36	- medium grained at 35.6ft BGS - horizontal fracture at shale lens at 35.8ft BGS					
38	- horizontal fracture at shale lens at 37.3ft BGS - horizontal fracture at shale lens at 37.7ft BGS					
40	- 2-inch interbedded section of shale and limestone at 40.0ft BGS - horizontal fracture at shale lens at 40.2ft BGS			2	100	100
42	- horizontal fracture at shale lens at 42.0ft BGS					
44	- horizontal fracture at shale lens at 44.2ft BGS - horizontal fracture at shale lens at 44.9ft BGS					
46	END OF BOREHOLE @ 45.6ft BGS	646.1				
48						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-2A
DATE COMPLETED: August 15, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	TOP OF CASING 690.6 GROUND SURFACE 688.0					
0	CL-CLAY, firm, low plasticity, medium brown, moist					
		686.8				
2	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray					
4	- weathered rock and clay at 3.5ft BGS		4" DIA. STEEL CASING			
6	- 1.5-feet Void at 6.5ft BGS					
8	- 0.5-feet Void at 9.0ft BGS					
		678.5	CEMENT / BENTONITE SEAL			
10	CL-CLAY, firm, low plasticity, brown					
		676.0				
12	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray - 3-inch Void at 12.4ft BGS - weathered rock at 12.7ft BGS					
14						
16	- 3.5-feet of weathered/fractured rock with clay at 15.5ft BGS					
18						
20	- Competent rock at 19.0ft BGS					
22	- set 4-inch steel casing at 22.0ft BGS - horizontal fracture at 22.7ft BGS - horizontal fracture at 22.9ft BGS			1	100	90
24						
26	- shale parting at 25.0ft BGS - horizontal fracture at 25.6ft BGS - horizontal fracture at 25.7ft BGS - horizontal fracture at 25.8ft BGS - horizontal fracture at 25.9ft BGS - horizontal fracture at 26.0ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-2A
DATE COMPLETED: August 15, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
30	- horizontal fracture at 26.2ft BGS - horizontal fracture at 26.3ft BGS - horizontal fracture at 28.3ft BGS					
	- medium to coarse grained, gray at 30.7ft BGS - horizontal fracture at 31.3ft BGS					
32	- horizontal fracture at 32.1ft BGS					
34	- horizontal fracture at 34.3ft BGS		4" DIA. COREHOLE			
36	- fine to medium grained, horizontal fracture at 36.0ft BGS - medium to coarse grained at 36.9ft BGS - horizontal fracture at 37.6ft BGS					
38	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, grayish/brown, slightly porous	650.0		2	100	100
40	- open stylolite at 38.7ft BGS - stylolite at 39.1ft BGS - stylolite at 39.2ft BGS - open stylolite at 41.0ft BGS					
42	- stylolite at 41.1ft BGS - open stylolite at 42.6ft BGS					
	END OF BOREHOLE @ 42.9ft BGS	645.1				
44						
46						
48						
50						
52						
54						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-2A
DATE COMPLETED: August 15, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING	690.6					
	GROUND SURFACE	688.0					
0	CL-CLAY, firm, low plasticity, medium brown, moist						
1.2	END OF OVERBURDEN HOLE @ 1.2ft BGS						

2 4 6 8 10 12 14 16 18 20 22 24 26

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-2A
DATE COMPLETED: August 15, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	TOP OF CASING 690.6 GROUND SURFACE 688.0					
	CL-CLAY, firm, low plasticity, medium brown, moist					
		686.8				
	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray					
	- weathered rock and clay at 3.5ft BGS		4" DIA. STEEL CASING			
	- 1.5-feet Void at 6.5ft BGS					
	- 0.5-feet Void at 9.0ft BGS					
		678.5	CEMENT / BENTONITE SEAL			
	CL-CLAY, firm, low plasticity, brown					
		676.0				
	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray - 3-inch Void at 12.4ft BGS - weathered rock at 12.7ft BGS					
	- 3.5-feet of weathered/fractured rock with clay at 15.5ft BGS					
	- Competent rock at 19.0ft BGS					
	- set 4-inch steel casing at 22.0ft BGS - horizontal fracture at 22.7ft BGS - horizontal fracture at 22.9ft BGS			1	100	90
	- shale parting at 25.0ft BGS - horizontal fracture at 25.6ft BGS - horizontal fracture at 25.7ft BGS - horizontal fracture at 25.8ft BGS - horizontal fracture at 25.9ft BGS - horizontal fracture at 26.0ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-2A
DATE COMPLETED: August 15, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
30	- horizontal fracture at 26.2ft BGS - horizontal fracture at 26.3ft BGS - horizontal fracture at 28.3ft BGS					
	- medium to coarse grained, gray at 30.7ft BGS - horizontal fracture at 31.3ft BGS					
32	- horizontal fracture at 32.1ft BGS					
34	- horizontal fracture at 34.3ft BGS		4" DIA. COREHOLE			
36	- fine to medium grained, horizontal fracture at 36.0ft BGS - medium to coarse grained at 36.9ft BGS					
	- horizontal fracture at 37.6ft BGS			2	100	100
38	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, grayish/brown, slightly porous	650.0				
40	- open stylolite at 38.7ft BGS - stylolite at 39.1ft BGS - stylolite at 39.2ft BGS - open stylolite at 41.0ft BGS					
42	- stylolite at 41.1ft BGS - open stylolite at 42.6ft BGS					
	END OF BOREHOLE @ 42.9ft BGS	645.1				
44						
46						
48						
50						
52						
54						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-3
DATE COMPLETED: June 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	673.3						
0	TOPSOIL	672.9						
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist			1		1.7	4	0.0
2			CEMENT / BENTONITE SEAL	2		1.0	>25	0.0
4	LIMESTONE	669.8						
			4" DIA. STEEL CASING					
6	CL-CLAY	667.3						
	END OF OVERBURDEN HOLE @ 7.0ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-3
DATE COMPLETED: June 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY	667.3				
	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, light gray	666.3				
8	- set 4-inch steel casing at 9.0ft BGS					
10	- 3.1-feet vertical fracture also a horizontal fracture with silt infilling at 10.8ft BGS - 2.8 feet of highly weathered and calcite build up as well as oxidized staining within the vertical fracture at 11.1ft BGS			1	90	88
12	- horizontal fracture at 11.4ft BGS					
14	- horizontal fracture with silt infilling at 11.5ft BGS - horizontal fracture with trace silt infilling, 1.25-inch limestone/shale lens at 13.9ft BGS		4" DIA. COREHOLE			
16	- granular, medium to coarse grain size, occasional fossil present at 14.1ft BGS - 4-feet section of rock with trace calcite present at 16.0ft BGS			2	85	85
18	- horizontal fracture with silt infilling at 16.5ft BGS - horizontal fracture with silt infilling at 18.1ft BGS		CEMENT / BENTONITE SEAL			
20	- horizontal fracture at 18.4ft BGS Void, water lost	653.5				
	LIMESTONE	653.1				
	END OF BOREHOLE @ 20.2ft BGS					
22	Hole later abandoned					
24						
26						
28						
30						
32						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-3A
DATE COMPLETED: August 17, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING GROUND SURFACE	675.4 673.1					
0	CL-CLAY, firm, low plasticity, medium brown, moist						
2							
3.5	END OF OVERBURDEN HOLE @ 3.5ft BGS						
4							
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-3A
DATE COMPLETED: August 17, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (ST. LOUIS FORMATION), thin bedded, fine grained, light gray	669.6	4" DIA. STEEL CASING			
6						
8						
10						
12						
14			CEMENT / BENTONITE SEAL			
16						
18						
20						
22	- Set 4-inch steel casing at 23.0ft BGS					
24	- open stylolite at 24.5ft BGS - gray in color at 24.6ft BGS					
26	- open stylolite at 25.6ft BGS - stylolite at 25.9ft BGS - stylolite at 26.5ft BGS					
28	- horizontal fracture at 29.1ft BGS - stylolite at 29.2ft BGS	644.1		1	100	100

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-3A
DATE COMPLETED: August 17, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
32	LIMESTONE (SALEM FORMATION), thin bedded, medium grained, light gray - stylolite at 29.3ft BGS - stylolite at 29.4ft BGS - stylolite at 29.5ft BGS - stylolite at 29.9ft BGS - stylolite at 30.0ft BGS - stylolite at 30.1ft BGS					
34	- open stylolite at 30.3ft BGS - open stylolite at 31.9ft BGS - stylolite at 32.0ft BGS		4" DIA. COREHOLE	2	100	100
36	- stylolite at 32.1ft BGS - stylolite at 32.3ft BGS - open stylolite at 33.1ft BGS - trace calcite, gray at 33.7ft BGS					
38	- stylolite at 34.7ft BGS - stylolite at 35.8ft BGS - horizontal fracture at 37.5ft BGS - horizontal fracture at 38.7ft BGS					
40	- stylolite at 39.5ft BGS					
42	- horizontal fracture at 41.6ft BGS					
44	- stylolite at 43.0ft BGS					
	END OF BOREHOLE @ 43.8ft BGS	629.3				
46						
48						
50						
52						
54						
56						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-4
DATE COMPLETED: August 5, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	677.2						
0	TOPSOIL, trace roots, dark brown, moist	676.9						
	CL-CLAY, with silt, firm, low plasticity, medium brown, moist			1	P/S	3.2		0.0
4	MIXTURE OF LIMESTONE AND SILT	673.4	4" DIA. STEEL CASING					
6				2	P/S	3.5		0.0
8			CEMENT / BENTONITE SEAL	3	P/S	1.3		0.0
9.3	END OF OVERBURDEN HOLE @ 9.3ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-4
DATE COMPLETED: August 5, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
10	LIMESTONE (ST. LOUIS FORMATION), thin bedded, fine grained, gray - set 4" steel casing at 10.5ft BGS - horizontal fracture at 11.3ft BGS - horizontal fracture at 12.2ft BGS - 6-inch void, approximately 350 gallons of water lost at 12.5ft BGS - horizontal fracture at 14.0ft BGS	667.9	CEMENT / BENTONITE SEAL	1	85	85
16	END OF BOREHOLE @ 15.7ft BGS	661.5				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-4A
DATE COMPLETED: August 22, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: JULIE LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING GROUND SURFACE	679.6 676.8					
	Same stratigraphy as CH-4		4" DIA. STEEL CASING CEMENT / BENTONITE SEAL				
14	- set 4-inch steel casing at 14.5ft BGS END OF OVERBURDEN HOLE @ 14.5ft BGS						

2 4 6 8 10 12 14 16 18 20 22 24 26

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-4A
DATE COMPLETED: August 22, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: JULIE LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
14	- set 4-inch steel casing at 14.5ft BGS	662.3				
16	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray - open stylolite at 16.2ft BGS - stylolite at 17.2ft BGS - open stylolite at 17.6ft BGS					
18	- stylolite at 17.7ft BGS - stylolite at 17.8ft BGS - stylolite at 18.4ft BGS					
20	- stylolite at 18.6ft BGS	656.8		1	100	100
22	LIMESTONE (SALEM FORMATION), fine grained, thin bedded, gray - stylolite at 21.1ft BGS - open stylolite at 21.2ft BGS - stylolite at 22.7ft BGS					
24	- open stylolite at 23.9ft BGS					
26	- stylolite at 26.0ft BGS - stylolite at 26.1ft BGS					
28	- open stylolite at 27.3ft BGS - medium grained at 28.6ft BGS					
30			4" DIA. COREHOLE	2	100	100
32						
34	- stylolite at 33.5ft BGS - open stylolite at 33.6ft BGS - stylolite at 33.7ft BGS					
36	- open stylolite at 33.9ft BGS - stylolite at 34.7ft BGS END OF BOREHOLE @ 34.8ft BGS	642.0				
38						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-5
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	685.7 683.5						
0	GP-GRAVEL (FILL)							
	CL-CLAY (FILL), trace gravel, soft, medium plasticity, strong brown, moist	682.5						
2				1	P/S	4.0		0.0
4								
6	- Wet at 7.0ft BGS							
8				2	P/S	5.0		0.3
10			4" DIA. STEEL CASING					
12				3	P/S	5.0		0.2
14	- brown/black in color at 15.0ft BGS							
16				4	P/S	3.5		0.0
18	END OF OVERBURDEN HOLE @ 18.5ft BGS		CEMENT / BENTONITE SEAL					
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-5
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
18			CEMENT / BENTONITE SEAL			
	LIMESTONE (ST. LOUIS FORMATION), medium grained, granular, light gray	665.0				
20						
	- set 4" steel casing at 21.0ft BGS - 1.3 feet of moderately porous section "honeycomb" with occasional fossils present at 21.4ft BGS					
22				1	100	90
	- stylolite at 23.8ft BGS - open stylolite at 24.0ft BGS					
24						
	- horizontal fracture at 26.2ft BGS - horizontal fracture at 26.7ft BGS					
26						
	- thin beds of shale at 28.4ft BGS - thin beds of shale at 28.8ft BGS - horizontal fracture at 28.9ft BGS - horizontal fracture at 29.2ft BGS - horizontal fracture at 29.4ft BGS - 6-feet of interbedded shale throughout at 30.9ft BGS		4" DIA. COREHOLE			
28						
30						
32						
	- stylolite at 33.4ft BGS - stylolite at 34.0ft BGS - fracture at shale lens at 34.6ft BGS					
34						
	- stylolite at 35.6ft BGS - stylolite at 35.8ft BGS - stylolite at 36.7ft BGS - open stylolite at 37.0ft BGS			2	100	100
36						
	LIMESTONE (SALEM FORMATION), 3 feet vertical fracture, medium grained, gray/brown	645.8				
38						
40						
	- 2 feet open vertical fracture, water lost, noticed sheen at 40.9ft BGS					
42				3	100	100

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-5
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
46	- stylolite at 44.7ft BGS - 3-inch vertical fracture at 45.6ft BGS END OF BOREHOLE @ 46.1ft BGS	637.4	SUMP			
48						
50						
52						
54						
56						
58						
60						
62						
64						
66						
68						
70						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-6
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	692.1						
	GROUND SURFACE	690.5						
0	TOPSOIL	690.3						
	CL-CLAY (FILL), trace fine gravel, firm, low plasticity, grayish brown, moist			1		1.0		0.0
2	- 2-inch silty sand lens at 1.8ft BGS							
	- trace sand and gravel at 2.3ft BGS			2		1.3		0.0
	- sandy clay, trace silt, trace gravel at 3.0ft BGS							
4	- trace gravel at 4.3ft BGS		4" DIA. STEEL CASING	3		1.5		0.0
6	ML-SILT (FILL), with clay, trace sand, loose, gray, very moist, faint odors, trace peat fibers	684.2		4		1.3		0.0
8	CL-CLAY (FILL), trace sand, soft, low plasticity, gray and white, moist	682.5		5		2.0		0.0
	- trace rootlet at 9.0ft BGS							
10	- 1-inch wet sandy clay at 9.8ft BGS			6		1.0		0.0
	CL-CLAY, trace fine sand, soft, low plasticity, gray, moist	680.0						
12	- firm, brownish gray at 11.0ft BGS			7		1.0		0.0
	- stiff, grayish brown at 12.5ft BGS							
	- trace limestone fragments at 13.5ft BGS							
14	- light brown/olive and dark brown in color at 14.0ft BGS		CEMENT / BENTONITE SEAL	8		2.0		0.0
16	END OF OVERBURDEN HOLE @ 16.3ft BGS							
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-6
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
16			CEMENT / BENTONITE SEAL			
	LIMESTONE (ST. LOUIS FORMATION), trace shale, fine to medium grained, dark gray	674.2				
18	- set 4" steel casing at 19.0ft BGS					
20						
22	- horizontal shale parting at 21.6ft BGS - light gray in color at 21.8ft BGS - 1/2-inch of slightly porous section at 22.4ft BGS					
24	- 1/2-inch "honeycomb" section at 22.5ft BGS - dark gray in color at 24.2ft BGS					
26	- light gray in color at 25.8ft BGS			1	100	99
28	- horizontal shale parting at 27.0ft BGS - dark gray in color at 27.3ft BGS - horizontal shale parting at 27.4ft BGS - horizontal shale parting at 27.5ft BGS - light gray in color at 29.0ft BGS					
30	- vuggy porous section with mineral (calcite) deposits at 29.4ft BGS		4" DIA. COREHOLE			
32	- stylolite at 31.1ft BGS - stylolite at 31.7ft BGS					
34	- horizontal fracture at 33.6ft BGS					
36	- horizontal fracture at 35.2ft BGS			2	100	100
38	- horizontal fracture at 37.2ft BGS					
40	- horizontal shale parting at 39.6ft BGS					
	END OF BOREHOLE @ 40.3ft BGS	650.2				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-7
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	690.3						
	GROUND SURFACE	688.7						
0	TOPSOIL	688.4						
	CL-CLAY (FILL), firm, low plasticity, medium brown, moist			1		1.0		0.0
2	- trace wet sand lens at 2.5ft BGS			2		1.0		0.0
4			4" DIA. STEEL CASING	3		1.0		0.0
6	- 2-inch wet limestone/gravel, lens at 6.3ft BGS			4		0.5		0.0
8	- soft at 8.0ft BGS			5		1.0		0.0
10				6		1.0		0.0
12				7		1.0		0.0
14	CL-CLAY, firm, low plasticity, medium brown, moist	674.7	CEMENT / BENTONITE SEAL	8		1.5		0.0
16	- trace limestone fragments, very moist at 15.5ft BGS - gray and brown in color, moist at 16.2ft BGS			9		0.9		0.0
	END OF OVERBURDEN HOLE @ 16.9ft BGS							
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-7
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, firm, low plasticity, medium brown, moist	674.7			
16	- trace limestone fragments, very moist at 15.5ft BGS - gray and brown in color, moist at 16.2ft BGS				
	LIMESTONE (ST. LOUIS FORMATION), light gray, thin bedded	671.8			
18					
	- set 4-inch steel casing at 19.2ft BGS				
20	- oxidized horizontal fracture at 20.0ft BGS - 2-feet of dark gray section at 20.9ft BGS				
22			1	100	100
24	- 2-inch highly fractured shale partings at 23.6ft BGS - shale lens at 23.8ft BGS - horizontal shale fracture at 24.1ft BGS - horizontal shale fracture at 24.2ft BGS				
26	- 5-inch dark gray section at 25.4ft BGS - 10 feet of light gray section, slightly open shale parting at 25.9ft BGS - 1/2-inch slightly porous section at 27.0ft BGS				
28	- horizontal shale fracture at 27.3ft BGS - slightly porous section at 28.1ft BGS				
30	- horizontal shale fracture at 30.0ft BGS - slightly porous section at 30.3ft BGS		2	100	100
32	- horizontal shale fracture at 31.6ft BGS				
34	- horizontal shale fracture at 34.5ft BGS				
36	- 1-inch shale seam at 35.5ft BGS				
	- horizontal shale parting at 37.0ft BGS		3	100	100
38					
	END OF BOREHOLE @ 39.3ft BGS	649.4			
40					

COREHOLE: CEMENT / BENTONITE SEAL; 4" DIA. COREHOLE

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-8
DATE COMPLETED: June 2, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	688.1 684.7						
0	GRAVEL (FILL)							
	CL-CLAY (FILL), soft, medium plasticity, black, moist	683.7						
2				1	P/S	4.5		0.3
4								
	- gray, wet at 5.0ft BGS		4" DIA. STEEL CASING					
6	- brown, moist at 6.0ft BGS			2	P/S	2.0		0.6
8		676.7						
	CL-CLAY, firm, medium plasticity, brown - 1/4-inch limestone lens at 8.3ft BGS - 1/4-inch limestone lens at 8.8ft BGS		4" DIA. STEEL CASING					
10	END OF OVERBURDEN HOLE @ 9.5ft BGS							
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-8
DATE COMPLETED: June 2, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, firm, medium plasticity, brown	676.7	4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL			
	- 1/4-inch limestone lens at 8.3ft BGS					
	- 1/4-inch limestone lens at 8.8ft BGS	675.2				
10	LIMESTONE (ST. LOUIS FORMATION), trace shale, light gray, thin bedded, fine grained					
	- set 4" steel casing at 11.5ft BGS					
12						
14	- shale parting at 14.2ft BGS					
	- dark gray in color at 14.9ft BGS					
16				1	100	92
	- light gray in color at 17.2ft BGS					
18	- brown and dark gray in color, shale parting at 17.9ft BGS					
	- shale parting at 18.0ft BGS					
	- shale parting at 18.1ft BGS					
20	- shale parting with clay infilling, trace sheen and faint odor at 18.4ft BGS					
	- shale parting at 18.7ft BGS					
	- dark gray in color at 18.9ft BGS					
22	- light gray in color at 20.0ft BGS					
	- slightly porous at 20.2ft BGS					
	- stylolite at 20.5ft BGS					
	- 2-inch porous section at 21.2ft BGS					
24	- stylolite at 21.5ft BGS					
	- stylolite at 21.6ft BGS					
	- stylolite at 21.7ft BGS					
	- 4-inch porous section at 22.2ft BGS			2	100	99
26	- 6 feet of medium grain size section at 23.2ft BGS					
	- shale parting at 24.8ft BGS					
28						
	- shale parting at 29.0ft BGS					
30	- shale parting at 30.2ft BGS		4" DIA. COREHOLE			
32	- horizontal shale parting at 31.9ft BGS			3	100	100
34	- dark brownish gray in color at 34.2ft BGS					
	END OF BOREHOLE @ 35.2ft BGS	649.5				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-9
DATE COMPLETED: August 18, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	710.2						
0	TOPSOIL	709.6						
	CL-CLAY, trace gravel, soft, medium plasticity, dark brown, moist							
2	- stiff, low plasticity, orange in color at 2.0ft BGS			1	P/S	5.0		0.0
4			4" DIA. STEEL CASING					
	- soft, light brown at 5.0ft BGS							
6								
8			CEMENT / BENTONITE SEAL	2	P/S	5.0		0.0
10	END OF OVERBURDEN HOLE @ 10.0ft BGS							
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-9
DATE COMPLETED: August 18, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
10	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray	700.2				
12						
14	- set 4-inch steel casing at 15.0ft BGS					
16						
18	- brown and gray in color at 18.1ft BGS - horizontal fracture at 18.2ft BGS - 4-inch void at 18.3ft BGS					
20	- highly fractured with clay infilling at 18.7ft BGS - 1-inch very porous section ("honeycomb" like) at 19.2ft BGS - 1-inch slightly oxidized section, gray at 20.0ft BGS		4" DIA. COREHOLE	1	90	78
22	- horizontal fracture at 22.5ft BGS - 1-feet of highly porous ("honeycomb") and weathered at 22.7ft BGS					
24	- horizontal fracture at 23.2ft BGS - horizontal fracture at 23.4ft BGS - horizontal fracture at 23.5ft BGS		CEMENT / BENTONITE SEAL			
26	- horizontal fracture at 23.6ft BGS - horizontal fracture at 24.0ft BGS - 1-feet of slightly weathered, trace oxidized and brown at 24.8ft BGS					
28	- horizontal fracture at 25.1ft BGS - 1-inch of shale at 25.4ft BGS - 3-inch highly fractured rock with silty clay infilling at 25.5ft BGS			2	77	30
30	- 3-inch of silty clay at 25.8ft BGS - 8-inch highly horizontal fractured section at 26.1ft BGS	679.7				
32	- horizontal fracture at 27.1ft BGS - horizontal fracture at 27.3ft BGS - horizontal fracture at 28.1ft BGS - horizontal fracture at 28.2ft BGS					
34	- horizontal fracture at 28.5ft BGS - horizontal fracture at 28.7ft BGS - horizontal fracture at 28.9ft BGS - 1.5-feet of silty clay, lost approximately 250 gallons of water during coring at 29.0ft BGS					
	END OF BOREHOLE @ 30.5ft BGS					

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-9A
DATE COMPLETED: August 29, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING	712.1					
	GROUND SURFACE	709.9					
0	CL-SILTY CLAY, firm, low plasticity, strong brown, moist						
6	LIMESTONE	703.9					
	CLAY AND LIMESTONE	702.9					
8	LIMESTONE	701.4					
	CLAY AND LIMESTONE	700.4					
12	LIMESTONE, fractured	697.9					
			4" DIA. STEEL CASING				
22	CL-SILTY CLAY, firm, low plasticity, strong brown, moist	687.9	CEMENT / BENTONITE SEAL				
	CLAY AND LIMESTONE, fractured	687.4					
24	CL-SILTY CLAY, firm, low plasticity, strong brown, moist	684.9					
26	LIMESTONE, fractured	684.4					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-9A
DATE COMPLETED: August 29, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
30	CLAY AND LIMESTONE	680.4					
32	END OF OVERBURDEN HOLE @ 32.2ft BGS						
34							
36							
38							
40							
42							
44							
46							
48							
50							
52							
54							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-9A
DATE COMPLETED: August 29, 2005
DRILLING METHOD: TRI-CONE ROLLER BIT & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
32	LIMESTONE (SALEM FORMATION), fine grained, thin bedded, light gray,	677.7				
34						
36						
38	- set 4-inch steel casing, lost approximately 600 gallons of water from 28 to 38 feet below ground at 38.0ft BGS					
40	- slight sheen on exterior of rock at 38.9ft BGS - medium brown and light gray in color at 39.1ft BGS - sheen noticed on water return at 40.5ft BGS					
42	- horizontal fracture at 42.5ft BGS - horizontal fracture at 42.6ft BGS - at 42.7ft BGS			1	100	95
44	- horizontal fracture at 43.0ft BGS - horizontal fracture at 43.1ft BGS - horizontal fracture at 43.4ft BGS					
46	- light gray in color at 44.9ft BGS - slight sheen within horizontal fracture at 45.1ft BGS		4" DIA. COREHOLE			
48	- slightly porous for 1 feet at 46.1ft BGS - horizontal fracture at 46.2ft BGS - horizontal fracture at 46.9ft BGS - horizontal fracture at 47.8ft BGS END OF BOREHOLE @ 48.4ft BGS	661.5				
50						
52						
54						
56						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-10
DATE COMPLETED:
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	693.9						
	Same stratigraphy as PS-5B		CEMENT / BENTONITE SEAL					
4	CL-CLAY, some silt, trace rock fragments, firm, low plasticity, strong brown, moist - little silt, medium plasticity at 5.0ft BGS	689.9		1		1.2	6	0.0
			4" DIA. STEEL CASING	2		1.5	4	0.0
8	ML-SILT, rock fragments, extremely dense, beige, moist	684.9		3		1.5	>50	0.0
10	LIMESTONE	683.9						
12	Mixture of rock and clay	681.9						
14	- LIMESTONE at 14.0ft BGS END OF BOREHOLE @ 14.0ft BGS	679.9						
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-10A
DATE COMPLETED: August 29, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING GROUND SURFACE	696.5 693.3					
0	Same stratigraphy as CH-10		CEMENT / BENTONITE SEAL 4" DIA. STEEL CASING				
14	END OF OVERBURDEN HOLE @ 14.0ft BGS						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-10A
DATE COMPLETED: August 29, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
14	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray	679.3				
16	- Set 4" steel casing at 16.0ft BGS					
18						
20	- 4-inch slightly porous section at 19.0ft BGS		4" DIA. COREHOLE			
22				1	100	100
24	- horizontal fracture at 23.9ft BGS - horizontal fracture at 24.2ft BGS - horizontal fracture at 24.3ft BGS - horizontal fracture at 24.4ft BGS					
26	- calcite crystals present at 25.9ft BGS - calcite crystals present at 26.0ft BGS - calcite crystals present at 26.4ft BGS	666.8				
28	END OF BOREHOLE @ 26.5ft BGS					
30						
32						
34						
36						
38						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-11
DATE COMPLETED: June 17, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	661.5 659.0						
0	TOPSOIL	658.4						
	CL-CLAY, trace gravel, soft, medium plasticity, strong brown, moist			1	P/S	2.0		0.0
2								
4	END OF OVERBURDEN HOLE @ 3.4ft BGS		4" DIA. STEEL CASING					
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-11
DATE COMPLETED: June 17, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
		655.6	4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL			
4	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, gray					
6	- set 4" steel casing at 6.0ft BGS - stylolite at 6.6ft BGS - 5-inches of fractured rock at 6.7ft BGS					
8						
10	- horizontal fracture at 9.3ft BGS - horizontal fracture at 10.3ft BGS - horizontal fracture at 11.0ft BGS			1	100	90
12	- 1.2-feet of closed vertical fracture, tan in color at 11.9ft BGS - 3-inch vertical fracture, slightly oxidized, gray in color at 12.4ft BGS					
14	- horizontal fracture at 12.7ft BGS - stylolite at 14.3ft BGS - stylolite at 14.7ft BGS - stylolite at 14.9ft BGS					
16	- open stylolite at 15.7ft BGS - 1-feet of medium to coarse grained with fossils at 15.9ft BGS					
18	- trace fossils, trace calcite, medium grained, gray at 16.8ft BGS - stylolite at 18.9ft BGS					
20			4" DIA. COREHOLE			
22	- stylolite at 20.6ft BGS - stylolite at 20.9ft BGS - stylolite at 22.4ft BGS			2	100	100
24						
26	- stylolite at 24.4ft BGS - tan in color at 24.5ft BGS - gray in color at 25.9ft BGS - stylolite at 26.5ft BGS - tan in color at 26.6ft BGS	631.9				
28	END OF BOREHOLE @ 27.1ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-12
DATE COMPLETED: April 8, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	660.4						
0	TOPSOIL	660.0						
	CL-CLAY, some silt, firm, low plasticity, strong brown, moist			1	P/S	2.5		0.0
2								
	LIMESTONE	657.4	4" DIA. STEEL CASING					
4								
			CEMENT / BENTONITE SEAL					
6	- set 4" steel casing at 6.0ft BGS	654.4						
	END OF BOREHOLE @ 6.0ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-12A
DATE COMPLETED: June 20, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	650.4					
0	TOPSOIL, silt with clay	649.9					
	ML-SILT, with clay, compact, dark brown, moist						
2	CL-CLAY, with silt, stiff, low plasticity, dark brown, moist	647.9	4" DIA. STEEL CASING				
4	END OF OVERBURDEN HOLE @ 4.0ft BGS						
6							
8							
10							
12							
14							
16							
18							
20							
22							
24							
26							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-12A
DATE COMPLETED: June 20, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, with silt, stiff, low plasticity, dark brown, moist	647.9	4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL			
4	LIMESTONE (SALEM FORMATION), thin bedded, shale lens, gray	646.4				
6						
	- weathered, shale parting at 7.3ft BGS					
8						
	- stylolite at 8.8ft BGS - open stylolite at 8.9ft BGS					
10	- stylolite at 9.0ft BGS - stylolite at 9.1ft BGS					
	- open stylolite at 11.1ft BGS - stylolite at 11.3ft BGS			1	100	100
12	- horizontal fracture, medium grained at 11.9ft BGS					
14	- stylolite at 14.3ft BGS					
	- stylolite at 15.6ft BGS					
16						
	- trace calcite, gray at 16.9ft BGS - stylolite at 17.3ft BGS					
18	- stylolite at 18.3ft BGS					
20			4" DIA. COREHOLE			
	- stylolite at 20.5ft BGS					
	- stylolite at 21.5ft BGS - stylolite at 21.9ft BGS			2	100	100
22						
24	- stylolite at 23.7ft BGS					
26	- stylolite at 26.0ft BGS					
	END OF BOREHOLE @ 27.1ft BGS	623.3				
28						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-13
DATE COMPLETED: March 29, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	653.6						
0	TOPSOIL	653.2						
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist			1	P/S	3.0		0.0
2								
	- rock fragments at 3.2ft BGS							
	LIMESTONE	650.1	4" DIA. STEEL CASING					
4								
			CEMENT / BENTONITE SEAL					
6	- set 4" steel casing at 6.5ft BGS	647.1						
	END OF BOREHOLE @ 6.5ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-13A
DATE COMPLETED: August 3, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	645.1						
0	TOPSOIL, silt and clay	644.9						
	CL-CLAY, with silt, soft, low plasticity, light brown, very moist							
2				1	P/S	3.0		0.0
	- stiff, medium plasticity, moist at 3.0ft BGS		CEMENT / BENTONITE SEAL					
4	END OF OVERBURDEN HOLE @ 4.1ft BGS			2		0.1		0.0
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-13A
DATE COMPLETED: August 3, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	- stiff, medium plasticity, moist at 3.0ft BGS		CEMENT / BENTONITE SEAL			
	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, gray, trace calcite content, trace fossils	641.0				
6			4" DIA. STEEL CASING			
8	- set 4-inch steel casing at 8.0ft BGS					
10	- horizontal fracture at 10.1ft BGS					
12						
14	- stylolite at 13.5ft BGS - stylolite at 14.6ft BGS			1	100	100
16						
18	- stylolite at 17.1ft BGS		4" DIA. COREHOLE			
20	- open stylolite at 20.6ft BGS					
22	- stylolite at 21.5ft BGS					
24	- brownish gray in color at 23.8ft BGS - stylolite at 23.9ft BGS - gray in color at 24.1ft BGS - open stylolite at 24.2ft BGS			2	100	100
26	- open stylolite at 24.9ft BGS - medium to coarse grained at 25.6ft BGS - stylolite at 25.8ft BGS - stylolite at 25.9ft BGS					
28	- open stylolite at 26.9ft BGS					
	- stylolite at 29.6ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-13A
DATE COMPLETED: August 3, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
32	- stylolite at 30.0ft BGS - stylolite at 31.2ft BGS			3	100	100
34						
36						
38	- open stylolite at 38.3ft BGS - stylolite at 38.4ft BGS					
40	- stylolite at 40.5ft BGS - horizontal fracture at 41.0ft BGS		4" DIA. COREHOLE	4	100	100
42	- stylolite at 41.7ft BGS - stylolite at 42.2ft BGS					
44						
46	- grayish brown, fine to medium grained at 45.2ft BGS - gray in color at 46.3ft BGS - horizontal fracture at 46.4ft BGS					
48	- horizontal fracture at 47.5ft BGS					
50	- 3-inch dark gray fossilized section at 49.7ft BGS					
52	- light gray in color at 51.1ft BGS - horizontal fracture at 51.3ft BGS - stylolite at 51.4ft BGS - stylolite at 51.5ft BGS - stylolite at 52.6ft BGS	592.1		5	100	100
54	LIMESTONE (UPPER HARRODSBURG FORMATION), medium to coarse grained, fossilized, slightly porous, calcite content, gray - horizontal fracture at 53.6ft BGS					
56	- two 1/4-inch vugs with calcite infilling at 53.9ft BGS - stylolite at 54.6ft BGS - horizontal fracture at 55.8ft BGS - 2.4 feet section of increase porosity at 55.9ft					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-13A
DATE COMPLETED: August 3, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	BGS - stylolite at 57.2ft BGS - stylolite at 57.3ft BGS END OF BOREHOLE @ 58.7ft BGS	586.4				

60
62
64
66
68
70
72
74
76
78
80
82
84

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-14
DATE COMPLETED: June 16, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	641.5						
0	TOPSOIL	641.1						
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist		4" DIA. STEEL CASING	1	P/S	3.5		0.0
4	END OF OVERBURDEN HOLE @ 4.0ft BGS							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-14
DATE COMPLETED: June 16, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (SALEM FORMATION), thin bedded, medium to coarse grained, light gray, trace calcite	637.5	CEMENT / BENTONITE SEAL			
6	- set 4" steel casing at 6.0ft BGS					
	- stylolite at 6.9ft BGS					
8				1	100	100
10	- stylolite at 9.7ft BGS		4" DIA. COREHOLE			
	- stylolite at 10.8ft BGS					
	- stylolite at 11.3ft BGS		CEMENT / BENTONITE SEAL			
12	- stylolite at 11.4ft BGS	629.4				
	- Abandoned corehole due to construction damage (casing hit and seal broken) at 12.1ft BGS					
14	END OF BOREHOLE @ 12.1ft BGS					
16						
18						
20						
22						
24						
26						
28						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-14A
DATE COMPLETED: August 4, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN / D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	642.0					
0	Same stratigraphy as CH-14		4" DIA. STEEL CASING				
5.5	CL-CLAY, firm, low plasticity, brown, moist END OF OVERBURDEN HOLE @ 5.5ft BGS	637.0	CEMENT / BENTONITE SEAL				

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-14A
DATE COMPLETED: August 4, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN / D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, firm, low plasticity, brown, moist	637.0	CEMENT / BENTONITE SEAL			
6	LIMESTONE (SALEM FORMATION), medium to coarse grained, thin bedded, trace calcite, gray	636.5				
	- set 4" steel casing at 7.4ft BGS					
8						
	- stylolite at 9.6ft BGS					
10						
	- stylolite at 10.9ft BGS					
	- stylolite at 11.9ft BGS					
12				1	100	100
	- stylolite at 13.9ft BGS					
14	- medium grained at 14.0ft BGS					
16						
	- stylolite at 16.8ft BGS					
	- open stylolite at 17.1ft BGS					
18	- stylolite at 17.9ft BGS					
	- open stylolite at 18.7ft BGS					
20			4" DIA. COREHOLE			
	- stylolite at 20.5ft BGS					
	- medium to coarse grained at 20.6ft BGS					
22						
				2	100	100
24						
	- stylolite at 24.6ft BGS					
	- stylolite at 25.1ft BGS					
26						
	- stylolite at 26.9ft BGS					
28						
	END OF BOREHOLE @ 28.1ft BGS	613.9				
30						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-15
DATE COMPLETED: June 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	636.2 633.6						
2	CL-CLAY (FILL), firm, low plasticity, strong brown, moist		4" DIA. STEEL CASING	1	P/S	2.5		0.0
4	629.9 CL-CLAY, firm, low plasticity, strong brown, moist			2	P/S	0.5		0.0
6	END OF OVERBURDEN HOLE @ 4.5ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-15
DATE COMPLETED: June 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	RUN NUMBER	CORE RECOVERY %	RQD %
4	CL-CLAY, firm, low plasticity, strong brown, moist	629.9			
	LIMESTONE (SALEM FORMATION), fractured, medium grained, thin bedded, light gray	629.1			
6	- competent rock at 5.5ft BGS				
8	- set 4" steel casing at 8.0ft BGS				
	- open stylolite at 9.1ft BGS				
10					
12					
	- stylolite at 12.9ft BGS		1	100	100
14					
	- stylolite at 15.1ft BGS				
16					
	- stylolite at 16.5ft BGS				
	- light brown in color at 17.2ft BGS				
18					
	- stylolite at 18.4ft BGS				
	- gray with brown in color at 18.5ft BGS				
	- horizontal fracture at 19.2ft BGS				
20					
	- stylolite at 20.6ft BGS				
	- gray in color at 21.0ft BGS				
22					
	- gray and brown in color, some water lost, open stylolite at 22.8ft BGS		2	100	100
24					
	- gray in color at 24.2ft BGS				
26					
	- stylolite at 27.4ft BGS				
28	- horizontal fracture at 27.7ft BGS				
	- brown in color at 28.3ft BGS	605.1			
	END OF BOREHOLE @ 28.5ft BGS				

COREHOLE: 4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL; 4" DIA. COREHOLE

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-15A
DATE COMPLETED: August 5, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	639.9						
	GROUND SURFACE	637.3						
0	TOPSOIL, with silty clay, soft, dark brown, moist	637.1	4" DIA. STEEL CASING	1	P/S	2.4		0.0
	CL-CLAY, with silt, firm, low plasticity, strong brown, moist							
2	END OF OVERBURDEN HOLE @ 2.2ft BGS							
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-15A
DATE COMPLETED: August 5, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	TOP OF CASING	639.9				
	GROUND SURFACE	637.3				
	TOPSOIL, with silty clay, soft, dark brown, moist					
	CL-CLAY, with silt, firm, low plasticity, strong brown, moist	637.1	4" DIA. STEEL CASING			
2	LIMESTONE (SALEM FORMATION), thin bedded, medium grained, gray, trace fossils, trace calcite content	635.1	CEMENT / BENTONITE SEAL			
4	- set 4-inch steel casing at 5.0ft BGS					
6	- stylolite at 6.0ft BGS					
8	- stylolite at 7.8ft BGS - stylolite at 8.2ft BGS					
10	- open stylolite at 9.9ft BGS - grayish brown at 10.0ft BGS - gray at 11.0ft BGS - open stylolite at 11.1ft BGS			1	100	100
12	- stylolite at 12.4ft BGS					
14						
16	- stylolite at 15.2ft BGS		4" DIA. COREHOLE			
18	- stylolite at 16.9ft BGS					
20	- stylolite at 18.4ft BGS - open stylolite at 19.5ft BGS			2	100	100
22	- open stylolite at 21.6ft BGS					
24						
26	END OF BOREHOLE @ 25.9ft BGS	611.4				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-16
DATE COMPLETED: June 13, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	635.4 632.9						
0	CL-CLAY (FILL), trace gravel, little silt, firm, low to medium plasticity, strong brown, moist							
2				1	P/S	3.0		0.0
4			4" DIA. STEEL CASING					
6				2	P/S	3.0		0.0
8								
10			CEMENT / BENTONITE SEAL	3	P/S	3.0		0.0
	- rock fragments at 11.0ft BGS							
12	CL-CLAY, little to some silt, soft, medium plasticity, gray, moist	620.9		4	P/S	2.0		0.0
14	END OF OVERBURDEN HOLE @ 14.2ft BGS							
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-16
DATE COMPLETED: June 13, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	CL-CLAY, little to some silt, soft, medium plasticity, gray, moist	620.9				
14	LIMESTONE (SALEM FORMATION), medium to coarse grained, occasional fossil, gray	618.7				
	- set 4" steel casing at 15.5ft BGS		CEMENT / BENTONITE SEAL			
16	- stylolite at 16.4ft BGS					
18	- vug at 18.5ft BGS					
	- horizontal fracture at 19.2ft BGS					
20	- stylolite at 19.9ft BGS			1	100	100
22	- horizontal fracture at 22.9ft BGS					
24	- horizontal fracture with silt infilling at 24.7ft BGS					
26	- 5-feet dark gray in color section at 26.3ft BGS					
	- stylolite at 26.9ft BGS					
28	- stylolite at 28.4ft BGS					
	- horizontal fracture at 28.8ft BGS					
30	- horizontal fracture at 29.9ft BGS		4" DIA. COREHOLE			
32	- open stylolite at 32.6ft BGS			2	100	100
34	- open stylolite at 33.9ft BGS					
	- 1-feet vertical fracture, slightly weathered at 35.0ft BGS					
36	- oxidized lens at 35.4ft BGS					
	- stylolite at 36.2ft BGS	596.5				
	END OF BOREHOLE @ 36.4ft BGS					
38						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-17
DATE COMPLETED: June 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	631.6 628.8						
0	CL-CLAY (FILL), some to little silt, firm, medium plasticity, strong brown, moist		4" DIA. STEEL CASING CEMENT / BENTONITE SEAL	1	P/S	3.0		0.0
6	CL-CLAY, little silt, stiff, medium plasticity, strong brown, moist	623.3		2	P/S	3.5		0.0
8	END OF OVERBURDEN HOLE @ 8.0ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-17
DATE COMPLETED: June 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
8	LIMESTONE (SALEM FORMATION), medium grained, trace calcite throughout, dark and light gray in color	620.8	CEMENT / BENTONITE SEAL			
10	- set 4" steel casing at 10.0ft BGS					
12	- brown and gray in color at 11.4ft BGS					
14	- stylolite at 13.0ft BGS					
16	- dark and light gray in color at 15.5ft BGS		4" DIA. COREHOLE	1	100	100
18	- stylolite at 18.1ft BGS					
20	END OF BOREHOLE @ 20.8ft BGS	608.0				
22						
24						
26						
28						
30						
32						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-17A
DATE COMPLETED: August 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	624.4 621.0						
0	CL-CLAY, trace rootlets, firm, low plasticity, dark brown and gray, moist			1	P/S	2.3		0.0
2	Weathered and fractured limestone	618.7	4" DIA. STEEL CASING					
4	END OF OVERBURDEN HOLE @ 5.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-17A
DATE COMPLETED: August 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
		616.0				
	LIMESTONE (SALEM FORMATION), fine to medium grained, thin bedded, grayish brown, trace calcite		CEMENT / BENTONITE SEAL			
	- set 4" steel casing at 7.4ft BGS					
	- gray in color at 10.5ft BGS			1	95	91
	- brown / gray in color, horizontal fracture at 13.6ft BGS - shale parting at 13.7ft BGS - 5-inches of highly fractured rock at 13.9ft BGS - grayish brown in color at 14.4ft BGS - 1/2-inch calcite infilled vug at 14.9ft BGS					
	- stylolite at 19.3ft BGS - 1.2-feet vertical fracture, highly oxidized at 20.2ft BGS - horizontal fracture at 20.7ft BGS - open stylolite at 21.7ft BGS - horizontal fracture at 22.1ft BGS - stylolite at 22.3ft BGS - open stylolite at 23.1ft BGS - horizontal fracture at 23.7ft BGS		4" DIA. COREHOLE	2	100	100
	- 4-inches of porous rock at 24.7ft BGS - horizontal fracture, fossilized and slightly oxidized at 25.3ft BGS - fossilized and fractured at 26.1ft BGS - trace gray/brown color lens, 4-inches of slightly porous rock at 26.8ft BGS - fossilized and fractured at 27.5ft BGS - light gray in color at 27.7ft BGS	592.6				
	END OF BOREHOLE @ 28.4ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-18
DATE COMPLETED: June 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING GROUND SURFACE	627.4 625.5					
0	TOPSOIL	625.0					
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist						
2			4" DIA. STEEL CASING	1	P/S	3.0	
4							
6				2	P/S	3.0	
8							
10	- slight brown discoloration for 1 feet at 11.0ft BGS		CEMENT / BENTONITE SEAL	3	P/S	4.0	
12							
14				4	P/S	4.0	
16				5	P/S	1.2	
	END OF OVERBURDEN HOLE @ 17.2ft BGS		CEMENT / BENTONITE SEAL				
18							
20							
22							
24							
26							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-18
DATE COMPLETED: June 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
18	LIMESTONE (SALEM FORMATION), medium grained, gray with slight browning	608.3	CEMENT / BENTONITE SEAL			
	- set 4" steel casing at 19.0ft BGS					
20	- stylolite at 20.9ft BGS					
	- horizontal fracture at 21.4ft BGS					
22	- horizontal fracture at 22.6ft BGS					
	- horizontal fracture at 23.4ft BGS					
24	- 1.3 feet of closed vertical fracture at 23.5ft BGS			1	100	100
	- gray in color at 25.6ft BGS					
26	- horizontal fracture with silt infilling at 26.3ft BGS	598.9				
	LIMESTONE (UPPER HARRODSBURG FORMATION), fossils present					
28	- stylolite at 28.8ft BGS					
	- horizontal fracture at 29.0ft BGS					
30	- slightly porous at 29.3ft BGS		4" DIA. COREHOLE			
	- stylolite at 30.0ft BGS					
	- open stylolite at 31.5ft BGS					
32						
	- horizontal fracture at 33.4ft BGS					
34	- stylolite at 34.1ft BGS					
	- stylolite at 34.6ft BGS			2	100	100
	- open stylolite at 35.2ft BGS					
36	- horizontal fracture at 35.7ft BGS					
	- horizontal fracture at 35.8ft BGS					
	- stylolite at 36.3ft BGS					
	- stylolite at 37.2ft BGS					
38	- horizontal fracture at shale parting at 38.4ft BGS					
	- horizontal fracture at 38.6ft BGS	585.8				
40	END OF BOREHOLE @ 39.7ft BGS					
42						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-19
DATE COMPLETED: June 15, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING	627.8					
	GROUND SURFACE	625.0					
0	TOPSOIL	624.4					
	CL-CLAY, little silt, stiff, low to medium plasticity, strong brown, moist						
2			4" DIA. STEEL CASING	1	P/S	3.0	
4							
6				2	P/S	3.0	
8	END OF OVERBURDEN HOLE @ 8.5ft BGS		CEMENT / BENTONITE SEAL				
10							
12							
14							
16							
18							
20							
22							
24							
26							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-19
DATE COMPLETED: June 15, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
8	LIMESTONE (SALEM FORMATION), medium grained, light brown	616.5	CEMENT / BENTONITE SEAL			
10	- set 4-inch steel casing at 11.0ft BGS					
12	- stylolite at 12.6ft BGS - stylolite at 13.1ft BGS - gray in color at 13.4ft BGS					
14	- stylolite at 15.2ft BGS					
16				1	100	100
18	- stylolite at 18.3ft BGS					
20	- stylolite at 20.3ft BGS					
22						
24						
26				2	100	100
28	- open stylolite at 28.6ft BGS - stylolite at 28.7ft BGS - horizontal fracture at 29.1ft BGS		4" DIA. COREHOLE			
30	- horizontal fracture with silt infilling at 30.1ft BGS	594.8				
	LIMESTONE (UPPER HARRODSBURG FORMATION), dark gray, fossilized					
32	- stylolite at 31.3ft BGS - stylolite at 31.6ft BGS END OF BOREHOLE @ 31.7ft BGS	593.3				

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-20
DATE COMPLETED: June 7, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	621.8						
	GROUND SURFACE	619.2						
0	CL-CLAY (FILL), with silt, gravel, firm, low plasticity, brown, moist							
2	ML-SILT (FILL), little clay, compact, beige, wet, dilatant	617.2	4" DIA. STEEL CASING	1	P/S	3.0		0.0
6	CL-CLAY (FILL), little silt, soft, medium plasticity, dark gray, very moist to wet	613.2		2	P/S	4.0		0.0
10			CEMENT / BENTONITE SEAL	3	P/S	3.0		0.0
12				4	P/S	2.0		0.0
14	Rock fragments END OF OVERBURDEN HOLE @ 14.0ft BGS	605.7						
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-20
DATE COMPLETED: June 7, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
14	Rock fragments	605.7				
	LIMESTONE (SALEM FORMATION), medium grained, gray with brown in color	605.2	CEMENT / BENTONITE SEAL			
16	- set 4-inch steel casing at 17.0ft BGS					
	- stylolite at 17.6ft BGS					
18	LIMESTONE (UPPER HARRODSBURG FORMATION), medium to coarse grained, gray/tan	601.2				
20	- horizontal fracture at 20.8ft BGS					
22	- horizontal fracture at 22.7ft BGS			1	100	100
	- shale parting at 23.4ft BGS					
24	- shale parting at 23.8ft BGS					
	- shale parting at 24.4ft BGS					
	- 1/2-inch vug at 25.4ft BGS					
26	- open stylolite at 26.0ft BGS		4" DIA. COREHOLE			
	- stylolite at 27.5ft BGS					
28	- fossils present at 27.9ft BGS					
	- 8-inch slightly porous section at 28.6ft BGS					
30	- stylolite at 30.4ft BGS					
	- stylolite at 30.9ft BGS					
	- stylolite at 31.5ft BGS					
32	- open stylolite at 32.1ft BGS					
	- 10-inch slightly porous section at 33.3ft BGS			2	100	100
34	- horizontal fracture at 33.7ft BGS					
	- stylolite at 35.1ft BGS					
36	- horizontal fracture at 37.1ft BGS					
38	END OF BOREHOLE @ 38.0ft BGS	581.2				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-21
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	614.5						
	GROUND SURFACE	612.1						
0	CL-CLAY (FILL), trace gravel, low plasticity, strong brown, moist							
2				1	P/S	1.8		0.0
4			4" DIA. STEEL CASING					
		607.1						
6	SP-SAND (FILL), fine grained, poorly graded, brown, moist			2	P/S	3.0		0.2
	- Wet at 7.0ft BGS							
8		604.1	CEMENT / BENTONITE SEAL					
	CL-CLAY (FILL), soft, medium plasticity, gray, moist			3	P/S	3.5		0.0
10								
12	END OF OVERBURDEN HOLE @ 11.5ft BGS							
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-21
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
12	LIMESTONE (SALEM FORMATION), medium grained, gray	600.6	CEMENT / BENTONITE SEAL			
14	- set 4-inch steel casing at 14.0ft BGS - 7-inch slightly porous section at 14.5ft BGS					
16	- stylolite at 15.3ft BGS - stylolite at 15.6ft BGS - vug at 16.1ft BGS - open stylolite at 17.0ft BGS					
18	- 7-inch slightly porous section at 18.0ft BGS - stylolite at 18.8ft BGS	593.1				
20	LIMESTONE (UPPER HARRODSBURG FORMATION), medium grained, gray - 1 feet of slightly porous section at 19.7ft BGS			1	100	99
22	- open stylolite at 21.4ft BGS - stylolite at 22.5ft BGS - horizontal fracture at 22.6ft BGS					
24	- stylolite at 23.0ft BGS - stylolite at 23.1ft BGS - stylolite at 23.4ft BGS - 1/4-inch vug at 24.1ft BGS					
26	- stylolite at 24.6ft BGS - 3.5-feet of highly vertical and horizontal fractures with partial silt infilling at 24.7ft BGS					
28	- stylolite at 28.6ft BGS					
30	- stylolite at 30.0ft BGS - stylolite at 30.4ft BGS - stylolite at 30.6ft BGS		4" DIA. COREHOLE	2	100	65
32	- 9-inch fracture section with silt infilling at 30.9ft BGS - horizontal fracture at 32.2ft BGS					
34	- horizontal fracture at 33.8ft BGS - horizontal fracture at 34.4ft BGS					
36	- open stylolite at 37.3ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-21
DATE COMPLETED: June 6, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
40	- stylolite at 38.1ft BGS - shale parting at 39.3ft BGS - stylolite at 40.0ft BGS - stylolite at 41.0ft BGS - stylolite at 41.2ft BGS		4" DIA. COREHOLE	3	100	100
42	- 1/2-inch shale parting at 41.5ft BGS - stylolite at 42.9ft BGS - stylolite at 43.1ft BGS					
44	- horizontal fracture at 44.2ft BGS - stylolite at 44.6ft BGS - open stylolite at 44.7ft BGS					
46	- open stylolite at 45.0ft BGS - stylolite at 45.4ft BGS END OF BOREHOLE @ 45.5ft BGS	566.6				
48						
50						
52						
54						
56						
58						
60						
62						
64						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-22
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	615.9 613.4						
0	CL-CLAY (FILL), some silt, trace gravel, firm, low to medium plasticity, strong brown, moist		4" DIA. STEEL CASING	1	P/S	3.0		0.0
2								
4			CEMENT / BENTONITE SEAL	2	P/S	3.0		0.0
6								
8				3	P/S	1.0		0.0
9.2	END OF OVERBURDEN HOLE @ 9.2ft BGS							
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-22
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	LIMESTONE (SALEM FORMATION), fine to medium grained, occasional calcite content, thin bedded, gray	604.2	CEMENT / BENTONITE SEAL			
12	- set 4-inch steel casing at 12.0ft BGS					
	LIMESTONE (UPPER HARRODSBURG FORMATION), fine to medium grained, occasional calcite content, thin bedded, gray	599.9				
	- stylolite at 13.9ft BGS - stylolite at 14.1ft BGS - open stylolite at 14.5ft BGS - stylolite at 15.0ft BGS - vertical fracture at 15.5ft BGS - open stylolite at 16.3ft BGS - 1.4 feet of porous section at 17.5ft BGS - stylolite at 18.8ft BGS			1	100	100
	- stylolite at 19.7ft BGS - stylolite at 19.8ft BGS - open stylolite at 20.7ft BGS		4" DIA. HQ COREHOLE			
	- open stylolite at 23.4ft BGS - stylolite at 24.0ft BGS - 3 feet of porous section at 24.9ft BGS					
	- stylolite at 27.1ft BGS - stylolite at 27.5ft BGS - open stylolite at 28.2ft BGS - 4 feet porous section at 28.8ft BGS			2	100	100
	- horizontal fracture at 30.5ft BGS					
	- horizontal fracture at 31.6ft BGS - horizontal fracture at 31.8ft BGS - horizontal fracture at 32.1ft BGS	580.8				
	END OF BOREHOLE @ 32.6ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-23
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	616.3 613.5						
0	CL-CLAY (FILL), trace gravel, soft, medium plasticity, strong brown, moist		4" DIA. STEEL CASING	1	P/S	3.5		1.0
4	END OF OVERBURDEN HOLE @ 3.5ft BGS		CEMENT / BENTONITE GROUT					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-23
DATE COMPLETED: June 1, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (SALEM FORMATION), fine to medium grained, gray, thin bedded	610.0	CEMENT / BENTONITE GROUT; 4" DIA. STEEL CASING			
6	- set 4-inch steel casing at 6.0ft BGS - horizontal fracture at 6.7ft BGS					
8						
10						
12				1	100	100
	LIMESTONE (UPPER HARRODSBURG FORMATION), medium to coarse grained, gray, 1.5 feet of porous section	600.5				
14	- stylolite at 13.5ft BGS - stylolite at 13.6ft BGS - stylolite at 14.7ft BGS					
16	- open stylolite at 14.8ft BGS - stylolite at 14.9ft BGS					
18	- open stylolite at 15.9ft BGS - stylolite at 17.2ft BGS - stylolite at 17.6ft BGS - stylolite at 18.5ft BGS - stylolite at 19.0ft BGS					
20	- stylolite at 19.2ft BGS - stylolite at 20.4ft BGS		4" DIA. HQ COREHOLE			
22				2	100	100
24	- stylolite at 22.7ft BGS - open stylolite at 22.9ft BGS - stylolite at 23.1ft BGS - horizontal fracture at 24.0ft BGS					
26	- open stylolite at 24.1ft BGS - open stylolite at 24.8ft BGS					
	END OF BOREHOLE @ 26.9ft BGS	586.6				
28						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-24
DATE COMPLETED: May 27, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	619.7 617.4						
0	CL-CLAY (FILL), soft, medium plasticity, brown, moist							
2	- firm at 2.0ft BGS		4" DIA. STEEL CASING	1	P/S	3.0		1.5
4								
6	- trace sand, light brown, wet at 5.0ft BGS		CEMENT / BENTONITE SEAL	2	P/S	3.5		1.3
8	- dark brown in color at 7.0ft BGS			3	P/S	1.5		0.5
10	END OF OVERBURDEN HOLE @ 9.5ft BGS							
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-24
DATE COMPLETED: May 27, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
10	LIMESTONE (SALEM FORMATION), fine grained, thin bedded, calcite content, gray	607.9	CEMENT / BENTONITE SEAL			
12	- set 4-inch steel casing at 12.0ft BGS					
14	- open stylolite at 14.5ft BGS					
16	- stylolite at 15.8ft BGS - stylolite at 16.0ft BGS - open stylolite at 16.7ft BGS - stylolite at 16.9ft BGS	599.9		1	99	100
18	LIMESTONE (UPPER HARRODSBURG FORMATION), 2.4-feet porous ("honeycomb") section, medium grained, gray - stylolite at 17.8ft BGS					
20	- stylolite at 18.2ft BGS - stylolite at 18.6ft BGS - 2-feet vertical fracture at 19.2ft BGS					
22	- stylolite at 21.6ft BGS					
24	- stylolite at 22.8ft BGS - stylolite at 23.3ft BGS - stylolite at 24.3ft BGS - stylolite at 24.9ft BGS					
26	- stylolite at 26.4ft BGS - stylolite at 26.5ft BGS - stylolite at 26.7ft BGS					
28	- stylolite at 26.8ft BGS - horizontal fracture with slight fossilization at 27.2ft BGS		4" DIA. COREHOLE	2	100	93
30	- horizontal fracture with clay infilling at 28.2ft BGS - 4-inch vertical fracture at 28.6ft BGS					
32	- horizontal fracture with clay infilling at 29.0ft BGS - open stylolite at 31.9ft BGS - stylolite at 32.3ft BGS	584.7				
34	END OF BOREHOLE @ 32.7ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-25
DATE COMPLETED: May 26, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	625.8						
	GROUND SURFACE	622.8						
0	CL-CLAY (FILL), firm, medium plasticity, brown, moist							
2	SM-SAND (FILL), with silt, fine grained, poorly graded, light brown, wet	620.8		1	P/S	3.0		0.0
4			4" DIA. STEEL CASING					
6	SC-CLAY (FILL), some fine grained sand, gray, wet	617.8		2	P/S	4.0		0.0
8			CEMENT / BENTONITE SEAL					
10				3	P/S	4.0		0.0
12								
14				4	P/S	4.0		0.0
16								
18	END OF OVERBURDEN HOLE @ 18.0ft BGS			5	P/S	0.0		0.0
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-25
DATE COMPLETED: May 26, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
18	LIMESTONE (SALEM FORMATION), fine grained, thin bedded, gray, calcite content	604.8	CEMENT / BENTONITE SEAL			
20	- set 4-inch steel casing at 20.0ft BGS					
	- open stylolite at 21.3ft BGS					
22	- stylolite at 22.7ft BGS					
	- open stylolite at 22.8ft BGS	599.4				
24	- stylolite at 22.9ft BGS - medium grained at 23.6ft BGS LIMESTONE (UPPER HARRODSBURG FORMATION), 14-inch porous section, medium grained, gray			1	100	100
26	- stylolite at 23.7ft BGS - 7-inch vertical fracture at 24.1ft BGS - 2-feet fine grained section at 26.0ft BGS					
28	- open stylolite at 26.4ft BGS - stylolite at 26.5ft BGS - open stylolite at 27.6ft BGS - medium grained at 28.3ft BGS					
30	- stylolite at 29.1ft BGS		4" DIA. COREHOLE			
	- open stylolite at 31.3ft BGS					
32	- stylolite at 33.1ft BGS - open stylolite at 33.5ft BGS					
34	- stylolite at 33.8ft BGS - open stylolite at 35.0ft BGS					
36	- stylolite at 35.9ft BGS - stylolite at 36.0ft BGS - open stylolite at 36.1ft BGS			2	100	100
38	- open stylolite at 38.4ft BGS - stylolite at 38.6ft BGS - stylolite at 38.9ft BGS					
40	- stylolite at 40.8ft BGS	581.9				
	END OF BOREHOLE @ 40.9ft BGS					
42						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-26
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	627.9						
0	CL-CLAY (FILL), trace gravel, firm, medium plasticity, strong brown, moist							
2	SM-SAND (FILL), with silt, light brown, moist	625.9		1	P/S	4.0		0.2
4	CL-CLAY (FILL), trace sand, medium plasticity, brown, moist	624.9	4" DIA. STEEL CASING	2	P/S	1.0		1.0
5	END OF OVERBURDEN HOLE @ 5.0ft BGS							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-26
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
		622.9				
6	LIMESTONE (SALEM FORMATION), fine to medium grained, tan					
	- set 4" steel casing at 7.0ft BGS					
8	- horizontal fracture at 8.5ft BGS - horizontal fracture at 8.8ft BGS - horizontal fracture at 8.9ft BGS					
10	- horizontal fracture at 9.0ft BGS - gray in color at 9.4ft BGS					
12	- stylolite at 12.4ft BGS - horizontal fracture at 12.7ft BGS			1	100	99
14			CEMENT / BENTONITE SEAL			
16	- stylolite at 15.4ft BGS - horizontal fracture at 15.8ft BGS					
18	- stylolite at 18.2ft BGS					
20	- horizontal fracture at 19.0ft BGS - horizontal fracture at 19.5ft BGS - horizontal fracture at 19.9ft BGS		4" DIA. COREHOLE			
22	- horizontal fracture at 21.2ft BGS			2	100	90
24	- horizontal fracture at 22.8ft BGS - horizontal fracture at 23.1ft BGS - horizontal fracture at 23.5ft BGS - horizontal fracture at 23.8ft BGS					
26	- stylolite at 24.2ft BGS - 2-feet section of fossils at 25.2ft BGS					
28	END OF BOREHOLE @ 27.6ft BGS	600.3				
30						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-27
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	635.8 633.2						
0	CL-CLAY (FILL), firm, medium plasticity, strong brown, moist			1	P/S	2.0		0.0
2	END OF OVERBURDEN HOLE @ 2.0ft BGS							
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-27
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	TOP OF CASING GROUND SURFACE	635.8 633.2				
0	CL-CLAY (FILL), firm, medium plasticity, strong brown, moist					
2	LIMESTONE (SALEM FORMATION), medium grained, gray, little calcite content	631.2	4" DIA. STEEL CASING CEMENT / BENTONITE SEAL			
4						
6	- set 4-inch steel casing at 5.5ft BGS					
8	- stylolite at 7.4ft BGS					
10				1	100	100
12						
14						
16						
18	- stylolite at 17.4ft BGS					
20	- stylolite at 18.9ft BGS - stylolite at 20.0ft BGS		4" DIA. COREHOLE	2	100	100
22	- horizontal fracture at 22.6ft BGS					
24						
26	- stylolite at 26.0ft BGS	607.2				
	END OF BOREHOLE @ 26.0ft BGS					

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-28
DATE COMPLETED: May 23, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	641.6 638.9						
0	CL-CLAY (FILL), firm, medium plasticity, strong brown, moist			1	P/S	1.0		0.0
	END OF OVERBURDEN HOLE @ 1.0ft BGS							
2								
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-28
DATE COMPLETED: May 23, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	RUN NUMBER	CORE RECOVERY %	RQD %
	TOP OF CASING	641.6			
	GROUND SURFACE	638.9			
	CL-CLAY (FILL), firm, medium plasticity, strong brown, moist				
		637.9			
	LIMESTONE (SALEM FORMATION), fine to medium grained, fossilized, gray, calcite content				
2					
4	- set 4-inch steel casing at 4.0ft BGS				
6	- horizontal fracture at 6.1ft BGS				
8	- stylolite at 7.9ft BGS				
	- stylolite at 9.3ft BGS				
10	- horizontal fracture at 9.7ft BGS		1	100	100
12	- horizontal fracture at 12.0ft BGS				
	- stylolite at 12.3ft BGS				
	- horizontal fracture at 13.5ft BGS				
14					
16					
18					
20	- horizontal fracture at 19.9ft BGS		2	100	100
22					
	- stylolite at 22.8ft BGS				
24					
	END OF BOREHOLE @ 24.7ft BGS	614.2			
26					

COREHOLE: 4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL; 4" DIA. COREHOLE

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-29
DATE COMPLETED: May 18, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING	645.0						
	GROUND SURFACE	641.6						
0	CL-CLAY (FILL), trace gravel, soft, medium plasticity, brown, moist							
2				1	P/S	4.0		0.1
4								
6				2	P/S	1.0		0.0
8	GRAVEL	634.1						
	LIMESTONE	633.6						
	CL-CLAY	632.6						
10			4" DIA. STEEL CASING					
12								
14								
16								
18								
20			CEMENT / BENTONITE SEAL					
22								
	END OF OVERBURDEN HOLE @ 23.0ft BGS							
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-29
DATE COMPLETED: May 18, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
		618.6				
24	LIMESTONE (SALEM FORMATION), weather, fractured, medium grained, gray, calcite content, fossilized		CEMENT / BENTONITE SEAL			
26	- less fractures at 26.0ft BGS					
28	- set 4-inch steel casing at 28.5ft BGS					
30	- stylolite at 29.7ft BGS - 5-inch vertical fracture at 30.1ft BGS - horizontal fracture at 30.6ft BGS - horizontal fracture at 30.9ft BGS			1	100	100
32	- had water lost at 31.0ft BGS - horizontal fracture at 31.9ft BGS - horizontal fracture at 32.0ft BGS - horizontal fracture at 33.4ft BGS					
34						
36	- open stylolite at 35.4ft BGS					
38	- horizontal fracture at 36.7ft BGS - open stylolite at 37.6ft BGS - open stylolite at 38.2ft BGS		4" DIA. COREHOLE			
40	- 9-inch vertical fracture at 39.1ft BGS			2	100	90
42	- horizontal fracture at 40.8ft BGS - horizontal fracture at 41.4ft BGS - horizontal fracture at 42.6ft BGS					
		598.4				
44	LIMESTONE (UPPER HARRODSBURG FORMATION), porous, tan/gray, fossil (brachipods and bryozoan), occasional calcite content throughout					
46	- 6-inch of highly fractured and porous rock ("honeycomb"), oxidized at 44.2ft BGS - 2-inch vertical fracture at 45.1ft BGS - 4-inch highly fractured, oxidized rock at 45.8ft BGS					
48	- horizontal oxidized fracture at 46.8ft BGS - horizontal oxidized fracture at 47.8ft BGS - horizontal oxidized fracture at 49.0ft BGS - 3-inch vertical fracture at 49.3ft BGS			3	98	20

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-29
DATE COMPLETED: May 18, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
52	- 2-inch vertical fracture at 50.2ft BGS - horizontal fracture at 50.9ft BGS - 2-inch vertical fracture at 51.6ft BGS - 1/4-inch thick horizontal fracture at 52.3ft BGS - stylolite at 52.7ft BGS					
54	- horizontal fracture at 53.5ft BGS - stylolite at 53.9ft BGS - open stylolite at 54.4ft BGS					
56	- stylolite at 55.5ft BGS - horizontal fracture at 56.6ft BGS			4	99	95
58	- open stylolite at 57.5ft BGS					
60			4" DIA. COREHOLE			
62	- 3-inch vertical fracture at 60.5ft BGS - open stylolite at 60.8ft BGS - losing water during drilling at 61.2ft BGS - horizontal fracture at shale parting at 61.7ft BGS - horizontal fracture at shale parting at 62.0ft BGS					
64	- horizontal fracture at shale parting at 63.1ft BGS - horizontal fracture at shale parting at 64.6ft BGS					
66	- horizontal fracture at 65.2ft BGS - open stylolite at 65.5ft BGS - open stylolite at 66.1ft BGS			5	100	95
68	- 2-inch vertical fracture at 68.2ft BGS - stylolite at 69.2ft BGS					
70	- 2-inch vertical fracture at 69.4ft BGS - stylolite at 70.0ft BGS - horizontal fracture at 70.3ft BGS					
72	- horizontal fracture at shale parting at 71.0ft BGS - losing water during drilling at 71.2ft BGS END OF BOREHOLE @ 71.2ft BGS	570.4				
74						
76						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-30
DATE COMPLETED: May 23, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	659.2 656.8						
0	CL-CLAY, trace gravel, soft, medium plasticity, strong brown, moist							
2	- firm at 2.0ft BGS			1	P/S	3.0		0.1
4	END OF OVERBURDEN HOLE @ 4.0ft BGS		4" DIA. STEEL CASING					
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-30
DATE COMPLETED: May 23, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
4	LIMESTONE (SALEM FORMATION), weathered, fractured, fine to medium grained, calcite content, gray	652.8	4" DIA. STEEL CASING; CEMENT / BENTONITE SEAL			
6	- less fractured rock at 4.8ft BGS - set 4-inch steel casing at 6.5ft BGS					
8	- open stylolite at 8.9ft BGS - horizontal fracture at 9.2ft BGS					
10	- stylolite at 10.4ft BGS					
12				1	100	100
14	- stylolite at 13.3ft BGS - stylolite at 13.5ft BGS					
16	- stylolite at 16.0ft BGS					
18						
20	- open stylolite at 20.3ft BGS		4" DIA. COREHOLE			
22	- horizontal fracture at 22.6ft BGS			2	100	100
24						
26	END OF BOREHOLE @ 26.6ft BGS	630.2				
28						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-31
DATE COMPLETED: August 11, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	671.2 668.4						
0	CL-CLAY (FILL), trace gravel, soft, low plasticity, brown, dry			1	P/S	3.0		0.0
4	SP-SAND (FILL), fine grained, poorly graded, brown, moist	664.4	4" DIA. STEEL CASING	2	P/S	3.0		0.0
6	CL-CLAY, firm, medium plasticity, strong brown, moist	661.4		3	P/S	1.5		0.0
9.5	END OF OVERBURDEN HOLE @ 9.5ft BGS							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-31
DATE COMPLETED: August 11, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
10	LIMESTONE (SALEM FORMATION), medium grained, thin bedded, gray, weathered - no fractures at 10.5ft BGS	658.9	CEMENT / BENTONITE SEAL			
12	- set 4-inch steel casing at 12.5ft BGS					
14	- stylolite at 14.7ft BGS					
16						
18	- horizontal fracture at 17.4ft BGS - horizontal fracture at 18.2ft BGS			1	100	100
20						
22	- stylolite at 21.8ft BGS - horizontal fracture at 22.1ft BGS - stylolite at 22.3ft BGS					
24	- stylolite at 22.9ft BGS - open stylolite at 23.9ft BGS - stylolite at 24.2ft BGS					
26	- stylolite at 26.5ft BGS					
28	- open stylolite at 27.6ft BGS		4" DIA. COREHOLE	2	100	100
30	- stylolite at 30.7ft BGS - open stylolite at 30.9ft BGS					
32						
34	END OF BOREHOLE @ 33.3ft BGS	635.1				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-32
DATE COMPLETED: August 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	672.5 669.4						
0	CL-CLAY (FILL), trace gravel, soft, medium plasticity, brown, moist		4" DIA. STEEL CASING	1	P/S	3.5		0.0
4				2	P/S	1.5		0.0
6	END OF OVERBURDEN HOLE @ 5.5ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-32
DATE COMPLETED: August 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
6	LIMESTONE (SALEM FORMATION), medium grained, calcite content, gray, occasional fossil content	663.9	CEMENT / BENTONITE SEAL			
8	- set 4-inch steel casing at 8.0ft BGS					
10	- horizontal fracture at 9.9ft BGS					
12						
14	- stylolite at 13.6ft BGS - horizontal fracture at 14.2ft BGS - stylolite at 14.7ft BGS			1	100	100
16	- stylolite at 16.1ft BGS					
18	- open stylolite at 17.0ft BGS - stylolite at 18.1ft BGS					
20	- horizontal fracture at 20.3ft BGS - stylolite at 20.9ft BGS		4" DIA. COREHOLE			
22						
24	- stylolite at 23.0ft BGS - horizontal fracture at 23.5ft BGS			2	100	100
26						
28	- open stylolite at 27.3ft BGS					
30	END OF BOREHOLE @ 28.5ft BGS	640.9				

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-33
DATE COMPLETED: August 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	672.3 669.7						
0	CL-CLAY (FILL), trace gravel, soft, medium plasticity, brown, moist		4" DIA. STEEL CASING	1	P/S	4.0		0.0
4	GRAVEL	665.2		2	P/S	1.5		0.0
5.5	END OF OVERBURDEN HOLE @ 5.5ft BGS							

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-33
DATE COMPLETED: August 9, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GRAVEL	665.2	CEMENT / BENTONITE SEAL			
	LIMESTONE (SALEM FORMATION), medium grained, fossil content, gray	664.2				
6						
8	- set 4-inch steel casing at 8.5ft BGS					
10	- stylolite at 10.0ft BGS					
	- stylolite at 10.7ft BGS					
	- horizontal fracture at 10.8ft BGS					
12	- open stylolite at 11.2ft BGS			1	67	67
	- stylolite at 11.3ft BGS					
	- stylolite at 11.4ft BGS					
	- horizontal fracture at 13.2ft BGS					
14	- stylolite at 13.8ft BGS					
	- stylolite at 14.0ft BGS					
	- stylolite at 15.3ft BGS					
16	- stylolite at 16.0ft BGS					
18						
	- stylolite at 19.5ft BGS		4" DIA. COREHOLE			
20						
	- stylolite at 20.9ft BGS			2	100	100
22						
24						
	- open stylolite at 24.5ft BGS					
	- stylolite at 24.8ft BGS					
	- stylolite at 24.9ft BGS	644.5				
26	- stylolite at 25.0ft BGS					
	END OF BOREHOLE @ 25.2ft BGS					
28						
30						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34
DATE COMPLETED: April 5, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	682.0						
0	TOPSOIL	681.4						
	CL-CLAY (FILL), trace gravel, soft, medium plasticity, strong brown, moist							
2				1	P/S	5.0		0.0
4								
6								
8				2	P/S	5.0		0.0
	- rock fragments at 9.0ft BGS							
10	- rock and gravel, gray at 10.0ft BGS - high plasticity, wet at 10.5ft BGS		CEMENT / BENTONITE SEAL					
12				3	P/S	5.0		0.0
14								
	LIMESTONE	667.0						
16	CL-CLAY	666.0						
	LIMESTONE, 4-inch steel casing set at 19 feet below ground	665.0						
18	- Had to abandon boring at 19.0ft BGS	663.0						
	END OF BOREHOLE @ 19.0ft BGS							
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34A
DATE COMPLETED: June 28, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	681.6					
	Same stratigraphy as CH-34						
14	LIMESTONE, weathered and fractured	666.6					
18	- competent rock at 18.0ft BGS						
20	- Had to abandon the boring due to obstructions in the hole, therefore, unable to set casing at 20.0ft BGS	661.6					
	END OF BOREHOLE @ 20.0ft BGS						

CEMENT / BENTONITE SEAL

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34A
DATE COMPLETED: June 28, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	681.6				
	Same stratigraphy as CH-34					
14	LIMESTONE, weathered and fractured	666.6				
18	- competent rock at 18.0ft BGS					
20	- Had to abandon the boring due to obstructions in the hole, therefore, unable to set casing at 20.0ft BGS	661.6				
	END OF BOREHOLE @ 20.0ft BGS					

CEMENT / BENTONITE SEAL

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34B
DATE COMPLETED: July 29, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	681.4					
	Same stratigraphy as CH-34						
6	LIMESTONE	675.4					
	CL-CLAY	674.9					
8			4" DIA. STEEL CASING				
	LIMESTONE	672.4					
10	CL-CLAY	671.4	CEMENT / BENTONITE SEAL				
12	LIMESTONE	669.4					
14	- set 4" steel casing at 14.4ft BGS						
	END OF BOREHOLE @ 15.0ft BGS	666.4					

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34B
DATE COMPLETED: July 29, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	GROUND SURFACE	681.4				
	Same stratigraphy as CH-34					
6	LIMESTONE	675.4				
	CL-CLAY	674.9				
8			4" DIA. STEEL CASING			
	LIMESTONE	672.4				
10	CL-CLAY	671.4	CEMENT / BENTONITE SEAL			
12	LIMESTONE	669.4				
14	- set 4" steel casing at 14.4ft BGS					
	END OF BOREHOLE @ 15.0ft BGS	666.4				

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34C
DATE COMPLETED: August 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING GROUND SURFACE	684.5 681.9					
	Same stratigraphy as CH-34B		4" DIA. STEEL CASING				
12	END OF OVERBURDEN HOLE @ 12.0ft BGS						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34C
DATE COMPLETED: August 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
12	LIMESTONE	669.9				
	CL-CLAY	668.4				
14	LIMESTONE	667.9				
16	CL-CLAY	665.4				
	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray	664.9	CEMENT / BENTONITE SEAL			
18						
20						
22	- set 4-inch steel casing at 22.0ft BGS - 1.7-feet porous section at 22.7ft BGS					
24	- horizontal fracture at 23.9ft BGS - stylolite at 24.1ft BGS - horizontal fracture at 24.5ft BGS - open stylolite at 25.1ft BGS					
26	- stylolite at 25.9ft BGS - open stylolite at 26.8ft BGS			1	100	100
28						
30						
32						
34			4" DIA. COREHOLE			
36	- horizontal fracture at 37.0ft BGS			2	100	100

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-34C
DATE COMPLETED: August 8, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	- stylolite at 38.1ft BGS - horizontal fracture at 38.2ft BGS					
40	LIMESTONE (SALEM FORMATION), medium grained, gray - horizontal fracture at 39.9ft BGS - stylolite at 40.6ft BGS	642.3				
42	- open stylolite at 41.1ft BGS END OF BOREHOLE @ 42.0ft BGS	639.9				
44						
46						
48						
50						
52						
54						
56						
58						
60						
62						
64						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-35
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	690.7						
0	TOPSOIL	690.1						
	CL-CLAY (FILL), little silt, soft, medium plasticity, strong brown, moist							
2	- trace gravel at 2.0ft BGS			1	P/S	5.0		1.2
4			4" DIA. STEEL CASING					
6			CEMENT / BENTONITE GROUT	2	P/S	2.0		4.5
	END OF OVERBURDEN HOLE @ 7.0ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-35
DATE COMPLETED: May 24, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
		683.7				
8	LIMESTONE (ST. LOUIS FORMATION), weathered, fine grained (micritic), thin bedded, gray, calcite deposits					
	- less fractured at 9.0ft BGS					
10						
	- set 4-inch steel casing at 11.0ft BGS					
12	- horizontal fracture at 11.9ft BGS - horizontal fracture at 12.1ft BGS - 4 feet of limestone with interbedded calcareous tan/gray, shale lens, soft, friable at 12.4ft BGS					
14	- horizontal fracture at 13.1ft BGS - horizontal fracture at 13.2ft BGS - horizontal fracture at 13.7ft BGS - horizontal fracture at 13.9ft BGS					
16	- horizontal fracture at 14.7ft BGS - horizontal fracture at 15.9ft BGS - horizontal fracture at 16.2ft BGS - medium grained at 16.8ft BGS			1	100	92
18	- horizontal fracture at 17.2ft BGS					
	- horizontal fracture at 19.2ft BGS					
20			4" DIA. HQ COREHOLE			
	- horizontal fracture with silt infilling at 21.4ft BGS	669.2				
22	LIMESTONE (SALEM FORMATION), medium grained, granular, thick bedded, gray, horizontal fracture at shale parting					
24	- stylolite at 21.9ft BGS - stylolite at 22.2ft BGS					
	- 3.5 feet of slightly porous (honeycomb like) section, light brown at 22.7ft BGS		CEMENT / BENTONITE GROUT	2	100	99
26						
28	- thin shale parting at 28.4ft BGS - stylolite at 28.6ft BGS					
	- stylolite at 29.7ft BGS					
30	- stylolite at 29.9ft BGS	660.4				
	END OF BOREHOLE @ 30.3ft BGS					
32						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-35
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	690.7						
0	TOPSOIL	690.1						
	CL-CLAY (FILL), little silt, soft, medium plasticity, strong brown, moist							
2	- trace gravel at 2.0ft BGS			1	P/S	5.0		1.2
4			BENTONITE SEAL					
6				2	P/S	2.0		4.5
	- BEDROCK at 7.0ft BGS	683.7						
	END OF BOREHOLE @ 7.0ft BGS							
8								
10								
12								
14								
16								
18								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-36
DATE COMPLETED: May 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	699.6						
0	TOPSOIL	699.0						
	CL-CLAY (FILL), little silt, soft, medium plasticity, strong brown, moist							
2				1	P/S	5.0		0.0
4								
6								
	- high plasticity at 7.0ft BGS							
8	- medium plasticity, gray at 8.0ft BGS			2	P/S	5.0		0.0
10								
12				3	P/S	5.0		0.0
14			4" DIA. STEEL CASING					
16		682.6						
	CL-CLAY, little silt, soft, high plasticity, strong brown, moist			4	P/S	5.0		0.0
18			CEMENT / BENTONITE GROUT					
20	- Wet at 20.0ft BGS							
22				5	P/S	5.0		0.0
24								
26				6	P/S	3.0		0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-36
DATE COMPLETED: May 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	BEDROCK	671.6						
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist	670.1						
30								
32			CEMENT / BENTONITE GROUT					
34								
	CLAY / ROCK MIXTURE	664.6	4" DIA. STEEL CASING					
36	END OF OVERBURDEN HOLE @ 36.4ft BGS							
38								
40								
42								
44								
46								
48								
50								
52								
54								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-36
DATE COMPLETED: May 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
36	CLAY / ROCK MIXTURE	664.6	4" DIA. STEEL CASING			
	LIMESTONE (SALEM FORMATION), fine to medium grained, thin bedded, light gray, calcite deposits	663.2				
38	- set 4-inch steel casing at 39.0ft BGS					
40	- horizontal fracture at 40.2ft BGS - 3-inch slightly porous section at 40.7ft BGS - horizontal fracture, shale parting at 40.8ft BGS		CEMENT / BENTONITE GROUT			
42	- horizontal fracture at 41.4ft BGS - 2-inch near vertical fracture at 42.0ft BGS					
	- open stylolite at 43.0ft BGS					
44	- horizontal fracture at 43.8ft BGS		4" DIA. HQ COREHOLE	1	100	100
46	- horizontal fracture at 46.8ft BGS					
48	- horizontal fracture at 49.2ft BGS					
50	END OF BOREHOLE @ 49.8ft BGS	649.8				
52						
54						
56						
58						
60						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-36
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	699.6						
0	TOPSOIL	699.0						
	CL-CLAY (FILL), little silt, soft, medium plasticity, strong brown, moist							
2				1	P/S	5.0		0.0
4								
6	- high plasticity at 7.0ft BGS			2	P/S	5.0		0.0
8	- medium plasticity, gray at 8.0ft BGS							
10				3	P/S	5.0		0.0
12								
14			BENTONITE SEAL					
16								
	CL-CLAY, little silt, soft, high plasticity, strong brown, moist	682.6		4	P/S	5.0		0.0
18								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-36
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
22	- Wet at 20.0ft BGS			5	P/S	5.0		0.0
24								
26				6	P/S	3.0		0.0
28	- BEDROCK at 28.0ft BGS END OF BOREHOLE @ 28.0ft BGS	671.6						
30								
32								
34								
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-37
DATE COMPLETED: May 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	695.2						
0	TOPSOIL	694.6						
	CL-CLAY (FILL), little silt, trace gravel, high plasticity, strong brown, moist							
2				1	P/S	3.0		0.1
4								
6	- gray in color at 7.0ft BGS		4" DIA. STEEL CASING	2	P/S	3.0		0.0
8								
10								
12			CEMENT / BENTONITE GROUT	3	P/S	5.0		0.0
	CL-CLAY, little silt, high plasticity, strong brown, moist	681.7						
14								
16				4	P/S	5.0		0.0
18								
20	- minor amount of water on top of rock at 19.8ft BGS			5	P/S	1.0		0.0
	END OF OVERBURDEN HOLE @ 21.0ft BGS							
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-37
DATE COMPLETED: May 19, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	LIMESTONE (ST. LOUIS FORMATION), fine grained, gray, thin bedded	674.2				
22	- set 4-inch steel casing at 23.0ft BGS					
24	- horizontal fracture at 23.8ft BGS					
	- horizontal fracture, shale parting at 24.9ft BGS					
	- open stylolite, shale parting at 25.2ft BGS	670.1				
26	- 2.3 feet of porous section, tan / gray in color at 25.3ft BGS					
	LIMESTONE (SALEM FORMATION), medium grained, thick bedded, gray/brown, horizontal fracture, shale/clay parting, black					
28	- stylolite at 25.7ft BGS			1	100	100
	- horizontal fracture at 26.4ft BGS					
	- horizontal fracture at 27.3ft BGS					
30	- horizontal fracture at 28.8ft BGS		4" DIA. HQ COREHOLE			
	- 1/2-inch horizontal fracture at 29.3ft BGS					
	- horizontal fracture at 30.1ft BGS					
	- stylolite at 30.2ft BGS					
32	- horizontal fracture at 31.3ft BGS					
	- horizontal fracture, shale parting at 31.8ft BGS					
34	- horizontal fracture, shale parting at 33.6ft BGS					
	- horizontal fracture at 34.7ft BGS					
36	- open stylolite, water loss at 35.7ft BGS					
38				2	100	100
	- horizontal fracture at 39.3ft BGS					
40						
42						
	- horizontal fracture at 42.9ft BGS	652.0				
	END OF BOREHOLE @ 43.2ft BGS					
44						
46						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-37
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	695.2						
0	TOPSOIL	694.6						
	CL-CLAY (FILL), little silt, trace gravel, high plasticity, strong brown, moist			1	P/S	3.0		0.1
2								
4								
6	- gray in color at 7.0ft BGS			2	P/S	3.0		0.0
8								
10			BENTONITE SEAL					
12				3	P/S	5.0		0.0
	CL-CLAY, little silt, high plasticity, strong brown, moist	681.7						
14								
16				4	P/S	5.0		0.0
18								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-37
DATE COMPLETED:
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
22				5	P/S	3.0		0.0
	- BEDROCK at 23.0ft BGS	672.2						
	END OF BOREHOLE @ 23.0ft BGS							
24								
26								
28								
30								
32								
34								
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-38
DATE COMPLETED: May 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	690.5						
0	TOPSOIL	689.9						
	CL-CLAY (FILL), trace gravel, soft, medium plasticity, strong brown, moist							
2				1	P/S	5.0		0.0
4	- stiff at 5.0ft BGS		4" DIA. STEEL CASING					
6								
8			CEMENT / BENTONITE GROUT	2	P/S	5.0		0.0
10								
12				3	P/S	5.0		0.0
14	END OF OVERBURDEN HOLE @ 15.0ft BGS							
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-38
DATE COMPLETED: May 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER / K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
16	LIMESTONE (ST. LOUIS FORMATION), fine grained, thin bedded, gray	675.5				
	- set 4-inch steel casing at 17.0ft BGS					
18	- stylolite at 18.1ft BGS					
	- horizontal fracture at 19.4ft BGS					
20	- 2-inches of broken rock, shale partings at 20.2ft BGS	669.9				
	- horizontal fracture at 20.5ft BGS					
22	LIMESTONE (SALEM FORMATION), medium grained, thick bedded, light gray, occasional fossils, open stylolite			1	100	94
	- stylolite at 21.7ft BGS					
24	- 6-inch porous section (honeycomb like) at 22.0ft BGS					
	- near vertical fracture at 22.4ft BGS					
	- 4-inch porous section (honeycomb like) at 23.7ft BGS		4" DIA. HQ COREHOLE			
26	- horizontal fracture at 23.8ft BGS					
	- horizontal fracture at 24.4ft BGS					
	- horizontal fracture at 25.9ft BGS					
28	- horizontal fracture at 27.0ft BGS					
	- stylolite at 27.7ft BGS					
	- open stylolite at 27.9ft BGS					
30	- open stylolite at 29.5ft BGS					
	- 2-inch section of stylolite at 29.7ft BGS					
	- stylolite at 30.9ft BGS					
32				2	100	100
	- horizontal fracture at 33.0ft BGS					
34						
36	- stylolite at 35.9ft BGS					
	- horizontal fracture at 36.8ft BGS					
38	END OF BOREHOLE @ 37.5ft BGS	653.0				
40						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-38
DATE COMPLETED:
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	690.5						
0	TOPSOIL	689.9						
	CL-CLAY (FILL), trace gravel, soft, medium plasticity, strong brown, moist							
2				1	P/S	5.0		0.0
4								
	- stiff at 5.0ft BGS							
6								
8				2	P/S	5.0		0.0
10								
12				3	P/S	5.0		0.0
14								
	- LIMESTONE at 15.0ft BGS	675.5						
	END OF BOREHOLE @ 15.0ft BGS							
16								
18								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-39
DATE COMPLETED: May 11, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	688.3						
0	GRAVEL (FILL)	687.7						
	CL-CLAY (FILL), trace gravel, firm, low plasticity, brown, moist							
2	- strong brown in color at 2.0ft BGS			1	P/S	5.0		0.0
4								
	- medium plasticity at 5.0ft BGS							
6								
	SP-SAND (FILL), fine grained, poorly graded, black-gray, moist	681.3		2	P/S	5.0		0.0
8								
10								
12				3	P/S	4.0		0.0
14								
16								
18			CEMENT / BENTONITE SEAL	4	P/S	4.5		0.0
20								
22				5	P/S	5.0		0.0
24								
26				6	P/S	3.0		0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-39
DATE COMPLETED: May 11, 2005
DRILLING METHOD: 6 1/4" HSA
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
30	LIMESTONE, weathered, fractured,	660.3	CEMENT / BENTONITE SEAL					
	- 4.5 feet of rock and clay mixture at 30.0ft BGS							
32								
34	- 6-inches of fratured rock at 34.5ft BGS - less fractured rock at 35.0ft BGS							
36								
	- set 4-inch steel casing at 37.0ft BGS	651.3						
38	END OF BOREHOLE @ 37.0ft BGS							
40								
42								
44								
46								
48								
50								
52								
54								

DRAFT

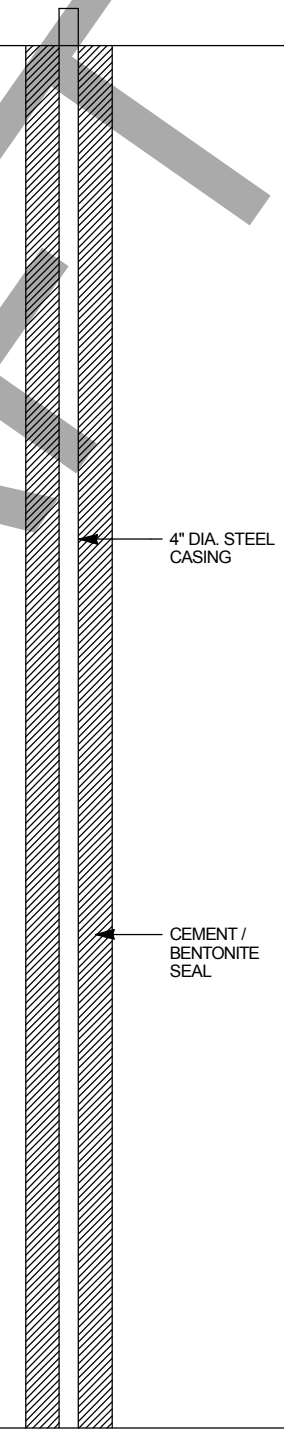
NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-39A
DATE COMPLETED: May 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	TOP OF CASING	689.5					
	GROUND SURFACE	686.9					
0	CL-CLAY (FILL)						
4	SP-SAND (FILL), fine grained, poorly graded, black, moist	683.4					



DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-39A
DATE COMPLETED: May 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
30							
32			CEMENT / BENTONITE SEAL				
34							
36	END OF OVERBURDEN HOLE @ 35.8ft BGS						
38							
40							
42							
44							
46							
48							
50							
52							
54							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-39A
DATE COMPLETED: May 25, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
36	LIMESTONE (SALEM FORMATION), thin bedded, gray, fine to medium grained - less fractured rock at 37.0ft BGS	651.1	CEMENT / BENTONITE SEAL			
38	- set 4-inch steel casing at 39.0ft BGS					
40	- brown and gray in color at 40.1ft BGS - horizontal fracture at 40.2ft BGS - horizontal fracture at 40.5ft BGS - stylolite, fossil at 41.5ft BGS		4" DIA. COREHOLE			
42	- stylolite at 41.9ft BGS - open stylolite at 42.1ft BGS - stylolite at 42.3ft BGS			1	100	93
44	- horizontal fracture at 42.4ft BGS - stylolite at 43.6ft BGS					
46	- slight calcite content at 45.3ft BGS					
48	- open stylolite at 48.0ft BGS					
50				2	100	100
52	- open stylolite at 51.8ft BGS - stylolite at 52.1ft BGS - stylolite at 52.2ft BGS					
54	- open stylolite at 53.8ft BGS - stylolite at 54.0ft BGS - open stylolite at 54.8ft BGS - shale parting at 55.0ft BGS	631.3				
56	END OF BOREHOLE @ 55.6ft BGS					
58						
60						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-40
DATE COMPLETED: June 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	654.6 651.9						
0	CL-CLAY (FILL), firm, low plasticity, light brown, moist							
2	- soft, medium plasticity, brown-black at 2.0ft BGS			1	P/S	5.0		0.0
4	- high plasticity, dark brown at 4.0ft BGS		4" DIA. STEEL CASING					
6	- soft, medium plasticity, black, wet at 5.0ft BGS		CEMENT / BENTONITE SEAL	2	P/S	3.0		0.0
8	END OF OVERBURDEN HOLE @ 8.0ft BGS							
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-40
DATE COMPLETED: June 10, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
8	LIMESTONE (SALEM FORMATION), medium grained, gray	643.9	CEMENT / BENTONITE SEAL			
10	- set 4-inch steel casing at 11.0ft BGS - horizontal fracture at 11.6ft BGS					
12	- stylolite at 13.3ft BGS					
14						
16	- stylolite at 15.9ft BGS			1	100	100
18	- open stylolite at 17.6ft BGS - stylolite at 18.1ft BGS					
20						
22						
24	- stylolite at 23.7ft BGS - light brown in color at 23.9ft BGS		4" DIA. COREHOLE	2	100	100
26						
28						
30	END OF BOREHOLE @ 30.3ft BGS	621.6				
32						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-41
DATE COMPLETED: June 14, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	TOP OF CASING GROUND SURFACE	633.8 631.1						
0	GRAVEL (FILL)	630.5	4" DIA. STEEL CASING CEMENT / BENTONITE SEAL	1	P/S	3.0		0.0
	CL-CLAY (FILL), soft, medium plasticity, strong brown, moist							
2	- trace gravel at 2.0ft BGS							
	END OF OVERBURDEN HOLE @ 3.0ft BGS							
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (BEDROCK)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: CH-41
DATE COMPLETED: June 14, 2005
DRILLING METHOD: 6 1/4" HSA & HQ CORE
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	COREHOLE	RUN NUMBER	CORE RECOVERY %	RQD %
	LIMESTONE (SALEM FORMATION), brown, medium grained, fossils	628.1	CEMENT / BENTONITE SEAL			
4						
	- set 4" steel casing at 5.5ft BGS		CEMENT / BENTONITE SEAL			
6	- 1.3-feet open vertical fracture with oxidization at 6.0ft BGS					
	- stylolite at 7.4ft BGS					
8	- gray in color at 8.0ft BGS - stylolite at 8.4ft BGS - stylolite at 8.8ft BGS					
10	- stylolite at 10.4ft BGS			1	100	100
12						
	- stylolite at 12.8ft BGS					
	- stylolite at 13.6ft BGS					
14						
	- stylolite at 14.9ft BGS					
16	- open stylolite at 16.0ft BGS					
18						
20			4" DIA. COREHOLE	2	100	100
	- stylolite at 21.8ft BGS					
22						
24						
26	END OF BOREHOLE @ 26.2ft BGS	604.9				
28						

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-1
DATE COMPLETED: April 14, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' VALUE	PID (ppm)
	GROUND SURFACE	704.6						
	TOPSOIL	704.0						
	CL-CLAY (FILL), soft, medium plasticity, orange, moist			1		2.0	4	0.0
2				2		2.0	4	0.0
4	- light brown, wet at 4.0ft BGS			3		2.0	2	0.0
6				4		2.0	1	0.0
8	- trace gravel at 8.0ft BGS			5		2.0	3	0.0
10				6				
12	- stiff, low plasticity, yellow-brown, moist at 12.0ft BGS		BENTONITE SEAL	7		2.0	8	0.0
14	- trace gravel at 14.0ft BGS			8		2.0	9	0.0
16				9		2.0	11	0.0
18	CL-CLAY, stiff, low plasticity, strong brown, moist	686.6		10		2.0	8	0.0

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-1
DATE COMPLETED: April 14, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
22				11		2.0	10	0.0
24				12		2.0	6	0.0
	- LIMESTONE at 24.5ft BGS	680.1						
	END OF BOREHOLE @ 24.5ft BGS							
26								
28								
30								
32								
34								
36								
38								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS ☐

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-2
DATE COMPLETED: April 14, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	696.3						
0	TOPSOIL	695.7						
	CL-CLAY (FILL), soft, medium plasticity, strong brown, moist			1		2.0	2	0.0
2				2		2.0	6	0.0
4				3		2.0	3	0.0
6	- trace gravel, dark brown, wet at 6.0ft BGS			4		2.0	2	0.0
8				5		2.0	4	0.0
10	- orange-brown, moist at 10.0ft BGS		BENTONITE SEAL	6		2.0	3	0.0
12				7				
14	- trace gravel, brown at 14.0ft BGS			8		2.0	6	0.0
16				9		2.0	10	0.0
18				10		2.0	8	0.0

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-2
DATE COMPLETED: April 14, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	- LIMESTONE at 21.0ft BGS END OF BOREHOLE @ 21.0ft BGS	675.3						

22
24
26
28
30
32
34
36
38

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-3
DATE COMPLETED: April 15, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL
	GROUND SURFACE	691.9
0	GW-GRAVEL (FILL)	
2	CL-CLAY (FILL), trace gravel, stiff, medium plasticity, moist	689.9
4	- dark brown in color at 4.0ft BGS	
6	SP-SAND (FILL), loose, fine grained, poorly graded, black-gray, moist - brown in color at 6.0ft BGS	686.4
8		
10	- black-gray in color at 10.0ft BGS	
12		
14	CL-CLAY, firm, medium plasticity, brown, moist	677.4
16	- soft, high plasticity at 16.0ft BGS	
18	- medium plasticity at 18.0ft BGS	

BOREHOLE: BENTONITE SEAL

SAMPLE NUMBER	INTERVAL	REC (ft)	'N' VALUE	PID (ppm)
1		2.0	31	0.0
2		2.0	15	0.0
3		2.0	22	0.0
4		2.0	4	0.0
5				
6		2.0	6	0.0
7		2.0	5	0.0
8		2.0	5	0.0
9		2.0	4	0.0
10		2.0	9	0.0

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-3
DATE COMPLETED: April 15, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	- stiff, low plasticity at 20.0ft BGS			11		2.0	7	0.0
22	- trace gravel, firm at 22.0ft BGS							
	- LIMESTONE at 22.5ft BGS	669.4						
	END OF BOREHOLE @ 22.5ft BGS							
24								
26								
28								
30								
32								
34								
36								
38								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-4
DATE COMPLETED: April 15, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	INTERVAL	REC (ft)	'N' VALUE	PID (ppm)
	GROUND SURFACE	691.9						
	TOPSOIL			1		2.0	2	0.0
2	CL-CLAY, stiff, low plasticity, brown, moist	689.9		2		2.0	9	0.0
4	- trace gravel, low plasticity, strong brown at 4.0ft BGS			3		2.0	14	0.0
6				4		2.0	10	0.0
8	- yellow-brown in color at 8.0ft BGS			5		2.0	12	0.0
10			BENTONITE SEAL	6				
12				7		2.0	14	0.0
14				8		2.0	12	0.0
16				9		2.0	13	0.0
18				10		1.5	19	0.0
	- LIMESTONE at 19.5ft BGS	672.4						
	END OF BOREHOLE @ 19.5ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

GRAIN SIZE ANALYSIS

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-5
DATE COMPLETED: April 15, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
	GROUND SURFACE	697.9					
0	TOPSOIL	697.3					
	CL-CLAY, with silt, very soft, low plasticity, strong brown, moist			1		1.5	2
2				2		2.0	6
4	- trace rock fragments, stiff at 4.0ft BGS			3		2.0	12
6				4		1.8	13
8	- slight black discoloration throughout for 3 feet at 8.0ft BGS			5		2.0	11
10			BENTONITE SEAL	6		2.0	11
12				7		2.0	10
14				8		2.0	9
16		680.9		9		2.0	17
18	ML-SILT, trace to little clay, rock fragments, compact, beige, moist	679.4					
	CL-CLAY, with silt, rock fragments, very stiff, low plasticity, strong brown-beige, moist			10		2.0	18

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-5
DATE COMPLETED: April 15, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE
22	ML-SILT, rock fragments, trace clay, dense, beige, moist - LIMESTONE at 22.0ft BGS END OF BOREHOLE @ 22.0ft BGS	676.4 675.9		11		2.0	12

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-6
DATE COMPLETED: April 19, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	696.9						
	TOPSOIL	696.3						
	CL-CLAY (FILL), some silt, soft, medium plasticity, strong brown, moist			1		1.7	4	0.0
2	- rock fragments, trace fine sand, firm, low plasticity at 2.0ft BGS			2		1.5	6	0.0
4	- trace gravel, low to medium plasticity, gray, moist at 4.0ft BGS			3		2.0	7	0.0
6	- little silt, medium plasticity, wood fragments at 7.0ft BGS			4		1.6	6	0.0
8	- some silt at 9.0ft BGS			5		1.7	6	0.0
10			BENTONITE SEAL	6		1.7	5	0.0
12	- trace gravel, beige at 13.0ft BGS			7		1.7	8	0.0
14	- strong brown, very moist at 15.0ft BGS			8		1.7	4	0.0
16	- rock fragments at 17.0ft BGS			9		1.8	8	0.0
18		677.9		10		1.7	5	0.0
	CL-CLAY, little silt, firm, medium plasticity, strong brown, moist							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-6
DATE COMPLETED: April 19, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	- rock fragments, very moist at 20.0ft BGS			11		1.0	>45	0.0
	- LIMESTONE at 21.0ft BGS	675.9						
	END OF BOREHOLE @ 21.0ft BGS							
22								
24								
26								
28								
30								
32								
34								
36								
38								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-7
DATE COMPLETED: April 20, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	691.3						
	TOPSOIL (1")	690.9						
	CL-CLAY (FILL), some silt, trace gravel, firm, low plasticity, strong brown, moist			1		1.9	5	0.0
2	- little silt, medium plasticity at 2.0ft BGS			2		2.0	6	0.0
4	- soft, high plasticity, gray at 4.0ft BGS			3		1.7	3	0.0
6				4		2.0	3	0.0
8	- trace gravel at 8.0ft BGS			5		2.0	4	0.0
10	- firm, medium plasticity, brown at 10.0ft BGS			6		2.0	5	0.0
12	- brown-gray in color at 13.0ft BGS		BENTONITE SEAL	7		2.0	4	0.0
14				8		2.0	7	0.0
16	- little silt, strong brown at 17.0ft BGS			9		2.0	4	0.0
18				10		2.0	5	0.0

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: 7-7
DATE COMPLETED: April 20, 2005
DRILLING METHOD: 4 1/4" HSA
FIELD PERSONNEL: K. VANDER MEULEN

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
22	- soft, dark gray, very moist, rock fragments at 21.0ft BGS			11		1.7	4	0.0
	SP-SAND (FILL), little to some silt, rock chips, loose, fine grained, poorly graded, beige, Wet	668.3		12		1.2	2	0.0
24	CL-CLAY (FILL), some silt, wood fragments, firm, medium plasticity, gray, wet	666.3		13		2.0	2	0.0
26	- LIMESTONE at 26.0ft BGS END OF BOREHOLE @ 26.0ft BGS	665.3						
28								
30								
32								
34								
36								
38								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-1
DATE COMPLETED: June 2, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	651.7						
2	CL-CLAY, trace gravel, little silt, medium plasticity, strong brown, moist		BENTONITE SEAL	1	P/S	2.5		0.0
4	GP-GRAVEL	647.7		2	P/S	1.0		0.0
	- Refusal at 5.0ft BGS	646.7						
6	END OF BOREHOLE @ 5.0ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-2
DATE COMPLETED: June 2, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	647.3						
2	CL-CLAY, little silt, trace gravel, low plasticity, brown, moist - dry at 2.0ft BGS		BENTONITE SEAL	1	P/S	3.5		0.0
4	- Refusal at 3.5ft BGS END OF BOREHOLE @ 3.5ft BGS	643.8						
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-3
DATE COMPLETED: June 2, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	638.7						
0	CL-CLAY, little silt, trace gravel, medium plasticity, brown, moist		BENTONITE SEAL	1	P/S	3.0		0.0
2	- Refusal at 3.0ft BGS	635.7						
	END OF BOREHOLE @ 3.0ft BGS							
4								
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-4
DATE COMPLETED: June 7, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	691.7						
0	GP-GRAVEL (FILL)							
		690.7						
2	SP-SAND (FILL), fine grained, poorly graded, black, moist			1	P/S	1.5		0.0
4	CL-CLAY (FILL), firm, low plasticity, olive, moist	687.7						
6	- orange in color at 6.0ft BGS			2	P/S	3.0		0.0
8	- medium plasticity at 8.0ft BGS		BENTONITE SEAL					
10				3	P/S	3.5		0.0
12	- brown in color at 11.5ft BGS - orange in color at 12.0ft BGS							
14				4	P/S	4.0		0.0
16	- trace gravel at 16.0ft BGS							
	- Refusal at 17.0ft BGS	674.7		5	P/S	1.0		0.0
18	END OF BOREHOLE @ 17.0ft BGS							
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-5
DATE COMPLETED: June 7, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	693.9						
0	GP-GRAVEL (FILL)							
		692.9						
2	SP-SAND (FILL), fine grained, poorly graded, black, dry - brown in color at 2.0ft BGS			1	P/S	3.0		0.0
4	- black, moist at 4.0ft BGS							
6				2	P/S	3.5		0.0
8								
10			BENTONITE SEAL	3	P/S	1.5		0.0
12	CL-CLAY (FILL), firm, medium plasticity, orange, moist	681.9						
14	- trace gravel at 14.0ft BGS			4	P/S	4.0		0.0
16								
18				5	P/S	4.0		0.0
20								
				6	P/S	1.5		0.0
	- Refusal at 21.5ft BGS	672.4						
22	END OF BOREHOLE @ 21.5ft BGS							
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-6
DATE COMPLETED: June 7, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	663.5						
0	CL-CLAY (FILL)							
2				1	P/S	0.0		
4								
6	SP-SAND (FILL), fine grained, poorly graded, brown, dry	657.5		2	P/S	1.0		0.0
8	- moist at 8.0ft BGS							
10			BENTONITE SEAL	3	P/S	4.0		0.0
12								
14				4	P/S	4.0		0.0
16								
16	CL-CLAY, medium plasticity, dark gray, moist	646.5						
18				5	P/S	3.5		0.0
18	- Refusal at 19.5ft BGS	644.0						
20	END OF BOREHOLE @ 19.5ft BGS							
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-7
DATE COMPLETED: June 8, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	651.0						
2	CL-CLAY (FILL), soft, low plasticity, brown, dry			1	P/S	3.5		0.0
4	SP-SAND (FILL), fine grained, poorly graded, dark brown, moist	647.0						
6				2	P/S	3.5		0.0
8	- no recovery at 8.0ft BGS		BENTONITE SEAL					
10				3	P/S	0.0		
12	- no recovery at 12.0ft BGS							
14				4	P/S	0.0		
	- Refusal at 15.0ft BGS	636.0						
16	END OF BOREHOLE @ 15.0ft BGS							
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-8
DATE COMPLETED: June 8, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	635.9						
2	CL-CLAY (FILL), soft, medium plasticity, brown, moist			1	P/S	2.5		0.0
4	- trace black sand, wet at 4.0ft BGS		BENTONITE SEAL					
6				2	P/S	3.0		0.0
8	- Refusal at 8.0ft BGS END OF BOREHOLE @ 8.0ft BGS	627.9						
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-9
DATE COMPLETED: June 8, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	653.2						
0	CL-CLAY (FILL), trace gravel, firm, low plasticity, brown, dry							
2				1	P/S	2.0		0.0
4								
6	SP-SAND (FILL), fine grained, poorly graded, black, moist	647.2		2	P/S	3.0		0.0
8	CL-CLAY (FILL), soft, medium plasticity, brown, moist	645.2						
10	- gray in color at 10.0ft BGS		BENTONITE SEAL	3	P/S	3.5		0.0
12	- low plasticity, brown at 12.0ft BGS							
14				4	P/S	3.7		0.0
16	CL-CLAY, soft, medium plasticity,strong brown, moist	637.2						
18				5	P/S	3.0		0.0
	- Refusal at 19.0ft BGS	634.2						
20	END OF BOREHOLE @ 19.0ft BGS							
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG
(OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-10
DATE COMPLETED: June 8, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: J. LUZWICK

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	649.2						
0	CL-CLAY, trace gravel, soft, low plasticity, brown, dry							
2				1	P/S	3.0		0.0
4	- brown-black, medium plasticity, moist at 4.0ft BGS		BENTONITE SEAL					
6				2	P/S	2.0		0.0
	- Refusal at 7.0ft BGS	642.2						
8	END OF BOREHOLE @ 7.0ft BGS							
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-11
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	633.3						
0	TOPSOIL, silty, dark brown, moist							
		631.8						
2	CL-CLAY, firm, low plasticity, light brown, moist	631.3	BENTONITE SEAL	1	P/S	3.0		0.0
	ML-SILT, fine sand, compact, light brown, very moist							
	- trace silty sand, loose, wet at 3.7ft BGS							
4	- Refusal at 4.5ft BGS	628.8		2	P/S	0.5		0.0
	END OF BOREHOLE @ 4.5ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-12
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	630.9						
0	TOPSOIL	630.3						
	ML-SILT (FILL), trace fine sand, trace clay, loose, light brown, very moist		BENTONITE SEAL	1	P/S	3.0		0.0
2								
	CL-CLAY, stiff, low plasticity, strong brown, moist	628.4						
4	- Refusal at 3.8ft BGS	627.1						
	END OF BOREHOLE @ 3.8ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-13
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	635.0						
0	TOPSOIL	634.5						
	CL-CLAY (FILL), firm, low plasticity, brown, moist							
2	- trace sand, trace rock fragments, trace organic matter, dark brown at 2.0ft BGS		BENTONITE SEAL	1	P/S	3.0		0.0
4	CL-CLAY, trace sand, firm, low plasticity, strong brown, moist	630.8		2	P/S	1.5		0.0
	- Refusal at 5.5ft BGS	629.5						
6	END OF BOREHOLE @ 5.5ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-14
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	649.3						
0	ML-SILT (FILL), with clay, trace sand, trace organic matter, loose, medium brown, moist							
		647.8						
2	CL-CLAY (FILL), firm, low plasticity, medium brown, moist			1	P/S	2.7		0.0
4	SP-SAND (FILL), compact, fine grained, poorly graded, black, moist	645.5						
	- 2-inch trace bright yellow staining at 5.2ft BGS	644.3						
6	CL-CLAY (FILL), trace sand, trace silt, firm, low plasticity, black, moist			2	P/S	3.0		0.0
8	- soft, medium brown at 7.6ft BGS - black in color at 8.0ft BGS		BENTONITE SEAL					
10				3	P/S	3.0		0.0
12	- faint odor at 11.0ft BGS							
14	- brown, black / gray in color at 13.0ft BGS			4	P/S	3.0		0.0
16				5	P/S	1.0		0.0
	- Refusal at 17.0ft BGS	632.3						
18	END OF BOREHOLE @ 17.0ft BGS							
20								
22								
24								
26								

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-15
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	648.5						
0	TOPSOIL AND WOODCHIPS	648.3						
	CL-CLAY (FILL), stiff, low plasticity, yellow-brown, moist							
2			BENTONITE SEAL	1	P/S	3.0		0.0
	- trace organic matter, trace sand, dark brown at 3.2ft BGS							
4				2	P/S	1.0		0.0
	- Refusal at 5.0ft BGS	643.5						
	END OF BOREHOLE @ 5.0ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-16
DATE COMPLETED: June 14, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	639.8						
0	TOPSOIL, dark brown, moist	639.6						
	CL-CLAY, low plasticity, reddish brown, moist							
2			BENTONITE SEAL	1	P/S	3.0		0.0
	- medium brown in color at 3.5ft BGS							
4				2	P/S	1.5		0.0
	- Refusal at 5.5ft BGS	634.3						
6	END OF BOREHOLE @ 5.5ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-17
DATE COMPLETED: June 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	632.5						
0	TOPSOIL	632.3						
	ML-SILT, with clay, compact, medium brown, moist							
2			BENTONITE SEAL	1	P/S	3.5		0.0
		629.0						
4	CL-CLAY, with silt, firm, low plasticity, strong brown, moist							
		628.0		2	P/S	1.1		0.0
	LIMESTONE, weathered with clay infilling - Refusal at 5.1ft BGS	627.4						
6	END OF BOREHOLE @ 5.1ft BGS							
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-18
DATE COMPLETED: June 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	632.4						
0	TOPSOIL, with silt and clay, dark brown, moist	632.0						
	ML-SILT, with clay, compact, dark brown, moist			1	P/S	3.0		0.0
4	CL-CLAY, with silt, firm, low plasticity, medium brown, moist	628.9	BENTONITE SEAL	2	P/S	2.0		0.0
6	- limestone with trace clay at 5.9ft BGS - Refusal at 6.1ft BGS END OF BOREHOLE @ 6.1ft BGS	626.3						

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-19
DATE COMPLETED: June 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	632.0						
0	TOPSOIL, dark brown, moist	631.8						
	CL-CLAY, with silt, firm, low plasticity, medium brown, moist		BENTONITE SEAL	1	P/S	3.4		0.0
4	- trace limestone fragments at 3.5ft BGS - Refusal at 3.7ft BGS	628.3						
	END OF BOREHOLE @ 3.7ft BGS							

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

DRAFT

STRATIGRAPHIC AND INSTRUMENTATION LOG (OVERBURDEN)

PROJECT NAME: GM BEDFORD RFI
PROJECT NUMBER: 013968
CLIENT: GENERAL MOTORS CORPORATION
LOCATION: BEDFORD, INDIANA

HOLE DESIGNATION: AD-20
DATE COMPLETED: June 21, 2005
DRILLING METHOD: GEOPROBE
FIELD PERSONNEL: D. DEITNER

DEPTH ft BGS	STRATIGRAPHIC DESCRIPTION & REMARKS	ELEV. ft AMSL	BOREHOLE	SAMPLE NUMBER	SAMPLE INTERVAL	SAMPLE REC (ft)	SAMPLE 'N' VALUE	SAMPLE PID (ppm)
	GROUND SURFACE	631.1						
0	TOPSOIL, trace roots, dark brown	630.9						
	CL-CLAY, firm, low plasticity, medium brown, moist		BENTONITE SEAL	1	P/S	2.5		0.0
2								
	LIMESTONE, weathered with clay	628.6						
	- Refusal at 3.1ft BGS	628.0						
4	END OF BOREHOLE @ 3.1ft BGS							
6								
8								
10								
12								
14								
16								
18								
20								
22								
24								
26								

DRAFT

NOTES: MEASURING POINT ELEVATIONS MAY CHANGE; REFER TO CURRENT ELEVATION TABLE

APPENDIX B1

GEOTECHNICAL SOIL TESTING REPORT

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-98)

CLIENT: Conestoga Rovers & Associates — LAB No.: WL-247
PROJECT / SITE: GM-Powertria Bedford Indiana — PROJECT No.: 13968

BOREHOLE No.: P.B -1 — SAMPLE No.: S-020805-KMV-1066 — DEPTH: 9' - 11'
SOIL DESCRIPTION:

APPARATUS: BALANCE No.: — PORCELAIN BOWL No.:
L.L. DEVICE No.: — OVEN No.: — SPATULA No.:
SIEVE No.: — PLATE No.:

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	29	20	16
WATER CONTENT:			
TARE No.	9	1	10
WET+TARE	47.34	45.86	51.06
DRY+TARE	42.7	40.76	43.77
TARE	27.55	24.65	20.95
MASS WATER	4.64	5.1	7.29
MASS SOIL	15.15	16.11	22.82
M.C. (%)	30.6	31.7	31.9

PLASTIC LIMIT (PL):

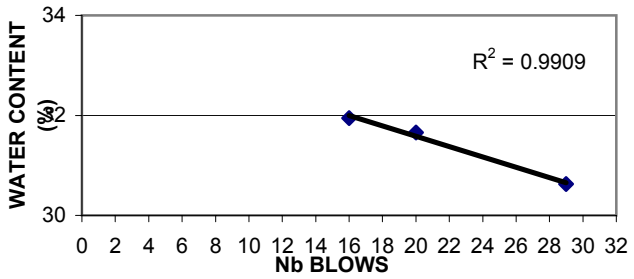
	TEST 1	TEST 2
TARE No.	21	18
WET+TARE	42.79	39.67
DRY+TARE	39.23	36.98
TARE	25.06	26.13
MASS WATER	3.56	2.69
MASS SOIL	14.17	10.85
M.C. (%)	25.1	24.8

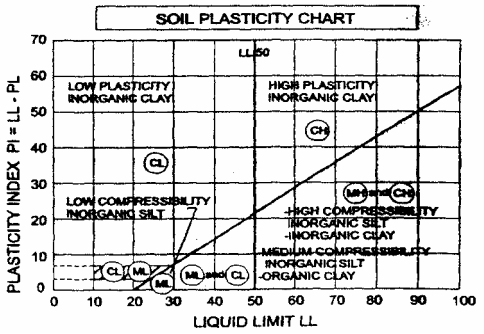
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.		
WET+TARE		
DRY+TARE		
TARE		
MASS WATER	0	0
MASS SOIL	0	0
M.C. (%)	#DIV/0!	#DIV/0!

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☐ DRY PREPARATION
- ☑ WET PREPARATION





P.L.	25
L.L.	31
P.I.	6
W^n (%)	#DIV/0!

REMARKS:

PERFORMED BY: — DATE:
VERIFIED BY: — DATE:

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT: C.R.A
PROJECT / SITE: Proposed Landfill Cell Bedford, Indiana
LAB No.: WL 270-1
PROJECT No.: 13968

BOREHOLE No.:
SAMPLE No.: S-041505-JL-1146
DEPTH: 10 - 12'
SOIL DESCRIPTION: Silty CLAY

APPARATUS:
BALANCE No.: 17280023
L.L. DEVICE No.: 350-8914
OVEN No.: 9904173
SIEVE No.: 40
PLATE No.: WL-ATT-PL-01
PORCELAIN BOWL No.: WL-ATTP-PB-01
SPATULA No.: WL-ATT-SP-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	36	24	17
TARE No.	21	18	4
WET+TARE	39.25	42.09	42.39
DRY+TARE	33.76	35.52	34.35
TARE	25.06	26.13	23.27
MASS WATER	5.49	6.57	8.04
MASS SOIL	8.7	9.39	11.08
M.C. (%)	63.1	70.0	72.6

PLASTIC LIMIT (PL):

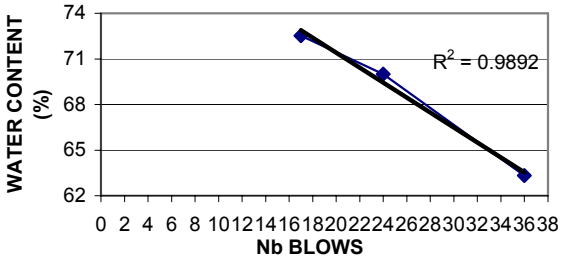
	TEST 1	TEST 2
TARE No.	9	5
WET+TARE	36	33.62
DRY+TARE	33.82	31.63
TARE	27.55	25.95
MASS WATER	2.18	1.99
MASS SOIL	6.27	5.68
M.C. (%)	34.8	35.0

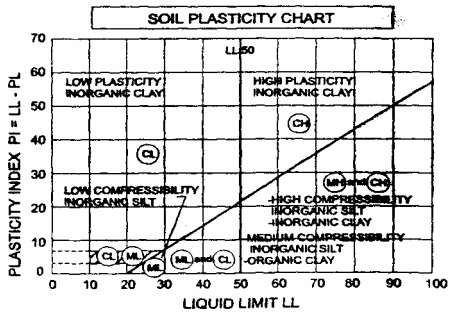
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.		
WET+TARE	205.0	
DRY+TARE	157.8	
TARE	3.7	
MASS WATER	154.1	
MASS SOIL	47.2	
M.C. (%)	30.6	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	35
L.L.	69
P.I.	34
W^n (%)	30.6

REMARKS:

PERFORMED BY: A.Irfan
DATE: 28-Apr-05
VERIFIED BY: H.Gilani
DATE: 28-Apr-05

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT: C.R.A
PROJECT / SITE: Proposed Landfill Cell Bedford, Indiana
LAB No.: WL 270-3
PROJECT No.: 13968

BOREHOLE No.:
SAMPLE No.: S-041505-JL-1154
DEPTH:
SOIL DESCRIPTION: Silty CLAY, with gravel, trace sand

APPARATUS:
BALANCE No.: 17280023
L.L. DEVICE No.: 350-8914
OVEN No.: 9904173
SIEVE No.: 40
PLATE No.: WL-ATT-PL-01
PORCELAIN BOWL No.: WL-ATTP-PB-01
SPATULA No.: WL-ATT-SP-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	31	24	14
TARE No.	6	10	23
WET+TARE	42.62	42.71	46.76
DRY+TARE	35.25	35.26	39.11
TARE	20.27	20.95	25.05
MASS WATER	7.37	7.45	7.65
MASS SOIL	14.98	14.31	14.06
M.C. (%)	49.2	52.1	54.4

PLASTIC LIMIT (PL):

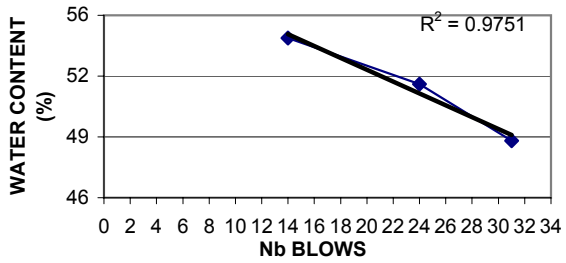
	TEST 1	TEST 2
TARE No.	14	13
WET+TARE	35.36	42.52
DRY+TARE	33.4	39.29
TARE	25.33	26.34
MASS WATER	1.96	3.23
MASS SOIL	8.07	12.95
M.C. (%)	24.3	24.9

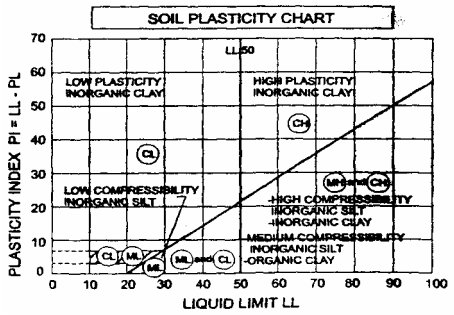
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.		
WET+TARE	219.6	
DRY+TARE	175.5	
TARE	4.2	
MASS WATER	171.3	
MASS SOIL	44.1	
M.C. (%)	25.7	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	25
L.L.	51
P.I.	27
W^n (%)	25.7

REMARKS:

PERFORMED BY: A.Irfan
DATE: 28-Apr-05
VERIFIED BY: H.Gilani
DATE: 28-Apr-05

INSPEC-SOL INC.

UNIT WEIGHT CALCULATIONS

PROJECT NO.: 13968
PROJECT: Proposed Landfil Cell
CLIENT: CRA
LOCATION: Bedford Indiana

SAMPLE DATE: April 15, 2005
SAMPLED BY: KMV
TEST DATE: April 25, 2005
TESTED BY: DO/AI

SAMPLE	Diameter	Length	Sample+tare wet	Sample+tare dry	Tare	Bulk unit weight	Moisture content	Dry unit weight
	cm	cm	g	g	g	(kN/m^3)	%	(kN/m^3)
S-041405-JL-1160	-	-	156.2	137.3	4.2	-	***14.2***	-

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT: C.R.A
PROJECT / SITE: Proposed Landfill Cell Bedford, Indiana
LAB No.: WL 270-2
PROJECT No.: 13968

BOREHOLE No.:
SAMPLE No.: S-041505-JL-1167
DEPTH: 10 -12'
SOIL DESCRIPTION: Silty CLAY, trace sand

APPARATUS:
BALANCE No.: 17280023
L.L. DEVICE No.: 350-8914
OVEN No.: 9904173
SIEVE No.: 40
PLATE No.: WL-ATT-PL-01
PORCELAIN BOWL No.: WL-ATTP-PB-01
SPATULA No.: WL-ATT-SP-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	31	24	17
TARE No.	2	19	25
WET+TARE	40.71	45.02	50.06
DRY+TARE	35.44	38.53	42.26
TARE	23.95	24.79	26.58
MASS WATER	5.27	6.49	7.8
MASS SOIL	11.49	13.74	15.68
M.C. (%)	45.9	47.2	49.7

PLASTIC LIMIT (PL):

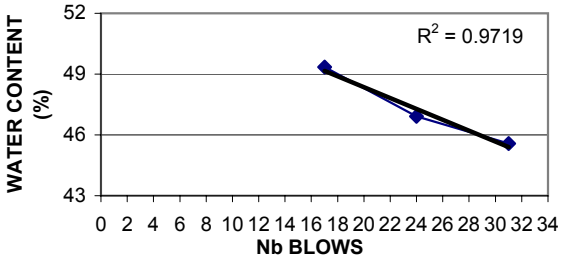
	TEST 1	TEST 2
TARE No.	3	8
WET+TARE	32.88	34.52
DRY+TARE	31.42	32.55
TARE	24.8	23.22
MASS WATER	1.46	1.97
MASS SOIL	6.62	9.33
M.C. (%)	22.1	21.1

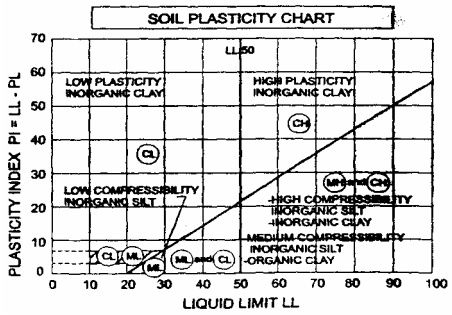
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.		
WET+TARE	212.2	
DRY+TARE	170.0	
TARE	3.6	
MASS WATER	166.4	
MASS SOIL	42.2	
M.C. (%)	25.4	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	22
L.L.	47
P.I.	26
W^n (%)	25.4

REMARKS:

PERFORMED BY: A.Irfan
DATE: 28-Apr-05
VERIFIED BY: H.Gilani
DATE: 28-Apr-05

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT:	**CONESTOGA- ROVERS & ASSOCIATES**	LAB No.:	**WL 289-1**
PROJECT / SITE:	**Proposed Vault, GM Powertrain, Bedford, Indiana**	PROJECT No.:	**13968**

BOREHOLE No.: **CH 36** SAMPLE No.: **S-060305-JL-1259** DEPTH: **25 - 27'**

SOIL DESCRIPTION: **SILT and CLAY, trace sand**

APPARATUS:

BALANCE No.: 17280023 PORCELAIN BOWL No.: WL-ATTP-PB-01

L.L. DEVICE No.: 350-8914 OVEN No.: 9904173 SPATULA No.: WL-ATT-SP-01

SIEVE No.: 40 PLATE No.: WL-ATT-PL-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	36	28	19
TARE No.	14	18	23
WET+TARE	41.55	40.89	39.66
DRY+TARE	35.23	34.48	33.7
TARE	25.33	24.79	25.06
MASS WATER	6.32	6.41	5.96
MASS SOIL	9.9	9.69	8.64
M.C. (%)	63.8	66.2	69.0

PLASTIC LIMIT (PL):

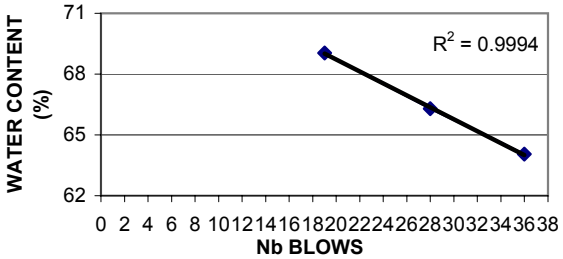
	TEST 1	TEST 2
TARE No.	1	4
WET+TARE	35.83	35.31
DRY+TARE	33.16	32.41
TARE	24.65	23.27
MASS WATER	2.67	2.9
MASS SOIL	8.51	9.14
M.C. (%)	31.4	31.7

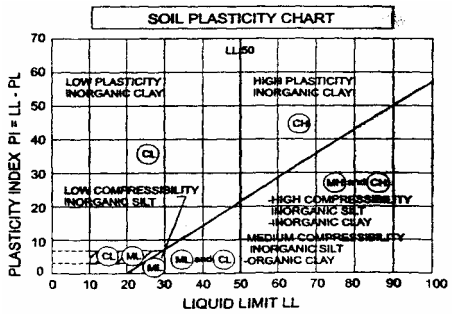
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.	20	
WET+TARE	538.4	
DRY+TARE	417.8	
TARE	9.0	
MASS WATER	408.8	
MASS SOIL	120.6	
M.C. (%)	29.5	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	32
L.L.	67
P.I.	36
W^n (%)	29.5

REMARKS:

PERFORMED BY: A.Irfan DATE: 14-Jun-05

VERIFIED BY: H.Gilani DATE: 14-Jun-05

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT:	**CONESTOGA- ROVERS & ASSOCIATES**	LAB No.:	**WL 289-2**
PROJECT / SITE:	**Proposed Vault, GM Powertrain, Bedford, Indiana**	PROJECT No.:	**13968**

BOREHOLE No.: **CH 37** SAMPLE No.: **S-060605-JL-1260** DEPTH: **17 - 19'**

SOIL DESCRIPTION: **SILT and CLAY, trace sand and gravel**

APPARATUS:

BALANCE No.: 17280023 PORCELAIN BOWL No.: WL-ATTP-PB-01

L.L. DEVICE No.: 350-8914 OVEN No.: 9904173 SPATULA No.: WL-ATT-SP-01

SIEVE No.: 40 PLATE No.: WL-ATT-PL-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	31	22	15
TARE No.	2	17	26
WET+TARE	42.56	45.11	41.4
DRY+TARE	36.49	38.22	35.97
TARE	23.95	24.49	25.25
MASS WATER	6.07	6.89	5.43
MASS SOIL	12.54	13.73	10.72
M.C. (%)	48.4	50.2	50.7

PLASTIC LIMIT (PL):

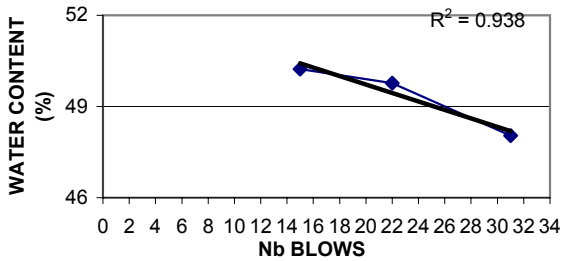
	TEST 1	TEST 2
TARE No.	22	24
WET+TARE	36.32	35.22
DRY+TARE	33.96	33.05
TARE	25.07	24.7
MASS WATER	2.36	2.17
MASS SOIL	8.89	8.35
M.C. (%)	26.5	26.0

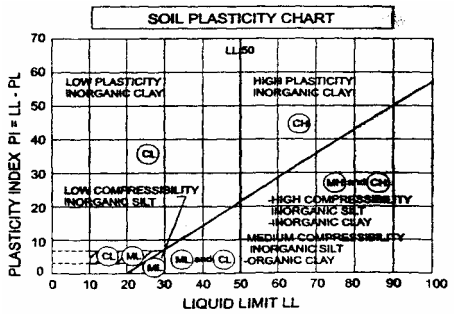
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.	18	
WET+TARE	470.0	
DRY+TARE	379.3	
TARE	9.0	
MASS WATER	370.3	
MASS SOIL	90.7	
M.C. (%)	24.5	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	26
L.L.	49
P.I.	23
W^n (%)	24.5

REMARKS:

PERFORMED BY: A.Irfan DATE: 14-Jun-05

VERIFIED BY: H.Gilani DATE: 14-Jun-05

INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT:	**CONESTOGA- ROVERS & ASSOCIATES**	LAB No.:	**WL 289-3**
PROJECT / SITE:	**Proposed Vault, GM Powertrain, Bedford, Indiana**	PROJECT No.:	**13968**

BOREHOLE No.: **CH 35** SAMPLE No.: **S-060605-JL-1261** DEPTH: **4 - 6'**

SOIL DESCRIPTION: **Clayey SILT, trace sand**

APPARATUS:

BALANCE No.: 17280023 PORCELAIN BOWL No.: WL-ATTP-PB-01

L.L. DEVICE No.: 350-8914 OVEN No.: 9904173 SPATULA No.: WL-ATT-SP-01

SIEVE No.: 40 PLATE No.: WL-ATT-PL-01

LIQUID LIMIT (LL):

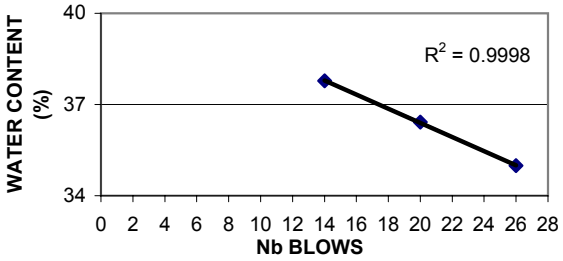
	TEST 1	TEST 2	TEST 3
No. OF BLOWS	26	20	14
TARE No.	13	16	9
WET+TARE	46.68	43.7	47.73
DRY+TARE	41.41	38.58	42.19
TARE	26.34	24.53	27.55
MASS WATER	5.27	5.12	5.54
MASS SOIL	15.07	14.05	14.64
M.C. (%)	35.0	36.4	37.8

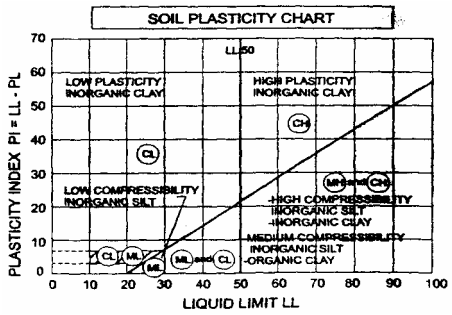
PLASTIC LIMIT (PL):

	TEST 1	TEST 2
TARE No.	23	6
WET+TARE	34.83	27.85
DRY+TARE	33.17	26.54
TARE	25.05	20.27
MASS WATER	1.66	1.31
MASS SOIL	8.12	6.27
M.C. (%)	20.4	20.9

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





INSPEC-SOL INC.

LIQUID LIMIT, PLASTIC LIMIT, AND PLASTICITY INDEX OF SOILS (ASTM D4318-00)

CLIENT:	**CONESTOGA- ROVERS & ASSOCIATES**	LAB No.:	**WL 289-4**
PROJECT / SITE:	**Proposed Vault, GM Powertrain, Bedford, Indiana**	PROJECT No.:	**13968**

BOREHOLE No.: **CH 38** SAMPLE No.: **S-060605-JL-1262** DEPTH: **12 - 14'**

SOIL DESCRIPTION: **Silty CLAY, trace sand**

APPARATUS:

BALANCE No.: 17280023 PORCELAIN BOWL No.: WL-ATTP-PB-01

L.L. DEVICE No.: 350-8914 OVEN No.: 9904173 SPATULA No.: WL-ATT-SP-01

SIEVE No.: 40 PLATE No.: WL-ATT-PL-01

LIQUID LIMIT (LL):

	TEST 1	TEST 2	TEST 3
No. OF BLOWS	34	26	17
TARE No.	6	18	24
WET+TARE	34.02	38.93	44.04
DRY+TARE	28.22	32.5	35.61
TARE	20.27	23.95	24.7
MASS WATER	5.8	6.43	8.43
MASS SOIL	7.95	8.55	10.91
M.C. (%)	73.0	75.2	77.3

PLASTIC LIMIT (PL):

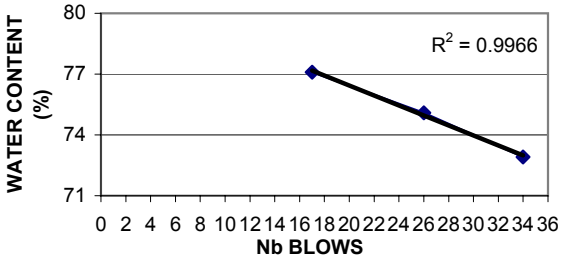
	TEST 1	TEST 2
TARE No.	22	23
WET+TARE	35.31	34.09
DRY+TARE	32.72	31.9
TARE	25.07	25.06
MASS WATER	2.59	2.19
MASS SOIL	7.65	6.84
M.C. (%)	33.9	32.0

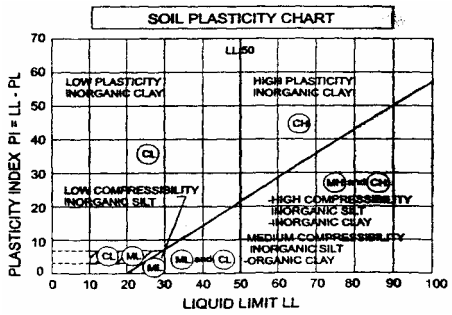
NATURAL MOISTURE CONTENT (W^n)

	TEST 1	TEST 2
TARE No.	1	
WET+TARE	292.1	
DRY+TARE	231.5	
TARE	9.0	
MASS WATER	222.5	
MASS SOIL	60.6	
M.C. (%)	27.2	

SOIL PREPARATION:

- ☐ COHESIVE <400 um
- ☐ COHESIVE >400 um
- ☐ NON-COHESIVE
- ☑ DRY PREPARATION
- ☐ WET PREPARATION





P.L.	33
L.L.	75
P.I.	42
W^n (%)	27.2

REMARKS:

PERFORMED BY: A.Irfan DATE: 16-Jun-05

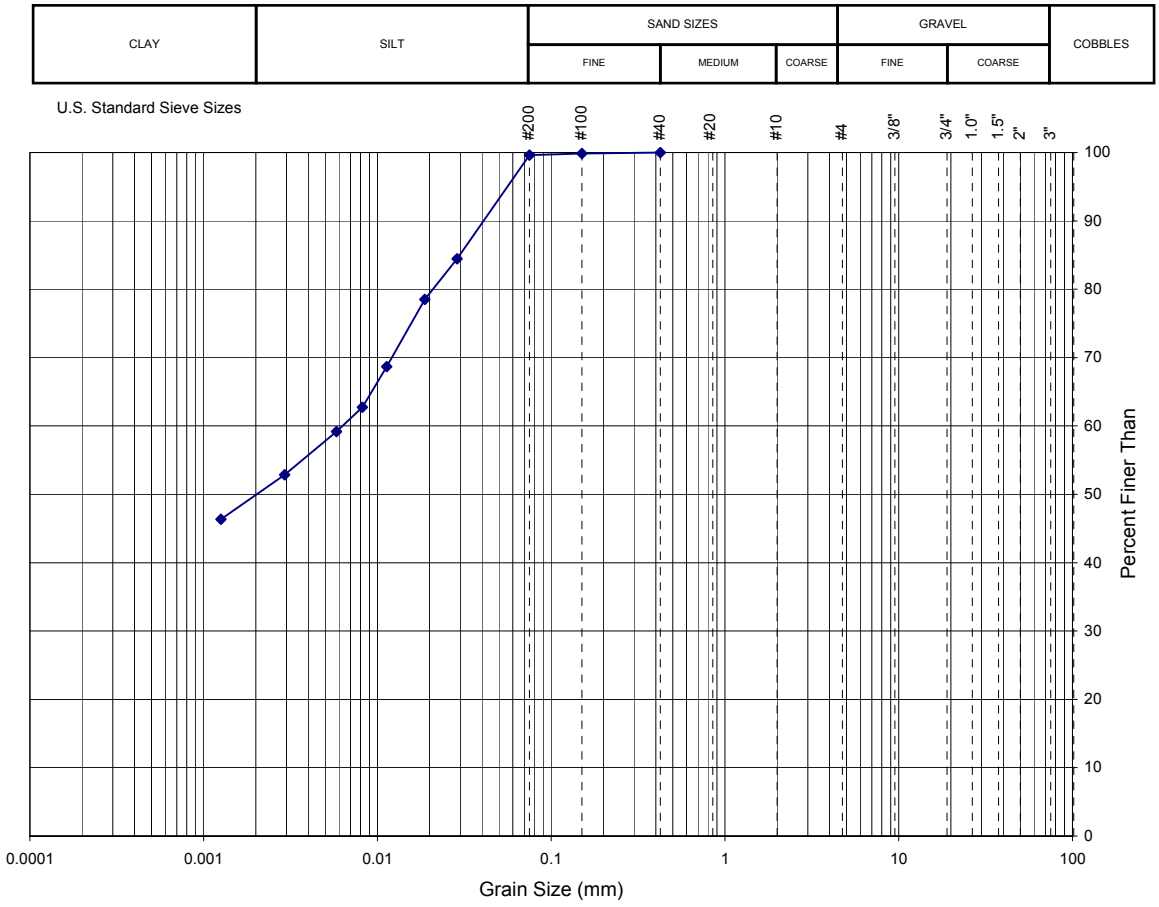
VERIFIED BY: H.Gilani DATE: 16-Jun-05

INSPEC-SOL INC.

SAMPLE DATE: April 14, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-041405-JL-1146
SAMPLE DEPTH: 10 - 12'
SAMPLED BY: Ken Vander Meulen

PROJECT: Proposed Landfill Cell
LOCATION: Bedford, Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.:

TEST DATE:
TESTED BY: A.Irfan
LAB No. : WL 270-1



PARTICLE SIZE DISTRIBUTION

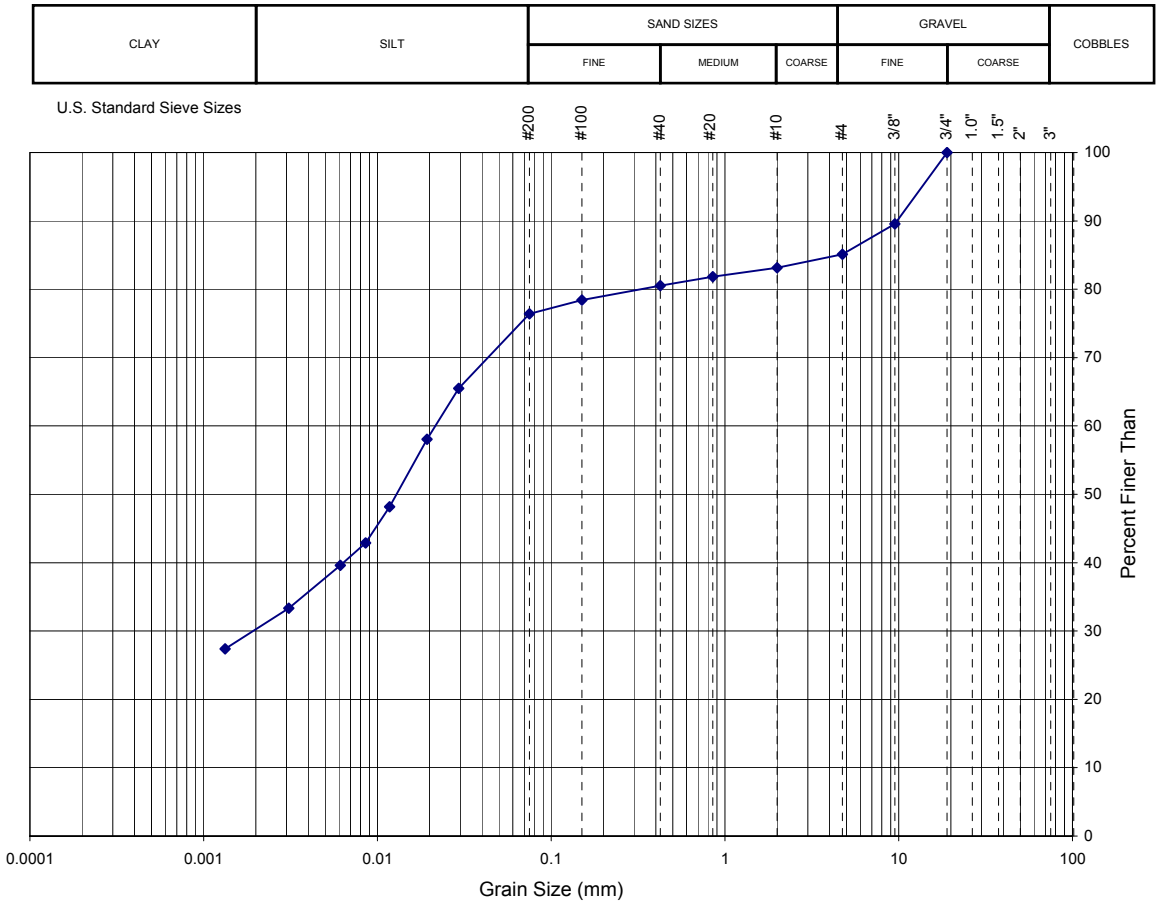
DESCRIPTION				
Silty CLAY	AND	36 - 50 %	GRAVEL	0 %
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	0 %
	WITH	11 - 20 %	SILT + CLAY	100 %
	TRACE	1 - 10 %		

INSPEC-SOL INC.

SAMPLE DATE: April 14, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-041405-JL-1154
SAMPLE DEPTH: 10 -12'
SAMPLED BY: Ken Vander Meulen

PROJECT: Proposed Landfill Cell
LOCATION: Bedford Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.:

TEST DATE:
TESTED BY: A.Irfan
LAB No. : WL 270-3



PARTICLE SIZE DISTRIBUTION

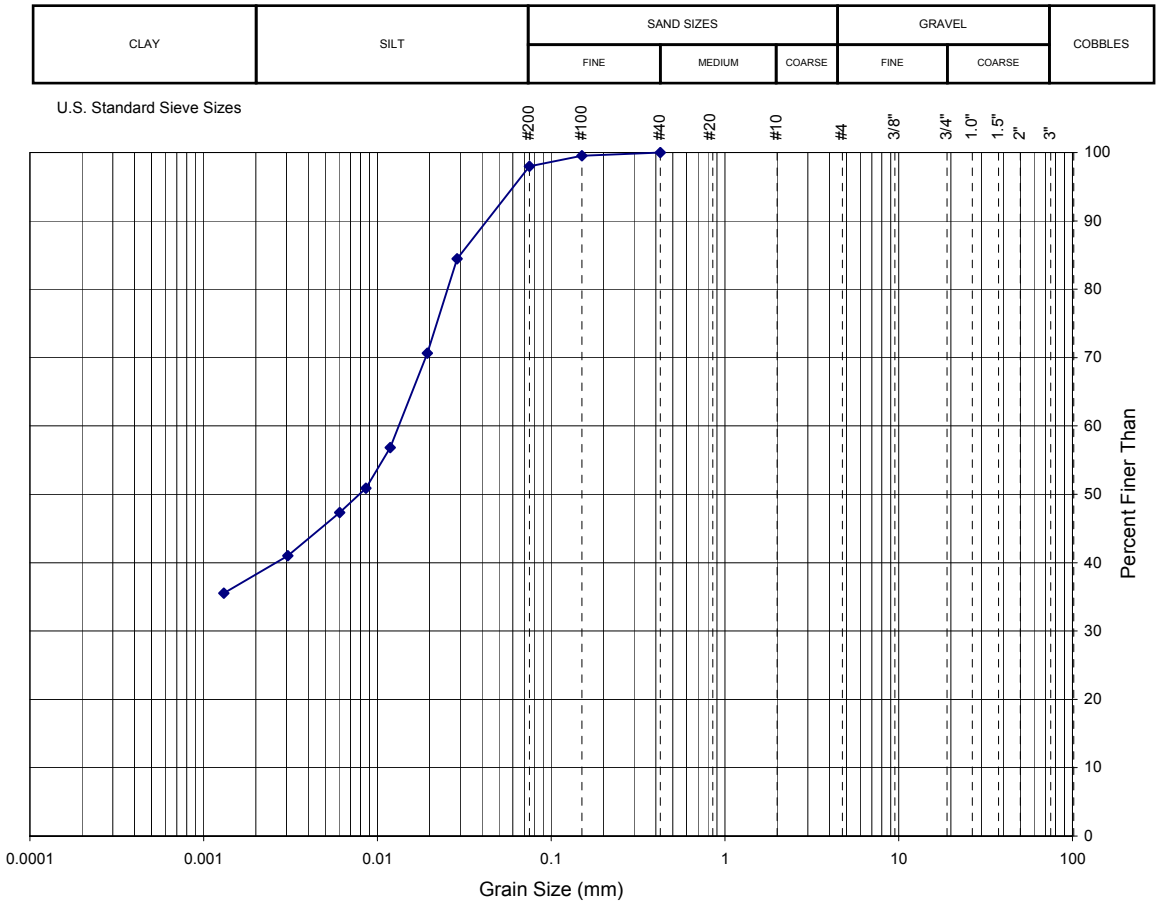
DESCRIPTION				
Silty CLAY, with gravel, trace sand	AND	36 - 50 %	GRAVEL 15 %	
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND 9 %	
	WITH	11 - 20 %	SILT + CLAY 76 %	
	TRACE	1 - 10 %		

INSPEC-SOL INC.

