Technical Package Cover Page

This file contains the following documents:

1. Summary of application (in plain language)
2. First notice (NORI-Notice of Receipt of Application and Intent to Obtain a Permit)
3. Second notice (NAPD-Notice of Preliminary Decision)
4. Application materials
5. Draft permit
6. Technical summary or fact sheet

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUMMARY OF APPLICATION IN PLAIN LANGUAGE FOR TPDES OR TLAP PERMIT APPLICATIONS

Summary of Application (in plain language) Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

The US Department of Energy National Nuclear Security Administration Pantex Plant (RN100210756) is owned and co-operated by the United States Department of Energy (CN600125009) and Pantexas Deterrence, LLC (CN606313724), a facility that engages in the assembly and disassembly of nuclear weapons, the fabrication of chemical high explosive components for nuclear weapons, surveillance, testing and treatment of chemical high explosives, and nonexplosive testing on weapon components and disposal of treated environmental restoration wastewater.

The facility is located at 955 Farm to Market Road 2373, in Panhandle, Carson County, Texas 79068.

The wastewater system consists of a facultative lagoon, an alternate lagoon, and a holding pond. Wastewater enters the facultative lagoon after passing through a bar screen and is treated via biological activity. Commercially available products may be introduced to reduce algae in the facultative lagoon. The average retention time in the facultative lagoon is approximately 42 days. Effluent is then directed to alternate lagoon or holding pond prior to discharge via Outfall 001.

This application serves as a renewal to the current water quality permit WQ0002296000. This permit authorizes an average daily flow of 560,000 gallons of treated wastewater per day discharged through Outfall 001 into an on-site ephemeral water body (playa lake) approximately 79.3 surface acres, when the Pantex Plant cannot discharge through Outfall 031 or 032 under Permit WQ0004397000. The effluent is a mixture of domestic effluent and industrial effluent. The playa lake is not hydraulically connected to any lakes, streams, or rivers and has no high aquatic organisms. All effluents remain within the Pantex Plant boundaries. Pantex discharges to the playa are pursuant to the TCEQ's Playa Lake Policy statement dated October 20, 1997.

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF RECEIPT OF APPLICATION AND INTENT TO OBTAIN WATER QUALITY PERMIT RENEWAL

PERMIT NO. WQ0002296000

APPLICATION. United States Department of Energy and PanTeXas Deterrence LLC, P.O. Box 30020, Amarillo, Texas 79120, which co-operates Pantex Plant, a nuclear weapons stewardship facility owned by the United States Department of Energy and operated by PanTeXas Deterrence LLC under a management and operating contract, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Water Quality Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day. The facility is located at 955 Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the plant site to an on-site playa lake, located adjacent to the watershed of McClellen Creek, which flows into the North Fork Red River. TCEQ received this application on February 17, 2025. The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

ADDITIONAL NOTICE. TCEQ's Executive Director has determined the application is administratively complete and will conduct a technical review of the application. After technical review of the application is complete, the Executive Director may prepare a draft permit and will issue a preliminary decision on the application. **Notice of the Application and Preliminary Decision will be published and mailed to those who are on the county-wide mailing list and to those who are on the mailing list for this application. That notice will contain the deadline for submitting public comments.**

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting on this application. The purpose of a public meeting is to provide the opportunity to submit comments or to ask questions about the application. TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for submitting public comments, the Executive Director will consider all timely comments and prepare a response to all relevant and material, or significant public comments. **Unless the application is directly referred for a contested case hearing, the response to comments, and the Executive Director's decision on the application, will be mailed to everyone who submitted public comments and to those persons who are on the mailing list for this application. If comments are received, the mailing will also provide instructions for requesting reconsideration of the Executive Director's decision and for requesting a contested case hearing.** A contested case hearing is a legal proceeding similar to a civil trial in state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period and, the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period.**

TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be placed on: (1) the permanent mailing list for a specific applicant name and permit number; and/or (2) the mailing list for a specific county. If you wish to be placed on the permanent and/or the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at www.tceq.texas.gov/goto/cid. Search the database using the permit number for this application, which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. All public comments and requests must be submitted either electronically at **https://www14.tceq.texas.gov/epic/eComment/**, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Please be aware that any contact information you provide, including your name, phone number, email address and physical address will become part of the agency's public record. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, Toll Free, at 1-800-687-4040 or visit their website at www.tceq.texas.gov/goto/pep. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from United States Department of Energy and PanTeXas Deterrence LLC at the address stated above or by calling Mr. Jeffrey Flowers, Senior Manager, Environmental Compliance/PanTeXas Deterrence LLC, at 806-573-6689.

Issuance Date: March 17, 2025

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

NOTICE OF APPLICATION AND PRELIMINARY DECISION FOR TCEQ PERMIT FOR INDUSTRIAL WASTEWATER

RENEWAL

Permit No. WQ0002296000

APPLICATION AND PRELIMINARY DECISION. United States Department of Energy and PanTeXas Deterrence LLC, P.O. Box 30020, Amarillo, Texas 79120, which operates United States Department of Energy (USDOE) National Nuclear Security Administration (Secadm) Pantex Plant, a facility principally engaged in the assembly of nuclear weapons from components received from other Department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater, has applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of TCEQ Permit No. WQ0002296000, which authorizes the discharge of domestic effluent and industrial effluent at a daily average flow not exceed 560,000 gallons per day. The TCEQ received this application on February 17, 2025.

The facility is located at Farm-to-Market Road 2373, west of Farm-to-Market Road 2373, south of Farm-to-Market Road 293 and north of U.S. Highway 60, approximately 17 miles northeast of the City of Amarillo and 10 miles west of the City of Panhandle, in Carson County, Texas 79068. This link to an electronic map of the site or facility's general location is provided as a public courtesy and is not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

The effluent is discharged to a playa lake, located adjacent to the watershed of McClellen Creek which flows into North Fork Red River in Segment No. 0224 of the Red River Basin. The designated uses for Segment No. 0224 are primary contact recreation and high aquatic life use.

The TCEQ Executive Director has completed the technical review of the application and prepared a draft permit. The draft permit, if approved, would establish the conditions under which the facility must operate. The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The permit application, Executive Director's preliminary decision, and draft permit are available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas. The application, including any updates, and associated notices are available

electronically at the following webpage:
https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications

PUBLIC COMMENT / PUBLIC MEETING. You may submit public comments or request a public meeting about this application. The purpose of a public meeting is to provide the opportunity to submit written or oral comment or to ask questions about the application. Generally, the TCEQ will hold a public meeting if the Executive Director determines that there is a significant degree of public interest in the application or if requested by a local legislator. A public meeting is not a contested case hearing.

OPPORTUNITY FOR A CONTESTED CASE HEARING. After the deadline for public comments, the Executive Director will consider the comments and prepare a response to all relevant and material, or significant public comments. **The response to comments, along with the Executive Director's decision on the application, will be mailed to everyone who submitted public comments or who requested to be on a mailing list for this application. If comments are received, the mailing will also provide instructions for requesting a contested case hearing or reconsideration of the Executive Director's decision.** A contested case hearing is a legal proceeding similar to a civil trial in a state district court.

TO REQUEST A CONTESTED CASE HEARING, YOU MUST INCLUDE THE FOLLOWING ITEMS IN YOUR REQUEST: your name, address, phone number; applicant's name and proposed permit number; the location and distance of your property/activities relative to the proposed facility; a specific description of how you would be adversely affected by the facility in a way not common to the general public; a list of all disputed issues of fact that you submit during the comment period; and the statement "[I/we] request a contested case hearing." If the request for contested case hearing is filed on behalf of a group or association, the request must designate the group's representative for receiving future correspondence; identify by name and physical address an individual member of the group who would be adversely affected by the proposed facility or activity; provide the information discussed above regarding the affected member's location and distance from the facility or activity; explain how and why the member would be affected; and explain how the interests the group seeks to protect are relevant to the group's purpose.

Following the close of all applicable comment and request periods, the Executive Director will forward the application and any requests for reconsideration or for a contested case hearing to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

The Commission may only grant a request for a contested case hearing on issues the requestor submitted in their timely comments that were not subsequently withdrawn. **If a hearing is granted, the subject of a hearing will be limited to disputed issues of fact or mixed questions of fact and law relating to relevant and material water quality concerns submitted during the comment period. TCEQ may act on an application to renew a permit for discharge of wastewater without providing an opportunity for a contested case hearing if certain criteria are met.**

EXECUTIVE DIRECTOR ACTION. The Executive Director may issue final approval of the application unless a timely contested case hearing request or a timely request for reconsideration is filed. If a timely hearing request or request for reconsideration is filed, the Executive Director

will not issue final approval of the permit and will forward the application and requests to the TCEQ Commissioners for their consideration at a scheduled Commission meeting.

MAILING LIST. If you submit public comments, a request for a contested case hearing or a reconsideration of the Executive Director's decision, you will be added to the mailing list for this specific application to receive future public notices mailed by the Office of the Chief Clerk. In addition, you may request to be added to: (1) the permanent list for a specific applicant name and permit number; and (2) the mailing list for a specific county. If you wish to be placed on the permanent and the county mailing list, clearly specify which list(s) and send your request to TCEQ Office of the Chief Clerk at the address below.

All written public comments and public meeting requests must be submitted to the Office of the Chief Clerk, MC 105, TCEQ, P.O. Box 13087, Austin, TX 78711-3087 or electronically at https://www.tceq.texas.gov/goto/comment#**within 30 days from the date of newspaper publication of this notice.**

INFORMATION AVAILABLE ONLINE. For details about the status of the application, visit the Commissioners' Integrated Database at https://www.tceq.texas.gov/goto/cid/. Search the database using the permit number for this application**,** which is provided at the top of this notice.

AGENCY CONTACTS AND INFORMATION. Public comments and requests must be submitted either electronically at https://www.tceq.texas.gov/goto/comment, or in writing to the Texas Commission on Environmental Quality, Office of the Chief Clerk, MC-105, P.O. Box 13087, Austin, Texas 78711-3087. Please be aware that any contact information you provide, including your name, phone number, email address, and physical address will become part of the agency's public record. For more information about this permit application or the permitting process, please call the TCEQ Public Education Program, toll free, at 1-800-687-4040 or visit their website at https://www.tceq.texas.gov/agency/decisions/participation/permitting-participation. Si desea información en Español, puede llamar al 1-800-687-4040.

Further information may also be obtained from United States Department of Energy and PanTeXas Deterrence LLC at the address stated above or by calling Mr. Jeffrey Flowers, Senior Manager, Environmental Compliance/ PanTeXas Deterrence LLC, at (806) 573-6689.

Issued: September 16, 2025

PANTEX | Managed and Operated by PANTEXAS DETERRENCE

P.O. Box 30020
Amarillo, TX
79120-0020 **Office:** 806.573.6689

February 14, 2025

Texas Commission on Environmental Quality
Water Quality Division
Applications Review and Processing Team, MC-148
P.O. Box 13087
Austin, Texas 78711-3087

Dear Sir or Madam:

APPLICATION TO RENEW WATER QUALITY PERMIT NO. WQ0002296000; US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT: RN100210756; UNITED STATES DEPARTMENT OF ENERGY: CN600125009; PANTEXAS DETERRENCE LLC: CN606313724

Certified Return Receipt Requested: 7020 2450 0000 9032 6910

With this letter and enclosures, the U.S. Department of Energy/National Nuclear Security Administration and PanTeXas Deterrence LLC (PXD) request the renewal of Water Quality Permit No. WQ0002296000. In support of this request, enclosed are one original and two copies of the renewal application that includes the following:

- Administrative Report 1.0;
- Technical Report 1.0;
- Worksheets 3.0 and 3.1;
- Core Data Forrms;
- Plain Language Summary;
- USGS Map;
- Required Photographs;
- Plant Production Area Map;
- Waterflow and Balance Diagram;
- Safety Data Sheets for Boiler and Cooling Tower Chemicals;
- Pond Liner Repair Descriptions;and
- Groundwater Well Information.

Texas Commission on Environmental Quality (TCEQ) Form 20960 (Public Involvement Plan Form) was reviewed and determined not to be applicable to this permit application. This application is not a new permit or registration and does not request modification to the current permit conditions.

In addition to this hard copy submittal, one electronic copy of the application has been uploaded via TCEQ's file transfer protocal (FTP) server. A water quality permit renewal fee was prepared and transmitted under a separate cover dated January 13, 2025, to the TCEQ's Finanical Administration Division.

C-4301

This document has been reviewed by a DC/RO and has been determined to be UNCLASSIFIED, not UCNI, and contains no CUI based on current classification guidance. This review does not constitute a review for CUI outside of classification guidance and does not constitute clearance for Public Release.
Name: Maria Holt
Date: 2/14/2025
Pantex eDC/RO ID: 891397

PXD is the management and operating contractor at the U.S. Department of Energy's Pantex Plant under Contract 89233224CNA000004.

If you have any questions, please contact me by phone at 806.573.6689 or by email at Jeff.Flowers@pantex.doe.gov or J. D. Booker by phone at 806.573.4354 or by email at Jon.Booker@pantex.doe.gov.

Sincerely yours,

Jeffrey R. Flowers
Senior Manager, Environmental Compliance

JRF:crn

Enclosure: As stated

c/att: Martin R. Amos
Corrie B. Baker, PFO-60
Jon D. Booker
Alyssa M. Brooks
Matthew A. Buchholz, PFO-60
Amber D. Bullard
Bobby L. Carlton III
Jesse Flores, Jr.
Jon K. Gilbert
Harry E. Gulley
Alex M. Herrmann
Casey L. Kaplan
Jimmy C. Rogers
Monty G. Schoenhals
Lindsey N. Wesley
Tyler E. White
Guy Wilkins, TCEQ Region 1
Shian R. Yada, PFO-60
ECD Records



U.S. DEPARTMENT OF ENERGY

NATIONAL NUCLEAR SECURITY ADMINISTRATION

PANTEX PLANT

Carson County, Texas

Permit Application for Renewal Without Modification of
Water Quality Permit WQ0002296000

February 2025

Prepared by
PanTeXas Deterrence, LLC
Management & Operating Contractor
for the
Pantex Plant
under Contract No. 89233224CNA000004
with the
U.S. Department of Energy
National Nuclear Security Administration



Table of Contents

Application to Renew without Modifications Permit WQ0002296000

Table of Contents

Forward

This Application requests the renewal of Permit WQ0002296000 issued to the US Department of Energy as the owner and Pantexas Deterrence LLC as the operator.

Table of Contents

- Industrial Administrative Report- Administrative Report Tab
  - Industrial Administrative Checklist
  - Industrial Administrative Report 1.0

- Technical Report – Technical Report Tab
  - Worksheets to Industrial Wastewater Permit Application Technical Report
  - Industrial Technical Report 1.0
  - Worksheet 3.0 - Land Application of Effluent
  - Worksheet 3.1 – Surface Land Application and Application

- Appendices
  - Appendix 1 Core Data Form
  - Appendix 2 Plain Language Summary
  - Appendix 3 USGS Map of Pantex Plant
  - Appendix 4 Photographs
  - Appendix 5 Plant Production Areas
  - Appendix 6 Wastewater Flow and Balance
  - Appendix 7 SDS of Boiler and Cooling Tower Chemicals
  - Appendix 8 Pond Liner Improvements
  - Appendix 9 Well Information

Industrial Administrative Report

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER PERMIT APPLICATION CHECKLIST

Complete and submit this checklist with the industrial wastewater permit application.

APPLICANT NAME: UNITED STATES DEPARTMENT OF ENERGY AND PANTEXAS DETERRENCE LLC

PERMIT NUMBER (If new, leave blank): WQ0002296000

Indicate if each of the following items is included in your application.

	Y	N		Y	N
Administrative Report 1.0	☒	☐	Worksheet 8.0	☐	☒
Administrative Report 1.1	☐	☒	Worksheet 9.0	☐	☒
SPIF	☐	☒	Worksheet 10.0	☐	☒
Core Data Form	☒	☐	Worksheet 11.0	☐	☒
Summary of Application (PLS)	☒	☐	Worksheet 11.1	☐	☒
Public Involvement Plan Form	☐	☒	Worksheet 11.2	☐	☒
Technical Report 1.0	☒	☐	Worksheet 11.3	☐	☒
Worksheet 1.0	☐	☒	Original USGS Map	☒	☐
Worksheet 2.0	☐	☒	Affected Landowners Map	☐	☒
Worksheet 3.0	☒	☐	Landowner Disk or Labels	☐	☒
Worksheet 3.1	☒	☐	Flow Diagram	☒	☐
Worksheet 3.2	☐	☒	Site Drawing	☒	☐
Worksheet 3.3	☐	☒	Original Photographs	☒	☐
Worksheet 4.0	☐	☒	Design Calculations	☐	☒
Worksheet 4.1	☐	☒	Solids Management Plan	☐	☒
Worksheet 5.0	☐	☒	Water Balance	☒	☐
Worksheet 6.0	☐	☒			
Worksheet 7.0	☐	☒			

For TCEQ Use Only

gment Number _____County _____
Expiration Date _____Region _____
Permit Number _____

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.0

This report is required for all applications for TPDES permits and TLAPs, except applications for oil and gas extraction operations subject to 40 CFR Part 435. Contact the Applications Review and Processing Team at 512-239-4671 with any questions about completing this report.

Applications for oil and gas extraction operations subject to 40 CFR Part 435 must use the Oil and Gas Exploration and Production Administrative Report (TCEQ Form-20893 and 20893-inst[1]).

Item 1. Application Information and Fees (Instructions, Page 26)

a. Complete each field with the requested information, if applicable.

Applicant Name: United States Department of Energy and Pantexas Deterrence LLC

Permit No.: WQ0002296000

EPA ID No.: TX0 TX4890110527

Expiration Date: 08/27/2025

b. Check the box next to the appropriate authorization type.

☒ Industrial Wastewater (wastewater and stormwater)

☐ Industrial Stormwater (stormwater only)

c. Check the box next to the appropriate facility status.

☒ Active ☐ Inactive

d. Check the box next to the appropriate permit type. State only authorization

☐ TPDES Permit ☐ TLAP ☐ TPDES with TLAP component

e. Check the box next to the appropriate application type.

☐ New

☐ Renewal with changes ☒ Renewal without changes

☐ Major amendment with renewal ☐ Major amendment without renewal

☐ Minor amendment without renewal

☐ Minor modification without renewal

f. If applying for an amendment or modification, describe the request: No modifications.

For TCEQ Use Only

Segment Number _____County _____
Expiration Date _____Region _____
Permit Number _____

[1] https://www.tceq.texas.gov/publications/search_forms.html

g. Application Fee

EPA Classification	New	Major Amend. (with or without renewal)	Renewal (with or without changes)	Minor Amend. / Minor Mod. (without renewal)
Minor facility not subject to EPA categorical effluent guidelines (40 CFR Parts 400-471)	☐ $350	☐ $350	☒ $315	☐ $150
Minor facility subject to EPA categorical effluent guidelines (40 CFR Parts 400-471)	☐ $1,250	☐ $1,250	☐ $1,215	☐ $150
Major facility	N/A [2]	☐ $2,050	☐ $2,015	☐ $450

h. Payment Information

Mailed

Check or money order No.: 01664205

Check or money order amt.: $315.00

Named printed on check or money order: PANTEXAS DETERRENCE LLC

Epay

Voucher number: N/A

Copy of voucher attachment: N/A

Item 2. Applicant Information (Instructions, Pages 26)

a. Customer Number, if applicant is an existing customer: CN600125009

Note: Locate the customer number using the TCEQ's Central Registry Customer Search[3].

b. Legal name of the entity (applicant) applying for this permit: UNITED STATES DEPARTMENT OF ENERGY

Note: The owner of the facility must apply for the permit. The legal name must be spelled exactly as filed with the TX SOS, Texas Comptroller of Public Accounts, County, or in the legal documents forming the entity.

c. Name and title of the person signing the application. (**Note:** The person must be an executive official that meets signatory requirements in 30 TAC § 305.44.)

Prefix: Mr. Full Name (Last/First Name): Buchholz, Matthew

Title: Assistant Manager, Environment Safety and Health Credential: N/A

d. Will the applicant have overall financial responsibility for the facility?

☐ Yes ☒ No

[2] All facilities are designated as minors until formally classified as a major by EPA.

[3] https://www15.tceq.texas.gov/crpub/index.cfm?fuseaction=cust.CustSearch

Note: The entity with overall financial responsibility for the facility must apply as a co-applicant, if not the facility owner.

Item 3. Co-applicant Information (Instructions, Page 27)

☐ Check this box if there is no co-applicant.; otherwise, complete the below questions.

a. Legal name of the entity (co-applicant) applying for this permit: PANTEXAS DETERRENCE LLC

Note: The legal name must be spelled exactly as filed with the TX SOS, Texas Comptroller of Public Accounts, County, or in the legal documents forming the entity.

b. Customer Number (if applicant is an existing customer): CN606313724

Note: Locate the customer number using the TCEQ's Central Registry Customer Search.

c. Name and title of the person signing the application. (**Note:** The person must be an executive official that meets signatory requirements in 30 TAC § 305.44.)

Prefix: Mr. Full Name (Last/First Name): Flowers, Jeffrey

Title: Senior Manager, Environmental Compliance Credential: N/A

d. Will the co-applicant have overall financial responsibility for the facility?

☒ Yes ☐ No

Note: The entity with overall financial responsibility for the facility must apply as a co-applicant, if not the facility owner.

Item 4. Core Data Form (Instructions, Pages 27)

a. Complete and attach one Core Data Form (TCEQ Form 10400) for each customer (applicant and co-applicant(s)). If the customer type selected on the Core Data Form is Individual, complete Attachment 1 of the Administrative Report. Attachment: Appendix 1

Item 5. Application Contact Information (Instructions, Page 27)

Provide names of two individuals who can be contacted about this application. Indicate if the individual can be contacted about administrative or technical information, or both.

a. ☒ Administrative Contact . ☒ Technical Contact

Prefix: Mr. Full Name (Last/First Name): Flowers, Jeffrey

Title: Senior Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-6689 Email: Jeff.Flowers@pantex.doe.gov

b. ☒ Administrative Contact ☒ Technical Contact

Prefix: Mr. Full Name (Last/First Name): Booker, Jon D.

Title: Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-4354 Email: Jon.Booker@pantex doe.gov

Attachment: N/A

Item 6. Permit Contact Information (Instructions, Page 28)

Provide two names of individuals that can be contacted throughout the permit term.

a. Prefix: Mr. Full Name (Last/First Name): Flowers, Jeffrey

Title: Senior Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-6689 Email: Jeff.Flowers@pantex.doe.gov

b. Prefix: Mr. Full Name (Last/First Name): Booker, Jon D.

Title: Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-4354 Email: Jon.Booker@pantex.doe.gov

Attachment: N/A

Item 7. Billing Contact Information (Instructions, Page 28)

The permittee is responsible for paying the annual fee. The annual fee will be assessed for permits **in effect on September 1 of each year**. The TCEQ will send a bill to the address provided in this section. The permittee is responsible for terminating the permit when it is no longer needed (form TCEQ-20029).

Provide the complete mailing address where the annual fee invoice should be mailed and the name and phone number of the permittee's representative responsible for payment of the invoice.

Prefix: Mr. Full Name (Last/First Name): Flowers, Jeffrey

Title: Senior Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-6689 Email: Jeff.Flowers@pantex.doe.gov

Item 8. DMR/MER Contact Information (Instructions, Page 28)

Provide the name and mailing address of the person delegated to receive and submit DMRs or MERs. **Note:** DMR data must be submitted through the NetDMR system. An electronic reporting account can be established once the facility has obtained the permit number.

Prefix: Mr. Full Name (Last/First Name): Flowers, Jeff

Title: Senior Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-6689 Email: Jeff.Flowers@pantex.doe.gov

Item 9. Notice Information (Instructions, Pages 28)

a. Individual Publishing the Notices

Prefix: Ms. Full Name (Last/First Name): Brooks, Alyssa

Title: Permitting Specialist Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Mailing Address: P.O. Box 30020; MS 1008-02 City/State/Zip: Amarillo, TX 79120-0020

Phone No: 806-573-4140 Email: Alyssa.Brooks@pantex.doe.gov

b. Method for Receiving Notice of Receipt and Intent to Obtain a Water Quality Permit Package (only for NORI, NAPD will be sent via regular mail)

☒ E-mail: Jeff.Flowers@pantex.doe.gov and Alyssa.Brooks@pantex.doe.gov

☐ Fax: N/A

☐ Regular Mail (USPS)

Mailing Address: N/A

City/State/Zip Code: N/A

c. Contact in the Notice

Prefix: Mr. Full Name (Last/First Name): Flowers, Jeff

Title: Senior Manager, Environmental Compliance Credential: N/A

Organization Name: PANTEXAS DETERRENCE LLC

Phone No: 806-573-6689 Email: Jeff.Flowers@pantex.doe.gov

d. Public Viewing Location Information

Note: If the facility or outfall is located in more than one county, provide a public viewing place for each county.

Public building name: Carson County Public Library Location within the building: Front Lobby

Physical Address of Building: 401 Main Street

City: Panhandle County: Carson

e. Bilingual Notice Requirements

This information is required for new, major amendment, minor amendment or minor modification, and renewal applications.

This section of the application is only used to determine if alternative language notices will be needed. Complete instructions on publishing the alternative language notices will be in your public notice package.

Call the bilingual/ESL coordinator at the nearest elementary and middle schools and obtain the following information to determine if an alternative language notice(s) is required.

1. Is a bilingual education program required by the Texas Education Code at the elementary or middle school nearest to the facility or proposed facility?

   ☐ Yes ☒ No

If no, publication of an alternative language notice is not required; skip to Item 8 (Regulated Entity and Permitted Site Information.)

2. Are the students who attend either the elementary school or the middle school enrolled in a bilingual education program at that school?

   ☐ Yes ☒ No

3. Do the students at these schools attend a bilingual education program at another location?

   ☐ Yes ☒ No

4. Would the school be required to provide a bilingual education program, but the school has waived out of this requirement under 19 TAC §89.1205(g)?

   ☐ Yes ☒ No ☐ N/A

5. If the answer is yes to question 1, 2, 3, or 4, public notices in an alternative language are required. Which language is required by the bilingual program? N/A

f. Summary of Application in Plain Language Template - Complete and attach the Summary of Application in Plain Language Template (TCEQ Form 20972), also known as the plain language summary or PLS. Attachment: Appendix 2

g. Complete and attach one Public Involvement Plan (PIP) Form (TCEQ Form 20960) for each application for a new permit or major amendment. Attachment: N/A

Item 10. Regulated Entity and Permitted Site Information (Instructions Page 29)

a. TCEQ issued Regulated Entity Number (RN), if available: RN100210756

Note: If your business site is part of a larger business site, a Regulated Entity Number (RN) may already be assigned for the larger site. Use the RN assigned for the larger site. Search the TCEQ's Central Registry to determine the RN or to see if the larger site may already be registered as a Regulated Entity. If the site is found, provide the assigned RN.

b. Name of project or site (name known by the community where located): US Department of Energy National Nuclear Security Administration Pantex Plant

c. Is the location address of the facility in the existing permit the same?

☒ Yes ☐ No ☐ N/A (new permit)

Note: If the facility is located in Bexar, Comal, Hays, Kinney, Medina, Travis, Uvalde, or Williamson County, additional information concerning protection of the Edwards Aquifer may be required.

d. Owner of treatment facility:

Prefix: N/A Full Name (Last/First Name): N/A

or Organization Name: US Department of Energy National Nuclear Security Administration Pantex Plant

Mailing Address: P.O. Box 30030 City/State/Zip: Amarillo, TX 79120-0030

Phone No: 806-573-8856 Email: Matthew.Buchholz@pfo.doe.gov

e. Ownership of facility: ☐ Public ☐ Private ☐ Both ☒ Federal

f. Owner of land where treatment facility is or will be: United States Department of Energy

Prefix: N/A Full Name (Last/First Name): N/A

or Organization Name: United States Department of Energy

Mailing Address: P.O. Box 30030 City/State/Zip: Amarillo, TX 79120-0030

Phone No: 806-573-8856 Email: Matthew.Buchholz@pfo.doe.gov

Note: If not the same as the facility owner, attach a long-term lease agreement in effect for at least six years (In some cases, a lease may not suffice - see instructions). Attachment: N/A

g. Owner of effluent TLAP disposal site (if applicable): United States Department of Energy

Prefix: N/A Full Name (Last/First Name): N/A

or Organization Name: United States Department of Energy

Mailing Address: P.O. Box 30030 City/State/Zip: Amarillo, TX 79120-0030

Phone No: 806-573-8856 Email: Matthew.Buchholz@pfo.doe.gov

Note: If not the same as the facility owner, attach a long-term lease agreement in effect for at least six years. Attachment: N/A

h. Owner of sewage sludge disposal site (if applicable):

Prefix: N/A Full Name (Last/First Name): N/A

or Organization Name: N/A

Mailing Address: N/A City/State/Zip: N/A

Phone No: N/A Email: N/A

Note: If not the same as the facility owner, attach a long-term lease agreement in effect for at least six years. Attachment: N/A

Item 11. TDPES Discharge/TLAP Disposal Information (Instructions, Page 31)

a. Is the facility located on or does the treated effluent cross Native American Land?

☐ Yes ☒ No

b. Attach an original full size USGS Topographic Map (or an 8.5"×11" reproduced portion for renewal or amendment applications) with all required information. Check the box next to each item below to confirm it has been included on the map.

☒ One-mile radius

☒ Applicant's property boundaries

☒ Labeled point(s) of discharge

☒ Effluent disposal site boundaries

☒ Sewage sludge disposal site

☐ Three-miles downstream information

☒ Treatment facility boundaries

☒ Highlighted discharge route(s)

☒ All wastewater ponds

☒ New and future construction

Attachment: Appendix 3

c. Is the location of the sewage sludge disposal site in the existing permit accurate?

☒ Yes ☐ No or New Permit

If no, or a new application, provide an accurate location description: N/A

d. Are the point(s) of discharge in the existing permit correct?

☒ Yes ☐ No or New Permit

If no, or a new application, provide an accurate location description: N/A

e. Are the discharge route(s) in the existing permit correct?

☒ Yes ☐ No or New Permit

If no, or a new permit, provide an accurate description of the discharge route: N/A

f. City nearest the outfall(s): Panhandle, Texas

g. County in which the outfalls(s) is/are located: Carson

h. Is or will the treated wastewater discharge to a city, county, or state highway right-of-way, or a flood control district drainage ditch?

☐ Yes ☒ No

If yes, indicate by a check mark if: ☐ Authorization granted ☐ Authorization pending

For new and amendment applications, attach copies of letters that show proof of contact and provide the approval letter upon receipt. Attachment: N/A

For all applications involving an average daily discharge of 5 MGD or more, provide the names of all counties located within 100 statute miles downstream of the point(s) of discharge: N/A

i. For TLAPs, is the location of the effluent disposal site in the existing permit accurate?

☐ Yes No or New Permit ☒ N/A

If no, or a new application, provide an accurate location description: N/A

j. City nearest the disposal site: Panhandle, Texas

k. County in which the disposal site is located: Carson

l. For TLAPs, describe how effluent is/will be routed from the treatment facility to the disposal site: N/A

m. For TLAPs, identify the nearest watercourse to the disposal site to which rainfall runoff might flow if not contained: N/A

Item 12. Miscellaneous Information (Instructions, Page 33)

a. Did any person formerly employed by the TCEQ represent your company and get paid for service regarding this application?

☐ Yes ☒ No

If yes, list each person: N/A

b. Do you owe any fees to the TCEQ?

☐ Yes ☒ No

If yes, provide the following information:

Account no.: N/A

Total amount due: N/A

c. Do you owe any penalties to the TCEQ?

☐ Yes ☒ No

If yes, provide the following information:

Enforcement order no.: N/A

Amount due: N/A

Item 13. Signature Page (Instructions, Page 33)

Permit No: WQ0002296000

Applicant Name: United States Department of Energy and Pantexas Deterrence LLC

Certification: I, Matthew Buchholz, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Mr. Matthew Buchholz

Signatory title: Assistant Manager, Environmental Safety and Health, US Department of Energy, National Nuclear Security Administration, Pantex Field Office

Signature: Matthew A. Buchholz (Use blue ink) Date: 2/5/2025

Subscribed and Sworn to before me by the said Matthew A. Buchholz.

on this 5th day of February, 20 25.

My commission expires on the 8th 9th or day of June, 20 25.

CHRISTIAN ROMO
Notary Public, State of Texas
Comm. Expires 06-09-2025
Notary ID 13314665-6

Christian Romo
Notary Public [SEAL]

Carson
County, Texas

Note: *If co-applicants are necessary, each entity must submit an original, separate signature page.*

Item 14. Signature Page (Instructions, Page 33)

Permit No: WQ0002296000

Applicant Name: United States Department of Energy and Pantexas Deterrence LLC

Certification: I, Jeffrey Flowers, certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

I further certify that I am authorized under 30 Texas Administrative Code §305.44 to sign and submit this document and can provide documentation in proof of such authorization upon request.

Signatory name (typed or printed): Mr. Jeffrey Flowers

Signatory title: Senior Manager, Environmental Compliance, Pantexas Deterrence LLC

Signature: _____ Date: 02/05/2025

(Use blue ink)

Subscribed and Sworn to before me by the said Jeff Flowers

on this 5th day of February, 2025.

My commission expires on the 9th day of June, 2025.

CHRISTIAN ROMO
Notary Public, State of Texas
Comm. Expires 06-09-2025
Notary ID 13314665-6

Christian Romo
Notary Public

[SEAL]

Carson
County, Texas

Note: *If co-applicants are necessary, each entity must submit an original, separate signature page.*

INDUSTRIAL WASTEWATER PERMIT APPLICATION ADMINISTRATIVE REPORT 1.1

The following information is required for new and amendment applications.

Item 1. Affected Landowner Information (Instructions, Page 35)

a. Attach a landowner map or drawing, with scale, as applicable. Check the box next to each item to confirm it has been provided.

☐ The applicant's property boundaries.

☐ The facility site boundaries within the applicant's property boundaries.

☐ The distance the buffer zone falls into adjacent properties and the property boundaries of the landowners located within the buffer zone.

☐ The property boundaries of all landowners surrounding the applicant's property. (Note: if the application is a major amendment for a lignite mine, the map must include the property boundaries of all landowners adjacent to the new facility (ponds).)

☐ The point(s) of discharge and highlighted discharge route(s) clearly shown for one mile downstream.

☐ The property boundaries of the landowners located on both sides of the discharge route for one full stream mile downstream of the point of discharge.

☐ The property boundaries of the landowners along the watercourse for a one-half mile radius from the point of discharge if the point of discharge is into a lake, bay, estuary, or affected by tides.

☐ The boundaries of the effluent disposal site (e.g., irrigation area or subsurface drainfield site) and all evaporation/holding ponds within the applicant's property.

☐ The property boundaries of all landowners surrounding the applicant's property boundaries where the effluent disposal site is located.

☐ The boundaries of the sludge land application site (for land application of sewage sludge for beneficial use) and the property boundaries of landowners within one-quarter mile of the applicant's property boundaries where the sewage sludge land application site is located.

☐ The property boundaries of landowners within one-half mile in all directions from the applicant's property boundaries where the sewage sludge disposal site (e.g., sludge surface disposal site or sludge monofil) is located.

Attachment: Item 1.1 in Administrative Report 1.1 is not applicable to this permit application because there are no adjacent landowners within ½ mile of the land application site (playa lake). See Appendix 3 for corresponding map.

b. ☐ that the landowners list has also been provided as mailing labels in electronic format (Avery 5160).

c. Check this box to confirm a separate list with the landowners' names and mailing addresses cross-referenced to the landowner's map has been provided.Provide the source of the landowners' names and mailing addresses: N/A

e. As required by Texas Water Code § 5.115, is any permanent school fund land affected by this application?

☐ Yes ☒ No

If yes, provide the location and foreseeable impacts and effects this application has on the land(s): N/A

Item 2. Original Photographs (Instructions, Page 37)

Provide original ground level photographs. Check the box next to each of the following items to indicate it is included.

☐ At least one original photograph of the new or expanded treatment unit location.

☒ At least two photographs of the existing/proposed point of discharge and as much area downstream (photo 1) and upstream (photo 2) as can be captured. If the discharge is to an open water body (e.g., lake, bay), the point of discharge should be in the right or left edge of each photograph showing the open water and with as much area on each respective side of the discharge as can be captured.

☒ At least one photograph of the existing/proposed effluent disposal site.

☐ A plot plan or map showing the location and direction of each photograph.

Attachment: Appendix 4

Technical Report

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

INDUSTRIAL WASTEWATER PERMIT APPLICATION TECHNICAL REPORT 1.0

The following information **is required** for all applications for a TLAP or an individual TPDES discharge permit.

For **additional information** or clarification on the requested information, please refer to the Instructions for Completing the Industrial Wastewater Permit Application[1] available on the TCEQ website. Please contact the Industrial Permits Team at 512-239-4671 with any questions about this form.

If more than one outfall is included in the application, provide applicable information for each individual outfall. **If an item does not apply to the facility, enter N/A** to indicate that the item has been considered. Include separate reports or additional sheets as **clearly cross-referenced attachments** and provide the attachment number in the space provided for the item the attachment addresses.

NOTE: This application is for an industrial wastewater permit only. Additional authorizations from the TCEQ Waste Permits Division or the TCEQ Air Permits Division may be needed.

Item 1. Facility/Site Information (Instructions, Page 39)

a. Describe the general nature of the business and type(s) of industrial and commercial activities. Include all applicable SIC codes (up to 4).

The Pantex facility is principally engaged in the assembly of nuclear weapons from components received from other DOE plants, the fabrication of chemical high explosive components for nuclear weapons, surveillance, testing and treatment of chemical high explosives, disassembly of nuclear weapons, and maintenance, modification, and nonexplosive testing on weapon components.

b. Describe all wastewater-generating processes at the facility.

Wastewater consists of a mixture of domestic sewage and industrial wastewater. Industrial wastewater includes non-contact wastewaters from heating and cooling, cooling tower blowdown, reverse osmosis system and ion exchange columns brine, boiler wastewater, steam condensate, chiller condensate wastewater, wastewater from laundry activities, pre-treated photographic processing wash water, pre-treated wastewater from the production of energetics, pre-treated energetic machining wastewaters, wastewater from vehicle maintenance facilities, and treated wastewater from groundwater remediation activities.

1 https://www.tceq.texas.gov/permitting/wastewater/industrial/TPDES_industrial_wastewater_steps.html

c. Provide a list of raw materials, major intermediates, and final products handled at the facility.

Materials List

Raw Materials	Intermediate Products	Final Products
Pursuant to the TCEQ's instruction criteria for completing the application, there are no raw materials, major intermediates, or final products that may be reasonably expected to be present in the effluent, which is discharged and disposed via the authorization requested.		

Attachment: N/A

d. Attach a facility map (drawn to scale) with the following information:

- Production areas, maintenance areas, materials-handling areas, waste-disposal areas, and water intake structures.
- The location of each unit of the WWTP including the location of wastewater collection sumps, impoundments, outfalls, and sampling points, if significantly different from outfall locations.

Attachment: Appendix 5

e. Is this a new permit application for an existing facility?

☐ Yes ☒ No

If **yes**, provide background discussion: N/A

f. Is/will the treatment facility/disposal site be located above the 100-year frequency flood level.

☒ Yes ☐ No

List source(s) used to determine 100-year frequency flood plain: U.S. Army Corps of Engineers, 1995. Floodplain delineation report: Pantex Plant, Amarillo Texas. Prepared by U.S Army Corps of Engineers, Tulsa District (only the lower storage lagoon is inside the 100-year floodplain). In 2001, a berm was constructed to keep the lower lagoon out of the floodplain.

If **no**, provide the elevation of the 100-year frequency flood plain and describe what protective measures are used/proposed to prevent flooding (including tail water and rainfall run-on controls) of the treatment facility and disposal area: N/A

Attachment: N/A

g. For **new** or **major amendment** permit applications, will any construction operations result in a discharge of fill material into a water in the state?

☐ Yes ☐ No ☒ N/A (renewal only)

h. If **yes** to Item 1.g, has the applicant applied for a USACE CWA Chapter 404 Dredge and Fill permit?

☐ Yes ☐ No

If **yes**, provide the permit number: N/A

If **no**, provide an approximate date of application submittal to the USACE: N/A

Item 2. Treatment System (Instructions, Page 40)

a. List any physical, chemical, or biological treatment process(es) used/proposed to treat wastewater at this facility. Include a description of each treatment process, starting with initial treatment and finishing with the outfall/point of disposal.

The wastewater treatment system at Pantex is comprised of a facultative lagoon, an alternative facultative/storage lagoon, and a smaller storage lagoon. After passing through a bar screen, the wastewater enters the facultative lagoon and is treated via biological activity then flows to one or both of the storage lagoons. At any point in this process, commercially available products to reduce algae in the treatment and storage lagoons may be introduced. The retention time in the facility meets the criteria for other means of disinfection stated in 30 TAC 317.6(c)(1). The wastewater is then discharged through either Outfall 001 under permit WQ0002296000 or for irrigation through Outfall 031 or Outfall 032 under permit WQ0004397000. The waters from the groundwater remediation activities are treated by a series of filters and ion exchange units before they are transferred to either the wastewater storage lagoons or the irrigation storage lagoon permitted under permit WQ0004397000. The treated groundwater remediation water is then discharged through either Outfall 031 or Outfall 032 under permit WQ0004397000 or Outfall 001 under permit WQ0002296000.

b. Attach a flow schematic **with a water balance** showing all sources of water and wastewater flow into the facility, wastewater flow into and from each treatment unit, and wastewater flow to each outfall/point of disposal.

Attachment: Appendix 6

Item 3. Impoundments (Instructions, Page 40)

Does the facility use or plan to use any wastewater impoundments (e.g., lagoons or ponds?)

☒ Yes ☐ No

If **no**, proceed to Item 4. If **yes**, complete **Item 3.a** for **existing** impoundments and **Items 3.a - 3.e** for **new or proposed** impoundments. **NOTE:** See instructions, Pages 40-42, for additional information on the attachments required by Items 3.a – 3.e.

a. Complete the table with the following information for each existing, new, or proposed impoundment. Attach additional copies of the Impoundment Information table, if needed.

Use Designation: Indicate the use designation for each impoundment as Treatment (**T**), Disposal (**D**), Containment (**C**), or Evaporation (**E**).

Associated Outfall Number: Provide an outfall number if a discharge occurs or will occur.

Liner Type: Indicate the liner type as Compacted clay liner (**C**), In-situ clay liner (**I**), Synthetic/plastic/rubber liner (**S**), or Alternate liner (**A**). **NOTE:** See instructions for further detail on liner specifications. If an alternate liner (A) is selected, include an attachment that provides a description of the alternate liner and any additional technical information necessary for an evaluation.

Leak Detection System: If any leak detection systems are in place/planned, enter **Y** for yes. Otherwise, enter **N** for no.

Groundwater Monitoring Wells and Data: If groundwater monitoring wells are in place/planned, enter **Y** for yes. Otherwise, enter **N** for no. Attach any existing groundwater monitoring data.

Dimensions: Provide the dimensions, freeboard, surface area, storage capacity of the impoundments, and the maximum depth (not including freeboard). For impoundments with irregular shapes, submit surface area instead of length and width.

Compliance with 40 CFR Part 257, Subpart D: If the impoundment is required to be in compliance with 40 CFR Part 257, Subpart D, enter **Y** for yes. Otherwise, enter **N** for no.

Date of Construction: Enter the date construction of the impoundment commenced (mm/dd/yy).

Impoundment Information

Parameter	Pond #1	Pond #2	Pond #3	Pond #
Use Designation: (T) (D) (C) or (E)	T/C	T/C	C	
Associated Outfall Number	001	001	001	
Liner Type (C) (I) (S) or (A)	C	S	C	
Alt. Liner Attachment Reference				
Leak Detection System, Y/N	N	Y	N	
Groundwater Monitoring Wells, Y/N	N	N	N	
Groundwater Monitoring Data Attachment	N	N	N	
Pond Bottom Located Above The Seasonal High-Water Table, Y/N	Y	Y	Y	
Length (ft)	660	660	380	
Width (ft)	260	260	293	
Max Depth From Water Surface (ft), Not Including Freeboard	10	10	9	
Freeboard (ft)	2.0	2.0	2.0	
Surface Area (acres)	3.9	3.9	2.2	
Storage Capacity (gallons)	10.8M	10.8M	6.9M	
40 CFR Part 257, Subpart D, Y/N	N	N	N	
Date of Construction	2002	2002	1986	

Attachment: N/A

The following information (**Items 3.b – 3.e**) is required only for **new or proposed** impoundments.

b. For new or proposed impoundments, attach any available information on the following items. If attached, check **yes** in the appropriate box. Otherwise, check **no** or **not yet designed**.

1. Liner data

☐ Yes ☐ No ☐ Not yet designed

2. Leak detection system or groundwater monitoring data

☐ Yes ☐ No ☐ Not yet designed

3. Groundwater impacts

☐ Yes ☐ No ☐ Not yet designed

NOTE: Item b.3 is required if the bottom of the pond is not above the seasonal high-water table in the shallowest water-bearing zone.

Attachment: N/A

For TLAP applications: Items 3.c – 3.e are **not required**, continue to Item 4.

c. Attach a USGS map or a color copy of original quality and scale which accurately locates and identifies all known water supply wells and monitor wells within ½-mile of the impoundments.

Attachment: N/A

d. Attach copies of State Water Well Reports (e.g., driller's logs, completion data, etc.), and data on depths to groundwater for all known water supply wells including a description of how the depths to groundwater were obtained.

Attachment: N/A

e. Attach information pertaining to the groundwater, soils, geology, pond liner, etc. used to assess the potential for migration of wastes from the impoundments or the potential for contamination of groundwater or surface water.

Attachment: N/A

Item 4. Outfall/Disposal Method Information (Instructions, Page 42)

Complete the following tables to describe the location and wastewater discharge or disposal operations for each outfall for discharge, and for each point of disposal for TLAP operations.

If there are more outfalls/points of disposal at the facility than the spaces provided, copies of pages 6 and/0r numbered accordingly (i.e., page 6a, 6b, etc.) may be used to provide information on the additional outfalls.

For TLAP applications: Indicate the disposal method and each individual irrigation area **I**, evaporation pond **E**, or subsurface drainage system **S** by providing the appropriate letter designation for the disposal method followed by a numerical designation for each disposal

area in the space provided for **Outfall** number (e.g. **E1** for evaporation pond 1, **I2** for irrigation area No. 2, etc.).

Outfall Longitude and Latitude

Outfall No.	Latitude (Decimal Degrees)	Longitude (Decimal Degrees)
001	35.324215	-101.555347

Outfall Location Description

Outfall No.	Location Description
001	North of Lagoons 1 and 2, East of Lagoon 3

Description of Sampling Point(s) (if different from Outfall location)

Outfall No.	Description of sampling point
001	Parshall Flume

Outfall Flow Information – Permitted and Proposed

Outfall No.	Permitted Daily Avg Flow (MGD)	Permitted Daily Max Flow (MGD)	Proposed Daily Avg Flow (MGD)	Proposed Daily Max Flow (MGD)	Anticipated Discharge Date (mm/dd/yy)
001	0.56	0.82	0.56	0.82	Permitted

Outfall Discharge – Method and Measurement

Outfall No.	Pumped Discharge? Y/N	Gravity Discharge? Y/N	Type of Flow Measurement Device Used
001	N	Y	Ultrasonic/Mechanical

Outfall Discharge – Flow Characteristics

Outfall No.	Intermittent Discharge? Y/N	Continuous Discharge? Y/N	Seasonal Discharge? Y/N	Discharge Duration (hrs/day)	Discharge Duration (days/mo)	Discharge Duration (mo/yr)
001	Y	N	N	0-24	0-31	0-12

Outfall No.	Intermittent Discharge? Y/N	Continuous Discharge? Y/N	Seasonal Discharge? Y/N	Discharge Duration (hrs/day)	Discharge Duration (days/mo)	Discharge Duration (mo/yr)

Outfall Wastestream Contributions

Outfall No. 001

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow
See Appendix 6		

Outfall No. Click to enter text.

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow

Outfall No. Click to enter text.

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow

Contributing Wastestream	Volume (MGD)	Percent (%) of Total Flow

Attachment: Appendix 6

Item 5. Blowdown and Once-Through Cooling Water Discharges (Instructions, Page 43)

a. Indicate if the facility currently or proposes to:

☒ Yes ☐ No Use cooling towers that discharge blowdown or other wastestreams

☒ Yes ☐ No Use boilers that discharge blowdown or other wastestreams

☒ Yes ☐ No Discharge once-through cooling water

NOTE: If the facility uses or plans to use cooling towers or once-through cooling water, Item 12 **is required**.

b. If **yes** to any of the above, attach an SDS with the following information for each chemical additive.

- Manufacturers Product Identification Number
- Product use (e.g., biocide, fungicide, corrosion inhibitor, etc.)
- Chemical composition including CASRN for each ingredient
- Classify product as non-persistent, persistent, or bioaccumulative
- Product or active ingredient half-life
- Frequency of product use (e.g., 2 hours/day once every two weeks)
- Product toxicity data specific to fish and aquatic invertebrate organisms
- Concentration of whole product or active ingredient, as appropriate, in wastestream.

In addition to each SDS, attach a summary of the above information for each specific wastestream and the associated chemical additives. Specify which outfalls are affected.

Attachment: Appendix 7

c. Cooling Towers and Boilers

If the facility currently or proposes to use cooling towers or boilers that discharge blowdown or other wastestreams to the outfall(s), complete the following table.

Cooling Towers and Boilers

Type of Unit	Number of Units	Daily Avg Blowdown (gallons/day)	Daily Max Blowdown (gallons/day)
Cooling Towers	12	~11,000	~15,000
Boilers	4	720	810

Item 6. Stormwater Management (Instructions, Page 44)

Will any existing/proposed outfalls discharge stormwater associated with industrial activities, as defined at *40 CFR § 122.26(b)(14)*, commingled with any other wastestream?

☐ Yes ☒ No

If **yes**, briefly describe the industrial processes and activities that occur outdoors or in a manner which may result in exposure of the activities or materials to stormwater: N/A

Item 7. Domestic Sewage, Sewage Sludge, and Septage Management and Disposal (Instructions, Page 44)

Domestic Sewage - Waste and wastewater from humans or household operations that is discharged to a wastewater collection system or otherwise enters a treatment works.

a. Check the box next to the appropriate method of domestic sewage and domestic sewage sludge treatment or disposal. Complete Worksheet 5.0 or Item 7.b if directed to do so.

☒ Domestic sewage is routed (i.e., connected to or transported to) to a WWTP permitted to receive domestic sewage for treatment, disposal, or both. Complete Item 7.b.

☒ Domestic sewage disposed of by an on-site septic tank and drainfield system. Complete Item 7.b.

☐ Domestic and industrial treatment sludge ARE commingled prior to use or disposal.

☐ Industrial wastewater and domestic sewage are treated separately, and the respective sludge IS NOT commingled prior to sludge use or disposal. Complete Worksheet 5.0.

☐ Facility is a POTW. Complete Worksheet 5.0.

☐ Domestic sewage is not generated on-site.

☐ Other (e.g., portable toilets), specify and Complete Item 7.b: Click to enter text.

b. Provide the name and TCEQ, NPDES, or TPDES Permit No. of the waste-disposal facility which receives the domestic sewage/septage. If hauled by motorized vehicle, provide the name and TCEQ Registration No. of the hauler.

Domestic Sewage Plant/Hauler Name

Plant/Hauler Name	Permit/Registration No.
Southwest Landfill/ Allen's Tri State Mechanical, Canyon, TX	MSW 2231/ Reg. No. 20289

Item 8. Improvements or Compliance/Enforcement Requirements (Instructions, Page 45)

a. Is the permittee currently required to meet any implementation schedule for compliance or enforcement?

☐ Yes ☒ No

b. Has the permittee completed or planned for any improvements or construction projects?

☒ Yes ☐ No

c. If **yes** to either 8.a **or** 8.b, provide a brief summary of the requirements and a status update: Appendix 8

Item 9. Toxicity Testing (Instructions, Page 45)

Have any biological tests for acute or chronic toxicity been made on any of the discharges or on a receiving water in relation to the discharge within the last three years?

☐ Yes ☒ No

If **yes**, identify the tests and describe their purposes: N/A

Additionally, attach a copy of all tests performed which **have not** been submitted to the TCEQ or EPA. **Attachment:** N/A

Item 10. Off-Site/Third Party Wastes (Instructions, Page 45)

a. Does or will the facility receive wastes from off-site sources for treatment at the facility, disposal on-site via land application, or discharge via a permitted outfall?

☒ Yes ☐ No

If **yes**, provide responses to Items 10.b through 10.d below.

If **no**, proceed to Item 11.

b. Attach the following information to the application:

- List of wastes received (including volumes, characterization, and capability with on-site wastes).
- Identify the sources of wastes received (including the legal name and addresses of the generators).
- Description of the relationship of waste source(s) with the facility's activities.

Attachment: Pantex receives domestic wastewater from Lawler/Wood Pantex, LLC, P.O. Box 1240, Panhandle, TX 79068. Lawler/Wood provides leased office space and food services for approximately 1,100 Pantex employees. Included in this domestic wastewater is effluent from a food service operation. Effluent from food service goes through an oil/water separator prior to comingling with Pantex effluent for treatment and disposal. No industrial wastewater is generated at this facility.

c. Is or will wastewater from another TCEQ, NPDES, or TPDES permitted facility commingled with this facility's wastewater after final treatment and prior to discharge via the final outfall/point of disposal?

☐ Yes ☒ No

If **yes**, provide the name, address, and TCEQ, NPDES, or TPDES permit number of the contributing facility and a copy of any agreements or contracts relating to this activity.

Attachment: N/A

d. Is this facility a POTW that accepts/will accept process wastewater from any SIU and has/is required to have an approved pretreatment program under the NPDES/TPDES program?

☐ Yes ☒ No

If **yes, Worksheet 6.0** of this application **is required.**

Item 11. Radioactive Materials (Instructions, Page 46)

a. Are/will radioactive materials be mined, used, stored, or processed at this facility?

☒ Yes ☐ No

If **yes**, use the following table to provide the results of one analysis of the effluent for all radioactive materials that may be present. Provide results in pCi/L.

Radioactive Materials Mined, Used, Stored, or Processed

Radioactive Material Name	Concentration (pCi/L)
The Pantex Plant is a nuclear weapons facility, owned by the U.S. Department of Energy. Pursuant to the Atomic Energy Act of 1954, as amended, the discharge of radionuclides is regulated by the U.S. Department of Energy. Pantex handles sealed sources of radioactive materials having low probabilities of being released.	

b. Does the applicant or anyone at the facility have any knowledge or reason to believe that radioactive materials may be present in the discharge, including naturally occurring radioactive materials in the source waters or on the facility property?

☐ Yes ☒ No

If **yes**, use the following table to provide the results of one analysis of the effluent for all radioactive materials that may be present. Provide results in pCi/L. Do not include information provided in response to Item 11.a.

Radioactive Materials Present in the Discharge

Radioactive Material Name	Concentration (pCi/L)
N/A	

Item 12. Cooling Water (Instructions, Page 46)

a. Does the facility use or propose to use water for cooling purposes?

☒ Yes

☐ No

☐ Decommissioned: Click to enter text.

☐ To Be Decommissioned: Click to enter text.

If **yes**, complete Items 12.b thru 12.f. If **no**, stop here.

If **decommissioned**, provide the date operation ceased and stop here.

If to **be decommissioned**, provide the date operation is anticipated to cease and stop here.

b. Cooling water is/will be obtained from a groundwater source (e.g., on-site well).

☒ Yes ☐ No

If **yes**, stop here. If **no**, continue.

c. Cooling Water Supplier

1. Provide the name of the owner(s) and operator(s) for the CWIS that supplies or will supply water for cooling purposes to the facility.

Cooling Water Intake Structure(s) Owner(s) and Operator(s)

CWIS ID				
Owner				
Operator				

2. Cooling water is/will be obtained from a Public Water Supplier (PWS)

☐ No ☐ Yes; PWS No.: Click to enter text.

If **no**, continue. If **yes**, provide the PWS Registration No. and stop here.

3. Cooling water is/will be obtained from a reclaimed water source?

☐ No ☐ Yes; Auth No.: Click to enter text.

If **no**, continue. If **yes**, provide the Reuse Authorization No. and stop here.

4. Cooling water is/will be obtained from an Independent Supplier

☐ No ☐ Yes; AIF: Click to enter text.

If **no**, proceed to Item 12.d. If **yes**, provide the actual intake flow of the Independent Supplier's CWIS that is/will be used to provide water for cooling purposes and proceed.

d. 316(b) General Criteria

1. The CWIS(s) used to provide water for cooling purposes to the facility has or will have a cumulative design intake flow of 2 MGD or greater.

☐ Yes ☐ No

2. At least 25% of the total water withdrawn by the CWIS(s) is/will be used at the facility exclusively for cooling purposes on an annual average basis.

☐ Yes ☐ No

3. The CWIS(s) withdraw(s)/propose(s) to withdraw water for cooling purposes from surface waters that meet the definition of Waters of the United States in *40 CFR § 122.2*.

☐ Yes ☐ No. Explanation: Click to enter text.

If **no**, provide an explanation of how the waterbody does not meet the definition of Waters of the United States in *40 CFR § 122.2*.

If **yes** to all three questions in Item 12.d, the facility **meets** the minimum criteria to be subject to the full requirements of Section 316(b) of the CWA. Proceed to **Item 12.f.**

If **no** to any of the questions in Item 12.d, the facility **does not meet** the minimum criteria to be subject to the full requirements of Section 316(b) of the CWA; however, a determination is required based upon BPJ. Proceed to **Item 12.e**.

e. The facility does not meet the minimum requirements to be subject to the fill requirements of Section 316(b) **and uses**/proposes **to use cooling towers**.

☐ Yes ☐ No

If **yes**, stop here. If **no**, complete Worksheet 11.0, Items 1.a, 1.b.1-3 and 6, 2.b.1, and 3.a to allow for a determination based upon BPJ.

f. Oil and Gas Exploration and Production

1. The facility is subject to requirements at 40 CFR Part 435, Subparts A or D.

☐ Yes ☐ No

If **yes**, continue. If **no**, skip to Item 12.g.

2. The facility is an existing facility as defined at 40 CFR § 125.92(k) or a new unit at an existing facility as defined at 40 CFR § 125.92(u).

☐ Yes ☐ No

If **yes**, complete Worksheet 11.0, Items 1.a, 1.b.1-3 and 6, 2.b.1, and 3.a to allow for a determination based upon BPJ. If **no**, skip to Item 12.g.3.

g. Compliance Phase and Track Selection

1. Phase I – New facility subject to 40 CFR Part 125, Subpart I

☐ Yes ☐ No

If **yes**, check the box next to the compliance track selection, attach the requested information, and complete Worksheet 11.0, Items 2 and 3, and Worksheet 11.2.

☐ Track I – AIF greater than 2 MGD, but less than 10 MGD

- Attach information required by *40 CFR §§ 125.86(b)(2)-(4).*

☐ Track I – AIF greater than 10 MGD

- Attach information required by *40 CFR § 125.86(b).*

☐ Track II

- Attach information required by *40 CFR § 125.86(c).*

Attachment: Click to enter text.

2. Phase II – Existing facility subject to 40 CFR Part 125, Subpart J

☐ Yes ☐ No

If **yes**, complete Worksheets 11.0 through 11.3, as applicable.

3. Phase III – New facility subject to 40 CFR Part 125, Subpart N

☐ Yes ☐ No

If **yes**, check the box next to the compliance track selection and provide the requested information.

☐ Track I – Fixed facility

- Attach information required by 40 CFR § 125.136(b) and complete Worksheet 11.0, Items 2 and 3, and Worksheet 11.2.

☐ Track I – Not a fixed facility

- Attach information required by 40 CFR § 125.136(b) and complete Worksheet 11.0, Item 2 (except CWIS latitude/longitude under Item 2.a).

☐ Track II – Fixed facility

- Attach information required by 40 CFR § 125.136(c) and complete Worksheet 11.0, Items 2 and 3.

Attachment: Click to enter text.

Item 13. Permit Change Requests (Instructions, Page 48)

This item is only applicable to existing permitted facilities.

a. Is the facility requesting a **major amendment** of an existing permit?

☐ Yes ☒ No

If **yes**, list each request individually and provide the following information: 1) detailed information regarding the scope of each request and 2) a justification for each request. Attach any supplemental information or additional data to support each request.

N/A

b. Is the facility requesting any **minor amendments** to the permit?

☐ Yes ☒ No

If **yes**, list and describe each change individually.

N/A

c. Is the facility requesting any **minor modifications** to the permit?

☐ Yes ☒ No

If **yes**, list and describe each change individually.

N/A

Item 14. Laboratory Accreditation (Instructions, Page 49)

All laboratory tests performed must meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification*, which includes the following general exemptions from National Environmental Laboratory Accreditation Program (NELAP) certification requirements:

- The laboratory is an in-house laboratory and is:
  - periodically inspected by the TCEQ; or
  - located in another state and is accredited or inspected by that state; or
  - performing work for another company with a unit located in the same site; or
  - performing pro bono work for a governmental agency or charitable organization.
- The laboratory is accredited under federal law.
- The data are needed for emergency-response activities, and a laboratory accredited under the Texas Laboratory Accreditation Program is not available.
- The laboratory supplies data for which the TCEQ does not offer accreditation.

The applicant should review *30 TAC Chapter 25* for specific requirements.

The following certification statement shall be signed and submitted with every application. See the *Signature Page* section in the Instructions, for a list of designated representatives who may sign the certification.

CERTIFICATION:

I certify that all laboratory tests submitted with this application meet the requirements of *30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.*

Printed Name: Jeff R. Flowers

Title: Senior Manager, Environmental Compliance, Pantexas Deterrence LLC

Signature: _____

Date: 02-12-2025

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.0: LAND APPLICATION OF EFFLUENT

This worksheet **is required** for all applications for a permit to disposal of wastewater by land application (i.e., TLAP)).

Item 1. Type of Disposal System (Instructions, Page 69)

Check the box next to the type of land disposal requested by this application:

- ☐ Irrigation
- ☐ Evaporation
- ☐ Evapotranspiration beds
- ☐ Drip irrigation system
- ☐ Subsurface application
- ☐ Subsurface soils absorption
- ☐ Surface application
- ☒ Other, specify: Treated effluent is discharged to an on-site ephemeral water body (playa) (sized at approximately 79.3 surface acres) when the Pantex Plant cannot discharge the effluent through Outfall 031 or 032 under Permit WQ0004397000. The playa is not hydraulically connected to any lakes, streams, or rivers, and has no high aquatic organisms. All treated effluents remain within the Pantex Plant boundaries. Pantex has restricted human access. Pantex discharges to the playa are pursuant to the TCEQ's Playa Lake Policy (October 20, 1997).

Item 2. Land Application Area (Instructions, Page 69)

Land Application Area Information

Effluent Application (gallons/day)	Irrigation Acreage (acres)	Describe land use & indicate type(s) of crop(s)	Public Access? (Y/N)
560,000	No irrigation	Playa	N

Item 3. Annual Cropping Plan (Instructions, Page 69)

Attach the required cropping plan that includes each of the following:

- Cool and warm season plant species
- Breakdown of acreage and percent of total acreage for each crop
- Crop growing season
- Harvesting method/number of harvests
- Minimum/maximum harvest height

- Crop yield goals
- Soils map
- Nitrogen requirements per crop
- Additional fertilizer requirements
- Supplemental watering requirements
- Crop salt tolerances
- Justification for not removing existing vegetation to be irrigated

Attachment:

Item 4. Well and Map Information (Instructions, Page 70)

a. Check each box to confirm the required information is shown and labeled on the attached USGS map:

☒ The exact boundaries of the land application area

☒ On-site buildings

☒ Waste-disposal or treatment facilities

☒ Effluent storage and tailwater control facilities

☒ Buffer zones

☒ All surface waters in the state onsite and within 500 feet of the property boundaries

☒ All water wells within ½-mile of the disposal site, wastewater ponds, or property boundaries

☐ All springs and seeps onsite and within 500 feet of the property boundaries

Attachment: Appendix 9

b. List and cross reference all water wells located on or within 500 feet of the disposal site, wastewater ponds, or property boundaries in the following table. Attach additional pages as necessary to include all of the wells.

Well and Map Information Table

Well ID	Well Use	Producing? Y/N/U	Open, cased, capped, or plugged?	Proposed Best Management Practice
See Appendix 9				

Attachment: Appendix 9

c. Groundwater monitoring wells or lysimeters are/will be installed around the land application site or wastewater ponds.

☐ Yes ☒ No

If **yes**, provide the existing/proposed location of the monitoring wells or lysimeters on the site map attached for Item 4.a. Additionally, attach information on the depth of the wells or lysimeters, sampling schedule, and monitoring parameters for TCEQ review, possible modification, and approval.

Attachment: N/A

d. Attach a short groundwater technical report using *30 TAC § 309.20(a)(4)* as guidance. **Attachment:** N/A

Item 5. Soil Map and Soil Information (Instructions, Page 71)

Check each box to confirm that the following information is attached:

a. ☐ USDA NRCS Soil Survey Map depicting the area to be used for land application with the locations identified by fields and crops.

b. ☐ Breakdown of acreage and percent of total acreage for each soil type.

c. ☐ Copies of laboratory soil analyses. **Attachment:** N/A

Item 6. Effluent Monitoring Data (Instructions, Page 72)

a. Completion of Table 14 **is required** for all **renewal** and **major amendment** applications. Complete the table with monitoring data for the previous two years for all parameters regulated in the current permit. An additional table has been provided with blank headers for parameters regulated in the current permit which are not listed in Table 14.

Table 1 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☐ Grab**

Date (mo/yr)	Daily Avg Flow (gpd)	BOD5 (mg/L)	TSS (mg/L)	Nitrogen (mg/L)	Conductivity (mmhos/cm)	Total acres irrigated	Hydraulic Application rate (acre-feet/month)
11/2022	163,880	3.11	4.54	N/A	N/A	0	N/A
12/2022	222,161	6.10	14.53	N/A	N/A	0	N/A
01/2023	222,161	10.86	20.54	N/A	N/A	0	N/A
02/2023	119,214	11.78	13.08	N/A	N/A	0	N/A
03/2023	42,819	16.23	16.58	N/A	N/A	0	N/A
04/2023	329,121	15.06	11.37	N/A	N/A	0	N/A
05/2023	42,819	21.16	18.10	N/A	N/A	0	N/A
06/2023	249,600	23.68	16.80	N/A	N/A	0	N/A
07/2023	149,065	17.08	26.03	N/A	N/A	0	N/A
08/2023	243,840	12.40	36.13	N/A	N/A	0	N/A
09/2023	154,633	4.97	36.08	N/A	N/A	0	N/A
10/2023	181,742	6.11	23.22	N/A	N/A	0	N/A
11/2023	120,467	4.37	6.75	N/A	N/A	0	N/A
12/2023	127,323	7.52	6.28	N/A	N/A	0	N/A

Date (mo/yr)	Daily Avg Flow (gpd)	BOD5 (mg/L)	TSS (mg/L)	Nitrogen (mg/L)	Conductivity (mmhos/cm)	Total acres irrigated	Hydraulic Application rate (acre-feet/month)
01/2024	189,903	11.24	14.60	N/A	N/A	0	N/A
02/2024	160,448	15.16	18.78	N/A	N/A	0	N/A
03/2024	119,677	13.05	25.95	N/A	N/A	0	N/A
04/2024	70,733	11.49	15.37	N/A	N/A	0	N/A
05/2024	125,419	9.56	4.43	N/A	N/A	0	N/A
06/2024	153,233	8.29	5.37	N/A	N/A	0	N/A
07/2024	82,161	10.07	25.03	N/A	N/A	0	N/A
08/2024	81,419	13.17	44.64	N/A	N/A	0	N/A
09/2024	104,767	10.84	65.00	N/A	N/A	0	N/A
10/2024	142,839	14.07	40.54	N/A	N/A	0	N/A

b. Use this table to provide effluent analysis for parameters regulated in the current permit which are not listed in Table 14.

Additional Parameter Effluent Analysis

Date (mo/yr)	COD (mg/L)	Cu (ug/L)	Mn (ug/L)	Zn (ug/L)	Oil/Grease (mg/L)	pH (S.U)	
11/2022	20.00	-	-	-	<9.80	7.91	
12/2022	<20.00	-	-	-	<10.00	7.79	
01/2023	57.30	0.916	12.2	4.65	<9.62	7.58	
02/2023	<20.00	-	-	-	<10.00	7.61	
03/2023	31.60	-	-	-	<9.80	8.07	
04/2023	69.20	<20.00	17.80	7.86	<9.80	7.94	
05/2023	20.20	-	-	-	<10.00	8.30	
06/2023	40.60	-	-	-	<10.00	8.70	
07/2023	72.20	<20.00	27.33	3.45	<10.20	8.20	
08/2023	62.10	-	-	-	<10.00	8.25	
09/2023	50.30	-	-	-	<10.00	8.48	
10/2023	51.40	<20.00	12.08	6.82	<9.80	8.33	
11/2023	38.00	-	-	-	<10.20	8.06	
12/2023	25.40	-	-	-	<10.40	7.98	
01/2024	23.10	4.25	22.20	10.42	<10.00	8.16	
02/2024	27.40	-	-	-	<9.80	8.20	
03/2024	52.70	-	-	-	<10.40	8.38	

Date (mo/yr)	COD (mg/L)	Cu (ug/L)	Mn (ug/L)	Zn (ug/L)	Oil/Grease (mg/L)	pH (S.U)	
04/2024	53.00	4.26	44.13	7.65	<10.40	8.03	
05/2024	30.70	-	-	-	<10.40	8.03	
06/2024	52.60	-	-	-	<10.00	7.99	
07/2024	32.30	<20.00	48.28	4.64	<10.40	8.25	
08/2024	50.10	-	-	-	<10.00	8.56	
09/2024	61.50	-	-	-	<10.20	8.57	
10/2024	58.70	<20.00	12.3	5.90	<8.90	8.13	

Date (mo/yr)	RDX (ug/L)	PETN (ug/L)	TNT (ug/L)	TATB (ug/L)	HMX (ug/L)		
11/2022	-	-	-	-	-		
12/2022	-	-	-	-	-		
01/2023	<0.26	<0.52	<0.26	<1.03	0.11		
02/2023	-	-	-	-	-		
03/2023	-	-	-	-	-		
04/2023	<0.26	<0.52	<0.26	<1.04	0.11		
05/2023	-	-	-	-	-		
06/2023	-	-	-	-	-		
07/2023	<0.26	<0.50	<0.27	<1.06	0.10		
08/2023	-	-	-	-	-		
09/2023	-	-	-	-	-		
10/2023	<0.26	<0.53	<0.26	<1.05	<1.25		
11/2023	-	-	-	-	-		
12/2023	-	-	-	-	-		
01/2024	<0.26	<0.52	<0.26	<1.05	0.12		
02/2024	-	-	-	-	-		
03/2024	-	-	-	-	-		
04/2024	<0.27	<0.53	<0.27	<1.08	<0.27		
05/2024	-	-	-	-	-		
06/2024	-	-	-	-	-		
07/2024	<0.26	<0.52	<0.26	<1.04	<0.83		
08/2024	-	-	-	-	-		

Date (mo/yr)	RDX (ug/L)	PETN (ug/L)	TNT (ug/L)	TATB (ug/L)	HMX (ug/L)		
09/2024	-	-	-	-	-		
10/2024	<0.26	<0.51	<0.26	<1.02	<0.26		

c. Attach an explanation of all persistent excursions to permitted parameters and corrective actions taken. **Attachment:** N/A

Item 7. Pollutant Analysis (Instructions, Page 72)

a. Provide the date range of all sampling events conducted to obtain the analytical data submitted with this application (e.g., 05/01/2018-05/30/2018): 09/18/2024-10/09/2024

b. ☒ Check the box to confirm all samples were collected no more than 12 months prior to the date of application submittal.

c. Complete Tables 15 and 16.

Table 2 for Outfall No.: 001 **Samples are (check one): ☒ Composite ☒ Grab**

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
BOD (5-day)	7.24	8.12	13.9	7.94
CBOD (5-day)	6.80	5.56	6.06	6.72
Chemical oxygen demand	106	108	61.1	49.3
Total organic carbon	3.4	13.1	8.67	9.37
Dissolved oxygen	32.9%	35.8%	30%	30%
Ammonia nitrogen	<.25	<.25	0.57	0.26
Total suspended solids	72	69	28	41
Nitrate nitrogen	<0.07	<0.07	<0.07	<0.07
Total organic nitrogen	5.47	8.35	5.23	5.04
Total phosphorus	0.883	0.833	0.663	0.633
Oil and grease	<9.43	4.40	<10.0	<10.0
Total residual chlorine	N/A	N/A	N/A	N/A
Total dissolved solids	933	892	811	778
Sulfate	51.8	48.9	43.2	38.9
Chloride	288	273	329	314
Fluoride	2.11	2.04	1.55	1.61
Total alkalinity (mg/L as CaCO3)	339	336	329	314
Temperature (°F)	70.16 (21.2 C)	66.56 (19.2 C)	65.48 (18.6 C)	64.04 (17.8 C)

Pollutant	Sample 1 (mg/L)	Sample 2 (mg/L)	Sample 3 (mg/L)	Sample 4 (mg/L)
pH (standard units)	8.8	8.7	8.01	8.2

Table 3 for Outfall No.: 001 **Samples are (check one): ☐ Composite ☒ Grab**

Pollutant	Sample 1 (µg/L)	Sample 2 (µg/L)	Sample 3 (µg/L)	Sample 4 (µg/L)	MAL (µg/L)
Aluminum, total	<50.0	<50.0	<50.0	<50.0	2.5
Antimony, total	<3.0	<3.0	<3.0	<3.0	5
Arsenic, total	2.66	2.60	2.25	2.54	0.5
Barium, total	156	152	193	201	3
Beryllium, total	<0.5	<0.5	<0.5	<0.5	0.5
Cadmium, total	<1.00	<1.00	<1.00	<1.00	1
Chromium, total	<10.0	<10.0	<10.0	<10.0	3
Chromium, hexavalent	<0.02	0.01	<0.01	0.09	3
Chromium, trivalent	<10.0	<10.0	<10.0	<10.0	N/A
Copper, total	2.43	2.3	1.49	1.5	2
Cyanide, available	<5.0	<5.0	<5.0	<5.0	2/10
Lead, total	<2.0	<2.0	<2.0	<2.0	0.5
Mercury, total	<0.20	<0.20	0.07 (J)	<0.20	0.005/0.0005
Nickel, total	0.76	0.74	1.01	1.11	2
Selenium, total	2.29	1.83	1.73	1.67	5
Silver, total	<1.00	<1.00	<1.00	<1.00	0.5
Thallium, total	<2.00	<2.00	<2.00	<2.00	0.5
Zinc, total	<20.0	<20.0	<20.0	<20.0	5.0

INDUSTRIAL WASTEWATER PERMIT APPLICATION WORKSHEET 3.1: SURFACE LAND APPLICATION AND APPLICATION

This worksheet **is required** for all applications for a permit to disposal of wastewater by surface land application or evaporation.

Item 1. Edwards Aquifer (Instructions, Page 73)

a. Is the facility subject to *30 TAC Chapter 213*, Edwards Aquifer Rules?

☐ Yes ☒ No

If **no**, proceed to Item 2. If **yes**, complete Items 1.b **and** 1.c.

b. Check the box next to the subchapter applicable to the facility.

☐ 30 TAC Chapter 213, Subchapter A

☐ 30 TAC Chapter 213, Subchapter B

c. If *30 TAC Chapter 213, Subchapter A* applies, attach **either**: 1) a Geologic Assessment (if conducted in accordance with *30 TAC § 213.5*) **or** 2) a report that contains the following:

- A description of the surface geological units within the proposed land application site and wastewater pond area.
- The location and extent of any sensitive recharge features in the land application site and wastewater pond area
- A list of any proposed BMPs to protect the recharge features.

Attachment: N/A

Item 2. Surface Spray/Irrigation (Instructions, Page 73)

a. Provide the following information on the irrigation operations:

Area under irrigation (acres): N/A

Design application rate (acre-ft/acre/yr): N/A

Design application frequency (hours/day): N/A

Design application frequency (days/week): N/A

Design total nitrogen loading rate (lbs nitrogen/acre/year): N/A

Average slope of the application area (percent): N/A

Maximum slope of the application area (percent): N/A

Irrigation efficiency (percent): N/A

Effluent conductivity (mmhos/cm): N/A

Soil conductivity (mmhos/cm): N/A

Curve number: N/A

Describe the application method and equipment: N/A

b. Attach a detailed engineering report which includes a water balance, storage volume calculations, and a nitrogen balance. **Attachment:** N/A

Item 3. Evaporation Ponds (Instructions, Page 74)

a. Daily average effluent flow into ponds: N/A gallons per day

b. Attach a separate engineering report of evaporation calculations for average long-term and worst-case critical conditions. **Attachment:** N/A

Item 4. Evapotranspiration Beds (Instructions, Page 74)

a. Provide the following information on the evapotranspiration beds:

Number of beds: N/A

Area of bed(s) (acres): Click to enter text.

Depth of bed(s) (feet): Click to enter text.

Void ratio of soil in the beds: Click to enter text.

Storage volume within the beds (include units): Click to enter text.

Description of any lining to protect groundwater: Click to enter text.

b. Attach a certification by a licensed Texas professional engineer that the liner meets TCEQ requirements. **Attachment:** N/A

c. Attach a separate engineering report with water balance, storage volume calculations, and description of the liner. **Attachment:** N/A

Item 5. Overland Flow (Instructions, Page 74)

a. Provide the following information on the overland flow:

Area used for application (acres): N/A

Slopes for application area (percent): Click to enter text.

Design application rate (gpm/foot of slope width): Click to enter text.

Slope length (feet): Click to enter text.

Design BOD5 loading rate (lbs BOD5/acre/day): Click to enter text.

Design application frequency (hours/day): Click to enter text.

Design application frequency (days/week): Click to enter text.

b. Attach a separate engineering report with the method of application and design requirements according to *30 TAC § 217.212*. **Attachment:** Click to enter text.

Appendix 1

Core Data Form

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission (*If other is checked please describe in space provided.*)

☐ New Permit, Registration or Authorization (*Core Data Form should be submitted with the program application.*)

☒ Renewal (*Core Data Form should be submitted with the renewal form*) ☐ Other

2. Customer Reference Number (if issued)	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number (if issued)
CN 600125009		RN 100210756

SECTION II: Customer Information

4. General Customer Information	5. Effective Date for Customer Information Updates (mm/dd/yyyy)	N/A

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name (If an individual, print last name first: eg: Doe, John)	If new Customer, enter previous Customer below:
US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT	

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number (if applicable)
N/A	N/A	N/A	N/A

11. Type of Customer: ☐ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☒ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☒ 21-100 ☐ 101-250 ☐ 251-500 ☐ 501 and higher

13. Independently Owned and Operated?
☐ **Yes** ☒ **No**

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☐ Owner & Operator
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant
☒ Other: Owner & Co-Operator

15. Mailing Address:								
DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX FIELD OFFICE: ATTN: MATTHEW A. BUCHHOLZ								
P.O. BOX 30030								
City	AMARILLO	**State**	TX	**ZIP**	79120	**ZIP + 4**	0030	

16. Country Mailing Information (if outside USA)	17. E-Mail Address (if applicable)
USA	MATTHEW.BUCHHOLZ@PFO.DOE.GOV

18. Telephone Number	19. Extension or Code	20. Fax Number (if applicable)

(806) 573-8856		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	955 FARM-to-MARKET ROAD 2373							
	City	PANHANDLE	**State**	TX	**ZIP**	79068	**ZIP + 4**	
24. County	CARSON							

If no Street Address is provided, fields 25-28 are required.

25. Description to Physical Location:	PANTEX PLANT IS LOCATED APPROXIMATELY 17 MILES NORTHEAST OF THE CITY OF AMARILLO, TEXAS AND 10 MILES WEST OF THE CITY OF PANHANDLE, TEXAS, WEST OF FARM-to-MARKET ROAD 2373, SOUTH OF FARM-to-MARKET ROAD 293, AND NORTH OF US HIGHWAY 60, IN CARSON, COUNTY, TX

26. Nearest City	**State**	**Nearest ZIP Code**
PANHANDLE	TX	79068

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

27. Latitude (N) In Decimal:	35.31811		**28. Longitude (W) In Decimal:**	-101.54206	
Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

29. Primary SIC Code (4 digits)	**30. Secondary SIC Code** (4 digits)	**31. Primary NAICS Code** (5 or 6 digits)	**32. Secondary NAICS Code** (5 or 6 digits)
3483	2892	332993	325920

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

NUCLEAR WEAPONS STOCKPILE STEWARDSHIP

34. Mailing Address:	**DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX FIELD OFFICE: ATTN: MATTHEW A. BUCHHOLZ**							
	P.O. BOX 30030							
	City	**AMARILLO**	**State**	**TX**	**ZIP**	**79120**	**ZIP + 4**	
35. E-Mail Address:	**MATTHEW.BUCHHOLZ@PFO.DOE.GOV**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(806) 573-8856		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☒ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:
	WQ0002296000			

SECTION IV: Preparer Information

40. Name:	ALYSSA M. BROOKS	41. Title:	PERMITTING SPECIALIST

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(806) 573-4140		( ) -	ALYSSA.BROOKS@PANTEX.DOE.GOV

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	USDOE/NNSA PANTEX FIELD OFFICE	Job Title:	ASSISTANT MANAGER FOR ENVIRONMENT, SAFETY, HEALTH, & QUALITY
Name *(In Print)*:	MATTHEW A. BUCHHOLZ	Phone:	(806) 573- **8856**
Signature:	Matthew A. Buchholz	Date:	2/5/2025

TCEQ Use Only

TCEQ Core Data Form

For detailed instructions on completing this form, please read the Core Data Form Instructions or call 512-239-5175.

SECTION I: General Information

1. Reason for Submission *(If other is checked please describe in space provided.)*

☐ New Permit, Registration or Authorization *(Core Data Form should be submitted with the program application.)*

☒ Renewal *(Core Data Form should be submitted with the renewal form)*

☐ Other

2. Customer Reference Number *(if issued)*	Follow this link to search for CN or RN numbers in Central Registry**	3. Regulated Entity Reference Number *(if issued)*
CN 606313724		RN 100210756

SECTION II: Customer Information

4. General Customer Information | **5. Effective Date for Customer Information Updates** (mm/dd/yyyy) | N/A

☐ New Customer ☐ Update to Customer Information ☐ Change in Regulated Entity Ownership
☐ Change in Legal Name (Verifiable with the Texas Secretary of State or Texas Comptroller of Public Accounts)

The Customer Name submitted here may be updated automatically based on what is current and active with the Texas Secretary of State (SOS) or Texas Comptroller of Public Accounts (CPA).

6. Customer Legal Name *(If an individual, print last name first: eg: Doe, John)* — *If new Customer, enter previous Customer below:*

PANTEXAS DETERRENCE LLC

7. TX SOS/CPA Filing Number	8. TX State Tax ID (11 digits)	9. Federal Tax ID (9 digits)	10. DUNS Number *(if applicable)*
0805655672	32096282028	92-3671850	119324859

11. Type of Customer: ☒ Corporation ☐ Individual Partnership: ☐ General ☐ Limited
Government: ☐ City ☐ County ☐ Federal ☐ Local ☐ State ☐ Other ☐ Sole Proprietorship ☐ Other:

12. Number of Employees
☐ 0-20 ☐ 21-100 ☐ 101-250 ☐ 251-500 ☒ 501 and higher

13. Independently Owned and Operated?
☐ Yes ☒ No

14. Customer Role (Proposed or Actual) – *as it relates to the Regulated Entity listed on this form. Please check one of the following*

☐ Owner ☐ Operator ☐ Owner & Operator ☒ Other: CO-OPERATOR
☐ Occupational Licensee ☐ Responsible Party ☐ VCP/BSA Applicant

15. Mailing Address:

PANTEXAS DETERRENCE LLC
P.O. BOX 30020

City	State	ZIP	ZIP + 4
AMARILLO	TX	79120	0020

16. Country Mailing Information *(if outside USA)*	17. E-Mail Address *(if applicable)*
USA	JEFF.FLOWERS@PANTEX.DOE.GOV

18. Telephone Number	19. Extension or Code	20. Fax Number *(if applicable)*

(806) 573-4612		( ) -

SECTION III: Regulated Entity Information

21. General Regulated Entity Information *(If 'New Regulated Entity" is selected, a new permit application is also required.)*

☐ New Regulated Entity ☐ Update to Regulated Entity Name ☐ Update to Regulated Entity Information

The Regulated Entity Name submitted may be updated, in order to meet TCEQ Core Data Standards (removal of organizational endings such as Inc, LP, or LLC).

22. Regulated Entity Name *(Enter name of the site where the regulated action is taking place.)*

US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT

23. Street Address of the Regulated Entity: ***(No PO Boxes)***	955							
	FARM-to-MARKET ROAD 2373							
	City	PANDHANDLE	**State**	TX	**ZIP**	79068	**ZIP + 4**	
24. County	CARSON							

If no Street Address is provided, fields 25-28 are required.

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26. Nearest City	**State**	**Nearest ZIP Code**
PANHANLDE	TX	79068

Latitude/Longitude are required and may be added/updated to meet TCEQ Core Data Standards. (Geocoding of the Physical Address may be used to supply coordinates where none have been provided or to gain accuracy).

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Degrees	Minutes	Seconds	Degrees	Minutes	Seconds

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3483	2892	332993	325920

33. What is the Primary Business of this entity? *(Do not repeat the SIC or NAICS description.)*

NUCLEAR WEAPONS STOCKPILE STEWARDSHIP

34. Mailing Address:	**DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX FIELD OFFICE: ATTN: PANTEX FIELD OFFICE ENVIRONMENTAL SAFETY, AND HEALTH**							
	P.O. BOX 30030							
	City	**AMARILLO**	**State**	**TX**	**ZIP**	**79120**	**ZIP + 4**	**0030**
35. E-Mail Address:	**MATTHEW.BUCHHOLZ@PFO.DOE.GOV**							

36. Telephone Number	**37. Extension or Code**	**38. Fax Number** *(if applicable)*
(806) 573-8856		( ) -

39. TCEQ Programs and ID Numbers Check all Programs and write in the permits/registration numbers that will be affected by the updates submitted on this form. See the Core Data Form instructions for additional guidance.

☐ Dam Safety	☐ Districts	☐ Edwards Aquifer	☐ Emissions Inventory Air	☐ Industrial Hazardous Waste
☐ Municipal Solid Waste	☐ New Source Review Air	☐ OSSF	☐ Petroleum Storage Tank	☐ PWS
☐ Sludge	☐ Storm Water	☐ Title V Air	☐ Tires	☐ Used Oil
☐ Voluntary Cleanup	☒ Wastewater	☐ Wastewater Agriculture	☐ Water Rights	☐ Other:
	WQ0002296000 WQ0004397000			

SECTION IV: Preparer Information

40. Name:	ALYSSA M. BROOKS	41. Title:	PERMITTING SPECIALIST

42. Telephone Number	43. Ext./Code	44. Fax Number	45. E-Mail Address
(806) 573-4140		( ) -	ALYSSA.BROOKS@PANTEX.DOE.GOV

SECTION V: Authorized Signature

46. By my signature below, I certify, to the best of my knowledge, that the information provided in this form is true and complete, and that I have signature authority to submit this form on behalf of the entity specified in Section II, Field 6 and/or as required for the updates to the ID numbers identified in field 39.

Company:	PANTEXAS DETERRENCE LLC	Job Title:	SENIOR MANAGER ENVIRONMENTAL COMPLIANCE
Name *(In Print)*:	JEFF FLOWERS	Phone:	(806) 573- **6689**
Signature:	JF	Date:	02/05/2025

Appendix 2

Plain Language Summary

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

SUMMARY OF APPLICATION IN PLAIN LANGUAGE FOR TPDES OR TLAP PERMIT APPLICATIONS

Summary of Application (in plain language) Template and Instructions for Texas Pollutant Discharge Elimination System (TPDES) and Texas Land Application (TLAP) Permit Applications

The following summary is provided for this pending water quality permit application being reviewed by the Texas Commission on Environmental Quality as required by 30 TAC Chapter 39. The information provided in this summary may change during the technical review of the application and is not a federal enforceable representation of the permit application.

The US Department of Energy National Nuclear Security Administration Pantex Plant (RN100210756) is owned and co-operated by the United States Department of Energy (CN600125009) and Pantexas Deterrence, LLC (CN606313724), a facility that engages in the assembly and disassembly of nuclear weapons, the fabrication of chemical high explosive components for nuclear weapons, surveillance, testing and treatment of chemical high explosives, and nonexplosive testing on weapon components and disposal of treated environmental restoration wastewater.

The facility is located at 955 Farm to Market Road 2373, in Panhandle, Carson County, Texas 79068.

The wastewater system consists of a facultative lagoon, an alternate lagoon, and a holding pond. Wastewater enters the facultative lagoon after passing through a bar screen and is treated via biological activity. Commercially available products may be introduced to reduce algae in the facultative lagoon. The average retention time in the facultative lagoon is approximately 42 days. Effluent is then directed to alternate lagoon or holding pond prior to discharge via Outfall 001.

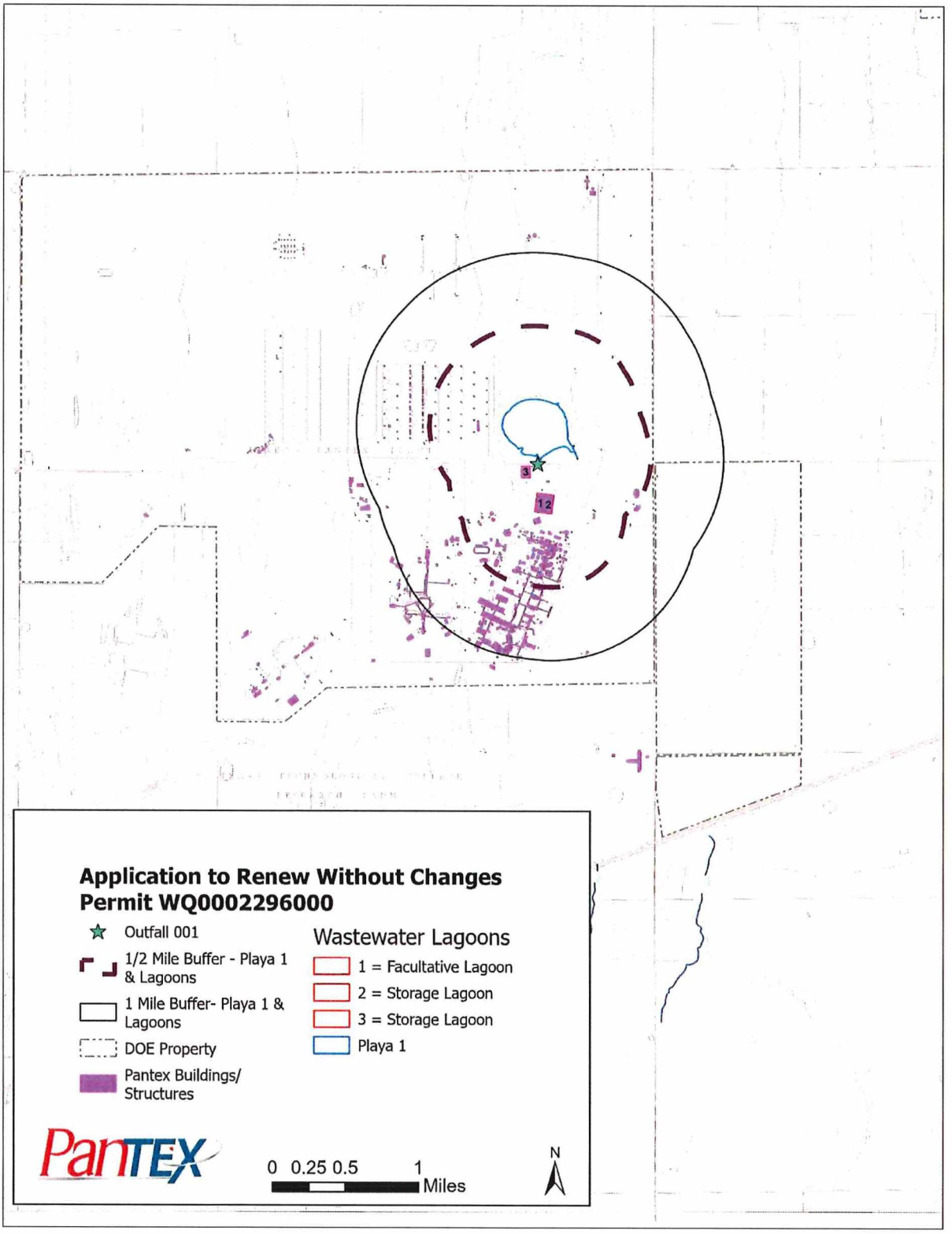
This application serves as a renewal to the current water quality permit WQ0002296000. This permit authorizes an average daily flow of 560,000 gallons of treated wastewater per day discharged through Outfall 001 into an on-site ephemeral water body (playa lake) approximately 79.3 surface acres, when the Pantex Plant cannot discharge through Outfall 031 or 032 under Permit WQ0004397000. The effluent is a mixture of domestic effluent and industrial effluent. The playa lake is not hydraulically connected to any lakes, streams, or rivers and has no high aquatic organisms. All effluents remain within the Pantex Plant boundaries. Pantex discharges to the playa are pursuant to the TCEQ's Playa Lake Policy statement dated October 20, 1997.

Appendix 3

USGS Map of Pantex Plant

Appendix 3

USGS Map of Pantex Plant



Appendix 4

Photographs

Appendix 4

Photographs of the Wastewater Treatment System, Outfall and Disposal Area

4.1 Facultative Lagoon (Lagoon 1)
4.2 Irrigation Storage Lagoon (Lagoon 2)
4.3 Irrigation Storage Lagoon (Lagoon 3)
4.4 Outfall 001
4.5 Drainage channel to Playa 1

4.1 – Facultative Lagoon



4.2 Upper Storage Lagoon



4.3 Lower Storage Lagoon



4.4 Outfall 001



4.5 Drainage Channel to Playa 1



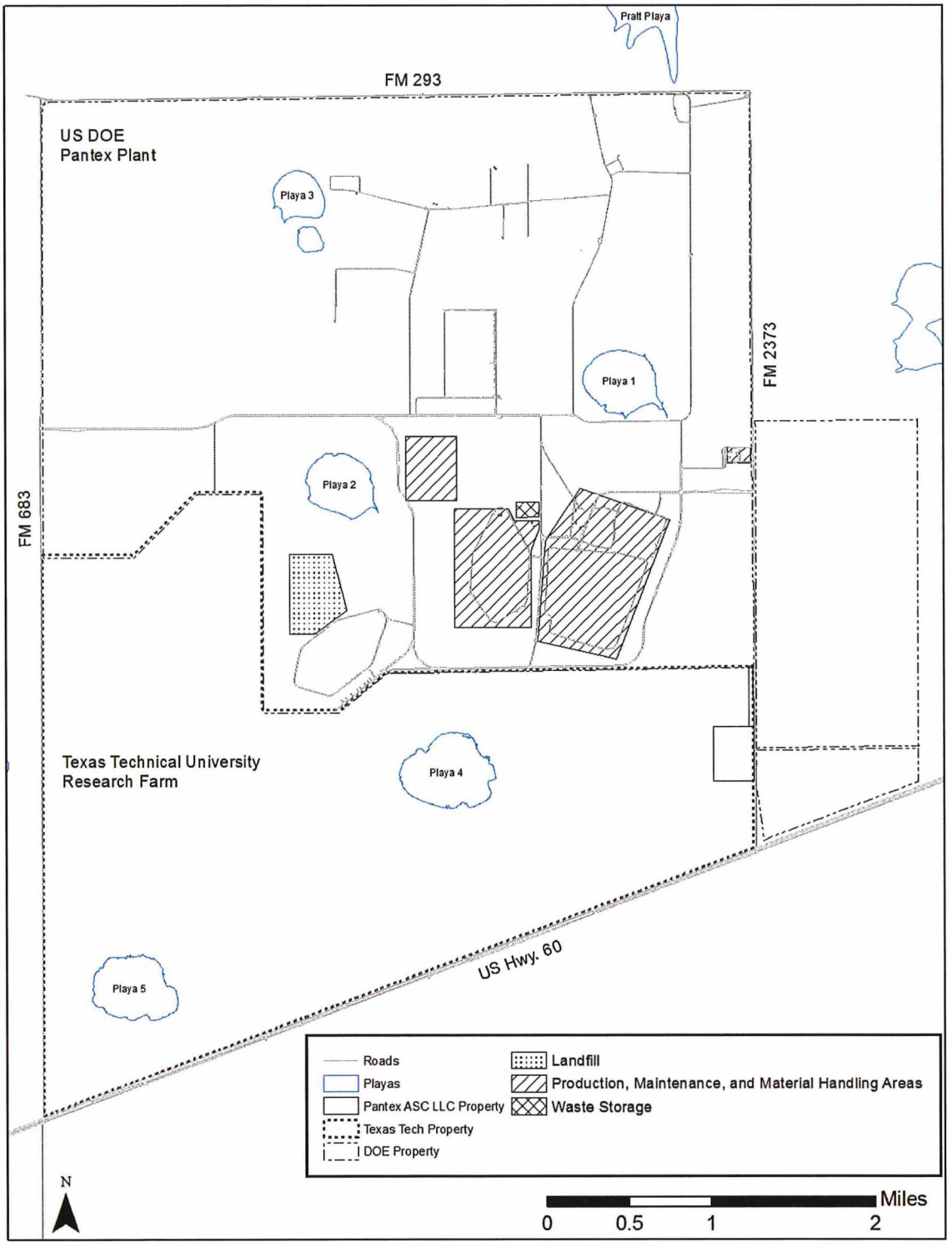
Appendix 5

Plant Production Areas

Appendix 5
Plant Production Areas

Figure 5.1 depicts the areas at Pantex Plant in which production, maintenance, materials handling, and support operations are conducted.

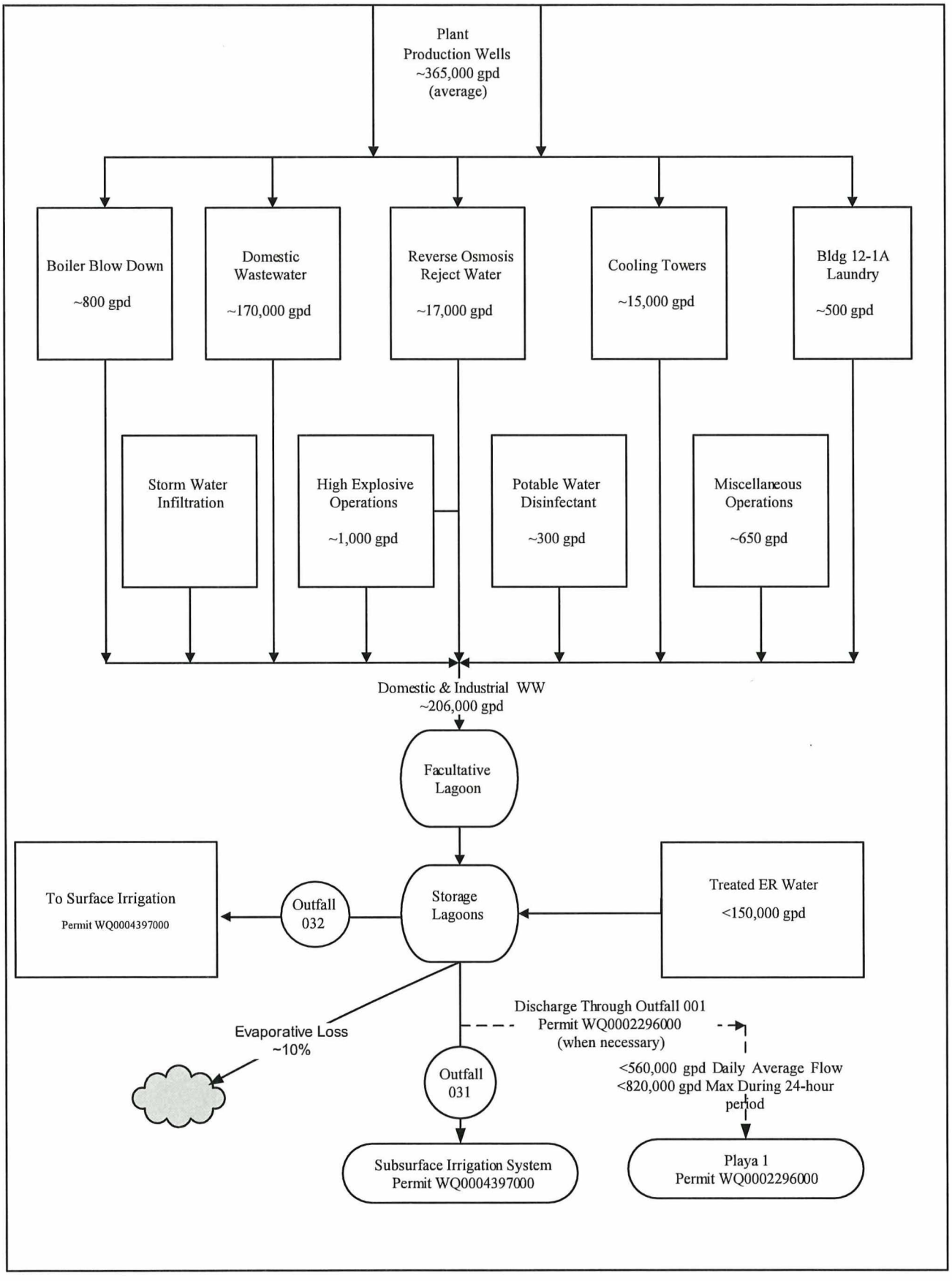
Figure 5.1 Production, Maintenance, Materials Handling, and Support Operations



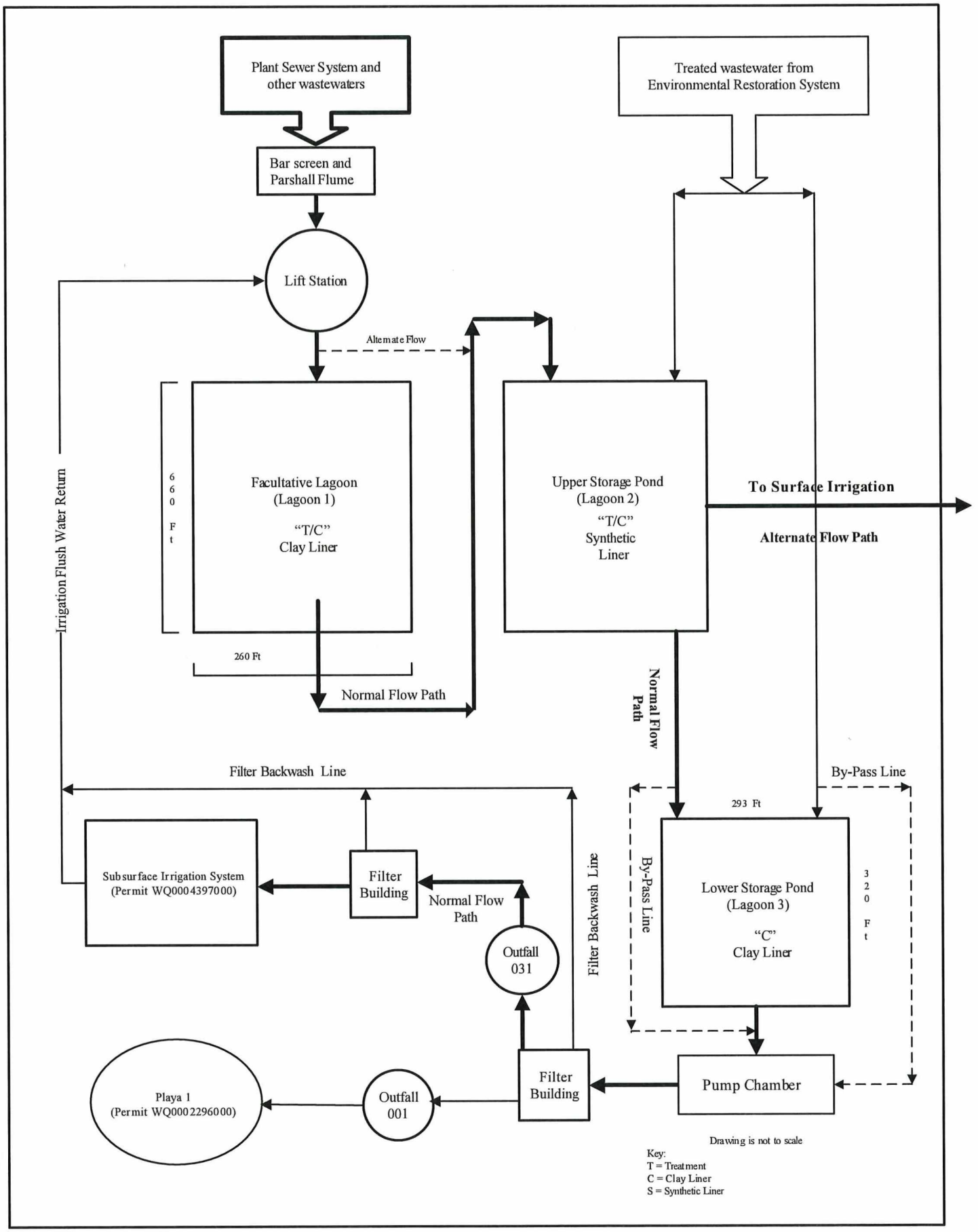
Appendix 6

Wastewater Flow and Balance

Appendix 6 Wastewater Balance



Appendix 6 Wastewater Flow Diagram



Appendix 7

SDS of Boiler and Cooling Tower Chemicals

Appendix 7

MSDS of Boiler and Cooling Tower

Chemicals

Table 7.1 Table of Contents

7.1 MSDS for Chemicals Added to the Boilers at the Pantex Plant

- Alpha 415
- Alpha 510
- Alpha 550

7.2 MSDS for Chemicals Added to the Cooling Towers at the Pantex Plant

- Alpha 795

7.3 MSDS for Chemicals Added to the Close Loop Systems at the Pantex Plant

- Alpha 850

7.4 MSDS for Chemicals Added to the Wastewater Treatment System at the Pantex Plant

- Agri Tec
- Aqua Shade
- BTZ Waste Digester
- Calcium Hypochlorite Granular HTH

Alpha 415
Chemicals added to Boilers 7.1

Revised Labeling Information

Catalog ID / Q Level
0000037527 0

MSDS Control # Rev
00002710 002

Name: ALPHA 415
Part No: ALHPA 415
Mfgr Code: ALPHA LABS

MSDS Date:
01/03/2005

Label Information

Health	Fire
3	0
Reactivity	**Form**
1	L

Compatibility
D

Special Information
-W-: EVOLVES HEAT ON CONTACT WITH WATER
COR: CORROSIVE
SKIN: DAMAGES THE SKIN
T-ORG: TARGETS ONE OR MORE ORGANS OF THE BODY

For HazCom Use Only
Reviewer Thorban B Weaver
CCC Tony E Byn

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 5933, 7213, 5229, or 6560.

2710

MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME AND COMPANY INFORMATION

PRODUCT NAME: **Alpha 415**
Alpha Labs
1505 Buddy Holly Avenue
Lubbock, TX 79401
806-744-1960

Effective Date: January 3, 2005
Supercedes: September 10, 2002

2. COMPONENT INFORMATION

Material	C.A.S. No.	%	OSHA PEL	ACGIH TLV
Sodium Hydroxide	1310-73-2	< 15	2 mg/m^3	2 mg/m^3
Polymaleic Acid	26099-09-2	< 10	None	None
1-Hydroxyethylidene-1, 1-diphosphonic acid	2809-21-4	<5	None	None
Poly (Acrylic Acid-Co-Hypophosphite)	71050-62-9	< 15	None	None

3. HEALTH HAZARD DATA

STATEMENT OF HAZARD: May cause burns to eyes, skin, and mucous membranes.
EYE: Contact can cause severe damage including burns and blindness.
SKIN CONTACT: Corrosive. Contact may cause burns and tissue destruction.
SKIN ABSORPTION: A single prolonged skin exposure is not likely to result in absorption of harmful amounts.
INGESTION: Corrosive. Severe burns and complete tissue perforation of mucous membranes of mouth, throat and stomach.
INHALATION: Exposure to vapor, mist or liquid can produce burns of the respiratory tract.
SYSTEMIC & OTHER EFFECTS: No relevant information found.

4. FIRST AID

EYES: In case of eye contact, wash eyes immediately and continuously for 15 minutes, holding lids apart to ensure flushing of entire area. Washing eyes within several seconds is essential to achieve maximum effectiveness. Get medical attention immediately.
SKIN: Immediate continued and thorough washing in flowing water for 15 minutes is imperative while removing contaminated clothing. Get medical attention immediately. Wash contaminated clothing before reuse. Destroy contaminated shoes.
INGESTION: Never give anything by mouth to an unconscious person. Do not induce vomiting. Give large amounts of water or milk if available. Get medical attention immediately.
INHALATION: Remove to fresh air if effects occur. Get medical attention.

5. FIRE FIGHTING INFORMATION

FLASH POINT: None
METHOD USED: Not Applicable
FLAMMABLE LIMITS: Non-flammable
EXTINGUISHING MEDIA: Non-combustible
FIRE & EXPLOSION HAZARDS: Direct contact with water can cause a violent exothermic reaction.
FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

11099.1

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

Leaks should be stopped. Spills should be contained and cleaned up immediately. Neutralize traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, or acetic acid. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Only trained and properly protected personnel should be involved in spill cleanup operations.

7. HANDLING & STORAGE PRECAUTIONS

Prevent eye and skin contact. Do not breathe mists. Avoid storing next to strong acids. Caustic should be stored in clean, dry areas. Do not store in underground tanks. Product absorbs CO2 from air. Keep containers closed and sealed.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.
RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.
SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, and hardhat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.
EYE PROTECTION: Use chemical goggles. Full-face shield in addition to goggles may be desirable to protect face. Maintain eyewash and safety shower at or near work area.

9. PHYSICAL DATA

APPEARANCE AND ODOR:	Amber colored liquid; no odor
BOILING POINT:	No data
FREEZING POINT:	No data
VAPOR PRESSURE:	Not available
VAPOR DENSITY:	Not applicable
SOLUBILITY IN WATER:	Water solution
pH:	11.0 - 12.0
SPECIFIC GRAVITY:	1.11

10. REACTIVITY DATA

STABILITY: Material is stable
CONDITIONS TO AVOID: Product absorbs carbon dioxide from the air. Keep containers closed and sealed.
INCOMPATIBILITY: Water and acid. Product is strong caustic alkali. May react violently with water, acid, and a number of organic compounds. Caustic reacts rapidly with aluminum, tin, and zinc. It will also react with bronze and brass.
HAZARDOUS DECOMPOSITION PRODUCTS: None.
HAZARDOUS POLYMERIZATION: Will not occur.

MATERIAL SAFETY DATA SHEET

11. TOXICOLOGICAL INFORMATION

INGESTION: LD50 (rat) 220 mg/kg (Sodium Hydroxide)
ACUTE DERMAL LD50: (rabbit) 1350 mg/kg (Sodium Hydroxide)
CARCINOGENITY: This material is not considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration.

12. ECOLOGICAL INFORMATION

AQUATIC ECOTOXICITY DATA:

Sodium Hydroxide	Fish: LC50 (24 hr.) (Goldfish) 160 mg/L
	Invertebrates: Lethal (48 hr.) (Water flea) 100 mg/L
	Plants: No data available

13. DISPOSAL PROCEDURES

Reuse or reprocess if possible. Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.

14. TRANSPORTATION INFORMATION

SHIPPING NAME:	Corrosive Liquid, N.O.S. (Sodium Hydroxide)
HAZARD CLASS:	8
PACKING GROUP:	II
UN NUMBER:	1760
D.O.T. REPORTABLE QUANTITY:	1000
HAZARDOUS SUBSTANCES:	Sodium Hydroxide
TRANSPORT LABEL:	Corrosive

15. REGULATORY INFORMATION

Product classification under Sections 311 and 312 of SARA Title III
Sodium Hydroxide - Immediate Health Hazard

NFPA HAZARD RATING:	Health:	2
	Fire:	0
	Reactivity:	0

16. OTHER INFORMATION

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Alpha Labs makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Alpha Labs control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product, or from the publication or use of, or relation upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

Alpha 510
Chemicals added to Boilers 7.1

Revised Labeling Information

Catalog ID / Q Level
0000040216 0

MSDS Control # Rev
00002701 002

Name: ALPHA 510
Part No: ALPHA 510
Mfgr Code: ALPHA LABS

MSDS Date:
01/03/2005

Label Information

Health	Fire
3	0
Reactivity	**Form**
1	L

Compatibility
F

Special Information
COR: CORROSIVE
S: SENSITIZING AGENT
SKIN: DAMAGES THE SKIN
T-ORG: TARGETS ONE OR MORE ORGANS OF THE BODY

For HazCom Use Only
Reviewer Thorbar B Weaver
CCC

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 5933, 7213, 5229, or 6560.

2701

MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME AND COMPANY INFORMATION

PRODUCT NAME: **Alpha 510**
Alpha Labs
1505 Buddy Holly Avenue
Lubbock, TX 79401
806-744-1960

Effective Date: January 3, 2005
Supercedes: July 27, 2001

2. COMPONENT INFORMATION

Material	C.A.S. No.	%	OSHA PEL	ACGIH TLV
Cyclohexylamine	108-91-8	40 - 42	None	10 ppm (TWA)
Diethylhydroxylamine	3710-84-7	< 5	None	None

3. HEALTH HAZARD DATA

STATEMENT OF HAZARD: Corrosive. Harmful if swallowed.
EYE: Contact with liquid can be corrosive to the eyes, resulting in irreversible damage. Contact with vapors can cause eye irritation. Severe eye damage may cause blindness.
SKIN CONTACT: Can cause severe skin effects, including burns and skin corrosion. Causes severe irritation with pain, excess redness and swelling with chemical burns, blister formation, and possible tissue destruction.
SKIN ABSORPTION: Prolonged or repeated overexposure may result in the absorption of potentially harmful amounts.
INGESTION: Causes burning of mouth, throat, and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness, and collapse.
INHALATION: Vapors may result in irritation, light-headedness, drowsiness, anxiety, nausea and vomiting.
SYSTEMIC & OTHER EFFECTS: No relevant information found.

4. FIRST AID

EYES: In case of eye contact, wash eyes immediately and continuously for 15 minutes, holding lids apart to ensure flushing of entire area. Washing eyes within several seconds is essential to achieve maximum effectiveness. Get medical attention immediately.
SKIN: Immediate continued and thorough washing in flowing water for 15 minutes is imperative while removing contaminated clothing. Get medical attention immediately. Wash contaminated clothing before reuse. Destroy contaminated shoes.
INGESTION: Never give anything by mouth to an unconscious person. Do not induce vomiting. Give large amounts of water. Get medical attention immediately.
INHALATION: Remove to fresh air if effects occur. Get medical attention.

5. FIRE FIGHTING INFORMATION

FLASH POINT: None
METHOD USED: Not Applicable
FLAMMABLE LIMITS: Not Applicable
EXTINGUISHING MEDIA: Apply alcohol-type or all-purpose-type foam for large fires. Use carbon dioxide or dry chemical media for small fires.
FIRE & EXPLOSION HAZARDS: Dangerous when exposed to heat of flames. Can react with oxidizing materials. Emits toxic gases when heated to decomposition.
FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

11082.1

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

Only trained and properly protected personnel should be involved in spill cleanup operations. Eliminate all ignition sources. Ventilate area. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. Contain spill if possible. Remove with inert absorbent. Prevent entry into sewers and waterways.

7. HANDLING & STORAGE PRECAUTIONS

Prevent eye and skin contact. Do not breathe vapors. Exercise care when opening. Keep away from heat, sparks, flame, and other sources of ignition. Should be stored in clean, dry areas. Keep containers closed and sealed. Keep away from acids and oxidizers.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.
RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.
SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, and hardhat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.
EYE PROTECTION: Use chemical goggles. Full-face shield in addition to goggles may be desirable to protect face. Maintain eyewash and safety shower at or near work area.

9. PHYSICAL DATA

APPEARANCE AND ODOR:	Colorless liquid; ammonia-like odor
BOILING POINT:	Not available
FREEZING POINT:	Not available
VAPOR PRESSURE:	Not available
VAPOR DENSITY:	Not applicable
SOLUBILITY IN WATER:	Water solution
pH:	10.0 - 11.0
SPECIFIC GRAVITY:	0.96

10. REACTIVITY DATA

STABILITY: Material is stable.
CONDITIONS TO AVOID: Heat, sparks, flame, oxidizers, acids.
INCOMPATIBILITY: May react violently with heat, oxidizers and acids.
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic levels of ammonia, combustion products of nitrogen, carbon monoxide, and carbon dioxide may be formed on burning.
HAZARDOUS POLYMERIZATION: Will not occur.

MATERIAL SAFETY DATA SHEET

11. TOXICOLOGICAL INFORMATION

INGESTION: Oral: LD50 300 mg/kg (rat) very toxic (Cyclohexylamine)
DERMAL: LD50 280 mg/kg (rabbit) moderately toxic (Cyclohexylamine)
OTHER EFFECTS: This product contains amines which can combine with nitrites to form nitrosamines.
CARCINOGENITY: This material is not considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration.

12. ECOLOGICAL INFORMATION

AQUATIC ECOTOXICITY DATA:

Cyclohexylamine	Fish: LC50 (96 hr.) (Golden Orfe) 58 - 195 mg/L Invertebrates: LC50 (24 hr.) (Daphnia Magna) 49 - 80 mg/L Plants: LC50 (96 hr.) (Algal) 20 mg/L

13. DISPOSAL PROCEDURES

Reuse or reprocess if possible. Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.

14. TRANSPORTATION INFORMATION

SHIPPING NAME:	Corrosive Liquid, Basic, Organic, N.O.S. (Cyclohexylamine)
HAZARD CLASS:	8
PACKING GROUP:	II
UN NUMBER:	3267
D.O.T. REPORTABLE QUANTITY:	Not applicable
HAZARDOUS SUBSTANCES:	Cyclohexylamine
TRANSPORT LABEL:	Corrosive

15. REGULATORY INFORMATION

Product classification under Sections 311 and 312 of SARA Title III
Cyclohexylamine - Immediate Health Hazard/Delayed Health Hazard

NFPA HAZARD RATING:	Health:	2
	Fire:	0
	Reactivity:	0

16. OTHER INFORMATION

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Alpha 550

Chemicals added to Boilers 7.1

Revised Labeling Information

Catalog ID / Q Level
0000041596 0

MSDS Control # Rev
00002700 001

Name: ALPHA 550

Part No: ALPHA 550

Mfgr Code: ALPHA LABS

MSDS Date:
01/03/2005

Label Information

Health	Fire
3	0
Reactivity	**Form**
0	L

Compatibility
F

Special Information
-W-: EVOLVES HEAT ON CONTACT WITH WATER
COR: CORROSIVE
SKIN: DAMAGES THE SKIN
T-ORG: TARGETS ONE OR MORE ORGANS OF THE BODY

For HazCom Use Only

Reviewer Thorban Weaver

CCC Larry E. Boyer

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 5933, 7213, 5229, or 6560.

MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME AND COMPANY INFORMATION

PRODUCT NAME: **Alpha 550**
Alpha Labs
1505 Buddy Holly Avenue
Lubbock, TX 79401
806-744-1960

Effective Date: January 3, 2005
Supercedes: July 27, 2001

2. COMPONENT INFORMATION

Material	C.A.S. No.	%	OSHA PEL	ACGIH TLV
Morpholine	110-91-8	38 – 42	30 ppm (STEL)	20 ppm (TWA)

3. HEALTH HAZARD DATA

STATEMENT OF HAZARD: Corrosive. Harmful if swallowed.
EYE: Causes irritation, experienced as pain, with excess blinking and tear production, and seen as extreme redness and swelling of the eye and chemical burns of the eye. Severe eye damage may cause blindness.
SKIN CONTACT: Causes severe irritation with pain, excess redness and swelling with chemical burns, blister formation, and possible tissue destruction.
SKIN ABSORPTION: Prolonged or repeated overexposure may result in the absorption of potentially harmful amounts.
INGESTION: Causes burning of mouth, throat, and stomach with abdominal and chest pain, nausea, vomiting, diarrhea, thirst, weakness, and collapse.
INHALATION: Vapors or mist are irritating and could cause nasal discharge, coughing and discomfort in nose and throat.
SYSTEMIC & OTHER EFFECTS: No relevant information found.

4. FIRST AID

EYES: Immediately flush eyes with large amounts of running water for at least 15 minutes. Hold eyelids apart while flushing to rinse entire surface of eye and lids with water. Do not attempt to neutralize with chemical agents. Obtain medical attention immediately. Continue flushing for an additional 15 minutes if medical attention is not immediately available.
SKIN: Immediately remove contaminated clothing and shoes. Under a safety shower, flush skin thoroughly with large amounts of running water for at least 15 minutes. Do not attempt to neutralize with chemical agents. Get medical attention immediately. Discard or decontaminate clothing and shoes before reuse.
INGESTION: If person is conscious and can swallow, immediately give two glasses of water. Do not induce vomiting. Do not give anything by mouth to an unconscious or convulsing person. Get immediate medical attention.
INHALATION: Remove to fresh air if effects occur. If not breathing, clear person's airway and start artificial respiration. Get medical consultation.

MATERIAL SAFETY DATA SHEET

5. FIRE FIGHTING INFORMATION

FLASH POINT: None
METHOD USED: Not Applicable
FLAMMABLE LIMITS: Not Applicable
EXTINGUISHING MEDIA: Use water spray, dry chemical, alcohol resistant foam or carbon dioxide to extinguish flames.
FIRE & EXPLOSION HAZARDS: Flammable materials (morpholine) may release vapors that travel long distances, ignite and flash back. Do not expose to heat, sparks or flame.
FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

6. ACCIDENTAL RELEASE MEASURES

Only trained and properly protected personnel should be involved in spill cleanup operations. Eliminate all ignition sources. Ventilate area. Avoid breathing vapor. Avoid contact with skin, eyes, or clothing. Contain spill if possible. Remove with inert absorbent. Prevent entry into sewers and waterways.

7. HANDLING & STORAGE PRECAUTIONS

Prevent eye and skin contact. Do not breathe vapors. Exercise care when opening. Keep away from heat, sparks, flame, and other sources of ignition. Should be stored in clean, dry areas. Keep containers closed and sealed.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.
RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.
SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, and hardhat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.
EYE PROTECTION: Use chemical goggles. Full-face shield in addition to goggles may be desirable to protect face. Maintain eyewash and safety shower at or near work area.

9. PHYSICAL DATA

APPEARANCE AND ODOR:	Colorless liquid; ammonia-like odor
BOILING POINT:	Not available
FREEZING POINT:	Not available
VAPOR PRESSURE:	Not available
VAPOR DENSITY:	Not applicable
SOLUBILITY IN WATER:	Water solution
pH:	10.0 - 11.0
SPECIFIC GRAVITY:	1.00

MATERIAL SAFETY DATA SHEET

10. REACTIVITY DATA

STABILITY: Material is stable.
CONDITIONS TO AVOID: Heat, sparks, flame, oxidizers, acids.
INCOMPATIBILITY: May react violently with heat, oxidizers and acids.
HAZARDOUS DECOMPOSITION PRODUCTS: Toxic levels of ammonia, combustion products of nitrogen, carbon monoxide, and carbon dioxide may be formed on burning.
HAZARDOUS POLYMERIZATION: Will not occur.

11. TOXICOLOGICAL INFORMATION

INGESTION: Oral: LD50 1.05 g/kg (rat) moderately toxic (Morpholine)
DERMAL: LD50 1.21 g/kg (rabbit) moderately toxic (Morpholine)
OTHER EFFECTS: This product contains amines which can combine with nitrites to form nitrosamines. Many nitrosamines have been found to cause cancer in laboratory animals.
CARCINOGENITY: This material is not considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration.

12. ECOLOGICAL INFORMATION

AQUATIC ECOTOXICITY DATA: LC50-96hr. Aquatic toxicity rating is > 100 – 1000 ppm; practically non-toxic (Morpholine).

13. DISPOSAL PROCEDURES

Reuse or reprocess if possible. Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.

14. TRANSPORTATION INFORMATION

SHIPPING NAME:	Corrosive Liquid, Basic, Organic, N.O.S. (Morpholine)
HAZARD CLASS:	8
PACKING GROUP:	II
UN NUMBER:	3267
D.O.T. REPORTABLE QUANTITY:	Not applicable
HAZARDOUS SUBSTANCES:	Morpholine
TRANSPORT LABEL:	Corrosive

15. REGULATORY INFORMATION

Product classification under Sections 311 and 312 of SARA Title III
Morpholine - Immediate Health Hazard/Delayed Health Hazard

NFPA HAZARD RATING:	Health:	2
	Fire:	0
	Reactivity:	0

MATERIAL SAFETY DATA SHEET

16. OTHER INFORMATION

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Alpha Labs makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Alpha Labs control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product, or from the publication or use of, or relation upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

Alpha 795

Chemicals added to Cooling Tower 7.2

CNS | consolidated nuclear security, llc
PANTEX PLANT | Y-12 NATIONAL SECURITY COMPLEX

Hazard Classification Coversheet

Product: ALPHA 795

Manufacturer: ALPHA LABS, INC.

SDS Date: January 28, 2014

SDS#: 36103

Family Code: 11100

HEALTH	FLAMMABILITY
3	0
REACTIVITY	**FORM**
0	L
SPECIAL INFORMATION	
COR, SKIN, -W-	

COMPATIBILITY CODE

D

35-Account Numbers

For Pantex Hazard Communication Use Only

Reviewer Brian Hildinger

HazCom Manager Thorban Weaver

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's SDS, a third party SDS, and/or other national consensus standards or references. The Hazard Classification Coversheet is for Pantex informational use only and is not part of the manufacturer's SDS.
Please refer all questions to your supervisor or the Pantex Hazard Communication Group at 6486 or 5933.

11/20/2018

SAFETY DATA SHEET

36103

SECTION 1: IDENTIFICATION

Product Identity:	Alpha 795
Recommended Use:	Cooling Tower Treatment
Company Name:	Alpha Labs
Address:	1505 Buddy Holly Avenue
City and State:	Lubbock, TX 79401
Company Phone:	806-744-1960
Emergency Phone:	CHEMTREC: 800-424-9300
New SDS Date:	January 28, 2014; Supercedes: September 1, 2009

SECTION 2: HAZARD(S) IDENTIFICATION

Hazard Classification:	Corrosive
Signal Word:	**DANGER**
Hazard Statements:	Avoid contact with eyes, skin, and mucous membranes. Contact can cause severe burns. Swallowing may cause severe burns.
Pictogram:	
Precautionary Statements:	Wear suitable protective clothing, gloves and eye protection. In case of contact with eyes, rinse immediately with plenty of water and seek medical attention.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

Material	CAS#	Weight %
Potassium Hydroxide	1310-58-3	8 - 12
2-Phosphono-1, 2, 4-Butanetricarboxylic Acid	37971-36-1	3 – 6
Acrylate Co-Polymer	97953-25-8	5 – 10
Poly (Acrylic Acid-Co-Hypophosphite)	71050-62-9	3 - 6

The specific chemical identity and/or exact percentage (concentration) of composition have been withheld as a trade secret.

SECTION 4: FIRST AID MEASURES

Eye Contact:	Immediately flush eyes with plenty of water for 15 minutes and get medical attention.
Skin Contact:	Immediately wash contaminated area with plenty of water. Remove contaminated clothing and wash before reuse. Get medical attention as soon as possible.
Inhalation:	Remove to fresh air if effects occur. Get medical attention.
Swallowing:	Rinse mouth. Give plenty of water to drink. Do NOT induce vomiting. Get medical attention immediately. Do NOT give liquids to an unconscious or convulsing person.

11100

SECTION 5: FIRE FIGHTING MEASURES

Extinguishing Media: Use dry powder. In case of fire in surroundings, all extinguishing agents allowed.
Fire and Explosion Hazards: Negligible fire hazard. Reacts with strong acids.
Special Fire Fighting Equipment and Procedures: Use NIOSH approved positive-pressure self-contained breathing apparatus and full protective clothing. Cool containers exposed to flames with water. Avoid contact with skin.

SECTION 6: ACCIDENTAL RELEASE MEASURES

Personal Precautions: Wear chemical goggles or full-face shield, gloves and full protective clothing.
Emergency Procedures: Keep from entering storm sewers and ditches, which lead to waterways. Inform the responsible authorities in case of entry into waterways.
Methods and Materials for Containment: Stop leak at source. Dike and contain.
Cleanup Procedures: Spills should be contained and cleaned up immediately. Neutralize traces of material with any dilute inorganic acid such as hydrochloric, sulfuric, or acetic acid. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Only trained and properly protected personnel should be involved in spill cleanup operations.

SECTION 7: HANDLING AND STORAGE

Safe Handling: Use with adequate ventilation. Do not get in eyes, on skin or clothing. Wear chemical goggles or full-face shield. Use protective gloves, apron and footwear impervious to this material. Remove contaminated clothing immediately. Wash skin area with soap and water, and launder clothing before reuse.
Safe Storage: Avoid storing next to strong acids. Keep container tightly closed and upright when not in use. Wear full protective clothing, gloves and eye protection when opening or handling. When empty, drain completely and replace bungs securely.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

Material	CAS#	OSHA PEL	ACGIH TLV
Potassium Hydroxide	1310-58-3	2 mg/m^3	2 mg/m^3
2-Phosphono-1, 2, 4-Butanetricarboxylic Acid	37971-36-1	None Known	None Known
Acrylate Co-Polymer	97953-25-8	None Known	None Known
Poly (Acrylic Acid-Co-Hypophosphite)	71050-62-9	None Known	None Known

Appropriate Engineering Controls: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations. If respiratory irritation is experienced, use an approved air-purifying respirator.
Personal Protective Measures: Wear gloves, apron and footwear impervious to this material. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse. Use chemical goggles. Full-face shield in addition to goggles may be desirable to protect face.
Special Requirements: Provide readily accessible eye wash stations and safety showers. Wash at end of each work shift. Promptly remove clothing that becomes contaminated. Launder or discard contaminated clothing.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

Appearance:	Clear Yellow Liquid
Odor:	Slight Odor
Odor Threshold:	Not Available
pH:	9.5 approximately
Melting Point/Freezing Point:	Not Available
Initial Boiling Point and Boiling Range:	Not Available
Flash Point:	Not Available
Evaporation Rate:	Not Available
Flammability:	Non-Combustible
Upper/Lower Flammability or Explosive Limits:	Not Available
Vapor Pressure:	Not Available
Vapor Density:	Not Available
Relative Density (Specific Gravity):	1.05
Solubility:	Complete
Partition Coefficient: n-octanol/water	Not Available
Auto-ignition Temperature:	Not Available
Decomposition Temperature:	Not Available
Viscosity:	Not Available

SECTION 10: STABILITY AND REACTIVITY

Stability: Stable under normal conditions.
Conditions to Avoid: Isolate from acids.
Materials to Avoid: This is a strong base, reacts with acids and is corrosive. Reacts violently with strong acids. Attacks alkali sensitive metals such as aluminum, lead, tin and zinc. Absorbs carbon dioxide and water from the air.
Hazardous Decomposition Products: None
Hazardous Polymerization: Will not occur.

SECTION 11: TOXICOLOGICAL INFORMATION

Routes of Exposure: Eye and skin contact, inhalation, ingestion.
Description and Symptoms of Effects: **Acute**—May cause severe burns to eyes with redness, tearing and blurred vision. May cause severe burns to skin with defatting and dermatitis. Respiratory tract irritation may occur. Swallowing may cause severe burns and complete tissue perforation of mucous membranes of the mouth, throat, esophagus and stomach.

Subchronic/Conditions Aggravated—None Known.

Chronic-- This material has no carcinogens listed in the National Toxicology Program (NTP) Report on Carcinogens (latest edition) or has been found to be a potential carcinogen in the International Agency for Research on Cancer (IARC) Monographs (latest edition), or found to be a potential carcinogen by the Occupational Safety and Health Administration.

Numerical Measures of Toxicity: Ingestion: Acute Oral LD50 (rat) 365 mg/kg (Potassium Hydroxide)
Dermal: LD50: (rabbit, 24 hr.) Severe (Potassium Hydroxide)

SECTION 12: ECOLOGICAL INFORMATION

Aquatic Toxicity Data:	Potassium Hydroxide	Fish: LC50 (96hr.) (Fathead Minnow) 179 mg/L Invertebrates: EC50 (48 hr.) (Water Flea) 60 mg/L Plants: EC50 (96hr.) (Green Algae) 61 mg/L

Degradability: This product is completely biodegradable.
Accumulation: This product does not bioaccumulate.
Mobility in Soil: Mobility of this product has not been determined.
Other Adverse Effects: None known.

SECTION 13: DISPOSAL CONSIDERATIONS

Reuse or reprocess if possible. Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health, safety and environmental regulations. If in doubt, contact the appropriate agencies.

SECTION 14: TRANSPORT INFORMATION

UN Number:	1760
UN Proper Shipping Name:	Corrosive Liquid, N.O.S. (Potassium Hydroxide)
Transport Hazard Class:	8
Packing Group:	II
D.O.T. Reportable Quantity:	1,000 lbs.
Hazardous Substances:	Potassium Hydroxide
Transport Label:	Corrosive

SECTION 15: REGULATORY INFORMATION

Product classification under Sections 311 and 312 of SARA Title III
Potassium Hydroxide – Acute Health Hazard

NFPA HAZARD RATING:	Health:	2
	Fire:	0
	Reactivity:	0

SECTION 16: OTHER INFORMATION

New SDS Date:	January 28, 2014
Supercedes:	September 1, 2009

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Alpha 850

Chemicals added to Closed Loop Systems 7.3

Revised Labeling Information

Catalog ID / Q Level
0000042121 0

MSDS Control # Rev
00002699 001

Name: ALPHA 850
Part No: ALPHA 850
Mfgr: ALPHA LABS

MSDS Date:
01/03/2005

35 Account Number(s):
N/A

Label Information

Health	Fire
2	0
Reactivity	**Form**
1	L

Compatibility
E

Special Information
OX: OXIDIZING AGENT
R: REPRODUCTIVE TOXIN
SKIN: IRRITATES THE SKIN
T-ORG: TARGETS ONE OR MORE ORGANS OF THE BODY

For HazCom Use Only

Reviewer Thorban Weaver

CCC Larry E Boyer

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Please refer all questions to your supervisor or the Hazard Communication Group at 5933, 7213, 5229, or 6560.

MATERIAL SAFETY DATA SHEET

1. PRODUCT NAME AND COMPANY INFORMATION

PRODUCT NAME: **Alpha 850**
Alpha Labs
1505 Buddy Holly Avenue
Lubbock, TX 79401
806-744-1960

Effective Date: **January 3, 2005**
Supercedes: December 7, 2001

2. COMPONENT INFORMATION

Material	C.A.S. No.	%	OSHA PEL	ACGIH TLV
Sodium Nitrite	7632-00-0	< 15	15 mg/m^3	None
Sodium Metaborate	10555-76-7	< 5	15 mg/m^3	10 mg/m^3
Potassium Carbonate	584-08-7	< 5	None	None
Sodium Tolyltriazole	64665-57-2	< 5	2 mg/m^3	None
Isopropyl Alcohol	67-63-0	< 5	400 ppm	400 ppm

3. HEALTH HAZARD DATA

STATEMENT OF HAZARD: Harmful if swallowed.
EYE: May cause eye irritation with discomfort, tearing or blurring of vision.
SKIN CONTACT: May cause irritation with discomfort or rash.
SKIN ABSORPTION: No data.
INGESTION: May cause low blood pressure with headache and fainting, or nonspecific discomfort such as nausea or weakness. Overexposure may cause reduced oxygen carrying capacity of blood.
INHALATION: May cause irritation of the upper respiratory passages with coughing.
SYSTEMIC & OTHER EFFECTS: No relevant information found.

4. FIRST AID

EYES: Immediately flush eyes with large amounts of water for at least 15 minutes, holding lids apart to ensure flushing of the entire surface. Get medical attention.
SKIN: Immediately wash contaminated areas with plenty of soap and water for 15 minutes. Remove contaminated clothing and footwear and wash clothing before reuse.
INGESTION: Never give anything by mouth to an unconscious person. Give several glasses of water. Seek medical attention immediately.
INHALATION: Remove to fresh air if effects occur. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Call a physician.

5. FIRE FIGHTING INFORMATION

FLASH POINT: None
METHOD USED: Not Applicable
FLAMMABLE LIMITS: Not Applicable
EXTINGUISHING MEDIA: This product is not combustible. Water spray may be used in areas where this product is stored.
FIRE & EXPLOSION HAZARDS: This product contains sodium nitrite which is a strong oxidizer and intensifies combustion of other materials.
FIRE-FIGHTING EQUIPMENT: Wear self-contained (positive-pressure if available) breathing apparatus and full protective clothing.

MATERIAL SAFETY DATA SHEET

6. ACCIDENTAL RELEASE MEASURES

Leaks should be stopped. Spills should be contained and cleaned up immediately. All clean-up material should be removed and placed in approved containers, labeled and stored in a safe place to await proper treatment or disposal. Only trained and properly protected personnel should be involved in spill cleanup operations.

7. HANDLING & STORAGE PRECAUTIONS

Do not take internally. Keep from contact with clothing and other combustible materials. Avoid contact with eyes and skin. Do not breathe mists. Do not mix or store with acids, ammonium salts, cyanides, amines, or reducing agents. Should be stored in clean, dry areas. Keep containers closed and sealed.

8. EXPOSURE CONTROLS & PERSONAL PROTECTION

VENTILATION: Control airborne concentrations below the exposure guideline. Good general ventilation sufficient for most operations.
RESPIRATORY PROTECTION: In misty atmospheres, use an approved mist respirator. If respiratory irritation is experienced, use an approved air-purifying respirator.
SKIN PROTECTION: Use protective clothing impervious to this material. Selection of specific items such as gloves, boots, apron, and hardhat with face-shield or full-body suit will depend on operation. Remove contaminated clothing immediately, wash skin area with soap and water, and launder clothing before reuse.
EYE PROTECTION: Use chemical goggles. Full-face shield in addition to goggles may be desirable to protect face. Maintain eyewash and safety shower at or near work area.

9. PHYSICAL DATA

APPEARANCE AND ODOR:	Red, clear liquid; slight odor
BOILING POINT:	Not available
FREEZING POINT:	Not available
VAPOR PRESSURE:	Not available
VAPOR DENSITY:	Not applicable
SOLUBILITY IN WATER:	Water solution
pH:	11.0 - 11.5 approximately
SPECIFIC GRAVITY:	1.15

10. REACTIVITY DATA

STABILITY: Material is stable
CONDITIONS TO AVOID: High temperatures.
INCOMPATIBILITY: Incompatible with acids, ammonium salts, amines, activated carbon, cyanides, and reducing agents. May react with amines to form nitrosamines (certain nitrosamines are cancer-suspect agents).
HAZARDOUS DECOMPOSITION PRODUCTS: Hazardous gases/vapors produced are oxygen and toxic nitrogen gases.
HAZARDOUS POLYMERIZATION: Will not occur.

MATERIAL SAFETY DATA SHEET

11. TOXICOLOGICAL INFORMATION

INGESTION: Oral LD50: 120 mg/kg in rats (sodium nitrite)
DERMAL: None established
CARCINOGENITY: This material is not considered to be a carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or the Occupational Safety and Health Administration.

12. ECOLOGICAL INFORMATION

AQUATIC ECOTOXICITY DATA:

Fish: LC50 (96 hr.) (Minnows) > 100 mg/L (Sodium Nitrite)
Invertebrates: EC50 (24 hr.) (Daphnia Magna) 242 mg Boron/L (Sodium Metaborate)
Plants: Green Algae: EC10 (96 hr.) 24 mg Boron/L (Sodium Metaborate)

13. DISPOSAL PROCEDURES

Reuse or reprocess if possible. Dispose of all waste and contaminated equipment in accordance with all applicable federal, state and local health and environmental regulations.

14. TRANSPORTATION INFORMATION

SHIPPING NAME:	Water clarifying, purifying or softening compound
HAZARD CLASS:	Non hazardous
PACKING GROUP:	Not applicable
UN NUMBER:	Not applicable
D.O.T. REPORTABLE QUANTITY:	None
HAZARDOUS SUBSTANCES:	Not regulated
TRANSPORT LABEL:	Not regulated

15. REGULATORY INFORMATION

Product classification under Sections 311 and 312 of SARA Title III
Sodium Nitrite - Immediate Health Hazard/Delayed Health Hazard
Superfund reportable discharge is 100 pounds

NFPA HAZARD RATING:	Health:	1
	Fire:	0
	Reactivity:	1

16. OTHER INFORMATION

All information appearing herein is based upon data obtained from the manufacturer and/or recognized technical sources. While the information is believed to be accurate, Alpha Labs makes no representations as to its accuracy or sufficiency. Conditions of use are beyond Alpha Labs control and therefore users are responsible to verify this data under their own operating conditions to determine whether the product is suitable for their particular purposes and they assume all risks of their use, handling and disposal of the product, or from the publication or use of, or relation upon, information contained herein. This information relates only to the product designated herein, and does not relate to its use in combination with any other material or in any other process.

Agri Tec 2

Chemicals added to Waste Water Treatment System 7.4

Pantex Chemical Labeling Information

Product: AGRITEC 2™

Manufacturer: EARTH SCIENCE LABORATORIES, INC.

MSDS Date: May 01, 2008

MSDS#: 40640

Family Code: 14201

HEALTH	FLAMMABILITY
X	X
REACTIVITY	**FORM**
X	X
SPECIAL INFORMATION	
FUNGICIDE NO LABEL REQUIRED	

COMPATIBILITY CODE

C

35-Account Numbers

For HazCom Use Only

Reviewer Brian Hildinger

HazCom Manager Thorban Weaver

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 6486, 5933, 5109, 5929, or 5229.

7/3/2012

40640

MATERIAL SAFETY DATA SHEET

EARTH SCIENCE LABORATORIES, INC.
113 SE 22nd St., Suite 1
Bentonville, AR 72712
earthsciencelabs.com

Emergency Phone Number: 1-800-535-5053 (Infotrac)
Information Phone Number: 1-479-271-7381

Material Name: *AgriTec 2™*

Issue Date: 12/93
Revision Date: 5/08

Section 1 – PRODUCT IDENTIFICATION

Product Name: AgriTec 2™ **EPA No:** 64962-1

Certified to: NSF / Standard 60 Do not exceed 19 mg/L.

Section 2 – HAZARDOUS INGREDIENTS

Components	CAS#	OSHA PEL	ACGIH TLV	%
Copper sulfate pentahydrate	7758-99-8	1mg/m^3	1mg/m^3	18.25-21.75%

Section 3 – HEALTH HAZARDS IDENTIFICATION

Primary Routes of Entry: *Inhalation, Absorption, and Ingestion.*
Eyes: *Corrosive.* Exposure may cause severe burns, destruction of eye tissue and possible permanent injury or blindness.
Skin: *Corrosive.* Contact may cause reddening, itching or inflammation.
Ingestion: *Corrosive.* May cause painful irritation and burning of the mouth and throat, painful swallowing, labored breathing, burns or perforation of the gastrointestinal tract leading to ulceration and secondary infection.
Inhalation: *Irritating.* Overexposure may cause burns and tissue damage.

Section 4 – FIRST AID MEASURES

Eyes: Flush immediately with large amounts of water for at least 20 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get immediate medical attention.
Skin: Immediately flush skin with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Get immediate medical attention.
Ingestion: If victim is conscious and alert, give 1-3 glasses of water to dilute stomach contents. Rinse mouth out with water. Do not induce vomiting unless directed by medical personnel. Get immediate medical attention.
Inhalation: Remove to fresh air. If not breathing, institute cardiopulmonary resuscitation (CPR). If breathing is difficult, ensure clear airway and give oxygen. Keep affected person warm and at rest. Get immediate medical attention.

Section 5 – FIRE AND EXPLOSION HAZARDS

Flash Point: N/E **UFL:** N/E **LFL:** N/E

Hazardous Combustion Products: May react with high carbon metals to produce hydrogen gas, which can form an explosive mixture.
Fire Fighting Equipment/Instructions: Firefighters must wear MSHA/NIOSH approved positive pressure breathing apparatus (SCBA) with full face mask and full protective equipment.

NFPA Ratings:	**Fire:** 0	**Health:** 2	**Reactivity:** 1	**Other:** X
HMIS III Ratings:	**Fire:** 0	**Health:** 2	**Reactivity:** 1	**Personal Protection:** X

Section 6 – ACCIDENTAL RELEASE MEASURES

Containment Procedures: Flush with water into retaining area or container. Caution should be exercised regarding personal safety and exposure to released product.
Clean-Up Procedures: Neutralize solution with bicarbonate of soda.
Evacuation Procedures: Keep unnecessary people away; isolate hazard area and deny entry. Stay upwind.
Special Instructions: Notify local authorities and the National Response Center, if required.

14201

Section 7 – HANDLING AND STORAGE

Procedures for Handling: Avoid contact with strong oxidizers. Do not use with materials or equipment sensitive to corrosive solutions.
Recommended Storage Methods: Avoid storage in excessive heat; expansion of container may occur creating spillage. Do not store in galvanized or nylon equipment.

Section 8 – PERSONAL PROTECTION

Respiratory Protection: Ventilation and other forms of engineering controls are the preferred means for controlling exposures. A NIOSH/ MSHA approved air-purifying respirator with an appropriate acid gas cartridge or canister may be appropriate under certain circumstances where airborne concentrations are expected to exceed exposure limits.
Protective Gloves: Use appropriate chemical gloves that are in usable order.
Other Protective Clothing or Equipment: Eye and face protection is necessary, long sleeved shirts, long pants, socks and shoes.
Work/Hygienic Practices: Use good personal hygiene. Body shower for prolonged skin contact.

Section 9 – PHYSICAL & CHEMICAL PROPERTIES

Appearance: Clear blue liquid
Physical State: Liquid
pH: 0.5
Vapor Pressure: 0.1mm 68° F
Boiling Point: 220° F
Melting Point: N/A
Odor: Minimal odor
Vapor Density (Air=1): 1.0
Evaporation Rate: N/A
Solubility in Water: Complete
Specific Gravity (H_20=1): 1.2

Section 10 – REACTIVITY INFORMATION

Chemical Stability: Stable.
Conditions to Avoid: Avoid mixing with strong bases and strong reducing agents.
Incompatibility: Incompatible with strong bases and strong reducing agents.
Hazardous Decomposition Products: Sulfur dioxide and sulfur trioxide may be produced with decomposition.
Hazardous Polymerization: Will not occur.

Section 11 - TOXICOLOGICAL INFORMATION

Acute Toxicity / Chronic Toxicity: Continued overexposure to this solution may cause systemic toxicity.
Carcinogenicity: N/A
Signs and Symptoms of Exposure: Overexposure may cause the following specific symptoms, depending on the concentration and duration of exposure: vomiting, shallow respiration and lung function changes.

Section 12 – DISPOSAL CONSIDERATIONS

Disposal Instructions: Neutralize with bicarbonate of soda or fertilizer grade lime and dispose of in accordance with all federal, state and local regulations.

Section 13 – TRANSPORTATION INFORMATION

DOT Information
Proper Shipping Name: Corrosive liquid, acidic, inorganic, n.o.s. (contains cupric sulfate)
Hazard Class: 8
UN/NA #: UN3264
Packing Group: III

- *Packages that contain more than 5.1 US gallons are **RQ** (reportable quantity)*
- *Packages that contain less than 4.0 liters could be **ORM-D***
- *The proper shipping information is the responsibility of the shipper and this information is only guidelines.*

The information set forth herein is furnished free of charge and is based on technical data that Earth Science Laboratories, Inc. believes to be reliable. It is intended for use by persons having technical skill and at their own discretion and risk. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of the information. Nothing herein is to be taken as a license to operate under or a recommendation to infringe any patents.

AgriTec™ 2

ALGICIDE/ BACTERICIDE

for lakes, ponds, reservoirs, canals, lagoons, aquaculture systems and irrigation systems

NSF Certified to NSF/ANSI 60

ACTIVE INGREDIENTS	
Copper Sulfate Pentahydrate* (CAS No. 7758-99-8)	19.8%*
INERT INGREDIENTS	80.2%
Total	100.0%
*Metallic Copper Equivalent Equal	5%

THIS PRODUCT WEIGHS 9.9 LB. PER GALLON

EPA REGISTRATION NO. 84062-1

EPA ESTABLISHMENT NO. 84062-NE-001

NET CONTENTS: 275 GAL. / 1040.99 L

9.9 lb. per gallon / 1.188 kg/L

MFG. BY: Earth Science Laboratories, Inc.
113 SE 22nd Street, Suite 1
Bentonville, AR 72712
Phone: 800-257-9283

LOT NUMBER

KEEP OUT OF REACH OF CHILDREN

DANGER

If you do not understand this label, find someone to explain it to you in detail. Si usted no entiende la etiqueta, busque a alguien para que se la explique a usted en detalle.

FIRST AID

IF SWALLOWED: Call a poison control center or doctor immediately for treatment advice. Have person sip a glass of water if able to swallow. Do not induce vomiting unless told to do so by a poison control center or doctor. Do not give anything by mouth to an unconscious person.

IF ON SKIN OR CLOTHING: Take off contaminated clothing. Rinse skin immediately with plenty of soap and water for 15-20 minutes. Call a poison control center or doctor for treatment.

IF IN EYES: Hold eye open and rinse slowly and gently with water for 20 minutes. Remove contact lenses, if present, after first 5 minutes, then continue rinsing eye. Call a poison control center or doctor for advice.

NOTE TO PHYSICIAN: Probable mucosal damage may contraindicate the use of gastric lavage.

Have the product container or label with you when calling a poison control center or doctor, or going for treatment.

SEE ADDITIONAL PRECAUTIONARY STATEMENTS

PRECAUTIONARY STATEMENTS

Hazards to Humans and Domestic Animals

DANGER

Corrosive. Causes irreversible eye damage. Do not get in eyes or on clothing. Avoid contact with skin. Wear protective eyewear (goggles, face shield or safety glasses), long-sleeved shirt, and long pants. Chemical Resistance Category A. Prolonged exposure may cause chronic effects. Do not breathe vapor. Avoid contact with eyes or clothing. Wash thoroughly with soap and water after handling. Remove contaminated clothing and wash clothing before reuse.

ENVIRONMENTAL HAZARDS

Fish and Aquatic Organisms: This product is toxic to fish. Direct application of copper to lakes or other quiescent bodies of water can result in a significant reduction of aquatic invertebrates, plants and fish. Do not treat more than one half of a lake or pond at one time to avoid depletion of oxygen from decaying vegetation. Allow 1 to 2 weeks between treatments for oxygen levels to recover. Trout and other species of fish may be killed at application rates recommended on this label, especially in soft or acidic waters. Do not contaminate water when disposing of equipment wash-water. (See Disposal Instructions.) Consult your local State Fish and Game Agency before applying this product to public waters. Permits may be required before treating such waters.

Endangered Species Restrictions: It is a violation of Federal law to use any pesticide in a manner that results in the death of an endangered species or adverse modification of their habitat. Because this product may pose a hazard to certain fish or other aquatic endangered species known to occur in specific areas within the following counties:

STATE	SPECIES	BULLETIN NO.	COUNTY
California	Tidewater Goby	EPA/ES-66-13	Ventura
Tennessee	Blackside Darter	EPA/ES-66-04	Lawrence, Wayne, Hickman
	Freshwater Mussels	EPA/ES-66-01	Claiborne, Hamblen, Jefferson
Alabama	Stonecrop Darter	EPA/ES-66-01	Lauderdale, Limestone, Madison
Virginia	Freshwater Mussels	EPA/ES-66-06	Grayson, Smyth, Scott, Washington, Lee

PLEASE NOTE: Before using this product in the above counties you must obtain the EPA bulletin specific to your area. This bulletin identifies certain waters where the use of this product is prohibited unless specified otherwise. The EPA bulletin is available from your County Agricultural Extension Agent, the Endangered Species Specialist in your State Wildlife Agency (usually part of the appropriate Regional Office of the U.S. Fish and Wildlife Service).

THIS BULLETIN MUST BE READ BY ANY PERSON PRIOR TO PESTICIDE USE.

FOR CHEMICAL EMERGENCY
Call INFOTRAC 1-800-535-5053
Non-Planned • Do Not Delay

PERSONAL PROTECTIVE EQUIPMENT

Applicators and other handlers must wear:
- Long-sleeved shirt
- Long pants
- Chemical-resistant gloves made of any waterproof material. Chemical Resistance Category A
- Protective eyewear
- Shoes plus socks

Maintain this clothing separately from other laundry and wash with detergent and hot water. As soon as possible after use, wash the exterior of gloves before removal. Wash hands after removing gloves.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling. Do not apply this product in a way that will contact waterborne algae, people, other desirable plants or animals, or cause undesirable reduction of oxygen levels in the water during application. For any requirements not specified on this label, consult the agency responsible for pesticide regulation.

GENERAL INFORMATION

AGRITEC 2 is an inorganic, formulated mixture used for suppression of bacteria and algae growth in sewage lagoons, feedlot run-off pits, animal confinement facilities and other ponds containing organic wastes, algae and in some cases bacteria. AGRITEC 2 may be used in commercial, agricultural and municipal systems of growth in irrigation conveyance ponds, aquaculture ponds, biological fish ponds or systems and in sewage treatment systems. AGRITEC 2 will not or suppress the growth of bacteria. When used as directed on this label, it is a bactericide.

APPLICATION AND HANDLING EQUIPMENT

Application, handling and storage equipment MUST consist of either fiberglass (FRP), polypropylene, or hot-melt glass lined or stainless steel. Never use mild steel, copper, aluminum, brass or organic zinc and fully strength AGRITEC 2.

Always wear equipment rinse and clean of AGRITEC 2 mist might with plenty of fresh, clean water.

Always store AGRITEC 2 above 32° F. Freezing may cause product separation. Seller makes no warranty for product which has been frozen. Apply over an area of limited or non-thorough and controllable dispersal with sewage. Use formula for calculating water volume and flow rates. To find the capacity of water storage containment in gallons, multiply the area of water in acres by the mean depth in feet.

NOTE: 1 acre/ft = 27,000 gallons 1 acre/ft = 326,000 gallons

STORAGE AND DISPOSAL

Do not reuse empty container. Triple rinse container (or equivalent) promptly after emptying. Empty rinse as follows: Empty dispensing controls and application equipment, or pour tank, if it is necessary, full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring it rinses one complete revolution (i.e. 30 seconds). Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

Pesticide Storage: Store in a cool place away from pets and keep out of the reach of children. Store away from excessive heat. AGRITEC 2 will freeze. Always store and mix AGRITEC 2 in non-metallic containers only. Keep away from galvanized pipe and any nylon storage or handling equipment.

Pesticide Disposal: Pesticide wastes are acutely hazardous. Improper disposal of excess AGRITEC 2 spray mixture is a violation of Federal law. If these wastes cannot be disposed of by use according to label instructions, contact your State Pesticide or Environmental Control Agency, or the Hazardous Waste representative at the nearest EPA Regional Office for guidance.

In the event of spill, one pilot will be present one or before pesticide before disposal. May destroy the contents.

Container Disposal: Nonrefillable container. Do not use or refill. Air container. Offer for recycling, if available. Triple rinse container (or equivalent) promptly after emptying. Empty rinse as follows: Empty dispensing controls and application equipment, or pour tank, if it is necessary, full with water. Replace and tighten closures. Tip container on its side and roll it back and forth, ensuring it rinses one complete revolution (i.e. 30 seconds). Stand the container on its end and tip it back and forth several times. Empty the rinsate into application equipment or mix tank or store rinsate for later use or disposal. Repeat this procedure two more times.

GENERAL BACTERIA CONTROL

Application rates may vary depending on amounts of organic matter (sewage) in lagoon or pond. Application should be done to prevent AGRITEC 2 from diluting to concentrations less than 50 ppm. Several applications per week may be required. Use one gallon of AGRITEC 2 to treat 10,000 gallons (up to 10,000 gallons per day) of sewage. For severe results dispense AGRITEC 2 evenly throughout sewage. Bacteria and odors should be noticeably reduced in 1 to 2 weeks. Repeat application when odor returns.

Feedlot Run Off Lagoons: Add a gallon mix of the required dosage of AGRITEC 2 at several locations around the lagoon to spread dispersal of the product. A minimum of two applications per year in spring and fall is recommended. Additional applications may be required as needed when the lagoon is pumped.

Animal Confinement Pits: Pump pit contents under the roof manure flush. Add AGRITEC 2 directly to slurry pit. If the pits are outside, add AGRITEC 2 to the transfer line to the pit.

Other Organic Sludges: AGRITEC 2 may be thoroughly mixed with sludges. Apply at the rate of one gallon AGRITEC 2 to 10,000 gallons of sludge.

GENERAL ALGAE CONTROL

For algae control, apply at the first spring or early summer when algae first appear. The dosage you use will depend upon algae species, water hardness, water temperature, amount of algae present, as well as whether water is clear, turbid, flowing or static. Preferably, the water should be clear with temperatures above 60 °F (15.5 °C). Higher dosages are required at lower water temperatures. Higher algae concentrations and/or hard waters. Application should be done by pouring AGRITEC 2 directly from the container into the lakes, ponds, reservoirs or irrigation canals. Several applications are usually required for dispersal. Static waters require hot chemical bed just over 48 hours that flowing water. Use higher dosages for short, warm and clear waters as algae spread more and lower dosages for cooler, more turbid algae. If clear water army about the dosage begin with lower dosages and increase until control is achieved as needed to maintain a favorably level has been reached.

Treatment of algae can result in oxygen loss from the decomposing mass of dying algae. This loss can at times kill fish or more. If the algae cover more than one third of the total water area, treat in sections. Treat one half of the water area in a single application and wait for 10 to 14 days between treatments. Begin treatment along shoreline and proceed outward in bands to allow fish to move into untreated areas. Excessive algae masses from a recent treatment should be dead 6 to 8 weeks before expected losses to prevent masses of decaying algae under an ice cover.

SPECIFIC DIRECTIONS FOR USE

To Control Algae or Bacteria in Non-Sprinkler, Non-Drip Irrigation Conveyance Systems and Chemigation Systems, Ditches, Canals and Similar Irrigation Conveyances: For conveyance systems, add one pint AGRITEC 2 for each 7,500-9,500,000 gallons. For conveyance systems longer than 10 miles, it is recommended that the above dosage be dispersed among the injection points every 10 miles. However, do not exceed the total dose of one gallon AGRITEC 2 in 60,000 gallons (1 quart maximum).

To Control Algae or Bacteria in Sprinkler, Drip or Other Types of Irrigation Equipment: Apply as directed. Do not mix with other additives. AGRITEC 2 must be applied continuously for the duration of the water application.

Mixing instructions for dilutions of AGRITEC 2 in one gallon: 7,500 to 9,500,000 gallons of water.

To Control Algae in Impounded Waters, Lakes, Ponds, Aquaculture Systems and Reservoirs: For algae control, dispense AGRITEC 2 evenly throughout the body of water. Apply at the rate of one gallon AGRITEC 2 to 7,500 to 9,500,000 gallons. For best results apply in warm still water on a sunny day when algae are near the surface. For portable water systems, do not exceed one gallon in 60,000 gallons or the any maximum noted (1 quart per 15 acre/ft).

LIMITED WARRANTY AND LIMITATION OF REMEDIES

To the maximum extent permitted by applicable law, Earth Science Laboratories, Inc. ("ESL") makes no warranties, express or implied, of fitness or merchantability except as stated in this label. Buyer assumes all risk and liability for use of this product not in accordance with this label. To the extent consistent with applicable law, ESL shall not be liable for any incidental, consequential or other damages. ESL's exclusive liability for any claim of any kind whatsoever with respect to this product, whether based in contract, tort, strict liability or otherwise, shall not exceed the purchase price paid for the product. In no event shall ESL be liable for special or indirect damages. ESL neither assumes nor authorizes any person to assume for it any other liability in connection with the sale, handling or use of this product. Buyer assumes all risk and liability for use of this product not in accordance with this label. To the extent consistent with applicable law, ESL shall not be liable for any incidental, consequential or other damages. ESL's exclusive liability for any claim of any kind whatsoever with respect to this product, whether based in contract, tort, strict liability or otherwise, shall not exceed the purchase price paid for the product. In no event shall ESL be liable for special or indirect damages. ESL neither assumes nor authorizes any person to assume for it any other liability in connection with the sale, handling or use of this product.

Manufactured by: Earth Science Laboratories, Inc.
113 SE 22nd Street, Suite 1
Bentonville, AR 72712
(800) 257-9283

Aquashade

Chemicals added to Waste Water Treatment System 7.4

Revised Labeling Information

Catalog ID / Q Level
0000050309 0

MSDS Control # Rev
00002666 001

Name: AB AQUASHADE

MSDS Date:
10/24/2006

Part No: NONE

Mfgr Code: APPLIED BI

Label Information

Health	Fire
1	0
Reactivity	**Form**
0	L

Compatibility
F

Special Information
S: SENSITIZING AGENT
SKIN: IRRITATES THE SKIN

For HazCom Use Only

Reviewer Thalban Weaver

CCC Tony C Boyer

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 5933, 7213, 5229, or 6560.

MATERIAL SAFETY DATA SHEET

AB Aquashade

1. Product And Company Identification

Supplier
Applied Biochemists (WI)
A division of Advantis Technologies, Inc.
W175 N11163 Stonewood Drive, Suite 234
Germantown, WI 53022

Telephone Number: (262) 255-4449
FAX Number: (262) 255-4268
Web Site: www.appliedbiochemists.com

Manufacturer
Advantis Technologies, Inc.
1400 Bluegrass Lakes Parkway
Alpharetta, GA 30004 United States

Telephone Number: (770) 521-5999
FAX Number: (770) 521-5959
Web Site: www.poolspacare.com

Supplier Emergency Contacts & Phone Number
CHEMTREC - DAY OR NIGHT: (800) 424-9300

Manufacturer Emergency Contacts & Phone Number
CHEMTREC - DAY OR NIGHT: (800) 424-9300

Issue Date: 10/24/2006

Product Name: AB Aquashade
Chemical Name: Water Soluble Dye
CAS Number: Not Established
Chemical Formula: Proprietary
MSDS Number: 361

2. Composition/Information On Ingredients

Ingredient Name	CAS Number		Percent Of Total Weight
DYE ACID BLUE 9	3844-45-9		
DYE ACID YELLOW 23	1934-21-0		

Ingredients listed in this section have been determined to be hazardous as defined in 29CFR 1910.1200. Materials determined to be health hazards are listed if they comprise 1% or more of the composition. Materials identified as carcinogens are listed if they comprise 0.1% or more of the composition. Information on proprietary materials is available in 29CFR 1910.1200(i)(1).

3. Hazards Identification

Primary Routes(s) Of Entry
See appropriate emergency procedures below for principle route of entry. Never give anything by mouth to an unconscious person.

Eye Hazards
May cause eye irritation and redness.

Skin Hazards
May cause slight skin irritation. May stain tissue.

Ingestion Hazards
Ingestion may result in gastric disturbances or irritation.

Inhalation Hazards
Inhalation may cause respiratory tract discomfort.

Chronic/Carcinogenicity Effects
None known.

Conditions Aggravated By Exposure
None known.

MATERIAL SAFETY DATA SHEET

AB Aquashade

4. First Aid Measures

Eye
Flush with large amounts of water for at least 15 minutes. Contact a physician if irritation occurs.

Skin
Wash the area with large amounts of soap and water for at least 15 minutes. Wash clothes thoroughly before reuse.

Ingestion
Induce vomiting. Call a physician.

Inhalation
Remove to fresh air.

Fire Fighting (Pictograms)



5. Fire Fighting Measures

Flash Point: NA °F
Flammability Class: Non-flammable

Fire And Explosion Hazards
None known.

Extinguishing Media
Water, carbon dioxide, or foam

Fire Fighting Instructions
Cool area to prevent product containers from bursting or melting. Firefighters should be equipped with self-contained breathing apparatus.

6. Accidental Release Measures

Contain spill. Soak up with absorbant. Place in a suitable container for disposal. Wash area with soap and water. Care should be taken when handling this product as it can stain. Wear appropriate personal protective equipment. Do not flush liquid into public sewer, water systems, or surface waters.

Handling & Storage (Pictograms)



7. Handling And Storage

Handling And Storage Precautions
Keep away from intense heat and open flame.

Handling Precautions
Avoid eye contact. Avoid repeated or prolonged skin contact. Avoid drinking, tasting, swallowing or ingesting this product. Was thoroughly after handling this product. Always wash before eating, smoking, or using the facilities. Use under well-ventilated conditions.

Storage Precautions
Keep container closed when not in use. Do not store in open, unlabeled or mislabeled containers.

MATERIAL SAFETY DATA SHEET

AB Aquashade

Protective Clothing (Pictograms)



8. Exposure Controls/Personal Protection

Engineering Controls
Local exhaust acceptable. Special exhaust normally not required

Eye/Face Protection
Safety glasses with side shields or goggles.

Skin Protection
Chemical resistant gloves

Respiratory Protection
Not normally required.

9. Physical And Chemical Properties

Appearance
Blue liquid

Odor
None

Chemical Type: Mixture
Physical State: Liquid
Melting Point: NA °F
Boiling Point: 212 °F 100 °C
Specific Gravity: 1.055 (Water = 1)
Percent Volitales: Not determined
Vapor Pressure: Not determined
pH Factor: 4.2-4.7
Solubility: Miscible in water
Evaporation Rate: Not determined

10. Stability And Reactivity

Stability: Stable
Hazardous Polymerization: Does not occur

Conditions To Avoid (Stability)
Keep away from intense heat and open flame.

Incompatible Materials
None known

Hazardous Decomposition Products
None known

Conditions To Avoid (Polymerization)
None

11. Toxicological Information

Acute Oral Effects
C.I. Acid Blue 9, Disodium Salt: Oral, Rat, adult: LD50 > 2000 mg/kg

MATERIAL SAFETY DATA SHEET

AB Aquashade

11. Toxicological Information - Continued

Chronic/Carcinogenicity

Dye Acid Blue 9: Lifetime feeding studies in rats and mice indicate that Acid Blue 9 is not carcinogenic. The no-observed-adverse-effect levels (NOAEL) in these studies were highest dose tested in male rats (1072 mg/kg/day) and both sexes of mice (7354-8966 mg/kg/day); the NOAEL in female rats was 631 mg/kg/day based on decrements in terminal body weight and survival.

Reproductive Effects

Acid Blue 9: No reproductive or developmental effects have been observed in rats or rabbits.

12. Ecological Information

Ecotoxicological Information

Acid Blue 9: %BOD after 7 days = 77
12 days = 84
20 days = 88

13. Disposal Considerations

Dispose in accordance with applicable federal, state and local government regulations.

14. Transport Information

Proper Shipping Name
Not regulated

Hazard Class
None assigned

DOT Identification Number
NONE

15. Regulatory Information

No Data Available...

NFPA



HMIS

HEALTH	1
	0
REACTIVITY	0
PERSONAL PROTECTION	B

16. Other Information

Revision/Preparer Information
MSDS Preparer: JHW

Disclaimer

Although reasonable care has been taken in the preparation of this document, we extend no warranties and make no representations as to the accuracy or completeness of the information contained therein, and assume no responsibility regarding the suitability of this information for the user's intended purposes or for the consequences of its use. Each individual should make a determination as to the suitability of the information for their particular purposes(s).

Applied Biochemists (WI)

Printed Using MSDS Generator™ 2000

40338

MATERIAL SAFETY DATA SHEET

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NAME: Calcium Hypochlorite Granular 65%
Product ID: 0310
SYNONYMS: Calcium Hypochlorite Granular; Cal Hypo Granules; $Ca(OCl)_2$; MSDS No. 0310
ISSUE DATE: 10/04/2007
EDITION NO.: 12

PPG Industries, Inc.
One PPG Place, Pittsburgh, PA 15272, USA
24-hour Emergency Telephone Number: 1-412-434-4515
For Product Information (8am-5pm Eastern time):
1-800-245-2974 (Cal Hypo)

PREPARER: Product Safety, Chemicals

2. COMPOSITION/INFORMATION ON INGREDIENTS

Material/CAS Number	Percent
Calcium Hypochlorite 7778-54-3	>65
Calcium Chlorate 10137-74-3	<2
Calcium Carbonate 471-34-1	<2
Calcium Hydroxide 1305-62-0	<2
Magnesium 7439-95-4	0.1834

Note: Minimum 65% Available Chlorine. 35% inert ingredients (includes 5.5-8.5% water).

3. HAZARDS IDENTIFICATION

EMERGENCY OVERVIEW:

DANGER! Corrosive - Causes severe and irreversible burns to eye and skin. Harmful if inhaled. May cause irritation and inflammation to the respiratory tract. Harmful or fatal if swallowed. Strong Oxidizing Agent! Mix only with water. Never add water to product. Always add the product to large quantities of water. Do not mix with any other chemicals. Contamination with moisture, acids, organic

CNS | consolidated nuclear security, llc
PANTEX PLANT | Y-12 NATIONAL SECURITY COMPLEX

9c

Hazard Classification Coversheet

Product: BZT WASTE DIGESTER

Manufacturer: UNITED-TECH INC / BIO-FORM

SDS Date: September 22, 2014

SDS#: 36146

Family Code: 11136

HEALTH	FLAMMABILITY
X	X
REACTIVITY	**FORM**
X	S
SPECIAL INFORMATION	
NO LABEL REQUIRED BIOLOGICAL-SEE SDS	

COMPATIBILITY CODE

F

35-Account Numbers

For Pantex Hazard Communication Use Only

Reviewer Brian Hildinger

HazCom Manager Thorlan Weaver

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's SDS, a third party SDS, and/or other national consensus standards or references. The Hazard Classification Coversheet is for Pantex informational use only and is not part of the manufacturer's SDS.
Please refer all questions to your supervisor or the Pantex Hazard Communication Group at 6486 or 5933.

1. PRODUCT AND COMPANY IDENTIFICATION

Product Name	**BZT® Waste Digester**
Manufacturer Information	**United-Tech, Inc.** **P.O. Box 470940** **Tulsa, OK 74147-0940 USA** **(+1) 918.610.5205**
Email Address	**info@united-tech.com**
URL	**www.united-tech.com**
Emergency Telephone	**Call United-Tech, Inc. – Toll Free: (+1) 888.999.0545**
Recommended Use	**Water Quality, Feed Additive. Not for human consumption**

2. HAZARDS IDENTIFICATION

Eyes	**May cause irritation**
Skin	**May cause slight irritation**
Inhalation	**Inhalation of dust in high concentrations may cause irritation of respiratory system**
Ingestion	**Non-toxic by ingestion**
Physical and chemical hazards	**Possible explosive dust hazard typical of fine-powder organic substances.**

3. COMPOSITION/INFORMATION ON INGREDIENTS

Description: Powdered Microbial-Cultures and Enzymes

Chemical Name	CAS No.	% Composition	OSHA – PEL	ACGIH – TLV-TWA
Whey (as nuisance dust, Total)	92129-90-3	>90%	15mg/m^3	10mg/m^3
Hydrated Silicon Dioxide (as nuisance dust, Total)	7631-86-9	<1%	15mg/m^3	10mg/m^3
Freeze-dried microbial cultures and enzymes		Trade Secret	Not Listed	Not Listed

Exact percentages of ingredients, microbial species, and enzyme types are withheld in order to protect trade secrets.

4. FIRST-AID MEASURES

Eye Contact	Rinse thoroughly with plenty of water for at least 15 minutes. If irritation persists, consult a physician.
Skin contact	Wash off immediately with plenty of water. If irritation persists, consult a physician.
Inhalation	If respiratory irritation or distress occurs, remove victim to fresh air. Seek medical attention if respiratory irritations or distress continues.
Ingestion	Clean mouth with water and afterwards drink plenty of water. If symptoms persist, call a physician.
Notes to Physician	Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Flammable properties	Fine dust dispersed in air in sufficient concentrations, and in the presence of an ignition source is a potential dust explosion hazard.
Suitable extinguishing methods	Use water-spray, fog, carbon-dioxide, foam, or dry chemical
Protective Equipment and Precautions for Firefighters	As in any fire, wear self-contained breathing apparatus with pressure demand and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment, and emergency procedures	Avoid contact with skin and eyes
Methods for containment	Prevent dust cloud
Methods for cleanup	Sweep or scoop into suitable container for disposal. Avoid dust formation. After product recovery, flush area with water.

7. HANDLING AND STORAGE

Precautions for safe handling	Avoid inhalation, ingestion, and contact with skin and eyes.
Conditions for safe storage, including any incompatibilities.	Store in original container. Keep container tightly closed. Check the Product Description for storage temperature.
Technical Measures/Precautions	This product may present a dust explosive hazard, minimize dust generation and accumulation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines	OSHA PEL 15mg/m^3 ACGIH TLV 10mg/m^3
Occupational Exposure Controls	
Engineering Measures	Ensure adequate ventilation. Local exhaust ventilation of dust at the point of generation.
Hygiene Measures	Handle in accordance with good industrial hygiene and safety practices.
Personal Protective Equipment (PPE)	
Eye/Face Protection	Tightly fitting safety goggles
Skin and Body Protection	Wear protective gloves/clothing
Respiratory Protection	No protective equipment needed under normal use conditions. If exposure limits are exceeded or irritation is experienced, ventilation, appropriate respirator, or evacuation may be required.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance	Off-white to tan	**Odor**	Dairy/fermentation product
Physical State	Powdered Solid	**pH**	5.5-6.5 (10% solution)
Melting/Freezing Point	Unknown	**Boiling Point/Range**	Unknown
Flash Point	Unknown	**Evaporation Rate**	Unknown
Flammability	Must be preheated	**Explosion Limits**	Unknown
Vapor Pressure	Unknown	**Density**	0.80g/cm^3, tapped
Water Solubility	Very Soluble	**Autoignition Temperature**	Unknown
Decomposition Temperature	Unknown		

10. STABILITY AND REACTIVITY

Reactivity	Avoid contact with strong oxidizers
Chemical Stability	Stable
Hazardous Polymerization	Will not occur
Hazardous Decomposition	Combustion results in carbon monoxide and carbon dioxide
Conditions to Avoid	Avoid dust formation, heat, flames, and sparks

11. TOXICOLOGICAL INFORMATION

Acute Toxicity	
Oral	None Known
Dermal	None Known
Inhalation	No data available
Irritation	
Eye	Dust contact with the eyes can lead to mechanical irritation
Skin	Prolonged or repeated contact may dry skin or cause irritation.
Respiratory	Inhalation of dust in high concentrations may cause irritation of the respiratory system.
Ingestion	May cause temporary gastrointestinal discomfort
Sensitization	May cause sensitization of susceptible persons.
Effects of Short and Long-Term Exposure	No data available
Symptoms of Exposure	Possible irritation to eyes, skin, or respiratory system
NTP Report on Carcinogens / IARC Monographs	Not Listed
Potential OSHA Carcinogen	Not Listed

12. ECOLOGICAL INFORMATION

Persistence and Degradability	No data available; readily biodegradable components and viable microorganisms
Ecotoxicological Information	No data available
Adverse effects	None Expected

13. DISPOSAL CONSIDERATIONS

This material is not considered hazardous wastes according to Federal regulations (40-CFR-261). Consult local, regional, or state regulations for additional requirements.

14. TRANSPORT INFORMATION

Not classified as dangerous with respect to transport regulations

15. REGULATORY INFORMATION

Hazard Rating

HMIS							
Health		**Flammability**		**Reactivity**		**PPE**	
2	Temporary or minor injury may occur	1	Must be preheated before ignition will occur.	0	Normally stable	E	Safety Glasses Gloves Dust Respirator

U.S. Federal Regulations

Chemical Name	SARA 313 – Threshold Values	CERCLA/SARA – Section 302 Extremely Hazardous
Freeze-dried Microbial Mixture	Not Listed	Not Listed

U.S. State Regulations

California – This product does not contain any Proposition 65 Chemicals

16. OTHER

Issuing Date	22 September 2014
Revision Date	22 September 2014
The information presented herein has been compiled from sources considered to be dependable and is accurate at the date of publication to the best of United-Tech, Inc.'s knowledge. The information is designed only to be a guide for safe handling, use, processing, storage, transportation, disposal, and release of the product. United-Tech, Inc. makes no warranty whatsoever, expressed or implied, of merchantability or fitness for the particular purpose, regarding the accuracy of such data or the results to be obtained from the use thereof. United-Tech, Inc. assumes no responsibility for injury to recipient or to third persons or for any damage to any property and recipient assumes all such risks.	
END OF SDS	

Pantex Chemical Labeling Information

Product: CALCIUM HYPOCHLORITE, GRANULAR 65%

Manufacturer: PPG INDUSTRIES, INC

MSDS Date: October 04, 2012

MSDS#: 40558

Family Code: 10399

HEALTH	FLAMMABILITY
3	0
REACTIVITY	**FORM**
3	S
SPECIAL INFORMATION	
A^, COR, OX, SKIN W^	

COMPATIBILITY CODE

E

35-Account Numbers

For HazCom Use Only

Reviewer Brian Hildinger

HazCom Manager Thorstan Weaver

Hazard Ratings on this information sheet may be based on data contained in the manufacturer's MSDS, a third party MSDS, and/or other national consensus standards or references.

Please refer all questions to your supervisor or the Hazard Communication Group at 6486, 5933, 5109, 5929, or 5229.

3/19/2012

materials and other easily combustible materials such as petroleum, paint products, wood or paper may cause fire or explosion and the liberation of hazardous gases. Do not add this product to any dispensing device containing remnants of any other product. Such use may cause violent reaction leading to fire or explosion. Very toxic to aquatic organisms.

Precautions: Do not get in eyes, on skin, or on clothing. Avoid breathing dust. Irritating to nose and throat. Do not swallow. Do not eat, drink or smoke in work area. Wash hands after handling. Remove and wash contaminated clothing before reuse. Keep out of reach of children.

4. FIRST AID MEASURES

INHALATION: Remove from area to fresh air. If symptomatic, contact a poison control center, emergency room or physician for treatment information.

EYE/SKIN CONTACT: EYE: Remove contact lens and pour a gentle stream of warm water through the affected eye for at least 15 minutes. Contact a poison control center, emergency room or physician right away as further treatment will be necessary. SKIN: Run a gentle stream of water over the affected area for 15 minutes. A mild soap may be used if available. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

INGESTION: Gently wipe or rinse the inside of the mouth with water. Sips of water may be given if person is fully conscious. Never give anything by mouth to an unconscious or convulsing person. Do Not induce vomiting. Contact a poison control center, emergency room or physician right away as further treatment will be necessary.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not Applicable.

EXTINGUISHING MEDIA: Drench with large quantities of water only. Do not use dry chemicals or foams. Product supplies own oxygen, therefore attempts to smother fire with a wet blanket, carbon dioxide, dry chemical extinguisher or other means are not effective.

SPECIAL FIREFIGHTING PROCEDURES: Product decomposes at approximately 338-356°F (170-180°C) releasing oxygen gas. Container may rupture. Fire-fighters must wear NIOSH approved, pressure demand, self-contained breathing apparatus with full face piece for possible exposure to hazardous gases. Emits toxic fumes under fire conditions.

6. ACCIDENTAL RELEASE MEASURES

ACTION TO BE TAKEN IF MATERIAL IS RELEASED OR SPILLED:
Use extreme caution in handling spilled material. Do not mix with any other chemicals. Contamination with moisture, acids, organics or other easily combustible materials such as petroleum, paint products, wood or paper may cause fire or violent decomposition. If fire or decomposition occurs in area of spill, immediately douse with plenty of water. Otherwise, sweep up all visible material using a clean (new, if possible), dry shovel and broom and dissolve material in water. Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being consumed.

7. HANDLING AND STORAGE

PRECAUTIONS TO BE TAKEN DURING HANDLING AND STORAGE:
Store in a cool, dry, well-ventilated place. Keep in original container. Keep container closed when not in use. Keep away from heat, sparks, flames, direct sunlight, and other sources of heat, including lighted tobacco products. Use only a clean (new, if possible), dry scoop made of metal or plastic each time product is taken from the container. Do not add this product to any dispensing device containing remnants of any other product. Such use may cause violent reaction leading to fire or explosion. Add this product only to water. Never add water to product. Always add the product to large quantities of water. May cause fire or explosion if mixed with other chemicals. Fire may result if contaminated with acids, organic materials and other easily combustible materials such as oil, kerosene, gasoline, paint products wood and paper. Do not reuse container. Residual material remaining in empty container can react to cause fire. Thoroughly flush empty container with water then destroy by placing in trash collection. Do not contaminate water, food, or feed by storage or disposal of this product.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure Limits:
8-hour Time Weighted Average (TWA); 15-minute Short-Term Exposure Limit (STEL)

OSHA: The OSHA exposure limit(s) for chlorine: 0.5 ppm TWA. 1 ppm STEL. Calcium hydroxide: 5 mg/m^3 TWA. Calcium carbonate: 15 mg/m^3 (total dust) 5 mg/m^3 (respirable dust) (1989 Vacated PEL's)

ACGIH: The ACGIH exposure limit(s) for chlorine: 0.5 ppm TWA. 1 ppm STEL. Calcium hydroxide: 5 mg/m^3 TWA Calcium carbonate: 10 mg/m^3 (total dust) 3 mg/m^3 (respirable nuisance particulate) TWA.

ONTARIO: The Ontario Exposure limit(s) for Chlorine: 0.5 ppm TWAEV 1 ppm STEV (Short Term Exposure Value) Calcium hydroxide: 5 mg/m^3Calcium carbonate: 10 mg/m^3TWAEV

RESPIRATORY PROTECTION: Where the potential for exposure to dust exists, use the appropriate regulatory compliant full facepiece air-purifying respirator with acid gas cartridge and particulate prefilter. Carefully read and follow the respirator manufacturer's instructions and information.

VENTILATION: Use local exhaust or general room/dilution ventilation sufficient to maintain employee exposure below permissible exposure limits.

EYE AND FACE PROTECTION: Splashproof goggles and faceshield.

PROTECTIVE GLOVES: Butyl rubber. Neoprene. Nitrile.

OTHER PROTECTIVE EQUIPMENT: Boots, aprons, or chemical suits should be used when necessary to prevent skin contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point: Decomposes at approximately 338-356°F (170-180°C)
Vapor Density (Air=1): NA
Specific Gravity (Water=1): NA

pH:	Alkaline
FREEZING/MELTING POINT:	NA
SOLUBILITY (wt.% in water):	217 g/l @ 27°C
Bulk Density (kg/M3):	65-67 lbs./cu.ft.
VOLUME % VOLATILE:	NA
VAPOR PRESSURE:	NA
Evaporation Rate:	NA
HEAT OF SOLUTION:	Slightly exothermic
Physical State:	Granules
Odor:	slight chlorine
COLOR:	White

10. STABILITY AND REACTIVITY

Stability: Unstable above 338°F (170°C).

HAZARDOUS POLYMERIZATION: Will not occur.

INCOMPATIBILITY (CONDITIONS/MATERIALS TO AVOID):
Contamination. Excessive heat above 338°F (170°C). Moisture. Acids. Reducing agents. Organics. Combustible materials. Petroleum products. Paint products. Wood and paper.

HAZARDOUS THERMAL DECOMPOSITION/COMBUSTION PRODUCTS:
Acid or ammonia contamination will release toxic gases. Excessive heat will cause decomposition resulting in the release of oxygen and chlorine gas.

11. TOXICOLOGICAL INFORMATION

ACUTE INHALATION LC50: No mortality at 3.5 mg/l (rat) (1 hour) Slight to very low toxicity.
ACUTE DERMAL LD50: >1000 mg/kg. (rabbit) Slight to very low toxicity.
SKIN IRRITATION: Corrosive.
EYE IRRITATION: Corrosive.
ACUTE ORAL LD50: 850 mg/kg. (rat) Moderate toxicity.

CARCINOGENICITY STATUS: This product is NOT listed as a carcinogen or suspected carcinogen by NTP, IARC, ACGIH, or OSHA.

MEDICAL CONDITIONS AGGRAVATED: None known.

EFFECTS OF OVEREXPOSURE:

ACUTE:

Inhalation: Inhalation of calcium hypochlorite dust and deposition of particles in the respiratory tract can lead to irritation of the tissue and cause a variety of effects. These effects are dependent on concentration and include: upper respiratory tract irritation, nasal congestion, coughing, sore throat, laryngitis and shortness of breath. In operations where there are high concentrations of respirable particulates, pulmonary edema (fluid in the lung) may be produced. If not treated immediately,

pulmonary edema can be life threatening. Since this product is in granular or tablet form, particles of respirable size are not generally encountered.

Eye/Skin: Calcium hypochlorite is corrosive to the eyes. Contact of calcium hypochlorite dust with the eyes, even a minute amount for a short duration, can cause severe irritation and even blindness. Contact with the skin may cause severe irritation, burns, or tissue destruction. In studies utilizing rabbits, the skin irritation score was 8/8 and the eye irritation score was 98.5/110.

Ingestion: Calcium hypochlorite, if swallowed, causes severe burns to the digestive tract and can be fatal.

CHRONIC:

Genotoxicity: Calcium hypochlorite produced positive responses in in-vitro assays using bacterial systems (the Ames test) and chromosomal aberrations in Chinese hamster fibroblasts. In a whole animal experiment (mouse micronucleus test), exposures ranging from 20 to 160 mg/kg produced no compound related chromosomal abnormalities.

Carcinogenisis: Although no study has been conducted with calcium hypochlorite, the carcinogenic potential of sodium hypochlorite was studied in F344 rats. After 104 weeks of drinking water containing up to 2000 ppm sodium hypochlorite, there was no evidence that this chemical produced any carcinogenic response. In addition, this exposure did not result in any adverse effects

12. ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION:
0.088 mg/l (Bluegill) 96-hour LC50. Extreme toxicity.

ENVIRONMENTAL FATE:
No data at this time.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHOD:
Spilled material that has been swept up and dissolved in water should be used immediately in the normal application for which this product is being used. If this is not possible, dissolve material in water and carefully neutralize dissolved material by adding hydrogen peroxide (one pint of 35% hydrogen peroxide solution per pound of calcium hypochlorite to be neutralized) then dilute the neutralized material with plenty of water and flush to sewer. Note: Only properly neutralized material should be flushed to sewer. Unneutralized material can cause environmental damage to receiving water or can interfere with treatment plant operation. Care must be taken when using or disposing of chemical materials and/or their containers to prevent environmental contamination. It is your duty to dispose of the chemical materials and/or their containers in accordance with the U.S. Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, as well as any other relevant Federal, State, or local laws/regulations regarding disposal.

14. TRANSPORT INFORMATION

Proper Shipping Name: Calcium Hypochlorite, Hydrated
Hazard Class: 5.1 (Oxidizer)

UN Number: UN2880
Packing Group: II
USA-RQ, Hazardous Substance and Quantity: 10 lbs./4.5 kg. (calcium hypochlorite)
Marine Pollutant: None
Additional Information: USA Shipments Only - Hazardous Substances are regulated in the USA when shipped above their Reportable Quantity (RQ).

15. REGULATORY INFORMATION

USA TSCA: All components of this product are listed on the TSCA Inventory.
EU EINECS: All components in this product are listed on EINECS.
CANADA DOMESTIC SUBSTANCES LIST (DSL): This product and/or all of its components are listed on the Canadian DSL.
AUSTRALIA AICS: All components of this product are listed on AICS.
KOREA ECL: All components in this product are listed on the Korean Existing Chemicals Inventory (KECI).
JAPAN MITI (ENCS): All components in this product are listed on the Japanese Existing and New Chemical Substances (ENCS) chemical inventory.
PHILIPPINES PICCS: All of the components in this product are listed on the Philippines Inventory of Chemicals and Chemical Substances (PICCS).
CHINA IECSC: All components of this product are listed on the Inventory of Existing Chemical Substances in China (IECSC) or otherwise exempt.

SARA TITLE III:
SARA (311, 312) Hazard Class:
Acute Health Hazard. Reactive Hazard. Fire Hazard.
SARA (313) Chemicals:
Not listed.
SARA Extremely Hazardous Substance:
Not listed.

CERCLA Hazardous Substance:
The following materials are listed as CERCLA Hazardous Substances in Table 302.4 of 40 CFR Part 302: Calcium Hypochlorite (7778-54-3) RQ = 10 lbs./4.54 kg.

CANADA REGULATIONS (WHMIS): Class C - Oxidizing material.

FIFRA:
This product is registered with EPA as a pesticide.

16. OTHER INFORMATION

Other Information:
NSF Drinking Water Treatment Chemicals Listing - PPG calcium hypochlorite is certified for maximum use at 15 mg/L under NSF/ANSI Standard 60.

The following has been revised since the last issue of this MSDS:
Date. Edition. Section 8 has been updated. Section 16 has been updated.

PPG:	0310 Calcium Hypochlorite Granular 65%	10/04/2007

Previous revision date: 03/09/2007
Previous edition number: 11

NA = Not Available

Appendix 8

Pond Liner Improvements

Appendix 8

Summary of the repairs made to the facultative and upper storage lagoons

8.1 Upper Storage Lagoon

Repairs made in accordance with the project plans and specifications approved by TCEQ on June 28, 2019 were completed on the Upper Storage Lagoon on October 10, 2022. These repairs included:

- Demolition of the concrete debris trough at the north end of the structure.
- Subgrade repair and extension of the 12-inch-thick compacted soil liner and 12- inch- thick protective cover soil layer.
- Installation of an under-liner vent system.
- Placement of a 40-mil XR-5 synthetic liner manufactured by Seaman Corporation.

Notification of these repairs was sent to TCEQ on October 19, 2022.

8.2 Facultative Lagoon

Repairs made in accordance with the project plans and specifications approved by TCEQ on June 28, 2019 were completed on the Facultative Lagoon September 4, 2024. These repairs included:

- Removal of the existing concrete debris trough.
- Subgrade repair and extension of the 2-foot-thick compacted soil liner with a permeability of less then 1.0×10^{-7} cm/s to top of slope where the debris trough was removed.
- Placement of the concrete apron along the north slope where compacted soil liner was placed.
- Crack repair of the existing concrete apron around the remainder of the lagoon.
- Replacement of the two 10" pipes along the north slope of the lagoon.
- Clay liner repair along the upper 6-feet of the easter side of the lagoon adjacent to the concrete apron.

Notification of these repairs was sent to TCEQ on September 13, 2024.

Appendix 9

Well Information

Appendix 9
Well Information

This application provides Well Information as required by the Permit Application Form. A Table of Contents is presented below to summarize the Well Information.

Table 9.1 Table of Contents

9.1 Map Requirements
9.2 List and Cross Reference of Water Wells
9.3 Well Drilling Logs

Summary

9.1 Map Requirements

USGS map with the locations of:

- Onsite buildings
- Waste disposal or treatment facilities
- Buffer zones
- Surface waters of the state onsite and within 500 feet of the property boundaries
- Water wells within ½ mile of the disposal site and wastewater ponds

Figure 8.1 provides a depiction of the wastewater treatment and disposal site along with current and plugged wells within ½ mile.

There are no springs or Seeps on-site or within 500 feet of the property. There are no tail water control facilities at Pantex Plant.

9.2 List and Cross Reference of Water Wells

Table 8.2 provides the required information on wells within ½ mile of the wastewater disposal and treatment facility.

All wells except extraction wells are constructed with a surface completion consisting of a 5' x 5' concrete pad, protective casing with locking Royer covers, and bollards at the four corners. Extraction wells surface completion consist of a below grade concrete vault with a locking hatch cover, and bollards at the four corners. All wells include a seal plug at the top of the casing or piping for the extraction wells.

9.3 Drilling completion logs.

Section 8.3 includes the available drilling logs, completion diagrams, and State Well Reports for the wells identified within ½ mile of the wastewater disposal and treatment facility.

