MAR 01 1993 (11)

Station #12

ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 160831

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) D.B.Barnett, B.A.Williams, L.C.Swanson, Geosciences	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Environmental Division	6. Cog. Engr.: K. D. Reynolds	7. Purchase Order No.: N/A
8. Originator Remarks: For review and approval of the attached borehole completion package. Forward comments to B. A. Williams, H6-06, 6-3416.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: February 19, 1993

MAR 1993 EDMC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-DP-052		0	Borehole Completion Package for the 216-S-10 Facility CY 1992	3Q	1/4	1	

16. KEY

Impact Level (F)	Reason for Transmittal (G)		Disposition (H) & (I)	
1, 2, 3, or 4 (see MRP 5.43)	1. Approval 2. Release 3. Information	4. Review 5. Post-Review 6. Dist. (Receipt Acknow. Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment	4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

17. SIGNATURE/DISTRIBUTION (See Impact Level for required signatures)

(G) Reason	(H) Disp.	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp.
1	1	Cog.Eng. K. D. Reynolds		2/12/93	H6-06	D. B. Barnett		2/12/93	H6-06	1	1
1	1	Cog. Mgr. R. L. Jackson		2/16/93	H6-06	L. C. Swanson			H6-06	1	4
1	1	QA W. R. Thackaberry		2/17/93	H4-16	B. A. Williams		2/12/93	H6-06	1	2
		Safety				EDMC (2)			H6-08	3	
		Env.				Central Files (2)			L8-04	3	

18. B.A.Williams Signature of EDT Originator — Date 2/12/93	19. K.R.Fecht Authorized Representative for Receiving Organization — Date 2/16/93	20. R.L.Jackson Cognizant/Project Engineer's Manager — Date 2/16/93	21. DOE APPROVAL (if required) • Ltr. No. N/A [] Approved [] Approved w/comments [] Disapproved w/comments

BD-7400-172-2 (07/91) GEF097

BD-7400-172-1 (07/91)

INSTRUCTIONS FOR COMPLETION OF THE ENGINEERING DATA TRANSMITTAL

(USE BLACK INK OR TYPE)

BLOCK	TITLE	
(1)*	EDT	• Pre-assigned EDT number.
(2)	To: (Receiving Organization)	• Enter the individual's name, title of the organization, or entity (e.g., Distribution) that the EDT is being transmitted to.
(3)	From: (Originating Organization)	• Enter the title of the organization originating and transmitting the EDT.
(4)	Related EDT No.	• Enter EDT numbers which relate to the data being transmitted.
(5)*	Proj./Prog./Dept./Div.	• Enter the Project/Program/Department/Division title or Project/Program acronym or Project Number, Work Order Number or Organization Code.
(6)*	Cognizant Engineer	• Enter the name of the individual identified as being responsible for coordinating disposition of the EDT.
(7)	Purchase Order No.	• Enter related Purchase Order (P.O.) Number, if available.
(8)*	Originator Remarks	• Enter special or additional comments concerning transmittal, or "Key" retrieval words may be entered.
(9)	Equipment/Component No.	• Enter equipment/component number of affected item, if appropriate.
(10)	System/Bldg./Facility	• Enter appropriate system, building or facility number, if appropriate.
(11)	Receiver Remarks	• Enter special or additional comments concerning transmittal.
(12)	Major Assm. Dwg. No.	• Enter applicable drawing number of major assembly, if appropriate.
(13)	Permit/Permit Application No.	• Enter applicable permit or permit application number, if appropriate.
(14)	Required Response Date	• Enter the date a response is required from individuals identified in Block 17 (Signature/Distribution).
(15)*	Data Transmitted	
	(A)* Item Number	• Enter sequential number, beginning with 1, of the information listed on EDT.
	(B)* Document/Drawing No.	• Enter the unique identification number assigned to the document or drawing being transmitted.
	(C)* Sheet No.	• Enter the sheet number of the information being transmitted. If no sheet number, leave blank.
	(D)* Rev. No.	• Enter the revision number of the information being transmitted. If no revision number, leave blank.
	(E) Title or Description of Data Transmitted	• Enter the title of the document or drawing or a brief description of the subject if no title is identified.
	(F)* Impact Level	• Enter the appropriate Impact Level (Block 15). Also, indicate the appropriate approvals for each item listed, i.e., SQ, ESQ, etc. Use NA for non-engineering documents.
	(G) Reason for Transmittal	• Enter the appropriate code to identify the purpose of the data transmittal (see Block 16).
	(H) Originator Disposition	• Enter the appropriate disposition code (see Block 16).
	(I) Receiver Disposition	• Enter the appropriate disposition code (see Block 16).
(16)	Key	• Number codes used in completion of Blocks 15 (G), (H), and (I), and 17 (G), (H) (Signature/Distribution).
(17)	Signature/Distribution	
	(G) Reason	• Enter the code of the reason for transmittal (Block 16).
	(H) Disposition	• Enter the code for the disposition (Block 16).
	(J) Name	• Enter the signature of the individual completing the Disposition 17 (H) and the Transmittal.
	(K)* Signature	• Obtain appropriate signature(s).
	(L)* Date	• Enter date signature is obtained.
	(M)* MSIN	• Enter MSIN. Note: If Distribution Sheet is used, show entire distribution (including that indicated on Page 1 of the EDT) on the Distribution Sheet.
(18)	Signature of EDT Originator	• Enter the signature and date of the individual originating the EDT (entered prior to transmittal to Receiving Organization). If the EDT originator is the cognizant engineer, sign both Blocks 17 and 18.
(19)	Authorized Representative for Receiving Organization	• Enter the signature and date of the individual identified by the Receiving Organization as authorized to approve disposition of the EDT and acceptance of the data transmitted, as applicable.
(20)*	Cognizant Manager	• Enter the signature and date of the cognizant manager. (This signature is authorization for release.)
(21)*	DOE Approval	• Enter DOE approval (if required) by letter number and indicate DOE action.

*Asterisk denote the required minimum items check by Configuration Documentation prior to release; these are the minimum release requirements.

SUPPORTING DOCUMENT

1. Total Pages 302

2. Title

Borehole Completion Data Package for the 216-S-10 Facility, CY 1992

3. Number

WHC-SD-EN-DP-052

4. Rev No.

0

5. Key Words

Borehole Completion, RCRA Groundwater Monitoring wells, CY 1992, S-10 Facility

APPROVED FOR PUBLIC RELEASE

3/1/93 N. Solis

6. Author

Name: B.A.Williams,D.B.Barnett

Signature 2/12/93 2/12/93

Organization/Charge Code 81235/R4GD1

7. Abstract

Well 299-W27-2 was installed in CY 1992 as a RCRA-compliance groundwater monitoring wells at the 216-S-10 Ditch on the Hanford Site. This monitoring well was installed to monitor the base of the unconfined aquifer. This data package summarizes the well installation activities,and includes information and records of drilling, construction, development, sampling, and aquifer pumping tests. An interpretation of the aquifer test results is included in Appendix D.

8. PURPOSE AND USE OF DOCUMENT - This document was prepared for use within the U.S. Department of Energy and its contractors. It is to be used only to perform, direct, or integrate work under U.S. Department of Energy contracts. This document is not approved for public release until reviewed.

PATENT STATUS - This document copy, since it is transmitted in advance of patent clearance, is made available in confidence solely for use in performance of work under contracts with the U.S. Department of Energy. This document is not to be published nor its contents otherwise disseminated or used for purposes other than specified above before patent approval for such release or use has been secured, upon request, from the Patent Counsel, U.S. Department of Energy Field Office, Richland, WA.

DISCLAIMER - This report was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor any agency thereof, nor any of their employees, nor any of their contractors, subcontractors or their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or any third party's use or the results of such use of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or any agency thereof or its contractors or subcontractors. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or any agency thereof.

9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (11)
DATE MAR 01 1993
Station # 12

THIS PAGE INTENTIONALLY
LEFT BLANK

Date Received: 2/26/93 NS	INFORMATION RELEASE REQUEST	Reference: WHC-CM-3-4

Complete for all Types of Release

Purpose

- [] Speech or Presentation
  - [] Full Paper
  - [] Summary
  - [] Abstract
  - [] Visual Aid
  - (Check only one suffix)
- [] Speakers Bureau
- [] Poster Session
- [] Videotape
- [] Reference
- [X] Technical Report
- [] Thesis or Dissertation
- [] Manual
- [] Brochure/Flier
- [] Software/Database
- [] Controlled Document
- [] Other

ID Number (include revision, volume, etc.): WHC-SD-EN-DP-052, Rev. 0

List attachments.: NA

Date Release Required: March 25, 1993

Title: Borehole Completion Package for the 216-S-10 Facility CY 1992

Unclassified Category: UC-NA

Impact Level: 3Q

New or novel (patentable) subject matter? [X] No [] Yes
If "Yes", has disclosure been submitted by WHC or other company?
[] No [] Yes Disclosure No(s).

Information received from others in confidence, such as proprietary data, trade secrets, and/or inventions?
[X] No [] Yes (Identify)

Copyrights? [X] No [] Yes
If "Yes", has written permission been granted?
[] No [] Yes (Attach Permission)

Trademarks?
[X] No [] Yes (Identify)

Complete for Speech or Presentation

Title of Conference or Meeting: NA

Group or Society Sponsoring: NA

Date(s) of Conference or Meeting: NA

City/State: NA

Will proceedings be published? [] Yes [] No
Will material be handed out? [] Yes [] No

Title of Journal: NA

CHECKLIST FOR SIGNATORIES

Review Required per WHC-CM-3-4	Yes	No	Reviewer - Signature Indicates Approval: Name (printed) / Signature / Date
Classification/Unclassified Controlled Nuclear Information	[]	[]	
Patent - General Counsel	~~[X]~~	~~[X]~~	not req'd per telecon 2-26-93
Legal - General Counsel	~~[X]~~	~~[X]~~	
Applied Technology/Export Controlled Information or International Program	[]	[]	
WHC Program/Project	[]	[]	
Communications	[]	[]	
RL Program/Project	[]	[]	
Publication Services	[X]	[]	G L Crawford / Gary Lynne Crawford 03-01-93
Other Program/Project	[]	[]	

Information conforms to all applicable requirements. The above information is certified to be correct.

	Yes	No
References Available to Intended Audience	[X]	[]
Transmit to DOE-HQ/Office of Scientific and Technical Information	[]	[X]

Author/Requestor (Printed/Signature) Date
B. A. Williams, D. B. Barnett 2/19/93

Intended Audience
[] Internal [] Sponsor [X] External

Responsible Manager (Printed/Signature) Date
R. L. Jackson 2/19/93

INFORMATION RELEASE ADMINISTRATION APPROVAL STAMP

Stamp is required before release. Release is contingent upon resolution of mandatory comments.

APPROVED FOR RELEASE — OFFICIAL DOCUMENT — NS — Date 3/1/93

Date Cancelled | Date Disapproved

THIS PAGE INTENTIONALLY
LEFT BLANK

CONTENTS

1.0 INTRODUCTION 1

2.0 WELL 299-W27-2 3
2.1 DRILLING 3
2.2 WELL COMPLETION 3
2.3 WELL DEVELOPMENT AND PUMP INSTALLATION 4
2.4 AQUIFER TESTING 4

3.0 REFERENCES 4

APPENDICES

A Drilling and Construction Data A-1
B Sediment Sampling Data B-1
C Well Development and Pump Installation C-1
D Aquifer Tests and Interpretation D-1

FIGURE

1 Location map of well 299-W27-2 2

THIS PAGE INTENTIONALLY
LEFT BLANK

1.0 INTRODUCTION

In support of Tri-Party Agreement milestone M-24-23, one new RCRA deep groundwater monitoring well was installed at the 216-S-10 facility during CY 1992. Installation of this well took place between October and December, 1992. The addition of this new well, 299-W27-2, increases the monitoring network to seven wells; two upgradient wells, three shallow downgradient wells, one deep downgradient well, and one well in a perched aquifer.

The 216-S-10 Facility (pond and ditch) is located south of the 200 West Area. The location of the network wells is illustrated in Figure 1. Location coordinates and survey elevations for the new well are in Appendix A. The RCRA groundwater monitoring plan for the 216-S-10 facility (WHC 1990) describes the hydrogeology of the area, and provides justification for the new well and its location. The well was constructed to the specifications described in WHC (1991) and complies with Washington Administrative Codes (WAC) 173-160 *Minimum Standards for Construction and Maintenance of Wells*, WAC 173-303 *Dangerous Waste Regulations*, and WAC 173-304 *Solid Waste Handling*. Well construction, completion, and documentation followed procedures outlined in WHC (1988).

This document contains new well installation data and documentation of field activities that include drilling, construction, development, aquifer testing, and permanent pump installation. Geologic descriptions, geophysical logs, and available soil physical and chemical analytical data results are also reported. All data has been validated as required by WHC (1988). With the exception of the aquifer testing results, all data are reported without interpretation.

The following data are included in appendices:

Appendix A:
- Well Summary Sheet
- Well Construction Report
- Borehole Log
- Geophysical Log
- Survey data

APPENDIX B:
- Radiation Safety Report
- Physical Sampling and Data Reports

APPENDIX C:
- Pump Installation Form
- Well Development Information Checklist
- Drawdown and Recovery Data

APPENDIX D:
- Introduction and Aquifer Test Analysis
- Slug Test Data
- Constant Discharge and Step-Drawdown Data

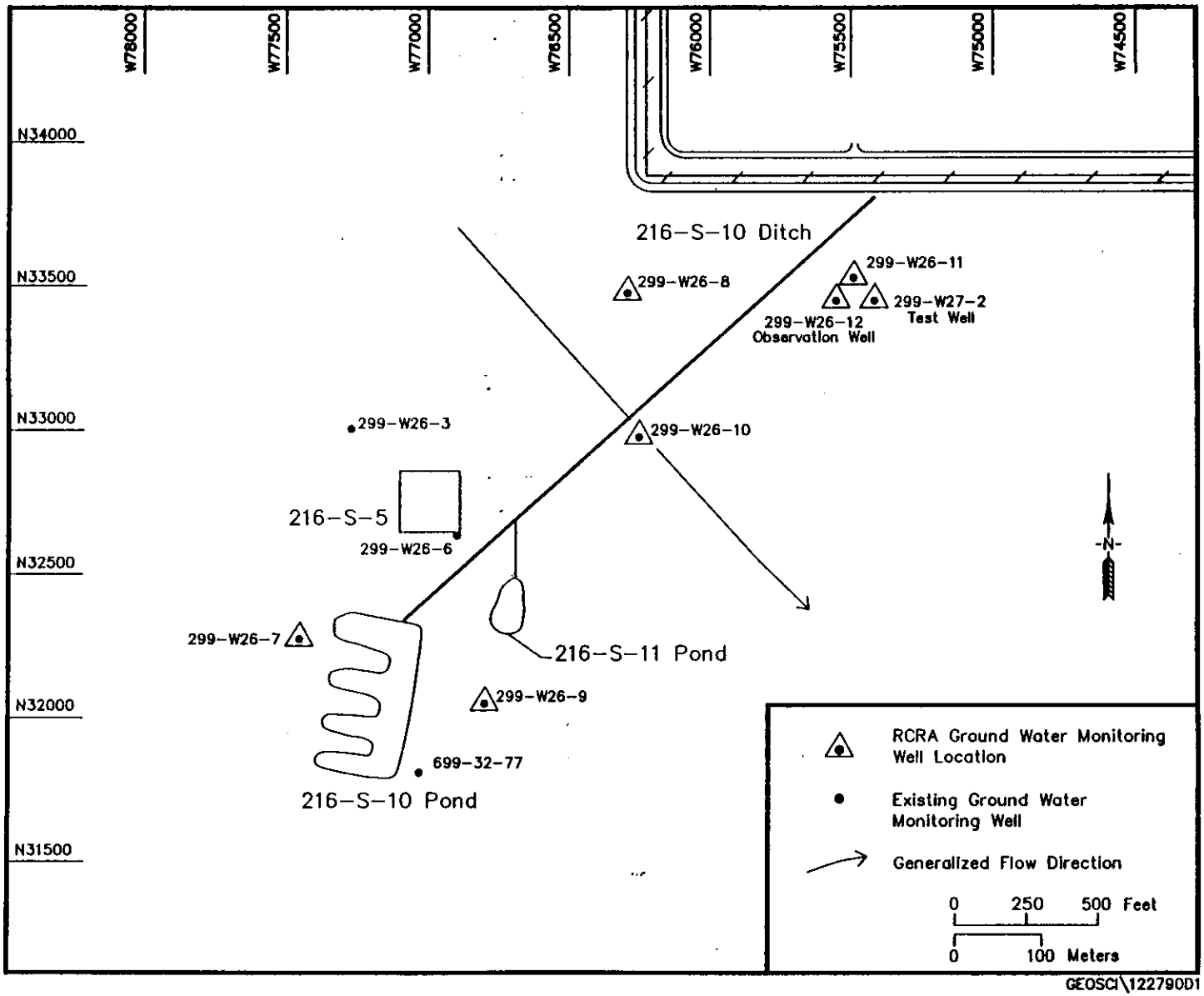


Figure 1. Location of network wells for the S-10 Facility.

Other records, such as chain of custody forms, decontamination records, daily field activity reports, and training records are filed with Westinghouse Hanford Company (WHC).

2.0 WELL 299-W27-2

2.1 DRILLING

Well 299-W27-2 was drilled by Kaiser Engineers Hanford (KEH) using cable-tool and air-rotary drilling equipment. Cable-tool drilling began October 10, 1992, and reached a depth of 181.5 ft below land surface (bls). An air-rotary rig was used to finish drilling the borehole to a total depth (TD) of 435.0 ft. Upon completion of drilling, static water was measured at 215.9 ft bls. The Well Construction Report in Appendix A summarizes all drilling and construction activities. The well as-built diagram and a brief geologic summary are included with the Well Summary Sheet (Appendix A). A Well Survey Data Report that includes well horizontal and vertical coordinates for well 299-W27-2 is also presented in Appendix A.

Temporary casing was installed during drilling to maintain an open borehole: 16-in-dia casing was set from surface to 9.85 ft bls, 12-in-dia was set from surface to 179.88 ft bls, 10-in-dia was set from surface to 302.82 ft bls, and 8-in-dia was set from surface to 426.56 ft bls. A gross gamma log was run through casing consecutively after the 12-in., 10-in., and 8-in-dia casing strings were set. These geophysical logs are in Appendix A.

Chemical health and safety monitoring was conducted by KEH during drilling and detected no contamination. Health Physics Technicians from WHC performed radiological surveys on all samples and drill cuttings with no detections above site background levels.

The geologic section is composed of unconsolidated silty sand to semi-consolidated sandy gravel. A detailed lithologic description is documented on the Borehole Log in Appendix A. Sediment samples were collected approximately every 5 ft of depth for calcium carbonate analysis, radiological screening, and lithological archiving. Samples were collected for moisture analysis at each interval until the water table was encountered. Samples were taken by drive barrel sampler to a depth of 180 ft. Air-rotary drilling continued beyond this depth and samples were collected via a continuous sampling device. Three split-spoon samples were taken (at 145 ft, 179.5 ft, and 427 ft) for chemical and physical analysis to aid in hydrologic interpretation. All physical data results are reported in Appendix B.

2.2 WELL COMPLETION

Construction of well 299-W27-2 began on November 21, 1992, and was completed on December 15, 1992. The well is designed as a deep, downgradient groundwater monitoring well with the screen installed to allow sampling near the bottom of the unconfined aquifer. Bentonite was added to the borehole to backfill it to the completion depth of 420.0 ft bls. Approximately 10 ft of

4-in-dia, 20 slot (0.20-in.) wire screen was installed from 416.6 to 406.1 ft bls. At the time the screen was installed, the water level in the well was 217.5 ft bls. All permanent casing and screen is 4-in-dia, type 304 stainless steel. The casing and screen has stainless steel centralizers for proper alignment in the borehole. All temporary casings and drilling shoes were removed as fill and annular sealing materials were added. The filter pack consists of 10-20 mesh Colorado silica sand. The sand pack was emplaced from 420.0 ft to 399.4 ft bls. The annular seal consists of; bentonite chunks from 399.4 to 389.4 ft bls, portland cement from 389.4 ft to 374.5 ft bls, bentonite slurry from 374.5 ft to 221.8 ft bls, 8-20 mesh bentonite crumbles from 221.8 ft to 9.7 ft bls, and portland cement from 9.7 ft to 2.0 ft bls. A 6-in-dia stainless steel protective casing with pump base plate, locking well cap (installed over the permanent well casing), and four protective posts were set into a reinforced concrete surface pad. The well identification number was stenciled onto the protective casing and one post, and engraved into a brass cap placed on the north side of the concrete surface pad. The well head and surrounding area was then cleaned and inspected.

2.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Development of well 299-W27-2 began December 17, 1992. Two temporary submersible pumps were used to remove 24,985 gal of water from the well until turbidity measured 1.5 nephelometric turbidity units. Drawdown and recovery data were collected with a transducer during development, and are included in Appendix C. A well development log is included in Appendix C. A permanent Hydrostar (a trademark of Instrumentation Northwest, Inc.) sampling pump was installed and tested in well 299-W27-2 on December 18, 1992. The pump intake is set at 414.78 ft below top of casing. The pump installation record is included in Appendix C.

2.4 AQUIFER TESTING

Air-rotary drilling was halted just below the water table at 235.5 ft below top of casing. Twenty feet of temporary screen was then installed for aquifer testing. An observation well, 299-W26-12, was configured with a water level transducer to monitor and record water level fluctuations during testing. Two slug injection/withdrawal tests were conducted in well 299-W27-2 on November 4 and 5, 1992. Following the slug tests, a stepped, constant-discharge and recovery test was conducted. The test data and interpretation are included in Appendix D.

3.0 REFERENCES

WHC, 1988, *Environmental Investigations and Site Characterization Manual*, WHC-CM-7-7, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990, *Interim Status Groundwater Monitoring Plan for the 216-S-10 Pond and Ditch*, WHC-SD-EN-AP-018, Westinghouse Hanford Company, Richland, Washington.

WHC, 1991, *Generic Specification Groundwater Monitoring Wells*, WHC-S-014, Rev. 6, Westinghouse Hanford Company, Richland , Washington.

9313090.0580

9313090.0581

APPENDIX A

DRILLING AND CONSTRUCTION DATA

9413080.0582

CONTENTS

WELL CONSTRUCTION REPORT A-1
WELL SUMMARY SHEET A-3
BOREHOLE LOG A-6
GEOPHYSICAL LOGS A-27
SURVEY DATA REPORT A-33

9313090.0583

WELL CONSTRUCTION REPORT

KDR 1/19/93
SIGNATURE/DATE

Specification No. WHC-S-014 Rev No. 7

Ns 166764

Project W0124/ S-10 Ditch

Location South of S Tank Farm

Drilling Company Kaiser

Driller Gary Lydin and Gary Howell

Other (Companies) R.E.H., MCE,

Geologist(s) Brett Thompson / MCE
MD Sweeney - HEPCO N. Ballantyne Ebasco
KJ Swett - NACES - (ED-RAFUSE WHC)
Robert Edington - WHC

Well No. 299-W27-2 Temp. Well No

Coordinates N 133,670.63, E 566,908.55

Casing Elev. 677.11' Ground Elev. 674.10'
677.13 Top of Hydrostatic plate.

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-014 5.2, 5.3, 7.5 ETI

		Initials	Date
Rotary	Air 181.5 - 435 Mud 376-414.5 (reamed)	MOS / MOS	11/20/92 / 12/9/92
Cable Tool	D 0-181.5 H	BRT	10-6-92
Drilling Fluid	Raw H_2O ①	BRT	10-12-92
Other			

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	40 - 181.0	10/22/92
Gross Gamma	170 - 426.8	11/21/92
Gross Gamma	350 - 415	12/2/92
	-	
	-	

Completion Data

Drilled Depth 435.0'

Completed Depth ~~416.76'~~ 01-21-93 416.56

Date Started 10-6-92

Date Completed 12/18/92

Static Water Level/Date 215.9'/11-2-92
217.5'/12-15-92

Aquifer Testing

Type Instantaneous Slug

Flow Meter I.D. No. NA

Cal. Due Date NA

Length of Test 1 hour

Volume Pumped NA

Drawdown NA

Date of Test BRT 12-18-92

Completion Results

Cleaning

Verification Method Visual Observation & Doc. Review

Criteria WHC-S-014 4.22, 7.6, 7.7 ETI 5.4
WHC-CM-7.7-5.4

	Initials	Date
Drilling Tools/Rig	BRT	10/6/92
Temporary Materials	BRT	10/6/92
Permanent Materials	MOS	11/24/92

Screen

Type	Length	Slot Size
304 Schedule 5 Stainless	10.14	0.20
304 Schedule Stainless w/end	10.42	0.20

Depth(s) ELL ~~416.76~~ 416.56 - ELL ~~415.76~~ 406.14 21-01-93

Verification Method Steel Tape Measurement

Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.2.1

Initials MOS MOS Date 11/24/92 12/9/92

Material Storage/Packing

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Initials	Date
Mtl. Handling/Storage	MOS	11/24/92
Material Packing	MOS	11/24/92

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Col Niven Mud 2N.O Nickel	MOS / MOS	11/30/92
Lubricants	Well guard	BRT	10/6/92

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 8.2

Initials MOS/MOS Date 11/22/92 12/9/92

A-6000-436 (09/90)

WELL CONSTRUCTION REPORT
(continuation sheet)

Casing (permanent)

Type	Size	Placement
TP304 SS SCH.5	4"	416.56 - +3.7
		-
		-
		-

Verification Method: MEASUREMENT W/STEEL TAPE
Criteria: WHC-S-014 4.2.1 4.2.4, 4.2.5, 12.2.1
Initials: WMS Date: 12/9/92

Well Protection

Verification Method: Visual inspection w/tape
Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	ECL	12/18/92
Protective Casing	ECL	12/18/92
Site Restored	ECL	12/18/92
Cap, Hasp and Lock	ECL	12/18/92
Surface Pad	ECL	12/18/92

Annular Seal/Filter Pack (* SEE BELOW)

Verification Method: MEASUREMENT W/STEEL TAPE Criteria: WHC-S-014, 4.2.6, 4.2.7 4.2.8, 4.2.9

Type	Interval	Volume	Initials	Date
WMS 12/18/92 4" BENTONITE PLUG	428.2 - 420.0	2.07 cu ft	WMS	12/18/92
10/20 SAND	420.0 - 399.4	5.35 cu ft	WMS	12/18/92
BARRIER HOLE PLUG	399.4 - 389.4	2.76 cu ft	WMS	12/18/92
PORTLAND CEMENT	389.4 - 374.5	~~19.13~~ 34.70 cu ft WMS 12/18/92	WMS	12/18/92

Well Survey/Labeling

Verification Method: Review of survey report
Criteria: WHC-S-014

	Initials	Date
Measurement Point/Surveyed	JB	1/8/92
Protective Casing/Brass Cap Surveyed	ECL	12/18/92
Well Number Stenciled	ECL	12/18/92
Brass Cap Labeled	ECL	12/18/92

Pump Installation

Verification Method: Visual observation
Criteria: WHC-S-014 4.2.11, 4.2.3

	Initials	Date
Pump Decon/Prep	BRT	12-18-92
Installed	BRT	12-18-92
Pump Tested	BRT	12-18-92

Other (initial if performed)

_____ Well Abandonment _____ Downhole TV Inspection ECL Complete As-Built Diagram, Driller's/Geologist's Logs

BRT 12-18-92 Well Development

Comments/Remarks: ① Columbia River Raw water may be used intermittently during Drilling.

* BENTONITE SLURRY	374.5 - 221.8	~~68.54~~ 113.3 cu ft WMS 12/18/92	WMS	12-18-92
BENTONITE CRUMBLES	221.8 - 9.7	~~220.1~~ 244.95 cu ft	WMS	12/18/92
PORTLAND CEMENT	9.7 - 2.0	~~15.40~~ 15.42 cu ft WMS 12/18/92	WMS	12/18/92

Reviewed By (Sign/Print Name): Kent D Reynolds / Kent D Reynolds Date: 1/19/93

A-6000-436 (09/90)

WELL SUMMARY SHEET

Boring or Well No. 299-W27-2

Sheet 1 of 3

Location South of S tank farm

Project WOLTH / S-10 Ditch

Elevation 674' ground surface

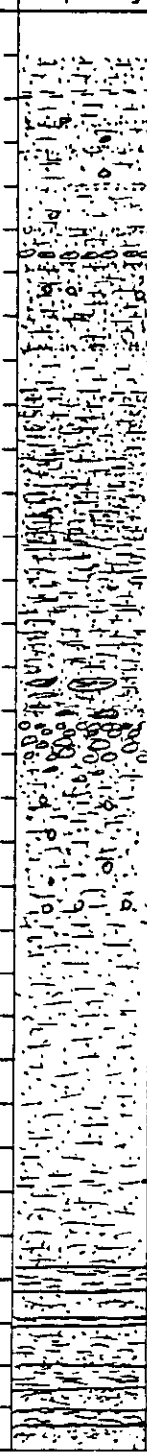
Drilling Contractor K.E.H.

Driller G. Howell, G. Lydin

Drilling Method and Equipment Cable tool B.E. 22W

Prepared By [illegible] / Brett Thompson (Sign/Print Name) Date 10-6-92

Reviewed By Edward C. Rafuse (Sign/Print Name) Date 12/20/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
		0		Silty Sand with occasional pebble. (0-76')
		5		" "
15" ϕ C.S Casing set at 985		10		" "
		15		" "
2" ϕ C.S Casing set at 179.88		20		Pebble or Gravell lense
2" ϕ CS CASING SET @ 302.92		25		Silty Sand
		30		" "
3" ϕ CS CASING SET @ 426.56		35		" "
		40		" "
4" STAINLESS STEEL PERMANENT		45		" "
CASING - SET @ 416.56'		50		" " Coarse SAND LENSE @ 51'
SCREENED INTERVAL SET		55		" "
@ ~~415.46~~ 416.56 - ~~405.46~~ 406.14		60		" "
STICKUP = 3.7 W/CAP ON		65		" "
12/05/92.		70		silt clay ripup clasts
		75		silty Sandy Gravel - (76'-79')
		80		Gravel silty Sand (79'-97')
		85		" " "
		90		" " "
		95		silty Sand (97'-139')
		100		" "
		105		" "
		110		" "
		115		" "
		120		" "
		125		" " silty clay lense @ 125'
		130		" "
		135		silt clay (139'-143')
		140		silty Sand
		145		" " SILT/CLAY LENSE @ 149'
		150		(139-173)" Rhythmic Tacket beds
		155		or Alternating silt to Sand Sequences

9313090.0586

WELL SUMMARY SHEET

Boring or Well No. 299-W27-2

Sheet 2 of 3

Location South of S Tank Farm

Project W017H / S-10

Elevation 674' ground surface

Drilling Contractor K.E.H

Driller G. Lydin

Drilling Method and Equipment Cable tool BE. 22W

Prepared By [signature] (Sign/Print Name) Date 11/3/92

Reviewed By Edward C. Rogers (Sign/Print Name) Date 12/20/92

CONSTRUCTION DATA Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA Graphic Log	Lithologic Description
		165		Silt clay
"Ø CS CASING SET @ 179.88'		170		Sandy silt clay
		175		Silty Sand/Gravel ~~@173'-174' BRT~~ (Caliche from 173'-174')
"Ø CS CASING SET @ 303.82		180		" " "
		185		SILTY GRAVELLY SAND
		190		SILTY SANDY GRAVEL
		195		GRAVELLY SAND
		200		" "
		205		" SAND
		210		~~BRT~~ "
SWL @ 217.5 12/15/92		215		~~BRT~~ "
		220		SAND SWL @ 217.5 ON 12/15/92
		225		GRAVEL LENSE
		230		silty sandy GRAVEL
		235		SILTY SANDY GRAVEL
		240		" " "
		245		GRAVELLY SAND
		250		SILTY SANDY GRAVEL
		255		" " "
		260		GRAVELLY SAND.
		265		SILTY SAND
		270		GRAVEL.
		275		GRAVELLY SAND w/ GRAVEL
		280		INTERBEDS
		285		" "
		290		" "
		295		" "
		300		" "
		305		GRAVEL.
		310		"
		315		"
		320		"

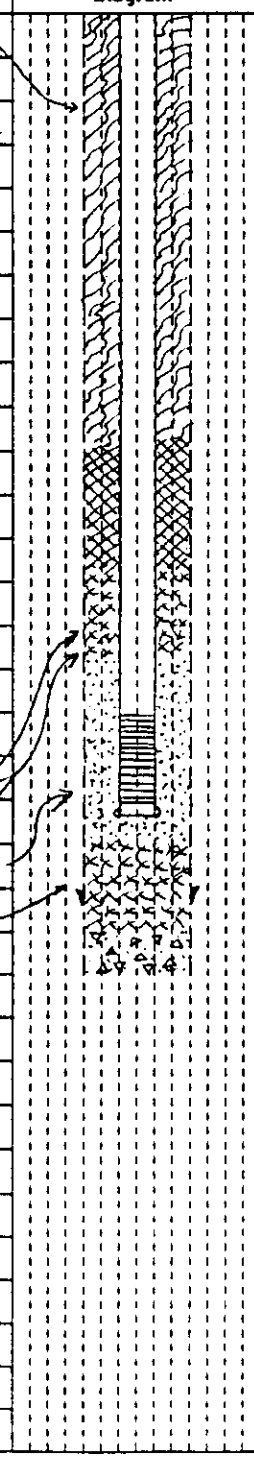
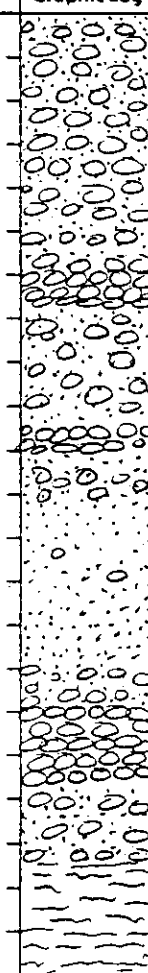
9313090.0587

WELL SUMMARY SHEET

Boring or Well No. 299-W27-2

Sheet 3 of 3

Location: South of "S" Tank Farm
Project: W017H/S-10
Elevation: 674' ground surface
Drilling Contractor: Jensen
Driller: D. Mingo
Drilling Method and Equipment: CP650/Air Rotary
Prepared By: MDS Weeney (Sign/Print Name) Date: 12/18/92
Reviewed By: Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date: 12/20/92

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
3" ⌀ CS CASING SET @ 426.56		330		Sandy Gravel.
		335		" "
		340		" "
		345		" "
		350		" "
		355		Gravel.
		360		
		365		Sandy Gravel.
		370		" "
		375		Gravel.
		380		Sandy Gravel.
		385		" "
		390		Gravelly Sand.
Screen set @ 416.56 to 406.14		395		" "
Portland Cement 9.7'-20'		400		Sand
Bentonite Crumbles (8-20) 221.8-9.7		405		Sandy Gravel.
Bentonite Slurry 374.5-221.8		410		Gravel
Portland Cement 389.4-374.5		415		"
Baroid Hole Plug 399.4-389.4		420		Sandy Gravel.
10/20 Sand 420 - ~~399.4~~ 420.0 - 399.4		425		" "
Bentonite Plug 428.2-420.0		430		Clay/Silt
Hole collapsed to 428.2		435		
		440		TD = 435.0' 11/20/92
				Redrilled from 376' to 414.5
				12/4/92 - 12/9/92 w/ 13E22W
				Rig # V-12.

A-6000-384 (04/90)

9313090.0588

VALIDATED
KDR 1/19/93
SIGNATURE/DATE

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 1 of 21

Location: South of S tank farm
Project: W017H / S-10 ditch
Elevation: 674' ground surface (g.s.)
Drilling Contractor: K.E.H
Driller: G. Lydin and G. Howell
Drilling Method and Equipment: B.E. 22W Cable tool
Prepared By: Brett Thompson / [signature] (Sign/Print Name) Date: 10/6/92
Reviewed By: Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date: 10/08/92

Depth (0')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
		DB		0-2' wind Blown ~~Eaolian~~ Eolian surficial top	Casing size NA. Drill
				soil a silty Sand. 60% Sand 40%	rate 5'/10 min vadose
				Silt. 80-90 F. Sand 10-20% Coarse Sand	Zone Dry.
				2.5y 6/3 dry light yellow Brown	12 Drive Barrell
				poor sorting. Angular to subround	
				mineralogy 20% Basalt 25% qtz	
				5% feldspar. moderate reaction	
				to HCL. lightly cemented.	
	2 lith 1 HPT 1 CaCO3 + H2O				
5'				5' Sample at 1053 10/6/92.	Sunny warm weather.
				(2'-34') silty Sand w/occasional pebble	Drillers add 10.55 of [illegible]
				55% Sand 45% Silt	C.S Casing, 5/10' min.
				20% C.S 100% Silt	
				20% M.S	(Hanford sediments)
				10% F.S	Hanford rithmite appear
				2.5y 6/3 dry light yellow brown	to start at ~4.5'.
				5y 5/4 wet olive	
				poor to moderate sorting Angular to	
10'	2 lith 1 HPT 1 CaCO3 + H2O			subround subdiscoidal to prismoidal	
				Mineralogy: 40% Basalt 30% qtz	10' Sample at 1315 10/6/92
				30% feldspar and undifferentiated volcanics	12" Drive Barrell
				5% feldspar. Moderate reaction to HCL.	Dry vadose zone
				Sand Silt couples in alternating	ecologic
				sequences with Sand (Rithmites)	Rythmites
				occasional small and medium	
				pebble lightly cemented	10/7/92 Down sized
				10' Sample at 1315 10/6/92 12"	Casing to 12" C.S
				Drive Barrell Dry vadose zone.	Casing 10" Drive Barrell
15'	2 lith 1 HPT 1 CaCO3 + H2O			Rithmic Black Hanford Sands (10'-20')	vadose zone. Sunny
				15' Sample at 0831 10/7/92	to partly cloudy cold
				silty Sand with less silt	weather.
				20% Silt 80% Sand	
				100% silt 10% GS	
				50% M.S	Rithmic Black
				20% F.S	Hanford Sands 10'-
				20% V.F.S	20'.
				rithmic Sand Silt Sequences	
	1 HPT 2 lith 1 CaCO3			continue. No reaction to HCL	
20'				Color 2.5y 4/2 dry dark grey Brown	

Mineralogy did not change 4.0

A-6000-382 (04/90)

9313090.0589

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 2 of 21

Location South of S tank Farm
Project W017H / S-10 ditch
Elevation 674' (g.s.)
Drilling Contractor K.E.H.
Driller G. Lydin, G. Howell
Drilling Method and Equipment BE 22W cable tool
Prepared By Brett Thompson / Brett Thompson (Sign/Print Name) Date 10/7/92
Reviewed By Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 10/10/92

Depth (20')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
		DB		20' Sample at 0856 10/7/92	B.O.C ≈ 18', 5ft/25min
				Minor lith change 90% V.F.S	12 C.S casing 10" Drive Barrel
				and fine sand. 10-20% silt.	Vadose Zone
				No reaction to HCL Angular	
				mineralogy 25% Basalt 50% Qtz	
				25% undifferentiated volcanics and	
				felsics. ~~No react~~ Bot color 2.5Y 4/2	
				Dry (2.5Y 3/2 very Dark grey Brown	
	2 lith 1 HPT 1 Calcgt H2O			wet) Dry dark grey Brown well sorted.	
25'				25' at 1122 10/7/92 Sample	B.O.C 24 5ft/28min
				Same as last observation.	" "
				Coarse sand lense at 22'	"
				medium and fine pebble lense	
				at 23'.	
				Gravelly and coarse sand lense at	
				28'.	
	2 lith 1 HPT 1 Calcgt H2O				
30'				30' Sample at 1255 10/7/92	B.O.C ≈ 28' 5ft/30min
				No change in lithology.	" "
	2 lith 1 HPT 1 Calcgt H2O				"
			volcanic ash	volcanic ash layer at 32'	weather over cast
	1 HPT 2 lith 1 Calcgt H2O			(34' to 37') silty Sand	B.O.C ≈ 35' "
35'				15-20% Silt 80-85% Sand	"
				100% silt C.S ≈ 60%	" Drill rate 5'/30min
				M.S ≈ 25%	over cast and cloudy
				F.S ≈ 15%	
				Color 2.5Y N5/ to 5/2 gray Brown Dry.	
				poor sorting Angular to Subround	Vadose Zone Damp.
				Mineralogy: 30-35% Basalt 40% Qtz	
				25% to 30% ~~undifferentiated~~ volcanics	
				No reaction to HCL → UNDIFFERENTIATED	
				35' Sample at 1430 10/7/92	
40'				Color wet 2.5Y N3 to 4/3 Dark grey to olive	

A-6000-382 (04/90)

9313090.0590

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 3 of 21

Location South of S tank farm

Project W017A/S-10 ditch

Elevation 674' g.s.

Drilling Contractor K.E.A.

Driller G. Hydin, G. Howell

Drilling Method and Equipment B.E. 22W cable tool

Prepared By Brett Thompson / Brett Thompson (Sign/Print Name) Date 10-5-92

Reviewed By Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 10/18/92

Depth (40')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1HPT 2lith 1CaCO3+H2O	DB		(37-40) fining upward sequences of VCS to F.S. to silt	B.O.C = 40.0' Drillrate 5ft/58 min. 12" C.S
				(40-59) silty Sand	Casing 10" Drive Darrell
				15-20% silt ~~80-85% V.F.S~~	widose zone Damp.
				color wet 2.5Y 4/2 dry 80-85% Sand	overcast cold weather.
				Dry 2.5Y 5/2 Dry 70. F.S.	
				well sorted 30. V.F.S.	40' sample at 1022 10/8/92
				Subangular subround	
45'	1HPT 2lith 1CaCO3 + H2O			mineralogy: 20% Basalt 30%	
				undiff volcanics 50% Qtz	
				moderate to strong reaction to	
				HCL	BOC 45 Drillrate 5'/
				45' sample at 1050 10/8/92	32 min. "
				Same as last observation	" "
50'	1HPT 2lith 1CaCO3+ H2O			50' Sample at 1115 10/8/92	BOC = 46' Drillrate
				No change Same as	5'/20' min. " "
				last observation	" "
				Coarse grained Sand lense	
				Coarse Sand lense	
				fine silt lense w/clay	
55'	1HPT 2lith 1CaCO3+ H2O			55' Sample at 1408 10/8/92	B.O.C. = 55' Drillrate
					5ft/40 min "
					" "
				minor change 3% mica flakes.	
				Silty Sand see next page for description.	

A-6000-382 (04/90)

9313090.0591

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 4 of 21

Location: South of S tank farm
Project: W017H / S-10 ditch
Elevation: 674' g.s.
Drilling Contractor: K.E.H.
Driller: G. Howell
Drilling Method and Equipment: B.F. 22W Cable tool
Prepared By: [signature] / Brett Thompson (Sign/Print Name) Date: 10-4-92
Reviewed By: Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date: 10/18/92

Depth (60')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 HPT 2 lith 1 CaCO3+H2O	DB		Silty Sand (59-64 & 76')	60' Sample at ~~[illegible]~~
				5-15% Silt 85-95% V.F.S	1020 on 10-9-92
				~~[illegible]~~	B.O.C = 58 ft Drillrate
				Color wet: 2.5Y 4/4 olive Brown.	5'/32' min 12" GS
				Dry: 2.5Y 6/3 light yellow Brown	Casing Damp vadose
				well sorted: well round to Angular	Zone Sunny warm weather
				Mostly well round	
				Mineralogy: 53% Qtz. 15% magnitite	
	1 HPT 2 lith 1 CaCO3+H2O			7% Biotite 10% Muscovite	
65'				15 feldspar	
				moderate reaction to HCL.	
				65' Sample at 1225 on 10-9-92	B.O.C = 67' Drillrate
				Slight lithology change	5'/20 min "
				5% Silt 95% fine Sand	" "
				increase in Basalt mineral 10%-	Vadose Zone dry
				20% very light reaction to	
				HCL Lithmic fining upward	
				sequences continue.	
	1 HPT 2 lith 1 CaCO3+H2O			Silt clay lease at 69'	
70'					
				70' Sample at 1348 on 10/9/92	BOC = 68' Drillrate
				Same as above 60' Sand	5' /19 min vadose
				see description	Lightly Damp or
				72' Silt clast and shallow	Moist
				cross bedding lightly cemented	
				to well cemented. Silt clay coupled	
				micro laminae within the silt	
				clast. (Ripup Clasts)	
	1 HPT 2 lith 1 CaCO3+H2O				
75'				75' Sample at 1435 10/9/92	B.O.C = 73 ft.
				Same as 60' description	" "
	1 HPT 2 lith 1 CaCO3+H2O			No change.	" "
				76' Sample 1454 10/9/92	B.O.C. = 77 ft.
				Transition to Silty Sandy Gravel	Vadose Zone dry
				3-5% Silt 25-40% Sand 50-60% Gravel	Stop drilling Shift end 76'
				100% Silt. 40% C.S 40% C.P	
				40% M.S 40% M.P	
				20% F.S 20% F.P	
80'				continued on the next page.	

A-6000-382 (04/90)

9313090.0592

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 5 of 21

Location: South of S Tank farm
Project: W017A / S-10 ditch.
Elevation: 674' g.s.
Drilling Contractor: K.E.A.
Driller: G. Howell
Drilling Method and Equipment: wellmate 1250 Cable tool
Prepared By: Brett Thompson / Brett Thompson (Sign/Print Name) Date: 10/9/92
Reviewed By: Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date: 10/18/92

Depth (80')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1HPT 2lith 1CaCO3+H2O	DB		color wet: 2.5Y 4/4 olive Brown.	10/12/92 B.O.C.=76
				Sand Dry: 2.5Y 6/3 light yellow Brown	12" ø C.S. Casing
				poor sorted well rounded to	10" ø Drive Barrel
				subrounded pebbless subpriomodel	Vadose zone
				mineralogy of the pebbles	sunny warm weather
				75% Basalt 25% Felsic volcanics	changing to partly
				mineralogy Sand: 50% Qtz	cloudy.
				20% Basalt 30% undifferentiated	10-13-92 Situation the
85'	1HPT 2lith 1CaCO3+H2O			volcanics. Strong reaction	same as yesterday partly
				to HCL loose mica flakes.	cloudy and cool.
				This description is valid (76'-79')	
				Carbonate Cemented.	
				Transition. (79-80) Transition	80' Sample at 0857 10/13
				~~Gravel silty Sand~~ (Gravel silty Sand)	92 12 ø C.S. Casing
				5-10% silt 90 to 95% V.F.S	B.O.C.=79' 10"
				1-2% medium basalt pebbles.	Drive Barrel
				color 2.5Y 4/4 olive brown, wet.	lighty moist vadose zone.
				2.5Y 6/3 light yellow Brown Dry.	
90'	1HPT 2lith 1CaCO3+H2O			poor sorted. pebbles subround	
				to subangular. Sand subround	85' Sample at 0950
				to subangular. well round Qtz.	10-13-92 B.O.C at
				mineralogy of the Sand: 65% Qtz	84.0' " "
				5 feldspar 2% biotite 2-3% muscovite	" "
				10-15% magnitite. 10% undifferentiated	Drill rate 5 ft/1 hour.
				volcanic minerals. This description	
				valid from (80' to 97').	90' Sample at 1252
					10/13/92 B.O.C=88'
				10% increase in Gravel at 83'.	
95'	1HPT 2lith 1CaCO3+H2O			85 ft. ~~loose~~ lose pebbles. Reaction	
				to HCL Decreases.	
				90' grain size change to fine Sand.	
				w/ 3 to 5% Coarse Sand.	
				Silty SAND	
				95' Sample at 1345 9/13/92	B.O.C = 93'
				Same as last observed	5 ft / 40 min
				~~100' Sample at~~	
				silt clay lense at 99.5'	
				crossbeds. Cemented. strong Re HCL	

A-6000-382 (04/90)

9313090.0593

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 6 of 21

Location: South of S tank Farm
Project: W017H / S-10 ditch
Elevation: 674' g.s.
Drilling Contractor: K.E.H.
Driller: G. Lydin
Drilling Method and Equipment: Wellmaster Cable tool 1250
Prepared By: [signature] (Sign/Print Name) Date: 10-12-92
Reviewed By: Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date: 10/18/92

Depth (100')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 HPT 2 lith 1 Calcast H2O	DB		100' Sample at 0828 10/14/92	99.0' 12" c.s. Casing
					Drillrate = 5'/45' min
				Cemented Coarse Sand inter Bed.	10" drive Barrel Vadose
				Ripup clast w/ silt clay.	Zone moist to lightly
				Silt clay inner bed 3mm thick.	Moist weather Sunny
				increasing cementation.	and Breezy.
				Cement is SiO2 No reaction	
				to HCL.	
105'	1 HPT 2 lith 1 Calcast H2O				
				105' Sample at 1020 10/14/92	B.O.C. at 104'
				loose Ripup clasts	Drillrate Not Available.
					" "
				Silty Sand with silt clay	" "
				lenses and Rip up clasts (97'	
				to 139') see Silt sand description	
				below.	
				Silt clay lense	
110'	1 HPT 2 lith 1 Calcast H2O				
				110' Sample at 1254 10/14/92	B.O.C. = 109'
				silty Sand continues.	Drillrate 5'/35 min
					Moist vadose zone
				Silty Sand (97'-139')	
				15-20% Silt 85-50% Sand	
				100% silt/~~clay~~ 10% V.F.S	
				40% F.S	
				Color: wet: 2.5y 5/4 light olive brown	
				dry: 2.5y 6/3 light yellow brown	
115'	1 HPT 2 lith 1 Calcast H2O			moderate sorting Angular to Sub	
				angular. Subprismoidal.	
				mineralogy: 77% Qtz 5% Mica	
				10% Basalt 3% Feldspar 5% Undiff volc/min	
				light to strong reaction HCL	
				No reaction to HCL at 110'	
				~~115'~~	
				115' Sample at 1345 10-14-92	B.O.C. 114' moist Vadose
				10% increase in Silt 50% increase in	" "
				~~115'~~ fine Sand	" "

A-6000-382 (04/90)

9313090.0594

BOREHOLE LOG

Boring or Well No. 299 - W27 - 2

Sheet 7 of 21

Location South of S tank Farm

Project W017H / S-10 ditch

Elevation 674' q.s.

Drilling Contractor K.E.H.

Driller G. Lydin

Drilling Method and Equipment Wellmaster 1250 cable tool

Prepared By Brett Thompson (Sign/Print Name) Date 10-14-92

Reviewed By Edward G. Rafar (Sign/Print Name) Date 10/18/92

Depth (120')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1HPT 2lith 1CaCO3	DB		120' at 0814 10/15/92	B.O.C 118.0'
				silt clay lenses in couples	12 C.S. Casing
					10" Dri-Rite Barrell
					moist vadose zone
				coarse grained Sand lense	
				silty Sand same as	
				description on page 6	
	1HPT 2lith 1CaCO3 H20				
125'				silt clay lense 4mm thick (couple) 125' sample at 0930 10/15/92	B.O.C = 124'
				V.F.S and silt clay lense	" "
				.02' Thick with shallow inner beds	" moist vadose.
				over bank clay silt Hackle tocture	
				looks like a paleo sol, silt clay	
				couples with V.F.S inner beds.	
				90-100% Silt Clay 0-10% Sand	125' sample on 10/15/92 @ 0920
				well sorted Color 2Wet 10YR 4/2	
	1HPT 2lith 1CaCO3 H20			Dark Brown Dry 10YR 5/2 grayish brown	
130'				mineralogy NA strong reaction to	
				HCL	B.O.C 128'
				130' sample on 10/15/92 @ 1300	
					" "
				silt lense Typical	
				Rythmic Alternating silt	
				clay and Very fine Sand silt	
	1HPT 2lith 1CaCO3 H20			as expected of The Touchet	
135'				formation or Touchet Beds.	
				135' sample on 10/15/92 @ 1330	B.O.C. 135' D. Ante 5'
					30 min.
				silt lense	
				silt lens	

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 8 of 21

Location 200 W / S-10 ditch

Project W0174 / S-10 ditch

Elevation 674' g.s.

Drilling Contractor K.E.H

Driller G. Lydik

Drilling Method and Equipment Wall mast / 250 Cable Tool Drill.

Prepared By [signature] / Brett Thompson (Sign/Print Name) Date 10-16-92

Reviewed By [signature] Edwin C. Rafferty (Sign/Print Name) Date 10/30/92

Depth (140')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 HPT 2 Lith 1 CaCO3	DB		Silt or Sandy Silt (139'-143')	B.O.C 139', Drill rate
				10% V.S.S. 90% Silt/clay	100% available. #5-12'8
				limonite stainig ≈ 30% clay	C.S. Casing, 10" drive
				or laccgany banding. ≈ 70% Silt	Barrell Moist vadose
				Color: wet: 2.5Y 4/3 olive brown	zone.
				Dry: 2.5Y 6/3 light yellowish	
	1 HPT 2 Lith 1 CaCO3 H2O			well sorted to moderate sorting	140' Sample 0820 10/16
				Subrounded to Rond otz sand. mineralogy	92
	1 CaCO3 + H2O 4 Lith 1 HPT	ST		Mute 5 mica 3 feldspar 139 Kmatics	
145'				Intermediate to strong reaction to HCL	
				Silt/clay 145' Sample at 0850	B. oc. = 144'
				ST-144.92'-146.92' 9/16/92	
		DB			Note vadose zone
				~~V.F.S. V.F.S. Silt & Silt~~	is intermittently
				~~V.F.S.~~	moist to lightly
				→ Silty Sand Sand & V.F.S.	moist Silty Sands
				Silt/clay Same as (139'-143')	
	1 HPT 2 Lith 1 CaCO3 H2O			← silty Sand / see 97' to 139'	
150'				description is The Same.	
					B.O.C = 148
				← V.F. Sand Silt (see 97' to 139')	150' Sample at 1311
				for Description.	10/16/92
				Rythmic fining upward	
				Sequences of V.F.S and silty	
				Clay Beds or Alternating lenses	
				of Silt and Sand and Silt clay	
				overbank or Touchet Beds	
	1 HPT 2 Lith 1 CaCO3 + H2O				
155'				155' Sample 1355 on 10/16/92	B.O.C. 152' @ 1355
				Clastic Dike of fine sand	10-16-92.
				Cutting Verticle Through a Horizontal	Drill rate 5'/44
				Silt Clay bed.	
				≈5% F.S. ≈60% silt ≈35% Clay.	
				→ Sand within clastic Dikes	10-19-92
				limonite staining and laccgany	Vadose Zone
				banding.	very moist at 158'
	1 HPT 2 Lith 1 CaCO3				

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 9 of 21

Location 200 W / S-10 ditch

Project W017H / S-10 ditch

Elevation 674' g.s.

Drilling Contractor K. E. H.

Driller G. Lydin

Drilling Method and Equipment Wellmaster/1250 Cable tool.

Prepared By [signature] (Sign/Print Name) Date 10/16/92

Reviewed By Edward C. Rafuse [signature] (Sign/Print Name) Date 10/20/92

Depth (160')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 CaCO3	DB		160' Sample at 0856 10/19/92 SILT/CLAY	BOC = ~~15~~ 160'
					SFT/52 min. 12"Ø
					C.S. Casing, 10" Drive
				Paleo soil Horizon? Hackle texture	Barrell Vadose zone
				root casts? limonite staining	moist to lighty moist
				← Silt/Clay sediment Horizontle	in The Sand inner Bed
				fracturing along interbedding.	
				Fine Sand inter beds	
165'	1 CaCO3 + H2O 2 lith 1 HPT			165' Sample at 0945 10/19/92	B.O.C = 164 "
					" "
				Rythmic Touchet Beds Cont.	
				F.S / Silt Clay packages	
				In fining upward alternating	
				Sequences Interval ~~starts at~~	
				of Those Silt/Clay F.S.	
				packages start at around	
	1 HPT 2 lith 1 CaCO3 + H2O			(115'-173')	
170'				Packages can be described as follows.	
				Sandy Silt/Clay	170' Sample at 1250
				0-10% Sand 90% Silt clay	10-19-92 BOC = 168
				Color: 10YR 5/2 wet : 10YR 6/2 dry	Drillrate 5'/30 min
				moderate sorting Angularity NA.	
				mineralogy: Clay 30%, Sands	
				87% Qtz 3-5 mica 5% feldspar 39 mafics	173' Sample at 1330
				Silty Sand: ~~(Caliche 173'-174')~~	10/19/92 lith change
				70%-80% F.S 20-30% Silt.	B.O.C = 171.0'
	1 HPT 2 lith 1 CaCO3 + H2O			Color: 2.5Y 5/3 wet 2.5Y 7/2 Dry	
175'				moderate to poor sorting Angular	
				to Sub round. mineralog	175' Sample 0811
				80 Qtz 3-5% mica 5% feldspar	10/20/92
				10% mafics	B.O.C = 174.0
				Both Bed types React moderate to	
				well to H.C.L.	
				169 decrease in silt grain size	
	1 HPT 2 lith 1 CaCO3			Change to medium Sand inter beds.	
				Coarsening.	
		Split Spoon		Plio Pliestocene Calichea (173'-174')	

A-6000-382 (04/90)

9313090.0597

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 10 of 21

Location 200 W/S-10 ditch

Project W027H/S-10 ditch

Elevation 674' g.s.

Drilling Contractor K.E.H.

Driller Cabeston

Drilling Method and Equipment Well Master 1250 Cable Tool

Prepared By Brett Thompson/Brett Thompson (Sign/Print Name) Date 10-20-92

Reviewed By Edward C. Rogers (Sign/Print Name) Date 10/20/92

Depth (180')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 Cabeston 3 phase	split Spoon		lithology change at 173' can be described as follows.	180' of 12.53 10/19/92
				Silty Sandy Gravel	Casing 12.5 10" Dia
				5-10% Silt 95% Sand 55% Gravel	Barrell 1/4 4" Grind
				100% silt 10% C.S. 70% C.P.	Undose Zone
				20% M.S. 20% M.P.	Split Tube 179.5-181.5
				70% F.S. 10% F.P.	at 132' 10/20/92
				Color: Wet: 10YR 4/3 Brown.	
				Dry: 7.5YR 8/2 Pinkish white.	End of Cable tool
				poor sorting Angular to well	Drilling.
				Round Some of the pebbles are	
				ventifact in shape. Some are	
				subdiscoidal.	
				Mineralogy. 80% Basalt pebbles	
				20% volcanic felsic pebbles. Sand:	
				55% Qtz 10-15% feldspar 30% Basalt/mafic	
				pebbles are coated with caliche	
				Strong vigorous reaction to HCL.	
				179' lith change.	
				Silty Gravel Sand (179'-181.5)	
				10-20% Silt 40% Gravel 40-50% Sand	
				100% silt. 70% CP 10% C.S	
				20% MP 70% MS	
				10% FP 20% F.S	
				Color: wet: 10YR 5/3 Brown.	
				Dry: 10YR 6/6 Brownish yellow	
				poor sorted Angular to well Round	
				Sand Subangular.	
				Mineralogy: 60% Qtz 25% feldspar	
				15% mafics/Basalt	
				in a felsic silica cemented	
				matrix. Conglomerate almost a	
				Sand stone No reaction to HCL.	
				Pebbles are basalt. water is	
				slow to permeate it.	
				END OF CABLE TOOL	
				DRILLING	

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 11 of 21

Location: 200 W / South of S-10 Ditch
Project: W017H
Elevation: 674' g.s.
Drilling Contractor: Jensen
Driller: D. Mingo
Drilling Method and Equipment: Air Rotary / CP-650
Prepared By: Mo Sweeney / [signature] (Sign/Print Name) Date 11/2/92
Reviewed By: Edward C. Hafuse / Edward C. Hafuse (Sign/Print Name) Date 12/20/92

Depth 180 ~~181.5~~	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
				181.5-187 Same as 179 Silty Gravelly Sand.	~~180~~ 11-2-92
185'					185 @ 1624 10-30-92
	2 Lith 1 Rad 1 Cu Oz H2O	Air Rotary		187-192 Same as 179 But w/ increasing Pebble Gravel (50%)	
190'					190 @ 1647 10-30-92
				192-199 Gravelly Sand. Gravel: 25% Sand 75% Silt-trace. CP-10% CG-20% Color wet 2.5Y 5/4 Lt olive brown. MP-40% MG-35% Color dry 2.5Y 5/3 Lt olive brown. FP 50% FG-45% Gravel: mafic: 35%, felsic: 35%, Qtz: 30%; Sand: felsic: 60%, Qtz: 20%, mafic: 20% Angular-subangular-subrounded. Rounded No rxn to HCl.	
195'	1 Lith 1 Cu Oz. H2O 1 Rad				195 @ 0837 11-2-92

A-6000-382 (04/90)

9313090.0599

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 12 of 21

Location 200 W / SOUTH OF S-10-DITCH

Project W017H

Elevation 674' g.s.

Drilling Contractor JENSEN

Driller D. MINGO.

Drilling Method and Equipment AIR ROTARY / CP-650

Prepared By M A SWEENEY (Sign/Print Name) Date 11/2/92

Reviewed By EDWARD C. RAFFO (Sign/Print Name) Date 12/20/92

Depth (200')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description (Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl)	Comments (Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level)
				199-224 SAND	200@ 0849 11-2-92
				GRAVEL: 5 SAND 95 SILT. TRACE.	
				MP 80% CG-15 GRAVEL: 2.5Y 5/4 LT OLIVE BRN.	
				HP-906 MG-15 GRAVEL SAND: 2.5Y 4/3 OLIVE BROWN	
				60-70	
				GRAVEL: MAFIC 40% FELSIC: 40% QTZ: 20%	
				ANGULAR, SUBANGULAR SUBROUNDED. SAND	
	1 LITH			MAFIC 20% FELSIC: 40% QTZ: 40%, ANGULAR	
	1 CaCO3 - H2O			SUBANGULAR SUBROUNDED MILDLY REACTIVE	
205'	1 RAD			HCl. DRY.	
					205@ 0852 11-2-92
210'					210@ 955 11-2-92
215'	2 LITH				215@ 1047 11-2-92
	1 RAD				SHUT @ 215.9 ON 11-2-92
	1 CaCO3				
	H2O				

AIR ROTARY

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 13 of 21

Location: 200 W / SOUTH OF S-10 DITCH
Project: W017H
Elevation: 674' g.s.
Drilling Contractor: JENSEN
Driller: D MINGO
Drilling Method and Equipment: AIR ROTARY / CP650
Prepared By: MO SWEENEY / [illegible] (Sign/Print Name) Date: 11/3/92 11-11-92
Reviewed By: EDWARD C. RAFFOL / Edward C. Raffol (Sign/Print Name) Date: 12/20/92

Depth (~~225~~ 220')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
11-2-92					220 @ 1053 11-2-92
	1 LITH 1 COLOR [illegible] 1 RAD [illegible]			224-225 GRAVEL	225 @ 1107 11-2-92
225'				GRAVEL: 90% SAND: 10% SILT-TRACE.	
				CP-30% CG: 10% COLOR WET 2.5Y 3/2 VOIC GRAY BRN	
				MP: 30% MG: 40% COLOR DRY 2.5Y 3/2 VOIC GRAY BRN	
				FP-40% FG: 50%	
				MAFIC: 40%, FELSIC, 45%, QTZ: 10%	
				ANGULAR, SUBANGULAR, SUBROUNDED	
				NO RXN TO HCl.	
				225- ~~[illegible]~~ 11-11-92 SILTY SANDY GRAVEL	
		AIR ROTARY		GRAVEL: 55% SAND: 40% SILT: 5%	230 @ 1707 11-2-92
230'				CP-20 CG-20 COLOR WET 2.5Y 4/3 OLIVE BROWN	
				MP-40 MG-50 COLOR DRY 2.5Y 5/3 LT OLIVE BROWN	
				FP-40 FG-30	
				MAFIC: 25%, FELSIC: 60% QTZ: 5%	
				ANGULAR SUBANGULAR SUBROUND.	
235'	2 LITH 1 COLOR [illegible] 1 RAD [illegible]				237 @ 1300 11-10-92
				238-246 Gravelly SAND (25%	
				Gravel, 70% sand, 5% silt)	
				50% LOSCS wet: 2.5Y 4/3 (olive br)	
				30% MS Dry: 2.5Y 5/3 Lt olive Br.	
				20% FS-LFS	
				Saturated, subangular to subrounded	
				subprismoidal to subdiscoidal, 50% QTZ	
240'				30% Basalt, 20% Felsic, no rxn to HCl	

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 14 of 21

Location 200W South of S-10 Ditch

Project W017H

Elevation 674' g.s.

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary/CP 650

Prepared By K.J. Swett [signature] (Sign/Print Name) Date 11-12-92

Reviewed By Edward C. Rafer [signature] (Sign/Print Name) Date 12/20/92

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
240					240 @ 1325 11-10-92
245				246-253 Silty Sandy GRAVEL gs at 225-238 FT	245 @ 1345 11-10-92
	2 bits 1 culoz. Hg 1 no 11-10-92				
250		4 in Rotary			250 @ 1435 11-10-92
				253-258 Gravelly SAND gs at 238-246 FT	
255					255 @ 1450 11-10-92
				258-266 SL Silty SAND (5% Gravel 85% Sand, 10% silt) 50% vcs-cs wet: 2.5Y 4/3 (olive Br) 30% ms Dry: 2.5Y 5/3 (L. Olive Br) 20% fs-vfs saturated subangular to subrounded, subdiscoidal to subprizmoidal, 50% QTZ, 30% Basalt, 20% Gel/SiC, no rxn to HCl	
260					

A-6000-182 (04/90)

9313090.0602

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 15 of 21

Location 200W south of S-10 Ditch

Project W017H

Elevation 1.74' g.s.

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary CP 650

Prepared By K.J. Smith [signature] (Sign/Print Name) Date 11-12-92

Reviewed By Edward C. Rafuse [signature] (Sign/Print Name) Date 12/20/92

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
260					260 @ 1512 11-10-92
265					265 @ 1535 11-10-92
				266-268 GRAVEL (90% Grav., 10% sand, trace silt)	crushed rotary cuttings: cannot tell gravel sizes.
				33% Basalt 33% Qtz and Qtzite 33% Felsic	
	2 with 1 calcg-ofs [illegible]	Air Rotary			
270				268-292 Gravely SAND C 25% Gravel, 70% sand, 5% silt	270 @ 1655 11-10-92
				50% vcs-cs wet: 2.5Y 4/3 (olive brn)	
				30% ms Dry 2.5Y 5/3 (Lt olive Br)	
				20% fs-vfs	
				Saturated subangular to subrounded subprismoidal to subdiscoidal	
				50% Qtz, 30% Basalt, 20% Felsic No rxn to HCl	
275				272-275 as indicated by hard drilling	
				~~273-274~~ Gravel Interbed as at 266-268	275 @ 0743 11-11-92
280					

A-6000-382 (04/90)

9313090.0603

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 16 of 21

Location 200 West south of S-10 Ditch

Project W017H

Elevation 674' g.s.

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary CP 650

Prepared By K.J. Swett [signature] (Sign/Print Name) Date 11-12-92

Reviewed By Edward C. Rafuse [signature] (Sign/Print Name) Date 12/20/92

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
280					280 @ 0825 11-11-92
285				286-288 Gravel Interbed 95	285 @ 0840 11-11-92
				9+ 266-268	
290	2 LITH 1 colog- [illegible] 1 [illegible]	Air Rotary			290 @ 0950 11-11-92
				292-322 GRAVEL (90% Grav	
				10% Sand, trace silt)	
				Med. pebble to cobble GRAVEL	
				well rounded to rounded	
				33% Basalt 33% Qtz and	
				Qtzite, 33% Felsic	
295					295 @ 1105 11-11-92
300					300 @ 1125 11-11-92

9313090.0604

A-6000-182 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 17 of 21

Location 200 West south of S-10 Ditch

Project W017H

Elevation 634' g.s.

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary CP650

Prepared By K.S. Swett [signature] (Sign/Print Name) Date 11-13-92

Reviewed By Edward C. Rafuse [signature] (Sign/Print Name) Date 12/20/92

Depth (Feet) 200	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
				292 - 322 Ft. GRAVEL (90% Gravel, 10% Sand, trace silt med. pebble to sm. cobble GRAVEL well rounded to rounded, subdiscoidal to subprismoidal 33% Basalt, 33% Qtz and Qtzite 33% Felsic	304 Ft @ 1215 11-11-92
305					
	2 LITH 1 CaCO3 1 RAD	Air Rotary			
310					310 @ 1007 11-13-92
315					315 @ 1020 11-13-92
320					

9313090.0605

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 18 of 21

Location 200 west South of S-10 Ditch

Project W017H

Elevation 674' g.s.

Drilling Contractor Jensen

Driller D. Mingo

Drilling Method and Equipment Air Rotary CP650

Prepared By K. Swett [signature] (Sign/Print Name) Date 11-13-92

Reviewed By Edward C. Rafuse [signature] (Sign/Print Name) Date 12/20/92

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
320					320 @ 1030 11-13-92
				322 - 355 Sandy GRAVEL	
				65% Gravel, 35% Sand, trace	
				Silt	
				20% SC 20% vcs-cs	
				20% vcpcp 50% ms	
				30% mp 30% fs-vfs	
325				30' FP wet: 2.5Y 3/2 (Dk olive br)	325 @ 1140 11-13-92
				Dry: 2.5Y 4/3 (olive br.)	
				Saturated, mod. sorted, well rounded	
				to rounded, subprismoidal to	
				subdiscoidal, 33% Basalt, 33%	
				Qtz and Qtzite, 33% Felsic	
				no rxn to HCl	
	2 with 1 and 1 Calcg				
330		Air Rotary			330 @ 1150 11-13-92
335					335 @ 0730 11-16-92
340					

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 19 of 21

Location 200 WEST - SOUTH OF S-10 DITCH

Project W017M

Elevation 674' g.s.

Drilling Contractor JENSEN DRILLING

Driller D. MINGO

Drilling Method and Equipment CME 650 / AIR ROTARY

Prepared By MO SWEENEY (Sign/Print Name) Date 11/18/92

Reviewed By EDWARD C. KAFORE (Sign/Print Name) Date 12/20/92

Depth (340)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
				340-358 Sandy GRAVEL	340 @ 0759 11-16-92
				SAME AS 322-355 BUT	
				W/ INCREASING MANGANATE	
				(75% GRAVEL)	345 @ 0845 11-16-92
345					
					350 @ 0854 11-16-92
350					
				355-358 GRAVEL	
355				GRAVEL: 90% SAND: 10% SILT: TRACE.	355 @ 0930 11-16-92
				CP-60% CG-20% CHERT, 2.5Y 5/4 LT OLIVE BRN.	
	24 IN 1 MM 1 CU YD	AIR ROTARY		MP-30% MG-40% COLOR Dry: 2.5Y 6/3 LT YELLOW BROWN	
				FP-10% FG-40%	
				MAFIC 30%, FELSIC: 40%, QTZ: 30%	
360				ANGULAR SUBANGULAR, SUBROUND, SAND:	
				MAFIC: 20%, FELSIC: 40%, QTZ: 40%,	360 @ 0946 11-16-92
				ANGULAR, SUBANGULAR SUBROUND.	
				358-372 Sandy GRAVEL	
365				SAME AS 322-355	365 @ 1472 11-16-92
				BUT MOST LIKE 340-355.	
370				372-375 GRAVEL	370 @ 1500 11-16-92
				SAME AS 355-358	
375				375-381 F Sandy GRAVEL	375 @ 1515 11-16-92
				SAME AS 358-372	

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 2 of 21

Location 200 WEST. SOUTH OF S-10 DITCH

Project W017H

Elevation 674' g.s.

Drilling Contractor JENSEN DRILLING

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / CP650

Prepared By MOSWEENEY / [signature] (Sign/Print Name) Date 11-18-92

Reviewed By EDWARD C. RAFFLE / EDWARD C. RAFFLE (Sign/Print Name) Date 12/20/92

Depth (380)	Sample: Type and No.	Sample: Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
					380 @ 1547 11-16-92
				381 - 395 GRAVELLY SAND	
				GRAVEL 25% SAND 75% SILT: TRACE	
				CP-20% CG-30% COLORLET:	
385				MP-60% MG-30% COLOR DRY.	385 @ 1027 11-17-92
				FP-20% FG-40%	
				GRAVEL: MAFIC: 15%, FELSIC: 50%, QTZ 35%	
				ANGULAR, SUBANGULAR. SAND: MAFIC: 30%	
				FELSIC: 25% QTZ: 45%. ANGULAR	
				SUBANGULAR, SUBROUNDED. ABUNDANT	
390				MICAS.	390 @ 1035 11-17-92
395		AIR ROTARY		395 - 398 SAND	395 @ 1040 11-17-92
				SAME MINERALOGY AS	
				ABOVE W/O GRAVEL.	
	2 LITH				
400	1 CuCO3			398 - 404 SANDY GRAVEL	400 @ 1046 11-17-92
	1 RAD			SAME AS 375-381	
405				404-412 GRAVEL	405 @ 1416 11-17-92
				SAME AS 355'-358'	
410					410 @ 1422 11-17-92
				412 - 423 SANDY GRAVEL	
				SAME AS 398-404	
415					415 @ 1445 11-17-92

9313090.0608

BOREHOLE LOG

Boring or Well No. 299-W27-2

Sheet 21 of 21

Location 200W / SOUTH OF S-10 DITCH

Project WOITH

Elevation 674' g.s.

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / CP-650

Prepared By [signature] (Sign/Print Name) Date 11-18-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 12/21/92

Depth (420)	Sample: Type and No.	Sample: Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCL	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	1 LITH No Cuttings / Rad				420 @ 1530 11-17-92
				423-TD CLAY/SILT.	423 @ 1600 11-17-92
				BLUE/TAN (2.5Y 5/0)	
425				MASSIVE STRONG RXN TO HCL.	
		Split spoon		Split spoon sampled @ 427-428	
430					
435					TD @ 435 ON 11-17-92
440					

Air Rotary

9313090.0609

4-6000-382 (04/90)

WHC-SD-EM-DP-054, Rev. 0

Westinghouse Hanford Company	VALIDATED KDR 1/19/93 SIGNATURE/DATE	LOG HEADER	Page 1 of 2

Well No. 299-W27-2 Area 200 West Date 10/23/92

Log Run #1 Log Type Gross Gamma

Elevation Datum Brass Cap Elevation 674.10

Survey Coordinates 133,670.63 N 566,908.55 E

Log Measured From Ground Surface

Location Description East Side of 216-S10-Trench

Ground Surface Elevation 674.10

Surface Temperature NA Weather Clear-Warm

BOREHOLE INFORMATION

Driller: Gary Lydin

Drill Rig Type Cable Tool	Bit Type/Diameter Drive Barrel / 12"
Borehole Diameter(s)/Depth 16"/9.9' 12"/181.5'	
Depth Driller 181.5'	Depth Logger 181.0'
Liquid Level NA (none)	Liquid Density NA
Temperature NA	

CASING RECORD

Type 16" Carbon Steel Sch.40	Interval +0.4' -9.85'
Type 12" Carbon Steel Sch.40	Interval +1.1' -179.88
Type	Interval
Type	Interval

Well Screen Interval NA

Comments: Return Error = +0.2' high
Centralizer used.

A-6000-520 (05/90)

LOG HEADER

EQUIPMENT DATA

Logging Company: PNL

Operator(s): Alan Pearson

Equipment Brand: MLS

Equipment Type: Analog

Tool Type: Gamma Ray

Serial No.: C627A97

Base Calibration Date: 5/92

Calibration Reference: PNL-8820 UC-606

Calibration/Probe Factor: 9.08×10^{-2} PPM/CPS

Base Calibration Datum (eU): Position 1: 315.1 eU Position 2: 65.1 eU

Dead Time: 12.3 μsec

Warm Up Time: >15 min

LOGGING INFORMATION

Log Interval From: 181.0' To: 4.0'

Rerun(s): 181.0' to 150.0'

Pre Survey Verification: Position 1: 312.4 eU Position 2: 64.9 eU Background: 60 cps

Base Calibration Difference: Position 1: 2.7 eU Position 2: 0.2 eU

Logging Speed: 5 ft./min.

Rerun Scales, CPS/in.: 50 CPS/in.

Start Time: 0945

Completion Time: 1130

Chart Speed(s), ft/in.: 10 ft./in.

Chart Recorder Horizontal Scale, CPS/in.: 50 CPS/in.