SAMPLE DATE: April 15, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-041405-JL-1167
SAMPLE DEPTH: 10 - 12'
SAMPLED BY: Ken Vander Meulen

PROJECT: Proposed Landfill Cell
LOCATION: Bedford, Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.: 13968

TEST DATE: April 27, 2005
TESTED BY: A.Irfan
LAB No. : WL-270-2



PARTICLE SIZE DISTRIBUTION

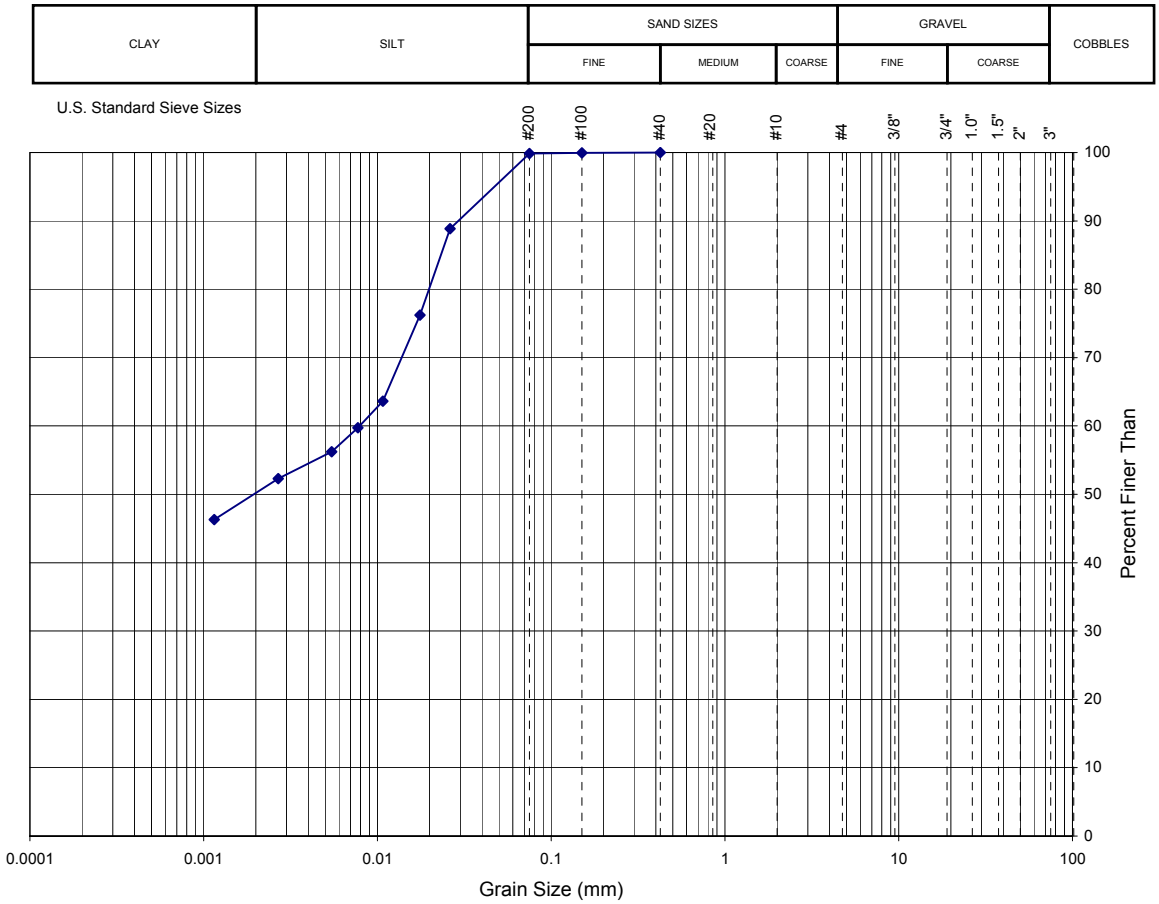
DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS		SUMMARY		
Silty CLAY, trace sand	AND	36 - 50 %	GRAVEL	0	%
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	2	%
	WITH	11 - 20 %	SILT + CLAY	98	%
	TRACE	1 - 10 %			

INSPEC-SOL INC.

SAMPLE DATE: June 3, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-060305-JL-1259
SAMPLE DEPTH: 25 - 27'
SAMPLED BY: JL

PROJECT: Proposed Vault, GM Powertrain
LOCATION: Bedford Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.: 13968

TEST DATE: June 15, 2005
TESTED BY: A.Irfan
LAB No. : WL 289-1



PARTICLE SIZE DISTRIBUTION

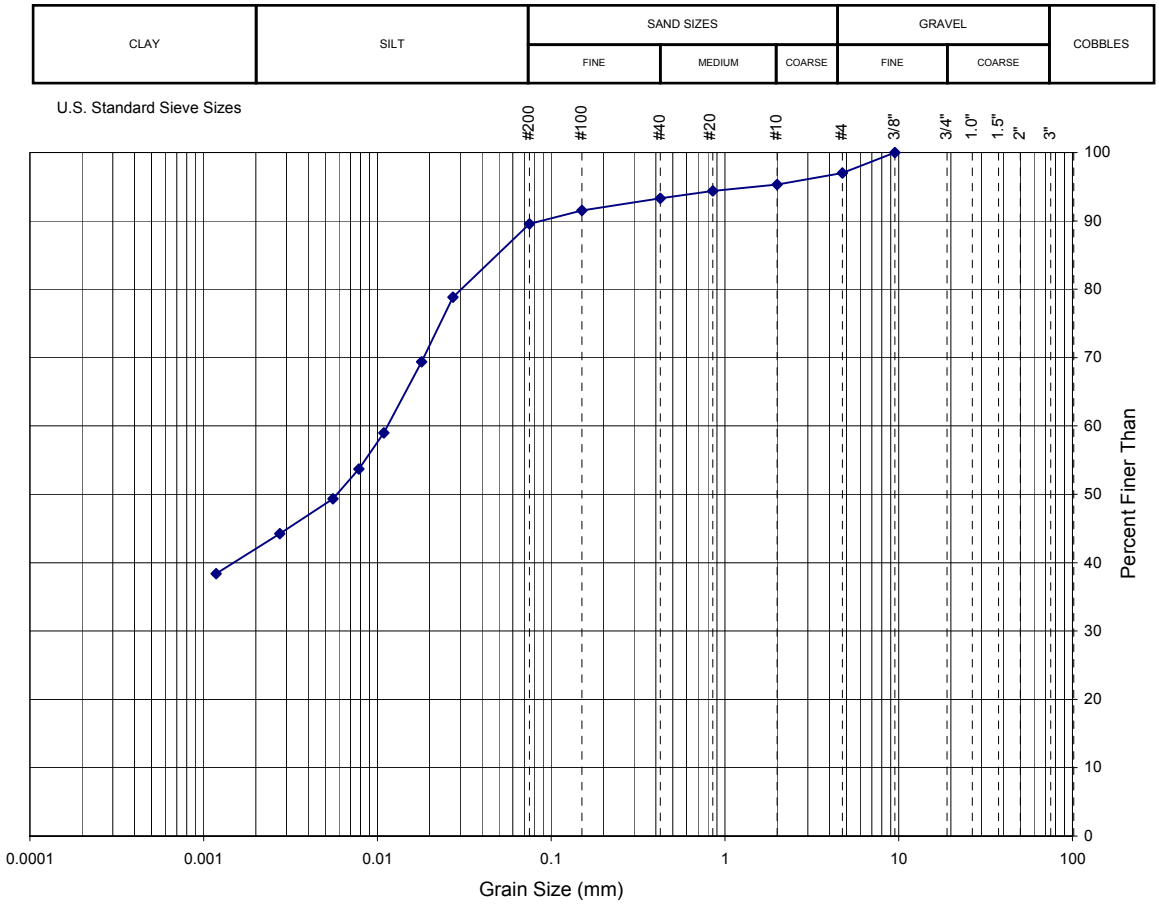
DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS		SUMMARY		
SILT and CLAY, trace sand	AND	36 - 50 %	GRAVEL	0	%
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	0	%
	WITH	11 - 20 %	SILT + CLAY	100	%
	TRACE	1 - 10 %			

INSPEC-SOL INC.

SAMPLE DATE: June 6, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-060605-JL-1260
SAMPLE DEPTH: 17 - 19'
SAMPLED BY: JL

PROJECT: Proposed Vault, GM Powertrain
LOCATION: Bedford Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.:

TEST DATE:
TESTED BY: A.Irfan
LAB No. : WL 289-2



PARTICLE SIZE DISTRIBUTION

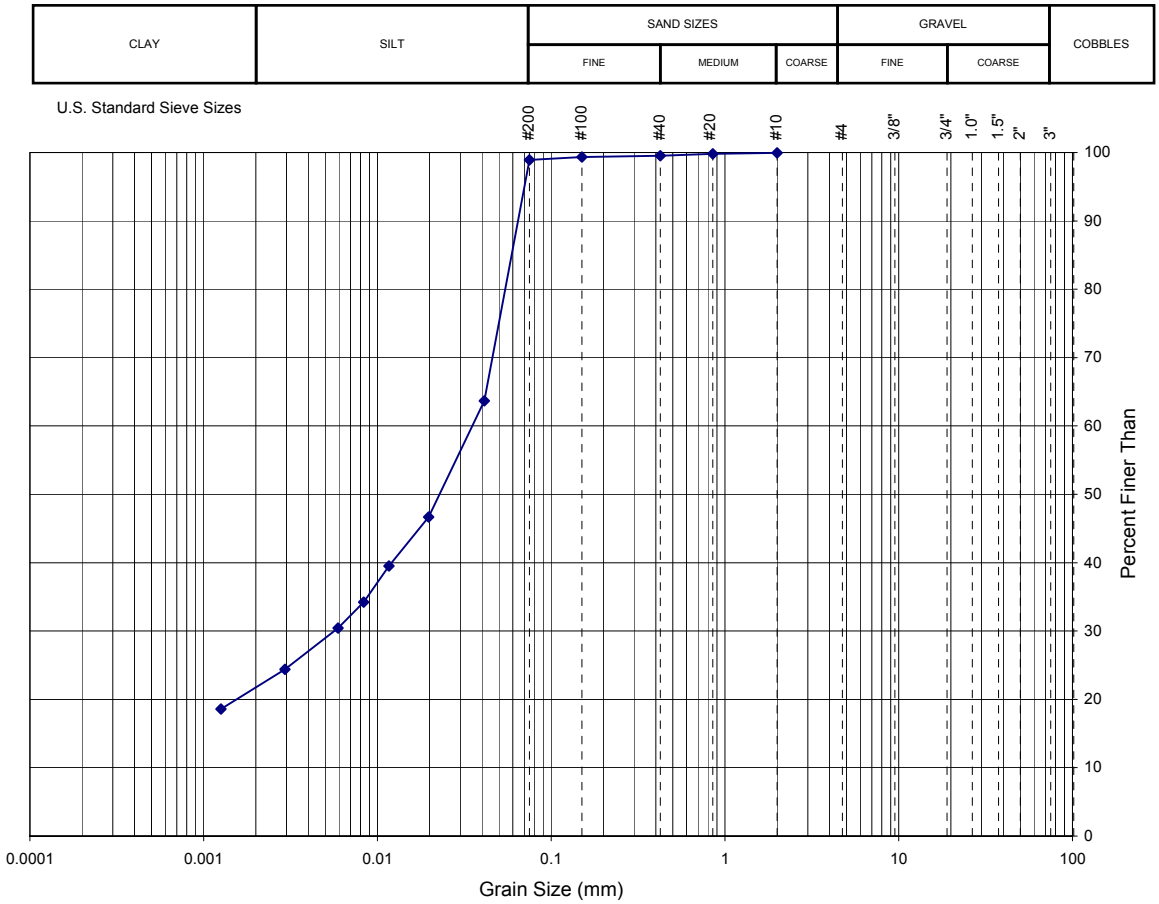
DESCRIPTION				
SILT and CLAY, trace sand & gravel	AND	36 - 50 %	GRAVEL	3 %
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	7 %
	WITH	11 - 20 %	SILT + CLAY	90 %
	TRACE	1 - 10 %		

INSPEC-SOL INC.

SAMPLE DATE: June 6, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-060605-JL-1261
SAMPLE DEPTH: 4 - 6'
SAMPLED BY: JL

PROJECT: Proposed Vault, GM Powertrain
LOCATION: Bedford Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.:

TEST DATE:
TESTED BY: A.Irfan
LAB No. : WL 289-3



PARTICLE SIZE DISTRIBUTION

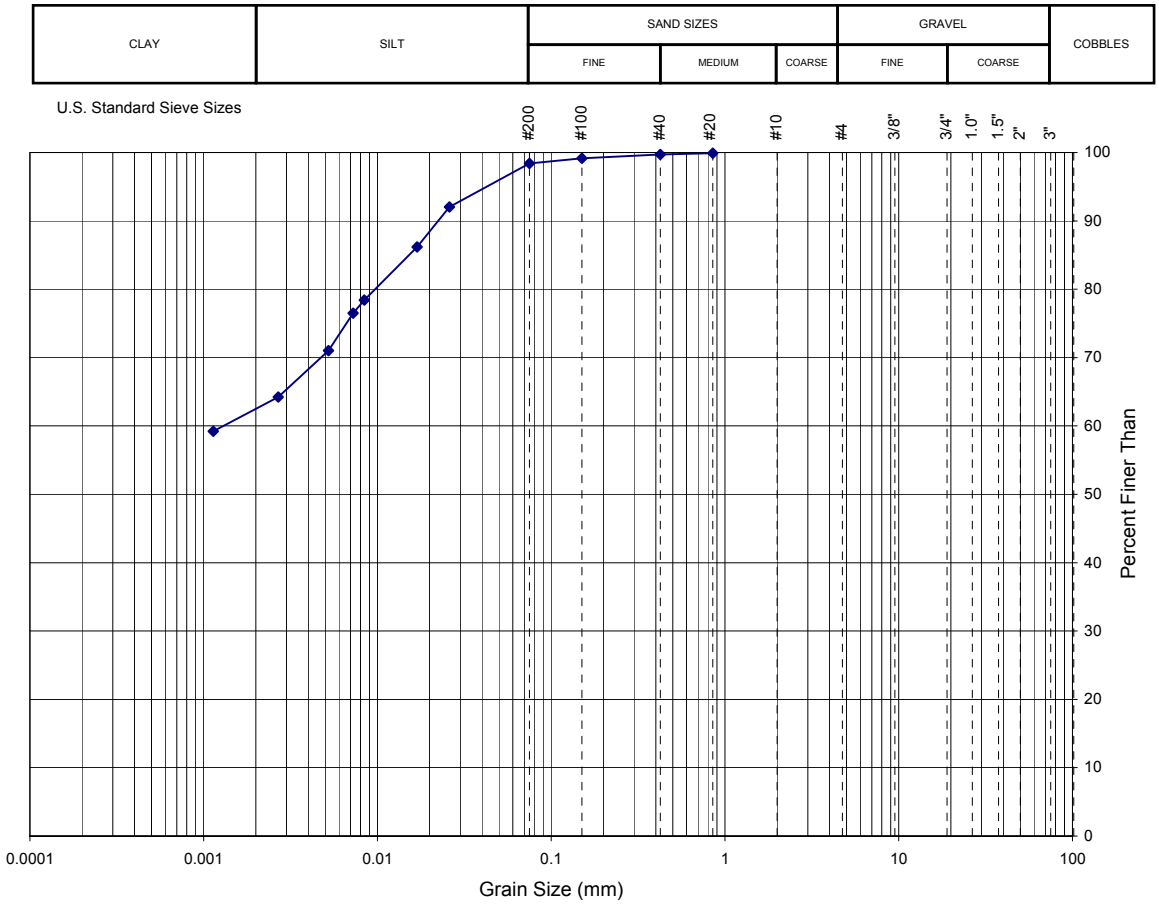
DESCRIPTION				
Clayey SILT, trace sand	AND	36 - 50 %	GRAVEL	0 %
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	1 %
	WITH	11 - 20 %	SILT + CLAY	99 %
	TRACE	1 - 10 %		

INSPEC-SOL INC.

SAMPLE DATE: June 6, 2005
SAMPLE LOCATION: Bedford
SAMPLE No.: S-060605-JL-1262
SAMPLE DEPTH: 12 - 14'
SAMPLED BY: JL

PROJECT: Proposed Vault, GM Powertrain
LOCATION: Bedford Indiana
CLIENT : Conestoga Rovers & Associates
PROJECT NO.: 13968

TEST DATE: June 17, 2005
TESTED BY: A.Irfan
LAB No. : WL 289-4



PARTICLE SIZE DISTRIBUTION

DESCRIPTION	SOIL CLASSIFICATION DESCRIPTIVE MODIFIERS		SUMMARY		
Silty CLAY, trace sand	AND	36 - 50 %	GRAVEL	0	%
	ADJECTIVE (e.g. sandy)	21 - 35 %	SAND	2	%
	WITH	11 - 20 %	SILT + CLAY	98	%
	TRACE	1 - 10 %			

INSPEC-SOL INC.

Measurement of Hydraulic Conductivity of Saturated Porous Material Using a Flexible Wall Permeameter

Constant Head Method

(ASTM D-5084)

SAMPLE IDENTIFICATION

Sample No.	**S-060305-JL-1259**
Type of specimen	**Undisturbed sample**
Depth of undisturbed sample, ft/m.	**26'**

Date	**20-Jun-05**
Project No.	**13968**
Site	**Proposed Vault, GM Powertrain, Bedford, Indiana**

Specimen description	**SILT and CLAY, trace sand**

Specimen conditions:		**Initial**
Diameter	cm	*5.103*
Length	cm	*5.171*
Volume	cm^3	105.76
Wet Mass	gr.	*203.1*
Dry Density	kg/m^3	*1452*
Water content	%	*32.3*

Permeation condition		
Cell pressure	kPa	*206.84*
Head pressure	kPa	*77.22*
Back pressure	kPa	*57.92*
Volume under steady state flow	cm^3	*0.3-0.6*
Hydraulic gradient, I	-	*19.3*

HYDRAULIC CONDUCTIVITY, cm/s	***7.97E-09***

INSPEC-SOL INC.

Measurement of Hydraulic Conductivity of Saturated Porous Material Using a Flexible Wall Permeameter

Constant Head Method

(ASTM D-5084)

SAMPLE IDENTIFICATION

Sample No.	**S-060605-JL-1260**
Type of specimen	**Undisturbed sample**
Depth of undisturbed sample, ft/m.	**18'**

Date	**24-Jun-05**
Project No.	**13968**
Site	**Proposed Vault, GM Powertrain, Bedford, Indiana**

Specimen description	**SILT and CLAY, trace sand & gravel**

Specimen conditions:		**Initial**
Diameter	cm	*5.094*
Length	cm	*5.224*
Volume	cm^3	106.47
Wet Mass	gr.	*209.16*
Dry Density	kg/m^3	*1578*
Water content	%	*24.5*

Permeation condition		
Cell pressure	kPa	*206.84*
Head pressure	kPa	*104.11*
Back pressure	kPa	*84.81*
Volume under steady state flow	cm^3	*1.5*
Hydraulic gradient, I	-	*19.3*

HYDRAULIC CONDUCTIVITY, cm/s	***8.09E-09***

INSPEC-SOL INC.

Measurement of Hydraulic Conductivity of Saturated Porous Material Using a Flexible Wall Permeameter

Constant Head Method

(ASTM D-5084)

SAMPLE IDENTIFICATION

Sample No.	**S-060605-JL-1261**
Type of specimen	**Undisturbed sample**
Depth of undisturbed sample, ft/m.	**5'**

Date	**20-Jun-05**
Project No.	**13968**
Site	**Proposed Vault, GM Powertrain, Bedford, Indiana**

Specimen description	**Clayey SILT, trace sand**

Specimen conditions:		**Initial**
Diameter	cm	*5.132*
Length	cm	*5.323*
Volume	cm^3	110.11
Wet Mass	gr.	*210.93*
Dry Density	kg/m^3	*1513*
Water content	%	*26.6*

Permeation condition		
Cell pressure	kPa	*206.84*
Head pressure	kPa	*177.20*
Back pressure	kPa	*157.89*
Volume under steady state flow	cm^3	*0.6-1.5*
Hydraulic gradient, I	-	*19.3*

HYDRAULIC CONDUCTIVITY, cm/s	***1.76E-07***

FACSIMILE TRANSMISSION

Golder Associates Ltd.
2390 Argentia Road
Mississauga, ON, Canada L5N 5Z7

Telephone: 905-567-4444
Fax Access: 905-567-6561

DATE:	April 29, 2005	**JOB NO:**	05-1116-022
TO:	Dmitry Olshansky	**FAX NO:**	(519) 884-5256
	Inspec-Sol Inc.	**TOTAL PAGES:**	3
FROM:	Rui Oliveira	**EMAIL:**	
RE:	**LABORATORY TEST RESULTS**		

Original hard copy to follow by mail ☒ Yes, ☐ No

Please advise immediately if any pages are not received

The document(s) included in this transmission are intended only for the recipient(s) named above and contain privileged and confidential information. Any unauthorized disclosure, dissemination or copying of this transmission is strictly prohibited. If you have received this transmission in error, please immediately notify our receptionist by telephone and destroy the transmission. Thank you.

OFFICES ACROSS NORTH AMERICA, SOUTH AMERICA, EUROPE, ASIA, AUSTRALASIA

CANADA'S 50 BEST MANAGED PRIVATE COMPANIES

UNCONFINED COMPRESSION TEST (UC)

ASTM D 2166-00e1

SAMPLE IDENTIFICATION

PROJECT NUMBER	05-1116-022	SAMPLE NUMBER	1146
BOREHOLE NUMBER	-	SAMPLE DEPTH, m	3.05-3.66

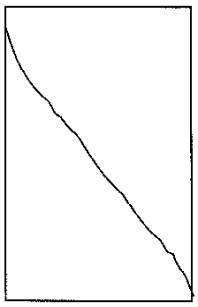
TEST CONDITIONS

MACHINE SPEED, mm/min	1.15	TYPE OF SPECIMEN	undisturbed
RATE OF AXIAL STRAIN, %/min	0.75	L/D	2.21

SPECIMEN INFORMATION

SAMPLE HEIGHT, cm	15.38	WATER CONTENT, (specimen) %	30.30
SAMPLE DIAMETER, cm	6.97	UNIT WEIGHT, kN/m^3	18.72
SAMPLE AREA, cm^2	38.13	DRY UNIT WT., kN/m^3	14.36
SAMPLE VOLUME, cm^3	586.47	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	1119.66	VOID RATIO	0.46
DRY WEIGHT, g	858.87		

FAILURE SKETCH



TEST RESULTS

STRAIN AT FAILURE, %	3.4	COMPRESSIVE STRESS, kPa	58

REMARKS:

DATE: April 29, 2005

UNCONFINED COMPRESSION TEST (UC)

ASTM D 2166-00e1

SAMPLE IDENTIFICATION

PROJECT NUMBER	05-1116-022	SAMPLE NUMBER	1167
BOREHOLE NUMBER	-	SAMPLE DEPTH, m	3.05-3.66

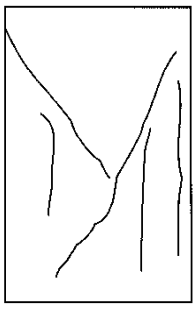
TEST CONDITIONS

MACHINE SPEED, mm/min	1.09	TYPE OF SPECIMEN	undisturbed
RATE OF AXIAL STRAIN, %/min	0.75	L/D	2.09

SPECIMEN INFORMATION

SAMPLE HEIGHT, cm	14.55	WATER CONTENT, (specimen) %	21.69
SAMPLE DIAMETER, cm	6.96	UNIT WEIGHT, kN/m^3	19.26
SAMPLE AREA, cm^2	38.07	DRY UNIT WT., kN/m^3	15.83
SAMPLE VOLUME, cm^3	553.75	SPECIFIC GRAVITY, assumed	2.70
WET WEIGHT, g	1088.04	VOID RATIO	0.40
DRY WEIGHT, g	894.09		

FAILURE SKETCH



TEST RESULTS

STRAIN AT FAILURE, %	4.2	COMPRESSIVE STRESS, kPa	77

REMARKS:

DATE: April 29, 2005

APPENDIX B2

GEOTECHNICAL BEDROCK TESTING REPORTS

DAVROC
TESTING LABORATORIES INC.

CONSULTING ENGINEERS •
Materials Testing • and Inspection

File: L04-0139RC

June 30, 2005

Inspec-Sol Inc.
651 Colby Drive
Waterloo, Ontario
N2V 1Z2

Attn: Mr. Bruce Polan

Dear Sir;

Rock Core Tests

Further to receipt of six (6) 63 mm diameter rock core samples in our laboratory on June 29, 2005, Davroc Testing Laboratories Inc. are pleased to report the results of our tests.

As instructed, the core samples were trimmed, ground and tested for compressive strength in accordance with ASTM D 2938 Standard Test Method for "Unconfined Compressive Strength of Intact Rock Core Specimens".

Results of our tests are shown on the attached Rock Core Test Certificate.

FAX
05
Bruce Polan
Rick Hoekstra
1-519-884-5256
Lisa @ Davroc
DATE: June 30/05

2051 Williams Parkway
Units 20 & 21
Brampton, Ontario
Canada L6S 5 T4
Tel: (905) 792-7792
Fax: (905) 792-7829

DAVROC

File: L04-0139RC

We trust the above is satisfactory. Should you require any further information, please do not hesitate to contact the undersigned.

Yours very truly,
Davroc Testing Laboratories Inc.

Fabio Fregonese, C.E.T.
Manager Material Testing Services

Sal Fasullo, C.E.T.
Vice President

FF/ld
04-0139-2

Distribution: Mr. Rick Hoekstra

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	843-1	843-2
Location	1184	1185
Date Cored	Not Known	Not Known
Date Tested	June 30, 2005	June 30, 2005
Capped Height (mm)	126	126
Average Diameter (mm)	63	63
L/D Ratio	2	2
Density (kg/m^3)	-	-
Corrected Compressive Strength (MPa)	94.0	135.9
Mode of Failure	Satisfactory	Satisfactory
***Direction of Loading**	Same	Same
** **Moisture Condition at Time of Test**	As Received	As Received

Remarks: None

Date: June 30, 2005

Signed:

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	843-3	893-4
Location	1186	1187
Date Cored	Not Known	Not Known
Date Tested	June 30, 2005	June 30, 2005
Capped Height (mm)	126	126
Average Diameter (mm)	63	63
L/D Ratio	2	2
Density (kg/m^3)	-	-
Corrected Compressive Strength (MPa)	128.1	98.0
Mode of Failure	Satisfactory	Satisfactory
***Direction of Loading**	Same	Same
** **Moisture Condition at Time of Test**	As Received	As Received

Remarks: None

Date: June 30, 2005 **Signed:**

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	843-5	843-6
Location	1188	1189
Date Cored	Not Known	Not Known
Date Tested	June 30, 2005	June 30, 2005
Capped Height (mm)	126	126
Average Diameter (mm)	63	63
L/D Ratio	2	2
Density (kg/m^3)	-	-
Corrected Compressive Strength (MPa)	163.1	105.1
Mode of Failure	Satisfactory	Satisfactory
***Direction of Loading**	Same	Same
** **Moisture Condition at Time of Test**	As Received	As Received

Remarks: None

Date: June 30, 2005

Signed:

DAVROC
TESTING LABORATORIES INC.

CONSULTING ENGINEERS •
Materials Testing • and Inspection

File: L04-0139RC

October 4, 2005

Inspec-Sol Inc.
651 Colby Drive
Waterloo, Ontario
N2V 1Z2

Attn: Mr. Bruce Polan

Dear Sir;

Rock Core Tests

Further to receipt of fifteen (15) 60 mm diameter nominal size rock core samples in our laboratory on September 30, 2005, Davroc Testing Laboratories Inc. is pleased to report the results of our tests.

As instructed, the core samples were trimmed, end ground and tested for compressive strength in accordance with ASTM D 2938 Standard Test Method for "Unconfined Compressive Strength of Intact Rock Core Specimens".

Results of our tests are shown on the attached Rock Core Test Certificate.

We trust the above is satisfactory. Should you require any further information, please do not hesitate to contact the undersigned.

Yours very truly,
Davroc Testing Laboratories Inc.

F. Fregonese

Fabio Fregonese, C.E.T.
Manager Material Testing Services

Sal Fasullo, C.E.T.
Vice President

04-0139-4

FAX
Bruce Polan - Inspec-Sol
1-519-884-5256
Angela - Davroc
6
DATE: Oct 4/05

2051 Williams Parkway
Units 20 & 21
Brampton, Ontario
Canada L6S 5 T4
Tel: (905) 792-7792
Fax: (905) 792-7829

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	1194	1195	1196
Location	-	-	-
Date Cored	Not Known	Not Known	Not Known
Date Tested	October 4, 2005	October 4, 2005	October 4, 2005
Capped Height (mm)	118	126	126
Average Diameter (mm)	63	63	63
L/D Ratio	1.87	2	2
Density (kg/m^3)	-	-	
Corrected Compressive Strength (MPa)	48.8	90.1	72.6
Mode of Failure	Satisfactory	Satisfactory	Satisfactory
***Direction of Loading**	Not Known	Not Known	Not Known
** **Moisture Condition at Time of Test**	Dry	Dry	Dry

Remarks: None

Date: October 4, 2005 **Signed:**

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	1197	1198	1199
Location	-	-	-
Date Cored	Not Known	Not Known	Not Known
Date Tested	October 4, 2005	October 4, 2005	October 4, 2005
Capped Height (mm)	126	126	126
Average Diameter (mm)	63	63	63
L/D Ratio	2	2	2
Density (kg/m^3)	-	-	-
Corrected Compressive Strength (MPa)	108.0	67.8	110.2
Mode of Failure	Satisfactory	Satisfactory	Satisfactory
***Direction of Loading**	Not Known	Not Known	Not Known
** **Moisture Condition at Time of Test**	Dry	Dry	Dry

Remarks: None

Date: October 4, 2005

Signed:

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	1200	1201	1202
Location	-	-	-
Date Cored	Not Known	Not Known	Not Known
Date Tested	October 4, 2005	October 4, 2005	October 4, 2005
Capped Height (mm)	126	126	126
Average Diameter (mm)	63	63	63
L/D Ratio	2	2	2
Density (kg/m^3)	-	-	-
Corrected Compressive Strength (MPa)	71.9	98.0	121.5
Mode of Failure	Satisfactory	Satisfactory	Satisfactory
***Direction of Loading**	Not Known	Not Known	Not Known
** **Moisture Condition at Time of Test**	Dry	Dry	Dry

Remarks: None

Date: October 4, 2005

Signed:

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	1203	1204	1205
Location	-	-	-
Date Cored	Not Known	Not Known	Not Known
Date Tested	October 4, 2005	October 4, 2005	October 4, 2005
Capped Height (mm)	126	126	126
Average Diameter (mm)	63	63	63
L/D Ratio	2	2	2
Density (kg/m^3)	-	-	-
Corrected Compressive Strength (MPa)	147.0	63.1	45.8
Mode of Failure	Satisfactory	Satisfactory	Satisfactory
***Direction of Loading**	Not Known	Not Known	Not Known
** **Moisture Condition at Time of Test**	Dry	Dry	Dry

Remarks: None

Date: October 4, 2005

Signed:

DAVROC

ROCK CORE TEST REPORT

File No. L04-0139RC

Core No.	1206	1207	1208
Location	-	-	-
Date Cored	Not Known	Not Known	Not Known
Date Tested	October 4, 2005	October 4, 2005	October 4, 2005
Capped Height (mm)	126	126	126
Average Diameter (mm)	63	63	63
L/D Ratio	2	2	2
Density (kg/m^3)	-	-	-
Corrected Compressive Strength (MPa)	45.3	166.5	68.4
Mode of Failure	Satisfactory	Satisfactory	Satisfactory
***Direction of Loading**	Not Known	Not Known	Not Known
**** Moisture Condition at Time of Test**	Dry	Dry	Dry

Remarks: None

Date: October 4, 2005

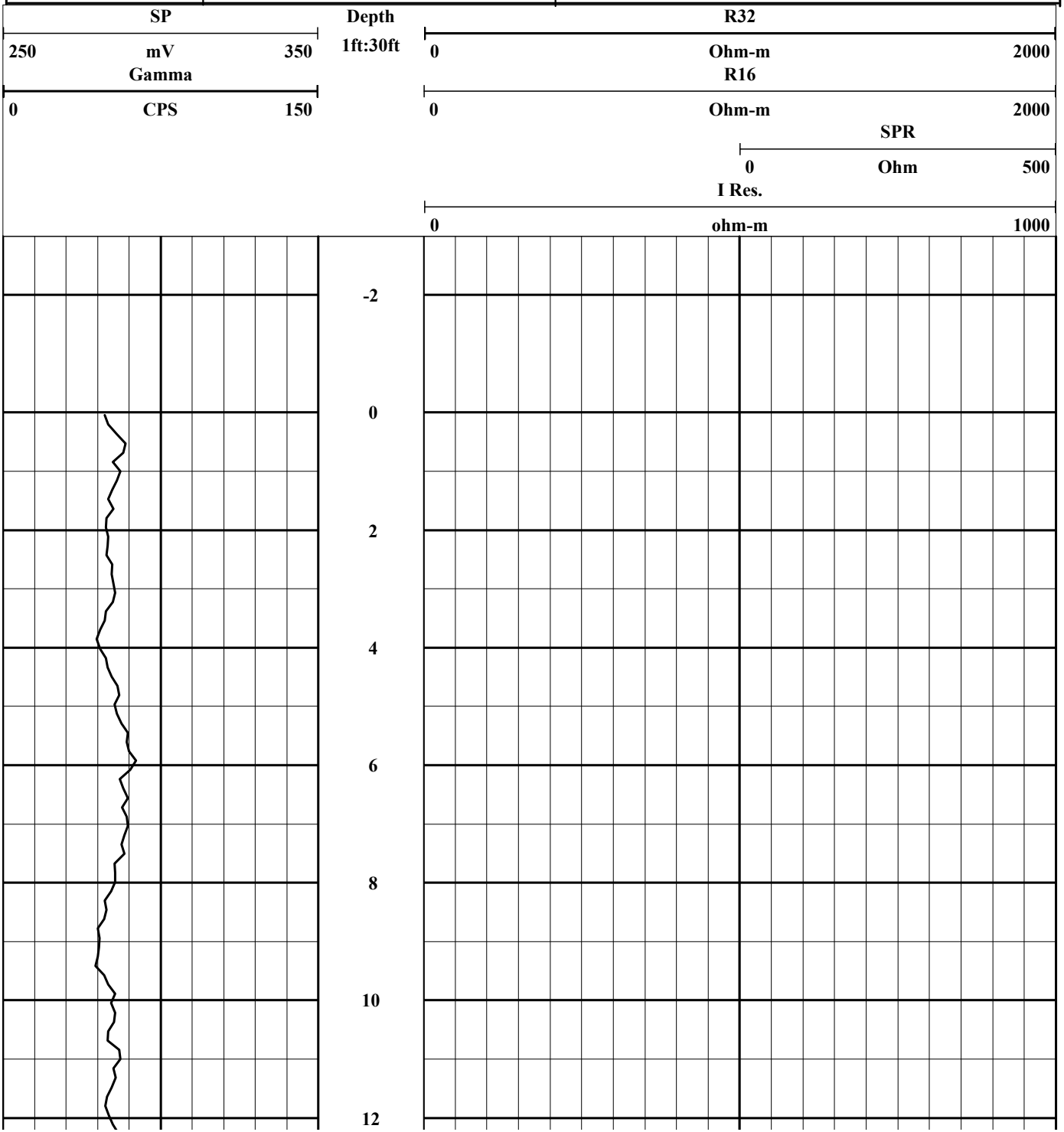
Signed:

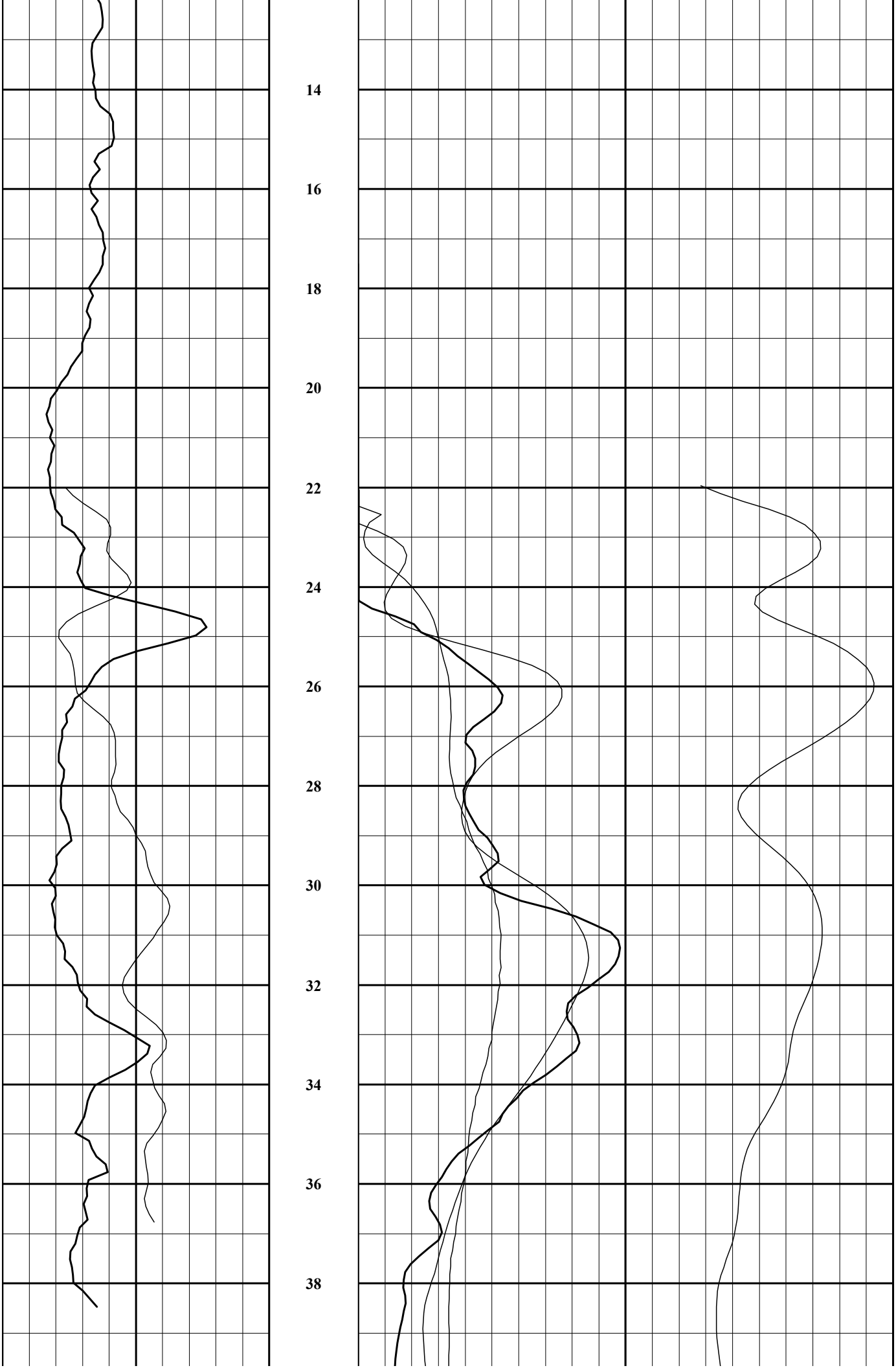
APPENDIX C

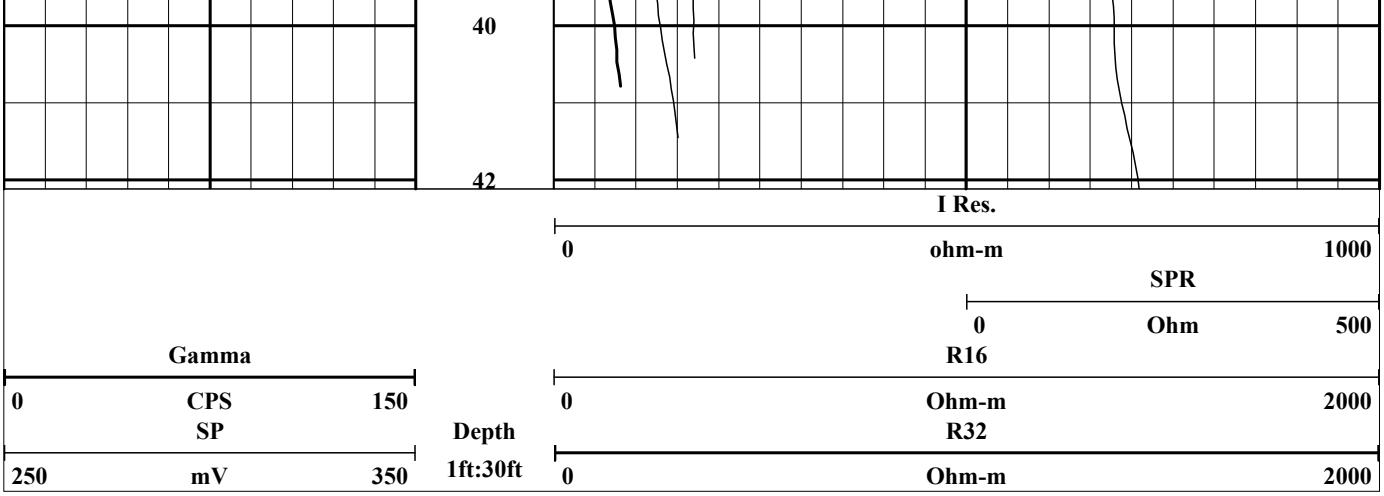
DOWNHOLE GEOPHYSICAL LOGGING REPORT (CD)

	COMPANY CRA
	Location: GM Powertrain
Well	CH-37
Date	July 19, 2005 BH Fluid
Casing	
File Name	
Depth Driller	
Depth Logger	
Logged by:	
Witness:	

OTHER SERVICES




14
16
18
20
22
24
26
28
30
32
34
36
38

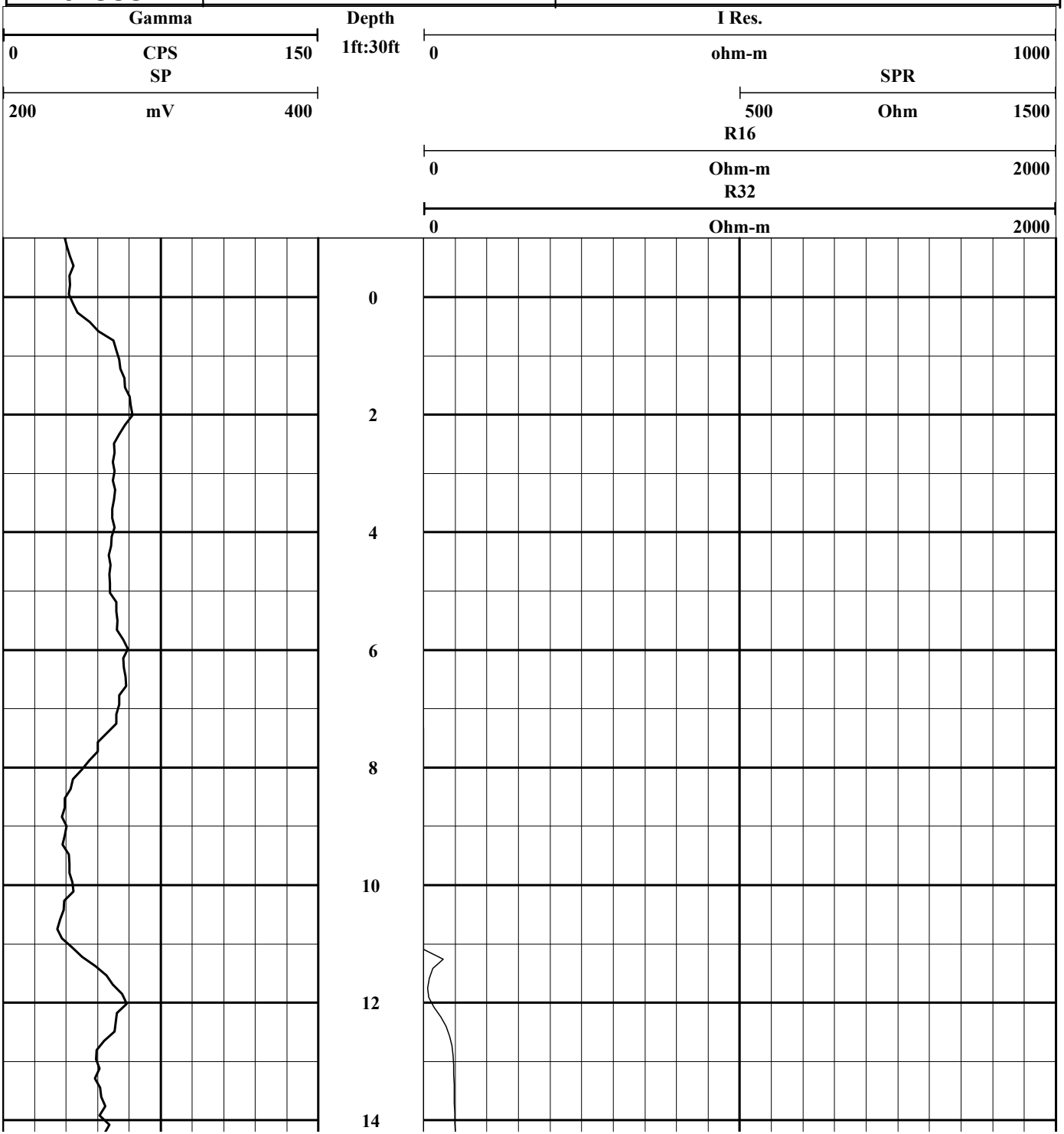


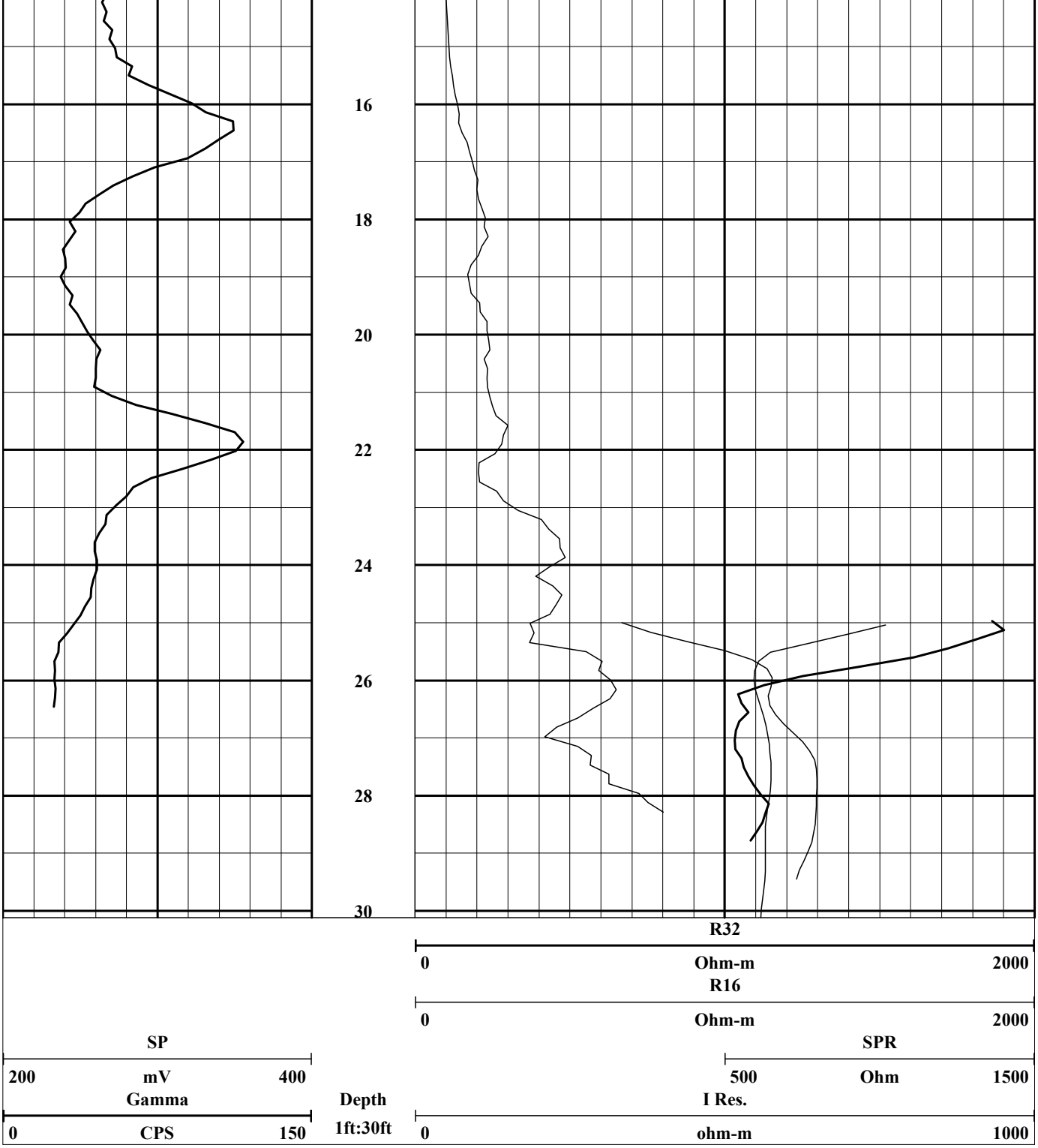
	I Res.	
0	ohm-m	1000
	SPR	
0	Ohm	500
Gamma	R16	
0 CPS 150	0 Ohm-m	2000
SP	R32	
250 mV 350	0 Ohm-m	2000

Depth
1ft:30ft

	COMPANY: CRA
	Location: GM Powertrain
Well	CH-35
Date	July 20, 2005 BH Fluid
Casing	
File Name	
Depth Driller	
Depth Logger	
Logged by:	
Witness:	

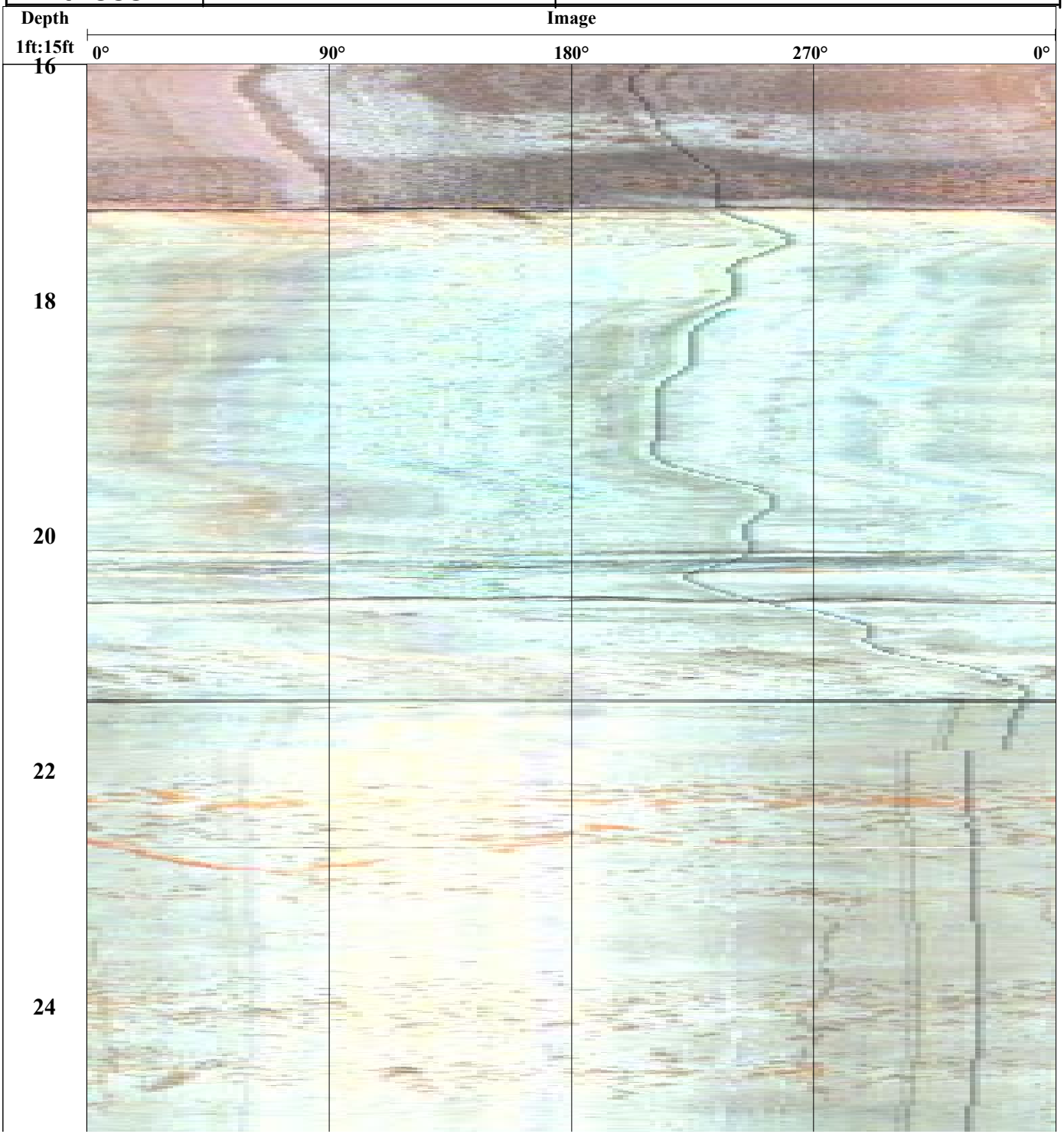
OTHER SERVICES

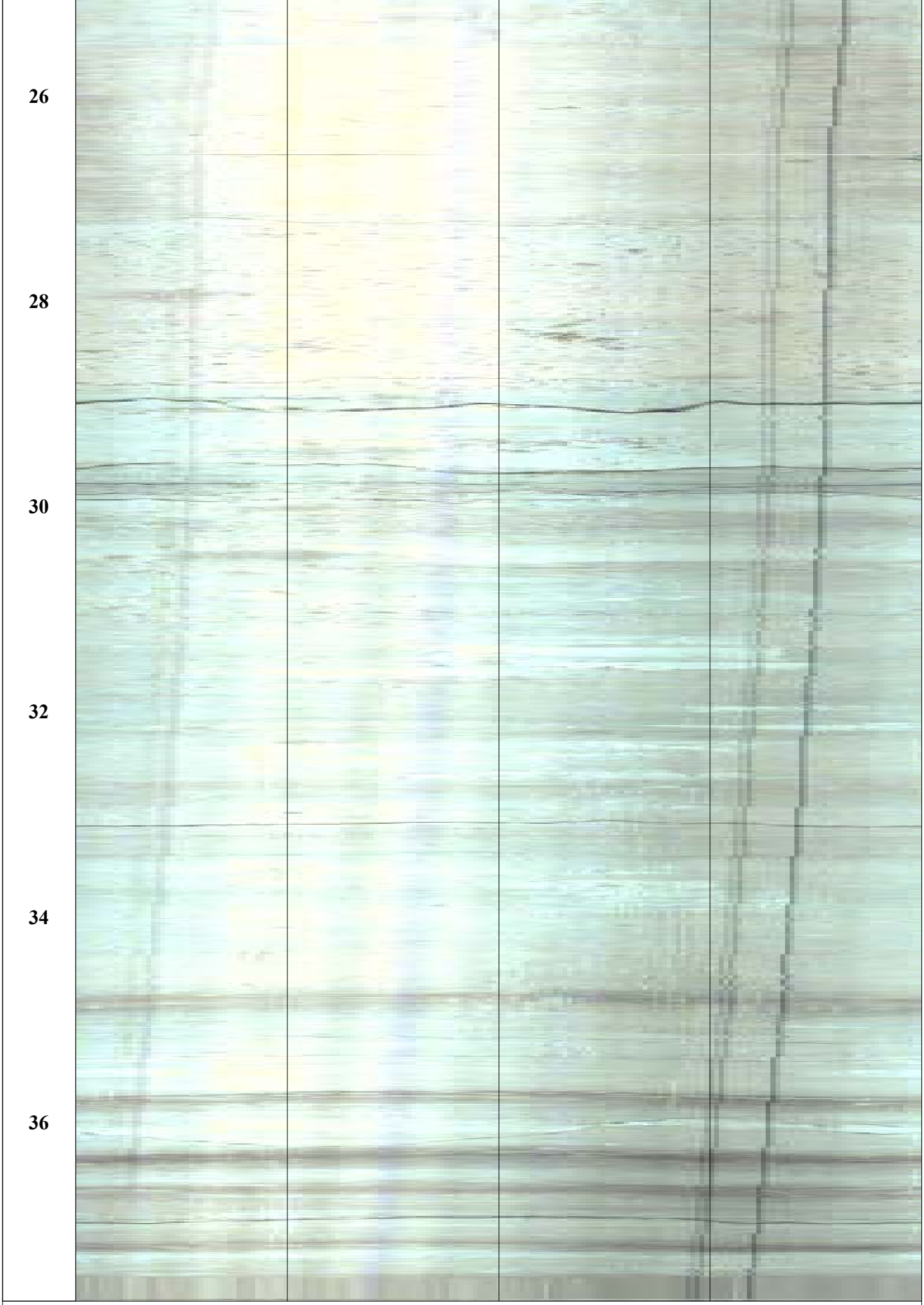



16
18
20
22
24
26
28
30
R32
0
Ohm-m
2000
R16
0
Ohm-m
2000
SP
200
mV
400
SPR
500
Ohm
1500
Gamma
0
CPS
150
Depth
1ft:30ft
I Res.
0
ohm-m
1000

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-38		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

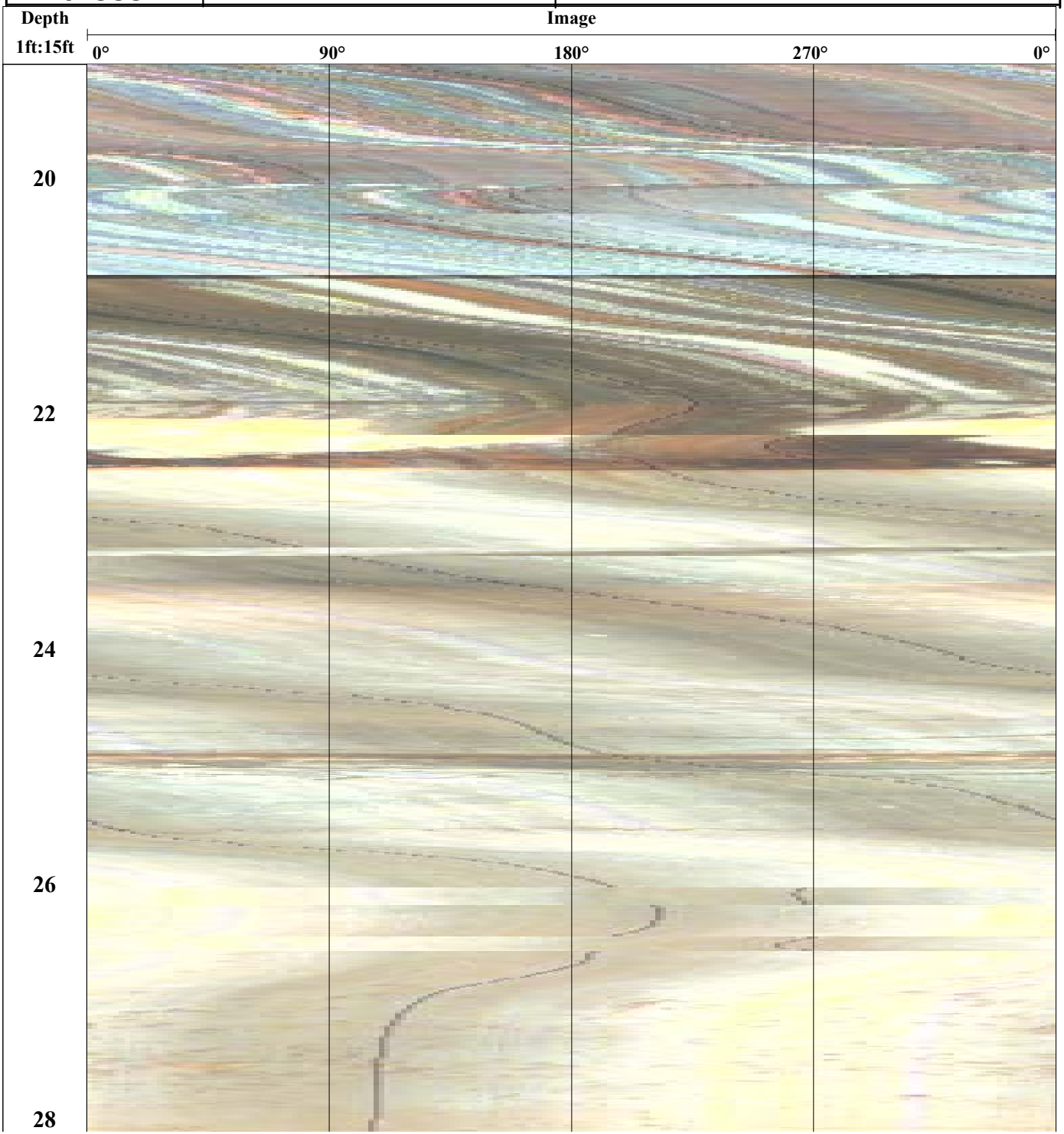




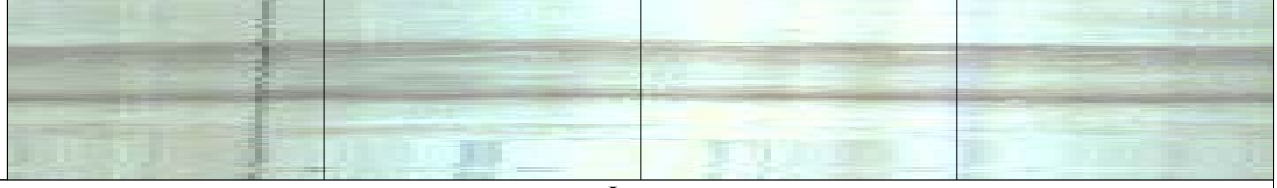
Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANYCRA
	Location: GM Powertrain

Well	July 19, 2005		OTHER SERVICES
Date		BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			




30
32
34
36
38
40



Depth

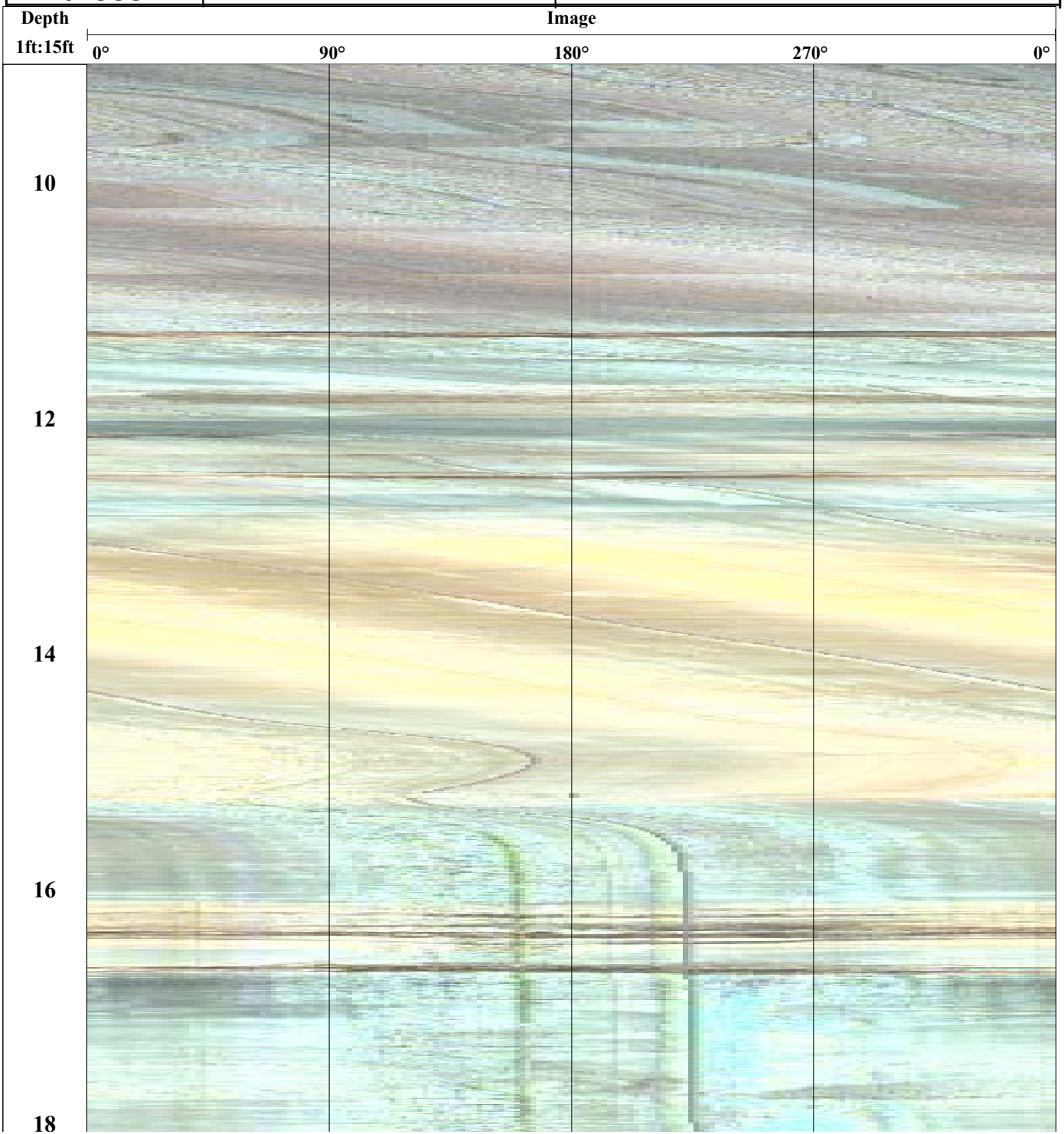
1ft:15ft

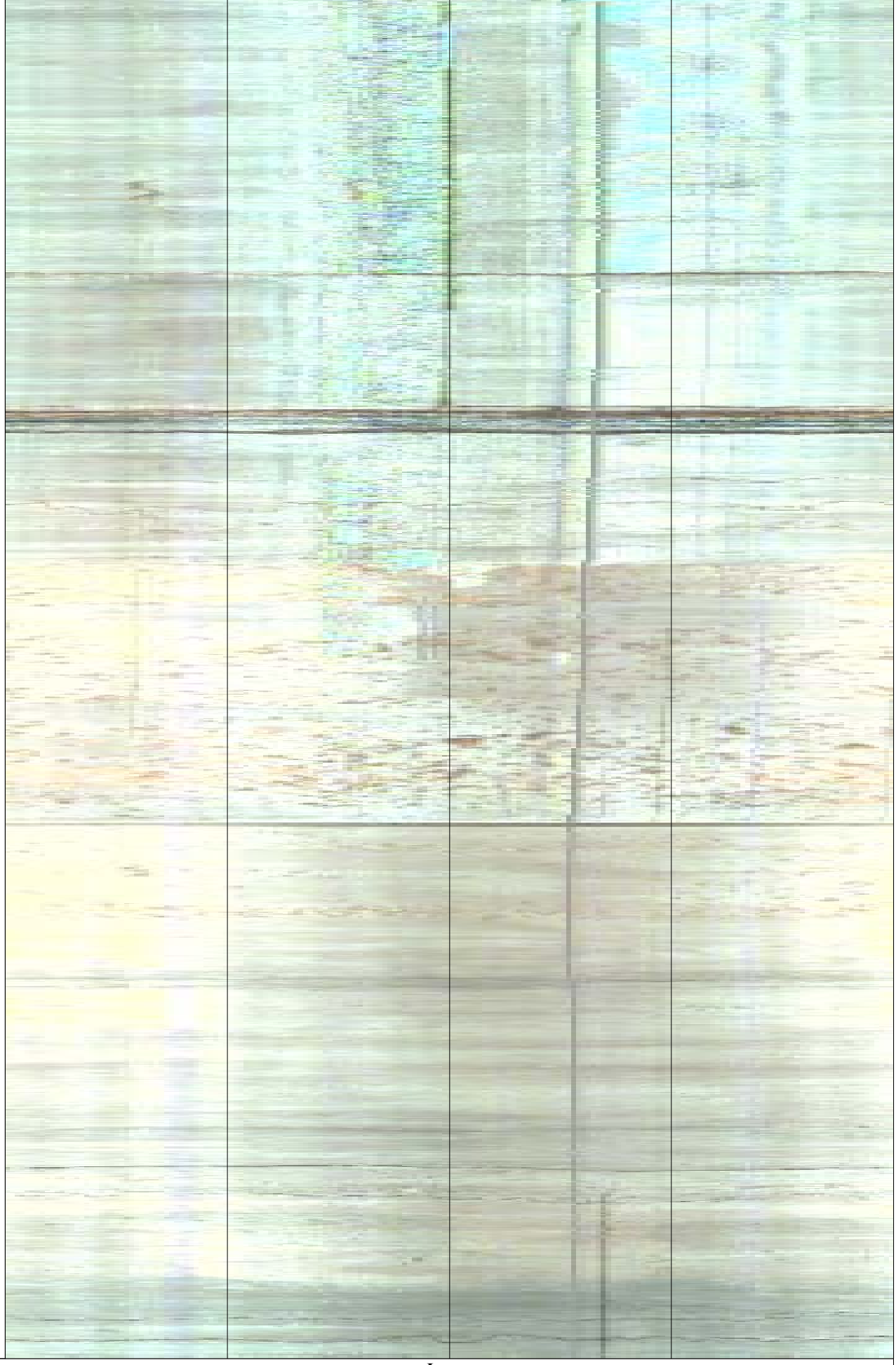
Image

0° 90° 180° 270° 0°

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-35		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

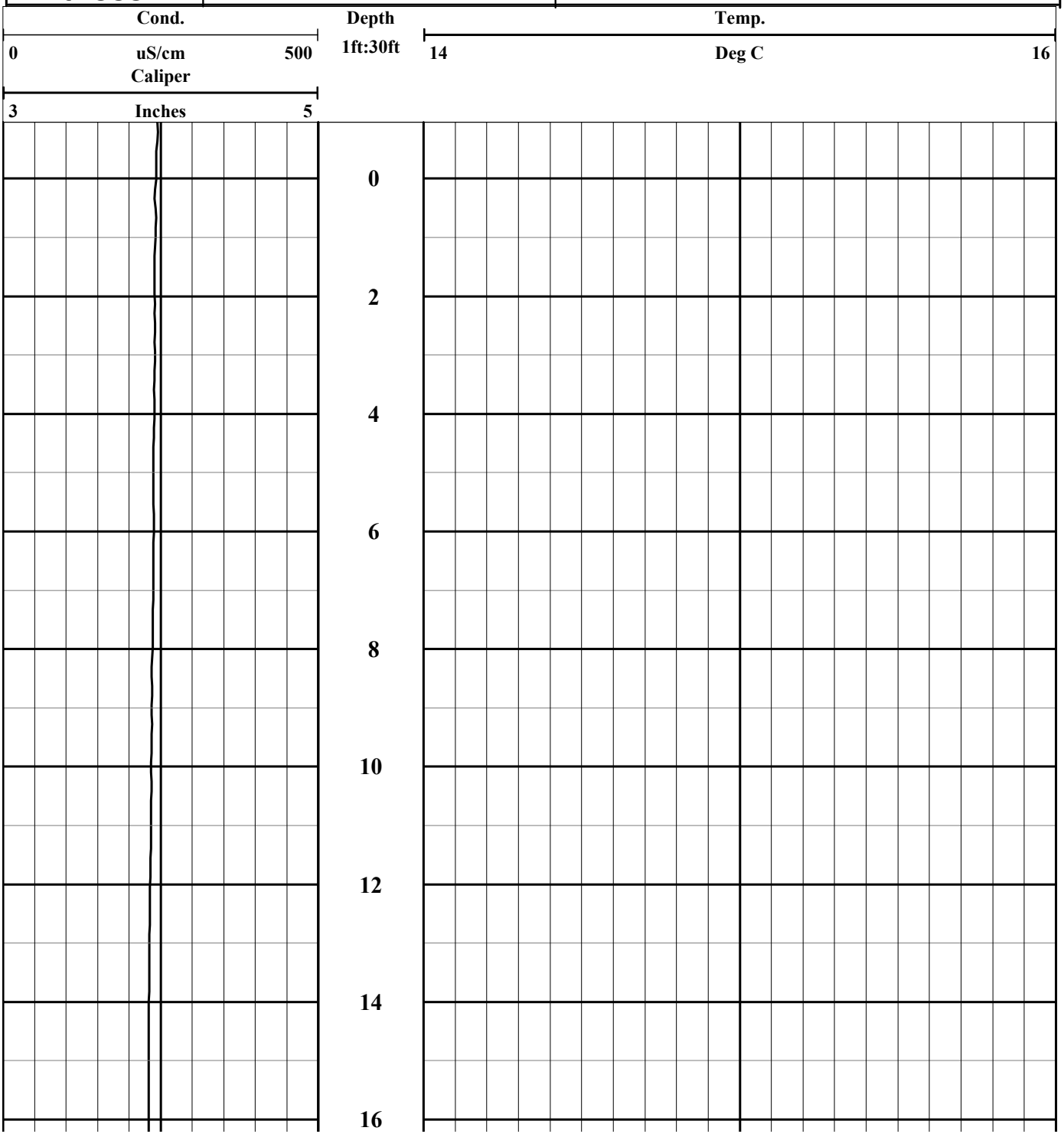


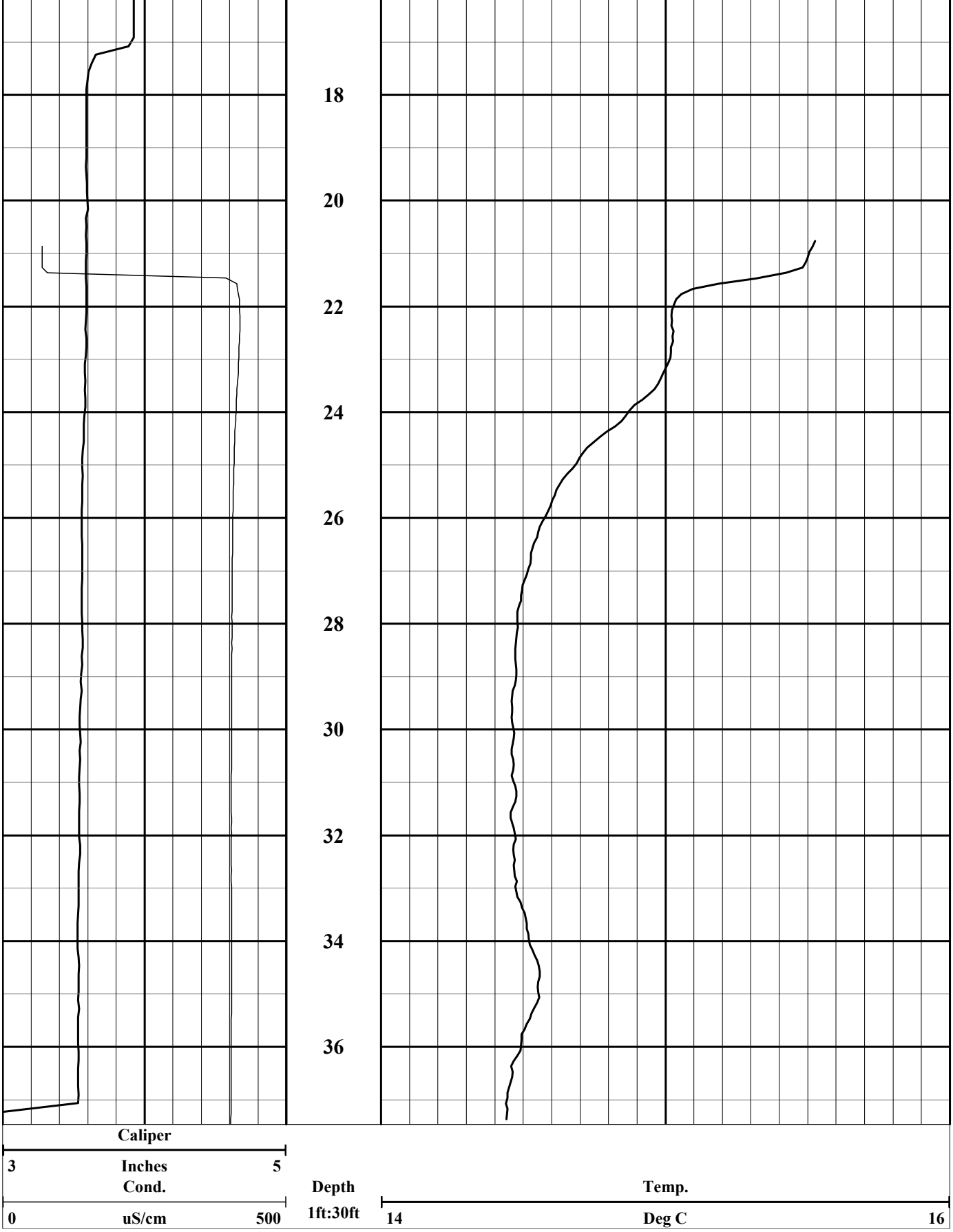


Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-38		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			





Caliper

3 Inches 5

Cond.

0 uS/cm 500

Depth

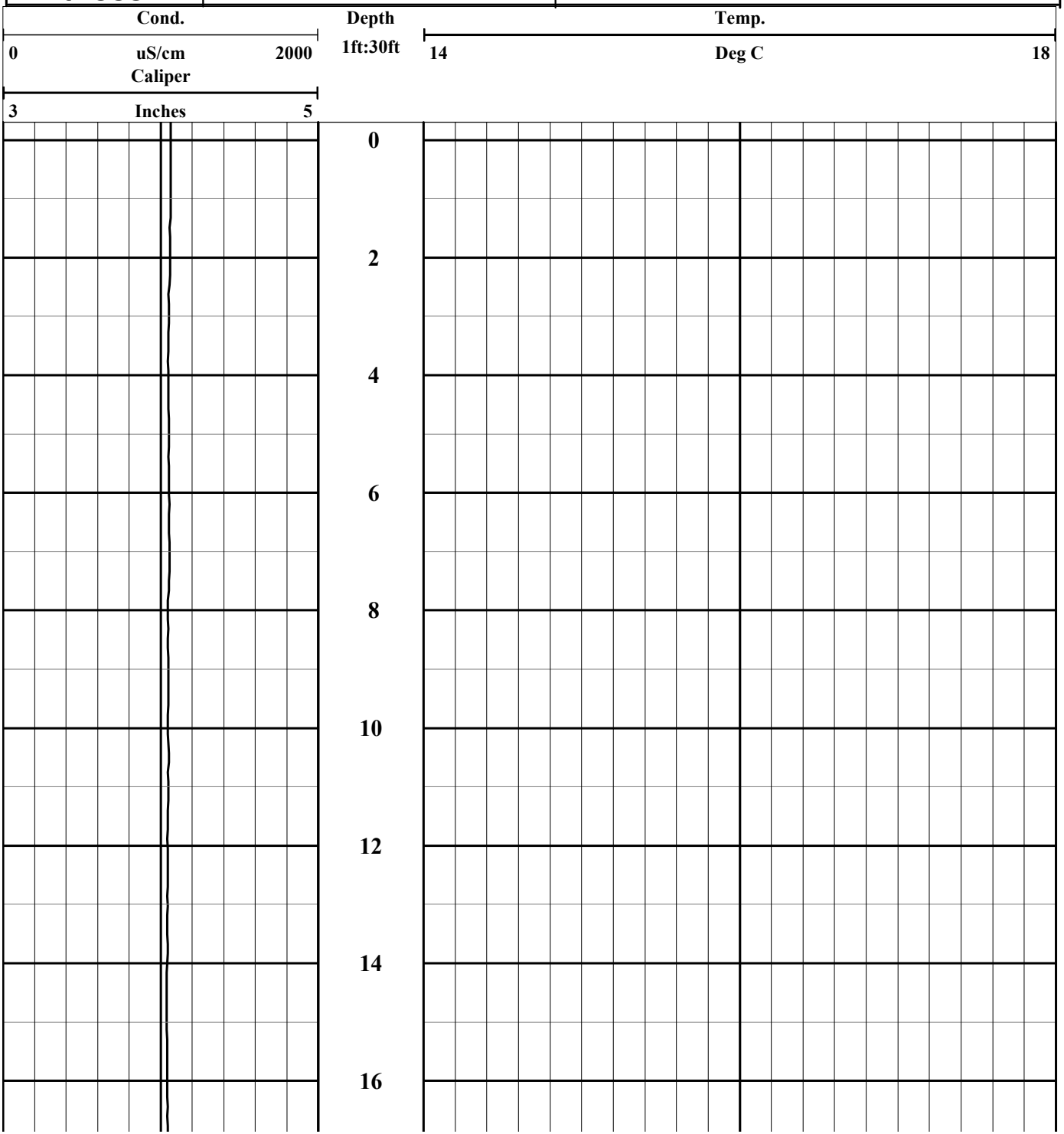
1ft:30ft

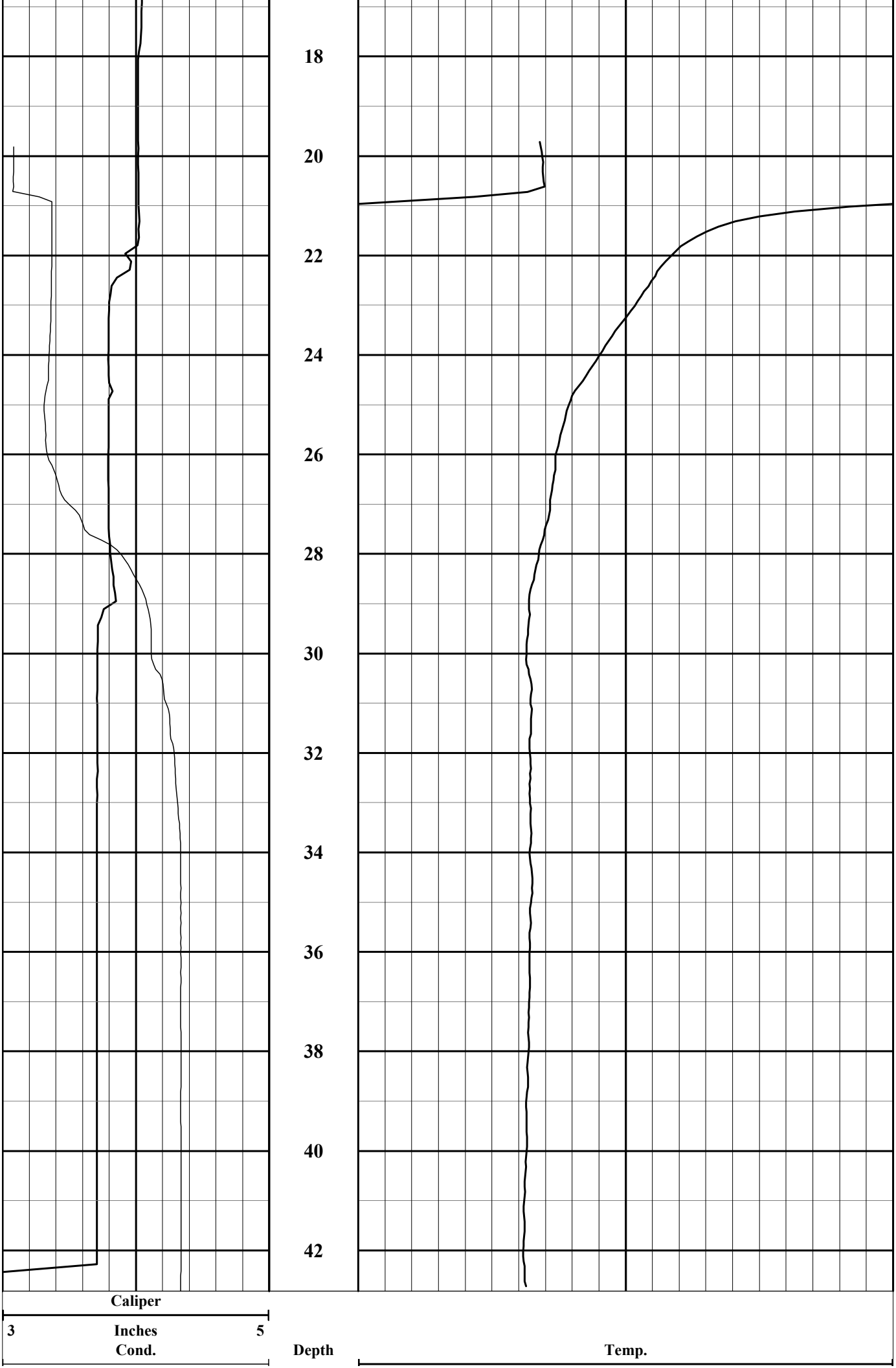
Temp.

14 Deg C 16

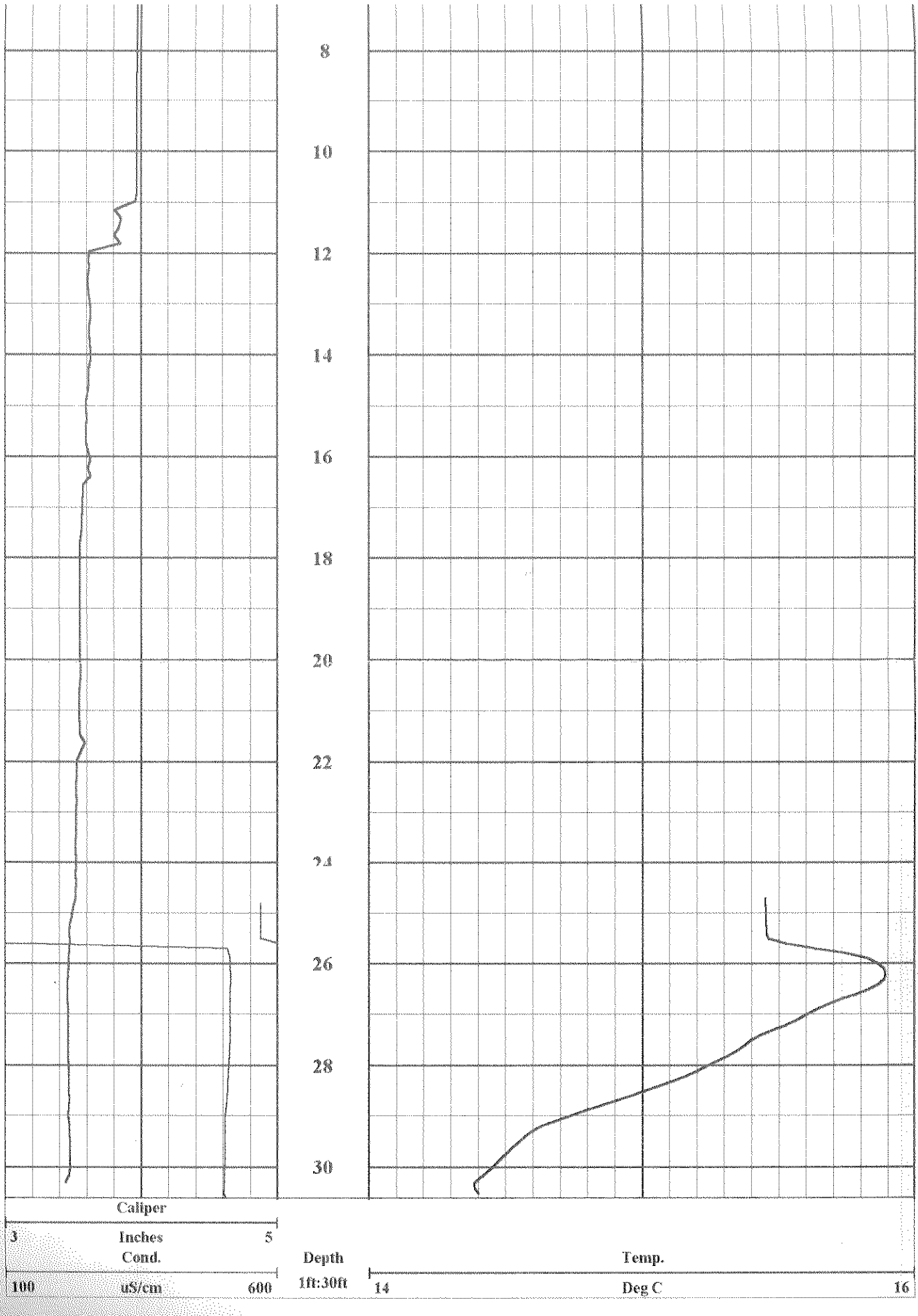
	COMPANYCRA
	Location: GM Powertrain

Well	CH-37		OTHER SERVICES
Date	July 19,2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

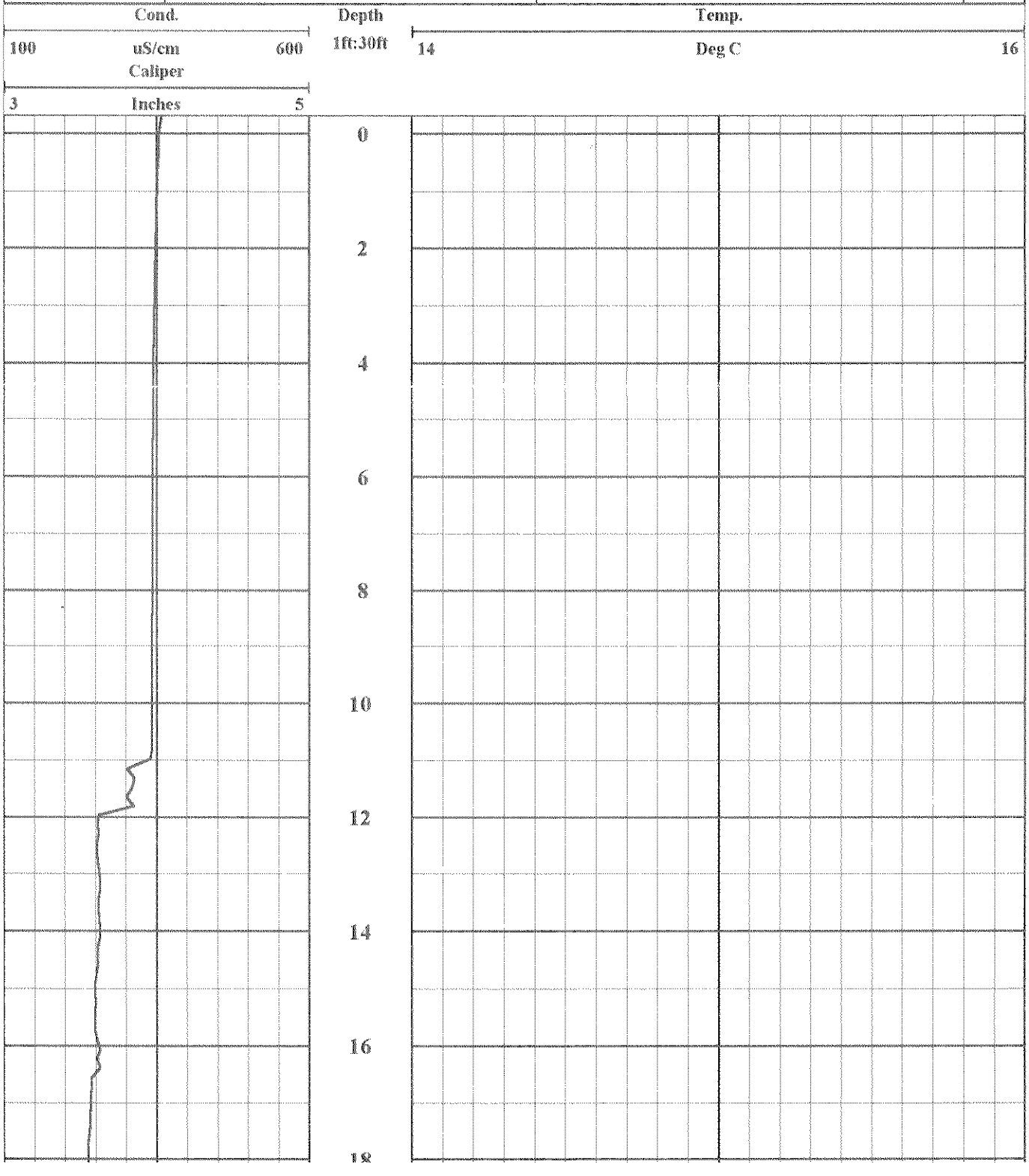



18
20
22
24
26
28
30
32
34
36
38
40
42
Caliper
3
Inches
5
Cond.
Depth
Temp.

0	uS/cm	2000	1ft:30ft	14	Deg C	18

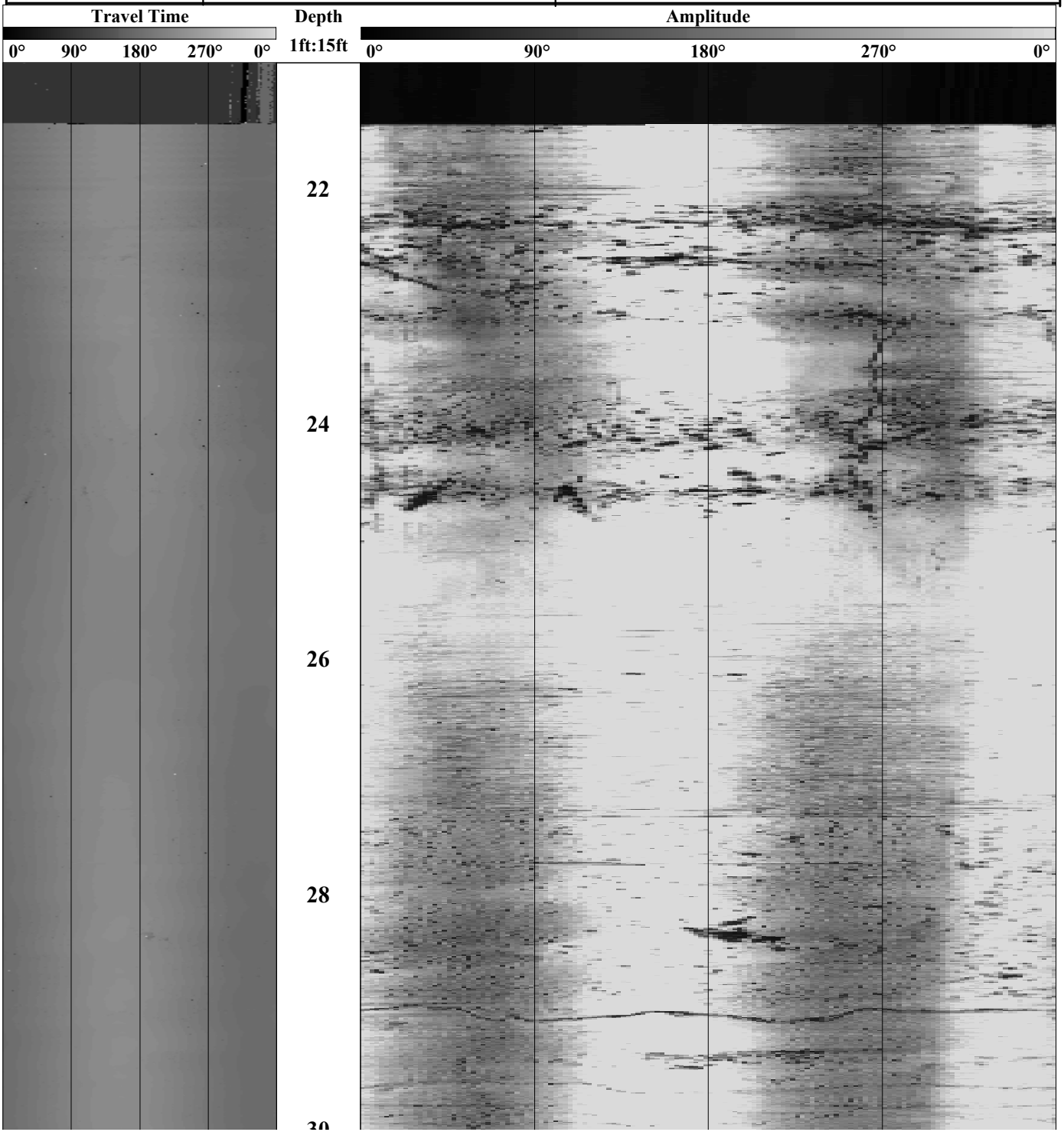

8
10
12
14
16
18
20
22
24
26
28
30
Caliper
3
Inches
5
Cond.
100
uS/cm
600
Depth
1ft:30ft
Temp.
14
Deg C
16

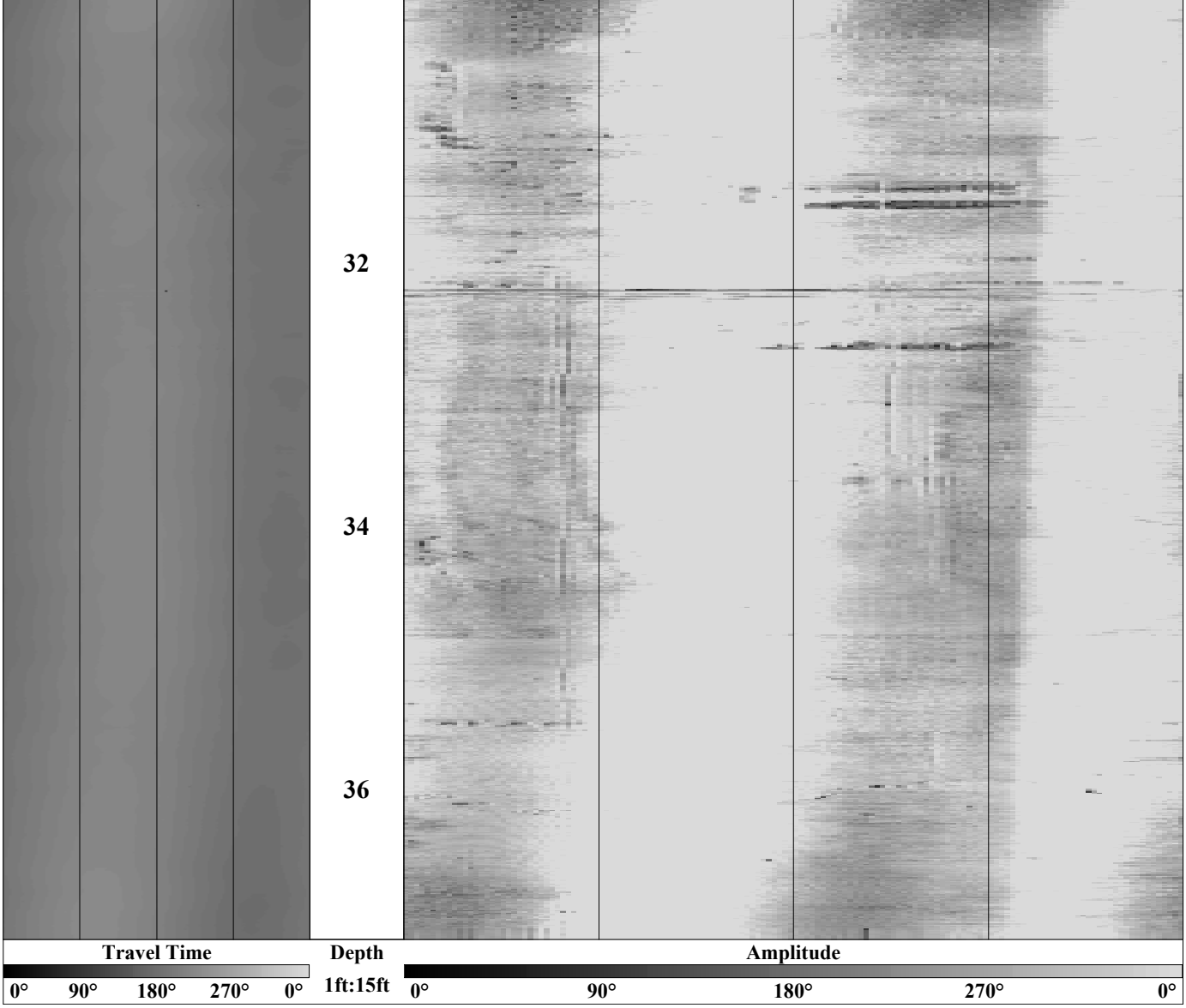
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-35	Depth Driller / Depth Logger	
Date: July 20,05 — BH Fluid	Logged by:	
File Name	Witness:	



	COMPANY: CRA
	Location: GM Powertrain

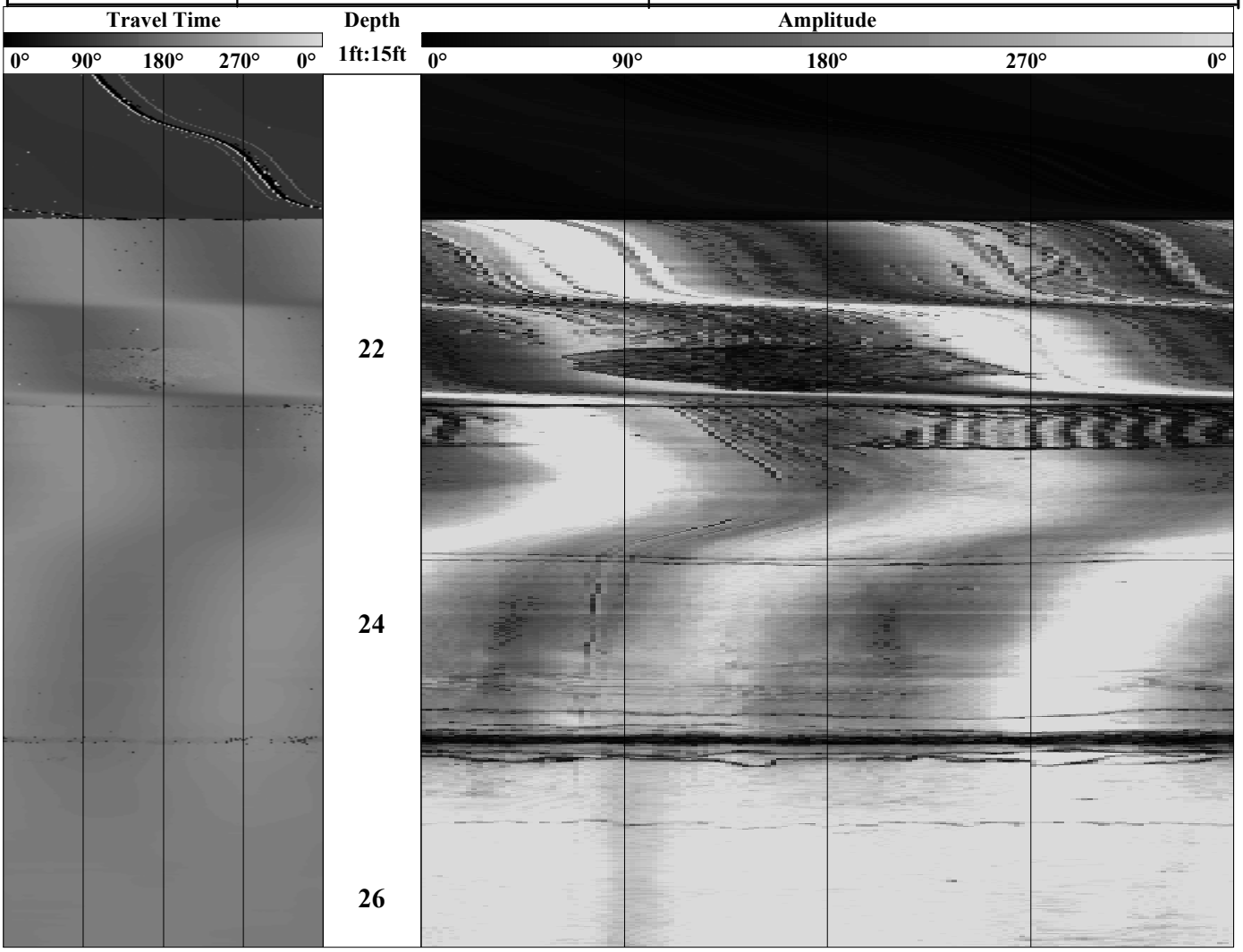
Well	CH-38		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

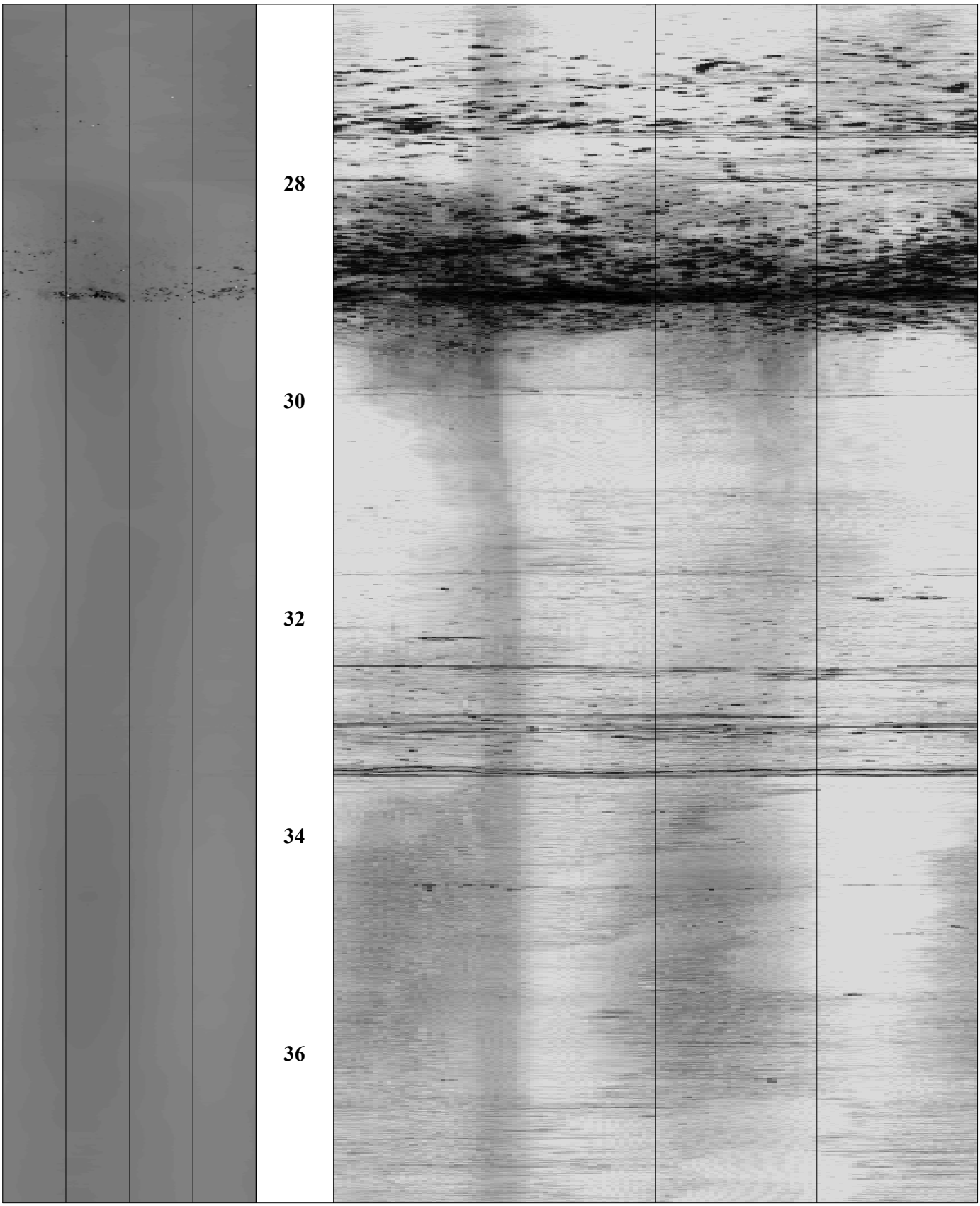


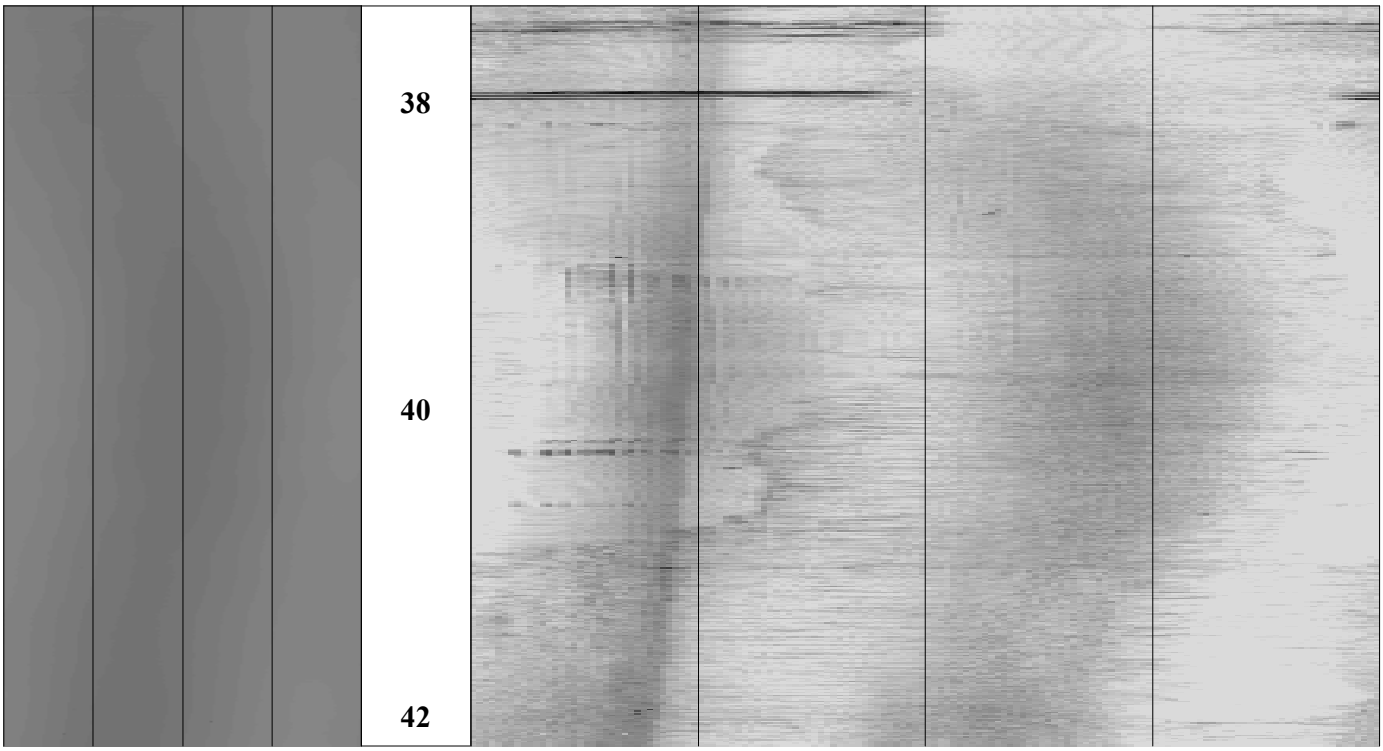

32
34
36
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY CRA
	Location: GM Powertrain
Well	CH-37
Date	July 19, 2005 BH Fluid
Casing	
File Name	
Depth Driller	
Depth Logger	
Logged by:	
Witness:	

OTHER SERVICES

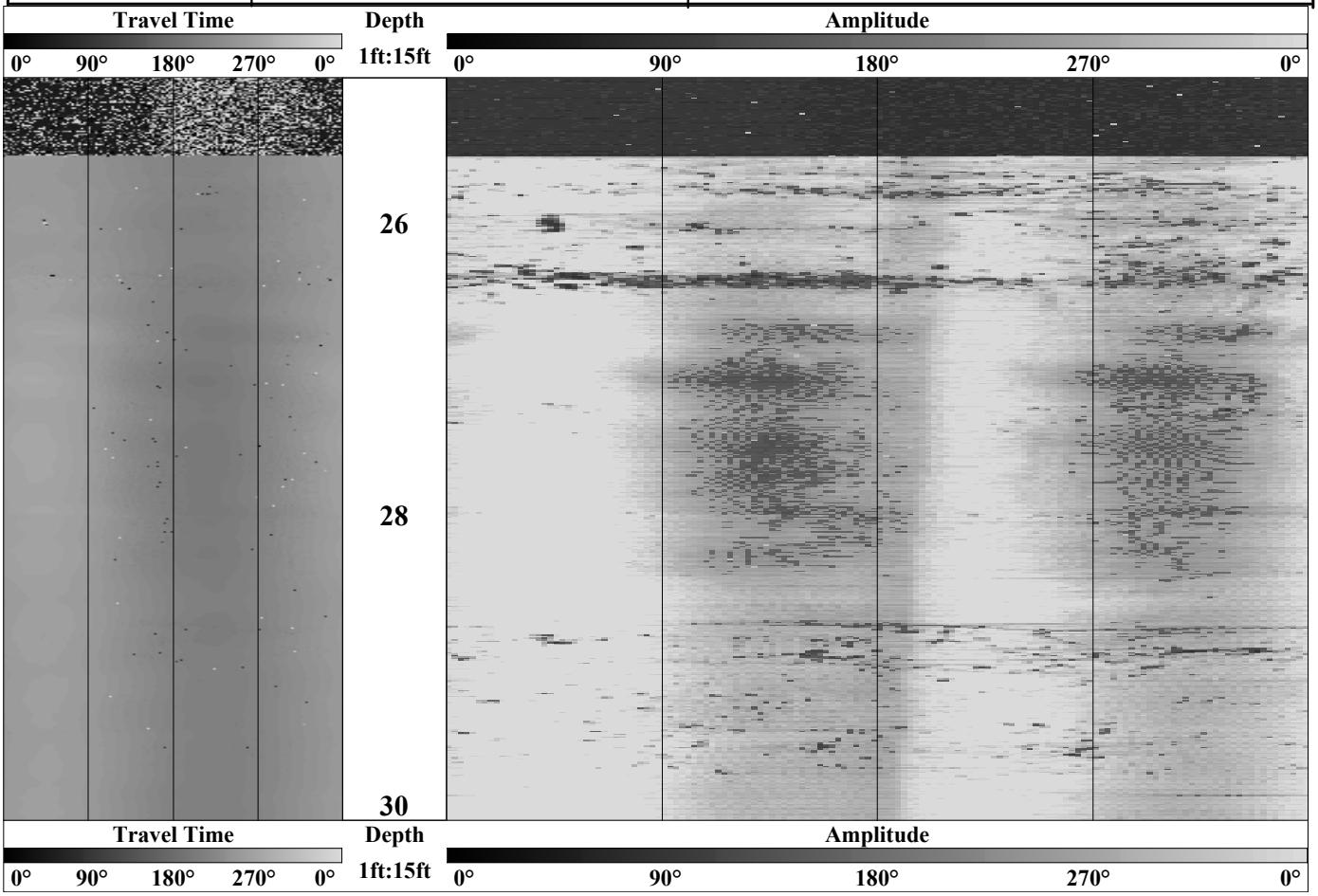



28
30
32
34
36


38
40
42

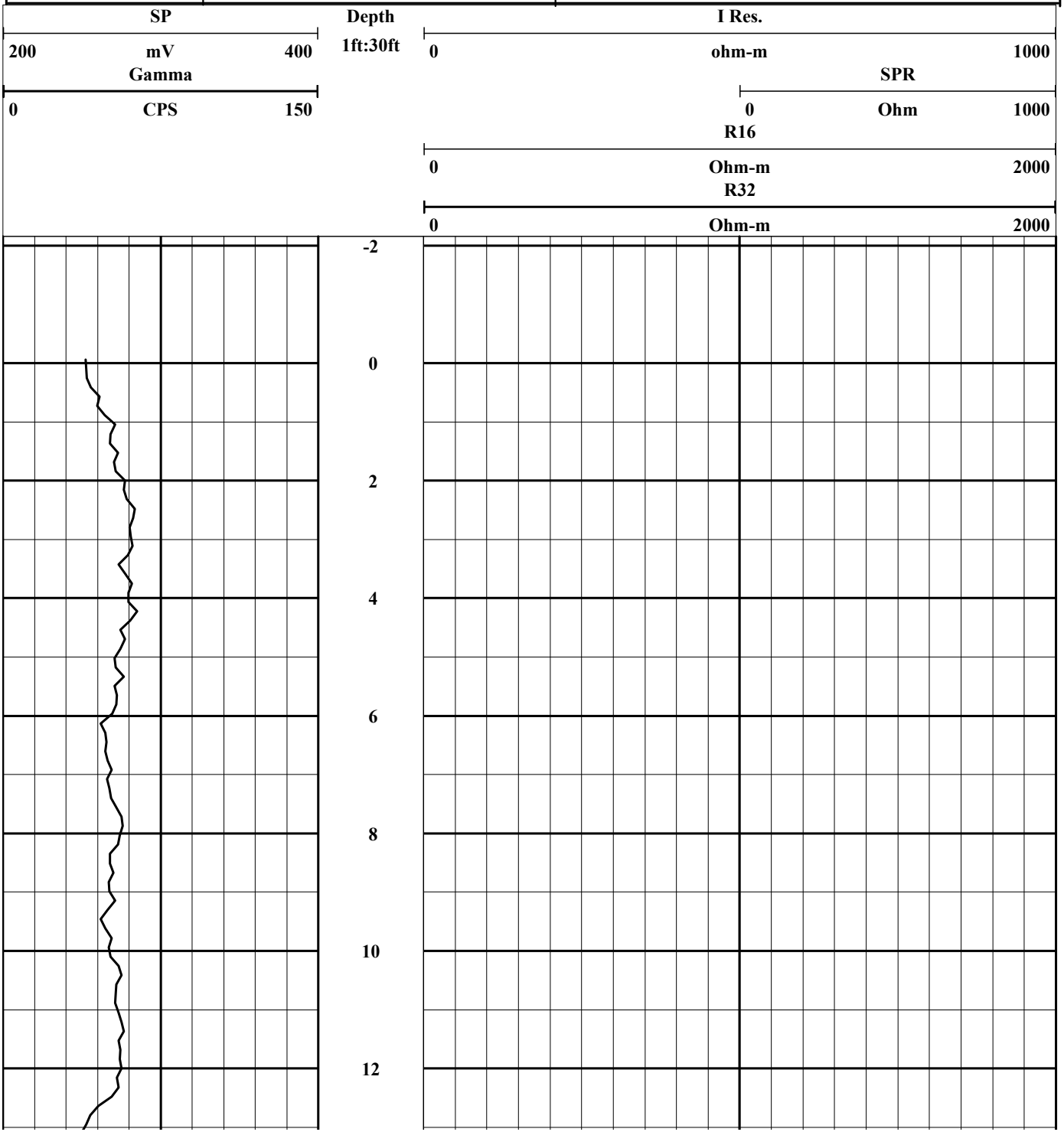
	COMPANY: CRA
	Location: GM Powertrain

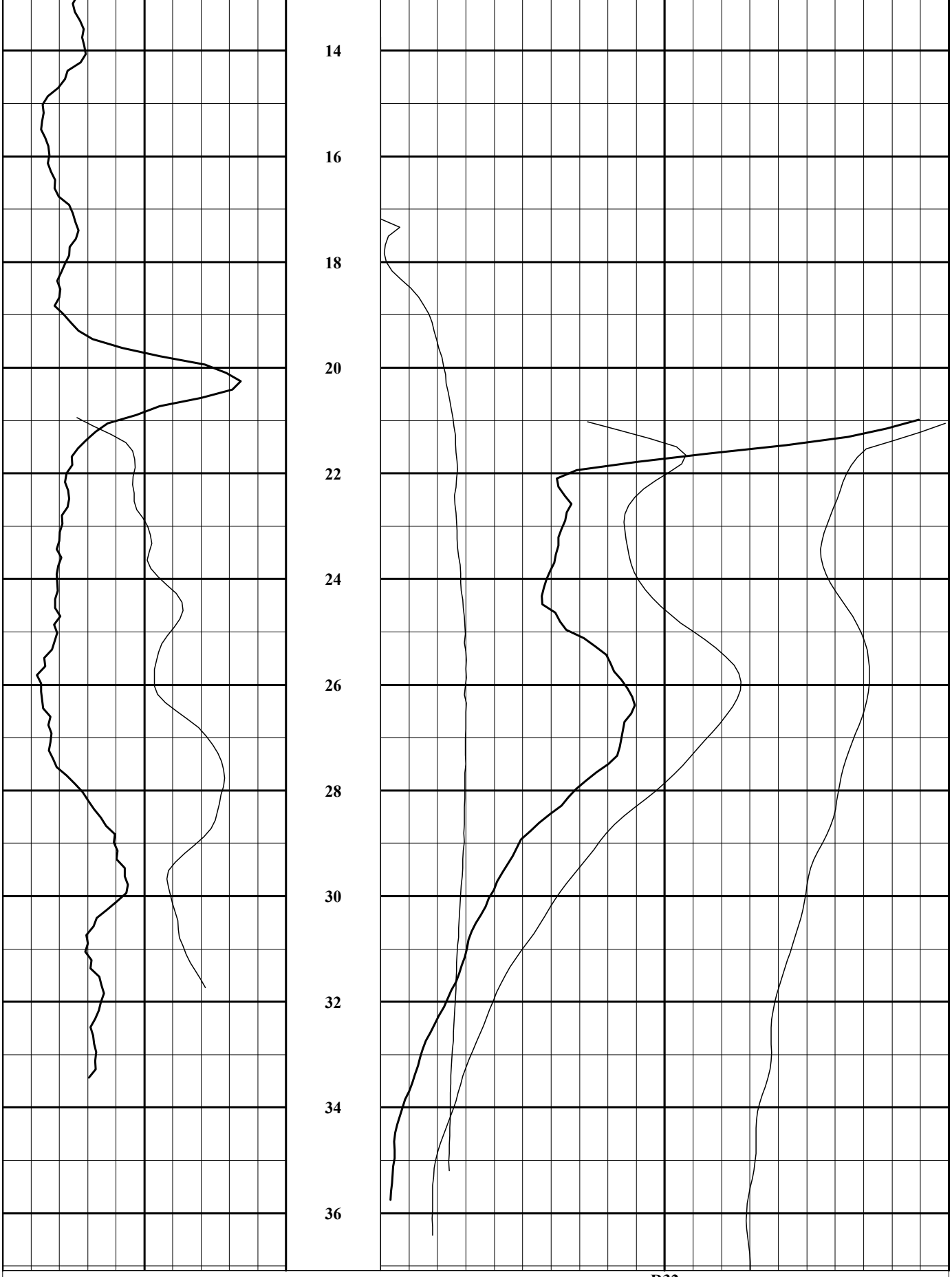
Well	CH-35		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			



	COMPANY: CRA
	Location: GM Powertrain

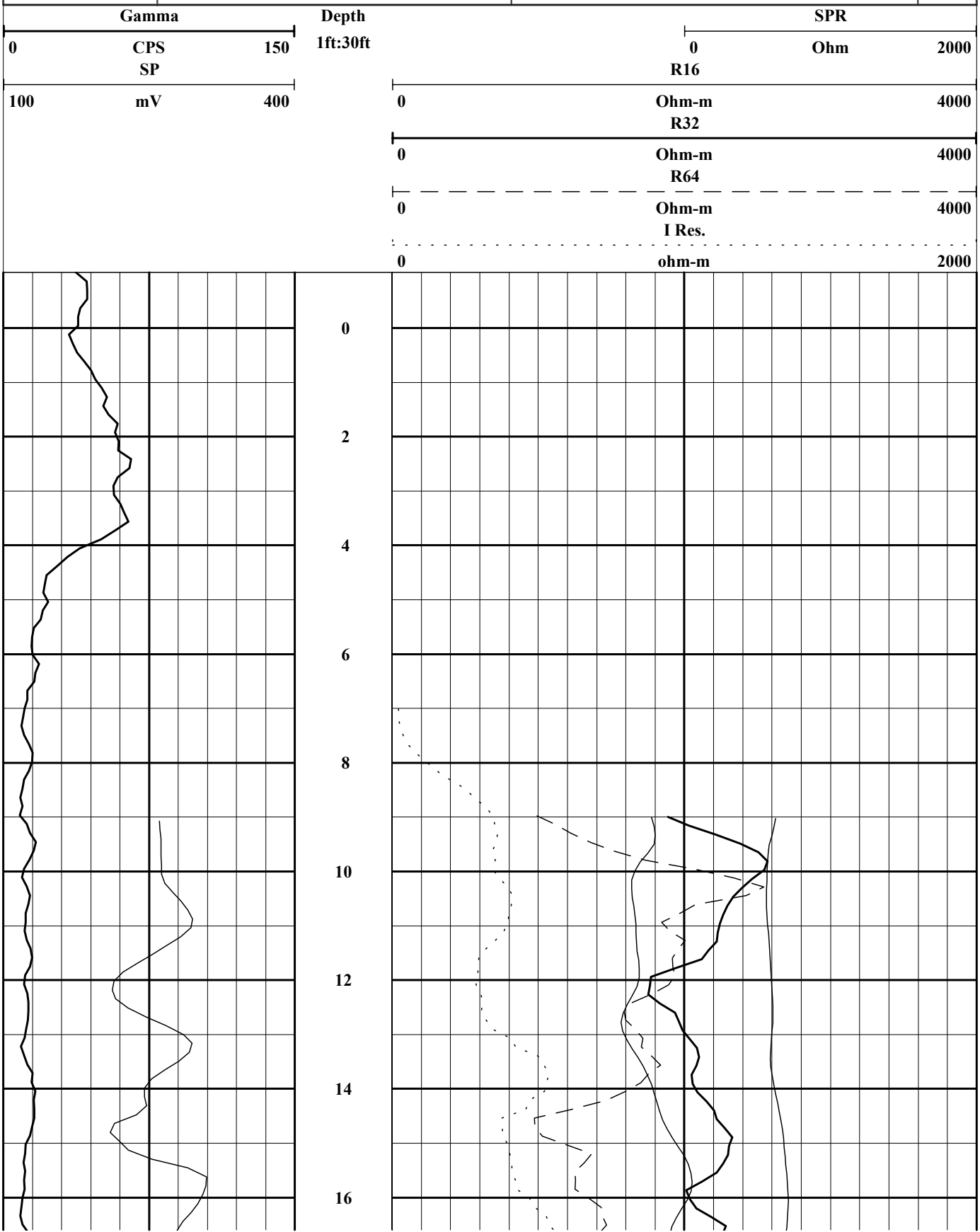
Well	CH-38		OTHER SERVICES
Date	July 20, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

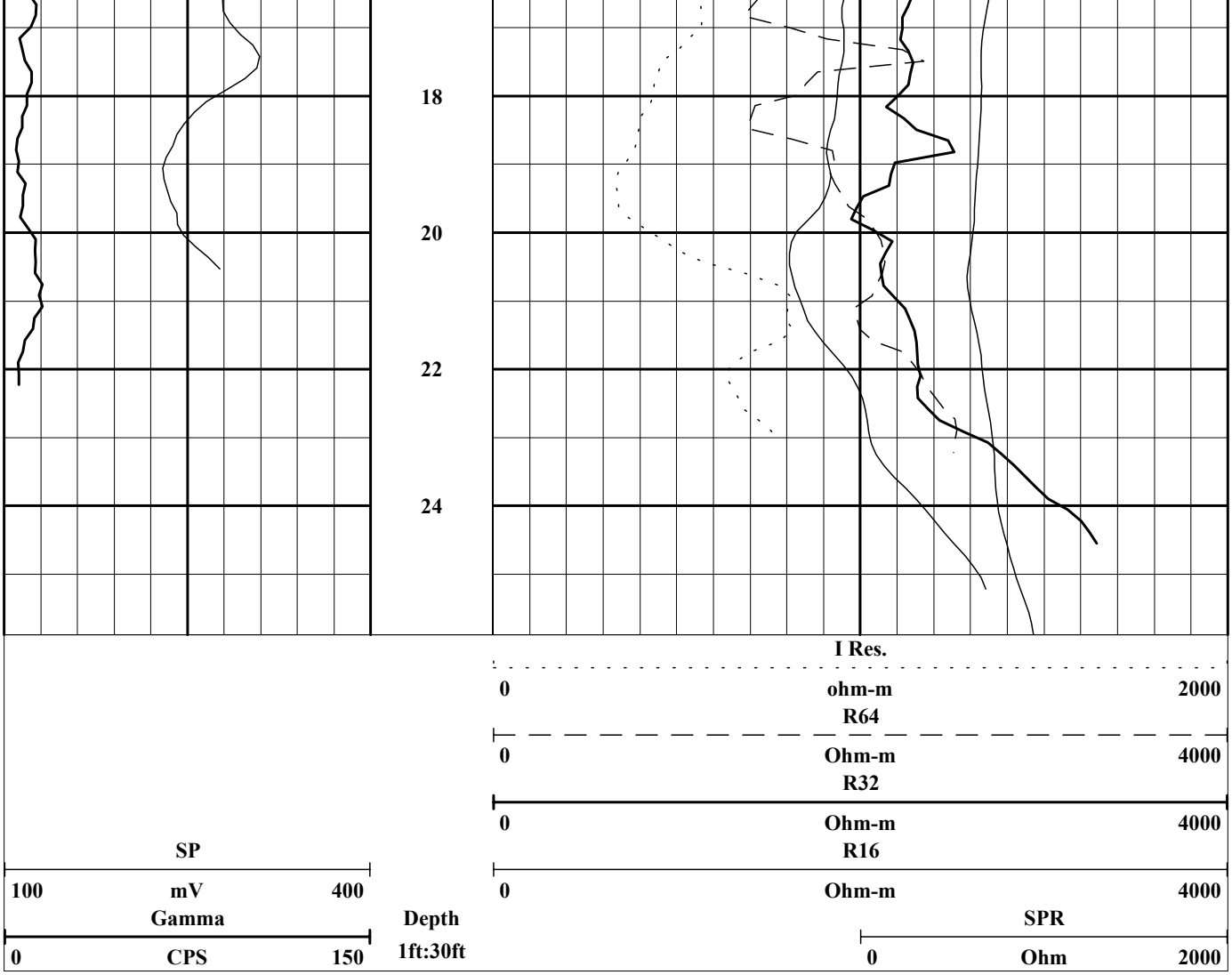



14
16
18
20
22
24
26
28
30
32
34
36
R32
0
Ohm-m
2000
R16
0
Ohm-m
2000
Gamma
0
CPS
150
SP
Depth
SPR
0
Ohm
1000
I Res.

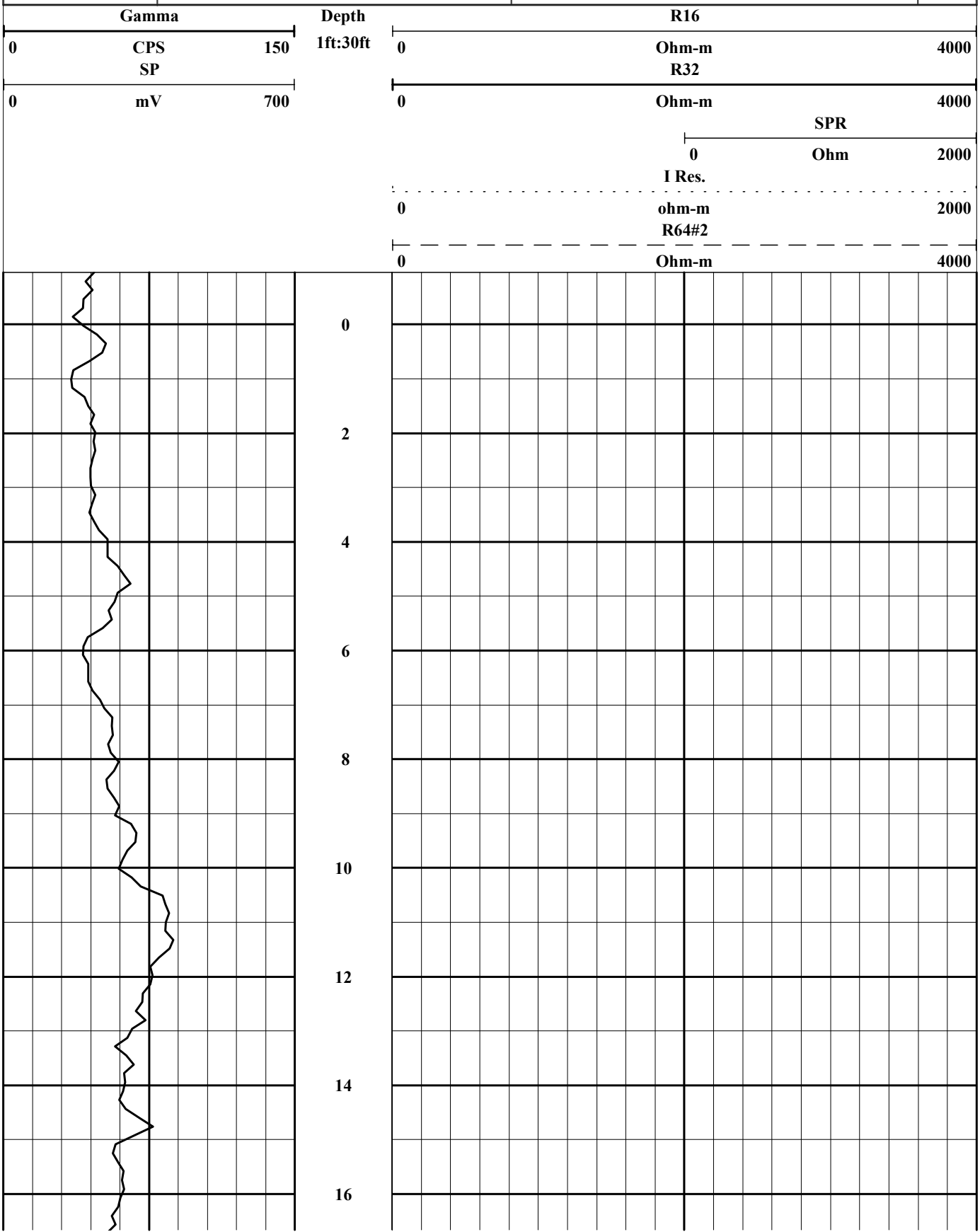
200	**mV**	**400**	**1ft:30ft**	**0**	**ohm-m**	**1000**

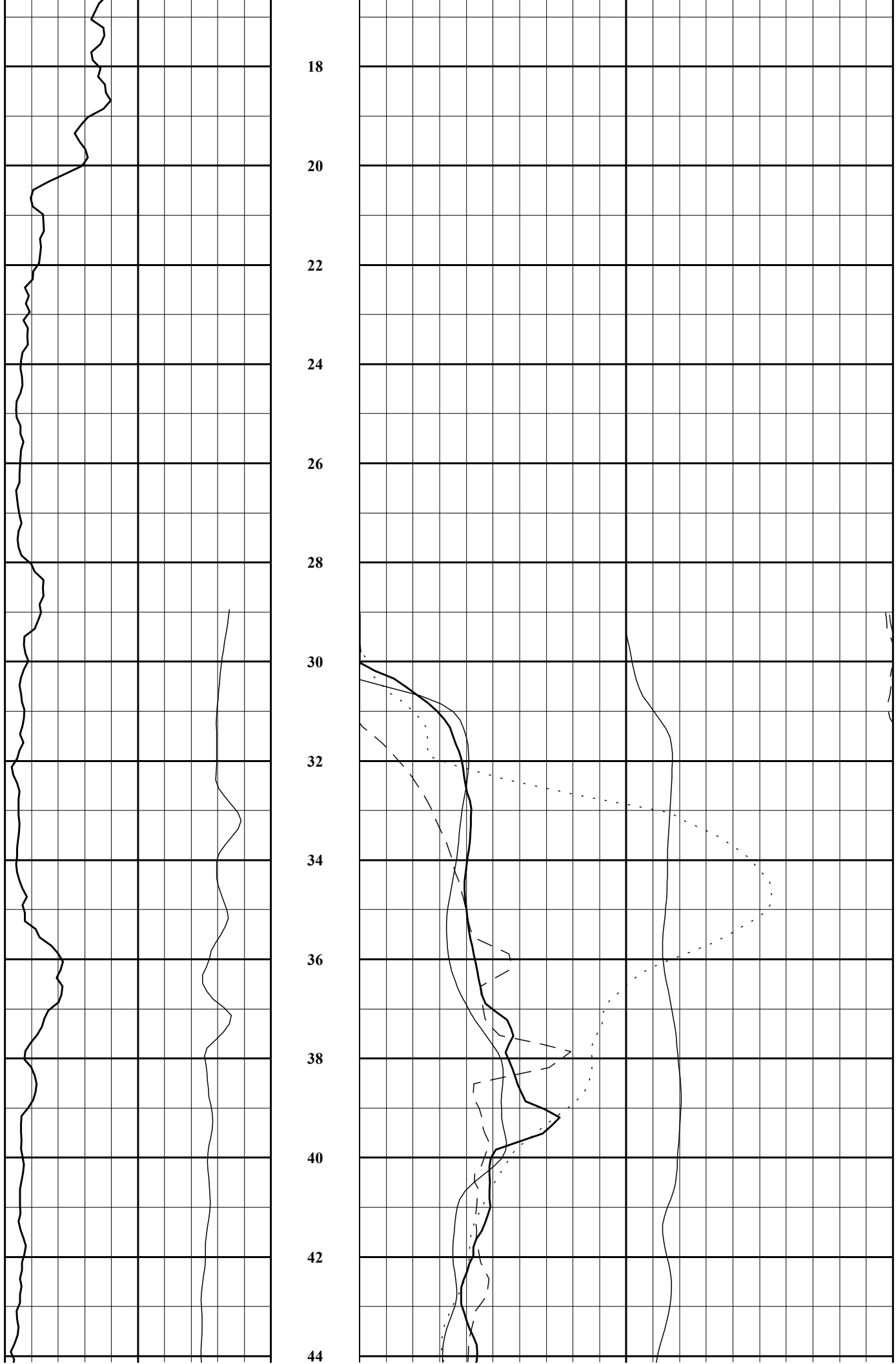
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-30	Depth Driller / Depth Logger	
Date: Aug 10, 05 — BH Fluid	Logged by:	
File Name	Witness:	

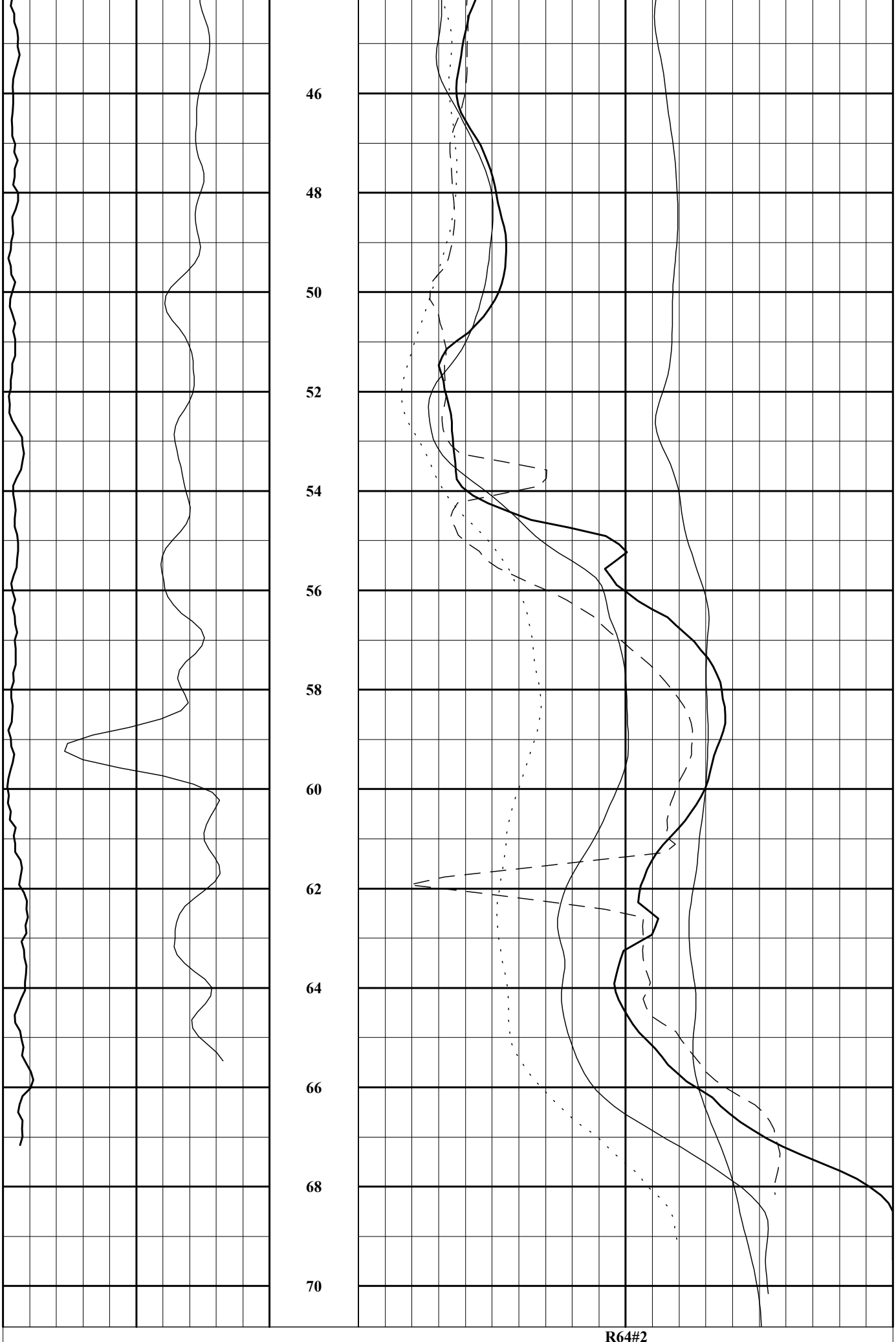


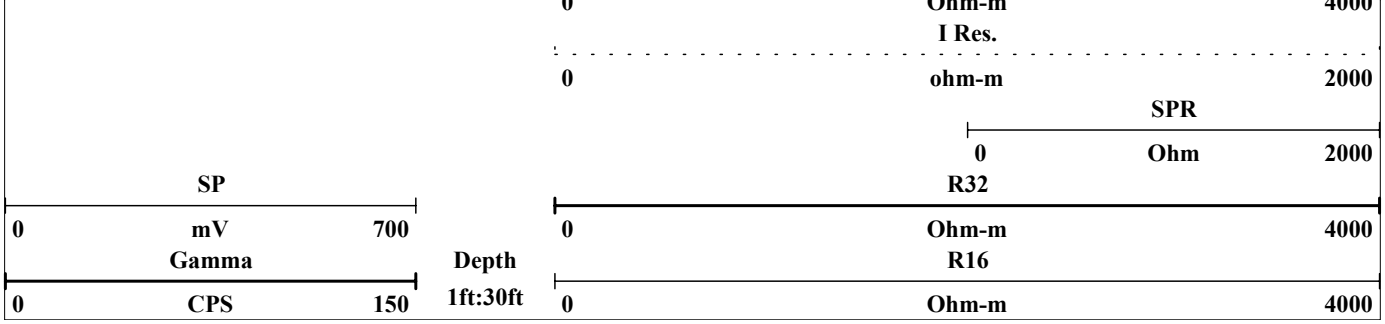

18
20
22
24
I Res.
0
ohm-m
2000
R64
0
Ohm-m
4000
R32
0
Ohm-m
4000
SP
R16
100
mV
400
0
Ohm-m
4000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
2000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-29	Depth Driller / Depth Logger	
Date: Aug 10, 05 — BH Fluid	Logged by:	
File Name	Witness:	

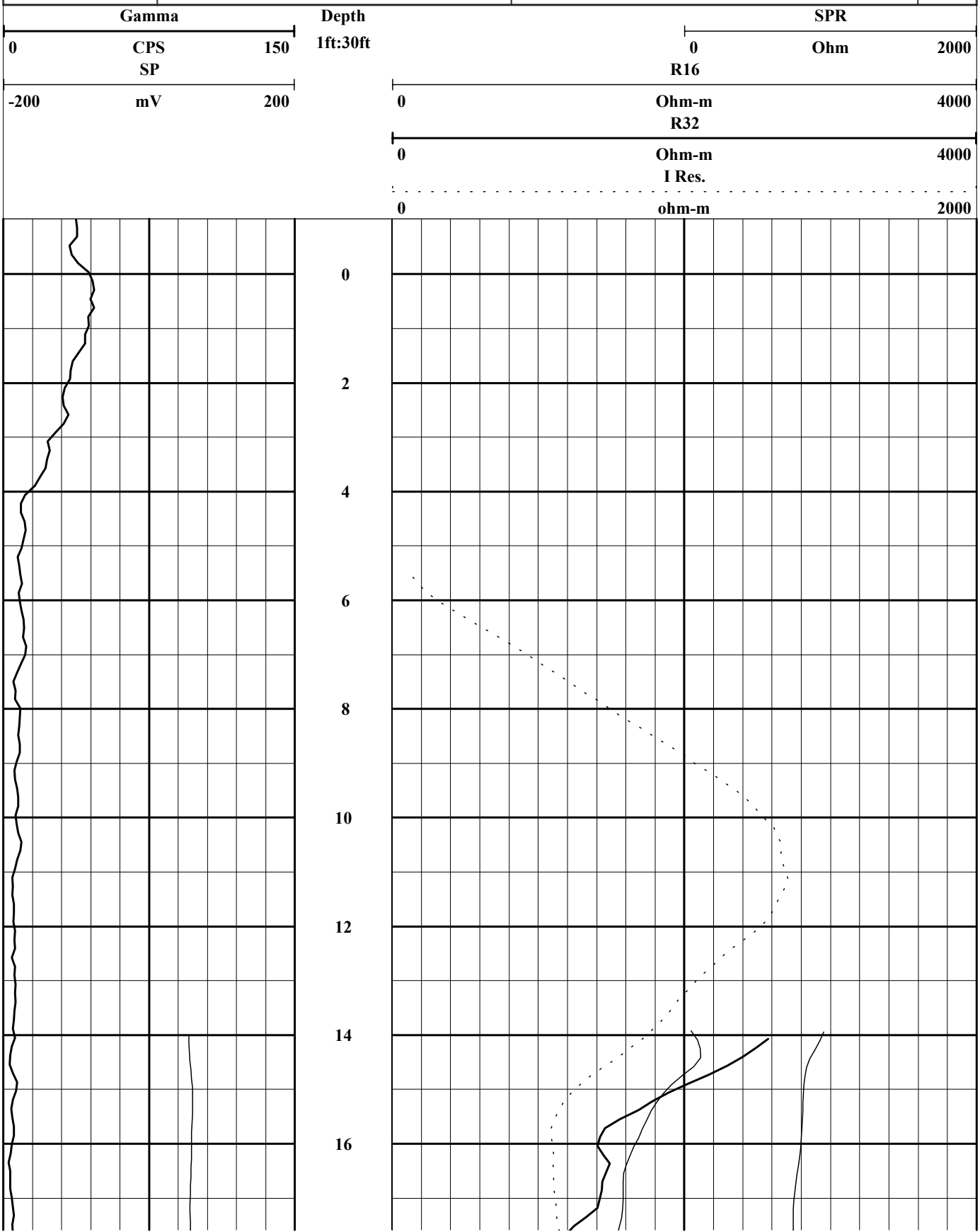


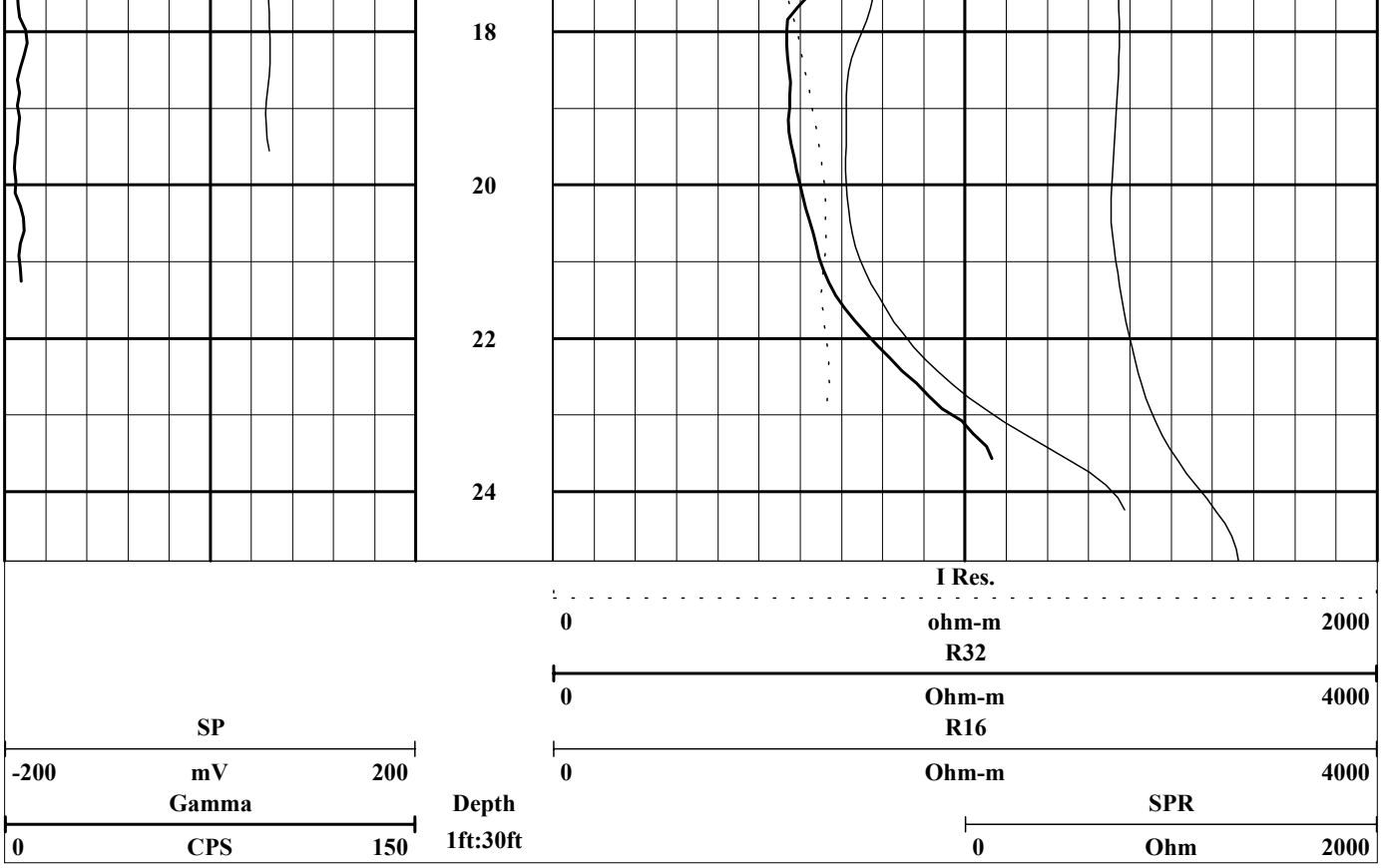

18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
52
54
56
58
60
62
64
66
68
70
R64#2
0
Ohm-m
4000

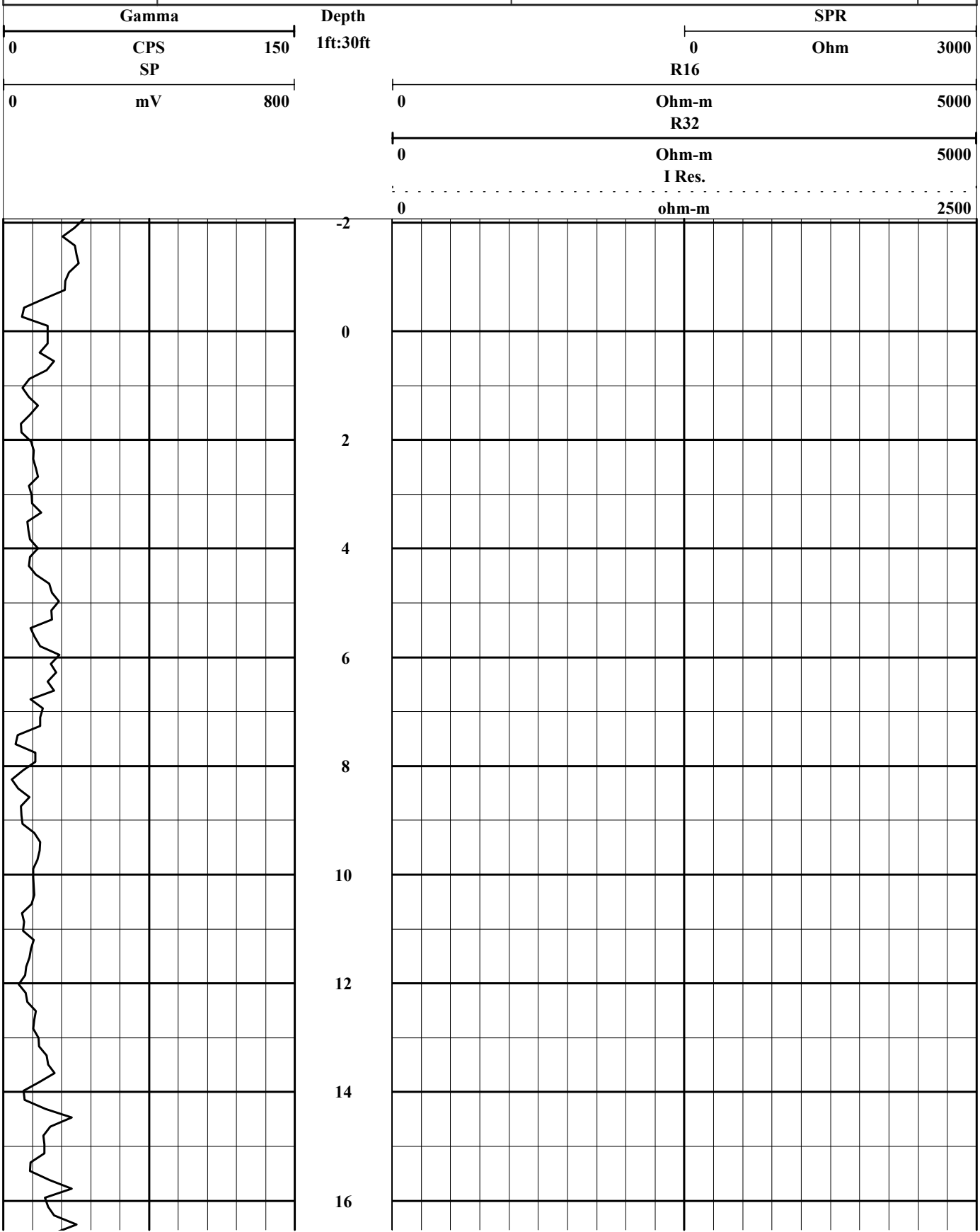

0
Ohm-m
4000
I Res.
0
ohm-m
2000
SPR
0
Ohm
2000
SP
R32
0
mV
700
0
Ohm-m
4000
Gamma
Depth
R16
0
CPS
150
1ft:30ft
0
Ohm-m
4000

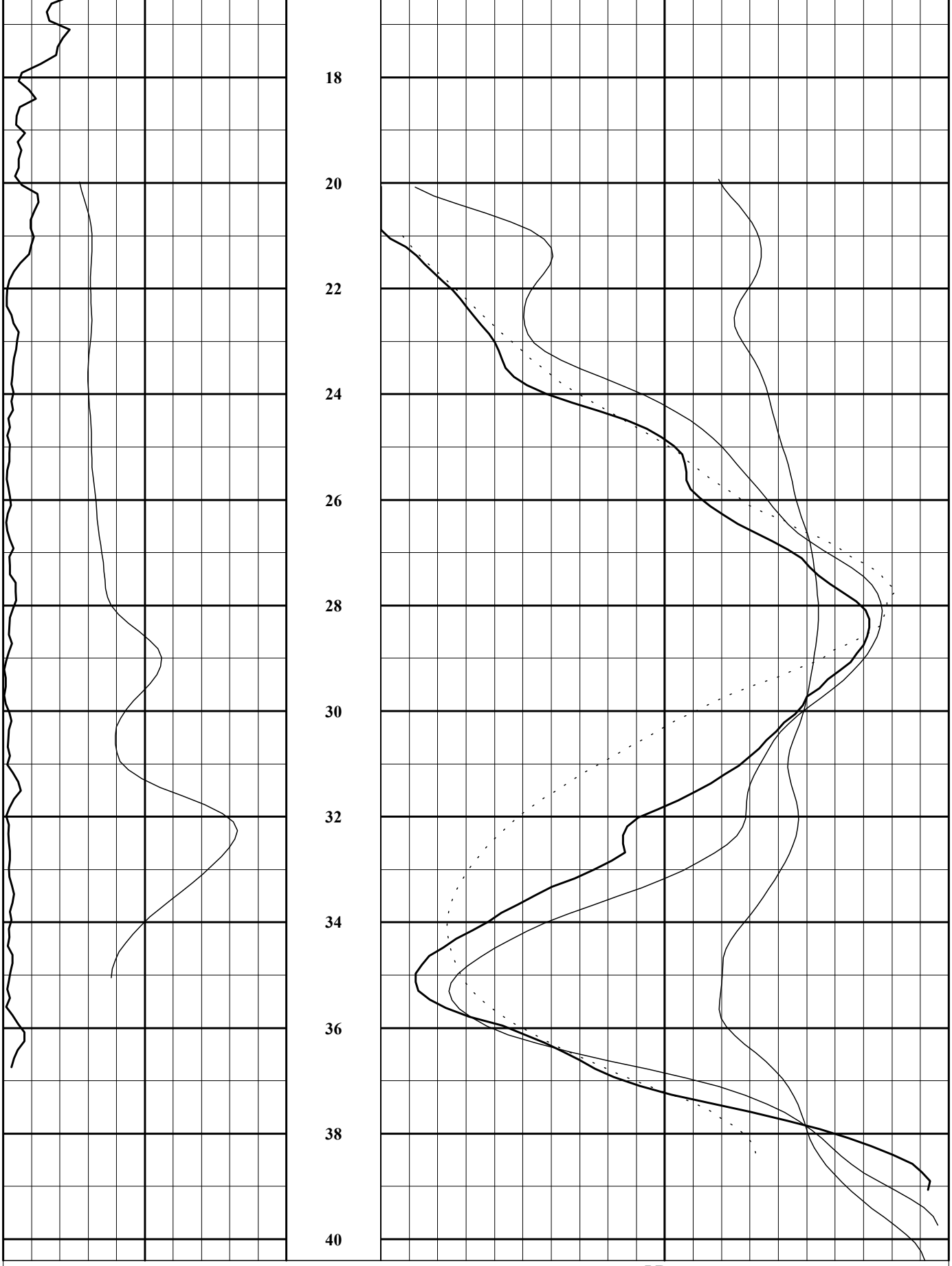
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-28	Depth Driller / Depth Logger	
Date: Aug 9, 05 — BH Fluid	Logged by:	
File Name	Witness:	




18
20
22
24
I Res.
0
ohm-m
2000
R32
0
Ohm-m
4000
SP
R16
-200
mV
200
0
Ohm-m
4000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
2000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-25	Depth Driller / Depth Logger	
Date: Aug 9, 05	BH Fluid	Logged by:
File Name		Witness:





I Res.

