MAR 17 1993
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START

ENGINEERING DATA TRANSMITTAL

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Page 1 of 1

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16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
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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		Cog.Eng. B. A. Williams	[signature]	3/1/93		CENTRAL FILES (2)			L8-04		
1		Cog. Mgr. R. L. Jackson	R L Jackson	3/3/93		ERMC (2)			H6-08		
1	1	QA W. R. Thackaberry	W R Thackaberry	3-2-93		ERC			H6-07		
		Safety									
1		Env. L. C. Swanson	L C Swanson	3/2/93	H6-06						
1		C. D. Delaney	C. D. Delaney	2/24/93	H6-06						

18.	19.	20.	21. DOE APPROVAL (if required)
C. D. Delaney C. D. Delaney 2/24/93 Signature of EDT Originator Date	— Authorized Representative for Receiving Organization Date	R L Jackson R. L. Jackson 03/03/93 Cognizant/Project Engineer's Manager Date	Ltr. No. [] Approved [] Approved w/comments [] Disapproved w/comments

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

SUPPORTING DOCUMENT

1. Total Pages 178

2. Title

Borehole Completion Data Package for the CY 1992 216-B-3 Pond Drilling Project

3. Number

WHC-SD-EN-DP-053

4. Rev No.

0

5. Key Words

216-B-3 Pond
Well Summary Sheet
Well Construction Sheet
Geologic Log
Aquifer Testing

6. Author

Name: C. D. Delaney

C. D. Delaney
Signature

Organization/Charge Code 81235/R4GD1

APPROVED FOR PUBLIC RELEASE
3/9/93 D. Soler

7. Abstract

This data package summarizes 1992 RCRA drilling and completion activities at the 216-B-3 Pond System. Two groundwater monitoring wells were installed under RCRA assessment monitoring at the B Pond System.

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9. Impact Level 3Q

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1.0 INTRODUCTION

This data package summarizes the drilling, well completion, aquifer testing, well development, and pump installation activities for two Resource Conservation and Recovery Act wells drilled at the 216-B-3 Pond during CY 1992. The 1992 RCRA groundwater monitoring wells were drilled to meet *Hanford Federal Facility Agreement and Consent Order* (Ecology et al. 1989), Tri-Party Agreement Milestone M-24-27. A compilation of data generated from the drilling, testing, and completion of the wells is provided. Drilling and well completion for the CY 1992 216-B-3 Pond activities began August 3, 1992, and continued through October 29, 1992. Both wells were constructed to monitor the upper portion of the uppermost aquifer.

A description of the B Pond facility is contained in the *Interim Hydrogeologic Characterization Report for the 216-B-3 Pond* (WHC 1990b). B Pond is a series of unlined, interconnected wastewater disposal ponds that lie east of the 200 East Area (Figure 1). Elements that are considered part of the B Pond site include:

- 216-B-3 Pond
- 216-B-3A, 3B, and 3C ponds
- 216-B-3-3 Ditch
- Part of an inactive overflow area (Figure 2).

All seven wells were installed and justified according to specifications outlined in the *216-B-3 Pond System Groundwater Quality Assessment Plan* (Harris 1990), and *Generic Specifications - Groundwater Monitoring Wells* (WHC 1990a). Drilling, sampling, and documentation at the wells was performed according to procedures presented in the *Environmental Investigations and Site Characterization Manual* (EII) (WHC 1988). Specifically, the collection and documentation of borehole samples followed EII 5.1, 5.2, and 9.1, and the construction of wells followed EII 6.1 and 6.8 (WHC 1988). Well locations and the strategies behind these locations are outlined in Engineering Change Notice No. 166756, supplement to the *216-B-3 Pond System Groundwater Quality Assessment Plan* (Harris 1990) (Figure 3).

2.0 DRILLING

Well 699-41-42 was drilled using air-rotary drilling methods. Well 699-44-39B was drilled using both air-rotary and cable-tool methods. Two 1-pint lithologic samples were collected approximately every 5 ft or at changes in lithology, for archival in the 2101-M storage facility. An additional sample was collected for moisture and calcium carbonate content analyses from intervals that were drilled using drive barrel and air-rotary techniques. Samples for radiologic analyses were obtained from the same intervals as the lithologic samples. All samples analyzed for radionuclides and hazardous chemicals were measured less than the detectable limits. Physical and chemical sample data are contained in Appendix B. Split spoon samples were collected at specified intervals for the determination of physical properties.

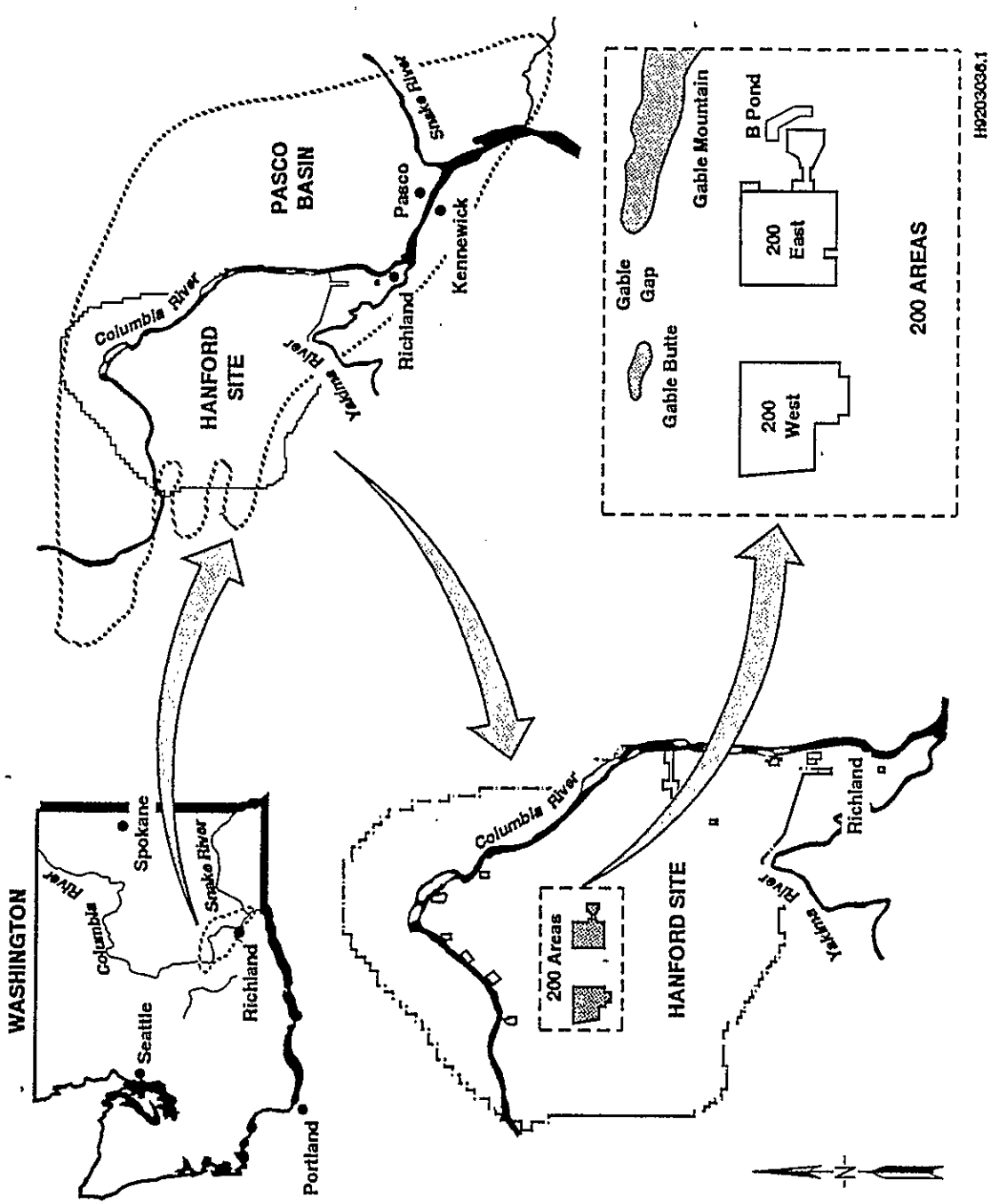


Figure 1. Map Showing the Locations of the Hanford Site and 216-B-3 Pond.

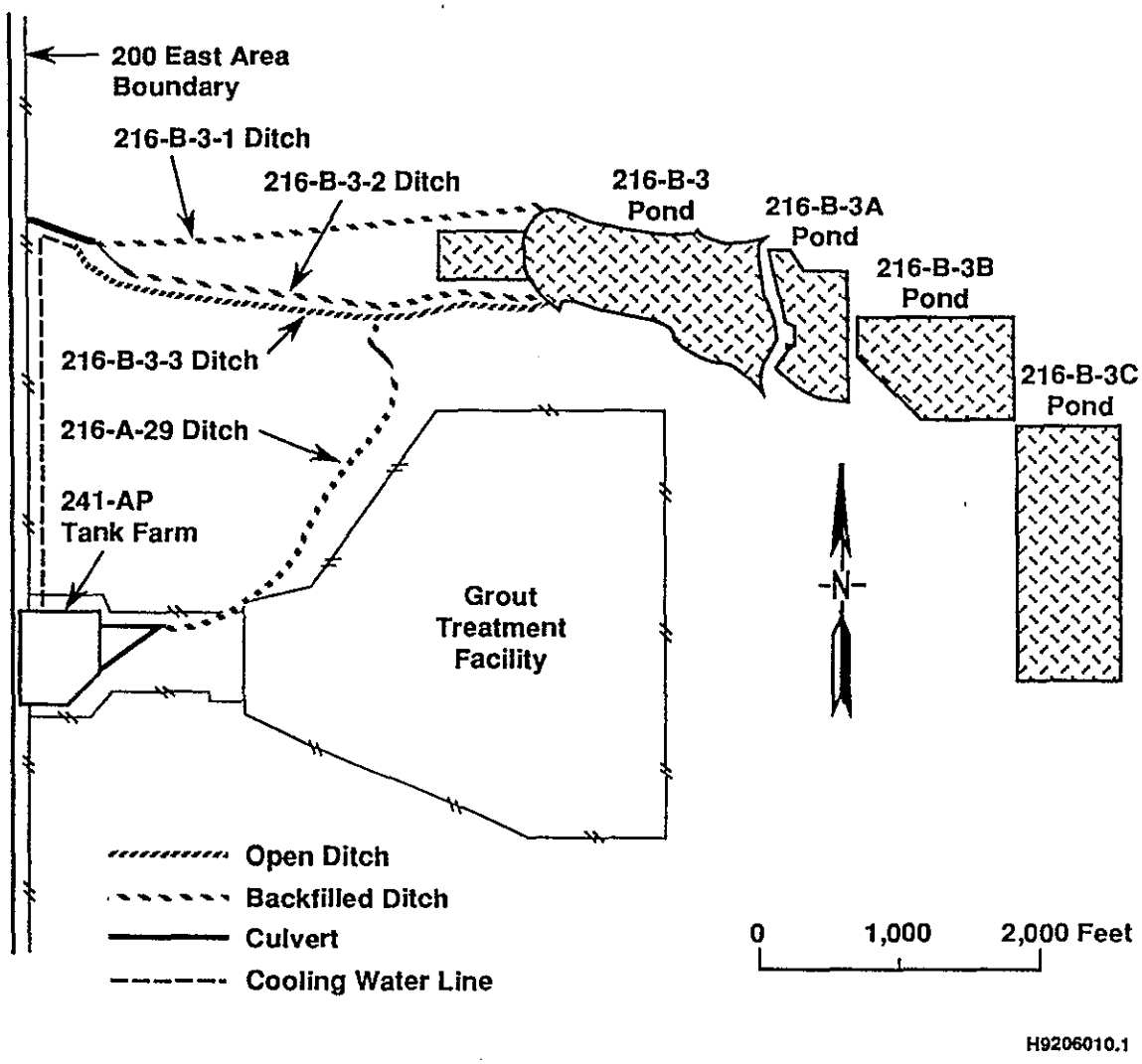


Figure 2. 216-B-3 Pond Site.

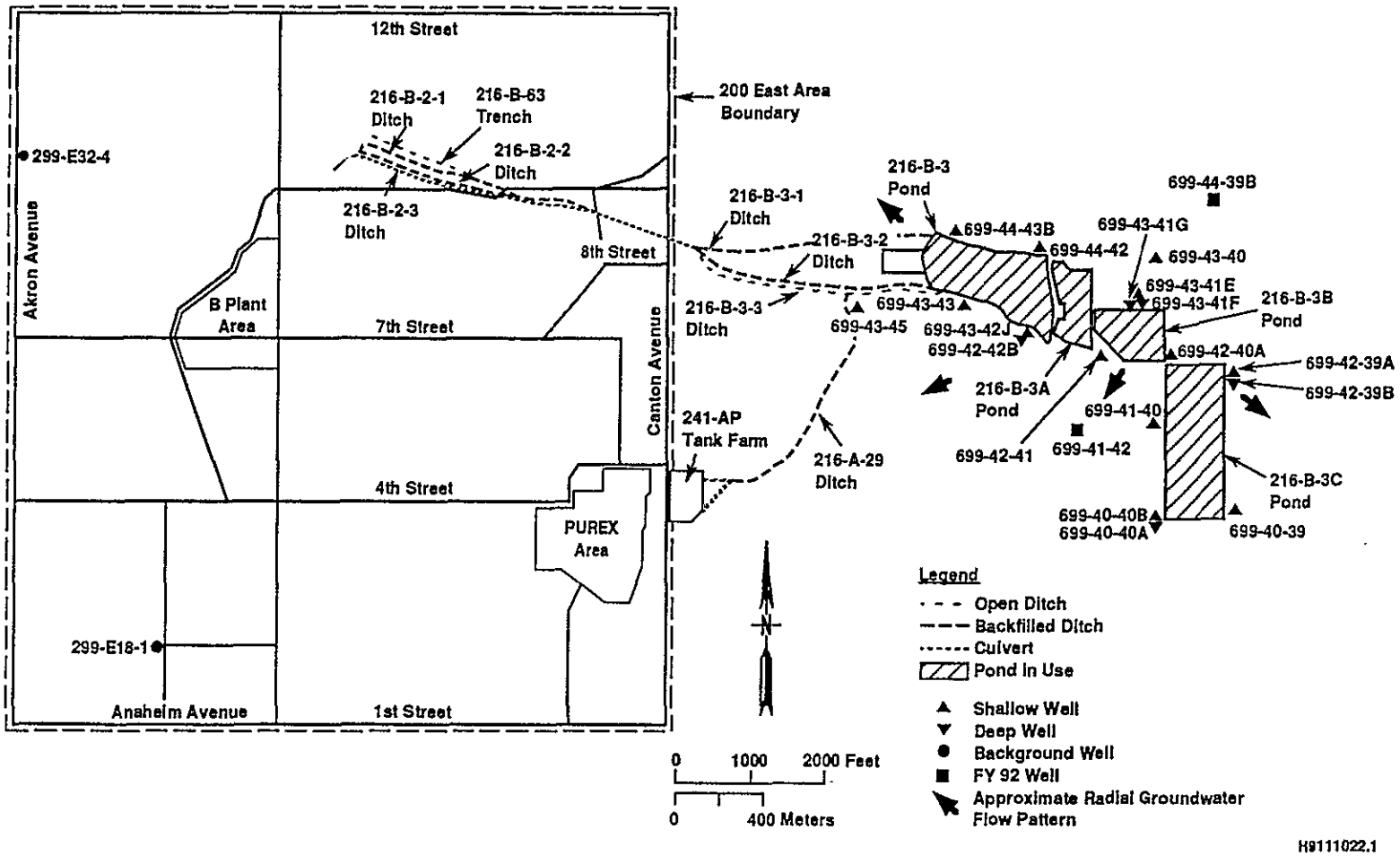


Figure 3. 216-B-3 Pond Well Location Map.

Specific gravity, moisture content, moisture retention, particle size, hydraulic conductivity, and porosity analyses were performed on split-spooned intervals according to procedures outlined in *Geotechnical Engineering Procedures Manual*, Vol. 1 and 2 (WHC 1991); data from the analyses is contained in Appendix B. Wells were drilled using telescoping carbon steel casings with drive shoes.

The boreholes were geophysically logged with a gross-gamma probe before telescoping down to a smaller diameter carbon steel casing; geophysical logs are included in Appendix A. Gross-gamma geophysical logging was in accordance with procedure EII 11.1 (WHC 1988).

3.0 WELL COMPLETION

After total depth was reached, the wells were bailed to remove any remaining material from the borehole and to confirm water depths. A straightness test was then performed to ensure the plumbness of the borehole by passing a length of casing to the bottom of the borehole with a minimum length of 20 ft and a minimum diameter of one pipe size smaller than the final temporary casing size. Both of the B Pond wells passed the straightness test.

The permanent 4-in-dia, type 304, schedule 5 stainless steel casing and type 304 continuous wrap stainless steel screen was then installed with a hydraulic crane. Factory welded stainless steel casing centralizers were placed approximately every 40 ft along the permanent casing, beginning above the screen. The temporary carbon steel casing was then backpulled with hydraulic casing jacks as the annular fill and seal materials were added. The annular fill and seal materials generally consisted of a silica sand pack, a bentonite pellet seal, an 8-20 mesh granular bentonite seal, and a cement grout seal. A concrete pad was poured upon completion of the annular fill and seal materials, and the final 4-in. stainless steel casing stickup was reduced to a height of approximately 1 ft above the concrete pad. Six-in-dia protective stainless steel casing was installed at a height of 2.5 ft above the top of the 4-in. final casing and four yellow guard posts were set in concrete. A brass marker was then placed on the pad, and both the outer casing and the brass marker were stamped with the applicable well number.

4.0 WELL DEVELOPMENT

All B Pond wells were developed by pumping at a rate of approximately 10 gpm until the turbidity of a collected water sample was below 5 nephelometric turbidity unit (NTU) or the sediment content was less than 8 mg/L. Submersible 1/2-hp pumps were used for development of all wells. Procedure EII 10.4 (WHC 1988) was utilized during well development activities. A summary table of water removed during well development activities is contained in Appendix C.

5.0 AQUIFER TESTING

Slug tests were performed on both B Pond wells by quickly injecting or withdrawing a slugging rod in the well to displace the water column while measuring the water-level response with a pressure transducer data-logger system. Slug injection and withdrawal tests were performed on November 20, 1992, and November 12, 1992, to provide estimates on aquifer properties. The field procedure can be found in EII 10.1, Appendix A (WHC 1988). Data and analyses from the slug tests are in Appendix D.

6.0 PUMP INSTALLATION

Hydrostar (a trademark of Instrumentation Northwest, Inc.) pumps were installed and tested on November 10 and 12, 1992. Hydrostar HS-8001, positive displacement reciprocating cylinder pumps, were set in both wells and tested for proper operation. Sample pump installation logs are included in Appendix D; installation of the Hydrostar pumps was in accordance with the manufacturer's instruction manual. Well development for both B Pond wells took place November 9 through November 12, 1992, until a turbidity reading less than 5 NTU was obtained.

7.0 WELL SUMMARIES

The following paragraphs describe the drilling, completion, aquifer testing, and development activities at individual wells; the datum for the measurements listed is below land surface. Well summary sheets in Appendix A graphically illustrate the lithologies encountered, depths of the temporary casings, and placement of the permanent materials.

7.1 WELL 699-41-42

Drilling began July 17, 1992, and continued until September 14, 1992, when a final depth of 342.9 ft was reached. A total of 10.3 ft of 12-in, 164 ft of 10-in, 281.5 ft of 8-in, and 342.3 ft of 6-in-dia temporary carbon steel casing was used to reach the final depth. Sediments encountered are graphically represented in the well summary sheets in Appendix A. The primary lithologies encountered include: silty sand to pebbly sand from 0 to 228 ft; silty sand to clay 228 to 254 ft; sandy gravel to gravel 254 to 335 ft; and basalt 335 to 343 ft. The well was logged with the gross-gamma geophysical probe on September 18, 1992, and logged with the magnetic geophysical probe on September 18, 1992, and October 12, 1992. Fragments from a broken split spoon sampler were lost in the borehole at approximately 250 ft below ground surface. NCR No. 050007 states that the abandoned materials are isolated from the screened interval and mitigate any possible effects on the fluids of the sampling interval. The static water level measured on October 10, 1992, was 228.8 ft below ground surface.

Well completion activities began October 6, 1992, and continued through October 20, 1992. A total of 270.33 ft of type 304, schedule 5 casing and 9.96 ft of 10-slot, type 304 continuous wrap channel pack screen was installed. The screen was placed from 280.29 to 270.33 ft, and the casing was placed from 270.33 to 0 ft above land surface. The Colorado silica sand filter pack consisted of 20-40 mesh sand 285.3 to 262.1 ft. The sand pack was settled by bailing inside the screen with a dart bailer; approximately 30 gal were removed to develop the sand pack. Bentonite chips were placed from 341.7 to 285.3 ft and 262.1 to 229.1, followed by bentonite crumbles 221.9 ft to 11.2 ft. A cement grout seal was poured from 11.2 to 2.0 ft. The cement pad was installed from 2.0 to 0.5 ft above land surface. The well design is classified as upper semiconfined.

Well development took place on October 18, 1992, until a turbidity reading of 4.7 NTU was obtained. Slug injection and withdrawal tests were performed on November 12, 1992, to provide estimates on aquifer hydraulic conductivity and/or transmissivity. Data from the slug tests can be found in Appendix D. The Hydrostar pump was installed and tested on November 12, 1992. Well development and pump installation information is contained in Appendix C. The successful testing of the sampling pump completed installation activities at well 699-41-42. Vertical reference point elevations for well 699-41-42 were surveyed to the National Geodetic Vertical Datum (NGVD) of 1929 (NGVD 29) and can be found in Appendix A.

7.2 WELL 699-44-39B

Drilling began September 19, 1992, and continued until October 26, 1992, when a final depth of 181.9 ft was reached. Drilling was initiated with the cable-tool method until gravels within the Hanford formation increased the difficulty of drilling. At approximately 60 ft below ground surface air-rotary drilling was used to reach total depth. A total of 8.5 ft of 12-in, 62.8 ft of 10-in, and 181.20 ft of 8-in-dia temporary carbon steel casing was used to reach the final depth. Sediments encountered are graphically represented in the well summary sheets in Appendix A. The primary lithologies encountered include: sand from 0 to 5 ft; sandy gravel and gravel from 5 to 92 ft; gravel to gravelly silty sand to sand 92 to 172 ft; and basalt from 172 to 181.9 ft. The well was logged with the gross-gamma geophysical probe on October 28, 1992. The static water level measured on November 3, 1992, was 93.3 ft below ground surface. During drilling, approximately 93 gal of drill supply water were added to the borehole.

Well completion activities began October 21, 1992, and continued through October 29, 1992. A total of 98.94 ft of type 304, schedule 5 casing and 19.92 ft of 10-slot, type 304 continuous wrap channel pack screen was installed. The screen was placed from 118.86 to 98.94 ft, and the casing was placed from 98.94 to 0 ft above land surface. The Colorado silica sand filter pack consisted of 20-40 mesh sand 121.4 to 93.9 ft. The sand pack was settled by bailing inside the screen with a dart bailer; approximately 35 gal were removed to develop the sand pack. Bentonite chunks were placed from 181.9 to 121.4 ft and 93.9 to 88.7 ft. Bentonite crumbles were then placed 88.7 ft to 10.2 ft, and a cement grout seal poured from 10.2 to 2.0 ft. The cement pad was installed from 2.0 to 0.5 ft above land surface. The well design is classified as upper semiconfined.

Well development took place on November 9, 1992, until a turbidity reading of 3.7 NTU was obtained. Slug injection and withdrawal tests were performed on November 10, 1992, to provide estimates on aquifer properties. Data from the slug tests can be found in Appendix D. The Hydrostar pump was installed and tested on November 10, 1992. Well development and pump installation information is contained in Appendix C. The successful testing of the sampling pump completed installation activities at well 699-44-39B. Vertical reference point elevations for well 699-44-39B were surveyed to NGVD 29 and can be found in Appendix A.

9.0 REFERENCES

Ecology, DOE, EPA, 1989, *Hanford Federal Facility Agreement and Consent Order*, Washington State Department of Ecology, U.S. Department of Energy, and U.S. Environmental Protection Agency, Olympia, Washington.

Harris, S. F., 1990, *Ground Water Quality Assessment Plan for the 216-B-3 System*, WHC-EN-AP-030, Westinghouse Hanford Company, Richland, Washington.

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

WHC, 1990a, *Generic Specifications-Groundwater Monitoring Wells*, WHC-S-014, Westinghouse Hanford Company, Richland, Washington.

WHC, 1990b, *Interim Hydrogeologic Characterization Report for the 216-B-3 Pond*, WHC-SD-EN-EV-002, Westinghouse Hanford Company, Richland, Washington.

WHC, 1991, *Geotechnical Engineering Procedures Manual*, Vol. 1 and 2, WHC-IP-0635, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

APPENDIX A

WELL CONSTRUCTION REPORTS
BOREHOLE LOGS
WELL SUMMARY SHEETS
GEOPHYSICAL LOGS
WELL SURVEY DATA

CONTENTS

Well 699-41-42 . . . . . A-1
Well 699-44-39B A-49

WELL CONSTRUCTION REPORT

VALIDATED KDR 1/18/93 SIGNATURE/DATE

Specification No. WHC-S-014 Rev No. ~~6~~ 7 DRT 1-20-93

ECNs 150137, 150138, 127439, 164223, 166757, 150132, 172209, 166752, 119402, 150143

Project KCRA-W017 / 216-B-3 Pond

Location B-Pond

Drilling Company Jensen Drilling

Driller D Mingo

Other (Companies)

Geologist(s) E.C. Rafuse (WHC) MD Sweeney (HEPCO) KD. Reynolds (WHC) K. Swett (NACES) DJ. Anderson (WHC) Brett Thompson (MCE)

Well No. 699-41-42 Temp. Well No.

Coordinates N: 136,068.17 E: 577,122.21

Casing Elev. 643.91 TOC Ground Elev. 640.32'
643.92 Top of Hydrostar plate

Drilling Method

Verification Method Visual observation

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

			Initials	Date
Rotary	Air 10.3-342.92	Mud	KDR	8/3/92
Cable Tool	D N/A	H N/A	N/A	N/A
Drilling Fluid	N/A	N/A	N/A	N/A
Other	Backhoe	0-10.3'	ECR	07/17/92

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	3.3 - 341.4	9/18/92
Magnetic Log	3.2 - 340	9/18/92
Magnetic Log	5.0 - 280.0	10/12/92
	-	
	-	

Completion Data

Drilled Depth 342.92

Completed Depth 280.59 Ft

Date Started 7-17-92

Date Completed 10-09-92

Static Water Level/Date 230.1 / 9-14/92
228.8 / 10-10/92

Aquifer Testing

Type INSTANTANEOUS Slug test

Flow Meter I.D. No. N/A

Cal. Due Date N/A

Length of Test 1 hr.

Volume Pumped N/A

Drawdown N/A

Date of Test 11/12/92

Completion Results

Cleaning

Verification Method Visual observation + Doc Review

Criteria WHC-S-014 4.2.2, 7.6, 7.7, EII 5.4
WHC-CM-7.7-5.4

	Initials	Date
Drilling Tools/Rig	MPS	8/3/92
Temporary Materials	ECR	07/17/92
Permanent Materials	KJS	10-6-92

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	KJS	10-6-92
Material Packing	KJS	10-6-92

Screen

Type	Length	Slot Size
Stainless Steel Screen	9.96'	10 slot
Type 304		

Depth(s) 270.33' - 280.29 w/o cap
270.33' - 280.59 w/cap

Verification Method steel tape measurement

Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.21

Initials KJS Date 10-6-92

Lubricants/Additives

Verification Method Visual observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Columbia River H_2O	MPS	8/12/92
	Jet Lube	KDR	8/3/92
Lubricants	RN-D Rock Oil	KDR	8/3/92

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014 8.2

Initials MPS Date 9/14/92

A-6000-436 (09/90)

WELL CONSTRUCTION REPORT
(continuation sheet)

Casing (permanent)

Type	Size	Placement
Stainless Steel blank	4" Ø	0' - 270.33'
Type 304		-
		-
		-

Verification Method: measurement w/steel tape

Criteria: WHC-5-014 4.2.1, 4.2.4, 4.2.5, 12.2.1

Initials: KJS Date: 10-6-92

Well Protection

Verification Method: visual inspection w/tape

Criteria: WHC-5-014 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

Verification Method: measurement w/steel tape Criteria: WHC-5-014 4.2.6, 4.2.7, 4.2.8, 4.2.9

Type	Interval	Volume	Initials	Date
Type I & II Cement 12 bags 100#	2.0' - 11.2'	15.42 cuft	DJG	10/20/92
Bentonite crumbles (8-20 mesh) 130 sks 50#	11.2' - 221.9'	92.3 cuft	DJG	10/20/92
Bentonite chips 50 sks 50#	229.1 - 262.1 285.3 - 341.7	34.50 cuft	DJG	10/20/92
Silica Sand (20-40) 11 bags	262.1 - 285.3	12.32 cuft	DJG	10/20/92

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-5-014

	Initials	Date
Measurement Point/Surveyed	BRT	1-12-93
Protective Casing/Brass Cap Surveyed	BRT	1-12-93
Well Number Stenciled	ECL	12/18/92
Brass Cap Labeled	ECL	12/18/92

Pump Installation

Verification Method: visual observation

Criteria: WHC-5-014 4.2.1, 4.2.3

	Initials	Date
Pump Decon/Prep	RJE	11/12/92
Installed	RJE	11/12/92
Pump Tested	RJE	11/12/92

Other (initial if performed)

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

RJE 11/11/92 Well Development

Comments/Remarks: Using RN-P Rock Oil As Approved by WHC ENV & Eng Eng RCRA (KDE)
Failed split spoon is abandoned on 9/4/92. Magnetic log verifies split spoon pieces at 245', 253', and 255'. Refer to NCR 50007 closed 12-4-92.