Figure 9.1 - Map of the Pantex Plant Wastewater Treatment Sites and Disposal Site

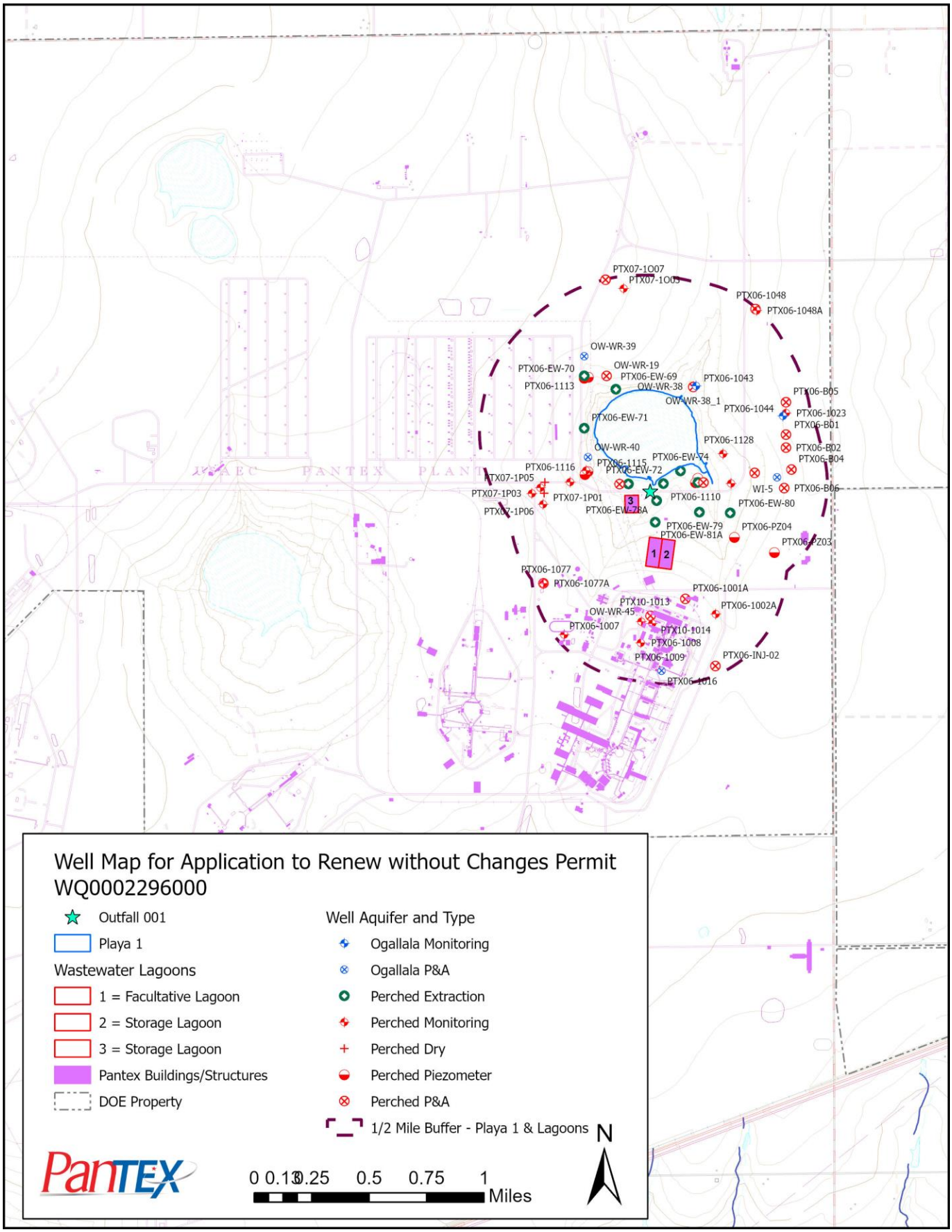


Table 9.2 List and Cross Reference of Water Wells for WWTF Area

Well ID	Aquifer	Well Use	Producing	Current Status
OW-WR-19	Perched	Monitoring	No	P&A
OW-WR-38	Perched	Monitoring	No	Active
OW-WR-38_1	Perched	Monitoring	No	P&A
OW-WR-39	Ogallala	Monitoring	No	P&A
OW-WR-40	Ogallala	Monitoring	No	P&A
OW-WR-45	Perched	Monitoring	No	Active
PTX06-1001A	Perched	Monitoring	No	Active
PTX06-1002A	Perched	Monitoring	No	Active
PTX06-1007	Perched	Monitoring	No	Active
PTX06-1008	Perched	Monitoring	No	Active
PTX06-1009	Perched	Monitoring	No	Dry
PTX06-1016	Ogallala	Monitoring	No	P&A
PTX06-1023	Perched	Monitoring	No	Active
PTX06-1043	Ogallala	Monitoring	No	Active
PTX06-1044	Ogallala	Monitoring	No	Active
PTX06-1048	Perched	Bore Hole Abandoned	No	P&A
PTX06-1048A	Perched	Monitoring	No	Active
PTX06-1077	Perched	Bore Hole Abandoned	No	P&A
PTX06-1077A	Perched	Monitoring	No	Active
PTX06-1109	Perched	Piezometer	No	Active
PTX06-1110	Perched	Piezometer	No	Active
PTX06-1112	Perched	Piezometer	No	Active
PTX06-1113	Perched	Piezometer	No	Active
PTX06-1115	Perched	Piezometer	No	Active
PTX06-1116	Perched	Piezometer	No	Active
PTX06-1117	Perched	Monitoring	No	Active
PTX06-1128	Perched	Monitoring	No	Active
PTX06-1129	Perched	Monitoring	No	Active
PTX06-B01	Perched	Investigative Boring	No	P&A
PTX06-B02	Perched	Investigative Boring	No	P&A
PTX06-B04	Perched	Investigative Boring	No	P&A
PTX06-B05	Perched	Investigative Boring	No	P&A
PTX06-B06	Perched	Investigative Boring	No	P&A
PTX06-EW-69	Perched	Remediation Extraction	Yes	Active
PTX06-EW-70	Perched	Remediation Extraction	Yes	Active
PTX06-EW-71	Perched	Remediation Extraction	Yes	Active
PTX06-EW-72	Perched	Remediation Extraction	Yes	Active
PTX06-EW-73	Perched	Remediation Extraction	Yes	Active
PTX06-EW-74	Perched	Remediation Extraction	Yes	Active
PTX06-EW-75	Perched	Remediation Extraction	Yes	Active
PTX06-EW-78	Perched	Remediation Extraction	No	P&A
PTX06-EW-78A	Perched	Remediation Extraction	Yes	Active
PTX06-EW-79	Perched	Remediation Extraction	Yes	Active

Table 9.2 List and Cross Reference of Water Wells for WWTF Area (cont.)

Well ID	Aquifer	Well Use	Producing	Current Status
PTX06-EW-80	Perched	Remediation Extraction	Yes	Active
PTX06-EW-81A	Perched	Remediation Extraction	Yes	Active
PTX06-INJ-02	Perched	Injection	No	P&A
PTX06-PZ03	Perched	Piezometer	No	Active
PTX06-PZ04	Perched	Piezometer	No	Inactive
PTX07-1O03	Perched	Monitoring	No	Active
PTX07-1P01	Perched	Monitoring	No	Dry
PTX07-1P02	Perched	Monitoring	No	Active
PTX07-1P03	Perched	Monitoring	No	Active
PTX07-1P04	Perched	Monitoring	No	Dry
PTX07-1P05	Perched	Monitoring	No	Active
PTX07-1P06	Perched	Monitoring	No	Active
PTX08-1001	Perched	Monitoring	No	Active
PTX08-1001_1	Perched	Monitoring	No	P&A
PTX08-1002	Perched	Monitoring	No	Active
PTX08-1002_1	Perched	Monitoring	No	P&A
PTX10-1013	Perched	Monitoring	No	P&A
PTX10-1014	Perched	Monitoring	No	Active
WI-5	Ogallala	Bore Hole Abandoned	No	P&A

Section 9.3

Well Lithologic Logs, Completion Diagrams, and State Well Reports

STATE OF TEXAS PLUGGING REPORT for Tracking #91276

Owner:	**U.S. Department of Energy**	Owner Well #:	**OW-WR-19**
Address:	**U.S Highway 60 & FM 2373 Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**U.S. Highway 60 & FM 2373 Amarillo , TX 79120**	Latitude:	**35° 19' 53" N**
Well County:	**Carson**	Longitude:	**101° 33' 31" W**
		GPS Brand Used:	**Trimble**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Double A Drilling Company**
Driller's License Number of Original Well Driller:	**691**
Date Well Drilled:	**1/30/1975**
Well Report Tracking Number:	**NA**
Diameter of Borehole:	**12.25 inch inches**
Total Depth of Borehole:	**350 ft. feet**

Date Well Plugged:	**11/7/2013**
Person Actually Performing Plugging Operation:	**Roy Burson**
License Number of Plugging Operator:	**2585**
Plugging Method:	**Other plugging method.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **5.5 inches diameter, From 0 ft to 350 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 350 ft to 243 ft; Sack(s)/type of cement used: bentonite chips** 2nd Interval: **From 243 ft to 25 ft; Sack(s)/type of cement used: bentonite grout** 3rd Interval: **From 25 ft to 8 ft; Sack(s)/type of cement used: bentonite chips** 4th Interval: **From 8 ft to 3 ft; Sack(s)/type of cement used: cement** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**Roy Burson Elk City , OK 73644**

Plug Installer License Number:	**2585**
Licensed Plug Installer Signature:	**Roy Burson**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Bentonite chips and grout used from bottom to 8 ft. from surface. 5 ft. cement cap to within three feet below ground surface. Pad and casing will be removed to 3 feet below surface to remove foot print.**

Please include the plugging report's tracking number (Tracking **#91276**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

OW-WR-19

aka: PM-19

Contractor: Groundwater Technology
Contract #: 830011063
Contractor's Project #:
Drilled date: About 06/1991

OPTIX #:
Last Update:

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- ___Draft
- ___Final

_X_Installation Log/Diagram

Lithologic Logs
- ___Draft Visual Classification of Soils (handwritten)
- _X_Final Visual Classification of Soils (computerized)

Geophysical Logs
- _X_Neutron
- _X_Gamma
- ___e-Log
- ___Bond Log
- ___Deviation Log

_X_State Well Report

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

Well updates may only be performed upon receipt of this form by the Geographical Information System (GIS) Section, along with all appropriate signatures below. Electronic submittals may be made using a routed "E-Stars" task.

* *Cover sheet remains attached to request form for validity. If sent by "E-Stars", recommend sending as a "Routed Approval task" (ends with GIS signee at end of routing).*

Requestor:

(Signature) | Clifton Britten (Print)

Project Manager:

NA (Signature) | (Print)

Groundwater Media Scientist: Matt Jones, PhD.

(Signature) | Matt Jones (Print)

Reviewer: Tony Biggs

(Signature) | Tony Biggs (Print)

Reviewer: Michelle Jarrett

(Signature) | Michelle Jarrett (Print)

Integrated Environmental Database (IED) & Suspect Anomaly Report (SAR) Administration: Tammy Vincent

(Signature) | Tammy Vincent (Print)

GIS Administration *(when request is completed)*: Barry Guidry

(Signature) | Barry Guidry (Print)

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

ENVIRONMENTAL PROGRAMS
WELL REQUEST AND CHANGE FORM

STOP!! DO NOT ATTEMPT TO COMPLETE THIS FORM UNTIL
YOU HAVE CAREFULLY READ THE INSTRUCTIONS AFTER THE FORM

Type of Well Change (check one):

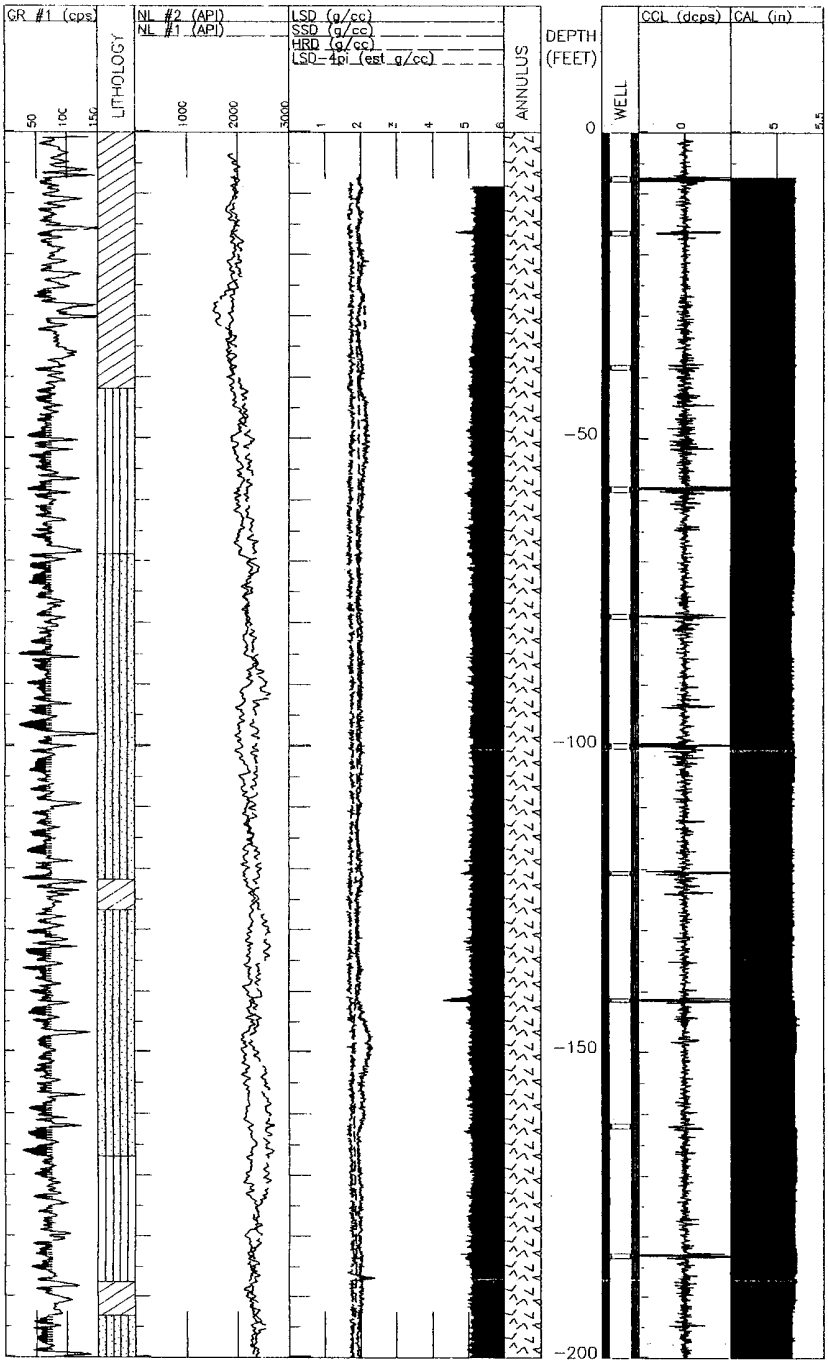
☐ New well request?
How many?

☒ Updates to existing wells

1. General Information			
a. Existing Well No.: (If well currently exists)	OW-WR-19	b. Long-Tem Monitoring (LTM) Well?	☐
c. Requestor's Name:	Clifton Britten	d. Date:	12/6/2013
e. Dept/Organization:	622	f. Mail Drop:	T9-130
g. Phone:	4028	h. Deadline:	
i. Reason for deadline:			
2. New Well Request			
a. Aquifer:	N/A	b. Well Type:	N/A
c. Proposed Coordinates:			
Easting (x):	0.000	Northing (y):	0.000
3. Well Changes (to existing wells)			
a. When completed?	N/A	Date: 11/7/2013	
	Existing	*New*	
b. Aquifer:	Perched	N/A	
c. Well Type:	Investigative Well	N/A	
d. Current status of well:	Plugged Abandoned	Active	

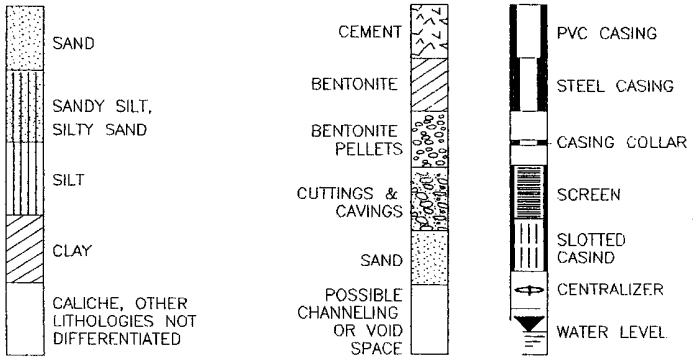
4. Other: Well was plugged and abandoned by Sampling & Analysis technicians. Work completed under Texas Licensed Water Well Driller, Roy Burson.TDLR report filed on 12-2-13.

Well Name: OW-WR-19
File Name: PTX19FNL
Location: SEC 33, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
STEEL CASING: 5.5-INCH DIAMETER
BIT SIZE 12.25 INCH



WELL IS CONSTRUCTED OF 5.5-INCH DIAMETER STEEL CASING, (20-FOOT JOINTS)

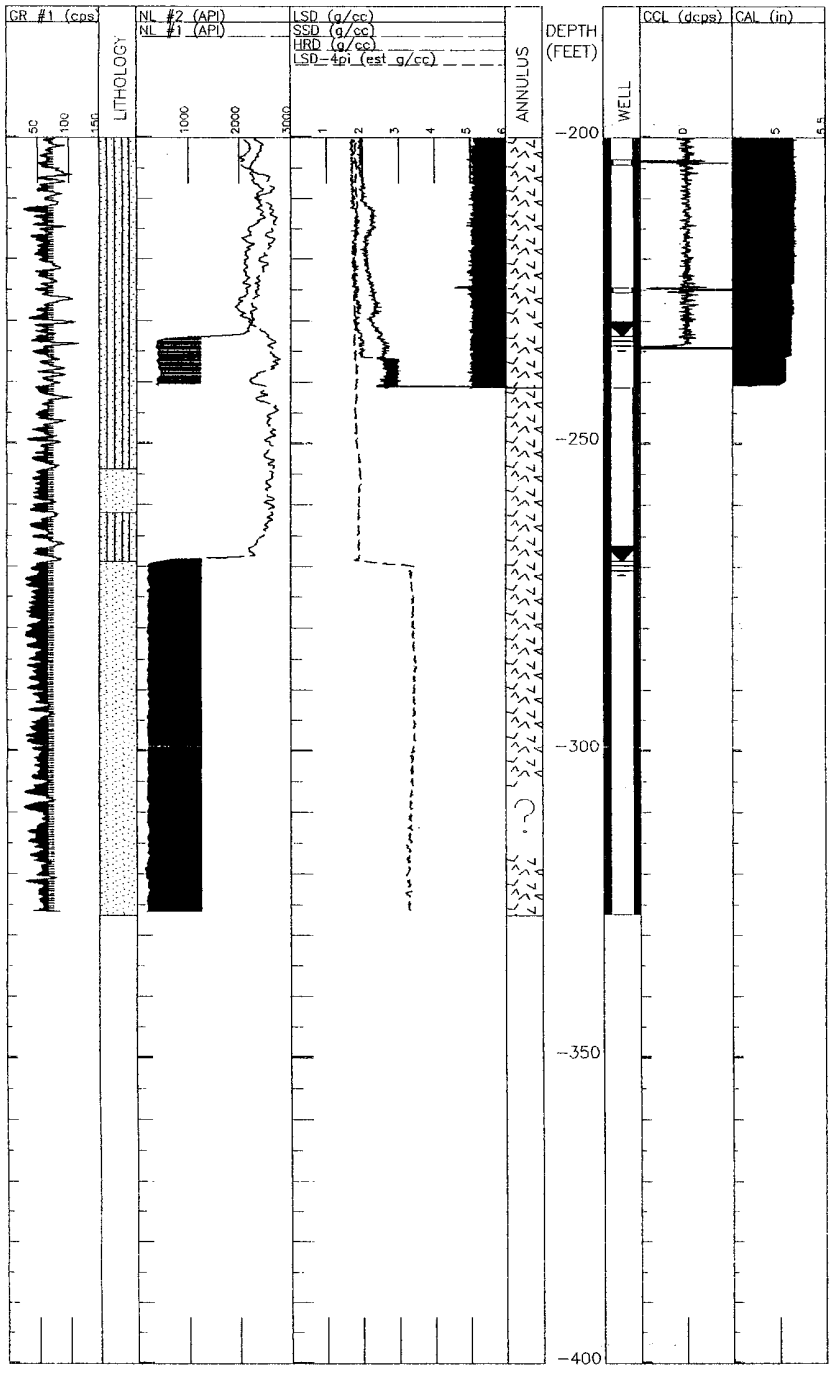
- DEPTH - 0-240 FEET
- LOGS - NL, LSD, SSD, HRD, CCL
- STEEL CASING, UNIFORM CEMENT DENSITY, VARIABLE WATER CONTENT



GROUNDWATER TECHNOLOGY
12101 E. 51st ST. SUITE 103 TULSA, OK 74146

PROJECT NO.: 830011063	DATE MAP GENERATED: 5/13/92
AUTHORED: RVH	TITLE: WELL OW-WR-19 (0-200 FEET)
CHECKED: RVH	
DETAILED: RHW	CLIENT: CENG/PANTEX PLANT/AM/
	LOCATION: PANTEX
	ACAD FILE: PTX19_2

Well Name: OW-WR-19
File Name: PTX19FNL
Location: SEC 33, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
STEEL CASING: 5.5-INCH DIAMETER
BIT SIZE 12.25 INCH



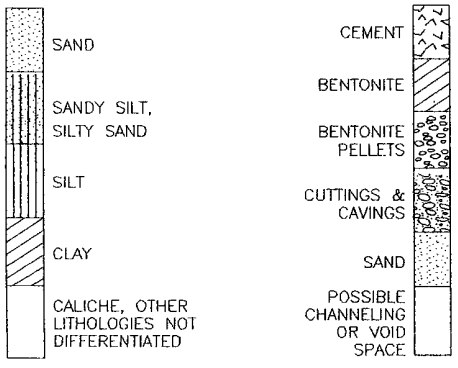
WELL IS CONSTRUCTED OF 5.5-INCH DIAMETER STEEL CASING, (20-FOOT JOINTS)

DEPTH - 0-240 FEET
LOGS - NL, LSD, SSD, HRD, CCL
■ STEEL CASING, UNIFORM CEMENT DENSITY, VARIABLE WATER CONTENT

DEPTH - 232 FET
LOG -NL
■ WATER LEVEL, SECOND LOGGING RUN

DEPTH - 268 FEET
LOGS - NL, SSD
■ WATER LEVEL, INITIAL LOGGING RUN

DEPTH - 240-327 FEET
LOGS - NL #1, LSD-4pi
■ NEUTRON AND DENSITY RESPONSES (COMBINED CASING AND ANNULAR ATTENUATION) UNIFORM; ANY PRODUCING INTERVALS MAY BE THROUGH PERFORATIONS OR FIELD-SLOTTED CASING



GROUNDWATER TECHNOLOGY
12101 E. 51st ST.
SUITE 103
TULSA, OK 74146

PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE:

WELL OW-WR-19
(200-400 FEET)

CLIENT: CENG/PANTEX PLANT/AMA
LOCATION: PANTEX
ACAD FILE: PTX19_

TABLE 3. WELL OW-WR-19, DATA AND ASSESSMENT

OTHER WELL DESIGNATIONS	Test Well 1 (TW-1), Old North Playa Well
LOCATION	Sec 33, Blk M-4, between Red Lake (Playa 1) and Zone 4; State Plane Coordinates not available
GEOPHYSICAL TOOLS (LOGS) DATA:	1991: 9030H (GR, HRD, CAL), 9035 (GR, LSD, SSD, CAL), 9051 (GR, NL, CCL) 1988: 9067 (GR, NL), 9068 (GR, LSD-4pi)
LOG QUALITY	Excellent
CASING: MATERIALS	Steel, 20-foot joints, 5.5-inch diameter, 0-241 feet, uncertain construction below 241 feet
POTENTIAL PROBLEMS	None detected
QUALITY OF ASSESSMENT	Good 0-241 feet (depth of 1991 logs) Poor 241-333 feet (1988 log suite); could be improved with additional logs
SCREEN: MATERIALS	Steel, 5.5-inch diameter, possibly perforated or field-slotted casing, within the 241-333 foot interval (308-350 feet reported)
POTENTIAL PROBLEMS	None detected; if casing is perforated or field-slotted, potential for silting-in of well and corrosion of casing
QUALITY OF ASSESSMENT	Poor (1988 log suite); could not confirm reported screen from 308-350 feet; could be improved with additional logs
ANNULUS: MATERIALS	Cement 0-241 feet, uniform density with some variation in water content; possibly cement 241-326 feet; bentonite and sand not apparent
POTENTIAL PROBLEMS	None detected
QUALITY OF ASSESSMENT	Good 0-241 feet (depth of 1991 logs) Poor 241-326 feet (1988 log suite); could be improved with additional logs
OVERALL WELL CONDITION	Good 0-241 feet; not currently determined below 241 feet
CORPS OF ENGINEERS WELL CONSTRUCTION NOTES LOG HEADER NOTES	Double A Drilling Co. drilled 1/30/75, rotary Bit size 12 ¼ inch 5 ½ in. dia. casing 0-308 feet 5 ½ in. dia. screen 308-350 feet Total depth drilled 350 feet Total depth well 350 feet Total depth logged (1988) 333 feet (1991) 241 feet
OTHER COMMENTS	Possible obstructions at 333 feet in 1988 and at 241 feet in 1991 (logs not run to reported TD)



Century GEOPHYSICAL CORP.

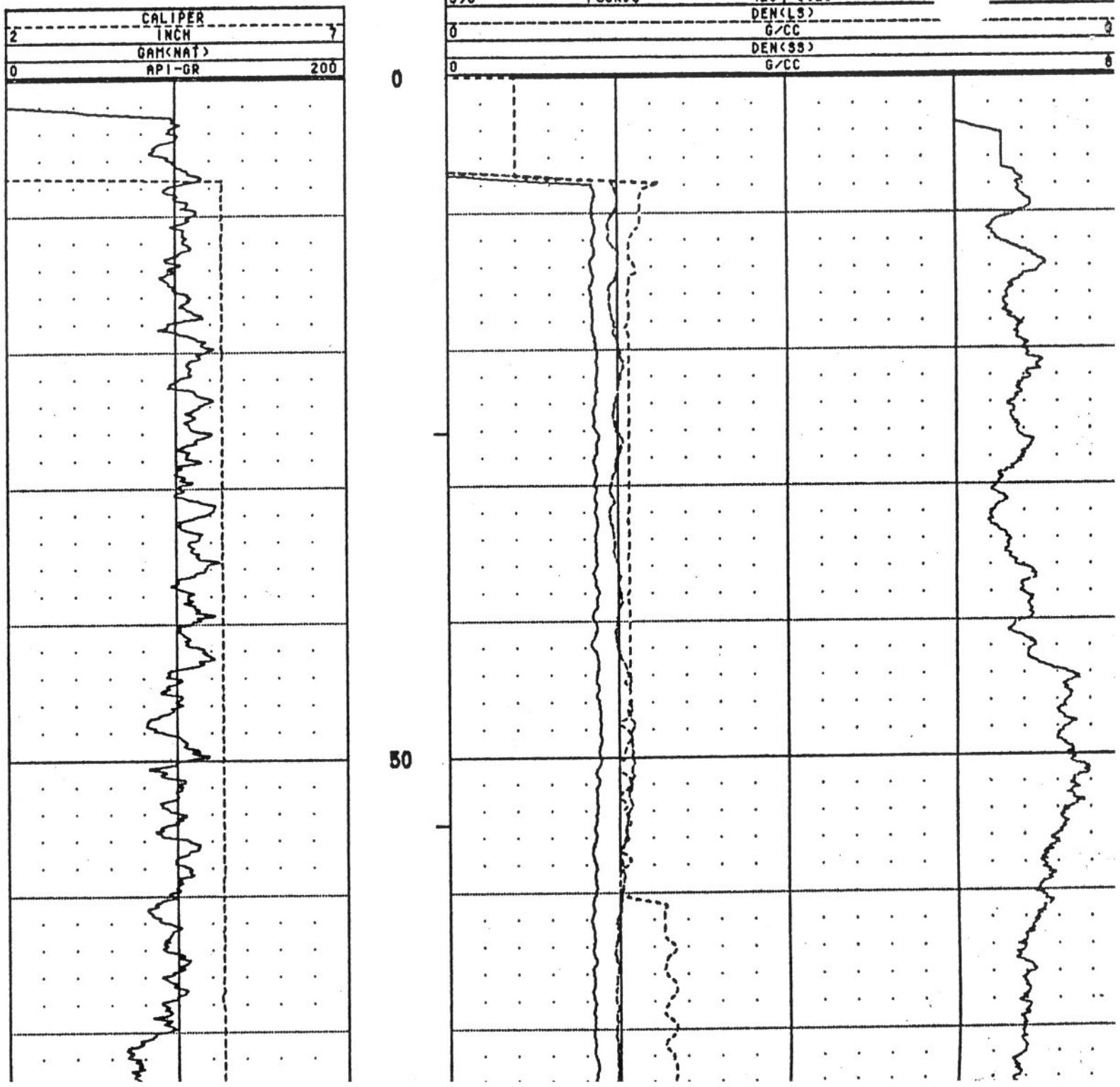
COMPENSATED DENSITY

COMPANY	: USACE TULSA			OTHER SERVICES:	
WELL	: OW-WR-19				
LOCATION/FIELD	: PANTEX NORTH OF PLAYA 1				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/12/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 350	ELEV. PERM. DATUM:		KB	: NA
LOG BOTTOM	: 241.30	LOG MEASURED FROM:	TOC	DF	: NA
LOG TOP	: 0.00	DRL MEASURED FROM:	GL	GL	:
CASING DRILLER	: 308	LOGGING UNIT	: 9101		
CASING TYPE	: STEEL	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .25	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: PROCESSED
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9035AA
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 8
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 8
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

REMARKS :

WELL SCREENED FROM 308' TO 350'.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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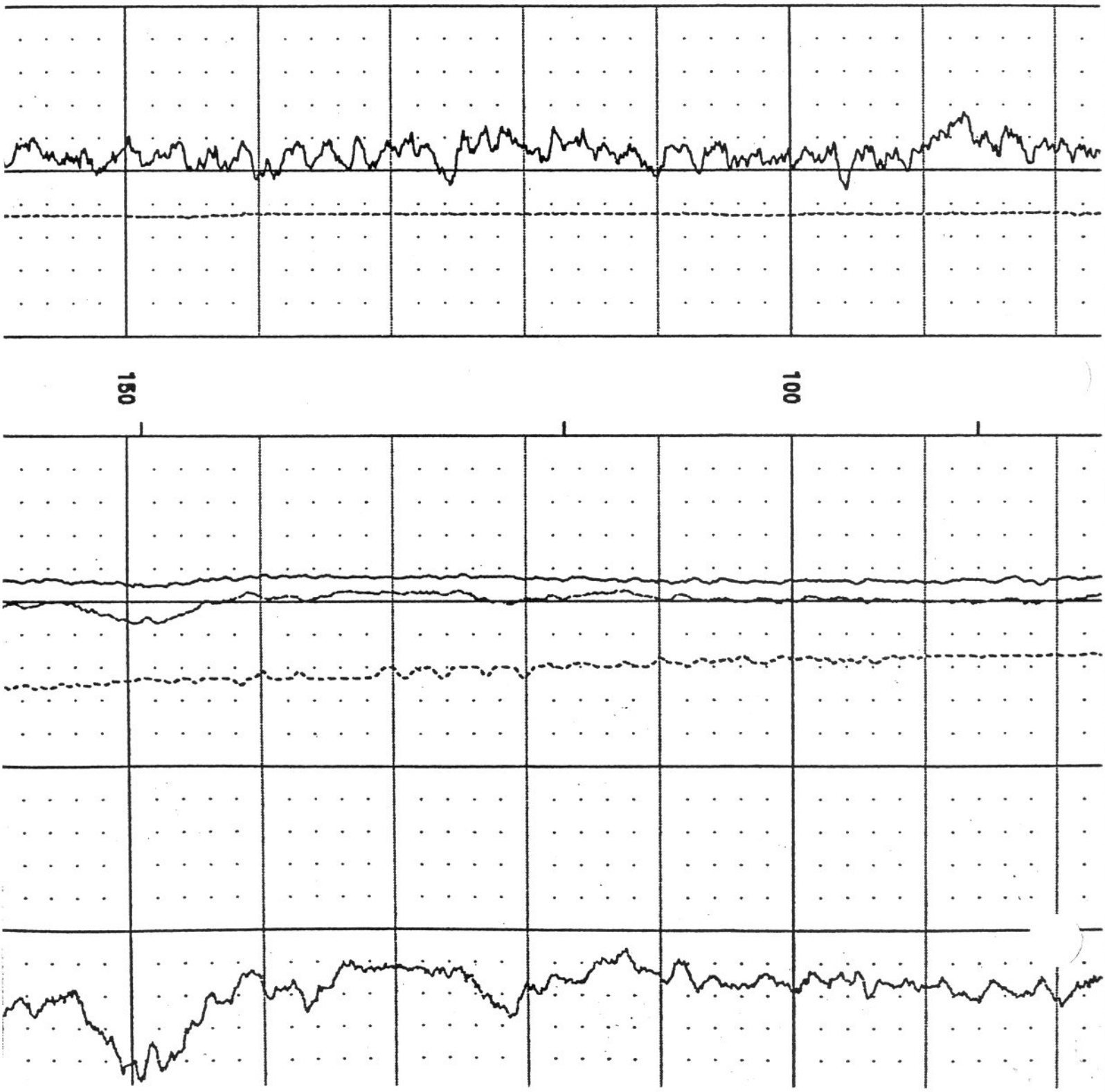
INCH
7
GAM(NAT)
0
API-GR
200
TENSION
390
POUNDS
420
-0.25
0.25
DEN(LS)
0
G/CC
3
DEN(SS)
0
G/CC
3
0
50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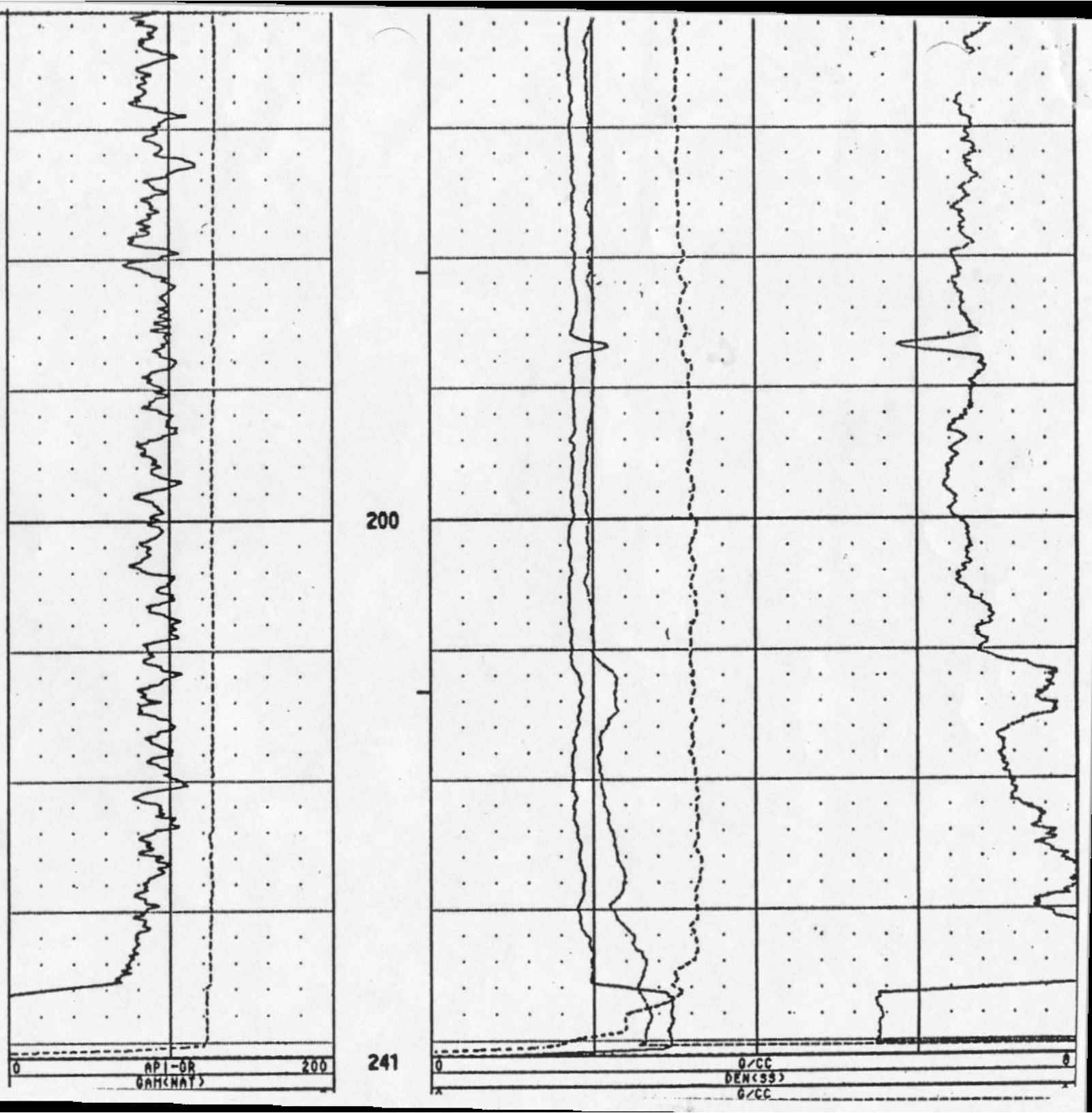

0
API-GR
200
GAM(NAT)
200
241
0
G/CC
0
DEN(SS)
G/CC



Century GEOPHYSICAL CORP.

GAMMA-NEUTRON-CCL

COMPANY	: USACE TULSA				
WELL	: OW-WR-19				
LOCATION/FIELD	: PANTEX NORTH OF PLAYA 1				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/12/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 350	ELEV. PERM. DATUM:		KB	: NA
LOG BOTTOM	: 240.90	LOG MEASURED FROM:	TOC	DF	: NA
LOG TOP	: 1.10	DRL MEASURED FROM:	GL	GL	:
CASING DRILLER	: 300	LOGGING UNIT	: 9101		
CASING TYPE	: STEEL	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .25	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: ORIGINAL
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9031A
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 0
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 4
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

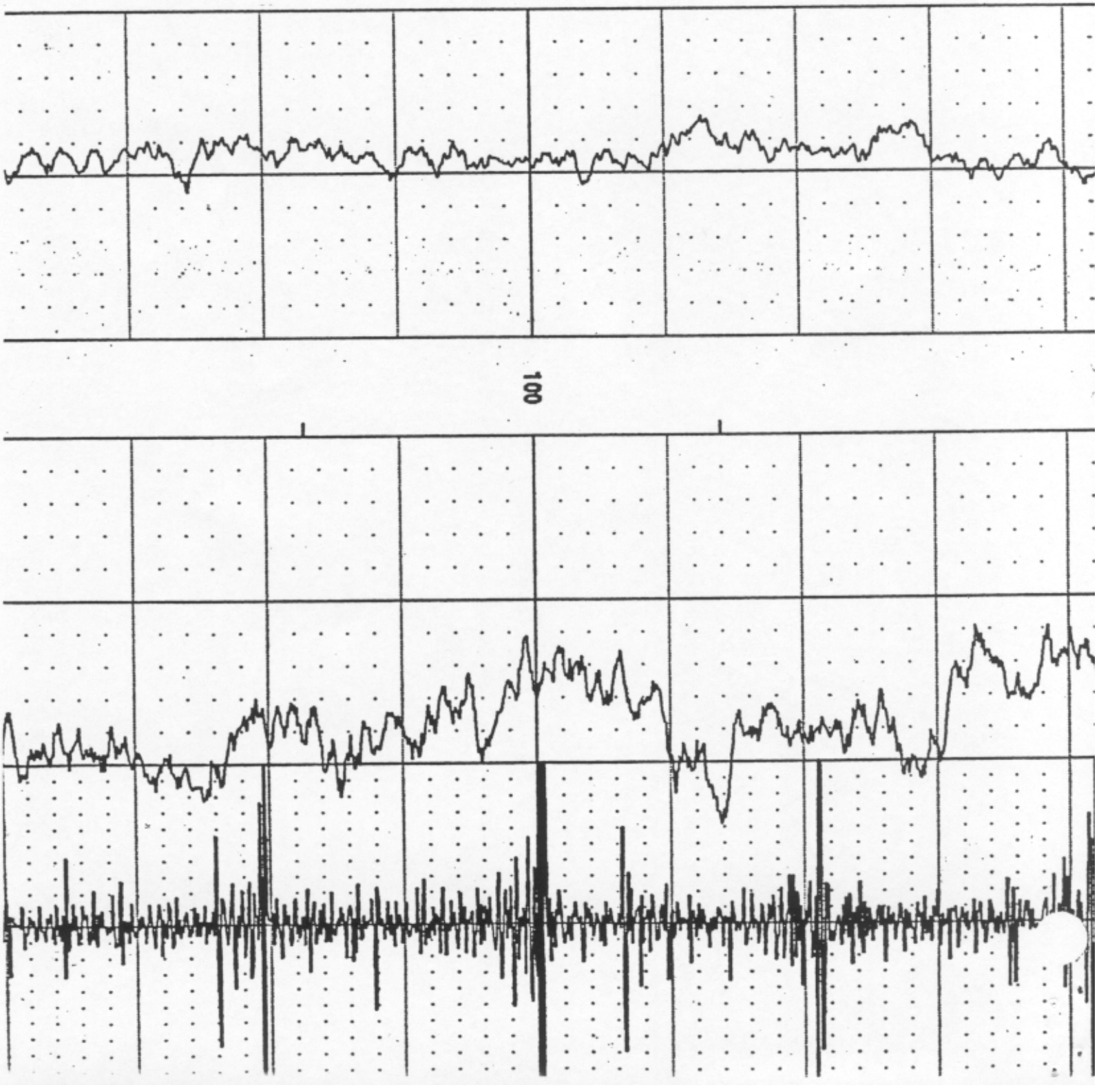
OTHER SERVICES:

REMARKS :

WELL SCREENED FROM 300' TO 350'.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAM(NAT)
0
API-GR
200
CCL
-200
DELT-CPS
200
NEUTRON
0
API-N
1500
0
50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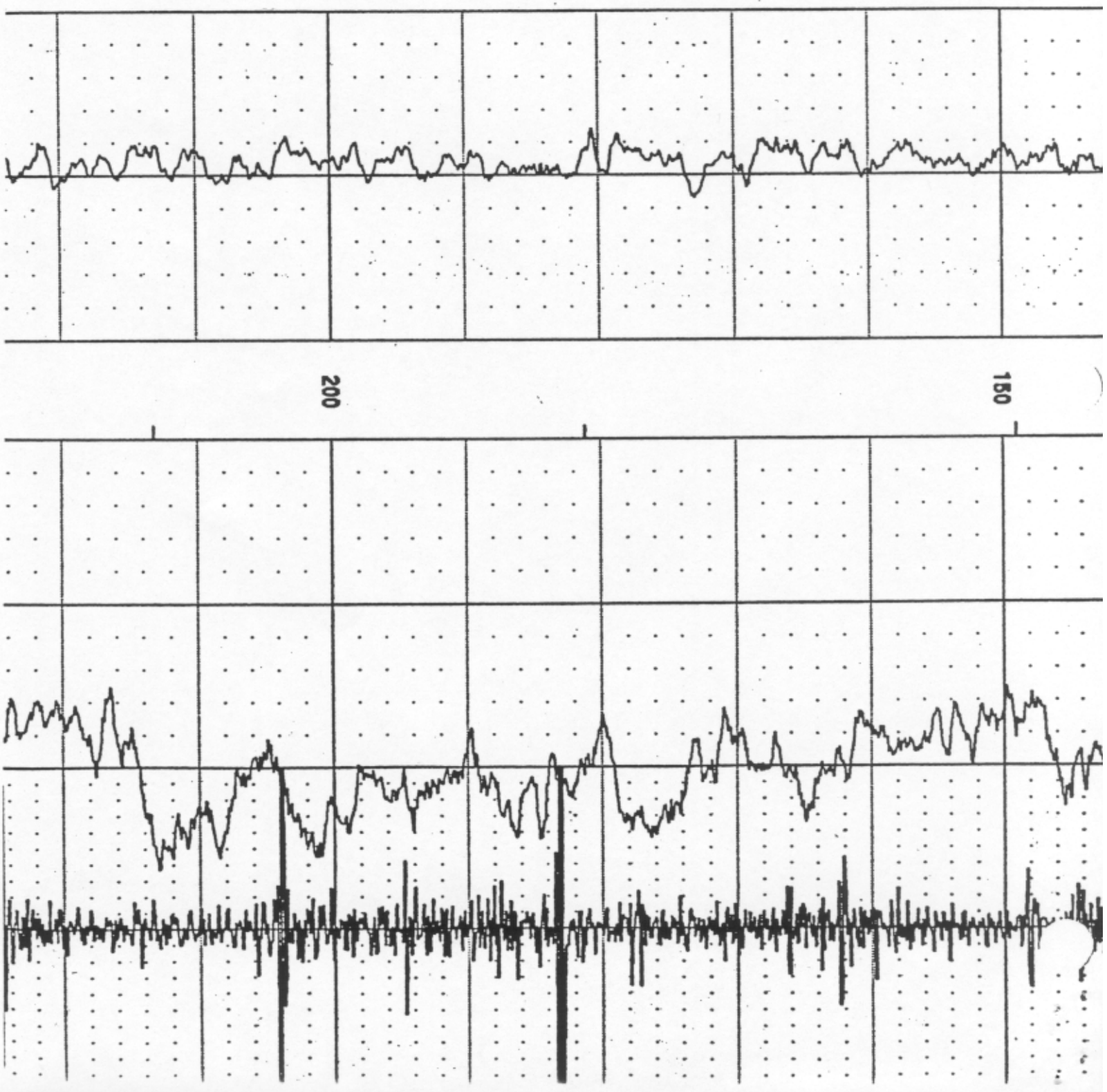
200
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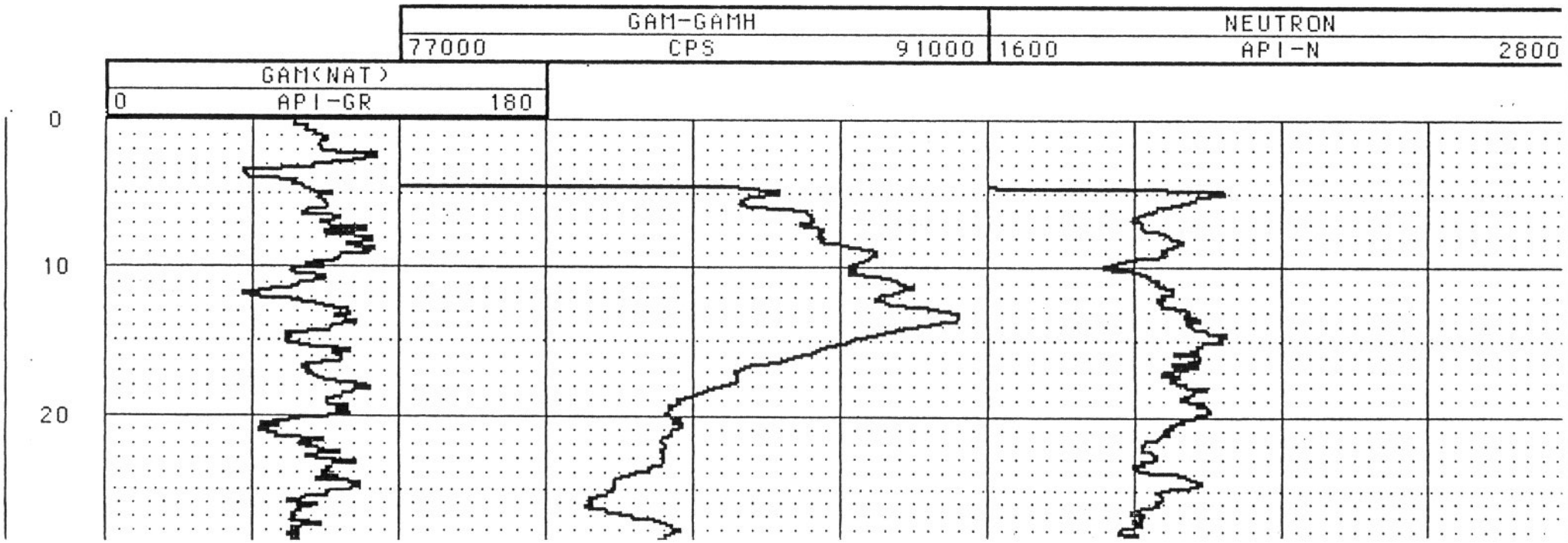
Century

TW2

COMPANY	: ROY F. WESTON INC.			OTHER SERVICES:	
WELL	: TW2/OW-WR-19				
LOCATION/FIELD	: PANTEX PLANT				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/29/88	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 241	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 241.00	LOG MEASURED FROM	: GL	DF	:
LOG TOP	: -1.00	DRL MEASURED FROM	: GL	GL	:
CASING DRILLER	: 241	LOGGING UNIT	: 568		
CASING TYPE	: STEEL	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .75	RECORDED BY	: R. MILLER		
BIT SIZE	: 6.25	BOREHOLE FLUID	: WATER	FILE	: PROCESSED
MAGNETIC DECL.	: 7.5	RM	: 0	TYPE	: 9067A
MATRIX DENSITY	: 2.68	RM TEMPERATURE	: 0	LOG	: 2
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 57	PLOT	: WESTON 0
NEUTRON MATRIX	: LIMESTONE	FLUID DELTA T	: 210	THRESH	: 2500
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO CGC STANDARD TERMS AND CONDITIONS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CPS
91000
NEUTRON
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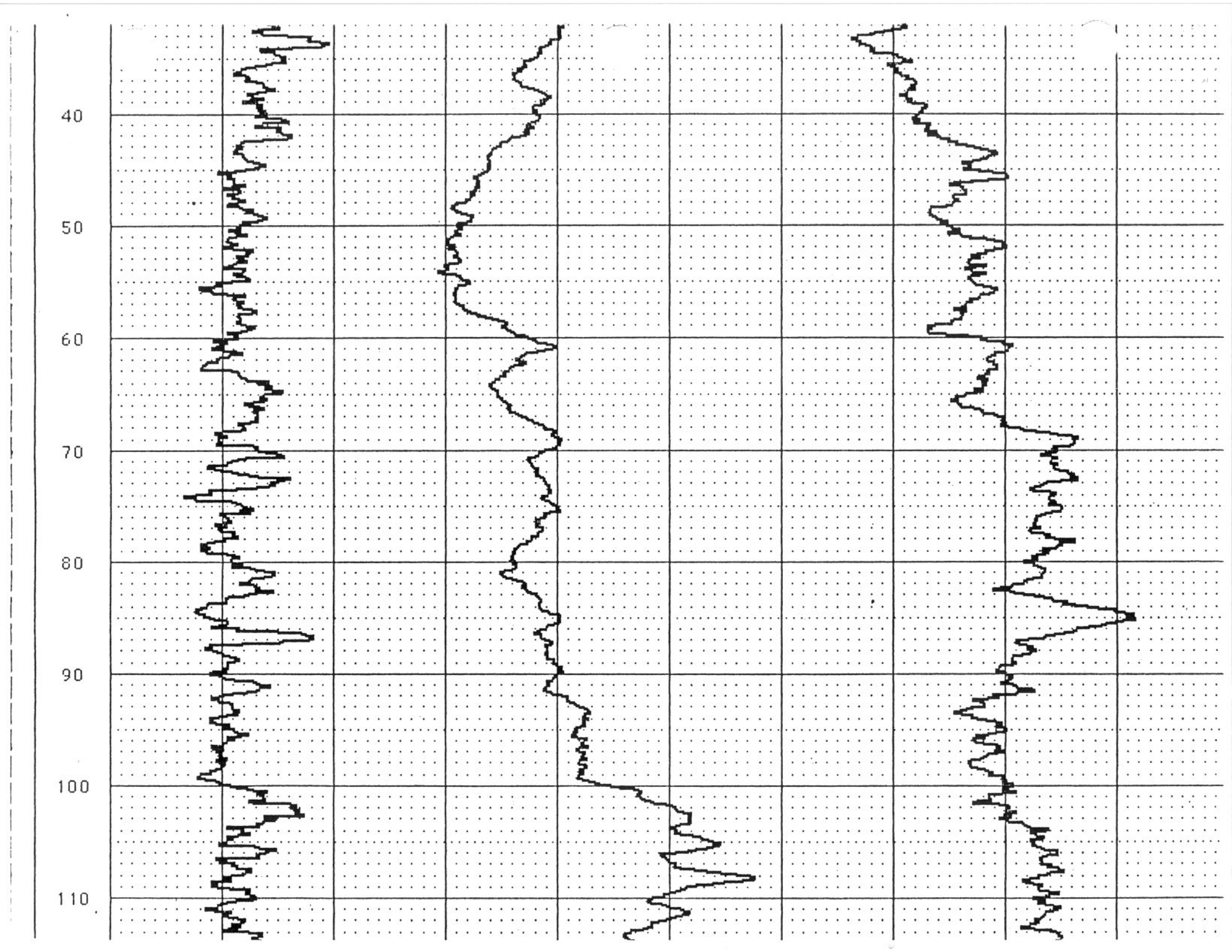
API-N
2800
GAM(NAT)
0
API-GR
180
0
10
20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80
90
100
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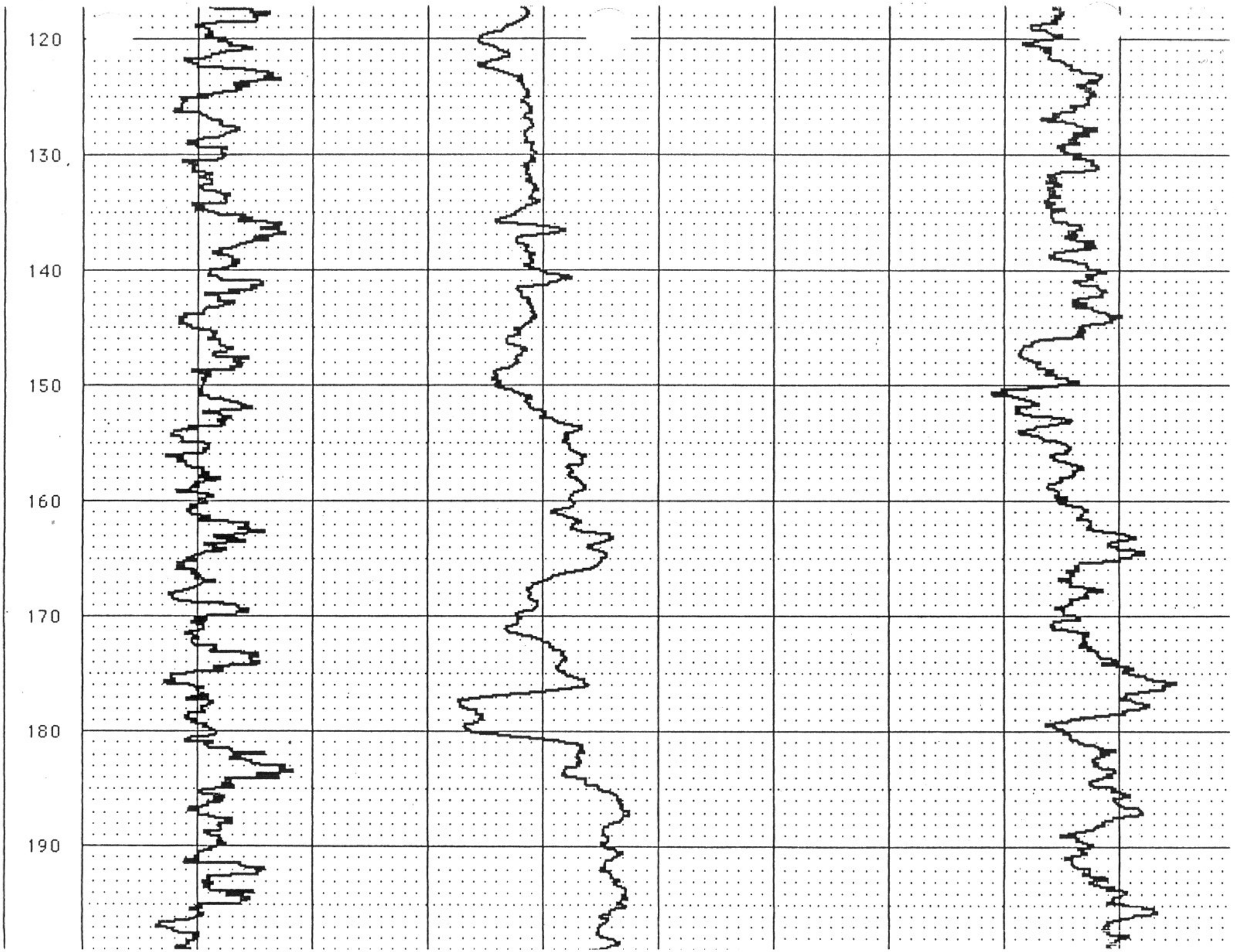
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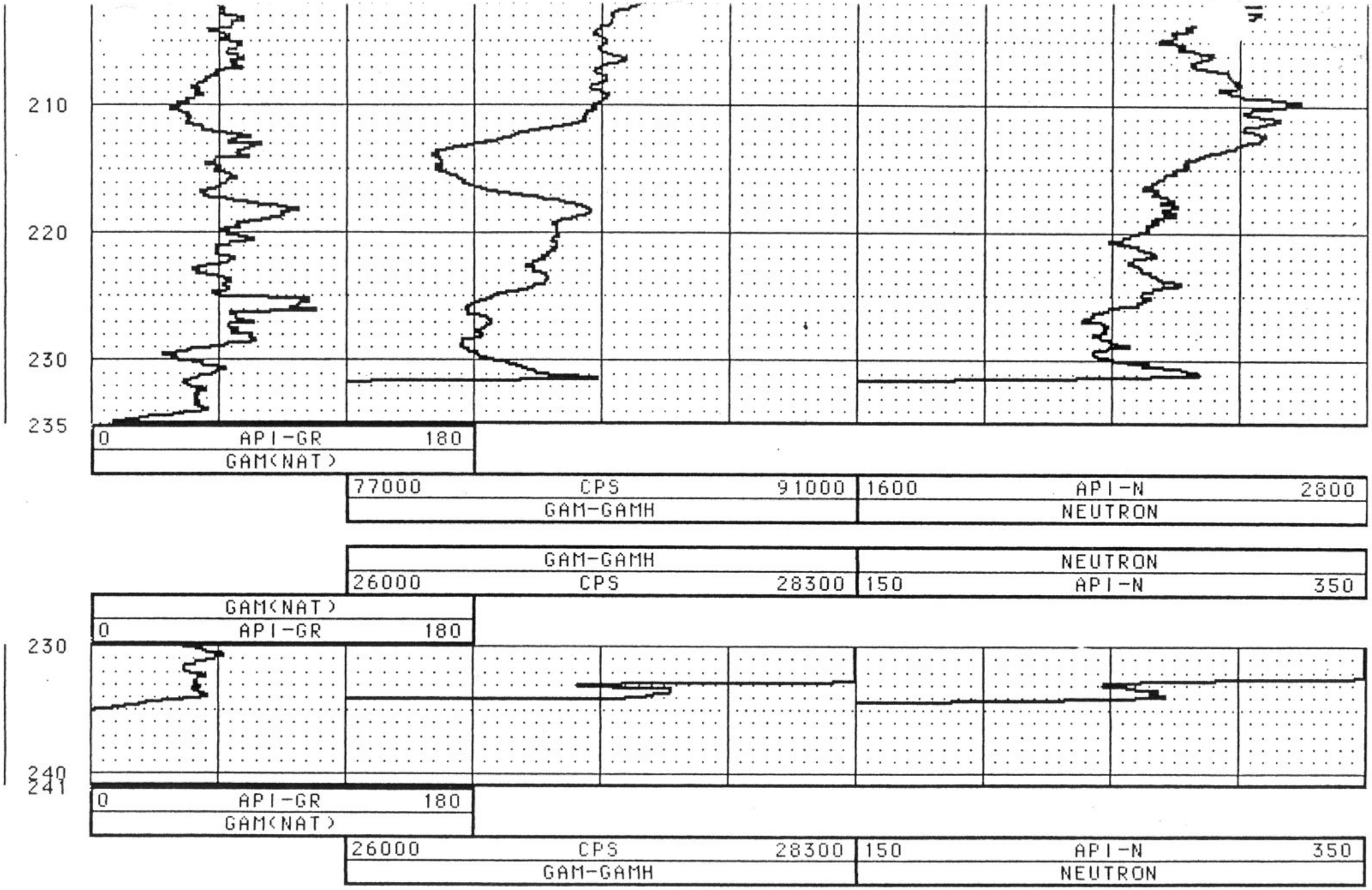
130
140
150
160
170
180
190


210
220
230
235
0 API-GR 180
GAM(NAT)
77000 CPS 91000
GAM-GAMH
1600 API-N 2800
NEUTRON
GAM-GAMH
26000 CPS 28300
NEUTRON
150 API-N 350
GAM(NAT)
0 API-GR 180
230
240
241
0 API-GR 180
GAM(NAT)
26000 CPS 28300
GAM-GAMH
150 API-N 350
NEUTRON

7B

Send original copy by certified mail to the Texas Water Development Board P. O. Box 12386 Austin, Texas 78711

State of Texas

WATER WELL REPORT

OW-WR-19

For TWDB use only
Well No. 06-44-7B
Located on map 105
Received: 75
dv

1) OWNER:
Person having well drilled Mason & Hanger (Name) Address P.O. Box 647 (Street or RFD) Amarillo (City) Texas (State)

Landowner Pantex Ord. Plant (Name) Address P. O. Box 647 (Street or RFD) Amarillo (City) Texas (State)

2) LOCATION OF WELL:
County Carson, _____ miles in N.E. (N.E., S.W., etc.) direction from Amarillo (Town)

Locate by sketch map showing landmarks, roads, creeks, hiway number, etc.*

#1 Between Red Lake & Zone 4

North

(Use reverse side if necessary)

or

Give legal location with distances and directions from adjacent sections or survey lines.

Labor _____ League _____

Block _____ Survey _____

Abstract No. _____

(NW¼ NE¼ SW¼ SE¼) of Section _____

3) TYPE OF WORK (Check): New Well X, Deepening, Reconditioning, Plugging

4) PROPOSED USE (Check): Domestic, Industrial, Municipal, Irrigation, X Test Well, Observant, Other

5) TYPE OF WELL (Check): Rotary X, Driven, Dug, Cable, Jetted, Bored

6) WELL LOG:
Diameter of hole 12¼ in. Depth drilled 350 ft. Depth of completed well 350 ft. Date drilled 1-30-75

All measurements made from 0 ft. above ground level.

From (ft.)	To (ft.)	Description and color of formation material
0	28	Topsoil
28	48	Red Clay & Sand
48	70	Red Clay & Sand
70	92	Rock & Sand
92	114	Dry Sand
114	136	Dry Sand
136	158	Dry Sand
158	180	Dry Sand
180	202	Sand & Rock
202	224	Sand
224	246	Sand

(Use reverse side if necessary)

9) Casing:
Type: Old, NXw, XXeel, Plastic, Other

Cemented from _____ ft. to _____ ft.

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Gage

10) SCREEN:
Type _____

Perforated 42' Slotted 1/8"

Diameter (inches)	Setting From (ft.)	Setting To (ft.)	Slot Size
5½"	308	350	1/8"

7) COMPLETION (Check):
Straight wall, Gravel packe X, Other, Under reamed, Open Hole

8) WATER LEVEL:
Static level 252 ft. below land surface Date 1-30-75

Artesian pressure _____ lbs. per square inch Date _____

Depth to pump bowls, cylinder, jet, etc., _____ ft. below land surface.

11) WELL TESTS:
Was a pump test made? Yes X No If yes, by whom?

Yield: 15 gpm with 4 ft. drawdown after 6 hrs.

Bailer test 15 gpm with 4 ft. drawdown after 6 hrs.

Artesian flow _____ gpm

Temperature of water _____

12) WATER QUALITY:
Was a chemical analysis made? Yes No

Did any strata contain undesirable water? Yes No

Type of water? _____ depth of strata _____

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

NAME Double A Drilling Company (Type or Print) Water Well Drillers Registration No. 691

ADDRESS Rt. 3, Box 241-B (Street or RFD) Amarillo (City) Texas (State) 79108

(Signed) [signature] (Water Well Driller) Double A Drilling Company (Company Name)

Please attach electric log, chemical analysis, and other pertinent information, if available.

*Additional instructions on reverse side.

TWDBE-GW-53

2)LOCATION OF WELL:

The sketch showing the well location must be as accurate as possible, showing landmarks, in sufficient detail so that the well may be plotted on a General Highway Map of the county in which the well is located.

Reference points from which distances are measured and directions given should be of a permanent nature (e.g. highway intersections, center of towns, river and creek bridges, railroad crossings). The distance and direction from the nearest town should always be indicated.

When giving a legal description include a sketch showing location of the well within the described area. e.g. survey abstract.

Information furnished in Section 2) of the TWDBE-GW-53 is very important. Unless the well can be accurately located on a map the value of the other data contained in the Report is greatly reduced.

246	268	Sand
268	290	Sand
290	312	Sand
312	334	Clay & Sand
334	350	Clay & Sand
350		TD

March 17, 1975

Texas Water Development Board
P.O. Box 13087
Capitol Station
Austin, Texas 78711

Dear Sirs:

These three wells were dug at Pantex Plant 18 miles N.E. of Amarillo. This is all the information we could get due to the security of the plant. You might get more information from J. B. Pennington Mason & Hanger Pantex Plant P. O. Box 647 Amarillo, Texas 79105.

AA Drilling Co.
8040 River Rd.
Amarillo, Texas

Thank You

Paul M. Cobill

J. B. Pennington
Mason & Hanger
Pantex Plant
P. O. Box 647
Amarillo, Texas 79105

RECEIVED

Survey information following is actually for replacement well "OW-WR-38", and previous (P&A) well is now "OW-WR-38_1".

Davis Geomatics, LLC
Professional Geomatic Consultants
J.D. Davis, RPLS, CFedS
Professional Land Surveyors Colorado • Kansas • Oklahoma • Texas Certified Federal Surveyors

S.M. Stoller Corporation — Pantex Plant

POINT DESCRIPTION	NORTHING	EASTING	ELEVATION	CASING ELEVATION
BH 108	3760647.590	641204.2064	3533.08	
BH 93	3757475.395	632981.4801	3541.90	
PTX08-1007_1	3758440.458	638900.0381	3546.55	3548.81
OW-WR-38_1	3765214.163	640649.0090	3519.86	3521.94

NOTE: COORDINATE VALUES ARE TEXAS STATE PLANE, NORTH ZONE, NAD 83 AS DETERMINED FROM OPUS SOLUTION AND RELATIVE TO BOHANNAN HUSTON 108 AND BOHANNAN HUSTON 93.

J.D. Davis
Registered Professional Land Surveyor
Texas Registration Number 5626
Amarillo, Texas

Well name changed to:
OW-WR-38

OW-WR-38_1

Pantex Drilling BOA Release 9 **Pantex Plant - NE Corner Playa 1** **Amarillo, Texas**

Stoller Project Number: 4446-300	Client: B&W Pantex Contract #34
Geologist: R. Hill Texas Well Report No.: 264686	Northing: 3765214.163 Easting: 640649.009
Drilling Contractor: WDC Lic. #4885 W. Bludworth	TD Borehole: 228.8 Ft BGS TD Well: 226.2 Ft BGS
Dates Drilled: 8/29/11 Date Completed: 8/30/11	Depth to Water: 216.99 Ft BGS
Borehole Diameter: 10" Drilling Method: ARCH	Well Type: 4-inch Sch 80 PVC GW Monitoring Well
Ground Elevation: 3519.86 Ft amsl	Top of Casing Elevation: 3521.94 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	5		OL	0' - 6' TOPSOIL, silty clay loam, brown (7.5YR 5/3) grading to red (2.5YR 4/8) by 6 feet, dry		
	10		ML	6' - 46' clayey SILT, trace very fine grained sand, red (2.5YR 5/6), occassional calcic partings/nodules, low plasticity, dry		
	15					
	20					
	25					
	30			@ 28' - 36' increase in clay		
	35					
	40			@ 40' clayey SILT, pale red (10R 7/3), abundant calcic partings, dry		
	45					
	50		CAP RX	46' - 53' CALICHE CAPROCK, white (10YR 8/1), indurated calcic siltstone		
	55		SM	53' - 85' silty SAND, reddish yellow (5YR 7/6), very fine grained, poorly graded, abundant quartz, loose, silt/clay decreasing with depth to 60 feet		
	60					
	65			@ 65' silty SAND, very pale brown (10YR 8/4), increase in coarseness of sand, very fine grained to fine grained, poorly graded, slightly silty, abundant quartz, loose, dry		
	70					
	75					
	80					
	85		SP	85' - 160' SAND, very pale brown (10YR 8/4), fine grained, poorly graded, abundant quartz, loose, dry		
	90					
	95					

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S.M. STOLLER CORPORATION

OW-WR-38_1

Pantex Drilling BOA Release 9 **Pantex Plant - NE Corner Playa 1** **Amarillo, Texas**

Stoller Project Number: 4446-300	Client: B&W Pantex Contract #34
Geologist: R. Hill Texas Well Report No.: 264686	Northing: 3765214.163 Easting: 640649.009
Drilling Contractor: WDC Lic. #4885 W. Bludworth	TD Borehole: 228.8 Ft BGS TD Well: 226.2 Ft BGS
Dates Drilled: 8/29/11 Date Completed: 8/30/11	Depth to Water: 216.99 Ft BGS
Borehole Diameter: 10" Drilling Method: ARCH	Well Type: 4-inch Sch 80 PVC GW Monitoring Well
Ground Elevation: 3519.86 Ft amsl	Top of Casing Elevation: 3521.94 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	105			@ 105' occassional medium grained sand		
	110					
	115					
	120					
	125					
	130		SP	@ 130' occassional coarse grained sand		
	135					
	140			@ 140' formation density increasing		
	145					
	150			@ 150' occassional sandstone nodules		
	155					
	160			160' - 185' SAND, reddish yellow (7.5YR 7/6), fine to medium grained, poor to moderate grading, firm, slightly damp		
	165					
	170		SP	@ 170' abundant calcic nodules to 3/4-inch		
	175					
	180			@ 180' dense, lots of rig chatter		
	185					
	190		SP/ SW	185' - 195' gravelly SAND, well rounded alluvial gravel to 1/2-inch		
	195		SW	195' - 210' SAND, reddish yellow (7.5YR 7/6), fine to medium grained sand with occassional coarse grains and rounded gravel,		

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OW-WR-38_1

Pantex Drilling BOA Release 9 **Pantex Plant - NE Corner Playa 1** **Amarillo, Texas**

Stoller Project Number: 4446-300	Client: B&W Pantex Contract #34
Geologist: R. Hill Texas Well Report No.: 264686	Northing: 3765214.163 Easting: 640649.009
Drilling Contractor: WDC Lic. #4885 W. Bludworth	TD Borehole: 228.8 Ft BGS TD Well: 226.2 Ft BGS
Dates Drilled: 8/29/11 Date Completed: 8/30/11	Depth to Water: 216.99 Ft BGS
Borehole Diameter: 10" Drilling Method: ARCH	Well Type: 4-inch Sch 80 PVC GW Monitoring Well
Ground Elevation: 3519.86 Ft amsl	Top of Casing Elevation: 3521.94 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	205		SW	abundant quartz, well graded, firm to dense, slightly damp to damp at 202 feet		
	210		SW	210' - 224' SAND, very pale brown (10YR 7/4), fine to coarse grained well rounded sand with occassional rounded gravel to 3/4-inch, well graded, abundant frosted quartz grains, dense, moist to saturated at 217 feet		
	215					
	220					
	225		CL	224' - 228.8' sandy, silty, CLAY, light brown (7.5YR 6/6), 30% very fine grained sand, 40% silt, 30% clay, very stiff to hard, damp grading to dry, plastic when wetted, pronounced color change and drilling characteristics at contact		OW-WR-38_1 Triaxial Permeability
	230			Total Depth of Borehole 228.8 Ft BGS Top of Fine Grained Zone 224 Ft BGS Well Completion Details: All well materials of Monoflex, flush threaded, 4-inch, Schedule 80, PVC Blank Casing, +2.08' to 210' bgs Screen, 0.010-inch factory slotted screen, 210' to 225' bgs Sump with end cap, 225' to 226' bgs Casing centralizers at 225', 210', 170', 130', 90', 50', 10' Filtration sand, Carmeuse 10/20 gradation, 207' to 228.8' bgs Filter pack seal, Baroid 3/8-inch Holeplug, 201' to 207' bgs Annular seal, Baroid QuikGrout, 2' to 201' bgs Concrete surface seal, poured with well pad, 0' to 2' bgs Surface Completion, concrete pad 5'X5'X8" with four 3" pipe bollards and 10" steel protective casing with Royer aluminum locking cover		
	235					
	240					
	245					
	250					
	255					
	260					
	265					
	270					
	275					
	280					
	285					
	290					
	295					

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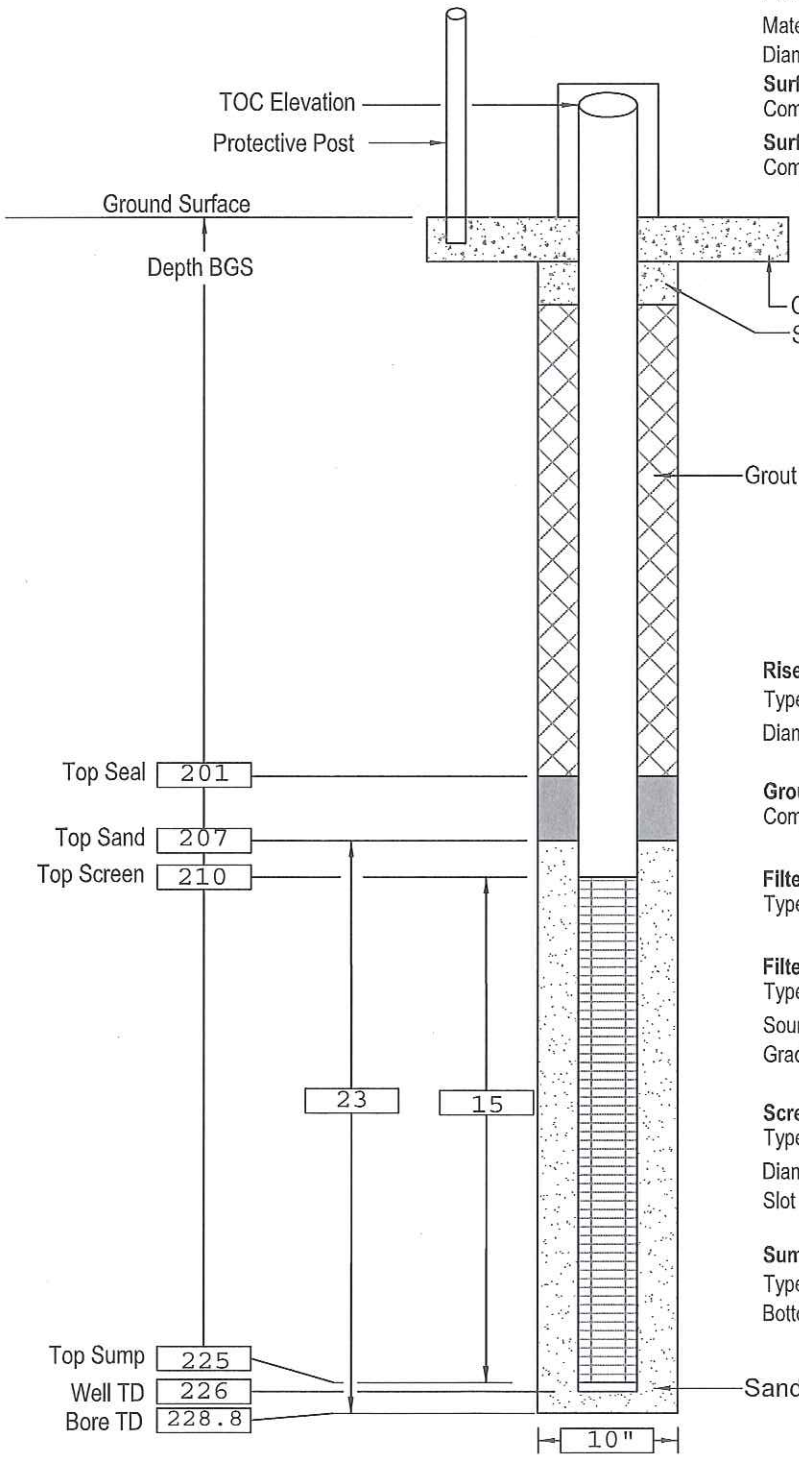
Well Installation Diagram

Project: Pantex BOA Release 9
Location: NE Corner Playa 1
Contractor: S.M. Stoller Corporation
Driller: WDC, W. Bludworth
Well Coordinates: 3765214.163 N 640649.009 E
TOC Elevation: 3521.94 Ft amsl
Surface Elevation: 3519.86 Ft amsl

Well No: OW-WR-38_1
Well Type: GW Monitoring
Date Constructed: 8/30/2011
Observed By: R. Hill

Sheet 1 of 1



Protective Casing
Material: Steel with locking aluminum cover
Diameter: 10-inches

Surface Pad
Composition & Size: Concrete, 5'x5'x8" with four 3-inch pipe bollards

Surface Seal
Composition & Thickness: Concrete, 2 feet

Riser Pipe
Type: Monoflex, Flush Threaded Sch 80 PVC
Diameter: 4-inches ID

Grout
Composition: Baroid Quik Grout - 38 sacks

Filter Pack Seal
Type: Baroid 3/8" Holeplug - 3 sacks

Filter Pack
Type: Silica Sand - 23 bags
Source: Carmeuse Industrial Sands
Gradation: 10/20

Screen
Type: Monoflex, Flush Threaded Sch 80 PVC
Diameter: 4-inches ID
Slot Size: 0.010-inch

Sump
Type: Monoflex, Flush Threaded Sch 80 PVC
Bottom Cap: 4-inches ID

STATE OF TEXAS WELL REPORT for Tracking #264686

Owner:	**US Department of Energy**	Owner Well #:	**OW-WR-38_1**
Address:	**PO Box 30030** **Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**USDOE Pantex Plant** **Panhandle , TX 79068**	Latitude:	**35° 19' 47" N**
Well County:	**Carson**	Longitude:	**101° 33' 07" W**
Elevation:	**3518 ft.**	GPS Brand Used:	**Google Earth**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/29/2011**
Completed: **8/30/2011**

Diameter of Hole: Diameter: **10 In From Surface To 228.8 ft**

Drilling Method: **Air Rotary** Other: **Casing Hammer**

Borehole Completion: Gravel Packed From: **206 ft to 228.8 ft**
Gravel Pack Size: **10/20 Sand**

Annular Seal Data: 1st Interval: **From 3 ft to 201 ft with 38/Bent.Grout (#sacks and material)**
2nd Interval: **From 201 ft to 206 ft with 3/Bent.Chips (#sacks and material)**
3rd Interval: **No Data**
Method Used: **Tremie**
Cemented By: **WDC**
Distance to Septic Field or other Concentrated Contamination: **No Data**
Distance to Property Line: **No Data**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Sleeve Installed**

Water Level: Static level: **216 ft. below land surface on 8/31/2011**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **No Data**
Depth of Strata: **No Data**
Chemical Analysis Made: **No**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **WDC Exploration & Wells**
3621 Hwy 47
Peralta , NM 87042

Driller License Number: **4885**

Licensed Well Driller Signature:	**William B. Bludworth**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking **#264686**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description

0- 6 Top Soil, brown, dry, silty.

6- 40 Silt, red, dry, clayey, trace sand.

40- 46 Silt, pale red, dry, clayey.

46- 53 Caliche, white.

53- 65 Sand, reddish yellow, coarseness increasing w/ depth, silty, some clay decreasing w/ depth.

65- 85 Sand, very pale brown, vf to fine, sl. silty, dry loose.

85-100 Sand, very pale brown, fine increasing in coarseness w/ depth, loose, dry.

100-185 Sand, reddish yellow, fine to medium, firm, damp.

185-210 Sand w/ Gravel.

210-224 Sand, pale brown, fine to coarse, dense, moist.

224-228.8 Fine Grain Zone, silty sandy clay, light brown, damp to dry.

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To

4 N PVC Riser +3-209 Sch#80
4 N PVC Slotted Screen 209-224 .010"sl
4 N PVC Sump 224-225 Sch#80

BOREHOLE GEOPHYSICS & HYDROPHYSICS
COLOG
A DIVISION OF LAYNE CHRISTENSEN COMPANY

810 Quail St. Suite E
Lakewood, Colorado
80215
Office: 303.279.0171
FAX: 303.278.0135
www.colog.com

Natural Gamma Neutron

Company S. M. Stoller Corp.
Well OW-WR-38_1
Field PANTEX BOA Rel8/9
County Carson
State TX

COMPANY S. M. Stoller Corp.
WELL OW-WR-38_1
FIELD PANTEX BOA Release 8/9
COUNTY Carson **STATE** TX

LOCATION
Pantex Plant

QTR **SEC** **TWP** **RGE**

OTHER SERVICES

**** FIELD COPY ****

PERMANENT DATUM Ground Level **ELEVATION** NA

LOG MEAS. FROM Top Cement Pad **ABOVE PERMANENT DATUM**

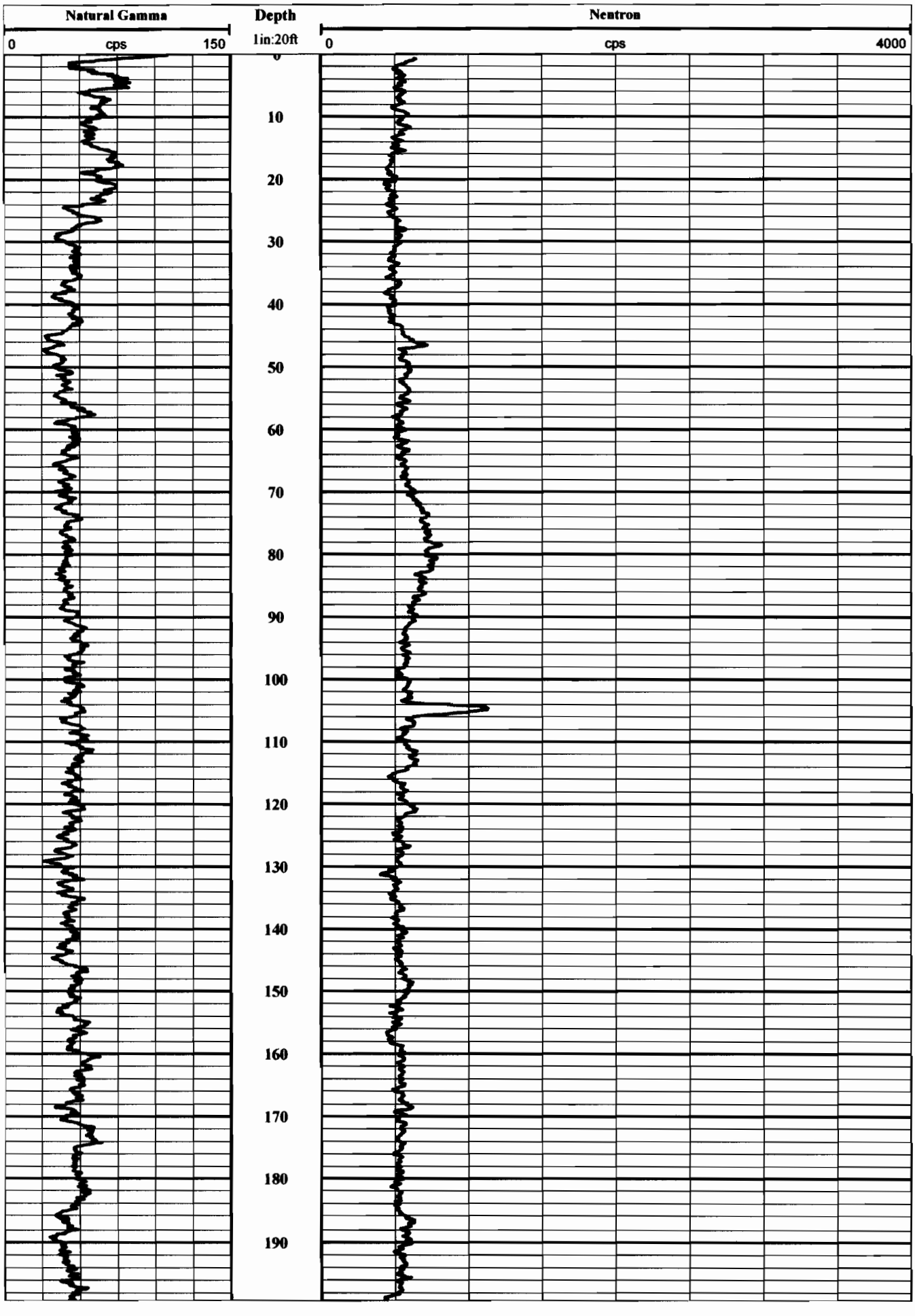
DRILLING MEAS. FROM Ground Level

DATE ACQUIRED	13 Sept 2011	13 Sept 2011		
RUN NUMBER	1	2		
LOG TYPE	Natural Gamma	Neutron		
DEPTH-DRILLER	225 ft			
DEPTH-LOGGER	226.0 ft			
BTM LOG INTERVAL	219.8 ft	225.1 ft		
TOP LOG INTERVAL	0 ft	0.7 ft		
RECORDED BY	Summer Montgomery			
WITNESSED BY	Ralph Rupp			
PROBE TYPE, S/N	DUIN	LLP		
LOGGING SPEED	25 ft/min	25 ft/min		
A.S.D.E.	0.1 ft	0.1 ft		
SAMPLE INTERVAL	0.1ft	0.1 ft		

BOREHOLE RECORD				**CASING RECORD**			
RUN No.	**BIT**	**FROM**	**TO**	**SIZE**	**WGT.**	**FROM**	**TO**
				4"	PVC		

NA - Not Available, N/A - Not Applicable

COMMENTS


Natural Gamma
0
cps
150
Depth
1in:20ft
Neutron
0
cps
4000
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160
170
180
190


200
210
220
Natural Gamma
Depth
Neutron
0
cps
150
1in:20ft
0
cps
4000

Deviation Survey for: S. M. Stoller Corporation **Field:** PANTEX BOA **Date:** 9/13/2011

Well: OW-WR-38_1 **Depth Ref.:** top pad **Total Depth:** 226.00 **Probe Type, S/N:** BVDS

Depth (feet)	Inclination (degrees)	Bearing (degrees)	ClosureLength (line ft.)	ClosureDist. (horiz. ft.)	ClosureDepth (vertical ft.)	Northing (feet)	Easting (feet)	TrueDepth (feet)	Dist.Sum (feet)	NorthSum (feet)	EastSum (feet)
0	0.573626	138.462	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	0.658824	122.622	5	0.06	5.00	-0.03	0.05	5.00	0.06	-0.03	0.05
10	0.716274	92.6333	5	0.06	5.00	0.00	0.06	10.00	0.12	-0.03	0.11
15	0.629412	97.5216	5	0.05	5.00	-0.01	0.05	15.00	0.17	-0.04	0.17
20	0.431569	66.2588	5	0.04	5.00	0.02	0.03	20.00	0.20	-0.03	0.20
25	0.285294	140.973	5	0.02	5.00	-0.02	0.02	25.00	0.22	-0.05	0.22
30	0.322353	276.586	5	0.03	5.00	0.00	-0.03	30.00	0.19	-0.04	0.19
35	0.516667	210.906	5	0.05	5.00	-0.04	-0.02	35.00	0.18	-0.08	0.16
40	0.602157	256.729	5	0.05	5.00	-0.01	-0.05	40.00	0.15	-0.09	0.11
45	0.808039	174.714	5	0.07	5.00	-0.07	0.01	45.00	0.20	-0.16	0.12
50	0.836667	290.861	5	0.07	5.00	0.03	-0.07	50.00	0.15	-0.14	0.05
55	0.727843	254.529	5	0.06	5.00	-0.02	-0.06	55.00	0.15	-0.15	-0.01
60	0.44098	67.849	5	0.04	5.00	0.01	0.04	60.00	0.14	-0.14	0.03
65	0.356863	30.998	5	0.03	5.00	0.03	0.02	65.00	0.12	-0.11	0.04
70	0.349608	163.698	5	0.03	5.00	-0.03	0.01	70.00	0.15	-0.14	0.05
75	0.506863	189.98	5	0.04	5.00	-0.04	-0.01	75.00	0.19	-0.19	0.04
80	0.770196	192.79	5	0.07	5.00	-0.07	-0.01	80.00	0.25	-0.25	0.03
85	0.965294	46.302	5	0.08	5.00	0.06	0.06	85.00	0.21	-0.19	0.09
90	1.2249	31.7941	5	0.11	5.00	0.09	0.06	89.99	0.18	-0.10	0.15
95	1.64157	30.9647	5	0.14	5.00	0.12	0.07	94.99	0.22	0.02	0.22
100	1.47274	35.4	5	0.13	5.00	0.10	0.07	99.99	0.32	0.13	0.29
105	1.32608	36.8392	5	0.12	5.00	0.09	0.07	104.99	0.42	0.22	0.36
110	0.938627	43.5863	5	0.08	5.00	0.06	0.06	109.99	0.50	0.28	0.42
115	0.762157	45.9294	5	0.07	5.00	0.05	0.05	114.99	0.57	0.32	0.47
120	0.708824	47.4216	5	0.06	5.00	0.04	0.05	119.99	0.63	0.37	0.51
125	0.44451	76.2471	5	0.04	5.00	0.01	0.04	124.99	0.67	0.37	0.55
130	0.300392	123	5	0.03	5.00	-0.01	0.02	129.99	0.68	0.36	0.57
135	0.306274	170.027	5	0.03	5.00	-0.03	0.00	134.99	0.67	0.33	0.58
140	0.423922	201.633	5	0.04	5.00	-0.03	-0.01	139.99	0.64	0.30	0.56
145	0.367647	215.065	5	0.03	5.00	-0.03	-0.02	144.99	0.61	0.27	0.54
150	0.20098	224.953	5	0.02	5.00	-0.01	-0.01	149.99	0.59	0.26	0.53
155	0.244314	108.651	5	0.02	5.00	-0.01	0.02	154.99	0.61	0.25	0.55
160	0.330392	40.8216	5	0.03	5.00	0.02	0.02	159.99	0.63	0.28	0.57
165	0.473137	31.7882	5	0.04	5.00	0.04	0.02	164.99	0.67	0.31	0.59
170	0.468431	32.6274	5	0.04	5.00	0.03	0.02	169.99	0.71	0.35	0.62
175	0.419216	45.8902	5	0.04	5.00	0.03	0.03	174.99	0.74	0.37	0.64
180	0.37098	74.8039	5	0.03	5.00	0.01	0.03	179.99	0.77	0.38	0.67
185	0.307843	73.1372	5	0.03	5.00	0.01	0.03	184.99	0.80	0.39	0.70
190	0.319804	70.5549	5	0.03	5.00	0.01	0.03	189.99	0.83	0.40	0.72
195	0.331961	62.4412	5	0.03	5.00	0.01	0.03	194.99	0.86	0.41	0.75
200	0.328039	68.7039	5	0.03	5.00	0.01	0.03	199.99	0.88	0.42	0.78
205	0.311373	44.3588	5	0.03	5.00	0.02	0.02	204.99	0.91	0.44	0.80
210	0.319608	62.7274	5	0.03	5.00	0.01	0.02	209.99	0.94	0.45	0.82
215	0.323137	50.5922	5	0.03	5.00	0.02	0.02	214.99	0.97	0.47	0.84
220	0.298039	42.3549	5	0.03	5.00	0.02	0.02	219.99	0.99	0.49	0.86
225	0.288627	185.302	5	0.03	5.00	-0.03	0.00	224.99	0.98	0.46	0.86
226	0.288627	185.302	1	0.01	1.00	-0.01	0.00	225.99	0.97	0.46	0.86

Totals:			
True Depth	DistSum	NorthSum	EastSum
225.99	**0.97**	**0.46**	**0.86**

Orientations are with respect to Magnetic North

Deviation Survey for: S. M. Stoller Corporation **Field:** PANTEX BOA **Date:** 9/13/2011
Well: OW-WR-38_1 **Depth Ref.:** top pad **Total Depth:** 226.00 **Probe Type, S/N:** BVDS

Definitions

Bearing = Azimuth Degrees from Magnetic North (Raw Data)

ClosureDistance = Horizontal Feet Between Each Station

ClosureDepth = Vertical Feet Between Each Interval

Northing = North/South Component of Horizontal Distance Between Each Station (Negative = South)
(Closure Dist.) x cos(Bearing)

Easting = East/West Component of Horizontal Distance Between Each Station (Negative = West)
(Closure Dist.) x sin(Bearing)

TrueDepth = Vertical Depth from the Surface to This Station

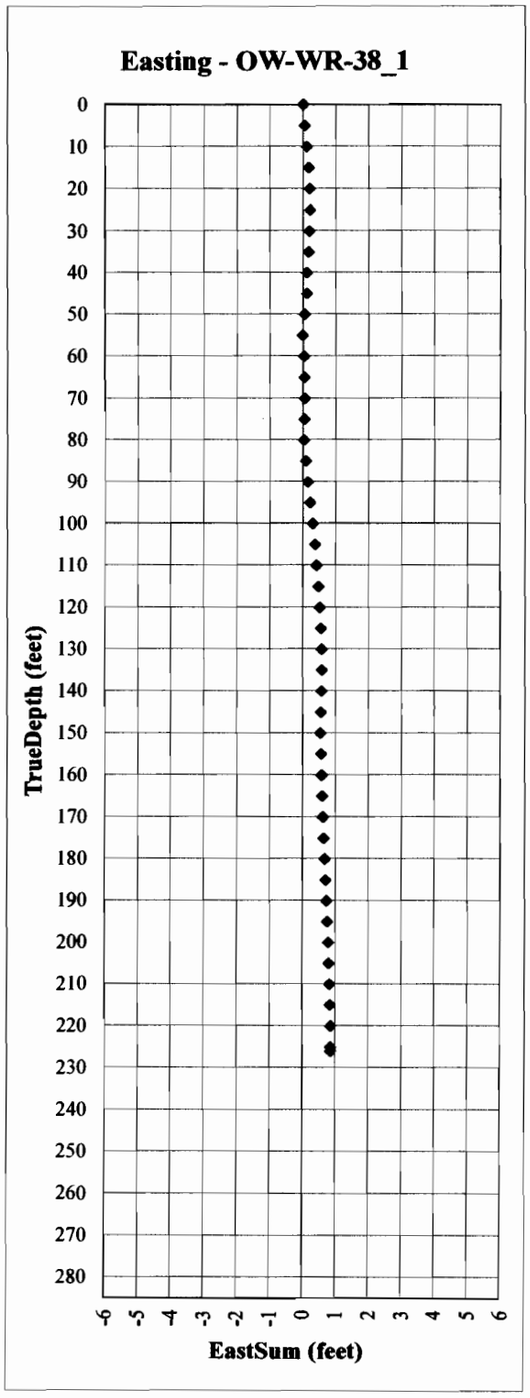
DistanceSum = Horizontal Distance from Wellhead to this Station

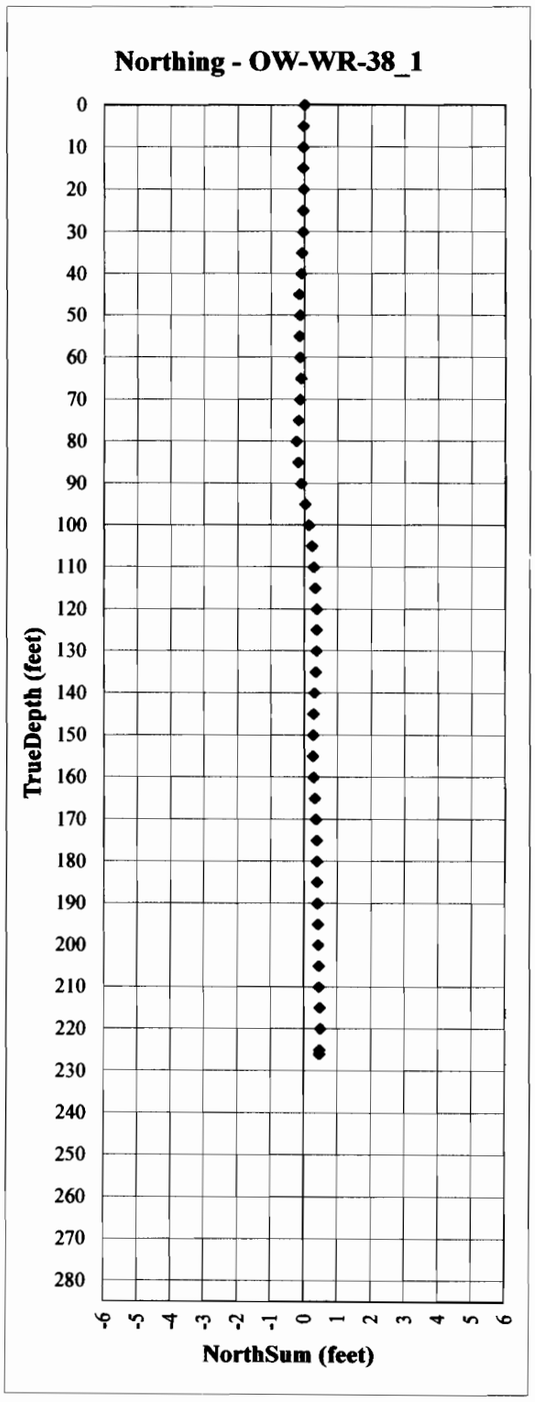
NorthSum = North/South Component of Horizontal Distance from the Wellhead to This Station (Negative = South)
Running Sum of Northing

EastSum = East/West Component of Horizontal Distance from the Wellhead to This Station (Negative = West)
Running Sum of Easting

Orientations are with respect to Magnetic North

Deviation Survey for: S. M. Stoller Corporation **Field:** PANTEX BOA **Date:** 9/13/2011
Well: OW-WR-38_1 **Depth Ref.:** top pad **Total Depth:** 226.00 **Probe Type, S/N:** BVDS





Orientations are with respect to Magnetic North

Orientations are with respect to Magnetic North

Well name changed to OW-WR-38_1

STATE OF TEXAS PLUGGING REPORT for Tracking #77672

Owner:	U.S. Department of Energy	Owner Well #:	OW-WR-38
Address:	HWY 60 & FM 2373 Amarillo , TX 79120	Grid #:	06-44-5
Well Location:	HWY 60 & FM 2373 Amarillo , TX 79120	Latitude:	35° 19' 47" N
Well County:	Carson	Longitude:	101° 33' 07" W
		GPS Brand Used:	Google Earth
Well Type:	Monitor		

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	Hi Plains Drilling
Driller's License Number of Original Well Driller:	Unknown
Date Well Drilled:	5/13/1992
Well Report Tracking Number:	Unknow
Diameter of Borehole:	9 in. inches
Total Depth of Borehole:	230 ft. feet

Date Well Plugged:	10/19/2011
Person Actually Performing Plugging Operation:	Roy Burson
License Number of Plugging Operator:	2585
Plugging Method:	Tremmie pipe bentonite from bottom to 2 feet from surface, cement top 2 feet.
Plugging Variance #:	No Data
Casing Left Data:	1st Interval: 4 inches diameter, From 229 ft to 3 ft 2nd Interval: No Data 3rd Interval: No Data
Cement/Bentonite Plugs Placed in Well:	1st Interval: From 229 ft to 5 ft; Sack(s)/type of cement used: 5-High solids bentonite 2nd Interval: From 5 ft to 3 ft; Sack(s)/type of cement used: 1-cement 3rd Interval: No Data 4th Interval: No Data 5th Interval: No Data

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	U.S. Department of Enerby HWY 60 & FM 2373 Amarillo , TX 79120

Plug Installer License Number:	**2585**
Licensed Plug Installer Signature:	**Roy Burson**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Well plugged as noted above, however P&A' to 3 ft. below ground surface to allow for well pad and bollards leaving no footprint.**

Please include the plugging report's tracking number (Tracking **#77672**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

OW-WR-38

Contractor: Groundwater Technology

Contract #: 830011063

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

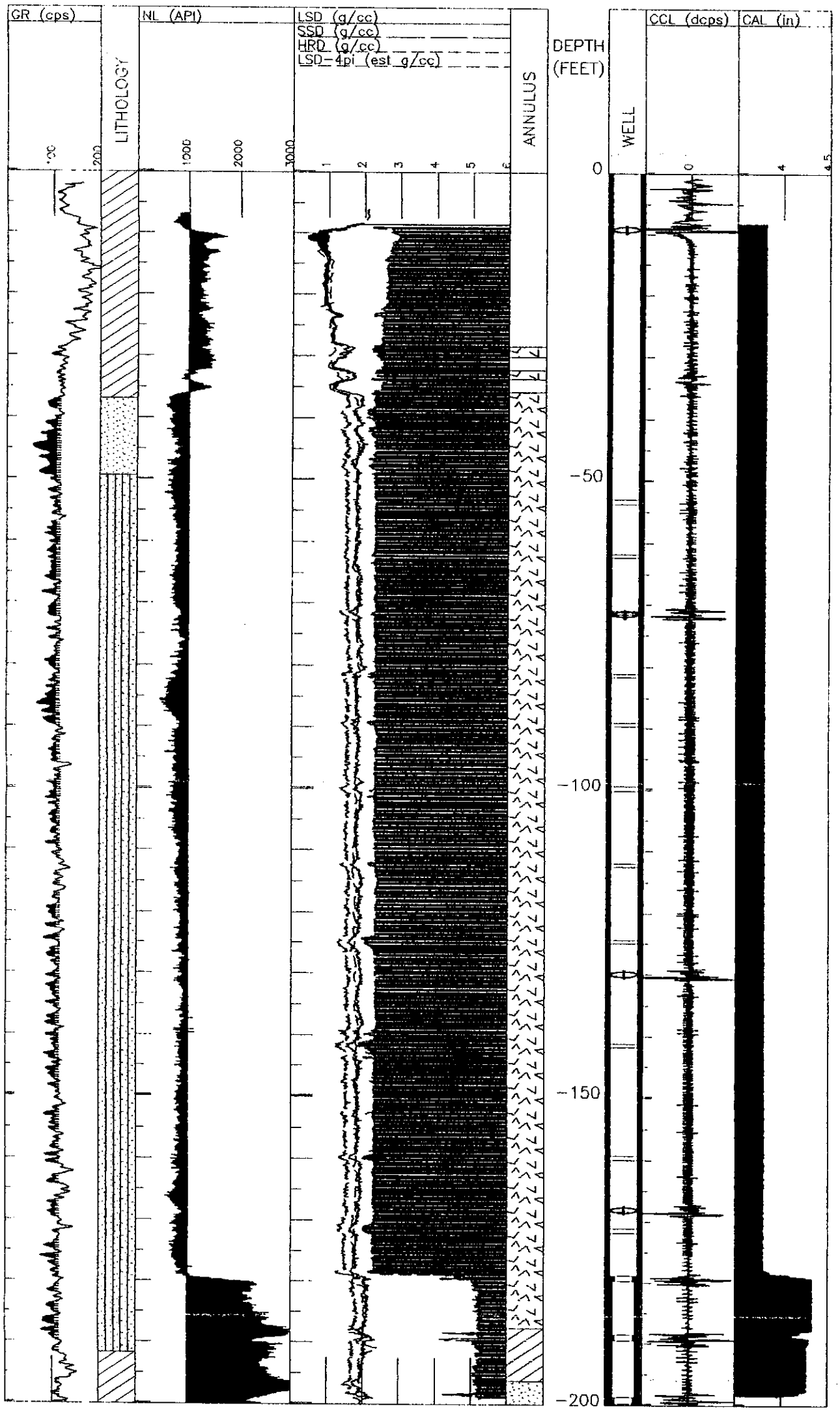
_X_Installation Log

___Lithologic Logs
- ___Draft
- ___Final

_X_Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

Well Name: OW-WR-38
File Name: PTX38FNL
Location: SEC 33, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
PVC CASING AND STEEL SCREEN: 4-INCH DIAMETER



WELL IS CONSTRUCTED OF 4-INCH DIAMETER PVC CASING, 4-INCH DIAMETER STEEL CASING, AND 4-INCH DIAMETER STEEL SCREEN, (10-FOOT CASING JOINTS)

DEPTH - 0-179 FEET
LOGS - NL, LSD, LSD-4pi, SSD, HRD, CCL
■ PVC CASING

DEPTH - 9 FEET
LOG - CCL
■ CENTRALIZER

DEPTH - 0-36 FEET
LOGS - NL, LSD, LSD-4pi, SSD
■ AIR-FILLED CAVITY

DEPTH - 36-188 FEET
LOGS - NL, LSD, LSD-4pi, SSD
■ UNIFORM CEMENT

DEPTH - 71 FEET
LOG - CCL
■ CENTRALIZER

DEPTH - 130 FEET
LOG - CCL
■ CENTRALIZER

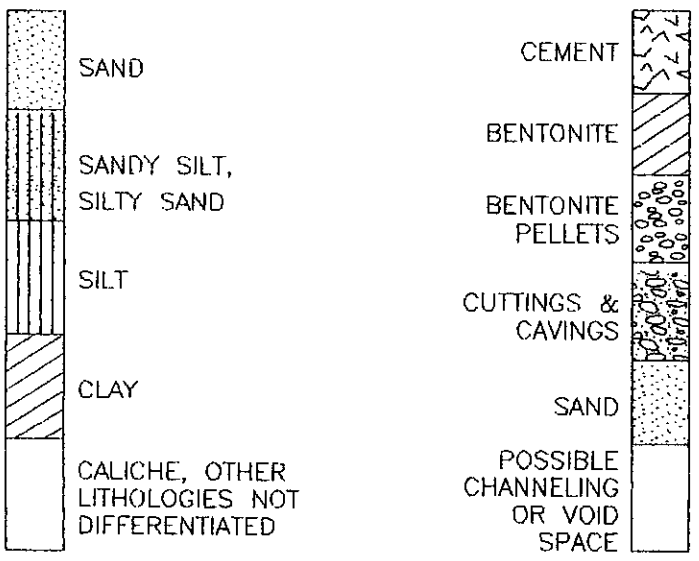
DEPTH - 168 FEET
LOG - CCL
■ CENTRALIZER

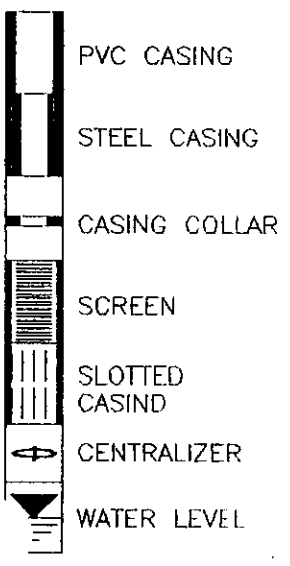
DEPTH - 179-199 FEET
LOGS - NL, LSD, LSD-4pi, SSD, HRD, CCL
■ STEEL CASING

DEPTH - 188-196 FEET
LOGS - NL
■ POSSIBLE BENTONITE SEAL

DEPTH - 196-229 FEET
LOG - NL
■ SAND (FILTER) PACK

DEPTH - 199-229 FEET
LOGS - NL, LSD, LSD-4pi, SSD, HRD, CCL
■ STEEL SCREEN

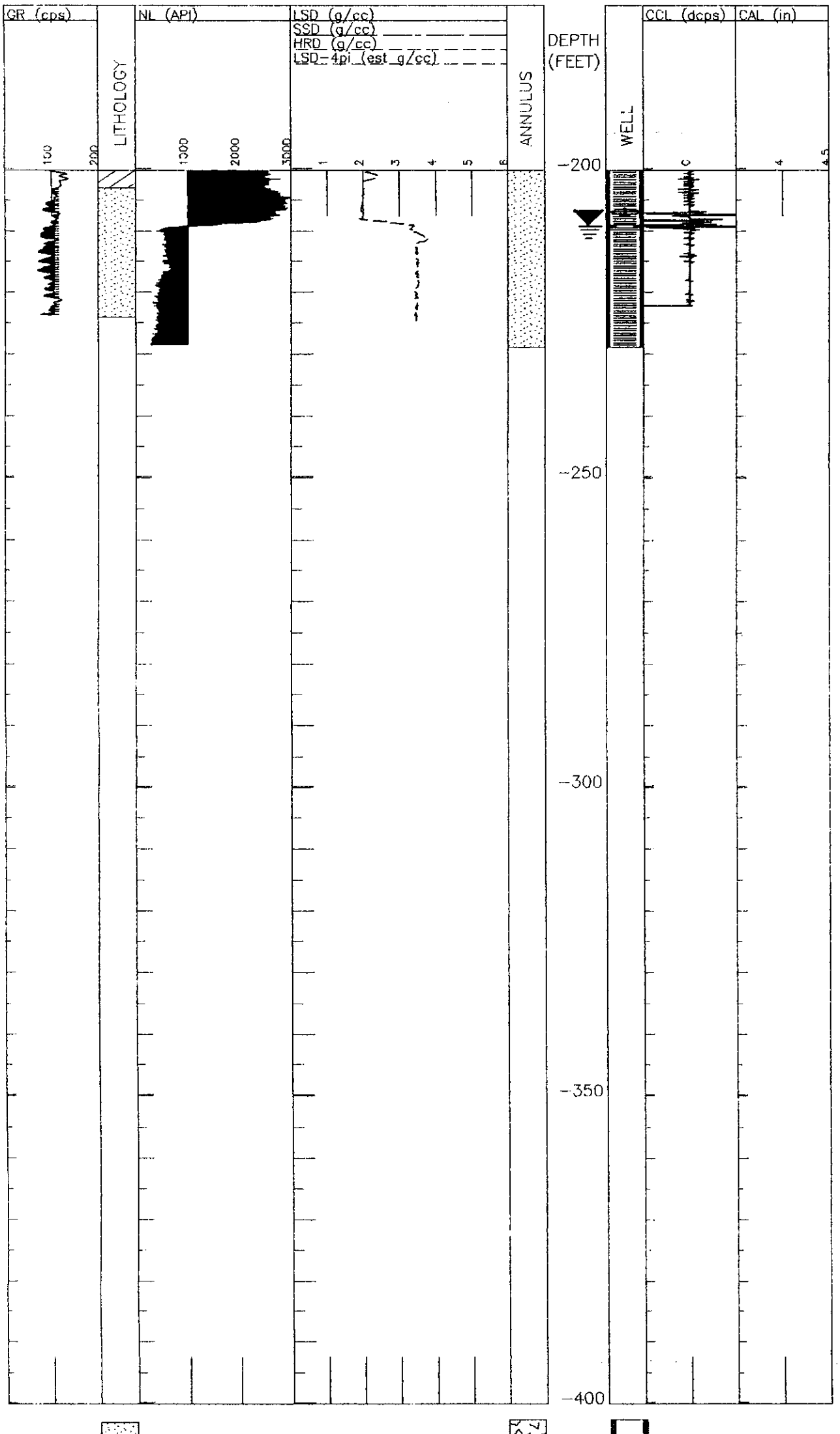




GROUNDWATER TECHNOLOGY
12101 E. 51st ST. SUITE 103 TULSA, OK 74146

PROJECT NO.: 830011063	DATE MAP GENERATED: 5/13/92
AUTHORED: RVH	TITLE: **WELL OW-WR-38 (0-200 FEET)**
CHECKED: RVH	
DETAILED: RHW	CLIENT: CENG/PANTEX PLANT/AMA
	LOCATION: PANTEX
	ACAD FILE: PTX38_2

Well Name: OW-WR-38
File Name: PTX38FNL
Location: SEC 33, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
PVC CASING AND STEEL SCREEN: 4-INCH DIAMETER



WELL IS CONSTRUCTED OF 4-INCH DIAMETER PVC CASING, 4-INCH DIAMETER STEEL CASING, AND 4-INCH DIAMETER STEEL SCREEN, (10-FOOT CASING JOINTS)

DEPTH - 199-229 FEET
LOGS - NL, LSD, LSD-4pi, SSD, HRD, CCL
■ STEEL SCREEN

DEPTH - 207 FEET
LOGS - CCL
■ POSSIBLE CENTRALIZER

DEPTH - 209 FEET
LOGS - NL, LSD-4pi
■ WATER LEVEL

DEPTH - 196-229 FEET
LOGS - NL
■ SAND (FILTER) PACK

SAND
SANDY SILT, SILTY SAND
SILT
CLAY
CALICHE, OTHER LITHOLOGIES NOT DIFFERENTIATED

CEMENT
BENTONITE
BENTONITE PELLETS
CUTTINGS & CAVINGS
SAND
POSSIBLE CHANNELING OR VOID SPACE

PVC CASING
STEEL CASING
CASING COLLAR
SCREEN
SLOTTED CASIND
CENTRALIZER
WATER LEVEL

GROUNDWATER TECHNOLOGY
12101 E. 51st St.
SUITE 103
TULSA, OK 74146

PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE:

WELL OW-WR-38
(200-400 FEET)

CLIENT: CENG/PANTEX PLANT/AMA
LOCATION: PANTEX
ACAD FILE: PTX38_

TABLE 6. WELL OW-WR-38, DATA AND ASSESSMENT

OTHER WELL DESIGNATIONS	NE Well, Battelle, PTX-08-0001
LOCATION	Sec 33, Blk M-4, NE of Playa 1; State Plane Coordinates not available
GEOPHYSICAL DATA: TOOLS (LOGS)	1991: 9030H (GR, HRD, CAL), 9035 (GR, LSD, SSD, CAL), 9051 (GR, NL, CCL) 1988: 9067 (GR, NL), 9068 (GR, LSD-4pi)
LOG QUALITY	Excellent
CASING: MATERIALS	PVC, 8- to 18-foot joints, 4-inch diameter, 0-179 feet, with steel centralizers at 9, 71, 130, and 168 feet Steel, 10-foot joints, 4-inch diameter, 179-199 feet
POTENTIAL PROBLEMS	None detected
QUALITY OF ASSESSMENT	Good
SCREEN: MATERIALS	Steel, 306-341 feet, possibly perforated or field-slotted casing
POTENTIAL PROBLEMS	Possibly some corrosion at couplings
QUALITY OF ASSESSMENT	Fair
ANNULUS: MATERIALS	Cement 36-188 feet, uniform density and water content; possible bentonite 188-196 feet (speculative); possible sand (filter) pack 196-229 feet
POTENTIAL PROBLEMS	Significant air-filled cavity at 0-36 feet
QUALITY OF ASSESSMENT	Good in cemented interval
OVERALL WELL CONDITION	Mostly good; cavity 0-36 feet needs study
CORPS OF ENGINEERS WELL CONSTRUCTION NOTES LOG HEADER NOTES	Hi Plains Drilling Co. drilled 1/23/88 Bit size: unknown 4 in. dia. PVC casing: 0-(?) feet 4 in. dia. stainless steel casing: 197-230(?) feet Total depth drilled: 230 feet Total depth well: 230(?) feet Total depth logged: (1988) 229 feet; (1991) 200 and 229 feet
OTHER COMMENTS	If no alternate explanation exists for the apparent cavity at 0-36 feet, and if the surface installation permits access to the annular space by drilling or other means, the Corps should consider cementing this interval to prevent near-surface seepage into the annulus. Measures are required to avoid damage to the PVC casing.

Century GEOPHYSICAL CORP.

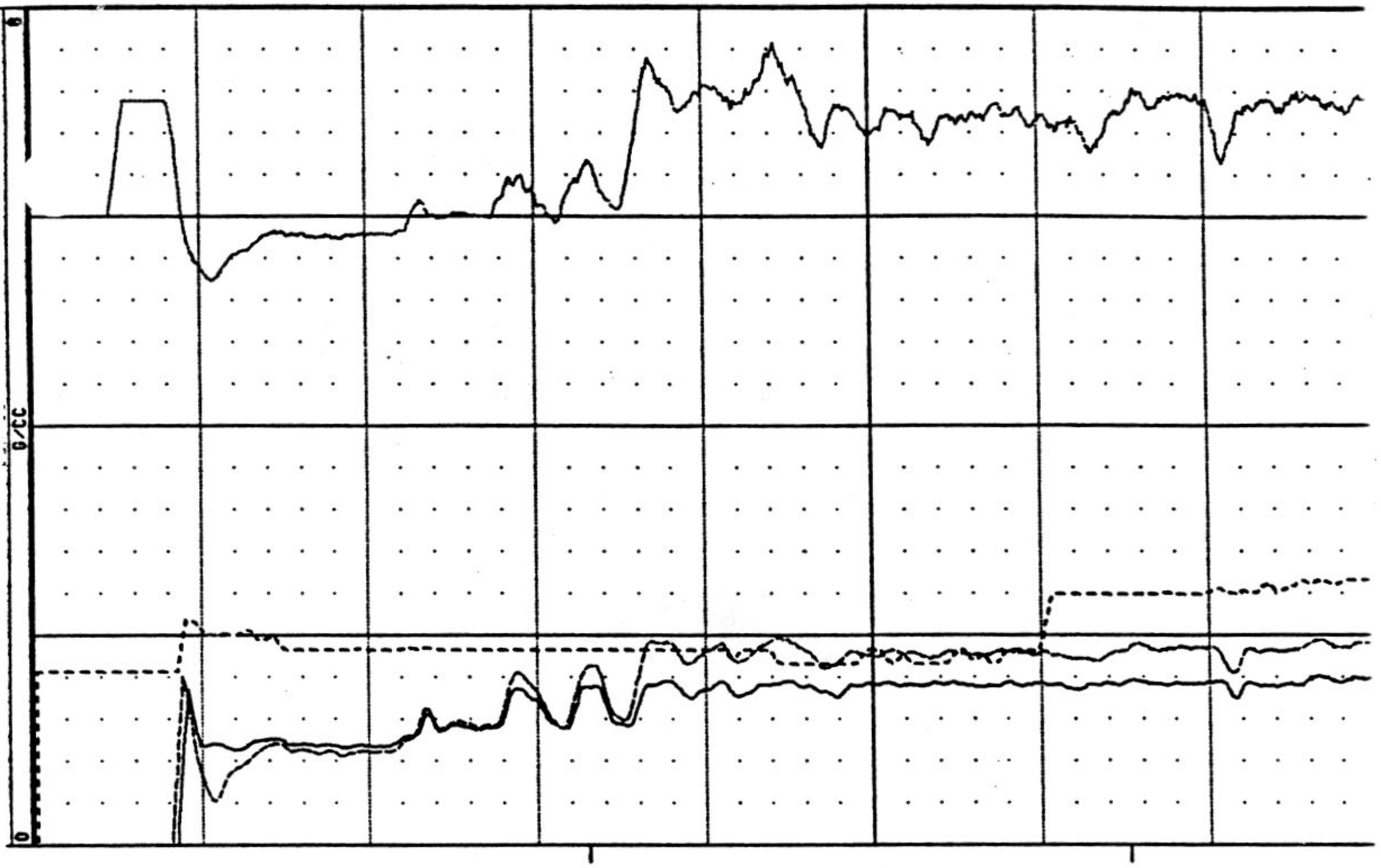
COMPENSATED DENSITY

COMPANY	: USACE TULSA			OTHER SERVICES:	
WELL	: OW-WR-38				
LOCATION/FIELD	: NORTH EAST OF PLAYA 1				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/14/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 230	ELEV. PERM. DATUM	:	KB	: NA
LOG BOTTOM	: 199.80	LOG MEASURED FROM	: TOC	DF	: NA
LOG TOP	: 0.20	DRL MEASURED FROM	: GL	GL	:
CASING DRILLER	: 200	LOGGING UNIT	: 9101		
CASING TYPE	: PVC	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .25	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: PROCESSED
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9035AA
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 6
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

REMARKS :

WELL SCREENED FROM 200' TO 230'.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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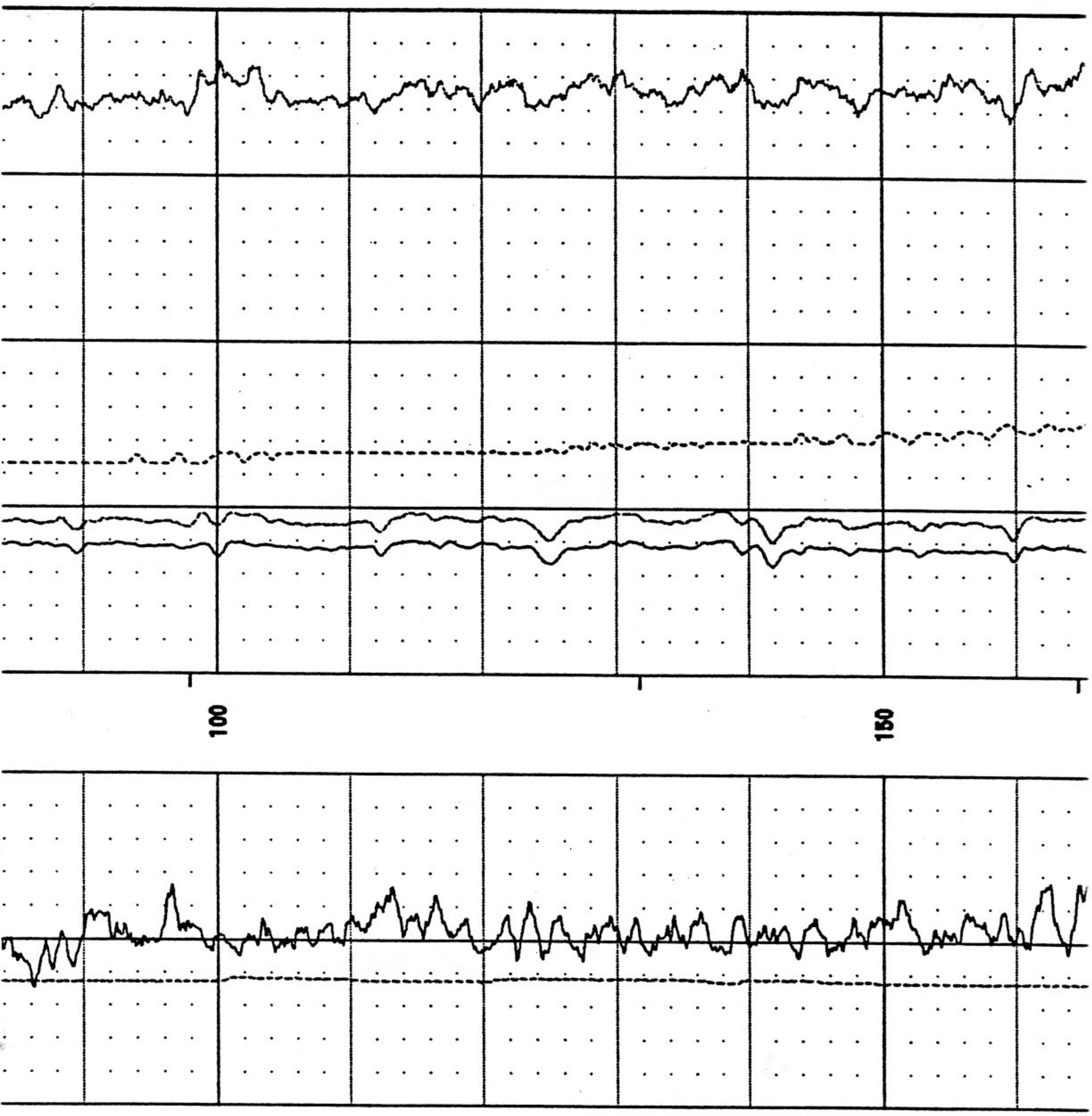
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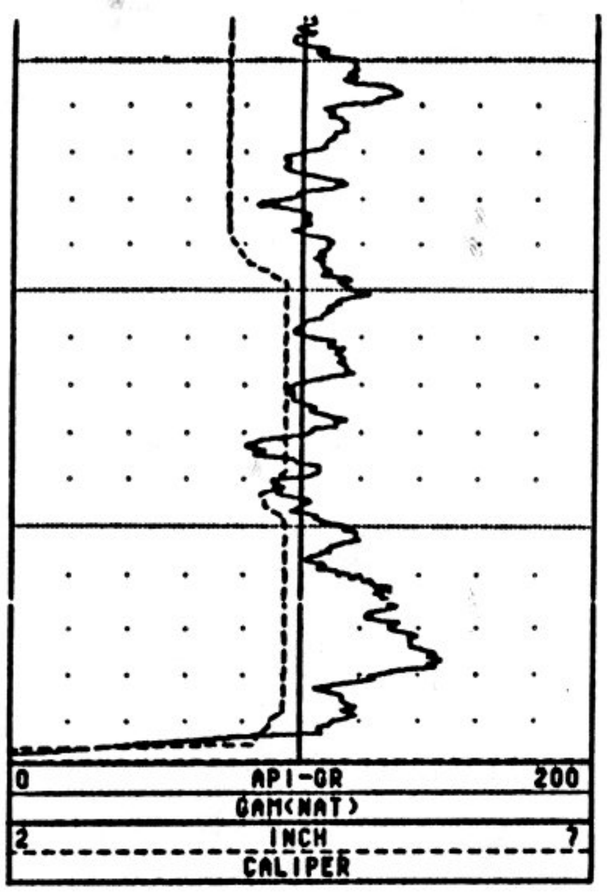

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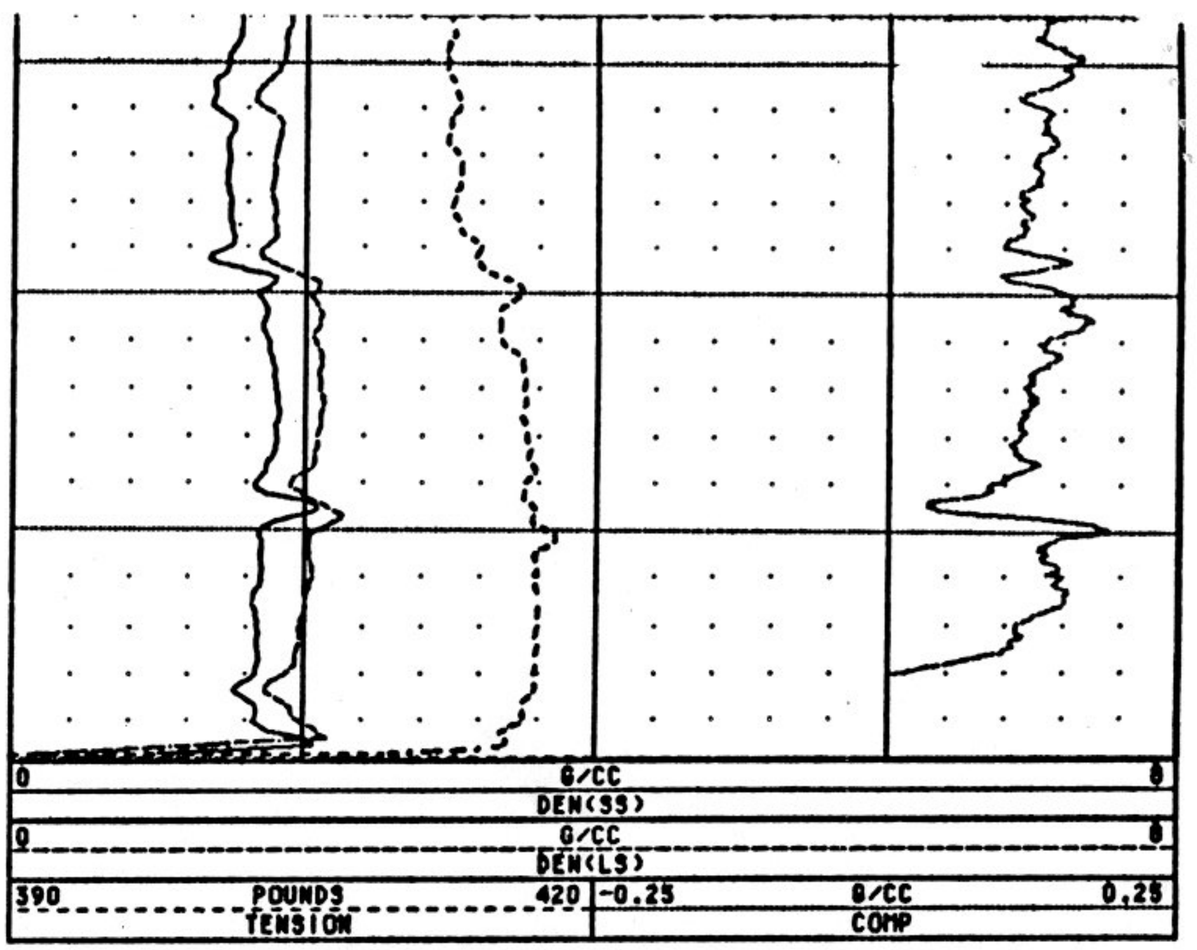


OW-WR-38 06/14/91 820

geo-0002

NEW WELL FIELD LOGBOOK

NUMBER: _____

Battelle Columbus Division

OW-WL-38

1988 Battelle Well

Site: Pantex

Date: 19 Jan 88

Team: Thomas Beard Mark Hampton
David Stitcher

aw-WR-38

...RONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Portes — PAGE 10 of 10 — DATE (dd/mmm/yy): 20/Jan/88

ID NUMBER: PX 943

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

AND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				193
				195 — Clay, sl. sandy & silty
				196
				197
				200
				202 — Clay - no silt or sand very plastic potters clay grey & red.
				D. 272
				↑ #2

LOGGED BY: Thomas C Grant (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

RONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Pantex 49

PAGE 1 of 10

ID NUMBER: PZMW1 → PX443

DATE (dd/mmm/yy): 19 JAN 88

COORDINATES or DRILLING LOCATION: Playa No. 1, North East of Playa

GROUND WATER FIRST ENCOUNTERED AT ——— ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/ RECOVERY (feet)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				Sandy silt, red, some thin stringers of caliche
	1			~~1~~ Silt and Clay, slightly sandy (med to fine) Red some caliche stringers, ~~few~~ see in HCL some ~~of~~ small root tubes w/ organic remains
	1			Driller says this much harder cuttings have much more caliche in them
	2			Silt and Clay, slight sand (coarse to fine) Red–very Red ~~little~~ caliche ~~some~~ semi moist nodules of calcite, x talline
				↖ 2 ft clay layer
				← back to silt and clay & caliche
	3			Red Clay slightly silty & sandy large (irregularly shaped) areas of caliche (calcite) throughout the sample.

LOGGED BY: Thomas C Beard (Signature) CHECKED BY: _____ (Signature)

Ou-WR-38

RECORD OF SUBSURFACE EXPLORATION

ENVIRONMENTAL SURVEY

SITE NAME: Pantex

PAGE 2 of 10
DATE (dd/mm/yy): 19/Jan/88

ID NUMBER: PZMW1 JB 19 Jan 88 PX 443

COORDINATES or DRILLING LOCATION: North east of Playa No. 1

GROUND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				same as above
	4			Caliche, 90% + a little red silty clay, Dry no sand
				Driller reports all caliche, cuttings very white
	5			Caliche same as above no sand little more clay
				Cuttings Becoming lighter sandier v.f.g.

RECORDED BY: Thomas C. Board (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

ENVIRONMENTAL SURVEY

RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Pantex

PAGE 3 of 10

DATE (dd/mm/yy): 19/Jan/88

ID NUMBER: ~~P2MW1~~ A.P. 19 Jan 88 PX443

COORDINATES or DRILLING LOCATION: see pg. 63

GROUND WATER FIRST ENCOUNTERED AT ——— ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				much sandier, will take split spoon at 70 ft
				← soft sand significant change 69 ft
6			—	Sand med to fine grained w silt & clay sand is well rounded mod sorted to well sorted slightly moist v. loose - unconsolidated
				Same as above
				— driller reports loss of circulation & cover in I saw them lose circulation, we have to go to mud rotary

CHECKED BY: Thomas C. Beard (Signature)

CHECKED BY: _____ (Signature)

OW-WR-38

IRONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Pantex

PAGE 4 of 10
DATE (dd/mm/yy): 20/Jan/88

ID NUMBER: Px 493

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

OUND WATER FIRST ENCOUNTERED AT ——— ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				Sand, same as ~~above~~ pr. previous page
				Cave-in of hole start of mud rotary
				Sand same as above v. loose, unconsolidated
				97 - Clay, silty, slightly sandy
				End of clay

Why wasn't sample taken here, wasn't going from sand to clay as change in lithology

BY: [signature] (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

ENVIRONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Porter — PAGE 5 of 10

ID NUMBER: Px 493 — DATE (dd/mmm/yy): 20/Jan/88

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

GROUND WATER FIRST ENCOUNTERED AT ~~~~ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/ RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				End of clay
				Sand, some clay and silt, clay balls
				interbedded sands and silty clays. Mostly sand
				more thin interbeds of clay and silt
7	15-18	18/4		Sand, Med. to fine, no clay 20% recovery

LOGGED BY: Thomas C. Board (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

ONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Pasture — PAGE 6 of 12

ID NUMBER: Px 443 — DATE (dd/mm/yy): 22/12/88

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

AND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCE/RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				Silty Sand easy drilling fast
				Silty Sand

DED BY: Thomas C Arend (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

ENVIRONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Portes — PAGE 7 of 10

ID NUMBER: Px 443 — DATE (dd/mm/yy): 22/12/88

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

GROUND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/ RECOVERY (in)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				Silty Sand
140				Silty Clayey Sand becoming harder/more clayey
8				Sandy Clay/Clayey Sand red 60-70% sand, moist med to fine grained, some hard dry clots.
150				same as above
				Same as above

LOGGED BY: Thomas C Board (Signature) CHECKED BY: _____ (Signature)

OW-WR-38

IRONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Portes — PAGE 8 of 10

ID NUMBER: PX 443 — DATE (dd/mmm/yy): 20/JAN/88

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

AND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE ADVANCED/ RECOVERY (ins)	BLOWS (per 6 ins)	DESCRIPTION OF MATERIALS (indicate zones of lost circulation and water bearing zones)
				Same as above
				Sand, clayey – med to coarse w/ some gravel up to 1"
				Coarse sand, well sorted little silt & clay w/ quite a bit of gravel as above.
9			½	Sand coarse well sorted w/ v.c. gravel real sample
			½	Silty Clay, brown slightly sandy v.f.g. what do v c, vfg and real sample refers to?

LOGGED BY: Thomas C Reed (Signature) CHECKED BY: _____

OW-WR-33

IRONMENTAL SURVEY — RECORD OF SUBSURFACE EXPLORATION

SITE NAME: Pantex — PAGE 9 of 10

ID NUMBER: PX 443 — DATE (dd/mmm/yy): 20/Jun/83

COORDINATES or DRILLING LOCATION: Northeast of Playa No. 1

GND WATER FIRST ENCOUNTERED AT _____ ft.

SAMPLE NUMBER	SAMPLE INTERVAL AND TYPE	SAMPLE RECOVERY (Feet)	BLOWS (per 6 in)	DESCRIPTION OF MATERIALS (Indicate zones of lost circulation and water bearing zones)
175				Clay, silty, sandy, brown
185				more sand content to clay but very little more
195				Clay slightly silty & sandy

LOGGED BY: Thomas Sprad (Signature) CHECKED BY: _____ (Signature)

OW-WR-39

Contractor: Groundwater Technology

Contract #: 830011063

OPTIX #:

Included Documents

_X_Drilling Log
- _X_Draft
- ___Final

___Installation Log

___Lithologic Logs
- ___Draft
- ___Final

___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

Converted to OW-WR-39
No geophysical Log Available.

Log - Monitoring Well No. 1

Depth *	Description
0-4	Topsoil, clay, dark brn, (CL)
14-60	Caliche, sandy clay to clayey sand (SC/CL), red brown
60-70	Sandy clay, red-brown, fine grained (SC) possibly caliche
70-75	Clay, sandy, some gravel, grey brown (CL)
75-90	Clayey sand, red brown, some gravel (SC) Caliche?
90-100	Clayey sand, grey, fine grained (SC)
100-110	Clay, some sand, tan (CL)
110-165	Sand, fine grained, tan, some gravel to 1/4" diameter (SW)
165-180	Sandy clay/clayey sand, tan, fine grained (SC)
180-298	Sand, fine grained, tan, (SW), minor clay streaks (some red, some white)
298-308	Sandy clay (CL), tan, some streaks of fine sand (SW)
308-490	Clay, tan, plastic to non-plastic (CL/CH), numerous clay "balls",

* Depth from top of drilling platform. Subtract 5 ft. for depth from ground surface.

Log - Monitoring well No. 1 (cont'd)

Depth *	Description
490 - 525	clay, with increasing amounts of sand, minor gravel (SC/CL)
525 - 540	Clayey sand / sandy clay (SC), gray, minor gravel
540 - 555	Sand, fine to very coarse grained, well rounded to subangular, some gravel, minor clay streaks (SW)
555 - 590	Clay, red (CL), minor coarse sand, slow drilling
590 - 600	Clay (CL), tan to white
600 - 620	Clay and sand (SC), fine to coarse, tan to white
620 - 630	Clay (CL), tan to white
630 - 673	Clay and sand (SC), fine to coarse, tan to white, minor gravel
673 - 705	Triassic redbeds, clay (CL) red with minor streaks of white clay. Slow drilling.

Monitoring Well No. 1 - Notes

Set 2-in. wire wound screen from 520 to 550 ft* (measured from ground surface). Blank casing from 550 ft to 592 ft. Circulated with water. Placed gravel 430 - 705 ft, then 10 ft bentonite pellets (let sit for 4 hrs). Placed grout from 420 ft to surface.

Drilling speed varied from 20 to 90 ft/hr, averaged 54 ft/hr.

* See notes of 10/12/85 for revised screen setting

OW-WR-39

Plain & Gravel Wall Wells

Holes

WATER INDUSTRIES

A DIVISION OF TASCOSA INDUSTRIES, INC.
Ground Water Research and Development
IRRIGATION. MUNICIPAL. INDUSTRIAL
P. O. Box 871 Phone 806-364-3109
HEREFORD, TEXAS 79045

Pump Sales & Repair

Water Systems

Mason & Hanger - Silas Mason Co., Inc.
Pantex Plant
Amarillo, Texas 79177

Drilling Log: Monitor Well #1 12" Hole
Drilling Date: October 7, 1985 (All Measurements are 5' Above Ground Level)

0	8	Top Soil
8	30	Caliche
30	50	Caliche
50	70	Red Sandy Clay
70	75	Streaks of Sandrock, and Sandy Clay
75	85	Sandy Clay
85	90	Caliche Rock
90	100	Fine Sand and Clay
100	110	Sandy Clay
110	120	Sand
120	160	Sand with Clay Streaks
160	170	Sandy Clay
170	210	Sand
210	220	Sand with Clay Streaks
220	280	Sand
280	288	Sand and Sandrock
288	308	Sand, Sandrock, and Clay
308	325	Mostly Clay, Some Sand
325	500	Clay, Very Little Sand
500	528	Clay and Sandrock
528	535	Sandrock, Gravel, Clay Layers
535	555	Sand and Gravel
555	580	Red Clay
580	675	Yellow Sandy Clay
675	680	Red Clay, Yellow Sandy Clay with Gravel Streaks
680	690	Red Bed
690	695	Red Clay, Yellow Sandy Clay
695	707	Red Bed

TEST HOLE NO. 1 (MONITORING WELL) WR-39

DEPTH BELOW GROUND (FT.)	FORMATION DESCRIPTION
0 - 4	TOPSOIL, CLAY, DARK BROWN, (CL)
14 - 55	CALICHE, SANDY CLAY TO CLAYEY SAND (SC/CL), RED BROWN
55 - 65	SANDY CLAY, RED BROWN, FINE GRAINED (SC), CALICHE
65 - 70	CLAY, SANDY, SOME GRAVEL, GREY BROWN (CL)
70 - 85	CLAYEY SAND, RED BROWN, SOME GRAVEL (SC), CALICHE
85 - 95	CLAYEY SAND, GREY, FINE GRAINED (SC)
95 - 105	CLAY, SOME SAND, TAN (CL)
105 - 160	SAND, FINE GRAINED, TAN, SOME GRAVEL TO 1/4" DIAMETER (SW)
160 - 175	SANDY CLAY, CLAYEY SAND, TAN, FINE GRAINED (SC)
175 - 293	SAND, FINE GRAINED, TAN, (SW), MINOR CLAY STREAKS, (SOME RED, SOME WHITE)
293 - 303	SANDY CLAY (CL), TAN, SOME STREAKS OF FINE SAND (SW)
303 - 485	CLAY, TAN, PLASTIC TO NON-PLASTIC (CL/CH), NUMEROUS CLAY "BALLS"
485 - 520	CLAY, WITH INCREASING AMOUNTS OF SAND, MINOR GRAVEL (SC/CL)
520 - 535	CLAYEY SAND/SANDY CLAY (SC), GREY, MINOR GRAVEL
535 - 550	SAND, FINE TO VERY COARSE GRAINED, WELL ROUNDED TO SUBANGULAR, SOME GRAVEL, MINOR CLAY STREAKS (SW)
550 - 585	CLAY, RED (CL), MINOR COARSE SAND, SLOW DRILLING
585 - 595	CLAY (CL), TAN TO WHITE
595 - 615	CLAY AND SAND (SC), FINE TO COARSE, TAN TO WHITE
615 - 625	CLAY (CL), TAN TO WHITE
625 - 668	CLAY AND SAND (SC), FINE TO COARSE, TAN TO WHITE, MINOR GRAVEL
668 - 700	TRIASSIC RED BEDS, CLAY (SL), RED WITH MINOR STREAKS OF WHITE CLAY, SLOW DRILLING

TEST HOLE NO. 2 (MONITORING WELL) WR-40

DEPTH BELOW GROUND (FT.)	FORMATION DESCRIPTION
0 - 4	TOP SOIL, CLAY (CL), DARK BROWN
4 - 40	CALICHE, SANDY CLAY (SC), RED-BROWN, FINE GRAINED
40 - 80	CALICHE, AS ABOVE (SC), BUT WITH SOME COARSE SAND AND GRAVEL
80 - 100	SAND (SW), LIGHT BROWN, FINE TO MEDIUM GRAINED
100 - 110	SANDY CLAY/CLAYEY SAND (SC), TAN, FINE GRAINED
110 - 115	CLAY (CL), LIGHT BROWN
115 - 125	SAND (SW), TAN, FINE GRAINED, WITH SOME CLAY STREAKS
125 - 145	CLAY (CL), TAN, MINOR SAND
145 - 180	SAND (SW), TAN, FINE GRAINED, MINOR CLAY
180 - 225	SANDY CLAY (SC), TAN, FINE GRAINED, INCREASING CLAY WITH DEPTH
225 - 252	CLAYEY SAND (SC), TAN, FINE GRAINED TO COARSE, SOME GRAVEL
252 - 322	CLAY (CL), TAN
322 - 440	AS ABOVE (CL) BUT WITH MINOR SAND AND GRAVEL
440 - 510	AS ABOVE (CL), BUT RED-BROWN COLOR AND NO GRAVEL
510 - 560	AS ABOVE (CL), BUT TAN COLOR, MINOR SAND STREAKS
560 - 580	CLAYEY SANDY GRAVEL (GC), TAN FINE TO COARSE, CONSIDERABLE FINES
580 - 590	SAND AND GRAVEL (GP), SOME FINES, TAN
590 - 610	SAND AND GRAVEL (GP), MEDIUM TO COARSE GRAINED, FEW FINES, TAN
610 - 620	CLAY (CL), TAN, MINOR RED CLAY
620 - 630	CLAY, COARSE SAND AND GRAVEL (GC) RED-BROWN
630 - 640	SANDY CLAY (SC), RED-BROWN
640 - 650	CLAY (CL), TAN WITH SOME RED STREAKS
650 - 670	TRIASSIC RED BEDS, CLAY (CL), RED
670 - 679	TRIASSIC RED BEDS, CLAY (CL), WHITE WITH STREAKS OF RED, SLOW DRILLING

TEST

Depth Below GROUND (FT.)	FORM
0 - 3	TOP SOIL, MATERIAL
3 - 45	CALICHE,
45 - 53	CALICHE,
53 - 61	SANDY CLA
61 - 90	CLAY, SLI
90 - 99	SAND AND GRAVEL PI
99 - 116	SILT AND
116 - 125	CLAY (CL),
125 - 188	SAND (SP), FEW RED CL
188 - 197	SAND, AS
197 - 215	SAND (SP), BROWN
215 - 249	SAND (SP), NOT SILTY,
249 - 255	SAND (SW), GRAVEL, YE
255 - 265	AS ABOVE (
455 - 494	SANDY CLAY 485'-494'
494 - 524	CLAY (CL),
524 - 534	SANDY CLAY
534 - 544	CLAY, SAND
544 - 554	GRAVEL, SA DIAMETER, TAN
554 - 625	CLAY (CL),
625 - 663	CLAY AND F
663 - 668	CLAY, MINO
668 - 702	TRIASSIC R

PRODUCTION WEL

DEPTH BELOW GROUND (FT.)	FORMA
0 - 3	TOP SOIL,
3 - 53	CALICHE, S BROWN 40'-
53 - 61	CALICHE, CL
61 - 71	SANDY CLAY
71 - 81	CALICHE, S RED-BROWN
81 - 116	CLAY (CL),
116 - 125	CLAY, SAND
125 - 160	SANDY CLAY, GRAINED, TA 143'-160'
160 - 169	CLAY (CL),
169 - 178	SAND (SP),
178 - 188	CLAYEY SAND
188 - 197	CLAY (CL),
197 - 206	SAND (SP), CLAY
206 - 224	CLAY (CL),
224 - 234	CLAYEY SAND
234 - 244	SAND AND G SAND, TAN
244 - 316	CLAY (CL),
316 - 326	SANDY CLAY
326 - 375	CLAY (CL), TAN
375 - 405	CLAY AND VE
405 - 425	CLAYEY SAND
425 - 435	

OM39

This is OW WR 39

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Mason & Hanger - Silas Mason Co. (Name) (Pantex Plant) Address P. O. Box 30020 (Street or RFD) Amarillo (City) Texas (State) 79177 (Zip)

2) LOCATION OF WELL:
County Carson 10 miles in West (N.E., S.W., etc.) direction from Panhandle (Town)
Test Hole #1 - Monitor Well

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. 37 Block No. M4 Township
Abstract No. Survey Name J H Gibson
Distance and direction from two intersecting section or survey lines 2000' S. of N. Sec. Line and 250' W. of E. Sec. Line
☐ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☒ Other Monitor

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other

6) WELL LOG:
Date drilled 10-7-85

DIAMETER OF HOLE Dia. (in.)	From (ft.)	To (ft.)
12	Surface	707

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from 420 ft. to 707 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	8	Top Soil
8	30	Caliche
30	50	Caliche
50	70	Red Sandy Clay
70	75	Streaks of Sandrock, Sandy Clay
75	85	Sandy Clay
85	90	Caliche Rock
90	100	Fine Sand and Clay
100	110	Sandy Clay
110	120	Sand
120	160	Sand with Clay Streaks
160	170	Sandy Clay
170	210	Sand
210	220	Sand with Clay Streaks
220	280	Sand
280	288	Sand and Sandrock
288	308	Sand, Sandrock, and Clay
308	325	Mostly Clay, Some Sand
325	500	Clay, Very Little Sand
500	528	Clay and Sandrock
528	535	Sandrock, Gravel, Clay Layers
535	555	Sand and Gravel
555	580	Red Clay
580	675	Yellow Sandy Clay
675	680	Red Clay, Yellow Sandy Clay with Gravel Streaks
680	690	Red Bed

(Use reverse side if necessary) (Over)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	To	Gage Casing Screen
2	New	Galv. Pipe (T&C)	+2	488	.15
2	New	Galv. Howard Smith Screen, .040 Slot (T&C)	488	518	.15
2	New	Galv. Pipe (T&C)	518	560	.15

CEMENTING DATA
Cemented from 0 ft. to 420 ft.
Method used Pumping
Cemented by Dyna Pumping (Company or Individual)

9) WATER LEVEL:
Static level ____ ft. below land surface Date
Artesian flow ____ gpm. Date

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet, etc., ____ ft.

12) WELL TESTS:
☐ Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☒ No

RECEIVED
DEC 27 1985
TEXAS WATER COMMISSION

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME Water Industries (Type or Print) Water Well Driller's License No. 1084

ADDRESS P. O. Box 871 (Street or RFD) Hereford (City) Texas (State) 79045 (Zip)

(Signed) ____ (Licensed Water Well Driller) (Signed) ____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only Well No. 06-44-513 Located on map H7

TDWR-0392 (Rev. 5-27-82)

DEPARTMENT OF WATER RESOURCES COPY

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Department of Water Resources are concerned that some persons having water wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every registered water well driller drilling, deepening, or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within sixty (60) days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential. Please note that the term "Commission" in the above-quoted section and elsewhere in the Water Well Drillers Act now properly means the Texas Department of Water Resources (P. O. Box 13087; Austin, Texas 78711).

FORMATION LOG (Continued)

690	-	695	Red Clay, Yellow Sandy Clay
695	-	707	Red Bed

Form No. 98-DOM-01

WELL
APPLICATION
NUMBER_____
DATE_____

RECEIVED
BY_____

COMPLETION
DATE_____

Panhandle Ground Water Conservation District No. 3

Application For Water Well Registration

1. Well Owner **U.S. Department of Energy - Pantex Plant**

   Address **P.O. Box 30020 Amarillo, Texas 79120**

   Phone **(806) 477-3183**

2. Well Location: **Carson** County

   NW1/4 NE1/4 SW1/4 SE1/4 Section 37 Block M-4 Survey **J.H. Gibson**
   (Circle One that Applies)

   4 miles N S and **17** miles E W of the town of **Amarillo, Texas**

   _____ measured yards from N or S, (property) or (section) line, and

   _____ measured yards from E or W, (property) or (section) line
   (Circle all that apply)

   Latitude_____ Longitude_____ (if known)

   Easting 638136.500 Northing 3765903.300

3. Well Description: **OW-WR-39 (TWC#06-44-5B)**

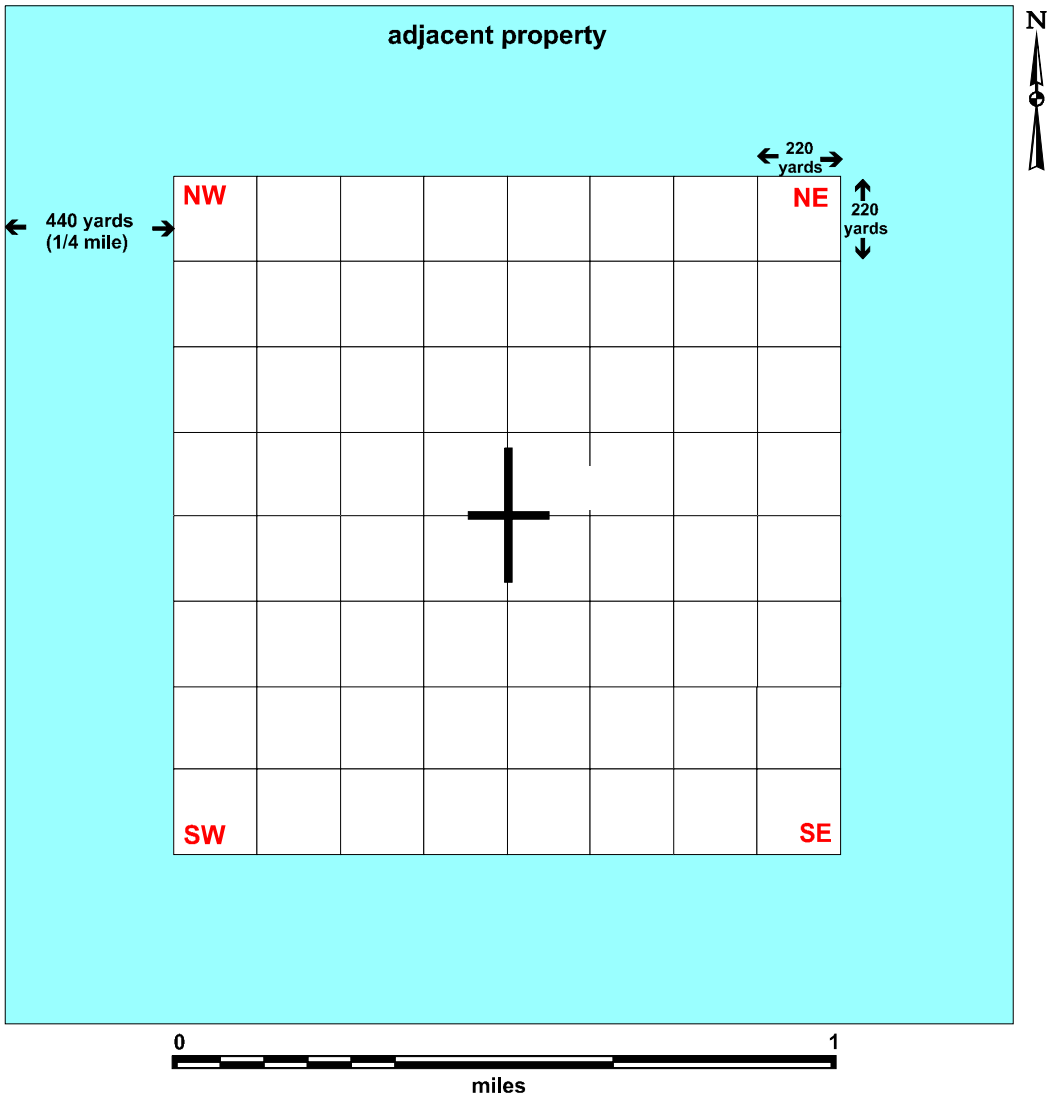
   Anticipated Drill Date 10-7-85 Driller Water Industries

   Casing Size 2"

   Pump Size Bennett Sample Pump

4. Well Use: Domestic Stock Watering Other Monitoring Well

5. Locate well by marking dot inside a circle within the grid to show proposed well location. Grid represents one section or one square mile.



I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish the Board of Directors the completed well log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by:

_____

(Signature of Owner or Agent) Title

I, hereby, certify that this application has been verified and is in compliance with the Rules of the District.

_____ _____

District Manager Date

STATE OF TEXAS PLUGGING REPORT for Tracking #27882

Owner:	**U. S. Department of Energy**	Owner Well #:	**OW-WR-39**
Address:	**State Hwy 60 & FM 2373 Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**U. S Hwy 60 & FM 2373 Amarillo , TX 79120**	Latitude:	**35° 19' 58" N**
Well County:	**Carson**	Longitude:	**101° 33' 38" W**
		GPS Brand Used:	**No Data**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Water Industries**
Driller's License Number of Original Well Driller:	**1084**
Date Well Drilled:	**10/17/1985**
Well Report Tracking Number:	**No Data**
Diameter of Well:	**12.25 inches**
Total Depth of Well:	**684 feet**

Date Well Plugged:	**8/17/2005**
Person Actually Performing Plugging Operation:	**Roy Burson**
License Number of Plugging Operator:	**2585**
Plugging Method:	**Other plugging method.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **2 inches diameter, From 560 ft to 0 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 560 ft to 100 ft; Sack(s)/type of cement used: 3 sacks quickgrout** 2nd Interval: **From 100 ft to 6 ft; Sack(s)/type of cement used: 3.5 sacks holeplug** 3rd Interval: **From 6 ft to 3 ft; Sack(s)/type of cement used: 0.5 sacks cement** 4th Interval: **From 3 ft to 0 ft; Sack(s)/type of cement used: native soil** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**U.S Department of Energy State Hwy 60 & FM 2373 Amarillo , TX 79120**
Plug Installer License Number:	**2585**

Licensed Plug Installer Signature:	**Roy Burson**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Termmie quickgrout from total depth to 100 feet, place holeplug from 100 feet to 6 feet, cement 6 feet to 3 feet, native soil from 3 feet to surface. Well location in pasture native soil used for final plugging material**

Please include the plugging report's tracking number (Tracking #**27882**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

OW-WR-40

aka: <other names>

Contractor: Groundwater Technology
Contract #: 830011063
Contractor's Project #: <number/ID>
Drilled date: 10/17/1985
Drilling Contractor: *[may have been subcontracted by primary]*

OPTIX #: <if known>
Last Update: 10/18/05 (added plugging report)

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- ___ Draft
- _X_ Final

___ Draft Installation Log/Diagram (handwritten/drawn)
___ Final Installation Log/Diagram (computer-generated)

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (computer-generated)

Geophysical Logs
- ___ Neutron
- _X_ Gamma
- ___ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

_X_ State Well Report
_X_ State Plugging Report

OW-WR-4C

Plain & Gravel Wall Wells

Holes

WATER INDUSTRIES

A DIVISION OF TASCOSA INDUSTRIES, INC.
Ground Water Research and Development
IRRIGATION. MUNICIPAL. INDUSTRIAL
P. O. Box 871 Phone 806-364-3109
HEREFORD, TEXAS 79045

Pump Sales & Repair

Water Systems

Mason & Hanger - Silas Mason Co., Inc.
Pantex Plant
Amarillo, Texas 79177

Drilling Log: Monitor Well #2 12¼" Hole
Drilling Date: October 17, 1985 (All Measurements are 5' Above Ground Level)

0	- 8	Top Soil
8	- 10	Caliche
10	- 50	Brown Clay
50	- 58	Red Clay
58	- 66	Sand and Clay
66	- 75	Caliche Rock, Clay, and Sand
75	- 85	Brown Clay
85	- 104	Sand
104	- 121	Sand and Clay
121	- 130	Sand
130	- 148	Sand and Some Clay
148	- 184	Sand
184	- 226	Sand and Some Clay
226	- 236	Sand and Some Gravel
236	- 246	Clay and Sand
246	- 259	Sand and Little Clay
259	- 267	Mostly Clay
267	- 277	Sandy Clay
277	- 317	Mostly Clay
317	- 327	CLay and Very Little Sand
327	- 377	Clay
377	- 387	Mostly Clay and Little Sand
387	- 410	Clay
410	- 416	Sandy Clay
416	- 504	Clay
504	- 560	Sandy Clay

Plain & Gravel
Well Wells

Test Holes

WATER INDUSTRIES

A DIVISION OF TASCOSA INDUSTRIES, INC.
Ground Water Research and Development
IRRIGATION, MUNICIPAL, INDUSTRIAL
P. O. Box 871 Phone 806-364-3109
HEREFORD, TEXAS 79045

Pump Sales
& Repair

Water Systems

Mason & Hanger - Silas Mason Co., Inc.
Pantex Plant
Amarillo, Texas 79177

Re: Monitor Well #2 (Continued)

560 - 590	Sandy Clay, Sand Rock, and Gravel Streaks
590 - 595	Sand, Fine Gravel, and Clay
595 - 620	Sand and Gravel
620 - 635	Clay
635 - 645	Red Clay
645 - 654	Brown Clay
654 - 674	Red Bed
674 - 684	Red Bed with Brown Clay

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Mason & Hanger - Silas Mason Co. (Name) (Pantex Plant) Address P. O. Box 30020 (Street or RFD) Amarillo (City) Texas (State) 79177 (Zip)

2) LOCATION OF WELL:
County Carson 10 miles in West (N.E., S.W., etc.) direction from Panhandle (Town)
Test Hole #2 - Monitor Well

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. 37 Block No. M4 Township
Abstract No. Survey Name J H Gibson
Distance and direction from two intersecting section or survey lines 700' N. of S. Sec. Line and 250' W. of E. Sec. Line
☐ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☒ Other Monitor

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other

6) WELL LOG:

Dia. (in.)	From (ft.)	To (ft.)
12¼	Surface	684

Date drilled 10-17-85

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from 490 ft. to 684 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	8	Top Soil
8	10	Caliche
10	50	Brown Clay
50	58	Red Clay
58	66	Sand and Clay
66	75	Caliche Rock, Clay, and Sand
75	85	Brown Clay
85	104	Sand
104	121	Sand and Clay
121	130	Sand
130	148	Sand and Some Clay
148	184	Sand
184	226	Sand and Some Clay
226	236	Sand and Some Gravel
236	246	Clay and Sand
246	259	Sand and Little Clay
259	267	Mostly Clay
267	277	Sandy Clay
277	317	Mostly Clay
317	327	Clay and Very Little Sand
327	377	Clay
377	387	Mostly Clay and Little Sand
387	410	Clay
410	416	Sandy Clay
416	504	Clay
504	560	Sandy Clay
560	590	Sandy Clay, Sandrock, Gravel Streaks

(Use reverse side if necessary) (Over)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfr., if commercial	Setting (ft.) From	To	Gage Casing Screen
2	New	Galv. Pipe (T&C)	+2	580	.15
2	New	Howard Smith Screen Galv., .040 Slot (T&C)	580	610	.15
2	New	Galv. Pipe (T&C)	610	631	.15

CEMENTING DATA
Cemented from 0 ft. to 490 ft.
Method used Pumping
Cemented by Dyna Pumping (Company or Individual)

9) WATER LEVEL:
Static level ft. below land surface Date
Artesian flow gpm. Date

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet, etc., ft.

12) WELL TESTS:
☐ Type Test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: gpm with ft. drawdown after hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained harmful amounts of salty water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Depth of strata
Was a chemical analysis made? ☐ Yes ☒ No

RECEIVED
DEC 27 1985
TEXAS WATER COMMISSION

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true and correct to the best of my knowledge and belief.

COMPANY NAME Water Industries (Type or Print) Water Well Driller's License No. 1084

ADDRESS P. O. Box 871 (Street or RFD) Hereford (City) Texas (State) 79045 (Zip)

(Signed) (Licensed Water Well Driller) (Signed) (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TDWR use only Well No 58-44-5A Located on map MM

DWR-0382 (Rev. 5-27-82)

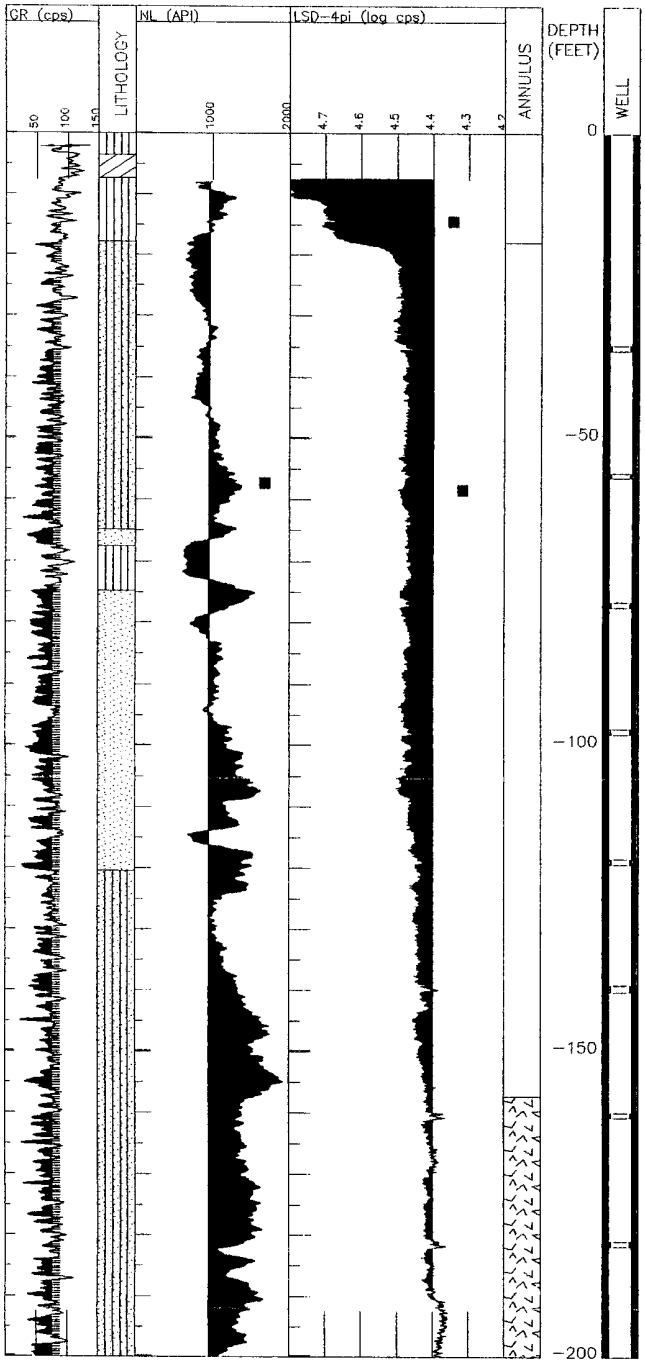
DEPARTMENT OF WATER RESOURCES COPY

TABLE 7. WELL OW-WR-40, DATA AND ASSESSMENT

OTHER WELL DESIGNATIONS	Test Hole 2, WI-2, MW 2 (south), SW Playa 1
LOCATION	Sec 37, Blk M-4, west side, Midway, Zone 11; State Plane Coordinates N 17,775.5118 E 25,515.8405
GEOPHYSICAL DATA: TOOLS (LOGS)	1991: 9067 (GR, NL), 9068 (GR, LSD-4pi)
LOG QUALITY	Excellent
CASING: MATERIALS	Steel, 20-foot joints, 2-inch diameter, 0-580 feet, 611-628 feet
POTENTIAL PROBLEMS	See composite well log interval from 407-447 feet: possible junk in hole, large diameter casing string, or other feature
QUALITY OF ASSESSMENT	Fair
SCREEN: MATERIALS	Steel, 2-inch diameter, 580-611 feet
POTENTIAL PROBLEMS	None apparent
QUALITY OF ASSESSMENT	Fair
ANNULUS: MATERIALS	Cement 157-230 feet, 157-230 feet, 303-407 feet, variable density and water content; possibly gravel pack 471-545 feet and 565-628 feet
POTENTIAL PROBLEMS	Significant cavities and/or channeling throughout
QUALITY OF ASSESSMENT	Poor
OVERALL WELL CONDITION	Poor due to possible vertical fluid movement in annulus
CORPS OF ENGINEERS WELL CONSTRUCTION NOTES LOG HEADER NOTES	Water Industries drilled 10/17/85, mud rotary Bit size 12 ¼ inch 2 in. dia. galvanized steel casing 0-580 feet 2 in. dia. screen 580-610 feet Total depth drilled 684 feet Total depth well 631 feet Total depth logged 629 feet
OTHER COMMENTS	See composite well log interval from 407-447 feet: possible junk in hole, large diameter casing string, or other feature causes significant increase in apparent density; no explanation on TWC water well report

Well Name: OW-WR-40
File Name: PTX40FNL
Location: SEC 37, BLK M-4, PANTEX
Elevation: 0 Reference: TOC

GALVANIZED STEEL CASING & SCREEN (.040 SLOT): 2-INCH
BIT SIZE 12.25 INCH



WELL IS CONSTRUCTED OF 2-INCH DIAMETER STEEL CASING (20-FOOT JOINTS) AND SCREEN (.040 SLOT, 10-FOOT JOINTS)

DEPTH - 0-18 FEET
LOGS - NL, LSD
■ AIR-FILLED CAVITY

DEPTH - 18-157 FEET
LOGS - NL, LSD
■ POSSIBLE CHANNELING AND AIR-FILLED VOIDS

DEPTH - 157-230 FEET
LOGS - NL, LSD
■ VARIABLE-DENSITY GROUT, POSSIBLY WITH SOME CHANNELING

SAND
SANDY SILT, SILTY SAND
SILT
CLAY
CALICHE, OTHER LITHOLOGIES NOT DIFFERENTIATED

CEMENT
BENTONITE
BENTONITE PELLETS
CUTTINGS & CAVINGS
SAND
POSSIBLE CHANNELING OR VOID SPACE

PVC CASING
STEEL CASING
CASING COLLAR
SCREEN
SLOTTED CASING
CENTRALIZER
WATER LEVEL

GROUNDWATER TECHNOLOGY
12101 E. 51st ST. SUITE 103 TULSA, OK 74146

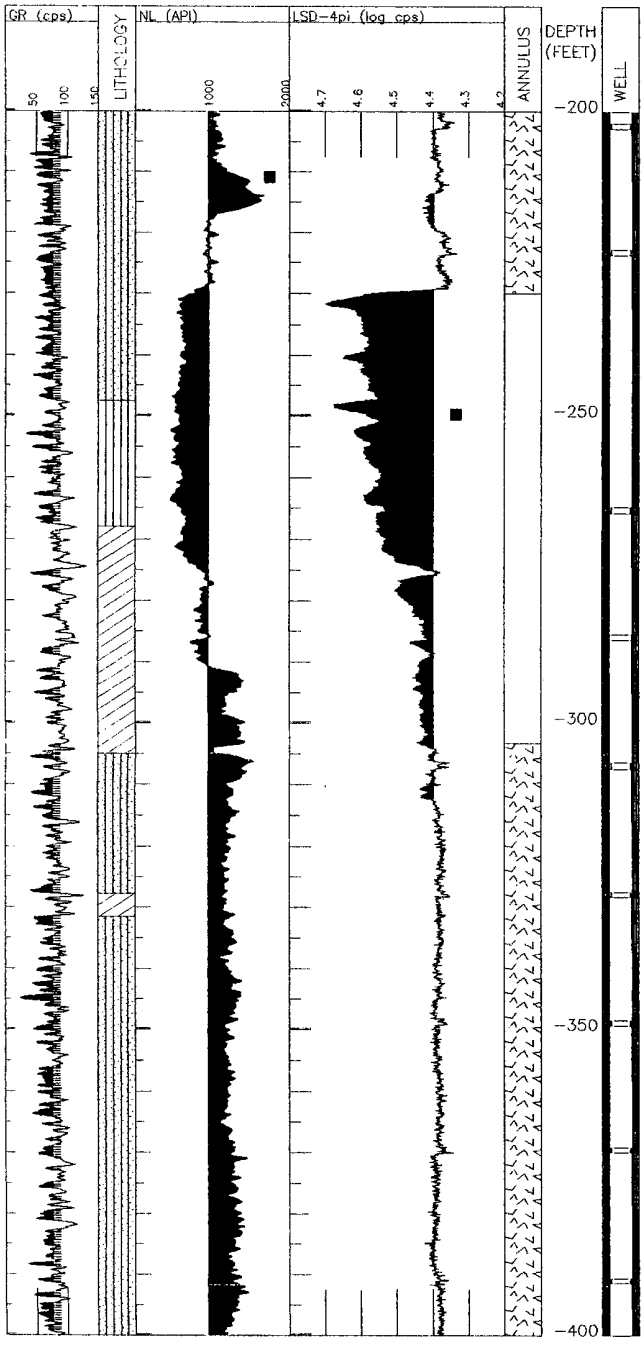
PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/97

AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW

TITLE:
WELL OW-WR-40
(0-200 FEET)

CLIENT: CENG/PANTEX PLANT/AMA
LOCATION: PANTEX
ACAD FILE: PTX40_2

Well Name: OW-WR-40
File Name: PTX40FNL
Location: SEC 37, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
GALVANIZED STEEL CASING & SCREEN (.040 SLOT): 2-INCH
BIT SIZE 12.25 INCH



WELL IS CONSTRUCTED OF 2-INCH DIAMETER STEEL CASING (20-FOOT JOINTS) AND SCREEN (.040 SLOT, 10-FOOT JOINTS)

DEPTH - 157-230 FEET
LOGS - NL, LSD
■ VARIABLE-DENSITY GROUT, POSSIBLY WITH SOME CHANNELING

DEPTH - 230-303 FEET
LOGS - NL, LSD
■ POSSIBLE VOID SPACE AND LOW-DENSITY GROUT

DEPTH - 303-407 FEET
LOGS - NL, LSD
■ CEMENT GROUT

SAND
SANDY SILT, SILTY SAND
SILT
CLAY
CALICHE, OTHER LITHOLOGIES NOT DIFFERENTIATED

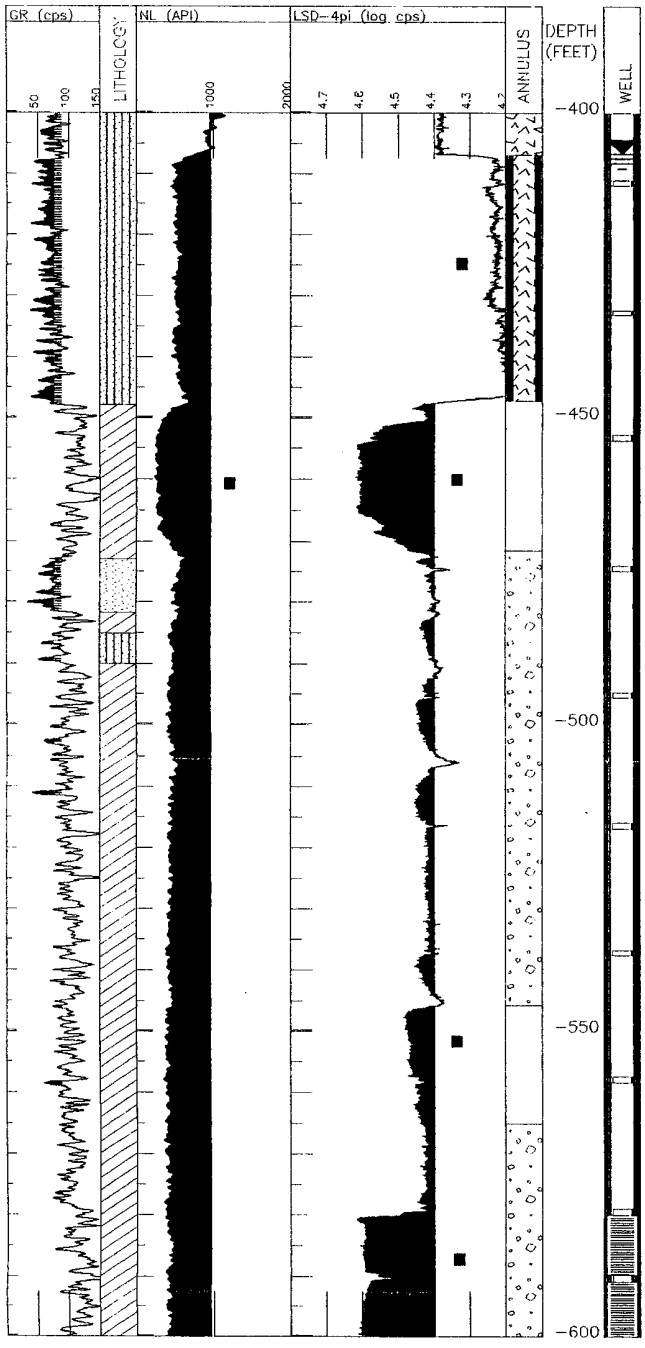
CEMENT
BENTONITE
BENTONITE PELLETS
CUTTINGS & CAVINGS
SAND
POSSIBLE CHANNELING OR VOID SPACE

PVC CASING
STEEL CASING
CASING COLLAR
SCREEN
SLOTTED CASING
CENTRALIZER
WATER LEVEL

GROUNDWATER TECHNOLOGY
12101 E. 51st ST.
SUITE 103
TULSA, OK 74146

PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE: **WELL OW-WR-40 (200-400 FEET)**
CLIENT: CENG/PANTEX PLANT/AMA
LOCATION: PANTEX
ACAD FILE: PTX40_4

Well Name: OW-WR-40
File Name: PTX40FNL
Location: SEC 37, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
GALVANIZED STEEL CASING & SCREEN (.040 SLOT): 2-INCH
BIT SIZE 12.25 INCH



WELL IS CONSTRUCTED OF 2-INCH DIAMETER STEEL CASING (20-FOOT JOINTS) AND SCREEN (.040 SLOT, 10-FOOT JOINTS)

DEPTH - 303-407 FEET
LOGS - NL, LSD
- CEMENT GROUT

DEPTH - 407 FEET
LOGS - NL, LSD
- WATER LEVEL

DEPTH - 407-447 FEET
LOGS - NL, LSD
- HIGH-DENSITY ANOMALY, POSSIBLY JUNK IN HOLE, OR LARGE DIAMETER CASING STRING USED TO ISOLATE LOST CIRCULATION OR CAVING ZONE (HOWEVER, ONLY ONE BIT SIZE WAS REPORTED BY DRILLER)

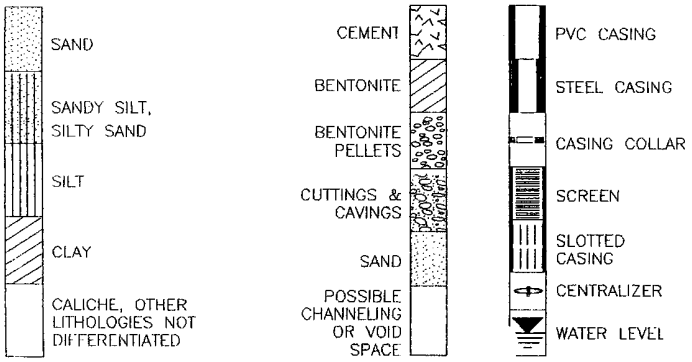
DEPTH - 447-471 FEET
LOGS - NL, LSD
- WATER-FILLED CAVITY

DEPTH - 471-545 FEET
LOGS - NL, LSD
- VARIABLE-DENSITY GRAVEL PACK, POSSIBLY WITH SOME CHANNELING

DEPTH - 545-565 FEET
LOGS - NL, LSD
- POSSIBLE WATER-FILLED VOID SPACE AND CHANNELING

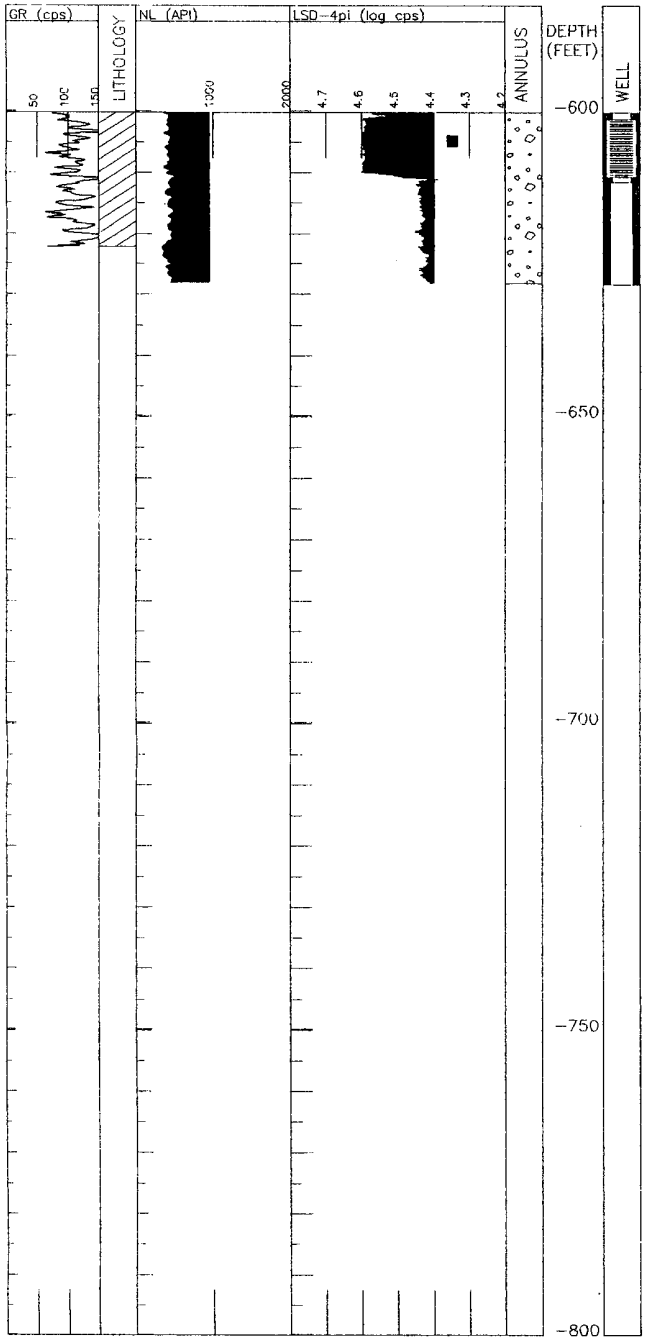
DEPTH - 565-628 FEET
LOGS - NL, LSD
- GRAVEL PACK

DEPTH - 580-611 FEET
LOGS - NL, LSD
- SCREEN



GROUNDWATER TECHNOLOGY	12101 E. 51st St, SUITE 103, TULSA, OK 74146	
PROJECT NO.: 830011063	DATE MAP GENERATED: 5/13/92	
AUTHORED: RVH	TITLE: WELL OW-WR-40 (400-600 FEET)	
CHECKED: RVH		
DETAILED: RHW	CLIENT: CENG/PANTEX PLANT/AM/	LOCATION: PANTEX
	ACAD FILE: PTX40-t.	

Well Name: OW-WR-40
File Name: PTX40FNL
Location: SEC 37, BLK M-4, PANTEX
Elevation: 0 Reference: TOC
GALVANIZED STEEL CASING & SCREEN (.040 SLOT): 2-INCH
BIT SIZE 12.25 INCH

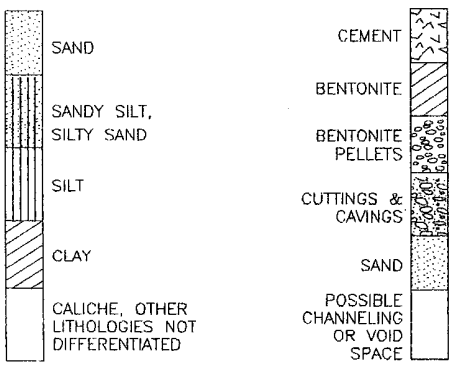


WELL IS CONSTRUCTED OF 2-INCH DIAMETER STEEL CASING (20-FOOT JOINTS) AND SCREEN (.040 SLOT, 10-FOOT JOINTS)

DEPTH - 580-611 FEET
LOGS - NL, LSD
■ SCREEN

DEPTH - 565-628 FEET
LOGS - NL, LSD
■ GRAVEL PACK

DEPTH - 611-628 FEET
LOGS - NL, LSD
■ STEEL SAND TRAP (CASING)



GROUNDWATER TECHNOLOGY
12101 E. 51st St. SUITE 103 TULSA, OK 74146

PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE: **WELL OW-WR-40 (600-800 FEET)**
CLIENT: CENG/PANTEX PLANT/AMA
LOCATION: PANTEX
ACAD FILE: PTX40_

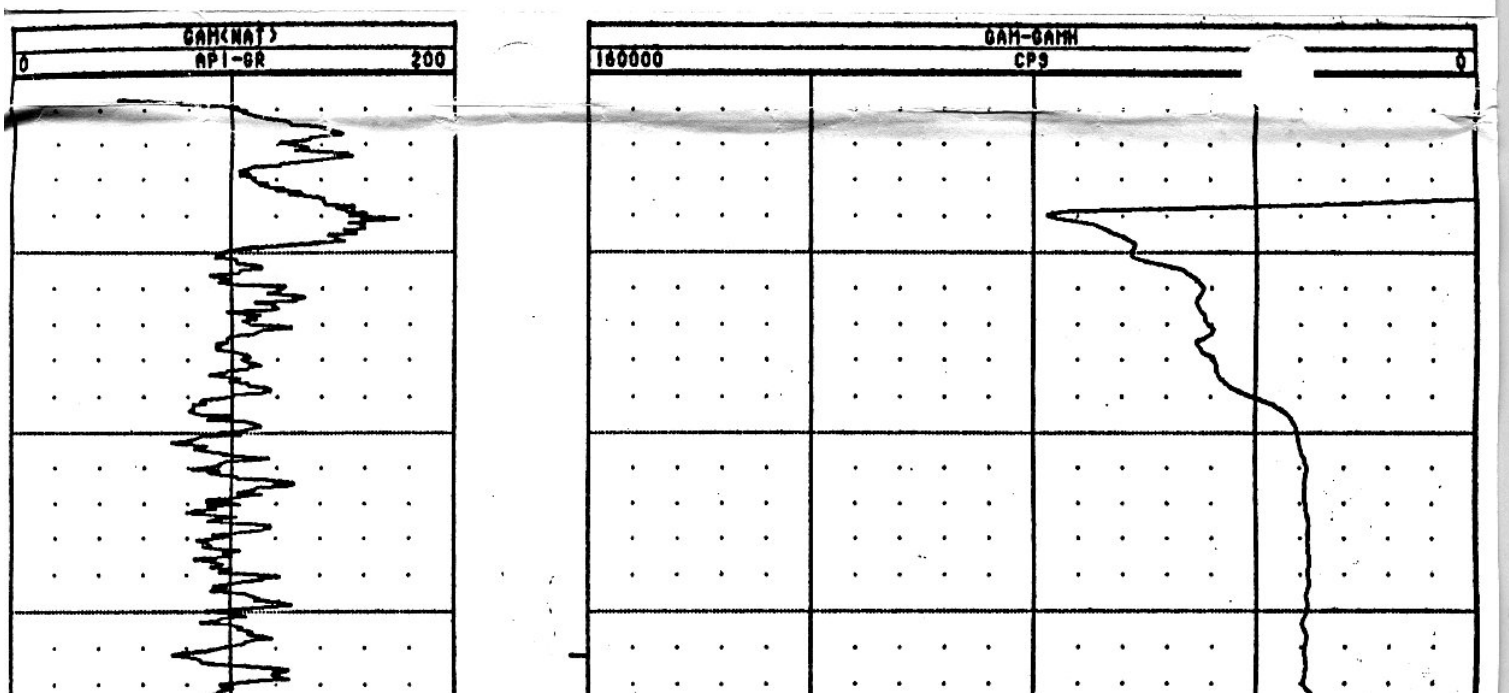
Century GEOPHYSICAL CORP.