0 ohm-m 2500

R32

0 Ohm-m 5000

SP

0 mV 800

R16

0 Ohm-m 5000

Gamma

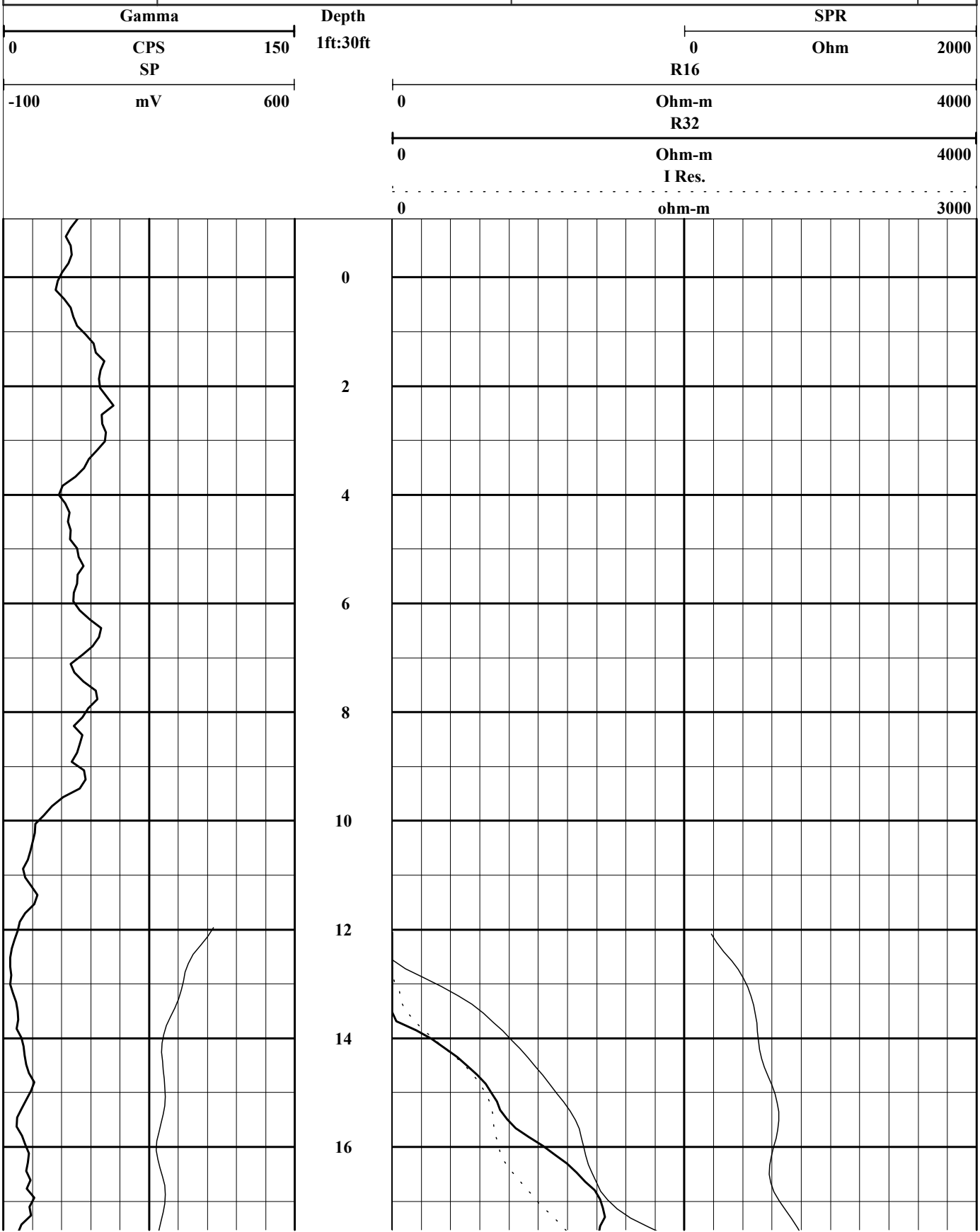
Depth

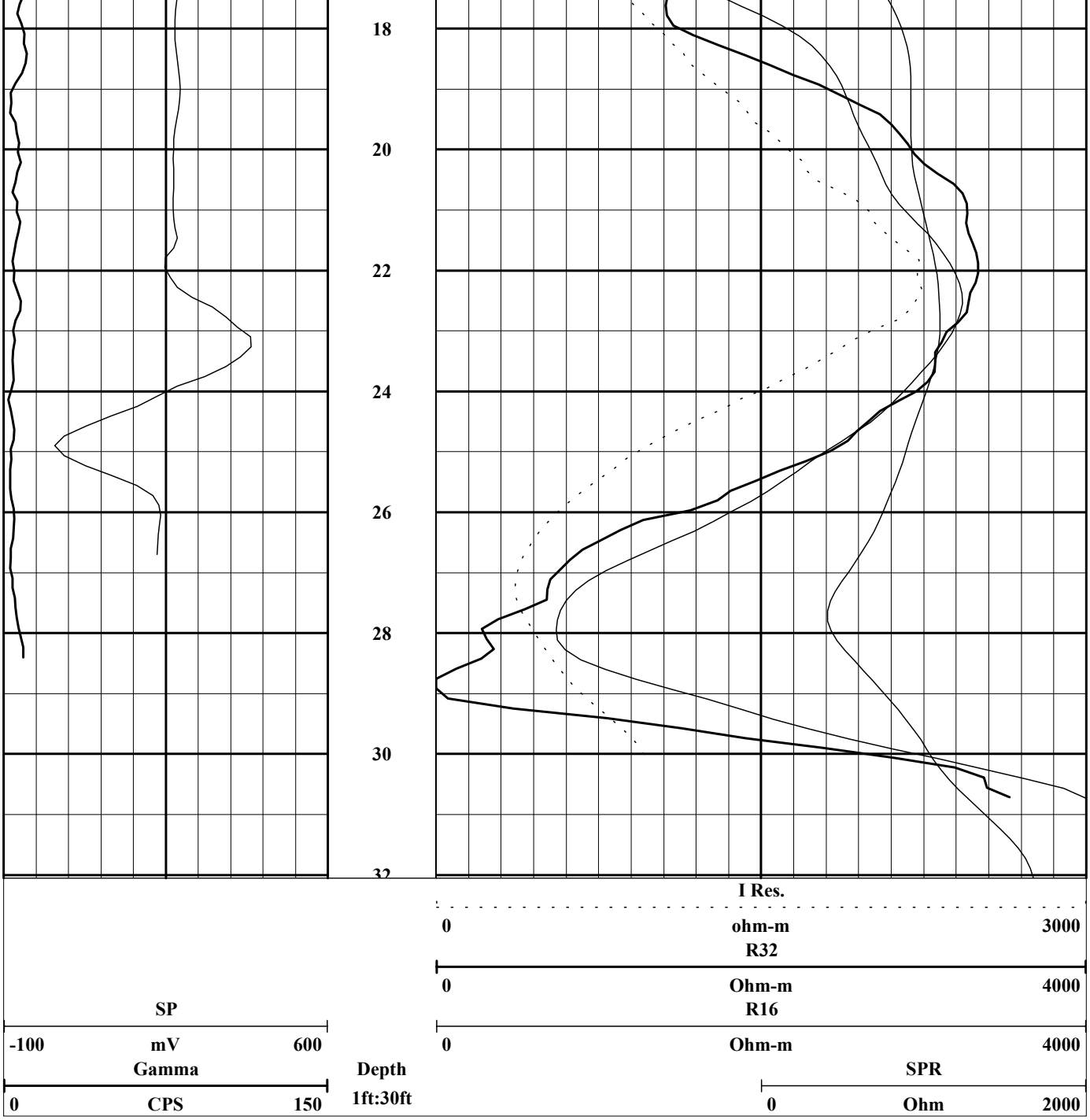
1ft 30ft

SPR

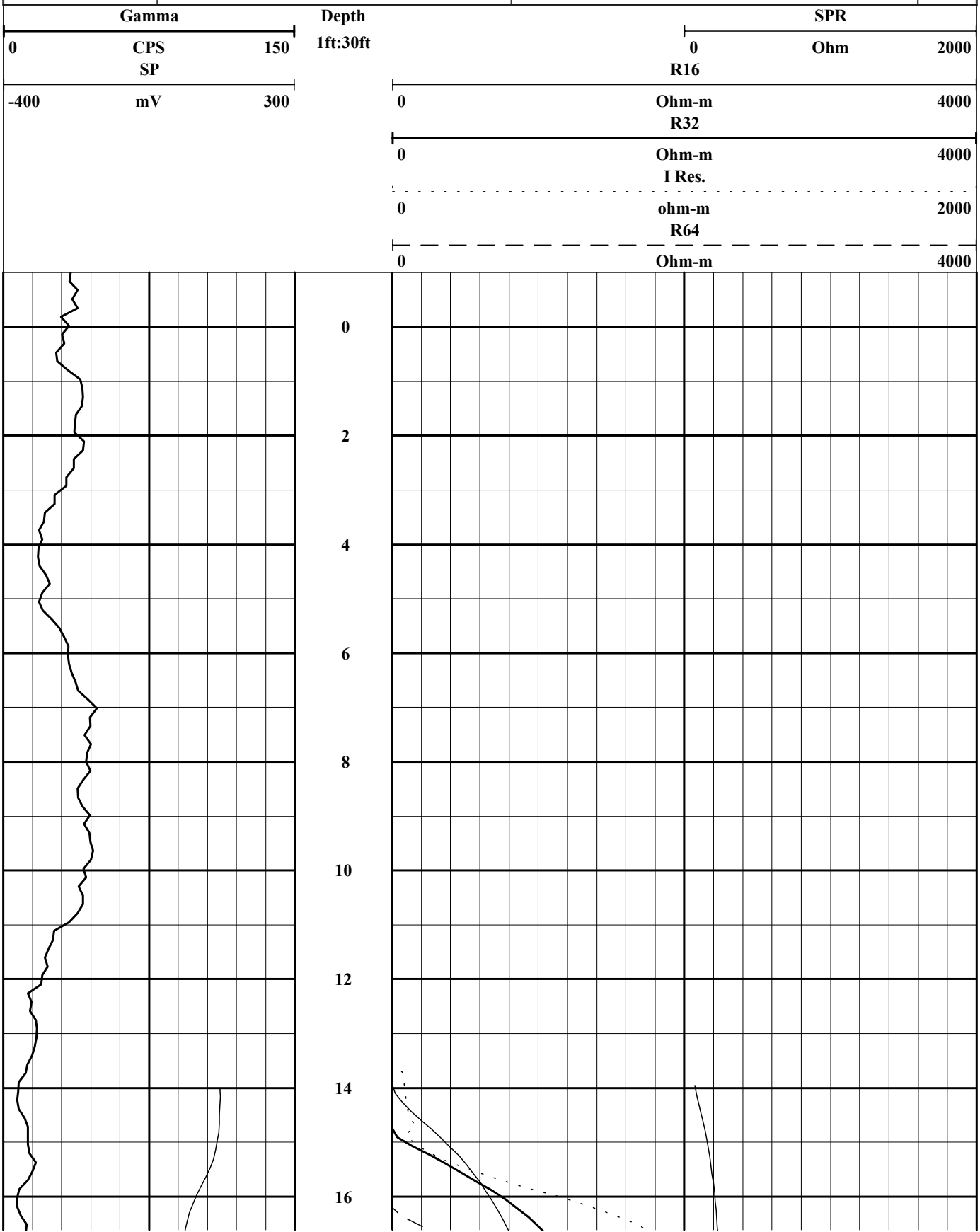
0	**CPS**	**150**	**1ft:30ft**	**0**	**Ohm**	**3000**

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-24	Depth Driller / Depth Logger	
Date: Aug 8, 05 — BH Fluid	Logged by:	
File Name	Witness:	

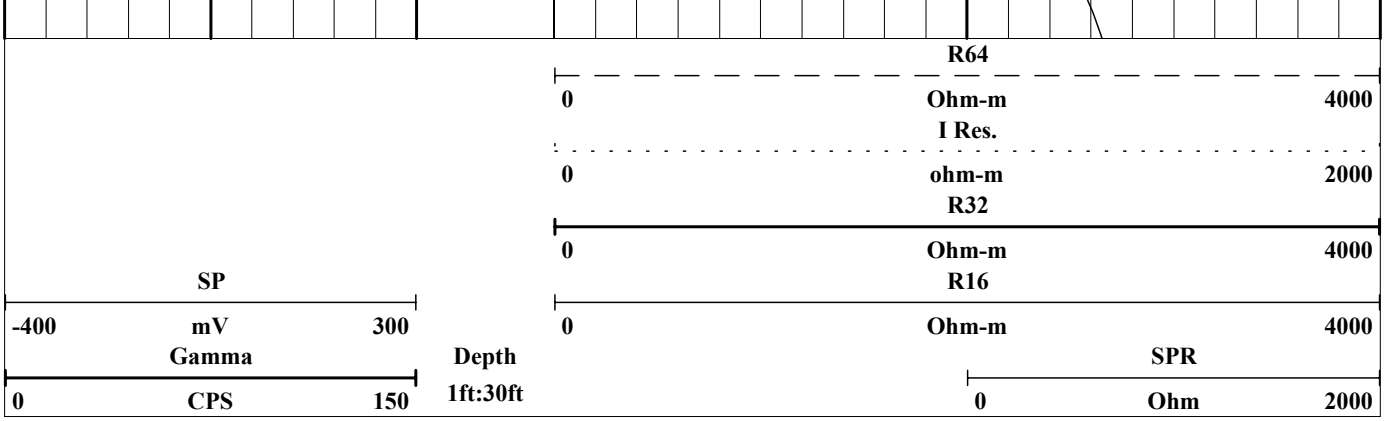



18
20
22
24
26
28
30
32
I Res.
0
ohm-m
3000
R32
0
Ohm-m
4000
SP
R16
-100
mV
600
0
Ohm-m
4000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
2000

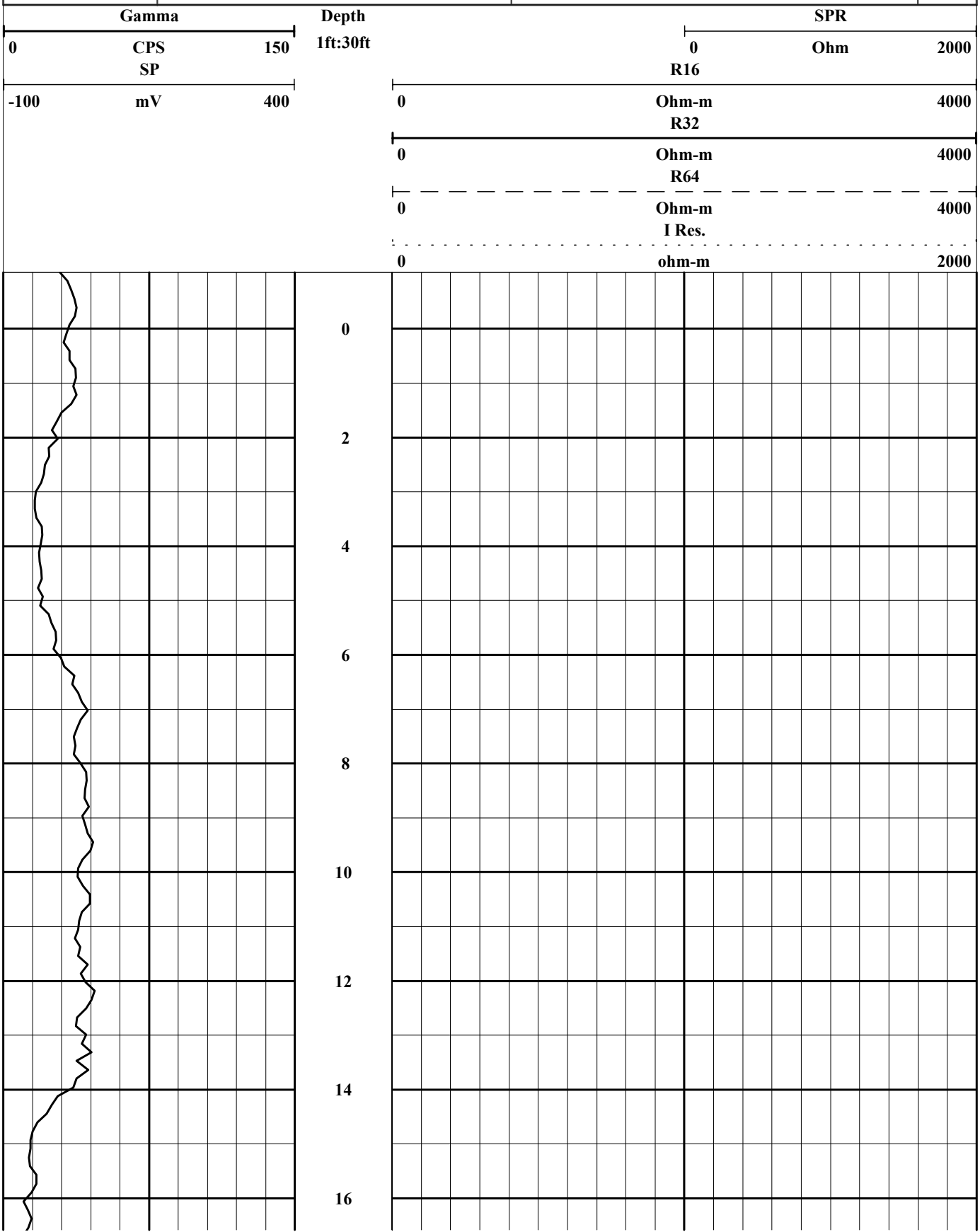
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-21	Depth Driller / Depth Logger	
Date: Aug 8, 05 / BH Fluid	Logged by:	
File Name	Witness:	

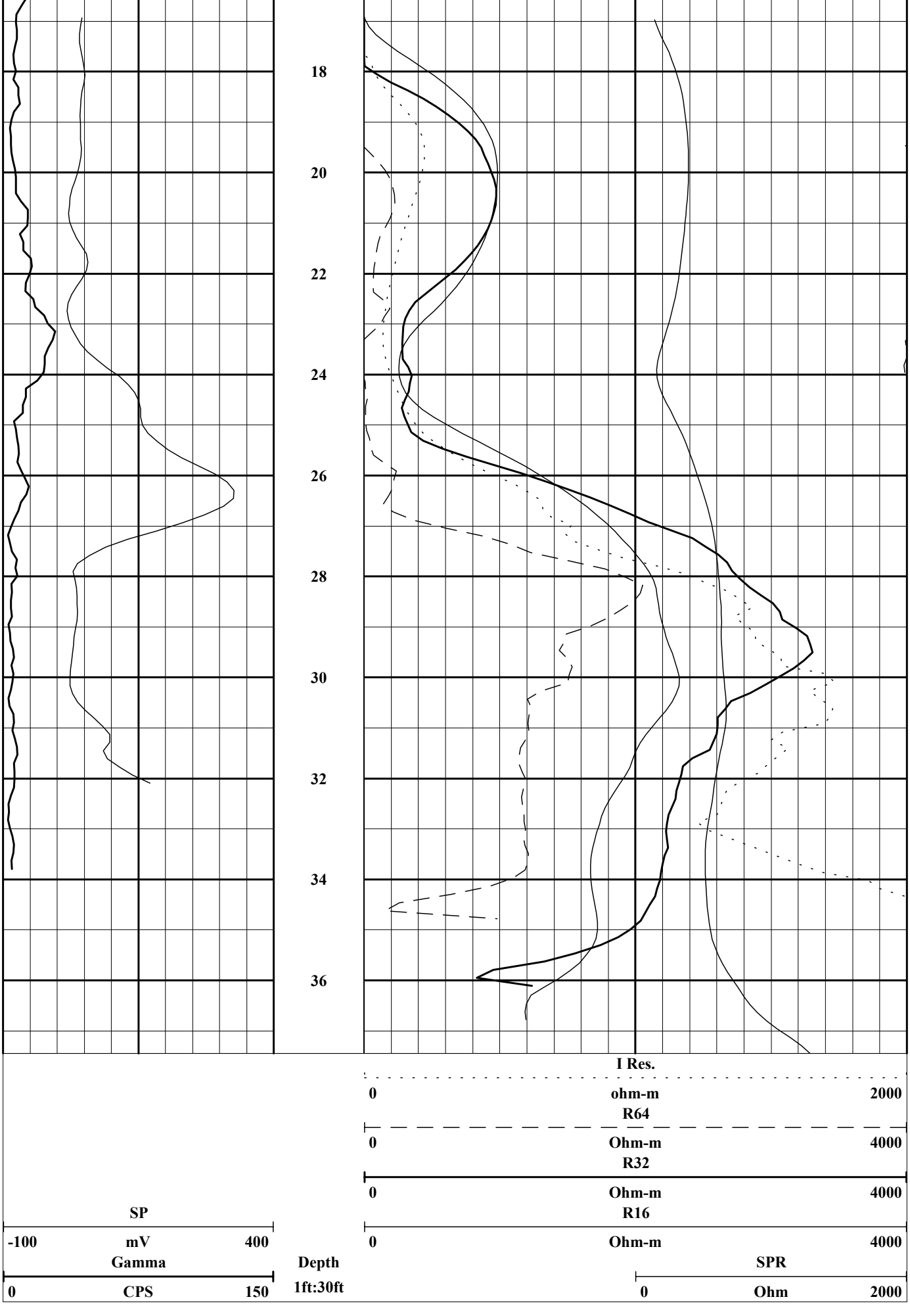



18
20
22
24
26
28
30
32
34
36
38
40
42
44


R64
0
Ohm-m
4000
I Res.
0
ohm-m
2000
R32
0
Ohm-m
4000
SP
R16
-400
mV
300
0
Ohm-m
4000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
2000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-20	Depth Driller / Depth Logger	
Date: Aug 5, 05	BH Fluid	Logged by:
File Name		Witness:

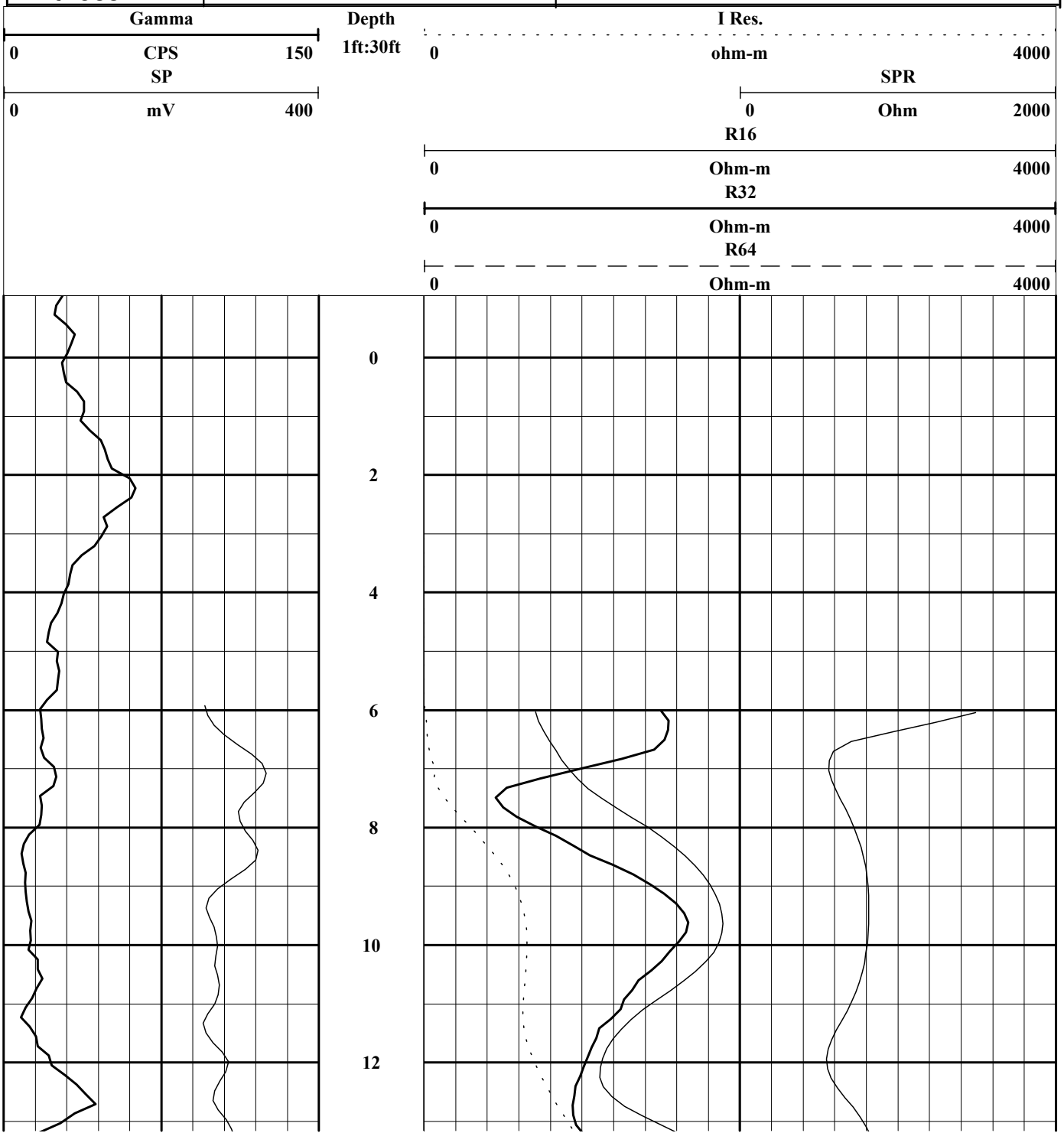


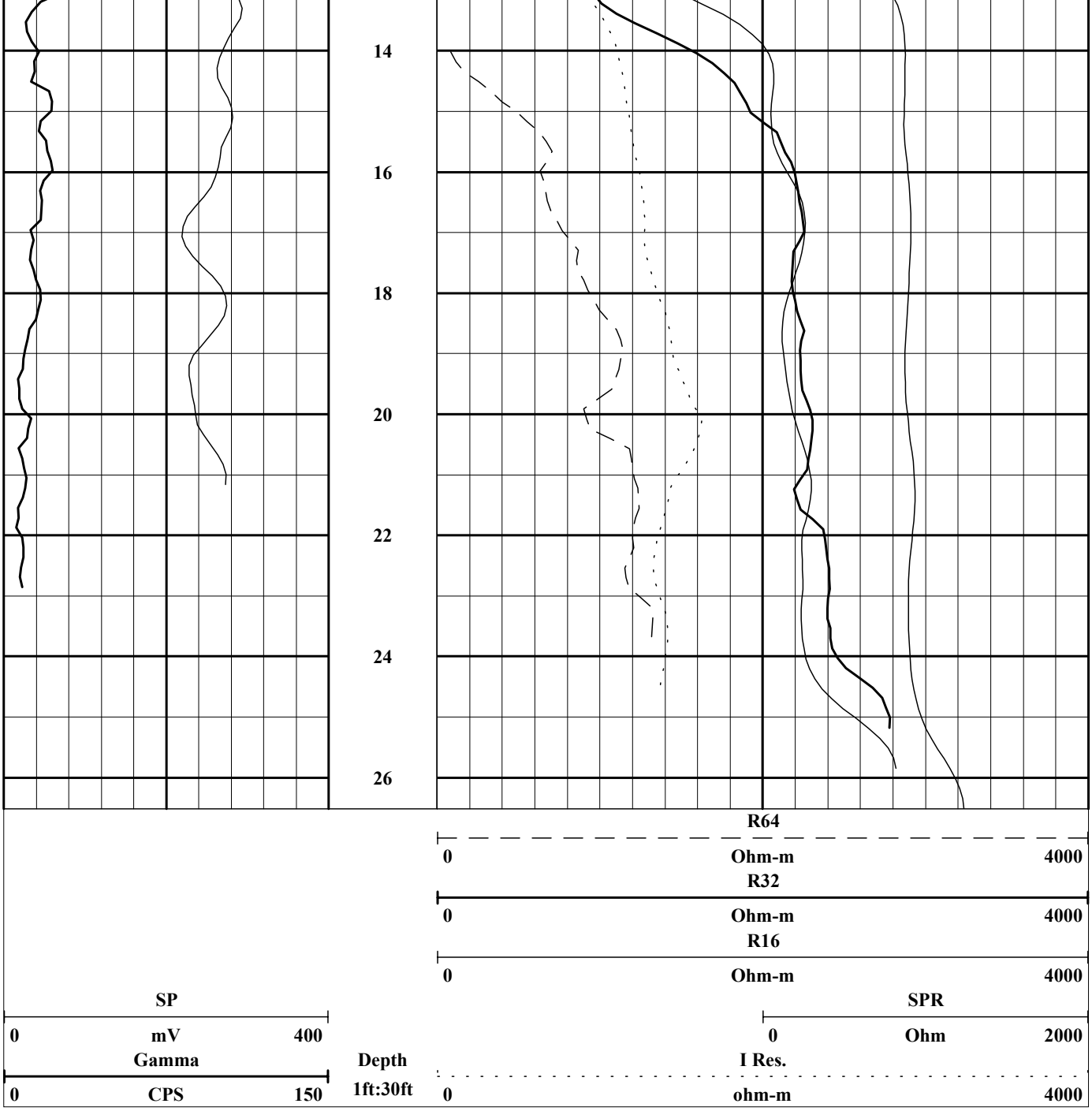

18
20
22
24
26
28
30
32
34
36
I Res.
0
ohm-m
2000
R64
0
Ohm-m
4000
R32
0
Ohm-m
4000
R16
0
Ohm-m
4000
SP
-100
mV
400
Gamma
0
CPS
150
Depth
1ft:30ft
SPR
0
Ohm
2000

COMPANY:	CRA
Location:	GM Powertrain

Well	CH-11		
Date	July 25, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES





R64

0 Ohm-m 4000

R32

0 Ohm-m 4000

R16

0 Ohm-m 4000

SP

0 mV 400

SPR

0 Ohm 2000

Gamma

0 CPS 150

Depth

1ft:30ft

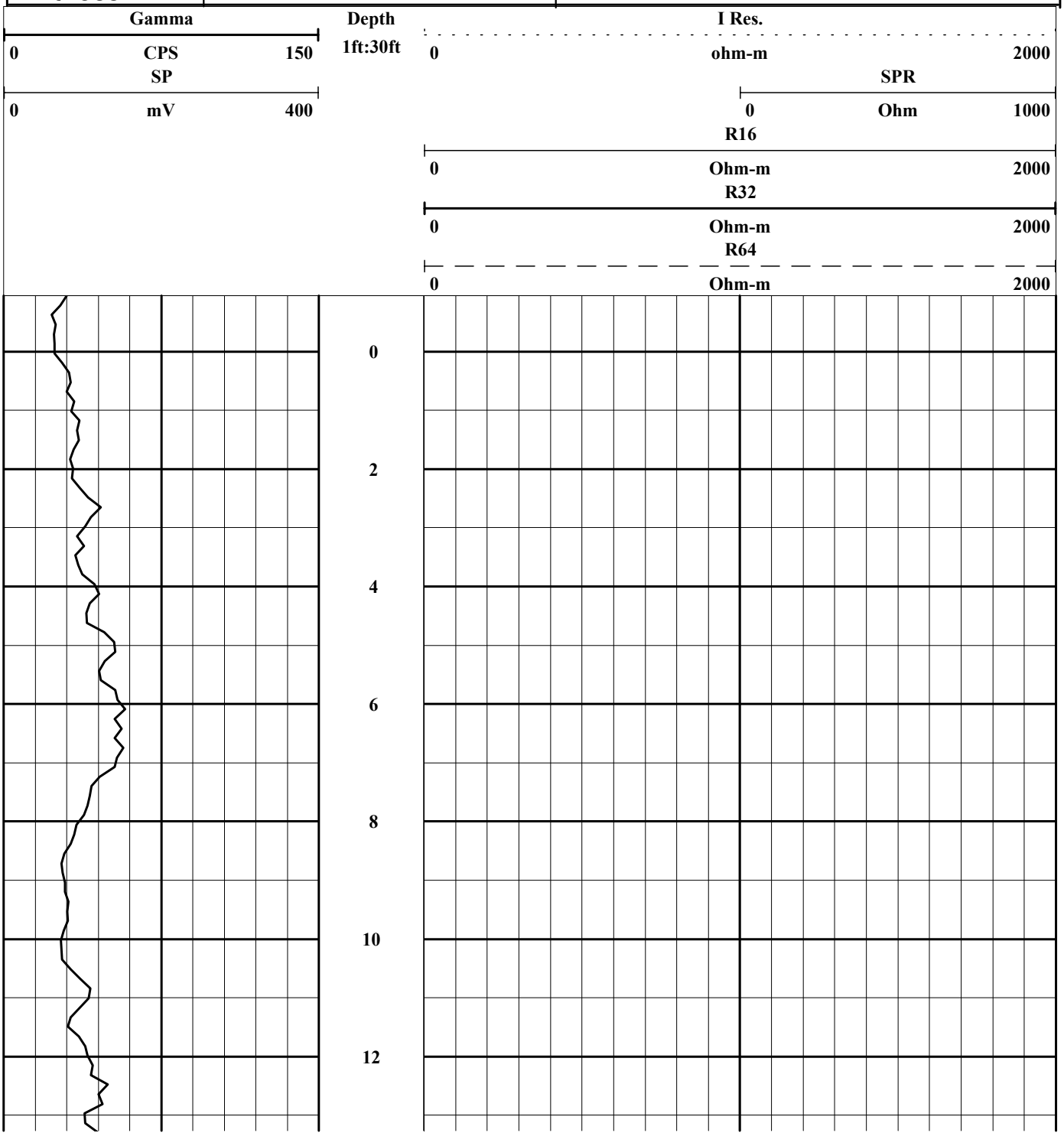
I Res.

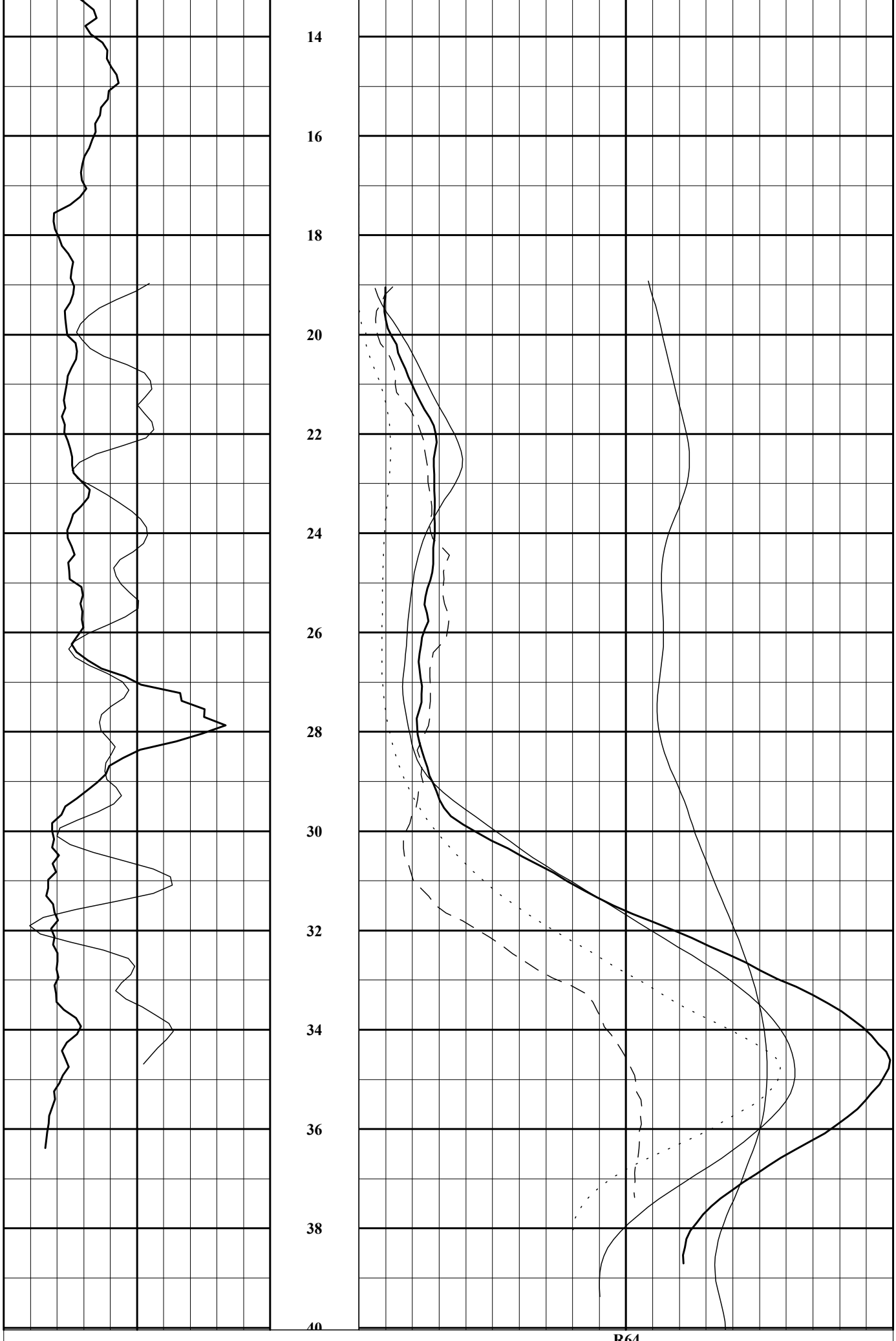
0 ohm-m 4000

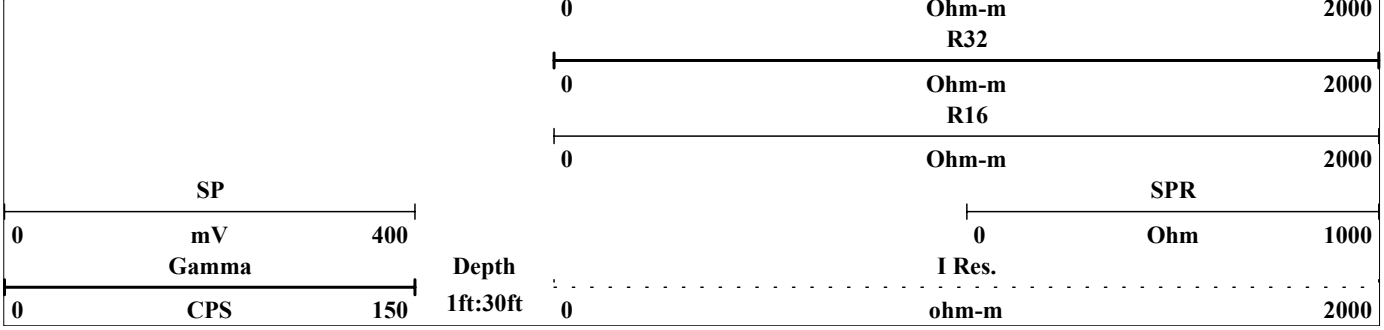
COMPANY:	CRA
Location:	GM Powertrain

Well	CH-6		
Date	July 22, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES



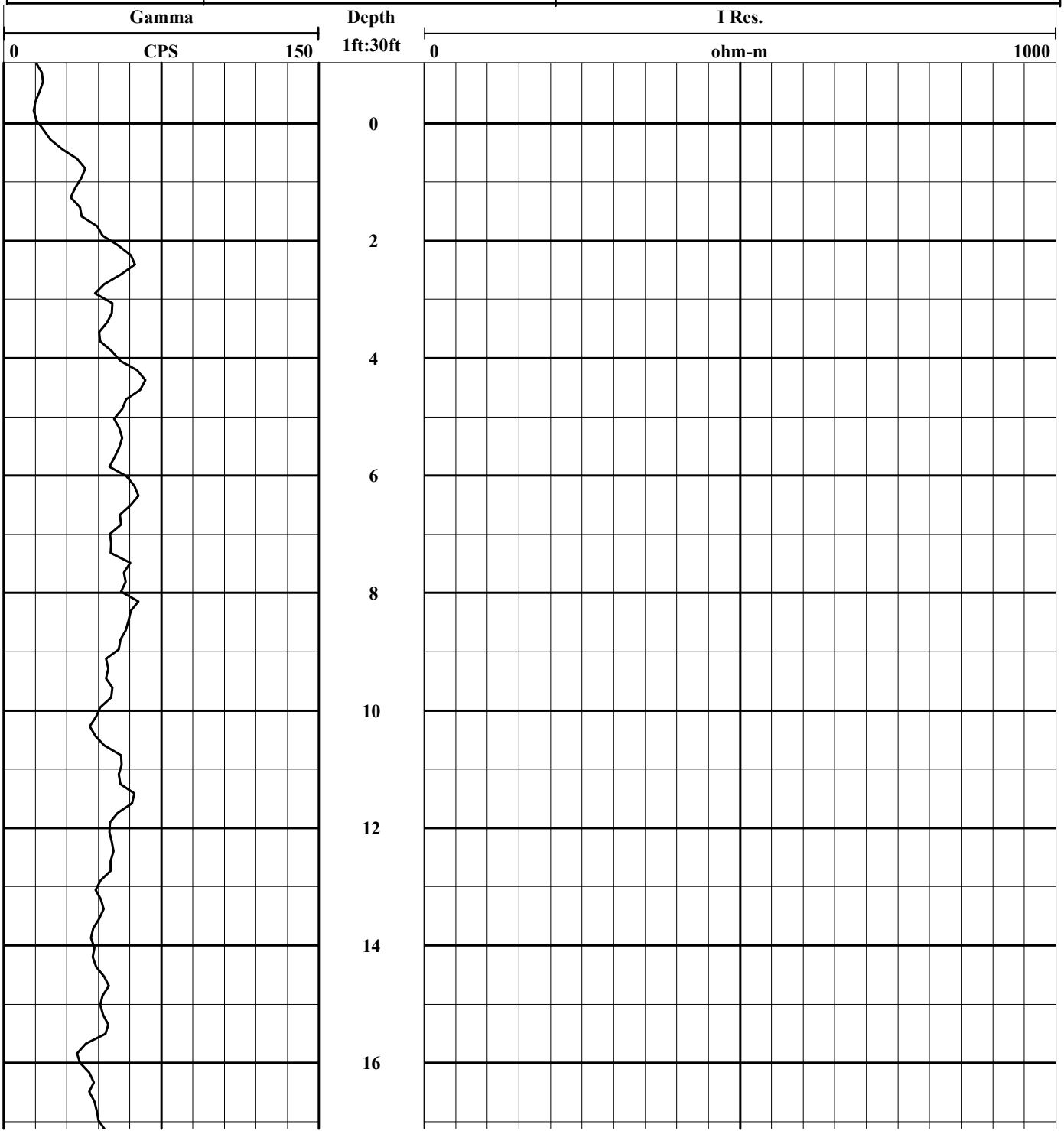

14
16
18
20
22
24
26
28
30
32
34
36
38
40
R64

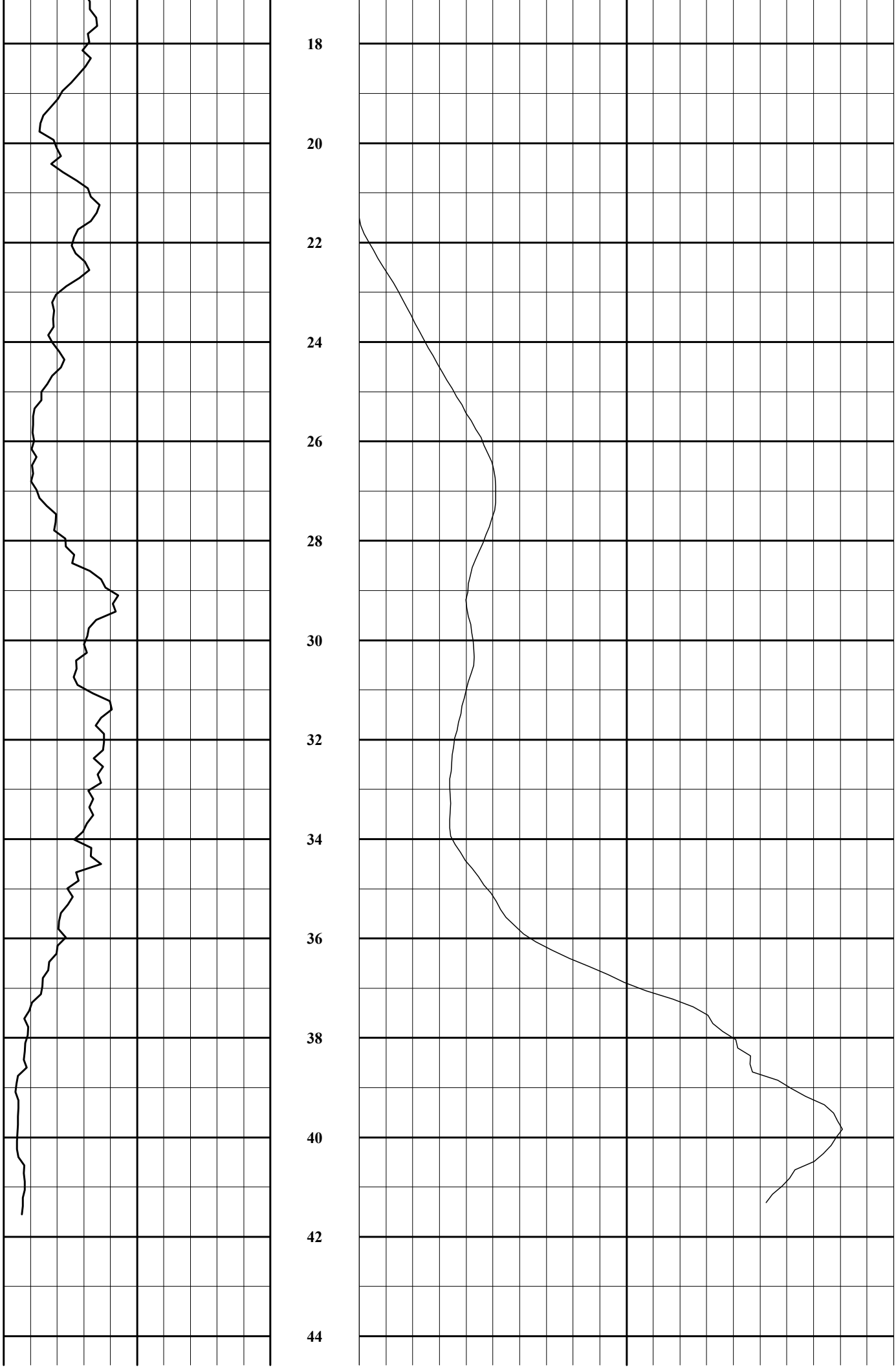

0
Ohm-m
2000
R32
0
Ohm-m
2000
R16
0
Ohm-m
2000
SP
SPR
0
mV
400
0
Ohm
1000
Gamma
Depth
I Res.
0
CPS
150
1ft:30ft
0
ohm-m
2000

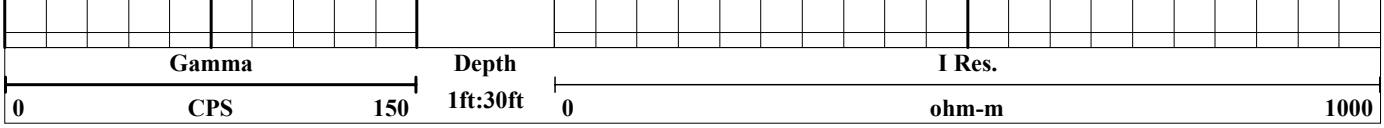
COMPANY:	CRA
Location:	GM Powertrain

Well	CH-5		
Date	July 21, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES



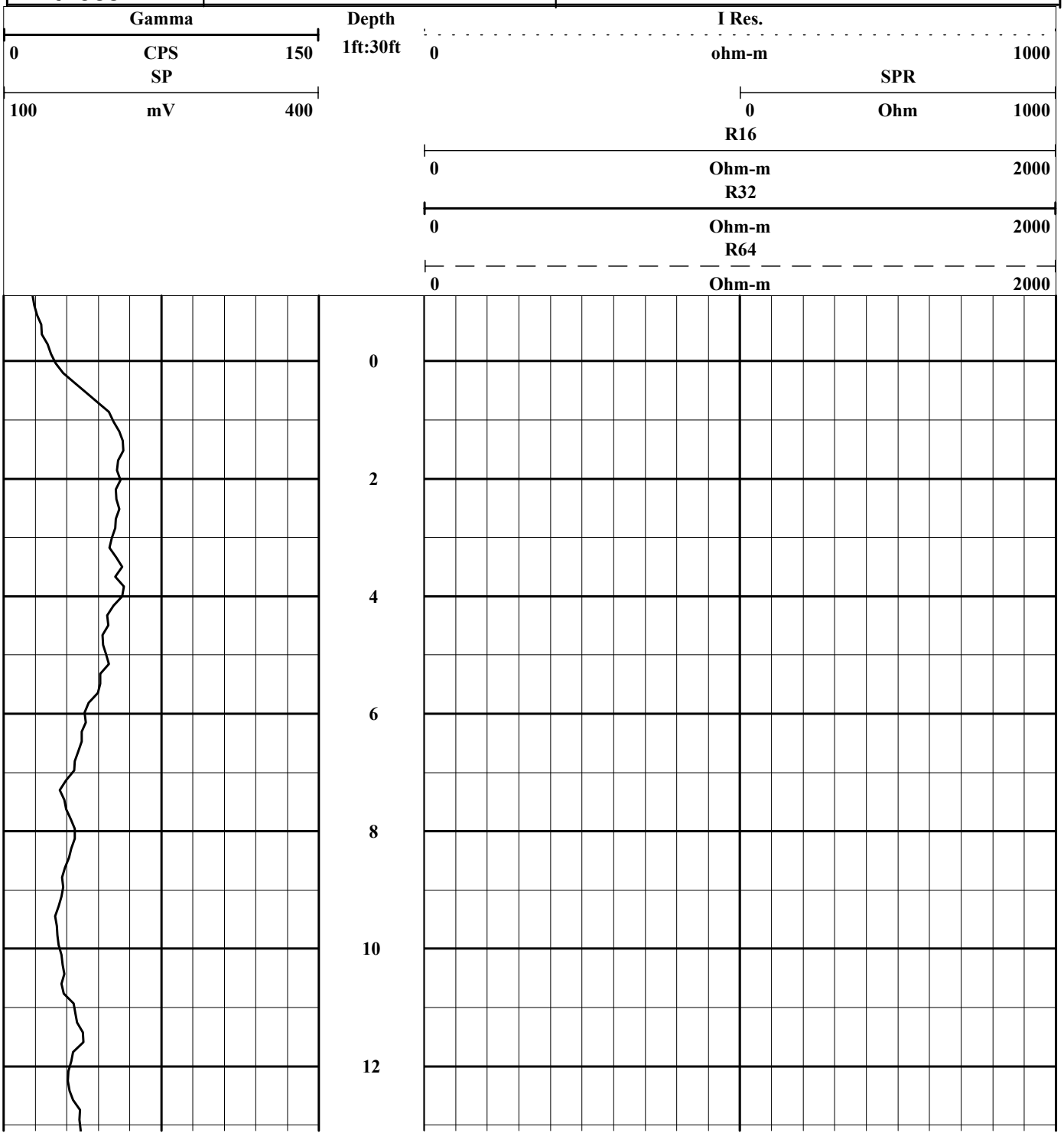

18
20
22
24
26
28
30
32
34
36
38
40
42
44


Gamma
Depth
I Res.
0
CPS
150
1ft:30ft
0
ohm-m
1000

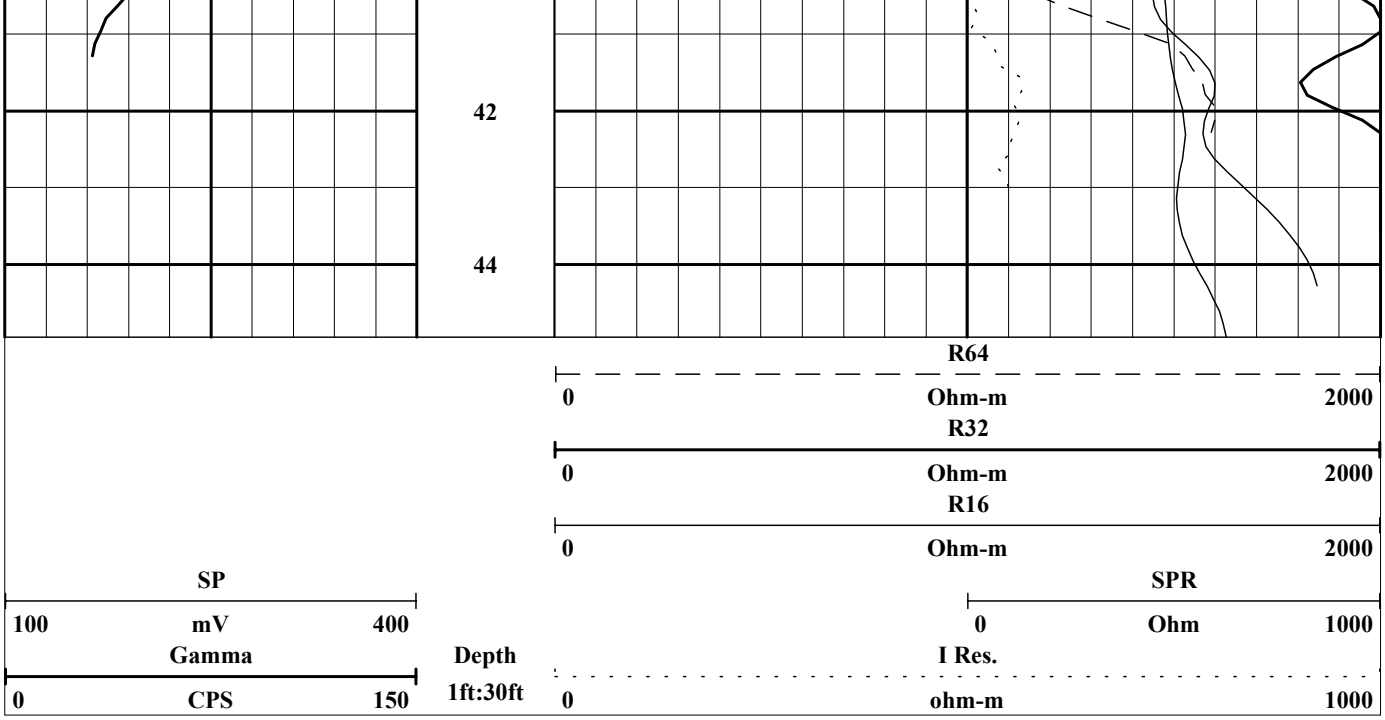
COMPANY:	CRA
Location:	GM Powertrain

Well	CH-1B		
Date	July 21, 2005	BH Fluid	
Casing	26		
File Name			
Depth Driller			
Depth Logger	45.5		
Logged by:			
Witness:			

OTHER SERVICES




14
16
18
20
22
24
26
28
30
32
34
36
38
40



R64

0 Ohm-m 2000

R32

0 Ohm-m 2000

R16

0 Ohm-m 2000

SP

100 mV 400

SPR

0 Ohm 1000

Gamma

0 CPS 150

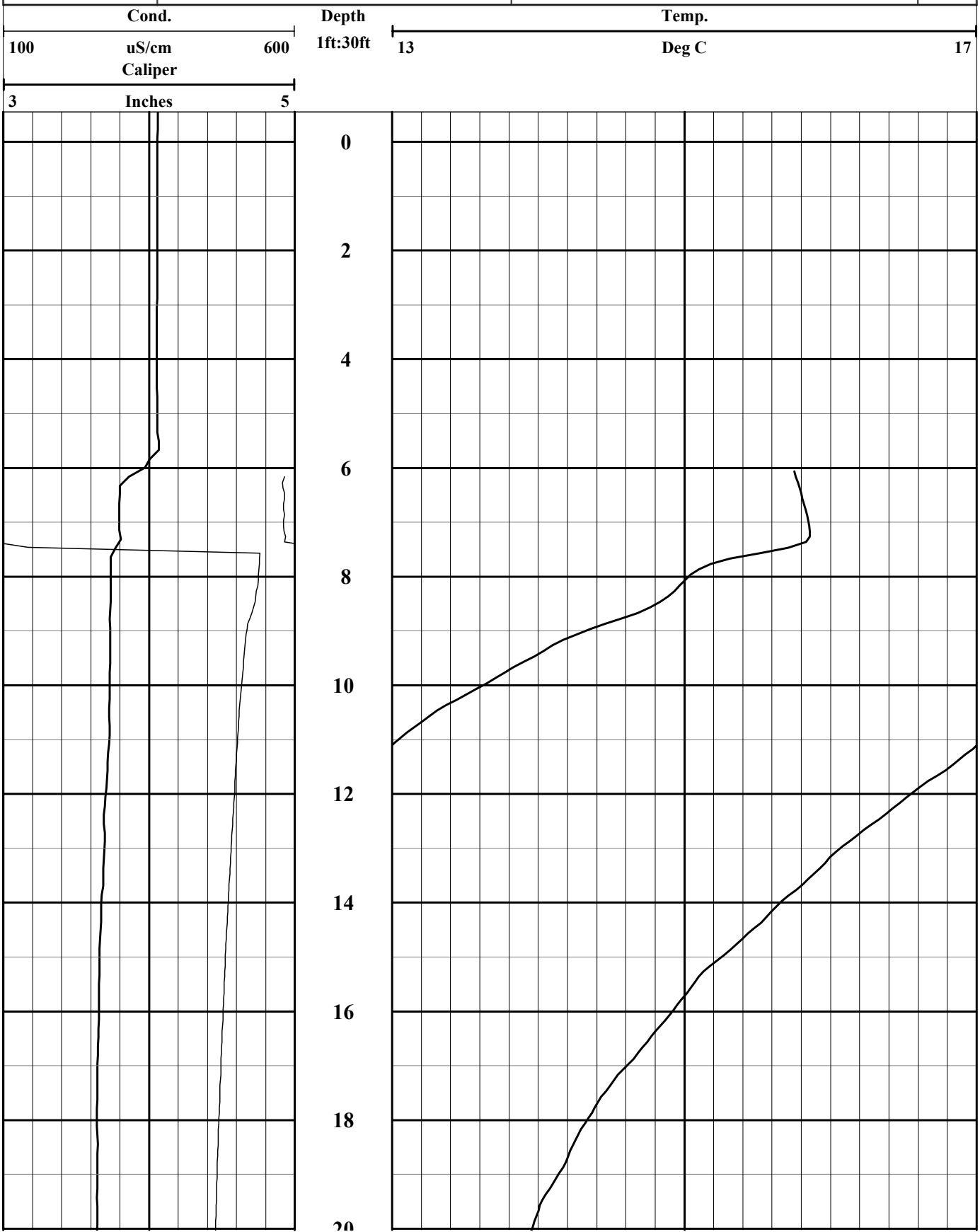
Depth

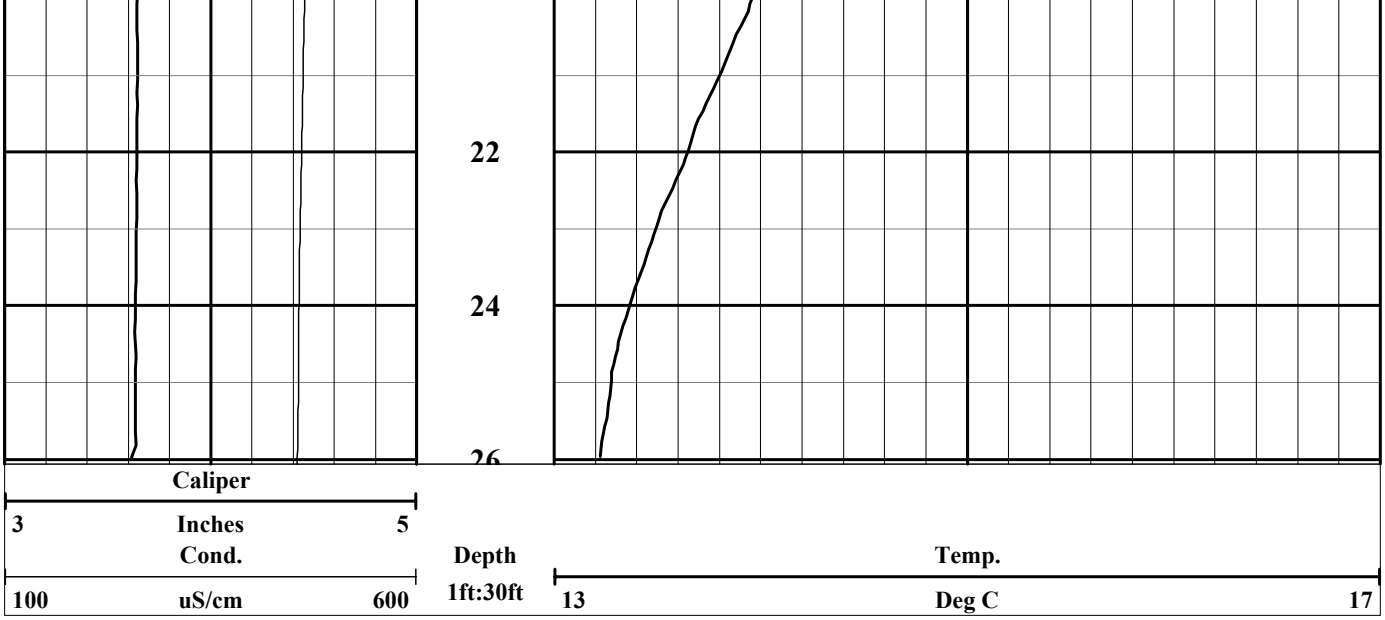
1ft:30ft

I Res.

0 ohm-m 1000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-41	Depth Driller / Depth Logger	
Date: Aug 4, 05 / BH Fluid	Logged by:	
File Name	Witness:	



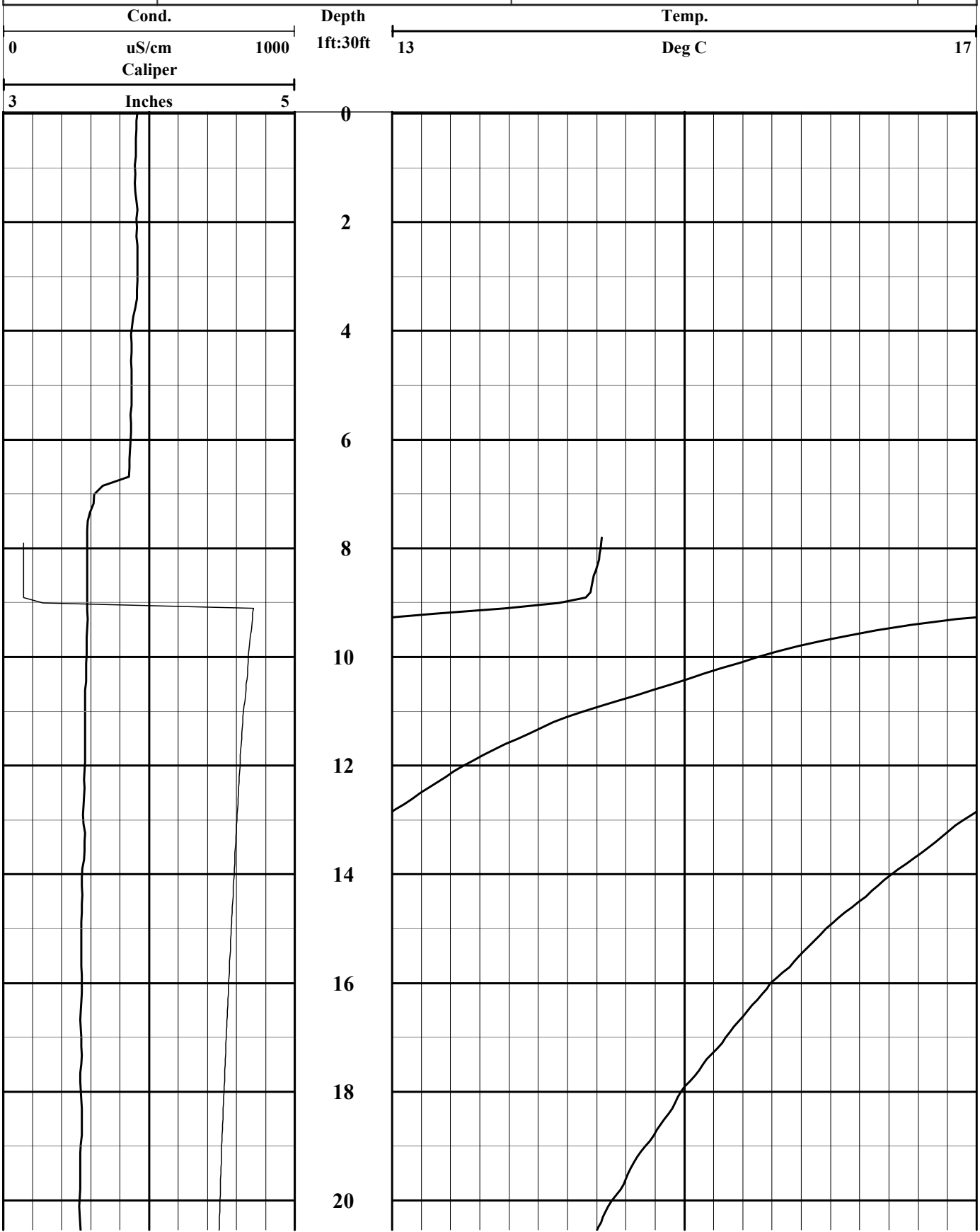


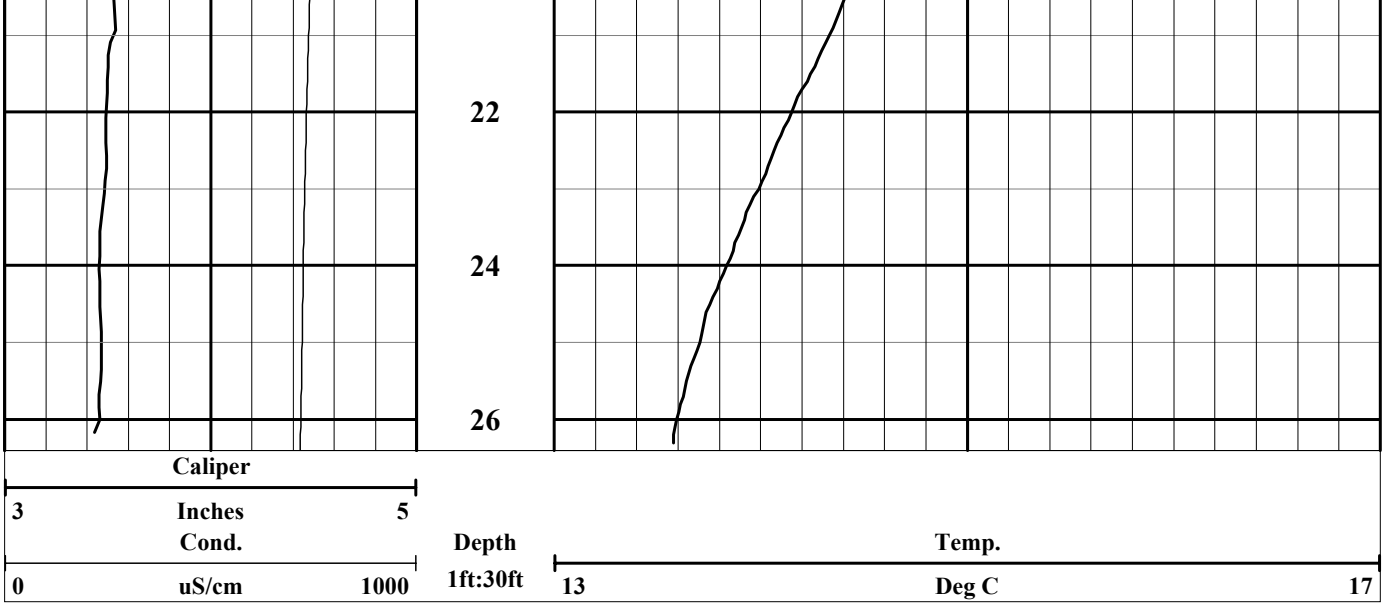
Caliper		
3	Inches	5
Cond.		
100	uS/cm	600

Depth
1ft:30ft

Temp.		
13	Deg C	17

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-30	Depth Driller / Depth Logger	
Date: Aug 10, 05	BH Fluid	Logged by:
File Name		Witness:





Caliper

3 Inches 5

Cond.

0 uS/cm 1000

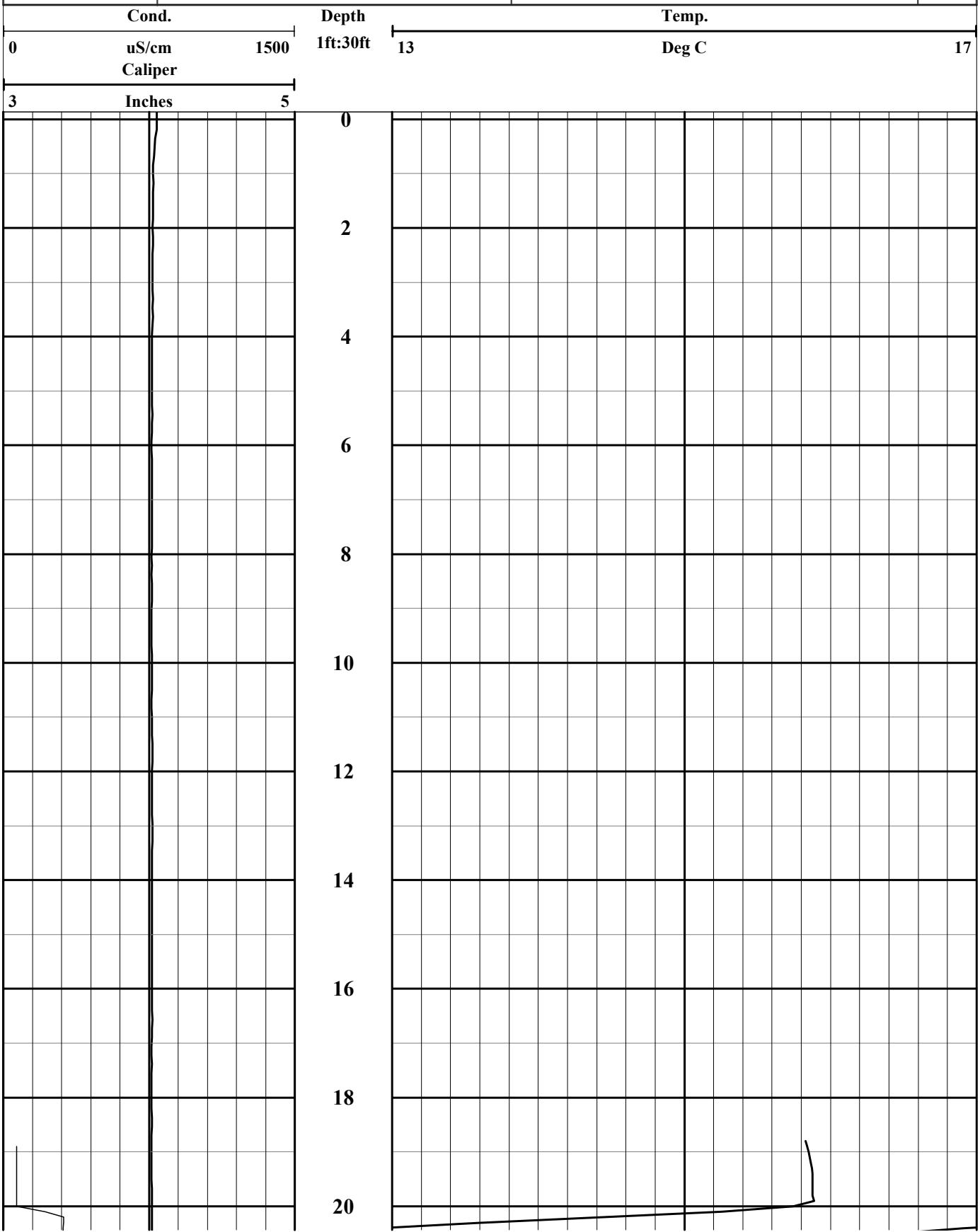
Depth

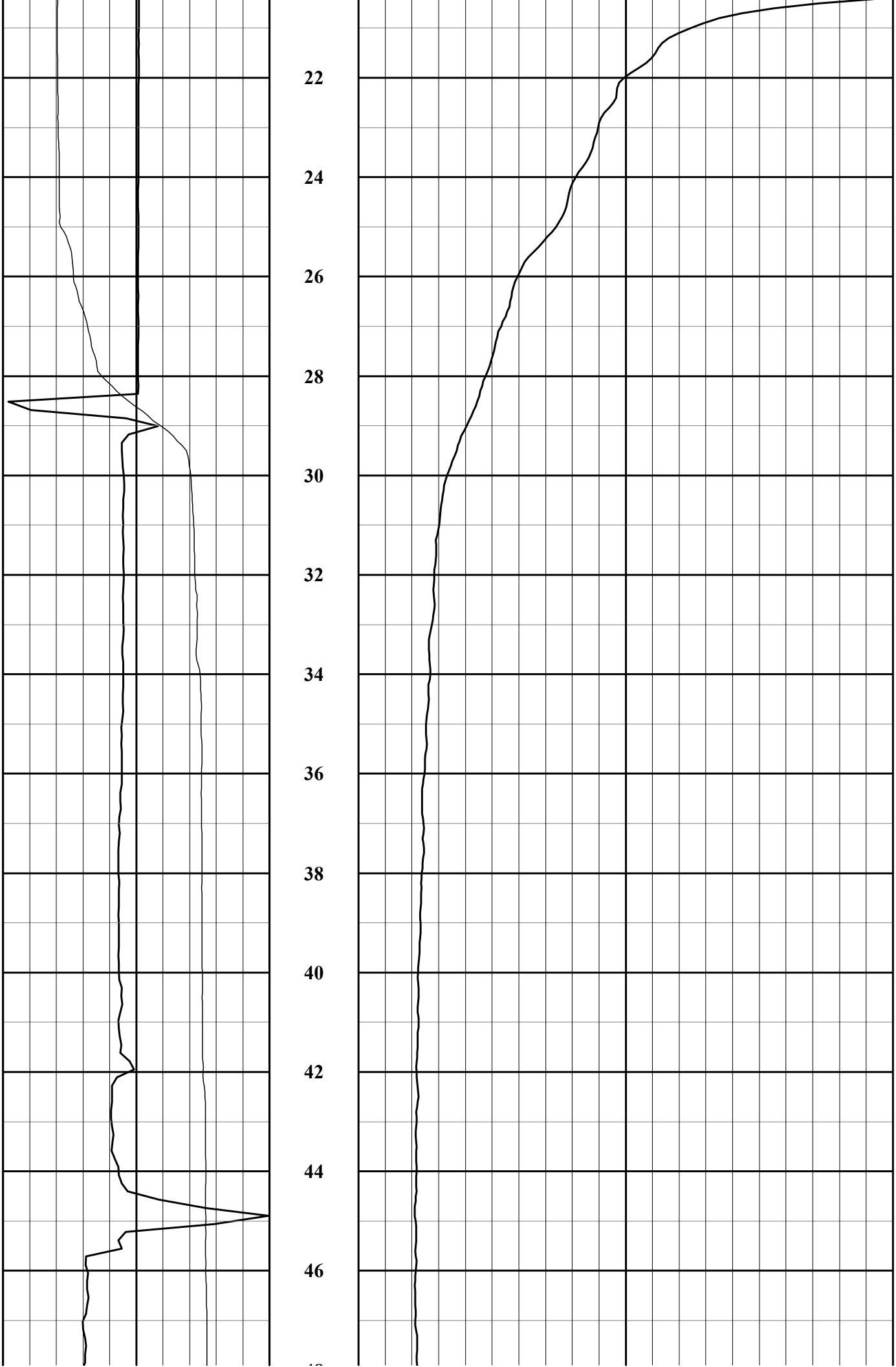
1ft:30ft

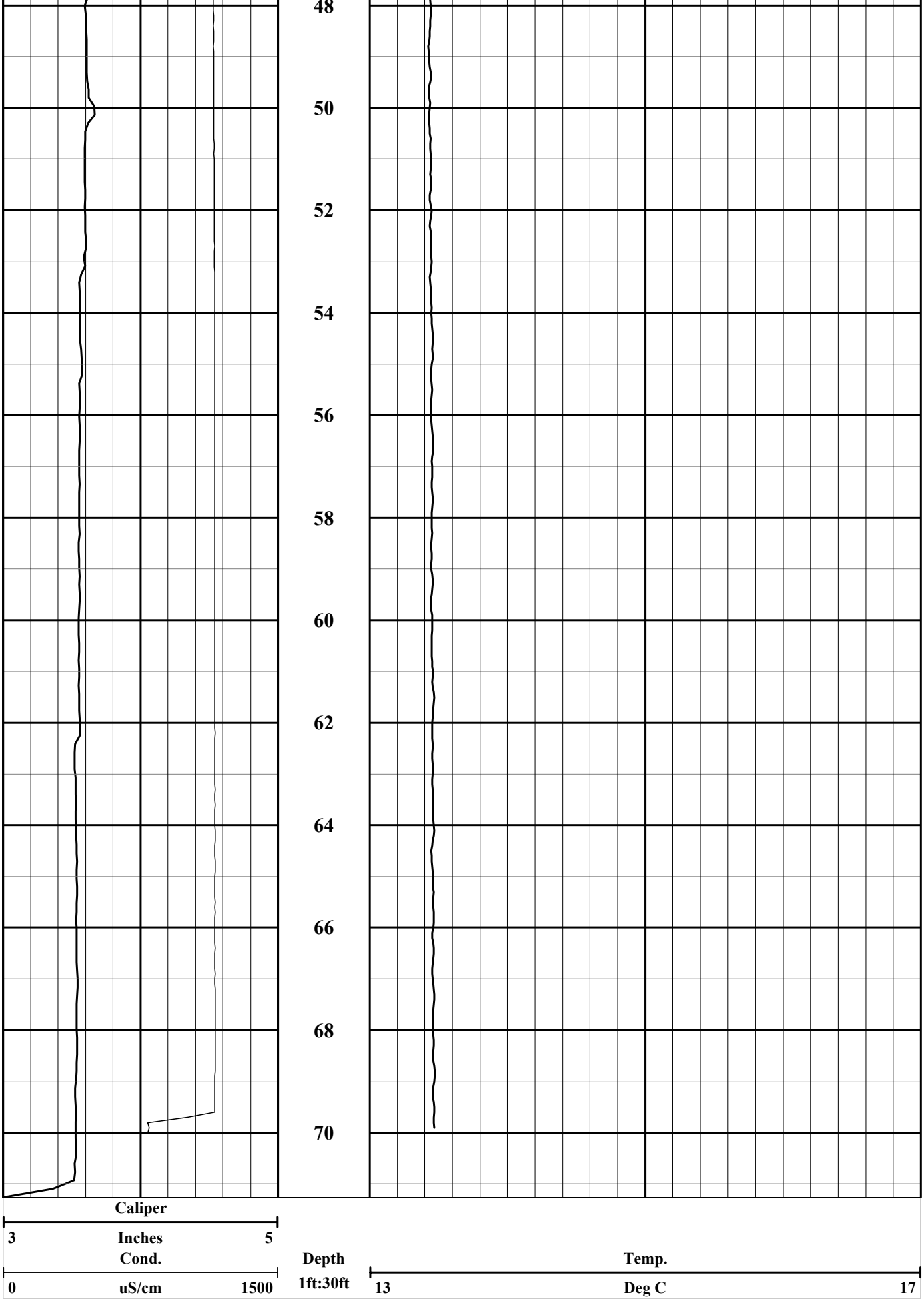
Temp.

13 Deg C 17

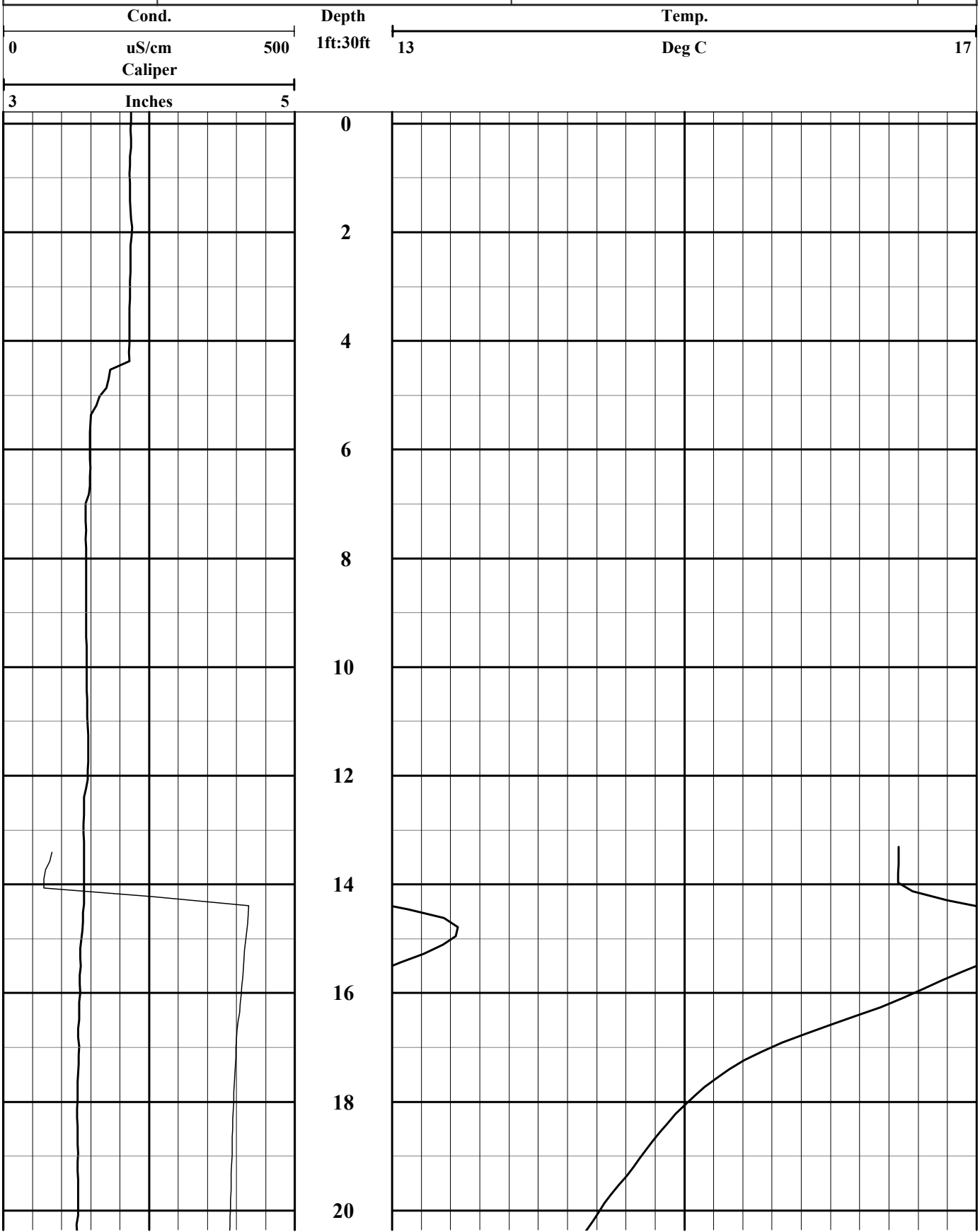
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-29	Depth Driller / Depth Logger	
Date: Aug 10, 05	BH Fluid	Logged by:
File Name		Witness:

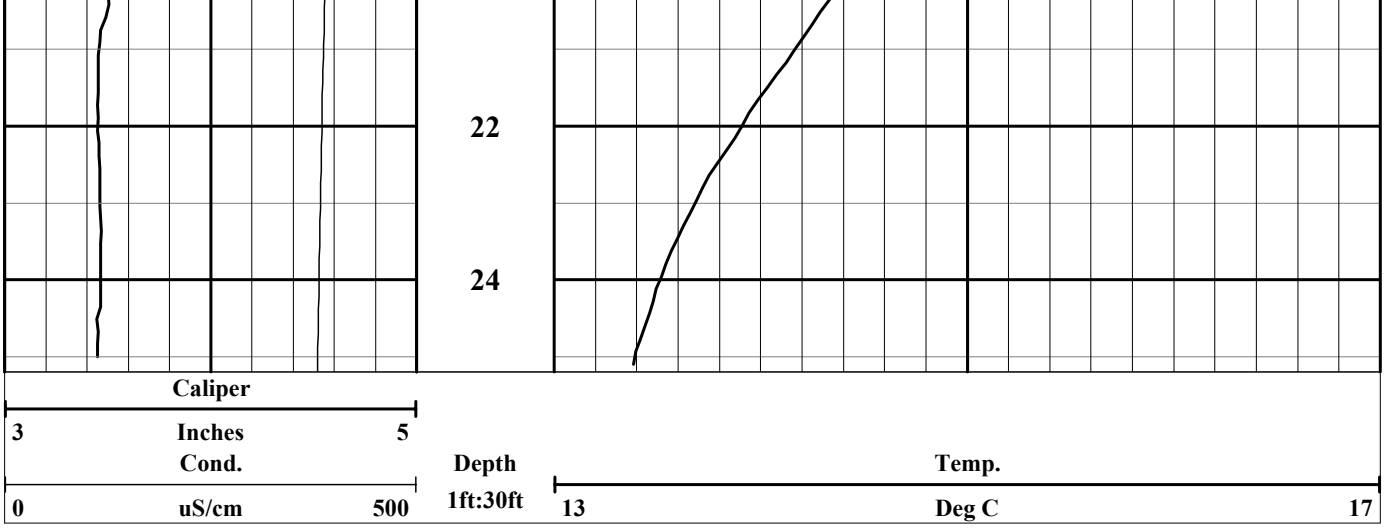



22
24
26
28
30
32
34
36
38
40
42
44
46


48
50
52
54
56
58
60
62
64
66
68
70
Caliper
3
Inches
5
Cond.
0
uS/cm
1500
Depth
1ft:30ft
Temp.
13
Deg C
17

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-28	Depth Driller / Depth Logger	
Date: Aug 9, 05 — BH Fluid	Logged by:	
File Name	Witness:	





Caliper

3 Inches 5

Cond.

0 uS/cm 500

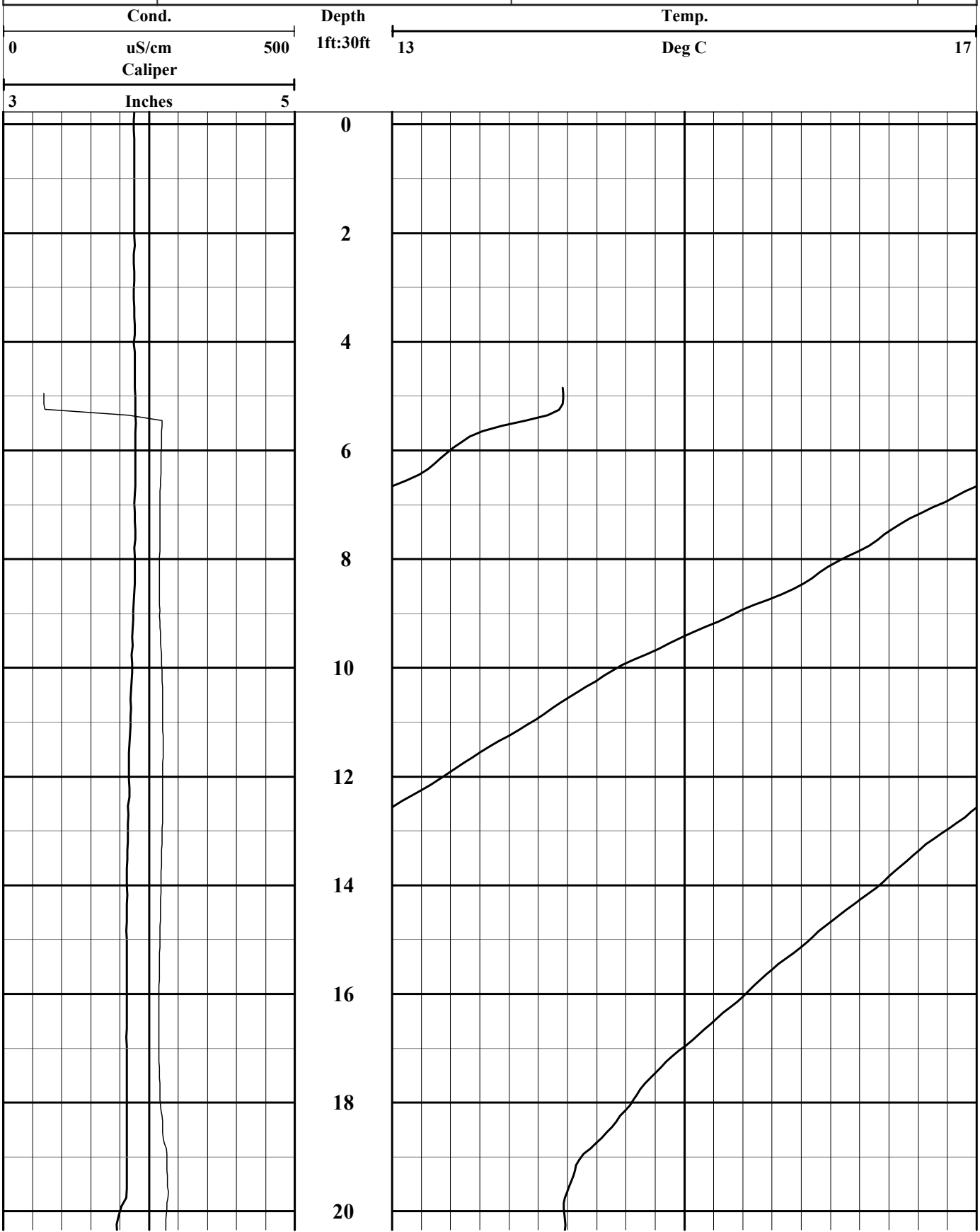
Depth

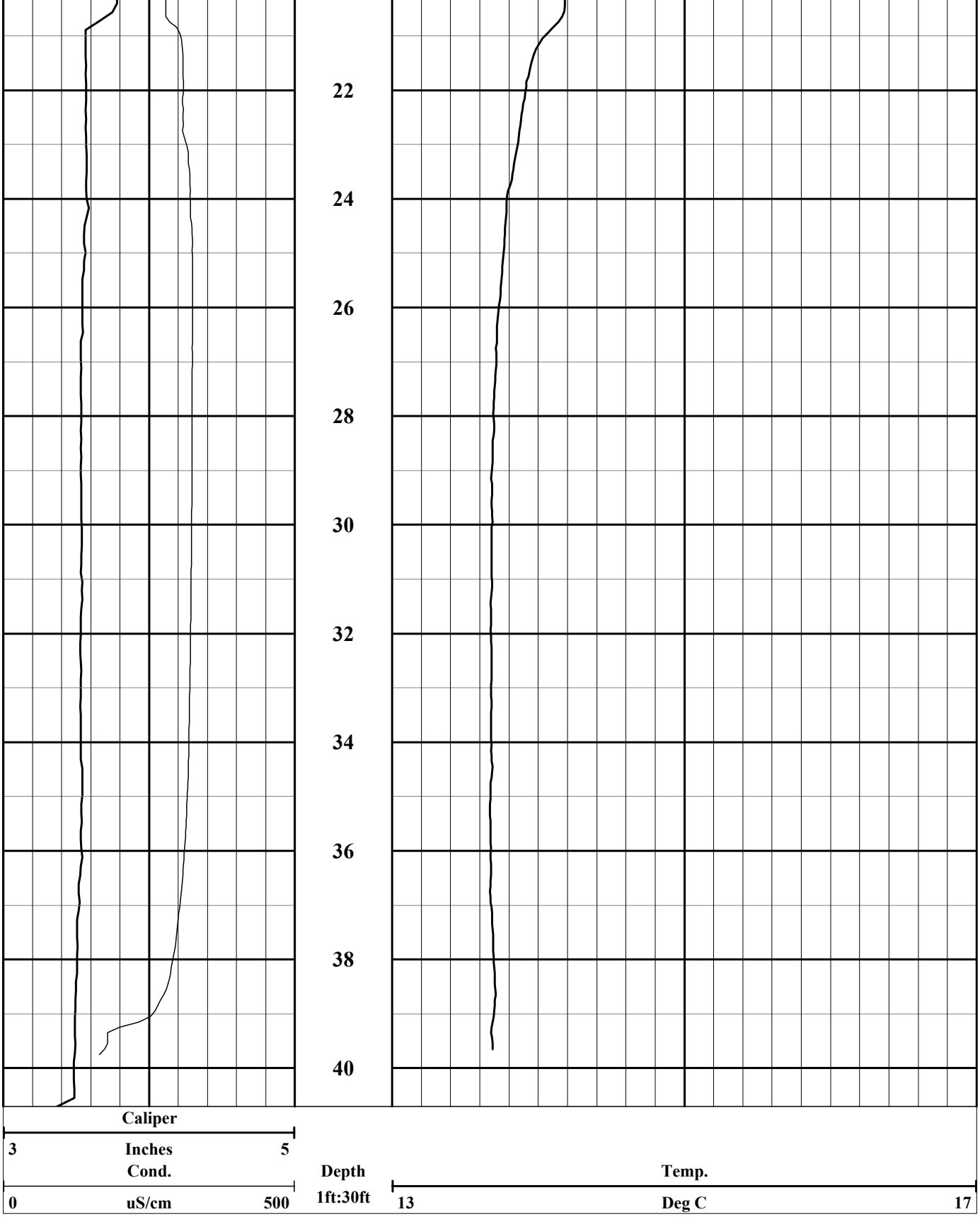
1ft:30ft

Temp.

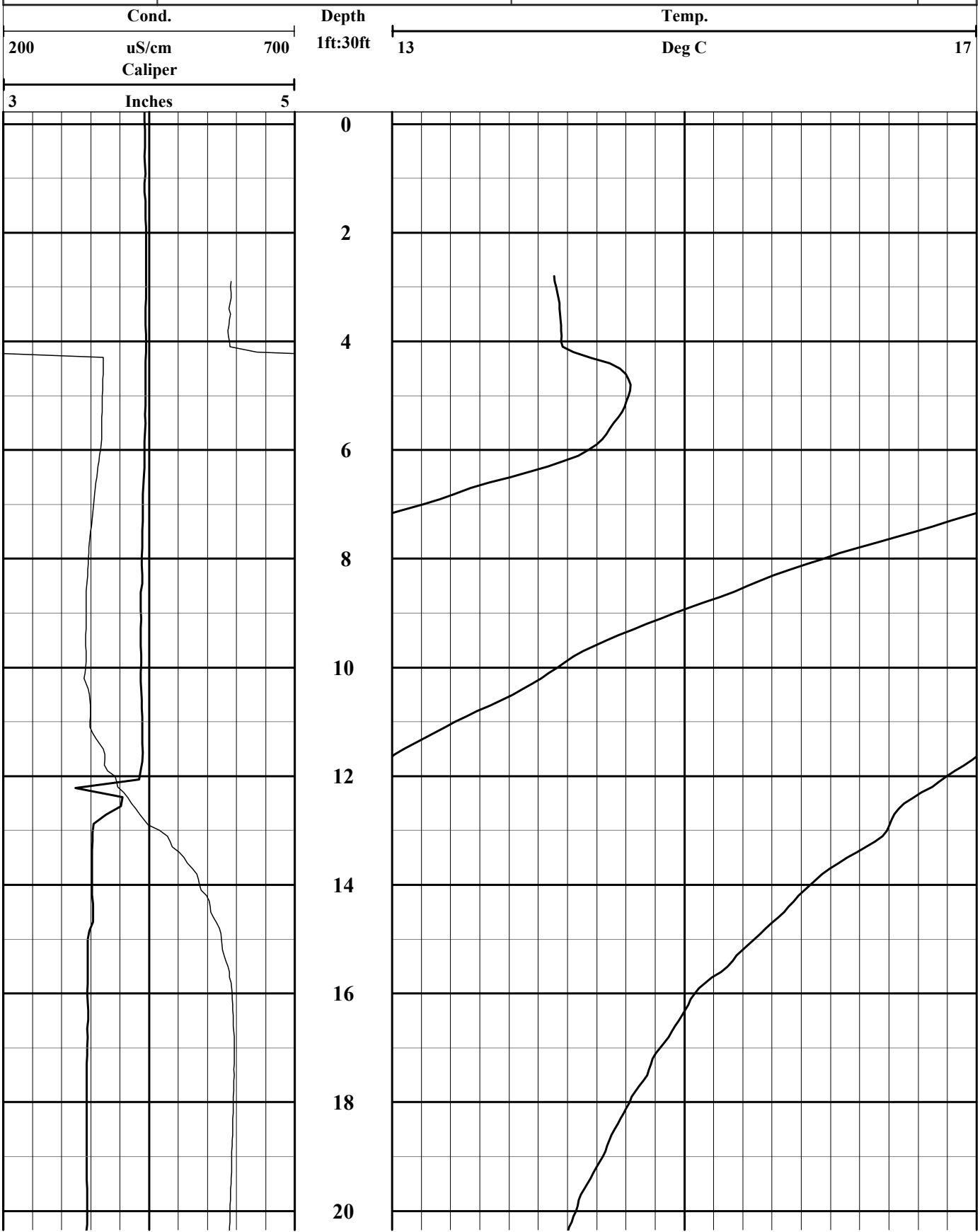
13 Deg C 17

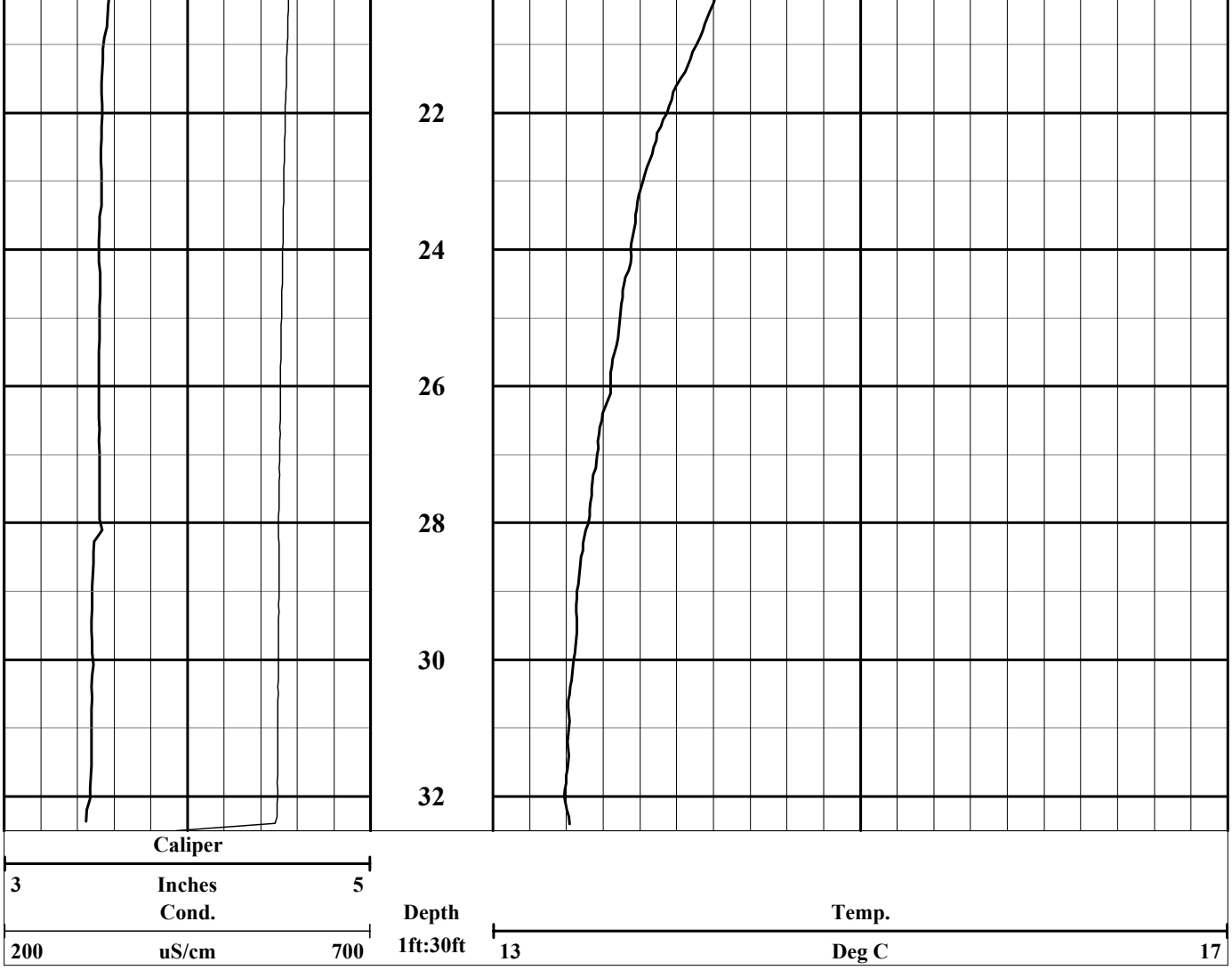
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-25	Depth Driller / Depth Logger	
Date: Aug 9, 05	BH Fluid	Logged by:
File Name		Witness:



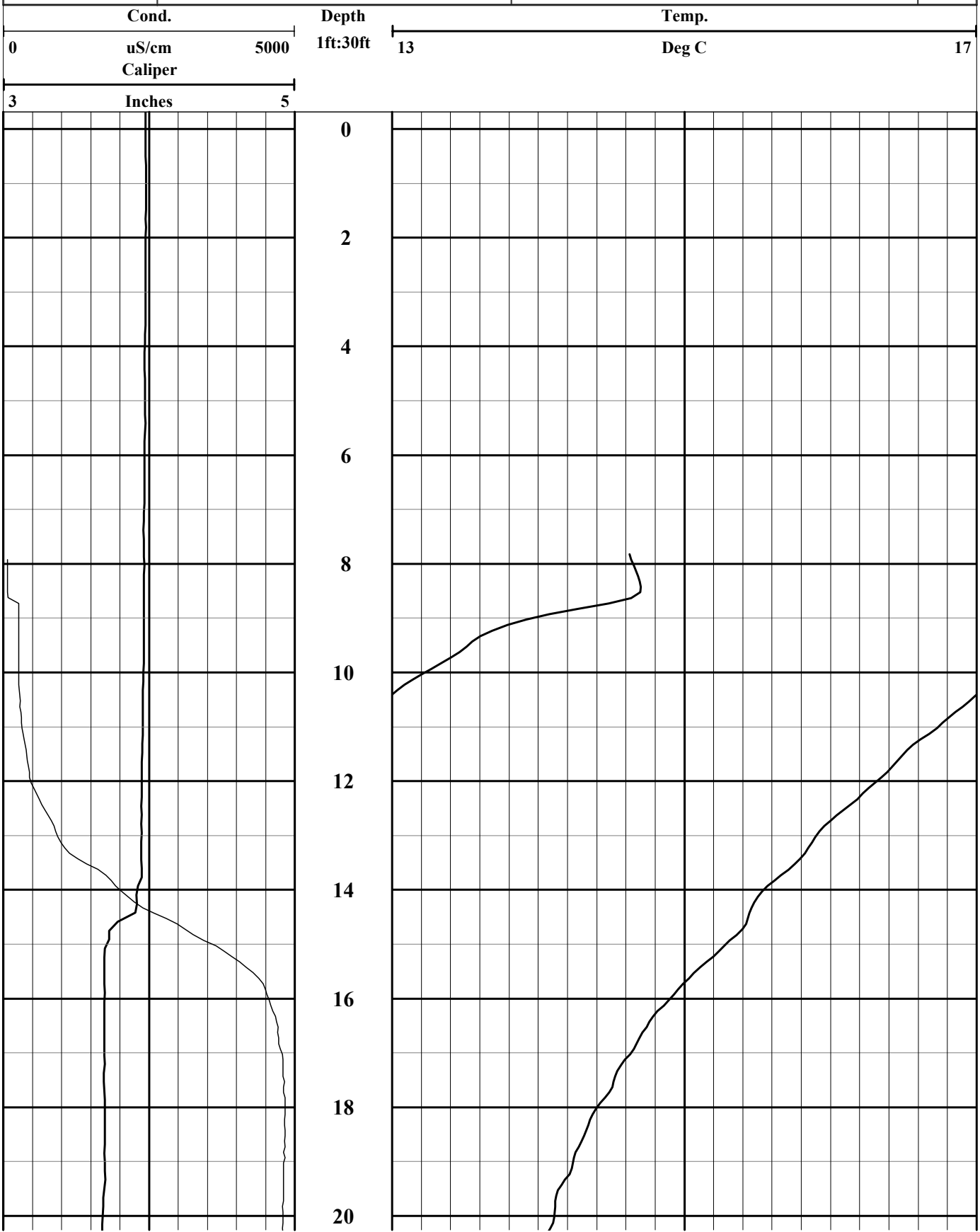

22
24
26
28
30
32
34
36
38
40
Caliper
3
Inches
5
Cond.
0
uS/cm
500
Depth
1ft:30ft
Temp.
13
Deg C
17

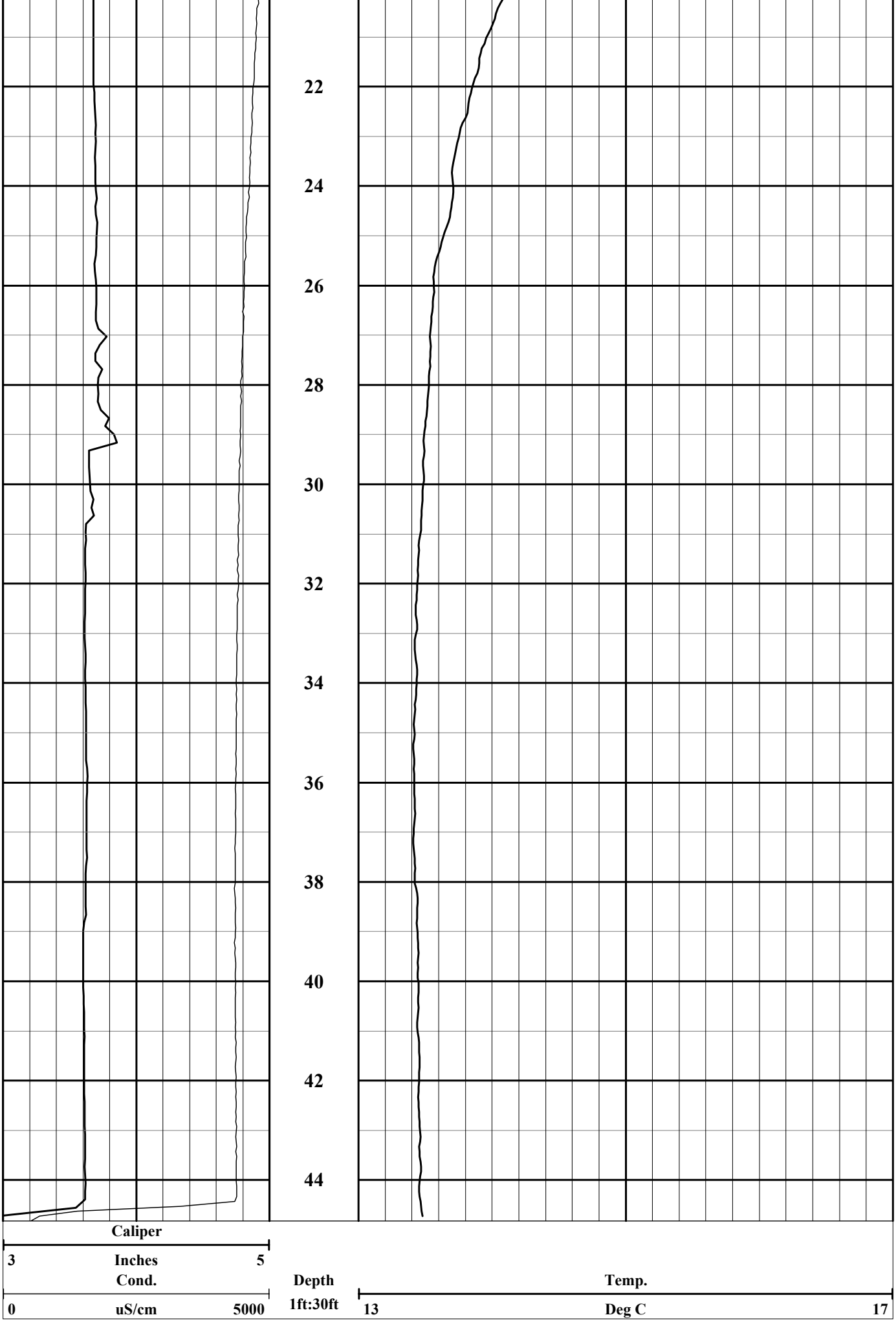
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-24	Depth Driller / Depth Logger	
Date: Aug 8, 05	BH Fluid	Logged by:
File Name		Witness:




22
24
26
28
30
32
Caliper
3
Inches
5
Cond.
200
uS/cm
700
Depth
1ft:30ft
Temp.
13
Deg C
17

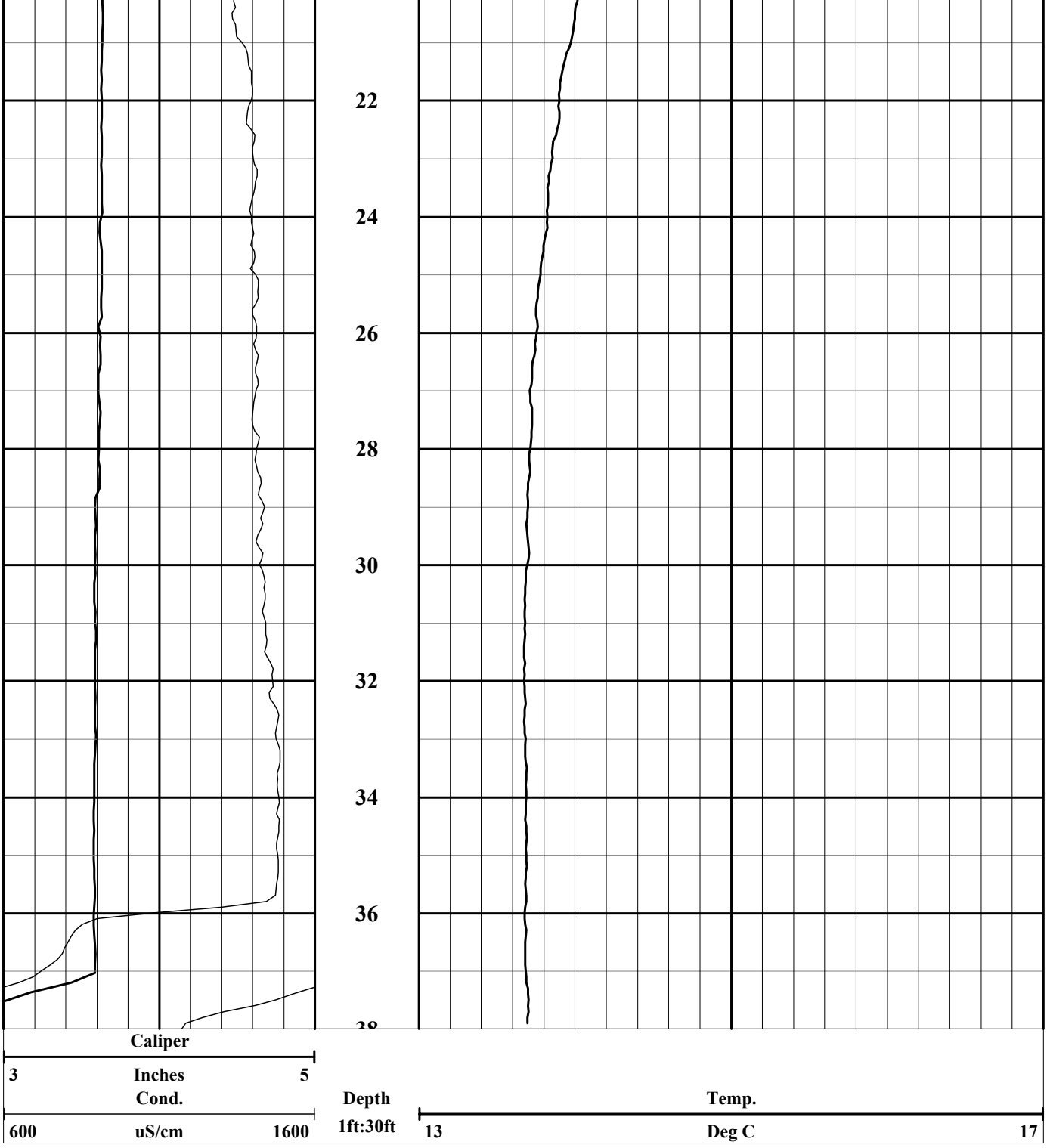
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-21	Depth Driller / Depth Logger	
Date: Aug 8, 05	BH Fluid	Logged by:
File Name		Witness:




22
24
26
28
30
32
34
36
38
40
42
44
Caliper
3
Inches
5
Cond.
0
uS/cm
5000
Depth
1ft:30ft
Temp.
13
Deg C
17

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-20	Depth Driller / Depth Logger	
Date: Aug 5, 05 / BH Fluid	Logged by:	
File Name	Witness:	

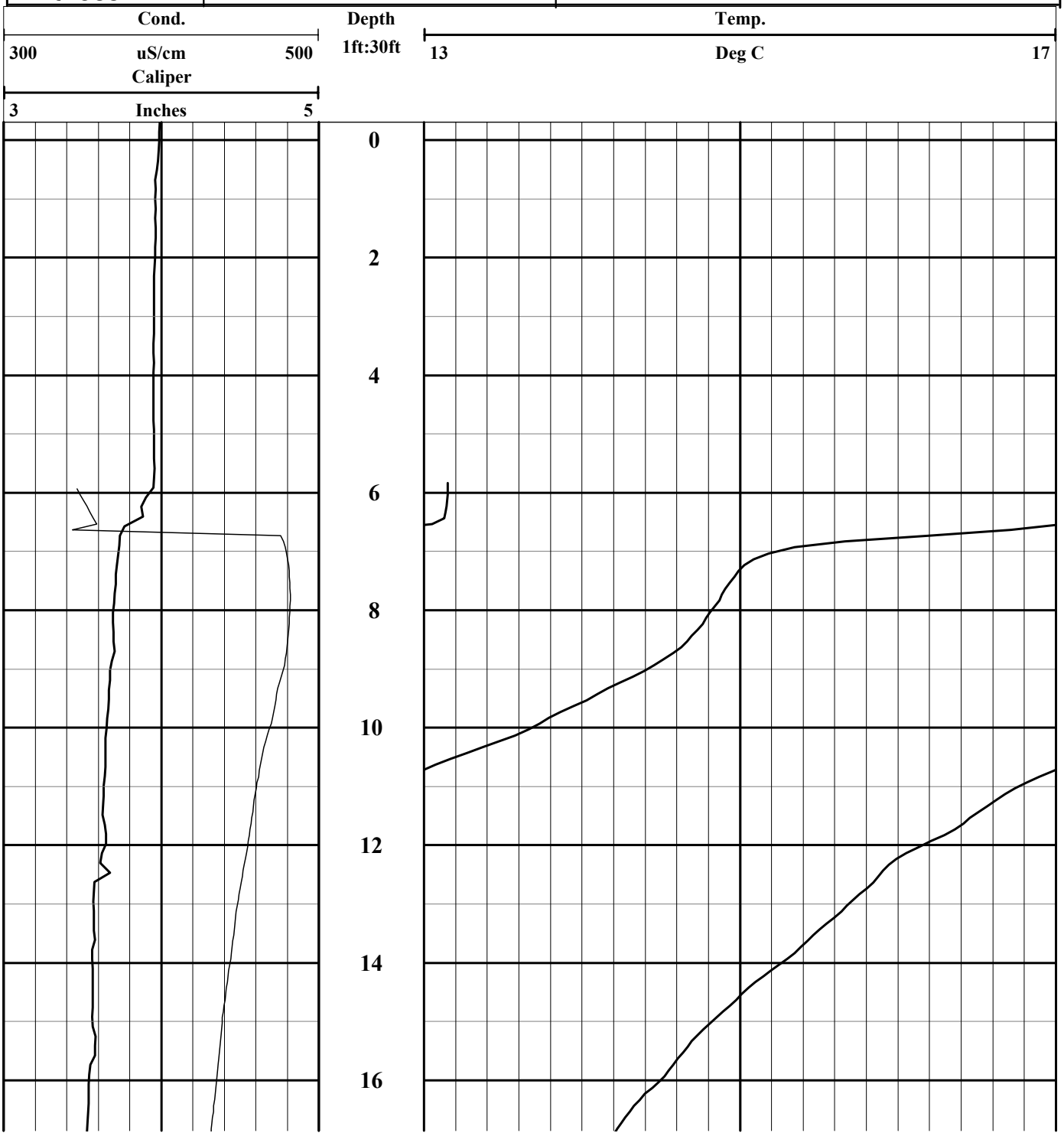


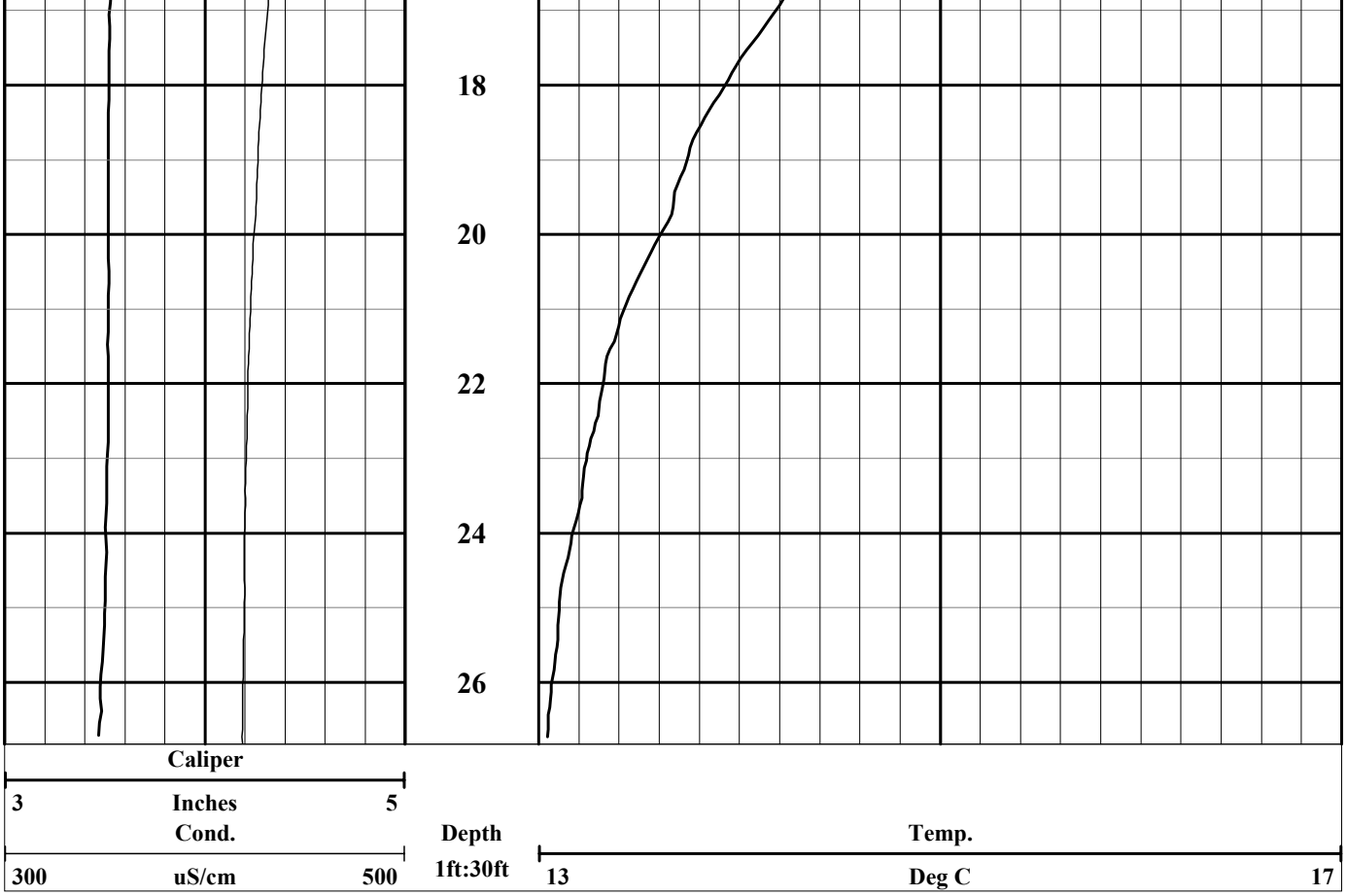

22
24
26
28
30
32
34
36
Caliper
3
Inches
5
Cond.
600
uS/cm
1600
Depth
1ft:30ft
Temp.
13
Deg C
17

COMPANY:	CRA
Location:	GM Powertrain

Well	CH-11		
Date	July 25, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES





Caliper		
3	Inches	5
Cond.		
300	uS/cm	500

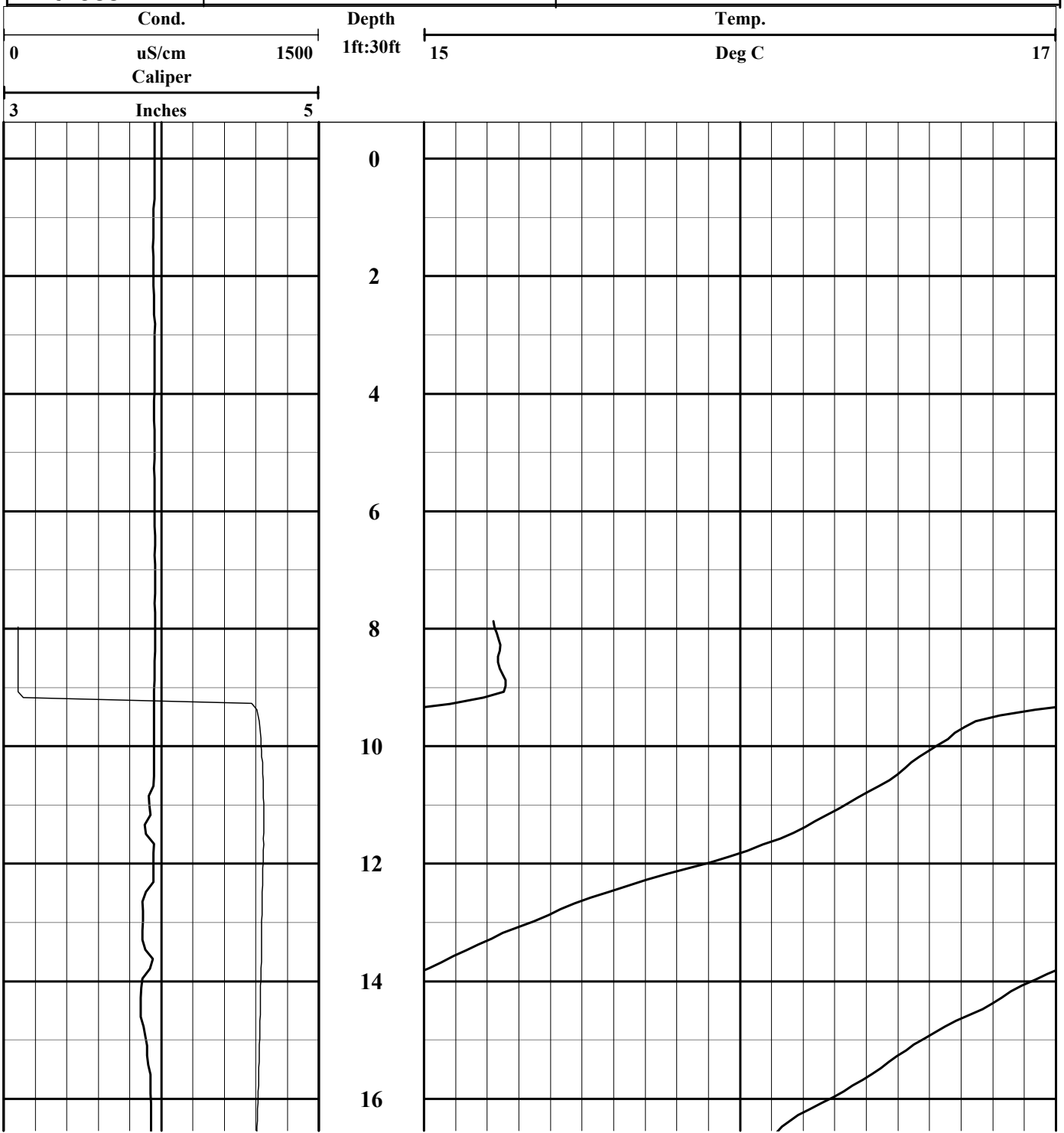
Depth
1ft:30ft

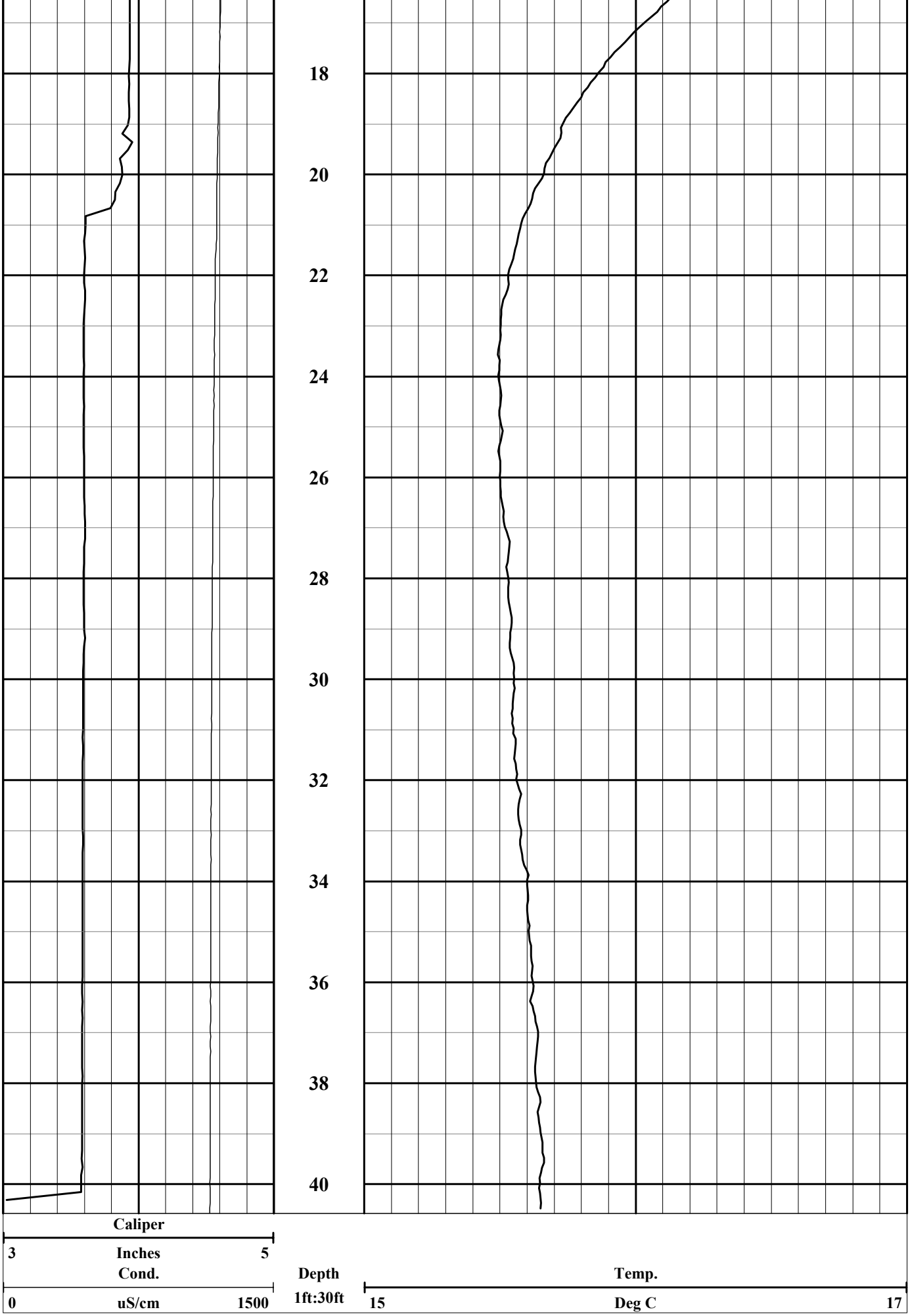
Temp.		
13	Deg C	17

	COMPANY: CRA
	Location: GM Poewertrain

Well	CH-6		
Date	July 22, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES

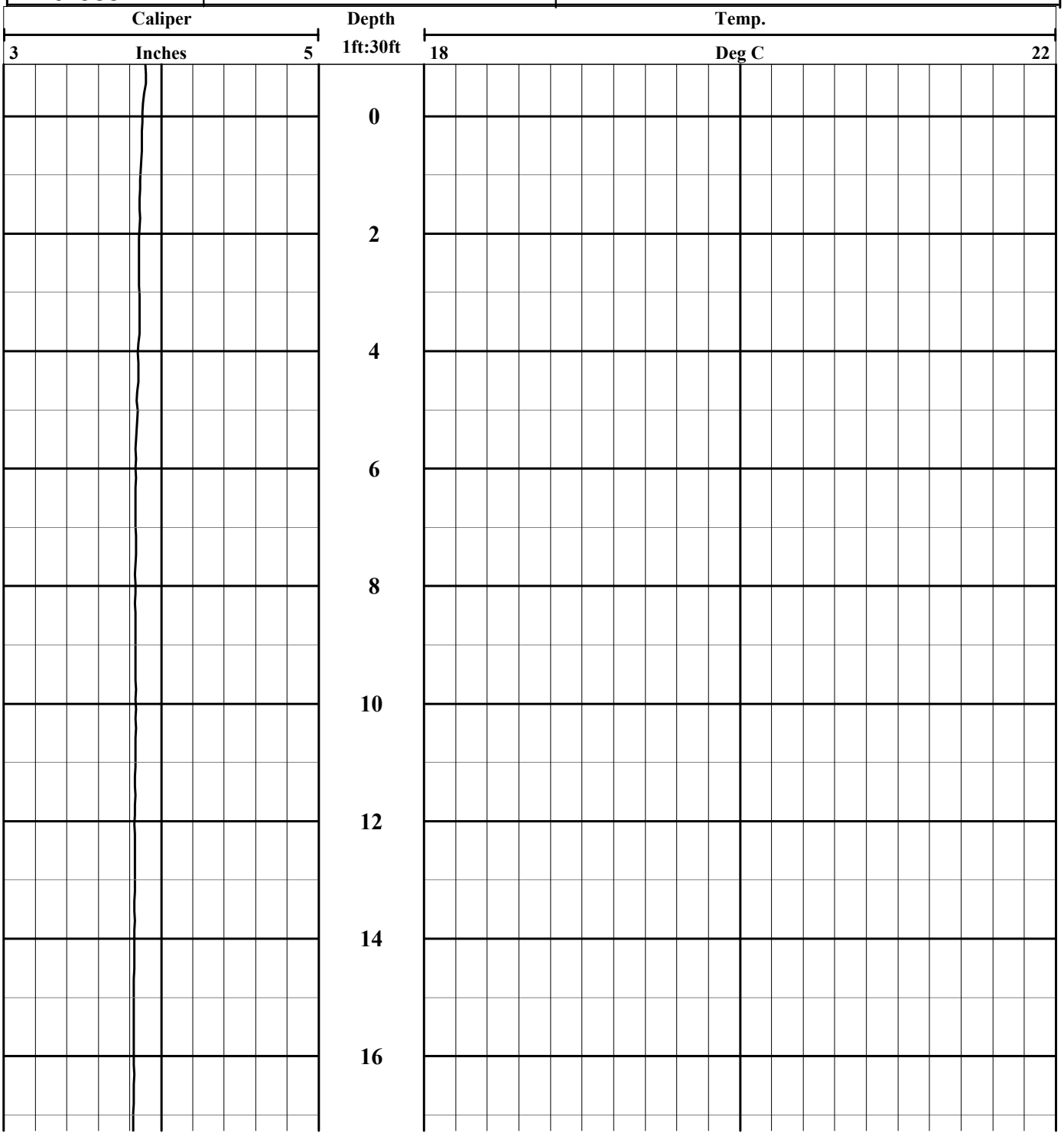


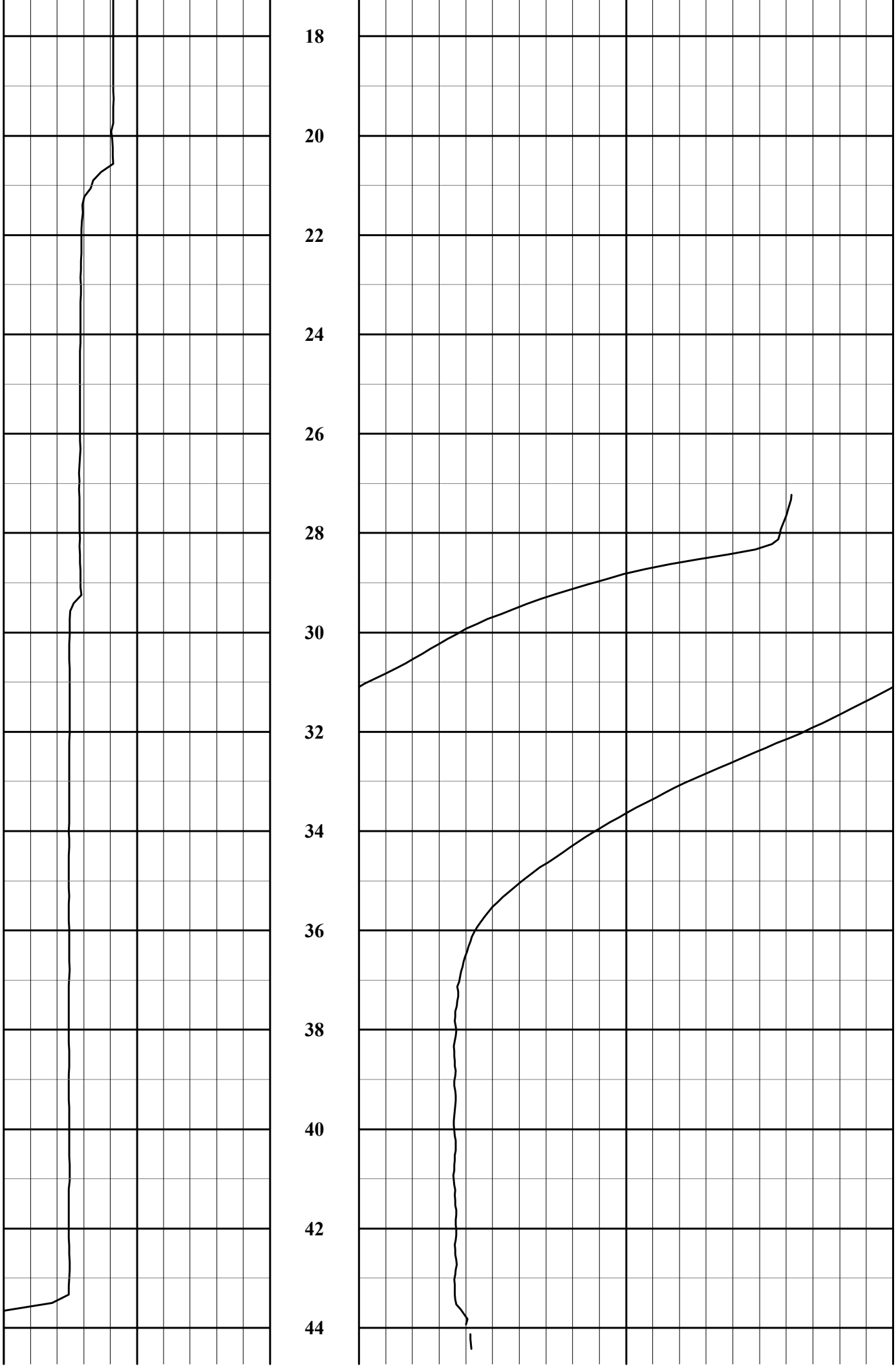

18
20
22
24
26
28
30
32
34
36
38
40
Caliper
3
Inches
5
Cond.
0
uS/cm
1500
Depth
1ft:30ft
Temp.
15
Deg C
17

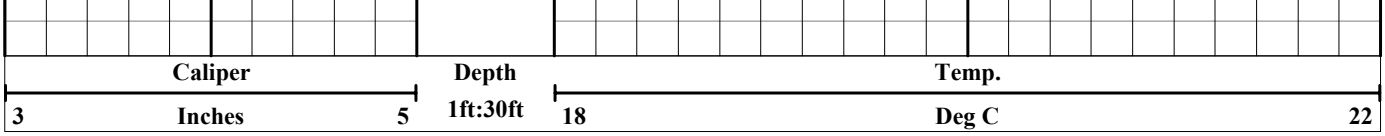
	COMPANY: CRA
	Location: GM Powertrain

Well	CH-5		
Date	July 21, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES



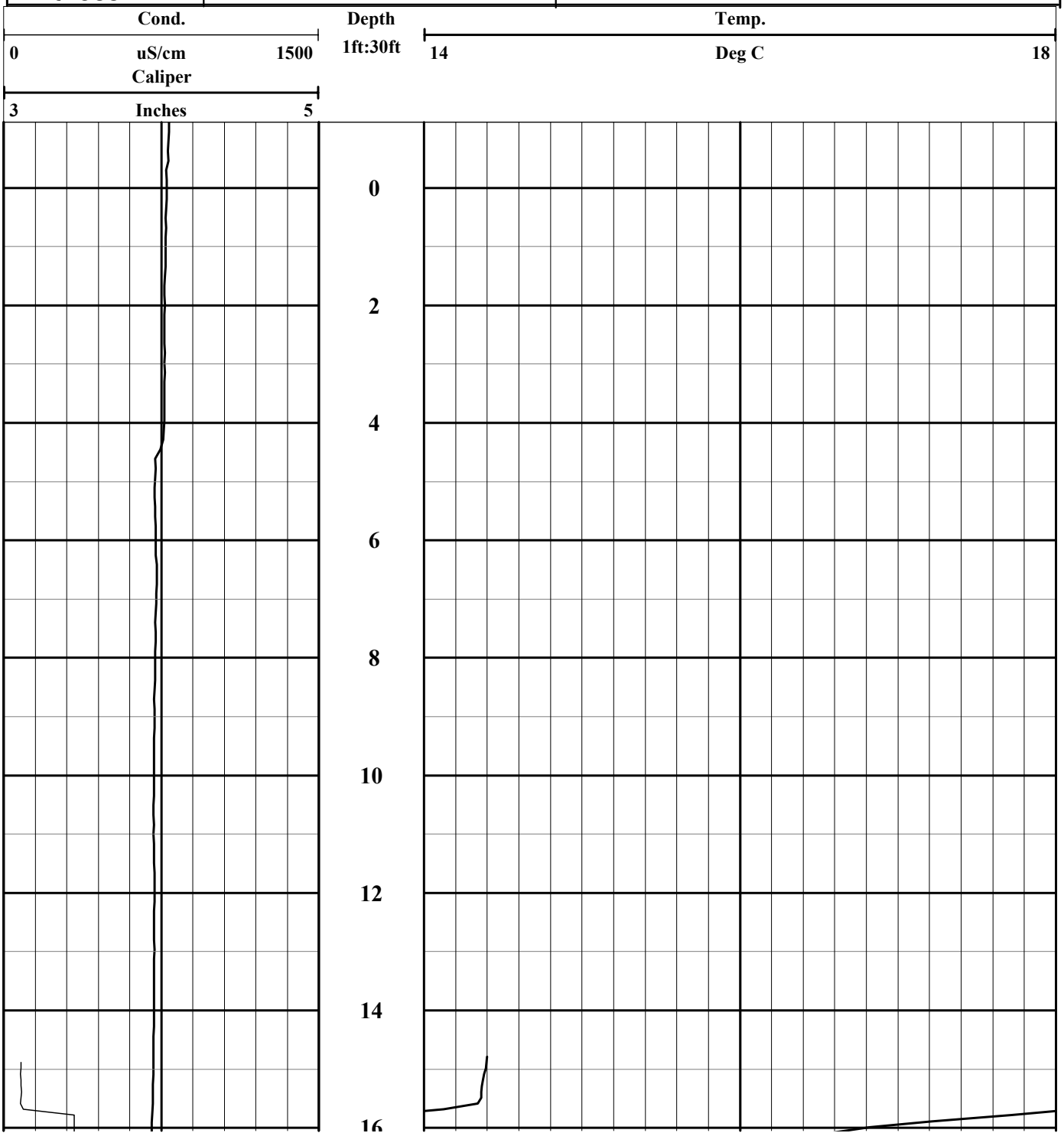

18
20
22
24
26
28
30
32
34
36
38
40
42
44

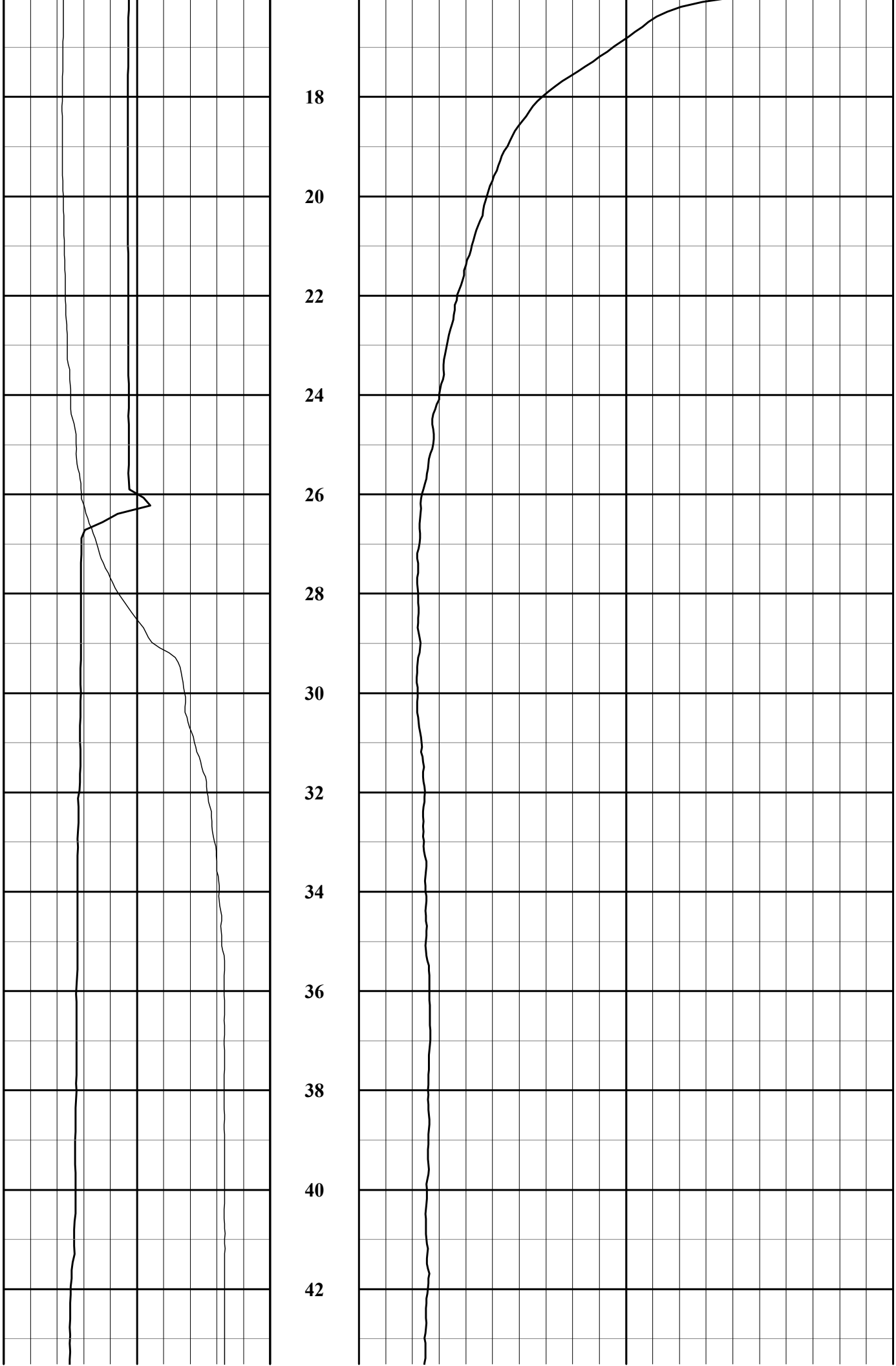

Caliper
Depth
Temp.
3
Inches
5
1ft:30ft
18
Deg C
22

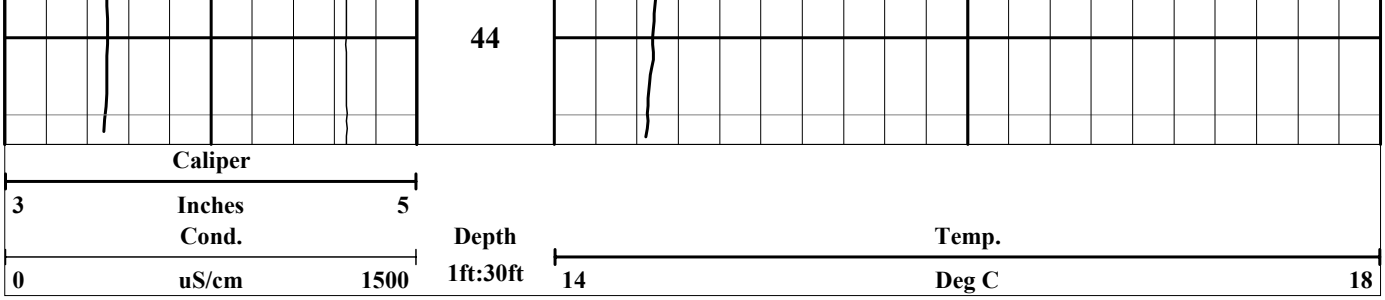
	COMPANY: CRA
	Location: GM Powertrain

Well	CH-1B		
Date	July 21, 2005	BH Fluid	
Casing	26		
File Name			
Depth Driller			
Depth Logger	45.5		
Logged by:			
Witness:			