Time Constant(s): TC-1

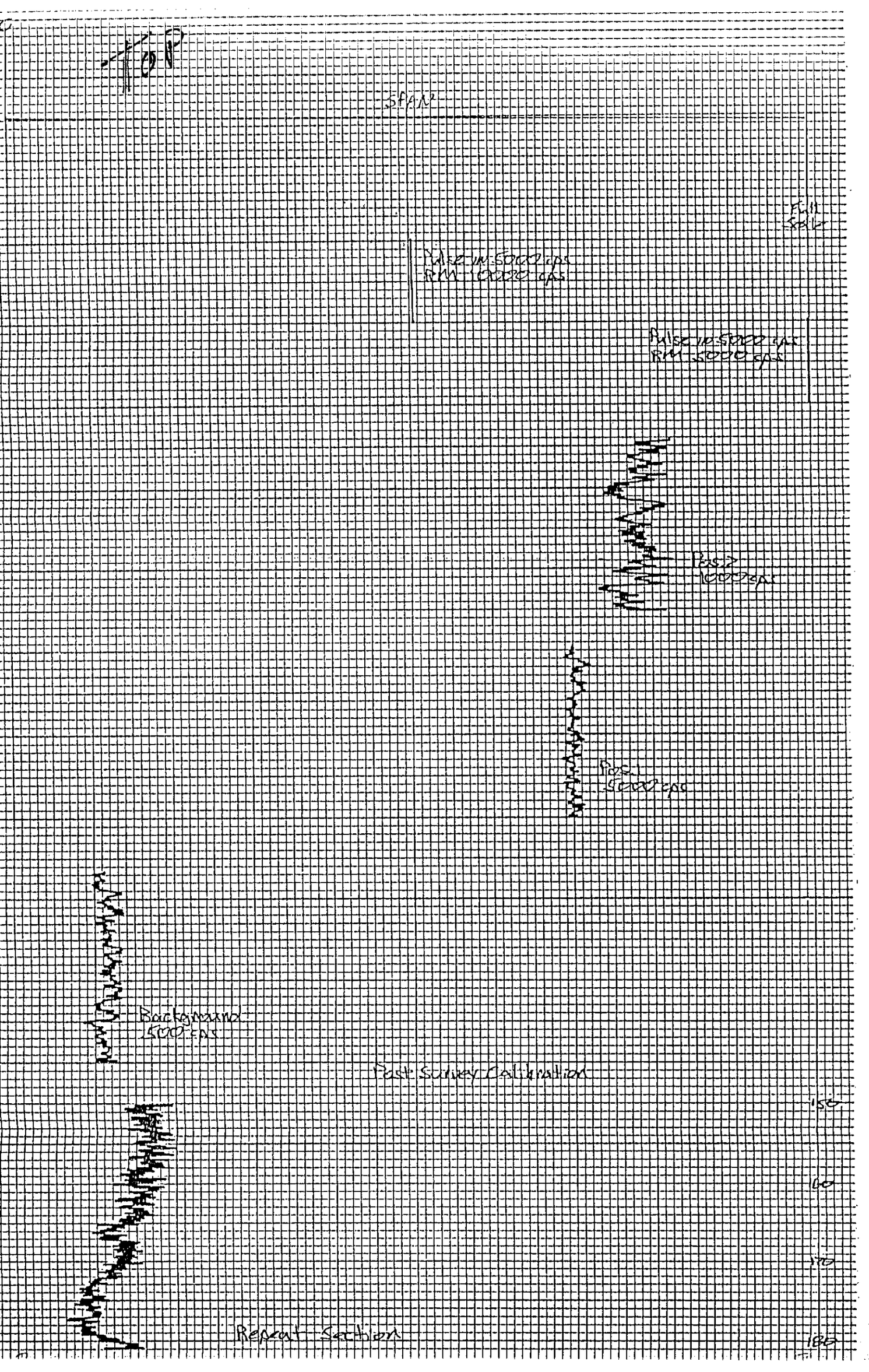
Post Survey Verification: Position 1: 312.5 eU Position 2: 65.6 eU Background: 58 cps

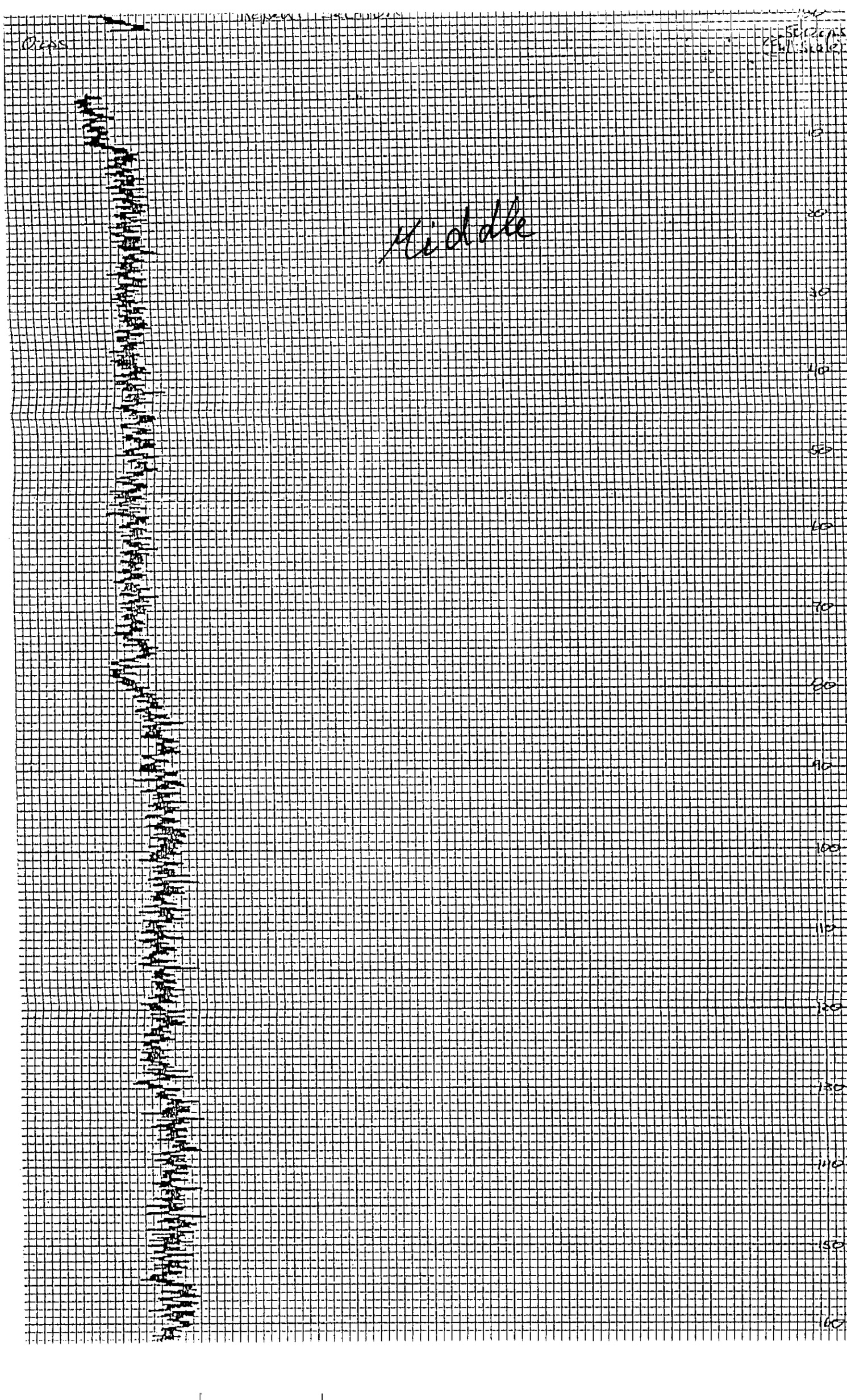
Percent Change: Position 1: 0.1% Position 2: 1.1%

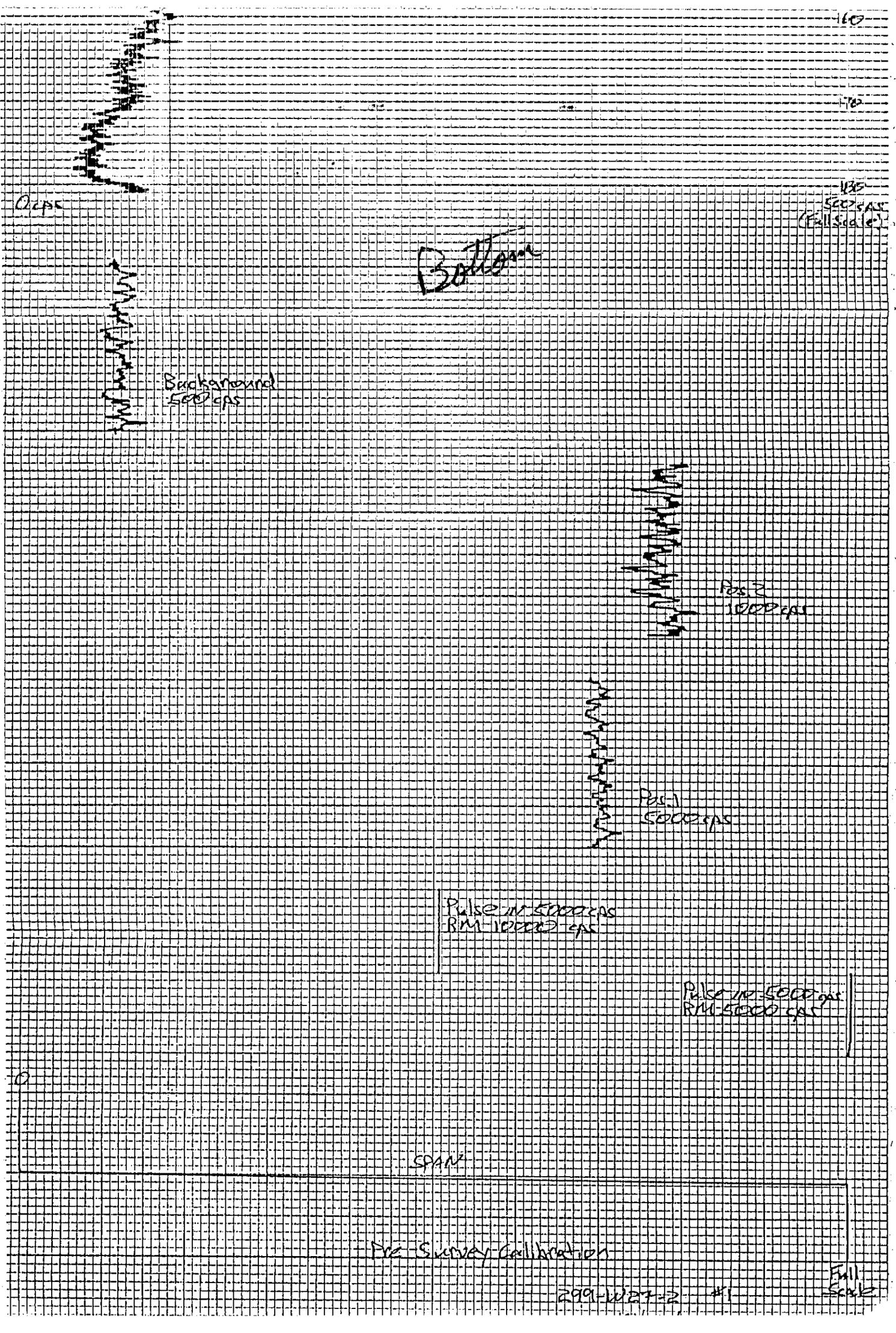
Comments: Return Error = +0.2' high

Centralizer used.

Witnessed and Verified by: (sign and print name) Alan Pearson Alan Pearson Date: 10/23/92


Top
SPAN
Full Scale
Pulse in 5000 cps
BM 10000 cps
Pulse in 5000 cps
BM 5000 cps
Pos 2
10000 cps
Pos 1
5000 cps
Background
5000 cps
Post Survey Calibration
150
160
170
180
Repeat Section


Middle
10
20
30
40
50
60
70
80
90
100
110
120
130
140
150
160


160
140
125
5000 cps
(Full Scale)
0 cps
Bottom
Background
500 cps
Pos 2
1000 cps
Pos 1
5000 cps
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
0
SPAN
Pre Survey Calibration
299-W27-2
#1
Full
Scale

THIS PAGE INTENTIONALLY
LEFT BLANK

Westinghouse Hanford Company | 1/19/93 SIGNATURE/DATE | LOG HEADER | Page 1 of 2

Well No. 299-W27-2 Area 200W Date 11/20/92

Log Run #2 Log Type Gross Gamma

Elevation Datum Ground Surface Elevation 674.10

Survey Coordinates 133,670.63 N 566,908.55 E

Log Measured From Ground Surface

Location Description East Side of S-10 Trench

Ground Surface Elevation 674.10

Surface Temperature NA Weather Clear. Cool

BOREHOLE INFORMATION

Driller Dennis Mingo (Jensen Drilling)

Drill Rig Type ODEX | Bit Type/Diameter Air Hammer/8"

Borehole Diameter(s)/Depth 16"/9.85' 12"/179.80' 10"/303.82' 8"/435'

Depth Driller 435' | Depth Logger 426.8'

Liquid Level 215 | Liquid Density Slightly Muddy

Temperature NA

CASING RECORD

Type 16" Carbon Steel Sch. 40	Interval 0.0' - 9.85'
Type 12" Carbon Steel Sch. 40	Interval +0.5' - 179.80'
Type 10" Carbon Steel Sch. 40	Interval +0.7' - 303.82'
Type 8" Carbon Steel Sch. 40	Interval +2.2' - 426.56'

Well Screen Interval NA

Comments: Return Error = +0.1' high

Centralizer used.

A-6000-520 (05/90)

LOG HEADER

EQUIPMENT DATA

Logging Company PNL

Operator(s) Alan Pearson

Equipment Brand MLS Equipment Type Analog

Tool Type Gamma Ray Serial No. C627A97

Base Calibration Date 5/92 Calibration Reference PNL-8220 UC-606

Calibration/Probe Factor 9.08×10^{-2} PPM/CPS Base Calibration Datum (eU): Position 1 315.1 eU Position 2 65.1 eU

Dead Time 12.3 μsec Warm Up Time > 15 min

LOGGING INFORMATION

Log Interval From 426.8' To ~~150.0'~~ 149.2'

Rerun(s) 425.0' to 395.0'

Pre Survey Verification: Position 1 312.8 eU Position 2 64.0 eU. Background 55 cps

Base Calibration Difference: Position 1 2.3 eU Position 2 ~~0~~ 1.1 eU

Logging Speed 5 ft./min. Rerun Scales, CPS/in. 50 CPS/in.

Start Time 1130 Completion Time 1400

Chart Speed(s), ft/in. 10 ft./in.

Chart Recorder Horizontal Scale, CPS/in. 50 CPS/in. Time Constant(s) TC-1

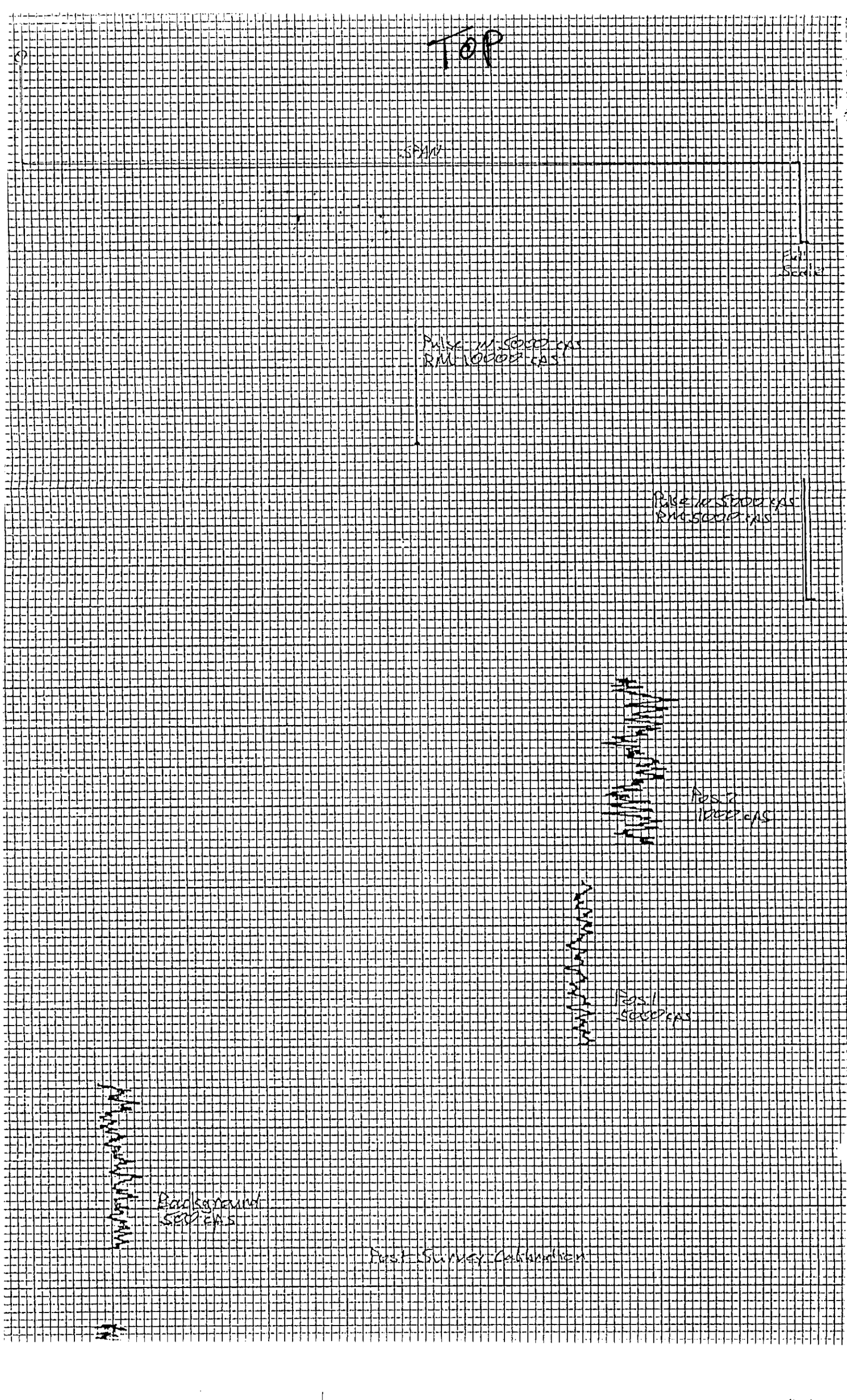
Post Survey Verification: Position 1 312.8 eU Position 2 65.4 Background 55 cps

Percent Change: Position 1 0 Position 2 2.2%

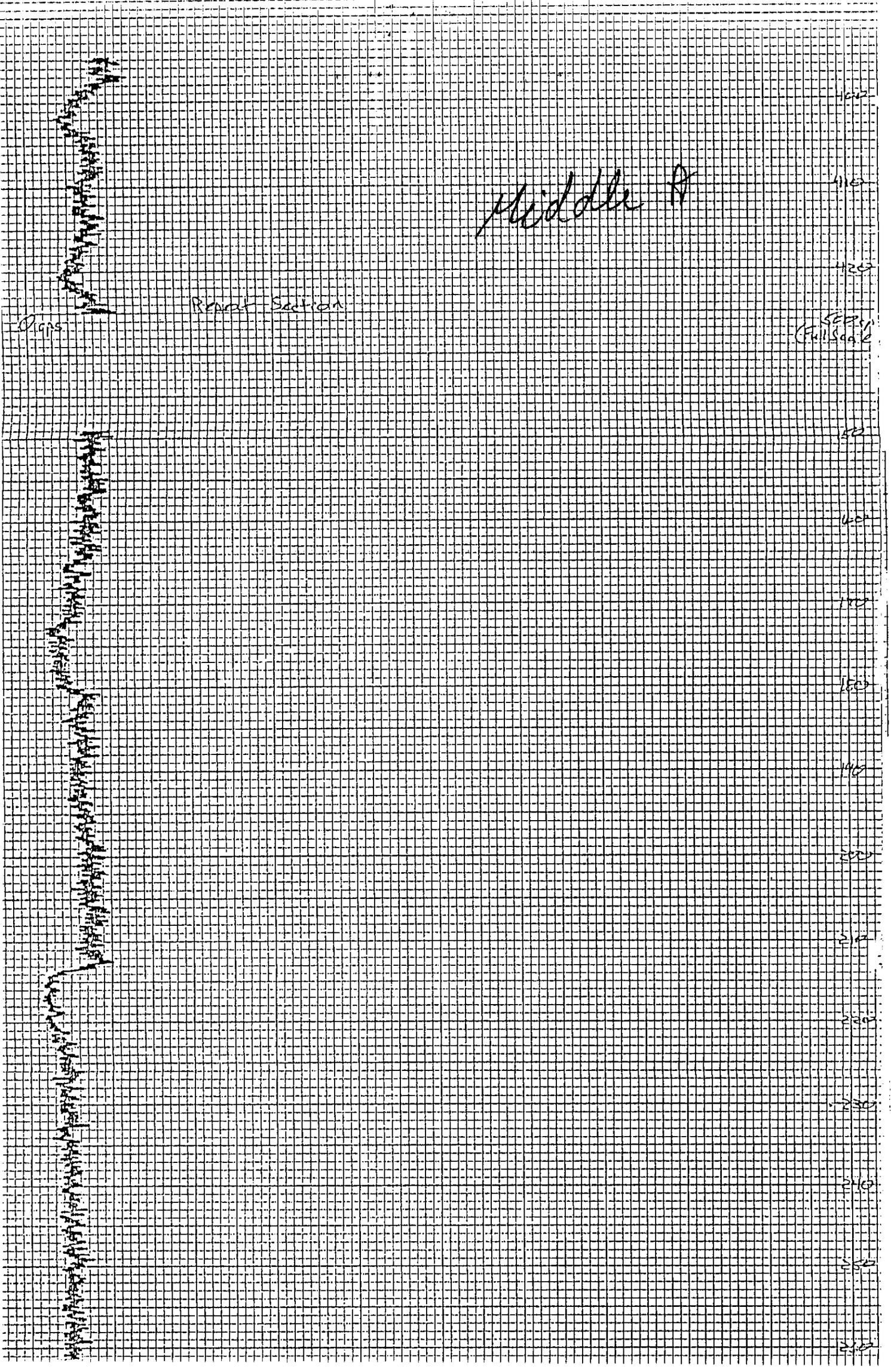
Comments Return Error = +0.1' high

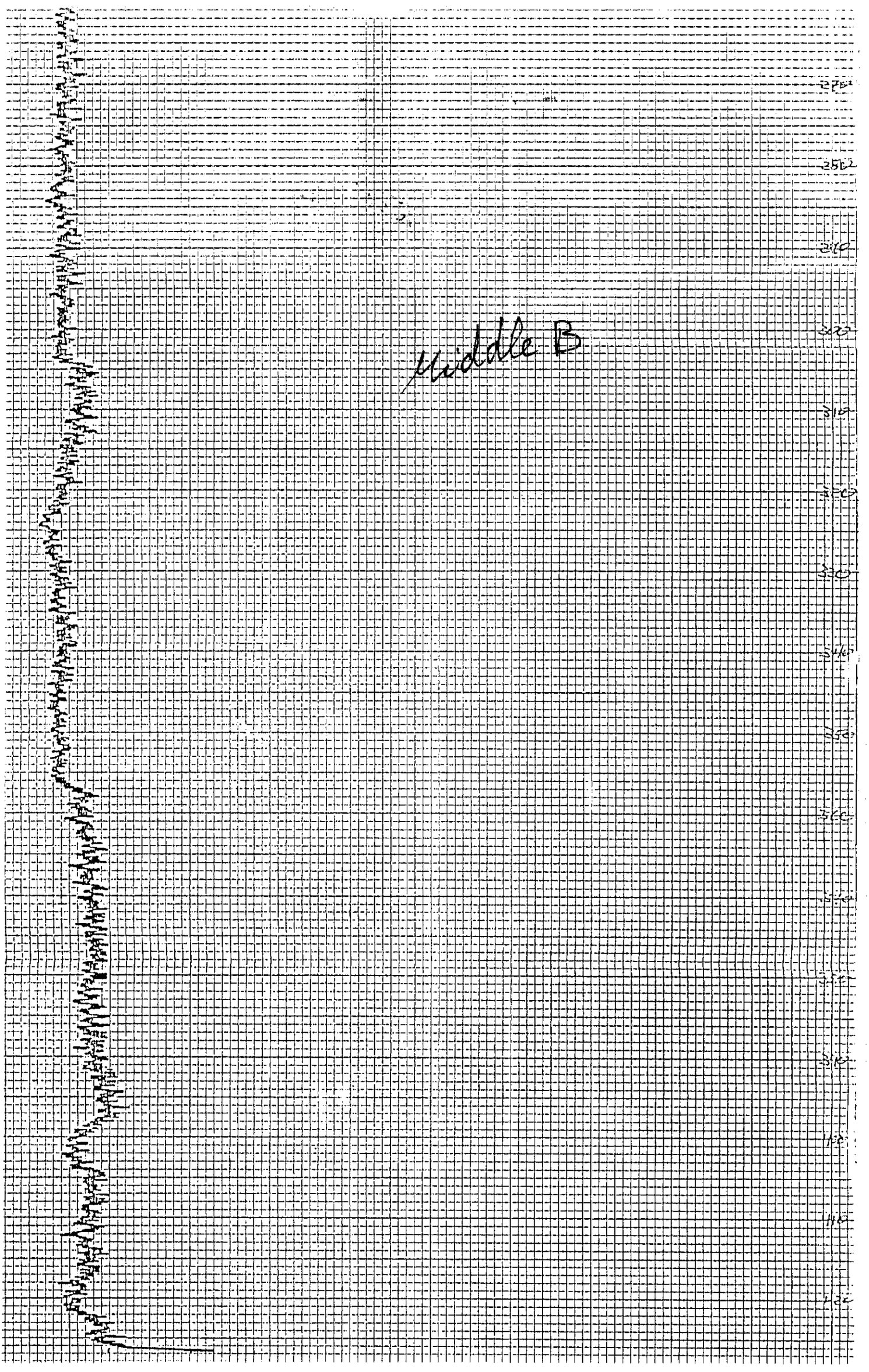
Centralizer used.

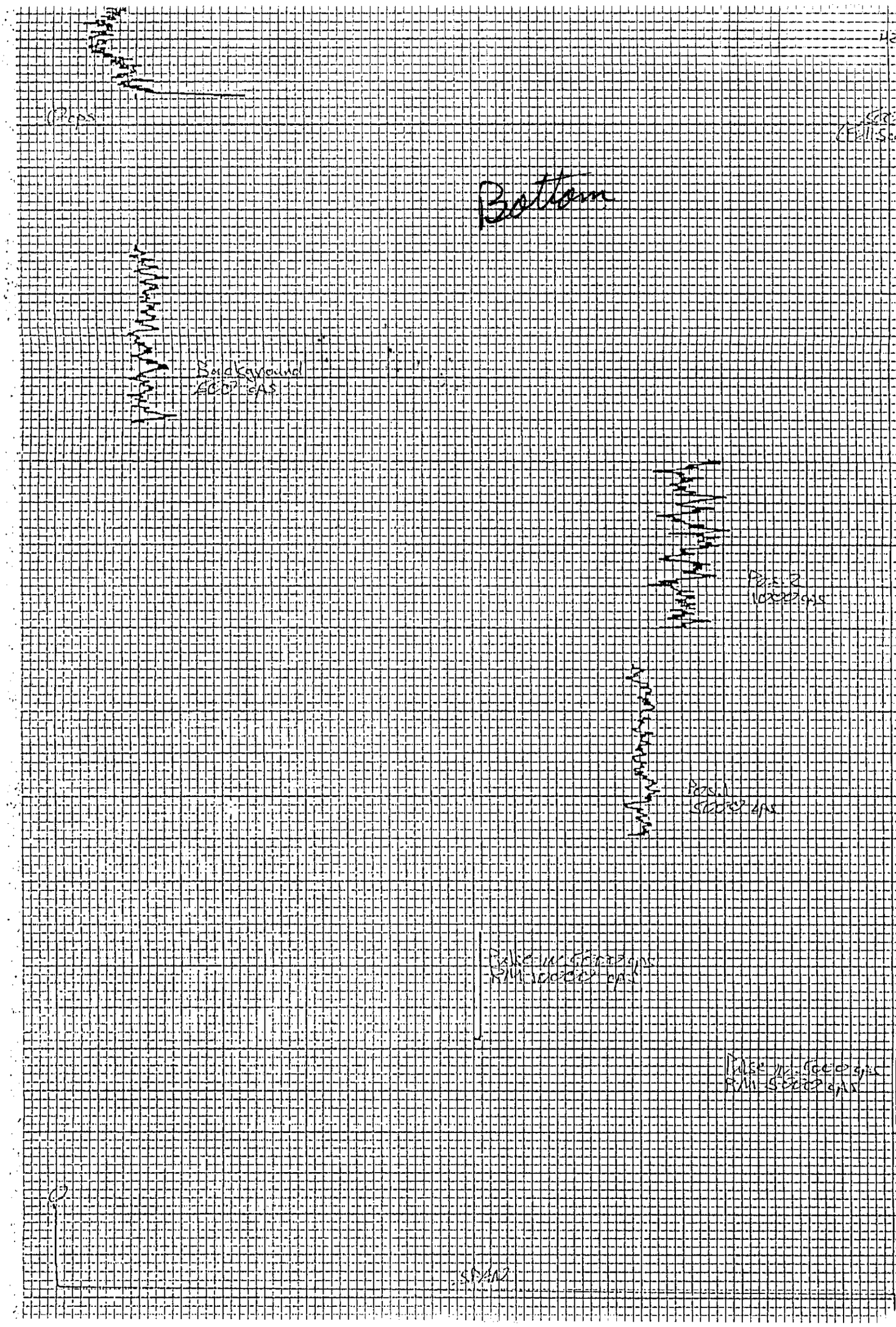
Witnessed and Verified by: (sign and print name) Alan Pearson Alan Pearson Date: 11/20/92


TOP
SPAN
Full Scale
Pulse 14.5000 cps
RM 10000 cps
Pulse 14.5000 cps
RM 5000 cps
Pos. 2
10000 cps
Pos. 1
5000 cps
Background
500 cps
Post Survey Calibration

Test Survey Calibration




Middle B


Bottom
Background
Pos. 2
Pos. 1
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 50000 cps
SPAN

Westinghouse Hanford Company | VALIDATED KDR 1/19/93 SIGNATURE/DATE | LOG HEADER | Page 1 of 2

Well No. 299-W27-2 Area 200W Date 12/2/92

Log Run #3 Log Type Gross Gamma

Elevation Datum Ground Surface Elevation 674.10

Survey Coordinates 133,670.63 N 566,908.55 E

Log Measured From Ground Surface

Location Description East Side of 216-S-10-Trench

Ground Surface Elevation 674.10

Surface Temperature NA Weather Clear-Cool

BOREHOLE INFORMATION

Driller Dennis Mingo (Jensen Drilling)

Drill Rig Type CDEX | Bit Type/Diameter Air Hammer/8"

Borehole Diameter(s)/Depth 16"/9.85 12"/179.80 10"/303.82 8"/375.9' 4"/415.0'

Depth Driller 415.0' | Depth Logger

Liquid Level 215.0' | Liquid ~~Density~~ Appearance Clean

Temperature NA

CASING RECORD

Type 16"/Carbon Steel Sch.40 | Interval +0.0' - 9.85

Type 12" Carbon Steel Sch. 40 | Interval +0.0' - 179.80

Type 10" Carbon Steel Sch.40 | Interval +1.0' - 303.82'

Type 8" Carbon Steel Sch.40 | Interval +11.2' - 375.9'

Well Screen Interval 415.0' - 405.0'

Comments: Return Error = +0.1' high

Centralizer used.

4" Stainless Steel sch.5 | Interval +6.8' - 415.0'

A-6000-520 (05/90)

LOG HEADER

EQUIPMENT DATA

Logging Company: PNL

Operator(s): Alan Pearson

Equipment Brand: MLS

Equipment Type: Analog

Tool Type: Gamma Ray

Serial No.: C627A97

Base Calibration Date: 5/92

Calibration Reference: PNL-8220 UC-606

Calibration/Probe Factor: 9.08×10^{-2} PPM/CPS

Base Calibration Datum (eU): Position 1: 315.1 eU

Position 2: 65.1 eU

Dead Time: 12.3 μsec

Warm Up Time: >15 min

LOGGING INFORMATION

Log Interval From: 415.0'

To: 350.0'

Rerun(s): 415.0' to 365.0'

Pre Survey Verification: Position 1: 316.9 eU Position 2: 64.9 eU Background: 60 cps

Base Calibration Difference: Position 1: 1.8 eU Position 2: 0.2 eU

Logging Speed: 5 ft./min.

Rerun Scales, CPS/in.: 50 CPS/in.

Start Time: 1230

Completion Time: 1407

Chart Speed(s), ft/in.: 10 ft./in.

Chart Recorder Horizontal Scale, CPS/in.: 50 CPS/in.

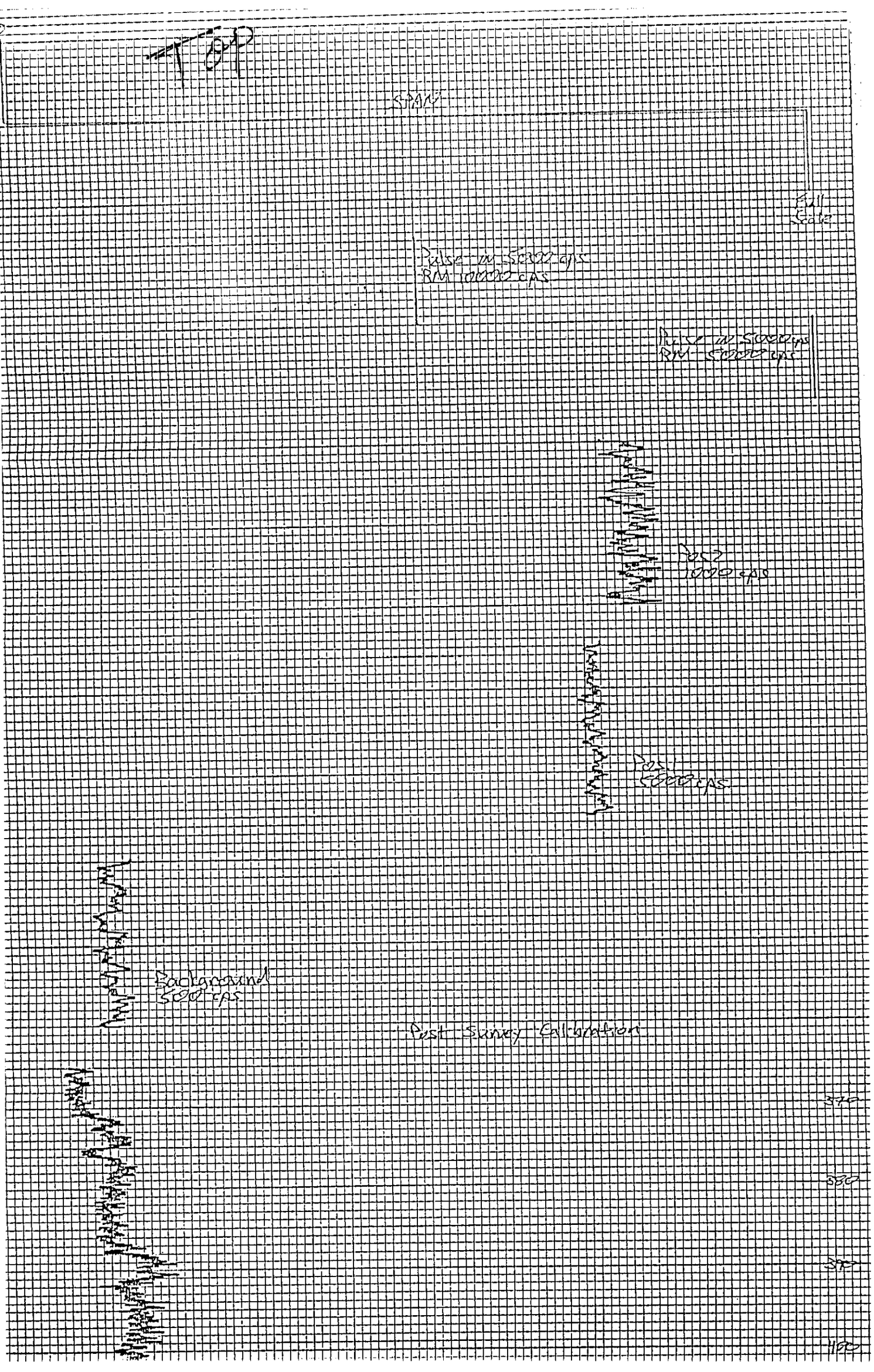
Time Constant(s): TC-1

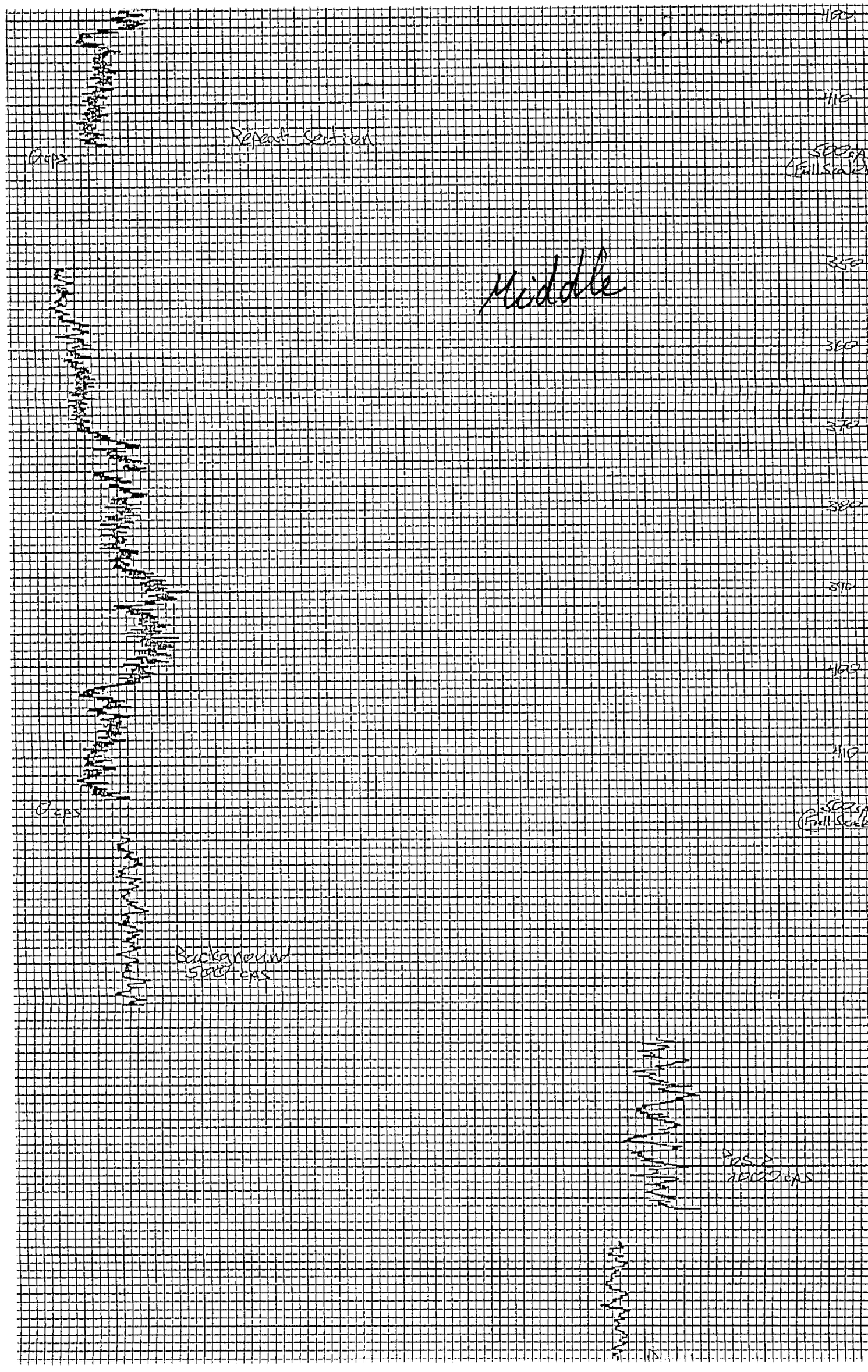
Post Survey Verification: Position 1: 316.9 eU Position 2: 64.0 eU Background: 60 cps

Percent Change: Position 1: 0.0% Position 2: 1.4%

Comments: Return Σ_{min} = +0.1' high

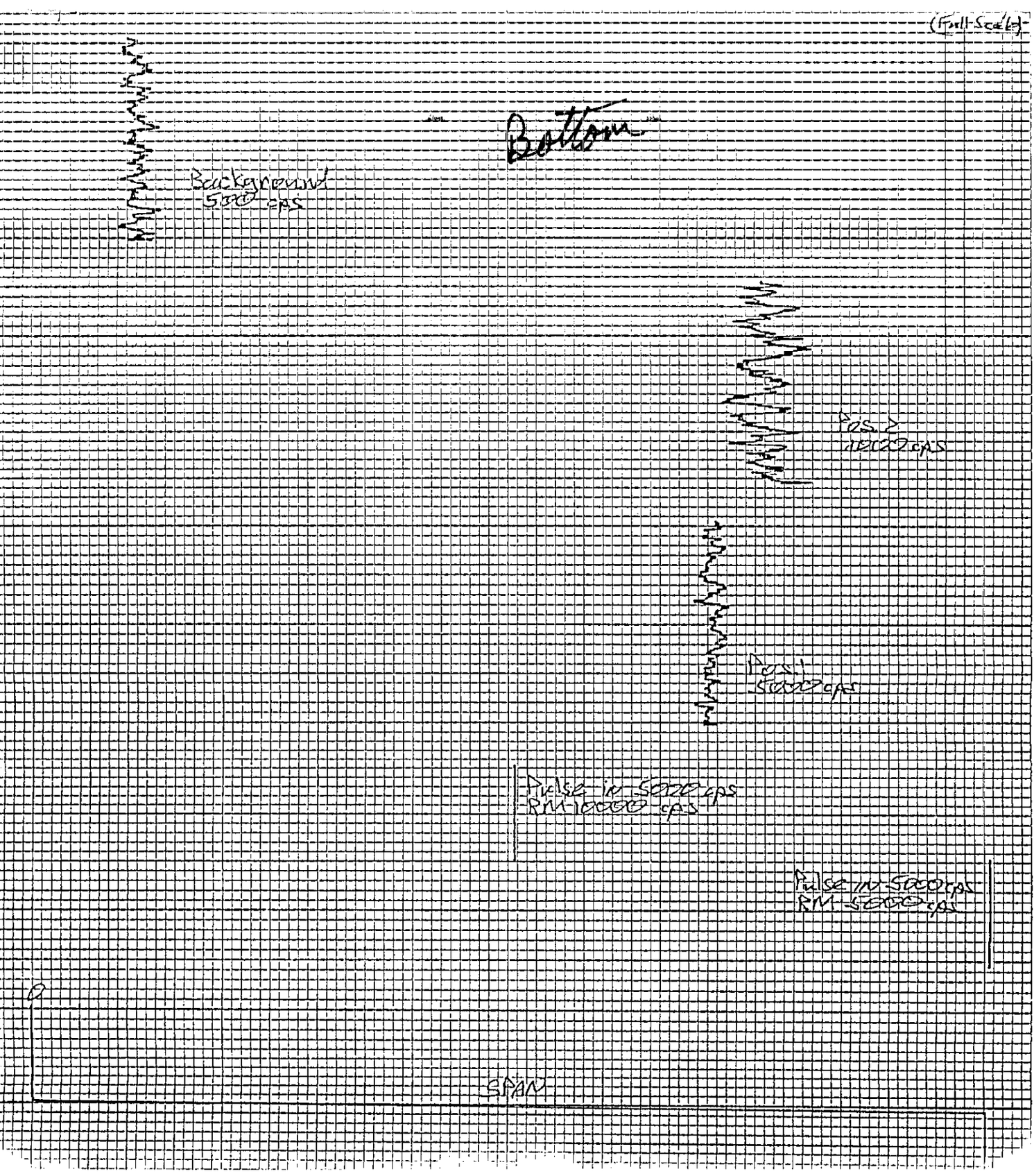
Centralizer used.


TOP
SPAN
Full Scale
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
Pos 10000 cps
Pos 5000 cps
Background 500 cps
Post Survey Calibration
370
350
330
310
100



Repeat Section
0 cps
Middle
0 cps
Background
500 cps
400
410
500 sA
(Full Scale)
350
360
370
380
390
400
410
500 sA
(Full Scale)
Pos 2
10000 cps

(Full Scale)


Bottom
Background
5000 cps
Pos. >
10000 cps
Pos.
5000 cps
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
0
SPAN

THIS PAGE INTENTIONALLY
LEFT BLANK

KAISER ENGINEERS HANFORD

SURVEY DATA REPORT

Request No. 931-057

Project/W.O. No.	Title	File No.
W-017H	Nine Odex CM Wells	299-E25

KEH Job No.	Prepared By	Date	Reviewer	
CR-9752	RL Hackwith	12/30/92	V. Coyne	1 | 2

DESCRIPTION OF WORK

Horizontal (NAD'83) and vertical (NGVD'29) location of monitoring wells.

ACCEPTABILITY (Within Plan Tolerance)

- Yes [XX]
- No [ ]
- NA [ ]
- TBD by Requestor [ ]

DISTRIBUTION

Survey File	OR
Field Project File	1
P Collier	1
L Dietz	1
J Rieger	1
D Weekes	1

SURVEY RESULTS AND COMMENTS

Control Monuments: Landfill Site

LF-1
N:131,301.762
E:579,339.132

C.P."D"
N:130,947.087
E:579,137.752

NOTE: Horizontal control points used were part of a traverse with a linear closure greater than 1:50,000.

USGS BM MON
W63
EL. 514.864

WELL #	COORDINATES ℄ CASING: PLANT	COORDINATES ℄ CASING: LAMBERT WCS83S (mtrs)	ELEVATION (feet) NGVD 29: BRASS CAP	HYDROSTAR	TOP OF CASING
199-N-77	100N N: 5521.9 W: 5819.8	N: 149,243.21 E: 571,309.93	455.75	459.45	459.44
699-26-34B	200E N: 25,782.6 W: 33,716.8	N: 131,352.50 E: 579,629.52	526.47	530.29	530.27
699-25-34D	200E N: 25,253.6 W: 33,847.9	N:131,191.16 E:579,589.97	534.47	537.92	537.91

ntrol Monuments: 100N

100N-1
N: 148,992.908
E: 571,887.337

100N-2
N: 149,644.403
E: 571,811.368

S-324
USC&GS
EL.=466.462

NOTE: Horizontal Control points used were part of a traverse with a linear closure greater than 1:48,000.

KEH-159.1 (6-84)

KAISER ENGINEERS HANFORD

FIELD SKETCH

Attachment To Or Description: Nine Odex CM Wells - Continued

Sheet 2 of 2

Control Monuments: Grout

SL-2	SL-3	BM MON.
N:135,705.555	N:135,916.127	2E-18
E:575,938.675	E:575,938,323	EL=678.331

Horizontal Control Monuments used to locate wells were part of a traverse with a linear closure greater than 1:50,000. Vertical control monuments used was based on 5.8 mile loop with a closure of .024 ft.

WELL #	COORDINATES ℄ CASING		ELEVATION (feet)		
	PLANT	LAMBERT WCS83S (mtrs)	BRASS CAP	HYDROSTAR	TOP OF CASING
299-E25-45	200E N: 39,939.7 W: 44,973.2	N: 135,659.15 E: 576,185.55	675.74	678.46	678.45
299-E25-47	200E N: 40,835.3 W: 46,306.1	N: 135,930.98 E: 575,778.55	670.41	673.78	673.77
299-E25-48	200E N: 40,456.8 W: 46,816.1	N: 135,815.16 E: 575,623.43	679.68	682.32	682.31
[redacted]	200W N: 33,494.3 W: 75,430.7	N: 133,670.63 E: 566,908.55	674.10	677.13	677.11
699-41-42	200E N: 41,270.3 W: 41,898.1	N: 136,068.17 E: 577,122.21	640.32	643.92	643.91
699-44-39B	200E N: 43,426.3 W: 39,140.4	N: 136,727.61 E: 577,960.80	509.62	513.41	513.40

Control Monuments: 200W

RAG	FLAG	BM B.C. MONS.
N:133,758.279	N:133,900.567	299-W26-11
E:567,152.333	E:566,321.472	299-W26-12

Vertical control points used were based on a 3.3 mile level run with a closure of -0.037 ft.

APPENDIX B

SEDIMENT SAMPLING DATA

9413000.0615

CONTENTS

RADIATION SAFETY REPORT B-1
PHYSICAL SAMPLING DATA RESULTS B-16

9313090.0616

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

VALIDATED 2/8/93 KDR
SIGNATURE/DATE

Requested by:	Phone No.	Well No. 299-W27-2	Date:

Sample No. (Depth)	Sample Date	Sample Description	Analysis Date	Lab No.	Results Beta/Gamma (pCi/g)	Results Alpha (pCi/g)
5'	10/8/92	Soil	12/29/92	2861-92-49	7.2	2.2
10'				2862-92-50	14.3	2.6
15'				2863-92-1	11.9	0.3
20'				2864-92-2	12.6	5.2
25'				2865-92-3	16.8	4.4
30'				2866-92-4	11.4	3.1
32'				2867-92-5	11.7	1.6
35'	10/8/92			2868-92-6	10.0	3.0
40'	10/12/92			2872-92-10	13.5	5.2
45'				2873-92-11	11.8	3.3
50'				2874-92-12	14.1	2.6
55'	10/12/92			2875-92-13	13.0	3.1
60'	10/13/92			2890-92-28	12.4	6.1
65'				2891-92-29	10.2	3.0
70'				2892-92-30	11.7	3.1
75'				2893-92-31	16.6	4.6
76'				2894-92-32	11.9	1.3
80'				2895-92-33	10.9	2.0
85'				2896-92-34	16.5	2.1
90'	10/13/92			2897-92-35	16.0	0.7
95'	10/16/92			2898-92-36	14.6	2.6
100'				2899-92-37	12.0	2.1
110'	10/16/92	Soil	12/29/92	2900-92-38	13.9	3.7

Performed By: [signature] Date: 1/12/93

Supervisor Review: [signature] Date: 2/1/93

Page: 1 of 4

A-6000-829 (10/91)

9413000.0917

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-W27-2		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pCi/g)**	**Results Alpha (pCi/g)**
115'	10/16/92	Soil	12/29/92	2901-92-39	19.5	5.2
140'	10/20/92		12/30/92	2925-92-15	19.5	2.5
145'				2926-92-16	12.2	<D
144.42'-146.76'				2927-92-17	11.7	<D
150'				2907-92-45	16.5	<D
155'				2908-92-46	15.8	<D
160'				2909-92-47	17.0	<D
165'				2910-92-48	18.9	0.8
170'				2911-92-49	7.0	<D
173'				2912-92-50	7.3	0.3
175'				2913-92-3	5.8	<D
179.5'-181.5'				2914-92-4	5.9	0.3
180'	10/20/92		12/30/92	2915-92-5	6.4	<D
185'	11/2/92		1/4/93	2973-92-13	8.0	0.2
190'				2974-92-14 ~~2972~~ 1/12/93	7.4	0.4
195'				2975-92-15	12.0	<D
200'				2976-92-16	12.6	0.8
205'				2977-92-17	13.3	0.3
210'				2978-92-18	11.8	0.3
215'				2979-92-19	9.4	<D
220				2980-92-20	9.3	0.4
225'				2981-92-21	10.8	0.8
230'	11/2/92	Soil	1/4/93	2982-92-22	10.1	0.7

Performed By: [signature] Date: 1/12/93

Supervisor Review: [signature] Date: 2/1/93

Page: 2 of 4

A-6000-829 (10/91)

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-W27-2		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
237'	11/11/92	Soil	1/4/93	2990-92-30	8.8	0.5
240'				2991-92-31	10.1	1.1
245'				2992-92-32	13.5	<D
250'				2993-92-33	7.6	<D
255'				2994-92-34	13.1	<D
260'				2995-92-35	8.9	0.3
265'				2996-92-36	10.4	0.5
270'	11/11/92		1/4/93	2997-92-37	8.6	0.2
275'	11/12/92		1/5/93	3002-92-41	11.0	0.7
280'				3003-92-42	15.4	0.8
285'				3004-92-43	13.9	<D
290'				3005-92-44	10.0	0.7
295'				3006-92-45	12.0	<D
300'				3007-92-46	7.9	0.5
304'	11/12/92			3008-92-47	6.5	0.5
310'	11/13/92			3009-92-48	11.6	<D
315'				3010-92-49	8.7	0.6
320'				3011-92-50	12.3	2.0
325'				3012-92-1	7.8	1.1
330'	11/13/92			3013-92-2	12.2	1.3
335'	11/13/92			3014-92-3	8.7	0.3
340'				3015-92-4	12.8	<D
345'	11/13/92	Soil	1/5/93	3016-92-5	7.5	0.5

Performed By: [signature] Date: 1/12/93

Supervisor Review: [signature] Date: 2/1/93

Page: 3 of 4

A-6000-829 (10/91)

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-W27-2		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
350'	11/18/92	Soil	1/5/93	3017-92-6	8.6	1.1
355'				3018-92-7	7.4	1.3
360'				3019-92-8	9.5	0.3
365'				3020-92-9	11.0	0.3
370'				3021-92-10	10.9	0.2
375'				3022-92-11	9.6	0.7
380'				3023-92-12	8.0	0.3
385'				3024-92-13	13.2	1.4
390'				3025-92-14	9.4	<D
395'				3026-92-15	11.4	1.1
400'				3027-92-16	10.3	0.8
405'	11/18/92			3028-92-17	11.4	<D
410'	11/24/92			3063-92-2	9.2	0.3
415'				3064-92-3	9.1	<D
420'				3065-92-4	13.3	1
423'	11/24/92	Soil	1/5/93	3066-92-5	10.8	5.9

Performed By: [signature] Date: 1/12/93

Supervisor Review: [signature] Date: 2/1/93

Page: 4 of 4

A-6000-829 (10/91)

WATER SAMPLE RESULTS
ENVIRONMENTAL FIELD SERVICES HEALTH PHYSICS

Requested by:	Phone No.	Well#/Location	Date:
		299-W27-2	

Sample No. (local)	Sample Date	Sample volume	Analysis Date	Lab No.	Results Beta/Gamma (pCi/ml)	Results Alpha (pCi/ml)
105'	2-10-93	Soil	2-10-93	0064-93-20	10.8	.5
120'	↓	↓	↓	0065-93-21	15.1	.8
125'	↓	↓	↓	0066-93-22	9.6	1.5
130'	2-10-93	Soil	2-10-93	0067-93-23	12.5	.5

Performed By: [illegible] Date: 2-11-93

Supervisor Review: [illegible] Date: 2/11/93

Page: _____ of _____

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:			Phone No.	Well No. 299-W27-2		Date:
Sample No. (Depth)	**Sample Date**	**Sample Description**	**Analysis Date**	**Lab No.**	**Results Beta/Gamma (pci/g)**	**Results Alpha (pci/g)**
105'	2/10/93	Soil	2/10/93	0064-93-20	10.8	0.5
120'				0065-93-21	15.1	0.8
125'				0066-93-22	9.6	1.5
130'				0067-93-23	12.5	0.5
135'	2/10/93	Soil	2/10/93	0068-93-24	11.5	1.5

Performed By: [illegible] Date: 2/11/93

Supervisor Review: Keith R. Shea for telecom [illegible] Date: 2/22/93

Page: ____ of ____

A-6000-828 (10/91)

E.R. Walker
2-3755/L7-09

2/05/93

WELL: 299-W27-2

VALIDATED
KDR 2/10/93
SIGNATURE/DATE

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0384	299-W27-2	RCRA	180 - 180.5									intact
3-0385	299-W27-2	RCRA	180.5 - 181	2.61E-2	n/a	n/a	2.70	n/r	34.72	1.76	n/r	
3-0386	299-W27-2	RCRA	181 - 181.5		2.70			n/r			n/r	Sieve
3-0387	299-W27-2	RCRA	181.5 - 181.7					8.67			<1.0	
3-0388	299-W27-2	RCRA	146.42 - 146.76					7.76			1.5	
3-0389	299-W27-2	RCRA	144.42 - 144.92									intact
3-0390	299-W27-2	RCRA	144.92 - 145.42	6.63E-4				n/r	48.10	1.39	n/r	
3-0391	299-W27-2	RCRA	145.42 - 145.92		2.67	n/a	2.67					Sieve
3-0392	299-W27-2	RCRA	145.92 - 146.42									intact
3-0393	299-W27-2	RCRA	426.75 - 427.25	1.75E-5				18.71	31.06	1.84	.01	
3-0394	299-W27-2	RCRA	427.25 - 427.5		2.58	2.74	2.67					Sieve
3-0395	299-W27-2	RCRA	427.5 - 428									intact
3-0396	299-W27-2	RCRA	5					2.53			2.2	
3-0397	299-W27-2	RCRA	10					2.33			<1.0	
3-0398	299-W27-2	RCRA	15					2.89			<1.0	
3-0399	299-W27-2	RCRA	20					3.30			<1.0	
3-0400	299-W27-2	RCRA	25					4.01			1.0	
3-0401	299-W27-2	RCRA	30					2.88			<1.0	
3-0402	299-W27-2	RCRA	32					2.32			<1.0	
3-0403	299-W27-2	RCRA	35					2.25			<1.0	
3-0404	299-W27-2	RCRA	40					4.22			1.0	
3-0405	299-W27-2	RCRA	45					3.99			1.0	
3-0406	299-W27-2	RCRA	50					4.27			1.0	
3-0407	299-W27-2	RCRA	55					5.64			1.0	
3-0408	299-W27-2	RCRA	60					5.10			1.0	
3-0409	299-W27-2	RCRA	65					2.64			<1.0	
3-0410	299-W27-2	RCRA	70					2.96			<1.0	
3-0411	299-W27-2	RCRA	75					2.88			<1.0	
3-0412	299-W27-2	RCRA	76					2.31			<1.0	
3-0413	299-W27-2	RCRA	80					2.77			<1.0	

intact - did not use soil
n/r - not requested
n/a - not applicable

E.R. Walker
2-3755/L7-09

2/05/93 WELL: 299-W27-2 Page 2

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0414	299-W27-2	RCRA	85					2.01			<1.0	
3-0415	299-W27-2	RCRA	90					2.81			<1.0	
3-0416	299-W27-2	RCRA	95					2.45			<1.0	
3-0417	299-W27-2	RCRA	100					15.45			1.0	
3-0418	299-W27-2	RCRA	105					3.39			<1.0	
3-0419	299-W27-2	RCRA	110					3.38			<1.0	
3-0420	299-W27-2	RCRA	115					7.35			<1.0	
3-0421	299-W27-2	RCRA	120					4.35			<1.0	
3-0422	299-W27-2	RCRA	125					24.14			<1.0	
3-0423	299-W27-2	RCRA	130					5.82			1.0	
3-0424	299-W27-2	RCRA	135					7.25			1.2	
3-0425	299-W27-2	RCRA	140					10.31			1.2	
3-0426	299-W27-2	RCRA	145					21.28			2.0	
3-0427	299-W27-2	RCRA	150					15.69			1.7	
3-0428	299-W27-2	RCRA	155					31.85			1.7	
3-0429	299-W27-2	RCRA	160					12.50			1.7	
3-0430	299-W27-2	RCRA	165					21.70			1.5	
3-0431	299-W27-2	RCRA	170					17.68			1.0	
3-0432	299-W27-2	RCRA	173					9.42			5.4	
3-0433	299-W27-2	RCRA	175					6.52			2.2	
3-0434	299-W27-2	RCRA	180					12.46			<1.0	
3-0435	299-W27-2	RCRA	185					3.56			<1.0	
3-0436	299-W27-2	RCRA	190					3.17			<1.0	
3-0437	299-W27-2	RCRA	195					3.83			<1.0	
3-0438	299-W27-2	RCRA	200					2.49			<1.0	
3-0439	299-W27-2	RCRA	205					2.19			<1.0	
3-0440	299-W27-2	RCRA	210					2.12			<1.0	
3-0441	299-W27-2	RCRA	215					5.33			<1.0	
3-0442	299-W27-2	RCRA	220					14.31			<1.0	
3-0443	299-W27-2	RCRA	225					8.29			<1.0	
3-0444	299-W27-2	RCRA	230					13.94			<1.0	

intact - did not use soil
n/r - not requested
n/a - not applicable

E.R. Walker
2-3755/L7-09

2/05/93 WELL: 299-W27-2 Page 3

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0445	299-W27-2	RCRA	237					14.01			<1.0	
3-0446	299-W27-2	RCRA	240					5.74			<1.0	
3-0447	299-W27-2	RCRA	245					5.01			<1.0	
3-0448	299-W27-2	RCRA	250					12.26			<1.0	
3-0449	299-W27-2	RCRA	255					4.32			<1.0	
3-0450	299-W27-2	RCRA	260					4.06			<1.0	
3-0451	299-W27-2	RCRA	265					6.51			<1.0	
3-0452	299-W27-2	RCRA	270					2.03			<1.0	
3-0453	299-W27-2	RCRA	275					16.41			<1.0	
3-0454	299-W27-2	RCRA	280					21.40			<1.0	
3-0455	299-W27-2	RCRA	285					18.83			<1.0	
3-0456	299-W27-2	RCRA	290					15.13			<1.0	
3-0457	299-W27-2	RCRA	295					13.55			<1.0	
3-0458	299-W27-2	RCRA	300					8.36			<1.0	
3-0459	299-W27-2	RCRA	304					11.96			<1.0	
3-0460	299-W27-2	RCRA	310					11.29			<1.0	
3-0461	299-W27-2	RCRA	315					10.10			<1.0	
3-0462	299-W27-2	RCRA	320					11.09			<1.0	
3-0463	299-W27-2	RCRA	325					14.66			<1.0	
3-0464	299-W27-2	RCRA	330					26.84			<1.0	
3-0465	299-W27-2	RCRA	335					17.33			<1.0	
3-0466	299-W27-2	RCRA	340					14.31			<1.0	
3-0467	299-W27-2	RCRA	345					14.57			<1.0	
3-0468	299-W27-2	RCRA	350					14.65			<1.0	
3-0469	299-W27-2	RCRA	355					7.05			<1.0	
3-0470	299-W27-2	RCRA	360					12.74			<1.0	
3-0471	299-W27-2	RCRA	365					17.55			<1.0	
3-0472	299-W27-2	RCRA	370					16.25			<1.0	
3-0473	299-W27-2	RCRA	375					14.56			<1.0	
3-0474	299-W27-2	RCRA	380					14.67			<1.0	
3-0475	299-W27-2	RCRA	385					20.69			<1.0	

intact - did not use soil
n/r - not requested
n/a - not applicable

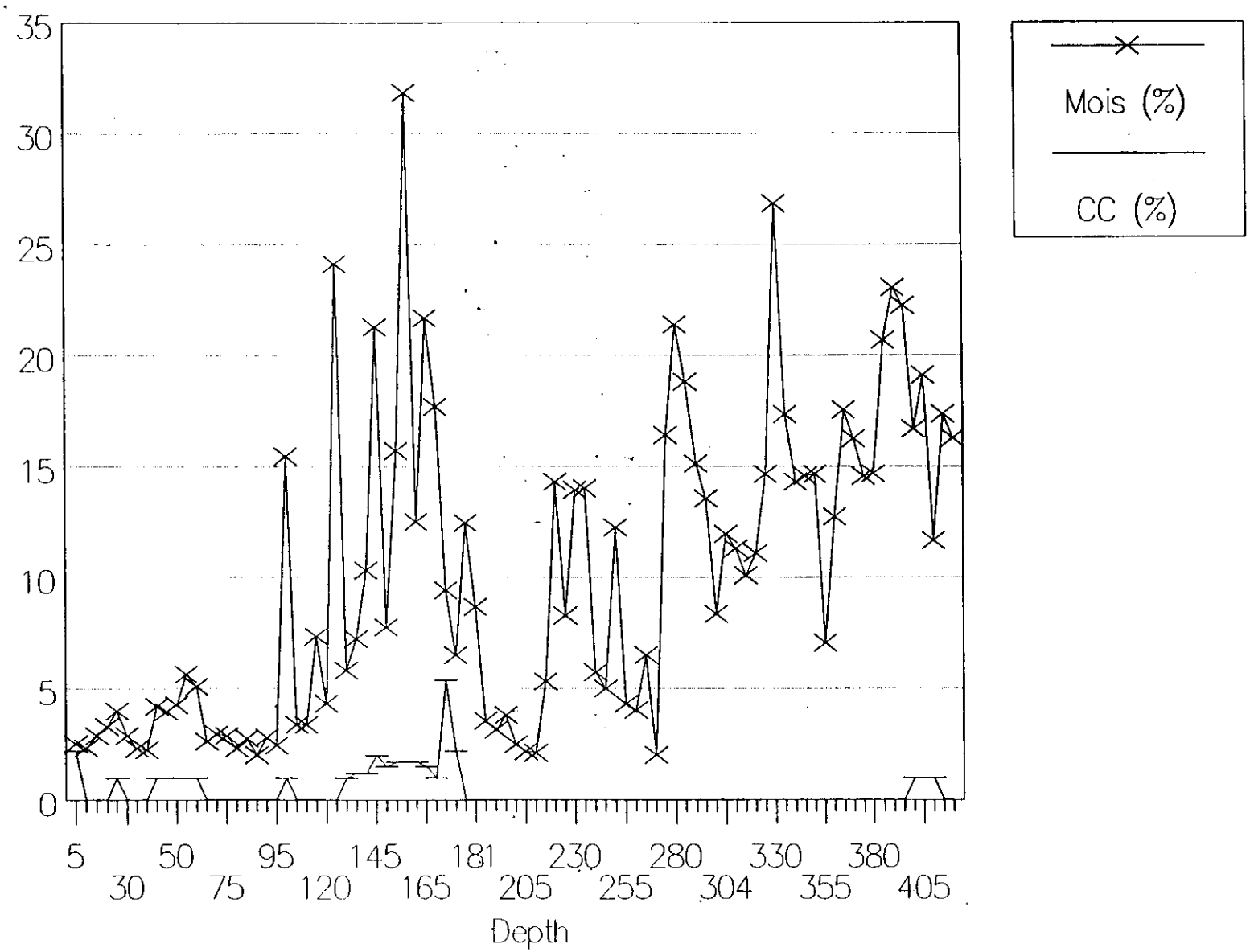
E.R. Walker
2-3755/L7-09

2/05/93 WELL: 299-W27-2 Page 4

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0476	299-W27-2	RCRA	390					23.06			<1.0	
3-0477	299-W27-2	RCRA	395					22.27			<1.0	
3-0478	299-W27-2	RCRA	400					16.69			<1.0	
3-0479	299-W27-2	RCRA	405					19.11			<1.0	
3-0480	299-W27-2	RCRA	410					11.67			<1.0	
3-0481	299-W27-2	RCRA	415					17.37			<1.0	
3-0482	299-W27-2	RCRA	420					16.27			<1.0	

intact - did not use soil
n/r - not requested
n/a - not applicable

WELL 299-W27-2



TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	N/A
SAMPLE/SPECIMEN NO	3-0396 -> 3-0440	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	45	GEL 19
Moisture Content	45	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

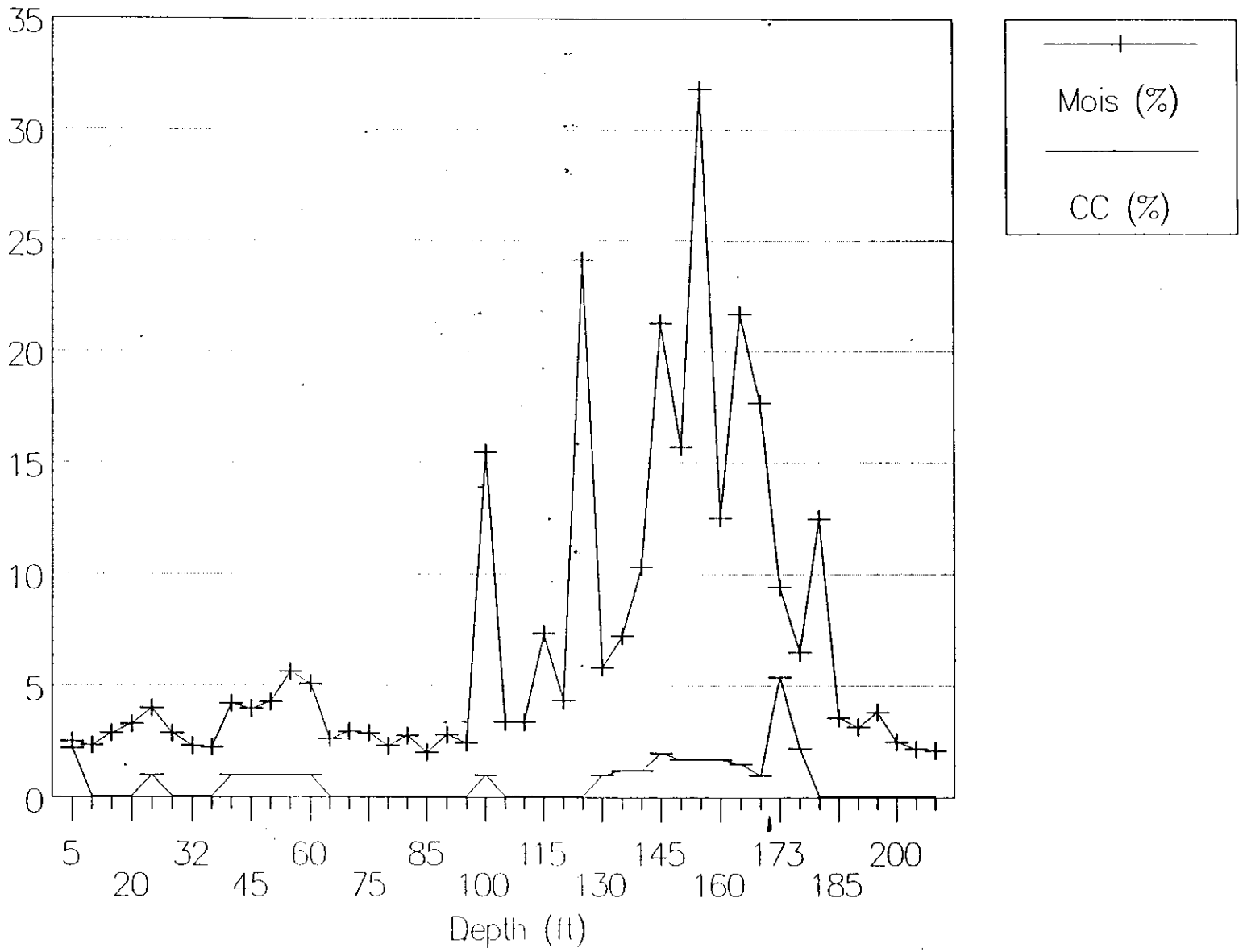
TAPE RELEASE STICKER HERE

NOT APPLICABLE

RECEIVED BY E. R. Walker

DATE 12/18/92

WELL 299-W27-2



Elizabeth R. Walker
2-3755/L7-09

1/15/93 WELL: 299-W27-2 Page 1

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0396	299-W27-2	RCRA	5	nr	nr	nr	nr	2.53	nr	nr	2.2	
3-0397	299-W27-2	RCRA	10	nr	nr	nr	nr	2.33	nr	nr	<1.0	
3-0398	299-W27-2	RCRA	15	nr	nr	nr	nr	2.89	nr	nr	<1.0	
3-0399	299-W27-2	RCRA	20	nr	nr	nr	nr	3.30	nr	nr	<1.0	
3-0400	299-W27-2	RCRA	25	nr	nr	nr	nr	4.01	nr	nr	1.0	
3-0401	299-W27-2	RCRA	30	nr	nr	nr	nr	2.88	nr	nr	<1.0	
3-0402	299-W27-2	RCRA	32	nr	nr	nr	nr	2.32	nr	nr	<1.0	
3-0403	299-W27-2	RCRA	35	nr	nr	nr	nr	2.25	nr	nr	<1.0	
3-0404	299-W27-2	RCRA	40	nr	nr	nr	nr	4.22	nr	nr	1.0	
3-0405	299-W27-2	RCRA	45	nr	nr	nr	nr	3.99	nr	nr	1.0	
3-0406	299-W27-2	RCRA	50	nr	nr	nr	nr	4.27	nr	nr	1.0	
3-0407	299-W27-2	RCRA	55	nr	nr	nr	nr	5.64	nr	nr	1.0	
3-0408	299-W27-2	RCRA	60	nr	nr	nr	nr	5.10	nr	nr	1.0	
3-0409	299-W27-2	RCRA	65	nr	nr	nr	nr	2.64	nr	nr	<1.0	
3-0410	299-W27-2	RCRA	70	nr	nr	nr	nr	2.96	nr	nr	<1.0	
3-0411	299-W27-2	RCRA	75	nr	nr	nr	nr	2.88	nr	nr	<1.0	
3-0412	299-W27-2	RCRA	76	nr	nr	nr	nr	2.31	nr	nr	<1.0	
3-0413	299-W27-2	RCRA	80	nr	nr	nr	nr	2.77	nr	nr	<1.0	
3-0414	299-W27-2	RCRA	85	nr	nr	nr	nr	2.01	nr	nr	<1.0	
3-0415	299-W27-2	RCRA	90	nr	nr	nr	nr	2.81	nr	nr	<1.0	
3-0416	299-W27-2	RCRA	95	nr	nr	nr	nr	2.45	nr	nr	<1.0	
3-0417	299-W27-2	RCRA	100	nr	nr	nr	nr	15.45	nr	nr	1.0	
3-0418	299-W27-2	RCRA	105	nr	nr	nr	nr	3.39	nr	nr	<1.0	
3-0419	299-W27-2	RCRA	110	nr	nr	nr	nr	3.38	nr	nr	<1.0	
3-0420	299-W27-2	RCRA	115	nr	nr	nr	nr	7.35	nr	nr	<1.0	
3-0421	299-W27-2	RCRA	120	nr	nr	nr	nr	4.35	nr	nr	<1.0	
3-0422	299-W27-2	RCRA	125	nr	nr	nr	nr	24.14	nr	nr	<1.0	
3-0423	299-W27-2	RCRA	130	nr	nr	nr	nr	5.82	nr	nr	1.0	
3-0424	299-W27-2	RCRA	135	nr	nr	nr	nr	7.25	nr	nr	1.2	
3-0425	299-W27-2	RCRA	140	nr	nr	nr	nr	10.31	nr	nr	1.2	

nr - Not Requested
na - Not Applicable

Elizabeth R. Walker
2-3755/L7-09

1/15/93 WELL: 299-W27-2 Page 2

Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0426	299-W27-2	RCRA	145	nr	nr	nr	nr	21.28	nr	nr	2.0	
3-0427	299-W27-2	RCRA	150	nr	nr	nr	nr	15.69	nr	nr	1.7	
3-0428	299-W27-2	RCRA	155	nr	nr	nr	nr	31.85	nr	nr	1.7	
3-0429	299-W27-2	RCRA	160	nr	nr	nr	nr	12.50	nr	nr	1.7	
3-0430	299-W27-2	RCRA	165	nr	nr	nr	nr	21.70	nr	nr	1.5	
3-0431	299-W27-2	RCRA	170	nr	nr	nr	nr	17.68	nr	nr	1.0	
3-0432	299-W27-2	RCRA	173	nr	nr	nr	nr	9.42	nr	nr	5.4	
3-0433	299-W27-2	RCRA	175	nr	nr	nr	nr	6.52	nr	nr	2.2	
3-0434	299-W27-2	RCRA	180	nr	nr	nr	nr	12.46	nr	nr	<1.0	
3-0435	299-W27-2	RCRA	185	nr	nr	nr	nr	3.56	nr	nr	<1.0	
3-0436	299-W27-2	RCRA	190	nr	nr	nr	nr	3.17	nr	nr	<1.0	
3-0437	299-W27-2	RCRA	195	nr	nr	nr	nr	3.83	nr	nr	<1.0	
3-0438	299-W27-2	RCRA	200	nr	nr	nr	nr	2.49	nr	nr	<1.0	
3-0439	299-W27-2	RCRA	205	nr	nr	nr	nr	2.19	nr	nr	<1.0	
3-0440	299-W27-2	RCRA	210	nr	nr	nr	nr	2.12	nr	nr	<1.0	

nr - Not Requested
na - Not Applicable

GEL 07 ☐ GEL 16 ☐
GEL 09 ☐ GEL 17 ☐
GEL 10 ☐ GEL 19 ☒
GEL 14 ☒ GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0396 > 0418

Page 1 of 2

GEL-14 SOIL MOISTURE | **GEL-19 CALCIUM CARBONATE**

Tested By J. Hayne Balance: 3304 Calibration Due Date 1-25-93 Vessel No. 5650

Date 1-13-93 Thermometer: 0015 Calibration Due Date _____ Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
3 0396	553.96	540.45	63.10	13.51	534.95	2.53	1.2	2.2	
3 0397	492.70	481.50	60.95	11.20	481.50	2.33	.3	<1	
3 0398	492.06	479.95	62.22	12.11	419.00	2.89	.4	<1	
3 0399	484.81	471.32	61.05	13.49	409.10	3.30	.2	<1	
3 0400	426.96	412.85	63.41	14.11	351.80	4.01	.7	1.0	
3 0401	517.09	504.38	63.78	12.71	440.97	2.88	.4	<1	
3 0402	501.82	491.90	61.18	9.92	428.12	2.32	.3	<1	
3 0403	561.27	550.26	62.88	11.01	489.08	2.25	.2	<1	
3 0404	455.40	439.50	61.76	15.90	376.62	4.22	.7	1.0	
3 0405	478.36	462.39	63.93	15.97	400.63	3.99	.7	1.0	
3 0406	463.18	446.84	62.23	16.34	382.91	4.27	.7	1.0	
3 0407	445.47	425.01	60.18	20.46	362.78	5.64	.7	1.0	
3 0408	440.52	422.07	62.06	18.45	361.89	5.10	.7	1.0	
3 0409	465.20	454.84	62.21	10.36	392.78	2.64	.5	<1	
3 0410	433.56	422.88	61.83	10.68	360.67	2.96	.6	<1	
3 0411	461.59	450.28	61.81	11.21	389.00	2.88	.5	<1	
3 0412	568.36	556.96	62.53	11.40	494.43	2.31	.4	<1	
3 0413	419.64	410.00	61.90	9.64	347.47	2.77	.6	<1	
3 0414	473.32	465.20	61.12	8.12	403.30	2.01	.3	<1	
3 0415	477.40	466.02	63.23	11.38	404.90	2.81	.4	<1	
3 0416	454.96	445.60	62.70	9.36	382.37	2.45	.4	<1	
3 0417	438.09	387.86	61.92	50.23	325.16	15.45	.7	1.0	
3 0418	465.89	452.66	63.77	13.23	390.74	3.39	.4	<1	

Remarks: _____

Tests Checked By: R. T. McCutcheon Date 01/14/93

BD-6000-806 (04/92)

WHC-SD-EN-DP-052, Rev. 0

GEL 07 ☐	GEL 16 ☐
GEL 09 ☐	GEL 17 ☐
GEL 10 ☐	GEL 19 ☒
GEL 14 ☒	GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0419 > 0440

Page 2 of 2

GEL-14 SOIL MOISTURE

Tested By JR Pagne Balance: 3304 Calibration Due Date 1-25-93

Date 1-14-93 Thermometer: 0015 Calibration Due Date

GEL-19 CALCIUM CARBONATE

Vessel No.