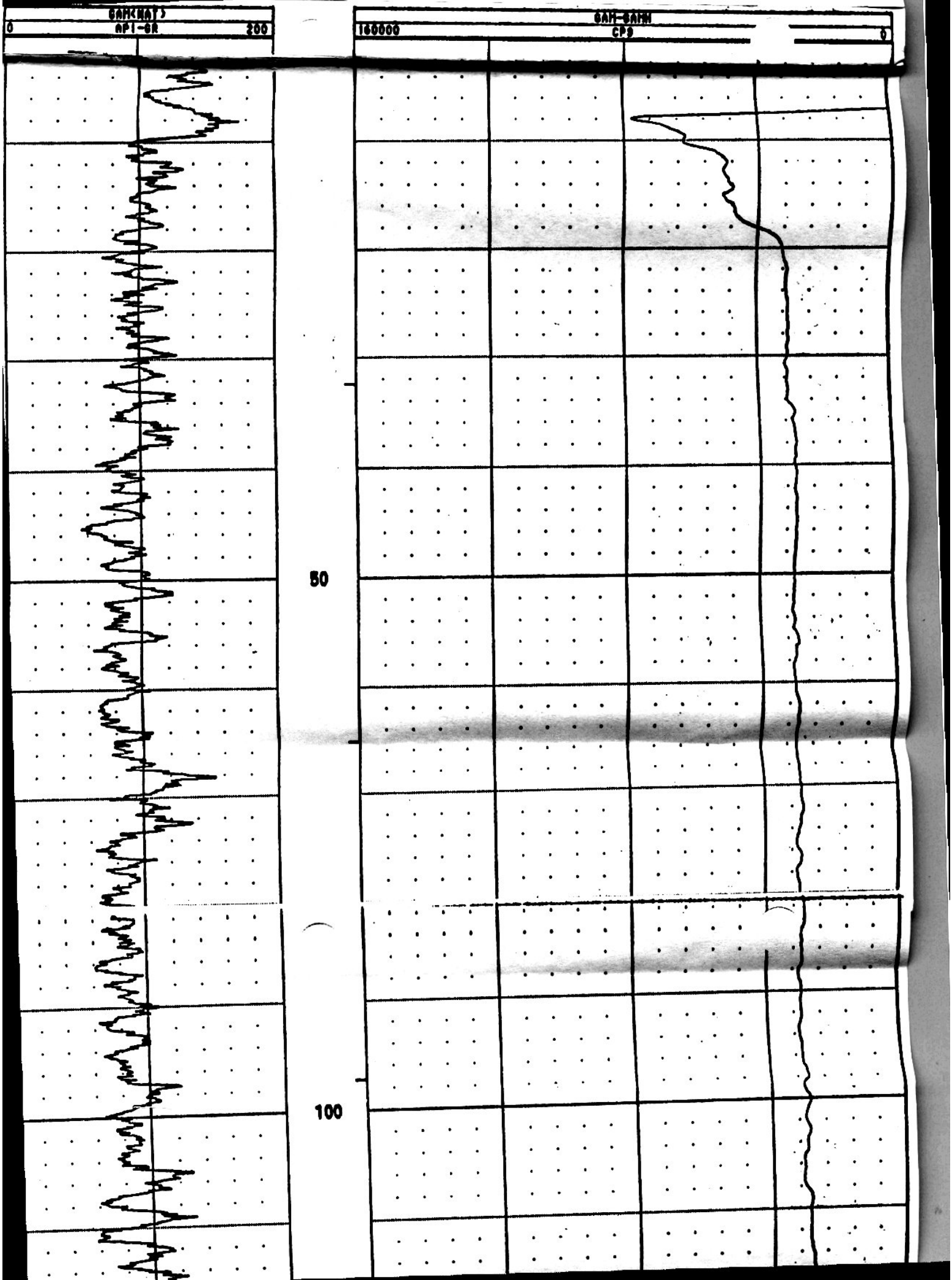
4 PI DENSITY

COMPANY	: USACE TULSA			OTHER SERVICES:	
WELL	: OW-WR-40				
LOCATION/FIELD	: WEST OF PLAYA 1				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/17/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 683'	ELEV. PERM. DATUM:		KB	: NA
LOG BOTTOM	: 628.70	LOG MEASURED FROM:	TOC	DF	: NA
LOG TOP	: 1.50	DRL MEASURED FROM:	GL	GL	:
CASING DRILLER	: 580	LOGGING UNIT	: 9101		
CASING TYPE	: STEEL	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .125	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: ORIGINAL
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9060A
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 3
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

REMARKS :
SCREENS FROM 580' TO TD.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

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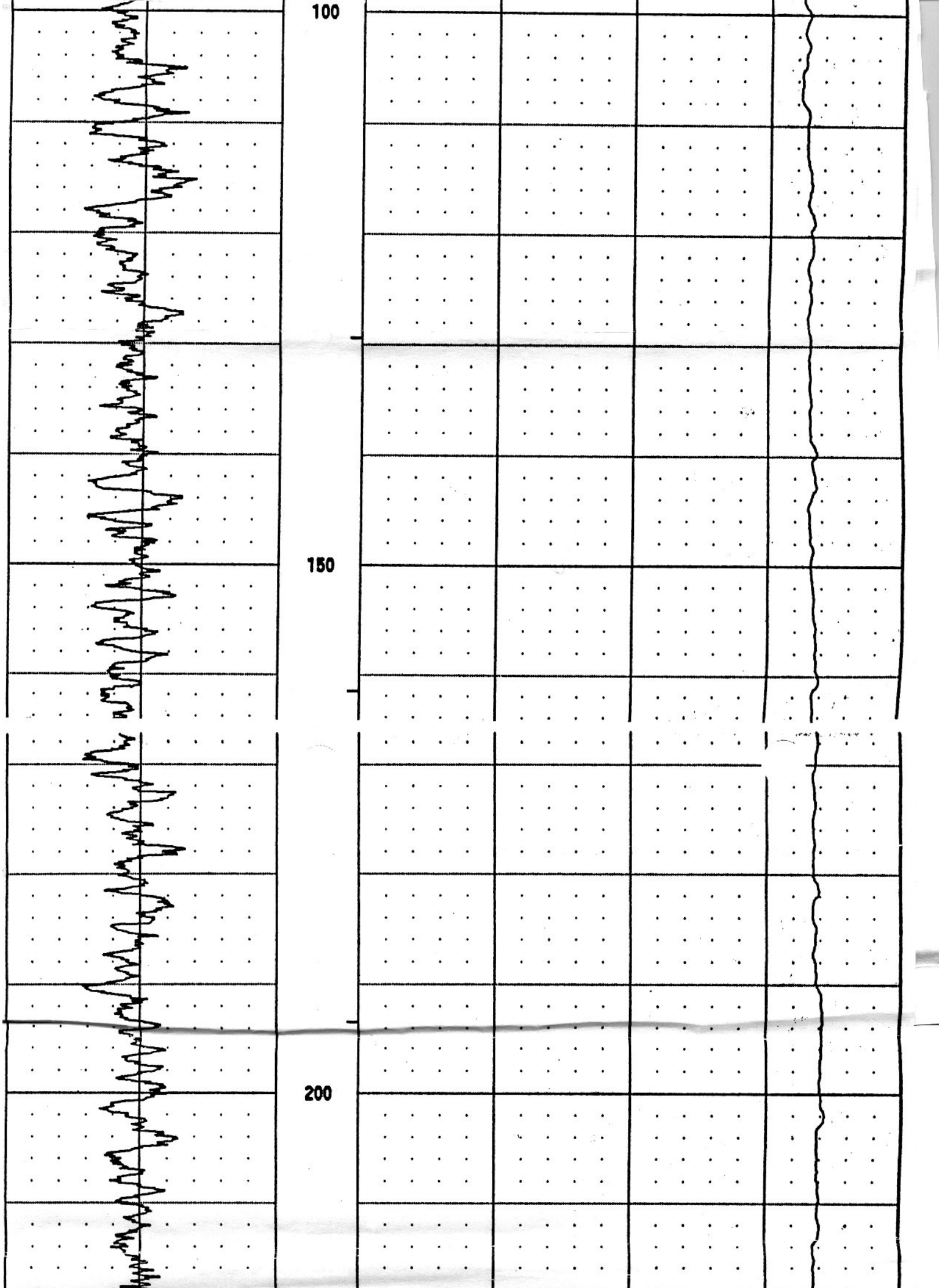
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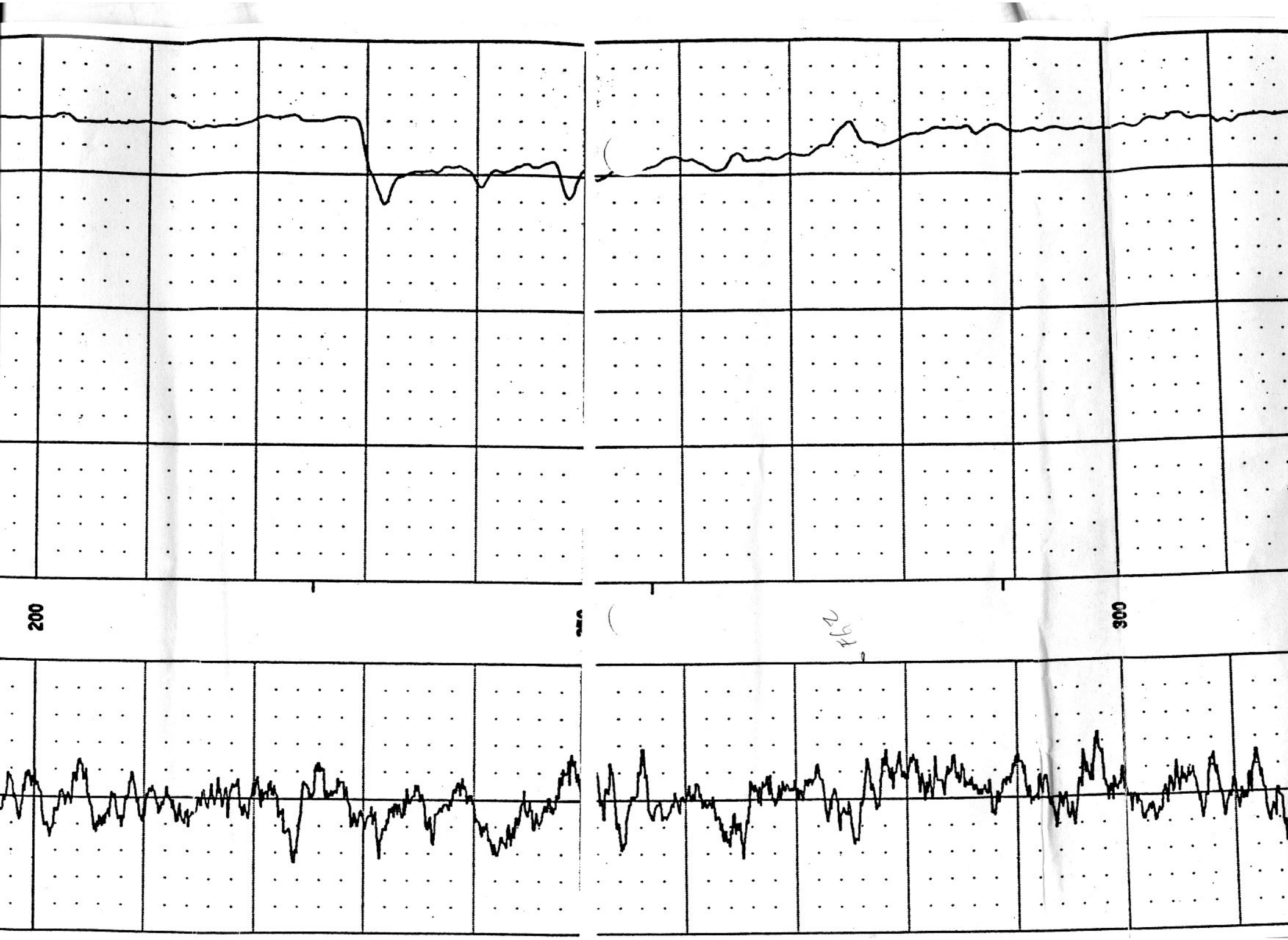
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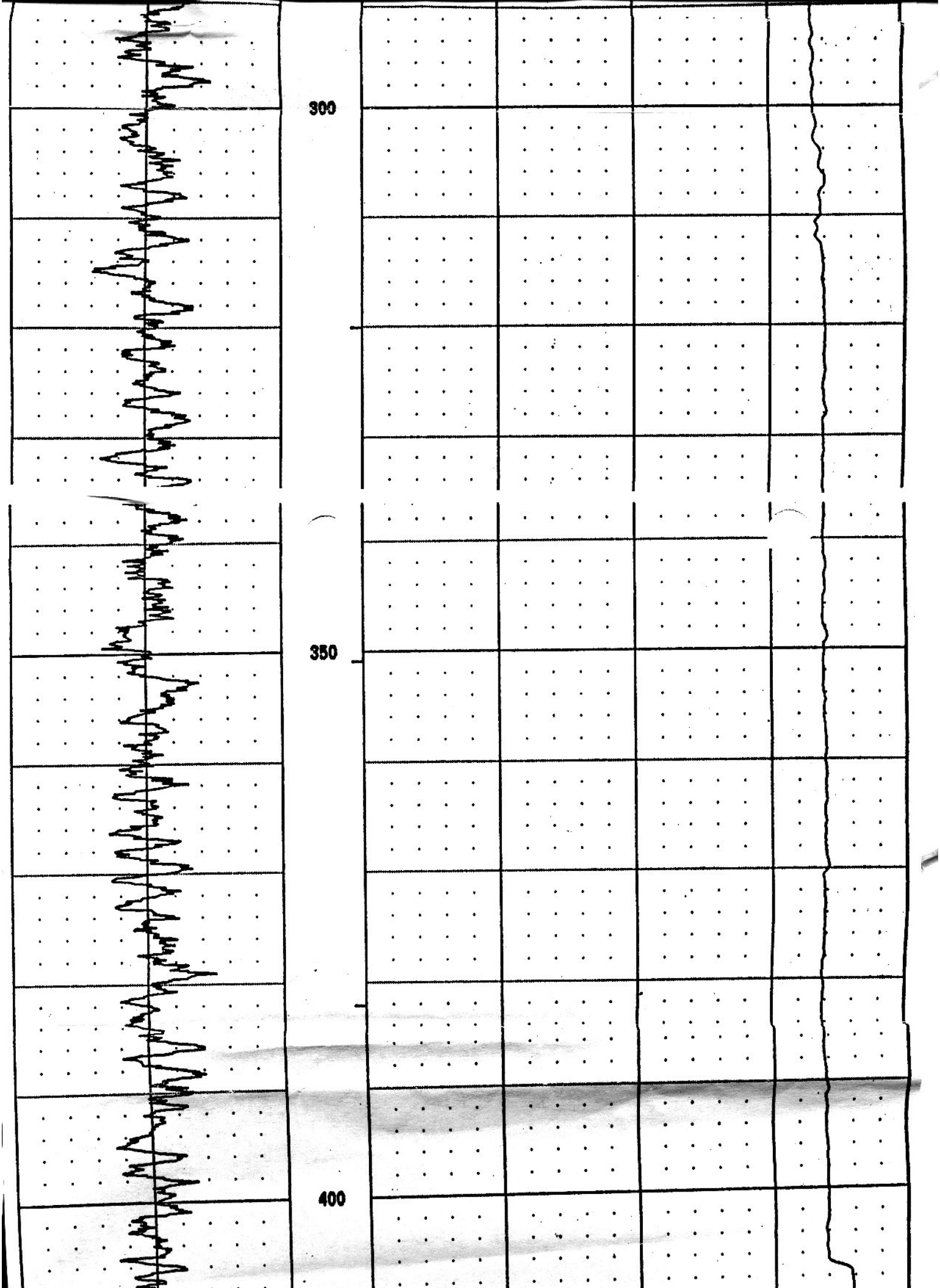
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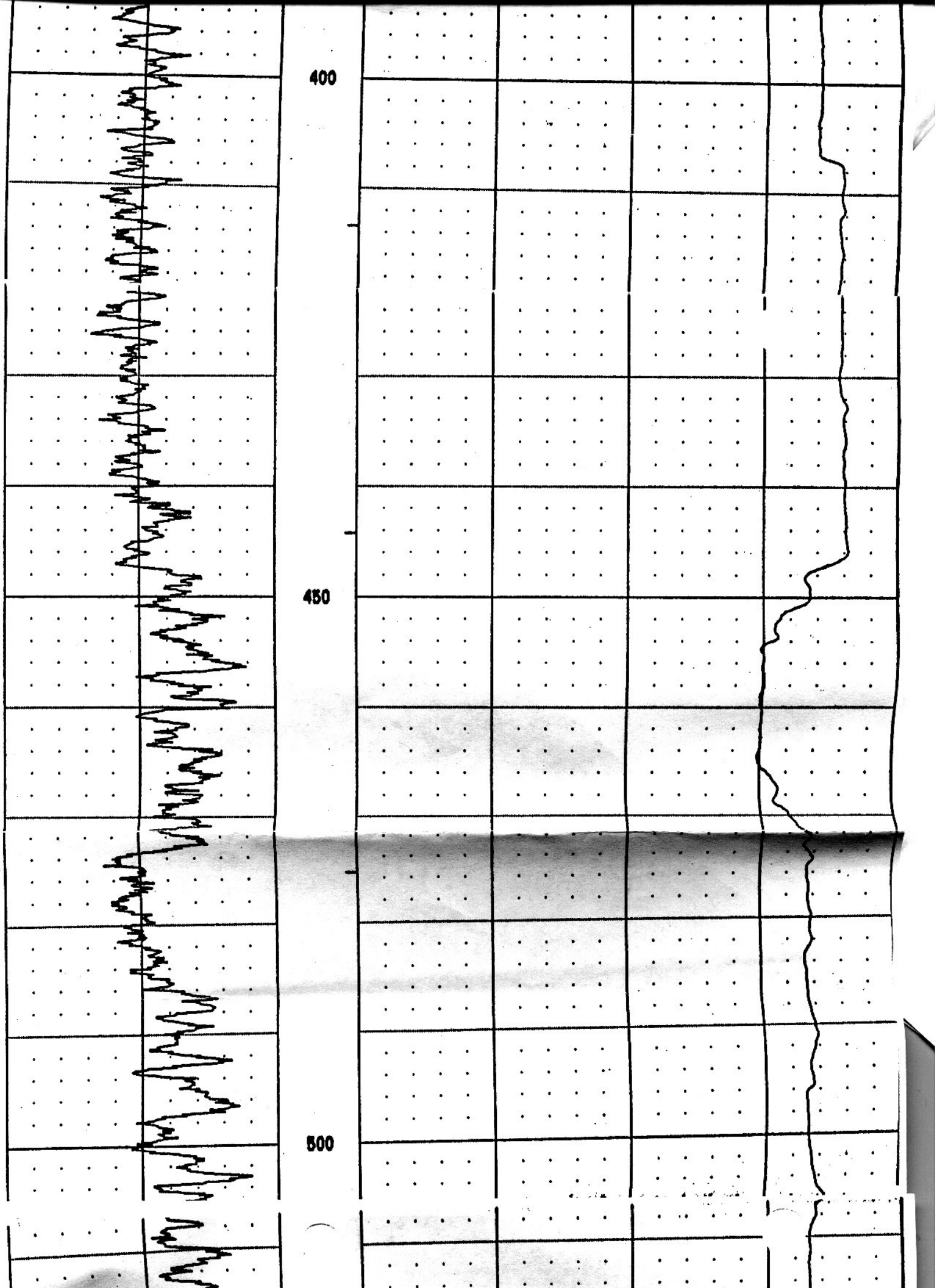
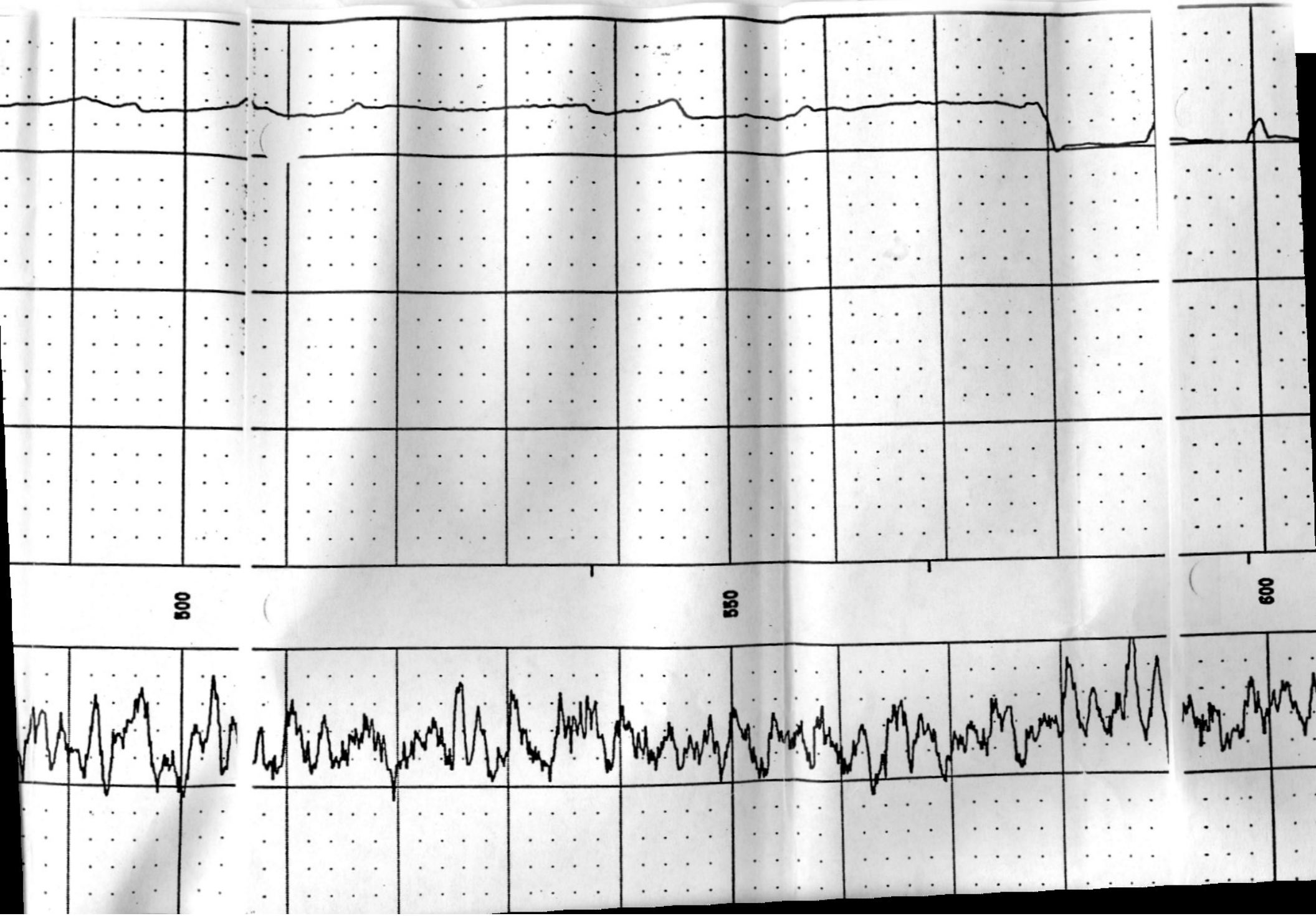
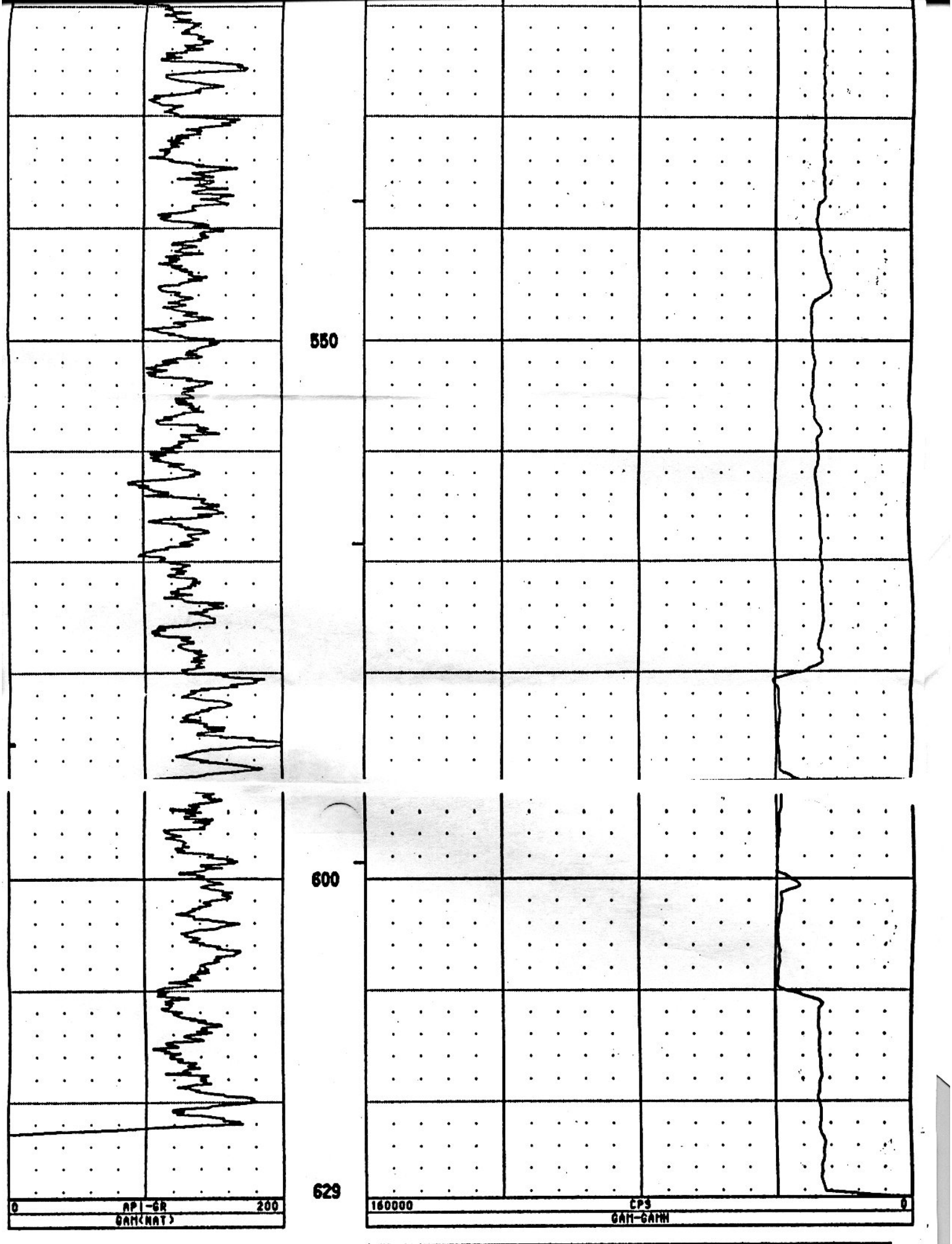

400
450
500


500
550
600



OW-WR-40 06/17/91 642

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

TWWR-40

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

1) OWNER Mason & Hanger - Silas Mason Co. (Name) (Pantex Plant) Address P. O. Box 30020 (Street or RFD) Amarillo (City) Texas (State) 79177 (Zip)

2) LOCATION OF WELL:
County Carson, 10 miles in West (N.E., S.W., etc.) direction from Panhandle (Town)

Test Hole #2 - Monitor Well

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description:
Section No. 37 Block No. M4 Township
Abstract No. Survey Name J H Gibson
Distance and direction from two intersecting section or survey lines 700' N. of S. Sec. Line and 250' W. of E. Sec. Line
☐ See attached map.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☐ Test Well ☒ Other Monitor

5) DRILLING METHOD (Check):
☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other

6) WELL LOG:

Date drilled 10-17-85

DIAMETER OF HOLE Dia. (in.)	From (ft.)	To (ft.)
12¼	Surface	684

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other
If Gravel Packed give interval . . . from 490 ft. to 684 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	8	Top Soil
8	10	Caliche
10	50	Brown Clay
50	58	Red Clay
58	66	Sand and Clay
66	75	Caliche Rock, Clay, and Sand
75	85	Brown Clay
85	104	Sand
104	121	Sand and Clay
121	130	Sand
130	148	Sand and Some Clay
148	184	Sand
184	226	Sand and Some Clay
226	236	Sand and Some Gravel
236	246	Clay and Sand
246	259	Sand and Little Clay
259	267	Mostly Clay
267	277	Sandy Clay
277	317	Mostly Clay
317	327	Clay and Very Little Sand
327	377	Clay
377	387	Mostly Clay and Little Sand
387	410	Clay
410	416	Sandy Clay
416	504	Clay
504	560	Sandy Clay
560	590	Sandy Clay, Sandrock, Gravel Streaks

(Use reverse side if necessary) (Over)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	To	Gage Casing Screen
2	New	Galv. Pipe (T&C)	+2	580	.154
2	New	Howard Smith Screen Galv., .040 Slot (T&C)	580	610	.154
2	New	Galv. Pipe (T&C)	610	631	.154

CEMENTING DATA
Cemented from 0 ft. to 490 ft.
Method used Pumping
Cemented by Dyna Pumping (Company or Individual)

9) WATER LEVEL:
Static level ft. below land surface Date
Artesian flow gpm. Date

10) PACKERS: Type Depth

11) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other
Depth to pump bowls, cylinder, jet, etc., ft.

12) WELL TESTS:
☐ Type Test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: gpm with ft. drawdown after hrs.

13) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Depth of strata
Was a chemical analysis made? ☐ Yes ☒ No

RECEIVED
DEC 27 1985
TEXAS WATER COMMISSION

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true and correct to the best of my knowledge and belief.

COMPANY NAME Water Industries (Type or Print) Water Well Driller's License No. 1084

ADDRESS P. O. Box 871 (Street or RFD) Hereford (City) Texas (State) 79045 (Zip)

(Signed) (Licensed Water Well Driller) (Signed) (Registered Driller Trainee)

For TDWR use only
Well No. 06-44-5A
Located on map

Please attach electric log, chemical analysis, and other pertinent information, if available.

TWDR 0392 (Rev. 5-27-82)

IMPORTANT NOTICE FOR PERSONS
HAVING WELLS DRILLED CONCERNING
PRIVILEGE OF CONFIDENTIALITY

The Water Well Drillers Board and the Department of Water Resources are concerned that some persons having water wells drilled may not be aware of the confidentiality privilege provision of Section 5 of the Water Well Drillers Act. Section 5, the Reporting of Well Logs, reads as follows:

> "Every registered water well driller drilling, deepening, or otherwise altering a water well within this State shall make and keep, or cause to be made and kept, a legible and accurate well log, and within sixty (60) days from the completion or cessation of drilling, deepening or otherwise altering such a water well, shall deliver or transmit by certified mail a copy of such well log to the Commission, and the owner thereof or the person having had such well drilled. The well log required herein shall at the request in writing to the Commission, by certified mail, by the owner or the person having such well drilled be held as confidential matter and not made of public record."

The last sentence specifies the means whereby you can, if you wish, assure that logs of your wells will be kept confidential. Please note that the term "Commission" in the above-quoted section and elsewhere in the Water Well Drillers Act now properly means the Texas Department of Water Resources (P. O. Box 13087; Austin, Texas 78711).

FORMATION LOG (Continued)

590	-	595	Sand, Fine Gravel, and Clay
595	-	620	Sand and Gravel
620	-	635	Clay
635	-	645	Red Clay
645	-	654	Brown Clay
654	-	674	Red Bed
674	-	684	Red Bed with Brown Clay



Form No. 98-DOM-01

WELL
APPLICATION
NUMBER_____
DATE_____

RECEIVED
BY_____

COMPLETION
DATE_____

Panhandle Ground Water Conservation District No. 3

Application For Water Well Registration

1. Well Owner **U.S. Department of Energy - Pantex Plant**

   Address **P.O. Box 30020 Amarillo, Texas 79120**

   Phone **(806) 477-3183**

2. Well Location: **Carson** County

   NW1/4 NE1/4 SW1/4 **SE1/4** Section 37 Block M-4 Survey **J.H. Gibson**
   (Circle One that Applies)

   4 miles N S and **17** miles E W of the town of **Amarillo, Texas**

   _____ measured yards from N or S, (property) or (section) line, and

   _____ measured yards from E or W, (property) or (section) line
   (Circle all that apply)

   Latitude_____ Longitude_____ (if known)

   Easting 638228.000 Northing 3763589.000

3. Well Description: **OW-WR-40 (TWC#06-44-5A)**

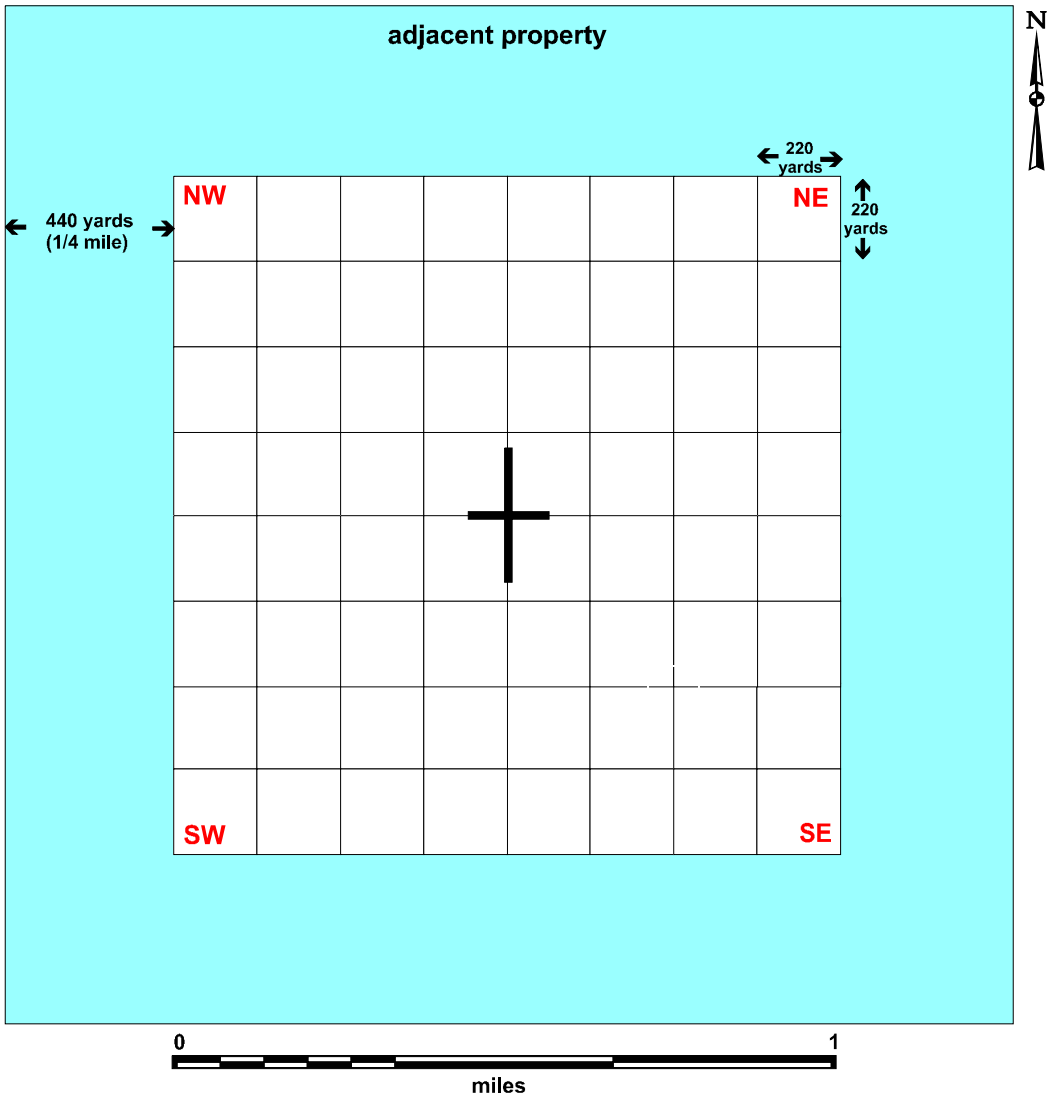
   Anticipated Drill Date 10-17-85 Driller Water Industries

   Casing Size 2"

   Pump Size Bennett Sample Pump

4. Well Use: Domestic Stock Watering Other Monitoring Well

5. Locate well by marking dot inside a circle within the grid to show proposed well location. Grid represents one section or one square mile.



I agree that this well will be drilled within ten (10) yards of the location specified and not elsewhere, and that I will furnish the Board of Directors the completed well log immediately upon completion of this well and prior to the production of water. I hereby certify that I have read the foregoing statements, and that all data therein contained are true and correct to the best of my knowledge and belief.

This notice given by:

_____

(Signature of Owner or Agent) Title

I, hereby, certify that this application has been verified and is in compliance with the Rules of the District.

_____ _____

District Manager Date

STATE OF TEXAS PLUGGING REPORT for Tracking #27883

Owner:	**U. S. Department of Energy**	Owner Well #:	**OW-WR-40**
Address:	**State Hwy 60 & FM 2373 Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**U. S Hwy 60 & FM 2373 Amarillo , TX 79120**	Latitude:	**35° 19' 35" N**
Well County:	**Carson**	Longitude:	**101° 33' 36" W**
		GPS Brand Used:	**No Data**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**Water Industries**
Driller's License Number of Original Well Driller:	**1084**
Date Well Drilled:	**10/17/1985**
Well Report Tracking Number:	**No Data**
Diameter of Well:	**12.25 inches**
Total Depth of Well:	**631 feet**

Date Well Plugged:	**8/18/2005**
Person Actually Performing Plugging Operation:	**Roy Burson**
License Number of Plugging Operator:	**2585**
Plugging Method:	**Other plugging method.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **2 inches diameter, From 631 ft to 0 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 631 ft to 175 ft; Sack(s)/type of cement used: 2 sacks quickgrout** 2nd Interval: **From 175 ft to 6 ft; Sack(s)/type of cement used: 7.5 sacks holeplug** 3rd Interval: **From 6 ft to 3 ft; Sack(s)/type of cement used: 0.5 sacks cement** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**U.S Department of Energy State Hwy 60 & FM 2373 Amarillo , TX 79120**
Plug Installer License Number:	**2585**

Licensed Plug Installer Signature:	**Roy Burson**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Tremmie quickgrout from total depth to 175 feet, holeplug from 175 feet to 6 feet, cement 6 feet to 3 feet, native soil from 3 feet to surface. Well is located in pasture so native soil was used to complete plugging.**

Please include the plugging report's tracking number (Tracking #**27883**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

OW-WR-45

aka: PTX09-0004

Contractor: Groundwater Technology
Contract #: 830011063
Contractor's Project #:
Drilled date:

OPTIX #:
Last Update: 07/28/2004 (added missing pages from Stoller data)

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- _X_ Draft
- _X_ Final

_X_ Installation Log/Diagram

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (computerized, text only)
- ___ Final Visual Classification of Soils (computerized)

Geophysical Logs
- ___ Neutron
- _X_ Gamma
- _X_ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

_X_ State Well Report

OW-WR-45

VERIFIED AUG 2 2 1988

ENTERED SEP AUG 1 8 1988

BOREHOLE LOG (SOIL)

SITE CODE PTX09
LOCATION ID 0004
COORDINATES (FT):
NORTH 13,997.656 EAST 26,539.894
GROUND ELEVATION (FT MSL) 3,544.101
LOCATION TYPE BH

DRILLER CODE LAY
COMPLETION DATE 7-1-88
DIAMETER (IN)
DEPTH (FTFD) 275 feet
CONSTRUCTION METHOD P
ACCEPTANCE CODE A

COMMENTS Compressor operated drive hammer is equivalent to 145 lbs. of weight.

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (FT)
7-6-88	0825	255.25

LOCATION DESCRIPTION
West of Building 12-107.
Adjacent to road.
South of Building
12-35

LITHOLOGIC LOG

LOGGER CODE RFW

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	SAMPLE METHOD	SAMPLE #	BLOW COUNT (PER 6 IN)	N VALUE	USCS	VISUAL DESCRIPTION
0-4'	NA	NA	NA	O	NA	NA	NA	OH	Dk. brown, wet, plastic, organic clay
4'-18'	NA	NA	NA	O	NA	NA	NA	ML	Mod. brown, dry, silty clay to clayey silt
18'-19'	18.0-19.0	100%	18.5-19.0	S	01/01A	17/31	N/A	ML	Mod brown, medium dry, clayey silt w/ small nodules of caliche
19'-38'									same as above
38'-39'	38.0-39.0	100%	38.8-39.0	S	02/02A	4/14	NA	ML	as above
39'-58'	(48-50' CALCRETE/Silcrete? Hard Drilling)								as above → but w/ inc. in caliche content
58'-59'	58.0-59.0	100%	58.8-59.0	S	03/03A	25/73	NA	ML	Mod. reddish brown, med dry, clayey silt w/caliche nodules

ACCEPTANCE CODES: A-ACCEPTABLE M-MARGINALLY ACCEPTABLE R-RECONNAISSANCE U-UNACCEPTABLE N-NOT DETERMINED

CONSTRUCTION METHODS:
A – AIR ROTARY
B – BORED OR AUGERED
C – CABLE-TOOL
D – DUG
H – HYDRAULIC-ROTARY
J – JETTED
P – AIR-PERCUSSION
R – REVERSE ROTARY
T – TRENCHING
V – DRIVEN
W – DRIVE AND WASH
Z – OTHER (SPECIFY)

SAMPLE METHODS:
A – AUGER CUTTINGS
S – 2" O.D. 1.38" I.D. DRIVE SAMPLE
U – 3" O.D. 2.42" I.D. TUBE SAMPLE
T – 3" O.D. THIN-WALLED SHELBY TUBE
O – OTHER (SPECIFY) Cuttings blown out of dual tube w/reverse air

UNI-BHD-002 (6/87)

Dexter/Larson/290688
FORM COMPLETED BY/DATE

TECHNICAL REVIEWER/DATE

ENTERED FEB AUG 1 8

BOREHOLE LOG (SOIL)

SITE CODE PTX09 OW-WR-45

LOCATION ID 0004

COMPLETION DATE 7-1-88

LITHOLOGIC LOG * no catcher used in drive spoon → sample fell out while spoon still in hole. No Recovery

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	SAMPLE METHOD	SAMPLE #	BLOW COUNT (PER 6 IN)	N VALUE	USCS	VISUAL DESCRIPTION
59'-78'	NA	NA	NA	0	NA	NA	NA	ML	as above but becoming inc. silty
78'-79'	78.0-79.0	100%	78.8-79.0	S	0%/0.4A	7/30	NA	ML	Reddish brown, dry, loose, slightly clayey silt w/ 30-50% caliche content.
79'-94'	NA	NA	NA	0	NA	NA	NA	ML	as above
94'-98'	NA	NA	NA	0	NA	NA	NA	ML	Lt. reddish brown, loose, fine grained, sandy silt
98'-99'	98.0-99.0	100%	98.5-99.0	S	0.5/0.5A	17/27	NA	ML	Lt. brown, fine grained, loose sandy silt showing subtle bedding features
99-104.5	NA	NA	NA	0	NA	NA	NA		as above
104.5-105.5	104.5-105.5	100%	104.5-104.9	S	0%/0.4A	21/31		ML	Lt. brown, fine grained, slightly sandy silt.
105.5-118	NA	NA	NA	0	NA	NA	NA		as above
118-119	118.0-119.0	0%	*	S	*	33/75	NA	ML	as above
119-128	NA	NA	NA	0	NA	NA	NA	ML	as above
128-129	128.0-129.0	100%	128.5-129.0	S	0.5/0.5A	10/53	NA	SP	lt. brn to tan, dry, loose silty sand w/ nodules of calcified sand.
129-158	NA	NA	NA	0	NA	NA	NA	SP	as above but w/ dec. calcified sand nodules and inc. sand grains.
158-159	EL 158.0-158.8	100%	158.5-158.9	S	0%/0.4A	7/63 ●	NA	SP	lt brn to tan, loose dry sand → 60% sand 40% calcified sand nodules
						● hit hardpan at ~10" down			
159-188	NA	NA	NA	0	NA	NA	NA	SP	Lt. Brn. to tan, loose dry, homogeneous medium grained sand; ~~no~~ few caliche nodules
188-189	188.0-189.0	100%	188.4-189	S	0%/0.4A	20/57		SP	caliche nodules (?) increasing (sand cemented w/ $CaCO_3$) as above
189-218	NA	NA	NA	0	NA	NA	NA	SP	as above/sand slightly damp in places

Dexter/Larsen 300688

FORM COMPLETED BY/DATE

TECHNICAL REVIEWER DATE

UNI-BHD-002 (6/87)

ENTERED EDP AUG 1 9 1988
VERIFIED

BOREHOLE LOG (SOIL)

SITE CODE PTX 09 OW-WR-45 PAGE 3 OF 3
LOCATION ID 0004 COMPLETION DATE 7-1-88
LITHOLOGIC LOG

DEPTH (FT)	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	SAMPLE METHOD	SAMPLE ID	BLOW COUNT (PER 6 IN)	N VALUE	USCS	VISUAL DESCRIPTION
218-219	218.0-219.0	100%	218.0-219.0	U	0041 TACOMA	20/25		SP	very slightly damp; tan, loose medium to fine grained sand with about 10% lumps of sandstone (the sand formed until CaCO3 from caliche processes)
219-248	NA	NA	NA	O	NA	NA	NA	SP	sand (as above)
								GP	@228' gravel (sandy) granule to dry and loose (pebble size)
								GP	medium to coarse grained sand with gravel at 230 feet. Drilling slowing down. @231 fed sand becoming finer grained - fine granule sized gravel with dry, loose, c
								GP	235-237 feet very lithified gravel; took 1/2 hour to penetrate, @240-242 another "hard" zone but only took 4 minutes to penetrate (about the same as the first)
								SP	245-248 sand with minor granules of gravel.
248-249	248.0-249.0	30%	N/A	U	N/A	20/59	NA	GP	pebble size gravel --- took No sample --- no fines remain in spoon. Very dry.
(2)									
248-275	NA	NA	NA	O	NA	NA	NA	SP	Golden tan colored medium grained sand. Becoming damper to 258 feet.
	Penetrating mixed layers from 268' on. Layers vary from dry to damp. Drilling very slow from 270' on; about 2'/10 minutes								very uniform, only scattered semi-round pebbles. Very damp from 255-258 feet. Drilling much harder at 262 feet Some very sandy silt coming with depth. Some sandy silty clay is damp. slightly sandy clay balls coming Very hard to drill, damp clay at 275'

UNE-GO-002 (8/87)

J Dexter 7/1/88
FORM COMPLETED BY/DATE

TECHNICAL REVIEW/DATE

LITHOLOGIC LOG
FACILITY: BUILDING 12-35
LOCATION: PTX09-0004
ELEVATION: 3544.10 FT.
LOG DATE: 01-JUL-88
REPORT DATE: 14-FEB-89

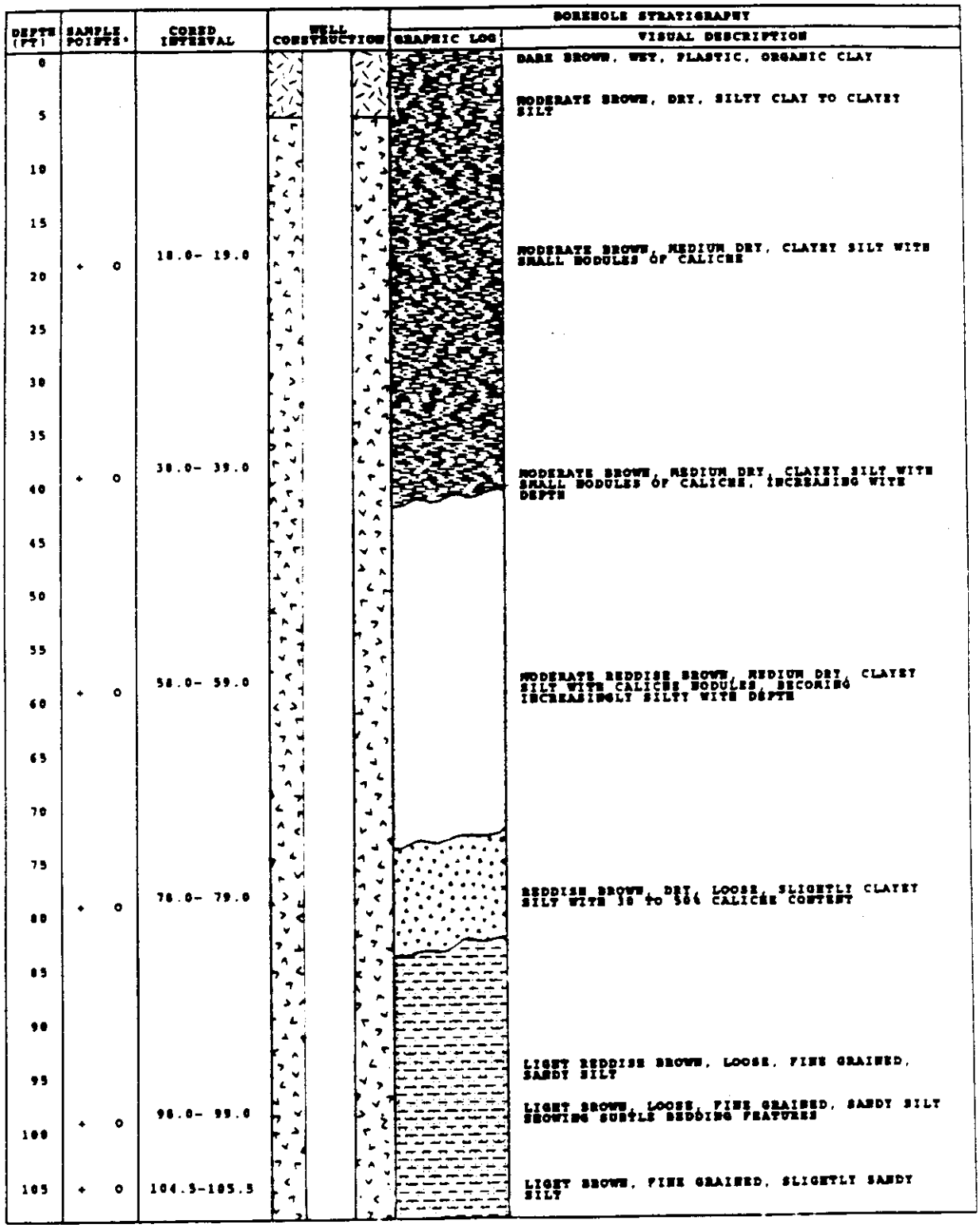
BEGINNING DEPTH (FT.)	ENDING DEPTH (FT.)	USCS OR ROCK CLASS	VISUAL DESCRIPTION
0.00	4.00	OH	DARK BROWN, WET, PLASTIC, ORGANIC CLAY
4.00	18.00	ML	MODERATE BROWN, DRY, SILTY CLAY TO CLAYEY SILT
18.00	39.00	ML	MODERATE BROWN, MEDIUM DRY, CLAYEY SILT WITH SMALL NODULES OF CALICHE
39.00	58.00	ML	MODERATE BROWN, MEDIUM DRY, CLAYEY SILT WITH SMALL NODULES OF CALICHE, INCREASING WITH DEPTH
58.00	78.00	ML	MODERATE REDDISH BROWN, MEDIUM DRY, CLAYEY SILT WITH CALICHE NODULES, BECOMING INCREASINGLY SILTY WITH DEPTH
78.00	94.00	ML	REDDISH BROWN, DRY, LOOSE, SLIGHTLY CLAYEY SILT WITH 30 TO 50% CALICHE CONTENT
94.00	98.00	ML	LIGHT REDDISH BROWN, LOOSE, FINE GRAINED, SANDY SILT
98.00	104.50	ML	LIGHT BROWN, LOOSE, FINE GRAINED, SANDY SILT SHOWING SUBTLE BEDDING FEATURES
104.50	128.00	ML	LIGHT BROWN, FINE GRAINED, SLIGHTLY SANDY SILT
128.00	158.00	SW	LIGHT BROWN TO TAN, DRY, LOOSE SILTY SAND, SAND CONTENT INCREASING WITH DEPTH, NODULES OF CALCIFIED SAND DECREASING WITH DEPTH
158.00	218.00	SW	LIGHT BROWN TO TAN, LOOSE, DRY, HOMOGENEOUS MEDIUM GRAINED SAND WITH A FEW CALICHE NODULES; NODULES OF CALCIFIED SAND INCREASING WITH DEPTH; SAND SLIGHTLY DAMP IN PLACES

LITHOLOGIC LOG
FACILITY: BUILDING 12-35
LOCATION: PTX09-0004
ELEVATION: 3544.10 FT.
LOG DATE: 01-JUL-88
REPORT DATE: 14-FEB-89

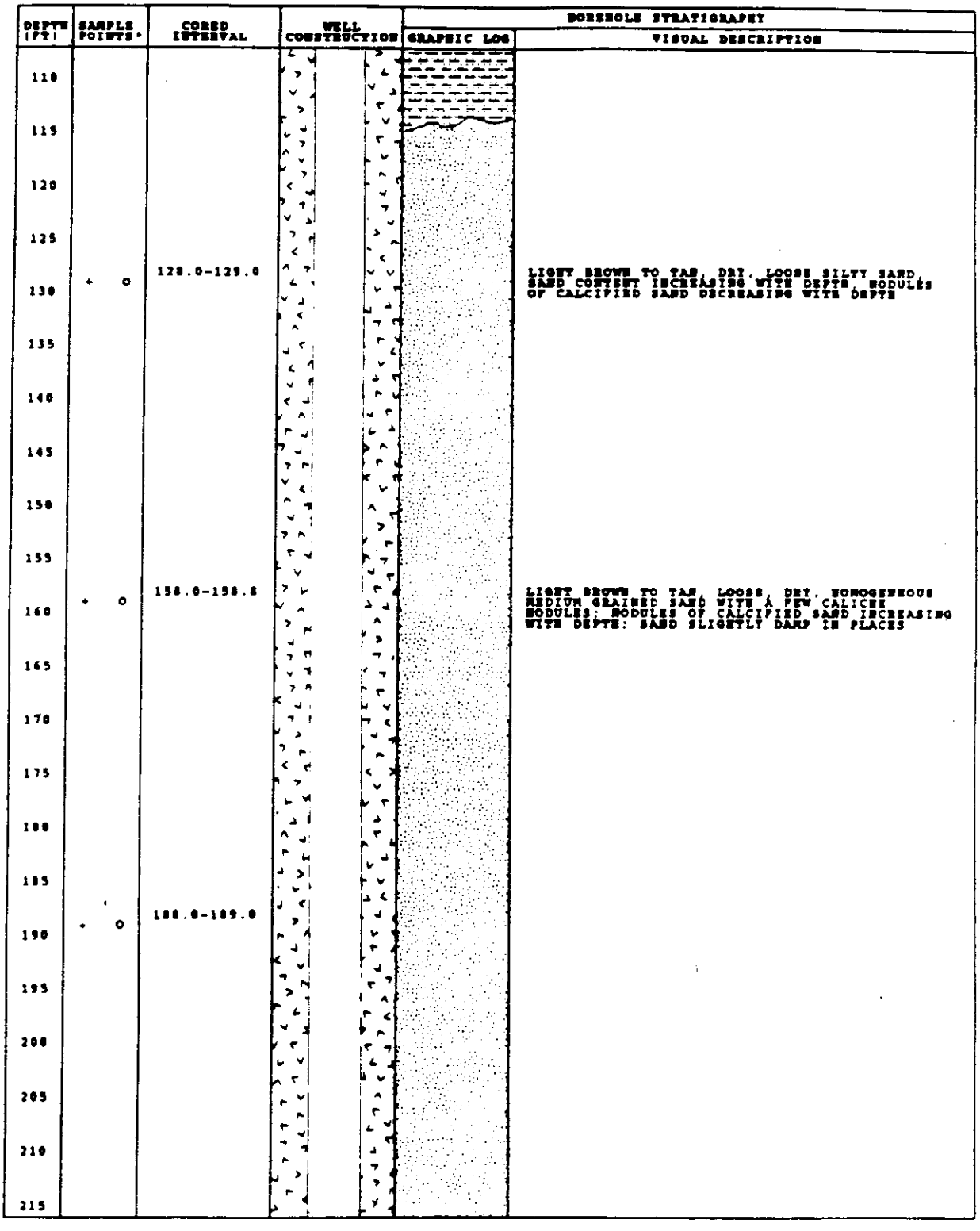
BEGINNING DEPTH (FT.)	ENDING DEPTH (FT.)	USCS OR ROCK CLASS	VISUAL DESCRIPTION
218.00	228.00	SW	TAN, VERY SLIGHTLY DAMP, LOOSE, MEDUIM TO FINE GRAINED SAND; 10% NODULES OF CALCIFIED SAND
228.00	233.00	GP	DRY, LOOSE, FINE TO COARSE GRAINED SAND WITH GRANULE TO PEBBLE SIZE GRAVEL
233.00	237.00	GP	SILICIFIED GRAVEL CONSISTING OF SAND, GRAVEL, PEBBLES, AND COBBLES CEMENTED WITH CALCIUM CARBONATE AND PARTIALLY SILICIFIED
237.00	249.00	GP	GRAVELLY SAND, INTERMITTENTLY WEAKLY CEMENTED WITH CALCIUM CARBONATE
249.00	270.00	SP	FINE TO MEDIUM GRAINED SAND WITH SILT; MINOR CLAYS AND GRAVELS
270.00	275.00	SP	CLAYEY SILT WITH SAND; CLAY CONTENT INCREASING WITH DEPTH

OW-WR-45

LITHOLOGIC LOG AND WELL CONSTRUCTION
FACILITY: PTX09 BUILDING 12-35
LOCATION ID: 0004
* + = PHOTOVAC ANALYSIS
O = LABORATORY ANALYSIS

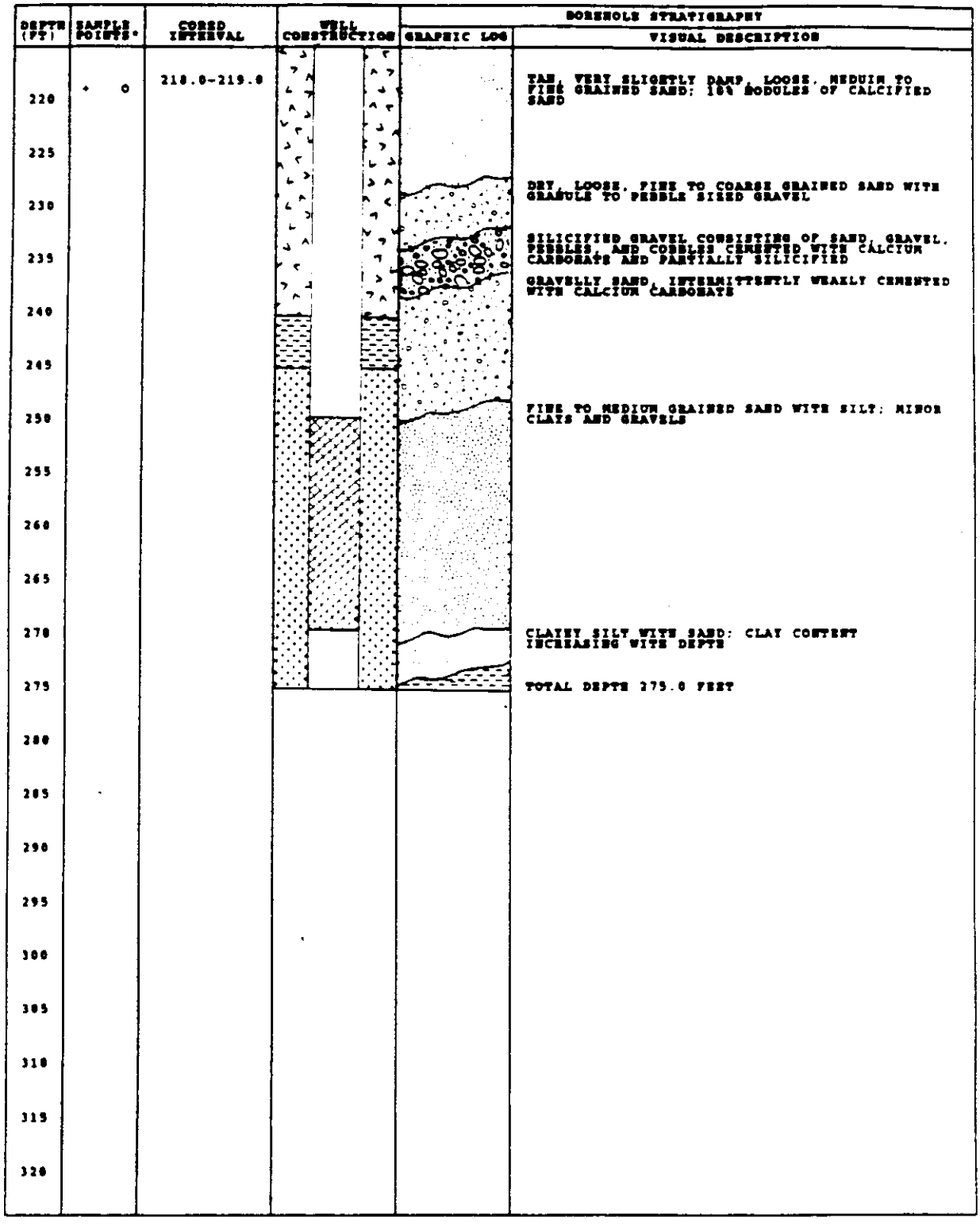


LITHOLOGIC LOG AND WELL CONSTRUCTION
FACILITY: PTX09 BUILDING 12-35
LOCATION ID: 0004
* + = PHOTOVAC ANALYSIS
O = LABORATORY ANALYSIS



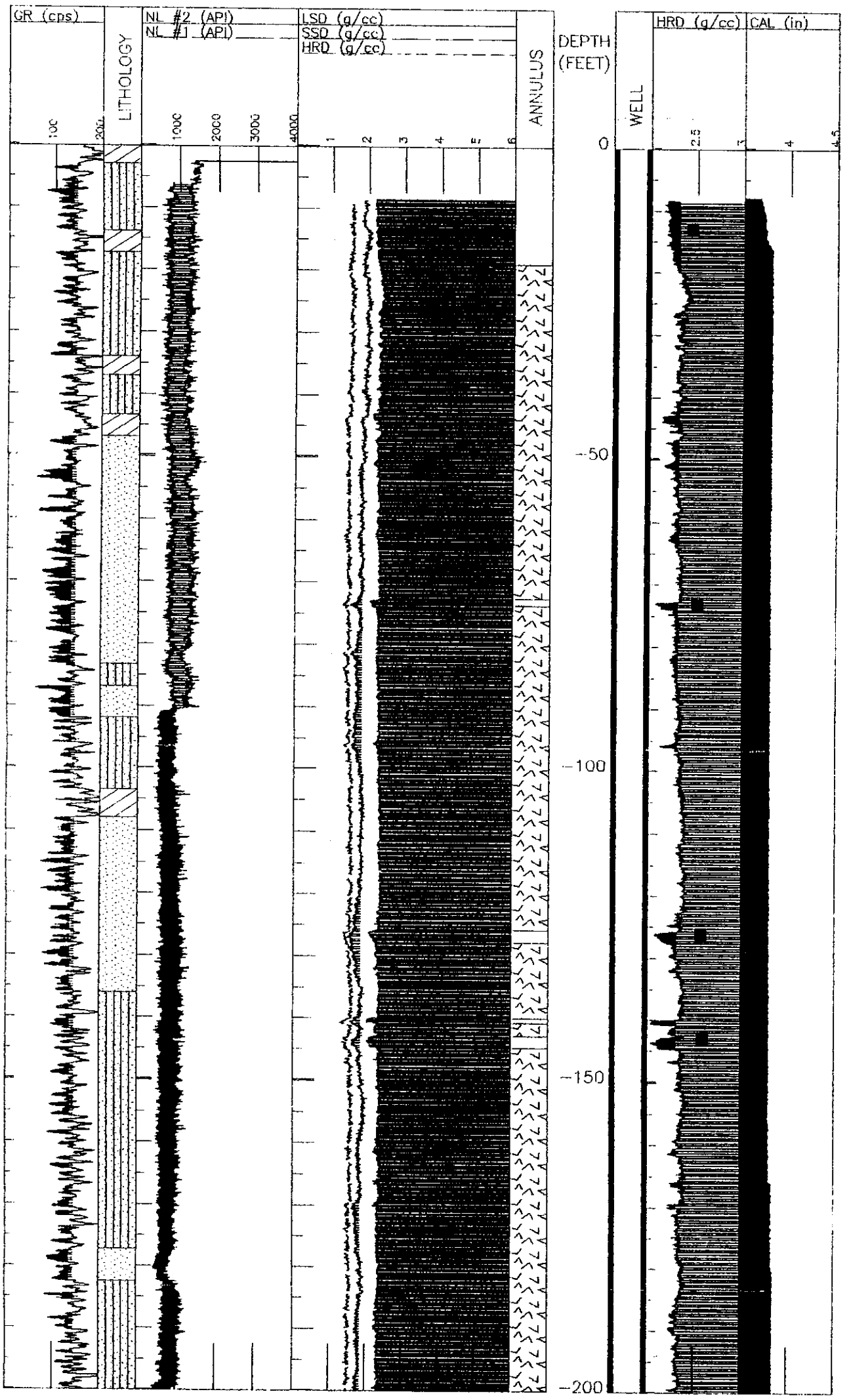
OW-WR-45

LITHOLOGIC LOG AND WELL CONSTRUCTION
FACILITY: PTX09 BUILDING 12-35
LOCATION ID: 0004
* + = PHOTOVAC ANALYSIS
O = LABORATORY ANALYSIS



Well Name: OW-WR-45
File Name: PTX45FNL
Location: SEC 32, BLK M-4, PANTEX
Elevation: 0 Reference: TOC

PVC & STEEL CASING: 4-INCH DIAMETER
SLOTTED STEEL CASING: 4-INCH DIAMETER
BIT SIZE 9.875 INCH



WELL IS CONSTRUCTED OF 4-INCH DIAMETER PVC CASING, 4-INCH DIAMETER STEEL CASING, AND 4-INCH DIAMETER SLOTTED STEEL CASING

DEPTH - 0-19 FEET
LOGS - HRD
■ LOW-DENSITY GROUT OR CHANNELING

DEPTH - 0-229 FEET
LOGS - NL, LSD, SSD, HRD, CAL
■ PVC CASING, UNKNOWN JOINT LENGTH, GENERALLY GOOD CONDITION

DEPTH - 0-224 FEET
LOGS - NL, LSD, SSD, HRD
■ CEMENT, GENERALLY UNIFORM

DEPTH - 73 FEET
LOGS - LSD, HRD
■ LOW-DENSITY GROUT OR CHANNELING, OR CASING DEFECT OR COUPLING

DEPTH - 127 FEET
LOGS - LSD, HRD
■ LOW-DENSITY GROUT OR CHANNELING, OR CASING DEFECT OR COUPLING

DEPTH - 140 FEET
LOGS - LSD, HRD
■ LOW-DENSITY GROUT OR CHANNELING, OR CASING DEFECT OR COUPLING

DEPTH - 144 FEET
LOGS - LSD, HRD
■ LOW-DENSITY GROUT OR CHANNELING, OR CASING DEFECT OR COUPLING

SAND
SANDY SILT, SILTY SAND
SILT
CLAY
CALICHE, OTHER LITHOLOGIES NOT DIFFERENTIATED

CEMENT
BENTONITE
BENTONITE PELLETS
CUTTINGS & CAVINGS
SAND
POSSIBLE CHANNELING OR VOID SPACE

PVC CASING
STEEL CASING
CASING COLLAR
SCREEN
SLOTTED CASING
CENTRALIZER
WATER LEVEL

GROUNDWATER TECHNOLOGY
12101 E. 51st ST.
SUITE 103
TULSA, OK 74146

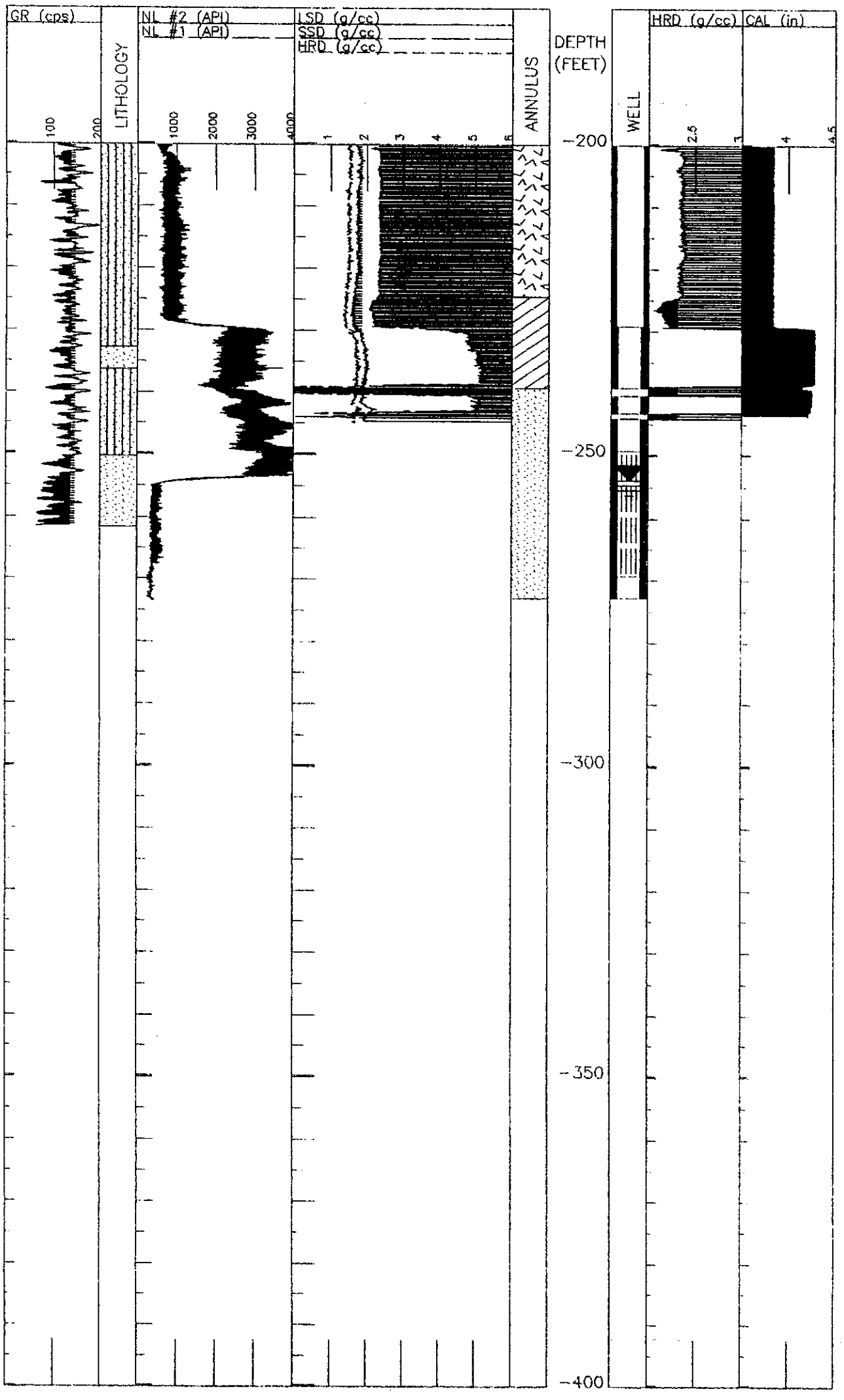
PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE:

WELL OW-WR-45
(0-200 FEET)

CLIENT: CENG/PANTEX PLANT/AMAF
LOCATION: PANTEX
ACAD FILE: PTX45_2

Well Name: OW-WR-45
File Name: PTX45FNL
Location: SEC 32, BLK M-4, PANTEX
Elevation: 0 Reference: TOC

PVC & STEEL CASING: 4-INCH DIAMETER
SLOTTED STEEL CASING: 4-INCH DIAMETER
BIT SIZE 9.875 INCH



WELL IS CONSTRUCTED OF 4-INCH DIAMETER PVC CASING, 4-INCH DIAMETER STEEL CASING, AND 4-INCH DIAMETER SLOTTED STEEL CASING

DEPTH - 0-229 FEET
LOGS - NL, LSD, SSD, HRD, CAL
■ PVC CASING, UNKNOWN JOINT LENGTH, GENERALLY GOOD CONDITION

DEPTH - 0-224 FEET
LOGS - NL, LSD, SSD, HRD
■ CEMENT, GENERALLY UNIFORM

DEPTH - 224-239 FEET
LOGS - NL, LSD, HRD
■ BENTONITE GROUT, WITH TENTATIVE LOW-DENSITY GROUT OR CHANNELING FROM 225 TO 229 FEET

DEPTH - 239-273 FEET
LOGS - NL, LSD, SSD, HRD
■ SAND (FILTER) PACK

DEPTH - 229-249 FEET
LOGS - NL, LSD, SSD, HRD
■ STEEL CASING (RISER), WITH POSSIBLE DEFECTS AT 239-240 FEET AND 243-244 FEET; 239-240 FEET COULD REPRESENT CORRODED THREADS AT COUPLING

DEPTH - 249-269 FEET
LOGS - NL, HRD
■ SLOTTED STEEL CASING

DEPTH - 269-273 FEET
LOGS - NL (AND FILE INFO)
■ SEDIMENT TRAP

SAND
SANDY SILT, SILTY SAND
SILT
CLAY
CALICHE, OTHER LITHOLOGIES NOT DIFFERENTIATED

CEMENT
BENTONITE
BENTONITE PELLETS
CUTTINGS & CAVINGS
SAND
POSSIBLE CHANNELING OR VOID SPACE

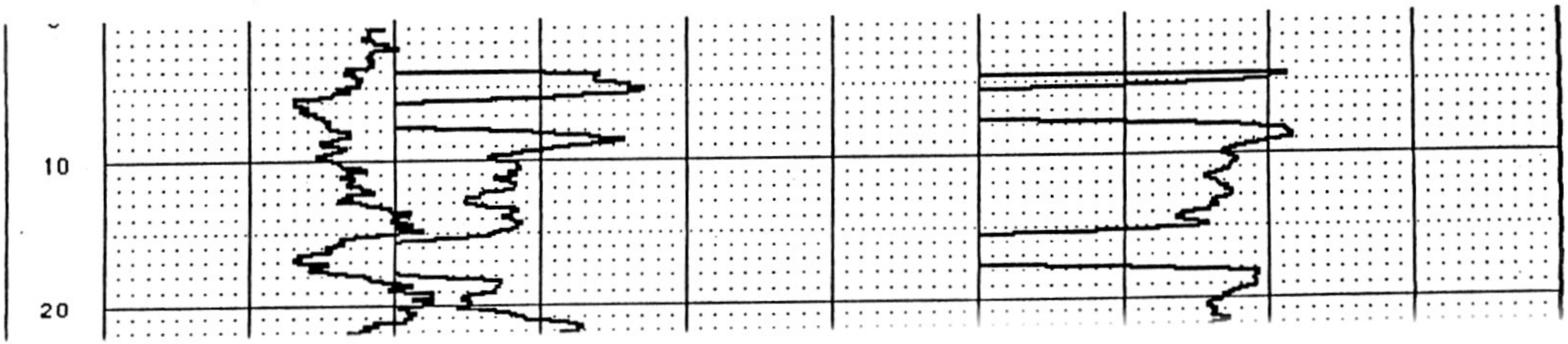
PVC CASING
STEEL CASING
CASING COLLAR
SCREEN
SLOTTED CASING
CENTRALIZER
WATER LEVEL

GROUNDWATER TECHNOLOGY
12101 E. 51st ST.
SUITE 103
TULSA, OK 74146

PROJECT NO.: 830011063
DATE MAP GENERATED: 5/13/92
AUTHORED: RVH
CHECKED: RVH
DETAILED: RHW
TITLE:

WELL OW-WR-45
(200-400 FEET)

CLIENT: CENG/PANTEX PLANT/AM
LOCATION: PANTEX
ACAD FILE: PTX45 4


10
20

120
130
140
150
160
170
180
190

100
90
80
70
60
50
40
30

200

210

220

230

240

250

260

268

0	API-GR	90
GAM(NAT)		

1000	API-N	1500
NEUTRON		

78000	CPS	88000
GAM-GAMH		



Century GEOPHYSICAL CORP.

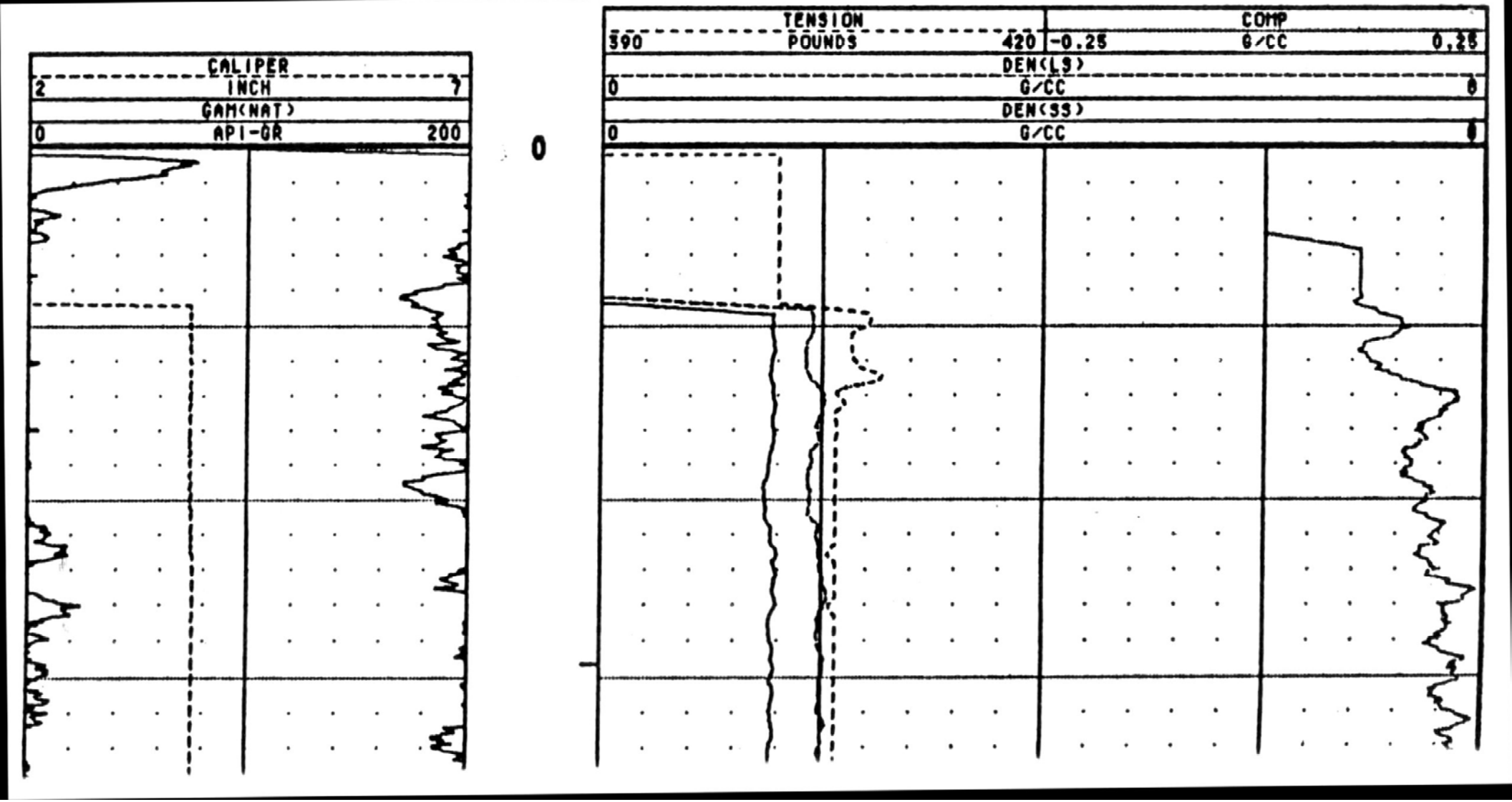
COMPENSATED DENSITY

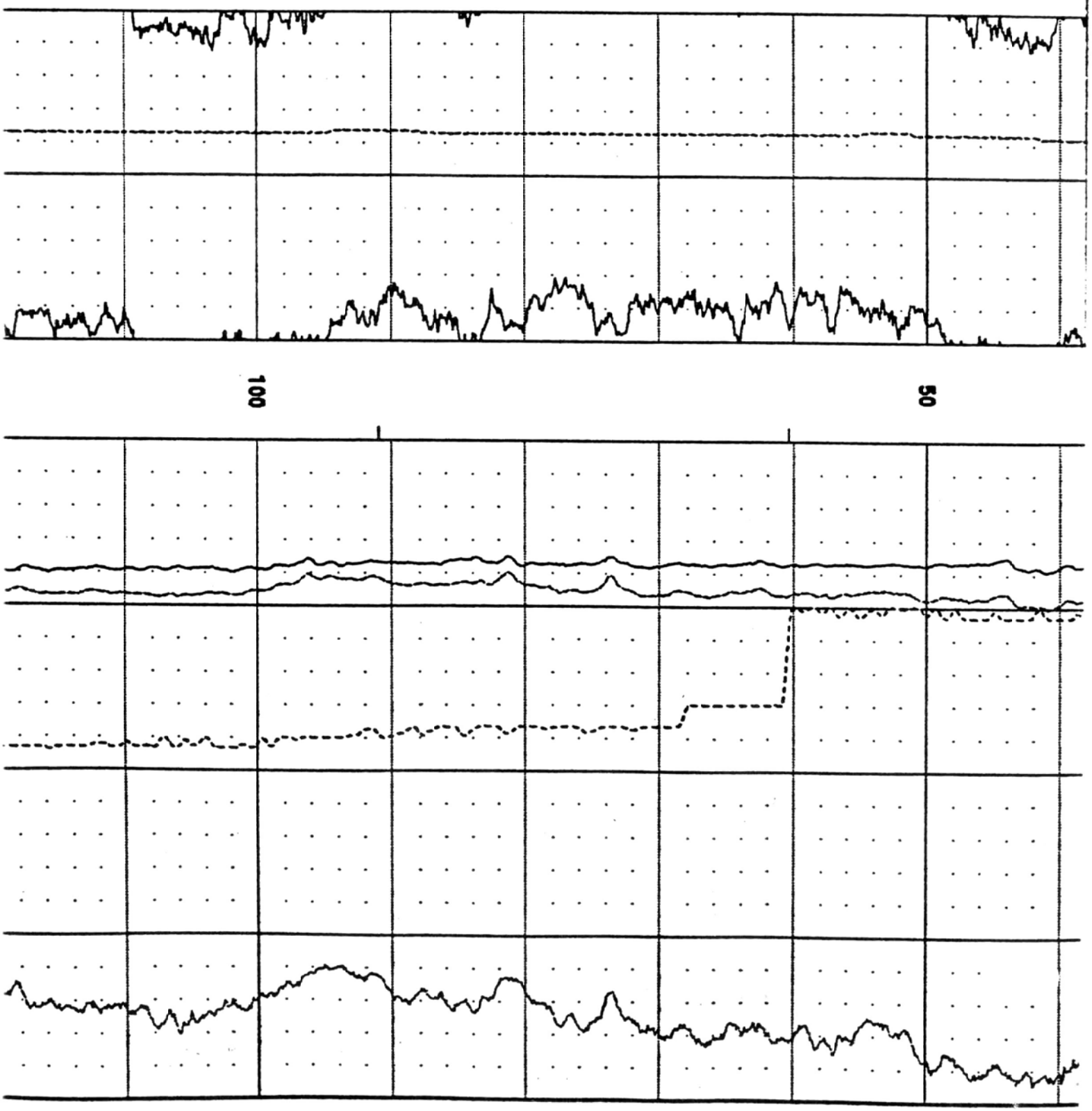
COMPANY	: USACE TULSA			OTHER SERVICES:	
WELL	: OW-WR-45				
LOCATION/FIELD	: 50' WEST OF 12-107				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/13/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	: NA
LOG BOTTOM	: 245.00	LOG MEASURED FROM	: TOC	DF	: NA
LOG TOP	: 0.00	DRL MEASURED FROM	: GL	GL	:
CASING DRILLER	: 249	LOGGING UNIT	: 9101		
CASING TYPE	: PVC	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .25	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: PROCESSED
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9035AA
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 4
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

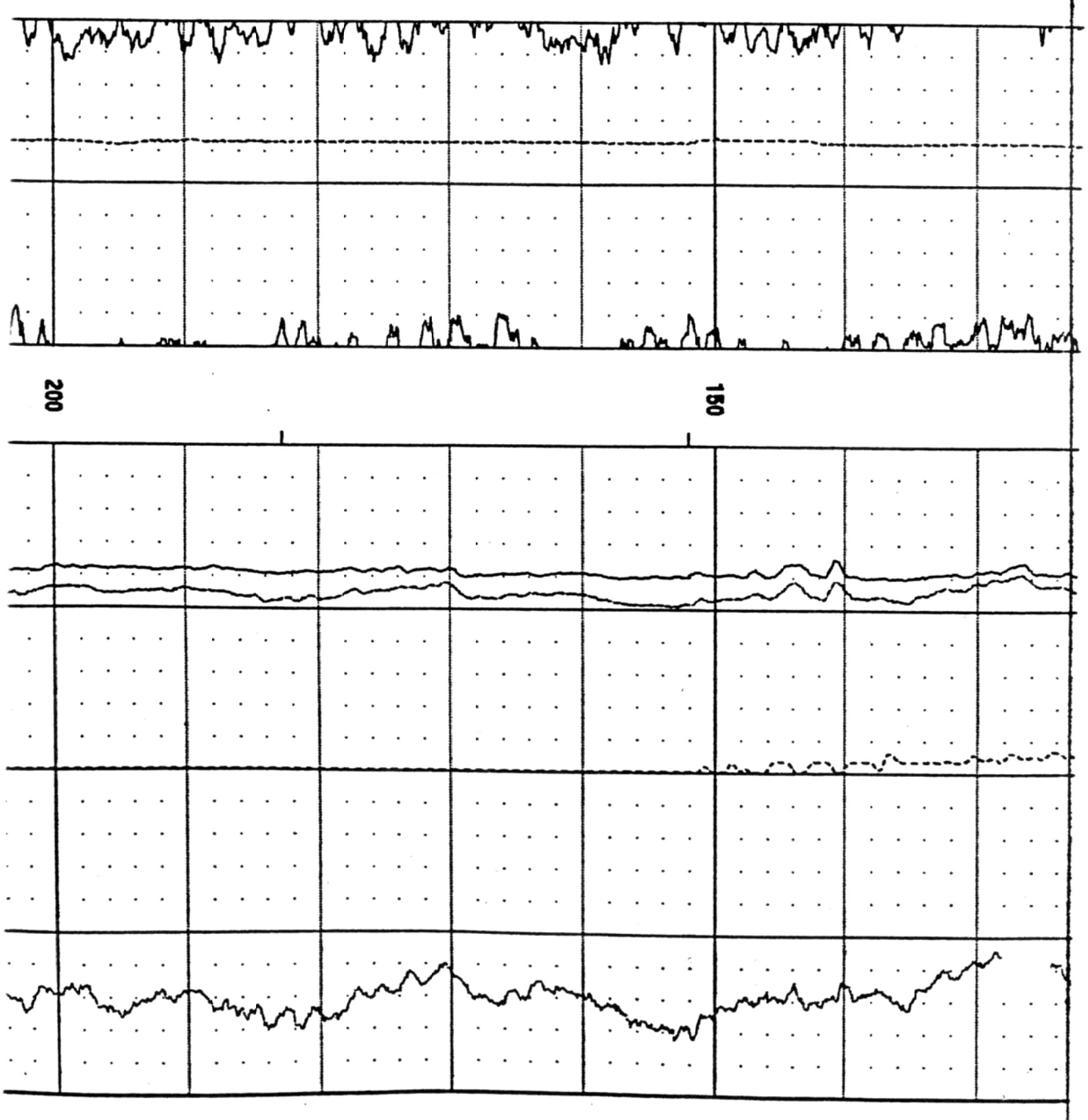
REMARKS :

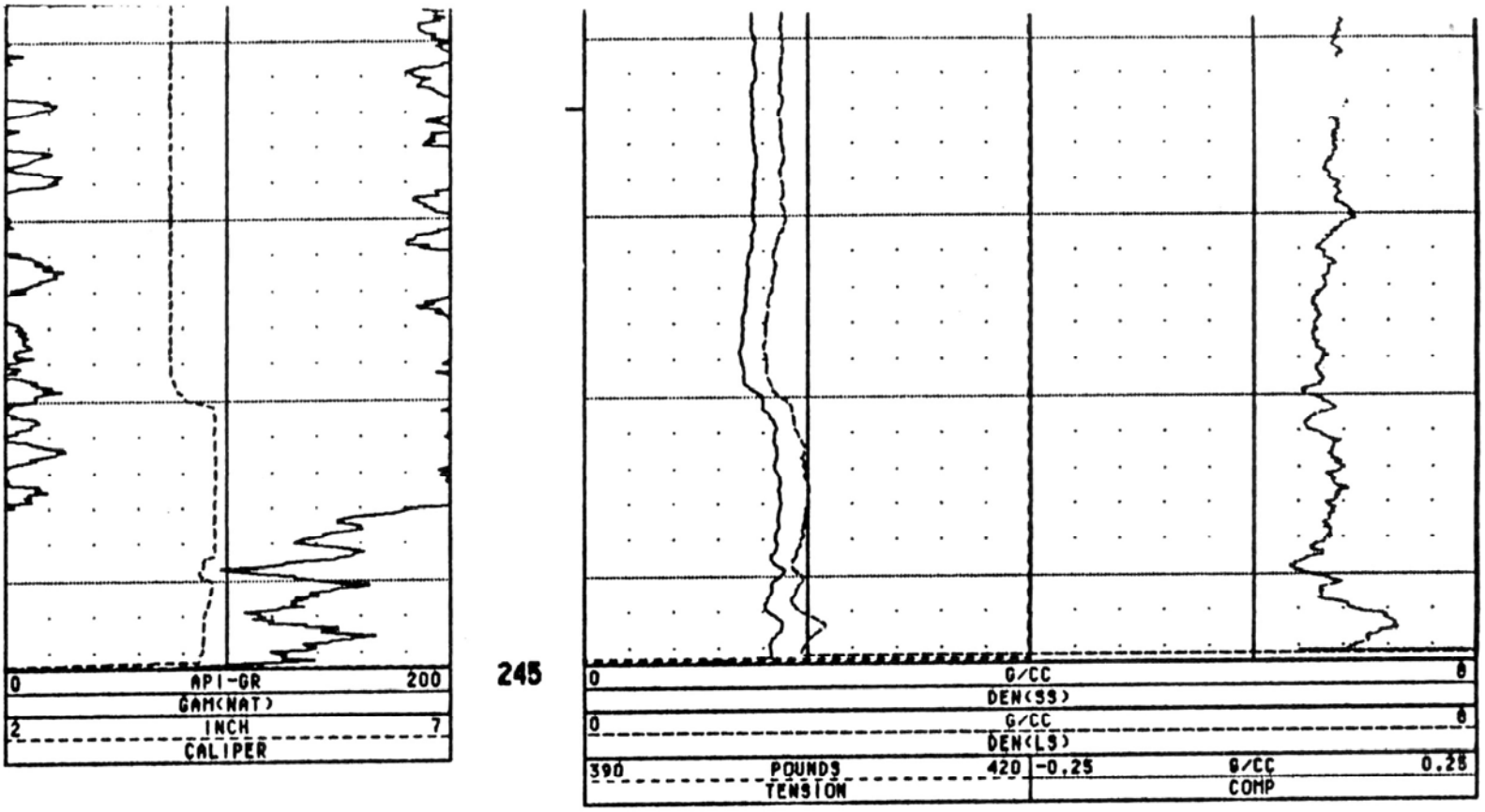
SLOTTED CASING FROM 249' TO 275'.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS


CALIPER
2
INCH
7
GAM(NAT)
0
API-GR
200
0
TENSION
590
POUNDS
420
COMP
-0.25
G/CC
0.25
DEN(LS)
0
G/CC
DEN(SS)
0
G/CC


100
50


200
150



OW-WR-45 06/13/91 820

TOOL CALIBRATION TOOL = 9035AA1 SERIAL NUMBER = 820

	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
0	JUN05.83	14:16:19	0	GAM(NAT)	0.000 CPS	0.000	API-GR
1	JUN05.83	14:16:19	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	JUN05.83	14:19:31	0	RES(SG)	8114.000 CPS	14.000	OHM-M
3	JUN05.83	14:19:31	0	RES(SG)	157742.000 CPS	2000.000	OHM-M
4	JUN05.83	14:20:32	0	CALIPER	137.000 CPS	3.000	INCH
5	JUN05.83	14:20:32	0	CALIPER	1739.000 CPS	11.000	INCH
6	JUN05.83	14:34:34	0	DEN(LS)	6205.000 CPS	1.106	G/CC
7	JUN07.83	12:37:46	0	DEN(LS)	470.000 CPS	2.750	G/CC
8	JUN05.83	15:17:20	0	DEN(SS)	20675.000 CPS	1.106	G/CC

Century GEOPHYSICAL CORP.

GAMMA-NEUTRON

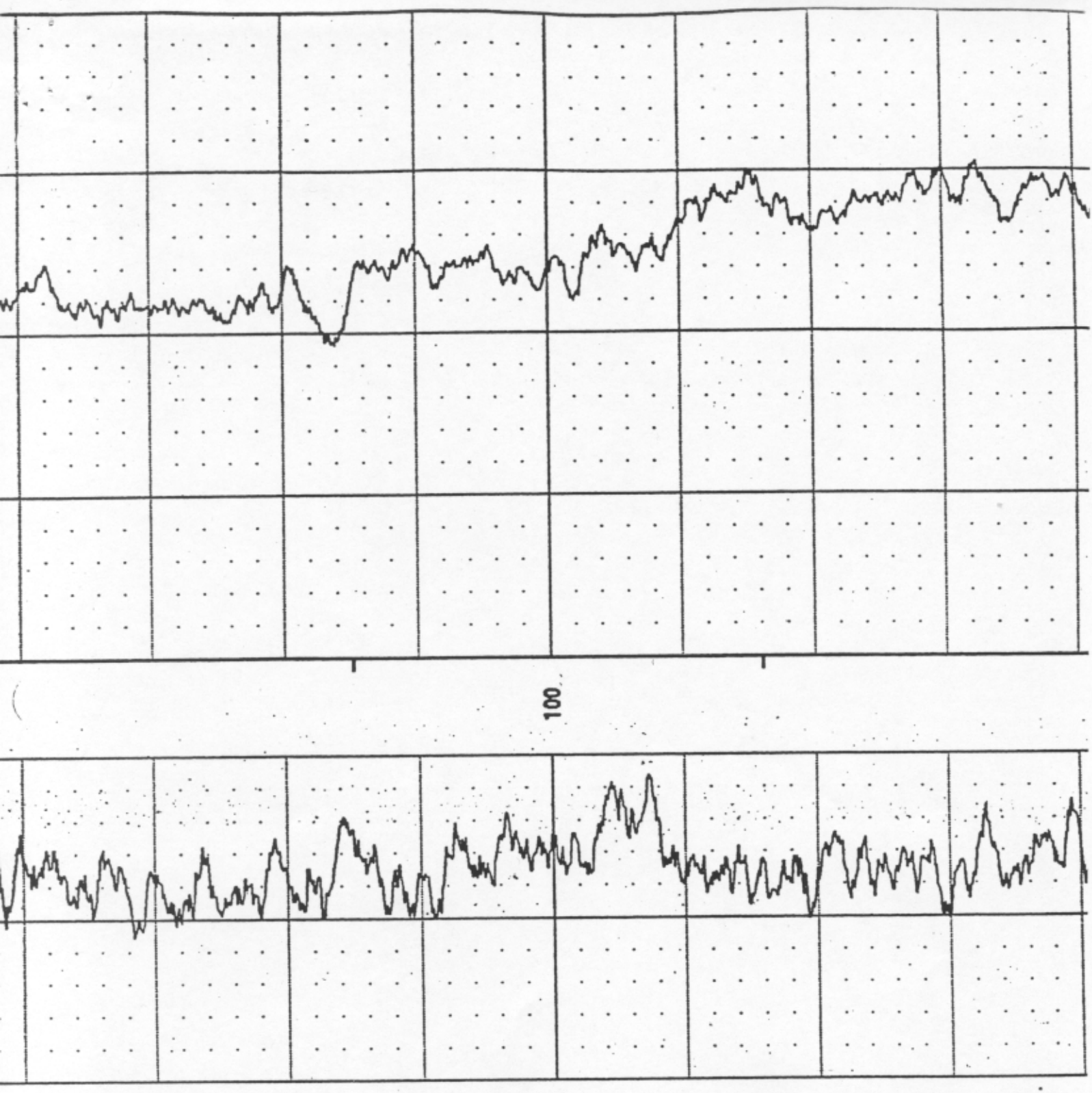
COMPANY	: USACE TULSA			OTHER SERVICES:	
WELL	: OW-WR-45				
LOCATION/FIELD	: 50' WEST OF 12-107				
COUNTY	: POTTER				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/13/91	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM:		KB	: NA
LOG BOTTOM	: 268.00	LOG MEASURED FROM:	TOC	DF	: NA
LOG TOP	: 0.10	DRL MEASURED FROM:	GL	GL	:
CASING DRILLER	: 249	LOGGING UNIT	: 9101		
CASING TYPE	: PVC	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .25	RECORDED BY	: BUTCH NELSON		
BIT SIZE	: -	BOREHOLE FLUID	: H/20	FILE	: ORIGINAL
MAGNETIC DECL.	: -	RM	: -	TYPE	: 9067A
MATRIX DENSITY	: 2.63	RM TEMPERATURE	: -	LOG	: 0
FLUID DENSITY	: 1.0	MATRIX DELTA T	: -	PLOT	: PTEX 5
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 50000

REMARKS :

SLOTTED CASING FROM 249' TO 275'.

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAM(NAT)
0
API-GR
200
NEUTRON
0
API-N
1500
0
50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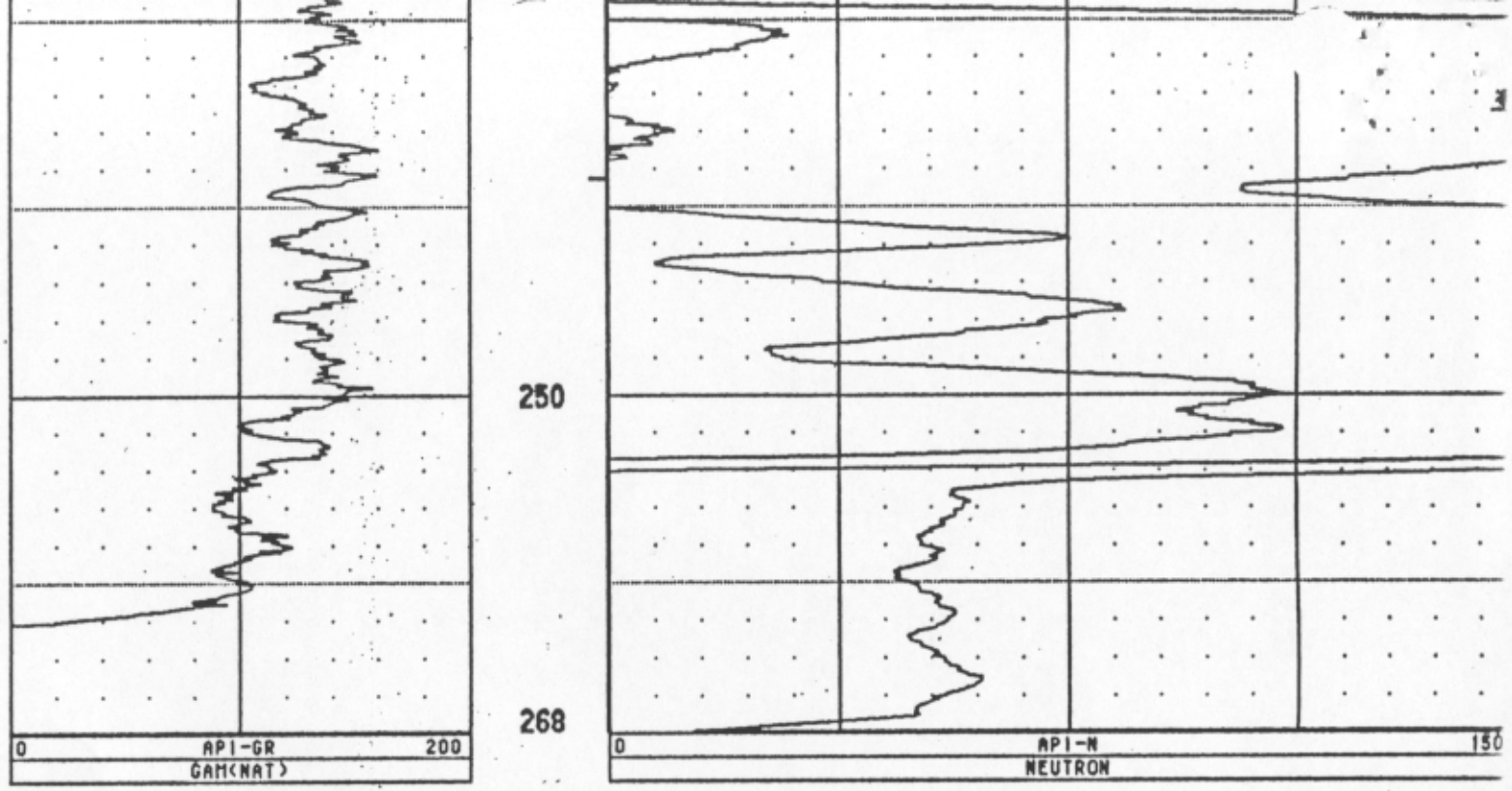


OW-WR-45 06/13/91 512

TOOL CALIBRATION TOOL = 9067A SERIAL NUMBER = 512

	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
0	MAY31.83	14:08:54	0	GAM(NAT)	0.000 CPS	0.000	API-GR
1	MAY31.83	14:08:54	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	JUN05.83	13:55:44	0	NEUTRON	0.000 CPS	0.000	API-N
3	JUN05.83	12:36:34	0	NEUTRON	160.000 CPS	271.000	API-N

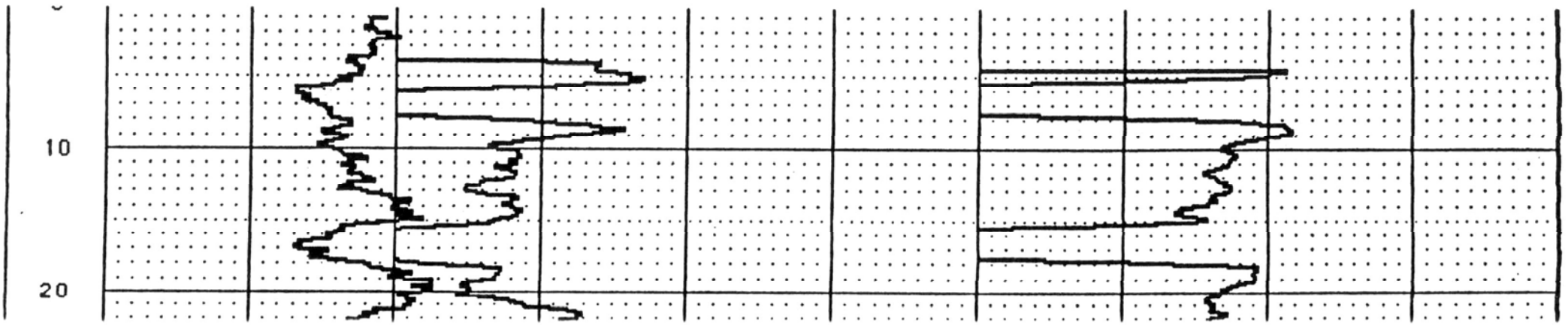


Century

PTX09-0004

COMPANY	: ROY F. WESTON INC.			OTHER SERVICES:	
WELL	: PTX09-0004 /OW-WR-45				
LOCATION/FIELD	: PANTEX PLANT				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/01/88	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 274	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 268.00	LOG MEASURED FROM	: GL	DF	:
LOG TOP	: 1.00	DRL MEASURED FROM	: GL	GL	:
CASING DRILLER	: 268	LOGGING UNIT	: 568		
CASING TYPE	: STEEL	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .75	RECORDED BY	: R. MILLER		
BIT SIZE	: 6.25	BOREHOLE FLUID	: WATER	FILE	: PROCESSED
MAGNETIC DECL.	: 7.5	RM	: 0	TYPE	: 9067A
MATRIX DENSITY	: 2.68	RM TEMPERATURE	: 0	LOG	: 6
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 57	PLOT	: WESTON 0
NEUTRON MATRIX	: LIMESTONE	FLUID DELTA T	: 210	THRESH	: 2500
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO CGC STANDARD TERMS AND CONDITIONS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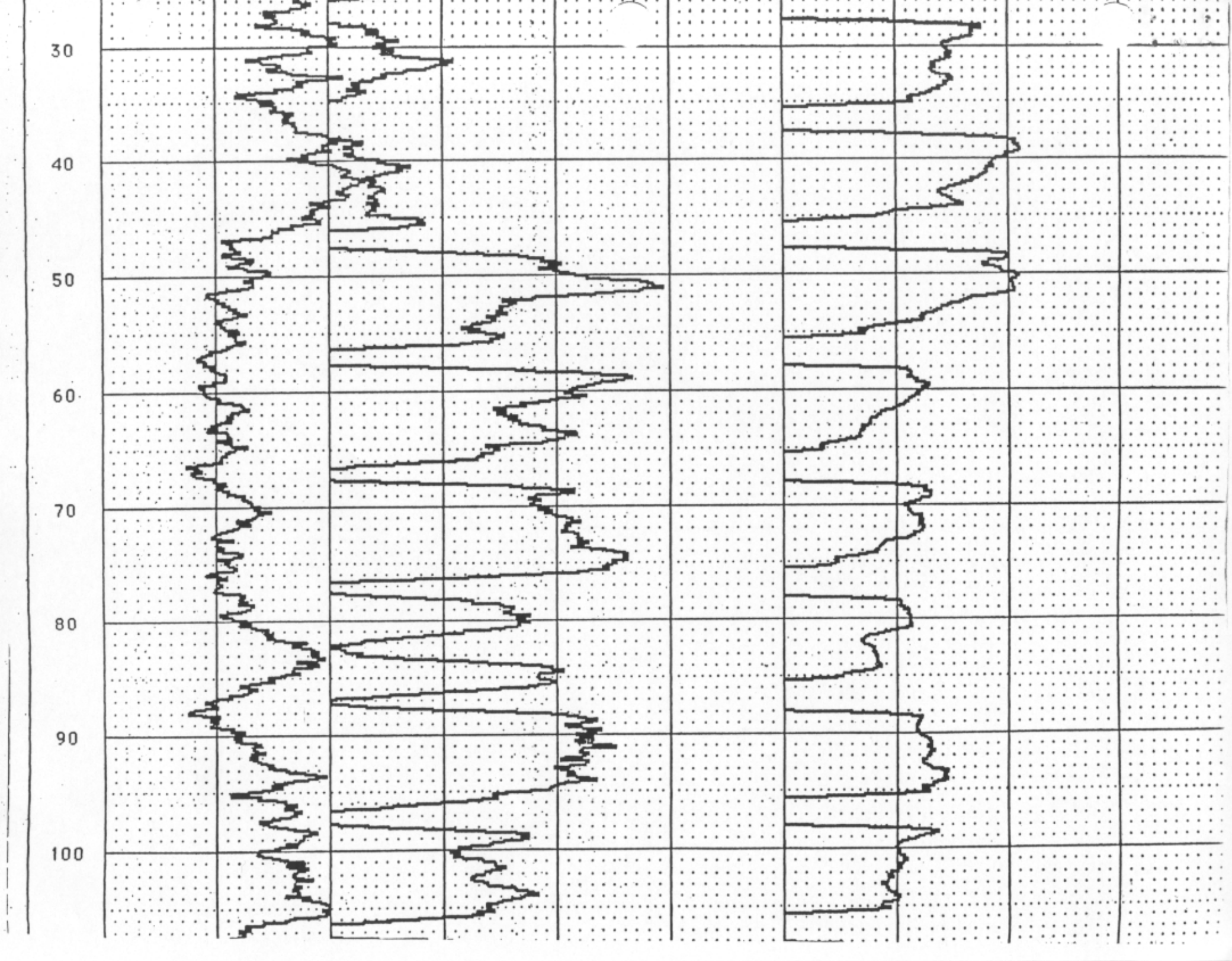
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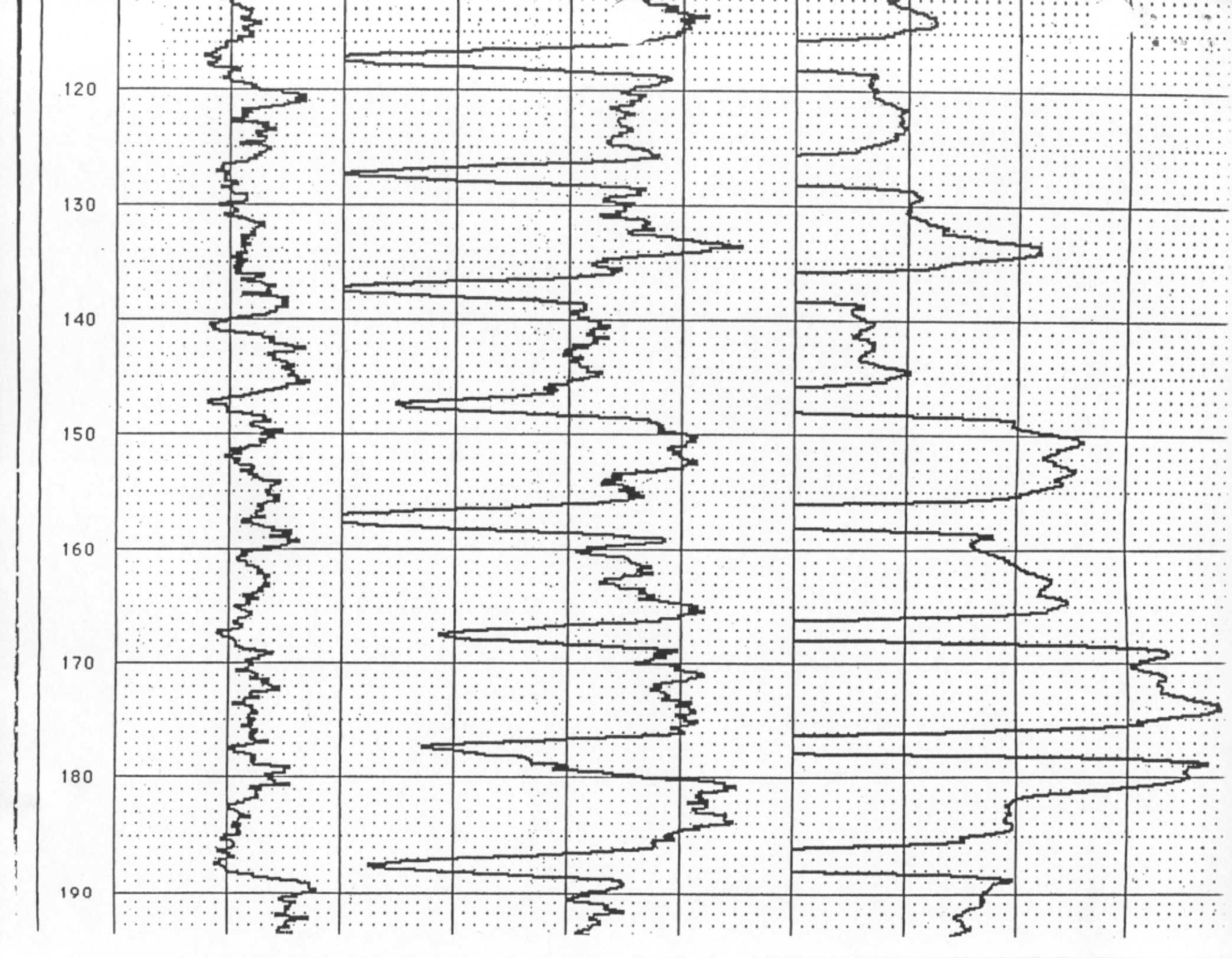
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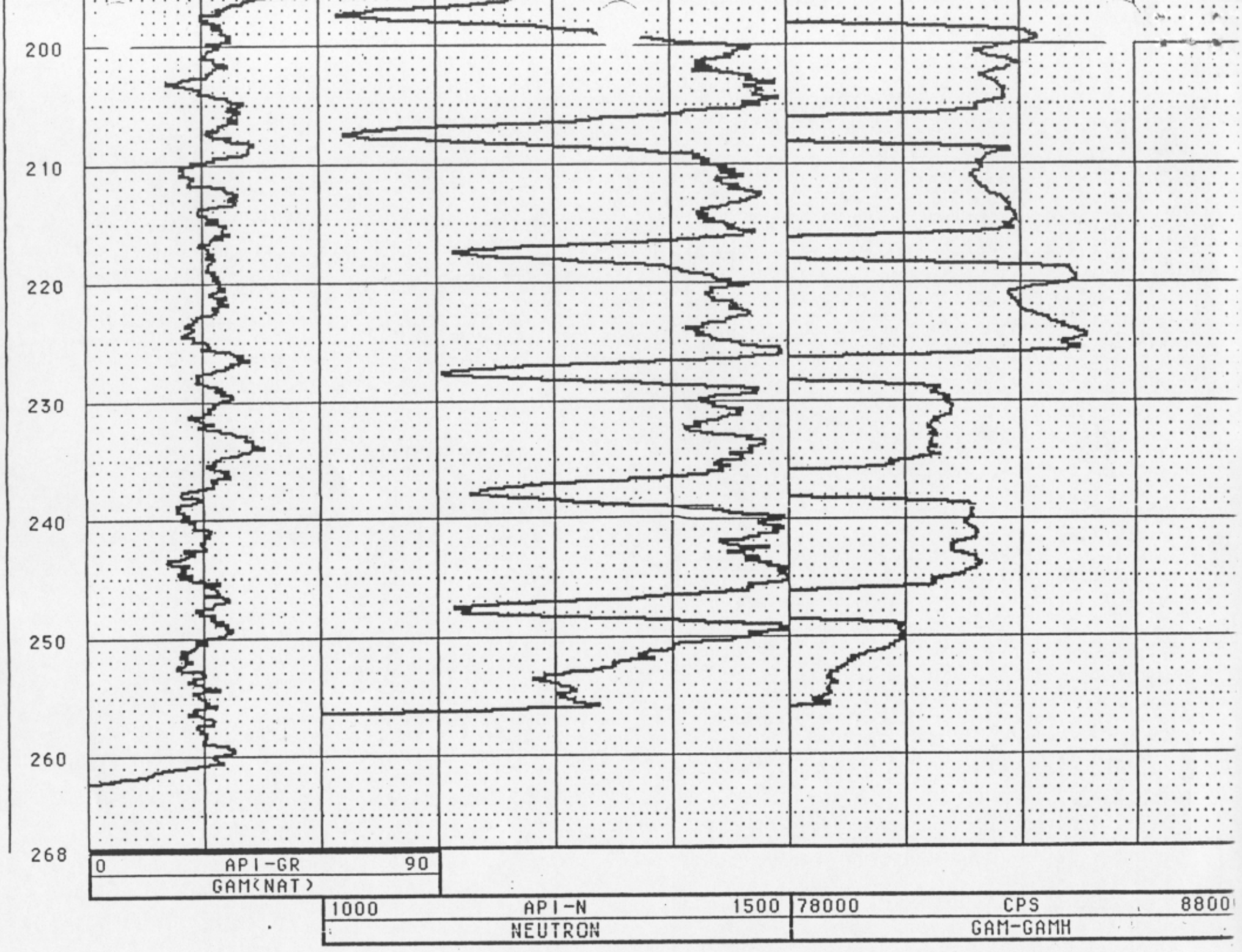
200
210
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240
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260
268
0
API-GR
90
GAM(NAT)
1000
API-N
1500
NEUTRON
78000
CPS
8800
GAM-GAMH

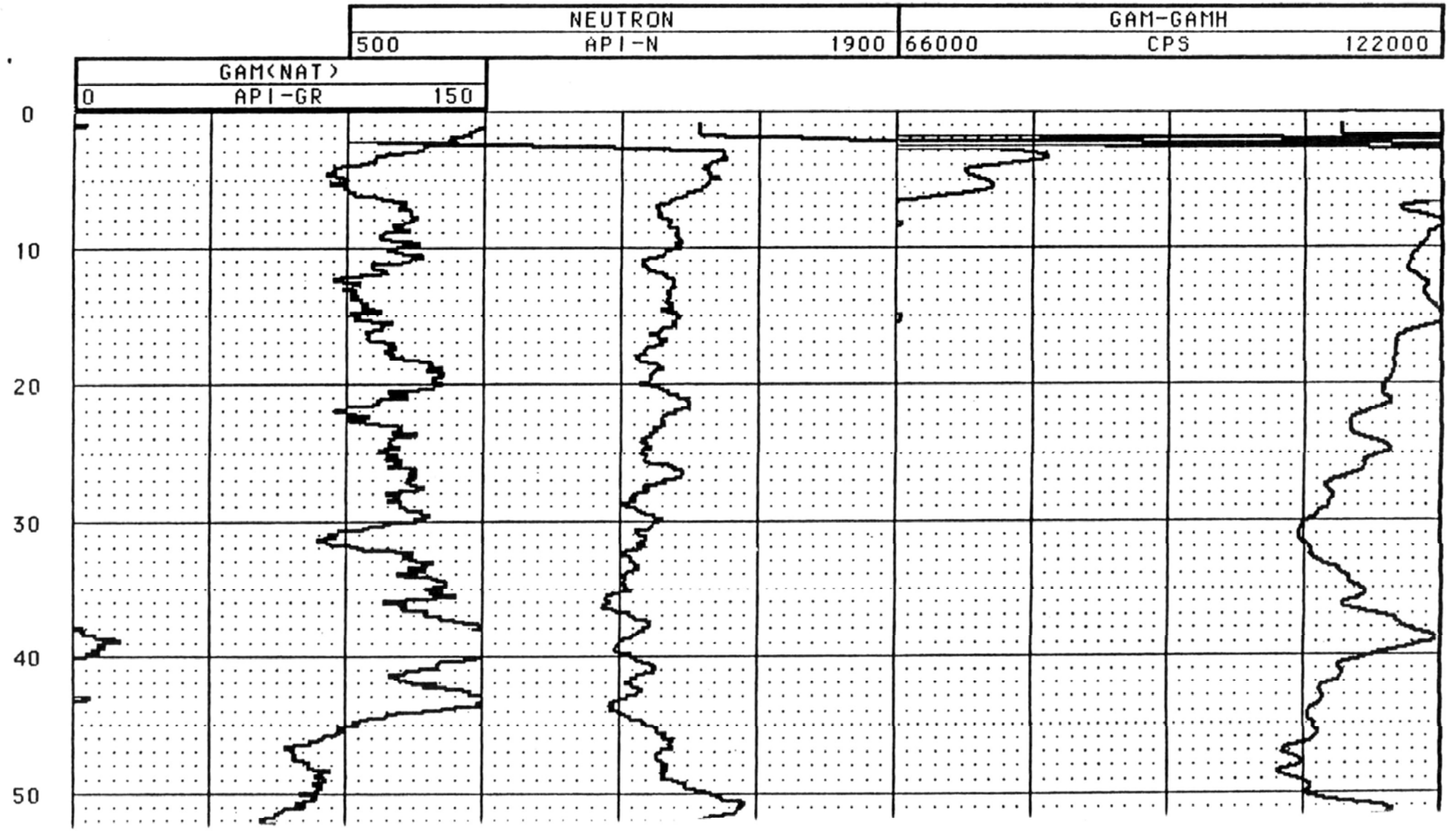


Century

PTX09-0004

COMPANY	: ROY F. WESTON INC.			OTHER SERVICES:	
WELL	: PTX09-0004/OW-WR-45				
LOCATION/FIELD	: PANTEX PLANT				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/14/88	PERMANENT DATUM	: GL	ELEVATIONS	
DEPTH DRILLER	: 274	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 273.90	LOG MEASURED FROM:	GL	DF	:
LOG TOP	: 0.90	DRL MEASURED FROM:	GL	GL	:
CASING DRILLER	: 268	LOGGING UNIT	: 568		
CASING TYPE	: P.V.C.	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .75	RECORDED BY	: R. MILLER		
BIT SIZE	: 6.25	BOREHOLE FLUID	: WATER	FILE	: PROCESSED
MAGNETIC DECL.	: 7.5	RM	: 0	TYPE	: 9067A
MATRIX DENSITY	: 2.68	RM TEMPERATURE	: 0	LOG	: 7
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 57	PLOT	: WESTON 1
NEUTRON MATRIX	: LIMESTONE	FLUID DELTA T	: 210	THRESH	: 2500
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO CGC STANDARD TERMS AND CONDITIONS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CPS
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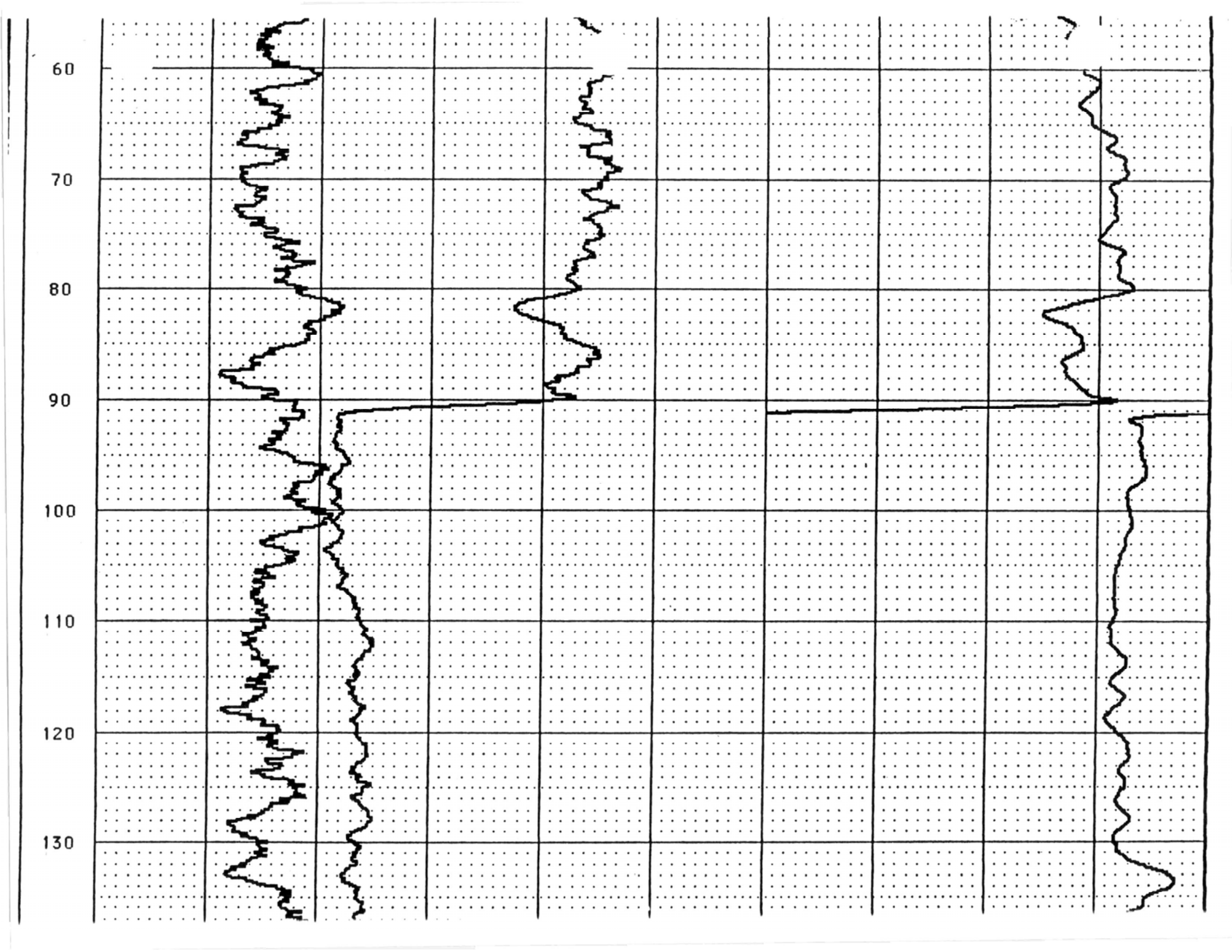
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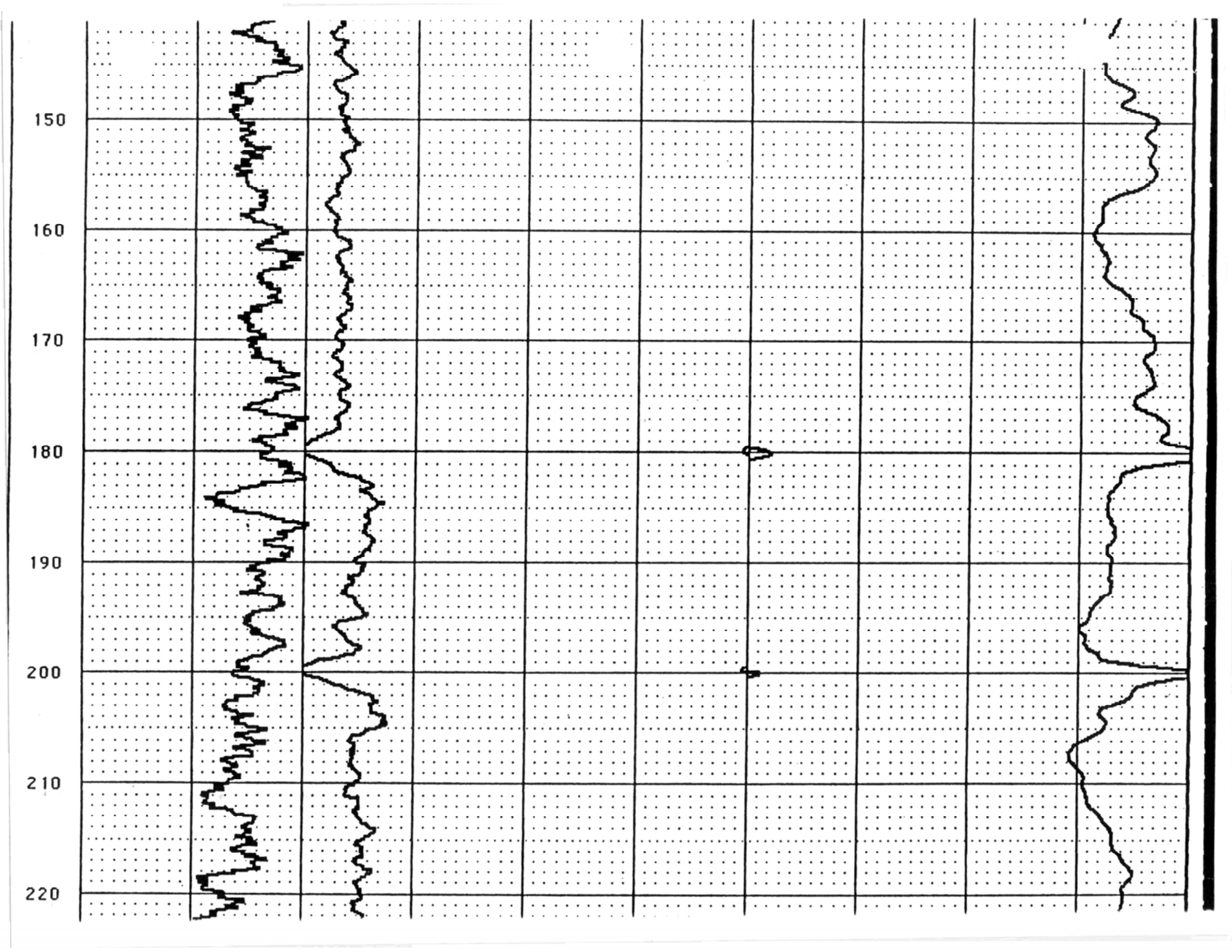
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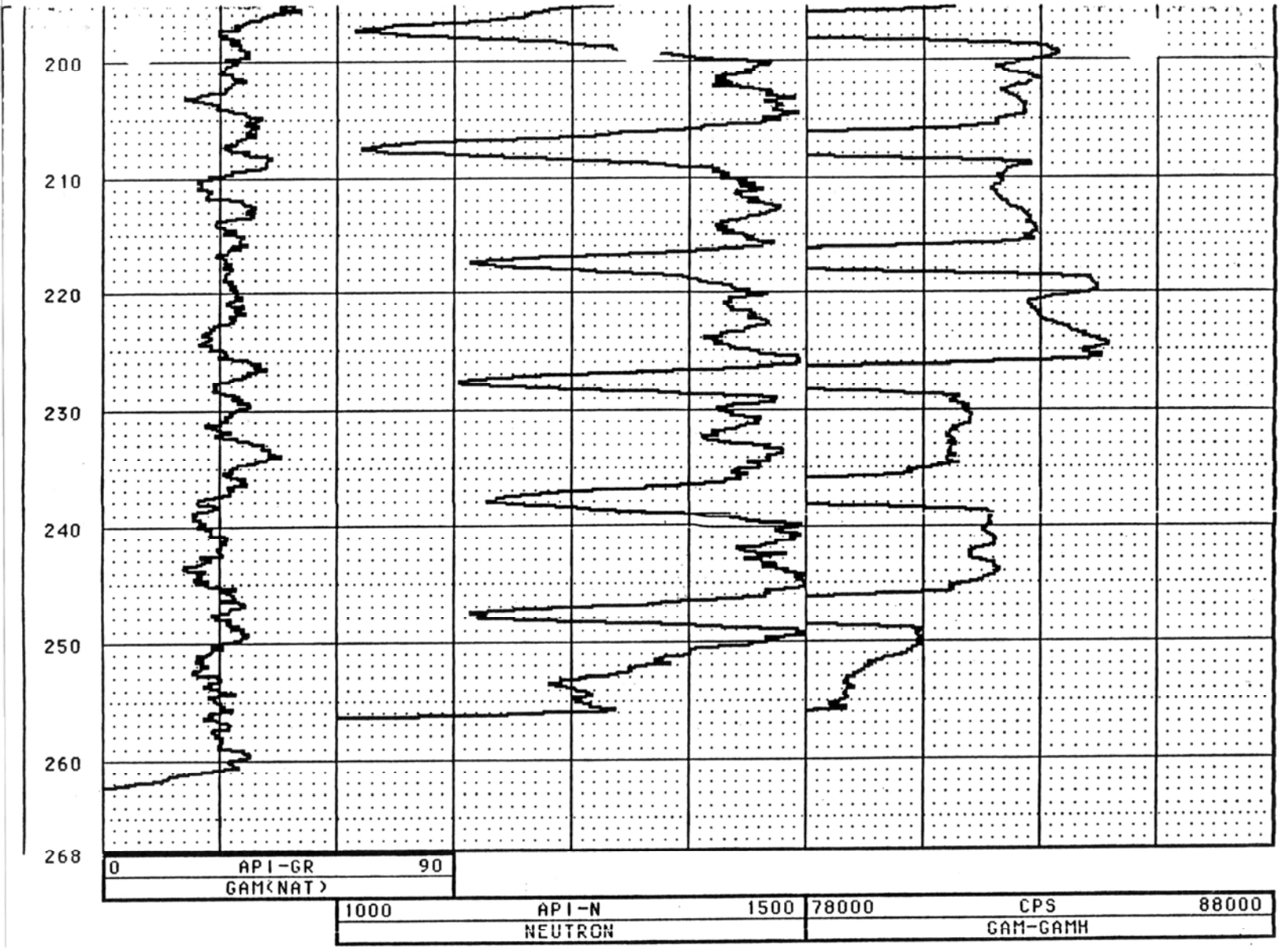
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NEUTRON
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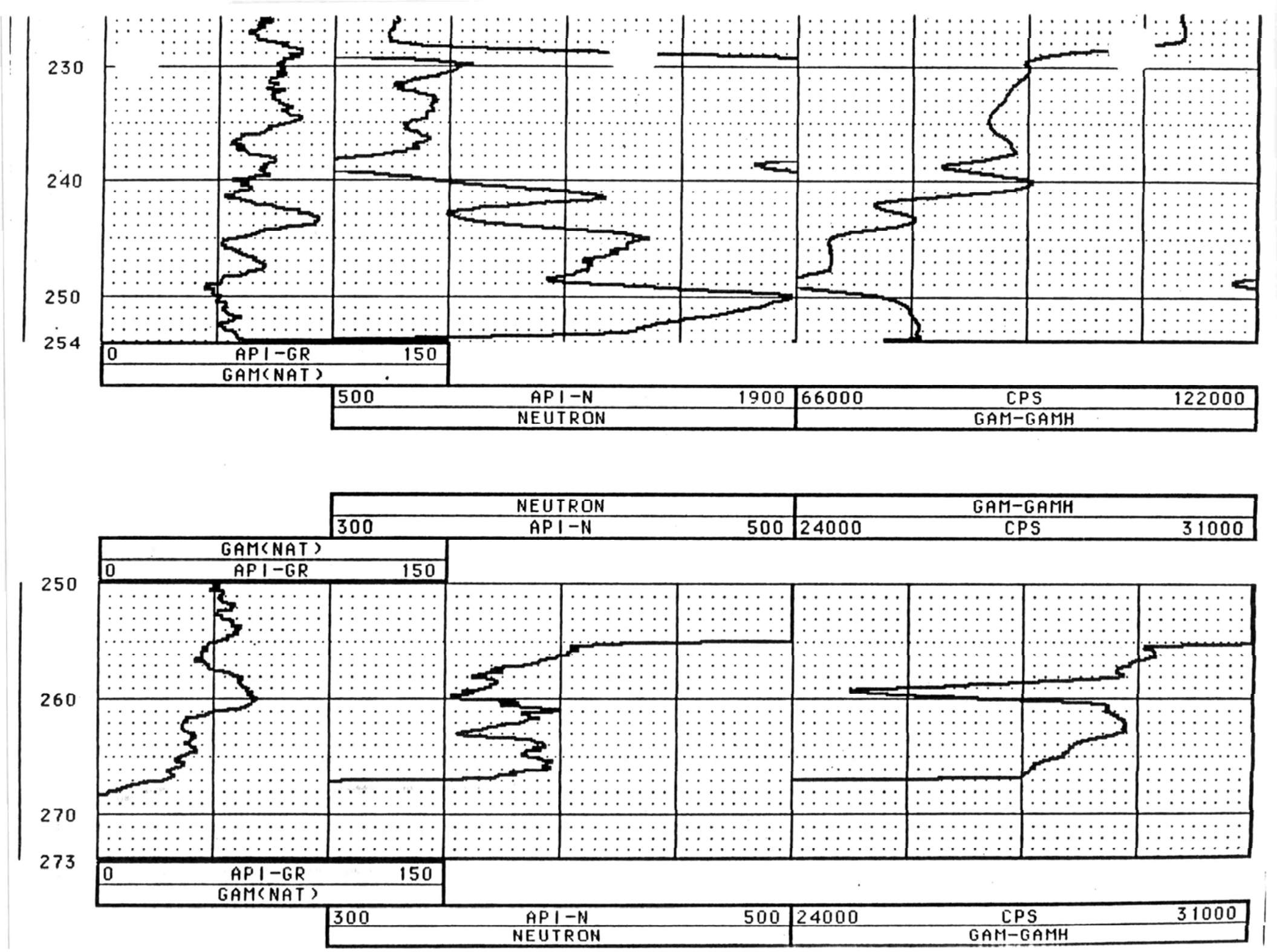
CPS
88000
GAM-GAMH


230
240
250
254
0 API-GR 150
GAM(NAT)
500 API-N 1900
NEUTRON
66000 CPS 122000
GAM-GAMH
NEUTRON
300 API-N 500
GAM-GAMH
24000 CPS 31000
GAM(NAT)
0 API-GR 150
250
260
270
273
0 API-GR 150
GAM(NAT)
300 API-N 500
NEUTRON
24000 CPS 31000
GAM-GAMH

Please use black ink.
Send original copy by certified mail to the
Texas Water Commission
P.O. Box 13087
Austin, Texas 78711

OWWR-45

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board
P. O. Box 13087
Austin, Texas 78711

JUL 17 1997

1) OWNER Dept. of Energy (Name) Address Pantex Plant (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL: County Carson 22 miles in N.E. (N.E., S.W., etc.) direction from Amarillo, Tx (Town)

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☒ Legal description:
Section No. 32 Block No. M-4 Township
Abstract No. Survey Name J.H. Gibson
Distance and direction from two intersecting section or survey lines
From S.W. corner 2345.27 N. 23° 50' 22" E

☐ See attached map.

3) TYPE OF WORK (Check):
☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☑ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ Other

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☑ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other

6) WELL LOG:
Date Drilling: Started June 29 19 88 Completed July 1 19 88

DIAMETER OF HOLE Dia. (in.)	From (ft.)	To (ft.)
9 7/8	Surface	275.0

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☑ Gravel Packed ☒ Other bentonite grout/cement cap
If Gravel Packed give interval . . . from 245.0 ft. to 275.0 ft.

From (ft.)	To (ft.)	Description and color of formation material
0.0	4.0	Clay; wet, plastic, organic, dark brown
4.0	94.0	Silty clay; dry, reddish brown with stringers and nodules of caliche
94.0	228.0	Sand; fine to medium grained, loose, dry, light brown to tan, with occasional $CaCO_3$ cemented zones.
228.0	249.0	Sandy gravel; intermittent $CaCO_3$ cemented zones containing pebbles to 3cm. in diameter
249.0	274.0	Sand; medium grained, golden brown, increasing silt and clay content with depth
274.0	275.0	Clay; damp, firm, brown

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4.0	N	PVC riser	+2.0	229.7	n/a
4.0	N	Steel riser	229.7	249.7	n/a
4.0	N	Steel slotted screen	249.7	269.7	0.02"
4.0	N	Steel blank	269.7	275.0	n/a

9) CEMENTING DATA [Rule 319.44(b)] nk - not known
Cemented from 0.0 ft. to 221.0 ft. No. of Sacks Used nk
Bentonite grout 221.0 ft. to 240.0 ft. No. of Sacks Used nk
Method used pump with tremie pipe
Cemented by Layne-Western Co./Stewart Bros. Co.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 319.44(c)]
☐ Pitless Adapter Used [Rule 319.44(d)]
☐ Approved Alternative Procedure Used [Rule 319.71]

11) WATER LEVEL:
Static level 255.25 ft. below land surface Date July 7, 1988
Artesian flow n/a gpm. Date n/a

12) PACKERS: n/a Type Depth

13) TYPE PUMP: no pump installed
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other not applicable
Depth to pump bowls, cylinder, jet, etc., ft.

14) WELL TESTS:
Type Test: ☒ Pump ☒ Bailer ☒ Jetted ☐ Estimated
Yield: 5.0 gpm with 2.0 ft. drawdown after 1.0 hrs.

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No
If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? Depth of strata
Was a chemical analysis made? ☐ Yes ☒ No

DEC 16 1988
TEXAS WATER COMMISSION

I here by certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 12 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Layne-Western Co., Inc. (Type or Print) Water Well Driller's License No. 767

ADDRESS 5931 Brittmore (Street or RFD) Houston (City) TX (State) 77041 (Zip)

(Signed) Lucian Blaine Williams (Licensed Water Well Driller) (Signed) (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only
Well No. 06-4645
Located on map

WWD-012 (Rev.01-28-87)

TEXAS WATER COMMISSION COPY

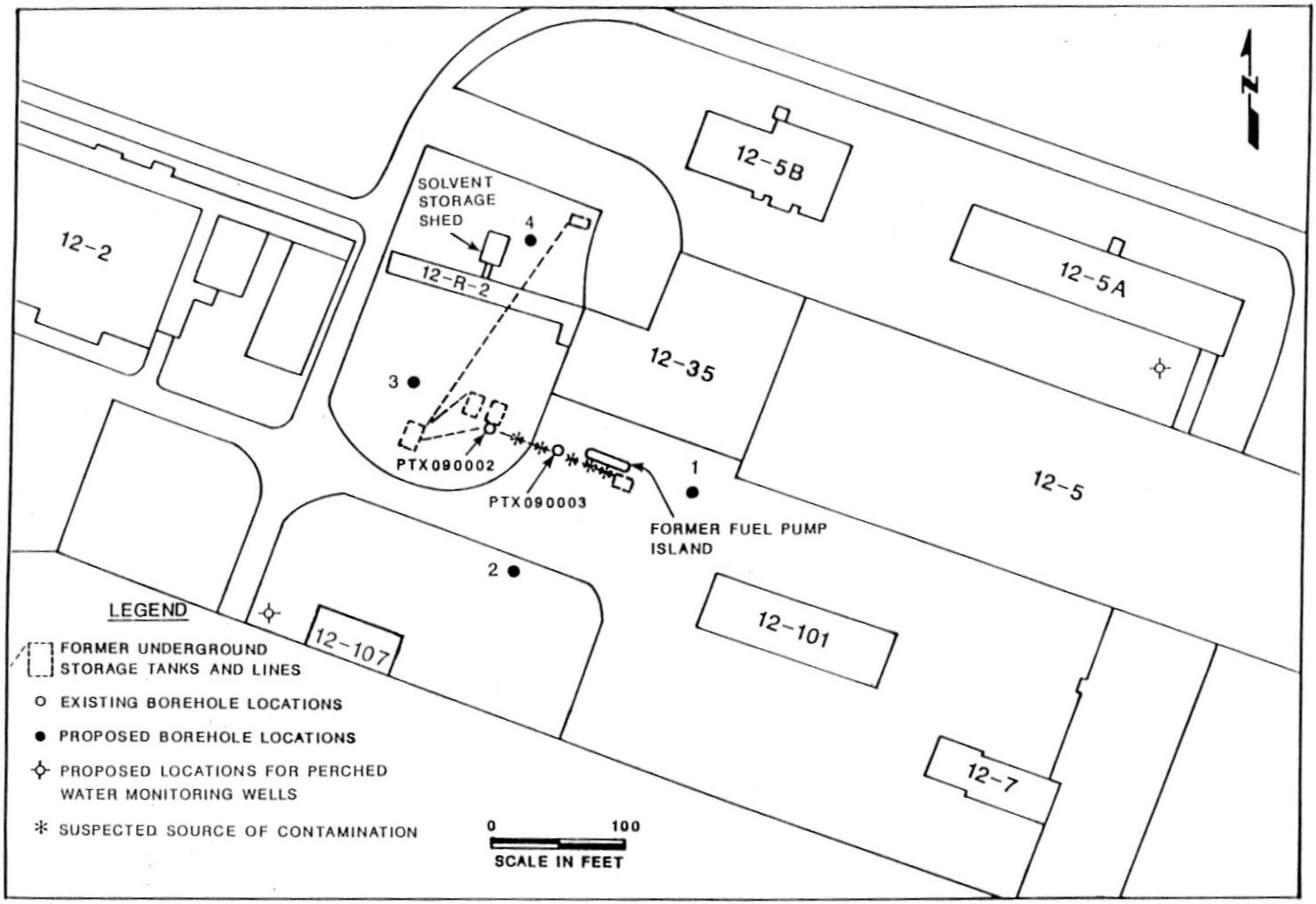


Figure 4.1. Proposed borehole locations at building 12-35.

TABLE 9. WELL OW-WR-45, DATA AND ASSESSMENT

OTHER WELL DESIGNATIONS	PTX-09-0004, SE 12-2, Bldg 12-35
LOCATION	Sec 32, Blk M-4; State Plane Coordinates N 13,997.686 E 26,539.894 (source: hand-written notes)
GEOPHYSICAL DATA: TOOLS (LOGS)	1991: 9030H (GR, HRD, CAL), 9035 (GR, LSD, SSD, CAL), 9067 (GR, NL) 1988: 9067 (GR, NL), 9068 (GR, LSD-4pi)
LOG QUALITY	Excellent
CASING: MATERIALS	PVC, undetermined joint length, 4-inch diameter, 0-229 feet; steel casing, 10-foot joints, 229-249 feet
POTENTIAL PROBLEMS	Possible defects at 73 feet, 127 feet, 140 feet, and 144 feet; note especially possible cracks or holes at 239-240 feet and 243-244 feet in steel riser
QUALITY OF ASSESSMENT	Fair, CCL would have improved
SCREEN: MATERIALS	Steel, 4-inch diameter slotted casing, 272-291 feet; assumed to be similar to OW-WR-44 (Table 8)
POTENTIAL PROBLEMS	None apparent
QUALITY OF ASSESSMENT	Poor, density logs not deep enough to evaluate
ANNULUS: MATERIALS	Cemented 0-224 feet, with few thin lower density zones; bentonite estimated from 224-239 feet with possible channeling 225-229 feet; sand (filter) pack estimated from 239-273 feet
POTENTIAL PROBLEMS	Minor channeling noted in a few intervals
QUALITY OF ASSESSMENT	Good 0-245 feet, poor below 245 feet
OVERALL WELL CONDITION	Fair to good, depending on subsequent study of possible casing defects, especially the possible defects at 240 feet and 244 feet; excessive silt and sand could enter well if these defects represent large cracks or partings in casing
CORPS OF ENGINEERS WELL CONSTRUCTION NOTES LOG HEADER NOTES	Layne-Western Co. drilled 7/1/88
Bit size	9 ⅞ inch
4 in. dia. PVC riser (casing)	2-230 feet
4 in. dia. steel riser (casing)	230-250 feet
4 in. dia. slotted screen	250-270 feet
4 in. dia. steel blank	270-275 feet
cement	0-221 feet
bentonite	221-240 feet
Total depth drilled	275 feet
Total depth well	275 feet
Total depth logged	(1988) 273 feet (1991) 245 and 268 feet

TABLE 9. WELL OW-WR-45, DATA AND ASSESSMENT

OTHER COMMENTS	The Century 9067 tool was used instead of the 9051 tool to obtain a neutron log. The 9051 would have permitted the detection of any steel centralizers used on the PVC casing, and would have been valuable in evaluating the steel casing and screen.

STATE OF TEXAS PLUGGING REPORT for Tracking #201378

Owner:	**U.S. Department of Energy**	Owner Well #:	**PTX06-1001-A**
Address:	**P.O. Box 30030 Amarillo, TX 79120**	Grid #:	**06-44-5**
Well Location:	**USDOE Pantex Plant FM 2373 near US 60 Panhandle, TX 79068**	Latitude:	**35° 19' 01.33" N**
		Longitude:	**101° 33' 13.44" W**
Well County:	**Carson**	Elevation:	**3544**

Well Type: **Monitor**

Drilling Information

Company: **Layne, Inc.** Date Drilled: **11/9/1992**

Driller: **Randy Swearingen** License Number: **2883-W**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**9.25**	**0**	**264**

Plugging Information

Date Plugged: **7/23/2020** Plugger: **William B. Bludworth**

Plug Method: **Tremmie pipe cement from bottom to top**

Casing Left in Well:

Dia (in.)	*Top (ft.)*	*Bottom (ft.)*
4.5	**11**	**264**

Plug(s) Placed in Well:

Top (ft.)	*Bottom (ft.)*	*Description (number of sacks & material)*
0	**264**	**Cement 16 47lb. Sacks**

Certification Data: The driller certified that the driller plugged this well (or the well was plugged under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the reports(s) being returned for completion and resubmittal.

Company Information: **Cascade Drilling**

3621 Hwy 47
Peralta, NM 87042

Driller Name: **William B. Bludworth** License Number: **4885**

Comments:

Casing left in hole is Schedule 10 stainless steel; casing was cut 11' bgs with an inside cutter and removed. Old concrete and cement removed 0-4'.

PTX06-1001A

aka: <none>

Contractor: Layne Drilling
Contract #:
Contractor's Project #:
Drilled date: 11/07/1992
Plugged date: 11/17/1992

OPTIX #: <if known>
Last Update: 02/15/2005 (created this cover sheet)

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- __ Draft
- __ Final

__ Installation Log/Diagram

Lithologic Logs
- __ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (computer-generated)

Geophysical Logs
- _X_ Neutron
- _X_ Gamma
- __ e-Log
- __ Bond Log
- _X_ Deviation Log

_X_ State Well Report
__ State Plugging Report

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 1 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		HS	1	40	9-13 13-20			(CL) CLAY, sandy, silty, brown, hard, dry, with some roots near surface, and with few rock fragments
3535	5							
3530	10	HS	2	40	27-55 74-20/2			10 ft - becomes very silty, light tan and brown with white caliche inclusions, very hard, dry
3525	15							
3520	20	HS	3	75	17-56 55-53			
3515	25							
3510	30	HS	4	60	29-59 71-25/1			30 ft - with increased sand and gravel content
3505								

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 2 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
								as above CL
3500	40	HS	5	60	16-30 71-62/5			40 ft - with thin moist zone
3495	45							
3490	50	HS	6	60	29-118			(SC) SAND, clayey, with silt and gravel, tan-brown with light gray gravel rock fragments, with caliche inclusions
3485	55							
3480	60							
3475	65							CALICHE, white, very hard
3470								(SC) SAND, clayey, with caliche inclusions

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 3 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3465	75							as above SC
3460	80							
3455	85							85 ft - silty sand layer, brown, dry
3450	90							
3445	95							
3440	100	HS	7	50	11-31 42-86/3			(CL) CLAY, with some silt, little sand, and caliche inclusions, brown with some black spots, very hard, dry
3435								

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 4 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3430	110							as above CL
3425	115							
3420	120							
3415	125							(SC) SAND, clayey, with caliche inclusions, loose, dry
3410	130							
3405	135							
3400								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 5 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3395	145							as above SC
3390	150							150 ft - becomes more dense
3385	155							
3380	160							
3375	165							
3370	170							
3365								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 6 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		HS	8	60	4-16 47-60/4			(SM) SAND, silty, very fine to fine grained, tan, very dense, dry
3360	180							
3355	185							
3350	190							
3345	195							
3340	200							
3335	205							205 ft - becomes more silty and finer grained
3330								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 7 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3325								as above SM
	215							SAND, gravelly, fine grained, with some cobbles, dry
3320								
	220							
3315								
	225							225 ft - sand becomes more coarse, with gravel increased (well rounded gravel)
3310								
	230							
3305								
	235							235 ft - sand becomes finer grained, with little gravel
3300								
	240							
3295								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1001A

Sheet No. 8 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/7/92
Project Number:	3922022G	Boring Completed:	11/17/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Autry	Surface Elevation:	3538.28 ft
Logged By:	B. Hazlett	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3540.12 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft (8, 16, 24, 32) / Neutron (F) cts/sec (2000, 4000, 6000, 8000)
								245 ft - as above gravelly SAND - sand becomes coarser, brown, moist	
3290	250	HS	9	70	4-8 13-19			250 ft - with increased gravel content, sand content becomes finer grained, moist	
3285	255								
3280	260								
3275								264 ft - sand becomes coarser, with some gravel and some dry clay BORING TERMINATED AT 264 FT BGS	

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

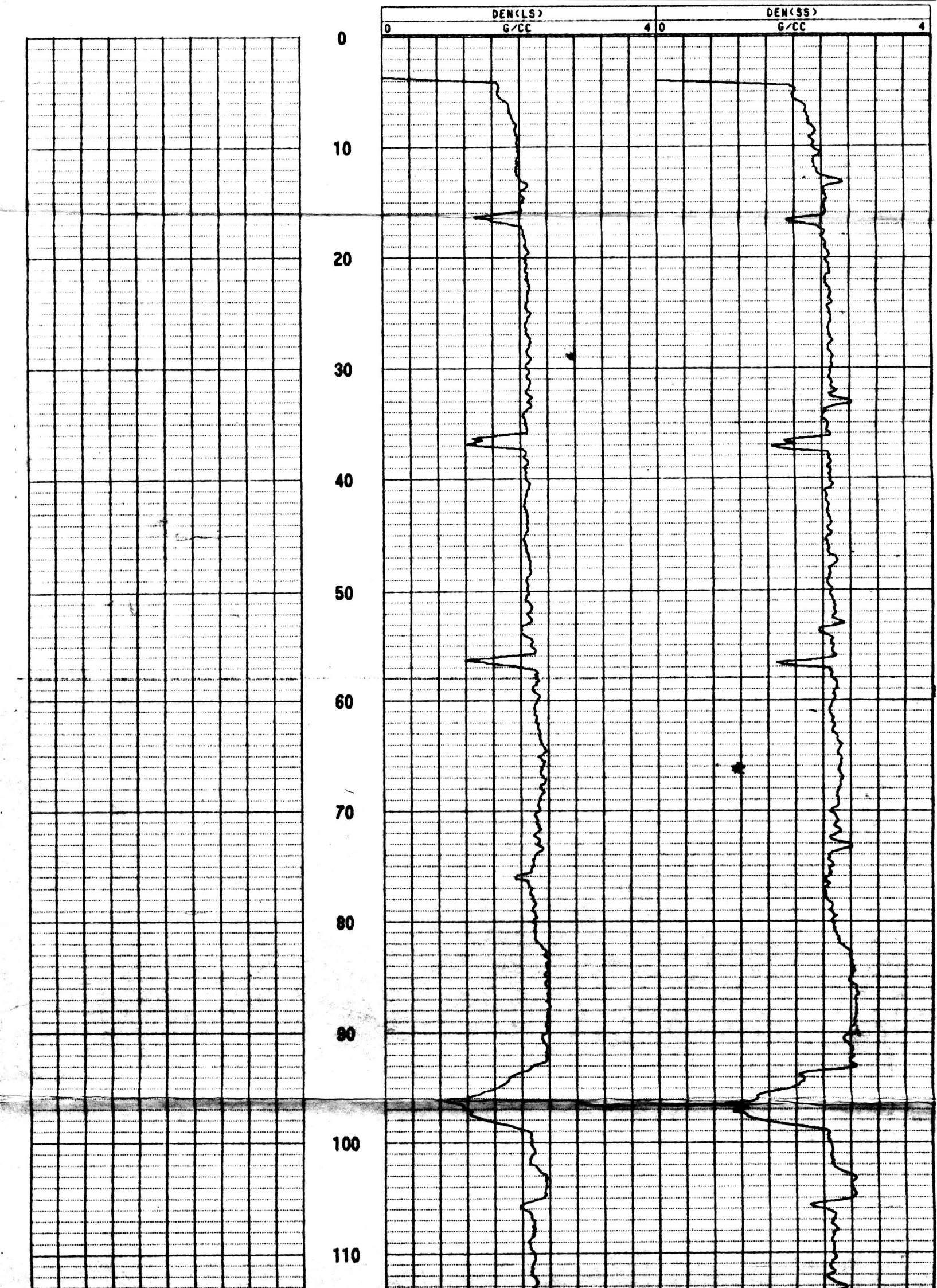


Century GEOPHYSICAL CORP.

PTX06 - 1001A

COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 - 1001A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/01/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 265	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 264.50	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -4.40	DRL MEASURED FROM	: T.O.C.	GL	:
CASING DRILLER	: 265	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9035AA
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0	LOG	: 8
FLUID DENSITY	: 1	MATRIX DELTA T	:	PLOT	: PTXF 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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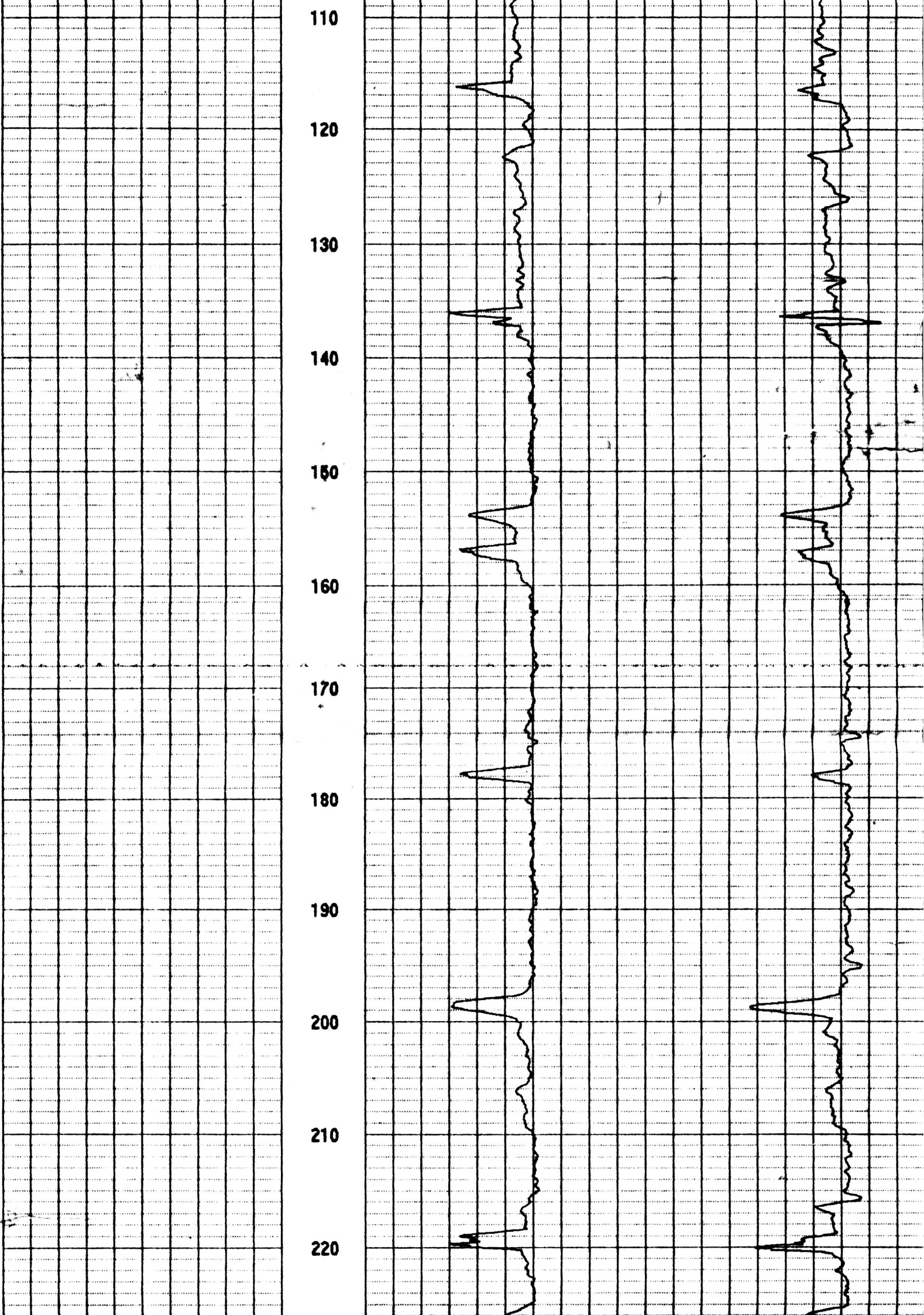
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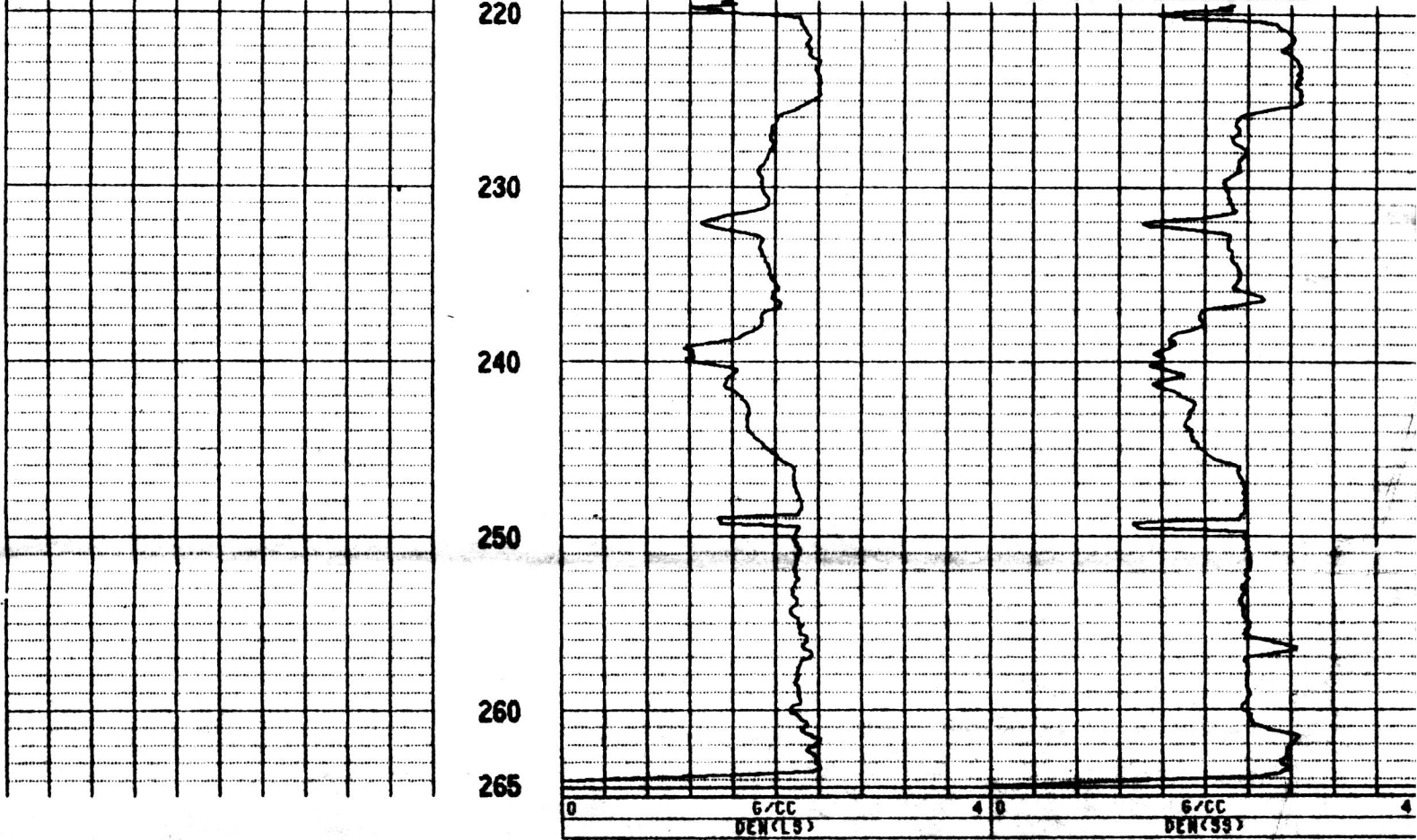
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260
265
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6/CC
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DEN(L9)
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6/CC
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DEN(59)

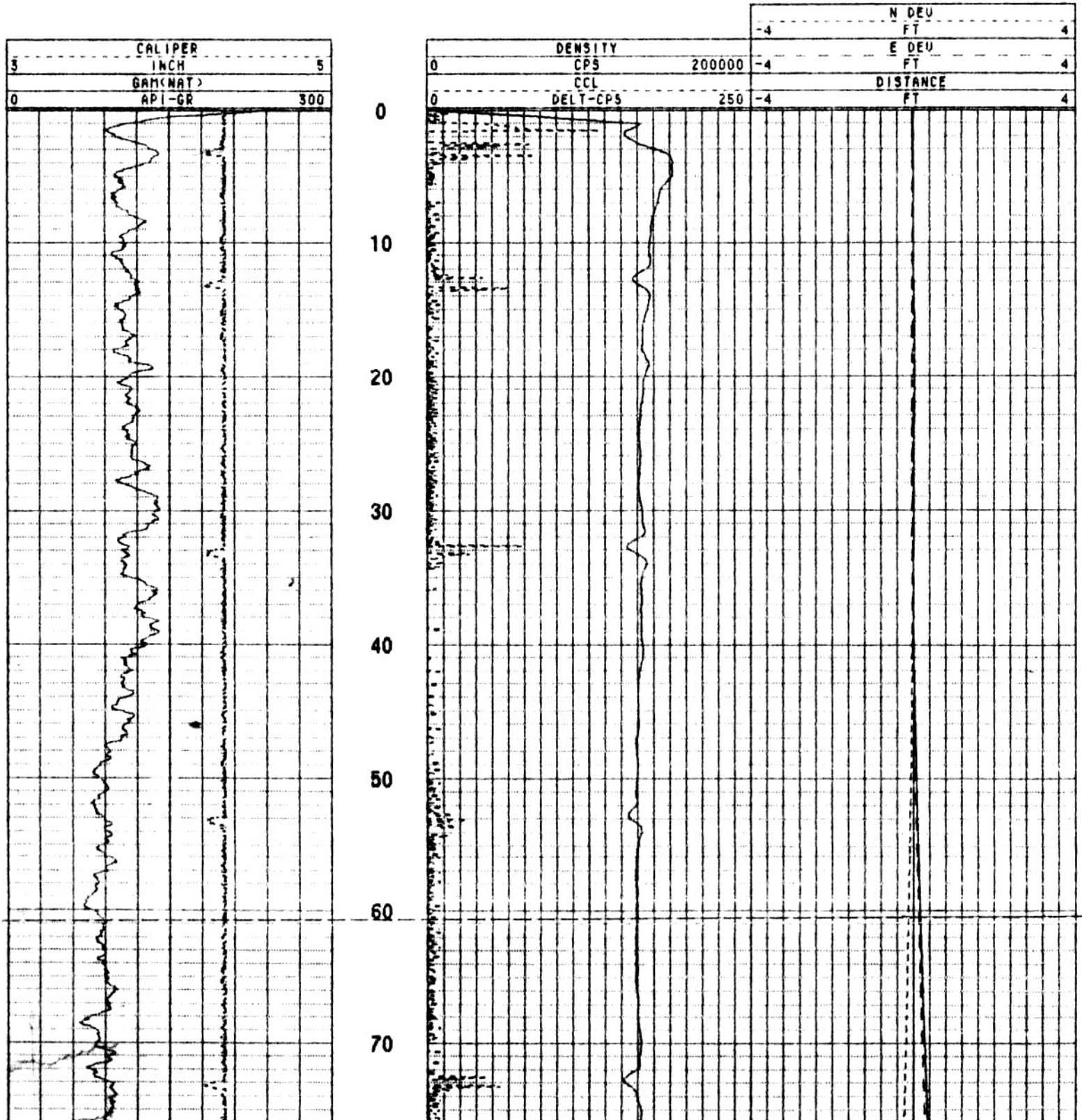


Century GEOPHYSICAL CORP.

PTX06 - 1001A

COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 1001A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/02/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 265	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 264.90	LOG MEASURED FROM:	T.O.C.	DF	:
LOG TOP	: -4.40	DRL MEASURED FROM:	T.O.C.	GL	:
CASING DRILLER	: 265	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9065A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 9
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTX 3
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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GAM(NAT)
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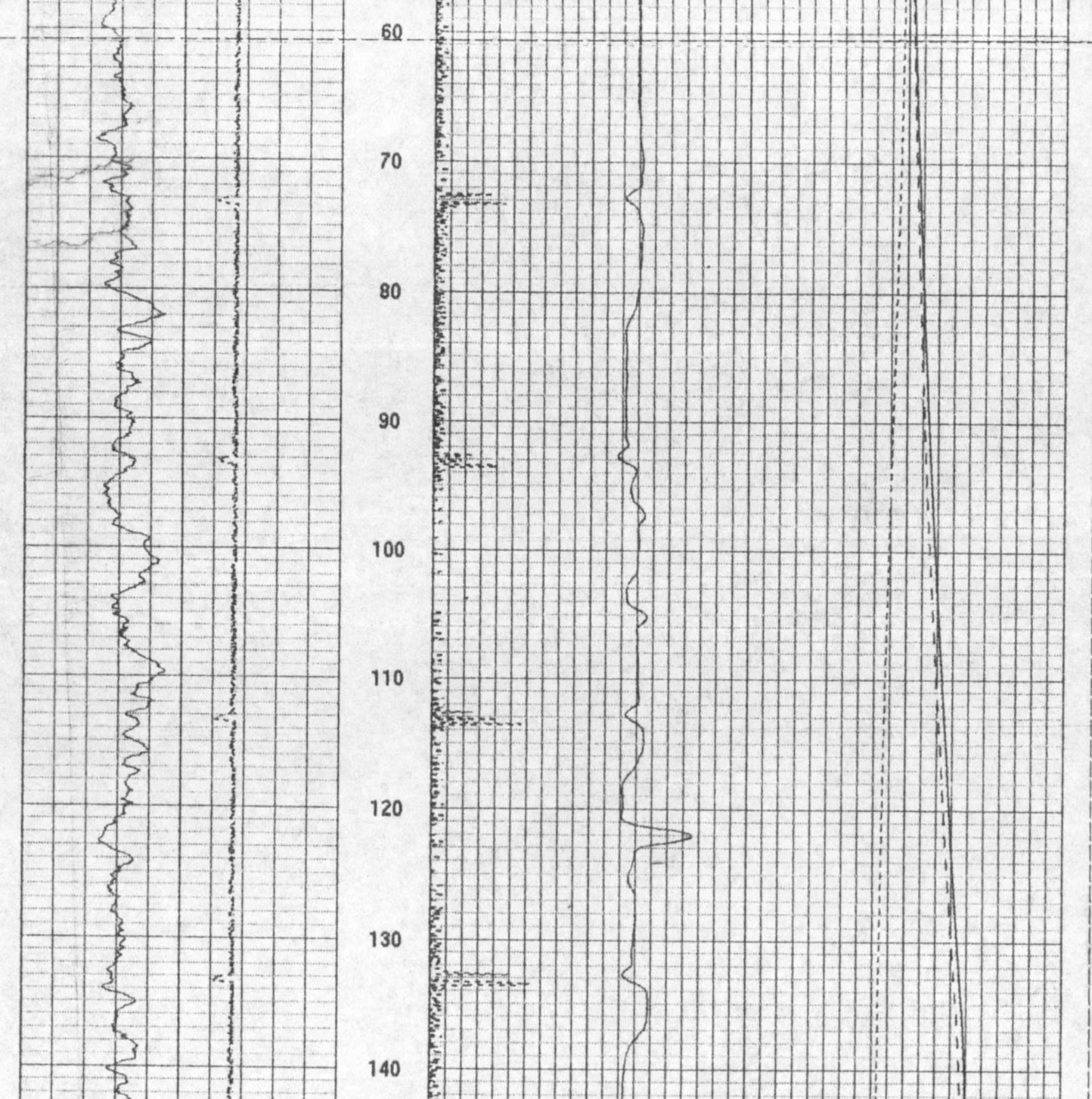
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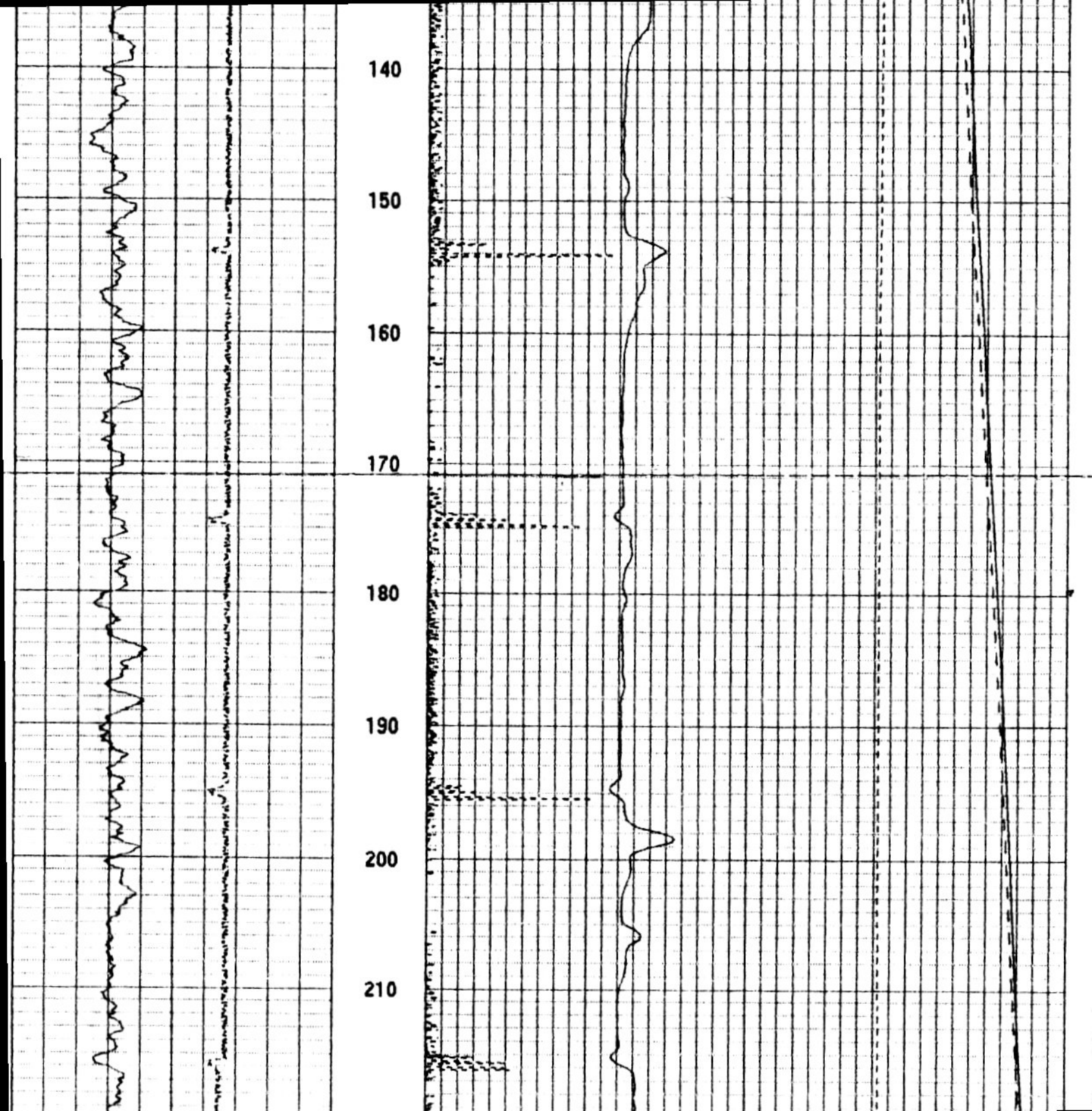
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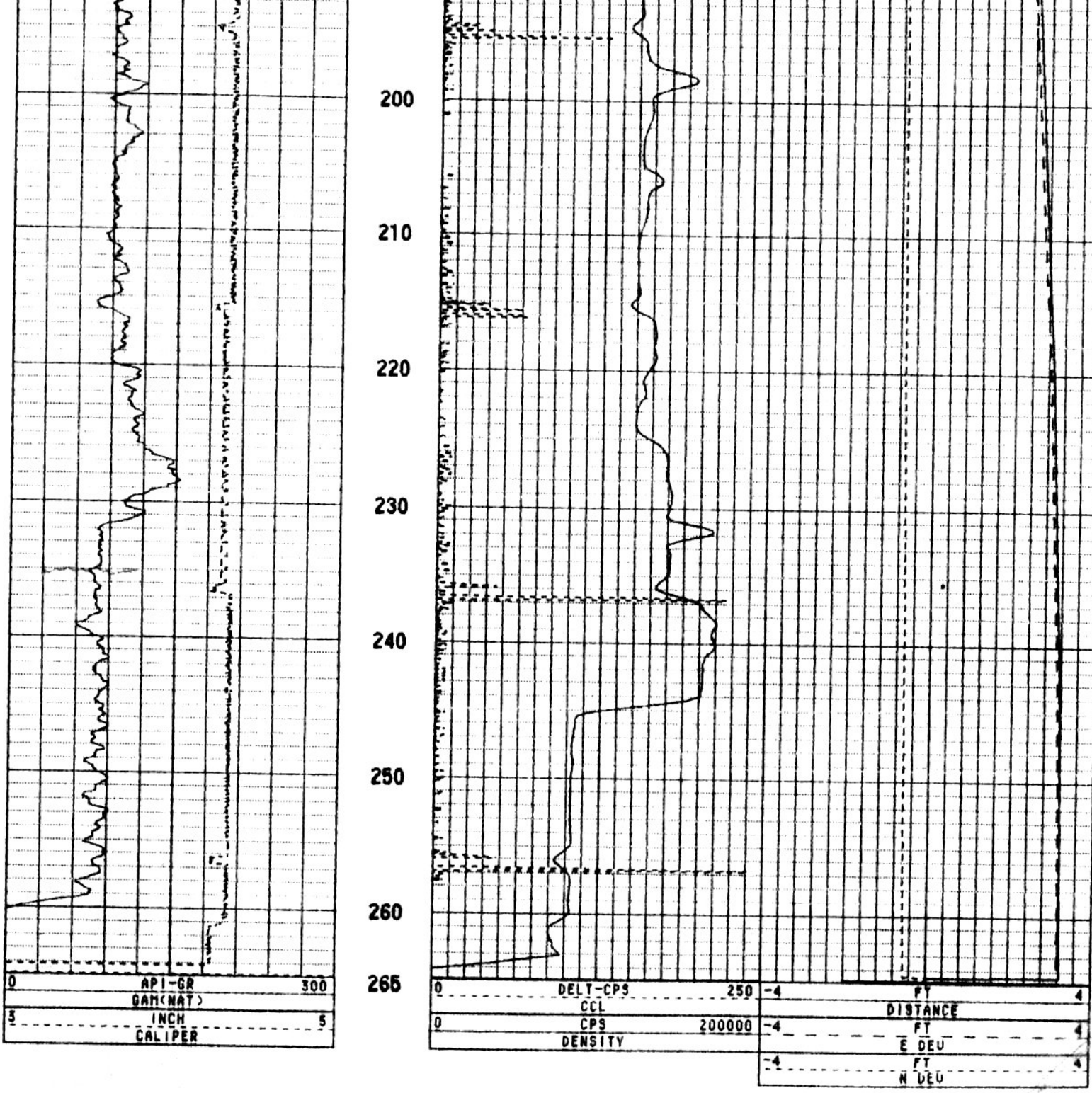
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DENSITY
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4
DISTANCE
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E DEV
-4
FT
4
N DEV

* * * * * * * CONFU-LOG - VERTICAL DEVIATION * * * * * * * *

CLIENT : E.G.&E.
FIELD OFFICE : CAIMAN VALLEY
DATA FROM :
MAG. DECL. : 14.500

HOLE ID. : FIXON - 1001A
DATE OF LOG : 12/20B/92
PROBE : 9055A
DEPTH UNITS : FEET LOG 5 245

COURSE	DEPTH	TRUE DEPTH	NORTH DEV.	EAST DEV.	DISTANCE	AZIMUTH	SANG	SANGB
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	100.00	100.00	0.00	0.00	0.00	0.00	0.00	0.00
3	200.00	200.00	0.00	0.00	0.00	0.00	0.00	0.00
4	300.00	300.00	0.00	0.00	0.00	0.00	0.00	0.00
5	400.00	400.00	0.00	0.00	0.00	0.00	0.00	0.00
6	500.00	500.00	0.00	0.00	0.00	0.00	0.00	0.00
7	600.00	600.00	0.00	0.00	0.00	0.00	0.00	0.00
8	700.00	700.00	0.00	0.00	0.00	0.00	0.00	0.00
9	800.00	800.00	0.00	0.00	0.00	0.00	0.00	0.00
10	900.00	900.00	0.00	0.00	0.00	0.00	0.00	0.00
11	1000.00	1000.00	0.00	0.00	0.00	0.00	0.00	0.00
12	1100.00	1100.00	0.00	0.00	0.00	0.00	0.00	0.00
13	1200.00	1200.00	0.00	0.00	0.00	0.00	0.00	0.00
14	1300.00	1300.00	0.00	0.00	0.00	0.00	0.00	0.00
15	1400.00	1400.00	0.00	0.00	0.00	0.00	0.00	0.00
16	1500.00	1500.00	0.00	0.00	0.00	0.00	0.00	0.00
17	1600.00	1600.00	0.00	0.00	0.00	0.00	0.00	0.00
18	1700.00	1700.00	0.00	0.00	0.00	0.00	0.00	0.00
19	1800.00	1800.00	0.00	0.00	0.00	0.00	0.00	0.00
20	1900.00	1900.00	0.00	0.00	0.00	0.00	0.00	0.00
21	2000.00	2000.00	0.00	0.00	0.00	0.00	0.00	0.00
22	2100.00	2100.00	0.00	0.00	0.00	0.00	0.00	0.00
23	2200.00	2200.00	0.00	0.00	0.00	0.00	0.00	0.00
24	2300.00	2300.00	0.00	0.00	0.00	0.00	0.00	0.00
25	2400.00	2400.00	0.00	0.00	0.00	0.00	0.00	0.00
26	2500.00	2500.00	0.00	0.00	0.00	0.00	0.00	0.00
27	2600.00	2600.00	0.00	0.00	0.00	0.00	0.00	0.00
28	2700.00	2700.00	0.00	0.00	0.00	0.00	0.00	0.00
29	2800.00	2800.00	0.00	0.00	0.00	0.00	0.00	0.00
30	2900.00	2900.00	0.00	0.00	0.00	0.00	0.00	0.00
31	3000.00	3000.00	0.00	0.00	0.00	0.00	0.00	0.00
32	3100.00	3100.00	0.00	0.00	0.00	0.00	0.00	0.00
33	3200.00	3200.00	0.00	0.00	0.00	0.00	0.00	0.00
34	3300.00	3300.00	0.00	0.00	0.00	0.00	0.00	0.00
35	3400.00	3400.00	0.00	0.00	0.00	0.00	0.00	0.00
36	3500.00	3500.00	0.00	0.00	0.00	0.00	0.00	0.00
37	3600.00	3600.00	0.00	0.00	0.00	0.00	0.00	0.00
38	3700.00	3700.00	0.00	0.00	0.00	0.00	0.00	0.00
39	3800.00	3800.00	0.00	0.00	0.00	0.00	0.00	0.00
40	3900.00	3900.00	0.00	0.00	0.00	0.00	0.00	0.00

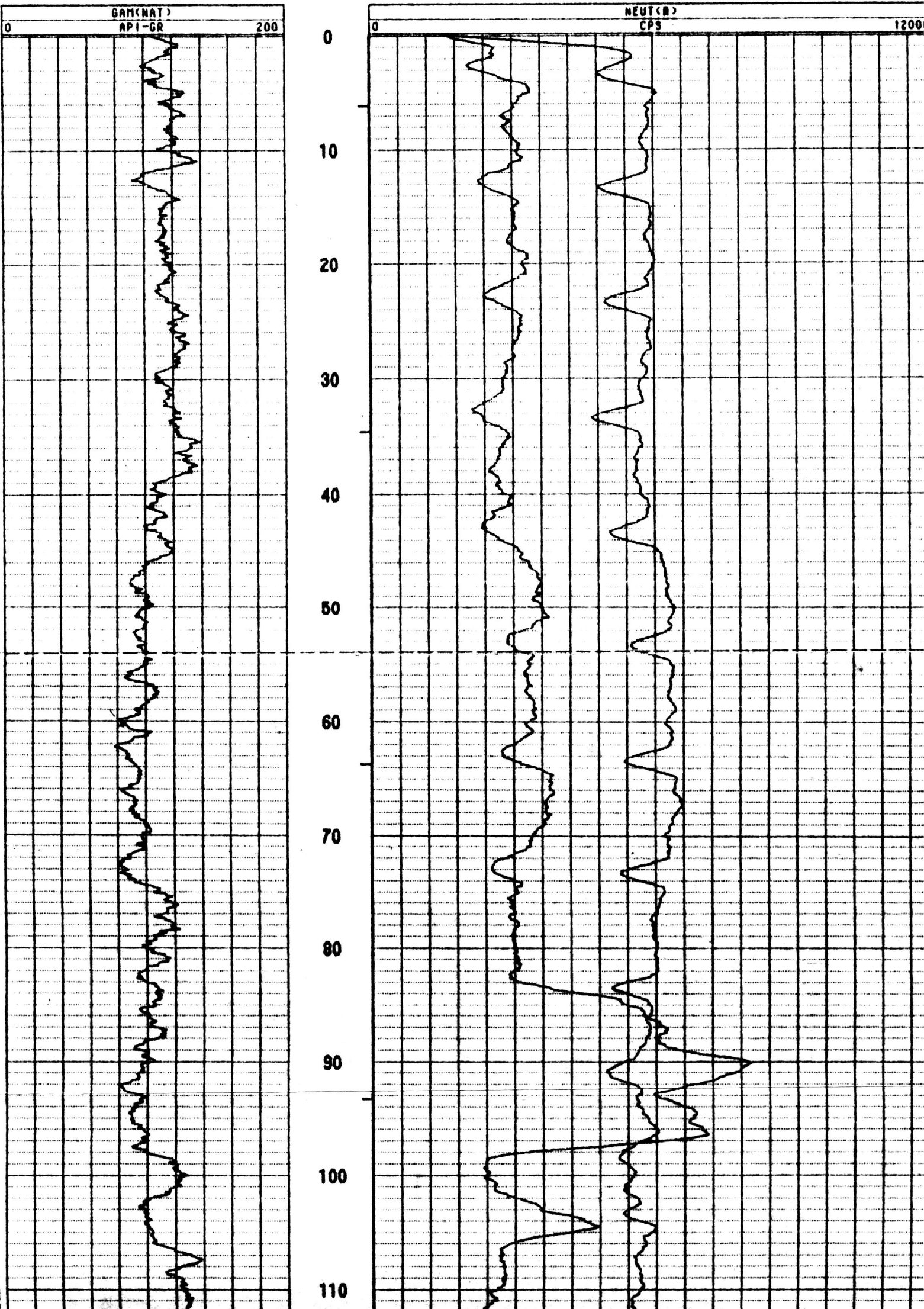


Century GEOPHYSICAL CORP.

PTX06 - 1001A

COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1001A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 11/16/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 264	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 262.20	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -9.90	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 264	LOGGING UNIT	: 9010		
CASING TYPE	: D.W.STEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 3	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9071A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 4
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PIXF 3
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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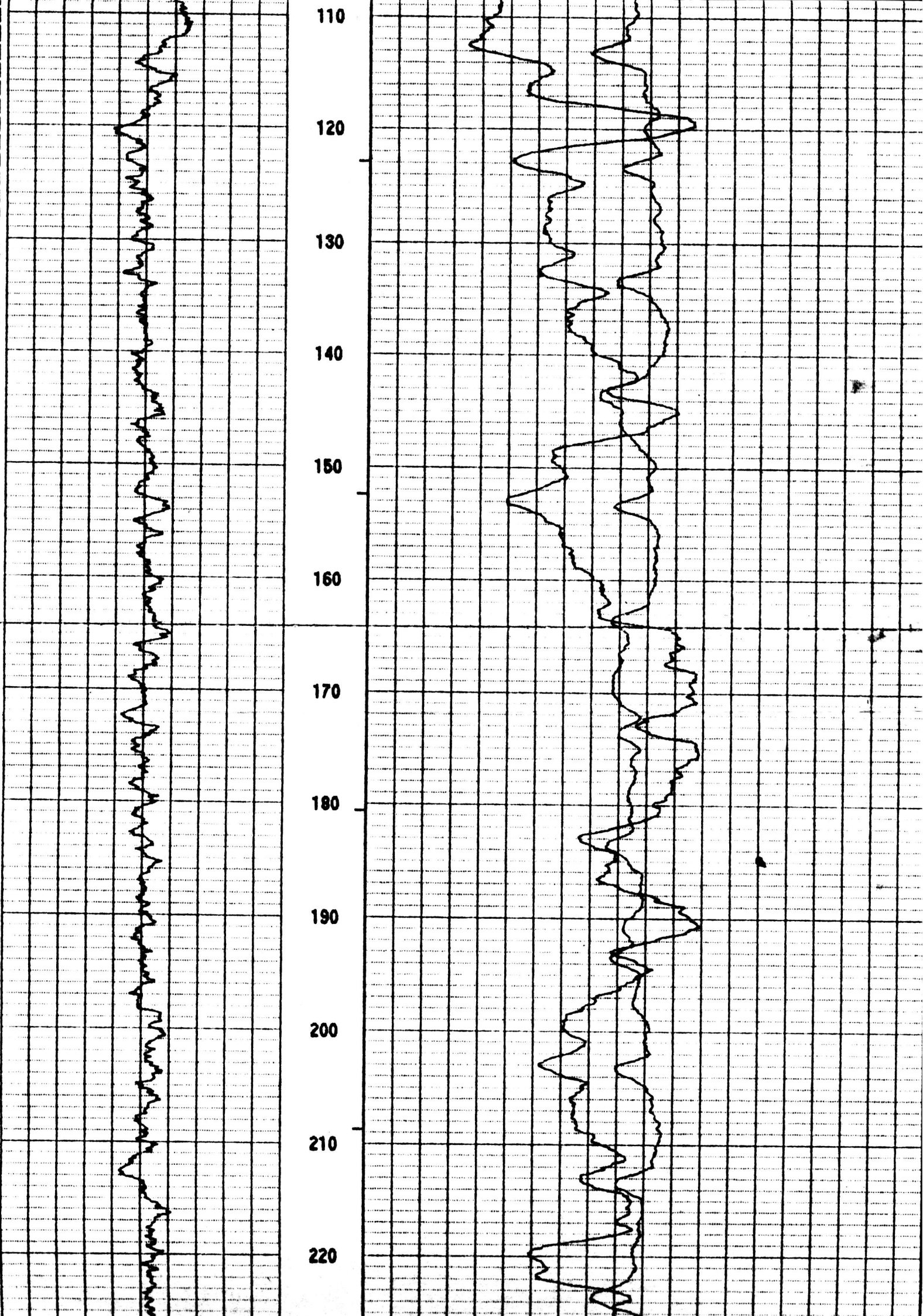
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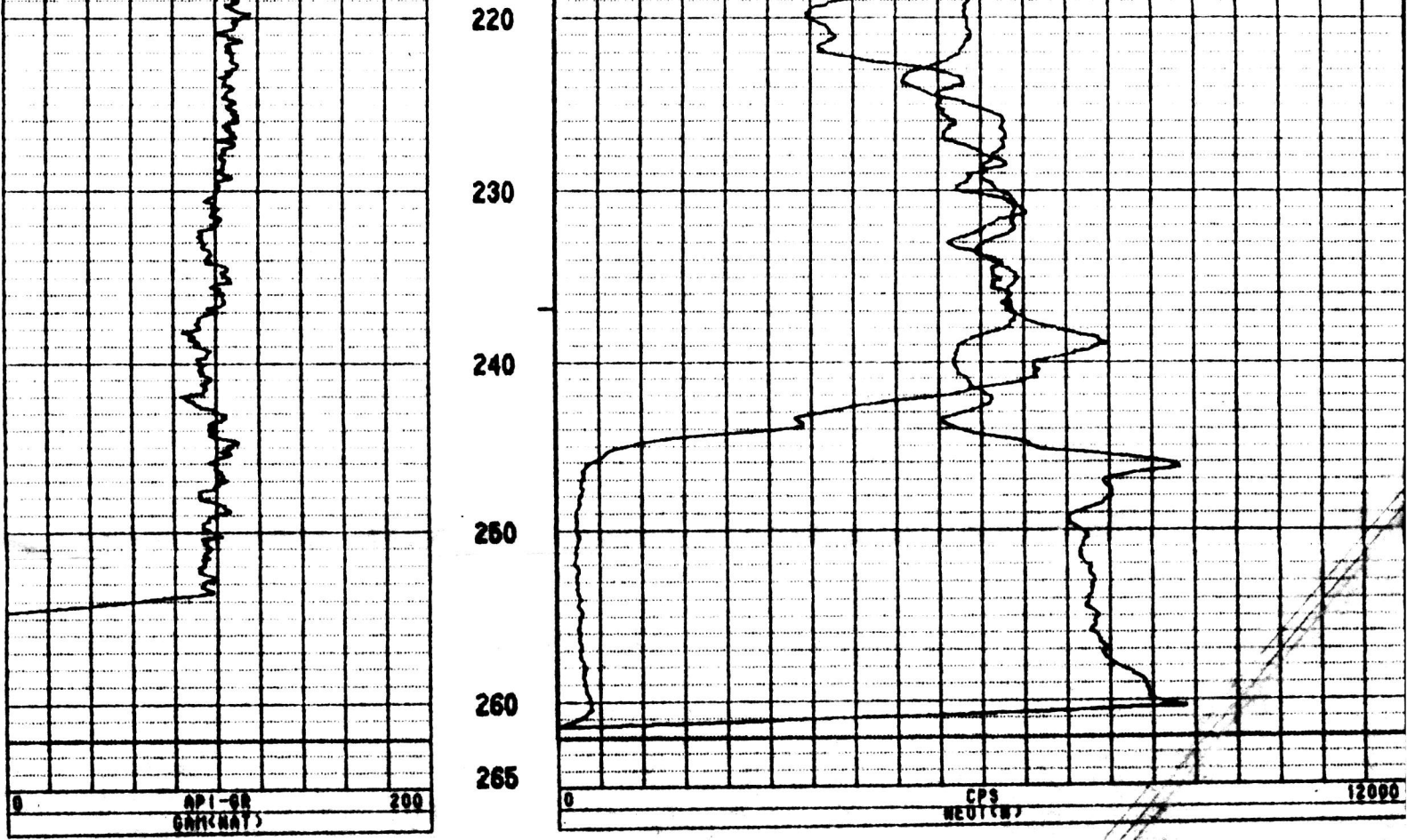
220
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265
0
API-GR
200
GAM(RAT)
0
CPS
12000
NEUT(R)

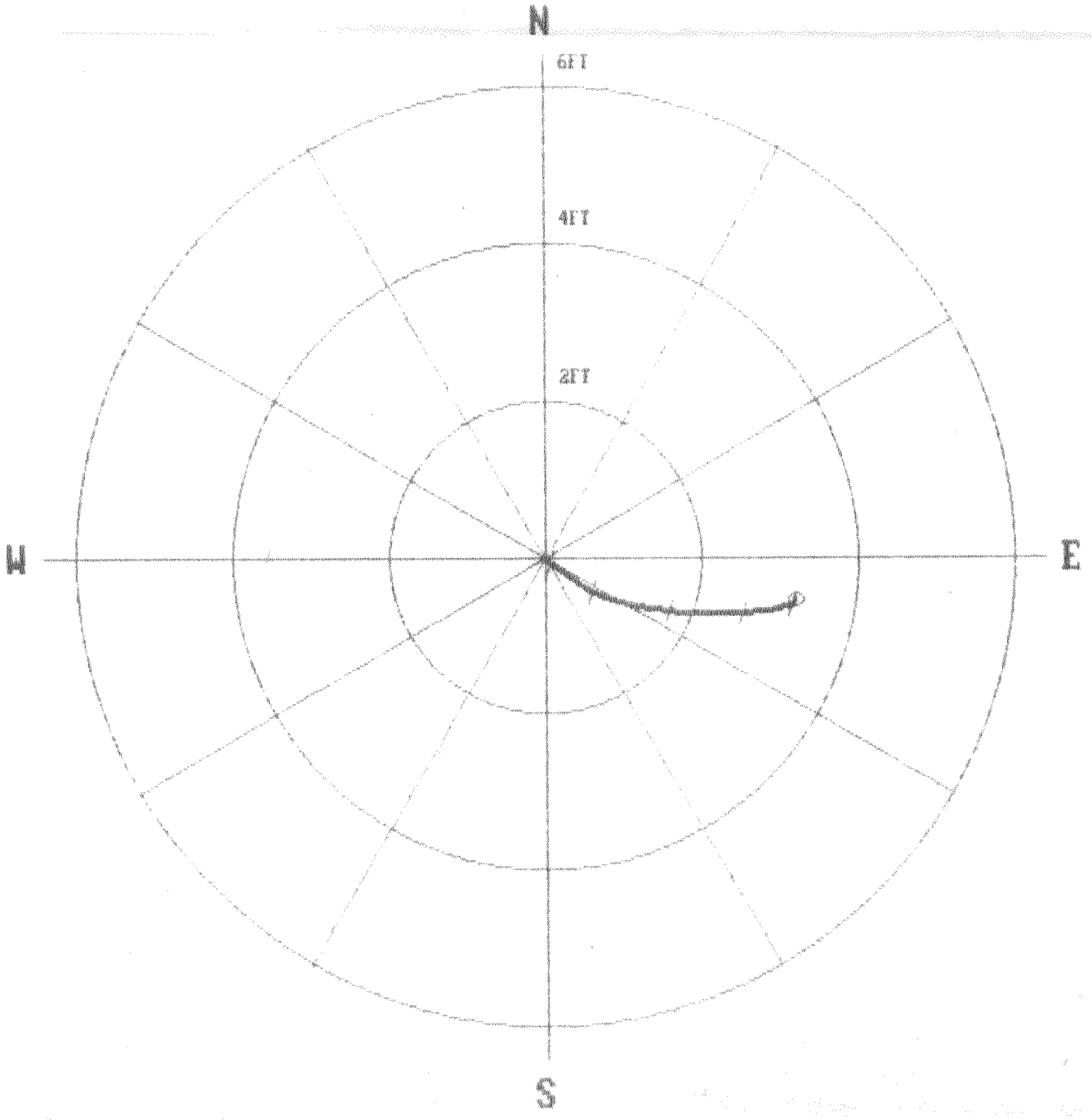
PLAN VIEW

COMPU-LOG DEVIATION

CLIENT: E.S.E
LOCATION: PANTEX
HOLE ID: PTX06 - 1001A
DATE OF LOG: 12/08/92
PROBE: 9055A 245

MAG DECL: 14.5

SCALE: 2 FT/IN
TRUE DEPTH: 264.27 FT
AZIMUTH: 99.5
DISTANCE: 3.2 FT
+ = 50 FT INCR
○ = BOTTOM OF HOLE



Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711

Please use black ink.

ATTENTION OWNER: *Confidentially*
Privilege Notice on Reverse Side

State of Texas WELL REPORT

D.I.M.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** US. Dept. of Energy-Pantex (Name) **ADDRESS** HIWAY 60 at FM 2373 (Street or RFD) Amarillo (City) Tx (State) 79177 (Zip)

2) **LOCATION OF WELL:** County CARSON . 15 miles in NE (NE, SW, etc.) direction from Amarillo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** PTX06-1001-A (1001 failed - Plugging Report Filed)

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

D.I.M.

5) **DRILLING METHOD (Check):**
☒ Driven ☐ Mud Rotary ☒ Air Hammer ☐ Jetted ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**

Date Drilling:
Started 11-9 19 92
Completed _____ 19 __

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9 1/4	Surface	264

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 264 ft. to 232 ft.
Bentonite Seal 232-225

From (ft.)	To (ft.)	Description and color of formation material
0	10	Brown Clay
10	52	TAN Clay
52	85	Clayey Sand w/Gravel & Silt HARD
85	102	Silty Sand
102	150	Brown Clay Very HARD
150	225	Sand. Fine TAN
225	264	Coarse Sand w/Gravel
264		Brown C

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4 1/2	N	Stainless Sump	264	261	Sch 10
4 1/2	N	Stainless Screen .010	261	236	.010
4 1/2	N	Stainless Steel Riser	236	3' AGL	Sch 10

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 225 ft. to 3 ft. No. of Sacks Used 79
_____ ft. to _____ ft. No. of Sacks Used _____
Method used TREMIE
Cemented by LAYNE INC

10) **SURFACE COMPLETION**
☐ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☒ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 248 ft. below land surface Date 11-22
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N/A Type Depth

13) **TYPE PUMP:** N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☒ Bailer ☐ Jetted ☐ Estimated
Yield: 4-5 gpm with 0 ft. drawdown after 3 hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE-INC. (Type or print) **WELL DRILLER'S LICENSE NO.** 2883-W

ADDRESS 1011 WEST HARRY (Street or RFD) WICHITA (City) KS (State) 67213 (Zip)

(Signed) Randy Swearengen (Licensed Well Driller) **(Signed)** Mona S Atherton (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

TWC-0199 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

PTX06-1002A

aka: <other names>

Contractor: USACE, Tulsa Dist.
Contract #:
Contractor's Project #:
Drilled date: 01/15/1993 - 01/25/1993
Drilling Contractor: Layne Drilling, Inc.

OPTIX #: <if known>
Last Update: <mm/dd/yyyy>

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- ___ Draft
- ___ Final

___ Draft Installation Log/Diagram (handwritten/drawn)
___ Final Installation Log/Diagram (computer-generated)

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (computer-generated)

Geophysical Logs
- _X_ Neutron
- _X_ Gamma
- ___ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

_X_ State Well Report
___ State Plugging Report

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 1 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3535	0	HS	1	60	5-7 20-47			(CL) CLAY, silty, with trace very fine grained sand, trace organics to 2 ft, brown, hard, moist at surface
3530	5							6 ft - sand content increases, becomes gray and brown, with occasional caliche inclusions in layers from 1 to 3 feet thick, very hard, dry
3525	10	HS	2	70	25-56 75-56			
3520	15							15 ft - becomes moist to dry
3515	20							
3510	25							
3505	30	HS	3	60	26-75 96/1.5			

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 2 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3500	40							as above CL
3495	45							
3490	50	HS	4	70	25-80 40/1			
3485	55							
3480	60							
3475	65							
3470								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 3 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3465								as above CL
	75							(SC) SAND, clayey, silty, fine to coarse grained, with occasional calcareous gravel, red-brown, moist
3460								
	80							
3455								
	85							
3450								87 ft - clay content increases
	90							
3445								
	95							(SM) SAND, with some to trace silt, fine grained, light brown, dry
3440								
	100							
3435								

Dynamic Pentration Resistance Blows/ft × 8 16 24 32

Neutron (F) cts/sec 2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 4 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3430								as above SM
	110							110 to 133 ft - with occasional 1- to 2-foot beds of red-brown silt and clay with fine grained sand
3425								
	115							
3420								
	120							
3415								
	125							
3410								
	130							
3405								CALICHE, soft, dry, arenaceous, siltaceous (non-bedded sandstone)
	135							
3400								

Dynamic Pentration Resistance
Blows/ft X
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 5 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3395								as above CALICHE
	145							(SM) SAND, with some silt, fine grained, light brown, very dense, dry - with occasional well-indurated zones
3390								
	150							
3385								
	155							
3380								
	160							
3375								
	165							
3370								
	170							
3365								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 6 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3360	180	HS	5	50	14-45 85			as above SM
3355								
	185							
3350								
	190							
3345								
	195							
3340								
	200							
3335								
	205							
3330								

Dynamic Pentration Resistance
Blows/ft
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1002A

Sheet No. 7 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3325	215							as above SM 212 ft - becomes buff to light brown
3320	220							220 ft - becomes light brown, with occasional calcareous cemented nodules of sand
3315	225							
3310	230							
3305	235							SAND, gravelly (rounded), fine to coarse grained
3300	240							SAND and GRAVEL, fine to coarse grained, with cobbles and some silt, moist
3295								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex Amarillo, Texas	Log of Boring No. 06-1002A	Sheet No. 8 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	1/15/93
Project Number:	3922022G	Boring Completed:	1/25/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	T. Elder	Surface Elevation:	3537.31 ft
Logged By:	E. Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3539.52 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	Becker 180

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3290								as above - SAND and GRAVEL 246 to 247 ft - becomes wet
	250							SAND, gravelly, fine to coarse grained, light brown, very dense, wet, occasionally well cemented
3285								
	255							
3280								
	260							261 ft - with trace clay inclusions
3275								
	265							
3270								
	270	HS	6	50	18-28 35-33			
3265								BORING TERMINATED AT 273 FT BGS

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Century GEOPHYSICAL CORP.