Reviewed By (Sign/Print Name): Kent D. Reynolds / Kent D. Reynolds Date: 1/18/93

A-2

WELL SUMMARY SHEET

Boring or Well No. ECO OT/TP 699-41-42

Sheet 1 of 3

Location 216-B-3 Pond
Project W017/B Pond
Elevation 640.32' ground surface (g.s.)
Drilling Contractor Jensen Drilling Company
Driller Jensen Drilling Company - D. Mingo
Drilling Method and Equipment Air Rotary
Prepared By MO SWEENEY / [illegible] (Sign/Print Name) Date 8-23-92
Reviewed By Edward C. Rafuse / Edward C. Rafuse 2 (Sign/Print Name) Date 10/20/92

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
2' OD CS CASING (TEMPORARY)		0		
SET @ 10.3' - NO SHOE		5		0-6' SANDY SILT
Stainless stickup = 2.0"		10		" "
Type I & II Cement 2.0'-11.2'		15		" "
		20		" "
Bentonite crumbles (8-20 mesh)		25		" "
11.2'-22.9'		30		
		35		6-33' SAND
		40		"
		45		33-41' SILTY SAND
		50		" "
		55		" "
		60		
		65		41-65' SAND
		70		"
		75		"
		80		65-80' SAND - INCREASING FINES
		85		"
		90		"
		95		80-96 SAND INCREASING COARSE
		100		"
		105		96-101 SAND DECREASING COARSE TR -> 10-15% SILT
		110		"
		115		"
		120		101-120 SAND w/ALTERNATING ZONES of VERY FINE TO FINE GRAIN SIZES.
		125		"
		130		
		135		120-136' SAND TO SILTY SAND
		140		136-139' MODERATE TO VERY SILTY SAND
		145		139-140 GRANULAR TO SLIGHTLY SILTY SAND
		150		
		155		
		160		

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 699-41-42

Sheet 2 of 3

Location 216-B-3 POND

Project W017/B POND

Elevation 640.32' g.s.

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / V-5

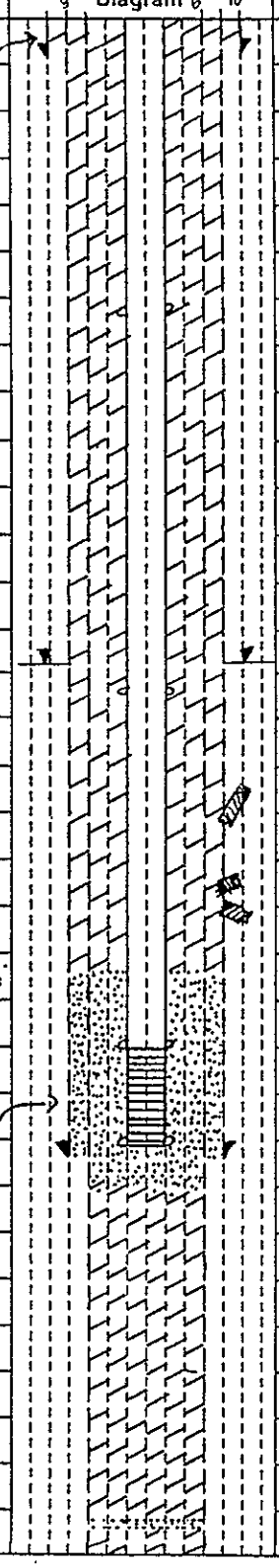
Prepared By MACWEENEY/[illegible] (Sign/Print Name) Date 9-11-92

Reviewed By EDWARD C. RAFUST / Edward C. Rafuse (Sign/Print Name) Date 10/20/92

CONSTRUCTION DATA

Description
0" OD CASING SET @ 163.96
0.89' SHOE. TEMPORARY
CS CASING
ENVIROplug 8-20 mesh
11.2 - 229.9'
SWL @ 228.8 / 10-10-92
Bentonite chips 229.9'-262.1'
SPLIT SPOON ABANDONED @ in 11-30-92
2 SECTIONS, LEFT IN BOREHOLE
at 245', 253' & 255'. NOT
Drawn to scale.
10 slot screen 270.33-280.59
w/ cap included
8" OD CASING SET @ 281.5
0.72 SHOE. TEMPORARY
CS CASING.
Sand (20-40) 262.1'-285.3'
Bentonite chips 285.3'-341.7'

Diagram



GEOLOGIC/HYDROLOGIC DATA

Depth in Feet	Graphic Log	Lithologic Description
165		140-164' SAND - ALTERNATING GRANULAR TO SILTY SAND
170		"
175		"
180		"
185		"
190		"
195		"
200		"
205		"
210		
215		164-212 PEBBLE COBBLE GRAVEL
220		212-216 PEBBLY SAND
225		" "
230		216-226 PEBBLE COBBLE GRAVEL
		226-228 COARSE SAND
235		
240		228-238 SILT/CLAY
245		" "
250		" "
255		238-254 SILTY SAND
260		" "
265		" "
270		" "
275		" "
280		" "
285		" "
290		" "
295		" "
300		" "
305		" "
310		" "
315		254-~~300~~ 315 MDS 9-14-92 SANDY GRAVEL
320		315-320 GRAVEL
325		

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A 6000-384 (04-90)

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 699-41-42

Sheet 3 of 3

Location 216-B-3 POND

Project W017 / B POND

Elevation 640.32' g.s.

Drilling Contractor JENSEN DRILLING

Driller D MINGO

Drilling Method and Equipment AIR ROTARY / V-5

Prepared By MOSCHENCY / [signature] (Sign/Print Name) Date 9-14-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 10/20/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram 6"		Graphic Log	Lithologic Description
6" OD CASING SET @ 342.3		330		320-330 SANDY GRAVEL
0.55 SHOE TEMPORARY		335		330-335 GRAVEL
CS CASING.		340		335-342.92 BASALT
		345		
				TD = 342.92
				SWL: 230.1 ON 9-14-92
Type I + II Cement - 2.0'-11.2'				
Bentonite 8-20msh 11.2'-229.9'				
Enviroplug)				
Bentonite chips 229.9'-262.1'				
Sand (20-40) 262.1'-285.3'				
Bentonite chips 285.3'-341.7'				

Westinghouse Hanford Company

NONCONFORMANCE REPORT

1. Page 1 of 4

2. Preprinted No. 050007

QA Log No. EQA-92-101

3. P. O., W. O., or Job Control No.	4. System/End Use	5. Item/Material	6. Dwg./Spec./Other No.	7. Rev.
W/O CR-9752	216-B-3 POND GROUNDWATER MONITORING	699-41-42	WHC-S-014	6

8. Program/Project/Other	9. Safety Class	10. ASME Code Items
RCRA / W-017H	3	☐ Yes ☒ No (If yes, notify authorized inspector)

11. Supplier Name/Address	12. Notification of Potential Occurence Required
JENSEN DRILLING CO.	☐ Yes ☒ No

13. Code: Lot/Heat/Serial	14. Lot Size	15. Sample	16. Qty. Acc.	17. Inspection Criteria
N/A	N/A	N/A	N/A.	☐ Dwg. ☒ Spec. ☐ Insp. Plan ☐ Other

18. Item	19. Description of Nonconformance (list serial no. where applicable)	22. Disposition, Justification, and Instructions
1)	SPECIFICATION REQUIRES THE REMOVAL OF TEMPORARY MATERIALS AND TOOLS FROM THE BOREHOLE. CONTRARY TO THE ABOVE, IN RCRA WELL #699-41-42 (B-POND), ~2' OF CARBON STEEL SPLIT SPOON SHELL, 2½ PIECES (6" EACH) OF STAINLESS STEEL LINER AND A STAINLESS STEEL SPLIT SPOON SHOE WERE ABANDONED IN THE SATURATED ZONE BETWEEN 241' AND 251'. (mol 9-28-92)	RCRA well number 699-41-42 is recommended to be accepted as is. Static water level in this well is 228.8 ft. below ground surface (bgs). The abandoned material in the well bore consists of several fragments of split spoon sampler, stainless steel liner and drilling shoe located at 245 ft, 253 ft, and 255 ft below ground surface. The abandoned materials are isolated from the screened interval (located from 270 ft - 280 ft. bgs) by 7 ft. of chunk bentonite (Hole Plug), and are within a clay and interbedded clay/silt stratagraphic unit. The confining aspect of the clay intervals and the sealing effects of the bentonite adequately contains the abandoned pieces of sampler and mitigate any possible effects on the fluids of the sampling interval.

9312759143 32

20. Originator's Signature	Date	23. Design Document Change Required?
MD Sweeney / [signature]	9-28-92	☐ Yes, Doc. No. ☐ No
21. Cognizant QA Manager's Signature	**Date**	**24. Corrective Action Required?**
[signature] for	9-30-92	☐ Yes, No. ☒ No

Disp. App.			
25. Cognizant Engineer [signature] 12/4/92	26. Technical Rep. Cynthia Delaney 12/04/92	Signature/Org. Date	
QA Engineer [signature] 12.4.92	Signature/Org. Date	Signature/Org. Date	

Close

27. Accept 1 Reject 0 Follow on NCR A-6 [signature] QA/C Personnel 12-4-92 Date

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 2699-41-42

Sheet 1 of 3

Location 216-B-3 Pond

Project W017/B Pond

Elevation

Drilling Contractor Jensen Drilling Company

Driller Jensen Drilling Company - D. Mingo

Drilling Method and Equipment Air Rotary

Prepared By MD Sweeney / [illegible] (Sign/Print Name) Date 8-23-92

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

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
2" OD CS CASING (TEMPORARY)		0		
SET @ 10.3' - NO SHOE		5		0-6' SANDY SILT
Stainless stickup - 2.0"		10		" "
Type I & II Cement 2.0'-11.2'		15		" "
		20		" "
Bentonite crumbles (8-20 msh)		25		" "
11.2'-22.9'		30		
		35		6-33' SAND
		40		"
		45		33-41' SILTY SAND
		50		" "
		55		" "
		60		
		65		41-65' SAND
		70		"
		75		"
		80		65-80' SAND - INCREASING FINES
		85		"
		90		"
		95		80-96 SAND INCREASING COARSE
		100		"
		105		96-101 SAND DECREASING COARSE TR → 10-15% SILT
		110		"
		115		"
		120		101-120 SAND w/ALTERNATING ZONES of VERY FINE TO FINE GRAIN SIZES.
		125		"
		130		
		135		120-136' SAND TO SILTY SAND
		140		136-139' MODERATE TO VERY SILTY SAND
		145		139-140 GRANULAR TO SLIGHTLY SILTY SAND
		150		
		155		
		160		

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EQA-92-101 pg. 3 of 4

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WELL SUMMARY SHEET

Boring or Well No. 699-41-42

Sheet 2 of 3

Location 216-B-3 Pond

Project W017/B Pond

Elevation

Drilling Contractor JENSEN

Driller D. Mingo

Drilling Method and Equipment AIR ROTARY / V-5

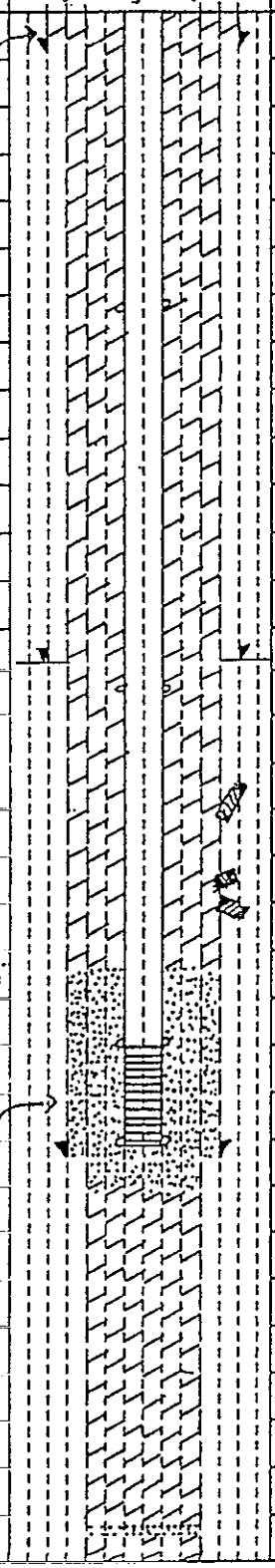
Prepared By MACWEENEY/[illegible] (Sign/Print Name) Date 9-11-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 10/20/92

CONSTRUCTION DATA

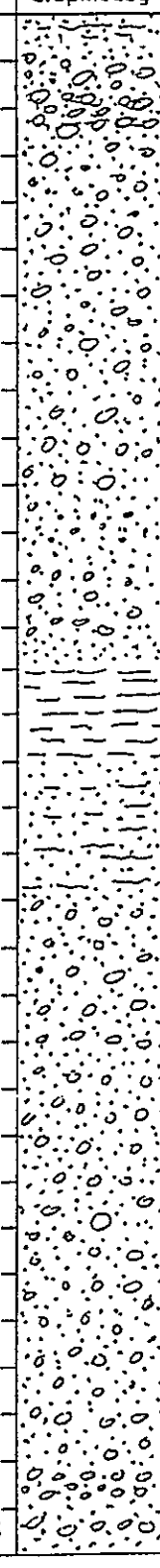
Description
SD CASING SET @ 163.96
89' SHOE. TEMPORARY
5 CASING
viroplug 8-20 mesh
.2 - 229.9'
SWL @ 228.8 / 10-10-92
ntonite chips 229.9'-262.1'
SIT SPOON ABANDONED @ in
11-30-92
2 SECTIONS, LEFT IN BOREHOLE
245', 253' & 255'. Not
wn to scale.
slot screen 270.33-280.59
w/ cap included
OD CASING SET @ 281.5
72 SHOE. TEMPORARY
CASING.
nd (20-40) 262.1'-285.3'
ntonite chips 285.3'-341.7'

Diagram



GEOLOGIC/HYDROLOGIC DATA

Graphic Log



Depth in Feet	Lithologic Description
165	140-164' SAND - ALTERNATING GRANULAR TO SILTY SAND
170	"
175	"
180	"
185	"
190	"
195	"
200	"
205	"
210	
215	164-212 PEBBLE COBBLE GRAVEL
220	212-216 PEBBLY SAND
225	" "
230	216-226 PEBBLE COBBLE GRAVEL
	226-228 COARSE SAND
235	
240	228-238 SILT/CLAY
245	" "
250	" "
255	238-254 SILTY SAND
260	" "
265	" "
270	" "
275	" "
280	" "
285	" "
290	" "
295	" "
300	" "
305	" "
310	" "
315	254-~~320~~ 315 MAG 9-14-92 SANDY GRAVEL
320	315-320 GRAVEL
325	

A-6000-384 (04/90)

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 699-41-42

Sheet 3 of 3

ocation 216-B-3 POND

Project WO13 / B POND

levation

Drilling Contractor JENSEN DRILLING

Driller D MINGO

Drilling Method and Equipment AIR ROTARY / V-5

Prepared By MOSCIETNCY / [signature] (Sign/Print Name) Date 9-14-92

Reviewed By EDWARD C. RAFFAS / Edward C. Raffas (Sign/Print Name) Date 10/20/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
OD CASING SET @ 342.3		330		320-330 SANDY GRAVEL
55' SHOE TEMPORARY		335		330-335 GRAVEL
CASING.		340		335-342.92 BASALT
		345		
				TD = 342.92
				SWL = 230.1 ON 9-14-92
pe I & II Cement - 2.0'-11.2'				
ntonite 8-20msh 11.2'-229.9'				
iroplug)				
onite chips 229.9'-262.1'				
nd (20-40) 262.1'-285.3'				
onite chips 285.3'-341.7'				

A-6000-384 (04/90)

BOREHOLE LOG

VALIDATED KDR 1/18/93 SIGNATURE DATE

Boring or Well No. 699-41-42

Sheet 1 of 14

Location B Pond

Project W-017

Elevation 640.32' ground surface (g.s.)

Drilling Contractor Jensen

Driller D Mingo

Drilling Method and Equipment Air Rotary

Prepared By KD Reynolds / KD Sen (Sign/Print Name) Date 8/3/92

Reviewed By Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 09/15/92

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
		Back hoe		Soil-sandy slty 0-6'	
				tr organic - vf-f. m snd lt gray brown	
				yellow brown, p srt, sbrnd-sb ang rp	5' @ 1330 7-17-92
				10-20% slt	10 @ 1345 7-17-92
5'	1 moisture 1 Rad 2 Ardine			vf-f 30-40%	
				m 40-50%	
				6' → 33'	
				KR Sand, m-c to granular sand	8/3/92 Drilling w/
10'	1M 1R 2A			D 2.5Y 5/2 grayish brown	Air Rotary
				W 2.5Y 7/0 black	@ 8.7'
				dry to sl. damp, p srt, sb ang-ang rp	
				some KR sbrnd, 60-70% mafic	
		Air Rotary		30-40% felsic	15' @ 1335 8-3-92
15'	1M 1R 2A			tr HCl reax on grains, uncons	20' @ 1340 8-3-92
				sand 90%+ Tr to 10% slt-cly	
				m - 40%+	
				c - 40%+	
				vf-f 10-20%	
20'	1M 1R 2A				
					25' @ 1440 8-3-92
25'	1M 1R 2A				30' @ 1530 8-3-92
		Air			
30'	1M 1R 2A				@ 33' dec in grain
					sz - and increase
				33' → 41' KR 8/11/92 Slty Snd	in felsic content
				~~Fine sand~~	
	1M 1R 2A			D 2.5Y 7/2 lt gray } 70 60% felsic	35' @ 1535 8-3-92
				W 2.5Y 6/0 gray } 30-40% mafic	40' @ 1540 8-3-92
				m-w srt, sbrnd to sl sb ang, dry	
				vf-f- 60-70% Slt-cly 30%	
				m- 10%-20%	
	1M 1R 2A			c 20-30% Tr HCl reax, uncons	

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BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 2 of 14

Location B-Pond | Project W-017

Elevation 640.32' g.s. | Drilling Contractor Jensen

Driller D Mingo | Drilling Method and Equipment Air Rotary

Prepared By KD Reynolds (Sign/Print Name) Date 8/3/92 | Reviewed By Edward C. Rafuse (Sign/Print Name) Date 09/15/92

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
		Air Rotary		41'–65'	45'@ 1545 8-3-92
				Sand, granular w/ occ sl silty zn	50'@ 1635 8-3-92
				tr pbls in discrete zns	
				D 2.5Y 5/2 S&D lt gray	
45'	1R 1M 2A			w 2.5Y 7/0 S&D black	
				m-w srt, sbrnd-sb Ang tp, uncons	
				60% mafic 40% Felsic	
				occ sl HCl rects in fnegrain zns	
				v dry	
50'	1R 1M 2A			c 30-40% Tr to occ 10% t slt	
				m 10-20% Tr granular to pbl	
				vf-f 40-60%	
55'	1R 1M 2A				55'@ 1640' 8-3-92
					60@ 1645 8-3-92
60'	1R 1M 2A				
					65'@ 1650 8-3-92
65'	1R 1M 2A			65' → 80'	END Shift
				Sand (dec grain-c %)	ⓓ 64' 8/3/92
				pred A/A	
				sl damp tp	
				c 10-20% o → occ up to 10%	
70'	1R 1M 2A			m 30-40% slt-dry	
				vf-f 40-60%	70'@ 800 8-4-92
				occ sl mc in Felsic ~~granules~~	75@ 805 8-4-92
				up to 50-50 mafic-felsic	80@ 810 8-4-92
75'	1R 1M 2A				
80'	1R 1M 2A				

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 3 of 14

Location B-Pond

Project W-017

Elevation 640.32' g.s.

Drilling Contractor Jensen

Driller D Mingo

Drilling Method and Equipment Air Rotary

Prepared By KD Reynolds / KD Reynolds (Sign/Print Name) Date 8/4/92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 08/19/92

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
		Air Rotary		Sand 80' → 96'	
				D 2.5Y 5/2 ltgray SBP	
				W 2.5Y 7/0 black SBP	
	1R 1m 2A			mod to w sort, sbrnd to sb Ang	
85'				occ sl Ang, none to tr HCL reac, uncons	
				v dry to occ sl damp, tr granular, scat mica	
				at 95', fine grained zn at 96 → 101	
				mafic 55-65% Felsic 45-35%	85' @ 844 8-4-92
				C 30-40%	90' @ 848 8-4-92
90'	1R 1m 2A			m 10-20%	95 @ 851 8-4-92
				vf-f 60-40% ← variable by zn	
					TR Pbls at 95', granular
95'	1R 1m 2A				snd
				96-101 dec in c %	
				tr to 10-15% slt	Thin c gr zn 101'-102'
				~~slty 101~~	
100'	1R 1m 2A			SAND ~~101~~ → 120'	100' @ 857' 8-4-92
				D 2.5Y 5/2 ltgy SBP	105 @ 934' 8-4-92
				W 2.5Y 3/2 vd gray brown SBP	
				mod-w sort, sbang-sbrnd, mod HCL reac	
				uncons, v dry to sl damp, scat to abnt mica	
105'	1R 1m 2A			50-60% felsic 40-50% mafic	
				c 5-15% 10-20% slt cly	Alt zns of vf-f snd
				m 20-30%	w/ occ m-c % in lyr bdd
				vf-f 45-75%	
110'	1R 1m 2A				COARSE GRAIN ZN
					111' → 112'
					110 @ 938 8-4-92
					115 @ 942 8-4-92
					120 @ 948 8-4-92
115'	1R 1m 2A				
	2A 1R 1m			A-12	COARSE @ 119'
120'					

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 4 of 14

Location B Pond

Project W-017

Elevation 640.32' g.s.

Drilling Contractor Jensen

Driller D Mingo

Drilling Method and Equipment Air Rotary

Prepared By KD Reynolds / KD Reynolds (Sign/Print Name) Date 8/4/92

Reviewed By EDWARD C. RAFFUSE / Edward C. Raffuse (Sign/Print Name) Date 8/15/92

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
		Air Rotary		Sand 120' → 136'	Sand to silty sand
				D 2.5Y 5/2 ltgy to yelgy	w/ occ sl gran zn
				W 2.5Y 3/2 vd gy brown	
	1R 1m 2A			mod-to w srt, sbang-occ to mod Abnt	
125'				af sbrnd, mod HCL KR in sltyzns	
				uncons, v dry tr sl damp, Abnt mica	125' @ 1106 8-4-92
				60% felsic, 40% mafic	130 @ 1110 8-4-92
				c-10% Sand 80-95% slt 5-20%	
				m 20%	
130'	1R 1A 2m			vF-F 70%	
					135 @ 1115 8-4-92
					140 @ 1119 8-4-92
135'	1R 1A 2m				
				MOD-v SILTY SND 136'-139'	
				Prod A/A w/ SAND 40-60%	
				SIT -60-40%	
				MOD to very strng HCL reac in slty zn	
140'	1R 1m 2A			Granular to Slightly SND 139'-140'	
				Sand to 144 → Dec gran sz	
				to slty SND KR 142'-KR 150'	
				SAND A/A 143'-145'	
					145 @ 1330 8-4-92
145'	1R 1m 2A			Tr gran to pbl snd 145	150 @ 1335 8-4-92
				(150'-164')	
				Sand (Alt Gran to slty snd)	
				D 2.5Y 5/2 to 6/4 ltgy to lt yel brn	
150'	1R 1m 2A			W 2.5Y 3/2 vd gy brn	
				mod to w srt, sbang to sbrnd, tr Ang frag	
				mod to v strng HCL reac in slty zn, no	
				reac in gran zns, dry to v slightly damp	
				uncons, 60-70% mafic 30-40% felsic	
155'	1R 1m 2A			trc (5-15%) felsic in slty zns	mc 8-4-92
				tr to Abnt mica	~~150~~ 155 @ 1340 8-4-92
				variable % gr sz depending on	160 @ 1345 8-4-92
				zn → 90% snd 10% or less slt	
	1R 1m 2A			40% c A-13	
160'				10% m 50% vF-F	

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 5 of 14

Location BOND

Project W017 / BOND

Elevation 640.32' g.s.

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By MOSWENEY / [illegible] (Sign/Print Name) Date 8-6-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 08/15/92

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
	1RAD 2LITH 1CaCO3 H2O	AIR ROTARY			
					END SHIFT 8-4-92 @ 163.96
				PEBBLE COBBLE	
165'				165' COBBLE ~~PEBBLE~~ GRAVEL	165' @ 1045 8-6-92
	1RAD 2LITH 1CaCO3 H2O			GRAVEL: 45% SAND: 53% SILT: 2%	164' - 212' PEBBLE
				SC - 50% CG - 50% COLOR WET: 2.5Y 2.5/1 BLACK	COBBLE GRAVEL.
				LP - 30% MP - 40% COLOR DRY: 2.5Y 5/2 OLIVE GRAY	
				MP - 10% FP - 10%	
				FP - 10%	
				GRAVEL - MAFICS: 80%, QTZ - 10%, FELSICS - 10%	
				ANGULAR SUBANGULAR, SAND - MAFICS: 60%, QTZ:	
				20%, FELSICS: 15% ANGULAR - SUBANGULAR	
				NO RXN TO HCl, POORLY SORTED	
170'				170' ~~COBBLE PEBBLE~~ PEBBLE COBBLE GRAVEL	170' @ 1050 8-6-92
	1RAD 2LITH 1CaCO3 H2O			SAME AS ABOVE	
				175' PEBBLE COBBLE GRAVEL	175' @ 1100 8-6-92
175'				SAME AS ABOVE	
	1RAD 2LITH 1CaCO3 H2O			EXCEPT SLIGHT	
				INCREASE IN SILT - 3%	
					END Shaft 8/6/92 177'

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 6 of 14

Location: BROND

Project: WOLF/BROND

Elevation: 640.32' g.s.

Drilling Contractor: JENSEN

Driller: D. MINGO

Drilling Method and Equipment: AIR ROTARY

Prepared By: MD SWEENEY (Sign/Print Name) Date: 8-10-92

Reviewed By: EDWARD C. RYKER (Sign/Print Name) Date: 09/15/92

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 RAD 2 LITH 1 CaCO3 H2O	AIR ROTARY		180' PEBBLE COBBLE GRAVEL SAME AS 175'	180' @ 0755 8-10-92
185'	1 RAD 2 LITH 1 CaCO3 H2O			185' PEBBLE COBBLE GRAVEL SAME AS 175'	185' @ 0856 8-10-92
190'	1 RAD 2 LITH 1 CaCO3 H2O			190' PEBBLE COBBLE GRAVEL SAME AS 175'	190' @ 0918 8-10-92
195'	1 RAD 2 LITH 1 CaCO3 H2O			195' PEBBLE COBBLE GRAVEL SAME AS 175'	195' @ 0955 8-10-92

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 7 of 14

Location B POND

Project W017/B POND

Elevation 640.32' g.s.

Drilling Contractor JENSEN

Driller D. MINCO

Drilling Method and Equipment AIR ROTARY

Prepared By MOSWEINEZ (Sign/Print Name) Date 8-10-92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 09/15/92

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
	1 RAD 2 LITH 1 CaCO3 - H2O		AIR ROTARY	200' PEBBLE COBBLE GRAVEL SAME AS 175'	200' @ 1007 8-10-92
205'	1 RAD 2 LITH 1 CaCO3 - H2O.			205' PEBBLE COBBLE GRAVEL SAME AS 175' EXCEPT INCREASING SAND - 55%.	205' @ 1057 8-10-92
210'	1 RAD 2 LITH 1 CaCO3 - H2O			210 PEBBLE COBBLE GRAVEL SAME AS 175'	210 @ 1115 8-10-92 CHANGE TO PEBBLY SAND @ 212'
215'	1 RAD 2 LITH 1 CaCO3 - H2O			215 PEBBLY SAND GRAVEL: 30% SAND 69% SILT: 1% MA-65% CG-60% COLOR WET: 5Y6/2 FP-35% MG-30% COLOR DRY: 5Y7/2 FG-10% GRAVEL: 80% MAFICS, 20% QTZ, 10% FELSICS. ANGULAR-SUBANGULAR-SUBROUND. SAND: 70% MAFICS, 25% QTZ, 5% FELSICS, ANGULAR SUBANGULAR, SUBROUNDED, POORLY SORTED NO RXN TO HCl	215 @ 1125 8-10-92 CHANGE TO PEBBLE COBBLE GRAVEL @ 216' 212 - 216 PEBBLY SAND

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 8 of 14

Location B Pond

Project W017 / BPOND

Elevation 640.32' g.s.