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
3 0419	459.91	446.96	63.10	12.95	383.19	3.38	.3	<1	JRP
3 0420	451.45	424.85	64.10	26.60	361.75	7.35	.2	<1	JRP
3 0421	493.22	475.34	62.79	17.88	411.24	4.35	.5	<1	JRP
3 0422	463.48	439.34	63.13	24.14	376.55	24.14	.3	<1	JRP
3 0423	500.61	476.56	62.55	24.05	413.43	5.82	.7	1.0	JRP
3 0424	436.67	411.38	59.69	25.29	348.83	7.25	.8	1.2	JRP
3 0425	472.78	434.16	61.19	38.62	374.47	10.31	.8	1.2	JRP
3 0426	539.04	455.18	62.74	83.86	393.99	21.28	1.1	2.0	JRP
3 0427	478.58	422.19	62.56	56.39	359.45	15.69	1.0	1.7	JRP
3 0428	502.71	396.39	61.01	106.32	333.83	31.85	1.0	1.7	JRP
3 0429	444.83	402.17	64.03	42.66	341.16	12.50	1.0	1.7	JRP
3 0430	505.04	426.40	61.50	78.64	362.37	21.70	.9	1.5	JRP
3 0431	490.85	426.34	61.53	64.51	364.84	17.68	.7	1.0	JRP
3 0432	397.14	368.25	61.92	28.89	306.72	9.42	2.5	5.4	JRP
3 0433	537.14	508.07	62.48	29.07	446.15	6.52	1.2	2.2	JRP
3 0434	425.03	384.87	61.62	40.16	322.39	12.46	.4	<1	JRP
3 0435	446.81	433.57	62.87	13.24	371.95	3.56	.3	<1	JRP
3 0436	405.19	394.68	61.94	10.51	331.81	3.17	.3	<1	JRP
3 0437	173.98	169.85	62.05	4.13	107.91	3.83	.2	<1	JRP
3 0438	210.62	207.01	63.48	3.61	144.96	2.49	.2	<1	JRP
3 0439	180.67	178.16	61.00	2.51	114.68	2.19	.2	<1	JRP
3 0440	159.89	157.84	62.83	2.05	96.84	2.12	.2	<1	JRP

Remarks:

Tests Checked By: R. T. McIntosh Date 01/14/93

BD-6000-806 (04/92)

9313090.0633

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	N/A
SAMPLE/SPECIMEN NO	3-0441 -> 3-0482	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	42	GEL 19
Moisture Content	42	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

TAPE RELEASE STICKER HERE

See attached Sheets.

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☐	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0	Sample No(s). 3-0441 70461
GEL 09 ☐	GEL 17 ☐	**GEOTECHNICAL ENGINEERING LABORATORY**	
GEL 10 ☐	GEL 19 ☒	**GEL-14, GEL-19**	Page 1 of 2
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Tested By: JR Payne Balance: 3304 Calibration Due Date: 1-25-93

Date: 1-14-93 Thermometer: 0018 Calibration Due Date: 9-17-93

GEL-19 CALCIUM CARBONATE

Vessel No.: 5650

Sample Wt.: 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
3 0441	368.64	353.19	63.26	15.45	289.93	5.33	.2	<1	[illegible]
3 0442	325.05	292.26	63.04	32.79	229.22	14.31	.2	<1	[illegible]
3 0443	308.35	289.54	62.74	18.81	226.80	8.29	.2	<1	[illegible]
3 0444	388.16	348.27	62.20	39.89	286.07	13.94	.3	<1	[illegible]
3 0445	500.74	447.04	63.66	53.70	383.38	14.01	.2	<1	[illegible]
3 0446	341.06	325.91	61.76	15.15	264.15	5.74	.3	<1	[illegible]
3 0447	401.80	385.53	60.70	16.27	324.83	5.01	.2	<1	[illegible]
3 0448	505.53	457.10	62.21	48.43	394.89	12.26	.2	<1	[illegible]
3 0449	392.35	378.71	62.90	13.64	315.81	4.32	.2	<1	[illegible]
3 0450	362.11	350.42	62.45	11.69	287.97	4.06	.2	<1	[illegible]
3 0451	356.85	338.85	62.46	18.00	276.39	6.51	.2	<1	[illegible]
3 0452	380.32	373.99	62.04	6.33	311.95	2.03	.2	<1	[illegible]
3 0453	574.23	502.07	62.27	72.16	439.80	16.41	.2	<1	[illegible]
3 0454	500.14	423.16	63.50	76.98	359.66	21.40	.2	<1	[illegible]
3 0455	467.49	403.36	62.87	64.13	340.49	18.83	.2	<1	[illegible]
3 0456	634.60	559.32	61.73	75.28	497.59	15.13	.2	<1	[illegible]
3 0457	479.42	429.74	63.02	49.68	366.72	13.55	.2	<1	[illegible]
3 0458	482.43	449.99	62.02	32.44	387.97	8.36	.2	<1	[illegible]
3 0459	518.08	469.16	60.27	48.92	408.89	11.96	.2	<1	[illegible]
3 0460	525.40	478.27	60.91	47.13	417.36	11.29	.2	<1	[illegible]
3 0461	531.62	488.64	63.13	42.98	425.51	10.10	.2	<1	[illegible]

Remarks:

Tests Checked By: R. T. McIntosh Date: 01/18/93

BD-6000-806 (04/92)

9313090.0635

GEL 07 ☐	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0	Sample No(s). 3-0462 > 0482
GEL 09 ☐	GEL 17 ☐	**GEOTECHNICAL ENGINEERING LABORATORY**	
GEL 10 ☐	GEL 19 ☒	**GEL-14, GEL-19**	Page 2 of 2
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Tested By [illegible] Balance: 3304 Calibration Due Date 1-25-93

Date 1-15-93 Thermometer: 0018 Calibration Due Date 9-17-93

GEL-19 CALCIUM CARBONATE

Vessel No. 5650

Sample Wt. 8.0 (g)

Sample No.	Wet Wt. + Tare	Dry Wt. + Tare	Tare Wt.	Moisture Wt.	Dry Wt. Soil	% Moisture	Sample Pressure (psi)	% $CaCO_3$ (per gram)	Calculated By
3 0462	515.65	470.32	61.55	45.33	~~404.05~~ 408.77	11.09	.3	<1	[illegible]
3 0463	553.53	490.58	61.28	~~103.69~~ 62.95	~~387.17~~ 429.30	~~26.76~~ 14.66	.3	<1	[illegible]
3 0464	552.71	449.02	62.64	103.69	386.38	26.84	.3	<1	[illegible]
3 0465	395.34	346.26	63.02	49.08	283.24	17.33	.2	<1	[illegible]
3 0466	438.32	391.30	62.78	47.02	328.52	14.31	.2	<1	[illegible]
3 0467	431.10	384.12	61.76	46.98	322.36	14.57	.3	<1	[illegible]
3 0468	411.73	367.14	62.76	44.59	304.38	14.65	.3	<1	[illegible]
3 0469	385.52	364.32	63.65	21.20	300.67	7.05	.3	<1	[illegible]
3 0470	415.41	375.60	63.20	39.81	312.40	12.74	.3	<1	[illegible]
3 0471	473.71	412.10	60.98	61.61	351.12	17.55	.3	<1	[illegible]
3 0472	504.67	442.79	62.04	61.88	380.75	16.25	.3	<1	[illegible]
3 0473	487.45	433.37	61.93	54.08	371.44	14.56	.3	<1	[illegible]
3 0474	502.72	446.38	62.45	56.34	383.93	14.67	.3	<1	[illegible]
3 0475	444.64	379.27	63.34	65.37	315.93	20.69	.2	<1	[illegible]
3 0476	402.48	338.70	62.16	63.78	~~276.54~~ 276.54	23.06	.3	<1	[illegible]
3 0477	425.52	359.21	62.13	66.19	297.18	22.27	.3	<1	[illegible]
3 0478	447.30	392.31	62.78	54.99	329.53	16.69	.3	<1	[illegible]
3 0479	433.04	373.51	62.03	59.53	311.48	19.11	.3	<1	[illegible]
3 0480	497.07	451.76	63.49	45.31	388.27	11.67	.3	<1	[illegible]
3 0481	409.80	358.42	62.59	51.38	295.83	17.37	.3	<1	[illegible]
3 0482	543.37	476.12	62.85	67.25	413.27	16.27	.3	<1	[illegible]

Remarks:

Tests Checked By: [illegible] Date 01/18/93

BD-6000-806 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	180.5 - 181.0
SAMPLE/SPECIMEN NO	3-0385/86	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Saturated Hydraulic Conduc	1	GEL 09
Bulk Density Porosity	1	GEL 16
Sieve Analysis	1	GEL 07
Specific Gravity	1	GEL 10

REMARKS: 2 Liners.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC Health Physics

Remarks 181.0-181.5

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC Health Physics

Remarks 180.5-181 ~~180-180.5~~

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☒	GEL 16 ☐
GEL 09 ☐	GEL 17 ☐
GEL 10 ☐	GEL 19 ☐
GEL 14 ☐	GEL ☐

WHC-SD-EN-DP-052, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-07 SIEVE AND HYDROMETER ANALYSIS

Sample No. 3-0386

Page ____ of ____

GEL-07 SIEVE ANALYSIS

Date 1-14-93 Calibration Due Date 1-25-93 Balance: 3310

Sample Description SAND & GRAVE Sieve Time 10 (min)

Reduced By: ☐ Splitting ☐ Quartering ☐ Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed	Tested By
1½	1697.3	0	0	100	L.D. Bruggeman
3/4	↓	20.5	1.2	98.8	
3/8	↓	97.3	5.7	94.3	
4	↓	141.4	8.3	91.7	
10	386.2	147.4	8.7	91.3	
40	↓	224.6	58.2	38.2	—
60	↓	272.0	70.4	27.0	
100	↓	285.0	73.8	23.9	
200	↓	297.4	77.0	21.0	

Remarks: pan 130 As Received 2131.9 - T = 1890.2
T = 241.7 Oven dried 1939.0 - T = 1697.3

GEL-07 HYDROMETER ANALYSIS

Date ____ Balance: ____ Calibration Due Date ____

Thermometer: ____ Calibration Due Date ____

Hydrometer: ____ Calibration Due Date ____

WEIGHT OF SAMPLE

Wt. Container + Soil ____ (g) Specific Gravity of Sample ____

Wt. Container ____ (g) % Passing No. 10 Sieve ____ %

Wt. Soil ____ (g) A = ____ W = ____ K = ____

COMPOSITE CORRECTION

1st Reading ____ at ____ °C

2nd Reading ____ at ____ °C

Date	Clock Time	Elapsed Time (min)	Hydrometer Reading	Hydrometer with Composite Correction	Temperature (°C)	Soil in Suspension (%)	Particle Diameter (mm)	Tested By
		2.0						
		5.0						
		15.0						
		30.0						
		60.0						
		250.0						
		1440.0						

Remarks: N/A

Tests Checked By ____ Date ____

BD-6000-796 (04/92)

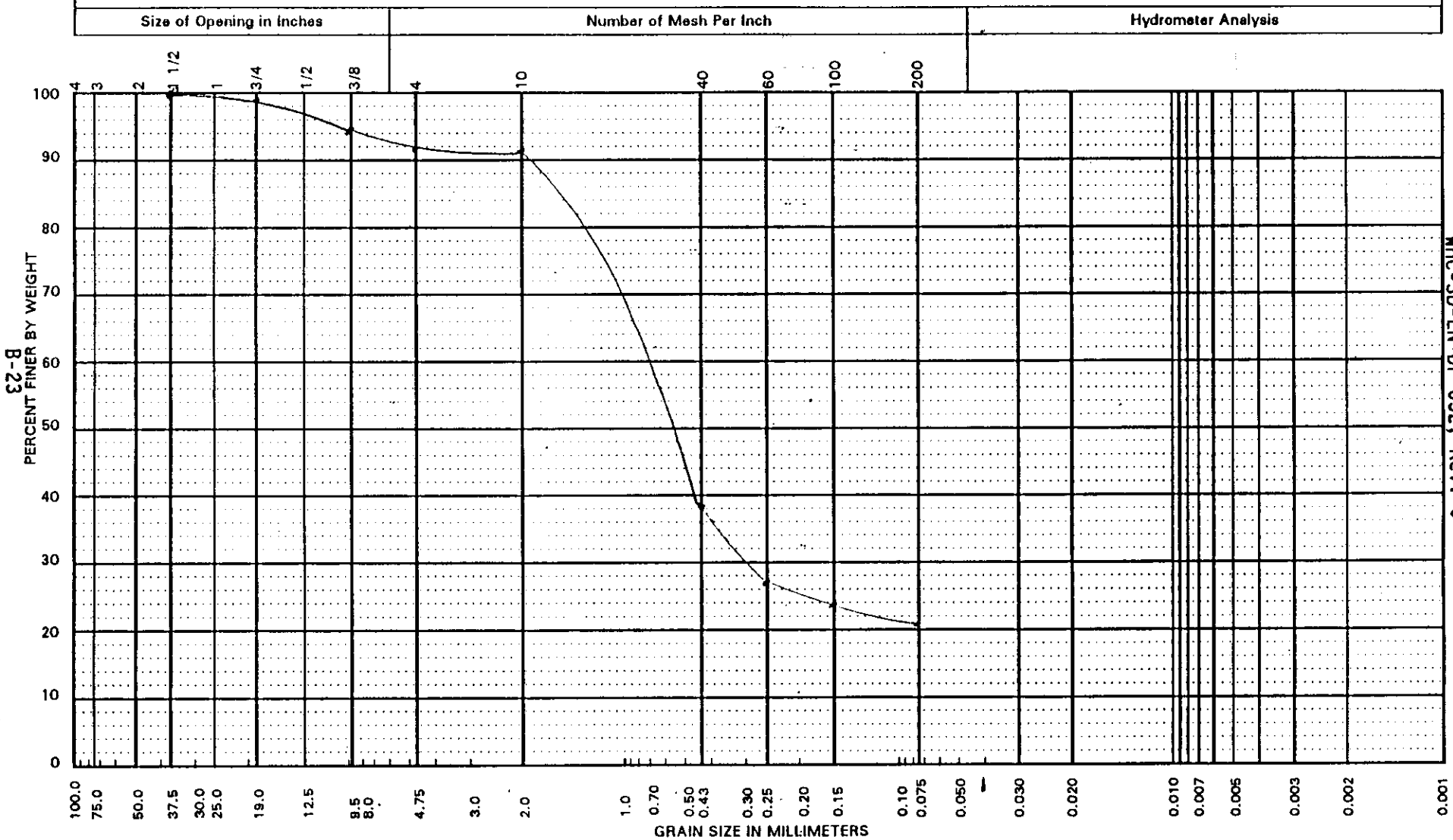
9313090.0639

GEL-07 GRAIN SIZE ANALYSIS PLOT

Sample No. 3-0386

Page _____ of _____

Remarks 299-W27-2 180.5-181.0'



Plotted By Ed Bruggeman Date 1-26-93

Plot Checked By Richard T. McCutcheon Date 1/26/93

BD-6000-799 (04/92)

GEL 07 ☒	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0	Sample No. 3-0386
GEL 09 ☐	GEL 17 ☐	GEOTECHNICAL ENGINEERING LABORATORY	
GEL 10 ☒	GEL 19 ☐	GEL-10 SPECIFIC GRAVITY SOILS FINE/COARSE	Page ____ of ____
GEL 14 ☐	GEL ☐		

GEL-10 SPECIFIC GRAVITY OF SOILS

Date 1-14-93 Tested By L D Bruggeman

Balance: 3304 Calibration Due Date 1-25-93

	DETERMINATION NO.	1	2	3
W_o	Wt. Oven Dry, Soil, g	58.__	.__	.__
	Pycnometer No.	2555		
	Wt. Pycnometer, g	.__	.__	.__
W_a	Wt. Pycnometer + Wetting Agent, g	381.38	.__	.__
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	415.99	.__	.__
	Temperature, T_x at W_b, °C	22.3		
G_w	Specific Gravity of Wetting Agent at T_x	1.0	.__	.__
G_t	Specific Gravity of Soil at T_x	2.70	.__	.__
G_s	Specific Gravity of Soil at 20 °C	2.70	.__	.__

NOT APPLICABLE

Wetting Agent D.I. H_2O

$$C_t = \frac{W_o}{W_o + W_a - W_b}$$

Remarks:

GEL-10 SPECIFIC GRAVITY COARSE AGGREGATES

Date ____ Tested By: ____

Balance: 3312 Calibration Due Date ____

	DETERMINATION NO.	1	
	Size fraction		
P_1	Size fraction, wt. % total, g		
	Tare weight		
B	Weight sample (SSD), g	.__	.__
C	Weight sample in H_2O, g	.__	.__
A	Weight of oven dry sample, g	.__	.__

NOT APPLICABLE

Bulk Specific Gravity, 23/23 °C = A/(B-C) = .__

A = wt. oven dry sample in air, g
B = wt. SSD sample in air, g
C = wt. saturated sample in H_2O, g

Bulk Specific Gravity SSD, 23/23 °C = B/(B-C) = .__

Apparent Specific Gravity, 23/23 °C = A/(A-C) = .__

*Average Specific Gravity Values, 23/23 °C $\overline{G}$ = .__

NOT APPLICABLE

Remarks:

$$\overline{G} = \frac{1}{\dfrac{P_1 = \%\ \text{coarse}}{G_1 = \text{coarse sp.gr.} \times 100} + \dfrac{P_2 = \%\ \text{fines}}{G_2 = \text{fines sp. gr.} \times 100}}$$

$\overline{G}$ = Ave. Specific Gravity for all forms of Specific Gravity i.e., formula applicable to Bulk, Bulk SSD and Apparent Specific Gravity.

G_1, G_2 = appropriate Specific Gravity values for each size fraction depending on the type of Specific Gravity being averaged.

P_1, P_2 = wt. percentages of each size fraction present in the original sample.

*State type of Specific Gravity Reported i.e., either Bulk, Bulk SSD or Apparent.

Tests Checked By: Richard T. McIntosh Date 1/26/93

BD-6000-798 (08/92)

GEL 07 ☐	GEL 16 ☒	WHC-SD-EN-DP-052, Rev. 0 GEOTECHNICAL ENGINEERING LABORATORY GEL-14, GEL-16, GEL-19	Sample No. 3-0385
GEL 09 ☒	GEL 17 ☐		Page ____ of ____
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Balance: _____ Calibration Due Date _____ Tested By _____

Thermometer: _____ Calibration Due Date _____

NOT APPLICABLE

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By

Remarks: _____

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☒ Plastic ☐ Metal	Length:	15.24	
Sample Volume, V, cc			1687.07	
Wt. of Sample & Mold, g			2391.1	
Wt. of Mold, g			301.6	
Wet Wt. of Sample, g			2089.50	
Wet Density of Sample, γ m, g/cc			1.92	
Water Content % Dry Weight			9.06	
Dry Density, g/cc γ d			1.76	
Dry weight of Sample, g, Ws			1915.92	
*Void Ratio, e			0.5319	
**Porosity, n, %			34.72	

Tested By L.D. Bruggman

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg. Sp. Gr.} \times \text{Vol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

Remarks: Composite with 38b SpG = 2.70 (3-0386)

GEL-19 CALCIUM CARBONATE

Vessel No. _____ Tested By _____

Balance No. 3304 Balance _____

Sample Weight 8.0 (g)

Sample Pressure _____ (psi) %$CaCO_3$ _____ Per Gram

NOT APPLICABLE

Remarks: _____

Tests Checked By: Richard T. McIntosh Date 1/26/93

BD-6000-797 (04/92)

GEL 07 ☐	GEL 16 ☒
GEL 09 ☒	GEL 17 ☐
GEL 10 ☐	GEL 19 ☐
GEL 14 ☐	GEL ☐

9313090.0642

GEOTECHNICAL ENGINEERING LABORATORY
GEL-09 HYDRAULIC CONDUCTIVITY DATA SHEET

Sample No. 3-0385

Page ____ of ____

Balance No. 3310 Permeameter No. 2

Test Initiated By LD Bruggeman Date 1-14-93 Procedure GEL 09 Rev 2 Sleeve Type: ☐ Metal ☒ Plastic

Specimen Diameter (D) 9.53 cm

Specimen Length (L) 15.24 cm

$$A = \left(\frac{D}{2}\right)^2 \times 3.1415$$

Specimen Area (A) ~~9.53~~ 71.33 cm^2 LDB 1-14-93

Darcy's Law

$$K = \frac{QL}{AH}$$

K = Hydraulic Conductivity (cm/sec)

Q = Flow (cm^3/sec) = Vol. g/Time (sec)

A = Area (cm^2)

H = Hydraulic Head

L = Length (cm)

Date Year 93 (Mo/Day)	Run Time System (Hr:Min)	Run Time System (Hr:Min)	Run Time Time Change	Container Weight (± 0.1 g)	Container Tare (± 0.1 g)	Container Tare & Effluent (± 0.1 g)	Room Temp (°C)	Pressure Pore H_2O (cm)	Effluent Description	Operator Initials	Hydraulic Conductivity (cm/sec)	Calculated By
1/16	8:44	9:01	0:17	299.7	298.5	598.2	21.6	2.1	clear	LDB	2.81E-02	LDB
↓	9:02	9:52	0:50	705.8	298.5	1004.3	21.0	2.0	↓	↓	2.36E-02	↓
	9:57	10:00	0:03	84.9	298.5	383.4	21.0	3.2			2.96E-02	
	10:01	10:10	0:09	240.8	298.5	539.3	20.9	3.2			2.80E-02	
	10:11	10:28	0:17	412.4	298.5	710.9	20.8	3.2			2.54E-02	
	10:29	10:54	:25	521.0	298.5	819.5	20.9	3.2			2.18E-02	

$K \equiv 2.61 \times 10^{-2}$

Remarks composite with 386

Test Checked By R. T. McIntosh Date 01/18/93

BD 0-795 (04/92)

WHC-SD-EN-DP-052, Rev. 0

8-26

TEST REQUEST

COPY

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	
SAMPLE/SPECIMEN NO	3-0387	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	1	GEL 19
Moisture Content	1	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3-0387 181.5-181.7

3 0387

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☐	GEL 16 ☐	GEOTECHNICAL ENGINEERING LABORATORY GEL-14, GEL-16, GEL-19	Sample No. 3-03857
GEL 09 ☐	GEL 17 ☐		Page ____ of ____
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Balance: 3304 Calibration Due Date 1-25-93 Tested By J R Payne

Thermometer: 0018 Calibration Due Date 9-17-93

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By
1-14-93	447.57	416.82	62.67	30.69	~~354.03~~	8.67	J R Payne
					354.15		

Remarks:

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☐ Plastic ☐ Metal	Length:		
Sample Volume, V, cc				
Wt. of Sample & Mold, g				
Wt. of Mold, g				
Wet Wt. of Sample, g				
Wet Density of Sample, γ m, g/cc				
Water Content % Dry Weight				
Dry Density, g/cc γ d				
Dry weight of Sample, g, Ws				
*Void Ratio, e				
**Porosity, n, %				

NOT APPLICABLE

Tested By

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Ap. Sp. Gr.} \times \text{Vol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

NOT APPLICABLE

Remarks:

GEL-19 CALCIUM CARBONATE

Vessel No. 5650 Tested By J R Payne

Balance No. 3304 Date Due 1-25-93

Sample Weight 8.0 (g)

Sample Pressure 3 (psi) %$CaCO_3$ <1 Per Gram

Remarks:

Tests Checked By: R T McCullough Date 01/18/93

BD-6000-797 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	
SAMPLE/SPECIMEN NO	3-0387	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	1	GEL 19
Moisture Content	1	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3-0387 181.5-181.7

3 0387

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☐	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0 GEOTECHNICAL ENGINEERING LABORATORY GEL-14, GEL-16, GEL-19	Sample No. 3-0387 Page ____ of ____
GEL 09 ☐	GEL 17 ☐		
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Balance: 3304 Calibration Due Date 1-25-93 Tested By J R Payne

Thermometer: 0018 Calibration Due Date 9-17-93

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By
1-14-93	447.57	416.82	62.67	30.69	~~354.83~~	8.67	J R Payne
					354.15		

Remarks:

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☐ Plastic ☐ Metal	Length:		
Sample Volume, V, cc				
Wt. of Sample & Mold, g				
Wt. of Mold, g				
Wet Wt. of Sample, g				
Wet Density of Sample, γ m, g/cc				
Water Content % Dry Weight				
Dry Density, g/cc γ d				
Dry weight of Sample, g, Ws				
*Void Ratio, e				
**Porosity, n, %				

NOT APPLICABLE

Tested By

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg Sp Gr} \times \text{Vol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

NOT APPLICABLE

Remarks:

GEL-19 CALCIUM CARBONATE

Vessel No. 5650 Tested By J R Payne

Balance No. 3304 Date Due 1-25-93

Sample Weight 8.0 (g)

Sample Pressure .3 (psi) $\%CaCO_3$ <1 Per Gram

Remarks:

Tests Checked By: R T McIntosh Date 01/18/93

BD-6000-797 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	146.42 - 146.76
SAMPLE/SPECIMEN NO	3-0388	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	1	GEL 19
Moisture Content	1	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3 0388 220

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☒	GEL 16 ☒	WHC-SD-EN-DP-052, Rev. 0 GEOTECHNICAL ENGINEERING LABORATORY GEL-14, GEL-16, GEL-19	Sample No.
GEL 09 ☒	GEL 17 ☐		
GEL 10 ☒	GEL 19 ☒		Page ____ of ____
GEL 14 ☒	GEL ☐		

GEL-14 SOIL MOISTURE

Balance: 3304 Calibration Due Date 1-25-93 Tested By [signature]

Thermometer: 0018 Calibration Due Date 9-17-93

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By
1-14-93	480.77	450.58	61.29	30.19	~~387.91~~	~~7.78~~	[signature]
					389.29	7.76	

Remarks:

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☐ Plastic ☐ Metal	Length:		
Sample Volume, V, cc				
Wt. of Sample & Mold, g				
Wt. of Mold, g				
Wet Wt. of Sample, g				
Wet Density of Sample, γ m, g/cc				
Water Content % Dry Weight				
Dry Density, g/cc γ d				
Dry weight of Sample, g, Ws				
*Void Ratio, e				
**Porosity, n, %				

NOT APPLICABLE

Tested By

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg. Sp. Gr. of Sol.}}{\text{Wet Density}} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

NOT APPLICABLE

Remarks:

GEL-19 CALCIUM CARBONATE

Vessel No. 5650 Tested By [signature]

Balance No. 3304 Date Due 1-25-93

Sample Weight 8.0 (g)

Sample Pressure 9 (psi) %$CaCO_3$ 1.5 Per Gram

Remarks:

Tests Checked By: R.T. McCulloch Date 01/18/93

BD-6000-797 (04/92)

TEST REQUEST

COPY

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	146.42 - 146.76
SAMPLE/SPECIMEN NO	3-0388	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	1	GEL 19
Moisture Content	1	GEL 14

REMARKS: Tin.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3 0388 220

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☒ GEL 09 ☒ GEL 10 ☒ GEL 14 ☒	GEL 16 ☒ GEL 17 ☐ GEL 19 ☒ GEL ☐	WHC-SD-EN-DP-052, Rev. 0 **GEOTECHNICAL ENGINEERING LABORATORY** **GEL-14, GEL-16, GEL-19**	Sample No. Page ____ of ____

GEL-14 SOIL MOISTURE

Balance: 3304 Calibration Due Date 1-25-93 Tested By J.R. Payne

Thermometer: 0018 Calibration Due Date 9-17-93

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By
1-14-93	480.77	450.58	61.29	30.19	~~387.91~~	~~7.78~~	J.R. Payne
					389.29	7.76	

Remarks:

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☐ Plastic ☐ Metal	Length:		
Sample Volume, V, cc				
Wt. of Sample & Mold, g				
Wt. of Mold, g				
Wet Wt. of Sample, g				
Wet Density of Sample, γ m, g/cc				
Water Content % Dry Weight				
Dry Density, g/cc γ d				
Dry weight of Sample, g, Ws				
*Void Ratio, e				
**Porosity, n, %				

NOT APPLICABLE

Tested By

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg. Sp. Gr. of Sol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

NOT APPLICABLE

Remarks:

GEL-19 CALCIUM CARBONATE

Vessel No. 5650 Tested By J.R. Payne

Balance No. 3304 Date Due 1-25-93

Sample Weight 8.0 (g)

Sample Pressure 9 (psi) %$CaCO_3$ 1.5 Per Gram

Remarks:

Tests Checked By: R.T. McCulloch Date 01/18/93

BD-6000-797 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	
SAMPLE/SPECIMEN NO	3-0390 -> 3-0392	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Saturated Hydraulic Conduc	1	GEL 09
Bulk Density Porosity	1	GEL 16
Sieve Analysis	1	GEL 07
Specific Gravity	1	GEL 10

REMARKS: 3 Liners. 3-0390 GEL 09, 16. 3-0391 GEL 07, 10. 3-0392 Archived – not needed.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC Health Physics

Remarks 144.92-145.42

3-0390

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC Health Physics

Remarks 145.42-145.92

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☐	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0 GEOTECHNICAL ENGINEERING LABORATORY GEL-10 SPECIFIC GRAVITY SOILS FINE/COARSE	Sample No. 3-0391 Page ____ of ____
GEL 09 ☐	GEL 17 ☐		
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-10 SPECIFIC GRAVITY OF SOILS

Date 1-25-93 Tested By LD Bruggeman

Balance: 3304 Calibration Due Date 1-25-93

	DETERMINATION NO.	1	2	3
W_o	Wt. Oven Dry, Soil, g	55.0	.	.
	Pycnometer No.	5697		
	Wt. Pycnometer, g	135.62	.	.
W_a	Wt. Pycnometer + Wetting Agent, g	386.62	.	.
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	421.00	.	.
	Temperature, T_x at W_b, °C	22.8		
G_w	Specific Gravity of Wetting Agent at T_x	1.0	.	.
G_t	Specific Gravity of Soil at T_x	2.67	.	.
G_s	Specific Gravity of Soil at 20 °C	.	.	.

NOT APPLICABLE

Wetting Agent D.I. H_2O

$$C_t = \frac{W_o}{W_o + W_a - W_b}$$

Remarks:

GEL-10 SPECIFIC GRAVITY COARSE AGGREGATES

Date ____ Tested By: ____

Balance: 3312 Calibration Due Date ____

	DETERMINATION NO.	1	
	Size fraction		
P_1	Size fraction, wt. % total, g		
	Tare weight		
B	Weight sample (SSD), g	.	.
C	Weight sample in H_2O, g	.	.
A	Weight of oven dry sample, g	.	.

NOT APPLICABLE

Bulk Specific Gravity, 23/23 °C = A/(B-C) = .

A = wt. oven dry sample in air, g
B = wt. SSD sample in air, g
C = wt. saturated sample in H_2O, g

Bulk Specific Gravity SSD, 23/23 °C = B/(B-C) = .

Apparent Specific Gravity, 23/23 °C = A/(A-C) = .

*Average Specific Gravity Values, 23/23 °C $\overline{G}$ = .

NOT APPLICABLE

Remarks: NA

$$\overline{G} = \frac{1}{\dfrac{P_1 = \%\ \text{coarse}}{G_1 = \text{coarse sp.gr.} \times 100} + \dfrac{P_2 = \%\ \text{fines}}{G_2 = \text{fines sp. gr.} \times 100}}$$

$\overline{G}$ = Ave. Specific Gravity for all forms of Specific Gravity i.e., formula applicable to Bulk, Bulk SSD and Apparent Specific Gravity.

G_1, G_2 = appropriate Specific Gravity values for each size fraction depending on the type of Specific Gravity being averaged.

P_1, P_2 = wt. percentages of each size fraction present in the original sample.

*State type of Specific Gravity Reported i.e., either Bulk, Bulk SSD or Apparent.

Tests Checked By: Richard T. McIntosh Date 1/28/93

BD-6000-798 (08/92)

GEL 07 ☐	GEL 16 ☒
GEL 09 ☒	GEL 17 ☐
GEL 10 ☐	GEL 19 ☐
GEL 14 ☐	GEL ☐

WHC-SD-EN-DP-052, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-16, GEL-19

Sample No. 3-0391

Page ____ of ____

GEL-14 SOIL MOISTURE

Balance: _____ Calibration Due Date _____ Tested By _____

Thermometer: _____ Calibration Due Date _____

NOT APPLICABLE

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By

Remarks: _____

GEL-16 BULK DENSITY-POROSITY

DETERMINATION NO.			1	
Pan No.:	Mold: ☐ Plastic ☒ Metal	Length:	15.24	
Sample Volume, V, cc			1156.56	
Wt. of Sample & Mold, g			2601.7	
Wt. of Mold, g			754.8	
Wet Wt. of Sample, g			1846.90	
Wet Density of Sample, γ m, g/cc			1.60	
Water Content % Dry Weight			15.23	
Dry Density, g/cc γ d			1.39	
Dry weight of Sample, g, Ws			1602.79	
*Void Ratio, e			0.9266	
**Porosity, n, %			48.10	

Tested By LD Bruggeman

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg. Sp. Gr. x Vol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

Remarks: Sp G 2.67 (3-0391)

GEL-19 CALCIUM CARBONATE

Vessel No. _____ Tested By _____

Balance No. 3304 Date Due _____

Sample Weight _____ (g)

NOT APPLICABLE

Sample Pressure _____ (psi) %$CaCO_3$ _____ Per Gram

Remarks: _____

Tests Checked By: Richard T. McIntosh Date 1/28/93

BD-6000-797 (04/92)

9313000.0653

GEL 07 ☒	GEL 16 ☒
GEL 09 ☒	GEL 17 ☐
GEL 10 ☒	GEL 19 ☒
GEL 14 ☒	GEL ☐

WHC-SD-EN-DP-052, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-07 SIEVE AND HYDROMETER ANALYSIS

Sample No. 3-0391

Page ____ of ____

GEL-07 SIEVE ANALYSIS

Date 1-25-93 Calibration Due Date 1-25-93 Balance: 3310

Sample Description Fine Sand Sieve Time 10 (min)

Reduced By: ☒ Splitting ☐ Quartering ☐ Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed	Tested By
10	244.3	0	0	100	JR Payne
40	↓	.5	0.2	99.8	
60		.8	0.3	99.7	
100		4.6	1.9	98.1	
200		64.5	26.4	73.6	

Remarks: pan 114 217.2 as recieved 2316.3 - T = 2099.1 soaked in 40 gl [illegible] calgon
Fine Sand split to 244.3 subsample 2038.8 - T = 1821.6 washed - dried - [illegible]

GEL-07 HYDROMETER ANALYSIS

Date 1-27-93

Balance: 3310 Calibration Due Date 4-26-93

Thermometer: 0014 Calibration Due Date 11-19-93

Hydrometer: 1000 Calibration Due Date 6-29-93

WEIGHT OF SAMPLE

Wt. Container + Soil 176.4 (g)

Wt. Container 61.7 (g)

Wt. Soil 114.7 (g)

Specific Gravity of Sample 2.67

% Passing No. 10 Sieve 100 %

A = ____ W = ____ K = ____

COMPOSITE CORRECTION

1st Reading 6 at 23.2°C

2nd Reading 6 at 23.7°C

Date	Clock Time	Elapsed Time (min)	Hydrometer Reading	Hydrometer with Composite Correction	Temperature (°C)	Soil in Suspension (%)	Particle Diameter (mm)	Tested By
1-26-93	0850	2.0	52	46	23.3	40.10	0.026	JR. Payne
↓	0853	5.0	35	29	23.0	25.28	0.019	
	0903	15.0	24	18	22.6	15.69	0.012	↓
	0918	30.0	21	15	22.5	13.08	0.008	
	0948	60.0	17	11	22.5	9.59	0.006	
	1300	250.0	13	7	23.3	6.10	0.003	
1-27-93	0848	1440.0	10	4	22.7	3.49	0.001	

Remarks:

Tests Checked By Richard T. McIntosh Date 1/28/93

BD-6000-796 (04/92)

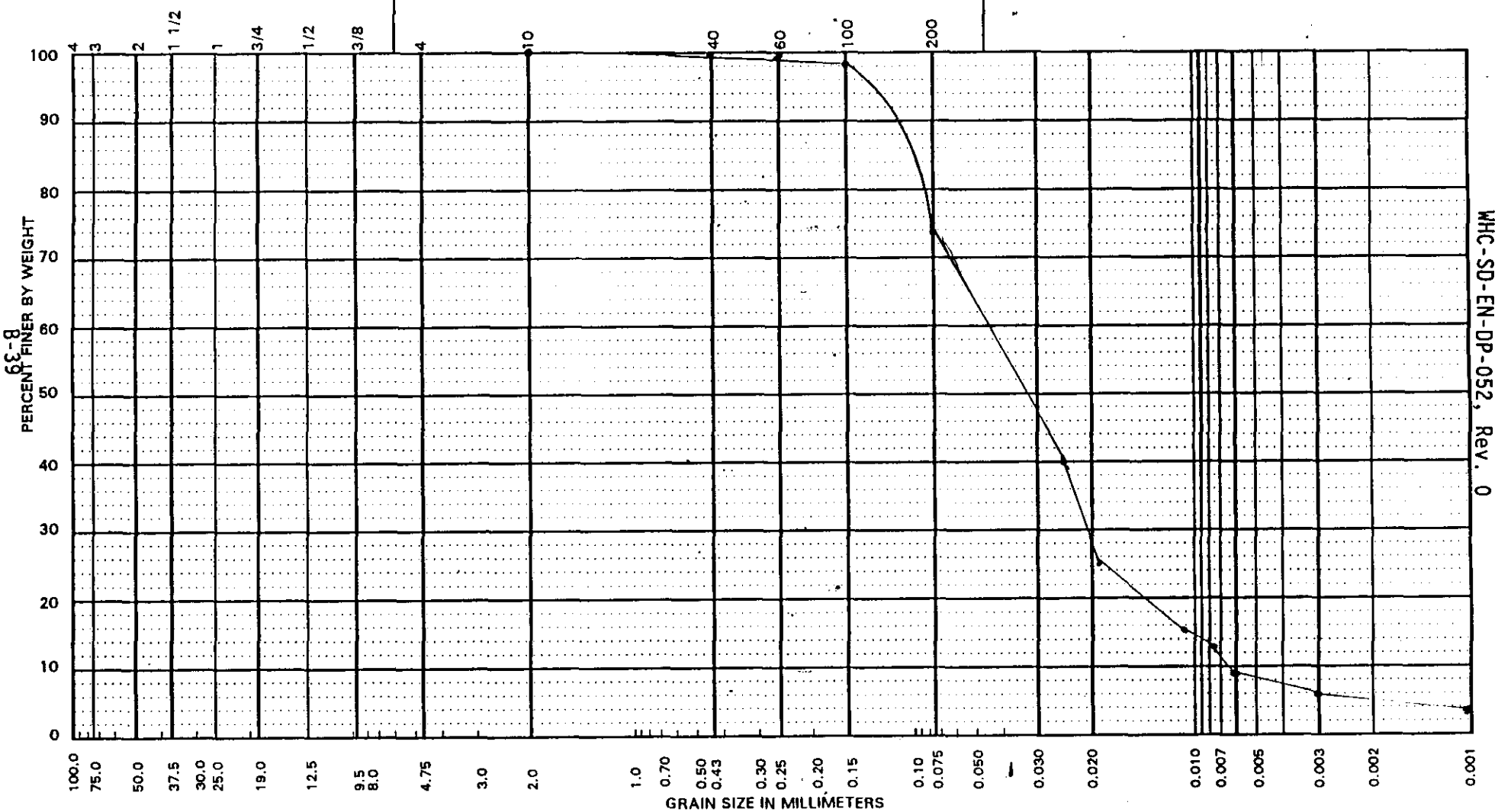
9313090.0655

GEL-07 GRAIN SIZE ANALYSIS PLOT

Sample No. 3-0391

Page ____ of ____

Remarks 299-W27-2



Plotted By [signature] Date 1-28-93

Plot Checked By [signature] Date 1/28/93

BD-6000-799 (04/92)

WHC-SD-EN-DP-052, Rev. 0

GEL 07 ☐	GEL 16 ☒
GEL 09 ☒	GEL 17 ☐
GEL 10 ☐	GEL 19 ☐
GEL 14 ☐	GEL ☐

9312090.0056

GEOTECHNICAL ENGINEERING LABORATORY
GEL-09 HYDRAULIC CONDUCTIVITY DATA SHEET

3-0390

Page ____ of ____

Balance No. 330 Permeameter No. 4

Test Initiated By LD Bunggum Date 1-14-93 Procedure ____ Sleeve Type: ☒ Metal ☐ Plastic

Specimen Diameter (D) 9.83 cm

Specimen Length (L) 15.24 cm

$$A = \left(\frac{D}{2}\right)^2 \times 3.1415$$

Specimen Area (A) 75.89 cm^2

Darcy's Law

$$K = \frac{QL}{AH}$$

K = Hydraulic Conductivity (cm/sec)

Q = Flow (cm^3/sec) = Vol. g/Time (sec)

A = Area (cm^2)

H = Hydraulic Head

L = Length (cm)

Date Year 93 (Mo/Day)	Run Time System (Hr:Min)	Run Time System (Hr:Min)	Run Time Time Change	Container Weight (± 0.1 g)	Container Tare (± 0.1 g)	Container Tare & Effluent (± 0.1 g)	Room Temp (°C)	Pressure Pore H_2O (cm)	Effluent Description	Operator Initials	Hydraulic Conductivity (cm/sec)	Calculated By
1/15	8:42	9:03	0:21	137.9	153.5	291.4	21.5	33.1	clear	LDB	6.64E-04	LDB
	9:04	9:50	0:46	297.9	153.5	451.4	21.0	33.0	clear		6.57E-04	
	9:51	10:12	0:21	135.5	153.5	289.0	20.9	32.0	clear		6.75E-04	
	10:13	10:30	0:17	108.7	153.5	262.2	20.8	32	clear		6.69E-04	
	10:31	10:55	0:24	151.7	153.5	305.2	20.7	32	clear		6.61E-04	
	10:56	11:20	0:24	149.8	153.5	303.3	20.4	32	clear		6.53E-04	
							≡	K = 6.63 × 10^{-4}				

Remarks ____

Test Checked By R. T. McCutcheon Date 1/18/93

BD 7000-795 (04/92)

WHC-SD-EN-DP-052, Rev. 0

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	299-W27-2	DEPTH	
SAMPLE/SPECIMEN NO	3-0393 -> 3-0395	COST CODE/WORK ORDER NUMBER			R4G1H
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/9

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Saturated Hydraulic Conduc	1	GEL 09
Bulk Density Porosity	1	GEL 16
Sieve Analysis	1	GEL 07
Specific Gravity	1	GEL 10
Calcium Carbonate	1	GEL 19
Moisture Content	1	GEL 14

REMARKS: 3 Liners. 3-0393 GEL 09, GEL 16, 3-0394 GEL 07, GEL 10, GEL 19, GEL 14. 3-0395 - Archived Intact.

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 426.75-427.25

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 299-W27-2 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 427.25-427.5

54-3000-022 (01/89)

RECEIVED BY E. R. Walker

DATE 12/18/92

GEL 07 ☐ GEL 16 ☐
GEL 09 ☐ GEL 17 ☐
GEL 10 ☐ GEL 19 ☐
GEL 14 ☐ GEL ☐

WHC-SD-EN-DP-052, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-07 SIEVE AND HYDROMETER ANALYSIS

Sample No. 3-0394

Page ____ of ____

GEL-07 SIEVE ANALYSIS

Date 1-18-93 Calibration Due Date 1-25-93 Balance: 3310

Sample Description Silt & Gravel Sieve Time 10 (min)

Reduced By: ☒ Splitting ☐ Quartering ☐ Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed	Tested By
2	1179.9	0	0	100	LD Bergen
1½	↓	149.9	12.7	87.3	
3/4		295.1	25.0	75.0	
3/8		434.8	36.9	63.1	
4	↓	610.8	51.8	48.2	
10	231.4	850.7	72.1	27.9	
40	↓	105.9	45.8	15.1	
60		163.0	70.4	8.2	
100		187.5	81.0	5.3	
200	↓	204.4	88.3	3.3	

Remarks: T = 250.3 As Received 1651.0 − T = 1400.7
Oven Dried 1430.2 − T = 1179.9

GEL-07 HYDROMETER ANALYSIS

Date ____ Balance: ____ Calibration Due Date ____

Thermometer: ____ Calibration Due Date ____

Hydrometer: ____ Calibration Due Date ____

NOT APPLICABLE

WEIGHT OF SAMPLE

Wt. Container + Soil ____ (g)

Wt. Container ____ (g)

Wt. Soil ____ (g)

Specific Gravity of Sample ____

% Passing No. 10 Sieve ____ %

A = ____ W = ____ K = ____

COMPOSITE CORRECTION

1st Reading ____ at ____ °C

2nd Reading ____ at ____ °C

Date	Clock Time	Elapsed Time (min)	Hydrometer Reading	Hydrometer with Composite Correction	Temperature (°C)	Soil in Suspension (%)	Particle Diameter (mm)	Tested By
		2.0						
		5.0						
		15.0						
		30.0						
		60.0						
		250.0						
		1440.0						

NOT APPLICABLE

Remarks: N/A

Tests Checked By Richard L. Martin Date 1/26/93

BD-6000-796 (04/92)

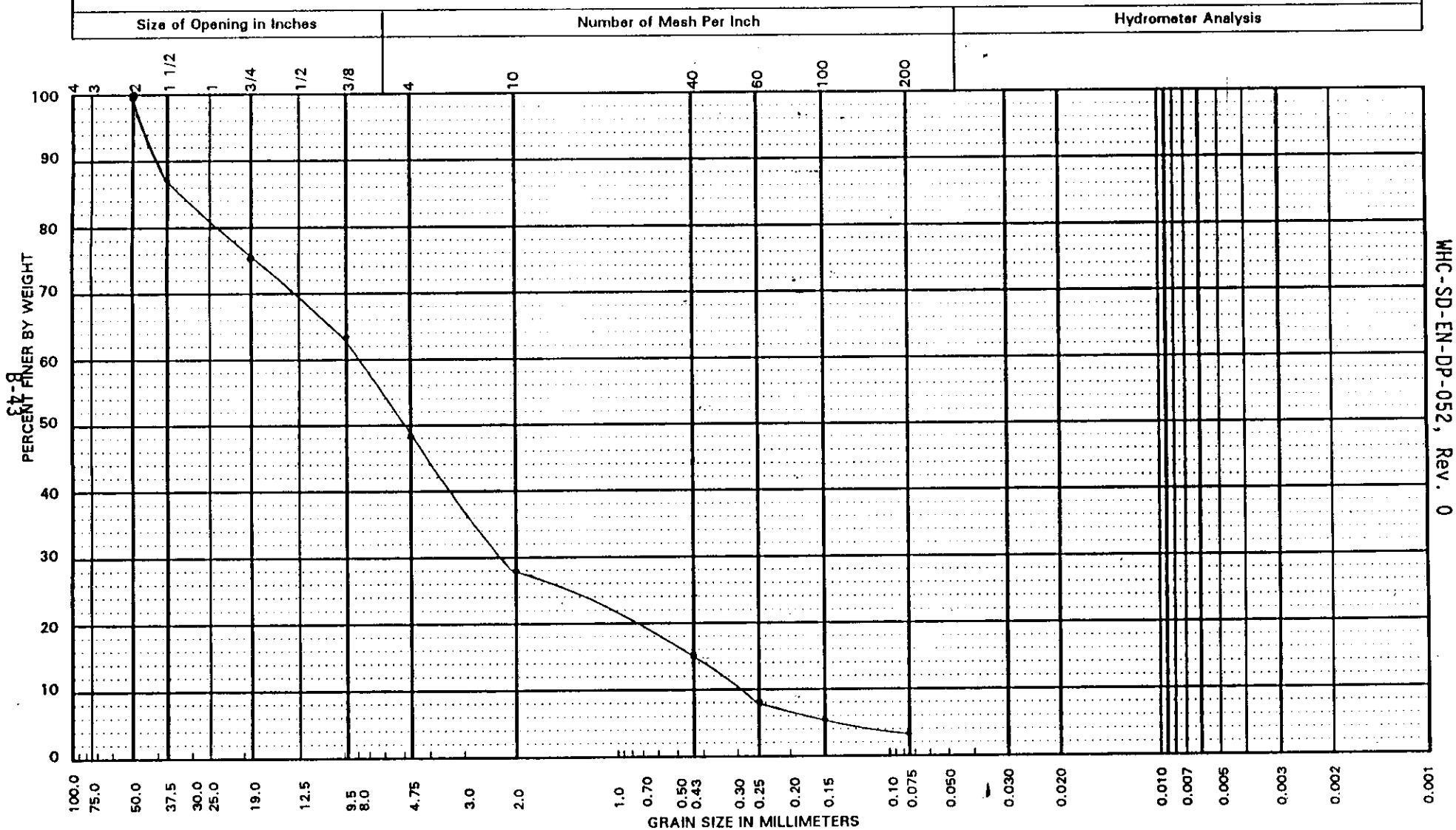
9313090.0659

GEL-07 GRAIN SIZE ANALYSIS PLOT

Sample No. 3-039Y

Page ____ of ____

Remarks 299-W27-2



Plotted By L A Bruggeman Date 1-26-93

Plot Checked By Richard T. McCutcheon Date 1/26/93

BD-6000-799 (04/92)

WHC-SD-EN-DP-052, Rev. 0

GEL 07 ☐	GEL 16 ☐	WHC-SD-EN-DP-052, Rev. 0 GEOTECHNICAL ENGINEERING LABORATORY GEL-10 SPECIFIC GRAVITY SOILS FINE/COARSE	Sample No. 3-0394 Page ____ of ____
GEL 09 ☐	GEL 17 ☐		
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-10 SPECIFIC GRAVITY OF SOILS

Date 1-20-93 Tested By LD Bruggen

Balance: 3304 Calibration Due Date 1-25-93

	DETERMINATION NO.	1	2	3
W_o	Wt. Oven Dry, Soil, g	55.0	.	.
	Pycnometer No.	5696		
	Wt. Pycnometer, g	179.88	.	.
W_a	Wt. Pycnometer + Wetting Agent, g	678.27	.	.
W_b	Wt. Pycnometer + Wetting Agent + Soil, g	711.92	.	.
	Temperature, T_x at W_b, °C	20.3		
G_w	Specific Gravity of Wetting Agent at T_x	1.0	.	.
G_t	Specific Gravity of Soil at T_x	2.58	.	.
G_s	Specific Gravity of Soil at 20 °C	2.58	.	.

NOT APPLICABLE

Wetting Agent D.I. H_2O

$$C_t = \frac{W_o}{W_o + W_a - W_b}$$

Remarks:

GEL-10 SPECIFIC GRAVITY COARSE AGGREGATES

Date 1-21-93 Tested By:

Balance: 3312 Calibration Due Date 7-20-93

	DETERMINATION NO.	1	
	Size fraction	2" → #4	
P_1	Size fraction, wt. % total, g	51.8	
	Tare weight	200.2	
B	Weight sample (SSD), g	424.8	625.0
C	Weight sample in H_2O, g	270.9	471.1
A	Weight of oven dry sample, g	421.5	.

Bulk Specific Gravity, 23/23 °C = A/(B-C) = 2.74

A = wt. oven dry sample in air, g
B = wt. SSD sample in air, g
C = wt. saturated sample in H_2O, g

Bulk Specific Gravity SSD, 23/23 °C = B/(B-C) = 2.76

Apparent Specific Gravity, 23/23 °C = A/(A-C) = 2.80

*Average Specific Gravity Values, 23/23 °C $\overline{G}$ = 2.67

Remarks:

$$\overline{G} = \frac{1}{\frac{P_1 = \%\ \text{coarse}}{G_1 = \text{coarse sp.gr.} \times 100} + \frac{P_2 = \%\ \text{fines}}{G_2 = \text{fines sp. gr.} \times 100}}$$

NOT APPLICABLE

$\overline{G}$ = Ave. Specific Gravity for all forms of Specific Gravity; formula applicable to Bulk, Bulk SSD and Apparent Specific Gravity.

G_1, G_2 = appropriate Specific Gravity values for each size fraction depending on the type of Specific Gravity being averaged.

P_1, P_2 = wt. percentages of each size fraction present in the original sample.

*State type of Specific Gravity Reported i.e., either Bulk, Bulk SSD or Apparent.

Tests Checked By: Richard T. McIntosh Date 1/26/93

BD-6000-798 (08/92)

GEL 07 ☐	GEL 16 ☒	WHC-SD-EN-DP-052, Rev. 0	Sample No. 3-0393
GEL 09 ☒	GEL 17 ☐	GEOTECHNICAL ENGINEERING LABORATORY	
GEL 10 ☐	GEL 19 ☐	GEL-14, GEL-16, GEL-19	Page ____ of ____
GEL 14 ☐	GEL ☐		

GEL-14 SOIL MOISTURE

Balance: 3310 Calibration Due Date 1-25-93 Tested By LD Bruggeman

Thermometer: 0014 Calibration Due Date 11-19-93

Date	Wet Wt. + Can	Dry Wt. + Can	Tare Wt.	Moisture	Dry Wt. Soil	% Moisture	Calculated By
1-18-93	1651.0	1430.2	250.3	220.8	1179.90	18.71	LD Bruggeman

Remarks: 3-0394

GEL-16 BULK DENSITY-POROSITY

Tested By LD Bruggeman

DETERMINATION NO.			1	
Pan No.:	Mold: ☒ Plastic ☐ Metal	Length:	15.24	
Sample Volume, V, cc			1087.07	
Wt. of Sample & Mold, g			2499.9	
Wt. of Mold, g			317.5	
Wet Wt. of Sample, g			2182.40	
Wet Density of Sample, γ m, g/cc			2.01	
Water Content % Dry Weight			9.06	
Dry Density, g/cc γ d			1.84	
Dry weight of Sample, g, Ws			2001.10	
*Void Ratio, e			0.4504	
**Porosity, n, %			31.06	

$$Ws = \frac{\text{Wet Wt.}}{1 + \%\ \text{Dry Wt.}}$$

$$*\text{Void Ratio, } e = \frac{\text{Avg. Sp. Gr.} \times \text{Vol.}}{Ws} - 1$$

$$**\text{Porosity, } n, \% = \left(\frac{e}{1+e}\right) 100$$

Remarks: Composite of 393, 394 SPG 2.67 (3-0394)

GEL-19 CALCIUM CARBONATE

Vessel No. 5650 Tested By JR Payne

Balance No. 3304 Date Due 1-25-93

Sample Weight 8.0 (g)

Sample Pressure .3 (psi) $\%CaCO_3$ <1 Per Gram

Remarks:

Tests Checked By: Richard T. McCartney Date 1/26/93

BD-6000-797 (04/92)

9313090.0662

GEL 07 ☐	GEL 16 ☒
GEL 09 ☒	GEL 17 ☐
GEL 10 ☐	GEL 19 ☐
GEL 14 ☐	GEL ☐

GEOTECHNICAL ENGINEERING LABORATORY
GEL-09 HYDRAULIC CONDUCTIVITY DATA SHEET

Sample No. 3-0393

Page ____ of ____

Balance No. 3310 Permeameter No. 3

Test Initiated By LD Bruggeman Date 1-14-93 Procedure ____ Sleeve Type: ☐ Metal ☒ Plastic

Specimen Diameter (D) 9.53 cm

Specimen Length (L) 15.24 cm

$$A = \left(\frac{D}{2}\right)^2 \times 3.1415$$

Specimen Area (A) 71.33 cm^2

Darcy's Law

$$K = \frac{QL}{AH}$$

K = Hydraulic Conductivity (cm/sec)

Q = Flow (cm^3/sec) = Vol. g/Time (sec)

A = Area (cm^2)

H = Hydraulic Head

L = Length (cm)

Date Year 93 (Mo/Day)	Run Time System (Hr:Min)	Run Time System (Hr:Min)	Run Time Time Change	Container Weight (± 0.1 g)	Container Tare (± 0.1 g)	Container Tare & Effluent (± 0.1 g)	Room Temp (°C)	Pressure Pore H_2O (cm)	Effluent Description	Operator Initials	Hydraulic Conductivity (cm/sec)	Calculated By
1/15	08:36	9:58	1:22	50.5	154.8	205.3	21.0	122.8	Clear	LDB	1.68E-05	LDB
	9:59	10:32	0:33	19.6	154.8	174.4	21.0	122.8	↓	↓	1.62E-05	↓
	10:33	10:57	0:24	14.5	154.8	169.3	20.3	122.8			1.65E-05	
	10:59	12:33	1:34	61.3	154.8	216.1	21.2	122.8			1.78E-05	
	12:34	13:14	0:40	27.0	154.8	181.8	21.5	122.8			1.84E-05	
	13:15	14:09	0:54	37.9	154.8	192.7	21.9	122.8			1.91E-05	
									Σ	1.75×10^{-5}		

Remarks clay & large ~~[illegible]~~ rounded rock. composite with 394

Test Checked By R. T. McIntosh Date 01/18/93

B-46

WHC-SD-EN-DP-052, Rev. 0

BI 795 (04/92)

APPENDIX C

WELL DEVELOPMENT AND PUMP INSTALLATION

9313090.0663

CONTENTS

PUMP INSTALLATION FORM C-1
WELL DEVELOPMENT INFORMATION CHECKLIST C-2
DRAWDOWN AND RECOVERY DATA C-5

9413090.0664

FOR INFORMATION ONLY

SAMPLING PUMP INSTALLATION FORM

Project: RCRA/S-10 Well Number: 299-W27-2

Pump Type: Hydrostar Pump Model: 8001

Date Installed: 12/18/92 Installed By: B. Strode

Depth to Water: 219.63 Ft BTOC* Depth to Bottom: 418.48 Ft BTOC

Reported Depth of water: 219.55(12/17/92)

Screened Interval: 408.48 -418.48 Ft BTOC

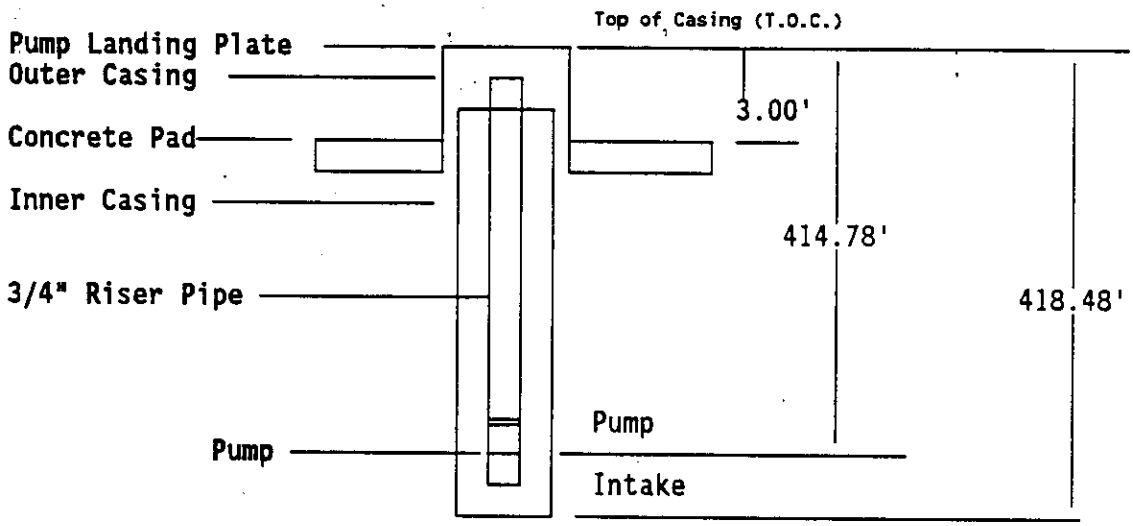
Pump/Riser Pipe Description:

Pipe:	3/4" Stainless steel
Pump Length:	4.31'
Pump Screen Length:	1.91'
Material Cleaning:	Manufacturer
Distance pump off bottom:	1.79'

Comments: Pump tested (12/18/92), produced 4.10 gpm at 44.3 strokes/min

PUMP INSTALLATION SKETCH

Total Material Length: 416.69 Ft Depth to Pump intake: 414.78 Ft BTOC



Completed By: RS Edrington Date: 12/21/92

* BTOC - Below Top Of Casing

9313090.0665

Well Development Information
Checklist

Well No. 299-W27-2 Date: 12/17/92

WELL INFORMATION

A. Outer Casing Diameter 6"

B. Inner Casing Diameter 4"

C. Difference in stick-up 3.06'

D. Stick-up of outer casing 3.00'

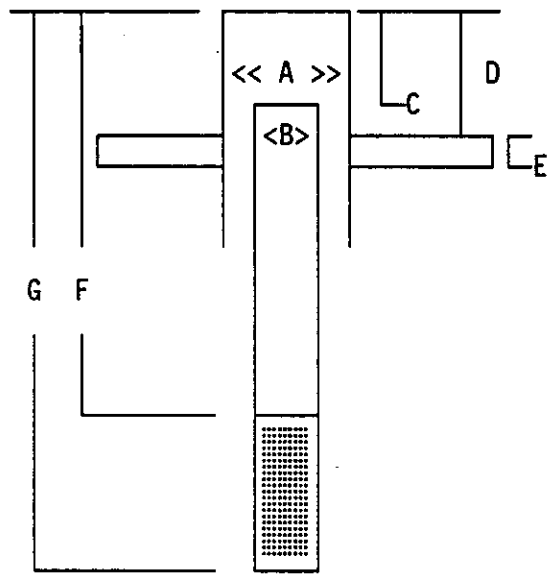
E. Thickness of well pad 0.5'

F. Depth to Water (BTOC) 219.55'

G. Total depth of Hole (BTOC) 418.48'

H. Screened Interval (BTOC) 408.48-418.48'

I. Screen length 10.0'



DEVELOPMENT INFORMATION

J. Depth of Development pump intake (1.5 hp/5 hp). 417.27/406.28' BTOC

K. Depth (below water) of Transducer during drawdown/recovery(1.5/5 hp). 79.29/78.04'

L. Depth (below water) of Transducer during slug test. N/D'

EQUIPMENT INFORMATION

	Serial #	Calibration date
Hermit	2KB-193	N/A
E-Tape	ET-4	1/8/93
Transducer	2110	2/21/93

Slugging Rod dimensions 6'x 2" (0.13 ft^3)

Comments: Development begun on 12/17 with a 1.5 hp Grundfos pump. The first drawdon and recovery performed with 1.5 hp, pump started at 1115, shutoff at 1717 (12/17). Starting pump rate was 11.71 gpm. 11.66 at 1145, 11.58 at 1245, 12.00 at 1330, 12.31 at 1445, 12.78 at 1530 and 12.37 at 1615. 4,365 gallons pumped during first drawdown. 1.5 shutoff at 1130 (12/18) after pumping a total of 18,058 gallons. 5 hp pump started pumping at 1421 (12/18) at 29.21 gpm. Shut off at 1445 due to overheating power box. Started again at 1502 at 29.10 gpm, rate reduced at 1819 to 12.77 gpm. Final shutdown at 1842 after reaching 1.5 ntu and pumping a total of 24,985 gallons during development. Slug test performed on 12/18, slug injected 2056, slug withdrawal 2133.

BTOC = Below Top Of Casing.

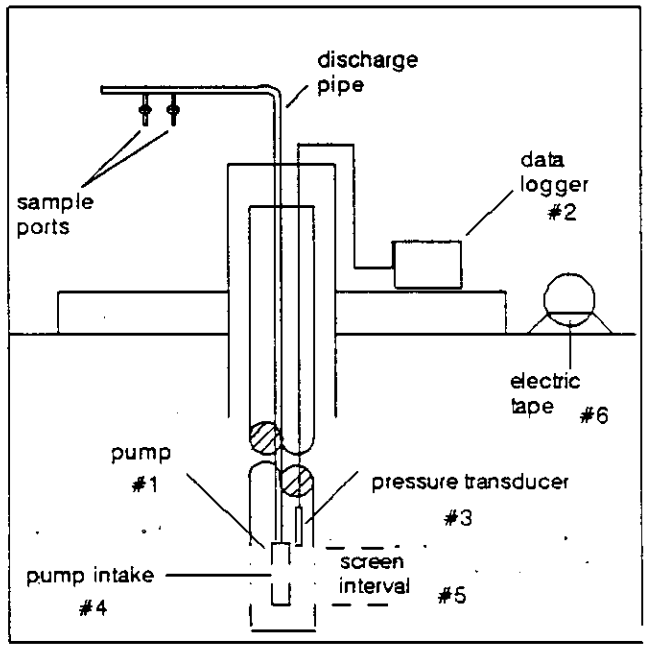
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 299-W27-2 DEPTH 418.48' Btoc 6"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	Data Logger 2KB-193
#3	In-Situ Inc s/n 2110 (cal. 2-20-93)
#4	@418.48 Btoc 6"
#5	408.48-418.48' Btoc 6"
#6	Solinst s/n: ET-4 (cal. 1-08-93)
#1A	5.0 HP submersible pump
	(replaced Item #1 at 1421 12-18.)

Diagram

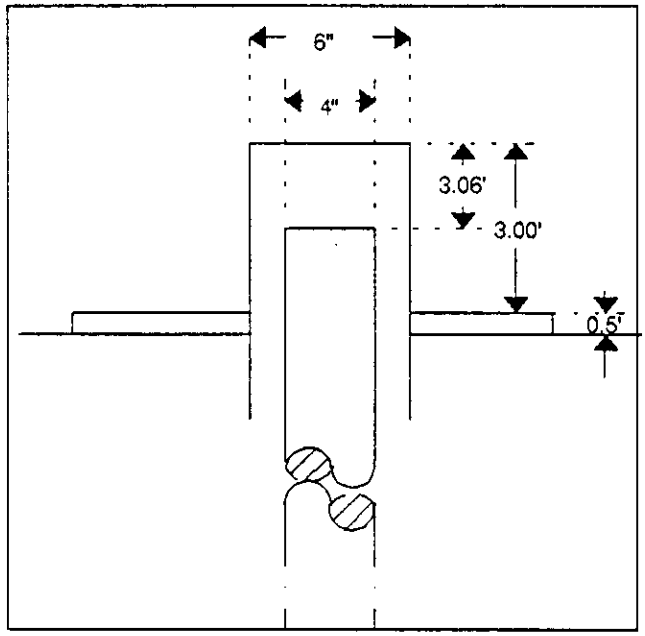


Well Head

Comments

Development started at 1115 on 12-17-92 with a 1 1/2 hp Grundfos pump. At 1421 on 12-18-92 development was switched to a 5 hp pump. The Development was completed at 1842 on 12-18. A total of 24.985 gallons was pumped from the well. The slug test was also performed on 12-18.

Diagram



Signature of Recorder R. S Edrington Date 12-21-92

A-6000-417 (08/89)

WELL DEVELOPMENT FORM

Well Designation: 299-W27-2 Well Depth: 418.48' BTOC

Screened Interval: 408.48-418.48' BTOC Date Well Devel. Performed: 12/17-18/92

BAILING

Water Level Prior to Bailing: _____ Time of Measurement: _____

Volume of Bailer: _____ Number of Bails Removed: _____ Gallons: _____

Summary Discription of Water Removed: _____

Water Level After Bailing: _____ Time of Measurement: _____

SURGE BLOCK:

N.A.

Type of Surge Block: _____ Dimensions of Surge Block: _____

TD Before	Stroke Length	Stroke Frequency	Surge Interval	Surge Time	TD After	TD Difference

AIRLIFT:

N.A.

Depyh to Eductor Pipe: _____ Airlift Start Time: _____

Flow Rate: _____ Accumulated Flow: _____ Airlift Stop Time: _____

Turbidity (NTU): _____

MECHANICAL PUMPING:

Pumping Technique: Constant Discharge Pump Depth: 406.4'BTOC Pump Start Time: 1115/12-17

Flow Rate: 11.58-29.21 Accumulated Flow: 24,985 gal Pump Stop Time: 1842/12-18

Turbidity (NTU): 100+ 50 35 26 25 25 29 36 19 45 23 31 19 22.5 25 10 15 7.7 9.4 32 6.1 7.5 1.5

COMMENTS: Development started with 1 1/2 hp pump and finished with 5 hp pump. A second drawdown performed with 5 hp pump. Development ran 31 straight hrs.