OTHER SERVICES

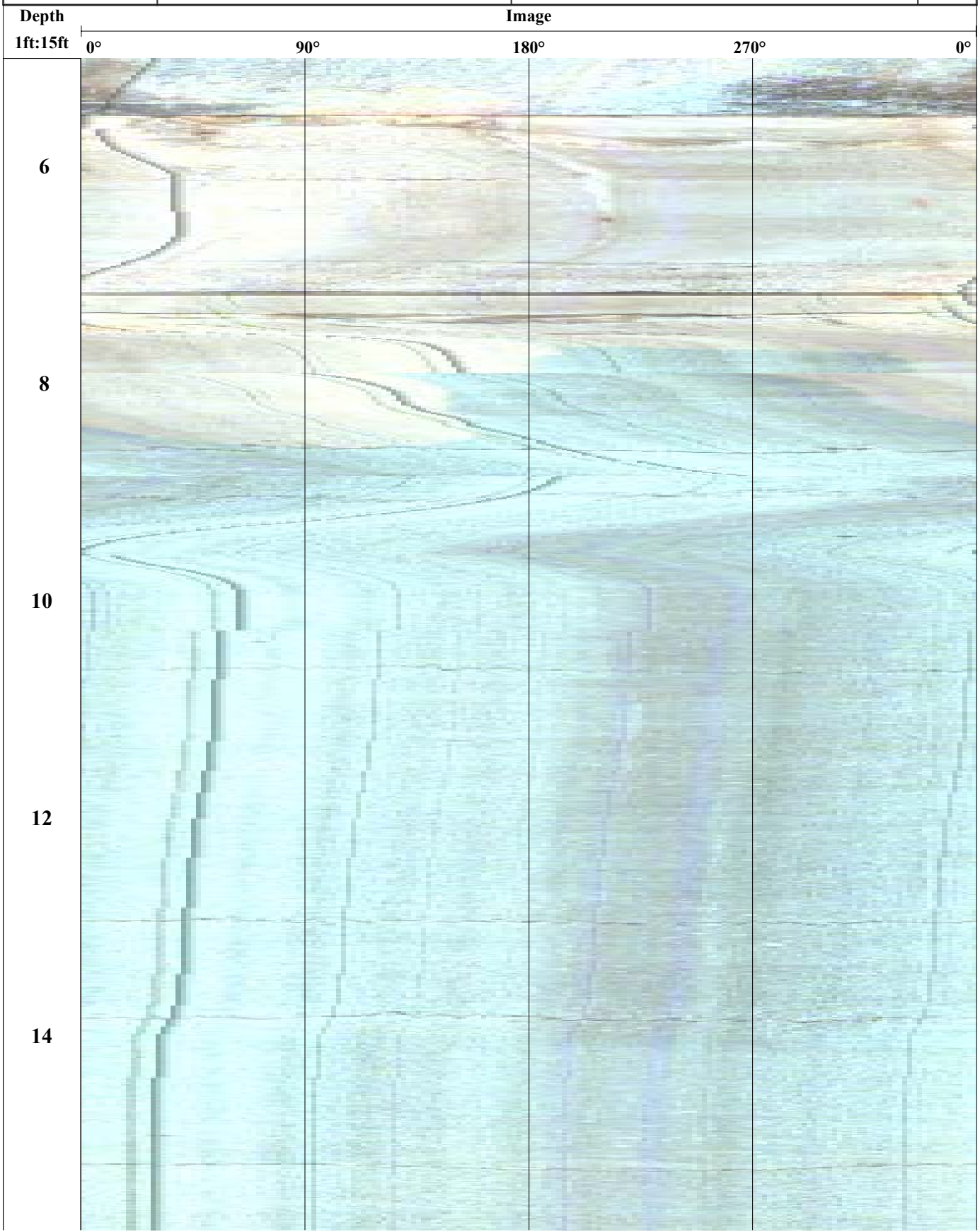


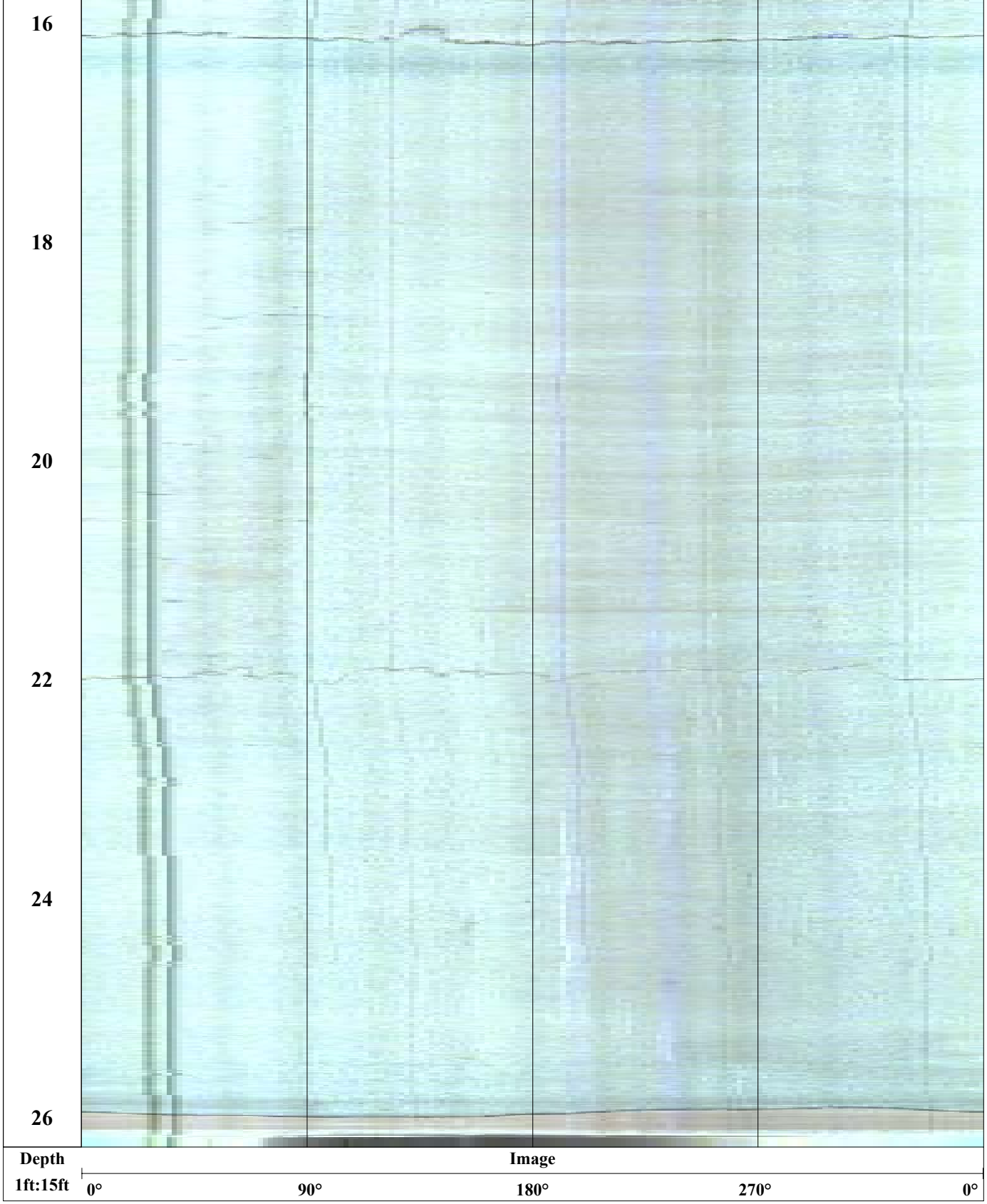

18
20
22
24
26
28
30
32
34
36
38
40
42


44
Caliper
3
Inches
5
Cond.
0
uS/cm
1500
Depth
1ft:30ft
Temp.
14
Deg C
18

	COMPANY: CRA	Casing
	Location: GM Powertrain	

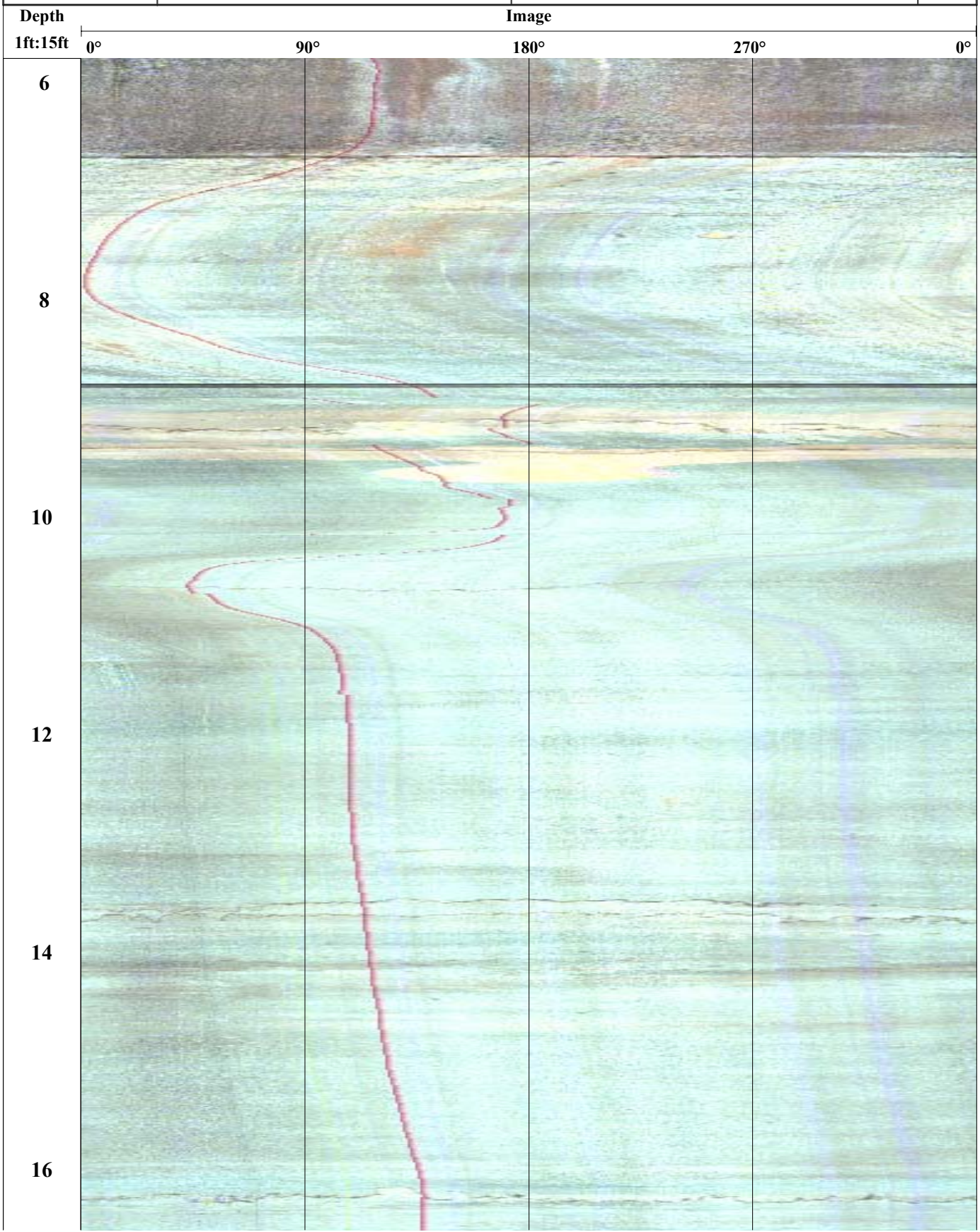
Well	C H-41			Depth Driller Depth Logger	
Date	Aug 4, 05	BH Fluid		Logged by:	
File Name				Witness:	

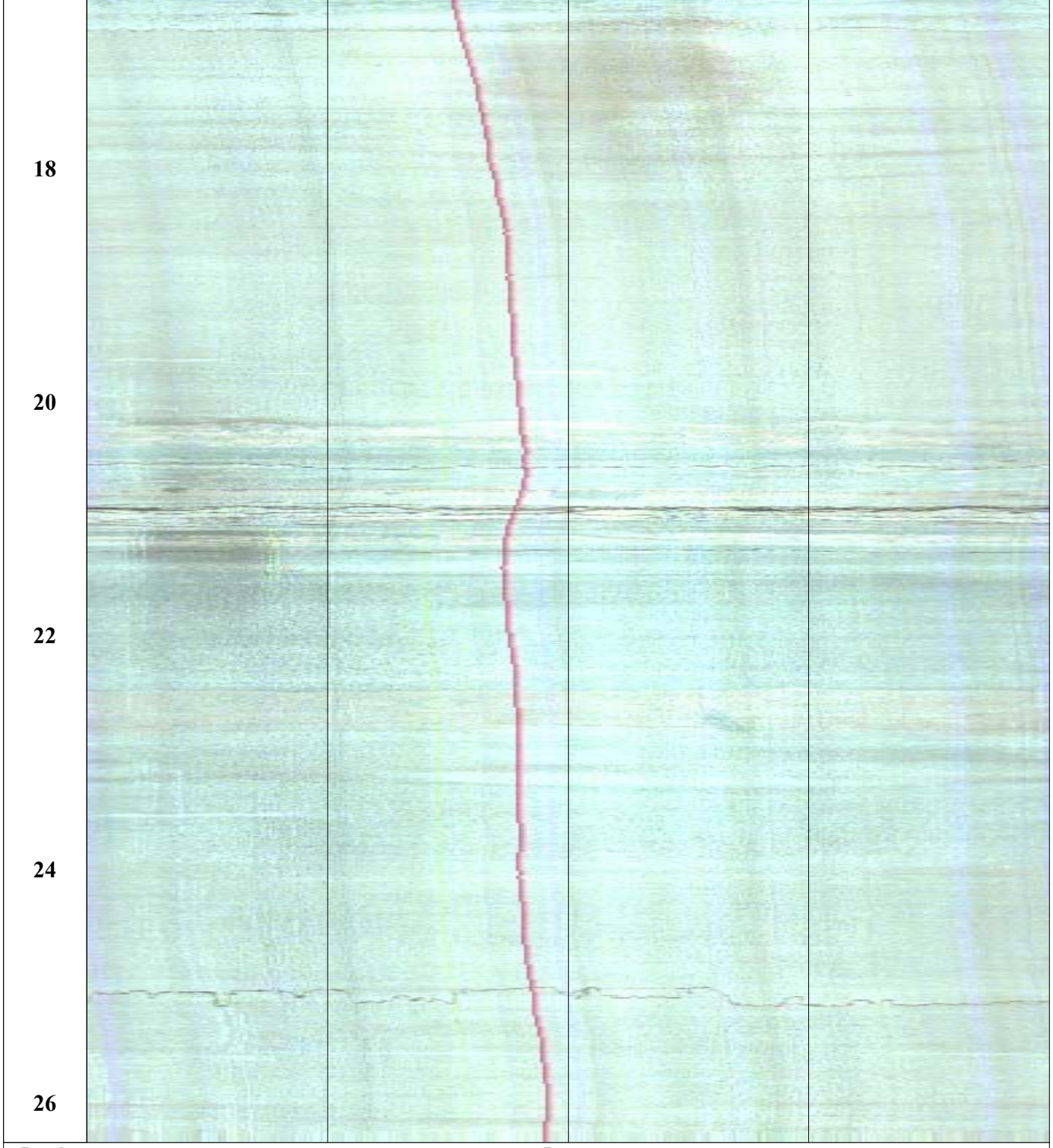



16
18
20
22
24
26
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

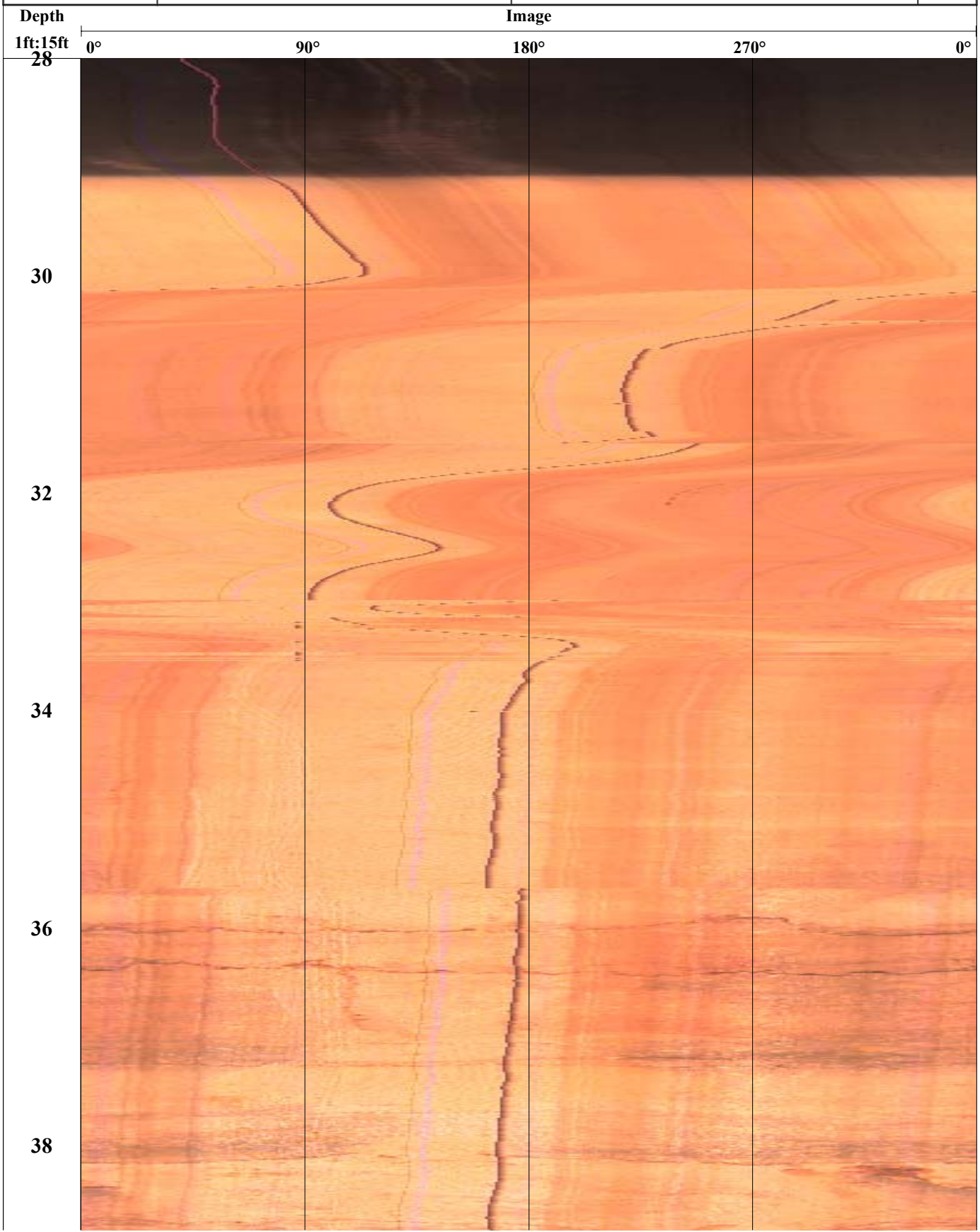
Well	CH-30			Depth Driller	
				Depth Logger	
Date	Aug 10, 05	BH Fluid		Logged by:	
File Name				Witness:	

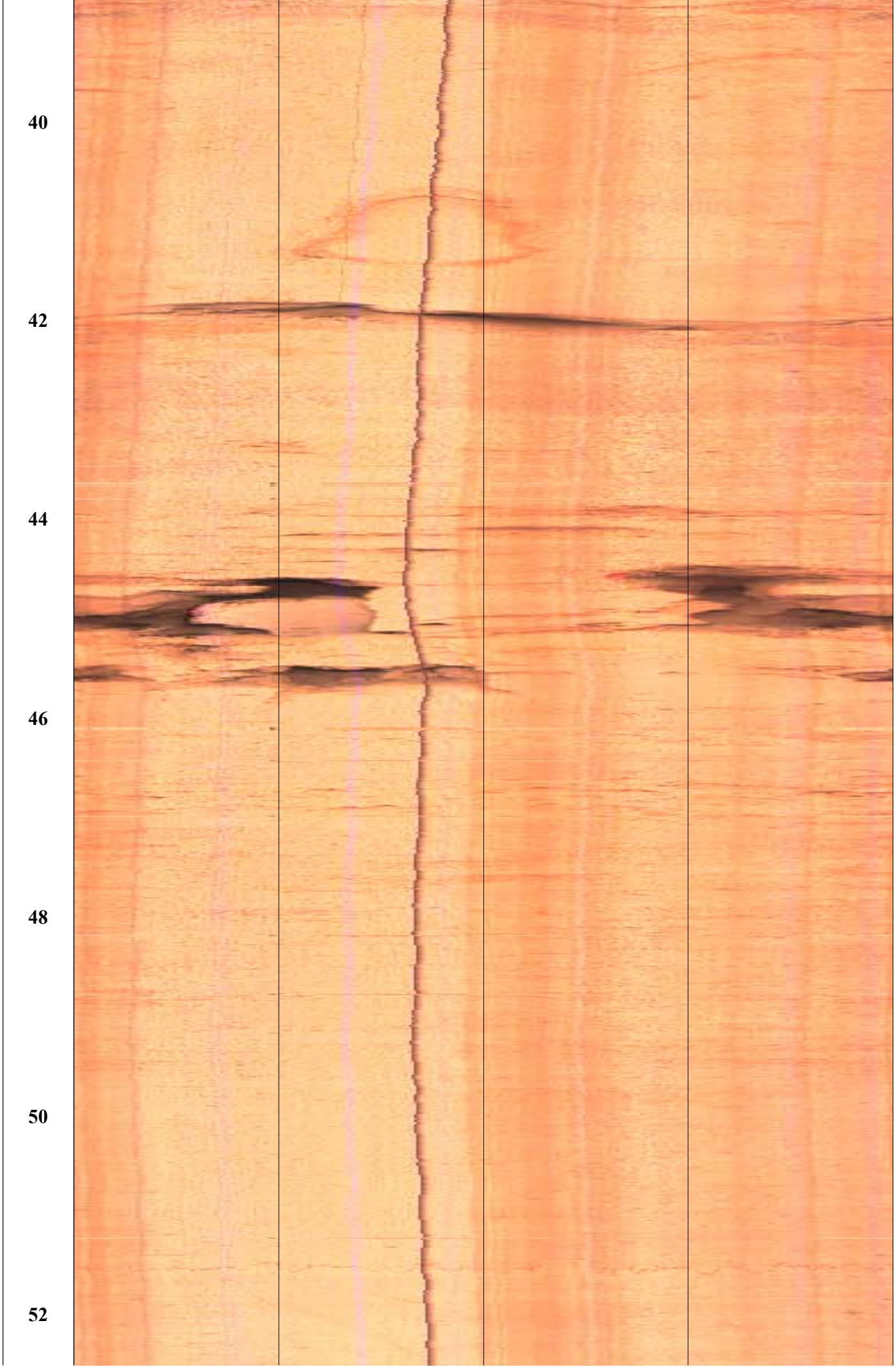


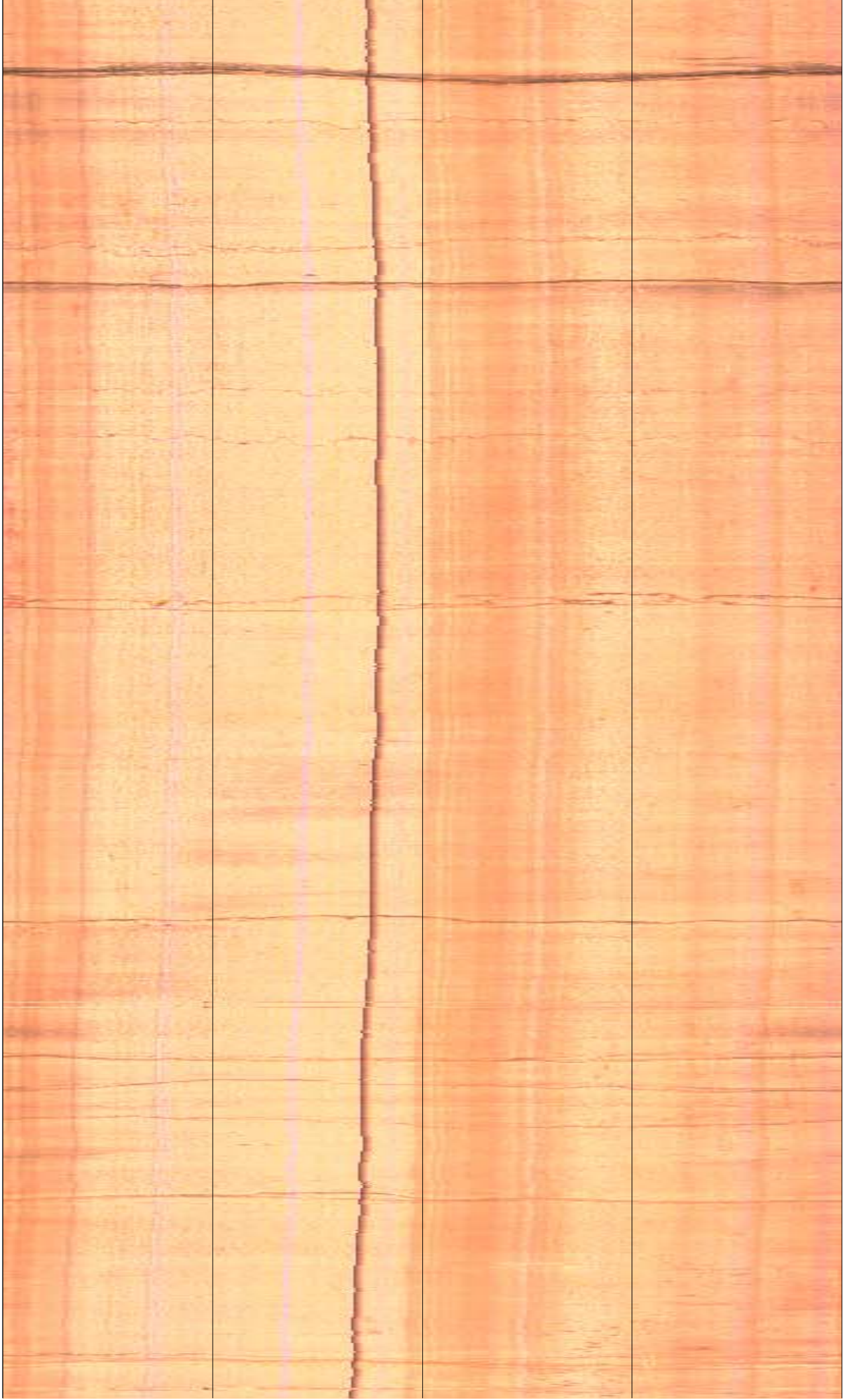


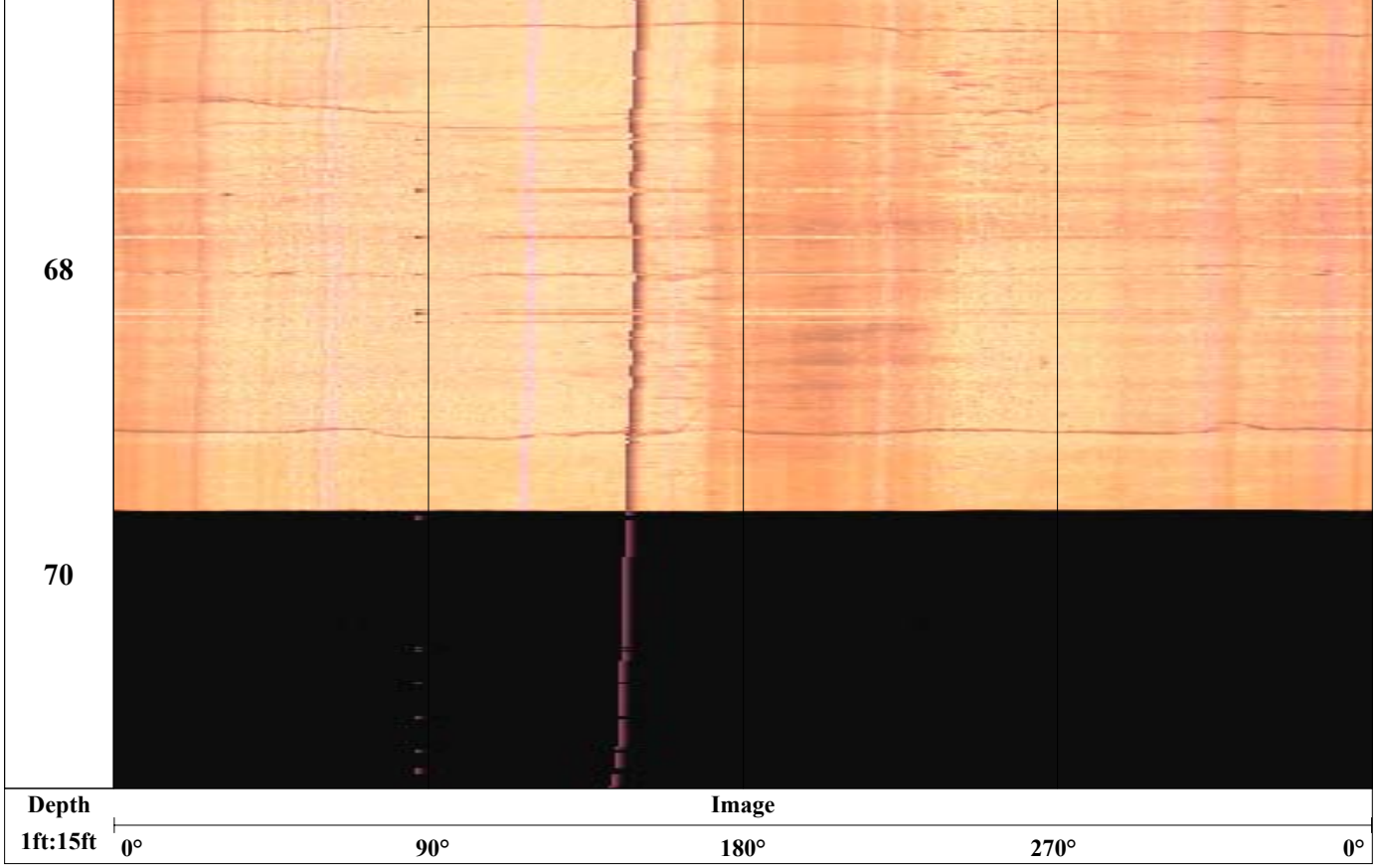
Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-29	Depth Driller / Depth Logger	
Date: Aug 10, 05	BH Fluid	Logged by:
File Name		Witness:



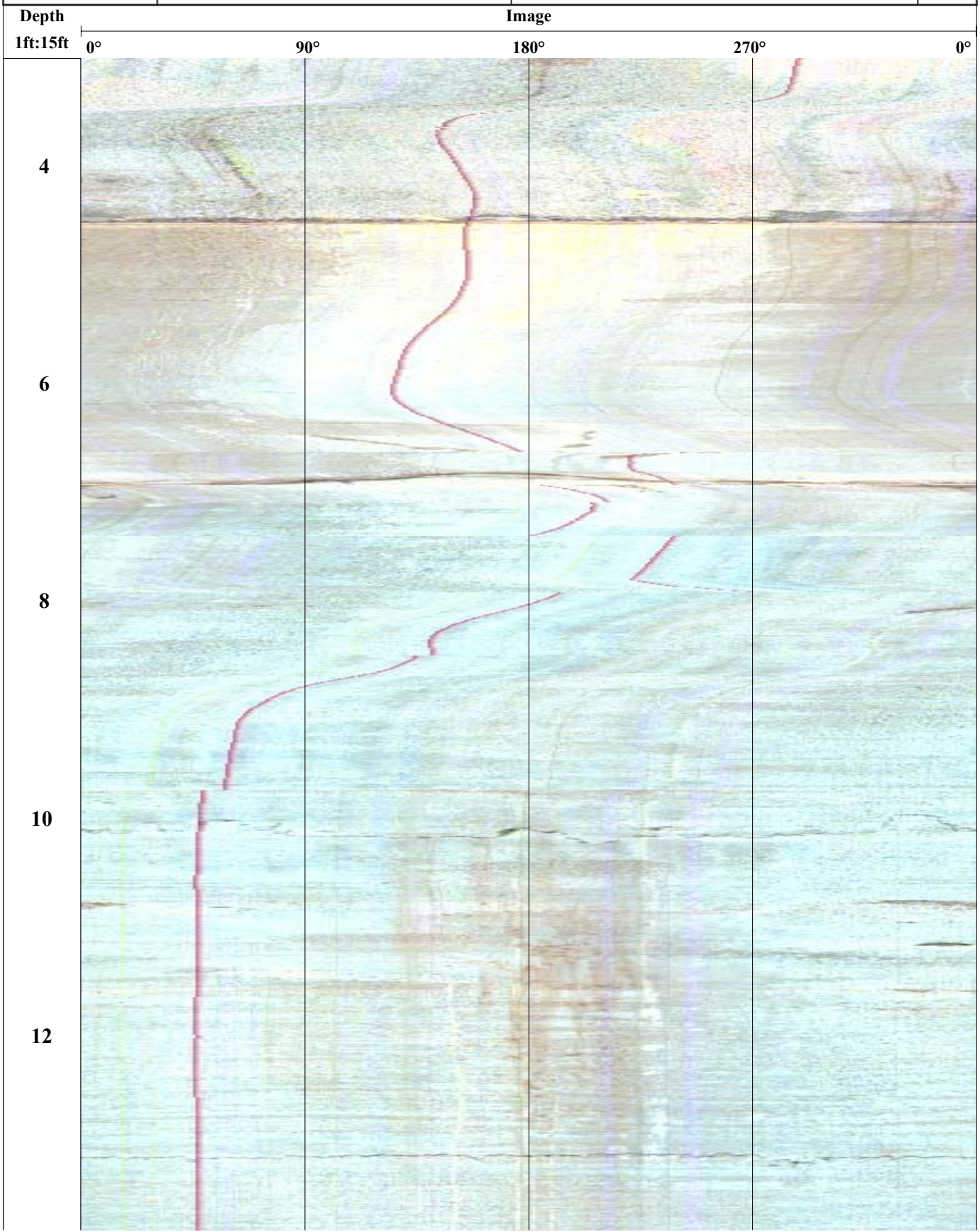

40
42
44
46
48
50
52

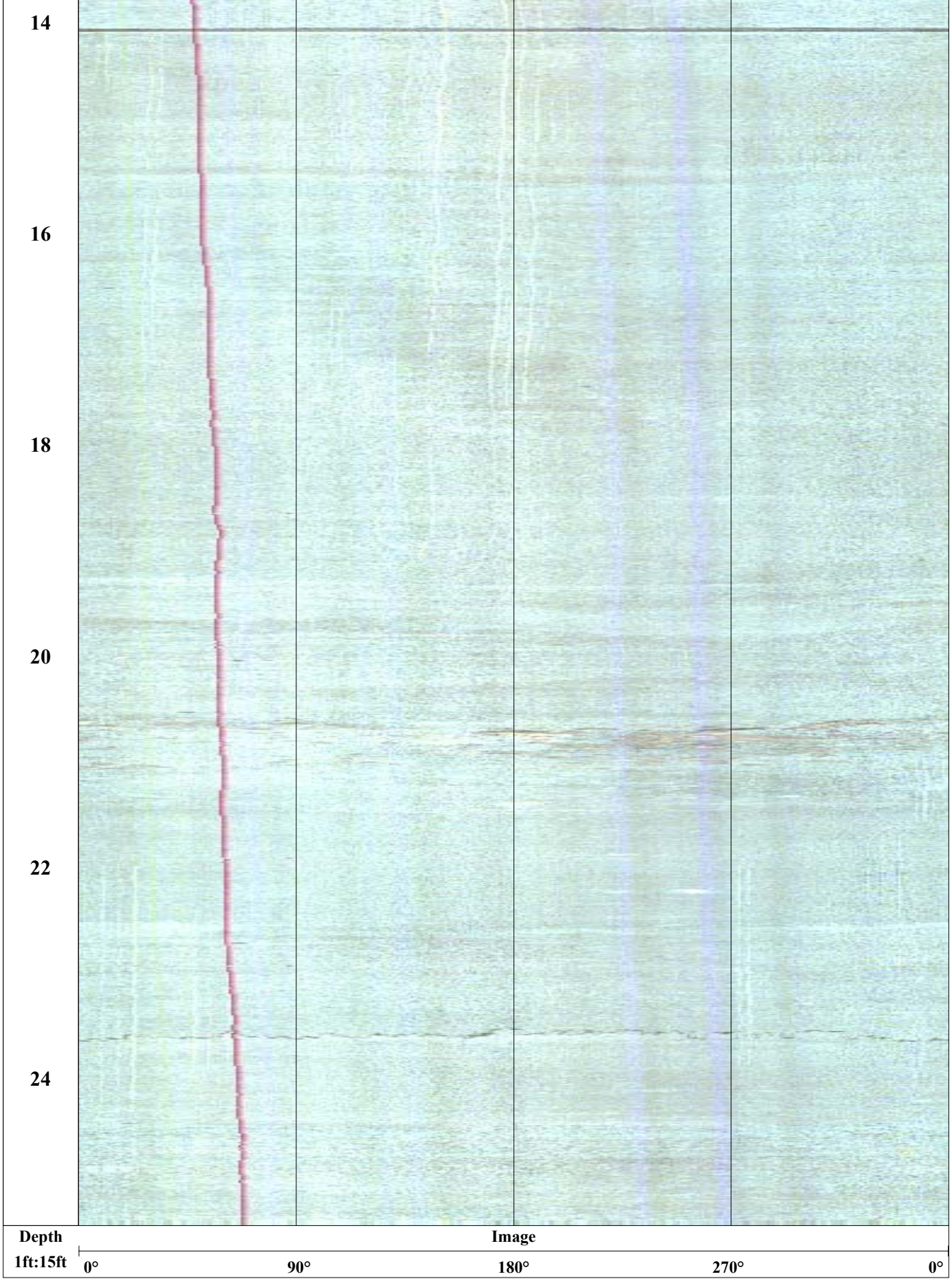

54
56
58
60
62
64
66


68
70
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

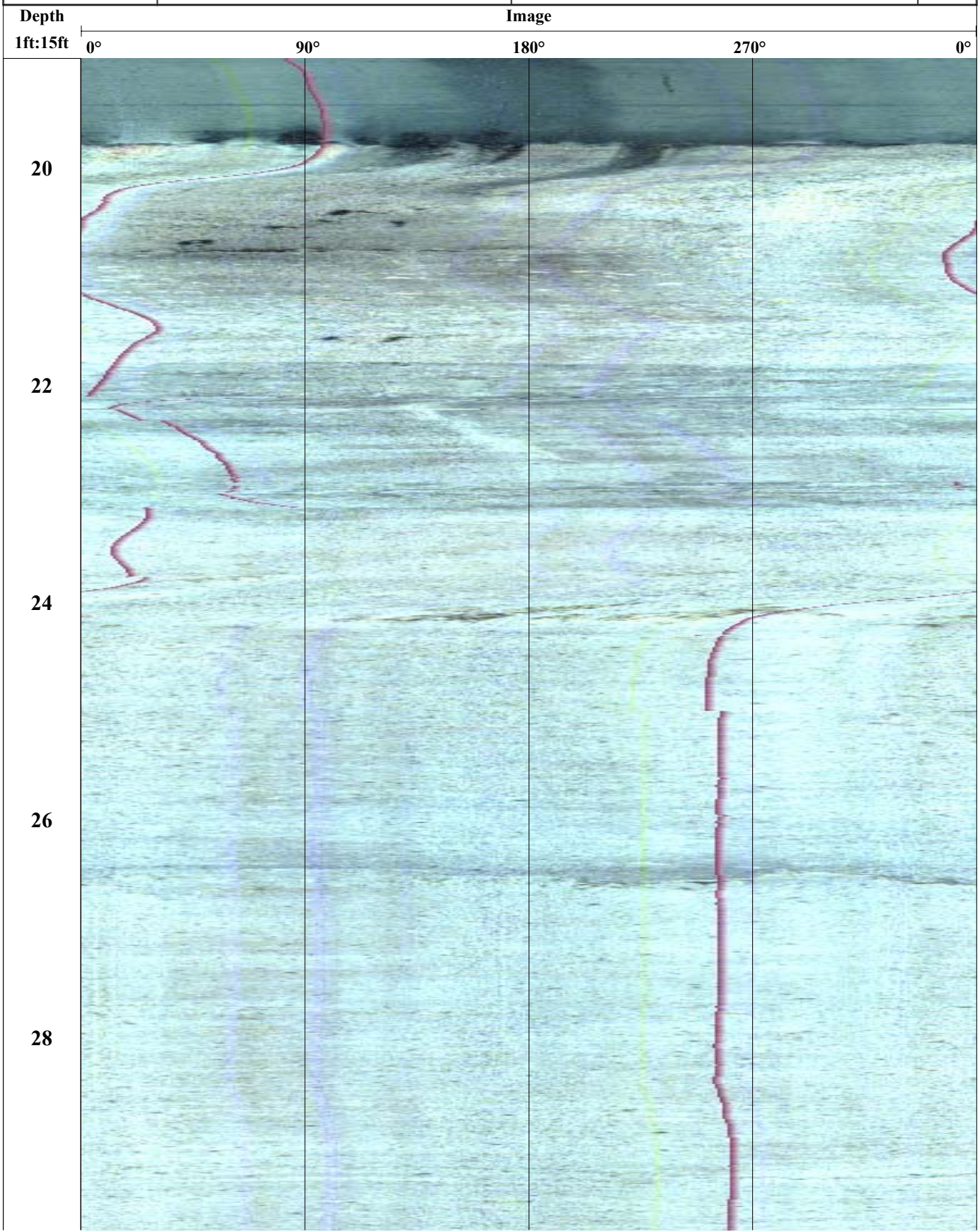
Well	CH-28			Depth Driller Depth Logger	
Date	Aug 9, 05	BH Fluid		Logged by:	
File Name				Witness:	

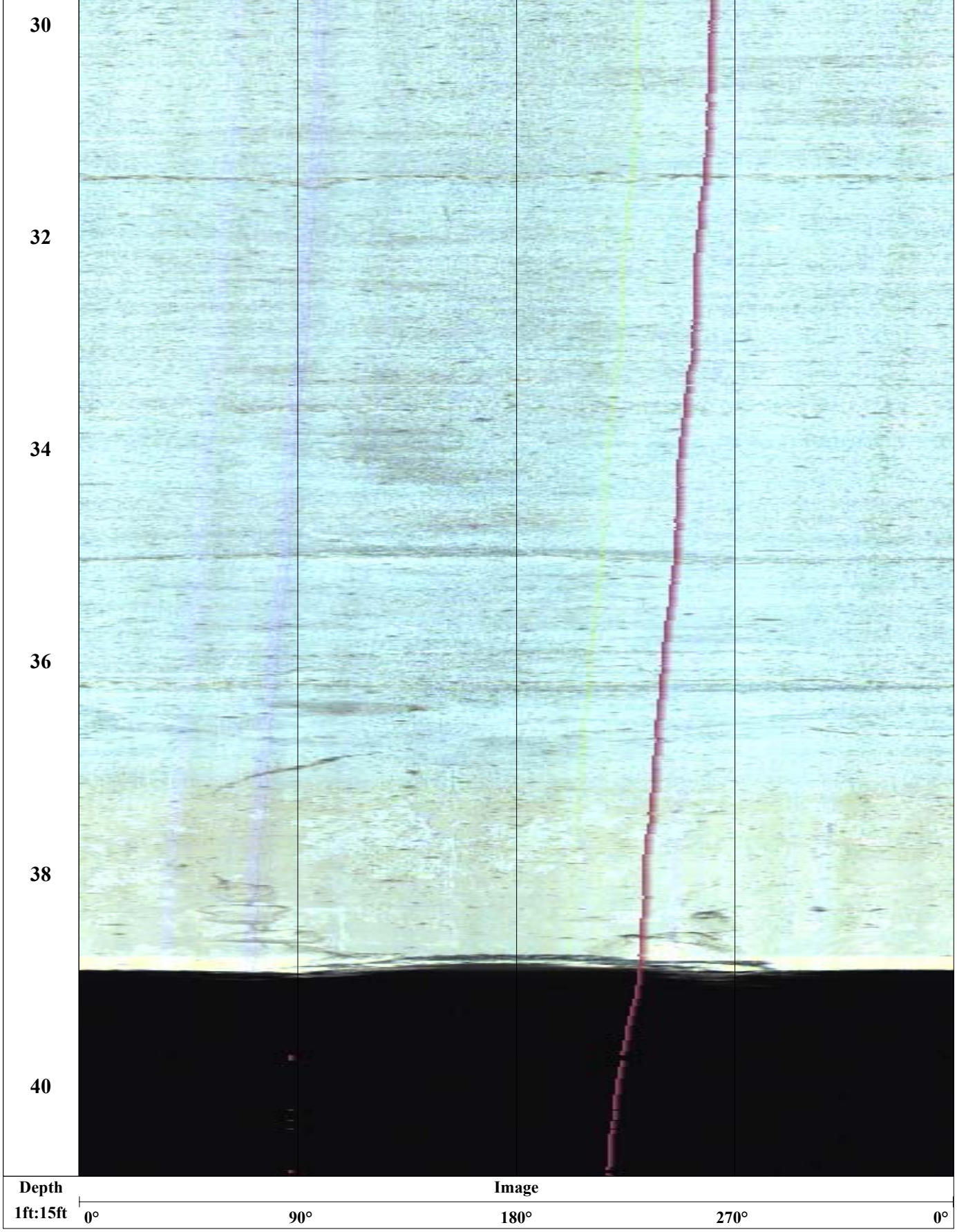



14
16
18
20
22
24
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

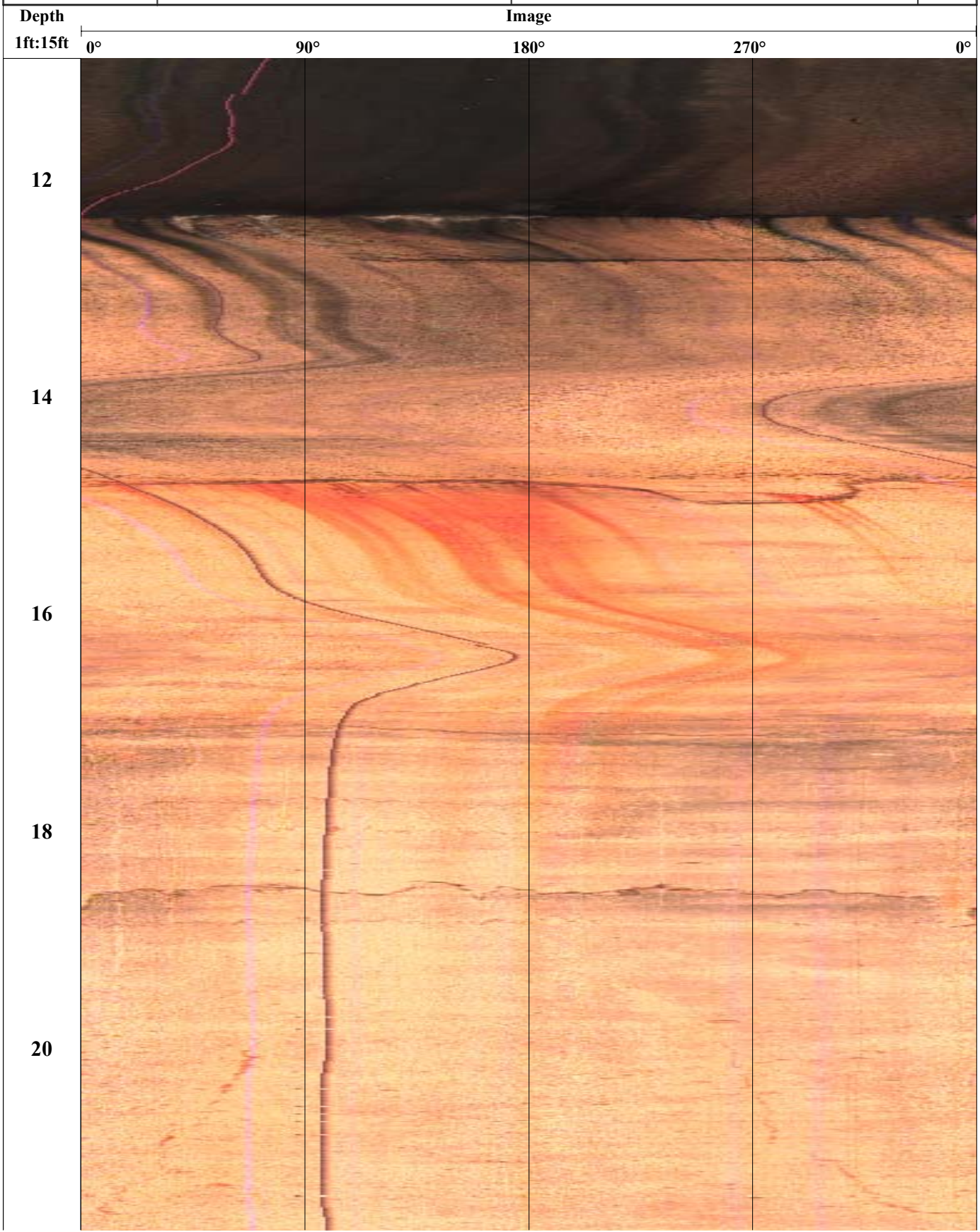
Well	CH-25			Depth Driller Depth Logger	
Date	Aug 8, 05	BH Fluid		Logged by:	
File Name				Witness:	

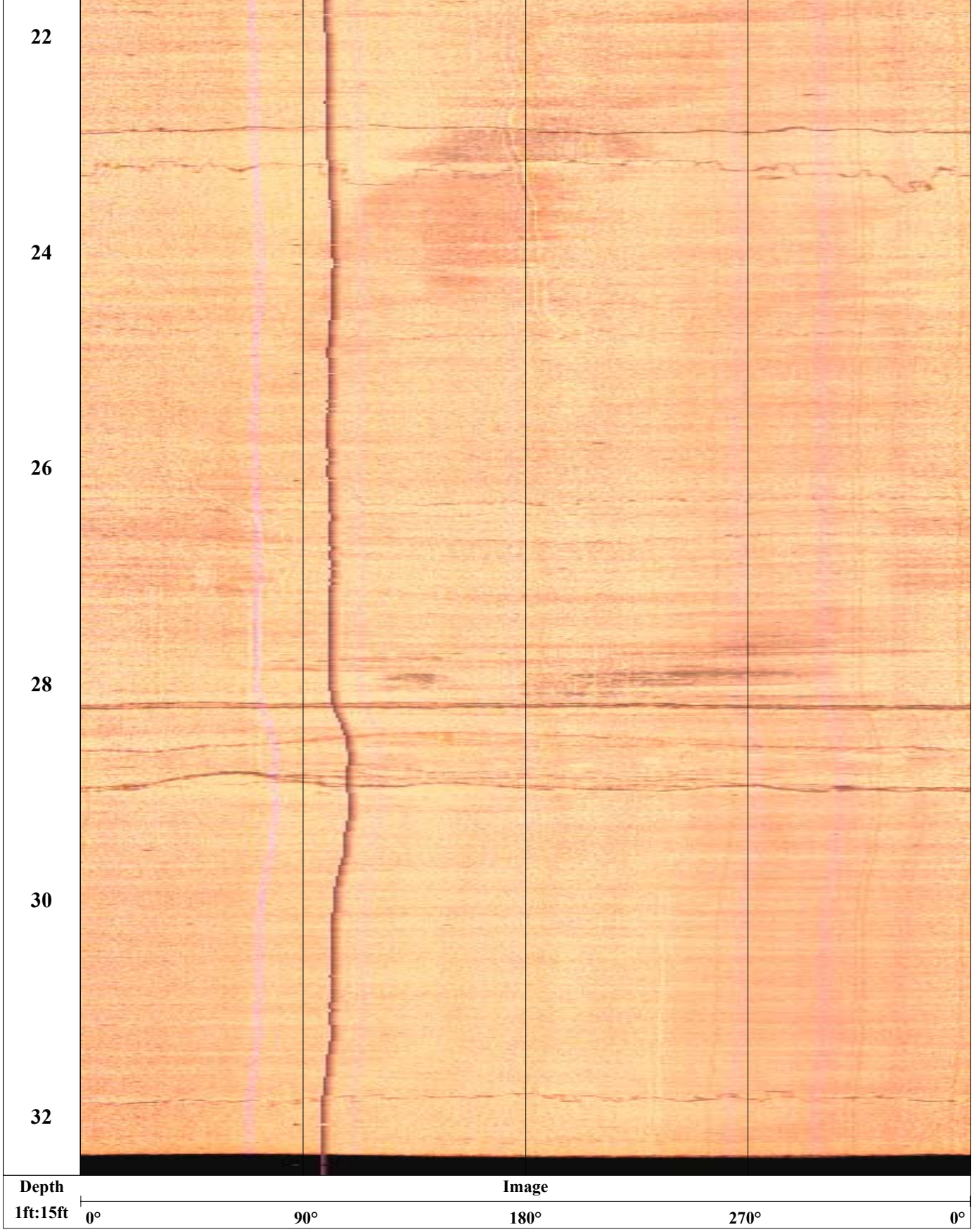



30
32
34
36
38
40
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	CH-24			Depth Driller Depth Logger	
Date	Aug 8, 05	BH Fluid		Logged by:	
File Name				Witness:	



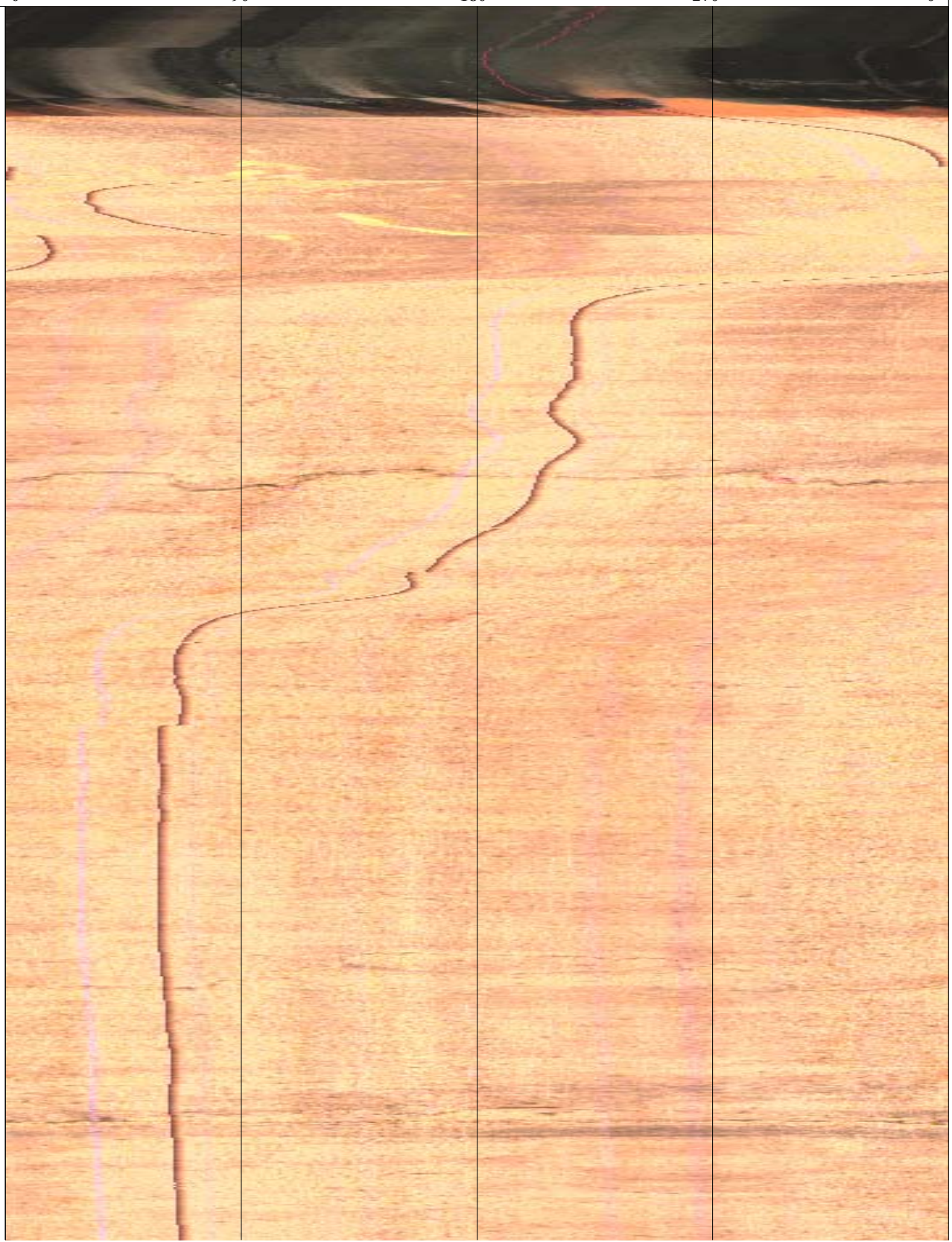

22
24
26
28
30
32
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

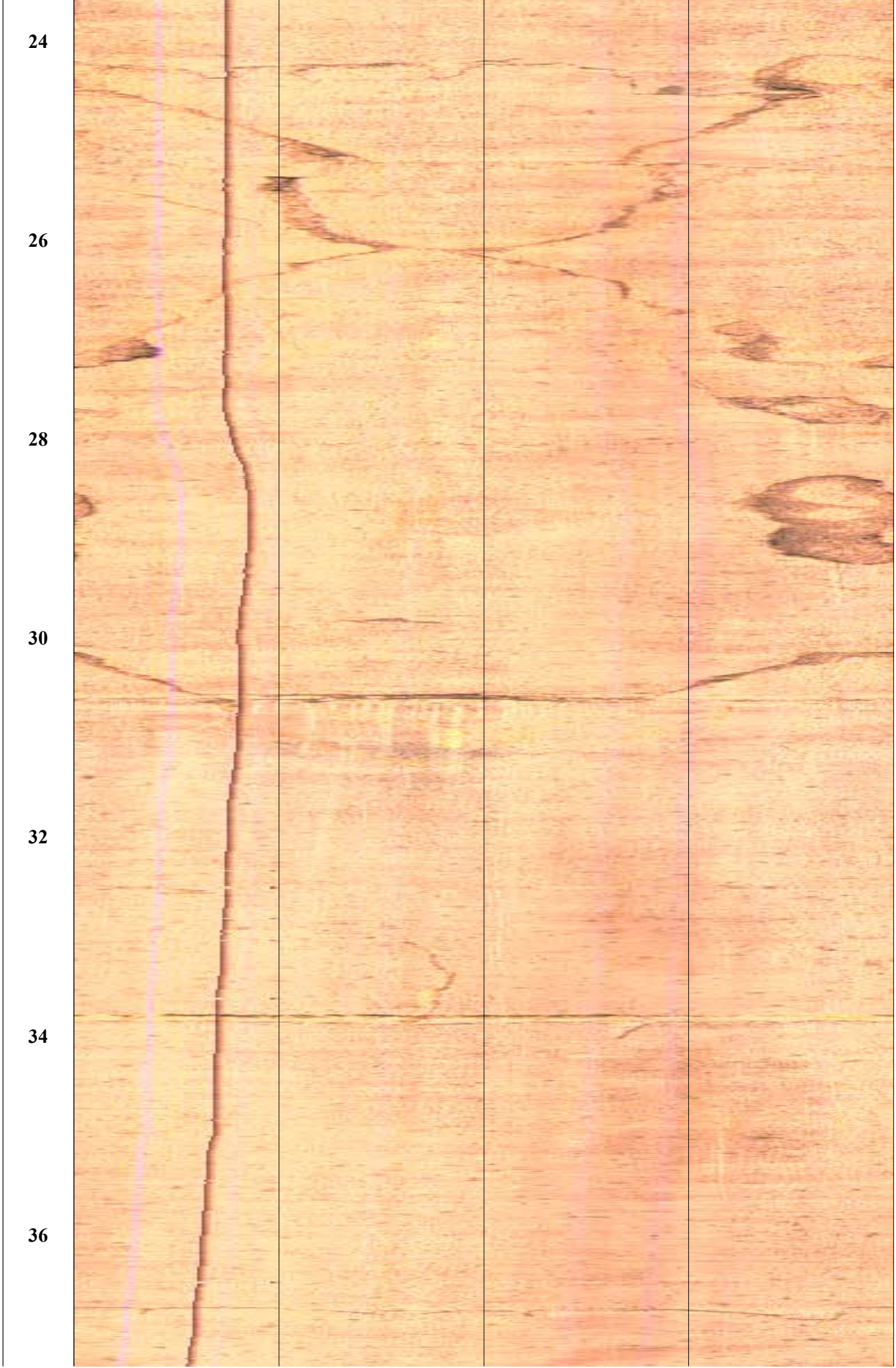
	COMPANY: CRA	Casing
	Location: GM Powertrain	

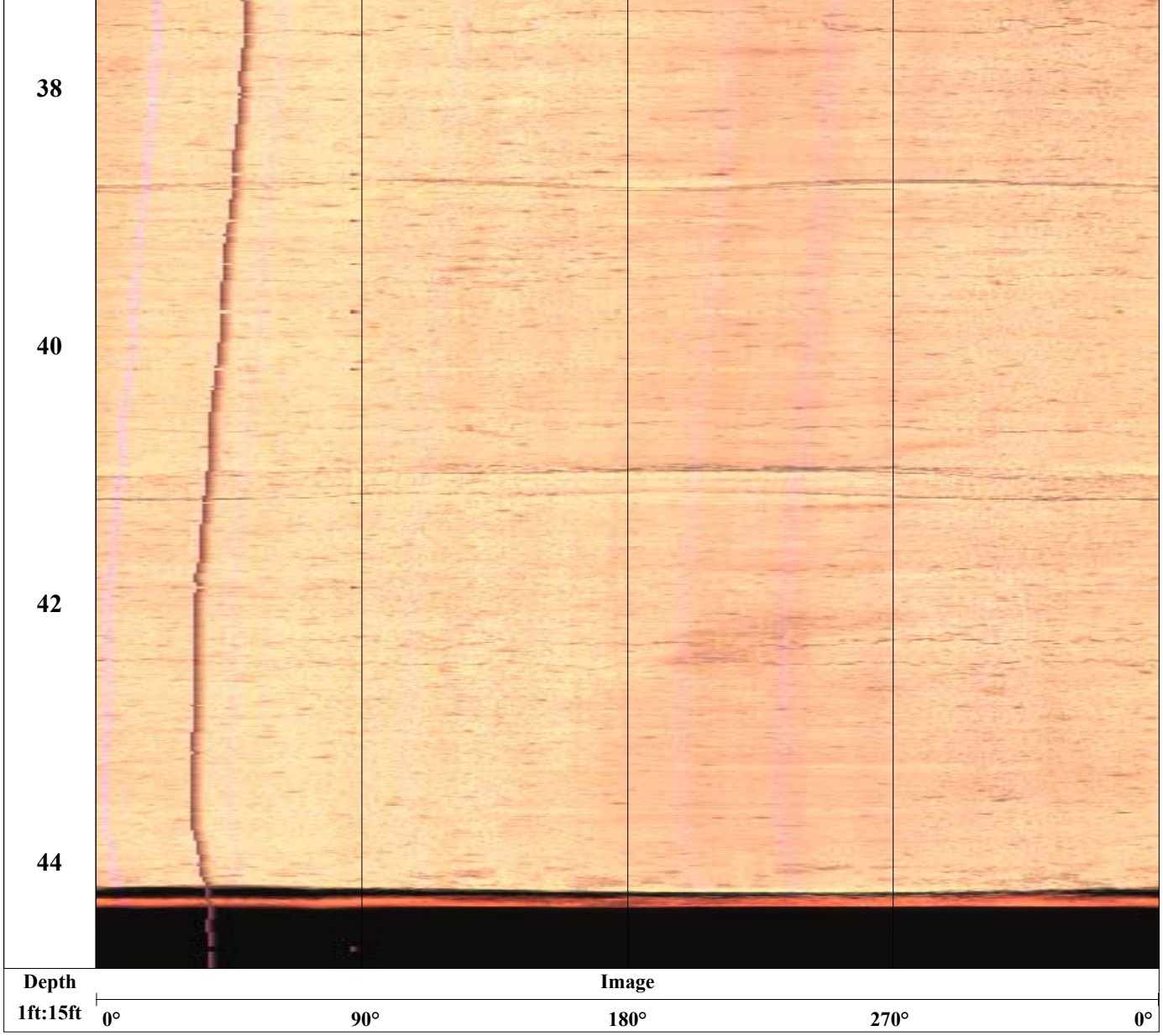
Well	CH-21			Depth Driller Depth Logger	
Date	Aug 8, 05	BH Fluid		Logged by:	
File Name				Witness:	

Depth
1ft:15ft

Image
0° 90° 180° 270° 0°

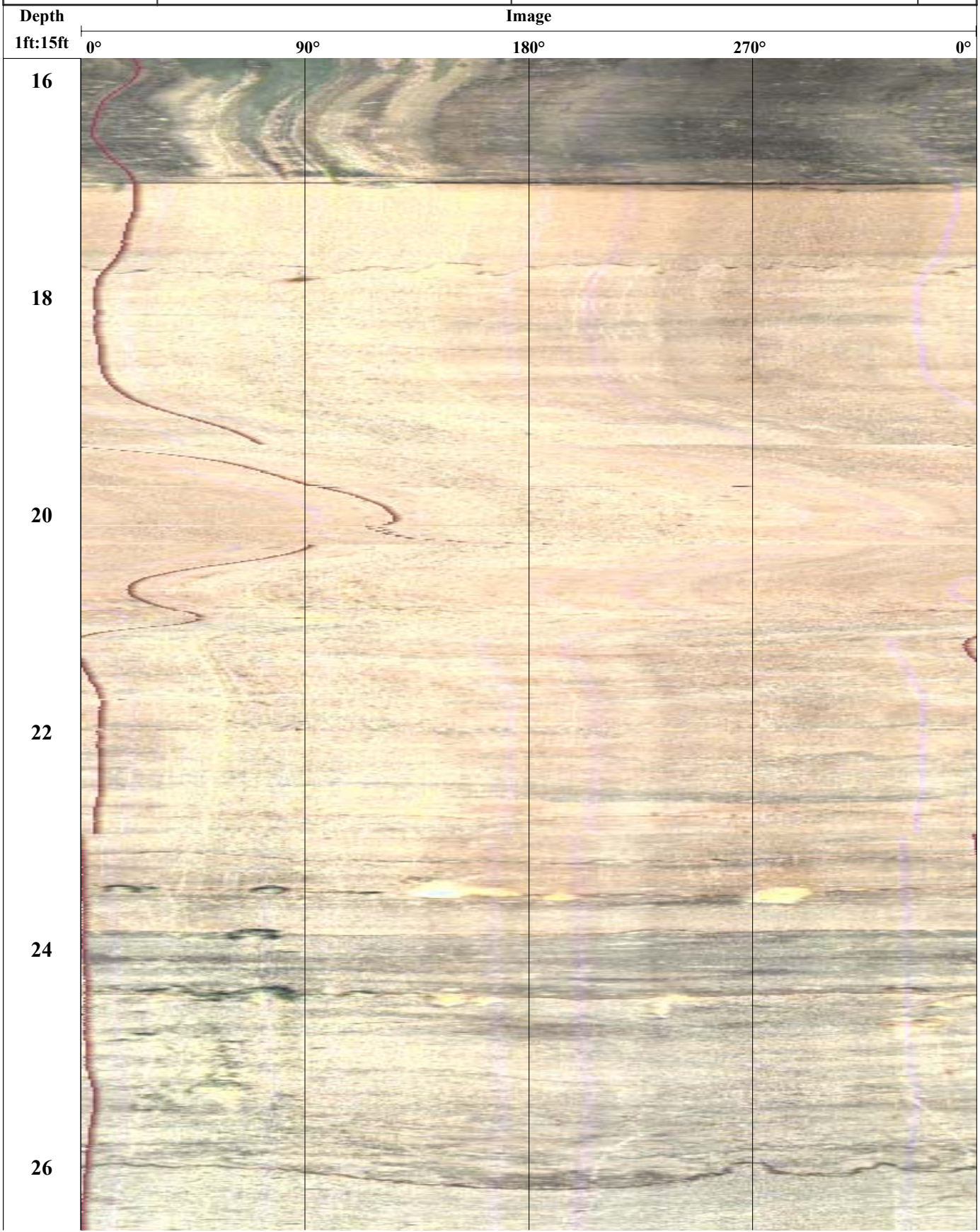


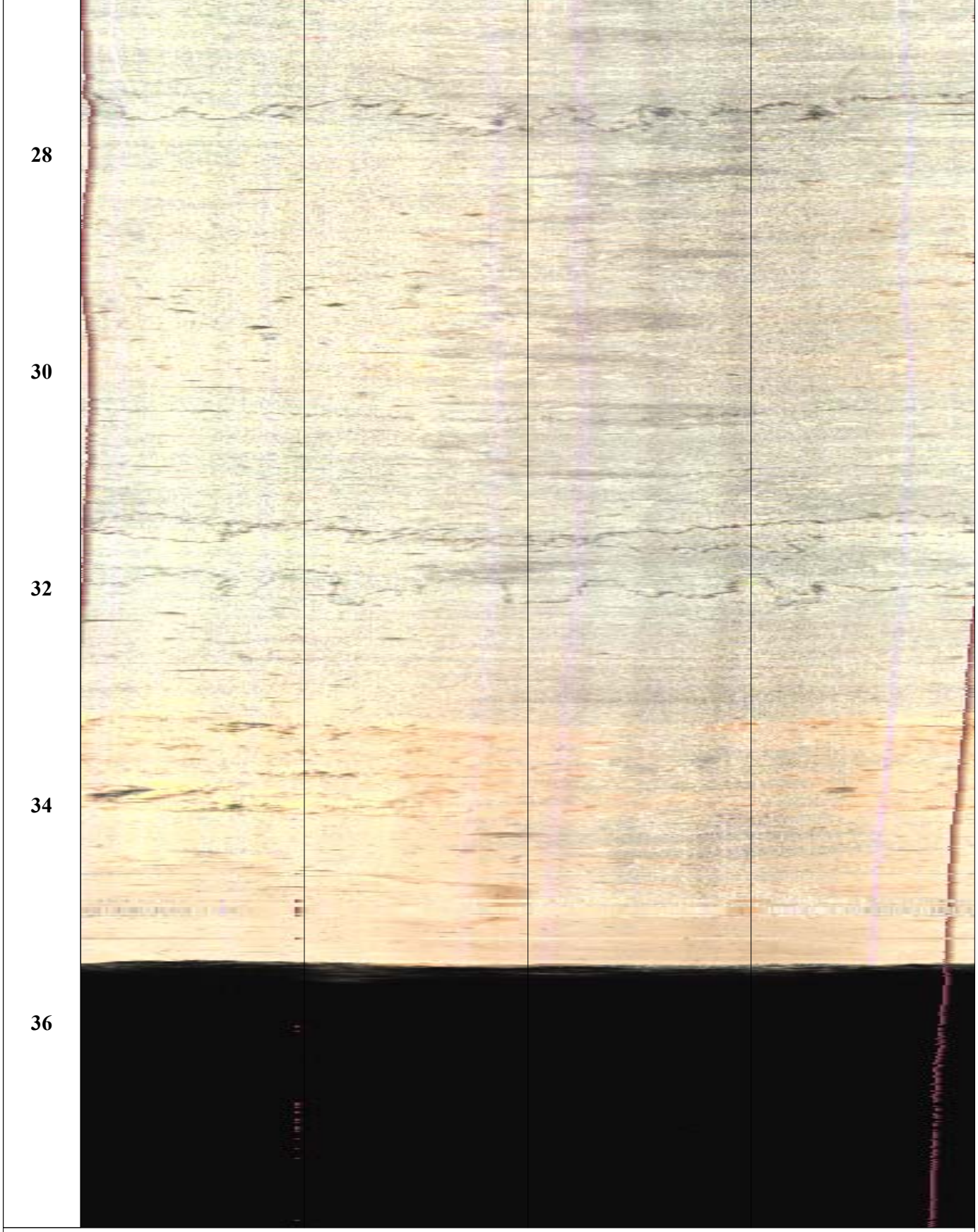

24
26
28
30
32
34
36


38
40
42
44
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	CH-20			Depth Driller Depth Logger	
Date	Aug 5, 05	BH Fluid		Logged by:	
File Name				Witness:	



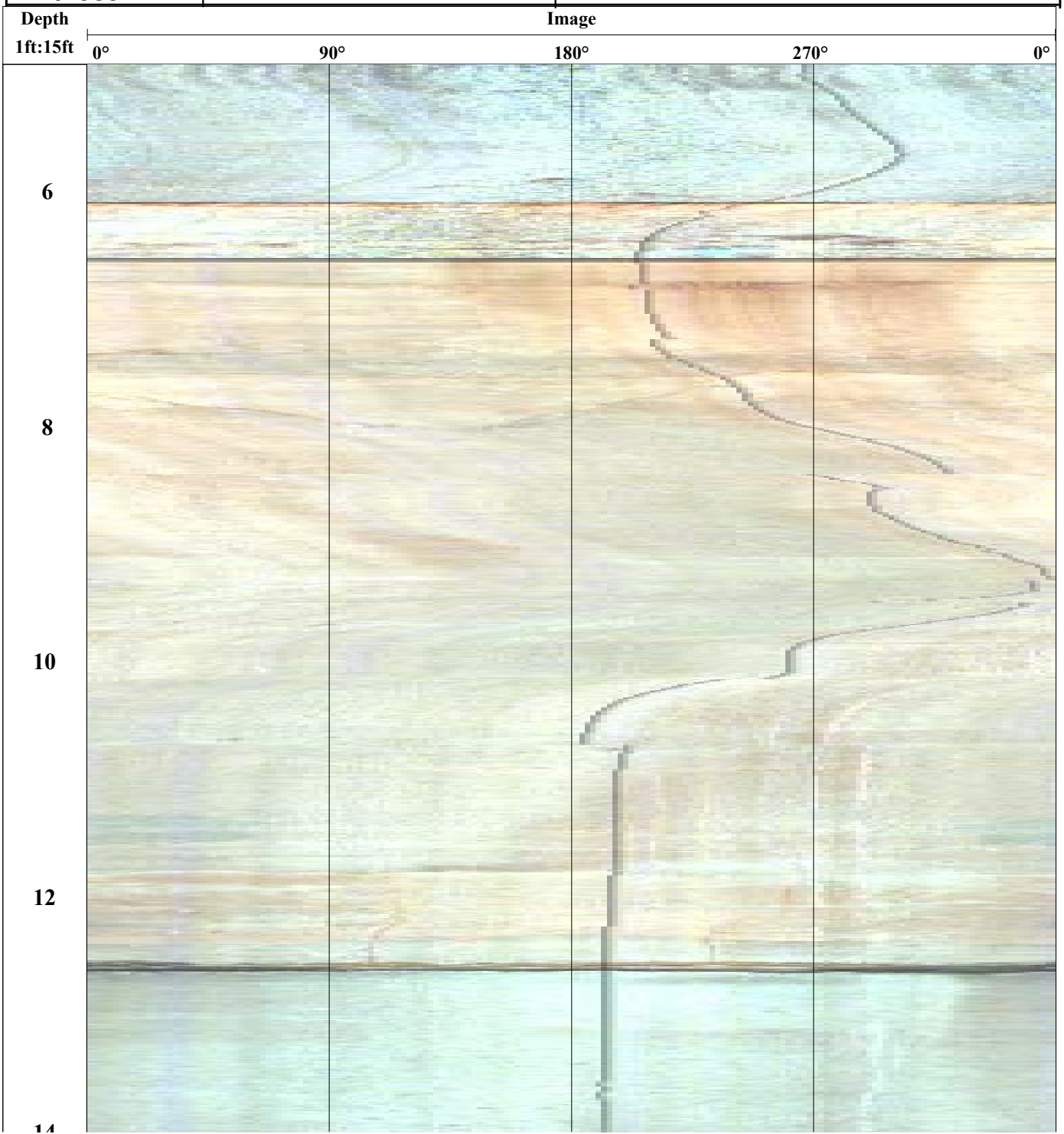


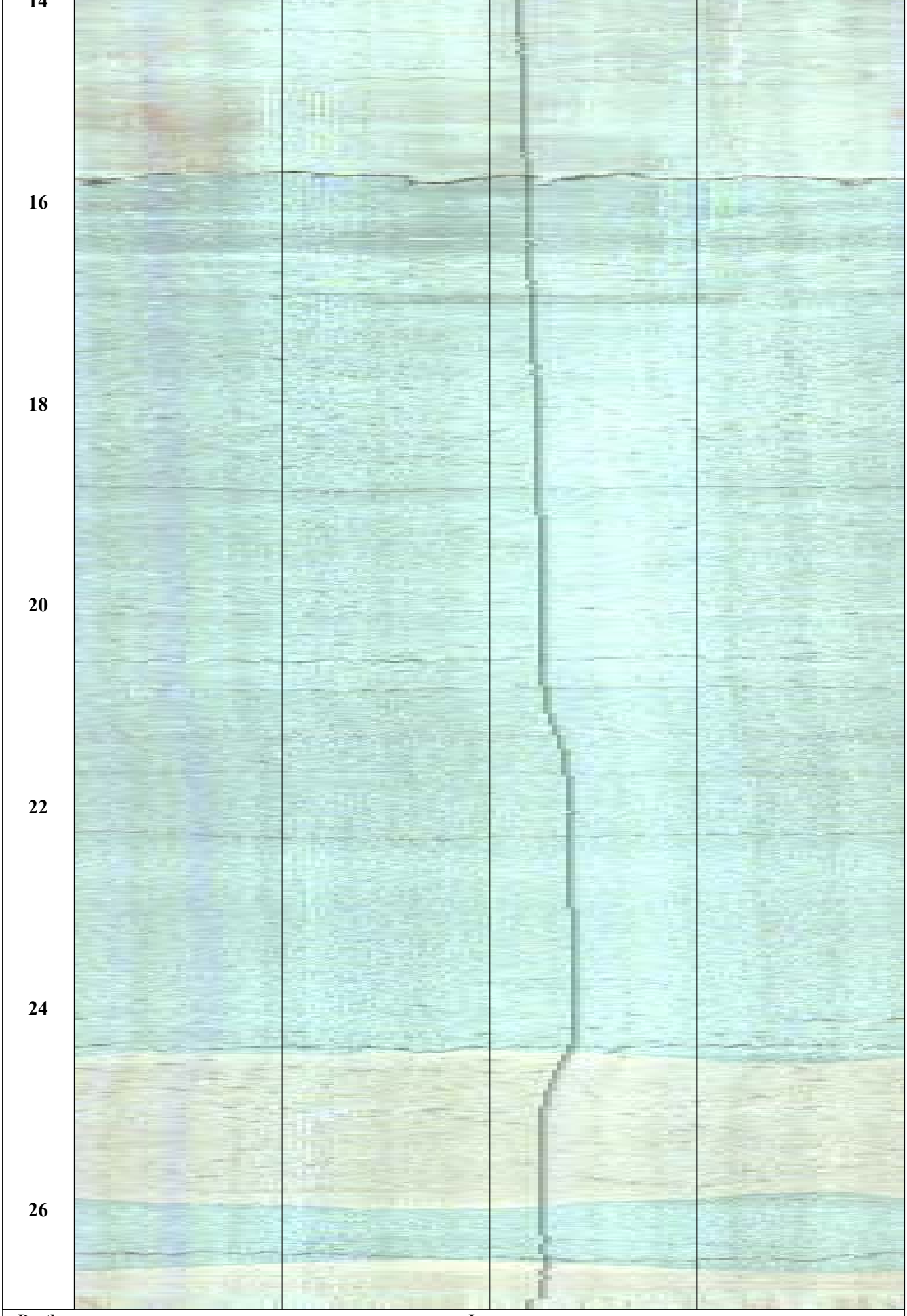
Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-11		
Date	July 25, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES



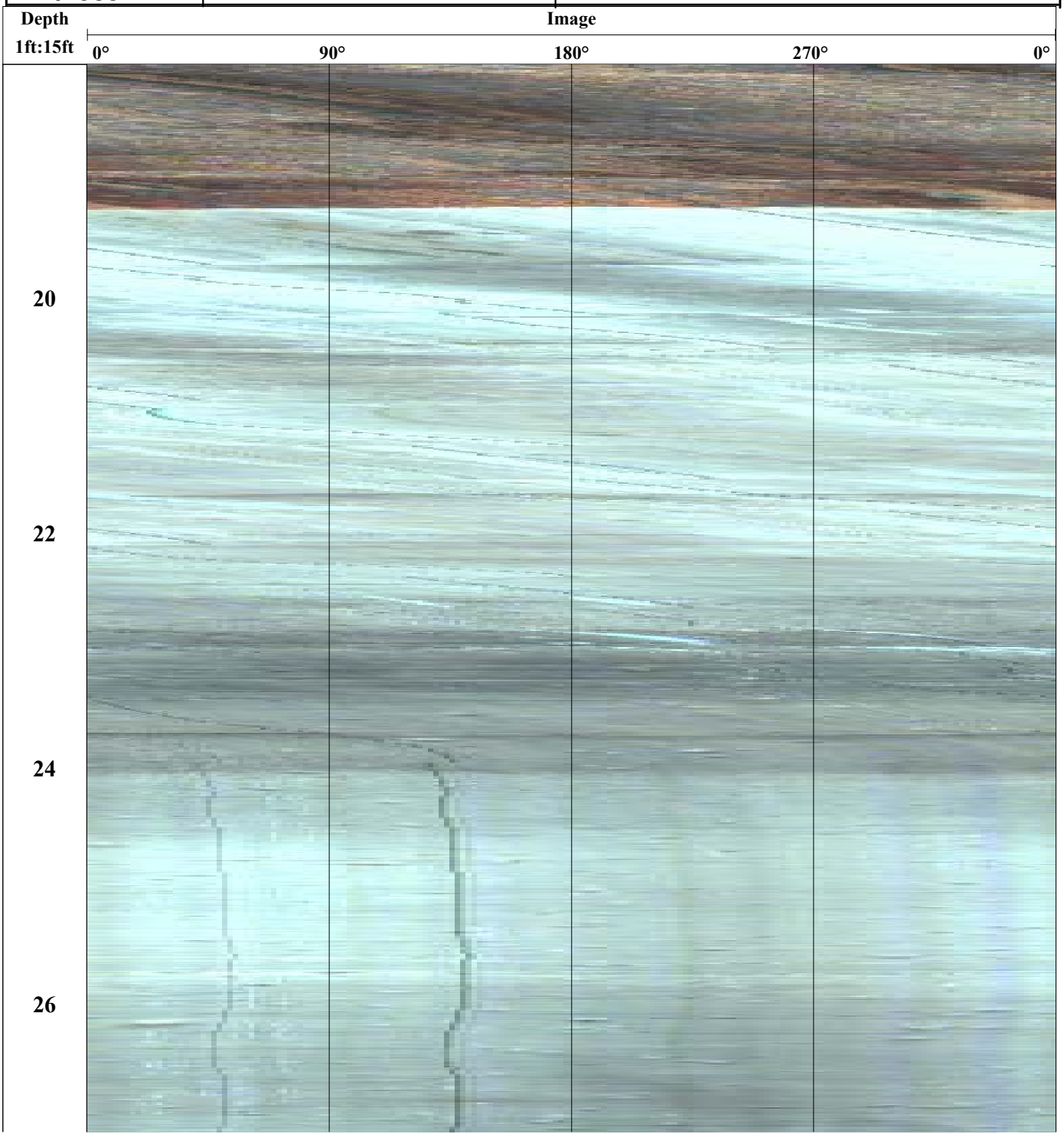


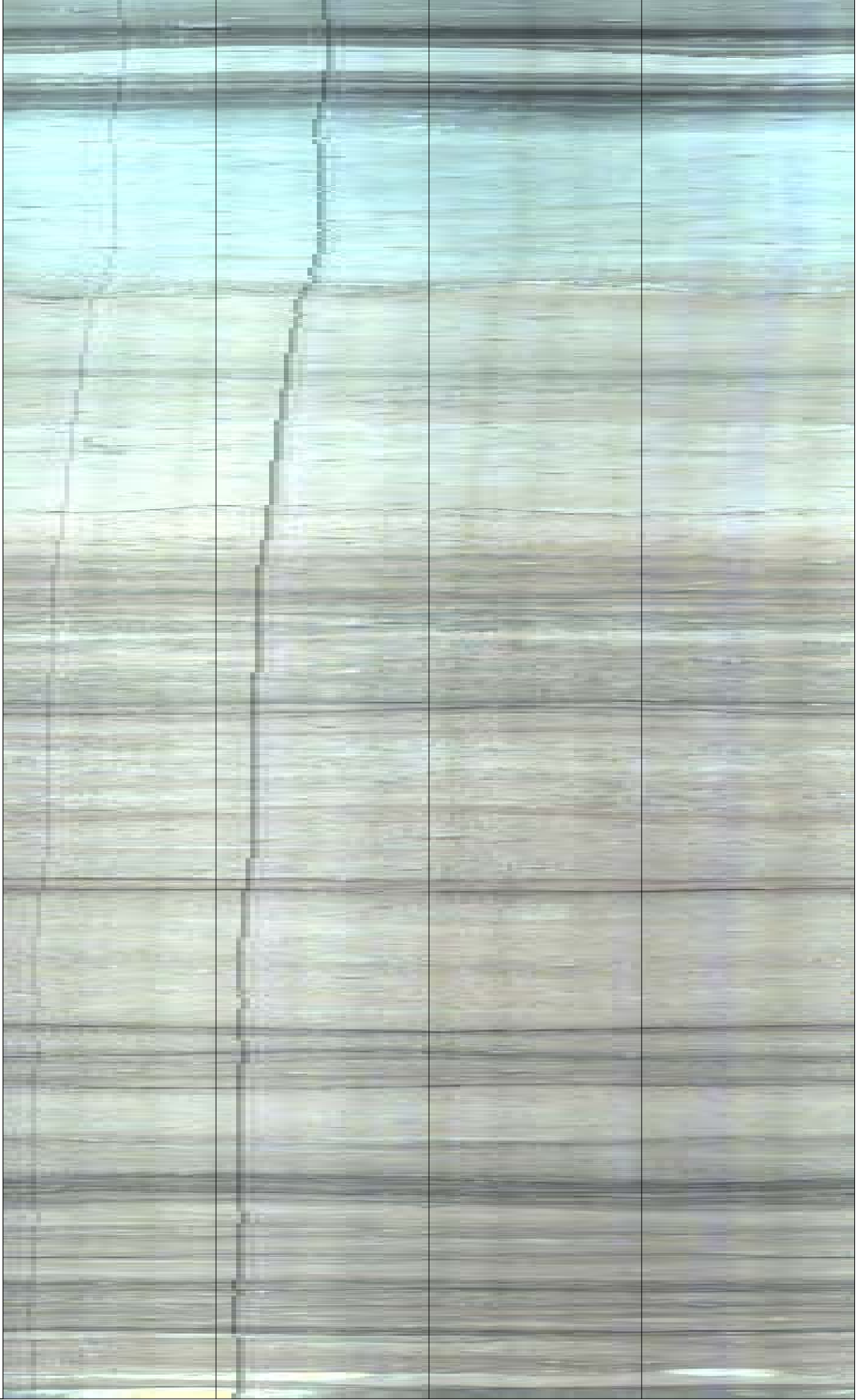
Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-6		
Date	July 22, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES





Depth

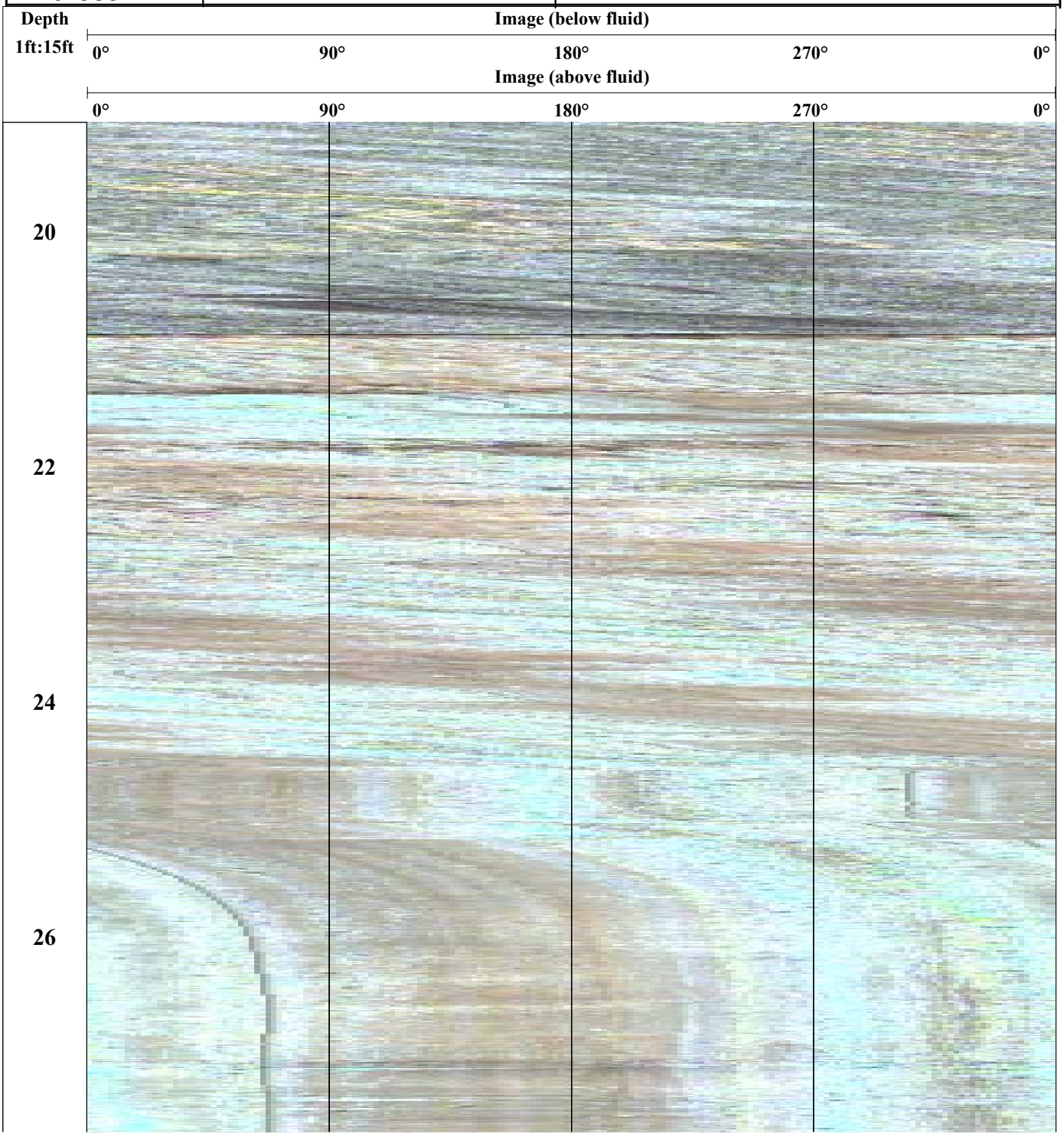
Image

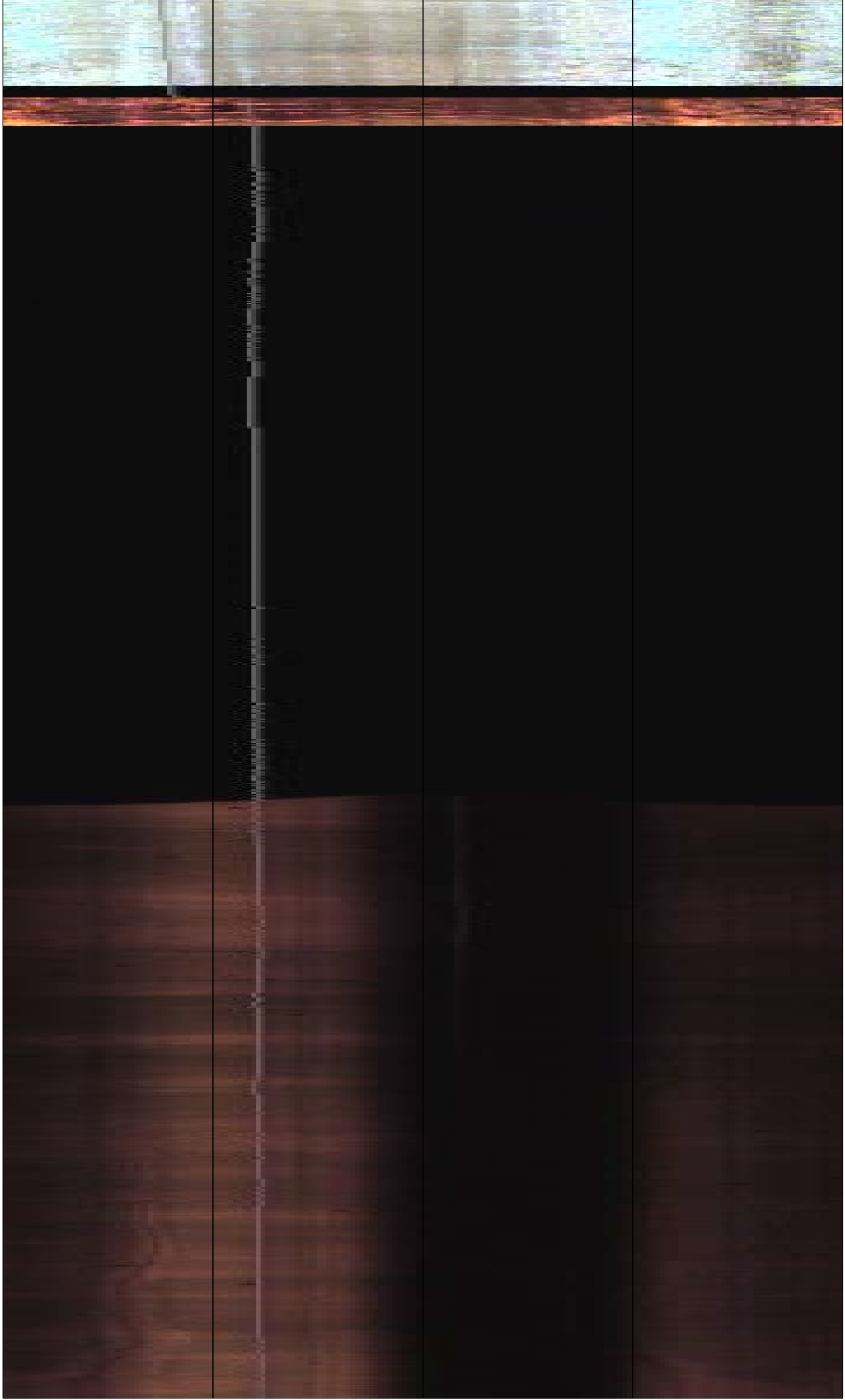

1ft:15ft
0°
90°
180°
270°
0°

	COMPANY: CRA
	Location: GM Powertrain

Well	CH-5		
Date	July 21, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

OTHER SERVICES




28
30
32
34
36
38
40

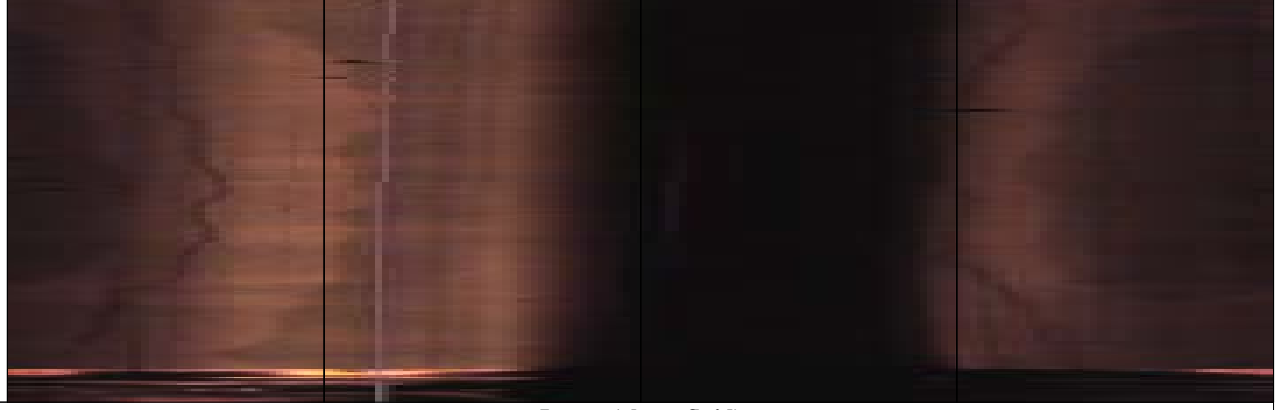


Image (above fluid)

0° 90° 180° 270° 0°

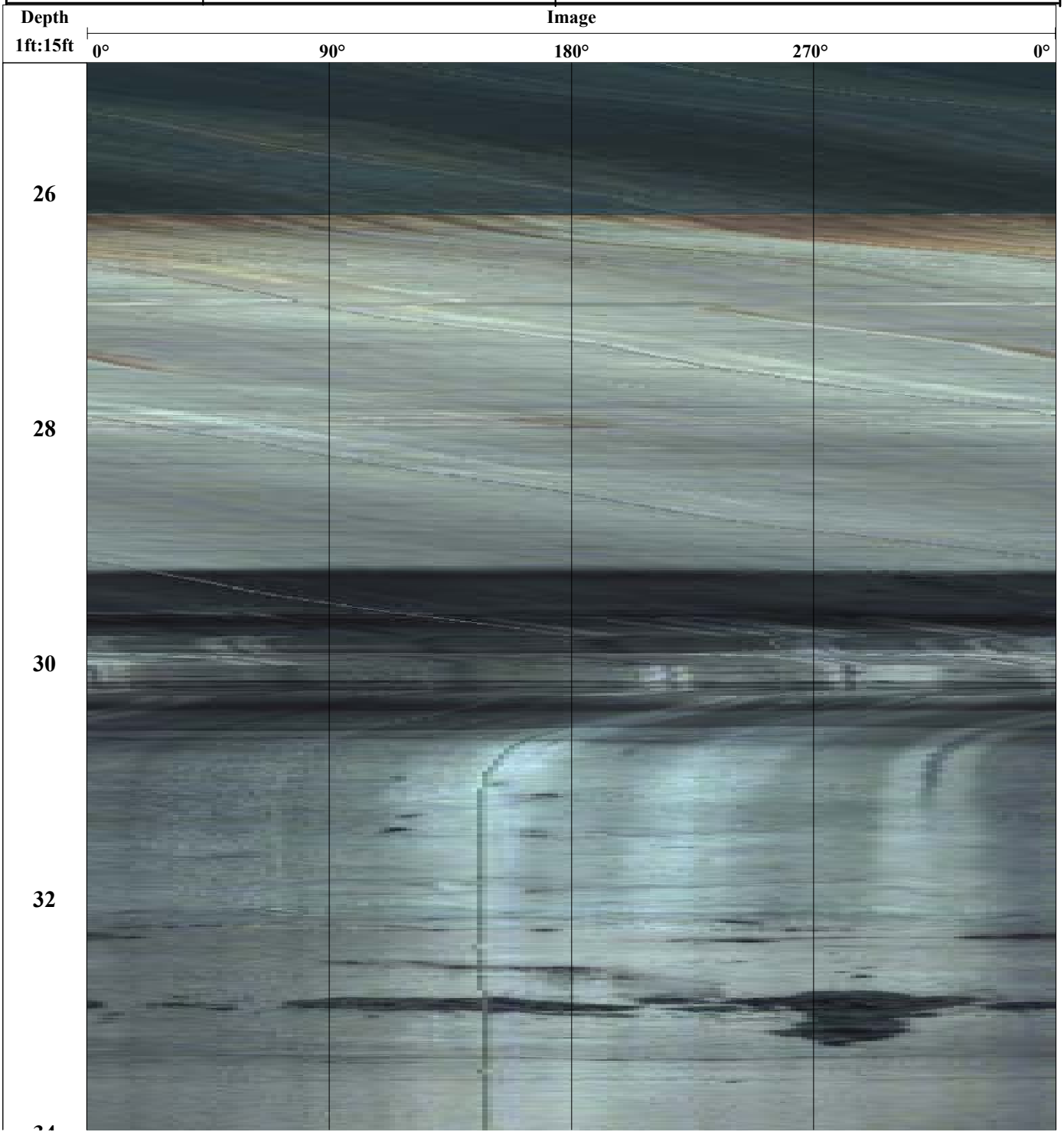
Depth

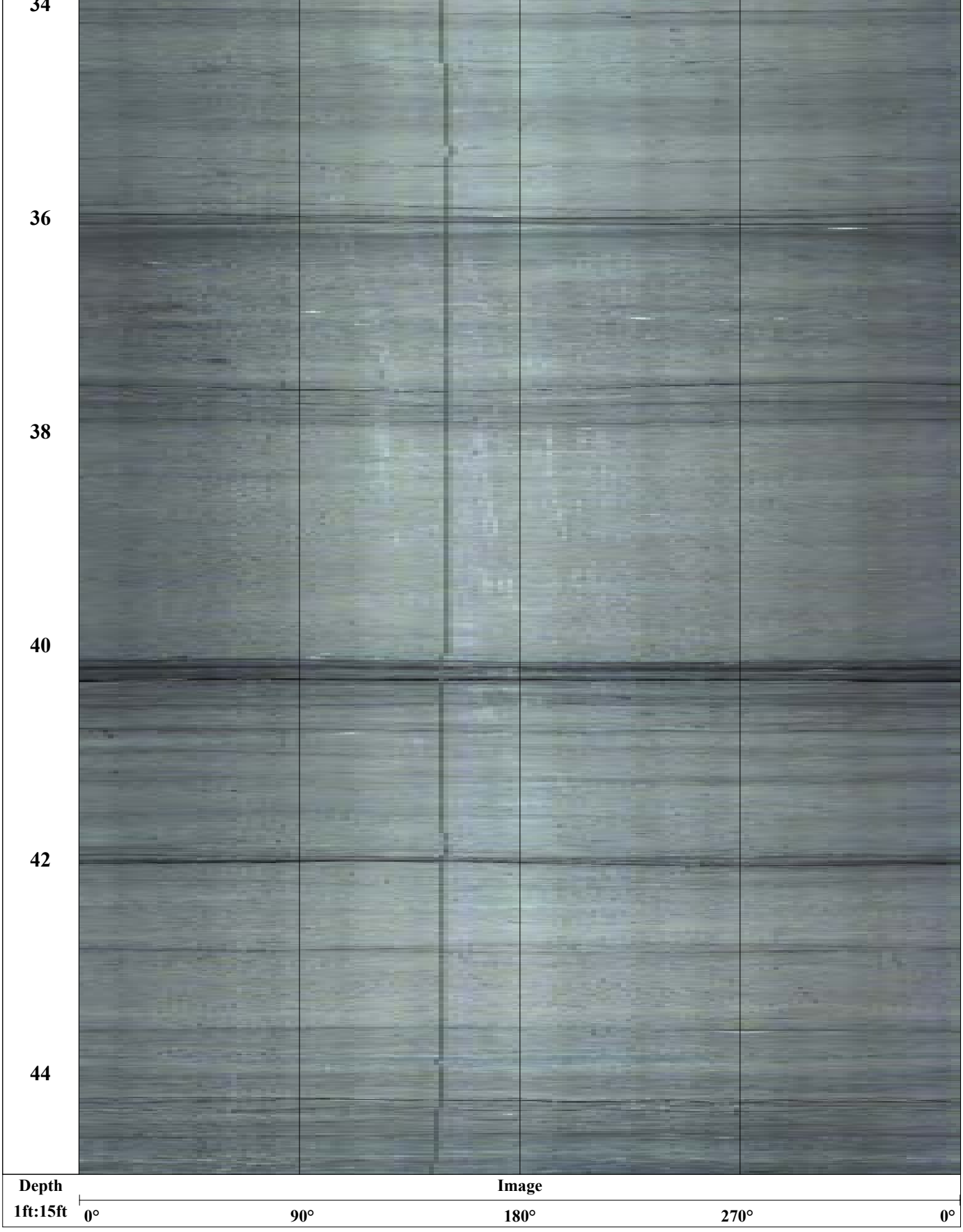
Image (below fluid)

1ft:15ft

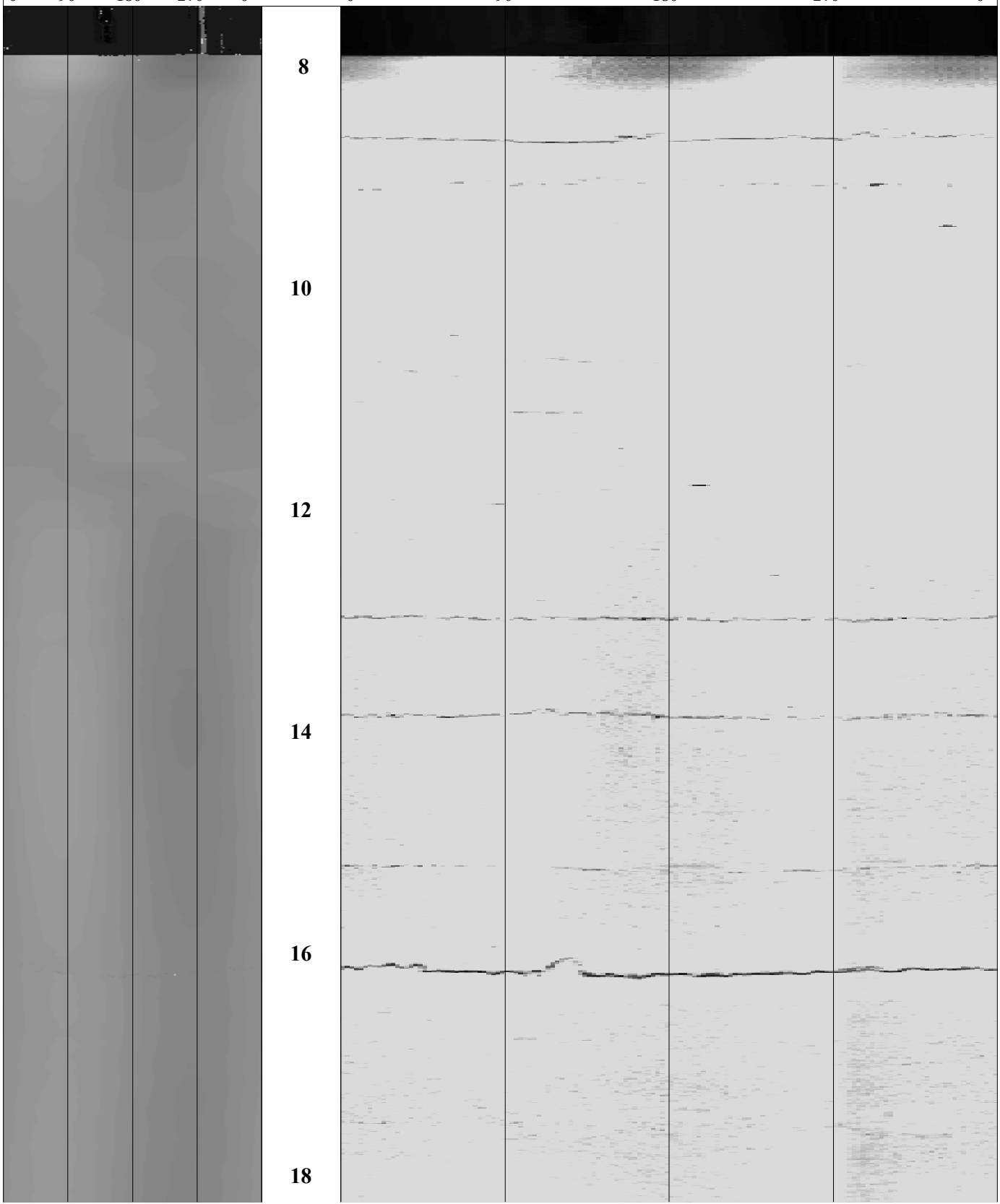
0° 90° 180° 270° 0°

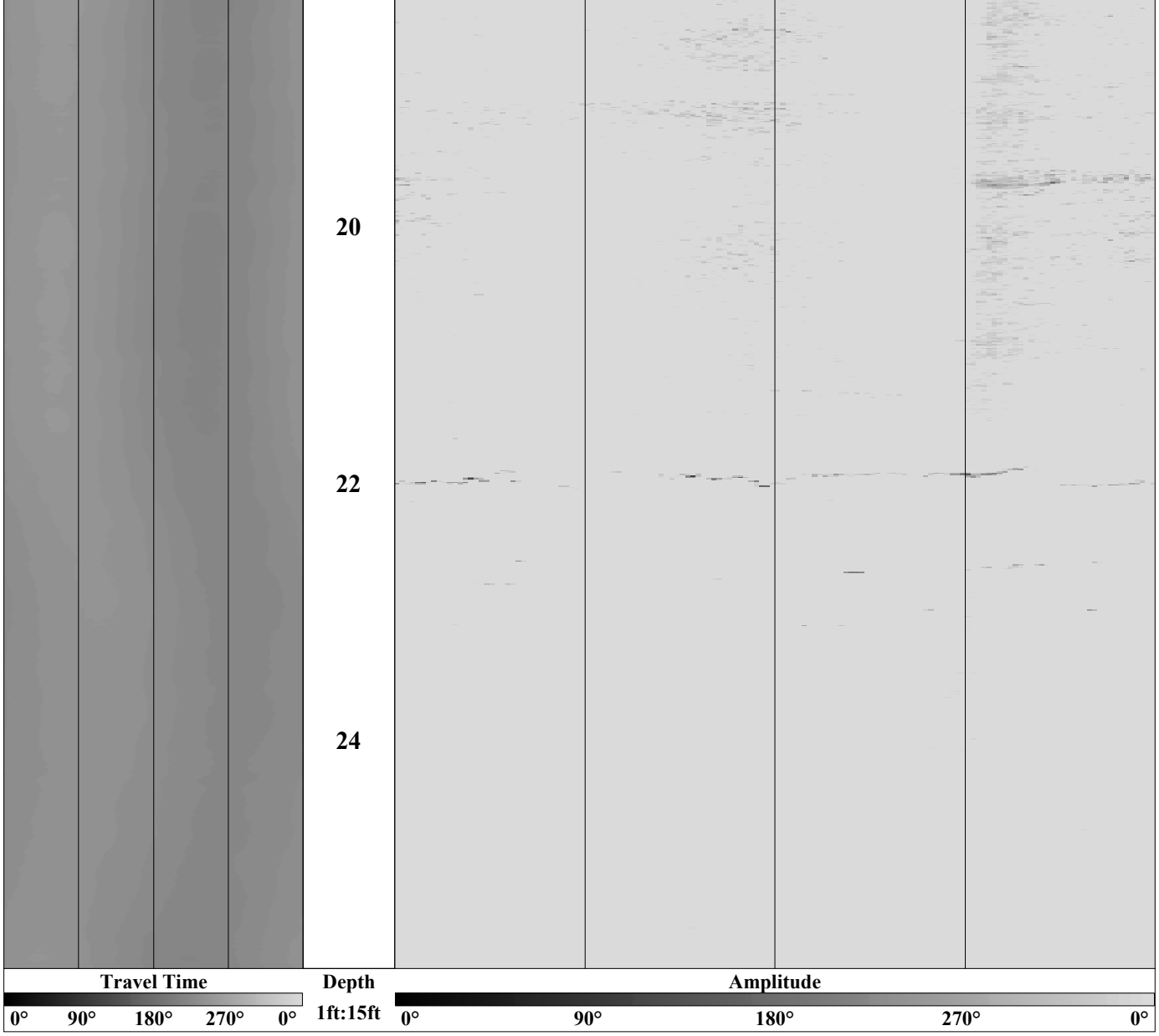
	COMPANY: CRA		
	Location: GM Powertrain		
Well	CH-1B		OTHER SERVICES
Date	July 21, 2005	BH Fluid	
Casing	26		
File Name			
Depth Driller			
Depth Logger	45.5		
Logged by:			
Witness:			




34
36
38
40
42
44
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

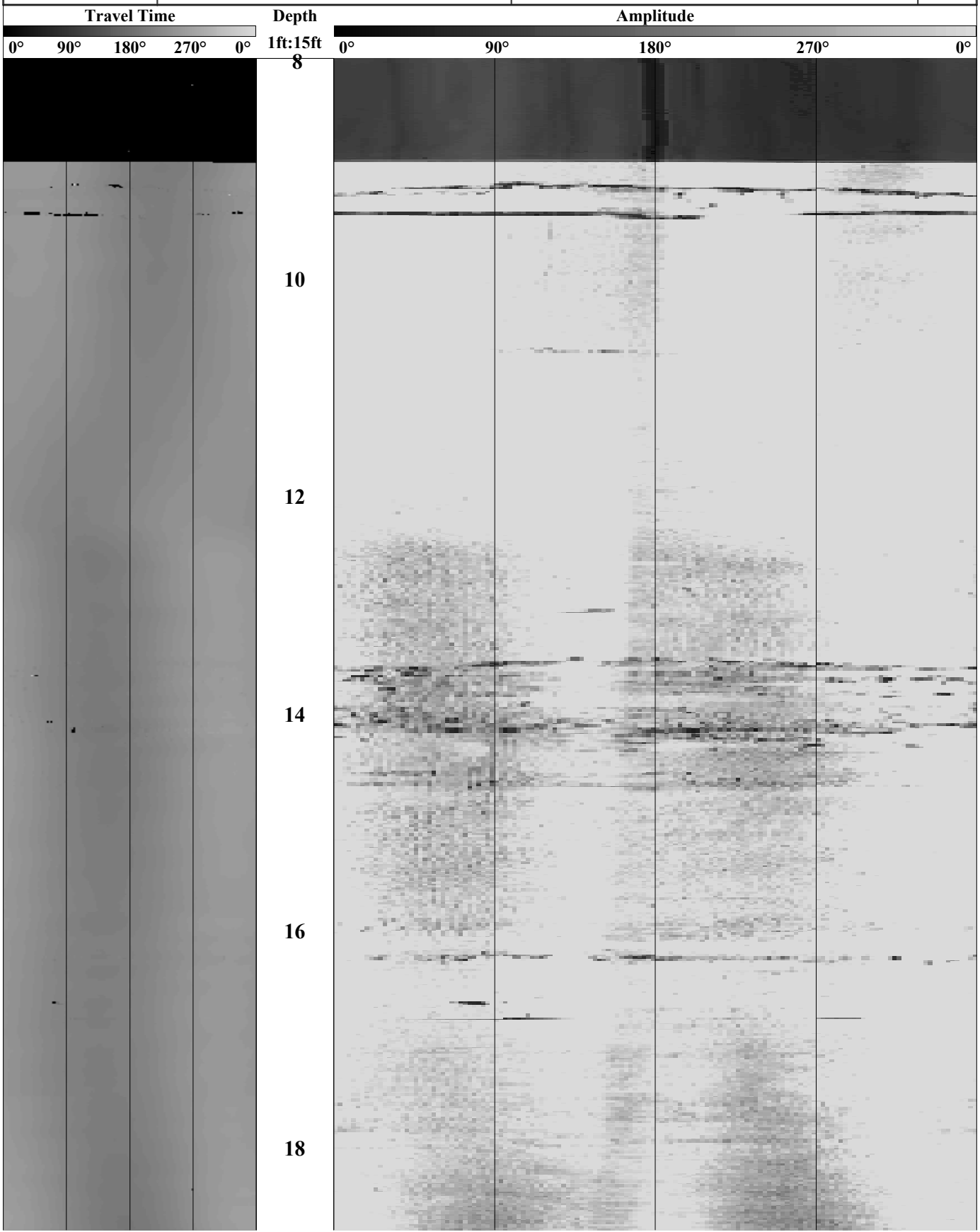
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-41	Depth Driller / Depth Logger	
Date: Aug 4, 05 — BH Fluid	Logged by:	
File Name	Witness:	

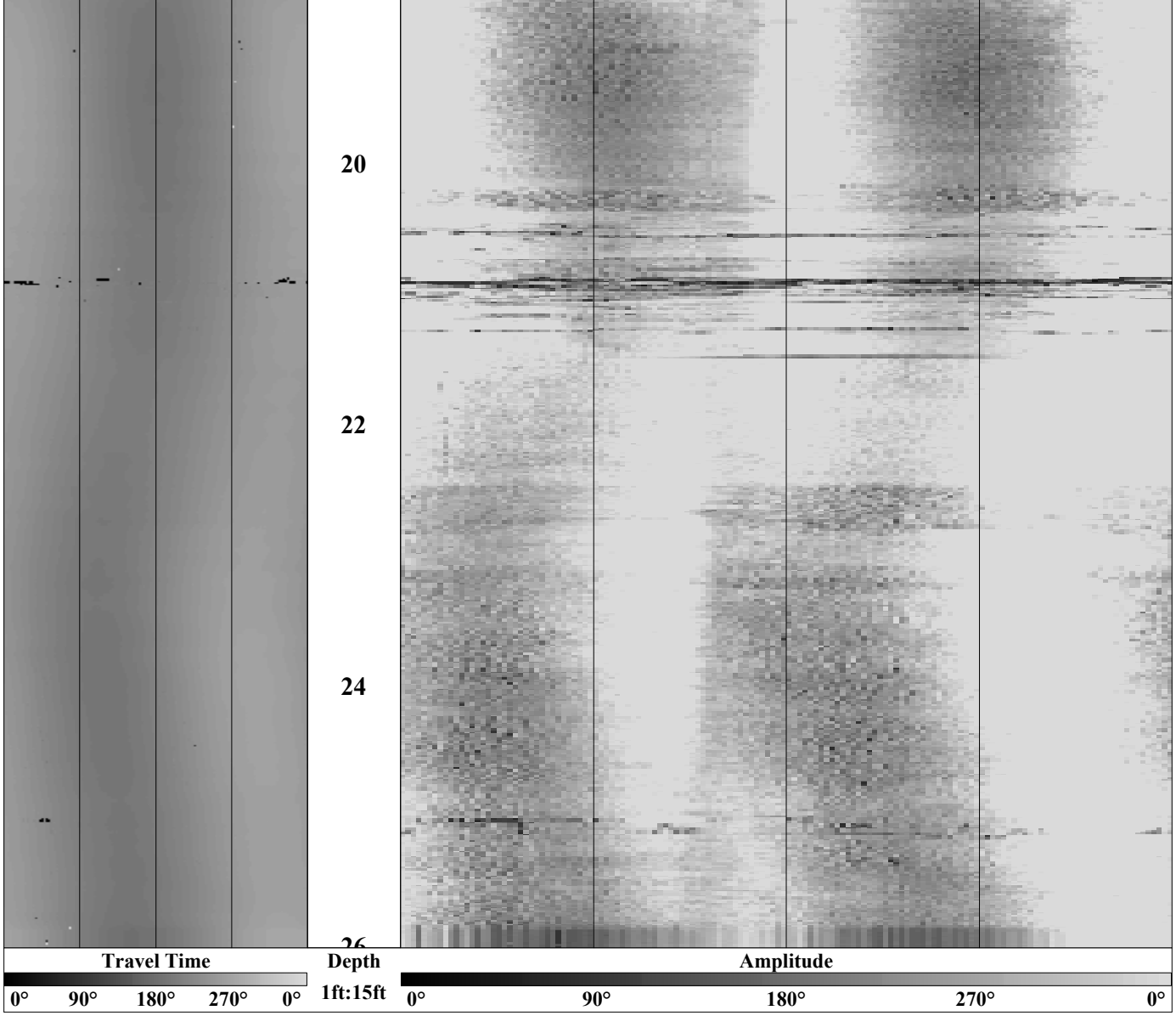



20
22
24
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

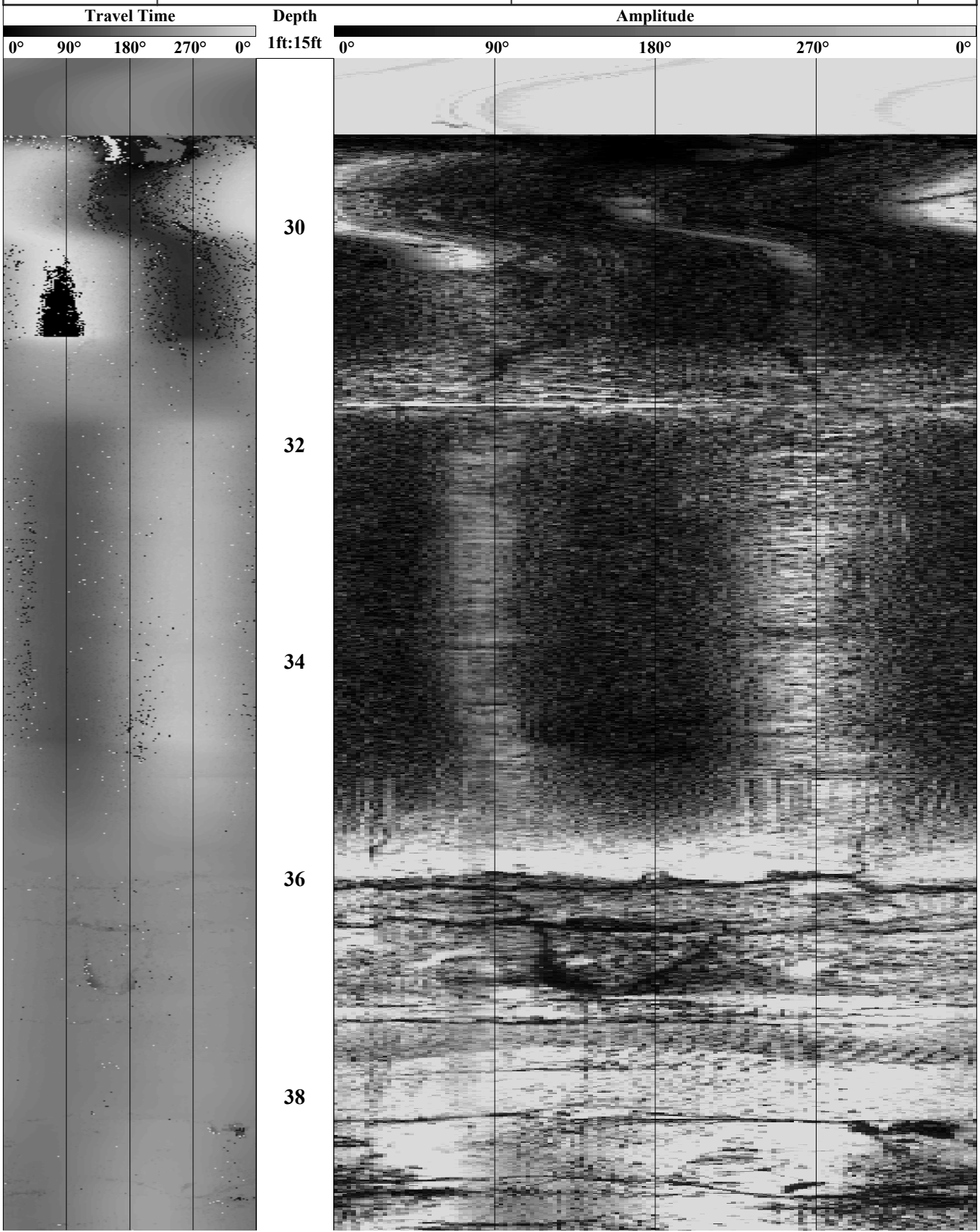
Well	CH-30			Depth Driller Depth Logger	
Date	Aug 10, 05	BH Fluid		Logged by:	
File Name				Witness:	

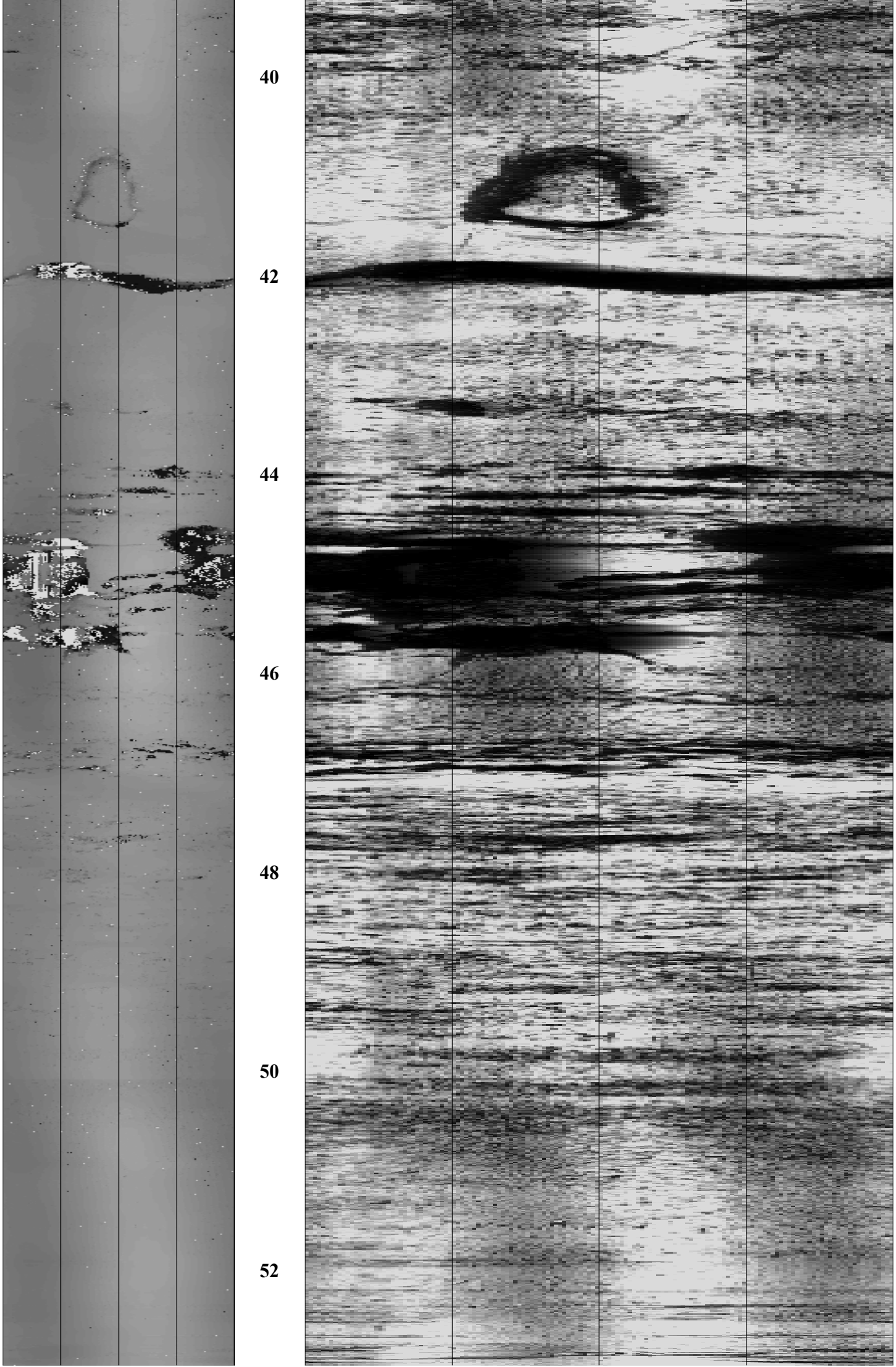


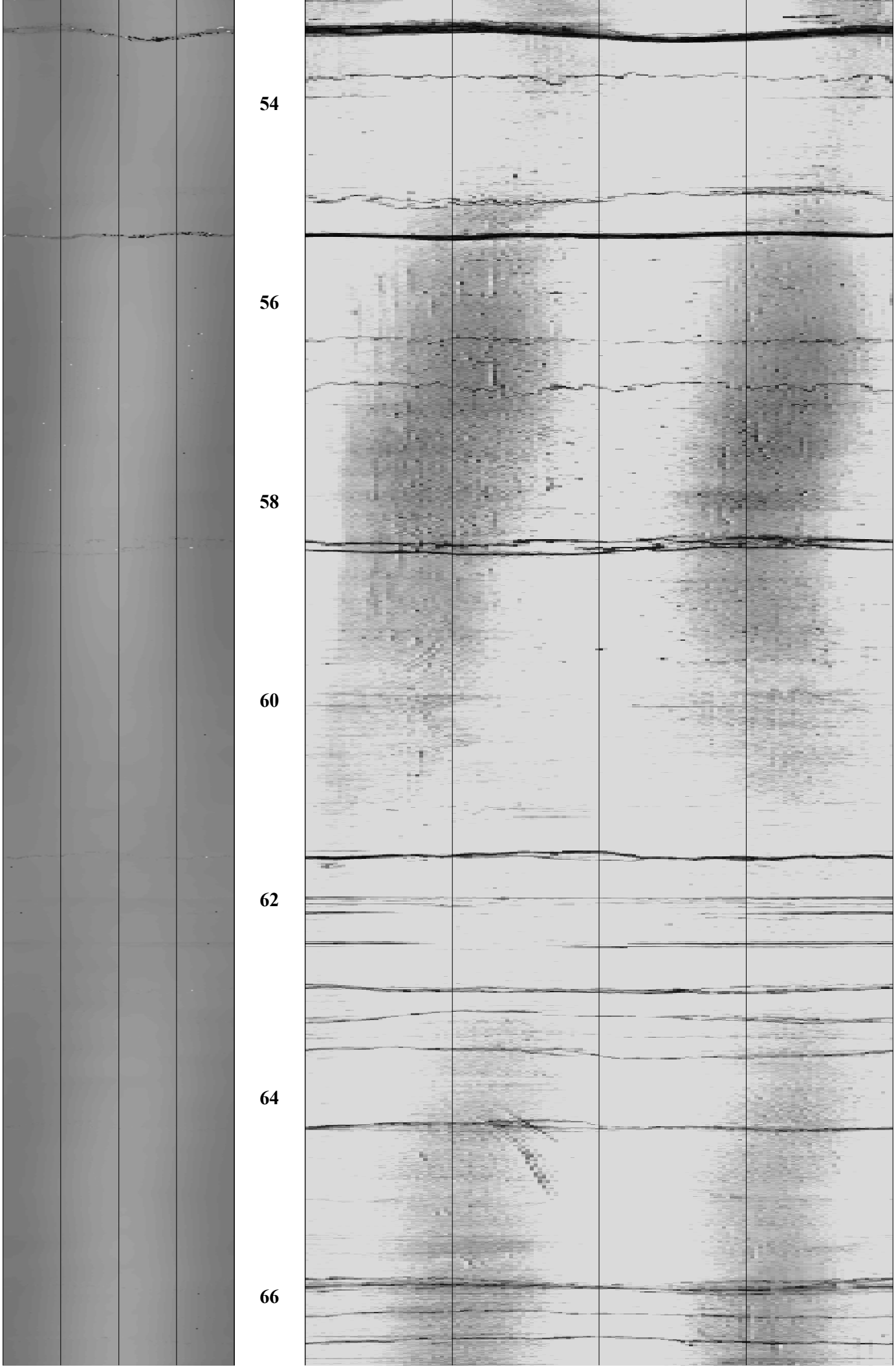

20
22
24
26
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

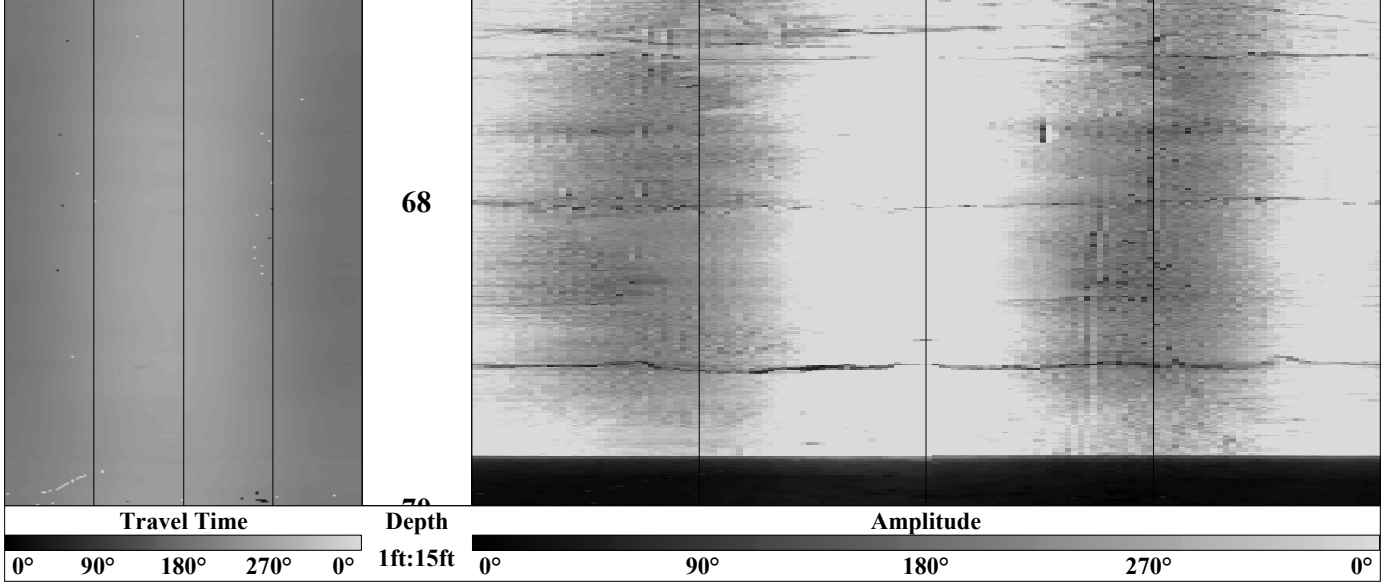
	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	CH-29			Depth Driller Depth Logger	
Date	Aug 10, 05	BH Fluid		Logged by:	
File Name				Witness:	

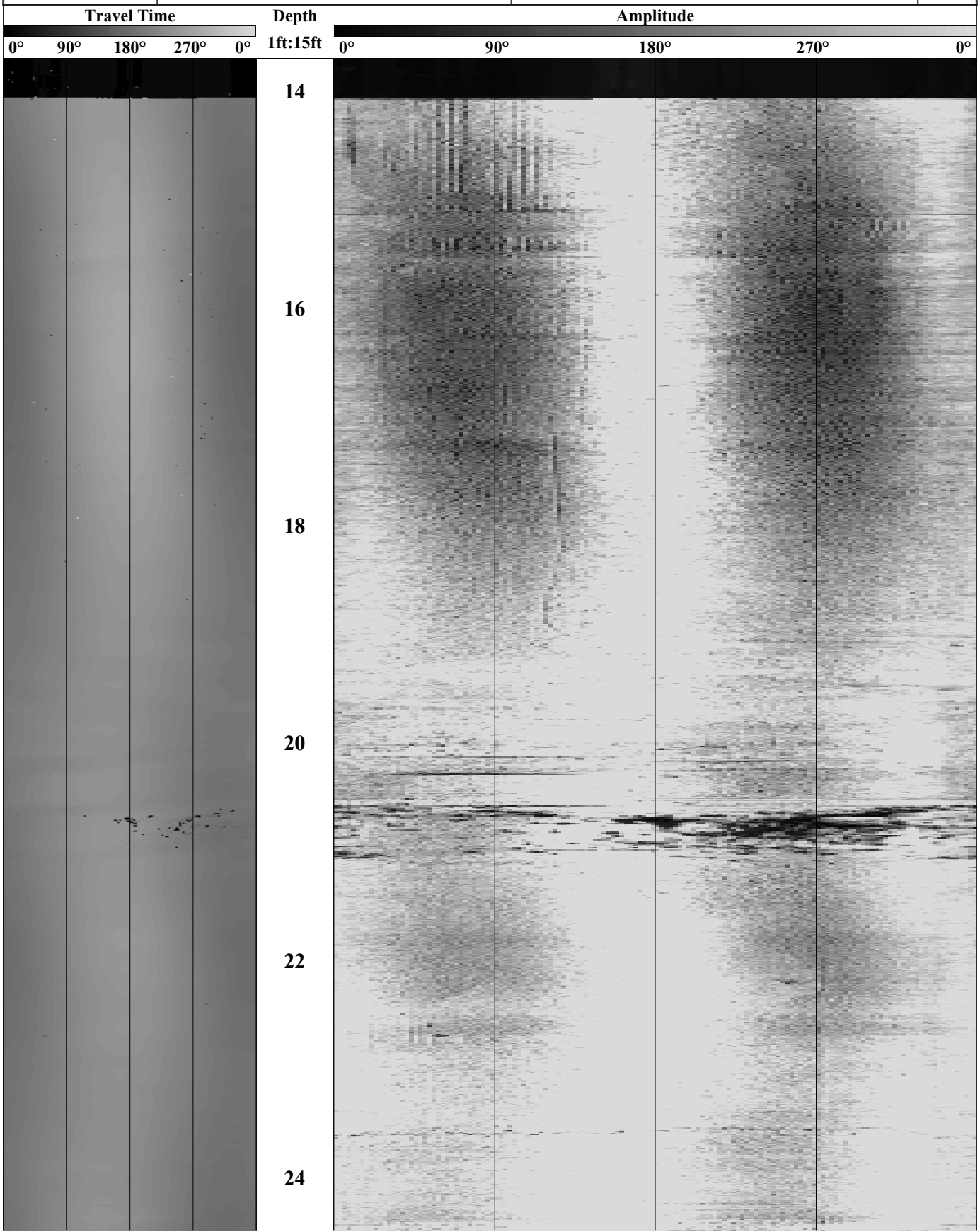


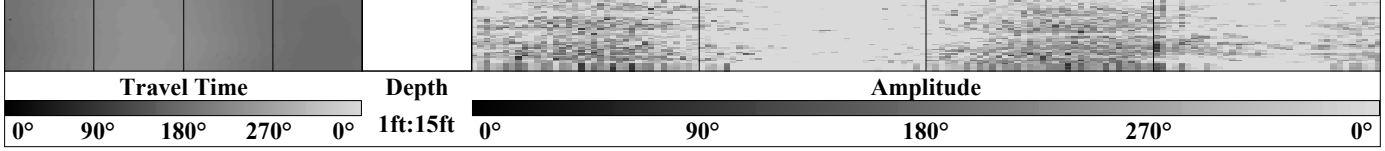

40
42
44
46
48
50
52


54
56
58
60
62
64
66


68
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

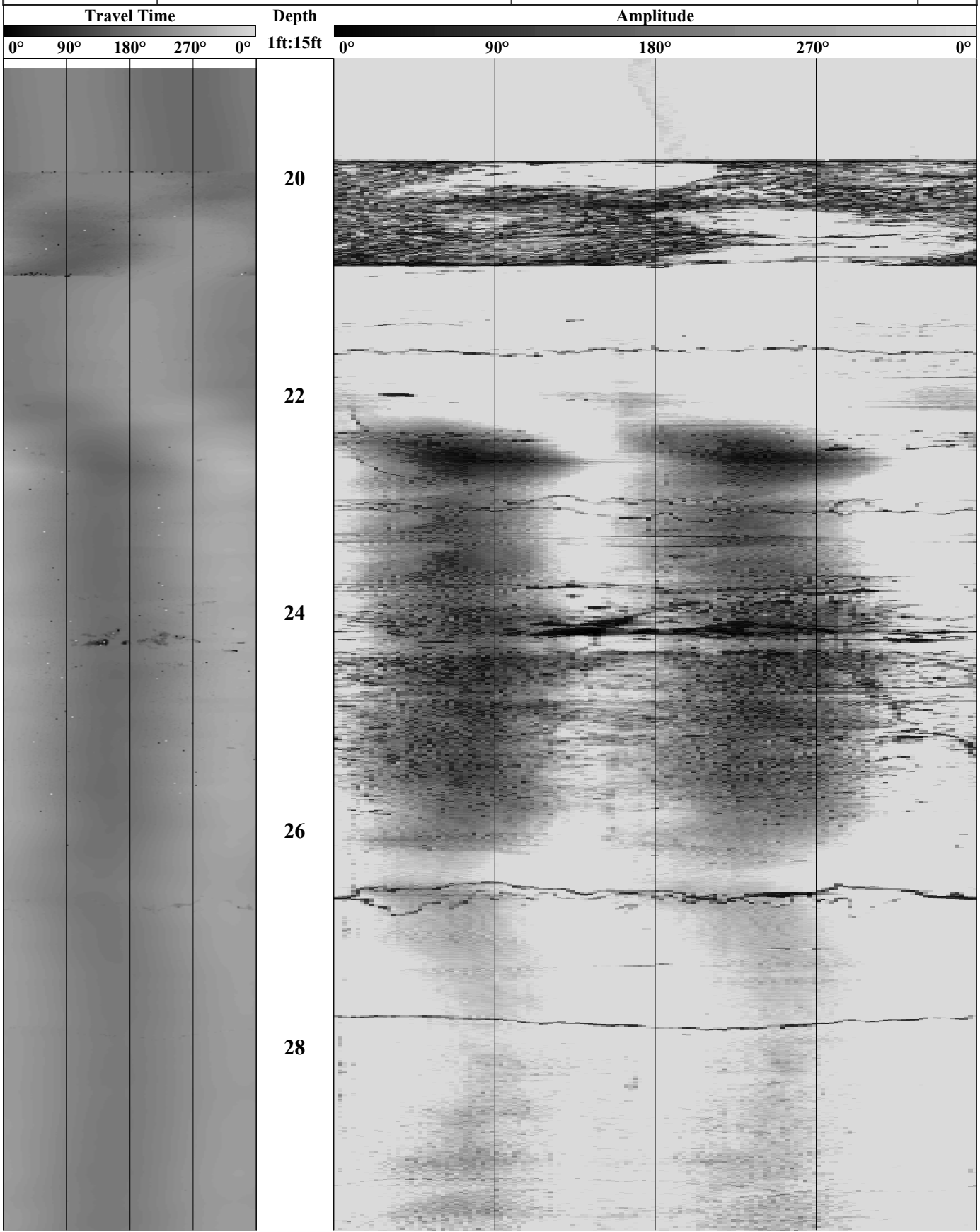
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-28	Depth Driller / Depth Logger	
Date: Aug 9, 05	BH Fluid	Logged by:
File Name		Witness:

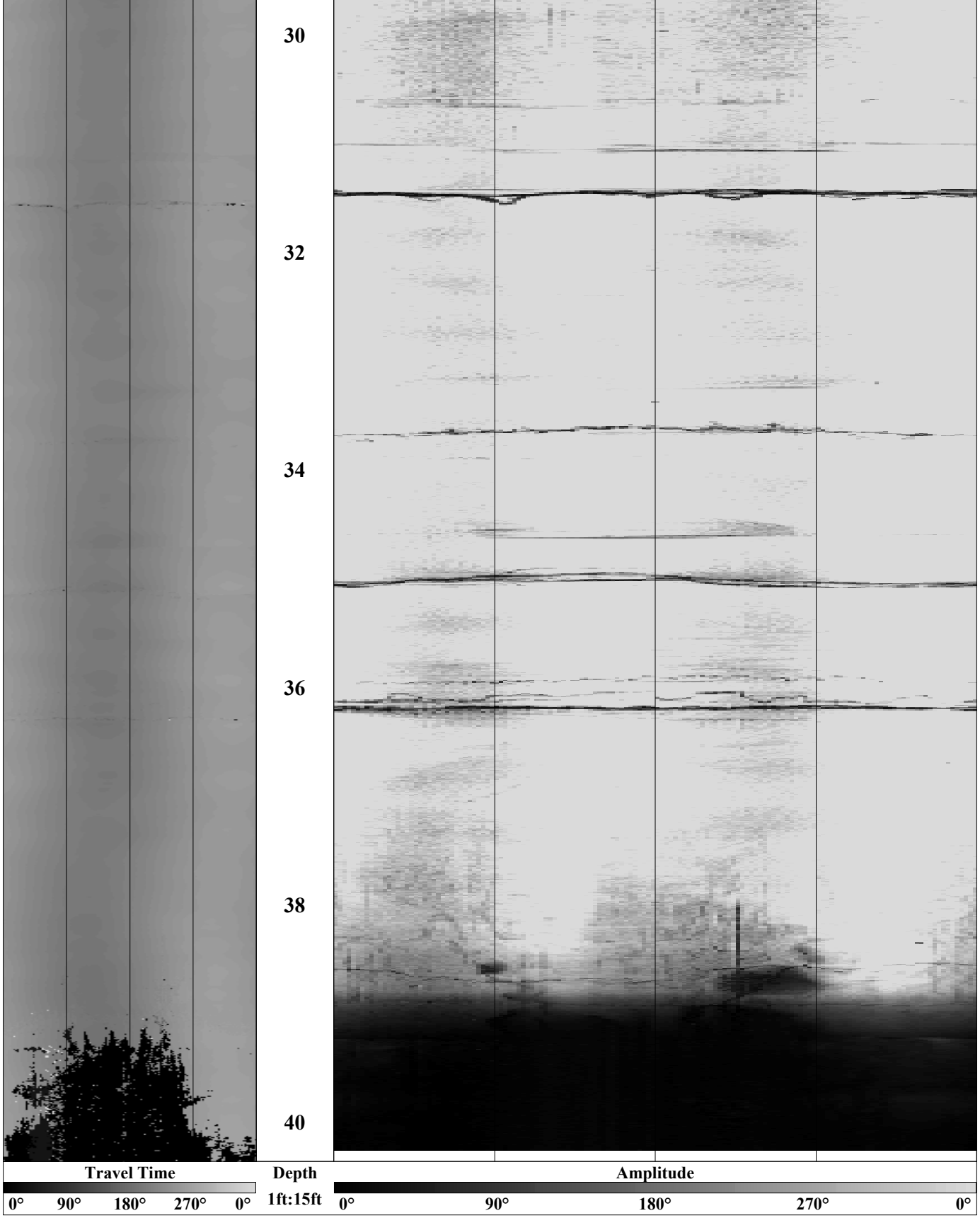




Travel Time					Depth	Amplitude				
0°	90°	180°	270°	0°	1ft:15ft	0°	90°	180°	270°	0°

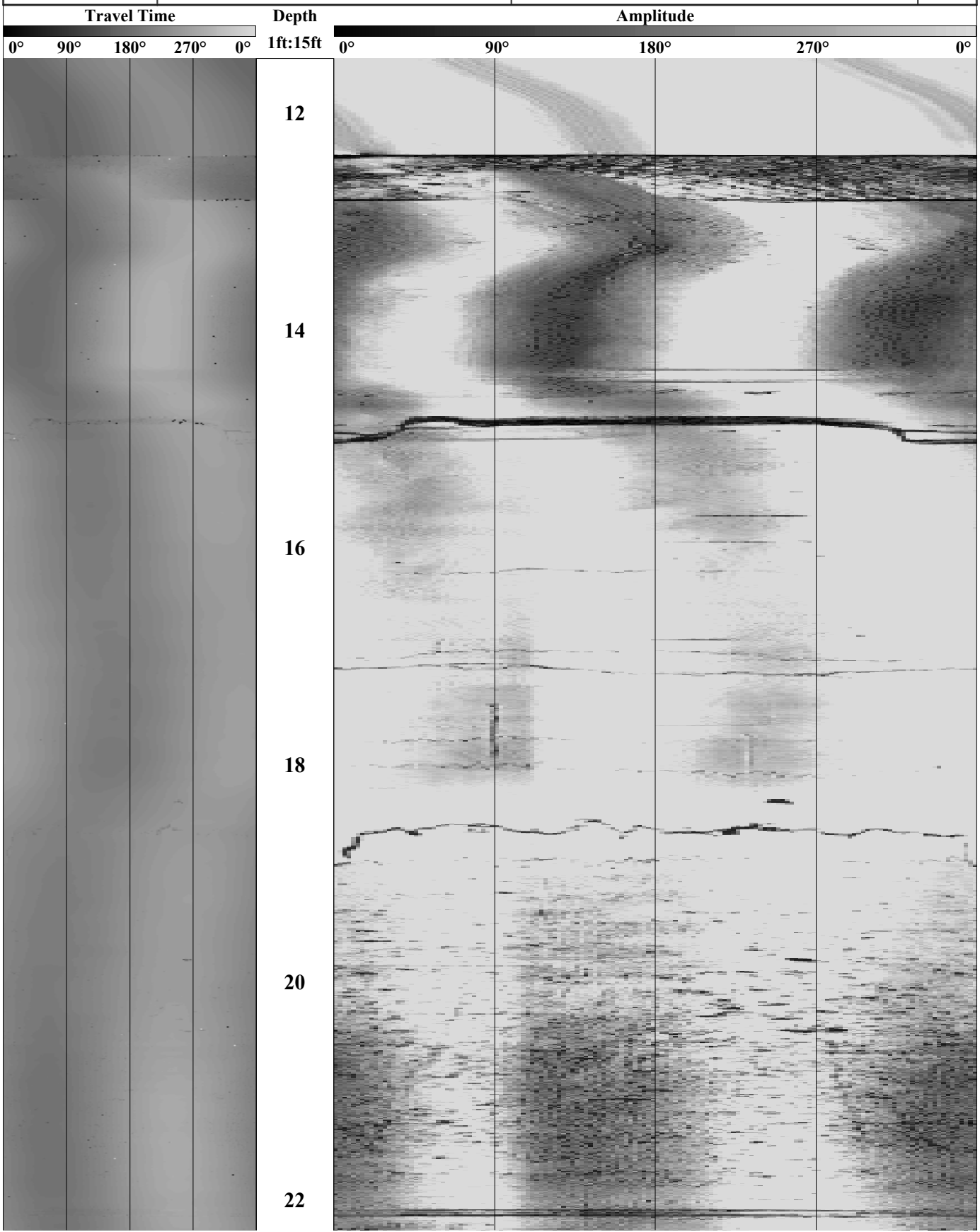
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-25	Depth Driller / Depth Logger	
Date: Aug 9, 05	BH Fluid	Logged by:
File Name		Witness:

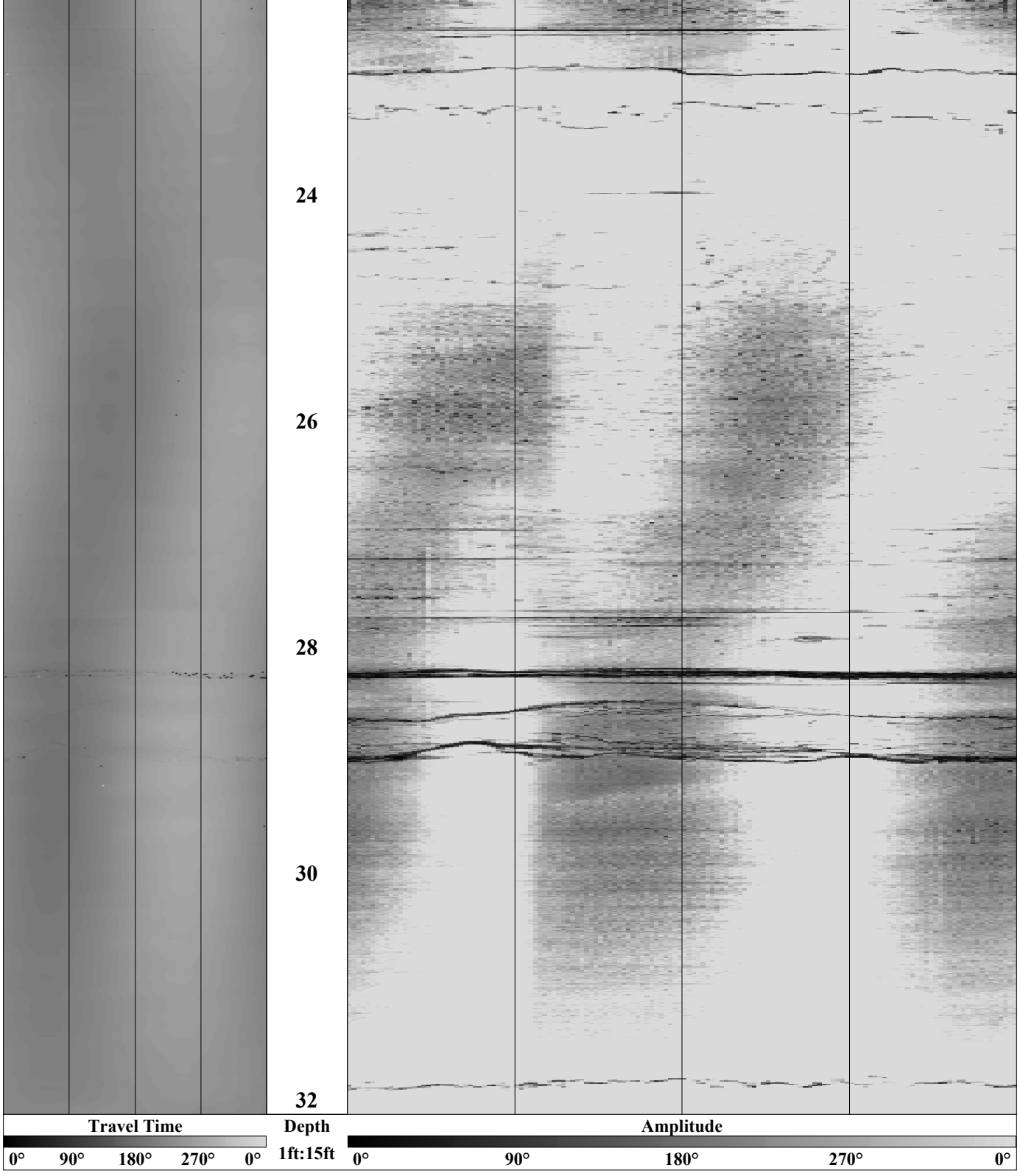



30
32
34
36
38
40
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

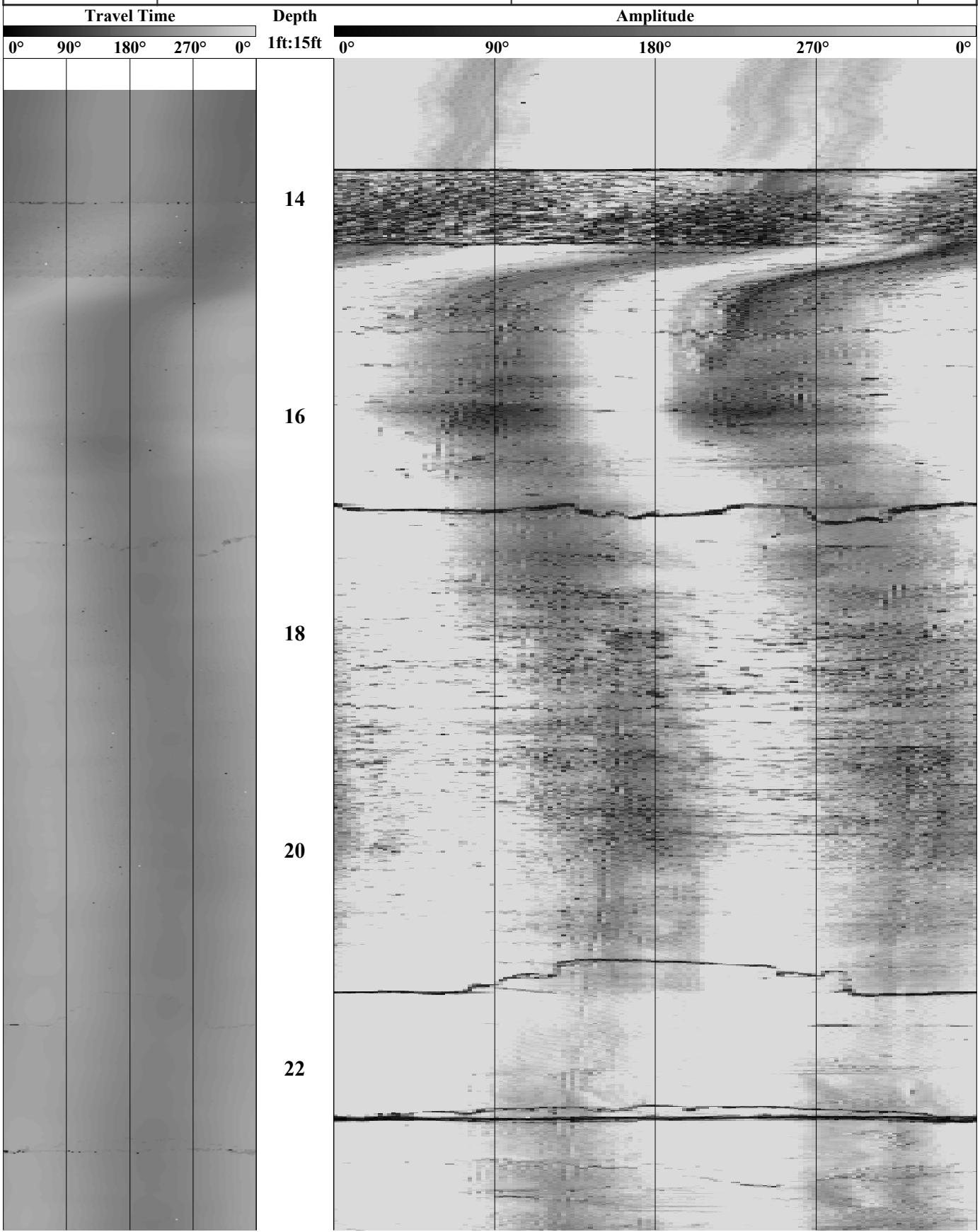
	COMPANY: CRA	Casing
	Location: GM Powertrain	