Drilling Contractor JENSEN

Driller D MINGO

Drilling Method and Equipment AIR ROTARY

Prepared By MOSWEENEY / [signature] (Sign/Print Name) Date 8/10/92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 09/15/92

Depth (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
	1 RAD 2 LITH 1 CaCO3 H2O	AIR ROTARY		220' PEBBLE COBBLE GRAVEL	220 @ 1142 8-10-92
				SC-40% CG-60% COLOR WET: 2.5Y 2.5/1 BLACK	
				LP-40% MG-30% COLOR DRY: 2.5Y 5/2 OLIVE GREY	216-226 PEBBLE COBBLE
				MP-10% FG-10%	GRAVEL.
				FP-10%	
				GRAVEL MAFICS-75%, QTZ:20%, FELSICS-5%,	
				ANGULAR SUBANGULAR SAND: 65% MAFIC,	
				25% QTZ, 10% FELSIC, ANGULAR-SUBANGULAR	Static Water on
				POORLY SORTED NO RXN TO HCl.	8/11/92 222.5'
225'	1 RAD 2 LITH 1 CaCO3 H2O			225' PEBBLE COBBLE GRAVEL	225' @ 1340 8-10-92
				SAME AS ABOVE	CHANGE TO SAND @
					226' - COARSE GRAINED
					NO SAMPLE.
					CHANGE TO SILT/CLAY
					@ 228'.
					226-228 COARSE SAND
230'	1 RAD 2 LITH 1 CaCO3 H2O			230' SILT/CLAY	230' @ 1355 8-10-92
				100% SILT/CLAY.	228-238' SILT/CLAY
				COLOR WET: 2.5Y 4/4 OLIVE BROWN.	
				COLOR DRY: 2.5Y 7/4 PALE YELLOW	
				STRONG RXN TO HCl. DAMP.	
235'	1 RAD 2 LITH 1 CaCO3 H2O			235' SILT/CLAY	235' 1425 8-10-92
				SAME AS ABOVE.	CHANGE OVER TO
					~~SANDY CLAY~~ WS 8 [illegible] @ 238'
					SILTY SAND

3 1 2 7 5 9 4 3

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 9 of 14

Location B Pond

Project W017/ B Pond

Elevation 640.32' q.s.

Drilling Contractor JENSEN

Driller D Mingo

Drilling Method and Equipment Air Rotary

Prepared By MD Sweeney / [signature] (Sign/Print Name) Date 8-10-92

Reviewed By Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 09/15/92

Depth (240')	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 RAD 2 LITH 1 CaCO3 Hcl			240' ~~Sandy Clay~~ MS 8-10-92 SILTY SAND	240' @ 1442 8-10-92
				SAND: ~~65~~ 65% SILT: ~~35~~ 35%.	
				COLOR WET: 2.5Y 5/6 LT OLIVE BROWN.	
				COLOR DRY: 2.5Y 5/6 LT OLIVE BROWN.	
				SAND: MAFIC-30%, QTZ-30%, 40% FELSIC.	
				ANGULAR-SUBANGULAR, FINE	
				GRAINED. WELL SORTED	
245'	NO SAMPLE			245' SILTY SAND	245' - NO SAMPLE
				SAME AS 240'	
					Note: split spoon abandoned on 9/4/92 3 pieces left in the formation at 245' 253' and 255'. Verification by Magnetic Log.
250'	NO SAMPLE	AIR ROTARY		250' SILTY SAND	250' - NO SAMPLE
				SAME AS 240'	
	SPLIT SPOON 3 SS SLEEVES.				
255'	2 LITH ~~RAD~~ MS 1 RAD 9/9/92 1 CaCO3 FROM SHOE OF SPLIT SPOON			255' SANDY GRAVEL	255' @ ~~80~~ 0835 MS 9-9-92 9-9-92
				GRAVEL: 65% SAND: 33% SILT: 2%.	
				CP: 30% CG: 15% COLOR WET: 5Y 4/3 OLIVE	SANDY GRAVEL @ 254.6.
				MP: 50% MG: 40% COLOR DRY: 5Y 5/3 OLIVE.	
				FP: 20% FG: 45%	
				GRAVEL: MAFIC: 30%, FELSIC 40%, QTZ: 30%, ANGULAR	
				SUBANGULAR-SUBROUNDED. SAND: MAFIC: 35%,	
				FELSIC: 40%, QTZ: 25%. WEAK RXN TO	
				HCl	

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A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 10 of 14

Location B-POND

Project W017/B POND

Elevation 640.32' G.S.

Drilling Contractor JENSEN

Driller D MINLO

Drilling Method and Equipment AIR ROTARY / V-5

Prepared By [illegible] (Sign/Print Name) Date 9-9-92

Reviewed By EDWARD C. RAFUSE (Sign/Print Name) Date 09/15/92

Depth (260')	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
	2 LITR 1 RAD 1 CaCO3	AIR ROTARY		260' SANDY GRAVEL SAME AS 255' EXCEPT INCREASE IN SAND: 45%	260' @ 1314 9-9-92
265'	2 LITR 1 RAD 1 CaCO3			265' SANDY GRAVEL SAME AS 255'	265' @ 1401 9-9-92
270'	2 LITR 1 RAD 1 CaCO3			270' SANDY GRAVEL SAME AS 255'	270' @ 1418 9-9-92
275'	2 LITR 1 RAD 1 CaCO3			275' SANDY GRAVEL SAME AS 255'	275' @ 1420 9-9-92

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A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 11 of 14

Location B-POND

Project W017 / B POND

Elevation 640.32' g.s.

Drilling Contractor JENSEN

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / V-5

Prepared By [signature] (Sign/Print Name) Date 9-9-92

Reviewed By EDWARD C. RAFUSE / EDWARD C. RAFUSE (Sign/Print Name) Date 09/15/92

Depth (280')	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
	2 RITY 1 RAD 1 CuCO3	AIR ROTARY		280' SANDY GRAVEL SAME AS 255'	280' @ 1x24 9-9-92
					TO 8" @ 281.5 SHIFT END
285'	NO SAMPLE			285' SANDY GRAVEL SAME AS 255'	285' 9-11-92 NO SAMPLE
290'				290 SANDY GRAVEL SAME AS 255	290' 9-14-92 NO SAMPLE
295'				295 SANDY GRAVEL	295 9-14-92 NO SAMPLE

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A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 12 of 14

Location ~~699-41-42~~ MAD 9-14-92 / B POND

Project W017 / B POND

Elevation 640.32' G.S.

Drilling Contractor JENSEN

Driller D. MINGO.

Drilling Method and Equipment AIR ROTARY. CP650/V-5

Prepared By MASWEENEY / [signature] (Sign/Print Name) Date 9-14-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 29/15/92

Depth (300')	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
	NO SAMPLE	AIR ROTARY		300' SANDY GRAVEL	300' 9-14-92 NO SAMPLE
305'	2 LITH 1 RAD 1 $CaCO_3$			305' SANDY GRAVEL GRAVEL: 65%, SAND: 34%, SILT: 1%. CP-45%. CK: 60% COLOR WET: 5Y 4/3 OLIVE MP-45% MC-30% COLOR DRY: 5Y 5/3 OLIVE. FP-10% FC-10% GRAVEL: MAFIC: 35%, FELSIC: 45%, QTZ: 20%. ANGULAR FRAMES 1/4-92 ~~310'~~ SUBANGULAR, SUBROUNDED; ROUNDED ~~SAND~~ MAD 9-14-92; SAND: MAFIC 25%, FELSIC 60%, QTZ: 15%. NO RXN TO HCl.	305' @ 0834 9-14-92
310'	2 LITH 1 RAD 1 $CaCO_3$			310' SANDY GRAVEL SAME AS 305'	310' @ 0838 9-14-92
315'	2 LITH 1 RAD 1 $CaCO_3$			315 GRAVEL GRAVEL: 85% SAND: 14% SILT: 1%. SAME LITH DESCRIPTION AS 305'	~~315-34~~ 315' @ 918 9-14-92

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A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 13 of 14

Location BPOND

Project W017/BPOND

Elevation 640.32' g.s.

Drilling Contractor JENSEN DRILLING

Driller D MINLAD

Drilling Method and Equipment AIR ROTARY/CP650-45

Prepared By WDS WEEREY/[signature] (Sign/Print Name) Date 9-14-92

Reviewed By EDWARD C. RAFUSE / EDWARD C. RAFUSE (Sign/Print Name) Date 09/15/92

Depth (320')	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
	2 LITH 1 RAD 1 $CaCO_3$	AIR ROTARY		320' SANDY GRAVEL SAME AS 305'	320 @ 0931 9-14-92
325'	2 LITH 1 RAD 1 $CaCO_3$			325' SANDY GRAVEL SAME AS 305' INCREASE IN MAFICS (50%)	325 @ 1023 9-14-92
330'	2 LITH 1 RAD 1 $CaCO_3$			330 GRAVEL SAME AS 315 INCREASE IN MAFICS (45%)	330 @ 1039 9-14-92
335'	2 LITH 1 RAD 1 $CaCO_3$			335 VESICULAR BASALT BLACK (5Y 2.5/0) VESICULAR BASALT W/ GREY (2-5Y 6/1) CLAY.	335 @ 1040 9-14-92

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A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 699-41-42

Sheet 14 of 14

Location: BPOND
Project: W017 / BPOND
Elevation: 640.32' T.S.
Drilling Contractor: JENSEN DRILLING
Driller: D MINGO
Drilling Method and Equipment: AIR ROTARY / CP650-US
Prepared By: MPSWEENEY (Sign/Print Name) Date: 9/14/93
Reviewed By: EDWARD C. KAFER / EDWARD C. KAFER (Sign/Print Name) Date: 09/15/92

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
	2 LITH 1 RAD 1 CaCO3	AIR ROTARY		340' BASALT W/OPALIZED MINERALIZATION. BLACK BASALT W/OPALIZED MINERAL FILLING.	340' @ 1045 9-14-92
					TD = 342.92
					SWL = 230.1 9/14/92

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A-6000-382 (04/90)

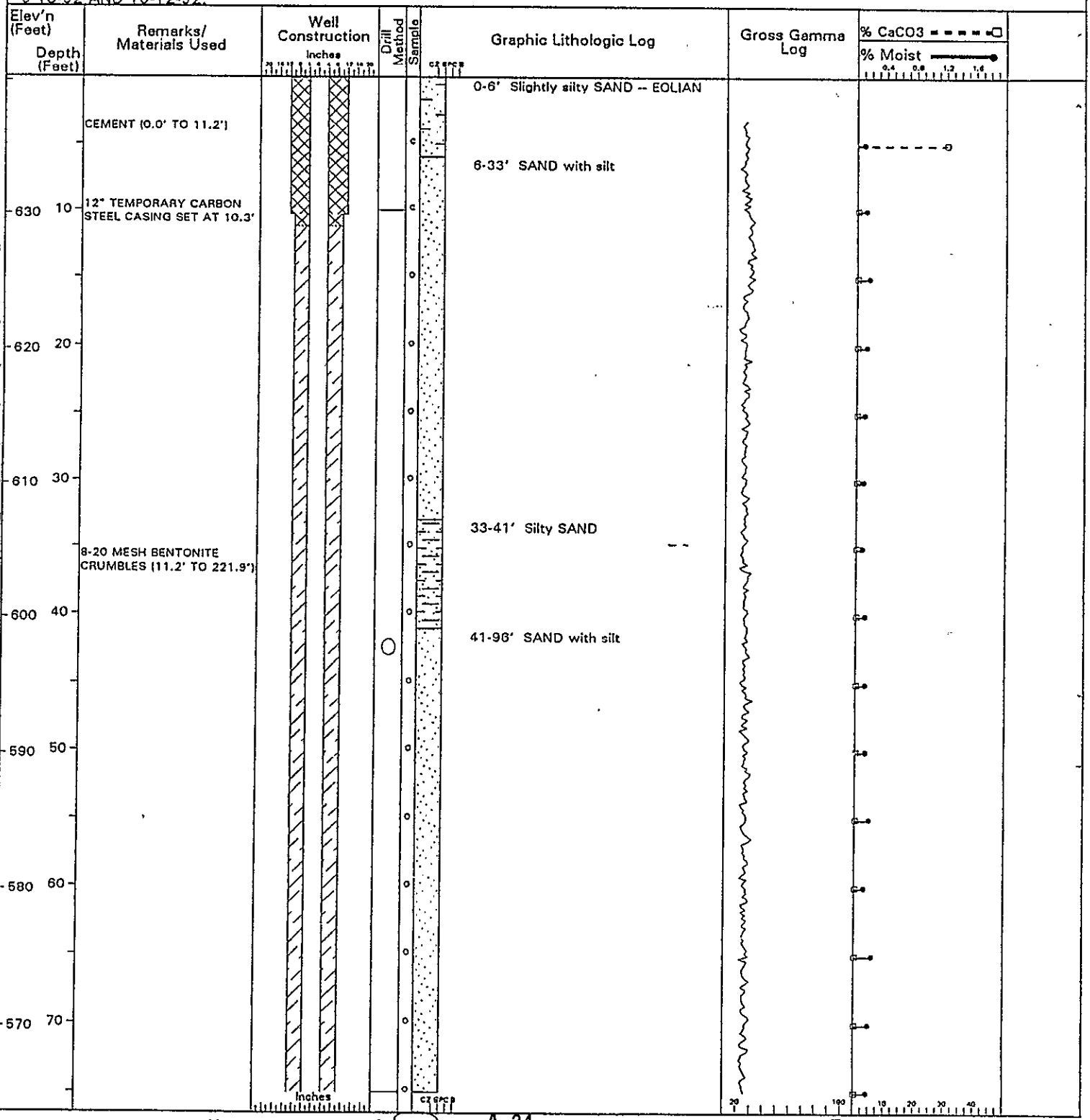
Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION		**Well No:** 699-41-42	Page 1 of 4
		Total Depth: 342.92	Static Water Level: 228.80
Date Started: 7-17-92	Date Completed: 11-12-92	Surface Elevation: 640.32	Casing Elevation: 643.91
Location: B-POND 200 EAST		Northing: 136068.17	Easting: 577122.21
Prepared By: KD REYNOLDS/MD SWEENEY		Hanford N: 41270.30	Hanford W: 41898.10
Drilling Co: JENSEN	Driller: D MINGO	Drill Meth: AIR ROTARY	Drill Equip: ODEX CP 650 V-5

Screen: 10.24' OF 4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP W/ENDCAP SET FROM 270.33' TO 280.59'

Filter Pack: 20-40 MESH SILICA SAND FROM 262.1' TO 285.3'

Permanent Casing: 4" DIAMETER TYPE 304 SCHEDULE 5 STAINLESS STEEL WITH CENTRALIZERS SET TO 270.33'

Comments: ABANDONED SPLIT SPOON PIECES AT 245', 253', AND 255' ON 9-4-92 AS VERIFIED BY MAGNETIC LOG RUN ON 9-18-92 AND 10-12-92.



Reviewed By: Kent D. Reynolds

Date: FEB. 19 1993

Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION | Well No: 699-41-42 |

WHC-SD-EN-DP-053, Rev. 0

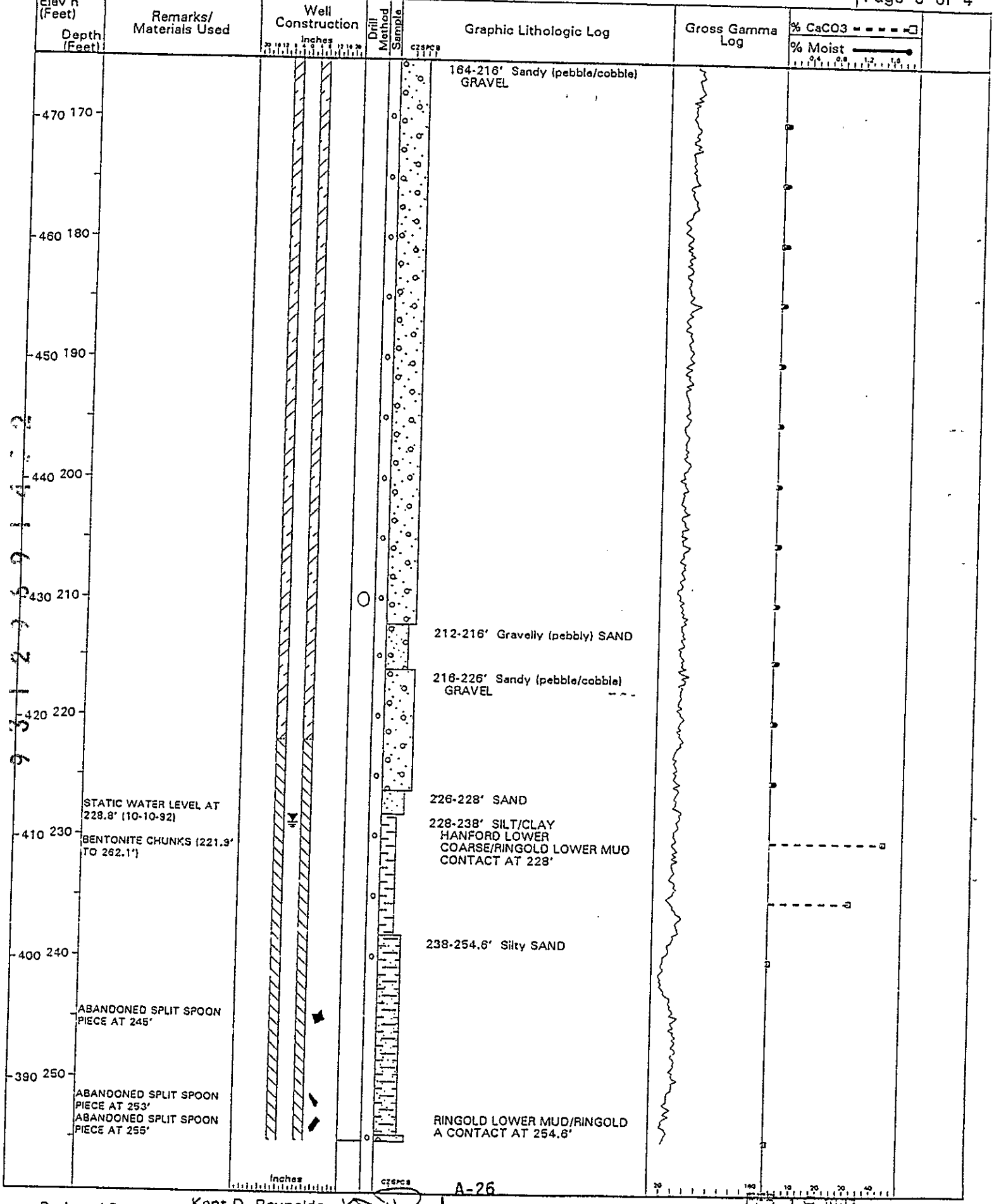
Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
560	80							
		4" DIAM T-304 SCH 6 STAINLESS STEEL PERM CASING W/CENTRALIZERS						
550	90							
						96-136' Slightly silty SAND Occasional thin pebble layers		
540	100							
530	110							
520	120							
510	130							
						136-139' Silty SAND Occasional thin pebble layers		
500	140					139-164' SAND with silt Occasional thin pebble layers		
490	150							
480	160							
		10" TEMPORARY CARBON STEEL CASING SET AT 163.96'				HANFORD FINE/HANFORD LOWER COARSE CONTACT AT 164'		

Inches

Reviewed By: Kent D. Reynolds A-25 Date: FEB. 19 1993

Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION

Well No: 699-41-42



Reviewed By: Kent D. Reynolds KD Rey

Date: FEB. 19 1993

Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION | Well No: 699-41-42 |

Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method	Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
						254.6-315' Sandy GRAVEL		
380	260	20-40 MESH SILICA SAND FILTER PACK (262.1' TO 285.3')						
370	270	4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN WITH ENDCAP (270.33' TO 280.59')						
360	280	8" TEMPORARY CARBON STEEL CASING SET AT 281.5'						
		BENTONITE CHUNKS (285.3' TO 341.7')						
350	290							
340	300							
330	310							
						315-320' Slightly sandy GRAVEL		
320	320	20-40 MESH SILICA SAND TO ELIMINATE BRIDGE IN BENTONITE CHUNKS				320-330' Sandy GRAVEL		
310	330					330-335' Slightly sandy GRAVEL		
						335-342.92' BASALT -- ELEPHANT MOUNTAIN MEMBER, CRBG		
300	340	6" TEMPORARY CARBON STEEL CASING SET AT 342.3' SLUFF (341.7' TO 342.92') TOTAL DEPTH = 342.92'						

Inches

A-27

Reviewed By: Kent D. Reynolds [signature] Date: FEB. 19 1993

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Westinghouse Hanford Company | VALIDATED KDR 1/18/93 SIGNATURE/DATE | LOG HEADER | Page 1 of 2

Well No. 699-41-42 Area 600 Date 9/18/92

Log Run #1 Log Type Gross Gamma

Elevation Datum Brass Cap Elevation ~~640.23~~ 640.32' BET 1-12-93

Survey Coordinates 136,068.17 N 577,122.21 E

Log Measured From Ground Surface

Location Description South of B-Pond

Ground Surface Elevation 640.32'

Surface Temperature NA Weather Clear-Warm

BOREHOLE INFORMATION

Driller Dennis Mingo (Jensen Drilling)

Drill Rig Type ODEX | Bit Type/Diameter Air Hammer / 6"

Borehole Diameter(s)/Depth 12"/10.3' 10"/163.9' 8"/281.5' 6"/340.5

Depth Driller 340.5' | Depth Logger 341.4'

Liquid Level 230.1' | Liquid ~~Density~~ ~~Appearance~~ Clean

Temperature NA

CASING RECORD

Type 12" Carbon Steel Sch. 40 | Interval 0.0' – 10.3'

Type 10" Carbon Steel Sch. 40 | Interval 0.0' – 163.9'

Type 8" Carbon Steel Sch. 40 | Interval 0.0' – 281.5'

Type 6" Carbon Steel Sch. 40 | Interval +1.8' – 340.5'

Well Screen Interval NA

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

LOG HEADER

EQUIPMENT DATA

Logging Company: PNL

Operator(s): Alan Pearson

Equipment Brand: MLS — Equipment Type: Analog

Tool Type: Gamma Ray — Serial No. CG27A97

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: 341.4' — To: 3.3'

Rerun(s): 260.0' to 230.0'

Pre Survey Verification: Position 1: 314.2 eU — Position 2: 65.8 eU — Background: 60 cps

Base Calibration Difference: Position 1: 0.9 eU — Position 2: 0.7 eU

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

Start Time: 1000 — Completion Time:

Chart Speed(s), I/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: 66.5 eU — Background: 58 cps

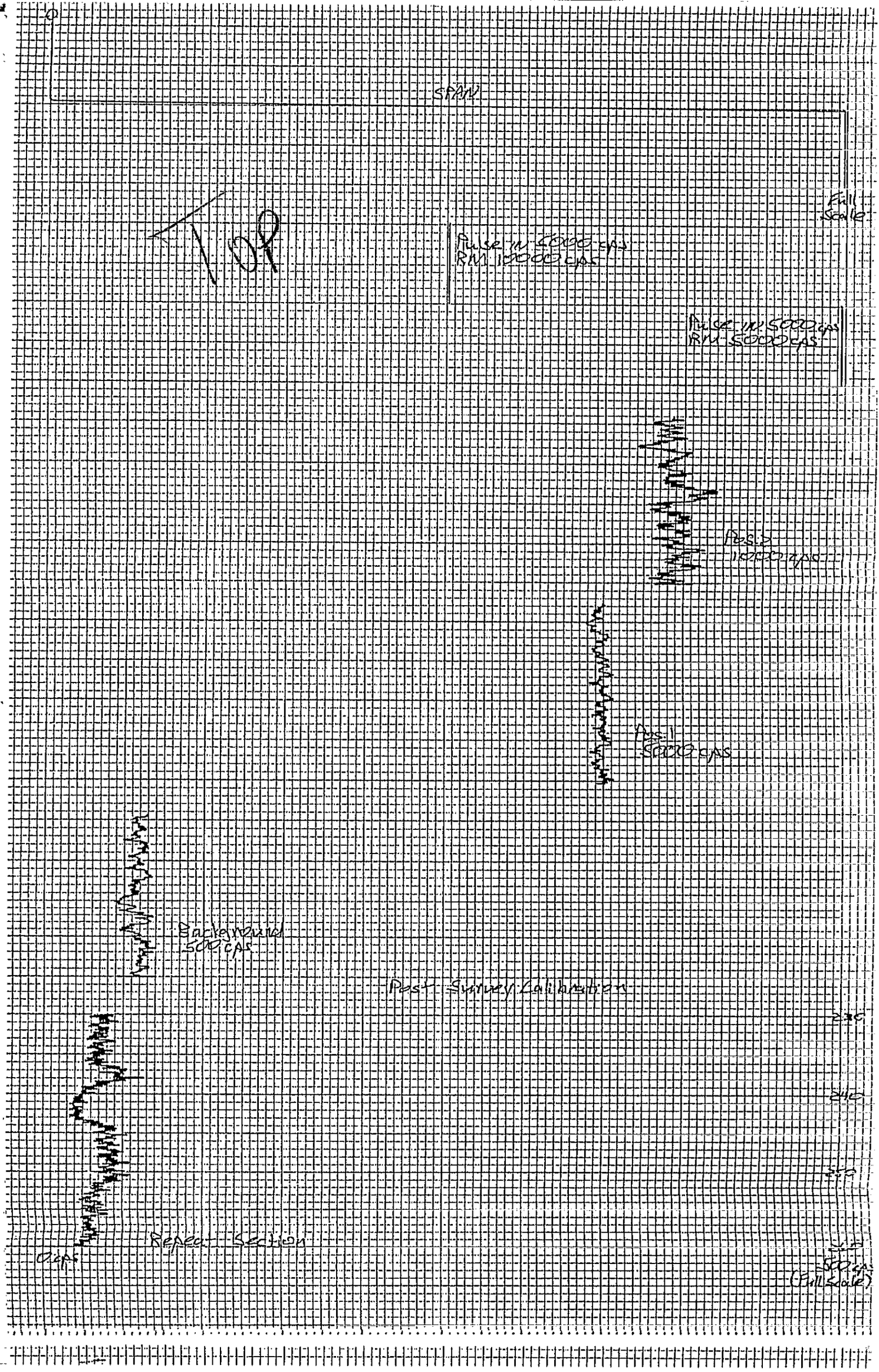
Percent Change: Position 1: 0.5% — Position 2: 1.1%

Comments: Return Error = +0.2' high

Centralizer used.