Recorded by: Robert S. Edrington R S Edrington Date: 12-21-92

Sign and Print Name

A-6000-393 (03/90)

DRAWDOWN/RECOVERY

Well Designation: 299-W27-2 Date: 12-17-92

Well Depth: 418.48'BTOC Screened Interval: 408.48-418.48'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-4/2110 Calibration Due: 1-8-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 1115 Pump Stop Time: 1717

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Bucket Method
12-17-92	1115			5gal./25.6sec = 11.71 gpm
	1145	See Attached Data	See Attached Data	5gal/25.72 sec = 11.66gpm
	1245			5gal/25.91sec = 11.58gpm
	1330			5gal/25.00sec = 12.00gpm
	1445			5gal/24.38sec = 12.31gpm
	1530			5gal/24.25sec = 12.78gpm
	1615			5gal/24.25sec = 12.37gpm

Recorded by: Robert S. Edrington Date: 12-21-92
Sign and Print Name

BD-6000-402(03/90)

9313090.0669

4 of 36

299-W27-2 Drawdown with 1.5 hp pump

Hermit Environment Data Logger Unit# 193
Water Level (ft) below top of casing (BTOC)

Test# 1
Type: Drawdown
SWL: 219.55'
Scale Factor:50.15

Baseline Begun: 10:59 12/17/92
Pump Started: 11:15 12/17/92

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	221.07	-221.07
0.008	0.00014	219.95	-219.95
0.017	0.00028	219.88	-219.88
0.025	0.00042	220.23	-220.23
0.033	0.00056	220.40	-220.40
0.042	0.00069	220.56	-220.56
0.050	0.00083	220.71	-220.71
0.058	0.00097	220.86	-220.86
0.067	0.00111	221.02	-221.02
0.075	0.00125	221.18	-221.18
0.083	0.00139	221.35	-221.35
0.100	0.00167	221.66	-221.66
0.117	0.00194	221.99	-221.99
0.133	0.00222	222.30	-222.30
0.150	0.00250	222.59	-222.59
0.167	0.00278	222.91	-222.91
0.183	0.00306	223.18	-223.18
0.200	0.00333	223.44	-223.44
0.217	0.00361	223.73	-223.73
0.233	0.00389	224.00	-224.00
0.250	0.00417	224.22	-224.22
0.267	0.00444	224.47	-224.47
0.283	0.00472	224.66	-224.66
0.300	0.00500	224.92	-224.92
0.317	0.00528	225.12	-225.12
0.333	0.00556	225.31	-225.31
0.417	0.00694	226.14	-226.14
0.500	0.00833	226.88	-226.88
0.583	0.00972	227.51	-227.51
0.667	0.01111	228.02	-228.02
0.750	0.01250	228.51	-228.51
0.833	0.01389	228.88	-228.88
0.917	0.01528	229.19	-229.19
1.000	0.01667	229.46	-229.46

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.000	219.565	-219.565
1.00	0.017	219.565	-219.565
2.00	0.033	219.565	-219.565
3.00	0.050	219.565	-219.565
4.00	0.067	219.581	-219.581
5.00	0.083	219.581	-219.581
6.00	0.100	219.581	-219.581
7.00	0.117	219.581	-219.581
8.00	0.133	219.597	-219.597
9.00	0.150	219.597	-219.597
10.00	0.167	219.597	-219.597
11.00	0.183	219.597	-219.597
12.00	0.200	219.613	-219.613
13.00	0.217	219.613	-219.613

9313090.0670

299-W27-2 Drawdown with 1.5 hp pump

1.083	0.01806	229.64	-229.64
1.167	0.01944	229.86	-229.86
1.250	0.02083	230.02	-230.02
1.333	0.02222	230.14	-230.14
1.417	0.02361	230.33	-230.33
1.500	0.02500	230.49	-230.49
1.583	0.02639	230.59	-230.59
1.667	0.02778	230.68	-230.68
1.750	0.02917	230.78	-230.78
1.833	0.03056	230.87	-230.87
1.917	0.03194	230.97	-230.97
2.000	0.03333	231.03	-231.03
2.500	0.04167	231.46	-231.46
3.000	0.05000	231.73	-231.73
3.500	0.05833	231.87	-231.87
4.000	0.06667	231.95	-231.95
4.500	0.07500	232.03	-232.03
5.000	0.08333	232.04	-232.04
5.500	0.09167	232.07	-232.07
6.000	0.10000	232.11	-232.11
6.500	0.10833	232.12	-232.12
7.000	0.11667	232.11	-232.11
7.500	0.12500	232.14	-232.14
8.000	0.13333	232.18	-232.18
8.500	0.14167	232.22	-232.22
9.000	0.15000	232.23	-232.23
9.500	0.15833	232.25	-232.25
10.000	0.16667	232.26	-232.26
12.000	0.20000	232.23	-232.23
14.000	0.23333	232.26	-232.26
16.000	0.26667	232.42	-232.42
18.000	0.30000	232.50	-232.50
20.000	0.33333	232.61	-232.61
22.000	0.36667	232.63	-232.63
24.000	0.40000	232.63	-232.63
26.000	0.43333	232.61	-232.61
28.000	0.46667	232.61	-232.61
30.000	0.50000	232.63	-232.63
32.000	0.53333	232.60	-232.60
34.000	0.56667	232.60	-232.60
36.000	0.60000	232.61	-232.61
38.000	0.63333	232.58	-232.58

9313090.0671

299-W27-2 Drawdown with 1.5 hp pump

40.000	0.66667	232.64	-232.64
42.000	0.70000	232.66	-232.66
44.000	0.73333	232.64	-232.64
46.000	0.76667	232.64	-232.64
48.000	0.80000	232.60	-232.60
50.000	0.83333	232.64	-232.64
52.000	0.86667	232.64	-232.64
54.000	0.90000	232.63	-232.63
56.000	0.93333	232.64	-232.64
58.000	0.96667	232.64	-232.64
60.000	1.00000	232.69	-232.69
62.000	1.03333	232.71	-232.71
64.000	1.06667	232.72	-232.72
66.000	1.10000	232.71	-232.71
68.000	1.13333	232.72	-232.72
70.000	1.16667	232.74	-232.74
72.000	1.20000	232.74	-232.74
74.000	1.23333	232.77	-232.77
76.000	1.26667	232.80	-232.80
78.000	1.30000	232.74	-232.74
80.000	1.33333	232.72	-232.72
82.000	1.36667	232.72	-232.72
84.000	1.40000	232.74	-232.74
86.000	1.43333	232.69	-232.69
88.000	1.46667	232.74	-232.74
90.000	1.50000	232.71	-232.71
92.000	1.53333	232.68	-232.68
94.000	1.56667	232.69	-232.69
96.000	1.60000	232.71	-232.71
98.000	1.63333	232.72	-232.72
100.000	1.66667	232.75	-232.75
110.000	1.83333	232.88	-232.88
120.000	2.00000	232.88	-232.88
130.000	2.16667	232.91	-232.91
140.000	2.33333	232.83	-232.83
150.000	2.50000	232.80	-232.80
160.000	2.66667	232.83	-232.83
170.000	2.83333	232.85	-232.85
180.000	3.00000	232.88	-232.88
190.000	3.16667	232.87	-232.87
200.000	3.33333	232.83	-232.83
210.000	3.50000	232.87	-232.87

9313090.0672

299-W27-2 Drawdown with 1.5 hp pump

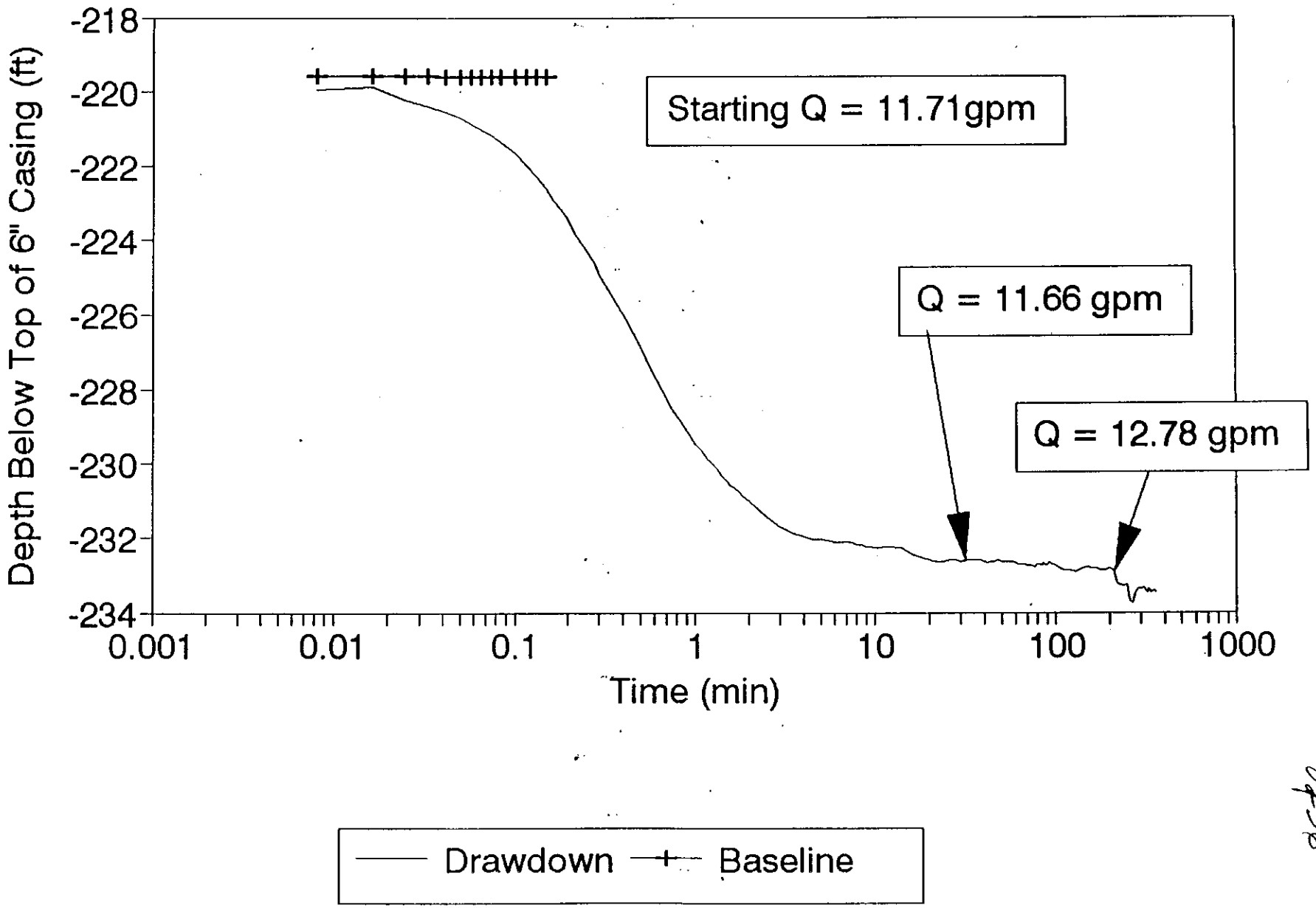
7 of 36

220.000	3.66667	233.21	-233.21
230.000	3.83333	233.28	-233.28
240.000	4.00000	233.31	-233.31
250.000	4.16667	233.28	-233.28
260.000	4.33333	233.70	-233.70
270.000	4.50000	233.74	-233.74
280.000	4.66667	233.47	-233.47
290.000	4.83333	233.39	-233.39
300.000	5.00000	233.39	-233.39
310.000	5.16667	233.34	-233.34
320.000	5.33333	233.45	-233.45
330.000	5.50000	233.39	-233.39
340.000	5.66667	233.45	-233.45
350.000	5.83333	233.44	-233.44
360.000	6.00000	233.47	-233.47

9313090.0673

299-W27-2 Drawdown with 1.5 hp pump

17-Dec-92



8 of 36

299-W27-2 Recovery with 1.5 hp pump

Hermit Environment Data Logger Unit# 193

Test# 2 SE2000 Water Level (ft) below top of casing (BTOC)

Type: Recovery

SWL: 219.55' Pump Shut off: 17:17 12/17/92

Scale: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	232.79	-232.79
0.008	0.00014	232.72	-232.72
0.017	0.00028	233.26	-233.26
0.025	0.00042	232.83	-232.83
0.033	0.00056	232.63	-232.63
0.042	0.00069	232.42	-232.42
0.050	0.00083	232.20	-232.20
0.058	0.00097	231.99	-231.99
0.067	0.00111	231.79	-231.79
0.075	0.00125	231.57	-231.57
0.083	0.00139	231.36	-231.36
0.100	0.00167	230.97	-230.97
0.117	0.00194	230.55	-230.55
0.133	0.00222	230.17	-230.17
0.150	0.00250	229.79	-229.79
0.167	0.00278	229.41	-229.41
0.183	0.00306	229.05	-229.05
0.200	0.00333	228.65	-228.65
0.217	0.00361	228.29	-228.29
0.233	0.00389	227.94	-227.94
0.250	0.00417	227.61	-227.61
0.267	0.00444	227.28	-227.28
0.283	0.00472	226.96	-226.96
0.300	0.00500	226.66	-226.66
0.317	0.00528	226.34	-226.34
0.333	0.00556	226.04	-226.04
0.417	0.00694	224.77	-224.77
0.500	0.00833	223.52	-223.52
0.583	0.00972	222.43	-222.43
0.667	0.01111	221.48	-221.48
0.750	0.01250	220.66	-220.66
0.833	0.01389	219.95	-219.95
0.917	0.01528	219.38	-219.38
1.000	0.01667	218.93	-218.93

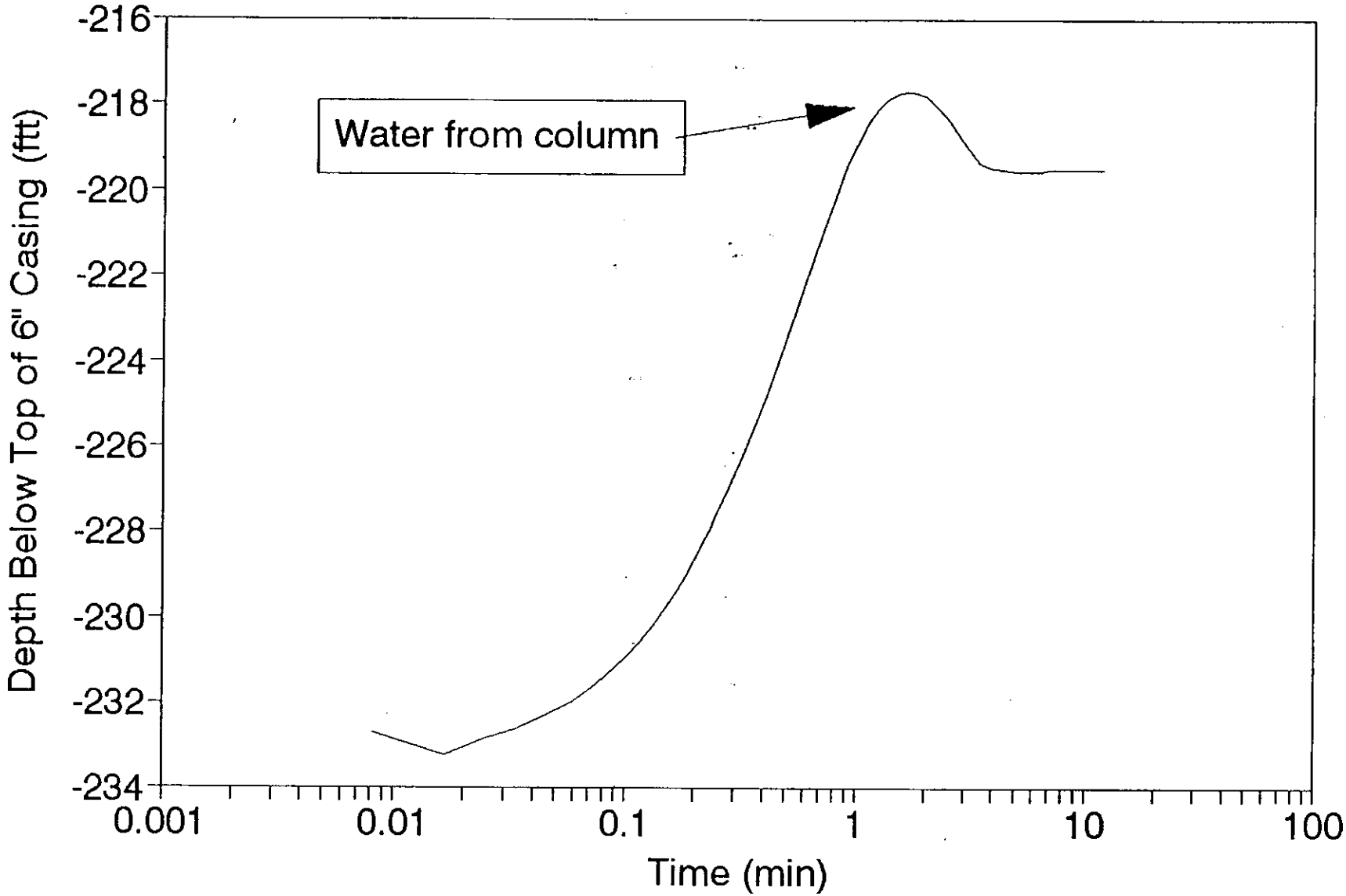
9413090.0675

299-W27-2 Recovery with 1.5 hp pump

1.083	0.01806	218.58	-218.58
1.167	0.01944	218.32	-218.32
1.250	0.02083	218.11	-218.11
1.333	0.02222	217.97	-217.97
1.417	0.02361	217.86	-217.86
1.500	0.02500	217.78	-217.78
1.583	0.02639	217.75	-217.75
1.667	0.02778	217.71	-217.71
1.750	0.02917	217.71	-217.71
1.833	0.03056	217.75	-217.75
1.917	0.03194	217.78	-217.78
2.000	0.03333	217.82	-217.82
2.500	0.04167	218.32	-218.32
3.000	0.05000	218.93	-218.93
3.500	0.05833	219.36	-219.36
4.000	0.06667	219.50	-219.50
4.500	0.07500	219.53	-219.53
5.000	0.08333	219.55	-219.55
5.500	0.09167	219.55	-219.55
6.000	0.10000	219.55	-219.55
6.500	0.10833	219.55	-219.55
7.000	0.11667	219.53	-219.53
7.500	0.12500	219.53	-219.53
8.000	0.13333	219.53	-219.53
8.500	0.14167	219.53	-219.53
9.000	0.15000	219.53	-219.53
9.500	0.15833	219.52	-219.52
10.000	0.16667	219.52	-219.52
12.000	0.20000	219.52	-219.52

9313090.0676

299-W27-2 Recovery
17-Dec-92



12 of 36

DRAWDOWN/RECOVERY

Well Designation: 299-W27-2 (1st Drawdown w/ 5 hp) Date: 12-18-92

Well Depth: 418.48'BTOC Screened Interval: 408.48-418.48'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-4/2110 Calibration Due: 1-8-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 1421 Pump Stop Time: 1445

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Bucket Method
12-18-92	1421			5gal./10.27sec = 29.21 gpm
		See Attached Data	See Attached Data	

Recorded by: Robert S. Edrington Date: 12-21-92

Sign and Print Name

BD-6000-402(03/90)

W27-2 1st Drawdown with 5 hp pump

Hermit Environment Data Logger Unit# 193

Test# 1 SE2000 Water Level (ft) below top of casing (BTOC)

Type: Drawdown Pump Started: 1421 12/18/92

SWL: 219.55'

Scale Factor: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	222.18	-222.18
0.008	0.00014	221.32	-221.32
0.017	0.00028	220.25	-220.25
0.025	0.00042	220.37	-220.37
0.033	0.00056	220.72	-220.72
0.042	0.00069	221.09	-221.09
0.050	0.00083	221.47	-221.47
0.058	0.00097	221.77	-221.77
0.067	0.00111	222.10	-222.10
0.075	0.00125	222.43	-222.43
0.083	0.00139	222.80	-222.80
0.100	0.00167	223.32	-223.32
0.117	0.00194	223.90	-223.90
0.133	0.00222	224.51	-224.51
0.150	0.00250	225.00	-225.00
0.167	0.00278	225.49	-225.49
0.183	0.00306	225.95	-225.95
0.200	0.00333	226.39	-226.39
0.217	0.00361	226.90	-226.90
0.233	0.00389	227.29	-227.29
0.250	0.00417	227.69	-227.69
0.267	0.00444	228.10	-228.10
0.283	0.00472	228.57	-228.57
0.300	0.00500	228.94	-228.94
0.317	0.00528	229.33	-229.33
0.333	0.00556	229.57	-229.57
0.417	0.00694	231.04	-231.04
0.500	0.00833	232.39	-232.39
0.583	0.00972	233.70	-233.70
0.667	0.01111	234.81	-234.81
0.750	0.01250	235.90	-235.90
0.833	0.01389	236.85	-236.85
0.917	0.01528	237.73	-237.73
1.000	0.01667	238.50	-238.50

9310050.0879

W27-2 1st Drawdown with 5 hp pump

14 of 36

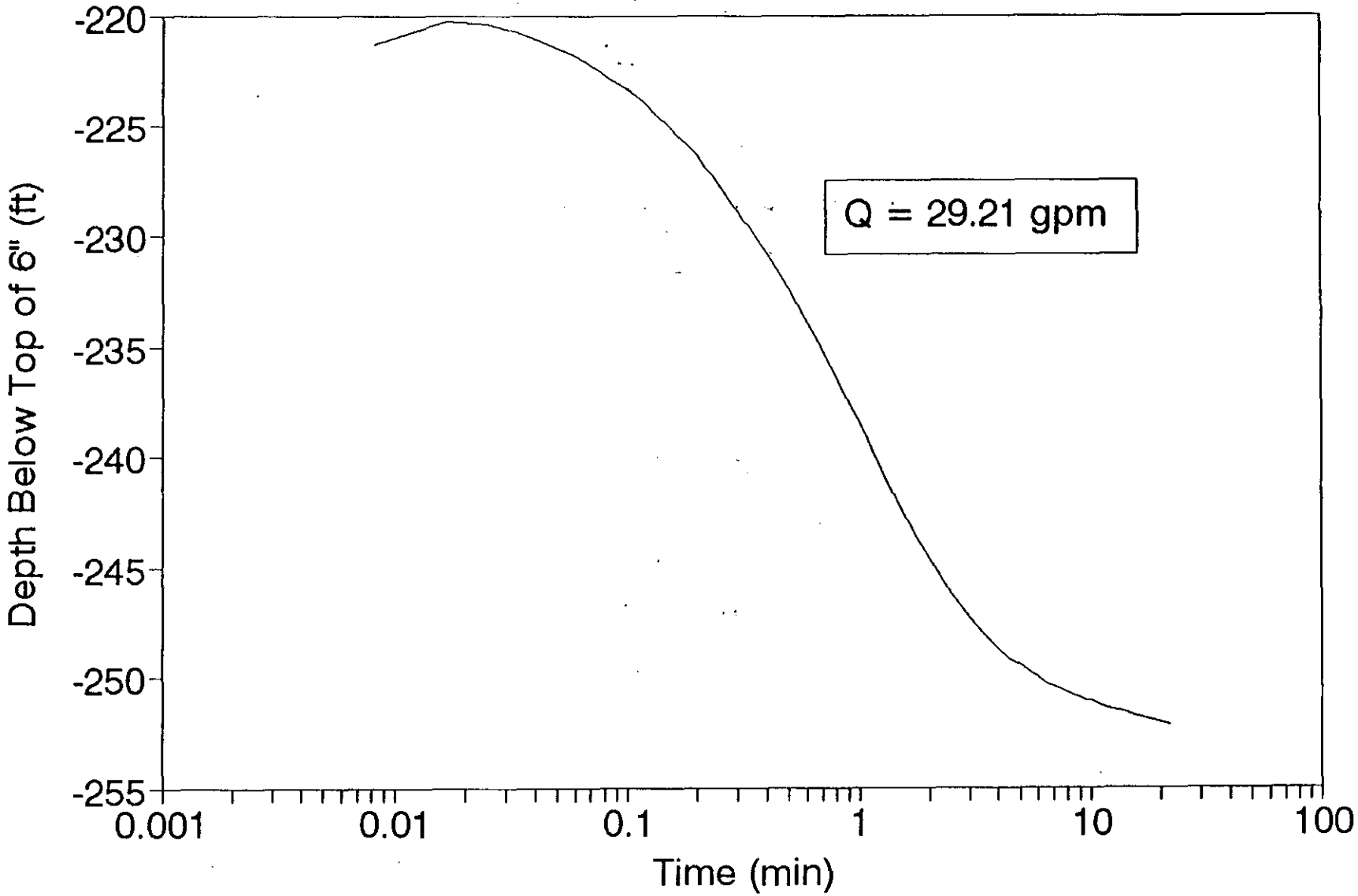
1.083	0.01806	239.28	-239.28
1.167	0.01944	239.96	-239.96
1.250	0.02083	240.61	-240.61
1.333	0.02222	241.18	-241.18
1.417	0.02361	241.67	-241.67
1.500	0.02500	242.24	-242.24
1.583	0.02639	242.71	-242.71
1.667	0.02778	243.09	-243.09
1.750	0.02917	243.52	-243.52
1.833	0.03056	243.88	-243.88
1.917	0.03194	244.25	-244.25
2.000	0.03333	244.60	-244.60
2.500	0.04167	246.21	-246.21
3.000	0.05000	247.27	-247.27
3.500	0.05833	248.11	-248.11
4.000	0.06667	248.75	-248.75
4.500	0.07500	249.13	-249.13
5.000	0.08333	249.46	-249.46
5.500	0.09167	249.81	-249.81
6.000	0.10000	250.00	-250.00
6.500	0.10833	250.27	-250.27
7.000	0.11667	250.41	-250.41
7.500	0.12500	250.53	-250.53
8.000	0.13333	250.72	-250.72
8.500	0.14167	250.85	-250.85
9.000	0.15000	250.90	-250.90
9.500	0.15833	251.07	-251.07
10.000	0.16667	251.09	-251.09
12.000	0.20000	251.40	-251.40
14.000	0.23333	251.58	-251.58
16.000	0.26667	251.78	-251.78
18.000	0.30000	251.90	-251.90
20.000	0.33333	252.09	-252.09
22.000	0.36667	252.15	-252.15

9313090.0680

15 of 36

W27-2 1st Drawdown with 5 hp pump

18-Dec-92



W27-2 1st Recovery with 5 hp pump

16 of 36

Hermit Environment Data Logger Unit# 193
Test# 2 SE2000 Water Level (ft) below top of casing (BTOC)
Type: Recovery
SWL: 219.55' Pump Shut off: 1445 12/18/92
Scale: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.00000	257.136	-257.136
0.008	0.00014	247.494	-247.494
0.017	0.00028	252.133	-252.133
0.025	0.00042	249.805	-249.805
0.033	0.00056	250.866	-250.866
0.042	0.00069	250.581	-250.581
0.050	0.00083	250.233	-250.233
0.058	0.00097	249.948	-249.948
0.067	0.00111	249.647	-249.647
0.075	0.00125	249.378	-249.378
0.083	0.00139	249.093	-249.093
0.100	0.00167	248.523	-248.523
0.117	0.00194	247.921	-247.921
0.133	0.00222	247.383	-247.383
0.150	0.00250	246.861	-246.861
0.167	0.00278	246.338	-246.338
0.183	0.00306	245.816	-245.816
0.200	0.00333	245.325	-245.325
0.217	0.00361	244.834	-244.834
0.233	0.00389	244.343	-244.343
0.250	0.00417	243.868	-243.868
0.267	0.00444	243.409	-243.409
0.283	0.00472	242.950	-242.950
0.300	0.00500	242.491	-242.491
0.317	0.00528	242.063	-242.063
0.333	0.00556	241.620	-241.620
0.417	0.00694	239.768	-239.768
0.500	0.00833	237.884	-237.884
0.583	0.00972	236.158	-236.158
0.667	0.01111	234.575	-234.575
0.750	0.01250	233.150	-233.150
0.833	0.01389	231.836	-231.836
0.917	0.01528	230.648	-230.648
1.000	0.01667	229.587	-229.587

9313090.0682

17 of 36

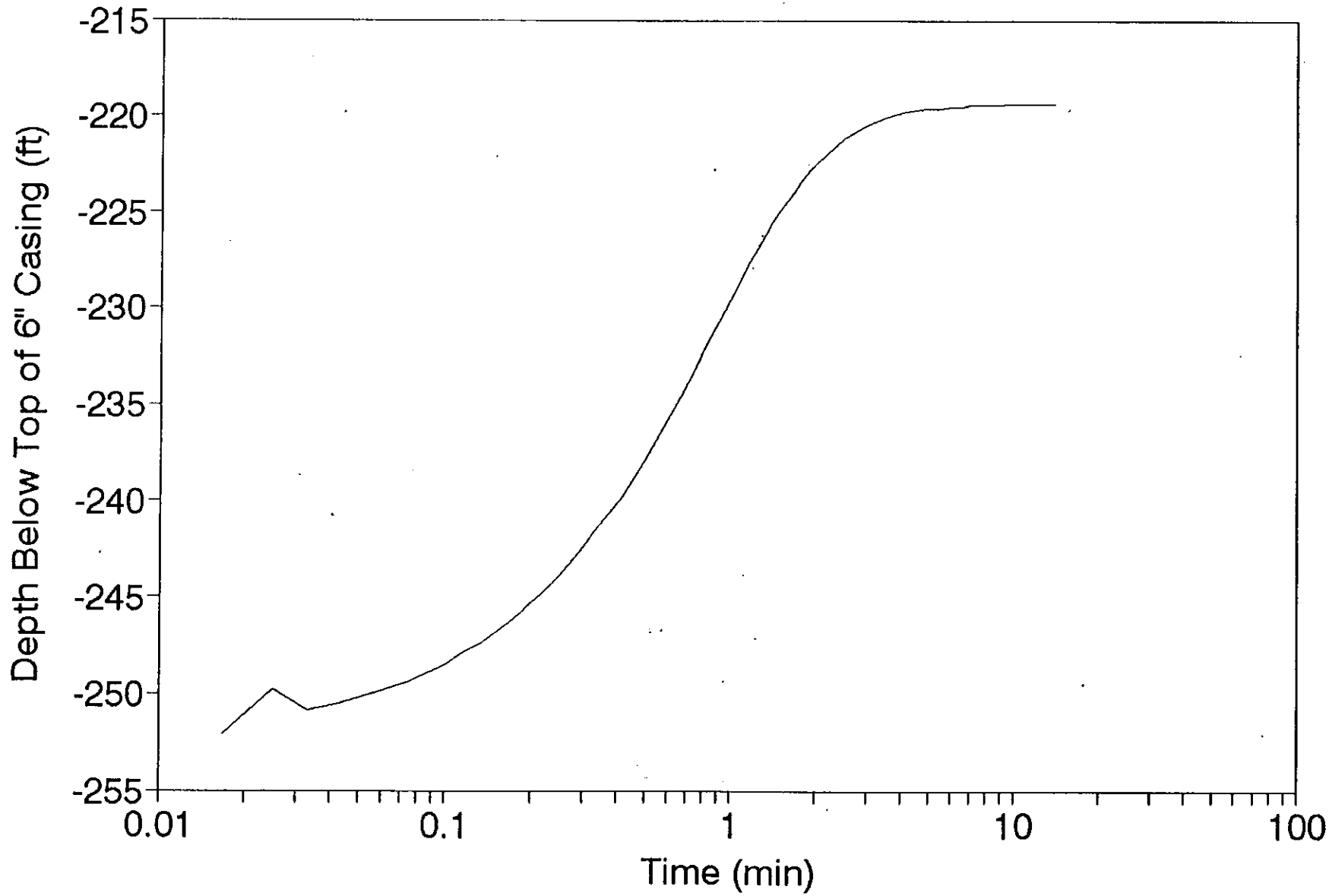
W27-2 1st Recovery with 5 hp pump

1.083	0.01806	228.606	-228.606
1.167	0.01944	227.687	-227.687
1.250	0.02083	226.912	-226.912
1.333	0.02222	226.199	-226.199
1.417	0.02361	225.550	-225.550
1.500	0.02500	224.964	-224.964
1.583	0.02639	224.442	-224.442
1.667	0.02778	223.983	-223.983
1.750	0.02917	223.555	-223.555
1.833	0.03056	223.159	-223.159
1.917	0.03194	222.811	-222.811
2.000	0.03333	222.494	-222.494
2.500	0.04167	221.149	-221.149
3.000	0.05000	220.436	-220.436
3.500	0.05833	220.056	-220.056
4.000	0.06667	219.834	-219.834
4.500	0.07500	219.708	-219.708
5.000	0.08333	219.629	-219.629
5.500	0.09167	219.565	-219.565
6.000	0.10000	219.534	-219.534
6.500	0.10833	219.502	-219.502
7.000	0.11667	219.470	-219.470
7.500	0.12500	219.455	-219.455
8.000	0.13333	219.423	-219.423
8.500	0.14167	219.407	-219.407
9.000	0.15000	219.407	-219.407
9.500	0.15833	219.391	-219.391
10.000	0.16667	219.391	-219.391
12.000	0.20000	219.344	-219.344
14.000	0.23333	219.328	-219.328

18 of 36

W27-2 1st Recovery with 5 hp pump

18-Dec-92



DRAWDOWN/RECOVERY

Well Designation: 299-W27-2 (2nd Drawdown w/ 5 hp) Date: 12-18-92

Well Depth: 418.48'BTOC Screened Interval: 408.48-418.48'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-4/2110 Calibration Due: 1-8-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 1502 Pump Stop Time: 1842

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Bucket Method
12-18-92	1421			5gal./10.31sec = 29.10 gpm
		See Attached Data	See Attached Data	

Recorded by: Robert S. Edrington Date: 12-21-92

Sign and Print Name

BD-6000-402(03/90)

9313090.0605

20 of 36

Hermit Environment Data Logger Unit# 193
Test# 1 SE2000 Water Level (ft) below top of casing (BTOC)
Type: Drawdown Pump Started: 1502 12/18/92
SWL: 219.55'
Scale Factor: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.00000	219.58	-219.58
0.008	0.00014	223.76	-223.76
0.017	0.00028	220.63	-220.63
0.025	0.00042	220.10	-220.10
0.033	0.00056	220.45	-220.45
0.042	0.00069	220.82	-220.82
0.050	0.00083	221.18	-221.18
0.058	0.00097	221.51	-221.51
0.067	0.00111	221.78	-221.78
0.075	0.00125	222.00	-222.00
0.083	0.00139	222.29	-222.29
0.100	0.00167	222.86	-222.86
0.117	0.00194	223.35	-223.35
0.133	0.00222	223.92	-223.92
0.150	0.00250	224.39	-224.39
0.167	0.00278	224.85	-224.85
0.183	0.00306	225.42	-225.42
0.200	0.00333	225.88	-225.88
0.217	0.00361	226.37	-226.37
0.233	0.00389	226.86	-226.86
0.250	0.00417	227.26	-227.26
0.267	0.00444	227.74	-227.74
0.283	0.00472	228.16	-228.16
0.300	0.00500	228.57	-228.57
0.317	0.00528	229.05	-229.05
0.333	0.00556	229.41	-229.41
0.417	0.00694	231.11	-231.11
0.500	0.00833	232.90	-232.90
0.583	0.00972	234.46	-234.46
0.667	0.01111	235.89	-235.89
0.750	0.01250	237.25	-237.25
0.833	0.01389	238.42	-238.42
0.917	0.01528	239.56	-239.56
1.000	0.01667	240.48	-240.48

9313090.0686

1.083	0.01806	241.46	-241.46
1.167	0.01944	242.24	-242.24
1.250	0.02083	243.11	-243.11
1.333	0.02222	243.73	-243.73
1.417	0.02361	244.49	-244.49
1.500	0.02500	244.99	-244.99
1.583	0.02639	245.67	-245.67
1.667	0.02778	246.09	-246.09
1.750	0.02917	246.64	-246.64
1.833	0.03056	247.07	-247.07
1.917	0.03194	247.43	-247.43
2.000	0.03333	247.84	-247.84
2.500	0.04167	249.55	-249.55
3.000	0.05000	250.65	-250.65
3.500	0.05833	251.44	-251.44
4.000	0.06667	251.97	-251.97
4.500	0.07500	252.24	-252.24
5.000	0.08333	252.48	-252.48
5.500	0.09167	252.77	-252.77
6.000	0.10000	252.86	-252.86
6.500	0.10833	253.00	-253.00
7.000	0.11667	253.02	-253.02
7.500	0.12500	253.11	-253.11
8.000	0.13333	253.16	-253.16
8.500	0.14167	253.19	-253.19
9.000	0.15000	253.27	-253.27
9.500	0.15833	253.34	-253.34
10.000	0.16667	253.42	-253.42
12.000	0.20000	253.62	-253.62
14.000	0.23333	253.75	-253.75
16.000	0.26667	253.91	-253.91
18.000	0.30000	254.08	-254.08
20.000	0.33333	254.06	-254.06
22.000	0.36667	254.10	-254.10
24.000	0.40000	254.16	-254.16
26.000	0.43333	254.30	-254.30
28.000	0.46667	254.33	-254.33
30.000	0.50000	254.40	-254.40
32.000	0.53333	254.38	-254.38
34.000	0.56667	254.49	-254.49
36.000	0.60000	254.49	-254.49
38.000	0.63333	254.46	-254.46

9313090.1067

22 of 36

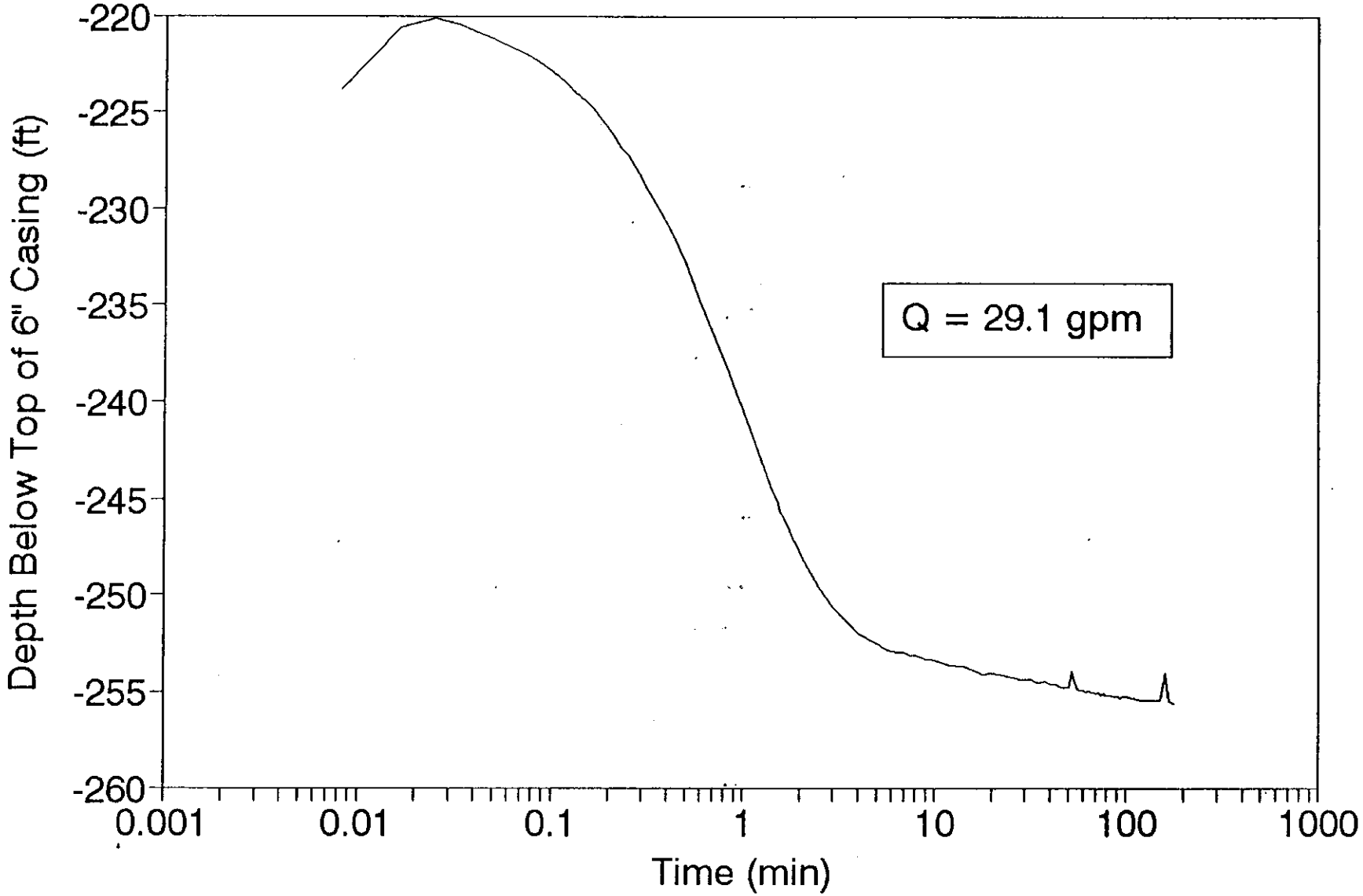
40.000	0.66667	254.59	-254.59
42.000	0.70000	254.60	-254.60
44.000	0.73333	254.62	-254.62
46.000	0.76667	254.75	-254.75
48.000	0.80000	254.73	-254.73
50.000	0.83333	254.79	-254.79
52.000	0.86667	253.92	-253.92
54.000	0.90000	254.43	-254.43
56.000	0.93333	254.89	-254.89
58.000	0.96667	254.94	-254.94
60.000	1.00000	254.97	-254.97
62.000	1.03333	255.01	-255.01
64.000	1.06667	254.95	-254.95
66.000	1.10000	255.00	-255.00
68.000	1.13333	255.05	-255.05
70.000	1.16667	255.09	-255.09
72.000	1.20000	255.05	-255.05
74.000	1.23333	255.16	-255.16
76.000	1.26667	255.11	-255.11
78.000	1.30000	255.14	-255.14
80.000	1.33333	255.19	-255.19
82.000	1.36667	255.19	-255.19
84.000	1.40000	255.19	-255.19
86.000	1.43333	255.24	-255.24
88.000	1.46667	255.22	-255.22
90.000	1.50000	255.22	-255.22
92.000	1.53333	255.22	-255.22
94.000	1.56667	255.32	-255.32
96.000	1.60000	255.22	-255.22
98.000	1.63333	255.27	-255.27
100.000	1.66667	255.22	-255.22
110.000	1.83333	255.32	-255.32
120.000	2.00000	255.39	-255.39
130.000	2.16667	255.41	-255.41
140.000	2.33333	255.39	-255.39
150.000	2.50000	255.43	-255.43
160.000	2.66667	254.06	-254.06
170.000	2.83333	255.49	-255.49
180.000	3.00000	255.58	-255.58

9313000.0698

23 of 36

W27-2 2nd Drawdown with 5 hp pump

18-Dec-92



2nd Recovery with 5 hp pump

24 of 36

Hermit Environment Data Logger Unit# 193
Test# 2 Water Level (ft) below top of casing (BTOC)
Type: 3rd Recovery
SWL: 219.55 Pump Shut off: 1842 12/18/92
Scale: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.00000	230.901	-230.901
0.008	0.00014	232.564	-232.564
0.017	0.00028	235.414	-235.414
0.025	0.00042	232.295	-232.295
0.033	0.00056	233.846	-233.846
0.042	0.00069	232.817	-232.817
0.050	0.00083	232.991	-232.991
0.058	0.00097	232.849	-232.849
0.067	0.00111	232.738	-232.738
0.075	0.00125	232.611	-232.611
0.083	0.00139	232.516	-232.516
0.100	0.00167	232.279	-232.279
0.117	0.00194	232.026	-232.026
0.133	0.00222	231.772	-231.772
0.150	0.00250	231.535	-231.535
0.167	0.00278	231.297	-231.297
0.183	0.00306	231.060	-231.060
0.200	0.00333	230.838	-230.838
0.217	0.00361	230.616	-230.616
0.233	0.00389	230.395	-230.395
0.250	0.00417	230.173	-230.173
0.267	0.00444	229.967	-229.967
0.283	0.00472	229.761	-229.761
0.300	0.00500	229.571	-229.571
0.317	0.00528	229.366	-229.366
0.333	0.00556	229.160	-229.160
0.417	0.00694	228.289	-228.289
0.500	0.00833	227.450	-227.450
0.583	0.00972	226.690	-226.690
0.667	0.01111	226.009	-226.009
0.750	0.01250	225.392	-225.392
0.833	0.01389	224.822	-224.822
0.917	0.01528	224.315	-224.315
1.000	0.01667	223.840	-223.840

9413031.0690

2nd Recovery with 5 hp pump

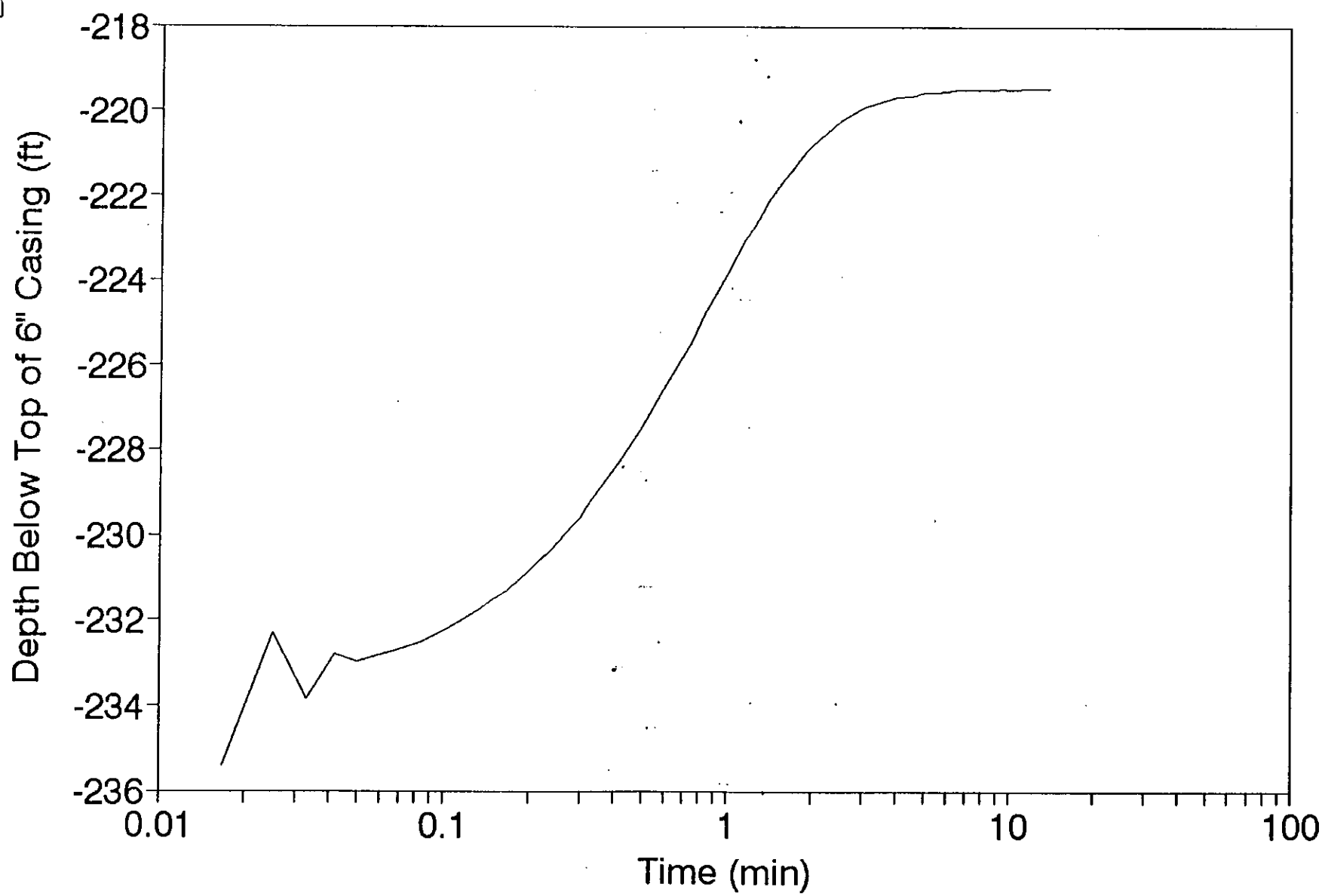
1.083	0.01806	223.428	-223.428
1.167	0.01944	223.048	-223.048
1.250	0.02083	222.716	-222.716
1.333	0.02222	222.399	-222.399
1.417	0.02361	222.130	-222.130
1.500	0.02500	221.877	-221.877
1.583	0.02639	221.639	-221.639
1.667	0.02778	221.449	-221.449
1.750	0.02917	221.259	-221.259
1.833	0.03056	221.101	-221.101
1.917	0.03194	220.943	-220.943
2.000	0.03333	220.816	-220.816
2.500	0.04167	220.246	-220.246
3.000	0.05000	219.929	-219.929
3.500	0.05833	219.771	-219.771
4.000	0.06667	219.676	-219.676
4.500	0.07500	219.629	-219.629
5.000	0.08333	219.581	-219.581
5.500	0.09167	219.565	-219.565
6.000	0.10000	219.550	-219.550
6.500	0.10833	219.518	-219.518
7.000	0.11667	219.518	-219.518
7.500	0.12500	219.502	-219.502
8.000	0.13333	219.502	-219.502
8.500	0.14167	219.486	-219.486
9.000	0.15000	219.486	-219.486
9.500	0.15833	219.470	-219.470
10.000	0.16667	219.486	-219.486
12.000	0.20000	219.470	-219.470
14.000	0.23333	219.455	-219.455

9130091.0691

26 of 36

2nd Recovery with 5 hp pump

18-Dec-92



27 of 36

BOREHOLE TEST INFORMATION

Borehole 299-W27-2 Borehole Diameter 4 in. Hanford Coordinates N/A

Interval Tested 418.48-219.55' Depth Interval 418.48-219.55' Test Type: Instantaneous Slug

Borehole Depth: 418.48' Instruction Used: WHC-CM-7-7 (EII 10.1)

EQUIPMENT

NAME	DESCRIPTION	
Electric Sounder	Solinst s/n: ET-4	Calibration due: 1-08-93
Data Logger	In-Situ Inc. s/n: 2KB193	
Pressure Transducer	In-Situ Inc. s/n: 2110	Calibration due: 2-21-93
Slugging Rod	Site Fabricated 72.0"Lx2.0"D	0.13 cu. ft.
Steel Measuring Tape	500' Graduated Steel Tape	

MEASUREMENT DATUM

Control Datum: Top of Casing (TOC) 6"

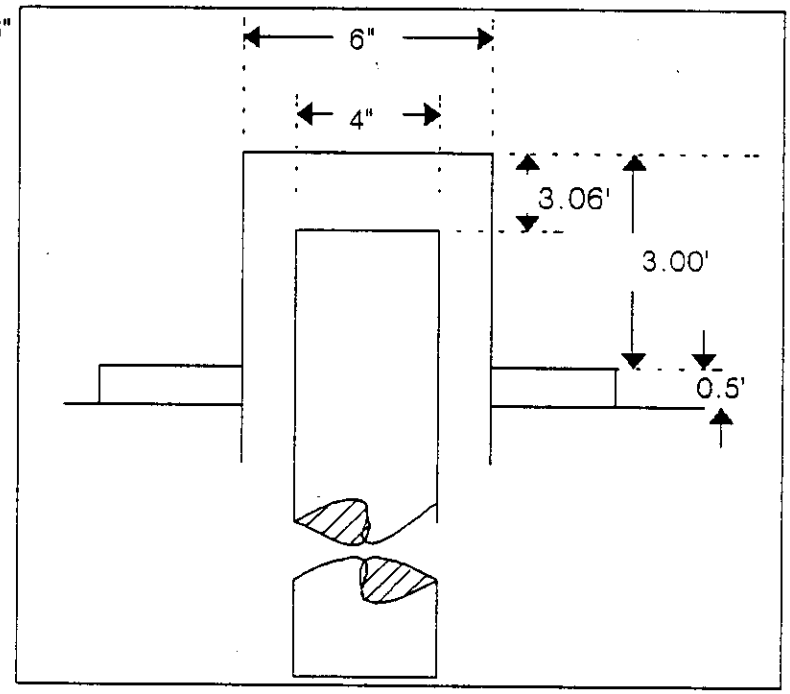
Elevation: N/A

Electric Sounder: TOC 6"

Steel Tape: TOC 6"

Pressure Transducer: TOC 6"

WELL HEAD DIAGRAM



COMMENTS

Recorded by: R S. Edrington Date: 12/22/92

Sign and Print Name

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION

Borehole: 299-W27-2

Interval Tested: 418.48 - 219.55' Btoc 6"

Depth To Water: 219.63' Btoc 6"

Depth to Transducer: N/D BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	2046	2056
Injection	2056	2114

Date: 12-18-92

Initial Pressure (Pi): 219.63'

Slug Level/Pressure (Pmax) 214.61

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data						
					See Attached Data			

Recorded by: Robert S. Edrington Date: 12-22-92

Sign and Print Name

BD-6000-293(07/90)

299-W27-2 Slug Test Baseline

29 of 36

Hermit Environment Data Logger Unit# 193

Test# 7 SE2000 Water Level (ft) below top of casing (BTOC)

Type: Slug test Baseline Baseline Begun: 20:46 12/18/92

SWL: 219.63'

Scale: 50.15

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.000	219.630	-219.630
10.000	0.167	219.566	-219.566

9313090.0695

299-W27-2 Slug Injection

30 of 36

Hermit Environment Data Logger Unit# 193

Test# 8 Water Level (ft) below top of casing (BTOC)

Type: Slug Injection Baseline Begun: 2046 12/18/92

SWL: 219.63 Slug Injected: 2056 12/18/92

Scale: 50.15 Slug Volume: 0.13 Cu ft

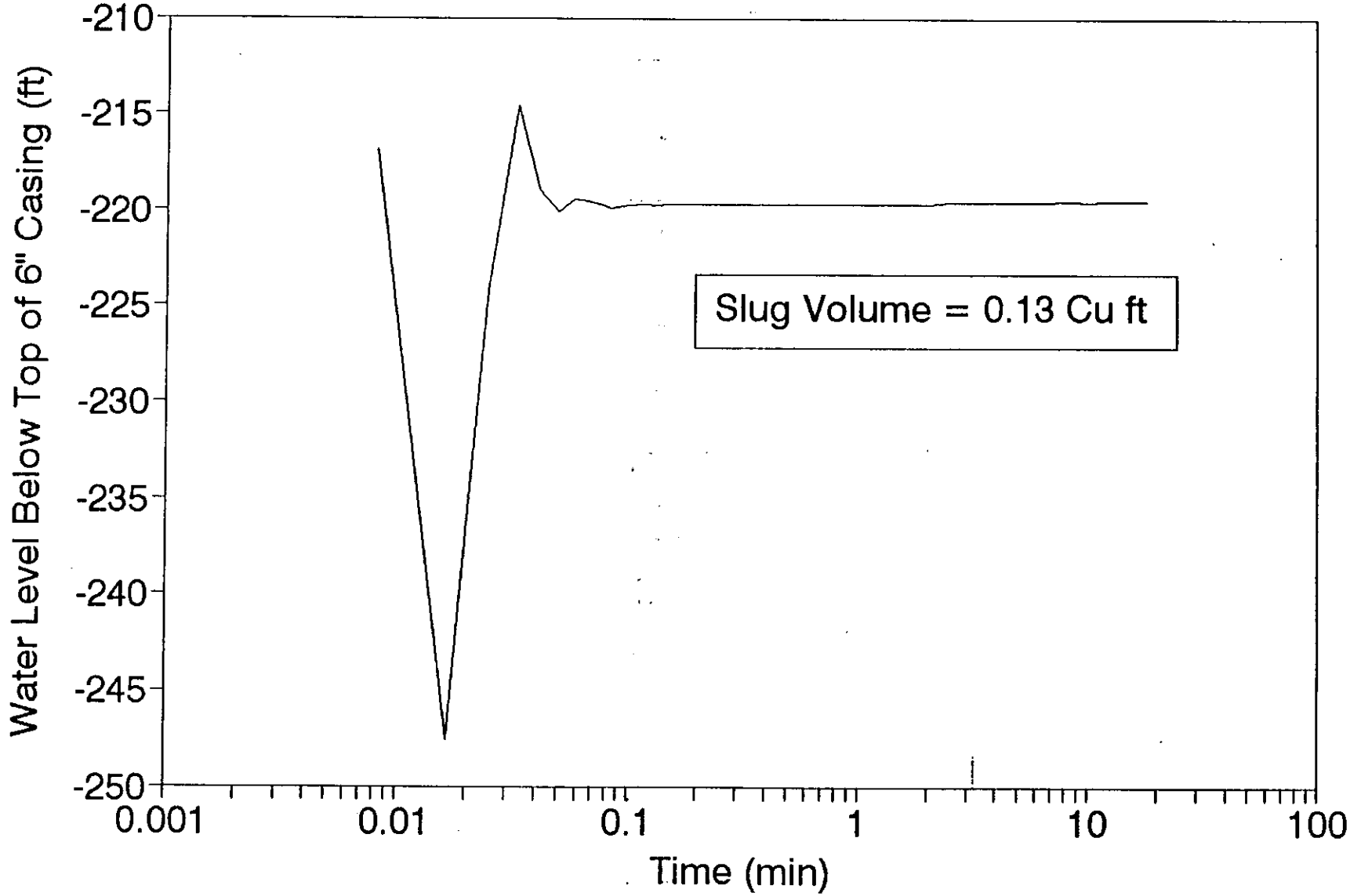
Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	218.030	-218.030
0.008	0.00014	216.843	-216.843
0.017	0.00028	247.526	-247.526
0.025	0.00042	224.237	-224.237
0.033	0.00056	214.611	-214.611
0.042	0.00069	218.949	-218.949
0.050	0.00083	220.073	-220.073
0.058	0.00097	219.424	-219.424
0.067	0.00111	219.503	-219.503
0.075	0.00125	219.709	-219.709
0.083	0.00139	219.899	-219.899
0.100	0.00167	219.740	-219.740
0.117	0.00194	219.661	-219.661
0.133	0.00222	219.756	-219.756
0.150	0.00250	219.709	-219.709
0.167	0.00278	219.709	-219.709
0.183	0.00306	219.693	-219.693
0.200	0.00333	219.709	-219.709
0.217	0.00361	219.693	-219.693
0.233	0.00389	219.693	-219.693
0.250	0.00417	219.693	-219.693
0.267	0.00444	219.693	-219.693
0.283	0.00472	219.693	-219.693
0.300	0.00500	219.693	-219.693
0.317	0.00528	219.693	-219.693
0.333	0.00556	219.693	-219.693
0.417	0.00694	219.677	-219.677
0.500	0.00833	219.677	-219.677
0.583	0.00972	219.661	-219.661
0.667	0.01111	219.661	-219.661
0.750	0.01250	219.661	-219.661
0.833	0.01389	219.661	-219.661
0.917	0.01528	219.661	-219.661
1.000	0.01667	219.661	-219.661

9313090.0696

1.083	0.01806	219.661	-219.661
1.167	0.01944	219.661	-219.661
1.250	0.02083	219.661	-219.661
1.333	0.02222	219.661	-219.661
1.417	0.02361	219.661	-219.661
1.500	0.02500	219.661	-219.661
1.583	0.02639	219.661	-219.661
1.667	0.02778	219.661	-219.661
1.750	0.02917	219.661	-219.661
1.833	0.03056	219.661	-219.661
1.917	0.03194	219.661	-219.661
2.000	0.03333	219.661	-219.661
2.500	0.04167	219.614	-219.614
3.000	0.05000	219.614	-219.614
3.500	0.05833	219.614	-219.614
4.000	0.06667	219.614	-219.614
4.500	0.07500	219.614	-219.614
5.000	0.08333	219.614	-219.614
5.500	0.09167	219.614	-219.614
6.000	0.10000	219.598	-219.598
6.500	0.10833	219.614	-219.614
7.000	0.11667	219.614	-219.614
7.500	0.12500	219.566	-219.566
8.000	0.13333	219.535	-219.535
8.500	0.14167	219.535	-219.535
9.000	0.15000	219.566	-219.566
9.500	0.15833	219.598	-219.598
10.000	0.16667	219.614	-219.614
12.000	0.20000	219.535	-219.535
14.000	0.23333	219.519	-219.519
16.000	0.26667	219.566	-219.566
18.000	0.30000	219.519	-219.519

32 of 36

299-W27-2 Slug Injection
18-Dec-92



33 of 36

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL

Page 1 of 4

Borehole: 299-W27-2

Interval Tested: 418.48 - 219.55' Btoc 6"

Depth To Water: 219.63' Btoc 6"

Depth to Transducer: N/D BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	2046	2056
Injection	2133	2147

Date: 12-18-92

Initial Pressure (Pi): 219.63'

Slug Level/Pressure (Pmax) 221.97

Borehole Diameter: 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data						
					See Attached Data			

Recorded by: [signature] Robert S. Edrington Date: 12-22-92

Sign and Print Name

BD-6000-293(07/90)

9313090.0699

299-W27-2 Slug Withdrawal

34 of 36

Hermit Environment Data Logger Unit# 193
Test# 9 SE2000 Water Level (ft) below top of casing (BTOC)
Type: Slug Withdrawal Slug Withdrawn: 21:33 12/18/92
SWL: 219.63' Slug Volume: 0.13 Cu ft
Scale: 50.15

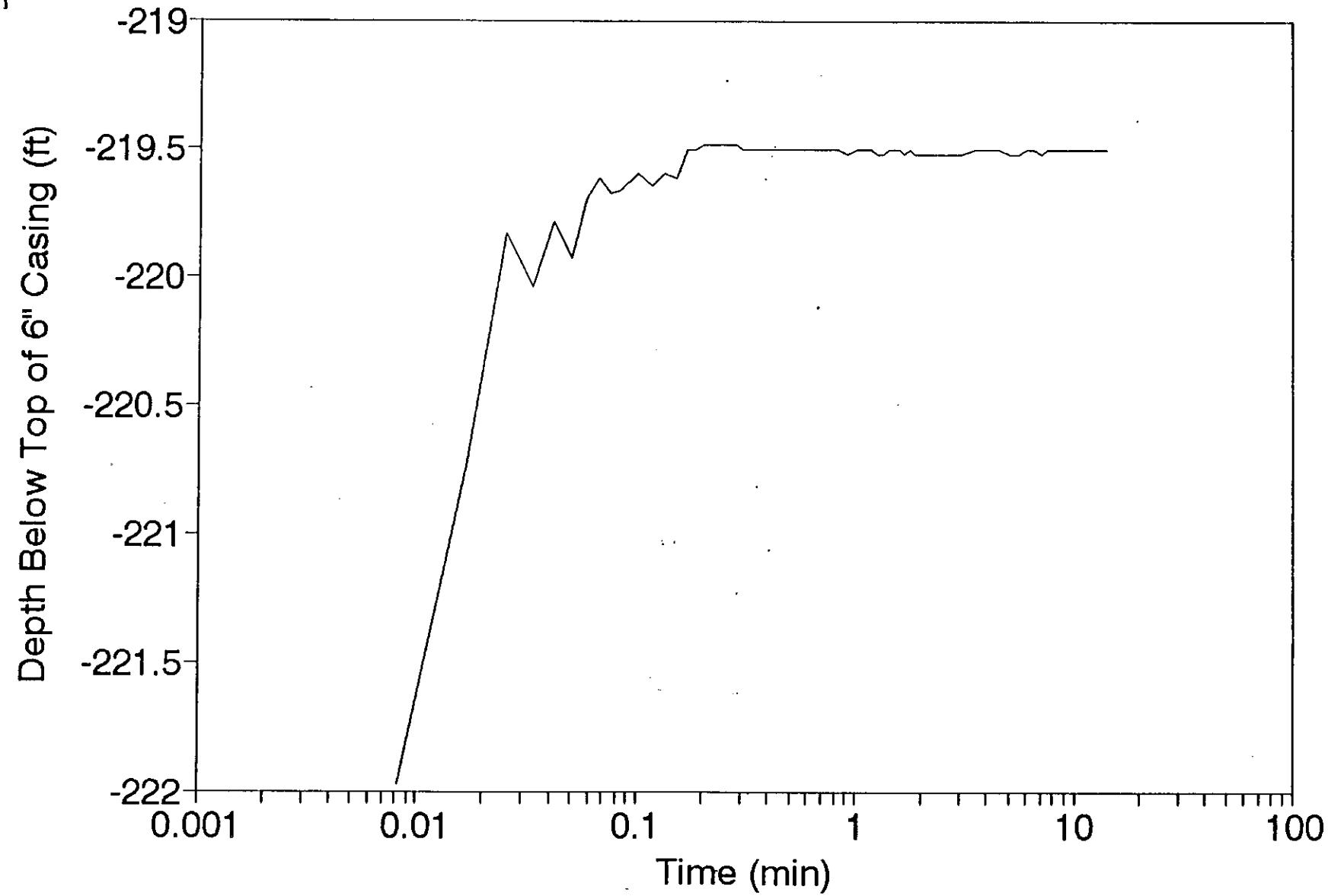
Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.00000	220.659	-220.659
0.008	0.00014	221.973	-221.973
0.017	0.00028	220.738	-220.738
0.025	0.00042	219.835	-219.835
0.033	0.00056	220.041	-220.041
0.042	0.00069	219.788	-219.788
0.050	0.00083	219.930	-219.930
0.058	0.00097	219.693	-219.693
0.067	0.00111	219.614	-219.614
0.075	0.00125	219.677	-219.677
0.083	0.00139	219.661	-219.661
0.100	0.00167	219.598	-219.598
0.117	0.00194	219.645	-219.645
0.133	0.00222	219.598	-219.598
0.150	0.00250	219.614	-219.614
0.167	0.00278	219.503	-219.503
0.183	0.00306	219.503	-219.503
0.200	0.00333	219.487	-219.487
0.217	0.00361	219.487	-219.487
0.233	0.00389	219.487	-219.487
0.250	0.00417	219.487	-219.487
0.267	0.00444	219.487	-219.487
0.283	0.00472	219.487	-219.487
0.300	0.00500	219.503	-219.503
0.317	0.00528	219.503	-219.503
0.333	0.00556	219.503	-219.503
0.417	0.00694	219.503	-219.503
0.500	0.00833	219.503	-219.503
0.583	0.00972	219.503	-219.503
0.667	0.01111	219.503	-219.503
0.750	0.01250	219.503	-219.503
0.833	0.01389	219.503	-219.503
0.917	0.01528	219.519	-219.519
1.000	0.01667	219.503	-219.503

1.083	0.01806	219.503	-219.503
1.167	0.01944	219.503	-219.503
1.250	0.02083	219.519	-219.519
1.333	0.02222	219.519	-219.519
1.417	0.02361	219.503	-219.503
1.500	0.02500	219.503	-219.503
1.583	0.02639	219.503	-219.503
1.667	0.02778	219.519	-219.519
1.750	0.02917	219.503	-219.503
1.833	0.03056	219.519	-219.519
1.917	0.03194	219.519	-219.519
2.000	0.03333	219.519	-219.519
2.500	0.04167	219.519	-219.519
3.000	0.05000	219.519	-219.519
3.500	0.05833	219.503	-219.503
4.000	0.06667	219.503	-219.503
4.500	0.07500	219.503	-219.503
5.000	0.08333	219.519	-219.519
5.500	0.09167	219.519	-219.519
6.000	0.10000	219.503	-219.503
6.500	0.10833	219.503	-219.503
7.000	0.11667	219.519	-219.519
7.500	0.12500	219.503	-219.503
8.000	0.13333	219.503	-219.503
8.500	0.14167	219.503	-219.503
9.000	0.15000	219.503	-219.503
9.500	0.15833	219.503	-219.503
10.000	0.16667	219.503	-219.503
12.000	0.20000	219.503	-219.503
14.000	0.23333	219.503	-219.503

9313090.0201

36 of 36

299-W27-2 Slug Withdrawal
18-Dec-92



APPENDIX D

AQUIFER TESTS AND INTERPRETATION

9313090.0703

CONTENTS

INTRODUCTION AND AQUIFER TEST ANALYSIS D-1
SLUG TEST DATA D-14
CONSTANT DISCHARGE AND STEP-DRAWDOWN DATA D-81

9313091.1704

1.0 INTRODUCTION

This appendix includes descriptions and interpretations of slug injection/withdrawal, constant discharge tests and well development activities conducted in well 299-W27-2 during 1992.

All tests were performed in the Middle Ringold unit of the unconfined aquifer. This is the uppermost saturated unit in the unconfined aquifer, which includes at least two other distinct lithologic units. The aquifer is over 200 ft thick and may exhibit both unconfining and semiconfined conditions.

The Middle Ringold unit has been described in WHC (1990) as a coarse grained facies representing channel-fill deposits composed of gravel to sandy gravel. This gravel is compacted and contains varying amounts of cement and void filling sands and silts that have created variable porosity and permeability. To date no explanations of geologic or lithologic relationships exist to account for this variability or its distribution.

1.1 SUMMARY OF AQUIFER TEST RESULTS

Slug tests and constant discharge aquifer tests were performed at well 299-W27-02 at the top of the aquifer (217.9 ft to 235.5 ft), and at the bottom of the aquifer (406 ft to 416 ft). The deeper test was performed after the well was completed at the bottom of the aquifer, and consisted of monitoring water level changes during well development. A step-drawdown test was also conducted at the top of the unconfined aquifer to determine an optimum pumping rate for the longer term constant discharge test.

During the shallow constant discharge test, water levels were measured at well 299-W26-12, which is located 67.6 ft northwest of pumping well 299-W27-02. A small but non-interpretable response was noted at this well during the test (Figure D-1). The water levels actually increased at the end of the test, rather than decreasing as would be expected. This reversed response may be attributable to the relatively low transmissivities of the interval coupled with a slow propagation of previous disturbances to the aquifer during drilling and prior test activities or possibly responses to atmospheric pressure changes.

Table D-1 presents a summary of results of aquifer tests performed in well 299-W27-2. Slug withdrawal data were analyzed by the Bouwer and Rice (1976) method, which is applicable both to unconfined and confined aquifer conditions.

Figures D-2, D-3, D-4, and D-5 show the analysis plots. Values of hydraulic conductivity ranged from 21 to 34 ft/day at the top of the aquifer, while the hydraulic conductivity at the bottom of the aquifer was estimated at 170 ft/day. Figure D-6 depicts the symbology for the Bouwer and Rice (1976) method. The computer software package ISOAQX (a trademark of HydraLogic, Missoula, MT) was used to evaluate the slug test data.

The constant discharge and development tests were analyzed using the Cooper and Jacob (1946) straight-line method. Transmissivities for the shallow and deep constant discharge and development tests were estimated at 600 ft^2/day and 980 ft^2/day, respectively. Figures D-7 and D-8 show the analysis plots.

Table D-1. Summary of Aquifer Test Results for Well 299-W27-02 in CY 1992.

Well W27-02	Test type	Analysis method[1]	Aquifer type	K (ft/d)	T (ft^2/d)
11/05/92	slug	B&R	shallow (217.5 to 235.5 ft)	21-34	(370-600)
11/06/92	constant discharge	C&J	shallow (217.5 to 235.5 ft)	(34)	600
11/09/92	slug	B&R	shallow (217.86 to 235.5 ft)	24	(420)
11/17/92	slug	B&R	deep (406.14 to 416.56 ft)	170	(1,700)
11/17/92	development	C&J	deep (406.14 to 416.56 ft)	(98)	980

[1]B&R refers to Bouwer and Rice (1976) analysis method, and C&J refers to the Cooper and Jacob (1946) analysis method

( ) VALUES IN PARENTHESES ARE DERIVED FROM THE EQUATION T = K*b; where b= the saturated screened interval measured in feet, K = the hydraulic conductivity, and T = the transmissivity.

1.1.1 Slug Test Discussion

Equivalent values for the transmissivity (T) of the saturated screen interval were calculated in order to make a comparison with the constant discharge and development test results. These values were calculated by multiplying the length of the screened interval by the hydraulic conductivity. The equivalent transmissivities were comparable to the slug test results (Table D-1).

Slug tests stress a relatively small portion of the aquifer immediately around the borehole. As a consequence, the test results may be influenced by local formational heterogeneities and borehole skin effects created by drilling operations. The relatively close correspondence between the slug

test results and the constant discharge results implies that these near borehole effects were minimal.

Slug rod volumes of 0.13 ft^3 and 0.441 ft^3 were used to perform the slug injection and withdrawal tests at completion of the well, and for testing at the top of the aquifer, respectively. Water level changes during injection and withdrawal of the slug rod were measured with an in situ pressure transducer and the data were collected using a data logger. This data along with the analysis results are contained in this appendix.

1.1.2 Constant Discharge Discussion

To account for unconfined aquifer conditions, the test data were corrected prior to analysis for the decrease in the saturated thickness of the aquifer as drawdown increased, and in the case of the shallow test, an observed pre-test water level trend. The water level trend was estimated at 4E-5 ft/min for the shallow test (Figure D-9).

Under water table conditions, the change in saturated thickness is correct using the equation

$$s_c = s_o - s_o^2/2m$$

where

s_c = the corrected drawdown
s_o = the observed drawdown during the test
m = the pretest saturated thickness of the aquifer.

This equation is described more fully in Bentall (1963).

The shallow test was terminated after 1,740 min of pumping, whereas the development test ended after 360 min of purging. Late time data for both tests were affected by a change in the discharge rate, making this portion of data inadequate for interpretation.

Borehole storage was estimated to end at about 12 min for the shallow test and at about 1 min for the deep test. The time when borehole storage effects no longer affect the drawdown data was calculated using the equation

$$t_c = 25r_c^2/T \text{ (Weeks 1977)}$$

where

t = the time when borehole storage effects become insignificant
r_c = the well radius
T = the estimated transmissivity.

The borehole diameter for the shallow test was about 10 in, and for the deep test about 4 in.

The early time data for the discharge tests do not appear to be affected by delayed gravity drainage (Figures D-7 and D-8) (i.e., the

drawdown curve does not manifest the three distinct drawdown sections generally associated with delayed drainage). For this reason, the data were analyzed under the assumption that these effects were minimal.

Well screens in both tests partially penetrated the aquifer. Hence, the transmissivities calculated from the test data are viewed as applicable only to the screened interval. This approach is one commonly used by hydrogeologists, even though it does introduce a non-quantifiable error to the test results. The test results are probably accurate to within one-half order of magnitude of the true value.

The recovery data were affected by drainage of water from the riser tubing back into the aquifer when pumping was terminated (a check valve or foot valve was not installed). For this reason, these data were not analyzed. Also, the slug injection data were not interpretable because of the excessive disturbance produced while injecting the slug rods. Likewise, these data were not analyzed.

In general, the estimated values of hydraulic conductivity appear to be reasonable based on the types of aquifer materials encountered while drilling, the observed response of the aquifer during testing, and comparability of the estimated values to those reported in Graham et al. (1981) for the 200 West Area. The test results are viewed as reasonable estimates, but are constrained by the testing limitations indicated previously.

2.2 REFERENCES

Bentall, R., 1963, "Methods of Determining Permeability, Transmissibility, and Drawdown", *USGS Water Supply Paper*, WSP 1536-I, pp. 278-292.

Bouwer, H. and R. C. Rice, 1976, "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells", *Water Resources Research*, v 12, no. 3, pp 423-428.

Cooper, H. H., Jr., and C. E. Jacob, 1946, "A Generalized Graphical Method for Evaluating Formation Constants and Summarizing Well-Field History", in *American Geophysical Union Transactions*, v 27, no. 4, pp. 526-534.

Graham M. J., M. D. Hall, S. R. Strait, and W. R. Brown, 1981, *Hydrology of the Separations Area*, RHO-ST-42, Rockwell Hanford Operations, Richland, Washington.

Weeks, E. P., 1977, "Aquifer Tests--the State of the Art in Hydrology", in *Proceedings of the Invitational Well Symposium*, LBL-7027, Lawrence Berkeley Laboratory, University of California, p. 23.

WHC, 1990, *Interim Status Groundwater Monitoring Plan for the 216-S-10 Pond and Ditch*, WHC-SD-EN-AP-018, Westinghouse Hanford Company, Richland, Washington.

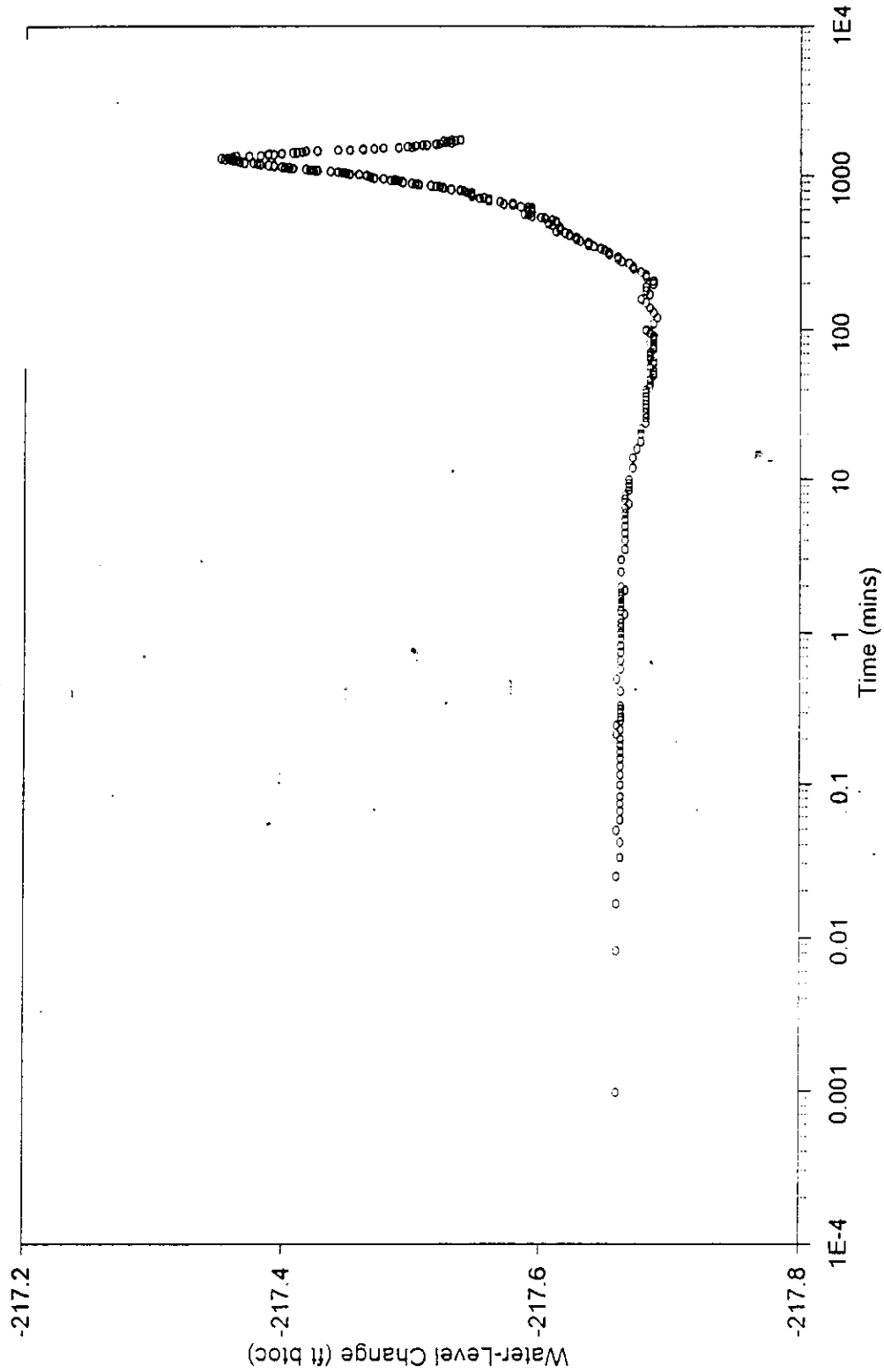


Figure D-1. Water-Level Response at Observation Well 299-W26-12 During the Constant Discharge Test at Well 299-W27-02.