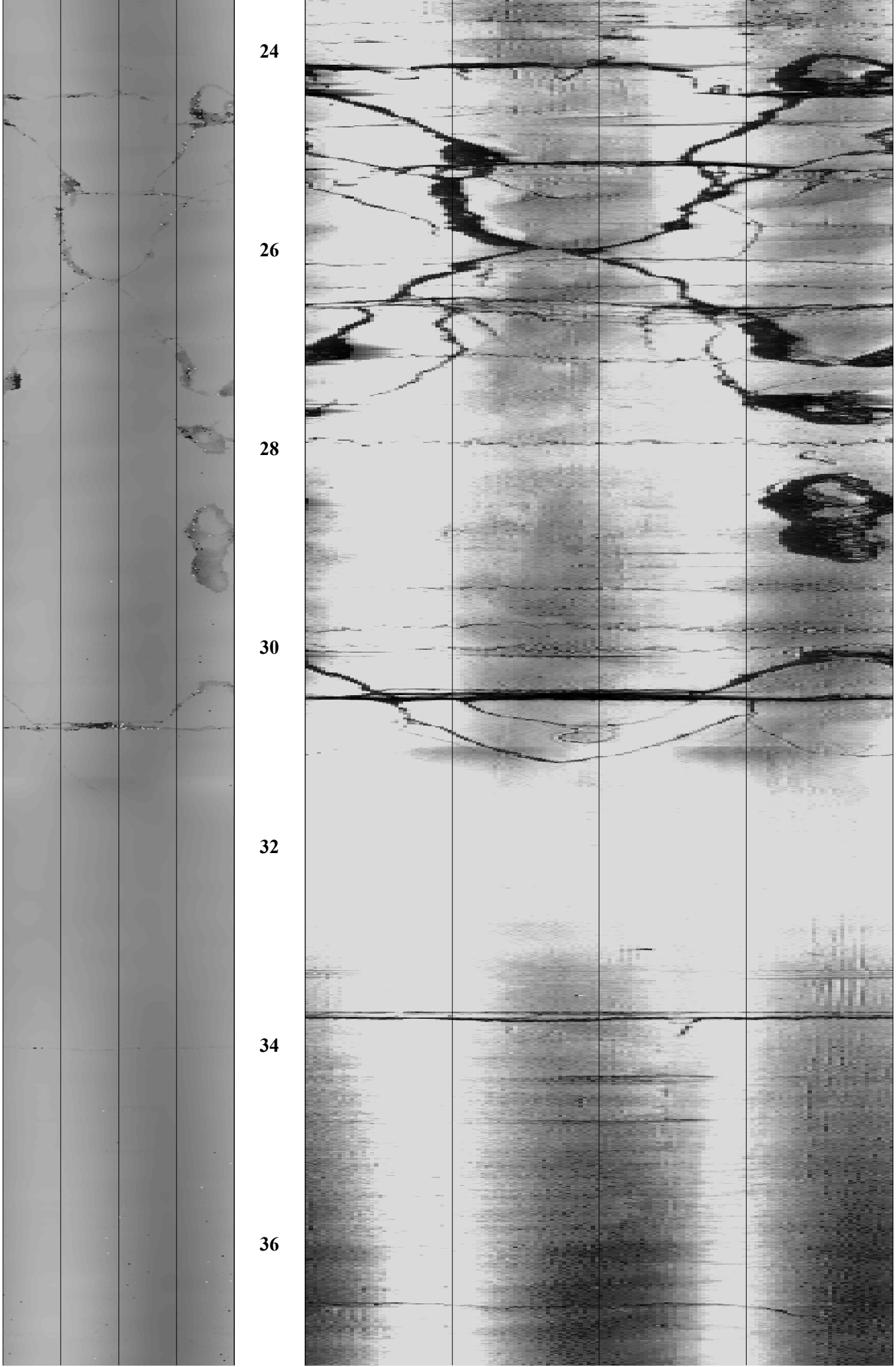
Well	CH-24			Depth Driller Depth Logger	
Date	Aug 8, 05	BH Fluid		Logged by:	
File Name				Witness:	

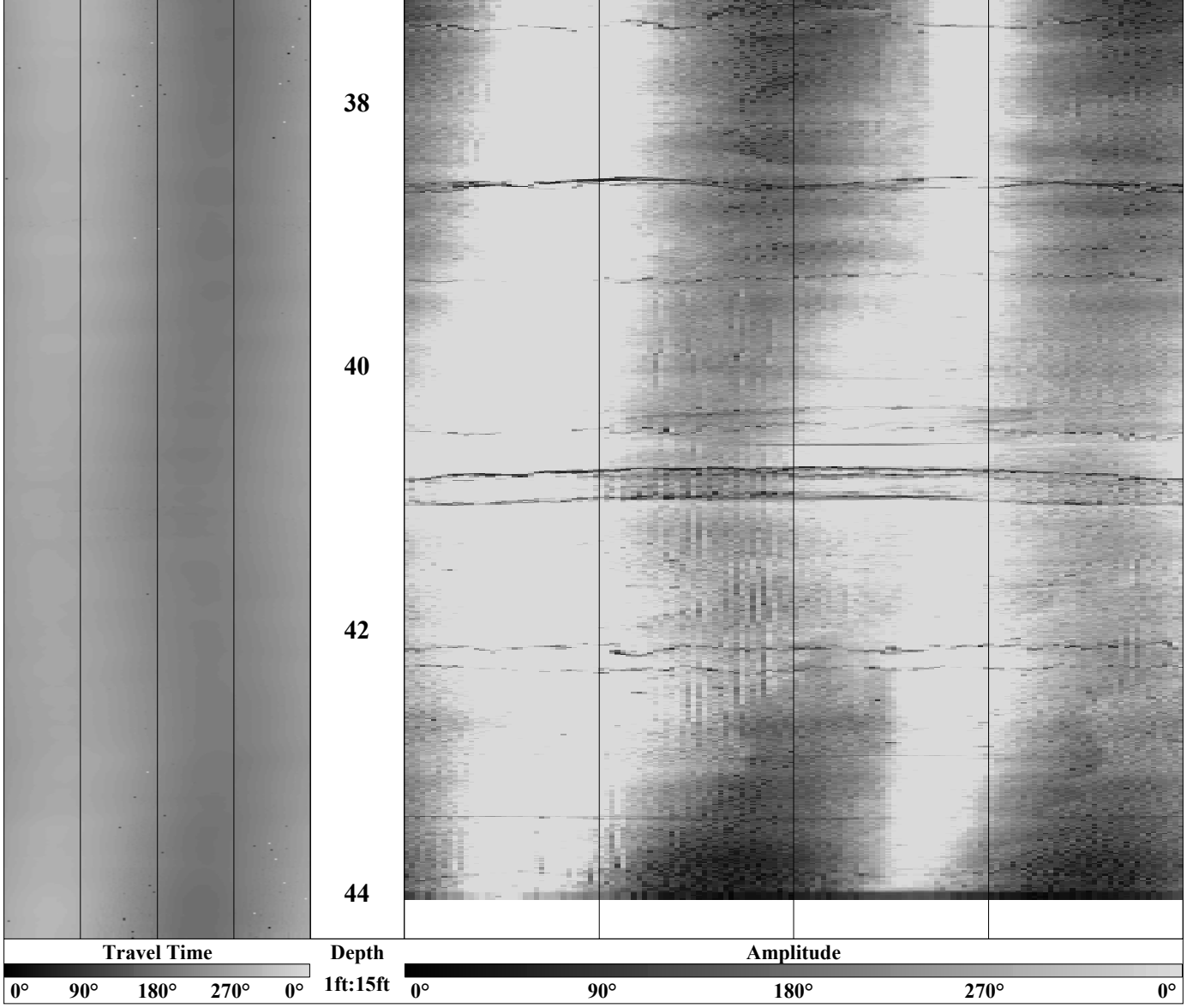



24
26
28
30
32
Travel Time
0°
90°
180°
270°
0°
Depth
1ft:15ft
Amplitude
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-21	Depth Driller / Depth Logger	
Date: Aug 8, 05 — BH Fluid	Logged by:	
File Name	Witness:	




24
26
28
30
32
34
36



Travel Time

0° 90° 180° 270° 0°

Depth

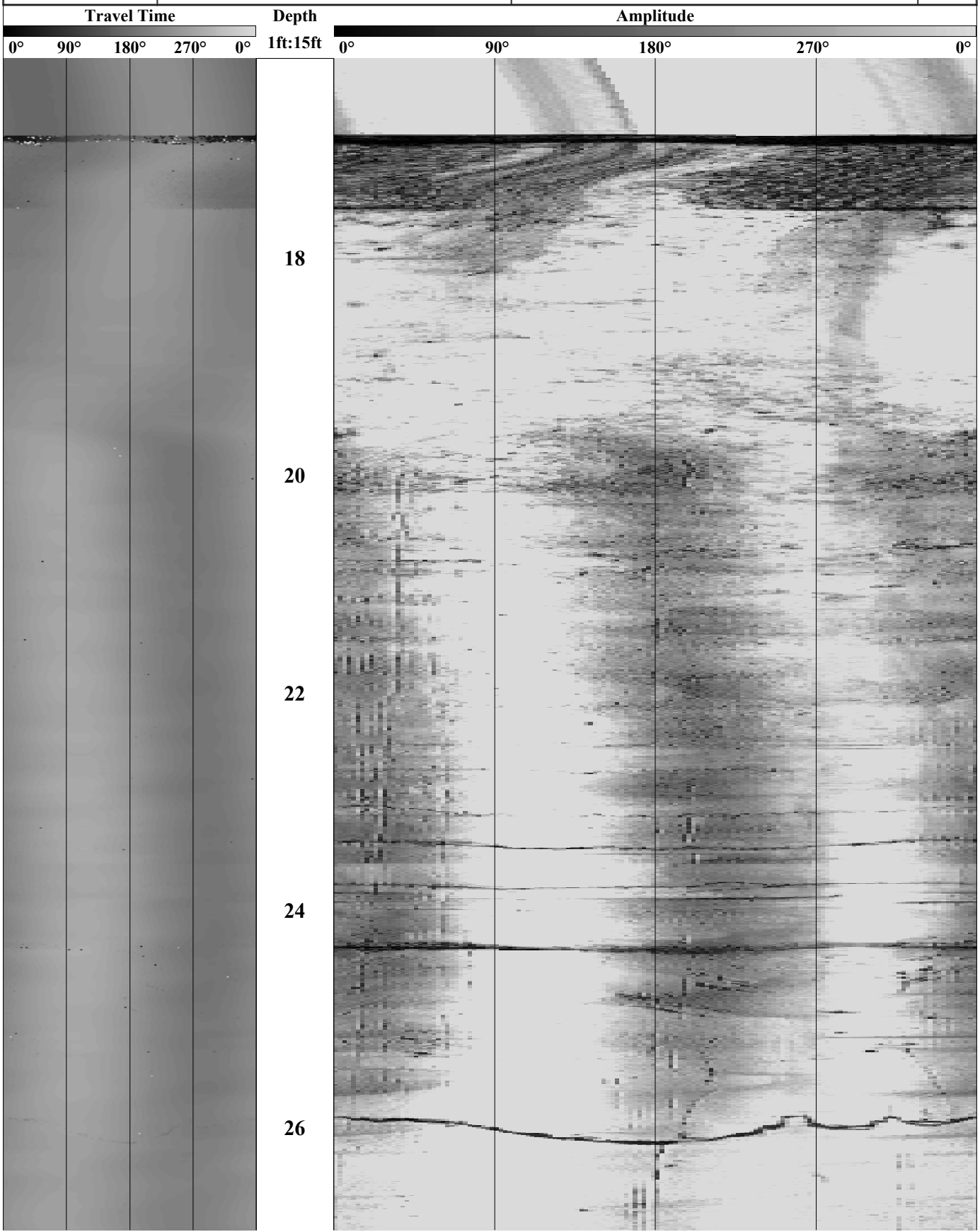
1ft:15ft

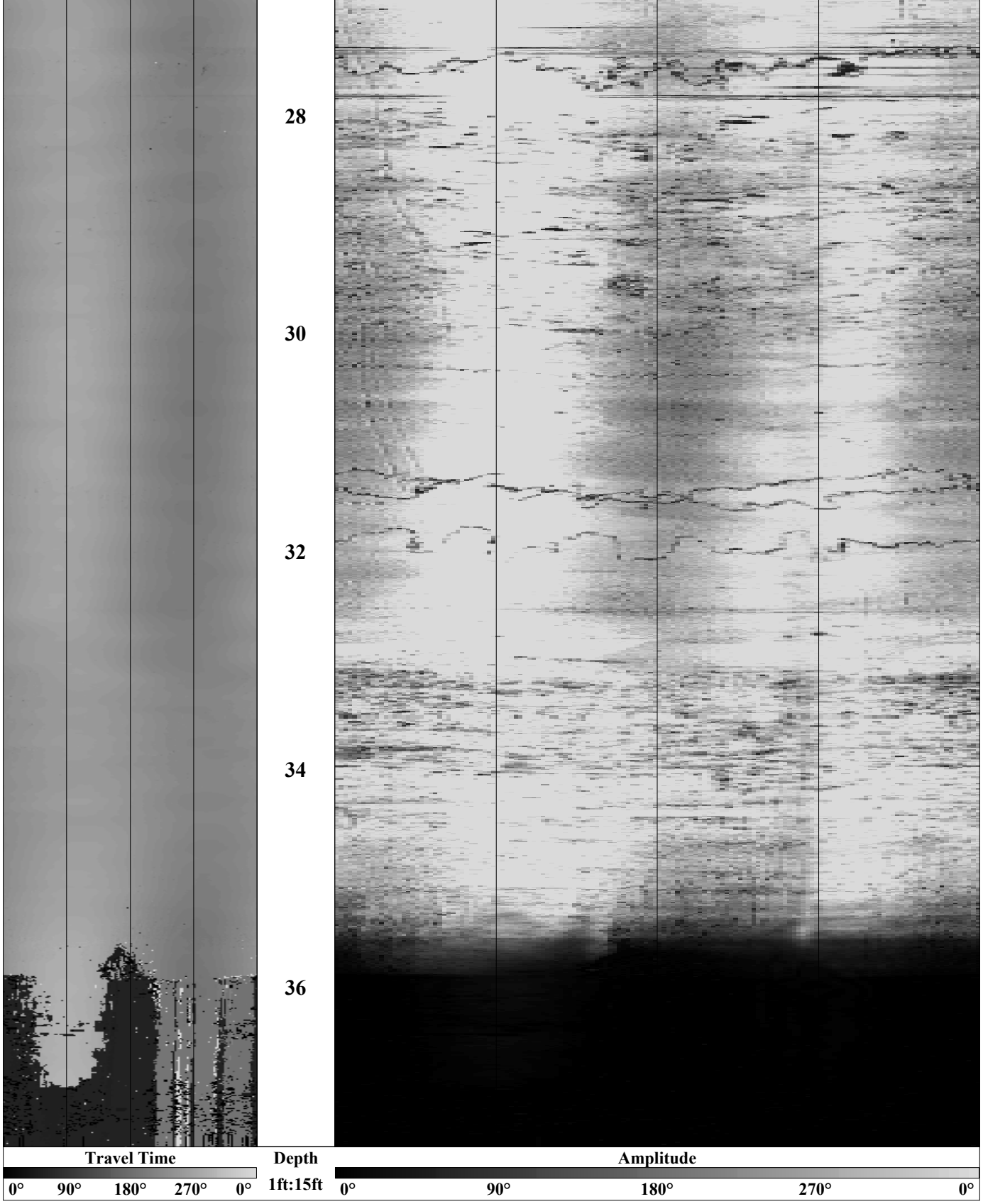
Amplitude

0° 90° 180° 270° 0°

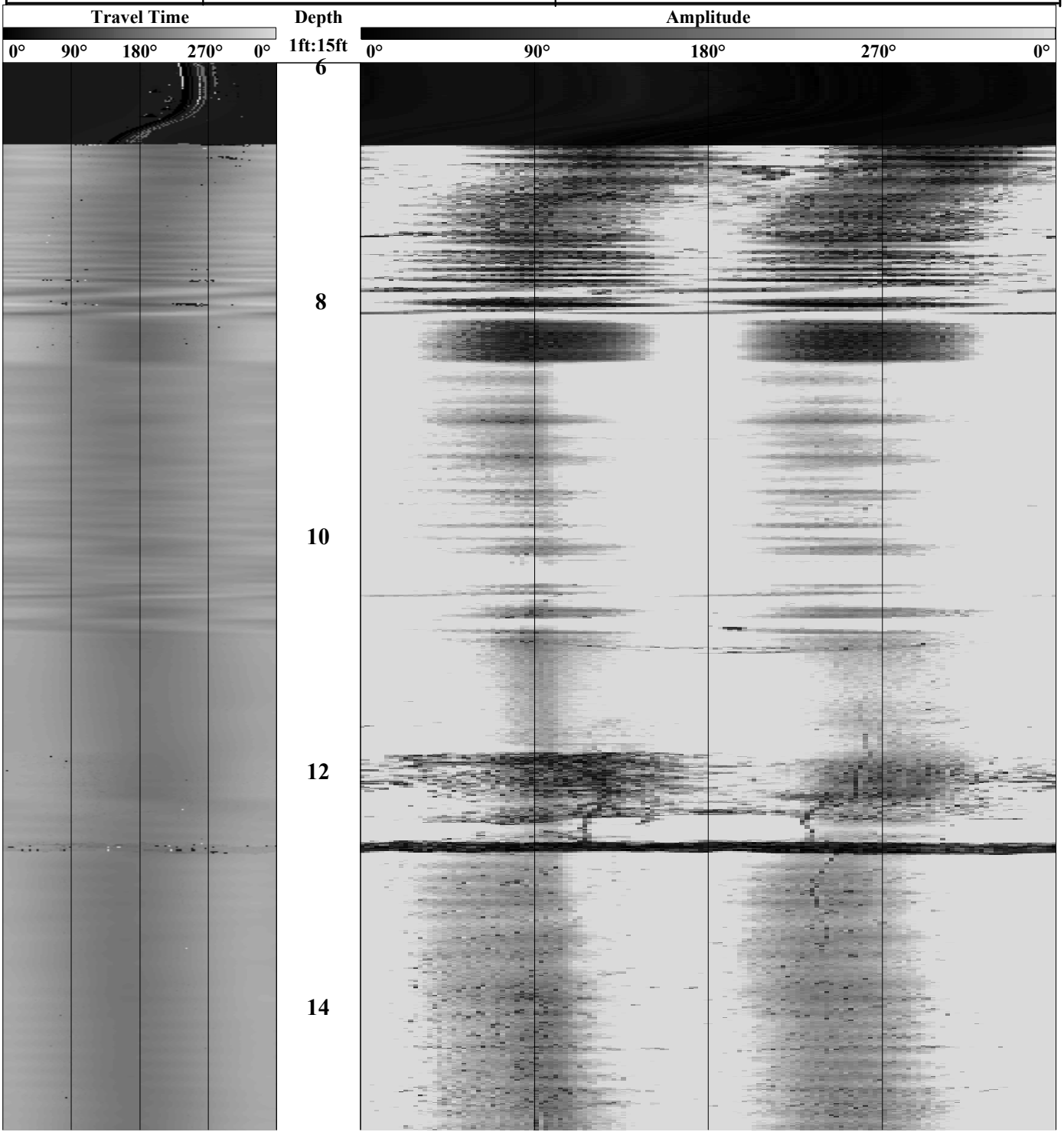
	COMPANY: CRA	Casing
	Location: GM Powertrain	

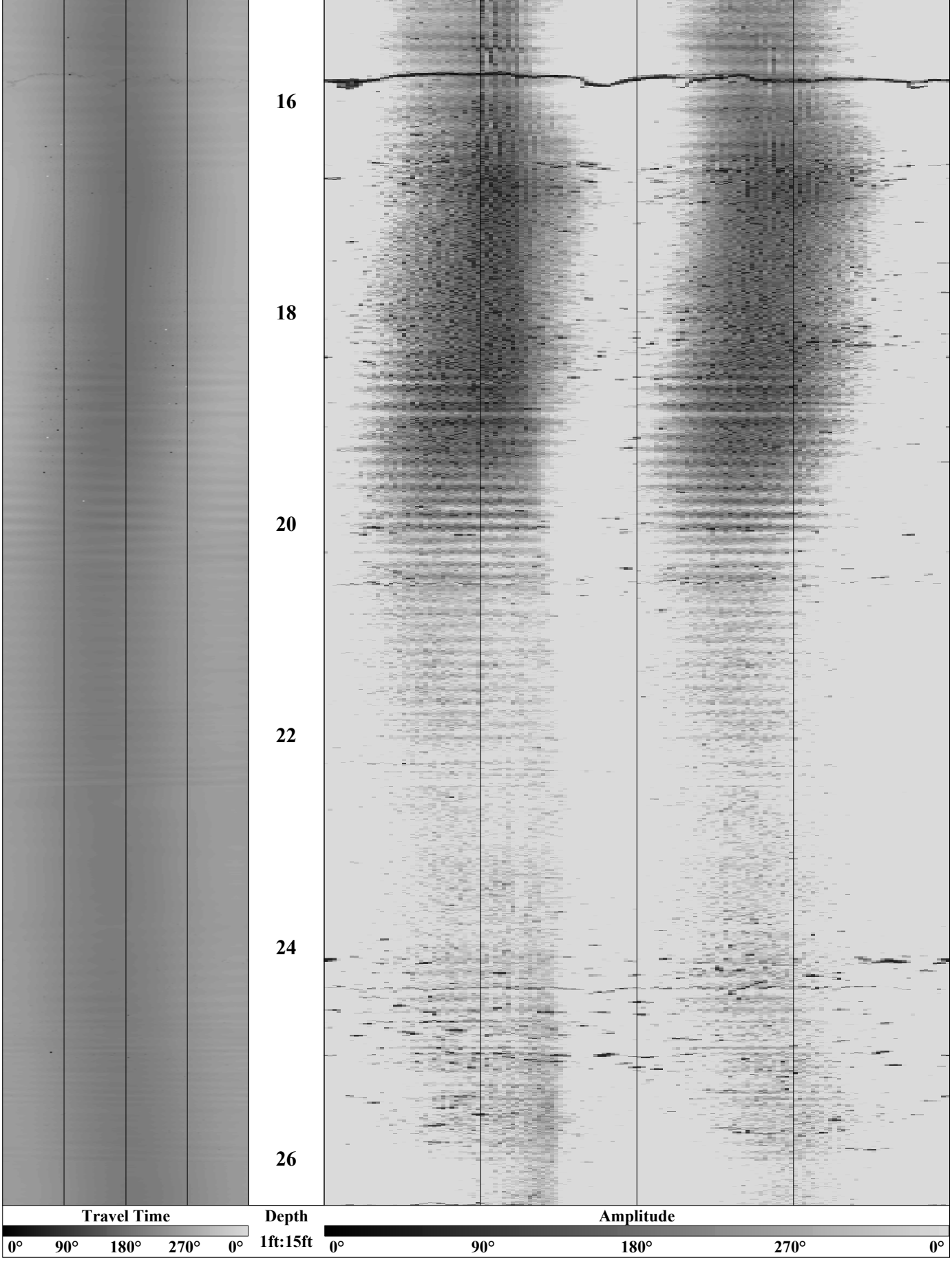
Well	CH-20			Depth Driller Depth Logger	
Date	Aug 5, 05	BH Fluid		Logged by:	
File Name				Witness:	




28
30
32
34
36
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA		
	Location: GM Powertrain		
Well	CH-11		OTHER SERVICES
Date	July 25, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

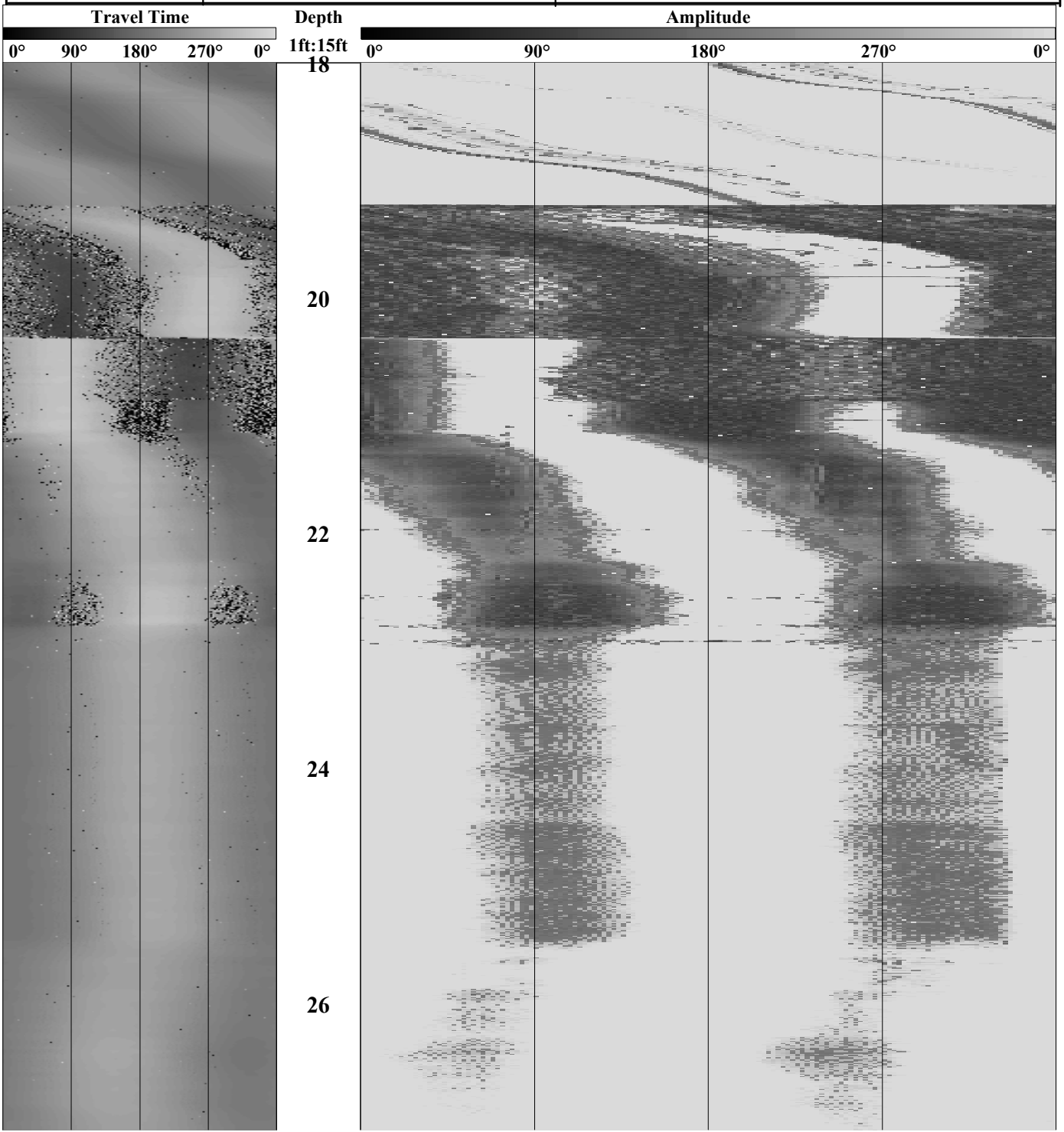


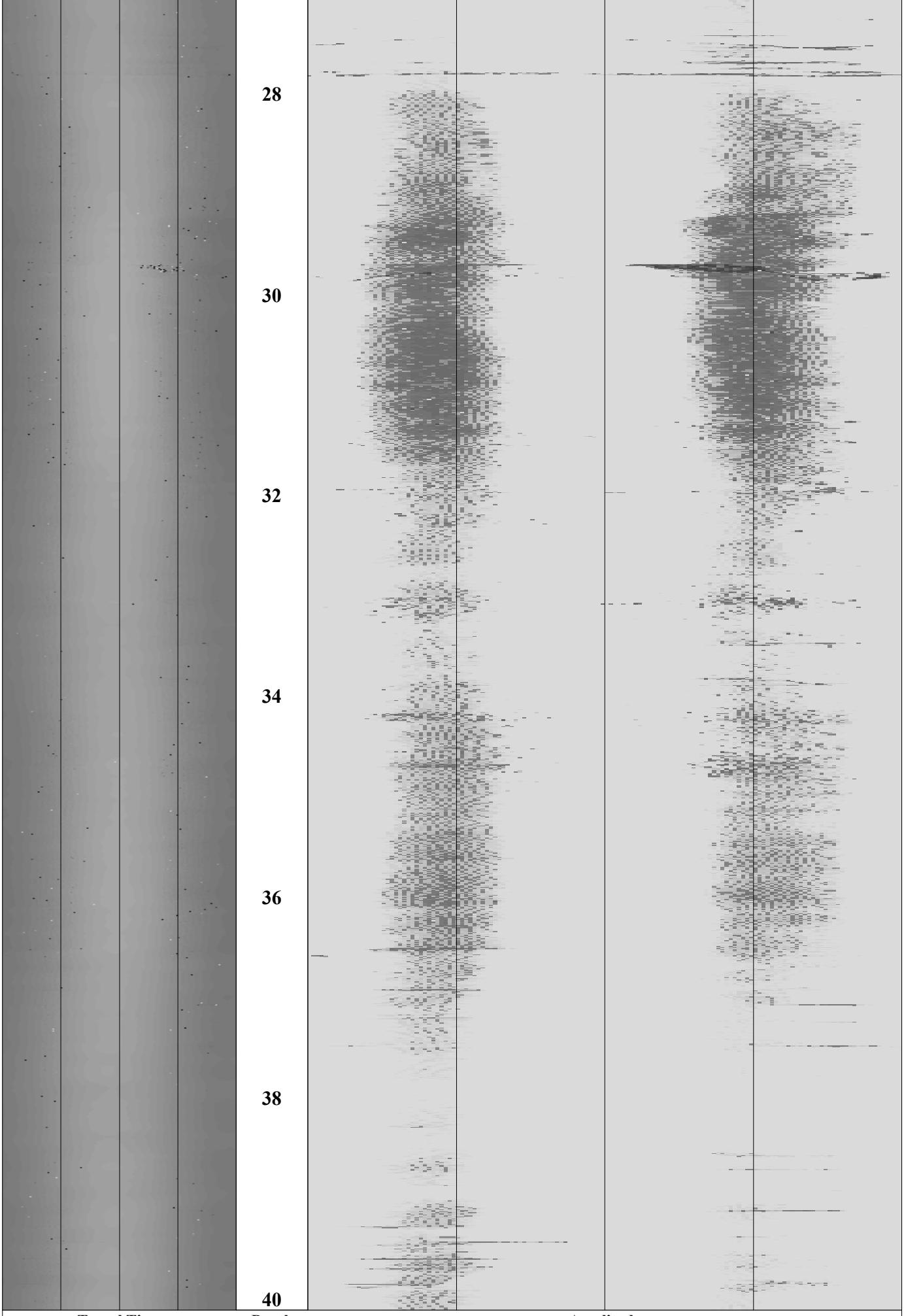

16
18
20
22
24
26
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA
	Location: GM Powertrain

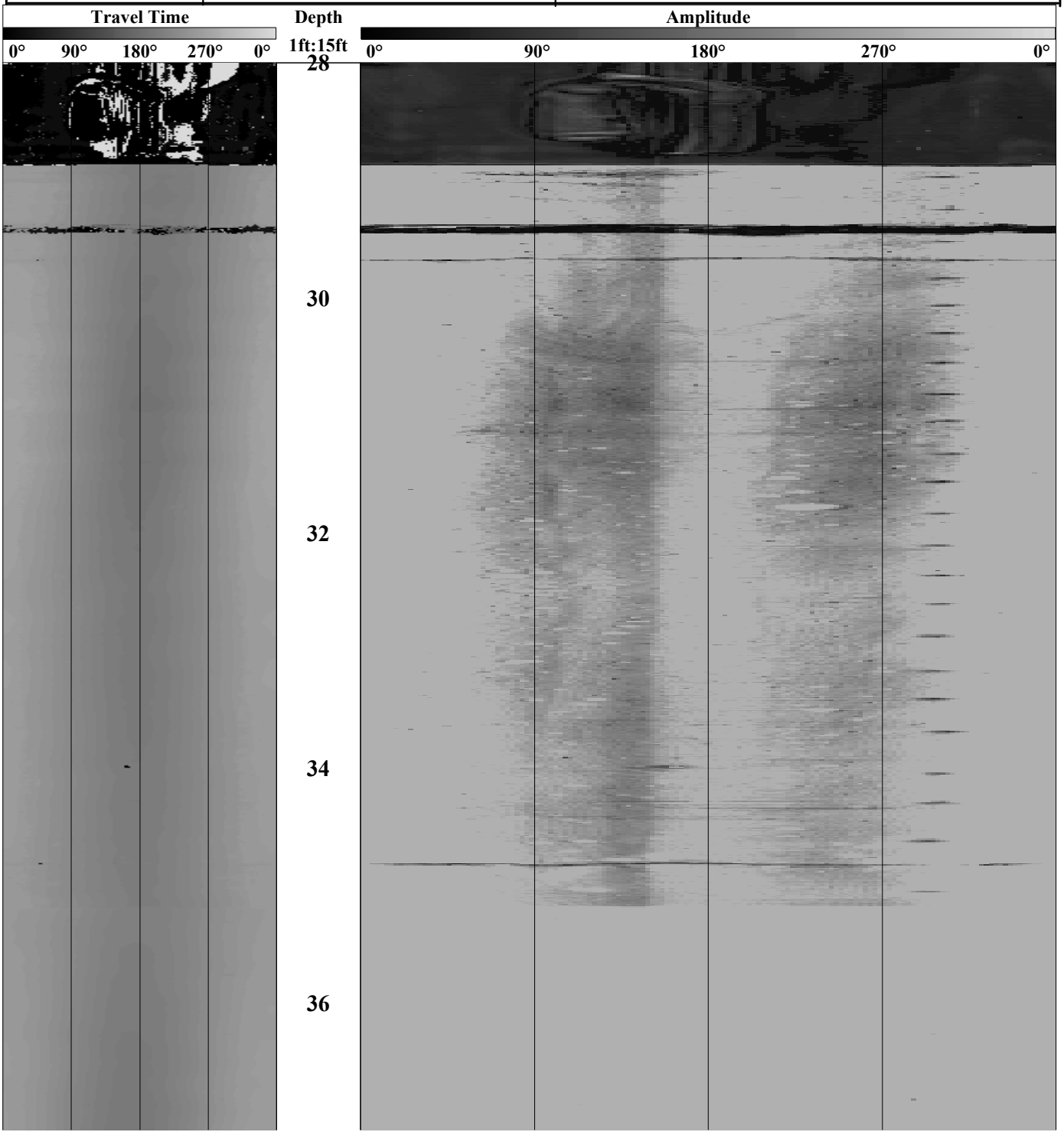
Well	CH-6		
Date	July 22, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

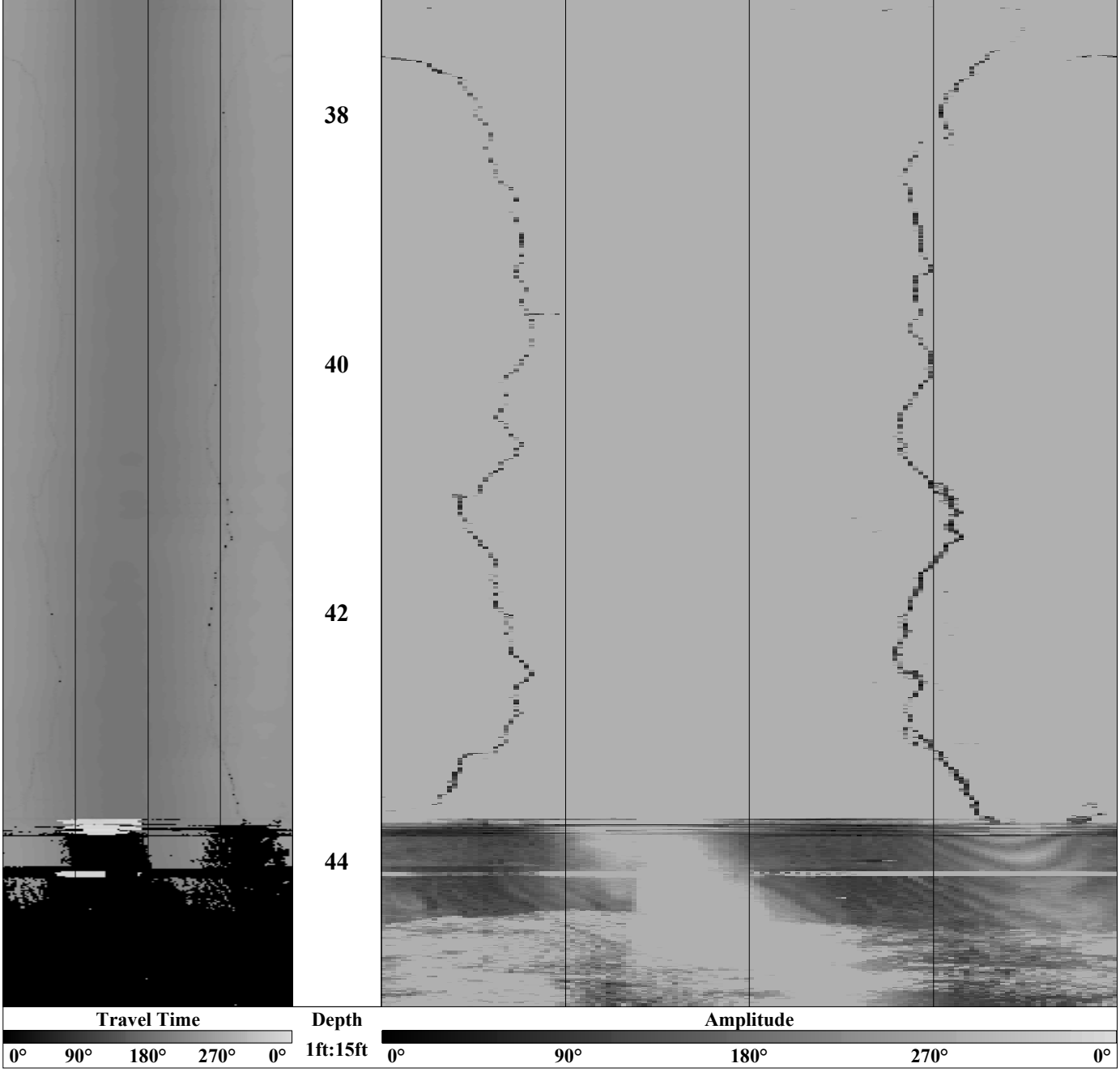
OTHER SERVICES




28
30
32
34
36
38
40
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA		
	Location: GM Powertrain		
Well	CH-5	OTHER SERVICES	
Date	July 21, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

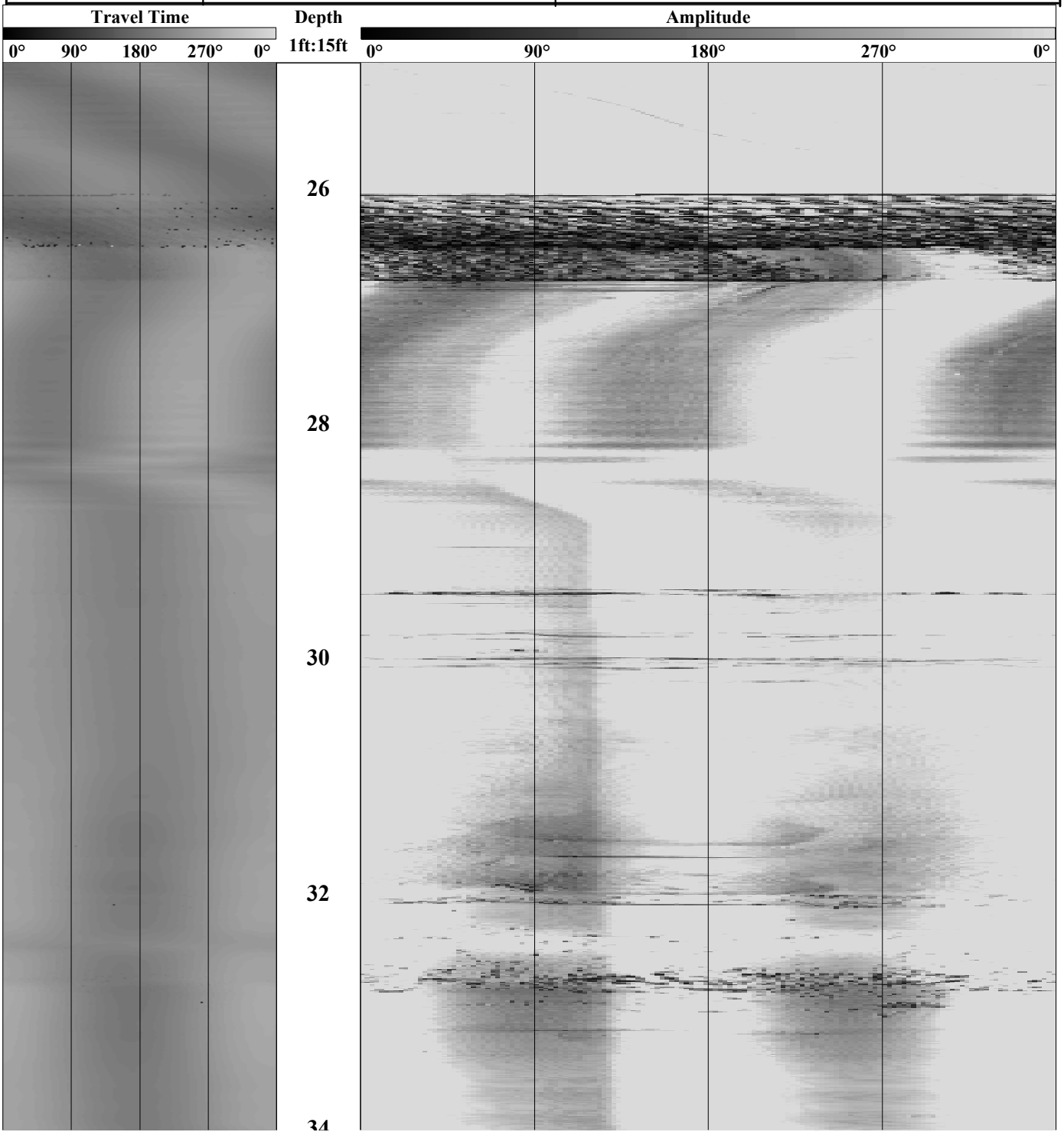


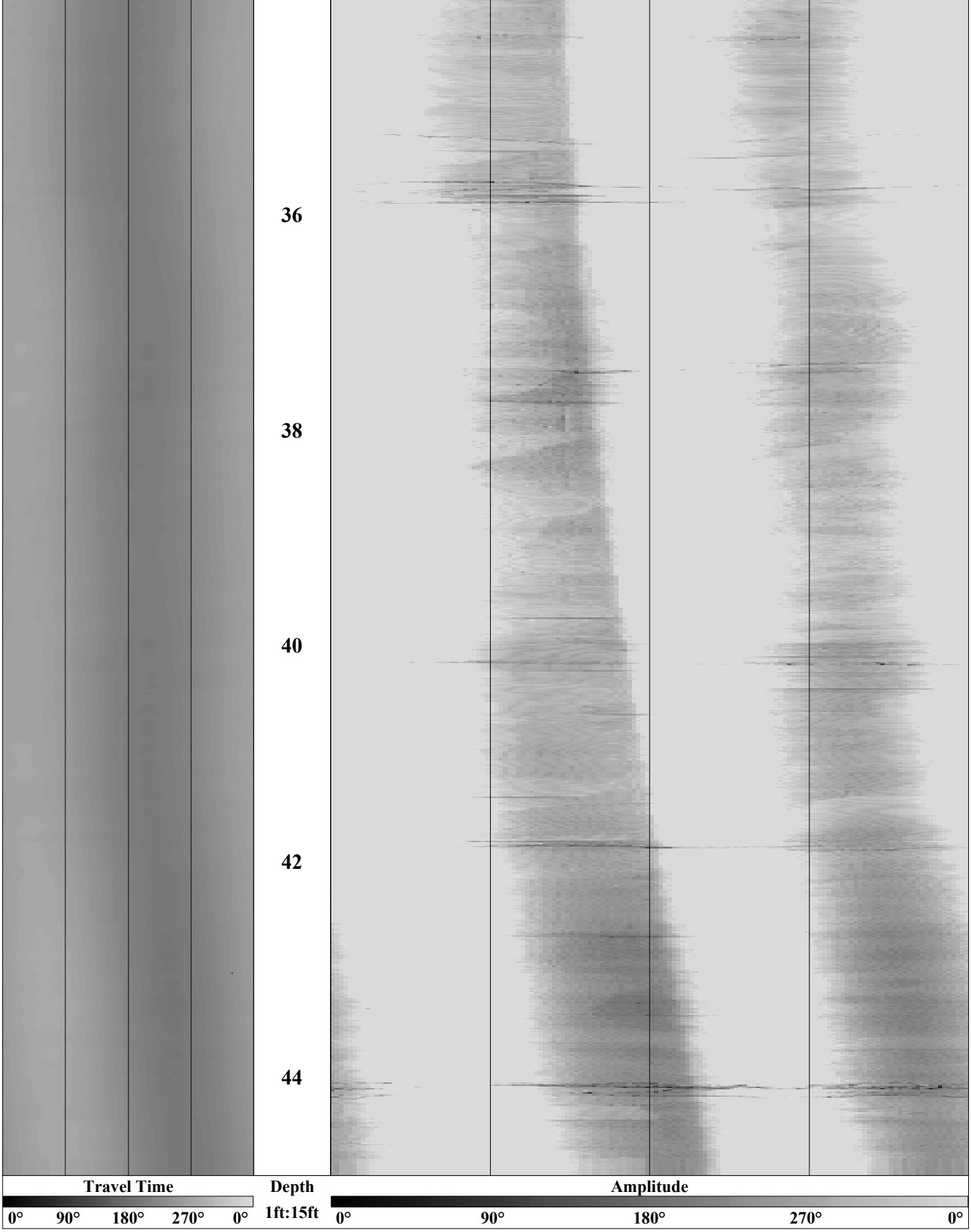

38
40
42
44
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA
	Location: GM Powertrain

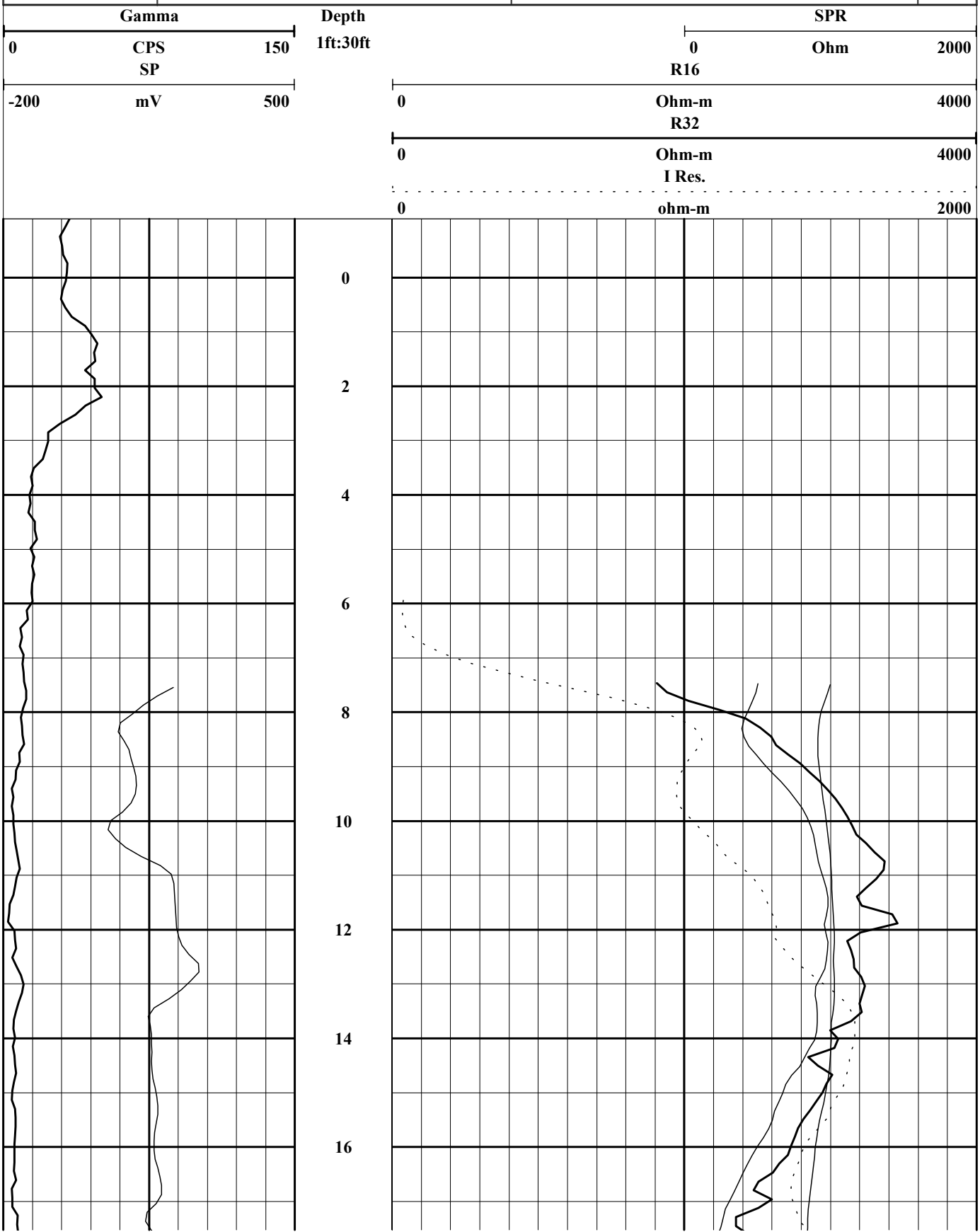
Well	CH-1B		
Date	July 21, 2005	BH Fluid	
Casing			
File Name			
Depth Driller			
Depth Logger			
Logged by:			
Witness:			

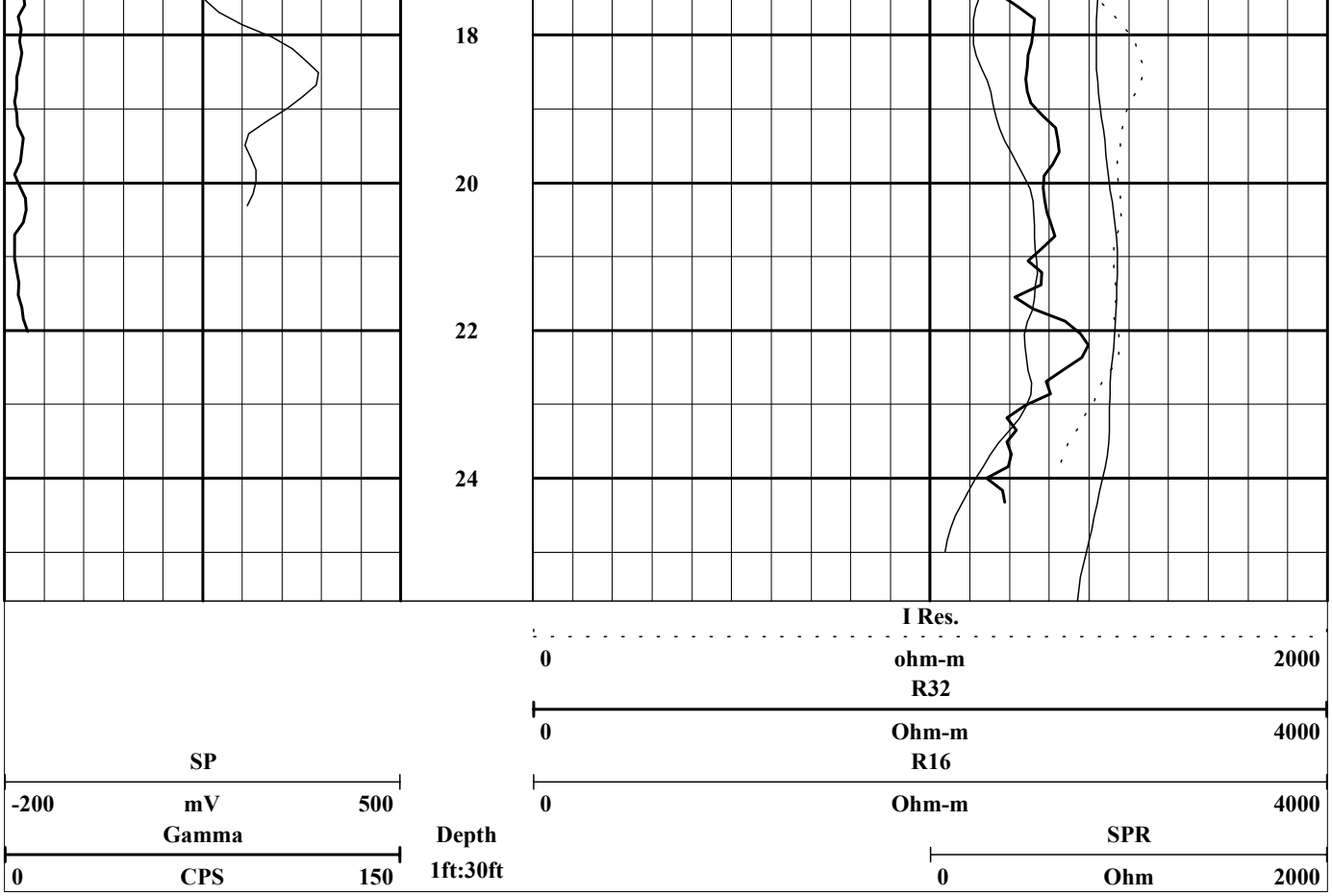
OTHER SERVICES




36
38
40
42
44
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-41	Depth Driller / Depth Logger	
Date: Aug 4, 05 — BH Fluid	Logged by:	
File Name	Witness:	





I Res.

0 ohm-m 2000

R32

0 Ohm-m 4000

SP

R16

-200 mV 500

0 Ohm-m 4000

Gamma

Depth

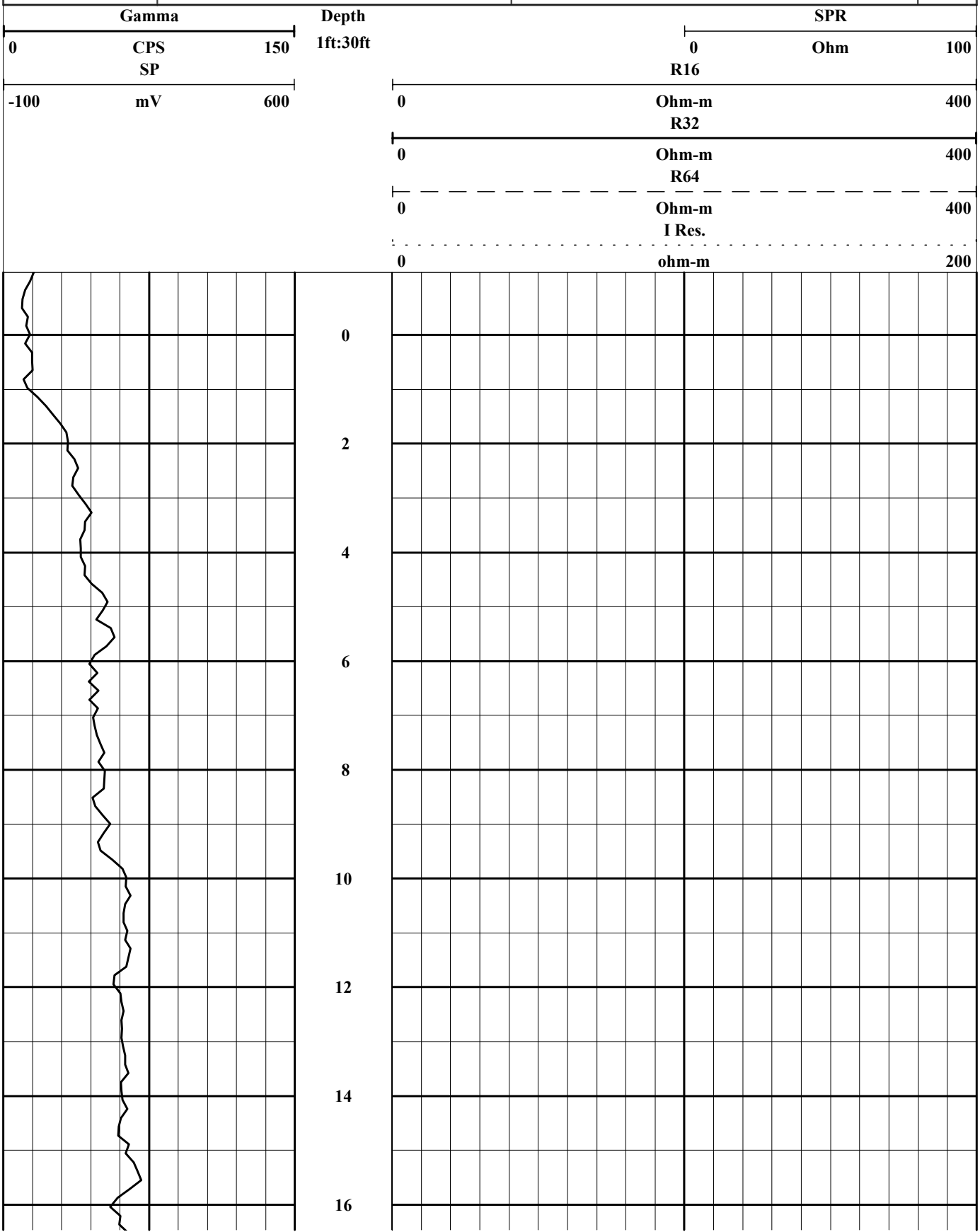
SPR

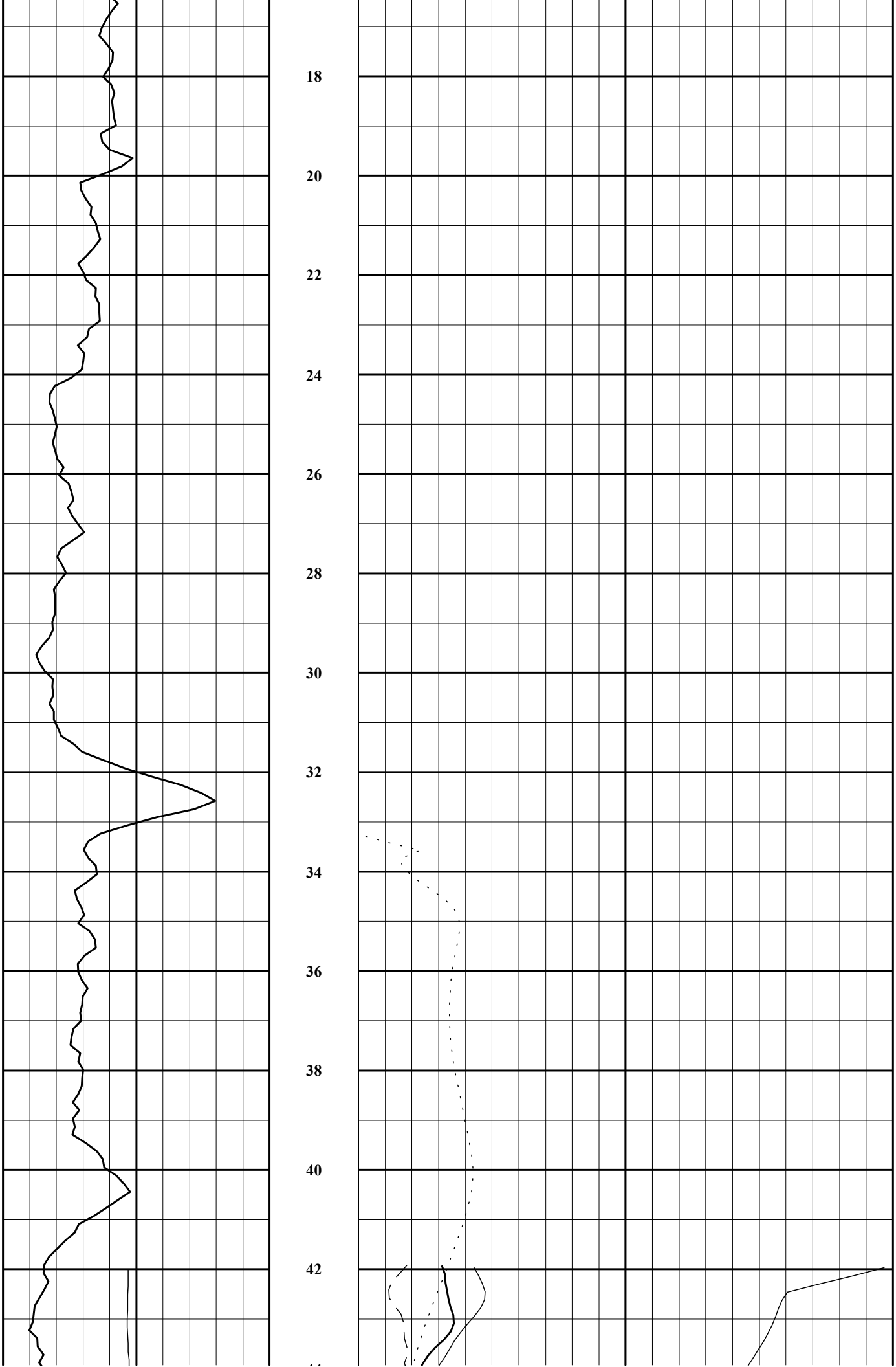
0 CPS 150

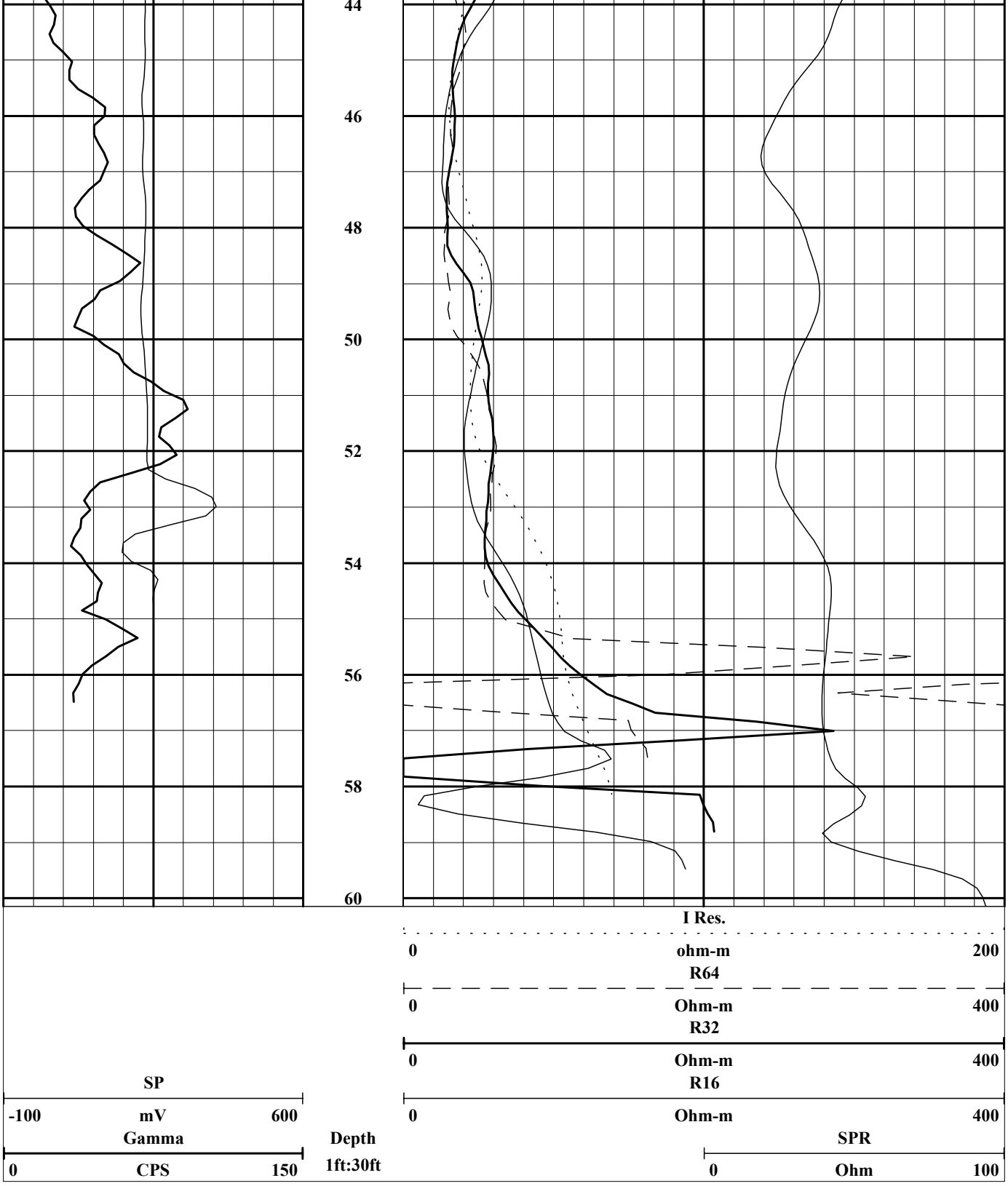
1ft:30ft

0 Ohm 2000

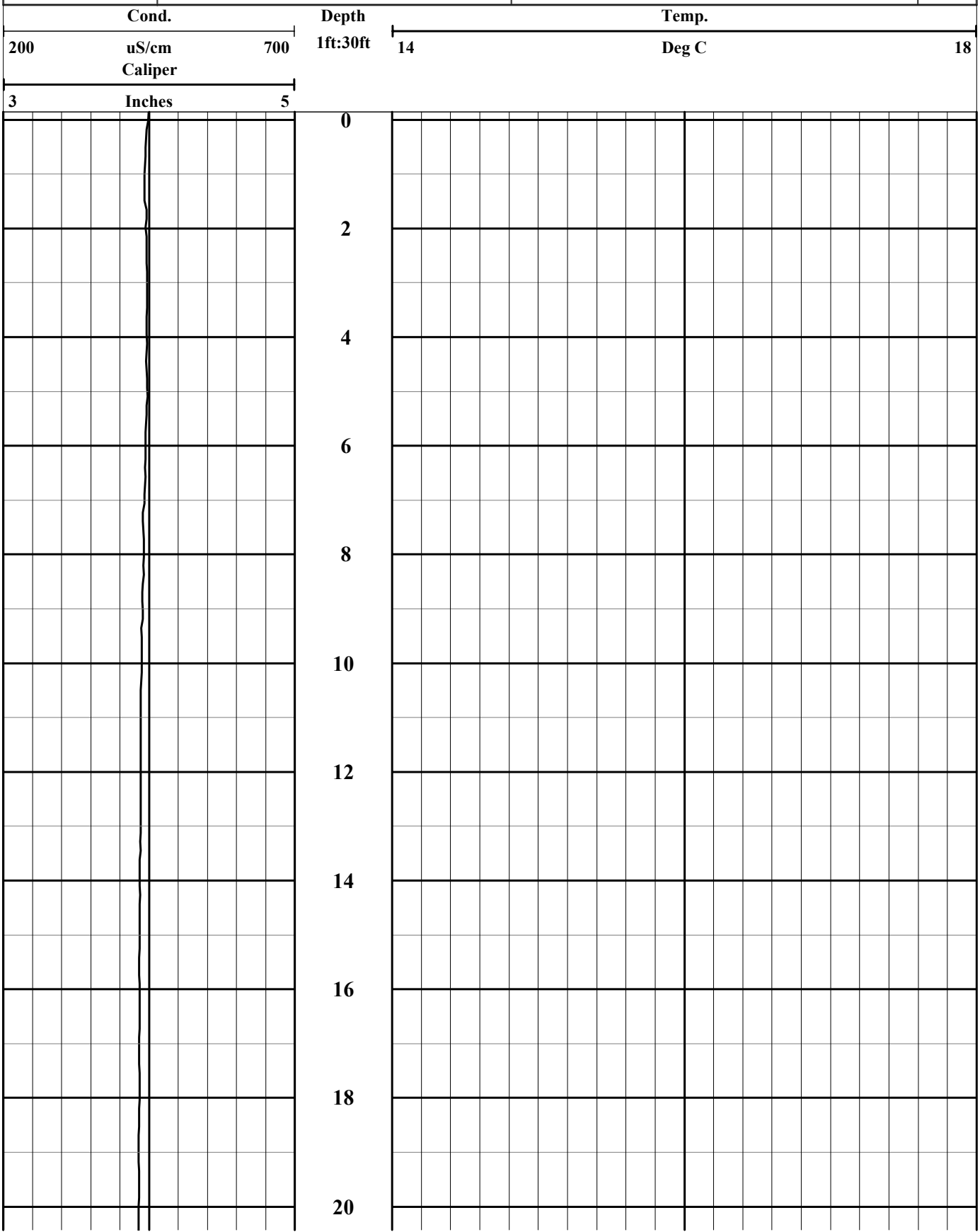
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: MW-X106Y102B	Depth Driller / Depth Logger	
Date: Aug 11, 05 — BH Fluid	Logged by:	
File Name	Witness:	

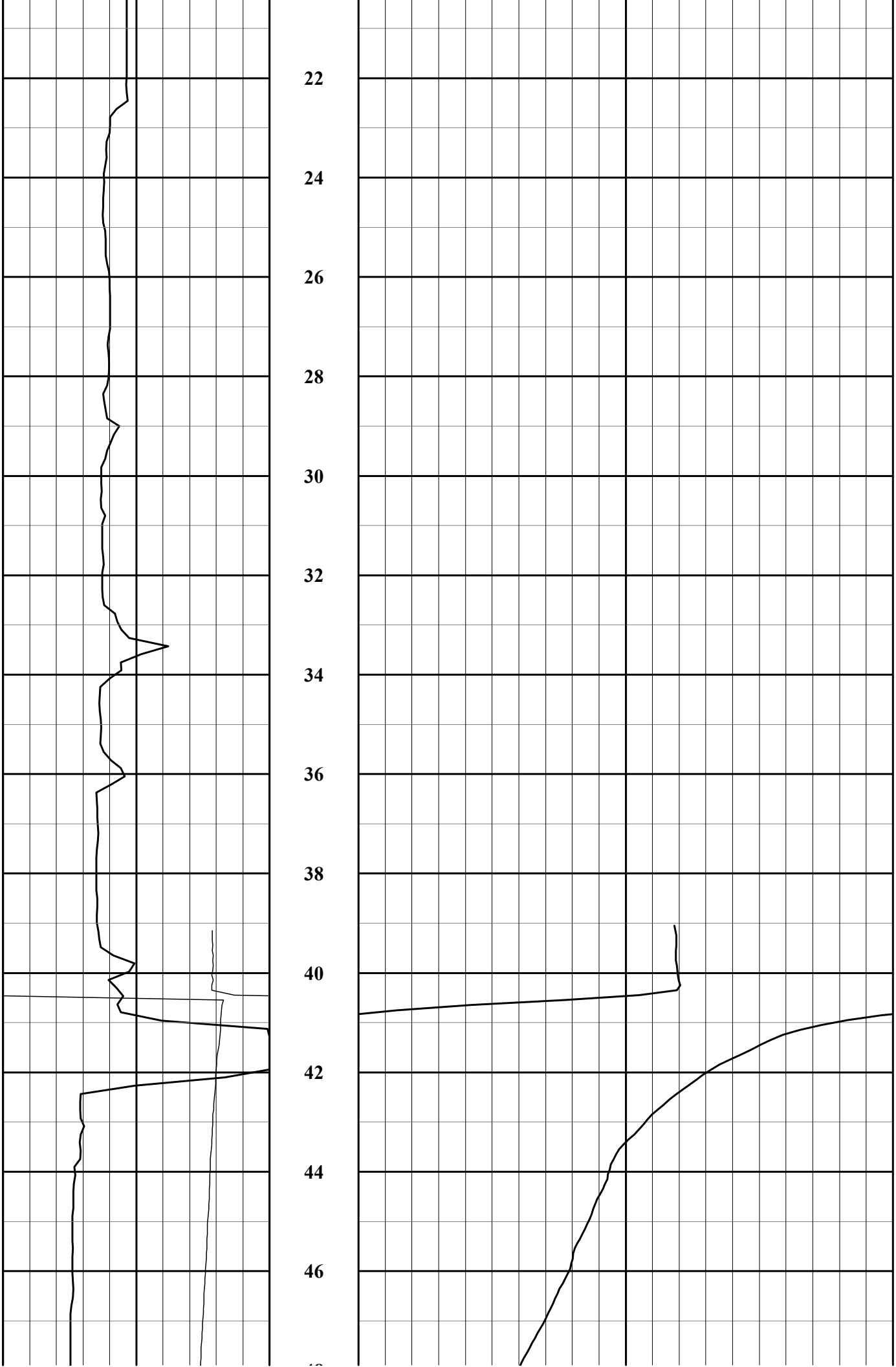


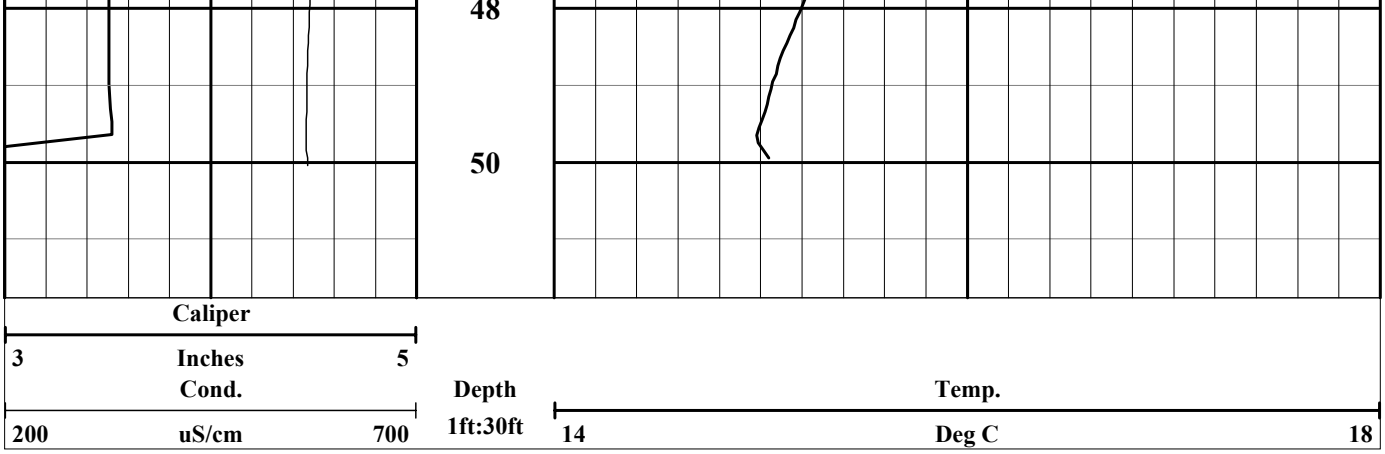

18
20
22
24
26
28
30
32
34
36
38
40
42


44
46
48
50
52
54
56
58
60
I Res.
0
ohm-m
200
R64
0
Ohm-m
400
R32
0
Ohm-m
400
SP
R16
-100
mV
600
0
Ohm-m
400
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
100

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: MW-X211Y131	Depth Driller:	
	Depth Logger:	
Date: Aug 11, 05	BH Fluid:	Logged by:
File Name:		Witness:



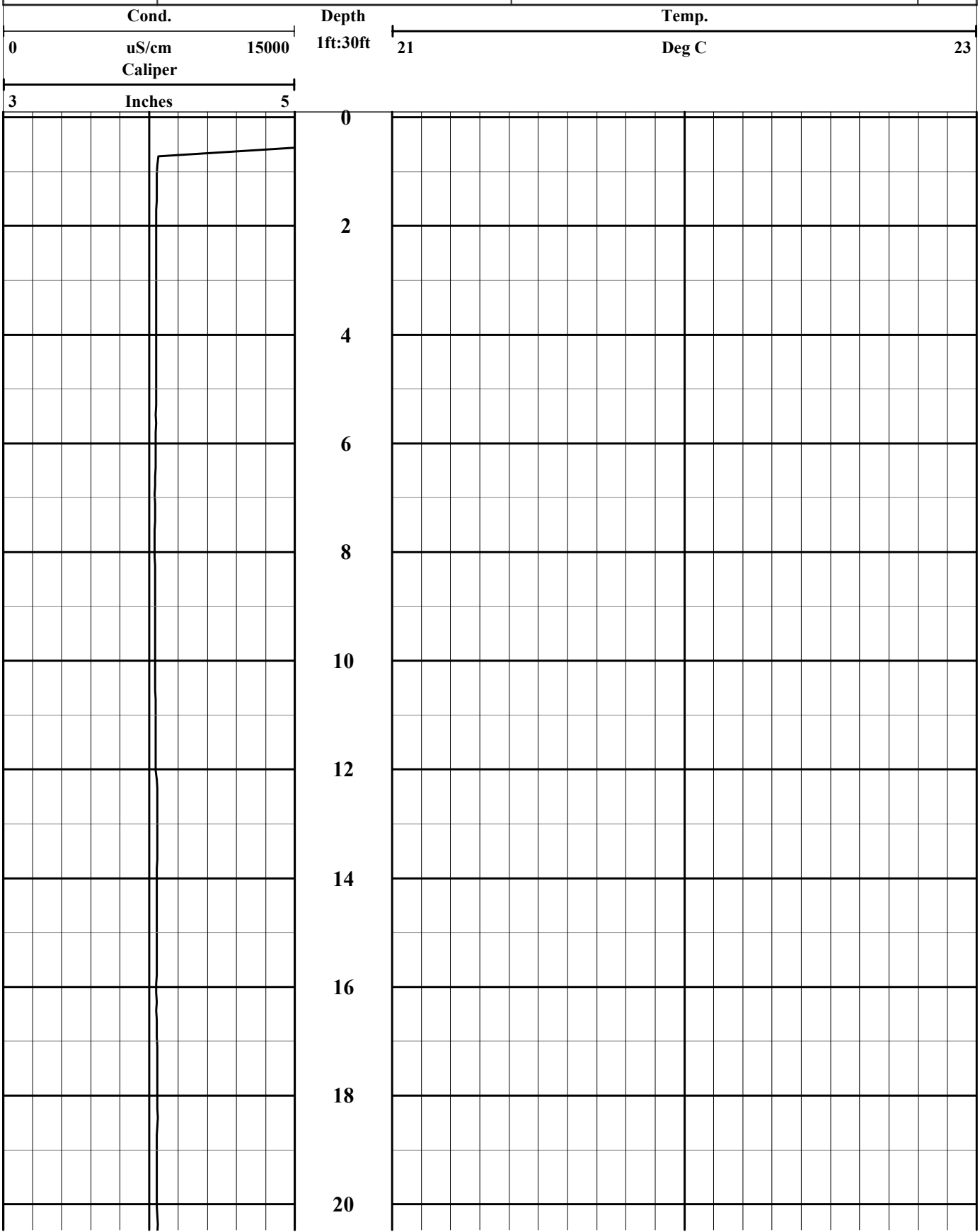

22
24
26
28
30
32
34
36
38
40
42
44
46

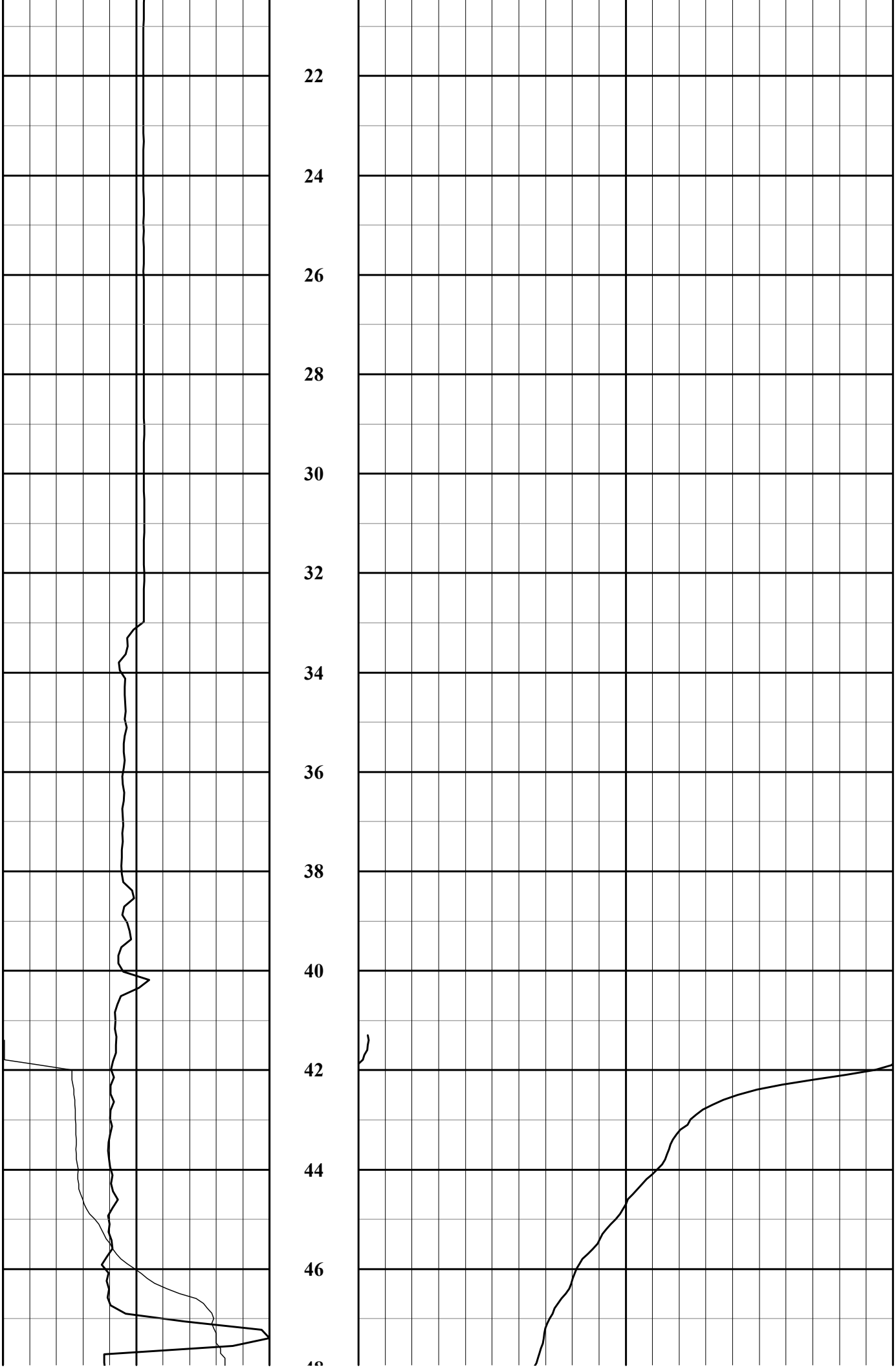


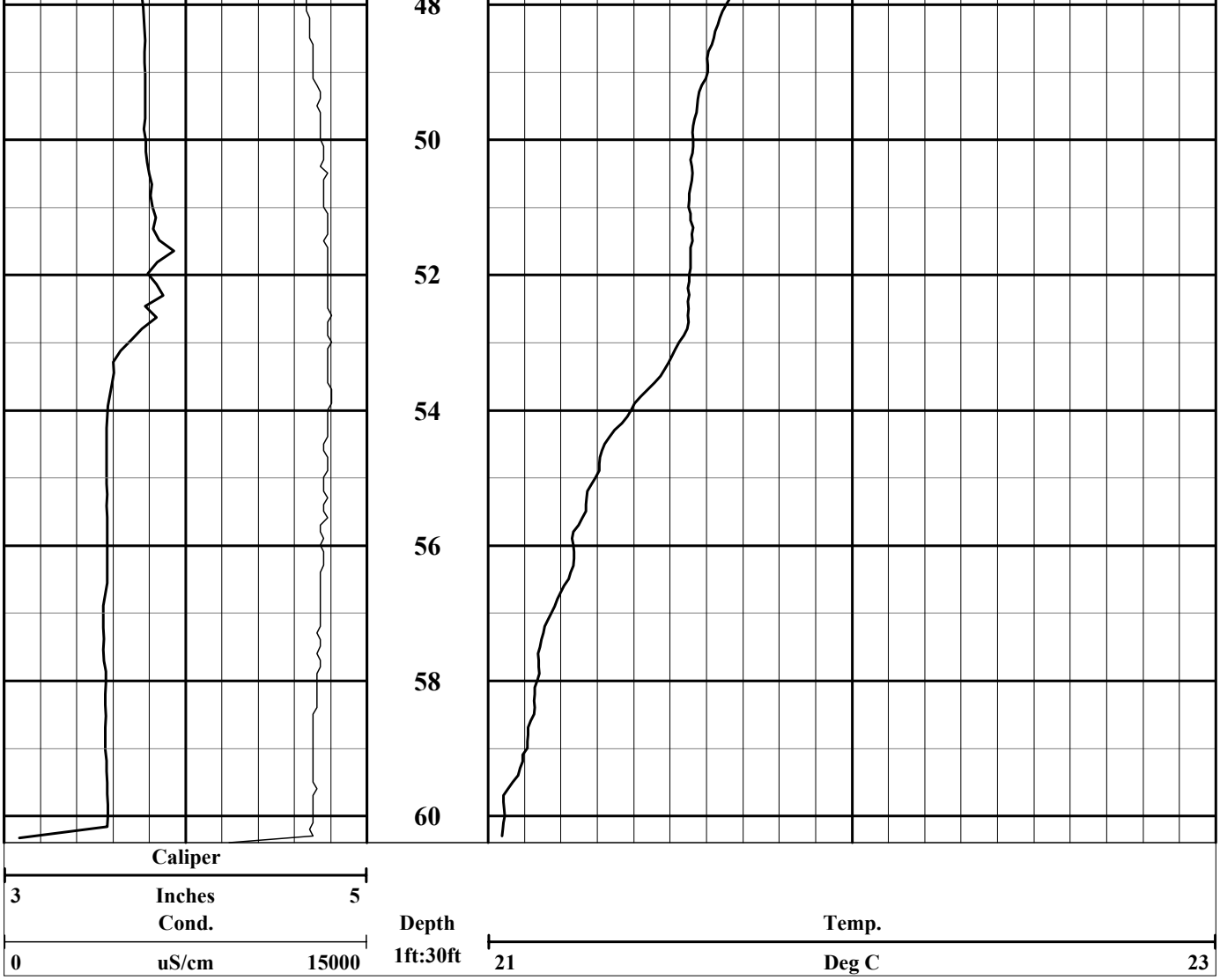
Caliper					
3	Inches	5			
Cond.			Depth	Temp.	
200	uS/cm	700	1ft:30ft	14	Deg C 18

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	MW-X106Y102B			Depth Driller Depth Logger	
Date	Aug 11, 05	BH Fluid		Logged by:	
File Name				Witness:	

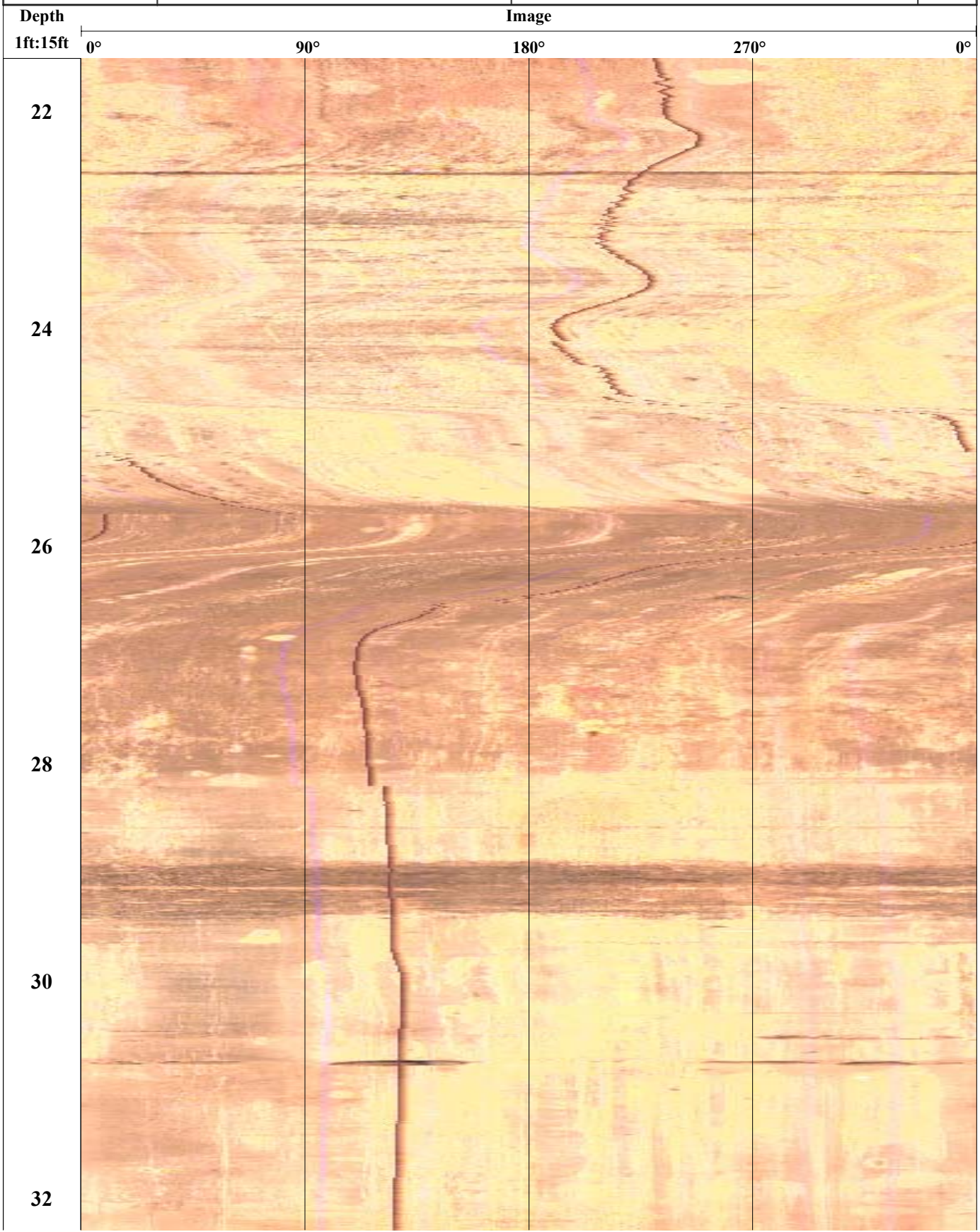


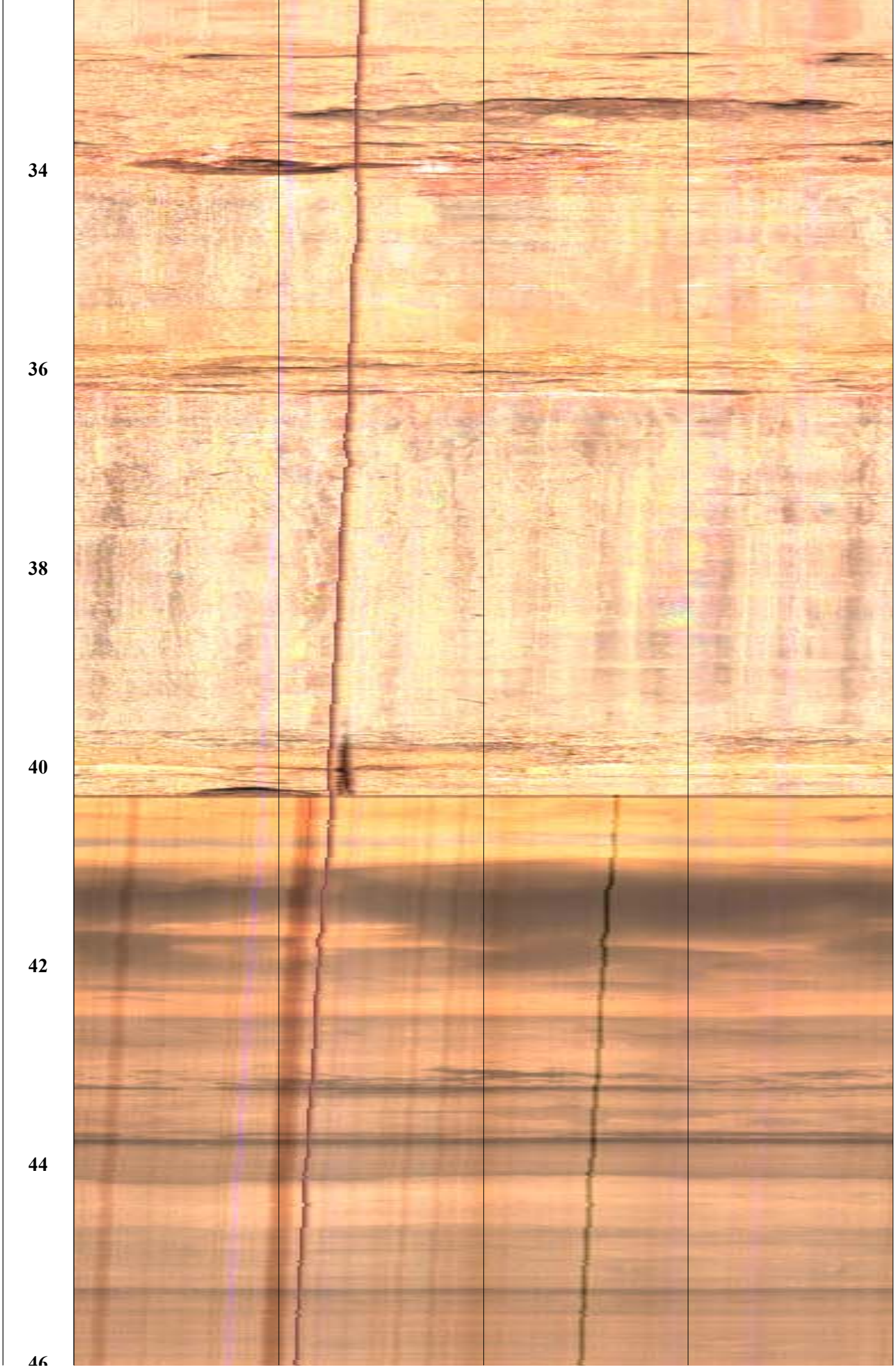

22
24
26
28
30
32
34
36
38
40
42
44
46

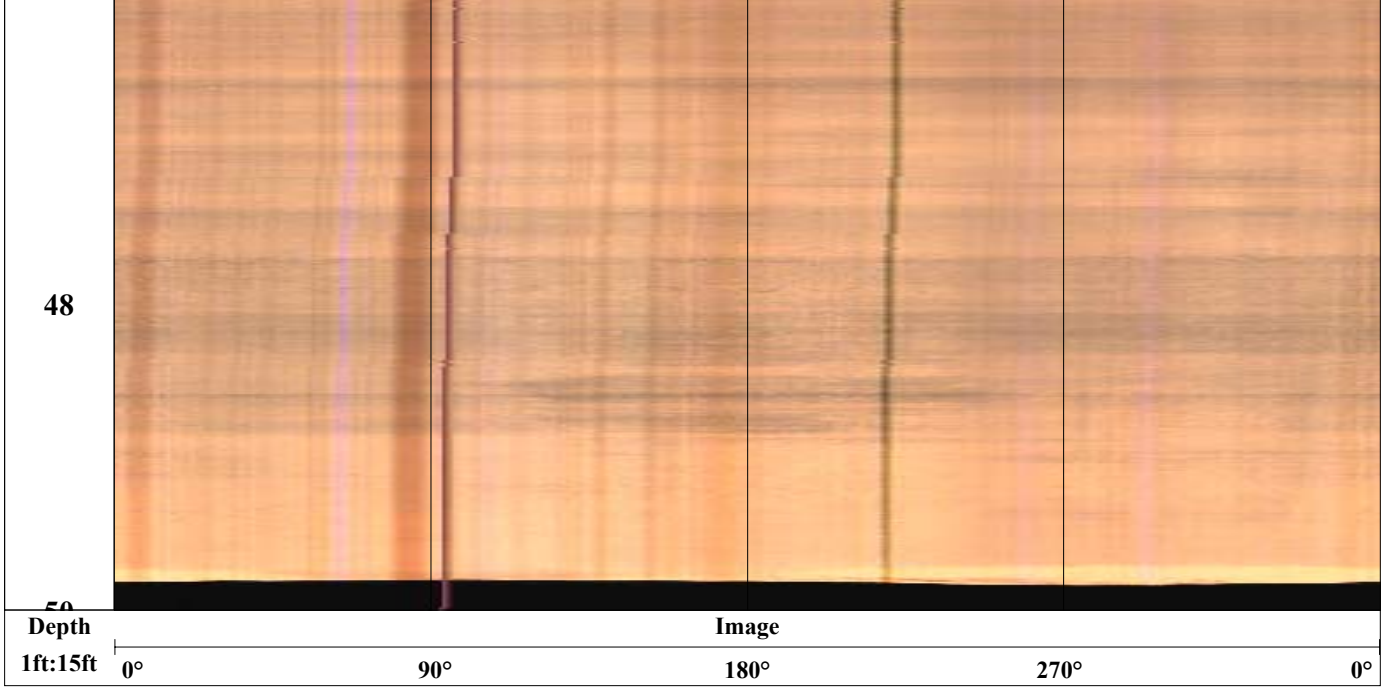

48
50
52
54
56
58
60
Caliper
3
Inches
5
Cond.
0
uS/cm
15000
Depth
1ft:30ft
Temp.
21
Deg C
23

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	MW-X211Y131			Depth Driller Depth Logger	
Date	Aug 11, 05	BH Fluid		Logged by:	
File Name				Witness:	

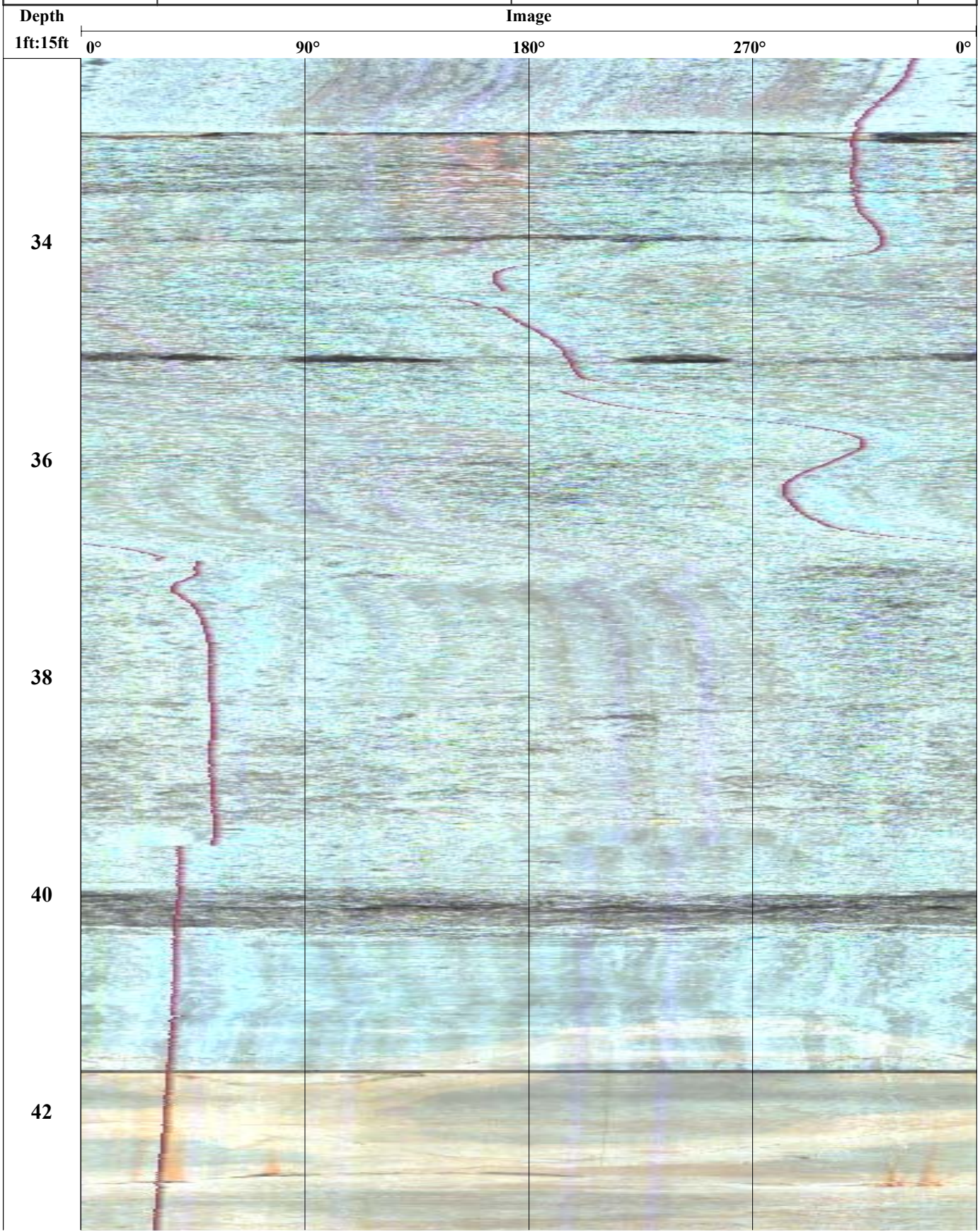


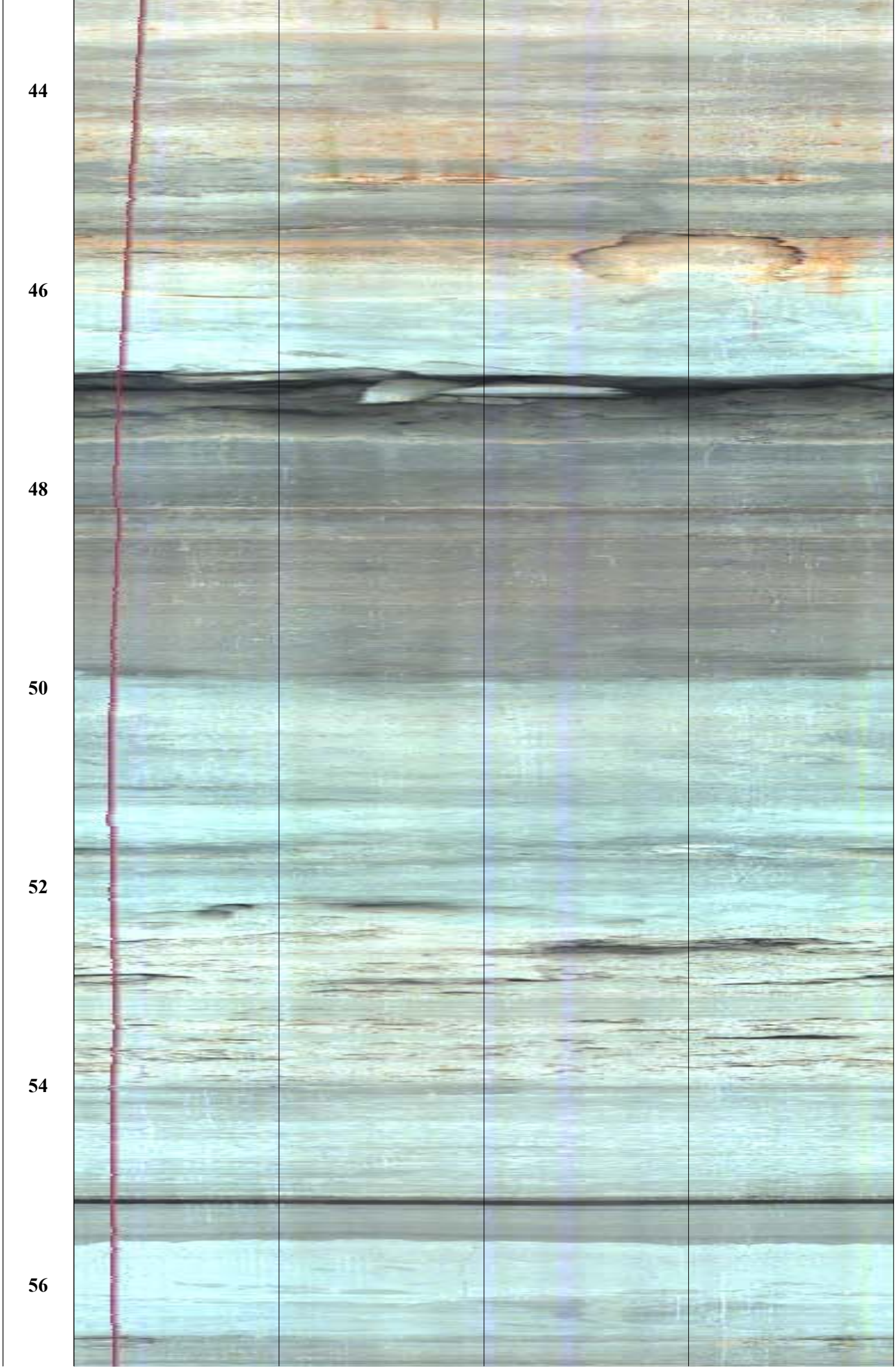

34
36
38
40
42
44
46


48
50
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	MW-X106Y102B			Depth Driller Depth Logger	
Date	Aug 11, 05	BH Fluid		Logged by:	
File Name				Witness:	

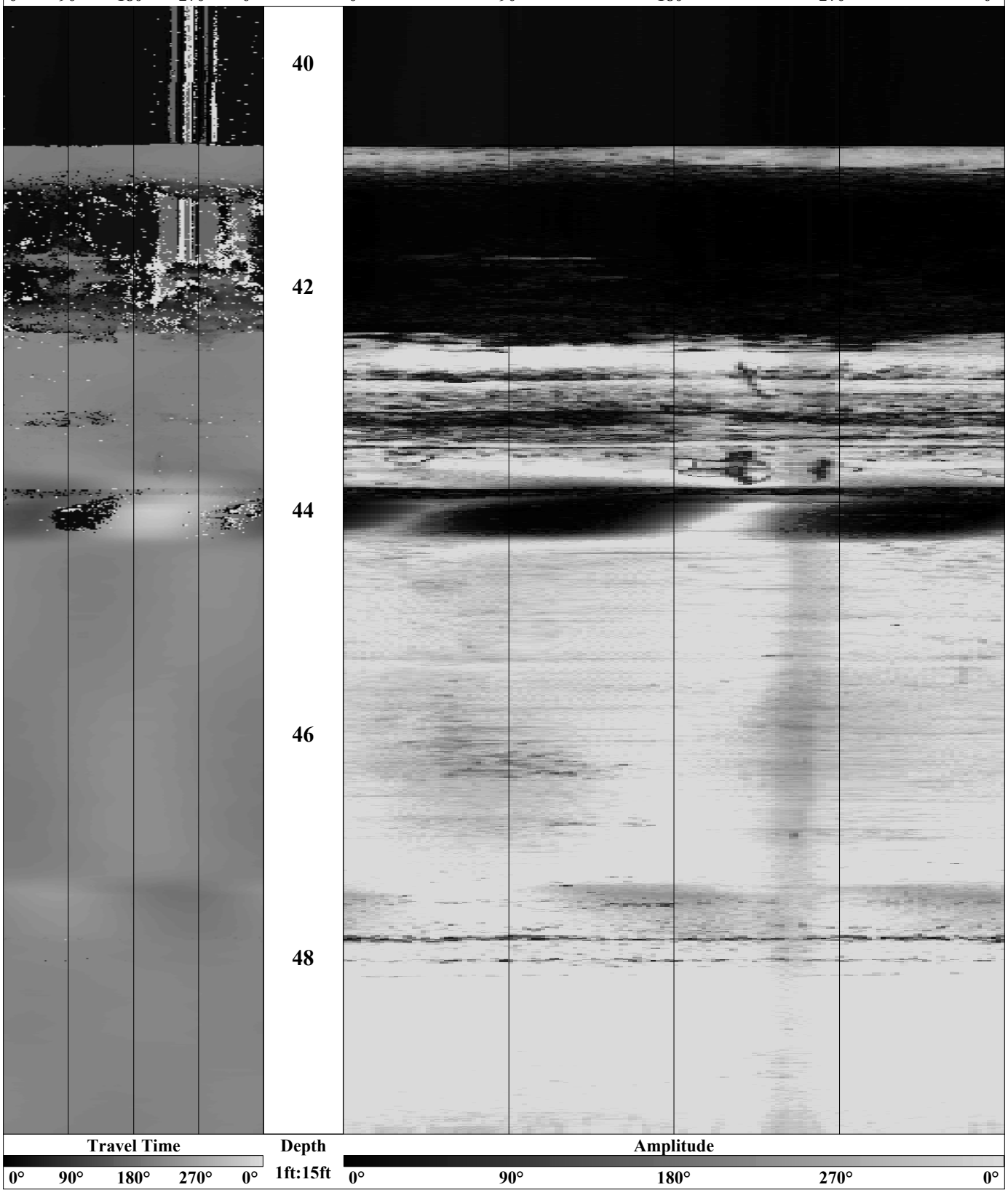



44
46
48
50
52
54
56

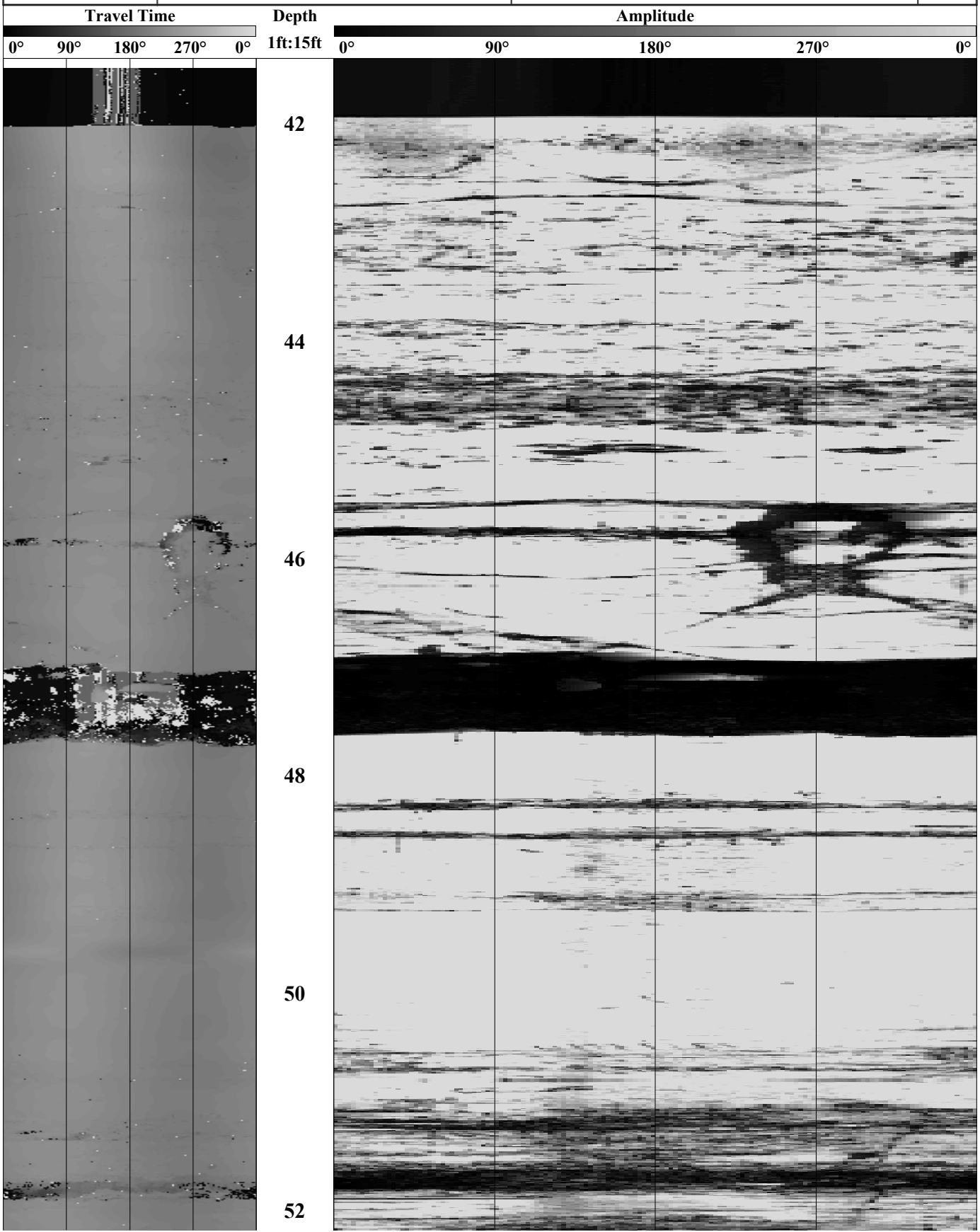


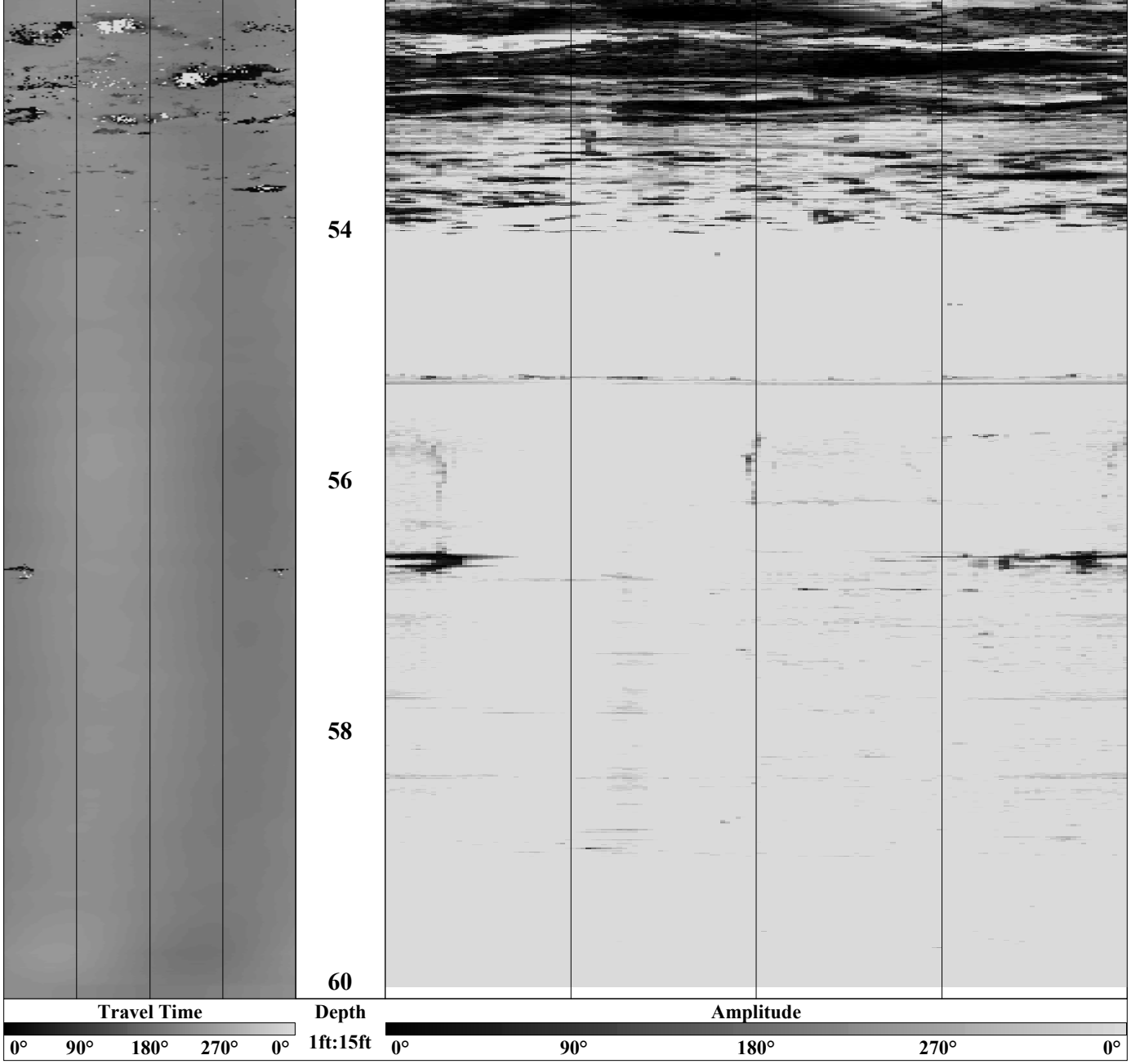
Depth	Image				
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: MW-X211Y131	Depth Driller / Depth Logger	
Date: Aug 11, 05	BH Fluid	Logged by:
File Name		Witness:

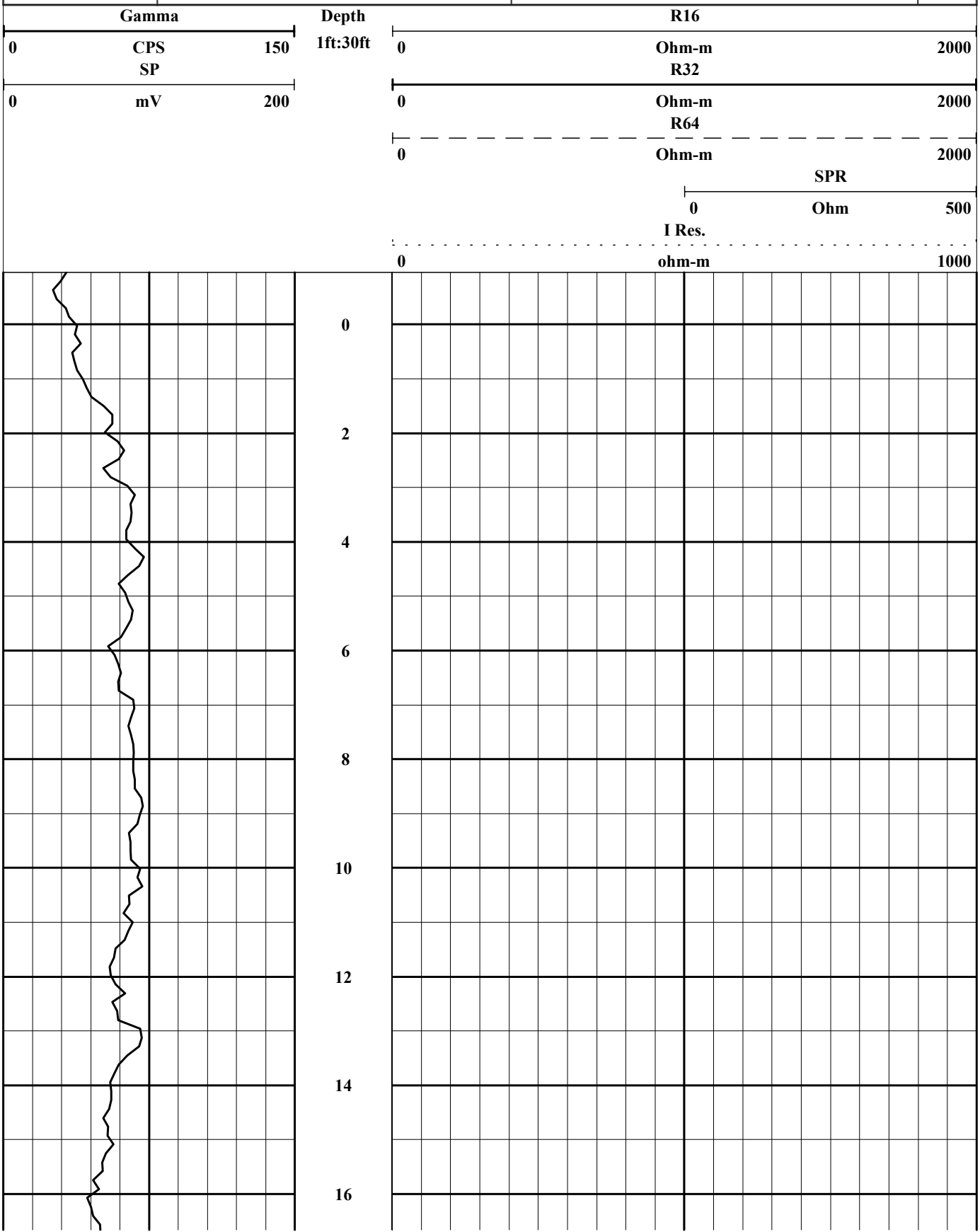


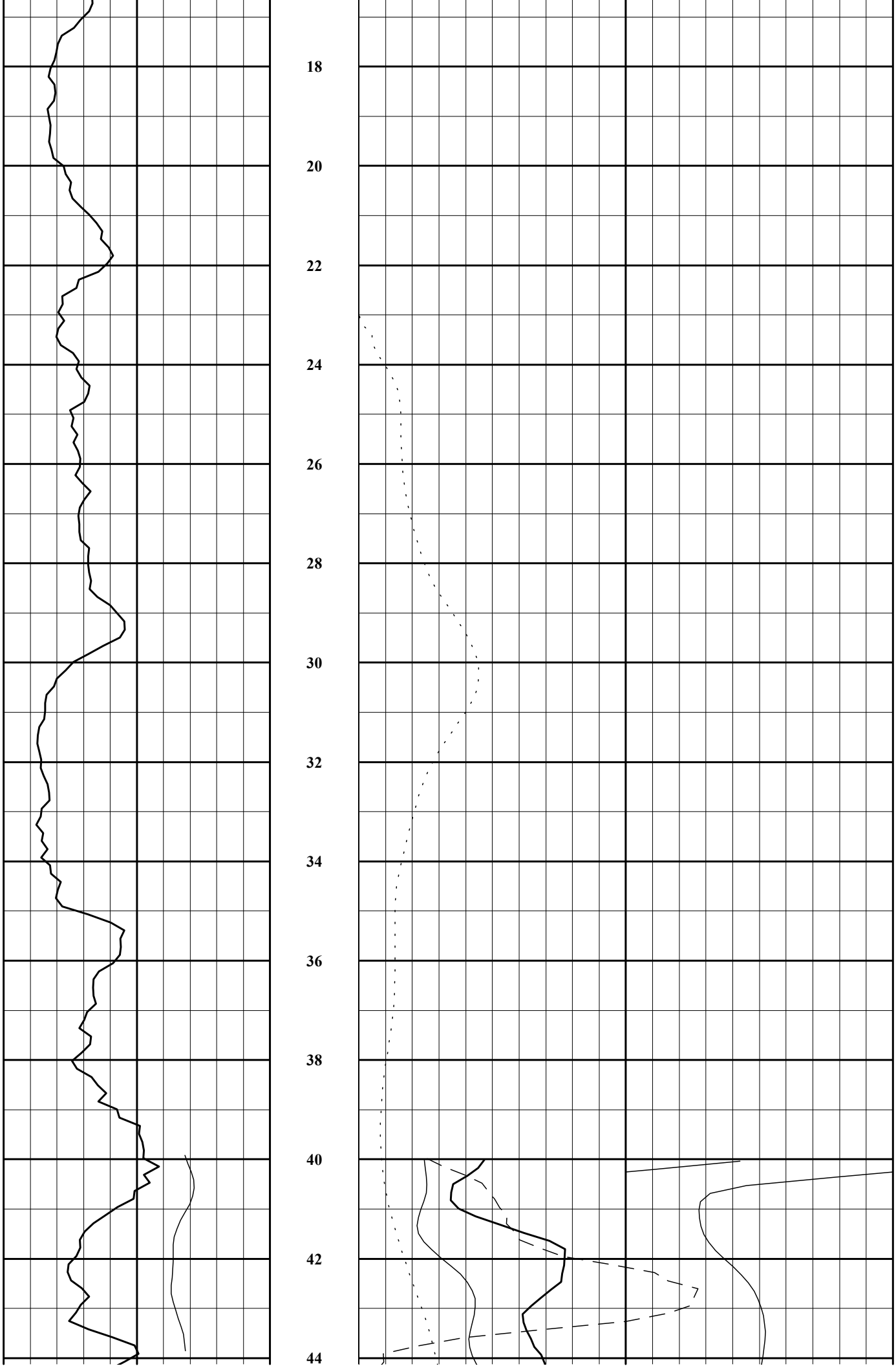
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: MW-X106Y102B	Depth Driller / Depth Logger	
Date: Aug 11, 05	BH Fluid	Logged by:
File Name		Witness:

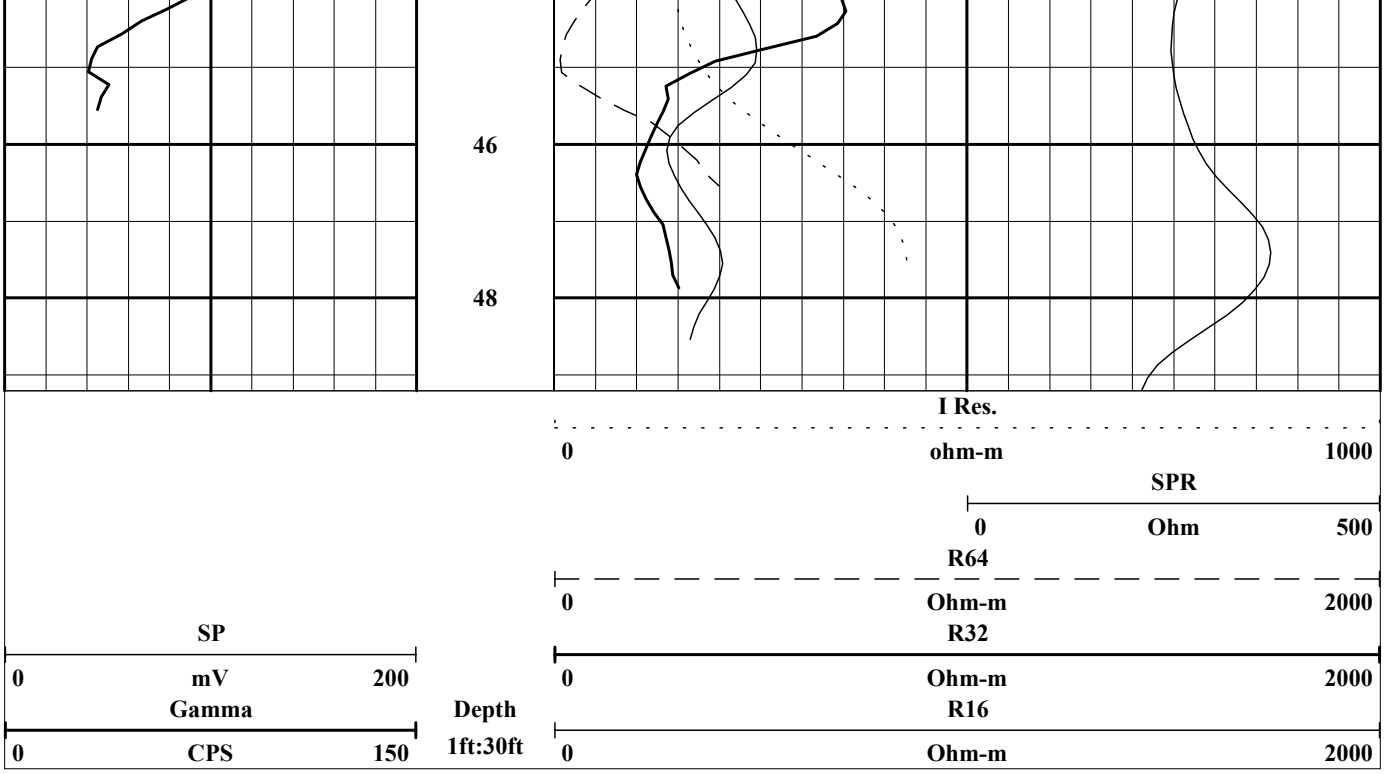



54
56
58
60
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: MW-X211Y131	Depth Driller / Depth Logger	
Date: Aug 11, 05	BH Fluid	Logged by:
File Name		Witness:




18
20
22
24
26
28
30
32
34
36
38
40
42
44



I Res.