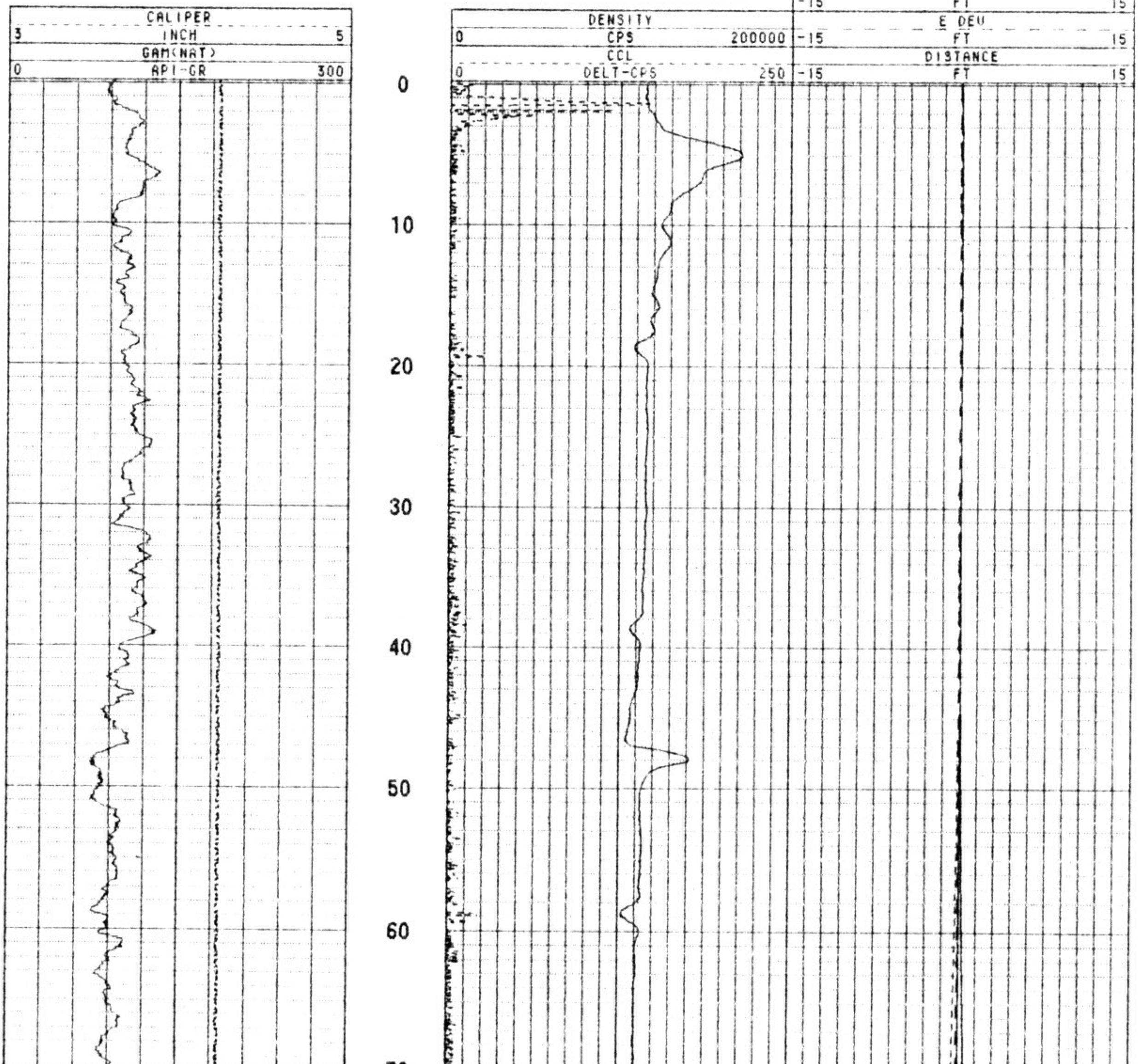
PTX06 - 1002A

COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1002A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 01/26/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 272	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 272.70	LOG MEASURED FROM:	T.O.P.	DF	:
LOG TOP	: -5.90	DRL MEASURED FROM:	G.L.	GL	:
CASING DRILLER	: 272	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS:	.25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 98516
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXF 1
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH:	500000
REMARKS	:				

LOG MEASURED FROM TOP OF PAD

STAINLESS STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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250
N DEV
-15
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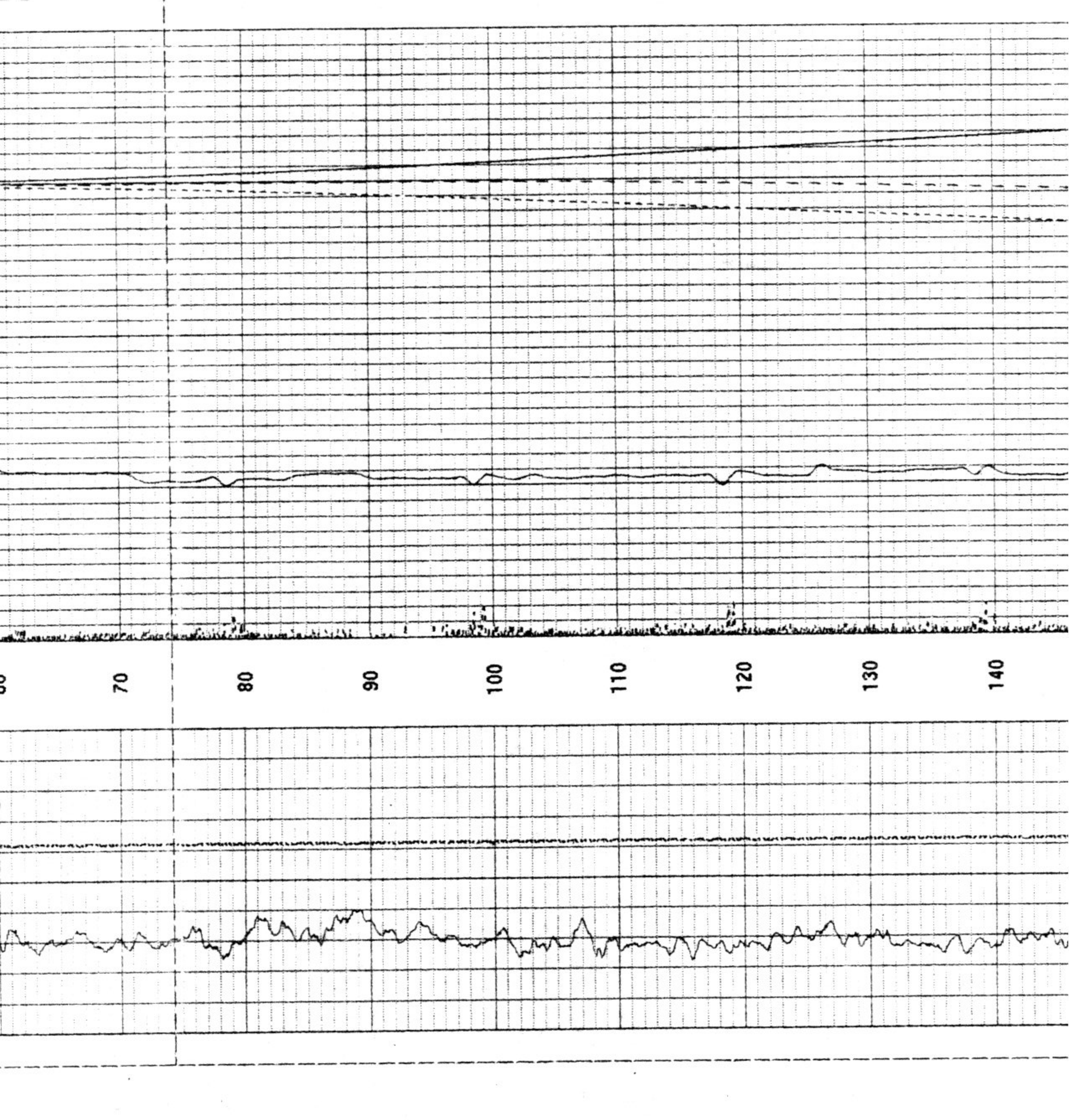
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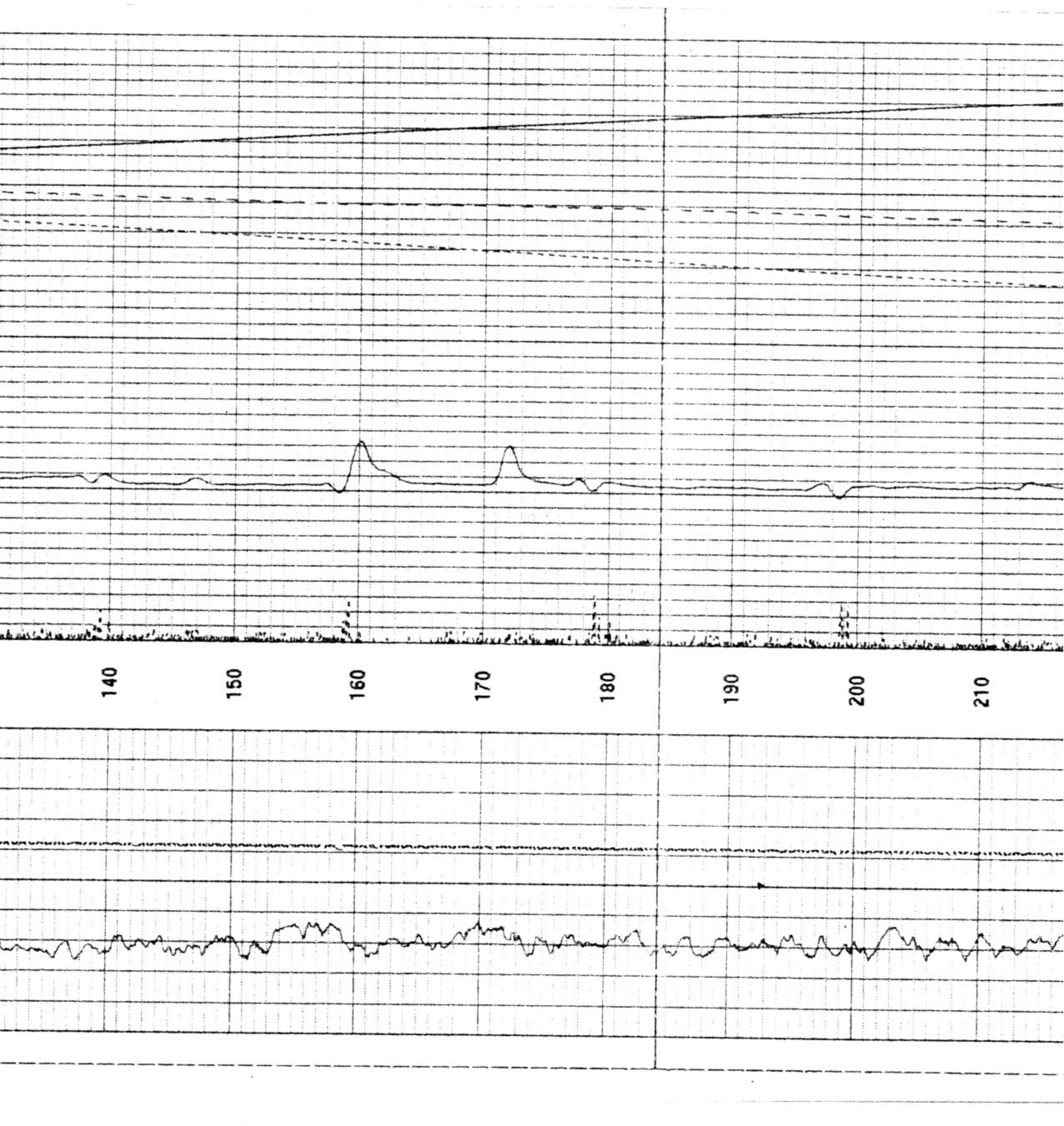
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270

275

0 API-GR 300
GAM(NAT)

3 INCH 5
CALIPER

0 DELT-CPS 250
CCL

0 CPS 200000
DENSITY

-18 FT 15
DISTANCE

-15 FT 15
E DEV

-15 FT 15



Century GEOPHYSICAL CORP.

PTX06 - 1002A

COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1002A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 01/26/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 272	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 272.30	LOG MEASURED FROM	: T.O.P.	DF	:
LOG TOP	: -11.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 272	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9035AA
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 9
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXT 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

LOG MEASURED FROM TOP OF PAD

STAINLESS STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS


DEN(CDL)
0
G/CC
4
DEN(LS)
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G/CC
4
DEN(SS)
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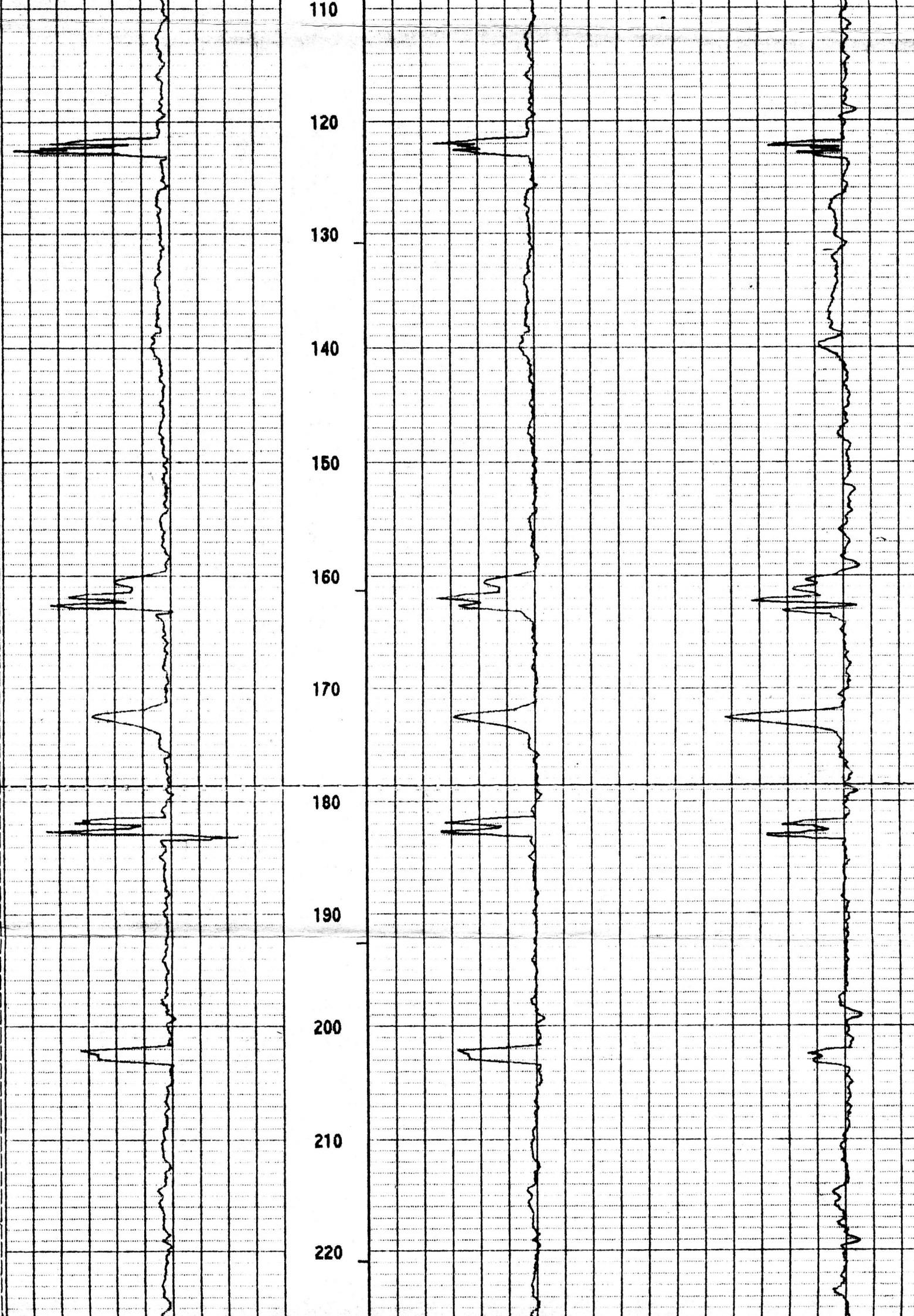
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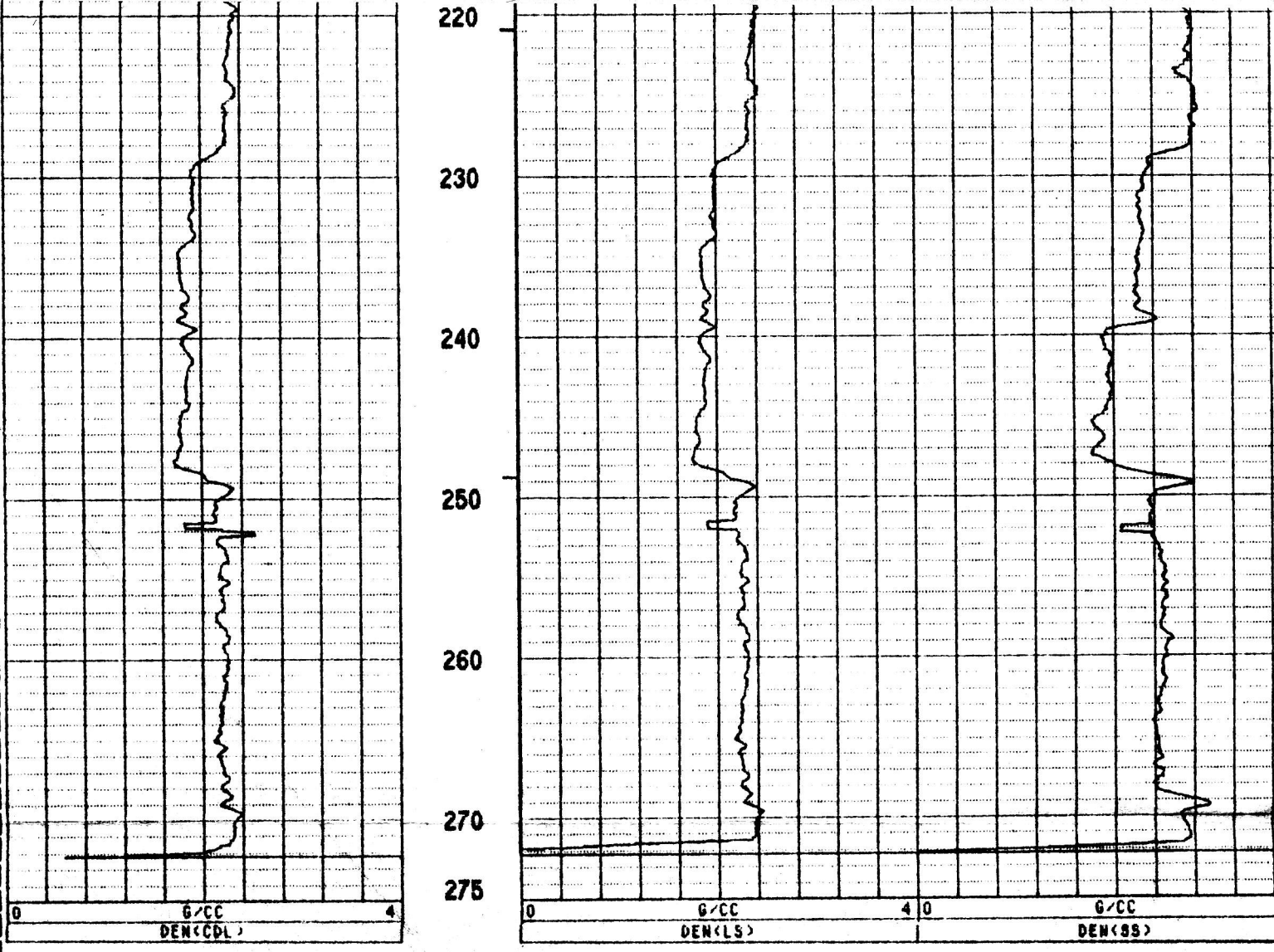
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G/CC
4
DEN(LS)
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G/CC
DEN(SS)

Century GEOPHYSICAL CORP.

PTX06 - 1002A

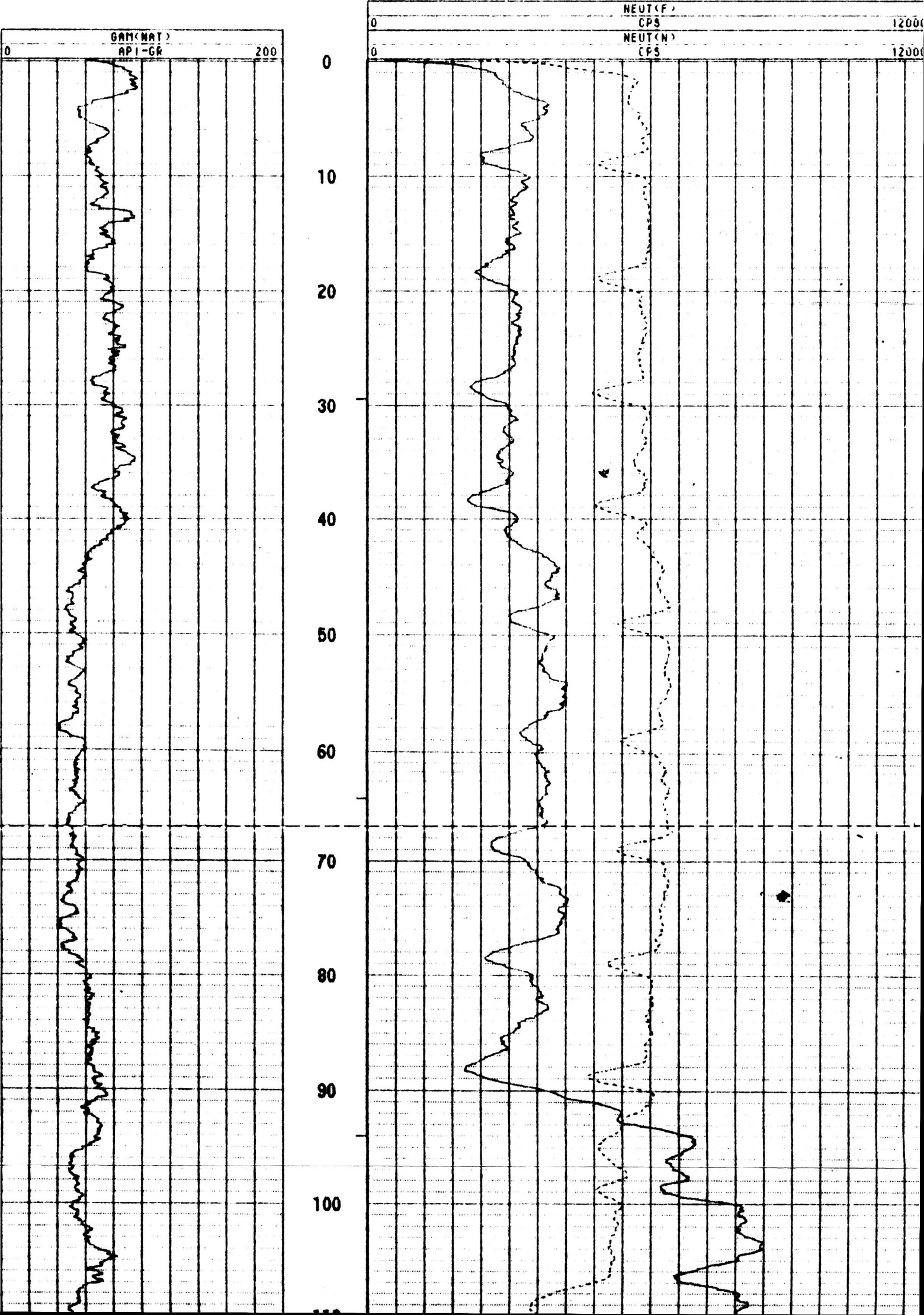
COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 1002A				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 01/28/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 272	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 255.90	LOG MEASURED FROM:	G.L.	DF	:
LOG TOP	: -7.00	DRL MEASURED FROM:	G.L.	GL	:
CASING DRILLER	: 272	LOGGING UNIT	: 9103		
CASING TYPE	: B.H.STEL	FIELD OFFICE	: CANYON VALLEY		
CASING THICKNESS:	3	RECORDED BY	: R.FEDERITSCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9071D
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 3
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PIXE 3
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH:	500000

REMARKS :

LOG MEASURED FROM GROUND LEVEL

DOUBLE WALL STEEL CASING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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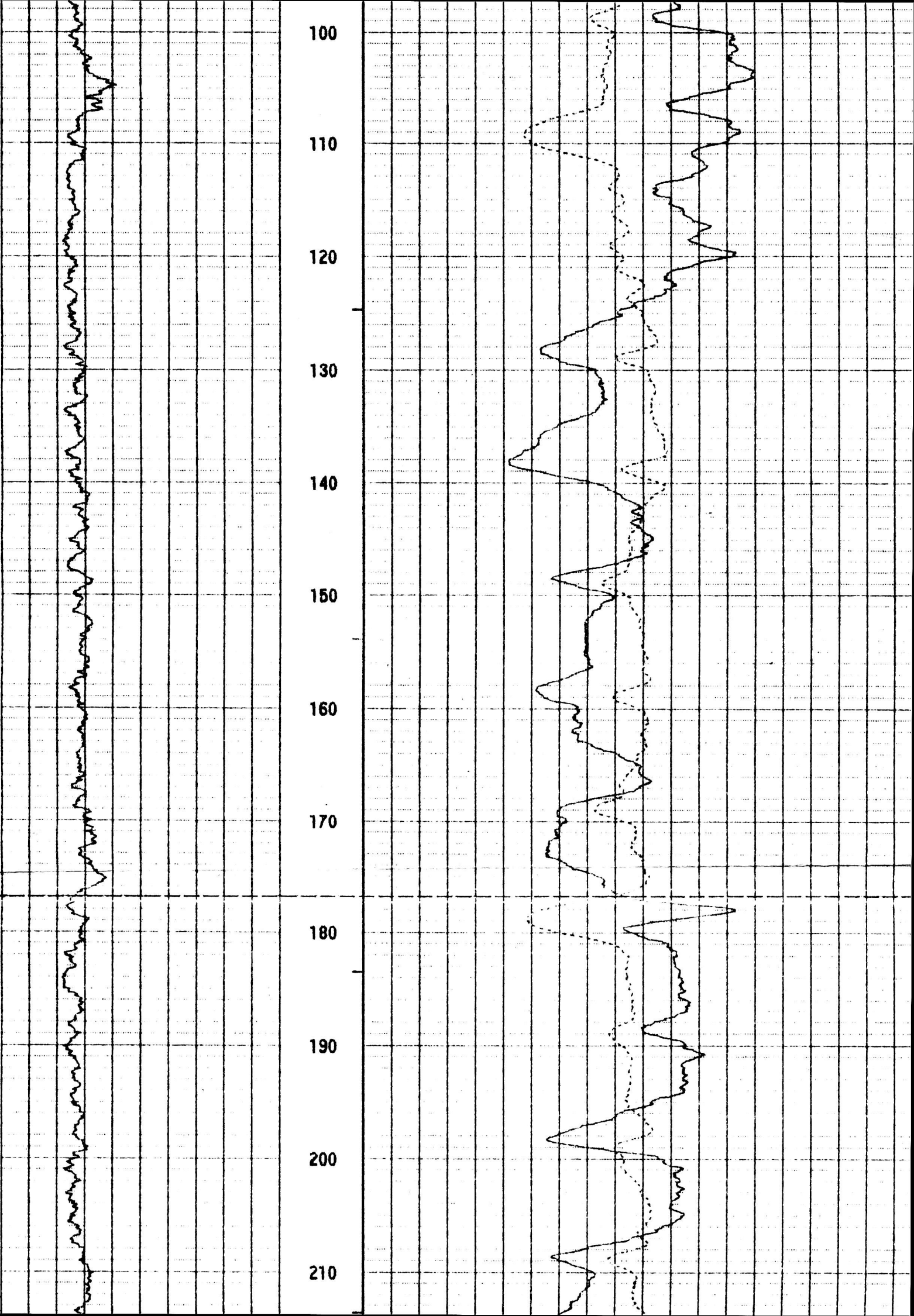
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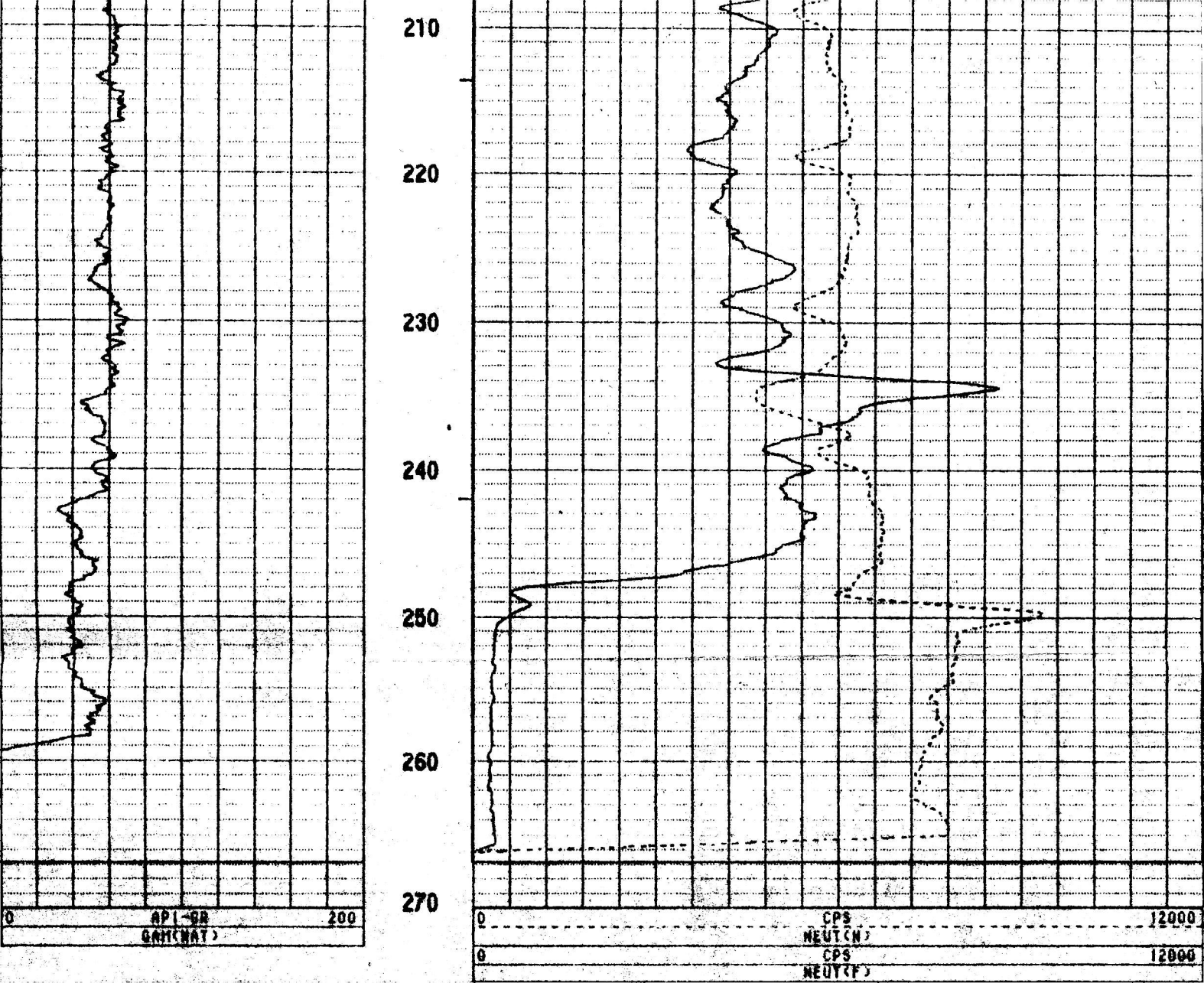
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API-GR
200
GAM(NAT)
0
CPS
12000
NEUT(N)
0
CPS
12000
NEUT(F)

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** US Dept of Energy-Pantex (Name) **ADDRESS** FM 2373 @ Hiway 60 Amarillo Tx 79177 (Street or RFD) (City) (State) (Zip)

2) **LOCATION OF WELL:** County CARSON . 15 miles in NE (NE, SW, etc.) direction from AMARILLO (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** PTX 06-1002-A

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):**
☐ Mud Rotary ~~☒ Air Hammer~~ ☐ Jetted ☐ Bored ~~☒ Air Rotary~~ ☐ Cable Tool ☒ Other AIR REVERSE ☒ Driven

6) **WELL LOG:**
Date Drilling: Started 1-15 1993 Completed 2-9 1993

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9 1/4	Surface	270
3"	270	272

7) **BOREHOLE COMPLETION:** DLM
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 272 ft. to 227.5 ft.
Bentonite Seal 227.5 to 222.5

From (ft.)	To (ft.)	Description and color of formation material
0	7	Brown Clay
7	20	Fine Sand - w/caliche
20	75	Brown Clayey Silt w/ Sand & Caliche
75	130	Coarse Sand & Gravel
130	145	Sandstone - Soft
145	230	Sand - fine Brown
230	272	Sand & Gravel

TEXAS WATER COMMISSION

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	316 Stainless steel	272	269	Sch 10
4	N	Stainless Screen	269	239	.010
4	N	316 Stainless Steel	239	2.6' AGL	Sch 10

1993

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 225 ft. to 3 ft. No. of Sacks Used 91
_____ ft. to _____ ft. No. of Sacks Used _____
Method used TREMIE
Cemented by LAYNE INC

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☒ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 249 ft. below land surface Date 1-23-93
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N/A

Type	Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other Submersible Aston (Bennett)
Depth to pump bowls, cylinder, jet, etc., 268 ft.

14) **WELL TESTS:**
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 9 gpm with 1 ft. drawdown after 2 hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE INC (Type or print) **WELL DRILLER'S LICENSE NO.** 2883-W

ADDRESS 1011 West Harry (Street or RFD) Wichita (City) Ks (State) 67213 (Zip)

(Signed) Randy Silvernagel (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

PTX06-1007

Contractor:ESE

Contract #:3922022G

OPTIX #:

Included Documents

___Drilling Log
___Draft
___Final

___Installation Log

_X_Lithologic Logs
___Draft
_X_Final

_X_Geophysical Logs
_X_Neutron
___Gamma
___e-log
___Bond Log
_X_Deviation log

___State Well Report

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 1 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3540	0	HS		80	2-4 17-24			(CL) CLAY, silty, with some organics at surface, dark brown, hard, moist becoming dry with depth 2 ft - becomes tan, with more silt, with caliche inclusions
3535	5							
	10	HS		80	34-53			10 ft - becomes brown with black specks, with caliche inclusions, very hard, dry
3530	15							
3525	20	HS		60	25-35 50/R			
3520	25							
3515	30	HS		80	38 50/4			30 ft - without black specks
3510								

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 2 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3505								as above CL
	40	HS		60	32-45 50/3			
3500								
	45							
3495								
	50	HS			34-50 55/3			
		HS		40	29-60			51.5 ft - becomes tan with gray, platey, hard material
3490								
	55							
3485								
	60							
3480								CALICHE (CL) CLAY, silty, with caliche inclusions, red-brown, very hard, dry
	65							
3475								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 3 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3470	75							as above CL
3465	80							CALICHE (CL) CLAY, silty, with caliche nodules and thin layers (less than above), red-brown, very hard, dry
3460	85							
3455	90							
3450	95							
3445	100	HS		60	14 50/1.5			(SC) SAND, with silt and clay, fine grained, tan, very dense, dry, non-cohesive (SM) SAND, silty, with caliche inclusions, fine grained, tan to light brown, very dense, dry
3440								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 4 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3435	110							as above SM
								110 ft - with less caliche
3430	115							
3425	120							
3420	125							
3415	130							
3410	135							CALICHE
3405								(SM) SAND, silty, fine grained, light brown to tan, very

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 5 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION	Dynamic Pentration Resistance Blows/ft (8 16 24 32) / Neutron (F) cts/sec (2000 4000 6000 8000)
3400	145							dense, dry, with very few caliche inclusions - as above SM	
3395	150								
3390	155								
3385	160								
3380	165								
3375	170								
3370									

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ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 6 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		HS		50	22-37			as above SM
3365								
	180							
3360								
	185							
3355								
	190							
3350								
	195							
3345								
	200	HS		50	28-24			
					50/2			
3340								
	205							
3335								

Dynamic Pentration Resistance
Blows/ft
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 7 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3330	215							as above SM
3325								
	220							
3320								
	225							
3315								
	230							230 ft - with some fragments of cemented sand in very thin layers
3310								
	235							
3305								
	240							
3300								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 8 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3295								as above SM
	250	HS		40	41-85			250 ft - becomes slightly moist, with few fragments of cemented silt/sand
3290								
	255							
3285								
	260							
3280								(SC) SAND, slightly clayey, fine to medium grained, very dense, moist, with few cemented fragments
	265							
3275 ▽								
	270							SAND and GRAVEL, fine to coarse grained sand, tan to white, very dense, moist
3270								
	275							275 to 276 ft - wet
3265								278 ft - with gravel to 4 cm in diameter

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1007

Sheet No. 9 of 9

Client:	USACE, Tulsa Dist.	Boring Started:	1/13/93
Project Number:	3922022G	Boring Completed:	1/24/93
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.05 ft
Logged By:	G. Johnson	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.73 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3260								280 - as above SAND and GRAVEL, with cobbles and rounded sandstone fragments, very dense, wet
	285							
3255								
	290							(SC) SAND, clayey
3250		HS		60	31-29 37-37			(CL) CLAY, silty, sandy, brown, very hard, moist to dry
	295							BORING TERMINATED AT 295 FT BGS

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

85
90
95

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Century GEOPHYSICAL CORP.

PTX06 - 1007

COMPANY	: E.S.E	OTHER SERVICES:	
WELL	: PTX06 - 1007		
LOCATION/FIELD	: PANTEX		
COUNTY	: CARSON		
STATE	: TEXAS		
SECTION	:	TOWNSHIP :	RANGE :

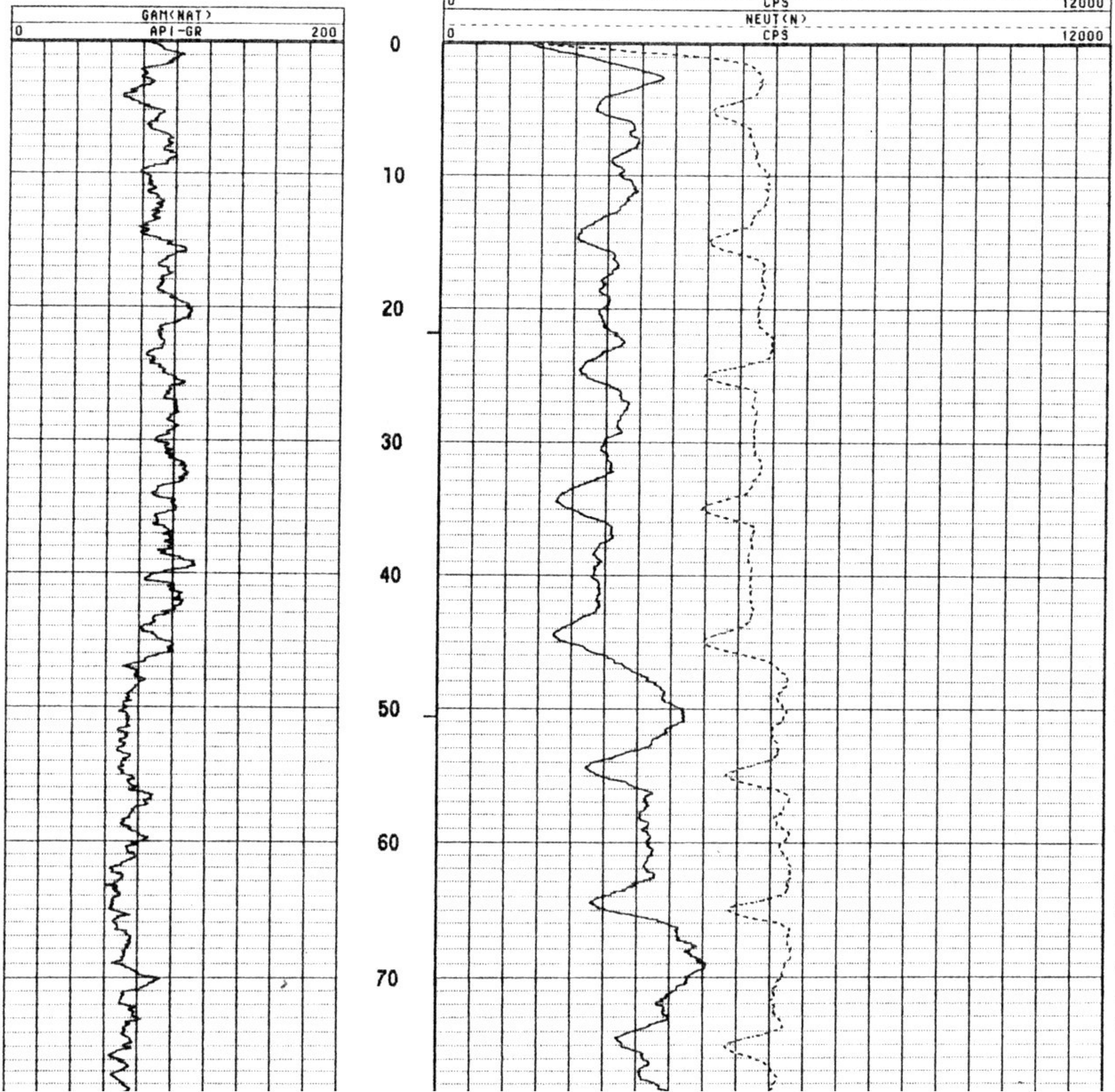
DATE	: 01/15/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 293	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 296.80	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -13.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 293	LOGGING UNIT	: 9103		
CASING TYPE	: D.W.STEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 3	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9071A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXF 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

LOG MEASURED FROM GROUND LEVEL

DOUBLE WALL STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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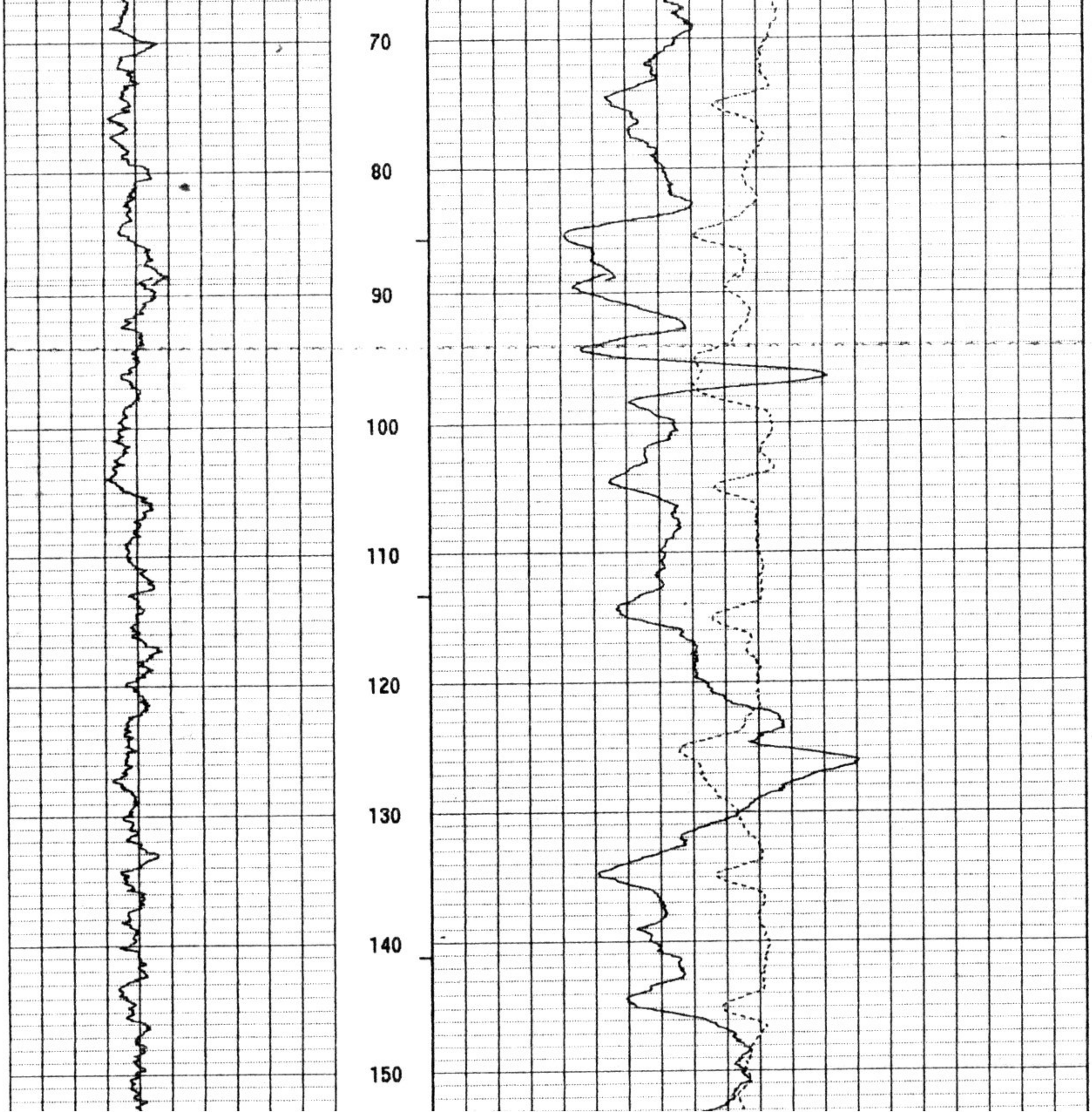
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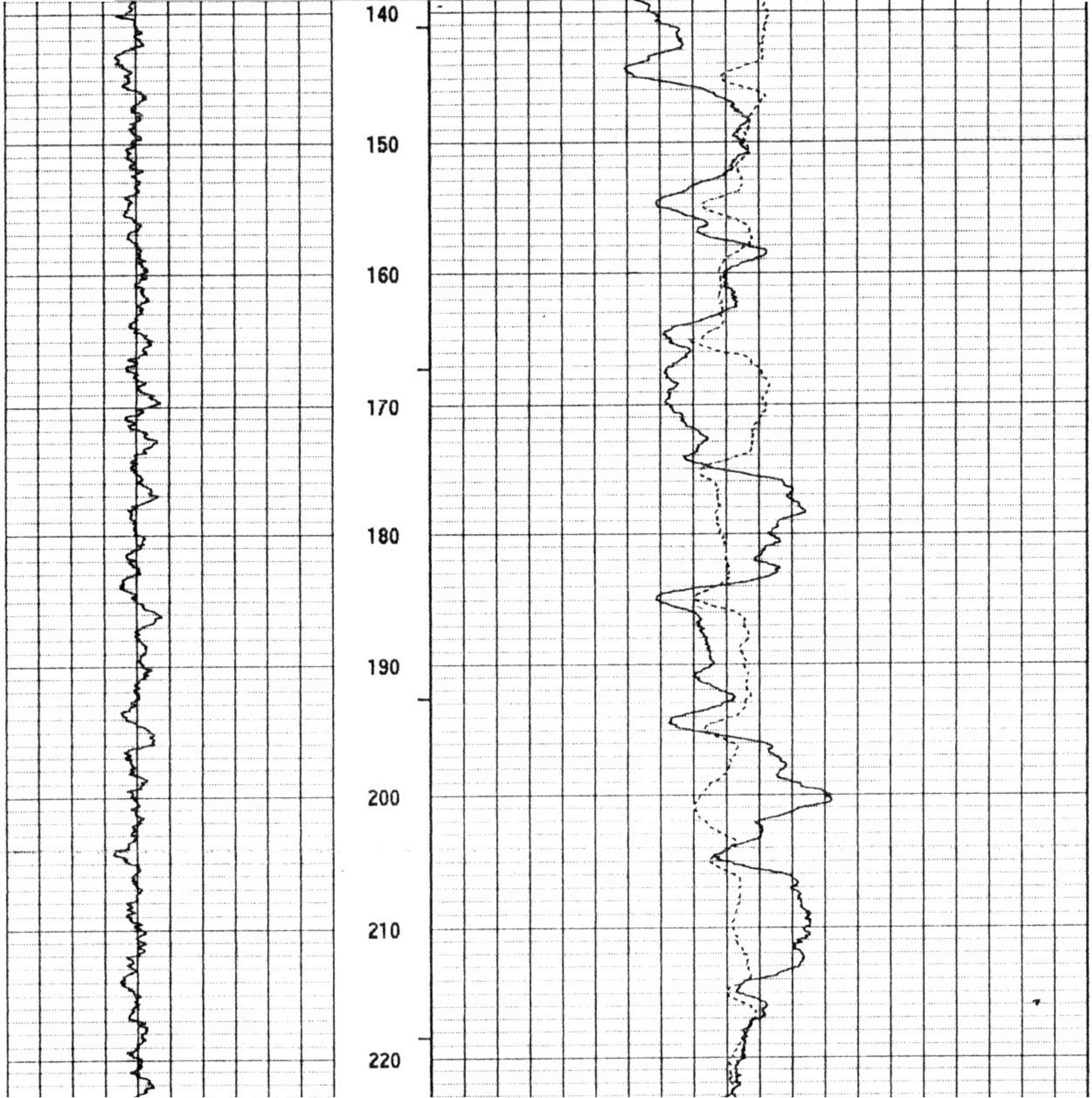
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GAM(NAT)

0 CPS 12000

NEUT(N)

0 CPS 12000



Century GEOPHYSICAL CORP.

PTX06 - 1007

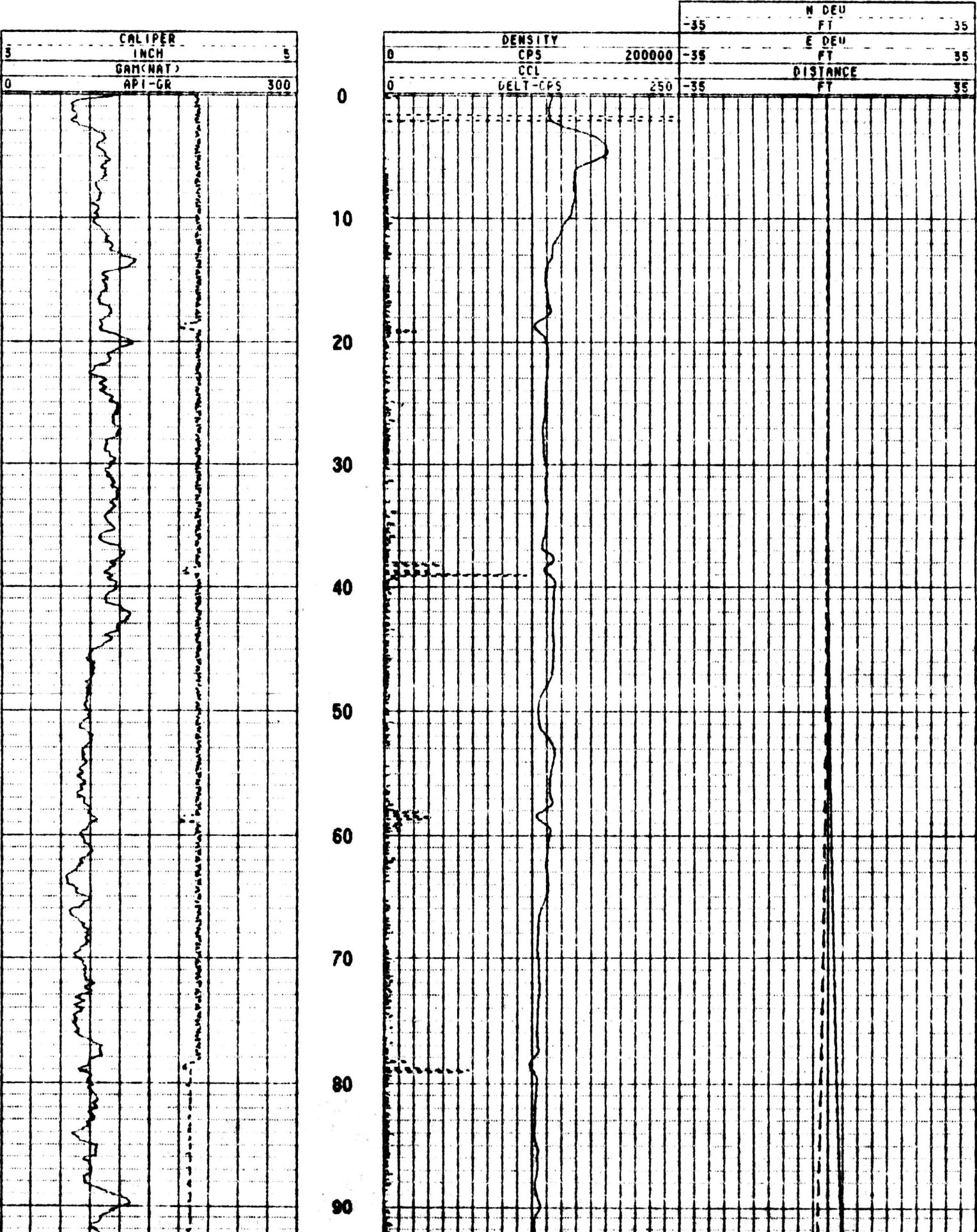
COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1007				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 01/23/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 291	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 292.40	LOG MEASURED FROM:	T.O.P.	DF	:
LOG TOP	: -8.10	DRI MEASURED FROM:	G.L.	GL	:
CASING DRILLER	: 291	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXF 1
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

LOG MEASURED FROM TOP OF PAD

STAINLESS STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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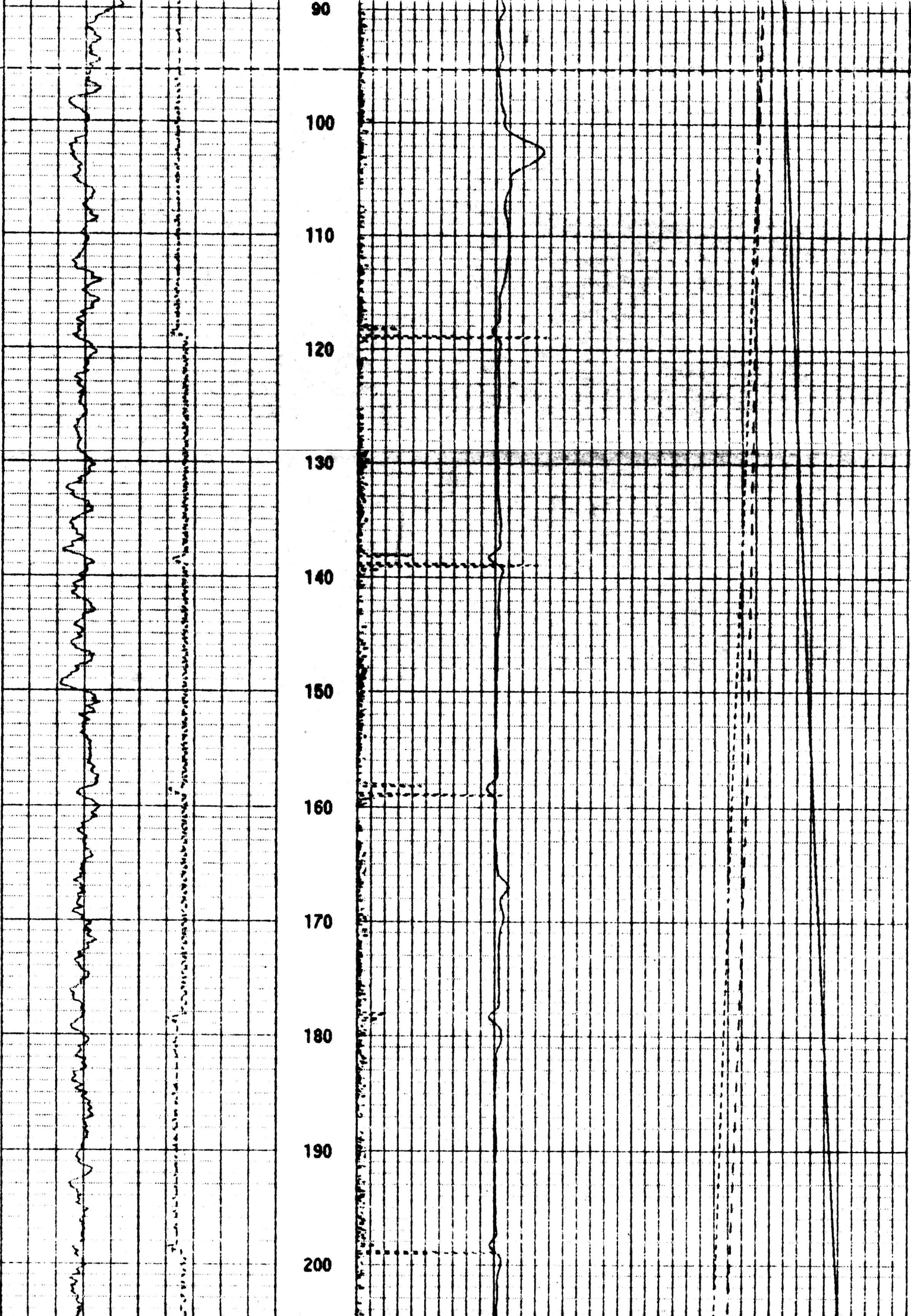
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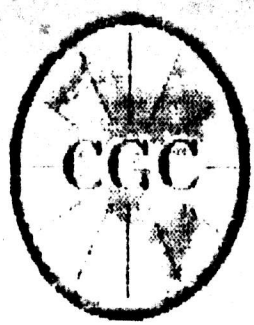


Century GEOPHYSICAL CORP.

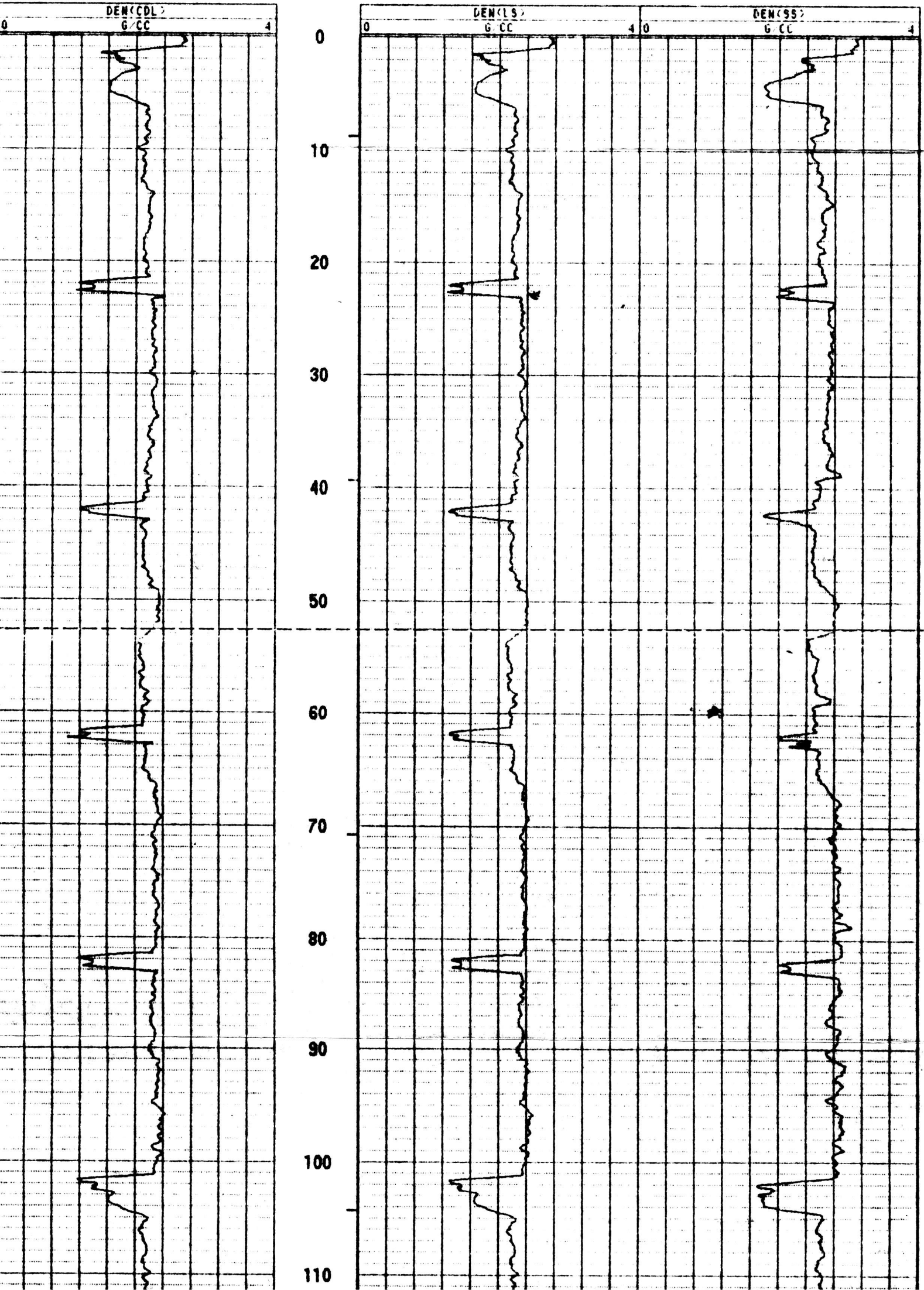
PTX06 - 1007

COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1007				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 01/23/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 291	ELEV. PERM. DATUM.		KB	:
LOG BOTTOM	: 258.40	LOG MEASURED FROM.	T.O.P.	DF	:
LOG TOP	: -10.90	DRL MEASURED FROM.	G.L.	GL	:
CASING DRILLER	: 291	LOGGING UNIT	: 9105		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS.	: .25	RECORDED BY	: R.FEDERHISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9035AA
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0 ←
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTX1 2 ←
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH:	500000
REMARKS	:				

LOG MEASURED FROM TOP OF PAD

STAINLESS STEEL CASING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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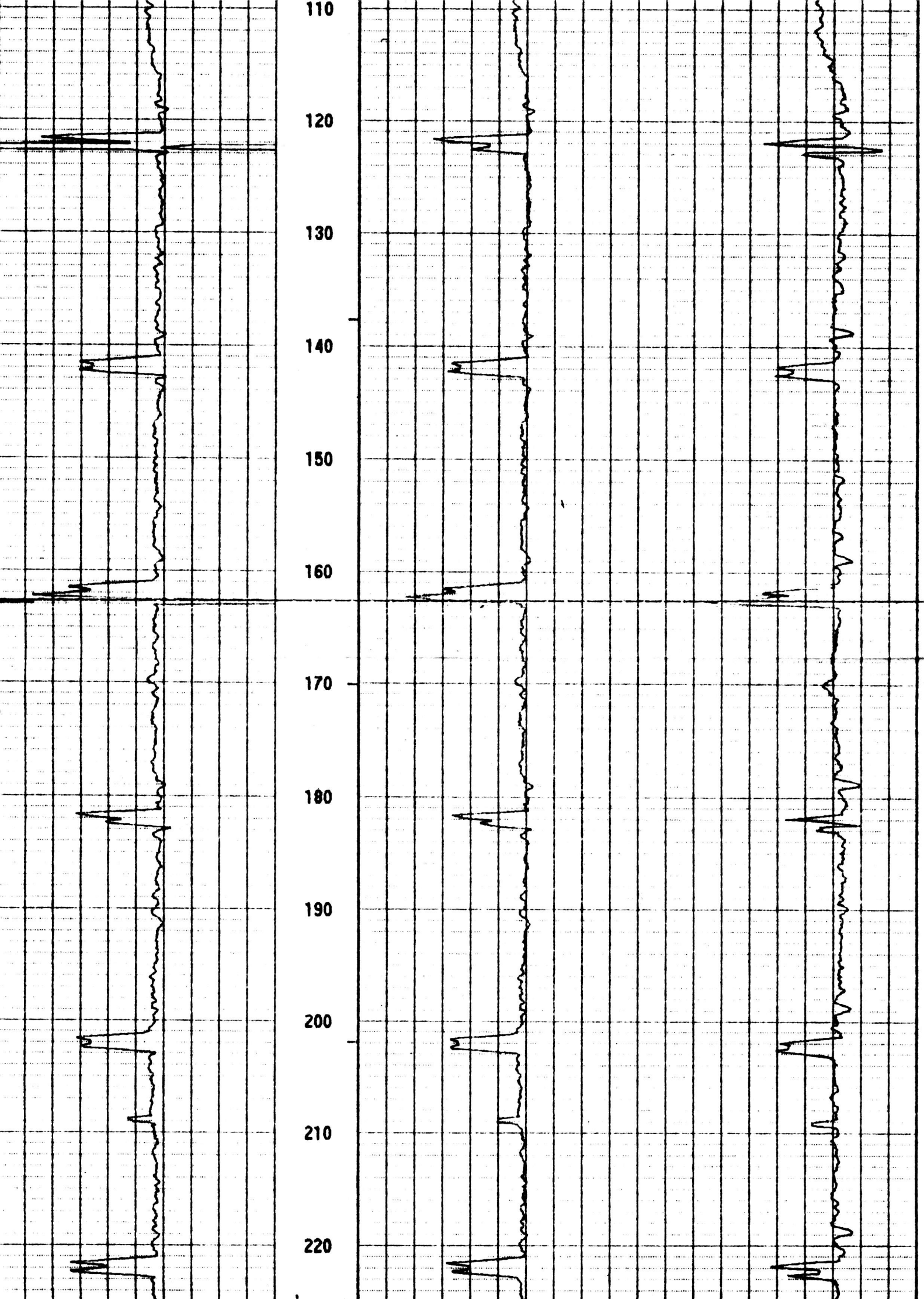
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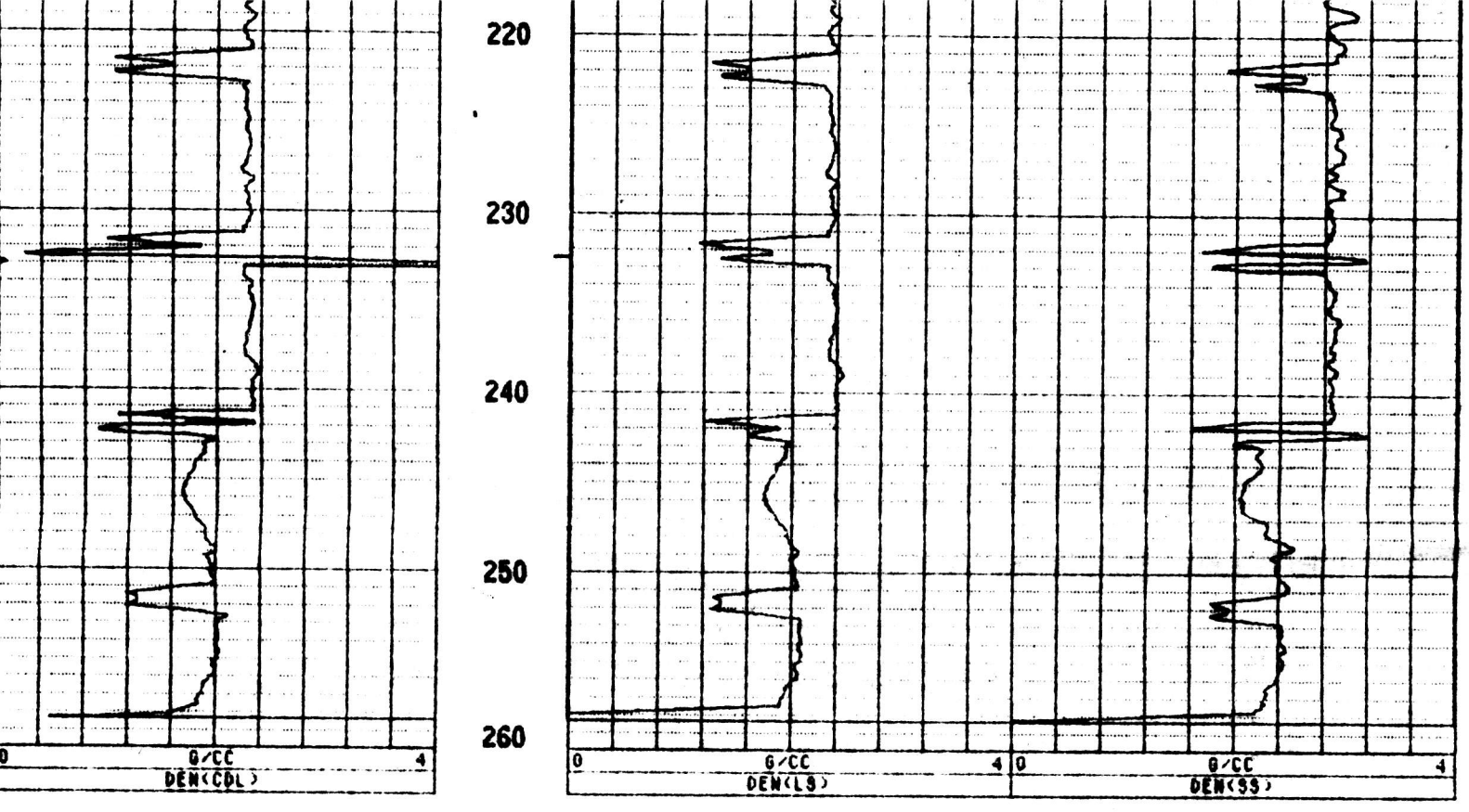
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G/CC
4
DEN(LS)
0
G/CC
4
DEN(SS)

PTX06-1008

Contractor:ESE

Contract #:3922022G

OPTIX #:

Included Documents

___Drilling Log
___Draft
___Final

___Installation Log

_X_Lithologic Logs
___Draft
_X_Final

_X_Geophysical Logs
_X_Neutron
___Gamma
___e-log
___Bond Log
_X_Deviation log

_X_State Well Report

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 1 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3545		C	1	60				(CH) CLAY, with some silt, trace sand, sand occasional gravel and caliche zones, red-brown and gray, moist becoming dry at 6 inches
		P	1	40				
		HS		40				
	5	C	2	40				
3540		P	2	50				(CL) CLAY, silty, with some fine grained sand, red-brown, dry
		HS		40	44-62			
	10	C	3	40	42			
3535		P	3	40	50/3			
	15							
3530								
	20	C	4	40	56-48			20 ft - clay and caliche content increase with depth
3525		P	4	40	50/2			
	25							
3520								
	30							
3515								

Dynamic Pentration Resistance
Blows/ft X
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 2 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3510								as above CL
	40							
3505								
	45							
3500								
	50	C	5	60	86-25			50 ft - becomes harder, with increased sand content
3495		P	5	100				
	55							
3490								
	60							
3485								
	65							
3480								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 3 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3475								as above CL
	75							(SP) SAND, with abundant caliche inclusions (up to 1 inch in diameter), fine grained, dry
3470								CALICHE, white, calcareous, dry
								(SP) SAND, fine grained, interbedded with thin layers of calcareous cemented sandstone (fine grained, brown)
	80							
3465								
	85							85 ft - becomes tan to red-brown, well-cemented
3460								
	90							(SC) SAND, silty, with some clay, fine grained, brown, dry, interbedded with thin slightly cemented layer of sandstone
3455								
	95							
3450								
	100	C	6	50	22-28			(CL) CLAY, very silty, sandy (fine grained), with occasional caliche inclusions, brown, very hard, dry
3445					34-43			
		P	6	50				

Dynamic Pentration Resistance Blows/ft × 8 16 24 32

Neutron (F) cts/sec 2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 4 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3440								as above CL
3435	110							
3430	115							(SM) SAND, silty, with sandstone (fine grained, moderately well cemented, brown to red-brown), fine grained, brown to red-brown, very dense, dry
3425	120							
3420	125							125 to 130 ft - with clay and occasional stringers/inclusions of caliche
3415	130							130 ft - with some sandstone and caliche inclusions, silt and clay content varies
3410	135							

Dynamic Penetration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

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ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 5 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3405								as above SM
	145							
3400								
	150							
3395								
	155							
3390								
	160							
3385								
	165							
3380								
	170	C	7	100	58-53			
3375								

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 6 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3370		P	7	90				as above SM
3365	180							
3360	185							
3355	190							190 ft - with more sandstone
3350	195							
3345	200							
3340	205							

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 7 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3335								as above SM
3330	215							
3325	220							
3320	225							
3315	230							
3310	235							SAND and GRAVEL, fine to medium grained sand, gravel up to 3 inches in diameter, brown to tan
3305	240							

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1008

Sheet No. 8 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/23/92
Project Number:	3922022G	Boring Completed:	12/8/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3545.76 ft
Logged By:	E.Faust/R.Hill	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3547.34 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3300								as above SAND and GRAVEL
	250	C	8		105/R			
3295		P	8					
	255							
3290								SAND, silty, with gravel (up to 1 inch in diameter), fine grained, red-brown, slightly moist
	260							
3285								261 ft - becomes moist
								(CL) CLAY, with caliche inclusions, red-brown, very hard, moist
	265							
3280								266 ft - with silt and sand (fine to medium grained), become brown to red-brown, very moist
	270	C	9	90	15-23			
3275		P	9		31-33			271 ft - becomes brown with small black inclusions, slightly moist, with less sand and silt
	275							
3270		C	10	90	16-27			278 ft - with more sand
					39-50			BORING TERMINATED AT 280 FT BGS

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Century GEOPHYSICAL CORP.

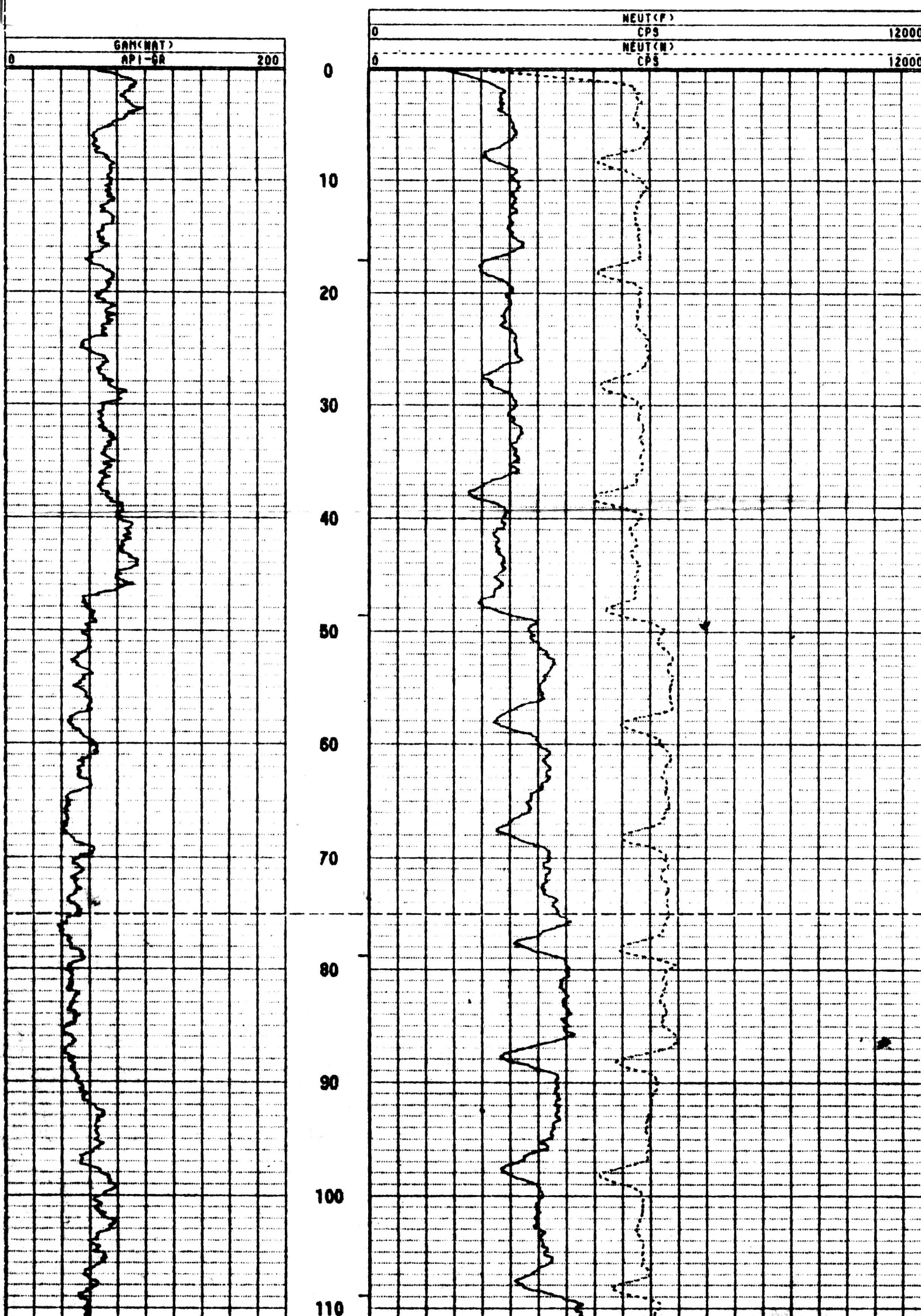
PTX06 - 1008

COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 - 1008				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/02/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 278	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 279.00	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: 8.70	DRL MEASURED FROM	: T.O.C.	GL	:
CASING DRILLER	: 278	LOGGING UNIT	: 9010		
CASING TYPE	: STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 3	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL ←
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9071A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0 ←
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXF 3 ←
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

DOUBLE WALL STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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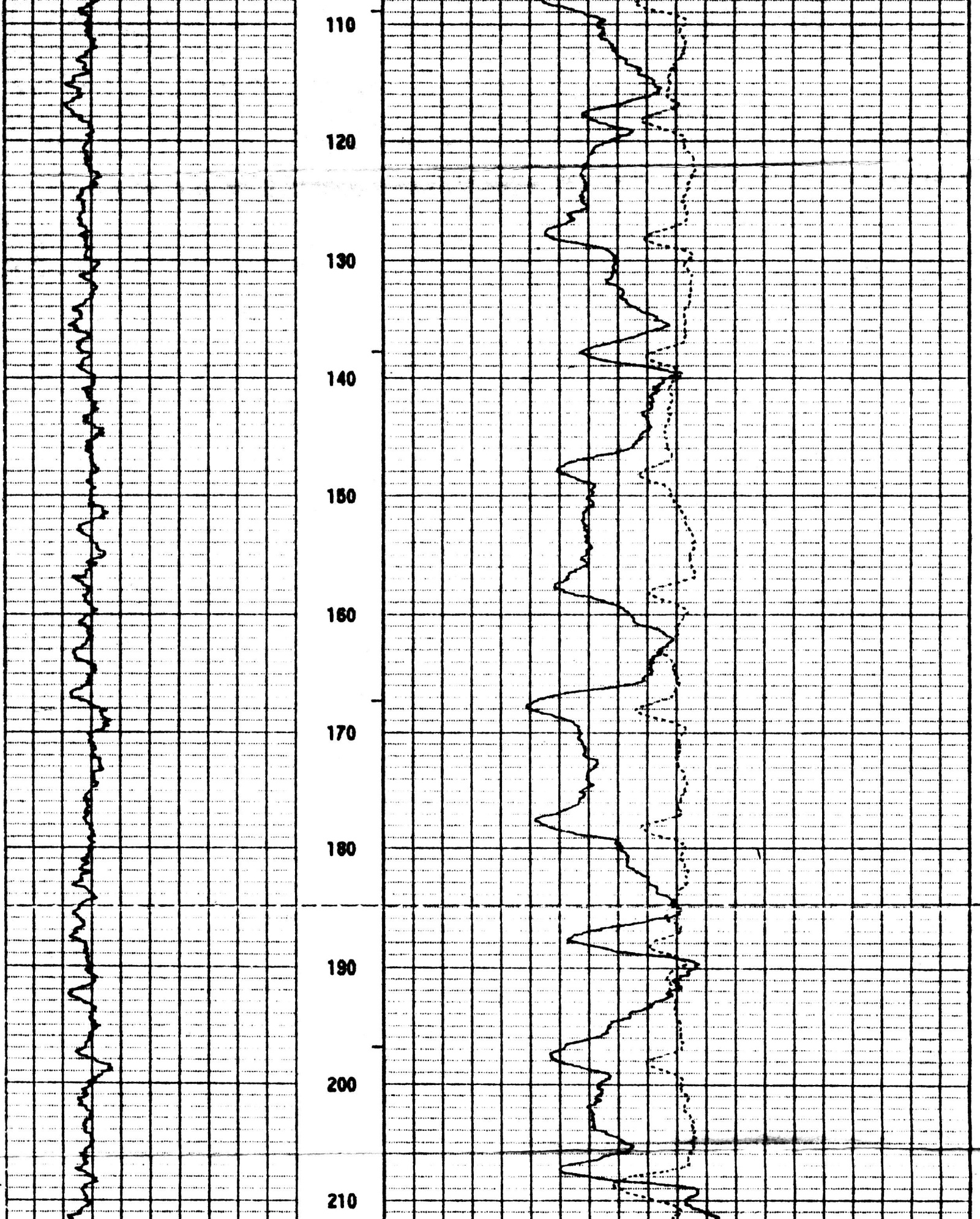
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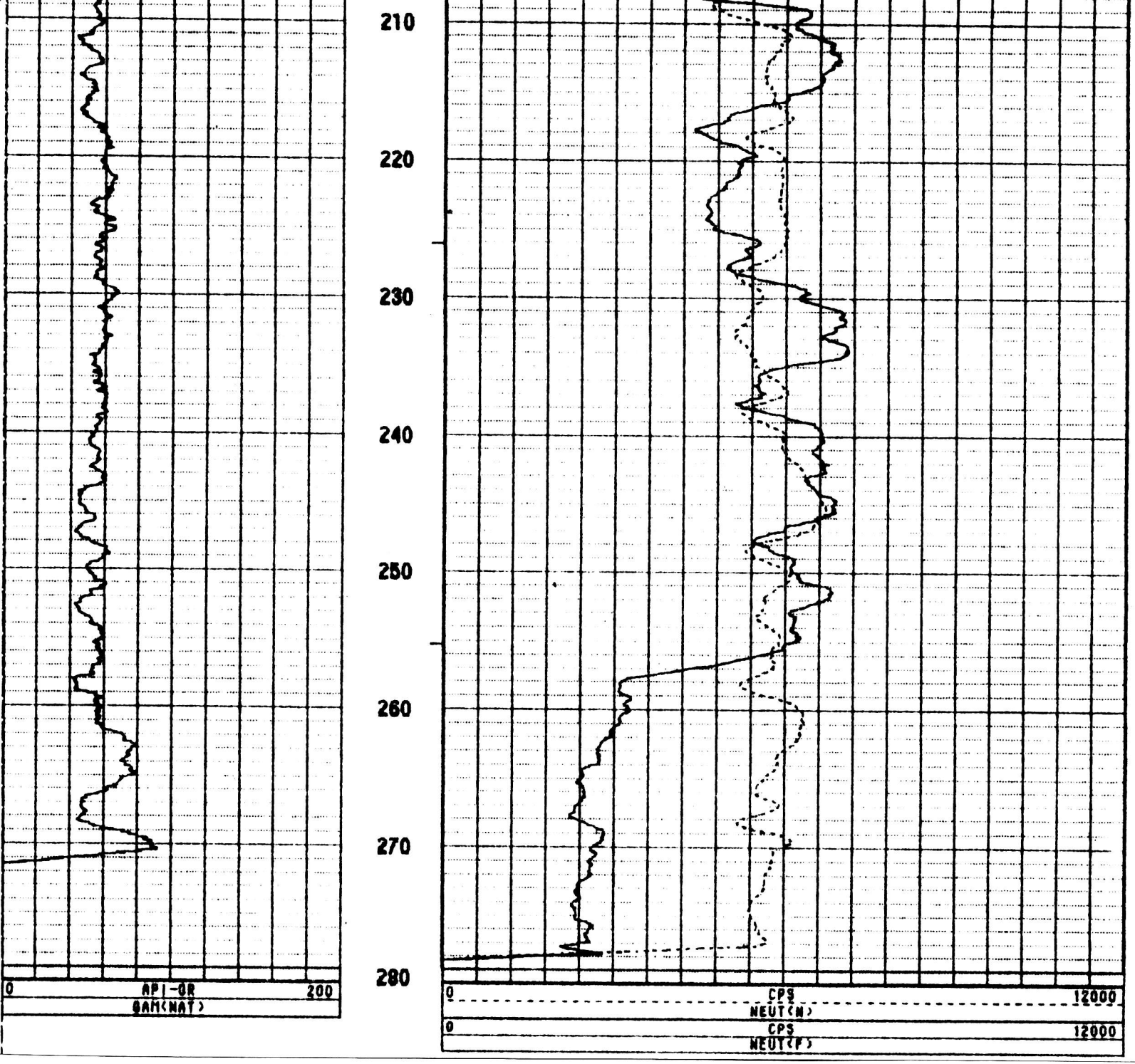
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NEUT(F)

Century GEOPHYSICAL CORP.

PTX06 - 1008

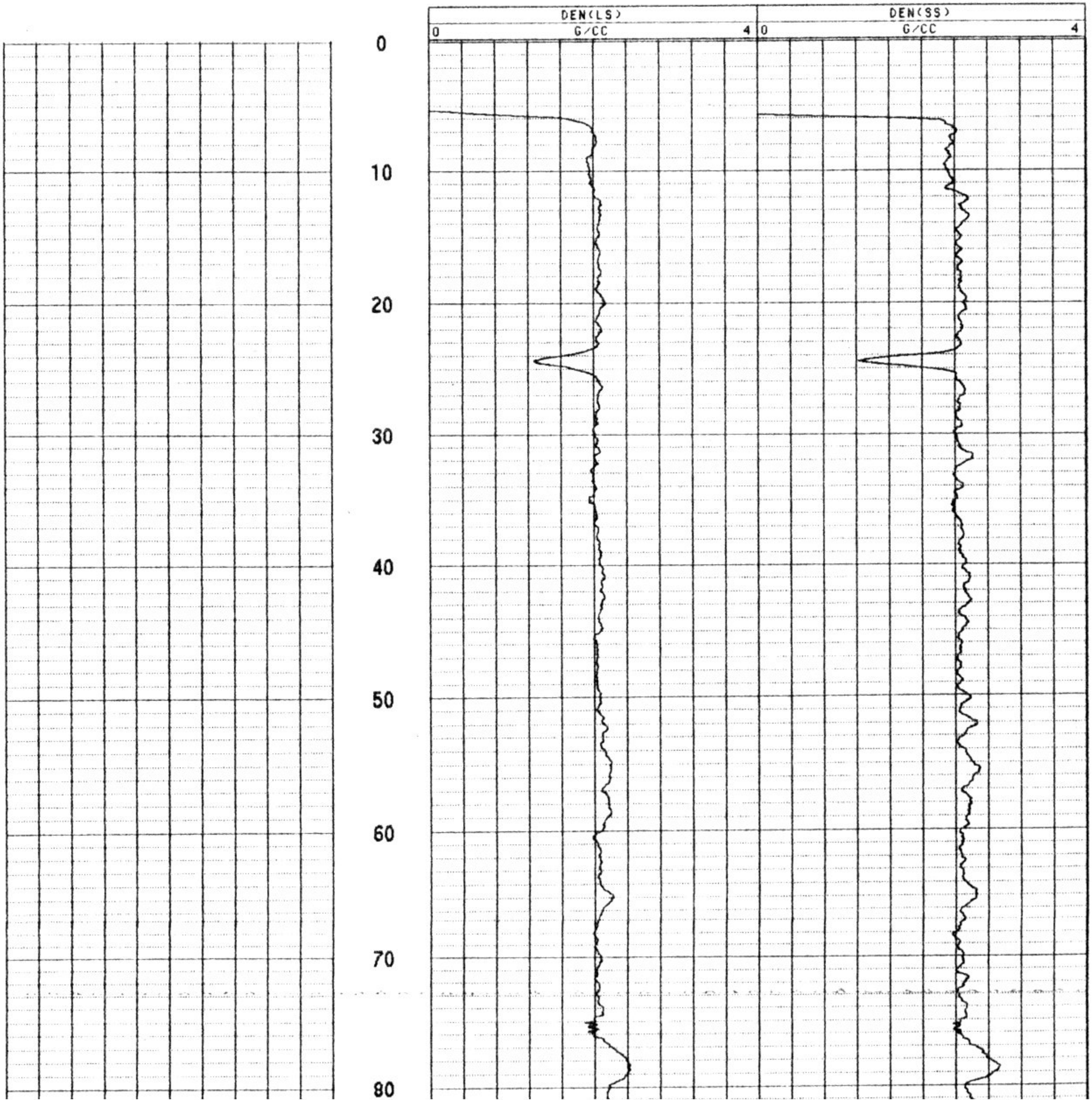
COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 - 1008				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/11/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 278	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 279.78	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -2.78	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 278	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9035AA
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1	MATRIX DELTA T	:	PLOT	: PIXF 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

STAINLESS STEEL CASEING

LOG MEASURED FROM TOP OF CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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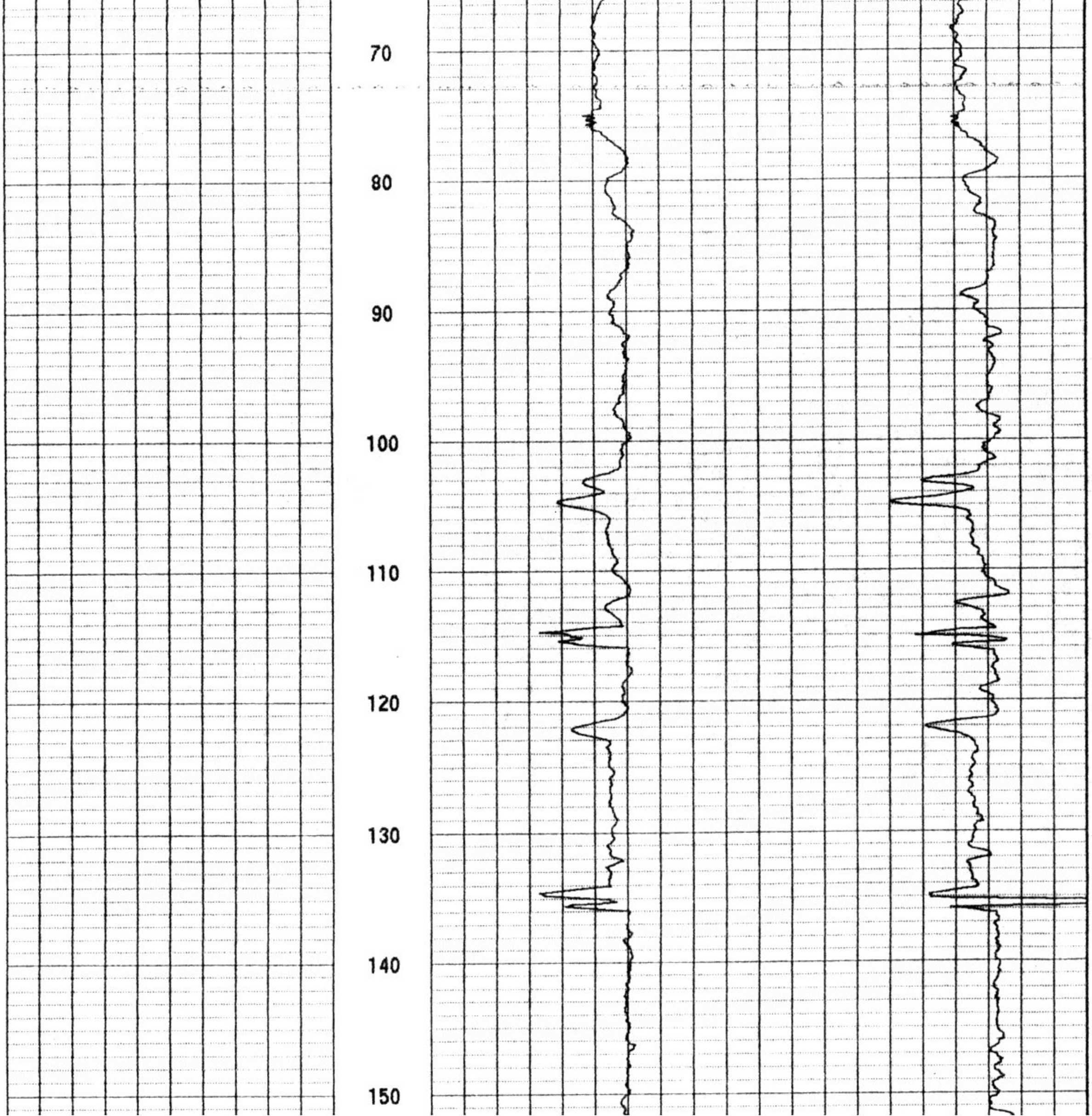
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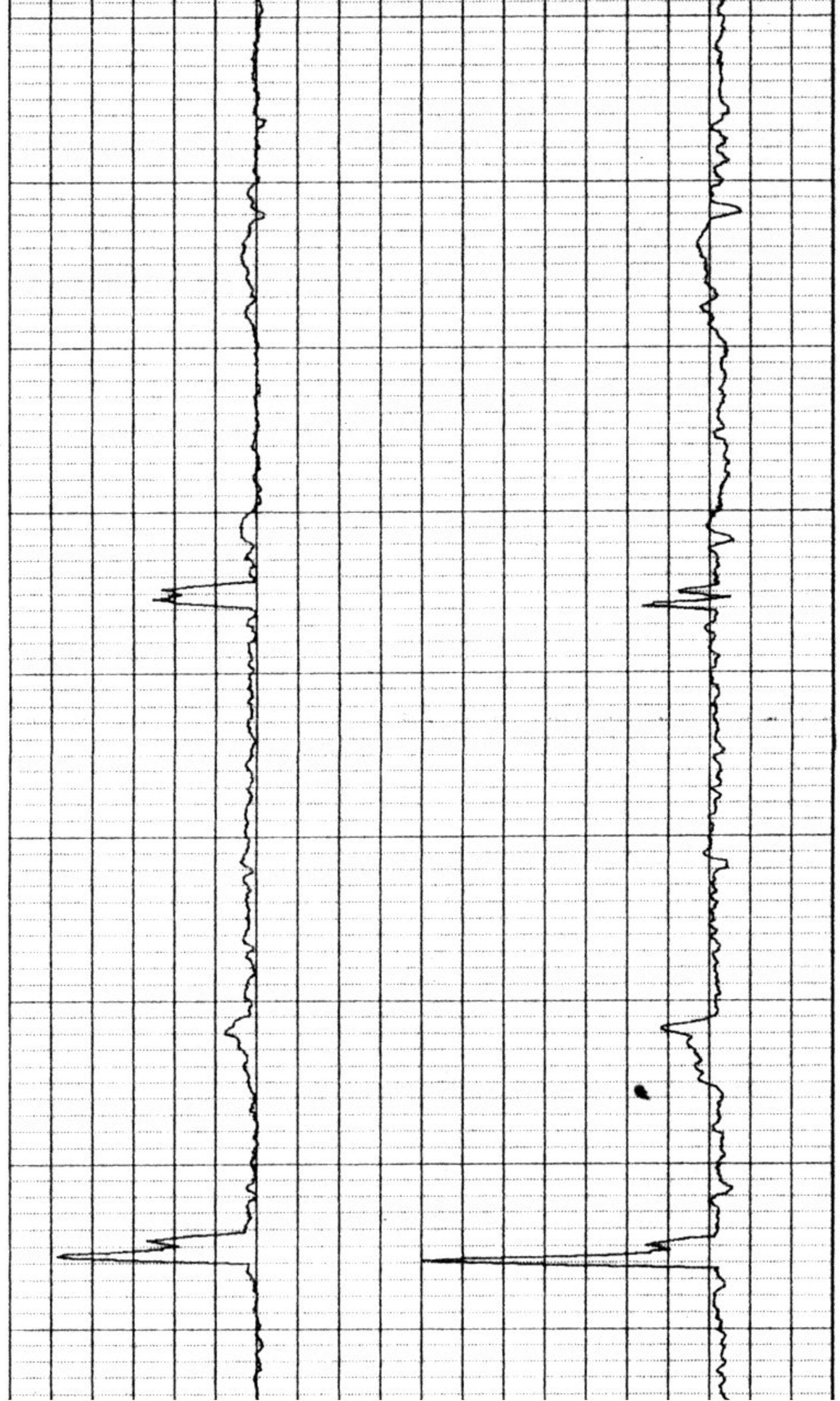

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220

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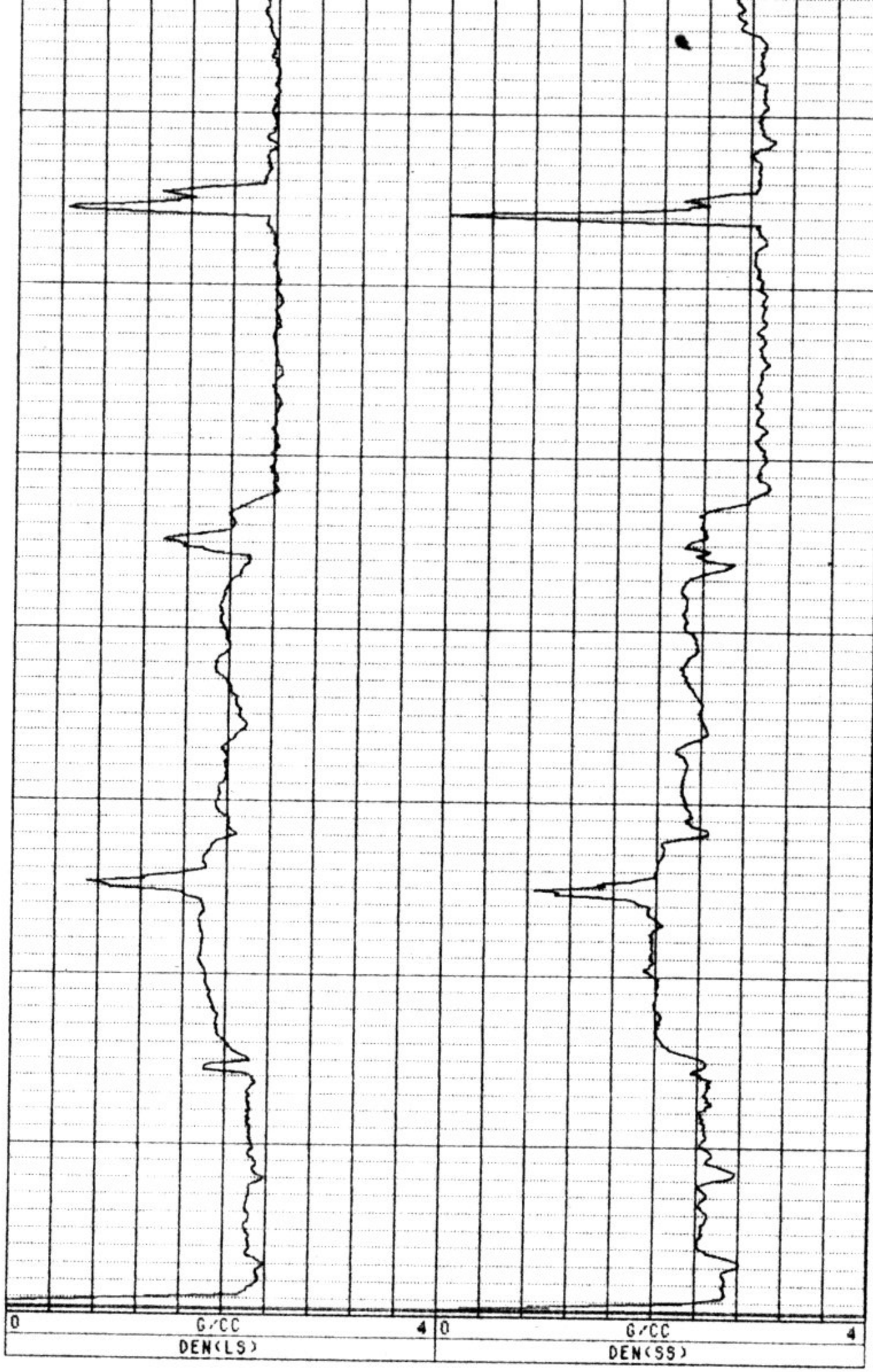



Century GEOPHYSICAL CORP.

PTX06 - 1008

COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 - 1008				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/11/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 278	ELEV. PERM. DATUM:		KB	:
LOG BOTTOM	: 280.10	LOG MEASURED FROM:	T.O.C.	DF	:
LOG TOP	: 2.20	DRL MEASURED FROM:	G.L.	GL	:
CASING DRILLER	: 278	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 9 ←
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTX 3 ←
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000

REMARKS :

STAINLESS STEEL CASEING

LOG MEASURED FROM TOP OF CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS


CALIPER
5
INCH
5
GAM(NAT)
0
API-GR
300
DENSITY
0
CPS
200000
CCL
0
DELT-CPS
250
N DEV
0
FT
40
E DEV
0
FT
40
DISTANCE
0
FT
40
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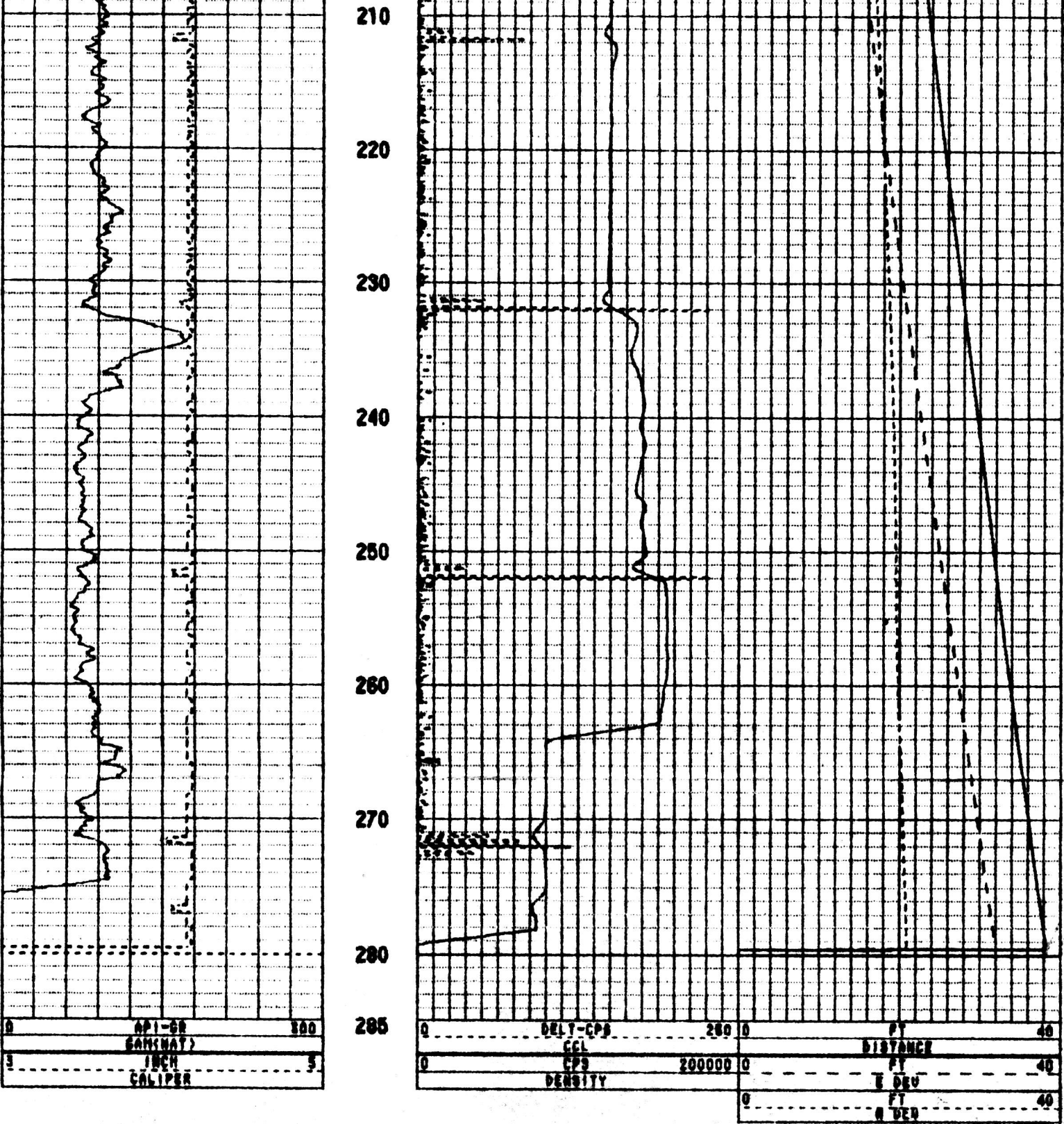
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API-GR
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GAMMA(HAT)
6
INCH
16
CALIPER
0
DELT-CPS
200
CCL
0
CPS
200000
DENSITY
0
FT
40
DISTANCE
0
FT
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E DEV
0
FT
40
A DEV

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

D.I.M.

1) **OWNER** US Dept of Energy-Pantex (Name) **ADDRESS** Hwy 60 A+FM 2373 Amarillo Tx 79177 (Street or RFD) (City) (State) (Zip)

2) **LOCATION OF WELL:** County CARSON . 15 miles in NE (NE, SW, etc.) direction from Amarillo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** PTX06-1008

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☒ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AIR REVERSE

D.I.M.

6) **WELL LOG:**
Date Drilling: Started 11-23 1992 Completed 2-9 1993

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9 1/4"	Surface	278
3"	278	280

From (ft.)	To (ft.)	Description and color of formation material
		Clay - Brown - Red w/Caliche
50	75	Clay silty w/Caliche Hard
75	115	Fine Sand Red-Brown
115	235	Silty Sand - Brown
235	264	Gravel w/Med-Fine SAND Brown
264	266	Red Brown Clay
266	278	SAND/Silt Brown Moist
278	280	Brown Clay (LEAN)

(Use reverse side if necessary)

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 280 ft. to 240 ft.
Bentonite Seal 240' to 235'

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	Stainless Steel 316	278	275	Sch 10
4	N	Stainless Screen	275	250	.010
4	N	Stainless Steel 316	250	2AGL	Sch 10

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 235 ft. to 3 ft. No. of Sacks Used 80
_____ ft. to _____ ft. No. of Sacks Used _____
Method used TREMIE
Cemented by LAYNE INC.

MAR 1993

TEXAS WATER

10) **SURFACE COMPLETION**
☑ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☑ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 266 ft. below land surface Date 12-8-92
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N-A Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other Submersible Piston - (Bennett)
Depth to pump bowls, cylinder, jet, etc., 274 ft.

14) **WELL TESTS:**
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 10 gpm with 1 ft. drawdown after 2 1/2 hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE INC (Type or print) **WELL DRILLER'S LICENSE NO.** 2883-W

ADDRESS 1011 West Harry (Street or RFD) Wichita (City) Ks (State) 67213 (Zip)

(Signed) Randy Swearengen (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

PTX06-1009

Contractor:ESE

Contract #:3922022G

OPTIX #:

Included Documents

___Drilling Log
___Draft
___Final

___Installation Log

_X_Lithologic Logs
___Draft
_X_Final

_X_Geophysical Logs
_X_Neutron
___Gamma
___e-log
___Bond Log
_X_Deviation log

_X_State Well Report

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 1 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3540	0	HS		50	12-14 18-24			(CL) CLAY, silty, brown, very hard, dry
3535	5							
3530	10	HS		40	38 80/6			10 ft - becomes red-brown with small caliche inclusions
3525	15							
3520	20	HS			20 60/6			
3515	25							
3510	30	HS			70 70/6			30 ft - becomes slightly moist

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 2 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3505								as above CL
	40	HS			16-28 31-34			
3500								
	45							
3495								
	50	HS			28 50/6			
3490								
	55							
3485								
	60							
3480								
	65							
3475								

Dynamic Pentration Resistance
Blows/ft × 8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 3 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3470								as above CL
	75							
3465								
	80							
3460								
	85							
3455								
	90							90 ft - becomes light gray, with sand and silt, dry
3450								
	95							
3445								
	100	HS			18-26 27-28			(SM) SAND, silty, fine grained, red-brown, very dense, dry, non-cohesive
3440								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 4 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3435	110							as above SM
3430	115							
3425	120							
3420	125							
3415	130							
3410	135							
3405								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 5 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3400	145							as above SM
3395								
	150							
3390								
	155							155 ft - with occasional thin layers of caliche
3385								
	160							
3380								
	165							
3375								
	170							
3370								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 6 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
		HS		50	31-58 70-54			175 ft - as above SM - becomes tan, slightly moist, with occasional nodules of well-cemented sand
3365	180							
3360								
	185							185 ft - with increase of cemented sand
3355								
	190							
3350								
	195							
3345								
	200	HS		60	20-47 60/6			
3340								
	205							
3335								

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

ESE

3/31/93 ptxglogf

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 7 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3330	215							as above SM
3325								
3320	220							
3315	225							SAND and GRAVEL, with trace silt and clay, slightly moist, sand is fine to medium grained, gravel is quartz and caliche
3310	230							
3305	235							235 ft - sand becomes fine grained, with occasional gravel, clay nodules, and cemented sand
3300	240							

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F) cts/sec
2000 4000 6000 8000

C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

3/31/93 ptxglogf

ESE

Pantex
Amarillo, Texas

Log of Boring No. 06-1009

Sheet No. 8 of 8

Client:	USACE, Tulsa Dist.	Boring Started:	11/9/92
Project Number:	3922022G	Boring Completed:	11/19/92
Drilling Contractor:	Layne Drilling, Inc.	Boring Diameter:	9 1/4 inch
Driller:	G. Rodriquez	Surface Elevation:	3543.00 ft
Logged By:	R.Gaylen/E.Faust	Well Casing Diameter:	4 inch
Drilling Method:	Double Wall/Air Percussion	Top of Casing Elev:	3544.88 ft
Boring Location:	Zone 12	Elevation Datum:	NGVD
		Type of Drill Rig:	VT-100

Elevation	Depth	Sample Type	Sample Number	RAD ct (cpm)	Blows Per 6"	Well Construction	Lithology	MATERIAL DESCRIPTION
3295								as above SAND and GRAVEL
	250	HS		50	8-27 50/6			(CL) CLAY, silty, with little fine grained sand and occasional caliche inclusions, brown to tan, very hard, dry, with occasional beds of fine grained sand
3290								
	255							
3285								259 ft - with less sand beds
	260							
3280								
	265							
3275								
	270	HS		60	62 100/6			270 ft - slight increase in sand content
								BORING TERMINATED AT 272 FT BGS

Dynamic Pentration Resistance
Blows/ft ×
8 16 24 32

Neutron (F)
cts/sec
2000 4000 6000 8000

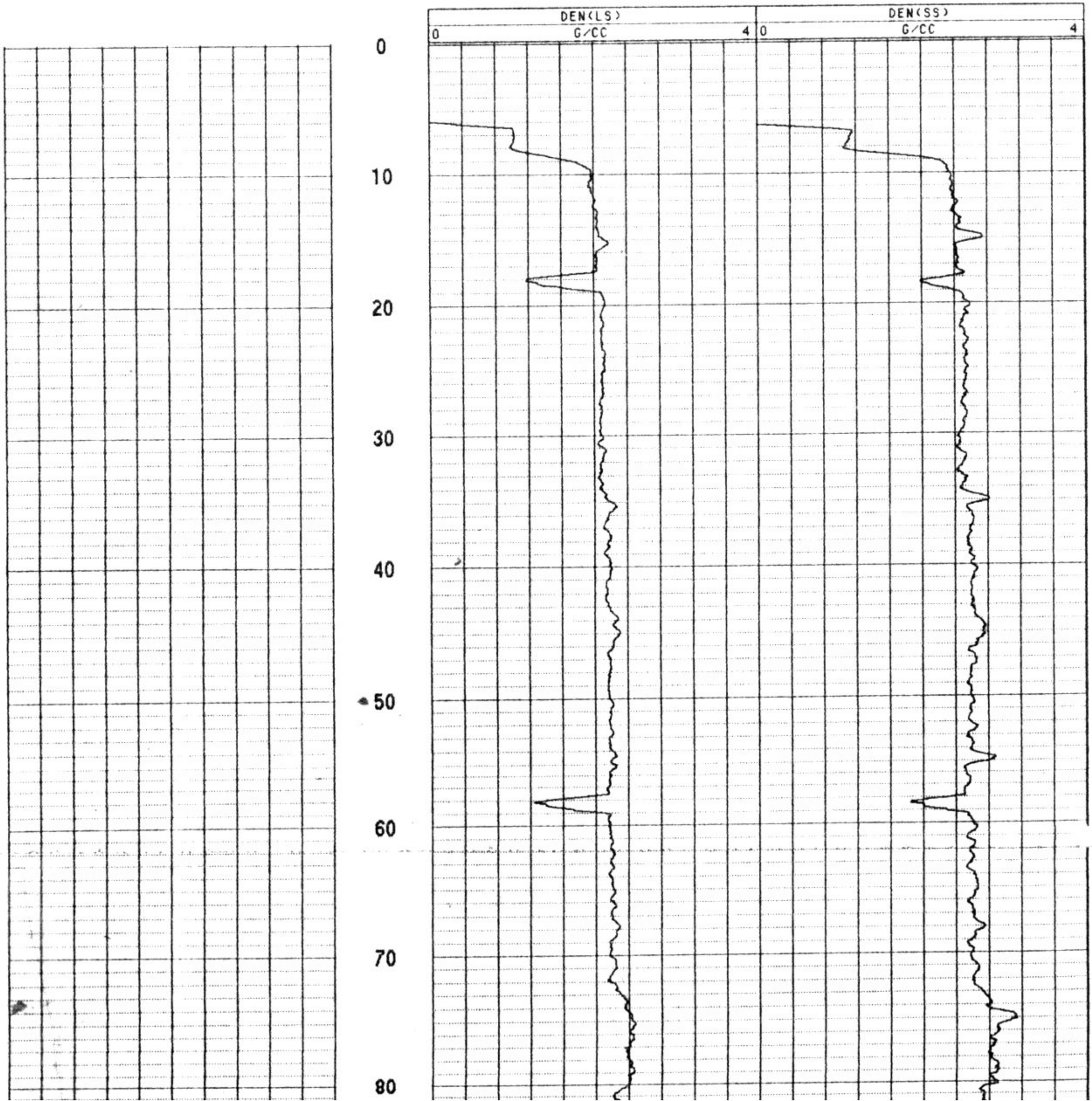
C = Chemical w/Splitspoon P = Physical w/Shelby Tube HS = Headspace w/Splitspoon RAD = Radiation counts/min.

Century GEOPHYSICAL CORP.

PTX06 - 1009

COMPANY	: E.S.E			OTHER SERVICES:	
WELL	: PTX06 - 1009				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/01/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 265	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 268.00	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -2.10	DRL MEASURED FROM	: T.O.C.	GL	:
CASING DRILLER	: 265	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9035AA
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1	MATRIX DELTA T	:	PLOT	: PIXF 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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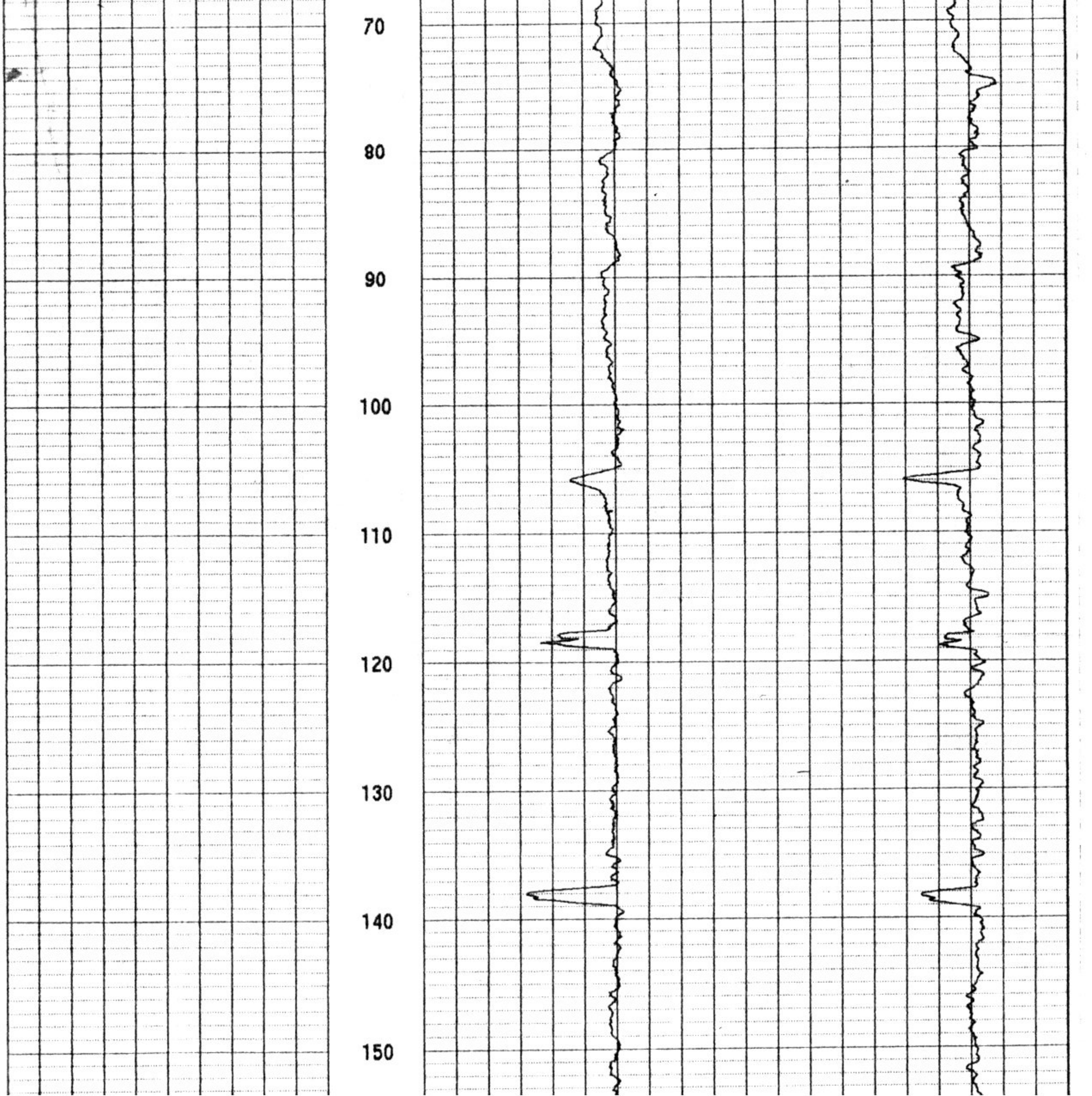
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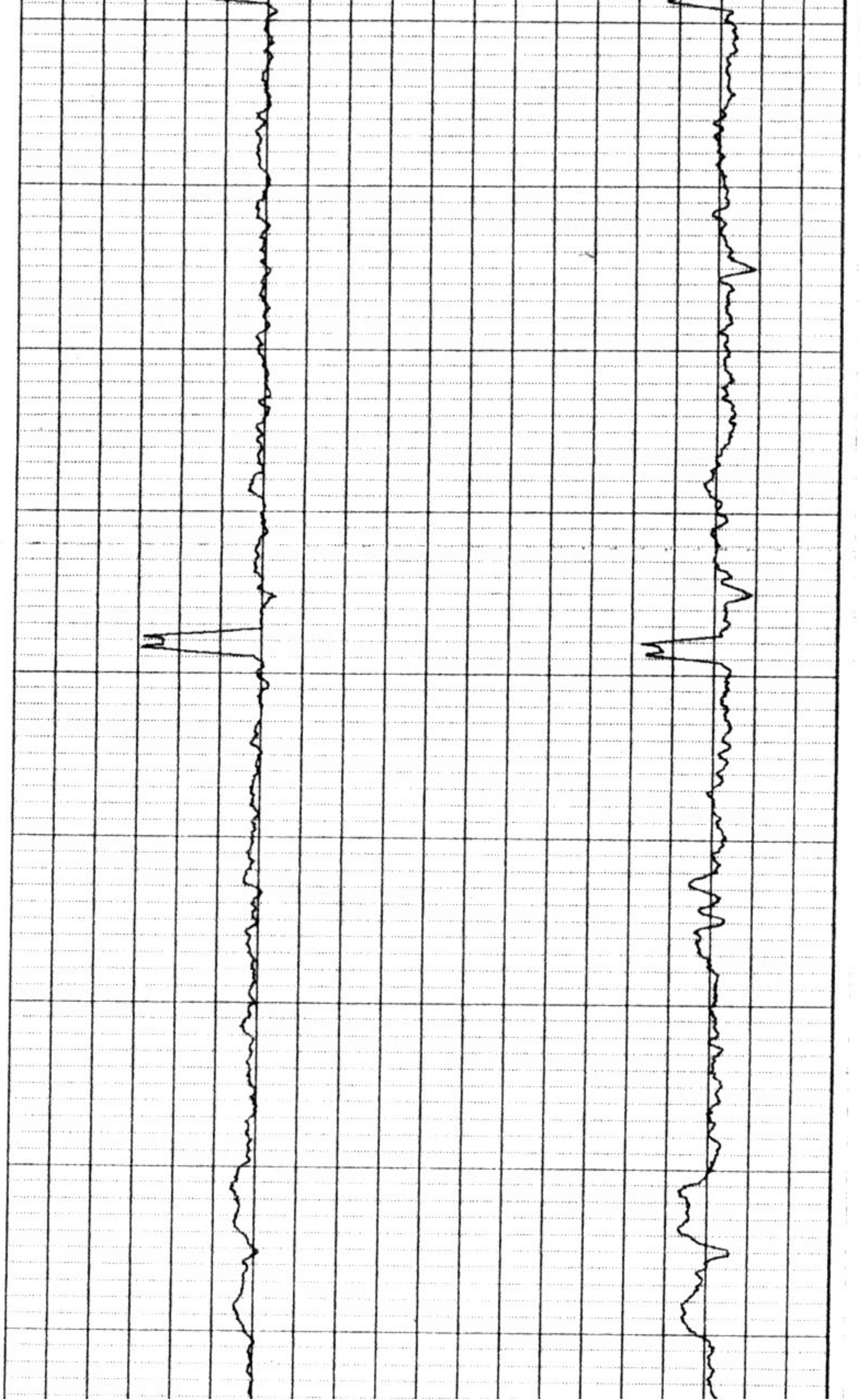

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200

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220

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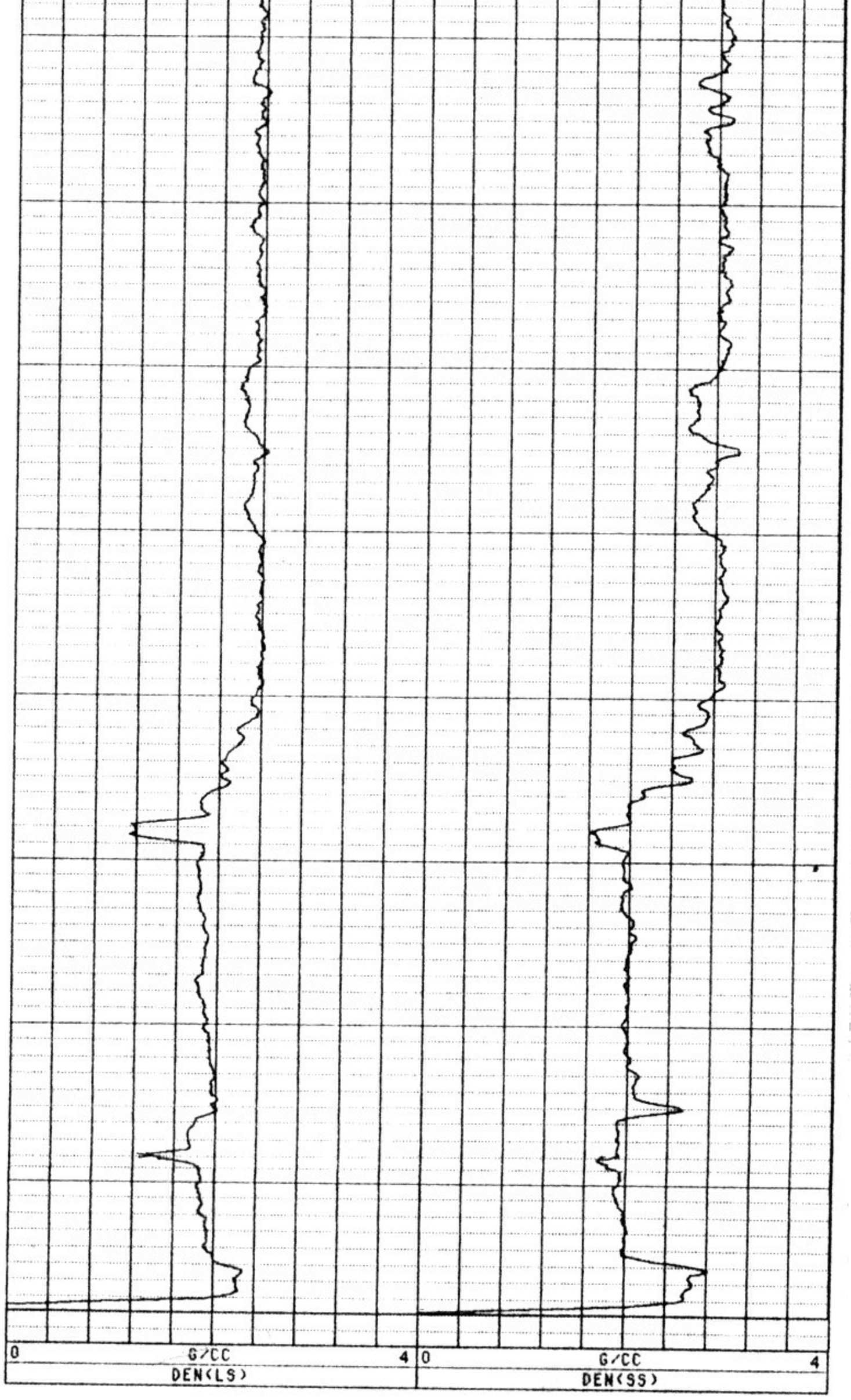
260

270

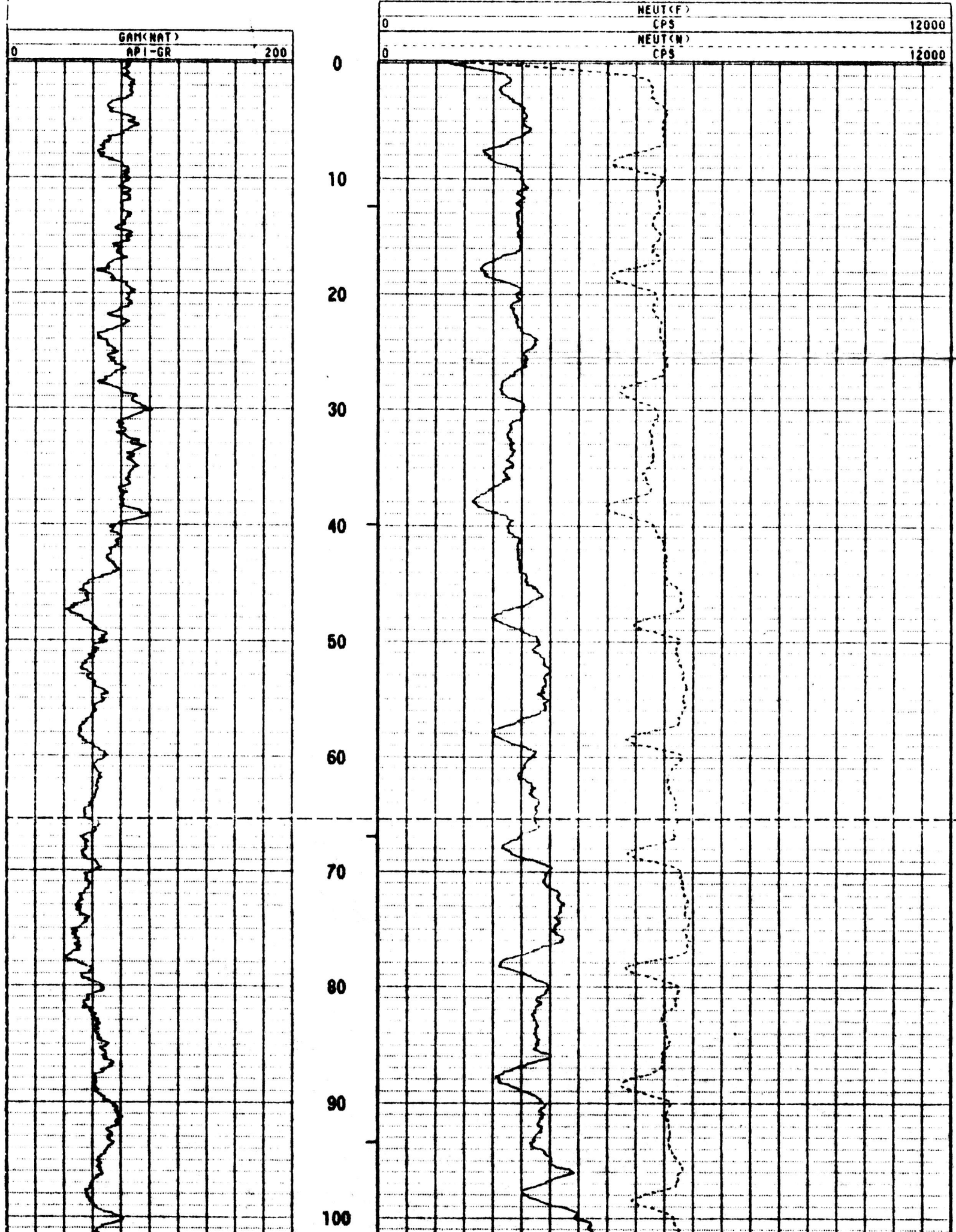


Century GEOPHYSICAL CORP.

PTX06 - 1009

COMPANY	: E.S.E.			OTHER SERVICES:	
WELL	: PTX06 - 1009				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 11/17/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 272	ELEV. PERM. DATUM:		Kb	:
LOG BOTTOM	: 268.60	LOG MEASURED FROM:	G.L.	DF	:
LOG TOP	: 10.10	DRL MEASURED FROM:	T.O.C.	GL	:
CASING DRILLER	: 272	LOGGING UNIT	: 9010		
CASING TYPE	: D.H.STEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 3	RECORDED BY	: R.FEDERITSCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: ORIGINAL ←
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9071A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 0 0
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PIXI 3 3←
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 5000000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS and CONDITIONS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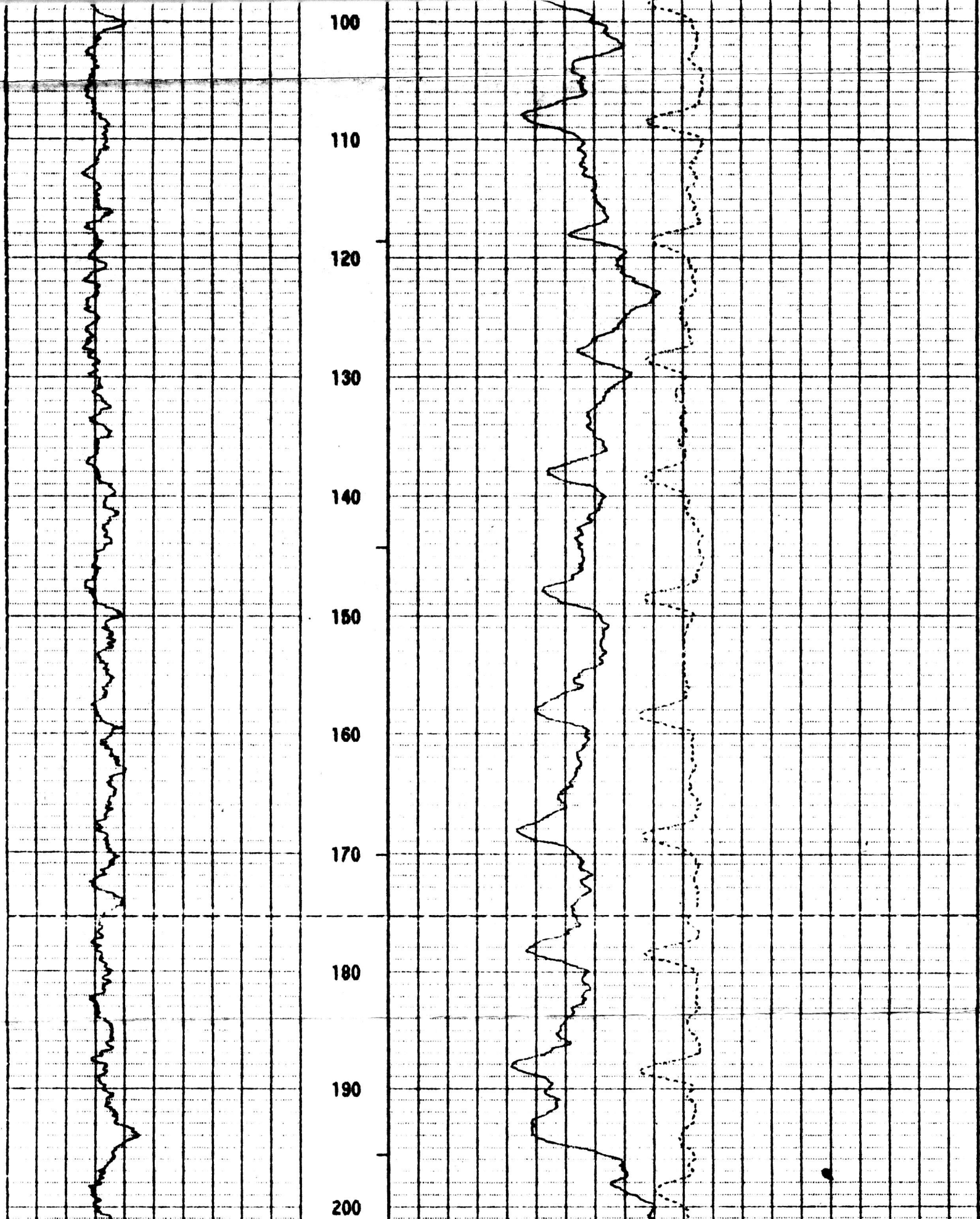
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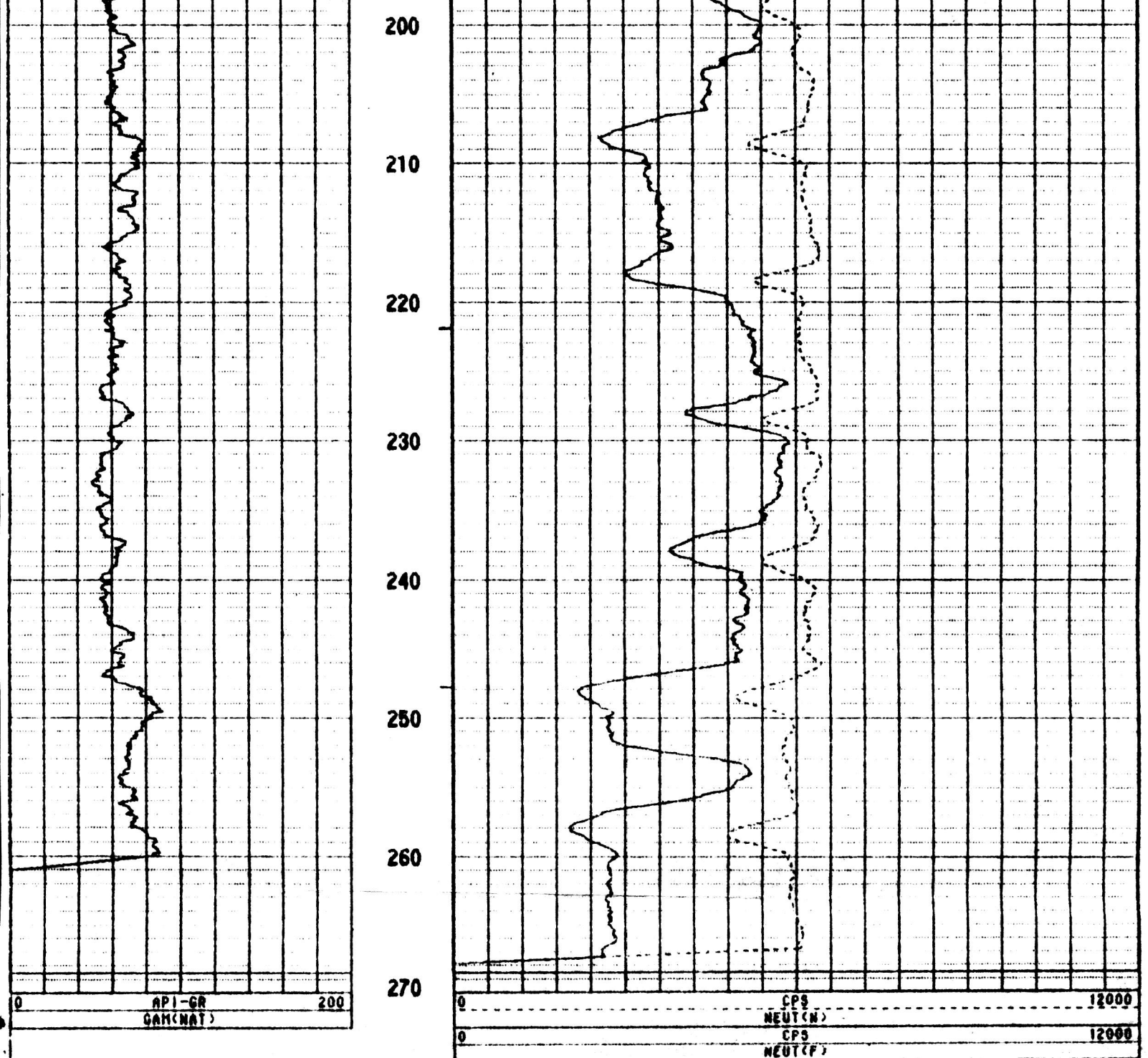
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NEUT(N)
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CPS
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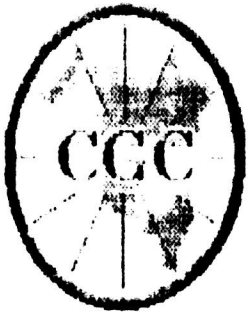
NEUT(F)

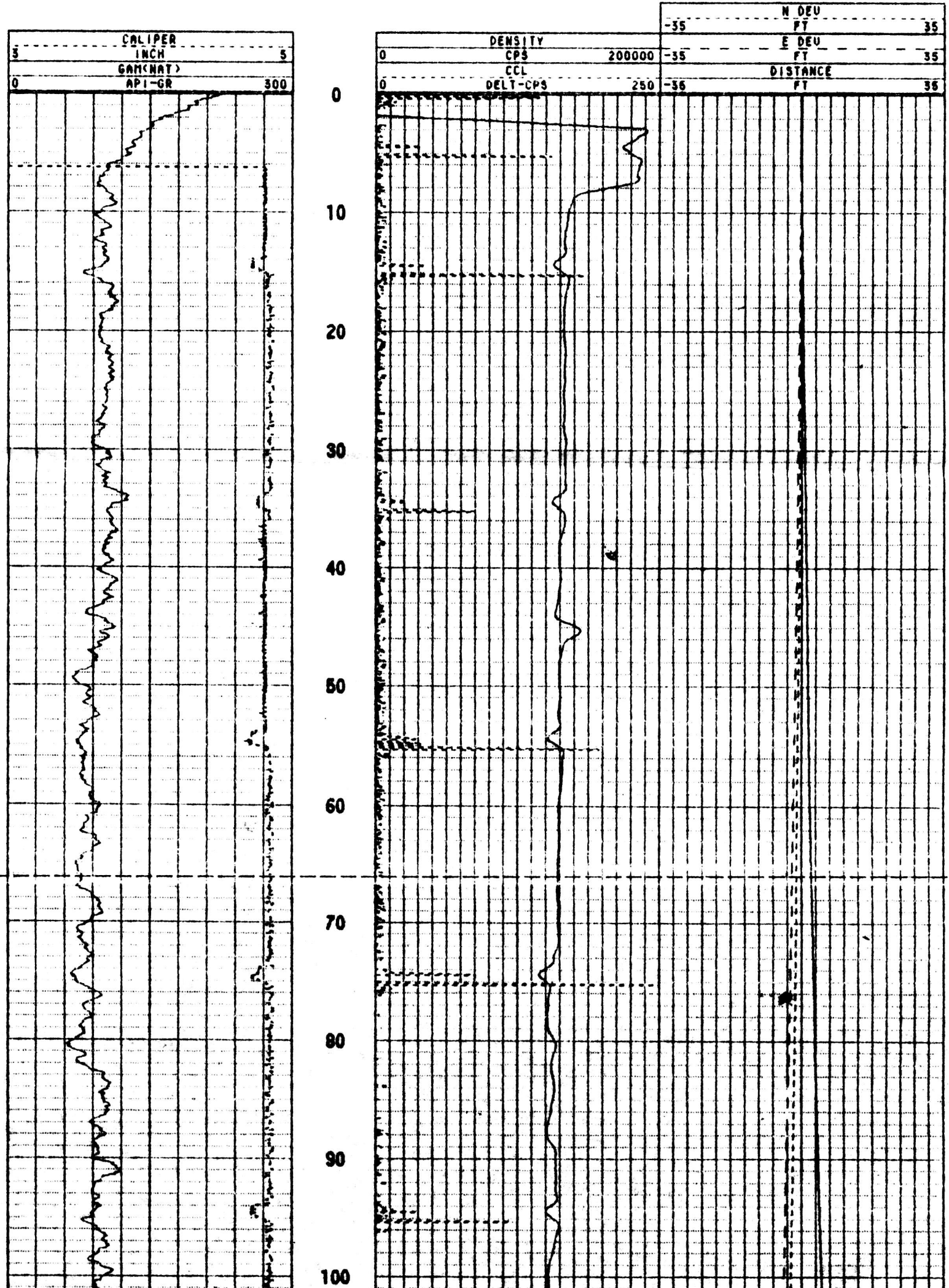


Century GEOPHYSICAL CORP.

PTX06 - 1009

COMPANY	: U.S.I.			OTHER SERVICES:	
WELL	: PTX06 1009				
LOCATION/FIELD	: PONTA				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 12/01/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 265	ELEV. PERM. DATUM.		KB	.
LOG BOTTOM	: 259.00	LOG MEASURED FROM:	T.O.C.	DF	:
LOG TOP	: 2.20	DRI MEASURED FROM:	T.O.C.	GL	:
CASING DRILLER	: 265	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERITSCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED ←
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 8 8
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTX 3 3 ←
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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CCL
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250
N DEV
-35
FT
35
E DEV
-35
FT
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DISTANCE
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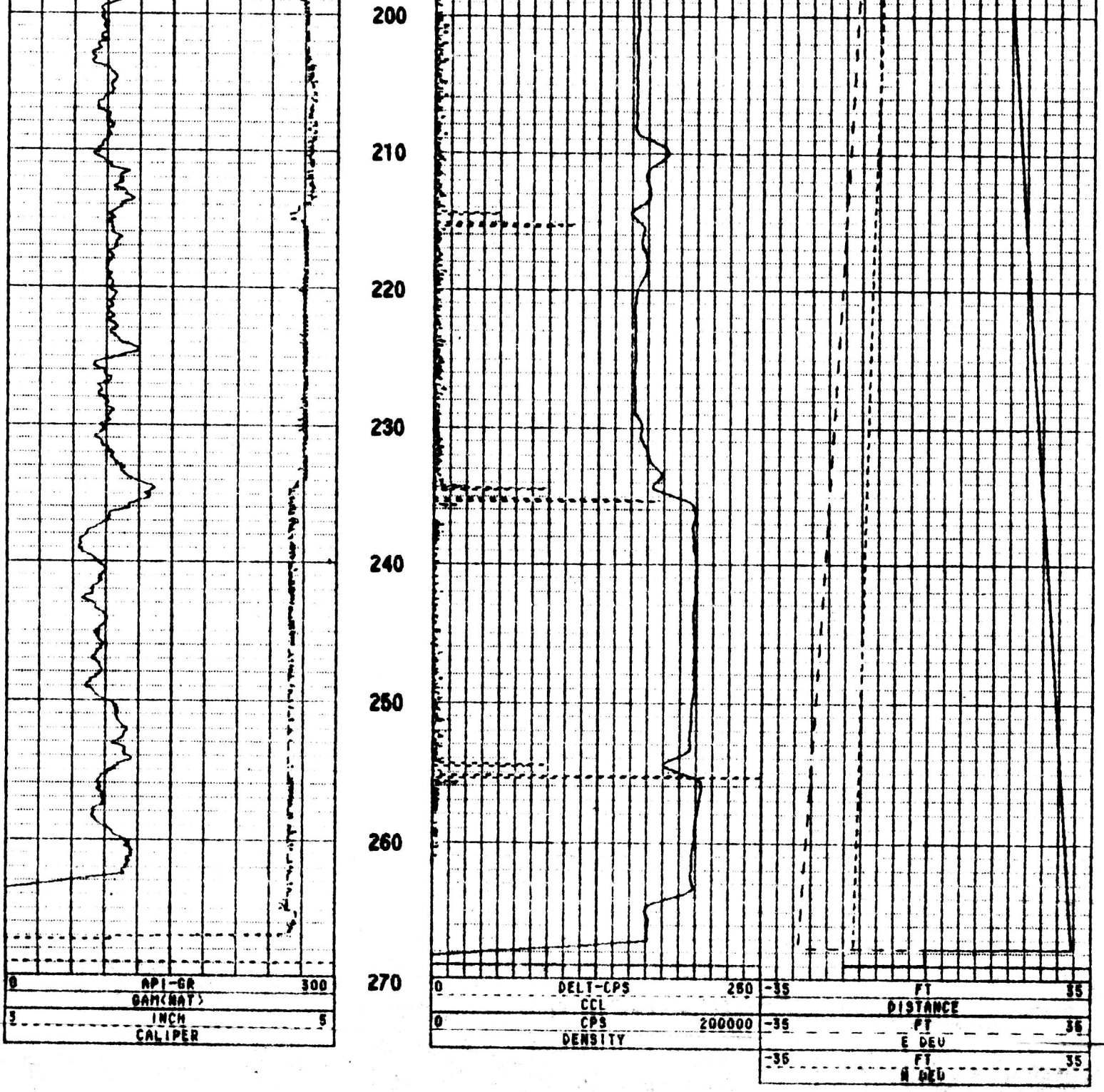
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INCH
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CALIPER
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DELT-CPS
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CCL
0
CPS
200000
DENSITY
-35
FT
35
DISTANCE
-35
FT
35
E DEV
-35
FT
35
N DEV

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

D.I.M.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER US Dept of Energy-Pantex (Name) ADDRESS Hwy 60 at FM2373 (Street or RFD) Amarillo (City) Tx (State) 79177 (Zip)

2) LOCATION OF WELL: County CARSON . 15 miles in NE (NE, SW, etc.) direction from Amarillo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an offical Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** PX06-1009

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☒ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AIR ROTARY

6) **WELL LOG:**

Date Drilling: Started 11-16 1993 Completed 2-9 1993

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
9¼	Surface	270

From (ft.)	To (ft.)	Description and color of formation material
0	30	Brown Clay
30	70	Red Brown Clay firm
70	175	Sandy Silt Very fine Red-Brown
175	230	Sand - fine Grained - Graded - Buff
230	235	Gravel - Sand - Silty Clay MOIST
235	250	Sand - Gravel some clay Moist
250	270	Clay & Silt Caliche

(Use reverse side if necessary)

RECEIVED MAR 17 1993 TEXAS WATER COMMISSION

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 268 ft. to 226.5 ft.
Bentonite Seal 226.5 to 223

D.I.M.

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	316 Stainless	265	262	Sch 10
4	N	316 Stainless Screen	262	232	.010
4	N	316 Stainless	232	2'Agl	Sch 10

9) **CEMENTING DATA** [Rule 287.4 (1)]
Cemented from 223 ft. to 3 ft. No. of Sacks Used 75
_____ ft. to _____ ft. No. of Sacks Used _____
Method used TREMIE
Cemented by LAYNE INC

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☒ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:** - DRY
Static level N/A ft. below land surface Date 11-20-93
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N/A Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Other
☒ Other NONE
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:** DRY HOLE
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:** - DRY HOLE
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☐ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE INC (Type or print) **WELL DRILLER'S LICENSE NO.** _____

ADDRESS 1911 West Harry St (Street or RFD) Wichita (City) KS (State) 67213 (Zip)

(Signed) Randy Swearengen (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

STATE OF TEXAS PLUGGING REPORT for Tracking #78988

Owner:	**US DOE**	Owner Well #:	**PTX06-1016**
Address:	**Highway 60 & FM 2373 Amarillo , TX 79121**	Grid #:	**06-44-5**
Well Location:	**Highway 60 & FM 2373 Amarillo , TX 79121**	Latitude:	**35° 18' 46" N**
Well County:	**Carson**	Longitude:	**101° 33' 16" W**
		GPS Brand Used:	**Garmin Etrex**

Well Type: **Monitor**

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	**No Data**
Driller's License Number of Original Well Driller:	**No Data**
Date Well Drilled:	**8/1/1995**
Well Report Tracking Number:	**No Data**
Diameter of Borehole:	**5.25" inches**
Total Depth of Borehole:	**532 feet**

Date Well Plugged:	**11/30/2011**
Person Actually Performing Plugging Operation:	**Shane Currie**
License Number of Plugging Operator:	**54499**
Plugging Method:	**Other plugging method.**
Plugging Variance #:	**No Data**
Casing Left Data:	1st Interval: **4 inches diameter, From 3 ft to 439 ft** 2nd Interval: **No Data** 3rd Interval: **No Data**
Cement/Bentonite Plugs Placed in Well:	1st Interval: **From 0 ft to 3 ft; Sack(s)/type of cement used: top soil** 2nd Interval: **From 3 ft to 5 ft; Sack(s)/type of cement used: 2 cement** 3rd Interval: **From 5 ft to 439 ft; Sack(s)/type of cement used: 59 bentonite** 4th Interval: **No Data** 5th Interval: **No Data**

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**Talon/LPE 921 N. Bivins Amarillo , TX 79107**

Plug Installer License Number:	**54499**
Licensed Plug Installer Signature:	**Shane Currie**
Registered Plug Installer Apprentice Signature:	**Ronnie Rodriguez**
Apprentice Registration Number:	**57601**
Plugging Method Comments:	**Poured and hydrated in 3/8" bentonite chips when standing water in well is less than 100' in depth, cement 3' to 5'. 16" outer casing and 8" coductor casing left in ground at 3' bgs, each cement grouted during construction**

Please include the plugging report's tracking number (Tracking #**78988**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

PTX06-1016

Contractor: Black & Veatch

Contract #: 4058.200

OPTIX #:

Included Documents

_X_Drilling Log
___Draft
_X_Final

_X_Installation Log

___Lithologic Logs
___Draft
___Final

___Geophysical Logs
___Neutron
___Gamma
___e-log
___Bond Log
___Deviation log

_X_State Well Report

Hole No.PTX06-1016

DRILLING LOG

DIVISION: Tulsa

INSTALLATION: Pantex Plant

1. PROJECT: Pantex Plant -Zone 12 GW Investigation
LOCATION (Coordinates or Station): X=639915.09, Y=3758683.56
2. DRILLING AGENCY: Stewart Brothers Drilling Company
3. HOLE NO. (As shown on drawing title and file number): PTX06-1016
4. NAME OF DRILLER: Bill Brunson
5. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED
6. THICKNESS OF OVERBURDEN: 270.0 Ft.
7. DEPTH DRILLED INTO ROCK: N/A Ft.
8. TOTAL DEPTH OF HOLE: 292.5 Ft.
10. SIZE AND TYPE OF BIT: 8-1/4" Auger Chisel Bit
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): (msl)
12. MANUFACTURER'S DESIGNATION OF DRILL: CP-650
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: disturbed: 11 undisturbed: 10
14. TOTAL NUMBER OF CORE BOXES: 56
15. ELEVATION GROUND WATER: 3281.32
16. DATE HOLE STARTED: 6/14/95 COMPLETED: 7/9/95
17. ELEVATION TOP OF HOLE: 3542.32 Ft.
18. TOTAL CORE RECOVERY FOR BORING: 77 %
19. NAME OF GEOLOGIST: T. Mathis

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (if significant)	BLOWS/
3542.3	.0						
			CLAY: dark yellowish-brown; low plasticity; stiff; moist; w/some roots.	100	CA-1	Boring advanced w/8-1/2" OD augers inside 9-5/8" OD drive casing. Air used as a drilling fluid. Samples collected w/2.5" I.D. California modified sampler driven w/ 300lb hammer. CA-1 through CA-5 were placed in core box CB-1.	6 6 8 7
			Grading very stiff.	40	CA-2		6 4 13
			Grading grayish-orange; stiff; dry.	53	CA-3		8 7 9
			Grading very stiff; w/trace caliche.	67	CA-4		9 9 13
				75	CA-5		9 10 11
						Sampling continued below 8.5' w/ 94mm wire line coring system.	
				100	CB-2		
			Grading w/some caliche.	100	CB-3		
			Grading moderate yellowish-brown; moist; caliche grades out.				
				100	CB-4		
						(continued)	

0 2 4 6 8 10 12 14 16 18

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3524.3	18.0						
			Grading w/trace caliche.	100	CB-4		
			Grading grayish-orange; dry; w/some caliche.	84	CB-5		
				100	CB-6		
			Grading w/some silt; moderate reddish-brown & grayish-orange mottled.	100	CB-7		
			Grading w/some sand; trace silt.	50	CB-8		
						(continued)	

18 20 22 24 26 28 30 32 34 36 38 40

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3502.3	40.0						
				50	CB-9		
				100	CB-10		
3494.3	48.0		Sandy CLAY; dark yellowish-orange; stiff; low plasticity; moist; w/some caliche & silt.				
				60	CB-11		
			Mottled dark yellowish-orange & grayish-orange; w/some sandstone concretions.				
			Sandstone concretions grade out.	60	CB-12		
						(continued)	

40 42 44 46 48 50 52 54 56 58 60 62

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3480.3	62.0						
			Increasing sand content; mottling grades out; dark yellowish-orange.	60	CB-12		
3475.8	66.5		SAND; dark yellowish-orange; medium dense; poorly graded; fine grained; rounded; dry; w/some caliche & clay.	100	CB-13		
3470.8	71.5		Sandy CLAY; dark yellowish-brown; very stiff; low plasticity; moist; w/some caliche.				
3468.3	74.0		CALICHE; white; cemented.			No core recovered; drilling very slow; caliche frags in cuttings	
3465.3	77.0		Silty CLAY; moderate orangish-pink; very stiff; low plasticity; dry; w/some fine sand & caliche.	43	CB-14		
						(continued)	

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

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3458.3	84.0			43	CB-14		
3456.3	86.0		Sandy CLAY; grayish-orange; stiff; low plasticity; moist; w/trace silt.	100	CB-15		
				100	CB-16		
18.8	93.5		Clayey SAND; grayish-orange; medium dense; poorly graded; fine grained; rounded; moist; w/trace silt.	100	CB-17		
3444.8	97.5		SAND; moderate yellowish-brown; medium dense; poorly graded; fine grained; rounded; moist; w/trace silt.	58	CB-18		
			Grading very pale orange.				
			Grading moderately cemented; w/some sandstone concretions.				
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

SHEET 6 OF 14

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3436.3	106.0						
				58	CB-18		
			Concretions grade out.	100	CB-19		
				100	CB-20		
				100	CB-21		
			Grading moist; w/trace gravel.	100	CB-22		
						(continued)	

106 108 110 112 114 116 118 120 122 124 126 128

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3414.3	128.0						
			Gravel grades out.	100	CB-23		
				100	CB-24		
				100	CB-25		
			Grading moderately cemented w/some sandstone concretions.	100	CB-26		
				100	CB-27		
				100	CB-28		
						(continued)	

128 130 132 134 136 138 140 142 144 146 148 150

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3392.3	150.0						
			Grading very dense; w/trace sandstone concretions.	100	CB-28		
				100	CB-29		
				100	CB-30		
				100	CB-31		
				100	CB-32		
				100	CB-33		
						(continued)	

150 152 154 156 158 160 162 164 166 168 170 172

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3370.3	172.0						172
				100	CB-34		174
				100	CB-35		176
				100	CB-36		178
				100	CB-37		180
			Grading well cemented; w/some silt.	100	CB-38		182
			Grading uncemented; silt grades out.	100	CB-39		184
						(continued)	186

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3348.3	194.0						
3347.8	194.5		SAND; grayish-orange; medium dense; well graded; fine to medium grained; rounded; moist.	100	CB-39		
			Grading w/some silt; trace clay.	70	CB-40	Added 5 gallons deionized water to lubricate stuck core barrel.	
			Silt & clay grade out.	100	CB-41		
			Grading some silt & clay.				
			Clay grades out.	100	CB-42		
3332.3	210.0		Silty SAND; grayish-orange; fine grained; medium dense; poorly graded; rounded; moist.				
3329.8	212.5			100	CB-43		
			SAND; grayish-orange; medium dense; well graded; fine to medium grained; well rounded; moist.	90	CB-44		
						(continued)	

194 196 198 200 202 204 206 208 210 212 214 216

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3326.3	216.0						
				90	CB-44		
			Grading w/some gravel.	70	CB-45		
3319.8	222.5						
			Sandy GRAVEL; grayish-orange; dense; poorly graded; 1" diameter; rounded; moist; w/1" diameter quartzite clasts.	80	CB-46		
3315.8	226.5						
			Gravelly SAND; grayish-orange; medium dense; well graded; fine to medium grained; rounded; moist.	56	CB-47		
3310.8	231.5						
			SAND; grayish-orange; medium dense; well graded; fine to medium grained; well rounded; moist.	50	CB-48		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3304.3	238.0						
				50	CB-48		
3297.8	244.5		Sandy CLAY; moderate yellowish-brown; stiff; low plasticity; moist.				
3295.8	246.5		CLAY; moderate yellowish-brown; stiff; low plasticity; moist; w/some sand.	100	CB-49		
				44	CB-50		
3287.3	255.0		SAND; pale yellowish-orange; medium dense; well graded; fine to medium grained; rounded; moist.				
3285.8	256.5		Silty CLAY; grayish-orange & moderate yellowish-brown mottled; firm; low plasticity; moist; w/trace sand.				
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

SHEET 13 OF 14

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3282.3	260.0						
			Grades w/some sand.	44	CB-50		
3277.3	265.0		Silty SAND; grayish-orange; moderately cemented; dense; poorly graded; fine grained; rounded; moist.	100	CB-51		
				100	CB-52	Sluff matl. in core barrel wet.	
				100	CB-53	Water level measured @ 261' on 6/30/95 & 7/1/95. Flowing sand in augers.	
3267.3	275.0		CLAY; moderate yellowish-brown; stiff; high plasticity; moist; w/trace sand stringers & concretions.				
3264.5	277.8		Silty SAND; moderate yellowish-brown; moderately cemented; very dense; well graded; fine to medium grained; rounded; moist.	50	CB-54		
261.1	281.2		Clayey SAND; moderate yellowish-brown; very dense; ~~well graded; fine to medium~~ grained; rounded; moist.			(continued)	

260 262 264 266 268 270 272 274 276 278 280 282

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT: Pantex Plant -Zone 12 GW Investigation

HOLE NUMBER: PTX06-1016

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.32 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3260.3	282.0						
3259.5	282.8		CLAY; moderate yellowish-brown; very stiff; high plasticity; moist.	50	CB-54		
3256.8	285.5		SAND; moderate yellowish-brown; dense; well graded; fine to medium grained; rounded; moist.	100	CB-55		
3255.8	286.5		CLAY; moderate yellowish-brown; very stiff; high plasticity; moist. Trace caliche nodules @ 287-287.5'.	80	CB-56		
3249.8	292.5		Grading w/some sand.			Bottom of boring @ 292.5'. Water level not recorded. Boring grouted to ground surface on 7/9/95.	

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (if significant)	BLOWS/
3260.8	282.0						
			For lithologic information from 0' to 292.5', see boring log for PTX06-1016 pilot hole.				
3250.3	292.5		Sandy SILT; moderate brown; medium stiff; nonplastic; wet.				
				33	CB-57	Boring advanced w/5-1/4" tricone roller bit. Sampling conducted using 2" ID Christianson continuous core system. Boring reamed using 9-5/8" tricone roller bit. Bentonite mud used as drilling fluid. Water in sample from drilling fluid.	
						(continued)	

282
284
286
288
290
292
294
296
298
300
302
304

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3238.8	304.0						
3236.8	306.0		Silty SAND; moderate orangish-pink; moderately cemented; very dense; poorly graded; fine grained; well rounded; moist.	33	CB-57		
			Grading moderate yellowish-brown.	100	CB-58		
			Grading poorly cemented.				
			Grading moderate orangish-pink.	100	CB-59		
			Grading uncemented.	82	CB-60		

(continued)

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3216.8	326.0						
			Grading moderate brown.	82	CB-60		
			Grading moderate yellowish-brown.				
			Grading w/trace caliche.	95	CB-61		
			Grading poorly cemented.	63	CB-62		
3198.8	344.0		SAND; moderate yellowish-brown; poorly cemented; dense; poorly graded; fine grained; rounded; moist; w/some silt.	100	CB-63		

(continued)

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3194.8	348.0						
				85	CB-64		
				85	CB-65		
			Grading w/trace clay.	89	CB-66		
			Grading w/some clay.				
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3172.8	370.0						
			Grading grayish-orange.				
			Clay grades out.				
				89	CB-66		
			Grading w/trace gravel.				
			Grading medium grained.				
				100	CB-67		
			Grading w/trace clay.				
				100	CB-68		
			Grading fine grained.				
				90	CB-69		
			Grading w/some low plasticity white clay seams.				
				85	CB-70		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3150.8	392.0						
			Sand grades medium grained; w/trace gravel.	85	CB-70		
3148.8	394.0		SAND; grayish-orange; poorly cemented; dense; well graded; fine to medium grained; well rounded; moist; w/trace silt.	100	CB-71		
			Grading loose; uncemented. Grading wet.	50	CB-72	Apparently encountered water during drilling @ 404' on 7/3/95.	
				90	CB-73		
						(continued)	

392 394 396 398 400 402 404 406 408 410 412 414

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3128.8	414.0						
			Grading w/some gravel; well rounded.	90	CB-73		
			Grading well graded; fine to coarse grained.	50	CB-74		
			Gravel grades to trace.				
			Gravel grades out.	100	CB-75		
				21	CB-76		
						(continued)	

414 416 418 420 422 424 426 428 430 432 434 436

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (if significant)	BLOWS/
3106.8	436.0						
			Grading w/trace fine gravel	21	CB-76		
				75	CB-77		
			Grading w/some fine to medium gravel.	75	CB-78		
			Gravel grades out; grading moderately cemented.				
3092.8	450.0		Silty SAND; very pale orange; very dense; poorly graded; fine grained; well rounded; moderately cemented; moist.	100	CB-79		
3089.8	453.0		Sandy SILT; very pale orange; very stiff; low plasticity; moist; w/ some clay.	90	CB-80		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3084.8	458.0						
			Grading light brown & very pale orange mottled.	90	CB-80		
3082.8	460.0						
			SAND; yellowish-brown; moderately cemented; very dense; well graded; fine to coarse grained; rounded; moist; w/some fine gravel.			Unable to core 462'-464'. Drill out w/ center bit.	
				23	CB-81		
3076.8	466.0						
			CLAY; dark reddish-brown; very stiff; high plasticity; moist; w/trace gravel.				
3074.8	468.0						
			SAND; yellowish-brown; moderately cemented; dense; well graded; fine to coarse grained; subrounded; moist; w/some gravel.				
3070.8	472.0						
			SAND; very pale orange; weakly cemented; medium dense; poorly graded; fing grained; well rounded; moist.				
				64	CB-82		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3062.84	480.0						
				64	CB-82		
3053.84	489.0		CLAY; dark reddish-brown; very stiff; high plasticity; moist.	40	CB-83		
3049.84	493.0		SAND; very pale orange; moderately cemented; very dense; poorly graded; fine grained; well rounded; moist.				
				40	CB-84		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (if significant)	BLOWS/
3040.8	502.0						
				80	CB-85		
				44	CB-86		
			Grading w/some moderate red mottling				
3026.8	516.0						
			Silty CLAY; moderate red; very stiff; low plasticity; moist; w/trace sand.	45	CB-87		
3022.8	520.0						
			CLAY; moderate red; very stiff; high plasticity; moist; w/trace sand.	85	CB-88		
						(continued)	

Hole No.PTX06-1016

DRILLING LOG (Cont. Sheet)

ELEVATION TOP OF HOLE 3542.80 Ft.

PROJECT: Pantex Plant -Zone 12 GW Investigation

INSTALLATION: Pantex Plant

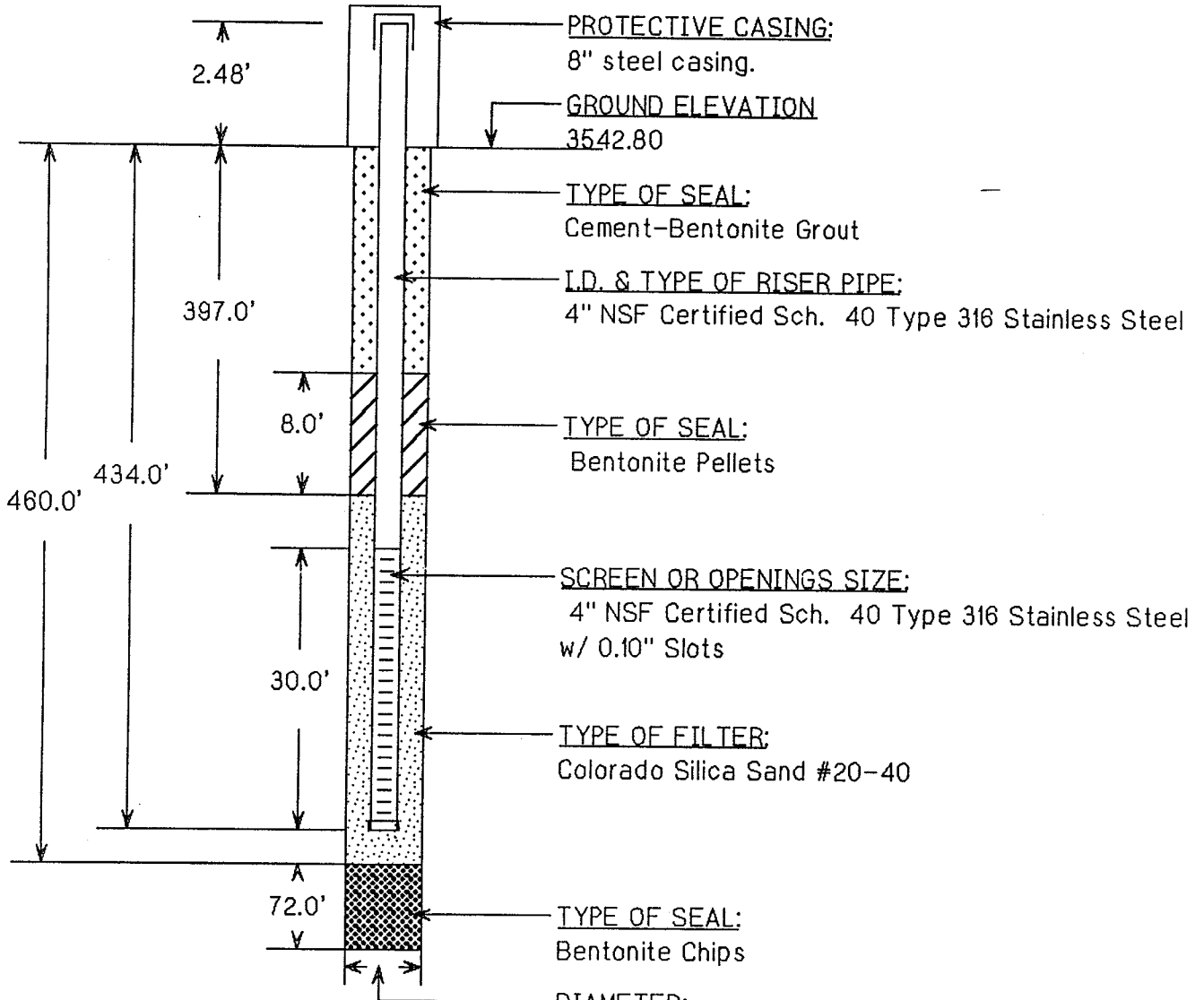
ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	BOX NUMBER	REMARKS (If significant)	BLOWS/
3018.8	524.0						
				85	CB-86		
3014.8	528.0					Bottom of boring @ 528.0'on 8/3/95. Boring deepened to 532.0' for geophysics on 8/8/95. Water level not recorded. Monitoring well installed 8/14/95.	

BLACK & VEATCH Waste Science, Inc.

WELL INSTALLATION LOG

NO. PTX08-1018

CLIENT U.S. Army Corps of Engineers		**PROJECT** Pantex Plant – Zone 12 GW Investigation	**PROJECT NO.** 40548.200
PROJECT LOCATION Pantex Plant, Amarillo, Texas	**COORDINATES** N 3758892.34 E 839917.11	**TOP OF RISER ELEVATION (DATUM)** 3544.94 (msl)	**DATE** 8/14/95
STRATUM MONITORED SAND (Ogallala Formation)		**LOGGED BY** T. Mathis	
CHECKED BY E.T. Bailey		**APPROVED BY** S. Broglio	



METHOD OF INSTALLATION:

Boring drilled to 295'; set 10" ID steel casing from 0' to 294' & pressure grouted. Boring drilled to completion; placed bottom seal; placed sand filter; set riser pipe & screen; placed filter pack & seal. Grouted to 3' below ground surface. Set above ground protective steel casing. Concrete surface seal placed 6" above ground surface.

REMARKS:

5' riser pipe below screen. Centrallizers @ 20', 100, 200', 300', 404', & 434'. Well developed by surge blocking, bailing, & pumping. 800 gallons of water (88 casing volumes) removed. Bennett pump installed 8/31/95.

Send original copy by certified mail to: **TNRCC, P.O. Box 13087, Austin, TX 78711-3087**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Advisory Council
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

1) **OWNER** MASON & HANGAR SILAS MASON (Name) **ADDRESS** PANTEX PLANT (Street or RFD) AMARILLO (City) TEX (State) 79177 (Zip)

2) **ADDRESS OF WELL:** County CARSON PANTEX PLANT (Street, RFD or other) AMARILLO (City) TEX (State) 79177 (Zip) **GRID #**

3) **TYPE OF WORK (Check):** ☑ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** ☑ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) **WELL LOG:** PTX06 1016
Date Drilling: Started 12 JUL 1995 Completed 15 AUG 1995

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
14 1/2	Surface	295
9 5/8	295	532

7) **DRILLING METHOD (Check):** ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☐ Air Hammer ☐ Cable Tool ☐ Jetted ☑ Other AIR HAMMER/ CASING HAMMER

N

From (ft.)	To (ft.)	Description and color of formation material
0	47.5	CLAY, DK TO MED YELLOW
47.5	66.5	SANDY CLAY YELLOW TO ORA
66.5	71.5	FINE SAND YELLOW TO ORA
71.5	74.0	SANDY CLAY YELLOWISH BRN
74.0	77.0	CALICHE
77.0	86.0	SILTY CLAY ORA PINK
86.0	93.5	SANDY CLAY GREYISH ORA
93.5	97.5	CLAYEY SAND GREYISH ORA
97.5	194.5	FINE SAND YELLOWISH BRN
194.5	222.5	FINE TO MED SAND
222.5	231.5	SANDY GRAVEL
231.5	245.0	FINE TO MED SAND GR ORA
245.0	255.0	CLAY MOD YELLOW BRN
255	256.5	FINE TO MED SAND
256.5	265	SANDY CLAY YELLOW BRN

(Use reverse side if necessary)

8) **Borehole Completion (Check):** ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☑ Gravel Packed ☐ Other
If Gravel Packed give interval ... from 139 ft. to 400 ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	316 SS BLANK	0	404	SCH 40
4	N	316 SS SCREEN	404	434	SCH 40
4	N	316 SS BLANK	434	439	SCH 40
10	N	LC STEEL	0	294	SCH 40

9) **CEMENTING DATA** [Rule 338.44(1)]
Cemented from 0 ft. to 295 ft. No. of sacks used 105
0 ft. to 359 ft. No. of sacks used 105
Method used TREMIE / PRESSURE GROUT
Cemented by STEWART BROS DRILLING CO
Distance to septic system field lines or other concentrated contamination ____ ft.
Method of verification of above distance

10) **SURFACE COMPLETION**
☑ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☑ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

11) **WATER LEVEL:**
Static level 423.5 ft. below land surface Date 8-27-95
Artesian flow ____ gpm. Date

12) **PACKERS:** Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☒ Other BENNETT SAMPLE PUMP
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) **WELL TESTS:**
Type test: ☑ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 25 gpm with 10 ft. drawdown after

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SEP 06 1995
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☑ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME STEWART BROS DRILLING CO (Type or print) **WELL DRILLER'S LICENSE NO.** 03175 W

ADDRESS 306 AIRPORT RD (Street or RFD) MILAN (City) NM (State) 87021 (Zip)

(Signed) (Licensed Well Driller) **(Signed)** (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 11-01-94)

TNRCC COPY

PTX06-1023

Contractor:

Contract #: BOA 002001
Contractor's Project #:

Drilled date: 09/28/95-10/05/95

OPTIX #:
Last Update:

Standard Included Documents

(Others may also be included)

Drilling Log
- ___Draft
- ___Final

_X_Installation Log

Lithologic Logs
- ___Draft Visual Classification of Soils (handwritten)
- ___Final Visual Classification of Soils (computerized)

Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-Log
- ___Bond Log
- ___Deviation Log

_X_State Well Report

Client: M&H/BMI
Location: East of Playa 1
Well Designation: PTX06 - 1023
Date Completed: 10/05/95

Drilling Contractor: Layne
Driller: Jim Duke
Method: 6"/9" Dual Wall Air Hammer
Casing/Screen

Contract: BOA 002001
Well Material: 316 4" NSF Stainless
Screen: 0.01" Wire Wrap

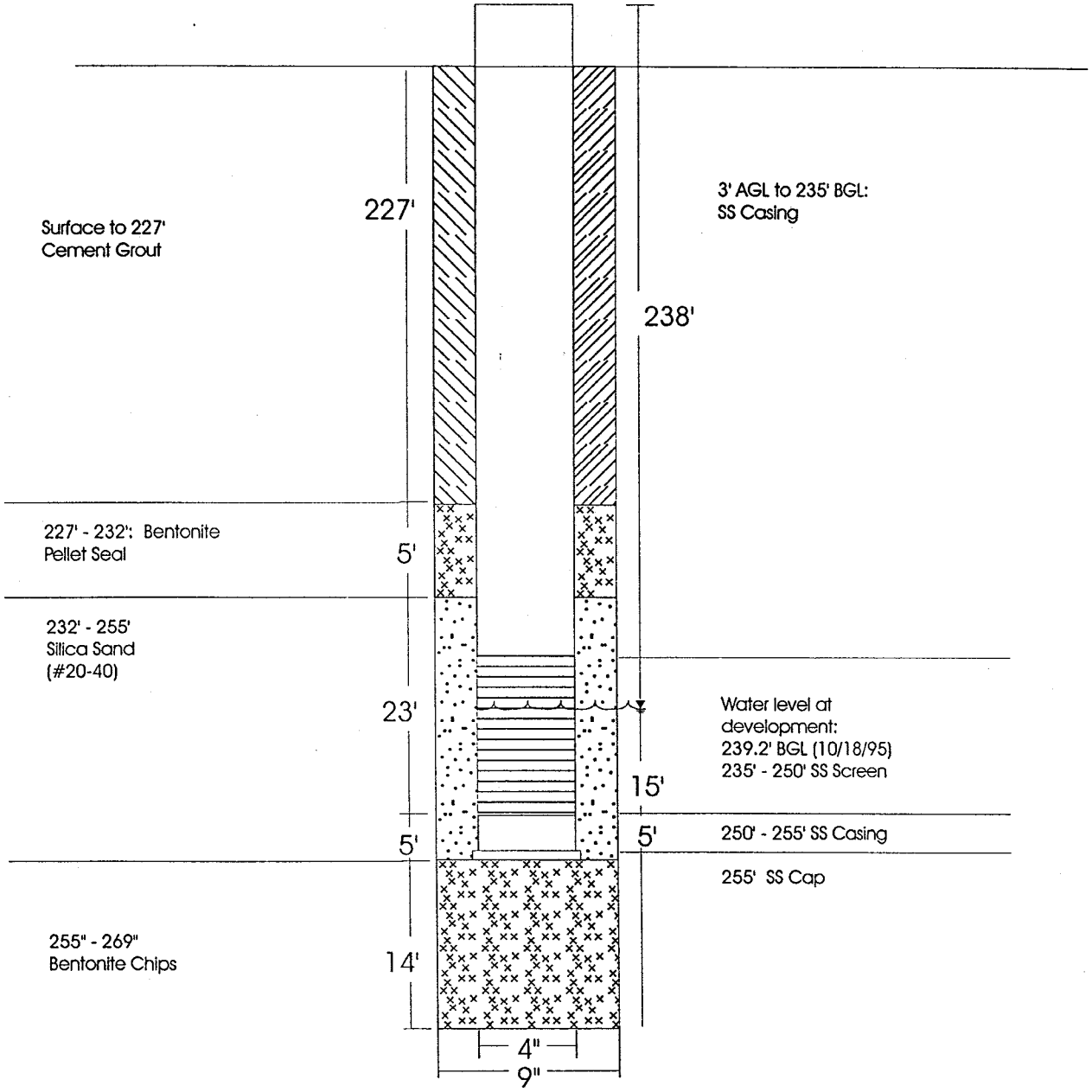

Figure 5. Well Construction - PTX06 - 1023

Send original copy by certified mail to: **TNRCC, P.O. Box 13087, Austin, TX 78711-3087** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

PX-06-102

State of Texas WELL REPORT

Texas Water Well Drillers Advisory Council
P.O. Box 13087
Austin, TX 78711-3087
512-239-0530

1) **OWNER** DOE Pantex Plant (Name) **ADDRESS** P.O. Box 30020 - Amarillo, TX. 79177 (Street or RFD) (City) (State) (Zip)

2) **ADDRESS OF WELL:** County Carson (Street, RFD or other) Amarillo, TX. (City) (State) (Zip) **GRID #** 06-44-5

3) **TYPE OF WORK (Check):** ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):** ☒ Monitor ☐ Environmental Soil Boring ☐ Domestic ☐ Industrial ☐ Irrigation ☐ Injection ☐ Public Supply ☐ De-watering ☐ Testwell
If Public Supply well, were plans submitted to the TNRCC? ☐ Yes ☐ No

5)

6) **WELL LOG:** MW-1
Date Drilling: Started 09-28 19 95 Completed 10-05 19 95

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9.25	Surface	269'

7) **DRILLING METHOD (Check):** ☐ Driven ☐ Air Rotary ☐ Mud Rotary ☐ Bored ☒ Air Hammer ☐ Cable Tool ☐ Jetted ☐ Other

N

From (ft.)	To (ft.)	Description and color of formation material
0'	60'	Well consolidated silt, Red-Brown
60'	90'	Caliche - cemented sandstone - White.
90'	180'	Fine grained sand
180'	230'	Sand and gravel Med. grade
230'	235'	Silt
235'	255'	Coarse Sand + Gravel
255'	265'	Silt
265'	269'	Clay

(Use reverse side if necessary)

8) **Borehole Completion (Check):** ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☒ Gravel Packed ☐ Other
If Gravel Packed give interval ... from 155' ft. to 132' ft.

CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4	N	316 S.S. Riser-Smp	155'	150'	Sch 10
4	N	316 S.S. Scrn. .010	150'	135'	Sch 10
4	N	316 SS Riser	135'	+3'	Sch 10

9) **CEMENTING DATA** [Rule 338.44(1)]
Cemented from 127' ft. to 2' ft. No. of sacks used 75
____ ft. to ____ ft. No. of sacks used ____
Method used Trimme thru Hammer pipe
Cemented by Layne
Distance to septic system field lines or other concentrated contamination ____ ft.
Method of verification of above distance ____

D.I.M.

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OCT 19 1995
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 338.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 338.44(3)(A)]
☐ Pitless Adapter Used [Rule 338.44(3)(b)]
☐ Approved Alternative Procedure Used [Rule 338.71]

13) **TYPE PUMP:** N/A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other
Depth to pump bowls, cylinder, jet, etc., ____ ft.

14) **WELL TESTS:** N/A
Type test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: ____ gpm with ____ ft. drawdown after ____ hrs.