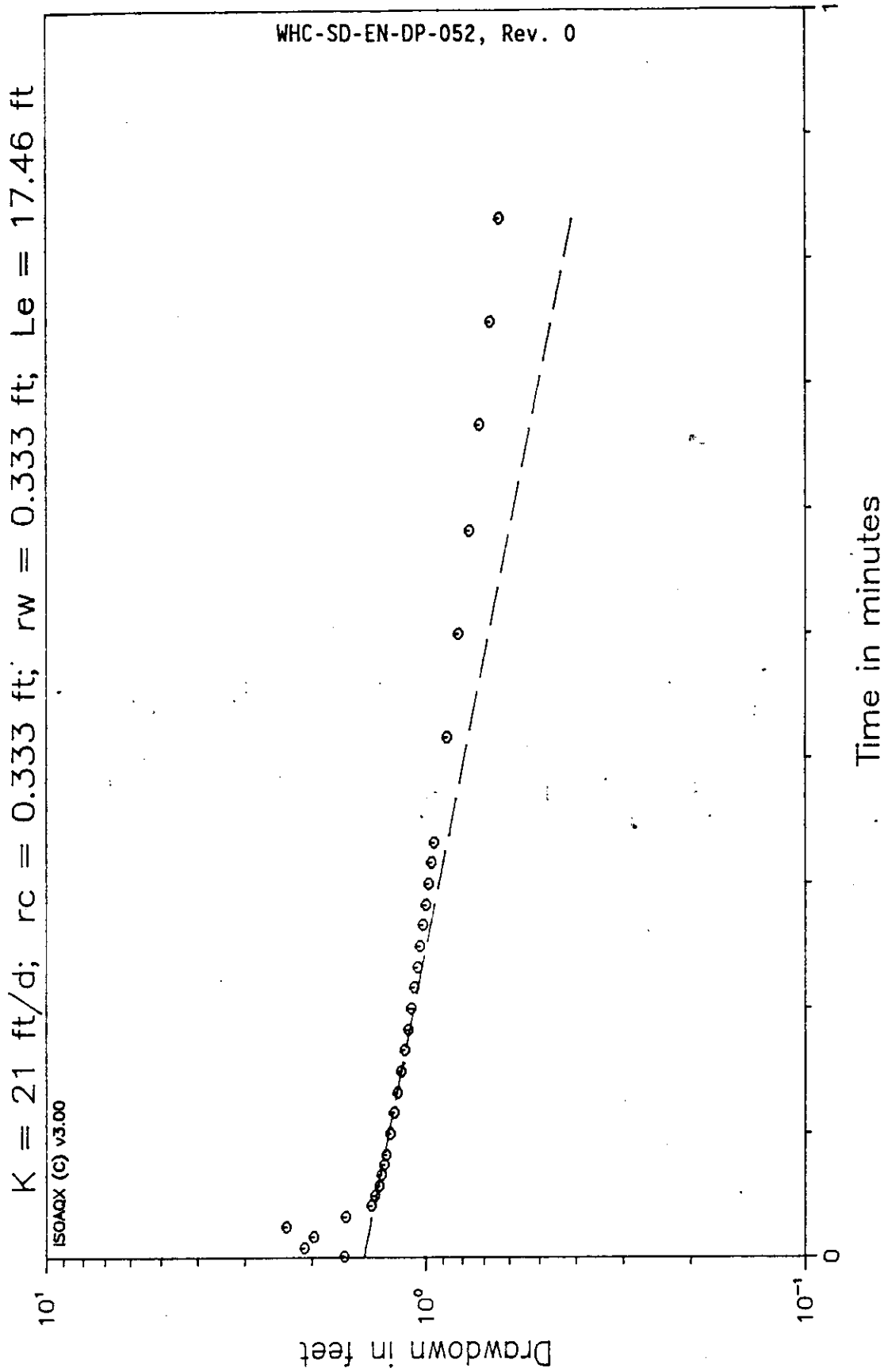


Figure D-2. Slug Withdrawal Analysis for Shallow Test at Well 299-W27-02, Interpretation One.

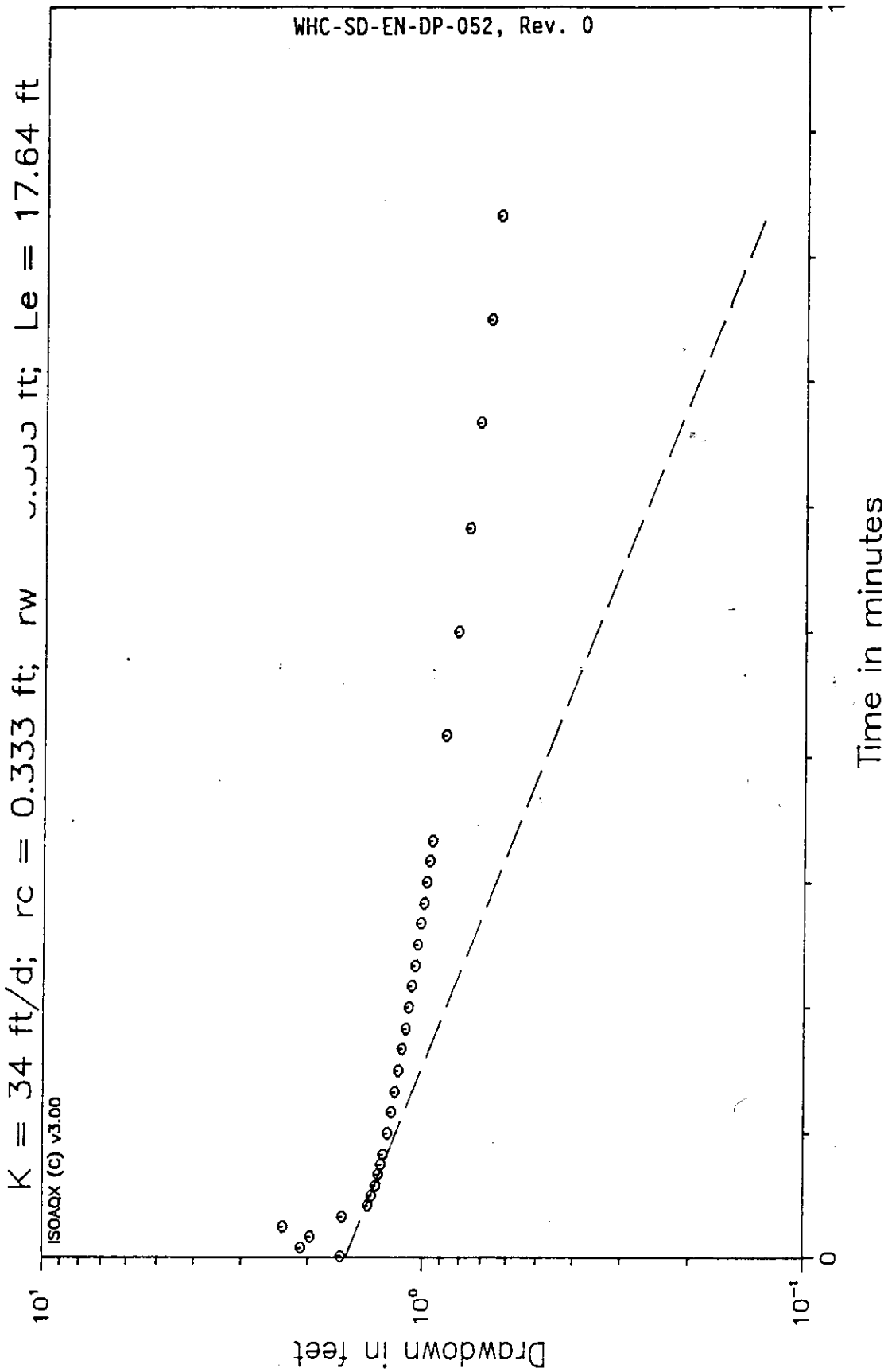


Figure D-3. Slug Withdrawal Analysis for Shallow Test at Well 299-W27-02, Interpretation Two.

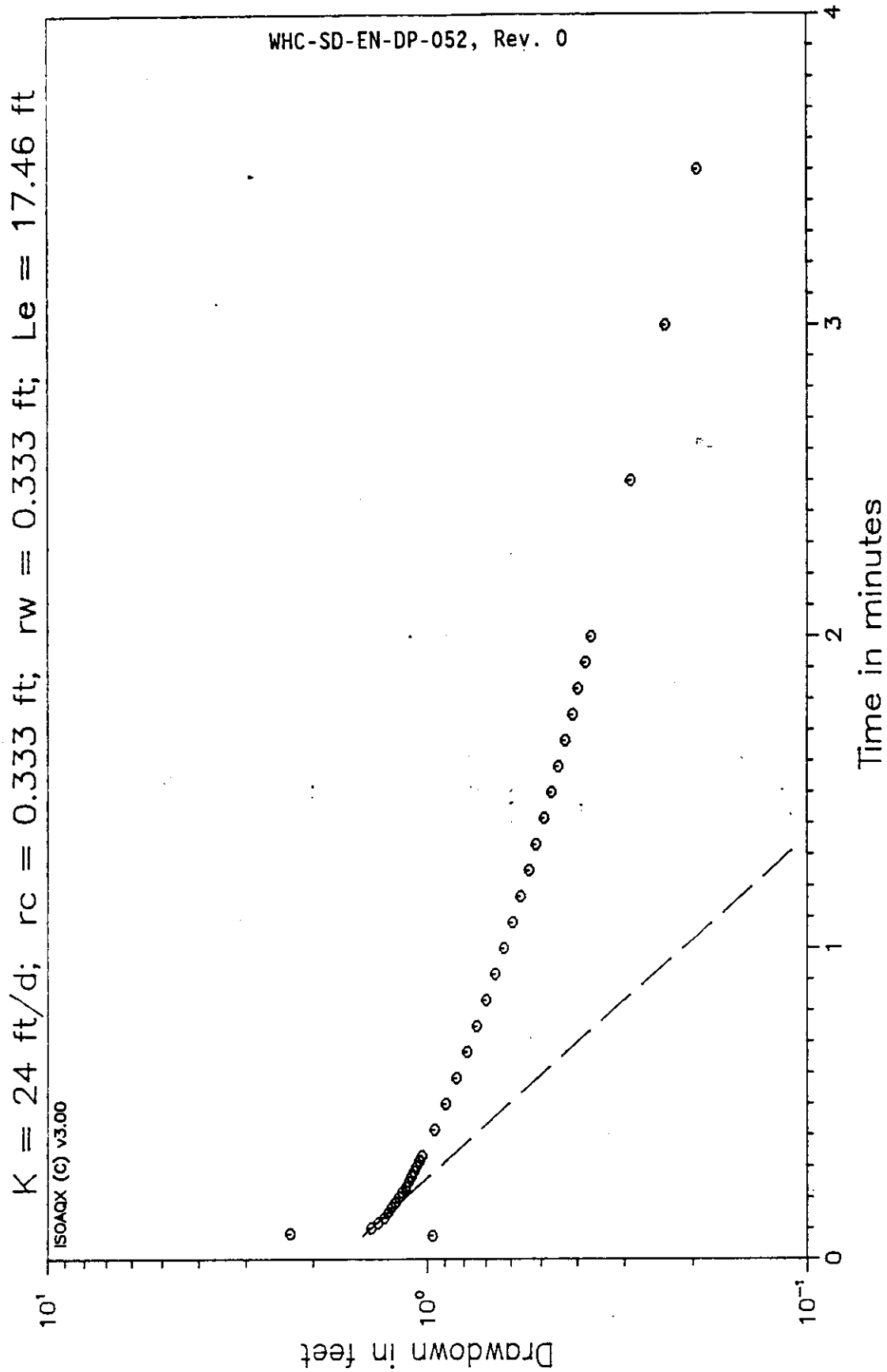


Figure D-4. Slug Withdrawal Analysis for Second Test at Well 299-W27-02 (Conducted after the Constant Discharge Test).

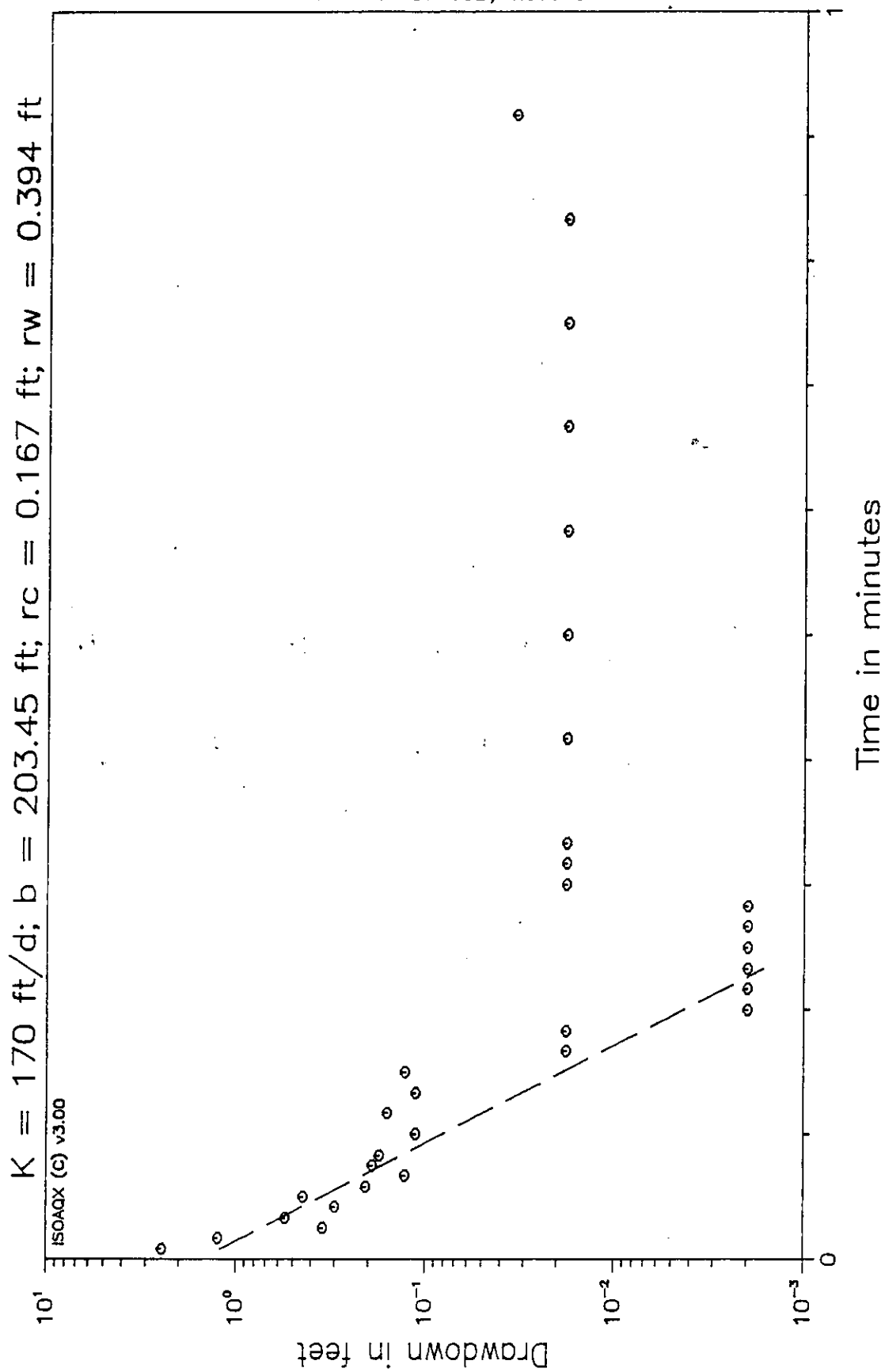


Figure D-5. Slug Withdrawal Analysis for Deep Test at Well 299-W27-02.

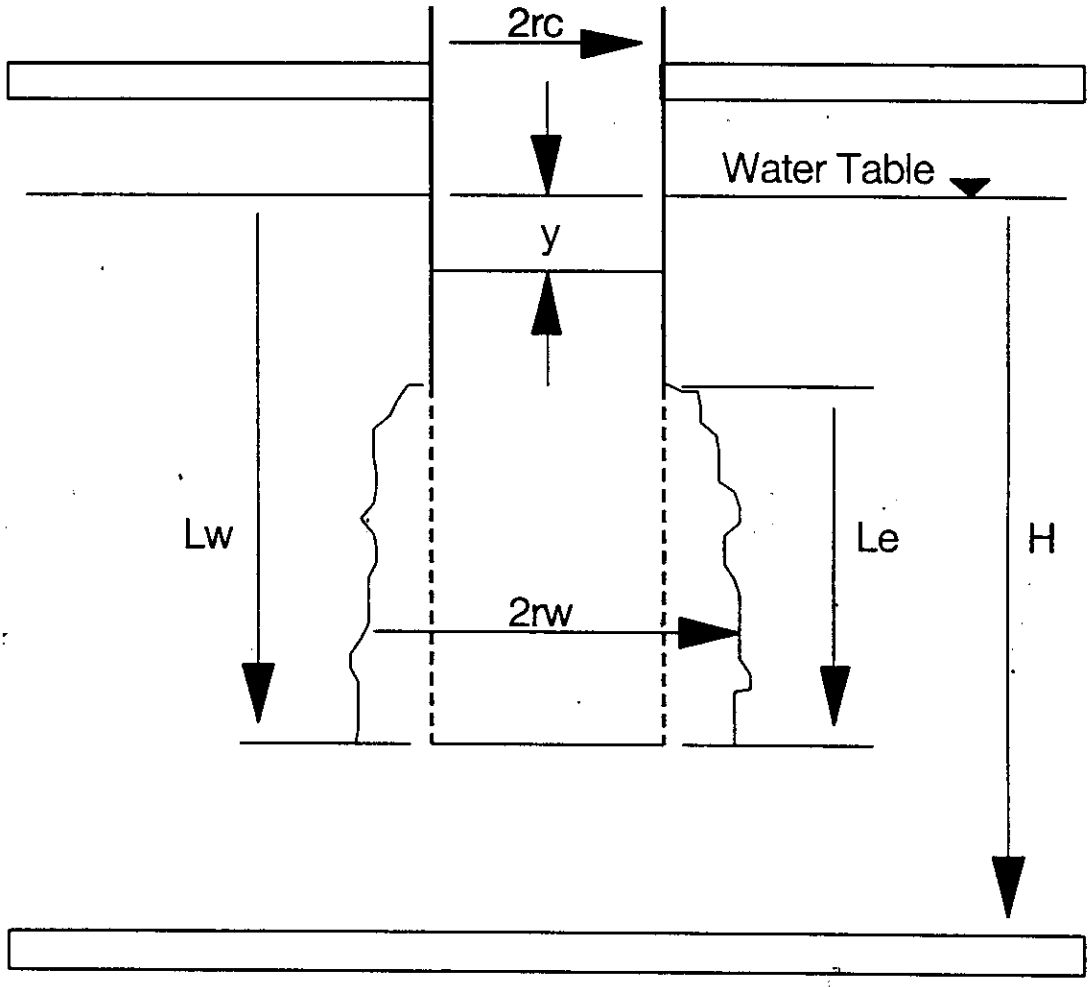


Figure D-6. Diagram Showing Terminology Used for the Bouwer and Rice (1976) Slug Test Analysis.

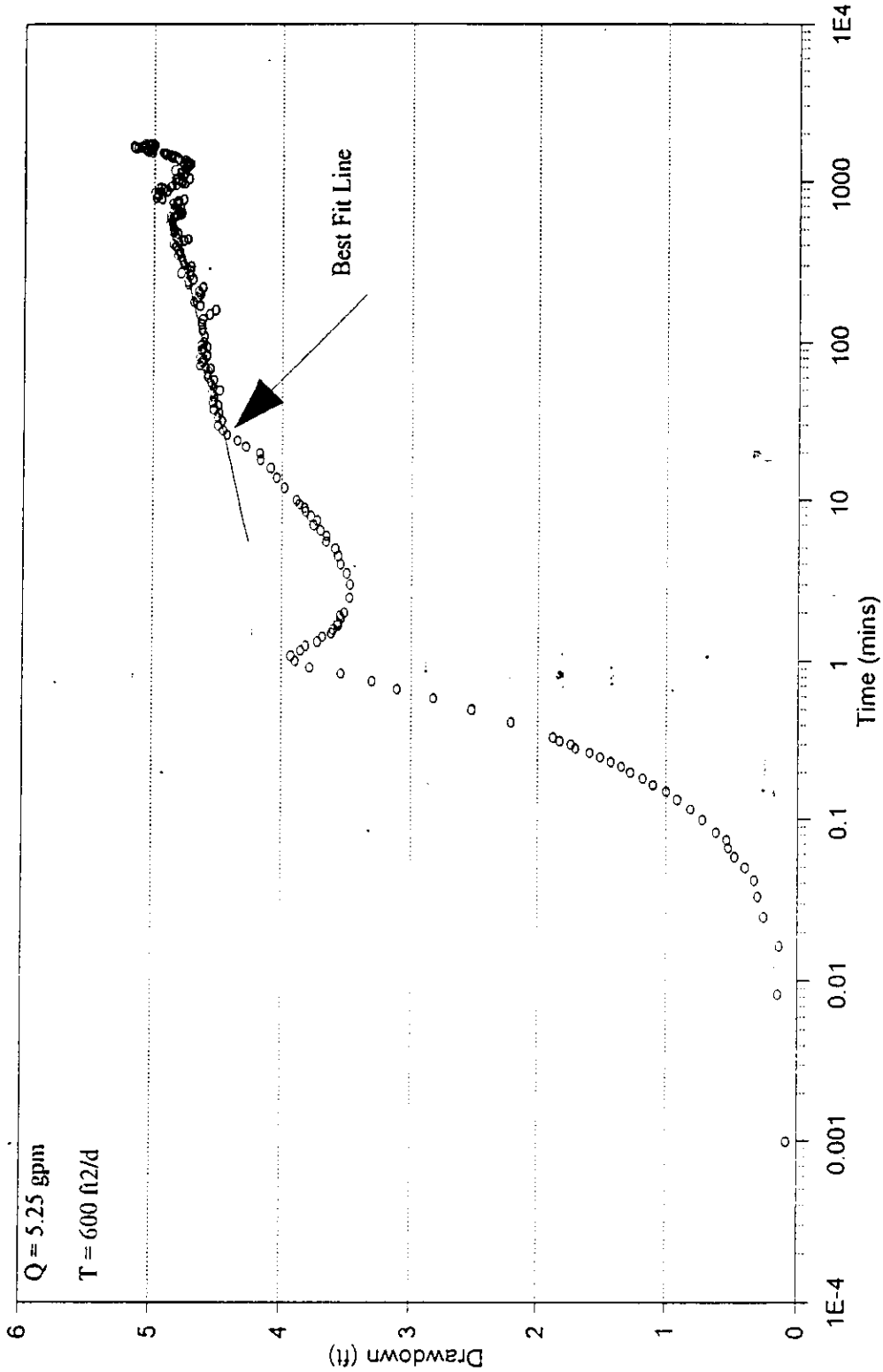


Figure D-7. Constant Discharge Test Analysis for Shallow Test at Well 299-W27-02.

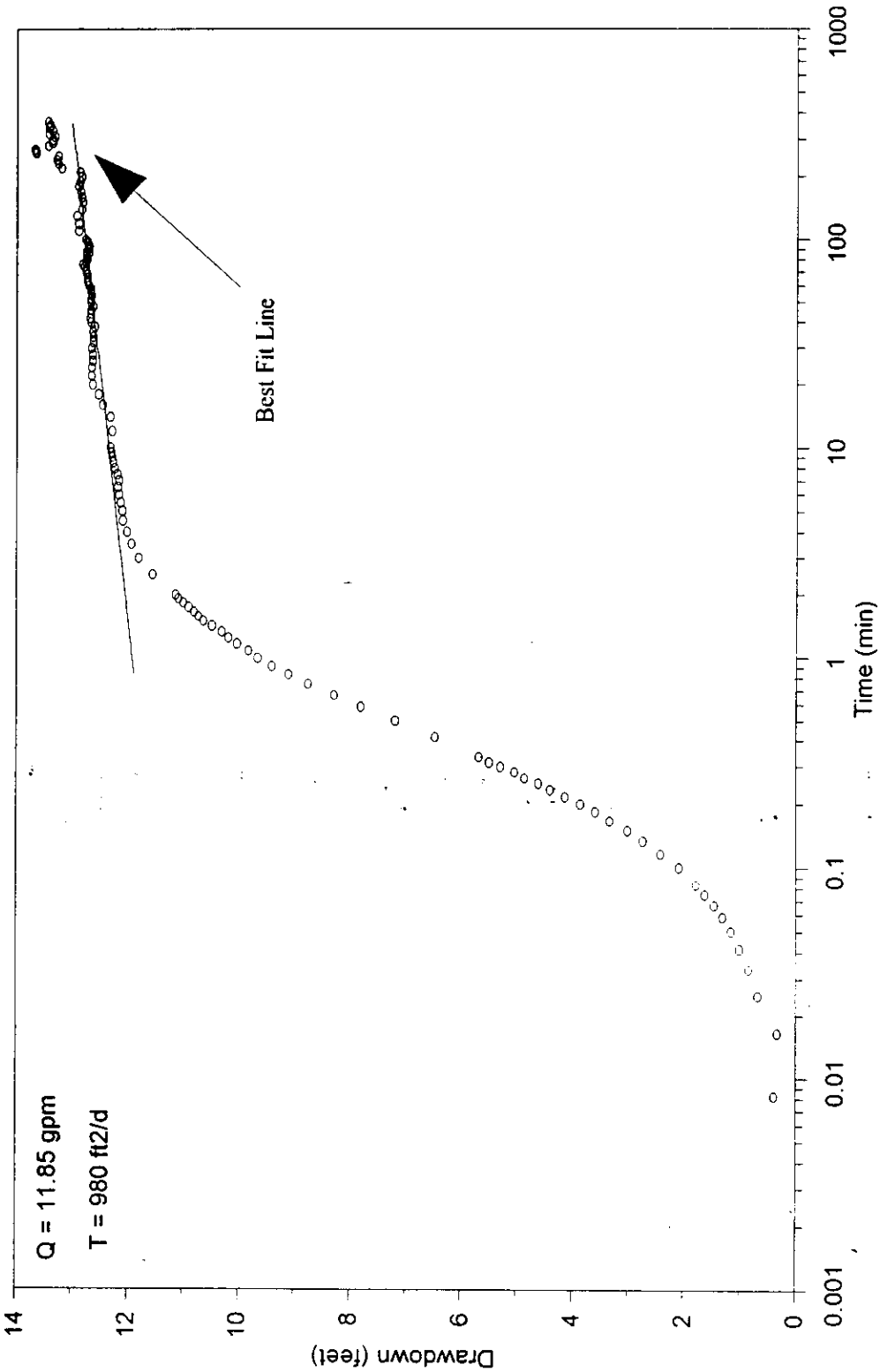


Figure D-8. Constant Discharge Test Analysis for Deep Test at Well 299-W27-02.

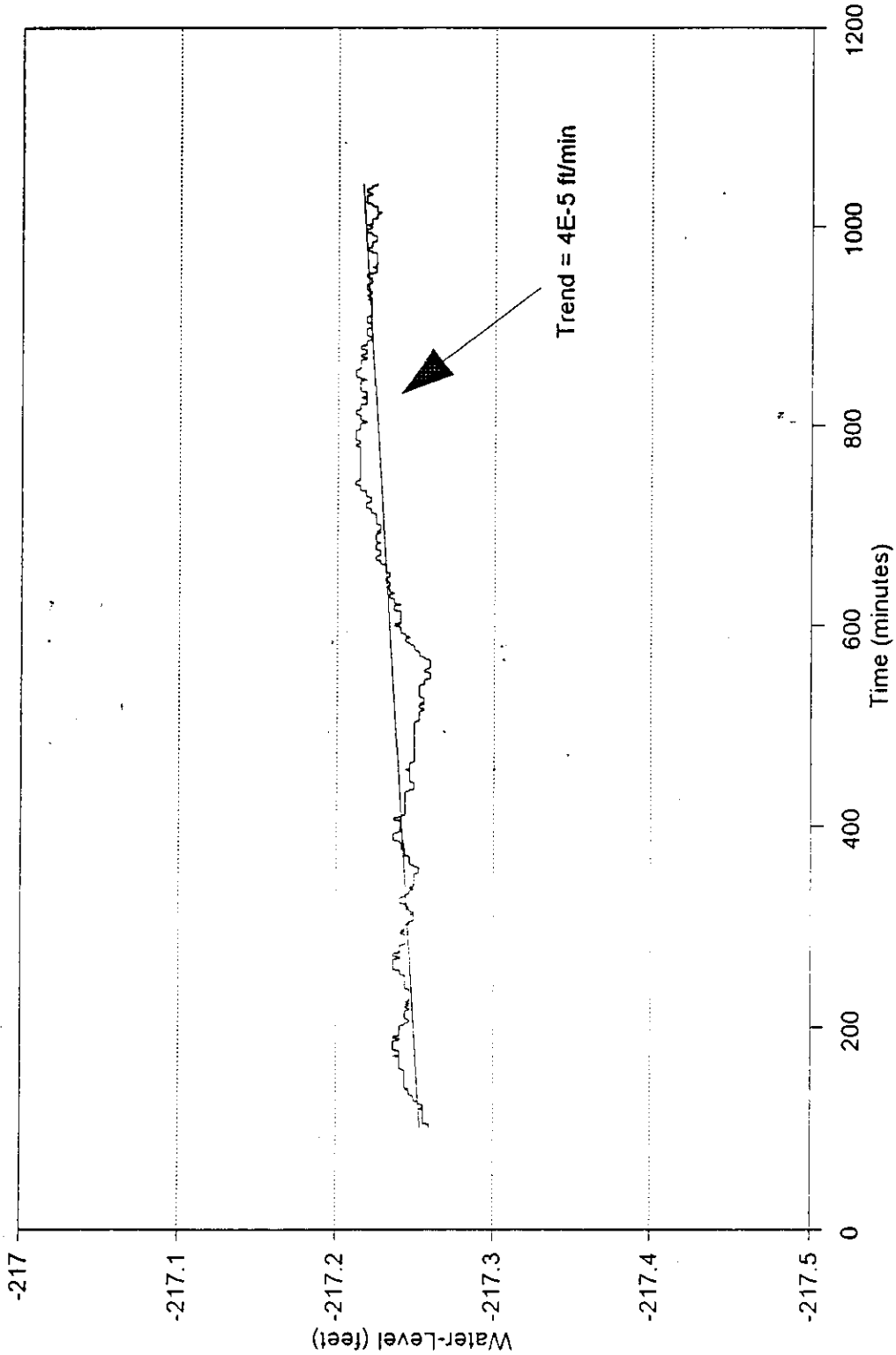


Figure D-9. Trend Analysis for Shallow Test at Well 299-W27-02.

INFORMATION SHEET: AQUIFER TEST-OBSERVATION WELL

WELL DESIGNATION 299-W26-12 DEPTH 230.83'BTOC

PUMP INSTALLATION

Project: _____ Date: 11-5-92

Pump Type: _____

Pump Model No.: _____

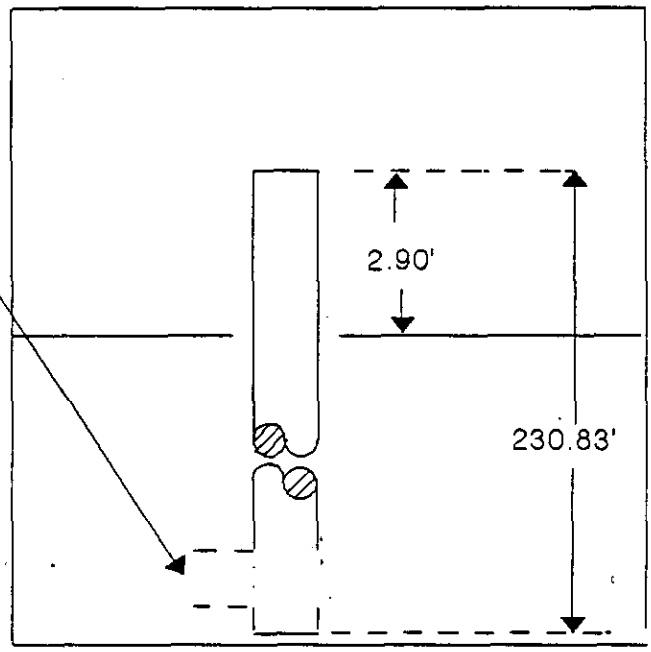
Installed By: _____

Depth to Water: 217.66'BTOC

Reported Depth to Water: _____

Screened Interval: 230.83'-210.11'

Depth to Bottom: 230.83'



PUMP/RISER DISCRIPTION:

Pipe: _____

Pump Length: _____

Pump Screen Length: _____

Total Material Length: _____

Distance Pump Off Bottom: _____

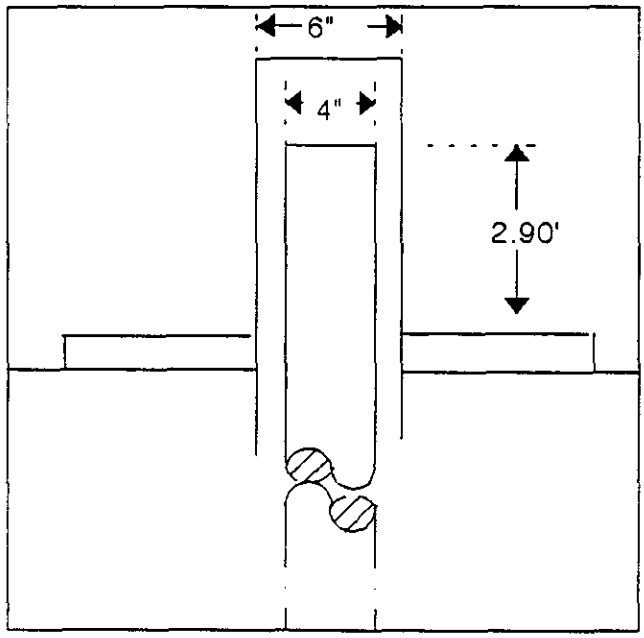
Pump Intake @: _____

Material Cleaning: _____

PUMP TEST: N/A

COMMENTS:

Observation well. Located 67.6'NW of pumping well.



Pump Intake @: _____

Transducer @: 10.14' BWL

Date: 11-5-92

Flow Rate (Q): 11.9-5.25 gpm

AQUIFER TEST INFORMATION

Slugging Rod Dim: 4.5"x4.0'=.442 cu.ft

Transducer @: 10.14'/L

Date: 11-5 & 11-9-92

EQUIPMENT INFORMATION:

Data logger: 2K193

E.Tape: ET-5 (1-13-93)

Transducer: 262362 (2-21-93)

Completed By: James A Coates James A. Coates Date 12-14-92

Note: well 299-W26-12 is the observation well for 299-W27-02

BOREHOLE TEST INFORMATION

Borehole 299-W26-12 Borehole Diameter 10in. Hanford Coordinates N/A

Interval Tested 230.83'-210.11' Depth Interval 230.83'-210.11' Test Type: Instantaneous Slug

Borehole Depth: 230.83' BTOC Instruction Used: WHC-CM-7-7 (Ell 10.1)

EQUIPMENT

NAME	DESCRIPTION
Electric Sounder	Solinst s/n: ET-5 Calibration due: 1-13-93
Data Logger	In-Situ Inc. s/n: 2K193
Pressure Transducer	In-Situ Inc. s/n: 259198 Calibration due: 2-21-93
Slugging Rod	Site Fabricated 48.0"Lx4.5"D 0.441 cu. ft.
Steel Measuring Tape	500' Graduated Steel Tape

MEASUREMENT DATUM

Control Datum: Top of Casing (TOC)6"

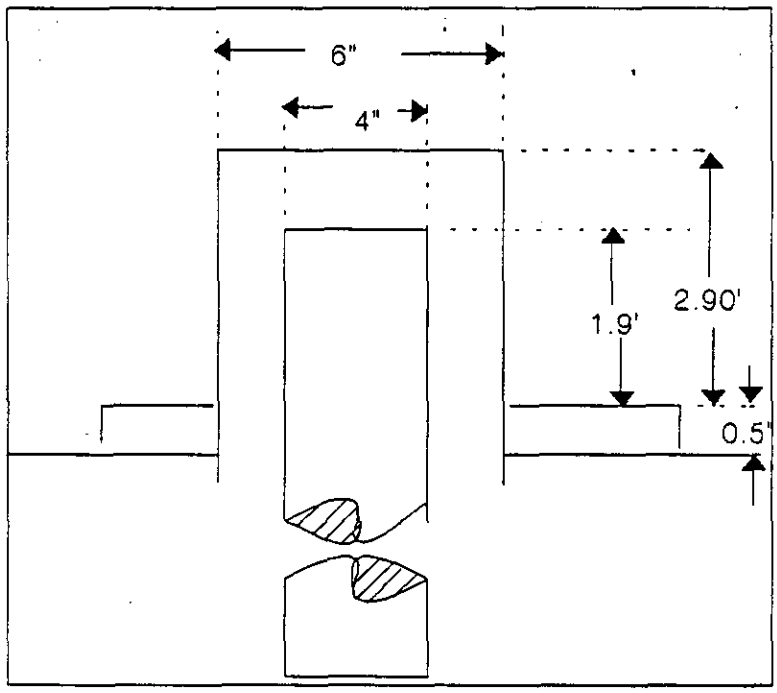
Elevation: N/A

Electric Sounder: TOC 6"

Steel Tape: TOC 6"

Pressure Transducer: TOC 6"

WELL HEAD DIAGRAM



COMMENTS

OBSERVATION WELL

Recorded by: James A. Coates James A. Coates Date: 12-14-92

Sign and Print Name

A-6000-417 (08/89)

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION #1

Borehole: 299-W26-12

Interval Tested: 230.83'-210.11' Btoc ~~10~~ 6"

Depth To Water: 217.86' Btoc ~~10~~ 6" [illegible]

Depth to Transducer: 10.14' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1735 (11/4)	0800 (11/5)
Injection	0925	1001

Date: 11-5-92

Initial Pressure (Pi): 217.660

Slug Level/Pressure (Pmax)

Borehole Diameter: 6"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates (signature) James A. Coates Date: 12-14-92

Sign and Print Name

BD-6000-293(07/90)

INSTANTANEOUS SLUG TEST DATA SHEET :WITHDRAWAL #1

Borehole: 299-W26-12

Interval Tested: 230.83'-210.11' Btoc 6"

Depth To Water: 217.86' Btoc 6"

Depth to Transducer: 10.14' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1735 (11/4)	0800 (11/5)
Withdrawal	1003	1034

Date: 11-5-92

Initial Pressure (Pi): 217.660

Slug Level/Pressure (Pmax)

Borehole Diameter: 6"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-14-92

Sign and Print Name

BD-6000-293(07/90)

299-W26-12 BASELINE: SLUG INJECTION TEST #1

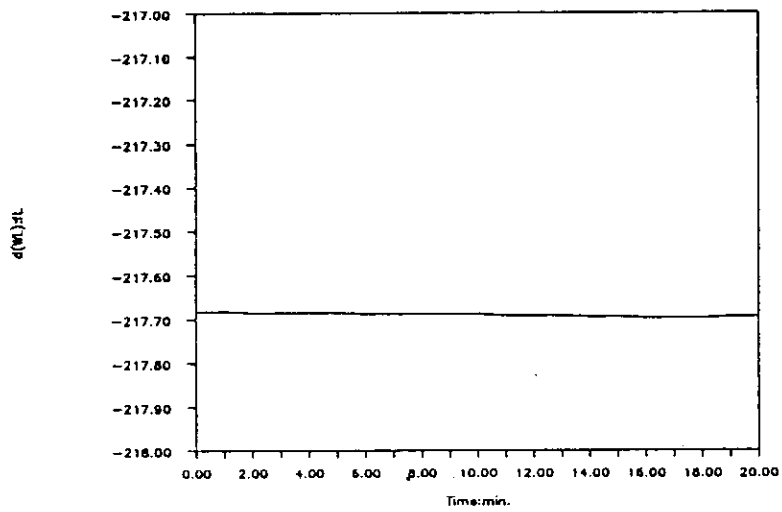
SE2000
Environ mental Logger
11/ 11 11:29

Unit# 19 3 Test 1

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/05 09:03:50



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.000	217.682	-217.682
1	0.017	217.682	-217.682
2	0.033	217.685	-217.685
3	0.050	217.685	-217.685
4	0.067	217.685	-217.685
5	0.083	217.685	-217.685
6	0.100	217.688	-217.688
7	0.117	217.688	-217.688
8	0.133	217.688	-217.688
9	0.150	217.688	-217.688
10	0.167	217.688	-217.688
11	0.183	217.691	-217.691
12	0.200	217.691	-217.691
13	0.217	217.691	-217.691
14	0.233	217.694	-217.694
15	0.250	217.694	-217.694
16	0.267	217.697	-217.697
17	0.283	217.697	-217.697
18	0.300	217.697	-217.697
19	0.317	217.694	-217.694
20	0.333	217.694	-217.694

Page 6 of 77

299-W26-12 AIR INJECTION: SLUG INTERFERENCE

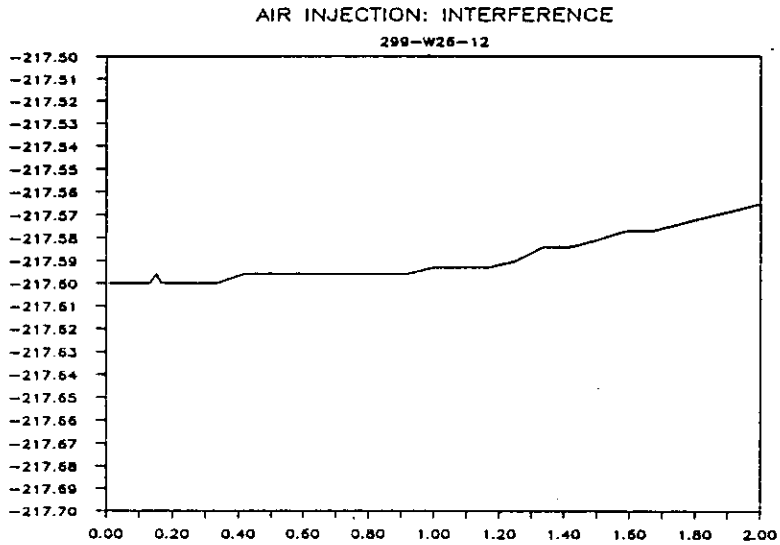
SE2000
Environ mental Logger
11/ 04 11:55

Unit# 19 3 Test 1

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/03 10:48:40



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.0000	217.600	-217.600
0.008	0.0001	217.600	-217.600
0.017	0.0003	217.600	-217.600
0.025	0.0004	217.600	-217.600
0.033	0.0006	217.600	-217.600
0.042	0.0007	217.600	-217.600
0.050	0.0008	217.600	-217.600
0.058	0.0010	217.600	-217.600
0.067	0.0011	217.600	-217.600
0.075	0.0013	217.600	-217.600
0.083	0.0014	217.600	-217.600
0.100	0.0017	217.600	-217.600
0.117	0.0019	217.600	-217.600
0.133	0.0022	217.600	-217.600
0.150	0.0025	217.596	-217.596
0.167	0.0028	217.600	-217.600
0.183	0.0031	217.600	-217.600
0.200	0.0033	217.600	-217.600
0.217	0.0036	217.600	-217.600
0.233	0.0039	217.600	-217.600
0.250	0.0042	217.600	-217.600
0.267	0.0044	217.600	-217.600
0.283	0.0047	217.600	-217.600
0.300	0.0050	217.600	-217.600
0.317	0.0053	217.600	-217.600

0.333	0.006	217.600	-217.600
0.417	0.007	217.596	-217.596
0.500	0.008	217.596	-217.596
0.583	0.010	217.596	-217.596
0.667	0.011	217.596	-217.596
0.750	0.013	217.596	-217.596
0.833	0.014	217.596	-217.596
0.917	0.015	217.596	-217.596
1.000	0.017	217.593	-217.593
1.083	0.018	217.593	-217.593
1.167	0.019	217.593	-217.593
1.250	0.021	217.590	-217.590
1.333	0.022	217.584	-217.584
1.417	0.024	217.584	-217.584
1.500	0.025	217.581	-217.581
1.583	0.026	217.577	-217.577
1.667	0.028	217.577	-217.577
1.750	0.029	217.574	-217.574
1.833	0.031	217.571	-217.571
1.917	0.032	217.568	-217.568
2.000	0.033	217.565	-217.565

9413090.0274

299-W26-12 AIR INJECTION: INTERFERENCE TEST 2

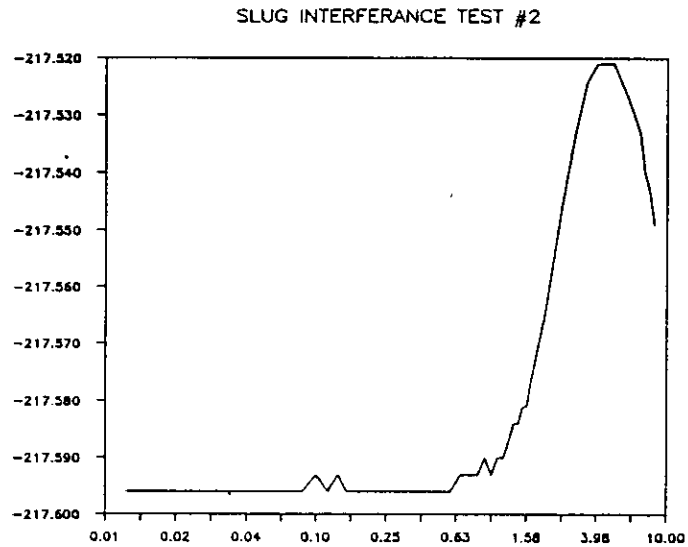
SE2000
Environ mental Logger
11/ 04 10:21

Unit# 19 3 Test 2

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/03 11:12:15



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0	217.596	-217.596
0.008	0.0001	217.596	-217.596
0.017	0.0003	217.596	-217.596
0.025	0.0004	217.596	-217.596
0.033	0.0006	217.596	-217.596
0.042	0.0007	217.596	-217.596
0.050	0.0008	217.596	-217.596
0.058	0.0010	217.596	-217.596
0.067	0.0011	217.596	-217.596
0.075	0.0013	217.596	-217.596
0.083	0.0014	217.596	-217.596
0.100	0.0017	217.593	-217.593
0.117	0.0019	217.596	-217.596
0.133	0.0022	217.593	-217.593
0.150	0.0025	217.596	-217.596
0.167	0.0028	217.596	-217.596
0.183	0.0031	217.596	-217.596
0.200	0.0033	217.596	-217.596
0.217	0.0036	217.596	-217.596
0.233	0.0039	217.596	-217.596
0.250	0.0042	217.596	-217.596
0.267	0.0044	217.596	-217.596
0.283	0.0047	217.596	-217.596
0.300	0.0050	217.596	-217.596
0.317	0.0053	217.596	-217.596

Slug Interferance Test #2

Observation Well No. 299-W26-12

WELL NO.299-W27-2 SLUGGING WELL

67.6 ft. well to well

0.333	0.006	217.596	-217.596
0.417	0.007	217.596	-217.596
0.500	0.008	217.596	-217.596
0.583	0.010	217.596	-217.596
0.667	0.011	217.593	-217.593
0.750	0.013	217.593	-217.593
0.833	0.014	217.593	-217.593
0.917	0.015	217.590	-217.590
1.000	0.017	217.593	-217.593
1.083	0.018	217.590	-217.590
1.167	0.019	217.590	-217.590
1.250	0.021	217.587	-217.587
1.333	0.022	217.584	-217.584
1.417	0.024	217.584	-217.584
1.500	0.025	217.581	-217.581
1.583	0.026	217.581	-217.581
1.667	0.028	217.577	-217.577
1.750	0.029	217.574	-217.574
1.833	0.031	217.571	-217.571
1.917	0.032	217.568	-217.568
2.000	0.033	217.565	-217.565
2.500	0.042	217.546	-217.546
3.000	0.050	217.533	-217.533
3.500	0.058	217.524	-217.524
4.000	0.067	217.521	-217.521
4.500	0.075	217.521	-217.521
5.000	0.083	217.521	-217.521
5.500	0.092	217.524	-217.524
6.000	0.100	217.527	-217.527
6.500	0.108	217.530	-217.530
7.000	0.117	217.533	-217.533
7.500	0.125	217.540	-217.540
8.000	0.133	217.543	-217.543
8.500	0.142	217.549	-217.549

299-W26-12 SLUG INJECTION TEST #1

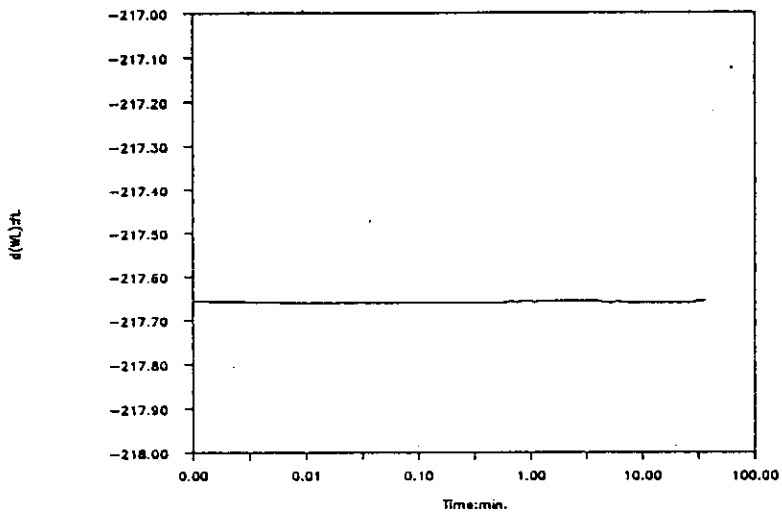
SE2000
Environ mental Logger
11/ 05 11:30

Unit# 19 3 Test 2

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/05 09:25:45



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft	
0.001	0.0000	217.656	-217.656	SLUG INJECTION TEST 1
0.008	0.0001	217.660	-217.660	OBSERVATION WELL 299-W26-12
0.017	0.0003	217.660	-217.660	
0.025	0.0004	217.660	-217.660	
0.033	0.0006	217.660	-217.660	
0.042	0.0007	217.660	-217.660	
0.050	0.0008	217.660	-217.660	
0.058	0.0010	217.660	-217.660	
0.067	0.0011	217.660	-217.660	
0.075	0.0013	217.660	-217.660	
0.083	0.0014	217.660	-217.660	
0.100	0.0017	217.660	-217.660	
0.117	0.0019	217.660	-217.660	
0.133	0.0022	217.660	-217.660	
0.150	0.0025	217.660	-217.660	
0.167	0.0028	217.660	-217.660	
0.183	0.0031	217.660	-217.660	
0.200	0.0033	217.660	-217.660	
0.217	0.0036	217.660	-217.660	
0.233	0.0039	217.660	-217.660	
0.250	0.0042	217.660	-217.660	
0.267	0.0044	217.660	-217.660	
0.283	0.0047	217.660	-217.660	
0.300	0.0050	217.660	-217.660	
0.317	0.0053	217.660	-217.660	

0.333	0.006	217.660	-217.660
0.417	0.007	217.660	-217.660
0.500	0.008	217.660	-217.660
0.583	0.010	217.660	-217.660
0.667	0.011	217.656	-217.656
0.750	0.013	217.660	-217.660
0.833	0.014	217.656	-217.656
0.917	0.015	217.656	-217.656
1.000	0.017	217.656	-217.656
1.083	0.018	217.660	-217.660
1.167	0.019	217.656	-217.656
1.250	0.021	217.656	-217.656
1.333	0.022	217.656	-217.656
1.417	0.024	217.656	-217.656
1.500	0.025	217.656	-217.656
1.583	0.026	217.656	-217.656
1.667	0.028	217.656	-217.656
1.750	0.029	217.656	-217.656
1.833	0.031	217.656	-217.656
1.917	0.032	217.656	-217.656
2.000	0.033	217.656	-217.656
2.500	0.042	217.656	-217.656
3.000	0.050	217.656	-217.656
3.500	0.058	217.656	-217.656
4.000	0.067	217.656	-217.656
4.500	0.075	217.660	-217.660
5.000	0.083	217.660	-217.660
5.500	0.092	217.660	-217.660
6.000	0.100	217.656	-217.656
6.500	0.108	217.660	-217.660
7.000	0.117	217.660	-217.660
7.500	0.125	217.660	-217.660
8.000	0.133	217.660	-217.660
8.500	0.142	217.660	-217.660
9.000	0.150	217.660	-217.660
9.500	0.158	217.660	-217.660
10.000	0.167	217.660	-217.660
11.000	0.183	217.660	-217.660
12.000	0.200	217.660	-217.660
13.000	0.217	217.660	-217.660
14.000	0.233	217.660	-217.660
15.000	0.250	217.660	-217.660
16.000	0.267	217.660	-217.660
17.000	0.283	217.660	-217.660
18.000	0.300	217.660	-217.660

9313090.0728

19.000	0.317	217.660	-217.660
20.000	0.333	217.660	-217.660
21.000	0.350	217.660	-217.660
22.000	0.367	217.660	-217.660
23.000	0.383	217.660	-217.660
24.000	0.400	217.660	-217.660
25.000	0.417	217.660	-217.660
26.000	0.433	217.660	-217.660
27.000	0.450	217.660	-217.660
28.000	0.467	217.660	-217.660
29.000	0.483	217.660	-217.660
30.000	0.500	217.656	-217.656
31.000	0.517	217.656	-217.656
32.000	0.533	217.656	-217.656
33.000	0.550	217.656	-217.656
34.000	0.567	217.656	-217.656
35.000	0.583	217.656	-217.656
36.000	0.600	217.656	-217.656

9413080.0729

Page B of 77

299-W26-12 SLUG WITHDRAWAL TEST #1

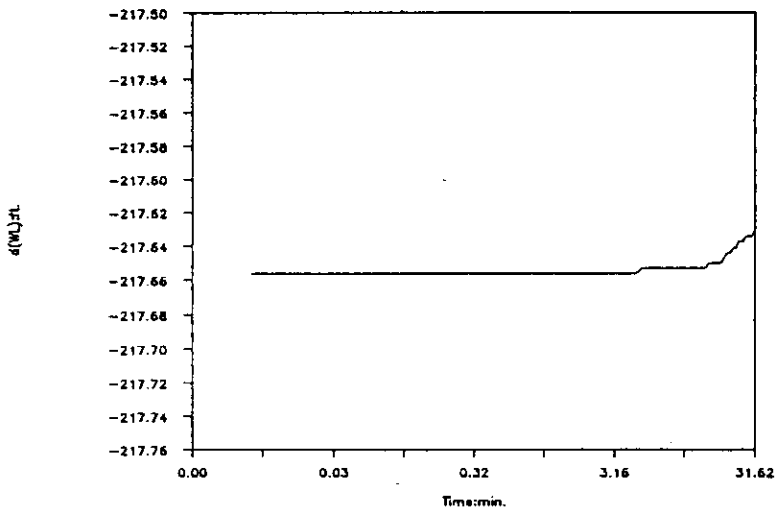
SE2000
Environ mental Logger
11/ 05 10:51

Unit# 19 3 Test 3

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/05 10:03:14



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.0000	217.656	-217.656
0.008	0.0001	217.656	-217.656
0.017	0.0003	217.656	-217.656
0.025	0.0004	217.656	-217.656
0.033	0.0006	217.656	-217.656
0.042	0.0007	217.656	-217.656
0.050	0.0008	217.656	-217.656
0.058	0.0010	217.656	-217.656
0.067	0.0011	217.656	-217.656
0.075	0.0013	217.656	-217.656
0.083	0.0014	217.656	-217.656
0.100	0.0017	217.656	-217.656
0.117	0.0019	217.656	-217.656
0.133	0.0022	217.656	-217.656
0.150	0.0025	217.656	-217.656
0.167	0.0028	217.656	-217.656
0.183	0.0031	217.656	-217.656
0.200	0.0033	217.656	-217.656
0.217	0.0036	217.656	-217.656
0.233	0.0039	217.656	-217.656
0.250	0.0042	217.656	-217.656
0.267	0.0044	217.656	-217.656
0.283	0.0047	217.656	-217.656
0.300	0.0050	217.656	-217.656
0.317	0.0053	217.656	-217.656

SLUG WITHDRAWAL OBSERVATION WELL
299-W26-12

0.333	0.006	217.656	-217.656
0.417	0.007	217.656	-217.656
0.500	0.008	217.656	-217.656
0.583	0.010	217.656	-217.656
0.667	0.011	217.656	-217.656
0.750	0.013	217.656	-217.656
0.833	0.014	217.656	-217.656
0.917	0.015	217.656	-217.656
1.000	0.017	217.656	-217.656
1.083	0.018	217.656	-217.656
1.167	0.019	217.656	-217.656
1.250	0.021	217.656	-217.656
1.333	0.022	217.656	-217.656
1.417	0.024	217.656	-217.656
1.500	0.025	217.656	-217.656
1.583	0.026	217.656	-217.656
1.667	0.028	217.656	-217.656
1.750	0.029	217.656	-217.656
1.833	0.031	217.656	-217.656
1.917	0.032	217.656	-217.656
2.000	0.033	217.656	-217.656
2.500	0.042	217.656	-217.656
3.000	0.050	217.656	-217.656
3.500	0.058	217.656	-217.656
4.000	0.067	217.656	-217.656
4.500	0.075	217.656	-217.656
5.000	0.083	217.653	-217.653
5.500	0.092	217.653	-217.653
6.000	0.100	217.653	-217.653
6.500	0.108	217.653	-217.653
7.000	0.117	217.653	-217.653
7.500	0.125	217.653	-217.653
8.000	0.133	217.653	-217.653
8.500	0.142	217.653	-217.653
9.000	0.150	217.653	-217.653
9.500	0.158	217.653	-217.653
10.000	0.167	217.653	-217.653
11.000	0.183	217.653	-217.653
12.000	0.200	217.653	-217.653
13.000	0.217	217.653	-217.653
14.000	0.233	217.653	-217.653
15.000	0.250	217.650	-217.650
16.000	0.267	217.650	-217.650
17.000	0.283	217.650	-217.650
18.000	0.300	217.650	-217.650

9413090.0731

19.000	0.317	217.647	-217.647
20.000	0.333	217.644	-217.644
21.000	0.350	217.644	-217.644
22.000	0.367	217.641	-217.641
23.000	0.383	217.641	-217.641
24.000	0.400	217.637	-217.637
25.000	0.417	217.637	-217.637
26.000	0.433	217.637	-217.637
27.000	0.450	217.634	-217.634
28.000	0.467	217.634	-217.634
29.000	0.483	217.634	-217.634
30.000	0.500	217.634	-217.634
31.000	0.517	217.631	-217.631

9310000.0732

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION #2

Borehole: 299-W26-12

Interval Tested: 230.83'-210.11' Btoc 6"

Depth To Water: 217.86' Btoc 6"

Depth to Transducer: 10.14' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	0839	0941
Injection	0946	1118

Date: 11-9-92

Initial Pressure (Pi): 217..600

Slug Level/Pressure (Pmax)

Borehole Diameter: 6"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-14-92

Sign and Print Name

BD-6000-293(07/90)

ò

AQUIFER TEST: SLUG INJECTION TEST 2 299-W26-12

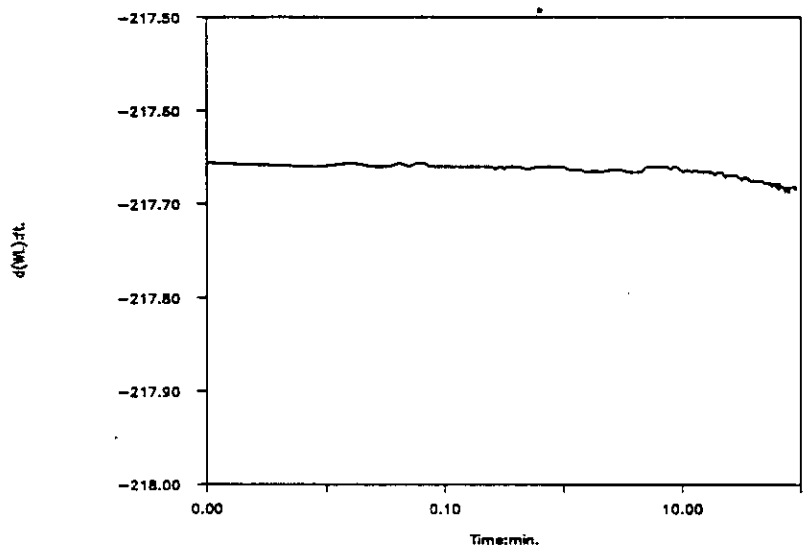
SE2000
Environ mental Logger
11/ 09 11:17

Unit# 19 3 Test 8

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/09 09:46:15



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.656	-217.656
0.008	0.0001	217.660	-217.660
0.017	0.0003	217.656	-217.656
0.025	0.0004	217.660	-217.660
0.033	0.0006	217.660	-217.660
0.042	0.0007	217.656	-217.656
0.050	0.0008	217.660	-217.660
0.058	0.0010	217.656	-217.656
0.067	0.0011	217.656	-217.656
0.075	0.0013	217.660	-217.660
0.083	0.0014	217.660	-217.660
0.100	0.0017	217.660	-217.660
0.117	0.0019	217.660	-217.660
0.133	0.0022	217.660	-217.660
0.150	0.0025	217.660	-217.660
0.167	0.0028	217.660	-217.660
0.183	0.0031	217.660	-217.660
0.200	0.0033	217.660	-217.660
0.217	0.0036	217.660	-217.660
0.233	0.0039	217.660	-217.660
0.250	0.0042	217.660	-217.660
0.267	0.0044	217.663	-217.663
0.283	0.0047	217.660	-217.660
0.300	0.0050	217.660	-217.660
0.317	0.0053	217.663	-217.663

0.333	0.006	217.660	-217.660
0.417	0.007	217.660	-217.660
0.500	0.008	217.663	-217.663
0.583	0.010	217.660	-217.660
0.667	0.011	217.660	-217.660
0.750	0.013	217.660	-217.660
0.833	0.014	217.660	-217.660
0.917	0.015	217.660	-217.660
1.000	0.017	217.660	-217.660
1.083	0.018	217.663	-217.663
1.167	0.019	217.663	-217.663
1.250	0.021	217.663	-217.663
1.333	0.022	217.663	-217.663
1.417	0.024	217.663	-217.663
1.500	0.025	217.666	-217.666
1.583	0.026	217.666	-217.666
1.667	0.028	217.666	-217.666
1.750	0.029	217.663	-217.663
1.833	0.031	217.666	-217.666
1.917	0.032	217.663	-217.663
2.000	0.033	217.666	-217.666
2.500	0.042	217.663	-217.663
3.000	0.050	217.663	-217.663
3.500	0.058	217.666	-217.666
4.000	0.067	217.666	-217.666
4.500	0.075	217.666	-217.666
5.000	0.083	217.660	-217.660
5.500	0.092	217.660	-217.660
6.000	0.100	217.660	-217.660
6.500	0.108	217.660	-217.660
7.000	0.117	217.660	-217.660
7.500	0.125	217.660	-217.660
8.000	0.133	217.663	-217.663
8.500	0.142	217.660	-217.660
9.000	0.150	217.660	-217.660
9.500	0.158	217.663	-217.663
10.000	0.167	217.666	-217.666
11.000	0.183	217.663	-217.663
12.000	0.200	217.666	-217.666
13.000	0.217	217.663	-217.663
14.000	0.233	217.666	-217.666
15.000	0.250	217.666	-217.666
16.000	0.267	217.666	-217.666
17.000	0.283	217.666	-217.666
18.000	0.300	217.666	-217.666

9313090.0035

19.000	0.317	217.669	-217.669
20.000	0.333	217.666	-217.666
21.000	0.350	217.666	-217.666
22.000	0.367	217.666	-217.666
23.000	0.383	217.672	-217.672
24.000	0.400	217.669	-217.669
25.000	0.417	217.669	-217.669
26.000	0.433	217.669	-217.669
27.000	0.450	217.669	-217.669
28.000	0.467	217.669	-217.669
29.000	0.483	217.669	-217.669
30.000	0.500	217.672	-217.672
31.000	0.517	217.672	-217.672
32.000	0.533	217.675	-217.675
33.000	0.550	217.672	-217.672
34.000	0.567	217.672	-217.672
35.000	0.583	217.672	-217.672
36.000	0.600	217.672	-217.672
37.000	0.617	217.675	-217.675
38.000	0.633	217.675	-217.675
39.000	0.650	217.675	-217.675
40.000	0.667	217.675	-217.675
41.000	0.683	217.675	-217.675
42.000	0.700	217.675	-217.675
43.000	0.717	217.675	-217.675
44.000	0.733	217.675	-217.675
45.000	0.750	217.675	-217.675
46.000	0.767	217.675	-217.675
47.000	0.783	217.675	-217.675
48.000	0.800	217.675	-217.675
49.000	0.817	217.678	-217.678
50.000	0.833	217.678	-217.678
51.000	0.850	217.678	-217.678
52.000	0.867	217.678	-217.678
53.000	0.883	217.678	-217.678
54.000	0.900	217.678	-217.678
55.000	0.917	217.678	-217.678
56.000	0.933	217.678	-217.678
57.000	0.950	217.682	-217.682
58.000	0.967	217.678	-217.678
59.000	0.983	217.678	-217.678
60.000	1.000	217.678	-217.678
61.000	1.017	217.678	-217.678
62.000	1.033	217.682	-217.682
63.000	1.050	217.678	-217.678

9413090.0236

64.000	1.067	217.682	-217.682
65.000	1.083	217.685	-217.685
66.000	1.100	217.682	-217.682
67.000	1.117	217.678	-217.678
68.000	1.133	217.682	-217.682
69.000	1.150	217.682	-217.682
70.000	1.167	217.682	-217.682
71.000	1.183	217.682	-217.682
72.000	1.200	217.682	-217.682
73.000	1.217	217.682	-217.682
74.000	1.233	217.688	-217.688
75.000	1.250	217.685	-217.685
76.000	1.267	217.682	-217.682
77.000	1.283	217.682	-217.682
78.000	1.300	217.682	-217.682
79.000	1.317	217.688	-217.688
80.000	1.333	217.685	-217.685
81.000	1.350	217.682	-217.682
82.000	1.367	217.682	-217.682
83.000	1.383	217.682	-217.682
84.000	1.400	217.682	-217.682
85.000	1.417	217.682	-217.682
86.000	1.433	217.682	-217.682
87.000	1.450	217.682	-217.682
88.000	1.467	217.682	-217.682
89.000	1.483	217.682	-217.682
90.000	1.500	217.682	-217.682
91.000	1.517	217.685	-217.685

9313080.0737

Page 2 of 27

BASELINE: SLUG INJECTION TEST #2

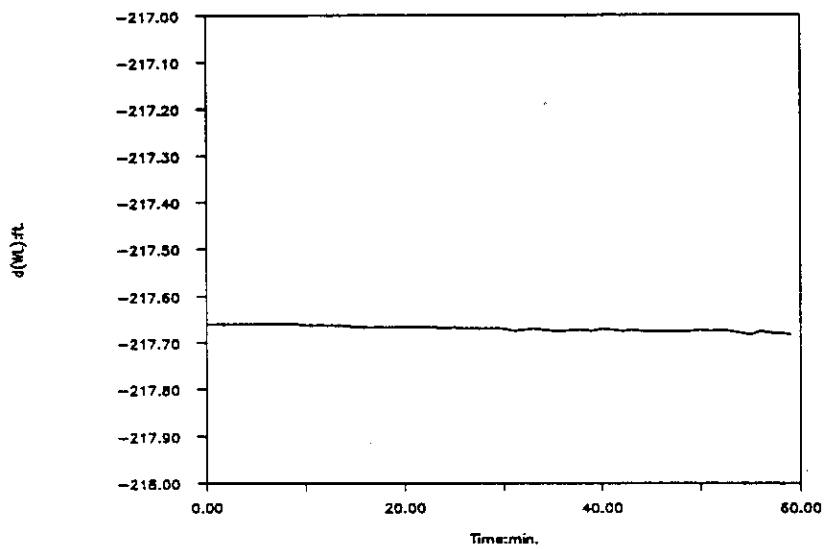
SE2000
Environ mental Logger
11/ 09 09:39

Unit# 19 3 Test 8

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/09 08:39:26



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.000	217.660	-217.660
1	0.017	217.660	-217.660
2	0.033	217.660	-217.660
3	0.050	217.660	-217.660
4	0.067	217.660	-217.660
5	0.083	217.660	-217.660
6	0.100	217.660	-217.660
7	0.117	217.660	-217.660
8	0.133	217.660	-217.660
9	0.150	217.660	-217.660
10	0.167	217.663	-217.663
11	0.183	217.663	-217.663
12	0.200	217.663	-217.663
13	0.217	217.663	-217.663
14	0.233	217.663	-217.663
15	0.250	217.666	-217.666
16	0.267	217.666	-217.666
17	0.283	217.666	-217.666
18	0.300	217.666	-217.666
19	0.317	217.666	-217.666
20	0.333	217.666	-217.666
21	0.350	217.666	-217.666
22	0.367	217.666	-217.666
23	0.383	217.666	-217.666
24	0.400	217.669	-217.669

25	0.417	217.666	-217.666
26	0.433	217.669	-217.669
27	0.450	217.669	-217.669
28	0.467	217.669	-217.669
29	0.483	217.669	-217.669
30	0.500	217.669	-217.669
31	0.517	217.675	-217.675
32	0.533	217.672	-217.672
33	0.550	217.669	-217.669
34	0.567	217.672	-217.672
35	0.583	217.675	-217.675
36	0.600	217.675	-217.675
37	0.617	217.672	-217.672
38	0.633	217.672	-217.672
39	0.650	217.675	-217.675
40	0.667	217.669	-217.669
41	0.683	217.672	-217.672
42	0.700	217.675	-217.675
43	0.717	217.672	-217.672
44	0.733	217.675	-217.675
45	0.750	217.675	-217.675
46	0.767	217.675	-217.675
47	0.783	217.675	-217.675
48	0.800	217.675	-217.675
49	0.817	217.675	-217.675
50	0.833	217.672	-217.672
51	0.850	217.675	-217.675
52	0.867	217.672	-217.672
53	0.883	217.675	-217.675
54	0.900	217.678	-217.678
55	0.917	217.682	-217.682
56	0.933	217.675	-217.675
57	0.950	217.678	-217.678
58	0.967	217.678	-217.678
59	0.983	217.682	-217.682

9413090.0239

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL #2

Borehole: 299-W26-12

Interval Tested: 230.83'-210.11' Btoc 6"

Depth To Water: 217.86' Btoc 6"

Depth to Transducer: 10.14' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	0839	0941
Wuthdrawal	1145	1215

Date: 11-9-92

Initial Pressure (Pi): 217..600

Slug Level/Pressure (Pmax)

Borehole Diameter: 6"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-14-92

Sign and Print Name

BD-6000-293(07/90)

299-W26-12 SLUG WITHDRAWAL TEST #2

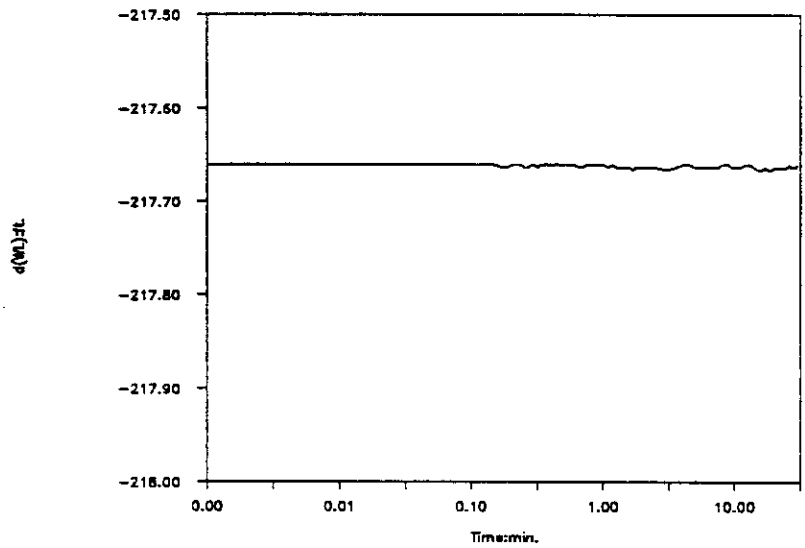
SE2000
Environ mental Logger
11/ 11 13:03

Unit# 19 3 Test 9

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/09 11:45:21



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.660	-217.660
0.008	0.0001	217.660	-217.660
0.017	0.0003	217.660	-217.660
0.025	0.0004	217.660	-217.660
0.033	0.0006	217.660	-217.660
0.042	0.0007	217.660	-217.660
0.050	0.0008	217.660	-217.660
0.058	0.0010	217.660	-217.660
0.067	0.0011	217.660	-217.660
0.075	0.0013	217.660	-217.660
0.083	0.0014	217.660	-217.660
0.100	0.0017	217.660	-217.660
0.117	0.0019	217.660	-217.660
0.133	0.0022	217.660	-217.660
0.150	0.0025	217.660	-217.660
0.167	0.0028	217.663	-217.663
0.183	0.0031	217.663	-217.663
0.200	0.0033	217.660	-217.660
0.217	0.0036	217.660	-217.660
0.233	0.0039	217.660	-217.660
0.250	0.0042	217.663	-217.663
0.267	0.0044	217.663	-217.663
0.283	0.0047	217.660	-217.660
0.300	0.0050	217.660	-217.660
0.317	0.0053	217.663	-217.663

0.333	0.006	217.660	-217.660
0.417	0.007	217.660	-217.660
0.500	0.008	217.660	-217.660
0.583	0.010	217.660	-217.660
0.667	0.011	217.663	-217.663
0.750	0.013	217.660	-217.660
0.833	0.014	217.660	-217.660
0.917	0.015	217.660	-217.660
1.000	0.017	217.660	-217.660
1.083	0.018	217.663	-217.663
1.167	0.019	217.660	-217.660
1.250	0.021	217.663	-217.663
1.333	0.022	217.663	-217.663
1.417	0.024	217.663	-217.663
1.500	0.025	217.663	-217.663
1.583	0.026	217.663	-217.663
1.667	0.028	217.666	-217.666
1.750	0.029	217.663	-217.663
1.833	0.031	217.663	-217.663
1.917	0.032	217.663	-217.663
2.000	0.033	217.663	-217.663
2.500	0.042	217.663	-217.663
3.000	0.050	217.666	-217.666
3.500	0.058	217.663	-217.663
4.000	0.067	217.660	-217.660
4.500	0.075	217.660	-217.660
5.000	0.083	217.663	-217.663
5.500	0.092	217.663	-217.663
6.000	0.100	217.663	-217.663
6.500	0.108	217.663	-217.663
7.000	0.117	217.663	-217.663
7.500	0.125	217.663	-217.663
8.000	0.133	217.660	-217.660
8.500	0.142	217.660	-217.660
9.000	0.150	217.660	-217.660
9.500	0.158	217.663	-217.663
10.000	0.167	217.663	-217.663
11.000	0.183	217.663	-217.663
12.000	0.200	217.660	-217.660
13.000	0.217	217.660	-217.660
14.000	0.233	217.663	-217.663
15.000	0.250	217.666	-217.666
16.000	0.267	217.666	-217.666
17.000	0.283	217.663	-217.663
18.000	0.300	217.666	-217.666

9413080.0742

19.000	0.317	217.666	-217.666
20.000	0.333	217.663	-217.663
21.000	0.350	217.663	-217.663
22.000	0.367	217.663	-217.663
23.000	0.383	217.663	-217.663
24.000	0.400	217.663	-217.663
25.000	0.417	217.663	-217.663
26.000	0.433	217.660	-217.660
27.000	0.450	217.663	-217.663
28.000	0.467	217.663	-217.663
29.000	0.483	217.663	-217.663
30.000	0.500	217.660	-217.660

9313090.0743

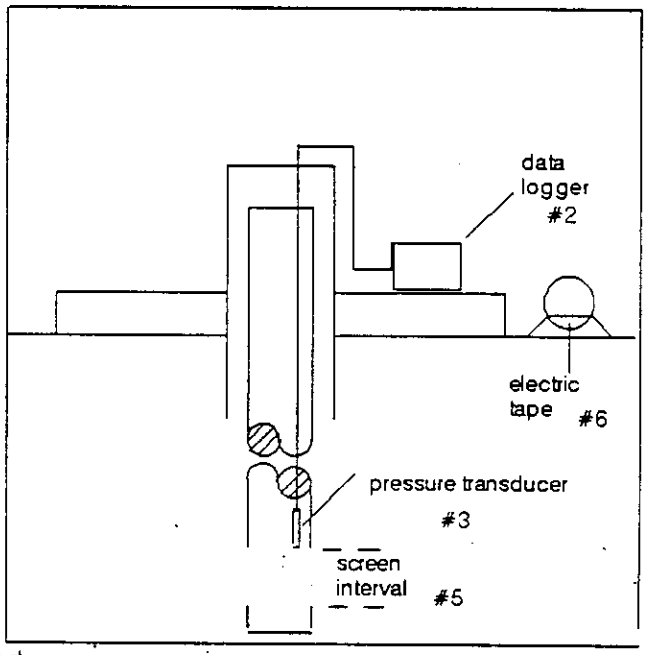
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 299-W26-12 DEPTH 230.83' Btoc 6"

Equipment Configuration

Item	Description
#1	
#2	In-Situ datalogger 2K192
#3	In-Situ Inc s/n 259198 (cal. 2-21-93)
#4	
#5	230.83'-210.11' Btoc 6"
#6	Solinst s/n: ET-5 (cal. 1-13-93)
#7	
#8	
#9	
#10	

Diagram

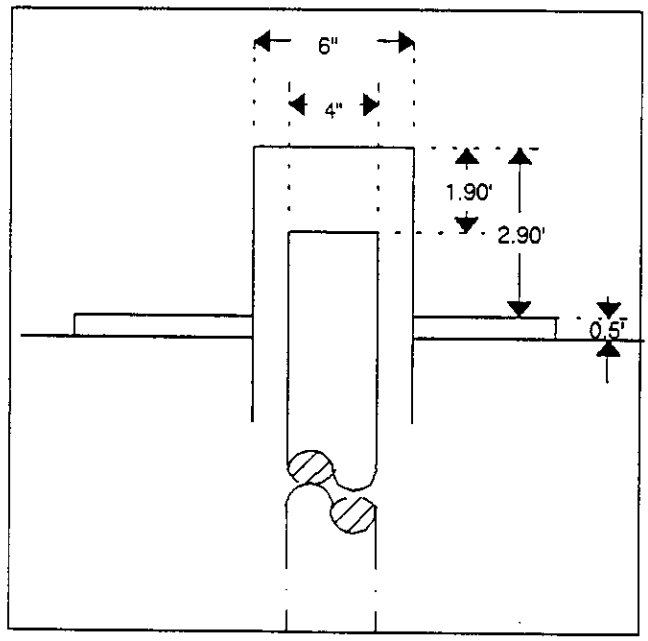


Well Head

Comments

OBSERVATION WELL

Diagram



Signature of Recorder James A. Coates James A. Coates Date 12-14-92

A-6000-417 (08/89)

STEP DRAWDOWN/RECOVERY: OBSERVATION WELL

Well Designation: 299-W26-12 Date: 11-6-92

Well Depth: 230.83' BTOC Screened Interval: 230.83'-210.11'BTOC

Pumping Method: Stepped Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/259198 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (6") Pump Start Time: 1225 Pump Stop Time: 1400

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
	See Attached Data		See Attached Data	

Bucket Method: 5gal./57.03sec.
= 5.25gal/min.