Witnessed and Verified by: (sign and print name) Alan Pearson Alan Pearson — Date: 9/18/92

A-6000-520 (05/90)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Full Scale
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
Pos. 2
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Pos. 1
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Post Survey Calibration
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250
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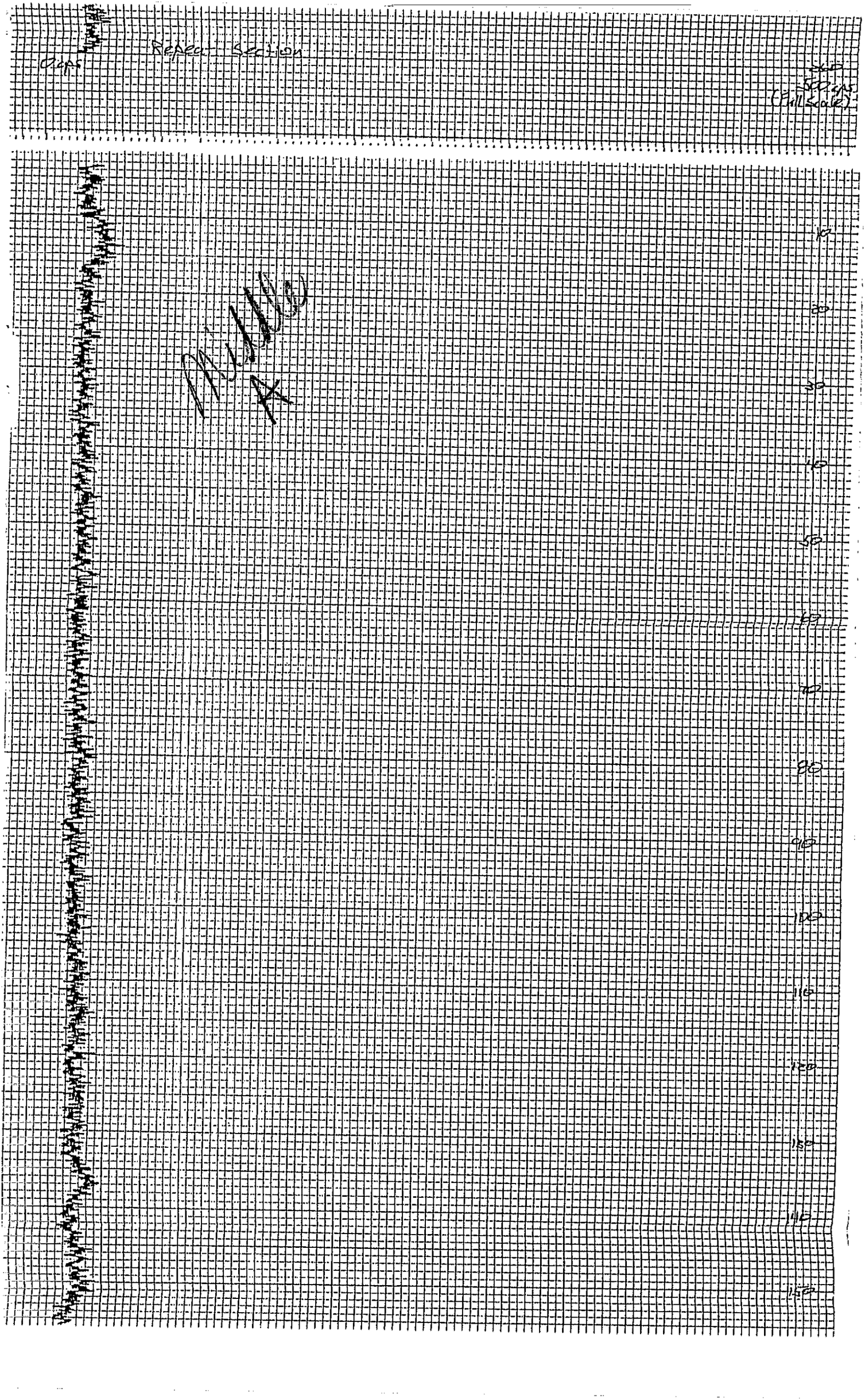
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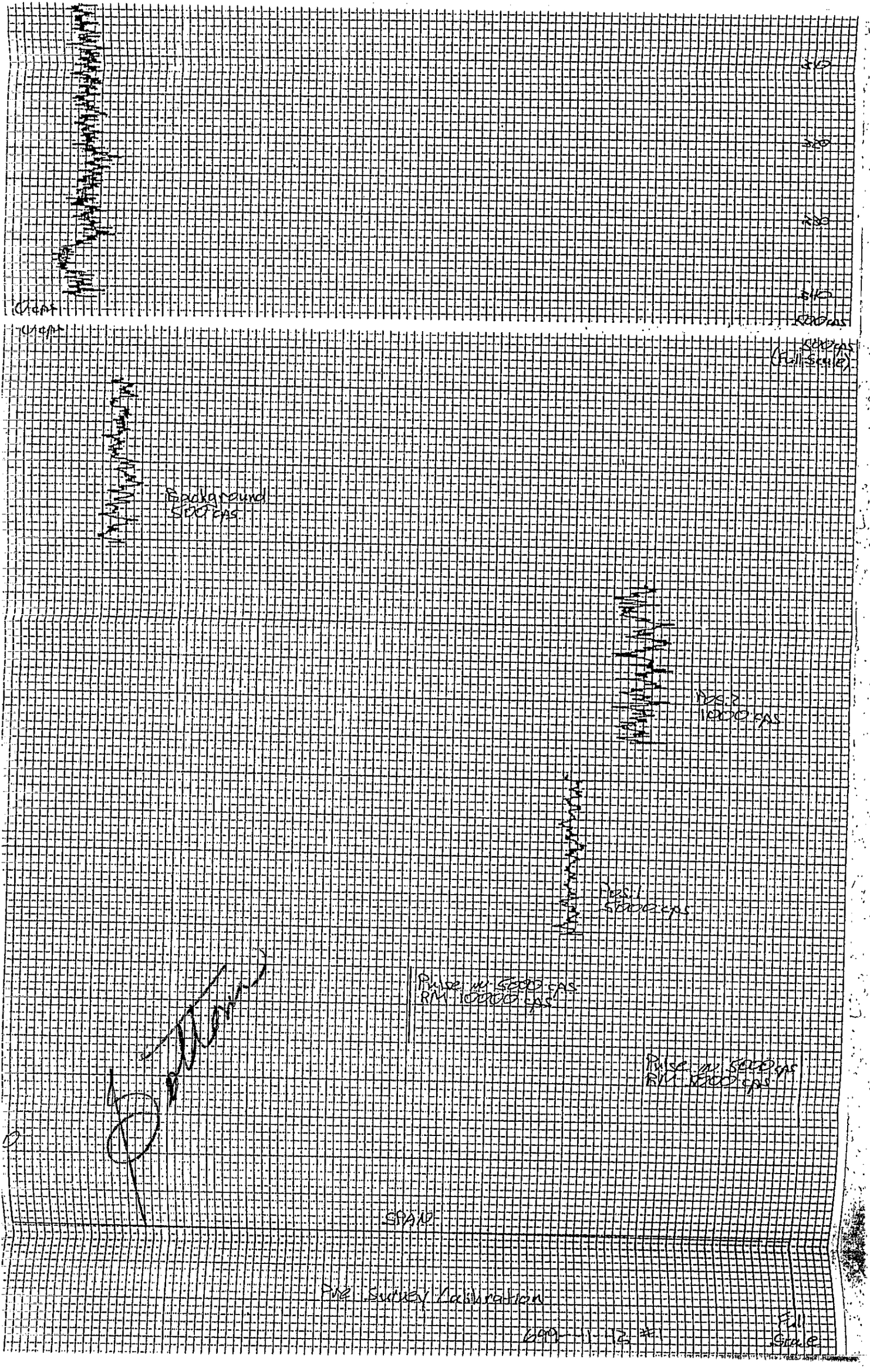

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330
340
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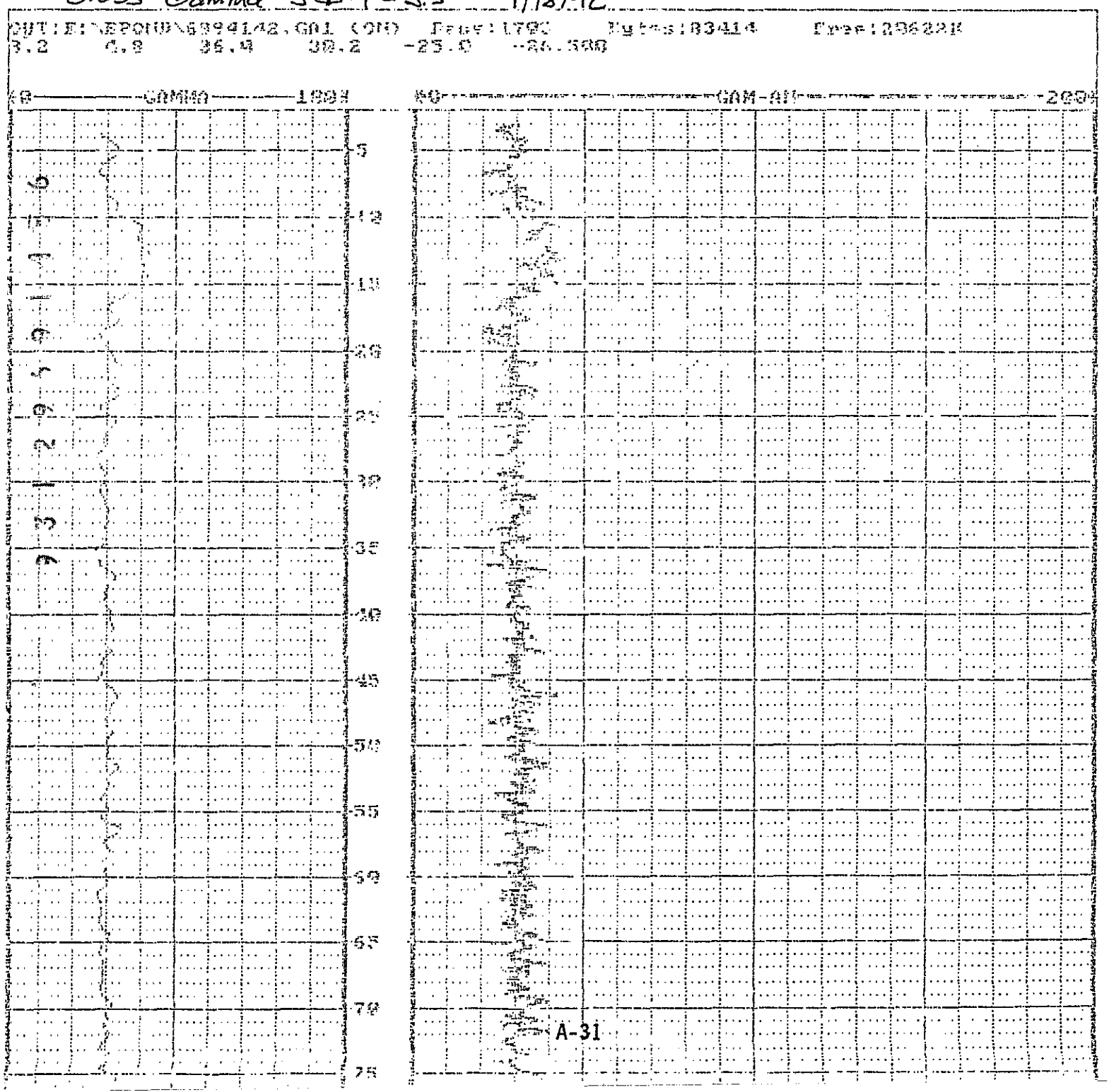
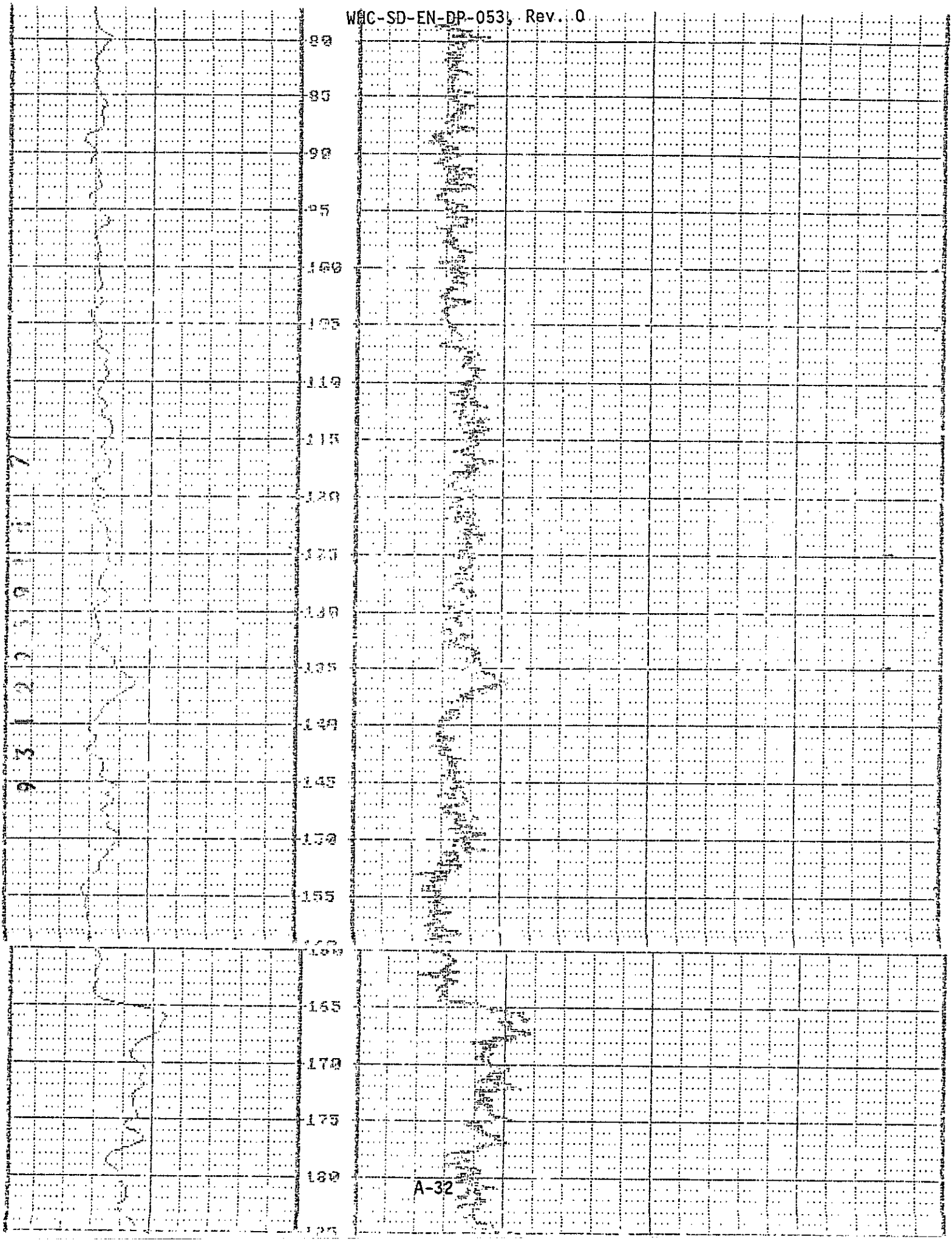
0 cps
500 cps
500 cps
(Full Scale)
Background
500 cps
Pos. 2
1000 cps
Pos. 1
5000 cps
Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
SPAN
Pre Survey Calibration
699-1-12 #1
Full
Scale

Gross Gamma 34.4'-3.3' 9/18/92

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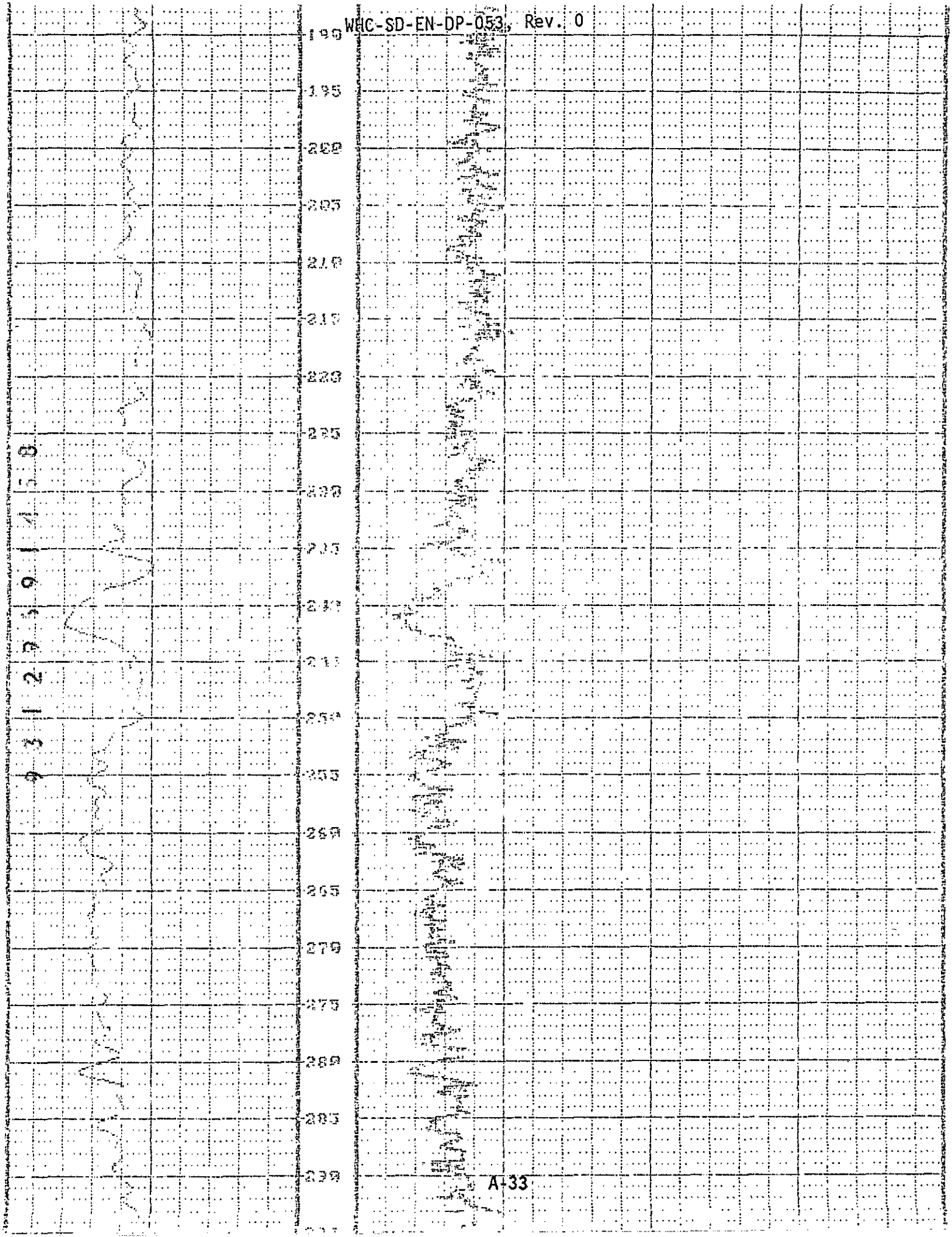
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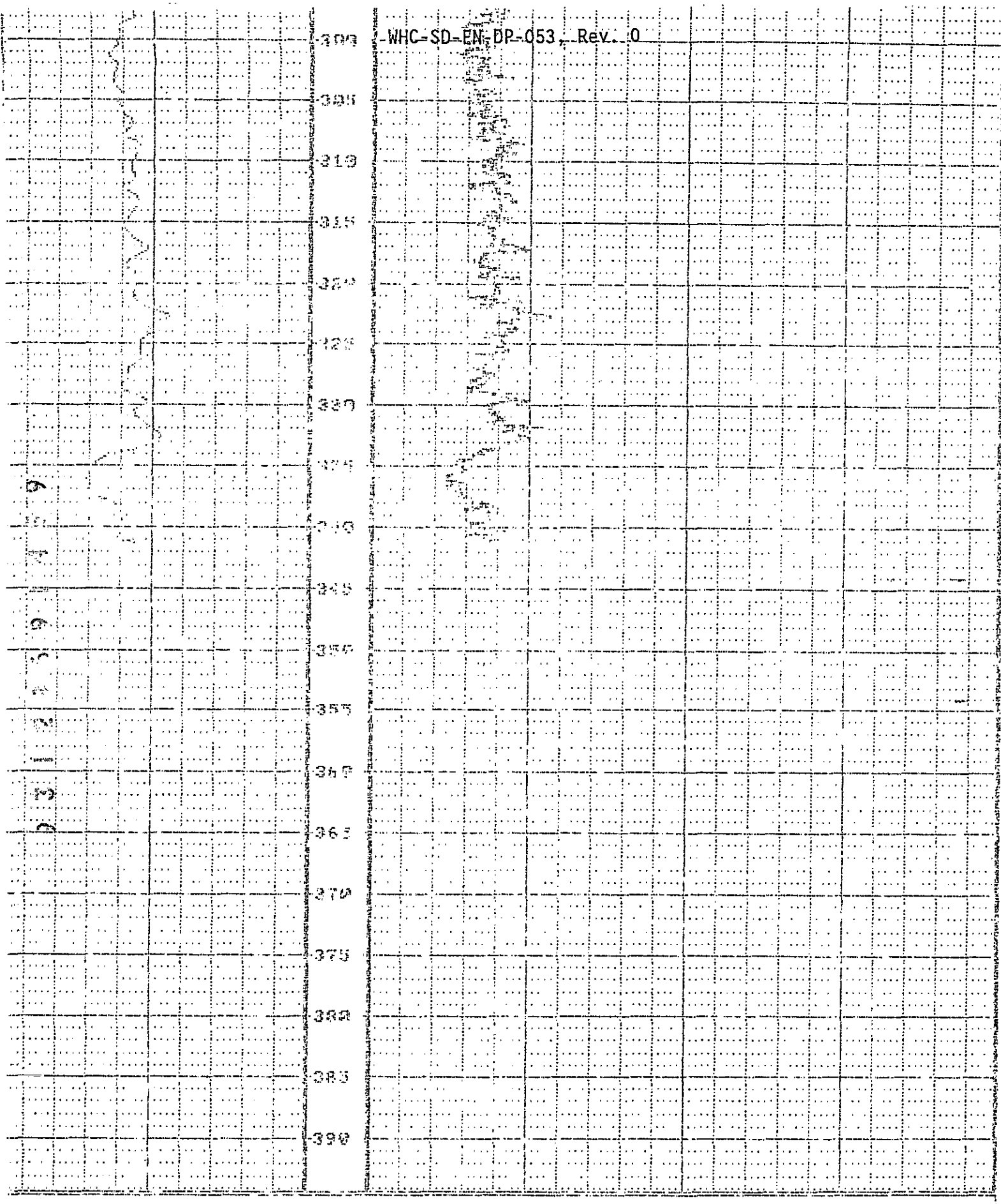

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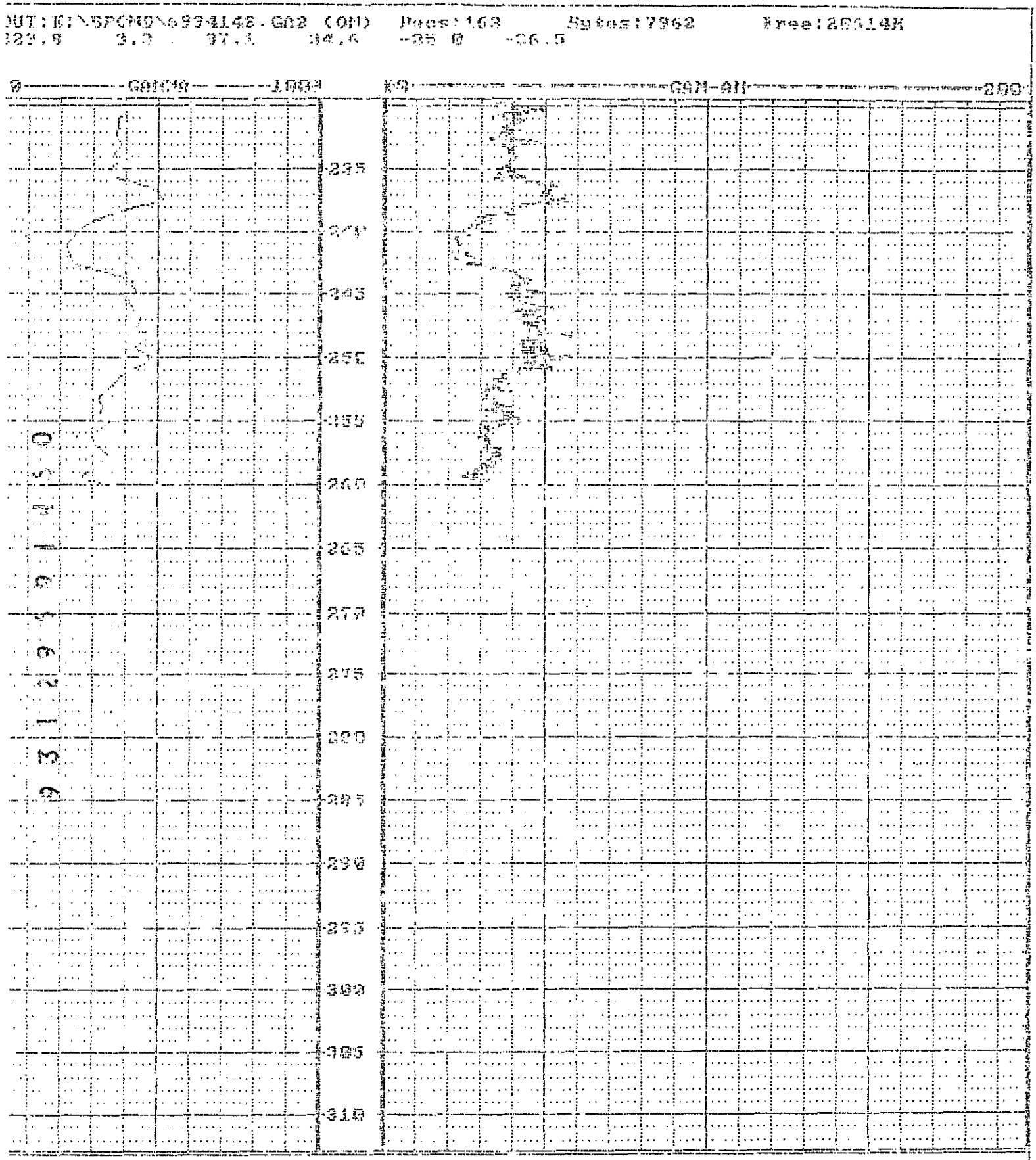
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GAM-AN
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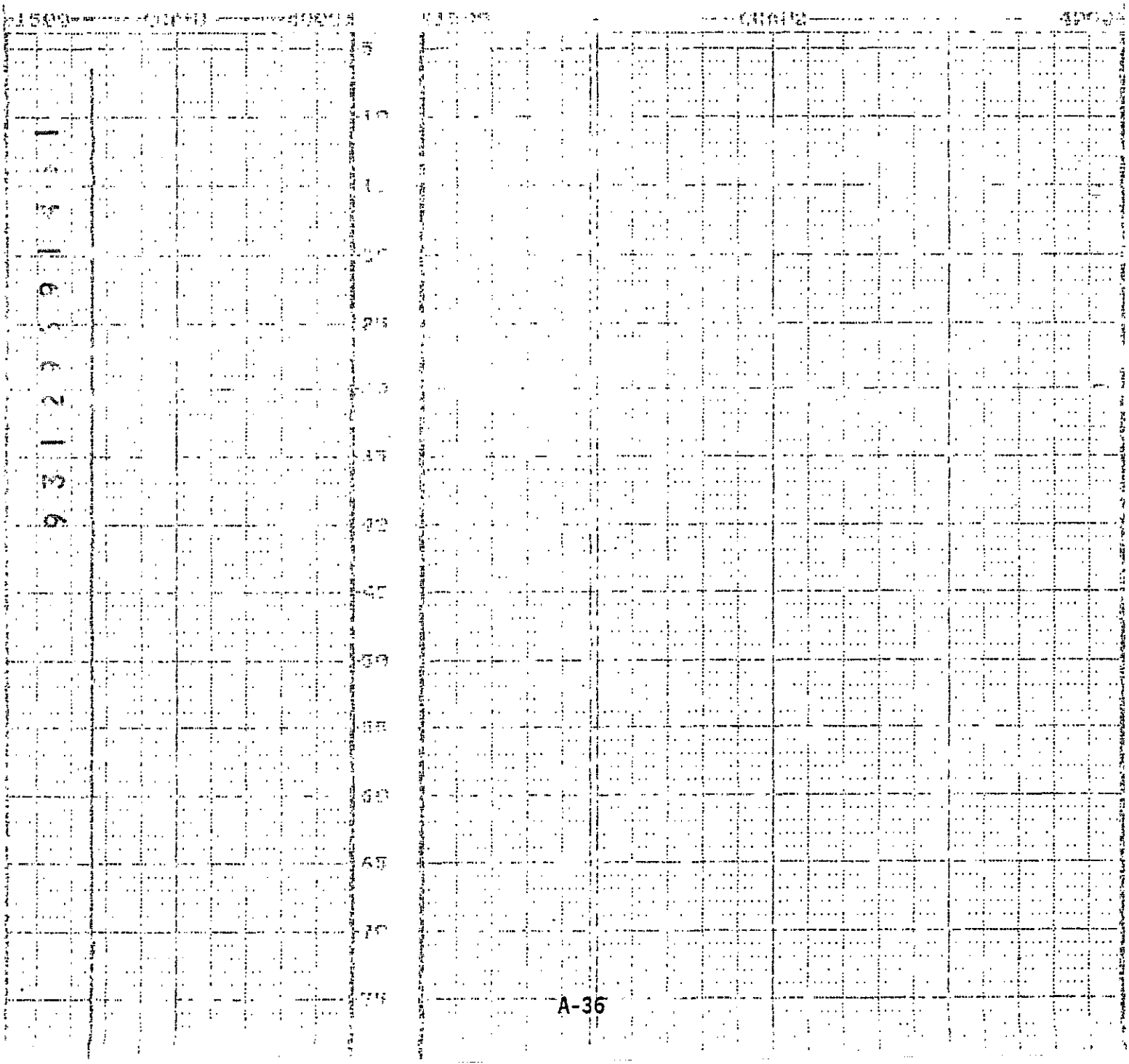
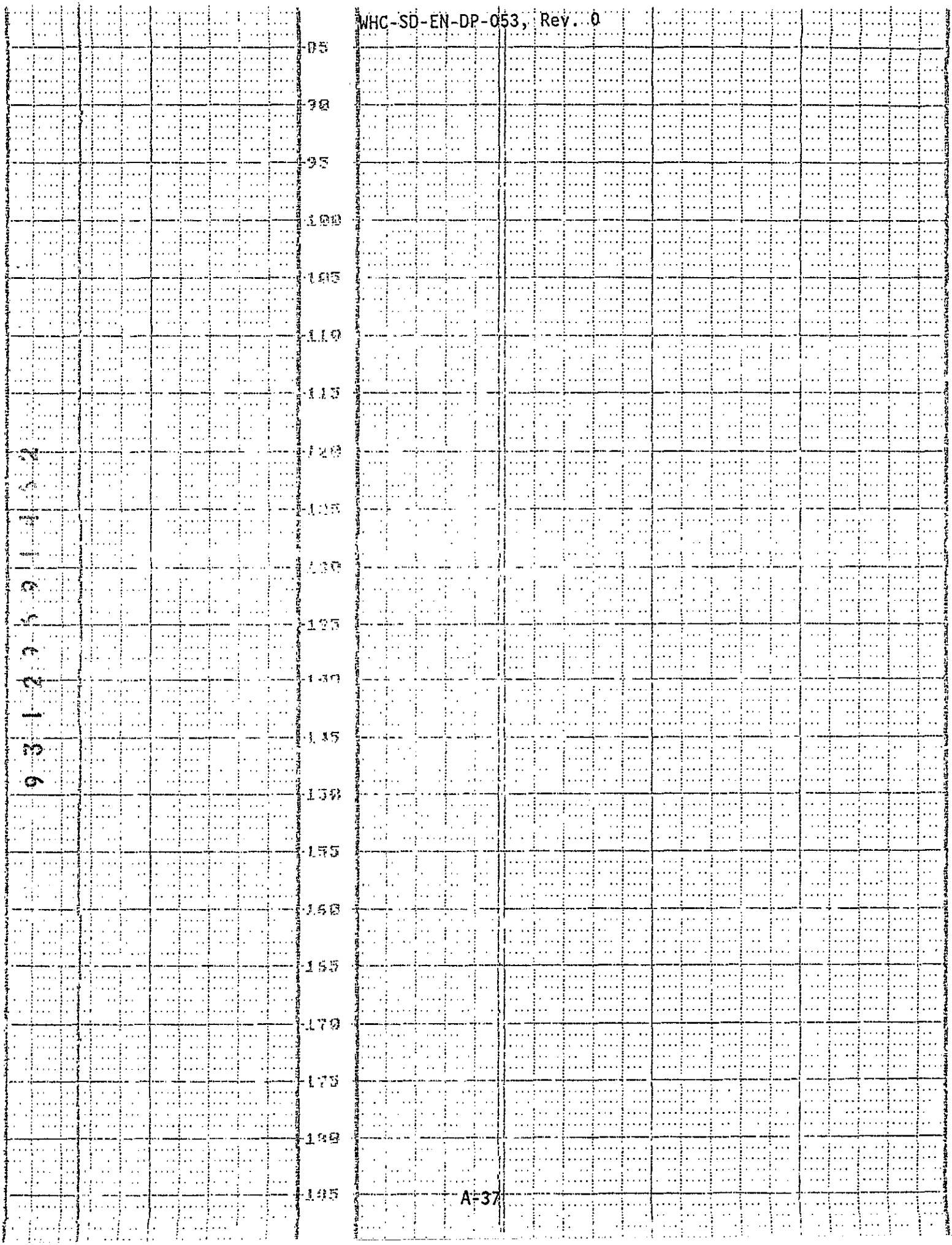
Bytes:612