11) **WATER LEVEL:** N/A
Static level ____ ft. below land surface Date ____
Artesian flow ____ gpm. Date ____

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? ____ Depth of strata ____
Was a chemical analysis made? ☐ Yes ☐ No

12) **PACKERS:** N/A Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Layne Environmental Services (Type or print) **WELL DRILLER'S LICENSE NO.** 4848 M

ADDRESS 6718 Northwinds Dr. (Street or RFD) Houston, (City) TX. (State) 77041 (Zip)

(Signed) James A. Dubey (Licensed Well Driller) **(Signed)** ____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

TNRCC-0199 (Rev. 11-01-94) TNRCC COPY

PTX06-1043

Contractor: ETAS

Contract #: 1552-003-184

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

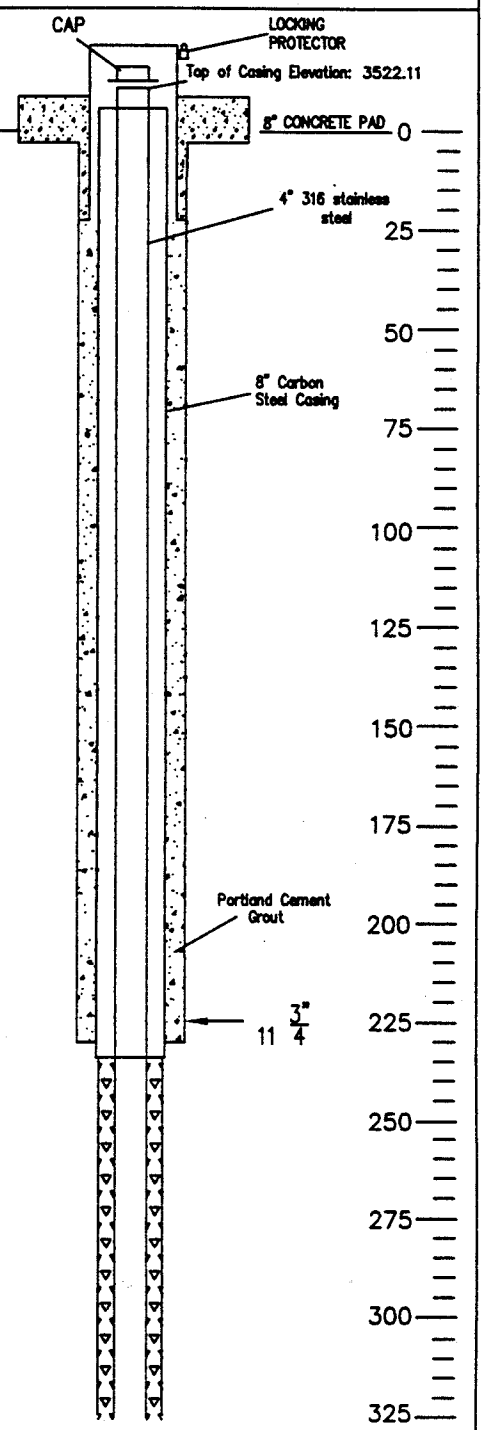
___Lithologic Logs
- ___Draft
- ___Final

_X_Geophysical Logs
- _X_Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

PTX06-1043 WELL LOG

DEPTH (FEET)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	SPLIT SPOON SAMPLE INTERVAL
		Northing (X) : 3765226.15 Easting (Y) : 640711.10	
0		GROUND SURFACE ELEVATION: 3519.05	
6'	CH	Topsoil.	
25	CL	Clay 7.5yr 7/2 pinkishgray. Silty w/caliche inclusions to 50 ft., becoming sandy with depth. Dry.	
50			
70'			
75	SM	Sand 7.5yr 7/3. Very fine grain with fine mica, poorly sorted, slightly moist with gravel @ 190 ft. Becoming very moist to wet @200 ft.	
100			
125			
150			
175			
200			205'-206'
222'			
225	FGZ	Clay 7.5 yr 5/3. Silty, dense and dry.	230'-231.5'
250			
275			
300			
325		Con't on page 2	



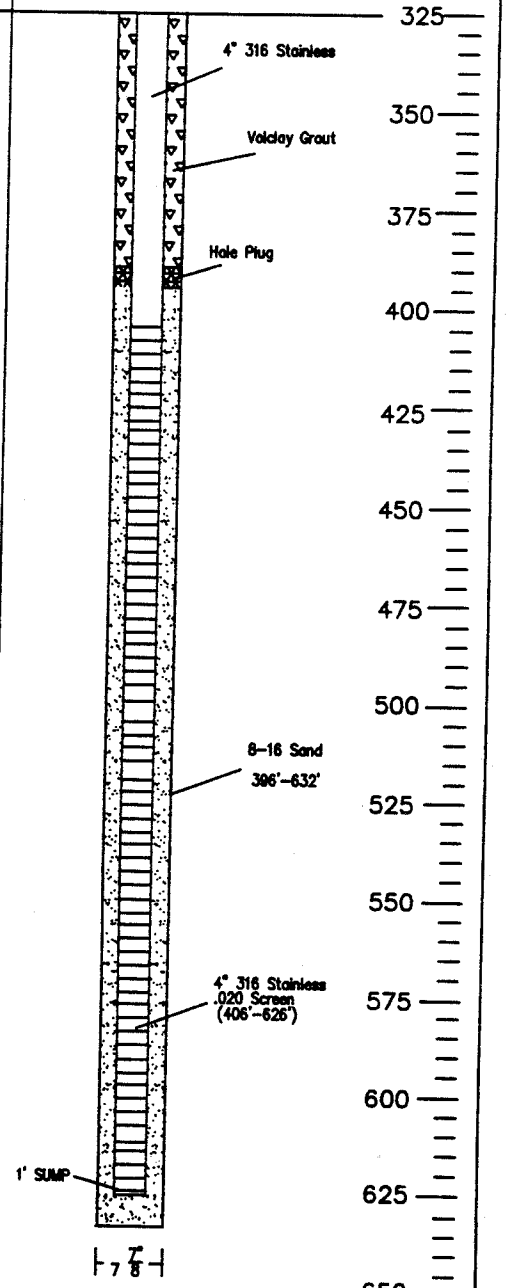
TASK ORDER NO. 1552-003 PROJECT 184

ETAS CORPORATION

LOCATION: NE OF PLAYA1
DATE STARTED: 8/11/99
DATE COMPLETED: 8/20/99 DATE PLUGGED: N/A
DRILLING METHOD CASING HAMMER/AIR ROTARY/MUD ROTARY
DRILLED BY WATER DEVELOPMENT CORP. WEDDLE/THATCHER/PHILLIPS
LOGGED BY HENDRICKS/SCHLAG/HALL
CHECKED BY SCHLAG
DRAWN BY: ETAS

PTX06-1043 WELL LOG CONTINUED

DEPTH (FEET)	GRAPHIC LOG	CONTINUED FROM PAGE 1	SPLIT SPOON SAMPLE INTERVAL	WELL COMPLETION DETAIL
325				
350	FGZ	Continued from page 1		
375				
378'				
400				
425				
450 ▼				
475	SP	Sand 2.5yr 7/2-8/3 pale red to pink. Silty with medium to course grain, very silty/calyey with hard dense layer from 555'-565'. Courser sand near 580'.		
500				
525				
550				
575				
600				
625 622'	Red beds	Sandstone/siltstone reddish brown Very dense, hard.		
650		TD @632' ▼ Water Table @ (24hrs)		



TASK ORDER NO. 1552-003 PROJECT 184

ETAS CORPORATION

LOCATION: EAST OF PLAYA1
DATE STARTED: 8/13/99
DATE COMPLETED: 8/27/99 DATE PLUGGED: N/A
DRILLING METHOD CASING HAMMER/AIR ROTARY/MUD ROTARY
DRILLED BY WATER DEVELOPMENT CORP. THATCHER/ANDERSON
LOGGED BY HENDRICKS/HALL
CHECKED BY SCHLAG
DRAWN BY: ETAS

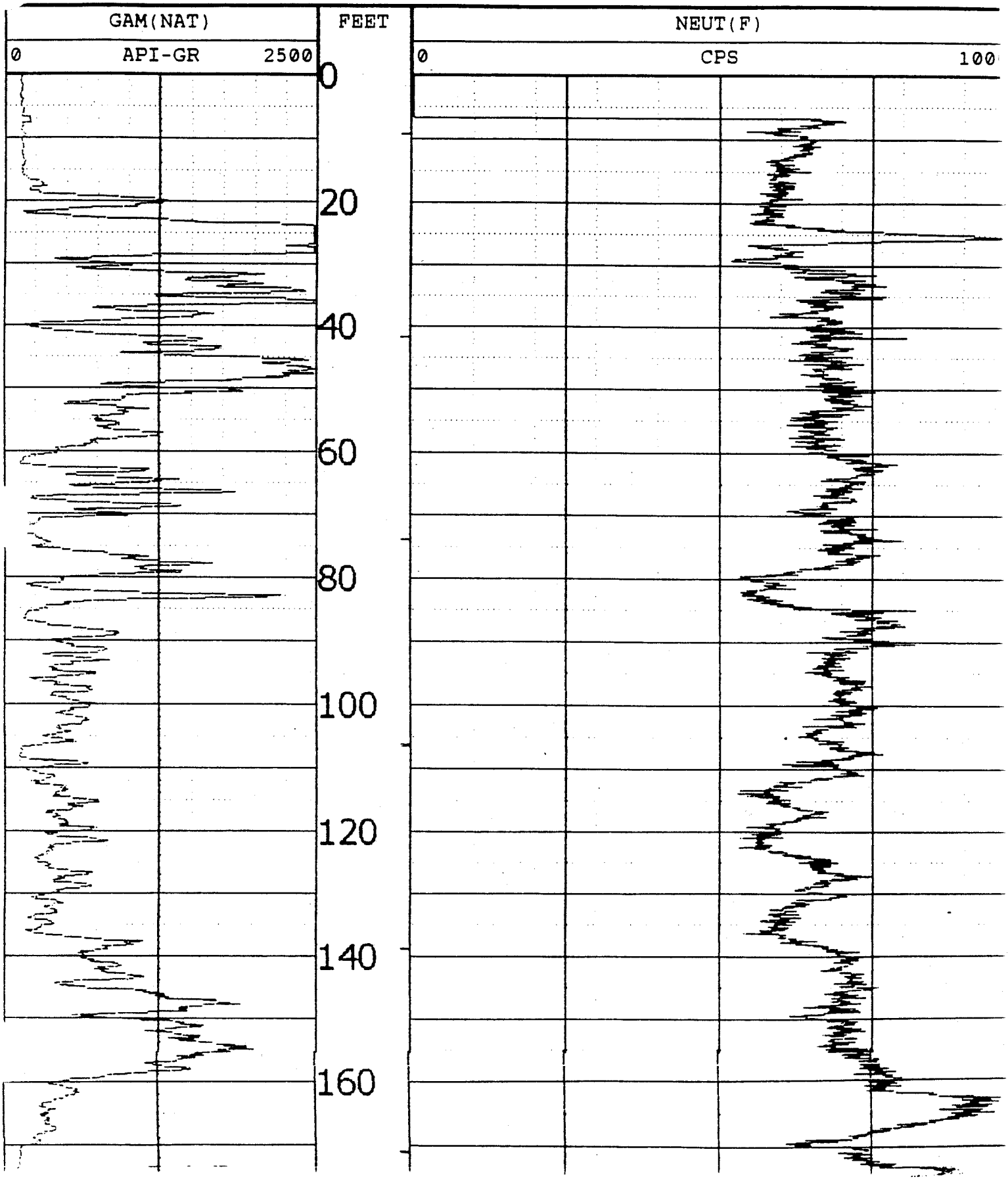


Century GEOPHYSICAL CORP

PTX-06-1043

COMPANY	: ETAS			OTHER SERVICES:	
WELL	: PTX-06-1043				
LOCATION/FIELD	: Pantex				
COUNTY	: Carson				
STATE	: TX				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 08/31/99	PERMANENT DATUM	:		
DEPTH DRILLER	: 622			KB	:
LOG BOTTOM	: 629.00	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -0.50	DRL MEASURED FROM	: G.L.	GL	:
CASING DIAMETER	: 6	LOGGING UNIT	: 9607		
CASING TYPE	: S.S.	FIELD OFFICE	: TULSA		
CASING THICKNESS	: .2	RECORDED BY	: Federwisch		
BIT SIZE	: 9.825	BOREHOLE FLUID	: WATER	FILE	: ORIGINAL
MAGNETIC DECL.	: 8	RM	: 0	TYPE	: 9072A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: sandstone	MATRIX DELTA T	: 54		
				THRESH:	20000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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CPS
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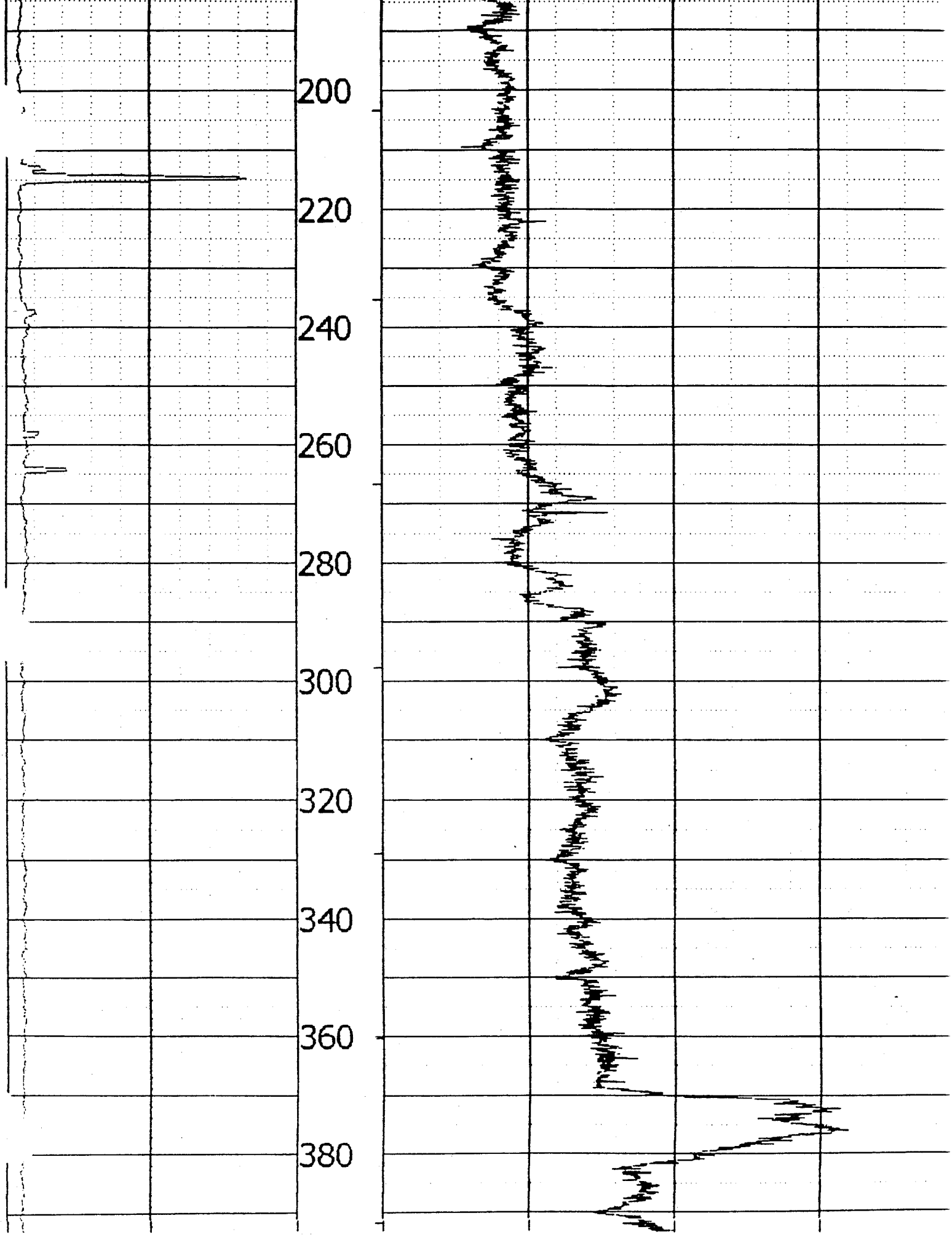
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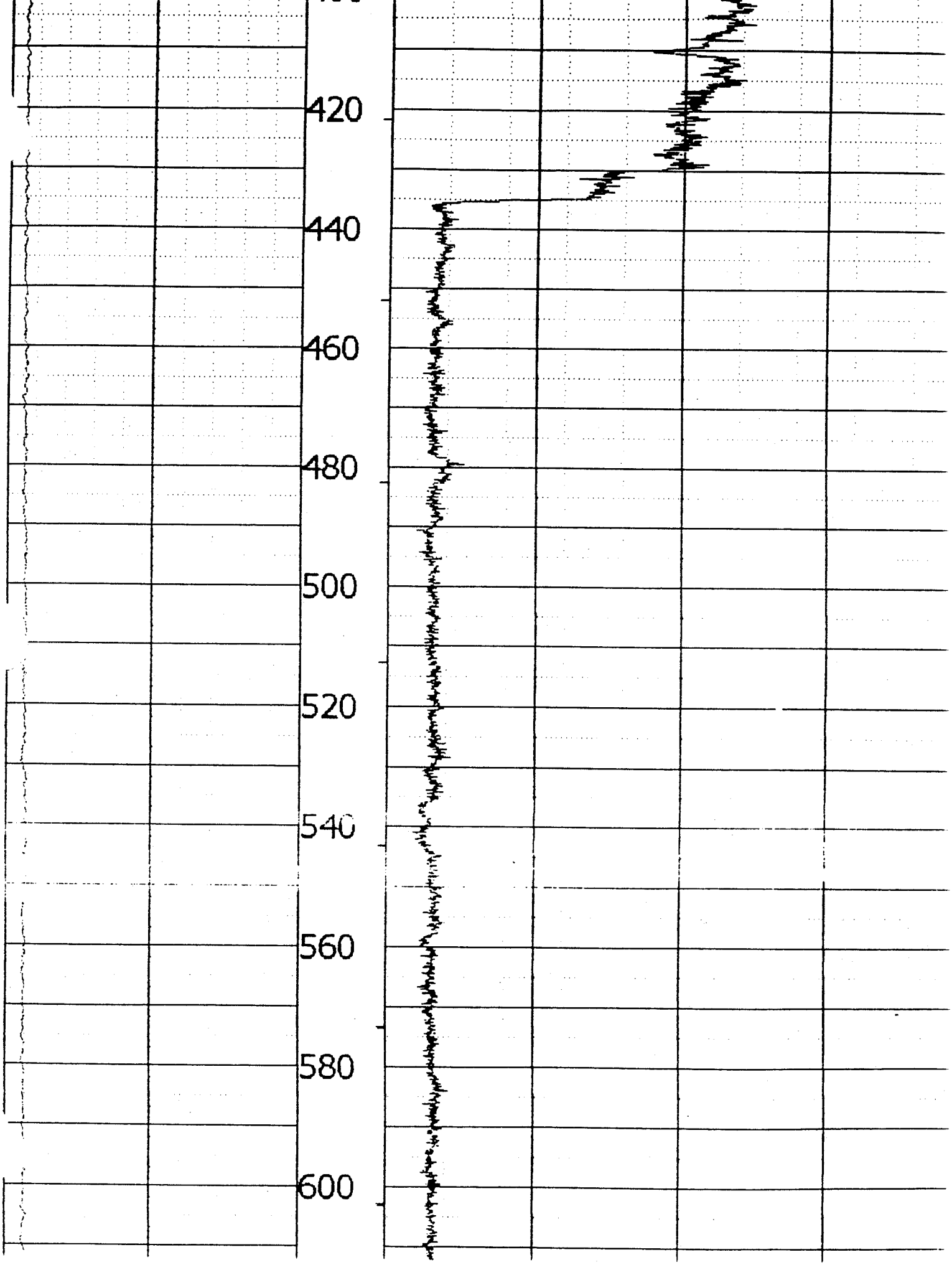
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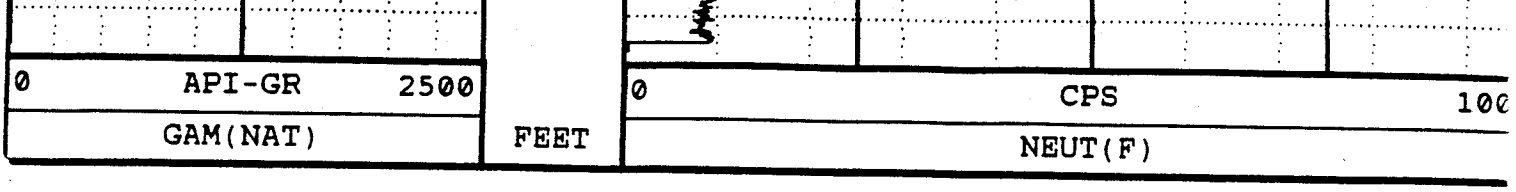


TOOL CALIBRATION PTX-06-1043 08/31/99 10:34
TOOL 9072A
SERIAL NUMBER 306

	DATE	TIME	SENSOR	STANDARD	RESPONS
1	Jun07,99	16:21:56	GAM(NAT)	Default [API-GR]	Default [CPS]
	Jun07,99	16:21:56	GAM(NAT)	Default [API-GR]	Default [CPS]
2	Jun07,99	16:21:56	VOLTAGE	Default [MV]	Default [CPS]
	Jun07,99	16:21:56	VOLTAGE	Default [MV]	Default [CPS]
3	Jun07,99	16:21:56	CURRENT	Default [UA]	Default [CPS]
	Jun07,99	16:21:56	CURRENT	Default [UA]	Default [CPS]
4	Jun07,99	16:21:56	NEUT(N)	10520.000 [CPS]	
5	Jun07,99	16:21:56	NEUT(F)	397.000 [CPS]	

PTX06-1044

Contractor: ETAS

Contract #: 1552-003-184

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

___Lithologic Logs
- ___Draft
- ___Final

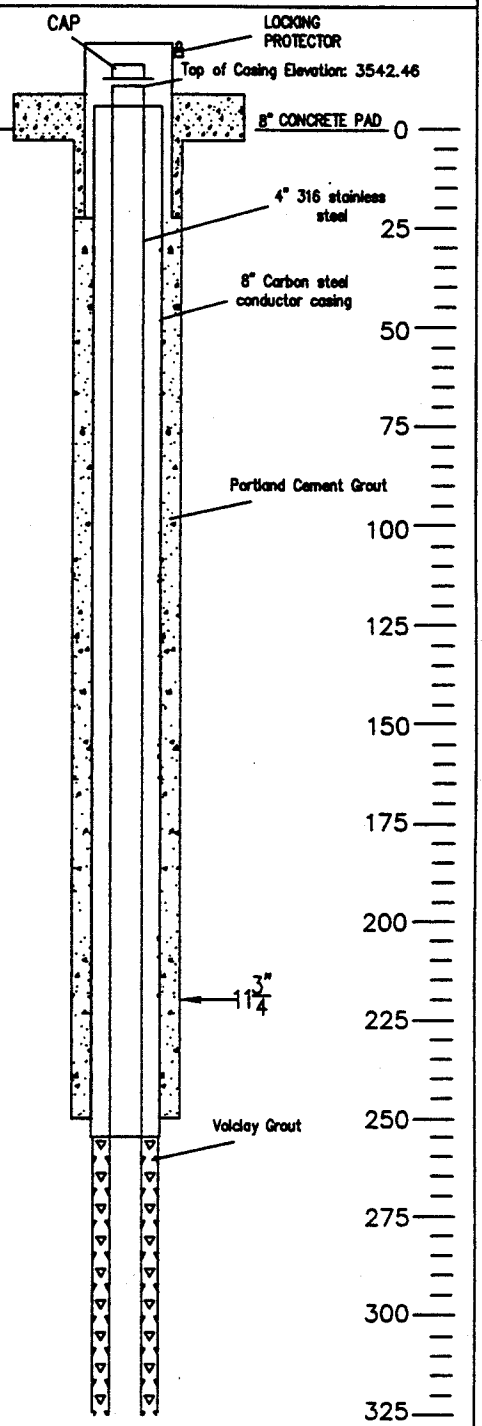
_X_Geophysical Logs
- _X_Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

PTX06-1044 WELL LOG

DEPTH (FEET)	GRAPHIC LOG	LITHOLOGIC DESCRIPTION	SPLIT SPOON SAMPLE INTERVAL
		Northing (X): 3764539.39 Easting (Y): 642706.19	
0	CH	GROUND SURFACE ELEVATION: 3539.11 Topsoil.	
6'			
25	CL	Clay 7.5yr 6/4-8/3 lightpink. Silty w/caliche inclusions and nodules < 1/2" dia. Dry. to slightly moist.	
50			
60'			
75	SM	Sand 7.5yr 7/4. Silty, very fine grain. Dry.	
100			
125			
140			
150	SP	Sand 10yr 7/3. Silty, fine grain with up to 20% gravel, sub-angular, dry.	
175			
200			
225			
250			250'-251.5'
275	FGZ	Clay 7.5 yr 7/3. Silty with caliche inclusions. Hard and dry.	
300			Cored 255-320
325		Con't on page 2 →	

WELL COMPLETION DETAIL



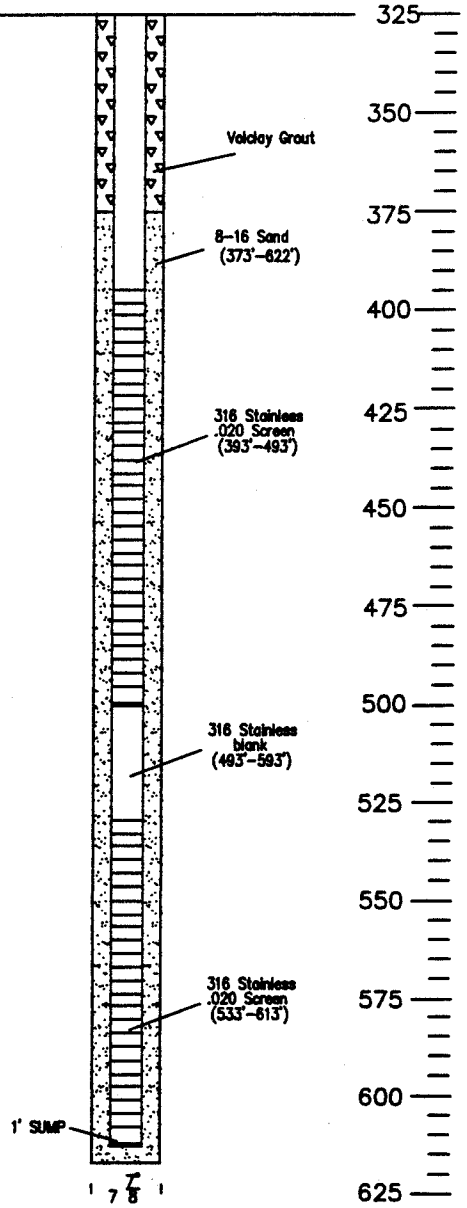
TASK ORDER NO. 1552-003 PROJECT 184

ETAS CORPORATION

LOCATION:	EAST OF PLAYA1
DATE STARTED:	8/13/99
DATE COMPLETED:	8/27/99 DATE PLUGGED: N/A
DRILLING METHOD	CASING HAMMER/AIR ROTARY/MUD ROTARY
DRILLED BY	WATER DEVELOPMENT CORP. WEDDLE/THATCHER
LOGGED BY	HENDRICKS/HALL
CHECKED BY	SCHLAG
DRAWN BY:	ETAS PAGE 1 OF 2

PTX06–1044 WELL LOG CONTINUED

DEPTH (FEET)	GRAPHIC LOG	CONTINUED FROM PAGE 1	SPLIT SPOON SAMPLE INTERVAL	WELL COMPLETION DETAIL
325				
350	FGZ	Continued from page 1		
375				
385'				
400	SP	Sand 7.5yr 6/3 light brown. Fine grain to coarse, silty in places.		
425				
440'				
450				
475	ML	Silty clay, Sand 7.5yr 5/3 brown. Very fine grain sand/silt. Samll gravel very clayey in places.		
500				
525				
550				
575				
600	SP	Gravelly Sand		
613				
625	Red beds	Sandstone/siltstone reddishbrown Very dense, hard.		
650				



TD @622' ▼ Water Table @ (24hrs)

TASK ORDER NO. 1552–003 PROJECT 184

ETAS CORPORATION

LOCATION: EAST OF PLAYA1
DATE STARTED: 8/13/99
DATE COMPLETED: 8/27/99 DATE PLUGGED: N/A
DRILLING METHOD CASING HAMMER/AIR ROTARY/MUD ROTARY
DRILLED BY WATER DEVELOPMENT CORP. THATCHER/ANDERSON
LOGGED BY HENDRICKS/HALL
CHECKED BY SCHLAG
DRAWN BY: ETAS

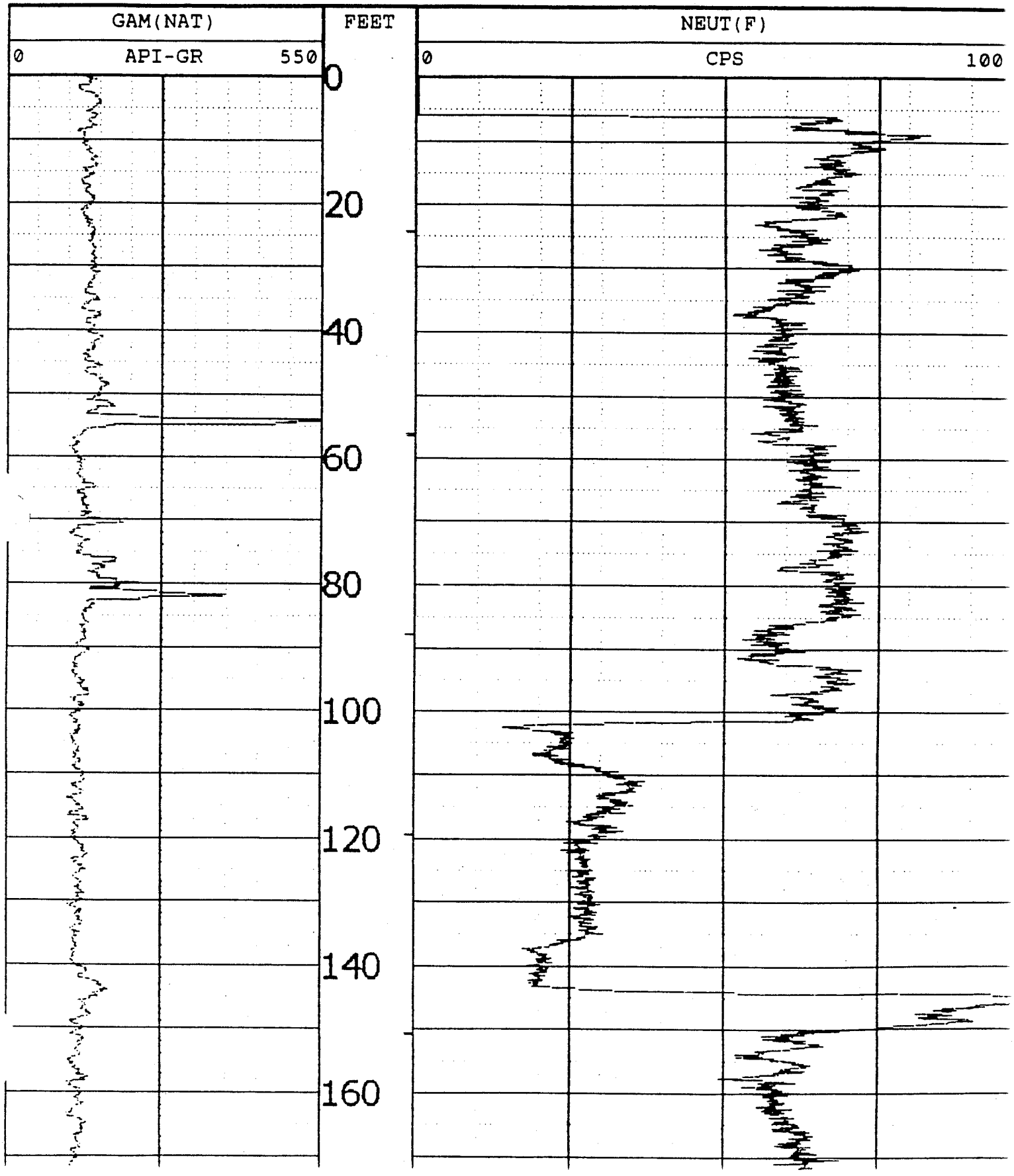


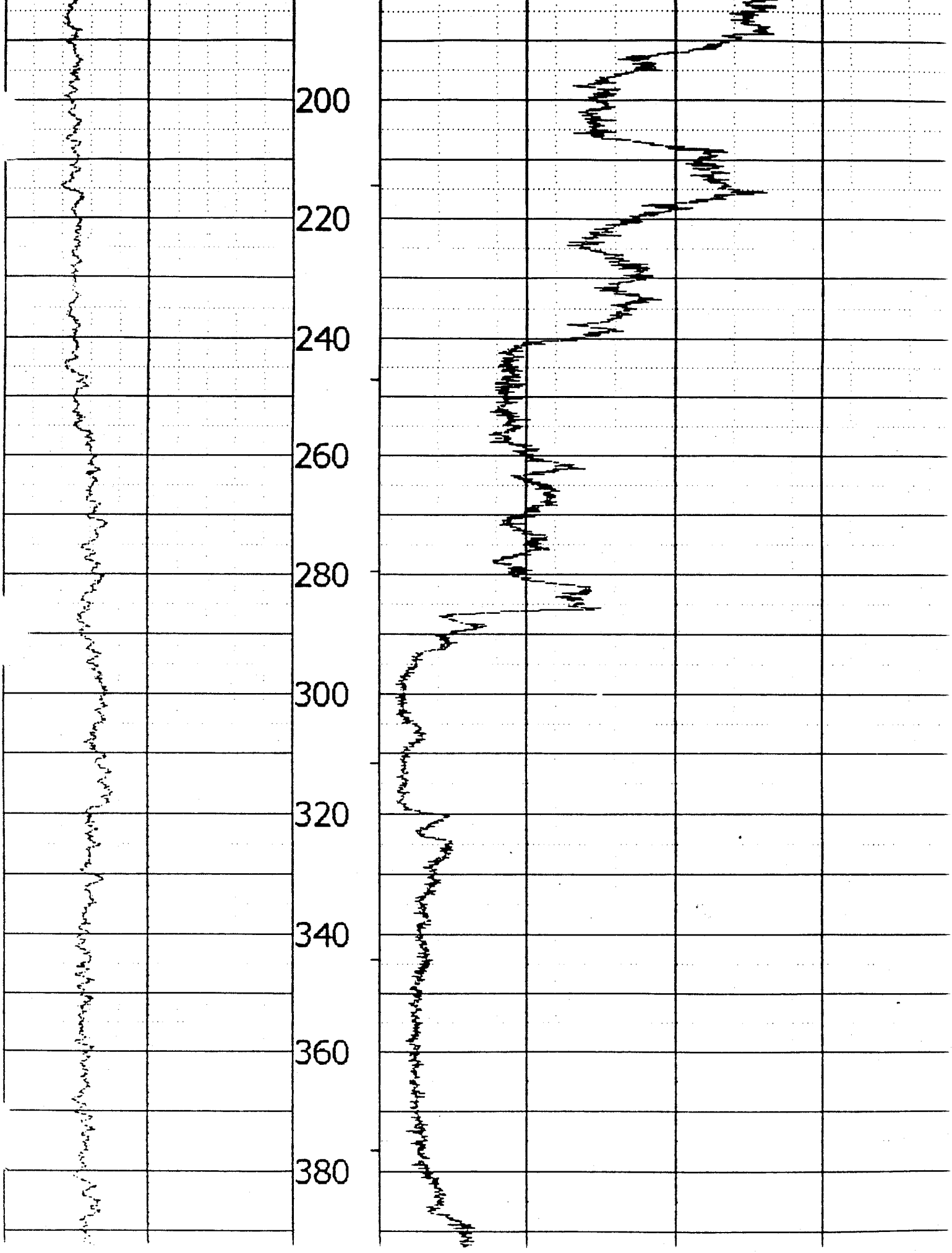
Century GEOPHYSICAL CORP

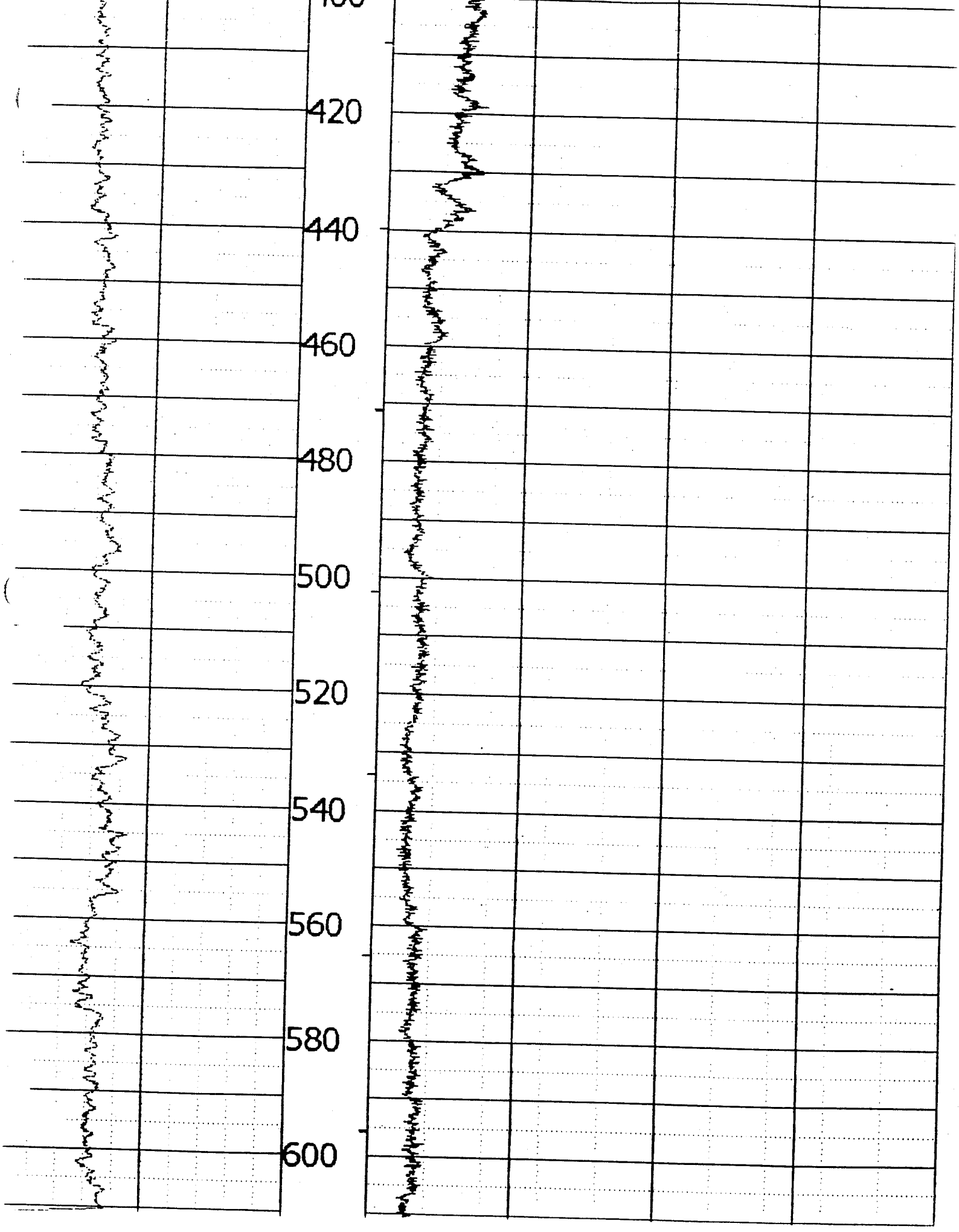
PTX-06-1044

COMPANY	: ETAS			OTHER SERVICES:	
WELL	: PTX-06-1044				
LOCATION/FIELD	: Pantex				
COUNTY	: Carson				
STATE	: TX				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 08/31/99	PERMANENT DATUM	:		
DEPTH DRILLER	: 614			KB	:
OG BOTTOM	: 619.30	LOG MEASURED FROM:	T.O.C.	DF	:
LOG TOP	: -1.20	DRL MEASURED FROM:	G.L.	GL	:
CASING DIAMETER	: 6	LOGGING UNIT	: 9607		
CASING TYPE	: S.Steel	FIELD OFFICE	: TULSA		
CASING THICKNESS:	.2	RECORDED BY	: Federwisch		
BIT SIZE	: 9.825	BOREHOLE FLUID	: WATER	FILE	: ORIGINAL
MAGNETIC DECL.	: 8	RM	: 0	TYPE	: 9072A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: sandstone	MATRIX DELTA T	: 54		
				THRESH:	20000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS


GAM(NAT)
0
API-GR
550
FEET
0
20
40
60
80
100
120
140
160
NEUT(F)
0
CPS
100


200
220
240
260
280
300
320
340
360
380


420
440
460
480
500
520
540
560
580
600

0	API-GR	550	0	CPS	100(

TOOL CALIBRATION PTX-06-1044 08/31/99 14:24
TOOL 9072A
SERIAL NUMBER 306

	DATE	TIME	SENSOR	STANDARD	RESPONS
1	Jun07,99	16:21:56	GAM(NAT)	Default [API-GR]	Default [CPS]
	Jun07,99	16:21:56	GAM(NAT)	Default [API-GR]	Default [CPS]
2	Jun07,99	16:21:56	VOLTAGE	Default [MV]	Default [CPS]
	Jun07,99	16:21:56	VOLTAGE	Default [MV]	Default [CPS]
3	Jun07,99	16:21:56	CURRENT	Default [UA]	Default [CPS]
	Jun07,99	16:21:56	CURRENT	Default [UA]	Default [CPS]
4	Jun07,99	16:21:56	NEUT(N)	10520.000 [CPS]	
5	Jun07,99	16:21:56	NEUT(F)	397.000 [CPS]	

PTX06-1048

Contractor: S.M. Stoller Corporation

Contract #: 3589 Project 102

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- ___Draft
- _X_Final

___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

PTX06-1048

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp	Northing: 3766991.73	Easting: 642073.52
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	247' BGS
Dates Drilled:	02/02/00 - 02/08/00	Depth to Water:	N/A
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3536.77'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	0		ML	0-5' SILT, sandy, clayey, dark brown (7.5YR, 4/3), medium plastic, very fine sand, hard, dry - Topsoil		
	10		CL	5-45' CLAY, slightly silty, trace fine sand, reddish brown (5YR, 5/4), medium to high plasticity, hard, dry, caliche nodules and manganese stringers prevalent At about 15' color alters to yellowish red (5YR, 5/6) At 22' increasing very fine sand to 25%, stiff to very stiff, dry		
	20					
	30					
	40					
	45		ML	45-47' SILT, clayey, sandy, with abundant unconsolidated caliche, red (2.5YR, 5/8), low plasticity, stiff, damp		
	50		SM	47-60' SAND, silty, 60-80% sand, red (2.5YR, 5/8), fine grain, subangular, poorly graded, dense, damp, some caliche		
	60		RX	60-65' CALICHE CAPROCK, white (5YR, 8/1), very dense		
	65		SM	65-73' SAND, silty, 70% sand, pink (5YR, 8/4), fine to very fine grain, subangular, graded, dense, dry		

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S.M. STOLLER CORPORATION

PTX06-1048

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp	Northing: 3766991.73	Easting: 642073.52
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	247' BGS
Dates Drilled:	02/02/00 - 02/08/00	Depth to Water:	N/A
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3536.77'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	80		SM	73-80' SAND, silty, 60% sand, 40% silt, reddish yellow, (5YR, 7/6), fine to medium grain, subangular, graded, medium dense, dry		
	90		SM-ML	80-93' SAND, silty to SILT, sandy, 50/50, pink (5YR, 7/4), fine to medium grain, subrounded, graded, medium dense, dry, moderately cemented 82-90'		
	100		SP-SW	93-135' SAND, reddish yellow (7.5YR, 7/6), 70% fine 30% medium grain, trace coarse grain, subrounded, well graded, loose, dry		
	120					
	130					
			SW	135-147' SAND, pink (7.5YR, 7/4), well graded, very fine to coarse grain, subangular, loose, dry		

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S.M. STOLLER CORPORATION

PTX06-1048

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp	Northing: 3766991.73	Easting: 642073.52
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	247' BGS
Dates Drilled:	02/02/00 - 02/08/00	Depth to Water:	N/A
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3536.77'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
			SW			
	150		SM	147-155' SAND, silty, reddish yellow (7.5YR, 6/6), fine grain with some very fine and medium grain, moderately graded, subangular, loose, damp, decreasing silt with depth		
	160		SP	155-195' SAND, reddish yellow (7.5YR, 7/6-6/8), very fine and medium grain, some fine grain, subangular, poorly graded, loose, dry to damp		
	170			thin sandstone lenses 170-193'		
	180			@175' grain size 60% fine with some medium		
	190					
	200		SW	195-207' SAND, as above but well graded and moist		
			SM	207-215' SAND, silty, 70% sand 30% silt, reddish yellow		

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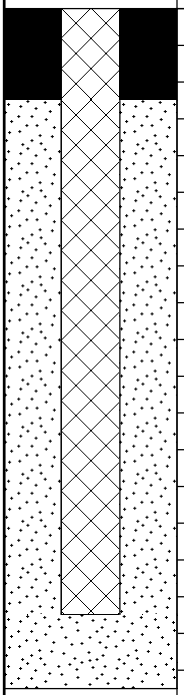
PTX06-1048

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp	Northing: 3766991.73	Easting: 642073.52
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	247' BGS
Dates Drilled:	02/02/00 - 02/08/00	Depth to Water:	N/A
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3536.77'	TOC Elevation:	N/A



Depth (Ft.)	USCS	Description	Sample	Sample Number
	SM	(5YR, 6/6-6/8), well graded sand, soft, damp		
	SW	215-222' SAND, very pale brown (10YR, 7/4), fine to medium gain, some coarse, subangular, well graded, loose, damp		
220	GP	222-225' GRAVEL, sandy, light gray (10YR, 7/2), medium grain, subangular, loose, damp; gravel is minus 1", rounded, elongated, and flattened		
	SW	225-232' SAND, very pale brown (10YR, 7/4), fine to medium grain, some coarse, subangular, graded, loose, damp		
230	SP	232-235' SAND, medium grain, subangular, poorly graded, moisture increasing but not saturated		PTX06-1048-2-0232 Sieve Analysis
	SM	235-242' SAND, silty, 30% silt, yellowish brn (10YR, 5/6), nonplastic, med grain, poorly graded, loose, v. moist, moisture increasing with depth; @ 237' silt increasing, sand size 90% fine grain, subang, some thin clay lenses and 1" rnded gravel, a 2" rnded gravel recovered in split-spoon sample 237-238'		PTX06-1048-2-0237 Sieve Analysis PTX06-1048-2-0242 HE Analysis PTX06-1048-2-243.5 Permeability Analysis
240	SC	242-248' SAND, clayey with interbedded gravel, 55% sand 45% clay, brn (7.5YR, 5/4), med plastic, v. fine sand, rnded, v. poorly graded, dense/stiff, damp, Split-spoon driven 247-249'		PTX06-1048-2-0247 HE Analysis
	SP	248-249' SAND 100%, reddish yellow (7.5YR, 6/6), 100% v. fine grain, rnded, very poorly graded, loose, dmp-dry		
250		Total Depth of Borehole 247" BGS Fine Grain Zone 242' BGS		
260		Well Completion Details: Borehole Diameter: 10.75 inches 4-inch, Schedule 80 PVC materials used in well construction: 1' Sump (242' - 243'); 20' Screen, 0.020 Factory Slot (222' - 242'); 225' Casing (+3' - 222'); Filter Pack, 10/20 Colorado Silica Sand, thickness above screen 7' (215' - 222'); Bentonite Seal, pellet thickness above sand 5' (210' - 215'); Baroid Quick Grout (Surface - 210')		
270		WELL DAMAGED DURING CONSTRUCTION, grout entered casing and stabilized about 140' BGS. Well abandoned and replacement well (PTX06-1048A) installed approximately 50 ' southeast.		

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PTX06-1048

Contractor: S.M. Stoller Corporation

Contract #: 3589 Project 102

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- ___Draft
- _X_Final

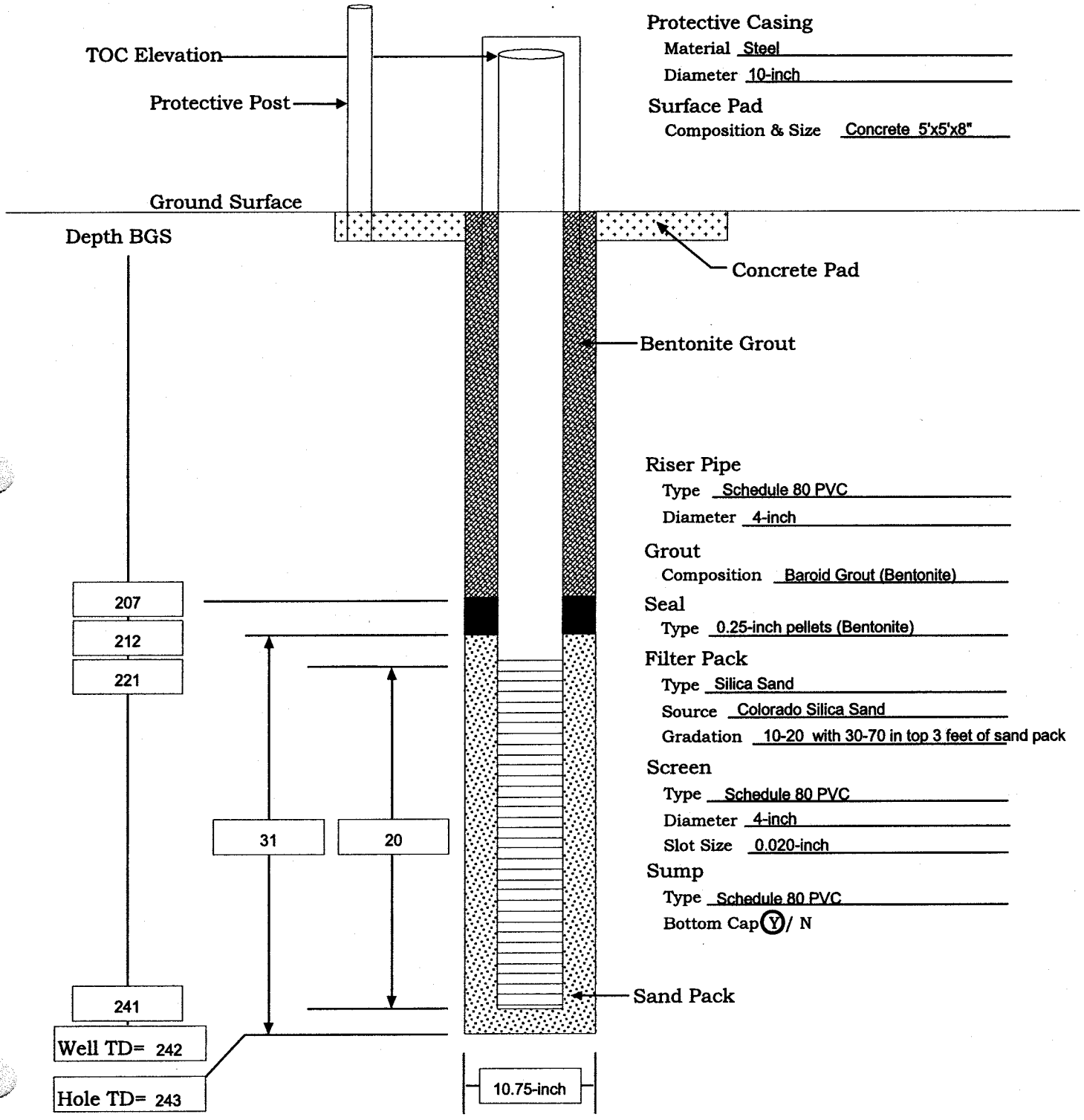
___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

Monitor Well Installation Diagram

Project: Pantex GW RFI
Location: NE of Playa 1
Contractor: Stewart Brothers Drilling Co.
Driller: M.King
Well Coordinates: N-3766957.63/ E-642103.43
TOC Elevation: 3540.19
Surface Elevation: 3537.67

Monitor Well No: PTX06-1048A
Date Constructed: 2-11-00
Observed by: C.Martin
Sheet 1 of 1



Protective Casing
Material: Steel
Diameter: 10-inch

Surface Pad
Composition & Size: Concrete 5'x5'x8"

Riser Pipe
Type: Schedule 80 PVC
Diameter: 4-inch

Grout
Composition: Baroid Grout (Bentonite)

Seal
Type: 0.25-inch pellets (Bentonite)

Filter Pack
Type: Silica Sand
Source: Colorado Silica Sand
Gradation: 10-20 with 30-70 in top 3 feet of sand pack

Screen
Type: Schedule 80 PVC
Diameter: 4-inch
Slot Size: 0.020-inch

Sump
Type: Schedule 80 PVC
Bottom Cap (Y)/ N

PTX06-1048A

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	C. Martin/R. Rupp	Northing: 3766957.63	Easting: 642103.43
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	243' BGS
Dates Drilled:	02/11/00 - 02/12/00	Depth to Water:	233.85' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3537.67'	TOC Elevation:	3540.19'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	10		CL	0-5.5' CLAY, sandy, dark brown (10YR, 2/3), plastic, very stiff, dry		
			SM	5.5-8' SAND, silty, reddish yellow (5YR, 6/6), dense, dry, very fine grained, layered		
			SM	8-9.5' SAND, silty, yellowish red (5YR, 5/6), dense, dry, very fine grained, no layers		
	20		CL	9.5-23' CLAY, sandy, silty, red (2.5YR, 4/8), very dense (slow drilling), dry, some layering of light colored (pinkish white (5YR, 8/2)) materials, decrease in sand at 19'		
	30		ML	23-36' SILT, sandy, clayey, strong brown (7.5YR, 4/6), very dense, dry, medium plastic		
			ML	36-39' SILT, sandy, clayey, yellowish red (5YR, 5/8), very fine grained sand, medium dense, dry		
	40		ML	39-50' SILT, strongly cemented, reddish yellow (7.5YR, 8/6), dense, dry, powdery caliche nodules up to 1/2"		
	50		SM	50-55' SAND, silty, yellowish red (5YR, 5/8), very fine to fine grained, medium dense, dry, some CaCO3 cementation		
			ML	55-57' SILT, sandy, clayey, yellowish red (5YR, 5/8), very fine grained sand, medium dense, dry		
	60		RX	57-61' CALICHE CAPROCK, white (5YR, 8/1), medium dense, crystalline, dry		
			SM-SP	61-71' SILT, sandy to SAND, silty, pink (7.5YR, 7/4), medium dense, dry		

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S.M. STOLLER CORPORATION

PTX06-1048A

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	C. Martin/R. Rupp	Northing: 3766957.63	Easting: 642103.43
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	243' BGS
Dates Drilled:	02/11/00 - 02/12/00	Depth to Water:	233.85' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3537.67'	TOC Elevation:	3540.19'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	80		SP	71-91' SAND, trace silt, reddish yellow (7.5YR, 7/6), loose, dry, very fine grained, subrounded, to subangular		
	90		SP	91-99' SAND, trace silt, pink (7.5YR, 8/6), lose, dry, very fine grained, cemented 94-96'		
	100		SP	99-110' SAND, reddish yellow (7.5 YR, 8/6), loose, dry, 80% very fine grained 20% medium grained, CaCO3 nodules to 1/8"		
	110		SP	110-115' SAND, reddish yellow (7.5YR, 7/8), loose, dry, very fine to fine grained, subangular-subrounded, well sorted		
	120		SP	115-134' SAND, pink (7.5YR, 8/4), loose, dry, very fine to fine grained, subangular to subrounded, well sorted, cemented zone 116-118'		
	130		SP	134-140' SAND, yellow (10YR, 8/6), loose, subrounded, well sorted, dry, cemented 136-138'		

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PTX06-1048A

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	C. Martin/R. Rupp	Northing: 3766957.63	Easting: 642103.43
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	243' BGS
Dates Drilled:	02/11/00 - 02/12/00	Depth to Water:	233.85' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3537.67'	TOC Elevation:	3540.19'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	150		SP	140-159' SAND, yellow (10YR, 7/8), very fine to fine grained, subrounded, well sorted, loose, dry		
	160		SP	159-176' SAND, reddish yellow (7.5YR, 7/8), very fine to fine grained, subrounded, well sorted, loose, dry Thin cemented layers 160-175'		
	170					
	180		SP	176-194' SAND, yellow (10YR, 8/6), very fine to fine grained, subrounded, well sorted, loose, dry strongly cemented 187-188'		
	190					
	200		SP-SM	194-208' SAND, trace silt, yellow (10YR, 7/6), very fine to medium grained, subangular, poorly graded, loose, dry, strongly cemented 196-198', color change to yellow (2.5Y, 8/6) from 199-203' then back to (10YR, 7/6)		
			SM	208-224' SAND, silty, reddish yellow (7.5YR, 6/8), very fine to		

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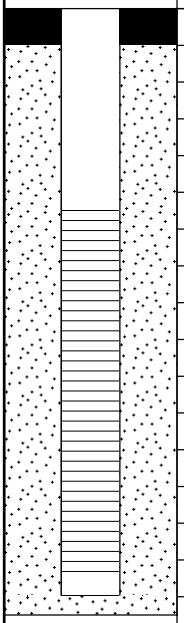
PTX06-1048A

Pantex GW RFI | **Pantex Plant, Northeast of Playa #1** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	C. Martin/R. Rupp	Northing: 3766957.63	Easting: 642103.43
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	243' BGS
Dates Drilled:	02/11/00 - 02/12/00	Depth to Water:	233.85' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3537.67'	TOC Elevation:	3540.19'



Depth (Ft.)	USCS	Description	Sample	Sample Number
220	SM	medium grained, subangular, poorly graded, loose, dry		
	GP	224-227' GRAVEL, sandy, light gray (10YR, 7/2), dry		
230	SP	227-235' SAND, light yellowish brown (10YR, 6/4), fine to medium grain with trace very fine and coarse, subrounded, poorly graded, loose, dry to damp, moisture increasing with depth		
	SM	235-237' SAND, silty, 20-25% silt, yellowish brn (10YR, 5/6), fine-cse grain (60% med), subang, graded, loose, v. mst		
	ML	237-240' SILT, sandy, clayey, 50%/30%/20%, yellowish brn (10YR, 5/6), low-med plas, v fine sand, med dense, v. mst		
240	SM	240-242' SAND, silty, 60%/30%/10% clay, yellowish brn (10YR, 5/6), 90% v fine 10% fine sand, dense-med dense, mst (slight drop in msture 237-240'), some thin clay lens 240.5-241.5'		
	CL	242-243' CLAY, sandy, 80% clay, 20% sand, brn (7.5YR, 5/4), med plastic, v. fine grain sand, dense to v. dense, dmp-dry		
250		Total Depth of Borehole 243' BGS Fine Grain Zone 242' BGS No samples collected from this borehole, samples were collected from borehole PTX06-1048, about 50' northwest. Well Completion Details: Borehole Diameter: 10.75 inches 4-inch, Schedule 80 PVC materials used in well construction: 1' Sump (241' - 242'); 20' Screen, 0.020 Factory Slot (221' - 241'); 243.5' Casing (+2.5 - 241'); Filter Pack thickness above screen 9' (212' - 243'), 10/20 Colorado Silica Sand (214' - 241') and 30/70 Colorado Silica Sand (212' - 214'); Bentonite Seal, pellet thickness above sand 5' (207' - 212'); Baroil Quick Grout (Surface - 207'); Concrete Pad (5'X5'X8") with 4 bollards; Steel Protective Casing (10.75") with locking cover.		
260				
270				

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COLOG Division of Layne Christensen Company
17301 West Colfax, Suite 265, Golden Colorado 80401
PHONE: (303) 279-0171 FAX: (303) 278-0135

NEUTRON LOG

COM: SM STOLLER
WELL: PTX06-1048A
FLD: PANTEX
ST: TX COUNTY: CARSON

COMPANY: SM STOLLER
WELL: PTX06-1048A
FIELD: PANTEX
STATE: TX COUNTY: CARSON

LOCATION:

SEC TWP RGE

OTHER SERVICES:

PERMANENT DATUM: Ground Surface ELEVATION: NA
LOG MEAS. FROM: Ground Surface 0.0 FT ABOVE PERM. DATUM
DRILL MEAS. FROM: Ground Surface

DATE ACQUIRED	3/14/00	3/14/00		
RUN NUMBER	1	2		
LOG TYPE	Gamma	Dual Neutron		
DEPTH-DRILLER	243'			
DEPTH-LOGGER	242'			
BTM LOGGED INTERVAL	240'	241'		
TOP LOGGED INTERVAL	Surface	2'		
RECORDED BY	Davis			
WITNESSED BY	Ford			
FLUID LEVEL	231'			
FLUID TYPE	Water			
Rm at TEMP	NA			
TIME SINCE CIRC.	N/A			
PROBE TYPE, S/N	RABPF 2171	Dual N, NSN		
MODULE TYPE, S/N	UM 1524	UM 1524		
LOGGING SPEED	15 ft/min	15 ft/min		
A.S.D.E.	0.2'	0.2'		
SAMPLE INTERVAL	0.1'	0.1'		
SOURCE SIZE, S/N	None	AmBe 3Ci 534		

BOREHOLE RECORD

BIT SIZE	FROM	TO
8" Cone	Surface	TD

CASING RECORD

SIZE/WGT	FROM	TO
Sump	241'	242'
Screen	221'	241'
Riser	Surface	221'

COMMENTS:
9.75" OD Drive Casing with
10.75" OD Stainless Steel Drive Shoe

COMMENTS:
4" Sch 80 PVC Casing & Screen
Screen Slot 0.020

NA - NOT AVAILABLE, N/A - NOT APPLICABLE

DIGITAL FILES: 1048a.dat, 1048a.BAT, 1048a.HDP, 1048a.PLP

SM STOLLER, PTX06-1048A, 3/14/00

COLOG

RATIO NR/FR

0 10

NEAR NEUTRON

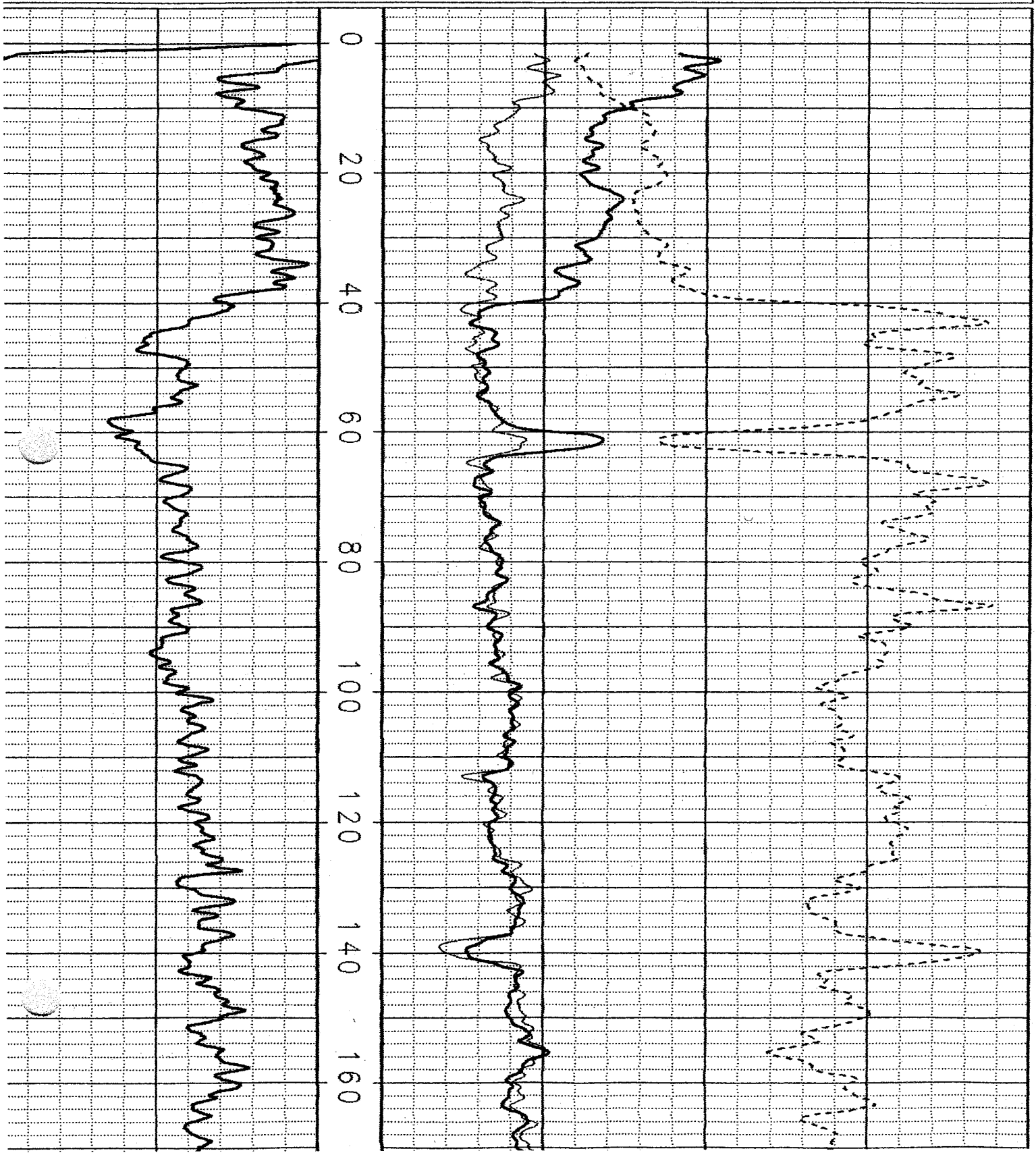
1000 CPS 3000

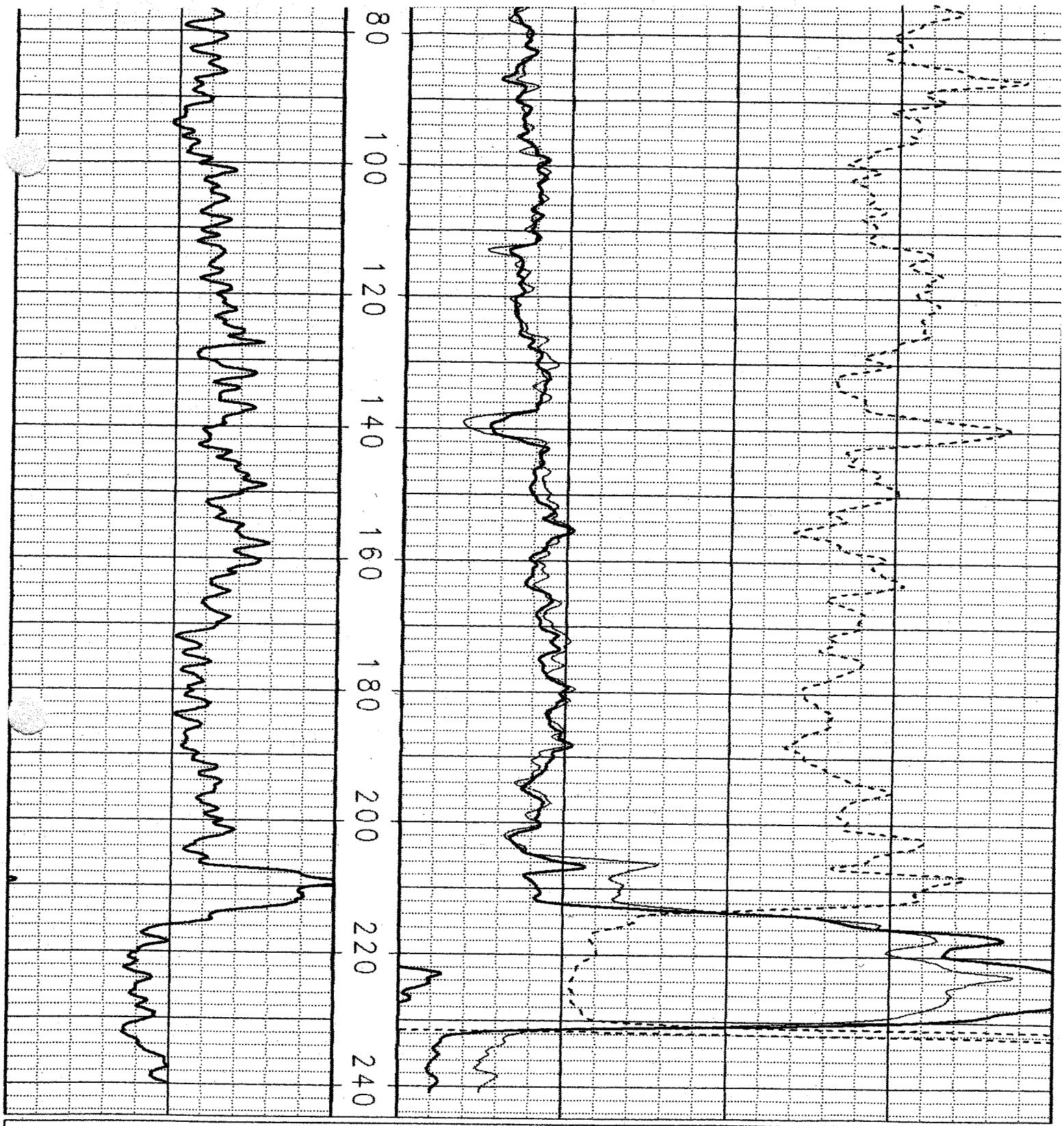
NATURAL GAMMA

0 API 150

FAR NEUTRON

0 CPS 1000





NATURAL GAMMA
0 API 150

FAR NEUTRON
0 CPS 1000

NEAR NEUTRON
1000 CPS 3000

RATIO NR/FR
0 10

SM STOLLER, PTX06-1048A, 3/14/00

COLOG

PTX06-1077

aka:

Associated with: FTA (Fire Training Area) Near bldg 16-8; Pantex Multiple Operable Units

Contractor: S.M. Stoller
Contract #: <number/ID>
Contractor's Project #: 3641
Drilled date: 01/10/02 – 01/11/02
Drilling Contractor: WDC Exploration

OPTIX #: <if known>
Last Update: 9/28/04 (add as new file)

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- ___ Draft
- ___ Final

___ Draft Installation Log/Diagram (handwritten/drawn)
___ Final Installation Log/Diagram (computerized)

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (computerized)

Geophysical Logs
- ___ Neutron
- ___ Gamma
- ___ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

___State Well Report
___State Plugging Report

PTX06-1077

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689	Easting: 637201
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276' BGS
Dates Drilled:	01/10/02 - 01/11/02	Depth to Water:	Probable Below 260' BGS
Borehole Type:	9 5/8" ARCH	Well Type:	Borehole Abandoned 01/23/02
Ground Elevation:	3547'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	10		ML CL	0-5' Topsoil		
			CL	5-10' CLAY, brown (7.5YR 4/2), dense, dry to slightly damp		
			CL	10-15' CLAY, light reddish brown (5YR 6/3), dense, dry to slightly damp		
	20		CL	15-20' SAND/CLAY, with silt, reddish yellow (7.5YR 6/6), clay is slightly plastic, sand is very fine grain, dense, slightly damp		
			CL	20-30' CLAY, trace sand, strong brown (7.5YR 5/6), slightly plastic, dense, slightly damp		
	30		CL	30-40' CLAY/SAND, trace silt, yellowish red (5YR 5/6), slightly plastic clay with fine grain sand, dense, slightly damp		
	40		CL	40-50' CLAY, trace sand, reddish brown (5YR 4/4), plastic, dense, damp		
	50		CL	50-55' CLAY, sandy, reddish brown (5YR 5/4), very slightly plastic, dense, very slightly damp		
	60		SM	55-65' SAND/SILT/CLAY, reddish yellow (5YR 6/6), silty sand with clay, very fine grain, medium dense, very slightly damp		
			SM ML	65-70' SILT/SAND, pink (5YR 7/4), fine grain sand with silt, some clay and coarse grain CaCO3, medium dense, very slightly damp		
	70		SC	70-75' SAND/CLAY, 50/50 sand/clay, yellowish red (5YR 6/6), fine and medium grain subrounded sand, coarse grain CaCO3, medium dense, slightly damp		
	80		SC	75-85' SAND/CLAY, as above, increase in moisture to damp		
	90		SM	85-95' SAND, trace clay and silt, pink (5YR 7/4), fine grain sand, coarse grain CaCO3, medium dense, very slightly damp		
			SP	95-100' SAND, light brown (7.5YR 7/4), fine grain sand, subrounded, poorly graded, loose, damp		

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S.M. STOLLER CORPORATION

PTX06-1077

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689	Easting: 637201
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276' BGS
Dates Drilled:	01/10/02 - 01/11/02	Depth to Water:	Probable Below 260' BGS
Borehole Type:	9 5/8" ARCH	Well Type:	Borehole Abandoned 01/23/02
Ground Elevation:	3547'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	110		SP	100-110' SAND, very pale brown ((10YR 7/3), very fine to fine grain sand, high quartz, poorly graded, loose, damp		
	120		SP	110-125' SAND, light reddish brown (5YR 6/4), fine grain sand, poorly graded, with weak sandstone lenses, small angular gravel, loose, damp		
	130		SP	125-140' SAND, very pale brown (10YR 7/4), very fine to fine sand, subrounded, poorly graded, loose, damp		
	140		SW	140-150' SAND, light yellowish brown (10YR 6/4), fine to medium sand, subrounded, graded, with small angular gravel, loose, damp		
	150		SM ML	150-160' SAND/SILT, light gray (10YR 7/2), very fine sand with silt, well cemented sandstone lenses, medium loose, dry @ 155' same as above with increase in sand		
	160		SP	160-185' SAND, very pale brown (10YR 7/4), very fine sand with silt, poorly graded, loose, dry		
	170					
	180					
	190		SP	185-195' SAND, very pale brown (10YR 7/4), very fine to fine, with medium grain, slightly graded, increase in mafic material, subrounded, loose, very slightly damp		
			SP	195-205' SAND, very pale brown (10YR 7/4), very fine, poorly graded, loose, slightly damp		

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PTX06-1077

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689	Easting: 637201
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276' BGS
Dates Drilled:	01/10/02 - 01/11/02	Depth to Water:	Probable Below 260' BGS
Borehole Type:	9 5/8" ARCH	Well Type:	Borehole Abandoned 01/23/02
Ground Elevation:	3547'	TOC Elevation:	N/A

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	210		SP	205-215' SAND, very pale brown (10YR 7/3), fine, medium, some coarse sand, subrounded, graded, loose, slightly damp		
	220		SP	215-230' SAND, very pale brown (10YR 7/3), fine to medium grain, subangular to subrounded, loose, slightly damp @ 220' same as above with well cemented sandstone lense, medium loose, dry @ 225' same as above, sandstone nodes smaller and decreasing		
	230		SP	230-245' SAND, light brown (7.5YR 6/4), fine to medium grain, subrounded, loose, slightly damp to damp		
	240		SP			
			SP	245-250' SAND, very pale brown (10YR 7/3), graded sand, fine-medium, subrounded, loose, slightly damp		
	250		SW	250-255' SAND, gravelly, pale brown (10YR 6/3), fine to coarse sand, subangular to subrounded, well graded, small <2cm gravel with angular fresh surfaces, medium loose, damp		
			SW	255-260' SAND, pale brown (10YR 6/4), with 50% angular gravel to 1" diameter, dense, dry		
	260		SW	260-265' SAND, moist to slightly saturated		
			SW	265-268' SAND, same as above, moist to slightly saturated		
	270		SC	268-270' SAND/CLAY, moist		
			CL	270-276' CLAY, damp, top of fine grain zone at 270'		
	280			Total Depth of Borehole 276' BGS Perched water probable below 260' BGS FGZ at 270' BGS Borehole abandoned due to separation of drive casing during well construction activities. About 130' of drive casing remains in the ground. Hole plugged with cement/bentonite grout on 01/23/02.		
	290					

S:\WELLOG\Pantex MOU #3641\PTX06-1077.wld

PTX06-1077A

aka:

Associated with: FTA (Fire Training Area) Near bldg 16-8; Pantex Multiple Operable Units

Contractor: S.M. Stoller
Contract #: <number/ID>
Contractor's Project #: 3641
Drilled date: 01/21/02 – 01/22/02
Drilling Contractor: WDC Exploration

OPTIX #: <if known>
Last Update: 9/28/04 (Add 2nd version of Lith Log)

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- ___ Draft
- ___ Final

_X_ Draft Installation Log/Diagram (handwritten/drawn)
___ Final Installation Log/Diagram (computerized)

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- _X_ Final Visual Classification of Soils (scanned)
- _X_ Final Visual Classification of Soils (computerized)

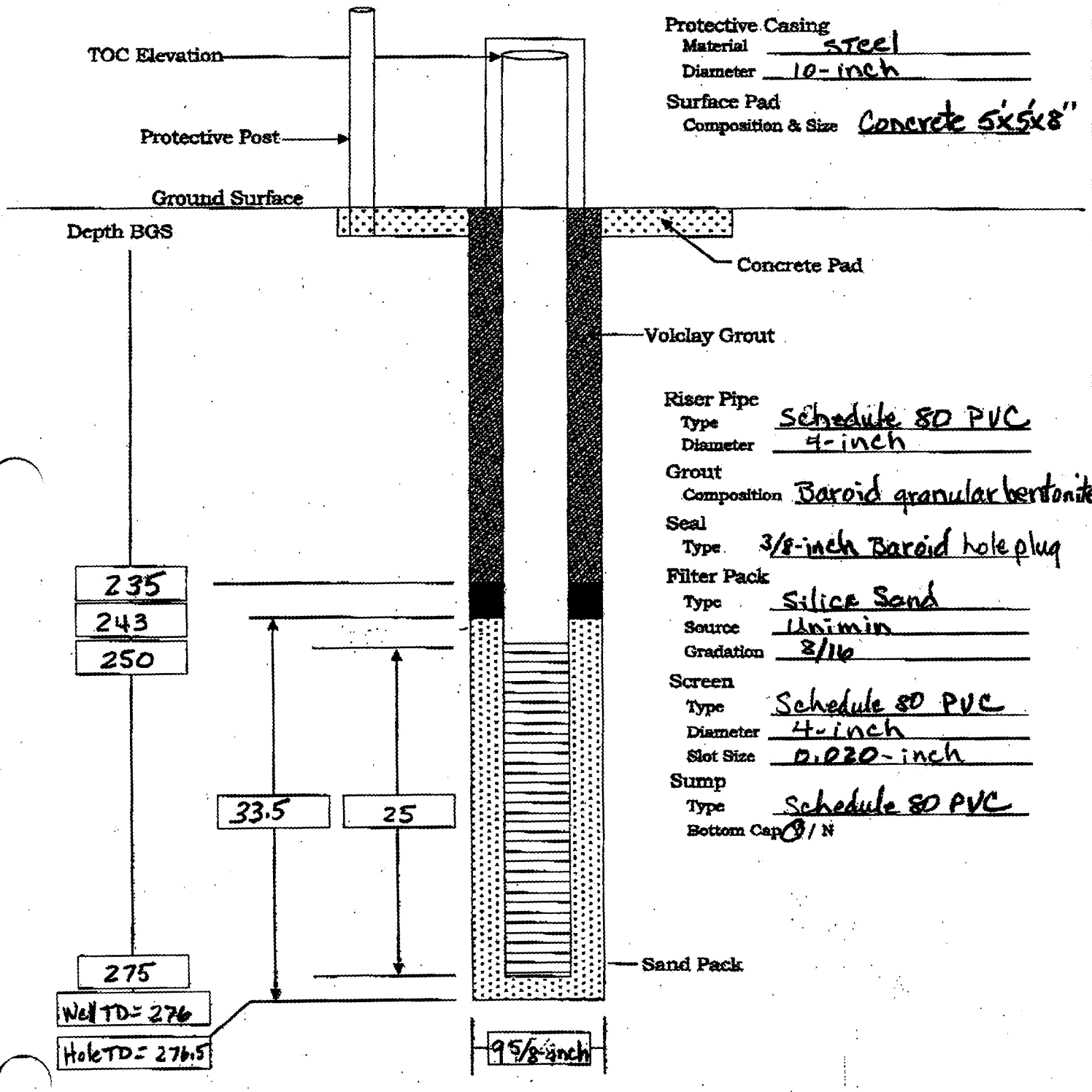
Geophysical Logs
- ___ Neutron
- ___ Gamma
- ___ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

___State Well Report
___State Plugging Report

Monitor Well Installation Diagram

Project: Pantex Multiple Operable Units
Location: Pantex Plant (FTA)
Contractor: WDC Exploration
Driller: K. Jones
Coordinates: N-376068 9.5 E-637201.8
TOC Elevation: 3549.6'
Surface Elevation: 3547.7'

Monitor Well No: PTX06-1077A
Date Constructed: 01-22-02
Observed by: T. Hall
Sheet 1 of 1



Protective Casing
Material: Steel
Diameter: 10-inch
Surface Pad
Composition & Size: Concrete 5'x5'x8"

Riser Pipe
Type: Schedule 80 PVC
Diameter: 4-inch
Grout
Composition: Baroid granular bentonite
Seal
Type: 3/8-inch Baroid hole plug
Filter Pack
Type: Silica Sand
Source: Unimin
Gradation: 8/16
Screen
Type: Schedule 80 PVC
Diameter: 4-inch
Slot Size: 0.020-inch
Sump
Type: Schedule 80 PVC
Bottom Cap: (Y) / N

PTX06-1077A

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689.5	Easting: 637201.8
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276.5' BGS
Dates Drilled:	01/21/02 - 01/22/02	Depth to Water:	265.5' BGS on 02/19/02
Borehole Type:	9 5/8" ARCH	Well Type:	Monitoring Well, 4" Sch. 80 PVC
Ground Elevation:	3547.7'	TOC Elevation:	3549.6'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	5		CL	0-5' CLAY, topsoil, brown (7.5YR 5/4), moderately dense, dry		
	10		CL	5-15' CLAY, slight silt, pink (7.5 YR7/3), moderately dense, dry		
	15		CL	15-20' CLAY, sandy, silty, light reddish brown (5YR 6/4), moderately dense, dry		
	20		CL	20-25' CLAY, brown (7.5YR 5/4), dense, moderately plastic, slightly damp		
	25		SM	25-30' SILT, sandy, clayey, light reddish brown (5YR 6/4), moderately dense, slightly damp		
	30		CL	30-45' CLAY, sandy (30% fine sand), brown (7.5YR 6/4), moderately dense, moderately plastic, slightly damp		
	35					
	40					
	45		CL	45-50' CLAY, sandy, brown (7.5YR 5/4), loose, slightly damp		
	50		CL	50-55' CLAY, brown (7.5YR 4/4), moderately dense, damp		
	55		SM	55-60' SILT, sandy, clayey, pink (7.5YR 7/4), moderately loose, slightly damp		
	60		SC CL	60-65' SAND/CLAY, slightly silty, reddish yellow (7.5YR 6/6), moderately loose, very slightly damp		
	65		ML	65-70' SILT, slightly sandy, slightly clayey, pink (7.5YR 6/4), moderately dense, slightly damp		
	70		SC CL	70-75' SAND/CLAY, slightly silty, reddish yellow (7.5YR 6/6), moderately dense, slightly damp		
	75		SC CL	75-80' SAND/CLAY (50%/50%), yellowish red (5YR 4/6), w/caliche nodules, moderately dense, slightly damp		

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S.M. STOLLER CORPORATION

PTX06-1077A

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689.5	Easting: 637201.8
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276.5' BGS
Dates Drilled:	01/21/02 - 01/22/02	Depth to Water:	265.5' BGS on 02/19/02
Borehole Type:	9 5/8" ARCH	Well Type:	Monitoring Well, 4" Sch. 80 PVC
Ground Elevation:	3547.7'	TOC Elevation:	3549.6'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	85		SC CL	80-85' SAND/CLAY, pink (7.5YR 7/3), as above with increase in caliche to 20%		
			SLT STN	85-90' SILT, sandy, w/ caliche, pink (7.5YR 7/3), incompetent caprock		
	90		SC	90-95' SAND, clayey (25%) w/ caliche (5%), brown (10YR 5/3), moderately loose, slightly damp		
	95		SC	95-100' SAND, clayey, brown (10YR 5/3), as above with caliche dropping out		
	100		SP	100-110' SAND, slightly clayey, light brown (7.5YR 6/3), poorly graded, fine grained, subrounded to rounded, loose, slightly damp		
	110		SP	110-120' SAND, light brown (7.5YR 6/4), poorly graded, fine grained, subrounded, well cemented ss lens, nodules to 1/2" dia., moderately loose, slightly damp		
	120		SP	120-125' SAND, pale brown (10YR 6/3), poorly graded, well cemented ss to 1 1/2", moderately loose, slightly damp		
	125		SW	125-130' SAND, w/ non-plastic clay balls, brown (10YR 5/3), well graded, well rounded, some ss nodules, moderately dense, damp		
	130		SP	130-135' SAND, brownish yellow (10YR 6/6), poorly graded, fine grained, well rounded, loose, damp		
	135		SW	135-145' SAND, brown (10YR 5/3), well graded w/ 10% gravel to 2" dia., moderately dense, damp		
	140					
	145		SW	145-155' SAND, light yellowish brown (10YR 6/4), slightly graded sand with small ss nodules, strongly cemented, fine to medium grained, subrounded, loose, damp		
	150					
	155		ML	155-160' SILT, light gray (10YR 7/2), coarse grained caliche nodules, moderately loose, dry		

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PTX06-1077A

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689.5	Easting: 637201.8
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276.5' BGS
Dates Drilled:	01/21/02 - 01/22/02	Depth to Water:	265.5' BGS on 02/19/02
Borehole Type:	9 5/8" ARCH	Well Type:	Monitoring Well, 4" Sch. 80 PVC
Ground Elevation:	3547.7'	TOC Elevation:	3549.6'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	165		SM	160-180' SAND, silty, very pale brown (10YR 7/3), very fine grained, loose, dry		
	170					
	175					
	180		SP	180-190' SAND, pale brown (10YR 6/3), slightly graded, fine to medium grained, subangular to subrounded, loose, slightly damp		
	185					
	190		SP	190-205' SAND, light yellowish brown (10YR 6/4), slightly graded, subrounded, loose, slightly damp		
	195					
	200					
	205		SP	205-210' SAND, very pale brown (10YR 7/3) fine to medium grained, subrounded, loose, slightly damp		
	210		SP	210-215' SAND, as above w. ss nodules <10%, strongly cemented		
	215		SW	215-225' SAND, very pale brown (10YR 7/3), subangular, loose, slightly damp		
	220					
	225		SM	225-230' SAND, silty, very pale brown (10YR 7/3), loose, slightly damp		
	230		SW	230-240' SAND, light brown (7.5YR 6/3), graded, subrounded, loose, slightly damp		
	235					

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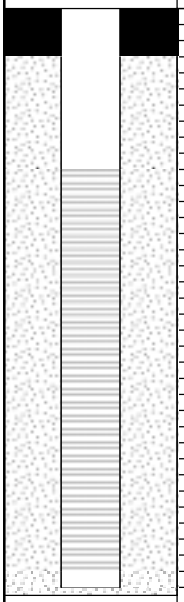
PTX06-1077A

Pantex Multiple Operable Units **Pantex Plant (FTA near Bldg. 16-8)** **Amarillo, Texas**

Project Number:	3641	Client:	BWXT Pantex
Geologist:	T. Hall	Northing: 3760689.5	Easting: 637201.8
Drilling Contractor:	WDC Exploration, K. Jones	Total Depth of Borehole:	276.5' BGS
Dates Drilled:	01/21/02 - 01/22/02	Depth to Water:	265.5' BGS on 02/19/02
Borehole Type:	9 5/8" ARCH	Well Type:	Monitoring Well, 4" Sch. 80 PVC
Ground Elevation:	3547.7'	TOC Elevation:	3549.6'



Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
245		SW	240-250' SAND, light brown (7.5YR 6/3), graded, subrounded, loose, slightly damp		
250		SW	250-260' SAND, gravely, very dense gravel, angular, well graded, very dense, dry		
255					
260		SW	260-270' SAND/GRAVEL, moist		
265				■	PTX06-1077A 263-265
			Split-Spoon Soil Samples Relinquished to BWXT Pantex Chain-of-Custody #089954 Date: 01/22/02	■	PTX06-1077A 268-270
270		SM	270-272' SAND, pale brown, slightly graded, moist		
275		CL	272-276.5' CLAY, sandy, top of fine grained zone		
280			Total Depth of Borehole 276.5' BGS Perched Water Encountered at 265.5' BGS Fine Grain Zone Encountered at 272' BGS		
285			Well Construction Details:		
290			Borehole Diameter: 9 5/8" Total Depth of Well 276' 4-inch Schedule 80 PVC casing and 0.020 slot screen 1' sump (275-276'), 25' screen (250-275'), 252' blank (+2-250') 6" backfill (276.5-276'), 33' #8/16 Unimin sand (276-243'), 8' bentonite seal (243-235'), 232' granular Volclay bentonite grout (235'-3'), 3' cement seal (0-3')		
295					
300					
305			Surface Completion: Concrete pad (5'X5'X8") with four bollards Protective casing, 10-inch steel with locking cover		
310					
315					

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COLOG Division of Layne Christensen Company
17301 West Colfax, Suite 265, Golden Colorado 80401
PHONE: (303) 279-0171 FAX: (303) 278-0135

Gamma-Neutron-Induction

COMP: SM Stoller
WELL: PTX06-1077A
FLD: Pantex Plant
ST: TX COUNTY: CARSON

COMPANY: SM Stoller
WELL: PTX06-1077A
FIELD: Pantex Plant
STATE: TX COUNTY: CARSON

LOCATION:
SEC TWP RGE

OTHER SERVICES:

PERMANENT DATUM: TOC ELEVATION:
LOG MEAS. FROM: TOC FT ABOVE PERM. DATUM
DRILL MEAS. FROM: G.L.

DATE ACQUIRED	25 June 2002	25 June 2002	25 June 2002	
RUN NUMBER	1	1	2	
LOG TYPE	Natural Gamma	Neutron	EM Induction	
DEPTH-DRILLER	NA			
DEPTH-LOGGER	274 Ft.		274 Ft.	
BTM LOGGED INTERVAL	274 Ft.	279 Ft.	274 Ft.	
TOP LOGGED INTERVAL	0.0 Ft.	5.3 Ft.	6 Ft.	
RECORDED BY	ML Whitney			
WITNESSED BY	Keith Wright			
FLUID LEVEL				
FLUID TYPE				
Rm at TEMP				
TIME SINCE CIRC.				
PROBE TYPE, S/N	RAB, 2019	OPF	EMP, 2033	
MODULE TYPE, S/N	UM, 1449	UM, 1449	UM, 1449	
LOGGING SPEED	15 Ft/Min		30 Ft/Min	
A.S.D.E.	0.23 Ft.		0.13	
SAMPLE INTERVAL	0.1 Ft.		0.1	
SOURCE SIZE, S/N		AM241, 3C: 534		

BOREHOLE RECORD

BIT SIZE	FROM	TO

CASING RECORD

SIZE/WGT	FROM	TO

COMMENTS:

COMMENTS:
Logs acquired through 4" PVC Casing

NA - NOT AVAILABLE, N/A - NOT APPLICABLE

DIGITAL FILES: 1077A.lis; PTX1077.lwdp

COLOG

WELL PTX06-1077A, 25 June 2002

DIGITAL FILES: 1077A.lis; PTX1077.ldp

WELL PTX06-1077A, 25 June 2002

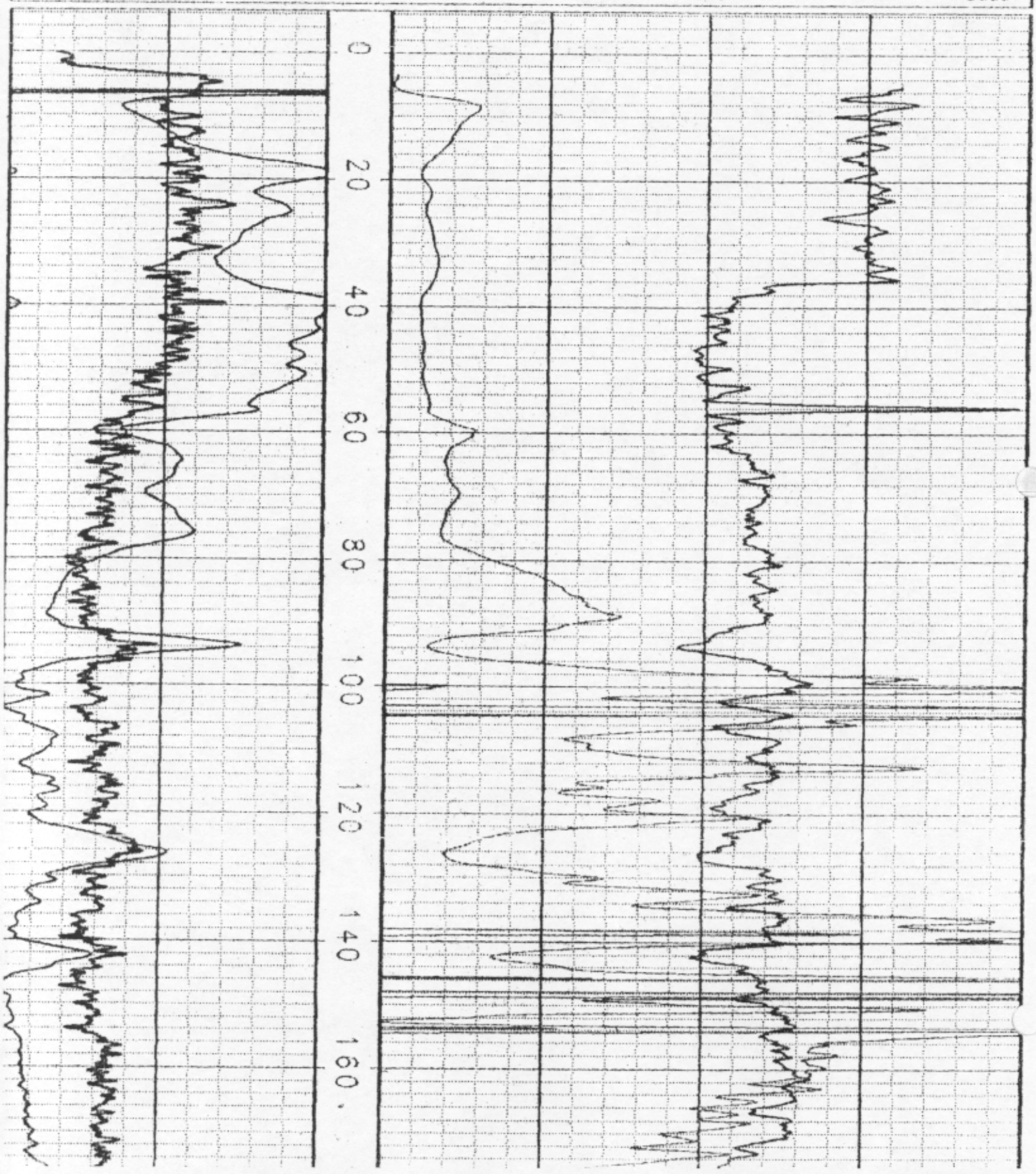
COLOG

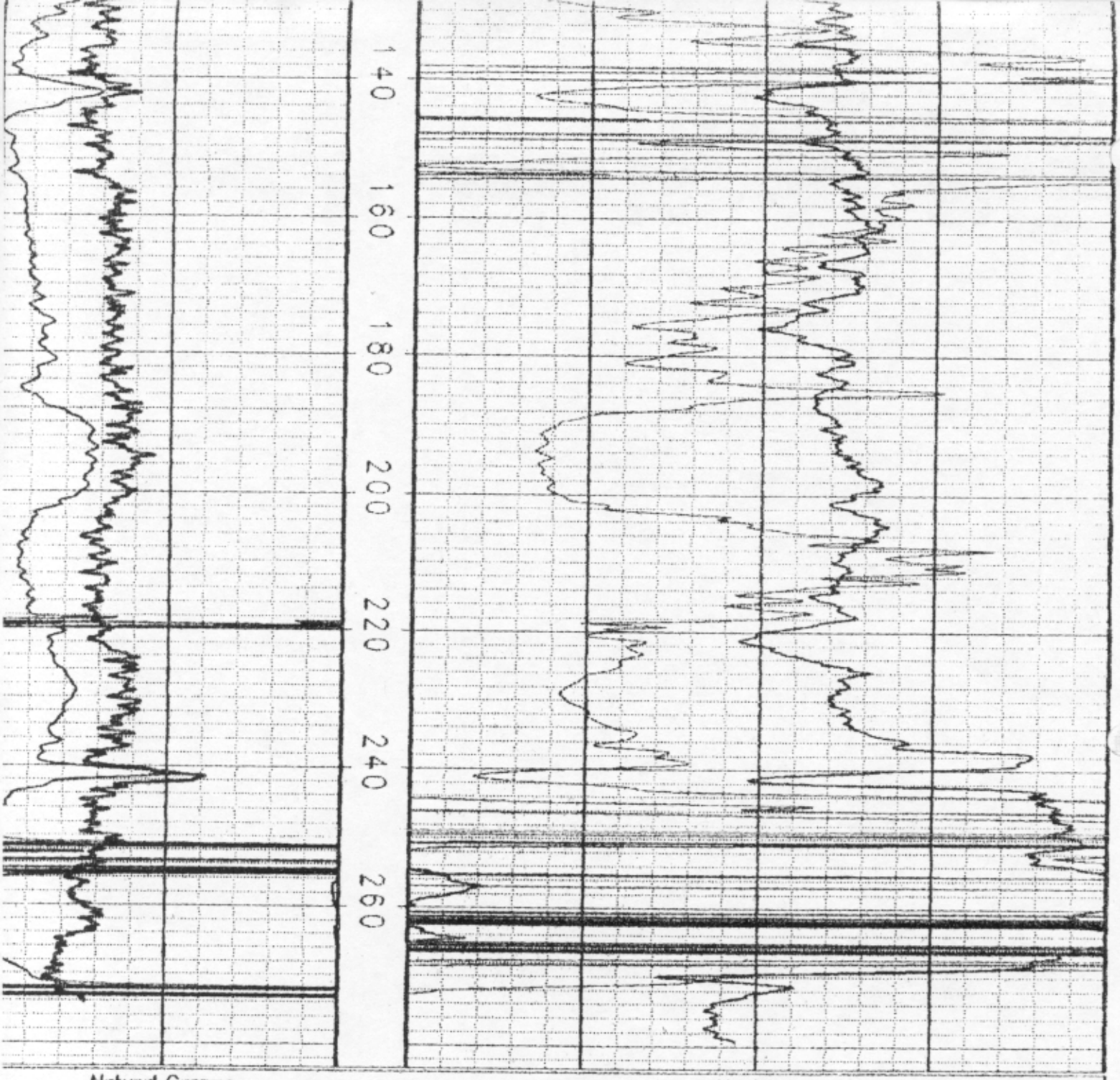
EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

Natural Gamma
0 CPS 200

Neutron
0 CPS 5000





Natural Gamma
0 CPS 200

Neutron
0 CPS 5000

EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

WELL PTX06-1077A, 25 June 2002

COLOG

WELL PTX06-1077A, (Repeat Section) 25 June 2002

COLOG

EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

Natural Gamma
0 CPS 200

Neutron
0 CPS 5000

Natural Gamma
0 CPS 200

Neutron
0 CPS 5000

EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

WELL PTX06-1077A, 25 June 2002

COLOG

WELL PTX06-1077A, (Repeat Section) 25 June 2002

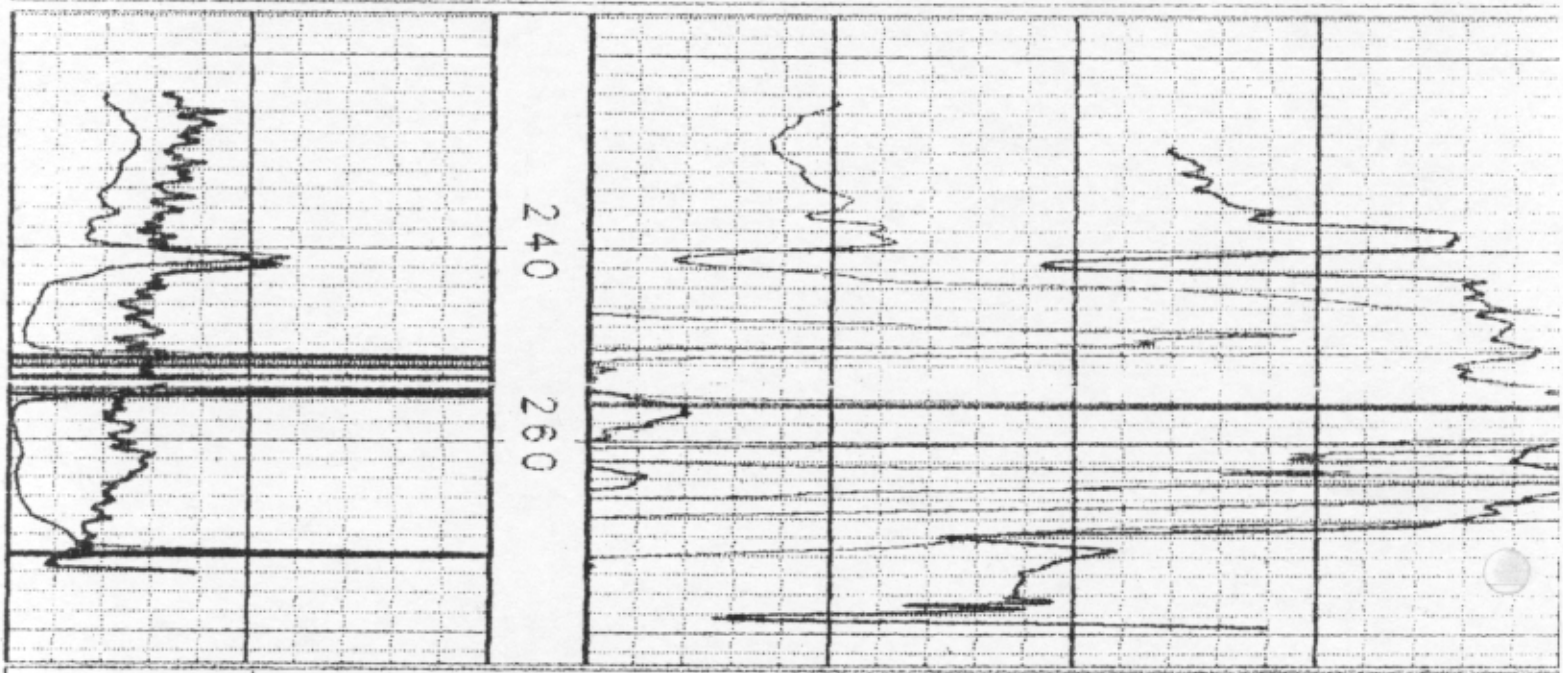
COLOG

EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

Natural Gamma
0 CPS 200

Neutron
0 CPS 5000



Natural Gamma
0 CPS 200

Neutron
0 CPS 5000

EM Conductivity
0 mS/M 100

EM Resistivity
0 Ohm-m 200

WELL PTX06-1077A, (Repeat Section) 25 June 2002

COLOG

PTX06-1117

aka: <if any>

Project:
Project PSTR:
Contractor: <name>
Contract #: <#>
Contractor's Project #: <#>
Drilled date: <*mm/dd/yy; if both starting date & ending date are known, then mm/dd/yy - mm/dd/yy, or abbreviate to mm/dd - mm/dd/yy*>
Drilling Contractor: <*Project contractor may have subcontracted the actual drilling*>
OPTIX #:
Last Update:

Standard Included Documents

(Others may also be included)

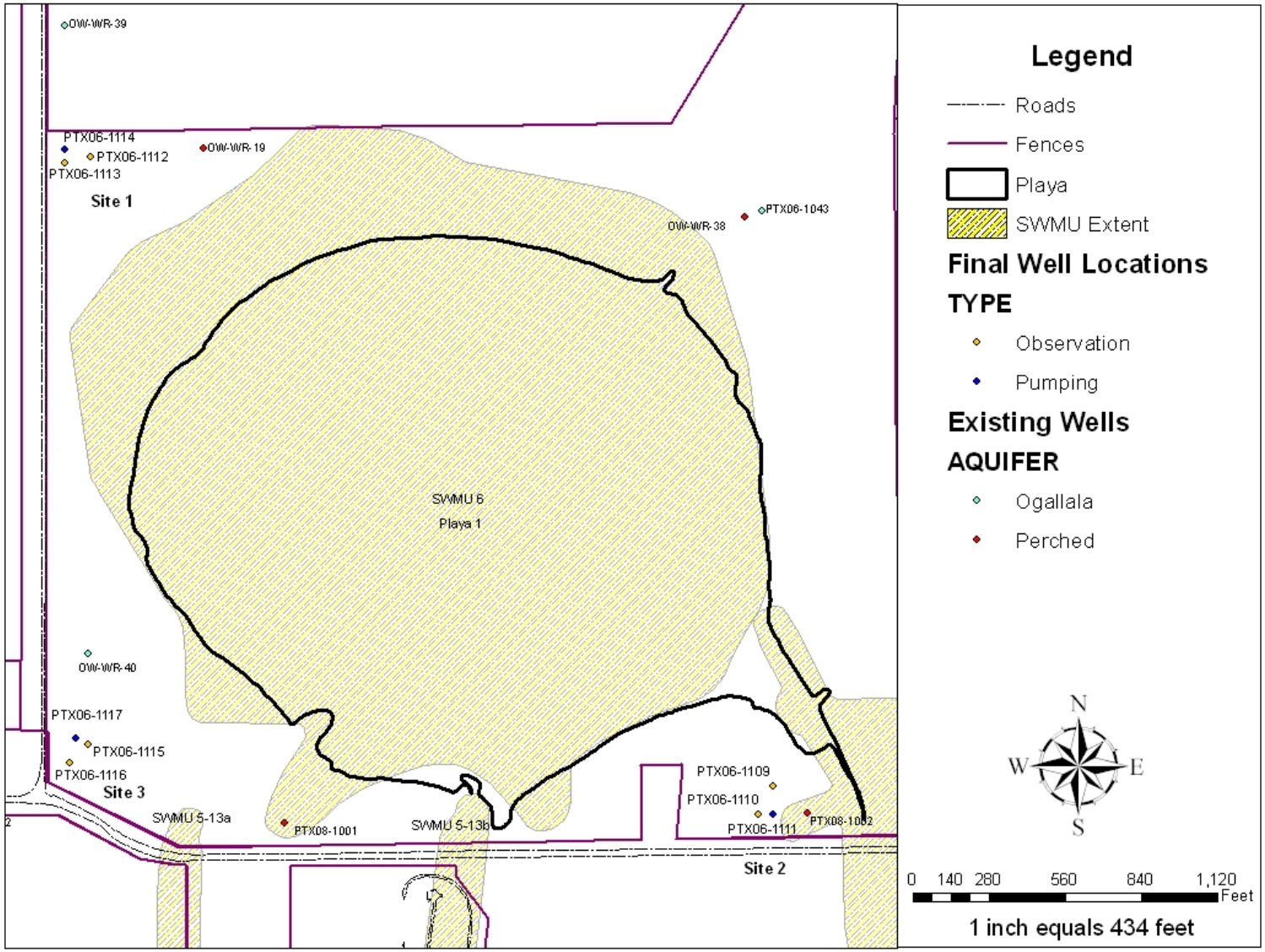
Drilling/Boring Log
- ___ Draft
- ___ Final

___ Draft Installation Log/Diagram (handwritten/drawn)
___ Final Installation Log/Diagram (computer-generated)

Lithologic Logs
- ___ Draft Visual Classification of Soils (handwritten)
- ___ Final Visual Classification of Soils (computer-generated)

Geophysical Logs
- ___ Neutron
- ___ Gamma
- ___ Compensated Density
- ___ e-Log
- ___ Bond Log
- ___ Deviation Log

___ State Well Report (#<xxxxx>)
___ State Plugging Report (#<xxxxx>)


OW-WR-39
PTX06-1114
PTX06-1112
PTX06-1113
OW-WR-19
Site 1
PTX06-1043
OW-WR-38
SWMU 6
Playa 1
OW-WR-40
PTX06-1117
PTX06-1115
PTX06-1116
Site 3
SWMU 5-13a
PTX08-1001
SWMU 5-13b
PTX06-1109
PTX06-1110
PTX06-1111
PTX08-1002
Site 2
Legend
Roads
Fences
Playa
SWMU Extent
Final Well Locations
TYPE
Observation
Pumping
Existing Wells
AQUIFER
Ogallala
Perched
N
W
E
S
0 140 280 560 840 1,120
Feet
1 inch equals 434 feet

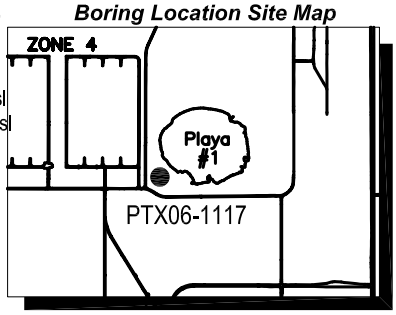
Appendix A

Lithologic Logs and Well Completion Report

DRILLING LOG - PTX06-1117 (Page 1 of 2)

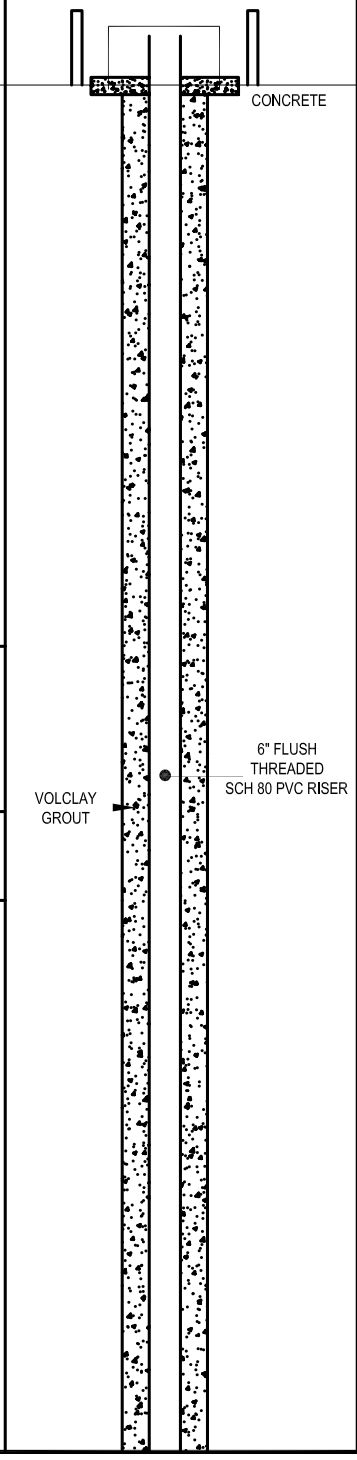
Project: Well Drilling Project **Well Owner:** BWXT-Pantex
Project Location: Pantex Plant, Amarillo, Texas **Date(s) Drilled:** September 8-12, 2006
Total Boring Depth: 262 feet bgs **Borehole Dia:** 11 3/4-inch **Ground Elev.** 3,542.53 msl
Northing: 3,763,283.385 **Easting:** 638,184.,823 **Top of Casing:** 3,529.41msl
Surface Casing: Dia: N/A **Length:** N/A **Type:** N/A
Casing: Dia: 6-inch **Length:** 212 feet **Type:** 316 SS
Screen: Dia: 6-inch **Length:** 50 feet **Type:** 316 SS: 10 Slot
Filter Pack Material: 12/20 Silica Sand **Well Seal Material:** Bentonite Pellets
Drilling Company: Water Development Corp. **Method:** ARCH **Rig:** Speed Star 50
Logged By: John Pawlik **Driller:** William Bludworth #4885-M **Core Type:** Cuttings

Boring Location Site Map



DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	SAMPLE ID	WATER LEVEL	USCS	GRAPHIC LOG	DESCRIPTION (COLOR, TEXTURE, STRUCTURE) TRACE <10%, LITTLE 10% TO 20%, SOME 20% TO 35%, AND 35% TO 50%
					CL		0'-3.5' - CLAY: Dark brown (10YR3/2), some silt, rootlets.
10					CL		3.5'-20' - CLAY: Brown (5YR6/8), litttle to some silt, caliche present in lenses throughout.
20					CL		20'-34' - CLAY: Same as above.
30					CL		34'-40' - CLAY: Dark brown, (5YR5/4), little silt, caliche present in lenses throughout section.
40					CL		40'-48' - CLAY: Dark brown (5YR5/4), some silt, caliche lenses present throughout.
50					CL		48'-50' - CLAY: Same as above with trace of very fine grained sand.
60					CL		50'-60' - CLAY: Dark brown (5YR5/4), trace to little very fine to fine grained sand, caliche present in lenses, nodules present at 58'.
					SM		60'-68' - SAND: (5YR6/8), very fine grained, some silt.
70					SM		68'-80' - SAND: (5YR6/8), fine grain, trace to little very fine grained, some silt.
80					SM		80'-82' - SAND: (5YR6/8), fine grain, trace to little very fine grained, some silt, trace of clay.
					CL		82'-87' - CLAY: Brown (7.5YR5/6).
90					CL		87'-90' - CLAY: Brown (7.5YR5/6), little very fine grained sand.
					SM		90'-100' - SAND: Light brown (7.5YR5/6), fine grain, some very fine grained, little clay, trace of medium grained sand from 98'-100', moist.
100					SM		100'-120' - SAND: Light brown (7.5YR5/6), fine grain, some very fine grained, moderately well sorted.
110							
120					SM		120'-125' - SAND: Light brown (7.5YR5/6), fine grain, some very fine grained, trace to little medium grained, little clay.
130					SM		125'-140' - SAND: Light brown (7.5YR5/6), fine grain, some silt, little to some very fine grained, little clay decreasing to trace with depth.
140					SM		140'-150' - SAND: Light brown (7.5YR7/8), fine grain, some very fine grained, trace of clay and silt, moist.
150							

WELL DIAGRAM



DEPTH (feet)

Monitoring Well Boring Log
PTX06-1117
Well Drilling Project
Contract Number 41802

BWXT Pantex

FIGURE
A-9

CALDWELL ENGINEERING, INC.
ENVIRONMENTAL CONSULTANTS

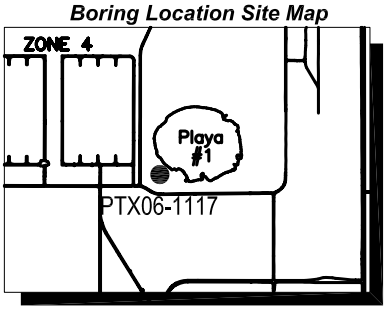
STATE OF TEXAS
Joseph D. Bauer
Geology
2120
LICENSED
PROFESSIONAL GEOSCIENTIST
SIGNATURE:

DRAWN:	JP
CHECKED BY:	JDB
DATE:	10/15
SCALE:	AS SHOWN
FILE:	Pantex - PTX06-1117

DRILLING LOG - PTX06-1117 (Page 2 of 2)

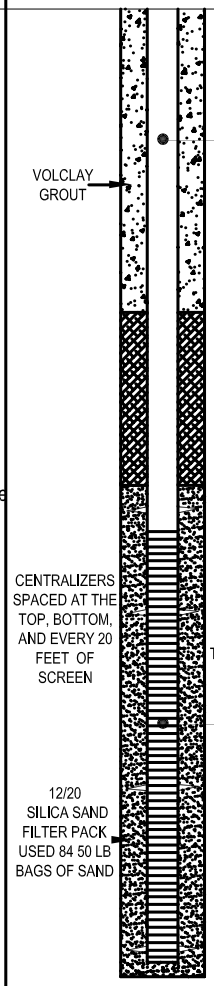
Project: Well Drilling Project **Well Owner:** BWXT-Pantex
Project Location: Pantex Plant, Amarillo, Texas **Date(s) Drilled:** September 8-12, 2006
Total Boring Depth: 262 feet bgs **Borehole Dia:** 11 3/4-inch **Ground Elev.** 3,542.53 msl
Northing: 3,763,283.385 **Easting:** 638,184,.823 **Top of Casing:** 3,529.41msl
Surface Casing: Dia: N/A **Length:** N/A **Type:** N/A
Casing: Dia: 6-inch **Length:** 212 feet **Type:** 316 SS
Screen: Dia: 6-inch **Length:** 50 feet **Type:** 316 SS; 10 Slot
Filter Pack Material: 12/20 Silica Sand **Well Seal Material:** Bentonite Pellets
Drilling Company: Water Development Corp. **Method:** ARCH **Rig:** Speed Star 50
Logged By: John Pawlik **Driller:** William Bludworth #4885-M **Core Type:** Cuttings

Boring Location Site Map



DEPTH (feet)	SAMPLE INTERVAL	PID (ppm)	SAMPLE ID	WATER LEVEL	USCS	GRAPHIC LOG	DESCRIPTION (COLOR, TEXTURE, STRUCTURE) TRACE <10%, LITTLE 10% TO 20%, SOME 20% TO 35%, AND 35% TO 50%
160					SM		150'-180' - SAND: Light brown (7.5YR7/8), fine grain, some very fine grained, trace of clay, trace to little silt, moist.
170							
180					SM		180'-190' - SAND: light reddish brown (10YR7/8), fine grain, some very fine grained, trace to little medium grained sand and silt, moist.
190							190'-202' - SAND: light reddish brown (10YR7/8), fine grain, some very fine grained, trace to little medium grained sand and silt, trace to little cemented fragments up to 1/2-inch in cuttings, increasing little to some at 195', moderately well cemented.
200					SM		
					SM		202'-203' - SAND: Same as bove, silt content increasing little to some, dry.
210					SM		203'-205' - SILT and SAND: Very fine grained sand.
				▽	SM		205'-215' - SAND: light reddish brown (10YR7/6), very fine grained sand, little fine grained and silt, trace to little clay, moist.
220					SM		215'-217' - SAND: light reddish brown (10YR7/6), fine grained, some very fine grained, trace to litlle medium grained, trace of coarse grained.
230					SM		217'-220' - Sand: same as above, trace to little fine and coarse gravel, liitle to some medium and coarse grained sand.
240					SM		220'-225' - SAND: same as above, gravel decreasing to a trace, very moist.
250					SM		225'-240' - SAND: light reddish brown (10YR7/6), fine grain, some very fine grain, trace to little medium grain, little silt, trace of fine and coarse gravel, very moist. Clay and gravel content percenatge increasing to little from 237'-240'.
260					CH		240'-257' - SAND: light reddish brown (10YR7/6), fine grained, some very fine grained, trace to little medium grained, trace of coarse sand and clay, very moist. Gravel content percenatge decreasing to trace from 250'-257'.
270							257'-262' - SAND: light reddish brown (10YR7/6), fine grained, some very fine grained, little medium and coarse grained, little to some clay.
280							Split-spoon sample 262'-263.5'- recovered 1.3' of sample. 0'-0.3'- Silt, some clay, 0.3'- 1.3'- Clay, little silt, slightly plastic, 2.5YR7/6.
290							
300							

WELL DIAGRAM



DEPTH (feet): 185, 205, 210, 260, 262

TOTAL DEPTH OF BORING =262'

BWXT Pantex

Monitoring Well Boring Log
PTX06-1117

Well Drilling Project
Contract Number 41802

FIGURE
A-9

CALDWELL ENGINEERING, INC.
ENVIRONMENTAL CONSULTANTS

STATE OF TEXAS
Joseph D. Bauer
Geology
2120
LICENSED
PROFESSIONAL GEOSCIENTIST

SIGNATURE:

DRAWN:	JP
CHECKED BY:	JDB
DATE:	10/15
SCALE:	AS SHOWN
FILE:	Pantex - PTX06-1117

Northings and Eastings of Playa 1 Feasibility Study Wells

LOCATION	TYPE	NORTHING	EASTING	ELEVATION
PTX06-1109	Observation	3763102	640749	3515
PTX06-1110	Observation	3763001	640699	3517
PTX06-1111	Pumping	3763005	640751	3519
PTX06-1112	Observation	3765426	638235	3539
PTX06-1113	Observation	3765401	638140	3541
PTX06-1114	Pumping	3765455	638141	3545
PTX06-1115	Observation	3763257	638225	3525
PTX06-1116	Observation	3763190	638158	3526
PTX06-1117	Pumping	3763283	638185	3529

Surveying perfomed by Gresham and Associates
All other surveying performed by Pantex's Environmental Projects Sampling and Analysis Department

PERMEABILITY TEST REPORT

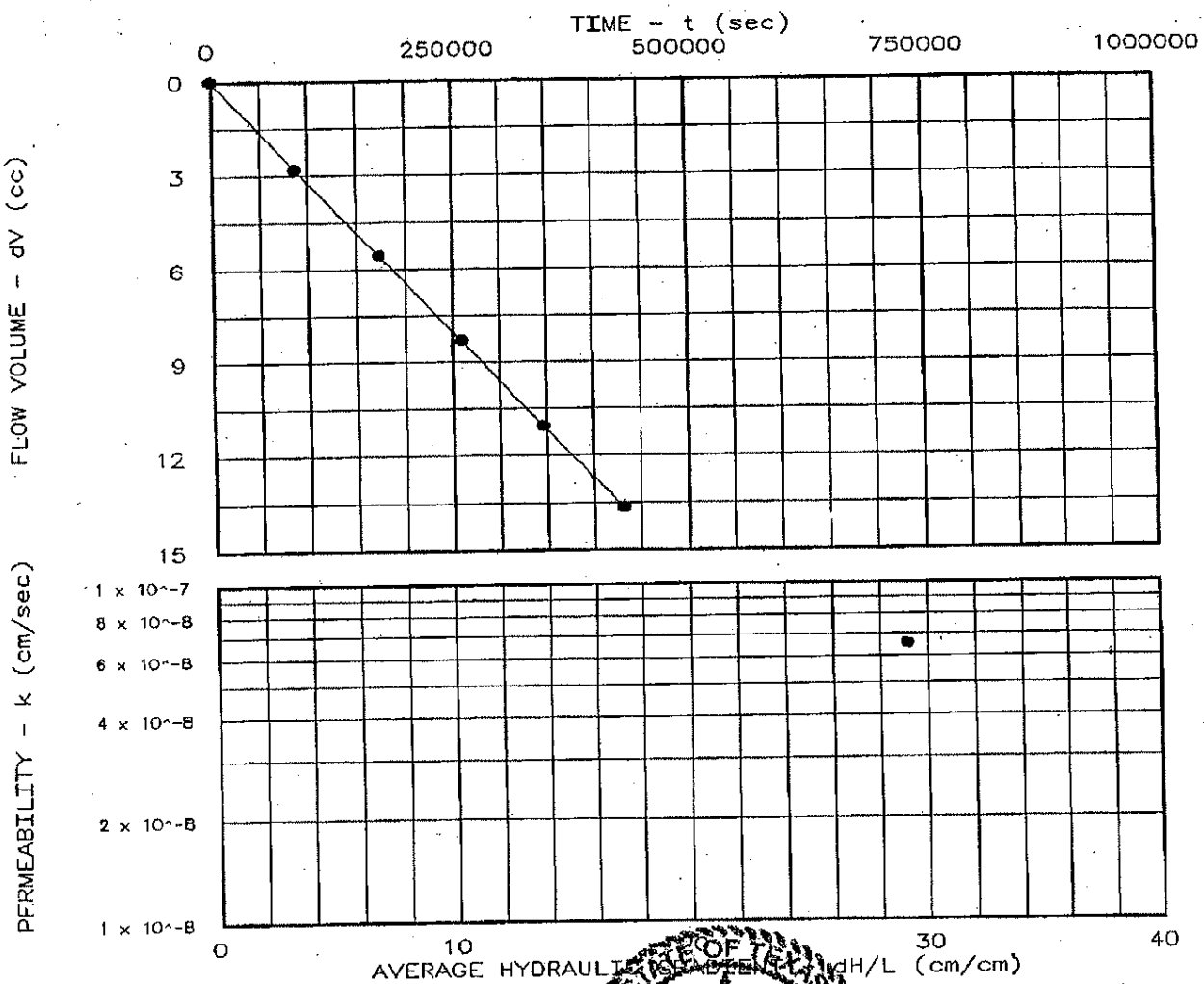
TEST DATA:
Specimen Height (cm): 12.70
Specimen Diameter (cm): 4.59
Dry Unit Weight (pcf): 102.2
Moisture Before Test (%): 14.8
Moisture After Test (%): 23.5

Run Number:	1 ●	2 ▲
Cell Pressure (psi):	50.0	
Test Pressure(psi):	50.0	
Back Pressure(psi):	44.7	
Diff. Head (psi):	5.3	
Flow Rate (cc/sec):	3.17 x 10^-5	
Perm. (cm/sec):	6.66 x 10^-8	

SAMPLE DATA:
Sample Identification: Sample Labeled PTX06-1117-FGZ-260'
Visual Description: Light Gray Sandy Lean Clay
Remarks: Carson County, Texas

Maximum Dry Density (pcf):
Optimum Moisture Content (%):

Percent Compaction:
Permeameter type: Flexible Wall
Sample type: In-Place



Project: Caldwell Engineering, Inc.
Location: BWXT Pantex Fine Grain Zone
Date: 11-04-2006

STATE OF TEXAS
MICHAEL D. COPELAND
72032
REGISTERED
PROFESSIONAL ENGINEER

Project No.: DP-2064
File No.: PT-3
Lab No.: DP-4914
Tested by:
Checked by:
Test: CH - Constant head

PERMEABILITY TEST REPORT

DYESS-PETERSON TESTING LABORATORY, INC.

CONSTANT HEAD PERMEABILITY TEST RESULTS

PROJECT NAME: Caldwell Engineering, Inc.
PROJECT LOCATION: BWXT Pantex Fine Grain Zone
SAMPLE IDENTIFICATION: Sample Labeled PTX06-1117-FGZ-260'
DESCRIPTION: Light Gray Sandy Lean Clay
MAX. DRY DENS.: OPT. WATER CONTENT:

FILE NO.: PT-3
PROJECT NO.: DP-2064
LAB NO.: DP-4914-C
SAMPLE TYPE: In-Place
DATE: 11-04-2006

SPECIMEN DATA

INITIAL PARAMETERS:	FINAL PARAMETERS:
HEIGHT: 12.70 cm	HEIGHT: 12.72 cm
DIAMETER: 4.59 cm	DIAMETER: 4.60 cm
WET WEIGHT: 395.5 g	WET WEIGHT: 425.7 g
MOISTURE CONTENT: 14.8 %	MOISTURE CONTENT: 23.5 %
DRY DENSITY: 102.2 pcf	DRY DENSITY: 102.0 pcf
PERCENT COMPACTION:	

TEST PARAMETERS

CELL NO.: 2 PANEL NO.: 2 POSITIONS: 1

	RUN NO. 1	RUN NO. 2
CELL PRESSURE:	50.0 psi	
TEST PRESSURE:	50.0 psi	
BACK PRESSURE:	44.7 psi /	
/ 0.0 psi		
DIFFERENTIAL HEAD:	5.3 psi	

PERMEABILITY DATA

	RUN NO. 1	RUN NO. 2
AVERAGE FLOW RATE:	3.17E-05 cc/sec	
COEFFICIENT OF CORRELATION:	0.99989	
AVERAGE GRADIENT:	29.1	
TEMPERATURE:	20.0 deg C	
PERMEABILITY, K, at 20 deg C:	6.56E-08 cm/sec	

PERMEABILITY TEST DATA

PROJECT DATA

Project Name:	Caldwell Engineering, Inc.
File No.:	PT-3
Project Location:	BWXT Pantex Fine Grain Zone
Project No.:	DP-2064
Sample Identification:	Sample Labeled PTX06-1117-FGZ-260'
Lab No.:	DP-4914-C
Description:	Light Gray Sandy Lean Clay
Sample Type:	In-Place
Max. Dry Dens.:	
Method (D1557/D698):	
Opt. Water Content:	
Date:	11-04-2006
Remarks:	Carson County, Texas
Permeameter Type:	Flexible Wall
Tested by:	
Checked by:	
Test type:	CH - Constant head

PERMEABILITY TEST SPECIMEN DATA

	Before test:			After test:		
	1	2		1	2	
Diameter:						
Top:	1.809 in	in		1.810 in	in	
Middle:	1.809 in	in		1.809 in	in	
Bottom:	1.807 in	in		1.810 in	in	
Average:	1.81 in	4.59 cm		1.81 in	4.60 cm	
	1	2	3	1	2	3
Length:	5.000 in	in	in	5.006 in	in	in
Average:	5.00 in	12.70 cm		5.01 in	12.72 cm	

Moisture, Density and Sample Parameters:

Specific Gravity:	2.65	
Wet Wt. & Tare:	524.40	554.60
Dry Wt. & Tare:	473.50	473.50
Tare Wt.:	128.90	128.90
Moisture Content:	14.8 %	23.5 %
Dry Unit Weight:	102.2 pcf	102.0 pcf
Porosity:	0.3822	0.3836
Saturation:	63.3 %	100.2 %

CONSTANT HEAD PERMEABILITY TEST CONDITIONS DATA

Cell No.: 2 Panel No.: 2 Positions: 1

Run Number:	1	2
Cell Pressure:	50.0 psi	0.0 psi
Saturation Pressure:	45.0 psi	0.0 psi
Inflow Corr. Factor:	1.00	1.00
Outflow Corr. Factor:	1.00	1.00
Test Temperature:	20.0 °C	0.0 °C

PERMEABILITY TEST READINGS DATA

CASE D X S R	DATE	TIME (24 hr)	ELAPSED TIME-sec	GAUGE PRESSURE-psi IN	GAUGE PRESSURE-psi OUT	BURET READING-cc IN	BURET READING-cc OUT	OUTFLOW/ INFLOW RATIO
S	10/30/ 6	5:23:00	0	50.0	44.9	0.90	24.70	0.00
	10/31/ 6	5:18:00	86,100	50.0	44.9	3.70	21.90	1.00
	11/ 1/ 6	5:22:00	172,740	50.0	44.9	6.50	19.20	0.96
	11/ 2/ 6	5:25:00	259,320	50.0	44.9	9.30	16.50	0.96
	11/ 3/ 6	5:21:00	345,480	50.0	44.9	12.10	13.80	0.96
	11/ 4/ 6	5:19:00	431,760	50.0	44.9	14.80	11.30	0.93

Test Pressure = 50.0 psi Differential Head = 5.3 psi, 369.9 cm H2O
Gradient = 2.913E 01 Flow rate = 3.167E-05 cc/sec R squared = 0.99989
Permeability, K20.0° = 6.560E-08 cm/sec, K20° = 6.560E-08 cm/sec

MEMBER OF:
American Society For Testing Materials
American Concrete Institute
American Welding Society
American Society of Civil Engineers
Texas Council of Engineering Laboratories

DYESS-PETERSON TESTING LABORATORY, INC.
PROFESSIONAL TESTING

■ Amarillo, Texas 79120
P.O. Box 30699
(806) 372-4911 • Fax (806) 372-5552
■ Lubbock, Texas 79424
5853 49th Street
(806) 785-8378 • Fax (806) 785-1959

Date of Report 10-27-06

To: Caldwell Engineering, Inc
% Rick Pawlik
PO Box 890808
Houston, Texas 77289

Report of Test On: Sample of Material Labeled PTX06-1117 at 230'-235' Depth from Playa "1" Location at BWXT Pantex Plant Project

Received From: Pantex Plant – Carson County, Texas

SOIL FINER THAN NO. 200 SIEVE
AS PER ASTM DESIGNATION: D 1140-92

Material Passing No. 200 Sieve = 5.1%

Remarks: Above sample was delivered to Laboratory by CEI personnel.

Copies To: 2 – Above

DYESS-PETERSON TESTING LABORATORY, INC

Project No. 2109 **Report No.** 8890E by Michael D. Copeland, P.E

STATE OF TEXAS
MICHAEL D. COPELAND
72032
REGISTERED
PROFESSIONAL ENGINEER

PTX06-EW-77/PTX06-1129

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120733	Northing: 3762977.17 Easting: 641513.59
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 8/01/07 - 8/02/07 Date Completed: 8/06/07	Depth to Water: 221 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.39 Ft amsl	Top of Casing Elevation: 3520.62 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	0					
	5		CL	0-10' CLAY, (80%), sand (20%), reddish brown (5YR, 5/4), very fine to medium grain, subrounded, well graded, stiff, dry		
	10		SC	10-15' SAND, (70%), stiff clay (30%), reddish brown (5YR, 5/4), very fine to medium grain, subangular, dry		
	15		SC	15-20' Color change to light reddish brown (5YR, 6/4)		
	20		SC	20-30' SAND, 85% sand, 15% stiff clay (0.5-2cm chunks), yellowish red (5YR, 5/6), very fine to medium grain, subangular, dry. Clay content decreases with depth		
	25					
	30		SC	30-35' SAND (90%), reddish brown (5YR, 5/4), very fine to medium grain, subangular, well graded, stiff clay (10%), dry		
	35		SM	35-45' SAND, yellowish red, (5YR, 5/8), very fine to fine grain, clay (5%), stiff, interbedded caliche layers from 37' to 42' BGS, dry		
	40					
	45		SP	45-50' SAND, yellowish red, (5 YR, 5/8), fine to medium grain, subangular, dry		
	50		SM	50-60' SAND, light reddish brown (5YR 6/4), very fine grain, caliche layer 58' to 59', dry		
	55					
	60		SW	60-65' SAND, light reddish brolwn, (5YR, 6/3), very fine to medium grain, rounded, well graded, dry		
	65		SP	65-75' SAND, reddish brown (5YR 5/4), medium grain (75%), fine grain (10%), coarse grain (10%), clay (5%), dry		
	70					
	75		SP	75-85' SAND, (100%), pink (5YR 7/4), very fine to fine grain, dry		
	80					
	85		SM	85-100' SAND, silty, (95%), reddish brown (5YR, 5/4), very fine to fine grain, silty, gravel (5%), dry		
	90					
	95					

C:\Program Files\Pompoise Media\Well Logger 2.7\Pantex PAD #4166\Pantex PAD #4166.wl2

S.M. STOLLER CORPORATION

PTX06-EW-77/PTX06-1129

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120733	Northing: 3762977.17 Easting: 641513.59
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 8/01/07 - 8/02/07 Date Completed: 8/06/07	Depth to Water: 221 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.39 Ft amsl	Top of Casing Elevation: 3520.62 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	105		SP	100-145' SAND, (100%) yellowish red (5YR, 5/6), fine to medium grain, subrounded, dry, trace amount of gravel (to 3 cm) from 125 - 135' BGS		
	110					
	115					
	120					
	125					
	130					
	135					
	140					
	145		SW	145-150' SAND, (100%), yellowish red (5YR, 5/6), very fine to medium grain, subrounded, dry		
	150		SW	150-155' Color change to pink (5YR, 7/4)		
	155		SW	155-165' Sand grains become more rounded		
	160					
	165		SW	165-170' Increase in silt content, trace gravel up to 1 cm		
	170		SW	170-175' Decrease in silt content, no gravel, trace sand and plastic clay chunks		
	175		SP	175-180' SAND, (100%), yellowish red (5YR, 5/6), fine to medium grain, subrounded, dry		
	180		SM	180-185' SAND, reddish yellow (5YR, 6/6), fine to medium grain, silty, subangular, dry		
	185		SM	185-195' Color change to reddish brown (5YR, 5/4), trace amount of gravel		
	190					
	195		SP	195-208' SAND, light reddish brown (5YR 6/4), fine to medium grain, subrounded, dry, trace gravel (0.5 - 1 cm) at 200' BGS		

C:\Program Files\Purpose Media\Well Logger 2.7\Pantex PAD 84166\Pantex PAD 84166.wl2

PTX06-EW-77/PTX06-1129

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120733	Northing: 3762977.17 Easting: 641513.59
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 8/01/07 - 8/02/07 Date Completed: 8/06/07	Depth to Water: 221 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.39 Ft amsl	Top of Casing Elevation: 3520.62 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	205		SP			
	210			208-225' SAND, (100%), yellowish red (5YR, 5/6), fine to medium grain, subrounded, damp		
	215		SP			
	220					
	225		SP	225-231' SAND, yellowish red (5YR, 5/6), increase in coarseness from above, slight increase in clay content		
	230		SC	231-235' SAND, clayey, gravelly, increased formation density and slower drilling rate, clay chunks and flattened pea gravel		
	235		CL	235-240' Fine grain zone contact at 235' as determined by drilling break and loss of slurry and cuttings return as casing advances. split spoon sample at 240' is CLAY, plastic, yellowish brown (10YR, 5/4)		PTX06-EW-77 Permeability 2.029E-06 cm/sec
	240			Total Depth of borehole 240' BGS Fine Grain Zone 235' BGS		
	245					
	250			Well Completion Details: 6-inch Type 316 stainless steel screen and sump used in well construction 5' Sump, (240-235); 20' Screen, 0.020" Factory Slot (235-215); 217.5' Schedule 80 PVC Casing (+2.5-215); Filter Pack, 12/20 Oglebay Norton Colorado Silica Sand, thickness above screen 7' (208-240); Bentonite Seal, 3/8" holeplug thickness above sand 9' (199-208); Baroid Quick Grout (199-2), concrete seal (2-0).		
	255					
	260					
	265					
	270					
	275			Surface Completion: Concrete Pad 5'X5'X8" with four 4" pipe bollards and 10-inch steel protective casing with locking cover.		
	280					
	285					
	290					
	295					

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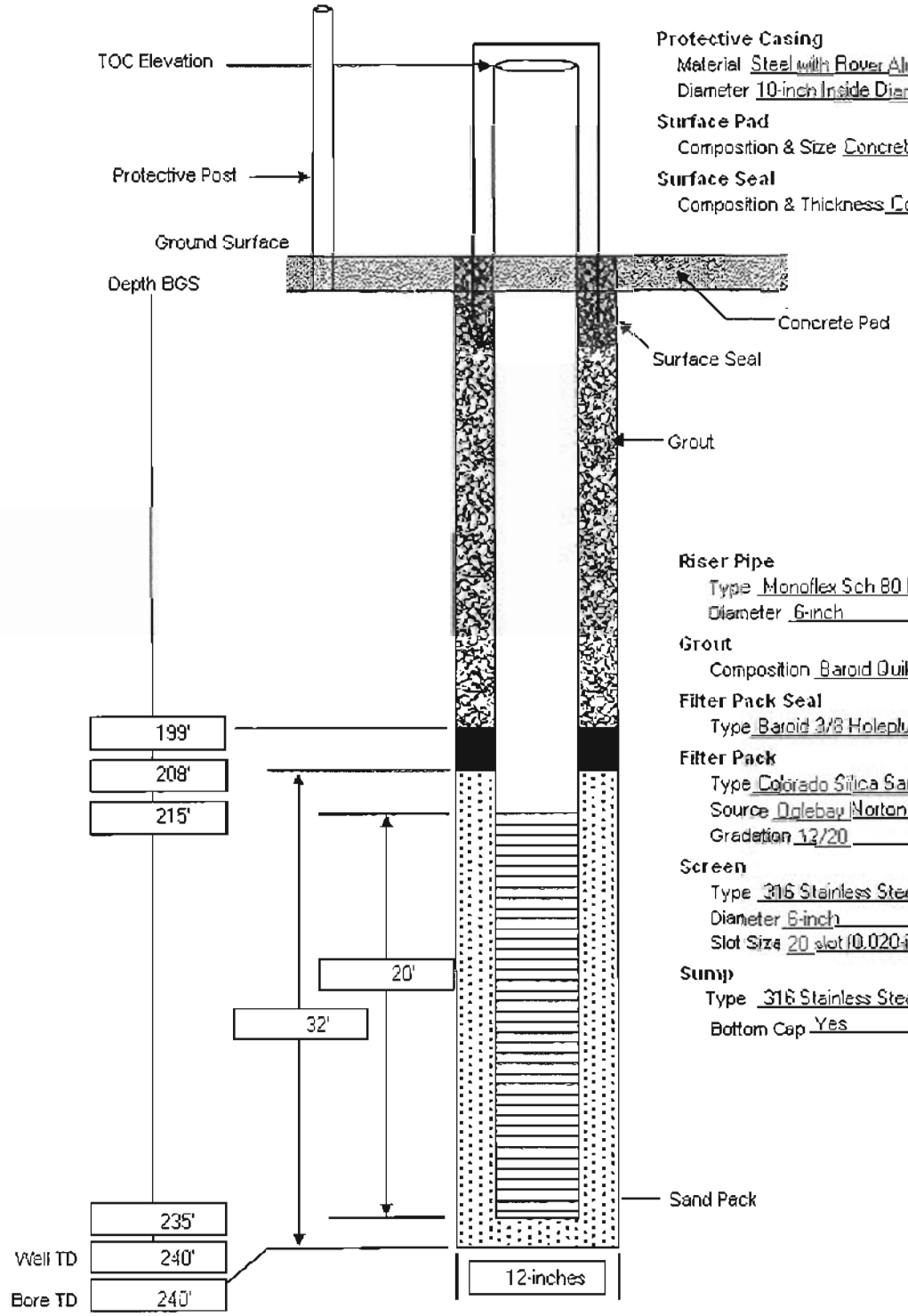
Well Installation Diagram

(Formerly PTX06-EW-77)

Project: Perched Aquifer Dewatering Project
Location: Pantex Plant Playa 1
Contractor: S.M. Stoller Corporation
Driller: WDC Exploration and Wells
Well Coordinates: North 3762977.17 East 641513.59
TOC Elevation: 3520.62 Ft
Surface Elevation: 3518.39 Ft

Well No: PTX06-1129
Well Type: Groundwater Monitoring
Date Constructed: 03/06/2007
Observed By: N Malczyk
Sheet 1 of 1



Protective Casing
Material Steel with Rover Aluminum Cover
Diameter 10-inch Inside Diameter

Surface Pad
Composition & Size Concrete, 5' x 5' x 8"

Surface Seal
Composition & Thickness Concrete, 2'

Riser Pipe
Type Monoflex Sch 80 PVC
Diameter 6-inch

Grout
Composition Baroid Quik-Grout

Filter Pack Seal
Type Baroid 3/8 Holeplug

Filter Pack
Type Colorado Silica Sand
Source Oglebay Norton
Gradation 12/20

Screen
Type 316 Stainless Steel
Diameter 6-inch
Slot Size 20 slot (0.020-inch)

Sump
Type 316 Stainless Steel, 6-inch
Bottom Cap Yes

BOREHOLE GEOPHYSICS & HYDROPHYSICS
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A DIVISION OF LAYNE CHRISTENSEN COMPANY

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Lakewood, Colorado
80215
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Dual Neutron and Natural Gamma

Company Stoller
Well PTX06-EW-77
Field Pantex
County Carson
State Texas

COMPANY Stoller
WELL PTX06-EW-77
FIELD Pantex
COUNTY Carson **STATE** TX

LOCATION
Pantex Plant: Perched Aquifer Dewatering Project

QTR NE NE **SEC** **TWP** **RGE**

OTHER SERVICES

PERMANENT DATUM **ELEVATION**
LOG MEAS. FROM 0.0 ft **ABOVE PERMINANT DATUM**
DRILLING MEAS. FROM

DATE ACQUIRED	12 September 2007			
RUN NUMBER	1			
LOG TYPE	Natural Gamma	Neutron		
DEPTH-DRILLER	240'			
DEPTH-LOGGER	241.7'			
BTM LOG INTERVAL	234.9'	240.7'		
TOP LOG INTERVAL	0'	1.6'		
RECORDED BY	Cody Allen			
WITNESSED BY	Ralph Rupp			
PROBE TYPE, S/N	RABPF	OPF		
LOGGING SPEED	25 ft/min			
A.S.D.E.	0			
SAMPLE INTERVAL	0.2'			

BOREHOLE RECORD

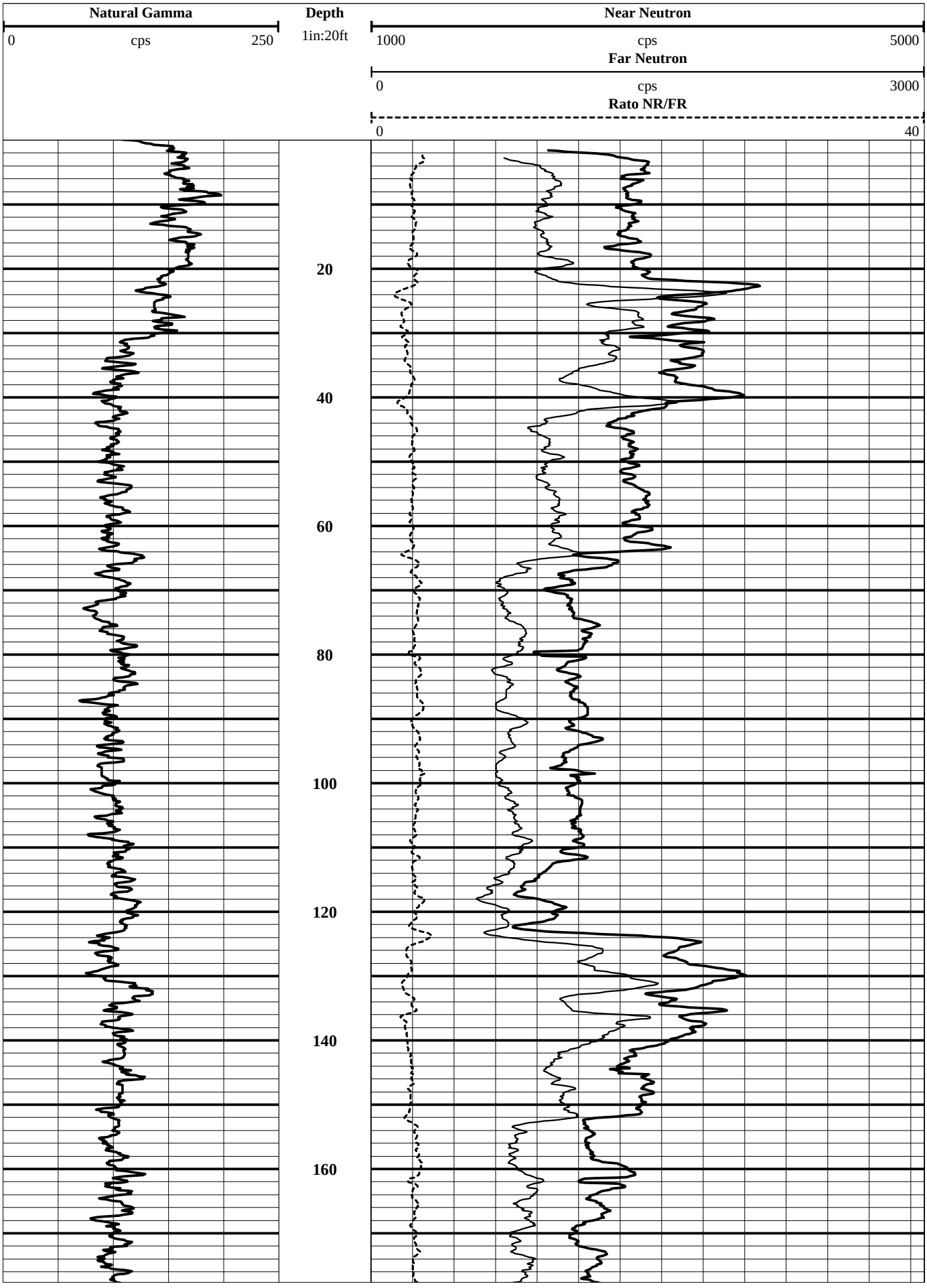
RUN No.	BIT	FROM	TO
1	12"	0	TD

CASING RECORD

SIZE	WGT.	FROM	TO
6"	PVC	0	215
	Screen	215	235
	Sump	235	240

NA - Not Available, N/A - Not Applicable

COMMENTS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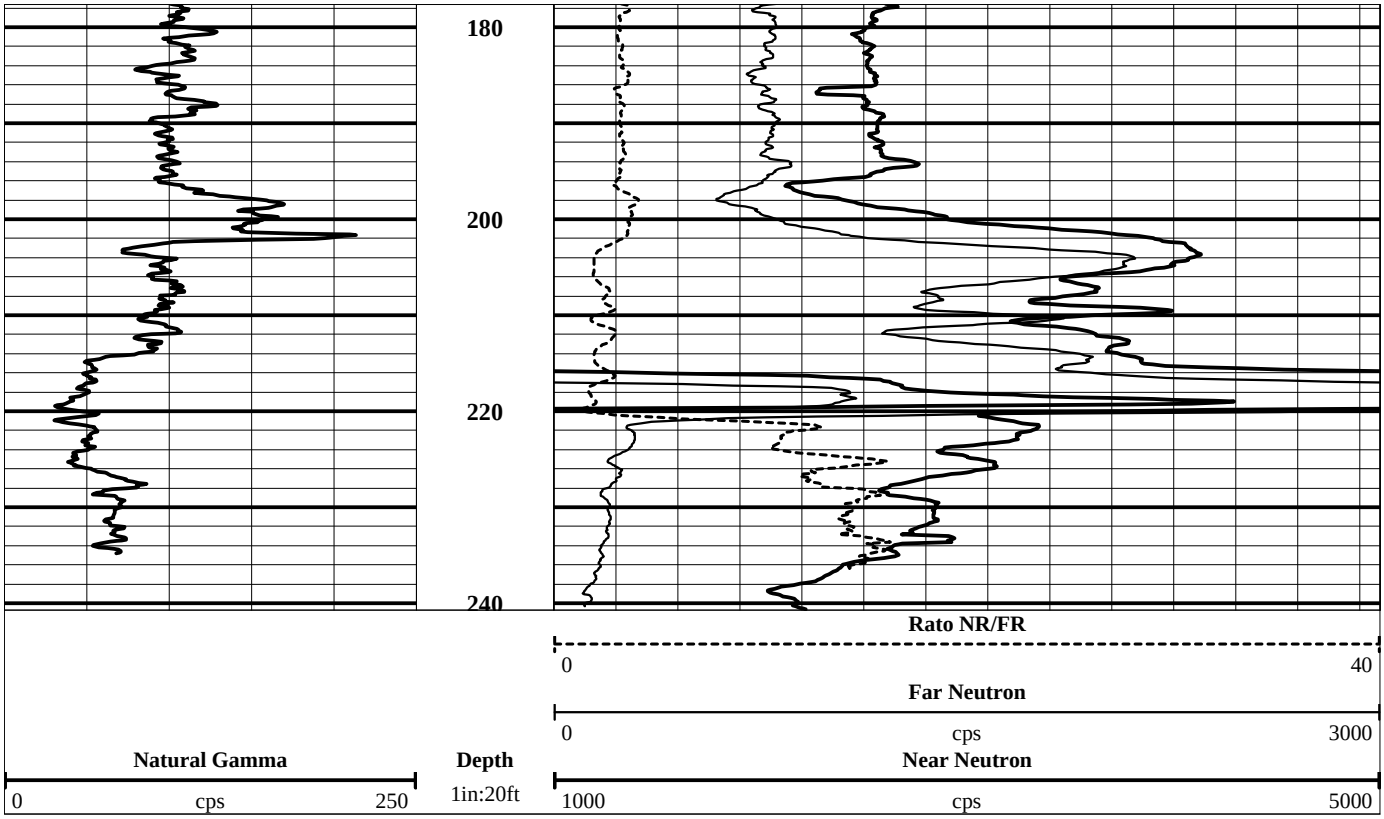
cps
250
Depth
1in:20ft
Near Neutron
1000
cps
5000
Far Neutron
0
cps
3000
Rato NR/FR
0
40
20
40
60
80
100
120
140
160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200
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Rato NR/FR
0
40
Far Neutron
0
cps
3000
Natural Gamma
Depth
Near Neutron
0
cps
250
1in:20ft
1000
cps
5000

STATE OF TEXAS WELL REPORT for Tracking #120733

Owner:	**US Department of Energy**	Owner Well #:	**PTX06-EW-77**
Address:	**PO BOX 30020** **Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**USDOE Pantex Plant** **Panhandle , TX 79068**	Latitude:	**35° 19' 25" N**
Well County:	**Carson**	Longitude:	**101° 33' 18" W**
Elevation:	**3508 ft.**	GPS Brand Used:	**Garmin GPS-72**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date:	Started: **8/2/2007** Completed: **8/6/2007**
Diameter of Hole:	Diameter: **12 in From Surface To 240 ft**
Drilling Method:	**Air Rotary** Other: **Casing Hammer**
Borehole Completion:	Gravel Packed From: **208 ft to 240 ft** Gravel Pack Size: **12/20**
Annular Seal Data:	1st Interval: **From 3 ft to 212 ft with 40SksVolclay (#sacks and material)** 2nd Interval: **From 212 ft to 217 ft with 15Bentonitepeli (#sacks and material)** 3rd Interval: **No Data** Method Used: **Poured** Cemented By: **WDC.** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data**
Surface Completion:	**Surface Sleeve Installed**

Water Level:	Static level: **No Data** Artesian flow: **No Data**
Packers:	**No Data**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**No Data**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**Wdc Exploration & WELLS** **3621 HWY 47** **Peralta , NM 87042**
Driller License Number:	**4885**
Licensed Well Driller Signature:	**William B. Bludworth**
Registered Driller Apprentice Signature:	**Mark A. Green**
Apprentice Registration Number:	**1033**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #**120733**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description

0-20 Silty clay, brown.

20-30 Clay, yellowish red vf sand.

30-35 Sand, silty sand reddish brewn.

35-45 Clay, yellowish red.

45-58 Sand, yellowish red fine.

58-59 Caliche, white.

59-85 Sand, with trace of silt pink.

85-100 Sand reddish brown.

100-150 Sand, yellowish fine to medium.

150-175 Sand, yellowish red fine.

175-180 Sand, yellowish to red vf.

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To

6 N PVC Riser 0-215 SCH#80
6 N SS Screen 215-235 .020" sl.
6 N SS Sump 235 -240 SCH40

180-208 Sand, yellowish brown.Sand, silt yellow brown.

208-235 Sand, yellowish increese clay.

235-240 Clay, pinkish silty sand.

PTX06-EW-76/PTX06-1128

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120741	Northing: 3763668.99 Easting: 641329.12
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 7/24/07 - 7/26/07 Date Completed: 7/31/07	Depth to Water: 216 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.06 Ft amsl	Top of Casing Elevation: 3520.02 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	5		OL	0-7' CLAY, very dark gray (5YR, 3/1), stiff, organic, dry		
	10		CL	7-15' CLAY, sandy, 80% clay 20% very fine and fine grain subangular sand, light reddish brown ((5YR, 6/4),		
	15		ML	15-20' SILT, clayey, sandy, 60% silt, 20% clay, 20% fine sand, light reddish brown (5 YR, 6/3), dry		
	20		SC	20-25' SAND, clayey, 80% sand 20% clay, yellowish red (5YR, 5/6), very fine, fine, and medium grain sand, subrounded, well graded, large stiff clay chunks, dry		
	25		SM	25-40' SAND, silty, clayey, 90% silty sand 10% clay, yellowish red (5YR, 5/6), very fine and fine grain silty sand, graded, large stiff clay chunks, dry		
	30					
	35					
	40		SM	40-45' SAND, silty, clayey, 85% silty sand, 15% clay, yellowish red (5YR, 5/6), very fine, fine, and medium grain silty sand, graded, 1-cm clay chunks and caliche, dry		
	45		SM	45-48' SAND, silty, 90% sand 10 % interbedded caliche, light reddish brown (5YR, 6/4), very fine and medium grain silty sand, subrounded, graded, dry		
	50		SP	48-52' SAND, 100% sand, yellowish red (5YR, 5/6), fine and medium grain, dry		
	55		SM	52-60' SAND, silty, 80% sand 20% caliche chunks, light reddish brown (5YR, 6/4), very fine and fine grain silty sand, graded, dry, well developed caliche from 52-55'		
	60		SM	60-65' SAND, silty, clayey, 90% silty sand 5% caliche 5% clay, light reddish brown (5YR, 6/4), very fine and fine grain, dry,		
	65		SM	65-85' SAND, silty, 85% sand 15% silt, reddish yellow (5YR, 6/6), f70% fine grain, 15% very fine grain, dry		
	70					
	75					
	80					
	85		SW	85-90' SAND, 100% sand, reddish yellow (5YR, 6/6), very fine, fine, and medium grain, subrounded, well graded, dry		
	90		SP	90-100' SAND, 100% sand, light reddish brown (5YR, 6/4), fine and medium grain, subrounded, dry		
	95					

C:\Program Files\Rockware\RockWare 2.7\Pantex PAD #4166\Pantex PAD #4166.wl2

S.M. STOLLER CORPORATION

PTX06-EW-76/PTX06-1128

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120741	Northing: 3763668.99 Easting: 641329.12
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 7/24/07 - 7/26/07 Date Completed: 7/31/07	Depth to Water: 216 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.06 Ft amsl	Top of Casing Elevation: 3520.02 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	105		SP	100-105' SAND, 100% sand, reddish brown (5YR, 5/4), 95% very fine and fine with 5% medium grain, dry		
	110		SP	105-115' SAND, 100% sand, reddish brown (5YR, 5/4), fine and medium grain, subrounded, dry @ 110' color change to light reddish brown (5YR, 6/4)		
	115		SW	115-135' SAND, 95% sand 5% clay, light reddish brown (5YR, 6/4), fine, medium, and coarse grain, well graded, dry, stiff clay chunks (<1-cm) decreasing with depth		
	120					
	125					
	130					
	135		SC	135-140' SAND, 80% sand 20% stiff clay nodules, light reddish brown (5YR, 6/4), fine, medium, and coarse grain, subrounded, well graded, dry		
	140		SP	140-167' SAND, light reddish brown (5YR, 6/4), fine and medium grain, subrounded, dry		
	145					
	150					
	155			@ 157-159 clay and caliche nodules		
	160					
	165			@ 165-167' 1-2 cm gravel		
	170		SP	167-175' SAND, gravelly, 80% sand 20% gravel, reddish brown (5YR, 5/4), very fine and fine sand, trace medium sand, gravel (1-3cm), dry		
	175		SP	175-180' SAND, light reddish brown (5YR, 6/4), fine and medium grain, gravel @ 177' (1-2cm), dry		
	180		SP	180-185' SAND, 98% sand with 2% gravel (0.5-1cm), light reddish brown (5YR, 6/4), fine grain, dry		
	185		SP	185-190' SAND, gravelly, 90% sand 10% gravel (0.5-3cm). reddish brown (5YR, 5/4), fine and medium grain, subangular, dry		
	190		SW	190-205' SAND, 95% sand 5% gravel (0.5-2 cm), pink (5YR, 7/4), fine, medium, coarse grain, subangular, well graded, dry @ 195' elongated gravel		
	195					

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PTX06-EW-76/PTX06-1128

Perched Aquifer Dewatering Project **Pantex Plant - Playa 1** **Amarillo, Texas**

Stoller Project Number: 4166-250	Client: B&W Pantex Contract: #52821
Geologist: N. Malczyk Texas Well Report No.: 120741	Northing: 3763668.99 Easting: 641329.12
Drilling Contractor: WDC Lic.# 4885 M W. Bludworth	TD Borehole: 240 Ft BGS TD Well: 240 Ft BGS
Dates Drilled: 7/24/07 - 7/26/07 Date Completed: 7/31/07	Depth to Water: 216 Ft BGS
Borehole Diameter: 12" Drilling Method: ARCH	Well Type: 6-inch Groundwater Monitoring Well
Ground Elevation: 3518.06 Ft amsl	Top of Casing Elevation: 3520.02 Ft amsl

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	205		SW	205-230' SAND, 95% sand 5% gravel (1-3cm), reddish brown (5YR, 5/4), fine, medium, and coarse grain, subrounded, well graded, damp, @ 210' gravel absent		
	210					
	215		SW			
	220			@ 220' saturated cuttings sticking to inside of drive casing, no cuttings return		
	225					
	230		SC	230-235' SAND, slight color change to light reddish brown (5YR, 6/4), increasing clay content at 230', saturated		
	235		CL	235-240' Fine grain zone contact at 235', cuttings and slurry flow stop as interval is penetrated, split spoon sample from 240-240.5' CLAY, reddish brown (5YR, 5/4), plastic		PTX06-EW-76 Permeability 1.926E-06 cm/sec
	240			Total Depth of Borehole 240' BGS Fine Grain Zone 235' BGS		
	245			Well Completion Details: 6-inch, Type 316 stainless steel materials used in screen and sump construction. 5' Sump (235-240); 40' Screen, 0.020" Factory Slot (195-235); 198' Schedule 80 PVC Casing (+3.0-195); Filter Pack, 12/20 Olgebay Norton CSS Silica Sand, thickness above screen 3' (192-240); Bentonite Seal, 3/8" holeplug thickness above sand 8' (184-192); Baroid Quick Grout (2-184), concrete seal (0-2)		
	250					
	255					
	260					
	265					
	270			Surface Completion: Concrete Pad 5'X5'X8" with four 4" pipe bollards and 10-inch steel protective casing with locking cover.		
	275					
	280					
	285					
	290					
	295					

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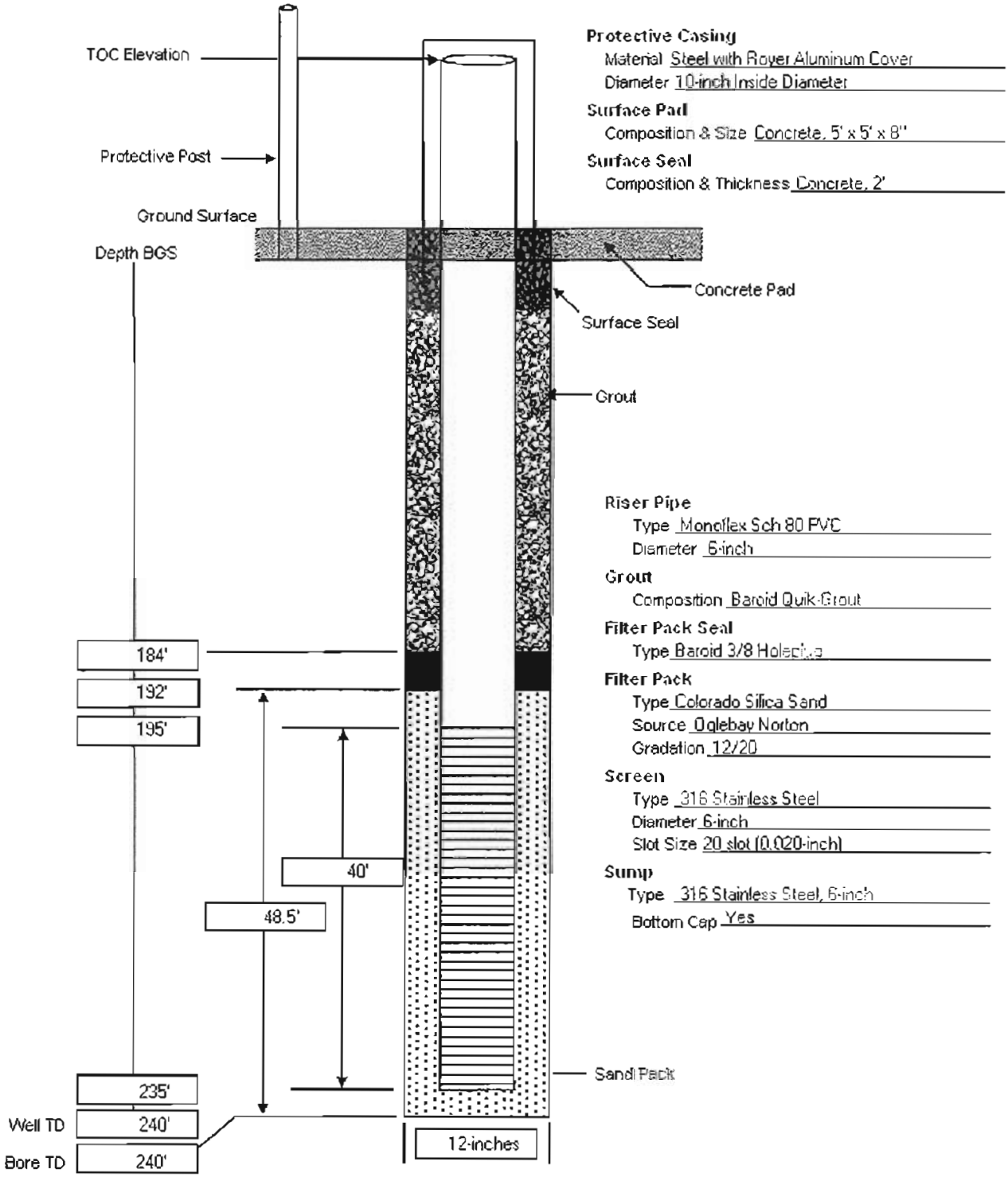
Well Installation Diagram

(Formerly PTX06-EW-76)

Project: Perched Aquifer Dewatering Project
Location: Pantex Plant Playa 1
Contractor: S.M. Stoller Corporation
Driller: WDC Exploration and Wells
Well Coordinates: North 3763668.93 East 641329.12
TOC Elevation: 3520.02 Ft
Surface Elevation: 3518.06 Ft

Well No: PTX06-1128
Well Type: Groundwater Monitoring
Date Constructed: 07/31/2007
Observed By: N Malczyk
Sheet 1 of 1



Protective Casing
Material: Steel with Royer Aluminum Cover
Diameter: 10-inch Inside Diameter

Surface Pad
Composition & Size: Concrete, 5' x 5' x 8"

Surface Seal
Composition & Thickness: Concrete, 2'

Riser Pipe
Type: Monoflex Sch 80 PVC
Diameter: 6-inch

Grout
Composition: Baroid Quik-Grout

Filter Pack Seal
Type: Baroid 3/8 Holeplug

Filter Pack
Type: Colorado Silica Sand
Source: Oglebay Norton
Gradation: 12/20

Screen
Type: 316 Stainless Steel
Diameter: 6-inch
Slot Size: 20 slot (0.020-inch)

Sump
Type: 316 Stainless Steel, 6-inch
Bottom Cap: Yes

BOREHOLE GEOPHYSICS & HYDROPHYSICS
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80215
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Dual Neutron and Natural Gamma

Company Stoller
Well PTX06-EW-76
Field Pantex
County Carson
State Texas

COMPANY Stoller
WELL PTX06-EW-76
FIELD Pantex
COUNTY Carson **STATE** TX

LOCATION
Pantex Plant: Perched Aquifer Dewatering Project

QTR NE NE **SEC** **TWP** **RGE**

OTHER SERVICES

PERMANENT DATUM **ELEVATION**
LOG MEAS. FROM 0.0 ft **ABOVE PERMINANT DATUM**
DRILLING MEAS. FROM

DATE ACQUIRED	12 September 2007			
RUN NUMBER	1			
LOG TYPE	Natural Gamma	Neutron		
DEPTH-DRILLER	240			
DEPTH-LOGGER	240.5'			
BTM LOG INTERVAL	233.7'	239.5'		
TOP LOG INTERVAL	0'	1.3'		
RECORDED BY	Cody Allen			
WITNESSED BY	Ralph Rupp			
PROBE TYPE, S/N	RABPF	OPF		
LOGGING SPEED	25 ft/min			
A.S.D.E.	0			
SAMPLE INTERVAL	0.2'			

BOREHOLE RECORD

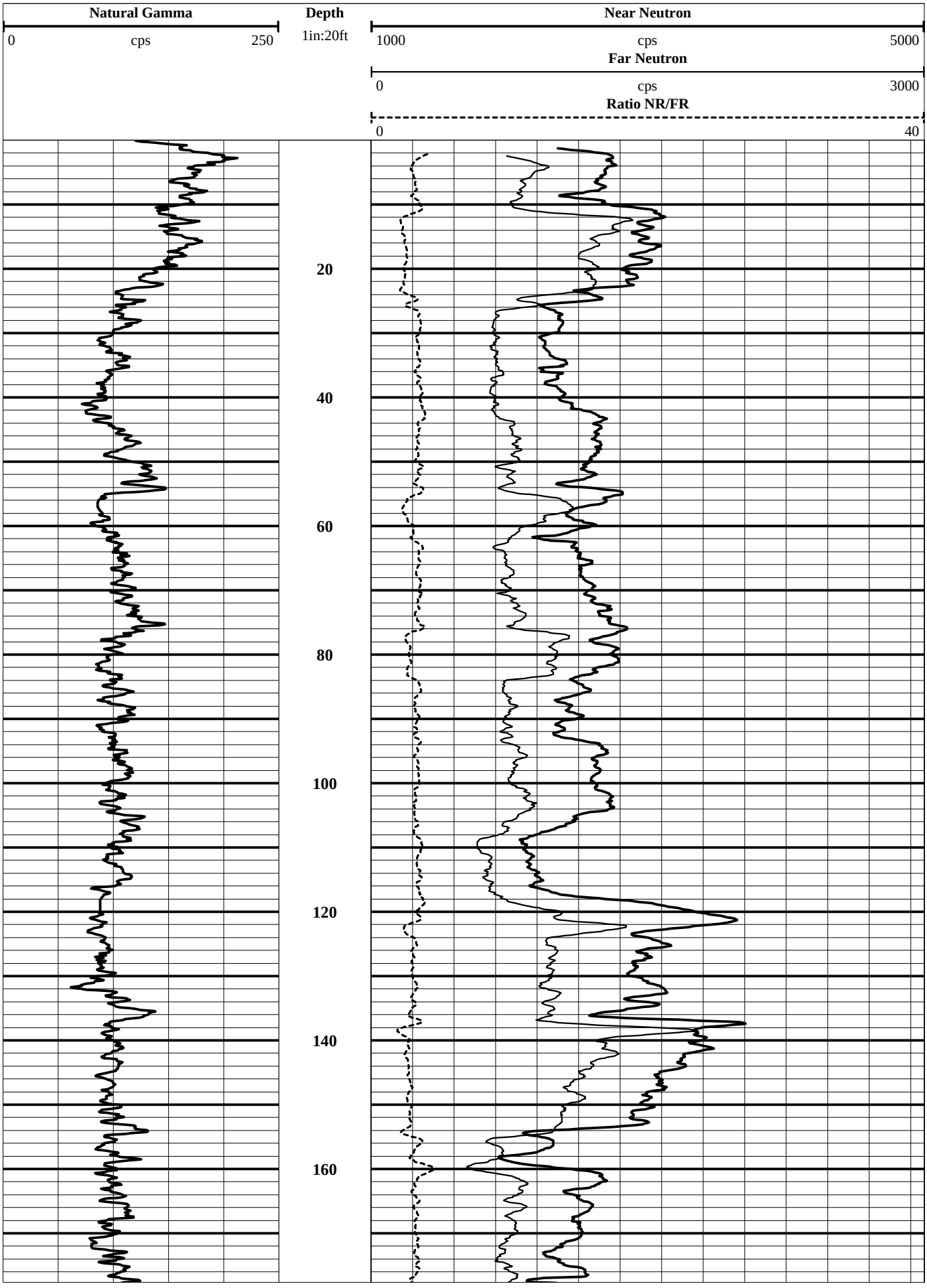
RUN No.	BIT	FROM	TO
1	12"	O	TD

CASING RECORD

SIZE	WGT.	FROM	TO
6"	PVC	0	195
	screen	195	235
	sump	235	240

NA - Not Available, N/A - Not Applicable

COMMENTS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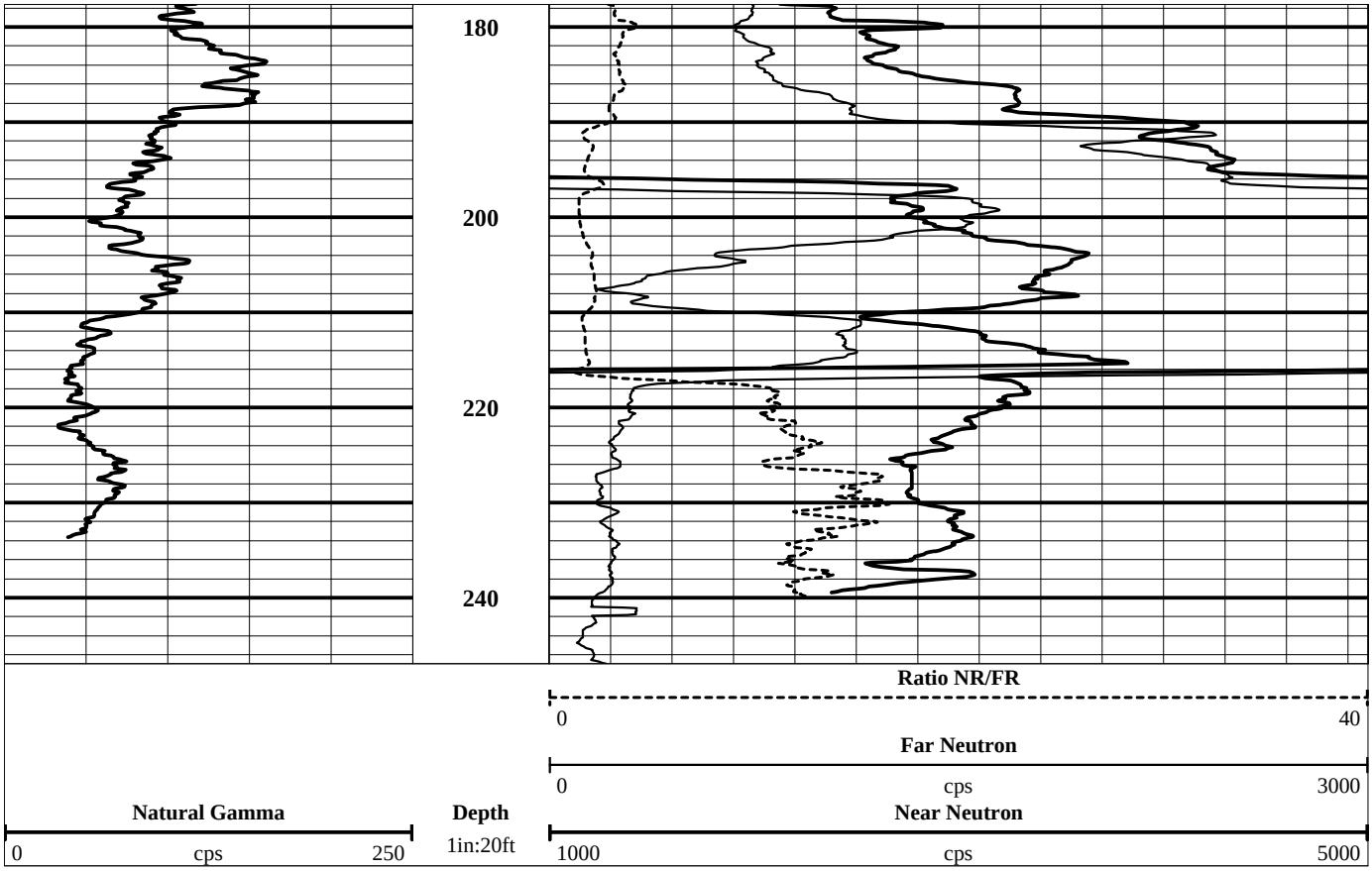
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0
cps
3000
Natural Gamma
Depth
Near Neutron
0
cps
250
1in:20ft
1000
cps
5000

STATE OF TEXAS WELL REPORT for Tracking #120741

Owner:	**US Department of Energy**	Owner Well #:	**PTX06-EW-76**
Address:	**PO BOX 30020** **Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**USDOE Pantex Plant** **Panhandle , TX 79068**	Latitude:	**35° 19' 36" N**
Well County:	**Carson**	Longitude:	**101° 32' 59" W**
Elevation:	**3507 ft.**	GPS Brand Used:	**Garmin GPS-72**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Date:	Started: **7/26/2007** Completed: **7/31/2007**
Diameter of Hole:	Diameter: **12 in From Surface To 240 ft**
Drilling Method:	**Air Rotary** Other: **Casing Hammer**
Borehole Completion:	Gravel Packed From: **192 ft to 240 ft** Gravel Pack Size: **12/20**
Annular Seal Data:	1st Interval: **From 3 ft to 184 ft with 40SksVolclay (#sacks and material)** 2nd Interval: **From 184 ft to 192 ft with 15Bentonitepeli (#sacks and material)** 3rd Interval: **No Data** Method Used: **Poured** Cemented By: **WDC.** Distance to Septic Field or other Concentrated Contamination: **No Data** Distance to Property Line: **No Data** Method of Verification: **No Data** Approved by Variance: **No Data**
Surface Completion:	**Surface Sleeve Installed**

Water Level:	Static level: **216 ft. below land surface on 8/2/2007** Artesian flow: **No Data**
Packers:	**No Data**
Plugging Info:	Casing or Cement/Bentonite left in well: **No Data**
Type Of Pump:	**No Data**
Well Tests:	**No Data**

Water Quality:	Type of Water: **No Data** Depth of Strata: **No Data** Chemical Analysis Made: **No** Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data:	The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	**Wdc Exploration & WELLS** **3621 HWY 47** **Peralta , NM 87042**
Driller License Number:	**4885**
Licensed Well Driller Signature:	**William B. Bludworth**
Registered Driller Apprentice Signature:	**Mark A. Green**
Apprentice Registration Number:	**1033**
Comments:	**No Data**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #**120741**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description

0-15 Silty clay, reddish brown.

15-40 Clay, yellowish red vf sand.

40-45 Sand, silty sand reddish brewn.

45-52 Clay, reddish and silty.

52-65 Sand, reddish brown with silt.

65-85 Sand, reddish brown fine.

85-90 Sand, with trace of silt reddeish brown.

95-135 Sand, reddish brown lite to medium coarce.

135-157 Sand, lite red and coarce.

157-167 Caliche, and gravel.

167-205 Sand, lite to medium gravel reddish broun

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To

6 N PVC Riser 0-195 SCH#80
6 N SS Screen 195-235 .020" sl.
6 N SS Sump 235 -240 SCH40

205-230 Sand, reddish brown fine to medium to coarce.

230-235 Sand, lite broun slite color change.

235-240 Clay, pinkish silty sand.

PTX07-1O03

Contractor: Jacobs Engineering

Contract #:

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- _X_Draft
- _X_Final

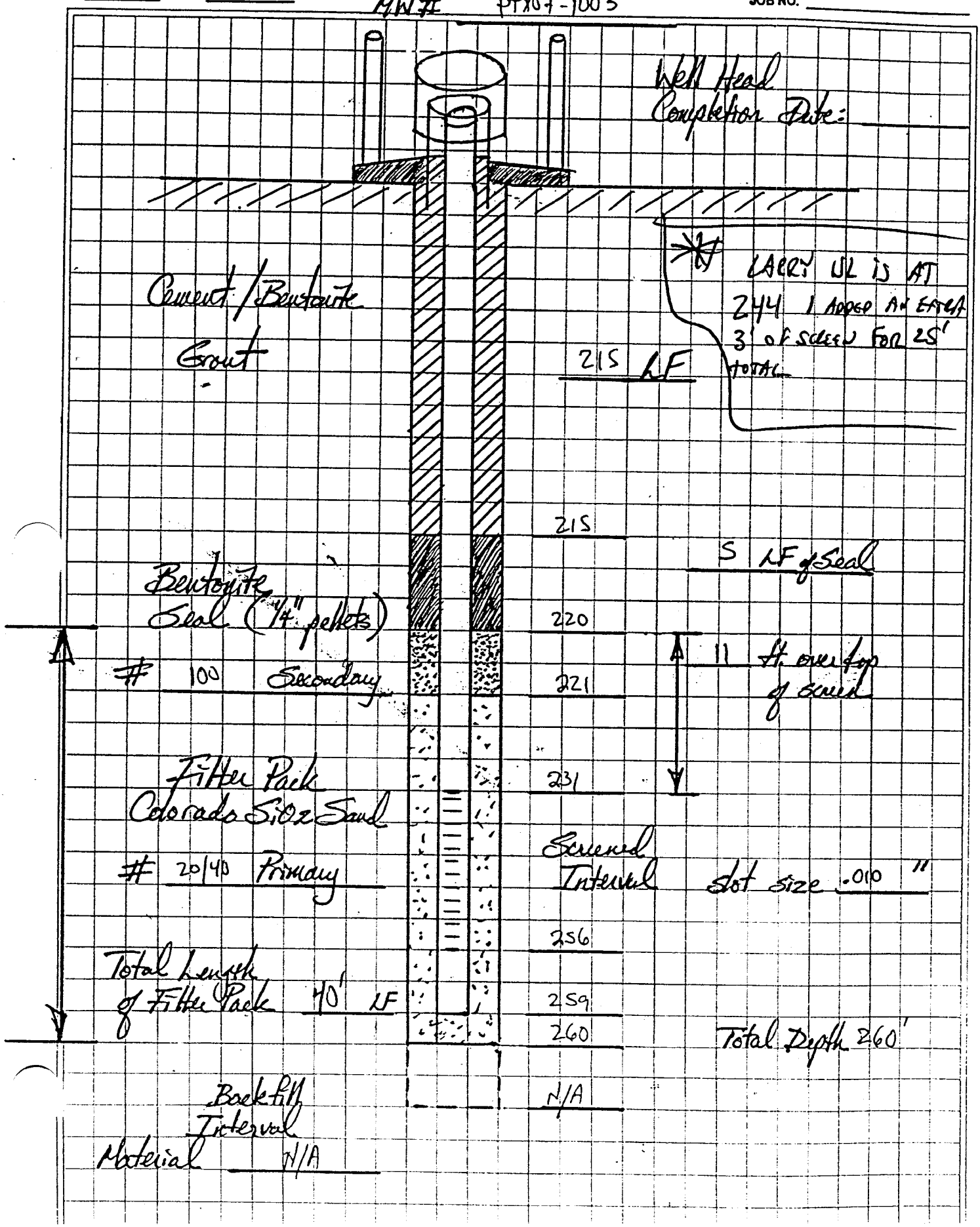
_X_Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

JACOBS ENGINEERING

DATE _____ SUBJECT Monitor Well Design SHEET NO. _____

BY _____ CHKD. _____ MW# PTX07-1003 JOB NO. _____



APPENDIX 5.3

GROUNDWATER QUALITY SAMPLING RECORD

GROUNDWATER QUALITY SAMPLING RECORD

FACILITY CODE Pantex
LOCATION ID PTX07-1003
SAMPLE ID PTX07-1003-1001
LOG DATE 8-1-94
ANALYTICAL LAB CODE NA

LOT CONTROL NO NA
SAMPLE TYPE Field
ACCEPTANCE CODE NA
LOGGER CODE NA

INITIAL GROUNDWATER DEPTH (FT) 247.8 ft
SAMPLE DEPTH (FT)
SAMPLING PERIOD: START 1245 ~~259.0 ft~~ COMPLETE
SAMPLING METHOD Bennett Pump
DATE SENT 8-1-94

COMMENTS

FIELD PARAMETER MEASUREMENTS:

POTENTIAL OF HYDROGEN	pH	S.U.	7.18
SPECIFIC CONDUCTANCE	Ec	umhos/cm	405
REDOX POTENTIAL	Eh	mvolts	NA
TEMPERATURE	TMP	°C	17.9
ALKALINITY ($CaCO_3$)	ALK	mg/l	236
DISSOLVED OXYGEN	DO	mg/l	NA

TIME	TOTAL VOLUME WITHDRAWN (GALS)	TOTAL VOLUME WITHDRAWN (Bore Volume)	pH	Ec (umhos/cm)	TEMP (°C)	COMMENTS
	0.0	0.0	--	--	--	START PUMPING
1245	0	0	7.01	500	17.8	
1250	5	.54	7.18	415	19.3	Flow = 1 GPM
1255	10	1.08	7.18	408	19.4	
1300	15	1.62	7.18	426	19.4	
1305	20	2.16	7.19	404	19.5	← Adjusted Flow Through Cell
1310	25	2.70	7.19	396	18.0	to allow H2O to cover
1315	30	3.24	7.19	402	17.9	entire temp. probe.
1320	35	3.78	7.19	401	17.9	
1325	40	4.32	7.18	409	17.9	
1330	45	4.86	7.18	411	17.9	
1335	50	5.40	7.18	405	17.9	Turbidity = .70

Hole No. PTX07-1003

DRILLING LOG	DIVISION TULSA	INSTALLATION	SHEET 1 OF 1 SHEETS

PROJECT: COE - LANDFILL RFI

LOCATION (Coordinates or Station): LANDFILL 1 PTX07-1003

3. DRILLING AGENCY: WATER DEVELOPMENT CORP.

4. HOLE NO. (As shown on drawing title and file number): PTX07-1003

5. NAME OF DRILLER: MILLER SMITH / KEVIN COLBY

6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.

7. THICKNESS OF OVERBURDEN

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 260'

10. SIZE AND TYPE OF BIT: 8 5/8 TRICONE

11. DATUM FOR ELEVATION SHOWN (TBM or MSL)

12. MANUFACTURER'S DESIGNATION OF DRILL: DRESSER T70W - AIR ROTARY CASING HAMMER

13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED

14. TOTAL NUMBER CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE: STARTED 6/7/94 COMPLETED 6/14/94

17. ELEVATION TOP OF HOLE

18. TOTAL CORE RECOVERY FOR BORING %

19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						D = DISTURBED SAMPLE UD = UNDISTURBED SAMPLE C = CHEMICAL ANALYSIS P = PHYSICAL ANALYSIS
	2					
	4					
	6		CLAY w/SILT AT 25Y., trace v.f.gr sand, 1/16" calcite nodules throughout, clay of med plasticity, black carbon rootlets throughout, 7.5YR 6/4 light brown, loose to medium dense, dry to sl. damp.		UD P	SHELBY TUBE #1 PTX07-1003-2005 t= 1320 DEPTH: 5'-7'
	8				D C	SPLIT SPOON #1 PTX07-1003-2007 t= 1325 PID=0.0 DEPTH: 7'-9'
	10		CLAY w/SILT 25-30%, trace v.f.gr sand, calcite nodules throughout to 1/4" black rootlets throughout, 7.5YR 6/4 light brown, medium dense, dry to sl. damp.		D C	SPLIT SPOON #2 PTX07-1003-2010 t= 1350 PID=0.0 DEPTH: 10'-12'
	12	CL				
	14					LITHOLOGIC GRAB @ 15' t= 1410
	16		As above w/sl. increase in $CaCO_3$, clay very stiff in nodules - grab sample from cyclone.			
	18					
	20		SILTY CLAY, silt at 30-40%. Significant black carbon rootlets throughout, trace $CaCO_3$ nodules to 1/4" 7.5YR 6/4 light brown, medium dense, dry to sl. damp.		D C	SPLIT SPOON #3 PTX07-1003-2020 t= 1530 PID=0.0 DEPTH: 20-22
	22				UD P	SHELBY TUBE #2 PTX07-1003-2022 t= 1545 DEPTH: 22'-24'
	24		As above w/slight increase in $CaCO_3$			LITHOLOGIC GRAB @ 25' t= 1605
	26					
	28					

PIPE SEQUENCE

5/1

5'

5/2

10'

10/1

20'

10/2

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc.) If significant g	PIPE SEQUENCE
	30	CL	SILTY CLAY, silt at 30%, trace v.f.gr sand, $CaCO_3$ streaking and nodules to 1/4", clay med. plasticity, black rootlets throughout, 7.5YR 6/4 light brown, med dense, dry.		D	SPLIT SPOON #4	10/2
	32				C	PT#07-1003-2030 t=1625 PID=0.0 DEPTH: 30'-32'	30'
	34		GRAB AS ABOVE w/slight increase in v.f.gr sand and caliche			LITHOLOGIC GRAB @ 35' t=1638	10/3
	36						
	38						
	40	ML	SILT, w/clay, clay is low plasticity, SILT AT 80%, 7.5YR 6/6 reddish yellow, trace caliche nodules to 1/8", black rootlets throughout, med dense, dry.		U0	SHELBY TUBE #3 PT#07-1003-2040 t=0835 DEPTH: 40-42'	40'
	42				P		
	44		As above decrease in $CaCO_3$		D	SPLIT SPOON #5 PT#07-1003-2042 t=0845 PID=0.0 DEPTH: 42'-44'	10/4
	46				C		
	48		INCREASE IN v.f.gr sands ↓			LITHOLOGIC GRAB @ 45' t=0855	
	50		SILT, w/trace clay of low plasticity, significant $CaCO_3$ nodules and streaking throughout, trace v.f.gr sands at appx 10%, black organic rootlets, 7.5YR 6/6 reddish yellow, Caliche is 7.5YR 8/2 pinkish white, very dense, dry.		D	SPLIT SPOON #6 PID=0.0 t=0915 DEPTH: 50'-52'	50'
	52						
	54		SLIGHT INCREASE IN LOW PLASTIC CLAY AND v.f.-sr. sands			LITHOLOGIC GRAB @ 55' t=0933	10/5
	56						
	58						
	60		SANDY SILT, sand v.f.gr poorly graded, trace low plastic clay, significant caliche layering throughout spoon interbedded with sandy silt, silts are 7.5YR 5/6 strong brown, Caliche is 5YR 8/1 white, very dense, dry.		D	SPLIT SPOON #7 t=0955 PID=0.0 DEPTH: 60'-62'	60'
	62						
	64		As above, very dense with significant $CaCO_3$ slight increase in v.f.gr. sands			LITHOLOGIC GRAB @ 65' t=1005	10/6
	66						

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
	70'	ML	SANDY SILT, SAND v.f.gr, poorly graded, signif. caliche throughout spoon interbedded 7.5YR 5/6 strong brown, 5YR 8/1 white for caliche, very dense, dry.		D C	SPLIT SPOON #8 PTX07-1003-2070+QL t=1035 PID=0.0 DEPTH: 70'-72' * shoe on spoon destroyed due to density of this interval.	10/6 70'
	72						
	74		SIGNIFICANT VERY DENSE CALICHE LAYER 5YR 8/1 WHITE, INTERBEDDED SANDY SILTS.			LITHOLOGIC GRAB @ 75' t=1100	10/7
	76						
	78		—OUT OF CALICHE LAYER, GRADING INTO SILTY SAND.				
	80'	SM	SILTY SAND sand v.f.gr, poorly graded, silt at 25-30%, trace caliche nodules to 1/4", 7.5YR 7/3 pink, dense, dry.		D	SPLIT SPOON #9 t=1230 PID=0.0 DEPTH: 80'-82'	80'
	82						
	84		Slight increase in silts 35-40%, caliche interbedded in thin 2" units.			LITHOLOGIC GRAB @ 85' t=1245	10/8
	86						
	88						
	90'		SILTY SAND, sand v.f.gr, poorly graded, silt at 20-25%, caliche nodules to 1/2" throughout spoon, 7.5YR 6/4 light brown, caliche is 10YR 8/1, white, med dense, dry.		D	SPLIT SPOON #10 t=1302 PID=0.0 DEPTH: 90'-92'	90'
	92						
	94		Increase in silts to 40%, significant caliche nodules to 1/2"			LITHOLOGIC GRAB @ 95' t=1318	10/9
	96						
	98					* tool not working ~~1325 RUN DEVIATION SURVEY @ 100'~~ AWB	
	100'		SILTY SAND, sand v.f.gr, poorly graded, silt at 30%, 7.5YR 7/3 pink, black organic rootlets throughout, trace caliche nodules to 1/4", med dense, dry		D	SPLIT SPOON #11 t=1445 PID=0.0 DEPTH: 100'-102'	100'
	102						
	104		decreasing silts to 15%, v.f.gr sand, 7.5YR 7/6 reddish yellow, poorly graded			LITHOLOGIC GRAB @ 105' t=1500	10/10
	106						

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc.; if significant) g	PIPE SEQUENCE
	110'	SM	SAND v.f.gr poorly graded uniform throughout spoon, silt at 20% cemented sand nodules to 1/2 inch, 10YR 7/6, yellow, loose, dry.		D	1030 DEVIATION AT 110' < .5° SPLIT SPOON #12 t=0745 PID=0.0 DEPTH: 110'-112'	10/10 110'
	112						
	114		Significant decrease in silts, v.f.gr sand, poorly graded.			LITHOLOGIC GRAB @ 115' t=0800	10/11
	116						
	118						
	120'	SP	SAND, v.f.gr, poorly graded silts at 5%, uniform throughout, trace caliche nodules to 1/4" trace cemented sandstone nodules to 1", 10YR 7/6 yellow, loose, dry to sl. damp		D	SPLIT SPOON #13 t=0815 PID=0.0 DEPTH: 120'-122'	120'
	122						
	124		Increase in caliche + color change to 10YR 7/4 very pale brown.			LITHOLOGIC GRAB @125' t=0830	10/12
	126						
	128						
	130'		SAND, v.f.gr, poorly graded, silt at 5-10%, uniform throughout spoon, 10YR 7/6 yellow, loose, dry to sl. damp		D	SPLIT SPOON #14 t=0850 PID=0.0 DEPTH: 130'-132'	130'
	132						
	134		As above, no change			LITHOLOGIC GRAB @ 135' t=0905	10/13
	136						
	138						
	140'		SAND, v.f.gr, poorly graded, uniform throughout, silts at <5%, 10YR 7/4 very pale brown, loose, dry.		D	SPLIT SPOON #15 t=0925 PID=0.0 DEPTH: 140'-142'	140'
	142						
	144		Slight increase in silts to 10%, uniform sand v.f.gr.			LITHOLOGIC GRAB @ 145' t=0940	10/14
	146						
	148						

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	Pipe SEQUENCE
	150'	SP	SAND, v.f.gr, poorly graded, uniform throughout spoon $CaCO_3$ streaking, trace $CaCO_3$ nodules to 1/4", 10YR 6/6 brownish yellow silt <5%, loose, sl. damp. INCREASE IN $CACO_3$ nodules - ground up in grab sample from cyclone.		UD P	SHELBY TUBE #4 PTX07-1003-2150 t=1000 DEPTH: 150'-152'	10/14 150'
	152				D C	SPLIT SPOON #16 PTX07-1003-2152 t=1030 PID=0.0 DEPTH: 152'-154'	
	154					LITHOLOGIC GRAB @ 155' t=1100	10/15
	156						
	158						
	160'		SAND, v.f.gr. poorly graded, silts <5%, uniform throughout, trace mafics, clean "beach" type sand, 10YR 7/4 very pale brown, loose to med. dense, dry.		D	SPLIT SPOON #17 t=1215 PID=0.0 DEPTH: 160'-162'	160'
	162						
	164					LITHOLOGIC GRAB @ 165' t=1234	10/16
	166		As above w/ calcareous sandstone pieces in grab sample				
	168						
	170'		SAND, v.f.gr, poorly graded, trace silts at <5%, trace calcareous sandstone nodules to 1/2". trace mafics, 10YR 6/4 light yellowish brown, loose to med. dense, sl. damp.		D	SPLIT SPOON #18 t=1300 PID=0.0 DEPTH: 170'-172'	170'
	172						
	174		Increase in calcareous sandstone pieces in grab sample color change to 10YR 7/4 very pale brown.			LITHOLOGIC GRAB @ 175' t=1320	10/17
	176						
	178						
	180'		SAND, v.f.gr. poorly graded, silt at <8%, calcareous sandstone nodules to 2". trace mafics, FeOx staining, 10YR 6/4 lt. yellowish brown, loose to med dense, dry.		D	SPLIT SPOON #19 t=1345 PID=0.0 DEPTH: 180'-182'	180
	182						
	184	SM	Increase in silts to 25%, v.f.gr poorly graded sand 10YR 6/4 lt. yell. brown			LITHOLOGIC GRAB @ 185' t=1405	10/18
	186						

ELEVATION ft	DEPTH ft	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc. If significant)	WELL SCHEMATIC
	190'					*1100 RON DEVIATION AT 190' <1°	10/18
			SILTY SAND, silt at 35%, sand. v.f.gr poorly graded, trace calcareous sandstone nodules to 1", 10YR 6/4 light yellowish brown, med. dense, sl. damp.		D	SPLIT SPOON #20 t= 1505 PID=0.0 DEPTH: 190'-192'	190'
	192						
	194		As above w/slight decrease in silts to 20%. trace ground up caliche			LITHOLOGIC GRAB @ 195' t= 1525	10/19
	196	Sm					
	198						
	200'		SILTY SAND silt at 25%, v.f.gr sands. poorly graded, calcareous sandstone nodules to 1/2", 10YR 7/3 very pale brown, med. dense, dry.		D	SPLIT SPOON #21 PT#07-1003-2200 t= 1600 PID=0.0 DEPTH: 200'-202'	200'
	202						
	204		DECREASING SILTS TO 10%.			LITHOLOGIC GRAB @ 205' t= 0820	10/23
	206						
	208		SAND v.f.gr poorly graded, silt at 5-8%. Calcareous sandstone nodules throughout to 1 1/2" 10YR 7/4 very pale brown, loose, dry to sl. damp.		D C	SPLIT SPOON #22 PT#07-1003-2210 t= 0905 PID=0.0 DEPTH: 210'-212'	210'
	210'						
	212						
	214	Sp	Increase in sand gr. size to f.gr. increase in calcareous sandstone nodules interbedded.			LITHOLOGIC GRAB @ 215' t= 0935	10/21
	216						
	218		grades back into v.f.gr. poorly graded sands.				
	220'		SAND, v.f.gr, poorly graded silt at <5%. Calcareous sandstone nodules throughout to 2". 10YR 7/4 very pale brown, loose, sl. damp.		D	SPLIT SPOON #23 t= 1025 PID=0.0 DEPTH: 220'-222'	220'
	222						
	224		-increase in silts to 25%.				10/22
			SANDY SILTS, sands at 20%. v.f.gr., low plastic silt, 10YR 6/3 pale brown, damp. trace rounded gravels to 1/8".			LITHOLOGIC GRAB @ 225' t= 1205	
	226	ML					

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY	BOX OR SAMPLE # NO.	REMARKS (Drilling time, water loss, depth of weathering, etc. If significant)
	230'	ML	SANDY SILT, sand v.f.gr to f.gr at 30%, silt of low plasticity, 10YR 6/4 light yellowish brown, very dense, sl. damp.		D C	SPLIT SPOON #24 PT#07 - 1003 - 2230 t = 1245 P.I.D = 0.0 Depth: 230' - 252'
	232					
	234		Grading into SAND, v.f.gr, silt at 30%, 10YR 7/4 very pale brown, trace calcareous sandstone nodules.			LITHOLOGIC GRAB @ 235' t = 1335
	236					
	238		Silt decreases to <10%.			
	240'		Sand grainsize v.f.gr to medium grained trace coarse sand, trace rounded gravels to 1" fairly well graded @ 240' moisture increase from sl. damp to sl. moist. silts <5%.		D	SPLIT SPOON #25 t = 1410 P.I.D = 0.0 DEPTH: 240' - 242'
	242					
APPX. W/LEVEL	244	SP/SW	SAND, v.f.gr to medium grained, silt <5%. trace rounded gravels to ½", trace cobbles rounded to 3", trace calcareous sandstone nodules to 1". 10YR 4/4 lt. yel. brown, med. dense, moist to saturated.			LITHOLOGIC GRAB @ 245' t = 1444
	246					
	248		GRAB @ 245' is v.f.gr to f.gr poorly graded sand, clean, less than 5-8% fines, saturated.			
	250'		*250' SPOON NOT COLLECTED TOO MUCH SLOUGH IN HOLE TO GET ACCURATE LITHOLOGY.		D	*NOT COLLECTED SPLIT SPOON #26 t = N/A P.I.D = N/A DEPTH: 250' - 252'
	252					
	254		SAND, v.f.gr to coarse grained well graded, silt 5-10%, trace rounded gravels to 1/4", 10YR 6/4 light yellowish brown, saturated.			LITHOLOGIC GRAB @ 255' t = 1530
	256					
	258	ML	SANDY SILT, v.f.gr sand, sand at 20-30%, silt of slight plasticity, 10YR 5/4 yellowish brown, very dense, sl. moist			TOP of CONFINING LAYER
4/14	260'					DEVIATION AT 240' = 1°
	TD of Hole @ 260		*SOME SLOUGH		UD P D C	SHELBY TUBE # t = 0900 DEPTH: 260' - 262' SPLIT SPOON #27 PT#07 - 1003 - 2262 t = 0905 P.I.D = 0.0 DEPTH: 262' - 264'
	262					
	264					
	266					
	268					

1003 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68b LANDFILL 1	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	639046 61 EAST 3767462 56 NORTH 3546 80 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS) WD-While Drilling AB-After Boring		
Depth(Ft)	247 80 AB	
Time	12 45	
Date	8-1-94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

0

CLAY (CL) Trace very fine grained sand, caliche nodules throughout, clay of medium plasticity, black carbon rootlets throughout, light brown (7 5YR6/4), loose to medium dense, dry to slightly damp

5

10

clay with silt, trace very fine grained sand, caliche nodules throughout, black rootlets, light brown (7 5YR6/4), medium dense, dry to slightly damp

15

increase in CaCO3, clay is very stiff in nodules

20

significant black carbon rootlets, trace CaCO3 nodules, light brown (7 5YR6/3), medium dense, dry to slightly damp

25

slight increase in CaCO3

30

trace very fine grained sand, CaCO3, streaking and nodules, clay medium plasticity, black rootlets, light brown (7 5YR6/4), medium dense, dry

35

slight increase in very fine grained sand and caliche

40

SILT (ML) Clay is low plasticity, reddish yellow (7 5YR6/6), trace caliche nodules, black rootlets, medium dense, dry

decrease in CaCO3

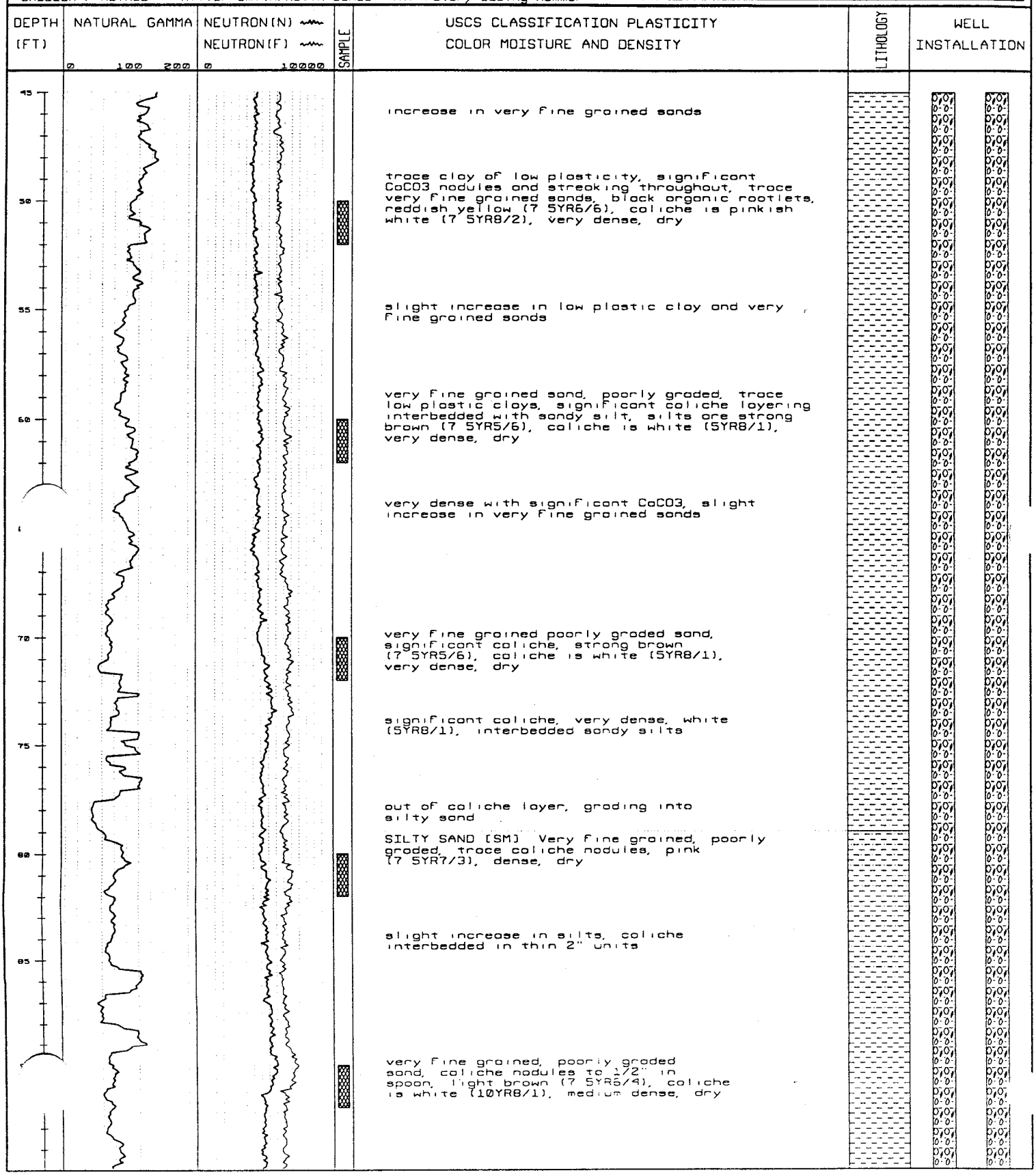
1003 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68b LANDFILL 1	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	639046 61 EAST 3767462 56 NORTH 3546 80 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)
WD-While Drilling AB-After Boring

Depth(Ft)	247 80 AB	
Time	12 45	
Date	8-1-94	



PROJECT NUMBER 05E62903

1003 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
PROJECT NO	SWMU 68b LANDFILL 1	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	639046 61 EAST 3767462 56 NORTH	3546 80 (FT MSL)	
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS) WD-While Drilling AB-After Boring		
Depth(Ft)	247 80 AB	
Time	12 45	
Date	8-1-94	

DEPTH (FT)	NATURAL GAMMA	NEUTRON(N) NEUTRON(F)	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
95	0 100 200	0 10000				
100				very fine grained, poorly graded sand, pink (7 5YR7/3), black organic rootlets, trace caliche nodules medium dense, dry		
105				decreasing silts, very fine grained sand, reddish yellow (7 5YR7/6), poorly graded		
110				very fine grained, uniform, cemented sand nodules to 1/2", yellow (10YR7/6), loose, dry		
				significant decrease in silts, very fine grained sand, poorly graded		
120				SAND (SP) Very fine grained, poorly graded silts, trace caliche nodules, trace cemented sandstone nodules to 1", yellow (10YR7/6), loose, dry to slightly damp		
125				increase in caliche and color change to very pale brown (10YR7/4)		
130				very fine grained, poorly graded, yellow (10YR7/6), loose, dry to slightly damp		
135				very fine grained, poorly graded, very pale brown (10YR7/4), loose, dry		
				slight increase in silts, very fine grained		

PROJECT NUMBER 05E62903

1003 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME ARMY CORPS OF ENGINEERS
LOCATION SWMU 68b LANDFILL 1
TOTAL DEPTH 260
COORDINATES / ELEV 639046 61 EAST 3767462 56 NORTH 3546 80 (FT MSL)
DRILLING COMPANY WATER DEVELOPMENT COMPANY
DRILLER / METHOD Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W
GEOLOGIST

STATIC WATER LEVEL (BLS) WD=While Drilling AB=After Boring	
Depth(ft)	247 80 AB
Time	12 45
Date	8-1-94

DEPTH (FT)	NATURAL GAMMA 0 100 200	NEUTRON(N) NEUTRON(F) 0 10000	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
145						
150				very fine grained, poorly graded, CaCO3 streaking, trace CaCO3 nodules, brownish yellow (10YR6/6), loose, slightly damp		
155				increase in CaCO3 nodules		
160				very fine grained, poorly graded, trace mafics, very pale brown (10YR7/4), loose to medium dense, dry		
1				calcareous sandstone pieces		
170				very fine grained, poorly graded, trace silts, trace calcareous sandstone nodules to 1/2", trace mafics, light yellowish brown (10YR6/4), loose to medium dense, slightly damp		
175				increase in calcareous sandstone pieces, very pale brown (10YR7/4)		
180				very fine grained, poorly graded, calcareous sandstone nodules to 2", trace mafics, FeOx staining, light yellowish brown (10YR6/4), loose to medium dense, dry		
185				SILTY SAND (SM) Increase in silts, very fine grained poorly graded sand, light yellow brown (10YR6/4)		
1				-very fine grained, poorly graded, trace calcareous sandstone nodules to 1", light yellowish brown (10YR6/4), medium dense, slightly damp		
				slight decrease in silts, trace ground up caliche		

PROJECT NUMBER 05E62903

1003 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME ARMY CORPS OF ENGINEERS
LOCATION SWMU 68b LANDFILL 1
DEPTH 260
COORDINATES / ELEV 639046 61 EAST 3767462 56 NORTH 3546 80 (FT MSL)
DRILLING COMPANY WATER DEVELOPMENT COMPANY
DRILLER / METHOD Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W
GEOLOGIST

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	247 80 AB	
Time	12 45	
Date	8-1-94	

DEPTH (FT)	NATURAL GAMMA	NEUTRON(N) NEUTRON(F)	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
195	0 100 200	0 10000				
200				very fine grained sands, poorly graded, calcareous sandstone nodules, very pale brown (10YR7/3), medium dense, dry		
				decrease in silts		
205				SAND (SP) Very fine grained, poorly graded, calcareous sandstone nodules, very pale brown (10YR7/4), loose, dry to slightly damp		
210				increase in sand grain size to fine grained, increase in calcareous sandstone nodules interbedded		
				grades back into very fine grained, poorly graded sands		
220				very fine grained, poorly graded, calcareous sandstone nodules, very pale brown (10YR7/4), loose, slightly damp		
				increase in silts		
225				SANDY SILT (ML) Very fine grained, low plasticity, pale brown (10YR6/3), damp, trace rounded gravels		
230				very fine to fine grained sand, silt of low plasticity, light yellowish brown (10YR6/4), very dense, slightly damp		
				grading into sand, very fine grained, very pale brown (10YR7/4), trace calcareous sandstone nodules		
235				SAND (SP) Decreasing silt, sand very fine grained to medium grained, trace coarse sand, trace rounded gravels to 1", fairly well graded, moisture increase from slightly damp to slightly moist		
240				very fine grained to medium grained, trace rounded gravels, trace cobbles rounded to 3", trace calcareous sandstone nodules, light yellow brown (10YR6/4), moist to saturated		

1003 WELL LOG

JACOBS ENGINEERING

PROJECT NAME: ARMY CORPS OF ENGINEERS
LOCATION: SWMU 68b LANDFILL 1
DEPTH: 260
COORDINATES / ELEV: 639046 61 EAST 3767462 56 NORTH 3546 80 (FT MSL)
DRILLING COMPANY: WATER DEVELOPMENT COMPANY
DRILLER / METHOD: Miller Smith/Kevin Jones Air Rotary Casing Hammer

RIG TYPE & NUMBER: Dresser T70 W
GEOLOGIST:

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	247 80 AB	
Time	12 45	
Date	8-1-94	

DEPTH (FT)	NATURAL GAMMA	NEUTRON(N) NEUTRON(F)	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
245	0 100 200	0 10000				
250				very Fine grained to Fine grained, poorly graded, saturated		
255				very Fine grained to coarse grained, well graded, trace rounded gravels, light yellowish brown (10YR6/4), saturated		
260				SANDY SILT (ML) Very Fine grained sand, silt slightly plastic, yellowish brown (10YR5/4), very dense, slightly moist		
270						
275						
280						
285						

PROJECT NUMBER 05E62903

CGGC

Century GEOPHYSICAL CORP.