Rotameter @ 5,25gpm
(see field activity report #'s 18 &19)

(IN PUMPING WELL)

Recorded by: James A. Coates James A. Coates Date: 12-14-92
Sign and Print Name

BD-6000-402(03/90)

299-W26-12 BASELINE: POST AQUIFER TEST

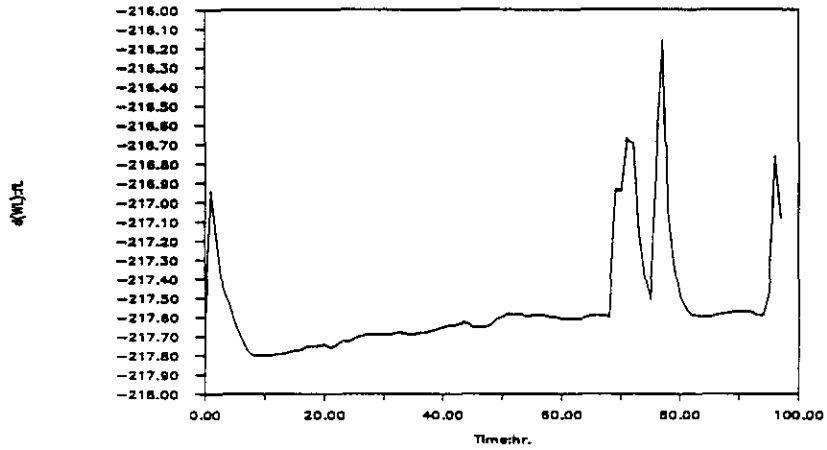
S E1000B
Environ mental Logger
11/ 17 16:30

Unit# 0 0758 Test# 3

INPUT 1: Level (F) TOC

Reference 217.60
Scale fac tor 10.00
Offset 0.01

Step# 0 11/13 11:00



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0	217.70	-217.70
60	1	216.94	-216.94
120	2	217.21	-217.21
180	3	217.45	-217.45
240	4	217.53	-217.53
300	5	217.63	-217.63
360	6	217.70	-217.70
420	7	217.77	-217.77
480	8	217.80	-217.80
540	9	217.80	-217.80
600	10	217.80	-217.80
660	11	217.80	-217.80
720	12	217.79	-217.79
780	13	217.79	-217.79
840	14	217.78	-217.78
900	15	217.77	-217.77
960	16	217.77	-217.77
1020	17	217.75	-217.75
1080	18	217.75	-217.75
1140	19	217.75	-217.75
1200	20	217.74	-217.74
1260	21	217.76	-217.76
1320	22	217.74	-217.74
1380	23	217.72	-217.72
1440	24	217.73	-217.73
1500	25	217.71	-217.71
1560	26	217.70	-217.70
1620	27	217.69	-217.69

1680	28	217.69	-217.69
1740	29	217.69	-217.69
1800	30	217.69	-217.69
1860	31	217.69	-217.69
1920	32	217.68	-217.68
1980	33	217.68	-217.68
2040	34	217.69	-217.69
2100	35	217.69	-217.69
2160	36	217.68	-217.68
2220	37	217.68	-217.68
2280	38	217.67	-217.67
2340	39	217.66	-217.66
2400	40	217.65	-217.65
2460	41	217.64	-217.64
2520	42	217.64	-217.64
2580	43	217.63	-217.63
2640	44	217.63	-217.63
2700	45	217.65	-217.65
2760	46	217.65	-217.65
2820	47	217.65	-217.65
2880	48	217.64	-217.64
2940	49	217.61	-217.61
3000	50	217.60	-217.60
3060	51	217.58	-217.58
3120	52	217.59	-217.59
3180	53	217.58	-217.58
3240	54	217.60	-217.60
3300	55	217.59	-217.59
3360	56	217.59	-217.59
3420	57	217.59	-217.59
3480	58	217.60	-217.60
3540	59	217.60	-217.60
3600	60	217.61	-217.61
3660	61	217.61	-217.61
3720	62	217.61	-217.61
3780	63	217.61	-217.61
3840	64	217.60	-217.60
3900	65	217.59	-217.59
3960	66	217.59	-217.59
4020	67	217.59	-217.59
4080	68	217.60	-217.60
4140	69	216.93	-216.93
4200	70	216.94	-216.94
4260	71	216.67	-216.67
4320	72	216.70	-216.70

9313090.0747

4380	73	217.14	-217.14
4440	74	217.39	-217.39
4500	75	217.51	-217.51
4560	76	216.79	-216.79
4620	77	216.16	-216.16
4680	78	217.05	-217.05
4740	79	217.33	-217.33
4800	80	217.49	-217.49
4860	81	217.55	-217.55
4920	82	217.59	-217.59
4980	83	217.59	-217.59
5040	84	217.60	-217.60
5100	85	217.60	-217.60
5160	86	217.59	-217.59
5220	87	217.58	-217.58
5280	88	217.58	-217.58
5340	89	217.57	-217.57
5400	90	217.57	-217.57
5460	91	217.57	-217.57
5520	92	217.57	-217.57
5580	93	217.59	-217.59
5640	94	217.59	-217.59
5700	95	217.47	-217.47
5760	96	216.76	-216.76
5820	97	217.08	-217.08

9413090.0749

299-W26-12 STEP DRAWDOWN Q= 5.5 & 11.9 GPM

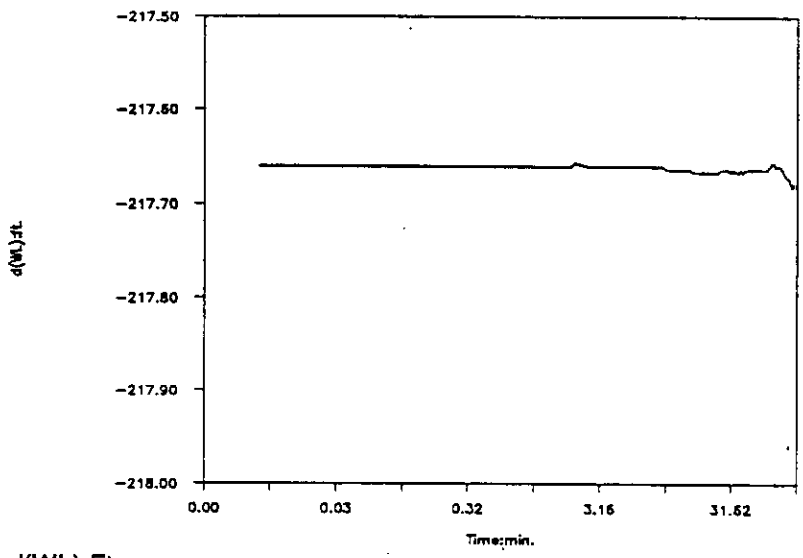
SE2000
Environ mental Logger
11/ 05 14:11

Unit# 19 3 Test 4

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/05 12:25:25



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft	
0.001	0.0000	217.656	-217.656	STEP DRAWDOWN 299-W26-12
0.008	0.0001	217.660	-217.660	
0.017	0.0003	217.660	-217.660	
0.025	0.0004	217.660	-217.660	
0.033	0.0006	217.660	-217.660	
0.042	0.0007	217.660	-217.660	
0.050	0.0008	217.660	-217.660	
0.058	0.0010	217.660	-217.660	
0.067	0.0011	217.660	-217.660	
0.075	0.0013	217.660	-217.660	
0.083	0.0014	217.660	-217.660	
0.100	0.0017	217.660	-217.660	
0.117	0.0019	217.660	-217.660	
0.133	0.0022	217.660	-217.660	
0.150	0.0025	217.660	-217.660	
0.167	0.0028	217.660	-217.660	
0.183	0.0031	217.660	-217.660	
0.200	0.0033	217.660	-217.660	
0.217	0.0036	217.660	-217.660	
0.233	0.0039	217.660	-217.660	
0.250	0.0042	217.660	-217.660	
0.267	0.0044	217.660	-217.660	
0.283	0.0047	217.660	-217.660	
0.300	0.0050	217.660	-217.660	
0.317	0.0053	217.660	-217.660	

0.333	0.006	217.660	-217.660
0.417	0.007	217.660	-217.660
0.500	0.008	217.660	-217.660
0.583	0.010	217.660	-217.660
0.667	0.011	217.660	-217.660
0.750	0.013	217.660	-217.660
0.833	0.014	217.660	-217.660
0.917	0.015	217.660	-217.660
1.000	0.017	217.660	-217.660
1.083	0.018	217.660	-217.660
1.167	0.019	217.660	-217.660
1.250	0.021	217.660	-217.660
1.333	0.022	217.660	-217.660
1.417	0.024	217.660	-217.660
1.500	0.025	217.660	-217.660
1.583	0.026	217.660	-217.660
1.667	0.028	217.660	-217.660
1.750	0.029	217.660	-217.660
1.833	0.031	217.660	-217.660
1.917	0.032	217.660	-217.660
2.000	0.033	217.656	-217.656
2.500	0.042	217.660	-217.660
3.000	0.050	217.660	-217.660
3.500	0.058	217.660	-217.660
4.000	0.067	217.660	-217.660
4.500	0.075	217.660	-217.660
5.000	0.083	217.660	-217.660
5.500	0.092	217.660	-217.660
6.000	0.100	217.660	-217.660
6.500	0.108	217.660	-217.660
7.000	0.117	217.660	-217.660
7.500	0.125	217.660	-217.660
8.000	0.133	217.660	-217.660
8.500	0.142	217.660	-217.660
9.000	0.150	217.660	-217.660
9.500	0.158	217.660	-217.660
10.000	0.167	217.663	-217.663
11.000	0.183	217.663	-217.663
12.000	0.200	217.663	-217.663
13.000	0.217	217.663	-217.663
14.000	0.233	217.663	-217.663
15.000	0.250	217.663	-217.663
16.000	0.267	217.666	-217.666
17.000	0.283	217.666	-217.666
18.000	0.300	217.666	-217.666

9.000	0.317	217.666	-217.666
20.000	0.333	217.666	-217.666
21.000	0.350	217.666	-217.666
22.000	0.367	217.666	-217.666
23.000	0.383	217.666	-217.666
24.000	0.400	217.666	-217.666
25.000	0.417	217.666	-217.666
26.000	0.433	217.663	-217.663
27.000	0.450	217.663	-217.663
28.000	0.467	217.663	-217.663
29.000	0.483	217.663	-217.663
30.000	0.500	217.663	-217.663
31.000	0.517	217.666	-217.666
32.000	0.533	217.663	-217.663
33.000	0.550	217.663	-217.663
34.000	0.567	217.666	-217.666
35.000	0.583	217.666	-217.666
36.000	0.600	217.666	-217.666
37.000	0.617	217.663	-217.663
38.000	0.633	217.666	-217.666
39.000	0.650	217.666	-217.666
40.000	0.667	217.663	-217.663
41.000	0.683	217.663	-217.663
2.000	0.700	217.663	-217.663
43.000	0.717	217.663	-217.663
44.000	0.733	217.663	-217.663
45.000	0.750	217.663	-217.663
46.000	0.767	217.663	-217.663
47.000	0.783	217.663	-217.663
48.000	0.800	217.663	-217.663
49.000	0.817	217.663	-217.663
50.000	0.833	217.663	-217.663
51.000	0.850	217.663	-217.663
52.000	0.867	217.663	-217.663
53.000	0.883	217.663	-217.663
54.000	0.900	217.663	-217.663
55.000	0.917	217.663	-217.663
56.000	0.933	217.663	-217.663
57.000	0.950	217.663	-217.663
58.000	0.967	217.663	-217.663
59.000	0.983	217.663	-217.663
60.000	1.000	217.660	-217.660
61.000	1.017	217.660	-217.660
62.000	1.033	217.660	-217.660
63.000	1.050	217.656	-217.656

9313000.0251

64.000	1.067	217.656	-217.656
65.000	1.083	217.656	-217.656
66.000	1.100	217.656	-217.656
67.000	1.117	217.656	-217.656
68.000	1.133	217.660	-217.660
69.000	1.150	217.660	-217.660
70.000	1.167	217.660	-217.660
71.000	1.183	217.660	-217.660
72.000	1.200	217.660	-217.660
73.000	1.217	217.660	-217.660
74.000	1.233	217.660	-217.660
75.000	1.250	217.660	-217.660
76.000	1.267	217.663	-217.663
77.000	1.283	217.663	-217.663
78.000	1.300	217.663	-217.663
79.000	1.317	217.666	-217.666
80.000	1.333	217.669	-217.669
81.000	1.350	217.669	-217.669
82.000	1.367	217.669	-217.669
83.000	1.383	217.672	-217.672
84.000	1.400	217.672	-217.672
85.000	1.417	217.672	-217.672
86.000	1.433	217.672	-217.672
87.000	1.450	217.672	-217.672
88.000	1.467	217.678	-217.678
89.000	1.483	217.678	-217.678
90.000	1.500	217.678	-217.678
91.000	1.517	217.682	-217.682
92.000	1.533	217.678	-217.678
93.000	1.550	217.682	-217.682
94.000	1.567	217.678	-217.678
95.000	1.583	217.678	-217.678

9413090.0252

299-W26-12 RECOVERY: STEP DRAWDOWN

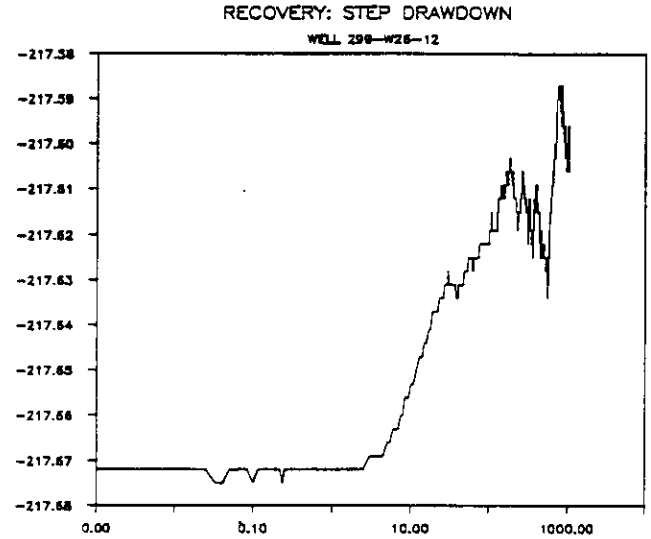
SE2000
Environ mental Logger
11/ 06 09:41

Unit# 19 3 Test 5

INPUT 2: Level (F) TOC

Reference	217.660
SG	1.000
Linearity	0.000
Scale fac tor	9.987
Offset	-0.015
Delay mSE C	50.000

Step 0 1 1/05 14:00:59



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.672	-217.672
0.008	0.0001	217.672	-217.672
0.017	0.0003	217.672	-217.672
0.025	0.0004	217.672	-217.672
0.033	0.0006	217.675	-217.675
0.042	0.0007	217.675	-217.675
0.050	0.0008	217.672	-217.672
0.058	0.0010	217.672	-217.672
0.067	0.0011	217.672	-217.672
0.075	0.0013	217.672	-217.672
0.083	0.0014	217.672	-217.672
0.100	0.0017	217.675	-217.675
0.117	0.0019	217.672	-217.672
0.133	0.0022	217.672	-217.672
0.150	0.0025	217.672	-217.672
0.167	0.0028	217.672	-217.672
0.183	0.0031	217.672	-217.672
0.200	0.0033	217.672	-217.672
0.217	0.0036	217.672	-217.672
0.233	0.0039	217.675	-217.675
0.250	0.0042	217.672	-217.672
0.267	0.0044	217.672	-217.672
0.283	0.0047	217.672	-217.672
0.300	0.0050	217.672	-217.672
0.317	0.0053	217.672	-217.672

RECOVERY: STEP DRAWDOWN 299-W26-12

0.333	0.006	217.672	-217.672
0.417	0.007	217.672	-217.672
0.500	0.008	217.672	-217.672
0.583	0.010	217.672	-217.672
0.667	0.011	217.672	-217.672
0.750	0.013	217.672	-217.672
0.833	0.014	217.672	-217.672
0.917	0.015	217.672	-217.672
1.000	0.017	217.672	-217.672
1.083	0.018	217.672	-217.672
1.167	0.019	217.672	-217.672
1.250	0.021	217.672	-217.672
1.333	0.022	217.672	-217.672
1.417	0.024	217.672	-217.672
1.500	0.025	217.672	-217.672
1.583	0.026	217.672	-217.672
1.667	0.028	217.672	-217.672
1.750	0.029	217.672	-217.672
1.833	0.031	217.672	-217.672
1.917	0.032	217.672	-217.672
2.000	0.033	217.672	-217.672
2.500	0.042	217.672	-217.672
3.000	0.050	217.669	-217.669
3.500	0.058	217.669	-217.669
4.000	0.067	217.669	-217.669
4.500	0.075	217.669	-217.669
5.000	0.083	217.666	-217.666
5.500	0.092	217.666	-217.666
6.000	0.100	217.663	-217.663
6.500	0.108	217.663	-217.663
7.000	0.117	217.663	-217.663
7.500	0.125	217.660	-217.660
8.000	0.133	217.660	-217.660
8.500	0.142	217.656	-217.656
9.000	0.150	217.656	-217.656
9.500	0.158	217.656	-217.656
10.000	0.167	217.653	-217.653
11.000	0.183	217.653	-217.653
12.000	0.200	217.650	-217.650
13.000	0.217	217.647	-217.647
14.000	0.233	217.647	-217.647
15.000	0.250	217.644	-217.644
16.000	0.267	217.644	-217.644
17.000	0.283	217.641	-217.641
18.000	0.300	217.641	-217.641

9413090.0754

19.000	0.317	217.637	-217.637
20.000	0.333	217.637	-217.637
21.000	0.350	217.637	-217.637
22.000	0.367	217.637	-217.637
23.000	0.383	217.634	-217.634
24.000	0.400	217.634	-217.634
25.000	0.417	217.634	-217.634
26.000	0.433	217.634	-217.634
27.000	0.450	217.631	-217.631
28.000	0.467	217.631	-217.631
29.000	0.483	217.631	-217.631
30.000	0.500	217.628	-217.628
31.000	0.517	217.631	-217.631
32.000	0.533	217.631	-217.631
33.000	0.550	217.631	-217.631
34.000	0.567	217.631	-217.631
35.000	0.583	217.631	-217.631
36.000	0.600	217.631	-217.631
37.000	0.617	217.631	-217.631
38.000	0.633	217.634	-217.634
39.000	0.650	217.634	-217.634
40.000	0.667	217.634	-217.634
41.000	0.683	217.631	-217.631
42.000	0.700	217.631	-217.631
43.000	0.717	217.631	-217.631
44.000	0.733	217.631	-217.631
45.000	0.750	217.631	-217.631
46.000	0.767	217.631	-217.631
47.000	0.783	217.631	-217.631
48.000	0.800	217.628	-217.628
49.000	0.817	217.628	-217.628
50.000	0.833	217.628	-217.628
51.000	0.850	217.628	-217.628
52.000	0.867	217.628	-217.628
53.000	0.883	217.628	-217.628
54.000	0.900	217.625	-217.625
55.000	0.917	217.625	-217.625
56.000	0.933	217.625	-217.625
57.000	0.950	217.625	-217.625
58.000	0.967	217.625	-217.625
59.000	0.983	217.625	-217.625
60.000	1.000	217.625	-217.625
61.000	1.017	217.625	-217.625
62.000	1.033	217.628	-217.628
63.000	1.050	217.625	-217.625

9413090.0255

64.000	1.067	217.625	-217.625
65.000	1.083	217.625	-217.625
66.000	1.100	217.625	-217.625
67.000	1.117	217.625	-217.625
68.000	1.133	217.625	-217.625
69.000	1.150	217.625	-217.625
70.000	1.167	217.625	-217.625
71.000	1.183	217.625	-217.625
72.000	1.200	217.625	-217.625
73.000	1.217	217.625	-217.625
74.000	1.233	217.622	-217.622
75.000	1.250	217.622	-217.622
76.000	1.267	217.622	-217.622
77.000	1.283	217.622	-217.622
78.000	1.300	217.622	-217.622
79.000	1.317	217.622	-217.622
80.000	1.333	217.622	-217.622
81.000	1.350	217.622	-217.622
82.000	1.367	217.622	-217.622
83.000	1.383	217.622	-217.622
84.000	1.400	217.622	-217.622
85.000	1.417	217.622	-217.622
86.000	1.433	217.622	-217.622
87.000	1.450	217.622	-217.622
88.000	1.467	217.622	-217.622
89.000	1.483	217.622	-217.622
90.000	1.500	217.622	-217.622
91.000	1.517	217.622	-217.622
92.000	1.533	217.622	-217.622
93.000	1.550	217.622	-217.622
94.000	1.567	217.622	-217.622
95.000	1.583	217.622	-217.622
96.000	1.600	217.622	-217.622
97.000	1.617	217.622	-217.622
98.000	1.633	217.622	-217.622
99.000	1.650	217.622	-217.622
100.000	1.667	217.619	-217.619
101.000	1.683	217.619	-217.619
102.000	1.700	217.619	-217.619
103.000	1.717	217.619	-217.619
104.000	1.733	217.619	-217.619
105.000	1.750	217.619	-217.619
106.000	1.767	217.615	-217.615
107.000	1.783	217.619	-217.619
108.000	1.800	217.619	-217.619

9413090.0256

109.000	1.817	217.619	-217.619
110.000	1.833	217.619	-217.619
111.000	1.850	217.619	-217.619
112.000	1.867	217.619	-217.619
113.000	1.883	217.619	-217.619
114.000	1.900	217.619	-217.619
115.000	1.917	217.619	-217.619
116.000	1.933	217.619	-217.619
117.000	1.950	217.619	-217.619
118.000	1.967	217.619	-217.619
119.000	1.983	217.619	-217.619
120.000	2.000	217.619	-217.619
121.000	2.017	217.619	-217.619
122.000	2.033	217.619	-217.619
123.000	2.050	217.619	-217.619
124.000	2.067	217.619	-217.619
125.000	2.083	217.619	-217.619
126.000	2.100	217.619	-217.619
127.000	2.117	217.615	-217.615
128.000	2.133	217.615	-217.615
129.000	2.150	217.615	-217.615
130.000	2.167	217.612	-217.612
131.000	2.183	217.612	-217.612
132.000	2.200	217.612	-217.612
133.000	2.217	217.612	-217.612
134.000	2.233	217.612	-217.612
135.000	2.250	217.612	-217.612
136.000	2.267	217.612	-217.612
137.000	2.283	217.612	-217.612
138.000	2.300	217.609	-217.609
139.000	2.317	217.609	-217.609
140.000	2.333	217.609	-217.609
141.000	2.350	217.612	-217.612
142.000	2.367	217.612	-217.612
143.000	2.383	217.612	-217.612
144.000	2.400	217.609	-217.609
145.000	2.417	217.609	-217.609
146.000	2.433	217.609	-217.609
147.000	2.450	217.609	-217.609
148.000	2.467	217.609	-217.609
149.000	2.483	217.609	-217.609
150.000	2.500	217.609	-217.609
151.000	2.517	217.609	-217.609
152.000	2.533	217.609	-217.609
153.000	2.550	217.609	-217.609

9313090.0052

154.000	2.567	217.609	-217.609
155.000	2.583	217.612	-217.612
156.000	2.600	217.612	-217.612
157.000	2.617	217.609	-217.609
158.000	2.633	217.609	-217.609
159.000	2.650	217.609	-217.609
160.000	2.667	217.609	-217.609
161.000	2.683	217.609	-217.609
162.000	2.700	217.606	-217.606
163.000	2.717	217.609	-217.609
164.000	2.733	217.609	-217.609
165.000	2.750	217.609	-217.609
166.000	2.767	217.609	-217.609
167.000	2.783	217.606	-217.606
168.000	2.800	217.606	-217.606
169.000	2.817	217.606	-217.606
170.000	2.833	217.606	-217.606
171.000	2.850	217.606	-217.606
172.000	2.867	217.606	-217.606
173.000	2.883	217.606	-217.606
174.000	2.900	217.606	-217.606
175.000	2.917	217.609	-217.609
176.000	2.933	217.609	-217.609
177.000	2.950	217.606	-217.606
178.000	2.967	217.606	-217.606
179.000	2.983	217.606	-217.606
180.000	3.000	217.606	-217.606
181.000	3.017	217.606	-217.606
182.000	3.033	217.603	-217.603
183.000	3.050	217.606	-217.606
184.000	3.067	217.603	-217.603
185.000	3.083	217.606	-217.606
186.000	3.100	217.606	-217.606
187.000	3.117	217.606	-217.606
188.000	3.133	217.606	-217.606
189.000	3.150	217.606	-217.606
190.000	3.167	217.606	-217.606
191.000	3.183	217.606	-217.606
192.000	3.200	217.606	-217.606
193.000	3.217	217.606	-217.606
194.000	3.233	217.606	-217.606
195.000	3.250	217.606	-217.606
196.000	3.267	217.609	-217.609
197.000	3.283	217.609	-217.609
198.000	3.300	217.609	-217.609

199.000	3.317	217.606	-217.606
200.000	3.333	217.609	-217.609
201.000	3.350	217.609	-217.609
202.000	3.367	217.609	-217.609
203.000	3.383	217.609	-217.609
204.000	3.400	217.609	-217.609
205.000	3.417	217.612	-217.612
206.000	3.433	217.612	-217.612
207.000	3.450	217.612	-217.612
208.000	3.467	217.612	-217.612
209.000	3.483	217.612	-217.612
210.000	3.500	217.612	-217.612
211.000	3.517	217.612	-217.612
212.000	3.533	217.612	-217.612
213.000	3.550	217.612	-217.612
214.000	3.567	217.612	-217.612
215.000	3.583	217.612	-217.612
216.000	3.600	217.612	-217.612
217.000	3.617	217.612	-217.612
218.000	3.633	217.612	-217.612
219.000	3.650	217.615	-217.615
220.000	3.667	217.615	-217.615
221.000	3.683	217.615	-217.615
222.000	3.700	217.615	-217.615
223.000	3.717	217.615	-217.615
224.000	3.733	217.615	-217.615
225.000	3.750	217.615	-217.615
226.000	3.767	217.615	-217.615
227.000	3.783	217.615	-217.615
228.000	3.800	217.615	-217.615
229.000	3.817	217.615	-217.615
230.000	3.833	217.615	-217.615
231.000	3.850	217.615	-217.615
232.000	3.867	217.619	-217.619
233.000	3.883	217.615	-217.615
234.000	3.900	217.615	-217.615
235.000	3.917	217.615	-217.615
236.000	3.933	217.615	-217.615
237.000	3.950	217.615	-217.615
238.000	3.967	217.615	-217.615
239.000	3.983	217.615	-217.615
240.000	4.000	217.615	-217.615
241.000	4.017	217.615	-217.615
242.000	4.033	217.615	-217.615
243.000	4.050	217.615	-217.615

9413080.0159

244.000	4.067	217.615	-217.615
245.000	4.083	217.615	-217.615
246.000	4.100	217.615	-217.615
247.000	4.117	217.615	-217.615
248.000	4.133	217.615	-217.615
249.000	4.150	217.615	-217.615
250.000	4.167	217.615	-217.615
251.000	4.183	217.615	-217.615
252.000	4.200	217.612	-217.612
253.000	4.217	217.612	-217.612
254.000	4.233	217.612	-217.612
255.000	4.250	217.612	-217.612
256.000	4.267	217.612	-217.612
257.000	4.283	217.612	-217.612
258.000	4.300	217.609	-217.609
259.000	4.317	217.609	-217.609
260.000	4.333	217.609	-217.609
261.000	4.350	217.609	-217.609
262.000	4.367	217.606	-217.606
263.000	4.383	217.606	-217.606
264.000	4.400	217.606	-217.606
265.000	4.417	217.606	-217.606
266.000	4.433	217.606	-217.606
267.000	4.450	217.606	-217.606
268.000	4.467	217.609	-217.609
269.000	4.483	217.609	-217.609
270.000	4.500	217.609	-217.609
271.000	4.517	217.609	-217.609
272.000	4.533	217.609	-217.609
273.000	4.550	217.609	-217.609
274.000	4.567	217.609	-217.609
275.000	4.583	217.609	-217.609
276.000	4.600	217.609	-217.609
277.000	4.617	217.612	-217.612
278.000	4.633	217.612	-217.612
279.000	4.650	217.612	-217.612
280.000	4.667	217.609	-217.609
281.000	4.683	217.612	-217.612
282.000	4.700	217.612	-217.612
283.000	4.717	217.612	-217.612
284.000	4.733	217.612	-217.612
285.000	4.750	217.615	-217.615
286.000	4.767	217.615	-217.615
287.000	4.783	217.615	-217.615
288.000	4.800	217.615	-217.615

9413090.0760

289.000	4.817	217.615	-217.615
290.000	4.833	217.615	-217.615
291.000	4.850	217.615	-217.615
292.000	4.867	217.615	-217.615
293.000	4.883	217.615	-217.615
294.000	4.900	217.612	-217.612
295.000	4.917	217.612	-217.612
296.000	4.933	217.612	-217.612
297.000	4.950	217.612	-217.612
298.000	4.967	217.612	-217.612
299.000	4.983	217.612	-217.612
300.000	5.000	217.612	-217.612
301.000	5.017	217.612	-217.612
302.000	5.033	217.615	-217.615
303.000	5.050	217.615	-217.615
304.000	5.067	217.615	-217.615
305.000	5.083	217.619	-217.619
306.000	5.100	217.619	-217.619
307.000	5.117	217.619	-217.619
308.000	5.133	217.619	-217.619
309.000	5.150	217.622	-217.622
310.000	5.167	217.622	-217.622
311.000	5.183	217.622	-217.622
312.000	5.200	217.622	-217.622
313.000	5.217	217.619	-217.619
314.000	5.233	217.619	-217.619
315.000	5.250	217.622	-217.622
316.000	5.267	217.619	-217.619
317.000	5.283	217.619	-217.619
318.000	5.300	217.619	-217.619
319.000	5.317	217.615	-217.615
320.000	5.333	217.615	-217.615
321.000	5.350	217.615	-217.615
322.000	5.367	217.615	-217.615
323.000	5.383	217.615	-217.615
324.000	5.400	217.615	-217.615
325.000	5.417	217.612	-217.612
326.000	5.433	217.612	-217.612
327.000	5.450	217.612	-217.612
328.000	5.467	217.612	-217.612
329.000	5.483	217.612	-217.612
330.000	5.500	217.612	-217.612
331.000	5.517	217.612	-217.612
332.000	5.533	217.612	-217.612
333.000	5.550	217.615	-217.615

9313090.0761

334.000	5.567	217.615	-217.615
335.000	5.583	217.619	-217.619
336.000	5.600	217.619	-217.619
337.000	5.617	217.619	-217.619
338.000	5.633	217.619	-217.619
339.000	5.650	217.619	-217.619
340.000	5.667	217.619	-217.619
341.000	5.683	217.619	-217.619
342.000	5.700	217.619	-217.619
343.000	5.717	217.622	-217.622
344.000	5.733	217.622	-217.622
345.000	5.750	217.622	-217.622
346.000	5.767	217.622	-217.622
347.000	5.783	217.622	-217.622
348.000	5.800	217.619	-217.619
349.000	5.817	217.619	-217.619
350.000	5.833	217.622	-217.622
351.000	5.850	217.619	-217.619
352.000	5.867	217.622	-217.622
353.000	5.883	217.622	-217.622
354.000	5.900	217.622	-217.622
355.000	5.917	217.622	-217.622
356.000	5.933	217.625	-217.625
357.000	5.950	217.625	-217.625
358.000	5.967	217.625	-217.625
359.000	5.983	217.625	-217.625
360.000	6.000	217.625	-217.625
361.000	6.017	217.622	-217.622
362.000	6.033	217.622	-217.622
363.000	6.050	217.619	-217.619
364.000	6.067	217.619	-217.619
365.000	6.083	217.619	-217.619
366.000	6.100	217.619	-217.619
367.000	6.117	217.619	-217.619
368.000	6.133	217.619	-217.619
369.000	6.150	217.619	-217.619
370.000	6.167	217.619	-217.619
371.000	6.183	217.615	-217.615
372.000	6.200	217.615	-217.615
373.000	6.217	217.615	-217.615
374.000	6.233	217.615	-217.615
375.000	6.250	217.615	-217.615
376.000	6.267	217.615	-217.615
377.000	6.283	217.612	-217.612
378.000	6.300	217.615	-217.615

9413090.0762

379.000	6.317	217.615	-217.615
380.000	6.333	217.615	-217.615
381.000	6.350	217.615	-217.615
382.000	6.367	217.615	-217.615
383.000	6.383	217.612	-217.612
384.000	6.400	217.612	-217.612
385.000	6.417	217.609	-217.609
386.000	6.433	217.609	-217.609
387.000	6.450	217.609	-217.609
388.000	6.467	217.609	-217.609
389.000	6.483	217.609	-217.609
390.000	6.500	217.609	-217.609
391.000	6.517	217.609	-217.609
392.000	6.533	217.609	-217.609
393.000	6.550	217.609	-217.609
394.000	6.567	217.609	-217.609
395.000	6.583	217.609	-217.609
396.000	6.600	217.612	-217.612
397.000	6.617	217.612	-217.612
398.000	6.633	217.612	-217.612
399.000	6.650	217.612	-217.612
400.000	6.667	217.612	-217.612
401.000	6.683	217.612	-217.612
402.000	6.700	217.612	-217.612
403.000	6.717	217.612	-217.612
404.000	6.733	217.612	-217.612
405.000	6.750	217.612	-217.612
406.000	6.767	217.609	-217.609
407.000	6.783	217.612	-217.612
408.000	6.800	217.612	-217.612
409.000	6.817	217.612	-217.612
410.000	6.833	217.612	-217.612
411.000	6.850	217.612	-217.612
412.000	6.867	217.615	-217.615
413.000	6.883	217.615	-217.615
414.000	6.900	217.615	-217.615
415.000	6.917	217.615	-217.615
416.000	6.933	217.615	-217.615
417.000	6.950	217.615	-217.615
418.000	6.967	217.615	-217.615
419.000	6.983	217.615	-217.615
420.000	7.000	217.615	-217.615
421.000	7.017	217.615	-217.615
422.000	7.033	217.615	-217.615
423.000	7.050	217.615	-217.615

9413090.1063

424.000	7.067	217.615	-217.615
425.000	7.083	217.615	-217.615
426.000	7.100	217.615	-217.615
427.000	7.117	217.615	-217.615
428.000	7.133	217.615	-217.615
429.000	7.150	217.615	-217.615
430.000	7.167	217.615	-217.615
431.000	7.183	217.615	-217.615
432.000	7.200	217.615	-217.615
433.000	7.217	217.615	-217.615
434.000	7.233	217.615	-217.615
435.000	7.250	217.615	-217.615
436.000	7.267	217.619	-217.619
437.000	7.283	217.619	-217.619
438.000	7.300	217.622	-217.622
439.000	7.317	217.622	-217.622
440.000	7.333	217.625	-217.625
441.000	7.350	217.622	-217.622
442.000	7.367	217.622	-217.622
443.000	7.383	217.622	-217.622
444.000	7.400	217.622	-217.622
445.000	7.417	217.622	-217.622
446.000	7.433	217.619	-217.619
447.000	7.450	217.619	-217.619
448.000	7.467	217.619	-217.619
449.000	7.483	217.619	-217.619
450.000	7.500	217.619	-217.619
451.000	7.517	217.619	-217.619
452.000	7.533	217.619	-217.619
453.000	7.550	217.619	-217.619
454.000	7.567	217.619	-217.619
455.000	7.583	217.619	-217.619
456.000	7.600	217.619	-217.619
457.000	7.617	217.619	-217.619
458.000	7.633	217.619	-217.619
459.000	7.650	217.619	-217.619
460.000	7.667	217.619	-217.619
461.000	7.683	217.622	-217.622
462.000	7.700	217.622	-217.622
463.000	7.717	217.619	-217.619
464.000	7.733	217.622	-217.622
465.000	7.750	217.622	-217.622
466.000	7.767	217.622	-217.622
467.000	7.783	217.622	-217.622
468.000	7.800	217.622	-217.622

9413090.0761

469.000	7.817	217.625	-217.625
470.000	7.833	217.625	-217.625
471.000	7.850	217.625	-217.625
472.000	7.867	217.622	-217.622
473.000	7.883	217.622	-217.622
474.000	7.900	217.622	-217.622
475.000	7.917	217.622	-217.622
476.000	7.933	217.622	-217.622
477.000	7.950	217.622	-217.622
478.000	7.967	217.622	-217.622
479.000	7.983	217.622	-217.622
480.000	8.000	217.625	-217.625
481.000	8.017	217.622	-217.622
482.000	8.033	217.625	-217.625
483.000	8.050	217.622	-217.622
484.000	8.067	217.625	-217.625
485.000	8.083	217.622	-217.622
486.000	8.100	217.622	-217.622
487.000	8.117	217.622	-217.622
488.000	8.133	217.622	-217.622
489.000	8.150	217.622	-217.622
490.000	8.167	217.622	-217.622
491.000	8.183	217.625	-217.625
492.000	8.200	217.622	-217.622
493.000	8.217	217.622	-217.622
494.000	8.233	217.622	-217.622
495.000	8.250	217.622	-217.622
496.000	8.267	217.622	-217.622
497.000	8.283	217.622	-217.622
498.000	8.300	217.622	-217.622
499.000	8.317	217.622	-217.622
500.000	8.333	217.622	-217.622
501.000	8.350	217.625	-217.625
502.000	8.367	217.622	-217.622
503.000	8.383	217.622	-217.622
504.000	8.400	217.625	-217.625
505.000	8.417	217.625	-217.625
506.000	8.433	217.625	-217.625
507.000	8.450	217.625	-217.625
508.000	8.467	217.625	-217.625
509.000	8.483	217.628	-217.628
510.000	8.500	217.625	-217.625
511.000	8.517	217.625	-217.625
512.000	8.533	217.625	-217.625
513.000	8.550	217.625	-217.625

9310900.0765

514.000	8.567	217.628	-217.628
515.000	8.583	217.628	-217.628
516.000	8.600	217.628	-217.628
517.000	8.617	217.628	-217.628
518.000	8.633	217.628	-217.628
519.000	8.650	217.628	-217.628
520.000	8.667	217.628	-217.628
521.000	8.683	217.628	-217.628
522.000	8.700	217.628	-217.628
523.000	8.717	217.628	-217.628
524.000	8.733	217.628	-217.628
525.000	8.750	217.628	-217.628
526.000	8.767	217.628	-217.628
527.000	8.783	217.628	-217.628
528.000	8.800	217.628	-217.628
529.000	8.817	217.625	-217.625
530.000	8.833	217.628	-217.628
531.000	8.850	217.628	-217.628
532.000	8.867	217.628	-217.628
533.000	8.883	217.625	-217.625
534.000	8.900	217.625	-217.625
535.000	8.917	217.625	-217.625
536.000	8.933	217.625	-217.625
537.000	8.950	217.625	-217.625
538.000	8.967	217.625	-217.625
539.000	8.983	217.625	-217.625
540.000	9.000	217.625	-217.625
541.000	9.017	217.625	-217.625
542.000	9.033	217.628	-217.628
543.000	9.050	217.628	-217.628
544.000	9.067	217.628	-217.628
545.000	9.083	217.628	-217.628
546.000	9.100	217.631	-217.631
547.000	9.117	217.631	-217.631
548.000	9.133	217.631	-217.631
549.000	9.150	217.631	-217.631
550.000	9.167	217.634	-217.634
551.000	9.183	217.631	-217.631
552.000	9.200	217.634	-217.634
553.000	9.217	217.631	-217.631
554.000	9.233	217.631	-217.631
555.000	9.250	217.631	-217.631
556.000	9.267	217.631	-217.631
557.000	9.283	217.631	-217.631
558.000	9.300	217.631	-217.631

9413001.0796

559.000	9.317	217.631	-217.631
560.000	9.333	217.631	-217.631
561.000	9.350	217.631	-217.631
562.000	9.367	217.631	-217.631
563.000	9.383	217.631	-217.631
564.000	9.400	217.634	-217.634
565.000	9.417	217.634	-217.634
566.000	9.433	217.631	-217.631
567.000	9.450	217.631	-217.631
568.000	9.467	217.631	-217.631
569.000	9.483	217.631	-217.631
570.000	9.500	217.628	-217.628
571.000	9.517	217.628	-217.628
572.000	9.533	217.625	-217.625
573.000	9.550	217.628	-217.628
574.000	9.567	217.628	-217.628
575.000	9.583	217.628	-217.628
576.000	9.600	217.625	-217.625
577.000	9.617	217.625	-217.625
578.000	9.633	217.625	-217.625
579.000	9.650	217.625	-217.625
580.000	9.667	217.625	-217.625
581.000	9.683	217.622	-217.622
582.000	9.700	217.622	-217.622
583.000	9.717	217.622	-217.622
584.000	9.733	217.619	-217.619
585.000	9.750	217.619	-217.619
586.000	9.767	217.619	-217.619
587.000	9.783	217.619	-217.619
588.000	9.800	217.619	-217.619
589.000	9.817	217.619	-217.619
590.000	9.833	217.619	-217.619
591.000	9.850	217.619	-217.619
592.000	9.867	217.615	-217.615
593.000	9.883	217.615	-217.615
594.000	9.900	217.615	-217.615
595.000	9.917	217.615	-217.615
596.000	9.933	217.615	-217.615
597.000	9.950	217.615	-217.615
598.000	9.967	217.615	-217.615
599.000	9.983	217.612	-217.612
600.000	10.000	217.612	-217.612
601.000	10.017	217.612	-217.612
602.000	10.033	217.612	-217.612
603.000	10.050	217.612	-217.612

9313090.0767

604.000	10.067	217.612	-217.612
605.000	10.083	217.615	-217.615
606.000	10.100	217.612	-217.612
607.000	10.117	217.612	-217.612
608.000	10.133	217.615	-217.615
609.000	10.150	217.615	-217.615
610.000	10.167	217.612	-217.612
611.000	10.183	217.615	-217.615
612.000	10.200	217.615	-217.615
613.000	10.217	217.615	-217.615
614.000	10.233	217.615	-217.615
615.000	10.250	217.612	-217.612
616.000	10.267	217.612	-217.612
617.000	10.283	217.612	-217.612
618.000	10.300	217.612	-217.612
619.000	10.317	217.612	-217.612
620.000	10.333	217.612	-217.612
621.000	10.350	217.612	-217.612
622.000	10.367	217.612	-217.612
623.000	10.383	217.612	-217.612
624.000	10.400	217.612	-217.612
625.000	10.417	217.612	-217.612
626.000	10.433	217.609	-217.609
627.000	10.450	217.612	-217.612
628.000	10.467	217.609	-217.609
629.000	10.483	217.609	-217.609
630.000	10.500	217.609	-217.609
631.000	10.517	217.609	-217.609
632.000	10.533	217.609	-217.609
633.000	10.550	217.609	-217.609
634.000	10.567	217.609	-217.609
635.000	10.583	217.609	-217.609
636.000	10.600	217.609	-217.609
637.000	10.617	217.609	-217.609
638.000	10.633	217.609	-217.609
639.000	10.650	217.606	-217.606
640.000	10.667	217.606	-217.606
641.000	10.683	217.609	-217.609
642.000	10.700	217.606	-217.606
643.000	10.717	217.609	-217.609
644.000	10.733	217.606	-217.606
645.000	10.750	217.606	-217.606
646.000	10.767	217.606	-217.606
647.000	10.783	217.606	-217.606
648.000	10.800	217.606	-217.606

9313090.0768

649.000	10.817	217.606	-217.606
650.000	10.833	217.606	-217.606
651.000	10.850	217.606	-217.606
652.000	10.867	217.606	-217.606
653.000	10.883	217.606	-217.606
654.000	10.900	217.609	-217.609
655.000	10.917	217.606	-217.606
656.000	10.933	217.606	-217.606
657.000	10.950	217.606	-217.606
658.000	10.967	217.606	-217.606
659.000	10.983	217.606	-217.606
660.000	11.000	217.606	-217.606
661.000	11.017	217.606	-217.606
662.000	11.033	217.606	-217.606
663.000	11.050	217.603	-217.603
664.000	11.067	217.603	-217.603
665.000	11.083	217.603	-217.603
666.000	11.100	217.603	-217.603
667.000	11.117	217.603	-217.603
668.000	11.133	217.603	-217.603
669.000	11.150	217.600	-217.600
670.000	11.167	217.600	-217.600
671.000	11.183	217.600	-217.600
672.000	11.200	217.603	-217.603
673.000	11.217	217.603	-217.603
674.000	11.233	217.603	-217.603
675.000	11.250	217.600	-217.600
676.000	11.267	217.600	-217.600
677.000	11.283	217.600	-217.600
678.000	11.300	217.600	-217.600
679.000	11.317	217.600	-217.600
680.000	11.333	217.600	-217.600
681.000	11.350	217.600	-217.600
682.000	11.367	217.600	-217.600
683.000	11.383	217.600	-217.600
684.000	11.400	217.600	-217.600
685.000	11.417	217.600	-217.600
686.000	11.433	217.600	-217.600
687.000	11.450	217.600	-217.600
688.000	11.467	217.600	-217.600
689.000	11.483	217.600	-217.600
690.000	11.500	217.600	-217.600
691.000	11.517	217.600	-217.600
692.000	11.533	217.603	-217.603
693.000	11.550	217.600	-217.600

9413090.0768

694.000	11.567	217.603	-217.603
695.000	11.583	217.603	-217.603
696.000	11.600	217.603	-217.603
697.000	11.617	217.603	-217.603
698.000	11.633	217.603	-217.603
699.000	11.650	217.603	-217.603
700.000	11.667	217.603	-217.603
701.000	11.683	217.600	-217.600
702.000	11.700	217.600	-217.600
703.000	11.717	217.600	-217.600
704.000	11.733	217.600	-217.600
705.000	11.750	217.600	-217.600
706.000	11.767	217.600	-217.600
707.000	11.783	217.600	-217.600
708.000	11.800	217.600	-217.600
709.000	11.817	217.600	-217.600
710.000	11.833	217.600	-217.600
711.000	11.850	217.600	-217.600
712.000	11.867	217.600	-217.600
713.000	11.883	217.600	-217.600
714.000	11.900	217.600	-217.600
715.000	11.917	217.596	-217.596
716.000	11.933	217.596	-217.596
717.000	11.950	217.596	-217.596
718.000	11.967	217.596	-217.596
719.000	11.983	217.596	-217.596
720.000	12.000	217.593	-217.593
721.000	12.017	217.593	-217.593
722.000	12.033	217.593	-217.593
723.000	12.050	217.593	-217.593
724.000	12.067	217.593	-217.593
725.000	12.083	217.596	-217.596
726.000	12.100	217.596	-217.596
727.000	12.117	217.596	-217.596
728.000	12.133	217.593	-217.593
729.000	12.150	217.593	-217.593
730.000	12.167	217.593	-217.593
731.000	12.183	217.593	-217.593
732.000	12.200	217.593	-217.593
733.000	12.217	217.593	-217.593
734.000	12.233	217.593	-217.593
735.000	12.250	217.593	-217.593
736.000	12.267	217.590	-217.590
737.000	12.283	217.590	-217.590
738.000	12.300	217.590	-217.590

9413090.0270

739.000	12.317	217.590	-217.590
740.000	12.333	217.590	-217.590
741.000	12.350	217.590	-217.590
742.000	12.367	217.587	-217.587
743.000	12.383	217.587	-217.587
744.000	12.400	217.587	-217.587
745.000	12.417	217.587	-217.587
746.000	12.433	217.590	-217.590
747.000	12.450	217.590	-217.590
748.000	12.467	217.587	-217.587
749.000	12.483	217.590	-217.590
750.000	12.500	217.590	-217.590
751.000	12.517	217.590	-217.590
752.000	12.533	217.590	-217.590
753.000	12.550	217.590	-217.590
754.000	12.567	217.590	-217.590
755.000	12.583	217.590	-217.590
756.000	12.600	217.590	-217.590
757.000	12.617	217.590	-217.590
758.000	12.633	217.590	-217.590
759.000	12.650	217.590	-217.590
760.000	12.667	217.590	-217.590
761.000	12.683	217.590	-217.590
762.000	12.700	217.590	-217.590
763.000	12.717	217.590	-217.590
764.000	12.733	217.590	-217.590
765.000	12.750	217.590	-217.590
766.000	12.767	217.590	-217.590
767.000	12.783	217.590	-217.590
768.000	12.800	217.590	-217.590
769.000	12.817	217.590	-217.590
770.000	12.833	217.590	-217.590
771.000	12.850	217.590	-217.590
772.000	12.867	217.590	-217.590
773.000	12.883	217.590	-217.590
774.000	12.900	217.590	-217.590
775.000	12.917	217.590	-217.590
776.000	12.933	217.590	-217.590
777.000	12.950	217.590	-217.590
778.000	12.967	217.590	-217.590
779.000	12.983	217.590	-217.590
780.000	13.000	217.590	-217.590
781.000	13.017	217.587	-217.587
782.000	13.033	217.587	-217.587
783.000	13.050	217.590	-217.590

784.000	13.067	217.590	-217.590
785.000	13.083	217.590	-217.590
786.000	13.100	217.590	-217.590
787.000	13.117	217.590	-217.590
788.000	13.133	217.590	-217.590
789.000	13.150	217.587	-217.587
790.000	13.167	217.587	-217.587
791.000	13.183	217.587	-217.587
792.000	13.200	217.587	-217.587
793.000	13.217	217.587	-217.587
794.000	13.233	217.587	-217.587
795.000	13.250	217.587	-217.587
796.000	13.267	217.587	-217.587
797.000	13.283	217.587	-217.587
798.000	13.300	217.590	-217.590
799.000	13.317	217.590	-217.590
800.000	13.333	217.590	-217.590
801.000	13.350	217.590	-217.590
802.000	13.367	217.590	-217.590
803.000	13.383	217.593	-217.593
804.000	13.400	217.593	-217.593
805.000	13.417	217.593	-217.593
806.000	13.433	217.593	-217.593
807.000	13.450	217.593	-217.593
808.000	13.467	217.593	-217.593
809.000	13.483	217.593	-217.593
810.000	13.500	217.593	-217.593
811.000	13.517	217.593	-217.593
812.000	13.533	217.590	-217.590
813.000	13.550	217.590	-217.590
814.000	13.567	217.590	-217.590
815.000	13.583	217.590	-217.590
816.000	13.600	217.587	-217.587
817.000	13.617	217.590	-217.590
818.000	13.633	217.590	-217.590
819.000	13.650	217.590	-217.590
820.000	13.667	217.590	-217.590
821.000	13.683	217.590	-217.590
822.000	13.700	217.593	-217.593
823.000	13.717	217.593	-217.593
824.000	13.733	217.593	-217.593
825.000	13.750	217.593	-217.593
826.000	13.767	217.593	-217.593
827.000	13.783	217.593	-217.593
828.000	13.800	217.593	-217.593

9413090.0772

829.000	13.817	217.593	-217.593
830.000	13.833	217.593	-217.593
831.000	13.850	217.593	-217.593
832.000	13.867	217.596	-217.596
833.000	13.883	217.596	-217.596
834.000	13.900	217.596	-217.596
835.000	13.917	217.593	-217.593
836.000	13.933	217.593	-217.593
837.000	13.950	217.593	-217.593
838.000	13.967	217.593	-217.593
839.000	13.983	217.593	-217.593
840.000	14.000	217.593	-217.593
841.000	14.017	217.590	-217.590
842.000	14.033	217.590	-217.590
843.000	14.050	217.590	-217.590
844.000	14.067	217.593	-217.593
845.000	14.083	217.593	-217.593
846.000	14.100	217.593	-217.593
847.000	14.117	217.593	-217.593
848.000	14.133	217.593	-217.593
849.000	14.150	217.593	-217.593
850.000	14.167	217.593	-217.593
851.000	14.183	217.590	-217.590
852.000	14.200	217.590	-217.590
853.000	14.217	217.587	-217.587
854.000	14.233	217.590	-217.590
855.000	14.250	217.587	-217.587
856.000	14.267	217.587	-217.587
857.000	14.283	217.590	-217.590
858.000	14.300	217.590	-217.590
859.000	14.317	217.593	-217.593
860.000	14.333	217.593	-217.593
861.000	14.350	217.593	-217.593
862.000	14.367	217.593	-217.593
863.000	14.383	217.593	-217.593
864.000	14.400	217.593	-217.593
865.000	14.417	217.593	-217.593
866.000	14.433	217.593	-217.593
867.000	14.450	217.593	-217.593
868.000	14.467	217.593	-217.593
869.000	14.483	217.593	-217.593
870.000	14.500	217.593	-217.593
871.000	14.517	217.593	-217.593
872.000	14.533	217.593	-217.593
873.000	14.550	217.593	-217.593

9413090.0723

874.000	14.567	217.596	-217.596
875.000	14.583	217.596	-217.596
876.000	14.600	217.596	-217.596
877.000	14.617	217.596	-217.596
878.000	14.633	217.593	-217.593
879.000	14.650	217.593	-217.593
880.000	14.667	217.593	-217.593
881.000	14.683	217.593	-217.593
882.000	14.700	217.593	-217.593
883.000	14.717	217.596	-217.596
884.000	14.733	217.596	-217.596
885.000	14.750	217.596	-217.596
886.000	14.767	217.596	-217.596
887.000	14.783	217.596	-217.596
888.000	14.800	217.596	-217.596
889.000	14.817	217.600	-217.600
890.000	14.833	217.600	-217.600
891.000	14.850	217.600	-217.600
892.000	14.867	217.596	-217.596
893.000	14.883	217.596	-217.596
894.000	14.900	217.596	-217.596
895.000	14.917	217.596	-217.596
896.000	14.933	217.596	-217.596
897.000	14.950	217.596	-217.596
898.000	14.967	217.596	-217.596
899.000	14.983	217.596	-217.596
900.000	15.000	217.600	-217.600
901.000	15.017	217.600	-217.600
902.000	15.033	217.603	-217.603
903.000	15.050	217.600	-217.600
904.000	15.067	217.600	-217.600
905.000	15.083	217.600	-217.600
906.000	15.100	217.596	-217.596
907.000	15.117	217.596	-217.596
908.000	15.133	217.596	-217.596
909.000	15.150	217.596	-217.596
910.000	15.167	217.596	-217.596
911.000	15.183	217.600	-217.600
912.000	15.200	217.600	-217.600
913.000	15.217	217.600	-217.600
914.000	15.233	217.600	-217.600
915.000	15.250	217.600	-217.600
916.000	15.267	217.600	-217.600
917.000	15.283	217.600	-217.600
918.000	15.300	217.600	-217.600

9413090.0774

919.000	15.317	217.600	-217.600
920.000	15.333	217.600	-217.600
921.000	15.350	217.600	-217.600
922.000	15.367	217.600	-217.600
923.000	15.383	217.600	-217.600
924.000	15.400	217.600	-217.600
925.000	15.417	217.600	-217.600
926.000	15.433	217.600	-217.600
927.000	15.450	217.600	-217.600
928.000	15.467	217.600	-217.600
929.000	15.483	217.600	-217.600
930.000	15.500	217.600	-217.600
931.000	15.517	217.600	-217.600
932.000	15.533	217.596	-217.596
933.000	15.550	217.600	-217.600
934.000	15.567	217.600	-217.600
935.000	15.583	217.600	-217.600
936.000	15.600	217.600	-217.600
937.000	15.617	217.600	-217.600
938.000	15.633	217.596	-217.596
939.000	15.650	217.596	-217.596
940.000	15.667	217.596	-217.596
941.000	15.683	217.600	-217.600
942.000	15.700	217.600	-217.600
943.000	15.717	217.600	-217.600
944.000	15.733	217.600	-217.600
945.000	15.750	217.600	-217.600
946.000	15.767	217.600	-217.600
947.000	15.783	217.600	-217.600
948.000	15.800	217.600	-217.600
949.000	15.817	217.600	-217.600
950.000	15.833	217.600	-217.600
951.000	15.850	217.600	-217.600
952.000	15.867	217.600	-217.600
953.000	15.883	217.600	-217.600
954.000	15.900	217.600	-217.600
955.000	15.917	217.603	-217.603
956.000	15.933	217.603	-217.603
957.000	15.950	217.603	-217.603
958.000	15.967	217.603	-217.603
959.000	15.983	217.603	-217.603
960.000	16.000	217.603	-217.603
961.000	16.017	217.603	-217.603
962.000	16.033	217.603	-217.603
963.000	16.050	217.606	-217.606

9313080.0725

964.000	16.067	217.603	-217.603
965.000	16.083	217.603	-217.603
966.000	16.100	217.603	-217.603
967.000	16.117	217.603	-217.603
968.000	16.133	217.603	-217.603
969.000	16.150	217.606	-217.606
970.000	16.167	217.606	-217.606
971.000	16.183	217.606	-217.606
972.000	16.200	217.603	-217.603
973.000	16.217	217.603	-217.603
974.000	16.233	217.603	-217.603
975.000	16.250	217.603	-217.603
976.000	16.267	217.600	-217.600
977.000	16.283	217.600	-217.600
978.000	16.300	217.600	-217.600
979.000	16.317	217.600	-217.600
980.000	16.333	217.600	-217.600
981.000	16.350	217.600	-217.600
982.000	16.367	217.603	-217.603
983.000	16.383	217.603	-217.603
984.000	16.400	217.603	-217.603
985.000	16.417	217.603	-217.603
986.000	16.433	217.603	-217.603
987.000	16.450	217.603	-217.603
988.000	16.467	217.606	-217.606
989.000	16.483	217.606	-217.606
990.000	16.500	217.603	-217.603
991.000	16.517	217.603	-217.603
992.000	16.533	217.603	-217.603
993.000	16.550	217.603	-217.603
994.000	16.567	217.603	-217.603
995.000	16.583	217.600	-217.600
996.000	16.600	217.600	-217.600
997.000	16.617	217.600	-217.600
998.000	16.633	217.600	-217.600
999.000	16.650	217.603	-217.603
1000.000	16.667	217.600	-217.600
1001.000	16.683	217.600	-217.600
1002.000	16.700	217.600	-217.600
1003.000	16.717	217.600	-217.600
1004.000	16.733	217.600	-217.600
1005.000	16.750	217.600	-217.600
1006.000	16.767	217.603	-217.603
1007.000	16.783	217.603	-217.603
1008.000	16.800	217.603	-217.603

1009.000	16.817	217.606	-217.606
1010.000	16.833	217.606	-217.606
1011.000	16.850	217.606	-217.606
1012.000	16.867	217.606	-217.606
1013.000	16.883	217.606	-217.606
1014.000	16.900	217.606	-217.606
1015.000	16.917	217.606	-217.606
1016.000	16.933	217.606	-217.606
1017.000	16.950	217.606	-217.606
1018.000	16.967	217.606	-217.606
1019.000	16.983	217.606	-217.606
1020.000	17.000	217.606	-217.606
1021.000	17.017	217.603	-217.603
1022.000	17.033	217.603	-217.603
1023.000	17.050	217.603	-217.603
1024.000	17.067	217.600	-217.600
1025.000	17.083	217.600	-217.600
1026.000	17.100	217.600	-217.600
1027.000	17.117	217.600	-217.600
1028.000	17.133	217.600	-217.600
1029.000	17.150	217.596	-217.596
1030.000	17.167	217.596	-217.596
1031.000	17.183	217.600	-217.600
1032.000	17.200	217.600	-217.600
1033.000	17.217	217.600	-217.600
1034.000	17.233	217.600	-217.600
1035.000	17.250	217.596	-217.596
1036.000	17.267	217.596	-217.596
1037.000	17.283	217.600	-217.600
1038.000	17.300	217.600	-217.600
1039.000	17.317	217.603	-217.603
1040.000	17.333	217.603	-217.603
1041.000	17.350	217.603	-217.603
1042.000	17.367	217.606	-217.606
1043.000	17.383	217.606	-217.606

DRAWDOWN/RECOVERY

Well Designation: 299-W26-12 Date: 11-6-92

Well Depth: 230.83' BTOC Screened Interval: 230.83'-210.11'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/259198 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (10") Pump Start Time: 0730 (11/6) Pump Stop Time: 1230 (11/7)

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
				Bucket Method: 5gal./57.03sec.
				= 5.25gal/min.
				Rotameter @ 5,25gpm
	See Attached Data			(see field activity report #'s 18 &19)
			See Attached Data	

Recorded by: James A. Coates James A. Coates Date: 12-14-92

Sign and Print Name

BD-6000-402(03/90)

9313090.0778

d

299-W26-12 CONSTANT DISCHARGE TEST Q=5.25

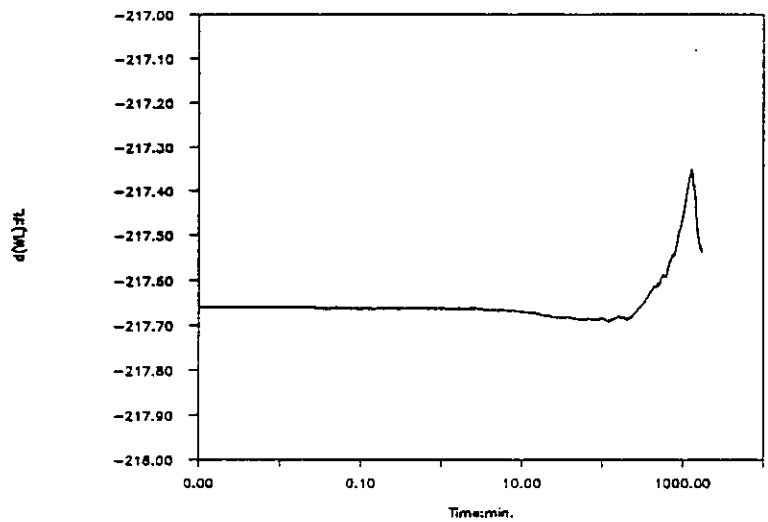
SE2000
Environ mental Logger
11/ 07 12:36

Unit# 19 3 Test 6

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/06 07:30:02



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.660	-217.660
0.008	0.0001	217.660	-217.660
0.017	0.0003	217.660	-217.660
0.025	0.0004	217.660	-217.660
0.033	0.0006	217.663	-217.663
0.042	0.0007	217.663	-217.663
0.050	0.0008	217.660	-217.660
0.058	0.0010	217.663	-217.663
0.067	0.0011	217.663	-217.663
0.075	0.0013	217.663	-217.663
0.083	0.0014	217.663	-217.663
0.100	0.0017	217.663	-217.663
0.117	0.0019	217.663	-217.663
0.133	0.0022	217.663	-217.663
0.150	0.0025	217.663	-217.663
0.167	0.0028	217.663	-217.663
0.183	0.0031	217.663	-217.663
0.200	0.0033	217.663	-217.663
0.217	0.0036	217.660	-217.660
0.233	0.0039	217.663	-217.663
0.250	0.0042	217.660	-217.660
0.267	0.0044	217.663	-217.663
0.283	0.0047	217.663	-217.663
0.300	0.0050	217.663	-217.663
0.317	0.0053	217.663	-217.663

0.333	0.006	217.663	-217.663
0.417	0.007	217.663	-217.663
0.500	0.008	217.660	-217.660
0.583	0.010	217.663	-217.663
0.667	0.011	217.663	-217.663
0.750	0.013	217.663	-217.663
0.833	0.014	217.663	-217.663
0.917	0.015	217.663	-217.663
1.000	0.017	217.663	-217.663
1.083	0.018	217.663	-217.663
1.167	0.019	217.663	-217.663
1.250	0.021	217.663	-217.663
1.333	0.022	217.666	-217.666
1.417	0.024	217.663	-217.663
1.500	0.025	217.663	-217.663
1.583	0.026	217.663	-217.663
1.667	0.028	217.663	-217.663
1.750	0.029	217.663	-217.663
1.833	0.031	217.663	-217.663
1.917	0.032	217.666	-217.666
2.000	0.033	217.663	-217.663
2.500	0.042	217.663	-217.663
3.000	0.050	217.663	-217.663
3.500	0.058	217.666	-217.666
4.000	0.067	217.666	-217.666
4.500	0.075	217.666	-217.666
5.000	0.083	217.666	-217.666
5.500	0.092	217.666	-217.666
6.000	0.100	217.666	-217.666
6.500	0.108	217.666	-217.666
7.000	0.117	217.669	-217.669
7.500	0.125	217.666	-217.666
8.000	0.133	217.666	-217.666
8.500	0.142	217.669	-217.669
9.000	0.150	217.669	-217.669
9.500	0.158	217.669	-217.669
10.000	0.167	217.669	-217.669
12.000	0.200	217.672	-217.672
14.000	0.233	217.672	-217.672
16.000	0.267	217.675	-217.675
18.000	0.300	217.678	-217.678
20.000	0.333	217.678	-217.678
22.000	0.367	217.678	-217.678
24.000	0.400	217.682	-217.682
26.000	0.433	217.682	-217.682

28.000	0.467	217.682	-217.682
30.000	0.500	217.682	-217.682
32.000	0.533	217.682	-217.682
34.000	0.567	217.682	-217.682
36.000	0.600	217.682	-217.682
38.000	0.633	217.682	-217.682
40.000	0.667	217.682	-217.682
42.000	0.700	217.685	-217.685
44.000	0.733	217.685	-217.685
46.000	0.767	217.685	-217.685
48.000	0.800	217.685	-217.685
50.000	0.833	217.688	-217.688
52.000	0.867	217.688	-217.688
54.000	0.900	217.688	-217.688
56.000	0.933	217.685	-217.685
58.000	0.967	217.685	-217.685
60.000	1.000	217.688	-217.688
62.000	1.033	217.688	-217.688
64.000	1.067	217.685	-217.685
66.000	1.100	217.685	-217.685
68.000	1.133	217.685	-217.685
70.000	1.167	217.685	-217.685
72.000	1.200	217.685	-217.685
74.000	1.233	217.688	-217.688
76.000	1.267	217.688	-217.688
78.000	1.300	217.688	-217.688
80.000	1.333	217.688	-217.688
82.000	1.367	217.685	-217.685
84.000	1.400	217.688	-217.688
86.000	1.433	217.688	-217.688
88.000	1.467	217.688	-217.688
90.000	1.500	217.688	-217.688
92.000	1.533	217.688	-217.688
94.000	1.567	217.685	-217.685
96.000	1.600	217.685	-217.685
98.000	1.633	217.682	-217.682
100.000	1.667	217.682	-217.682
110.000	1.833	217.688	-217.688
120.000	2.000	217.691	-217.691
130.000	2.167	217.688	-217.688
140.000	2.333	217.685	-217.685
150.000	2.500	217.682	-217.682
160.000	2.667	217.678	-217.678
170.000	2.833	217.685	-217.685
180.000	3.000	217.682	-217.682

9413090.0781

190.000	3.167	217.682	-217.682
200.000	3.333	217.688	-217.688
210.000	3.500	217.688	-217.688
220.000	3.667	217.682	-217.682
230.000	3.833	217.682	-217.682
240.000	4.000	217.678	-217.678
250.000	4.167	217.672	-217.672
260.000	4.333	217.672	-217.672
270.000	4.500	217.669	-217.669
280.000	4.667	217.663	-217.663
290.000	4.833	217.660	-217.660
300.000	5.000	217.660	-217.660
310.000	5.167	217.653	-217.653
320.000	5.333	217.653	-217.653
330.000	5.500	217.650	-217.650
340.000	5.667	217.647	-217.647
350.000	5.833	217.641	-217.641
360.000	6.000	217.637	-217.637
370.000	6.167	217.637	-217.637
380.000	6.333	217.631	-217.631
390.000	6.500	217.628	-217.628
400.000	6.667	217.628	-217.628
410.000	6.833	217.622	-217.622
420.000	7.000	217.622	-217.622
430.000	7.167	217.619	-217.619
440.000	7.333	217.612	-217.612
450.000	7.500	217.615	-217.615
460.000	7.667	217.615	-217.615
470.000	7.833	217.615	-217.615
480.000	8.000	217.609	-217.609
490.000	8.167	217.606	-217.606
500.000	8.333	217.606	-217.606
510.000	8.500	217.612	-217.612
520.000	8.667	217.609	-217.609
530.000	8.833	217.603	-217.603
540.000	9.000	217.600	-217.600
550.000	9.167	217.593	-217.593
560.000	9.333	217.590	-217.590
570.000	9.500	217.587	-217.587
580.000	9.667	217.590	-217.590
590.000	9.833	217.593	-217.593
600.000	10.000	217.590	-217.590
610.000	10.167	217.593	-217.593
620.000	10.333	217.593	-217.593
630.000	10.500	217.590	-217.590

9413090.0782

640.000	10.667	217.584	-217.584
650.000	10.833	217.578	-217.578
660.000	11.000	217.571	-217.571
670.000	11.167	217.578	-217.578
680.000	11.333	217.568	-217.568
690.000	11.500	217.559	-217.559
700.000	11.667	217.559	-217.559
710.000	11.833	217.559	-217.559
720.000	12.000	217.552	-217.552
730.000	12.167	217.555	-217.555
740.000	12.333	217.546	-217.546
750.000	12.500	217.546	-217.546
760.000	12.667	217.546	-217.546
770.000	12.833	217.546	-217.546
780.000	13.000	217.543	-217.543
790.000	13.167	217.546	-217.546
800.000	13.333	217.540	-217.540
810.000	13.500	217.537	-217.537
820.000	13.667	217.537	-217.537
830.000	13.833	217.530	-217.530
840.000	14.000	217.524	-217.524
850.000	14.167	217.521	-217.521
860.000	14.333	217.518	-217.518
870.000	14.500	217.514	-217.514
880.000	14.667	217.505	-217.505
890.000	14.833	217.502	-217.502
900.000	15.000	217.499	-217.499
910.000	15.167	217.492	-217.492
920.000	15.333	217.492	-217.492
930.000	15.500	217.489	-217.489
940.000	15.667	217.486	-217.486
950.000	15.833	217.483	-217.483
960.000	16.000	217.486	-217.486
970.000	16.167	217.477	-217.477
980.000	16.333	217.470	-217.470
990.000	16.500	217.467	-217.467
1000.000	16.667	217.467	-217.467
1010.000	16.833	217.464	-217.464
1020.000	17.000	217.464	-217.464
1030.000	17.167	217.458	-217.458
1040.000	17.333	217.451	-217.451
1050.000	17.500	217.448	-217.448
1060.000	17.667	217.445	-217.445
1070.000	17.833	217.442	-217.442
1080.000	18.000	217.436	-217.436

9313090.0783

1090.000	18.167	217.426	-217.426
1100.000	18.333	217.423	-217.423
1110.000	18.500	217.420	-217.420
1120.000	18.667	217.417	-217.417
1130.000	18.833	217.407	-217.407
1140.000	19.000	217.404	-217.404
1150.000	19.167	217.401	-217.401
1160.000	19.333	217.398	-217.398
1170.000	19.500	217.392	-217.392
1180.000	19.667	217.392	-217.392
1190.000	19.833	217.388	-217.388
1200.000	20.000	217.382	-217.382
1210.000	20.167	217.379	-217.379
1220.000	20.333	217.376	-217.376
1230.000	20.500	217.369	-217.369
1240.000	20.667	217.366	-217.366
1250.000	20.833	217.366	-217.366
1260.000	21.000	217.363	-217.363
1270.000	21.167	217.360	-217.360
1280.000	21.333	217.360	-217.360
1290.000	21.500	217.357	-217.357
1300.000	21.667	217.354	-217.354
1310.000	21.833	217.351	-217.351
1320.000	22.000	217.357	-217.357
1330.000	22.167	217.360	-217.360
1340.000	22.333	217.360	-217.360
1350.000	22.500	217.363	-217.363
1360.000	22.667	217.373	-217.373
1370.000	22.833	217.382	-217.382
1380.000	23.000	217.392	-217.392
1390.000	23.167	217.388	-217.388
1400.000	23.333	217.388	-217.388
1410.000	23.500	217.388	-217.388
1420.000	23.667	217.398	-217.398
1430.000	23.833	217.407	-217.407
1440.000	24.000	217.410	-217.410
1450.000	24.167	217.414	-217.414
1460.000	24.333	217.417	-217.417
1470.000	24.500	217.426	-217.426
1480.000	24.667	217.442	-217.442
1490.000	24.833	217.451	-217.451
1500.000	25.000	217.461	-217.461
1510.000	25.167	217.461	-217.461
1520.000	25.333	217.470	-217.470
1530.000	25.500	217.477	-217.477

1540.000	25.667	217.489	-217.489
1550.000	25.833	217.489	-217.489
1560.000	26.000	217.499	-217.499
1570.000	26.167	217.496	-217.496
1580.000	26.333	217.502	-217.502
1590.000	26.500	217.502	-217.502
1600.000	26.667	217.508	-217.508
1610.000	26.833	217.511	-217.511
1620.000	27.000	217.518	-217.518
1630.000	27.167	217.518	-217.518
1640.000	27.333	217.518	-217.518
1650.000	27.500	217.521	-217.521
1660.000	27.667	217.530	-217.530
1670.000	27.833	217.527	-217.527
1680.000	28.000	217.524	-217.524
1690.000	28.167	217.527	-217.527
1700.000	28.333	217.527	-217.527
1710.000	28.500	217.524	-217.524
1720.000	28.667	217.533	-217.533
1730.000	28.833	217.530	-217.530
1740.000	29.000	217.537	-217.537