Magnetic 280.0'-5.0' 10/12/92

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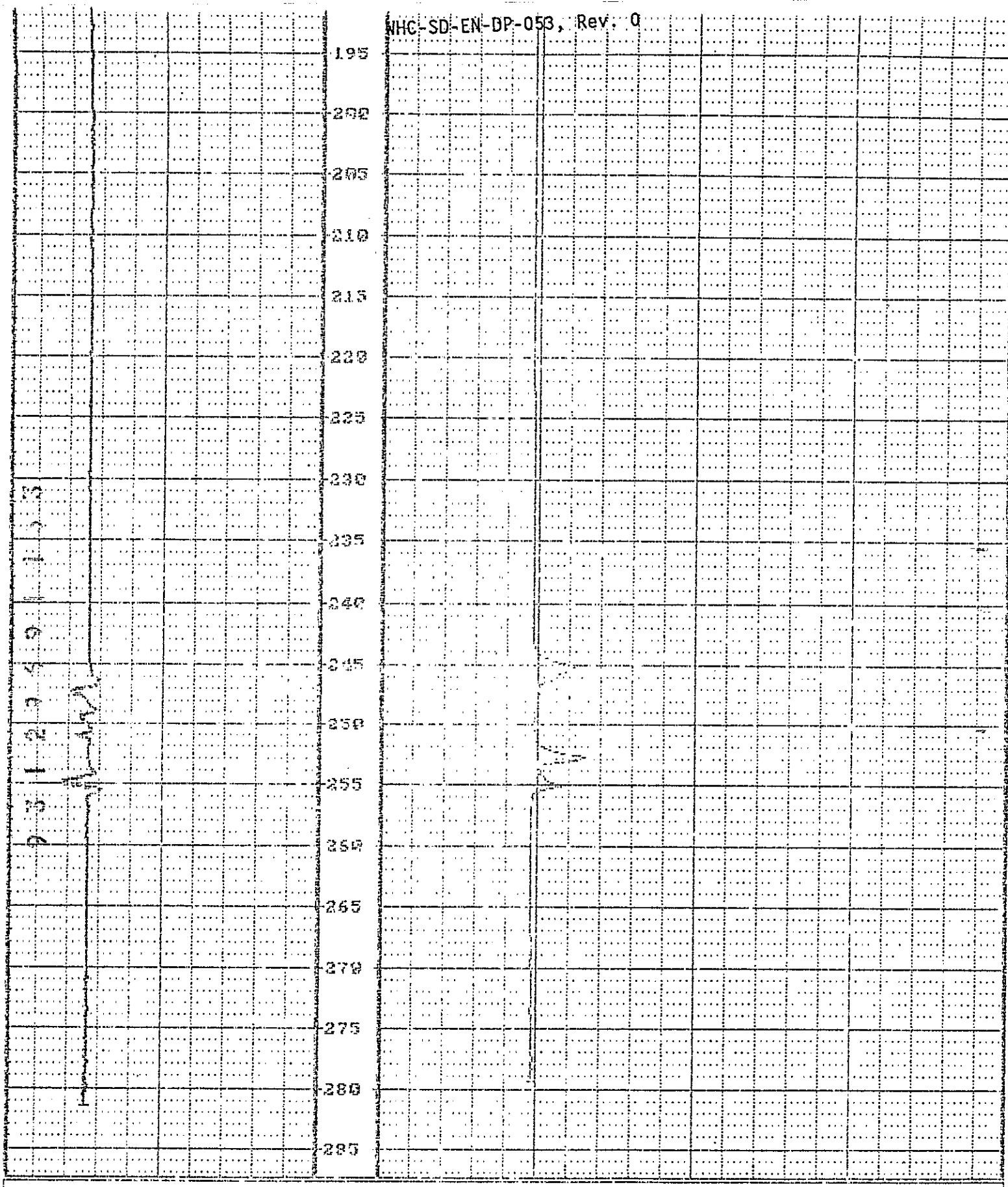
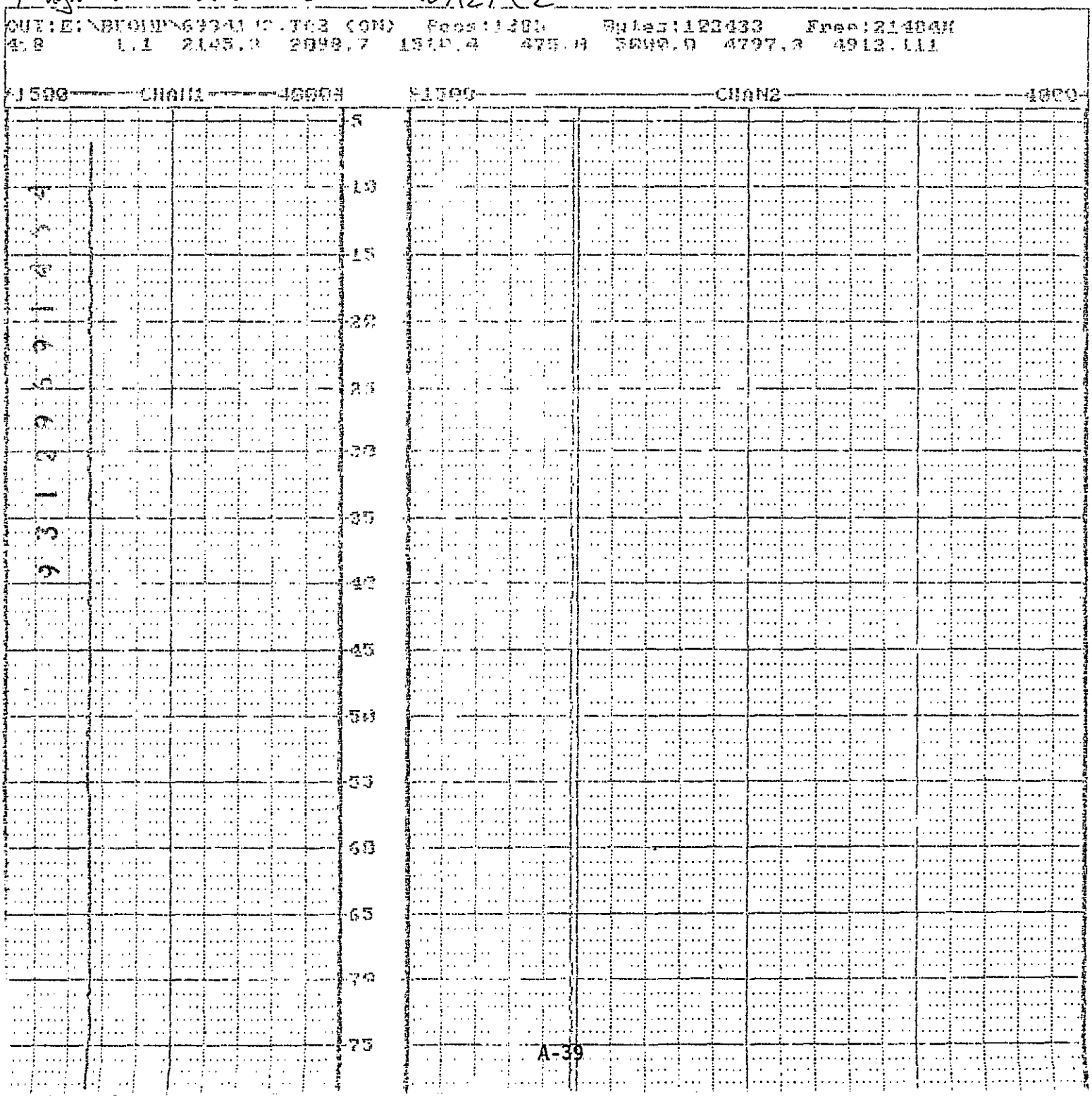
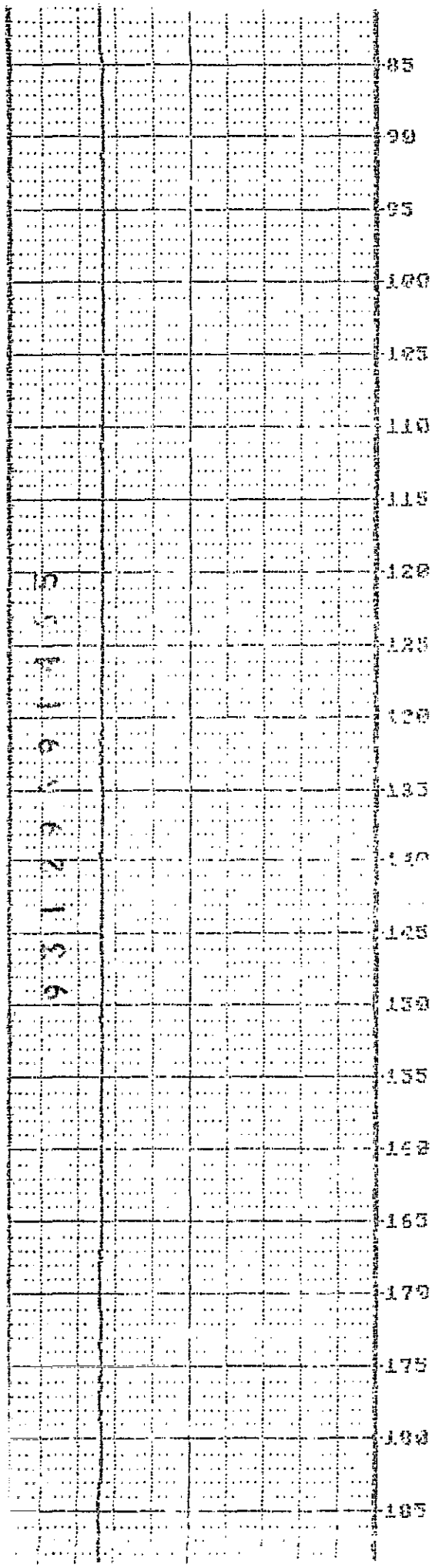


OUT:E:\BPOND\6994(A2.TAL (OWD) Decs:12 Bytes:831 Free:21606K
272.4 1.2 2134.8 2101.3 1511.1 475.7 5000.0 4799.3 4914.6

-1500 CHAN1 4000 -1500 CHAN2 4000

Magnetic 280.0'-5.0' 10/12/92

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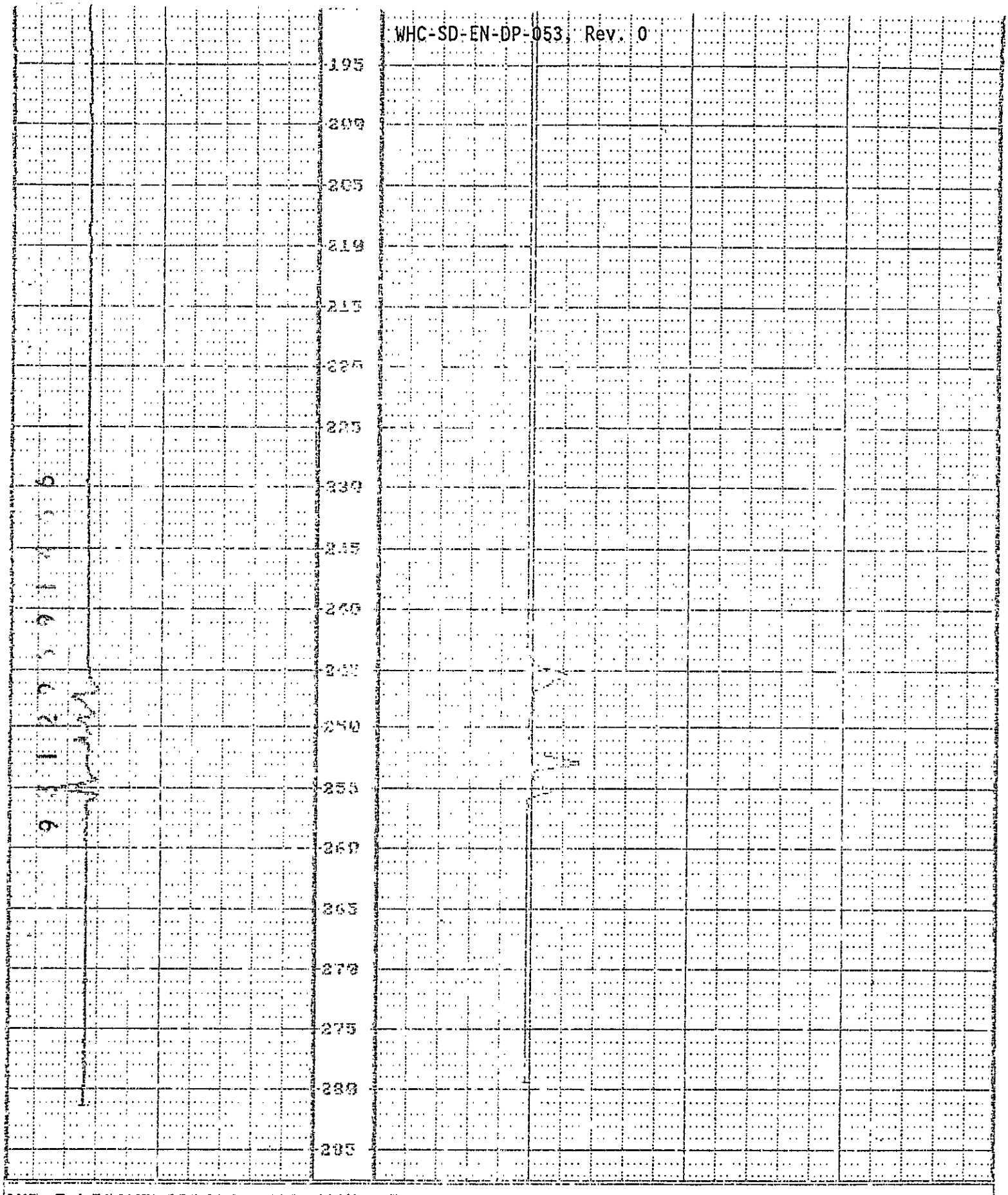
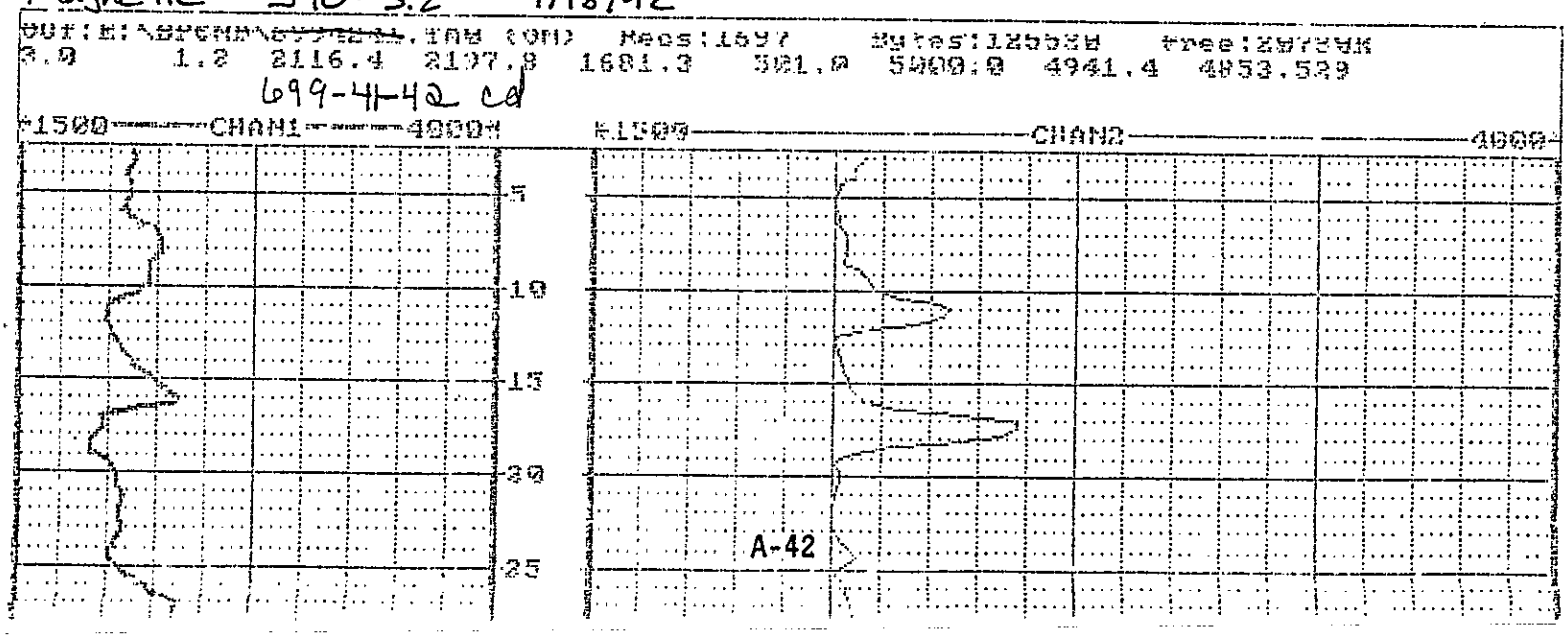


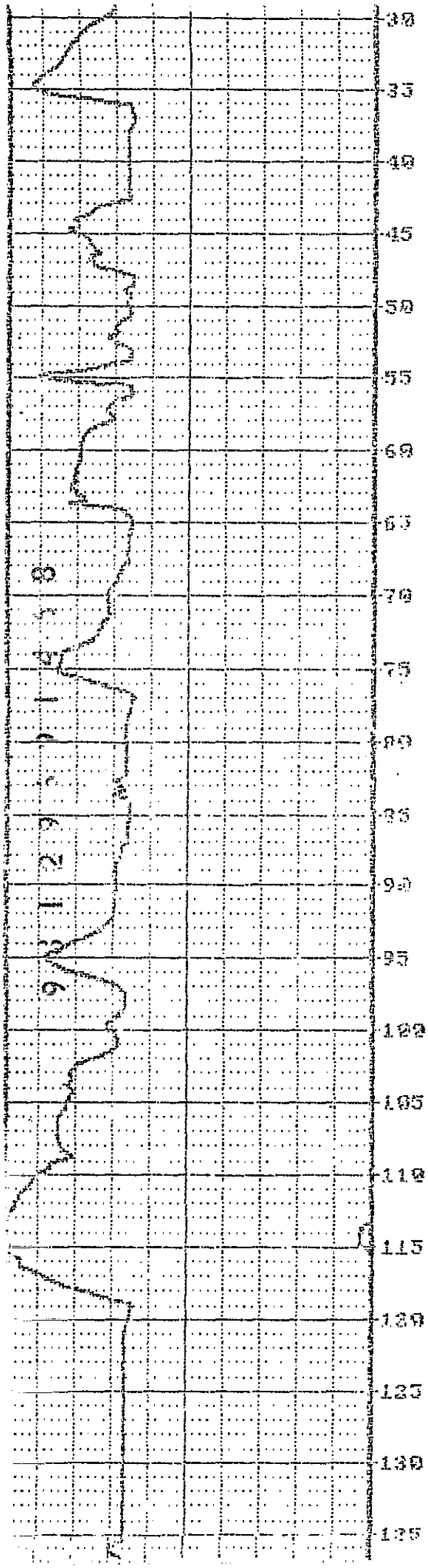
OUT:E:\BPOND\6394142.182 (CM) Recs:12 Bytes:831 Free:21584K
279.4 1.2 2139.0 2121.4 1711.6 974.1 5869.3 4891.6 4917.1

1500 CHAN1 4000 1500 CHAN2 4000

9 3 1 2 3 5 9 1 3 5 7

Magnetic 340'-3.2' 9/18/92

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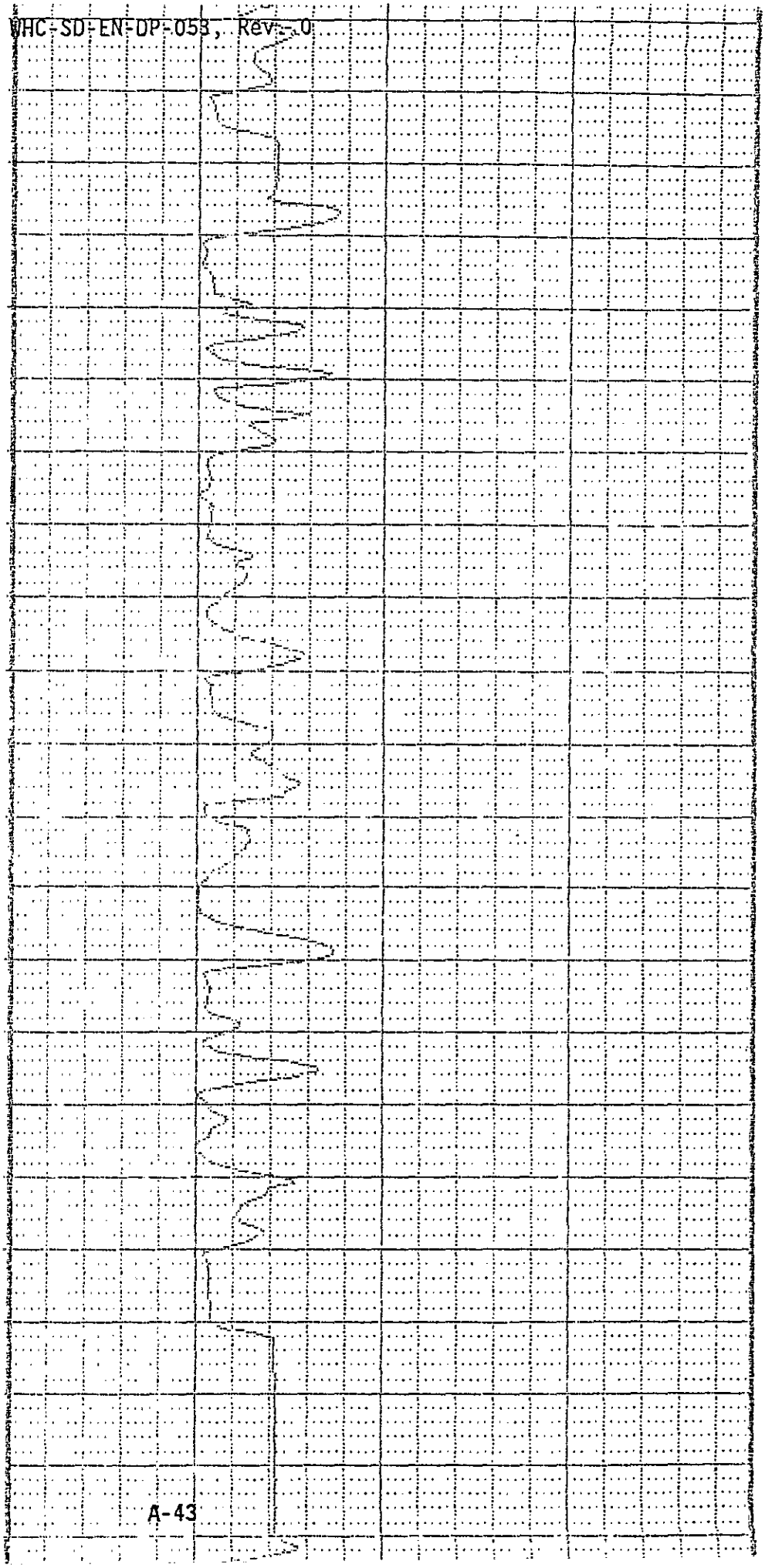