PTX07-1093

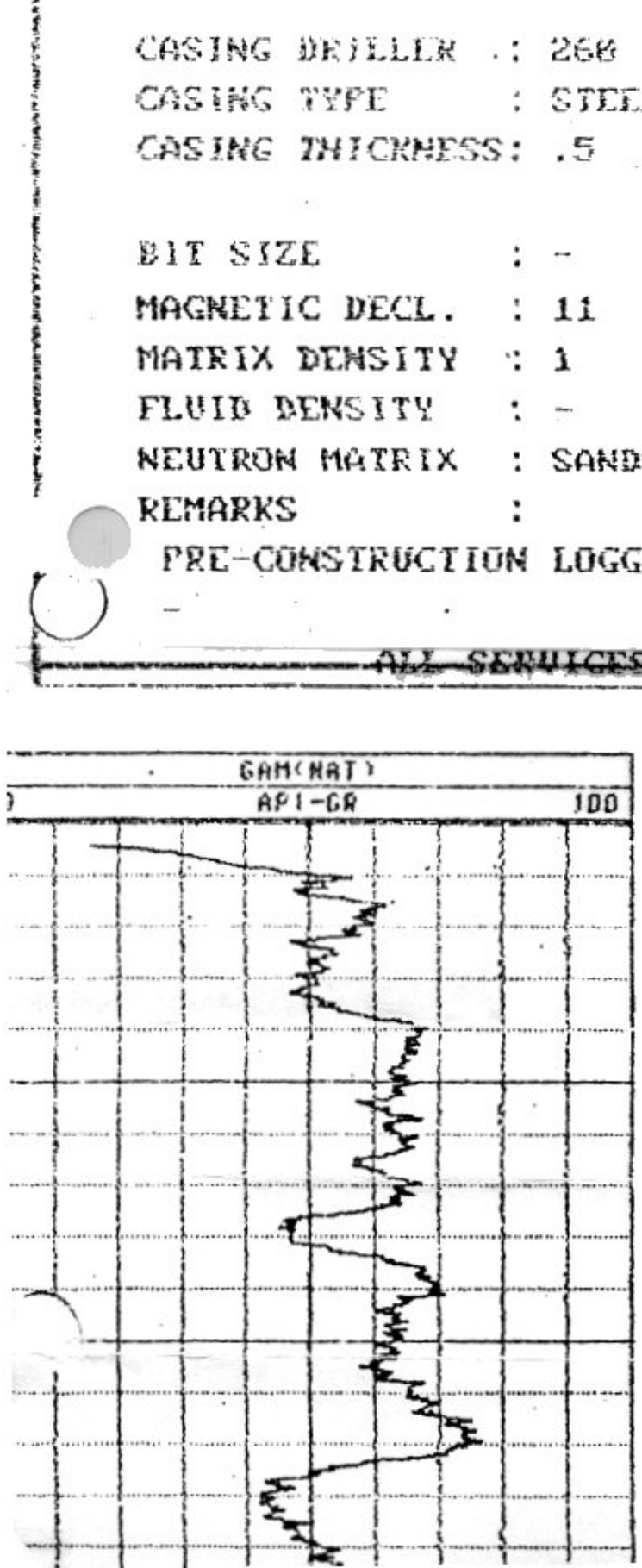
COMPANY	: JACOBS ENGINEERING GROUP	OTHER SERVICES:	
WELL	: PTX07-1003	-	
LOCATION/FIELD	: PANTEX	-	
COUNTY	: POTTER	-	
STATE	: TX		
SECTION	: - TOWNSHIP	: -	RANGE : -
DATE	: 04/22/80	PERMANENT DATUM : -	ELEVATIONS
DEPTH DRILLER	: 260	ELEV. PERM. DATUM: -	KB : -
LOG BOTTOM	: 264.70	LOG MEASURED FROM: G.L.	DF : -
LOG TOP	: 1.90	DRL MEASURED FROM: G.L.	GL : -
CASING DRILLER	: 260	LOGGING UNIT : 9301	
CASING TYPE	: STEEL	FIELD OFFICE : LAS VEGAS	
CASING THICKNESS	: .5	RECORDED BY : DEREK SLOOP	
BIT SIZE	: -	BOREHOLE FLUID : H20 AIR	FILM : PROCESSED
MAGNETIC DECL.	: 11	RM : -	TYPE : 9860A
MATRIX DENSITY	: 1	RM TEMPERATURE : -	LOG : 3
FLUID DENSITY	: -	MATRIX DELTA T : -	PLOT : PANTEX 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T : -	THRESH: 500000

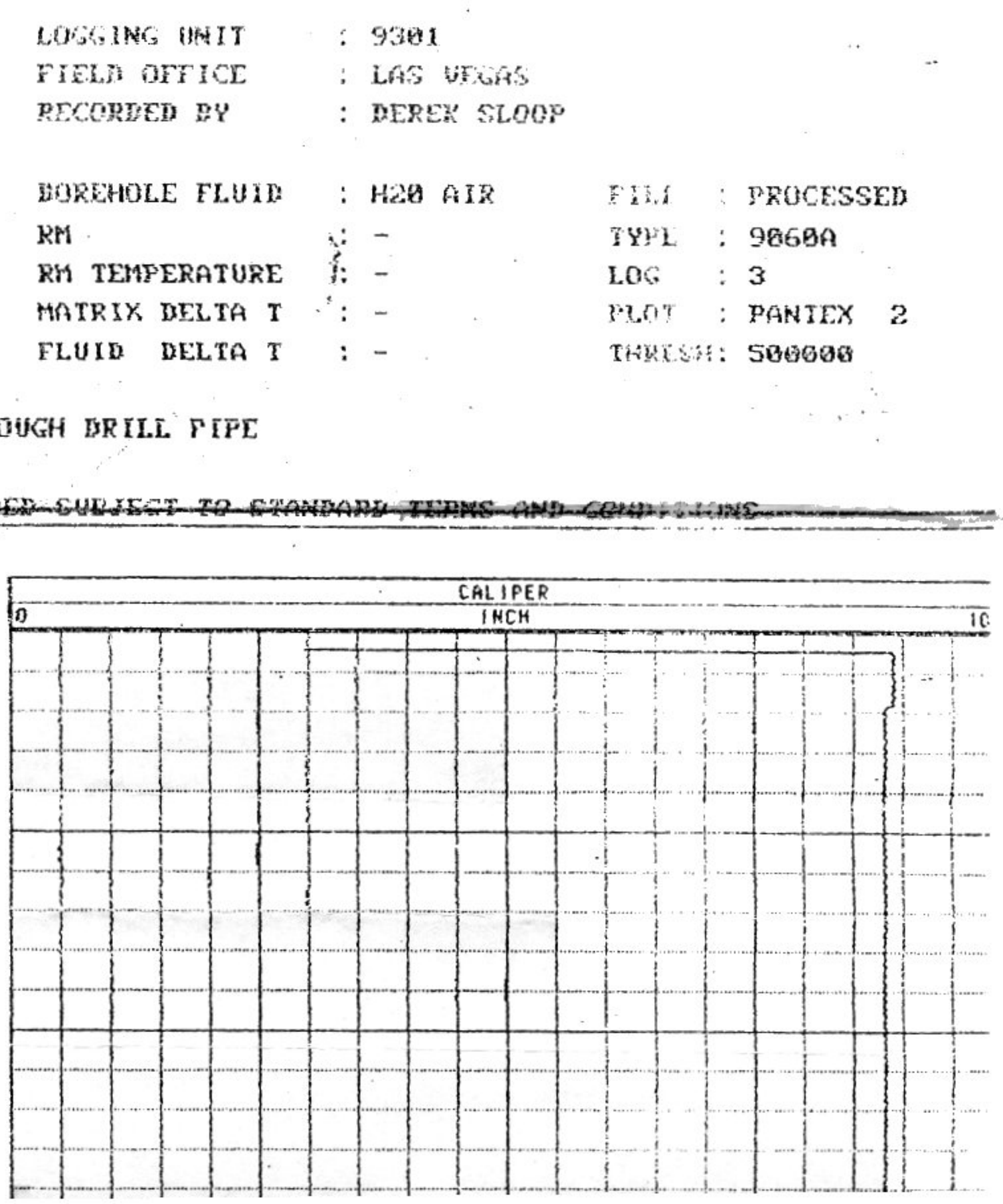
REMARKS :

PRE-CONSTRUCTION LOGGING THROUGH DRILL PIPE

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS





GAM(NAT)

0 API-GR 100

CALIPER

0 INCH 10

0

20

40

60

80

100

120

140

160

180

200

220

60
80
100
120
140
160
180
200
220
240
260
265

API-GR
GAM(NAT)
100

0
INCH
CALIPER

Century GEOPHYSICAL CORP.

P1X87-1863

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: P1X87-1863			-	
LOCATION/FIELD	: PANTEX			-	
COUNTY	: POTTER			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 87/05/09	PERMANENT DATUM	: -	*ELEVATIONS	
DEPTH DRILLER	: 266.	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 259.38	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: 0.00	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 266	LOGGING UNIT	: 9381		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 930664
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 0
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 5000000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAM(RAT)

0 API-GR 100

CALIPER

0 INCH 10

0

20

40

60

80

100

120

140

160

180

200

220

60
80
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120
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160
180
200
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260
265

API-GR
GAMMA RAY
0
100

INCH
CALIPER

Century GEOPHYSICAL CORP.

PTX87-1883

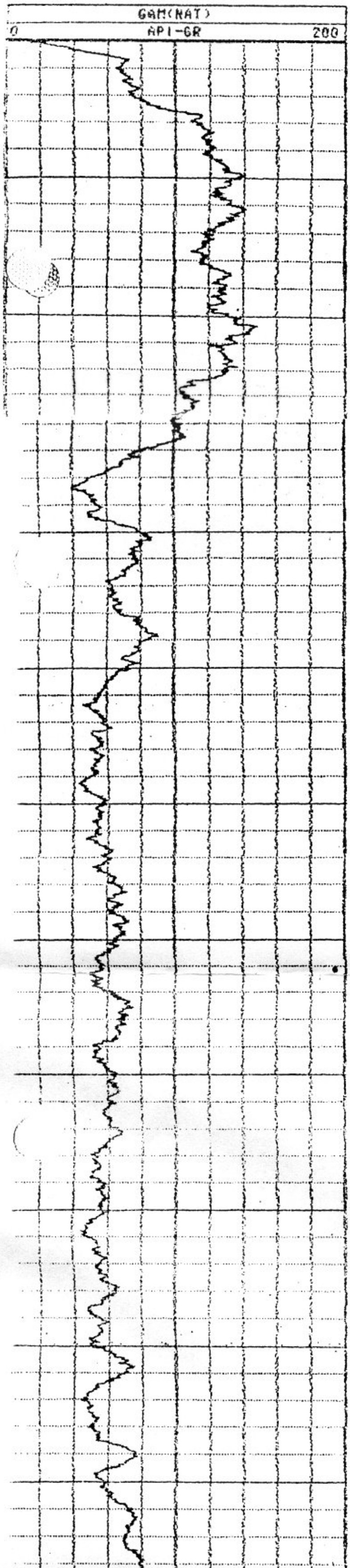
COMPANY	: JACOBS ENGINEERING			OTHER SERVICES	
WELL	: PTX87-1883			-	
LOCATION/FIELD	: PANTEX			-	
COUNTY	: POTTER			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RNG	: -
DATE	: 05/05/88	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 260	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 259.80	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: 0.10	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 260	LOGGING UNIT	: 9381		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9060A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 1
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

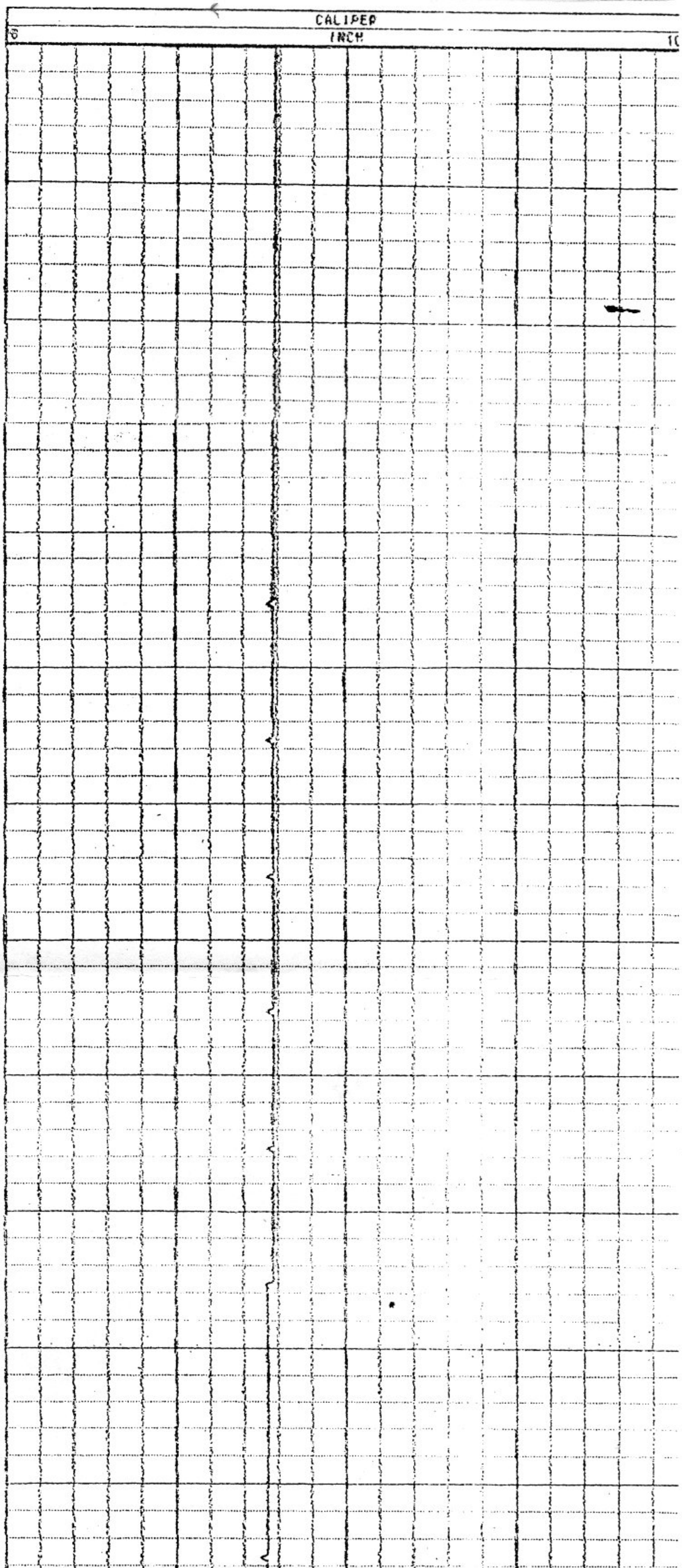
REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS





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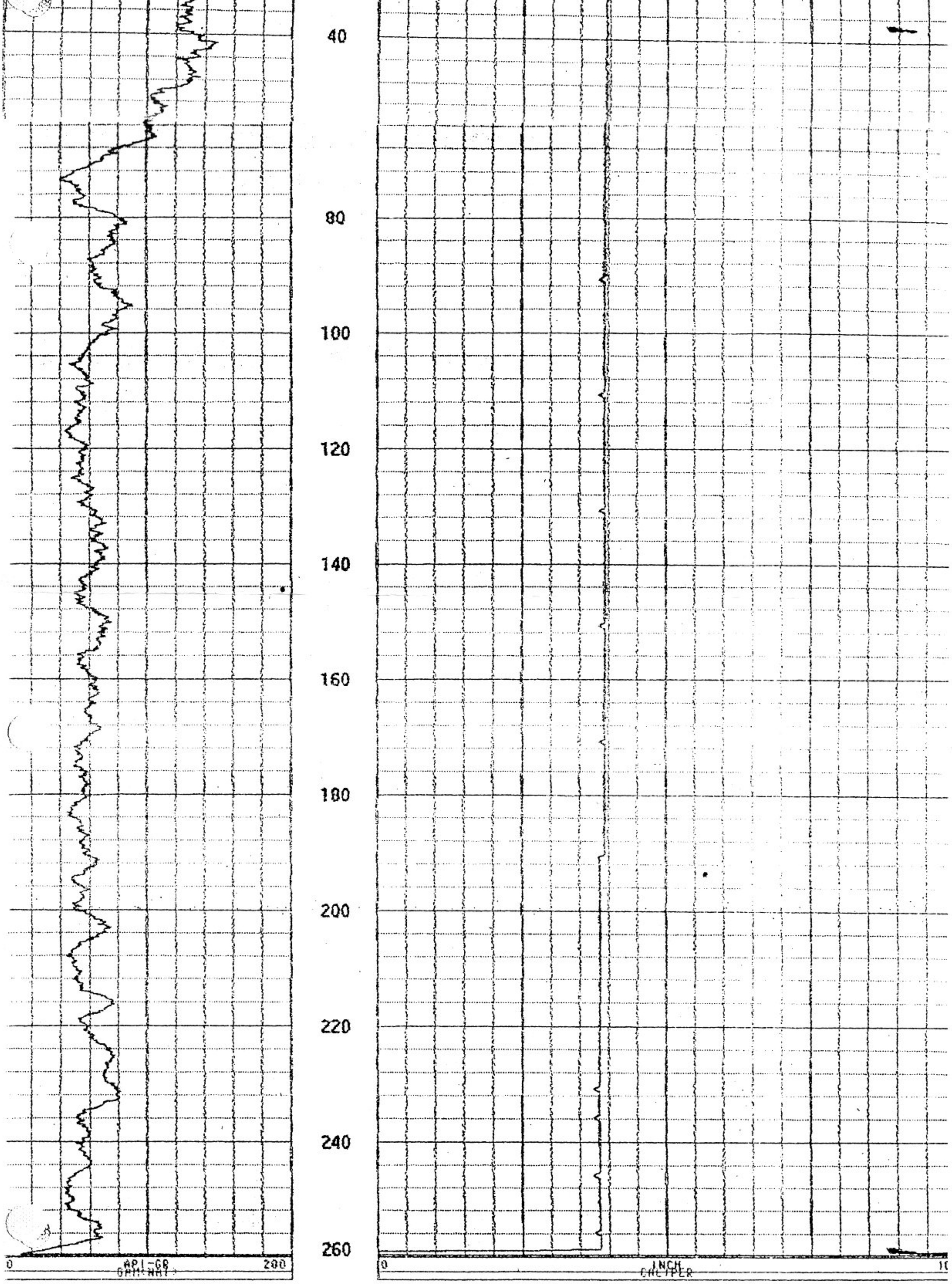
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260
0
API-GR
GAMMA RAY
200
0
INCH
CALIPER

Century GEOPHYSICAL CORP.

PTX07-1003

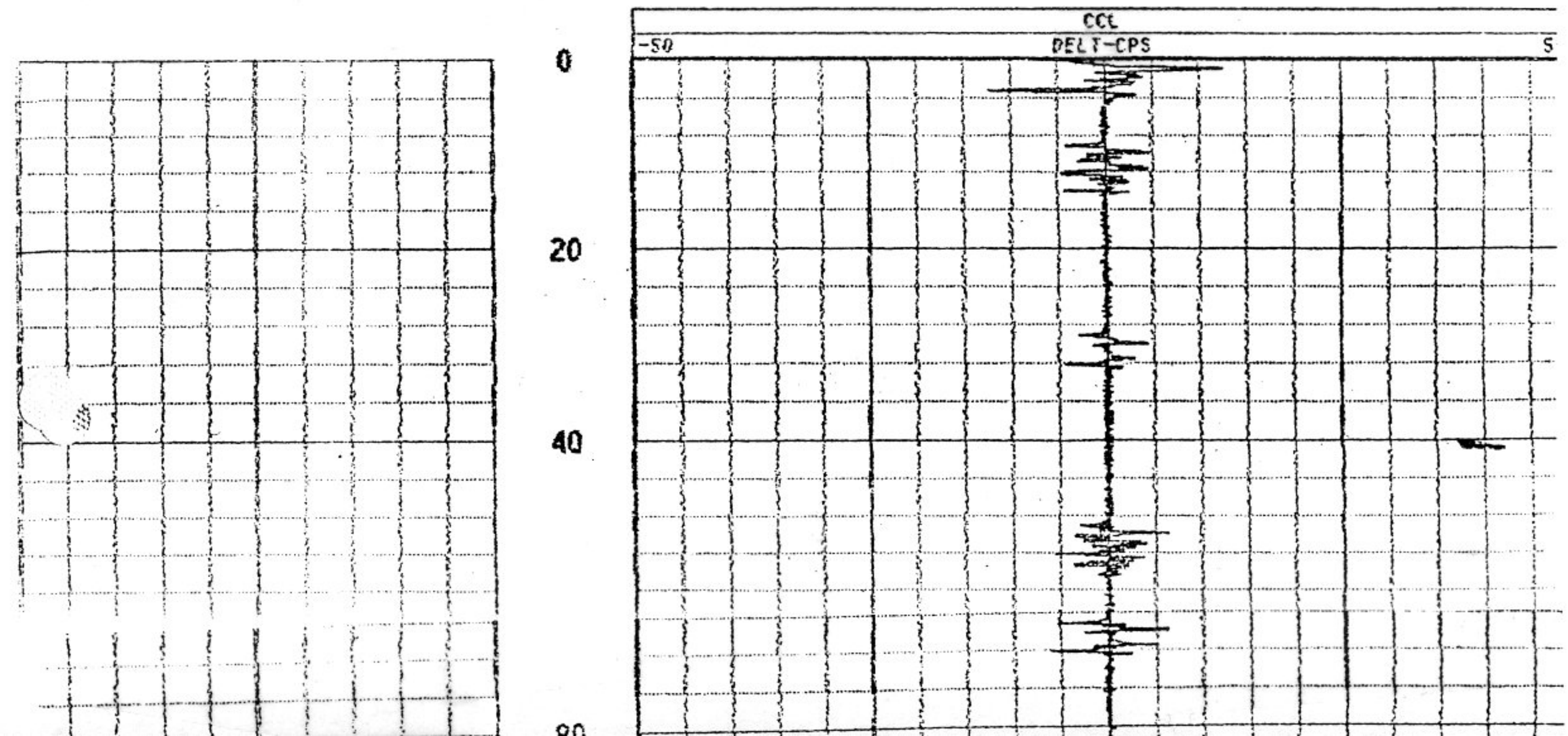
COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1003			-	
LOCATION/FIELD	: PANTEX			-	
COUNTY	: POTTER			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 05/05/88	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 260	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 259.40	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -3.20	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 260	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 5
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEXP 6
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



CCL

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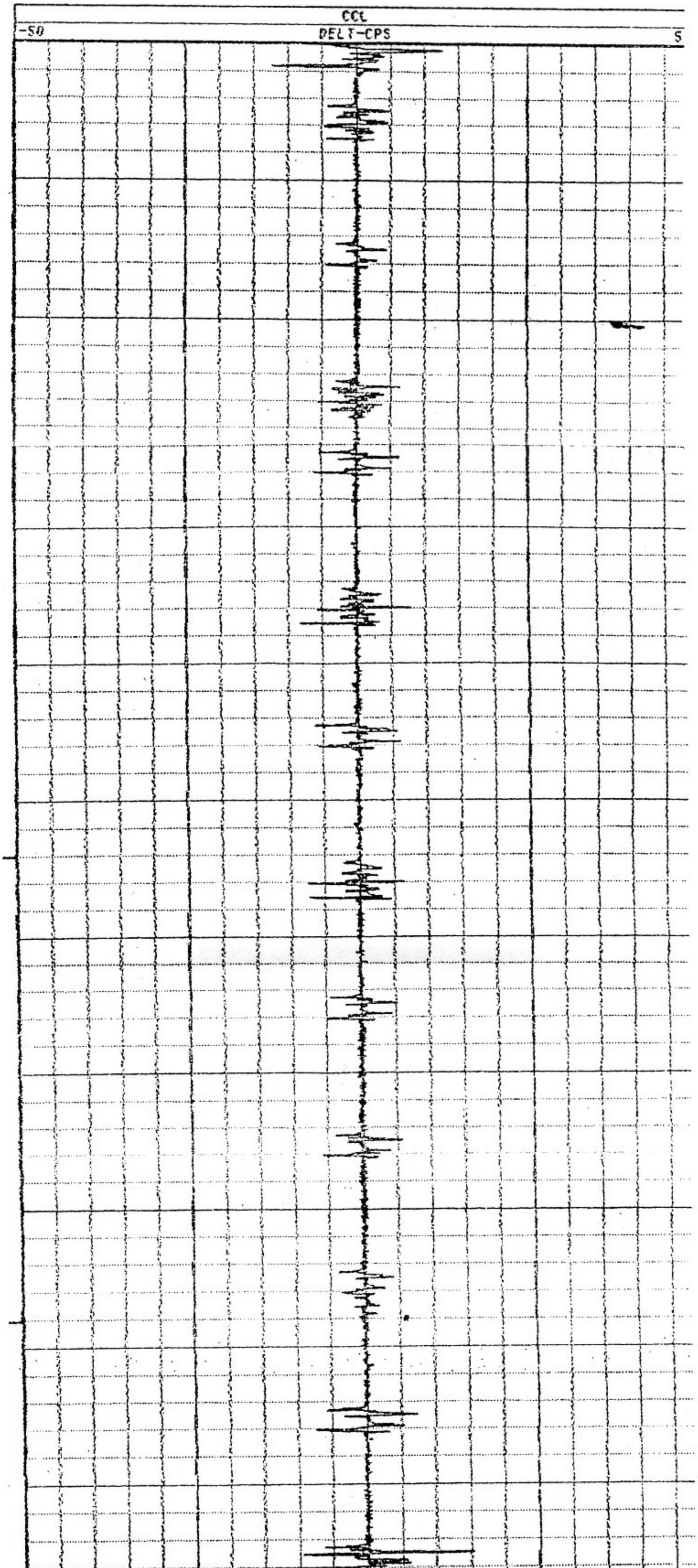

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-50

0ELT-CP3

5

CCL

CGGC

Century GEOPHYSICAL CORP.

PTX87-1883

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX87-1883			-	
LOCATION/FIELD	: PANTEX			-	
COUNTY	: POTTER			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
API #	: 42-375-32883	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 260	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 259.36	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -0.88	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 260	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSE
MAGNETIC DECL.	: 11.000	RM	: -	TYPE	: 9055A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 0
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DISTANCE

-4 FT 4

0

20

40

60

80

100

120

140

160

180

200

220

N DEV

-4 FT 4

E DEV

-4 FT 4

60

80

100

120

140

160

180

200

220

240

260

FT
4
DISTANCE

-4
FT
E DEV

-4
FT
N DEV

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Landfill Well Proj-1002

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER United States Dept. of Energy (Name) ADDRESS Pantex Plant (Street or RFD) Amarillo (City) Texas (State) 97117 (Zip)

2) LOCATION OF WELL: County Carson, 17 miles in N.E. (NE, SW, etc.) direction from Amarillo (Town), Texas

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☒ LEGAL DESCRIPTION:
Section No. 32 Block No. M-4 Township _____ Abstract No. _____ Survey Name J. H. Gibson
Distance and direction from two intersecting section or survey lines _____
☐ SEE ATTACHED MAP

D.I.M.

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other ARCH

6) WELL LOG:
Date Drilling: Started 6-7 1994 Completed 6-14 1994

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	260

From (ft.)	To (ft.)	Description and color of formation material
0	38	Silty Clay light brown
38	68	Silt reddish yellow
68	79	Sandy silt white
79	109	Silty sand reddish yellow
109	118	Sand yellow
118	184	Sand pale brown
184	206	Silty sand pale brown
206	224	Sand pale brown
224	236	Sandy silts yellowish brown
236	256	Sand yellowish brown
256	260	Sandy Silt yellowish brown

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 220 ft. to 260 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4½	N	Stainless steel blank	256	259	sch. 5
4½	N	Stainless steel screen	231	256	0.010
4½	N	Stainless steel blank	+ 3	231	sch. 5

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 215 ft. No. of Sacks Used 65
215 ft. to 220 ft. No. of Sacks Used 3-50# BENTONITE
Method used Tremied t pumped from 220'
Cemented by Water Development Corp.

13) TYPE PUMP:
☐ Turbine ☐ Jet ☒ Submersible ☐ Cylinder
☒ Other Bennett Sampler
Depth to pump bowls, cylinder, jet, etc., _____

RECEIVED
JUL 18 1994
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS:
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 4 gpm with 0 ft. drawdown after 1 hrs.

11) WATER LEVEL:
Static level 246'4½" ft. below land surface Date 7-7-94
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did the drilling penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

12) PACKERS: N/A Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Water Development Corp. (Type or print) WELL DRILLER'S LICENSE NO. 3098-W

ADDRESS 1202 Kentucky Ave. (Street or RFD) Woodland (City) Ca. (State) 95776 (Zip)

(Signed) J. Miller Smith (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY

PTX07-1P01

Contractor: Jacobs Engineering

Contract #:

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- _X_Draft
- _X_Final

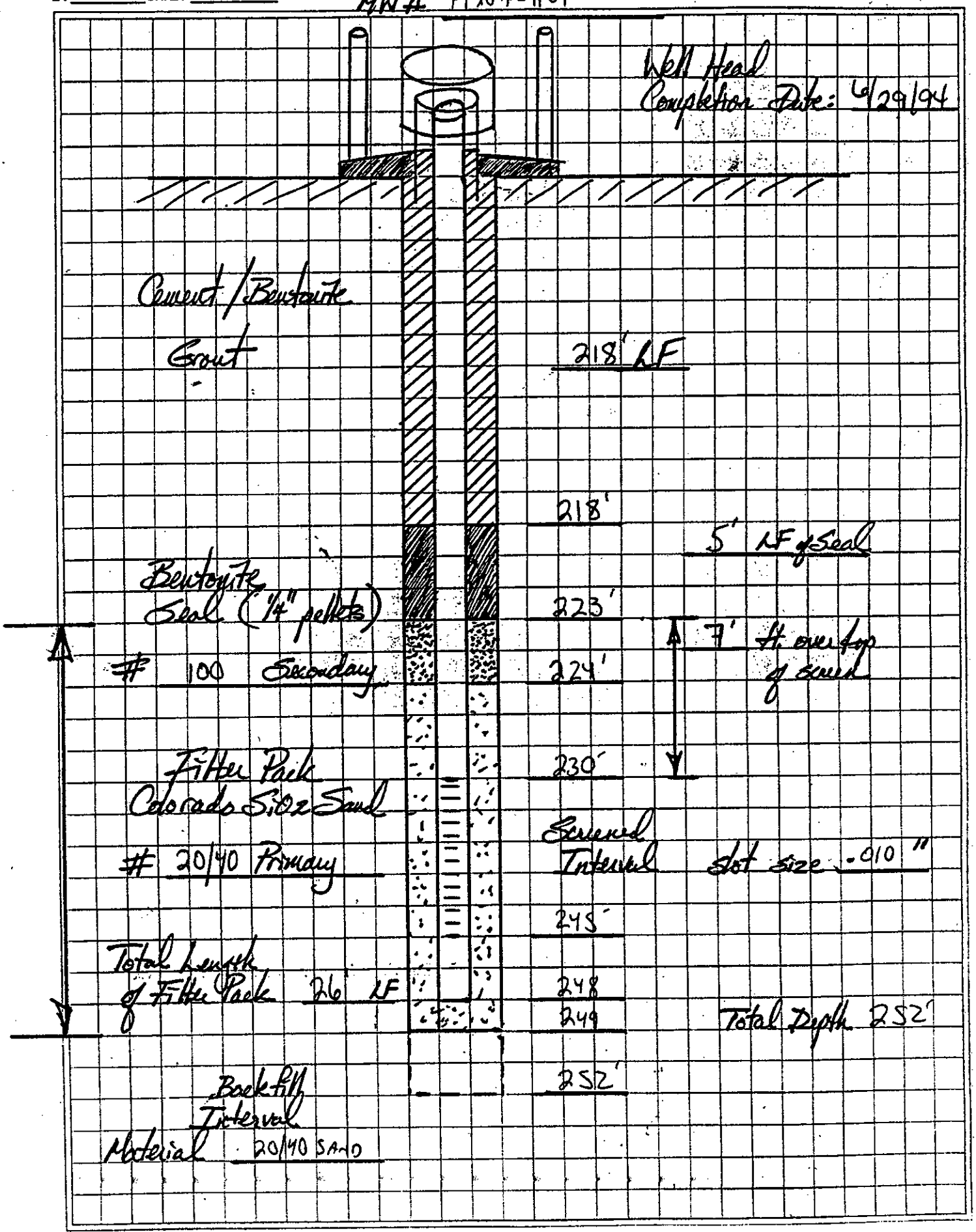
_X_Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

JACOBS ENGINEERING

DATE _____ SUBJECT Monitor Well Design SHEET NO. _____

BY _____ CHKD. _____ MW# PT107-1P01 JOB NO. _____

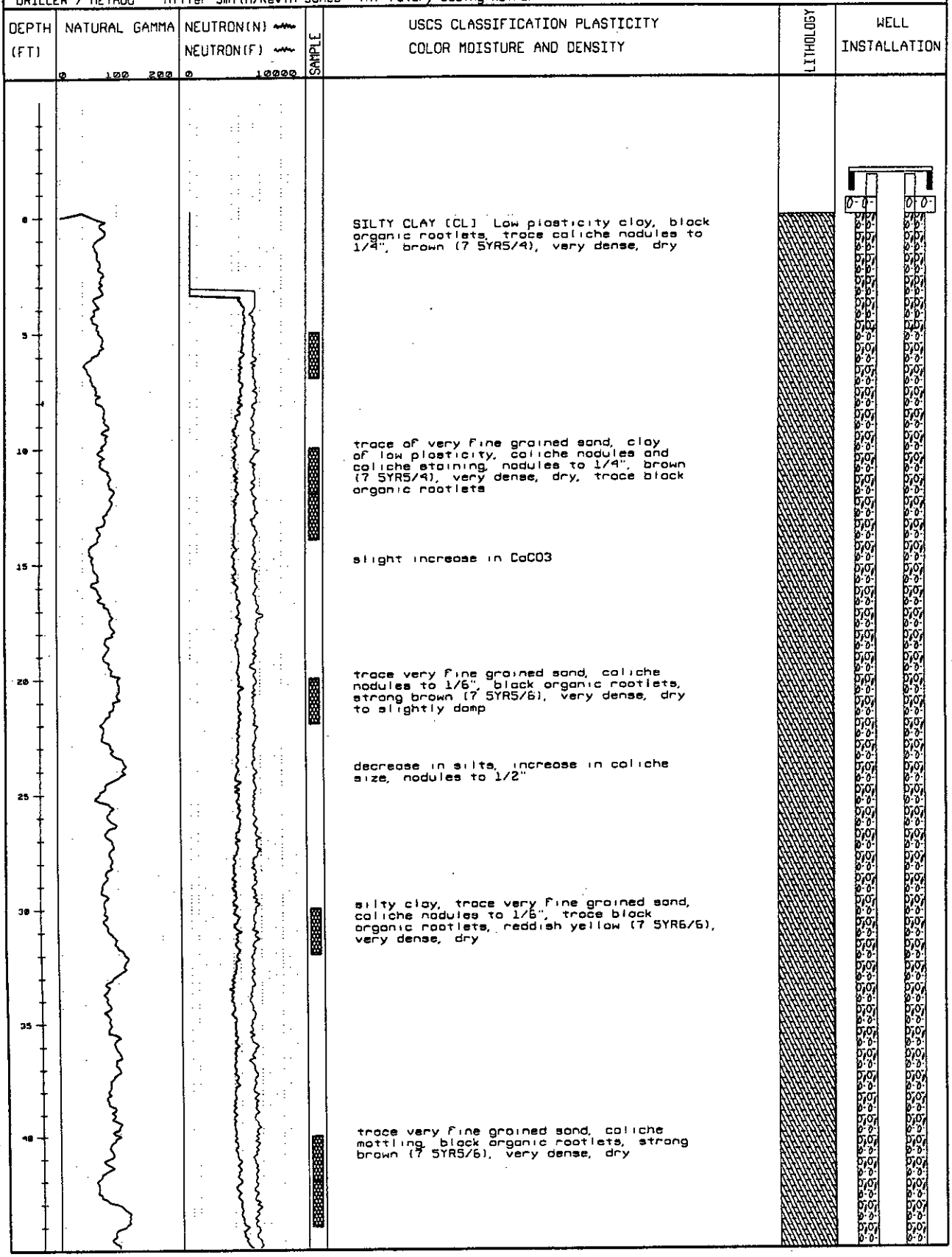


1P01 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	252		
COORDINATES / ELEV	637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS) WD=While Drilling AB=After Boring		
Depth(Ft)	243 95	
Time	2 20	
Date	8/10/94	



PROJECT NUMBER 05E62903

1P01 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	252
COORDINATES / ELEV	637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer
RIG TYPE & NUMBER	Dresser T70 W
GEOLOGIST	

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(ft)	243 96
Time	2 20
Date	8/10/94

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

45 — encountered significant caliche layer, pinkish white (5YR5/2), very dense

grading to silty sand

50 — SILTY SAND (SM) Very fine grained sand, significant caliche lenses and nodules to 1/4", black organic rootlets, significant FeOx staining, yellowish red (5YR5/8), dense, slightly damp

55 — significant caliche, yellowish red (5YR5/8)

60 — very fine grained sand, 1" caliche nodules, trace black organic rootlets, significant FeOx staining, reddish yellow (7 5YR6/6), medium dense, slightly damp

65 — significant caliche layer

70 — very fine grained sand, caliche nodules to 1/4", black organic rootlets, reddish yellow (7 5YR6/6), medium dense, dry

75 — increase in silts, increase in caliche

80 — very fine grained sand, poorly graded, caliche nodules 1/2", trace black mafics, light brown (7 5YR6/4), medium dense, slightly damp

85 — decreasing silts, very fine grained, poorly graded sand, trace caliche nodules

90 — SAND (SP) Very fine grained, poorly graded, light yellowish brown (10YR6/4), loose, dry

PROJECT NUMBER 05E62903

1P01 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME ARMY CORPS OF ENGINEERS
LOCATION SWMU 68c LANDFILL 2
TOTAL DEPTH 252
COORDINATES / ELEV 637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)
DRILLING COMPANY WATER DEVELOPMENT COMPANY
DRILLER / METHOD Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W
GEOLOGIST

STATIC WATER LEVEL (BLS) WD=While Drilling AB=After Boring		
Depth(Ft)	243 96	
Time	2 20	
Date	8/10/94	

DEPTH (FT)	NATURAL GAMMA 0 100 200	NEUTRON(N) NEUTRON(F) 0 10000	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
95				very fine grained, poorly graded, oxidized 2" layers of sand, grayish brown (10YR5/2), loose, dry		
100						
105				caliche nodules		
110				very fine grained, poorly graded, trace caliche nodules 1/4", trace mafics, light yellowish brown (10YR6/4), medium dense, slightly damp		
5				no caliche		
120				very fine grained, poorly graded, 2" sandstone seam at 121", trace caliche nodules to 1/2", light yellowish brown (10YR6/4), medium dense, dry		
125				increase in silts, increase in caliche		
130				very fine grained, poorly graded, trace caliche nodules to 1/4", brownish yellow (10YR6/6), trace mafics, medium dense		
135				1" to 3" calcareous sandstone lenses interbedded approx every 2' to 3'		
140				very fine grained, poorly graded, caliche streaking, very pale brown (10YR7/4), medium dense, dry to slightly damp		

PROJECT NUMBER 06E62903

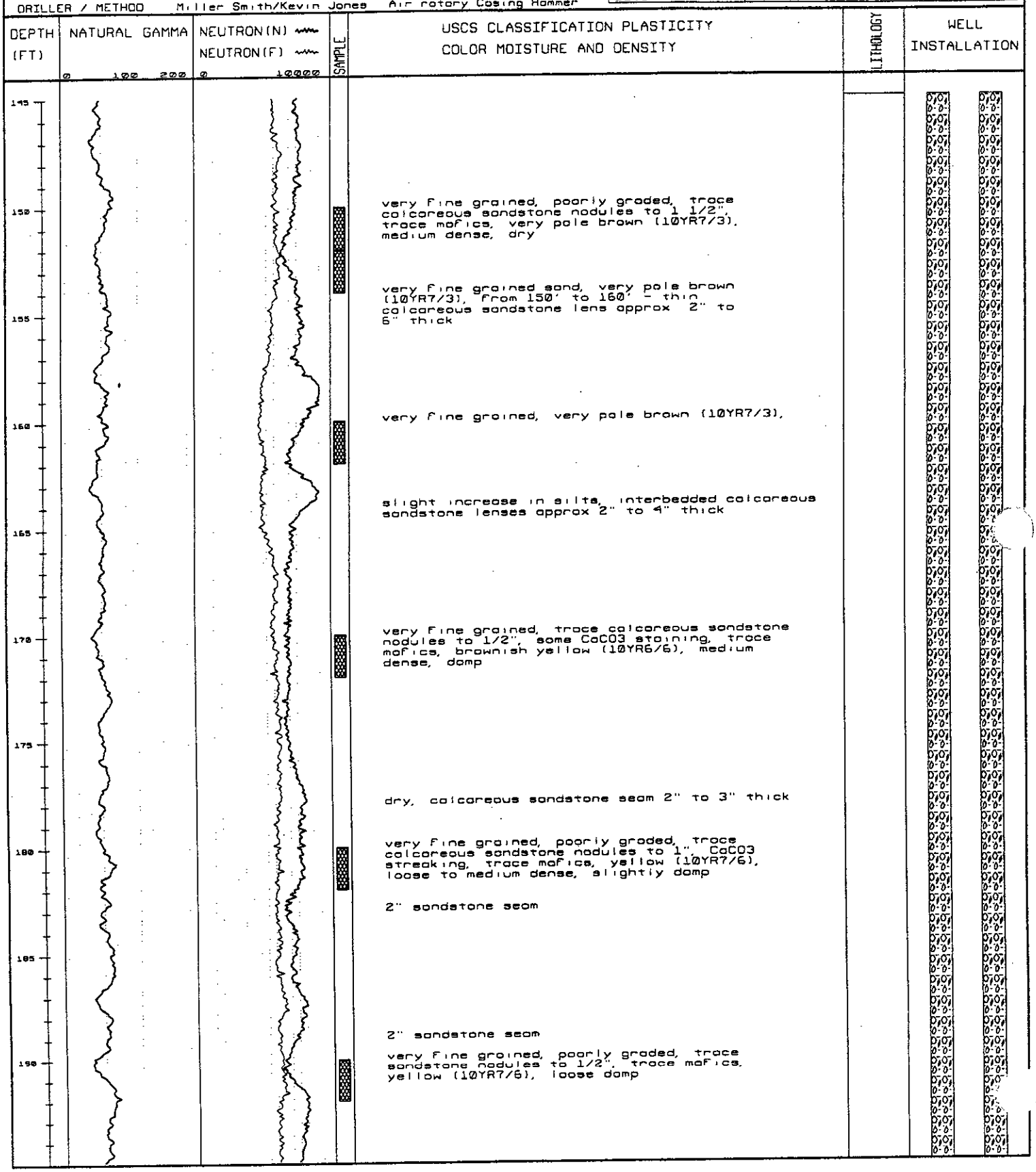
1P01 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	252		
COORDINATES / ELEV	637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)

WD-While Drilling AB-After Boring		
Depth(Ft)	243 95	
Time	2 20	
Date	8/10/94	



PROJECT NUMBER 05E62903

1P01 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	252
COORDINATES / ELEV	637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W

GEOLOGIST

STATIC WATER LEVEL (BLS)

WD=While Drilling AB=After Boring

Depth(Ft)	243 96	
Time	2 20	
Date	6/10/94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

195

thin 2" sandstone seam

very fine grained silts, poorly graded, sandstone nodules to 1/2", brownish yellow (10YR6/6), medium dense, damp

200

SILTY SAND (SM) Very fine grained, poorly graded silts, yellowish brown (10YR5/4), damp

205

sandstone seam of 2 - 4 inches

210

SAND (SW) Well graded, very fine grained to coarse grained, trace rounded gravels to 1/4", light yellowish brown (10YR6/4), medium dense, damp

GRAVEL (GW) Gravels with sand, sand very fine grained, gravels well graded and rounded to angular to 1 1/2", very pale brown (10YR7/4), dry

5

grading back into well graded sand with trace rounded gravels to 1/2"

220

gravelly sand, sand well graded, gravels subangular to rounded, trace rounded cobbles to 2 1/4", trace clay nodules of low plasticity, clay nodules of low plasticity, clay light yellow brown (10YR6/4), medium dense, damp

225

SAND (SP) Very fine grained, poorly graded, brownish yellow (10YR6/6), damp to moist

moisture content increasing, very fine grained poorly graded sand

230

sand, very fine grained, poorly graded, trace sandstone nodules to 1/4", yellowish

medium dense to dense, slightly moist

very fine grained, poorly graded, trace rounded gravels 1/16" to 1/2", yellowish brown (10YR5/4), moisture content is increasing to moist

235

240

moisture content increasing to saturation

Fine grained, poorly graded, trace rounded gravels to 1/4" to 1/2", trace sandstone nodules to 1/4", light yellow brown (10YR6/4), medium dense, saturated

PROJECT NUMBER 05E62903

1P01 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	252
COORDINATES / ELEV	637221 95 EAST 3762763 60 NORTH 3539 60 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotory Casing Hammer
RIG TYPE & NUMBER	Dresser T70 W
GEOLOGIST	

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	243 96	
Time	2 20	
Date	8/10/94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

245
250
255
260
265
270
275
280
285
290

SILT [ML] Silty confining layer, very dense, low plastic silt, trace sand, very fine grained, moist drying out with depth

SANDY SILT [SP] Very fine grained sand, silt of low to non plastic, reddish brown (5YR5/4), very dense, moist

PROJECT NUMBER 05E62903

Hole No. PTX07-1P01

DRILLING LOG	DIVISION TULSA	INSTALLATION PANTEX : DOE	SHEET 1 OF 7 SHEETS

PROJECT: LANDFILLS RFI
(Coordinates or Station): LANDFILL #2
DRILLING AGENCY: WATER DEVELOPMENT CORP.
HOLE NO. (As shown on drawing title and file number):
NAME OF DRILLER: MILLER SMITH / KEVIN JONES
DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
THICKNESS OF OVERBURDEN:
DEPTH DRILLED INTO ROCK: N/A
TOTAL DEPTH OF HOLE: 252'

10. SIZE AND TYPE OF BIT: 8 3/8" TRICONE
11. DATUM FOR ELEVATION SHOWN (GS or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: DRESSER T70-W ARCH RIG
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 0830 JUNE 21, 1994 COMPLETED JUNE 27, 1994
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: [signature] 8/4/94

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						D = DISTURBED SAMPLE UD = UNDISTURBED SAMPLE P = PHYSICAL SAMPLE C = CHEMICAL SAMPLE
	2'					
	4'		SILTY CLAY, silts at 35%, clay of low plasticity, black organic rootlets throughout, trace caliche nodules to 1/4", 7.5YR 5/4 brown, very dense, dry.		D C	SPLIT SPOON #1 PTX07-1P01-2005 t=0840 PID=0.0
	6'					
	8'					
	10'		SILTY CLAY, silts at 30%, sand trace v.f.gr, clay of low plasticity, caliche nodules and caliche staining throughout, nodules to 1/4" 7.5YR brown 5/4, very dense, dry, trace black organic rootlets.		UD P	SHELBY TUBE #1 PTX07-1P01-2010 + BULK t=0915
	12'	CL			D C	SPLIT SPOON #2 PTX07-1P01-2010 t=0930 PID=0.0
	14'					
	16'		LITHO GRAB AS ABOVE W/ SLIGHT INCREASE IN $CaCO_3$.			LITHOLOGIC GRAB @ 15' t=0950
	18'					
	20'		SILTY CLAY, silt at 25-30%, trace v.f.gr sand, caliche nodules to 1/8" throughout, black organic rootlets, 7.5YR 5/6 strong brown, very dense, dry to sl. damp.		D C	SPLIT SPOON #3 PTX07-1P01-2020 t=1013 PID=0.0
	22'					
	24'		Decrease in silts to 20%. increase in caliche size nodules to 1/2".			LITHOLOGIC GRAB @ 25' t=1020
	26'					
	28'					

PIPE SEQUENCE: S/1 · 5/2 · 10/1 · 20' · 10/2

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	30'		SILTY CLAY, silt at 25%, trace v.f.gr sand, caliche nodules throughout to 1/16", trace black organic rootlets throughout 7.5YR 6/4 reddish yellow, very dense, dry.		D C	SPLIT SPOON #4 PTX07-1P01-2030 t=1300 P.I.D=0.0
	32					
	34		As above, no change			LITHOLOGIC GRAB @ 35' t=1310
	36					
	38	CL				
	40		SILTY CLAY, silt at 20%, trace v.f.gr sands, caliche mottling throughout, black organic rootlets throughout, 7.5YR 5/6 strong brown, very dense, dry.		D C	SPLIT SPOON #5 PTX07-1P01-2040 +QA/QC t=1318 P.I.D=0.0
	42'				D C	SPLIT SPOON #6 PTX07-1P01-2040 + QA/QC t=1325 P.I.D=0.0
	44					
	46		ENCOUNTER ~~HEAVY~~ SIGNIFICANT CALICHE LAYER AT 45' 5YR 5/2 pinkish white, very dense			LITHOLOGIC GRAB @ 45' t=1345
	48		grading to silty sand			
	50		SILTY SAND, sand v.f.gr, silts at 30%, significant caliche lenses and nodules to 1/4" throughout, black organic rootlets, significant FeOx staining, 5YR 5/8 yellowish red, sl. damp, med dense.		D	SPLIT SPOON #7 ~~PTX07-1P01-2050~~ ANB t=1400 P.I.D=0.0
	52					
	54					LITHOLOGIC GRAB @ 55' t=1415
	56		As above / significant caliche 5YR 5/8 yellowish red.			
	58	SM				
	60'		SILTY SAND, SAND v.f.gr, silts at 30-35%, 1" caliche nodules throughout, trace black organic rootlets, signif. FeOx staining, 7.5YR 6/6 reddish yellow sl. damp, med. dense.		D	SPLIT SPOON #8 t=1435 P.I.D=0.0
	62					
	64					
	66		Significant caliche layer at 65'			LITHOLOGIC GRAB @ 65' t=1450
	68'					

PIPE SEQUENCE

10/2 — 30' — 10/3 — 40' — 4/4 — 50' — 10/5 — 10/6

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE.

PROJECT

HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc.; if significant) g	PIPE SEQUENCE
	70'						10/6
			SILTY SAND, sand v.f.gr, silt at 30%, caliche nodules throughout to 1/4", black organic rootlets, 7.5YR 6/6 reddish yellow, med dense, dry.		D	SPLIT SPOON #9	70'
	72				C	PTX07-1P01-2070 t=1500 PID=0.0	
						~~X~~ DEVIATION TEST AT 70' = 1°	
	74		Increase in silt to 35-40%, increase in caliche - ground up in grab.				
						LITHOLOGIC GRAB @ 75' t=1600	10/7
	76						
	78						
		SM					
	80		SILTY SAND, silt at 25%, sand is v.f.gr, poorly graded, caliche nodules to 1/2", trace black mafics 7.5YR 6/4 light brown, med dense, sl. damp.		D	SPLIT SPOON #10 t=1620 PID=0.0	80'
	82						
	84						10/8
			silts decreasing to 15-20%, sand v.f.gr poorly graded, trace caliche nodules.			LITHOLOGIC GRAB @ 85' t=1630	
	86						
	88						
	90		SAND, v.f.gr, poorly graded, silts at 5%, uniform throughout spoon, 10YR 6/4 light yellowish brown, loose, dry.		D	SPLIT SPOON #11 t=1645 PID=0.0	90'
	92						
	94		As above, clean sand <5% Fines			LITHOLOGIC GRAB @ 95' t=1650	10/9
	96						
		SP					
	98						
	100		SAND, v.f.gr poorly graded, silts at <10%, oxidized 2" layers of sands through spoon, 10YR 5/2 grayish brown and 10YR 5/6 yellowish brown, loose, dry.		D	SPLIT SPOON #12 t=0755 PID=0.0	100'
	102						
	104		Caliche nodules ground up in grab sample, silts 5-10%.			LITHOLOGIC GRAB @ 105' t=0810	10/10
	106						
	108						

ENG FORM ....

PROJECT

HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	PIPE SEQUENCE
	110		SAND, v.f.gr, poorly graded, <5% silts throughout, trace caliche nodules 1/4" trace mafics, 10YR6/4 light yellowish brown, med dense, sl. damp.		D	SPLIT SPOON #13 t=0830 PID=1.5 UNITS BG=.5 UNITS	9/9 110'
	112						
	114		As above, no caliche <5% silts.			LITHOLOGIC GRAB @ 115' t=0900	10/11
	116						
	118						
	120		SAND, v.f.gr. poorly graded, <5% silts, 2" sandstone seam at 121". trace caliche nodules to 1/2". 10YR 6/4 light yellowish brown. med. dense, dry.		D	SPLIT SPOON #14 t=0920 PID=0.0	120'
	122						
	124		Increase in silts to 10%, increase in caliche - ground up by drill bit in grab.			LITHOLOGIC GRAB @ 125 t=0935	10/12
	126						
	128	SP					
	130		SAND, v.f.gr. poorly graded, silt at 5-8%, trace caliche nodules to 1/4". 10YR6/6 brownish yellow, trace mafics, med dense, dry.		D	SPLIT SPOON #15 t=1015 PID=0.0	130'
	132						
	134		As above with thin 1-3" calcareous sandstone lenses interbedded every approx. 2'-3' to 140'.			LITHOLOGIC GRAB @ 135' t=1030	10/13
	136						
	138						
	140		SAND, v.f.gr, poorly graded, uniform throughout spoon, caliche streaking throughout spoon. <5% silts, 10YR 7/4 very pale brown, med. dense, dry to sl. damp.		P	SPLIT SPOON #16 t=1055 PID=0.0 RUN DEVIATION AT 140' = ≤1°	140'
	142						
	144						10/14
	146		As above, clean sand <5% fing			LITHOLOGIC GRAB @ 148' t=1240	
	148						

ENG FORM 1835 — DATE — PROJECT — HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	PIPE SEQUENCE
	150'		SAND, v.f.gr., poorly graded, <5% silt uniform throughout spoon. trace calcareous sandstone nodules to 1½". trace mafics, 10YR 7/3 very pale brown, med dense, dry.		UD	* NOTE: PUSHED TWO SHELBY TUBES AT THIS DEPTH: No RECOVERY VERY DENSE, COLLECT BULK BAGS FROM SPOON	14/14
	152				P	SHELBY TUBE #2 + BULK PTX07-1P01-2150 t=1415 - No RECOVERY x2	150'
	154				D	SPLIT SPOON #17 t=1455 PID=0.0	
	156		uniform, clean, v.f.gr SAND, <5% Fines, 10YR 7/3 very pale brown from 150'-160' - thin calcareous sandstone lense appx. 2"-6" thick encountered at appx. 159'.		C	PTX07-1P01-2152 LITHOLOGIC GRAB @ 155' t=1510	10/15
	158						
	160		SAND, v.f.gr., uniform, <5% Fines, 10YR 7/3 very pale brown, loose, dry		D	SPLIT SPOON #18 t=1530 PID=0.0	160'
	162						
	164		Slight increase in silts at 8-10%, interbedded calcareous sandstone lenses appx 2"-4" thick at 166' and 168'.			LITHOLOGIC GRAB @ 168' t=1610	14/16
	166						
	168						
	170		SAND, very F.gr., uniform, 5-8% Fines, trace calcareous sandstone nodules to ½", some $CaCO_3$ staining trace mafics, 10YR 6/6 brownish yellow, med dense, damp.		D	SPLIT SPOON #19 t=1630 PID=0.0	170'
	172						
	174					LITHOLOGIC GRAB @ 175' t=1650	10/17
	176		As above, dry, calcareous sandstone seam at 178' appx. 2"-3" thick.				
	178	SP					
of 2/14 & 3/14	180		SAND, v.f.gr, poorly graded, silts at <7%, trace calcareous sandstone nodules to 1", $CaCO_3$ streaking, trace mafics; 10YR 7/6 yellow, loose to med. dense, sl. damp.		D	SPLIT SPOON #20 t=0800 PID=0.0	180'
	182						
	184					LITHOLOGIC GRAB @ 185' t=0820	10/18
	186		As above with thin 2" sandstone seam at 183' and 189'.				
	188						

ENG FORM 1836 — PROJECT — HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	190'	SP	SAND, v.f.gr, poorly graded, trace sandstone nodules to 1/2", trace mafics, uniform, 10YR 7/6 yellow, loose, damp.		D	SPLIT SPOON #21 t=0840 PID=0.0
	192					
	194		No change, thin 2" sandstone seam at 199'.			LITHOLOGIC GRAB @ 198' t=0915
	196					
	198					
	200		SAND, v.f.gr silts at 10-12%, poorly graded, sandstone nodules to 1/2", 10YR 6/6 brownish yellow, med. dense, damp.		D C	SPLIT SPOON #22 PTX07-1P01-2200 t=0936 PID=0.0
	202					
	204		204' INCREASE IN SILTS			
	206	SM	SILTY SAND, v.f.gr, poorly graded, silts at 25%, 10YR 5/4 yellowish brown, damp. Sandstone seam of 2-4 inches encountered at 209'			LITHOLOGIC GRAB @ 205' t=0954
	208					
	210				UD P D	SHELBY TUBE #3 + BULK t=1010 PTX07-1P01-2210 SPLIT SPOON #23
	212	SW	SAND, well graded v.f.gr to coarse grained, silts at < 10%, trace rounded gravels to 1/4" at 10%. 10YR 6/4 light yellowish brown, med dense damp.		C	t=1045 PID=0.0 PTX07-1P01-2212
	214					
	216	GW/SW	Gravels w/sand, sand v.f.gr, gravels well graded and rounded to angular to 1 1/2", 10YR 7/4 very pale brown, dry.			LITHOLOGIC GRAB @ 215' t=1220
	218					
	220		219' grading back into well graded sands with trace rounded gravels to 1/4". Gravelly sands, sands well graded, silts 10%-15%, gravels subangular to rounded, size to 1/2", trace rounded cobbles to 2 1/4". trace clay nodules of low plasticity, clay 2.5YR 6/3 lt. yl brown. 10YR 6/4 lt. yel. brown, med dense, damp.		D C	SPLIT SPOON #24 t=1250 PID=0.0 PTX07-1P01-2220
	222					
	224					LITHOLOGIC GRAB @ 225' t=1300
	226	SP	SAND v.f.gr, poorly graded silts 5-10%. 10YR 6/6 brownish yellow. damp to moist			
	228					

PIPE SEQUENCE: 10/18 — 190' — 10/19 — 200' — 10/20 — 210' — 10/21 — 220' — 10/22

ENG FORM 1826 PREVIOUS EDITIONS ARE OBSOLETE PROJECT HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	230'		MOISTURE CONTENT INCREASING, v.f.gr, poorly graded sand.			
			SAND, v.f.gr, poorly graded, <5%. silts, trace sandstone nodules to 1/4", 10YR 5/4 yellowish brown, cemented in lenses, med. dense to dense, sl. moist.		D	SPLIT SPOON #25 t= 1345 PID=0.0
	232					
	234					
			SAND, v.f.gr, poorly graded, silts <7%. trace rounded gravels 1/16" to 1/2". 10YR 5/4 yellowish brown, moisture content is increasing to moist			LITHOLOGIC GRAB @ 235 t= 1405
	236					
	238		moisture increasing saturation at 240' - GROUNDWATER LOCATED			
WATER AT 240'	240'		SAND, fine grained, poorly graded, <5%. silts, trace rounded gravels to 1/4 inch, trace clay nodules, low plastic to 1/2", trace sandstone nodules to 1/4". 10YR 6/4 lt. yell. brown. med. dense, saturated.		D	SPLIT SPOON #26 t= 1430 PID=0.0
	242					
	244					DRYING OUT AT 243'-244'
CONFINING LAYER						LITHOLOGIC GRAB @ 245' t= 1510
	246		245' GRAB INTO SILTY CONFINING LAYER VERY DENSE, low plastic silt, trace sand v.f.gr at <10%. sl moist drying out w/depth			
	248					
	250'					DEVIATION SURVEY 252' = </°
BOTTOM of HOLE 252' TD SAMPLES 6/27/94			SANDY SILT, sand v.f.gr. at 20%. silt of low to non-plastic, 5YR 5/4 reddish brown, very dense, moist.		D C	SPLIT SPOON #27 t= 0800 P.D:0 PT 107 - 1101 - 2252 + TBEG

PIPE SEQUENCE

10/22
230'
10/27
240'
10/24
250'
252'
254'

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE Page 7 of 7

PROJECT

HOLE NO.

Century GEOPHYSICAL CORP.

PTX87-1P01

COMPONY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX87-1P01			-	
FIELD/LOCATION	: PANTEX PLANT			-	
COUNTY	: -			- -	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 248	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 248.10	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -1.30	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 248	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSE
MAGNETIC DECL.	: 11.400	RM	: -	TYPE	: 9055A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 6
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DISTANCE

-4 FT 4

0

20

40

60

80

100

120

140

160

180

200

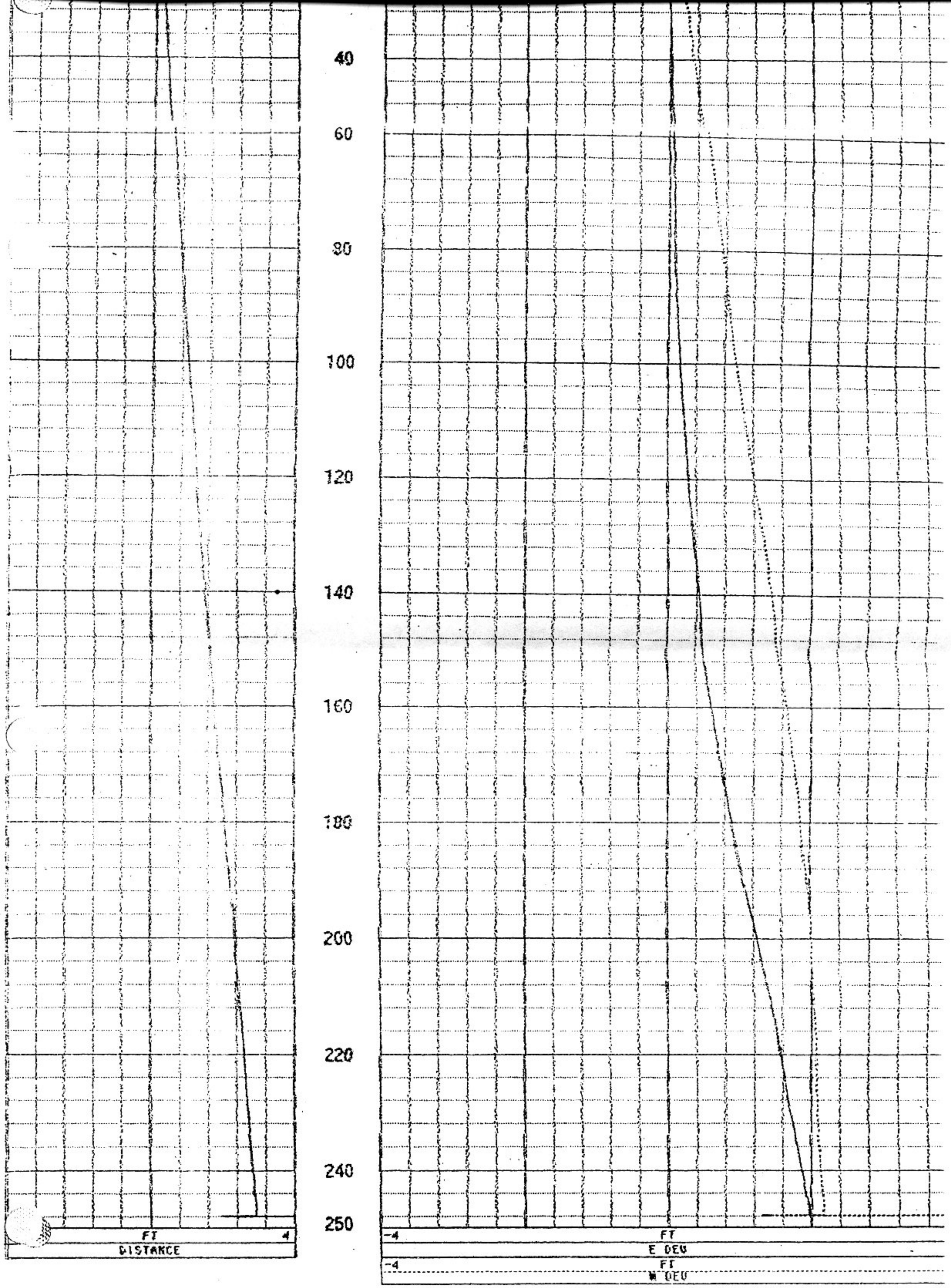
220

N DEV

-4 FT

E DEV

-4 FT


40
60
80
100
120
140
160
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Century GEOPHYSICAL CORP.

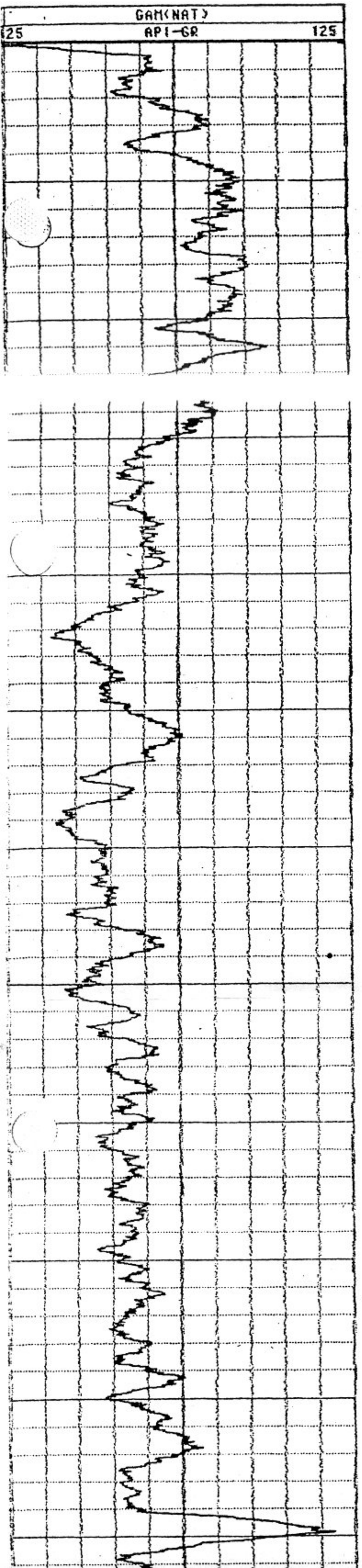
PTX87-1P01

COMPONY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX87-1P01			-	
FIELD/LOCATION	: PANTEX PLANT			-	
COUNTY	: -			- -	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 248	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 248.10	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -1.30	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 248	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSE
MAGNETIC DECL.	: 11.400	RM	: -	TYPE	: 9055A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 6
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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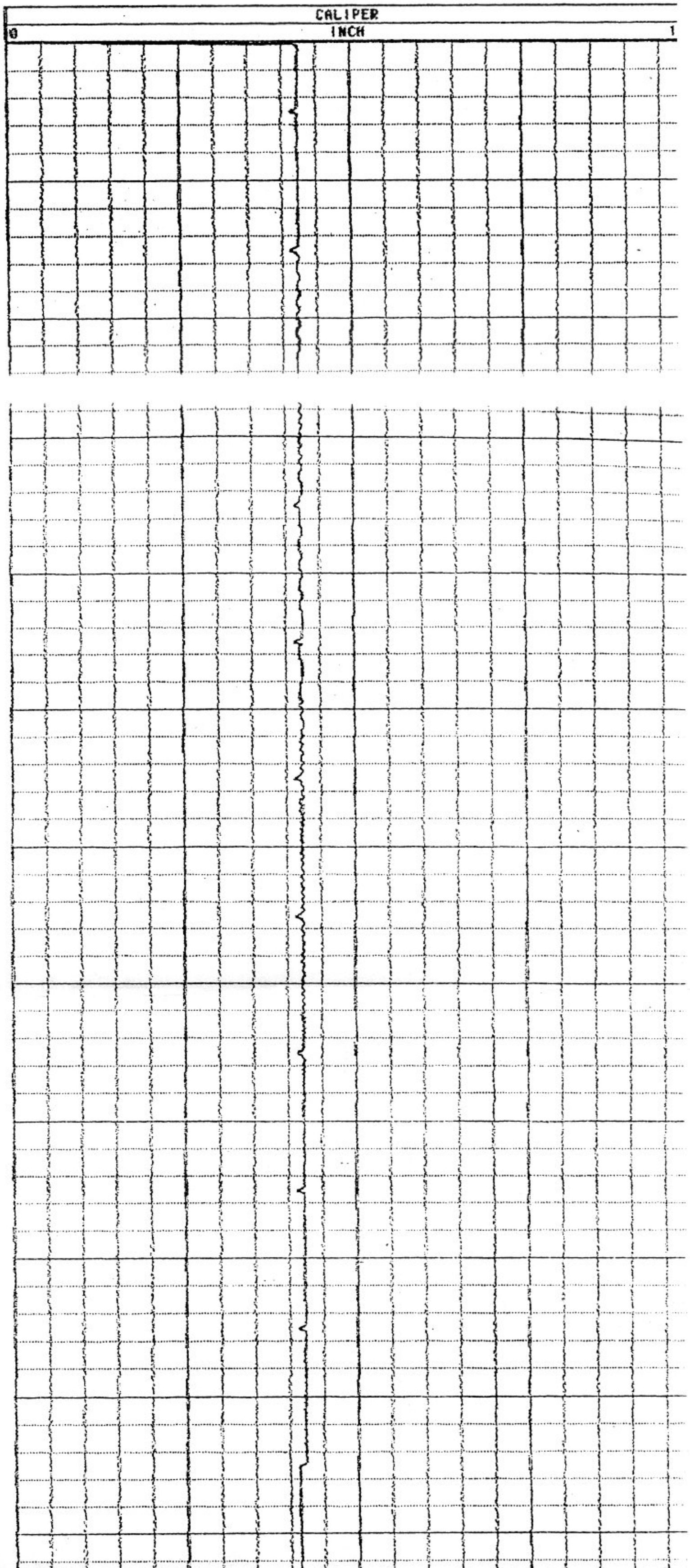

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Century GEOPHYSICAL CORP.

PTX07-1P01

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1P01			-	
LOCATION/FIELD	: PANTEX PLANT			-	
COUNTY	: -			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 248	ELEV. PERM. DATUM	: -	KB	: -
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LOG TOP	: 0.30	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 248	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9060A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 6
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

DISTANCE

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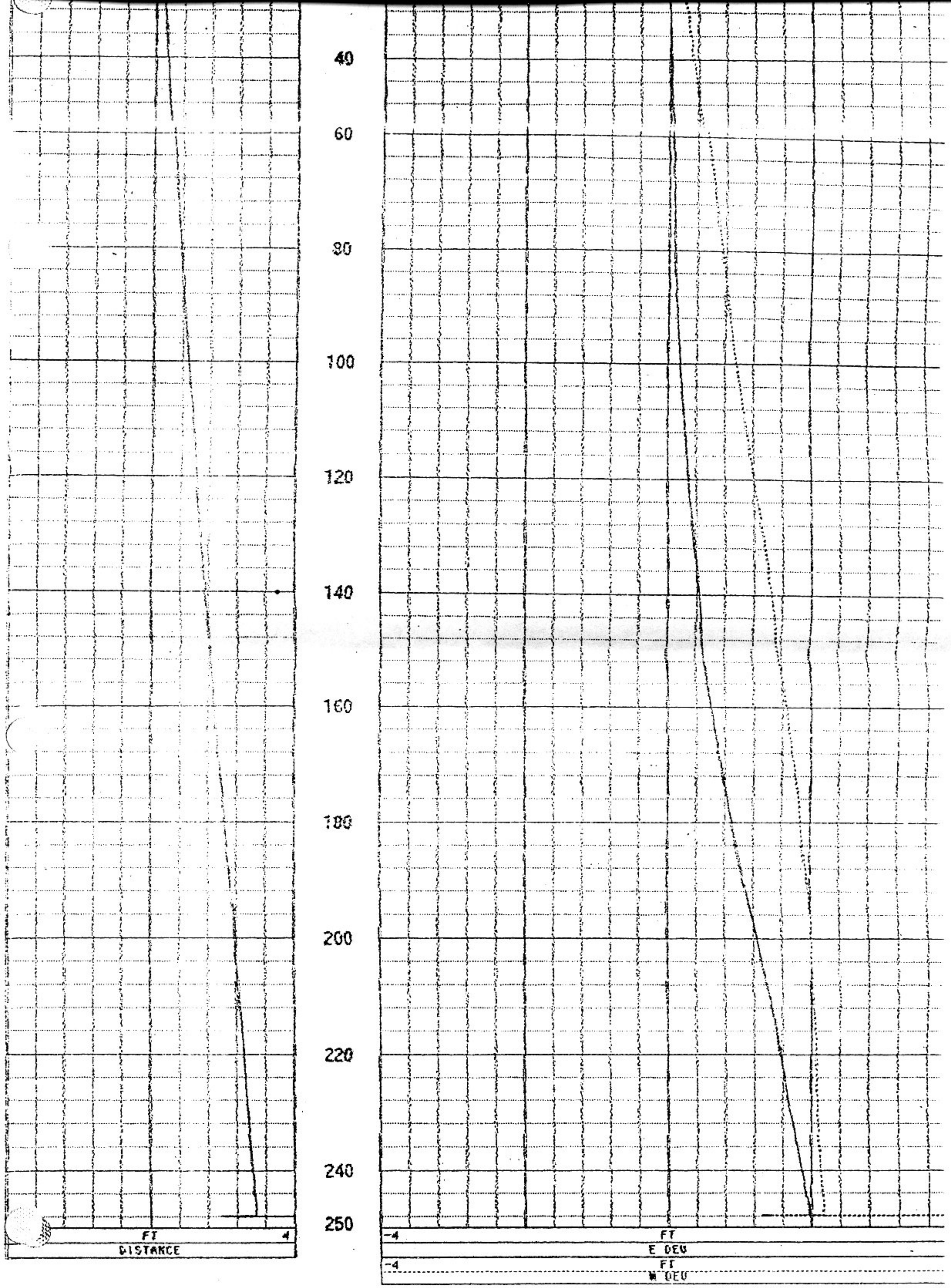
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Century GEOPHYSICAL CORP.

PTX07-1P01

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1P01			-	
LOCATION/FIELD	: PANTEX PLANT			-	
COUNTY	: -			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 248	ELEV. PERM. DATUM	: -	KB	: -
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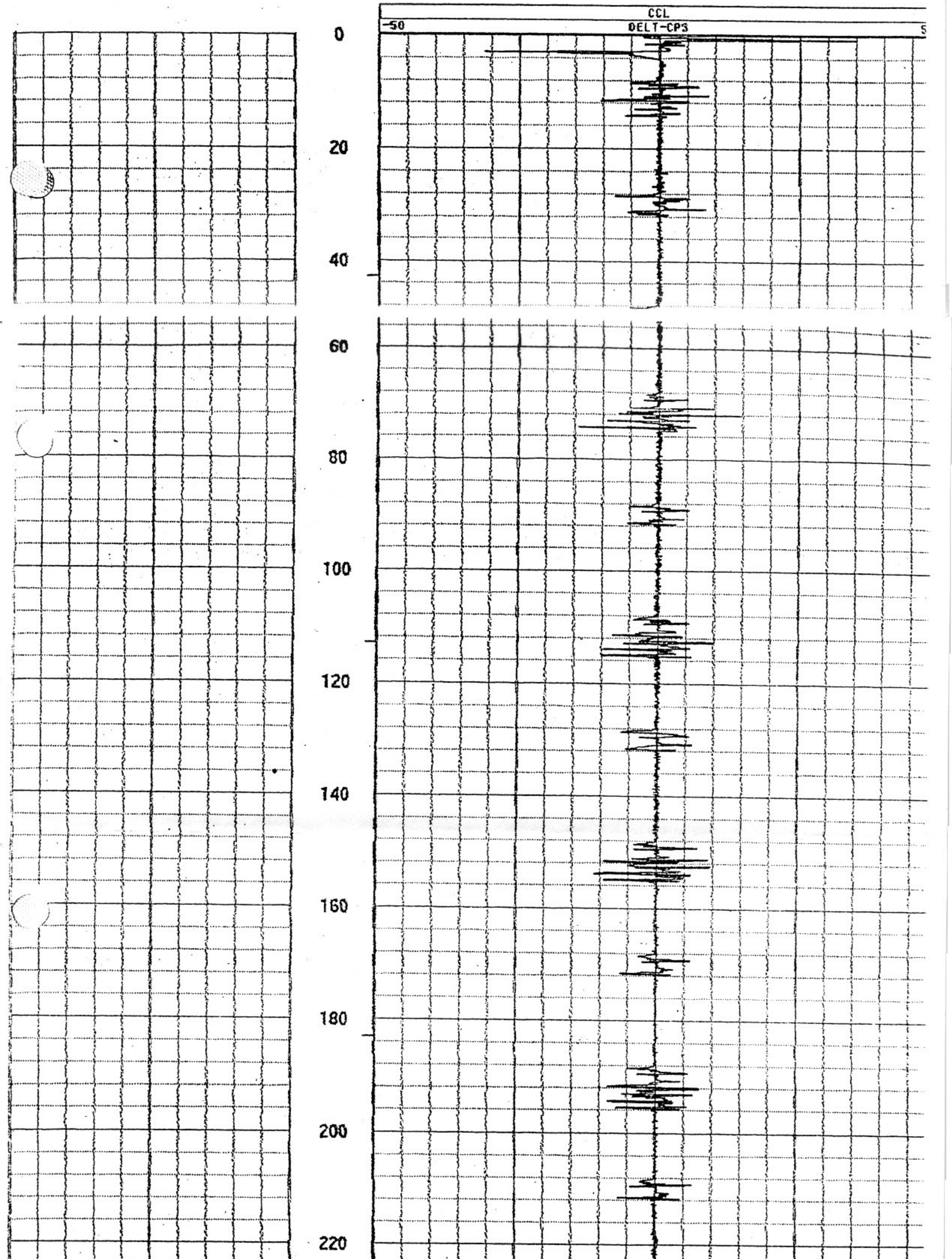
LOG TOP	: -4.28	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 248	LOGGING UNIT	: 9361		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 1
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANEXP 6
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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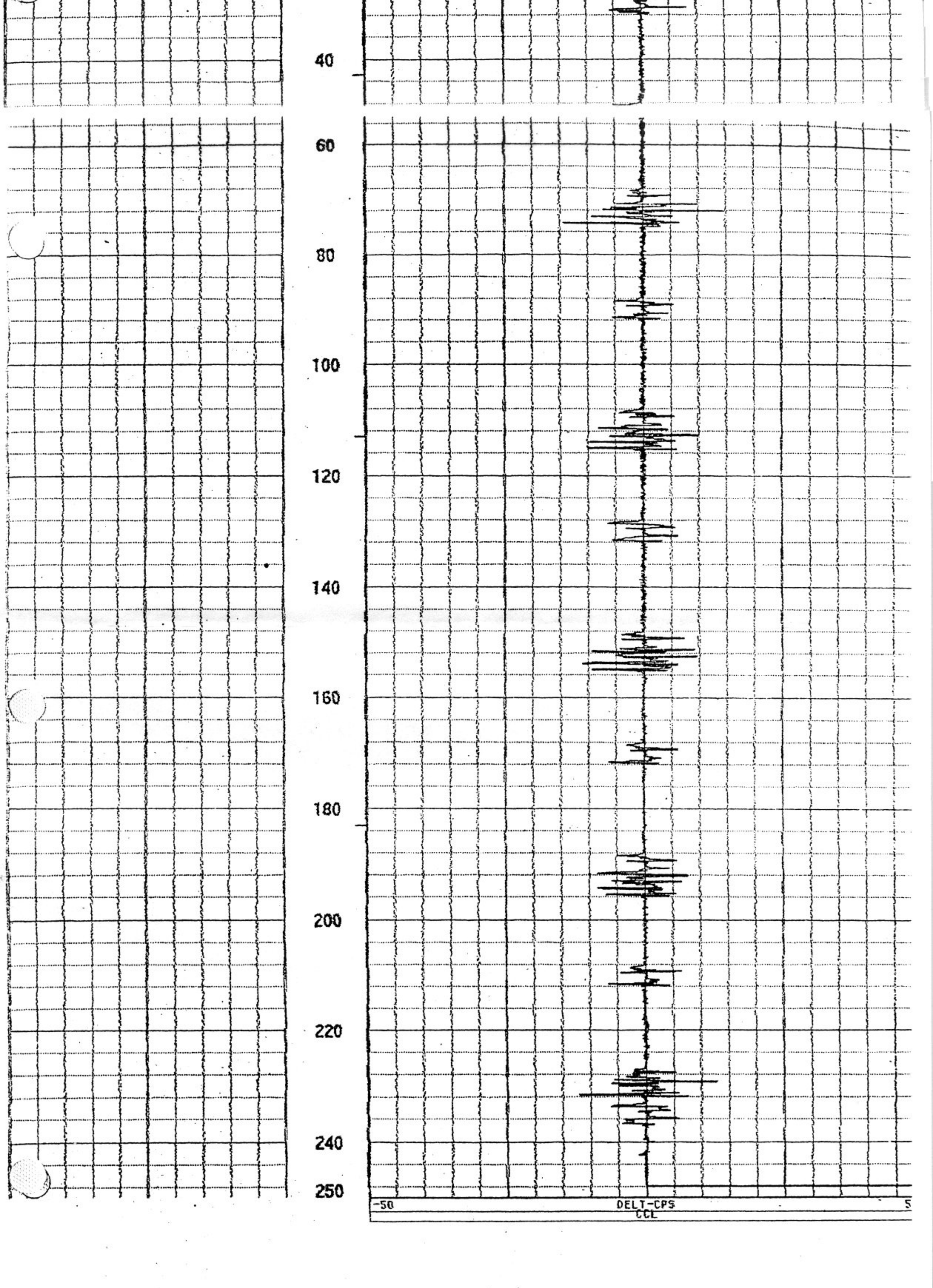
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Century GEOPHYSICAL CORP.

PTX07-1P01

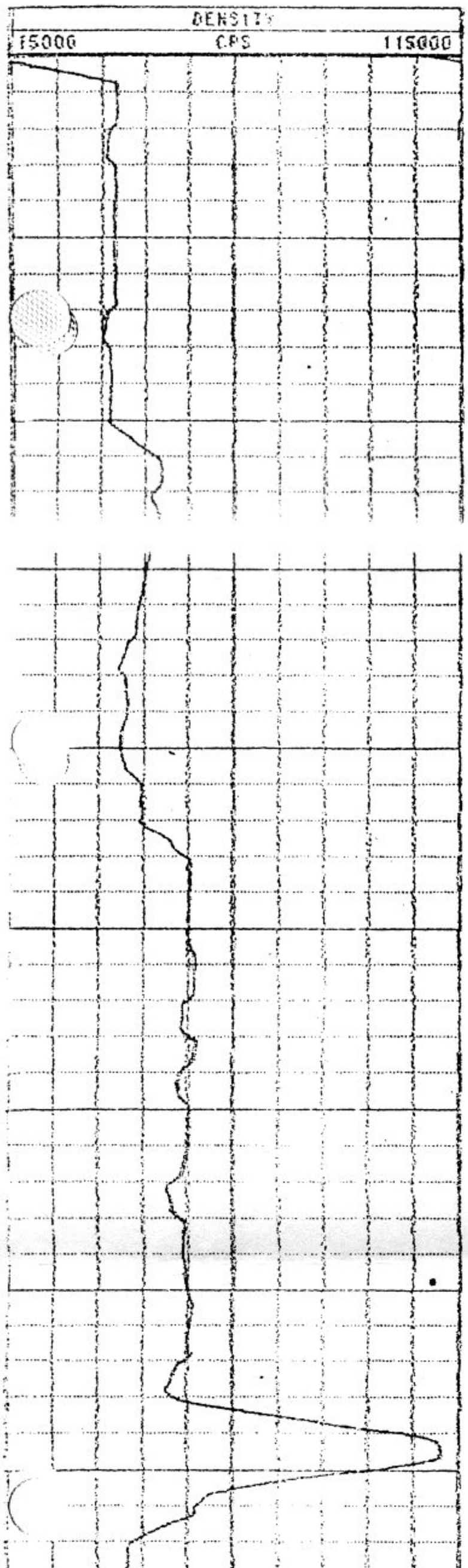
COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1P01			-	
LOCATION/FIELD	: PANTEX PLANT			-	
COUNTY	: -			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 248	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 248.18	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -4.28	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 248	LOGGING UNIT	: 9361		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 1
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANEXP 6
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING THROUGH CASING

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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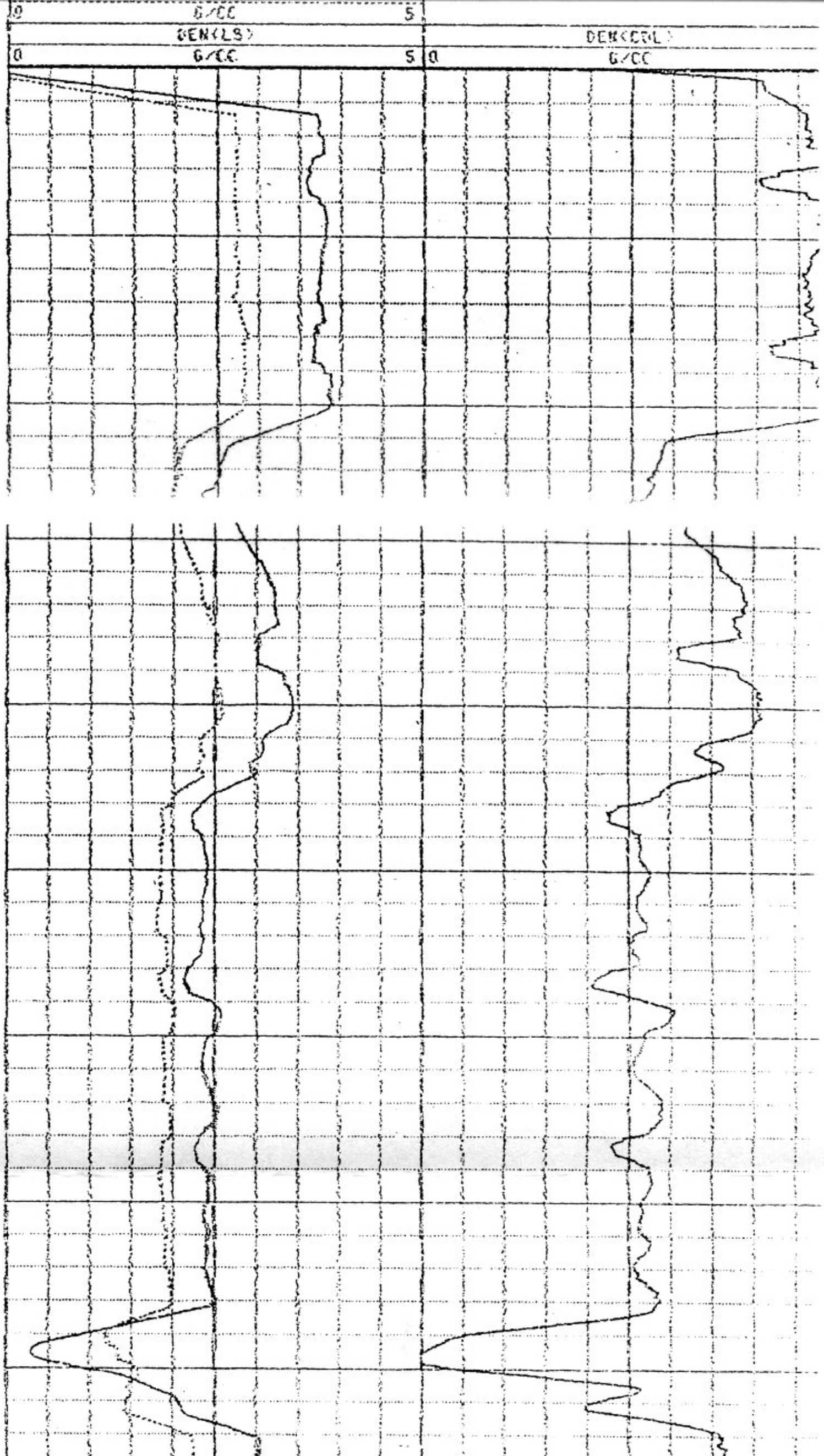

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Century GEOPHYSICAL CORP.

PTX07-1P81

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1P81			-	
LOCATION/FIELD	: PANTEX FLANT			-	
COUNTY	: -			-	
STATE	: TX.				
SECTION	-	TOWNSHIP	: -	RANGE	: -
DATE	: 07/11/94	PERMANENT DATUM	: -	ELEVATIONS:	
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LOG TOP	: 0.00	DRL MEASURED FROM:	G.L.	GL	: -
CASING DRILLER	: 246	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 90000
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 7
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PORTEX 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 5000000
REMARKS	:				

POST CONSTRUCTION LOGGING THROUGH CASING

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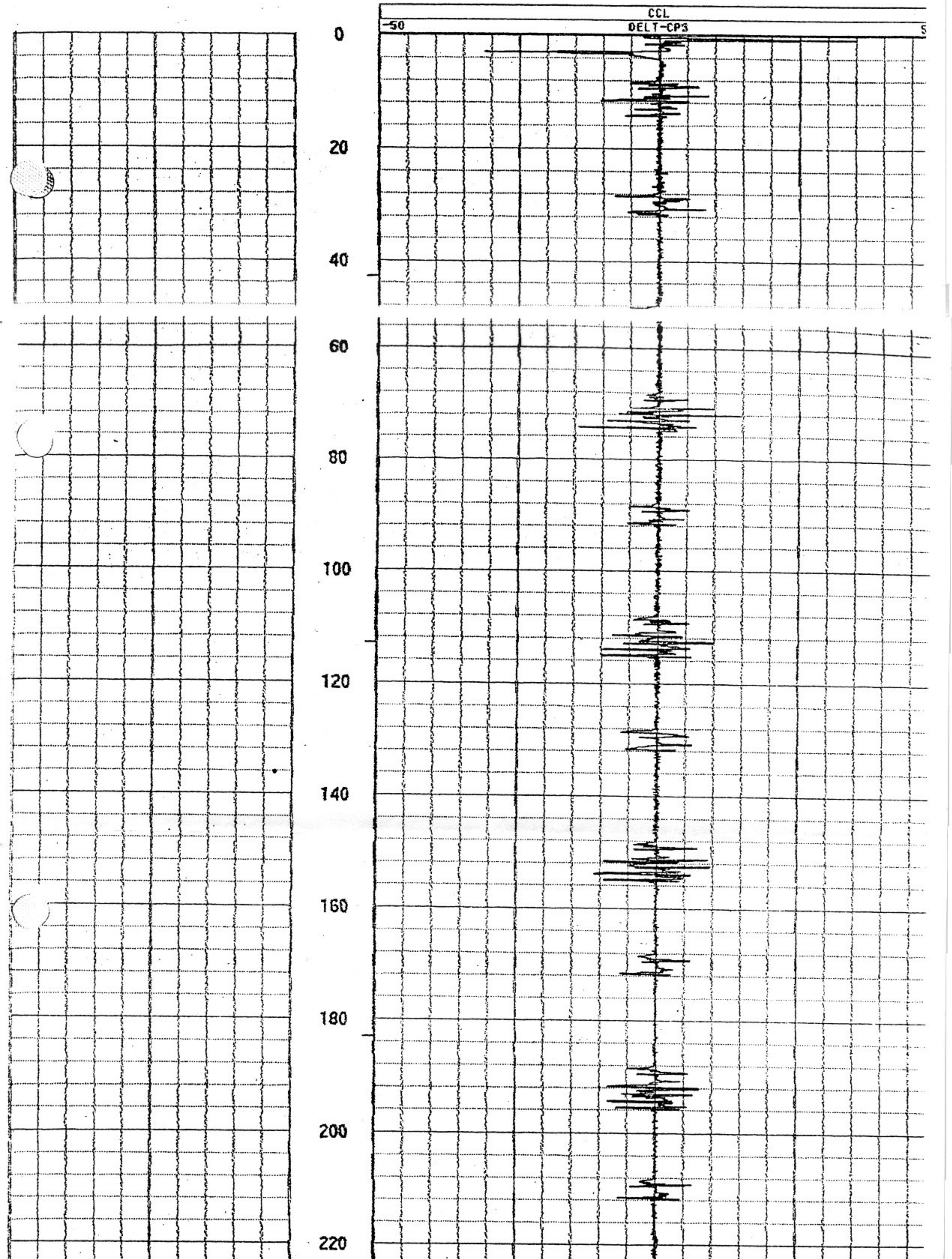
ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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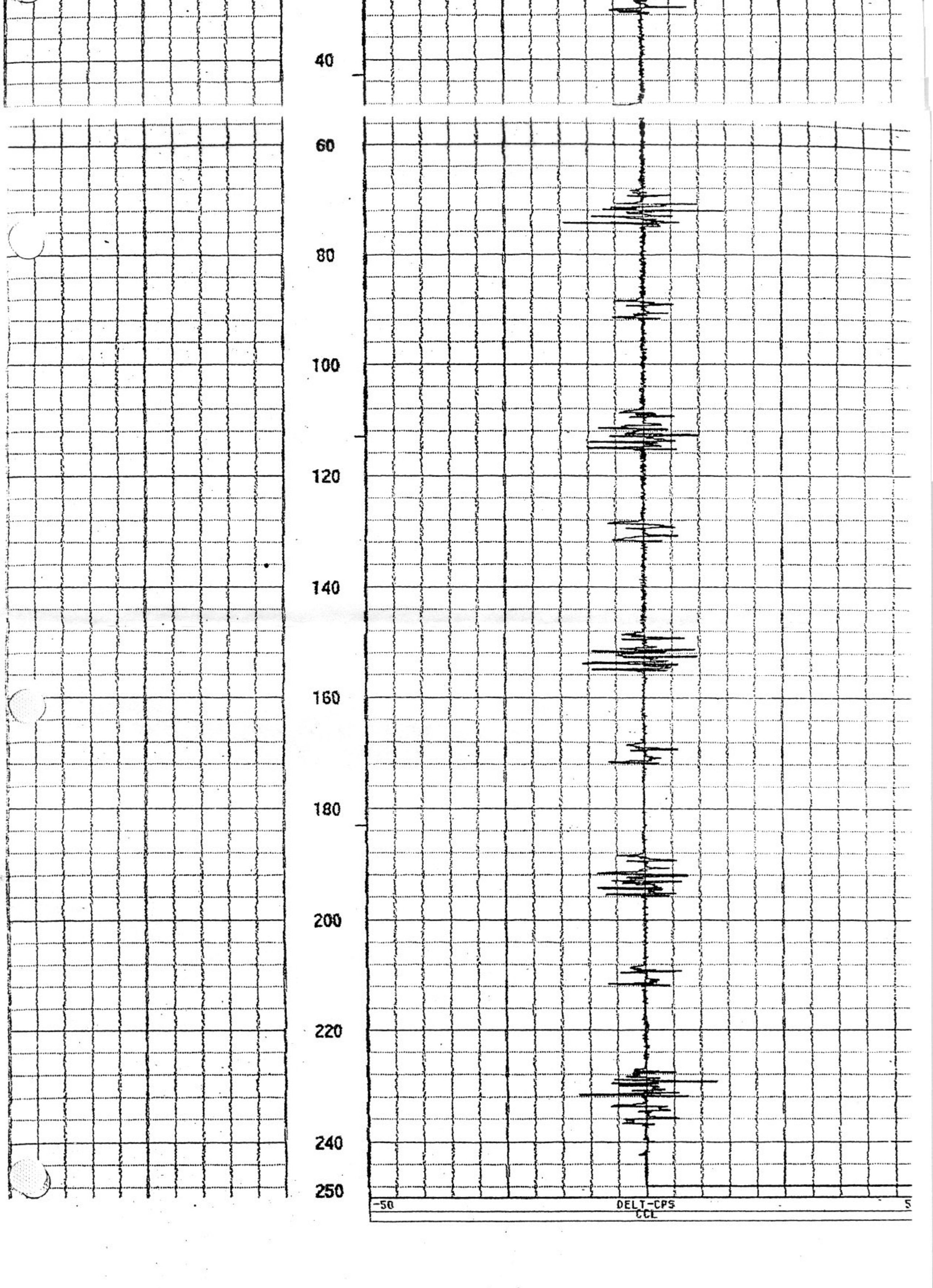
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Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Landfill 2 Pit 7-2 Pol PTXG-1201

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER United States Dept of Energy (Name) ADDRESS Pantex Plant (Street or RFD) Amarillo, (City) Texas (State) 79117 (Zip)

2) LOCATION OF WELL: County Carson . 17 miles in N.E. (NE, SW, etc.) direction from Amarillo, Texas (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☒ LEGAL DESCRIPTION:
Section No. _____ Block No. M-4 Township _____ Abstract No. _____ Survey Name J.D.H. Gibson
Distance and direction from two intersecting section or survey lines _____

☐ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Driven ☐ Air Rotary ☐ Cable Tool ☒ Other ARCH

6) WELL LOG:
Date Drilling: Started 6-21 19 94 Completed 6-29 19 94

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	252

RECEIVED AUG 17 1994 TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

From (ft.)	To (ft.)	Description and color of formation material
0	48	Silty Clay Brown
49	88	Silty sand reddish yellow
88	204	Sand yellowish brown
204	210	Silty sand yellowish brown
210	214	Sand yellowish brown
214	225	gravel w/sand yellowish brown
225	245	Sand yellowish brown
245	252	Sandy silt reddish yellow

(Use reverse side if necessary)

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 223 ft. to 252 ft.

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4½	N	Stainless steel blank	+3	230	sch. 5
4½	N	Stainless steel screen	230	245	0.010
4½	N	Stainless steel blank	245	248	sch 5

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 218 ft. No. of Sacks Used 69
218 ft. to 223 ft. No. of Sacks Used bentonite pellets 3-50#
Method used Tremied + pumped from 218'
Cemented by Water Development Corp.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other Bennett Sampler
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☐ Pump ☒ Bailer ☐ Jetted ☐ Estimated
Yield: balls dry in 10 mins. gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:
Static level 241 ft. below land surface Date 7-10-94
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did the drilling penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

12) PACKERS: N/A Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Water Development Corp. (Type or print) WELL DRILLER'S LICENSE NO. 3098-W

ADDRESS 1202 Kentucky Ave. (Street or RFD) Woodland (City) Ca. (State) 95766 (Zip)

(Signed) J. Miller Smith (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY

PTX07-1P02

Contractor: Jacobs Engineering

Contract #:

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- _X_Draft
- _X_Final

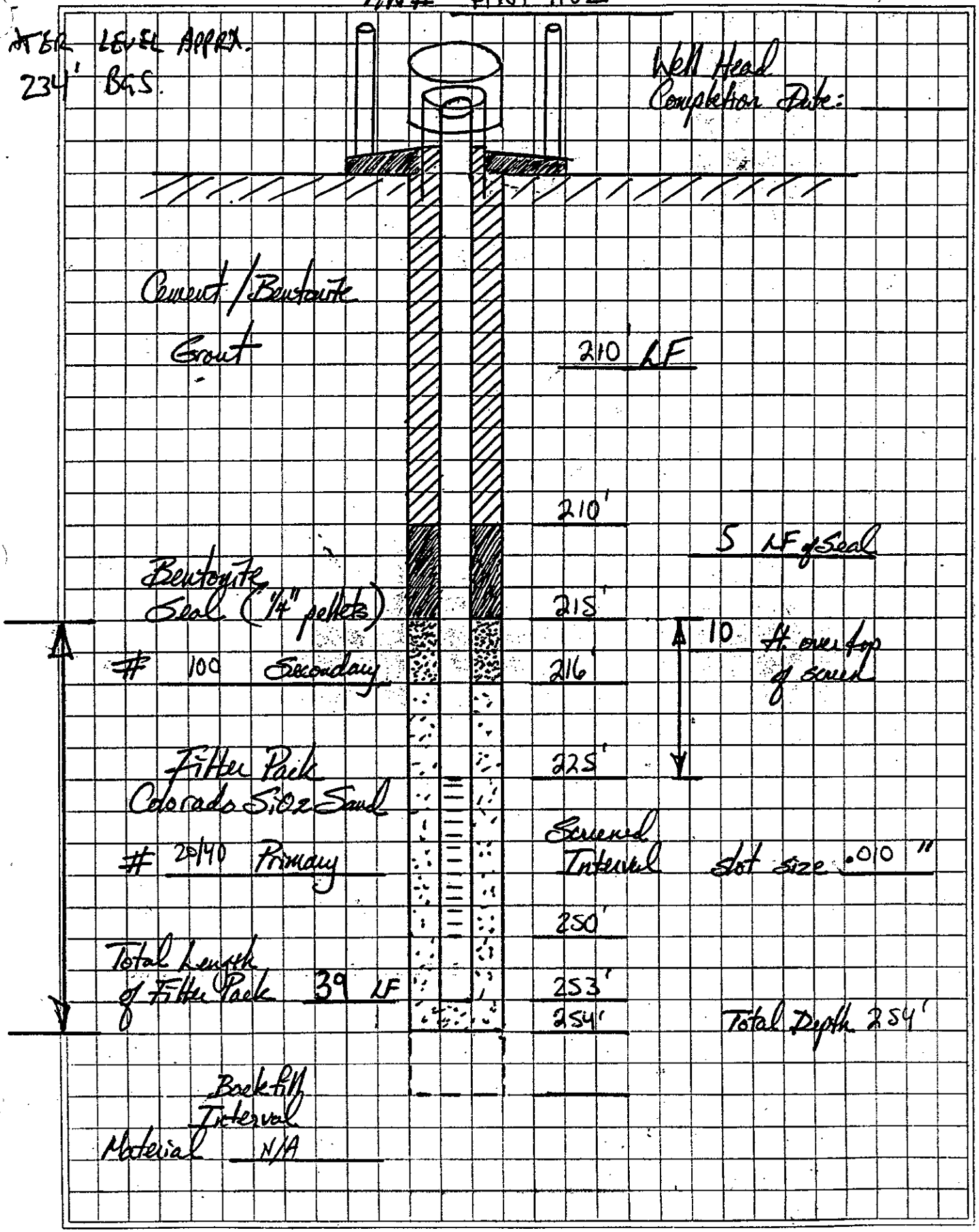
_X_Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

JACOBS ENGINEERING

DATE _____ SUBJECT Monitor Well Design SHEET NO. _____

BY _____ CHKD. _____ MW# PTV07-1P02 JOB NO. _____



1P02 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	254		
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(ft)	230 70 AB	
Time	9 30	
Date	8-11-94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

0

CLAY [CL] Silty clay, trace very fine grained sand, black organic rootlets, trace caliche nodules to 1/4", and discoloration, reddish yellow (10YR6/6), slightly damp, very dense

5

10

clay of low plasticity, black organic rootlets, caliche staining throughout, strong brown (7 5YR5/6), dry, very dense

15

20

clay of low plasticity, trace very fine grained sand and caliche nodules to 1/4", black organic rootlets, yellowish brown (10YR5/6), dry, very dense

25

slight increase in caliche

increasing silts, very fine sand

30

very fine grained sand, trace black organic rootlets, brownish yellow (10YR6/6), dry, medium dense

trace caliche

35

40

very fine grained sand, black organic rootlets, significant caliche staining, caliche is pink (7 5YR8/4), sand is yellowish red (5YR5/8), dry, very dense

PROJECT NUMBER 05E62903

1P02 WELL LOG

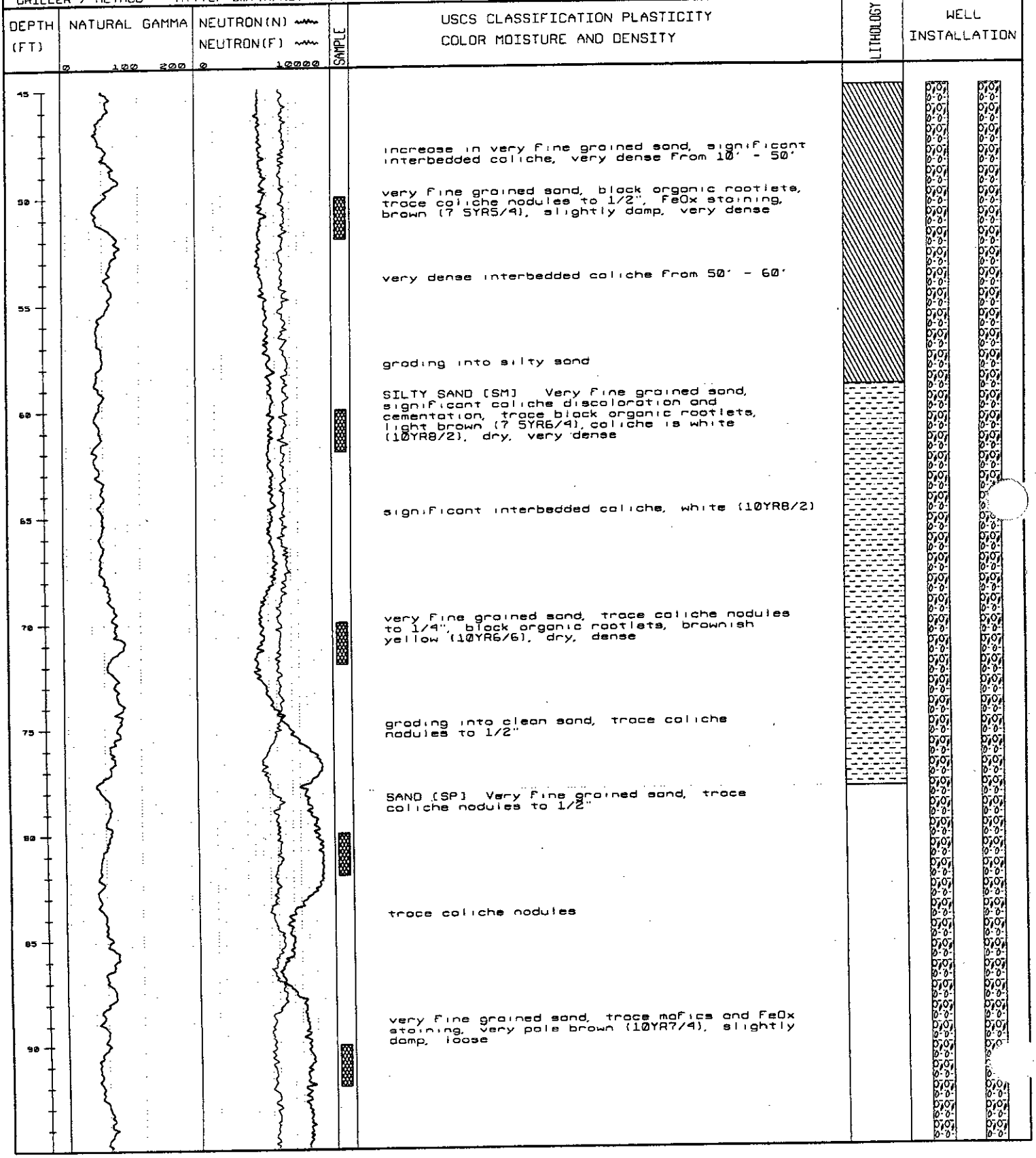
JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	254
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W

GEOLOGIST

STATIC WATER LEVEL (BLS) HO=While Drilling AB=After Boring		
Depth(Ft)	230 70 AB	
Time	9 30	
Date	8-11-94	



1P02 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	254
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer
RIG TYPE & NUMBER	Dresser T70 W
GEOLOGIST	

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	230 70 AB	
Time	9 30	
Date	8-11-94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

95

fine grained, poorly graded, yellow (10YR7/6), dry, loose

100

graded to very find sand, trace sandstone nodules, encounter 2" low plasticity silty clay

105

very fine grained, silty, poorly graded, yellow (10YR7/6), dry, loose

110

trace interbedded 1/2" silty clay seems of low plasticity to 120', interbedded approximotely every 2'-3'

115

120

very fine grained, poorly graded, significant CaCO3 cementing of sand, trace black organic rootlets, light brown (7 5YR6/4), very dense, dry

125

slight increase in silts, trace sandstone nodules to 1/4"

130

very fine grained, poorly graded, significant CaCO3 cementing in lenses and trace sandstone nodules to 1/2", light brown (4 5YR6/4), very dense, dry

135

140

very fine grained, poorly graded, trace sandstone nodules to 1", yellow (7 5YR7/6), medium dense, slightly damp

PROJECT NUMBER 05E62903

1P02 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	254
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer

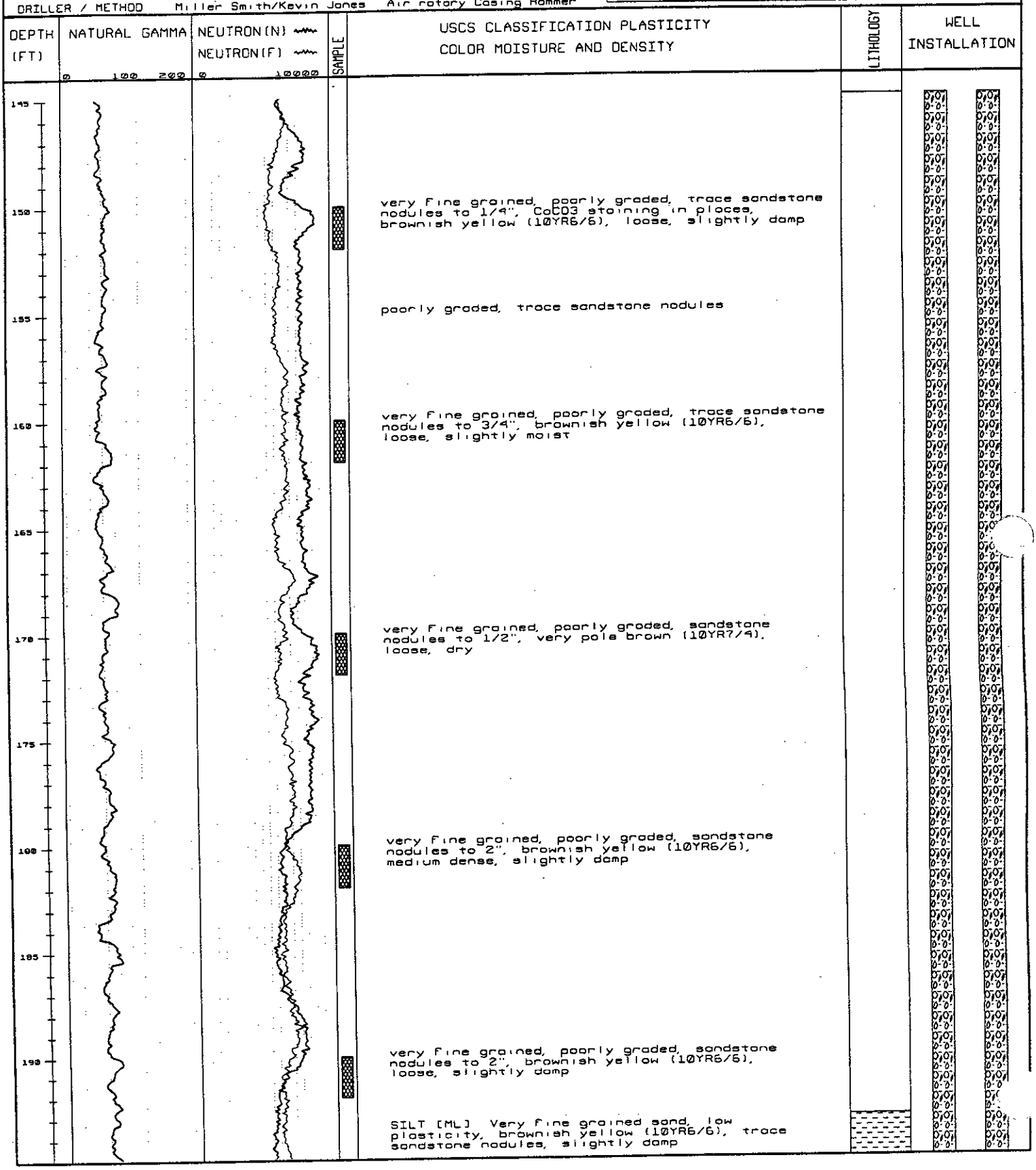
RIG TYPE & NUMBER Dresser T70 W

GEOLOGIST

STATIC WATER LEVEL (BLS)

40=While Drilling AB=After Boring

Depth(Ft)	230 70 AB	
Time	9 30	
Date	8-11-94	



PROJECT NUMBER 05E62903

1P02 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	254		
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	230 70 AB	
Time	9 30	
Date	8-11-94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

195
200
205
210
215
220
225
230
235
240

very Fine grained, poorly graded, silt low plasticity, sandstone nodules to 1/2", yellowish brown (10YR5/6), dense to very dense, slightly damp

grading back into very fine grained, poorly graded

GRAVELLY SAND (SW) Sand well graded, gravel angular to rounded to 1/2", one rounded cobble to 2 1/2", pale brown (10YR6/3), medium dense, slightly damp

at 215' grading From gravelly sand, well to poorly graded, very Fine grained sand, sample becoming slightly moist

SAND (SP) Very Fine grained, poorly graded, yellowish brown (10YR6/4), medium dense, moist

encounter 1" silt low plasticity layer at 226'-227' then back to into moist sand

Fine grained, poorly graded, light yellowish brown (10YR6/4), loose, moist

saturation of sand at 234'

very Fine grained, poorly graded, trace gravel to 1/4", angular to rounded, loose, saturated

PROJECT NUMBER 05E62903

1P02 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	254
COORDINATES / ELEV	637817 70 EAST 3763019 08 NORTH 3530 70 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W

GEOLOGIST

STATIC WATER LEVEL (BLS) WD=While Drilling AB=After Boring	
Depth(Ft)	230 70 AB
Time	9 30
Date	8-11-94

DEPTH (FT)	NATURAL GAMMA	NEUTRON(N) NEUTRON(F)	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
	0 100 200	0 10000				
245				slight increase in gravel and trace medium to coarse grain sand		
250				moisture content decreasing SILT [ML] Sand very fine grained, trace gravel to 1/4", subangular to round, very dense, low plasticity, moist		
255						
260						
265						
270						
275						
280						
285						
290						

PROJECT NUMBER 05E62903

Hole No. PTX07-1P02

DRILLING LOG | DIVISION: TULSA | INSTALLATION: DOE PANTEX | SHEET 1 OF 7 SHEETS

1. PROJECT: COE LANDFILL RFI
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: WATER DEV. CORP.
4. HOLE NO. (As shown on drawing title and file number): PTX07-1P02
5. NAME OF DRILLER: MILLER SMITH / KEVIN JONES
6. DIRECTION OF HOLE: ☒ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 254'
10. SIZE AND TYPE OF BIT: 8 5/8 TRILONG
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: DRESSER T70-W ARCH
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED JULY 6, 1994 COMPLETED JULY 12, 1994
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Tim Jones 8/4/94

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	2', 4', 6', 8', 10', 12', 14', 16', 18', 20', 22', 24', 26', 28'	CL	SILTY CLAY, SILTS AT 25-30%, trace v.f.gr. sands, black organic rootlets throughout, trace caliche nodules to 1/4" and discoloration, 10YR 6/6 reddish yellow, sl. damp. very dense.	UD		D= DISTURBED UD= UNDISTURBED C= CHEMICAL P= PHYSICAL SHELBY TUBE #1 PTX07-1P02-2005 t=0850
				P		
				D		SPLIT SPOON #1 PTX07-1P02-2007 t=0903 PID=0.0 BG=1.2
				C		
			SILTY CLAY SILT AT 25', clay low plastic, black organic rootlets throughout, cal.che staining throughout, 7.5YR 5/6 strong brown, dry, very dense	D		SPLIT SPOON #2 PTX07-1P02-2010 t=0925 PID=0.0
				C		
				D		SPLIT SPOON #3 PTX07-1P02-2010 t=0927 P.D=0.0
				C		
			SILTY CLAY, SILT AT 30-35%, clay is low plastic, trace v.f.gr sands and caliche nodules to 1/4" black organic rootlets 10YR 5/6 yellowish brown, dry, very dense,	D		SPLIT SPOON #4 PTX07-1P02-2020 t=1035 PID=0.0
				C		
			As above w/slight increase in caliche in grab sample			LITHOLOGIC GRAB @ 25' t=1040
			INCREASING SILTS TO 70% v.fgr sands			

PIPE SEQUENCE: 5/1 | 5' | 5/2 | 10' | 10/1 | 20' | 10/2

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PAGE 1 OF 7

PROJECT | HOLE NO. PTX07-1P02

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	30'		SANDY SILTS, v.f-gr sands at 20%. uniform throughout spoon, trace black organic rootlets 10YR 6/6 brownish yellow, dry, med. dense		D C	SPLIT SPOON #5 PT107-1P02-2030 t=12:06 P.I.D=0.0
	34		As above, trace caliche in grab			LITHOLOGIC GRAB @ 35' t=1215
	36					
	38					
	40		* No Recovery on 2 pushes of SHELBY Collect bulk Btx only at this SHELBY interval		U D P	SHELBY TUBE ~~SPLIT SPOON~~ #9 + BULK PTX17-1P02-2040 t=1239 P.I.D=0.0
	42					
	44	ML	SANDY SILTS, sand v.f-gr to 35%, Black organic rootlets throughout, sign.f. caliche staining throughout, Caliche is 7.5YR 8/4 pink, other is 5YR 5/8 yellowish red, dry, very dense..		D C	SPLIT SPOON #6 PTX07-1P02-2042 t=1315 P.I.D=0.0
	46					LITHOLOGIC GRAB @ 45' t=1330
	48		Increase in v.f-gr sands to 40%., significant interbedded caliche very dense from 40'-50'.			
	50		SANDY SILTS, v.f.gr. sands at 40%, Black organic rootlets, trace caliche nodules to 1/2", FeOx staining, 7.5YR 5/4 brown, sl. damp, very dense.		* D	* DEVIATION @ 50' = < 1/2° SPLIT SPOON #7 t=1355 P.I.D=0.0
	52					
	54		Very dense interbedded caliche from 50'-60'.			LITHOLOGIC GRAB @ 55' t=1410
	56					
	58		grading into silty sands			
	60	SM	SILTY SAND, sand v.f.gr., silt at 25%, significant caliche discoloration and cementation throughout trace black organic rootlets, 7.5YR 6/4 light brown, caliche is 10YR 8/2 white, dry, very dense		D	SPLIT SPOON #8 t=1425 P.I.D=0.0
	62					
	64					
	66		As above significant interbedded caliche 10YR 8/2 white			LITHOLOGIC GRAB @ 65' t=1440
	68					

TIPE SEQUENCE

10/2 — 30' — 10/3 — 40' — 10/4 — 50' — 10/5 — 60' — 10/6

PROJECT COE LANDFILL RFI

HOLE NO. PTX07-1P02

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	70'	SM	SILTY SAND, sand v.f.gr. silt at 25-30%., trace caliche nodules to ¼", black organic rootlets, 10YR 6/4 brownish yellow, dry, dense.		D C	SPLIT SPOON #9 PTX07-1P02-2070 t=1453 P.I.D=0.0
	74		grading into clean sand, silts at 5-10%. trace caliche nodules to ½".			LITHOLOGIC GRAB @ 75' t=1500
	78					
	80'	SP	SAND, v.f.gr sands, silts at <5%., qtz. sand w/ trace feldspar ~~grns~~, 10YR 7/4 very pale brown, loose, dry.		D	SPLIT SPOON #10 t=1535 P.I.D=0.0
	82					
	84		As above w/ trace caliche nodules in grab sample.			LITHOLOGIC GRAB @ 85' t=1600
	88					
	90'		SAND, v.f.gr, silt at 5-8%., uniform throughout spoon, trace mafics and FeOx staining, 10YR 7/4 very pale brown, sl. damp, loose.		D	SPLIT SPOON #11 t=1610 P.I.D=0.0
	94		As above, uniform to 100' ↓			LITHOLOGIC GRAB @ 95' t=1630
	98					
	100'		SAND, F.gr., poorly graded, silts at <5%., uniform throughout 10YR 7/6 yellow, dry, loose.		D	SPLIT SPOON #12 t=0815 P.I.D=0.0
	104		graded to v.f.gr sand, silt <8%, trace sandstone nodules in grab, encounter 2" low plasticity silty clay seam at appx 109'.			LITHOLOGIL GRAB @ 105' t=0830
	108					

PIPE SEQUENCE: 10/6, 70', 10/7, 80', 10/8, 90', 10/9, 100', 10/10

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PROJECT: COE LANDFILLS RFI

HOLE NO.: PTX07-1P02

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	110'		SAND, v.f-gr, silts at <5%. poorly graded uniform throughout. 10YR 7/6 yellow, dry, loose		D	SPLIT SPOON #13 t=0850 P.I.D = 0.0
	112					
	114		As above with trace interbedded appx 1/2" silty clay seams of low plasticity to 120', interbedded appx. every 2'-3'.			LITHOLOGIC GRAB @ 115' t=0805
	116					
	118					
	120		SAND, v.f-gr, silt at 8%. poorly graded, significant $CaCO_3$ cementing of sands, trace black organic rootlets, 7.5YR 6/4 light brown, very dense, dry.		D	SPLIT SPOON #14 t=0820 P.I.D=0.0
	122					
	124		Slight increase in silts to 10%. trace sandstone nodules to 1/4" in grab.			LITHOLOGIC GRAB @ 125' t=0832
	126					
	128	SP				
	130'		SAND, v.f-gr, poorly graded silt at 5-8%, ~~trace~~ significant $CaCO_3$ cementing in lenses and trace sandstone nodules to 1/2". 7.5YR 6/4 light brown, very dense, dry.		D	SPLIT SPOON #15 t=0900 P.I.D=0.0
	132					
	134		As above decrease in silts to 5%. trace sandstone nodules to 1/4" in grab			LITHOLOGIC GRAB @ 135' t=0935
	136					
	138					
	140'		SAND, v.f-gr, poorly graded, uniform throughout, silts at 5%, trace sandstone nodules to 1". 10YR 7/6 yellow, med. dense, sl. damp.		D	SPLIT SPOON #16 t=1000 P.I.D=0.0
	142					
	144		Uniform sand v.f-gr, poorly graded to 250' trace sandstone nodules to 1/2" at 249'-249.5', sl. damp.			LITHOLOGIC GRAB @ 145' t=1015
	146					
	148					

PIPE SEQUENCE

10/10 — 110'

10/11 — 120'

10/12 — 130'

10/13 — 140'

10/14

PROJECT

HOLE NO. PTV07-1002

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	150'		SAND, v.f-gr, poorly graded, uniform throughout, silts at <5%, trace sandstone nodules to 1/4" $CaCO_3$ staining in places, 10YR 6/6 brownish yellow, loose, sl. damp.		D	* DEVIATION SURVEY AT 150' = N/A SPLIT SPOON #17 PT107-1P02-2150
	152				C	t=~~1147~~ 1156 P.D=0.0
	154					
	156		SAND, v.f-gr, poorly graded, uniform formation to 160', trace sandstone nodules in grab.			LITHOLOGIC GRAB @ 155' t=1225
	158					
	160		SAND, v.f.gr. poorly graded, uniform, trace sandstone nodules to 3/4", silts at 5%. 10YR 6/6 brownish yellow. loose, sl. damp.		D	SPLIT SPOON #18 t=1242 P.D=0.0
	162					
	164		As above w/slight increase in presence of sandstone nodules in grab sample.			Lithologic grab @165' t=1300
	166	SP				
	168					
	170		SAND, v.f.gr. poorly graded, silts at <8%, sandstone nodules throughout to 1/2", 10YR 7/4 very pale brown, loose, dry.		D	SPLIT SPOON #19 t=1320 P.D=0.0
	172					
	174		As above, no change			LITHOLOGIC GRAB @ 175' t=1400
	176					
	178					
	180		SAND, v.f-gr. poorly graded, silts at 10%, sandstone nodules throughout to 2". trace oxides, 10YR 6/4 brownish yellow, med, dense, sl. damp.		D	SPLIT SPOON #20 t=1415 P.D=0.0
	182					
	184		Less silts at 5%, increase in sandstone nodules to 3/8".			LITHOLOGIC GRAB @ 185 t=1445
	186					
	188					

P.P6 SEQUENCE

10/14 — 150' — 10/15 — 160' — 10/16 — 170' — 10/17 — 180' — 10/18

PROJECT [illegible]

HOLE NO. PT107-P02

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	190'	SP	SAND, v.f.gr, poorly graded, silts at 8-10%. sandstone nodules throughout to 2". 10YR 6/6 brownish yellow, loose, sl. damp.		D	SPLIT SPOON #21 t=1510 PID=0.0
	194		SILT W/SAND, sand v.f.gr at 25%., silt low plasticity, 10YR 6/6 brownish yellow, trace sandstone nodules, sl. damp.			LITHOLOGIC GRAB @ 195' t=1525
	196					
	198					
	200'	ML	formation too dense bonds 2 shelby tubes — no shelby tube recovery.		UD	SHELBY TUBE # + BAG
	202		SILT W/SAND, sand v.f.gr poorly graded, sand at 30%. silt low plastic, sandstone nodules to 1/2" 10YR 5/6 yellowish brown, dense to very dense, sl. damp.		R	PT107 - 1P02 - 2200 + BAG t=1615
	204					SPLIT SPOON #22 PT107 - 1P02 - 2202 t=1630 PID=0.0
	206		GRADING BACK INTO v.f.gr. sands. poorly graded, uniform throughout <5% silts			LITHOLOGIC GRAB at 205' t=1645
	208					
	210'	SW	Gravelly sands, sands well graded, silts at 5-10%, gravels Angular to Rounded to 1/2". 1 rounded cobble to 2 1/2". 10YR 6/3 pale brown, med dense, sl. damp.		D	SPLIT SPOON #23 t=0945 PID=0.0 PT107-1P02-2210
	212				C	
	214		AT 215' grading from gravelly sands well graded into poorly graded v.f.gr sands <8% silts sample becoming slightly moist in cyclone cuttings grab			LITHOLOGIC GRAB @ 215' t=0955
	216					
	218		SAND, v.f.gr poorly graded, uniform throughout, silts at <5%. 10YR 6/4 lt. yell. brown, med dense, moist.			moisture content increases to sl. moist to moist.
	220				D	SPLIT SPOON # 24 t=1027 PID=0.0 PT107-1P02-2220
	222	SP			C	
	224		SAND As above, encounter 1" silt low plastic layer at 226'-227'. then back into moist sand.			LITHOLOGIC GRAB @ 225' t=1100
	226					
	228					

PIPE SEQUENCE: 10/18 → 190' → 10/19 → 200' → 10/20 → 210' → 10/21 → 220' → 10/22

PROJECT: CofC CANOFILES RFI

HOLE NO.: PTY07-1P02

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	230'		SAND, f.gr, poorly graded, uniform throughout spoon, silts at <5%, 10YR 6/4 light yellowish brown, loose, moist.		D	SPLIT SPOON #25 t= 1120 PID=0.0
WATER LEVEL 234	232	WL	As above w/saturation of sands at 234'.			
	234					LITHOLOGIC GRAB @ 235' t= 1130
	236					
	238					
	240	SP	SAND, v.f-gr to f.gr, poorly graded, silts at 5%, trace gravels to 1/4", angular to rounded, loose, saturated.			LITHOLOGIC GRAB @ 240' t= 1230
	242					
	244		As above w/slight increase in gravels and trace med. to coarse gr. sands.			LITHOLOGIC GRAB @ 245' t= 1245
	246					
	248		Moisture content decreasing			* MOISTURE CONTENT DECREASING.
250' confining layer encountered.	250					
	252	ML	SILT W/SAND, Sand v.f-gr at 20-25%. trace gravels to 1/4", subangular to rounded, very dense, low plasticity, moist.			LITHOLOGIC GRAB AT 250' t= 1330
TD=254	254				D C	SPLIT SPOON #26 t= 1405 PID=0.0 PTX07-1P02-254 + TBEG
	256					
	258					

PIPE SEQUENCE

10/22

230'

0/23

240'

10/24

250'

PROJECT COF LANDFILLS RFI

HOLE NO. PTX07-1P02

Century GEOPHYSICAL CORP.

PTX67-1P62

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX67-1P62			-	
LOCATION/FIELD	: PANTEX PLANT			-	
COUNTY	: POTTER			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/27/94	PERMANENT DATUM	: -	ELEVATIONS:	
DEPTH DRILLER	: 254	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 253.88	LOG MEASURED FROM	: G.L.	DF	: -
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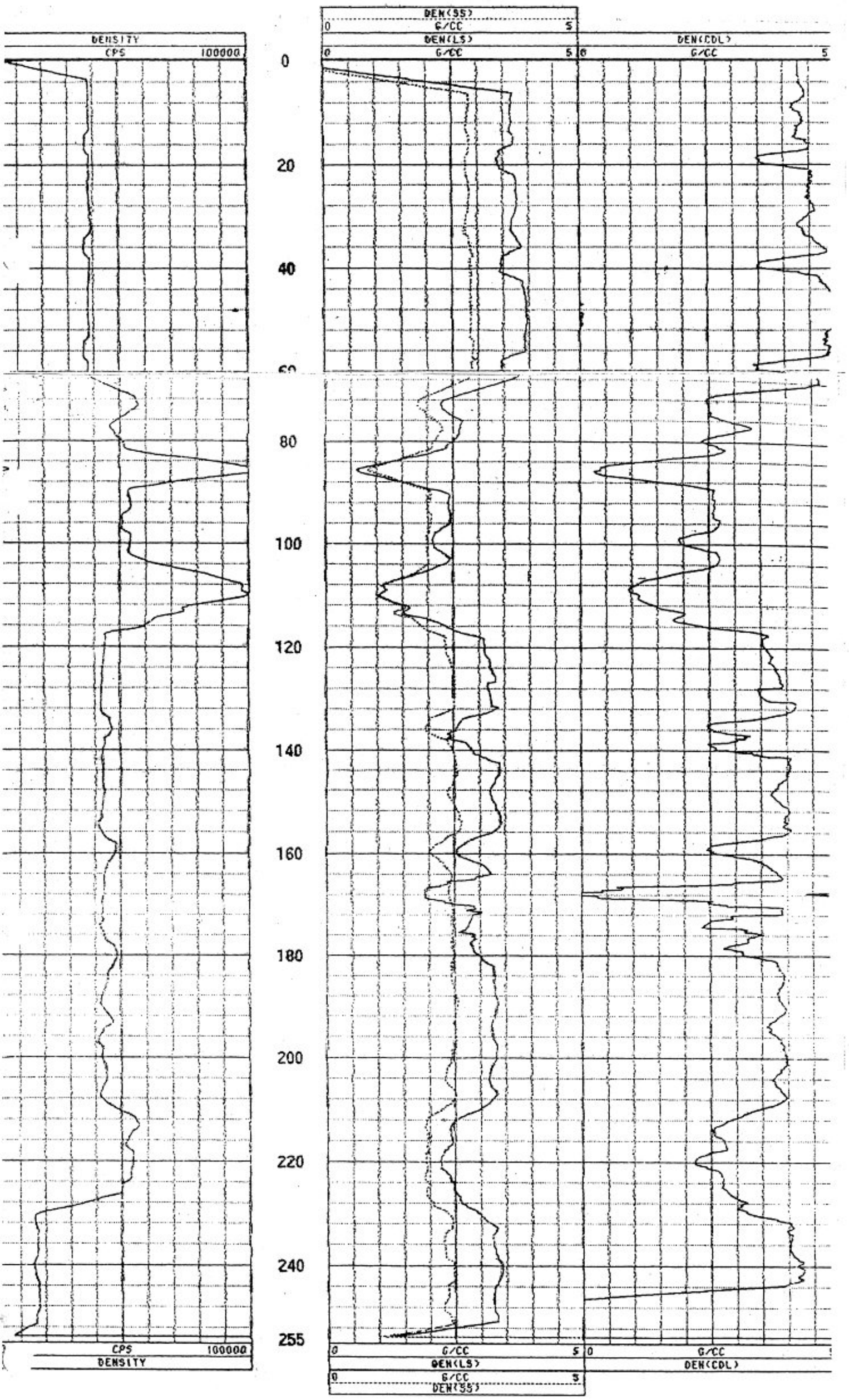
CASING DRILLER	: 254	LOGGING UNIT	: 9351		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9035AA
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 6
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING

-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200
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CPS
DENSITY
DEN(LS)
DEN(CDL)
DEN(SS)

PTX87-1P82

COMPANY	:	JACOBS ENGINEERING					
WELL	:	PTX87-1P82					
LOCATION/FIELD	:	PONTEX PLANT					
CITY	:	POTTER					
STATE	:	TX					
SECTION	:	-	TOWNSHIP	:	-	RANGE	: -
DATE	:	07/27/94	PERMANENT DATUM	:	-	ELEVATIONS	
DEPTH DRILLER	:	254	ELEV. PERM. DATUM:		-	KB	: -
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CASING DRILLER	:	254	LOGGING UNIT	:	9301		
CASING TYPE	:	STEEL	FIELD OFFICE	:	LAS VEGAS		
CASING THICKNESS:		.125	RECORDED BY	:	DEREK SLOOP		
BIT SIZE	:	-	BOREHOLE FLUID	:	H20 AIR	FILE	: PROFILE#2
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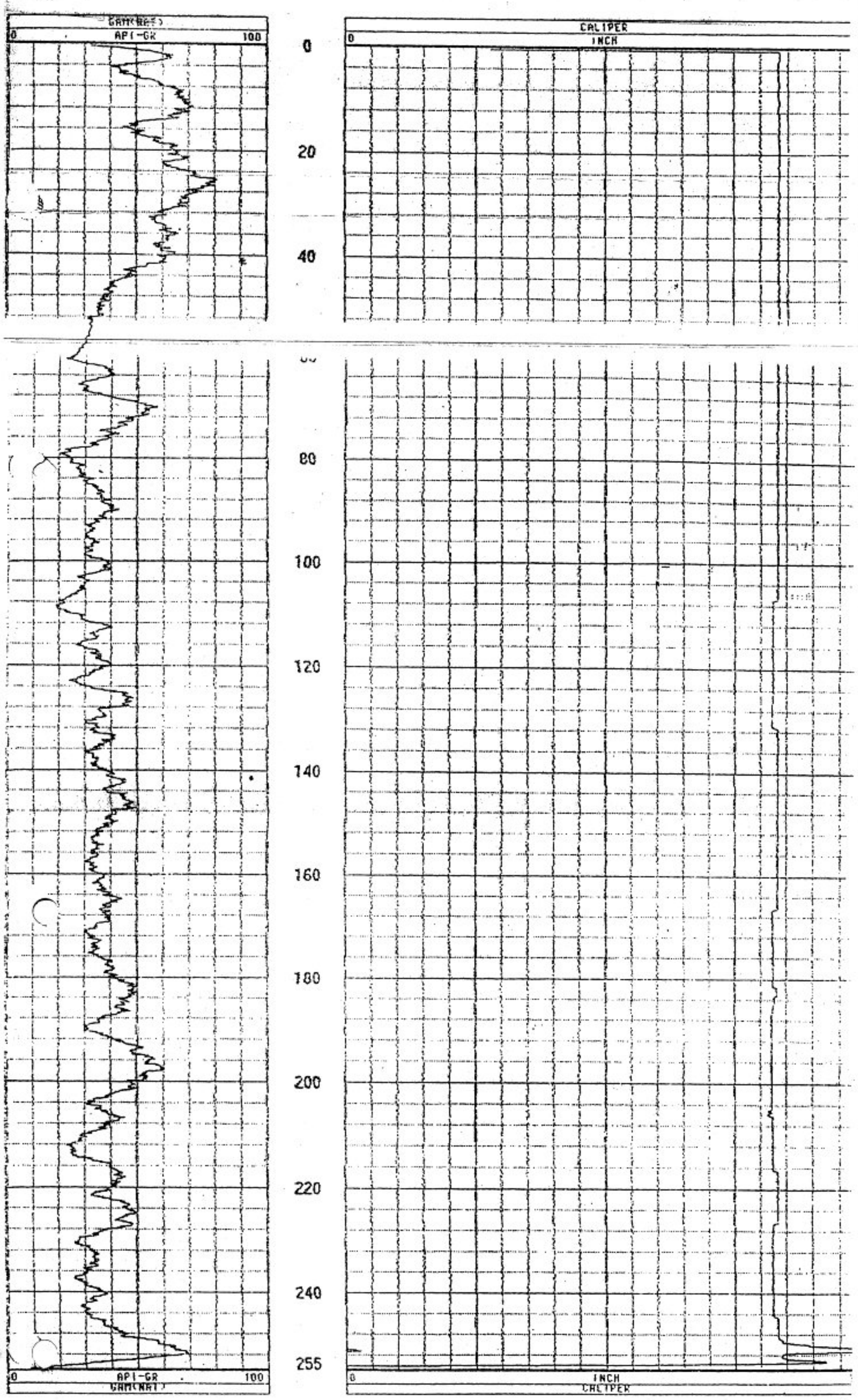
MATRIX DENSITY	:	1	Rm TEMPERATURE	:	-	LOG	: 8
FLUID DENSITY	:	-	MATRIX DELTA T	:	-	PLOT	: PANTEX
NEUTRON MATRIX	:	SANDSTONE	FLUID DELTA T	:	-	THRESH:	5M@800

REMARKS :

POST CONSTRUCTION LOGGING

OTHER SERVICES:
-
-
-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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API-GR
100
GAMMA RAY
0
INCH
CALIPER

CGGC

Century GEOPHYSICAL CORP.

PTX07-1P02

COMPANY	: JACOBS ENGINEERING			OTHER SERVICES:	
WELL	: PTX07-1P02			-	
LOCATION/FIELD	: PANTEX PLANT			-	
COUNTY	: -			-	
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	97/12/04	PERMANENT DATUM	: -	ELEVATIONS	
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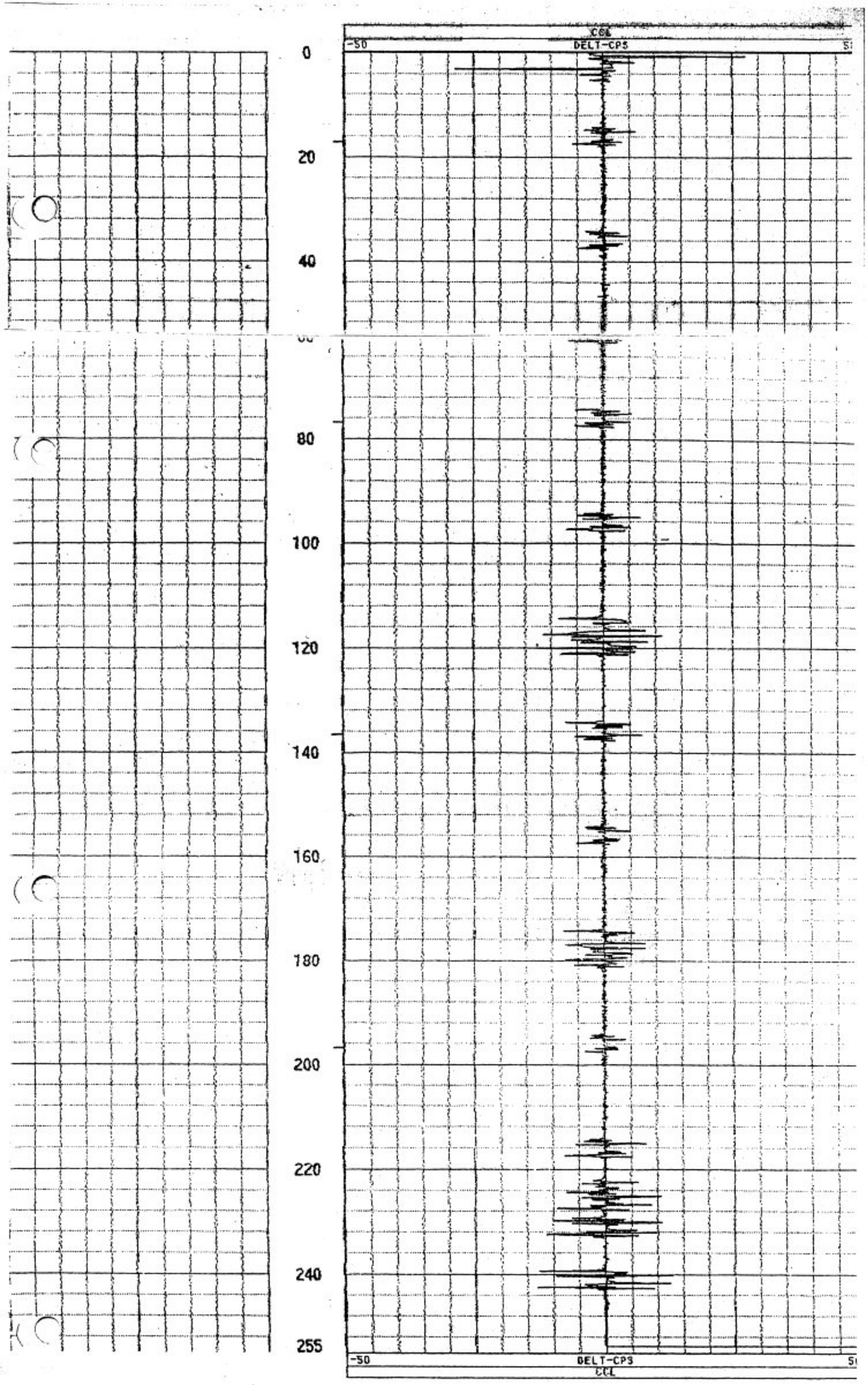
CASING DRILLER	: 254	LOGGING UNIT	: 9301		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .5	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: 8.5	BOREHOLE FLUID	: H20 AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9060A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 3
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEX 2
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

PRE-CONSTRUCTION LOGGING THROUGH DRILL PIPE

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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100
120
140
160
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200
220
240
255
-50
DELT-CPS
CCL

Century GEOPHYSICAL CORP.

PTX87-1PB2

COMPANY	: JACOBS ENGINEERING				
WELL	: PTX87-1PW2				
LOCATION/FIELD	: PANTEX PLANT				
COUNTY	: POTTER				
STATE	: TX				
SECTION	: -	TOWNSHIP	: -	RANGE	: -
DATE	: 07/27/94	PERMANENT DATUM	: -	ELEVATIONS	
DEPTH DRILLER	: 254	ELEV. PERM. DATUM	: -	KB	: -
LOG BOTTOM	: 253.60	LOG MEASURED FROM	: G.L.	DF	: -
LOG TOP	: -3.50	DRL MEASURED FROM	: G.L.	GL	: -
CASING DRILLER	: 254	LOGGING UNIT	: 9381		
CASING TYPE	: STEEL	FIELD OFFICE	: LAS VEGAS		
CASING THICKNESS	: .125	RECORDED BY	: DEREK SLOOP		
BIT SIZE	: -	BOREHOLE FLUID	: H20 AIR	FILE	: ORIGINAL
MAGNETIC DECL.	: 11	RM	: -	TYPE	: 9851A
MATRIX DENSITY	: 1	RM TEMPERATURE	: -	LOG	: 2
FLUID DENSITY	: -	MATRIX DELTA T	: -	PLOT	: PANTEXP 6
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: -	THRESH	: 500000

REMARKS :

POST CONSTRUCTION LOGGING

-

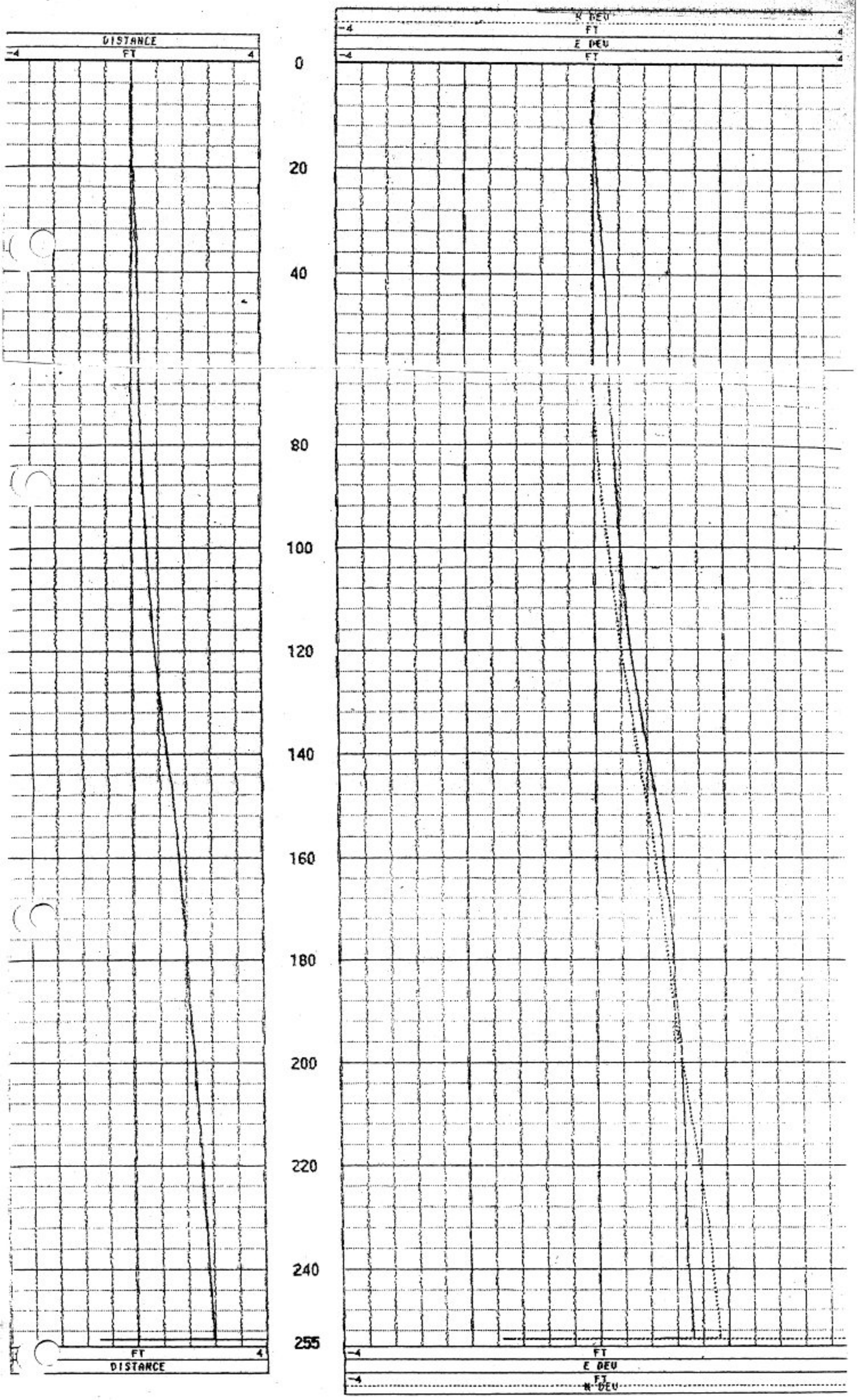
OTHER SERVICES:

-

-

-

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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20
40
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100
120
140
160
180
200
220
240
255
N DEV
E DEV

copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ION OWNER: *Confidentiality*
e Notice on Reverse Side
'12 PTx07-1P02 PTX07-1P02

State of Texas WELL REPORT

D.I.M.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

NER United States Dept. of Energy (Name) ADDRESS Pantex Plant (Street or RFD) Amarillo (City) Texas (State) 97117 (Zip)

ATION OF WELL:
nty Carson 17 miles in N.E. (NE, SW, etc.) direction from Amarillo, Texas (Town)

ust complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official or Half-Scale Texas County General Highway Map and attach the map to this form.

LEGAL DESCRIPTION:
Section No. 38 Block No M-4 Township _____ Abstract No. _____ Survey Name J. H. Gibson
Distance and direction from two intersecting section or survey lines _____

☐ SEE ATTACHED MAP

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check):
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Borec ☐ Air Rotary ☐ Cable Tool ☒ Other ARCH

6) WELL LOG:
Date Drilling: Started 7-6 19 94 Completed 7-17 19 94

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	254

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 215 ft. to 254 ft.

From (ft.) To (ft.) Description and color of formation material

From (ft.)	To (ft.)	Description and color of formation material
0	28	silty clay yellowish brown
28	59	sandy silts brownish yellow
59	78	silty sand light brown
78	193	sand pale brown
193	208	silty sand brownish yellow
208	215	gravelly sand pale brown
215	250	sand yellowish brown
250	254	silty w/ sand brown

(Use reverse side if necessary)

RECEIVED
AUG 17 1994
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4½	N	Stainless Steel Blank	+3	225	sch 5
4½	N	Stainless steel screen	225	250	0.010
4½	N	Stainless steel blank	250	253	sch. 5

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 0 ft. to 210 ft. No. of Sacks Used 60
210 ft. to 245 ft. No. of Sacks Used bentonite pellets 3-50#
Method used Tremied + pumped from 210'
Cemented by Water Development Corp.

10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) WATER LEVEL:
Static level 228 ft. below land surface Date 7-27-94
Artesian flow _____ gpm. Date _____

12) PACKERS: N/A Type Depth

13) TYPE PUMP:
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other Bennett Sampler
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) WELL TESTS:
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 6 gpm with 0 ft. drawdown after 1 hrs.

15) WATER QUALITY:
Did the drilling penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☒ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Water Development Corp. (Type or print) WELL DRILLER'S LICENSE NO. 3098-W

ADDRESS 1202 Kentucky Ave. (Street or RFD) Woodland (City) Ca. (State) 95766 (Zip)

(Signed) J. Miller Smith (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY

PTX07-1P03

Contractor: e^2m

Contract #: 873-004

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- _X_Draft
- _X_Final

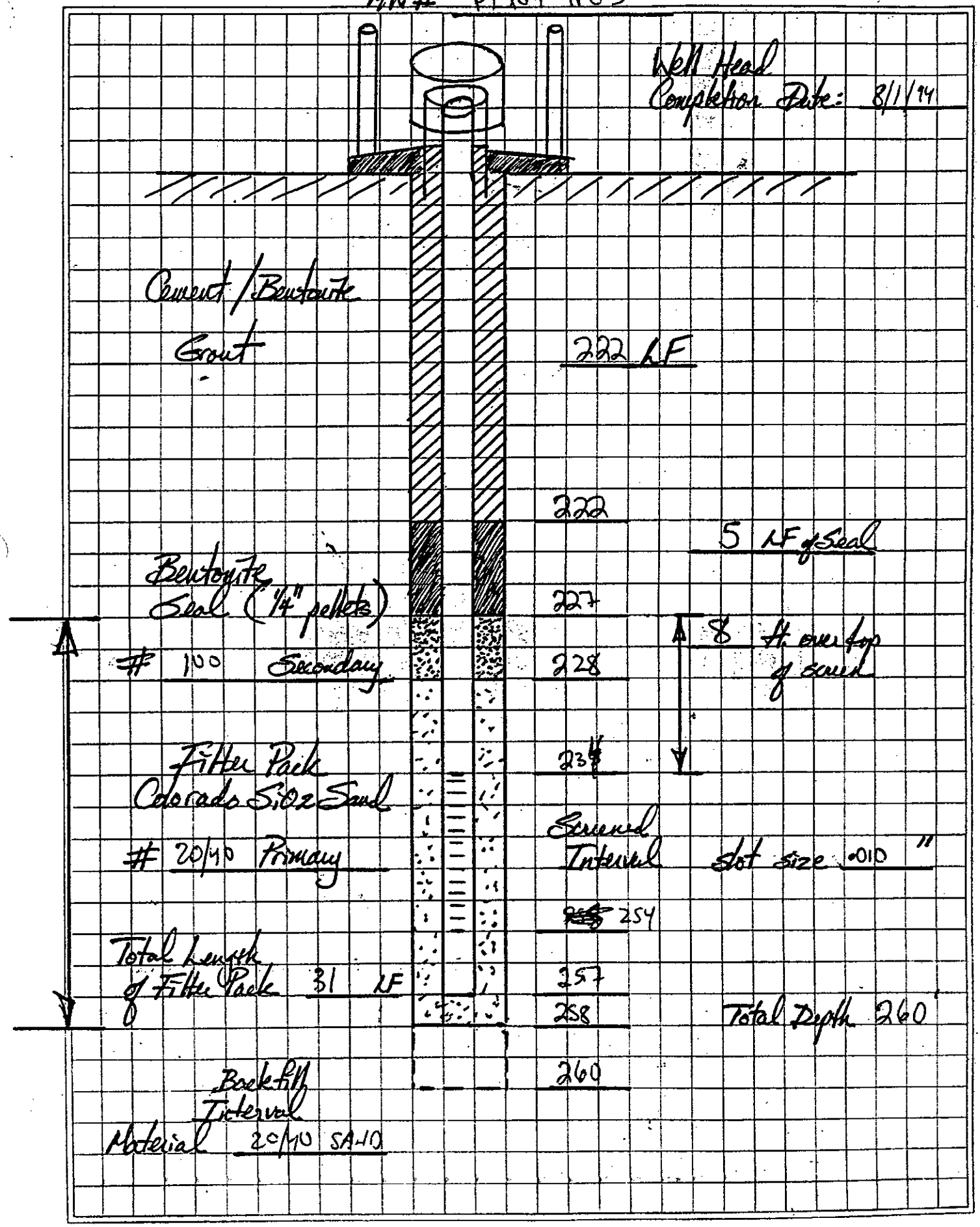
___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

_X_State Well Report

JACOBS ENGINEERING

DATE _____ SUBJECT Monitor Well Design SHEET NO. _____

BY _____ CHKD. _____ MW# PTX07-1803 JOB NO. _____

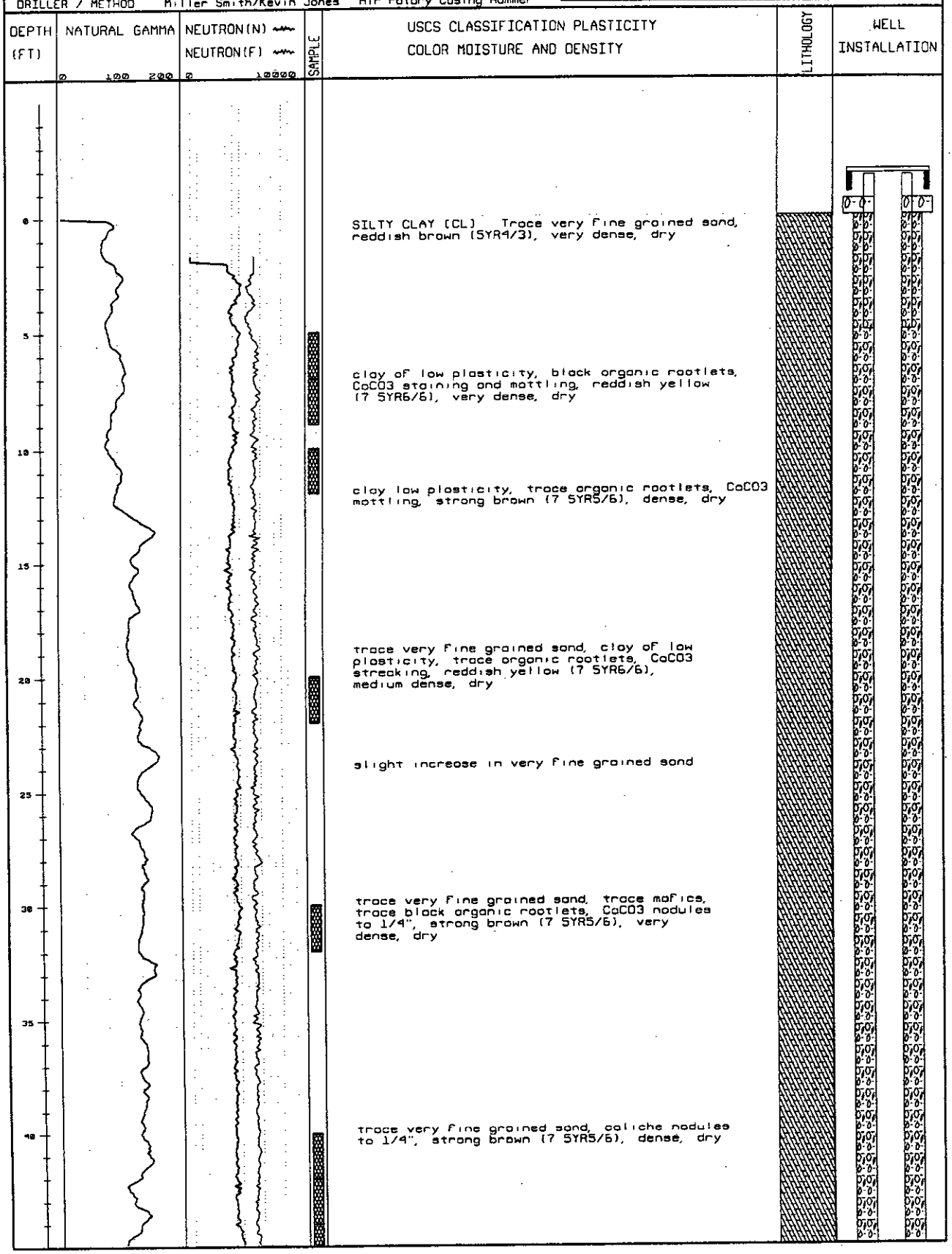


1P03 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotory Casing Hammer		

STATIC WATER LEVEL (BLS)		
WD=While Drilling AB=After Boring		
Depth(Ft)	248 54 AB	
Time	9 15	
Date	8-10-94	



PROJECT NUMBER 05E62903

1P03 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS
LOCATION	SWMU 68c LANDFILL 2
TOTAL DEPTH	260
COORDINATES / ELEV	636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)
DRILLING COMPANY	WATER DEVELOPMENT COMPANY
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotory Casing Hammer

RIG TYPE & NUMBER Dresser T70 W
GEOLOGIST

STATIC WATER LEVEL (SLS)
WD=While Drilling AB=After Boring

Depth(Ft)	248 39 AB	
Time	9 15	
Date	8-10-94	

DEPTH (FT)	NATURAL GAMMA 0 100 200	NEUTRON(N) NEUTRON(F) 0 10000	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
45				SANDY SILT [ML] Sand very fine grained, caliche nodules to 1/4", pink (7 5YR7/4), dense, dry		
50				sand very fine grained, silt low plasticity, trace mafics, FeOx staining, caliche nodules to 1/2", strong brown (7 5YR5/6), medium dense, dry		
55				increase in caliche nodules, interbedded silty clay seam approximately 4" encountered at 57' of low plasticity		
60				SILTY SAND [SM] Sand very fine grained, trace mafics, FeOx staining, CaCO3 nodules and cementation throughout, strong brown (7 5YR5/8) very dense, dry		
65						
70				sand very fine grained, significant caliche streaking, nodules present, trace mafics, caliche is pinkish white (5YR8/2), soil is strong brown (7 5YR5/8), very dense, cemented, dry		
75				interbedded caliche to 80', at 78' silt decreases, grading into cleaner very fine grained sand		
80				sand very fine grained, significant caliche streaking and cementing, reddish yellow (7 5YR6/6), dry		
85				grading into very fine sand, decrease in fines		
90				SAND [SP] Very fine grained, trace mafics, trace CaCO3 nodules to 1/2", reddish yellow (7 5YR6/6), dry		
				very fine grained, poorly graded, interbedded caliche nodules with trace low plasticity, clay nodules to 1/2", reddish yellow (7 5YR 7/8) loose, slightly damp		
				very fine grained, trace caliche nodules to 1/2"		

PROJECT NUMBER 05E62903

1P03 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME ARMY CORPS OF ENGINEERS
LOCATION SWMU 68c LANDFILL 2
TOTAL DEPTH 260
COORDINATES / ELEV 636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)
DRILLING COMPANY WATER DEVELOPMENT COMPANY
DRILLER / METHOD Miller Smith/Kevin Jones Air rotary Casing Hammer

RIG TYPE & NUMBER Dresser T70 W
GEOLOGIST

STATIC WATER LEVEL (BLS)		
WC=While Drilling AB=After Boring		
Depth(Ft)	248 54 AB	
Time	9 15	
Date	8-10-94	

DEPTH (FT) | NATURAL GAMMA 0 100 200 | NEUTRON(N) NEUTRON(F) 0 10000 | SAMPLE | USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY | LITHOLOGY | WELL INSTALLATION

95
100
105
110
115
120
125
130
135
140

very Fine grained, poorly graded, trace mafics, trace CaCO3 streaking, reddish yellow (7 5YR7/8) loose, dry

very Fine grained, poorly graded, trace sandstone nodules to 1/4", trace CaCO3 nodules to 1/2", reddish yellow (7 5YR7/6), loose, dry

slight increase in sandstone nodules to 1/2"

very Fine grained, poorly graded, sandstone nodules to 2", reddish yellow (7 5YR6/6), loose, dry

silt content increasing with depth

CLAY (CL) Cloy of low plasticity, very Fine grained sand, yellowish brown (10YR5/6), medium dense, dry

cloy of low to medium plasticity

increase in very Fine grained sand

SILTY SAND (SM) Very Fine grained, poorly graded, light yellowish brown (10YR6/4), dry

SAND (SP) Very Fine grained, poorly graded, FeOx staining, brownish yellow (10YR6/6), loose, dry

1P03 WELL LOG

JE JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	248 54 AB
Time	9 15
Date	8-10-94

DEPTH (FT)	NATURAL GAMMA	NEUTRON(N) NEUTRON(F)	SAMPLE	USCS CLASSIFICATION PLASTICITY COLOR MOISTURE AND DENSITY	LITHOLOGY	WELL INSTALLATION
145	0 100 200	0 10000				
150				very fine grained, poorly graded, very pale brown (10YR7/4), loose, dry, trace CaCO3 staining		
155				slight increase in grain size of sand to fine grained to a depth of 160'		
160				very fine grained, poorly graded, trace sandstone nodules to 1/4", yellow (10YR7/6), loose, dry to slightly damp		
165				slight increase in silts		
170				very fine grained, poorly graded, trace sandstone nodules to 1/2", very pale brown (10YR7/4), loose, dry		
175						
180				very fine grained, poorly graded, trace sandstone nodules to 1/2", dark yellow brown (10YR4/4), loose, slightly damp		
185				slight increase in sandstone nodules		
190				Fine grained, poorly graded, trace sandstone nodules to 1 1/2", slight CaCO3 streaking, trace mafics, brownish yellow (10YR6/6), loose, dry		

PROJECT NUMBER 05E62903

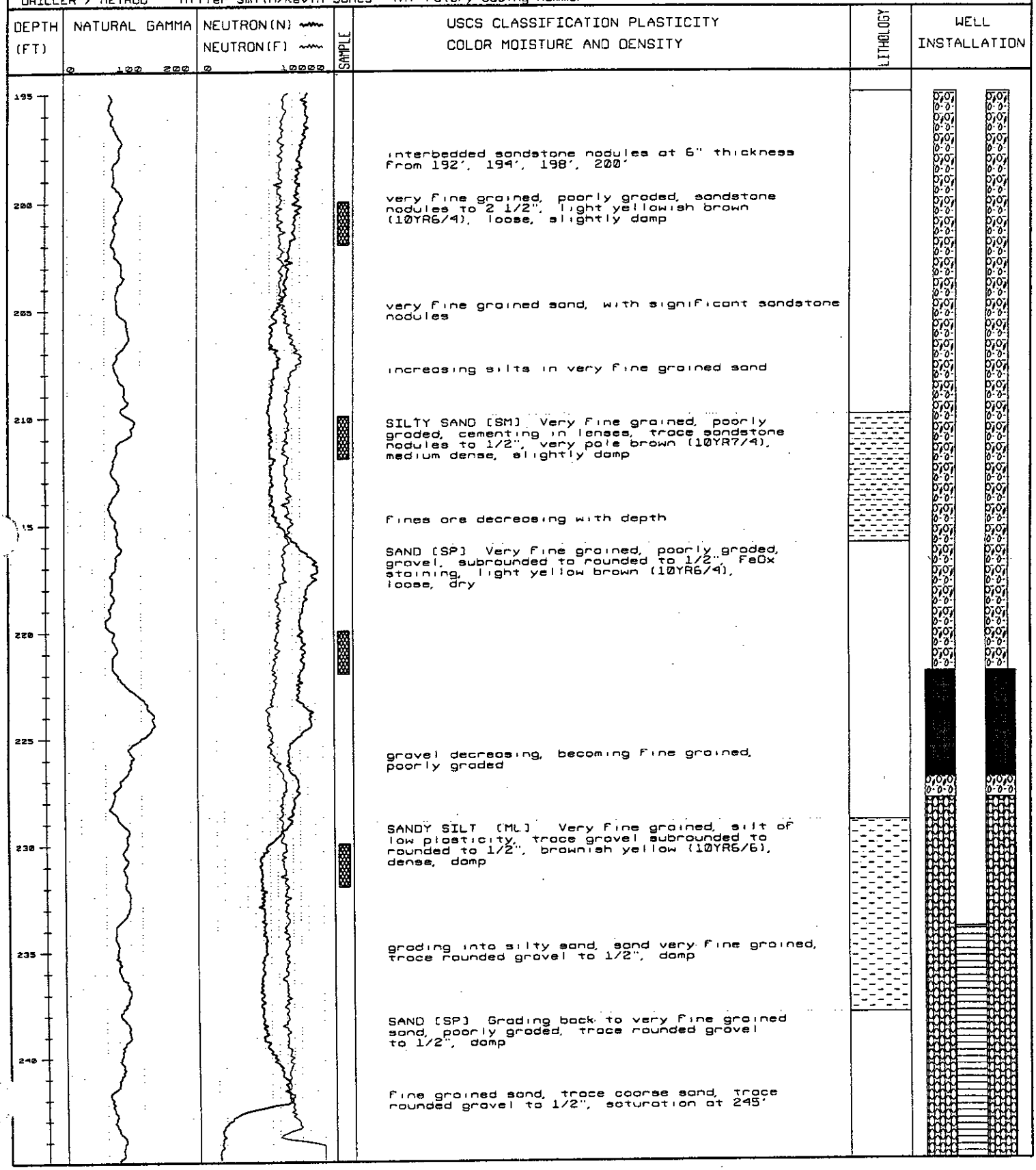
1P03 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotary Casing Hammer		

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	248 54 AB	
Time	9 15	
Date	8-10-94	



PROJECT NUMBER 05E62903

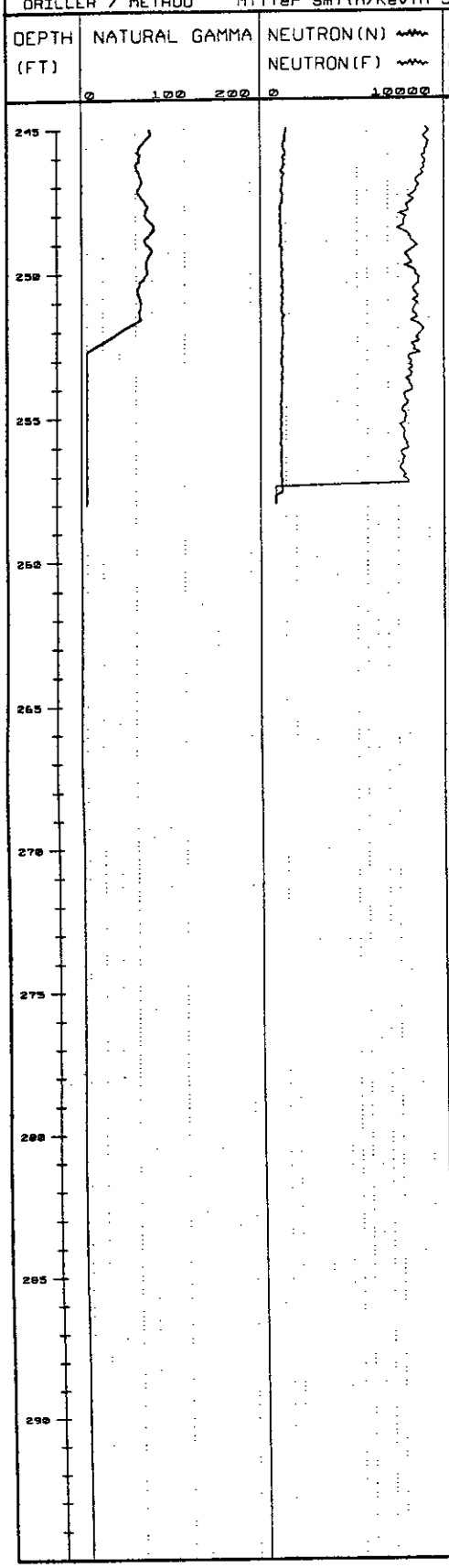
1P03 WELL LOG

JACOBS ENGINEERING

PROJECT NAME	ARMY CORPS OF ENGINEERS	RIG TYPE & NUMBER	Dresser T70 W
LOCATION	SWMU 68c LANDFILL 2	GEOLOGIST	
TOTAL DEPTH	260		
COORDINATES / ELEV	636938 46 EAST 3762755 25 NORTH 3542 40 (FT MSL)		
DRILLING COMPANY	WATER DEVELOPMENT COMPANY		
DRILLER / METHOD	Miller Smith/Kevin Jones Air rotory Casing Hammer		

STATIC WATER LEVEL (BLS)
WD=While Drilling AB=After Boring

Depth(Ft)	248 54 AB
Time	9 15
Date	8-10-94



USCS CLASSIFICATION PLASTICITY
COLOR MOISTURE AND DENSITY

very fine grained, poorly graded sand, trace low plasticity, clay/silt nodules, brownish yellow (10YR6/6), saturated

very fine grained sand, poorly graded, trace coarse sand, trace clay/silt nodules, brownish yellow (10YR6/6), saturated

soil drying out to moist

SILT (ML) Very fine grained, silt of slight plasticity, light reddish brown (5YR6/4), very dense, slightly damp

LITHOLOGY

WELL INSTALLATION

PROJECT NUMBER 05E62903

Hole No. PTX07-1P03

DRILLING LOG | DIVISION: TULSA | INSTALLATION: PANTEX | SHEET 1 OF 7 SHEETS

1. PROJECT: COE LANDFILLS RFI
2. LOCATION (Coordinates or Station):
3. DRILLING AGENCY: WATER DEVELOPMENT
4. HOLE NO. (As shown on drawing title and file number): PTX07-1P03
5. NAME OF DRILLER: KEVIN JONES / MILLER SMITH
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN:
8. DEPTH DRILLED INTO ROCK:
9. TOTAL DEPTH OF HOLE:
10. SIZE AND TYPE OF BIT: 8 5/8 TRICONE
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: DRESSER T70-W ARCH RIG
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 7/19/94 COMPLETED 7/26/94
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR:

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
						D = DISTURBED UD = UNDISTURBED P = PHYSICAL ANALYSIS C = CHEMICAL ANALYSIS
	2'		SILTY CLAY, silts at 25-30%, trace v.f.gr sands at <5%, 5YR 4/3 reddish brown, very dense, dry.			
	4					
	6				UD	SHELBY TUBE #1 + BULK PTX07-1P03-2005 t=0910
			SILTY CLAY, silts at 35%, clay of low plasticity, black organic rootlets throughout, $CaCO_3$ staining and mottling throughout, 7.5YR 6/6 reddish yellow, very dense, dry.		P	
	8				D	SPLIT SPOON #1 PTX07-1P03-2006 t=0915 P.I.D=0.0
					C	
	10'				D	SPLIT SPOON #2 PTX07-1P03-2010 t=0945 P.I.D=0.0
	12		SILTY CLAY, silts at 30-35%, clay low plasticity, trace organic rootlets, $CaCO_3$ mottling throughout, 7.5YR 5/6, strong brown, dense, dry.		C	
	14	CL				LITHOLOGIC GRAB @ 15' t=0955
			15' GRAB AS ABOVE, no change.			
	16					
	18					
	20'		SILTY CLAY, silts at 25%, trace v.f.gr. sands, clay of low plasticity, trace organic rootlets, $CaCO_3$ streaking, 7.5YR 6/6 reddish yellow, med dense, dry.		D	SPLIT SPOON #3 PTX07-1P03-2020 +BULK t=1015 P.I.D=0.0
	22				P+C	
	24		As above w/slight increase in v.f.gr sands from trace to <5%.			LITHOLOGIC GRAB @ 25' t=1045
	26					
	28'					

PIPE SEQUENCE: 5/1 — 5' — 5/2 — 10' — 10/1 — 20' — 10/2

PROJECT: COE LANDFILLS RFI | HOLE NO. PTX07-1P03

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	PIPE SEQUENCE
	30'		SILTY CLAY, silts at 25%, trace v.f.gr sands at <5%, trace mafics, trace black arsenic rootlets, $CaCO_3$ nodules to 1/4", 7.5YR 5/6 strong brown, very dense, dry.		D	SPLIT SPOON #4	14/2
	32'				C	PT107-1P03-2030	
	34'					t= 1220 PID=0.0	
	36'		As above w/increase in silts to 35%.				
		CL					
	38						
	40				VO	SHELBY TUBE #2	40'
	42		SILTY CLAY, SILTS AT 30%, trace v.f.gr sands at 8-10%, caliche nodules throughout to 1/4". 7.5YR 5/6 strong brown, dense, dry.		P	PT107-1P03-2040 rblwk	
						t= 1300	
	44				VO	SHELBY TUBE #3	10/4
					P	PT107-1P03-2040-QA/QC rblwk	
	46		* Shelby tubes difficult to collect at this interval due to density of soils collapsing shelby tubes in hole.			t= 1315 (TUBE COLLAPSED) *	
					D	SPLIT SPOON #5	
	48		GRADING INTO SANDY SILTS, sands v.f.gr at 25-30%, caliche nodules to 1/4", 7.5YR 7/4 pink, dense, dry		C	PT107-1P03-2040	
						t= 1320 PID=0.0	
	50				D	SPLIT SPOON #6	50'
						~~PT107-1P03~~	
	52	ML	SANDY SILT, sand v.f.gr, SANDS AT 35%, silt low plasticity, trace mafics, FeOx staining, caliche nodules to 1/2". 7.5YR 5/6 strong brown, med dense, dry.			t= 1340 PID=0.0	
	54						10/5
						LITHOLOGIC GRAB @ 55'	
	56					t= 1435	
			55' GRAB As above w/increase in caliche nodules, interbedded silty clay seam appx 4" encountered at 57' of low plasticity.				
	58						
	60		SILTY SAND, sand v.f.gr, silts at 30-35%, trace mafics, FeOx staining, $CaCO_3$ nodules and cementation throughout. 7.5YR 5/8, strong brown, very dense, dry.		D	SPLIT SPOON #7	60'
	62					t= 1500 PID=0.0	
	64						10/6
						LITHOLOGIC GRAB @ 65'	
	66		ditto CHANGE			t= 1530	
	68						

PROJECT COE LANDFILLS RFI

HOLE NO. PT107-1P03

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	PIPE SEQUENCE
	70'						10/6
					D	SPLIT SPOON #8	70'
	72				C	PT107-1103-2070	
					D	t = 1540 PID = 2.0	
	74					SPLIT SPOON #9	
					C	PT107-1103-2070	10/7
	76	SM	SILTY SAND, sand v.f.gr. silt at 35%, significant caliche streaking, and nodules present throughout, trace mafics, caliche is 5YR 8/2 pinkish white, soil is 7.5YR 5/8 strong brown. very dense, cemented, dry.			t = 1545 PID = 0.0	
			- interbedded caliche as above down to 80'. At 78' silt decreases to 20%. Grading into cleaner v.f.gr. Sand.			LITHOLOGIC GRAB @ 75'	
	78					t = 1610	
	80'		SILTY SAND, SAND v.f.gr, silt at 35%, significant caliche streaking and concentrations, 7.5YR 6/6 reddish yellow, dense, dry.		D	SPLIT SPOON #10	80'
	82					t = 0800 PID = 0.0	
						*80' DEVIATION TEST = 1°	
			grading into v.f.gr sand/decrease in fines				10/8
	84						
			SAND, v.f.gr, silts at 10-12%, trace mafics, trace $CaCO_3$ nodules to 1/2", 7.5YR 6/6 reddish yellow, dry.			LITHOLOGIC GRAB @ 85' t = 0825	
	86						
	88						
	90'		SAND, v.f.gr, poorly graded, silts at 10-12%, bottom 1½' of spoon uniform, top 1/2' of spoon interbedded caliche nodules w/trace low plastic clay nodules to 1/2". 7.5YR 7/8, reddish yellow, loose, sl. damp.		D	SPLIT SPOON #11	90'
	92					t = 0845 PID = 0.0	
	94		SAND, v.f.gr, uniform to 100' trace caliche nodules to 1/2" color as above.			LITHOLOGIC GRAB @ 95' t = 0905	10/9
	96	SP					
	98						
	100'		SAND, v.f.gr, poorly graded, uniform throughout trace mafics trace slight $CaCO_3$ streaking, 7.5YR 7/8, reddish yellow, loose, dry.		D	SPLIT SPOON #12	100'
	102					t = 0930 PID = 0.0	
	104		As above, fines at <5%. poorly graded "beach" type sand			LITHOLOGIC GRAB @ 105' t = 0955	10/10
	106						
	108						

PROJECT CDF LANDFILL RFI

HOLE NO. PT107-1103-

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	FIELD SEQUENCE
	110'		SAND, v.f.gr., poorly graded, uniform, trace sandstone nodules to 1/4", trace $CaCO_3$ nodules to 1/2", 7.5YR 7/6, reddish yellow, loose, dry.		D	SPLIT SPOON #13 t= 1015 PID=0.0	10/10 110'
	112						
	114		Slight increase in sandstone nodules to 1/2", as above.				
	116				X	LITHOLOGIC GRAB @ 115' t= 1035	10/11
	118	SP					
	120'		SAND, v.f.gr, poorly graded, sandstone nodules throughout to 2", silts at <10%., 7.5YR 6/6 reddish yellow, loose, dry.		D	SPLIT SPOON #14 t= 1215 PID=0.0	120'
	122'						
	124						
	125'		125' GRAB v.f.gr sand as above		X	LITHOLOGIC GRAB @ 125' t= 1230	10/12
	126		126' silt content increasing w/depth				
	128	CL	Clay w/silt & sands, clay of low plasticity, 20% fines, 10% v.f.gr sands, 10YR 5/6 yellowish brown, med dense, dry.				
	130'		130' spoon as above w/thin 1/2" interbedded v.f.gr sand seams. clay of low to med. plasticity.		D	SPLIT SPOON #15 t= 1255 PID=0.0	130'
	132						
	134		135' As above w increase in sands v.f.gr to 25%.				
	136		increasing v.f.gr sands.		X	LITHOLOGIC GRAB @ 135' t= 1310	10/13
	138	SM	SILTY SAND, sand v.f.gr, poorly graded silts at 25%, 10YR 6/4 light yellowish brown, dry.				
	140'						140'
	142	SP	SAND, v.f.gr, poorly graded, uniform <10%. Fines FeOx staining throughout, 10YR 6/6 brownish yellow, loose, dry.			SPLIT SPOON #16 t= 1330 PID=0.0	
	144		*(DISREGARD)*				10/14
	146	SP	Gravelly sand, sand v.f.gr. poorly graded, gravels rounded to 1 1/2". silts <10%, 10YR 6/6 brownish yellow, dry.		X	LITHOLOGIC GRAB @ 145' t= 1400	
	148						

PROJECT [illegible]

HOLE NO. DH17 - 1DA3

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	150'		SAND, v.f.gr, poorly graded, uniform silts at <10%., 10YR 7/4 very pale brown, loose, dry. trace $CaCO_3$ staining on upper portion of spoon.		UD	DEVIATION TEST @ 150' = 1°
	152				P	SHELBY TUBE t = 1450 PT107 - IP03 - 2150
	154				D	SPLIT SPOON #17 t = 1500 P10 = 0.0
	156		Slight increase in grainsize of sand to f.gr. to a depth of 160' uniformity of soil to 160'.		C	PT107 - IP03 - 2150
	158					LITHOLOGIC GRAB @ 155' t = 1510
	160'		SAND, v.f.gr, poorly graded, silts at 5-8%. trace sandstone nodules to 1/4", 10YR 7/6, yellow. loose, dry to sl. damp.		D	SPLIT SPOON #18 t = 1535 P10 = 0.0
	162					
	164		As above, slight increase in silts to 8-10%. uniform soil to a depth of 170'.			LITHOLOGIC GRAB @ 165' t = 1555
SP	166					
	168					
	170'		SAND, v.f.gr, poorly graded, silts at <10%, trace sandstone nodules to 1/2", 10YR 7/4 very pale brown, loose, dry.		D	SPLIT SPOON #19 t = 1605 P10 = 0.0
	172					
	174		As above to 180' uniform throughout silts <10%.			LITHOLOGIC GRAB @ 170' t = 1630
	176					
	178					
	180'		SAND, v.f.gr, poorly graded, uniform silts at 10%. trace sandstone nodules to 1/2", 10YR 4/4 dark yl. brown, loose, sl. damp			SPLIT SPOON #20 t = 0805 P10 = 0.0
	182					
	184		As above w/slight increase in sandstone nodules near 187'-188'			LITHOLOGIC GRAB @ 185' t = 0835
	186					
	188					

PIPE SEQUENCE

10/14

150

10/15

160'

10/16

170'

10/17

180'

10/18

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PAGE 5 of 7

PROJECT

HOLE NO.

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	190'		SAND, f.gr, poorly graded, silts at 10%, trace sandstone nodules to 1 1/2", slight $CaCO_3$ staining, trace mafics, 10YR 6/6 brownish yellow, loose, dry.		D	SPLIT SPOON # 21 T= 0845 PID=0.0
	192					
	194		As above w/interbedded sandstone nodules at 6" thickness from 192', 194', 198', 200'.			LITHOLOGIC GRAB @ 195' T= 0905
	196					
	198	SP				
	200'		SAND, v.f.gr, poorly graded, silts at <10%, sandstone nodules throughout to 2 1/2". 10YR 6/4 lt. yell. brown, loose, sl. damp.		D C	DEVIATION TEST @ 200' = <1° SPLIT SPOON # 22 PT107 - IP03 - 2200 T= 0950 PID=0.0
	202					
	204		f,f-sr sand as above w/significant sandstone nodules from 204'-206'			LITHOLOGIC GRAB @ 205' T= 1010 ~~TD=~~ TNB
	206					
	208'		208' INCREASING SILTS IN v.f.gr sands.			
	210'		SILTY SAND, sand v.f.gr, poorly graded silts at 25-30%, cementing in lenses, trace sandstone nodules to 1/2". 10YR 7/4 very pale brown, med dense, sl. damp.		D C	SPLIT SPOON SAMPLE # 23 T= 1035 PID= 0.0 PT107 - IP03 - 2210
	212	SM				
	214		215' GRAB Fines are decreasing w/depth			LITHOLOGIC GRAB @ 215 T= 1225
	216					
	218		GRADING INTO v.f.gr, poorly graded gravelly sand, gravels are s-rounded to well rounded, silts at 10%.			
	220'		GRAVELLY SAND, sand v.f.gr, poorly graded, silt at 10-12%, gravels subrounded to rounded to 1/2". FeOx staining, 10YR 6/4 lt. yellowish brown, loose, dry.			SPLIT SPOON # 24 T= 1250 PID= 0.0 PT107 - IP03 - 2220
	222	SP				
	224		As above at 225', gravels decreasing at 226' becoming fine grained, poorly graded sands to 230'. <10% fines.			LITHOLOGIC GRAB @ 225' T= 1310
	226					
	228					

PIPE SEQUENCE: 10/18 @ 190' · 10/19 @ 200' · 10/20 @ 210' · 10/21 @ 220' · 10/22

PROJECT POLLANDFILL RFI

HOLE NO. PTV07-IP03

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
		SP	SLIGHT INCREASE IN SILTS			
	230'	ML/SM	SANDY SILT, sand v.f.gr, sand at 25%, silt of low plasticity, trace gravels subrounded to rounded to 1/2". 10YR 6/6 brownish yellow, dense, damp.		D	SPLIT SPOON #25 t=1335 PID=0.0
	232					
	234					
	236					LITHOLOGIC GRAB @ 235' t=1355
	238		235' GRADING INTO SILTY SAND, SAND v.f.gr, silts at 30-40%. trace rounded gravels to 1/2", damp			
	240'	SP	238' GRADING BACK TO v.f.gr SAND poorly graded, silts at 10-12%, trace rounded gravels to 1/2". damp.			LITHOLOGIC GRAB @ 240' t=1400
	242		f.gr sand silts at 10%, trace coarse sand at <10%, trace rounded gravels to 1/2". saturation at 245'			
	244					
245' - WL						LITHOLOGIC GRAB @ 245' t=1430
	246		246' - v.f.gr to f.gr poorly graded sand, silts at 10% uniform to 250' trace low plastic clay/silt nodules. 10YR 6/6 brownish yellow, saturated.			
	248					
	250'		250' - v.f.gr sands, poorly graded, silts at 10-12%. trace coarse sand, trace clay/silt nodules, 10YR 6/6 brownish yellow, saturated.			LITHOLOGIC GRAB @ 250' t=1440
	252					
	254		SOIL DRYING OUT TO MOIST.			
CONFINING LAYER @ 254'	256	ML	SILT W/SAND, sand v.f.gr, sands at 15-20%. silt of slight plasticity, 5YR 6/4, light reddish brown, very dense, sl. damp.			
	258					
	260'					DEVIATION @ 260' = <1°
TD HOLE @ 260'	262'		NO RECOVERY ON SHELBY TUBE, DENSE FORMATION TUBE CRUSHED. COLLECT BULK BAG.		UP P D C	~~SPLIT SPOON #25~~ SHELBY TUBE + BULK t=1530 SPLIT SPOON #25 + TBEG t=1545 PID=0.0 PTX07-1P03-2260

PIPE SEQUENCE: 10/23 — 230' — 10/24 — 240' — 10/25 — 250' — 10/26 — 260' — 262'

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PAGE 7 OF 7

PROJECT ROCKY FLATS LANDFILL RFI

HOLE NO. PTX07-1P03

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side* PTK01-1P03

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER United States Dept. of Energy (Name) ADDRESS Pantex Plant Amarillo Texas 97117 (Street or RFD) (City) (State) (Zip)

2) LOCATION OF WELL:
County Carson 17 miles in N.E. (NE, SW, etc.) direction from Amarillo, Texas (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**
Section No. 39 Block No. M4 Township _____ Abstract No. _____ Survey Name P.I.M. T.&G. Gibson
Distance and direction from two intersecting section or survey lines _____

☐ **SEE ATTACHED MAP**

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):**
☐ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☒ Other AR/H

6) **WELL LOG:**
Date Drilling: Started 7-19 1994 Completed 7-26 1994

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
10"	Surface	260

From (ft.)	To (ft.)	Description and color of formation material
0	45	Sandy clay reddish yellow
45	59	Sandy silt brown
59	84	Silty sand brown
84	127	Sand reddish yellow
127	136	Clay w/silt + sand yellowish brown
136	140	Silty sand yellowish brown
140	144	Sand reddish yellow
144	148	Gravelly sand brownish yellow
148	209	Sand brownish yellow
209	216	Silty sand pale brown

(Use reverse side if necessary)

RECEIVED
AUG 7 1994
TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 227 ft. to 260 ft.

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4½	N	Stainless Steel blank	+3	234	sch. 5
4½	N	Stainless Steel screen	234	254	0.010
4½	N	Stainless Steel blank	254	257	sch 5

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 0 ft. to 222 ft. No. of Sacks Used 70
222 ft. to 227 ft. No. of Sacks Used Bentonite pellets 3-50#
Method used Tremied & pumped from 222'
Cemented by Water Development Corp.

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 245.2 ft. below land surface Date 8-2-94
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N/A Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☒ Other Bennett Sampler
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☒ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: 6 gpm with 0 ft. drawdown after 2 hrs.