9413090.0705

299-W26-12 RECOVERY: CONSTANT DISCHARGE TEST

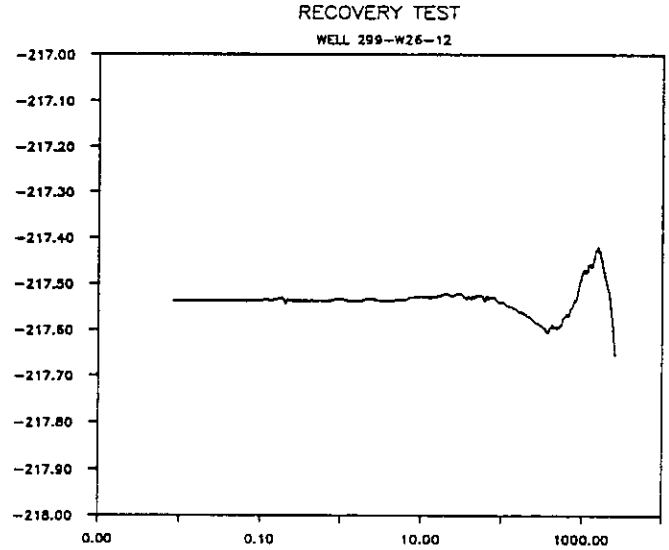
SE2000
Environ mental Logger
11/ 09 07:43

Unit# 19 3 Test 7

INPUT 2: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 9.987
Offset -0.015
Delay mSE C 50.000

Step 0 1 1/07 12:30:40



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft	
0.000	0.0000	217.537	-217.537	OBSERVATION WELL 299-W26-12
0.008	0.0001	217.537	-217.537	RECOVERY TEST
0.017	0.0003	217.537	-217.537	
0.025	0.0004	217.537	-217.537	
0.033	0.0006	217.537	-217.537	
0.042	0.0007	217.537	-217.537	
0.050	0.0008	217.537	-217.537	
0.058	0.0010	217.537	-217.537	
0.067	0.0011	217.537	-217.537	
0.075	0.0013	217.537	-217.537	
0.083	0.0014	217.537	-217.537	
0.100	0.0017	217.537	-217.537	
0.117	0.0019	217.533	-217.533	
0.133	0.0022	217.537	-217.537	
0.150	0.0025	217.533	-217.533	
0.167	0.0028	217.533	-217.533	
0.183	0.0031	217.530	-217.530	
0.200	0.0033	217.543	-217.543	
0.217	0.0036	217.533	-217.533	
0.233	0.0039	217.537	-217.537	
0.250	0.0042	217.537	-217.537	
0.267	0.0044	217.537	-217.537	
0.283	0.0047	217.537	-217.537	
0.300	0.0050	217.537	-217.537	
0.317	0.0053	217.537	-217.537	

9313090.0786

0.333	0.006	217.537	-217.537
0.417	0.007	217.537	-217.537
0.500	0.008	217.537	-217.537
0.583	0.010	217.537	-217.537
0.667	0.011	217.537	-217.537
0.750	0.013	217.537	-217.537
0.833	0.014	217.533	-217.533
0.917	0.015	217.533	-217.533
1.000	0.017	217.533	-217.533
1.083	0.018	217.533	-217.533
1.167	0.019	217.537	-217.537
1.250	0.021	217.537	-217.537
1.333	0.022	217.537	-217.537
1.417	0.024	217.537	-217.537
1.500	0.025	217.537	-217.537
1.583	0.026	217.537	-217.537
1.667	0.028	217.537	-217.537
1.750	0.029	217.537	-217.537
1.833	0.031	217.537	-217.537
1.917	0.032	217.537	-217.537
2.000	0.033	217.533	-217.533
2.500	0.042	217.533	-217.533
3.000	0.050	217.537	-217.537
3.500	0.058	217.537	-217.537
4.000	0.067	217.537	-217.537
4.500	0.075	217.537	-217.537
5.000	0.083	217.533	-217.533
5.500	0.092	217.533	-217.533
6.000	0.100	217.537	-217.537
6.500	0.108	217.533	-217.533
7.000	0.117	217.530	-217.530
7.500	0.125	217.530	-217.530
8.000	0.133	217.530	-217.530
8.500	0.142	217.530	-217.530
9.000	0.150	217.530	-217.530
9.500	0.158	217.527	-217.527
10.000	0.167	217.527	-217.527
12.000	0.200	217.530	-217.530
14.000	0.233	217.530	-217.530
16.000	0.267	217.527	-217.527
18.000	0.300	217.524	-217.524
20.000	0.333	217.521	-217.521
22.000	0.367	217.524	-217.524
24.000	0.400	217.527	-217.527
26.000	0.433	217.524	-217.524

9413090.0787

28.000	0.467	217.521	-217.521
30.000	0.500	217.521	-217.521
32.000	0.533	217.524	-217.524
34.000	0.567	217.530	-217.530
36.000	0.600	217.533	-217.533
38.000	0.633	217.527	-217.527
40.000	0.667	217.530	-217.530
42.000	0.700	217.533	-217.533
44.000	0.733	217.527	-217.527
46.000	0.767	217.530	-217.530
48.000	0.800	217.524	-217.524
50.000	0.833	217.527	-217.527
52.000	0.867	217.524	-217.524
54.000	0.900	217.524	-217.524
56.000	0.933	217.527	-217.527
58.000	0.967	217.527	-217.527
60.000	1.000	217.537	-217.537
62.000	1.033	217.537	-217.537
64.000	1.067	217.527	-217.527
66.000	1.100	217.527	-217.527
68.000	1.133	217.533	-217.533
70.000	1.167	217.530	-217.530
72.000	1.200	217.530	-217.530
74.000	1.233	217.530	-217.530
76.000	1.267	217.530	-217.530
78.000	1.300	217.530	-217.530
80.000	1.333	217.530	-217.530
82.000	1.367	217.530	-217.530
84.000	1.400	217.533	-217.533
86.000	1.433	217.533	-217.533
88.000	1.467	217.540	-217.540
90.000	1.500	217.540	-217.540
92.000	1.533	217.540	-217.540
94.000	1.567	217.540	-217.540
96.000	1.600	217.540	-217.540
98.000	1.633	217.540	-217.540
100.000	1.667	217.537	-217.537
110.000	1.833	217.543	-217.543
120.000	2.000	217.549	-217.549
130.000	2.167	217.549	-217.549
140.000	2.333	217.552	-217.552
150.000	2.500	217.555	-217.555
160.000	2.667	217.562	-217.562
170.000	2.833	217.559	-217.559
180.000	3.000	217.565	-217.565

9313090.0788

190.000	3.167	217.565	-217.565
200.000	3.333	217.568	-217.568
210.000	3.500	217.571	-217.571
220.000	3.667	217.571	-217.571
230.000	3.833	217.574	-217.574
240.000	4.000	217.578	-217.578
250.000	4.167	217.581	-217.581
260.000	4.333	217.584	-217.584
270.000	4.500	217.584	-217.584
280.000	4.667	217.584	-217.584
290.000	4.833	217.587	-217.587
300.000	5.000	217.590	-217.590
310.000	5.167	217.590	-217.590
320.000	5.333	217.593	-217.593
330.000	5.500	217.596	-217.596
340.000	5.667	217.596	-217.596
350.000	5.833	217.603	-217.603
360.000	6.000	217.603	-217.603
370.000	6.167	217.606	-217.606
380.000	6.333	217.606	-217.606
390.000	6.500	217.593	-217.593
400.000	6.667	217.593	-217.593
410.000	6.833	217.593	-217.593
420.000	7.000	217.587	-217.587
430.000	7.167	217.593	-217.593
440.000	7.333	217.593	-217.593
450.000	7.500	217.593	-217.593
460.000	7.667	217.596	-217.596
470.000	7.833	217.593	-217.593
480.000	8.000	217.593	-217.593
490.000	8.167	217.596	-217.596
500.000	8.333	217.596	-217.596
510.000	8.500	217.593	-217.593
520.000	8.667	217.593	-217.593
530.000	8.833	217.587	-217.587
540.000	9.000	217.587	-217.587
550.000	9.167	217.590	-217.590
560.000	9.333	217.587	-217.587
570.000	9.500	217.578	-217.578
580.000	9.667	217.574	-217.574
590.000	9.833	217.571	-217.571
600.000	10.000	217.571	-217.571
610.000	10.167	217.571	-217.571
620.000	10.333	217.571	-217.571
630.000	10.500	217.565	-217.565

9313090.0789

640.000	10.667	217.565	-217.565
650.000	10.833	217.568	-217.568
660.000	11.000	217.571	-217.571
670.000	11.167	217.571	-217.571
680.000	11.333	217.568	-217.568
690.000	11.500	217.568	-217.568
700.000	11.667	217.562	-217.562
710.000	11.833	217.555	-217.555
720.000	12.000	217.552	-217.552
730.000	12.167	217.552	-217.552
740.000	12.333	217.552	-217.552
750.000	12.500	217.552	-217.552
760.000	12.667	217.546	-217.546
770.000	12.833	217.546	-217.546
780.000	13.000	217.543	-217.543
790.000	13.167	217.540	-217.540
800.000	13.333	217.537	-217.537
810.000	13.500	217.537	-217.537
820.000	13.667	217.533	-217.533
830.000	13.833	217.537	-217.537
840.000	14.000	217.533	-217.533
850.000	14.167	217.533	-217.533
860.000	14.333	217.533	-217.533
870.000	14.500	217.524	-217.524
880.000	14.667	217.521	-217.521
890.000	14.833	217.518	-217.518
900.000	15.000	217.514	-217.514
910.000	15.167	217.511	-217.511
920.000	15.333	217.505	-217.505
930.000	15.500	217.502	-217.502
940.000	15.667	217.496	-217.496
950.000	15.833	217.492	-217.492
960.000	16.000	217.492	-217.492
970.000	16.167	217.492	-217.492
980.000	16.333	217.486	-217.486
990.000	16.500	217.483	-217.483
1000.000	16.667	217.480	-217.480
1010.000	16.833	217.477	-217.477
1020.000	17.000	217.473	-217.473
1030.000	17.167	217.473	-217.473
1040.000	17.333	217.473	-217.473
1050.000	17.500	217.470	-217.470
1060.000	17.667	217.470	-217.470
1070.000	17.833	217.473	-217.473
1080.000	18.000	217.473	-217.473

1090.000	18.167	217.470	-217.470
1100.000	18.333	217.477	-217.477
1110.000	18.500	217.477	-217.477
1120.000	18.667	217.477	-217.477
1130.000	18.833	217.477	-217.477
1140.000	19.000	217.473	-217.473
1150.000	19.167	217.473	-217.473
1160.000	19.333	217.473	-217.473
1170.000	19.500	217.473	-217.473
1180.000	19.667	217.470	-217.470
1190.000	19.833	217.470	-217.470
1200.000	20.000	217.467	-217.467
1210.000	20.167	217.458	-217.458
1220.000	20.333	217.461	-217.461
1230.000	20.500	217.461	-217.461
1240.000	20.667	217.461	-217.461
1250.000	20.833	217.458	-217.458
1260.000	21.000	217.458	-217.458
1270.000	21.167	217.458	-217.458
1280.000	21.333	217.458	-217.458
1290.000	21.500	217.461	-217.461
1300.000	21.667	217.461	-217.461
1310.000	21.833	217.464	-217.464
1320.000	22.000	217.461	-217.461
1330.000	22.167	217.464	-217.464
1340.000	22.333	217.464	-217.464
1350.000	22.500	217.461	-217.461
1360.000	22.667	217.458	-217.458
1370.000	22.833	217.455	-217.455
1380.000	23.000	217.455	-217.455
1390.000	23.167	217.451	-217.451
1400.000	23.333	217.448	-217.448
1410.000	23.500	217.448	-217.448
1420.000	23.667	217.445	-217.445
1430.000	23.833	217.442	-217.442
1440.000	24.000	217.439	-217.439
1450.000	24.167	217.439	-217.439
1460.000	24.333	217.436	-217.436
1470.000	24.500	217.429	-217.429
1480.000	24.667	217.429	-217.429
1490.000	24.833	217.426	-217.426
1500.000	25.000	217.426	-217.426
1510.000	25.167	217.426	-217.426
1520.000	25.333	217.426	-217.426
1530.000	25.500	217.426	-217.426

9413090.0791

1540.000	25.667	217.423	-217.423
1550.000	25.833	217.426	-217.426
1560.000	26.000	217.426	-217.426
1570.000	26.167	217.420	-217.420
1580.000	26.333	217.420	-217.420
1590.000	26.500	217.420	-217.420
1600.000	26.667	217.423	-217.423
1610.000	26.833	217.420	-217.420
1620.000	27.000	217.429	-217.429
1630.000	27.167	217.426	-217.426
1640.000	27.333	217.429	-217.429
1650.000	27.500	217.429	-217.429
1660.000	27.667	217.429	-217.429
1670.000	27.833	217.432	-217.432
1680.000	28.000	217.429	-217.429
1690.000	28.167	217.432	-217.432
1700.000	28.333	217.432	-217.432
1710.000	28.500	217.436	-217.436
1720.000	28.667	217.436	-217.436
1730.000	28.833	217.439	-217.439
1740.000	29.000	217.445	-217.445
1750.000	29.167	217.445	-217.445
1760.000	29.333	217.448	-217.448
1770.000	29.500	217.448	-217.448
1780.000	29.667	217.451	-217.451
1790.000	29.833	217.451	-217.451
1800.000	30.000	217.448	-217.448
1810.000	30.167	217.455	-217.455
1820.000	30.333	217.458	-217.458
1830.000	30.500	217.461	-217.461
1840.000	30.667	217.464	-217.464
1850.000	30.833	217.464	-217.464
1860.000	31.000	217.470	-217.470
1870.000	31.167	217.470	-217.470
1880.000	31.333	217.473	-217.473
1890.000	31.500	217.477	-217.477
1900.000	31.667	217.473	-217.473
1910.000	31.833	217.473	-217.473
1920.000	32.000	217.473	-217.473
1930.000	32.167	217.480	-217.480
1940.000	32.333	217.489	-217.489
1950.000	32.500	217.486	-217.486
1960.000	32.667	217.486	-217.486
1970.000	32.833	217.486	-217.486
1980.000	33.000	217.483	-217.483

9413090.0792

1990.000	33.167	217.489	-217.489
2000.000	33.333	217.496	-217.496
2010.000	33.500	217.496	-217.496
2020.000	33.667	217.499	-217.499
2030.000	33.833	217.496	-217.496
2040.000	34.000	217.496	-217.496
2050.000	34.167	217.499	-217.499
2060.000	34.333	217.505	-217.505
2070.000	34.500	217.502	-217.502
2080.000	34.667	217.505	-217.505
2090.000	34.833	217.508	-217.508
2100.000	35.000	217.508	-217.508
2110.000	35.167	217.508	-217.508
2120.000	35.333	217.511	-217.511
2130.000	35.500	217.511	-217.511
2140.000	35.667	217.514	-217.514
2150.000	35.833	217.514	-217.514
2160.000	36.000	217.514	-217.514
2170.000	36.167	217.514	-217.514
2180.000	36.333	217.514	-217.514
2190.000	36.500	217.518	-217.518
2200.000	36.667	217.518	-217.518
2210.000	36.833	217.521	-217.521
2220.000	37.000	217.524	-217.524
2230.000	37.167	217.530	-217.530
2240.000	37.333	217.533	-217.533
2250.000	37.500	217.533	-217.533
2260.000	37.667	217.540	-217.540
2270.000	37.833	217.543	-217.543
2280.000	38.000	217.543	-217.543
2290.000	38.167	217.546	-217.546
2300.000	38.333	217.549	-217.549
2310.000	38.500	217.552	-217.552
2320.000	38.667	217.555	-217.555
2330.000	38.833	217.559	-217.559
2340.000	39.000	217.559	-217.559
2350.000	39.167	217.559	-217.559
2360.000	39.333	217.562	-217.562
2370.000	39.500	217.568	-217.568
2380.000	39.667	217.571	-217.571
2390.000	39.833	217.574	-217.574
2400.000	40.000	217.578	-217.578
2410.000	40.167	217.581	-217.581
2420.000	40.333	217.584	-217.584
2430.000	40.500	217.587	-217.587

9313090.0793

2440.000	40.667	217.593	-217.593
2450.000	40.833	217.593	-217.593
2460.000	41.000	217.596	-217.596
2470.000	41.167	217.603	-217.603
2480.000	41.333	217.606	-217.606
2490.000	41.500	217.612	-217.612
2500.000	41.667	217.615	-217.615
2510.000	41.833	217.619	-217.619
2520.000	42.000	217.625	-217.625
2530.000	42.167	217.628	-217.628
2540.000	42.333	217.634	-217.634
2550.000	42.500	217.637	-217.637
2560.000	42.667	217.641	-217.641
2570.000	42.833	217.647	-217.647
2580.000	43.000	217.653	-217.653
2590.000	43.167	217.656	-217.656

9413080.0294

BOREHOLE TEST INFORMATION

page 1 of 74

Borehole 299-W27-02 Borehole Diameter 10in. Hanford Coordinates N/A

Interval Tested 235.50-217.86 Depth Interval 235.50-217.86 Test Type: Instantaneous Slug

Borehole Depth: 235.50' BTOC Instruction Used: WHC-CM-7-7 (EII 10.1)

EQUIPMENT

NAME	DESCRIPTION
Electric Sounder	Solinst s/n: ET-5 Calibration due: 1-13-93
Data Logger	In-Situ Inc. s/n: 2K193
Pressure Transducer	In-Situ Inc. s/n: 262362 Calibration due: 2-21-93
Slugging Rod	Site Fabricated 48.0"Lx4.5"D 0.441 cu. ft.
Steel Measuring Tape	500' Graduated Steel Tape

MEASUREMENT DATUM

Control Datum: Top of Casing (TOC)10"

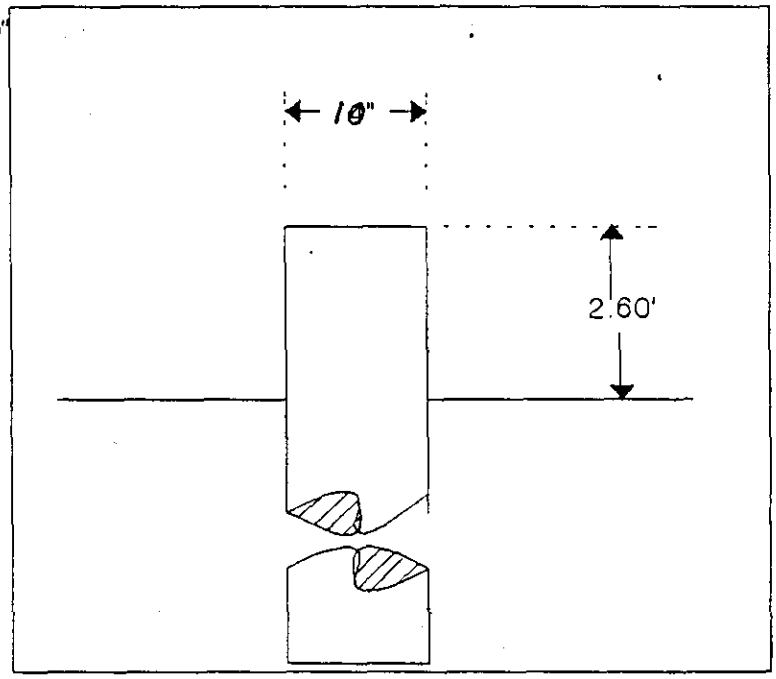
Elevation: N/A

Electric Sounder: TOC 10"

Steel Tape: TOC 10"

Pressure Transducer: TOC 10"

WELL HEAD DIAGRAM



COMMENTS

THIS IS NOT A COMPLETED WELL. DRILLING WAS STOPPED, A 20'TEMP. SCREEN INSTALLED (10 SLOT), AND THE CASING WAS PULLED BACK.

Recorded by: James A. Coates James A. Coates Date: 12-10-92

Sign and Print Name

A-6000-417 (08/89)

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION #1

page 2 of ~~80~~ 70

Borehole: 299-W27-02

Interval Tested: 235.50'-217.86' Btoc 10"

Depth To Water: 217.86' Btoc 10"

Depth to Transducer: 16.996' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1735 (11/4)	0800 (11/5)
Injection	0925	1001

Date: 11-5-92

Initial Pressure (Pi): 217.660

Slug Level/Pressure (Pmax) 216.483'

Borehole Diameter: 10"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-10-92

Sign and Print Name

BD-6000-293(07/90)

299-W27-2 SLUG INJECTION TEST #1

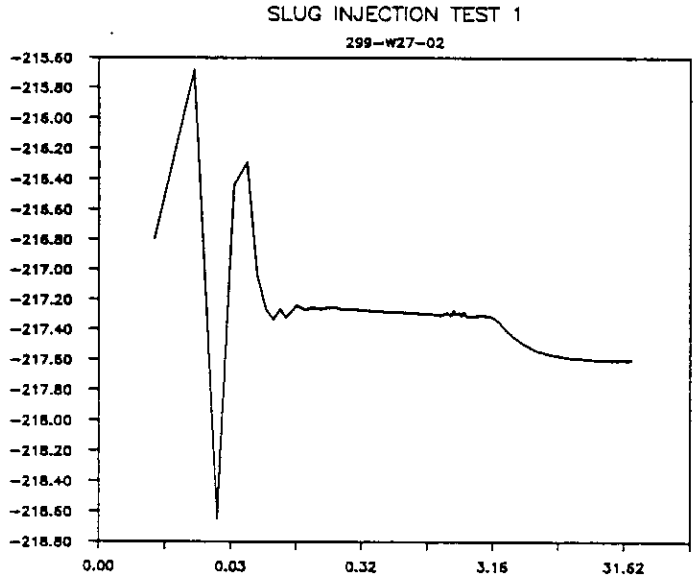
SE2000
Environ mental Logger
11/ 05 11:49

Unit# 19 3 Test 2

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/05 09:25:45



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft	
0.000	0.0000	217.527	-217.527	SLUG INJECTION TEST 1
0.008	0.0001	216.801	-216.801	WELL NO. 299-W27-2
0.017	0.0003	215.680	-215.680	
0.025	0.0004	218.651	-218.651	
0.033	0.0006	216.438	-216.438	
0.042	0.0007	216.289	-216.289	
0.050	0.0008	217.034	-217.034	
0.058	0.0010	217.265	-217.265	
0.067	0.0011	217.334	-217.334	
0.075	0.0013	217.262	-217.262	
0.083	0.0014	217.325	-217.325	
0.100	0.0017	217.240	-217.240	
0.117	0.0019	217.271	-217.271	
0.133	0.0022	217.252	-217.252	
0.150	0.0025	217.268	-217.268	
0.167	0.0028	217.259	-217.259	
0.183	0.0031	217.255	-217.255	
0.200	0.0033	217.252	-217.252	
0.217	0.0036	217.268	-217.268	
0.233	0.0039	217.268	-217.268	
0.250	0.0042	217.268	-217.268	
0.267	0.0044	217.268	-217.268	
0.283	0.0047	217.268	-217.268	
0.300	0.0050	217.271	-217.271	
0.317	0.0053	217.271	-217.271	

0.333	0.006	217.274	-217.274
0.417	0.007	217.277	-217.277
0.500	0.008	217.281	-217.281
0.583	0.010	217.281	-217.281
0.667	0.011	217.287	-217.287
0.750	0.013	217.290	-217.290
0.833	0.014	217.290	-217.290
0.917	0.015	217.293	-217.293
1.000	0.017	217.296	-217.296
1.083	0.018	217.300	-217.300
1.167	0.019	217.300	-217.300
1.250	0.021	217.306	-217.306
1.333	0.022	217.300	-217.300
1.417	0.024	217.281	-217.281
1.500	0.025	217.309	-217.309
1.583	0.026	217.271	-217.271
1.667	0.028	217.300	-217.300
1.750	0.029	217.287	-217.287
1.833	0.031	217.309	-217.309
1.917	0.032	217.284	-217.284
2.000	0.033	217.315	-217.315
2.500	0.042	217.306	-217.306
3.000	0.050	217.309	-217.309
3.500	0.058	217.347	-217.347
4.000	0.067	217.404	-217.404
4.500	0.075	217.445	-217.445
5.000	0.083	217.476	-217.476
5.500	0.092	217.498	-217.498
6.000	0.100	217.517	-217.517
6.500	0.108	217.530	-217.530
7.000	0.117	217.543	-217.543
7.500	0.125	217.549	-217.549
8.000	0.133	217.558	-217.558
8.500	0.142	217.562	-217.562
9.000	0.150	217.568	-217.568
9.500	0.158	217.571	-217.571
10.000	0.167	217.574	-217.574
11.000	0.183	217.581	-217.581
12.000	0.200	217.584	-217.584
13.000	0.217	217.587	-217.587
14.000	0.233	217.590	-217.590
15.000	0.250	217.590	-217.590
16.000	0.267	217.593	-217.593
17.000	0.283	217.596	-217.596
18.000	0.300	217.596	-217.596

9313090.0798

page 5 of 8074

19.000	0.317	217.600	-217.600
20.000	0.333	217.600	-217.600
21.000	0.350	217.603	-217.603
22.000	0.367	217.600	-217.600
23.000	0.383	217.603	-217.603
24.000	0.400	217.603	-217.603
25.000	0.417	217.603	-217.603
26.000	0.433	217.603	-217.603
27.000	0.450	217.603	-217.603
28.000	0.467	217.603	-217.603
29.000	0.483	217.603	-217.603
30.000	0.500	217.600	-217.600
31.000	0.517	217.600	-217.600
32.000	0.533	217.603	-217.603
33.000	0.550	217.603	-217.603
34.000	0.567	217.603	-217.603
35.000	0.583	217.600	-217.600
36.000	0.600	217.603	-217.603

9413090.0799

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL #1

page 6 of ~~80~~ 76

Borehole: 299-W27-02

Interval Tested: 235.50'-217.86' Btoc 10"

Depth To Water: 217.86' Btoc 10"

Depth to Transducer: 16.996' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1735 (11/4)	0800 (11/5)
Withdrawal	1003	1034

Date: 11-5-92

Initial Pressure (Pi): 217.660

Slug Level/Pressure (Pmax) 219.929'

Borehole Diameter: 10"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data			See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-10-92

Sign and Print Name

BD-6000-293(07/90)

299-W27-2 SLUG WITHDRAWAL TEST #1

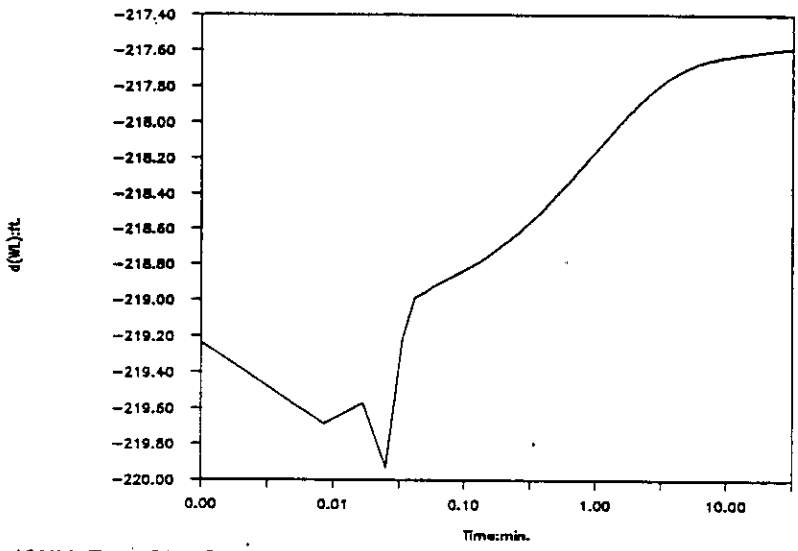
SE2000
Environ mental Logger
11/ 05 11:07

Unit# 19 3 Test 3

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/05 10:03:14



SLUG WITHDRAWAL TEST 1
WELL NO 299-W27-2

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.000	219.235	-219.235
0.008	0.0001	219.686	-219.686
0.017	0.0003	219.569	-219.569
0.025	0.0004	219.929	-219.929
0.033	0.0006	219.219	-219.219
0.042	0.0007	218.985	-218.985
0.050	0.0008	218.954	-218.954
0.058	0.0010	218.919	-218.919
0.067	0.0011	218.900	-218.900
0.075	0.0013	218.878	-218.878
0.083	0.0014	218.862	-218.862
0.100	0.0017	218.831	-218.831
0.117	0.0019	218.802	-218.802
0.133	0.0022	218.777	-218.777
0.150	0.0025	218.752	-218.752
0.167	0.0028	218.727	-218.727
0.183	0.0031	218.701	-218.701
0.200	0.0033	218.682	-218.682
0.217	0.0036	218.663	-218.663
0.233	0.0039	218.641	-218.641
0.250	0.0042	218.626	-218.626
0.267	0.0044	218.607	-218.607
0.283	0.0047	218.588	-218.588
0.300	0.0050	218.572	-218.572
0.317	0.0053	218.556	-218.556

0.333	0.006	218.540	-218.540
0.417	0.007	218.468	-218.468
0.500	0.008	218.408	-218.408
0.583	0.010	218.354	-218.354
0.667	0.011	218.307	-218.307
0.750	0.013	218.262	-218.262
0.833	0.014	218.225	-218.225
0.917	0.015	218.187	-218.187
1.000	0.017	218.158	-218.158
1.083	0.018	218.127	-218.127
1.167	0.019	218.101	-218.101
1.250	0.021	218.076	-218.076
1.333	0.022	218.051	-218.051
1.417	0.024	218.029	-218.029
1.500	0.025	218.010	-218.010
1.583	0.026	217.991	-217.991
1.667	0.028	217.975	-217.975
1.750	0.029	217.956	-217.956
1.833	0.031	217.940	-217.940
1.917	0.032	217.928	-217.928
2.000	0.033	217.915	-217.915
2.500	0.042	217.846	-217.846
3.000	0.050	217.798	-217.798
3.500	0.058	217.761	-217.761
4.000	0.067	217.735	-217.735
4.500	0.075	217.713	-217.713
5.000	0.083	217.697	-217.697
5.500	0.092	217.685	-217.685
6.000	0.100	217.672	-217.672
6.500	0.108	217.663	-217.663
7.000	0.117	217.656	-217.656
7.500	0.125	217.650	-217.650
8.000	0.133	217.647	-217.647
8.500	0.142	217.641	-217.641
9.000	0.150	217.637	-217.637
9.500	0.158	217.634	-217.634
10.000	0.167	217.631	-217.631
11.000	0.183	217.628	-217.628
12.000	0.200	217.622	-217.622
13.000	0.217	217.618	-217.618
14.000	0.233	217.618	-217.618
15.000	0.250	217.615	-217.615
16.000	0.267	217.612	-217.612
17.000	0.283	217.609	-217.609
18.000	0.300	217.606	-217.606

9313060168 2080.060

9.000	0.317	217.603	-217.603
20.000	0.333	217.600	-217.600
21.000	0.350	217.600	-217.600
22.000	0.367	217.596	-217.596
23.000	0.383	217.593	-217.593
24.000	0.400	217.593	-217.593
25.000	0.417	217.593	-217.593
26.000	0.433	217.590	-217.590
27.000	0.450	217.590	-217.590
28.000	0.467	217.590	-217.590
29.000	0.483	217.590	-217.590
30.000	0.500	217.587	-217.587
31.000	0.517	217.587	-217.587

9313090.0803

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION #2

page 10 of ~~80~~ 7

Borehole: 299-W27-02

Interval Tested: 235.50'-217.86' Btoc 10"

Depth To Water: 217.86' Btoc 10"

Depth to Transducer: 16.996' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	0839	0941
Injection	0946	1118

Date: 11-9-92

Initial Pressure (Pi): 217..600

Slug Level/Pressure (Pmax) 217.041'

Borehole Diameter: 10"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data						
					See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-10-92

Sign and Print Name

BD-6000-293(07/90)

9313090.0804

299-W27-2 BASELINE: SLUG INJECTION #2

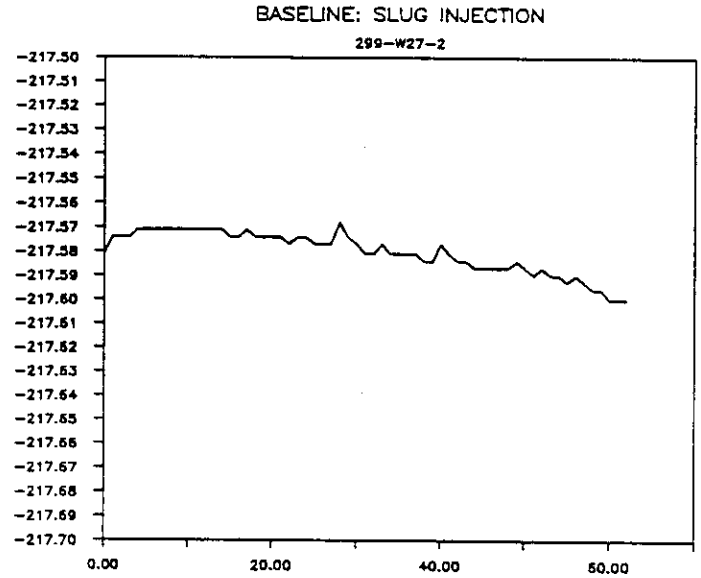
SE2000
Environ mental Logger
11/ 09 09:42

Unit# 19 3 Test 8

INPUT 1: Level (F) TOC

Reference	217.600
SG	1.000
Linearity	0.000
Scale fac tor	10.000
Offset	0.011
Delay mSE C	50.000

Step 0 1 1/09 08:39:26



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0	0.001	217.581	-217.581
1	0.017	217.574	-217.574
2	0.033	217.574	-217.574
3	0.050	217.574	-217.574
4	0.067	217.571	-217.571
5	0.083	217.571	-217.571
6	0.100	217.571	-217.571
7	0.117	217.571	-217.571
8	0.133	217.571	-217.571
9	0.150	217.571	-217.571
10	0.167	217.571	-217.571
11	0.183	217.571	-217.571
12	0.200	217.571	-217.571
13	0.217	217.571	-217.571
14	0.233	217.571	-217.571
15	0.250	217.574	-217.574
16	0.267	217.574	-217.574
17	0.283	217.571	-217.571
18	0.300	217.574	-217.574
19	0.317	217.574	-217.574
20	0.333	217.574	-217.574
21	0.350	217.574	-217.574
22	0.367	217.577	-217.577
23	0.383	217.574	-217.574
24	0.400	217.574	-217.574
25	0.417	217.577	-217.577
26	0.433	217.577	-217.577
27	0.450	217.577	-217.577

9313090.0805

28	0.467	217.568	-217.568
29	0.483	217.574	-217.574
30	0.500	217.577	-217.577
31	0.517	217.581	-217.581
32	0.533	217.581	-217.581
33	0.550	217.577	-217.577
34	0.567	217.581	-217.581
35	0.583	217.581	-217.581
36	0.600	217.581	-217.581
37	0.617	217.581	-217.581
38	0.633	217.584	-217.584
39	0.650	217.584	-217.584
40	0.667	217.577	-217.577
41	0.683	217.581	-217.581
42	0.700	217.584	-217.584
43	0.717	217.584	-217.584
44	0.733	217.587	-217.587
45	0.750	217.587	-217.587
46	0.767	217.587	-217.587
47	0.783	217.587	-217.587
48	0.800	217.587	-217.587
49	0.817	217.584	-217.584
50	0.833	217.587	-217.587
51	0.850	217.590	-217.590
52	0.867	217.587	-217.587
53	0.883	217.590	-217.590
54	0.900	217.590	-217.590
55	0.917	217.593	-217.593
56	0.933	217.590	-217.590
57	0.950	217.593	-217.593
58	0.967	217.596	-217.596
59	0.983	217.596	-217.596
60	1.000	217.600	-217.600
61	1.017	217.600	-217.600
62	1.033	217.600	-217.600

9413300.1005

299-W27-2 SLUG INJECTION TEST #2

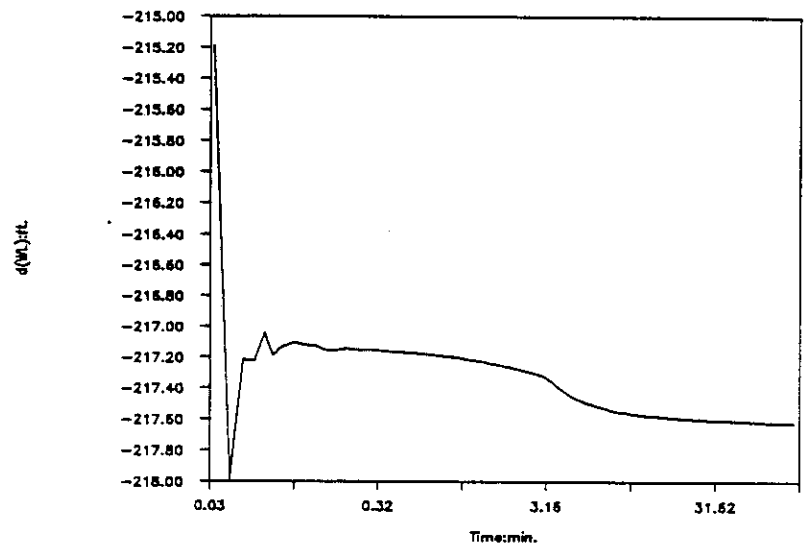
SE2000
Environ mental Logger
11/ 09 12:06

Unit# 19 3 Test 8

INPUT 1: Level (F) TOC

Reference	217.600
SG	1.000
Linearity	0.000
Scale fac tor	10.000
Offset	0.011
Delay mSE C	50.000

Step 0 1 1/09 09:46:15



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0	217.59	-217.59
0.0083	0.000138	216.807	-216.807
0.0166	0.000276	215.797	-215.797
0.025	0.000416	219.519	-219.519
0.0333	0.000555	215.191	-215.191
0.0416	0.000693	217.985	-217.985
0.05	0.000833	217.214	-217.214
0.0583	0.000971	217.224	-217.224
0.0666	0.00111	217.041	-217.041
0.075	0.00125	217.192	-217.192
0.0833	0.001388	217.135	-217.135
0.1	0.001666	217.104	-217.104
0.1166	0.001943	217.123	-217.123
0.1333	0.002221	217.126	-217.126
0.15	0.0025	217.151	-217.151
0.1666	0.002776	217.161	-217.161
0.1833	0.003055	217.154	-217.154
0.2	0.003333	217.145	-217.145
0.2166	0.00361	217.148	-217.148
0.2333	0.003888	217.151	-217.151
0.25	0.004166	217.151	-217.151
0.2666	0.004443	217.151	-217.151
0.2833	0.004721	217.154	-217.154
0.3	0.005	217.154	-217.154
0.3166	0.005276	217.158	-217.158
0.3333	0.005555	217.161	-217.161
0.4166	0.006943	217.167	-217.167
0.5	0.008333	217.173	-217.173

9313090.0807

page 14 of 8074

0.5833	0.009721	217.18	-217.18
0.6666	0.01111	217.186	-217.186
0.75	0.0125	217.192	-217.192
0.8333	0.013888	217.195	-217.195
0.9166	0.015276	217.202	-217.202
1	0.016666	217.208	-217.208
1.0833	0.018055	217.218	-217.218
1.1666	0.019443	217.221	-217.221
1.25	0.020833	217.224	-217.224
1.3333	0.022221	217.23	-217.23
1.4166	0.02361	217.236	-217.236
1.5	0.025	217.243	-217.243
1.5833	0.026388	217.246	-217.246
1.6666	0.027776	217.252	-217.252
1.75	0.029166	217.255	-217.255
1.8333	0.030555	217.262	-217.262
1.9166	0.031943	217.265	-217.265
2	0.033333	217.271	-217.271
2.5	0.041666	217.296	-217.296
3	0.05	217.322	-217.322
3.5	0.058333	217.372	-217.372
4	0.066666	217.416	-217.416
4.5	0.075	217.454	-217.454
5	0.083333	217.476	-217.476
5.5	0.091666	217.495	-217.495
6	0.1	217.508	-217.508
6.5	0.108333	217.521	-217.521
7	0.116666	217.53	-217.53
7.5	0.125	217.54	-217.54
8	0.133333	217.546	-217.546
8.5	0.141666	217.552	-217.552
9	0.15	217.555	-217.555
9.5	0.158333	217.558	-217.558
10	0.166666	217.562	-217.562
11	0.183333	217.568	-217.568
12	0.2	217.574	-217.574
13	0.216666	217.574	-217.574
14	0.233333	217.581	-217.581
15	0.25	217.581	-217.581
16	0.266666	217.584	-217.584
17	0.283333	217.587	-217.587
18	0.3	217.587	-217.587
19	0.316666	217.59	-217.59
20	0.333333	217.59	-217.59
21	0.35	217.593	-217.593
22	0.366666	217.593	-217.593
23	0.383333	217.596	-217.596
24	0.4	217.6	-217.6

9313090.0808

page 15 of 8074

25	0.416666	217.596	-217.596
26	0.433333	217.596	-217.596
27	0.45	217.6	-217.6
28	0.466666	217.603	-217.603
29	0.483333	217.603	-217.603
30	0.5	217.603	-217.603
31	0.516666	217.603	-217.603
32	0.533333	217.606	-217.606
33	0.55	217.606	-217.606
34	0.566666	217.606	-217.606
35	0.583333	217.603	-217.603
36	0.6	217.606	-217.606
37	0.616666	217.606	-217.606
38	0.633333	217.606	-217.606
39	0.65	217.609	-217.609
40	0.666666	217.609	-217.609
41	0.683333	217.609	-217.609
42	0.7	217.609	-217.609
43	0.716666	217.609	-217.609
44	0.733333	217.609	-217.609
45	0.75	217.609	-217.609
46	0.766666	217.612	-217.612
47	0.783333	217.612	-217.612
48	0.8	217.612	-217.612
49	0.816666	217.612	-217.612
50	0.833333	217.612	-217.612
51	0.85	217.612	-217.612
52	0.866666	217.615	-217.615
53	0.883333	217.612	-217.612
54	0.9	217.612	-217.612
55	0.916666	217.615	-217.615
56	0.933333	217.615	-217.615
57	0.95	217.615	-217.615
58	0.966666	217.615	-217.615
59	0.983333	217.615	-217.615
60	1	217.615	-217.615
61	1.016666	217.615	-217.615
62	1.033333	217.618	-217.618
63	1.05	217.618	-217.618
64	1.066666	217.618	-217.618
65	1.083333	217.618	-217.618
66	1.1	217.618	-217.618
67	1.116666	217.615	-217.615
68	1.133333	217.618	-217.618
69	1.15	217.618	-217.618
70	1.166666	217.618	-217.618
71	1.183333	217.618	-217.618
72	1.2	217.618	-217.618

73	1.216666	217.618	-217.618
74	1.233333	217.622	-217.622
75	1.25	217.622	-217.622
76	1.266666	217.618	-217.618
77	1.283333	217.618	-217.618
78	1.3	217.618	-217.618
79	1.316666	217.625	-217.625
80	1.333333	217.622	-217.622
81	1.35	217.618	-217.618
82	1.366666	217.618	-217.618
83	1.383333	217.618	-217.618
84	1.4	217.618	-217.618
85	1.416666	217.618	-217.618
86	1.433333	217.618	-217.618
87	1.45	217.618	-217.618
88	1.466666	217.618	-217.618
89	1.483333	217.618	-217.618
90	1.5	217.618	-217.618
91	1.516666	217.625	-217.625
92	1.533333	217.625	-217.625

9313090.0810

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL #2

page 17 of ~~80~~ 74

Borehole: 299-W27-02

Interval Tested: 235.50'-217.86' Btoc 10"

Depth To Water: 217.86' Btoc 10"

Depth to Transducer: 16.996' BWL

Measured by: James A. Coates

Slug Volume: 0.441 cu. ft.

Barometric Reading:
Beginning: N/A End: N/A

Time:	Start	End
Baseline	0839	0941
Wuthdrawal	1145	1215

Date: 11-9-92

Initial Pressure (Pi): 217..600

Slug Level/Pressure (Pmax) 219.907'

Borehole Diameter: 10"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement	Observed	Elapsed	Trans.Measurement
		See Attached Data						
					See Attached Data			

Recorded by: James A. Coates James A. Coates Date: 12-10-92
Sign and Print Name

BD-6000-293(07/90)

9313000.1811

299-W27-2 SLUG WITHDRAWAL TEST #2

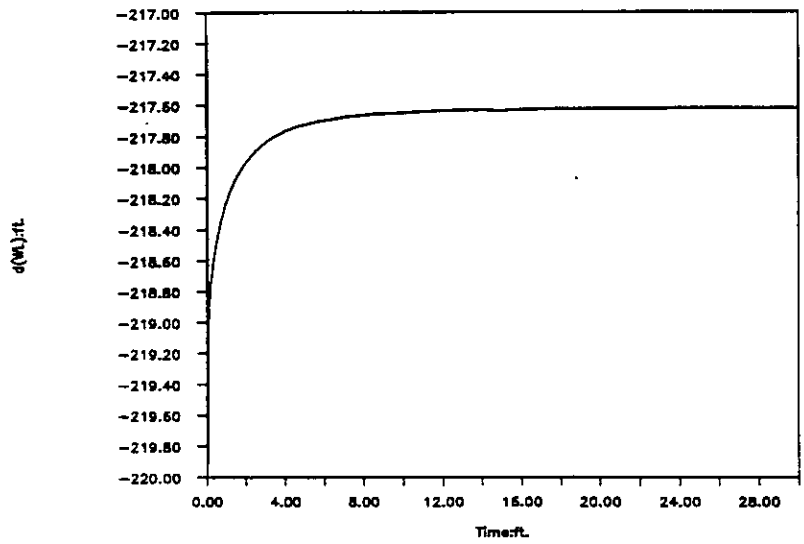
SE2000
Environ mental Logger
11/ 11 13:31

Unit# 19 3 Test 9

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/09 11:45:21



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.600	-217.600
0.008	0.0001	217.600	-217.600
0.017	0.0003	217.603	-217.603
0.025	0.0004	217.600	-217.600
0.033	0.0006	217.603	-217.603
0.042	0.0007	217.600	-217.600
0.050	0.0008	217.603	-217.603
0.058	0.0010	217.603	-217.603
0.067	0.0011	217.148	-217.148
0.075	0.0013	218.572	-218.572
0.083	0.0014	219.907	-219.907
0.100	0.0017	219.011	-219.011
0.117	0.0019	218.954	-218.954
0.133	0.0022	218.903	-218.903
0.150	0.0025	218.872	-218.872
0.167	0.0028	218.847	-218.847
0.183	0.0031	218.818	-218.818
0.200	0.0033	218.790	-218.790
0.217	0.0036	218.768	-218.768
0.233	0.0039	218.742	-218.742
0.250	0.0042	218.723	-218.723
0.267	0.0044	218.704	-218.704
0.283	0.0047	218.686	-218.686
0.300	0.0050	218.670	-218.670
0.317	0.0053	218.651	-218.651
0.333	0.006	218.635	-218.635
0.417	0.007	218.559	-218.559
0.500	0.008	218.496	-218.496

page 19 of 8074

0.583	0.010	218.439	-218.439
0.667	0.011	218.386	-218.386
0.750	0.013	218.341	-218.341
0.833	0.014	218.300	-218.300
0.917	0.015	218.262	-218.262
1.000	0.017	218.228	-218.228
1.083	0.018	218.196	-218.196
1.167	0.019	218.168	-218.168
1.250	0.021	218.139	-218.139
1.333	0.022	218.117	-218.117
1.417	0.024	218.092	-218.092
1.500	0.025	218.070	-218.070
1.583	0.026	218.051	-218.051
1.667	0.028	218.032	-218.032
1.750	0.029	218.013	-218.013
1.833	0.031	218.000	-218.000
1.917	0.032	217.982	-217.982
2.000	0.033	217.969	-217.969
2.500	0.042	217.890	-217.890
3.000	0.050	217.836	-217.836
3.500	0.058	217.795	-217.795
4.000	0.067	217.764	-217.764
4.500	0.075	217.738	-217.738
5.000	0.083	217.723	-217.723
5.500	0.092	217.707	-217.707
6.000	0.100	217.694	-217.694
6.500	0.108	217.685	-217.685
7.000	0.117	217.675	-217.675
7.500	0.125	217.669	-217.669
8.000	0.133	217.663	-217.663
8.500	0.142	217.656	-217.656
9.000	0.150	217.650	-217.650
9.500	0.158	217.650	-217.650
10.000	0.167	217.647	-217.647
11.000	0.183	217.641	-217.641
12.000	0.200	217.634	-217.634
13.000	0.217	217.631	-217.631
14.000	0.233	217.631	-217.631
15.000	0.250	217.634	-217.634
16.000	0.267	217.628	-217.628
17.000	0.283	217.628	-217.628
18.000	0.300	217.625	-217.625
19.000	0.317	217.625	-217.625
20.000	0.333	217.625	-217.625
21.000	0.350	217.625	-217.625
22.000	0.367	217.625	-217.625
23.000	0.383	217.625	-217.625
24.000	0.400	217.622	-217.622

9130050.0813

25.000	0.417	217.618	-217.618
26.000	0.433	217.618	-217.618
27.000	0.450	217.622	-217.622
28.000	0.467	217.618	-217.618
29.000	0.483	217.622	-217.622
30.000	0.500	217.622	-217.622

9313090.0814

PUMP INSTALLATION FORM and WELL DEVELOPMENT CHECKLIST

WELL DESIGNATION 299-W27-02 DEPTH 235.06'BTOC

PUMP INSTALLATION

Project: WO17 Date: 11-5-92

Pump Type: Grundfos

Pump Model No.: 1 HP 4"

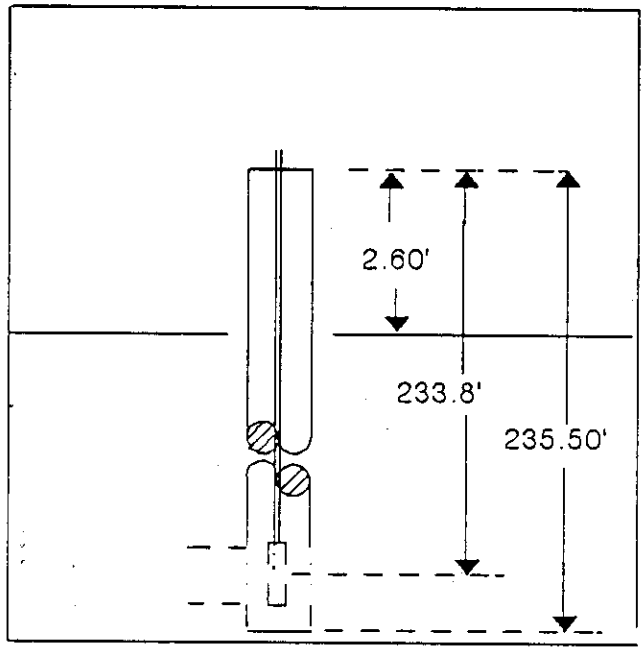
Installed By: D.Mingo (jdc)

Depth to Water: 217.86'Btoc

Reported Depth to Water:

Screened Interval: 235.50'-217.63

Depth to Bottom: 235.50



PUMP/RISER DISCRIPTION:

Pipe: 1 1/4"steel

Pump Length: 3.8'

Pump Screen Length: n/a

Total Material Length: 234.8'

Distance Pump Off Bottom: N/A

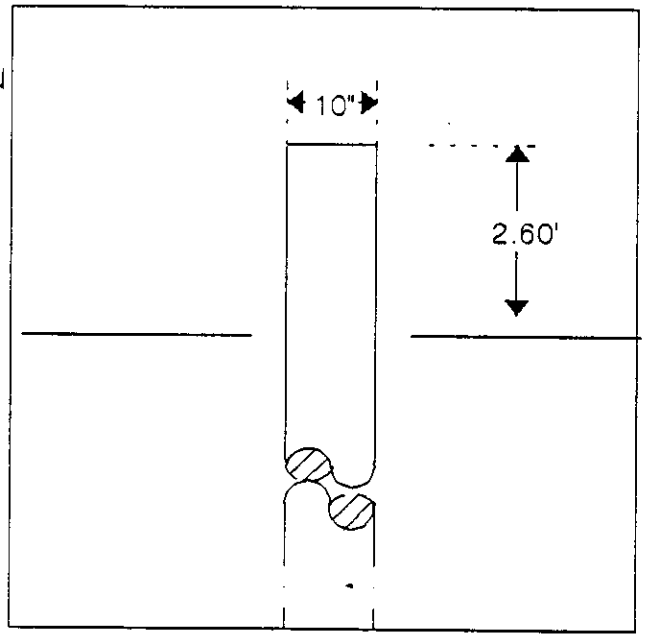
Pump Intake @: 233.8

Material Cleaning: Jenson Drilling Co.

PUMP TEST: N/A

COMMENTS:

THIS IS NOT A COMPLETE WELL.
DRILLING WAS STOP
CASING,20'TEMPORARY 10 SLOT SCREEN
INSTALLED AND CASING PULLED BACK



Pump Intake @: 233,8' BTOC

Transducer @: 16.966' BWL

Date: 11-5-92

Flow Rate (Q): 11.9-5.25 gpm

AQUIFER TEST INFORMATION

Slugging Rod Dim: 4.5"x4.0'=.442 cu.ft

Transducer @: 16.996'/L

Date: 11-5 & 11-9-92

EQUIPMENT INFORMATION:

Data logger: 2K193

E.Tape: ET-5 (1-13-93)

Transducer: 262362 (2-21-93)

Completed By: James A. Coates James A. Coates Date 12-10-92

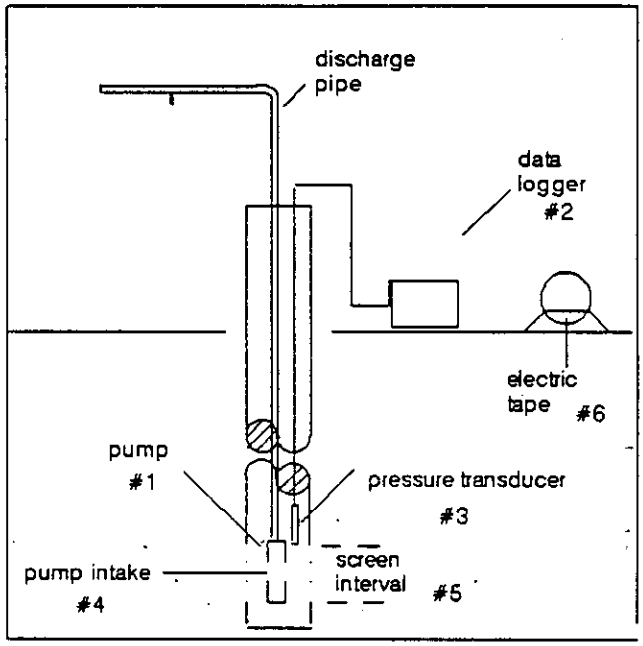
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 299-W27-02 DEPTH 235.50' Btoc 10"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	In-Situ datalogger 2K193
#3	In-Situ Inc s/n 262362 (cal. 2-21-93)
#4	@233.80' Btoc 10"
#5	235.50'-217.63' Btoc 10"
#6	Solinst s/n: ET-5 (cal. 1-13-93)
#7	
#8	
#9	
#10	

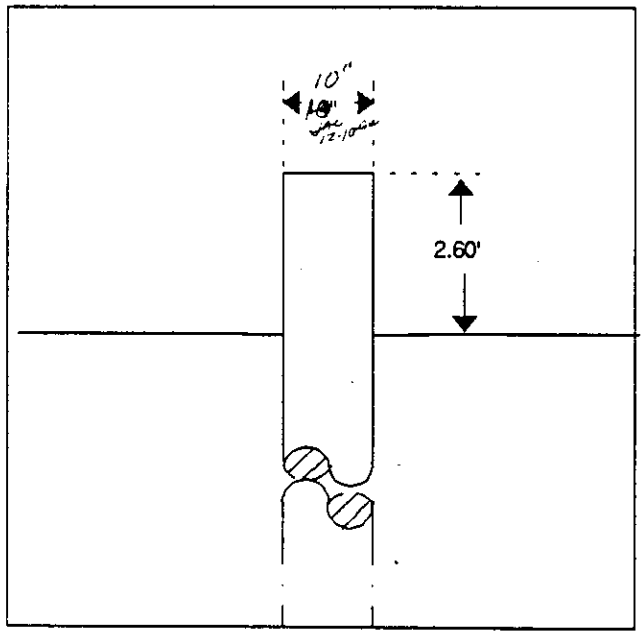
Diagram



Comments

N/A

Well Head Diagram



Signature of Recorder James A. Coates JAMES A. COATES Date 12-10-92

A-6000-417 (08/89)

STEP DRAWDOWN/RECOVERY

page 23 of ~~80~~ 79

Well Designation: 299-W27-02 Date: 11-5-92

Well Depth: 235.50' BTOC Screened Interval: 235.50'-217.63'BTOC

Pumping Method: Stepped Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/262362 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (10") Pump Start Time: 1225 Pump Stop Time: 1400

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
				Bucket Method: 5gal./54.56sec.
				= 5.50gal/min.
				Bucket Method: 5gal./25.13sec.
	See Attached Data			= 11.9gal/min.
			See Attached Data	

Recorded by: James A. Coates James A. Coates Date: ~~8-24-92~~ 12-10-92 12-10-92

Sign and Print Name

BD-6000-402(03/90)

p. 24 of 80 74

299-W27-2 BASELINE

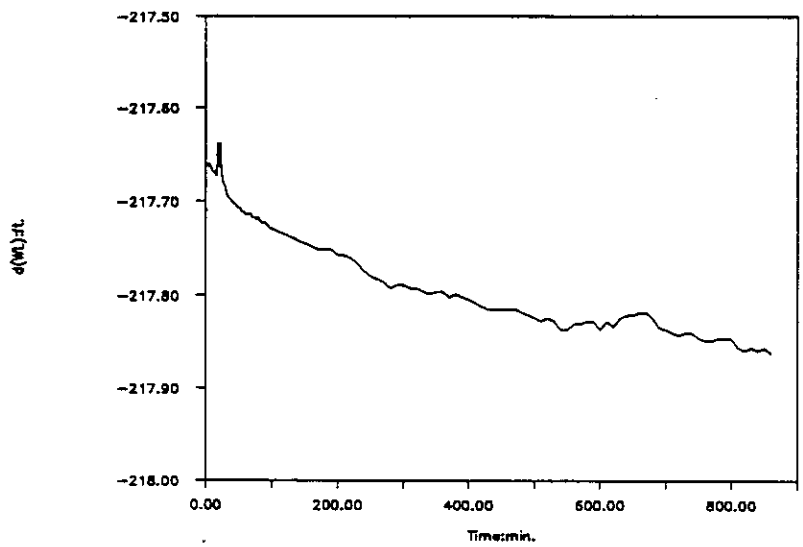
SE2000
Environ mental Logger
11/ 11 10:50

Unit# 19 3 Test 0

INPUT 1: Level (F) TOC

Reference 217.660
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.010
Delay mSE C 50.000

Step 0 1 1/04 17:34:52



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.660	-217.660
0.008	0.0001	217.660	-217.660
0.017	0.0003	217.660	-217.660
0.025	0.0004	217.660	-217.660
0.033	0.0006	217.660	-217.660
0.042	0.0007	217.660	-217.660
0.050	0.0008	217.660	-217.660
0.058	0.0010	217.663	-217.663
0.067	0.0011	217.660	-217.660
0.075	0.0013	217.663	-217.663
0.083	0.0014	217.663	-217.663
0.100	0.0017	217.660	-217.660
0.117	0.0019	217.660	-217.660
0.133	0.0022	217.660	-217.660
0.150	0.0025	217.660	-217.660
0.167	0.0028	217.660	-217.660
0.183	0.0031	217.660	-217.660
0.200	0.0033	217.660	-217.660
0.217	0.0036	217.660	-217.660
0.233	0.0039	217.660	-217.660
0.250	0.0042	217.663	-217.663
0.267	0.0044	217.663	-217.663
0.283	0.0047	217.660	-217.660
0.300	0.0050	217.660	-217.660
0.317	0.0053	217.660	-217.660

p. 25 of 8074

0.333	0.006	217.660	-217.660
0.417	0.007	217.660	-217.660
0.500	0.008	217.660	-217.660
0.583	0.010	217.660	-217.660
0.667	0.011	217.660	-217.660
0.750	0.013	217.660	-217.660
0.833	0.014	217.660	-217.660
0.917	0.015	217.660	-217.660
1.000	0.017	217.660	-217.660
1.083	0.018	217.660	-217.660
1.167	0.019	217.660	-217.660
1.250	0.021	217.660	-217.660
1.333	0.022	217.660	-217.660
1.417	0.024	217.660	-217.660
1.500	0.025	217.660	-217.660
1.583	0.026	217.660	-217.660
1.667	0.028	217.660	-217.660
1.750	0.029	217.660	-217.660
1.833	0.031	217.660	-217.660
1.917	0.032	217.660	-217.660
2.000	0.033	217.660	-217.660
2.500	0.042	217.660	-217.660
3.000	0.050	217.660	-217.660
3.500	0.058	217.660	-217.660
4.000	0.067	217.660	-217.660
4.500	0.075	217.660	-217.660
5.000	0.083	217.663	-217.663
5.500	0.092	217.660	-217.660
6.000	0.100	217.663	-217.663
6.500	0.108	217.663	-217.663
7.000	0.117	217.663	-217.663
7.500	0.125	217.663	-217.663
8.000	0.133	217.663	-217.663
8.500	0.142	217.663	-217.663
9.000	0.150	217.666	-217.666
9.500	0.158	217.666	-217.666
10.000	0.167	217.666	-217.666
12.000	0.200	217.669	-217.669
14.000	0.233	217.669	-217.669
16.000	0.267	217.673	-217.673
18.000	0.300	217.638	-217.638
20.000	0.333	217.663	-217.663
22.000	0.367	217.638	-217.638
24.000	0.400	217.669	-217.669
26.000	0.433	217.679	-217.679

9413090.0819

28.000	0.467	217.682	-217.682
30.000	0.500	217.685	-217.685
32.000	0.533	217.692	-217.692
34.000	0.567	217.695	-217.695
36.000	0.600	217.698	-217.698
38.000	0.633	217.698	-217.698
40.000	0.667	217.701	-217.701
42.000	0.700	217.701	-217.701
44.000	0.733	217.704	-217.704
46.000	0.767	217.704	-217.704
48.000	0.800	217.707	-217.707
50.000	0.833	217.707	-217.707
52.000	0.867	217.707	-217.707
54.000	0.900	217.711	-217.711
56.000	0.933	217.711	-217.711
58.000	0.967	217.711	-217.711
60.000	1.000	217.714	-217.714
62.000	1.033	217.714	-217.714
64.000	1.067	217.714	-217.714
66.000	1.100	217.714	-217.714
68.000	1.133	217.714	-217.714
70.000	1.167	217.717	-217.717
72.000	1.200	217.717	-217.717
74.000	1.233	217.717	-217.717
76.000	1.267	217.720	-217.720
78.000	1.300	217.717	-217.717
80.000	1.333	217.717	-217.717
82.000	1.367	217.720	-217.720
84.000	1.400	217.723	-217.723
86.000	1.433	217.723	-217.723
88.000	1.467	217.723	-217.723
90.000	1.500	217.723	-217.723
92.000	1.533	217.726	-217.726
94.000	1.567	217.726	-217.726
96.000	1.600	217.729	-217.729
98.000	1.633	217.729	-217.729
100.000	1.667	217.729	-217.729
110.000	1.833	217.733	-217.733
120.000	2.000	217.736	-217.736
130.000	2.167	217.739	-217.739
140.000	2.333	217.742	-217.742
150.000	2.500	217.745	-217.745
160.000	2.667	217.748	-217.748
170.000	2.833	217.752	-217.752
180.000	3.000	217.752	-217.752

9313090.0820

p. 27 of 8074

190.000	3.167	217.752	-217.752
200.000	3.333	217.758	-217.758
210.000	3.500	217.758	-217.758
220.000	3.667	217.761	-217.761
230.000	3.833	217.767	-217.767
240.000	4.000	217.774	-217.774
250.000	4.167	217.780	-217.780
260.000	4.333	217.783	-217.783
270.000	4.500	217.786	-217.786
280.000	4.667	217.793	-217.793
290.000	4.833	217.789	-217.789
300.000	5.000	217.789	-217.789
310.000	5.167	217.793	-217.793
320.000	5.333	217.793	-217.793
330.000	5.500	217.796	-217.796
340.000	5.667	217.799	-217.799
350.000	5.833	217.796	-217.796
360.000	6.000	217.796	-217.796
370.000	6.167	217.802	-217.802
380.000	6.333	217.799	-217.799
390.000	6.500	217.802	-217.802
400.000	6.667	217.805	-217.805
410.000	6.833	217.808	-217.808
420.000	7.000	217.812	-217.812
430.000	7.167	217.815	-217.815
440.000	7.333	217.815	-217.815
450.000	7.500	217.815	-217.815
460.000	7.667	217.815	-217.815
470.000	7.833	217.815	-217.815
480.000	8.000	217.818	-217.818
490.000	8.167	217.821	-217.821
500.000	8.333	217.824	-217.824
510.000	8.500	217.827	-217.827
520.000	8.667	217.824	-217.824
530.000	8.833	217.827	-217.827
540.000	9.000	217.837	-217.837
550.000	9.167	217.837	-217.837
560.000	9.333	217.830	-217.830
570.000	9.500	217.830	-217.830
580.000	9.667	217.827	-217.827
590.000	9.833	217.827	-217.827
600.000	10.000	217.837	-217.837
610.000	10.167	217.827	-217.827
620.000	10.333	217.834	-217.834
630.000	10.500	217.824	-217.824

9413000.0821

p. 28 of 8074

640.000	10.667	217.821	-217.821
650.000	10.833	217.821	-217.821
660.000	11.000	217.818	-217.818
670.000	11.167	217.818	-217.818
680.000	11.333	217.824	-217.824
690.000	11.500	217.834	-217.834
700.000	11.667	217.837	-217.837
710.000	11.833	217.840	-217.840
720.000	12.000	217.843	-217.843
730.000	12.167	217.840	-217.840
740.000	12.333	217.840	-217.840
750.000	12.500	217.846	-217.846
760.000	12.667	217.849	-217.849
770.000	12.833	217.849	-217.849
780.000	13.000	217.846	-217.846
790.000	13.167	217.846	-217.846
800.000	13.333	217.846	-217.846
810.000	13.500	217.856	-217.856
820.000	13.667	217.859	-217.859
830.000	13.833	217.856	-217.856
840.000	14.000	217.859	-217.859
850.000	14.167	217.856	-217.856
860.000	14.333	217.862	-217.862

9313090.0822

p. 29 of 8074

299-W27-2 STEP DRAWDOWN TEST Q= 5.5 &11.9 GPM

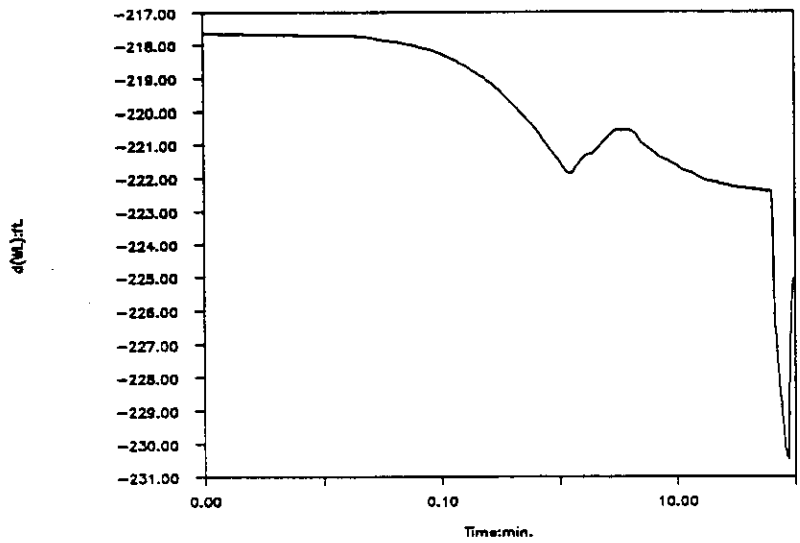
SE2000
Environ mental Logger
11/ 05 14:14

Unit# 19 3 Test 4

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/05 12:25:25



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.625	-217.625
0.008	0.0001	217.719	-217.719
0.017	0.0003	217.716	-217.716
0.025	0.0004	217.773	-217.773
0.033	0.0006	217.880	-217.880
0.042	0.0007	217.899	-217.899
0.050	0.0008	217.972	-217.972
0.058	0.0010	218.013	-218.013
0.067	0.0011	218.086	-218.086
0.075	0.0013	218.124	-218.124
0.083	0.0014	218.161	-218.161
0.100	0.0017	218.281	-218.281
0.117	0.0019	218.379	-218.379
0.133	0.0022	218.465	-218.465
0.150	0.0025	218.588	-218.588
0.167	0.0028	218.644	-218.644
0.183	0.0031	218.764	-218.764
0.200	0.0033	218.834	-218.834
0.217	0.0036	218.935	-218.935
0.233	0.0039	218.976	-218.976
0.250	0.0042	219.093	-219.093
0.267	0.0044	219.153	-219.153
0.283	0.0047	219.235	-219.235
0.300	0.0050	219.326	-219.326
0.317	0.0053	219.367	-219.367

STEP DRAWDOWN TEST
WELL 299-27-02

0.333	0.006	219.468	-219.468
0.417	0.007	219.822	-219.822
0.500	0.008	220.112	-220.112
0.583	0.010	220.375	-220.375
0.667	0.011	220.614	-220.614
0.750	0.013	220.873	-220.873
0.833	0.014	221.107	-221.107
0.917	0.015	221.303	-221.303
1.000	0.017	221.479	-221.479
1.083	0.018	221.678	-221.678
1.167	0.019	221.808	-221.808
1.250	0.021	221.880	-221.880
1.333	0.022	221.802	-221.802
1.417	0.024	221.647	-221.647
1.500	0.025	221.527	-221.527
1.583	0.026	221.423	-221.423
1.667	0.028	221.334	-221.334
1.750	0.029	221.281	-221.281
1.833	0.031	221.265	-221.265
1.917	0.032	221.259	-221.259
2.000	0.033	221.217	-221.217
2.500	0.042	220.842	-220.842
3.000	0.050	220.564	-220.564
3.500	0.058	220.554	-220.554
4.000	0.067	220.564	-220.564
4.500	0.075	220.674	-220.674
5.000	0.083	220.936	-220.936
5.500	0.092	221.038	-221.038
6.000	0.100	221.145	-221.145
6.500	0.108	221.227	-221.227
7.000	0.117	221.341	-221.341
7.500	0.125	221.394	-221.394
8.000	0.133	221.454	-221.454
8.500	0.142	221.483	-221.483
9.000	0.150	221.539	-221.539
9.500	0.158	221.590	-221.590
10.000	0.167	221.631	-221.631
11.000	0.183	221.738	-221.738
12.000	0.200	221.786	-221.786
13.000	0.217	221.833	-221.833
14.000	0.233	221.865	-221.865
15.000	0.250	221.934	-221.934
16.000	0.267	221.991	-221.991
17.000	0.283	222.023	-222.023
18.000	0.300	222.076	-222.076

9413090.0824

19.000	0.317	222.098	-222.098
20.000	0.333	222.108	-222.108
21.000	0.350	222.133	-222.133
22.000	0.367	222.130	-222.130
23.000	0.383	222.165	-222.165
24.000	0.400	222.196	-222.196
25.000	0.417	222.199	-222.199
26.000	0.433	222.206	-222.206
27.000	0.450	222.202	-222.202
28.000	0.467	222.231	-222.231
29.000	0.483	222.262	-222.262
30.000	0.500	222.278	-222.278
31.000	0.517	222.288	-222.288
32.000	0.533	222.278	-222.278
33.000	0.550	222.303	-222.303
34.000	0.567	222.285	-222.285
35.000	0.583	222.291	-222.291
36.000	0.600	222.319	-222.319
37.000	0.617	222.297	-222.297
38.000	0.633	222.303	-222.303
39.000	0.650	222.326	-222.326
40.000	0.667	222.329	-222.329
41.000	0.683	222.316	-222.316
42.000	0.700	222.326	-222.326
43.000	0.717	222.326	-222.326
44.000	0.733	222.322	-222.322
45.000	0.750	222.370	-222.370
46.000	0.767	222.338	-222.338
47.000	0.783	222.354	-222.354
48.000	0.800	222.363	-222.363
49.000	0.817	222.345	-222.345
50.000	0.833	222.370	-222.370
51.000	0.850	222.367	-222.367
52.000	0.867	222.354	-222.354
53.000	0.883	222.408	-222.408
54.000	0.900	222.395	-222.395
55.000	0.917	222.395	-222.395
56.000	0.933	222.401	-222.401
57.000	0.950	222.395	-222.395
58.000	0.967	222.430	-222.430
59.000	0.983	222.401	-222.401
60.000	1.000	222.395	-222.395
61.000	1.017	222.392	-222.392
62.000	1.033	222.405	-222.405
63.000	1.050	222.408	-222.408

9413080.0025

64.000	1.067	222.423	-222.423
65.000	1.083	223.478	-223.478
66.000	1.100	225.214	-225.214
67.000	1.117	225.969	-225.969
68.000	1.133	226.446	-226.446
69.000	1.150	226.843	-226.843
70.000	1.167	227.140	-227.140
71.000	1.183	227.462	-227.462
72.000	1.200	227.765	-227.765
73.000	1.217	228.011	-228.011
74.000	1.233	228.267	-228.267
75.000	1.250	228.542	-228.542
76.000	1.267	228.744	-228.744
77.000	1.283	228.981	-228.981
78.000	1.300	229.255	-229.255
79.000	1.317	229.479	-229.479
80.000	1.333	229.697	-229.697
81.000	1.350	229.887	-229.887
82.000	1.367	230.108	-230.108
83.000	1.383	230.269	-230.269
84.000	1.400	230.420	-230.420
85.000	1.417	230.240	-230.240
86.000	1.433	230.382	-230.382
87.000	1.450	230.471	-230.471
88.000	1.467	230.045	-230.045
89.000	1.483	228.646	-228.646
90.000	1.500	227.680	-227.680
91.000	1.517	226.976	-226.976
92.000	1.533	226.423	-226.423
93.000	1.550	225.909	-225.909
94.000	1.567	225.457	-225.457
95.000	1.583	225.072	-225.072

9313090.0826

299-W27-2 RECOVERY: STEP DRAWDOWN

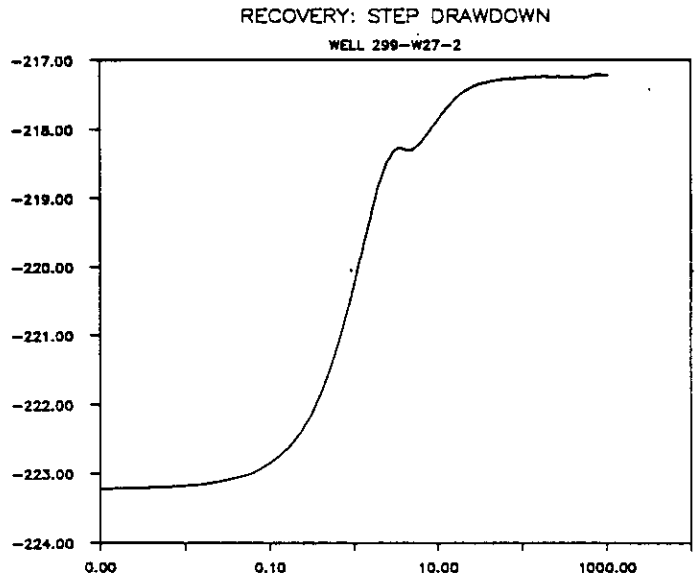
SE2000
Environ mental Logger
11/ 06 09:23