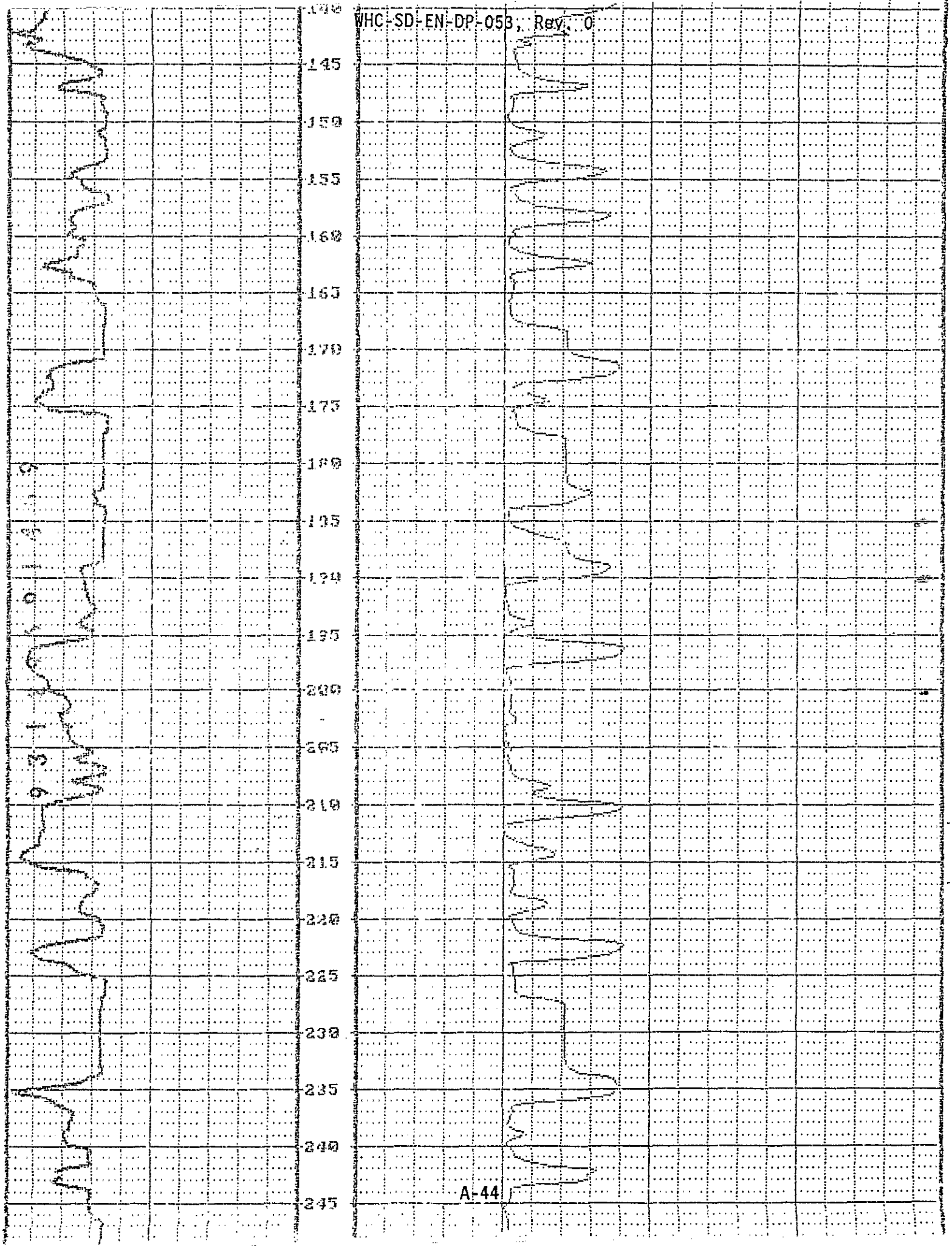
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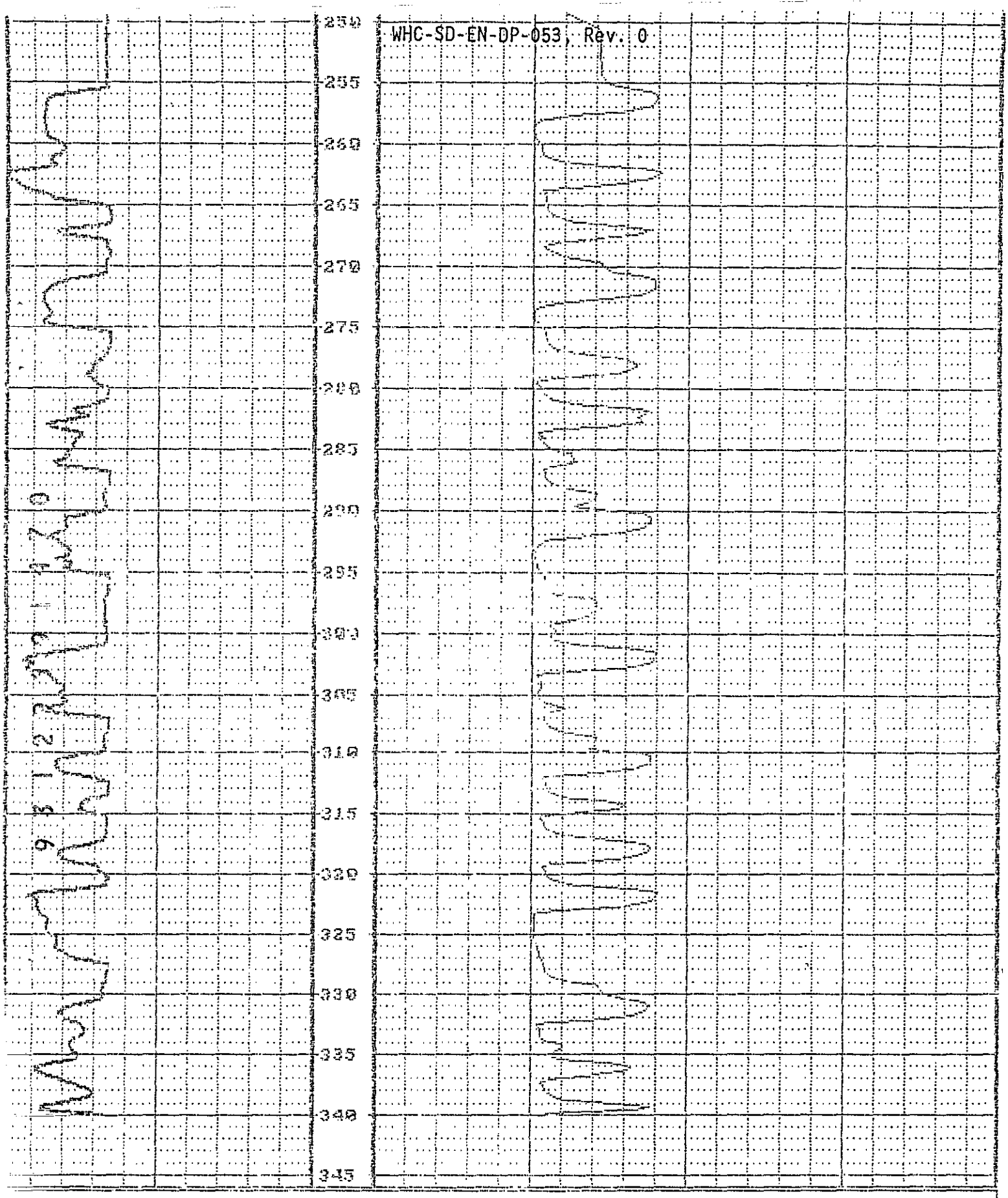
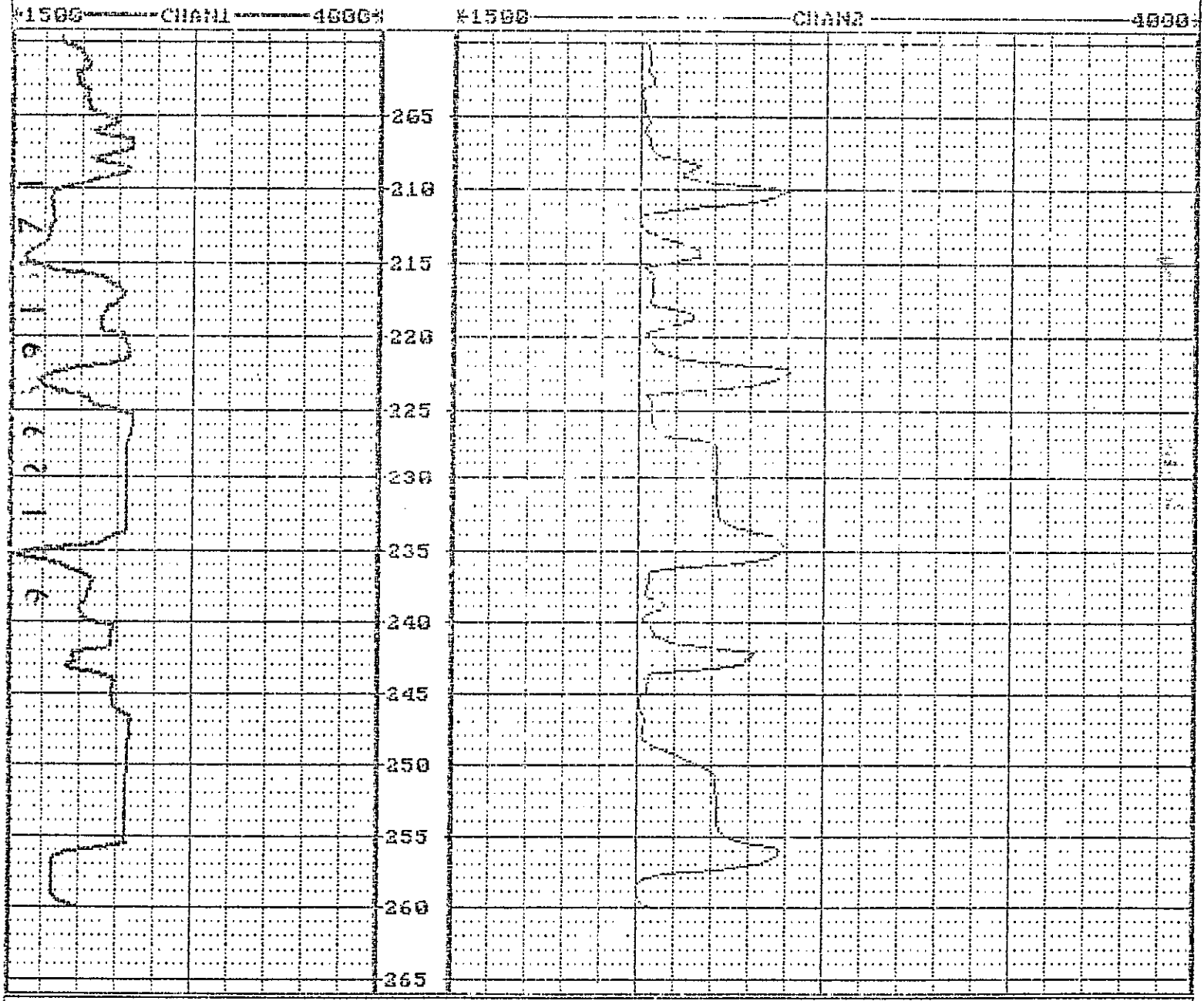


OUT:E:\BPOND\6[illegible].TAO (CH) Recs:12 Bytes:830 Free:20854K
:40.0 1.2 2308.5 3145.3 1679.8 504.5 5000.0 4925.8 4857.5

699-41-42 Cd

1500——CHAN1——4000 *1300——CHAN2——4000

OUT:E:\BPOND\~~699-41~~.TA1 (ON) Recs:313 Bytes:23104 Free:23706K
199.8 1.2 1851.0 2143.1 1691.9 499.4 5000.0 4948.7 4853.5
699-41-42 cd



OUT:E:\BPOND\~~699-41~~.TA1 (ON) Recs:12 Bytes:830 Free:20730K
260.0 1.2 1939.5 2141.5 1680.3 499.4 5000.0 4948.5 4850.9
699-41-42 cd

1500 CHAN1 4000 *1500 CHAN2 4000*

KAISER ENGINEERS HANFORD	SURVEY DATA REPORT	Request No. 9 3 1 0 5 7
Project/W.O. No. W-017H	Title Nine Odex CM Wells	File No. 2 9 9 E 2 5
KEH Job No. CR-9752	Prepared By RL Hackwith / Date 12/30/92	Reviewer V. Coyne 1 2

DESCRIPTION OF WORK	ACCEPTABILITY (Within Plan Tolerance)	DISTRIBUTION	
Horizontal (NAD'83) and vertical (NGVD'29)	Yes XX	Survey File	OR
location of monitoring wells.	No	Field Project File	1
	NA	P Collier	1
	TBD by Requestor	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	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
699-26-348	200E N: 25,782.6 W: 33,716.8	N: 131,352.50 E: 579,629.52	526.47	530.29	530.27
699-25-340	200E N: 25,253.6 W: 33,847.9	N:131,191.16 E:579,589.97	534.47	537.92	537.91

Control 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 A-47
EL.=466.462

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

12/30/92 931-057-299-E25

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: 46,316.1	N: 135,815.16 E: 575,623.43	679.68	682.32	682.31
299-W27-2	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
699-44-398	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.

page 1 of 4

WELL CONSTRUCTION REPORT

VALIDATED KDR 1/18/93 SIGNATURE/DATE

Page 1 of 2

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

ECNs 166764

Project RCRA-W017/216-B-3 Pond

Location B-Pond

Drilling Company Jensen Drilling

Driller S. McKinnon

Other (Companies)

Geologist(s) Edward C. Rafuse (WHC) Keith J. Swett (NACES)
Dennis J. Anderson (WHC)
Brett Thompson (MCE) RS Edrington (WHC)
Mark D Sweeney (HOPCO)

Well No. 699-44-39B Temp. Well No.

Coordinates N: 136,727.61 E: 577,960.80

Casing Elev. 513.40 TOC Ground Elev. 509.62
513.41 TOP OF Hydrostar plate

Drilling Method

Verification Method Visual observation

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

			Initials	Date
Rotary	Air 62.8-181.9	Mud	MDS	10-27-92
Cable Tool	D 0'-62.8'	H		
Drilling Fluid	① raw H2O		DJA	9/24/92
Other	Backhoe	0-8.8'	ECR	09/08/92

Geophysical Logging

Sondes	Interval	Date
Goss Gamma	181.7 - 2.9	10/28/92
	-	
	-	
	-	
	-	

Completion Data

Drilled Depth 181.90

Completed Depth 121.4

Date Started 9/08/92

Date Completed 11-3-92

Static Water Level/Date 92.3 / 10-27-92
93.3 11/2/92

Aquifer Testing

Type Instantaneous Slug test

Flow Meter I.D. No. N/A

Cal Due Date N/A

Length of Test 1 hr.

Volume Pumped N/A

Drawdown N/A

Date of Test 11/10/92

Completion Results

Cleaning

Verification Method Visual inspection & doc. Review

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

	Initials	Date
Drilling Tools/Rig	DJA / DJA	9/18/92
Temporary Materials	MDS / MDS	10-21-92
Permanent Materials	DJA	10/29/92

Screen

Type	Length	Slot Size
stainless steel	19.92'	10 slot
Sch 5 Type 304		

Depth(s) 98.94' - 119.16' w/cap
98.94' - 118.86' wo/cap

Verification Method STEEL TAPE MEASUREMENT

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

Initials DJA Date 10/29/92

Material Storage/Packing

Verification Method Visual observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	DJA	10/28/92
Material Packing	DJA	10/28/92

Lubricants/Additives

Verification Method Visual observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	raw H2O gals	DJA	9/24/92
Lubricants	Well Guard RNO Rock oil	MDS	10-22-92

Straightness Test

Verification Method Visual observation

Criteria WHC-S-014 8.2

Initials MDS Date 10/27/92

A-6000-436 (09/90)

WELL CONSTRUCTION REPORT
(continuation sheet) Well # 699-44-39B

Casing (permanent)

Type	Size	Placement
Stainless steel blank	4"	0 - 98.94'
Sch 5 Type 304		-
		-
		-

Verification Method: Measurement w/steel tape

Criteria: WHC-S-014 4.2.1, 4.2.4, 4.2.5, 12.3.1

Initials: DJA Date: 10/29/92

Well Protection

Verification Method: Visual inspection w/tape

Criteria: WHC-S-014 4.2.10

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

Annular Seal/Filter Pack

Verification Method: Measurement w/steel tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.8

Type	Interval	Volume	Initials	Date
Type I-II cement 10 bags	2.0' - 10.2'	12.85 cuft	DJA	11/2/92
Bentonite crumbles 8-20 mesh 74.75 bags	10.2 - 88.7	53.71 cuft.	DJA	11/3/92
Grout Hole Plug Chunks 36.75 bags	88.7 - 121.4	25.36 cuft	DJA	11/3/92
Silica Sand 20-40	93.9 - 121.4	14.56 cuft.	DJA	11/3/92

Well Survey/Labeling

Verification Method: Review of survey report

Criteria: WHC-S-014

	Initials	Date
Measurement Point/Surveyed	BRT	1-11-93
Protective Casing/Brass Cap Surveyed	BRT	1-11-93
Well Number Stenciled	ELL	12/18/92
Brass Cap Labeled	ELL	12/18/92

Pump Installation

Verification Method: Visual observation

Criteria: WHC-S-014 4.2.11, 4.2.3

	Initials	Date
Pump Decon/Prep	RJE	11/10/92
Installed	RJE	11/10/92
Pump Tested	RJE	11/10/92

Other (initial if performed)

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

11/9/92 RJE Well Development

Comments/Remarks: raw H2O added - 9/24/92, 9/25/92 - 3 gals, 9/28/92 - 20 gals; 9/27/92 - 50 gals 9/30/92 - 20 gals

Note: Stainless steel weight lost in completion @ 89.1' BGS

Reviewed By (Sign/Print Name): Kurt D Reynolds / Kurt D Reynolds Date: 1/18/93

A-6000-436 (09/90)

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 699-44-39B

Sheet 1 of 2

Location 200 EAST - B-Pond

Project RCRA W017

Elevation 509.62' ground surface

Drilling Contractor Jensen Drilling

Driller S. MACKINNON

Drilling Method and Equipment cabletool - BE22W

Prepared By Dennis J Anderson (Sign/Print Name) Date 9/18/92

Reviewed By EDWARD C. RAFUSE Edward C. Rafuse (Sign/Print Name) Date 11/30/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
2" temporary carbon steel		5		SAND
asing to 8.5' BGS w/no		10		GRAVEL
shoe		15		"
		20		"
		25		slightly sandy GRAVEL (Hanford fm)
		30		" " " " "
		35		" " " " "
		40		" " " " "
		45		" " " " "
		50		" " " " "
0" temporary carbon steel		55		" " " " "
asing to 62.8'		60		" " " " "
w/ shoe diameter of .95'		65		62.8-69 GRAVEL
		70		BOULDER @ 68'
20 mesh crumbles 10.2-88.7'		75		69-71 SANDY GRAVEL
		80		71-92 GRAVEL
		85		
ntonite chunks 88.7-93.9'		90		
SWL 93.3 FEET @ 11/3/92		93.3		92-95 GRAVELLY SILTY SAND
ainless steel screen		95		
slot 98.94'-118.86 w/o cap		100		
		105		
		110		
		115		
ntralizer cap 118.86-119.16		120		95-120 SAND
		125		
40 sand pack 93.9'-121.4'		130		120-135 GRAVEL
		135		
		140		135-140 GRAVELLY SAND
		145		
		150		140-155 SAND
		155		
		160		155-172 GRAVELLY SAND
		165		

WHC-SD-EN-DP-053, Rev. 0

WELL SUMMARY SHEET

Boring or Well No. 699-44-39B

Sheet 2 of 2

Location 200 EAST - B POND

Project RCRA W012

Elevation 509.62' ground surface

Drilling Contractor JENSEN DRILLING

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / CP650

Prepared By [signature] (Sign/Print Name) Date 10-26-92

Reviewed By EDWARD C. RAFUSE [signature] (Sign/Print Name) Date 11/20/92

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
OD TEMP CASING SET		170		155-172 GRAVELLY SAND
181.20		175		
		180		172-181.90 BASALT
		185		
				TD = 181.90
				SWL: 92.3 10/27/92
ipe I-II cement 10bgs				
2.0'-10.2' BGS				
ntonite crumbles 8-20 msh				
74.75bgs 10.2'-88.7' BGS				
roid Hole plug 36.75 sks				
88.7'-93.9' BGS				
121.4'-181.9 BGS				
lica Sand 20-40 13 sks				
93.9-121.4' BGS				

BOREHOLE LOG

VALIDATED KDR 1/18/93 SIGNATURE/DATE

Boring or Well No. 699-44-39B

Sheet 1 of 7

Location NORTH OF C LAKE

Project WOTM / 216-B-3 PAND

Elevation 510' ground surface (g.s.)

Drilling Contractor JENSEN

Driller S. McKINNON

Drilling Method and Equipment Backhoe /

Prepared By MD SWEENEY / [signature] (Sign/Print Name) Date 08/01/92

Reviewed By EDWARD C. RUFFER / Edward C. Ruffer (Sign/Print Name) Date 09/23/92

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
0				0-5 SAND (90% SAND, 5% silt 5% GRAVEL	
				50% cp 15% vf-cs lig Dyl Bl brown	SAMPLE @ 11:20 AM
				35% mp 20% m2 WET 10YR 3/2 (dk brown)	
				25% Fp-cp 70% F-VFS	
				dry - mod SORTED, SUBANGULAR -	
				SUBROUNDED, 40% QUARTZ 40% BASALT	
				20% FELSIC, NO RXN to HCL	
				TRACE MAGNETITE	
	2 LITH 1 RAD 1 MOIST	Backhoe			
5				GRAVEL (5-10') 90% GRAVEL	
				8% SAND 2% SILT	5-10 SAMPLE RETRIEVED
				15% SM. BROWN 5% VCS-CS	@ 11:30 SILT COATING
				20% lc 25% mg	ON SAND & GRAVEL
				30% sc 25% FS-VFS	
				30% vcp-cp lig 2.5 Y 5/4 olive	
				10% mp-VFp WET 2.5 Y 5/2 lt olive brown	
				FAIRLY - MOD SRT, SUBANGULAR to	
				SUBROUNDED, SUBPLATY/DISCOIDAL 70% BASALT	
	2 LITH 1 RAD 1 MOIST	Backhoe		15% QTZ, 15% FELSIC STRONG RXN	
10				to HCL	
				10-15 SAME AS ABOVE	
				GRAVEL	
				PREDOMINANTLY BASALTIC	
		DB			
					15' @ 1642 9-15-92
15	1 RAD 2 LITH ($CaCO_3$ - HCl)	DB		15-20' GRAVEL	
				SAME AS ABOVE	
					20' @ 1725 9-17-92
20					

BOREHOLE LOG

Boring or Well No. 699-44-39B

Sheet 2 of 7

Location 200 EAST B-Pond

Project RCRA W017

Elevation 510' g.s.

Drilling Contractor Jensen Drilling

Driller S. MACKINNON

Drilling Method and Equipment Cable tool - BE22

Prepared By Dennis Anderson (Sign/Print Name) Date 9/18/92

Reviewed By Edward C. Rafuse (Sign/Print Name) Date 09/22/92

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
20				slightly sandy GRAVEL (5% sand 95%	
				GRAVEL w/ trace silt) 15% vcp, 10% cp	
				20% mp, 20% fp 35% vfp, 15% vcs,	
				15% cs, 20% ms, 30% fs, 20% vfs	1g cobble @ 23' BGS
				Color: 5y 3/1 vydkgry-wet 5y 5/1 gry-dry	
				dry sample, poor sorting, subdiscoidal - spherical	
				rnd - wellrnd; 75% basalt, 15% Qtz,	
	2lith 1rad 1moist	DB		10% Qtze, gran, vol porph in trace amts.	25' sample 9/18/92 @ 10:25
				No Rxn to 10% HCl, gravel supported	
25'				consolidated material	
				slightly sandy GRAVEL (5% sand 95%	
				GRAVEL) description: same as 25'	Hanford fm.
				sample.	
				1g amt of "rock flour"	
	2lith 1rad 1moist	DB			30' sample 9/18/92 @ 1150
30'					
				38' sample same as above	
					Hanford fm.
	2lith 1rad 1moist	DB			35' sample 9/18/92 @ 1350
35'				40' sample same as above	
	2lith 1rad 1moist	DB			Hanford gravels
40					40' sample 9/18/92 @ 1420

BOREHOLE LOG

Boring or Well No. 699-44-398

Sheet 3 of 7

Location 200 EAST B-Pond

Project RCRA W017

Elevation 510' g.s.

Drilling Contractor Jensen Drilling

Driller S. MacKinnon

Drilling Method and Equipment Cable tool - BE22

Prepared By Dennis J. Anderson (Sign/Print Name) Date 9/18/92

Reviewed By Edward C. Ashford / Edward C. Ryan (Sign/Print Name) Date 10/04/92

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
				slightly sandy GRAVEL (5% sand 95% GRAVEL) 10% vcp 15% cp, 20% mp, 20% fp 35% vfp, 15% vcs, 15% cs, 20% ms 30% fs, 20% vfs; color 5y 3/1 vydk gry-wet 5y 5/1 gry-dry, dry sample, very poor sorting, subdiscoidal - spherical / rnd - wellrnd, 75% basalt 20% Qtz, 5% Qtz E, gran, No Rtn to 10% HCl, gravel supported + consolidated	1g boulders @ 41'-43' BGS
	2 lith 1 moist 1 rad	DB			Hanford fm (gravels)
45					45' sample 9/21/92 @ 1020
				sample desc same as above	
50	2 lith 1 moist 1 rad	DB			50' sample 9/21/92 @ 1145
				sample desc same to 54.3' - gravels w/ calcite cementation - weak Rtn to 10% HCl, color same as above as well as rndness, mineralogy,	
55	2 lith 1 moist 1 rad	DB		cemented lense from 54.3 - 55.5' BGS Cont in gravels w/ minor sand - gravel supported	55' sample 9/21/ @ 1420
					9/25/92
				Boulder at 58'	Damp vadose zone to very damp. probly from addition of water
60	2 lith 1 moist 1 rad	HT ~~DB~~		Switch to Hard Tool	60' sample 9/ /92 @

BOREHOLE LOG

Boring or Well No. 699-44-39B

Sheet 4 of 7

Location 200 EAST - BPOND

Project RCRA W017

Elevation 510' g.s.

Drilling Contractor JENSEN DRILLING.

Driller D. MINGO

Drilling Method and Equipment AIR/ROTARY/CP 650

Prepared By MD SWEENEY / [signature] (Sign/Print Name) Date 10-21-92

Reviewed By Edward C. Rafuse / Edward C. Rafuse (Sign/Print Name) Date 11/20/92

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
	2 LITH 1 RAD 1 CaCO3 H2O	AIR ROTARY		62.8-69 GRAVEL	65' @ 1645 10-21-92
				GRAVEL: 85 SAND: 15	
				CP-30 CG-30 COLOR DRY: 2.5Y 2/0 BLACK	
				MP-50 MG-60 COLOR DRY 2.5Y 4/0 DK GREY	
				FP-20 FG-10	
				MAFIC: 90%, FELSIC: 5%, QTZ: 15%.	
				ANGULAR, SUBANGULAR, SUBROUNDED.	
				MILD RXN TO HCl. DRY.	
65					
				BOULDER @ 68'	
70				69-71 SANDY GRAVEL	70' @ 1715 10-21-92
				SAME AS ABOVE MINERALOGICALLY	
				W/ 30% SAND.	
				FG SAND - 40%	
				MILD RXN TO HCl.	
75				71-92 GRAVEL.	
				SAME AS 62.8-69.	75' 1146 10-22-92

BOREHOLE LOG

Boring or Well No. 699-44-39B

Sheet 5 of 7

Location 200 EAST 2 POND

Project RCRA WOIP

Elevation 510' g.s.

Drilling Contractor JENSEN DRILLING

Driller D. MINGO

Drilling Method and Equipment AIR ROTARY / CASING

Prepared By [illegible] (Sign/Print Name) Date 10-27-92

Reviewed By Edward C. Rafuse (Sign/Print Name) Date 11/20/92

Depth (BGS)	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)
	2 LITH 1 RAD 1 $CaCO_3$ - H20	AIR ROTARY			80 @ 1152 10-22-92
					85' @ 1333 10-22-92
90					90' @ 1349 10-22-92
				92-95 - ~~Sand~~ Granular Silty Sand	92 @ 1354 10-22-92
	1 RAD 2 LITH 1 $CaCO_3$			GRAVEL: 40% SAND 60% SILT TRACE	
				CO: 25% CP: 15% CHERT: 2.59 5/4 LT GRAY-BROWN	
				MP: 60% MF: 30% COLOR DRY: 2.5Y 6/3 LT YELLOWISH BROWN	
				FP: 40% FF: 55%	95' @ 1405 10-22-92
				MAFIC: 60%, FELSIC: 30%, QTZ: 10%	
				ROUNDED, SUB ROUNDED, SUB ANGULAR	
100 ~~105~~ 95 10-21-92				95-120 SAND	
				GRAVEL: 5% SAND: 95%	100 @ 1410 10-22-92
				MF: 30% CO: 20% CHERT: 2.59 5/4 LT GRAY-BROWN	
				FP: 70% MF: 30% COLOR DRY: 2.5Y 6/3 LT YELLOWISH BROWN	
				FF: 10%	
				MAFIC: 25% FELSIC: 65%, QTZ 10%	
					105' @ 1545 10-22-92
110 ~~100~~ MF 10-21-92					110 @ 1607 10-22-92
					115 @ 1613 10-22-92

BOREHOLE LOG

Boring or Well No. 699-44-39B

Sheet 6 of 7

Location 200 EAST - B POND

Project RCRA W017

Elevation 510' g.s.

Drilling Contractor JENSEN DRILLING

Driller D MINGS

Drilling Method and Equipment AIR ROTARY / CP650

Prepared By MD SWEENEY (Sign/Print Name) Date 10-26-92

Reviewed By Kent Reynolds (Sign/Print Name) 12/15/92

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
	2 LITRE. 1 RAD 1 CaCO3	AIR ROTARY		120 - 135 GRAVEL	120' @ 1620 10-22-92
				GRAVEL 90% SAND 10%	SPLIT SPOON TAKEN
		SPLIT SPOON		CP. 40% CG - 60% COLOR WET: 2.5Y 3/2 DUSK BROWN	@ 122.40 - 123.40
				MP - 50% MG - 20% COLOR DRY: 2.5Y 6/6 OLIVE YELLOW	
				FP - 10% F - CG 20%	125' @ 1052 10-26-92
				MAFIC - 80% FELSIC - 10% OTZ - 10%	
				ROUNDED, SUBROUNDED, SUBANGULAR	
					130' @ 1100 10-26-92
130					
					135' @ 1115 10-26-92
				135-140' GRAVELLY SAND	
				GRAVEL: 35% SAND: 65%	
				CP - 10% CG - 40% WET 2.5Y 4/2 DARK GREYISH BROWN	
				MP - 40% MG - 30% DRY: 2.5Y 5/4 LIGHT OLIVE BROWN.	
140				FP - 50% FG 30%	
				MAFIC: 40%, FELSIC: 40%, QTZ - 20%	
				ROUNDED, SUBROUNDED.	140 @ 1120 10-26-92
		AIR ROTARY			
				140-155 SAND	
				SAME AS 95-120	145 @ 1330 10-26-92
150					
					150 @ 1345 10-26-92

BOREHOLE LOG

Boring or Well No. 699.44-39B

Sheet 7 of 7

Location 200 EAST BPOND

Project W017 - RCRA

Elevation 510' g.s.

Drilling Contractor JENSEN DRILLING CO.