15) **WATER QUALITY:**
Did the drilling penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Water Development Corp (Type or print) WELL DRILLER'S LICENSE NO. 3098W

ADDRESS 1202 Kentucky Ave (Street or RFD) Woodland (City) Ca. (State) 95766 (Zip)

(Signed) J. Miller Smith (Licensed Well Driller) (Signed) _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 09/21/88)

TEXAS WATER COMMISSION COPY

PTX07-1P04

Contractor: e^2m

Contract #: 873-004

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

___Lithologic Logs
- ___Draft
- ___Final

___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

Table 2-1
Extraction Well Data Information

EXTRACTION WELLS

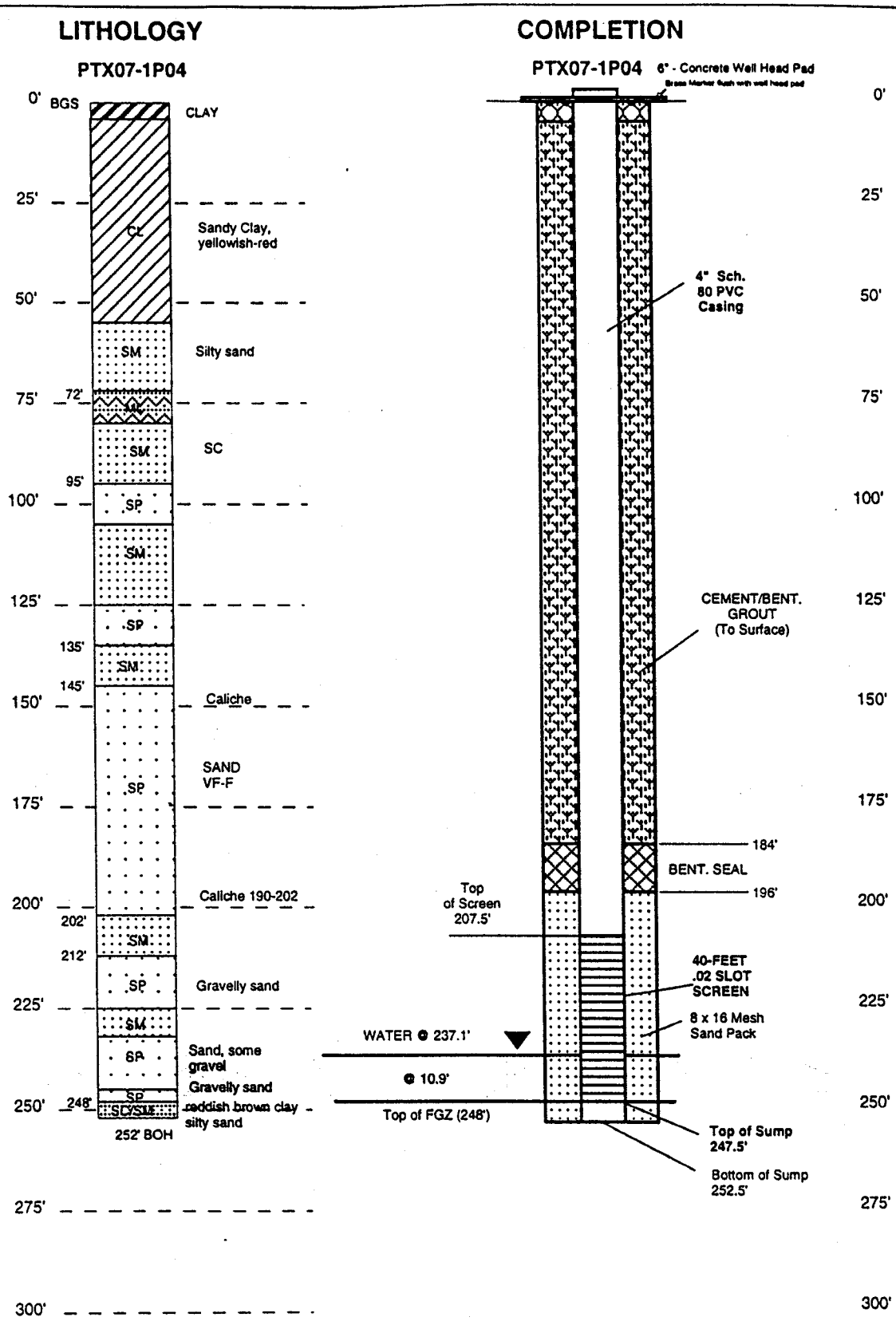
Data	PTX06-EW-16	PTX06-EW-17	PTX06-EW-18	PTX06-EW-19
EASTING	643,801.695	643,801.018	643,731.318	643,797.501
NORTHING	3,759,993.018	3,760,200.185	3,760,496.473	3,760,790.284
ELEVATION (Brass Marker)	3,537.394	3,537.712	3,537.790	3,538.137
TOP OF CASING	3,539.784	3,540.142	3,540.050	3,540.357
WELL DIAMETER	6-inch	6-inch	6-inch	6-inch
TOTAL DEPTH	283	280	281	280
DEPTH TO FGZ	280	276	280	277
INITIAL WATER LEVEL	258.6	256.6	257.6	256.0
SATURATED THICKNESS	21.4	19.4	22.4	21.0
TOP OF SCREEN	236	234	235	235
BOTTOM OF SCREEN	276	274	275	275
SCREEN SLOT SIZE	0.02	0.02	0.02	0.02
PUMP (HP)	1.5	1.0	1.0	1.5
PUMP SETTING	276	274	275	275

PIEZOMETERS

Data	PTX06-PZ05	PTX06-PZ06
EASTING	643,817.918	643,801.376
NORTHING	3,756,361.904	3,760,094.073
ELEVATION (Brass Marker)	3,532.717	3,537.601
TOP OF CASING	3,535.077	3,539.851
WELL DIAMETER	2-inch	2-inch
TOTAL DEPTH	285	280
DEPTH TO FGZ	279	279
INITIAL WATER LEVEL	256.5	265.0
SATURATED THICKNESS	22.5	14.0
TOP OF SCREEN	240	235
BOTTOM OF SCREEN	280	275
SCREEN SLOT SIZE	0.02	0.02

MONITORING WELLS

	Landfill 1		**Landfill 2**	
Data	PTX07-1O04	PTX07-1O05	PTX07-1P04	PTX07-1P05
EASTING	638,749.149	638,880.172	637,236.901	637,136.131
NORTHING	3,767,983.837	3,768,126.292	3,763,011.467	3,762,886.825
ELEVATION (Brass Marker)	3,548.214	3,547.721	3,538.337	3,540.809
TOP OF CASING	3,550.634	3,550.291	3,540.717	3,543.269
WELL DIAMETER	4-inch	4-inch	4-inch	4-inch
TOTAL DEPTH	259	259	252.5	253
DEPTH TO FGZ	255	255	248	250
INITIAL WATER LEVEL	249.5	248.8	237.1	240.6
SATURATED THICKNESS	5.5	6.3	10.9	9.4
TOP OF SCREEN	214	214	207.5	208
BOTTOM OF SCREEN	254	254	247.5	248
SCREEN SLOT SIZE	0.02	0.02	0.02	0.02



Pertinent Well Data:

Start Date: 9/24/98	Drilling Company: Water Development Corp.	Elevation: 3540.72' (V-Notch on Well Head)	Easting (x): 637236.90
Finish Date: 9/26/98	Driller: K. Thatcher	Elevation: 3538.34' (Brass Plate in Concrete Pad)	Northing(y): 3763011.47
Location: Pantex Landfill 2	Method: Air Rotary Casing Hammer - ARCH	10" Hole Depth: 252.5'	On-Site Geologist: J. Hoyt (MAXIM)
Amarillo, Texas	Depth to Water: 237.1	12" Hole Depth: 0'	Project Manager: D.T. Brownlow (e2M)
		14" Hole Depth: 0'	Contract No.: BOA873-004

Special Note: X,Y,Coordinates represent exact location of the Brass Plate in well head concrete pad

Title:	e²M	Figure 2-10
PTX07-1P04 (Monitoring Well) Lithologic & Completion Schematics		Drawn By: DTB Date: 11/05/98 Project No.: 873-004

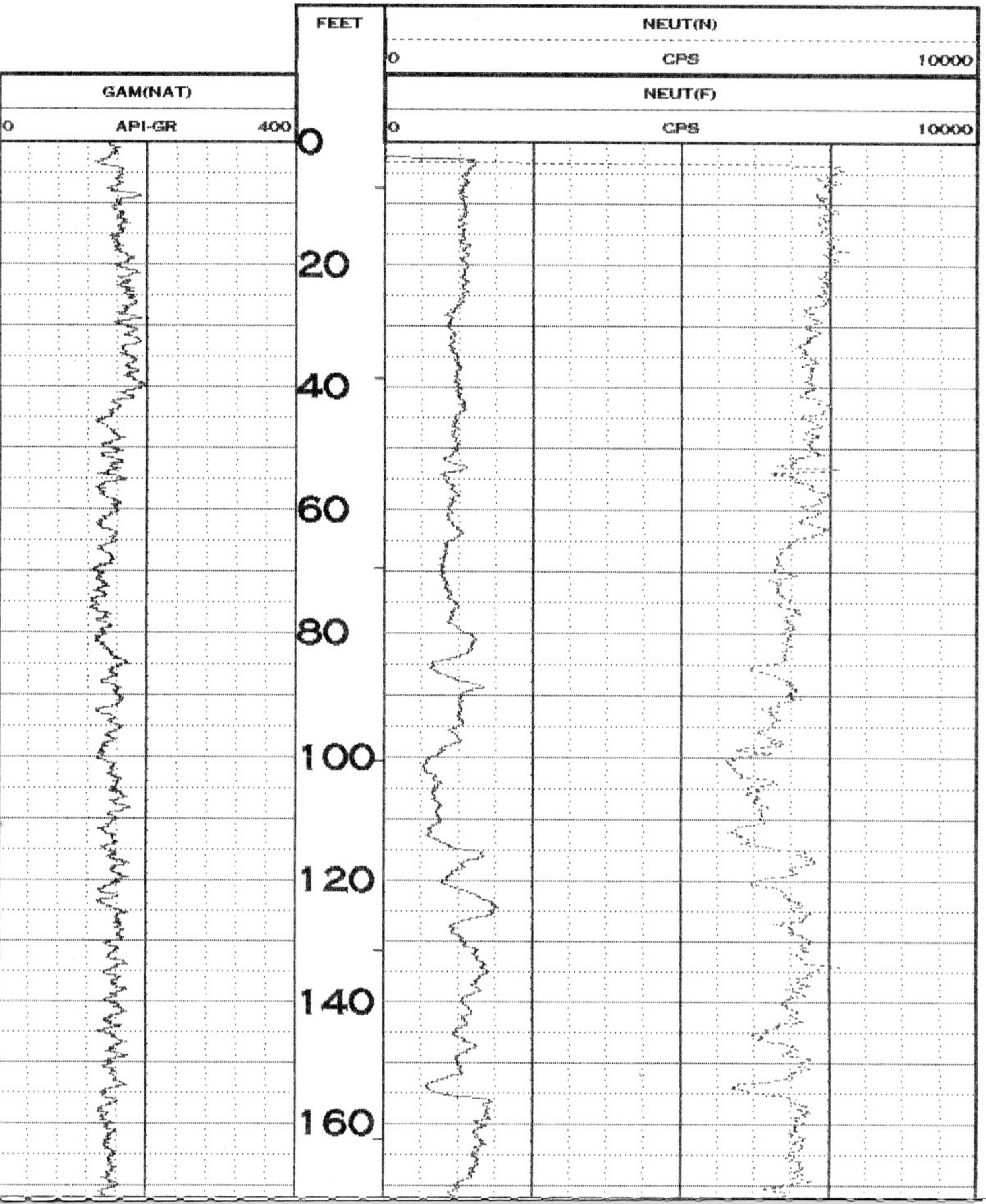
CGC

Century GEOPHYSICAL CORP.

PTX07-1P04

COMPANY	: E2M			OTHER SERVICES:	
WELL	: PTX07-1P04				
LOCATION/FIELD	: Pantex				
COUNTY	: Carson				
STATE	: TX				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 10/07/98	PERMANENT DATUM	:		
DEPTH DRILLER	: 300			EB	:
LOG BOTTOM	: 252.30	LOG MEASURED FROM:	GL	DF	:
LOG TOP	: -4.80	DRL MEASURED FROM:	G.L.	GL	:
CASING DIAMETER	: 4	LOGGING UNIT	: 9608		
CASING TYPE	: pvc	FIELD OFFICE	: ELKO		
CASING THICKNESS:		RECORDED BY	: Federwisch		
BIT SIZE	: 9	BOREHOLE FLUID	: water	FILE	: ORIGINAL
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9072A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Sandstone	MATRIX DELTA T	: 140		
				THRESH:	4000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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CPS
10000
GAM(NAT)
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NEUT(F)
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CPS
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80
100
120
140
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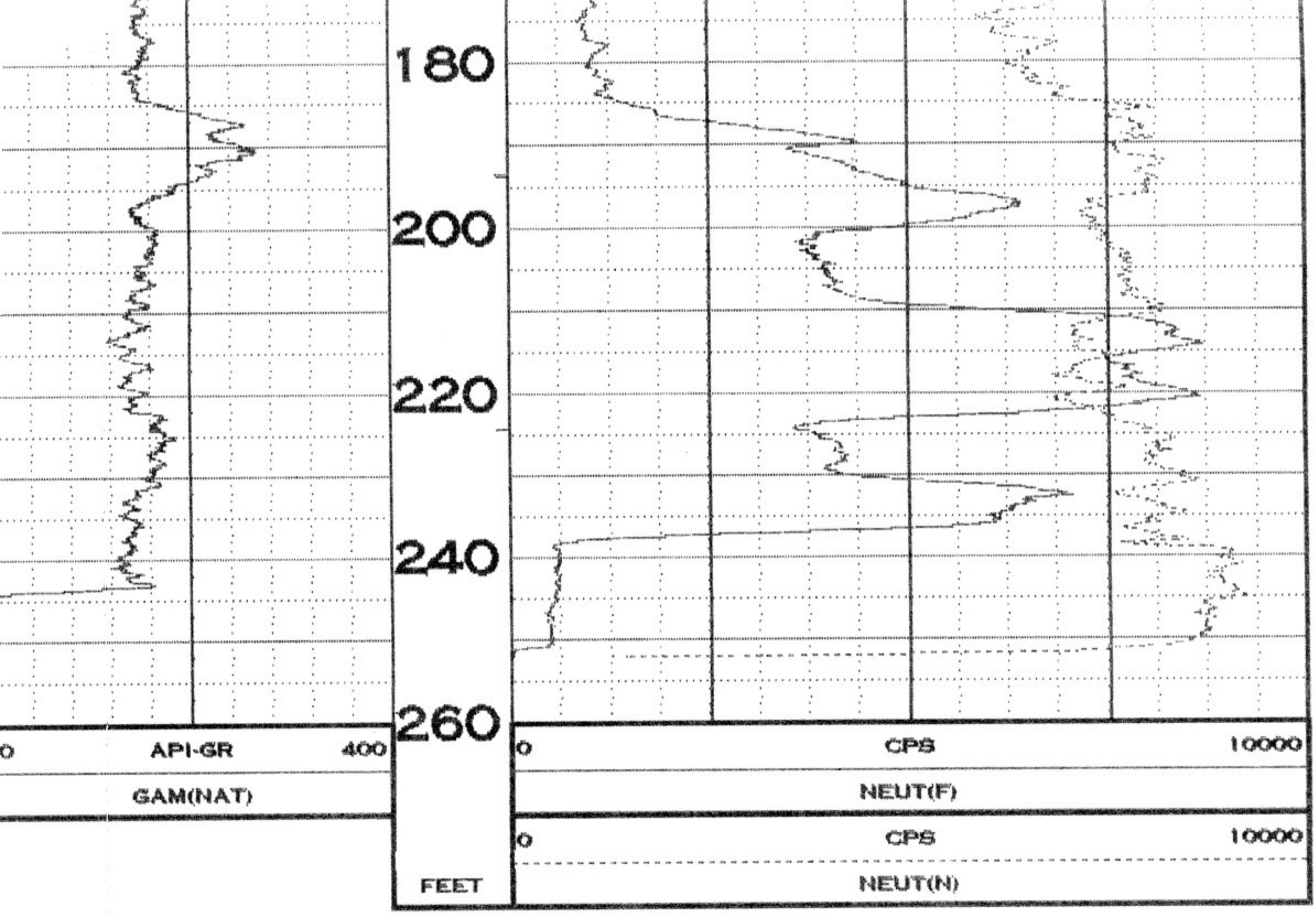

TOOL CALIBRATION PTX07-1P04 10/07/96 09:22
TOOL 9072A
SERIAL NUMBER 308

	DATE	TIME	SENSOR	STANDARD	RESPONSE
1			GAM(NAT)	Default [API-GR]	Default [CPS]
			GAM(NAT)	180.000 [API-GR]	237 [CPS]
2			VOLTAGE	48.800 [MV]	4783 [CPS]
			VOLTAGE	1187.000 [MV]	95830 [CPS]
3			CURRENT	236.700 [UA]	23089 [CPS]
			CURRENT	505.000 [UA]	50572 [CPS]
4			NEUT(N)	10740.000 [CPS]	
5			NEUT(F)	435.000 [CPS]	

PTX07-1P05

Contractor: e^2m

Contract #: 873-004

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

___Lithologic Logs
- ___Draft
- ___Final

___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

Table 2-1
Extraction Well Data Information

EXTRACTION WELLS

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EASTING	643,801.695	643,801.018	643,731.318	643,797.501
NORTHING	3,759,993.018	3,760,200.185	3,760,496.473	3,760,790.284
ELEVATION (Brass Marker)	3,537.394	3,537.712	3,537.790	3,538.137
TOP OF CASING	3,539.784	3,540.142	3,540.050	3,540.357
WELL DIAMETER	6-inch	6-inch	6-inch	6-inch
TOTAL DEPTH	283	280	281	280
DEPTH TO FGZ	280	276	280	277
INITIAL WATER LEVEL	258.6	256.6	257.6	256.0
SATURATED THICKNESS	21.4	19.4	22.4	21.0
TOP OF SCREEN	236	234	235	235
BOTTOM OF SCREEN	276	274	275	275
SCREEN SLOT SIZE	0.02	0.02	0.02	0.02
PUMP (HP)	1.5	1.0	1.0	1.5
PUMP SETTING	276	274	275	275

PIEZOMETERS

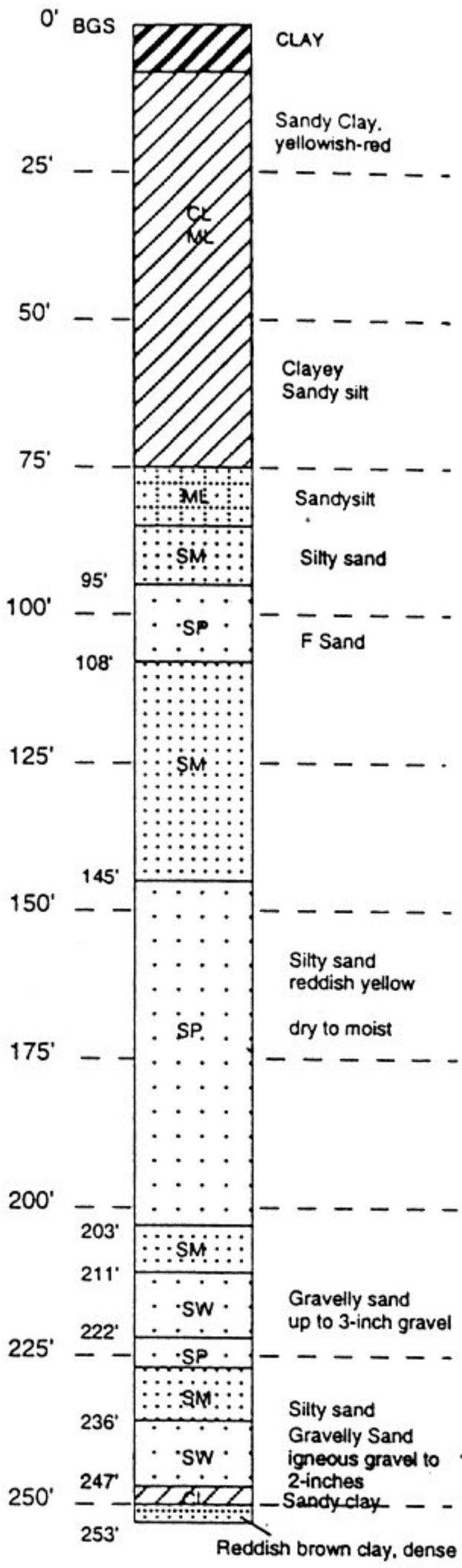
Data	PTX06-PZ05	PTX06-PZ06
EASTING	643,817.918	643,801.376
NORTHING	3,756,361.904	3,760,094.073
ELEVATION (Brass Marker)	3,532.717	3,537.601
TOP OF CASING	3,535.077	3,539.851
WELL DIAMETER	2-inch	2-inch
TOTAL DEPTH	285	280
DEPTH TO FGZ	279	279
INITIAL WATER LEVEL	256.5	265.0
SATURATED THICKNESS	22.5	14.0
TOP OF SCREEN	240	235
BOTTOM OF SCREEN	280	275
SCREEN SLOT SIZE	0.02	0.02

MONITORING WELLS

	Landfill 1		**Landfill 2**	
Data	PTX07-1O04	PTX07-1O05	PTX07-1P04	PTX07-1P05
EASTING	638,749.149	638,880.172	637,236.901	637,136.131
NORTHING	3,767,983.837	3,768,126.292	3,763,011.467	3,762,886.825
ELEVATION (Brass Marker)	3,548.214	3,547.721	3,538.337	3,540.809
TOP OF CASING	3,550.634	3,550.291	3,540.717	3,543.269
WELL DIAMETER	4-inch	4-inch	4-inch	4-inch
TOTAL DEPTH	259	259	252.5	253
DEPTH TO FGZ	255	255	248	250
INITIAL WATER LEVEL	249.5	248.8	237.1	240.6
SATURATED THICKNESS	5.5	6.3	10.9	9.4
TOP OF SCREEN	214	214	207.5	208
BOTTOM OF SCREEN	254	254	247.5	248
SCREEN SLOT SIZE	0.02	0.02	0.02	0.02

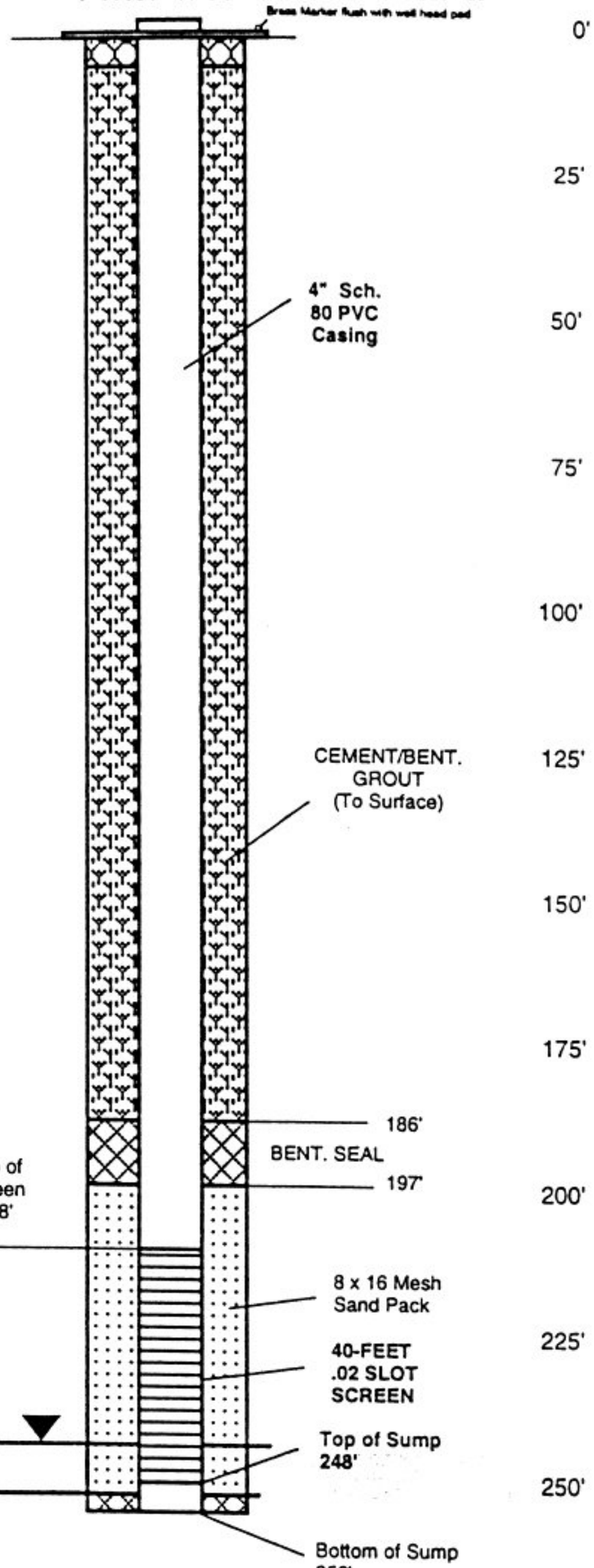
LITHOLOGY

PTX07-1P05



COMPLETION

PTX07-1P05



Pertinent Well Data:

Start Date: 9/27/98
Finish Date: 9/28/98
Location: Pantex Landfill 2
Amarillo, Texas

Drilling Company: Water Development Corp.
Driller: K. Thatcher
Method: Air Rotary Casing Hammer - ARCH
Depth to Water: 240.6

Elevation: 3543.27' (V-Notch on Well Head)
Elevation: 3540.81' (Brass Plate in Concrete Pad)
10" Hole Depth: 253'
12" Hole Depth: 0'
14" Hole Depth: 0'

Easting (x): 637136.13
Northing(y): 3762886.83
On-Site Geologist: J. Hoyt (MAXIM)
Project Manager: D.T. Brownlow (e2M)
Contract No.: BOA873-004

Special Note: X,Y,Coordinates represent exact location of the Brass Plate in well head concrete pad

Title: PTX07-1P05 (Monitoring Well) Lithologic & Completion Schematics

e²M

Figure 2-9

Drawn By: DTB
Date: 11/05/98
Project No.: 873-004

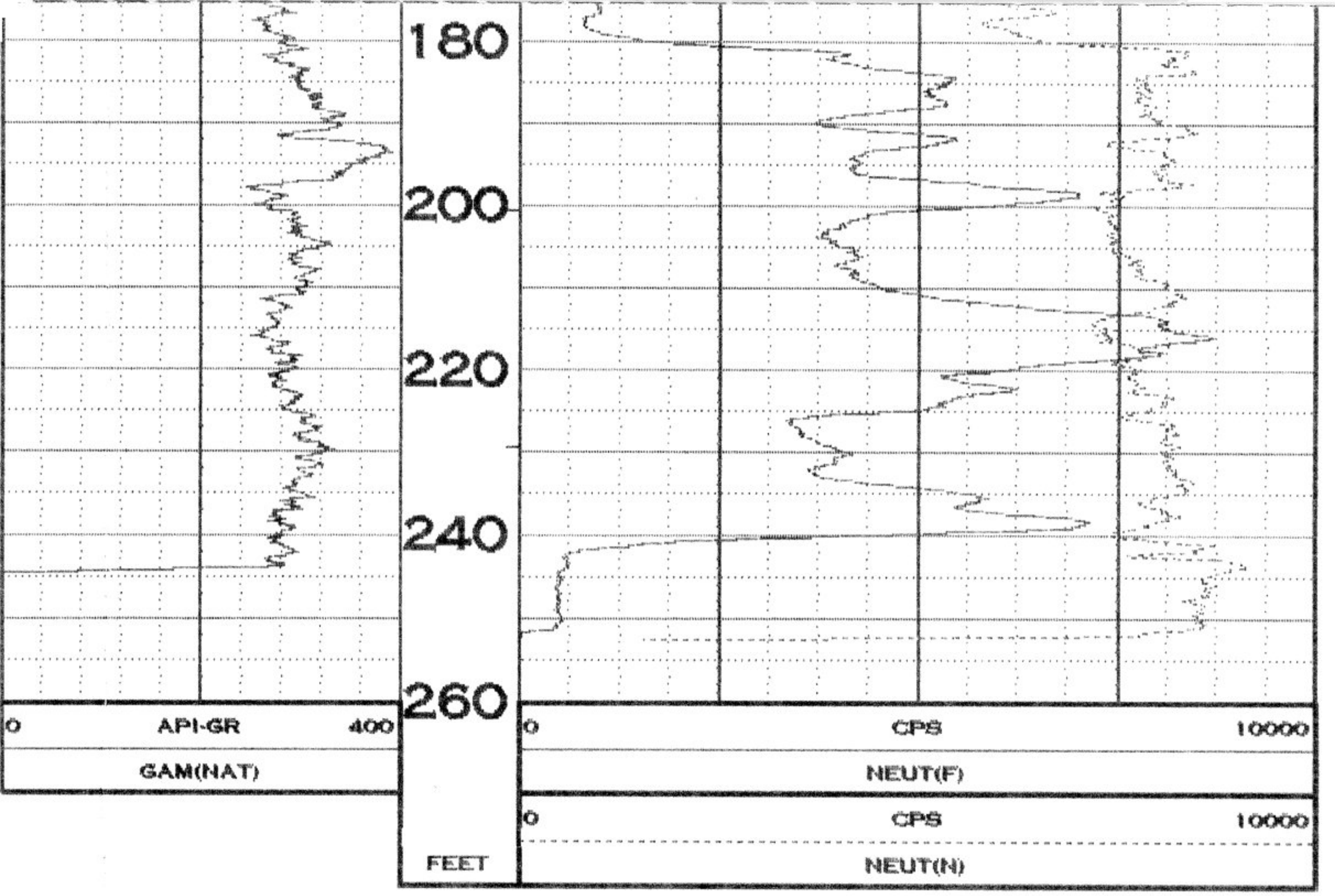
Century GEOPHYSICAL CORP.

PTX07-1P05

COMPANY	: E2M			OTHER SERVICES:	
WELL	: PTX07-1P05				
LOCATION/FIELD	: Parlex				
COUNTY	: Carson				
STATE	: TX				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 10/07/98	PERMANENT DATUM	:		
DEPTH DRILLER	: 300			KB	:
LOG BOTTOM	: 252.70	LOG MEASURED FROM:	GL	DF	:
LOG TOP	: -5.10	DRL MEASURED FROM:	G.L	GL	:
CASING DIAMETER	: 4	LOGGING UNIT	: 9608		
CASING TYPE	: pvc	FIELD OFFICE	: ELKO		
CASING THICKNESS:		RECORDED BY	: Federwisch		
BIT SIZE	: 9	BOREHOLE FLUID	: water	FILE	: ORIGINAL
MAGNETIC DECL.	: 0	RM	: 0	TYPE	: 9072A
MATRIX DENSITY	: 2.71	RM TEMPERATURE	: 0		
NEUTRON MATRIX	: Sandstone	MATRIX DELTA T	: 140		
				THRESH:	4000

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

GAM(NAT)	FEET	NEUT(N)	NEUT(F)
0 API-GR 400		0 CPS 10000	0 CPS 10000
	0		
	20		
	40		
	60		
	80		
	100		
	120		
	140		
	160		



TOOL CALIBRATION PTX07-1P05 10/07/98 08:41
TOOL 9072A
SERIAL NUMBER 308

	DATE	TIME	SENSOR	STANDARD	RESPONSE
1			GAM(NAT)	Default [API-GR]	Default [CPS]
			GAM(NAT)	180.000 [API-GR]	297 [CPS]
2			VOLTAGE	48.800 [MV]	4783 [CPS]
			VOLTAGE	1187.000 [MV]	95830 [CPS]
3			CURRENT	236.700 [UA]	23089 [CPS]
			CURRENT	505.000 [UA]	50572 [CPS]
4			NEUT(N)	10740.000 [CPS]	
5			NEUT(F)	435.000 [CPS]	

PTX07-1P06

Contractor: S.M. Stoller Corporation

Contract #: 3589-102

OPTIX #:

Included Documents

___Drilling Log
- ___Draft
- ___Final

_X_Installation Log

_X_Lithologic Logs
- ___Draft
- _X_Final

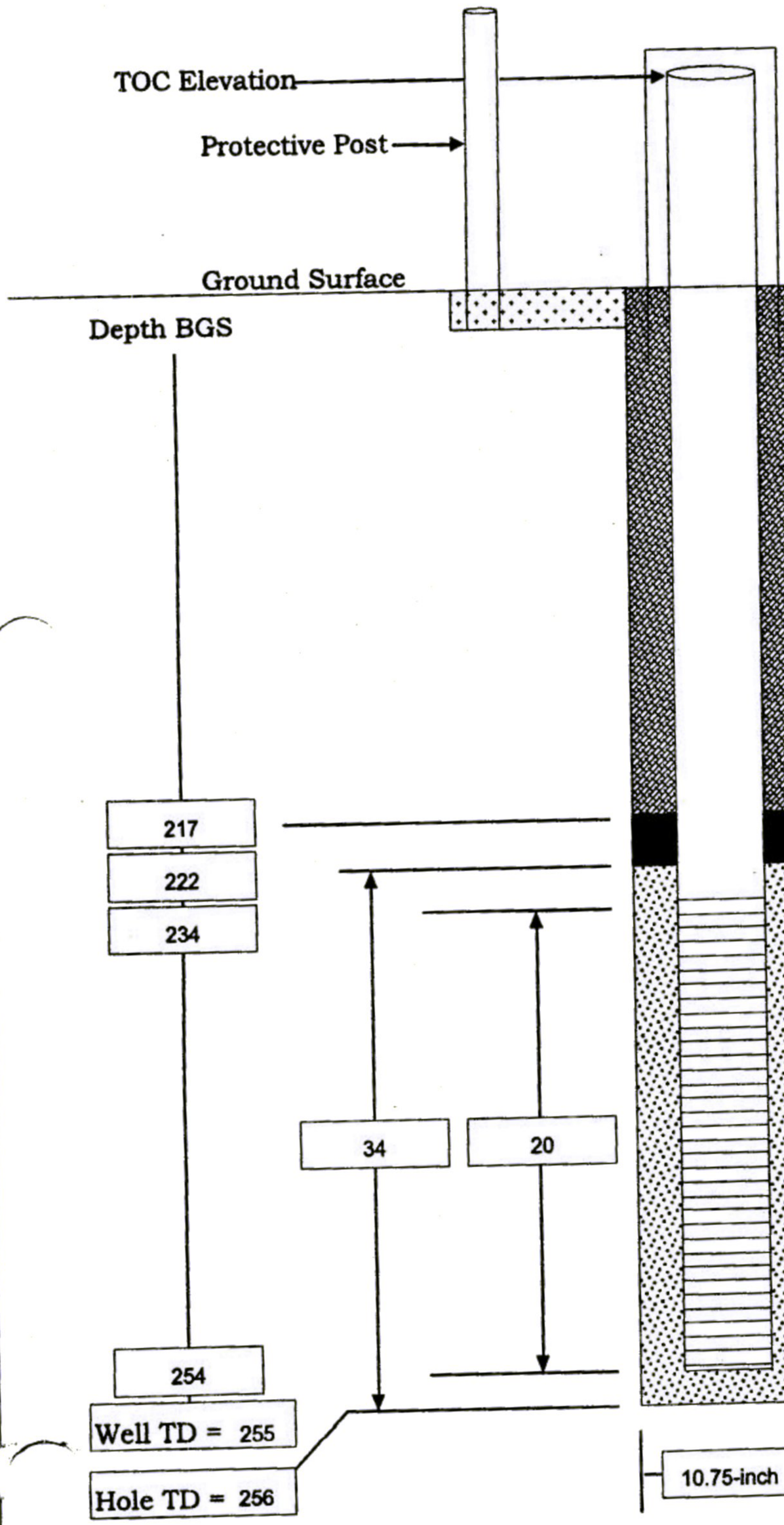
___Geophysical Logs
- ___Neutron
- ___Gamma
- ___e-log
- ___Bond Log
- ___Deviation log

___State Well Report

Monitor Well Installation Diagram

Project: Pantex GW RFI
Location: SW of Landfill 2
Contractor: Stewart Brothers Drilling Co.
Driller: M.King
Well Coordinates: N-3762509.81 / E-637197.39
TOC Elevation: 3545.16
Surface Elevation: 3542.52

Monitor Well No: PTX07-1P06
Date Constructed: 2-14-00
Observed by: C.Martin
Sheet 1 of 1



Protective Casing
Material Steel
Diameter 10-inch

Surface Pad
Composition & Size Concrete 5'x5'x8"

Riser Pipe
Type Schedule 80 PVC
Diameter 4-inch

Grout
Composition Baroid Grout (Bentonite)

Seal
Type 0.25-inch pellets (Bentonite)

Filter Pack
Type Silica Sand
Source Colorado Silica Sand
Gradation 10-20

Screen
Type Schedule 80 PVC
Diameter 4-inch
Slot Size 0.020-inch

Sump
Type Schedule 80 PVC
Bottom Cap (Y) / N

PTX07-1P06

Pantex GW RFI | **Pantex Plant (Landfill 2)** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp/C. Martin	Northing: 3762509.81	Easting: 637197.39
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	256' BGS
Dates Drilled:	02/13/00 - 02/13/00	Depth to Water:	246.26' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3542.52'	TOC Elevation:	3545.16'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
			ML	0-5' SILT, clayey, Topsoil, dark brown (7.5YR, 3/2), medium plastic, stiff, damp, grading to brown (7.5YR, 4/4) at 5'		
	10		CL	5-30' CLAY, silty, with trace very fine sand, 60% clay, 40% silt, yellowish red (5YR, 5/6), low plasticity, very stiff, dry, caliche nodes and stringers prevalent up to 1/4" diameter, some manganese staining		
	20					
	30		ML	30-42' SILT, clayey, trace very fine sand, strong brown (7.5YR, 5/6), low plasticity, stiff, dry, caliche nodes and stringers throughout		
	40		ML	42-50' SILT, sandy/clayey, 70% silt, 20% sand, 10% clay, reddish yellow (7.5YR, 6/6), low plasticity, very fine sand, medium stiff, damp		
	50		ML	50-57' SILT, sandy, with significant caliche, pink (5YR, 7/4), nonplastic, fine grain sand, stiff, sand content increasing with depth		
			SM	57-70' SAND, silty, yellowish red (5YR, 5/6 - 5/8), fine to medium grain sand, subangular, dense		

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PTX07-1P06

Pantex GW RFI | **Pantex Plant (Landfill 2)** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp/C. Martin	Northing: 3762509.81	Easting: 637197.39
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	256' BGS
Dates Drilled:	02/13/00 - 02/13/00	Depth to Water:	246.26' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3542.52'	TOC Elevation:	3545.16'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	70		SM			
			SM	70-75' SAND, silty, reddish yellow (5YR, 6/8), fine to medium grain, subangular, dense, dry		
			RX	75-80' CALICHE CAPROCK, pink (5YR, 8/3 - 8/4), caliche rock flour coating on sand and caliche chunks		
	80		SM	80-90' SAND, silty, strong brown (7.5YR, 5/6), fine grained, subangular, dense, dry		
	90		SP	90-107' SAND, reddish yellow (7.5YR, 7/6), fine to very fine grained, subrounded, loose		
	100					
	110		SP	107-123' SAND, yellowish red (5YR, 5/6), very fine grained, subrounded, loose, dry 107-109' dense silty sand		

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PTX07-1P06

Pantex GW RFI | **Pantex Plant (Landfill 2)** | **Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp/C. Martin	Northing: 3762509.81	Easting: 637197.39
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	256' BGS
Dates Drilled:	02/13/00 - 02/13/00	Depth to Water:	246.26' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3542.52'	TOC Elevation:	3545.16'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
			SP	120-121' lense of lighter colored sand, pink (7.5YR, 7/4)		
			SP	123-127' SAND, reddish yellow (7.5YR, 7/6), fine to very fine grained, subrounded, well sorted, loose, dry		
	130		SM	127-131' SAND, reddish yellow (7.5YR, 8/6), very fine grained, subrounded, dry, very dense, slow drilling, CaCO3 cement, with lenses of sandy silty clay, strong brown (7.5YR, 5/8), medium stiff, medium plastic, damp		
			SP	131-134' SAND, very pale brown (10YR, 8/4), fine to very fine grain, subrounded, loose, dry		
			SP	134-140' SAND, pink (7.5YR, 8/3), very fine to fine grain, subrounded, dry, loose		
	140					
	150					
	160		SP	140-180' SAND, yellow (10YR, 8/6), fine to very fine grain, subrounded-rounded, dry, loose		
	170					

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PTX07-1P06

Pantex GW RFI	**Pantex Plant (Landfill 2)**	**Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp/C. Martin	Northing: 3762509.81	Easting: 637197.39
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	256' BGS
Dates Drilled:	02/13/00 - 02/13/00	Depth to Water:	246.26' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3542.52'	TOC Elevation:	3545.16'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	190		SP	180-204' SAND, very pale brown (10YR, 8/4) to yellow (10YR, 8/6), very fine to medium grained, subrounded, dry, loose 186-200' dense cemented layers, cemented sand nodules up to 1-inch, average 1/4-inch		
	200		SP	204-207' SAND, yellow (10YR, 8/6), 90% very fine, 5% medium, 5% fine, subangular, loose, dry		
	210		SM	207-216' SAND, silty, reddish yellow (7.5YR, 7/6 - 6/6), fine to medium grained, subangular, damp, loose, decreasing silt at 212'		
	220		GP	216-221' GRAVEL, sandy, very pale brown (10YR, 7/3), medium to coarse, well sorted, loose, dry, gravels up to 3/4-inch		
			SP	221-223' SAND, very pale brown (10YR, 7/3), medium to coarse grained, well sorted, loose, dry		
			SW	223-225' SAND, dark grayish brown (10YR, 4/2), very coarse to fine, subrounded, well graded, loose, dry		
	230		SP	225-233' SAND, dark yellowish brown (10YR, 4/6), coarse to medium grain, subrounded, loose, dry, gravels up to 1/2-inch		
			SM	233-237' SAND, silty, brownish yellow (10YR, 6/6), medium coarse to fine grained, rounded to subrounded, loose, dry		
			SP	237-254.5' SAND, brnish yellow (10YR 6/8), med-fine grain, rnded-subrnded, loose, damp, moisture increasing with depth		

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PTX07-1P06

Pantex GW RFI	**Pantex Plant (Landfill 2)**	**Amarillo, Texas**

Project Number:	3589-102	Client:	Mason & Hanger Corporation
Geologist:	R. Rupp/C. Martin	Northing: 3762509.81	Easting: 637197.39
Drilling Contractor:	Stewart Brothers Drilling	Total Depth of Borehole:	256' BGS
Dates Drilled:	02/13/00 - 02/13/00	Depth to Water:	246.26' BTOC 04/24/00
Borehole Type:	10.75" ARCH	Well Type:	Monitoring Well, 4-inch Sch. 80 PVC
Ground Elevation:	3542.52'	TOC Elevation:	3545.16'

Completion	Depth (Ft.)	Lithology	USCS	Description	Sample	Sample Number
	250		SP	240' moist 245' wet 247' saturated (split spoon 247-249')		PTX07-1P06-2-0247 Sieve Analysis
						PTX07-1P06-2-0252 Sieve Analysis
			SC	254.5-256' SAND, clayey, silty, yellowish brown (10YR, 5/6) to light brown (7.5YR, 6/3), plastic, very fine to fine grained, subrounded, soft, damp to moist, moisture decreasing with depth		PTX07-1P06-2-254.5 HE Analysis PTX07-1P06-2-0255 Permeability Analysis PTX07-1P06-2-255.7 HE Analysis
	260			Total Depth of Borehole 256' BGS Fine Grain Zone 254.5' BGS Well Completion Details: Borehole Diameter: 10.75 inches 4-inch, Schedule 80 PVC materials used in well construction: 1' Sump (254 - 255); 20' Screen, 0.020" Factory Slot (234 - 254); 236.5' Casing (+2.5 - 234); Filter Pack, 10/20 Colorado Silica Sand, thickness above screen 12' (222 - 256); Bentonite Seal, pellet thickness above sand 5' (217 - 222); Baroid Quick Grout (Surface - 217); Concrete Pad (5'X5'X8") with 4 bollards; Steel Protective Casing (10.75") with locking cover.		
	270					
	280					
	290					

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STATE OF TEXAS WELL REPORT for Tracking #342793

Owner:	**U.S. Department of Energy**	Owner Well #:	**PTX08-1001**
Address:	**PO Box 30030 Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**FM 2373 & Hwy 60 Amarillo , TX 79120**	Latitude:	**35° 19' 47" N**
Well County:	**Carson**	Longitude:	**101° 33' 46" W**
Elevation:	**3517 ft.**	GPS Brand Used:	**Garmin**
Type of Work:	**Replacement Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/3/2013**
Completed: **8/4/2013**

Diameter of Hole: Diameter: **9 5/8 in From Surface To 280 ft**

Drilling Method: Other: **ARCH**

Borehole Completion: Gravel Packed From: **225 ft to 276 ft**
Gravel Pack Size: **12/20**

Annular Seal Data: 1st Interval: **From 276 ft to 225 ft with 52 12/20 sand (#sacks and material)**
2nd Interval: **From 225 ft to 215 ft with 7 3/8" bent. (#sacks and material)**
3rd Interval: **From 215 ft to 2 ft with bent. grout (#sacks and material)**
Method Used: **High Pressure**
Cemented By: **Yellow Jacket Drilling Svc.**
Distance to Septic Field or other Concentrated Contamination: **No Data ft**
Distance to Property Line: **No Data ft**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **227 ft. below land surface on 8/4/2013**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **Perched**
Depth of Strata: **250-274 ft.**
Chemical Analysis Made: **No**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Yellow Jacket Drilling Svc.**
3922 E. University Dr., Ste 1

	Phoenix , AZ 85034
Driller License Number:	**59375**
Licensed Well Driller Signature:	**Quentin Stevens**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**280'-276 ' interval plugged with 1/4" bent. pellets before well constructed, 1' sump 276'-275'**
	Replaces Tr.# 339801 10/11/13 Ref.# 11682

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #**342793**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-22 silt pinkish tan
22-30 silty clay brown
30-51 clay brown
51-53 silt brownish red
53-68 gravel brown
68-75 silt brown
75-85 sand lt. brown
85-92 gravel lt. brown
92-115 sand lt. brown
115-133 silt reddish brown
133-185 sand lt. brown
185-205 clayey silt tan
205-215 sand brown
215-227 silt brown
227-233 sand brown
233-242 silt brown
242-274 sand brown
274-280 silt redish brown

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
4 " new PVC casing, Schedule 80, +3-230'
4" new PVC screen, 0.01" slot, Schedule 80, 230-270'

Davis Geomatics, LLC
Professional Geomatic Consultants
J.D. Davis, RPLS, LSLS, CFedS
Licensed State Land Surveyors
Colorado • Kansas • Oklahoma • Texas

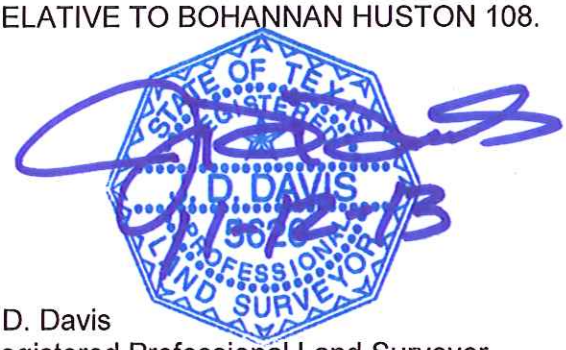
Professional Land Surveyors

Certified Federal Surveyors

Trihydro Corporation — Pantex Plant

POINT DESCRIPTION	NORTHING	EASTING	ELEVATION	CASING ELEVATION
PTX 08-1001	3762976.26	638941.45	3516.63	
PTX 08-1001 T/C				3518.86
PTX 08-1002	3763003.22	640859.00	3514.71	
PTX 08-1002 T/C				3517.01
PTX 06-1149	3754717.64	635864.13	3529.28	
PTX 06-1149 T/C				3531.45
PTX 06-1167	3752653.00	640913.71	3527.72	
PTX 06-1167 T/C				3529.82
PTX 06-EW-81A T/C	3762095.77	639773.41		3525.79

NOTE: COORDINATE VALUES ARE TEXAS STATE PLANE, NORTH ZONE, NAD 83 AS DETERMINED FROM OPUS SOLUTION AND RELATIVE TO BOHANNAN HUSTON 108 AND BOHANNAN HUSTON 93. ELEVATIONS ARE NAVD 88 AND RELATIVE TO BOHANNAN HUSTON 108.



J.D. Davis
Registered Professional Land Surveyor
Texas Registration Number 5626
Amarillo, Texas

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-009-001	**Borehole/Well ID:**	PTX08-1001
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3516.45
Start Date:	8-3-2013	**Driller:**	Quentin Stevens	**TOC Elevation (ft):**	3518.86
End Date:	8-4-2013	**Method:**	ARCH	**Northing:**	3762976.26
Total Depth:	280 ft.	**Borehole Diameter:**	9 5/8"	**Easting:**	638941.45
FGZ Depth:	274 ft.	**Logged by:**	E. Gorove	**Note:**	Replacement well

Depth (ft bgs)	Lithologic Description	Lithology	USCS Symbol	Geophysical Logging (Gamma Ray, Neutron)	Water Level	Well Construction	Depth (ft bgs)
0	Silt: medium brown, 7.5 YR 5/4, topsoil, dry, hard, organic rich.		OL			10" PROTECTIVE CASING WITH LOCKABLE CAP	0
10	Silt: pinkish tan, 7.5 YR 6/3, dry, hard .		ML			CEMENT SURFACE PAD 5' X 5'	10
20	Silty Clay: tanish brown, 5 YR 6/4, dry, hard, trace caliche nodules.		ML				20
30	Silty Clay: meduim brown, 5 YR 5/6, slightly damp, hard, slightly plastic, trace vfg sand.		ML				30
40	Silty Clay: light brown, 7.5 YR 6/3, dry, not plasic, hard. Grading to redish brown 5 YR 5/6 at 35 ft bgs. Grading to orangish brown 5 YR 5/8 at 40 ft bgs.		ML				40
50	Silt: brownish red, 5 YR 5/6, damp, some subangular to subrounded caliche gravel 1/4" - 3/4".		CL				50
60	Gravely Sand: light brown, 7.5 YR 6/6, dry. Sand vfg, poorly sorted. Gravel 1/8" to 1", primarily 1/4", rounded to subangular, caliche based.		SW				60
70	Silt: reddish brown, 7.5 YR 6/6, damp, hard, with some gravel. Gravel to 1/2", subangular to subrounded, caliche based.		ML				70
80	Sand: light brown, 7.5 YR 6/2, damp, vfg, well sorted, subangular to subrounded.		SP				80
90	Gravely Sand: light brown, 7.5 YR 6/3, dry, poorly sorted. Gravel 1/8" - 3/4", predominately 1/8", subangular to subrounded, caliche based		SW				90
100			SP				100
110						GROUTED ANNULUS 2' to 215'	110

State Well Report No.: 342793

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-009-001	**Borehole/Well ID:**	PTX08-1001
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3516.45
Start Date:	8-3-2013	**Driller:**	Quentin Stevens	**TOC Elevation (ft):**	3518.86
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FGZ Depth:	274 ft.	**Logged by:**	E. Gorove	**Note:**	Replacement well

Depth (ft bgs)	Lithologic Description	Lithology	USCS Symbol	Geophysical Logging (Gamma Ray, Neutron)	Water Level	Well Construction	Depth (ft bgs)
120	Sand: tan to light brown, 7.5 YR 6/2, dry, vfg, well sorted. Silty sand, mg, subangular to subrounded present 106 ft - 108 ft bgs.		ML			4" SCH. 80 PVC CASING 2' to 230'	120
130	Silt: reddish brown, 5 YR 5/6, dry, non plastic. Sand vfg, subangular to subrounded.						130
140	Silt: tan, 7.5 YR 7/3, dry, non plastic. With trace vfg sand and gravel to 1/4".		ML				140
150	Silty Sand: tan, 10 YR 6/4, slightly damp, non plastic. Sand vfg. With trace gravel 1/2" to 1", subrounded to subangular.		ML				150
160							160
170	Sand: tan, 10 YR 6/4, damp, vfg to fg, well sorted. Trace gravel to 1/4", subangular to rounded.		SP				170
180							180
190	Sand: light tan, 10 YR 6/2, damp, vfg to fg, poorly sorted. With some gravel 1/8" to 1", black, hardened cement grout.		SP / SC				190
200	Clayey Sand: light tan, 10 YR 6/2, damp, vfg to fg, well sorted. Clay dark gray, 7.5 YR 4/1, plastic, soft, possible grout.		SC				200
210	Sand: brown, 7.5 YR 6/4, vfg, well sorted, subangular to subrounded. Trace gravel to 3/4".		SP				210
220	Silty Sand: medium brown, 7.5 YR 5/6, vfrg to fg, well sorted, subangular to subrounded. Trace gravel 1/8" to 3/4", subangular to subrouded.		SM			BENTONITE PLUG 215' to 225'	220
230							230

State Well Report No.: 342793

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-009-001	**Borehole/Well ID:**	PTX08-1001
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3516.45
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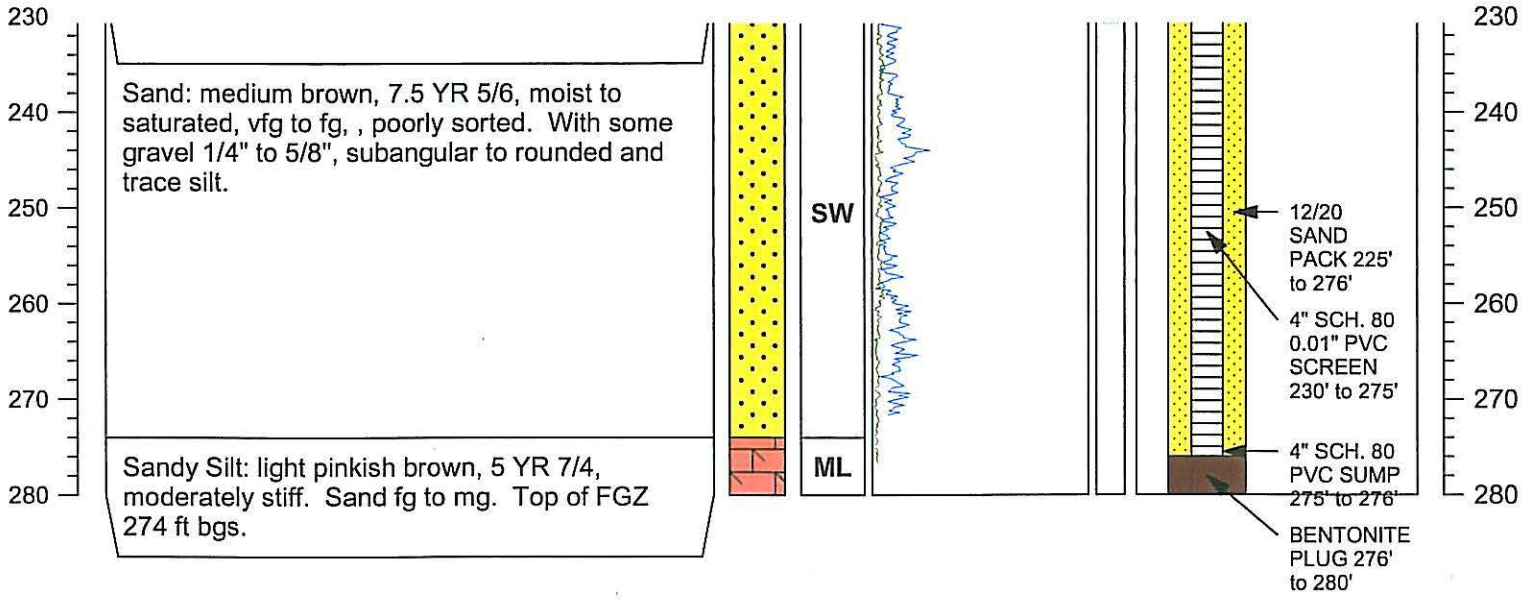


State Well Report No.: 342793

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

Well updates may only be performed upon receipt of this form by the Geographical Information System (GIS) Section, along with all appropriate signatures below. Electronic submittals may be made using a routed "E-Stars" task.

** Cover sheet remains attached to request form for validity. If sent by "E-Stars", recommend sending as a "Routed Approval task" (ends with GIS signee at end of routing).*

Requestor:

(Signature) Matthew Jones (Print)

Project Manager:

(Signature) Tony Biggs (Print)

Groundwater Media Scientist: Matt Jones, PhD.

(Signature) (Print)

Reviewer: Tony Biggs

(Signature) Tony Biggs (Print)

Reviewer: Michelle Jarrett

(Signature) Michelle Jarrett (Print)

Integrated Environmental Database (IED) & Suspect Anomaly Report (SAR) Administration: Tammy Vincent

(Signature) Tammy Vincent (Print)

GIS Administration *(when request is completed)*: Barry Guidry

(Signature) Barry Guidry (Print)

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

ENVIRONMENTAL PROGRAMS
WELL REQUEST AND CHANGE FORM

STOP!! DO NOT ATTEMPT TO COMPLETE THIS FORM UNTIL
YOU HAVE CAREFULLY READ THE INSTRUCTIONS AFTER THE FORM

Type of Well Change (check one):

☒ New well request?
How many? 2

☒ Updates to existing wells

1. General Information			
a. Existing Well No.: (If well currently exists)		b. Long-Tem Monitoring (LTM) Well?	☐
c. Requestor's Name:	M Jones	d. Date:	8/20/2013
e. Dept/Organization:	622	f. Mail Drop:	
g. Phone:	5916	h. Deadline:	
i. Reason for deadline:			
2. New Well Request			
a. Aquifer:	Perched	b. Well Type:	Investigative Well
c. Proposed Coordinates:			
Easting (x):	640900.000	Northing (y):	3752600.000
3. Well Changes (to existing wells)			
a. When completed?	Drilled	Date: unknown	
	Existing	*New*	
b. Aquifer:	N/A	N/A	
c. Well Type:	N/A	N/A	
d. Current status of well:	Unknown	Dry	

4. Other: PTX06-1167, borehole had water prior to well installation, but currently dry

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

ENVIRONMENTAL PROGRAMS
WELL REQUEST AND CHANGE FORM
(con't.)

1. General Information			
a. Existing Well No.: (If well currently exists)		b. LTM Well?	☐
2. New Well Request			
a. Aquifer:	Perched	b. Well Type:	Extraction Well
c. Proposed Coordinates:			
Easting (x):	640000.000	Northing (y):	3762400.000
3. Well Changes (to existing wells)			
a. When completed?	N/A	Date:	
	Existing	*New*	
b. Aquifer:	N/A	N/A	
c. Well Type:	N/A	N/A	
d. Current status of well:	Unknown	Active	

4. Other: EW-81

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

ENVIRONMENTAL PROGRAMS
WELL REQUEST AND CHANGE FORM
(con't.)

1. General Information			
a. Existing Well No.: (If well currently exists)	PTX08-1001	b. LTM Well?	☒
2. New Well Request			
a. Aquifer:	Perched	b. Well Type:	Investigative Well
c. Proposed Coordinates:			
Easting (x):	639000.000	Northing (y):	3762900
3. Well Changes (to existing wells)			
a. When completed?	N/A	Date:	

	Existing	*New*
b. Aquifer:	N/A	N/A
c. Well Type:	N/A	N/A
d. Current status of well:	Unknown	Active

4. Other: replacement well

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

WELL REQUEST AND CHANGE FORM
FORM INSTRUCTIONS

⌦ Normally may document up to three wells per form. If have any more than three, an additional PX-5760 form is required.

1a. Existing Well No.: Do not write in this space if well does not currently exist; in that case this number is assigned by GIS office personnel.

1b. LTM Well: Long-Term Monitoring Well: Flag for wells permitted under the LTM compliance plan; this is noted regardless if it is to be changed or not.

1c-i. Requestor's Information: This is needed to contact you if necessary.

2a. Aquifer: Ogallala or Perched.

2b. Well Type: Type of service/function (ex., ISB, INJ, IW, etc.).

2c. Proposed coordinates: Well coordinates in Texas State Plane (NAD 83) coordinate system in feet.

3a. Completion Date: Only for existing well(s), and only if changes/additions to this attribute are needed.

3b,c. Same type of information as above (2a,b).

3d. Current status of well: Only applies to existing wells or well numbers (not a new well number request), and only if changes/additions to this attribute are needed.

Definitions:

Active: in use
Dry: no water or insufficient for sampling
P&A = Plugged & Abandoned
Proposed: Well number has been assigned, but well has not yet been drilled.
Undeveloped: drilled but not prepared for any service.
Parked: Drilled, developed, but not being currently used for anything (Held for possible future use).
Unknown: (this is not the case, but the option is kept open) If you select this, please attach an explanation.

4. Other: Use for any other appropriate comments regarding well number requests/changes (i.e., reasons for special requests, corrections to other data (not listed) in well survey/well log, etc.); not for suggestions/comments on form format.

For more information, contact the GIS Section, Projects Division, at ext. 6258.

Return the completed form to the following:

Barry Guidry, BGuidry@pantex.com; Mail Drop 09-130

STATE OF TEXAS PLUGGING REPORT for Tracking #90342

Owner:	U.S. Department of Energy	Owner Well #:	PTX08-1001
Address:	PO Box 30030 Amarillo , TX 79120	Grid #:	06-43-6
Well Location:	FM 2373 & Hwy 60 Amarillo , TX 79120	Latitude:	35° 19' 49" N
Well County:	Carson	Longitude:	101° 38' 08" W
		GPS Brand Used:	Garmin

Well Type: Monitor

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	C. Allbritton
Driller's License Number of Original Well Driller:	3143W
Date Well Drilled:	12/23/1992
Well Report Tracking Number:	No Data
Diameter of Borehole:	9.5 inches
Total Depth of Borehole:	262 feet

Date Well Plugged:	8/8/2013
Person Actually Performing Plugging Operation:	Quentin Stevens
License Number of Plugging Operator:	59375
Plugging Method:	Pour in 3/8 bentonite chips when standing water in well is less than 100 feet in depth, cement top 2 feet.
Plugging Variance #:	No Data
Casing Left Data:	1st Interval: 4 inches diameter, From 230 ft to 2 ft 2nd Interval: No Data 3rd Interval: No Data
Cement/Bentonite Plugs Placed in Well:	1st Interval: From 230 ft to 2 ft; Sack(s)/type of cement used: 24 sacks bent. chips 2nd Interval: From 2 ft to 0 ft; Sack(s)/type of cement used: 4 sacks concrete 3rd Interval: No Data 4th Interval: No Data 5th Interval: No Data

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	Yellow Jacket Drilling Svc. 3922 E. University Dr., Ste 1

	Phoenix , AZ 85034
Plug Installer License Number:	**59375**
Licensed Plug Installer Signature:	**Quentin Stevens**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Stainless steel well casing cut 2 ft bgs. Boring originally drilled to 262 ft bgs and plugged to 232 ft bgs during well construction.**

Please include the plugging report's tracking number (Tracking #90342) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

PTX08-1001

Contractor:
Contract #:

OPTIX #:

Included Documents

_X_Drilling Log
    ___Draft
    _X_Final

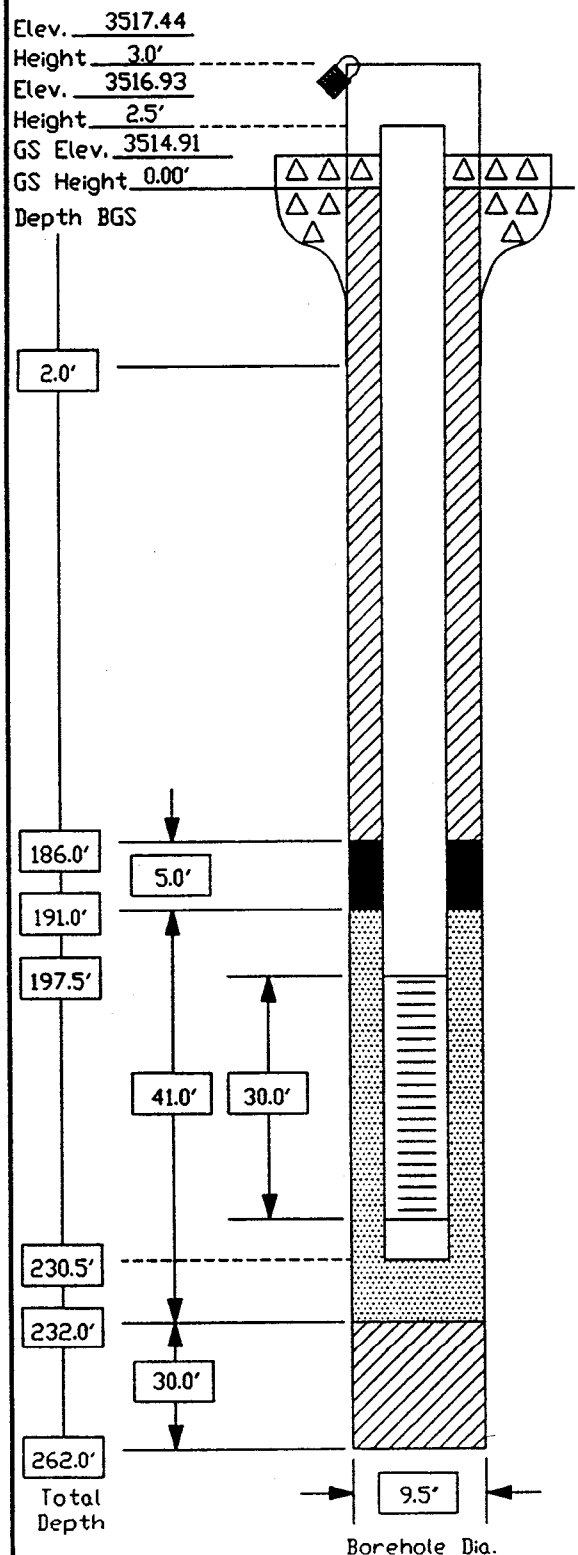
_X_Installation Log

___Lithologic Logs
    ___Draft
    ___Final

_X_Geophysical Logs
    ___Neutron
    ___Gamma
    ___e-log
    ___Bond Log
    ___Deviation log

_X_State Well Report

WELL LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 1 OF 2 SHEETS
1. PROJECT PANTEX RFI-DITCHES AND PLAYAS		10. SIZE AND TYPE OF BIT 9.5" HAMMER	
2. LOCATION (Coordinates or Station) SWMU-06		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 3514.91	
3. DRILLING AGENCY LAYNE ENVIRONMENTAL SERVICES		12. MANUFACTURER'S DESIGNATION OF DRILL AP-1000 (AIR PERCUSSION)	
4. HOLE NO. (As shown on drawing title and file number) PTX08-1001		13. OVERBURDEN SAMPLES DISTURBED 13	UNDISTURBED
5. NAME OF DRILLER CHUCK ALLBRITTON		14. TOTAL NUMBER CORE BOXES NONE	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER 3306.34 TOC 3/3/93	
		16. DATE HOLE STARTED 10/30/92	COMPLETED
7. THICKNESS OF OVERBURDEN NA		17. ELEVATION TOP OF HOLE 3514.91	
8. DEPTH DRILLED INTO ROCK NA		18. TOTAL CORE RECOVERY FOR BORING NA %	
9. TOTAL DEPTH OF HOLE 262.0 FEET		AL CHAPMAN	INSPECTOR



PROTECTIVE CSG
Material/Type Steel/Locking Cap
Diameter 10"
Depth BGS 2.0' Weep Hole (Y / N)

GUARD POSTS (Y / N)
No. 4 Type 3" Round Steel

SURFACE PAD
Composition & Size Concrete 4'10"x4'10"x6"

RISER PIPE
Type Stainless Steel (316)
Diameter 4.5" OD
Total Length (TOC to TOS) +2.5'-197.5'
Ventilated Cap (Y / N)

GROUT
Composition & Proportions 5828 lbs. type II Cement 400 lbs. Super Gel-X, 434 Gals. H_2O
Tremied (Y / N)
Interval BGS 186.0'-2.0'

CENTRALIZERS (Y / (N))
Depth(s) _____

SEAL
Type Bentonite (Pure Gold)
Source Volclay Sunbelt Supply American Colloid
Setup/Hydration Time 1.0 Hr.
Vol. Fluid Added 8 Gals.
Tremied (Y / N)

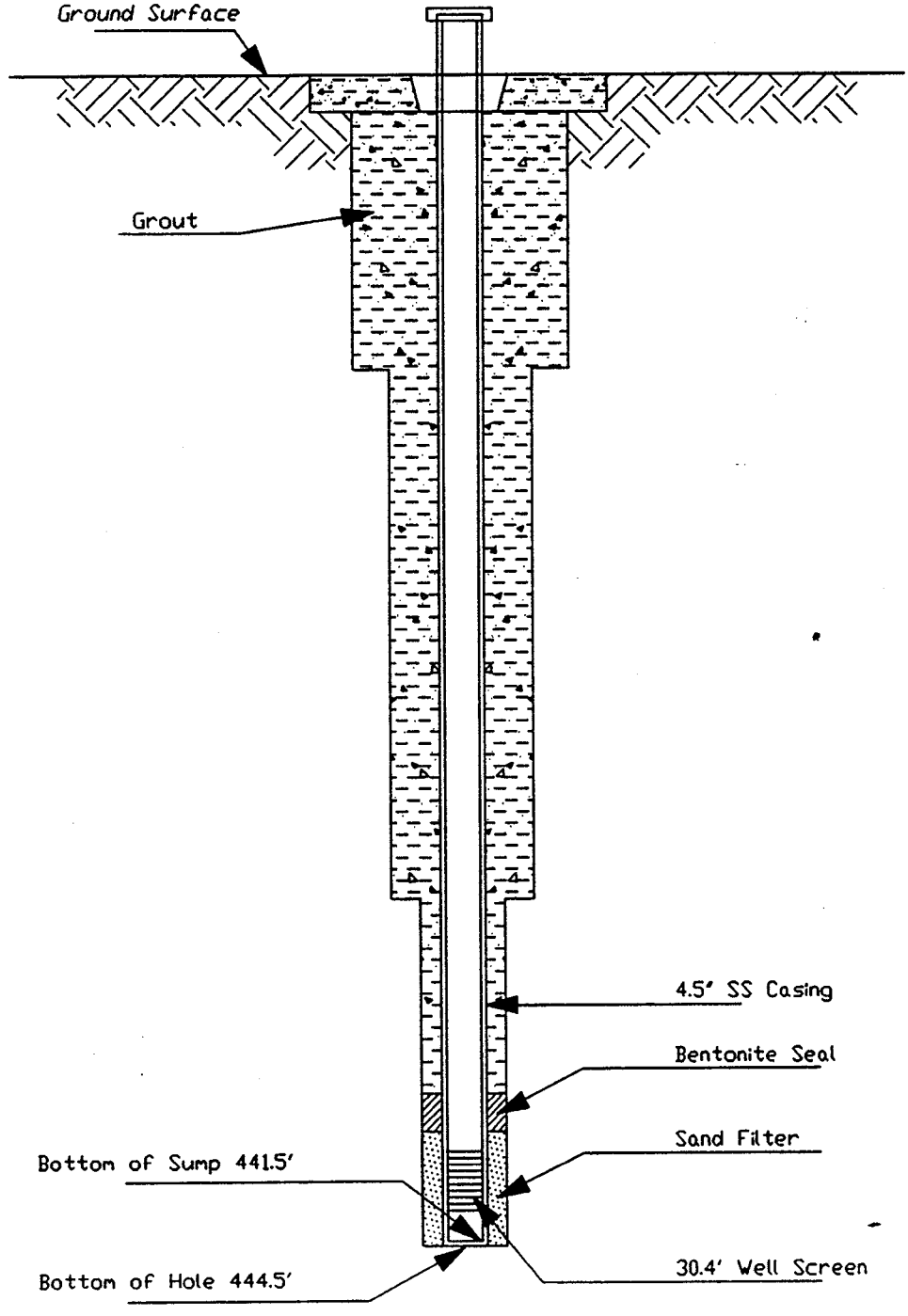
FILTER PACK
Type Silica Sand 20/40 + 100 Mesh
Amt. Used 2400 lbs.
Tremied (Y / N)
Source Texas Mining Company
Gr. Size Dist. 20/40 (.45mm-.48mm 100)

SCREEN
Type Stainless Steel (316)
Diameter 4.5" OD
Slot Size & Type 0.010 Johnson Wire-Wrap
Interval BGS 297.5'-227.5'

SUMP (Y / N)
Interval BSG 227.5'-230.5' Length 3.0'
Bottom Cap (Y / N)

BACKFILL PLUG
Material Silica Sand 20/40
Setup/Hydration Time 5 Days
Tremied (Y / N)

WELL LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 2 OF 2 SHEETS
1. PROJECT PANTEX RFI DITCHES AND PLAYAS		10. SIZE AND TYPE OF BIT 9.5" HAMMER	
2. LOCATION (Coordinates or Station) SWMU-6		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 3514.91	
3. DRILLING AGENCY LAYNE ENVIRONMENTAL SERVICES		12. MANUFACTURER'S DESIGNATION OF DRILL AP-1000 (AIR PERCUSSION)	
4. HOLE NO. (As shown on drawing title and file number) PTX08-1001		13. OVERBURDEN SAMPLES DISTURBED 13	UNDISTURBED
5. NAME OF DRILLER CHUCK ALLBRITTON		14. TOTAL NUMBER CORE BOXES NONE	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
		16. DATE HOLE STARTED 10/30/92	COMPLETED
7. THICKNESS OF OVERBURDEN NA		17. ELEVATION TOP OF HOLE 3514.91'	
8. DEPTH DRILLED INTO ROCK NA		18. TOTAL CORE RECOVERY FOR BORING NA %	
9. TOTAL DEPTH OF HOLE 262.0 FEET		AL CHAPMAN INSPECTOR	



DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 1 OF 6 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1001
5. NAME OF DRILLER: Chuck Allbritton
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 263.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED OCT 30 92; COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE: 3514.9
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
			Clayey silt: brown (7.5YR 5/4), trace sand, subangular, hard, slow to rapid dialtancy, low to medium plasticity, compact, low permeability, dry.	7 11 19 28	01	14:30/0-2' OVM= 0ppm B/G= 50cpm A= 0cpm Oxy= 21% LEL= 0%
				23 35 36 39		14:40/2-4' OVM= 0ppm B/G= 80cpm A= 0cpm
3510			Silty clay: strong brown (7.5YR 5/6), trace sand, poor grading, subrounded to subangular, hard, rapid dilatancy, moderate plasticity, slightly compact to compact, low permeability, dry. Reacts with HCl. White calcareous nodules intermixed with clay.	57 184	02	14:50/5-7' OVM= 0ppm B/G= 80cpm A= 0cpm Oxy= 20.9% LEL= 0%
	10				03	15:00/10-12' OVM= 0ppm B/G=100cpm A= 0cpm Oxy= 21% LEL= 0%
3500			Silty clay: brown (7.5YR 5/4), moderate grading, hard, compact.			
	20		Clayey silt: grayish brown (10YR 5/2), fine to very fine grained sand, subrounded to subangular, hard, rapid dilatancy, low to medium plasticity, compact, low to moderate permeability.		04	16:30/20-22' LEL=0% Oxy=20.8%
3490						
	30					16:55/20-22' LEL=0% Oxy=20.8%
3480						
	40					17:15/20-22' LEL=0% Oxy=21.1%
3470						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 2 OF 6 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1001
5. NAME OF DRILLER: Chuck Allbritton
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 263.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED OCT 30 92; COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE: 3514.9
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3460			Silty clay: strong brown (7.5YR 5/6), trace sand, poor grading, subrounded to subangular, hard, rapid dilatancy, moderate plasticity, slightly compact to compact, low permeability, dry. Reacts with HCl. White calcareous nodules intermixed with clay.	45 102/5"	05	07:45/50-52' OVM = 0ppm B/G = 40cpm A = 0cpm Oxy = 20.8% LEL = 0%
	60					
3450						
	70			11 22 26 40	06 QA/QC	08:35/70-72' OVM = 0ppm B/G = 50cpm A = 0cpm Oxy = 21.1% LEL = 0%
				11 29 35 46	06	
3440						
	80		Sand: yellowish brown, (10YR 5/6), fine to medium grained sand, well to moderate grading, subrounded to subangular, soft to firm, no plasticity, loose, high permeability, dry.	10 23 28 39		09:15/80-82' OVM = 0ppm B/G = 60cpm A = 0cpm Oxy = 21.1% LEL = 0%
3430						
	90			23 33 53 62		09:40/90-92' OVM = 0ppm B/G = 80cpm A = 0cpm Oxy = 21.2% LEL = 0%
3420						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 3 OF 6 SHEETS

1. PROJECT	PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station)	SWMU-6
3. DRILLING AGENCY	LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number)	PTX08-1001
5. NAME OF DRILLER	Chuck Allbritton
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	263.0
10. SIZE AND TYPE OF BIT	9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURES'S DESIGNATION OF DRILL	AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 13 / UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES	None
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED OCT 30 92 / COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE	3514.9
18. TOTAL CORE RECOVERY FOR BORING	NA %
19. SIGNATURE OF INSPECTOR	AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3410				16 30 36 63		10:00/100-102' LEL=0% Oxy=21.0%
	110		Sandy silt: yellowish brown (10YR 5/4), trace clay, moderate grading, subrounded to subangular, firm, no plasticity, loose, moderate to high permeability, dry.	24 60 58 66		00:00/110-112' OVM= 0ppm A= 0cpm Oxy= 21.3% LEL= 0%
3400						
	120		Sandy silt: (10YR 5/4), trace clay, moderate grading, subruonded to subangular, low plasticity, slightly compact, low to moderate permeability, dry.		07	00:00/120-122' OVM= 0ppm B/G= 50cpm A= 0cpm Oxy= 21.0% LEL= 0%
3390						
	130			38 100 100/2"		12:50/130-132' OVM= 0ppm B/G= 60cpm A= 0cpm Oxy= 21.2% LEL= 0%
3380						
	140		Sandy silt: (10YR 5/4), trace clay, moderate grading, subruonded to subangular, low plasticity, slightly compact, low to moderate permeability, dry.	15 30 77 100		13:40/140-142' OVM= 0ppm B/G= 60cpm A= 0cpm Oxy= 21.2% LEL= 0%
3370						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 4 OF 6 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1001
5. NAME OF DRILLER: Chuck Allbritton
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 263.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED OCT 30 92; COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE: 3514.9
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
				12 39 60 70		14:10/150-152' OVM= 0ppm B/G= 50cpm A= 0cpm Oxy= 21.0% LEL= 0%
3360						
	160		Sand: brownish yellow (10YR 6/6), trace silt, subrounded, high permeability.	23 38 57 60		14:25/160-162' OVM= 0ppm B/G= 50cpm A= 0cpm Oxy= 21.2% LEL= 0%
3350						
	170			21 28 37 103/5"	08	15:10/170-172' OVM= 0ppm B/G= 50cpm A= 0cpm Oxy= 21.2% LEL= 0%
3340						
	180			18 24 52 88		15:45/180-182' OVM= 0ppm B/G= 70cpm A= 0cpm Oxy= 21.2% LEL= 0%
3330						
	190			22 56 105/5"		16:15/190-192' OVM= 0ppm B/G= 60cpm A= 0cpm Oxy= 20.9% LEL= 0%
3320						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 5 OF 6 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1001
5. NAME OF DRILLER: Chuck Allbritton
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 263.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED OCT 30 92; COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE: 3514.9
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3310			Sandy silt: (10YR 5/4), trace clay, moderate grading, subruonded to subangular, low plasticity, slightly compact, low to moderate permeability, dry.	25 87 136 157	11 QA/QC	08:05/200-202' OVM = 0ppm B/G = 50cpm A = 0cpm Oxy = 20.8% LEL = 0%
	210			22 44 66 100/4"	09	09:05/210-212' OVM = 0ppm B/G = 70cpm A = 0cpm Oxy = 20.9% LEL = 0%
3300						
	220			17 100/3"	12	09:50/220-222' A = 0cpm OVM = 0ppm B/G = 100cpm LEL = 0% Oxy = 21.0%
3290						
	230		Gravelly sand: medium to coarse grained, cobles present.	6 7 2 6	10	10:15/230-232' OVM = 0ppm B/G = 90cpm A = 0cpm Oxy = 21.5% LEL = 0%
3280						
	240			19 36 103/5"	13	14:00/240-242' OVM = 0ppm B/G = 50cpm A = 0cpm Oxy = 21.0% LEL = 0%
3270						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 6 OF 6 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1001
5. NAME OF DRILLER: Chuck Allbritton
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 263.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 0
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED OCT 30 92; COMPLETED DEC 23 92
17. ELEVATION TOP OF HOLE: 3514.9
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

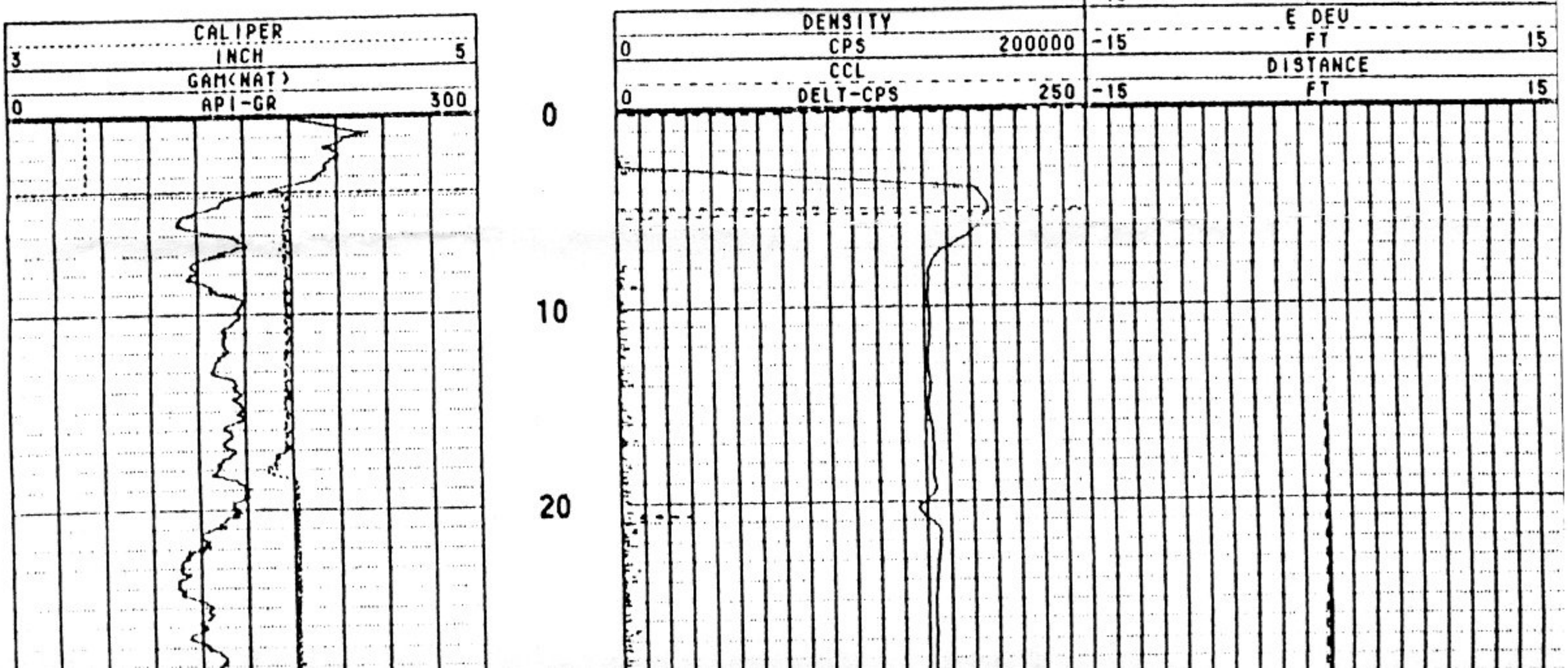
Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3260	260					15:30/250-252' Oxy = 21.3% LEL = 0%
						TD - 262.0'
				24 65		

Century GEOPHYSICAL CORP.

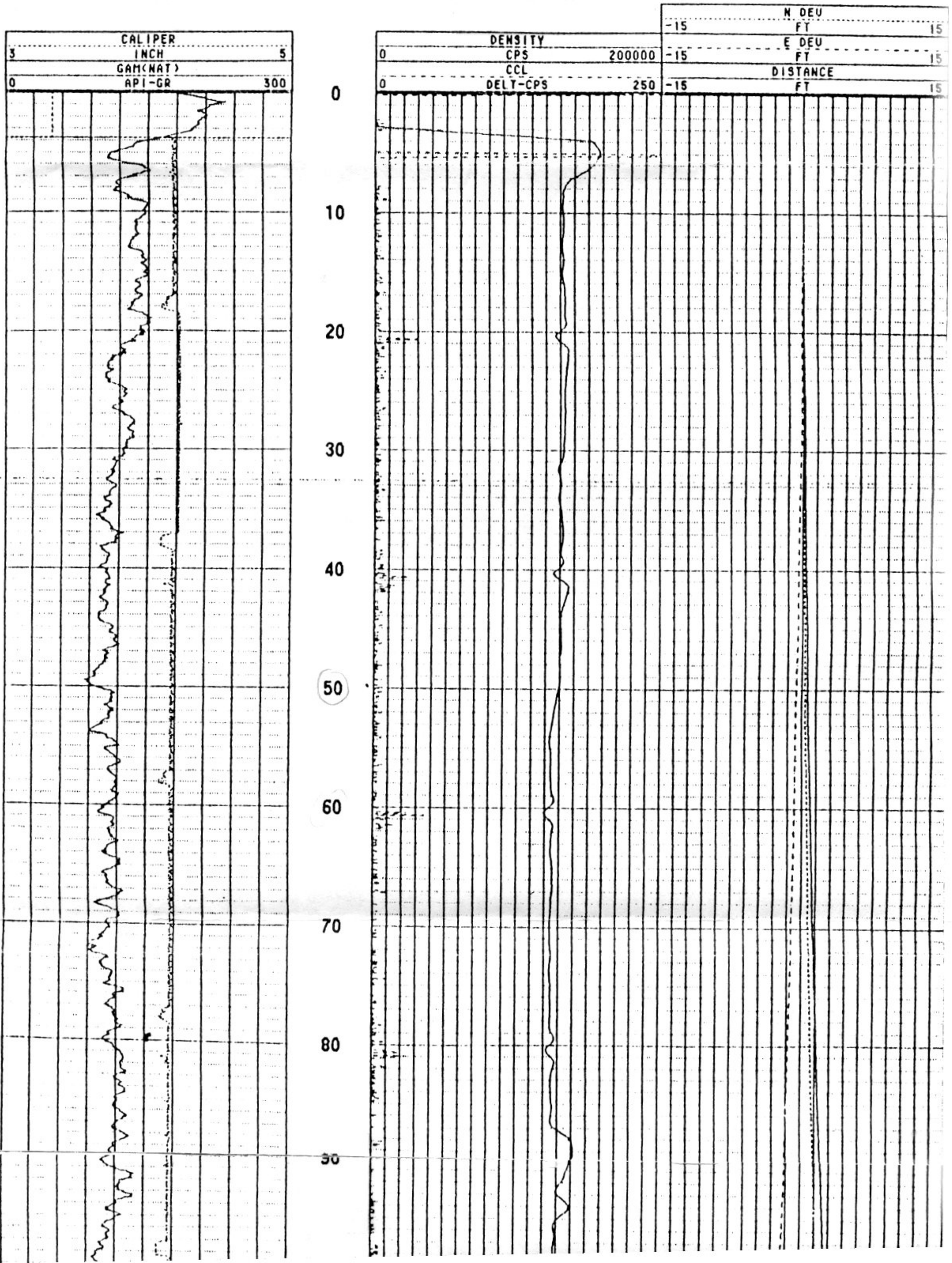
PTX08 - 1001

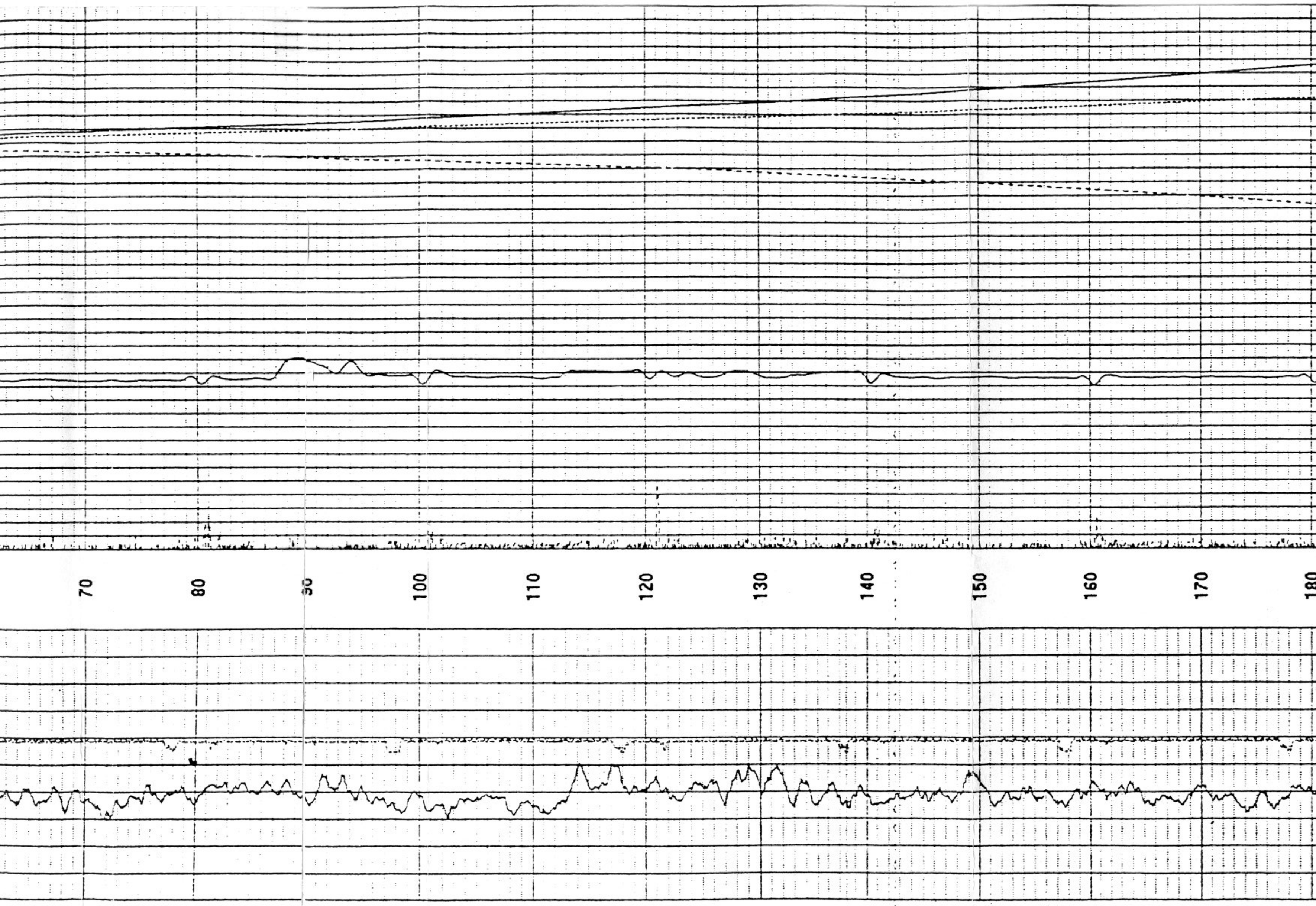
COMPANY	: RADIAN			OTHER SERVICES:	
WELL	: PTX08 - 1001				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 11/17/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 230	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 233.70	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -4.60	DRL MEASURED FROM	: T.O.C.	GL	:
CASING DRILLER	: 230	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 0	TYPE	: 9051A
MATRIX DENSITY	: 1	RM TEMPERATURE	: 0	LOG	: 8
FLUID DENSITY	:	MATRIX DELTA T	:	PLOT	: PTXF 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	:	THRESH	: 500000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

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170
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170

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190

200

210

220

230

235

0 API-GR 300
GAM(NAT)

3 INCH 5
CALIPER

0 DELT-CPS 250
CCL

0 CPS 200000
DENSITY

-15 FT 15
DISTANCE

-15 FT 15
E DEV

-15 FT 15
N DEV

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711** *Please use black ink.*

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** US Dept of Energy Pantex Plant (Name) **ADDRESS** Hwy 60 D.I.M. PO 2373 (Street or RFD) Amarillo (City), Texas (State) 79177 (Zip)

2) **LOCATION OF WELL:** County Carson, 30 miles in East N.E. (NE, SW, etc.) direction from Amarillo (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** Well # PTX08-1001

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** A/R
☒ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**
Date Drilling: Started 10-30 19 92 Completed _____ 19 __

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
9	Surface	262

From (ft.)	To (ft.)	Description and color of formation material
0	4	ORGANIC SILTY CLAY
4	20	SILTY CLAY
20	50	SANDY SILT
50	80	SILTY CLAY
80	110	SAND
110	160	SILTY SAND
160	200	SAND
200	230	SANDY SILT
230	261	SAND GRAVEL COBBLES
261	262	SANDY CLAY

(Use reverse side if necessary)

7) **BOREHOLE COMPLETION:** D.I.M.
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 262 ft. to 191 ft.

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4		S/S BLANK SUMP	230.5	227.5	SCH 10
4		S/S WIRE WRAP SCREEN	227.5	197.5	.010
4		S/S BLANK CASING	197.5	+2.5	SCH 10

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 186 ft. to 0 ft. No. of Sacks Used 62
BENTONITE SEAL 191 ft. to 186 ft. No. of Sacks Used _____
Method used TRIMMIE
Cemented by LAYNE ENVIRONMENTAL

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 212.75 ft. below land surface Date 11-01-92
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N-A Type Depth

13) **TYPE PUMP:** N-A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:** N-A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE WESTERN CO. INC. (Type or print) **WELL DRILLER'S LICENSE NO.** 3143W

ADDRESS 6900 DELHI (Street or RFD) EL PASO (City) TEXAS (State) 79927 (Zip)

(Signed) _____ (Licensed Well Driller) **(Signed)** Charles L. Arbuthnot (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

STATE OF TEXAS WELL REPORT for Tracking #342803

Owner:	**U.S. Department of Energy**	Owner Well #:	**PTX08-1002**
Address:	**PO Box 30030 Amarillo , TX 79120**	Grid #:	**06-44-5**
Well Location:	**FM 2373 & Hwy 60 Amarillo , TX 79120**	Latitude:	**35° 19' 49" N**
Well County:	**Carson**	Longitude:	**101° 33' 08" W**
Elevation:	**3515 ft.**	GPS Brand Used:	**Garmin**
Type of Work:	**Replacement Well**	Proposed Use:	**Monitor**

Drilling Date: Started: **8/26/2013**
Completed: **8/27/2013**

Diameter of Hole: Diameter: **9 5/8 in From Surface To 270 ft**

Drilling Method: Other: **ARCH**

Borehole Completion: Gravel Packed From: **220 ft to 263 ft**
Gravel Pack Size: **10/20 sand**

Annular Seal Data: 1st Interval: **From 263 ft to 220 ft with 49 10/20 sand (#sacks and material)**
2nd Interval: **From 220 ft to 211 ft with 8 1/4" bent pel (#sacks and material)**
3rd Interval: **From 211 ft to 2 ft with bent. grout (#sacks and material)**
Method Used: **High Pressure**
Cemented By: **Yellow Jacket Drilling Svc.**
Distance to Septic Field or other Concentrated Contamination: **No Data ft**
Distance to Property Line: **No Data ft**
Method of Verification: **No Data**
Approved by Variance: **No Data**

Surface Completion: **Surface Slab Installed**

Water Level: Static level: **230 ft. below land surface on 8/27/2013**
Artesian flow: **No Data**

Packers: **No Data**

Plugging Info: Casing or Cement/Bentonite left in well: **No Data**

Type Of Pump: **No Data**

Well Tests: **No Data**

Water Quality: Type of Water: **Perched**
Depth of Strata: **230-260 ft.**
Chemical Analysis Made: **No**
Did the driller knowingly penetrate any strata which contained undesirable constituents: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.

Company Information: **Yellow Jacket Drilling Svc.**
3922 E. University Dr., Ste 1

	Phoenix , AZ 85034
Driller License Number:	**59375**
Licensed Well Driller Signature:	**Quentin Stevens**
Registered Driller Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Comments:	**270-263 interval plugged wth 1/4" bent. pellets. 1 ft sump 261-260 ft**
	Replaces Tr.# 339811 10/11/13 Ref.# 11681

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking number (Tracking #**342803**) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

DESC. & COLOR OF FORMATION MATERIAL

From (ft) To (ft) Description
0-7 clay brown
7-28 caliche pinkish white
28-35 silty clay pinkish brown
35-50 silt brown
50-58 caliche white
58-62 silt brown
62-74 sandy silt reddish brown
74-92 sand brown
92-97 gravel brown
97-110 silt reddish brown
110-122 sand yellowish brown
122-150 silt yellowish brown
150-161 sand yellowish brown
161-185 silt yellowish brown
185-230 sand yellowish brown
230-235 gravely sand yellowish brown
235-240 sand brown
240-242 sandy gravel yellowish brown
242-260 gravel brown
260-270 clay med. brown

CASING, BLANK PIPE & WELL SCREEN DATA

Dia. New/Used Type Setting From/To
4 " new PVC casing, Schedule 80, +3-225'
4" new PVC screen, 0.01" slot, Schedule 80, 225-260'

Davis Geomatics, LLC
Professional Geomatic Consultants
J.D. Davis, RPLS, LSLS, CFedS
Licensed State Land Surveyors
Colorado • Kansas • Oklahoma • Texas

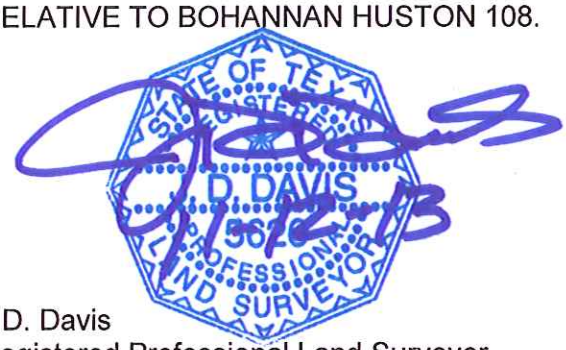
Professional Land Surveyors

Certified Federal Surveyors

Trihydro Corporation — Pantex Plant

POINT DESCRIPTION	NORTHING	EASTING	ELEVATION	CASING ELEVATION
PTX 08-1001	3762976.26	638941.45	3516.63	
PTX 08-1001 T/C				3518.86
PTX 08-1002	3763003.22	640859.00	3514.71	
PTX 08-1002 T/C				3517.01
PTX 06-1149	3754717.64	635864.13	3529.28	
PTX 06-1149 T/C				3531.45
PTX 06-1167	3752653.00	640913.71	3527.72	
PTX 06-1167 T/C				3529.82
PTX 06-EW-81A T/C	3762095.77	639773.41		3525.79

NOTE: COORDINATE VALUES ARE TEXAS STATE PLANE, NORTH ZONE, NAD 83 AS DETERMINED FROM OPUS SOLUTION AND RELATIVE TO BOHANNAN HUSTON 108 AND BOHANNAN HUSTON 93. ELEVATIONS ARE NAVD 88 AND RELATIVE TO BOHANNAN HUSTON 108.



J.D. Davis
Registered Professional Land Surveyor
Texas Registration Number 5626
Amarillo, Texas

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-092-001	**Borehole/Well ID:**	PTX08-1002
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3514.71
Start Date:	8-26-2013	**Driller:**	Quentin Stevens	**TOC Elevation (ft):**	3517.01
End Date:	8-27-2013	**Method:**	ARCH	**Northing:**	3763003.22
Total Depth:	270 ft.	**Borehole Diameter:**	9 5/8"	**Easting:**	640859.00
FGZ Depth:	260 ft.	**Logged by:**	E. Gorove	**Note:**	Replacement well

Depth (ft bgs)	Lithologic Description	Lithology	USCS Symbol	Geophysical Logging (Gamma Ray, Neutron)	Water Level	Well Construction	Depth (ft bgs)
0	Clay: brown, 7.5 YR 3/4, damp, hard, non plastic. With trace sand.		CL			10" PROTECTIVE CASING WITH LOCKABLE CAP	0
10	Silty Clay: brown, 7.5 YR 3/4, damp, hard, non plastic.		CL			CEMENT SURFACE PAD 5' X 5'	10
20							20
30	Silty Clay: pinkish brown, 2.5 YR 5/6, damp to dry, hard, slightly plastic, increasing calilche with depth.		CL				30
40	Silty Clay: pinkish brown, 2.5 YR 5/6, damp to dry, hard, slightly plastic.		CL				40
50	Gravel: white, 2.5 YR 8/1, dry, moderatley sorted, 1/8" to 1", subangular to subrounded, caliche. With some silt and trace vfg sand.		GW				50
60	Silt: light brown, 7.5 YR 6/4, dry, slightly compressible. With trace caliche 1/4" to 1".		CL ML				60
70	Sandy Silt: reddish brown, 2.5 YR 6/3, dry, non plastic. Sand vfg.		ML				70
80	Sand: light brown, 7.5 YR 6/4, dry, vfg, well sorted, quartz based. With trace gravel (caliche) 1/4" to 1", surbrounded.		SP				80
90	Sandy Silt: reddish brown, 2.5 YR 6/3, dry to damp, slightly plastic. Sand vfg. With some gravel, 1/4" to 3/4", subrounded to subangular.		ML				90
100			ML			GROUTED ANNULUS 2' to 211'	100
110	Silt: reddish brown, 5 YR 5/6, dry, slightly plastic. With some gravel (caliche) to 1/2", subangular						110

State Well Report No.: 342803

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-092-001	**Borehole/Well ID:**	PTX08-1002
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3514.71
Start Date:	8-26-2013	**Driller:**	Quentin Stevens	**TOC Elevation (ft):**	3517.01
End Date:	8-27-2013	**Method:**	ARCH	**Northing:**	3763003.22
Total Depth:	270 ft.	**Borehole Diameter:**	9 5/8"	**Easting:**	640859.00
FGZ Depth:	260 ft.	**Logged by:**	E. Gorove	**Note:**	Replacement well

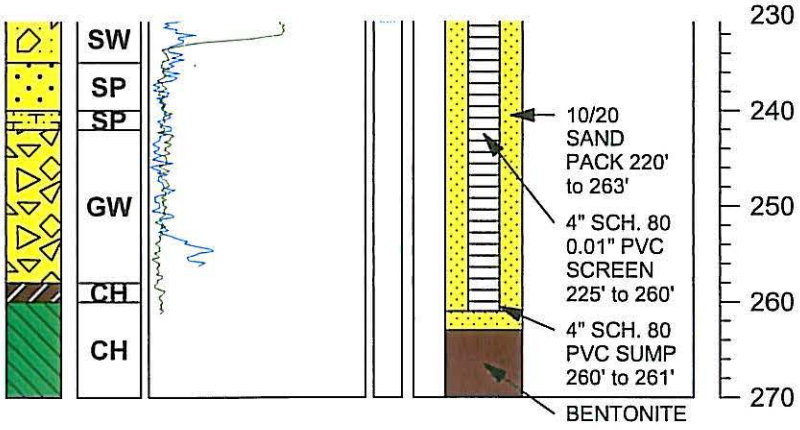
Depth (ft bgs)	Lithologic Description	Lithology	USCS Symbol	Geophysical Logging (Gamma Ray, Neutron)	Water Level	Well Construction	Depth (ft bgs)
120	to subrounded.		SP			4" SCH. 80 PVC CASING 2' to 225'	120
	Sand: yellowish brown, 7.5 YR 6/6, dry, vfg, well sorted, subangular to subrounded . With trace silt.						
130	Silt: yellowish bronw, 7.5 YR 6/6, dry, slightly plastic. With trace vfg sand and gravel to 1/4".		ML				130
140							140
150	Sand: yellowish brown, 7.5 YR 6/4, dry, vfg, well sorted, subangular to subrounded. With trace gravel, 1/4" to 1", subrounded to rounded.		SP				150
160							160
	Silt: yellowish bronw, 10 YR 6/4, dry to damp, slightly plastic. Increasing vfg sand with depth.		ML				
170							170
180							180
190	Sand: yellowish brown, 10 YR 6/4, dry, vfg, well sorted, subangular to subrounded, subangular to subrounded.		SP				190
	Sandy Silt: yellowish brown, 10 YR 6/4, damp, slightly plastic. Sand vfg. With trace gravel to 1/2".		CL				
200							200
210							210
220	Sand: yellowish brown, 10 YR 6/4, damp, vfg, well sorted, subangular to subrounded. With trace gravel to 1/2".		SP			BENTONITE PLUG 211' to 220'	220
230							230

State Well Report No.: 342803

Boring and Well Log

Project:	BOA 52, Release 1 and 2	**Project No.:**	18A-092-001	**Borehole/Well ID:**	PTX08-1002
Location:	Playa 1 area	**Drilling Co:**	Yellow Jacket Drilling Svc.	**Surface Elevation (ft):**	3514.71
Start Date:	8-26-2013	**Driller:**	Quentin Stevens	**TOC Elevation (ft):**	3517.01
End Date:	8-27-2013	**Method:**	ARCH	**Northing:**	3763003.22
Total Depth:	270 ft.	**Borehole Diameter:**	9 5/8"	**Easting:**	640859.00
FGZ Depth:	260 ft.	**Logged by:**	E. Gorove	**Note:**	Replacement well

Depth (ft bgs)	Lithologic Description
230	
240	Gravely Sand: yellowish brown, 10 YR 6/4, damp, vfg, poorly sorted, subangular to subrounded, Gravel 1/4" to 1-1/4", subrounded.
250	Sand: yellowish brown, 10 YR 6/4, damp, vfg, well sorted subangular to subrounded. With trace gravel to 1/2".
260	Silty Sand: yellowish brown, 10 YR 6/4, damp to moist, vfg, subangular to subrounded. Silt approx. 35%.
270	Sandy Gravel: light brown, 10 YR 5/3, saturated, 1/4" to 3/4", angular to subangular, poorly sorted. Sand mg to cg. With some silt decreasing with depth.
	Silty Clay: light brown, 10 YR 6/3, saturated, plastic, moderately stiff.
	Clay: light brown, 10 YR 6/3, saturated, fat, pliable, no sand or silt. Top of FGZ 260 ft bgs



State Well Report No.: 342803

B&W Pantex

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

Well updates may only be performed upon receipt of this form by the Geographical Information System (GIS) Section, along with all appropriate signatures below. Electronic submittals may be made using a routed "E-Stars" task.

* *Cover sheet remains attached to request form for validity. If sent by "E-Stars", recommend sending as a "Routed Approval task" (ends with GIS signee at end of routing).*

Requestor:

(Signature) Matthew Jones (Print)

Project Manager:

(Signature) Tony Biggs (Print)

Groundwater Media Scientist: Matt Jones, PhD.

(Signature) (Print)

Reviewer: Tony Biggs

(Signature) Tony Biggs (Print)

Reviewer: Michelle Jarrett

(Signature) Michelle Jarrett (Print)

Integrated Environmental Database (IED) & Suspect Anomaly Report (SAR) Administration: Tammy Vincent

(Signature) Tammy Vincent (Print)

GIS Administration *(when request is completed)*: Barry Guidry

(Signature) Barry Guidry (Print)

Environmental Projects & Operations Well Request and Change Form

(Reference WI 02.01.04.03.03)

ENVIRONMENTAL PROGRAMS
WELL REQUEST AND CHANGE FORM

STOP!! DO NOT ATTEMPT TO COMPLETE THIS FORM UNTIL
YOU HAVE CAREFULLY READ THE INSTRUCTIONS AFTER THE FORM

Type of Well Change (check one):

☐ New well request?
How many? 2

☒ Updates to existing wells

1. General Information			
a. Existing Well No.: (If well currently exists)	PTX08-1002	b. Long-Tem Monitoring (LTM) Well?	☒
c. Requestor's Name:	M Jones	d. Date:	8/20/2013
e. Dept/Organization:	622	f. Mail Drop:	
g. Phone:	5916	h. Deadline:	
i. Reason for deadline:			
2. New Well Request			
a. Aquifer:	Perched	b. Well Type:	Investigative Well
c. Proposed Coordinates:			
Easting (x):	640900.000	Northing (y):	3763000
3. Well Changes (to existing wells)			
a. When completed?	N/A	Date: unknown	
	Existing	*New*	
b. Aquifer:	N/A	N/A	
c. Well Type:	N/A	N/A	
d. Current status of well:	Active	Dry	

4. Other: replacement well

STATE OF TEXAS PLUGGING REPORT for Tracking #90341

Owner:	U.S. Department of Energy	Owner Well #:	PTX08-1002
Address:	PO Box 30030 Amarillo , TX 79120	Grid #:	06-44-5
Well Location:	FM 2373 & Hwy 60 Amarillo , TX 79120	Latitude:	35° 19' 47" N
Well County:	Carson	Longitude:	101° 33' 46" W
		GPS Brand Used:	Garmin
Well Type:	Monitor		

HISTORICAL DATA ON WELL TO BE PLUGGED

Original Well Driller:	C. Allbritton
Driller's License Number of Original Well Driller:	3143W
Date Well Drilled:	12/20/1992
Well Report Tracking Number:	No Data
Diameter of Borehole:	9.5 Inches
Total Depth of Borehole:	230 feet

Date Well Plugged:	8/5/2013
Person Actually Performing Plugging Operation:	Quentin Stevens
License Number of Plugging Operator:	59375
Plugging Method:	Pour in 3/8 bentonite chips when standing water in well is less than 100 feet in depth, cement top 2 feet.
Plugging Variance #:	No Data
Casing Left Data:	1st Interval: 4 inches diameter, From 230 ft to 2 ft 2nd Interval: No Data 3rd Interval: No Data
Cement/Bentonite Plugs Placed in Well:	1st Interval: From 230 ft to 2 ft; Sack(s)/type of cement used: 35 sacks bent. chips 2nd Interval: From 2 ft to 0 ft; Sack(s)/type of cement used: 4 sacks concrete 3rd Interval: No Data 4th Interval: No Data 5th Interval: No Data

Certification Data:	The plug installer certified that the plug installer plugged this well (or the well was plugged under the plug installer's direct supervision) and that each and all of the statements herein are true and correct. The plug installer understood that failure to complete the required items will result in the log(s) being returned for completion and resubmittal.
Company Information:	Yellow Jacket Drilling Svc. 3922 E. University Dr., Ste 1

	Phoenix , AZ 85034
Plug Installer License Number:	**59375**
Licensed Plug Installer Signature:	**Quentin Stevens**
Registered Plug Installer Apprentice Signature:	**No Data**
Apprentice Registration Number:	**No Data**
Plugging Method Comments:	**Stainless steel casing cut 2 ft bgs; remainder left in place.**

Please include the plugging report's tracking number (Tracking #90341) on your written request.

Texas Department of Licensing & Regulation
P.O. Box 12157
Austin, TX 78711
(512) 463-7880

PTX08-1002

Contractor:
Contract #:

OPTIX #:

Included Documents

_X_Drilling Log
    ___Draft
    _X_Final

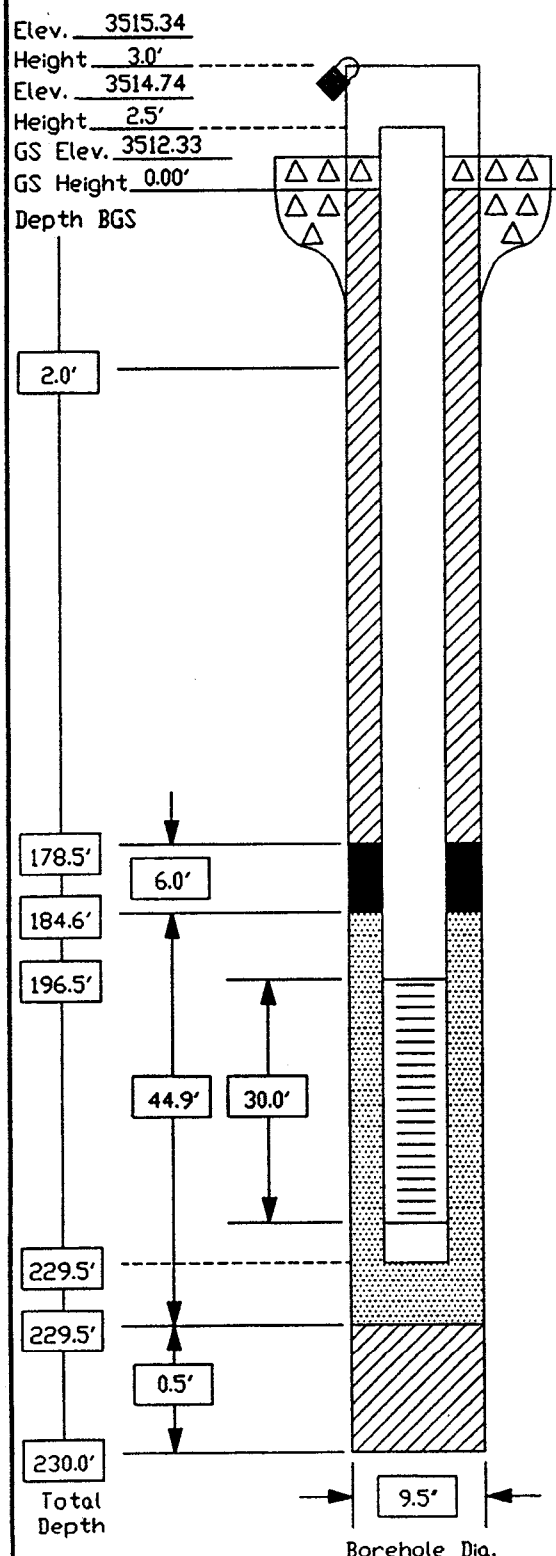
_X_Installation Log

___Lithologic Logs
    ___Draft
    ___Final

_X_Geophysical Logs
    ___Neutron
    ___Gamma
    ___e-log
    ___Bond Log
    ___Deviation log

_X_State Well Report

WELL LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 1 OF 2 SHEETS
1. PROJECT PANTEX RFI-DITCHES AND PLAYAS		10. SIZE AND TYPE OF BIT 9.5" HAMMER	
2. LOCATION (Coordinates or Station) SWMU-6		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 3512.33	
3. DRILLING AGENCY LAYNE ENVIRONMENTAL SERVICES		12. MANUFACTURER'S DESIGNATION OF DRILL AP-1000 (AIR PERCUSSION)	
4. HOLE NO. (As shown on drawing title and File number) PTX08-1002		13. OVERBURDEN SAMPLES DISTURBED 13	UNDISTURBED
5. NAME OF DRILLER CHUCK ALLBRITTON		14. TOTAL NUMBER CORE BOXES NA	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER 3305.19 TOC 3/3/93	
		16. DATE HOLE STARTED 12/16/92	COMPLETED 12/20/92
7. THICKNESS OF OVERBURDEN NA		17. ELEVATION TOP OF HOLE 3512.33	
8. DEPTH DRILLED INTO ROCK NA		18. TOTAL CORE RECOVERY FOR BORING NA	%
9. TOTAL DEPTH OF HOLE 230.0 FEET		AL CHAPMAN	INSPECTOR



PROTECTIVE CSG
Material/Type Steel/Locking Cap
Diameter 10"
Depth BGS 2.0' Weep Hole (Y) / N

GUARD POSTS (Y) / N
No. 4 Type 3" Round Steel

SURFACE PAD
Composition & Size Concrete 4'10"x4'10"x6"

RISER PIPE
Type Stainless Steel (316)
Diameter 4.5" OD
Total Length (TOC to TOS) +2.5'-196.5'
Ventilated Cap (Y) / N

GROUT
Composition & Proportions 6000 lbs. type II Cement 200 lbs. Super Gel-X
Tremied (Y) / N
Interval BGS 178.5'-2.0'

CENTRALIZERS Y / (N)
Depth(s) _____

SEAL
Type Bentonite (Pure Gold)
Source Volclay Sunbelt Supply American Colloid
Setup/Hydration Time 1.0 Hr.
Vol. Fluid Added 8 Gals.
Tremied (Y) / N

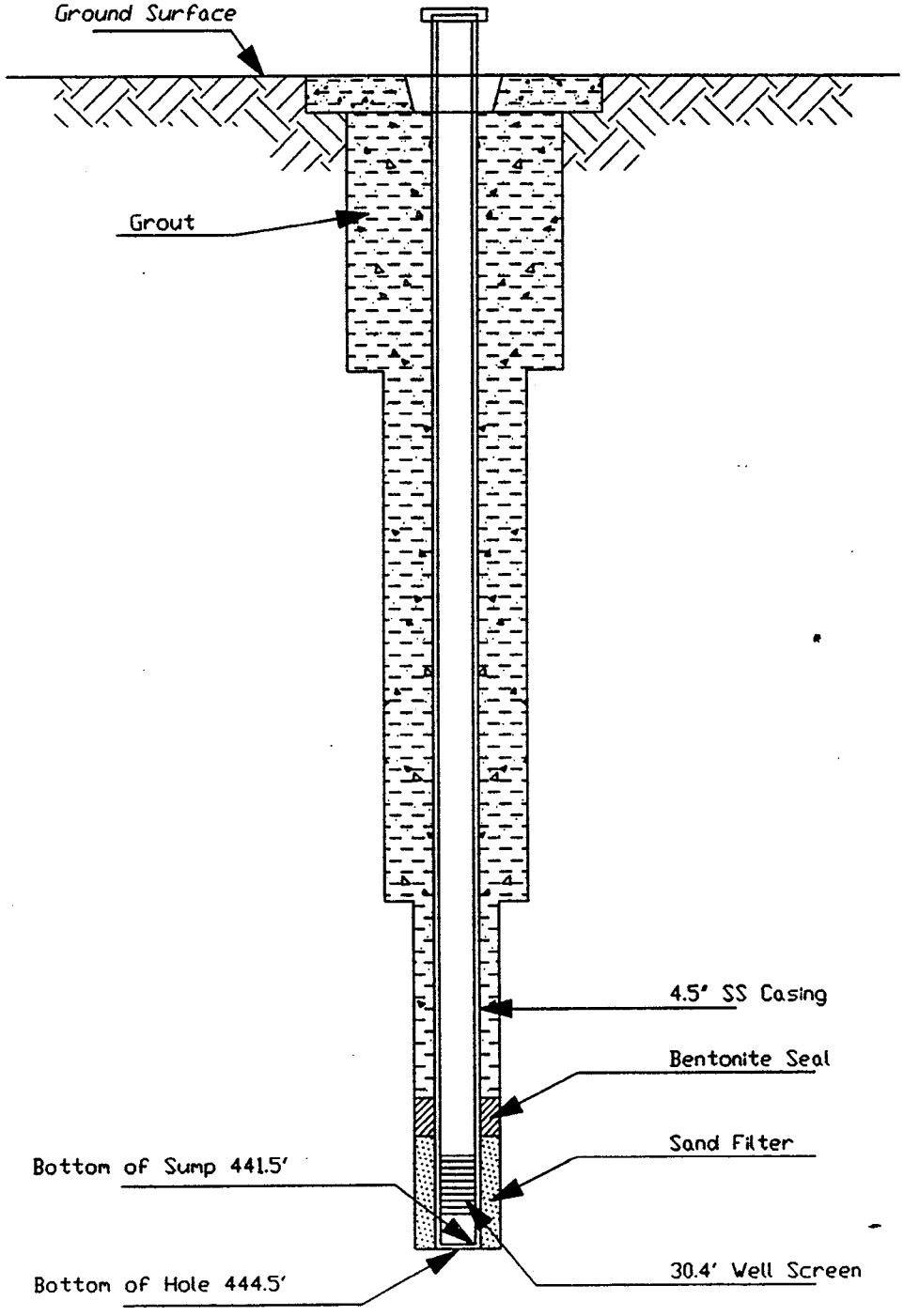
FILTER PACK
Type Silica Sand 20/40
Amt. Used 1300 lbs.
Tremied (Y) / N
Source Texas Mining Company
Gr. Size Dist. 20/40 (.45mm-.48mm)

SCREEN
Type Stainless Steel (316)
Diameter 4.5" OD
Slot Size & Type 0.010 Johnson Wire-Wrap
Interval BGS 226.5'-196.5'

SUMP (Y) / N
Interval BSG 226.5'-296.5' Length 3.0'
Bottom Cap (Y) / N

BACKFILL PLUG
Material Silica Sand 20/40
Setup/Hydration Time 0.0
Tremied (Y) / N

WELL LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 2 OF 2 SHEETS
1. PROJECT PANTEX RFI DITCHES AND PLAYAS		10. SIZE AND TYPE OF BIT 9.5" HAMMER	
2. LOCATION (Coordinates or Station) SWMU-6		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) 3512.33	
3. DRILLING AGENCY LAYNE ENVIRONMENTAL SERVICES		12. MANUFACTURER'S DESIGNATION OF DRILL AP-1000 (AIR PERCUSSION)	
4. HOLE NO. (As shown on drawing title and file number) PTX08-1002		13. OVERBURDEN SAMPLES	DISTURBED / UNDISTURBED
5. NAME OF DRILLER CHUCK ALLBRITTON		14. TOTAL NUMBER CORE BOXES NA	
6. DIRECTION OF HOLE ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	
		16. DATE HOLE STARTED 12/16/92 COMPLETED	
7. THICKNESS OF OVERBURDEN NA		17. ELEVATION TOP OF HOLE 3512.33'	
8. DEPTH DRILLED INTO ROCK NA		18. TOTAL CORE RECOVERY FOR BORING NA %	
9. TOTAL DEPTH OF HOLE 230.0 FEET		AL CHAPMAN INSPECTOR	



DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 1 OF 5 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1002
5. NAME OF DRILLER: Robert Rupp
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 232.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 3
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED DEC 16 92; COMPLETED DEC 20 92
17. ELEVATION TOP OF HOLE: 3512.3
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (CATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3510			Silty clay: very dark gray brown (10YR 3/2), very fine grained, moderate grading, subrounded, hard, rapid dilatancy, medium plasticity, compact, low permeability, damp. Topsoil roots present.	3 4 8 12	01	15:00/0-2' Alpha = 0cpm OVM = 0ppm Beta/Gamma = 80cpm
			Silty clay: dark brown (10YR 3/3), fine grained, moderate grading, subrounded, hard, rapid dilatancy, medium plasticity, compact, low permeability, damp. Topsoil roots present. White calcareous root casts present throughout unit.	21 45 61 55	02	08:30/5-7' Alpha = 0cpm OVM = 0ppm Beta/Gamma = 80cpm Hs = 0ppm
	10			22 42 54 52	03	10:30/10-12' LEL = 0% A = 0cpm Bz/Bh = 0ppm OVM = 0ppm B/G = 70cpm
3500			Clay: Brown (7.5YR 5/4), trace sand, moderate grading, hard to very hard, rapid dilatancy, medium to high plasticity, compact, low permeability, damp. White calcareous zones in clay matrix (caliche and clay).			
	20			13 34 52 79	04	13:00/20-22' LEL = 0% A = 0cpm OVM = 0ppm B/G = 70cpm
3490						
	30					13:25/30-32' BZ/BH = 0ppm LEL = 0%
3480						
	40		Silty sand: pink (7.5YR 7/4), poor grading, subrounded, very hard, no to slow dilatancy, no plasticity, loose, low to moderate permeability, dry. Cemented sand with white calcareous zones (caliche).			13:45/40-42' BZ/BH = 0ppm LEL = 0%
3470						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 2 OF 5 SHEETS

1. PROJECT	PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station)	SWMU-6
3. DRILLING AGENCY	LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number)	PTX08-1002
5. NAME OF DRILLER	Robert Rupp
6. DIRECTION OF HOLE	☒ VERTICAL ☐ INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	232.0
10. SIZE AND TYPE OF BIT	9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURES'S DESIGNATION OF DRILL	AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 13 / UNDISTURBED 3
14. TOTAL NUMBER CORE BOXES	None
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED DEC 16 92 / COMPLETED DEC 20 92
17. ELEVATION TOP OF HOLE	3512.3
18. TOTAL CORE RECOVERY FOR BORING	NA %
19. SIGNATURE OF INSPECTOR	AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3460				30 49 139	05	14:30/50-52' LEL= 0% A= 0cpm OVM= 0ppm B/G= 50cpm
3450	60		Sand: dark yellow brown (10YR 4/6), trace silt, well to moderate grading, subrounded, soft, no dilatancy, no plasticity, loose, high permeability, dry to damp.			14:35/60-62' Bz/Bh=0ppm LEL= 0% OVM= 0ppm
3440	70			50 14 21 30	06	14:40/70-72' Bz/Bh=0 LEL OVM= 0ppm
3430	80		Silty sand: yellowish brown (10YR 5/6), fine grained, moderate grading, subrounded, soft, no to slow dilatancy, no plasticity, loose, moderate to high permeability, dry to damp. Becomes less silty with depth.		11	15:05/80-82' LEL= 0% A= 0cpm OVM= 0ppm B/G= 70cpm Collect Denison sample for 6002-11 from 82-84' bgs
3420	90					08:15/90-92' BZ/BH =0ppm LEL= 0%

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 3 OF 5 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1002
5. NAME OF DRILLER: Robert Rupp
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 232.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 3
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED DEC 16 92; COMPLETED DEC 20 92
17. ELEVATION TOP OF HOLE: 3512.3
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3410				20 36 45 53		08:45/100-102' LEL = 0% A = 0cpm OVM = 0ppm B/G = 50cpm
	110			26 64 105		09:00/110-112' LEL = 0% A = 0cpm OVM = 0ppm B/G = 60cpm
3400						
	120			75 130/1"		09:45/120-122' OVM = 0ppm B/G = 65cpm A = 0cpm BZ/BH = 0ppm LEL = 0%
3390						
	130			25 43 51 72	07	10:15/130-132' OVM = 0ppm B/G = 70cpm A = 0cpm BZ/BH = 0ppm LEL = 0%
3380						
	140		Sand: yellowish brown (10YR 5/6), very fine to fine grained, moderate grading, subrounded, soft no dilatancy, no plasticity, loose, moderate to high permeability, dry to moist. Coobles present @ 190 bgs. Moisture increases @ 180' bgs. Cemented layers present throughout unit.	12 24 37 47		10:45/140-142' OVM = 0ppm B/G = 80cpm A = 0cpm BZ/BH = 0ppm LEL = 0%
3370						

DRILLING LOG | DIVISION: DOE | INSTALLATION: PANTEX | SHEET 4 OF 5 SHEETS

1. PROJECT: PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station): SWMU-6
3. DRILLING AGENCY: LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number): PTX08-1002
5. NAME OF DRILLER: Robert Rupp
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: NA
8. DEPTH DRILLED INTO ROCK: NA
9. TOTAL DEPTH OF HOLE: 232.0
10. SIZE AND TYPE OF BIT: 9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURES'S DESIGNATION OF DRILL: AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 13; UNDISTURBED 3
14. TOTAL NUMBER CORE BOXES: None
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED DEC 16 92; COMPLETED DEC 20 92
17. ELEVATION TOP OF HOLE: 3512.3
18. TOTAL CORE RECOVERY FOR BORING: NA %
19. SIGNATURE OF INSPECTOR: AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
					12	13:30/150-152' OVM= 0ppm B/G= 70cpm A= 0cpm BZ/BH= 0ppm LEL= 0%
3360				11 18	08	
				105 107		Undisturbed taken from 152'-153'.
						Disturbed taken from 154'-156 with s/s.
	160					
						15:15/160-162' BZ/BH= 0ppm LEL= 0%
3350						
	170					15:30/170-172' BZ/BH= 0ppm LEL= 0%
3340						
	180			10 23 45 100	09	180-182' OVM= 0ppm B/G= 70cpm A= 0cpm BZ/BH= 0ppm LEL= 0% Hs=0ppm
3330						
	190			8 21 53 78		17:00/190-192' OVM= 0ppm B/G= 70cpm A= 0cpm BZ/BH= 0ppm LEL= 0%
3320						

DRILLING LOG	DIVISION DOE	INSTALLATION PANTEX	SHEET 5 OF 5 SHEETS

1. PROJECT	PANTEX PLAYAS AND DITCHES
2. LOCATION (Coordinates or Station)	SWMU-6
3. DRILLING AGENCY	LAYNE ENVIRON. SVCS.
4. HOLE NO. (As shown on drawing title and file number)	PTX08-1002
5. NAME OF DRILLER	Robert Rupp
6. DIRECTION OF HOLE	[X] VERTICAL [ ] INCLINED 0.0 DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN	NA
8. DEPTH DRILLED INTO ROCK	NA
9. TOTAL DEPTH OF HOLE	232.0
10. SIZE AND TYPE OF BIT	9.5" Hammer
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)	MSL
12. MANUFACTURES'S DESIGNATION OF DRILL	AP-1000 Air Percussion
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 13 / UNDISTURBED 3
14. TOTAL NUMBER CORE BOXES	None
15. ELEVATION GROUND WATER	
16. DATE HOLE	STARTED DEC 16 92 / COMPLETED DEC 20 92
17. ELEVATION TOP OF HOLE	3512.3
18. TOTAL CORE RECOVERY FOR BORING	NA %
19. SIGNATURE OF INSPECTOR	AL CHAPMAN (ATC)

Elevation a	Depth b	Legend c	Classification Of Materials (Description) d	% Recovery RQD e	Box Or Sample No. f	Remarks (Drilling time, water loss, depth weathering, etc., if significant) g
3310			Silty sand: dark yellow brown (10YR 4/6), moderate grading, subrounded, soft, no to slow dilatancy, no plasticity, loose, high permeability, moist to wet.		13	10:15/200-202' BZ/BH = 0ppm LEL = 0%
						Collect denison sample OVM = 0ppm B/G = 50 cpm, A = 0cpm Hs = 0ppm
	210			27 58 104 100/3		11:15/210-212' OVM = 0ppm B/G = 80cpm A = 0cpm BZ/BH = 0ppm LEL = 0% Take H20 reading at 209.58
3300						
			Sand: dark yellow brown (10YR 4/6), subrounded, soft, no to slow dilatancy, no plasticity, loose, high permeability, wet. TD - 230.0'.			
	220			8 28 100/5"		12:15/220-222' OVM = 0ppm B/G = 60cpm A = 0cpm BZ/BH = 0ppm LEL = 0%
3290						
	230					12:30/230-232' BZ/BH = 0ppm LEL = 0% TD at 230.0' bgs.

Century GEOPHYSICAL CORP.

PTX08 - 1002

COMPANY	: RADIAN				
WELL	: PTX08 - 1002				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:

OTHER SERVICES:

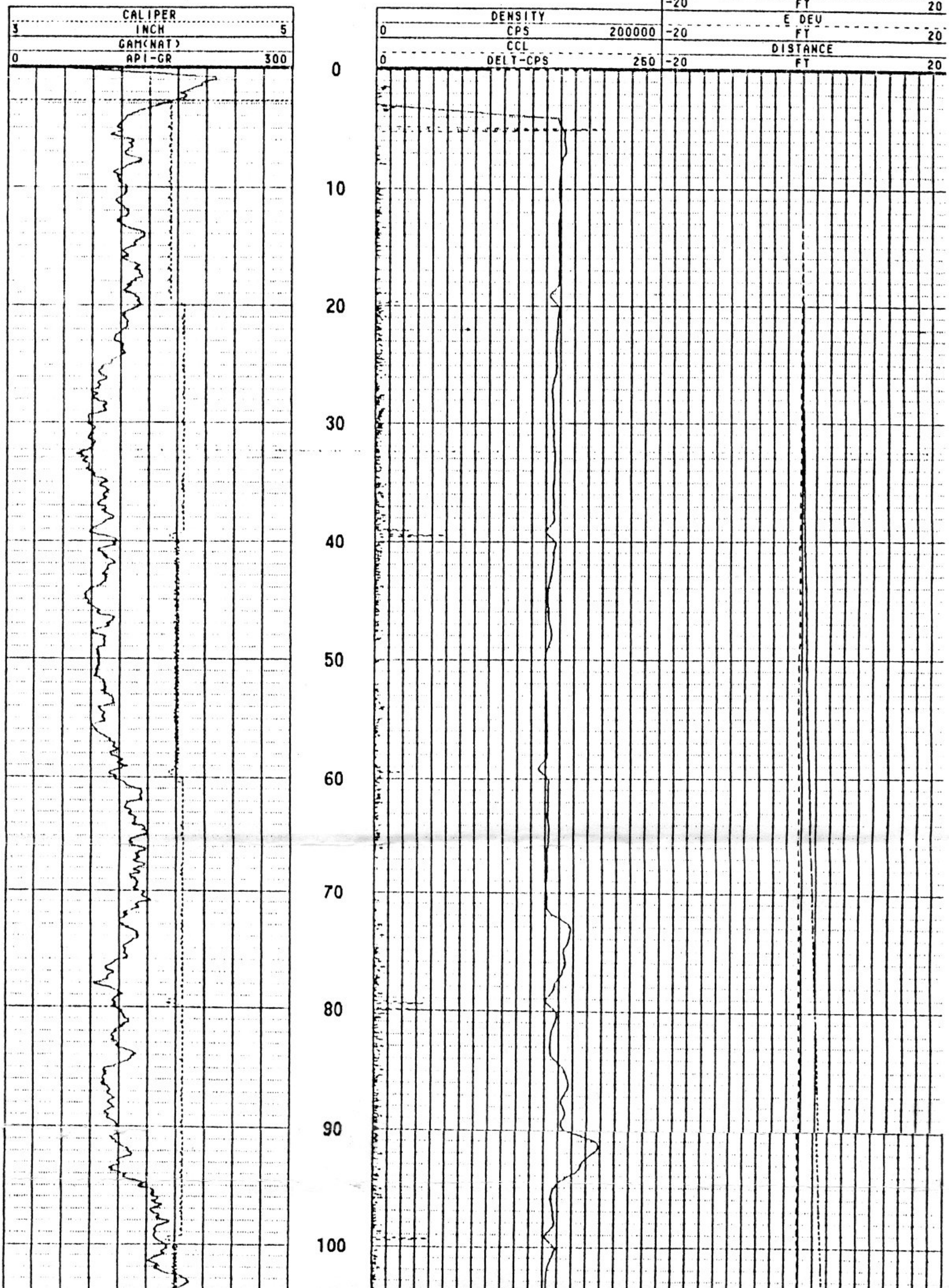
DATE	: 01/08/93	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 235	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 233.60	LOG MEASURED FROM	: T.O.C.	DF	:
LOG TOP	: -1.20	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 235	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R.FEDERWISCH		
BIT SIZE	: 9	BOREHOLE FLUID	: AIR	FILE	: PROCESSED
MAGNETIC DECL.	: 14.5	RM	: 20.8	TYPE	: 9051A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 9
FLUID DENSITY	: 0	MATRIX DELTA T	: 0	PLOT	: PTXF 0
NEUTRON MATRIX	: SANDSTONE	FLUID DELTA T	: 0	THRESH	: 50000

REMARKS :

LOG MEASURED FROM TOP OF CASEING PROTECTOR.

STAINLESS STEEL CASEING

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS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N DEV
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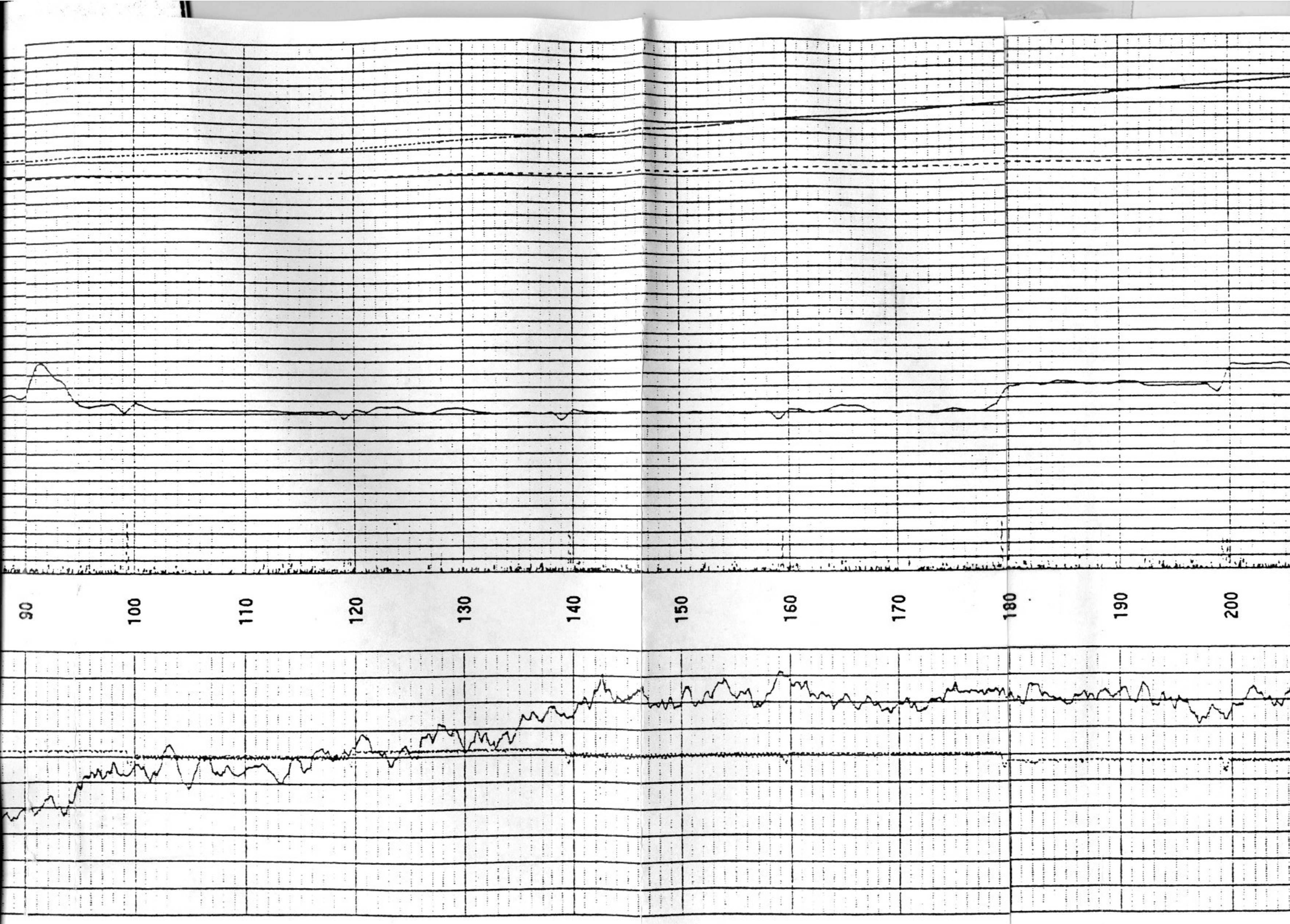
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CALIPER

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CCL
0 CPS 200000
DENSITY

-20 FT 20
DISTANCE
-20 FT 20
E DEV
-20 FT 20
N DEV

Send original copy by certified mail to: Texas Water Commission, P.O. Box 13087, Austin, Texas 78711 — Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) OWNER US DEPT of ENERGY PANTEX PLANT (Name) ADDRESS HWY 60 Fm 2373 (Street or RFD) AMARILLO (City), TEXAS (State) 79177 (Zip)

2) LOCATION OF WELL: County CARSON, 30 miles in EAST N.E. (NE, SW, etc.) direction from AMARILLO (Town)

Driller must complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ LEGAL DESCRIPTION:

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ SEE ATTACHED MAP PTX 08-1002

3) TYPE OF WORK (Check):
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check):
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply
☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) DRILLING METHOD (Check): AIR
☒ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored
☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) WELL LOG:
Date Drilling: Started 12-16 1992 Completed 12-21 1992

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
9	Surface	230

D.I.M.

7) BOREHOLE COMPLETION:
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☐ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 229.5 ft. to 184.6 ft.

From (ft.)	To (ft.)	Description and color of formation material
0	7	SILTY CLAY
		CLAY
40	60	SILTY SAND
60	80	SAND
80	140	SILTY SAND
140	200	SAND
200	215	SILTY SAND
215	230	SAND

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA:

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen
4		S/S BLANK SUMP	229.5	226.5	SCH 10
4		S/S WIRE WRAP SCREEN	226.5	196.5	.010
4		S/S BLANK CASING	196.5	+2.5	SCH 10

9) CEMENTING DATA [Rule 287.44(1)]
Cemented from 178.5 ft. to 0 ft. No. of Sacks Used 60
BENTONITE SEAL 184.6 ft. to 178.5 ft. No. of Sacks Used PELLETS
Method used TRIMMIE
Cemented by LAYNE ENVIRONMENTAL

13) TYPE PUMP: N-A
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

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10) SURFACE COMPLETION
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

14) WELL TESTS: N-A
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

11) WATER LEVEL:
Static level 209.5 ft. below land surface Date 12-19-92
Artesian flow _____ gpm. Date _____

15) WATER QUALITY:
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

12) PACKERS: N-A Type Depth

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME LAYNE WESTERN CO INC (Type or print) WELL DRILLER'S LICENSE NO. 3143

ADDRESS 600 DELHI (Street or RFD) EL PASO (City) TEXAS (State) 79927 (Zip)

(Signed) _____ (Licensed Well Driller) (Signed) Charles Clutton (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

GROUNDWATER MONITORING WELL REPORT

Project Name Gasoline Leak Sites, Building 12-35
Location Pantex Plant - Amarillo, Texas
Installed by Layne Environmental Services
Inspected by H. W. Merrell
Method of Installation Dual-Wall Percussion Drilling
Remarks

Well No. PTX09-0013
Project No. 91KC047-1
Date 07-12-92
Time 16:30
Boring No. PTX09-0013

Depths ft.	Elements/Identifiers	Elevations
	Brass disk in concrete pad	3542.94
0	Ground Surface	3542.70
	Top of casing	3542.01
	Surface casing Type Stainless steel schedule 10 I.D. Inches 10	
	Surface seal Type Cement-(5%) bentonite grout	
	Riser pipe Type Stainless steel schedule 10 I.D. inches 4	
	Backfill Type Cement-(5%) bentonite grout	
229.6	Bottom of backfill	
	Seal Type Bentonite 1/4" pellets	
233.1		
241.37	Top of screen	
	Filter pack Type Silica, 20-40 mesh	
	Screen Type Stainless steel wire wrap schedule 10 I.D. inches 4 Slot size 0.010" (factory slotted)	
271.0	Bottom of screen	
	Blank pipe	
274.12	Plug	
	Backfill below well plug Type Silica, 20-40 mesh	
275.0	Bottom of boring	
	Boring diameter 9 1/2"	

PTX10-0013

DRILLING LOG

HOLE NO. PTX09-0013

1. COMPANY NAME: Woodward-Clyde	2. DRILLING SUBCONTRACTOR: Layne Environmental Services, Inc.	SHEET 1 OF 11 SHEETS
3. PROJECT: Gasoline Leak Sites, Building 12-35	4. LOCATION: Pantex Plant, Amarillo, Texas	
5. NAME OF DRILLER: Nicholas Hernandez, Jr. (Licensed TWC Driller)	6. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 Drill Systems	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 9.5 inch Falcon, 2-inch split spoon	8. HOLE LOCATION: Building 12-35	
	9. SURFACE ELEVATION: 3542.7	
	10. DATE STARTED: 7/7/92	11. DATE COMPLETED: 7/12/92
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 250.51 ft on 8/10/92	
14. TOTAL DEPTH OF HOLE: 275.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
11 Total	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC.
27 Total	X	X	High explosives	TPH	pH,CEC	85.7%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Terry Gibson

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3542	1	Asphalt SILTY SAND (SM), medium, very fine to fine grained, moist, reddish yellow (Fill)					Note: "X" cut in brass disk; N3759945.01, E639665.18, Elev. 3542.94 ft.
3541	2						
3540	3						
3539	4						
3538	5						
3537	6		0.0 ppm			20 12 14	Interval (Int.) 5.0-6.5 ft., Recovery (Rec.) 0.8 ft.
3536	7	LEAN CLAY (CL), firm, moist, dark brown, with some caliche silty sand inclusions, and trace of sand and manganese					
3535	8						
3534	9						
3533	10		0.0 ppm			9 15 18	Int. 9.0-10.5 ft., Rec. 1.5 ft.
3532	11						
3531	12						
3530	13						
3529	14						
3528	15						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 2 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3527	16	Continuing CL	0.0 ppm			14 18 23	Int. 15.0-16.5 ft., Rec. 1.5 ft.
3526	17						
3525	18						
3524	19	Reddish yellow	0.0 ppm			7 17 21	Int. 19.0-20.5 ft., Rec. 1.5 ft.
3523	20						
3522	21						
3521	22						
3520	23						
3519	24						
3518	25		0.0 ppm	2025		12 17 19	Int. 25.0-26.5 ft., Rec. 1.5 ft.
3517	26						
3516	27						
3515	28						
3514	29	Brown, with increased silt content	0.0 ppm		2030	9 13 19	Int. 29.0-30.5 ft., Rec. 1.5 ft.
3513	30						
3512	31						
3511	32						
3510	33						
3509	34						
3508	35	Gravelly lense with caliche from 35 to 35.7 ft.	0.0 ppm			19 28 33	Int. 35.0-36.5 ft., Rec. 1.5 ft.
3507	36						
3506	37						
3505	38						
3504	39	Gravelly lense with caliche from 39 to 39.1 ft.	0.0 ppm		2040	5 7 11	Int. 39.0-40.5 ft., Rec. 1.5 ft.
3503	40						
3502	41						
3501	42						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 3 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3500	43						
3499	44						
3498	45						
3497	46	LEAN CLAY with Sand (CL), firm, moist, pink, with trace of caliche and manganese, very fine to fine grained sand	0.0 ppm			8 13 21	Int. 45.0-46.5 ft., Rec. 1.5 ft.
3496	47						
3495	48						
3494	49	Clay lense from 49 to 50 ft.	0.0 ppm	2050		8 18 28	Int. 49.0-50.5 ft., Rec. 1.5 ft.
3493	50	Trace of sandstone gravel and caliche cementing from 50.4 to 50.5 ft.					
3492	51						
3491	52						
3490	53						
3489	54						
3488	55		0.0 ppm		2055	4 5 11	Int. 55.0-56.5 ft., Rec. 1.5 ft.
3487	56						
3486	57						
3485	58						
3484	59	CLAYEY SAND (SC), dense to very dense, very fine to fine grained, moist, dark brown, with some silt, trace of organic staining and caliche inclusions	0.0 ppm			22 42 51	Int. 59.0-60.5 ft., Rec. 1.5 ft.
3483	60						
3482	61						
3481	62						
3480	63						
3479	64						
3478	65	Yellowish red	0.0 ppm		2065	43 51	Int. 65.0-66.1 ft., Rec. 1.1 ft.
3477	66					R	
3476	67						
3475	68						
3474	69						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 4 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3473	70	Decreased silt and clay content SILTY SAND (SM), dense to very dense, very fine to medium grained, moist, yellowish red, with trace of clay, caliche inclusions, and organic staining	0.0 ppm		2070	31 43 51	Int. 69.0-70.5 ft., Rec. 1.5 ft.
3472	71						
3471	72						
3470	73						
3469	74						
3468	75						
3467	76	Increased caliche content from 75 to 75.1 ft.	0.0 ppm	2075		35 55 R	Int. 75.0-76.0 ft., Rec. 1.0 ft.
3466	77						
3465	78						
3464	79						
3463	80		0.0 ppm		2080	35 71 96	Int. 79.0-81.5 ft., Rec. 2.1 ft.
3462	81					8 50 R	QA/QC Sample
3461	82						
3460	83						
3459	84						
3458	85						
3457	86		0.0 ppm			21 53 R	Int. 85.0-86.2 ft., Rec. 1.2 ft.
3456	87						
3455	88						
3454	89						
3453	90	Clay lense from 89 to 89.5 ft. With interbedded silty clay lenses, hard, reddish brown	0.0 ppm		2090	38 51 R	Int. 89.0-90.5 ft., Rec. 1.5 ft.
3452	91						
3451	92						
3450	93						
3449	94						
3448	95						
3447	96	LEAN CLAY (CL), hard, moist, reddish brown, with trace of caliche	0.0 ppm			25 33	Int. 95.0-96.5 ft., Rec. 1.2 ft.

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 6 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		and gravel				45	
3446	97	SILTY SAND (SM), dense to very dense, very fine to fine grained, moist, brown, weakly cemented with caliche, faintly laminated					
3445	98						
3444	99		0.0 ppm	2100		21 45 R	Int. 99.0-100.2 ft., Rec. 1.2 ft.
3443	100						
3442	101						
3441	102						
3440	103						
3439	104						
3438	105		0.0 ppm		2105	45 55 R	Int. 105.0-106.0 ft., Rec. 1.0 ft.
3437	106						
3436	107						
3435	108						
3434	109		0.0 ppm			24 65 R	Int. 109.0-110.0 ft., Rec. 1.0 ft.
3433	110						
3432	111						
3431	112						
3430	113						
3429	114						
3428	115		0.0 ppm		2115	17 39 50	Int. 115.0-116.5 ft., Rec. 1.5 ft.
3427	116	Pink					
3426	117						
3425	118						
3424	119		0.0 ppm			15 39 52	Int. 119.0-120.5 ft., Rec. 1.5 ft.
3423	120						
3422	121						
3421	122						
3420	123						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 6 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3419	124	Continuing SM					
3418	125		0.0 ppm	2125		48 51 R	Int. 125.0-126.1 ft., Rec. 1.1 ft.
3417	126						
3416	127						
3415	128						
3414	129		0.3 ppm		2130	46 52 R	Int. 129.0-130.5 ft., Rec. 1.5 ft.
3413	130						
3412	131						
3411	132						
3410	133						
3409	134						
3408	135		0.2 ppm		2135	37 52 R	Int. 135.0-136.5 ft., Rec. 1.5 ft.
3407	136						
3406	137						
3405	138						
3404	139		0.0 ppm			50 53 R	Int. 139.0-139.9 ft., Rec. 0.9 ft.
3403	140						
3402	141						
3401	142						
3400	143						
3399	144						
3398	145		0.0 ppm		2145	24 50 R	Int. 145.0-146.2 ft., Rec. 1.2 ft.
3397	146						
3396	147						
3395	148						
3394	149		0.0 ppm	2150		19 42	Int. 149.0-150.5 ft., Rec. 1.5 ft.
3393	150						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 7 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3392	151	Continuing SM				69	
3391	152						
3390	153						
3389	154						
3388	155						
3387	156	Decreased caliche content from 155 to 165 ft.				34 48	Int. 155.0-156.0 ft., Rec. 1.0 ft.
3386	157					R	
3385	158						
3384	159						
3383	160				2160	60 R	Int. 159.0-159.8 ft., Rec. 0.8 ft.
3382	161					R	
3381	162						
3380	163						
3379	164						
3378	165						
3377	166		21.0 ppm		2165	19 44 73	Int. 165.0-166.5 ft., Rec. 1.5 ft.
3376	167						
3375	168						
3374	169						
3373	170		1.4 ppm			22 54 R	Int. 169.0-170.2 ft., Rec. 1.2 ft.
3372	171						
3371	172						
3370	173						
3369	174						
3368	175						
3367	176		6.1 ppm	2175		9 24 50	Int. 175.0-176.5 ft., Rec. 1.5 ft.
3366	177						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 8 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3365	178	Continuing SM					
3364	179		4.4 ppm		2180	5 14 18 33 43	Int. 179.0-181.5 ft., Rec. 2.5 ft. QA/QC Sample
3363	180						
3362	181						
3361	182						
3360	183						
3359	184						
3358	185		0.0 ppm			12 27 50	Int. 185.0-186.5 ft., Rec. 1.5 ft.
3357	186						
3356	187						
3355	188						
3354	189	Trace of gravel	1.4 ppm		2190 EB	20 42 50	Int. 189.0-190.5 ft., Rec. 1.2 ft.
3353	190						
3352	191						
3351	192						
3350	193						
3349	194						
3348	195		0.0 ppm			5 25 50	Int. 195.0-196.5 ft., Rec. 1.5 ft.
3347	196						
3346	197						
3345	198						
3344	199		0.0 ppm	2200		19 17 35	Int. 199.0-200.5 ft., Rec. 1.2 ft.
3343	200						
3342	201						
3341	202						
3340	203						
3339	204						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 9 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3338	205	Continuing SM					
			0.0 ppm		2205	16 50 51	Int. 205.0-206.5 ft., Rec. 1.3 ft.
3337	206						
3336	207						
3335	208						
3334	209						
		Reddish yellow, with some zones of weakly to moderately caliche cemented sand lenses throughout	8.2 ppm	2210		50 52 R	Int. 209.0-210.3 ft., Rec. 1.3 ft.
3333	210						
3332	211						
3331	212						
3330	213						
3329	214						
3328	215						
			6.4 ppm			30 53 R	Int. 215.0-216.3 ft., Rec. 1.3 ft.
3327	216						
3326	217						
3325	218						
3324	219						
			1.8 ppm		2220	19 60 R	Int. 219.0-220.5 ft., Rec. 1.5 ft.
3323	220						
3322	221						
3321	222						
3320	223						
3319	224						
3318	225						
				2225		9 14 59	Int. 225.0-226.0 ft., Rec. 1.2 ft.
3317	226	Gravel from 226 to 227 ft., decreased silt content					
3316	227						
3315	228						
3314	229						
			4.6 ppm			6 14 27	Int. 229.0-230.5 ft., Rec. 0.8 ft.
3313	230						
3312	231						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 10 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3311	232	Poorly Graded GRAVEL with Sand (GP), dense, very fine to very coarse, dark red to white, highly cemented at base, decreasing gravel size with depth					
3310	233						
3309	234						
3308	235						
			3.6 ppm		2235	6 10 R	Int. 235.0-236.0 ft., Rec. 0.8 ft.
3307	236						
3306	237						
3305	238	SILTY SAND (SM), dense to very dense, very fine coarse grained, moist to wet, reddish yellow, with some caliche					
3304	239					6 12 29	Int. 239.0-240.5 ft., Rec. 0.5 ft.
3303	240						
3302	241						
3301	242						
3300	243	Gravelly lense from 243 to 244 ft.					
3299	244						
3298	245						
			3.7 ppm		2245	3 29 59	Int. 245.0-246.2 ft., Rec. 1.1 ft.
3297	246						
3296	247						
3295	248						
3294	249	Increased moisture content					
			0.0 ppm	2250		4 27 51	Int. 249.0-250.5 ft., Rec. 1.3 ft.
3293	250						
3292	251						
3291	252						
3290	253						
3289	254						
3288	255	Interbedded lenses of caliche cemented sand					
			0.0 ppm			9 19 33	Int. 255.0-256.5 ft., Rec. 1.3 ft.
3287	256						
3286	257						
3285	258						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0013

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 11 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3284	259	Continuing SM					
3283	260		0.0 ppm		2260	11 45 40	Int. 259.0-260.5 ft., Rec. 1.4 ft.
3282	261						
3281	262						
3280	263						
3279	264						
3278	265						
3277	266		0.0 ppm			7 26 50	Int. 265.0-266.5 ft., Rec. 1.5 ft.
3276	267						
3275	268	Increasing gravel and silt content					
3274	269						
3273	270		0.0 ppm		2270	28 57 R	Int. 269.0-270.5 ft., Rec. 1.5 ft.
3272	271						
3271	272						
3270	273	LEAN CLAY with Sand (CL), firm, moist, reddish yellow, very fine to fine grained sand	0.0 ppm	2275		27 57 R	Int. 272.5-275.0 ft., Rec. 2.5 ft.
3269	274						
3268	275						
3267	276						TD @ 275.0 ft.
3266	277						Monitoring well installed upon completion of drilling
3265	278						
3264	279						
3263	280						
3262	281						
3261	282						
3260	283						
3259	284						
3258	285						

/CORPS/3-2-93

Hole No.

DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 3 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and title number): PTX 09-0013
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: N/A
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 275
10. SIZE AND TYPE OF BIT: 9¼" FALCON
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 DRILL SYSTEMS
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 44 UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 7-7-92 COMPLETED 7-12-92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 85.72%
19. SIGNATURE OF INSPECTOR: Terry Gilson TPG

ELEVATION (a)	DEPTH (b)	LEGEND (c)	CLASSIFICATION OF MATERIALS (Description) (d)	% CORE RECOVERY (e)	BOX OR SAMPLE NO. (f)	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) (g)
	0.4		Asphalt			Blow Count Per 6"
	5	SM	Fill material clayey silty sand 7.5YR 6/4 reddish yellow, soft/hard non-strat. moist, some gravel, 20% clay, 30% silt, 50% sand vf-f grn rnd-subrnd	5 / 6.5	1	20 12 14
	7.0			9 / 10.5	2	9 15 18
	10	CL	Silty clay 7.5YR 5/6 strong brown firm, moist, sl mottling, m-l plast. some caliche silty sand inclusions trace sand, 35% silt, 75% clay trace mn streaks	15 / 16.5	3	14 18 23
	15		color lightens to 7.5YR 6/6 reddish yellow by 19.0' + to 7.5YR 5/4 brown by 29	19 / 20.5	4	7 17 21
	20		Soft-firm, moist			
	25		gravelly lense 35-35.7, 39-39.1 caliche sand silt increase by 29 to 40%	35 / 36.5	5 *	12 17 19 *Physical Sample 25-26.5 recovery est
	30		caliche sandy silty clay 7.5YR 7/4 pink, firm, faintly mottled, moist trace mn inclusions m-l plast., 10% caliche, 15% sand vf-f grn, rnd-subrnd 35% silt, 45% clay clay lense 49-50 7.5YR 5/4 firm, mottled trace sandstone gravel w/ caliche cement 50.4-50.5	29 / 29.5	6	9 13 19
	35			35 / 36.5	7	19 28 33
	40			39 / 40.5	8	5 7 11
	45			45 / 46.5	9	8 13 21
	50	CL	silty clayey sand 7.5YR 5/6 strong brown, firm, moist, faint mottling trace organic staining 1mm dia. black, trace caliche inclusions (white crystalline), 30% silt, 30% clay, 40% sand vf-f grn, rnd-subrnd grades to 5YR 5/8 yellowish red by 65' Decrease in silt + clay by 69'	49 / 50.5	10 *	9 18 28 *Physical Sample 49-50.5 recovery est
	55			55 / 56.5	11	4 5 11
	59			57 / 60.5	12	22 42 51
	60	SM				T.D 64' 7-7-92
	65		silty sand 5YR 5/8 yellowish red, soft-firm, moist, faint laminations 3-4mm, trace clay + caliche inclusions, organic black staining 1-2mm dia coating sand grns, Caliche lense 75-75.1 40% silt, 60% sand vf-m grn rnd-subrnd. some caliche lenses throughout, clay lense 99-99.5 5YR 4/4 reddish brown firm-hard m-l plast, interbedded silty clay lenses 99-94	65 / 66.5	13	43 51 /
	69			69 / 70.5	14	31 43 51
	70					*Physical Sample 75-76.5 recovery est
	75			75 / 76.5	15 *	35 55 /
	79			79 / 80.5	16	35 71 96 / 8 50 / QA/QC Chem Sample 79-80.5 2 spoons used
	80	SM				
	85			85 / 86.5	17	21 53 /
	89			89 / 90.5	18	38 51 /
	90					
	95			95 / 96.5	19	25 33 45
	97	CL				*Physical Sample 99-100.5 recovery est
		SM	Silty sand 7.5YR 5/4 brown, moist faint laminations, 4mm, soft-firm	99 / 100	20 *	21 45 /

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO. Revision

Hole No.

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 3 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and this record): PTX 09-0013
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: N/A
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 275
10. SIZE AND TYPE OF BIT: 9⅝" FALCON
11. DATUM FOR ELEVATION SHOWN (MSL or MLL):
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 DRILL SYSTEMS
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 44; UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: 250.19 TOC (7-13-92)
16. DATE HOLE: STARTED 7-7-92; COMPLETED 7-12-92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 85.7%
19. SIGNATURE OF INSPECTOR: Terry Gibson TPG

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	105	SM	silty sand (Cont)	100.5		Blow Count Per 6"
			some caliche lenses 99-99.2	105 / 106.5	21	45 55 /
			weak carb cement	109 / 110.5	22	24 65 /
			40% silt, 60% sand uf-fgrn rnd-subrnd	115 / 116.5	23	17 39 50
			color 2.5YR 8/4 pink by 117'	119 / 120.5	24	15 39 52
			laminations 119 by 119'	125 / 126.5	25	* 48 51 / *Physical Sample 125-126.5 recovery est.
			trace k-spar throughout	129 / 130.5	26	46 52 /
			decrease in caliche cemented sand lenses from 155-165	135 / 136.5	27	37 52 /
			trace caliche gravel from 189'	139 / 140.5	28	50 53 /
			sand fining w/depth to uf-fgrn	145 / 146.5	29	24 50 /
				149 / 150.5	30	* 19 42 64 *Physical Sample 149-150.5 recovery est.
				155 / 156.5	31	34 48 /
				159 / 160.5	32	60 / /
				165 / 166.5	33	19 44 73
				169 / 170.5	34	22 54 /
				175 / 176.5	35	* 9 24 50 *Physical Sample 175-176.5 recovery est.
				179 / 181.5	36	5 14 18 33 43
				185 / 186.5	37	12 21 50
				189 / 190.5	38	20 42 50
				195 / 196.5	39	5 25 50
				199 / 200.5	40	* 19 17 35 *Physical Sample 195-200.5 recovery est

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE

PROJECT | HOLE NO.

Revision

Hole No.

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 3 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and title number): PTX 09-0013
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: N/A
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 275
10. SIZE AND TYPE OF BIT: 9⅝" FALCON
11. DATUM FOR ELEVATION SHOWN (MSL or USL):
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 DRILL SYSTEMS
13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN: DISTURBED 44; UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: 250.19 TOC (7-13-92)
16. DATE HOLE: STARTED 7-7-92; COMPLETED 7-12-92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 85.7%
19. SIGNATURE OF INSPECTOR: Terry Wilson TPG

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOV. e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
		SM	silty sand (cont.) darkens w/ depth to 7.5YR 7/6 reddish yellow 5y 209 some interbedded zones of weakly to moderately calicic cemented sand lenses throughout	205		Blow Count Per 6"
	205			1.3 / 206.6	41	16 50 51
				209 / 210.5	42	50 52 /
	210			215 / 216.5	43	30 53 /
	215			219 / 220.5	44	19 60 /
	220		gravel in cuttings from 226-227 flat-subrnd 1-3 cm qtz 2.5YR 3/6 to 7.5YR 8/0 dark red to white decrease in silt w/depth	225 / 226.5	45	* 9 14 59 * Q.A. PHYSICAL SAMPLE 225-226.5 RECOVERY EST.
	225			229 / 230.5	46	6 14 27
	230		sandy gravel 2.5YR 3/6 dark red to 7.5YR 8/0 white vf-vc sand 40% sand rnd-subang, 60% gravel 5mm 2.5cm rnd-subang, some k-spar tr qtz gravel, highly cemented at base, decrease in gravel size w/depth, sand coarsens w/depth	235 / 236.5	47	6 10 / GRAVEL LOST SAMPLER RECOVERED SAMPLER
	232	SM				
	235	GC				
	238			239 / 240.5	48	6 12 29
	240					
	245	SM	silty sand 7.5YR 7/6 to 7/1 reddish yellow, soft, moist-sat, non-strat, some calicic sl. mottled w/ 7.5YR 8/2 pinkish white, 30% silt, 70% sand vf-c grn, rnd-subang gravelly lense 243-244 3-5cm qtz, flat-rnd increase in moisture from 249 interbedded lenses of calicic cemented sand, sat. 255-256.5 sample increase in silt w/depth gravel at base from 268-272 qtz	245 / 246.5	49	3 29 59
				249 / 250.5	50	* 4 27 51 * PHYSICAL SAMPLE 249-250.5 RECOVERY EST.
	250			255 / 256.5	51	9 19 33
	255			259 / 260.5	52	11 45 40
	260			265 / 266.5	53	7 26 50
	265			269 / 270.5	54	28 57 /
	270			274.5 / 275	55	* 27 57 / * FINAL PHYSICAL SAMPLE 273.5-275
	272	CL				
	275		sandy silty clay 7.5YR 6/6 reddish yellow, soft-firm, moist non-strat, 20% sand vf-f grn, rnd-subrnd, 50% silt, 50% clay			
	280					
	285					

CALL T.D. @ 275

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Revision

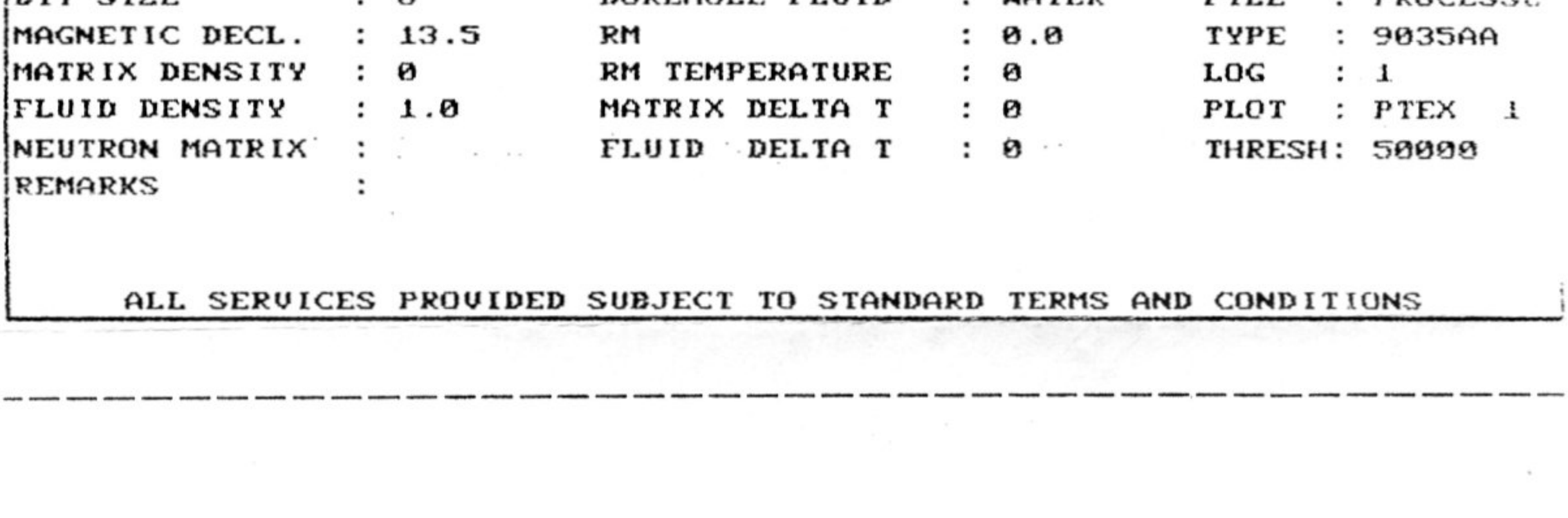
Run no. 1

Century GEOPHYSICAL CORP.

PTX 09 - 0013

COMPANY	: WOODWARD - CLYDE				OTHER SERVICES:		
WELL	: PTX 09 - 0013						
LOCATION/FIELD	: PANTEX						
COUNTY	: CARSON						
STATE	: TEXAS						
SECTION	:	TOWNSHIP	:		RANGE	:	
DATE	: 07/11/92	PERMANENT DATUM	:		ELEVATIONS		
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:		KB	:	
LOG BOTTOM	: 274.70	LOG MEASURED FROM	:	G.L.	DF	:	
LOG TOP	: -5.70	DRL MEASURED FROM	:	G.L.	GL	:	
CASING DRILLER	: 275	LOGGING UNIT	:	9103			
CASING TYPE	: D.W.STEL	FIELD OFFICE	:	CHINO VALLEY			
CASING THICKNESS	: 1.5	RECORDED BY	:	R. FEDERWISC			
BIT SIZE	: 0	BOREHOLE FLUID	:	WATER	FILE	:	PROCESSE
MAGNETIC DECL.	: 13.5	RM	:	0.0	TYPE	:	9035AA
MATRIX DENSITY	: 0	RM TEMPERATURE	:	0	LOG	:	1
FLUID DENSITY	: 1.0	MATRIX DELTA T	:	0	PLOT	:	PTEX 1
NEUTRON MATRIX	:	FLUID DELTA T	:	0	THRESH	:	50000
REMARKS	:						

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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CALIPER

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DEN(LS)
1 G/CC 5
DEN(SS)

CGC

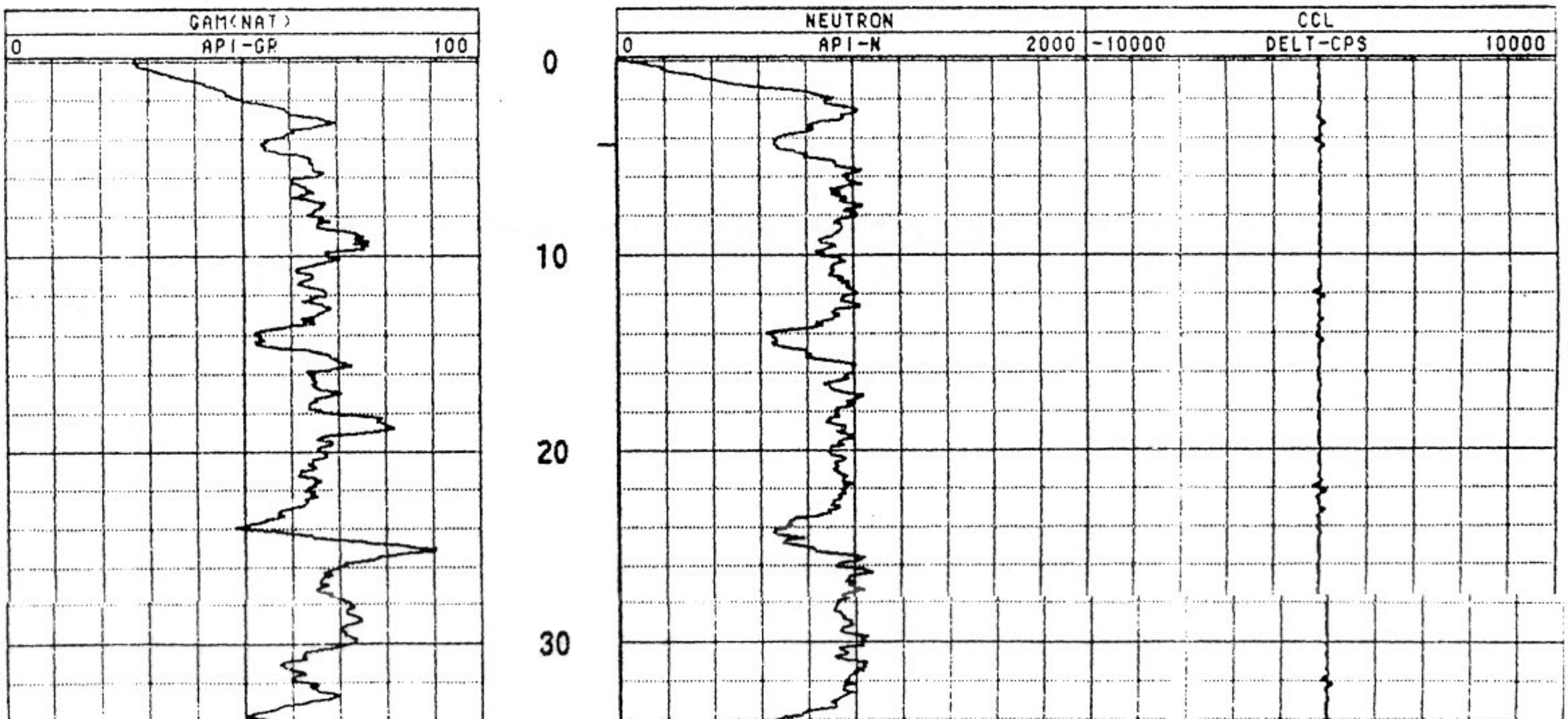
Century GEOPHYSICAL CORP.

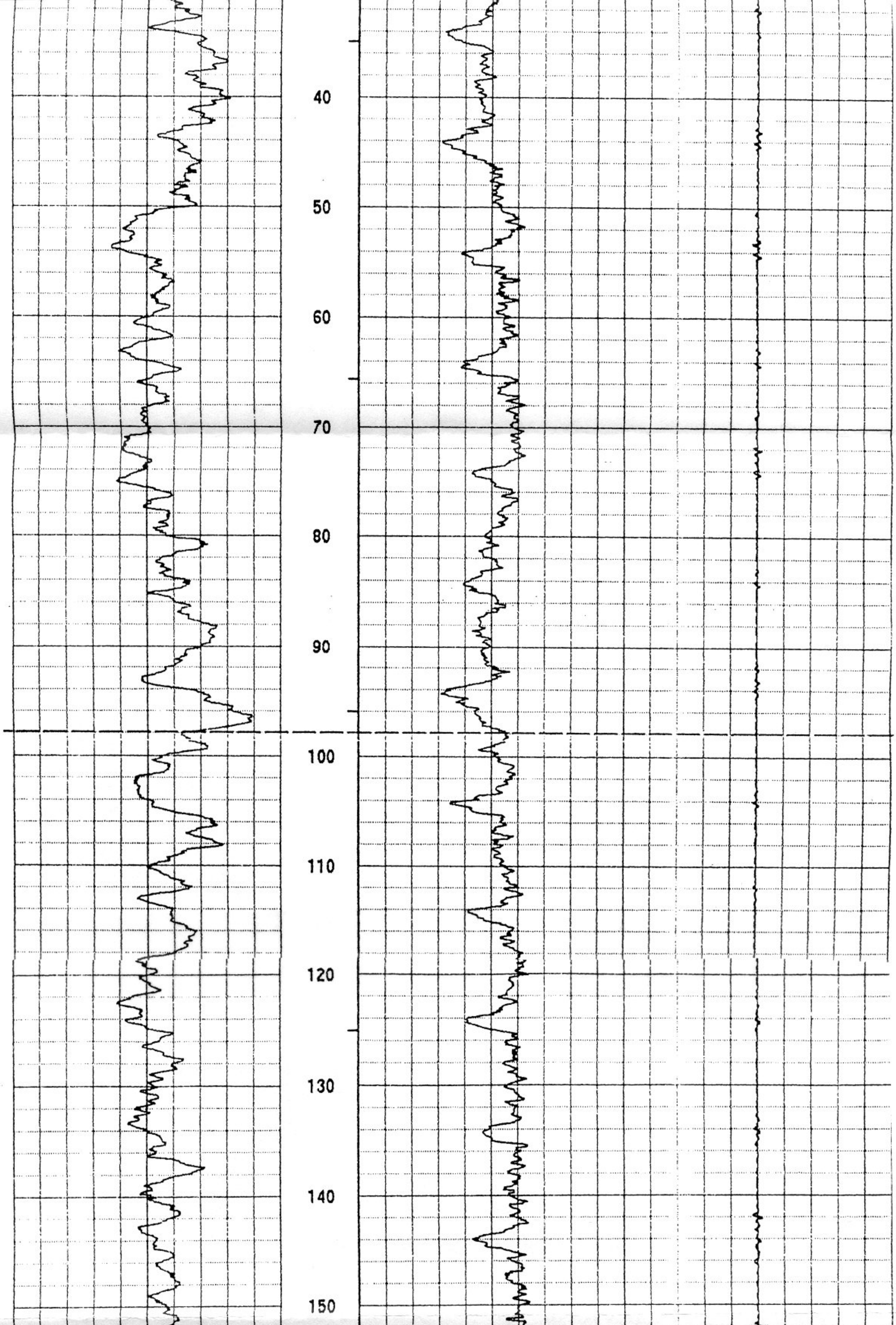
GAMMA-NEUTRON-CCL

OTHER SERVICES:

COMPANY	: WOODWARD - CLYDE				
WELL	: PTX 09 - 0013				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/11/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 275.20	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -6.10	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 275	LOGGING UNIT	: 9103		
CASING TYPE	: D.W.STEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 1.5	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: WATER	FILE	: ORIGINAL
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9051A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 1
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 51 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

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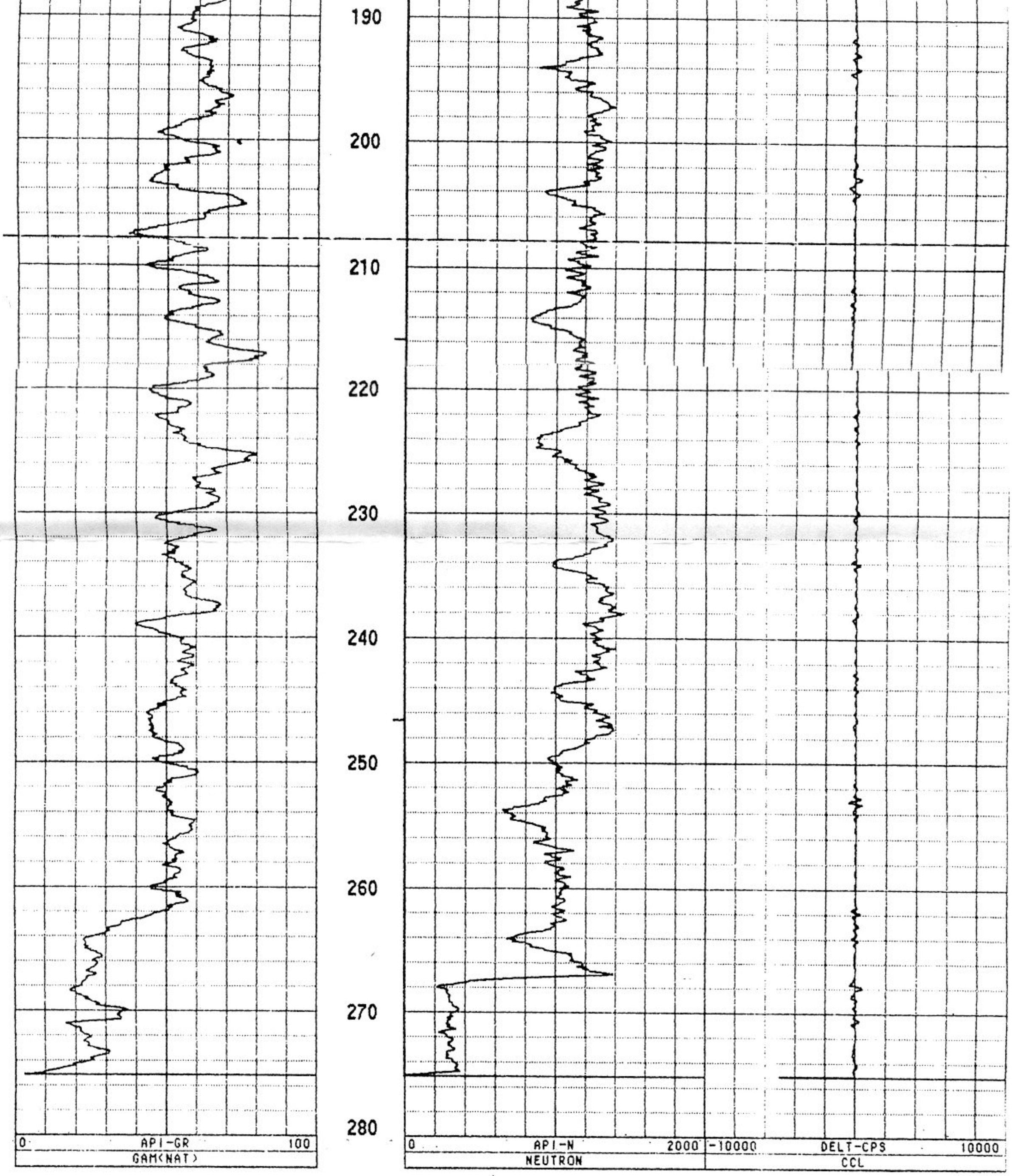


TOOL CALIBRATION TOOL = 9051A SERIAL NUMBER = 95

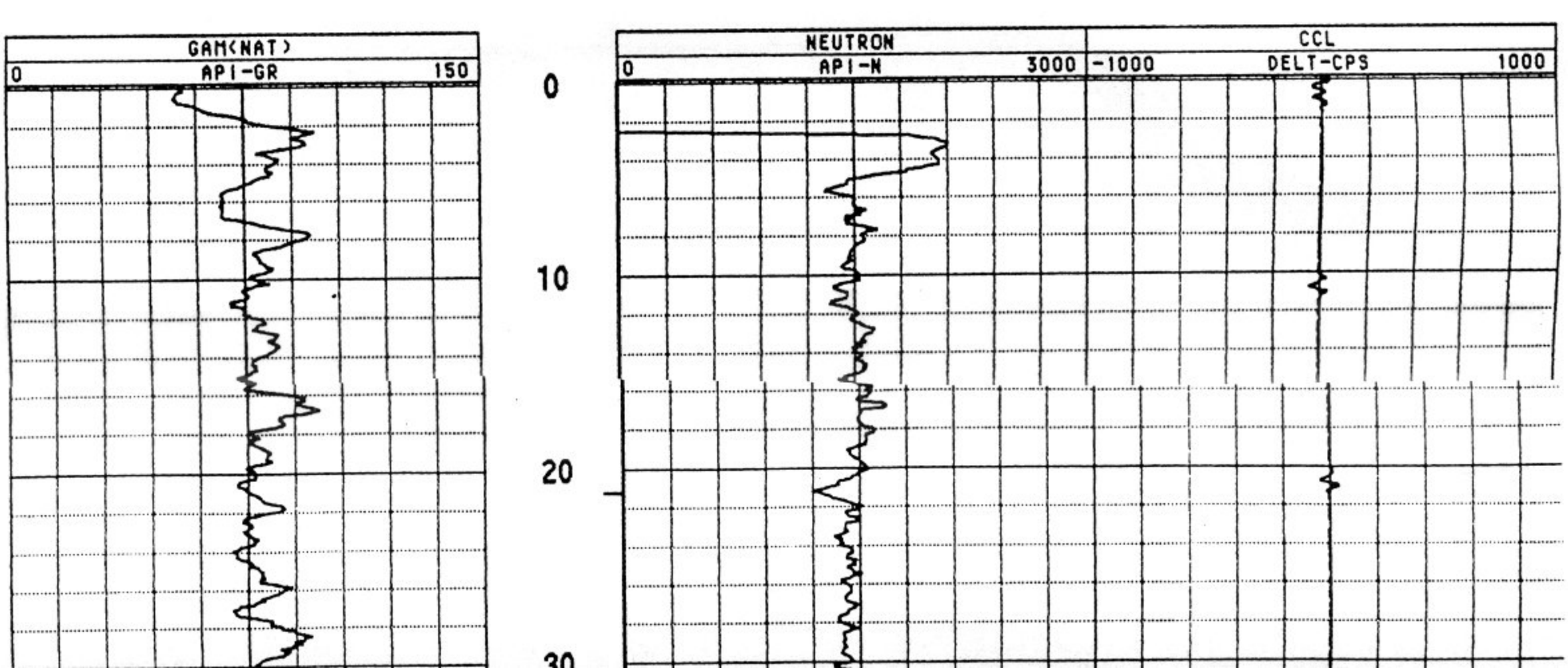
	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
0	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
1	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	MAY14,92	18:08:51	0	NEUTRON	0.000 CPS	0.000	API-N
3	MAY14,92	18:08:51	0	NEUTRON	271.000 CPS	271.000	API-N
4	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS
5	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS

Century GEOPHYSICAL CORP.

GAMMA-NEUTRON-CCL

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0013				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/15/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 273.40	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -3.50	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 275	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: WATER	FILE	: ORIGINAL
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9051A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 51 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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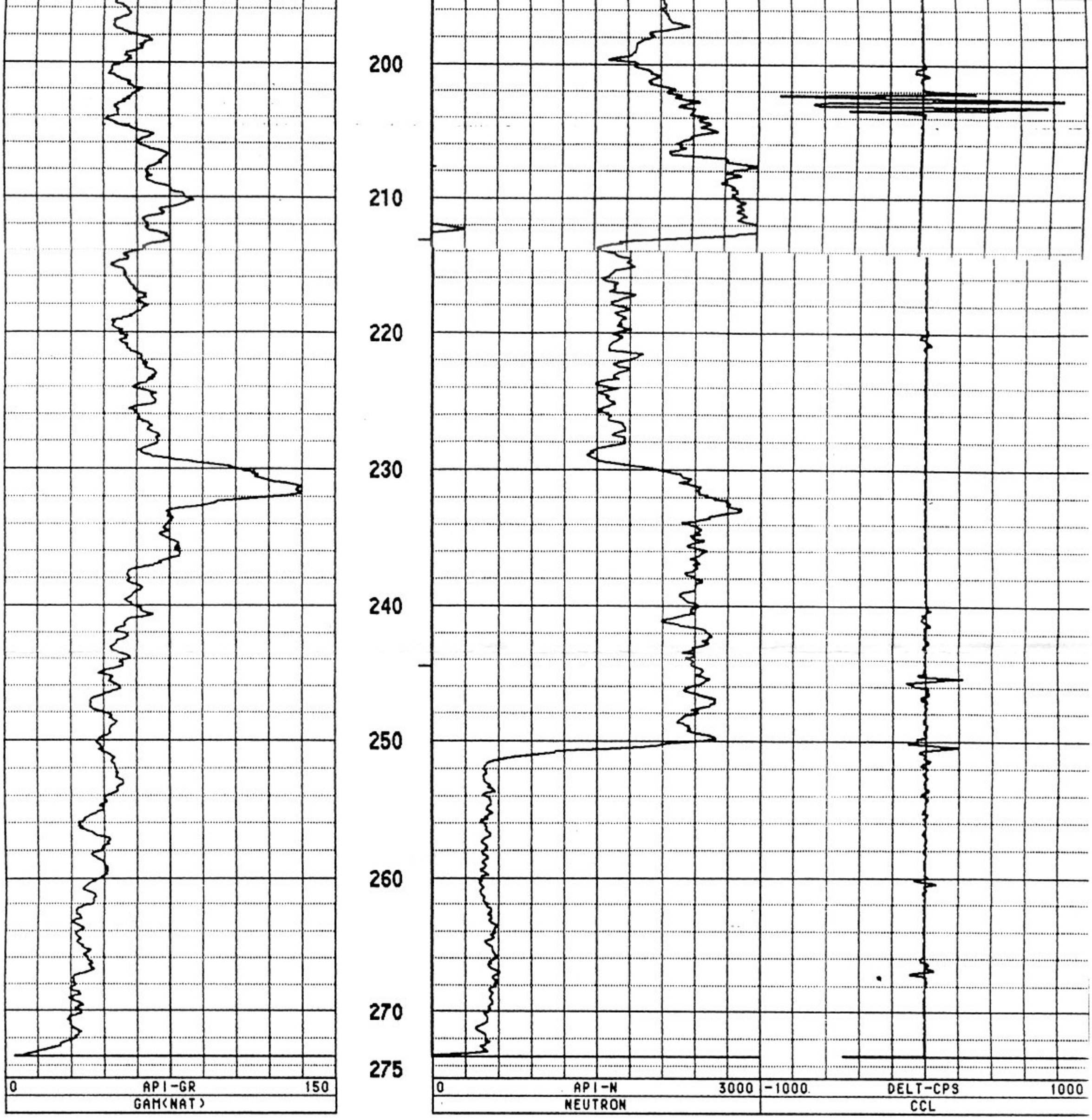


TOOL CALIBRATION TOOL = 9051A SERIAL NUMBER = 95

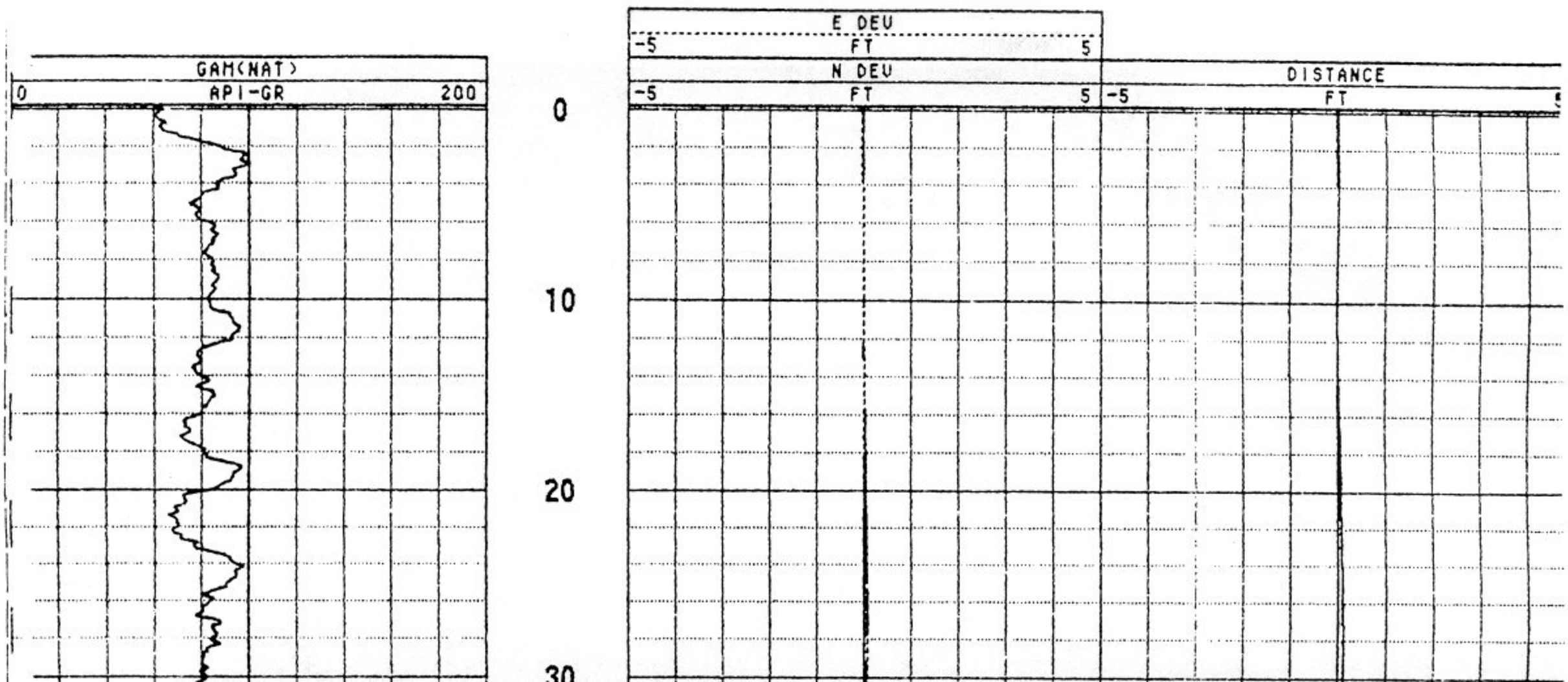
	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
0	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
1	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	MAY14,92	18:08:51	0	NEUTRON	0.000 CPS	0.000	API-N
3	MAY14,92	18:08:51	0	NEUTRON	271.000 CPS	271.000	API-N
4	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS
5	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS

Century GEOPHYSICAL CORP.