Unit# 19 3 Test 5

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/05 14:00:59



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	223.216	-223.216
0.008	0.0001	223.187	-223.187
0.017	0.0003	223.146	-223.146
0.025	0.0004	223.112	-223.112
0.033	0.0006	223.080	-223.080
0.042	0.0007	223.049	-223.049
0.050	0.0008	223.020	-223.020
0.058	0.0010	222.989	-222.989
0.067	0.0011	222.960	-222.960
0.075	0.0013	222.929	-222.929
0.083	0.0014	222.897	-222.897
0.100	0.0017	222.840	-222.840
0.117	0.0019	222.777	-222.777
0.133	0.0022	222.720	-222.720
0.150	0.0025	222.663	-222.663
0.167	0.0028	222.613	-222.613
0.183	0.0031	222.553	-222.553
0.200	0.0033	222.499	-222.499
0.217	0.0036	222.446	-222.446
0.233	0.0039	222.395	-222.395
0.250	0.0042	222.335	-222.335
0.267	0.0044	222.281	-222.281
0.283	0.0047	222.228	-222.228
0.300	0.0050	222.174	-222.174
0.317	0.0053	222.120	-222.120

RECOVERY / STEP DRAWDOWN 299-W27-2

0.333	0.006	222.070	-222.070
0.417	0.007	221.811	-221.811
0.500	0.008	221.552	-221.552
0.583	0.010	221.309	-221.309
0.667	0.011	221.075	-221.075
0.750	0.013	220.858	-220.858
0.833	0.014	220.652	-220.652
0.917	0.015	220.460	-220.460
1.000	0.017	220.277	-220.277
1.083	0.018	220.103	-220.103
1.167	0.019	219.945	-219.945
1.250	0.021	219.790	-219.790
1.333	0.022	219.652	-219.652
1.417	0.024	219.519	-219.519
1.500	0.025	219.393	-219.393
1.583	0.026	219.276	-219.276
1.667	0.028	219.169	-219.169
1.750	0.029	219.068	-219.068
1.833	0.031	218.973	-218.973
1.917	0.032	218.884	-218.884
2.000	0.033	218.802	-218.802
2.500	0.042	218.471	-218.471
3.000	0.050	218.310	-218.310
3.500	0.058	218.259	-218.259
4.000	0.067	218.281	-218.281
4.500	0.075	218.304	-218.304
5.000	0.083	218.291	-218.291
5.500	0.092	218.256	-218.256
6.000	0.100	218.215	-218.215
6.500	0.108	218.171	-218.171
7.000	0.117	218.120	-218.120
7.500	0.125	218.076	-218.076
8.000	0.133	218.032	-218.032
8.500	0.142	217.988	-217.988
9.000	0.150	217.947	-217.947
9.500	0.158	217.909	-217.909
10.000	0.167	217.871	-217.871
11.000	0.183	217.805	-217.805
12.000	0.200	217.748	-217.748
13.000	0.217	217.691	-217.691
14.000	0.233	217.650	-217.650
15.000	0.250	217.609	-217.609
16.000	0.267	217.574	-217.574
17.000	0.283	217.543	-217.543
18.000	0.300	217.517	-217.517

9413090.0828

9.000	0.317	217.489	-217.489
20.000	0.333	217.470	-217.470
21.000	0.350	217.451	-217.451
22.000	0.367	217.435	-217.435
23.000	0.383	217.420	-217.420
24.000	0.400	217.404	-217.404
25.000	0.417	217.394	-217.394
26.000	0.433	217.382	-217.382
27.000	0.450	217.372	-217.372
28.000	0.467	217.366	-217.366
29.000	0.483	217.356	-217.356
30.000	0.500	217.350	-217.350
31.000	0.517	217.347	-217.347
32.000	0.533	217.341	-217.341
33.000	0.550	217.337	-217.337
34.000	0.567	217.334	-217.334
35.000	0.583	217.331	-217.331
36.000	0.600	217.328	-217.328
37.000	0.617	217.325	-217.325
38.000	0.633	217.322	-217.322
39.000	0.650	217.319	-217.319
40.000	0.667	217.315	-217.315
41.000	0.683	217.312	-217.312
42.000	0.700	217.309	-217.309
43.000	0.717	217.306	-217.306
44.000	0.733	217.306	-217.306
45.000	0.750	217.303	-217.303
46.000	0.767	217.300	-217.300
47.000	0.783	217.296	-217.296
48.000	0.800	217.296	-217.296
49.000	0.817	217.293	-217.293
50.000	0.833	217.293	-217.293
51.000	0.850	217.290	-217.290
52.000	0.867	217.290	-217.290
53.000	0.883	217.287	-217.287
54.000	0.900	217.287	-217.287
55.000	0.917	217.284	-217.284
56.000	0.933	217.284	-217.284
57.000	0.950	217.284	-217.284
58.000	0.967	217.284	-217.284
59.000	0.983	217.284	-217.284
60.000	1.000	217.284	-217.284
61.000	1.017	217.281	-217.281
62.000	1.033	217.281	-217.281
63.000	1.050	217.277	-217.277

9413090.0029

64.000	1.067	217.277	-217.277
65.000	1.083	217.277	-217.277
66.000	1.100	217.274	-217.274
67.000	1.117	217.274	-217.274
68.000	1.133	217.274	-217.274
69.000	1.150	217.274	-217.274
70.000	1.167	217.274	-217.274
71.000	1.183	217.274	-217.274
72.000	1.200	217.271	-217.271
73.000	1.217	217.271	-217.271
74.000	1.233	217.271	-217.271
75.000	1.250	217.268	-217.268
76.000	1.267	217.268	-217.268
77.000	1.283	217.268	-217.268
78.000	1.300	217.268	-217.268
79.000	1.317	217.268	-217.268
80.000	1.333	217.268	-217.268
81.000	1.350	217.268	-217.268
82.000	1.367	217.268	-217.268
83.000	1.383	217.268	-217.268
84.000	1.400	217.268	-217.268
85.000	1.417	217.265	-217.265
86.000	1.433	217.265	-217.265
87.000	1.450	217.265	-217.265
88.000	1.467	217.265	-217.265
89.000	1.483	217.265	-217.265
90.000	1.500	217.265	-217.265
91.000	1.517	217.265	-217.265
92.000	1.533	217.265	-217.265
93.000	1.550	217.265	-217.265
94.000	1.567	217.262	-217.262
95.000	1.583	217.262	-217.262
96.000	1.600	217.262	-217.262
97.000	1.617	217.262	-217.262
98.000	1.633	217.262	-217.262
99.000	1.650	217.259	-217.259
100.000	1.667	217.259	-217.259
101.000	1.683	217.259	-217.259
102.000	1.700	217.259	-217.259
103.000	1.717	217.259	-217.259
104.000	1.733	217.259	-217.259
105.000	1.750	217.255	-217.255
106.000	1.767	217.255	-217.255
107.000	1.783	217.255	-217.255
108.000	1.800	217.255	-217.255

9413090.0830

p. 37 of 874

9.000	1.817	217.255	-217.255
110.000	1.833	217.255	-217.255
111.000	1.850	217.255	-217.255
112.000	1.867	217.255	-217.255
113.000	1.883	217.255	-217.255
114.000	1.900	217.255	-217.255
115.000	1.917	217.255	-217.255
116.000	1.933	217.255	-217.255
117.000	1.950	217.255	-217.255
118.000	1.967	217.255	-217.255
119.000	1.983	217.252	-217.252
120.000	2.000	217.255	-217.255
121.000	2.017	217.255	-217.255
122.000	2.033	217.255	-217.255
123.000	2.050	217.255	-217.255
124.000	2.067	217.252	-217.252
125.000	2.083	217.252	-217.252
126.000	2.100	217.252	-217.252
127.000	2.117	217.249	-217.249
128.000	2.133	217.249	-217.249
129.000	2.150	217.249	-217.249
130.000	2.167	217.249	-217.249
131.000	2.183	217.249	-217.249
2.000	2.200	217.249	-217.249
33.000	2.217	217.246	-217.246
134.000	2.233	217.246	-217.246
135.000	2.250	217.246	-217.246
136.000	2.267	217.246	-217.246
137.000	2.283	217.246	-217.246
138.000	2.300	217.243	-217.243
139.000	2.317	217.246	-217.246
140.000	2.333	217.243	-217.243
141.000	2.350	217.243	-217.243
142.000	2.367	217.243	-217.243
143.000	2.383	217.243	-217.243
144.000	2.400	217.243	-217.243
145.000	2.417	217.243	-217.243
146.000	2.433	217.243	-217.243
147.000	2.450	217.243	-217.243
148.000	2.467	217.243	-217.243
149.000	2.483	217.243	-217.243
150.000	2.500	217.243	-217.243
151.000	2.517	217.243	-217.243
152.000	2.533	217.243	-217.243
153.000	2.550	217.243	-217.243

9413090.0831

154.000	2.567	217.243	-217.243
155.000	2.583	217.243	-217.243
156.000	2.600	217.243	-217.243
157.000	2.617	217.243	-217.243
158.000	2.633	217.243	-217.243
159.000	2.650	217.240	-217.240
160.000	2.667	217.240	-217.240
161.000	2.683	217.240	-217.240
162.000	2.700	217.240	-217.240
163.000	2.717	217.240	-217.240
164.000	2.733	217.240	-217.240
165.000	2.750	217.240	-217.240
166.000	2.767	217.240	-217.240
167.000	2.783	217.240	-217.240
168.000	2.800	217.240	-217.240
169.000	2.817	217.240	-217.240
170.000	2.833	217.240	-217.240
171.000	2.850	217.240	-217.240
172.000	2.867	217.236	-217.236
173.000	2.883	217.240	-217.240
174.000	2.900	217.240	-217.240
175.000	2.917	217.240	-217.240
176.000	2.933	217.240	-217.240
177.000	2.950	217.240	-217.240
178.000	2.967	217.236	-217.236
179.000	2.983	217.236	-217.236
180.000	3.000	217.236	-217.236
181.000	3.017	217.236	-217.236
182.000	3.033	217.236	-217.236
183.000	3.050	217.236	-217.236
184.000	3.067	217.236	-217.236
185.000	3.083	217.236	-217.236
186.000	3.100	217.236	-217.236
187.000	3.117	217.236	-217.236
188.000	3.133	217.240	-217.240
189.000	3.150	217.240	-217.240
190.000	3.167	217.236	-217.236
191.000	3.183	217.236	-217.236
192.000	3.200	217.240	-217.240
193.000	3.217	217.240	-217.240
194.000	3.233	217.240	-217.240
195.000	3.250	217.240	-217.240
196.000	3.267	217.240	-217.240
197.000	3.283	217.240	-217.240
198.000	3.300	217.240	-217.240

9413090.0082

p. 39 of 8074

199.000	3.317	217.240	-217.240
200.000	3.333	217.240	-217.240
201.000	3.350	217.240	-217.240
202.000	3.367	217.240	-217.240
203.000	3.383	217.243	-217.243
204.000	3.400	217.243	-217.243
205.000	3.417	217.243	-217.243
206.000	3.433	217.246	-217.246
207.000	3.450	217.246	-217.246
208.000	3.467	217.246	-217.246
209.000	3.483	217.243	-217.243
210.000	3.500	217.243	-217.243
211.000	3.517	217.243	-217.243
212.000	3.533	217.243	-217.243
213.000	3.550	217.243	-217.243
214.000	3.567	217.243	-217.243
215.000	3.583	217.243	-217.243
216.000	3.600	217.243	-217.243
217.000	3.617	217.243	-217.243
218.000	3.633	217.246	-217.246
219.000	3.650	217.246	-217.246
220.000	3.667	217.243	-217.243
221.000	3.683	217.243	-217.243
222.000	3.700	217.246	-217.246
223.000	3.717	217.243	-217.243
224.000	3.733	217.246	-217.246
225.000	3.750	217.246	-217.246
226.000	3.767	217.243	-217.243
227.000	3.783	217.246	-217.246
228.000	3.800	217.246	-217.246
229.000	3.817	217.246	-217.246
230.000	3.833	217.246	-217.246
231.000	3.850	217.246	-217.246
232.000	3.867	217.246	-217.246
233.000	3.883	217.246	-217.246
234.000	3.900	217.246	-217.246
235.000	3.917	217.246	-217.246
236.000	3.933	217.246	-217.246
237.000	3.950	217.246	-217.246
238.000	3.967	217.246	-217.246
239.000	3.983	217.243	-217.243
240.000	4.000	217.243	-217.243
241.000	4.017	217.243	-217.243
242.000	4.033	217.243	-217.243
243.000	4.050	217.243	-217.243

p. 40 of 80 74

244.000	4.067	217.243	-217.243
245.000	4.083	217.243	-217.243
246.000	4.100	217.243	-217.243
247.000	4.117	217.243	-217.243
248.000	4.133	217.243	-217.243
249.000	4.150	217.243	-217.243
250.000	4.167	217.243	-217.243
251.000	4.183	217.243	-217.243
252.000	4.200	217.243	-217.243
253.000	4.217	217.240	-217.240
254.000	4.233	217.240	-217.240
255.000	4.250	217.240	-217.240
256.000	4.267	217.240	-217.240
257.000	4.283	217.240	-217.240
258.000	4.300	217.236	-217.236
259.000	4.317	217.236	-217.236
260.000	4.333	217.236	-217.236
261.000	4.350	217.236	-217.236
262.000	4.367	217.236	-217.236
263.000	4.383	217.236	-217.236
264.000	4.400	217.236	-217.236
265.000	4.417	217.236	-217.236
266.000	4.433	217.236	-217.236
267.000	4.450	217.236	-217.236
268.000	4.467	217.236	-217.236
269.000	4.483	217.240	-217.240
270.000	4.500	217.240	-217.240
271.000	4.517	217.236	-217.236
272.000	4.533	217.236	-217.236
273.000	4.550	217.236	-217.236
274.000	4.567	217.236	-217.236
275.000	4.583	217.240	-217.240
276.000	4.600	217.240	-217.240
277.000	4.617	217.240	-217.240
278.000	4.633	217.240	-217.240
279.000	4.650	217.240	-217.240
280.000	4.667	217.240	-217.240
281.000	4.683	217.240	-217.240
282.000	4.700	217.240	-217.240
283.000	4.717	217.243	-217.243
284.000	4.733	217.243	-217.243
285.000	4.750	217.243	-217.243
286.000	4.767	217.243	-217.243
287.000	4.783	217.243	-217.243
288.000	4.800	217.243	-217.243

9413090.0891

289.000	4.817	217.243	-217.243
290.000	4.833	217.243	-217.243
291.000	4.850	217.243	-217.243
292.000	4.867	217.243	-217.243
293.000	4.883	217.243	-217.243
294.000	4.900	217.240	-217.240
295.000	4.917	217.240	-217.240
296.000	4.933	217.243	-217.243
297.000	4.950	217.240	-217.240
298.000	4.967	217.243	-217.243
299.000	4.983	217.243	-217.243
300.000	5.000	217.243	-217.243
301.000	5.017	217.243	-217.243
302.000	5.033	217.243	-217.243
303.000	5.050	217.243	-217.243
304.000	5.067	217.246	-217.246
305.000	5.083	217.246	-217.246
306.000	5.100	217.246	-217.246
307.000	5.117	217.249	-217.249
308.000	5.133	217.249	-217.249
309.000	5.150	217.249	-217.249
310.000	5.167	217.249	-217.249
311.000	5.183	217.249	-217.249
312.000	5.200	217.249	-217.249
313.000	5.217	217.246	-217.246
314.000	5.233	217.249	-217.249
315.000	5.250	217.249	-217.249
316.000	5.267	217.246	-217.246
317.000	5.283	217.246	-217.246
318.000	5.300	217.246	-217.246
319.000	5.317	217.243	-217.243
320.000	5.333	217.246	-217.246
321.000	5.350	217.243	-217.243
322.000	5.367	217.243	-217.243
323.000	5.383	217.243	-217.243
324.000	5.400	217.240	-217.240
325.000	5.417	217.240	-217.240
326.000	5.433	217.240	-217.240
327.000	5.450	217.240	-217.240
328.000	5.467	217.240	-217.240
329.000	5.483	217.240	-217.240
330.000	5.500	217.240	-217.240
331.000	5.517	217.243	-217.243
332.000	5.533	217.243	-217.243
333.000	5.550	217.243	-217.243

9313050.0085

334.000	5.567	217.246	-217.246
335.000	5.583	217.246	-217.246
336.000	5.600	217.246	-217.246
337.000	5.617	217.246	-217.246
338.000	5.633	217.249	-217.249
339.000	5.650	217.246	-217.246
340.000	5.667	217.246	-217.246
341.000	5.683	217.249	-217.249
342.000	5.700	217.249	-217.249
343.000	5.717	217.249	-217.249
344.000	5.733	217.249	-217.249
345.000	5.750	217.249	-217.249
346.000	5.767	217.249	-217.249
347.000	5.783	217.249	-217.249
348.000	5.800	217.249	-217.249
349.000	5.817	217.249	-217.249
350.000	5.833	217.249	-217.249
351.000	5.850	217.249	-217.249
352.000	5.867	217.249	-217.249
353.000	5.883	217.249	-217.249
354.000	5.900	217.252	-217.252
355.000	5.917	217.252	-217.252
356.000	5.933	217.252	-217.252
357.000	5.950	217.252	-217.252
358.000	5.967	217.252	-217.252
359.000	5.983	217.252	-217.252
360.000	6.000	217.249	-217.249
361.000	6.017	217.249	-217.249
362.000	6.033	217.246	-217.246
363.000	6.050	217.246	-217.246
364.000	6.067	217.246	-217.246
365.000	6.083	217.246	-217.246
366.000	6.100	217.246	-217.246
367.000	6.117	217.246	-217.246
368.000	6.133	217.246	-217.246
369.000	6.150	217.246	-217.246
370.000	6.167	217.246	-217.246
371.000	6.183	217.243	-217.243
372.000	6.200	217.243	-217.243
373.000	6.217	217.243	-217.243
374.000	6.233	217.243	-217.243
375.000	6.250	217.243	-217.243
376.000	6.267	217.243	-217.243
377.000	6.283	217.240	-217.240
378.000	6.300	217.243	-217.243

9413090.0836

379.000	6.317	217.240	-217.240
380.000	6.333	217.243	-217.243
381.000	6.350	217.240	-217.240
382.000	6.367	217.243	-217.243
383.000	6.383	217.240	-217.240
384.000	6.400	217.240	-217.240
385.000	6.417	217.240	-217.240
386.000	6.433	217.236	-217.236
387.000	6.450	217.236	-217.236
388.000	6.467	217.236	-217.236
389.000	6.483	217.236	-217.236
390.000	6.500	217.236	-217.236
391.000	6.517	217.236	-217.236
392.000	6.533	217.236	-217.236
393.000	6.550	217.236	-217.236
394.000	6.567	217.240	-217.240
395.000	6.583	217.240	-217.240
396.000	6.600	217.240	-217.240
397.000	6.617	217.240	-217.240
398.000	6.633	217.240	-217.240
399.000	6.650	217.240	-217.240
400.000	6.667	217.240	-217.240
401.000	6.683	217.240	-217.240
402.000	6.700	217.240	-217.240
403.000	6.717	217.240	-217.240
404.000	6.733	217.240	-217.240
405.000	6.750	217.240	-217.240
406.000	6.767	217.236	-217.236
407.000	6.783	217.236	-217.236
408.000	6.800	217.236	-217.236
409.000	6.817	217.240	-217.240
410.000	6.833	217.240	-217.240
411.000	6.850	217.243	-217.243
412.000	6.867	217.243	-217.243
413.000	6.883	217.243	-217.243
414.000	6.900	217.243	-217.243
415.000	6.917	217.243	-217.243
416.000	6.933	217.243	-217.243
417.000	6.950	217.243	-217.243
418.000	6.967	217.243	-217.243
419.000	6.983	217.243	-217.243
420.000	7.000	217.243	-217.243
421.000	7.017	217.243	-217.243
422.000	7.033	217.243	-217.243
423.000	7.050	217.243	-217.243

9313090.0832

p. 44 of 807

424.000	7.067	217.243	-217.243
425.000	7.083	217.243	-217.243
426.000	7.100	217.243	-217.243
427.000	7.117	217.243	-217.243
428.000	7.133	217.243	-217.243
429.000	7.150	217.243	-217.243
430.000	7.167	217.243	-217.243
431.000	7.183	217.243	-217.243
432.000	7.200	217.243	-217.243
433.000	7.217	217.243	-217.243
434.000	7.233	217.243	-217.243
435.000	7.250	217.246	-217.246
436.000	7.267	217.246	-217.246
437.000	7.283	217.249	-217.249
438.000	7.300	217.249	-217.249
439.000	7.317	217.249	-217.249
440.000	7.333	217.249	-217.249
441.000	7.350	217.249	-217.249
442.000	7.367	217.249	-217.249
443.000	7.383	217.249	-217.249
444.000	7.400	217.246	-217.246
445.000	7.417	217.246	-217.246
446.000	7.433	217.246	-217.246
447.000	7.450	217.246	-217.246
448.000	7.467	217.246	-217.246
449.000	7.483	217.246	-217.246
450.000	7.500	217.246	-217.246
451.000	7.517	217.246	-217.246
452.000	7.533	217.246	-217.246
453.000	7.550	217.246	-217.246
454.000	7.567	217.246	-217.246
455.000	7.583	217.246	-217.246
456.000	7.600	217.243	-217.243
457.000	7.617	217.246	-217.246
458.000	7.633	217.246	-217.246
459.000	7.650	217.246	-217.246
460.000	7.667	217.246	-217.246
461.000	7.683	217.246	-217.246
462.000	7.700	217.246	-217.246
463.000	7.717	217.246	-217.246
464.000	7.733	217.249	-217.249
465.000	7.750	217.249	-217.249
466.000	7.767	217.249	-217.249
467.000	7.783	217.249	-217.249
468.000	7.800	217.249	-217.249

9313090.0038

469.000	7.817	217.249	-217.249
470.000	7.833	217.249	-217.249
471.000	7.850	217.249	-217.249
472.000	7.867	217.249	-217.249
473.000	7.883	217.249	-217.249
474.000	7.900	217.249	-217.249
475.000	7.917	217.249	-217.249
476.000	7.933	217.249	-217.249
477.000	7.950	217.249	-217.249
478.000	7.967	217.249	-217.249
479.000	7.983	217.249	-217.249
480.000	8.000	217.249	-217.249
481.000	8.017	217.249	-217.249
482.000	8.033	217.249	-217.249
483.000	8.050	217.249	-217.249
484.000	8.067	217.249	-217.249
485.000	8.083	217.249	-217.249
486.000	8.100	217.249	-217.249
487.000	8.117	217.249	-217.249
488.000	8.133	217.249	-217.249
489.000	8.150	217.249	-217.249
490.000	8.167	217.249	-217.249
491.000	8.183	217.249	-217.249
492.000	8.200	217.249	-217.249
493.000	8.217	217.249	-217.249
494.000	8.233	217.249	-217.249
495.000	8.250	217.249	-217.249
496.000	8.267	217.249	-217.249
497.000	8.283	217.249	-217.249
498.000	8.300	217.249	-217.249
499.000	8.317	217.249	-217.249
500.000	8.333	217.249	-217.249
501.000	8.350	217.249	-217.249
502.000	8.367	217.249	-217.249
503.000	8.383	217.249	-217.249
504.000	8.400	217.249	-217.249
505.000	8.417	217.252	-217.252
506.000	8.433	217.252	-217.252
507.000	8.450	217.252	-217.252
508.000	8.467	217.252	-217.252
509.000	8.483	217.252	-217.252
510.000	8.500	217.252	-217.252
511.000	8.517	217.252	-217.252
512.000	8.533	217.252	-217.252
513.000	8.550	217.252	-217.252

9300.0003163

p. 46 of 8074

514.000	8.567	217.252	-217.252
515.000	8.583	217.252	-217.252
516.000	8.600	217.255	-217.255
517.000	8.617	217.255	-217.255
518.000	8.633	217.252	-217.252
519.000	8.650	217.252	-217.252
520.000	8.667	217.252	-217.252
521.000	8.683	217.252	-217.252
522.000	8.700	217.255	-217.255
523.000	8.717	217.252	-217.252
524.000	8.733	217.255	-217.255
525.000	8.750	217.255	-217.255
526.000	8.767	217.255	-217.255
527.000	8.783	217.255	-217.255
528.000	8.800	217.255	-217.255
529.000	8.817	217.252	-217.252
530.000	8.833	217.252	-217.252
531.000	8.850	217.252	-217.252
532.000	8.867	217.252	-217.252
533.000	8.883	217.252	-217.252
534.000	8.900	217.252	-217.252
535.000	8.917	217.252	-217.252
536.000	8.933	217.252	-217.252
537.000	8.950	217.252	-217.252
538.000	8.967	217.252	-217.252
539.000	8.983	217.252	-217.252
540.000	9.000	217.252	-217.252
541.000	9.017	217.252	-217.252
542.000	9.033	217.255	-217.255
543.000	9.050	217.255	-217.255
544.000	9.067	217.255	-217.255
545.000	9.083	217.255	-217.255
546.000	9.100	217.255	-217.255
547.000	9.117	217.259	-217.259
548.000	9.133	217.259	-217.259
549.000	9.150	217.259	-217.259
550.000	9.167	217.259	-217.259
551.000	9.183	217.259	-217.259
552.000	9.200	217.259	-217.259
553.000	9.217	217.259	-217.259
554.000	9.233	217.255	-217.255
555.000	9.250	217.255	-217.255
556.000	9.267	217.255	-217.255
557.000	9.283	217.255	-217.255
558.000	9.300	217.259	-217.259

9313090.0840

p. 47 of 8074

559.000	9.317	217.259	-217.259
560.000	9.333	217.259	-217.259
561.000	9.350	217.259	-217.259
562.000	9.367	217.259	-217.259
563.000	9.383	217.259	-217.259
564.000	9.400	217.259	-217.259
565.000	9.417	217.259	-217.259
566.000	9.433	217.259	-217.259
567.000	9.450	217.255	-217.255
568.000	9.467	217.255	-217.255
569.000	9.483	217.255	-217.255
570.000	9.500	217.252	-217.252
571.000	9.517	217.252	-217.252
572.000	9.533	217.252	-217.252
573.000	9.550	217.252	-217.252
574.000	9.567	217.252	-217.252
575.000	9.583	217.252	-217.252
576.000	9.600	217.249	-217.249
577.000	9.617	217.249	-217.249
578.000	9.633	217.249	-217.249
579.000	9.650	217.249	-217.249
580.000	9.667	217.249	-217.249
581.000	9.683	217.246	-217.246
582.000	9.700	217.246	-217.246
583.000	9.717	217.246	-217.246
584.000	9.733	217.243	-217.243
585.000	9.750	217.243	-217.243
586.000	9.767	217.243	-217.243
587.000	9.783	217.243	-217.243
588.000	9.800	217.243	-217.243
589.000	9.817	217.246	-217.246
590.000	9.833	217.243	-217.243
591.000	9.850	217.243	-217.243
592.000	9.867	217.243	-217.243
593.000	9.883	217.240	-217.240
594.000	9.900	217.240	-217.240
595.000	9.917	217.240	-217.240
596.000	9.933	217.240	-217.240
597.000	9.950	217.240	-217.240
598.000	9.967	217.240	-217.240
599.000	9.983	217.240	-217.240
600.000	10.000	217.236	-217.236
601.000	10.017	217.236	-217.236
602.000	10.033	217.240	-217.240
603.000	10.050	217.236	-217.236

9413090.0841

p. 48 of 8074

604.000	10.067	217.240	-217.240
605.000	10.083	217.240	-217.240
606.000	10.100	217.240	-217.240
607.000	10.117	217.240	-217.240
608.000	10.133	217.240	-217.240
609.000	10.150	217.240	-217.240
610.000	10.167	217.240	-217.240
611.000	10.183	217.240	-217.240
612.000	10.200	217.240	-217.240
613.000	10.217	217.240	-217.240
614.000	10.233	217.240	-217.240
615.000	10.250	217.240	-217.240
616.000	10.267	217.236	-217.236
617.000	10.283	217.236	-217.236
618.000	10.300	217.236	-217.236
619.000	10.317	217.236	-217.236
620.000	10.333	217.236	-217.236
621.000	10.350	217.236	-217.236
622.000	10.367	217.240	-217.240
623.000	10.383	217.236	-217.236
624.000	10.400	217.236	-217.236
625.000	10.417	217.236	-217.236
626.000	10.433	217.236	-217.236
627.000	10.450	217.236	-217.236
628.000	10.467	217.233	-217.233
629.000	10.483	217.233	-217.233
630.000	10.500	217.233	-217.233
631.000	10.517	217.233	-217.233
632.000	10.533	217.233	-217.233
633.000	10.550	217.236	-217.236
634.000	10.567	217.233	-217.233
635.000	10.583	217.233	-217.233
636.000	10.600	217.233	-217.233
637.000	10.617	217.233	-217.233
638.000	10.633	217.233	-217.233
639.000	10.650	217.230	-217.230
640.000	10.667	217.233	-217.233
641.000	10.683	217.233	-217.233
642.000	10.700	217.233	-217.233
643.000	10.717	217.233	-217.233
644.000	10.733	217.233	-217.233
645.000	10.750	217.230	-217.230
646.000	10.767	217.230	-217.230
647.000	10.783	217.230	-217.230
648.000	10.800	217.230	-217.230

9313090.0842

p. 49 of 8074

649.000	10.817	217.233	-217.233
650.000	10.833	217.233	-217.233
651.000	10.850	217.233	-217.233
652.000	10.867	217.233	-217.233
653.000	10.883	217.233	-217.233
654.000	10.900	217.230	-217.230
655.000	10.917	217.230	-217.230
656.000	10.933	217.230	-217.230
657.000	10.950	217.230	-217.230
658.000	10.967	217.230	-217.230
659.000	10.983	217.230	-217.230
660.000	11.000	217.230	-217.230
661.000	11.017	217.230	-217.230
662.000	11.033	217.227	-217.227
663.000	11.050	217.227	-217.227
664.000	11.067	217.227	-217.227
665.000	11.083	217.227	-217.227
666.000	11.100	217.224	-217.224
667.000	11.117	217.224	-217.224
668.000	11.133	217.224	-217.224
669.000	11.150	217.224	-217.224
670.000	11.167	217.224	-217.224
671.000	11.183	217.227	-217.227
672.000	11.200	217.227	-217.227
673.000	11.217	217.227	-217.227
674.000	11.233	217.227	-217.227
675.000	11.250	217.227	-217.227
676.000	11.267	217.224	-217.224
677.000	11.283	217.224	-217.224
678.000	11.300	217.224	-217.224
679.000	11.317	217.224	-217.224
680.000	11.333	217.224	-217.224
681.000	11.350	217.224	-217.224
682.000	11.367	217.224	-217.224
683.000	11.383	217.227	-217.227
684.000	11.400	217.224	-217.224
685.000	11.417	217.224	-217.224
686.000	11.433	217.224	-217.224
687.000	11.450	217.224	-217.224
688.000	11.467	217.224	-217.224
689.000	11.483	217.224	-217.224
690.000	11.500	217.224	-217.224
691.000	11.517	217.224	-217.224
692.000	11.533	217.224	-217.224
693.000	11.550	217.227	-217.227

9413090.0043

p. 50 of 8074

694.000	11.567	217.227	-217.227
695.000	11.583	217.224	-217.224
696.000	11.600	217.227	-217.227
697.000	11.617	217.227	-217.227
698.000	11.633	217.227	-217.227
699.000	11.650	217.227	-217.227
700.000	11.667	217.227	-217.227
701.000	11.683	217.227	-217.227
702.000	11.700	217.224	-217.224
703.000	11.717	217.224	-217.224
704.000	11.733	217.224	-217.224
705.000	11.750	217.224	-217.224
706.000	11.767	217.224	-217.224
707.000	11.783	217.224	-217.224
708.000	11.800	217.224	-217.224
709.000	11.817	217.224	-217.224
710.000	11.833	217.224	-217.224
711.000	11.850	217.224	-217.224
712.000	11.867	217.224	-217.224
713.000	11.883	217.221	-217.221
714.000	11.900	217.221	-217.221
715.000	11.917	217.221	-217.221
716.000	11.933	217.221	-217.221
717.000	11.950	217.221	-217.221
718.000	11.967	217.218	-217.218
719.000	11.983	217.218	-217.218
720.000	12.000	217.218	-217.218
721.000	12.017	217.218	-217.218
722.000	12.033	217.218	-217.218
723.000	12.050	217.218	-217.218
724.000	12.067	217.221	-217.221
725.000	12.083	217.221	-217.221
726.000	12.100	217.221	-217.221
727.000	12.117	217.221	-217.221
728.000	12.133	217.221	-217.221
729.000	12.150	217.218	-217.218
730.000	12.167	217.218	-217.218
731.000	12.183	217.218	-217.218
732.000	12.200	217.218	-217.218
733.000	12.217	217.218	-217.218
734.000	12.233	217.218	-217.218
735.000	12.250	217.218	-217.218
736.000	12.267	217.214	-217.214
737.000	12.283	217.214	-217.214
738.000	12.300	217.214	-217.214

9313090.0844

p. 51 of 8079

739.000	12.317	217.214	-217.214
740.000	12.333	217.214	-217.214
741.000	12.350	217.211	-217.211
742.000	12.367	217.211	-217.211
743.000	12.383	217.211	-217.211
744.000	12.400	217.211	-217.211
745.000	12.417	217.211	-217.211
746.000	12.433	217.214	-217.214
747.000	12.450	217.214	-217.214
748.000	12.467	217.214	-217.214
749.000	12.483	217.214	-217.214
750.000	12.500	217.214	-217.214
751.000	12.517	217.214	-217.214
752.000	12.533	217.214	-217.214
753.000	12.550	217.214	-217.214
754.000	12.567	217.214	-217.214
755.000	12.583	217.214	-217.214
756.000	12.600	217.214	-217.214
757.000	12.617	217.214	-217.214
758.000	12.633	217.214	-217.214
759.000	12.650	217.214	-217.214
760.000	12.667	217.214	-217.214
761.000	12.683	217.214	-217.214
762.000	12.700	217.214	-217.214
763.000	12.717	217.214	-217.214
764.000	12.733	217.214	-217.214
765.000	12.750	217.214	-217.214
766.000	12.767	217.214	-217.214
767.000	12.783	217.214	-217.214
768.000	12.800	217.214	-217.214
769.000	12.817	217.214	-217.214
770.000	12.833	217.214	-217.214
771.000	12.850	217.214	-217.214
772.000	12.867	217.214	-217.214
773.000	12.883	217.214	-217.214
774.000	12.900	217.214	-217.214
775.000	12.917	217.214	-217.214
776.000	12.933	217.214	-217.214
777.000	12.950	217.214	-217.214
778.000	12.967	217.214	-217.214
779.000	12.983	217.214	-217.214
780.000	13.000	217.211	-217.211
781.000	13.017	217.211	-217.211
782.000	13.033	217.211	-217.211
783.000	13.050	217.214	-217.214

9313090.0845

p. 52 of 8074

784.000	13.067	217.214	-217.214
785.000	13.083	217.214	-217.214
786.000	13.100	217.211	-217.211
787.000	13.117	217.211	-217.211
788.000	13.133	217.211	-217.211
789.000	13.150	217.211	-217.211
790.000	13.167	217.211	-217.211
791.000	13.183	217.211	-217.211
792.000	13.200	217.211	-217.211
793.000	13.217	217.211	-217.211
794.000	13.233	217.211	-217.211
795.000	13.250	217.211	-217.211
796.000	13.267	217.211	-217.211
797.000	13.283	217.214	-217.214
798.000	13.300	217.214	-217.214
799.000	13.317	217.214	-217.214
800.000	13.333	217.214	-217.214
801.000	13.350	217.214	-217.214
802.000	13.367	217.214	-217.214
803.000	13.383	217.214	-217.214
804.000	13.400	217.218	-217.218
805.000	13.417	217.218	-217.218
806.000	13.433	217.214	-217.214
807.000	13.450	217.214	-217.214
808.000	13.467	217.214	-217.214
809.000	13.483	217.214	-217.214
810.000	13.500	217.214	-217.214
811.000	13.517	217.214	-217.214
812.000	13.533	217.211	-217.211
813.000	13.550	217.211	-217.211
814.000	13.567	217.211	-217.211
815.000	13.583	217.211	-217.211
816.000	13.600	217.211	-217.211
817.000	13.617	217.214	-217.214
818.000	13.633	217.214	-217.214
819.000	13.650	217.214	-217.214
820.000	13.667	217.214	-217.214
821.000	13.683	217.214	-217.214
822.000	13.700	217.214	-217.214
823.000	13.717	217.218	-217.218
824.000	13.733	217.218	-217.218
825.000	13.750	217.218	-217.218
826.000	13.767	217.218	-217.218
827.000	13.783	217.218	-217.218
828.000	13.800	217.218	-217.218

9313090.0846

829.000	13.817	217.214	-217.214
830.000	13.833	217.218	-217.218
831.000	13.850	217.218	-217.218
832.000	13.867	217.218	-217.218
833.000	13.883	217.218	-217.218
834.000	13.900	217.218	-217.218
835.000	13.917	217.218	-217.218
836.000	13.933	217.214	-217.214
837.000	13.950	217.214	-217.214
838.000	13.967	217.214	-217.214
839.000	13.983	217.214	-217.214
840.000	14.000	217.214	-217.214
841.000	14.017	217.214	-217.214
842.000	14.033	217.214	-217.214
843.000	14.050	217.214	-217.214
844.000	14.067	217.214	-217.214
845.000	14.083	217.214	-217.214
846.000	14.100	217.214	-217.214
847.000	14.117	217.218	-217.218
848.000	14.133	217.214	-217.214
849.000	14.150	217.214	-217.214
850.000	14.167	217.211	-217.211
851.000	14.183	217.211	-217.211
852.000	14.200	217.211	-217.211
853.000	14.217	217.211	-217.211
854.000	14.233	217.211	-217.211
855.000	14.250	217.211	-217.211
856.000	14.267	217.211	-217.211
857.000	14.283	217.211	-217.211
858.000	14.300	217.214	-217.214
859.000	14.317	217.214	-217.214
860.000	14.333	217.214	-217.214
861.000	14.350	217.214	-217.214
862.000	14.367	217.214	-217.214
863.000	14.383	217.214	-217.214
864.000	14.400	217.214	-217.214
865.000	14.417	217.214	-217.214
866.000	14.433	217.214	-217.214
867.000	14.450	217.214	-217.214
868.000	14.467	217.218	-217.218
869.000	14.483	217.218	-217.218
870.000	14.500	217.214	-217.214
871.000	14.517	217.214	-217.214
872.000	14.533	217.214	-217.214
873.000	14.550	217.218	-217.218

9313090.0697

p. 54 of 8074

874.000	14.567	217.218	-217.218
875.000	14.583	217.218	-217.218
876.000	14.600	217.218	-217.218
877.000	14.617	217.218	-217.218
878.000	14.633	217.214	-217.214
879.000	14.650	217.214	-217.214
880.000	14.667	217.214	-217.214
881.000	14.683	217.214	-217.214
882.000	14.700	217.218	-217.218
883.000	14.717	217.218	-217.218
884.000	14.733	217.218	-217.218
885.000	14.750	217.218	-217.218
886.000	14.767	217.218	-217.218
887.000	14.783	217.221	-217.221
888.000	14.800	217.221	-217.221
889.000	14.817	217.221	-217.221
890.000	14.833	217.221	-217.221
891.000	14.850	217.218	-217.218
892.000	14.867	217.218	-217.218
893.000	14.883	217.218	-217.218
894.000	14.900	217.218	-217.218
895.000	14.917	217.218	-217.218
896.000	14.933	217.218	-217.218
897.000	14.950	217.218	-217.218
898.000	14.967	217.218	-217.218
899.000	14.983	217.221	-217.221
900.000	15.000	217.221	-217.221
901.000	15.017	217.221	-217.221
902.000	15.033	217.221	-217.221
903.000	15.050	217.221	-217.221
904.000	15.067	217.218	-217.218
905.000	15.083	217.218	-217.218
906.000	15.100	217.218	-217.218
907.000	15.117	217.218	-217.218
908.000	15.133	217.218	-217.218
909.000	15.150	217.218	-217.218
910.000	15.167	217.218	-217.218
911.000	15.183	217.221	-217.221
912.000	15.200	217.221	-217.221
913.000	15.217	217.221	-217.221
914.000	15.233	217.221	-217.221
915.000	15.250	217.221	-217.221
916.000	15.267	217.221	-217.221
917.000	15.283	217.221	-217.221
918.000	15.300	217.221	-217.221

9313090.0848

p. 55 of 8074

919.000	15.317	217.221	-217.221
920.000	15.333	217.221	-217.221
921.000	15.350	217.221	-217.221
922.000	15.367	217.221	-217.221
923.000	15.383	217.221	-217.221
924.000	15.400	217.221	-217.221
925.000	15.417	217.221	-217.221
926.000	15.433	217.221	-217.221
927.000	15.450	217.218	-217.218
928.000	15.467	217.221	-217.221
929.000	15.483	217.221	-217.221
930.000	15.500	217.218	-217.218
931.000	15.517	217.218	-217.218
932.000	15.533	217.218	-217.218
933.000	15.550	217.221	-217.221
934.000	15.567	217.221	-217.221
935.000	15.583	217.221	-217.221
936.000	15.600	217.218	-217.218
937.000	15.617	217.218	-217.218
938.000	15.633	217.218	-217.218
939.000	15.650	217.218	-217.218
940.000	15.667	217.218	-217.218
941.000	15.683	217.218	-217.218
942.000	15.700	217.218	-217.218
943.000	15.717	217.221	-217.221
944.000	15.733	217.221	-217.221
945.000	15.750	217.221	-217.221
946.000	15.767	217.221	-217.221
947.000	15.783	217.221	-217.221
948.000	15.800	217.221	-217.221
949.000	15.817	217.218	-217.218
950.000	15.833	217.218	-217.218
951.000	15.850	217.218	-217.218
952.000	15.867	217.218	-217.218
953.000	15.883	217.221	-217.221
954.000	15.900	217.224	-217.224
955.000	15.917	217.224	-217.224
956.000	15.933	217.224	-217.224
957.000	15.950	217.224	-217.224
958.000	15.967	217.224	-217.224
959.000	15.983	217.221	-217.221
960.000	16.000	217.224	-217.224
961.000	16.017	217.224	-217.224
962.000	16.033	217.224	-217.224
963.000	16.050	217.224	-217.224

9413090.0809

p. 56 of 80

964.000	16.067	217.224	-217.224
965.000	16.083	217.224	-217.224
966.000	16.100	217.224	-217.224
967.000	16.117	217.224	-217.224
968.000	16.133	217.224	-217.224
969.000	16.150	217.224	-217.224
970.000	16.167	217.224	-217.224
971.000	16.183	217.224	-217.224
972.000	16.200	217.224	-217.224
973.000	16.217	217.224	-217.224
974.000	16.233	217.221	-217.221
975.000	16.250	217.221	-217.221
976.000	16.267	217.218	-217.218
977.000	16.283	217.218	-217.218
978.000	16.300	217.218	-217.218
979.000	16.317	217.221	-217.221
980.000	16.333	217.221	-217.221
981.000	16.350	217.221	-217.221
982.000	16.367	217.221	-217.221
983.000	16.383	217.221	-217.221
984.000	16.400	217.221	-217.221
985.000	16.417	217.224	-217.224
986.000	16.433	217.224	-217.224
987.000	16.450	217.224	-217.224
988.000	16.467	217.224	-217.224
989.000	16.483	217.224	-217.224
990.000	16.500	217.224	-217.224
991.000	16.517	217.221	-217.221
992.000	16.533	217.221	-217.221
993.000	16.550	217.221	-217.221
994.000	16.567	217.218	-217.218
995.000	16.583	217.218	-217.218
996.000	16.600	217.218	-217.218
997.000	16.617	217.218	-217.218
998.000	16.633	217.221	-217.221
999.000	16.650	217.221	-217.221
1000.000	16.667	217.221	-217.221
1001.000	16.683	217.218	-217.218
1002.000	16.700	217.221	-217.221
1003.000	16.717	217.221	-217.221
1004.000	16.733	217.221	-217.221
1005.000	16.750	217.221	-217.221
1006.000	16.767	217.221	-217.221
1007.000	16.783	217.221	-217.221
1008.000	16.800	217.224	-217.224

9413000.0850

p. 57 of 8074

009.000	16.817	217.224	-217.224
1010.000	16.833	217.224	-217.224
1011.000	16.850	217.224	-217.224
1012.000	16.867	217.224	-217.224
1013.000	16.883	217.227	-217.227
1014.000	16.900	217.224	-217.224
1015.000	16.917	217.224	-217.224
1016.000	16.933	217.224	-217.224
1017.000	16.950	217.224	-217.224
1018.000	16.967	217.224	-217.224
1019.000	16.983	217.224	-217.224
1020.000	17.000	217.221	-217.221
1021.000	17.017	217.221	-217.221
1022.000	17.033	217.221	-217.221
1023.000	17.050	217.218	-217.218
1024.000	17.067	217.218	-217.218
1025.000	17.083	217.218	-217.218
1026.000	17.100	217.218	-217.218
1027.000	17.117	217.218	-217.218
1028.000	17.133	217.218	-217.218
1029.000	17.150	217.218	-217.218
1030.000	17.167	217.218	-217.218
1031.000	17.183	217.221	-217.221
032.000	17.200	217.221	-217.221
1033.000	17.217	217.218	-217.218
1034.000	17.233	217.218	-217.218
1035.000	17.250	217.218	-217.218
1036.000	17.267	217.218	-217.218
1037.000	17.283	217.218	-217.218
1038.000	17.300	217.221	-217.221
1039.000	17.317	217.221	-217.221
1040.000	17.333	217.221	-217.221
1041.000	17.350	217.224	-217.224
1042.000	17.367	217.224	-217.224
1043.000	17.383	217.224	-217.224

9313090.0851

DRAWDOWN/RECOVERY

Well Designation: 299-W27-02 Date: 11-6-92

Well Depth: 235.50' BTOC Screened Interval: 235.50'-217.63'BTOC

Pumping Method: Constant Discharge

Equipment Used to Measure Water Level: E.Tape/Transducer S.N. ET-5/262362 Calibration Due: 1-13-93 /2-21-93

Equipment Used to Measure Flow: N.A. S.N.: N.A. Calibration Due: N.A.

Measuring Point: Top of Casing (10") Pump Start Time: 0730 (11/6) Pump Stop Time: 1230 (11/7)

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Units:
				Bucket Method: 5gal./57.03sec.
				= 5.25gal/min.
				Rotameter @ 5.25gpm
	See Attached Data			(see field activity report #'s 18 &19)
			See Attached Data	

Recorded by: James A. Coates James A. Coates Date: 12-10-92

Sign and Print Name

BD-6000-402(03/90)

9213090.0852

p. 59 of 8074

299-W27-2 RECOVERY: CONSTANT DISCHARGE PUMP TEST

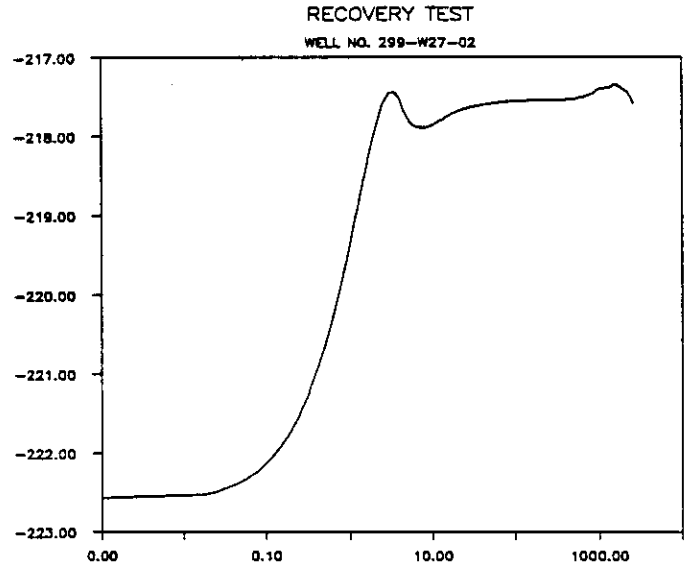
SE2000
Environ mental Logger
11/ 09 07:38

Unit# 19 3 Test 7

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/07 12:30:40



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft	
0.001	0.0000	222.566	-222.566	
0.008	0.0001	222.537	-222.537	RECOVERY TEST
0.017	0.0003	222.528	-222.528	297
0.025	0.0004	222.493	-222.493	
0.033	0.0006	222.442	-222.442	
0.042	0.0007	222.401	-222.401	
0.050	0.0008	222.363	-222.363	
0.058	0.0010	222.322	-222.322	
0.067	0.0011	222.281	-222.281	
0.075	0.0013	222.247	-222.247	
0.083	0.0014	222.202	-222.202	
0.100	0.0017	222.127	-222.127	
0.117	0.0019	222.054	-222.054	
0.133	0.0022	221.978	-221.978	
0.150	0.0025	221.906	-221.906	
0.167	0.0028	221.836	-221.836	
0.183	0.0031	221.767	-221.767	
0.200	0.0033	221.694	-221.694	
0.217	0.0036	221.637	-221.637	
0.233	0.0039	221.565	-221.565	
0.250	0.0042	221.498	-221.498	
0.267	0.0044	221.435	-221.435	
0.283	0.0047	221.372	-221.372	
0.300	0.0050	221.309	-221.309	
0.317	0.0053	221.246	-221.246	
0.333	0.006	221.186	-221.186	
0.417	0.007	220.905	-220.905	
0.500	0.008	220.652	-220.652	

0.583	0.010	220.406	-220.406
0.667	0.011	220.169	-220.169
0.750	0.013	219.951	-219.951
0.833	0.014	219.743	-219.743
0.917	0.015	219.547	-219.547
1.000	0.017	219.367	-219.367
1.083	0.018	219.200	-219.200
1.167	0.019	219.042	-219.042
1.250	0.021	218.897	-218.897
1.333	0.022	218.758	-218.758
1.417	0.024	218.632	-218.632
1.500	0.025	218.512	-218.512
1.583	0.026	218.401	-218.401
1.667	0.028	218.297	-218.297
1.750	0.029	218.202	-218.202
1.833	0.031	218.111	-218.111
1.917	0.032	218.029	-218.029
2.000	0.033	217.953	-217.953
2.500	0.042	217.603	-217.603
3.000	0.050	217.451	-217.451
3.500	0.058	217.448	-217.448
4.000	0.067	217.524	-217.524
4.500	0.075	217.659	-217.659
5.000	0.083	217.767	-217.767
5.500	0.092	217.833	-217.833
6.000	0.100	217.868	-217.868
6.500	0.108	217.887	-217.887
7.000	0.117	217.896	-217.896
7.500	0.125	217.896	-217.896
8.000	0.133	217.896	-217.896
8.500	0.142	217.890	-217.890
9.000	0.150	217.880	-217.880
9.500	0.158	217.868	-217.868
10.000	0.167	217.858	-217.858
12.000	0.200	217.814	-217.814
14.000	0.233	217.770	-217.770
16.000	0.267	217.735	-217.735
18.000	0.300	217.710	-217.710
20.000	0.333	217.682	-217.682
22.000	0.367	217.669	-217.669
24.000	0.400	217.653	-217.653
26.000	0.433	217.647	-217.647
28.000	0.467	217.634	-217.634
30.000	0.500	217.631	-217.631
32.000	0.533	217.622	-217.622
34.000	0.567	217.618	-217.618
36.000	0.600	217.612	-217.612
38.000	0.633	217.609	-217.609

9413090.0854

9313090.0855

40.000	0.667	217.603	-217.603
42.000	0.700	217.600	-217.600
44.000	0.733	217.593	-217.593
46.000	0.767	217.596	-217.596
48.000	0.800	217.590	-217.590
50.000	0.833	217.587	-217.587
52.000	0.867	217.584	-217.584
54.000	0.900	217.584	-217.584
56.000	0.933	217.581	-217.581
58.000	0.967	217.577	-217.577
60.000	1.000	217.577	-217.577
62.000	1.033	217.574	-217.574
64.000	1.067	217.574	-217.574
66.000	1.100	217.571	-217.571
68.000	1.133	217.571	-217.571
70.000	1.167	217.571	-217.571
72.000	1.200	217.568	-217.568
74.000	1.233	217.565	-217.565
76.000	1.267	217.565	-217.565
78.000	1.300	217.565	-217.565
80.000	1.333	217.562	-217.562
82.000	1.367	217.562	-217.562
84.000	1.400	217.565	-217.565
86.000	1.433	217.565	-217.565
88.000	1.467	217.565	-217.565
90.000	1.500	217.565	-217.565
92.000	1.533	217.562	-217.562
94.000	1.567	217.562	-217.562
96.000	1.600	217.562	-217.562
98.000	1.633	217.558	-217.558
100.000	1.667	217.558	-217.558
110.000	1.833	217.555	-217.555
120.000	2.000	217.555	-217.555
130.000	2.167	217.552	-217.552
140.000	2.333	217.552	-217.552
150.000	2.500	217.549	-217.549
160.000	2.667	217.546	-217.546
170.000	2.833	217.546	-217.546
180.000	3.000	217.546	-217.546
190.000	3.167	217.546	-217.546
200.000	3.333	217.546	-217.546
210.000	3.500	217.546	-217.546
220.000	3.667	217.543	-217.543
230.000	3.833	217.546	-217.546
240.000	4.000	217.546	-217.546
250.000	4.167	217.546	-217.546
260.000	4.333	217.549	-217.549
270.000	4.500	217.546	-217.546

280.000	4.667	217.546	-217.546
290.000	4.833	217.549	-217.549
300.000	5.000	217.549	-217.549
310.000	5.167	217.549	-217.549
320.000	5.333	217.549	-217.549
330.000	5.500	217.549	-217.549
340.000	5.667	217.549	-217.549
350.000	5.833	217.555	-217.555
360.000	6.000	217.555	-217.555
370.000	6.167	217.555	-217.555
380.000	6.333	217.546	-217.546
390.000	6.500	217.543	-217.543
400.000	6.667	217.540	-217.540
410.000	6.833	217.536	-217.536
420.000	7.000	217.533	-217.533
430.000	7.167	217.536	-217.536
440.000	7.333	217.536	-217.536
450.000	7.500	217.536	-217.536
460.000	7.667	217.536	-217.536
470.000	7.833	217.533	-217.533
480.000	8.000	217.533	-217.533
490.000	8.167	217.540	-217.540
500.000	8.333	217.533	-217.533
510.000	8.500	217.533	-217.533
520.000	8.667	217.533	-217.533
530.000	8.833	217.527	-217.527
540.000	9.000	217.527	-217.527
550.000	9.167	217.527	-217.527
560.000	9.333	217.524	-217.524
570.000	9.500	217.514	-217.514
580.000	9.667	217.511	-217.511
590.000	9.833	217.508	-217.508
600.000	10.000	217.508	-217.508
610.000	10.167	217.508	-217.508
620.000	10.333	217.508	-217.508
630.000	10.500	217.498	-217.498
640.000	10.667	217.502	-217.502
650.000	10.833	217.502	-217.502
660.000	11.000	217.505	-217.505
670.000	11.167	217.505	-217.505
680.000	11.333	217.502	-217.502
690.000	11.500	217.502	-217.502
700.000	11.667	217.495	-217.495
710.000	11.833	217.489	-217.489
720.000	12.000	217.486	-217.486
730.000	12.167	217.483	-217.483
740.000	12.333	217.483	-217.483
750.000	12.500	217.483	-217.483

9413090.0856

760.000	12.667	217.476	-217.476
770.000	12.833	217.476	-217.476
780.000	13.000	217.470	-217.470
790.000	13.167	217.470	-217.470
800.000	13.333	217.467	-217.467
810.000	13.500	217.470	-217.470
820.000	13.667	217.467	-217.467
830.000	13.833	217.467	-217.467
840.000	14.000	217.464	-217.464
850.000	14.167	217.464	-217.464
860.000	14.333	217.461	-217.461
870.000	14.500	217.454	-217.454
880.000	14.667	217.451	-217.451
890.000	14.833	217.445	-217.445
900.000	15.000	217.445	-217.445
910.000	15.167	217.442	-217.442
920.000	15.333	217.432	-217.432
930.000	15.500	217.429	-217.429
940.000	15.667	217.423	-217.423
950.000	15.833	217.420	-217.420
960.000	16.000	217.420	-217.420
970.000	16.167	217.420	-217.420
980.000	16.333	217.413	-217.413
990.000	16.500	217.410	-217.410
1000.000	16.667	217.407	-217.407
1010.000	16.833	217.404	-217.404
1020.000	17.000	217.401	-217.401
1030.000	17.167	217.401	-217.401
1040.000	17.333	217.401	-217.401
1050.000	17.500	217.397	-217.397
1060.000	17.667	217.397	-217.397
1070.000	17.833	217.401	-217.401
1080.000	18.000	217.401	-217.401
1090.000	18.167	217.401	-217.401
1100.000	18.333	217.404	-217.404
1110.000	18.500	217.404	-217.404
1120.000	18.667	217.401	-217.401
1130.000	18.833	217.404	-217.404
1140.000	19.000	217.397	-217.397
1150.000	19.167	217.397	-217.397
1160.000	19.333	217.401	-217.401
1170.000	19.500	217.401	-217.401
1180.000	19.667	217.394	-217.394
1190.000	19.833	217.394	-217.394
1200.000	20.000	217.391	-217.391
1210.000	20.167	217.385	-217.385
1220.000	20.333	217.385	-217.385
1230.000	20.500	217.385	-217.385

9413090.0957

p. 64 of 807

1240.000	20.667	217.388	-217.388
1250.000	20.833	217.385	-217.385
1260.000	21.000	217.385	-217.385
1270.000	21.167	217.382	-217.382
1280.000	21.333	217.385	-217.385
1290.000	21.500	217.385	-217.385
1300.000	21.667	217.388	-217.388
1310.000	21.833	217.391	-217.391
1320.000	22.000	217.388	-217.388
1330.000	22.167	217.388	-217.388
1340.000	22.333	217.388	-217.388
1350.000	22.500	217.388	-217.388
1360.000	22.667	217.385	-217.385
1370.000	22.833	217.382	-217.382
1380.000	23.000	217.382	-217.382
1390.000	23.167	217.375	-217.375
1400.000	23.333	217.375	-217.375
1410.000	23.500	217.375	-217.375
1420.000	23.667	217.369	-217.369
1430.000	23.833	217.369	-217.369
1440.000	24.000	217.366	-217.366
1450.000	24.167	217.363	-217.363
1460.000	24.333	217.360	-217.360
1470.000	24.500	217.356	-217.356
1480.000	24.667	217.356	-217.356
1490.000	24.833	217.350	-217.350
1500.000	25.000	217.350	-217.350
1510.000	25.167	217.350	-217.350
1520.000	25.333	217.350	-217.350
1530.000	25.500	217.350	-217.350
1540.000	25.667	217.350	-217.350
1550.000	25.833	217.350	-217.350
1560.000	26.000	217.347	-217.347
1570.000	26.167	217.347	-217.347
1580.000	26.333	217.347	-217.347
1590.000	26.500	217.347	-217.347
1600.000	26.667	217.347	-217.347
1610.000	26.833	217.347	-217.347
1620.000	27.000	217.350	-217.350
1630.000	27.167	217.353	-217.353
1640.000	27.333	217.353	-217.353
1650.000	27.500	217.353	-217.353
1660.000	27.667	217.353	-217.353
1670.000	27.833	217.356	-217.356
1680.000	28.000	217.356	-217.356
1690.000	28.167	217.356	-217.356
1700.000	28.333	217.356	-217.356
1710.000	28.500	217.360	-217.360

9313090.0859

1720.000	28.667	217.360	-217.360
1730.000	28.833	217.363	-217.363
1740.000	29.000	217.366	-217.366
1750.000	29.167	217.369	-217.369
1760.000	29.333	217.372	-217.372
1770.000	29.500	217.372	-217.372
1780.000	29.667	217.375	-217.375
1790.000	29.833	217.375	-217.375
1800.000	30.000	217.375	-217.375
1810.000	30.167	217.379	-217.379
1820.000	30.333	217.382	-217.382
1830.000	30.500	217.385	-217.385
1840.000	30.667	217.388	-217.388
1850.000	30.833	217.388	-217.388
1860.000	31.000	217.391	-217.391
1870.000	31.167	217.394	-217.394
1880.000	31.333	217.397	-217.397
1890.000	31.500	217.397	-217.397
1900.000	31.667	217.397	-217.397
1910.000	31.833	217.401	-217.401
1920.000	32.000	217.401	-217.401
1930.000	32.167	217.404	-217.404
1940.000	32.333	217.410	-217.410
1950.000	32.500	217.410	-217.410
1960.000	32.667	217.410	-217.410
1970.000	32.833	217.407	-217.407
1980.000	33.000	217.407	-217.407
1990.000	33.167	217.413	-217.413
2000.000	33.333	217.420	-217.420
2010.000	33.500	217.420	-217.420
2020.000	33.667	217.423	-217.423
2030.000	33.833	217.420	-217.420
2040.000	34.000	217.423	-217.423
2050.000	34.167	217.423	-217.423
2060.000	34.333	217.429	-217.429
2070.000	34.500	217.429	-217.429
2080.000	34.667	217.432	-217.432
2090.000	34.833	217.432	-217.432
2100.000	35.000	217.432	-217.432
2110.000	35.167	217.435	-217.435
2120.000	35.333	217.435	-217.435
2130.000	35.500	217.435	-217.435
2140.000	35.667	217.438	-217.438
2150.000	35.833	217.438	-217.438
2160.000	36.000	217.438	-217.438
2170.000	36.167	217.442	-217.442
2180.000	36.333	217.442	-217.442
2190.000	36.500	217.442	-217.442

2200.000	36.667	217.445	-217.445
2210.000	36.833	217.448	-217.448
2220.000	37.000	217.451	-217.451
2230.000	37.167	217.454	-217.454
2240.000	37.333	217.457	-217.457
2250.000	37.500	217.461	-217.461
2260.000	37.667	217.464	-217.464
2270.000	37.833	217.467	-217.467
2280.000	38.000	217.470	-217.470
2290.000	38.167	217.473	-217.473
2300.000	38.333	217.473	-217.473
2310.000	38.500	217.480	-217.480
2320.000	38.667	217.483	-217.483
2330.000	38.833	217.483	-217.483
2340.000	39.000	217.486	-217.486
2350.000	39.167	217.486	-217.486
2360.000	39.333	217.489	-217.489
2370.000	39.500	217.495	-217.495
2380.000	39.667	217.498	-217.498
2390.000	39.833	217.498	-217.498
2400.000	40.000	217.502	-217.502
2410.000	40.167	217.508	-217.508
2420.000	40.333	217.511	-217.511
2430.000	40.500	217.517	-217.517
2440.000	40.667	217.521	-217.521
2450.000	40.833	217.521	-217.521
2460.000	41.000	217.527	-217.527
2470.000	41.167	217.530	-217.530
2480.000	41.333	217.536	-217.536
2490.000	41.500	217.540	-217.540
2500.000	41.667	217.546	-217.546
2510.000	41.833	217.549	-217.549
2520.000	42.000	217.552	-217.552
2530.000	42.167	217.558	-217.558
2540.000	42.333	217.562	-217.562
2550.000	42.500	217.568	-217.568
2560.000	42.667	217.571	-217.571
2570.000	42.833	217.577	-217.577
2580.000	43.000	217.584	-217.584

p. 67 of 80 74

299-W27-02 CONSTANT DISCHARGE PUMP TEST Q= 5.25 gpm

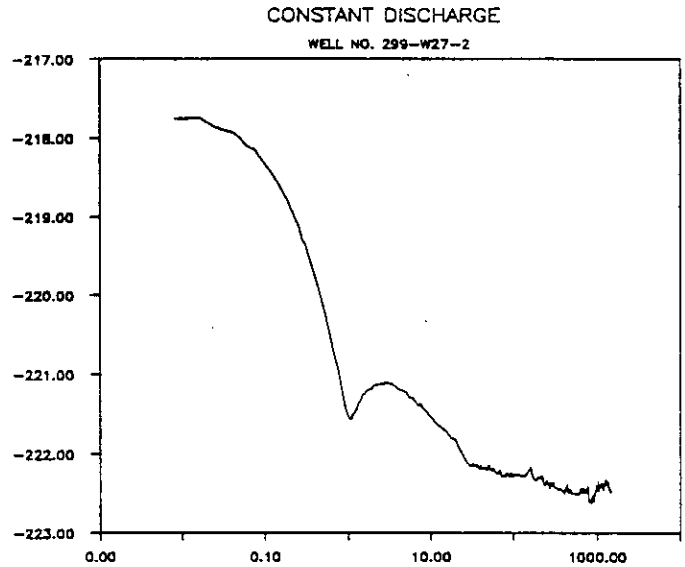
SE2000
Environ mental Logger
11/ 07 12:41

Unit# 19 3 Test 6

INPUT 1: Level (F) TOC

Reference 217.600
SG 1.000
Linearity 0.000
Scale fac tor 10.000
Offset 0.011
Delay mSE C 50.000

Step 0 1 1/06 07:30:02



Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.001	0.0000	217.685	-217.685
0.008	0.0001	217.754	-217.754
0.017	0.0003	217.745	-217.745
0.025	0.0004	217.862	-217.862
0.033	0.0006	217.906	-217.906
0.042	0.0007	217.931	-217.931
0.050	0.0008	218.004	-218.004
0.058	0.0010	218.083	-218.083
0.067	0.0011	218.130	-218.130
0.075	0.0013	218.146	-218.146
0.083	0.0014	218.225	-218.225
0.100	0.0017	218.332	-218.332
0.117	0.0019	218.420	-218.420
0.133	0.0022	218.521	-218.521
0.150	0.0025	218.607	-218.607
0.167	0.0028	218.708	-218.708
0.183	0.0031	218.787	-218.787
0.200	0.0033	218.884	-218.884
0.217	0.0036	218.954	-218.954
0.233	0.0039	219.042	-219.042
0.250	0.0042	219.118	-219.118
0.267	0.0044	219.203	-219.203
0.283	0.0047	219.317	-219.317
0.300	0.0050	219.352	-219.352
0.317	0.0053	219.440	-219.440
0.333	0.006	219.494	-219.494
0.417	0.007	219.832	-219.832
0.500	0.008	220.144	-220.144

0.583	0.010	220.447	-220.447
0.667	0.011	220.734	-220.734
0.750	0.013	220.933	-220.933
0.833	0.014	221.180	-221.180
0.917	0.015	221.420	-221.420
1.000	0.017	221.539	-221.539
1.083	0.018	221.571	-221.571
1.167	0.019	221.492	-221.492
1.250	0.021	221.451	-221.451
1.333	0.022	221.363	-221.363
1.417	0.024	221.322	-221.322
1.500	0.025	221.249	-221.249
1.583	0.026	221.236	-221.236
1.667	0.028	221.199	-221.199
1.750	0.029	221.199	-221.199
1.833	0.031	221.176	-221.176
1.917	0.032	221.186	-221.186
2.000	0.033	221.151	-221.151
2.500	0.042	221.110	-221.110
3.000	0.050	221.104	-221.104
3.500	0.058	221.132	-221.132
4.000	0.067	221.183	-221.183
4.500	0.075	221.199	-221.199
5.000	0.083	221.221	-221.221
5.500	0.092	221.293	-221.293
6.000	0.100	221.290	-221.290
6.500	0.108	221.341	-221.341
7.000	0.117	221.394	-221.394
7.500	0.125	221.366	-221.366
8.000	0.133	221.416	-221.416
8.500	0.142	221.457	-221.457
9.000	0.150	221.467	-221.467
9.500	0.158	221.505	-221.505
10.000	0.167	221.530	-221.530
12.000	0.200	221.622	-221.622
14.000	0.233	221.685	-221.685
16.000	0.267	221.732	-221.732
18.000	0.300	221.811	-221.811
20.000	0.333	221.817	-221.817
22.000	0.367	221.928	-221.928
24.000	0.400	221.994	-221.994
26.000	0.433	222.079	-222.079
28.000	0.467	222.114	-222.114
30.000	0.500	222.155	-222.155
32.000	0.533	222.120	-222.120
34.000	0.567	222.155	-222.155
36.000	0.600	222.142	-222.142
38.000	0.633	222.190	-222.190

9413090.0862

40.000	0.667	222.146	-222.146
42.000	0.700	222.196	-222.196
44.000	0.733	222.180	-222.180
46.000	0.767	222.184	-222.184
48.000	0.800	222.206	-222.206
50.000	0.833	222.139	-222.139
52.000	0.867	222.187	-222.187
54.000	0.900	222.202	-222.202
56.000	0.933	222.212	-222.212
58.000	0.967	222.184	-222.184
60.000	1.000	222.234	-222.234
62.000	1.033	222.243	-222.243
64.000	1.067	222.240	-222.240
66.000	1.100	222.228	-222.228
68.000	1.133	222.212	-222.212
70.000	1.167	222.250	-222.250
72.000	1.200	222.294	-222.294
74.000	1.233	222.272	-222.272
76.000	1.267	222.281	-222.281
78.000	1.300	222.269	-222.269
80.000	1.333	222.294	-222.294
82.000	1.367	222.243	-222.243
84.000	1.400	222.237	-222.237
86.000	1.433	222.259	-222.259
88.000	1.467	222.278	-222.278
90.000	1.500	222.285	-222.285
92.000	1.533	222.266	-222.266
94.000	1.567	222.237	-222.237
96.000	1.600	222.291	-222.291
98.000	1.633	222.275	-222.275
100.000	1.667	222.262	-222.262
110.000	1.833	222.256	-222.256
120.000	2.000	222.275	-222.275
130.000	2.167	222.278	-222.278
140.000	2.333	222.272	-222.272
150.000	2.500	222.218	-222.218
160.000	2.667	222.165	-222.165
170.000	2.833	222.291	-222.291
180.000	3.000	222.341	-222.341
190.000	3.167	222.310	-222.310
200.000	3.333	222.285	-222.285
210.000	3.500	222.300	-222.300
220.000	3.667	222.266	-222.266
230.000	3.833	222.386	-222.386
240.000	4.000	222.389	-222.389
250.000	4.167	222.341	-222.341
260.000	4.333	222.367	-222.367
270.000	4.500	222.442	-222.442

9310090.0863

p. 70 of 8074

280.000	4.667	222.363	-222.363
290.000	4.833	222.392	-222.392
300.000	5.000	222.360	-222.360
310.000	5.167	222.420	-222.420
320.000	5.333	222.427	-222.427
330.000	5.500	222.433	-222.433
340.000	5.667	222.439	-222.439
350.000	5.833	222.464	-222.464
360.000	6.000	222.446	-222.446
370.000	6.167	222.446	-222.446
380.000	6.333	222.464	-222.464
390.000	6.500	222.477	-222.477
400.000	6.667	222.483	-222.483
410.000	6.833	222.499	-222.499
420.000	7.000	222.452	-222.452
430.000	7.167	222.414	-222.414
440.000	7.333	222.382	-222.382
450.000	7.500	222.474	-222.474
460.000	7.667	222.480	-222.480
470.000	7.833	222.496	-222.496
480.000	8.000	222.458	-222.458
490.000	8.167	222.496	-222.496
500.000	8.333	222.487	-222.487
510.000	8.500	222.499	-222.499
520.000	8.667	222.499	-222.499
530.000	8.833	222.499	-222.499
540.000	9.000	222.499	-222.499
550.000	9.167	222.502	-222.502
560.000	9.333	222.524	-222.524
570.000	9.500	222.499	-222.499
580.000	9.667	222.502	-222.502
590.000	9.833	222.515	-222.515
600.000	10.000	222.490	-222.490
610.000	10.167	222.518	-222.518
620.000	10.333	222.461	-222.461
630.000	10.500	222.433	-222.433
640.000	10.667	222.420	-222.420
650.000	10.833	222.436	-222.436
660.000	11.000	222.446	-222.446
670.000	11.167	222.493	-222.493
680.000	11.333	222.461	-222.461
690.000	11.500	222.430	-222.430
700.000	11.667	222.474	-222.474
710.000	11.833	222.480	-222.480
720.000	12.000	222.461	-222.461
730.000	12.167	222.490	-222.490
740.000	12.333	222.452	-222.452
750.000	12.500	222.439	-222.439

p. 71 & 8074

760.000	12.667	222.455	-222.455
770.000	12.833	222.442	-222.442
780.000	13.000	222.401	-222.401
790.000	13.167	222.575	-222.575
800.000	13.333	222.616	-222.616
810.000	13.500	222.613	-222.613
820.000	13.667	222.600	-222.600
830.000	13.833	222.603	-222.603
840.000	14.000	222.575	-222.575
850.000	14.167	222.603	-222.603
860.000	14.333	222.625	-222.625
870.000	14.500	222.584	-222.584
880.000	14.667	222.531	-222.531
890.000	14.833	222.524	-222.524
900.000	15.000	222.559	-222.559
910.000	15.167	222.550	-222.550
920.000	15.333	222.594	-222.594
930.000	15.500	222.575	-222.575
940.000	15.667	222.496	-222.496
950.000	15.833	222.493	-222.493
960.000	16.000	222.483	-222.483
970.000	16.167	222.452	-222.452
980.000	16.333	222.386	-222.386
990.000	16.500	222.405	-222.405
1000.000	16.667	222.461	-222.461
1010.000	16.833	222.430	-222.430
1020.000	17.000	222.408	-222.408
1030.000	17.167	222.458	-222.458
1040.000	17.333	222.430	-222.430
1050.000	17.500	222.348	-222.348
1060.000	17.667	222.464	-222.464
1070.000	17.833	222.446	-222.446
1080.000	18.000	222.389	-222.389
1090.000	18.167	222.395	-222.395
1100.000	18.333	222.395	-222.395
1110.000	18.500	222.379	-222.379
1120.000	18.667	222.417	-222.417
1130.000	18.833	222.392	-222.392
1140.000	19.000	222.389	-222.389
1150.000	19.167	222.373	-222.373
1160.000	19.333	222.408	-222.408
1170.000	19.500	222.414	-222.414
1180.000	19.667	222.398	-222.398
1190.000	19.833	222.458	-222.458
1200.000	20.000	222.427	-222.427
1210.000	20.167	222.382	-222.382
1220.000	20.333	222.376	-222.376
1230.000	20.500	222.379	-222.379

9413090.0865

p. 72 of 8074

1240.000	20.667	222.351	-222.351
1250.000	20.833	222.389	-222.389
1260.000	21.000	222.338	-222.338
1270.000	21.167	222.341	-222.341
1280.000	21.333	222.335	-222.335
1290.000	21.500	222.322	-222.322
1300.000	21.667	222.379	-222.379
1310.000	21.833	222.357	-222.357
1320.000	22.000	222.386	-222.386
1330.000	22.167	222.338	-222.338
1340.000	22.333	222.348	-222.348
1350.000	22.500	222.345	-222.345
1360.000	22.667	222.367	-222.367
1370.000	22.833	222.423	-222.423
1380.000	23.000	222.417	-222.417
1390.000	23.167	222.420	-222.420
1400.000	23.333	222.417	-222.417
1410.000	23.500	222.471	-222.471
1420.000	23.667	222.430	-222.430
1430.000	23.833	222.464	-222.464
1440.000	24.000	222.449	-222.449
1450.000	24.167	222.496	-222.496
1460.000	24.333	222.477	-222.477
1470.000	24.500	222.471	-222.471
1480.000	24.667	222.524	-222.524
1490.000	24.833	222.528	-222.528
1500.000	25.000	222.521	-222.521
1510.000	25.167	222.509	-222.509
1520.000	25.333	222.540	-222.540
1530.000	25.500	222.528	-222.528
1540.000	25.667	222.619	-222.619
1550.000	25.833	222.651	-222.651
1560.000	26.000	222.660	-222.660
1570.000	26.167	222.638	-222.638
1580.000	26.333	222.657	-222.657
1590.000	26.500	222.625	-222.625
1600.000	26.667	222.613	-222.613
1610.000	26.833	222.673	-222.673
1620.000	27.000	222.685	-222.685
1630.000	27.167	222.654	-222.654
1640.000	27.333	222.730	-222.730
1650.000	27.500	222.752	-222.752
1660.000	27.667	222.758	-222.758
1670.000	27.833	222.758	-222.758
1680.000	28.000	222.689	-222.689
1690.000	28.167	222.594	-222.594
1700.000	28.333	222.635	-222.635
1710.000	28.500	222.644	-222.644

1720.000	28.667	222.641	-222.641
1730.000	28.833	222.670	-222.670
1740.000	29.000	222.613	-222.613

9313091.0867

5.25GPM

9313090.0868