0 ohm-m 1000

SPR

0 Ohm 500

R64

0 Ohm-m 2000

SP

0 mV 200

R32

0 Ohm-m 2000

Gamma

0 CPS 150

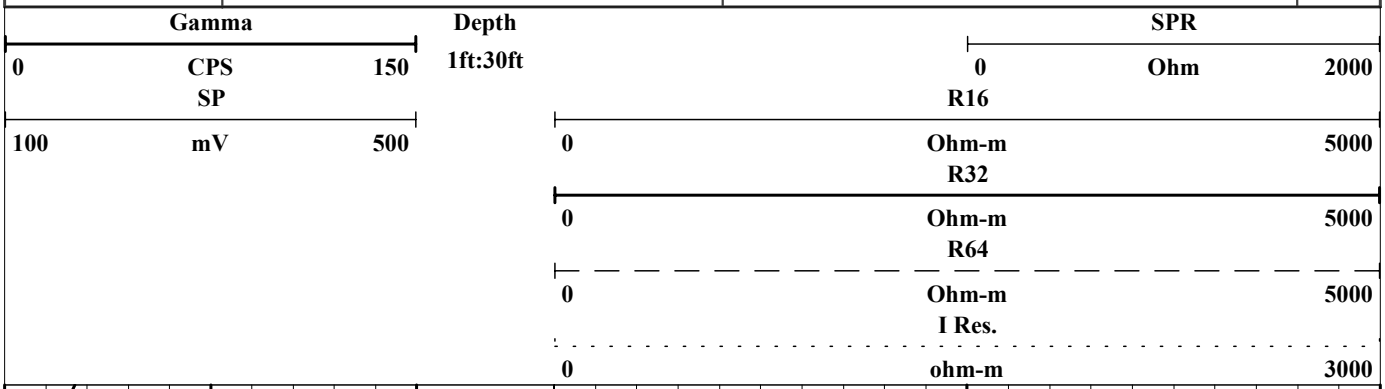
Depth

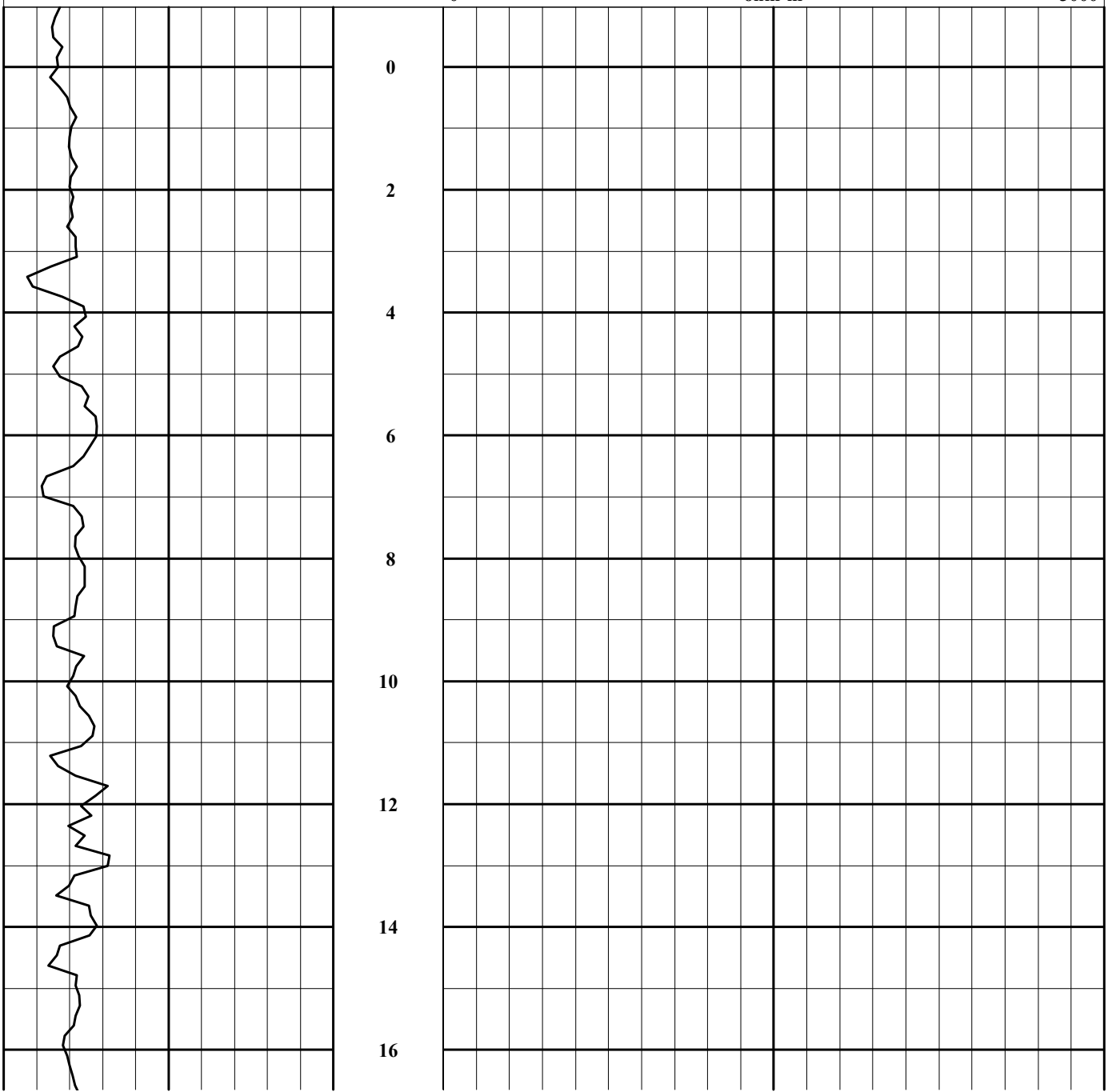
1ft:30ft

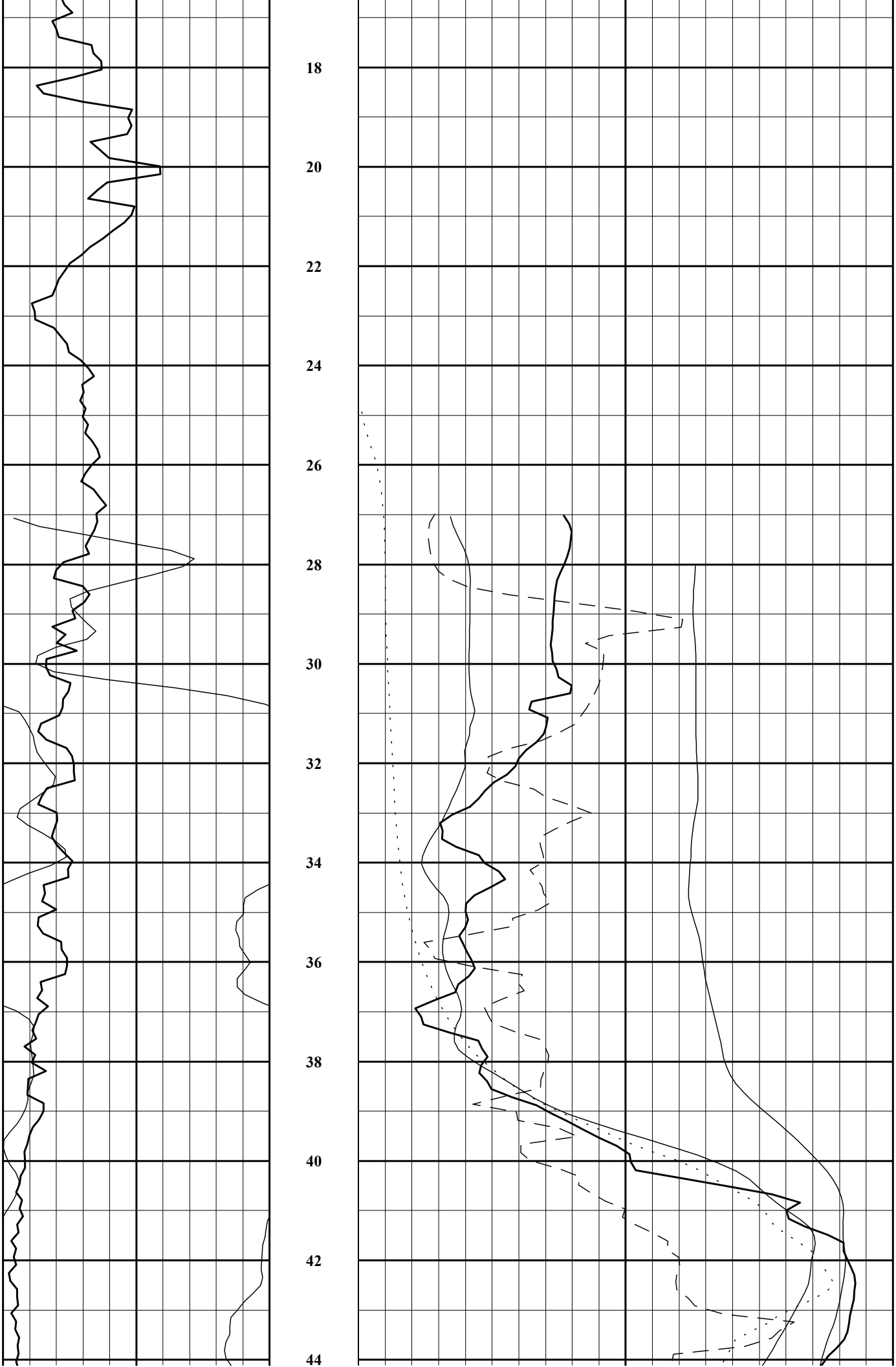
R16

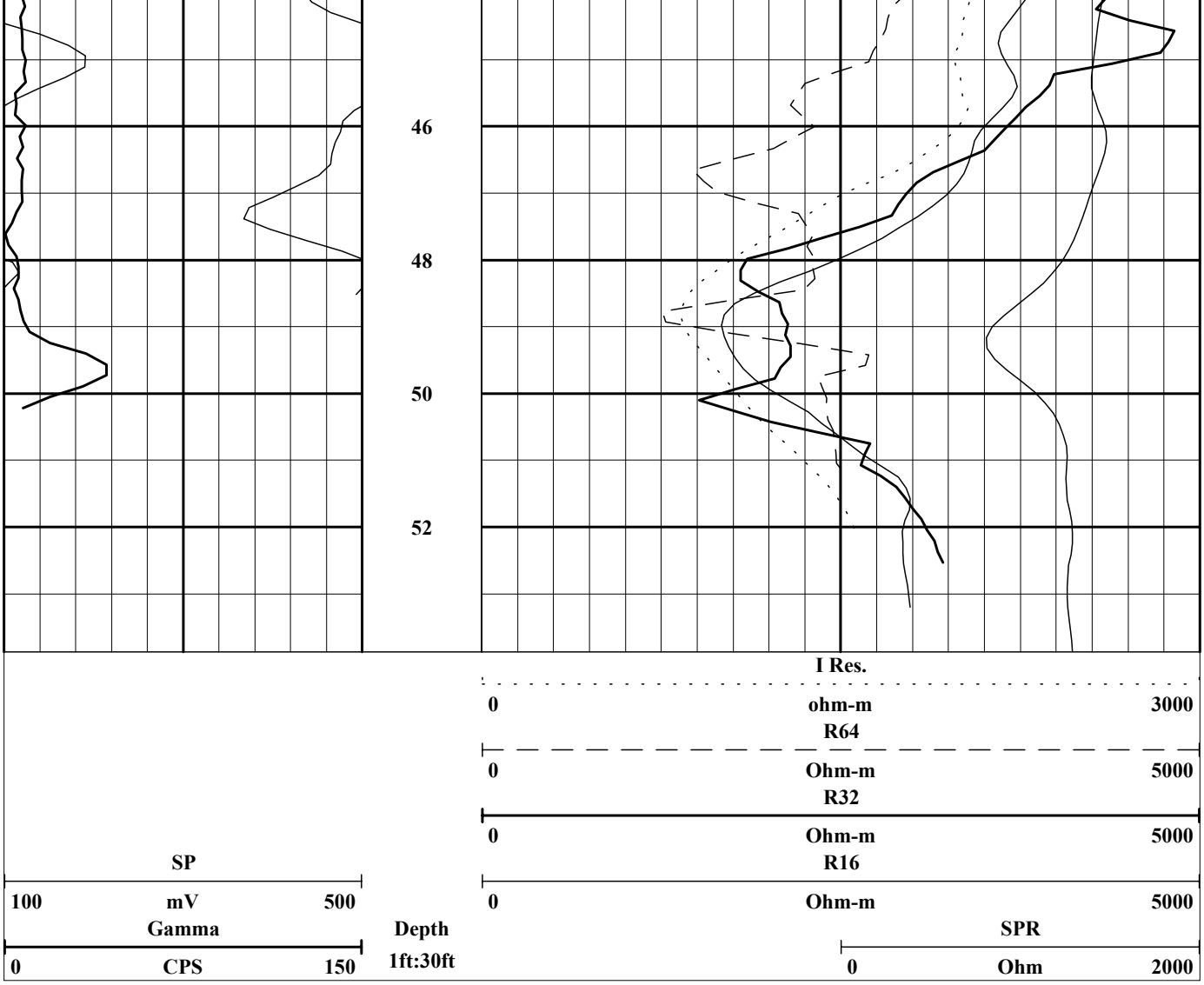
0 Ohm-m 2000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-4	Depth Driller / Depth Logger	
Date July 27, 2005 BH Fluid	Logged by:	
File Name	Witness:	

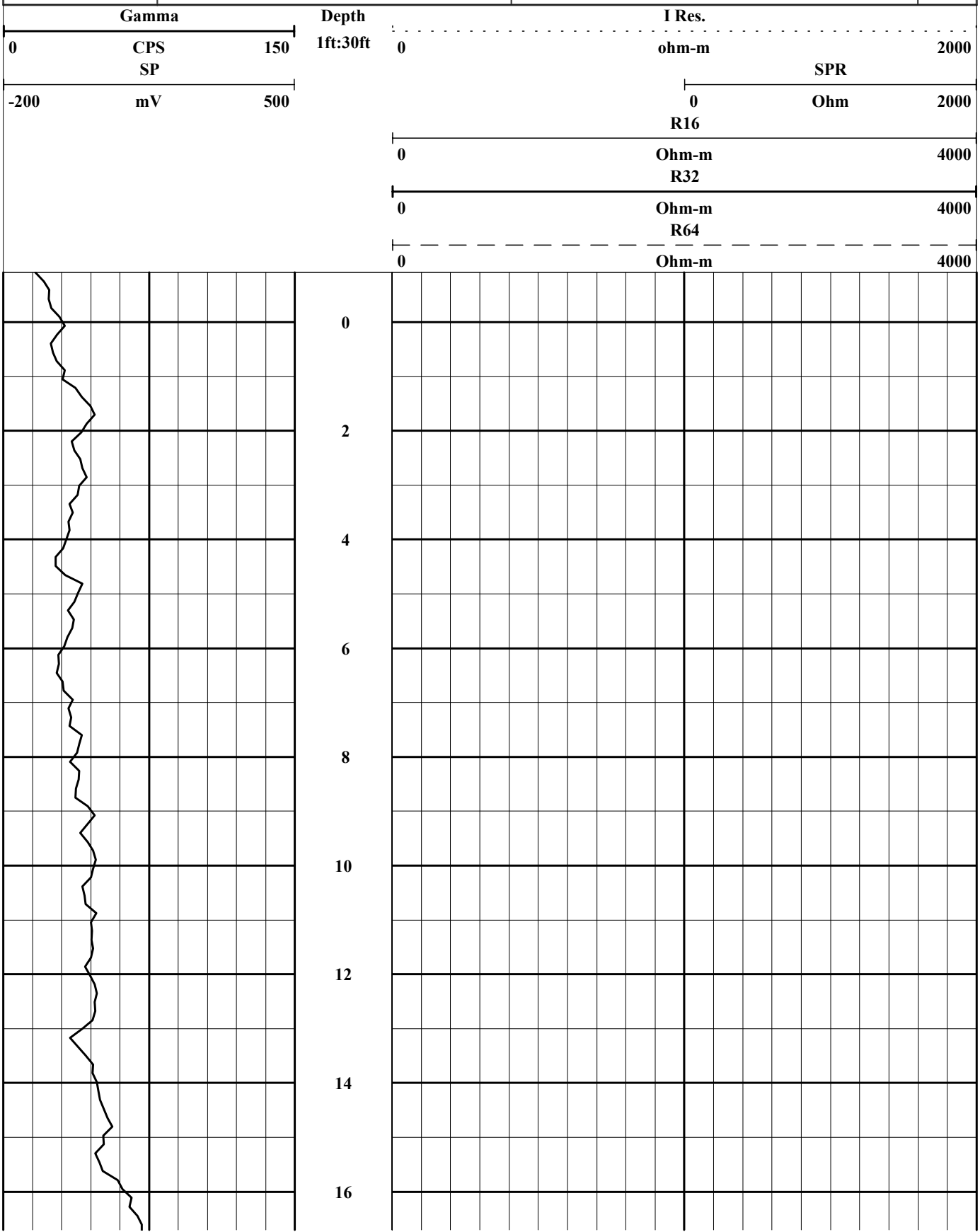


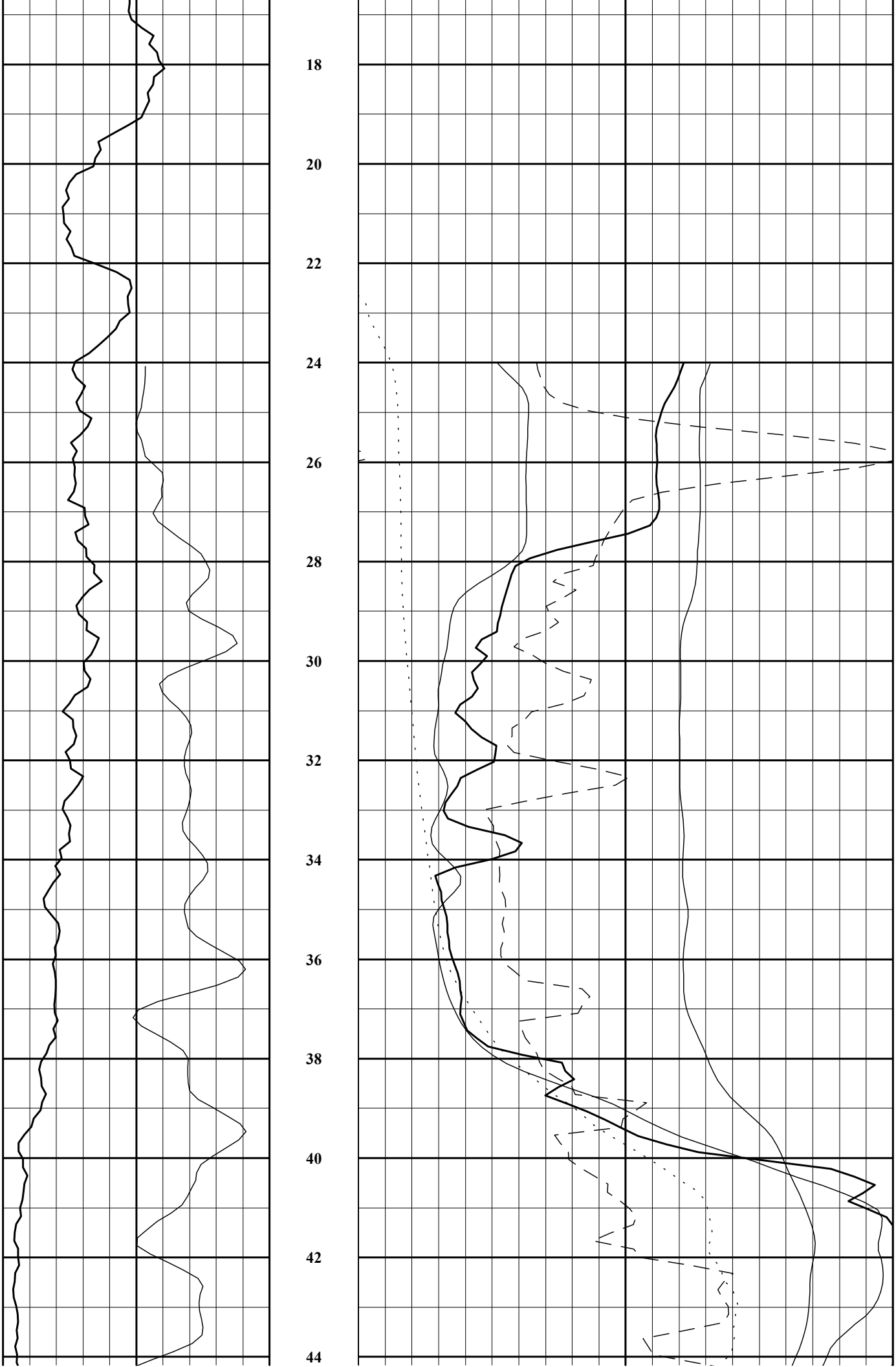


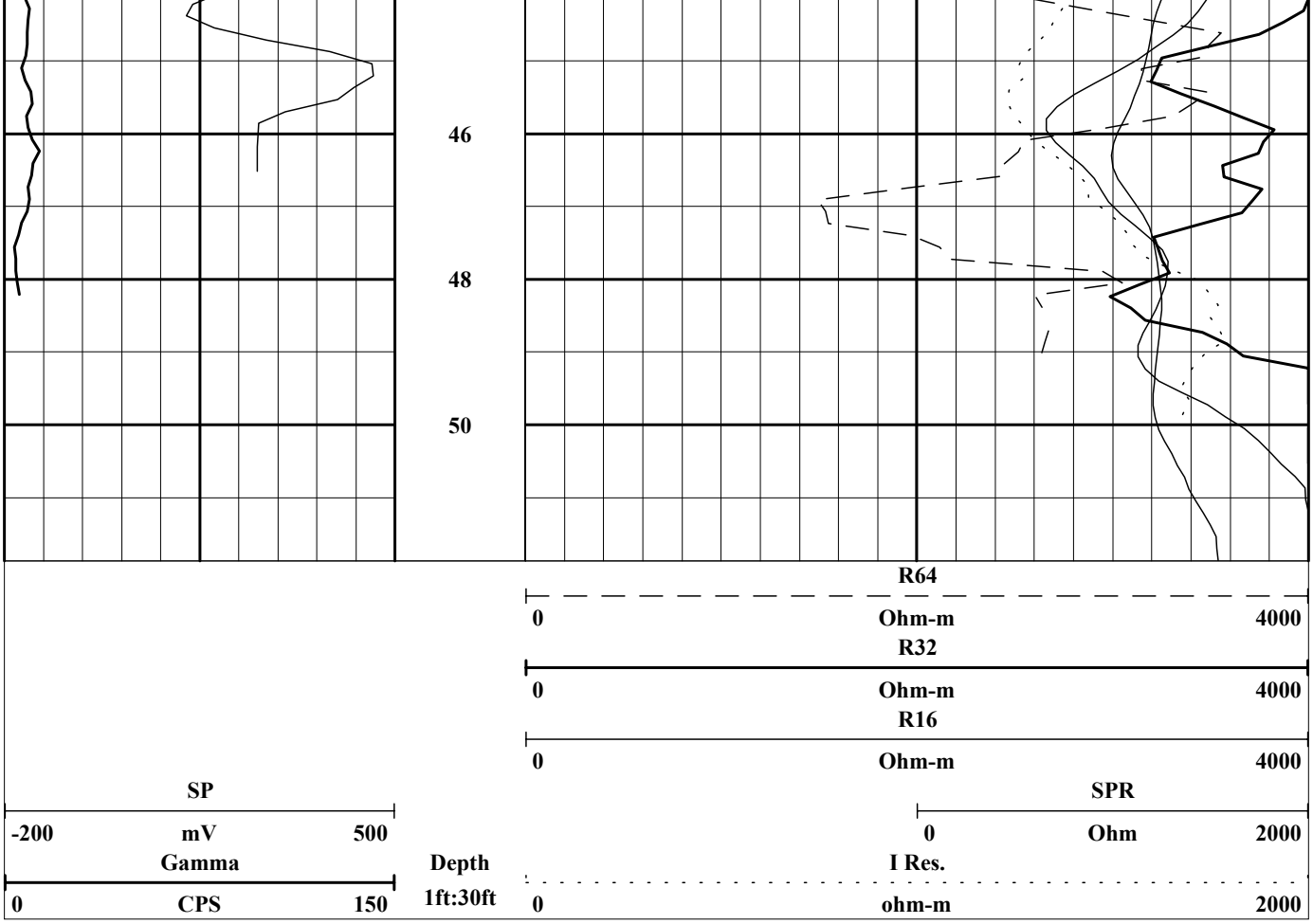

18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
52
I Res.
0
ohm-m
3000
R64
0
Ohm-m
5000
R32
0
Ohm-m
5000
R16
0
Ohm-m
5000
SP
100
mV
500
Gamma
0
CPS
150
Depth
1ft:30ft
SPR
0
Ohm
2000

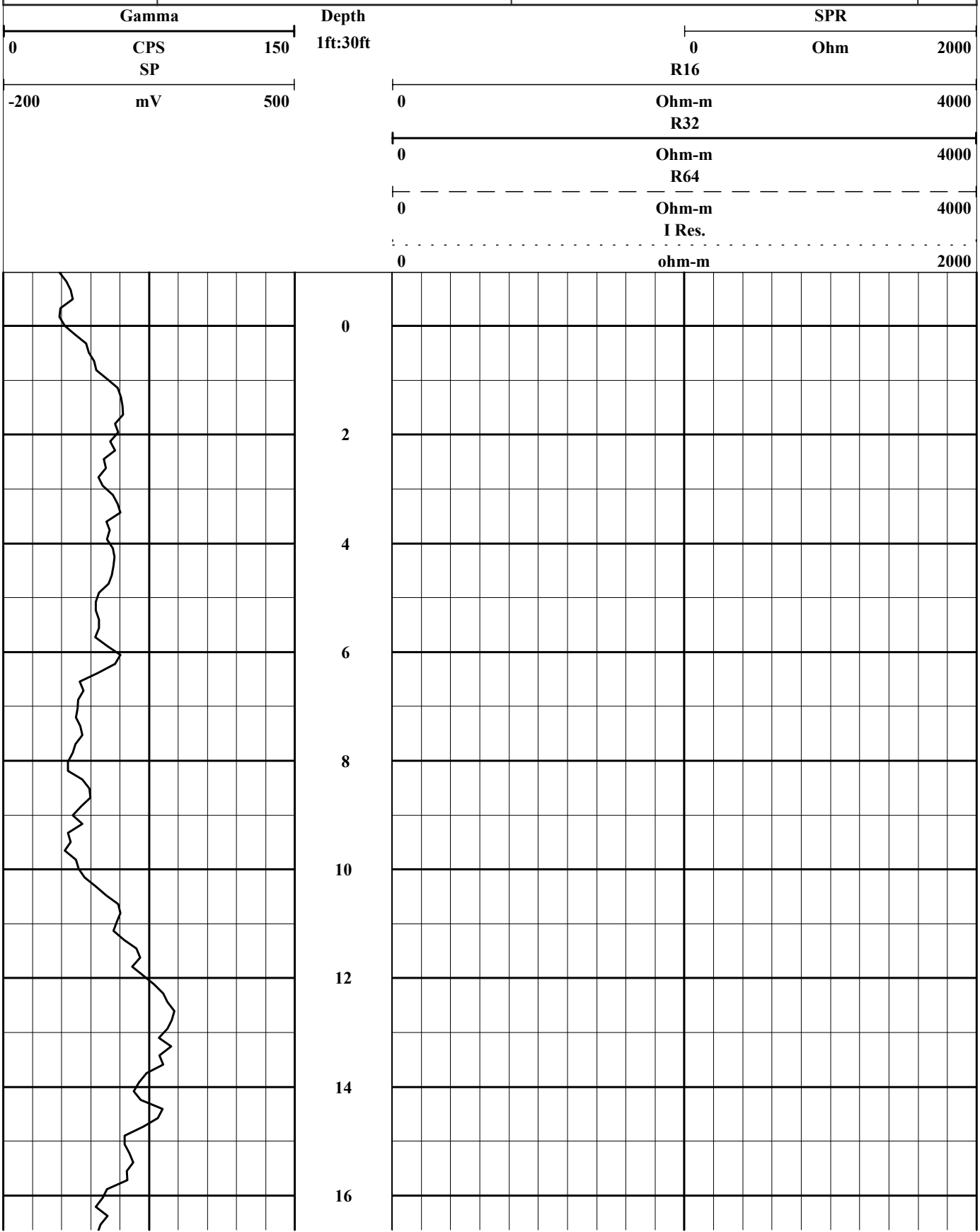
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-3	Depth Driller / Depth Logger	
Date July 28, 2005 BH Fluid	Logged by:	
File Name	Witness:	

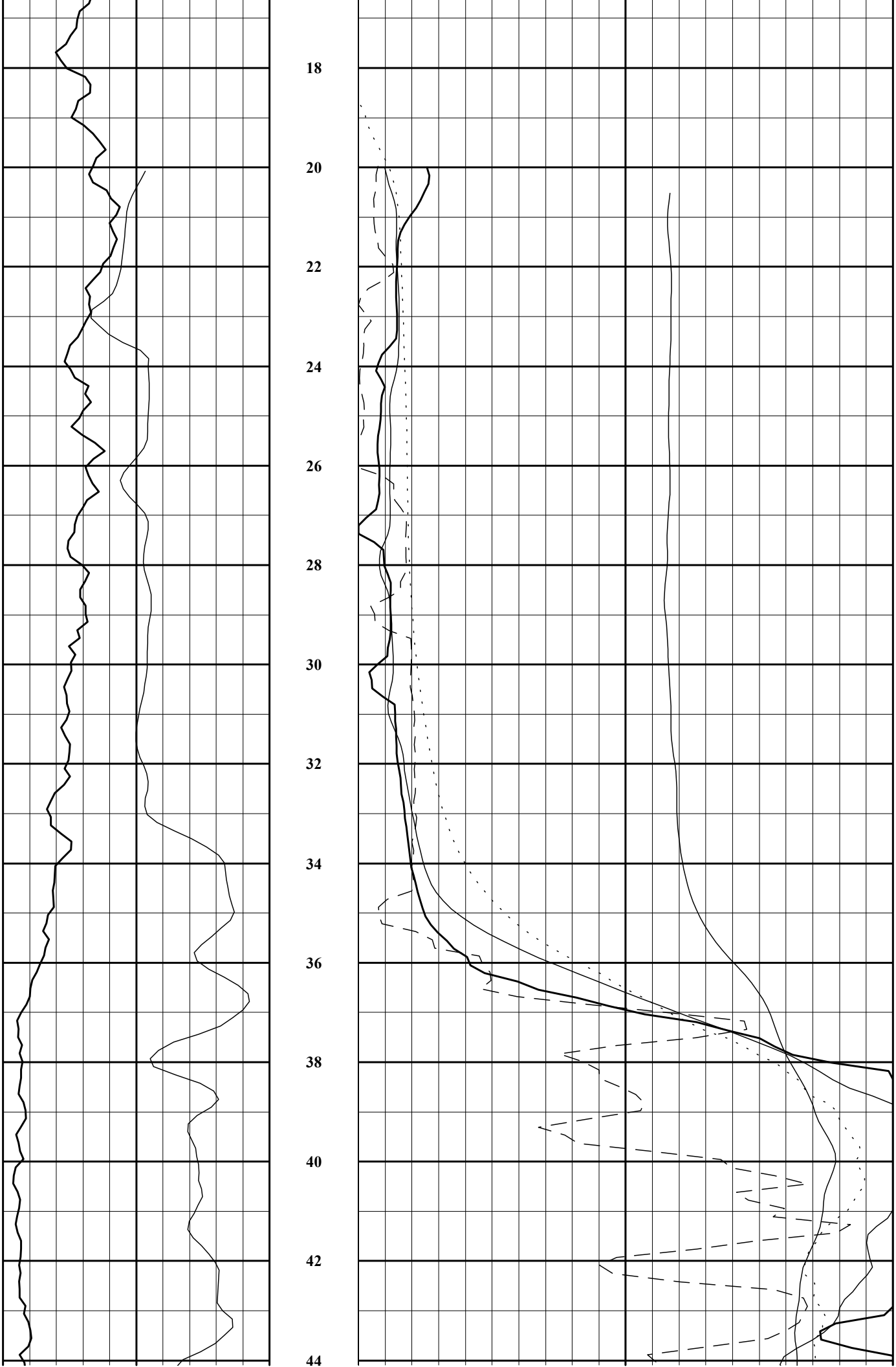


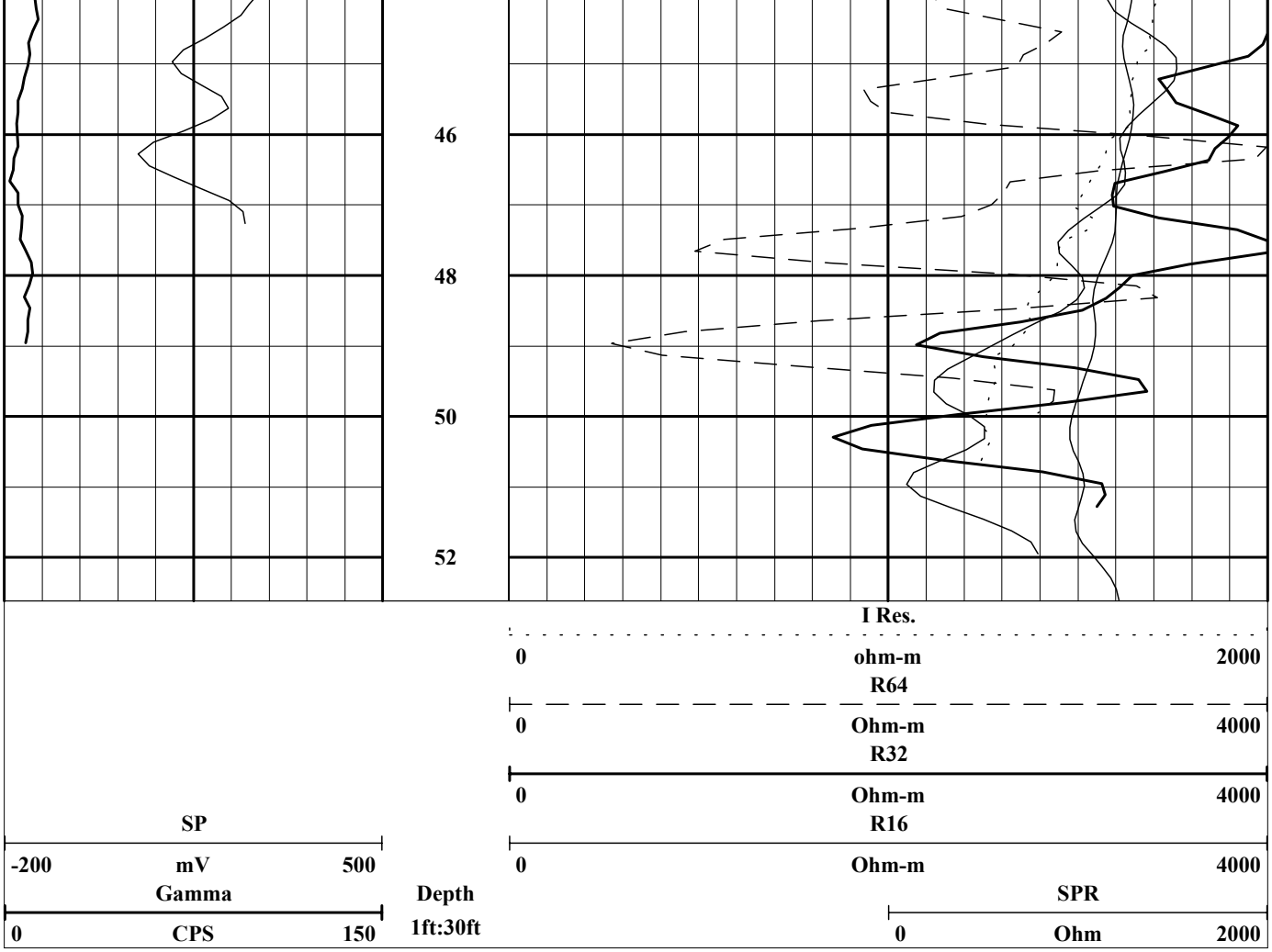

18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
R64
0
Ohm-m
4000
R32
0
Ohm-m
4000
R16
0
Ohm-m
4000
SP
-200
mV
500
SPR
0
Ohm
2000
Gamma
0
CPS
150
Depth
1ft:30ft
I Res.
0
ohm-m
2000

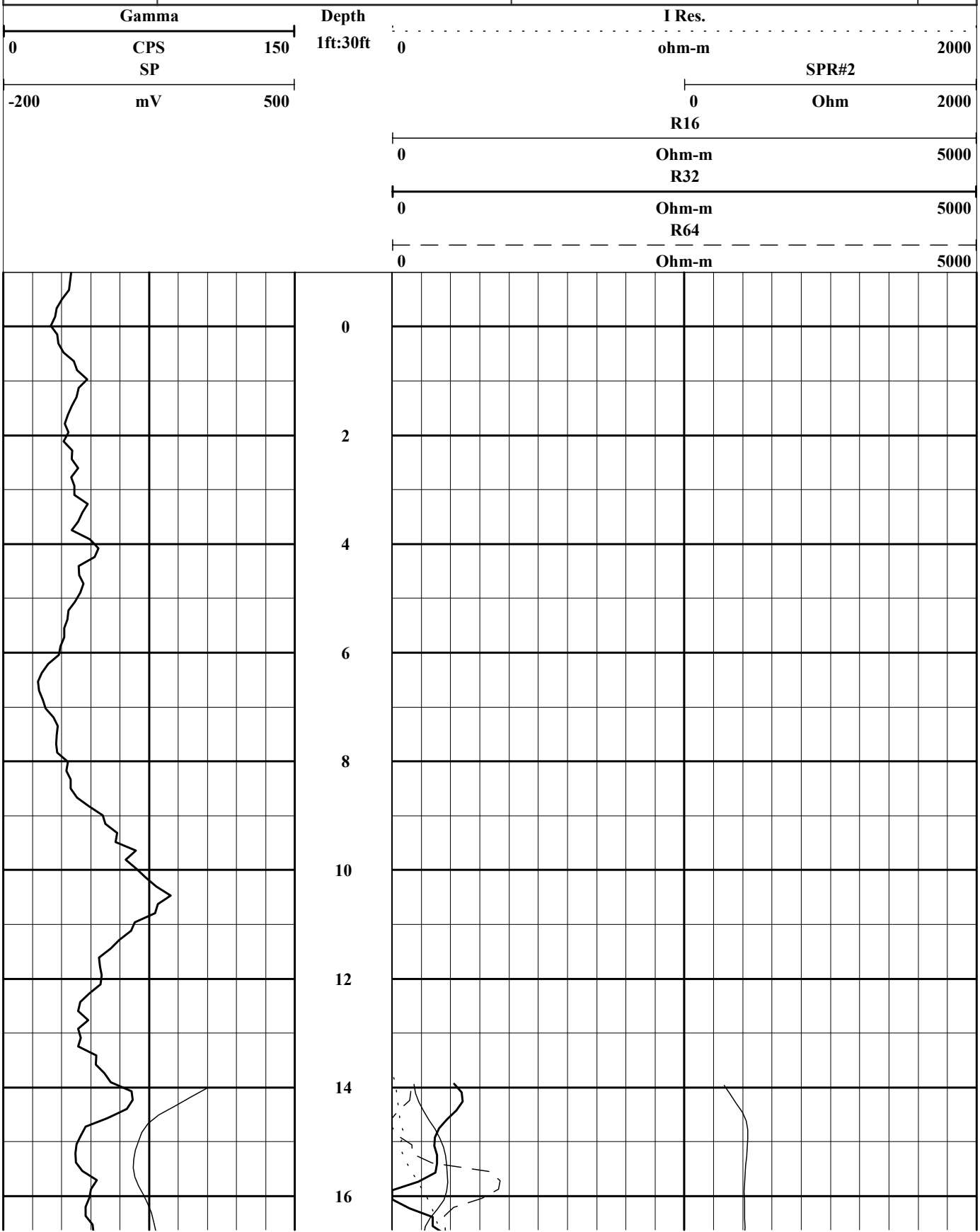
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-2	Depth Driller / Depth Logger	
Date July 28, 2005 BH Fluid	Logged by:	
File Name	Witness:	

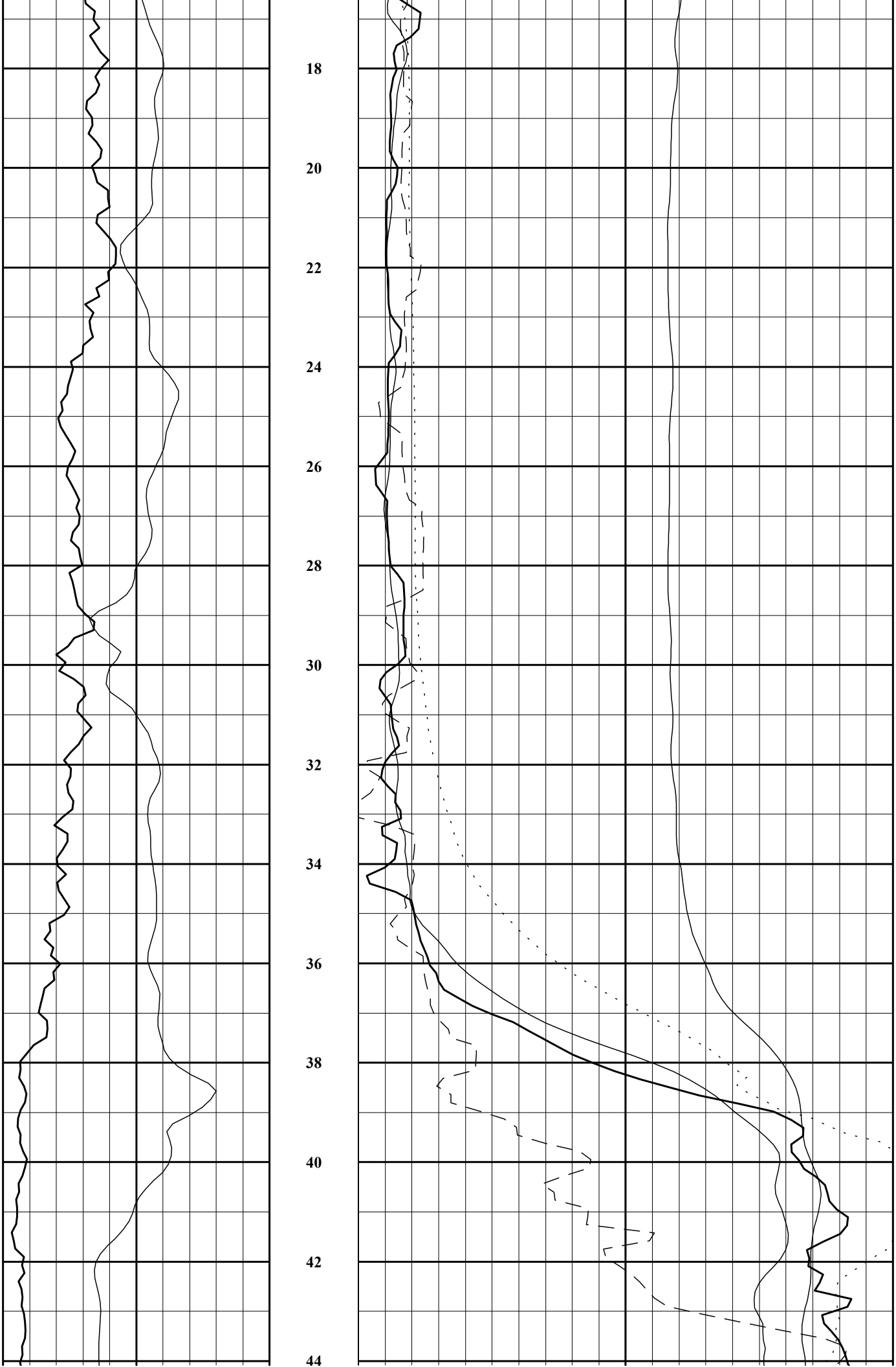


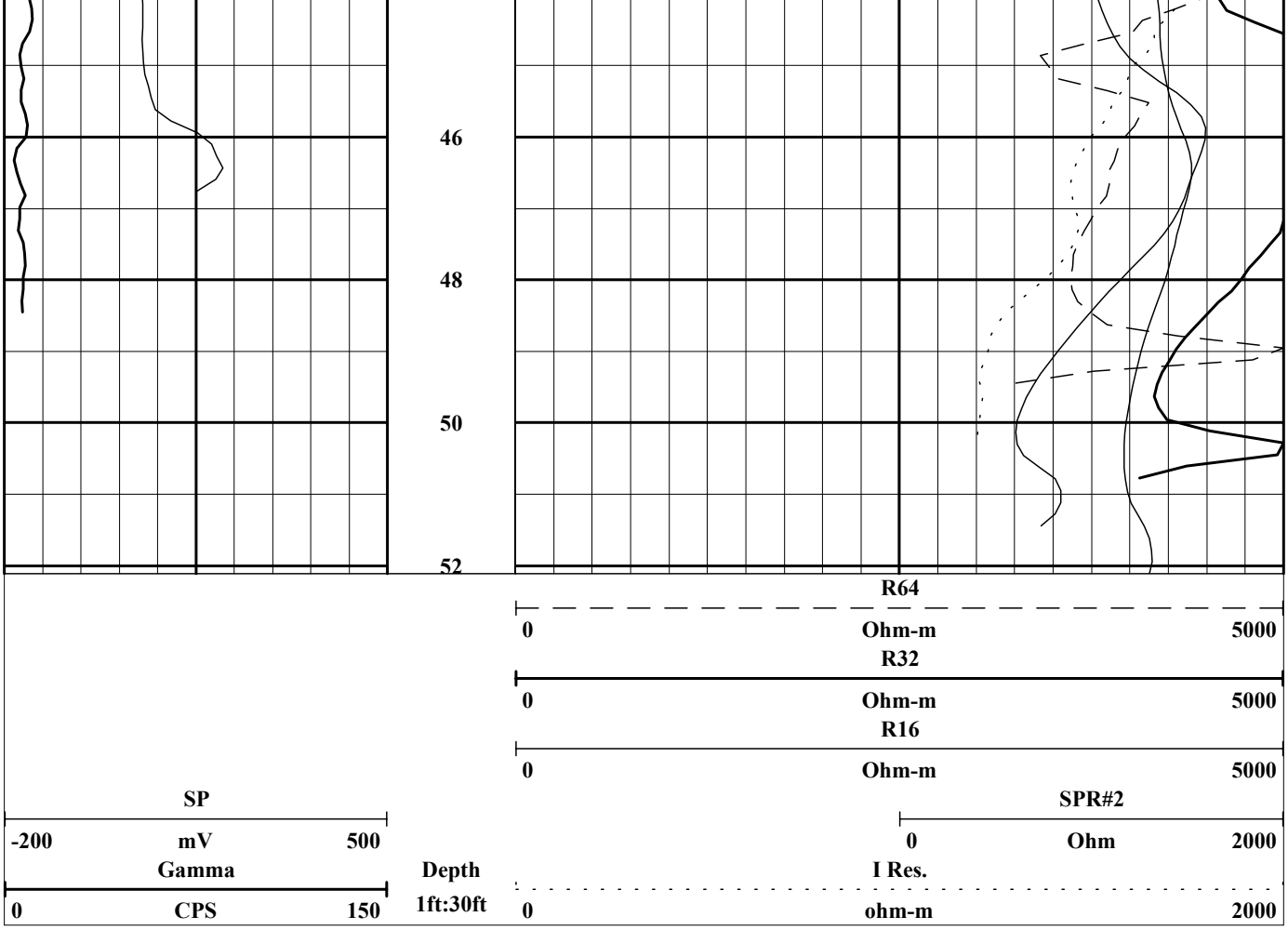

18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
52
I Res.
0
ohm-m
2000
R64
0
Ohm-m
4000
R32
0
Ohm-m
4000
SP
R16
-200
mV
500
0
Ohm-m
4000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
2000

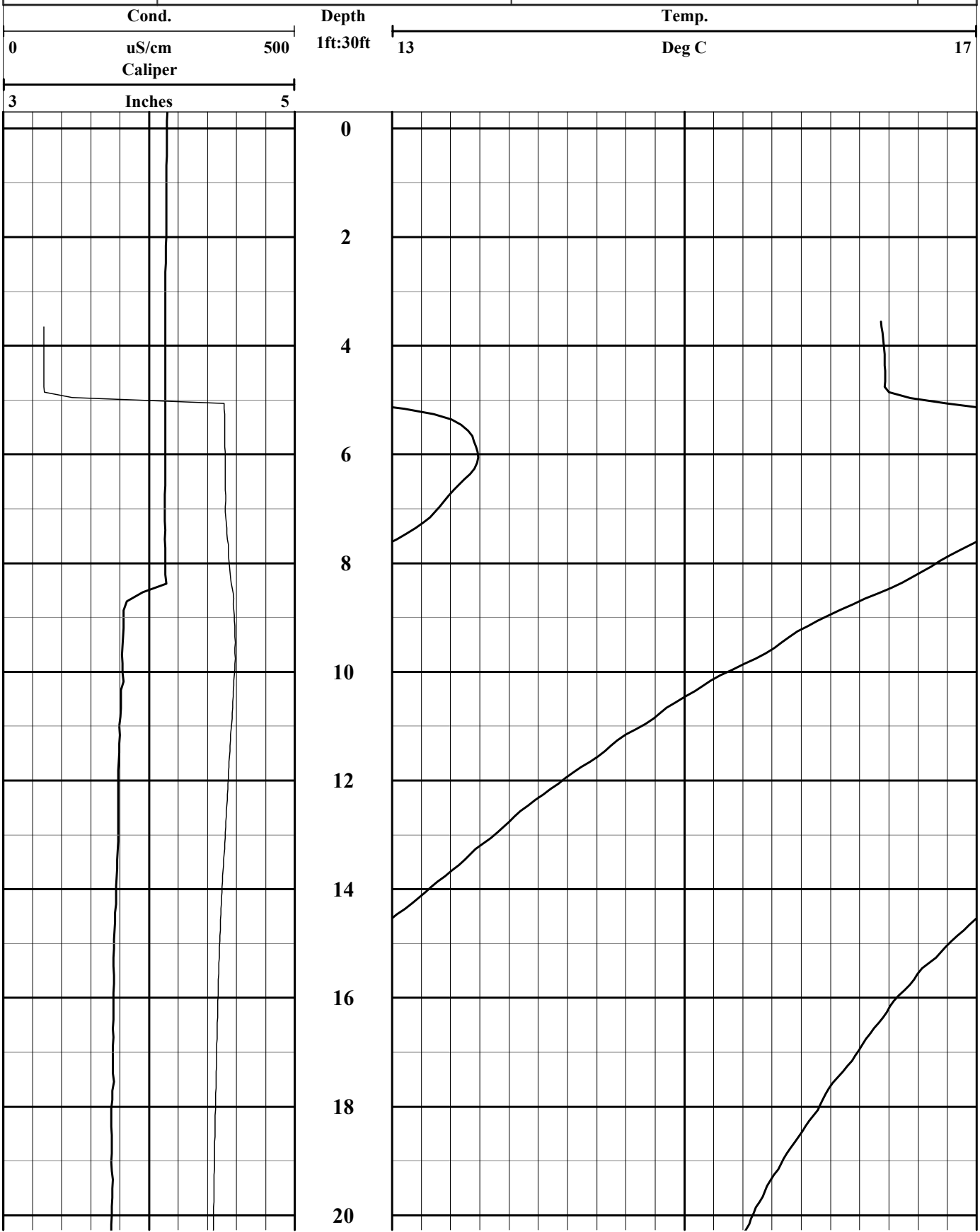
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: 9-1	Depth Driller / Depth Logger	
Date: July 29, 05 — BH Fluid	Logged by:	
File Name	Witness:	

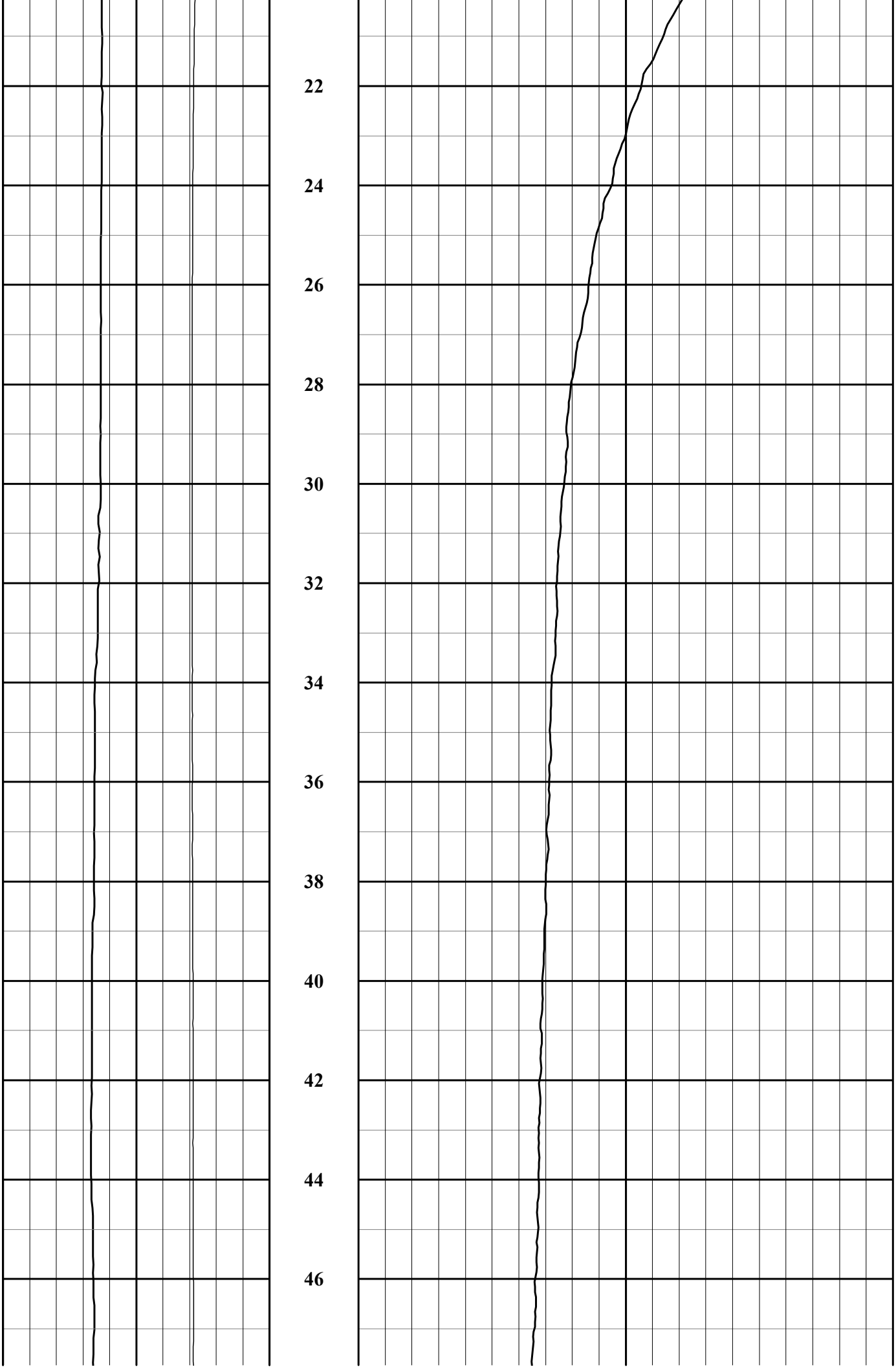


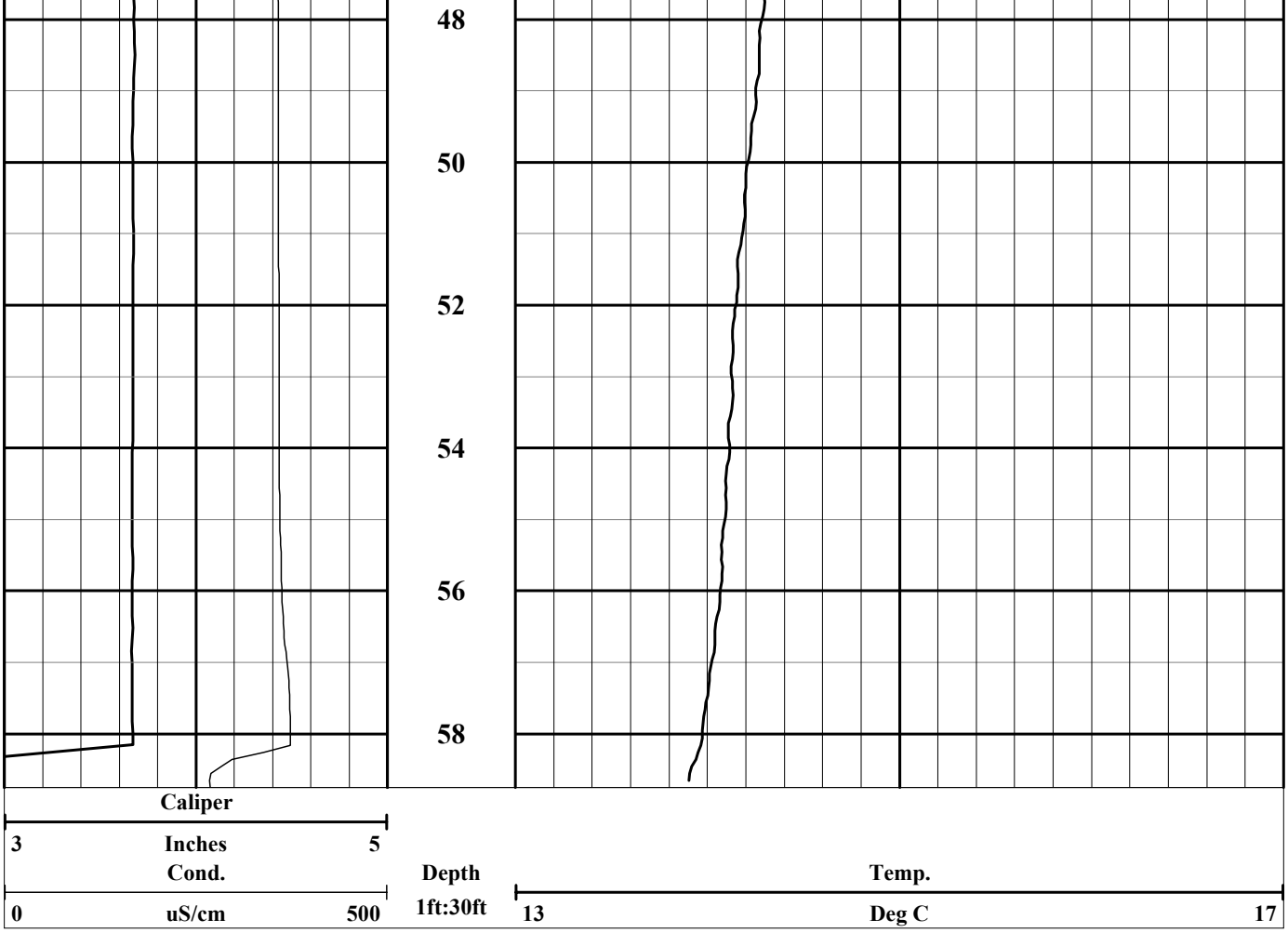

18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
52
R64
0
Ohm-m
5000
R32
0
Ohm-m
5000
R16
0
Ohm-m
5000
SP
-200
mV
500
SPR#2
0
Ohm
2000
Gamma
0
CPS
150
Depth
1ft:30ft
I Res.
0
ohm-m
2000

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-13A	Depth Driller / Depth Logger	
Date: Aug 4, 05	BH Fluid	Logged by:
File Name		Witness:




22
24
26
28
30
32
34
36
38
40
42
44
46


48
50
52
54
56
58
Caliper
3
Inches
5
Cond.
0
uS/cm
500
Depth
1ft:30ft
Temp.
13
Deg C
17

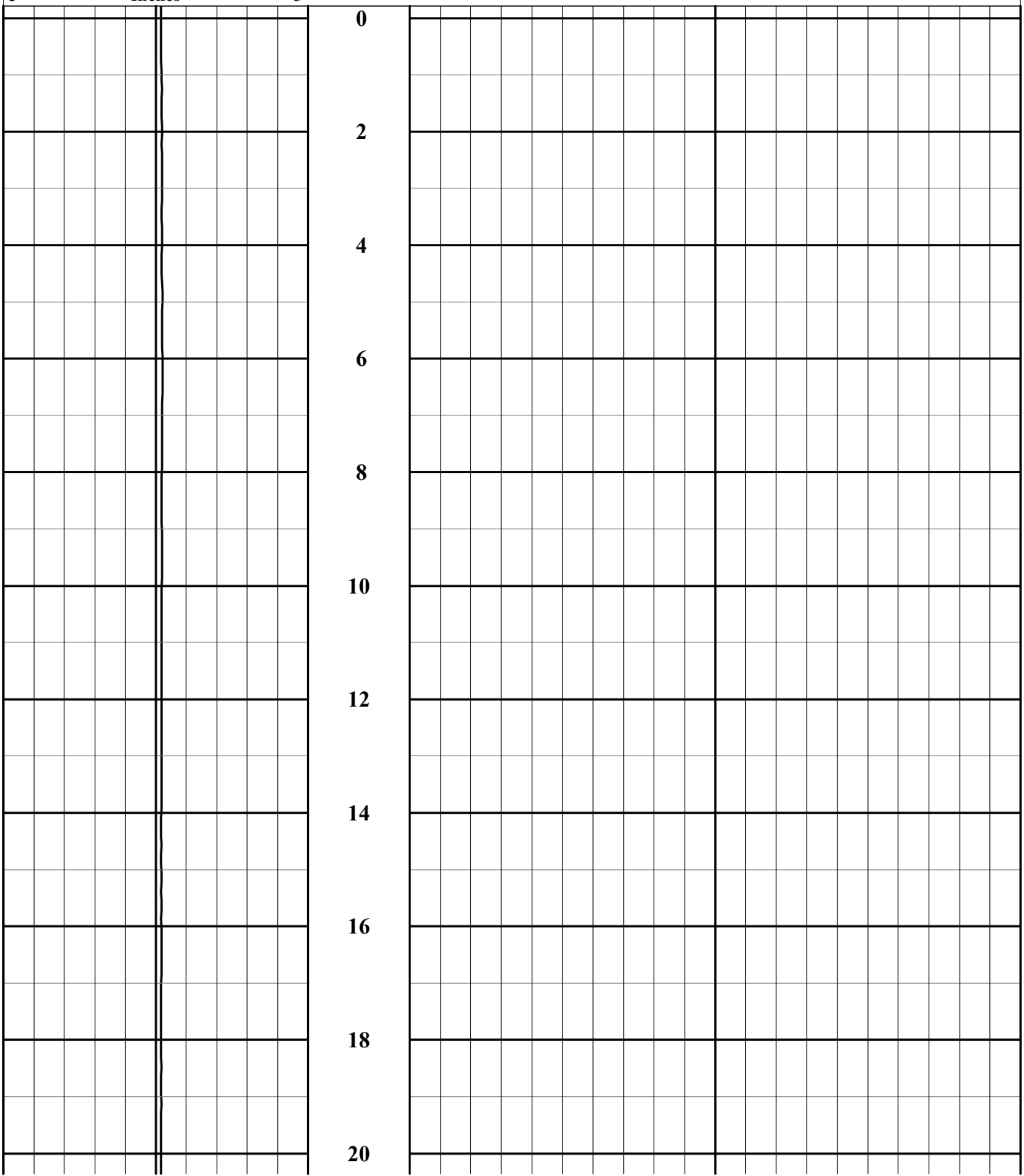
	COMPANY: CRA	Casing
	Location: GM Powertrain	

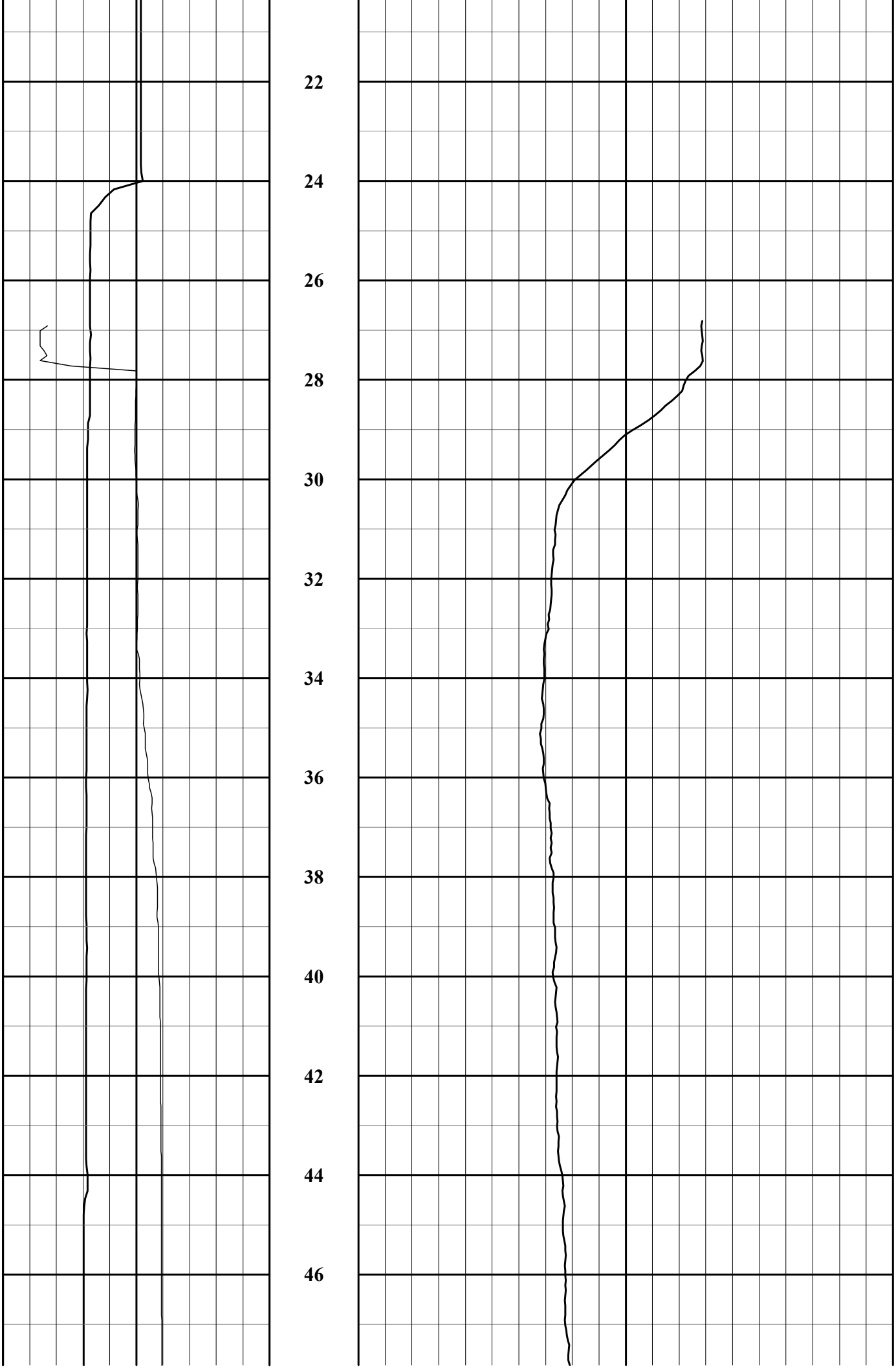
Well	9-4			Depth Driller	
				Depth Logger	
Date	July 27, 2005	BH Fluid		Logged by:	
File Name				Witness:	

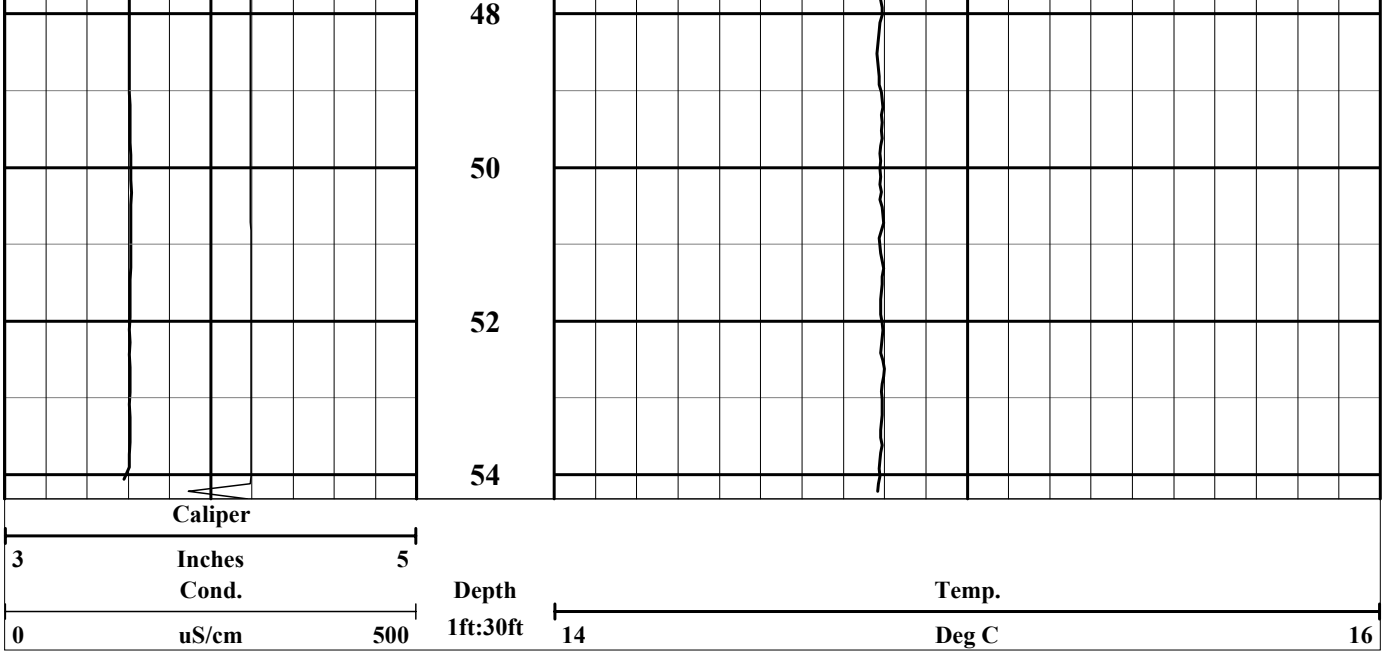
Cond.
0 **uS/cm** **500**
Caliper
3 **Inches** **5**

Depth
1ft:30ft

Temp.
14 **Deg C** **16**




22
24
26
28
30
32
34
36
38
40
42
44
46



Caliper

3 Inches 5

Cond.

0 uS/cm 500

Depth

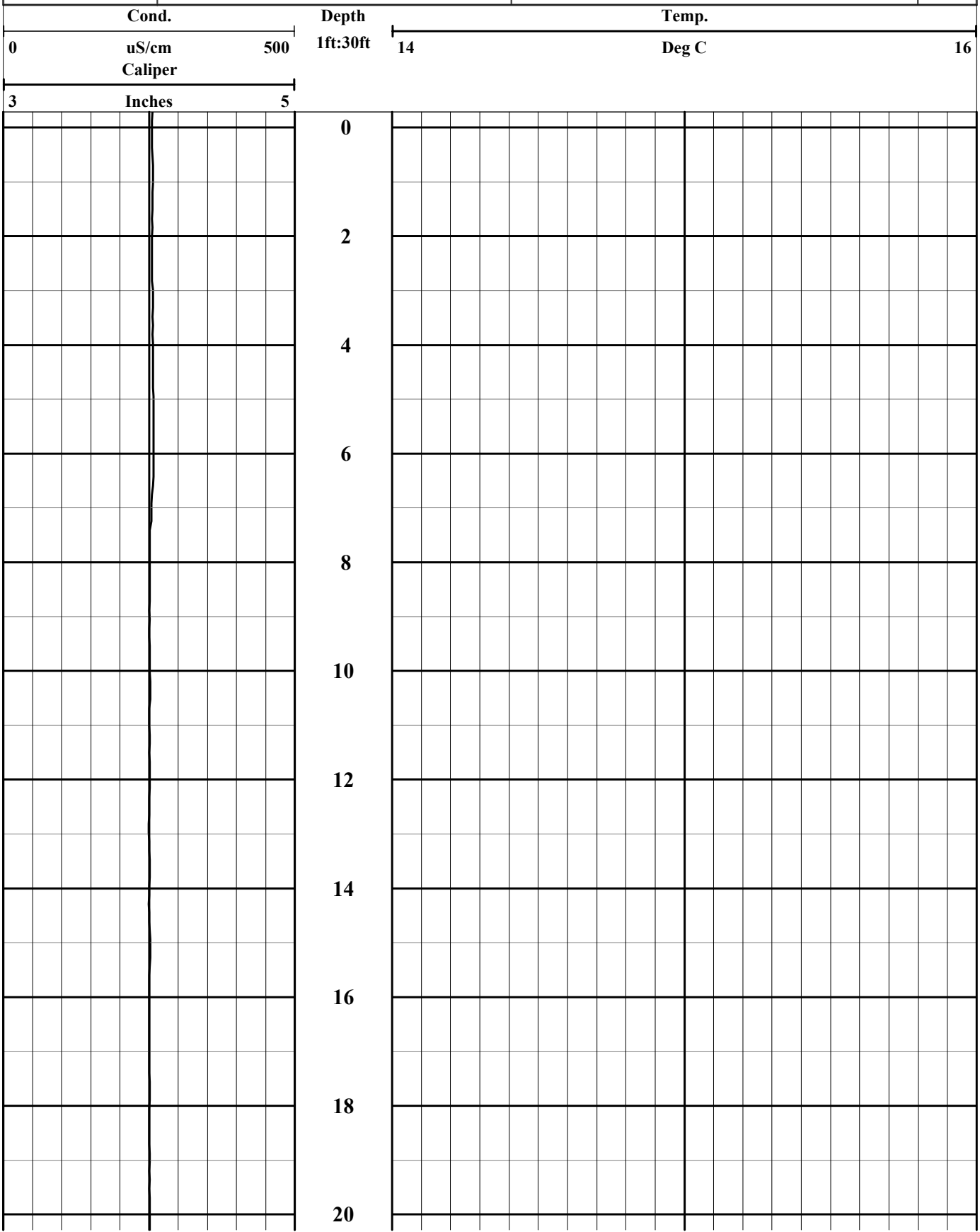
1ft:30ft

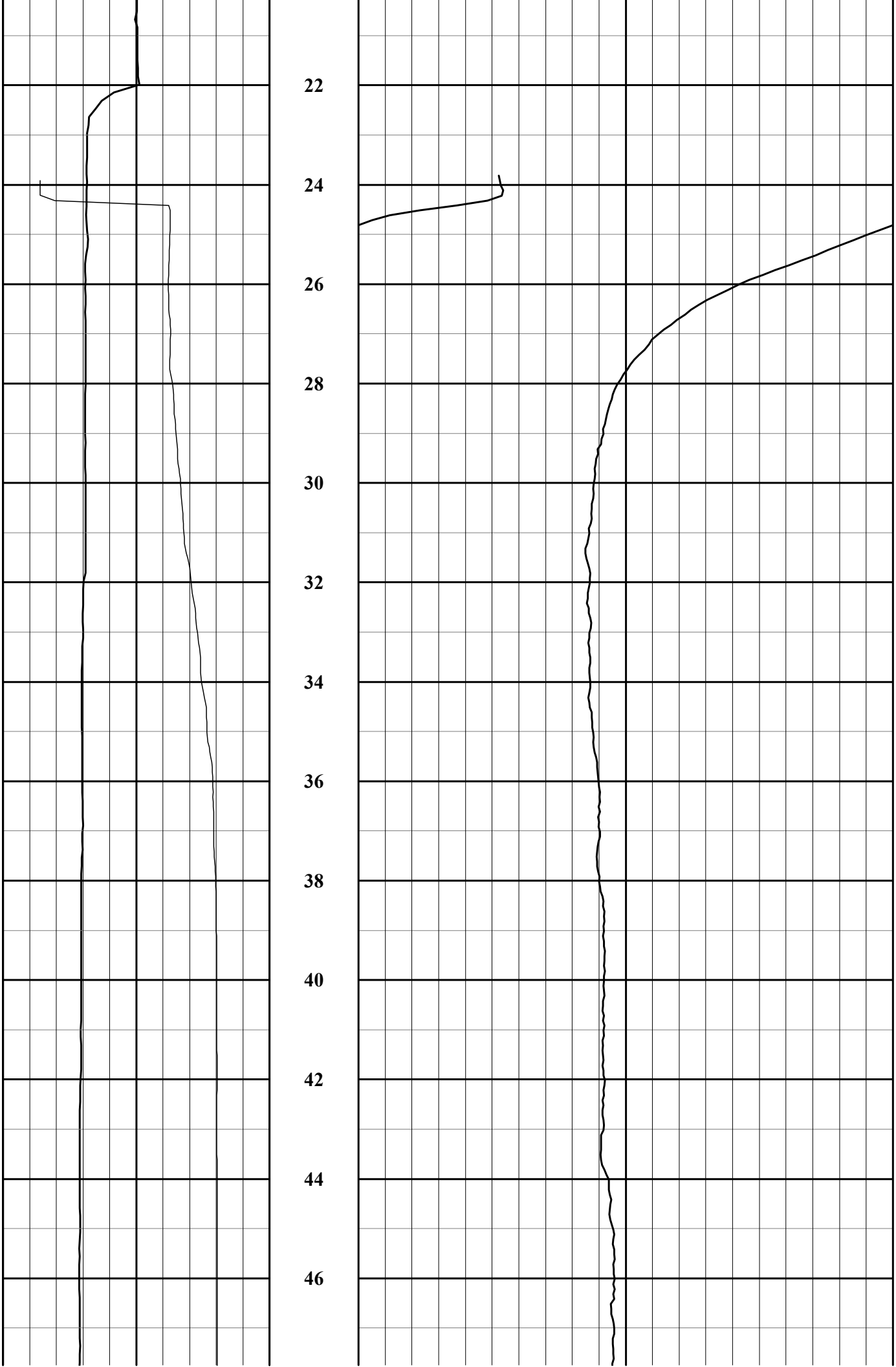
Temp.

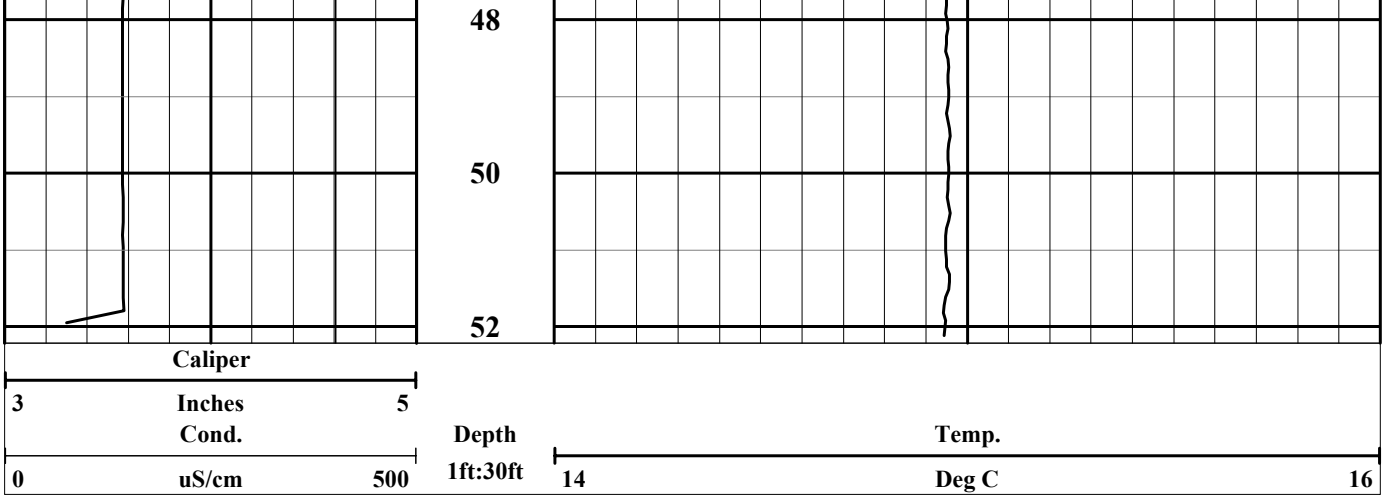
14 Deg C 16

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	9-3			Depth Driller Depth Logger	
Date	July 28, 2005	BH Fluid		Logged by:	
File Name				Witness:	




22
24
26
28
30
32
34
36
38
40
42
44
46



Caliper

3 Inches 5

Cond.

0 uS/cm 500

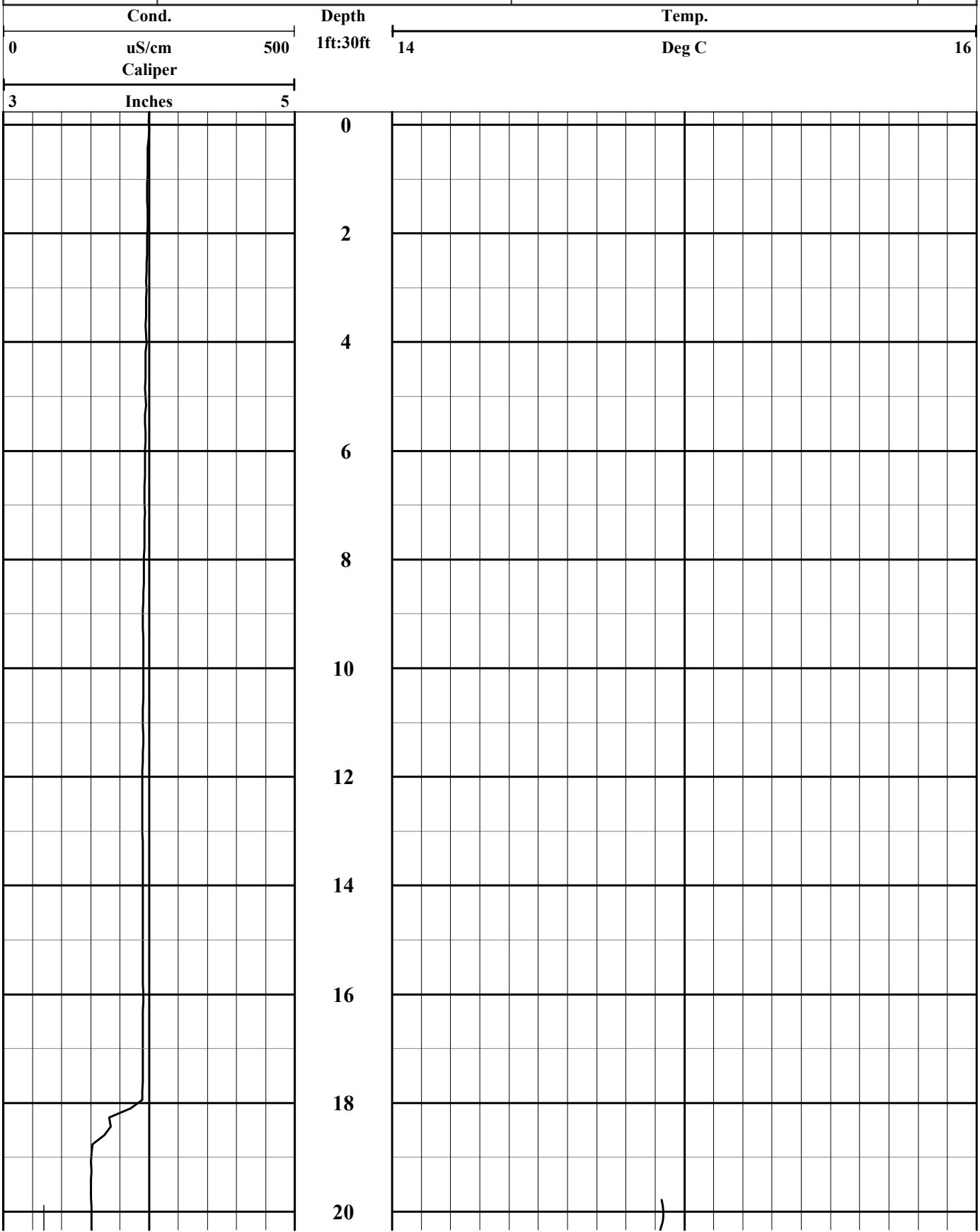
Depth

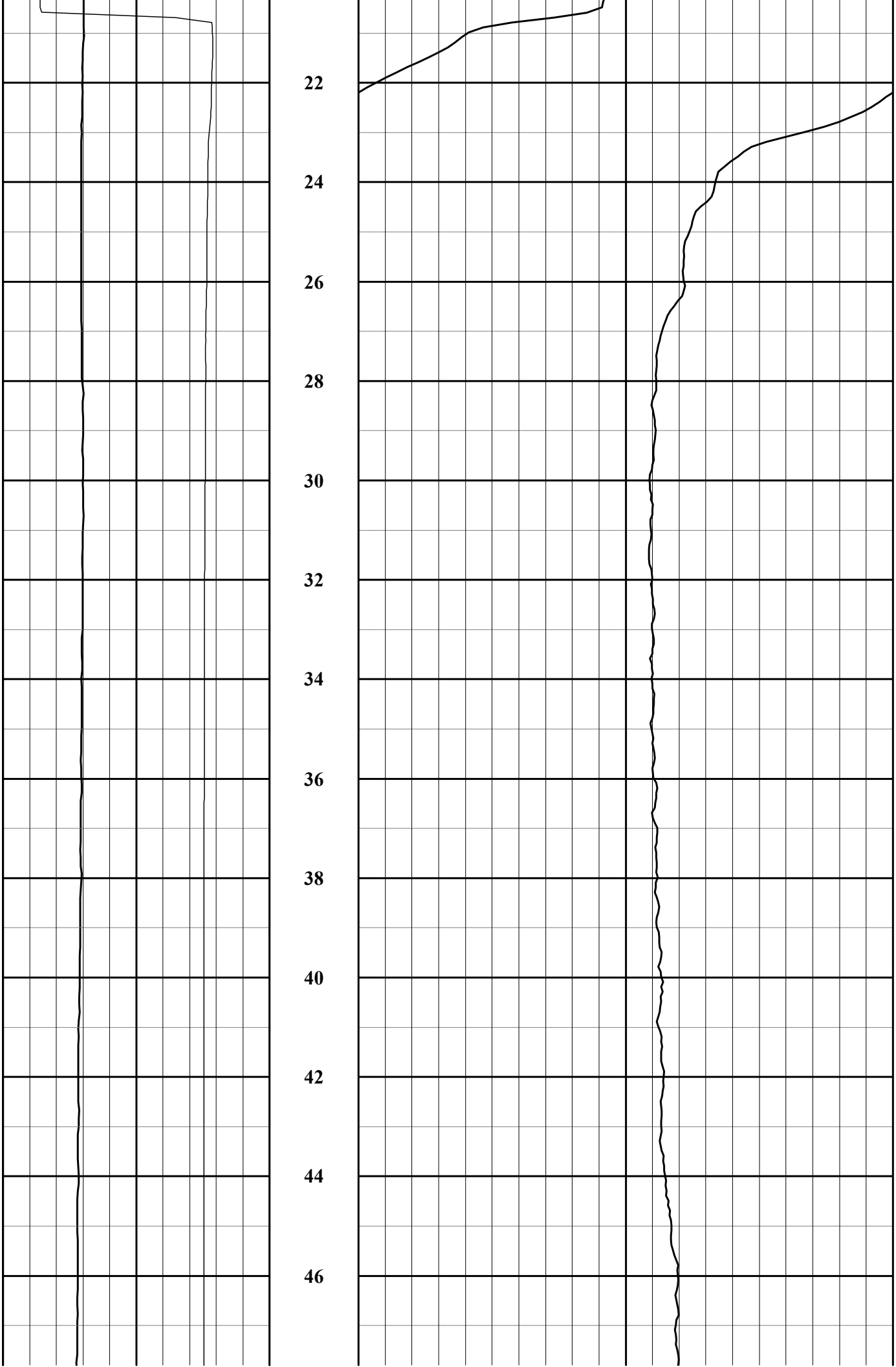
1ft:30ft

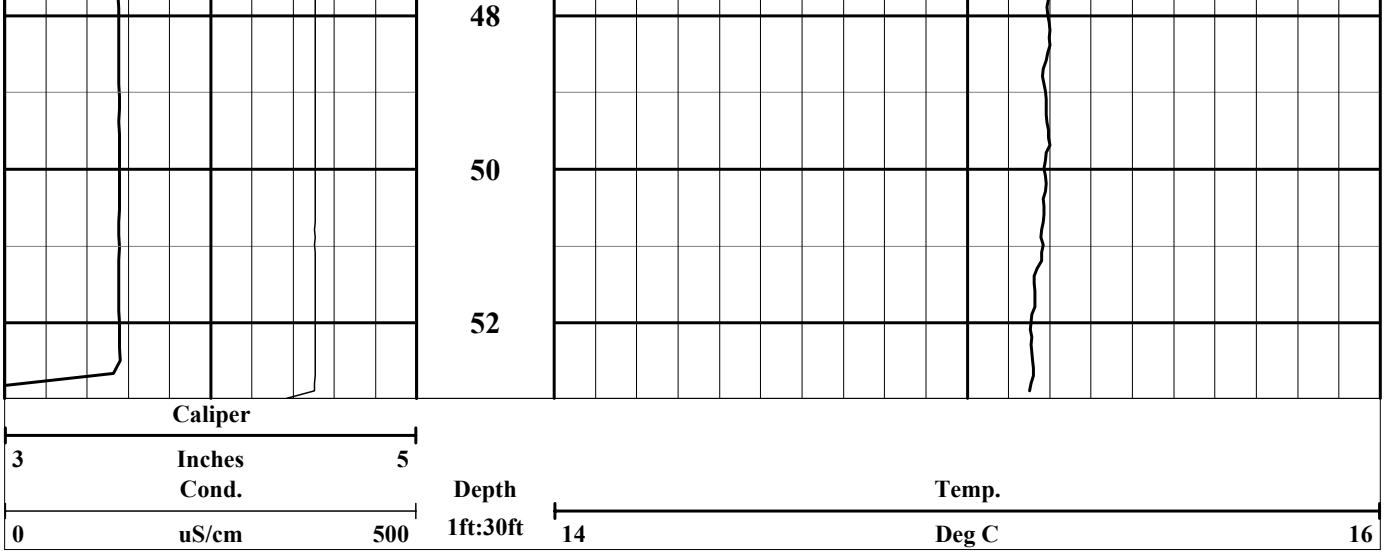
Temp.

14 Deg C 16

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: 9-3	Depth Driller:	
	Depth Logger:	
Date: July 28, 2005	BH Fluid:	Logged by:
File Name:		Witness:




22
24
26
28
30
32
34
36
38
40
42
44
46



Caliper

3 Inches 5

Cond.

0 uS/cm 500

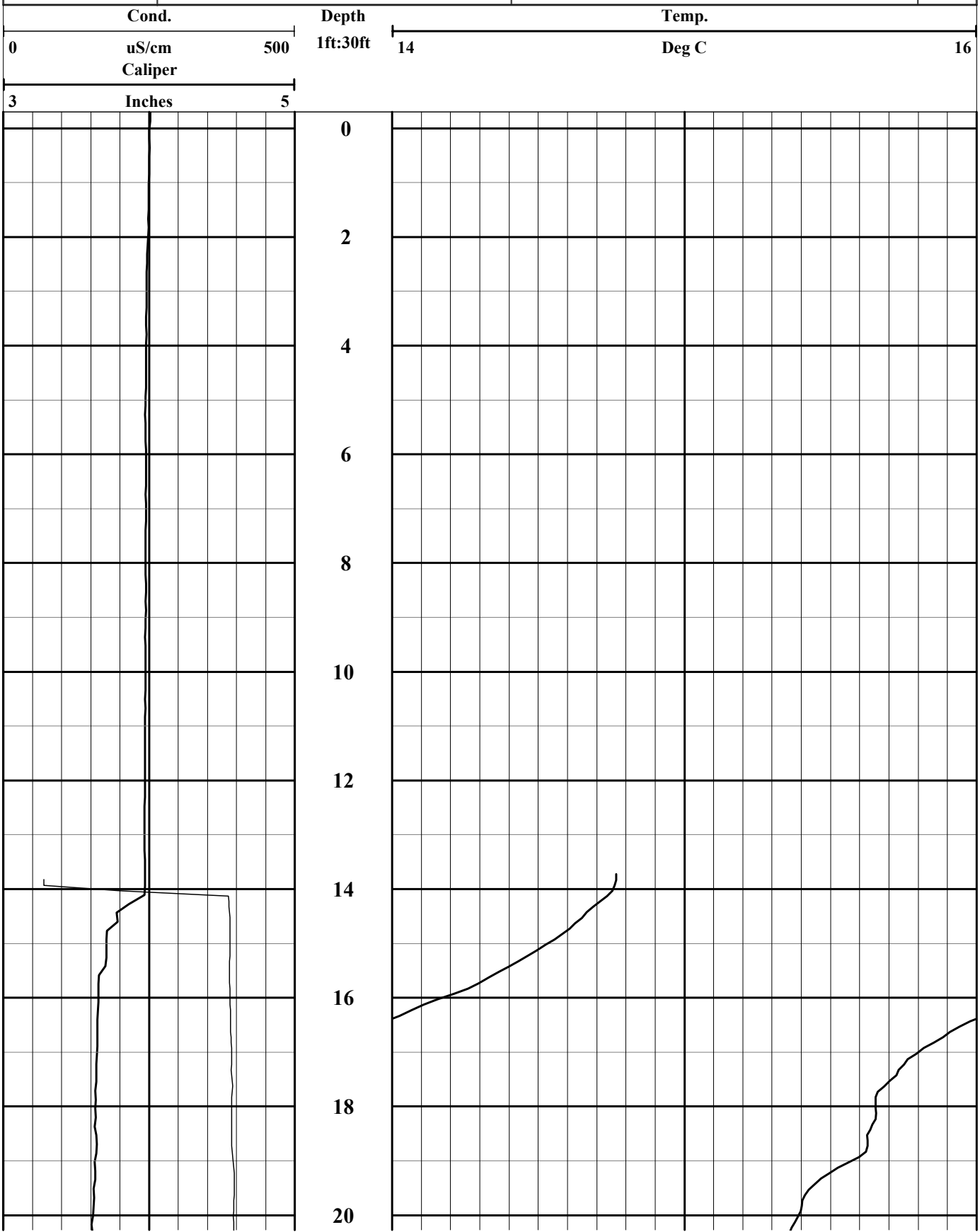
Depth

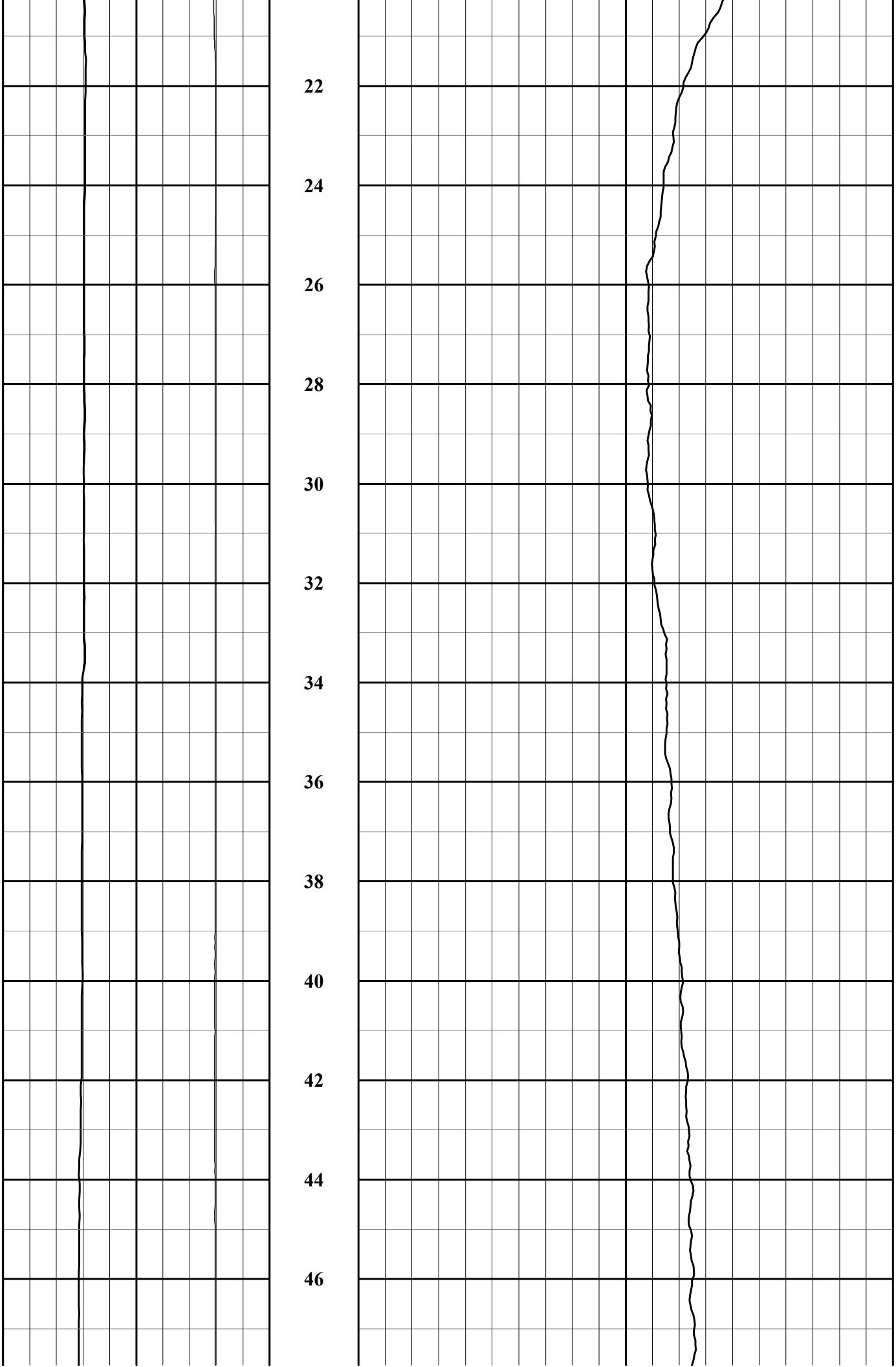
1ft:30ft

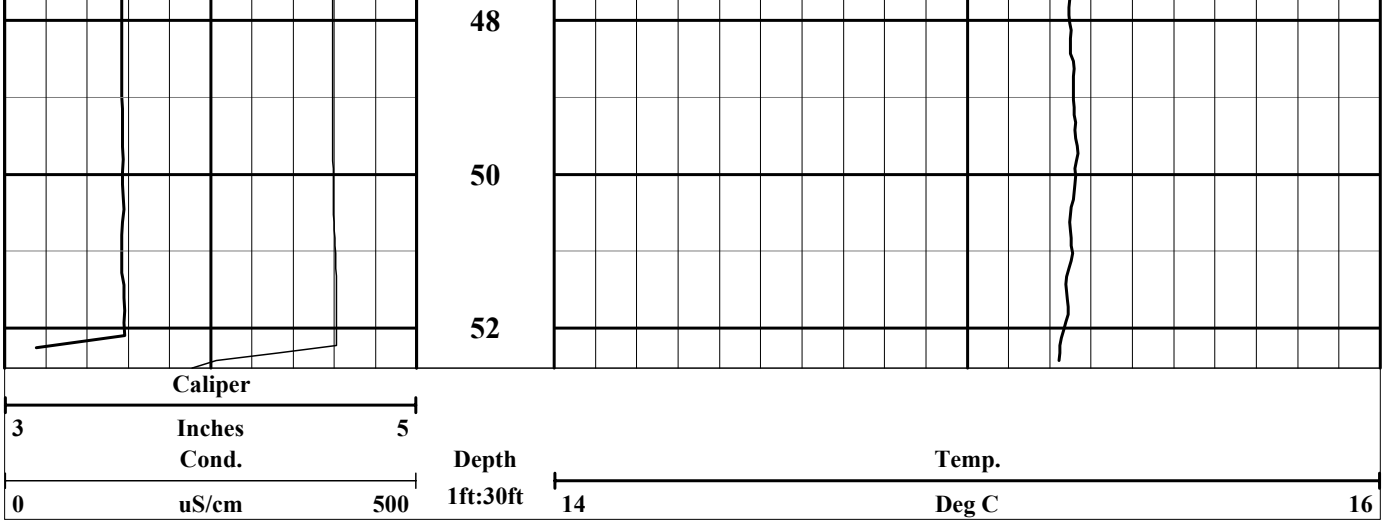
Temp.

14 Deg C 16

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: 9-1	Depth Driller:	
	Depth Logger:	
Date: July 29, 05	BH Fluid:	Logged by:
File Name:		Witness:




22
24
26
28
30
32
34
36
38
40
42
44
46



Caliper

3 Inches 5

Cond.

0 uS/cm 500

Depth

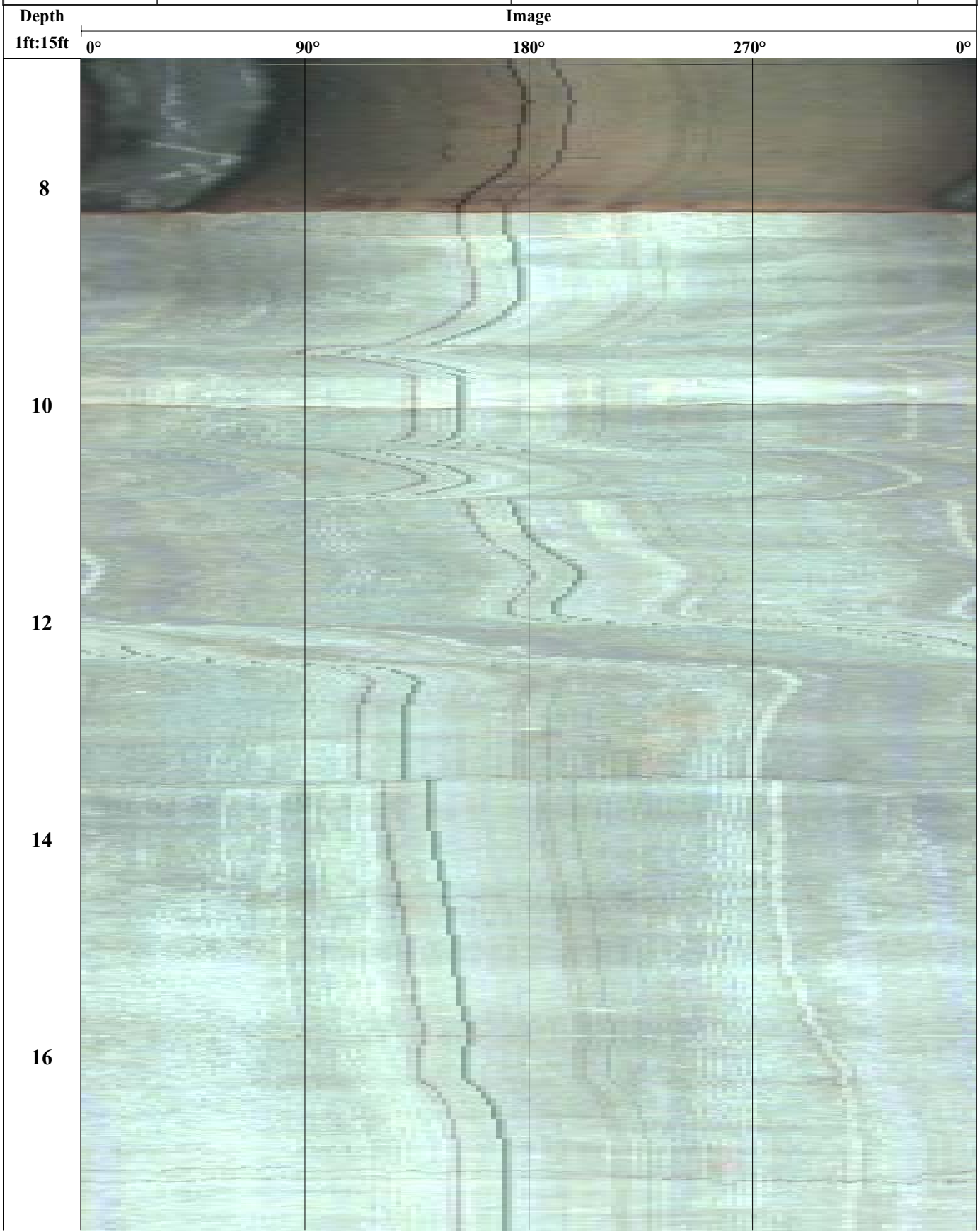
1ft:30ft

Temp.

14 Deg C 16

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	CH-13A			Depth Driller Depth Logger	
Date	Aug 4, 05	BH Fluid		Logged by:	
File Name				Witness:	



18

20

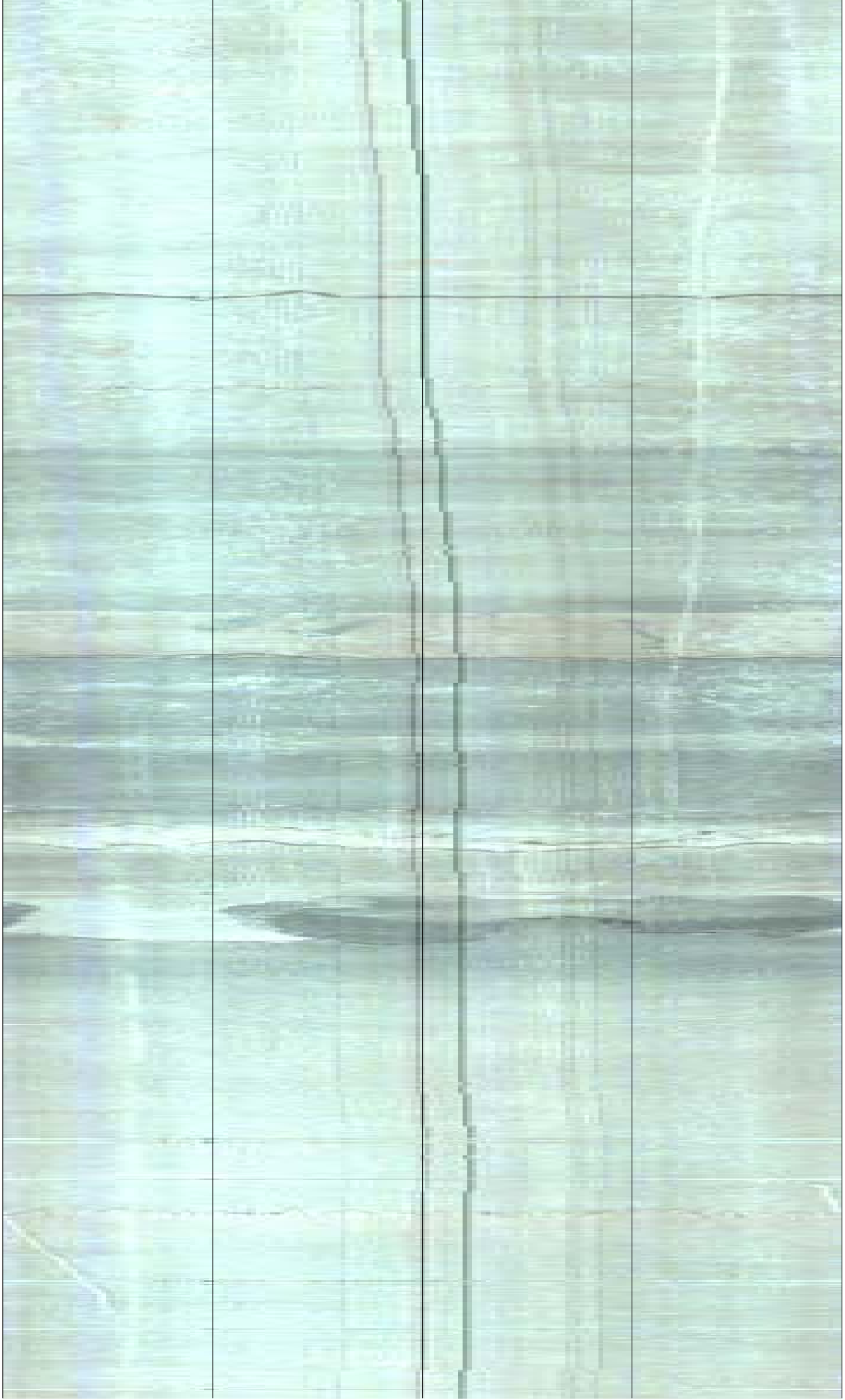
22

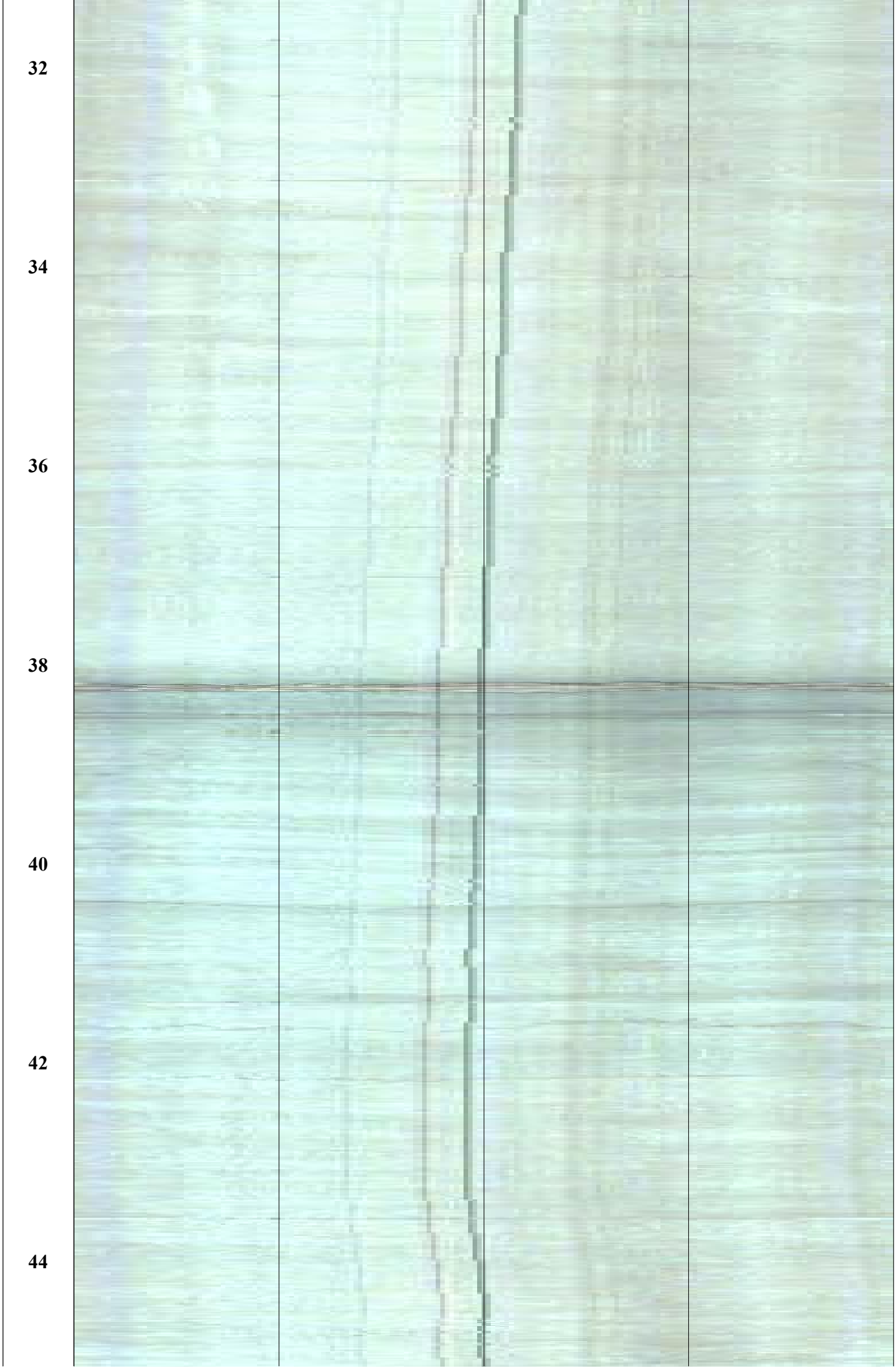
24

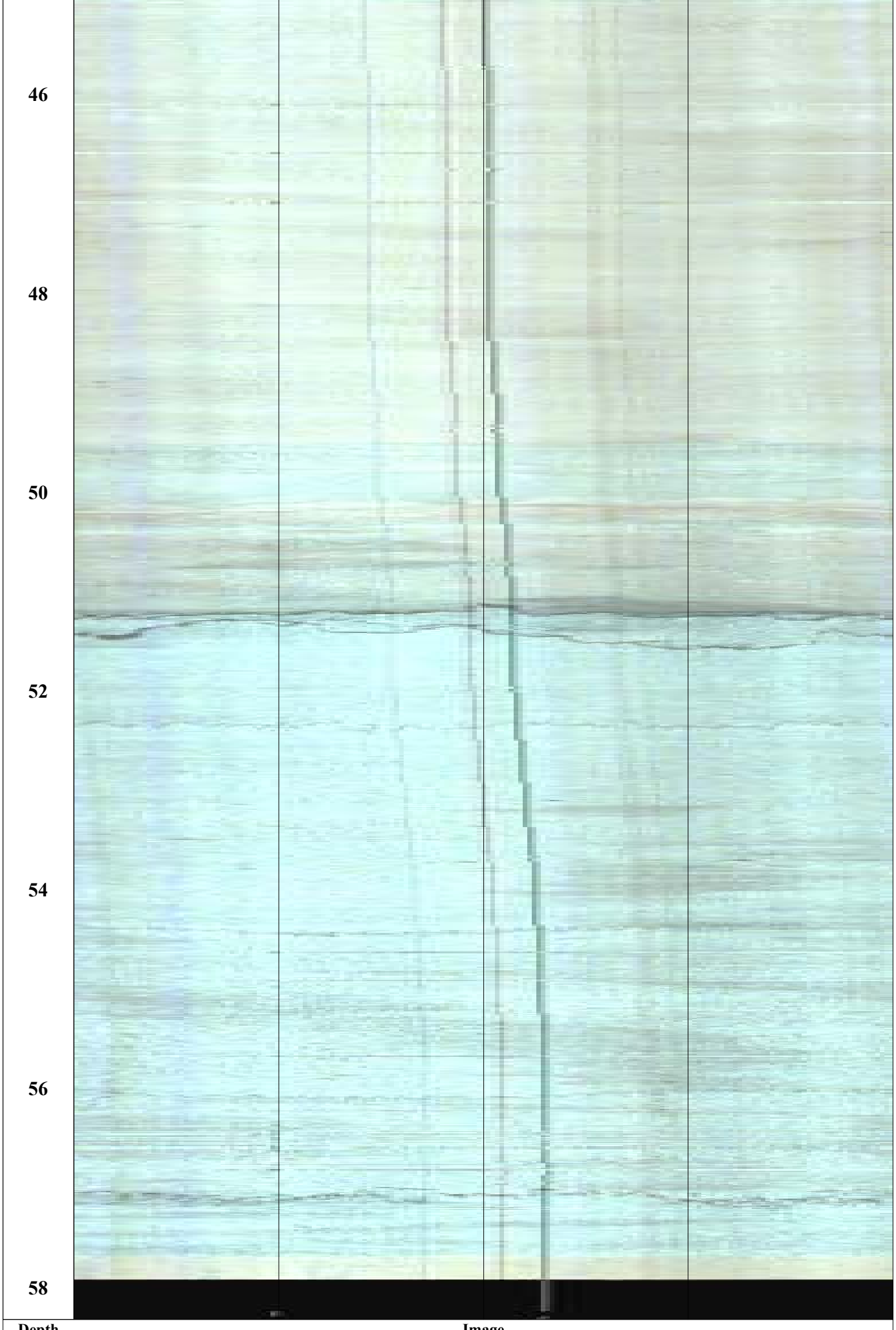
26

28

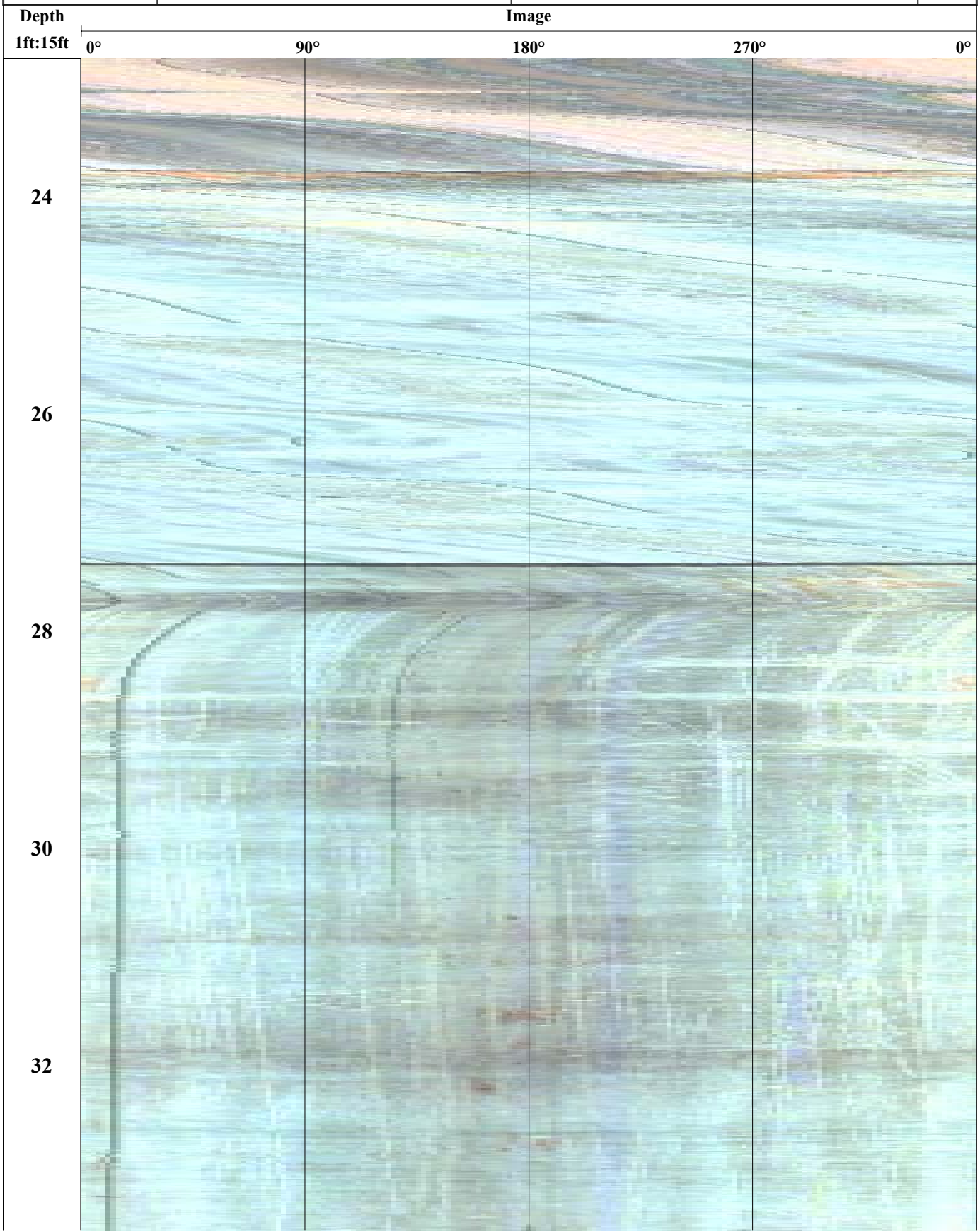
30

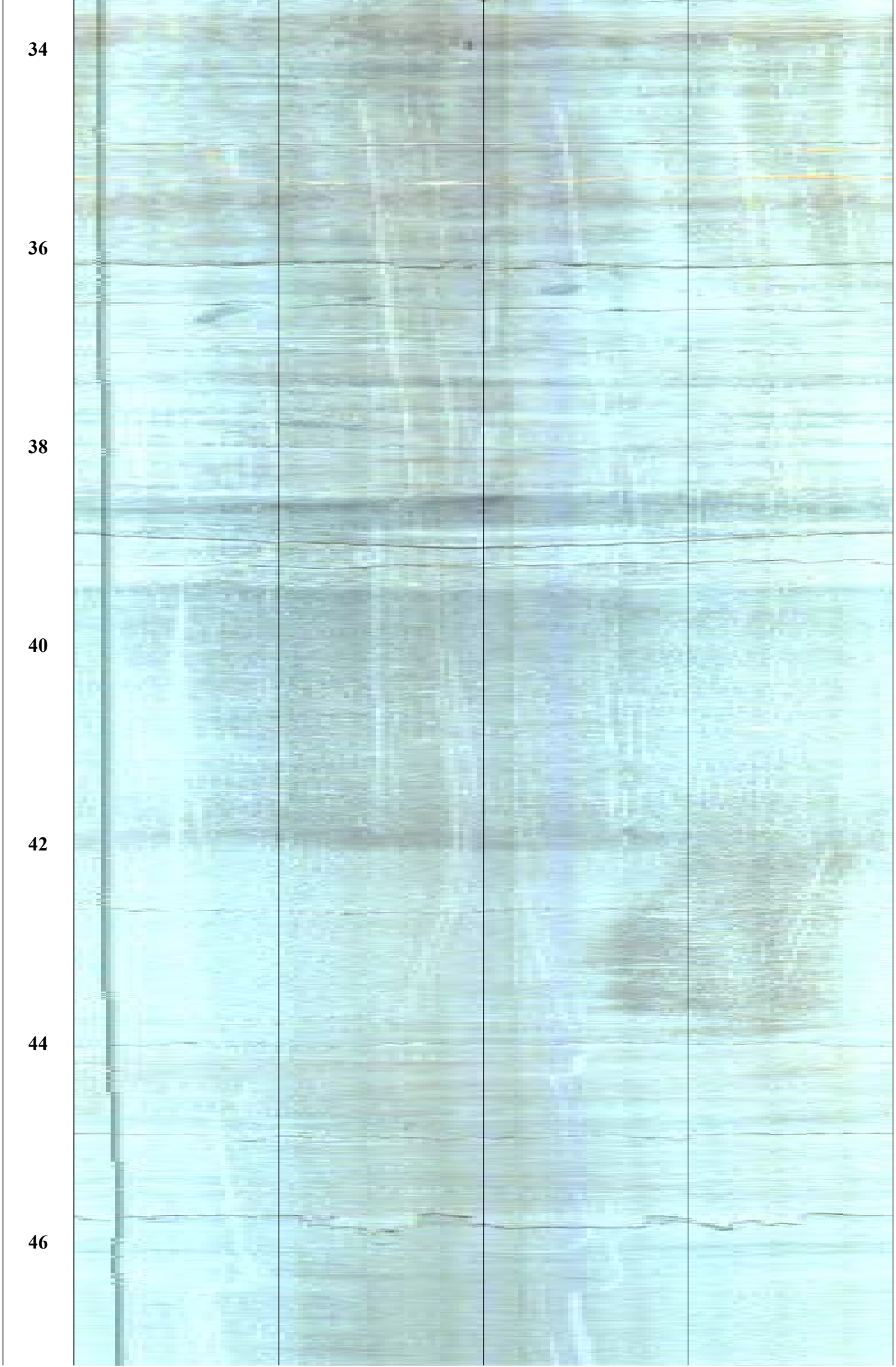


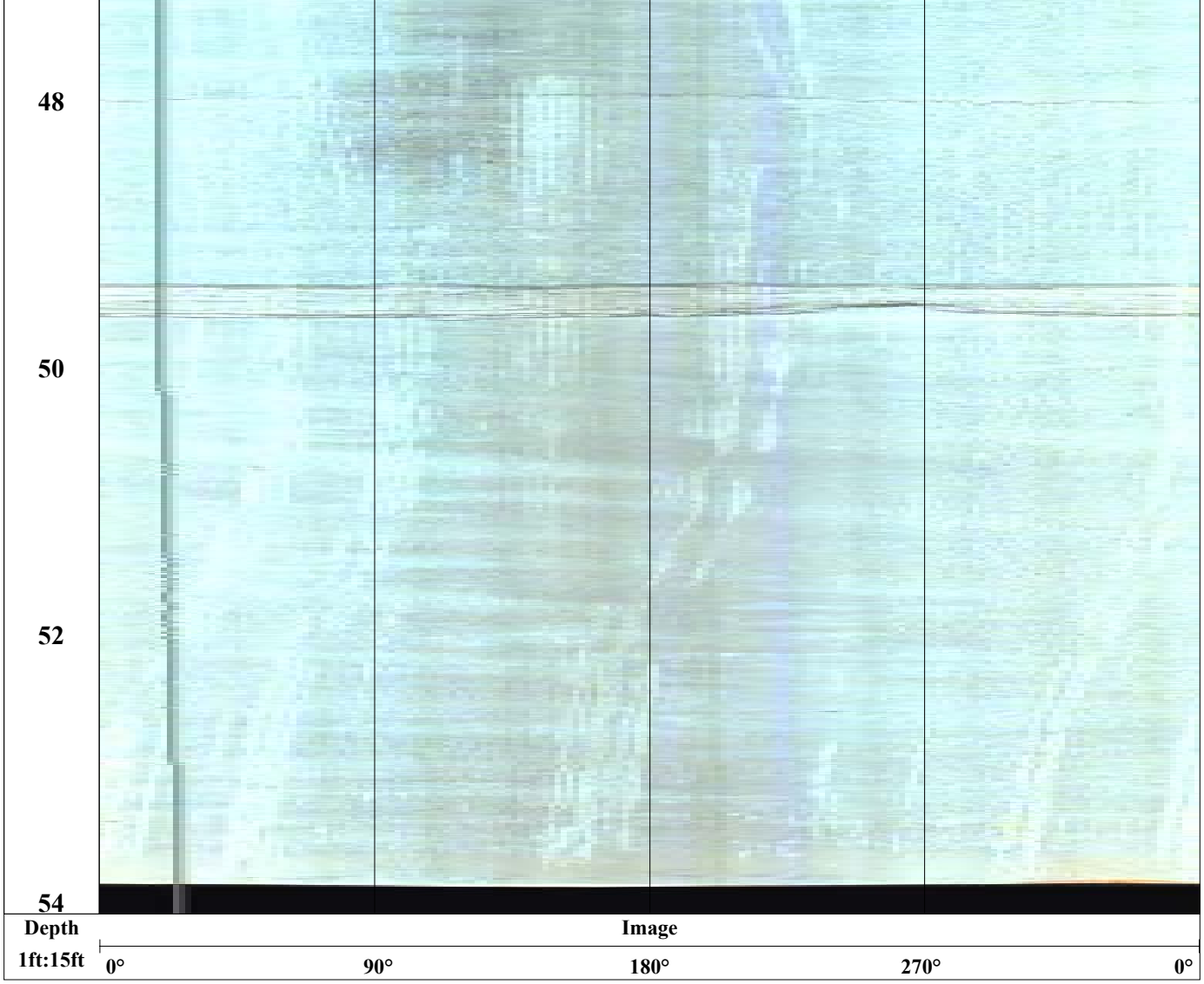

32
34
36
38
40
42
44


46
48
50
52
54
56
58
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

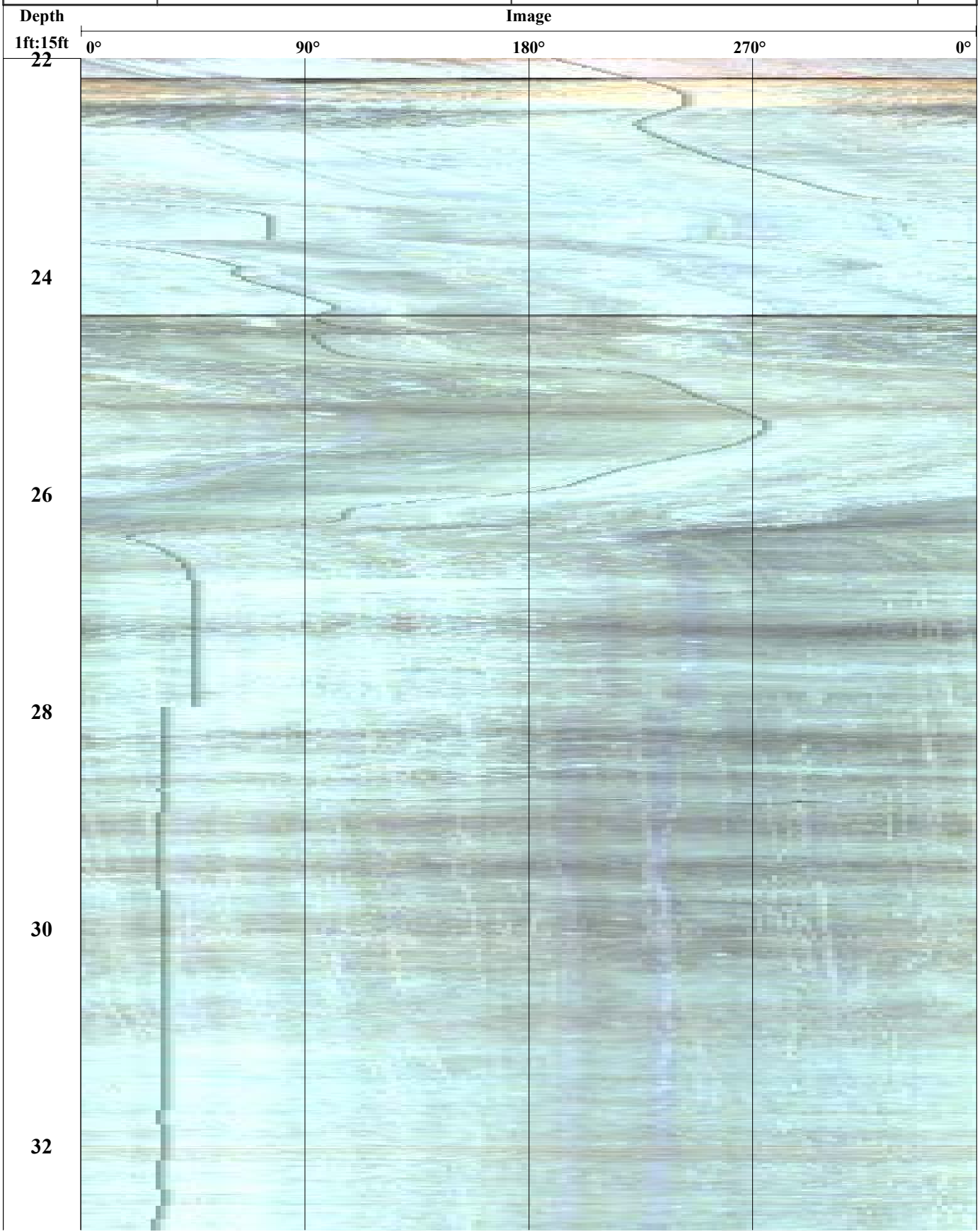
	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-4	Depth Driller / Depth Logger	
Date July 27, 2005 BH Fluid	Logged by:	
File Name	Witness:	

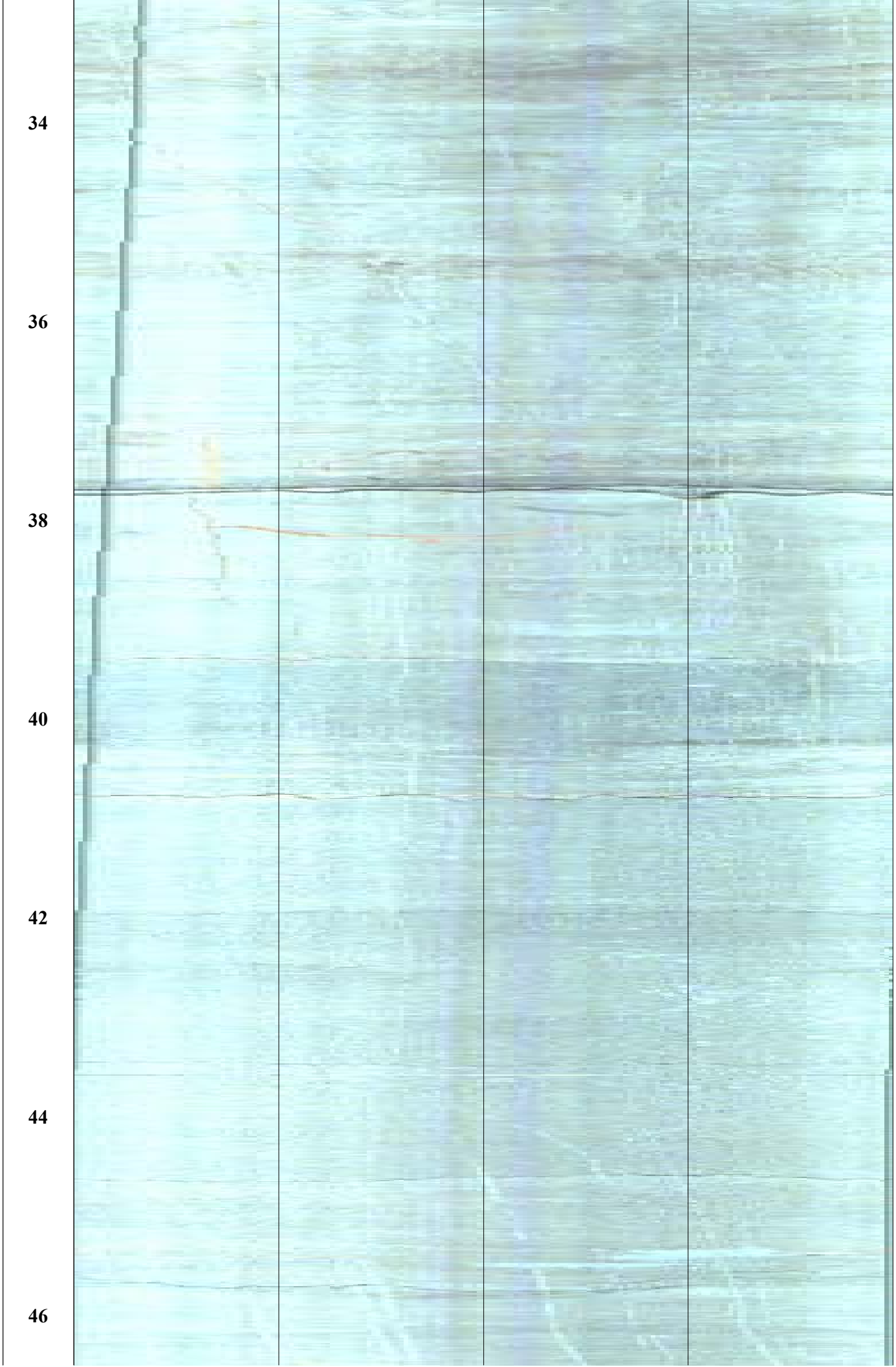


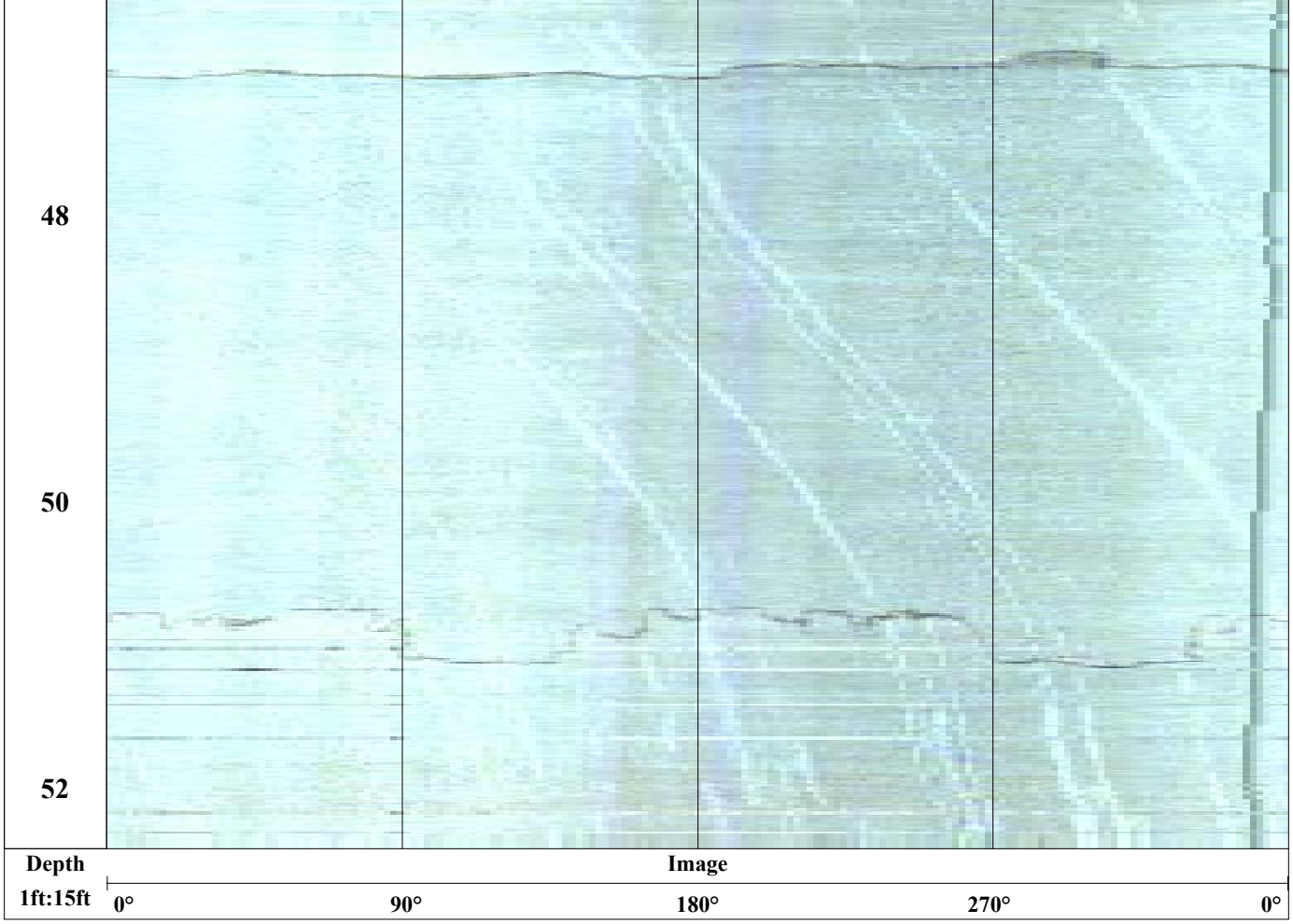

34
36
38
40
42
44
46


48
50
52
54
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-3	Depth Driller / Depth Logger	
Date July 28, 2005 BH Fluid	Logged by:	
File Name	Witness:	

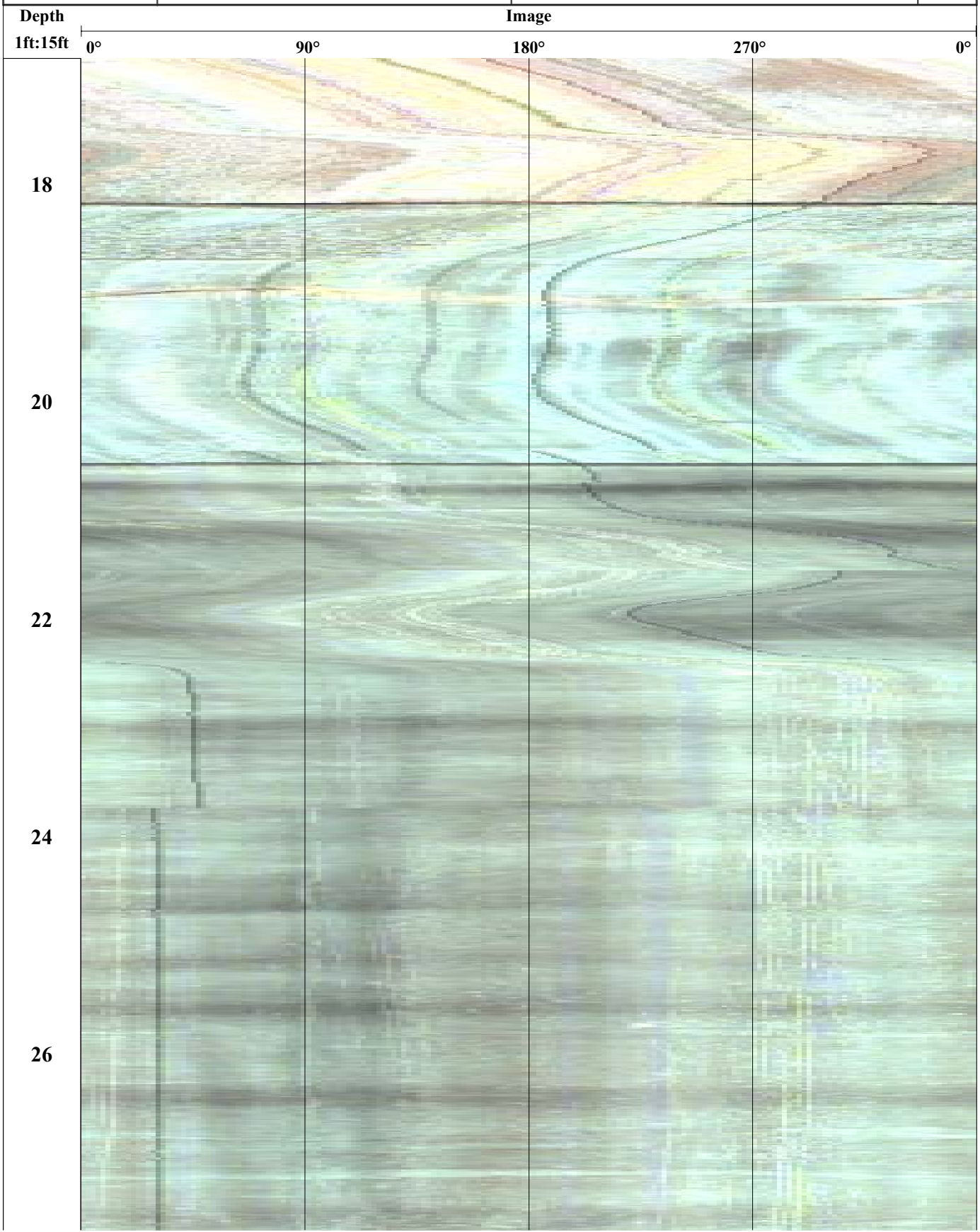


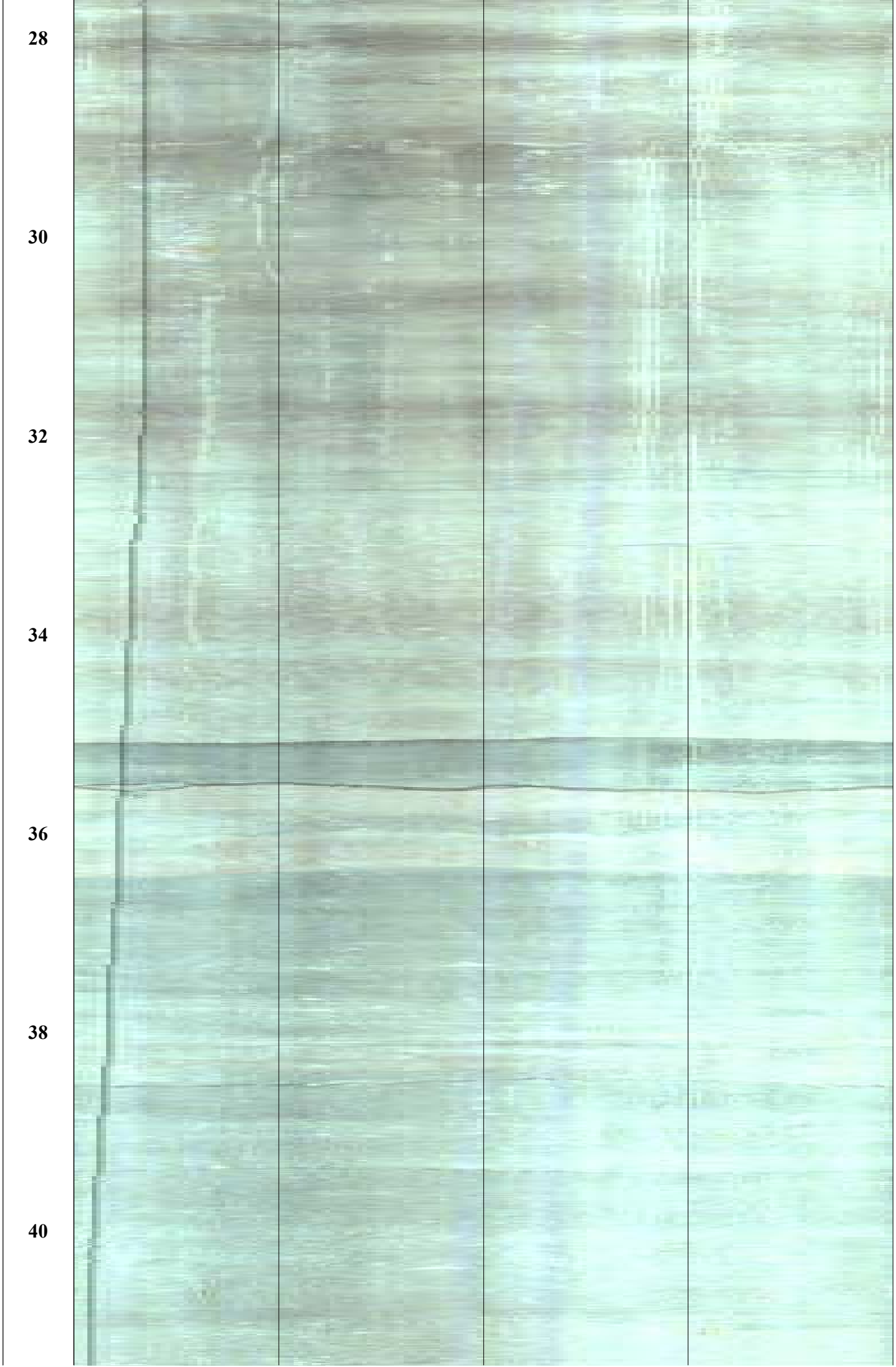

34
36
38
40
42
44
46

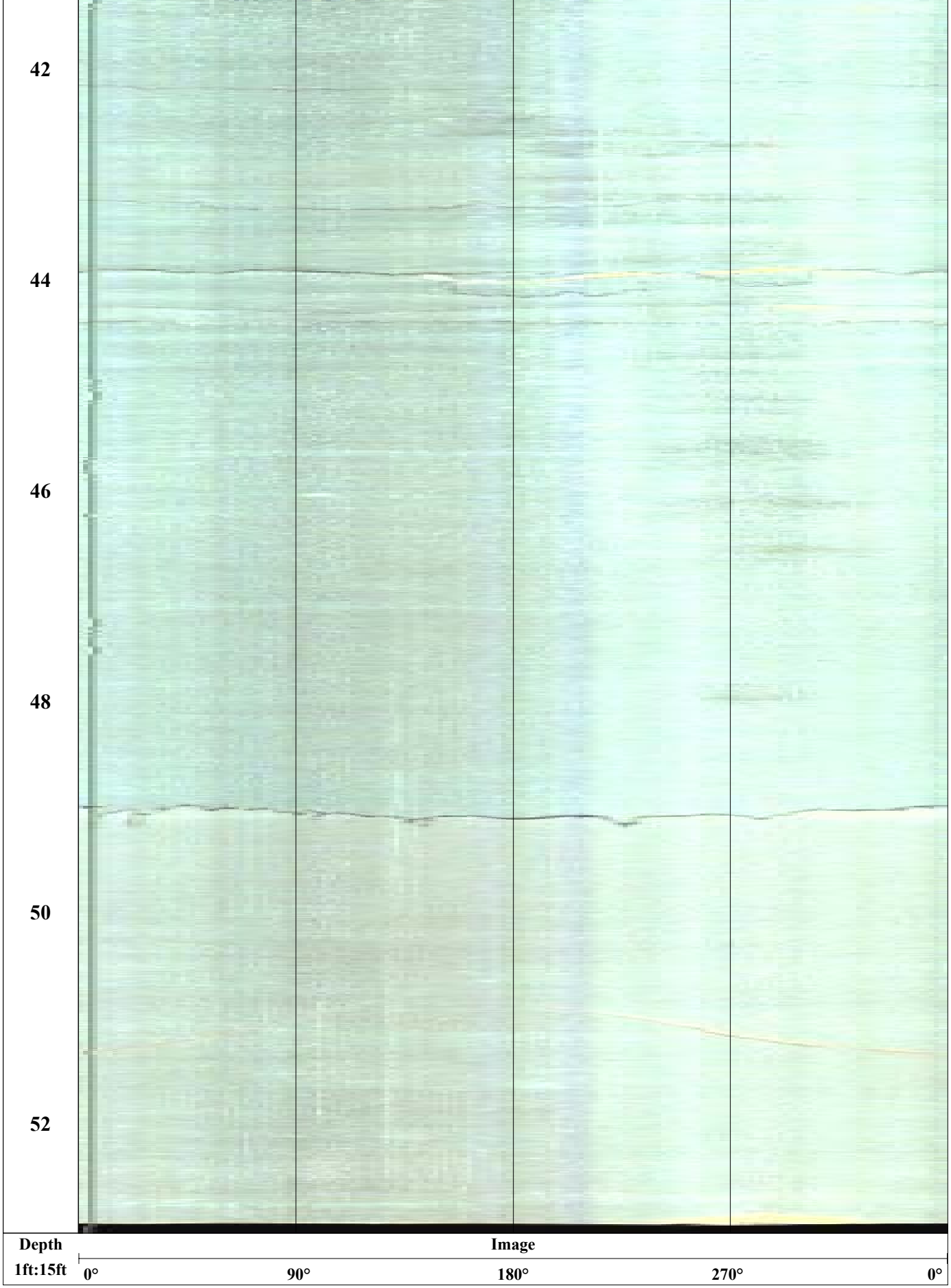

48
50
52
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	9-2			Depth Driller	
				Depth Logger	
Date	July 28, 2005	BH Fluid		Logged by:	
File Name				Witness:	

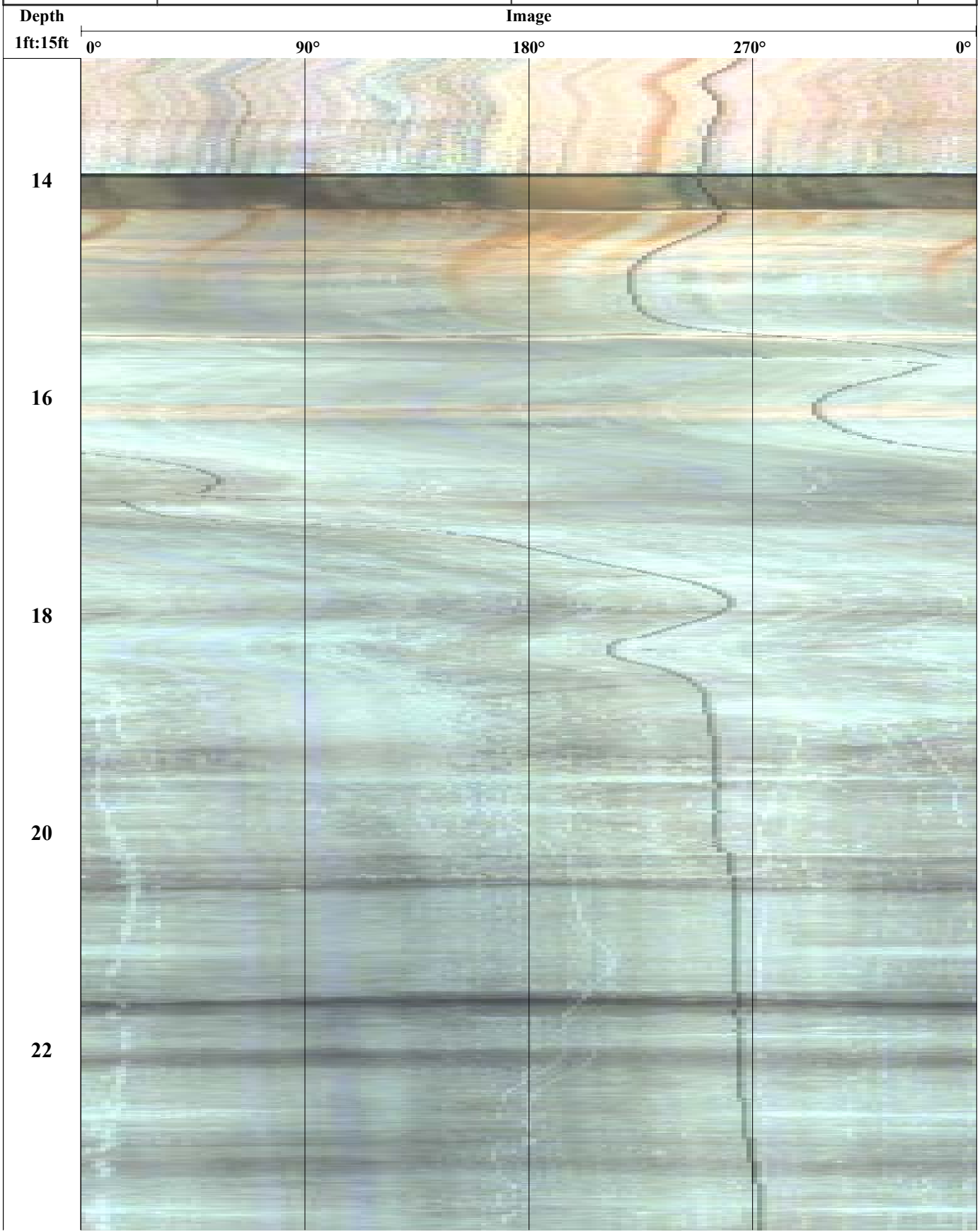


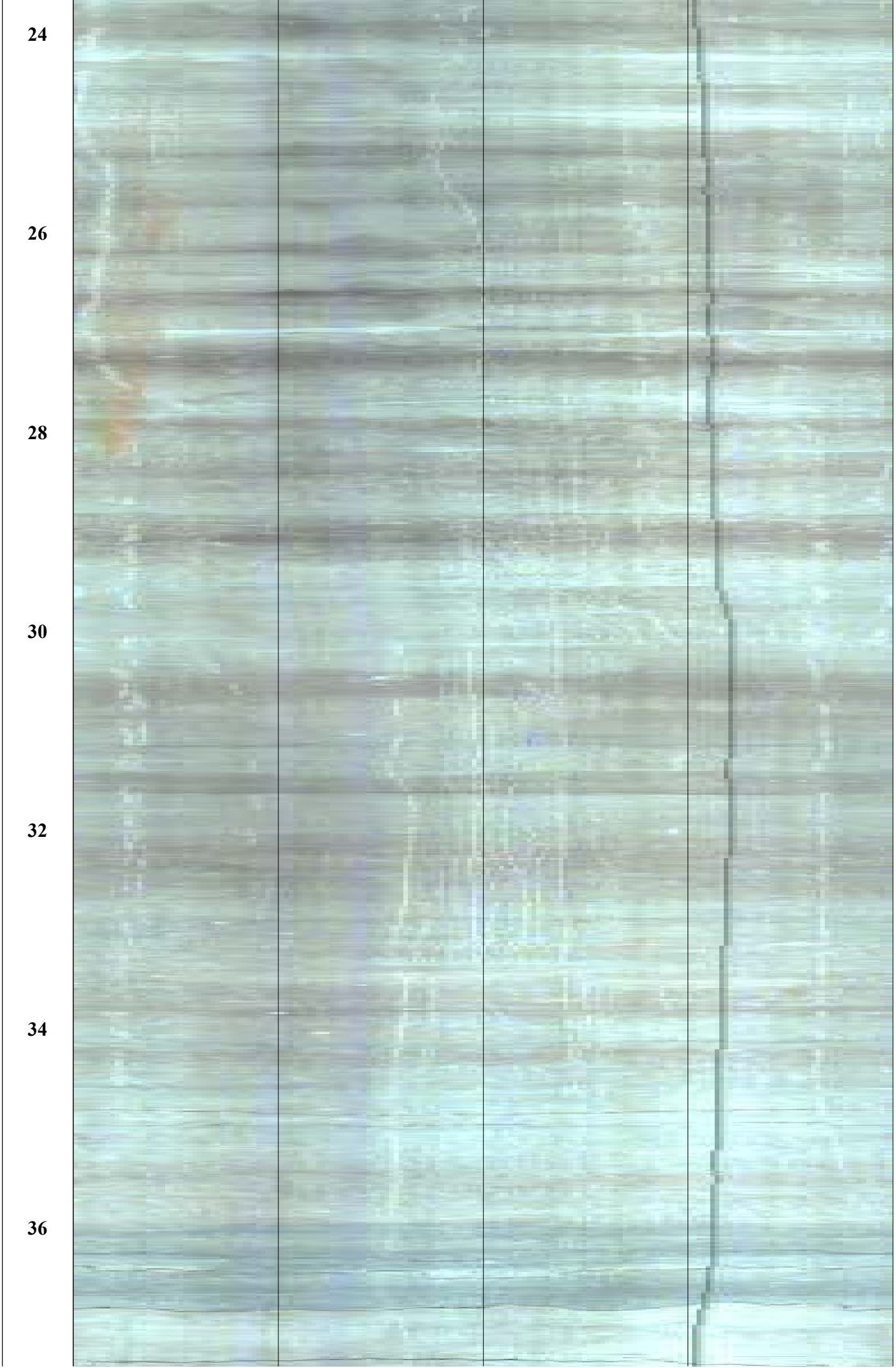

28
30
32
34
36
38
40

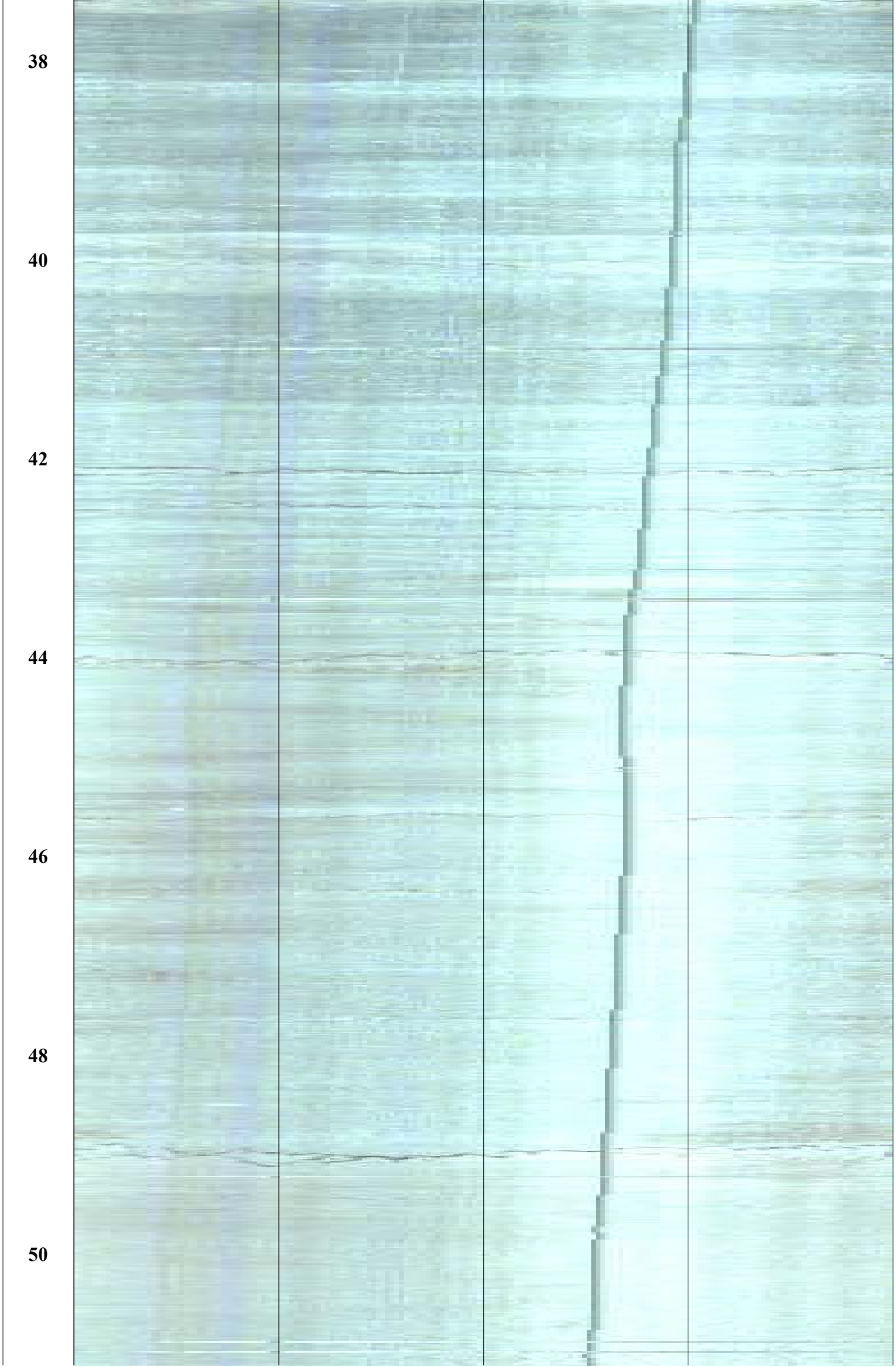

42
44
46
48
50
52
Depth
1ft:15ft
Image
0°
90°
180°
270°
0°

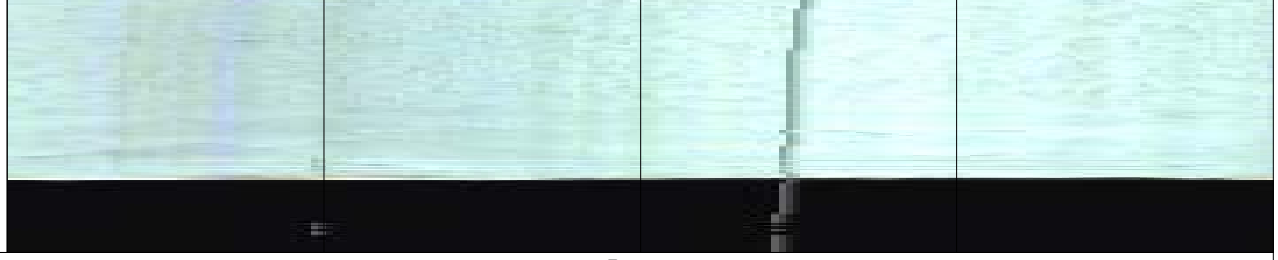
	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	9-1			Depth Driller	
				Depth Logger	
Date	July 29, 05	BH Fluid		Logged by:	
File Name				Witness:	



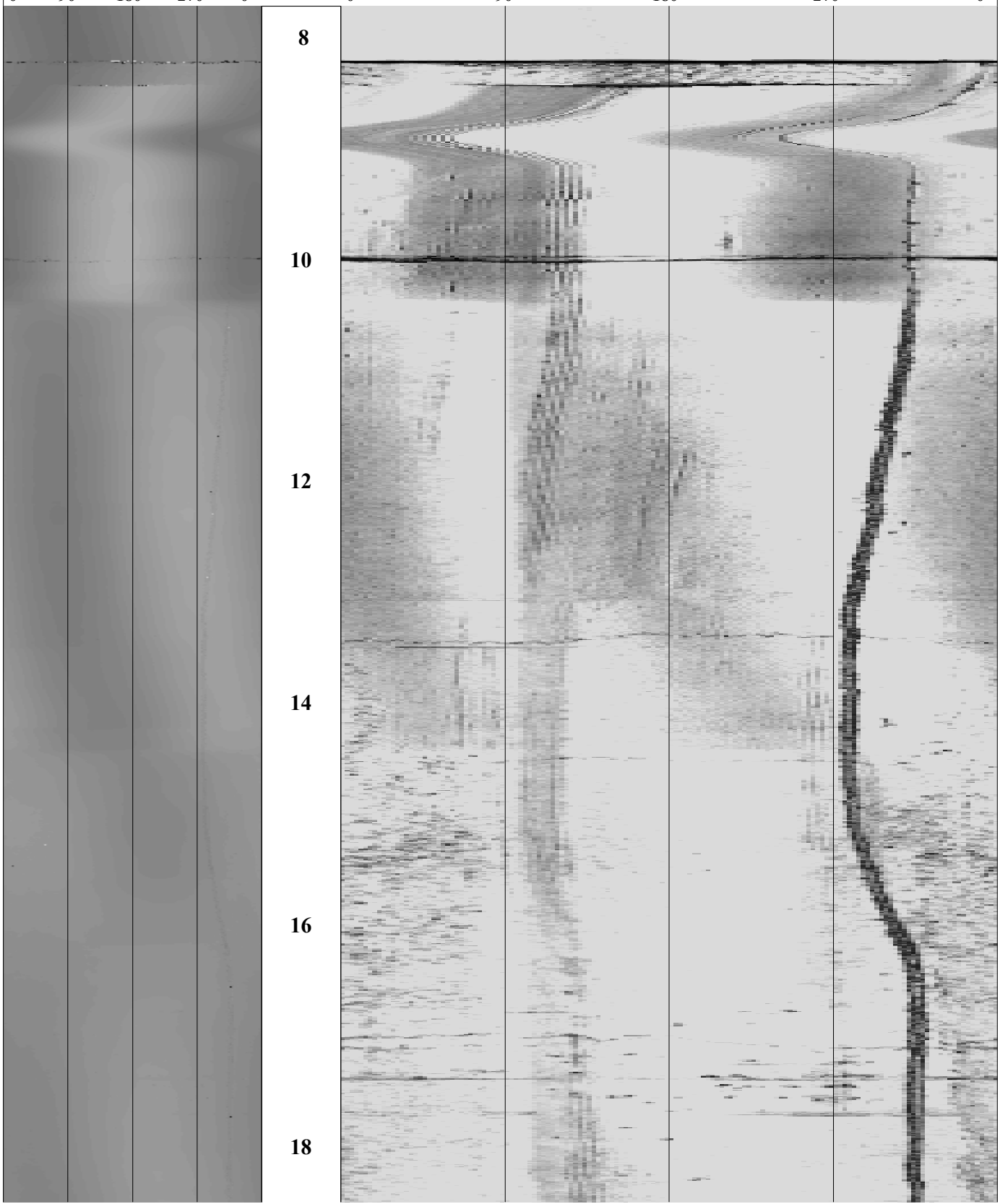

24
26
28
30
32
34
36

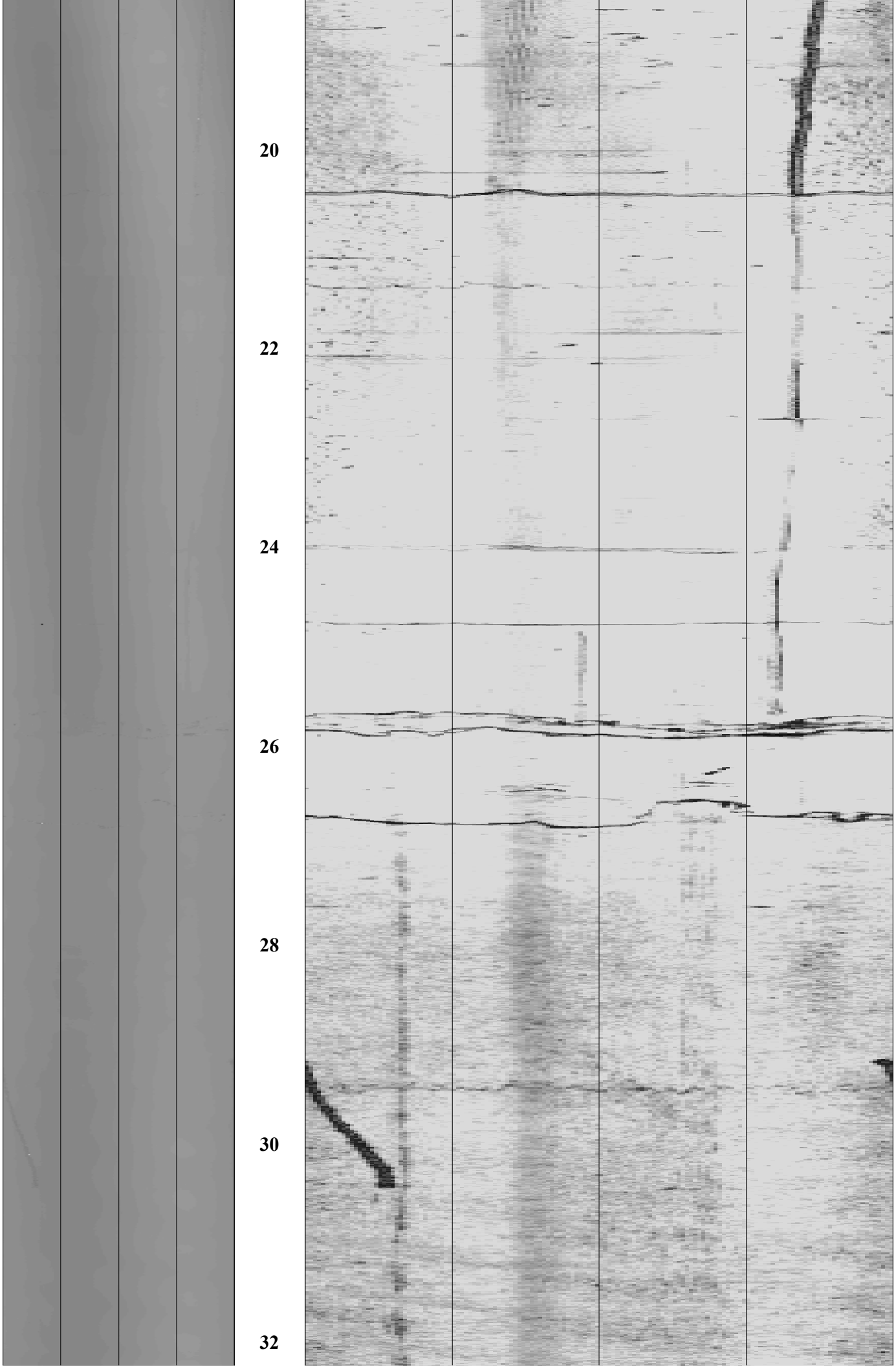

38
40
42
44
46
48
50

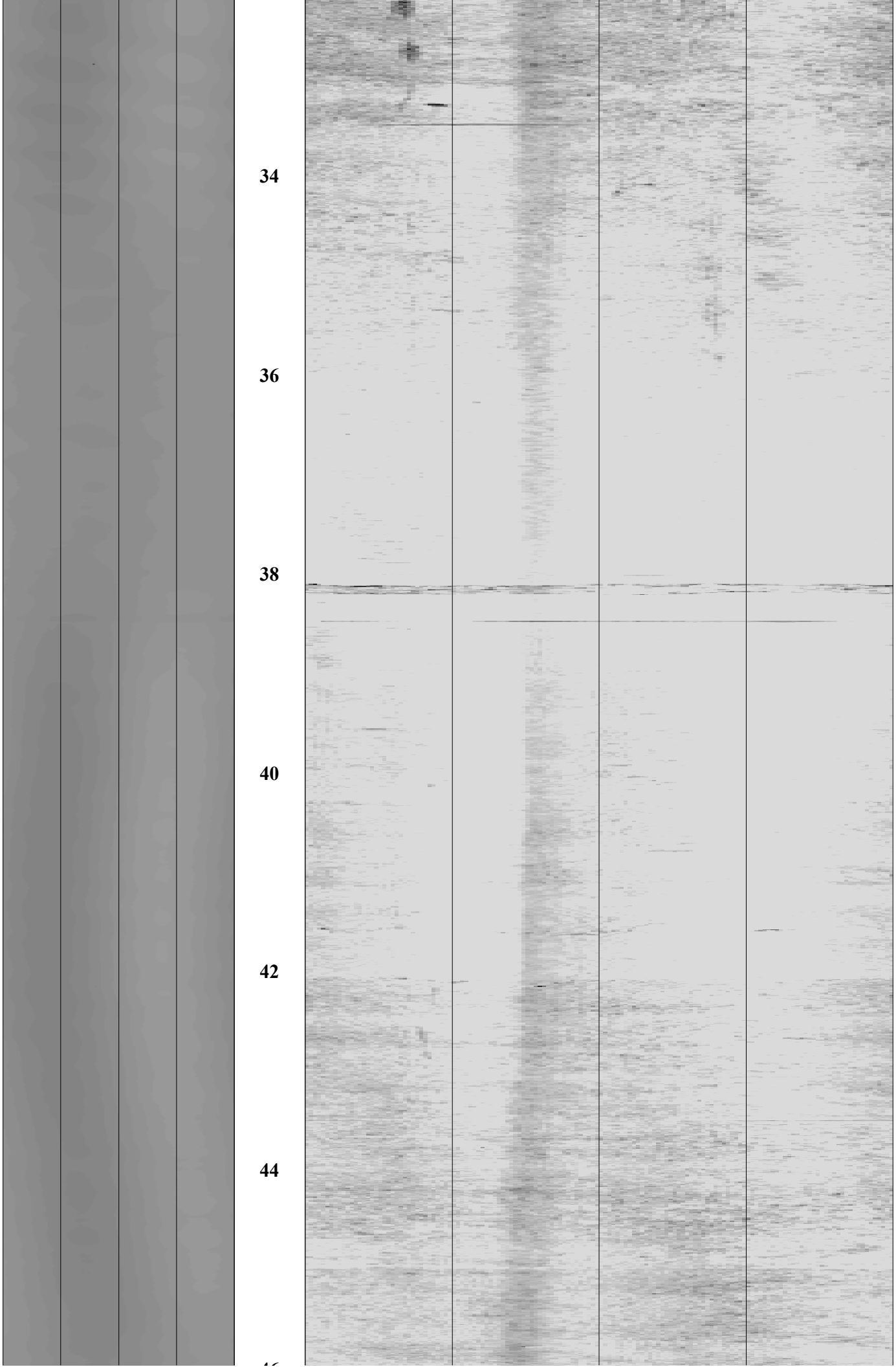


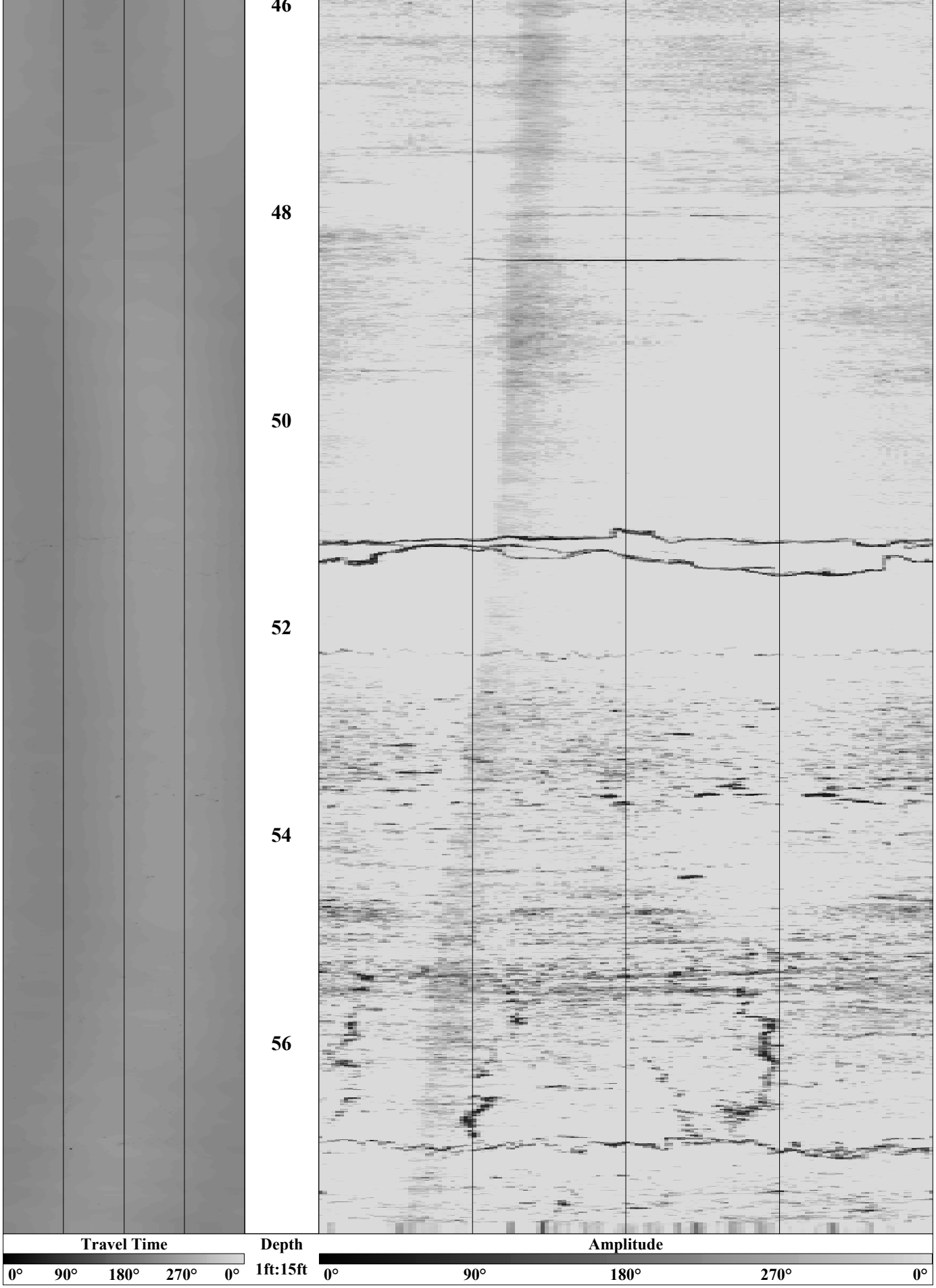
Depth	Image				
52					
1ft:15ft	0°	90°	180°	270°	0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-13A	Depth Driller / Depth Logger	
Date: Aug 4, 05	BH Fluid	Logged by:
File Name		Witness:



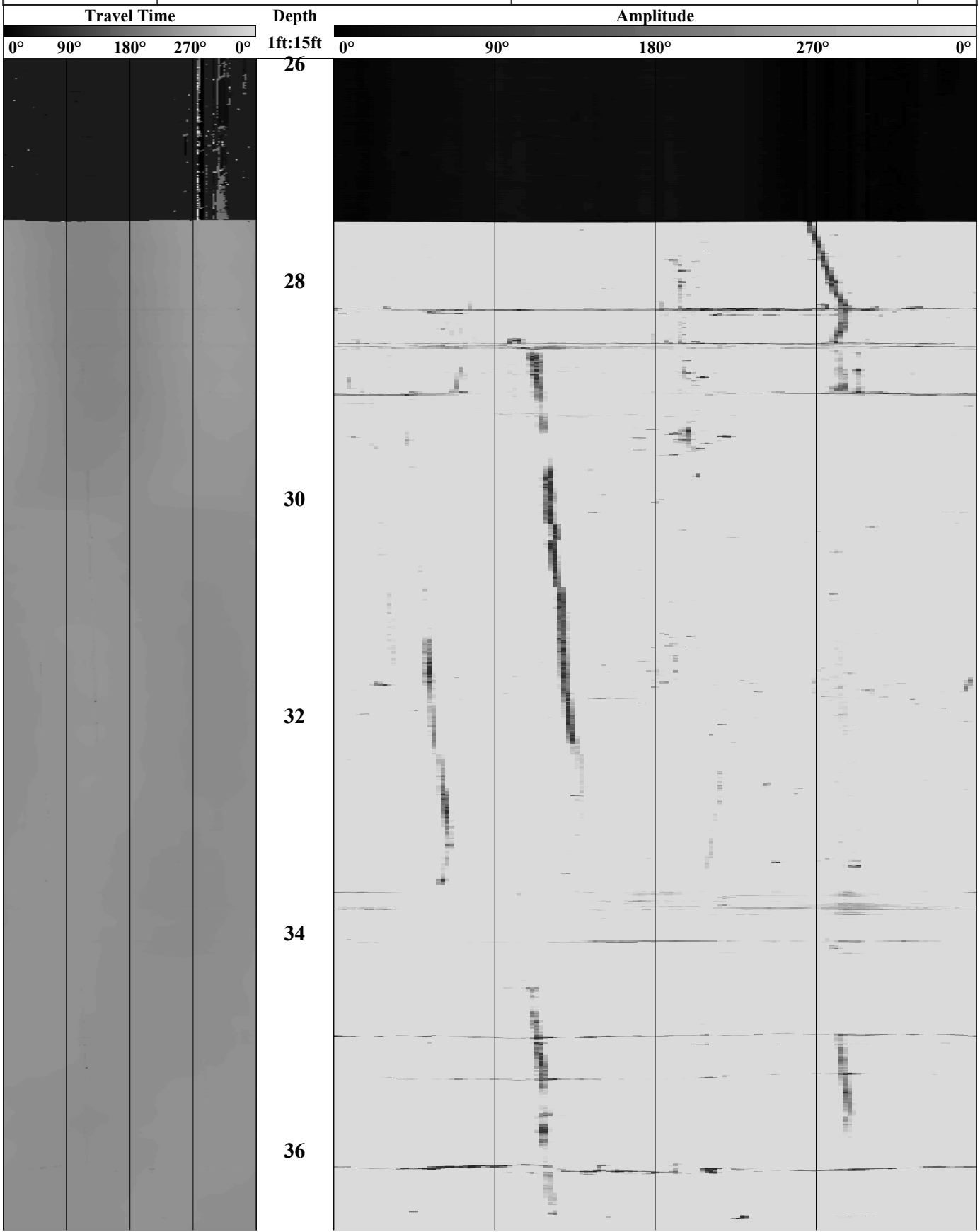

20
22
24
26
28
30
32

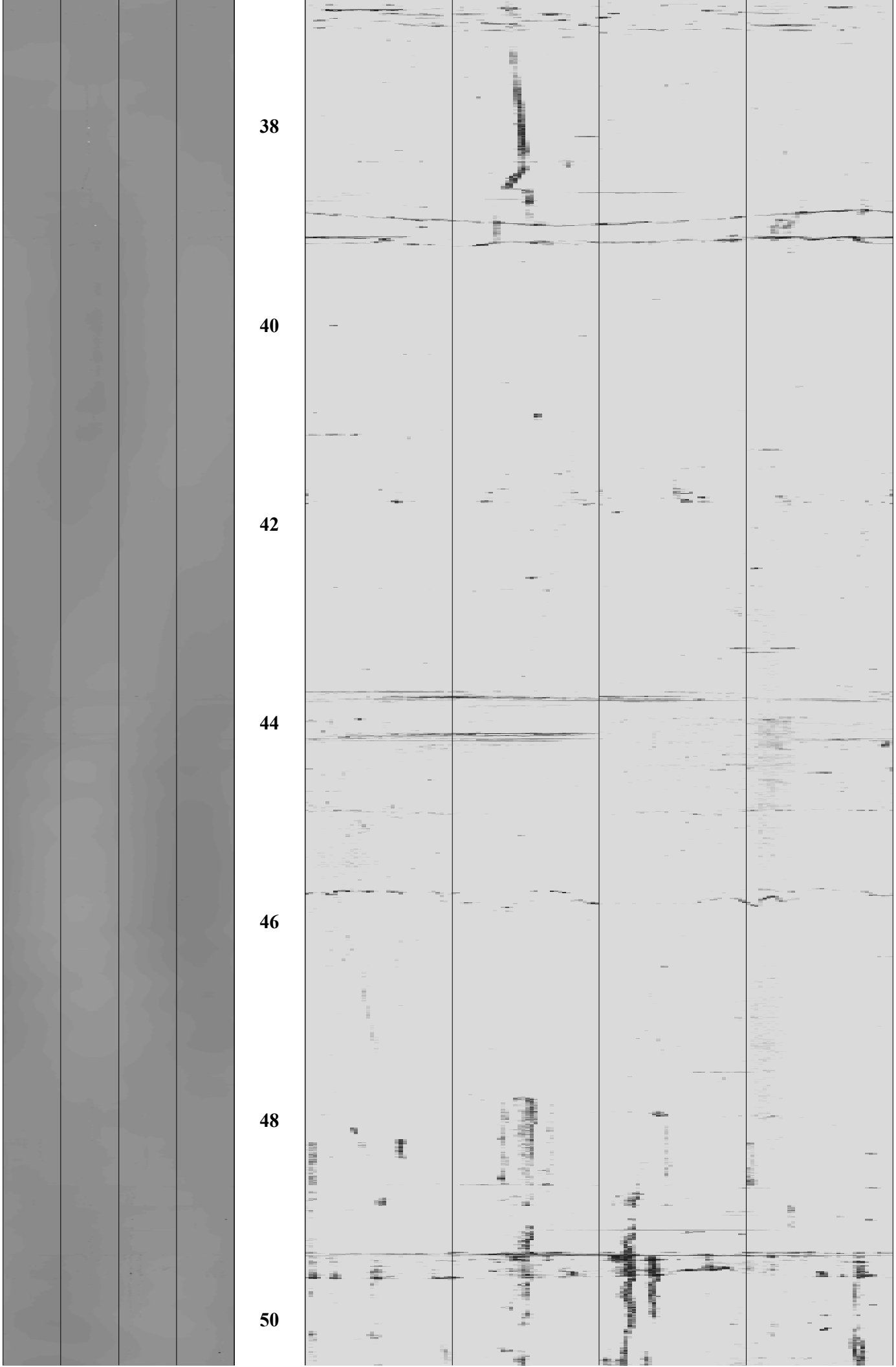

34
36
38
40
42
44

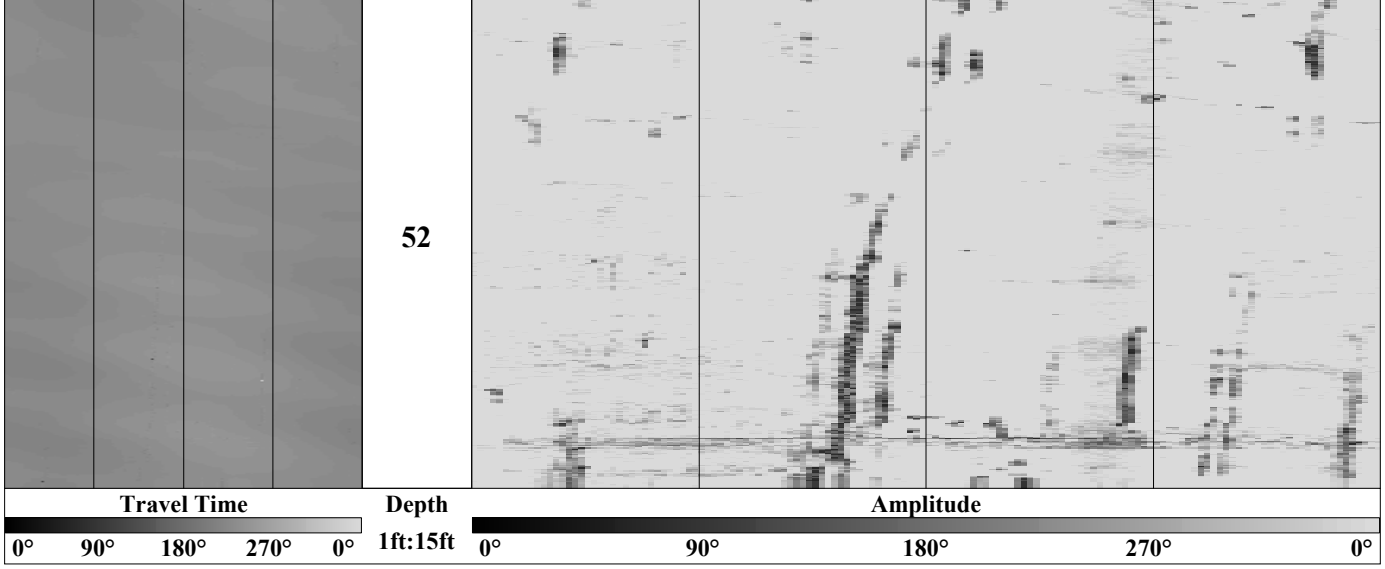

46
48
50
52
54
56
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

Well	9-4			Depth Driller Depth Logger	
Date	July 27, 2005	BH Fluid		Logged by:	
File Name				Witness:	




38
40
42
44
46
48
50



Travel Time

0° 90° 180° 270° 0°

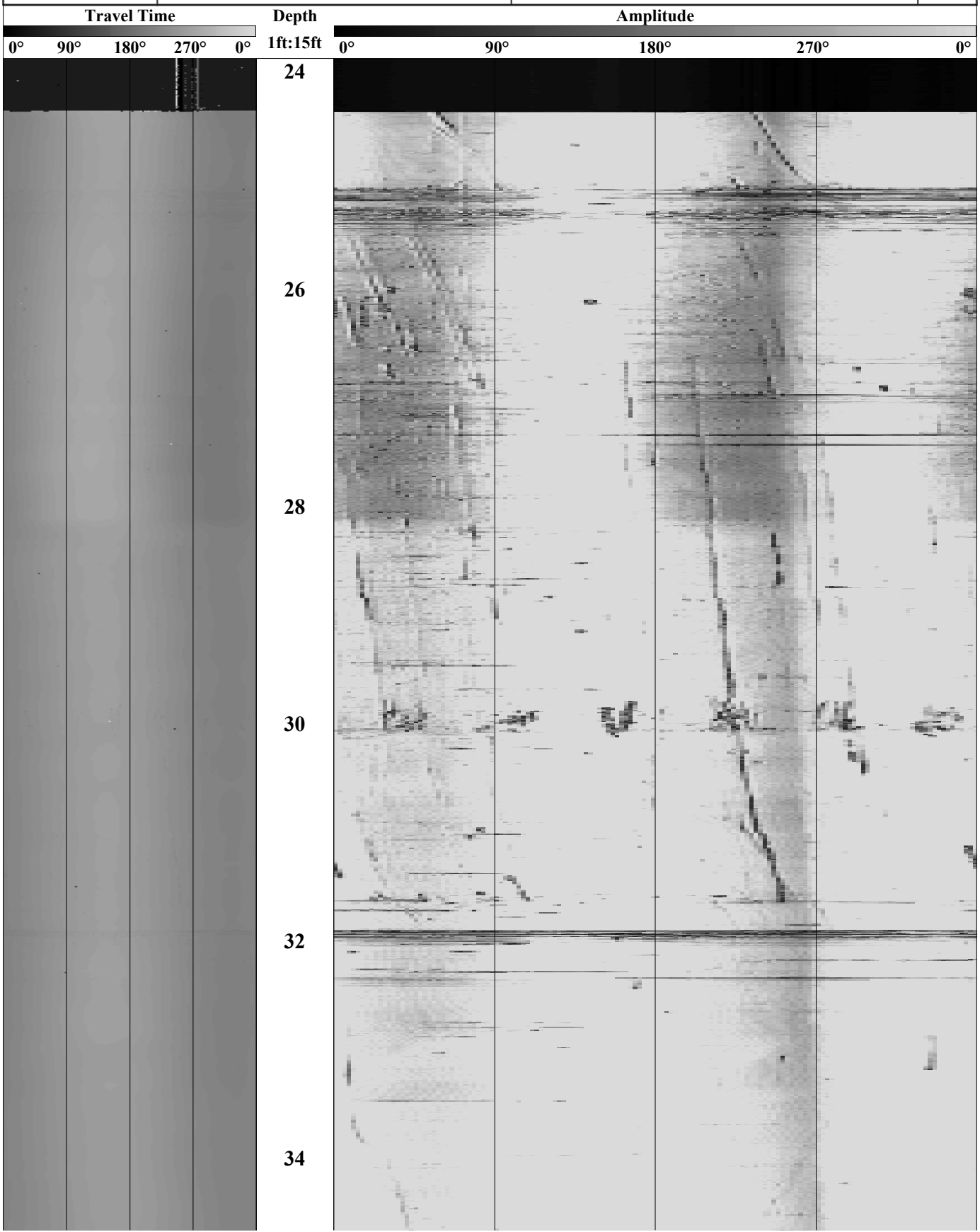
Depth

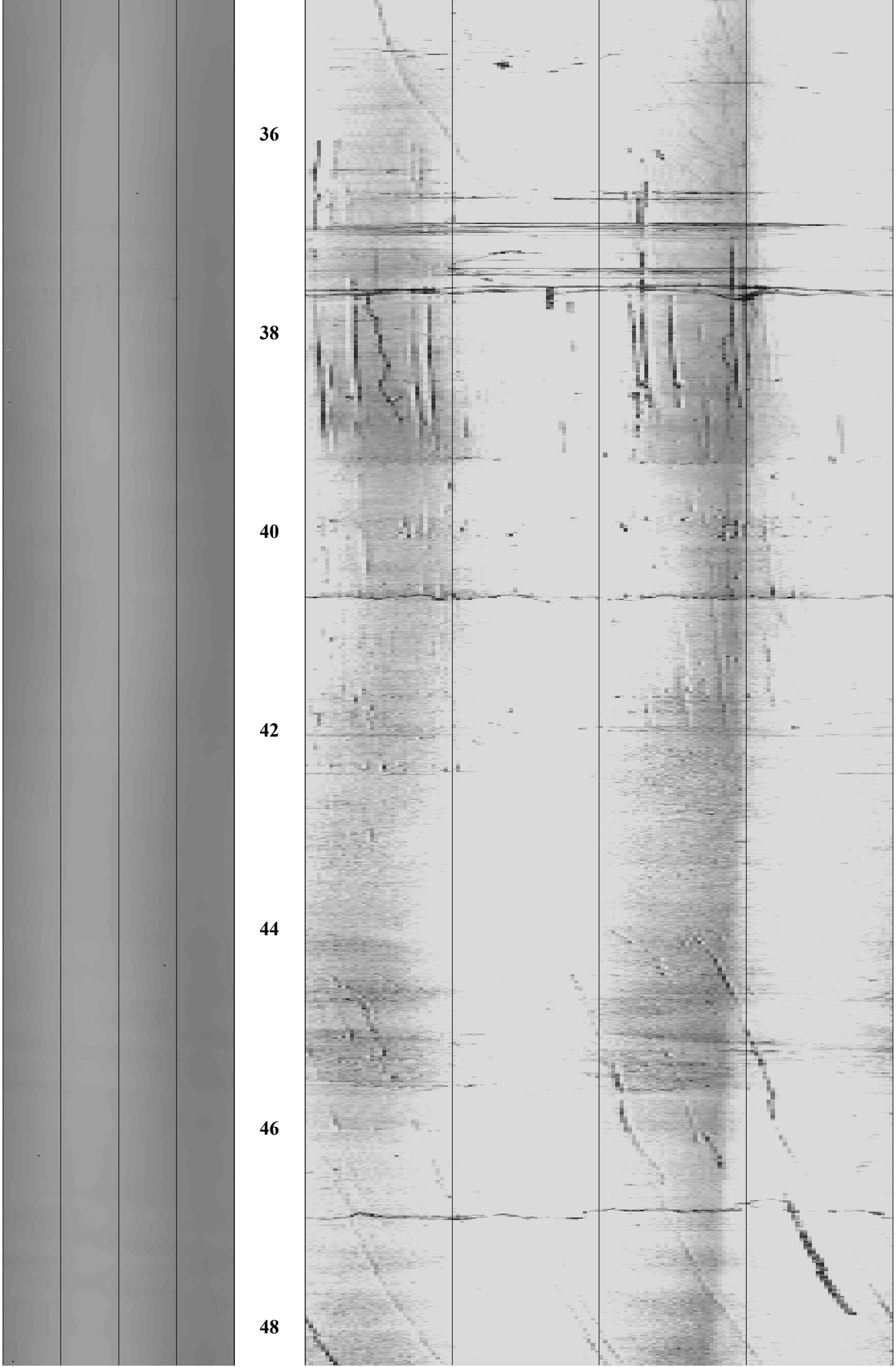
1ft:15ft

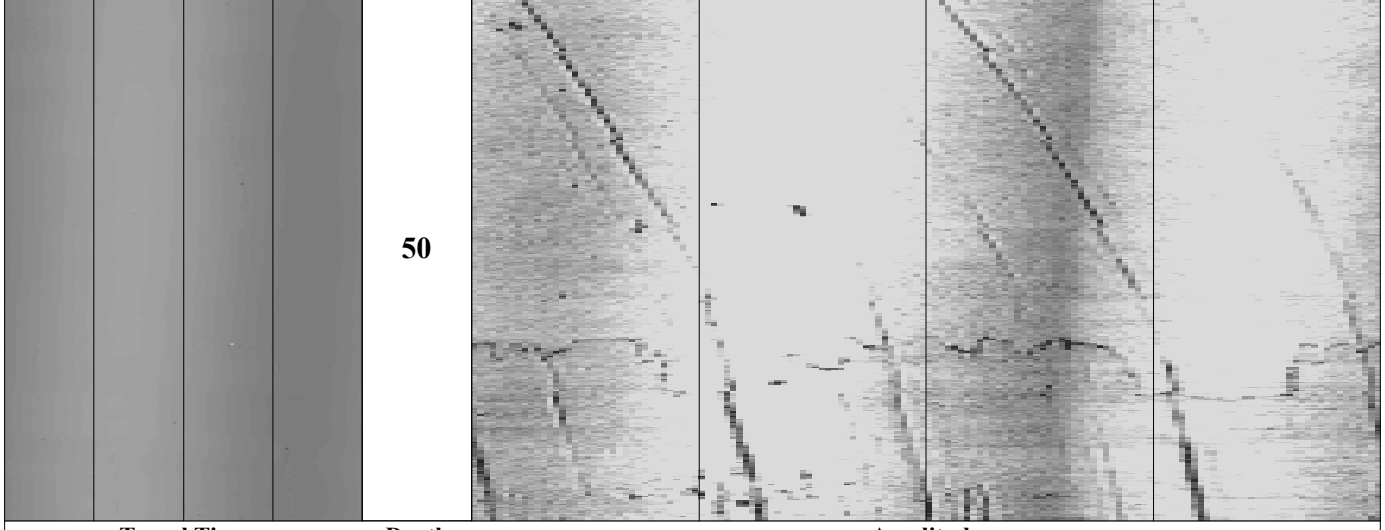
Amplitude

0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-3	Depth Driller / Depth Logger	
Date July 28, 2005 BH Fluid	Logged by:	
File Name	Witness:	




36
38
40
42
44
46
48



Travel Time

0° 90° 180° 270° 0°

Depth

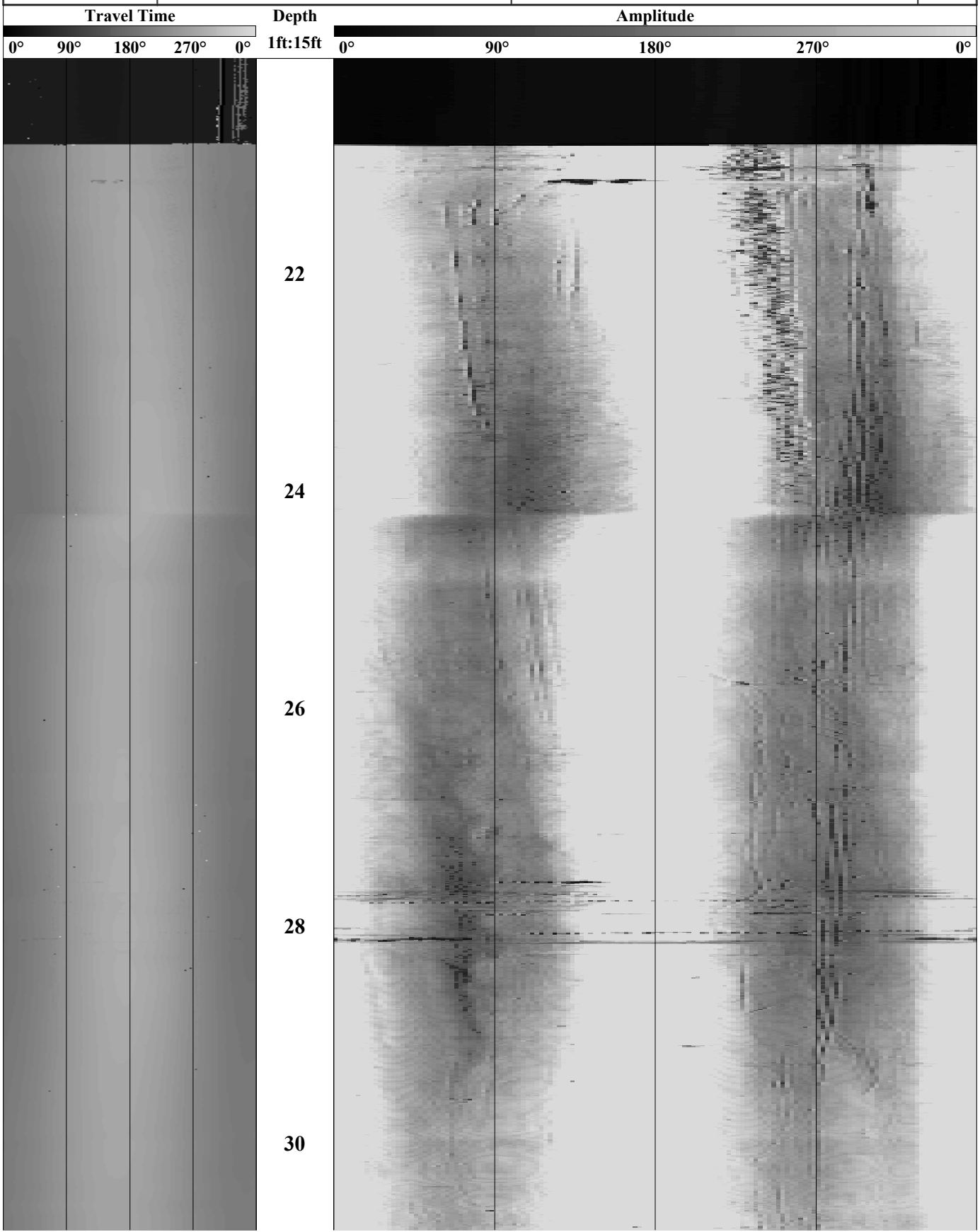
1ft:15ft

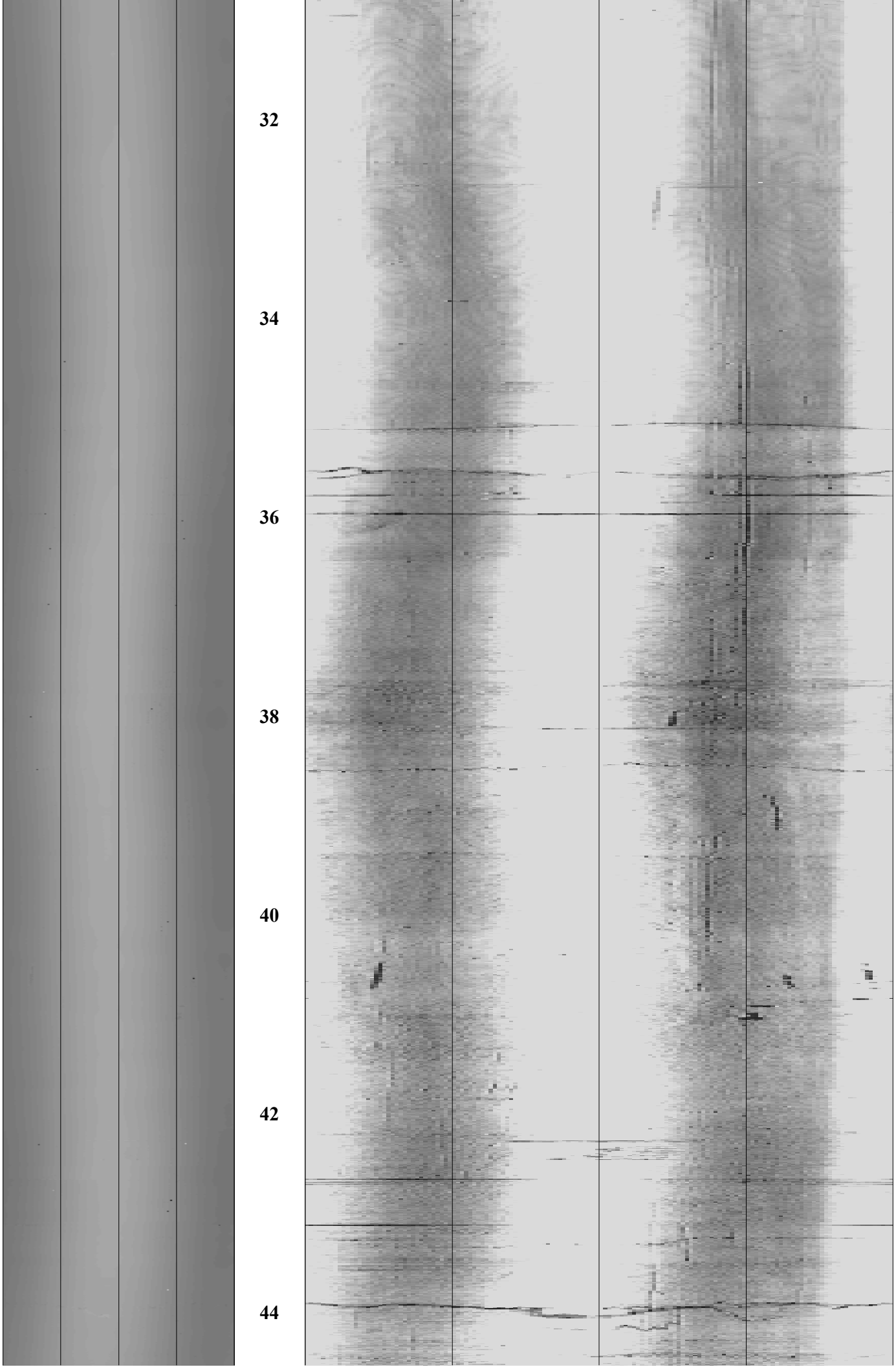
Amplitude

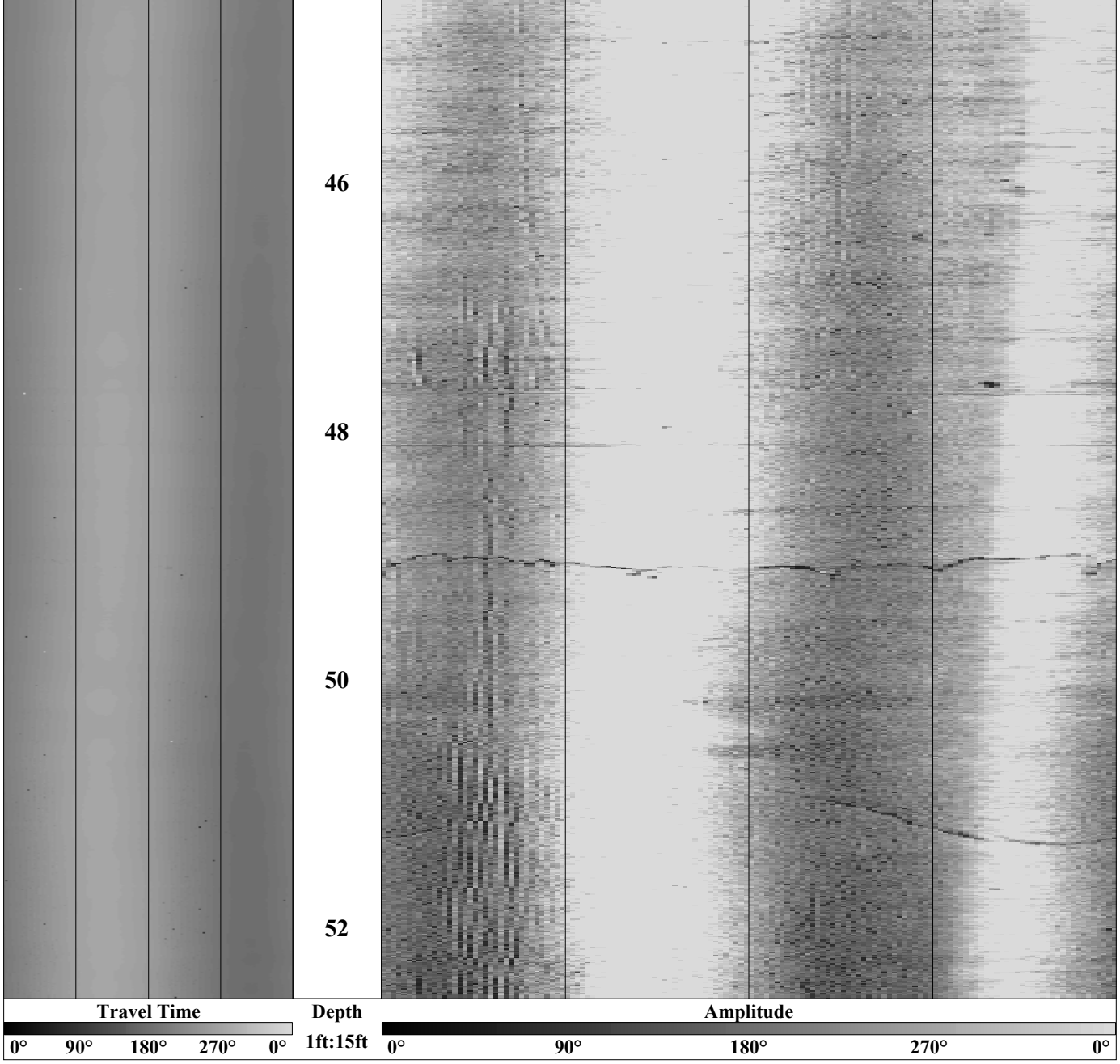
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	

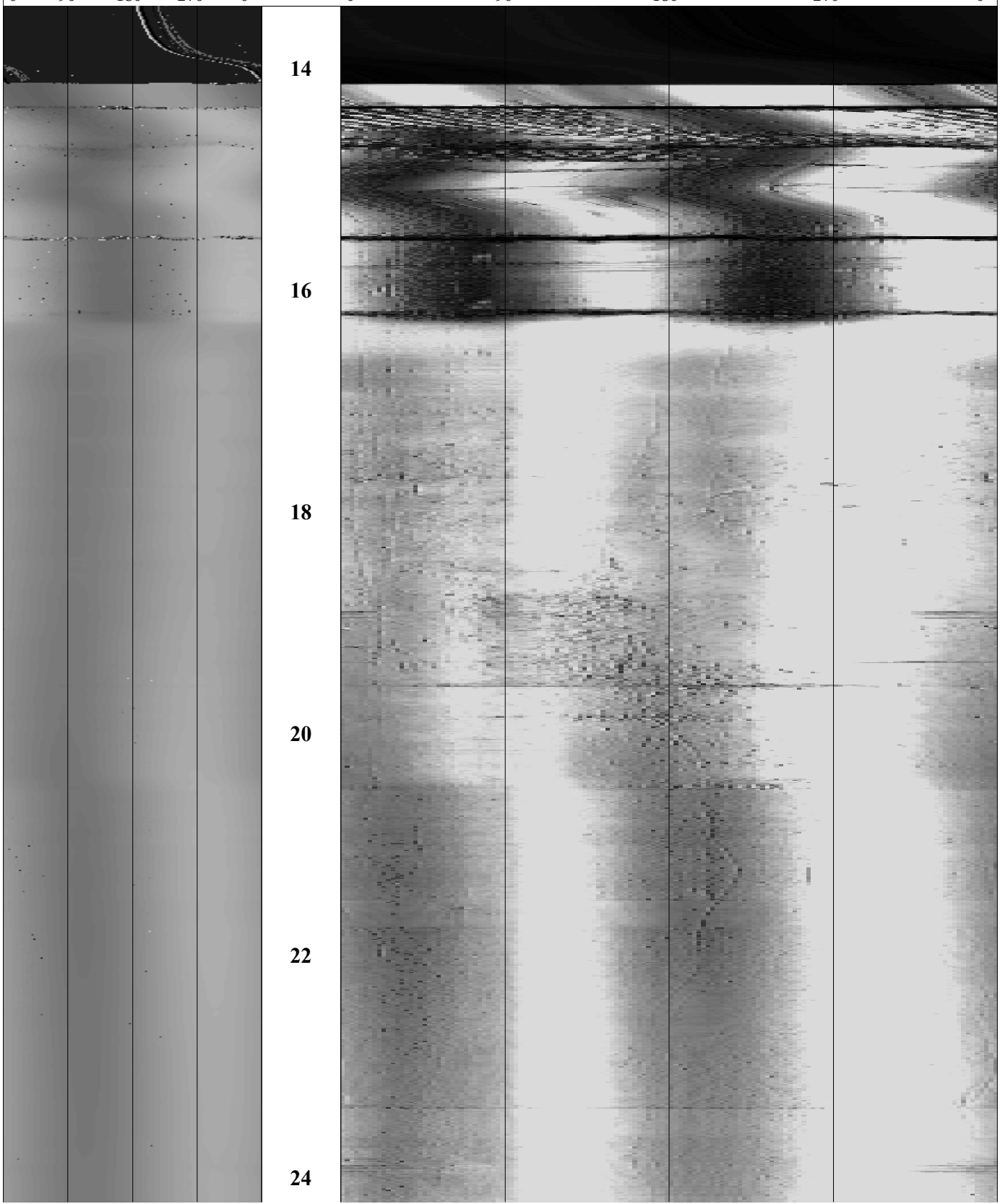
Well	9-2			Depth Driller Depth Logger	
Date	July 28, 2005	BH Fluid		Logged by:	
File Name				Witness:	

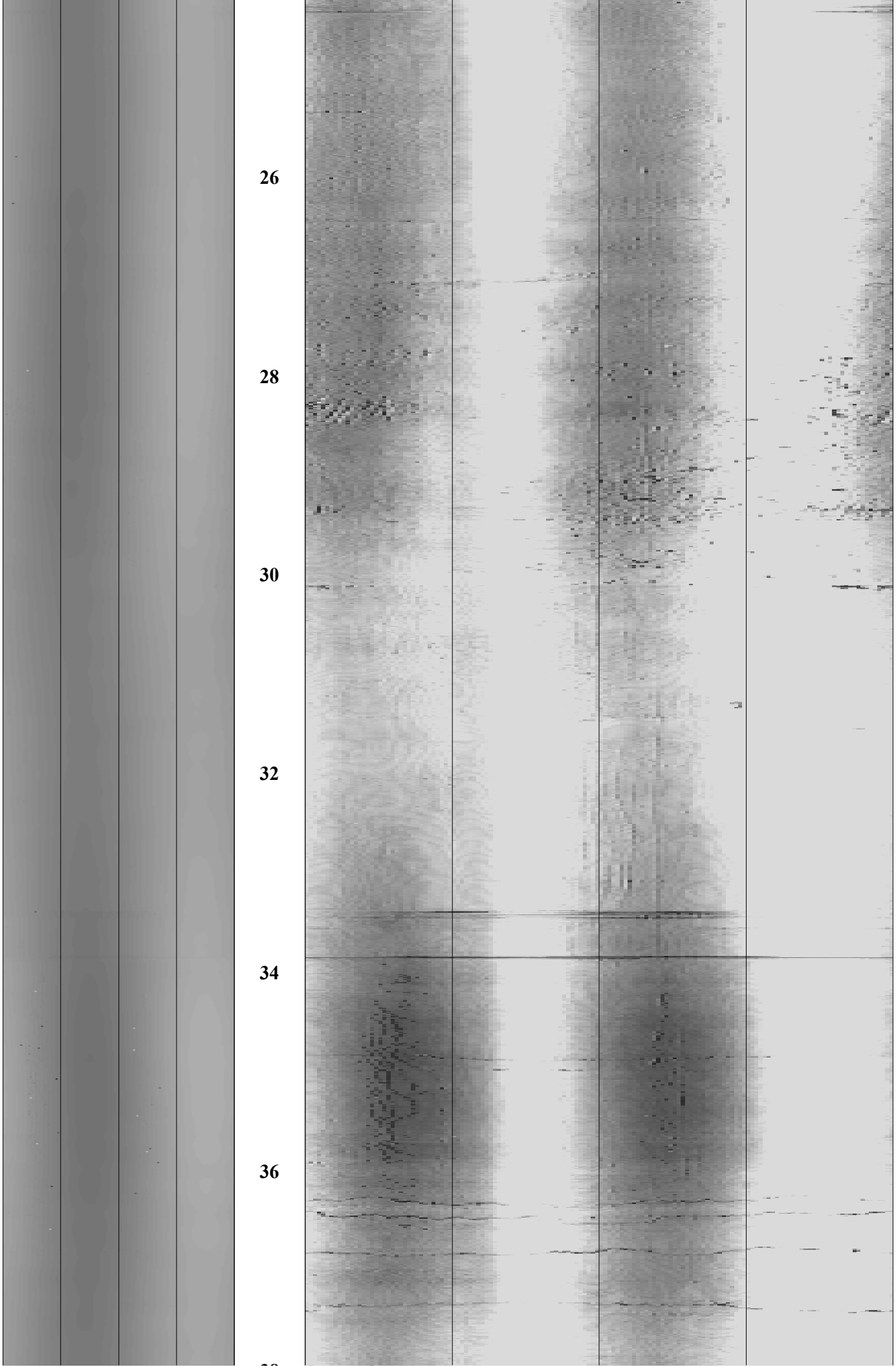


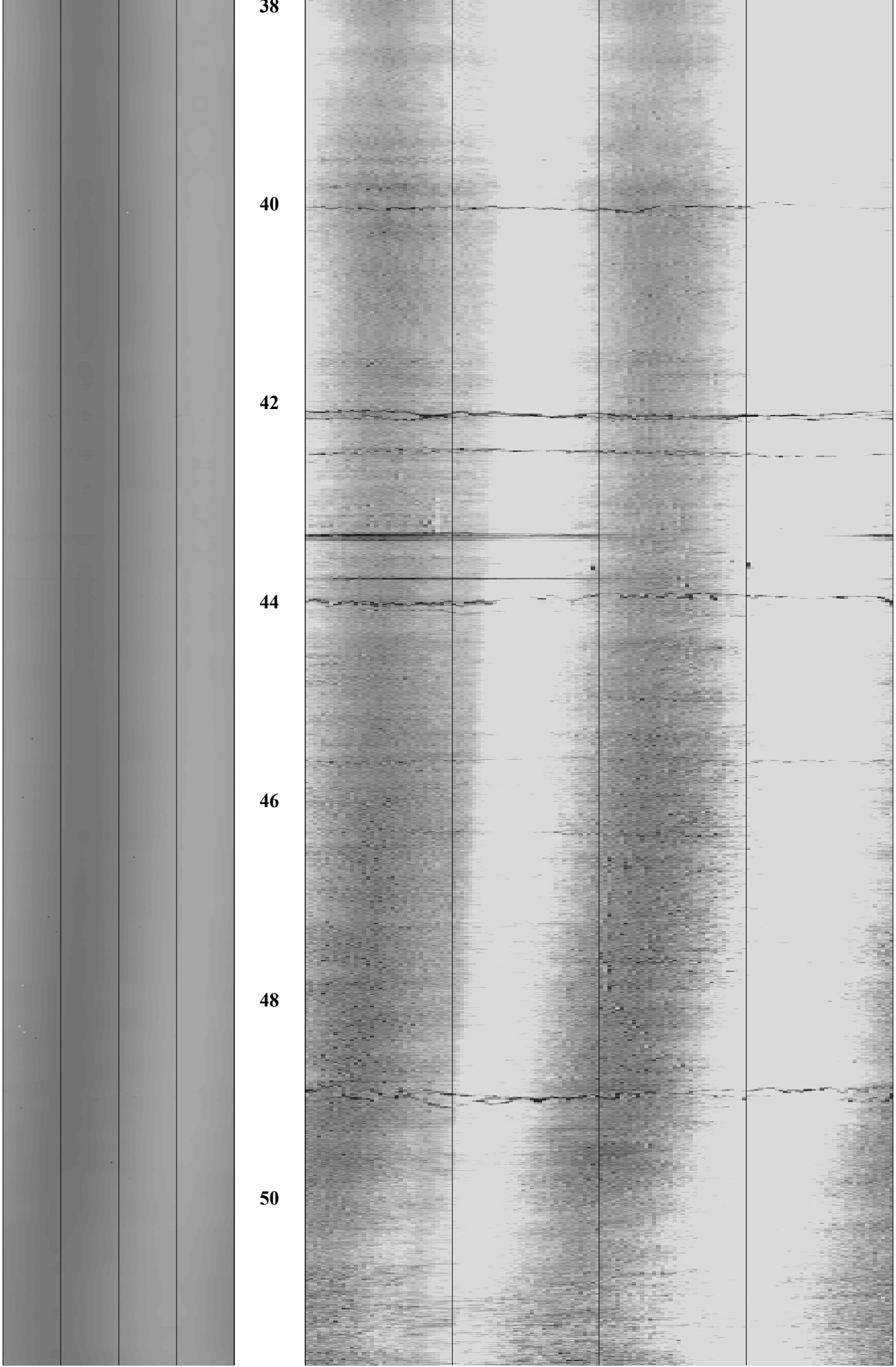

32
34
36
38
40
42
44

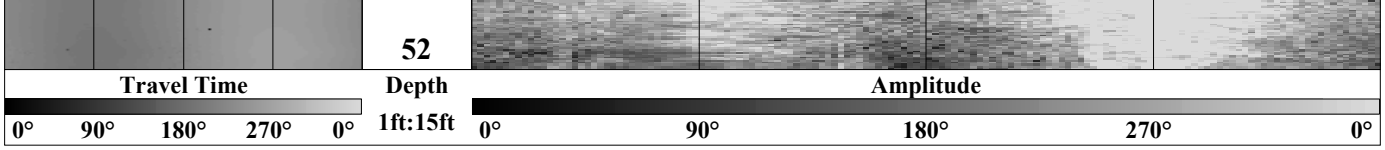

46
48
50
52
Travel Time
0° 90° 180° 270° 0°
Depth
1ft:15ft
Amplitude
0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well 9-1	Depth Driller / Depth Logger	
Date July 29, 05 / BH Fluid	Logged by:	
File Name	Witness:	



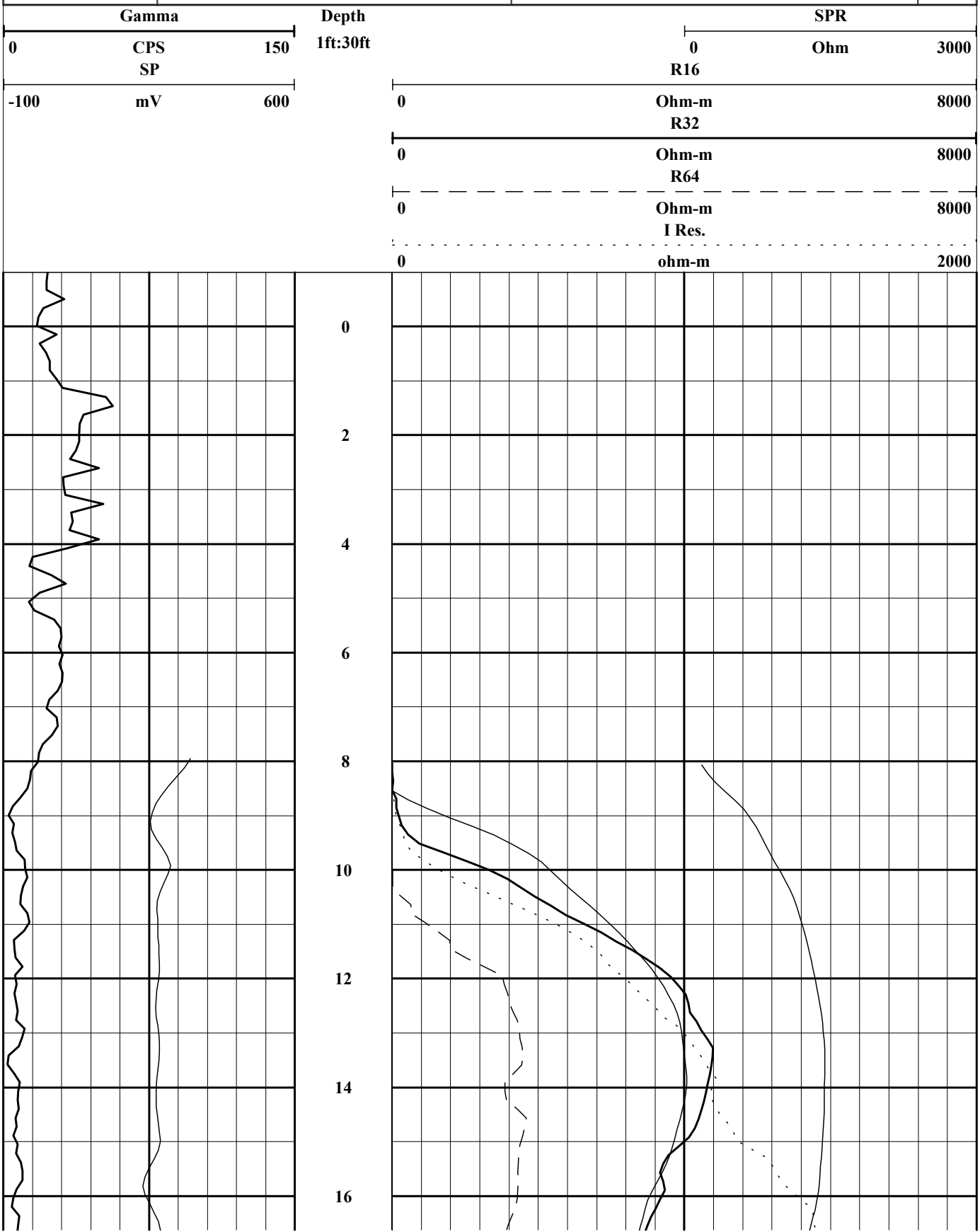

26
28
30
32
34
36

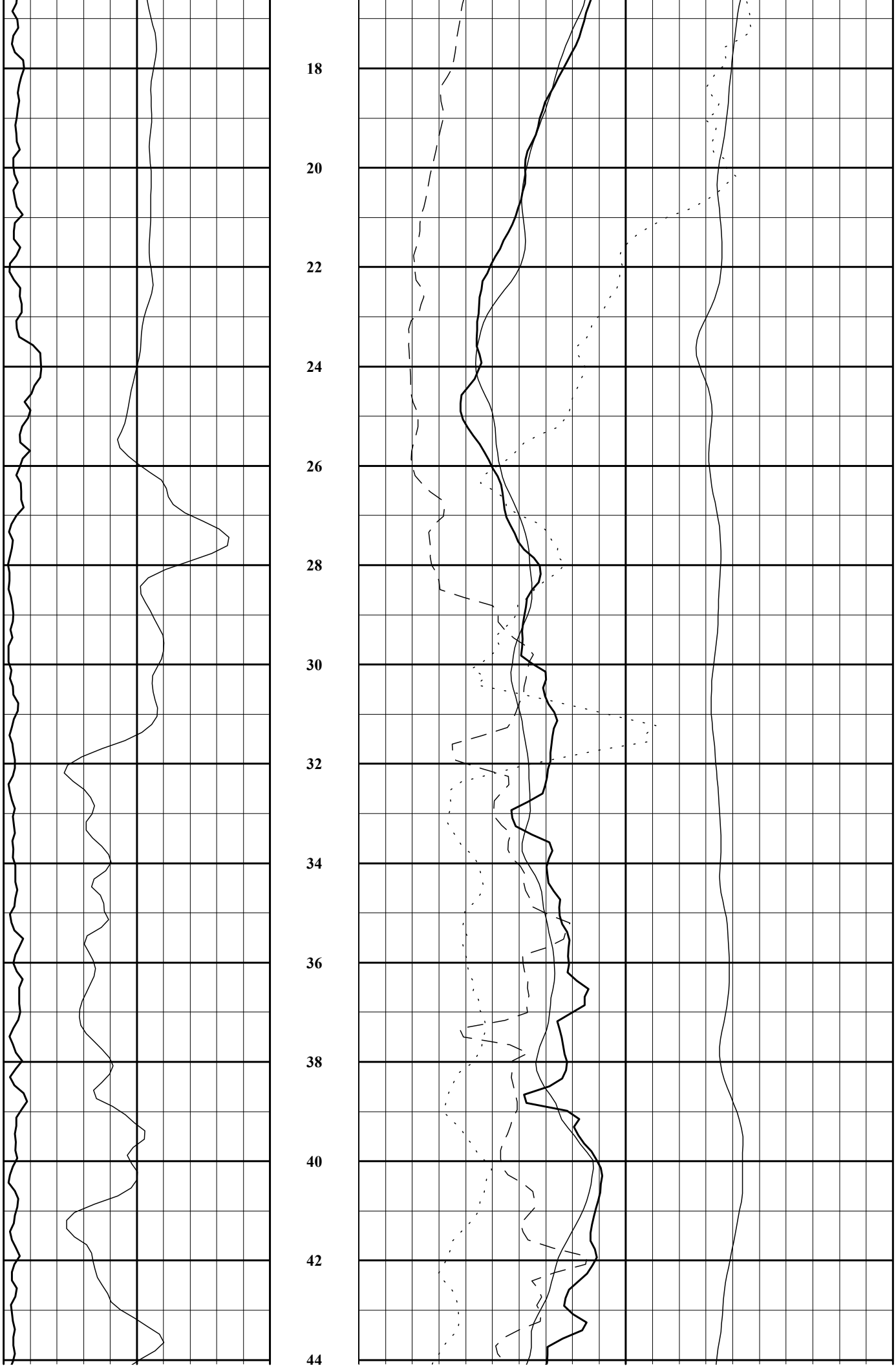

38
40
42
44
46
48
50

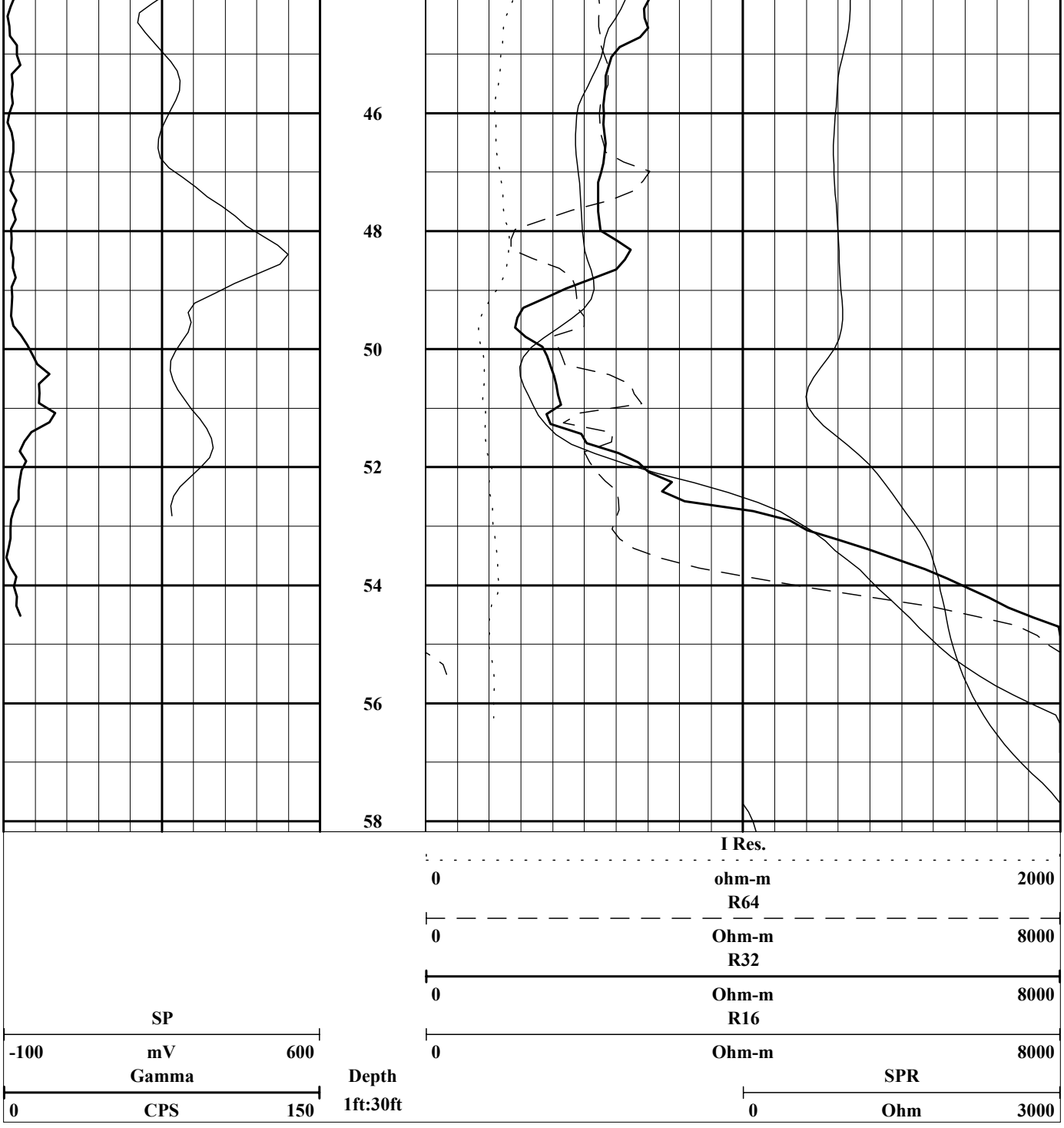


Travel Time	Depth	Amplitude
0° 90° 180° 270° 0°	1ft:15ft	0° 90° 180° 270° 0°

	COMPANY: CRA	Casing
	Location: GM Powertrain	
Well: CH-13A	Depth Driller / Depth Logger	
Date: Aug 4, 05 — BH Fluid	Logged by:	
File Name	Witness:	




18
20
22
24
26
28
30
32
34
36
38
40
42
44


46
48
50
52
54
56
58
I Res.
0
ohm-m
2000
R64
0
Ohm-m
8000
R32
0
Ohm-m
8000
SP
R16
-100
mV
600
0
Ohm-m
8000
Gamma
Depth
SPR
0
CPS
150
1ft:30ft
0
Ohm
3000

APPENDIX D1

GEOPHYSICAL INVESTIGATION – EAST PLANT AREA

TECHNICAL MEMORANDUM
RCRA FACILITY INVESTIGATION (RFI)

GEOPHYSICAL INVESTIGATION

GM POWERTRAIN BEDFORD FACILITY
105 GM DRIVE
BEDFORD, INDIANA

EPA ID # IND 006036099

JULY 2006
REF. NO. 13968 (156)
This report is printed on recycled paper.

TABLE OF CONTENTS

		Page
1.0	INTRODUCTION	1
1.1	GENERAL	1
1.2	RFI APPROACH	1
1.3	PURPOSE	1
2.0	REVIEW OF EXISTING CONDITIONS	2
2.1	LOCAL SETTING	2
2.1.1	LOCAL GEOLOGY	2
2.1.2	LOCAL HYDROGEOLOGY	2
2.2	EAST PLANT AREA AREAS OF INTEREST	3
3.0	GEOPHYSICAL SURVEY METHODS	4
4.0	EVALUATION OF GEOPHYSICAL SURVEY RESULTS	5
5.0	DISCUSSION	10
6.0	CONCLUSIONS	11

LIST OF FIGURES
(Following Text)

FIGURE 1.1 SITE LOCATION

FIGURE 1.2 ELECTRICAL RESISTIVITY SURVEY COVERAGE

FIGURE 4.1 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 1

FIGURE 4.2 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 2

FIGURE 4.3 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 3

FIGURE 4.4 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 4

FIGURE 4.5 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 5

FIGURE 4.6 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 6

FIGURE 4.7 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 7

FIGURE 4.8 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 8

FIGURE 4.9 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 9

FIGURE 4.10 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 10

FIGURE 4.11 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 11

FIGURE 4.12 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 12

FIGURE 4.13 ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 13

LIST OF ACRONYMS AND SHORT FORMS

Agreement	RCRA Corrective Action Agreement
AMSL	Above Mean Sea Level
AOI	Area of Interest
bgs	below ground surface
CRA	Conestoga-Rovers & Associates, Inc.
CSM	Conceptual Site Model
ERS	electrical resistivity survey
Facility	GM Powertrain Bedford Facility
GM	General Motors Corporation
Report	Geophysical Investigation Report
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
U.S. EPA	United States Environmental Protection Agency
USDA	United States Department of Agriculture
Work Plan	Resource Conservation and Recovery Act Facility Investigation Work Plan Addendum No. 9

1.0 INTRODUCTION

This Geophysical Investigation Report (Report) presents the geophysical investigation results conducted as part of the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Work Plan) Addendum No. 9 for the General Motors Corporation (GM) Powertrain Bedford Facility (Facility) located in Bedford, Indiana (U.S. EPA ID# IND006036099).

1.1 GENERAL

The Facility is located at 105 GM Drive, Bedford, Lawrence County, Indiana, 47421 (Figure 1.1). The Facility produces aluminum casting products, such as transmission cases, pistons, and engine blocks. Major aluminum production processes include die casting and permanent molding. The Facility has been operating as an aluminum foundry since 1942, with major facility modifications completed in 1950, 1953, 1966, 1971, 1974, 1977, 1979, and 1980.

The Facility, located on 152.5 acres, contains approximately 915,000 square feet of floor space and employs approximately 1,000 people.

1.2 RFI APPROACH

GM signed a Performance-Based RCRA Corrective Action Agreement (Agreement) with the United States Environmental Protection Agency (U.S. EPA) for the Bedford Facility on March 20, 2001, as amended on October 1, 2002. The signed Agreement states that GM will work with the U.S. EPA to identify and define the nature and extent of releases of hazardous waste and/or hazardous constituents at or from the Bedford Facility.

1.3 PURPOSE

The purpose of the electrical resistivity geophysical investigation was to further define geological features and stratigraphy, and to further evaluate the structural integrity and strength of the bedrock within the East Plant Area. In order to achieve these objectives, Conestoga-Rovers & Associates, Inc. (CRA) completed an electrical resistivity survey (ERS) in the East Plant Area. Multiple ERS lines were set up in Area of Interest (AOI) 7, along the northern boundary of AOI 4, and along the eastern boundary of AOI 10. The location of these geophysical survey lines are presented on Figure 1.2.

2.0 REVIEW OF EXISTING CONDITIONS

2.1 LOCAL SETTING

The local setting is based upon the various phases of investigations that have been completed at the Facility since 2001.

2.1.1 LOCAL GEOLOGY

The natural soil in the immediate vicinity of the Facility is known as Crider. Crider soil is a fine-grained, silt loam to silty clay loam. Crider soil develops on 20 inches to 45 inches of silty loess over clayey material derived from limestone (United States Department of Agriculture (USDA), 1985).

The overburden materials at the East Plant Area consist of fill materials, and clay and silt. The thickness of the overburden materials varies considerably across the East Plant Area. Overburden is generally thickest in AOIs 4, 5, 6, and 7, where filling activities are known to have occurred over the years.

The overburden within the East Plant Area is underlain by the St. Louis and Salem Limestone Formations. The St. Louis Formation has been identified to be highly weathered and fractured near surface. Fracture density appears to decrease with depth. The highly weathered and fractured St. Louis Limestone is underlain by the Salem Limestone (also known as the Indiana, Bedford, or Oolitic Limestone) which is the limestone formation utilized by local quarries for fine building stone. The Salem Limestone is also weathered and fractured when exposed at the surface, but is generally more massive and less weathered and fractured than the St. Louis Limestone.

Additional information on the East Plant Area geology is presented in the Technical Memorandum RFI, Soil, Sediment, Surface Water, Wipe Sampling (CRA, April 2004) and RFI Work Plan (CRA, October 2001).

2.1.2 LOCAL HYDROGEOLOGY

The Conceptual Site Model (CSM) for fill/overburden and shallow bedrock groundwater flow describes the shallow groundwater flow (i.e., unconfined water table) through the unconsolidated overburden and upper fractured/weathered bedrock at the Facility. Recharge to the water table aquifer occurs through the overburden materials and directly into bedrock, where exposed. Discharge of groundwater from the

overburden and shallow bedrock occurs through springs and seeps in topographically low areas (e.g., creeks and ditches). The results of groundwater sampling across the Facility and the results of the dye trace testing completed in September 2004 support this CSM of the shallow groundwater flow at the Facility.

2.2 EAST PLANT AREA AREAS OF INTEREST

The following AOIs are within the East Plant Area:

- AOI 3 – PCB Storage Area;
- AOI 4 – Former North Disposal Area;
- NAOI4 – Area North of AOI 4;
- AOI 5 – Former East sand Disposal Area;
- AOI 6 – Former Sludge Disposal and Fire Training Area;
- AOI 7 – Former North Lagoon and Outfall 001;
- AOI 8 – Former South Lagoons and Outfall 002;
- AOI 10 – Existing Stormwater Lagoon and Outfall 003;
- AOI 11 – Aboveground Storage Tanks;
- AOI 15 – Former Equipment Storage Area; and
- AOI 23 – Area Affected by the 1996 Wastewater Treatment Filter Cake Release.

3.0 GEOPHYSICAL SURVEY METHODS

Prior to the start of data collection, geophysical survey lines were established over the East Plant Area. Geophysical survey lines were established as indicated on Figure 1.2. The locations of the electrodes were determined by utilizing measuring tapes as the resistivity survey advanced along each line.

For the lines completed during this survey, the electrode spacings ranged from 3.3 to 5.0 feet. The corresponding resolution utilizing these electrode spacings was therefore on the order of one half the respective electrode spacings, and thus ranged from 1.8 to 2.5 feet. This demonstrates one of the most significant limitations inherent in completing a survey such as electrical resistivity on surface in an effort to characterize geologic information at depth, namely that resolution decreases with increasing depth of signal penetration. This fact is of particular importance for AOI 7, where significant soil borings and bedrock coring have been completed in support of the proposed vault. Thus, it is anticipated that due to the heterogeneous nature of the overburden and bedrock in AOI 7 the ERS results will compliment the borehole/corehole data better in some areas than others.

The ERS method was conducted with a Syscal R1 Plus dual-function electrical resistivity meter, which operates simultaneously as a transmitter and receiver. The survey utilized multi-electrode cables yielding a total spread of 72 electrodes. The receiver was programmed to automatically "switch" between measured quadripoles, yielding measurements of apparent resistivity. The apparent resistivity data were then imported into an inversion software program, and processed to yield a modeled profile section of resistivity. The bedrock response was expected to be identified on the basis of a higher resistivity response compared to the more conductive overlying overburden soils.

4.0 EVALUATION OF GEOPHYSICAL SURVEY RESULTS

The electrical resistivity data were plotted as colored contoured cross-sections of apparent resistivity, and then processed with the RES2DINV inversion program. The inversion program provided a model resistivity section for each profile, representing the interpreted subsurface stratigraphy based on the apparent resistivity data. The locations of the electrical resistivity survey lines are presented on Figure 1.2. Model resistivity sections for these lines are presented on Figures 4.1 to 4.13, inclusive.

Review of the modeled sections (Figures 4.1 to 4.13) indicates that two color scales were utilized to process the data. The upper modeled section used increments of 5 Ohm-meters (Ohm-m) per colored segment to emphasize the contact between the overburden and highly weathered and fractured bedrock. The lower modeled section used increments of 25 Ohm-m per colored segment to further delineate any lithologic changes or karst fractures in the bedrock.

In general, the modeled sections reveal that the resistivity of the clay and silt overburden is interpreted to vary from approximately 10 to 50 Ohm-m (which is typical of silty clay). Beneath the overburden, the highly fractured, weathered top surface of limestone bedrock is interpreted to range from 50 to 90 Ohm-m. The deeper bedrock is characterized by less fractured limestone with resistivities ranging from 90 to 400 Ohm-m (transition zone), and competent limestone bedrock is believed to yield resistivity values in excess of 400 Ohm-m. All layers as described above are evident on the modeled sections, and have been labeled accordingly. It must be stated that this interpretation is based on the assumption that the interpreted resistivities for overburden and bedrock zones are constant beneath the East Plant Area. However, due to the heterogeneous nature of the subsurface, this assumption will be more representative of some subsurface areas than of others. In any event, no surface ERS results can be as representative of subsurface conditions as stratigraphic and lithologic logs which can be resolved into intervals of 0.1 ft based on the examination of physical samples.

The approximate geologic formation contacts were superimposed on each of the modeled sections. Differences in the bedrock surface derived from the modeled section and the one derived from contouring the corehole information may be due to the differences in averaging and the nature of the weathered surface of the bedrock (e.g., the degree of weathering and epi-karst development, change in formation, etc.). In two cases, additional coreholes were completed after the surface geophysics was completed in order to field verify potential anomalies observed in the modeled section (for Line 9, four coreholes were advanced and for Line 12, one corehole, which was previously

planned for the perimeter trench investigation, was deepened). The corehole logs for these are provided in the RFI Addendum 9 Technical Memorandum.

The modeled sections for each survey line presented on Figure 1.2 are briefly described as follows.

Line 1

The modeled sections presented on Figure 4.1 indicate that overburden was primarily detected on this line. The relatively shallow depth of penetration is due to the relatively short electrode spacing of 3.3 feet utilized during the survey. With the exception Line 3, subsequent surveys used a larger electrode spacing. However, the results for Line 1 indicate that the weathered and fractured zone at the contact between the overburden and bedrock is approximately 3 to 5 feet thick. Also, the bedrock surface undulates and a bedrock valley is located near Station 175 on the survey line.

Line 2

Line 2 extends generally north/south along the western boundary of the proposed landfill vault, adjacent to GM Drive. The modeled sections on Figure 4.2 indicate that the overburden/bedrock contact is relatively flat in this area. In addition, bedrock representing the transition zone and ranging in thickness from 15 to 20 feet was found beneath the more weathered and fractured limestone. Based on the review of well logs, the transition zone in this area is interpreted to consist of slightly fractured bedrock interbedded with thin laminae of shale. Both the fractures and the presence of shale laminae would have the effect of lowering the resistivity for the transition zone, as is evident on the cross-section.

Line 3

Line 3 commenced at the perimeter fence along GM Drive, and continued eastward along the southern portion of AOI 7. As the modeled resistivity results presented on Figure 4.3 indicate, a bedrock ridge was detected at Station 125 along the survey line. Further east, a shallow valley was observed. The bedrock response presented on the lower modeled section indicates that a sequence of massive, competent bedrock was detected at depth along this survey line.

Line 4

Line 4 extended from the northwest to the southeast across AOI 7. Review of the modeled resistivity results, presented on Figure 4.4, indicate that the bedrock surface was approximately 30 feet below ground surface (bgs) in the northwestern portion of the survey line, but decreased to approximately 8 feet in the southeast end of the line. The highly weathered/fractured zone at the overburden/bedrock interface was generally 5 to 7 feet thick. Beneath this interpreted contact zone, the interbedded, slightly fractured ranged in thickness from 10 to 20 feet. Competent limestone was also detected across the bottom of the survey line.

Line 5

The modeled resistivity results for Line 5, presented on Figure 4.5, indicate that the overburden/bedrock contact varied slightly from the southwest to the southeast across the proposed location of the landfill vault. The contact zone of highly weathered and fractured bedrock was also consistent, and ranged from 4 to 7 feet in thickness. The interpreted bedrock results presented on the lower modeled section are similar to the results of Line 4, namely, two knolls of competent bedrock are evident at depth, beneath the interbedded and slightly fractured transition zone.

Line 6

Line 6 was completed across the north side of AOI 4, designated as the Former North Disposal Area. The modeled resistivity results for Line 6, as presented on Figure 4.6, reveal that sequences of resistive and conductive fill material overlie the bedrock in this area. Beneath the fill, a bedrock valley was delineated between Stations 200 and 250. The more weathered and fractured contact zone in this valley was approximately 10 feet thick, but thinned out to 3 feet to the east and west. According to the lower modeled resistivity section, the fractured bedrock extends into the bedrock valley. To the west and east, the valley was flanked by massive, competent limestone.

Line 7

Line 7 is located within the limits of the proposed landfill vault, approximately 75 feet west of its eastern boundary. The modeled resistivity results presented on Figure 4.7 indicate that the bedrock surface is relatively shallow (10 to 15 feet bgs) beneath most of the survey line. The more weathered, fractured zone is thin (<5 feet thick) across the flat portion of the survey line, and thickens (7 to 10 feet) at the edges of the line. The bedrock modeled section indicated that massive, competent bedrock is also found at a

relatively shallow depth beneath the proposed landfill vault, at approximately 30 feet bgs.

Line 8

The results for Line 8, which was located along the toe of slope of the Former North Disposal Area, are presented on Figure 4.8. The shallow resistivity response indicates that the material encountered varied from resistive and conductive fill to overburden. The contact zone of the more weathered and fractured bedrock was typical of other survey lines, with the exception of a thick sequence between Stations 425 and 500 along the line. This valley was also evident in the bedrock response, where the data indicated a thick sequence of fractured, transition zone bedrock beneath the thick contact zone sequence. Competent, massive limestone was found to either side of the valley, at elevations ranging from 610 to 625 feet above mean sea level (AMSL). Similar bedrock valley conditions were encountered on Line 6.

Line 9

The results for Line 9, presented on Figure 4.9, indicate that conductive and resistive fill material was detected along the southern boundary of the Former North Disposal Area. The modeled section indicates that the resistive fill was near surface, and the conductive fill was encountered at depth. Both modeled resistivity sections identified a "break" in the bedrock from Stations 275 to 300 along the survey line. The low resistivity (<50 Ohm-m) and sharp resistivity contrast with the adjacent bedrock is not indicative of a fault or karst feature. Four bedrock coreholes (9-1, 9-2, 9-3, and 9-4) were installed along this line in order to determine the bedrock conditions next to and within this apparent anomaly. As can be seen by the approximate formation contact imposed on the modeled section, there does not appear to by a physical “break” in the actual cored rock.

Line 10

Line 10 extended from the northeast corner of AOI 5 to within the limits of the proposed landfill vault. The modeled resistivity results, presented on Figure 4.10, indicate that a shallow east to west oriented bedrock valley is located coincident with the southern boundary of the proposed landfill vault along line 10. To the north and south of the shallow valley, the bedrock elevation increases approximately 15 feet. Further north, the contact zone approximates the results of Line 7, which Line 10 transects within the proposed landfill vault. In contrast with the Line 7 results, the bedrock modeled section

indicate that a thicker sequence of slightly fractured transition limestone interbedded with shale laminae is found along this line of section.

Line 11

The resistivity results presented on Figure 4.11 indicate that the overburden thickness beneath Line 11 ranged from 14 to 27 feet. The contact zone of the more weathered and fractured bedrock appeared thicker across this line, possibly a result of the 6.6-foot spaced electrodes used on the line. The bedrock resistivity model indicates that with the exception of the competent, massive limestone detected at depth at the eastern extent of the line, fractured limestone representative of the transition zone was found beneath the contact zone.

Line 12

Line 12 extended across a bedrock ridge located east of the existing stormwater lagoon (AOI 10). The modeled resistivity sections presented on Figure 4.12 indicate that a thin veneer of overburden was detected along this line of section. As the bedrock model reveals, the sequence of transition limestone encountered was also negligible. The majority of bedrock beneath this survey line was interpreted to consist of a relatively thick sequence of massive, competent limestone. A response of lower resistivity was indicated near the base of this section. As such, one of the proposed coreholes, which was being installed to evaluate the potential perimeter trench system, was deepened specifically to investigate the rock formation at this depth. The results of the coring indicated a change of formation near the elevation of this apparent anomaly. The contact between the Salem Formation and the Harrodsburg Formation is transitional and has been observed to exhibit a lower resistivity response in other downhole logging completed across the site.

Line 13

Line 13 was situated along the eastern boundary and extended from the wastewater treatment plant to just south of the existing stormwater lagoon. The modeled resistivity sections presented on Figure 4.13 for Line 13 indicate that the more weathered, fractured zone was variable in thickness, and ranged from 3 to 30 feet. Likewise, the bedrock modeled sections indicate that a thick sequence of fractured transition zone limestone was found beneath the contact zone. The exception to this is the competent, massive limestone located at depth at the west end of the line. Coincidentally, this knoll of competent bedrock appears to correlate with the sequence of massive bedrock found at depth at the east end of Line 11.

5.0 DISCUSSION

Review of the modeled sections presented on Figures 4.1 to 4.13 has indicated that the resistivity survey has been a useful tool for mapping bedrock surface topography within the East Plant Area. This includes areas such as the location of the proposed landfill vault, where extensive drilling activities have yielded overburden/bedrock contact information which was used to confirm the resistivity results. The resistivity results will also be utilized in support of the proposed trench alignment and profile design along the areas to the north and east of AOI 4.

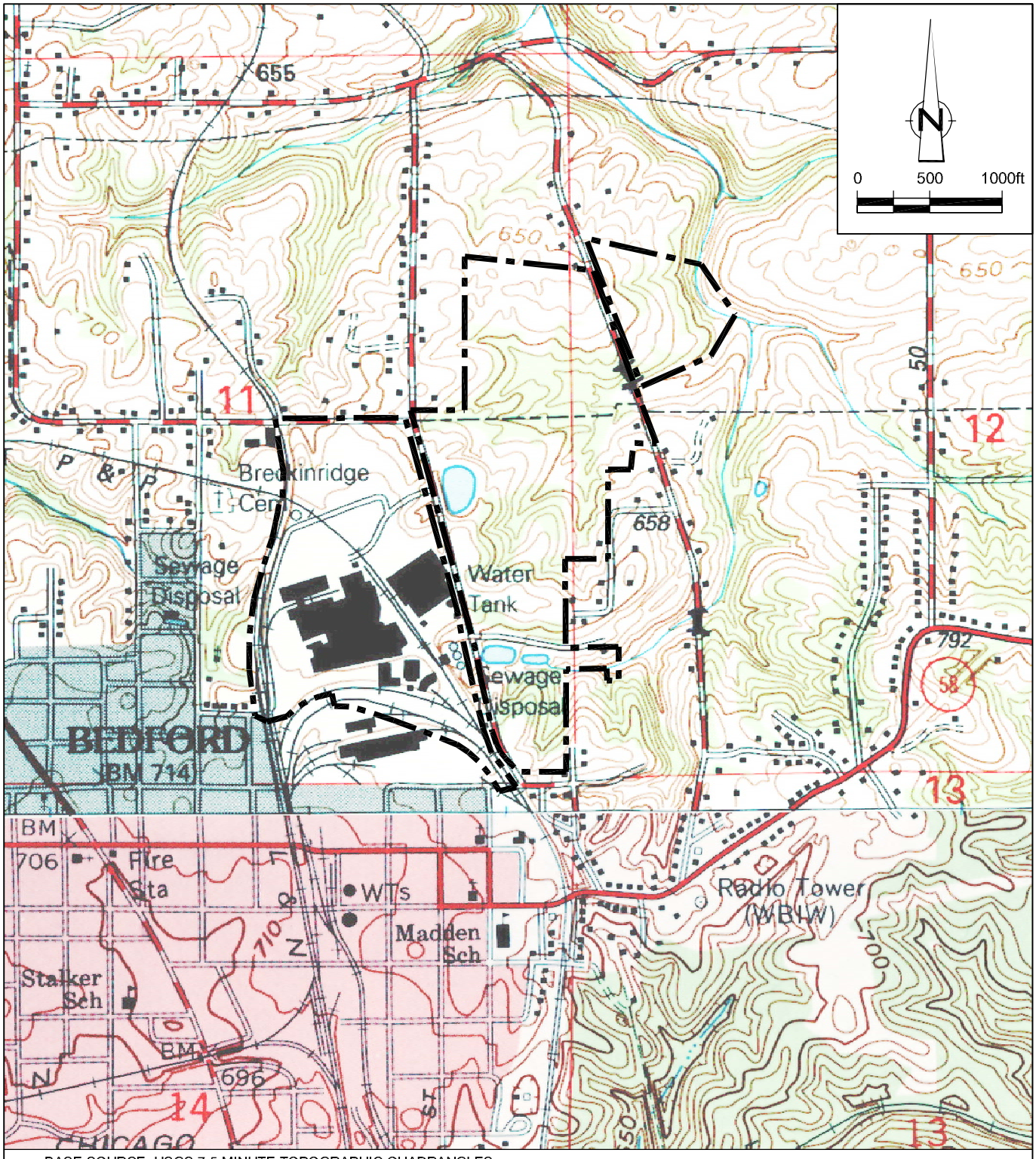
In addition to mapping the bedrock surface, the modeled resistivity sections provided information regarding the nature of the bedrock. This includes mapping the thickness of the more weathered and fractured contact zone, the underlying fractured bedrock (transition zone), and the deeper massive limestone (competent zone). Comparisons to coreholes completed within the East Plant Area indicate that the resistivity results correlate well to the bedrock results mapped in the core.

With respect to additional bedrock features, the modeled resistivity sections did not detect the presence of significant structural fractures such as faults or karst topography beneath the East Plant Area. These features, when present, are typically easy to identify, based on an expected low resistivity signature of clay or water filled features relative to the high resistivity response of the surrounding bedrock.

6.0 CONCLUSIONS

Based on the information provided by the geophysical investigation, the following conclusions are provided:

- The resistivity survey provided useful information regarding the thickness and nature of the overburden for various locations across the East Plant Area;
- The modeled resistivity sections indicated that the bedrock surface beneath the East Plant Area is undulating, and that localized "peaks and valleys" are common. This provides useful information concerning potential flow pathways for groundwater;
- The bedrock topography, as determined from the resistivity results, closely correlates to the overburden/bedrock contact delineated in RFI boreholes;
- The modeled resistivity sections provided useful information regarding the nature of the bedrock beneath the East Plant Area. The bedrock generally consists of a relatively thin, more weathered and fractured zone at the overburden/bedrock contact, an underlying fractured bedrock transition zone, and a deeper massive bedrock consisting of competent limestone;
- The resistivity survey did not delineate any significant structural features including faults or karst topography within the bedrock beneath the East Plant Area; and
- The information provided by the resistivity survey, as summarized above, will be utilized to support the design of remedial measures, including the proposed landfill vault and proposed collection trench system.



BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES;
BARTLETTSVILLE, INDIANA 1994
BEDFORD EAST, INDIANA 1978
BEDFORD WEST, INDIANA 1993
OOLITIC, INDIANA 1987



LEGEND

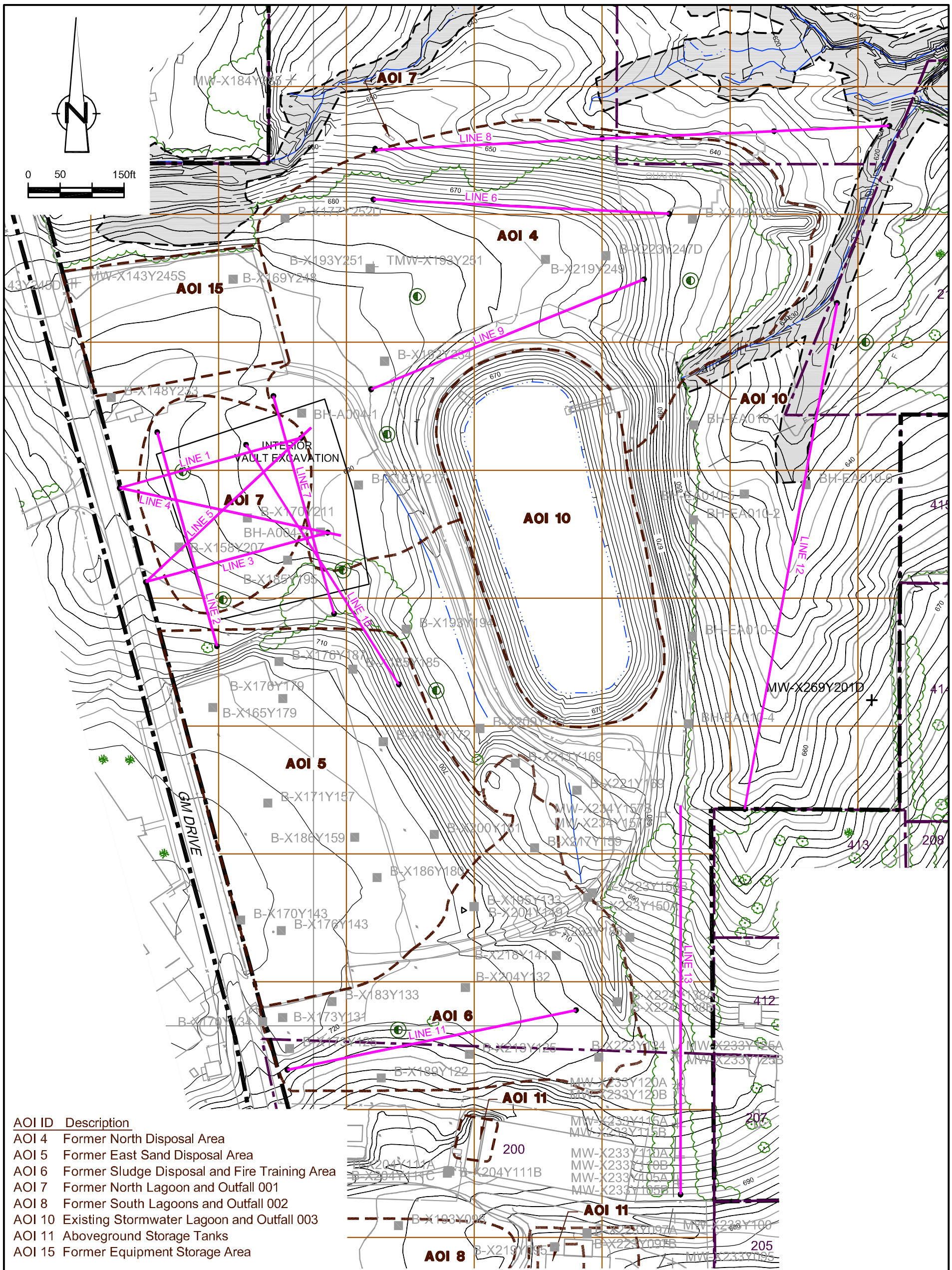
FACILITY BOUNDARY

DRAFT

figure 1.1

SITE LOCATION
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(156)GN-WA015 MAY 30/2005



AOI ID	Description
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area

LEGEND

- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- AOI BOUNDARY
- 200 X 200 GRID
- LINE 1 — ELECTRICAL RESISTIVITY SURVEY LINE
- BH-EA010-6 — EXISTING BOREHOLE TO ROCK
- MW-X269Y201D — EXISTING MONITORING WELL TO/IN ROCK
- PROPOSED BEDROCK COREHOLE
- SURVEY POINT AND ELEVATION

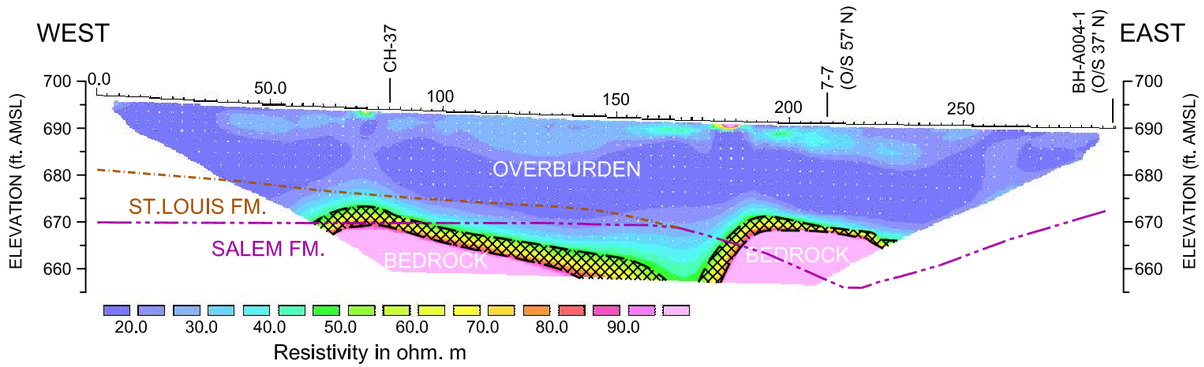
DRAFT

figure 1.2

ELECTRICAL RESISTIVITY SURVEY COVERAGE
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(156)GN-WA001 MAY 27/2005

AOI 7 - LINE 1 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

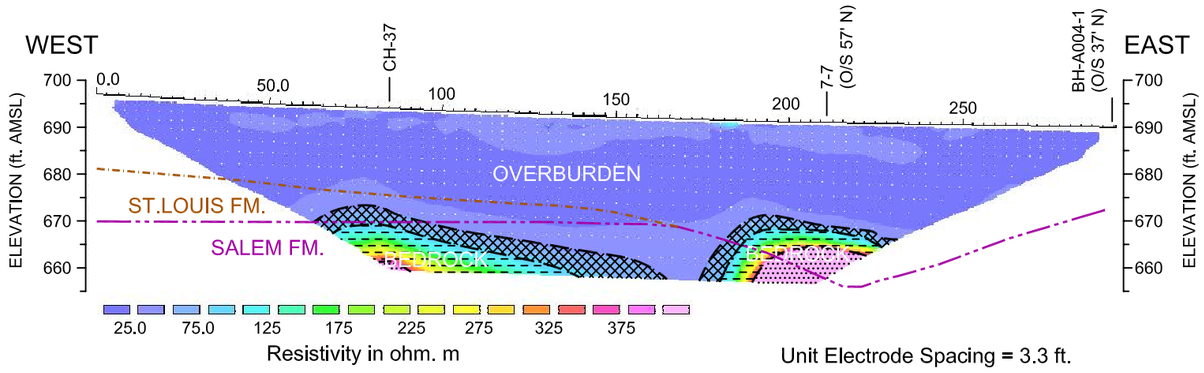
INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACES BASED ON COREHOLES

AOI 7 - LINE 1 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



Unit Electrode Spacing = 3.3 ft.

NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 3.3 ft.
3. O/S 57' N = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 57 FEET NORTH

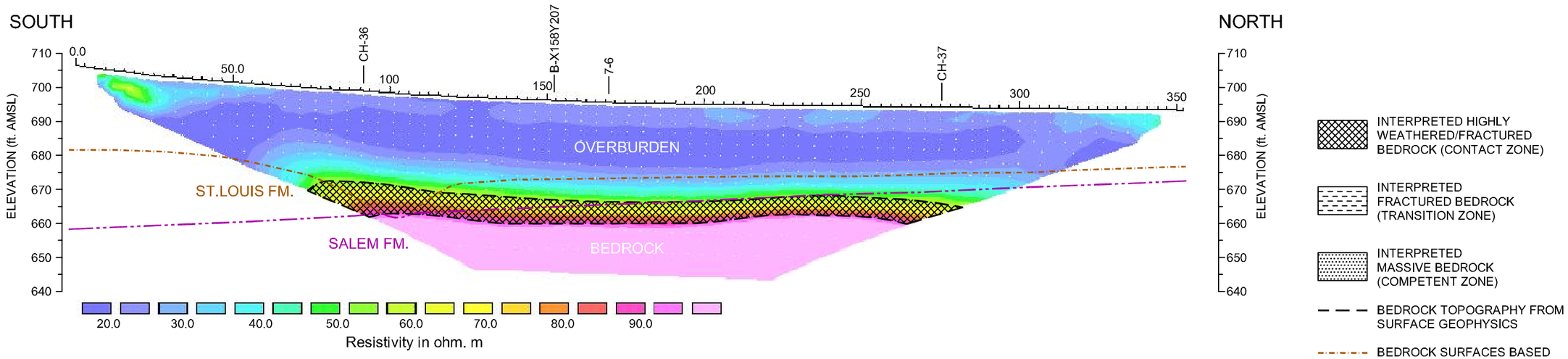
DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

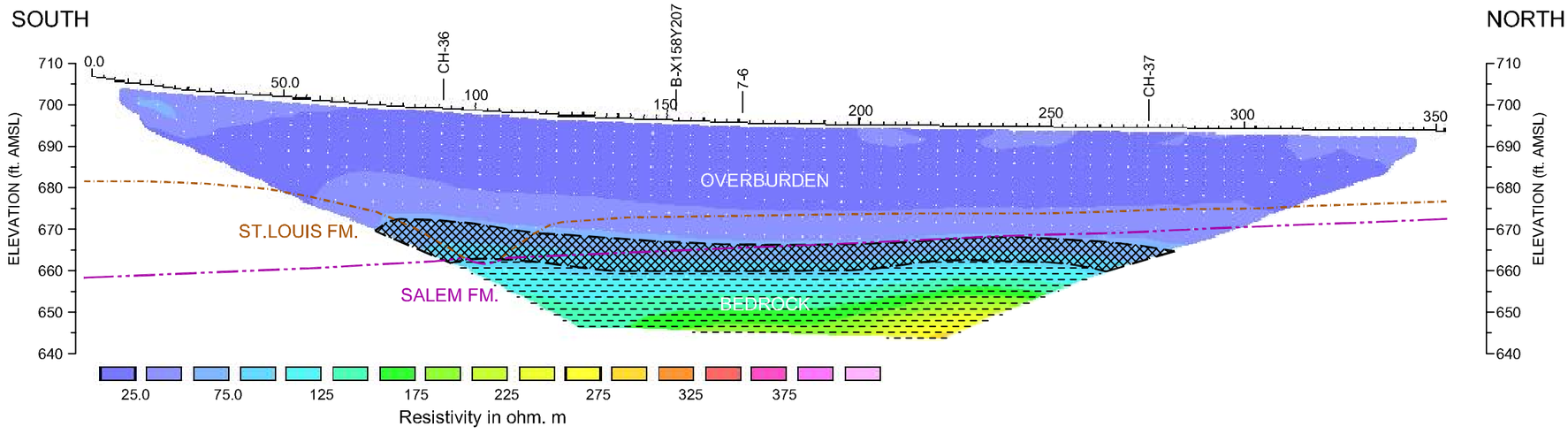
figure 4.1

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 1
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 7 - LINE 2 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



AOI 7 - LINE 2 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



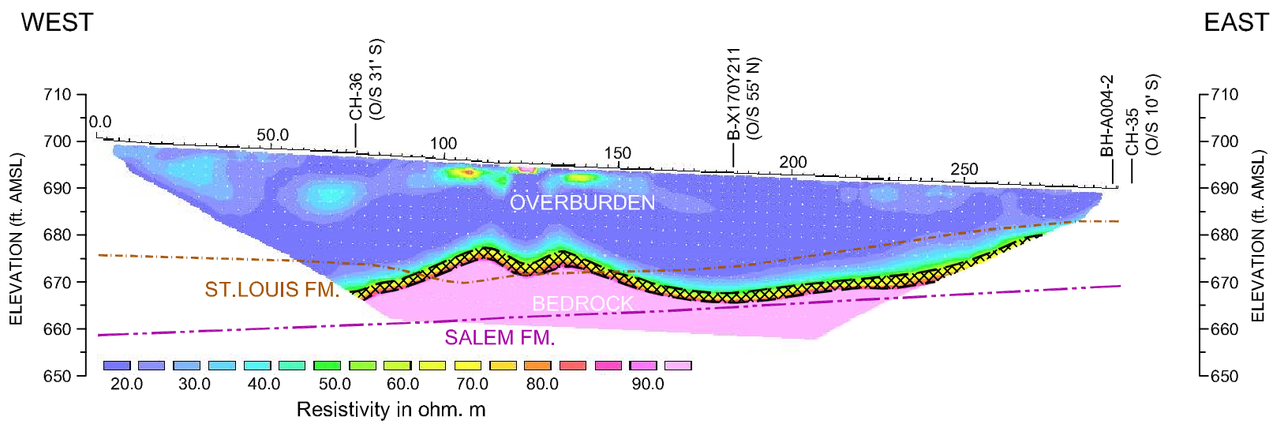
NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5.0 ft.

DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.2

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 2
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 7 - LINE 3 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

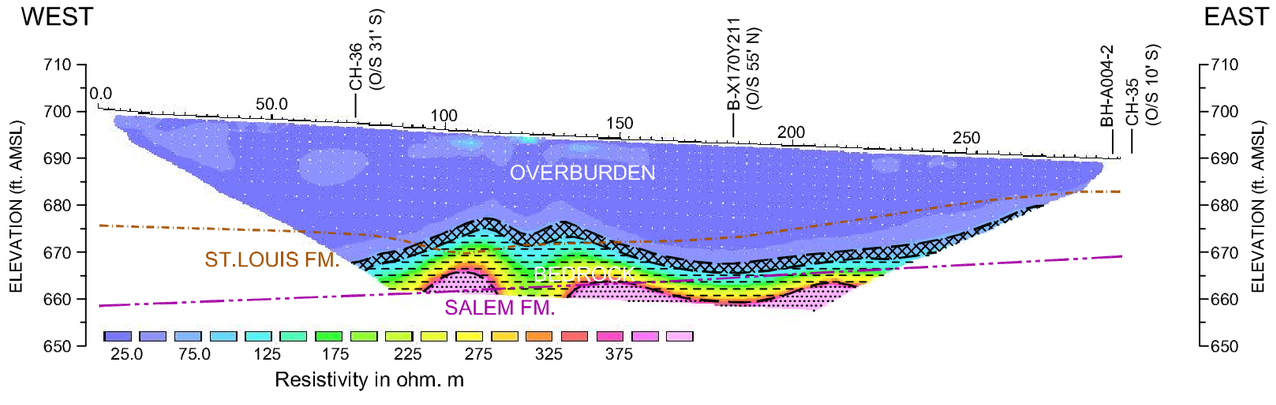
INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACES BASED ON COREHOLES

AOI 7 - LINE 3 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT5ELECTRODE SPACING = 3.3 ft.
3. O/S 55' N = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 55 FEET NORTH

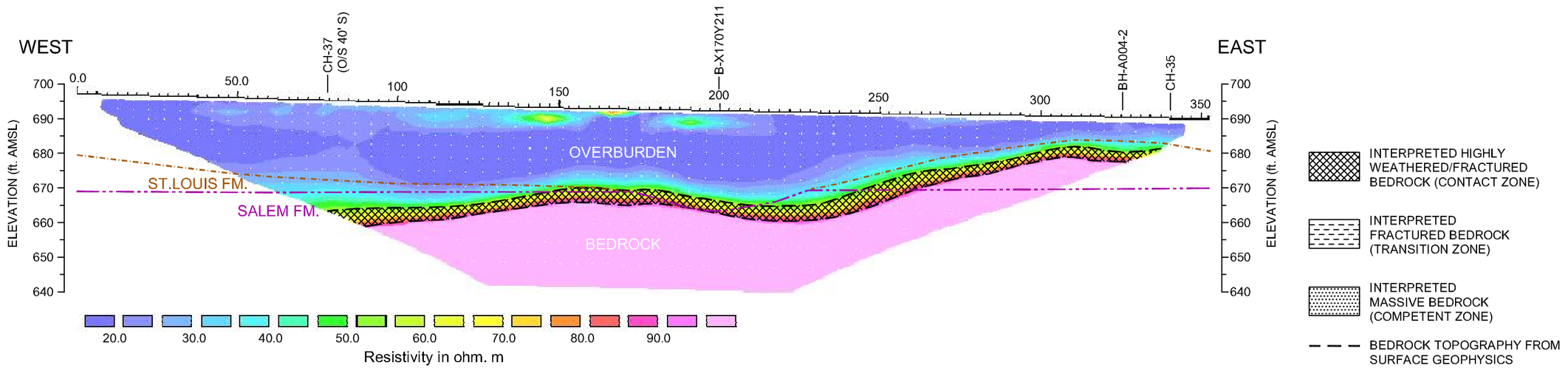
DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

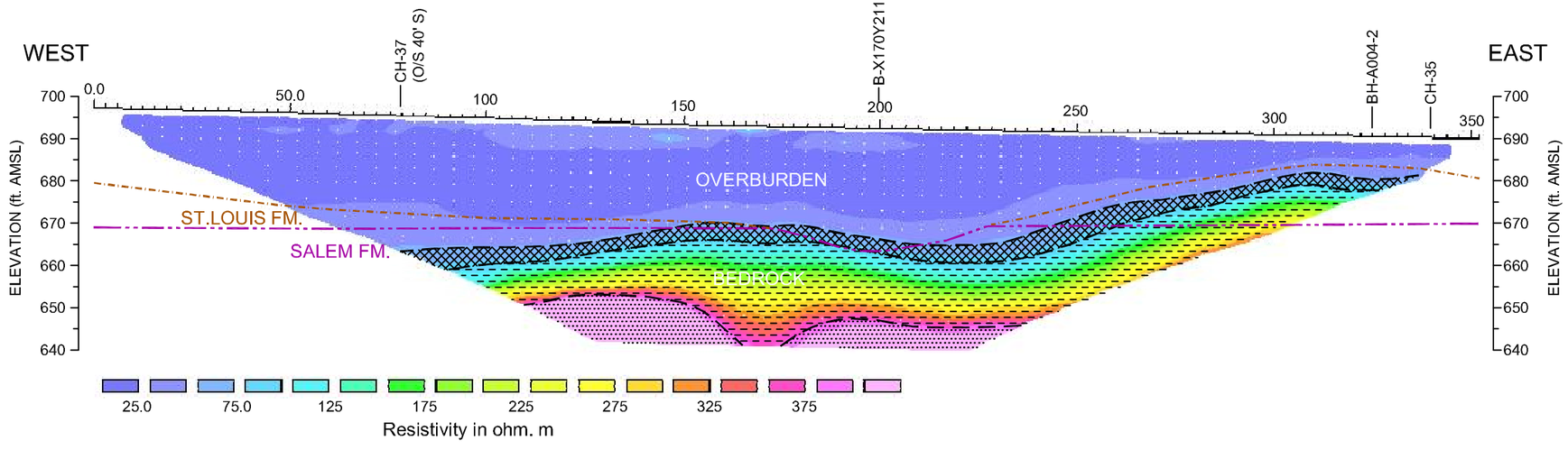
figure 4.3

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 3
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 7 - LINE 4 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



AOI 7 - LINE 4 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5 ft.
3. O/S 40' S = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 40 FEET SOUTH

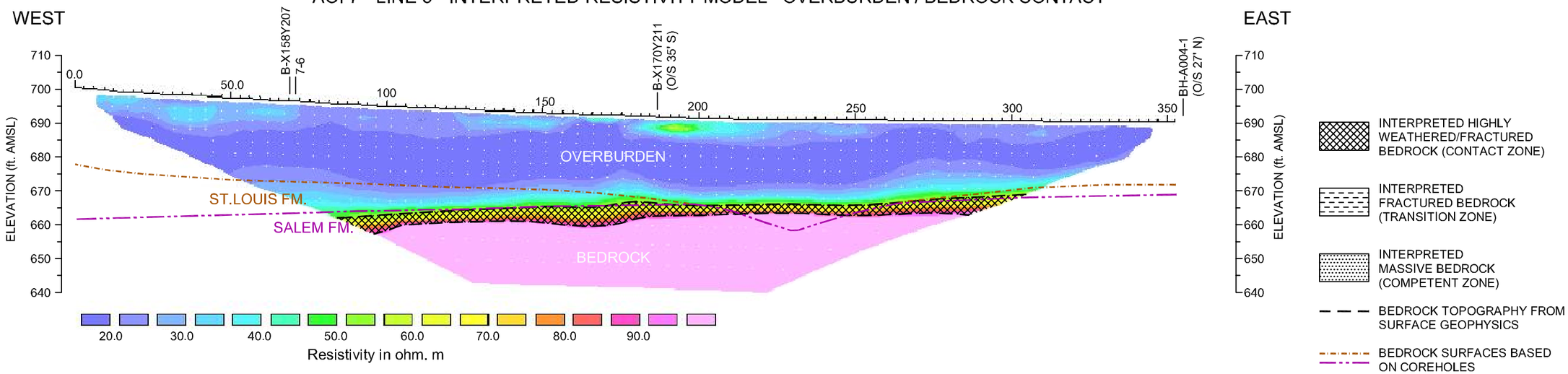
DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

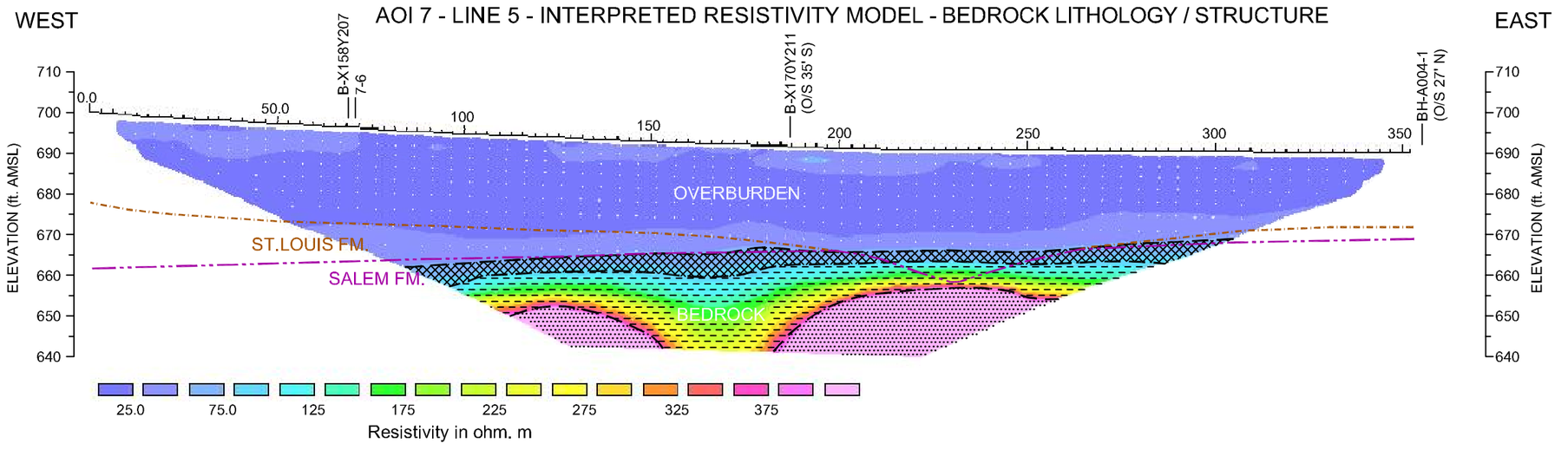
figure 4.4

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 4
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 7 - LINE 5 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



AOI 7 - LINE 5 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5.0 ft.
3. O/S 35' S = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 27 FEET SOUTH

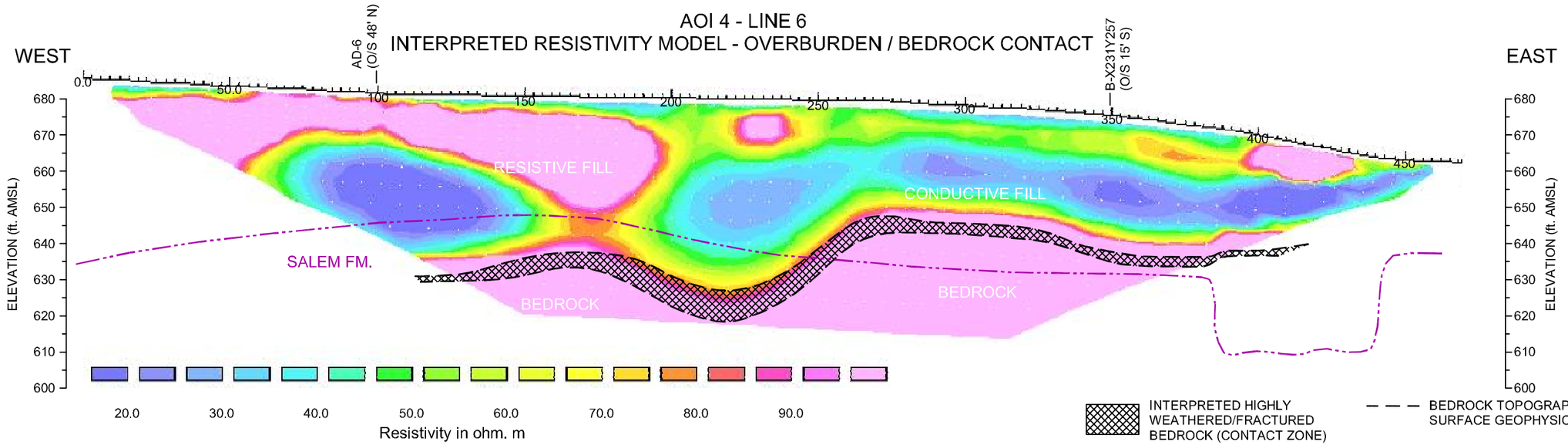
DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.5

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 5
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 4 - LINE 6
INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACE BASED ON COREHOLES

NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 6.6 ft.
3. O/S 15' S = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 15 FEET SOUTH

AOI 4 - LINE 6
INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE

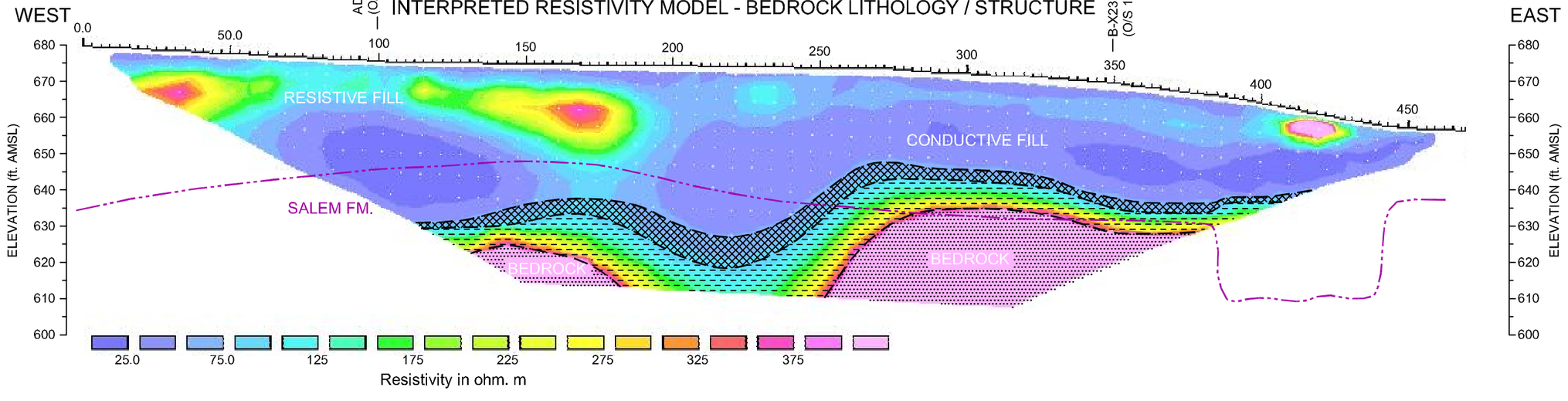


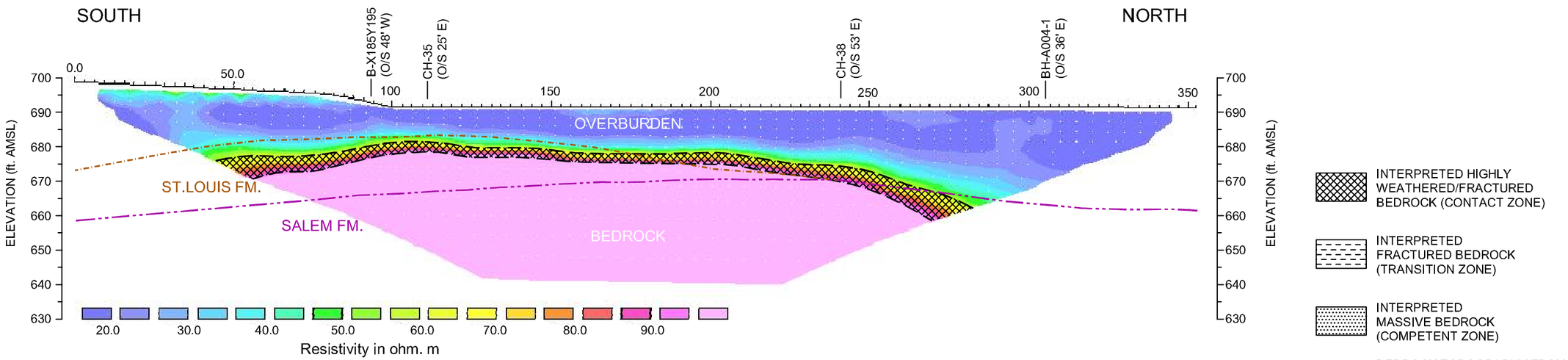
figure 4.6

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 6
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

AOI 7 - LINE 7 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

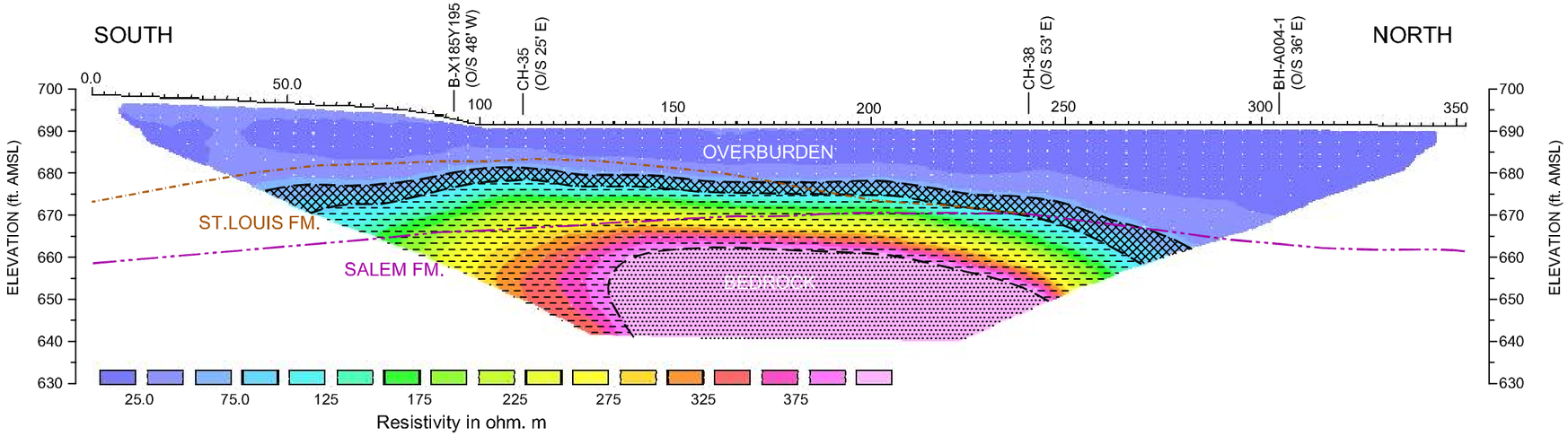
INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACES BASED ON COREHOLES

AOI 7 - LINE 7 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



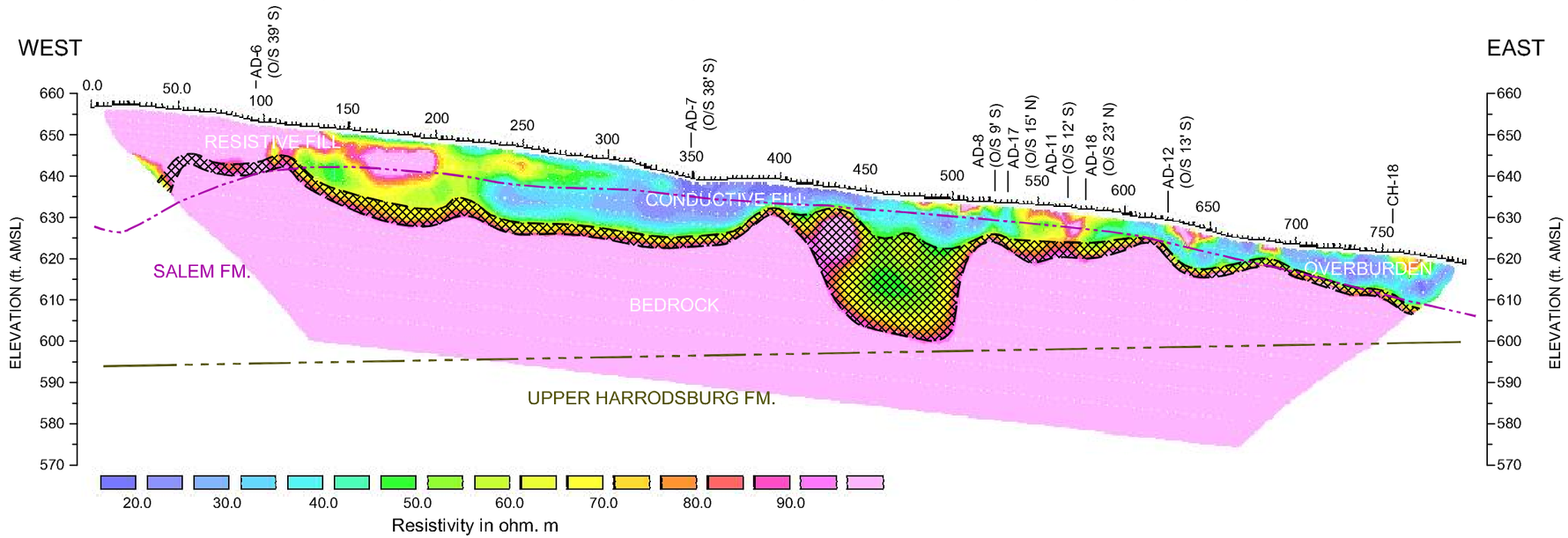
NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5 ft.
3. O/S 25' E = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 25 FEET EAST

DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

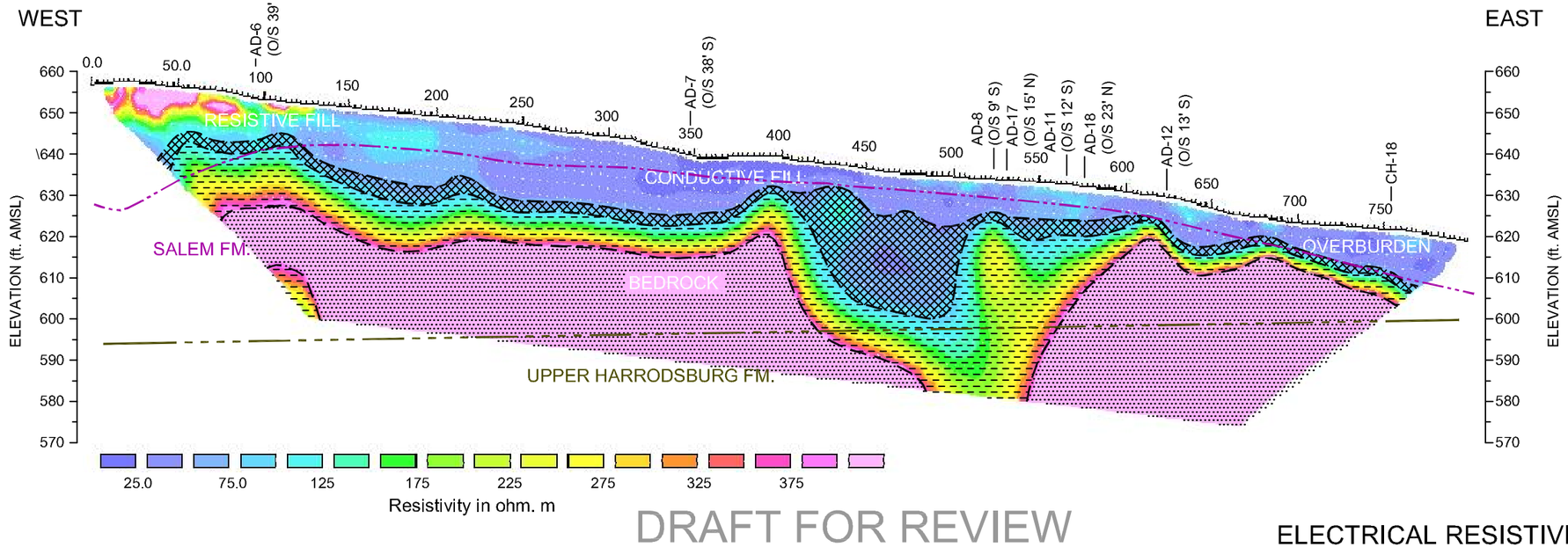
figure 4.7

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 7
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 4 - LINE 8 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



AOI 4 - LINE 8 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



- INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)
- INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)
- INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)
- BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS
- BEDROCK SURFACES BASED ON COREHOLES

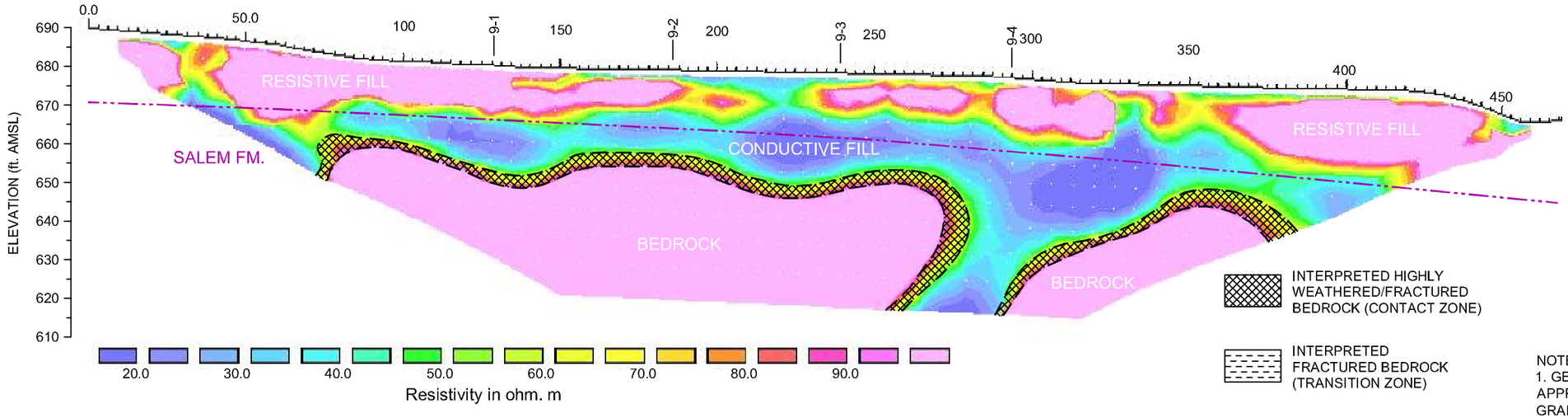
NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5 ft.
3. O/S 13' S = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 13 FEET SOUTH

DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.8

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 8
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 4 - LINE 9 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

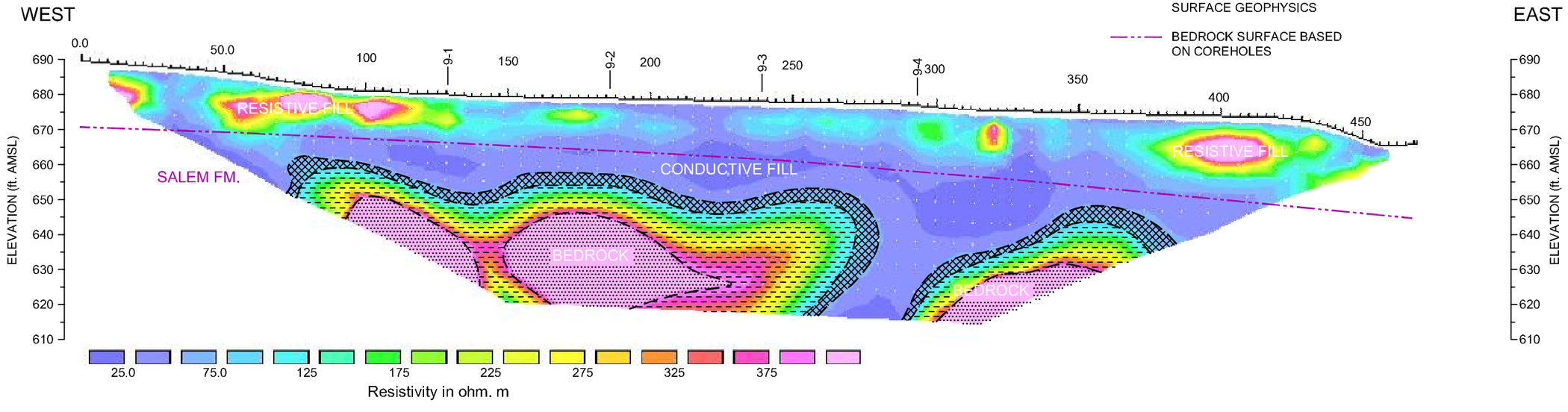
INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACE BASED ON COREHOLES

NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 6.6 ft.

AOI 4 - LINE 9 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE

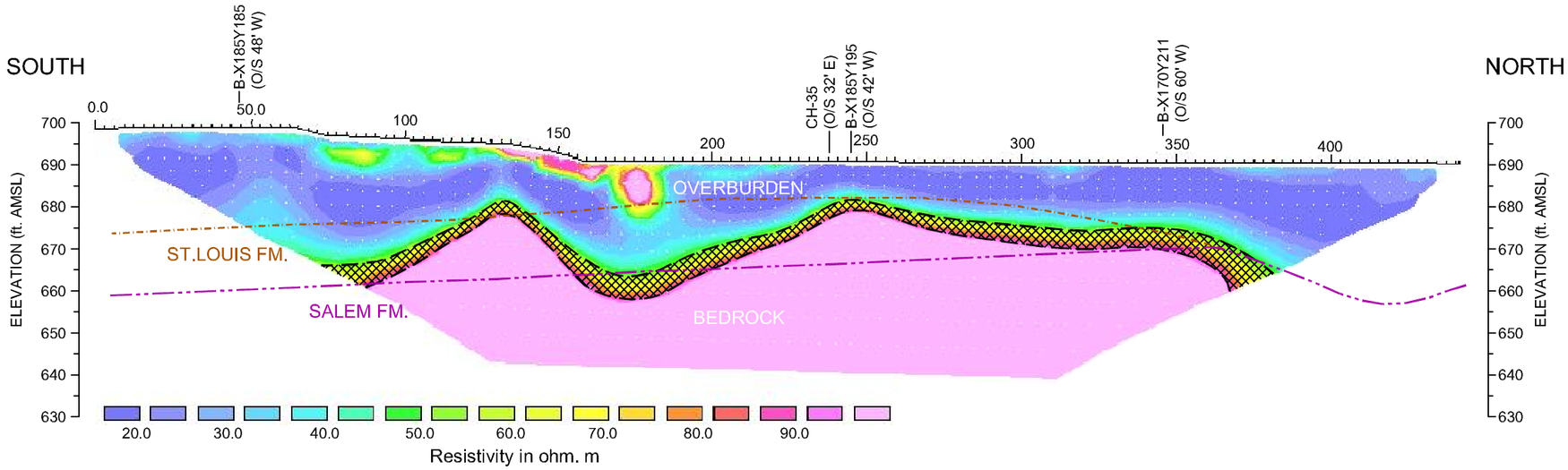


DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.9

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 9
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 7 - LINE 10 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

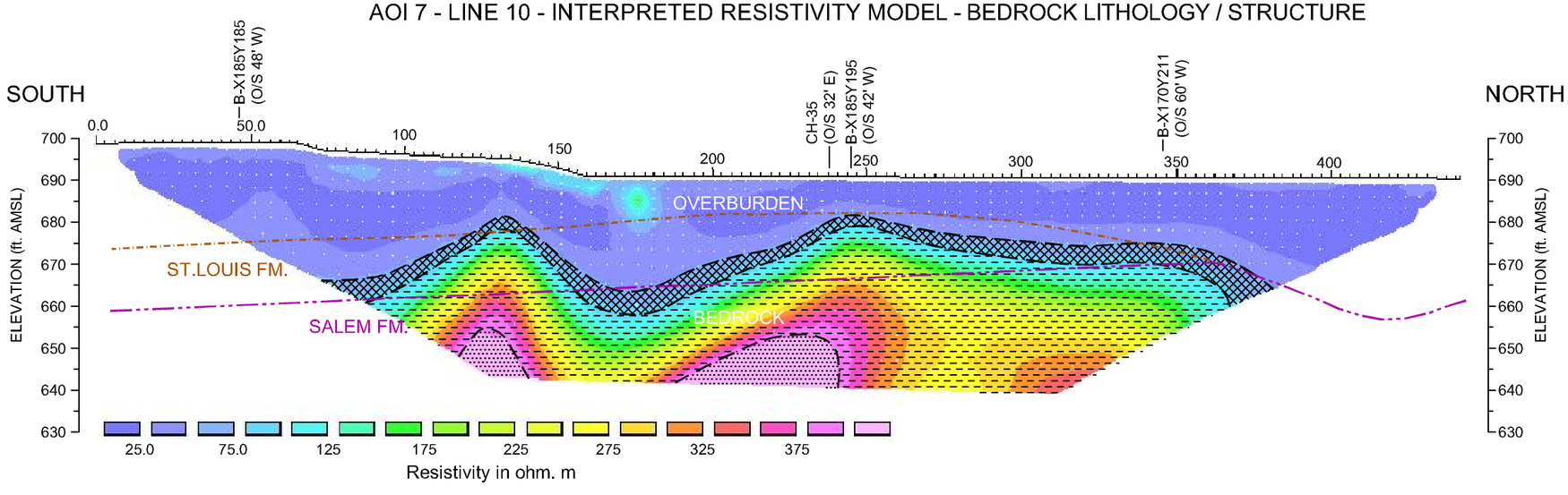
INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACES BASED ON COREHOLES

AOI 7 - LINE 10 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5.0 ft.
3. O/S 32' W = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 32 FEET EAST

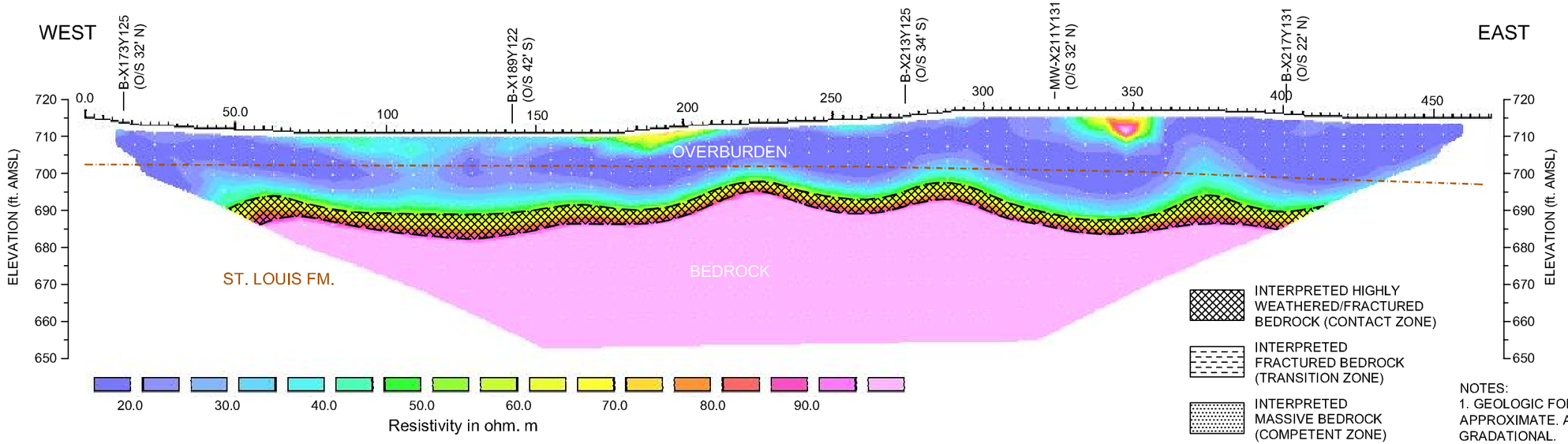
DRAFT FOR REVIEW

PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.10

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 10
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

AOI 6 - LINE 11 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

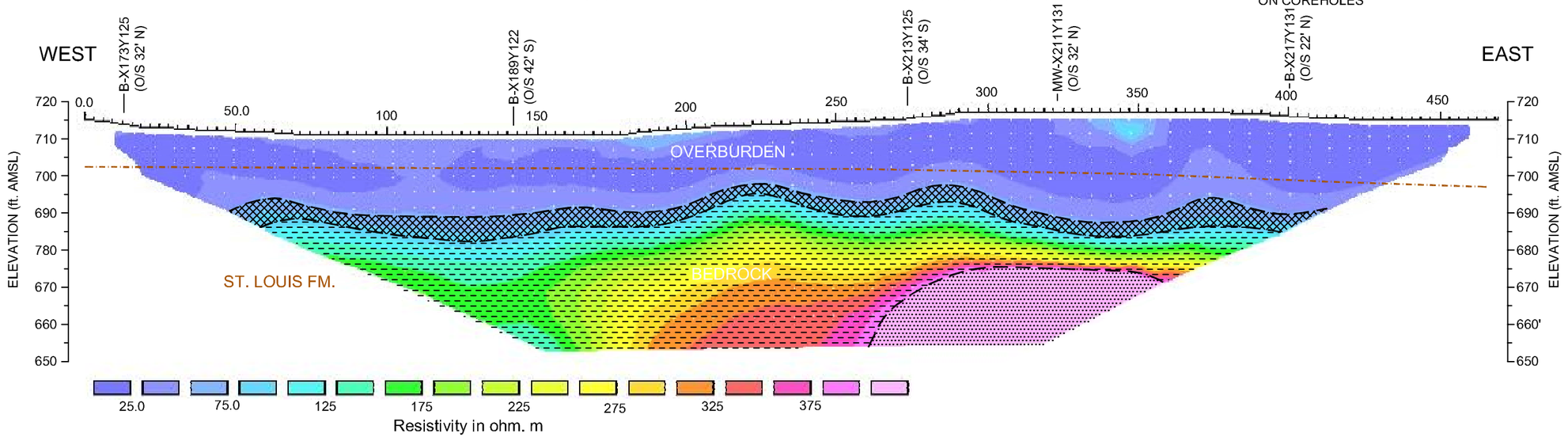
INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACE BASED ON COREHOLES

NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 6.6 ft.
3. O/S 22' N = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 22 FEET NORTH

AOI 6 - LINE 11 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE

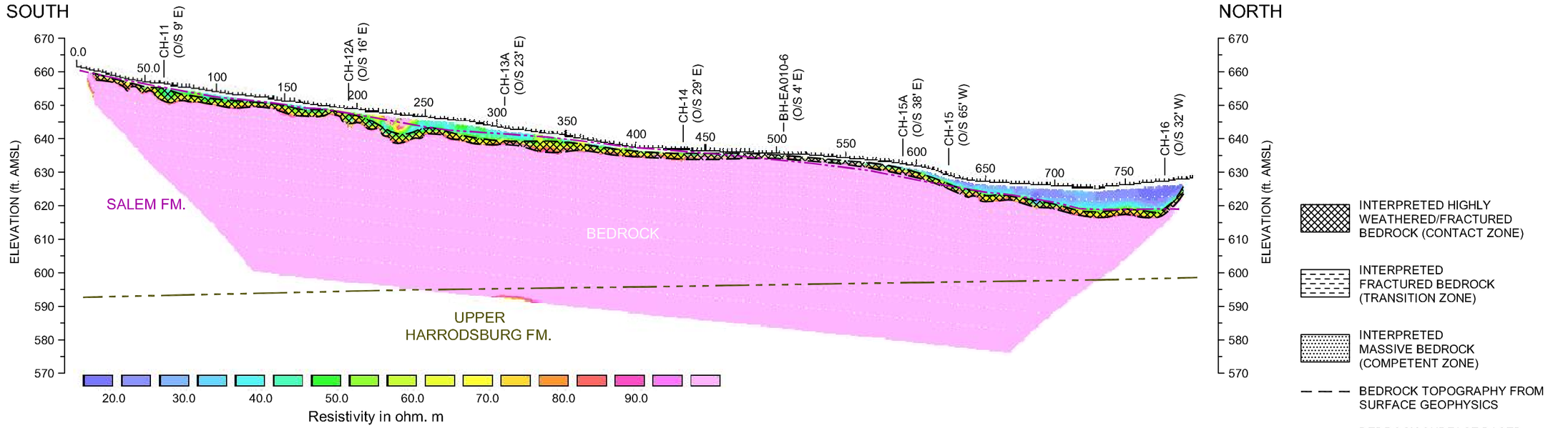


DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.11

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 11
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

EAST PLANT - LINE 12 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

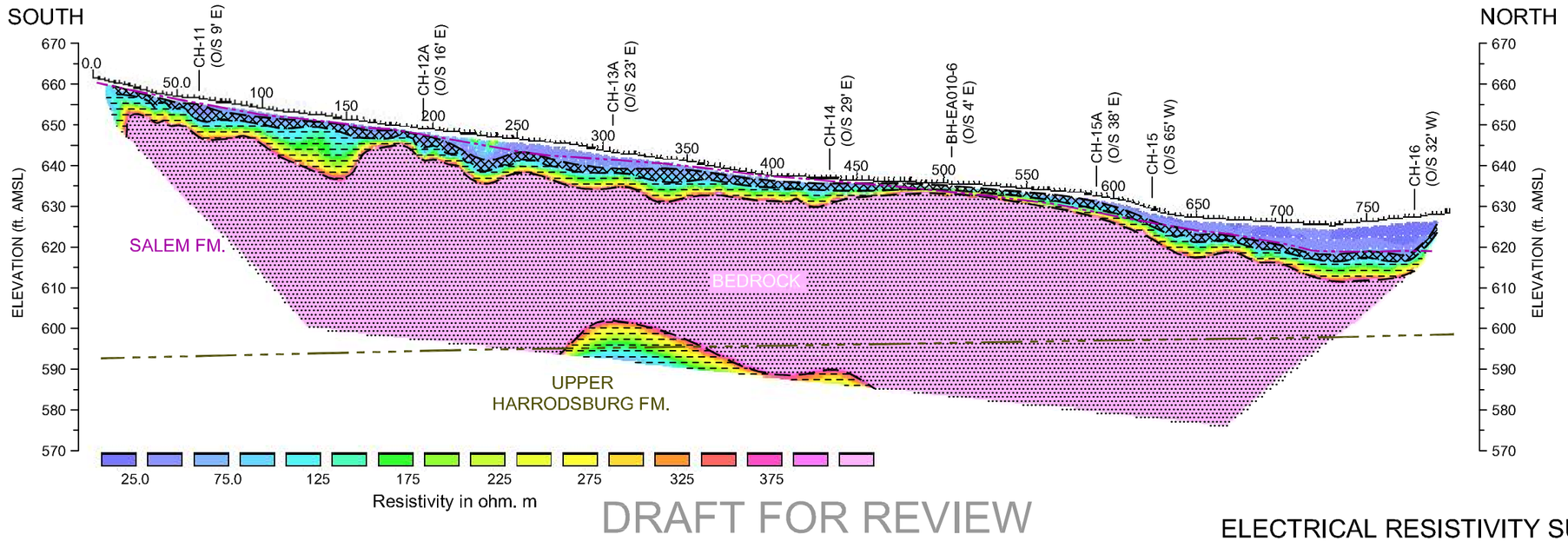
INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACE BASED ON COREHOLES

EAST PLANT - LINE 12 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 5.0 ft.
3. O/S 38' E = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 38 FEET EAST

DRAFT FOR REVIEW

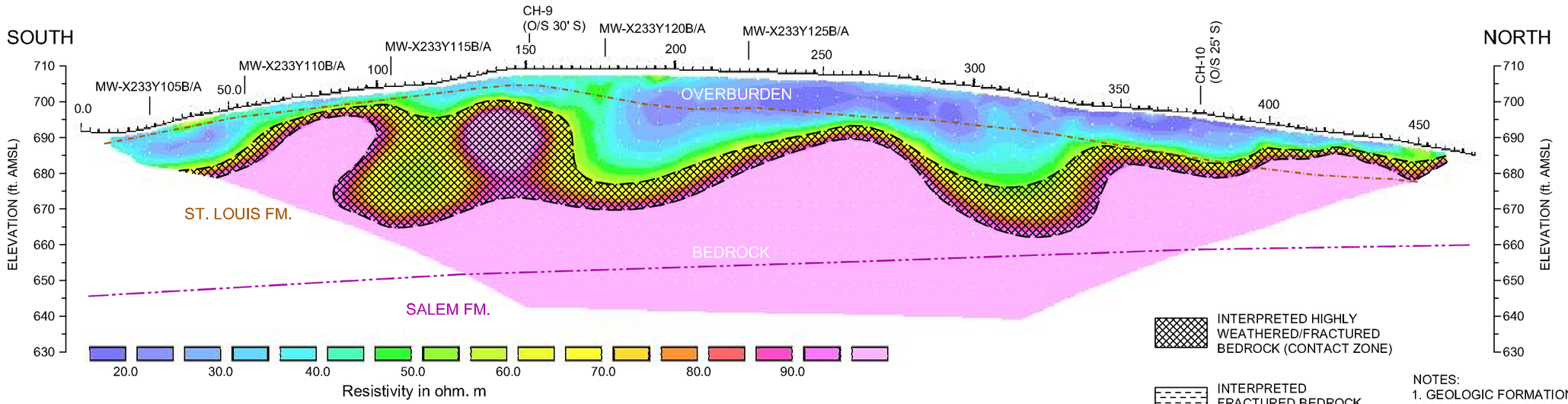
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.12

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 12
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

13968-00(156)GN-WA013 SEP 22/2005

EAST PLANT - LINE 13 - INTERPRETED RESISTIVITY MODEL - OVERBURDEN / BEDROCK CONTACT



INTERPRETED HIGHLY WEATHERED/FRACTURED BEDROCK (CONTACT ZONE)

INTERPRETED FRACTURED BEDROCK (TRANSITION ZONE)

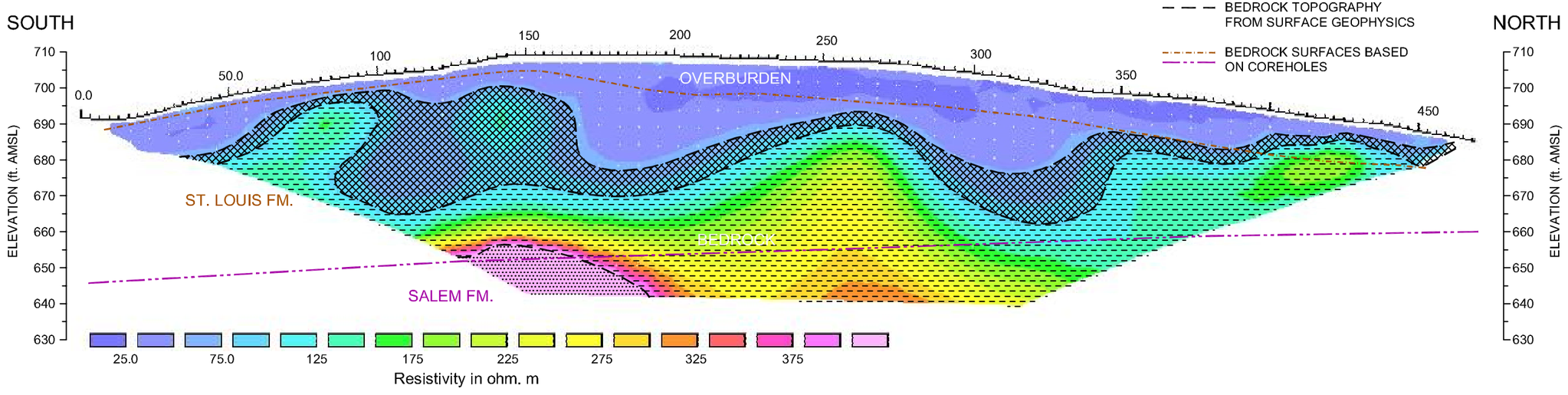
INTERPRETED MASSIVE BEDROCK (COMPETENT ZONE)

BEDROCK TOPOGRAPHY FROM SURFACE GEOPHYSICS

BEDROCK SURFACES BASED ON COREHOLES

NOTES:
1. GEOLOGIC FORMATION CONTACTS ARE APPROXIMATE. ACTUAL CONTACTS ARE GRADATIONAL.
2. UNIT ELECTRODE SPACING = 6.6 ft.
3. O/S 30' S = OFFSET FROM CROSS SECTION LOCATION BY ABOUT 30 FEET SOUTH

EAST PLANT - LINE 13 - INTERPRETED RESISTIVITY MODEL - BEDROCK LITHOLOGY / STRUCTURE



DRAFT FOR REVIEW
PRIVILEGED AND CONFIDENTIAL
PREPARED AT THE REQUEST OF COUNSEL

figure 4.13

ELECTRICAL RESISTIVITY SURVEY RESULTS - LINE 13
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

APPENDIX D2

GEOPHYSICAL INVESTIGATION – AOI 7 POST-EXCAVATION

CONESTOGA-ROVERS & ASSOCIATES

651 Colby Drive, Waterloo, Ontario, Canada N2V 1C2
Telephone: (519) 884-0510 Fax: (519) 884-0525
www.CRAworld.com

DRAFT FOR REVIEW MEMORANDUM

TO:	Cheryl Hiatt, Ed Peterson	REF. NO.:	13968
FROM:	Joe Rothfischer, Mike Howlett	DATE:	October 14, 2005
C.C.:	Glenn Turchan, Jim McGuigan, Bill Steinmann, Rick Hoekstra, Jeff Daniel, Katie Kamm, Mary Kelly, filing		
RE:	**Supplemental Electrical Resistivity Survey Test Results for Post-Excavation AOI 7 GM Powertrain Bedford Facility Bedford, Indiana**		

1.0 INTRODUCTION

This Geophysical Investigation Memorandum (Memo) presents the supplemental geophysical investigation results conducted as part of the Draft Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Work Plan (Work Plan) Addendum No. 9 for the General Motors Corporation (GM) Powertrain Bedford Plant (Facility) located in Bedford, Indiana (U.S. EPA ID# IND006036099).

1.1 GENERAL

The Facility is located at 105 GM Drive, Bedford, Lawrence County, Indiana, 47421 (Figure 1.1). The Facility produces aluminum casting products, such as transmission cases, pistons, and engine blocks. Major aluminum production processes include die casting and permanent molding. The Facility has been operating as an aluminum foundry since 1942, and covers an approximate area of 152.5 acres.

1.2 RFI APPROACH

GM signed a Performance-Based RCRA Corrective Action Agreement (Agreement) with the United States Environmental Protection Agency (U.S. EPA) for the Bedford Facility on March 20, 2001, as amended on October 1, 2002. The signed Agreement states that GM will work with the U.S. EPA to identify and define the nature and extent of releases of hazardous waste and/or hazardous constituents at or from the Bedford Facility.

1.3 PURPOSE

The supplemental geophysical investigation was completed using both ground penetrating radar (GPR) and electrical resistivity survey (ERS) methods. The purpose of the supplemental geophysical investigation

REGISTERED COMPANY FOR ISO 9001 ENGINEERING DESIGN

was to complete a detailed analysis of the recently excavated Area of Interest (AOI) 7, where a landfill vault is to be constructed. Specifically, the primary intent of the supplemental investigation was to determine the presence and extent of voids in bedrock. The survey data was to provide additional information on stratigraphy, geologic structure, and bedrock competency, to support an Interim Measure for the East Plant Area. In order to achieve these objectives, CRA completed GPR and ERS along the lines presented on Figures 2.1 and 2.2, respectively. A detailed grid was established over a small (approximately 2′ x 2′ x 2′), near-surface void and immediate surrounding area. To the north of the void, additional ERS coverage was completed over the north grid.

Prior to mobilization, the proposed work plan for the geophysical investigation included survey coverage of the entire vault footprint area. However, as will be described later, the proposed grid over this entire area could not be completed due to health and safety concerns in areas with standing water on top of the bedrock. Thus, the survey coverage consisted of GPR and ERS surveys over the near-surface void and surrounding area, and ERS coverage over the area to the north of the near-surface void, with one additional north-south line run along the western edge of the vault excavation area.

2.0 REVIEW OF EXISTING CONDITIONS

2.1 LOCAL SETTING

AOI7 is the location of a former stormwater basin in the East Plant Area at the facility. This stormwater basin had been discontinued from service, excavated to bedrock and restored with clean fill. A gravel blanket and passive groundwater collection system had also been constructed on the bedrock surface that conveyed groundwater to a sump.

2.1.1 LOCAL GEOLOGY

The natural soil in the immediate vicinity of the Facility is known as Crider. Crider soil is a fine-grained, silt loam to silty clay loam. Crider soil develops on 20 inches to 45 inches of silty loess over clayey material derived from limestone (United States Department of Agriculture (USDA), 1985).

The overburden materials at the East Plant Area consist of fill materials, clay and silt. The thickness of the overburden materials varies considerably across the East Plant Area. The overburden within the East Plant Area is underlain by the St. Louis and Salem Limestone Formations. The St. Louis Formation has been identified to be highly weathered and fractured near surface. Based on corehole stratigraphic logs, fracture density decreases rapidly with depth. The highly weathered and fractured St. Louis Limestone is underlain by the Salem Limestone (also known as the Indiana, Bedford, or Oolitic Limestone), which is the limestone formation utilized by local quarries for fine building stone. The Salem Limestone is also weathered and fractured when exposed at the near surface, but is generally more massive and less weathered and fractured than the St. Louis Limestone.

The post-excavation investigation of AOI 7 indicates that the base of the landfill vault is generally dominated by clay-mantled karstic features, commonly referred to as epi-karst. Based on visual observation, it appears that the karstic macroporosity has been predominantly in-filled with fine-grained sediments. In the area of the vault excavation, the St. Louis Formation is present as weathered knobs, and is

underlain by the Salem Formation. The Salem Formation is present as the bedrock surface in the lowest portion of the excavation.

Additional information on the East Plant Area geology is presented in the Technical Memorandum RFI, Soil, Sediment, Surface Water, Wipe Sampling (CRA, April 2004) and RFI Work Plan (CRA, October 2001).

2.1.2 LOCAL HYDROGEOLOGY

The Conceptual Site Model (CSM) for fill/overburden and shallow bedrock groundwater flow describes the shallow groundwater flow (i.e., unconfined water table) through the unconsolidated overburden and upper fractured/weathered bedrock at the Facility. Recharge to the water table aquifer occurs through the overburden materials and directly into bedrock, where exposed. Discharge of groundwater from the overburden and shallow bedrock occurs through springs and seeps in topographically low areas (e.g., creeks and ditches). The results of groundwater sampling across the Facility and the results of the dye trace testing, completed in September 2004, support this CSM of the shallow groundwater flow at the Facility.

2.2 SURVEYED AREA

The surveyed area consists of a large portion of the excavated area for the proposed storage location (landfill vault) for contaminated soil collected on-site (>50 ppb PCBs). The excavated area covers the majority of AOI 7, which was the site of the former north stormwater pond. This area had been previously remediated in the 1980's to bedrock, and backfilled with clean fill. Excavation activities have revealed that the bedrock topographic surface in the eastern portion of the vault footprint is significantly higher than the western portion.

The geophysical investigation was not completed over the entire area of excavation as envisioned in the work plan due to inadequate performance of the GPR method and unsuitable field conditions for ERS operation.

The GPR survey performed within the detail grid area in the southeastern portion of the excavation along closely spaced data collection lines. It was intended that the data collected during this initial survey would be used to develop an appropriate collection line spacing for the remaining area of the excavation. However, as described in section 4.0, the GPR data was of limited value due to the high attenuation of the signal resulting from the clay infilling along bedding planes. Therefore, the GPR grid was not extended over the remaining area.

The ERS method was also performed over the detailed grid in the southeastern portion of the excavated vault footprint as the last few feet of overburden soil in the remaining area was in the process of being removed from the bedrock surface. When the remaining soil had been removed and the bedrock surface exposed, it became evident that this area displayed relatively high topographic relief in the form of valleys and limestone knobs. These rough surfaces make it difficult to properly conduct the ERS survey. In addition, groundwater was pooling in the lower areas of the bedrock surface, presenting health and safety issues such as slip, trip, and fall hazards, as well as the electrical hazards resulting from running electrical lines through standing water. Therefore, the geophysical investigation was not completed over the western portion of the vault footprint. Thus, the survey coverage for the geophysical investigation was restricted to

the eastern and northern portions of the vault footprint, with one line run along the western edge of the excavation.