GAMMA-DEVIATION

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0013				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/15/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 273.60	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -0.70	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 275	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: WATER	FILE	: PROCESSED
MAGNETIC DECL.	: 13.500	RM	: 0.0	TYPE	: 9055A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 7
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 55 16
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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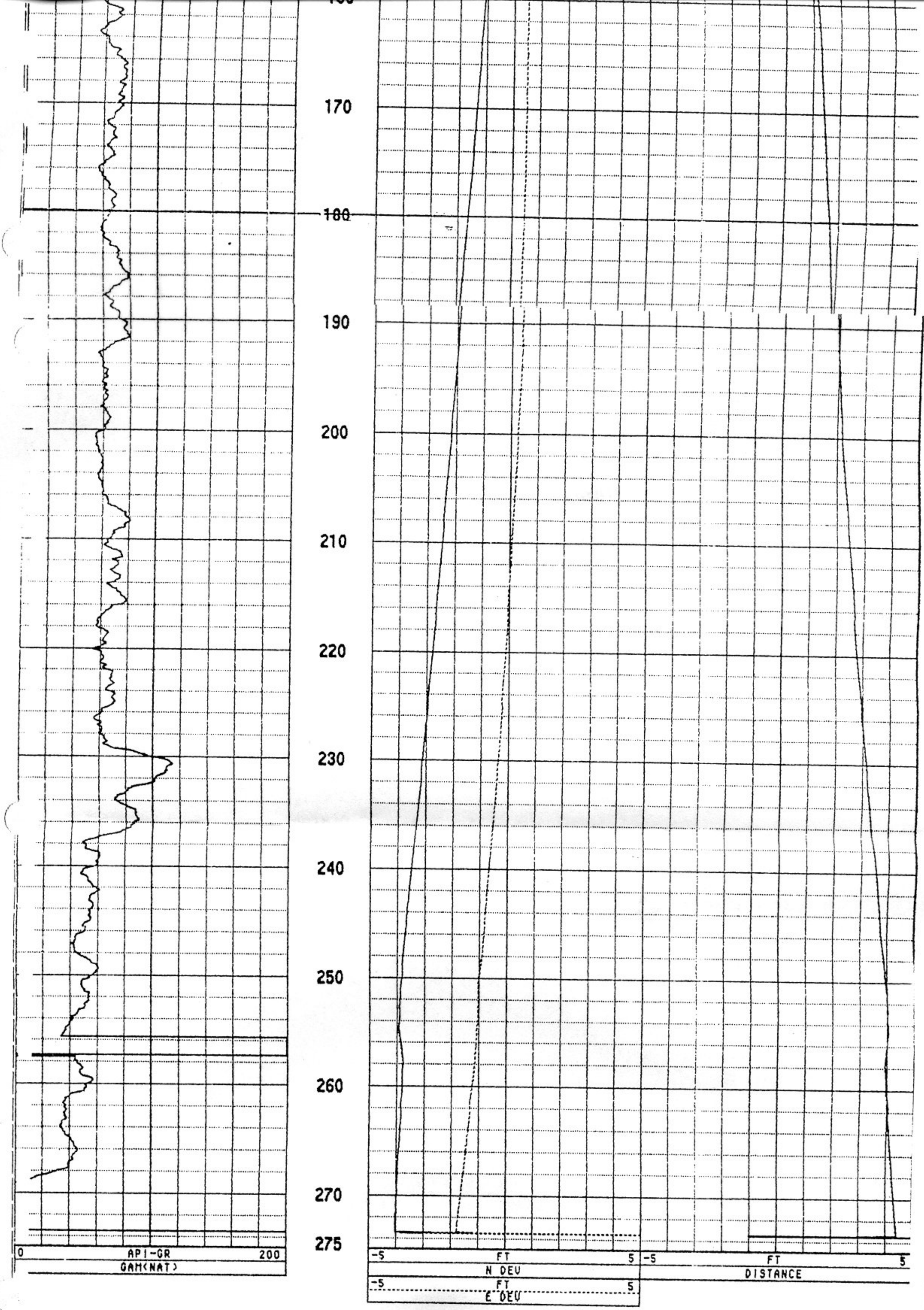
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DISTANCE

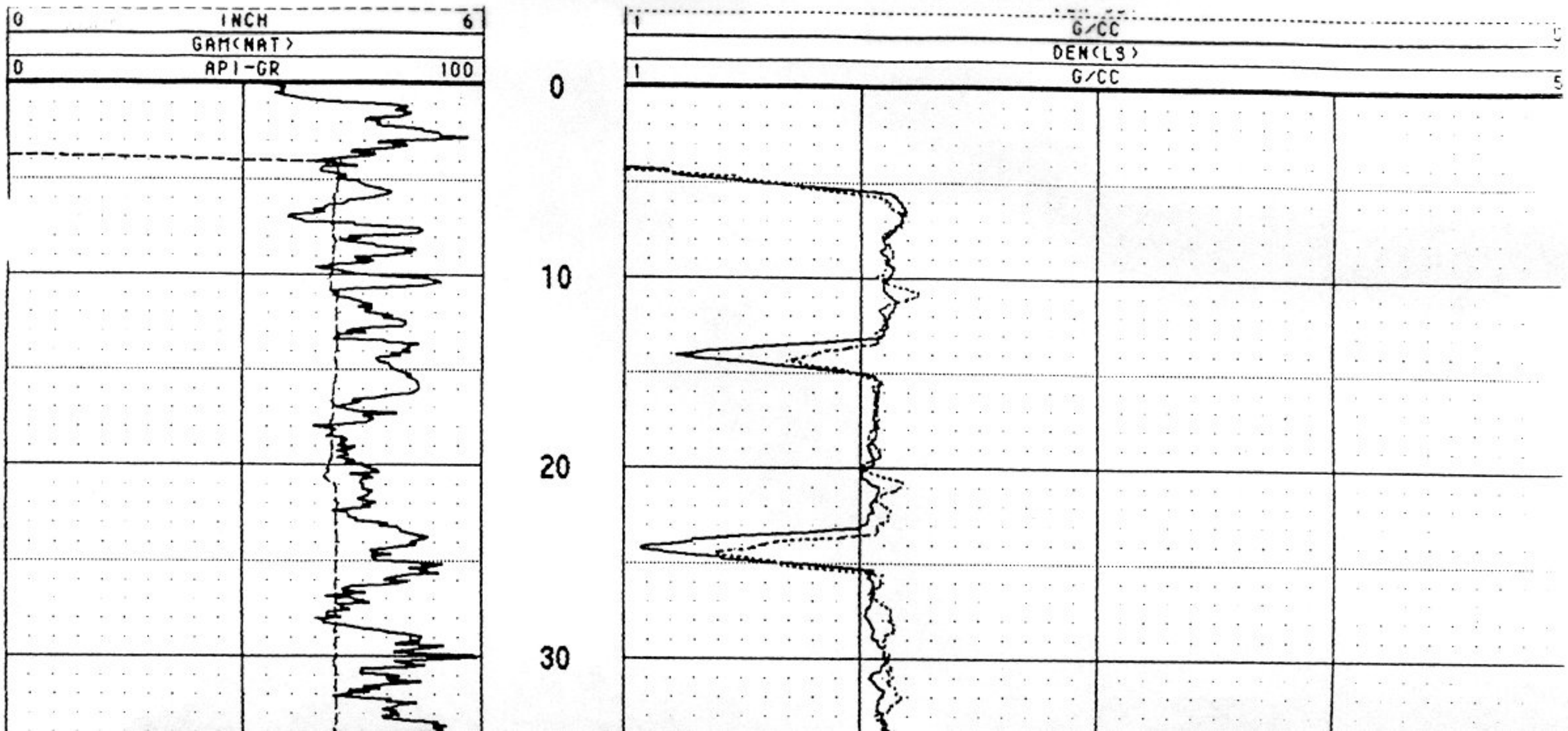
Run no. 2

Century GEOPHYSICAL CORP.

PTX 09 - 0013

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0013				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/15/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 273.40	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -4.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 275	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: WATER	FILE	: PROCESSI
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9035AA
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 3
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: PIEX
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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CALIPER

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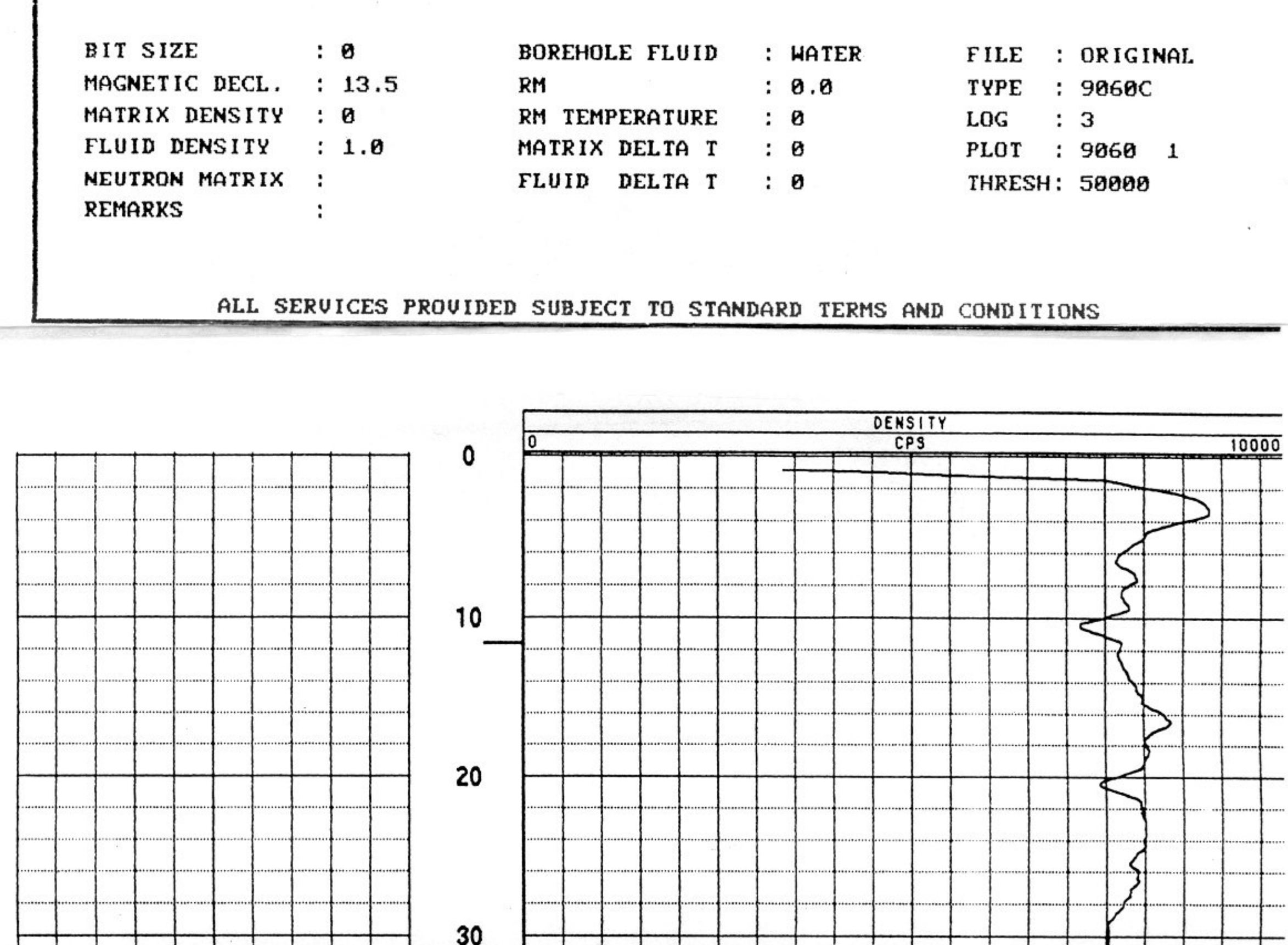
DEN(LS)
1 G/CC 5
DEN(SS)

Century GEOPHYSICAL CORP.

FOUR PI DENSITY

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0013				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/15/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 275	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 273.30	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: 1.00	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 275	LOGGING UNIT	: 9103		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: WATER	FILE	: ORIGINAL
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9060C
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 3
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 9060 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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DENSITY

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT D.I.M.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** _____ (Name) **ADDRESS** _____ (Street or RFD) _____ (City) _____ (State) _____ (Zip)

2) **LOCATION OF WELL:**
County _____, _____ miles in _____ (NE, SW, etc.) direction from _____ (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** _____

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

5) **DRILLING METHOD (Check):** ☒ Driven
☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**
Date Drilling: Started _____ 19__ Completed _____ 19__

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)

D.I.M.

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from _____ ft. to _____ ft.

From (ft.) To (ft.) Description and color of formation material

(Use reverse side if necessary)

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from _____ ft. to _____ ft. No. of Sacks Used _____
_____ ft. to _____ ft. No. of Sacks Used _____
Method used _____
Cemented by _____

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level _____ ft. below land surface Date _____
Artesian flow _____ gpm. Date _____

12) **PACKERS:** _____ Type Depth

13) **TYPE PUMP:**
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:**
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME _____ (Type or print) **WELL DRILLER'S LICENSE NO.** _____

ADDRESS _____ (Street or RFD) _____ (City) _____ (State) _____ (Zip)

(Signed) _____ (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

PTX10-0014

aka: PTX09-0014

Project: Gasoline Leak Sites, Bldg 16-1
Contractor: Woodward-Clyde Consultants
Contract #: <#>
Contractor's Project #: 91KC047-1
Drilled date: 07/01/1992
Drilling Contractor: Layne Environmental Services
OPTIX #:
Last Update:

Standard Included Documents

(Others may also be included)

Drilling/Boring Log
- X Draft
- X Final

___ Draft Installation Log/Diagram (handwritten/drawn)
X Final Installation Log/Diagram (computer-generated)

Lithologic Logs
- X Draft Visual Classification of Soils (handwritten)
- X Final Visual Classification of Soils (computer-generated)

Geophysical Logs
- X Neutron
- X Gamma
- X Compensated Density
- ___ e-Log
- ___ Bond Log
- X Deviation Log

X State Well Report
___ State Plugging Report

GROUNDWATER MONITORING WELL REPORT

Project Name Gasoline Leak Sites, Building 12-35
Location Pantex Plant - Amarillo, Texas
Installed by Layne Environmental Services
Inspected by H. W. Merrell
Method of Installation Dual-Wall Percussion Drilling
Remarks

Well No. PTX09-0014
Project No. 91KC047-1
Date 07-01-92
Time
Boring No. PTX09-0014

Depths ft.	Elements/Identifiers	Elevations
	Brass disk in concrete pad	3542.74
0	Ground Surface	3542.5
	Top of casing	3542.21
	Surface casing Type Stainless steel schedule 10 I.D. Inches 10	
	Surface seal Type Cement-(5%) bentonite grout	
	Riser pipe Type Stainless steel schedule 10 I.D. inches 4	
	Backfill Type Cement-(5%) bentonite grout	
231.5	Bottom of backfill	
	Seal Type Bentonite 1/4" pellets	
235.0		
242.96	Top of screen	
	Filter pack Type Silica, 20-40 mesh	
	Screen Type Stainless steel wire wrap schedule 10 I.D. inches 4 Slot size 0.010" (factory slotted)	
272.81	Bottom of screen	
	Blank pipe	
275.91	Plug	
	Backfill below well plug Type Silica, 20-40 mesh	
278.0	Bottom of boring	
	Boring diameter 9 1/2"	

DRILLING LOG

HOLE NO. PTX09-0014

1. COMPANY NAME: Woodward-Clyde	2. DRILLING SUBCONTRACTOR: Layne Environmental Services, Inc.	SHEET 1 OF 11 SHEETS
3. PROJECT: Gasoline Leak Sites, Building 12-35	4. LOCATION: Pantex Plant, Amarillo, Texas	
5. NAME OF DRILLER: Nicholas Hernandez, Jr. (Licensed TWC Driller)	6. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 Drill Systems	
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT: 9.5 inch Falcon, 2-inch split spoon	8. HOLE LOCATION: Building 12-35	
	9. SURFACE ELEVATION: 3542.5	
	10. DATE STARTED: 6/16/92	11. DATE COMPLETED: 6/29/92
12. OVERBURDEN THICKNESS: NA	15. DEPTH GROUNDWATER ENCOUNTERED	
13. DEPTH DRILLED INTO ROCK: NA	16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED: 252.20 ft on 8/10/92	
14. TOTAL DEPTH OF HOLE: 278.0'	17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
11 Total	X		NA

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	OTHER (SPECIFY)	OTHER (SPECIFY)	OTHER (SPECIFY)	21. TOTAL CORE REC.
29 Total	X	X	High explosives	TPH	pH,CEC	82.4%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
		X		Terry Gibson

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3542	1	LEAN CLAY with Sand (CL), firm, moist, brownish yellow, with some caliche inclusions, very fine to fine grained sand					Note: "X" cut in brass disk; N3759769.72, E639701.73, Elev. 3542.74 ft.
3541	2						
3540	3						
3539	4						
3538	5						
3537	6	Very dark grayish brown from 5.0 to 5.5 ft	0.0 ppm			11 16 18	Interval (Int.) 5.0-6.5 ft., Recovery (Rec.) 1.2 ft.
3536	7						
3535	8						
3534	9						
3533	10		0.0 ppm			14 24 33	Int. 9.0-10.5 ft., Rec. 1.5 ft.
3532	11						
3531	12						
3530	13						
3529	14						
3528	15						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 2 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3527	16	Hard, dry to moist, strong brown, with increase caliche content	0.0 ppm			35 52 R	Int. 15.0-16.3 ft., Rec. 1.3 ft.
3526	17						
3525	18						
3524	19	Lenses of caliche cemented sand	0.0 ppm			32 50 R	Int. 19.0-20.2 ft., Rec. 1.2 ft.
3523	20						
3522	21						
3521	22						
3520	23						
3519	24						
3518	25		0.0 ppm	2025		89 50 R	Int. 25.0-26.5 ft., Rec. 0.8 ft.
3517	26						
3516	27						
3515	28						
3514	29		0.0 ppm		2030	49 65 R	Int. 29.0-30.2 ft., Rec. 1.2 ft.
3513	30						
3512	31						
3511	32						
3510	33						
3509	34						
3508	35		0.0 ppm			38 53 R	Int. 35.0-36.1 ft., Rec. 1.1 ft.
3507	36						
3506	37						
3505	38						
3504	39	Increased silt and sand content, very fine to fine grained sand, decreased caliche content	0.3 ppm			12 30 31	Int. 39.0-40.5 ft., Rec. 1.5 ft.
3503	40						
3502	41						
3501	42						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 3 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3500	43						
3499	44						
3498	45						
3497	46	SILT with Sand (ML), dense to very dense, dry to moist, light reddish brown, with some caliche, friable, very fine to fine grained sand, some clay	1.3 ppm		2045	57 50 R	Int. 45.0-46.2 ft., Rec. 1.2 ft.
3496	47						
3495	48						
3494	49						
3493	50		0.4 ppm			40 50 R	Int. 49.0-50.1 ft., Rec. 1.1 ft.
3492	51						
3491	52						
3490	53						
3489	54						
3488	55						
3487	56	Increased caliche content from 55 to 56.5 ft, yellowish red to pink	0.0 ppm	2055		46 50 R	Int. 55.0-56.1 ft., Rec. 1.1 ft.
3486	57						
3485	58						
3484	59						
3483	60		0.0 ppm		2060	41 51 R	Int. 59.0-60.2 ft., Rec. 1.2 ft.
3482	61						
3481	62						
3480	63						
3479	64						
3478	65						
3477	66	SILTY SAND (SM), dense to very dense, very fine to medium grained, moist, red, with caliche	0.0 ppm			60 R	Int. 65.0-65.8 ft.
3476	67						
3475	68						
3474	69						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 4 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3473	70	Faint laminations from 69 to 70.4 ft	0.0 ppm		2070	29 47 51	Int. 69.0-70.5 ft., Rec. 1.5 ft.
3472	71						
3471	72						
3470	73						
3469	74						
3468	75						
3467	76	Increased caliche content	0.0 ppm	2075		68 53 R	Int. 75.0-76.5 ft., Rec. 0.8 ft.
3466	77						
3465	78						
3464	79						
3463	80	Black staining from 79.3 to 79.9 ft Caliche lense from 79.9 to 80.0 ft	0.0 ppm			40 80 R	Int. 79.0-80.0 ft., Rec. 1.0 ft.
3462	81						
3461	82						
3460	83						
3459	84						
3458	85	Decreased caliche content from 84.0 ft					
3457	86	Strong brown, with interbedded zones of caliche from 85.0 to 100.0 ft	0.0 ppm		2085	21 45 52 11 35	Int. 85.0-88.0 ft., Rec. 2.3 ft. QA/QC Sample
3456	87						
3455	88						
3454	89						
3453	90		0.0 ppm			56 R	Int. 89.0-90.0 ft., Rec. 0.0 ft.
3452	91						
3451	92						
3450	93						
3449	94						
3448	95						
3447	96	Finely laminated from 95.0 to 96.5 ft	0.0 ppm		2095	39 48	Int. 95.0-96.5 ft., Rec. 1.5 ft.

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 5 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3446		Continuing SM				49	
	97						
3445							
	98						
3444							
	99		0.0 ppm	2100		18	Int. 99.0-100.5
3443						39	ft., Rec. 1.2 ft.
	100					42	
3442							
	101						
3441							
	102						
3440							
	103						
3439							
	104						
3438							
	105		0.0 ppm		2105	13	Int. 105.0-106.5
3437						30	ft., Rec. 1.5 ft.
	106					30	
3436							
	107						
3435							
	108						
3434							
	109		0.0 ppm	2110		24	Int. 109.0-111.5
3433						26	ft., Rec. 2.5 ft.
	110					49	
3432						60	
	111					59	
3431							
	112						
3430							
	113						
3429							
	114						
3428							
	115	Reddish yellow, decreased silt	0.0 ppm			17	Int. 115.0-116.5
3427		content				26	ft., Rec. 1.5 ft.
	116					42	
3426							
	117						
3425							
	118						
3424							
	119		0.0 ppm		2120	73	Int. 119.0-119.7
3423						R	ft., Rec. 0.7 ft.
	120						
3422							
	121						
3421							
	122						
3420							
	123						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 6 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3419	124	Continuing SM					
3418	125		0.0 ppm			22 37 44	Int. 125.0-126.5 ft., Rec. 1.5 ft.
3417	126						
3416	127						
3415	128						
3414	129		0.0 ppm		2130	18 41 60	Int. 129.0-130.5 ft., Rec. 1.5 ft.
3413	130						
3412	131						
3411	132						
3410	133						
3409	134						
3408	135		0.8 ppm			32 57 R	Int. 135.0-136.2 ft., Rec. 1.2 ft.
3407	136						
3406	137						
3405	138						
3404	139		1.9 ppm		2140	23 53 R	Int. 139.0-140.3 ft., Rec. 1.3 ft.
3403	140						
3402	141						
3401	142						
3400	143						
3399	144						
3398	145		0.2 ppm		2145	24 54 R	Int. 145.0-146.3 ft., Rec. 1.3 ft.
3397	146						
3396	147						
3395	148						
3394	149		0.0 ppm	2150		14 53	Int. 149.0-150.5 ft., Rec. 1.5 ft.
3393	150						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 7 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3392	151	Continuing SM				50	
3391	152						
3390	153						
3389	154						
3388	155						
3387	156	Very fine to fine grained, with lenses of fine to medium grained sand weakly to highly cemented with caliche	1.9 ppm		2155	15 40 52	Int. 155.0-156.5 ft., Rec. 1.5 ft.
3386	157						
3385	158						
3384	159						
3383	160		0.0 ppm		2160	20 58 R	Int. 159.0-160.1 ft., Rec. 1.1 ft.
3382	161						
3381	162						
3380	163						
3379	164						
3378	165						
3377	166		0.0 ppm			38 60 R	Int. 165.0-166.3 ft., Rec. 1.3 ft.
3376	167						
3375	168						
3374	169						
3373	170	Faint laminations and interbedded caliche cemented sand from 169.7 to 170 ft	0.0 ppm		2170	28 52 R	Int. 169.0-170.3 ft., Rec. 1.3 ft.
3372	171						
3371	172						
3370	173						
3369	174						
3368	175						
3367	176			2175		25 62 R	Int. 175.0-176.5 ft., Rec. 1.5 ft.
3366	177						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 8 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3365	178	Continuing SM					
3364	179		0.0 ppm			17 50 50	Int. 179.0-180.5 ft., Rec. 1.5 ft.
3363	180						
3362	181						
3361	182						
3360	183						
3359	184						
3358	185						
3357	186	Spherical sand clusters faintly coated with black staining from 185.7 to 186.4 ft and 189 to 190.5 ft	0.0 ppm		2185	8 22 43 83 15	Int. 185.0-187.5 ft., Rec. 2.5 ft.
3356	187						
3355	188						
3354	189		0.0 ppm		2190 EB	8 22 40	Int. 189.0-190.5 ft., Rec. 1.5 ft.
3353	190						
3352	191						
3351	192						
3350	193						
3349	194						
3348	195	Caliche cemented sand lense from 195 to 195.2 ft	0.0 ppm			24 55 R	Int. 195.0-196.4 ft., Rec. 1.4 ft.
3347	196						
3346	197						
3345	198						
3344	199		0.0 ppm	2200		19 72 68	Int. 199.0-200.5 ft., Rec. 1.5 ft.
3343	200						
3342	201						
3341	202						
3340	203						
3339	204						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 9 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3338		Continuing SM					
	205		0.0 ppm		2205	22 48 50	Int. 205.0-206.5 ft., Rec. 1.5 ft.
3337	206						
3336	207						
3335	208						
3334	209		0.0 ppm			21 54 R	Int. 209.0-210.0 ft., Rec. 1.0 ft.
3333	210						
3332	211						
3331	212						
3330	213						
3329	214						
3328	215		0.0 ppm		2215	39 55 R	Int. 215.0-216.2 ft., Rec. 1.2 ft.
3327	216						
3326	217						
3325	218						
3324	219		0.0 ppm			24 65 R	Int. 219.0-220.1 ft., Rec. 1.1 ft.
3323	220						
3322	221						
3321	222						
3320	223						
3319	224						
3318	225	Increased moisture content at 225 ft	0.0 ppm	2225		17 67 51	Int. 225.0-226.5 ft., Rec. 1.5 ft.
3317	226						
3316	227						
3315	228						
3314	229	Trace of gravel @ 229 ft	0.0 ppm		2230	10 33 57	Int. 229.0-230.5 ft., Rec. 1.2 ft.
3313	230						
3312	231						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 10 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3311	232						
3310	233	Poorly Graded GRAVEL with Sand (GP), medium to dense, very fine to very coarse grained, reddish yellow					
3309	234						
3308	235		0.0 ppm			5 12 23	Int. 235.0-236.5 ft., Rec. 0.7 ft.
3307	236						
3306	237						
3305	238						
3304	239		0.0 ppm			6 9 17	Int. 239.0-240.5 ft., Rec. 0.5 ft.
3303	240						
3302	241						
3301	242						
3300	243						
3299	244						
3298	245						No sample, boulder in hole
3297	246						
3296	247						
3295	248						
3294	249						
3293	250	SILTY SAND (SM), dense to very dense, very fine to medium grained, moist to wet, reddish yellow, faintly laminated	1.3 ppm	2250	2250	25 67 40	Int. 249.0-250.5 ft., Rec. 1.3 ft.
3292	251						
3291	252						
3290	253						
3289	254						
3288	255						
3287	256	Increased silt content	0.4 ppm			13 41 50	Int. 255.0-256.5 ft., Rec. 1.5 ft.
3286	257						
3285	258						

/CORPS/3-2-93

DRILLING LOG

HOLE NO. PTX09-0014

PROJECT: Gasoline Leak Sites, Building 12-35

INSPECTOR: Terry Gibson

SHEET 11 OF 11 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
3284	259	Continuing SM					
3283	260	Wet, with trace of gravel	0.0 ppm			22 63 R	Int. 259.0-260.2 ft., Rec. 1.2 ft.
3282	261						
3281	262						
3280	263						
3279	264						
3278	265						
3277	266		0.4 ppm		2265	4 20 50	Int. 265.0-266.5 ft., Rec. 1.5 ft.
3276	267						
3275	268						
3274	269						
3273	270				2270	30 30 30	Int. 269.0-271.0 ft., Rec. 2.0 ft. QA/QC Sample
3272	271						
3271	272						
3270	273						
3269	274	LEAN CLAY with Clay (CL), firm, moist, reddish yellow, very fine to fine grained sand					
3268	275		0.4 ppm	2275		12 22 50	Int. 275.0-276.5 ft., Rec. 1.5 ft.
3267	276						
3266	277		1.3 ppm		2277	3 7 39	Int. 276.5-278.0 ft., Rec. 1.0 ft.
3265	278						
3264	279						TD @ 278.0 ft.
3263	280						
3262	281						Monitoring well installed upon completion of drilling
3261	282						
3260	283						
3259	284						
3258	285						

/CORPS/3-2-93

Hole No.

DRILLING LOG | DIVISION | INSTALLATION | SHEET 1 OF 3 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and file number): PTX09-0014
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: N/A
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 278
10. SIZE AND TYPE OF BIT: 9 7/8" FALCON
11. DATUM FOR ELEVATION SHOWN (TBM or MSL):
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 DRILL SYSTEMS
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 4/5 | UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: 252.12 (6-29-92)
16. DATE HOLE: STARTED 6-16-92 | COMPLETED 7-1-92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 82.4 %
19. SIGNATURE OF INSPECTOR: Terry Gilman

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sandy silty clay 10YR 6/6 brownish yellow, firm, moist, non-plast., v. fine laminations (10YR 3/2 v. dark grayish brown) 5.0-5.5	5.0 / 1.2	1	Blow Count Per 6" 11 16 18
			some caliche inclusions (precip deposit gravel) 15% sand vf-f gra, rnd-subrnd 30% silt, 55% clay	6.5 / 9.0 / 1.5	2	14 27 33
			lenses of caliche cemented sand from 14.0'	10.5 / 15.0 / 1.3	3	35 52 /
		CL	darkens w/depth from 15.0' to 7.5YR 5/8 strong brown faint laminations, grades to hard-dense	16.5 / 19.0 / 1.2	4	32 50 /
			increase in caliche w/ depth dry-moist	20.5 / 25.0 / .8	5	39 50 / * Physical sample recovery estimated (25-26.5) no sand catcher used
			increase in sand & silt from 39.0', sand to 20% vf-f gra rnd-subrnd, silt to 35% decrease in caliche from 39'	26.5 / 29.0 / 1.2	6	49 65 /
			clayey sandy silt 5YR 6/4 lt reddish brown, hard friable dry-moist, non-strat.,	30.5 / 35.0 / 1.1	7	38 53 /
			some caliche, s/i mottling 20% clay, 25% sand vf-f gra rnd-subrnd, 55% silt	36.5 / 39.0 / 1.5	8	12 30 31
			caliche zone 55-56.5', 5YR 4/6 7/4 yellowish red to pink w/poss mn inclusions of staining on sand grains.	40.5 / 45.0 / 1.2	9	57 50 /
		ML	grades to silty sand @ 65'	46.5 / 49.0 / 1.1	10	40 50 /
			silty sand 7.5YR 4/6 to 5/8 red moist, mottled, hard, caliche inclusions, firm-soft,	50.5 / 55.0 / .8	11	* Physical sample 55-56.5 recovery estimated 46 50 /
			decrease in silt 65-69 black staining on caliche surfaces, increase in caliche from 73' faint laminations	56.5 / 59.0 / 1.2	12	41 51 /
			from 69-70.4 3-4mm thick black staining 79.3-79.9 caliche lense 79.9-80.0	60.5 / 65.0 / .8	13	60 / /
			decrease in caliche (from cuttings) from 84	66.5 / 69.0 / 1.5	14	29 47 51
		SM	finely laminated 85-86.5 (4-5mm) 35% silt, 65% sand vf-m gra, rnd-subrnd	70.5 / 75.0 / .8	15	68 53 / * Physical sample 75-76.5 recovery est.
			lightens in color w/depth to 7.5YR 5/6 strong brown @ 85' fine interbedded caliche zones from 85-100	76.5 / 79.0 / 1.0	16	40 80 /
				80.5 / 85.0 / 1.5-.8	17	21 45 52 (1ft) QA/QC sample 11 35 50 (2ft) 85-86.5 run two spoons
				86.5 / 89.0 / 2.0	18	56 / /
				90.5 / 95.0 / 1.5	19	39 48 49
				96.5 / 99.0 / 1.2	20	* Physical sample 99.0-100.5 recovery est. 18 39 42

ENG FORM 1836 — PREVIOUS EDITIONS ARE OBSOLETE — PROJECT — HOLE NO. — Revision

Hole No.

DRILLING LOG | DIVISION | INSTALLATION | SHEET 2 OF 2 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and this number): PTX09-0014
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN: N/A
8. DEPTH DRILLED INTO ROCK: N/A
9. TOTAL DEPTH OF HOLE: 278
10. SIZE AND TYPE OF BIT: 7 7/8" FALCON
11. DATUM FOR ELEVATION SHOWN (MSL or MLL):
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 ORILL SYSTEMS
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 45; UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: 252.12 (6-29-92)
16. DATE HOLE: STARTED 6-16-92; COMPLETED 7-1-92
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: 82.4%
19. SIGNATURE OF INSPECTOR: Terry Gibson

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
	100			100.5		Blow Count Per 6"
	105		Silty sand 7.5YR 5/6 strong brown, soft-firm, moist finely laminated, some caliche inclusions, black staining or individual sand grains. decrease in silt from 115'	105.0 1.5	21	13 30 30
	110		caliche lenses interbedded w/ silty sand from 87 laminations 4-6mm step by 135'	106.5 109.0 2.5	22	* 24 26 49 60 59 Physical sample 109-111.5 recovery estimate split w/ BATTELLE
	115		caliche lenses consist of f-m gra rnd-sub ang sand cemented w/ caliche weakly to highly cemented throughout	111.5 115.0 1.5	23	17 26 42
	120		Sand vf-f gra, rnd-sub rnd na+k-spar traces from 155' color lightens to 7.5YR 8/6 reddish yellow from 115	120.5 119.0 .7	24	73 / /
	125			120.5 125.0 1.5	25	22 37 44
	130			126.5 129.0 1.5	26	18 41 60
	135			130.5 135.0 1.2	27	32 57 /
	140			136.5 139.0 1.3	28	23 53 /
	145	SM		140.5 145.0 1.3	29	24 54 /
	150			146.5 149.0 1.5	30	* 14 53 50 Physical sample 149-150.5 * recovery est.
	155		155-156.5 clusters of sand grns, faint black coating spherical in shape 2-3mm	150.5 155.0 1.5	31	15 40 52
	160			156.5 159.0 1.1	32	20 58 /
	165			160.5 165.0 1.3	33	38 60 /
	170		faint laminations 169.7-170.1 some caliche cemented sand interbedded	166.5 169.0 1.3	34	28 52 /
	175			170.5 175.0 1.5	35	* 25 62 / Physical sample 175-176.5 * recovery est.
	180			176.5 179.0 1.5	36	17 50 50
	185		185.7-186.4, 189-190.5 spherical sand clusters (2-3mm dia) faint black staining or coating on individual grns.	180.5 185.0 2.5	37	8 22 43 83 15 QA/QC sample 185-187.5
	190			187.5 189 1.5	38	8 22 40
	195		caliche cemented loose 195-195.2 (5YR 8/1 white)	190.5 195.0 1.4	39	24 55 /
	200			196.5 199.0 1.3	40	* 19 72 68 * Physical Sample

PROJECT | HOLE NO.

Hole No.

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 3 SHEETS

1. PROJECT: PANTEX
2. LOCATION (Coordinates or Station): BLDG 12-35
3. DRILLING AGENCY: LAYNE ENVIRONMENTAL
4. HOLE NO. (As shown on drawing title and file number): PTX 09-0014
5. NAME OF DRILLER: NICO HERNANDEZ
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. THICKNESS OF OVERBURDEN
8. DEPTH DRILLED INTO ROCK
9. TOTAL DEPTH OF HOLE: 278
10. SIZE AND TYPE OF BIT: 9 1/2" FALCON
11. DATUM FOR ELEVATION SHOWN (TBM or MSL)
12. MANUFACTURER'S DESIGNATION OF DRILL: AP-1000 DRILL SYSTEMS
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED 45; UNDISTURBED 11
14. TOTAL NUMBER CORE BOXES: N/A
15. ELEVATION GROUND WATER: 252.12 (6-29-92)
16. DATE HOLE: STARTED 6-16-92; COMPLETED 7-1-92
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING: 82.4% %
19. SIGNATURE OF INSPECTOR: Terry [signature]

ELEVATION a	DEPTH b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
		SM	Silty sand 7.5YR 7/8 reddish yellow, soft-firm, moist, non-strat. to finely laminated (3-5 mm) increase in k-spar + mn w/ depth, sand coarsens w/ depth vf-f to vf-c grn rnd-subang, some lenses of caliche cemented sand. 20% silt, 80% sand vf-c grn rnd-subang intermittent caliche cemented sand lenses throughout (5YR 8/1 white) increase in moisture from 225' trace quartz gravel, 1-3 cm rnd-subrnd moist-damp 229-229.1	200.5		Blow Count Per 6"
	205			205 / 1.5 / 206.5	41	22 48 50
	210			209 / 1.0 / 210.5	42	*21 54 / T.D. Physical Sample 209-210.5
	215			215 / 1.2 / 216.5	43	39 55 /
	220			219 / 1.1 / 220.5	44	24 65 /
	225			225 / 1.5 / 226.5	45	*17 67 51 Physical Sample 225-226.5
	230			229 / 1.2 / 230.5	46	10 33 57
	233	GC	Sandy gravel 10YR 4/6 to 7.5YR 7/6 red to reddish yellow, rnd-angular, granitic, quartzitic 5mm to 5cm flat to rnd, trace ss gravel increase to cobble w/ depth 40% sand vf-vc grn, rnd-subang 60% gravel 5mm-6cm subang-rnd			
	235			235 / .7 / 236.5	47	5 12 23
	240			239 / .5 / 240.5	48	6 9 17
	245			245 / 0 / 246.5	49	No Sample in hole boulder
	250	SM	Silty sand 5YR 6/6 reddish yellow, moist-sat, soft, non-strat, trace k-spar + micas, 20% silt, 80% sand vf-m grn, rnd-subang faint laminations from 250.5-252, 2-3mm, increase in silt from 255 to 35% (Color to 7.5YR 5/4 brown), sat in 259-266.5 sample interval, sand coarsens w/ depth trace gravel (qtz) 5-7mm rnd-subang	249 / 1.3 / 250.5	50	*25 67 40 *Physical Sample 249-250.5 recovery est.
	255			255 / 1.5 / 256.5	51	13 41 50
	260			259 / 1.2 / 260.5	52	22 63 /
	265			265 / 1.5 / 266.5	53	4 20 50
	270			269 / 2.0 / 271	54	*30 30 30 ~~[illegible]~~ *Physical sample ~~269-271~~ 275-276 recovery est.
	273	CL	Sandy silty clay 7.5YR 7/6 reddish yellow, firm, moist, mottled, 1-M plast. 15% sand, vf-f grn, rnd-subrnd, 25% silt, 65% clay			
	275			275 / 1.5 / 276.5	55	*12 22 50
	278			276.5 / 1.5 / 278	56	37 39
	280					

T.D. 278

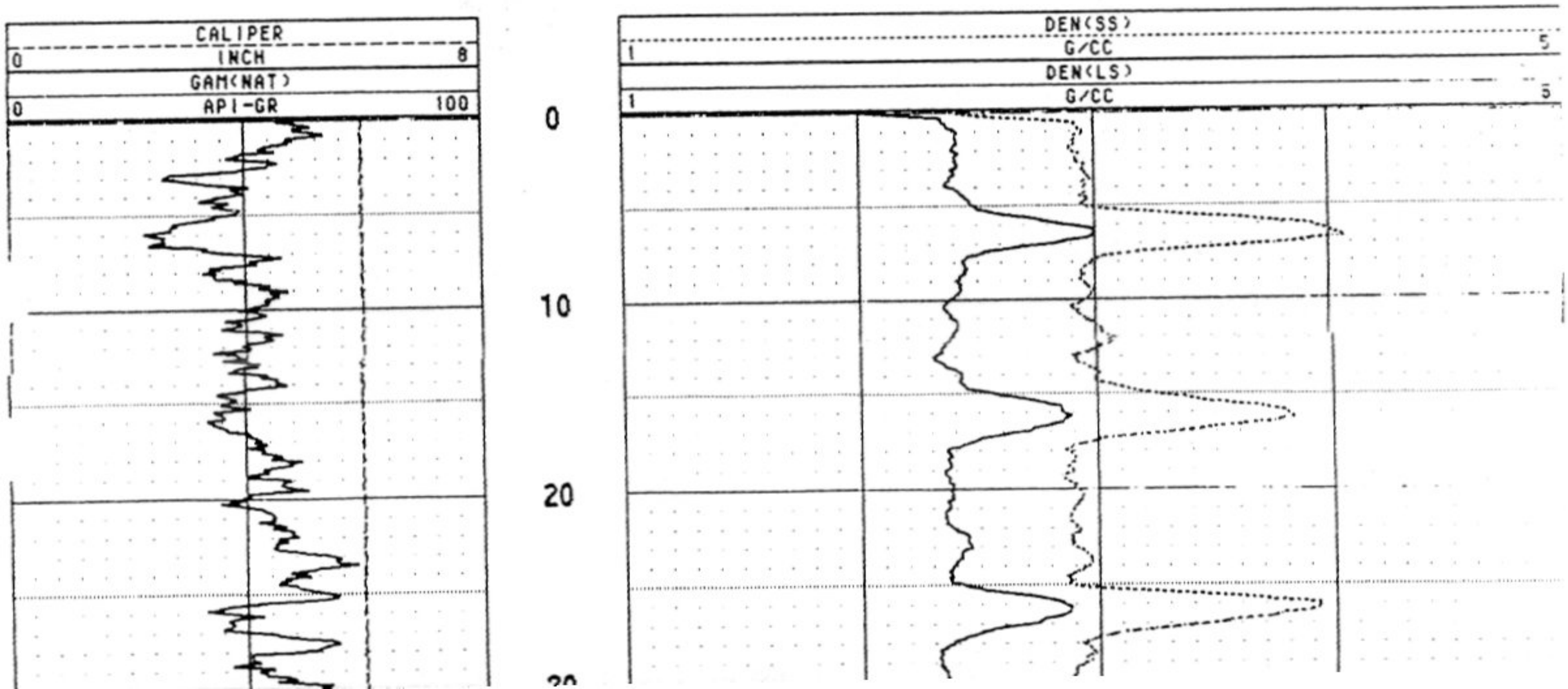
Run no. 1

Century GEOPHYSICAL CORP.

PTX 09 - 0014

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/29/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 278.30	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -10.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 1.5	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: PROCESSE
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9035AA
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 4
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: PTEX 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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API-GR 100
GAM(NAT)
0 INCH 8
CALIPER

1 G/CC 5
DEN(LS)
1 G/CC 5
DEN(SS)

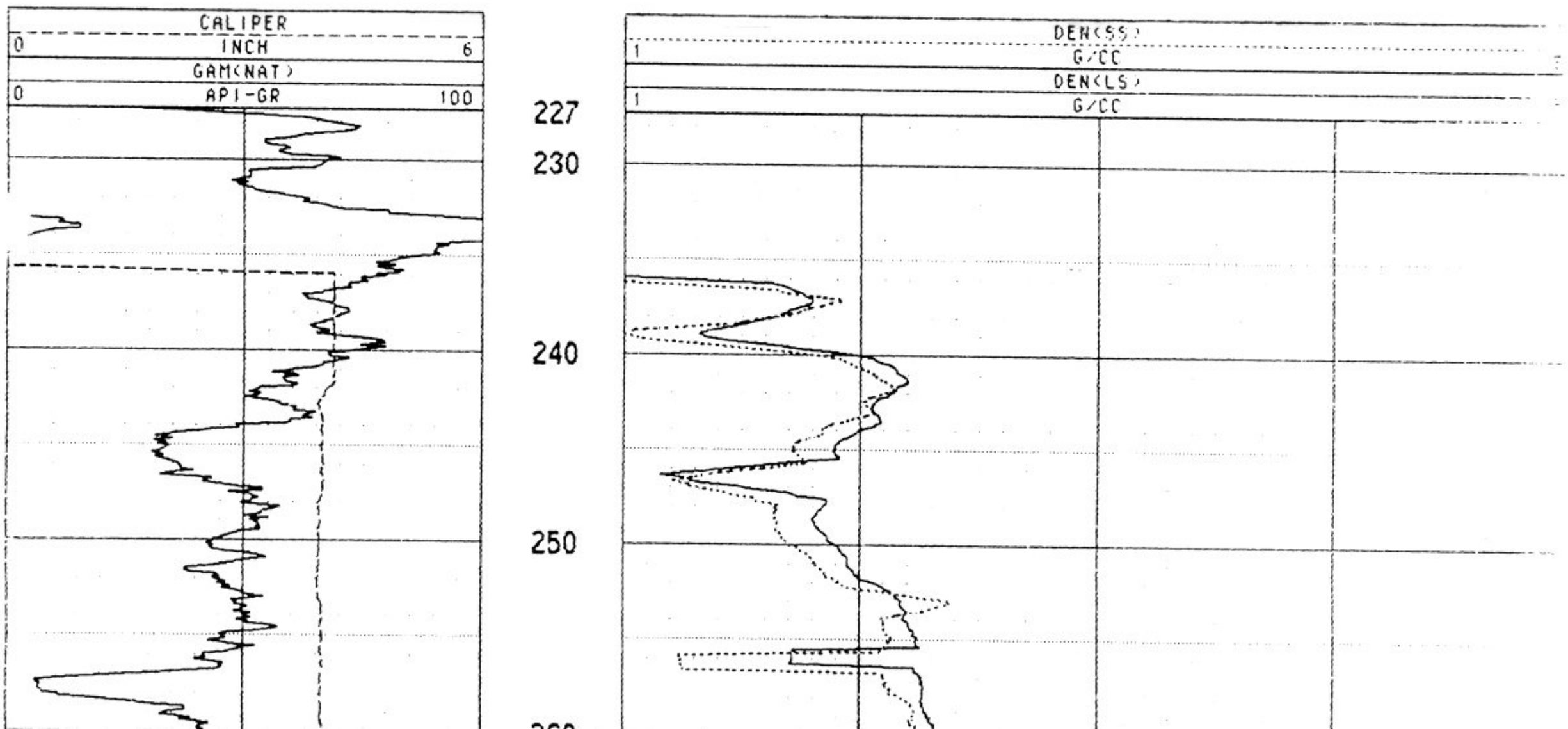
Run no.2

Century GEOPHYSICAL CORP.

PTX 09 - 0014

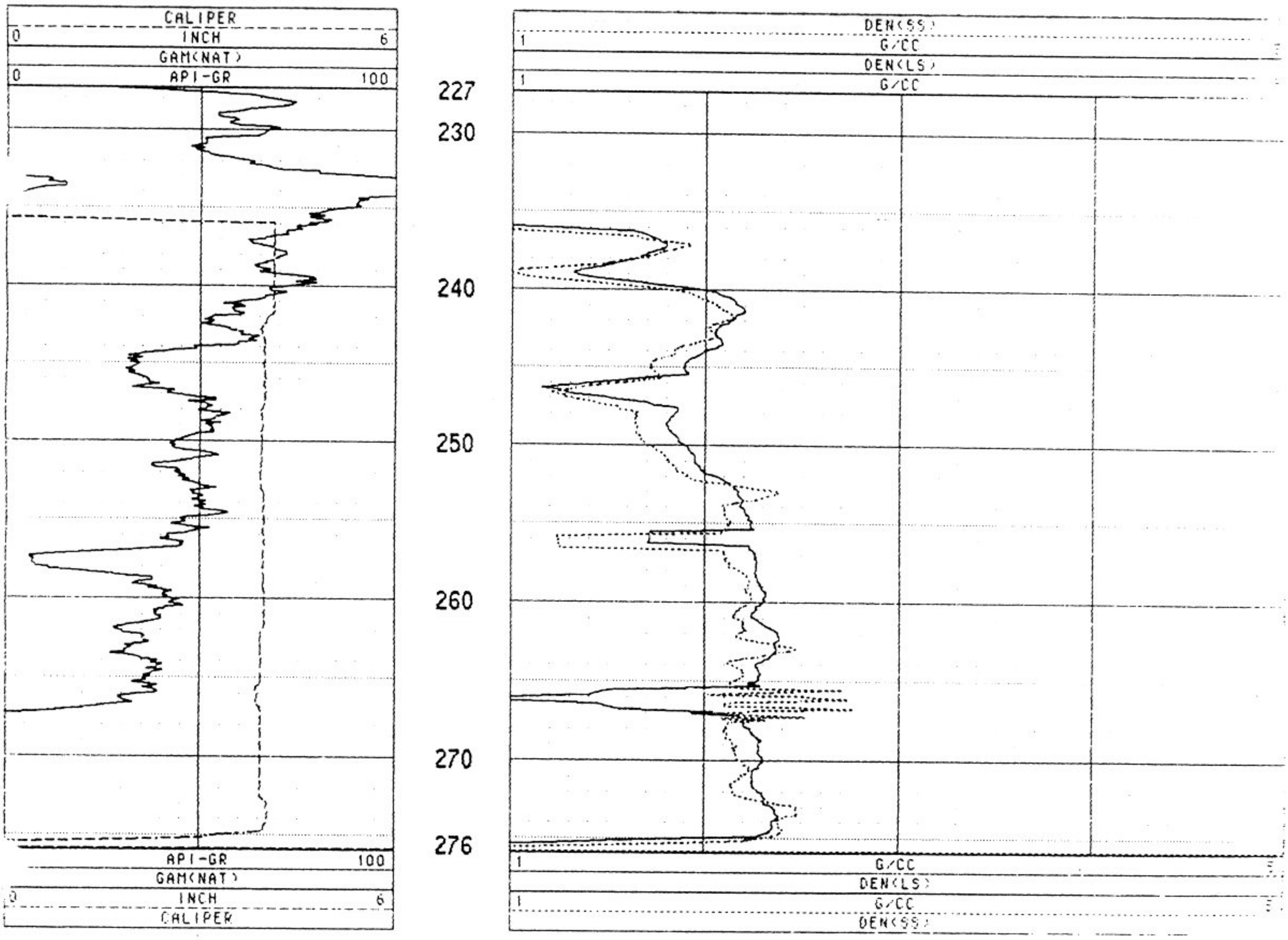
COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/10/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 275.90	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: 227.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: PROCESSE
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9035AA
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: PTEX 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/10/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 275.90	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: 227.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: PROCESSE
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9035AA
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: PTEX 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



CGC

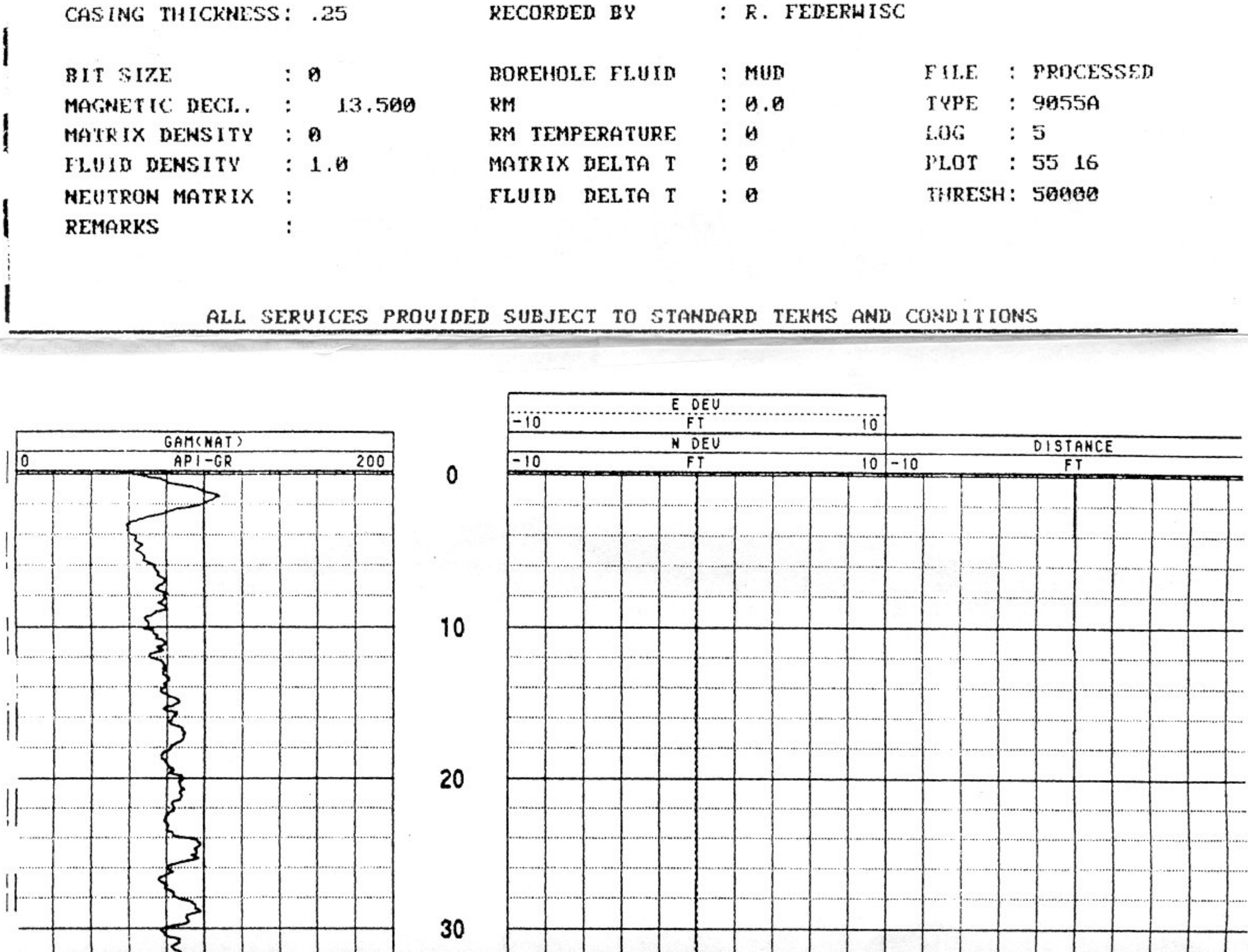
Century GEOPHYSICAL CORP.

GAMMA-DEVIATION

OTHER SERVICES:

COMPANY	: WOODWARD - CLYDE				
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/10/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 277.00	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -0.70	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: PROCESSED
MAGNETIC DECL.	: 13.500	RM	: 0.0	TYPE	: 9055A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 5
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 55 16
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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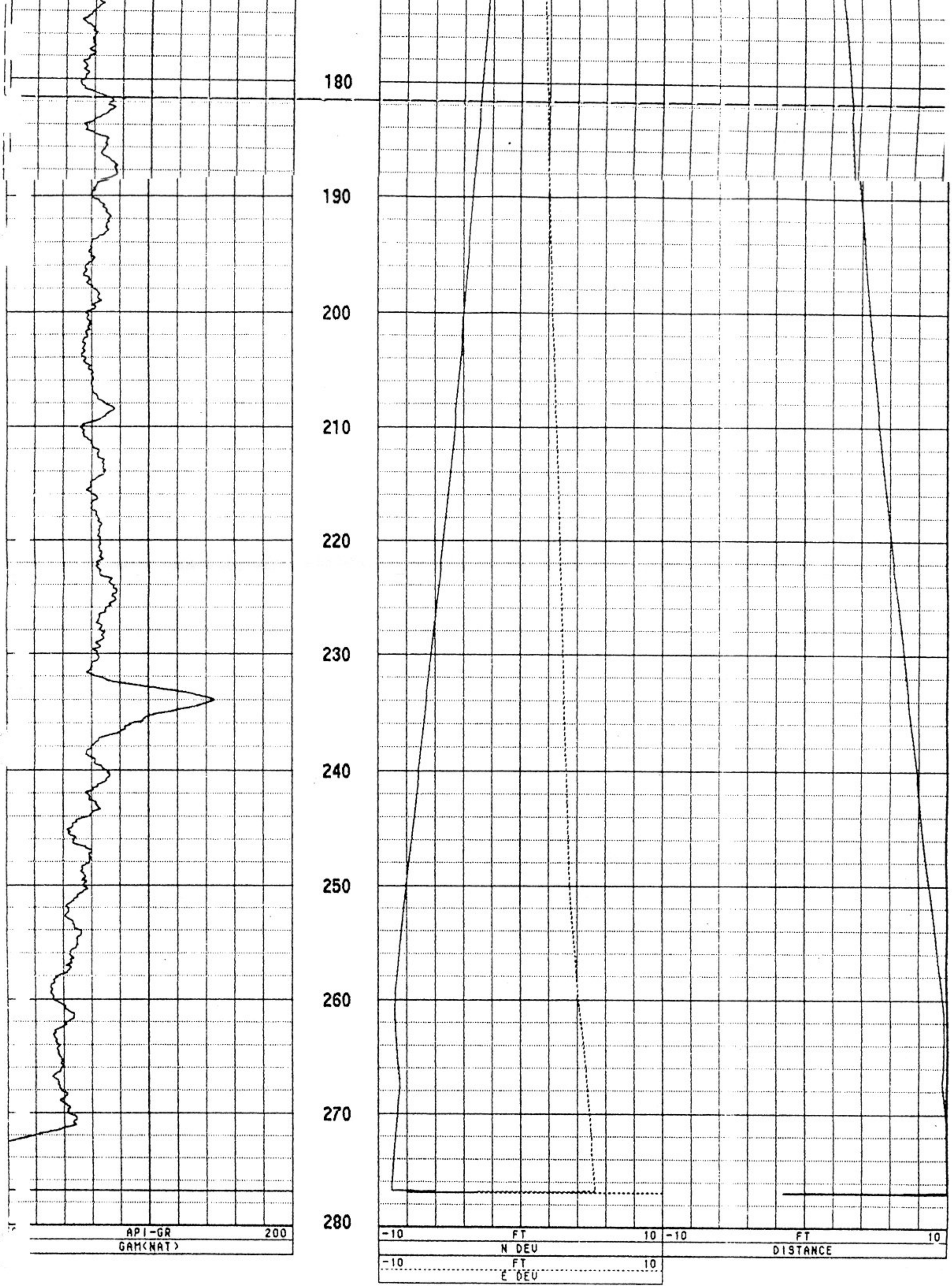
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DISTANCE

Century GEOPHYSICAL CORP.

FOUR PI DENSITY

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 07/10/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 276.20	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: 1.40	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: ORIGINAL
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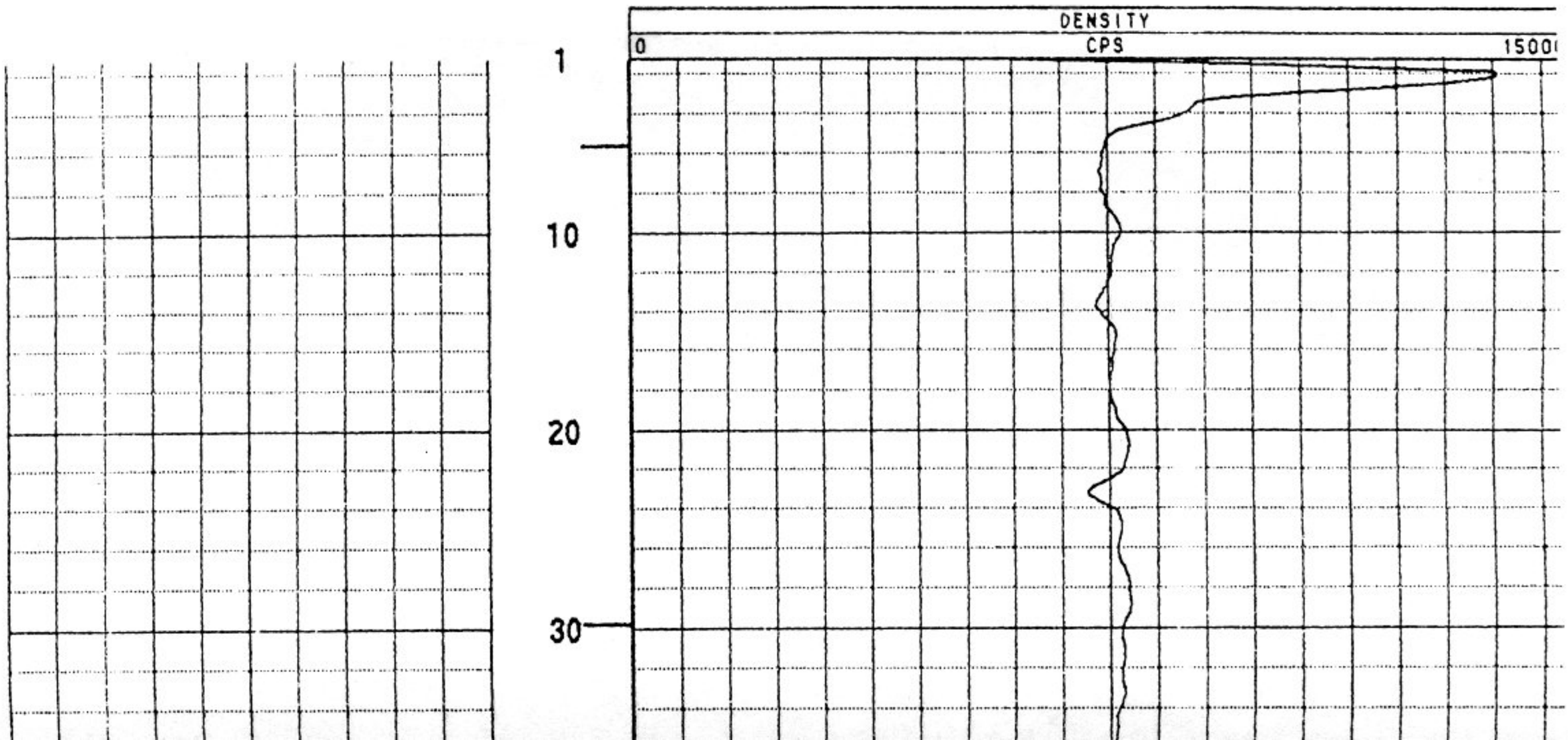
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 1
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 9060 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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DENSITY

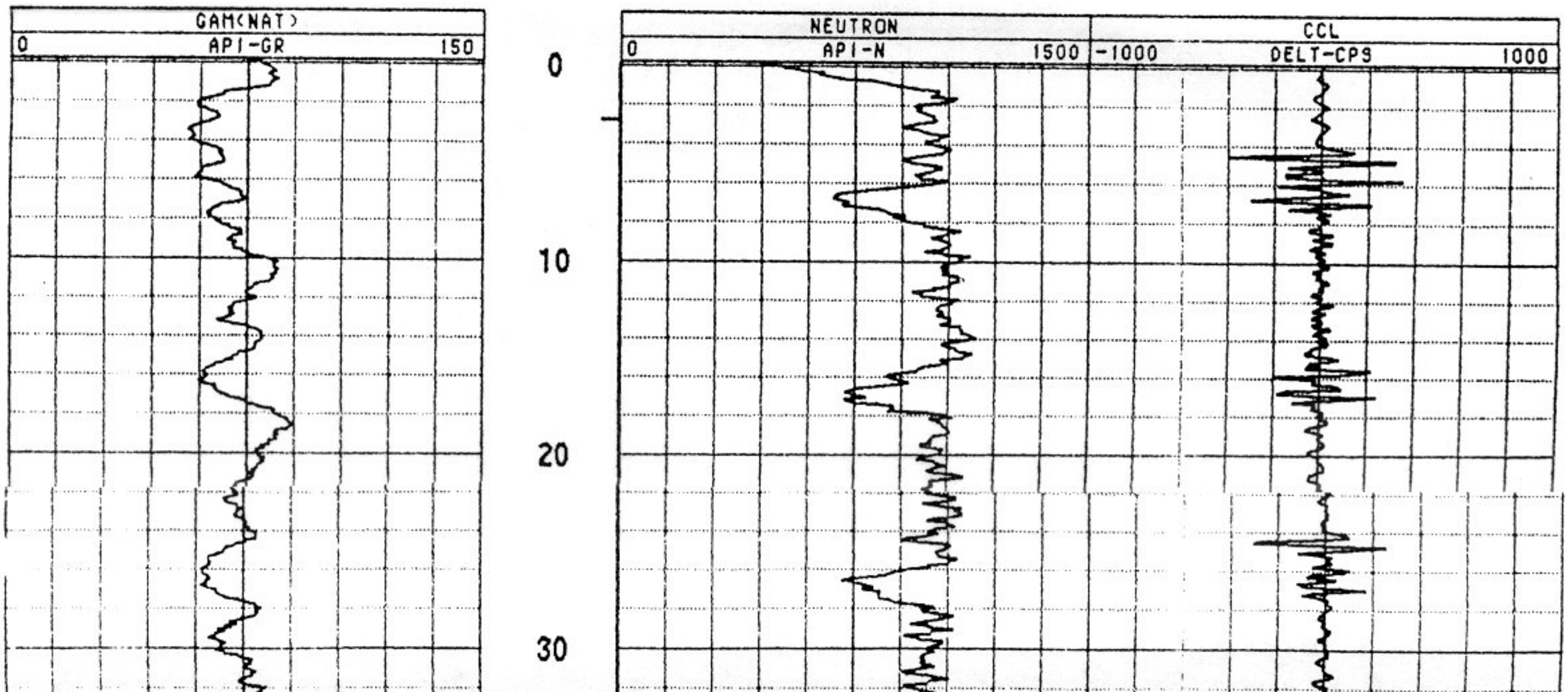
CGC

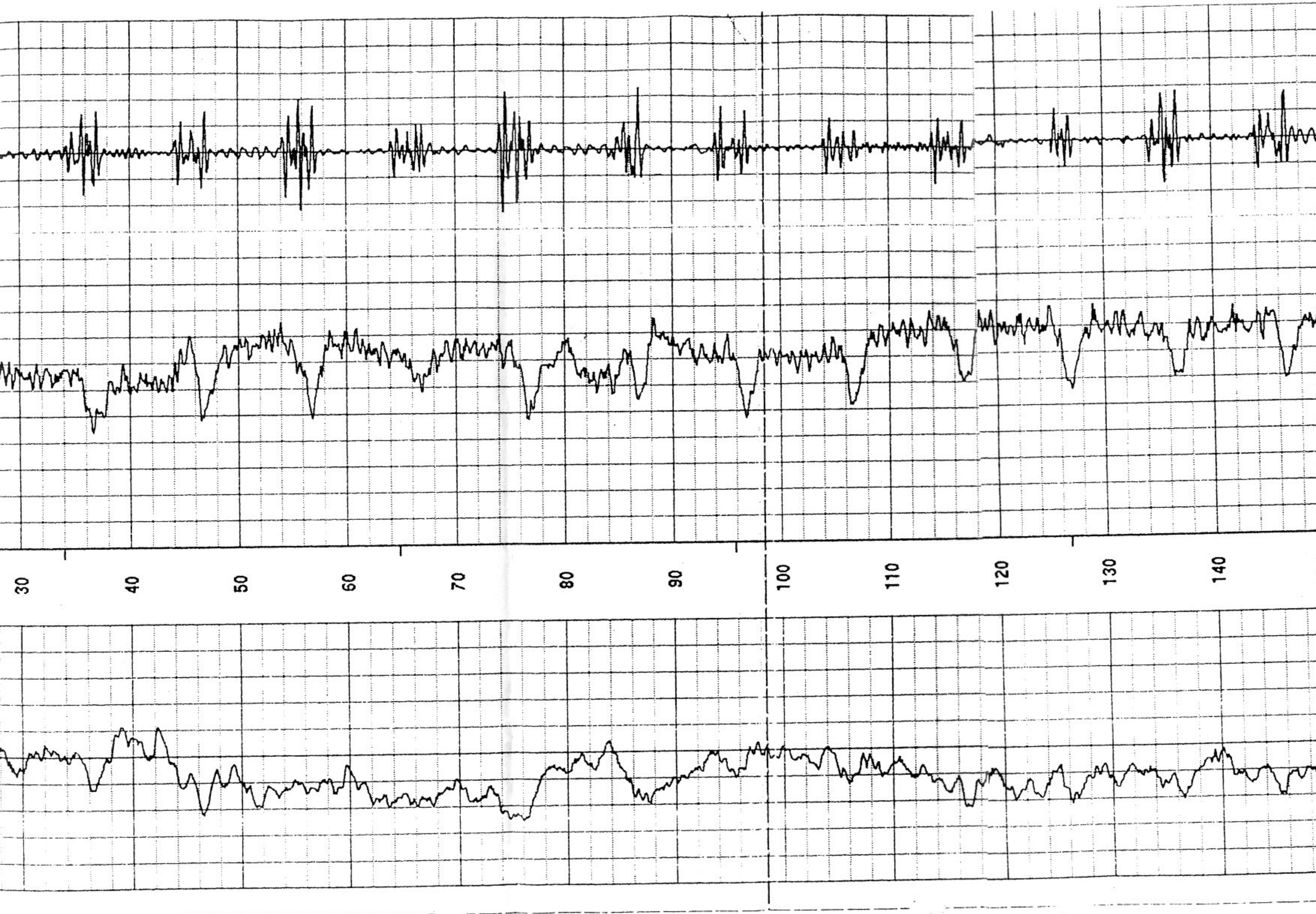
Century GEOPHYSICAL CORP.

GAMMA-NEUTRON-CCL

COMPANY	: WOODWARD - CLYDE			OTHER SERVICES:	
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
DATE	: 06/29/92	PERMANENT DATUM	:	ELEVATIONS	
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	KB	:
LOG BOTTOM	: 277.90	LOG MEASURED FROM	: G.L.	DF	:
LOG TOP	: -7.70	DRL MEASURED FROM	: G.L.	GL	:
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: 1.5	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: ORIGINAL
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9051A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 7
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 51 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS

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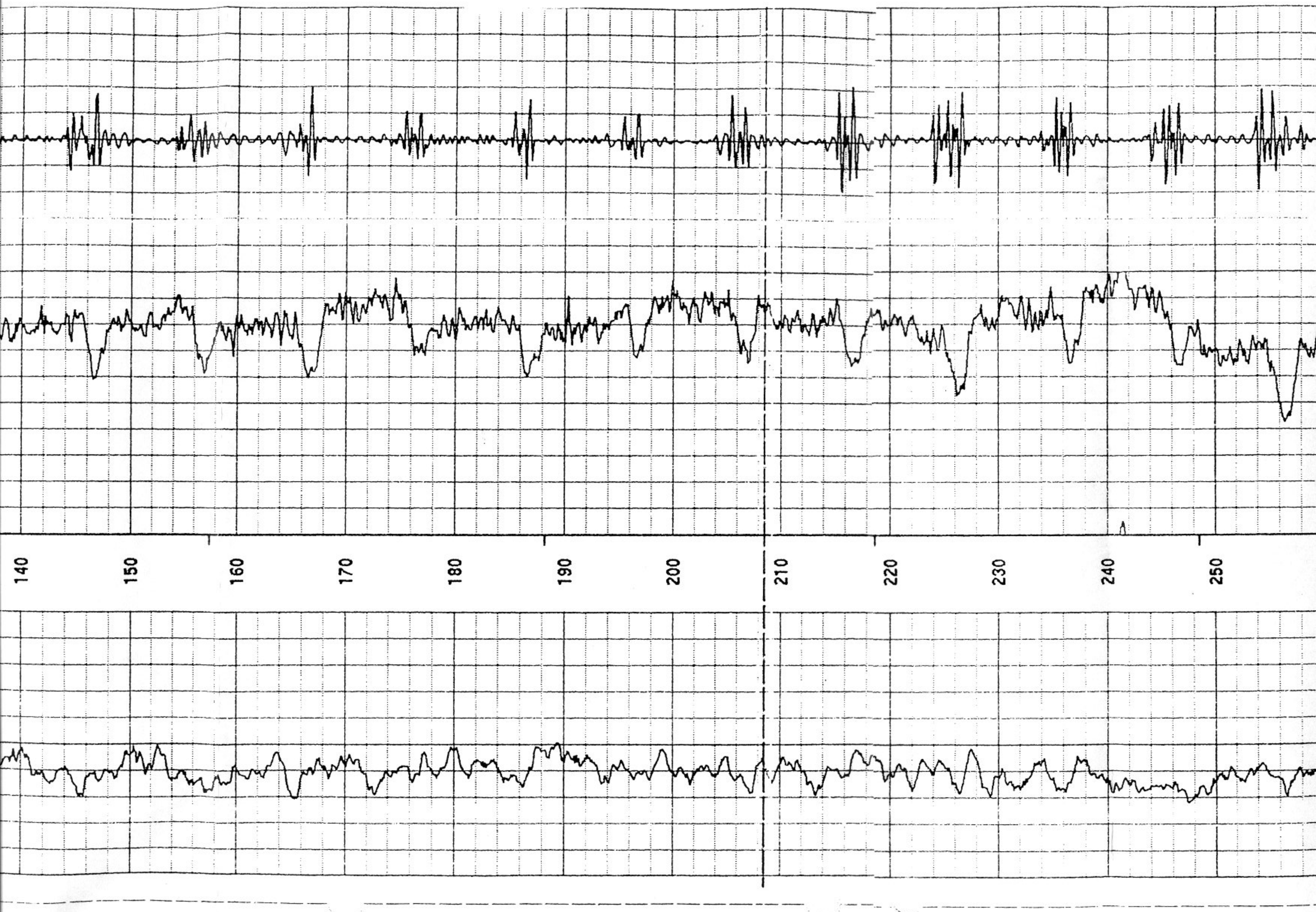
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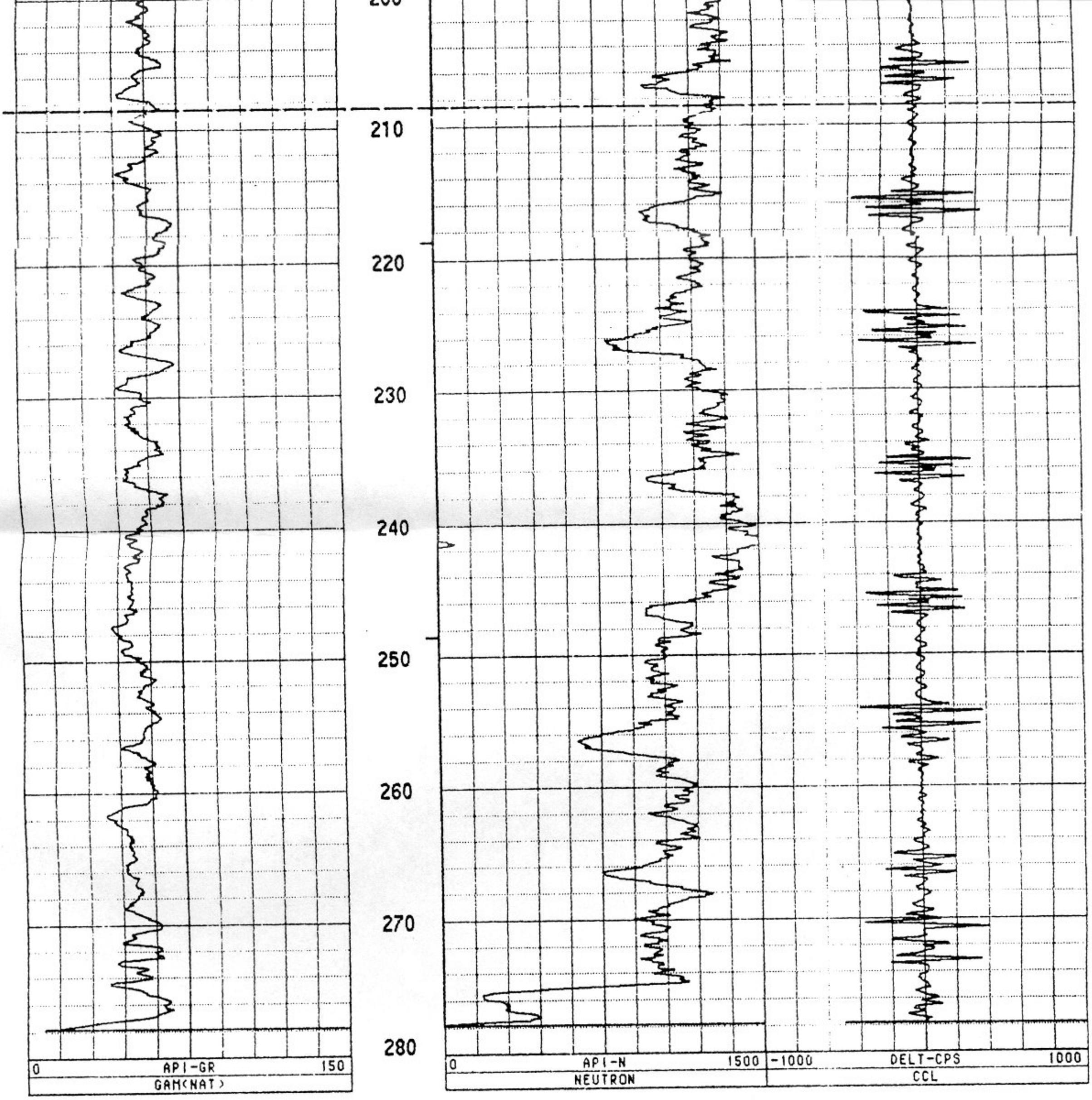

TOOL CALIBRATION TOOL = 9051A SERIAL NUMBER = 95

	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
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1	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	MAY14,92	18:08:51	0	NEUTRON	0.000 CPS	0.000	API-N
3	MAY14,92	18:08:51	0	NEUTRON	271.000 CPS	271.000	API-N
4	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS
5	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS

CGC

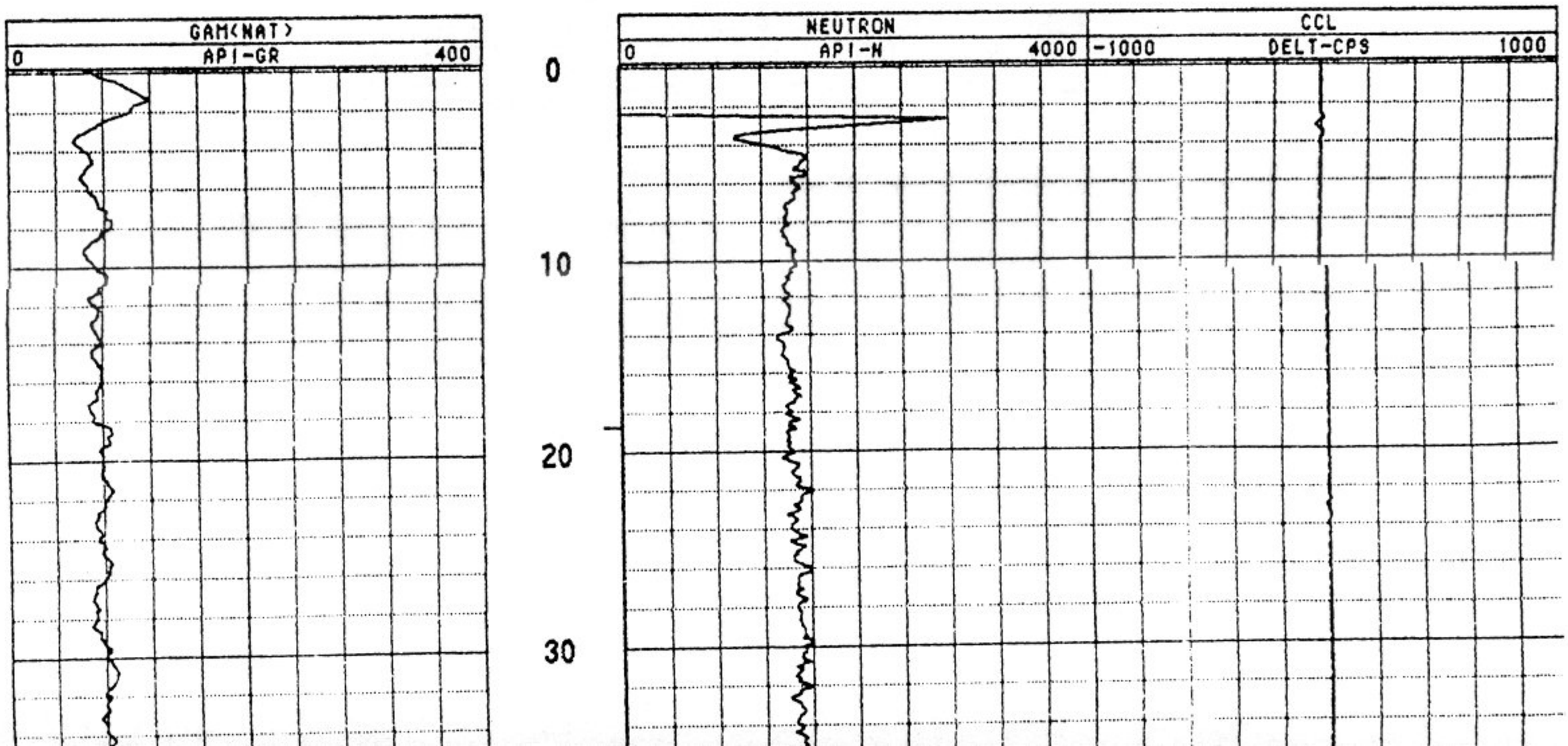
Century GEOPHYSICAL CORP.

GAMMA-NEUTRON-CCL

OTHER SERVICES:

COMPANY	: WOODWARD - CLYDE				
WELL	: PTX 09 - 0014				
LOCATION/FIELD	: PANTEX				
COUNTY	: CARSON				
STATE	: TEXAS				
SECTION	:	TOWNSHIP	:	RANGE	:
				ELEVATIONS	
DATE	: 07/10/92	PERMANENT DATUM	:	KB	:
DEPTH DRILLER	: 280	ELEV. PERM. DATUM	:	DF	:
LOG BOTTOM	: 275.40	LOG MEASURED FROM	: G.L.	GL	:
LOG TOP	: -3.60	DRL MEASURED FROM	: G.L.		
CASING DRILLER	: 280	LOGGING UNIT	: 9010		
CASING TYPE	: S.STEEL	FIELD OFFICE	: CHINO VALLEY		
CASING THICKNESS	: .25	RECORDED BY	: R. FEDERWISC		
BIT SIZE	: 0	BOREHOLE FLUID	: MUD	FILE	: ORIGINAL
MAGNETIC DECL.	: 13.5	RM	: 0.0	TYPE	: 9051A
MATRIX DENSITY	: 0	RM TEMPERATURE	: 0	LOG	: 3
FLUID DENSITY	: 1.0	MATRIX DELTA T	: 0	PLOT	: 51 1
NEUTRON MATRIX	:	FLUID DELTA T	: 0	THRESH	: 50000
REMARKS	:				

ALL SERVICES PROVIDED SUBJECT TO STANDARD TERMS AND CONDITIONS



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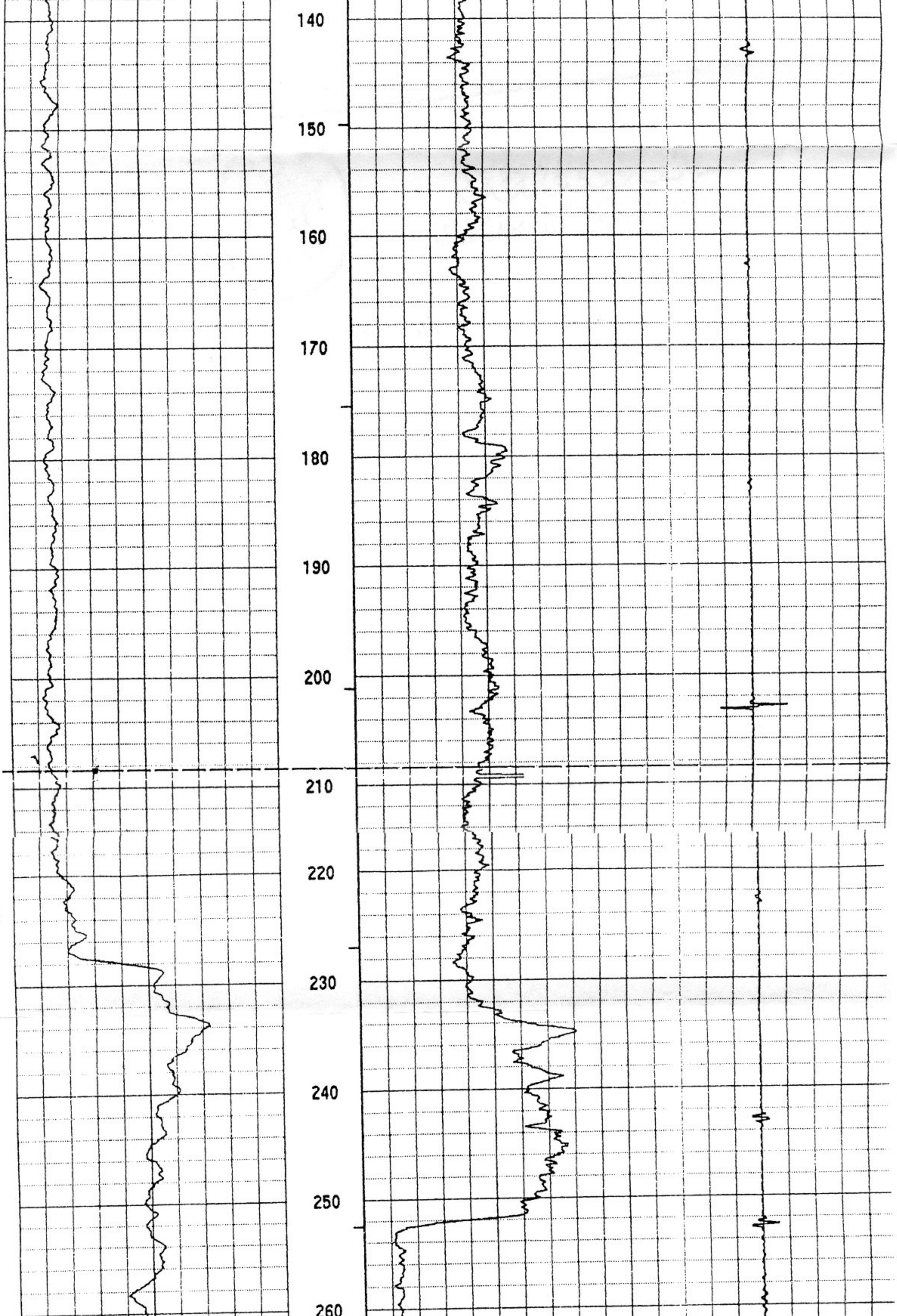
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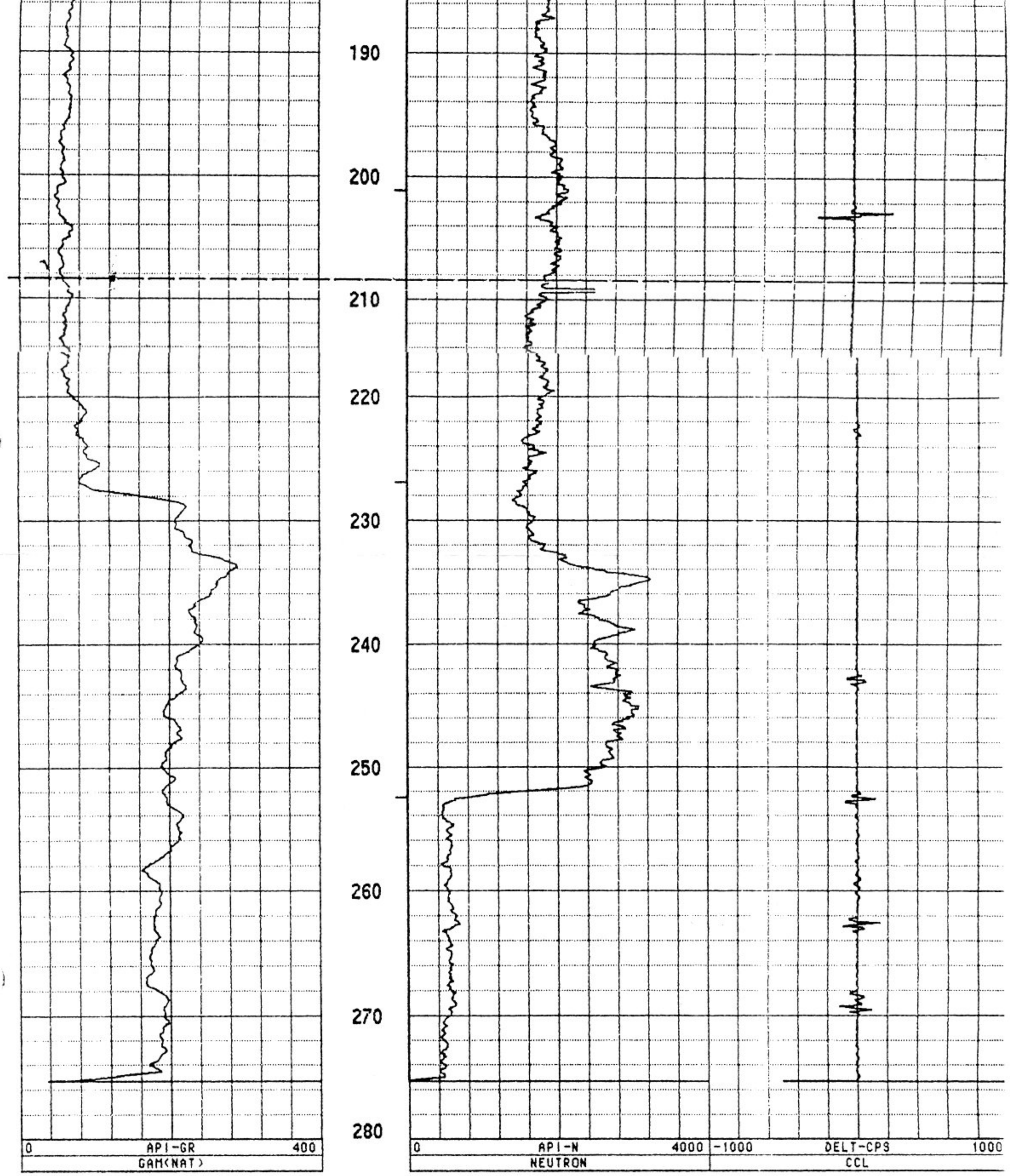


TOOL CALIBRATION TOOL = 9051A SERIAL NUMBER = 95

	CAL-DATE	CAL-TIME	SRCE	SENSOR	RESPONSE	STANDARD	
0	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
1	MAY14,92	18:08:51	0	GAM(NAT)	0.000 CPS	0.000	API-GR
2	MAY14,92	18:08:51	0	NEUTRON	0.000 CPS	0.000	API-N
3	MAY14,92	18:08:51	0	NEUTRON	271.000 CPS	271.000	API-N
4	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS
5	MAY14,92	18:08:51	0	CCL	0.000 CPS	0.000	DELT-CPS

Send original copy by certified mail to: **Texas Water Commission, P.O. Box 13087, Austin, Texas 78711**

Please use black ink.

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

State of Texas WELL REPORT D.I.M.

Texas Water Well Drillers Board
P.O. Box 13087
Austin, Texas 78711

1) **OWNER** ISD Dept of Agriculture Bldg (Name) **ADDRESS** [illegible] (Street or RFD) [illegible] (City) [illegible] (State) (Zip)

2) **LOCATION OF WELL:** County Uvalde, 30 miles in E.N.E. (NE, SW, etc.) direction from Uvalde (Town)

Driller **must** complete the legal description below with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ **LEGAL DESCRIPTION:**

Section No. _____ Block No. _____ Township _____ Abstract No. _____ Survey Name _____

Distance and direction from two intersecting section or survey lines _____

☒ **SEE ATTACHED MAP** No. 17509-0014

3) **TYPE OF WORK (Check):**
☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) **PROPOSED USE (Check):**
☐ Domestic ☐ Industrial ☒ Monitor ☐ Public Supply ☐ Irrigation ☐ Test Well ☐ Injection ☐ De-Watering

D.I.M.

5) **DRILLING METHOD (Check):**
☒ Driven ☐ Mud Rotary ☐ Air Hammer ☐ Jetted ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Other _____

6) **WELL LOG:**

Date Drilling: Started [illegible] 19 92 Completed [illegible] 19 92

DIAMETER OF HOLE		
Dia. (in.)	From (ft.)	To (ft.)
9	Surface	272

From (ft.)	To (ft.)	Description and color of formation material
0	1.5	Sandy Silty Clay
1.5	2.5	Caliche Rock
2.5	23	Silty Sand
23	241	Sandy Gravel
241	272	Silty Sand
272	275	Sandy Silty Clay

(Use reverse side if necessary)

7) **BOREHOLE COMPLETION:**
☐ Open Hole ☐ Straight Wall ☐ Underreamed
☒ Gravel Packed ☐ Other _____
If Gravel Packed give interval . . . from 220 ft. to 235 ft.

8) **CASING, BLANK PIPE, AND WELL SCREEN DATA:**

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mfg., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casting Screen
4"	New	S/S BLANK Sand	225 ft.	272.81	Sch 10
4"	New	S/S WIRE WOUND SCREEN	272.81	242.76	.010
4"	New	S/S CASING	242 ft.	0	Sch 10

9) **CEMENTING DATA** [Rule 287.44(1)]
Cemented from 231.5 ft. to 0 ft. No. of Sacks Used 71
Bentonite 235 ft. to 231.5 ft. No. of Sacks Used _____
Method used Tremie
Cemented by Layne Environmental

10) **SURFACE COMPLETION**
☒ Specified Surface Slab Installed [Rule 287.44(2)(A)]
☐ Specified Steel Sleeve Installed [Rule 287.44(3)(A)]
☐ Pitless Adapter Used [Rule 287.44(3)(B)]
☐ Approved Alternative Procedure Used [Rule 287.71]

11) **WATER LEVEL:**
Static level 230.12 ft. below land surface Date 6-22-92
Artesian flow _____ gpm. Date _____

12) **PACKERS:** N.A. Type Depth

13) **TYPE PUMP:** N.A.
☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder
☐ Other _____
Depth to pump bowls, cylinder, jet, etc., _____ ft.

14) **WELL TESTS:** N.A.
Type Test: ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated
Yield: _____ gpm with _____ ft. drawdown after _____ hrs.

15) **WATER QUALITY:**
Did you knowingly penetrate any strata which contained undesirable constituents?
☐ Yes ☒ No If yes, submit "REPORT OF UNDESIRABLE WATER"
Type of water? _____ Depth of strata _____
Was a chemical analysis made? ☐ Yes ☐ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief. I understand that failure to complete items 1 thru 15 will result in the log(s) being returned for completion and resubmittal.

COMPANY NAME Layne Western Co. Inc (Type or print) **WELL DRILLER'S LICENSE NO.** 5143

ADDRESS [illegible] (Street or RFD) Floresville (City) Texas (State) 78114 (Zip)

(Signed) [illegible] (Licensed Well Driller) **(Signed)** _____ (Registered Driller Trainee)

Please attach electric log, chemical analysis, and other pertinent information, if available.

For TWC use only: Well No. _____ Located on map _____

WWD-012 (Rev. 05-18-90)

TEXAS WATER COMMISSION COPY

WI-5

WI-5

WATER INDUSTRIES

A DIVISION OF TASCOSA INDUSTRIES, INC.

Ground Water Research and Development

IRRIGATION MUNICIPAL INDUSTRIAL

P. O. Box 871 Phone 806-364-3109

HEREFORD, TEXAS 79045

Plain & Gravel Wall Wells

Test Holes

Pump Sales & Repair

Water Systems

Mason & Hanger - Silas Mason Co., Inc.
Pantex Plant
Amarillo, Texas 79177

Drilling Log: Test Hole #5
Drilling Date: November 6, 1985

12¼" Hole
(All Measurements are from Ground Level)

0	- 3	Top Soil
3	- 35	Caliche, Red Clay
35	- 45	Brown Clay
45	- 60	Red Clay
60	- 68	Mostly Clay, Some Sand
68	- 78	Clay, Caliche Rock
78	- 100	Mostly Clay, Very Little Sand
100	- 147	Sandy Clay
147	- 185	Dark Brown Sandy Clay
185	- 200	White Sandy Clay
200	- 210	Sandy Clay with Gravel Stringers
210	- 220	Coarse Sand, Gravel, Little Clay
220	- 248	Sandy Clay, Little Sand, Gravel Streaks
248	- 288	Sandy Clay
288	- 348	Clay
348	- 449	Clay, Little Sandy Clay
449	- 490	Clay, Sand, Coarse Gravel
490	- 500	Coarse Sand, Gravel
500	- 510	Clay
510	- 520	Clay, Gravel Streaks
520	- 540	Sandy Clay
540	- 550	Clay
550	- 571	Sandy Clay
571	- 591	Medium - Coarse Sand, Clay
591	- 641	Sandy Clay
641	- 665	White Clay, Gravel Streaks, Sandstone
665	- 710	Red Bed

WI-5

Send original copy by certified mail to the Texas Department of Water Resources P. O. Box 13087 Austin, Texas 78711

State of Texas
WATER WELL REPORT

ATTENTION OWNER: *Confidentiality Privilege Notice on Reverse Side*

Texas Water Well Drillers Board P. O. Box 13087 Austin, Texas 78711

1) OWNER Mason & Hanger - Silas Mason Co. (Pantex Plant) (Name) Address P. O. Box 30020 (Street or RFD) Amarillo, Texas 79177 (City) (State) (Zip)

2) LOCATION OF WELL: County Carson 10 miles in West (N.E., S.W., etc.) direction from Panhandle (Town)

Test Hole #5

Driller must complete the legal description to the right with distance and direction from two intersecting section or survey lines, or he must locate and identify the well on an official Quarter- or Half-Scale Texas County General Highway Map and attach the map to this form.

☐ Legal description: Section No. 33 Block No. M4 Township ____ Abstract No. ____ Survey Name J H Gibson

Distance and direction from two intersecting section or survey lines 200' N. of S. Sec. Line and 1200' W. of E. Sec. Line

☐ See attached map.

3) TYPE OF WORK (Check): ☒ New Well ☐ Deepening ☐ Reconditioning ☐ Plugging

4) PROPOSED USE (Check): ☐ Domestic ☐ Industrial ☐ Public Supply ☐ Irrigation ☒ Test Well ☐ Other ____

5) DRILLING METHOD (Check): ☒ Mud Rotary ☐ Air Hammer ☐ Driven ☐ Bored ☐ Air Rotary ☐ Cable Tool ☐ Jetted ☐ Other ____

6) WELL LOG

Date drilled 11-6-85

DIAMETER OF HOLE

Dia. (in.)	From (ft.)	To (ft.)
12¼	Surface	710

7) BOREHOLE COMPLETION: ☐ Open Hole ☐ Straight Wall ☐ Underreamed ☐ Gravel Packed ☒ Other Plugged

If Gravel Packed give interval ... from ____ ft. to ____ ft.

From (ft.)	To (ft.)	Description and color of formation material
0	3	Top Soil
3	35	Caliche, Red Clay
35	45	Brown Clay
45	60	Red Clay
60	68	Mostly Clay, Some Sand
68	78	Clay, Caliche Rock
78	100	Mostly Clay, Very Little Sand
100	147	Sandy Clay
147	185	Dark Brown Sandy Clay
185	200	White Sandy Clay
200	210	Sandy Clay with Gravel Streaks
210	220	Coarse Sand, Gravel, Little Clay
220	248	Sandy Clay, Little Sand, Gravel Streaks
248	288	Sandy Clay
288	348	Clay
348	449	Clay, Little Sandy Clay
449	490	Clay, Sand, Coarse Gravel
490	500	Coarse Sand, Gravel
500	510	Clay
510	520	Clay, Gravel Streaks
520	540	Sandy Clay
540	550	Clay
550	571	Sandy Clay
571	591	Med. - Coarse Sand, Clay
591	641	Sandy Clay
641	665	White Clay, Gravel Streaks, Sand
665	710	Red Bed

(Use reverse side if necessary)

8) CASING, BLANK PIPE, AND WELL SCREEN DATA

Dia. (in.)	New or Used	Steel, Plastic, etc. Perf., Slotted, etc. Screen Mgf., if commercial	Setting (ft.) From	Setting (ft.) To	Gage Casing Screen

CEMENTING DATA

Cemented from 0 ft. to 400 ft.

Method used Pumping

Cemented by Water Industries (Company or individual)

9) WATER LEVEL

Static level ____ ft. below land surface Date ____

Artesian flow ____ gpm Date ____

10) PACKERS Type Depth

RECEIVED DEC 27 1985 TEXAS WATER COMMISSION

11) TYPE OF PUMP: ☐ Turbine ☐ Jet ☐ Submersible ☐ Cylinder ☐ Other ____

Depth to pump bowls, cylinder, jet, etc., ____ ft.

12) WELL TESTS: ☐ Type Test ☐ Pump ☐ Bailer ☐ Jetted ☐ Estimated

Yield ____ gpm with ____ ft. drawdown after ____ hrs.

13) WATER QUALITY:

Did you knowingly penetrate any strata which contained undesirable water? ☐ Yes ☒ No

If yes, submit "REPORT OF UNDESIRABLE WATER"

Type of water? ____ Depth of strata ____

Was a chemical analysis made? ☐ Yes ☒ No

I hereby certify that this well was drilled by me (or under my supervision) and that each and all of the statements herein are true to the best of my knowledge and belief.

COMPANY NAME Water Industries (Type or Print) Water Well Driller's License No. 1084

ADDRESS P. O. Box 871 (Street or RFD) Hereford (City) Texas (State) 79045 (Zip)

(Signed) [signature] (Licensed Water Well Driller) (Signed) ____ (Registered Driller Trainee)

For TDWR use only Well No. 06 [illegible] Located on map [illegible]

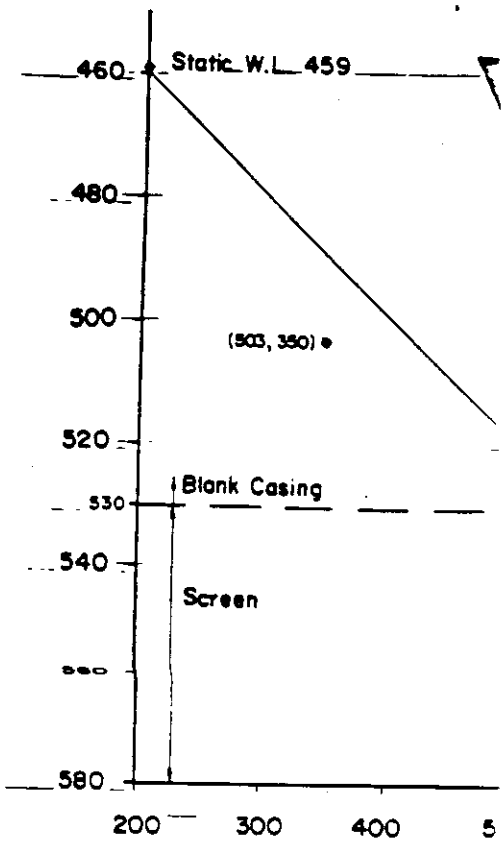
Please attach electric log, chemical analysis, and other pertinent information, if available

TDWR-0392 Rev. 5-27-82

DEPARTMENT OF WATER RESOURCES COPY

TEST HOLE NO. 5 Borehole, see map WI-5

DEPTH BELOW GROUND (FT.)	FORMATION DESCRIPTION
0 - 4	TOP SOIL, CLAY (CL), DARK BROWN, ORGANIC
4 - 35	CALICHE, CLAY (CL), RED-BROWN
35 - 40	CLAY (CL), BROWN
40 - 48	CLAY (CL), RED-BROWN
48 - 210	CLAY, SANDY (SC), LITTLE SAND, MINOR GRAVEL, RED-BROWN
210 - 220	GRAVEL, SAND AND CLAY (GC), COARSE SAND, RED-BROWN
220 - 230	GRAVEL, SAND AND CLAY (GC), MOSTLY CLAY, RED-BROWN
230 - 240	SANDY CLAY (SC), MOSTLY CLAY, SOME GRAVEL, RED-BROWN
240 - 418	CLAY (CL), MINOR SAND GRAVEL, RED-BROWN
418 - 490	GRAVEL, SAND AND CLAY (GC), MOSTLY CLAY, SOME GRAVEL AND COARSE SAND, RED-BROWN
490 - 500	AS ABOVE (GC) BUT LESS CLAY
500 - 510	CLAY (CL), MINOR COARSE SAND, RED-BROWN
510 - 520	SANDY CLAY (SC), VERY FINE SAND, RED-BROWN
520 - 530	CLAY (CL), MINOR SAND AND GRAVEL, RED-BROWN
530 - 591	SANDY CLAY (SC), VERY FINE SAND, RED-BROWN
591 - 611	CLAY (CL), SLIGHTLY SANDY, RED-BROWN
611 - 621	SANDY CLAY (SC), VERY FINE SAND, RED-BROWN
621 - 641	CLAYEY SAND (SC), VERY FINE, RED-BROWN
641 - 661	GRAVEL, SAND AND CLAY (GC), FINE TO COARSE SAND, RED-BROWN
661 - 671	CLAY (CL), WHITE AND RED
671 - 710	RED BEDS, CLAY, RED



TEST HOLE NO. 6 Borehole, see map

DEPTH BELOW GROUND (FT.)	FORMATION DESCRIPTION
0 - 4	TOP SOIL, SILTY CLAY (CL), DARK BROWN
4 - 35	CALICHE, SANDY CLAY (SC), RED-BROWN
35 - 55	CALICHE, CLAY (CL), RED-BROWN
55 - 79	CALICHE, SANDY CLAY (SC), RED-BROWN
79 - 89	CLAY (CL), LIGHT BROWN
89 - 135	SANDY CLAY (SC), COARSE GRAINED SAND, LIGHT BROWN
135 - 145	SAND (SP), SLIGHTLY CLAYEY, LIGHT BROWN
145 - 154	CLAY (CL), LIGHT BROWN
154 - 222	SANDY CLAY (SC), COARSE GRAINED SAND, SOME GRAVEL
222 - 232	GRAVEL, SAND AND CLAY (GC), FINE TO COARSE SAND, FINE GRAVEL, CONSIDERABLE CLAY, LIGHT BROWN
232 - 242	SAND AND GRAVEL (GP), FEW FINES, LIGHT BROWN
242 - 252	SANDY CLAY (SC), MOSTLY CLAY, LIGHT BROWN
252 - 310	CLAY (CL), LIGHT BROWN
310 - 380	SANDY CLAY (SC), MOSTLY CLAY, SOME FINE GRAVEL AND COARSE SAND, TAN
380 - 410	AS ABOVE (SC) BUT SANDIER
410 - 457	SANDY CLAY (SC), MOSTLY CLAY, SOME COARSE SAND AND FINE GRAVEL, TAN
457 - 468	SAND AND GRAVEL (GC), FINE TO COARSE SAND, SOME CLAY, TAN
468 - 478	AS ABOVE (GC), BUT MORE CLAY
[illegible] - 498	SAND AND GRAVEL (SP), COARSE SAND, FEW FINES, TAN
[illegible] - 518	SANDY CLAY (SC), SOME COARSE SAND AND GRAVEL, MOSTLY CLAY, TAN
518 - 548	CLAY (CL), SOME SAND, TAN
548 - 557	SAND AND GRAVEL (SP), COARSE SAND, FINE GRAVEL, SOME CLAY, TAN
557 - 587	CLAY (CL) WITH STREAKS OF GRAVEL (GC), TAN
587 - 627	SANDY CLAY/CLAYEY SAND (SC), VERY FINE SAND, TAN
627 - 637	GRAVEL, SAND AND CLAY (GC), VERY FINE TO COARSE SAND, FINE GRAVEL, TAN

PUMP TEST
(Test Hc

Candice Calhoun

From: Flowers, Jeff [PXD] <Jeff.Flowers@pantex.doe.gov>
Sent: Wednesday, March 5, 2025 12:41 PM
To: Candice Calhoun
Cc: Booker, JD [PXD]; Baker, Corrie B; Herrmann, Alex [PXD]; Brooks, Alyssa M [PXD]; Rogers, Jimmy Carol [PXD]; Gulley, Harry Everett [PXD]
Subject: Application to Renew Permit No. WQ0002296000 - Response to Administrative Review Comments
Attachments: C-4457 - Response to Administrative Review Comments; Application to Renew Water Quality Permit No. WQ0002296000.pdf; wq0002296000-TCEQ Request For Information Administrative Review.pdf; Redline NORI_20250305.docx

Ms. Calhoun-Courville:

Attached is a pdf file containing a response to each comment provided in your correspondence dated February 21, 2025. Also provided is a word file containing a redline version of the NORI. The revised NORI provides recommended changes to accurately provide information related to the US Department of Energy/National Nuclear Security Administration, Pantex Plant. A hardcopy of the pdf file will be mailed to you and the Texas Commission on Environmental Quality's Region 1 Office.

Please let me know if you have any questions or need additional information.

Thank you,

Jeff Flowers
Senior Manager, Environmental Compliance Department
PanTeXas Deterrence, LLC
Contractor to the US Department of Energy/National Nuclear Security Administration

---

From: Candice Calhoun <Candice.Calhoun@tceq.texas.gov>
Sent: Friday, February 21, 2025 11:11 AM
To: Flowers, Jeff [PXD] <Jeff.Flowers@pantex.doe.gov>
Cc: Booker, JD [PXD] <jon.booker@pantex.doe.gov>
Subject: [External] Application to Renew Permit No. WQ0002296000 - Notice of Deficiency
Importance: High

Good morning, Mr. Flowers,

The attached Notice of Deficiency (NOD) letter dated February 21, 2025, requests additional information needed to declare the application administratively complete. Please send complete response by March 7, 2025.

Please let me know if you have any questions.

Regards,

PANTEX | Managed and Operated by PANTEXAS DETERRENCE

P.O. Box 30020
Amarillo, TX
79120-0020 **Office:** 806.573.6689

March 5, 2025

Ms. Candice Calhoun-Courville
Texas Commission on Environmental Quality
Applications Review and Processing Team, MC-148
Water Quality Division
Post Office Box 13087
Austin, Texas 78711-3087

Dear Ms. Calhoun-Courville:

RESPONSE TO ADMINISTRATIVE REVIEW COMMENTS; APPLICATION TO RENEW WATER QUALITY PERMIT NO. WQ0002296000; US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT: RN100210756; UNITED STATES DEPARTMENT OF ENERGY: CN600125009; PANTEXAS DETERRENCE LLC: CN606313724

Certified Return Receipt Requested: 7020 0090 0000 0487 2371

Enclosed is information that responds to the request for additional information contained in your letter dated February 21, 2025, regarding administrative review of the application to renew Water Quality Permit No. WQ0002296000.

PanTeXas Deterrence, LLC is the management and operating contractor at the U.S. Department of Energy's Pantex Plant under Contract 89233224CNA000004.

If you have any questions, please contact me by phone at 806.573.6689 or by email at Jeff.Flowers@pantex.doe.gov or J. D. Booker by phone at 806.573.4354 or by email at Jon.Booker@pantex.doe.gov.

Sincerely yours,

Jeffrey R. Flowers
Senior Manager, Environmental Compliance

JRF:crn

Enclosures: As stated

C-4457

This document has been reviewed by a DC/RO and has been determined to be UNCLASSIFIED, not UCNI, and contains no CUI based on current classification guidance. This review does not constitute a review for CUI outside of classification guidance and does not constitute clearance for Public Release.
Name: Maria Holt
Date: 3/4/2025
Pantex eDC/RO ID: 897046

c/enc: Martin R. Amos
Corrie B. Baker, PFO-60
Jon D. Booker
Alyssa M. Brooks
Matthew A. Buchholz, PFO-60
Amber D. Bullard
Bobby L. Carlton III
Jesse Flores, Jr.
Jon K. Gilbert
Harry E. Gulley
Alex M. Herrmann
Jimmy C. Rogers
Monty G. Schoenhals
Lindsey N. Wesley
Tyler E. White
Guy Wilkins, TCEQ Region 1
ECD Records

ENCLOSURE 1

Response to Comments

Comment 1: *Application Fee on page 1 of the administrative report: We were unable to confirm payment of the application processing fee. The filing fee for your application is $315.00. Please submit payment to: TCEQ, Revenue Section (MC 214), P.O. Box 13088, Austin, Texas 78711-3088. Also, provide a copy of the check along with the response to this letter.*

Response 1: PanTeXas Deterrence, LLC remitted payment via check number 01664205 on January 13, 2025. The check was included in correspondence addressed to the Texas Commission on Environmental Quality, Financial Administration Division MC-214. Carrier mail was certified delivered January 17, 2025 according to the United States Postal Service tracking number 70200090000004872241. A copy of the transmittal has been included as proof of submittal as Attachment 1 to this enclosure.

Comment 2: *Administrative Report 1.0, Section 14 – Signature Page: There were two signature pages provided for "United States Department of Energy". Please provide a signature page for "PanTeXas Deterrence LLC".*

Response 2: Signed and notarized signature pages for both the U.S. Department of Energy and PanTeXas Deterrence, LLC were provided with the original application. Administrative Report page 11 identifies Matthew Buchholz as the signatory for the U.S. Department of Energy, National Nuclear Security Administration, Pantex Field Office. Administrative Report page 12 identifies Jeffrey Flowers as the signatory for PanTeXas Deterrence, LLC. In phone correspondence between PanTeXas Deterrence, LLC and the TCEQ on February 26, 2025, Candice Calhoun-Courville acknowledged the forms were appropriately submitted. No signature forms are being resubmitted with reference to Comment 2.

Comment 3: *USGS Topographic Map: The USGS map provided is not clear as well as is missing the highlighted discharge route. Please provide a clear map with the highlighted discharge route for three stream miles or until it reaches a classified segment included.*

Response 3: A revised USGS map with updated discharge route is provided as Attachment 2 to this enclosure. This updated map specifies:

a. One-mile radius
b. Applicant Property boundaries
c. Labeled point of discharge
d. Effluent disposal site boundaries
e. Treatment facility boundaries
f. Discharge route
g. All wastewater ponds

Wastewater is discharged from the wastewater treatment ponds to an internally drained playa lake which is located approximately 300 feet north of Outfall 001. This playa lake does not discharge into a classified segment.

Comment 4: *The following is a portion of the NORI which contains information relevant to your application. Please read it carefully and indicate if it contains any errors or omissions. The complete notice will be sent to you once the application is declared administratively complete.*

APPLICATION. United States Department of Energy and PanTeXas Deterrence LLC, P.O. Box 30020, Amarillo, Texas 79120, which owns a facility principally engaged in the assembly of nuclear weapons from components received from other department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not
to exceed a daily average flow of 560,000 gallons per day. The facility is located at 955 Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the plant site to a playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Form Red River. TCEQ received this application on February 17, 2025. The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage:
https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application.
https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

Further information may also be obtained from United States Department of Energy and PanTeXas Deterrence LLC at the address stated above or by calling Mr. Jeffrey Flowers, Senior Manager, Environmental Compliance, at 806-573-6649.

Response 4: Pantex requests changes to the NORI as follows. In addition to editorial changes, Pantex requests the reference to "Texas Pollutant Discharge Elimination System (TPDES)" be replaced with "Texas Water Quality Permit". Pantex does not have a TPDES discharge permit for industrial wastewater. Industrial wastewater permits issued to Pantex are issued pursuant to Chapter 26 of the Texas Water Code and not issued pursuant to the Clean Water Act.

APPLICATION. United States Department of Energy (USDOE) and PanTeXas Deterrence LLC, (PXD) P.O. Box 30020, Amarillo, Texas 79120-0020, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Water Quality Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day. The facility, owned by USDOE and operated by PXD under a

management and operating contract, is principally engaged in the assembly of nuclear weapons from components received from other USDOE facilities; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater. The facility is located at 955 Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the Plant site to a playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Fork of the Red River. TCEQ received this application on February 17, 2025.

The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

Further information may also be obtained from United States Department of Energy and PanTeXas Deterrence LLC at the address stated above or by calling Mr. Jeffrey Flowers, Senior Manager, Environmental Compliance, at 806-573-6649.

Attachment 1

Copy of Water Quality Permit Renewal Fee Submittal and Check

PANTEX | Managed and Operated by PANTEXAS DETERRENCE

P.O. Box 30020
Amarillo, TX
79120-0020 Office: 806-573-6689

January 13, 2025

Texas Commission on Environmental Quality
Financial Administration Division
Cashier's Office, MC-214
P.O. Box 13088
Austin, TX 78711-3088

Dear Financial Administration Division:

WATER QUALITY PERMIT RENEWAL FEE FOR WATER QUALITY PERMIT NO. WQ0002296000, ACCOUNT NO. 23007009; US DEPARTMENT OF ENERGY NATIONAL NUCLEAR SECURITY ADMINISTRATION PANTEX PLANT: RN100210756; UNITED STATES DEPARTMENT OF ENERGY: CN600125009; PANTEXAS DETERRENCE LLC: CN606313724

Certified Return Receipt Requested: 7020 0090 0000 0487 2241

Enclosed is the water quality permit renewal fee for Water Quality Permit No. WQ0002296000 in the amount of $315.00 for PanTeXas Deterrence, LLC (PXD).

PXD is the management and operating contractor at the U.S. Department of Energy's Pantex Plant under Contract 89233224CNA000004.

If you have any questions, please contact me by phone at 806.573.6689 or by email at Jeff.Flowers@pantex.doe.gov or J. D. Booker by phone at 806.573.4354 or by email at Jon.Booker@pantex.doe.gov.

Sincerely yours,

Jeffrey R. Flowers
Senior Manager, Environmental Compliance

JRF:crn

Attachment: As stated

This document has been reviewed by a DC/RO and has been determined to be UNCLASSIFIED, not UCNI, and contains no CUI based on current classification guidance. This review does not constitute a review for CUI outside of classification guidance and does not constitute clearance for Public Release.

Name: Alyssa Brooks
Date: 1/13/2025
Pantex eDC/RO ID: 885922

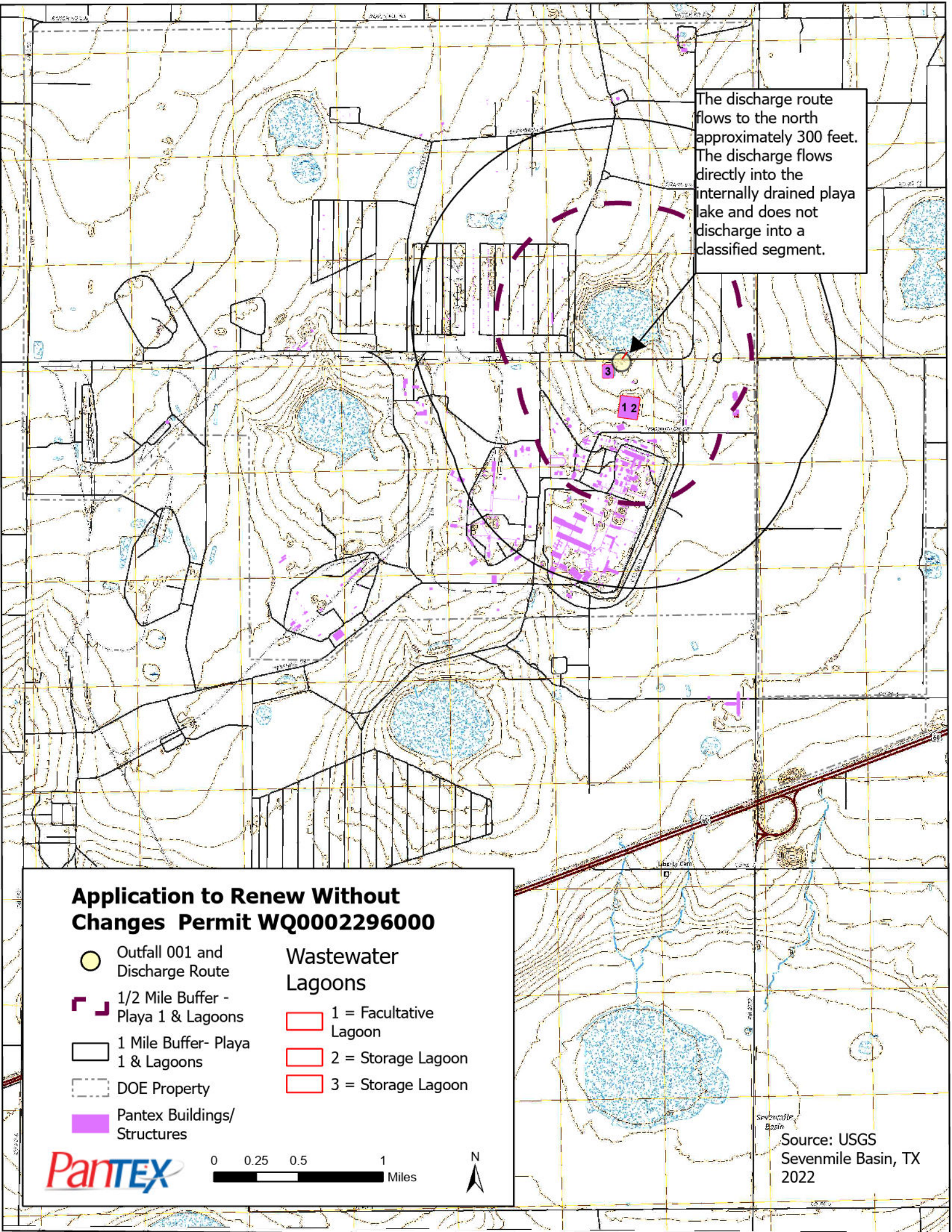
C-4297

c/att: Corrie B. Baker, PFO-60
Jon D. Booker
Alyssa M. Brooks
Matthew A. Buchholz, PFO-60
Amber D. Bullard
Bobby L. Carlton III
Jon K. Gilbert
Harry E. Gulley
Alex M. Herrmann
Casey L. Kaplan
Jimmy C. Rogers
Monty G. Schoenhals
Larry D. Warner, PFO-01
Tyler E. White
Guy Wilkins, TCEQ Region 1
Shian R. Yada, PFO-60
ECD Records

Attachment 2

USGS Topographic Map

Map Provides the Highlighted Discharge Route


The discharge route flows to the north approximately 300 feet. The discharge flows directly into the internally drained playa lake and does not discharge into a classified segment.
3
1 2
Application to Renew Without Changes Permit WQ0002296000
Outfall 001 and Discharge Route
1/2 Mile Buffer - Playa 1 & Lagoons
1 Mile Buffer- Playa 1 & Lagoons
DOE Property
Pantex Buildings/ Structures
Wastewater Lagoons
1 = Facultative Lagoon
2 = Storage Lagoon
3 = Storage Lagoon
PanTEX
0 0.25 0.5 1 Miles
N
Source: USGS Sevenmile Basin, TX 2022

APPLICATION. United States Department of Energy (USDOE) and PanTeXas Deterrence LLC, (PXD) P.O. Box 30020, Amarillo, Texas 79120-0020, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Water Quality Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day. The facility, owned by USDOE and operated by PXD under a management and operating contract, ~~which owns a facility~~ is principally engaged in the assembly of nuclear weapons from components received from other USDOE facilities ~~department of Energy plants~~; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater.~~,~~ ~~has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Pollutant Discharge Elimination System (TPDES) Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day.~~ The facility is located at 955 Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the ~~p~~Plant site to a playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Fork~~Form~~ of the Red River. TCEQ received this application on February 17, 2025.

The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

Further information may also be obtained from United States Department of Energy and PanTeXas Deterrence LLC at the address stated above or by calling Mr. Jeffrey Flowers, Senior Manager, Environmental Compliance, at 806-573-6649.

Erwin Madrid

From: Erwin Madrid
Sent: Wednesday, March 12, 2025 10:23 AM
To: Flowers, Jeff [CONTR]
Cc: Candice Calhoun; Booker, JD [CONTR]
Subject: Application for Permit No. WQ0002296000 – Notice of Deficiency 30-Day Will Return Letter
Attachments: WQ0002296000_Will Return Ltr.pdf

Importance: High

Dear applicant,

The attached Notice of Deficiency 30-Day Will Return Letter was mailed on **March 10, 2025,** requesting additional information needed to declare the application administratively complete. Please mail an original and two copies (with a cover letter) of the complete response by **April 9, 2025.**

Regards,

Erwin Madrid
Team Lead
ARP Team | Water Quality Division
512-239-2191
Texas Commission on Environmental Quality



Please consider whether it is necessary to print this e-mail.

Candice Calhoun

From: Baker, Corrie B <corrie.baker@pfo.doe.gov>
Sent: Thursday, March 13, 2025 4:43 PM
To: Flowers, Jeff [PXD]; Candice Calhoun
Cc: Herrmann, Alex [PXD]; Brooks, Alyssa M [PXD]; Rogers, Jimmy Carol [PXD]; Gulley, Harry Everett [PXD]; Booker, JD [PXD]
Subject: RE: [External] RE: Application to Renew Permit No. WQ0002296000 - Response to Administrative Review Comments

Ms. Courville:

I do not have any additional questions/concerns from the Department of Energy/National Nuclear Security, Pantex Field Office.

Thank you for all the help.

Corrie Baker NCO
Pantex Field Office - 60
Environmental Compliance &
Waste Management
P: 806.573.3638 P: 806.358.5833 C: 806.930.1566
E: corrie.baker@npo.doe.gov

From: Flowers, Jeff [PXD] <Jeff.Flowers@pantex.doe.gov>
Sent: Thursday, March 13, 2025 3:58 PM
To: Candice Calhoun <Candice.Calhoun@tceq.texas.gov>
Cc: Baker, Corrie B <corrie.baker@pfo.doe.gov>; Herrmann, Alex [PXD] <alex.herrmann@pantex.doe.gov>; Brooks, Alyssa M [PXD] <alyssa.brooks@pantex.doe.gov>; Rogers, Jimmy Carol [PXD] <Jimmy.Rogers@pantex.doe.gov>; Gulley, Harry Everett [PXD] <harry.gulley@pantex.doe.gov>; Baker, Corrie B <corrie.baker@pfo.doe.gov>; Booker, JD [PXD] <jon.booker@pantex.doe.gov>
Subject: RE: [External] RE: Application to Renew Permit No. WQ0002296000 - Response to Administrative Review Comments

Ms. Courville:

Thank you for your help and efforts! The revised NORI is appreciated. There are no additional comments or questions from PanTeXas Deterrence, LLC. I need to confirm that there are no additional questions/concerns from the Department of Energy/National Nuclear Security, Pantex Field Office. As soon as that confirmation is provided, I will ensure it is made available to you.

Thanks again,

Jeff Flowers
Senior Manager, Environmental Compliance Department
PanTeXas Deterrence, LLC

Candice Calhoun

From: Flowers, Jeff [PXD] <Jeff.Flowers@pantex.doe.gov>
Sent: Thursday, March 13, 2025 3:58 PM
To: Candice Calhoun
Cc: Baker, Corrie B; Herrmann, Alex [PXD]; Brooks, Alyssa M [PXD]; Rogers, Jimmy Carol [PXD]; Gulley, Harry Everett [PXD]; Baker, Corrie B; Booker, JD [PXD]
Subject: RE: [External] RE: Application to Renew Permit No. WQ0002296000 - Response to Administrative Review Comments

Ms. Courville:

Thank you for your help and efforts! The revised NORI is appreciated. There are no additional comments or questions from PanTeXas Deterrence, LLC. I need to confirm that there are no additional questions/concerns from the Department of Energy/National Nuclear Security, Pantex Field Office. As soon as that confirmation is provided, I will ensure it is made available to you.

Thanks again,

Jeff Flowers
Senior Manager, Environmental Compliance Department
PanTeXas Deterrence, LLC
Contractor to the Department of Energy/National Nuclear Security Administration, Pantex Plant
806.573.6689

From: Candice Calhoun <Candice.Calhoun@tceq.texas.gov>
Sent: Thursday, March 13, 2025 3:42 PM
To: Booker, JD [PXD] <jon.booker@pantex.doe.gov>; Flowers, Jeff [PXD] <Jeff.Flowers@pantex.doe.gov>
Cc: Baker, Corrie B <corrie.baker@pfo.doe.gov>; Herrmann, Alex [PXD] <alex.herrmann@pantex.doe.gov>; Brooks, Alyssa M [PXD] <alyssa.brooks@pantex.doe.gov>; Rogers, Jimmy Carol [PXD] <Jimmy.Rogers@pantex.doe.gov>; Gulley, Harry Everett [PXD] <harry.gulley@pantex.doe.gov>
Subject: RE: [External] RE: Application to Renew Permit No. WQ0002296000 - Response to Administrative Review Comments
Importance: High

Good afternoon,

The description of business activities was approved to be listed in the NORI as “which co-operates Pantex Plant, a nuclear weapons stewardship facility owned by the United States Department of Energy and operated by PanTeXas Deterrence LLC under a management and operating contract”.

Regarding the change in the discharge route, the WQA Team Leader, Peter Schaefer informed me that they would not include the “from the treatment and storage lagoons on the plant site” as they typically do not include the treatment units in the discharge route description; however, he has approved the discharge route to read “The discharge route is from the plant site to an

on-site playa lake, located adjacent to the watershed of McClellen Creek, which flows into the North Fork Red River".

Below is the updated NORI portion:

APPLICATION. United States Department of Energy and PanTeXas Deterrence LLC, P.O. Box 30020, Amarillo, Texas 79120, which co-operates Pantex Plant, a nuclear weapons stewardship facility owned by the United States Department of Energy and operated by PanTeXas Deterrence LLC under a management and operating contract, has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Water Quality Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day. The facility is located at 955 Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the plant site to an on-site playa lake, located adjacent to the watershed of McClellen Creek, which flows into the North Fork Red River. TCEQ received this application on February 17, 2025. The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

Please let me know if you have any additional questions or concerns, otherwise no further information will be needed, and I can proceed to declare the application administratively complete.

Regards,

Candice Courville
License & Permit Specialist
ARP Team | Water Quality Division
Texas Commission on Environmental Quality
512-239-4312
candice.calhoun@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

Candice Calhoun

From: Peter Schaefer
Sent: Wednesday, March 12, 2025 5:27 PM
To: Candice Calhoun
Subject: RE: WQ0002296000

We'll consider that discharge route description. The only difference is to call the playa lake an "on-site" playa lake. We don't typically include the treatment units in the discharge route description, so we would not include "from the treatment and storage lagoons on the plant site". So we're left with "The discharge route is from the plant site to an on-site playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Fork Red River."

Peter Schaefer, Team Leader
Standards Implementation Team (MC 150)
Water Quality Assessment Section
Water Quality Division, TCEQ
email: *peter.schaefer@tceq.texas.gov*
phone: 512-239-4372
fax: 512-239-4420

How is our customer service? Fill out our online customer satisfaction survey at
www.tceq.texas.gov/customersurvey

From: Candice Calhoun <Candice.Calhoun@tceq.texas.gov>
Sent: Wednesday, March 12, 2025 3:45 PM
To: Peter Schaefer <peter.schaefer@tceq.texas.gov>
Subject: WQ0002296000

Good afternoon, Peter,

The applicant for WQ0002296000 has requested me to update the discharge route, in the NORI, from "The discharge route is from the plant site to a playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Fork Red River.", to "The discharge route is from the treatment and storage lagoons on the plant site to an on-site playa lake, located adjacent to the watershed of McClellen Creek which flows into the North Fork Red River."

Would this be an acceptable change, or should I advise the applicant that we are to leave the discharge route as is?

Thank you in advance,

Candice Courville
License & Permit Specialist
ARP Team | Water Quality Division
Texas Commission on Environmental Quality
512-239-4312
candice.calhoun@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

Candice Calhoun

From: Todd Galiga
Sent: Wednesday, March 12, 2025 4:23 PM
To: Candice Calhoun
Cc: Erwin Madrid
Subject: RE: WQ0002296000

Candice,

I think the proposed description is acceptable. The notice rules only require a brief description of the location and nature of the proposed activity and I think the proposed language meets the rule requirement.

Thanks

From: Candice Calhoun <Candice.Calhoun@tceq.texas.gov>
Sent: Wednesday, March 12, 2025 3:42 PM
To: Todd Galiga <Todd.Galiga@tceq.texas.gov>
Cc: Erwin Madrid <Erwin.Madrid@tceq.texas.gov>
Subject: WQ0002296000

Good afternoon, Todd,

The renewal application for WQ0002296000 is currently under my administrative review. Within the applicant's response, they have asked me to update the description of business activities, in the NORI, to read "which co-operates Pantex Plant, a nuclear weapons stewardship facility owned by the United States Department of Energy and operated by PanTeXas Deterrence LLC under a management and operating contract."

In the previous NORI/NAPD and in the current permit, the description of business activities were wrote as "which owns and operates a facility principally engaged in the assembly of nuclear weapons form components received from other Department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater"

Would the requested change be acceptable to include in the current NORI?

Regards,

Candice Courville
License & Permit Specialist
ARP Team | Water Quality Division
Texas Commission on Environmental Quality
512-239-4312
candice.calhoun@tceq.texas.gov

How is our customer service? Fill out our online customer satisfaction survey at www.tceq.texas.gov/customersurvey

USGS
science for a changing world

U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

The National Map
US Topo

SEVENMILE BASIN QUADRANGLE
TEXAS
7.5-MINUTE SERIES

Application to Renew Without Changes
Permit WQ0002296000

- 1/2 Mile Buffer - Playa 1 & Lagoons
- 1 Mile Buffer- Playa 1 & Lagoons
- Outfall 001
- Discharge Route
- DOE Property
- Pantex Buildings/Structures

Wastewater Lagoons

Wastewater Lagoons

- 1 = Facultative Lagoon
- 2 = Storage Lagoon
- 3 = Storage Lagoon
- Facility Boundary

PanTEX

0 0.28 0.55 1.1 Miles

N

Produced by the United States Geological Survey
North American Datum of 1983 (NAD83)
World Geodetic System of 1984 (WGS84). Projection and
1 000-meter grid: Universal Transverse Mercator, Zone 14S
This map is not a legal document. Boundaries may be
generalized for this map scale. Private lands within government
reservations may not be shown. Obtain permission before
entering private lands.

Imagery	NAIP,	September	2016 - November 2016
Roads	U.S.	Census	Bureau, 2015 - 2018
Names	GNIS		1979
Hydrography	National	Hydrography	Dataset, 2002 - 2018
Contours	National	Elevation	Dataset, 2019
Boundaries	Multiple	sources;	see MetaData file 2019 - 2021

Wetlands FWS National Wetlands Inventory Not Available

UTM GRID AND 2019 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

APPLICATION. United States Department of Energy and PanTeXas Deterrence LLC, P.O. Box 30020, Amarillo, Texas 79120, which ~~owns~~ co-operate Pantex Plant, a nuclear weapons stewardship facility owned by the United States Department of Energy and operated by PanTeXas Deterrence LLC under a management and operating contract, ~~B~~nuclear weapons stockpile stewardship~~,~~ has applied to the Texas Commission on Environmental Quality (TCEQ) to renew Texas Water Quality Permit No. WQ0002296000 to authorize the discharge of treated wastewater at a volume not to exceed a daily average flow of 560,000 gallons per day. ~~Pantex Plant is principally engaged in the assembly of nuclear weapons from components received from other USDOE facilities department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater.~~ The facility is located at 955 ~~-~~Farm-to-Market Road 2373, near the city of Panhandle, in Carson County, Texas 79068. The discharge route is from the treatment and storage lagoons on the plant site to an on-site playa lake, ~~the watershed for the internally drained playa lake is~~ located adjacent to~~, but does not discharge into,~~ the watershed of McClellen Creek which flows into the North Fork Red River. TCEQ received this application on February 17, 2025. The permit application will be available for viewing and copying at Carson County Public Library, front lobby, 401 Main Street, Panhandle, in Carson County, Texas prior to the date this notice is published in the newspaper. The application, including any updates, and associated notices are available electronically at the following webpage: https://www.tceq.texas.gov/permitting/wastewater/pending-permits/tpdes-applications. This link to an electronic map of the site or facility's general location is provided as a public courtesy and not part of the application or notice. For the exact location, refer to the application. https://gisweb.tceq.texas.gov/LocationMapper/?marker=-101.578333,35.325555&level=18

TCEQ PERMIT NO.
WQ0002296000
[For TCEQ office use only]

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY
P.O. Box 13087
Austin, Texas 78711-3087

This renewal replaces TCEQ Permit No. WQ0002296000, issued on August 27, 2020.

PERMIT TO DISCHARGE WASTES
under provisions of
Chapter 26 of the Texas Water Code

United States Department of Energy and PanTeXas Deterrence LLC

whose mailing address is

P.O. Box 30020

Amarillo, Texas 79120

is authorized to treat and discharge wastes from United States Department of Energy National Nuclear Security Administration Pantex Plant, a facility principally engaged in the assembly of nuclear weapons from components received from other Department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater (SIC 2892 & 3483)

located at Farm-to-Market Road 2373, west of Farm-to-Market Road 2373, south of Farm-to-Market Road 293 and north of U.S. Highway 60, approximately 17 miles northeast of the City of Amarillo and 10 miles west of the City of Panhandle, in Carson County, Texas 79068

via Outfall 001 to a playa lake, located adjacent to watershed of McClellen Creek which flows into North Fork Red River in Segment No. 0224 of the Red River Basin

only according to effluent limitations, monitoring requirements, and other conditions set forth in this permit, as well as the rules of the Texas Commission on Environmental Quality (TCEQ), the laws of the State of Texas, and other orders of the TCEQ. The issuance of this permit does not grant to the permittee the right to use private or public property for conveyance of wastewater along the discharge route described in this permit. This includes, but is not limited to, property belonging to any individual, partnership, corporation, or other entity. Neither does this permit authorize any invasion of personal rights nor any violation of federal, state, or local laws or regulations. It is the responsibility of the permittee to acquire property rights as may be necessary to use the discharge route.

This permit shall expire at midnight, five years from the date of permit issuance.

ISSUED DATE:

_____
For the Commission

1. During the period beginning upon the date of permit issuance and lasting through the date of permit expiration, the permittee is authorized to discharge domestic effluent [1] and industrial effluent [1] subject to the following effluent limitations:

   The daily average flow of effluent shall not exceed 0.56 million gallons per day (MGD). The daily maximum flow shall not exceed 0.82 MGD.

Effluent Characteristics	Discharge Limitations			Minimum Self-Monitoring Requirements	
	Daily Average mg/L	Daily Maximum mg/L	Single Grab mg/L	Report Daily Average and Daily Maximum Measurement Frequency	Sample Type
Flow	0.56 MGD	0.82 MGD	N/A	Continuous [2]	Flow Meter
Biochemical Oxygen Demand (5-day)	30	70	100	1/week [2]	Composite
Total Suspended Solids	60	90	100	1/week [2]	Composite
Oil and Grease	N/A	15	15	1/week [2]	Grab
Chemical Oxygen Demand	N/A	150	150	1/month [2]	Composite
Copper, Total)	0.5	1.0	2.0	1/quarter [2]	Grab [3]
Manganese, Total	1.0	2.0	3.0	1/quarter [2]	Grab [3]
Zinc, Total	1.0	2.0	6.0	1/quarter [2]	Grab [3]
Octahydro-1,3,5,7-tetranitro 1,3,5,7-tetrazocine (HMX)	0.1	Report	N/A	1/quarter [2]	Grab [3]
Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.2	Report	N/A	1/quarter [2]	Grab [3]
Pentaerythritol tetranitrate (PETN)	0.4	Report	N/A	1/quarter [2]	Grab [3]
Trinitrotoluene (TNT)	0.02	Report	N/A	1/quarter [2]	Grab [3]
Triamino-trinitrobenzene (TATB)	N/A	Report	N/A	1/quarter [2]	Grab [3]

[1] See Other Requirement No. 2.
[2] When discharge occurs.
[3] The permittee may substitute the specified "*grab*" sample type with a "*composite*" sample type at its discretion.

2. The domestic sewage effluent shall 1) have a minimum residence time in the treatment system of 21 days before discharge via Outfall 001; or 2) contain a chlorine residual of at least 1.0 mg/L and a maximum chlorine residual of 4.0 mg/L after a detention time of at least 20 minutes (based on peak flow), and shall be monitored 5/week, by grab sample. An equivalent method of disinfection may be substituted only with prior approval of the Executive Director.

3. The pH shall not be less than 6.0 standard units nor greater than 10.0 standard units and shall be monitored 1/day, by grab sample, when discharge occurs.

4. There shall be no discharge of floating solids or visible foam in other than trace amounts and no discharge of visible oil.

5. Effluent monitoring samples shall be taken at the following location: at Outfall 001, prior to discharges to Playa No. 1, at the outlet weir from the wastewater treatment lagoon.

DEFINITIONS AND STANDARD PERMIT CONDITIONS

As required by Title 30 Texas Administrative Code (TAC) Chapter 305, certain regulations appear as standard conditions in waste discharge permits. 30 TAC §§305.121 - 305.129 (relating to Permit Characteristics and Conditions) as promulgated under the Texas Water Code (TWC) §§5.103 and 5.105, and the Texas Health and Safety Code (THSC) §§361.017 and 361.024(a), establish the characteristics and standards for waste discharge permits, including sewage sludge, and those sections of 40 Code of Federal Regulations (CFR) Part 122 adopted by reference by the Commission. The following text includes these conditions and incorporates them into this permit. All definitions in Texas Water Code §26.001 and 30 TAC Chapter 305 shall apply to this permit and are incorporated by reference. Some specific definitions of words or phrases used in this permit are as follows:

1. Flow Measurements

    a. Annual average flow - the arithmetic average of all daily flow determinations taken within the preceding 12 consecutive calendar months. The annual average flow determination shall consist of daily flow volume determinations made by a totalizing meter, charted on a chart recorder, and limited to major domestic wastewater discharge facilities with a one million gallons per day or greater permitted flow.

    b. Daily average flow - the arithmetic average of all determinations of the daily flow within a period of one calendar month. The daily average flow determination shall consist of determinations made on at least four separate days. If instantaneous measurements are used to determine the daily flow, the determination shall be the arithmetic average of all instantaneous measurements taken during that month. Daily average flow determination for intermittent discharges shall consist of a minimum of three flow determinations on days of discharge.

    c. Daily maximum flow - the highest total flow for any 24-hour period in a calendar month.

    d. Instantaneous flow - the measured flow during the minimum time required to interpret the flow measuring device.

    e. 2-hour peak flow (domestic wastewater treatment plants) - the maximum flow sustained for a two-hour period during the period of daily discharge. The average of multiple measurements of instantaneous maximum flow within a two-hour period may be used to calculate the 2-hour peak flow.

    f. Maximum 2-hour peak flow (domestic wastewater treatment plants) - the highest 2-hour peak flow for any 24-hour period in a calendar month.

2. Concentration Measurements

    a. Daily average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar month, consisting of at least four separate representative measurements.

        i. For domestic wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values in the previous four consecutive month period consisting of at least four measurements shall be utilized as the daily average concentration.

        ii. For all other wastewater treatment plants - When four samples are not available in a calendar month, the arithmetic average (weighted by flow) of all values taken during the month shall be utilized as the daily average concentration.

    b. 7-day average concentration - the arithmetic average of all effluent samples, composite or grab as required by this permit, within a period of one calendar week, Sunday through Saturday.

    c. Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month.

d. Daily discharge - the discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. For pollutants with limitations expressed in terms of mass, the "daily discharge" is calculated as the total mass of the pollutant discharged over the sampling day. For pollutants with limitations expressed in other units of measurement, the "daily discharge" is calculated as the average measurement of the pollutant over the sampling day.

   The "daily discharge" determination of concentration made using a composite sample shall be the concentration of the composite sample. When grab samples are used, the "daily discharge" determination of concentration shall be the arithmetic average (weighted by flow value) of all samples collected during that day.

e. Bacteria concentration (Fecal coliform, *E. coli*, or Enterococci) – the number of colonies of bacteria per 100 milliliters effluent. The daily average bacteria concentration is a geometric mean of the values for the effluent samples collected in a calendar month. The geometric mean shall be determined by calculating the nth root of the product of all measurements made in a calendar month, where n equals the number of measurements made; or computed as the antilogarithm of the arithmetic mean of the logarithms of all measurements made in a calendar month. For any measurement of bacteria equaling zero, a substitute value of one shall be made for input into either computation method. If specified, the 7-day average for bacteria is the geometric mean of the values for all effluent samples collected during a calendar week.

f. Daily average loading (lbs/day) - the arithmetic average of all daily discharge loading calculations during a period of one calendar month. These calculations must be made for each day of the month that a parameter is analyzed. The daily discharge, in terms of mass (lbs/day), is calculated as (Flow, MGD × Concentration, mg/L × 8.34).

g. Daily maximum loading (lbs/day) - the highest daily discharge, in terms of mass (lbs/day), within a period of one calendar month.

3. Sample Type

   a. Composite sample - For domestic wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(a). For industrial wastewater, a composite sample is a sample made up of a minimum of three effluent portions collected in a continuous 24-hour period or during the period of daily discharge if less than 24 hours, and combined in volumes proportional to flow, and collected at the intervals required by 30 TAC §319.9(c).

   b. Grab sample - an individual sample collected in less than 15 minutes.

4. Treatment Facility (facility) - wastewater facilities used in the conveyance, storage, treatment, recycling, reclamation or disposal of domestic sewage, industrial wastes, agricultural wastes, recreational wastes, or other wastes including sludge handling or disposal facilities under the jurisdiction of the Commission.

5. The term "sewage sludge" is defined as solid, semi-solid, or liquid residue generated during the treatment of domestic sewage in 30 TAC Chapter 312. This includes the solids that have not been classified as hazardous waste separated from wastewater by unit processes.

6. Bypass - the intentional diversion of a waste stream from any portion of a treatment facility.

MONITORING AND REPORTING REQUIREMENTS

1. Self-Reporting

   Monitoring results shall be provided at the intervals specified in the permit. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall conduct effluent sampling and reporting in accordance with 30 TAC §§319.4 - 319.12. Unless otherwise specified, effluent monitoring data shall be submitted each month, to the Enforcement Division (MC 224), by the 20th day of the following month for each discharge that is described by this

permit whether or not a discharge is made for that month. Monitoring results must be submitted online using the NetDMR reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. Monitoring results must be signed and certified as required by Monitoring and Reporting Requirements No. 10.
As provided by state law, the permittee is subject to administrative, civil and criminal penalties, as applicable, for negligently or knowingly violating the Clean Water Act; TWC Chapters 26, 27, and 28; and THSC Chapter 361, including but not limited to knowingly making any false statement, representation, or certification on any report, record, or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance, or falsifying, tampering with or knowingly rendering inaccurate any monitoring device or method required by this permit or violating any other requirement imposed by state or federal regulations.

2. Test Procedures

   a. Unless otherwise specified in this permit, test procedures for the analysis of pollutants shall comply with procedures specified in 30 TAC §§319.11 - 319.12. Measurements, tests, and calculations shall be accurately accomplished in a representative manner.

   b. All laboratory tests submitted to demonstrate compliance with this permit must meet the requirements of 30 TAC Chapter 25, Environmental Testing Laboratory Accreditation and Certification.

3. Records of Results

   a. Monitoring samples and measurements shall be taken at times and in a manner so as to be representative of the monitored activity.

   b. Except for records of monitoring information required by this permit related to the permittee's sewage sludge use and disposal activities, which shall be retained for a period of at least five years (or longer as required by 40 CFR Part 503), monitoring and reporting records, including strip charts and records of calibration and maintenance, copies of all records required by this permit, records of all data used to complete the application for this permit, and the certification required by 40 CFR §264.73(b)(9) shall be retained at the facility site, or shall be readily available for review by a TCEQ representative for a period of three years from the date of the record or sample, measurement, report, application or certification. This period shall be extended at the request of the Executive Director.

   c. Records of monitoring activities shall include the following:

      i. date, time, and place of sample or measurement;
      ii. identity of individual who collected the sample or made the measurement;
      iii. date and time of analysis;
      iv. identity of the individual and laboratory who performed the analysis;
      v. the technique or method of analysis; and
      vi. the results of the analysis or measurement and quality assurance/quality control records.

      The period during which records are required to be kept shall be automatically extended to the date of the final disposition of any administrative or judicial enforcement action that may be instituted against the permittee.

4. Additional Monitoring by Permittee

   If the permittee monitors any pollutant at the location(s) designated herein more frequently than required by this permit using approved analytical methods as specified above, all results of such monitoring shall be included in the calculation and reporting of the values submitted on the approved self-report form. Increased frequency of sampling shall be indicated on the self-report form.

5. Calibration of Instruments

   All automatic flow measuring or recording devices and all totalizing meters for measuring flows shall be accurately calibrated by a trained person at plant start-up and as often thereafter as

necessary to ensure accuracy, but not less often than annually unless authorized by the Executive Director for a longer period. Such person shall verify in writing that the device is operating properly and giving accurate results. Copies of the verification shall be retained at the facility site or shall be readily available for review by a TCEQ representative for a period of three years.

6. Compliance Schedule Reports

   Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any compliance schedule of the permit shall be submitted no later than 14 days following each schedule date to the regional office and the Enforcement Division (MC 224).

7. Noncompliance Notification

   a. In accordance with 30 TAC §305.125(9) any noncompliance that may endanger human health or safety, or the environment shall be reported by the permittee to the TCEQ. Report of such information shall be provided orally or by facsimile transmission (FAX) to the regional office within 24 hours of becoming aware of the noncompliance. A written submission of such information shall also be provided by the permittee to the regional office and the Enforcement Division (MC 224) within five working days of becoming aware of the noncompliance. For Publicly Owned Treatment Works (POTWs), effective September 1, 2020, the permittee must submit the written report for unauthorized discharges and unanticipated bypasses that exceed any effluent limit in the permit using the online electronic reporting system available through the TCEQ website unless the permittee requests and obtains an electronic reporting waiver. The written submission shall contain a description of the noncompliance and its cause; the potential danger to human health or safety, or the environment; the period of noncompliance, including exact dates and times; if the noncompliance has not been corrected, the time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance, and to mitigate its adverse effects.

   b. The following violations shall be reported under Monitoring and Reporting Requirement 7.a.:
      i. unauthorized discharges as defined in Permit Condition 2(g).
      ii. any unanticipated bypass that exceeds any effluent limitation in the permit.
      iii. violation of a permitted maximum daily discharge limitation for pollutants listed specifically in the Other Requirements section of this permit.

   c. In addition to the above, any effluent violation that deviates from the permitted effluent limitation by more than 40% shall be reported by the permittee in writing to the regional office and the Enforcement Division (MC 224) within 5 working days of becoming aware of the noncompliance.

   d. Any noncompliance other than that specified in this section, or any required information not submitted or submitted incorrectly, shall be reported to the Enforcement Division (MC 224) as promptly as possible. For effluent limitation violations, noncompliances shall be reported on the approved self-report form.

8. In accordance with the procedures described in 30 TAC §§35.301 - 35.303 (relating to Water Quality Emergency and Temporary Orders) if the permittee knows in advance of the need for a bypass, it shall submit prior notice by applying for such authorization.

9. Changes in Discharges of Toxic Substances

   All existing manufacturing, commercial, mining, and silvicultural permittees shall notify the regional office, orally or by facsimile transmission within 24 hours, and both the regional office and the Enforcement Division (MC 224) in writing within five (5) working days, after becoming aware of or having reason to believe:

   a. That any activity has occurred or will occur that would result in the discharge, on a routine or frequent basis, of any toxic pollutant listed at 40 CFR Part 122, Appendix D, Tables II and III (excluding Total Phenols) that is not limited in the permit, if that discharge will exceed the highest of the following “notification levels”:
      i. one hundred micrograms per liter (100 µg/L);

ii. two hundred micrograms per liter (200 µg/L) for acrolein and acrylonitrile; five hundred micrograms per liter (500 µg/L) for 2,4-dinitrophenol and for 2-methyl-4,6-dinitrophenol; and one milligram per liter (1 mg/L) for antimony;
iii. five (5) times the maximum concentration value reported for that pollutant in the permit application; or
iv. the level established by the TCEQ.

b. That any activity has occurred or will occur that would result in any discharge, on a nonroutine or infrequent basis, of a toxic pollutant that is not limited in the permit, if that discharge will exceed the highest of the following "notification levels":

i. five hundred micrograms per liter (500 µg/L);
ii. one milligram per liter (1 mg/L) for antimony;
iii. ten (10) times the maximum concentration value reported for that pollutant in the permit application; or
iv. the level established by the TCEQ.

10. Signatories to Reports

All reports and other information requested by the Executive Director shall be signed by the person and in the manner required by 30 TAC §305.128 (relating to Signatories to Reports).

11. All POTWs must provide adequate notice to the Executive Director of the following:

a. any new introduction of pollutants into the POTW from an indirect discharger that would be subject to CWA §301 or §306 if it were directly discharging those pollutants;

b. any substantial change in the volume or character of pollutants being introduced into that POTW by a source introducing pollutants into the POTW at the time of issuance of the permit; and

c. for the purpose of this paragraph, adequate notice shall include information on:

i. the quality and quantity of effluent introduced into the POTW; and
ii. any anticipated impact of the change on the quantity or quality of effluent to be discharged from the POTW.

PERMIT CONDITIONS

1. General

a. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in an application or in any report to the Executive Director, it shall promptly submit such facts or information.

b. This permit is granted on the basis of the information supplied and representations made by the permittee during action on an application, and relying upon the accuracy and completeness of that information and those representations. After notice and opportunity for a hearing, this permit may be modified, suspended, or revoked, in whole or in part, in accordance with 30 TAC Chapter 305, Subchapter D, during its term for good cause including, but not limited to, the following:

i. violation of any terms or conditions of this permit;
ii. obtaining this permit by misrepresentation or failure to disclose fully all relevant facts; or
iii. a change in any condition that requires either a temporary or permanent reduction or elimination of the authorized discharge.

c. The permittee shall furnish to the Executive Director, upon request and within a reasonable time, any information to determine whether cause exists for amending, revoking, suspending, or terminating the permit. The permittee shall also furnish to the Executive Director, upon request, copies of records required to be kept by the permit.

2. Compliance

   a. Acceptance of the permit by the person to whom it is issued constitutes acknowledgment and agreement that such person will comply with all the terms and conditions embodied in the permit, and the rules and other orders of the Commission.

   b. The permittee has a duty to comply with all conditions of the permit. Failure to comply with any permit condition constitutes a violation of the permit and the Texas Water Code or the Texas Health and Safety Code, and is grounds for enforcement action, for permit amendment, revocation, or suspension, or for denial of a permit renewal application or an application for a permit for another facility.

   c. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of the permit.

   d. The permittee shall take all reasonable steps to minimize or prevent any discharge or sludge use or disposal or other permit violation that has a reasonable likelihood of adversely affecting human health or the environment.

   e. Authorization from the Commission is required before beginning any change in the permitted facility or activity that may result in noncompliance with any permit requirements.

   f. A permit may be amended, suspended and reissued, or revoked for cause in accordance with 30 TAC §§305.62 and 305.66 and TWC §7.302. The filing of a request by the permittee for a permit amendment, suspension and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

   g. There shall be no unauthorized discharge of wastewater or any other waste. For the purpose of this permit, an unauthorized discharge is considered to be any discharge of wastewater into or adjacent to water in the state at any location not permitted as an outfall or otherwise defined in the Other Requirements section of this permit.

   h. In accordance with 30 TAC §305.535(a), the permittee may allow any bypass to occur from a TPDES permitted facility that does not cause permitted effluent limitations to be exceeded or an unauthorized discharge to occur, but only if the bypass is also for essential maintenance to assure efficient operation.

   i. The permittee is subject to administrative, civil, and criminal penalties, as applicable, under Texas Water Code §§7.051 - 7.075 (relating to Administrative Penalties), 7.101 - 7.111 (relating to Civil Penalties), and 7.141 - 7.202 (relating to Criminal Offenses and Penalties) for violations including, but not limited to, negligently or knowingly violating the federal CWA §§301, 302, 306, 307, 308, 318, or 405, or any condition or limitation implementing any sections in a permit issued under the CWA §402, or any requirement imposed in a pretreatment program approved under the CWA §§402(a)(3) or 402(b)(8).

3. Inspections and Entry

   a. Inspection and entry shall be allowed as prescribed in the TWC Chapters 26, 27, and 28, and THSC Chapter 361.

   b. The members of the Commission and employees and agents of the Commission are entitled to enter any public or private property at any reasonable time for the purpose of inspecting and investigating conditions relating to the quality of water in the state or the compliance with any rule, regulation, permit, or other order of the Commission. Members, employees, or agents of the Commission and Commission contractors are entitled to enter public or private property at any reasonable time to investigate or monitor or, if the responsible party is not responsive or there is an immediate danger to public health or the environment, to remove or remediate a condition related to the quality of water in the state. Members, employees, Commission contractors, or agents acting under this authority who enter private property shall observe the establishment's rules and regulations concerning safety, internal security, and fire protection, and if the property has management in residence, shall notify management or the person then in charge of his presence and shall exhibit proper credentials. If any member, employee,

Commission contractor, or agent is refused the right to enter in or on public or private property under this authority, the Executive Director may invoke the remedies authorized in TWC §7.002. The statement above, that Commission entry shall occur in accordance with an establishment's rules and regulations concerning safety, internal security, and fire protection, is not grounds for denial or restriction of entry to any part of the facility, but merely describes the Commission's duty to observe appropriate rules and regulations during an inspection.

4. Permit Amendment or Renewal

   a. The permittee shall give notice to the Executive Director as soon as possible of any planned physical alterations or additions to the permitted facility if such alterations or additions would require a permit amendment or result in a violation of permit requirements. Notice shall also be required under this paragraph when:

      i. the alteration or addition to a permitted facility may meet one of the criteria for determining whether a facility is a new source in accordance with 30 TAC §305.534 (relating to New Sources and New Dischargers); or

      ii. the alteration or addition could significantly change the nature or increase the quantity of pollutants discharged. This notification applies to pollutants that are subject neither to effluent limitations in the permit, nor to notification requirements in Monitoring and Reporting Requirements No. 9; or

      iii. the alteration or addition results in a significant change in the permittee's sludge use or disposal practices, and such alteration, addition, or change may justify the application of permit conditions that are different from or absent in the existing permit, including notification of additional use or disposal sites not reported during the permit application process or not reported pursuant to an approved land application plan.

   b. Prior to any facility modifications, additions, or expansions that will increase the plant capacity beyond the permitted flow, the permittee must apply for and obtain proper authorization from the Commission before commencing construction.

   c. The permittee must apply for an amendment or renewal at least 180 days prior to expiration of the existing permit in order to continue a permitted activity after the expiration date of the permit. If an application is submitted prior to the expiration date of the permit, the existing permit shall remain in effect until the application is approved, denied, or returned. If the application is returned or denied, authorization to continue such activity shall terminate upon the effective date of the action. If an application is not submitted prior to the expiration date of the permit, the permit shall expire and authorization to continue such activity shall terminate.

   d. Prior to accepting or generating wastes that are not described in the permit application or that would result in a significant change in the quantity or quality of the existing discharge, the permittee must report the proposed changes to the Commission. The permittee must apply for a permit amendment reflecting any necessary changes in permit conditions, including effluent limitations for pollutants not identified and limited by this permit.

   e. In accordance with the TWC §26.029(b), after a public hearing, notice of which shall be given to the permittee, the Commission may require the permittee, from time to time, for good cause, in accordance with applicable laws, to conform to new or additional conditions.

   f. If any toxic effluent standard or prohibition (including any schedule of compliance specified in such effluent standard or prohibition) is promulgated under CWA §307(a) for a toxic pollutant that is present in the discharge and that standard or prohibition is more stringent than any limitation on the pollutant in this permit, this permit shall be modified or revoked and reissued to conform to the toxic effluent standard or prohibition. The permittee shall comply with effluent standards or prohibitions established under CWA §307(a) for toxic pollutants within the time provided in the regulations that established those standards or prohibitions, even if the permit has not yet been modified to incorporate the requirement.

5. Permit Transfer

a. Prior to any transfer of this permit, Commission approval must be obtained. The Commission shall be notified in writing of any change in control or ownership of facilities authorized by this permit. Such notification should be sent to the Applications Review and Processing Team (MC 148) of the Water Quality Division.

b. A permit may be transferred only according to the provisions of 30 TAC §305.64 (relating to Transfer of Permits) and 30 TAC §50.133 (relating to Executive Director Action on Application or WQMP update).

6. Relationship to Hazardous Waste Activities

This permit does not authorize any activity of hazardous waste storage, processing, or disposal that requires a permit or other authorization pursuant to the Texas Health and Safety Code.

7. Relationship to Water Rights

Disposal of treated effluent by any means other than discharge directly to water in the state must be specifically authorized in this permit and may require a permit pursuant to Texas Water Code Chapter 11.

8. Property Rights

A permit does not convey any property rights of any sort, or any exclusive privilege.

9. Permit Enforceability

The conditions of this permit are severable, and if any provision of this permit, or the application of any provision of this permit to any circumstances, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

10. Relationship to Permit Application

The application pursuant to which the permit has been issued is incorporated herein; provided, however, that in the event of a conflict between the provisions of this permit and the application, the provisions of the permit shall control.

11. Notice of Bankruptcy.

a. Each permittee shall notify the Executive Director, in writing, immediately following the filing of a voluntary or involuntary petition for bankruptcy under any chapter of Title 11 (Bankruptcy) of the United States Code (11 USC) by or against:

i. the permittee;
ii. an entity (as that term is defined in 11 USC, §101(15)) controlling the permittee or listing the permit or permittee as property of the estate; or
iii. an affiliate (as that term is defined in 11 USC, §101(2)) of the permittee.

b. This notification must indicate:

i. the name of the permittee;
ii. the permit number(s);
iii. the bankruptcy court in which the petition for bankruptcy was filed; and
iv. the date of filing of the petition.

OPERATIONAL REQUIREMENTS

1. The permittee shall at all times ensure that the facility and all of its systems of collection, treatment, and disposal are properly operated and maintained. This includes, but is not limited to, the regular, periodic examination of wastewater solids within the treatment plant by the operator in order to maintain an appropriate quantity and quality of solids inventory as described in the various operator training manuals and according to accepted industry standards for process control. Process control, maintenance, and operations records shall be retained at the facility site, or shall be readily available for review by a TCEQ representative, for a period of three years.

2. Upon request by the Executive Director, the permittee shall take appropriate samples and provide proper analysis in order to demonstrate compliance with Commission rules. Unless otherwise specified in this permit or otherwise ordered by the Commission, the permittee shall comply with all applicable provisions of 30 TAC Chapter 312 concerning sewage sludge use and disposal and 30 TAC §§319.21 - 319.29 concerning the discharge of certain hazardous metals.

3. Domestic wastewater treatment facilities shall comply with the following provisions:

   a. The permittee shall notify the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, in writing, of any facility expansion at least 90 days prior to conducting such activity.

   b. The permittee shall submit a closure plan for review and approval to the Municipal Permits Team, Wastewater Permitting Section (MC 148) of the Water Quality Division, for any closure activity at least 90 days prior to conducting such activity. Closure is the act of permanently taking a waste management unit or treatment facility out of service and includes the permanent removal from service of any pit, tank, pond, lagoon, surface impoundment or other treatment unit regulated by this permit.

4. The permittee is responsible for installing prior to plant start-up, and subsequently maintaining, adequate safeguards to prevent the discharge of untreated or inadequately treated wastes during electrical power failures by means of alternate power sources, standby generators, or retention of inadequately treated wastewater.

5. Unless otherwise specified, the permittee shall provide a readily accessible sampling point and, where applicable, an effluent flow measuring device or other acceptable means by which effluent flow may be determined.

6. The permittee shall remit an annual water quality fee to the Commission as required by 30 TAC Chapter 21. Failure to pay the fee may result in revocation of this permit under TWC §7.302(b)(6).

7. Documentation

   For all written notifications to the Commission required of the permittee by this permit, the permittee shall keep and make available a copy of each such notification under the same conditions as self-monitoring data are required to be kept and made available. Except for information required for TPDES permit applications, effluent data, including effluent data in permits, draft permits and permit applications, and other information specified as not confidential in 30 TAC §1.5(d), any information submitted pursuant to this permit may be claimed as confidential by the submitter. Any such claim must be asserted in the manner prescribed in the application form or by stamping the words “confidential business information” on each page containing such information. If no claim is made at the time of submission, information may be made available to the public without further notice. If the Commission or Executive Director agrees with the designation of confidentiality, the TCEQ will not provide the information for public inspection unless required by the Texas Attorney General or a court pursuant to an open records request. If the Executive Director does not agree with the designation of confidentiality, the person submitting the information will be notified.

8. Facilities that generate domestic wastewater shall comply with the following provisions; domestic wastewater treatment facilities at permitted industrial sites are excluded.

   a. Whenever flow measurements for any domestic sewage treatment facility reach 75% of the permitted daily average or annual average flow for three consecutive months, the permittee must initiate engineering and financial planning for expansion or upgrading of the domestic wastewater treatment or collection facilities. Whenever the flow reaches 90% of the permitted daily average or annual average flow for three consecutive months, the permittee shall obtain necessary authorization from the Commission to commence construction of the necessary additional treatment or collection facilities. In the case of a domestic wastewater treatment facility that reaches 75% of the permitted daily average or annual average flow for three consecutive months, and the planned population to be served or the quantity of waste produced is not expected to exceed the design limitations of the treatment facility, the

permittee shall submit an engineering report supporting this claim to the Executive Director of the Commission.

If in the judgment of the Executive Director the population to be served will not cause permit noncompliance, then the requirement of this section may be waived. To be effective, any waiver must be in writing and signed by the Director of the Enforcement Division (MC 219) of the Commission, and such waiver of these requirements will be reviewed upon expiration of the existing permit; however, any such waiver shall not be interpreted as condoning or excusing any violation of any permit parameter.

b. The plans and specifications for domestic sewage collection and treatment works associated with any domestic permit must be approved by the Commission, and failure to secure approval before commencing construction of such works or making a discharge is a violation of this permit and each day is an additional violation until approval has been secured.

c. Permits for domestic wastewater treatment plants are granted subject to the policy of the Commission to encourage the development of area-wide waste collection, treatment, and disposal systems. The Commission reserves the right to amend any domestic wastewater permit in accordance with applicable procedural requirements to require the system covered by this permit to be integrated into an area-wide system, should such be developed; to require the delivery of the wastes authorized to be collected in, treated by or discharged from said system, to such area-wide system; or to amend this permit in any other particular to effectuate the Commission's policy. Such amendments may be made when the changes required are advisable for water quality control purposes and are feasible on the basis of waste treatment technology, engineering, financial, and related considerations existing at the time the changes are required, exclusive of the loss of investment in or revenues from any then existing or proposed waste collection, treatment or disposal system.

9. Domestic wastewater treatment plants shall be operated and maintained by sewage plant operators holding a valid certificate of competency at the required level as defined in 30 TAC Chapter 30.

10. For Publicly Owned Treatment Works (POTWs), the 30-day average (or monthly average) percent removal for BOD and TSS shall not be less than 85%, unless otherwise authorized by this permit.

11. Facilities that generate industrial solid waste as defined in 30 TAC §335.1 shall comply with these provisions:

a. Any solid waste, as defined in 30 TAC §335.1 (including but not limited to such wastes as garbage, refuse, sludge from a waste treatment, water supply treatment plant or air pollution control facility, discarded materials, discarded materials to be recycled, whether the waste is solid, liquid, or semisolid), generated by the permittee during the management and treatment of wastewater, must be managed in accordance with all applicable provisions of 30 TAC Chapter 335, relating to Industrial Solid Waste Management.

b. Industrial wastewater that is being collected, accumulated, stored, or processed before discharge through any final discharge outfall, specified by this permit, is considered to be industrial solid waste until the wastewater passes through the actual point source discharge and must be managed in accordance with all applicable provisions of 30 TAC Chapter 335.

c. The permittee shall provide written notification, pursuant to the requirements of 30 TAC §335.8(b)(1), to the Corrective Action Section (MC 127) of the Remediation Division informing the Commission of any closure activity involving an Industrial Solid Waste Management Unit, at least 90 days prior to conducting such an activity.

d. Construction of any industrial solid waste management unit requires the prior written notification of the proposed activity to the Registration and Reporting Section (MC 129) of the Permitting and Remediation Support Division. No person shall dispose of industrial solid waste, including sludge or other solids from wastewater treatment processes, prior to fulfilling the deed recordation requirements of 30 TAC §335.5.

e. The term “industrial solid waste management unit” means a landfill, surface impoundment, waste-pile, industrial furnace, incinerator, cement kiln, injection well, container, drum, salt

dome waste containment cavern, or any other structure vessel, appurtenance, or other improvement on land used to manage industrial solid waste.

f. The permittee shall keep management records for all sludge (or other waste) removed from any wastewater treatment process. These records shall fulfill all applicable requirements of 30 TAC Chapter 335 and must include the following, as it pertains to wastewater treatment and discharge:

i. volume of waste and date(s) generated from treatment process;
ii. volume of waste disposed of on-site or shipped off-site;
iii. date(s) of disposal;
iv. identity of hauler or transporter;
v. location of disposal site; and
vi. method of final disposal.

The above records shall be maintained on a monthly basis. The records shall be retained at the facility site, or shall be readily available for review by authorized representatives of the TCEQ for at least five years.

12. For industrial facilities to which the requirements of 30 TAC Chapter 335 do not apply, sludge and solid wastes, including tank cleaning and contaminated solids for disposal, shall be disposed of in accordance with THSC Code Chapter 361.

OTHER REQUIREMENTS

1. Violations of daily maximum limitations for the following pollutants shall be reported orally or by facsimile to TCEQ Region 1 within 24 hours from the time the permittee becomes aware of the violation, followed by a written report within five days:

   Copper, Total
   Manganese, Total
   Zinc, Total

2. EFFLUENT & WASTEWATER DEFINITIONS AND CLASSIFICATIONS

   A. The term "domestic effluent" means treated domestic sanitary sewage and treated laundry wastewater.

   B. The term "industrial effluent" includes, but is not limited to, the following industrial wastewaters which have been treated to remove pollutants: process wastewater, utility wastewaters, non-contact cooling (heating) waters, and pretreated wastewaters from environmental restoration activities.

   C. The term "process wastewater" means wastewaters from, but not limited to, any water which comes into contact with any product, raw material, intermediate product, or process waste. Also included are high explosive filtered wastewater; cooling water for explosives; wastewater from manufacturing explosive components; wastewater from photographic processing (photographic X-ray lab); metal plating plant treated wastewater; wastewater from washdown of equipment, transport vehicles, pipe lines, vessels, storage tanks, process area slabs, storage area slabs and floordrains/sumpdrains; and treated wastewaters from environmental remediation activities.

   D. The term "utility wastewaters" means wastewaters from, but not limited to, wet scrubber air pollution control systems; ion exchange water treatment system; demineralizer backwash; water treatment; evaporator and boiler blowdown; steam condensates; laboratory and sampling streams; non-contact cooling (heating) operations; cooling tower basin cleaning wastes; cooling tower blowdown; once-through cooling water; reverse osmosis brine; water used to regenerate ion-exchange columns; wastewaters generated from the sampling and production of monitor wells or the drilling and completion of monitoring wells; laundry activities; vehicle maintenance and washing; and cafeteria activities. Sanitary wastes are not included.

   E. The term "non-contact cooling (heating) waters" means waters used for the purpose of cooling (heating) which do not come into contact with any product, raw material, intermediate product, or process waste.

   F. The term "outfall" shall mean any effluent monitoring location that may be identified by the permit.

   G. The terms "plant area or Pantex plant", when used in this permit, shall mean those land areas either owned or controlled by The United States Department of Energy which are located approximately 17 miles northeast of the City of Amarillo and 10 miles west of the City of Panhandle, west of Farm-to-Market Road 2373, south of Farm-to-Market Road 293 and north of U.S. Highway 60, Carson County, Texas.

3. There shall be no discharge of domestic sewage effluent other than that discharged via Outfall

001, or to a septic tank/drainfield system, or disposed via TCEQ Permit No. WQ0004397000 or Underground Injection Control (UIC) Authorization No. 5W2000017.

4. The permittee shall operate the wastewater treatment facility lagoon in such a manner as to maintain a minimum freeboard of two feet consistent with exceptions provided in Other Requirement provision 13.G. The permittee shall measure and record the freeboard of each pond once per month in a "freeboard log". The freeboard log shall be maintained on site and made available to authorized representatives of the TCEQ.

5. The permittee shall agree to maintain records, in a matter consistent with Requirement 3.b of the "Monitoring and Reporting Requirements" of this permit, of all surface water sampling and testing. The permittee shall make these records available for inspection upon request of authorized representatives of the TCEQ.

6. MINIMUM ANALYTICAL LEVELS (MAL)

Pollutant	**MAL (mg/L)**
Copper (Total)	0.002
Manganese (Total)	0.0005
Zinc (Total)	0.005
HMX	N/A
PETN	N/A
RDX	N/A
TATB	N/A
TNT	N/A

Test methods used must be sensitive enough to demonstrate compliance with the permit effluent limitations. If an effluent limit for a pollutant is less than the MAL, then the test method for that pollutant must be sensitive enough to demonstrate compliance at the MAL. Permit compliance/noncompliance determinations will be based on the effluent limitations contained in this permit, with consideration given to the MAL for the pollutants specified above.

When an analysis of an effluent sample for a pollutant listed above indicates no detectable levels above the MAL and the test method detection level is as sensitive as the specified MAL, a value of zero shall be used for that measurement when making calculations for the self-reporting form. This applies to determinations of daily maximum concentration, calculations of loading and daily averages, and other reportable results.

When a reported value is zero based on this MAL provision, the permittee shall submit the following statement with the self-reporting form either as a separate attachment to the form or as a statement in the comments section of the form:

"The reported value(s) of zero for [list pollutant(s)] on the self-reporting form for [monitoring period date range] is based on the following conditions: (1) the analytical method used had a method detection level as sensitive as the MAL specified in the permit, and (2) the analytical results contained no detectable levels above the specified MAL."

When an analysis of an effluent sample for a pollutant indicates no detectable levels and the test method detection level is not as sensitive as the MAL specified in the permit, or an MAL is not specified in the permit for that pollutant, the level of detection achieved shall be used for that measurement when making calculations for the self-reporting form. A zero may not be used.

7. Flow-measuring devices and readily accessible sampling points, as required by this permit, shall be provided by the permittee.

8. There is no mixing zone established for these discharges to the playa lake. Water Quality Standards do not apply to this discharge.

9. Permit Conditions, Item 3, Inspections and Entry, is amended for purposes of this permit subject to the provisions of the Atomic Energy Act (as amended).

10. Monitoring results shall be provided at the intervals specified in the permit. For pollutants which are monitored four times per year, the first effluent report shall be submitted three months after the date of permit issuance and subsequent reports every three months thereafter.

11. The permittee shall use test procedures based on U.S. Environmental Protection Agency, *Test Methods for Evaluating Solid Waste*, EPA Manual SW-846, Method 8330 for the analysis of HMX, RDX, PETN, and TNT.

12. Definitions and Standard Permit Conditions, Item 2.c., daily maximum concentration, is amended as follows:

    Daily maximum concentration - the maximum concentration measured on a single day, by the sample type specified in the permit, within a period of one calendar month (when required monitoring frequency is equal to or more frequent than once per month) or within the period equivalent to the specified monitoring frequency (when required monitoring frequency is less frequent than once per month).

13. POND REQUIREMENTS

    A wastewater pond must comply with the following requirements. A *wastewater pond (or lagoon)* is an earthen structure used to evaporate, hold, store, or treat water that contains a *waste* or *pollutant* or that would cause *pollution* upon *discharge* as those terms are defined in Texas Water Code § 26.001, but does not include a pond that contains only *stormwater*.

    A. A wastewater pond **subject to 40 CFR Part 257, Subpart D** (related to coal combustion residuals) must comply with those requirements in lieu of the requirements in B through G of POND REQUIREMENTS. N/A

    B. An **existing** wastewater pond must be maintained to meet or exceed the original approved design and liner requirements; or, in the absence of original approved requirements, must be maintained to prevent unauthorized discharge of wastewater into or adjacent to water in the state. The permittee shall maintain copies of all liner construction and testing documents at the facility or in a reasonably accessible location and make the information available to the executive director upon request.

    C. A **new** wastewater pond constructed after the issuance date of this permit must be lined in compliance with one of the following requirements if it will contain process wastewater as defined in 40 CFR §122.2. The executive director will review ponds that will contain only non-process wastewater on a case-by case basis to determine whether the pond must be lined. If a pond will contain only non-process wastewater, the owner shall notify the Industrial Permits Team (MC 148) to obtain a written determination at least 90 days before the pond is placed into service and copy the TCEQ Compliance Monitoring Team (MC-224). The permittee must submit all information about the

proposed pond contents that is reasonably necessary for the executive director to make a determination. If the executive director determines that a pond does not need to be lined, then the pond is exempt from C(1) through C(3) and D through G of POND REQUIREMENTS.

A wastewater pond that only contains domestic wastewater must comply with the design requirements in 30 TAC Chapter 217 and 30 TAC §309.13(d) in lieu of items C(1) through C(3) of this subparagraph.

(1) Soil liner: The soil liner must contain clay-rich soil material (at least 30% of the liner material passing through a #200 mesh sieve, liquid limit greater than or equal to 30, and plasticity index greater than or equal to 15) that completely covers the sides and bottom of the pond. The liner must be at least 3.0 feet thick. The liner material must be compacted in lifts of no more than 8 inches to 95% standard proctor density at the optimum moisture content in accordance with ASTM D698 to achieve a permeability less than or equal to 1×10^{-7} ($\leq$ 0.0000001) cm/sec. For in-situ soil material that meets the permeability requirement, the material must be scarified at least 8 inches deep and then re-compacted to finished grade.

(2) Synthetic membrane: The liner must be a synthetic membrane liner at least 40 mils in thickness that completely covers the sides and the bottom of the pond. The liner material used must be compatible with the wastewater and be resistant to degradation (e.g., from ultraviolet light, chemical reactions, wave action, erosion, etc.). The liner material must be installed and maintained in accordance with the manufacturer's guidelines. A wastewater pond with a synthetic membrane liner must include an underdrain with a leak detection and collection system.

(3) Alternate liner: The permittee shall submit plans signed and sealed by a Texas-licensed professional engineer for any other equivalently-protective pond lining method to the TCEQ Industrial Permits Team (MC-148) and copy the TCEQ Compliance Monitoring Team (MC-224).

D. For a pond that must be lined according to subparagraph 3 (including ponds with in-situ soil liners), the permittee shall provide certification, signed and sealed by a Texas-licensed professional engineer, stating that the completed pond lining and any required underdrain with leak detection and collection system for the pond meet the requirements in subparagraph C(1) – C(3) before using the pond. The certification shall include the following minimum details about the pond lining system: (1) pond liner type (in-situ soil, amended in-situ soil, imported soil, synthetic membrane, or alternative), (2) materials used, (3) thickness of materials, and (4) either permeability test results or a leak detection and collection system description, as applicable.

The certification must be provided to the TCEQ Water Quality Assessment Team (MC-150), Industrial Permits Team (MC-148), Compliance Monitoring Team (MC-224), and Regional Office. A copy of the liner certification and construction details (i.e., as-built drawings, construction QA/QC documentation, and post construction testing) must be kept on-site or in a reasonably accessible location (in either hardcopy or digital format) until the pond is closed.

E. Protection and maintenance requirements for a pond subject to subparagraphs B or C (including ponds with in-situ soil liners).

(1) The permittee shall maintain a liner to prevent the unauthorized discharge of wastewater into or adjacent to water in the state.

(2) A liner must be protected from damage caused by animals. Fences or other protective devices or measures may be used to satisfy this requirement.

(3) The permittee shall maintain the structural integrity of the liner and shall keep the liner and embankment free of woody vegetation, animal burrows, and excessive erosion.

(4) The permittee shall inspect each pond liner and each leak detection system at least once per month. Evidence of damage or unauthorized discharge must be evaluated by a Texas-licensed professional engineer or Texas-licensed professional geoscientist within 30 days. The permittee is not required to drain an operating pond or to inspect below the waterline during these routine inspections.

a. A Texas-licensed professional engineer or Texas-licensed professional geoscientist must evaluate damage to a pond liner, including evidence of an unauthorized discharge without visible damage.

b. Pond liner damage must be repaired at the recommendation of a Texas-licensed professional engineer or Texas-licensed professional geoscientist. If the damage is significant or could result in unauthorized discharge, then the repair must be documented and certified by a Texas-licensed professional engineer. Within 60 days after a repair is completed, liner certification must be provided to the TCEQ Water Quality Assessment Team (MC-150), Compliance Monitoring Team (MC-224), and TCEQ Regional Office. A copy of the liner certification must be maintained at the facility or in a reasonably accessible location and made available to the executive director upon request.

c. A release determination and subsequent corrective action will be based on 40 CFR Part 257 or the Texas Risk Reduction Program (30 TAC Chapter 350), as applicable. If evidence indicates that an unauthorized discharge occurred, including evidence that the actual permeability exceeds the design permeability, the matter may also be referred to the TCEQ Enforcement Division to ensure the protection of the public and the environment.

F. For a pond subject to subparagraphs B or C (including ponds with in-situ soil liners), the permittee shall have a Texas-licensed professional engineer perform an evaluation of each pond that requires a liner at least once every five years. The evaluation must include: (1) a physical inspection of the pond liner to check for structural integrity, damage, and evidence of leaking; (2) a review of the liner documentation for the pond; and (3) a review of all documentation related to liner repair and maintenance performed since the last evaluation. For the purposes of this evaluation, evidence of leaking also includes evidence that the actual permeability exceeds the design permeability. The permittee is not required to drain an operating pond or to inspect below the waterline during the evaluation. A copy of the engineer's evaluation report must be maintained at the facility or in a reasonably accessible location and made available to the executive director upon request.

G. For a pond subject to subparagraphs B or C (including ponds with in-situ soil liners), the permittee shall maintain at least 2.0 feet of freeboard in the pond except when:

(1) the freeboard requirement temporarily cannot be maintained due to a large storm event that requires the additional retention capacity to be used for a limited period of time;

(2) the freeboard requirement temporarily cannot be maintained due to upset plant conditions that require the additional retention capacity to be used for treatment for a limited period of time; or

(3) the pond was not required to have at least 2.0 feet of freeboard according to the requirements at the time of construction.

14. Public access to the playa lake shall be limited by physical fencing and no trespass posting of the Pantex Plant and administrative access controls requiring badging of all authorized personnel on the site.

15. Groundwater quality monitoring and reporting shall be conducted according to requirements in Section XI (Compliance Plan) of the Pantex Plant Hazardous Waste Permit No. 50284.

TECHNICAL SUMMARY AND
EXECUTIVE DIRECTOR'S PRELIMINARY DECISION

DESCRIPTION OF APPLICATION

Applicant:	United States Department of Energy and PanTeXas Deterrence LLC; Texas Commission on Environmental Quality (TCEQ) Permit No. WQ0002296000
Regulated activity:	Industrial wastewater permit
Type of application:	Renewal
Request:	Renewal without changes
Authority:	Texas Water Code (TWC) §26.027; 30 Texas Administrative Code (TAC) Chapter 305, Subchapters C-F, and Chapters 307 and 319; commission policies; and Environmental Protection Agency (EPA) guidelines

EXECUTIVE DIRECTOR RECOMMENDATION

The Executive Director has made a preliminary decision that this permit, if issued, meets all statutory and regulatory requirements. The draft permit will expire at midnight, five years from the date of permit issuance according to the requirements of 30 TAC §305.127(1)(C)(i).

REASON FOR PROJECT PROPOSED

The applicant applied to the Texas Commission on Environmental Quality (TCEQ) for a renewal of its existing permit.

PROJECT DESCRIPTION AND LOCATION

The applicant currently operates United States Department of Energy (USDOE) National Nuclear Security Administration Pantex Plant, a facility principally engaged in the assembly of nuclear weapons from components received from other Department of Energy plants; the fabrication of chemical high explosive components for nuclear weapons; surveillance testing and processing of chemical high explosives; disassembly of nuclear weapons; maintenance, modification, repair, and nonexplosive testing of nuclear weapons components; and disposal of treated environmental restoration wastewater.

Wastewater consists of a mixture of domestic sewage and industrial wastewater. Industrial wastewater includes non-contact wastewaters from heating and cooling, cooling tower blowdown, reverse osmosis system and ion exchange columns brine, boiler wastewater, steam condensate, chiller condensate wastewater, wastewater from laundry activities, pre-treated photographic processing wash water, pre-treated wastewater from the production of energetics, pre-treated energetic machining wastewaters, wastewater from vehicle maintenance facilities, and treated wastewater from groundwater remediation activities.

The wastewater treatment system at the facility is comprised of a facultative lagoon, an alternative facultative/storage lagoon, and a smaller storage lagoon. After passing through a bar screen, the wastewater enters the facultative lagoon and is treated via biological activity then flows to one or both of the storage lagoons. At any point in this process, commercially available products to reduce algae in the treatment and storage lagoons may be introduced. The retention time in the facility is at least 21 days which normally does not need chemical disinfection as stated in 30 TAC §317.6(c)(1). The wastewater is then discharged through either Outfall 001 under TCEQ Permit No. WQ0002296000 or for irrigation under TCEQ Permit No. WQ0004397000. The waters from the groundwater remediation activities are treated by a series of filters and ion exchange units before they are

transferred to either the wastewater storage lagoons or the irrigation storage lagoon permitted under the TCEQ Permit No. WQ0004397000. The treated groundwater remediation water is then land applied under the TCEQ Permit No. WQ0004397000 or discharged via Outfall 001 under the TCEQ Permit No. WQ0002296000.

The facility is located at Farm-to-Market Road 2373, west of Farm-to-Market Road 2373, south of Farm-to-Market Road 293 and north of U.S. Highway 60, approximately 17 miles northeast of the City of Amarillo and 10 miles west of the City of Panhandle, in Carson County, Texas 79068.

Discharge Route and Designated Uses
The effluent is discharged to a playa lake, located adjacent to the watershed of McClellen Creek which flows into North Fork Red River in Segment No. 0224 of the Red River Basin. The designated uses for Segment No. 0224 are primary contact recreation and high aquatic life use. The effluent limits in the draft permit will maintain and protect the existing instream uses. All determinations are preliminary and subject to additional review and revisions.

Since the discharge is directly to a playa lake, the permit action was reviewed in accordance with the Playa Lake Policy Statement dated October 20, 1997, found in the Procedures to Implement the Texas Surface Water Quality Standards. Pursuant to the Playa Lake Policy Statement, the Texas Surface Water Quality Standards do not apply to the playa lake which receives discharge associated with permit number WQ0002296000.

Endangered Species Review
The discharge from this permit is not expected to have an effect on any federal endangered or threatened aquatic or aquatic-dependent species or proposed species or their critical habitat. This determination is based on the United States Fish and Wildlife Service's (USFWS) biological opinion on the State of Texas authorization of the TPDES (September 14, 1998; October 21, 1998 update). To make this determination for TCEQ permits, TCEQ and the EPA only considered aquatic or aquatic-dependent species occurring in watersheds of critical concern or high priority as listed in Appendix A of the USFWS's biological opinion. The determination is subject to reevaluation due to subsequent updates or amendments to the biological opinion. The permit does not require EPA review with respect to the presence of endangered or threatened species.

Impaired Water Bodies
Segment No. 0224 is not currently listed on the state's inventory of impaired and threatened waters, the 2022 CWA §303(d) list.

Completed Total Maximum Daily Loads (TMDLs)
There are no completed TMDLs for Segment No. 0224.

Dissolved Oxygen
Based on the playa lake policy and the review provided by the Water Quality Standards Team, no dissolved oxygen modeling has been performed.

SUMMARY OF EFFLUENT DATA

The following is a quantitative description of the discharge described in the monthly effluent report data for the period November 2022 through October 2024. The "Avg of Daily Avg" values presented in the following table are the average of all daily average values for the reporting period for each pollutant. The "Max of Daily Max" values presented in the following table are the individual maximum values for the reporting period for each pollutant. Flows are expressed in million gallons per day (MGD). All pH values are expressed in standard units (SU).

Flow

Outfall	Frequency	Avg of Daily Avg	Max of Daily Max
001	Intermittent	0.150 MGD	0.33 MGD

Effluent Characteristics

Outfall	Pollutant	Avg of Daily Avg	Max of Daily Max
001	Biochemical Oxygen Demand (5-day)	11.56 mg/L	23.68 mg/L
	Total Suspended Solids	21.23 mg/L	65 mg/L
	Oil and Grease	n/a	10.4 mg/L
	Chemical Oxygen Demand	n/a	72.6 mg/L
	Copper (total)	0.014 mg/L	0.02 mg/L
	Manganese (total)	0.024 mg/L	0.048 mg/L
	Zinc (total)	0.0064 mg/L	0.01 mg/L
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.00026 mg/L	0.00027 mg/L
	Octahydro-1,3,5,7-tetranitro 1,3,5,7-tetrazocine (HMX)	0.00038 mg/L	0.0013 mg/L
	Pentaerythritol tetranitrate (PETN)	0.00052 mg/L	0.00053 mg/L
	Trinitrotoluene (TNT)	0.00026 mg/L	0.00027 mg/L
	pH	7.58 SU (min)	8.7 SU

One effluent limitation violation was self-reported by the permittee in the monthly effluent reports for the period November 2022 through October 2024. There are no changes recommended in the draft permit based on the historical self-reporting data.

DRAFT PERMIT CONDITIONS

The draft permit authorizes the discharge of treated domestic effluent and industrial effluent at a daily average flow not to exceed 0.56 MGD via Outfall 001. Effluent limitations are established in the draft permit as follows:

Outfall	Pollutant	Daily Average mg/L	Daily Maximum mg/L
001	Flow	0.56 MGD	0.82 MGD
	Biochemical Oxygen Demand (5-day)	30	70
	Total Suspended Solids	60	90
	Oil and Grease	N/A	15
	Chemical Oxygen Demand	N/A	150
	Total Copper	0.5	1.0
	Total Manganese	1.0	2.0
	Total Zinc	1.0	2.0
	Octahydro-1,3,5,7-tetranitro 1,3,5,7-tetrazocine (HMX)	0.1	Report
	Hexahydro-1,3,5-trinitro-1,3,5-triazine (RDX)	0.2	Report
	Pentaerythritol tetranitrate (PETN)	0.4	Report
	Trinitrotoluene (TNT)	0.02	Report
	Triamino-trinitrobenzene (TATB)	N/A	Report

Outfall	Pollutant	Daily Average mg/L	Daily Maximum mg/L
	pH	6.0 SU (min)	10.0 SU

OUTFALL LOCATION

Outfall	Latitude	Longitude
001	35.324207 N	101.555467 W

Technology-Based Effluent Limitations
This permit is a state discharge permit. Effluent limitations and monitoring requirements have been continued from the current permit and were originally established as follows:

1. Effluent limitations for biochemical oxygen demand (5-day) and total suspended solids are continued from the current permit and were previously based on best professional judgment (BPJ) to establish technology-based limitations.
2. Effluent limitations for chemical oxygen demand, oil and grease, and pH are continued from the current permit and were previously based on the effluent limitations the TCEQ typically imposes on industrial wastewaters and were established as BPJ technology-based limitations.
3. Effluent limitations and monitoring requirements for total residual chlorine are continued from the current permit and based on disinfection requirements for treated sanitary wastewater. These limitations and monitoring requirements are only required when the permittee cannot maintain a minimum residence time in the treatment system of 21 days before discharge via Outfall 001. The 21-days residence time requirement is based on TCEQ rule 30 TAC 309.3(g)(5).
4. Effluent limitations and monitoring requirements for total copper, total manganese, total barium, and total zinc at Outfall 001 are continued from the current permit and are based on 30 TAC 319.22.
5. Effluent limitations and monitoring requirements HMX, PETN, RDX, and TNT are continued from the current permit and were established as BPJ technology-based limitations.

Water Quality-Based Effluent Limitations
The discharge is directly to a playa lake. The permit action was reviewed in accordance with the Playa Lake Policy Statement dated October 20, 1997 and found in the Procedures to Implement the Texas Surface Water Quality Standards. Pursuant to the Playa Lake Policy Statement, the Texas Surface Water Quality Standards do not apply to the playa lake which receives discharge associated with permit number WQ0002296000. Therefore, the screening for water quality-based limitations was not performed.

Total Dissolved Solids (TDS), Chloride, and Sulfate Screening
Pursuant to the Playa Lake Policy Statement, the Texas Surface Water Quality Standards do not apply to the playa lake which receives discharge associated with permit number WQ0002296000. No screening was performed for TDS, chloride, or sulfate in the effluent.

pH Screening
Pursuant to the Playa Lake Policy Statement, the Texas Surface Water Quality Standards do not apply to the playa lake which receives discharge associated with permit number WQ0002296000. No screening was performed for pH in the effluent.

316(b) Cooling Water Intake Structures
Federal regulations regarding Cooling Water Intake Structures are not implemented into this permit because the permit is issued as a State only authorization.

Whole Effluent Toxicity Testing (Biomonitoring)
The existing permit did not establish biomonitoring requirements and discharges authorized by this permit do not meet the threshold established in the *Procedures to Implement the Texas Surface Water Quality Standards* (RG-194) to impose biomonitoring requirements.

SUMMARY OF CHANGES FROM APPLICATION

No changes were made from the application.

SUMMARY OF CHANGES FROM EXISTING PERMIT

The following changes have been made to the draft permit.

1. Pages 3-13 were updated (May 2021 version).
2. Minimal Analytical Levels for total manganese and total copper have been updated to reflect current language.
3. The permittee's legal name has been changed from United States Department of Energy and Consolidated Nuclear Security, LLC to United States Department of Energy and PanTeXas Deterrence LLC based on TCEQ's ownership transfer document dated November 13, 2024.

BASIS FOR DRAFT PERMIT

The following items were considered in developing the draft permit:

1. Application received on February 17, 2025, and additional information received on July 18, 2025, and July 22, 2025.
2. Existing permits: TCEQ Permit No. WQ0002296000 issued on August 27, 2020.
3. TCEQ Rules.
4. *Procedures to Implement the Texas Surface Water Quality Standards* (IPs), Texas Commission on Environmental Quality, June 2010, as approved by EPA Region 6.
5. *Procedures to Implement the Texas Surface Water Quality Standards*, Texas Commission on Environmental Quality, January 2003, for portions of the 2010 IPs not approved by EPA Region 6.
6. Memos from the Standards Implementation Team and Water Quality Assessment Team of the Water Quality Assessment Section of the TCEQ.
7. *Guidance Document for Establishing Monitoring Frequencies for Domestic and Industrial Wastewater Discharge Permits*, TCEQ Document No. 98-001.000-OWR-WQ, May 1998.
8. EPA Effluent Guidelines: N/A.
9. Consistency with the Coastal Management Plan: N/A.

PROCEDURES FOR FINAL DECISION

When an application is declared administratively complete, the chief clerk sends a letter to the applicant advising the applicant to publish the Notice of Receipt of Application and Intent to Obtain Permit in the newspaper. In addition, the Chief Clerk instructs the applicant to place a copy of the application in a public place for reviewing and copying in the county where the facility is or will be located. This application will be in a public place throughout the comment period. The Chief Clerk also mails this

notice to any interested persons and, if required, to landowners identified in the permit application. This notice informs the public about the application and provides that an interested person may file comments on the application or request a contested case hearing or a public meeting.

Once a draft permit is completed, it is sent to the Chief Clerk, along with the Executive Director's preliminary decision contained in the technical summary or fact sheet. At that time, the Notice of Application and Preliminary Decision will be mailed to the same people and published in the same newspaper as the prior notice. This notice sets a deadline for making public comments. The applicant must place a copy of the Executive Director's preliminary decision and draft permit in the public place with the application.

Any interested person may request a public meeting on the application until the deadline for filing public comments. A public meeting is intended for the taking of public comment and is not a contested case hearing.

After the public comment deadline, the Executive Director prepares a response to all significant public comments on the application or the draft permit raised during the public comment period. The Chief Clerk then mails the Executive Director's response to comments and final decision to people who have filed comments, requested a contested case hearing, or requested to be on the mailing list. This notice provides that if a person is not satisfied with the Executive Director's response and decision, they can request a contested case hearing or file a request to reconsider the Executive Director's decision within 30 days after the notice is mailed.

The Executive Director will issue the permit unless a written hearing request or request for reconsideration is filed within 30 days after the Executive Director's response to comments and final decision is mailed. If a hearing request or request for reconsideration is filed, the Executive Director will not issue the permit and will forward the application and request to the TCEQ commissioners for their consideration at a scheduled commission meeting. If a contested case hearing is held, it will be a legal proceeding similar to a civil trial in state district court.

If the Executive Director calls a public meeting or the commission grants a contested case hearing as described above, the commission will give notice of the date, time, and place of the meeting or hearing. If a hearing request or request for reconsideration is made, the commission will consider all public comments in making its decision and shall either adopt the Executive Director's response to public comments or prepare its own response.

For additional information about this application, contact Ruiqiang Zong at (512) 239-4589.

Ruiqiang Zong
Ruiqiang Zong

July 23, 2025
Date