Driller D MINGO

Drilling Method and Equipment AIR ROTARY / CP650

Prepared By MDSHEEREY / [signature] (Sign/Print Name) Date 10-26-92

Reviewed By EDWARD C. RAFUSE / Edward C. Rafuse (Sign/Print Name) Date 11/20/92

Depth (155)	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
	2 LITH 1 PAD 1 $CaCO_3$ ~~HW~~ 10-27-92	AIR ROTARY		155-172 GRAVELLY SAND SAME AS 125-140.	155 @ 1352 10-26-92
					160 @ 1403 10-26-92
165					165 @ 1446 10-26-92
					170 @ 1448 10-26-92
175				172-191.90 BASALT BLACK, HIGHLY WEATHERED VESICULAR BASALT.	175 @ 1450 10-26-92
185	NA	NA			

93129591434

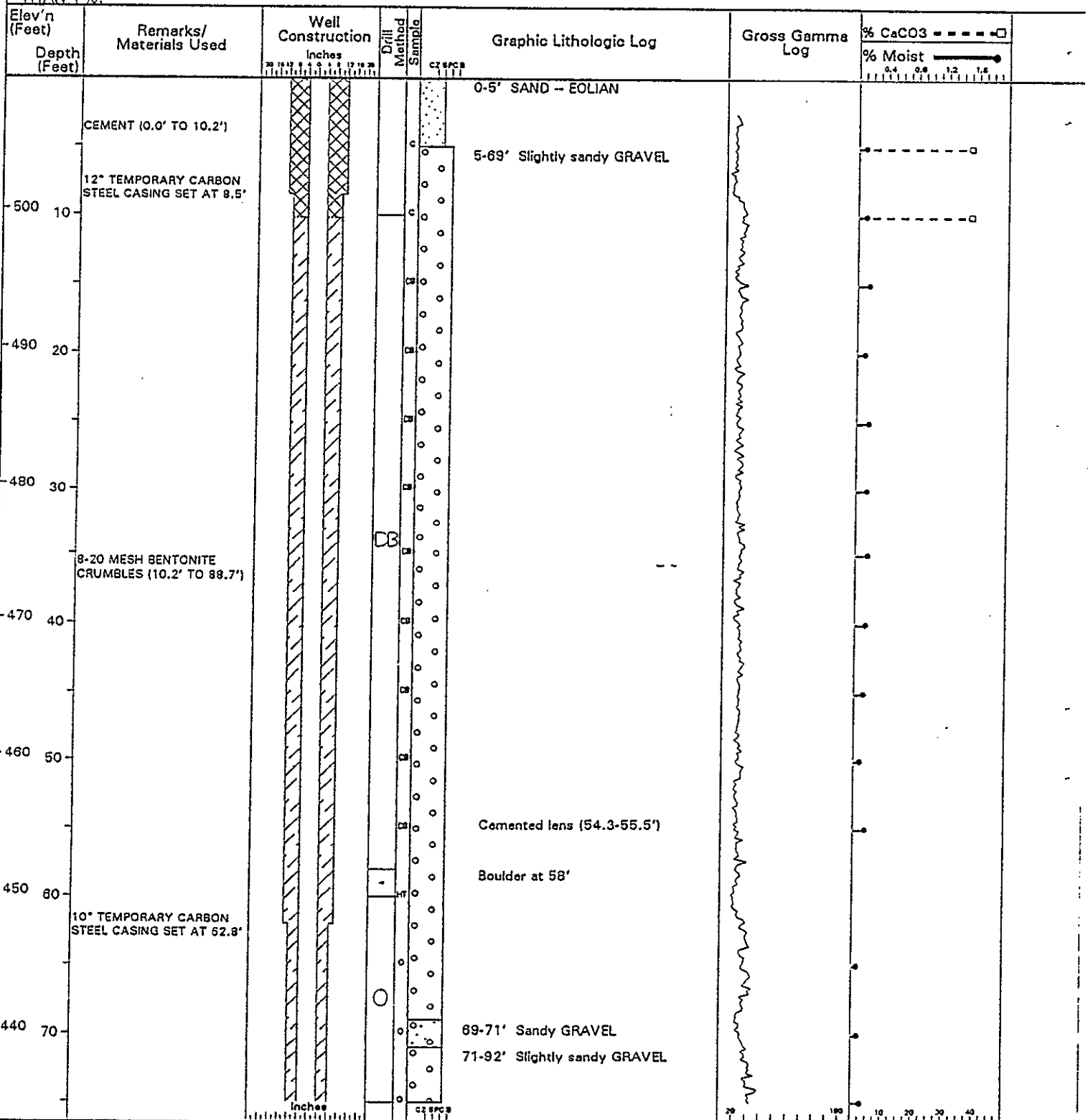
Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION		**Well No:** 699-44-39B	Page 1 of 3
		Total Depth: 181.90	Static Water Level: 93.30
Date Started: 9-8-92	Date Completed: 11-10-92	Surface Elevation: 509.62	Casing Elevation: 513.40
Location: N OF C-LOBE, B-POND 200 EAST		Northing: 136727.61	Easting: 577960.80
Prepared By: DJ ANDERSON/MD SWEENEY		Hanford N: 43426.30	Hanford W: 39140.40
Drilling Co: JENSEN	Driller: S McKINNON	Drill Meth: CBL TOOL/AIR ROT	Drill Equip: BE 22W/ODEX CP 650

Screen: 20.22' OF 4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP W/ENDCAP SET FROM 98.94' TO 119.16'

Filter Pack: 20-40 MESH SILICA SAND FROM 93.9' TO 121.4'

Permanent Casing: 4" DIAMETER TYPE 304 SCHEDULE 5 STAINLESS STEEL WITH CENTRALIZERS SET TO 98.94'

Comments: STAINLESS STEEL WEIGHT LOST IN HOLE DURING COMPLETION AT 89.1'. CaCO3 VALUES NOT POSTED ARE LESS THAN 1%.



Reviewed By: Kent D. Reynolds KDRey Date: FEB. 19 1993

Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION | Well No: 699-44-39B | Page 2 of 3

WHC-SD-EN-DP-053, Rev. 0

Elev'n (Feet)	Depth (Feet)	Remarks/ Materials Used
430	80	4" DIAM T-304 SCH 6 STAINLESS STEEL PERM CASING W/CENTRALIZERS
420	90	ABANDONED STAINLESS STEEL WEIGHT AT 89.1' BENTONITE CHUNKS (88.7' TO 93.9') STATIC WATER LEVEL AT 93.3' (11-3-92)
		20-40 MESH SILICA SAND FILTER PACK (93.9' TO 121.4')
410	100	4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN WITH ENDCAP (98.94' TO 119.16')
400	110	
390	120	BENTONITE CHUNKS (121.4' TO 181.9')
380	130	
370	140	
360	150	
350	160	

Well Construction (Inches)

Drill Method / Sample

Graphic Lithologic Log

HANFORD LOWER COARSE/ RINGOLD A CONTACT AT 92'

92-95' Gravelly SAND with trace silt

95-120' SAND

120-135' Slightly sandy GRAVEL

135-140' Gravelly SAND

140-155' SAND

155-172' Gravelly SAND

Gross Gamma Log

% CaCO3

% Moist

Reviewed By: Kent D. Reynolds

Date: FEB. 19 1993

Project: W-017H/B-POND RCRA GROUNDWATER MONITORING WELL INSTALLATION | Well No: 699-44-39B |

Elev'n (Feet) / Depth (Feet)	Remarks/ Materials Used	Well Construction (Inches)	Drill Method / Sample	Graphic Lithologic Log	Gross Gamma Log	% CaCO3 / % Moist
340 170						
				172-181.9' BASALT -- ELEPHANT MOUNTAIN MEMBER, CRBG		
330 180	8" TEMPORARY CARBON STEEL CASING SET AT 181.2' TOTAL DEPTH = 181.9'					
320 190						
310 200						
300 210						
290 220						
280 230						
270 240						
260 250						

Reviewed By: Kent D. Reynolds A-62 Date: FEB. 19 1993

Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

VALIDATED KDR 1/18/93 SIGNATURE/DATE

Well No. 699-44-39B Area 600 Area Date 10/28/92

Log Run #1 Log Type Gross Gamma

Elevation Datum ground surface Elevation 509.62'

Survey Coordinates 136,727.61 N 577,960.80 E

Log Measured From Ground Surface

Location Description NE of B-Pond

Ground Surface Elevation 509.62'

Surface Temperature NA Weather Overcast - Cool

BOREHOLE INFORMATION

Driller Dennis Mingo (Jensen Drilling)

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

Borehole Diameter(s)/Depth 12"/8.5 10"/62.8' 8"/181.9'

Depth Driller 181.9' Depth Logger 181.7'

Liquid Level 92.3' Liquid ~~Density~~ Appearance Clean

Temperature NA

CASING RECORD

Type 12" Carbon Steel Sch.40 Interval +0.8' - 8.50'

Type 10" Carbon Steel Sch.40 Interval +1.5' - 62.8'

Type 8" Carbon Steel Sch.40 Interval +2.2' - 181.2'

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-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: 181.7' | To: 2.9'

Rerun(s): 181.7' to 130.0'

Pre Survey Verification: Position 1: 318.4 eU | Position 2: 65.6 eU | Background: 68 cps

Base Calibration Difference: Position 1: 3.3 eU | Position 2: 0.5 eU

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

Start Time: 0700 | Completion Time: 0910

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

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

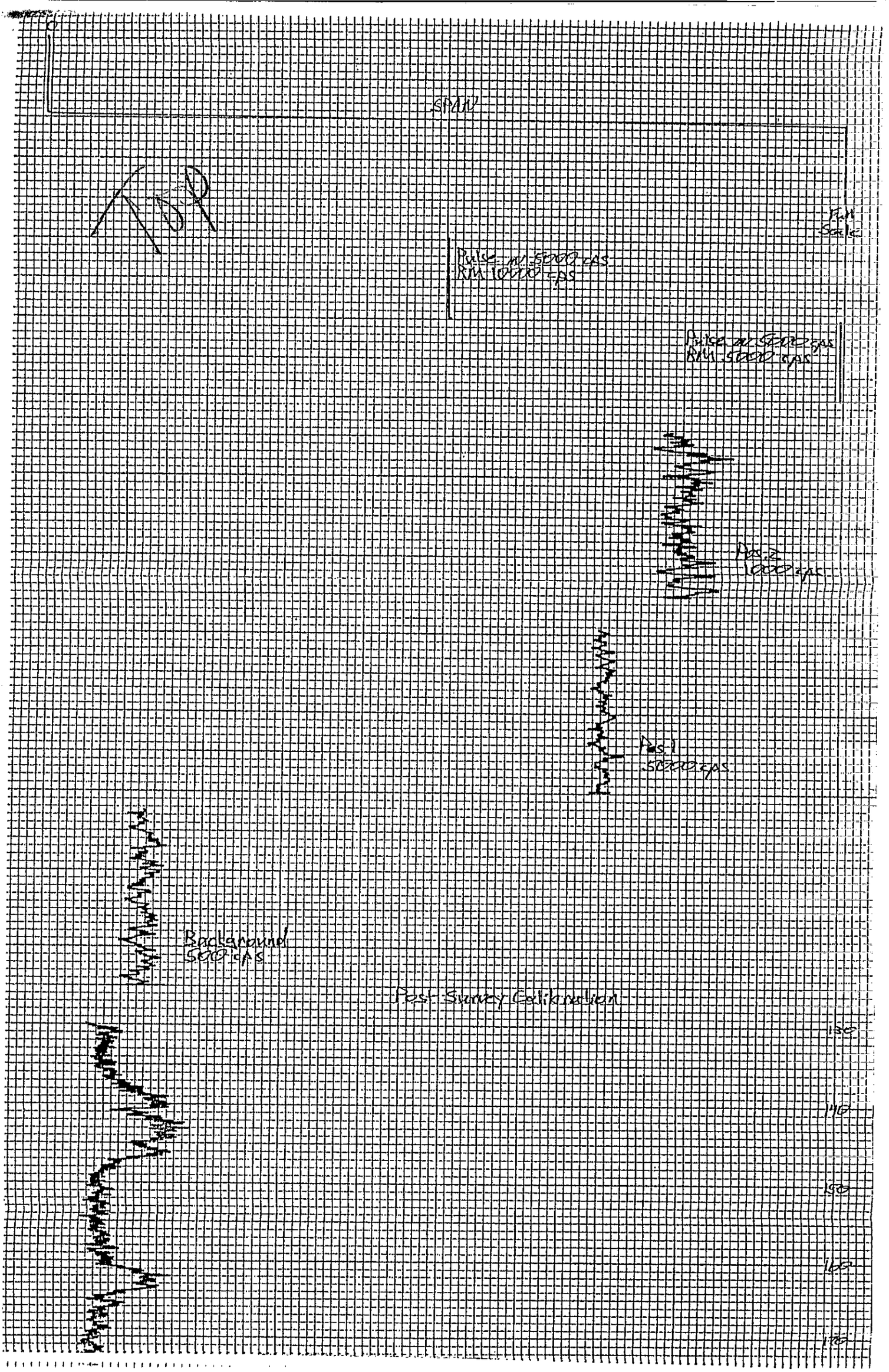
Post Survey Verification: Position 1: 314.2 eU | Position 2: 66.7 eU | Background: 65 cps

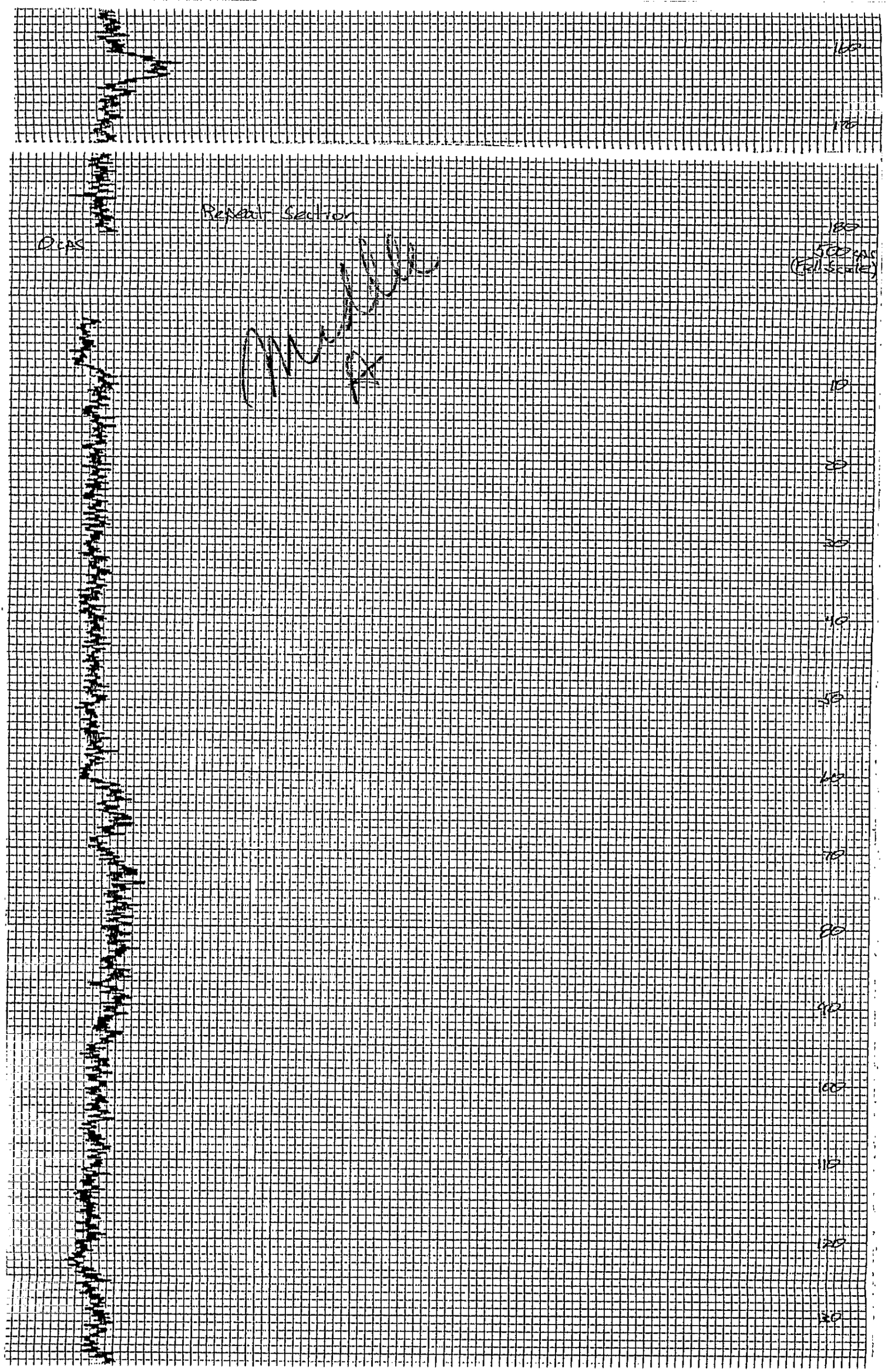
Percent Change: Position 1: 1.3% | Position 2: 1.7%

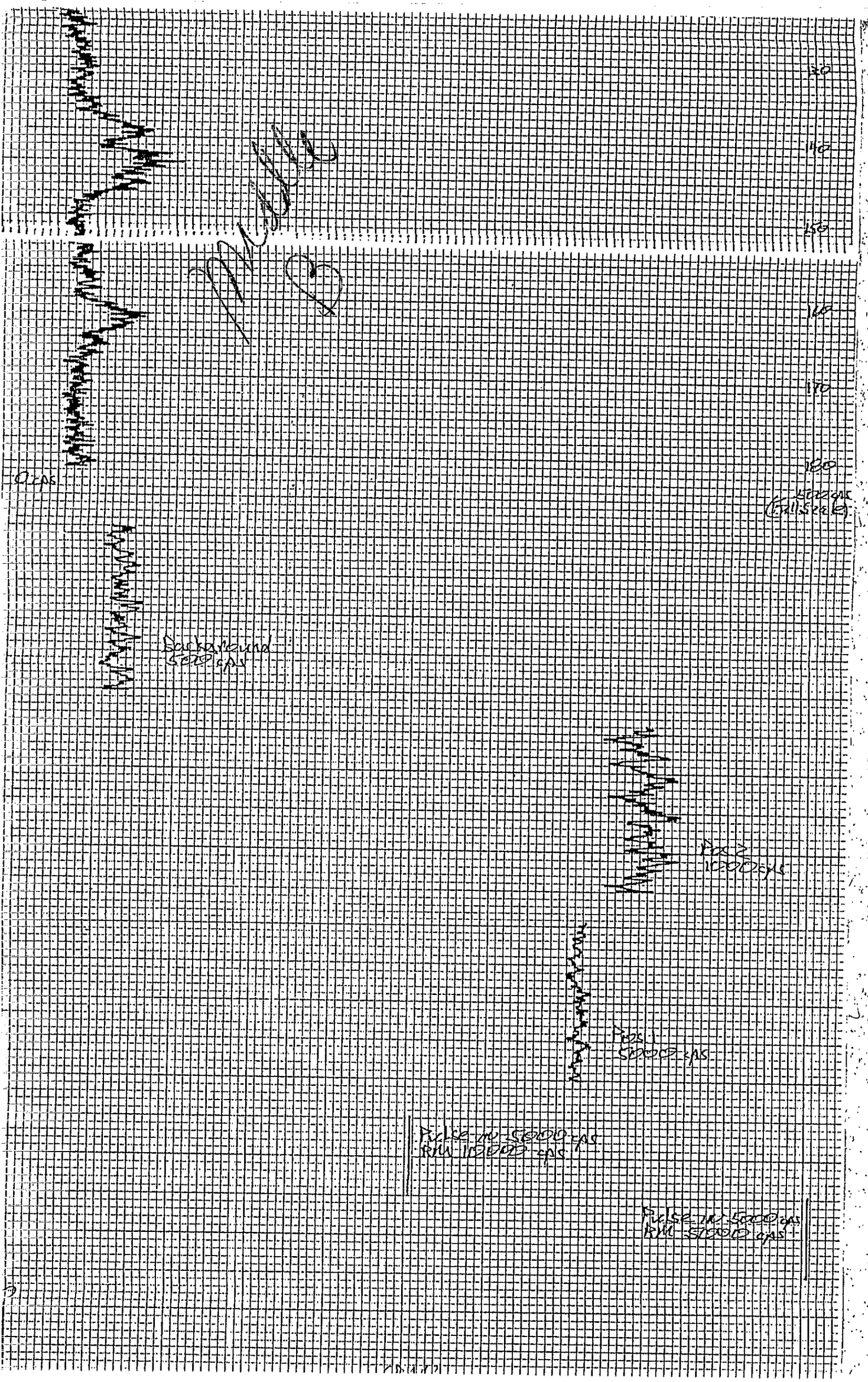
Comments: Return Error = +0.2' high

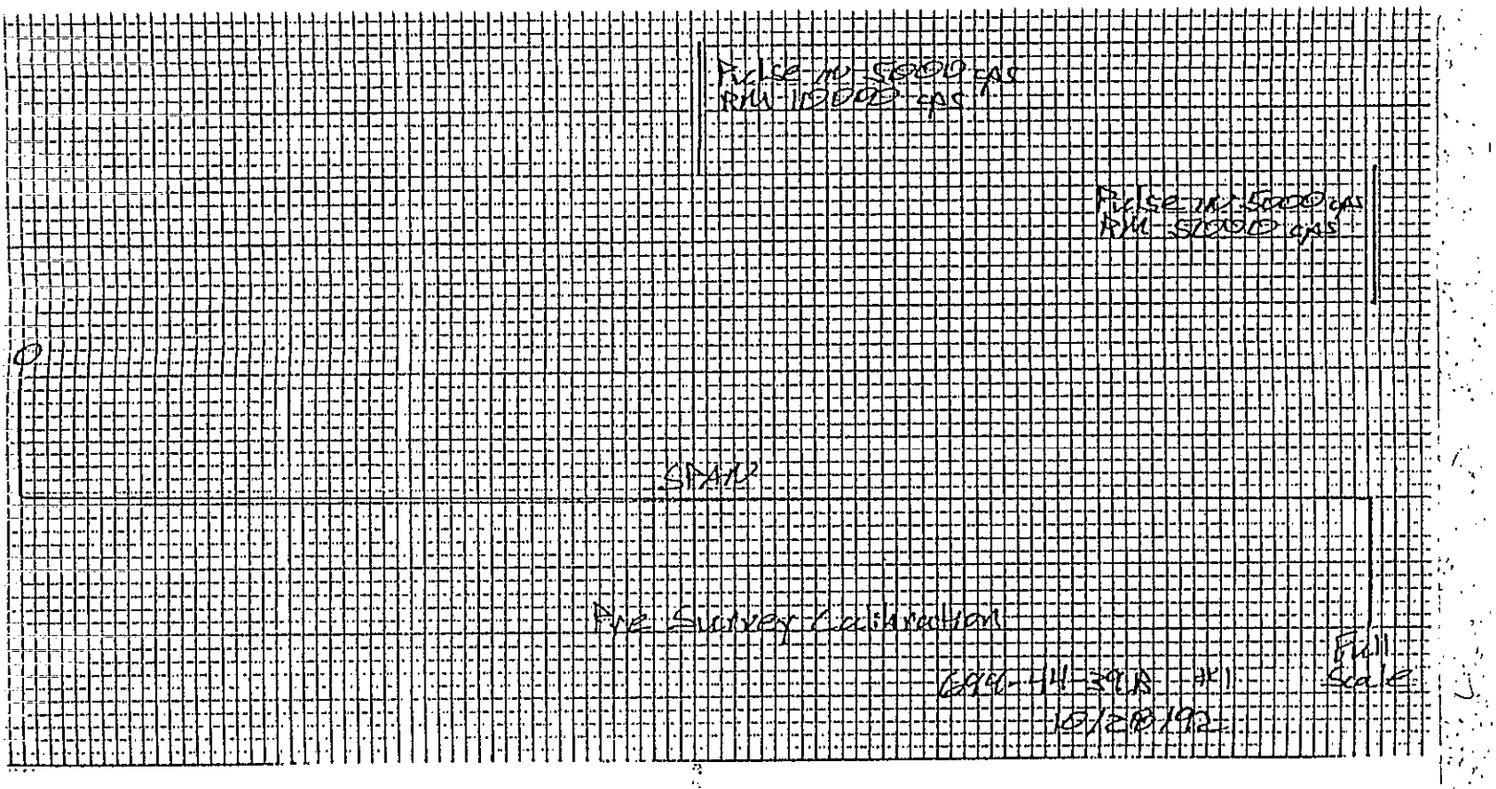
Centralizer used.

Witnessed and Verified by: (sign and print name) Alan Pearson Alan Pearson | Date: 10/28/92

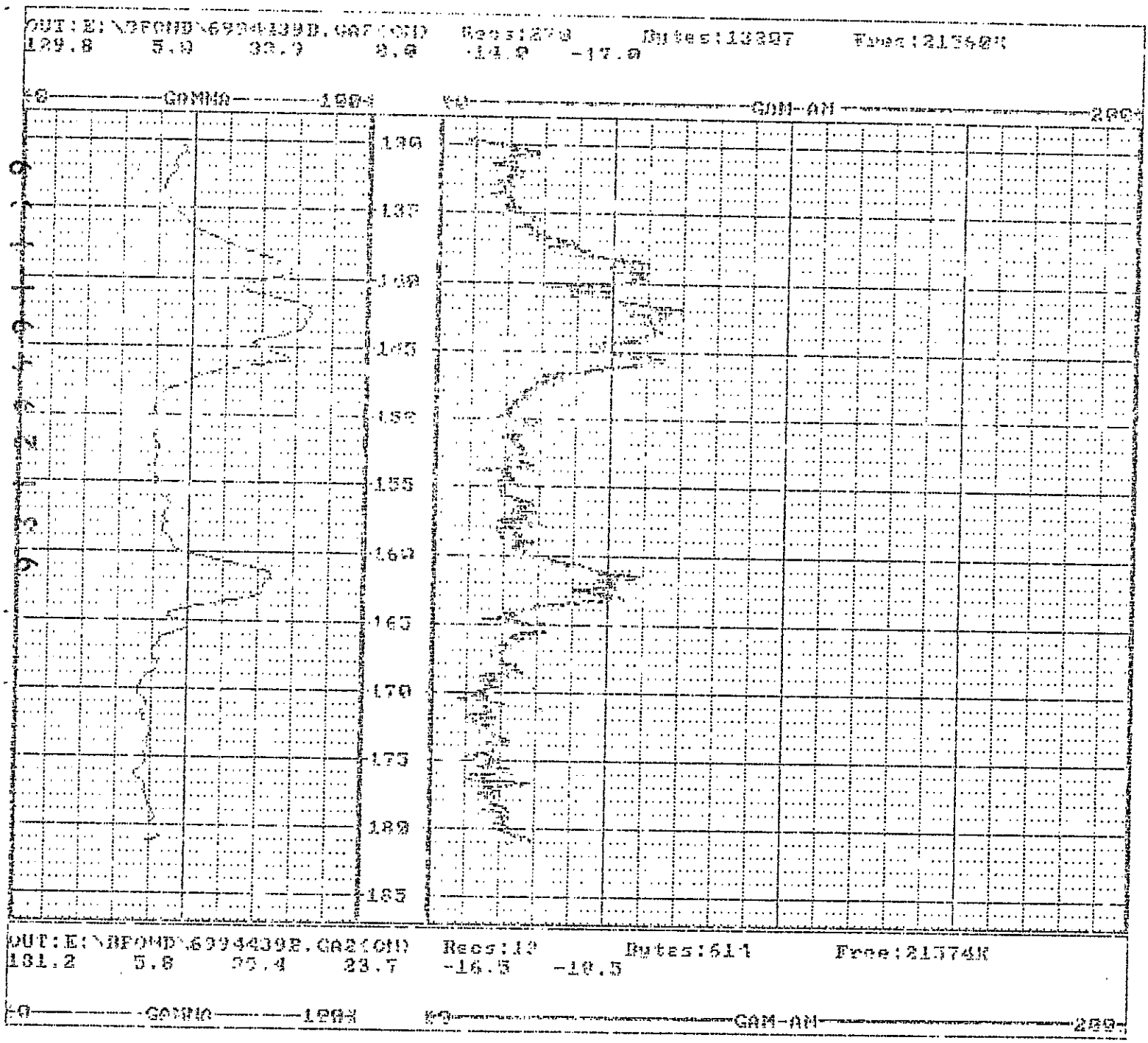

SPAN
Full Scale
Pulse on 50000 cps
RM 10000 cps
Pulse on 50000 cps
RM 50000 cps
Pos. 2
1000 cps
Pos. 1
50000 cps
Background
500 cps
Post Survey Calibration
130
140
150
160
170


Repair Section
0 cps
500 cps
(Full Scale)
160
170
180
10
20
30
40
50
60
70
80
90
100
110
120
130


120
110
150
160
170
180
0 cps
5000 cps
(Full scale)
Background
500 cps
Pos 2
10000 cps
Pos 1
5000 cps
Pulse rate 5000 cps
RM 10000 cps
Pulse rate 5000 cps
RM 5000 cps