3.0 GEOPHYSICAL SURVEY METHODS

The GPR survey was completed using a Ramac™ Rough Terrain Concept (RTC) low frequency system, which transmits at 50 mHz. This instrument is characterized by an in-line transmitter-receiver antenna configuration, which allows for relative rapid GPR data acquisition in comparison to other instruments. GPR systems utilize pulsed EM waves, which are emitted from a transmitting antenna. They are propagated into the ground, and travel at velocities determined by the electrical properties of earth materials. If a wave hits a buried object or boundary with different electrical properties, as it moves downward, part of the wave energy is reflected back to the surface and is detected by a receiving antenna. The reflected wave is stored digitally, and processed as a trace of signal versus amplitude. As the antennas are moved along a survey line, a series of traces are recorded at discrete points. When presented collectively, these traces display a profile of the subsurface. With respect to void detection, a significant void would appear as an intensified response or reflector, due to the air wave response created by the void.

The electrical resistivity survey was completed using a Syscal™ R1 Plus resistivity meter, which functions simultaneously as a transmitter and receiver. The survey lines completed in the excavated AOI 7 involved the use of 36, 54, or 72 electrodes, with electrode spacings of either 2.5 or 3.3 feet. The resolution utilizing these electrode spacings was on the order of one half the respective electrode spacings, and was therefore either 1.3 or 1.8 feet, which was considered adequate to delineate suspected karst features, based on field observations of the dimensions of the void in bedrock. The depth of investigation for each line ranged from approximately 15 to 40 feet, increasing with the number of electrodes used and the length of the electrode spacing.

Prior to the start of data collection, survey lines were established in the excavated area of AOI 7 in the East Plant Area. Base points were surveyed using global position system (GPS) technology.

4.0 EVALUATION OF GEOPHYSICAL SURVEY RESULTS

The GPR data were processed as trace plots for each survey line. The plots were examined for signatures indicative of voids, as well as for evidence of fracturing in the bedrock. The GPR results are presented on Figures 3.1 to 3.12, inclusive.

Examination of the GPR plots for the location of void (Figure 3.1) indicates that the void could not be delineated, due to its near surface location and the air-wave response at the bedrock surface, which is inherent to all GPR instrumentation. Review of figure 3.1 reveals that there is no differentiation of the GPR response over the near-surface void as compared to the response over a boulder at surface, or the response over a small (2-foot) ledge. In addition, the interbedded nature of the subsurface geology (i.e. limestone with thin interbeds of clay) caused the GPR signal to be attenuated at a relatively shallow depth. Due to these relatively poor results, the GPR survey coverage was not expanded beyond the initial detailed grid area.

The electrical resistivity data was plotted as colored contoured cross-sections of apparent resistivity, and then processed with the RES2DINV inversion program. The inversion program provided a model

resistivity section for each profile, representing the interpreted subsurface stratigraphy based on the apparent resistivity data. The modeled resistivity sections for these lines are presented on Figures 4.1 to 4.8, inclusive.

Review of the modeled sections (Figures 4.1 to 4.8) indicates that increments of 20 Ohm-meters (Ohm-m) per colored segment were used, over a range of 20 to 320 Ohm-m. This was done to emphasize the contact between the clay and the limestone layers, as well as illustrate the gradational weathering of the bedrock.

In general, the modeled sections reveal that the resistivity of the clay and silt overburden is interpreted to vary from approximately 10 to 50 Ohm-m (which is typical of silty clay). Beneath the overburden, the highly fractured, weathered top surface of limestone bedrock is interpreted to range from 50 to 100 Ohm-m. The deeper bedrock is characterized by less fractured limestone interbedded with thin laminae of shale (as indicated in bedrock logs for AOI 7), with resistivities ranging from 100 to 320 Ohm-m (transition zone), and moderately competent limestone bedrock is believed to yield resistivity values in excess of 320 Ohm-m. Air has a very high resistivity, and as such, any air-filled voids would show a substantially higher resistivity (>1000 Ohm-m).

Significant layers and features, as described above, are labeled on the modeled sections. This interpretation is based on an assumption that the resistivities of these interpreted zones are consistent for the overburden and bedrock beneath AOI 7. As indicated above, the inhomogeneous nature of the subsurface may result in the data being more representative of subsurface conditions of some areas of AOI 7 than others. These data need to be used in conjunction with existing stratigraphic and lithologic logs, which can be resolved into intervals of 0.1 ft based on the examination of physical samples.

Based on the dense data coverage in the excavated area of AOI 7, it is unnecessary to discuss each line independently. Given the spatial setup and trends in the data, it most effective to group the resistivity lines into three subsections of the excavated AOI 7; the southeast corner (detailed grid), northeast corner (north grid), and west side of the base of the vault.

The modeled sections for each subsection of the excavated AOI 7 are briefly described as follows:

AOI 7 – Detailed Grid

Data coverage over the detailed grid consists of the lines 200E, 210E, 220E, 230E, 240E, 250E, 260E, and 300E (see Figures 4.1 to 4.3, respectively), all of which run parallel to each other, approximately south to north, and were completed using 36 electrodes spaced at 3.3 feet. Lines 200E and 250E were also repeated using 54 electrodes spaced at 3.3 feet (see Figures 4.9 and 4.10, respectively) to increase the depth of investigation for the two lines. Finally, line 60 N was completed using 36 electrodes spaced at 2.5 feet (see Figure 4.1). This line runs west to east, and transects the approximate midpoints of the other 36-electrode lines in the detailed grid area.

The modeled sections presented indicate that the overburden is generally very thin to not present in the excavated area, although it does increase towards the southeast corner of the excavation, reaching a maximum depth in the range of 10 to 15 feet.

The bedrock is strongly weathered at the near surface, and generally shows a trend towards competency at depth. In some locations, however, the cross-sections seem to suggest that a moderately competent section

of limestone is underlain by a thin layer of lower competency materials at approximately 660 feet above sea level (fasl). The sections are reasonably consistent, although there is evidence for slightly increased weathering towards the southeast corner of the excavation, as well as along sections 240E and 250E, near the midpoints of the lines. The two lines completed using 54 electrodes spaced at 3.3 feet (200E and 250E) both indicate that the deeper rock is generally resistive and competent.

Examination of Figure 4.1 indicates that the ERS was able to detect the void which had been exposed at surface during the excavation. Small, high resistivity, near-surface anomalies on multiple modeled sections (230E, 240E, 250E, 60N) indicate a small (on the order of 2 feet diameter), elongate, near-surface feature, with a generally east-west trend. There was no indication of any continuation at depth, or that the void extended laterally beyond the bounding lines (240E and 260E). There was no strong evidence for any other voids in the area. Very high resistivity anomalies not directly at surface, if present, would be far more conclusive in showing the presence of additional significant voids.

The correlation between the different sections suggests both a strong repeatability as well as consistent results for overlapping data. The two 54 electrode lines (200E and 250E) match-up very well with their corresponding 36 electrode lines. As well, the cross-line (60N) correlates well at the intersections with the transverse lines, including showing a slightly elongated void response, and similar depths and levels of weathering at the overlapping points.

AOI 7 – North Grid

Data coverage over the north grid consists of 14 parallel lines, running approximately south to north, spaced at 10 feet intervals. Due to the complex topography, the lines had to be of varying lengths and electrode spacings, and slight offsets were employed to avoid unsuitable terrain. Line 150E involved 36 electrodes spaced at 2.5 feet; lines 160E, 170E, 180E, 190E, and 200E employed 36 electrodes at 3.3 feet spacings; and lines 210E, 220E, 230E, 240E, 250E, 260E, 270E, and 280E involved 54 electrodes spaced at 3.3 feet (see Figures 4.4 to 4.7, respectively).

The modeled sections generally show limited overburden response, as the vast majority of overburden had been removed prior to the ERS.

The bedrock response is relatively consistent, with the bedrock being more highly weathered at surface (especially to the south), and becoming more competent at depth. The obvious exception is the low resistivity zone cutting vertically through the middle of each section. This provides a strong indication of a clay zone running approximately east-west across the middle of the northeast quadrant of the excavation. The form and response is suggestive of a large, clay-filled vertical fracture. This feature is similar to ones observed along the sidewalls of the collection system which was excavated, and presently comprises the base of the vault. In addition, a smaller horizontal fracture in-filled with clay was delineated to the north of the vertical fracture, along the northern boundary of the base of the vault.

There is no evidence to suggest the presence of significant voids in the area.

The data in AOI 7 – north grid shows strong consistency and continuity. There are some areas of double coverage between 200E and 250E lines for the north and detailed grid, and the results for both sets show very strong similarities in the overlapping areas.

AOI 7 – West Side, Base of Vault

Line 20 E (figure 4.8) was completed on the west slope of the excavation, and extends south to north. The line incorporated 72 electrodes spaced at 3.3 feet, in an effort to maximize the depth of investigation.

The modeled section presented indicates that the overburden ranges in thickness from approximately 0 to 8 feet, and is generally thicker to the south. The survey results indicate that the subsurface in this area is comprised of a knoll of competent bedrock, flanked to the north and south by interbedded clay and limestone.

There is no evidence to suggest the presence of significant voids along the line.

5.0 DISCUSSION

Review of the modeled sections presented on Figures 4.1 to 4.8 has indicated that the resistivity survey has been a useful tool for determining whether voids are present in the subsurface bedrock beneath the excavated area of AOI 7. In addition to mapping the contact between overburden and bedrock, the modeled resistivity sections have provided information regarding the structure and competency of the bedrock. This includes mapping the thickness of the more weathered and fractured contact zone, the underlying fractured bedrock and interbedded clay sequences, while also providing evidence of resistive, competent bedrock at depth over the majority of the surveyed area of the ERS. The ERS results have further indicated that the void exposed during excavation was of minimal extent, and that there was no evidence to indicate the presence of other significant voids.

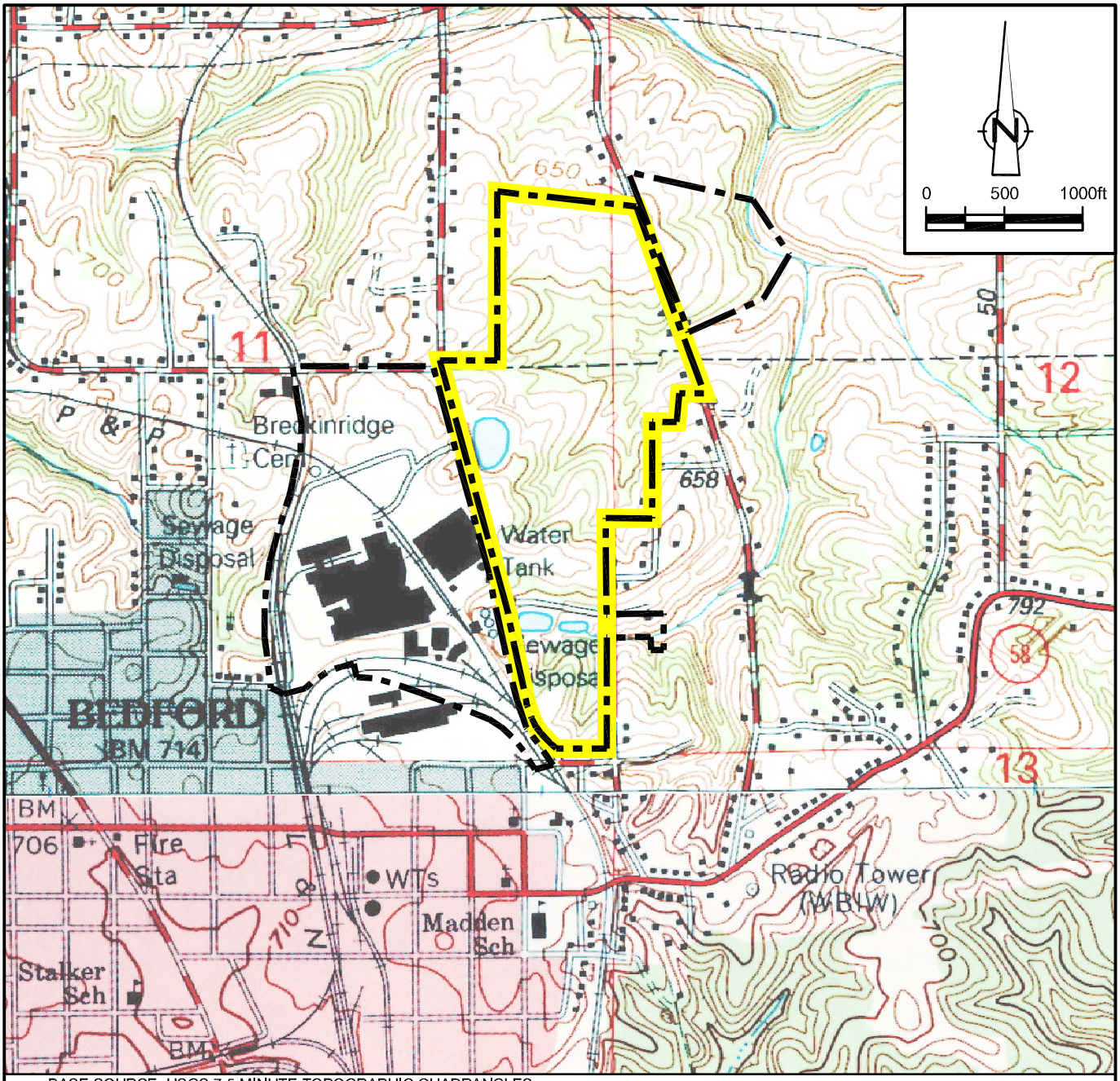
To further demonstrate that the actual stratigraphic cross-sections for coreholes installed in the vault footprint are consistent with the ERS interpretations, the geophysical well logs (optical and acoustic televiewer) for coreholes CH-35 and CH-38 have been plotted adjacent to respective ERS sections (Figures 5.1 and 5.2). The stratigraphic logs for these coreholes are provided in Attachment A. Examination of the ERS results, the geophysical well logs, and the stratigraphic corehole logs indicate that high resistivity ERS responses correspond to poorly fractured limestone. As fractures become more prevalent in the limestone (CH-38), the resistivity response observed on the ERS sections decreases. In areas where the porosity is believed to be in-filled with clay, the resistivity response is further reduced.

6.0 CONCLUSIONS

Based on the information provided by the supplemental geophysical investigation, the following conclusions are provided;

- The GPR results were not successful in delineating the void in the bedrock observed in the detailed grid area;
- Interbedded clay and rock sequences in the upper, weather bedrock resulted in the GPR signal becoming attenuated at a relatively shallow depth;
- The ERS provided useful information regarding the thickness and nature of the remaining overburden in the excavated areas of AOI 7, which could be surveyed;

- The modeled resistivity sections indicated that the bedrock surface beneath the excavation is weathered at the surface;
- The ERS results indicated that for a majority of the survey area, highly resistive, competent bedrock exists at depth;
- The void exposed during excavation was detected on multiple lines (detailed grid - 230E, 240E, 250E, 260N), with results indicating a small (on the order of 2 feet diameter), elongate, near-surface feature, with a generally east-west trend. The resistivity data confirmed that this feature was of limited depth and lateral extent;
- There was no evidence for the presence of any other significant voids;
- The modeled resistivity sections (150E to 270E) indicate that a vertical fracture with clay infilling was delineated in the north grid area. In addition, a smaller horizontal fracture was also detected near the northern boundary of the base of the vault;
- The ERS results are consistent with actual mapped corehole stratigraphy and geophysical well logging results; and
- The information provided by the resistivity survey, as summarized above, will be utilized to support the continued design and construction of the Vault.



BASE SOURCE: USGS 7.5 MINUTE TOPOGRAPHIC QUADRANGLES;
BARTLETTSVILLE, INDIANA 1994
BEDFORD EAST, INDIANA 1978
BEDFORD WEST, INDIANA 1993
OOLITIC, INDIANA 1987



LEGEND

FACILITY BOUNDARY

EAST PLANT AREA

figure 1.1

FACILITY LOCATION
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

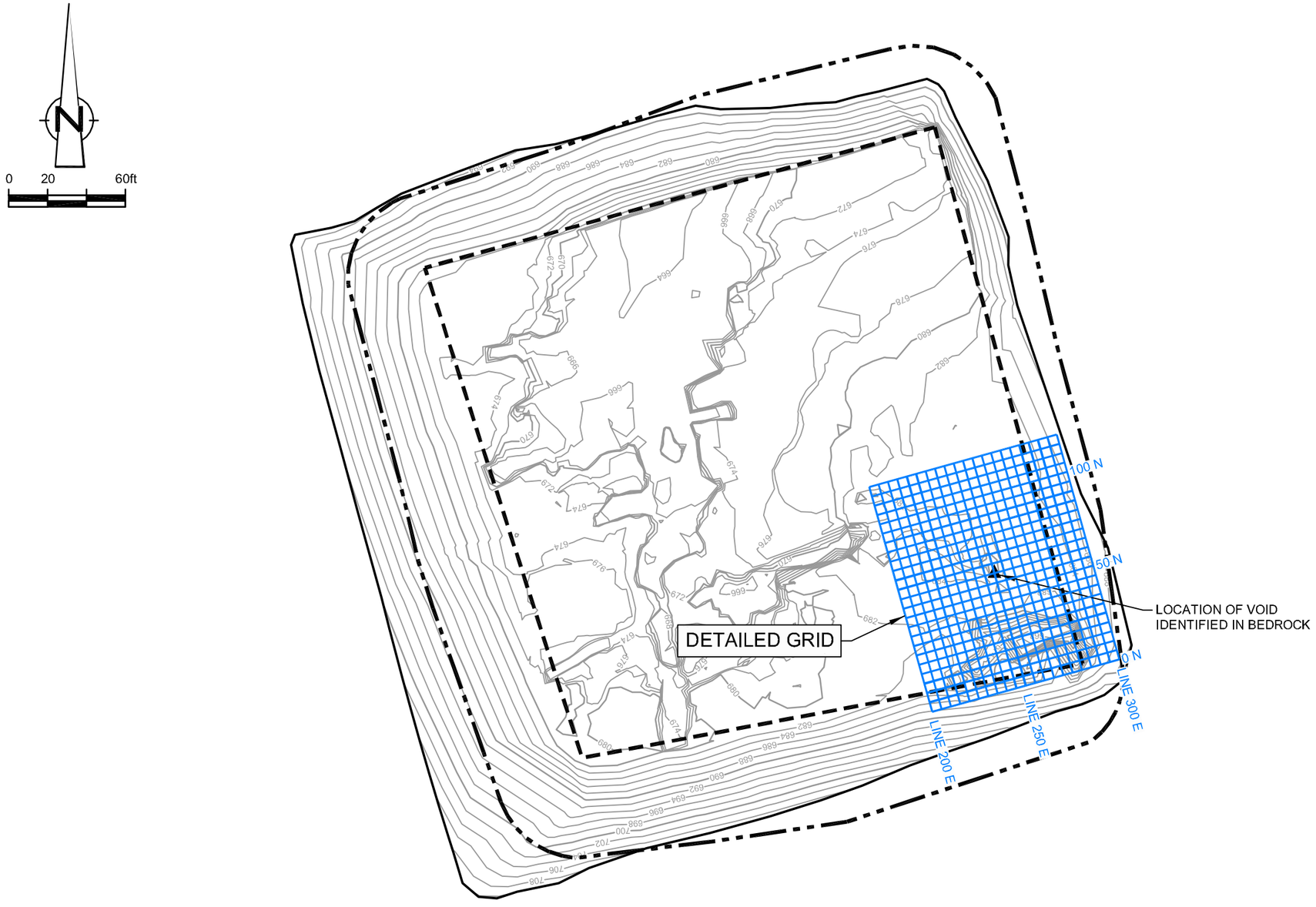
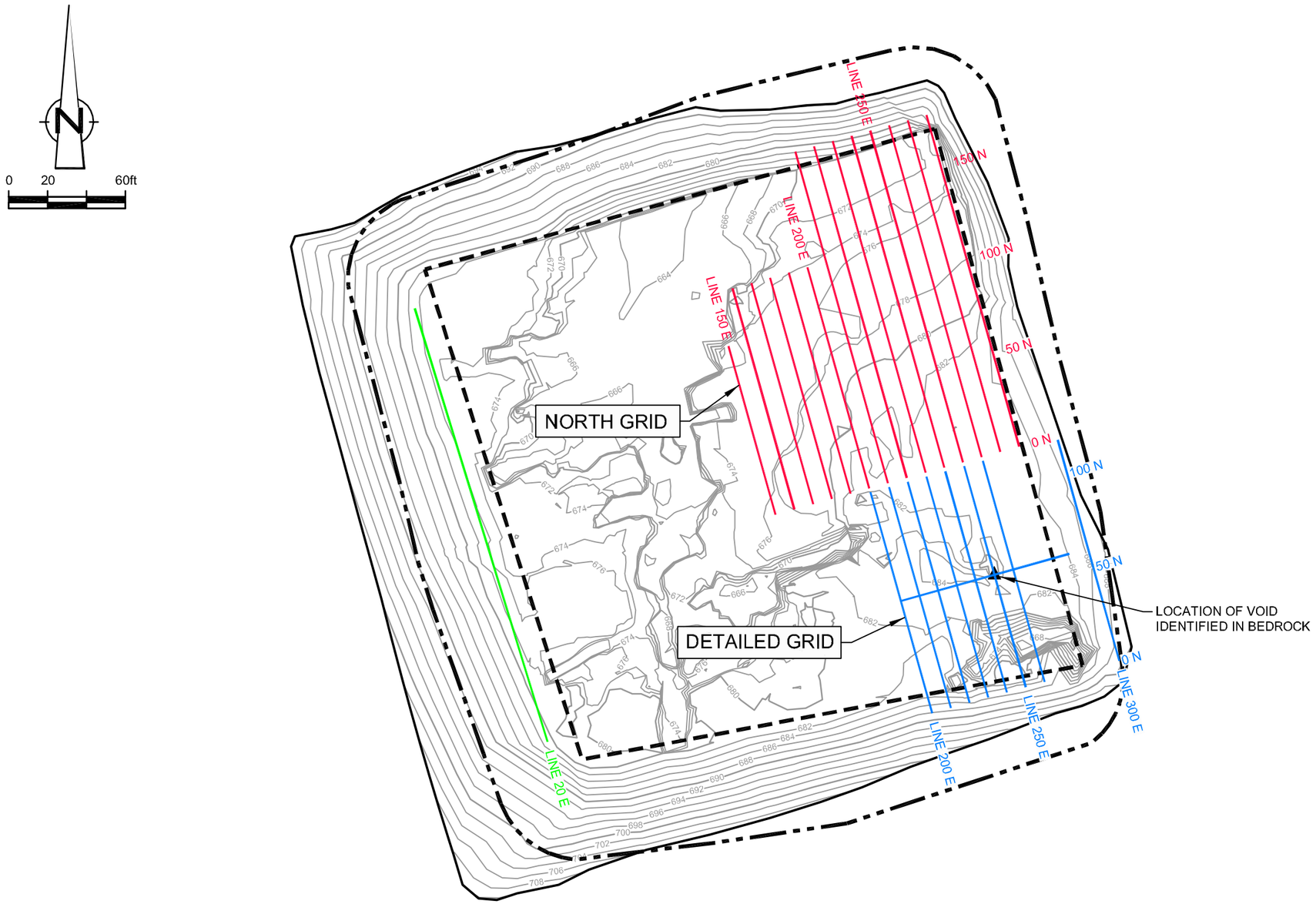


figure 2.1

GROUND PENETRATING RADAR SURVEY COVERAGE
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

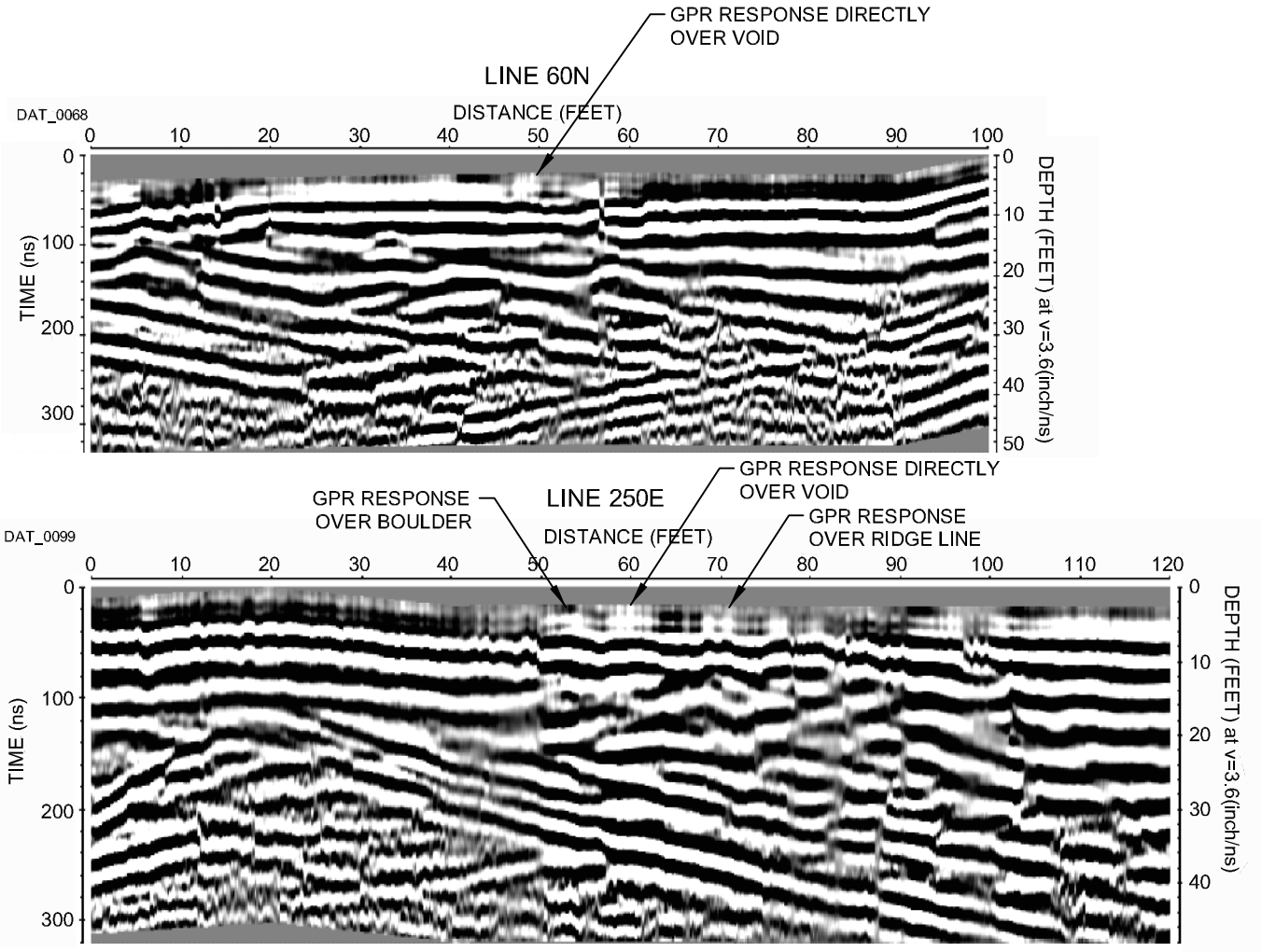
DRAFT



DRAFT

figure 2.2

ELECTRICAL RESISTIVITY SURVEY COVERAGE
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



LEGEND

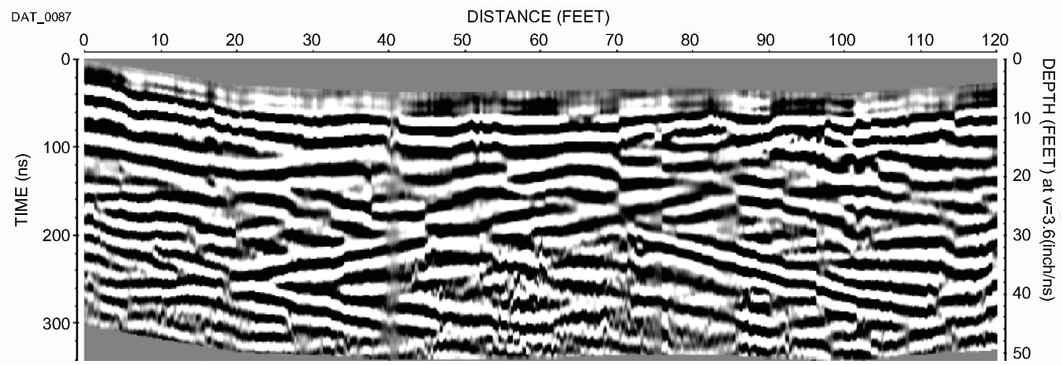
ns NANO SECOND

DRAFT

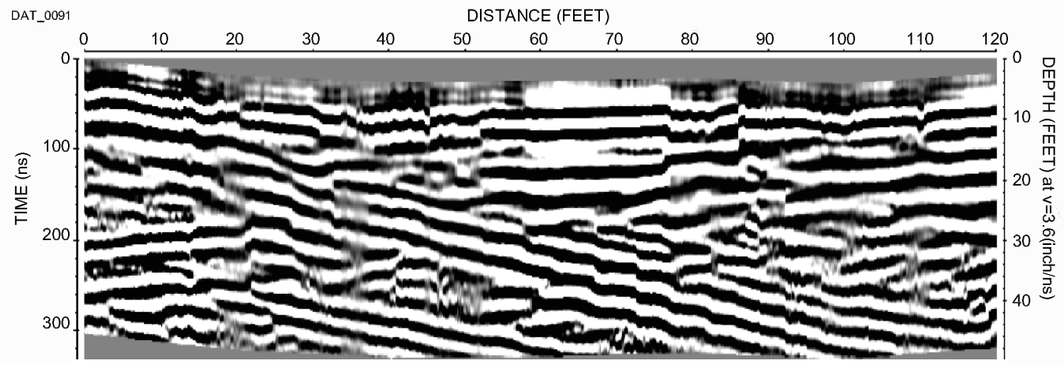
figure 3.1

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

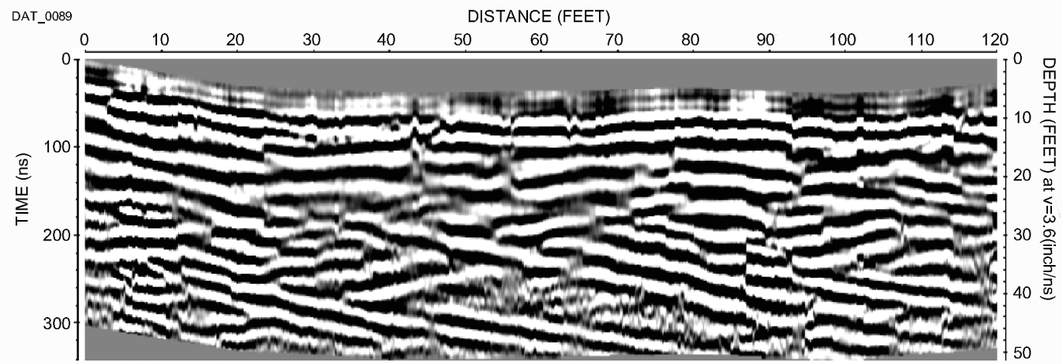
LINE 200E



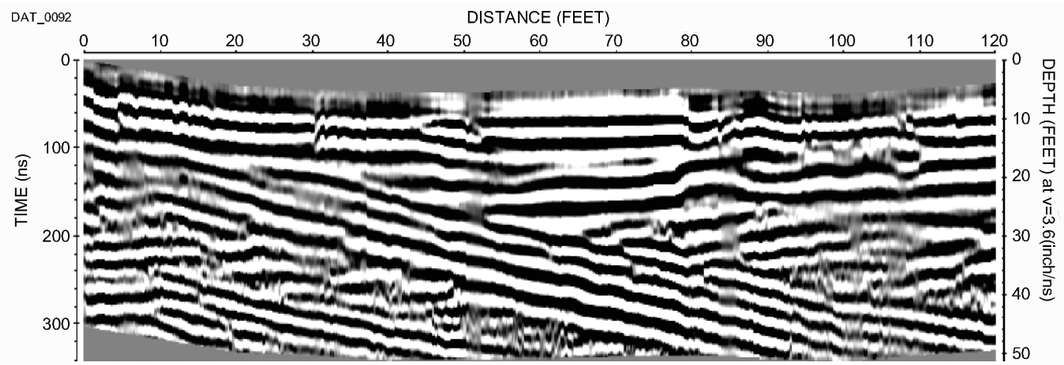
LINE 215E



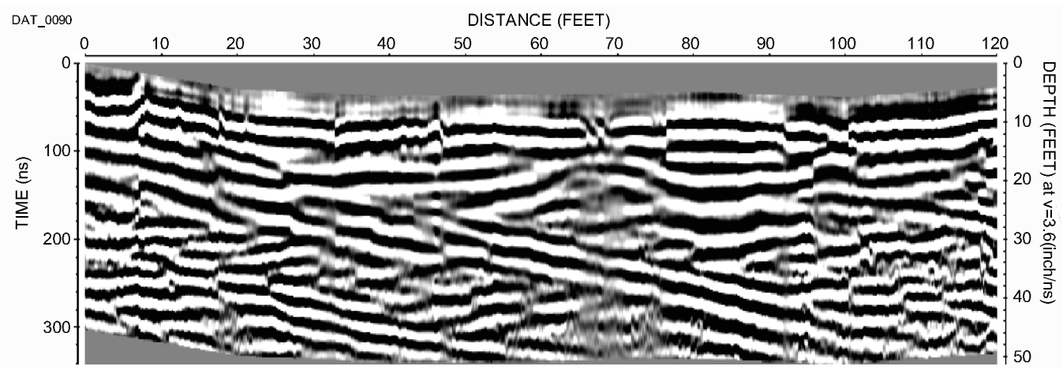
LINE 205E



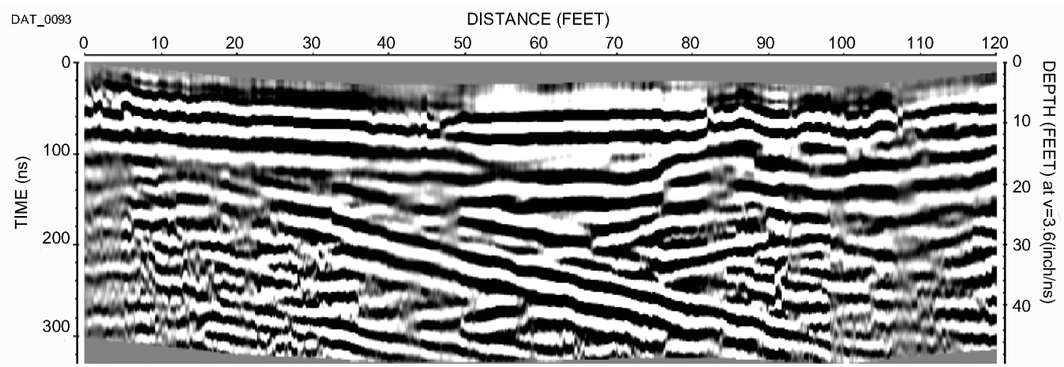
LINE 220E



LINE 210E



LINE 225E



LEGEND

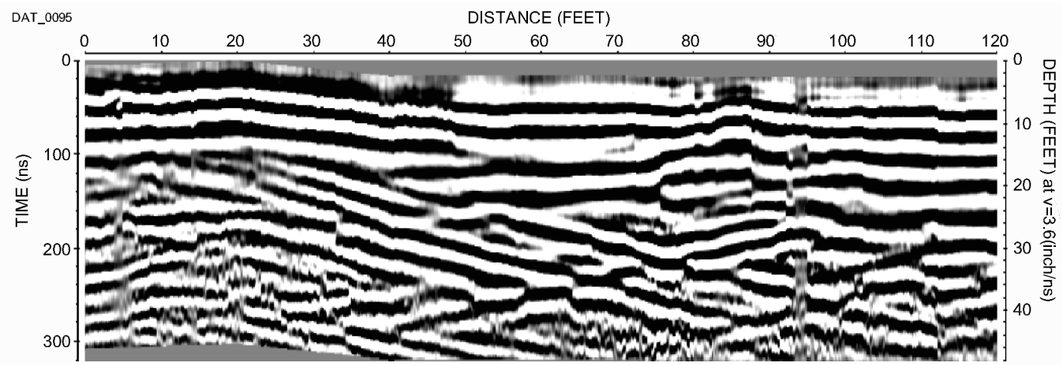
ns NANO SECOND

DRAFT

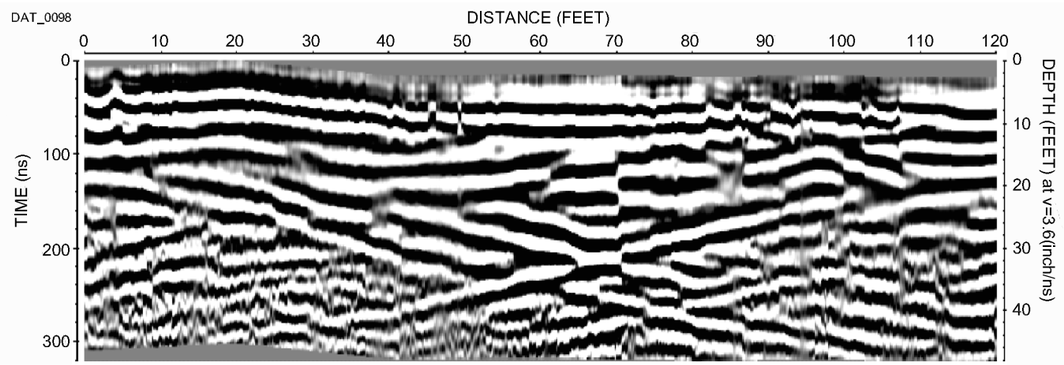
figure 3.2

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

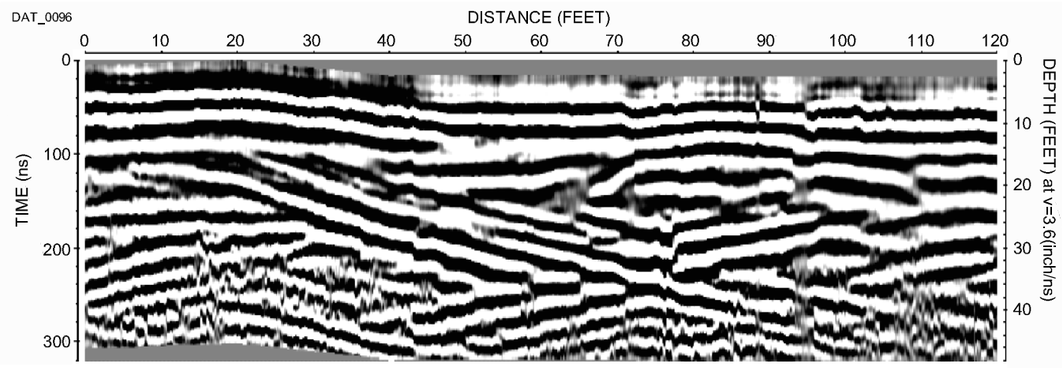
LINE 230E



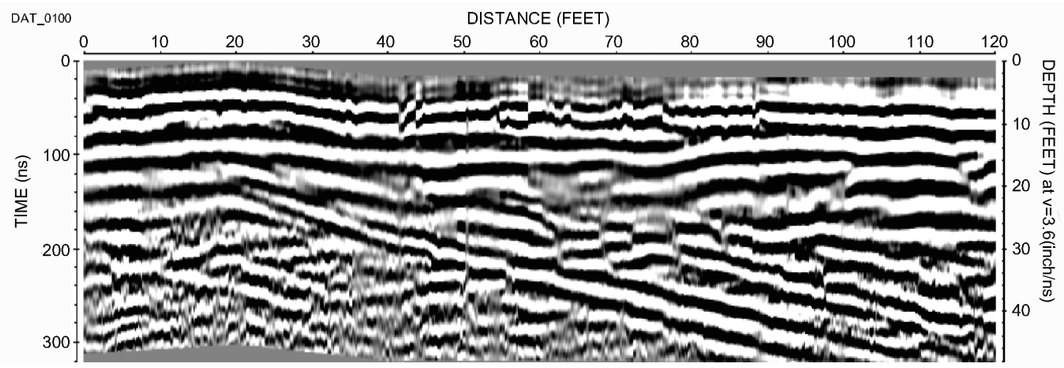
LINE 245E



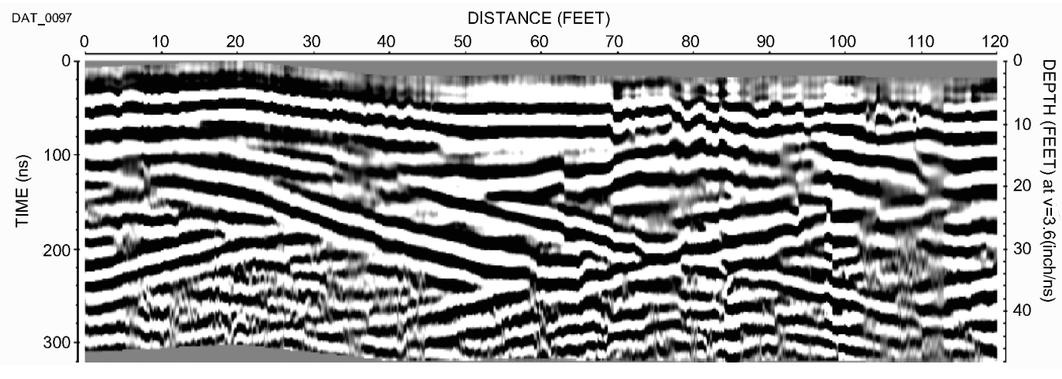
LINE 235E



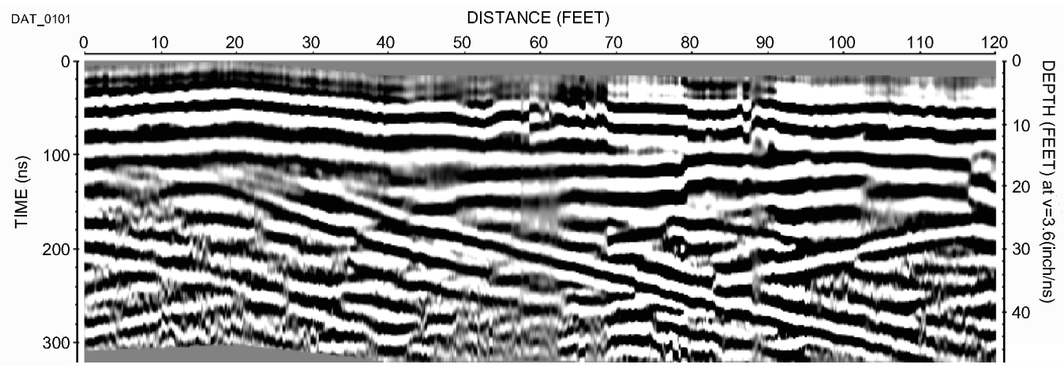
LINE 255E



LINE 240E



LINE 260E



LEGEND

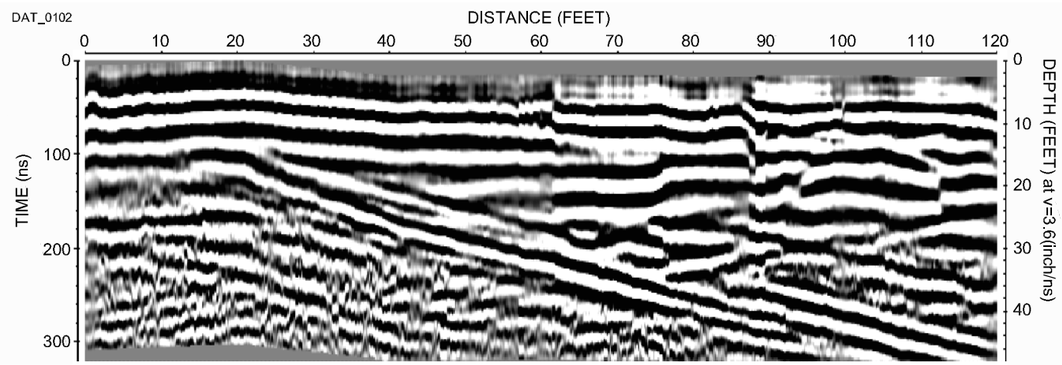
ns NANO SECOND

DRAFT

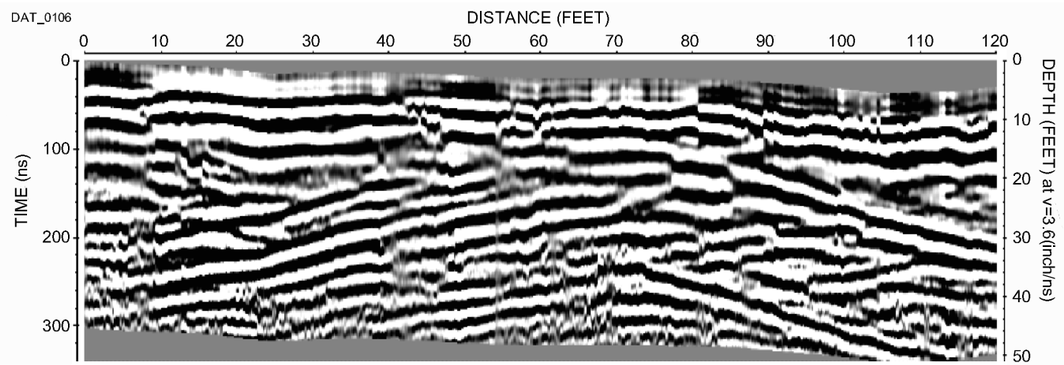
figure 3.3

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

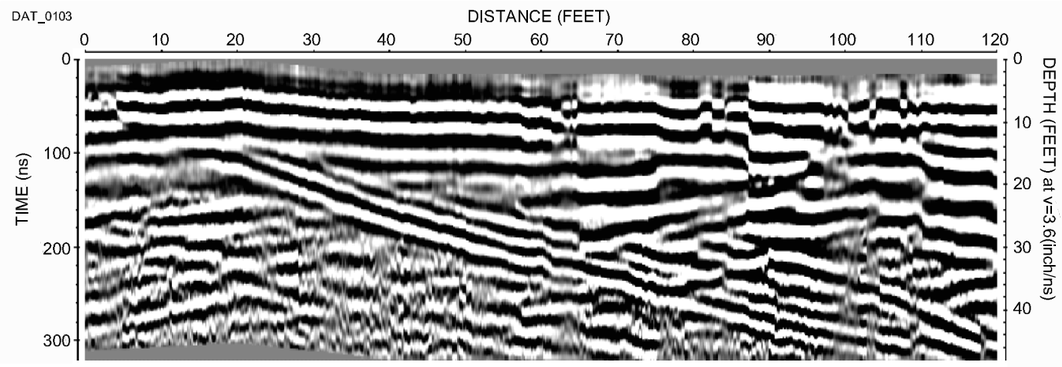
LINE 265E



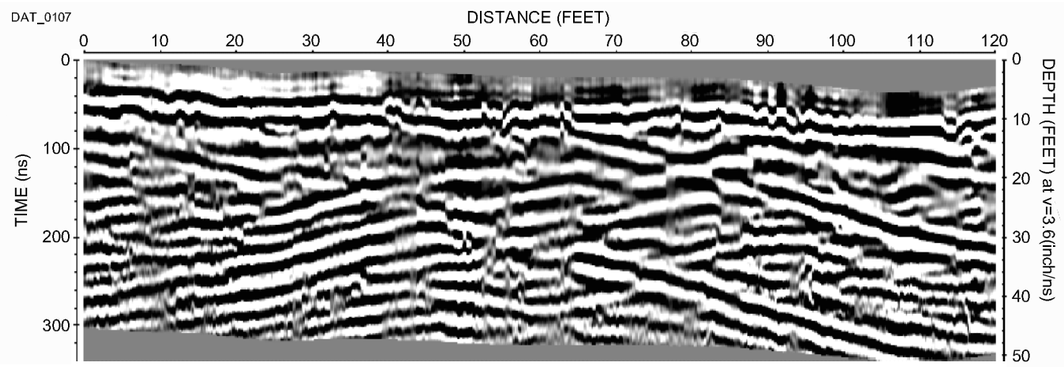
LINE 280E



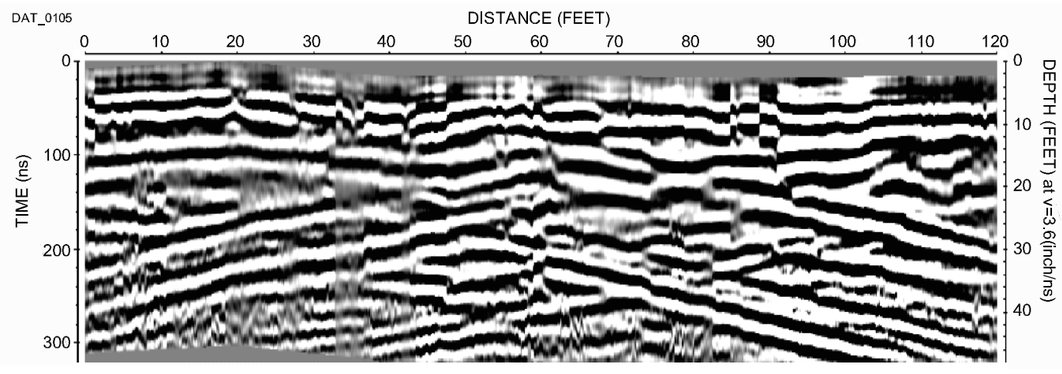
LINE 270E



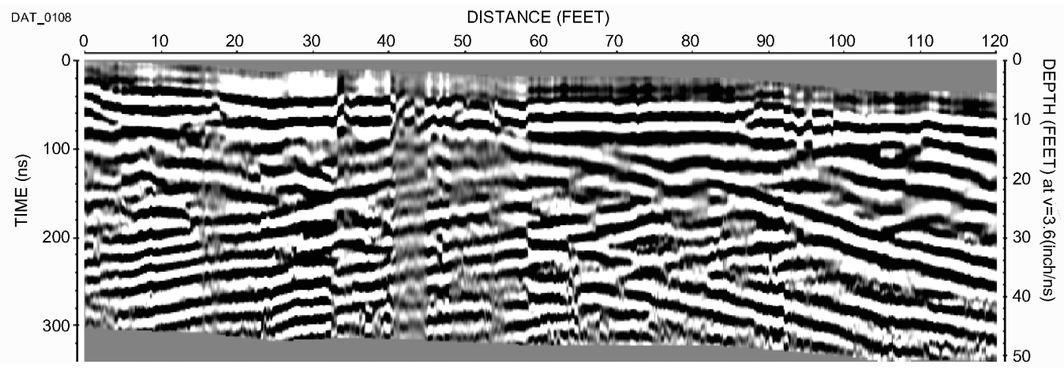
LINE 285E



LINE 275E



LINE 290E



LEGEND

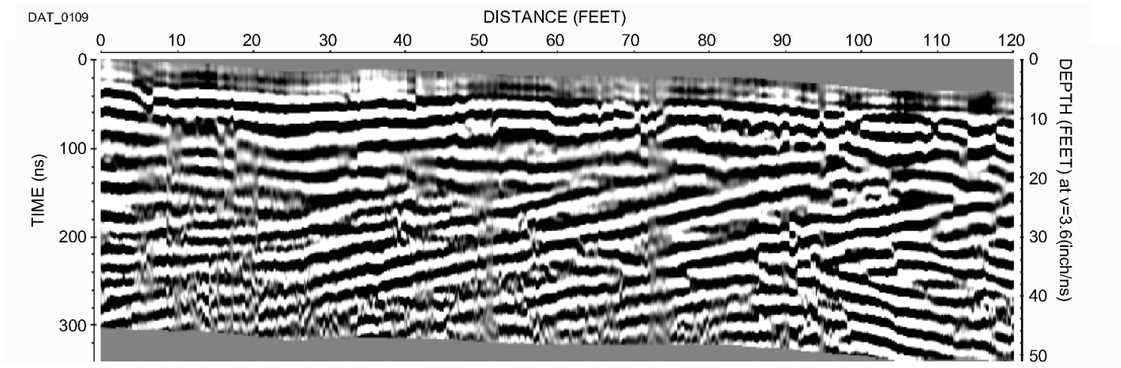
ns NANO SECOND

DRAFT

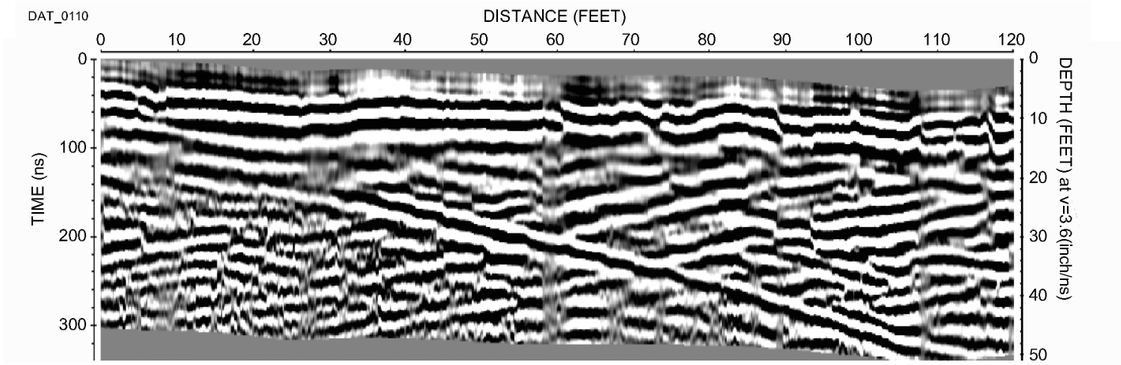
figure 3.4

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

LINE 95E



LINE 100E



LEGEND

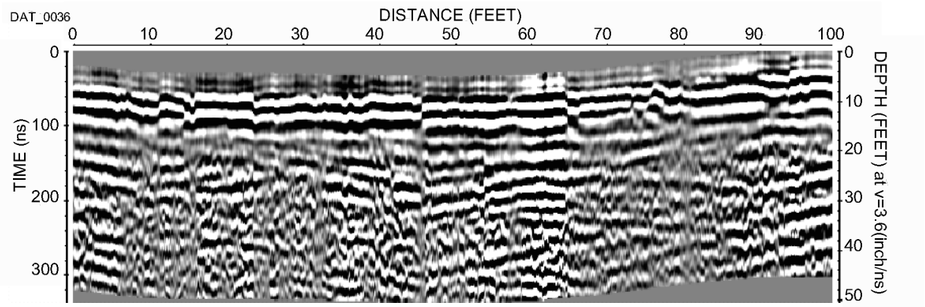
ns NANO SECOND

DRAFT

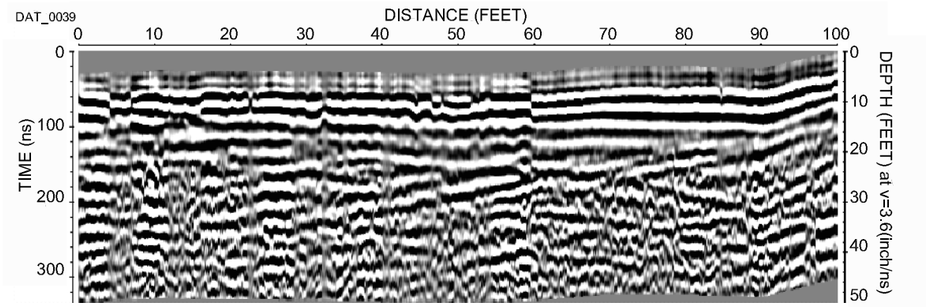
figure 3.5

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

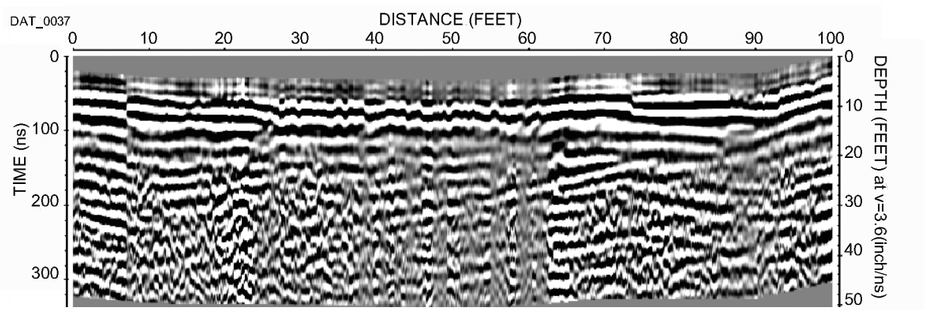
LINE 0N



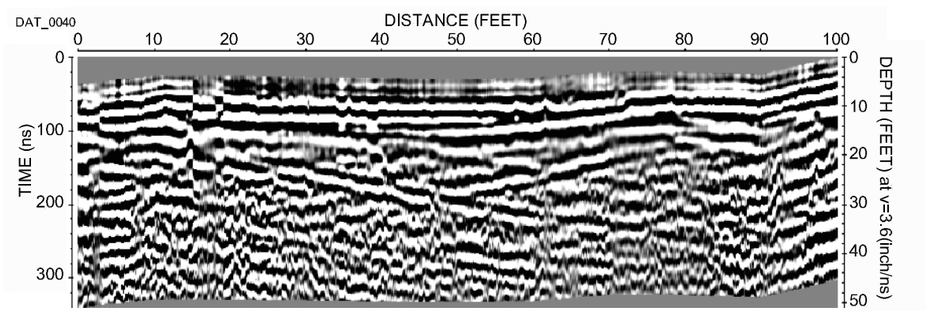
LINE 7.5N



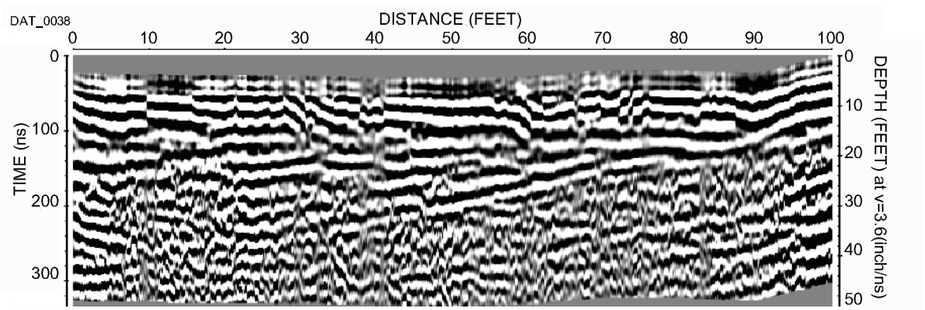
LINE 2.5N



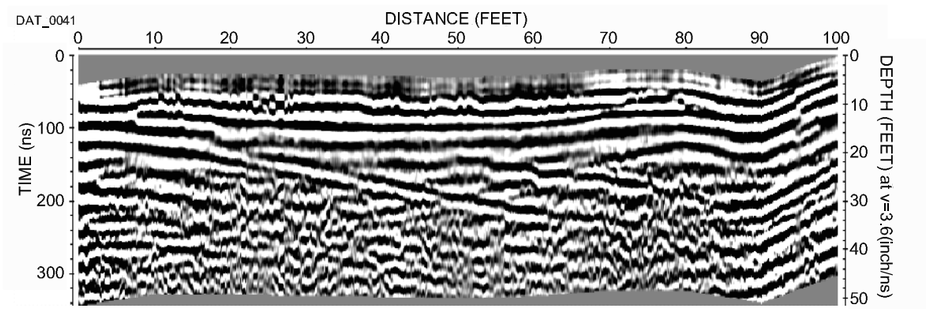
LINE 10N



LINE 5N



LINE 12.5N



LEGEND

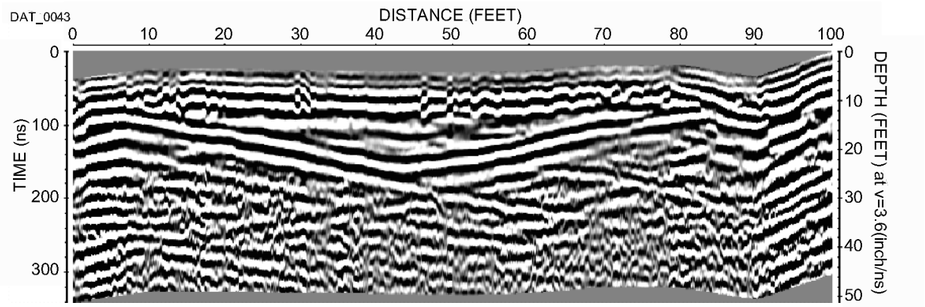
ns NANO SECOND

DRAFT

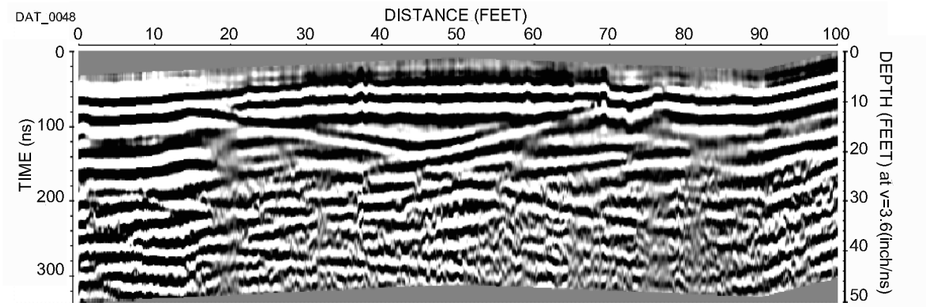
figure 3.6

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

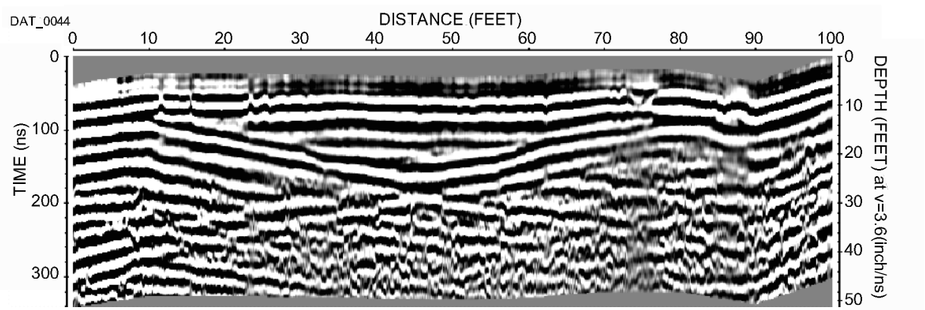
LINE 15N



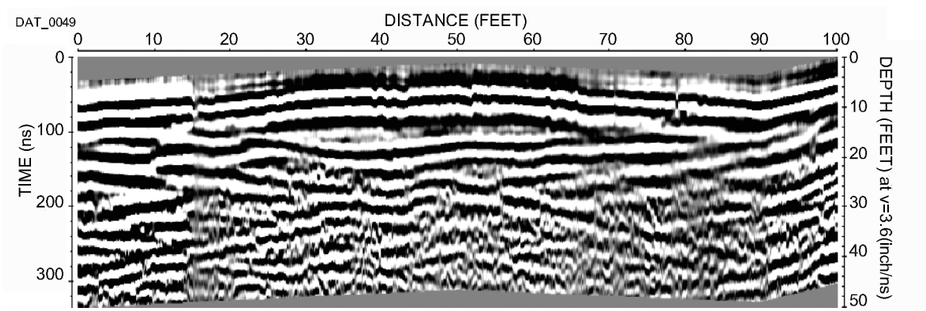
LINE 22.5N



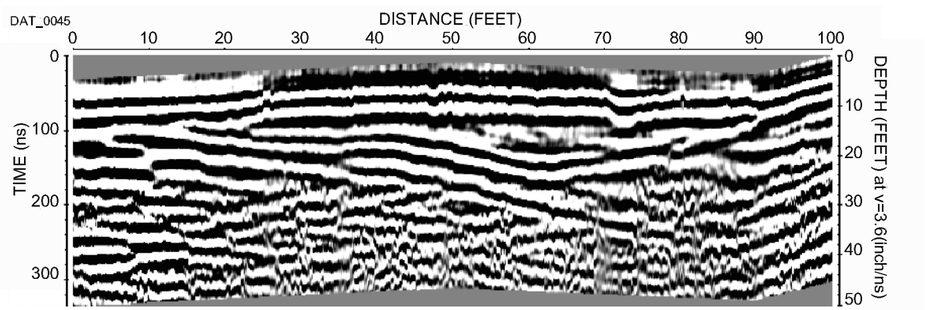
LINE 17.5N



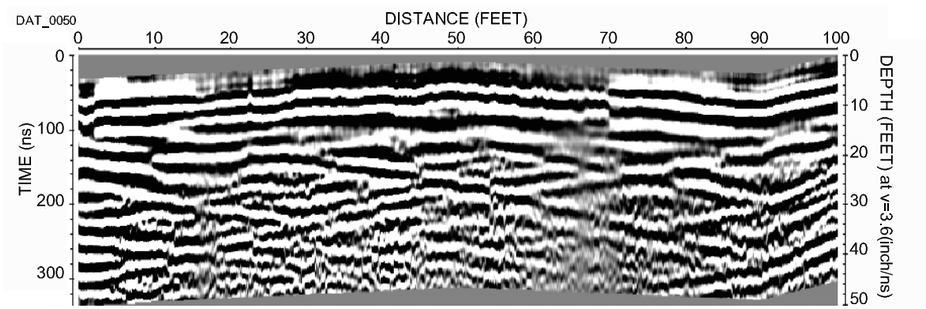
LINE 25N



LINE 20N



LINE 27.5N



LEGEND

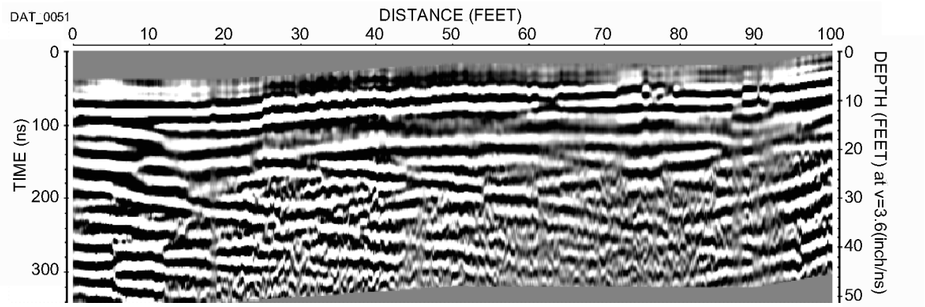
ns NANO SECOND

DRAFT

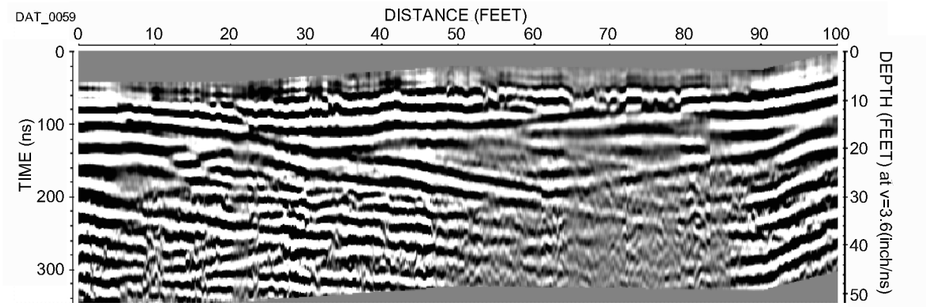
figure 3.7

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

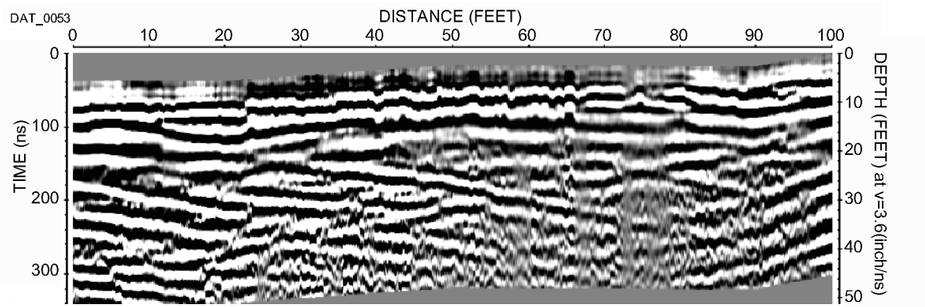
LINE 30N



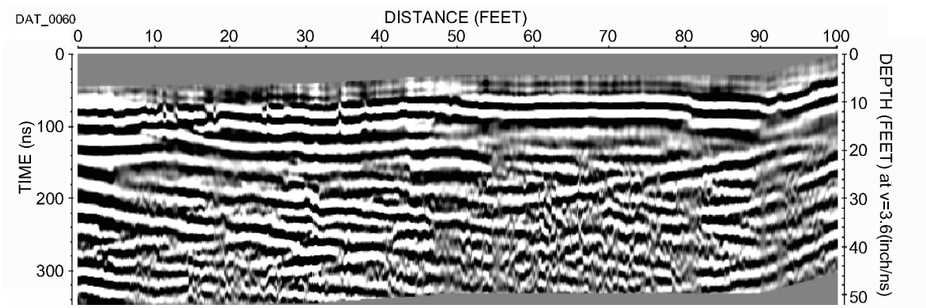
LINE 37.5N



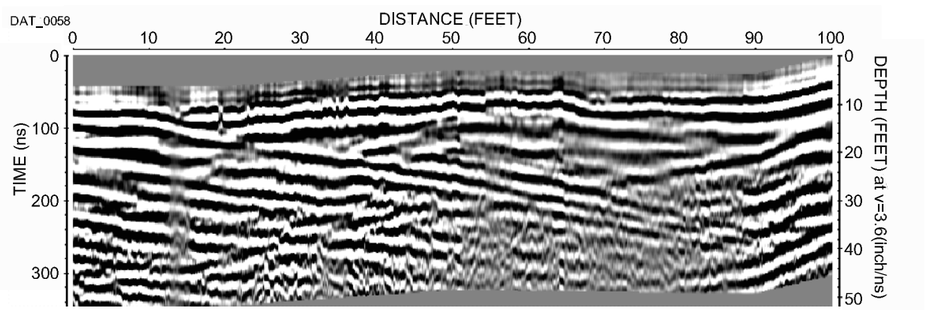
LINE 32.5N



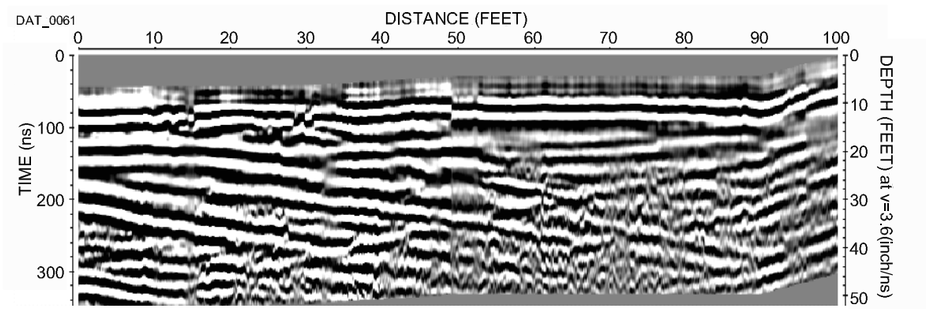
LINE 40N



LINE 35N



LINE 42.5N



LEGEND

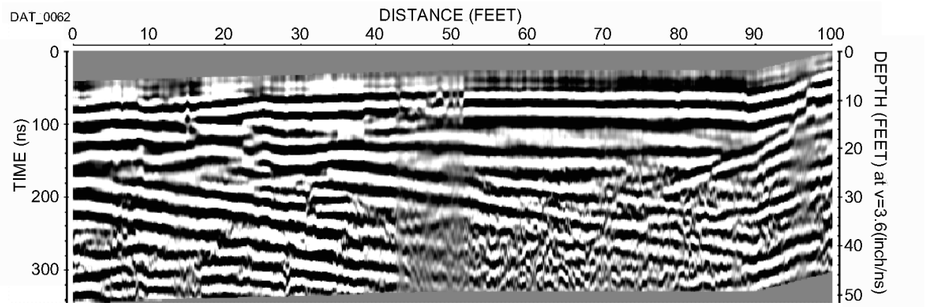
ns NANO SECOND

DRAFT

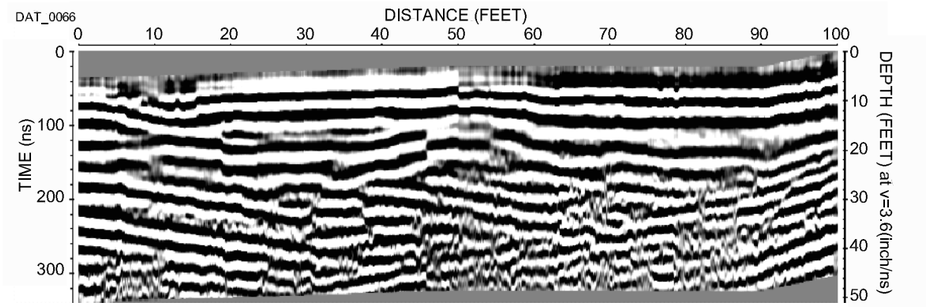
figure 3.8

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

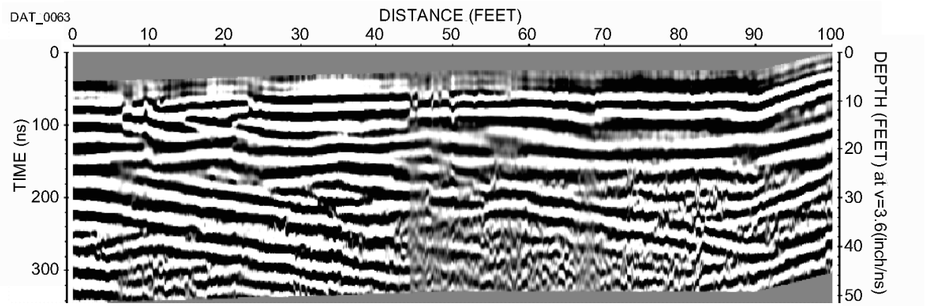
LINE 45N



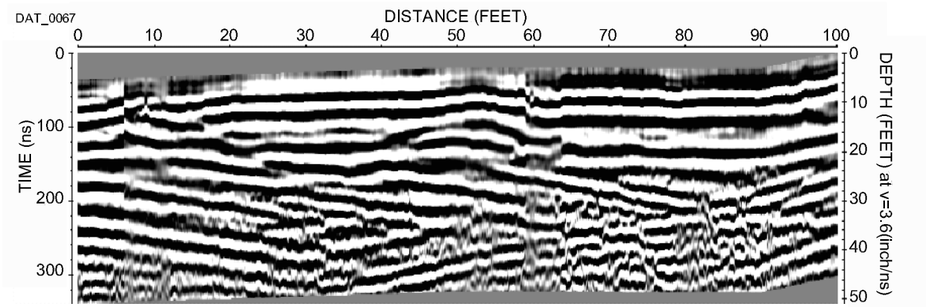
LINE 55N



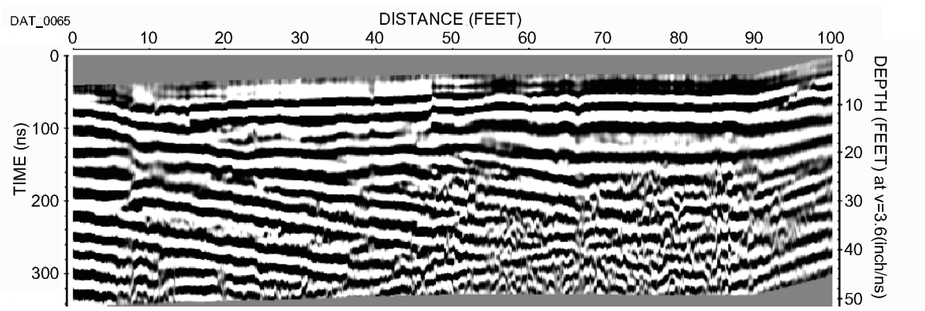
LINE 47.5N



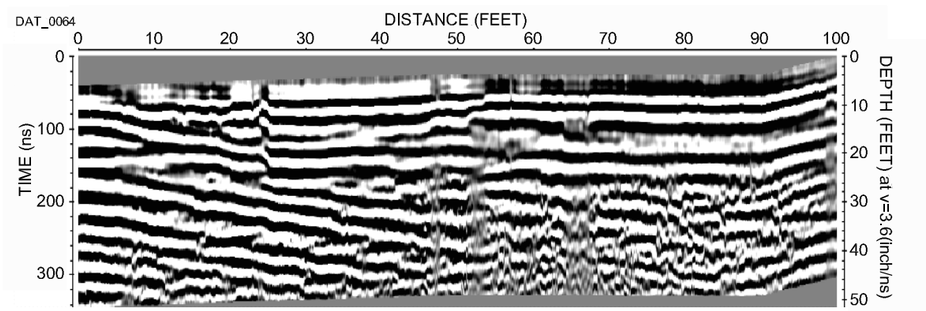
LINE 57.5N



LINE 52.5N



LINE 50N



LEGEND

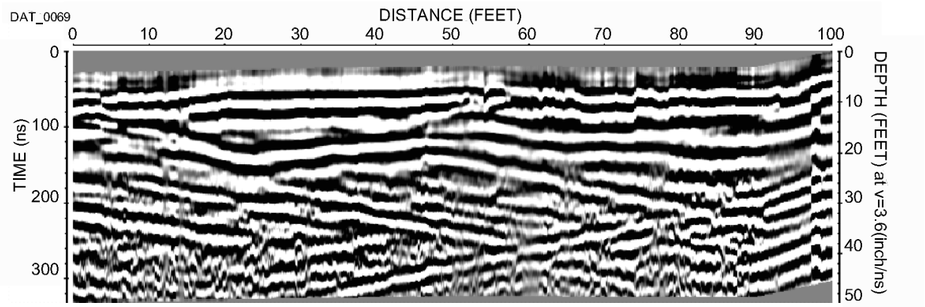
ns NANO SECOND

DRAFT

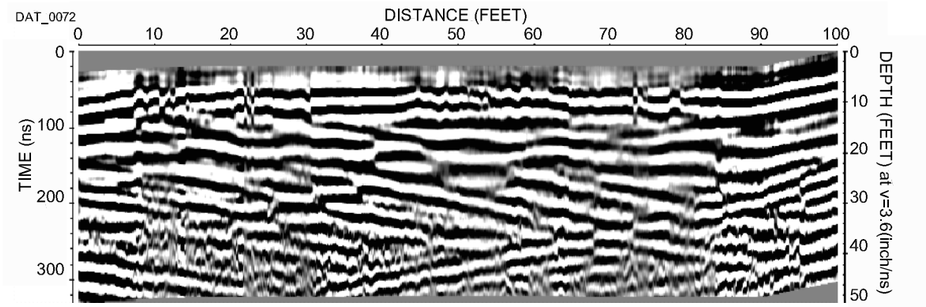
figure 3.9

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

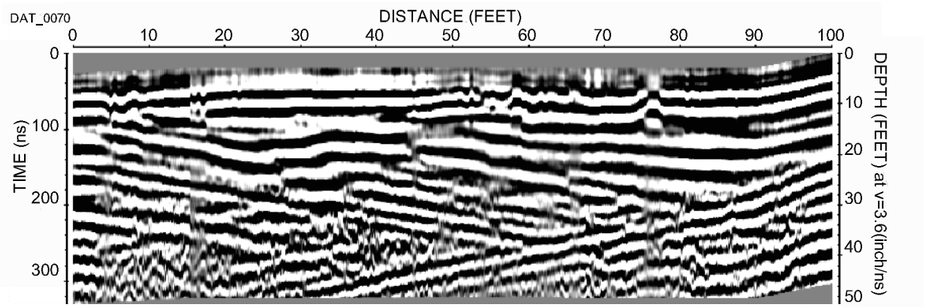
LINE 62.5N



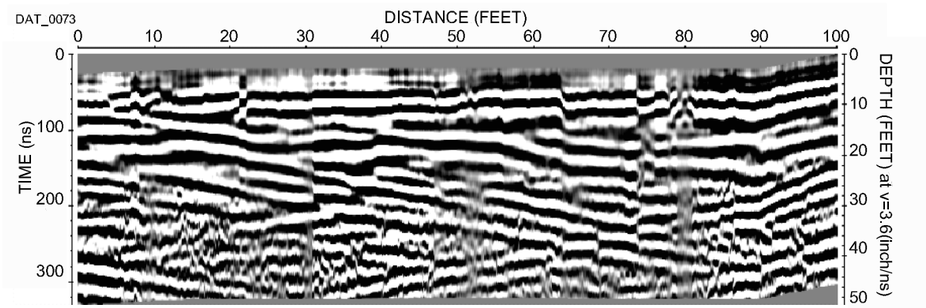
LINE 70N



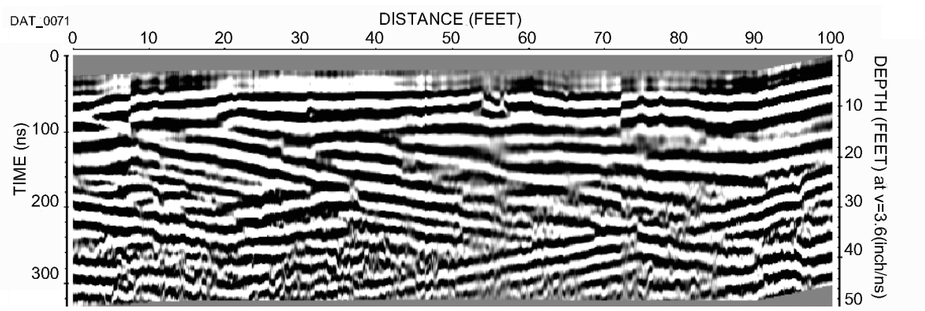
LINE 65N



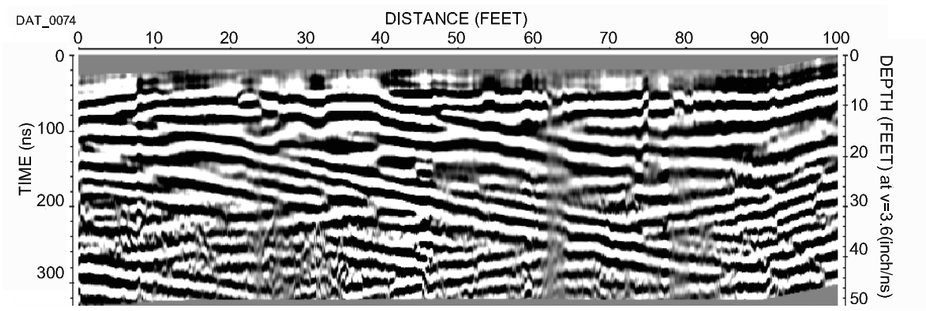
LINE 72.5N



LINE 67.5N



LINE 75N



LEGEND

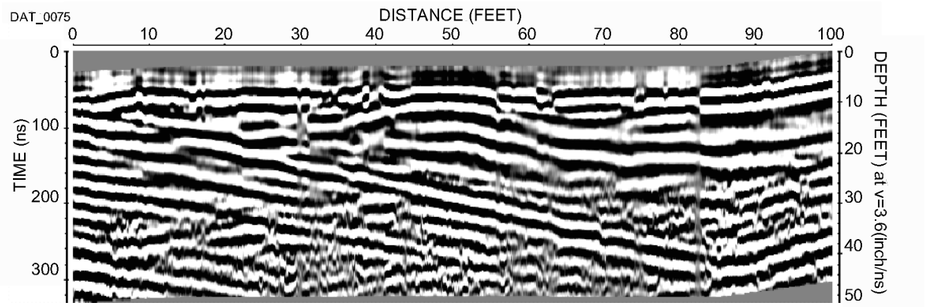
ns NANO SECOND

DRAFT

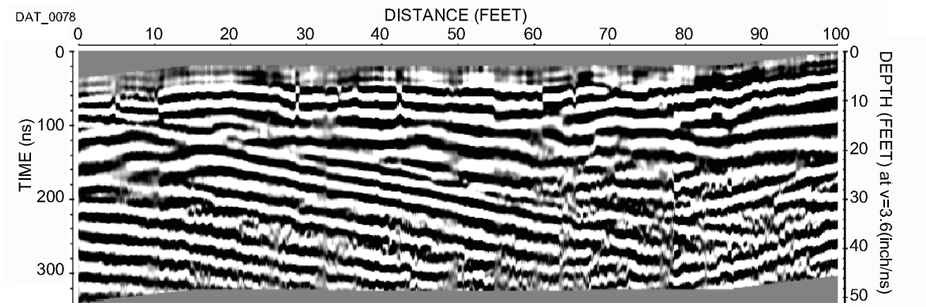
figure 3.10

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

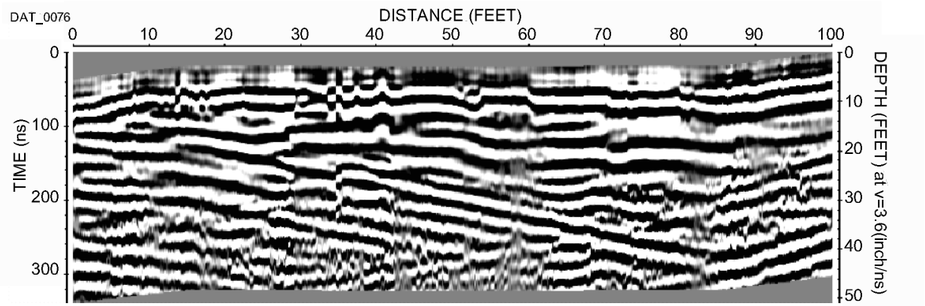
LINE 77.5N



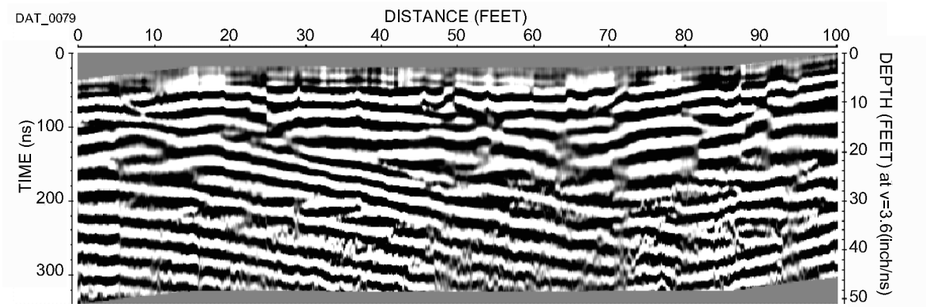
LINE 85N



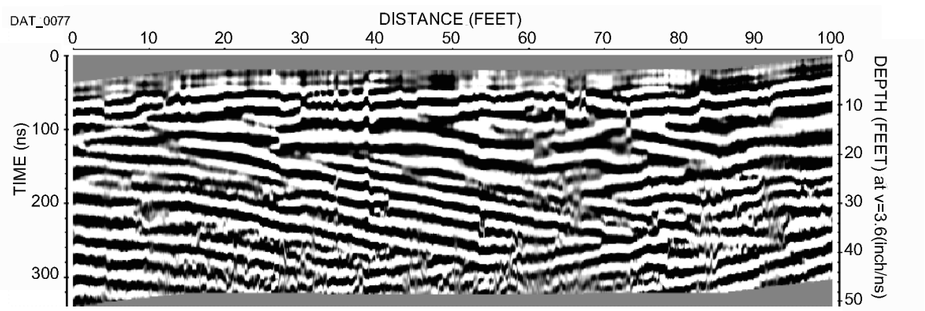
LINE 80N



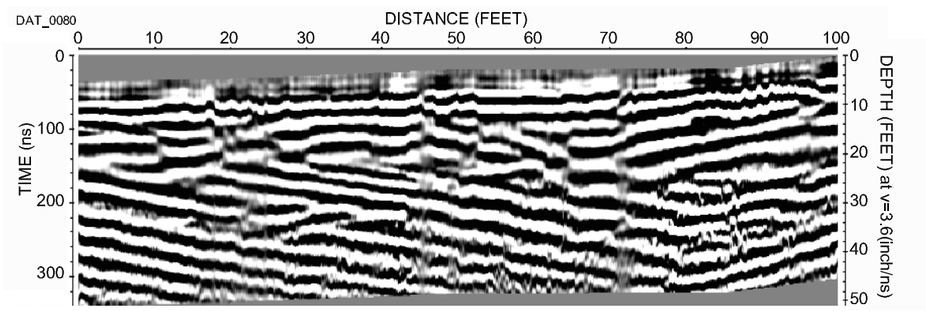
LINE 87.5N



LINE 82.5N



LINE 90N



LEGEND

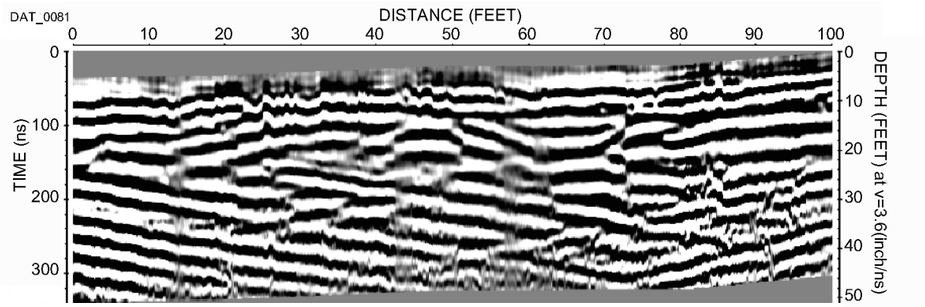
ns NANO SECOND

DRAFT

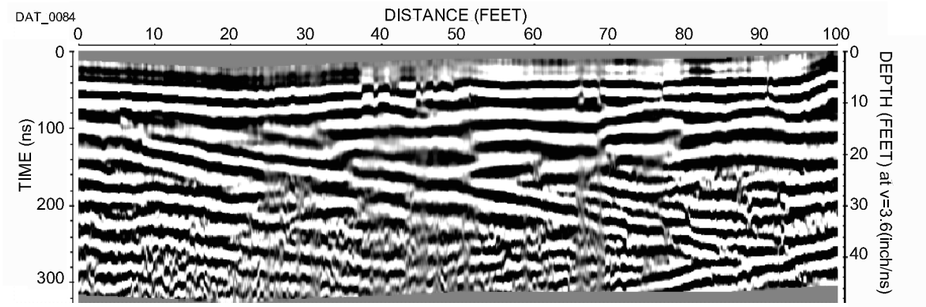
figure 3.11

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

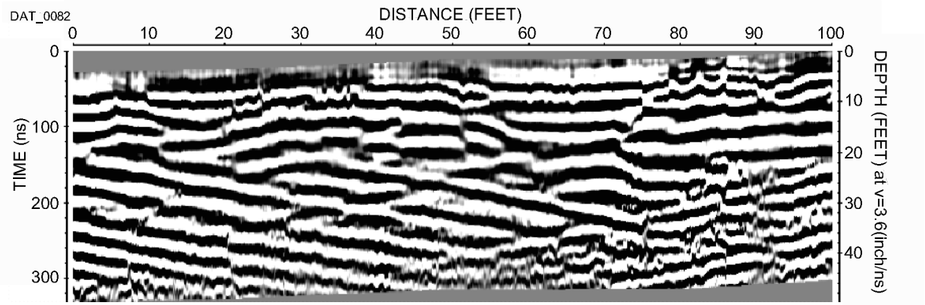
LINE 92.5N



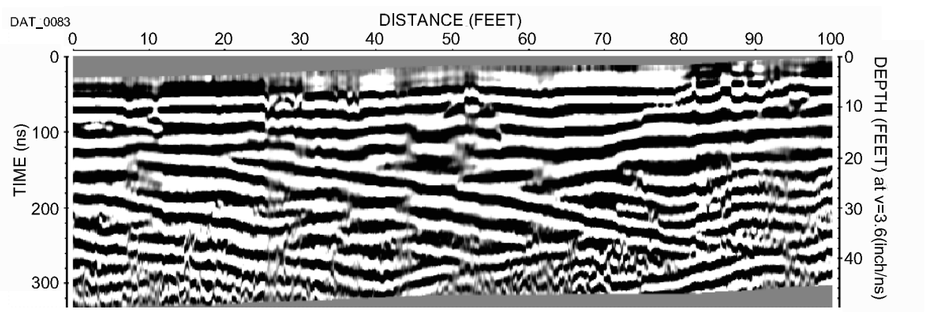
LINE 100N



LINE 95N



LINE 97.5N



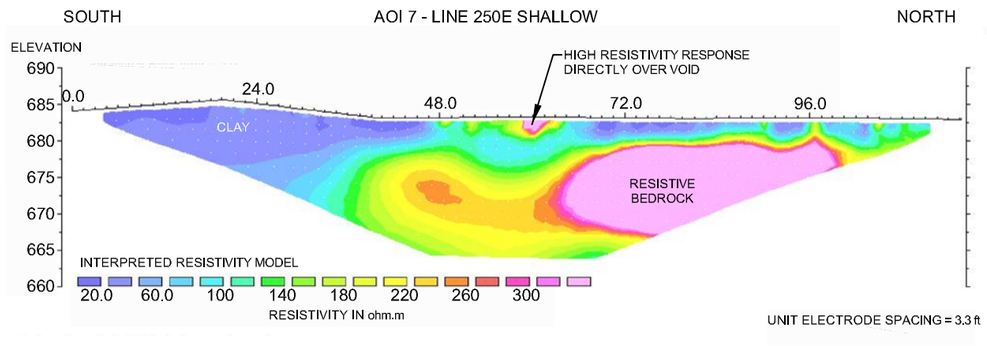
LEGEND

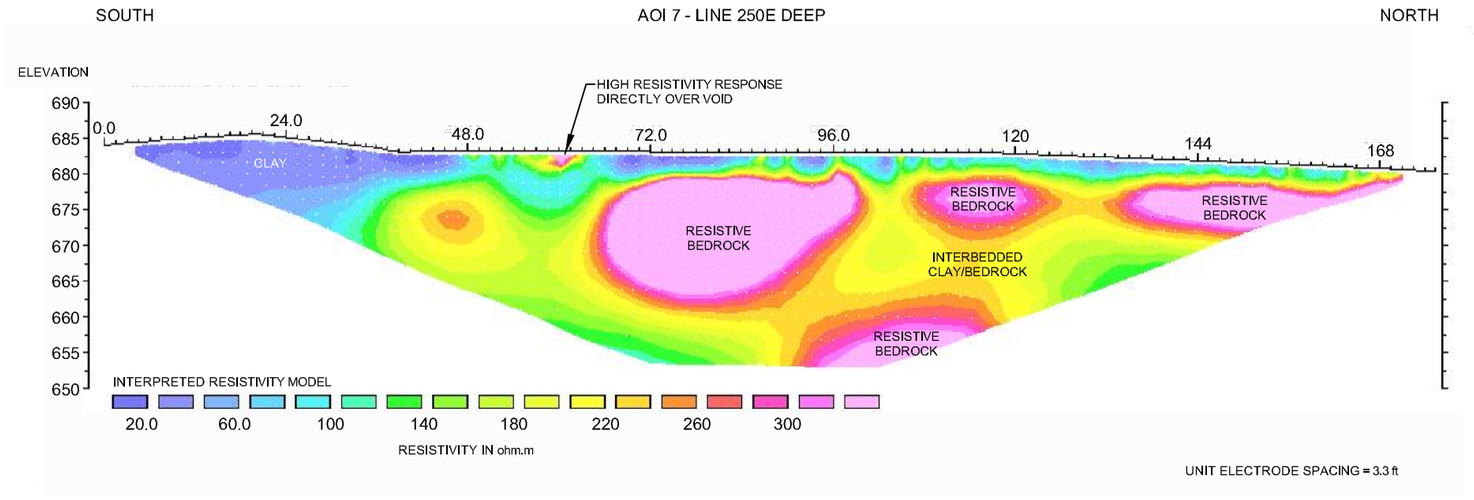
ns NANO SECOND

DRAFT

figure 3.12

GROUND PENETRATING RADAR RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





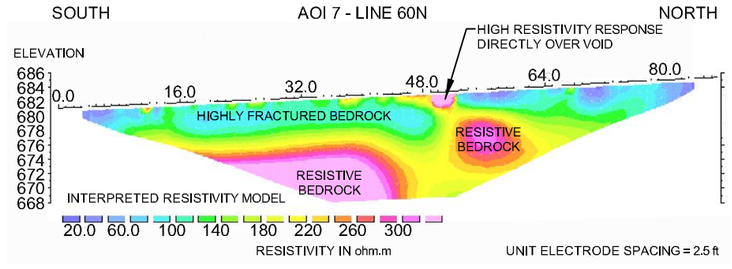
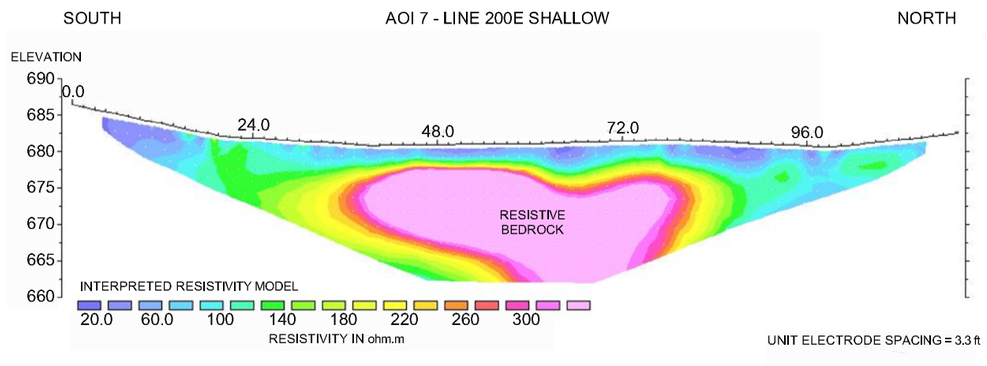
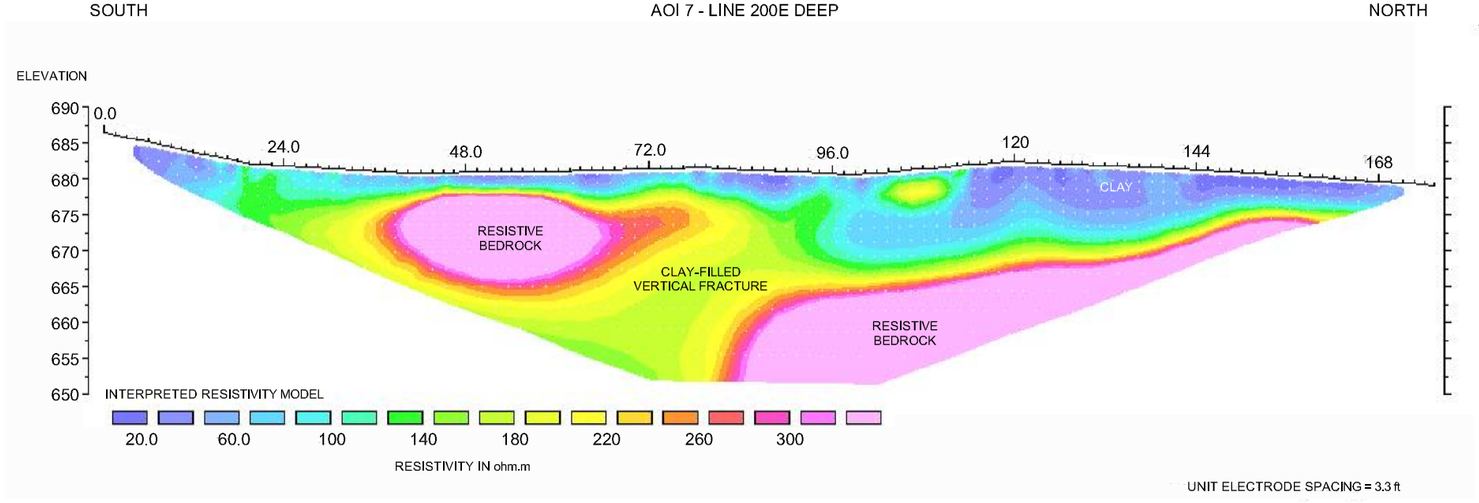


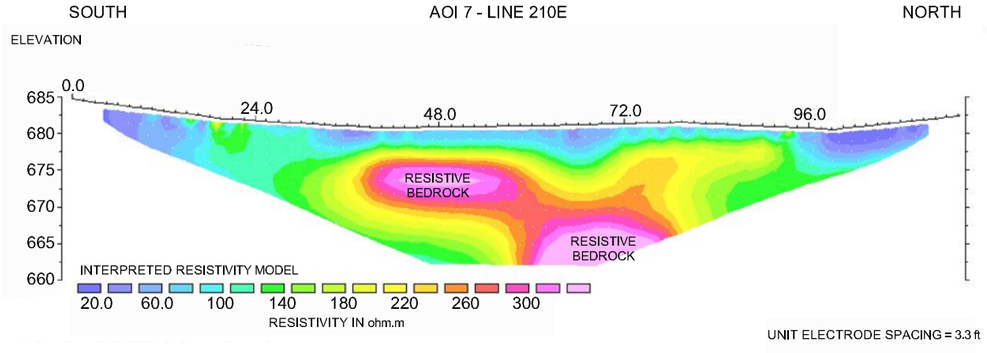
figure 4.1

ELECTRICAL RESISTIVITY SURVEY RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT



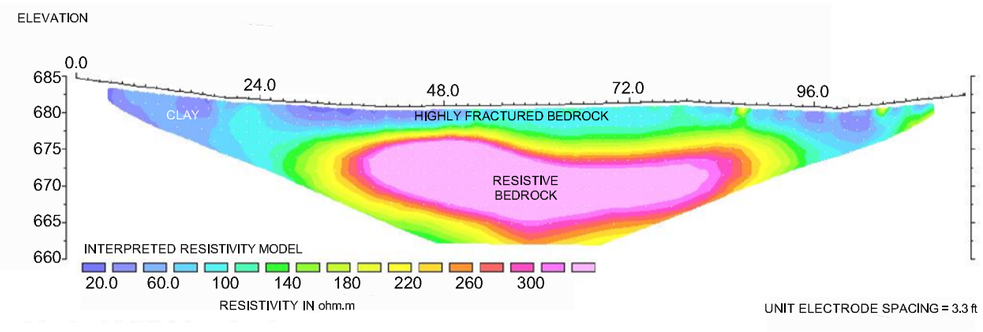


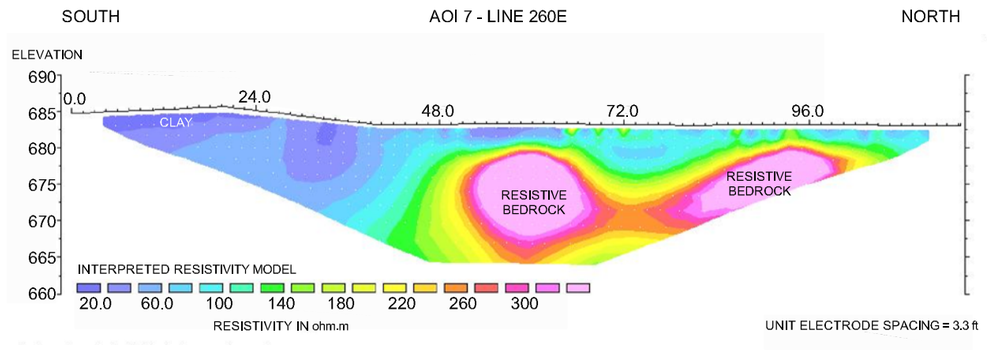


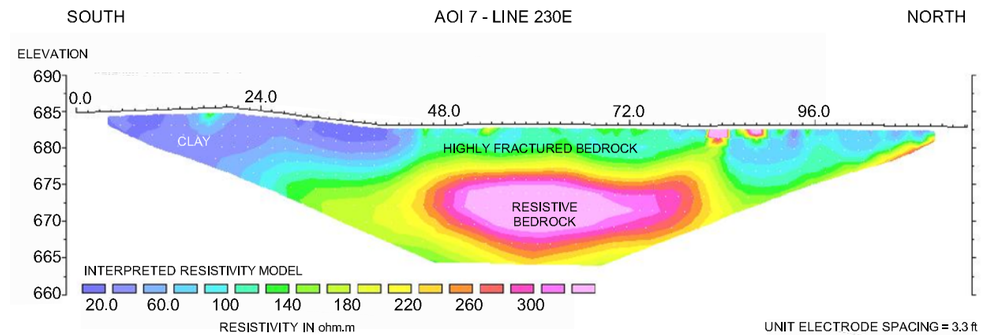
DRAFT

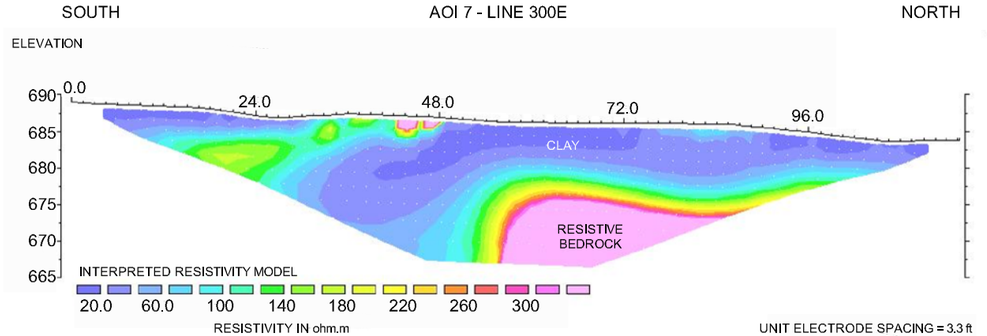
figure 4.2

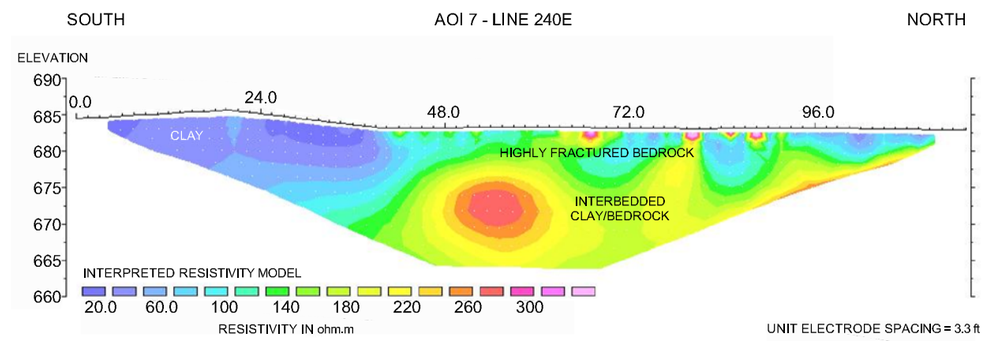
ELECTRICAL RESISTIVITY SURVEY RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana







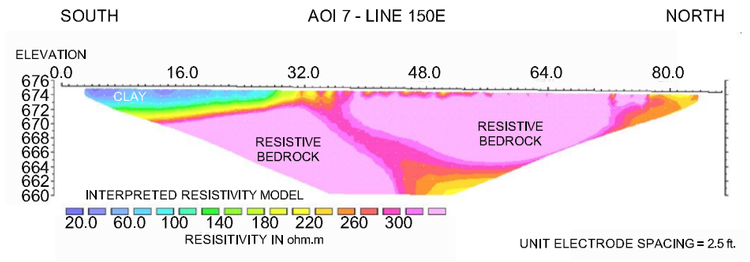


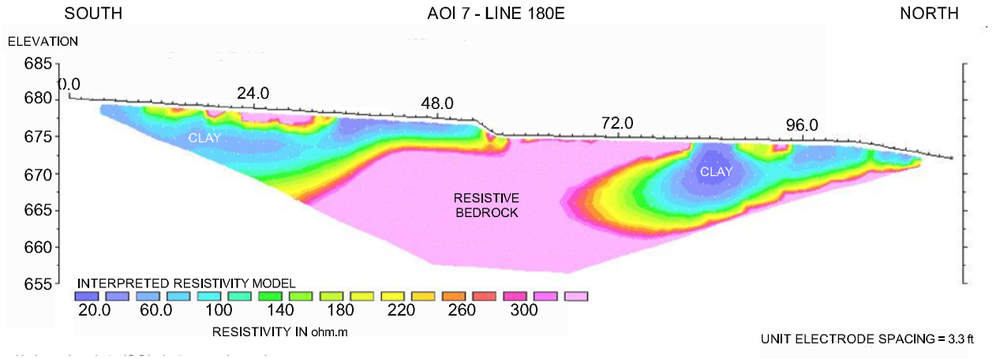


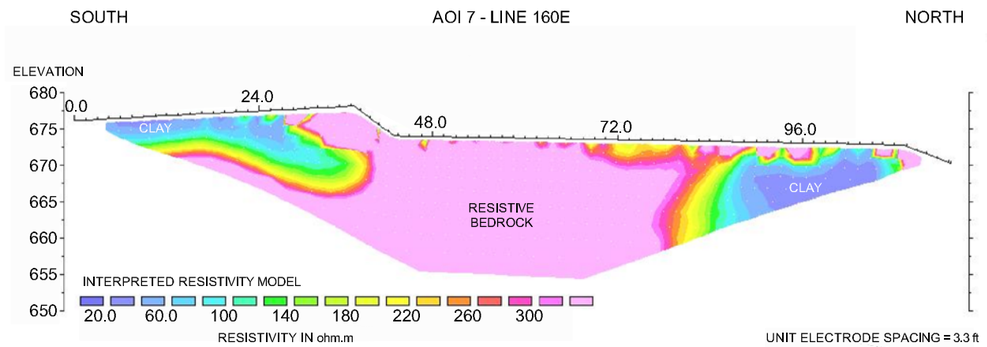
DRAFT

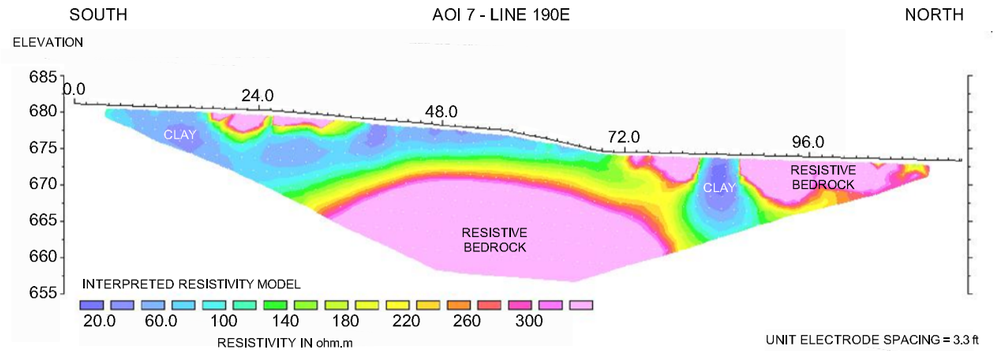
figure 4.3

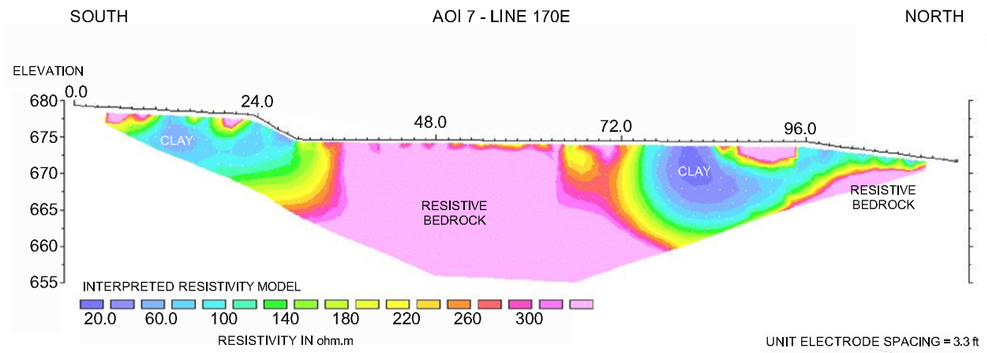
ELECTRICAL RESISTIVITY SURVEY RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

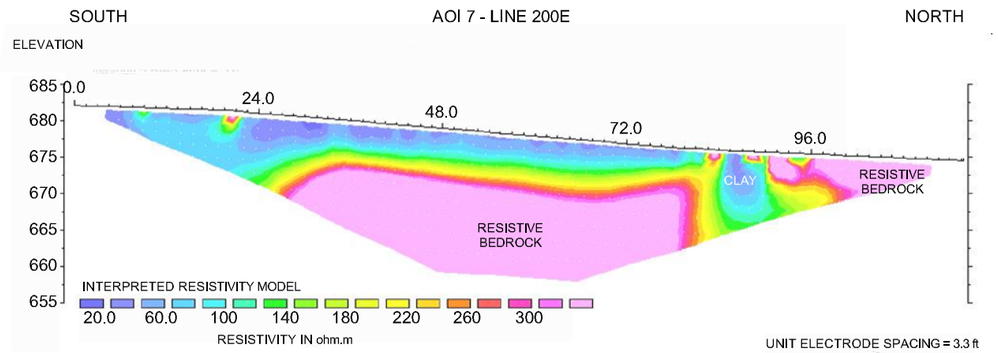








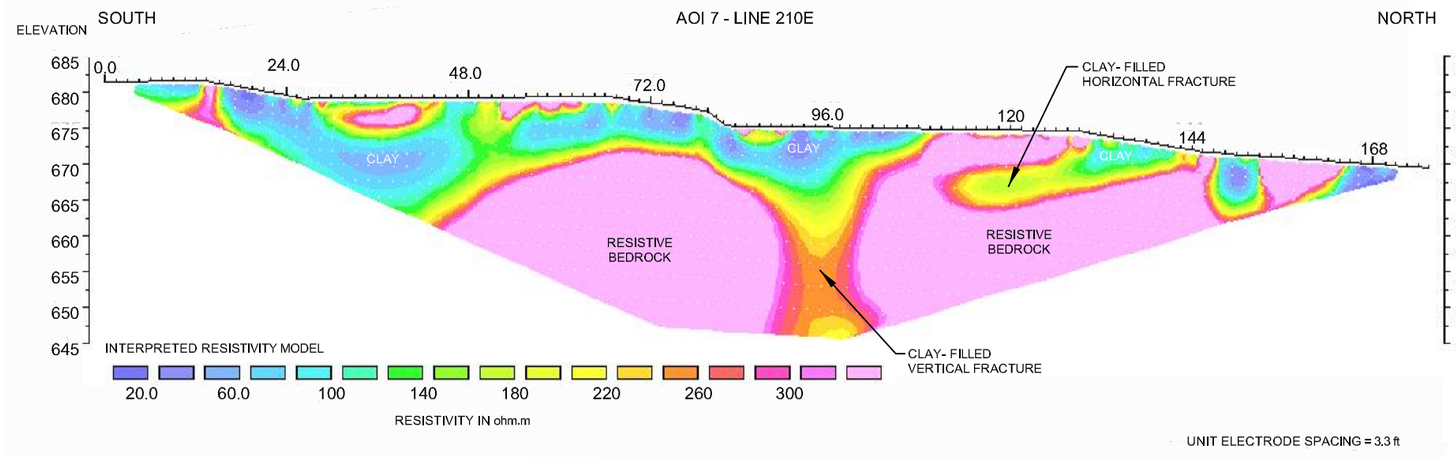


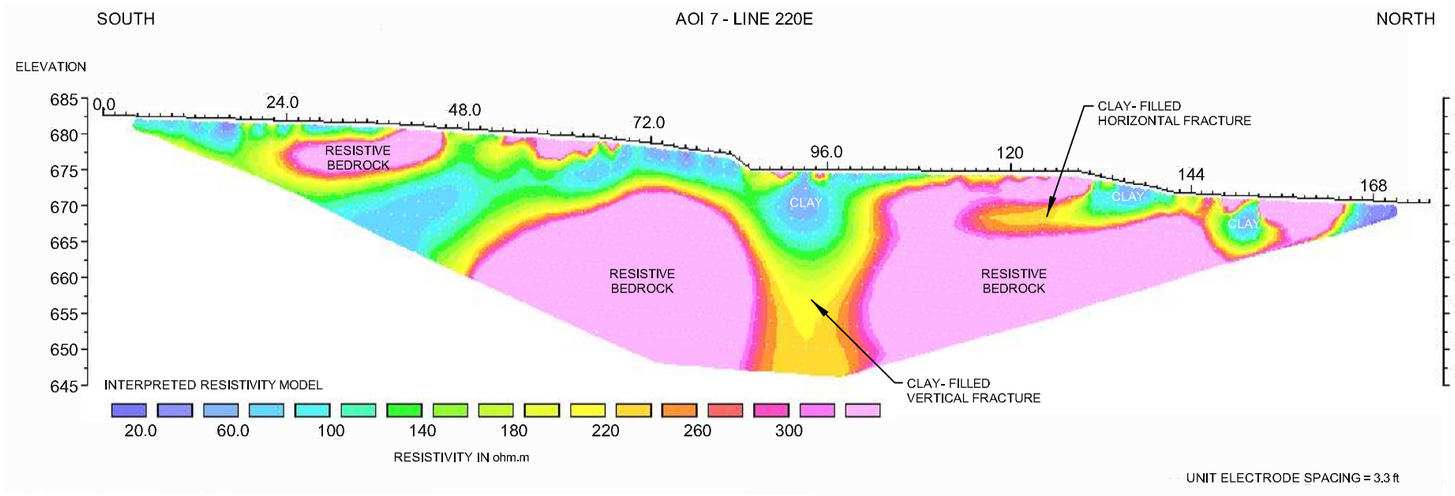


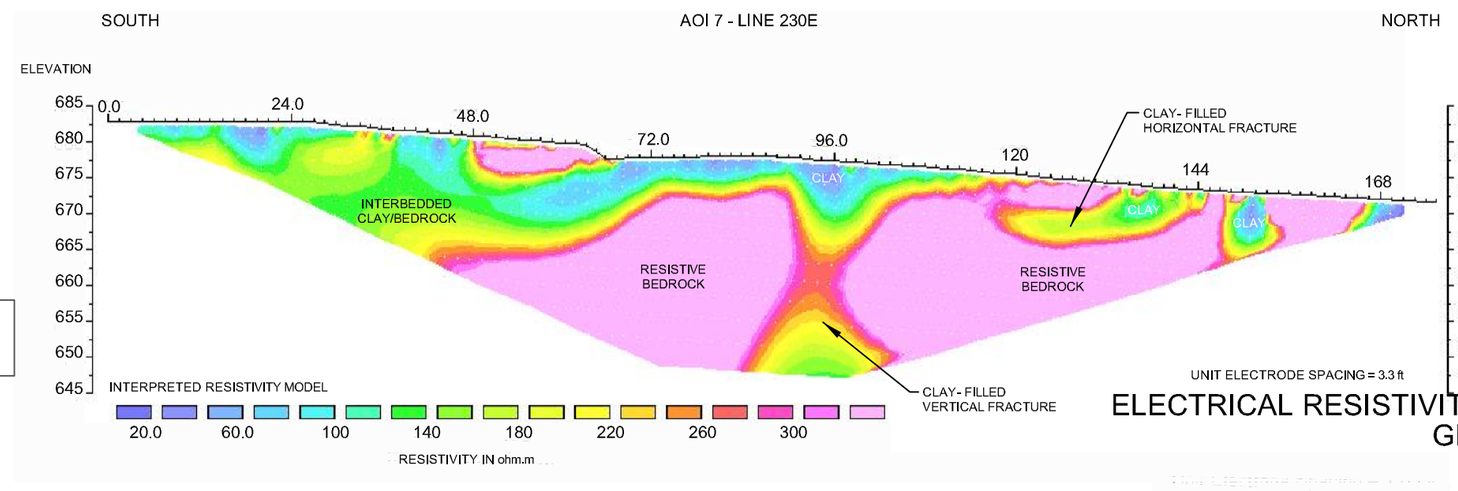
DRAFT

figure 4.4

ELECTRICAL RESISTIVITY SURVEY RESULTS - NORTH GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



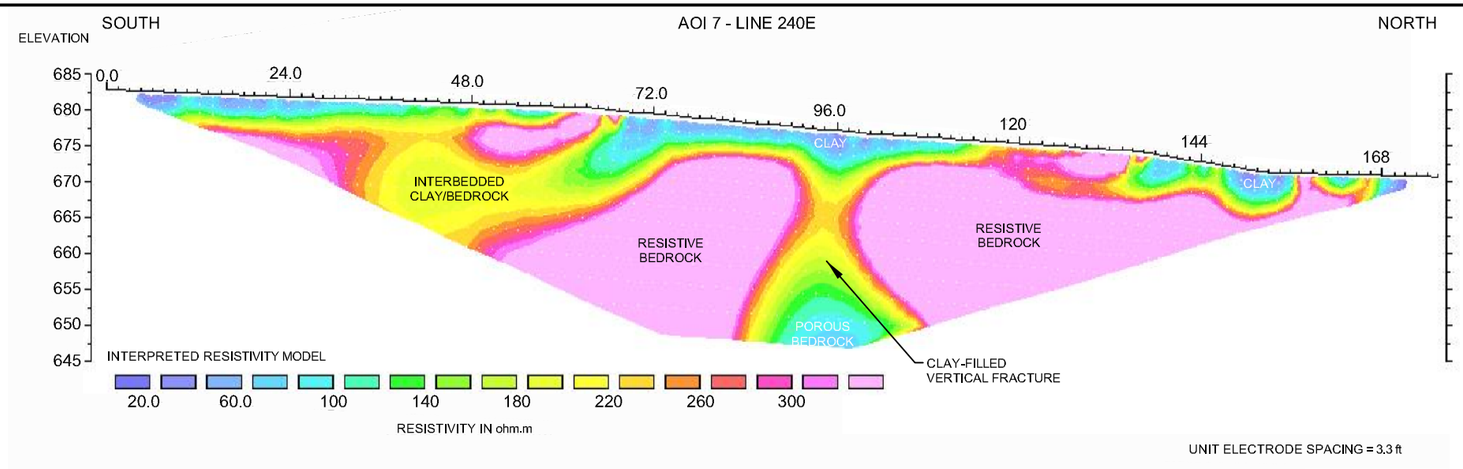


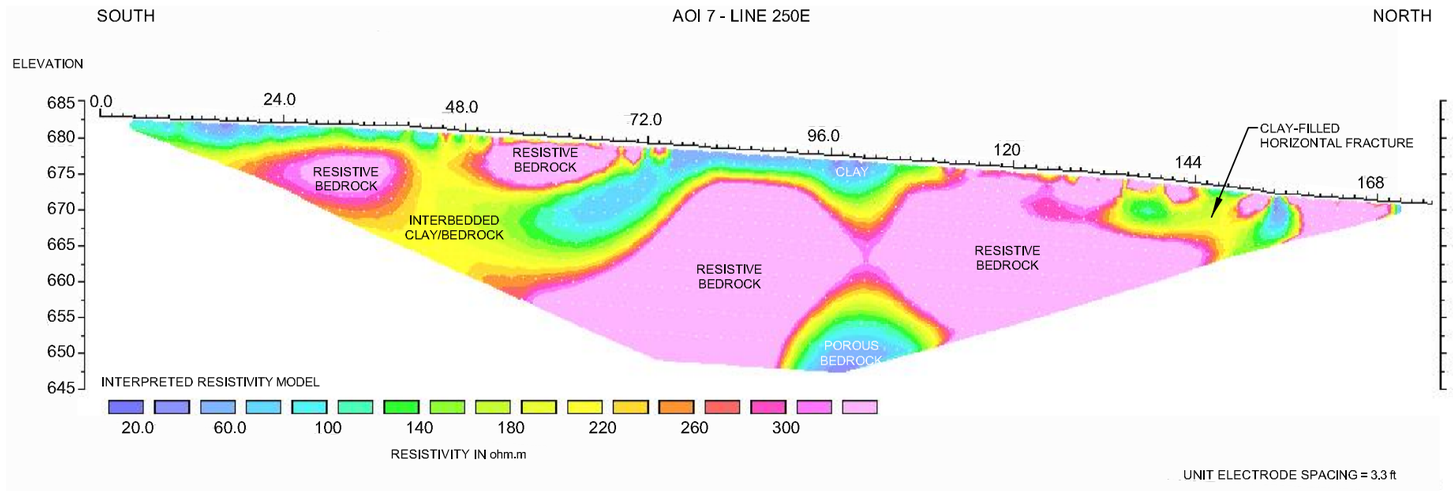


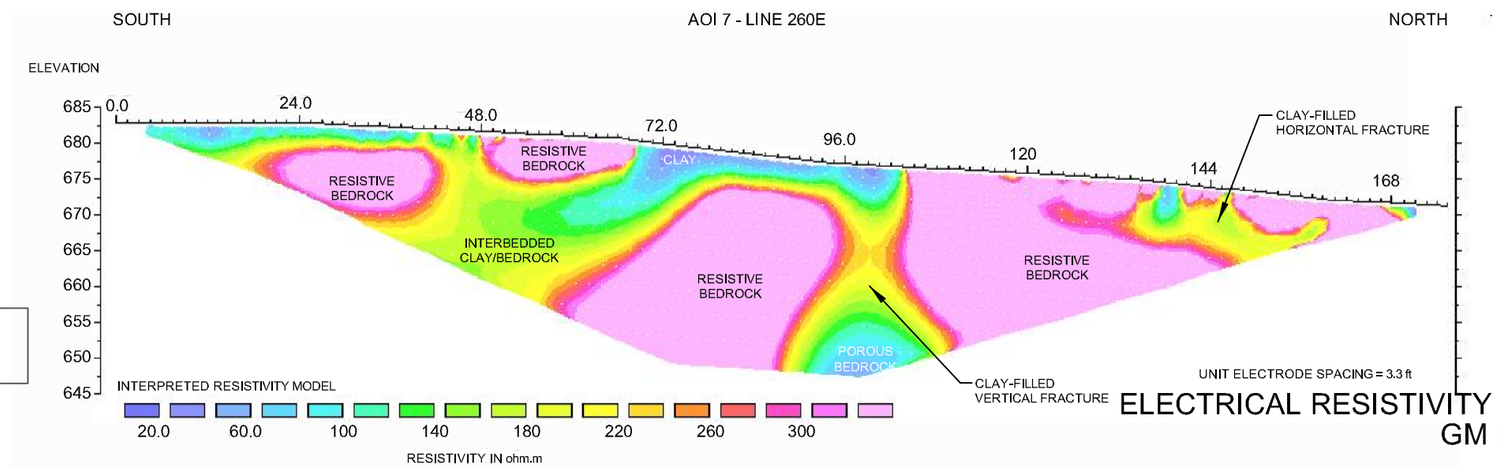
DRAFT

figure 4.5

ELECTRICAL RESISTIVITY SURVEY RESULTS - NORTH GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana



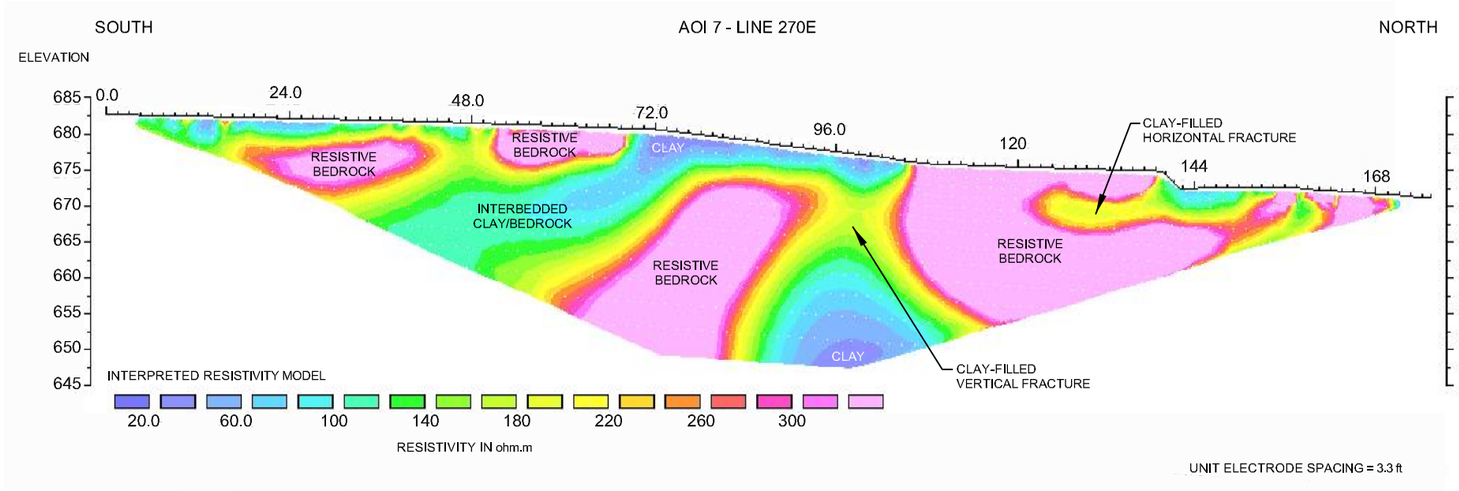


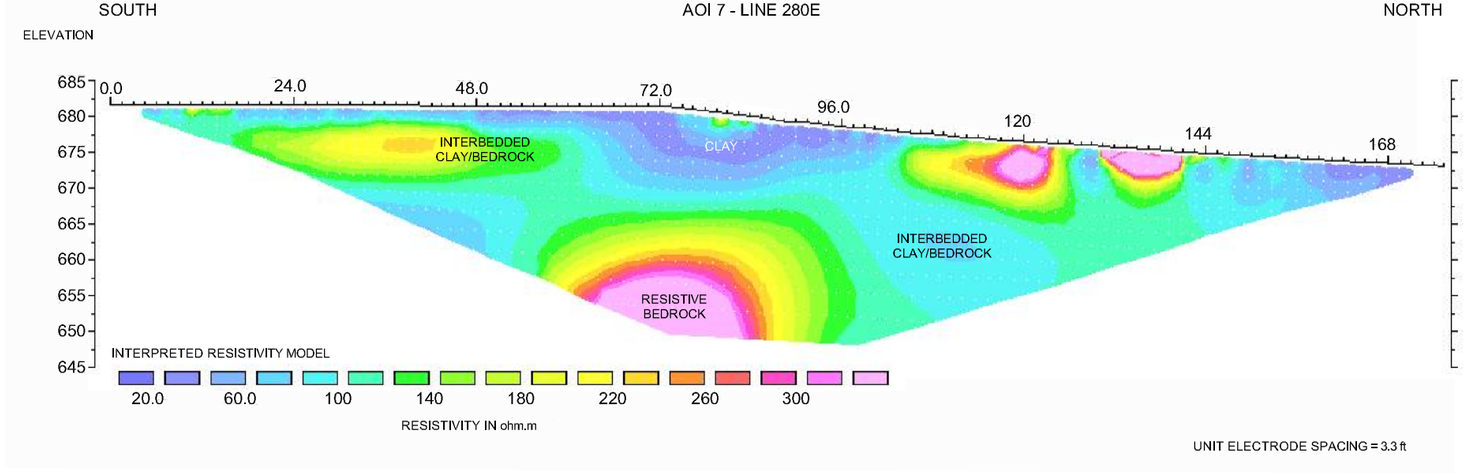


DRAFT

figure 4.6

ELECTRICAL RESISTIVITY SURVEY RESULTS - NORTH GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana





SOUTH

figure 4.7

ELECTRICAL RESISTIVITY SURVEY RESULTS - NORTH GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT

SOUTH AOI 7 - LINE 20E NORTH

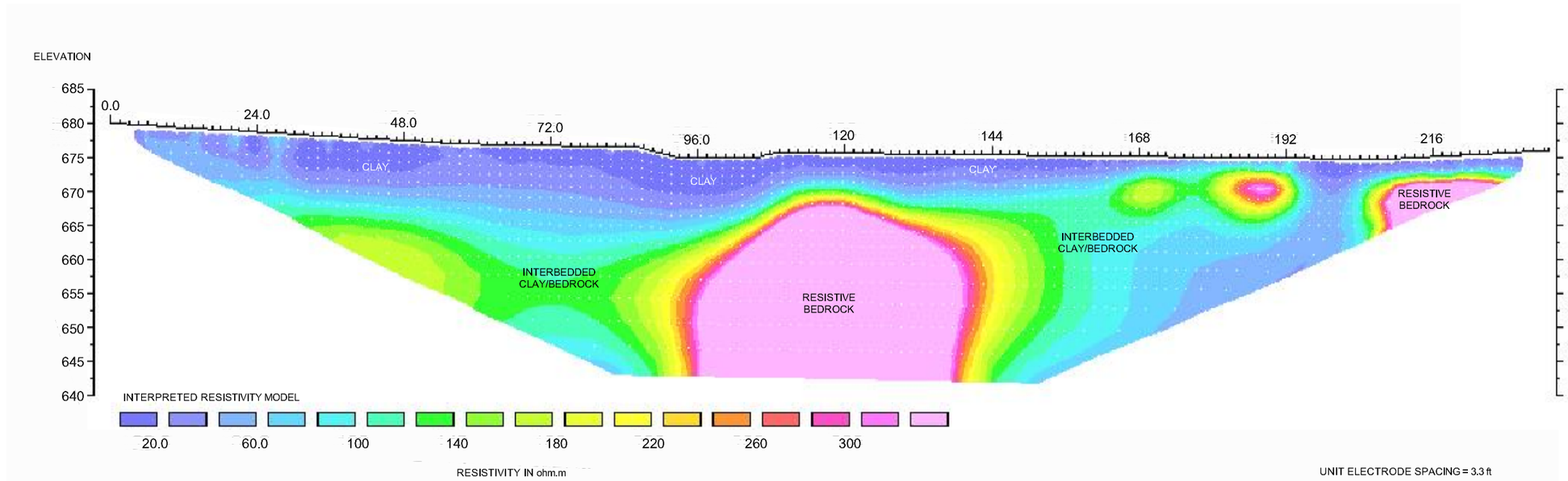
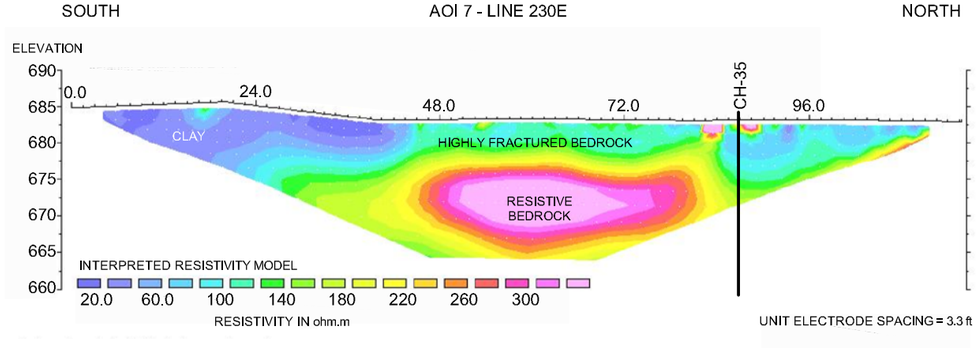


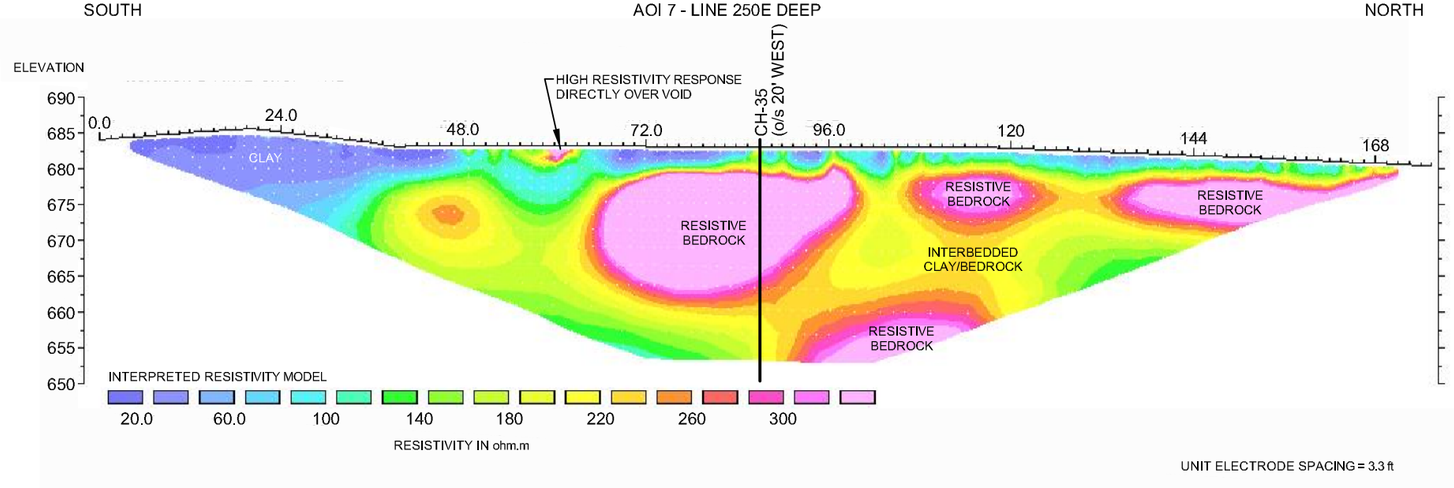
figure 4.8

ELECTRICAL RESISTIVITY SURVEY RESULTS - BASE OF VAULT, WEST SIDE
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT

13968-00(MEMO273)GN-WA008 SEP 30/2005





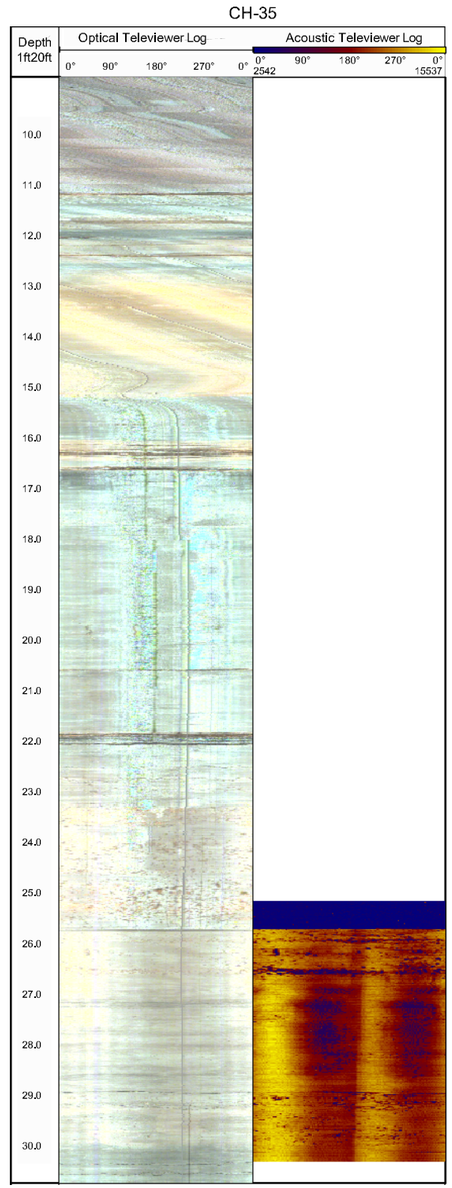
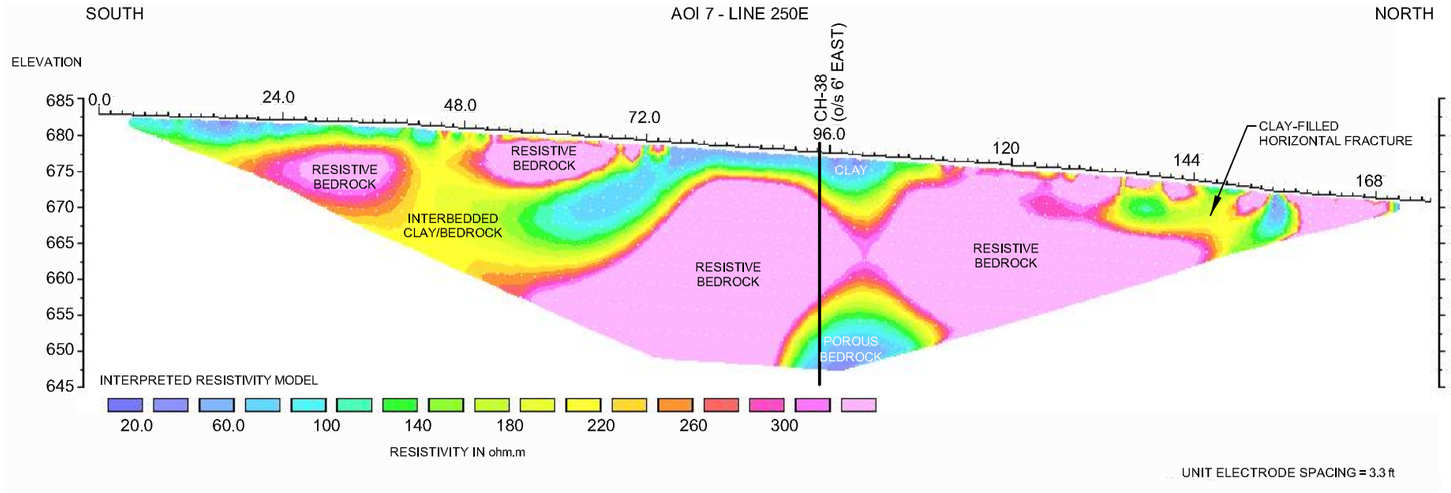
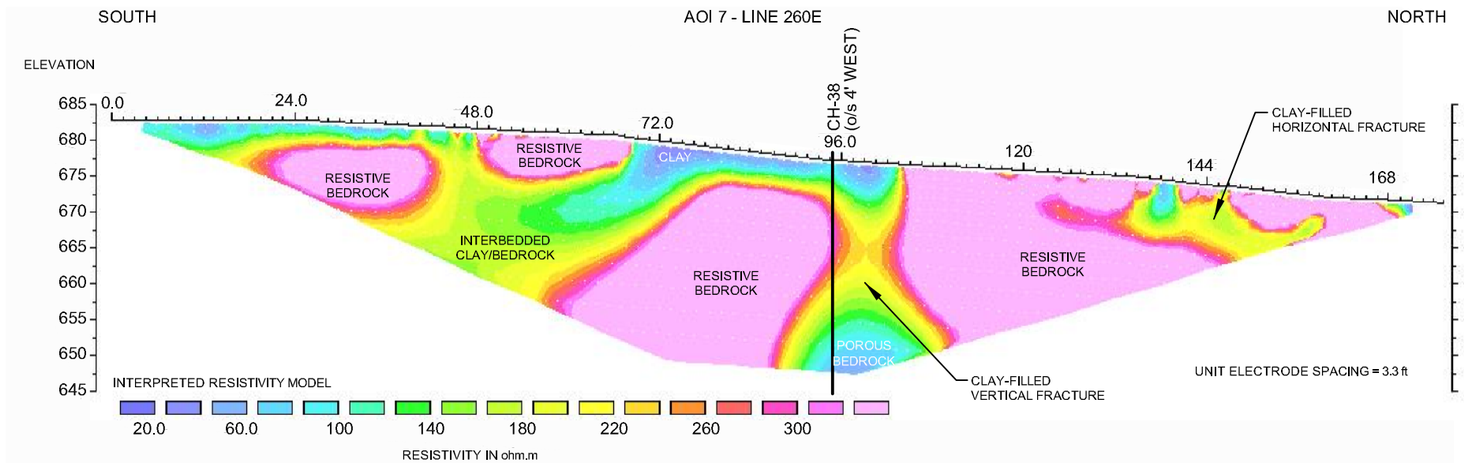


figure 5.1

COMPARISON OF ELECTRICAL RESISTIVITY AND WELL LOGGING RESULTS - DETAILED GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT





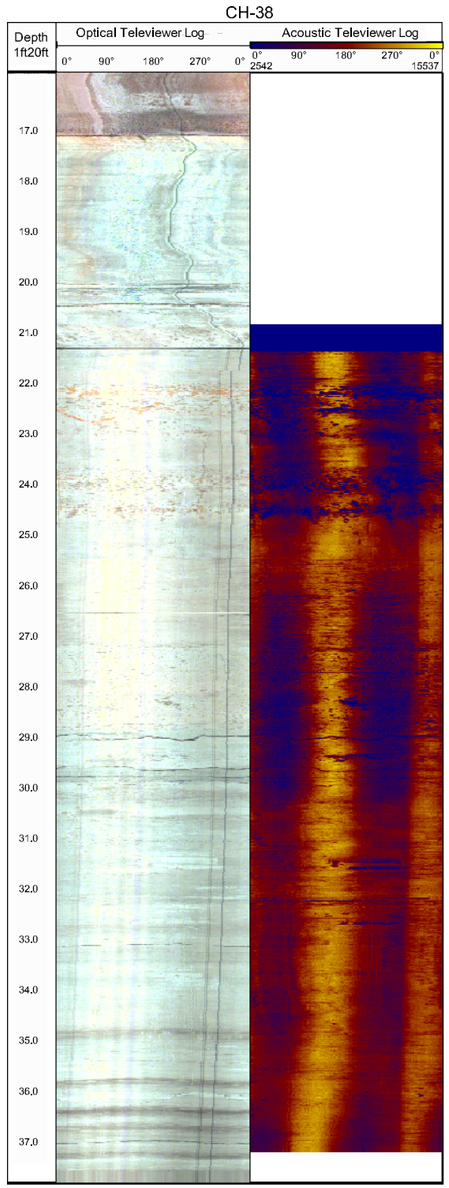


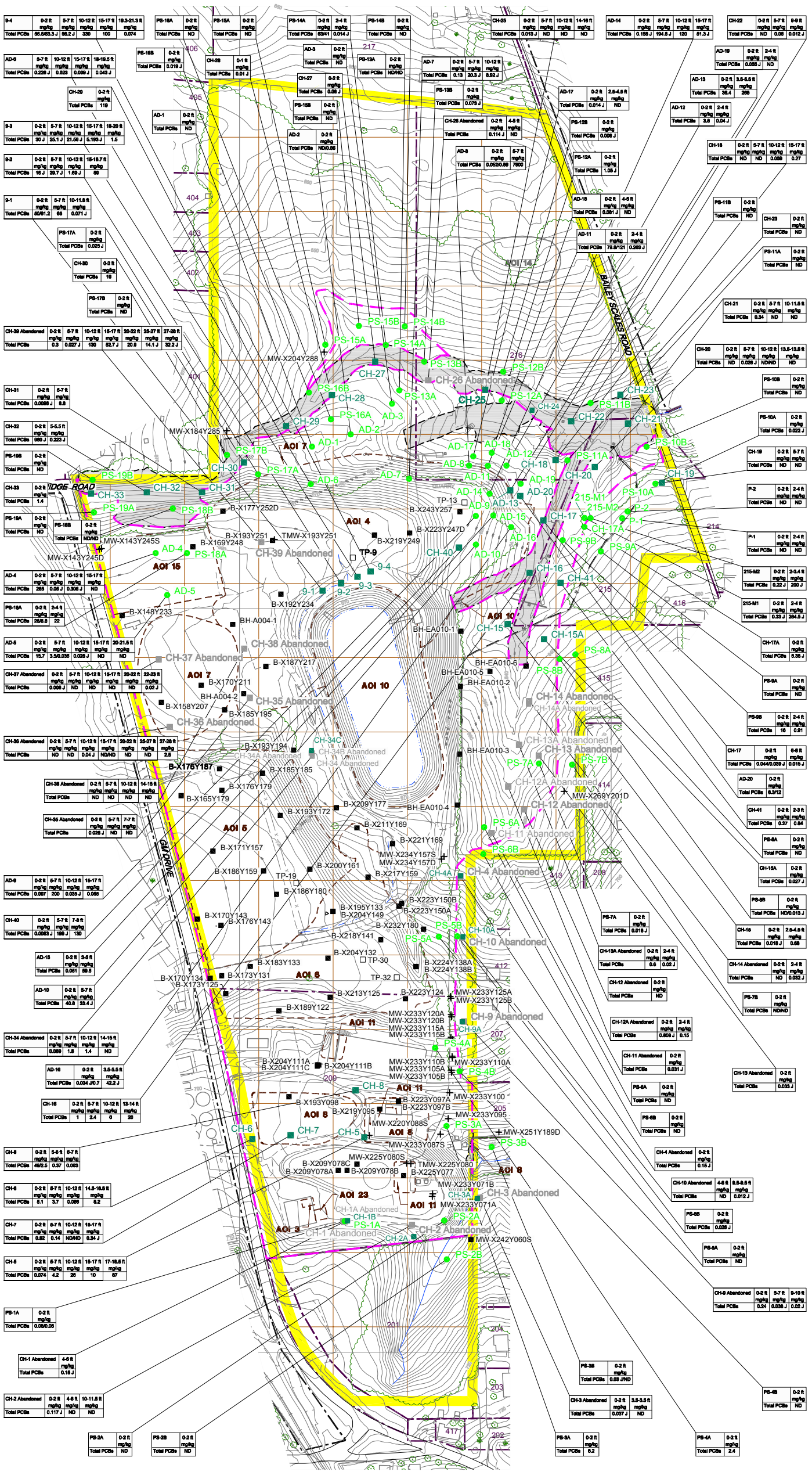
figure 5.2

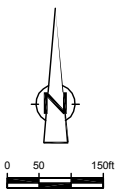
COMPARISON OF ELECTRICAL RESISTIVITY AND WELL LOGGING RESULTS - NORTH GRID
GM POWERTRAIN BEDFORD FACILITY
Bedford, Indiana

DRAFT

APPENDIX E

DATABOX DRAWING





LEGEND

- EXISTING GROUND SURFACE ELEVATION CONTOURS (feet AMSL)
- EXISTING VEGETATION
- EXISTING BUILDINGS
- FENCE LINE
- RAILROAD TRACKS
- DIRT ROADS
- ROADS / PAVED AREAS
- APPROXIMATE SURFACE WATER LOCATION
- APPROXIMATE GM PROPERTY BOUNDARY
- APPROXIMATE PROPERTY BOUNDARY
- AOI BOUNDARY
- 200 X 200 GRID
- EAST PLANT AREA
- REMOVAL ACTION EXCAVATION AREA NOT INCLUDED IN EAST PLANT AREA IM
- TP-9 — EXISTING TESTPIT LOCATION
- B-X223Y247D — EXISTING BOREHOLE TO ROCK
- MW-X269Y201D — EXISTING MONITORING WELL TO/IN ROCK
- PS-11B — RFI 9 BOREHOLE LOCATION
- CH-3 Abandoned — ABANDONED COREHOLE LOCATION
- CH-14 — RFI 9 COREHOLE LOCATION
- E — ELECTRICAL POWER LINE
- F — EXISTING FORCEMAIN TO TREATMENT FACILITY
- PROPOSED COVER SYSTEM LIMIT
- 0.04 B/0.03 J — PARENT/DUPLICATE SAMPLE RESULT
- ND — NOT DETECTED ABOVE THE LABORATORY REPORTING LIMIT
- J — THE ASSOCIATED VALUE IS AN ESTIMATED QUANTITY
- B — METHOD BLANK CONTAMINATION
- NA — NOT AVAILABLE

AOI SUMMARY

AOI ID	Description
AOI 3	PCB Storage Areas
AOI 4	Former North Disposal Area
AOI 5	Former East Sand Disposal Area
AOI 6	Former Sludge Disposal and Fire Training Area
AOI 7	Former North Lagoon and Outfall 001
AOI 8	Former South Lagoons and Outfall 002
AOI 10	Existing Stormwater Lagoon and Outfall 003
AOI 11	Aboveground Storage Tanks
AOI 15	Former Equipment Storage Area
AOI 23	Area Affected by the 1996 Wastewater Treatment Filter Cake Release

NOTES:

A. PROPERTY BOUNDARY LOCATIONS APPROXIMATED FROM THE LAWRENCE COUNTY SURVEY PLATS. LOCATIONS MAY NOT ACCURATELY REPRESENT THE TRUE BOUNDARIES

B. ACTUAL DEPTHS WHERE SAMPLES WERE TAKEN:
1. FIRST DEPTH IS 0 - 2 ft BGS
2. SECOND DEPTH IS 2 - 4 ft BGS (INCLUDES ALL 0 - 2 ft BGS)

Nº	Revision	Date	Initial

SCALE VERIFICATION

THIS BAR MEASURES 1" ON ORIGINAL. ADJUST SCALE ACCORDINGLY.

Approved

GM POWERTRAIN BEDFORD FACILITY
BEDFORD, INDIANA

RFI WORK PLAN ADDENDUM NO.9 TECHNICAL MEMORANDUM

PERIMETER SOIL DELINEATION
PCB RESULTS

CONESTOGA-ROVERS & ASSOCIATES

Source Reference: BASE MAP COMPLETED BY AIR-LAND SURVEYS, FLINT, MI, APRIL 2001.

Project Manager:	Reviewed By:	Date:	
J.M.	M.K.	JANUARY 2006	
Scale: AS SHOWN	Project Nº: 13968-00	Report Nº: 174	Drawing Nº: Appendix E

13968-00(174)GN-WA022 JUL 21/2006