Pulse in 5000 cps
RM 10000 cps
Pulse in 5000 cps
RM 5000 cps
0
SPAN
Pre Survey Calibration
Full Scale
694-44-39B #1
10/28/92

Bottom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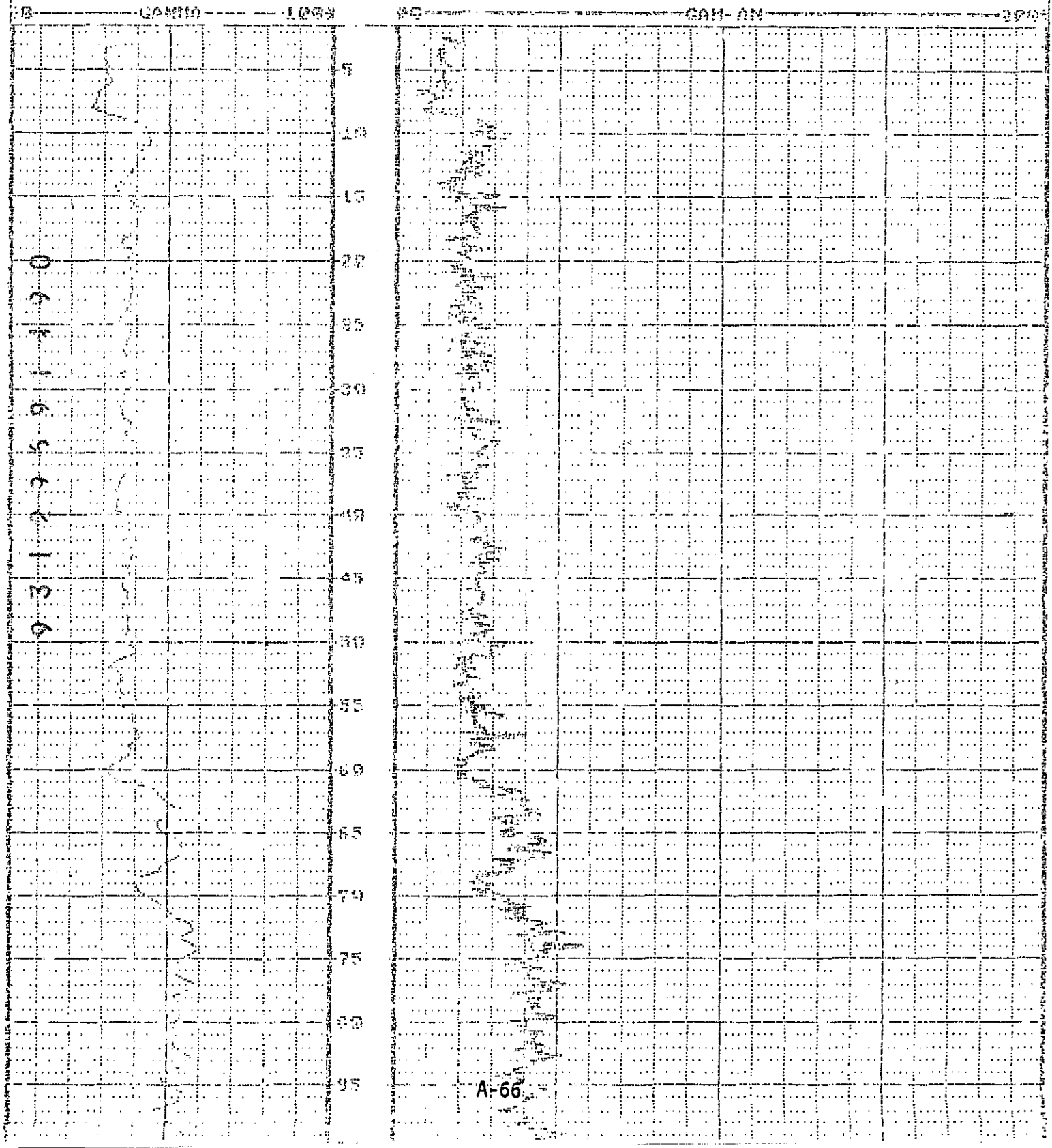
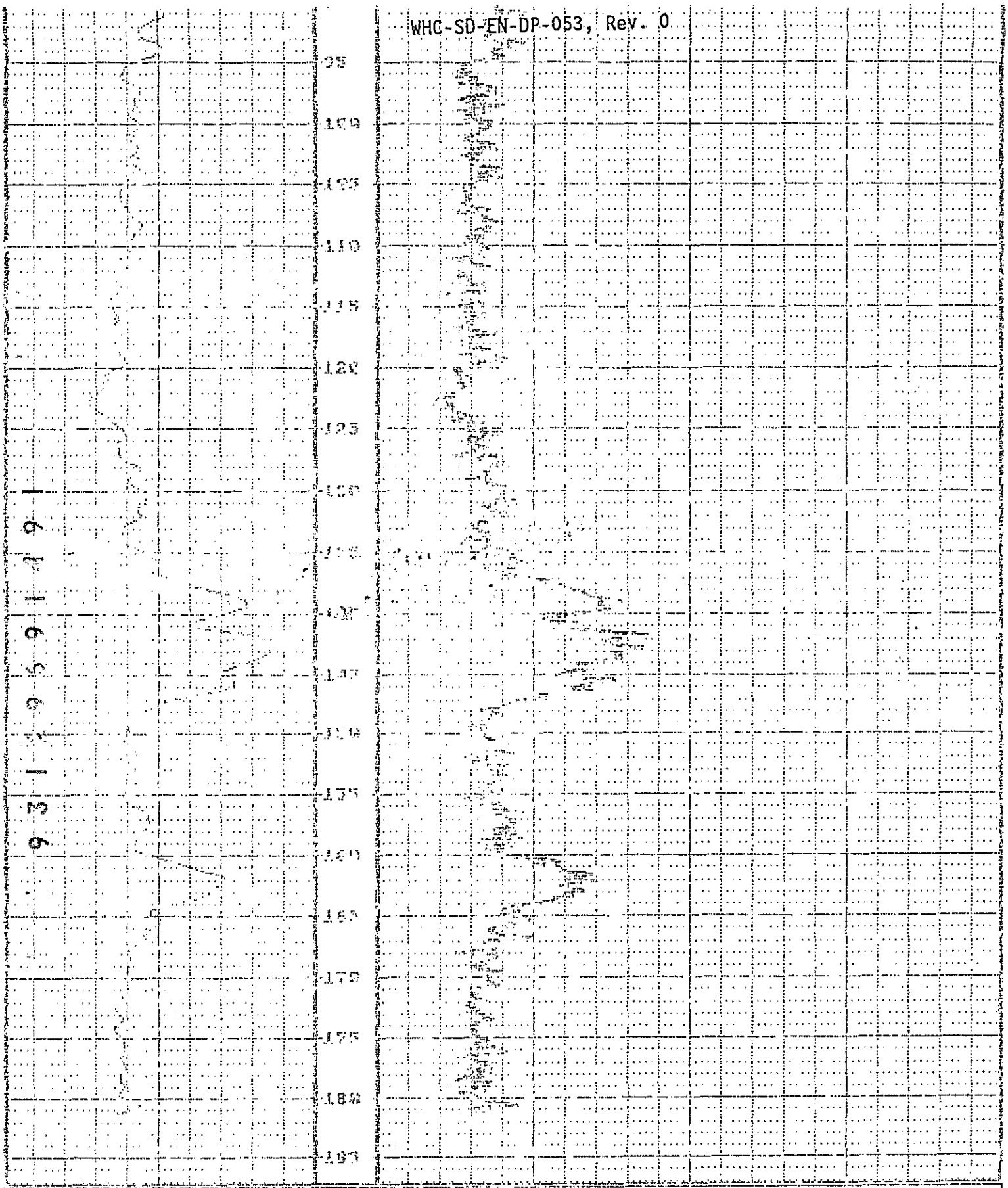
GAMMA
GAM-AM
130
135
140
145
150
155
160
165
170
175
180
185
OUT:E:\BFOND\6994439B.GA2(CH)
131.2 5.8 23.7 -16.5 -18.5
GAMMA
GAM-AM

Gross Gamma 181.7' to 2.9' 10/28/92

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100
105
110
115
120
125
130
135
140
145
150
155
160
165
170
175
180
185
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181.2 6.1 37.1 32.2 -29.0 -11.0
Free:21616K
COM-AN

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APPENDIX B

PHYSICAL SAMPLE DATA
CHEMICAL SAMPLE DATA

CONTENTS

Well 699-41-42 . . . . . B-1
Well 699-44-39B B-22

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

VALIDATED
KDR 2/8/92
SIGNATURE/DATE

2/04/93 WELL 699-41-42 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
3-0319	699-41-42	RCRA	253.5 - 254	4.62E-5								
3-0320	699-41-42	RCRA	254 - 254.5									archived
3-0321	699-41-42	RCRA	254.5 - 255									GEL 07
3-0322	699-41-42	RCRA	5'					2.31			1.2	
3-0323	699-41-42	RCRA	10'					2.91			0.01	
3-0324	699-41-42	RCRA	15'					4.05			0.01	
3-0325	699-41-42	RCRA	20'					3.16			0.01	
3-0326	699-41-42	RCRA	25'					2.62			0.01	
3-0327	699-41-42	RCRA	30'					2.25			0.01	
3-0328	699-41-42	RCRA	35'					2.03			0.01	
3-0329	699-41-42	RCRA	40'					2.95			0.01	
3-0330	699-41-42	RCRA	45'					3.12			0.01	
3-0331	699-41-42	RCRA	50'					3.30			0.01	
3-0332	699-41-42	RCRA	55'					4.60			0.01	
3-0333	699-41-42	RCRA	60'					3.01			0.01	
3-0334	699-41-42	RCRA	65'					5.80			0.01	
3-0335	699-41-42	RCRA	70'					4.67			0.01	
3-0336	699-41-42	RCRA	75'					4.21			0.01	
3-0337	699-41-42	RCRA	80'					2.87			0.01	
3-0338	699-41-42	RCRA	85'					2.58			0.01	
3-0339	699-41-42	RCRA	90'					3.39			0.01	
3-0340	699-41-42	RCRA	95'					4.07			0.01	
3-0341	699-41-42	RCRA	100'					9.62			1.0	
3-0342	699-41-42	RCRA	105'					5.06			1.2	
3-0343	699-41-42	RCRA	110'					5.88			1.0	
3-0344	699-41-42	RCRA	115'					5.14			1.0	
3-0345	699-41-42	RCRA	120'					5.47			0.01	
3-0346	699-41-42	RCRA	125'					4.95			0.01	
3-0347	699-41-42	RCRA	130'					5.40			0.01	
3-0348	699-41-42	RCRA	135'					3.00			1.0	

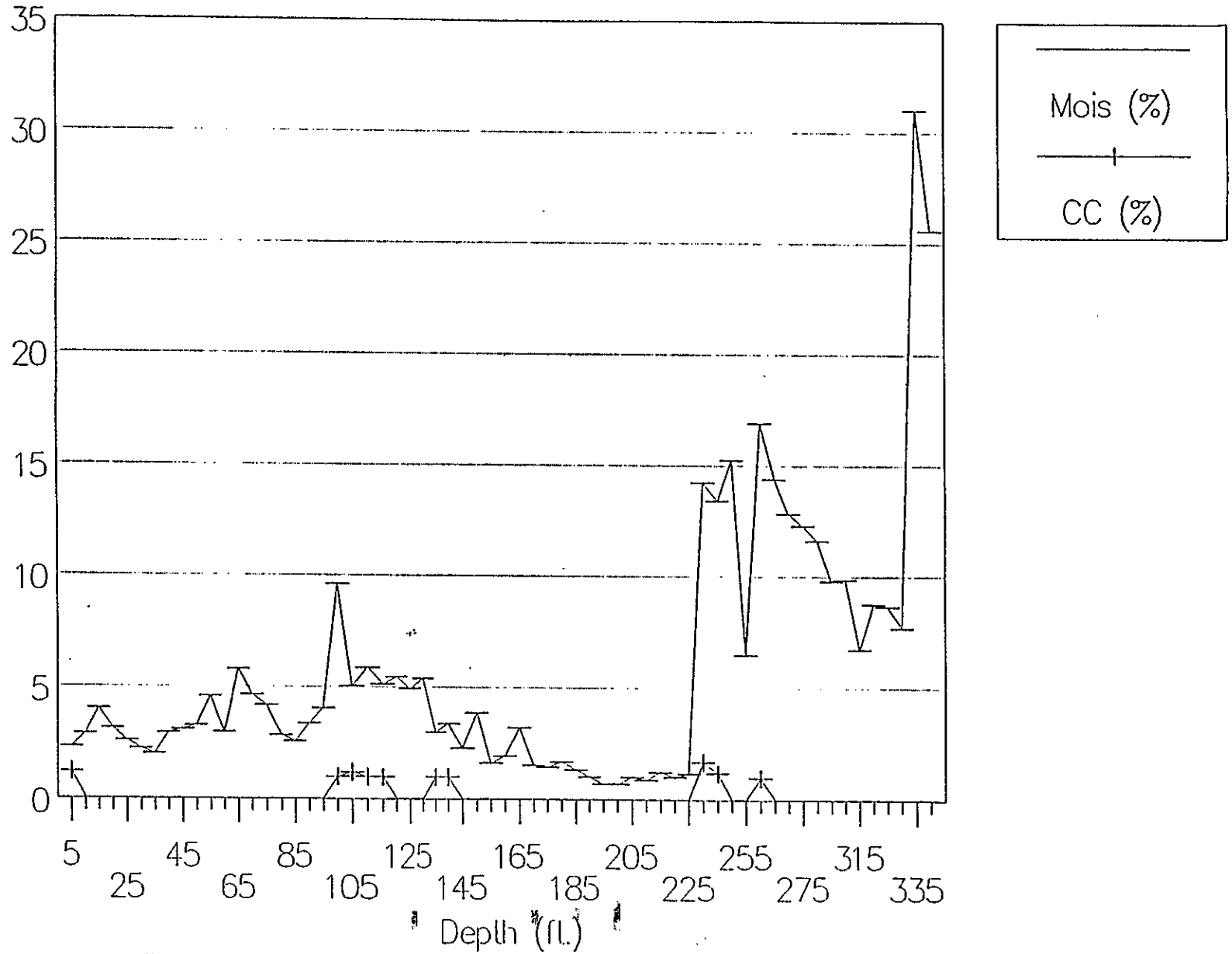
Sample No.	Well No.	Operable Unit	Depth	Sat K (cm/s)	SpG/F	SpG/C	SpG/Avg	Mois (%)	Por (%)	Den/D (g/cc)	CC (%)	Notes
3-0349	699-41-42	RCRA	140'					3.39			1.0	
3-0350	699-41-42	RCRA	145'					2.29			0.01	
3-0351	699-41-42	RCRA	150'					3.88			0.01	
3-0352	699-41-42	RCRA	155'					1.64			0.01	
3-0353	699-41-42	RCRA	160'					1.96			0.01	
3-0354	699-41-42	RCRA	165'					3.23			0.01	
3-0355	699-41-42	RCRA	170'					1.54			0.01	
3-0356	699-41-42	RCRA	175'					1.46			0.01	
3-0357	699-41-42	RCRA	180'					1.70			0.01	
3-0358	699-41-42	RCRA	185'					1.34			0.01	
3-0359	699-41-42	RCRA	190'					1.02			0.01	
3-0360	699-41-42	RCRA	195'					0.71			0.01	
3-0361	699-41-42	RCRA	200'					0.71			0.01	
3-0362	699-41-42	RCRA	205'					1.02			0.01	
3-0363	699-41-42	RCRA	210'					0.87			0.01	
3-0364	699-41-42	RCRA	215'					1.24			0.01	
3-0365	699-41-42	RCRA	220'					1.01			0.01	
3-0366	699-41-42	RCRA	225					1.17			0.01	
3-0367	699-41-42	RCRA	230					14.24			1.7	
3-0368	699-41-42	RCRA	235					13.41			1.2	
3-0369	699-41-42	RCRA	240					15.24			0.01	
3-0370	699-41-42	RCRA	255					6.49			0.01	
3-0371	699-41-42	RCRA	260					16.91			1.0	
3-0372	699-41-42	RCRA	265					14.41			0.01	
3-0373	699-41-42	RCRA	270					12.86			0.01	
3-0374	699-41-42	RCRA	275					12.31			0.01	
3-0375	699-41-42	RCRA	280					11.61			0.01	
3-0376	699-41-42	RCRA	305					9.79			0.01	
3-0377	699-41-42	RCRA	310					9.86			0.01	
3-0378	699-41-42	RCRA	315					6.75			0.01	
3-0379	699-41-42	RCRA	320					8.76			0.01	

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

2/04/93 WELL 699-41-42 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
3-0380	699-41-42	RCRA	325					8.66			0.01	
3-0381	699-41-42	RCRA	330					7.69			0.01	
3-0382	699-41-42	RCRA	335					31.02			0.01	
3-0383	699-41-42	RCRA	340					25.57			0.01	

WELL 699-41-42



TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	699-41-42	DEPTH	
SAMPLE/SPECIMEN NO	3-0319 → 3-0321	COST CODE/WORK ORDER NUMBER			A6CDR
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
*******HEIS********	N/A	MSIN	H6-06	DATE	12/10/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
SIEVE ANALYSIS	1	GEL 07
HYDRAULIC CONDUCTIVITY	1	GEL 09

REMARKS: 3 Liners. 3-0320 archive
319 GEL09
321 GEL07

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 253.5-254.0
3 0319
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 254.5-255.0
3 0321
54-3000-022 (01/89)

RECEIVED BY E. R. WALKER
DATE 12/17/92

GEL 09 [X] GEL 17 [ ]
GEL 10 [ ] GEL 19 [ ]
GEL 14 [ ] GEL [ ]

GEOTECHNICAL ENGINEERING LABORATORY
GEL-09 HYDRAULIC CONDUCTIVITY DATA SHEET

Sample No. 3-0319

Page ____ of ____

Balance No. 3310 Permeameter No. 2

Test Initiated By LD Bruggeman Date 1/28/93 Procedure GEL 09 Sleeve Type: [X] 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
1/28	11:04	12:52	1:48	59.3	153.5	212.8	23.4	68.2	clear	LDB.	2.69E-05	LDB
	12:53	14:34	1:41	52.6	153.5	206.1	24.0	68.1	clear		2.56E-05	
	14:36	15:56	1:20	39.6	153.5	193.1	24.3	68.1	clear		2.43E-05	
1/29	08:06	8:56	:50	81.4	153.5	234.9	23.0	70.8	clear		7.70E-05	
	8:57	10:33	1:36	156.6	153.5	310.1	23.3	70.6	Clear		7.73E-05	
								Σ =	4.62-05			

Remarks

Test Checked By Richard H. McIntosh Date 1/29/92

BD-6000-795 (04/92)

WHC-SD-EN-DP-053, Rev. 0

B-6

GEL 07 ☒	GEL 16 ☐	GEOTECHNICAL ENGINEERING LABORATORY GEL-07 SIEVE AND HYDROMETER ANALYSIS	Sample No. 3-0321
GEL 09 ☒	GEL 17 ☐		Page ____ of ____
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-07 SIEVE ANALYSIS

Date 1-29-93 Calibration Due Date 4-25-93 Balance: 3310

Sample Description SAND & Gravel Sieve Time 10 (min)

Reduced By: ☒ Splitting ☐ Quartering ☐ Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed	Tested By
1 1/2	1932.0	0	0	100	LD Bruggeman
3/4	↓	399.7	20.7	79.3	
3/8	↓	779.2	40.3	59.7	
4	↓	993.2	51.4	48.6	
10	↓	1176.5	60.9	39.1	
40	178.1	36.2	20.3	31.2	
60	↓	51.0	28.6	27.9	
100	↓	77.0	43.2	22.2	
200	↓	128.8	72.3	10.8	

Remarks: Pan 126 2324.3 - T = 2076.6

T = 247.7 2179.7 - T = 1932.0

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						

NOT AVAILABLE

Remarks: NA

Tests Checked By R. T. McCartney Date 1/29/93

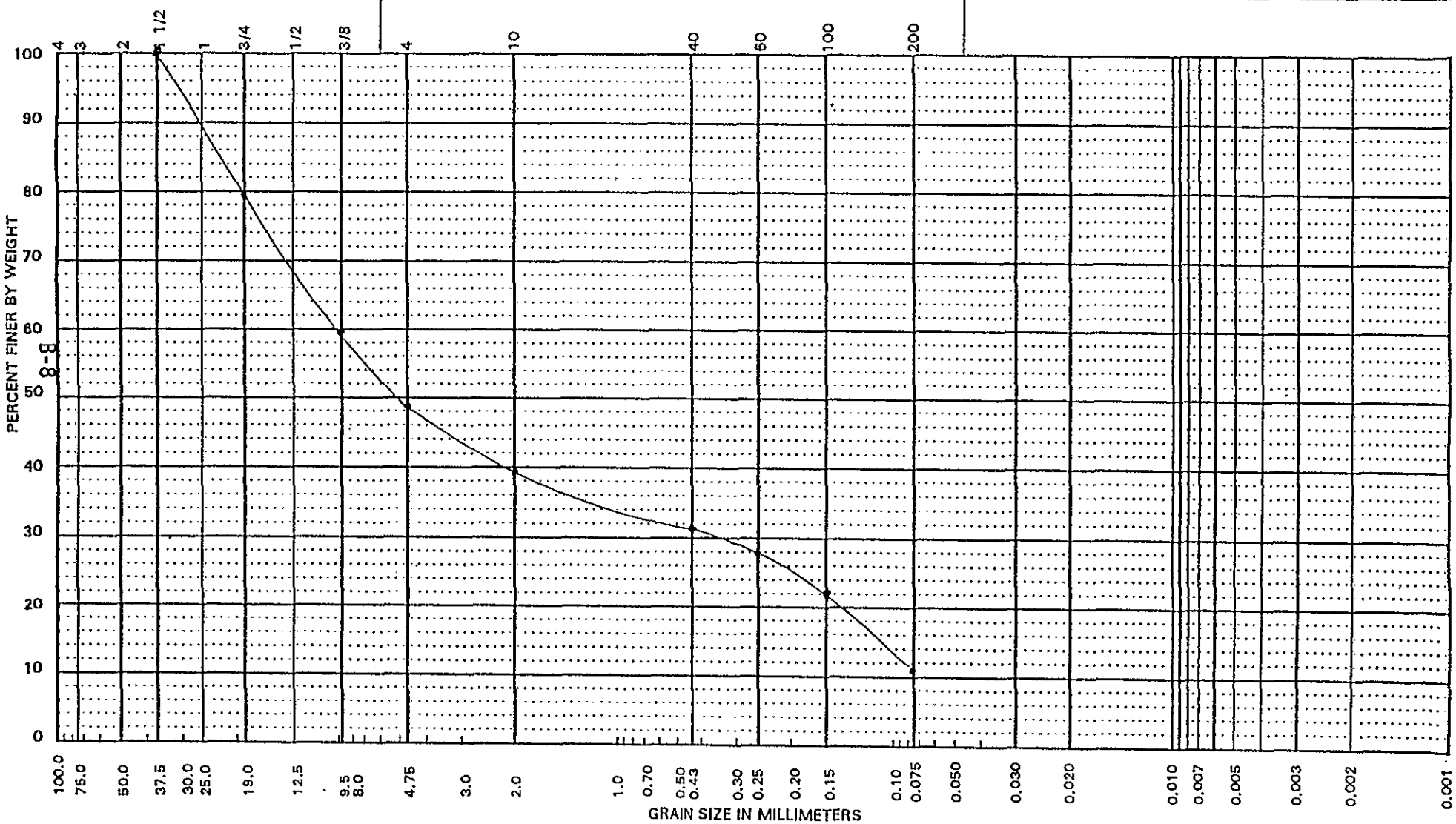
BD-6000-796 (04/92)

GEL-07 GRAIN SIZE ANALYSIS PLOT

Sample No. 3-0321

Page ____ of ____

Remarks



Plotted By L D Bruggeman Date 1-29-93

Plot Checked By [signature] Date 1/29/93

BD-6000-799 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	699-41-42	DEPTH	N/A
SAMPLE/SPECIMEN NO	3-0322 -> 3-0383	COST CODE/WORK ORDER NUMBER			A6CDR
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
*******HEIS********	N/A	MSIN	H6-06	DATE	12/10/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
Calcium Carbonate	62	GEL 19
Moisture Content	62	GEL 14

REMARKS:

ARCHIVE YES ☐ NO ☐

TAPE RELEASE STICKER HERE

See attached sheets.

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-053, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY

GEL-14, GEL-19

Sample No(s). 3-0322 > 50

GEL-14 SOIL MOISTURE	GEL-19 CALCIUM CARBONATE
Tested By JRPayne Balance: 3304 Calibration Due Date 1-25-93	Vessel No. 5650
Date 1-20-93 Thermometer: 0018 Calibration Due Date 9-17-93	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 0322	470.84	461.65	63.09	9.19	398.56	2.31	.8	1.2	JRP
3 0323	403.97	394.30	60.82	9.67	332.38	2.91	.5	<1	JRP
3 0324	419.12	405.24	62.91	13.88	342.33	4.05	.2	<1	JRP
3 0325	447.68	435.87	62.53	11.81	373.34	3.16	.2	<1	JRP
3 0326	472.31	461.82	62.14	10.49	399.68	2.62	.4	<1	JRP
3 0327	467.97	459.06	62.92	8.91	396.14	2.25	.4	<1	JRP
3 0328	437.23	427.76	62.67	7.47	367.09	2.03	.4	<1	JRP
3 0329	411.92	401.93	62.75	9.99	339.18	2.95	.5	<1	JRP
3 0330	434.97	423.70	63.02	11.27	360.68	3.12	.5	<1	JRP
3 0331	456.53	443.97	62.95	12.56	381.02	3.30	.5	<1	JRP
3 0332	450.40	433.28	61.01	17.12	372.27	4.60	.6	<1	JRP
3 0333	434.98	424.05	63.09	10.93	363.04	3.01	.5	<1	JRP
3 0334	442.86	422.04	63.02	20.82	359.02	5.80	.5	<1	JRP
3 0335	424.37	408.24	62.83	16.13	345.41	4.67	.5	<1	JRP
3 0336	428.73	413.93	63.59	14.80	351.34	4.21	.5	<1	JRP
3 0337	500.12	487.88	62.02	12.24	425.76	2.87	.4	<1	JRP
3 0338	363.07	355.51	62.93	7.56	292.58	2.58	.4	<1	JRP
3 0339	319.09	310.69	62.74	8.40	247.95	3.39	.4	<1	JRP
3 0340	369.61	357.59	62.50	12.02	295.09	4.07	.5	<1	JRP
3 0341	307.04	285.43	60.68	21.61	224.95	9.62	.7	1	JRP
3 0342	434.79	416.84	62.15	17.95	354.69	5.06	.8	1.2	JRP
3 0343	406.22	387.12	62.51	19.10	324.61	5.88	.7	1	JRP
3 0344	424.32	406.62	62.24	17.70	344.38	5.14	.7	1	JRP
3 0345	425.80	406.96	62.41	18.84	344.55	5.47	.6	<1	JRP
3 0346	430.21	412.89	62.74	17.32	350.15	4.95	.6	<1	JRP
3 0347	443.91	424.39	63.12	19.52	361.27	5.40	.6	<1	JRP
3 0348	332.95	344.48	61.68	8.47	282.80	3.00	.7	1	JRP
3 0349	399.79	388.75	62.67	11.04	326.08	3.39	.7	1	JRP
3 0350	475.51	466.25	62.04	9.26	404.21	2.29	.4	<1	JRP

Remarks:

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

BD-6000-806 (04/92)

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

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0351 / 0367

Page 2 of 3

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

Tested By [signature] Balance: 3304 Calibration Due Date 1-25-93 Vessel No. 5650

Date 1-20-93 Thermometer: 0018 Calibration Due Date 9-17-93 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 0351	431.32	417.45	59.84	13.87	357.61	3.88	.6	<1	[signature]
3 0352	406.69	401.13	62.64	5.56	338.49	1.64	.4	<1	[signature]
3 0353	341.56	336.21	63.44	5.35	272.77	1.96	.2	<1	[signature]
3 0354	327.32	319.03	62.35	8.29	256.68	3.23	.2	<1	[signature]
3 0355	336.90	332.72	61.19	4.18	271.53	1.54	.2	<1	[signature]
3 0356	521.74	515.16	63.82	6.58	451.34	1.46	.2	<1	[signature]
3 0357	554.00	545.78	62.03	8.22	483.75	1.70	.3	<1	[signature]
3 0358	552.56	546.07	63.07	6.49	483.00	1.34	.3	<1	[signature]
3 0359	576.05	570.86	62.63	5.19	508.23	1.02	.3	<1	[signature]
3 0360	457.80	455.02	63.40	2.78	391.62	0.71	.3	<1	[signature]
3 0361	567.43	563.87	62.55	3.54	501.34	0.71	.3	<1	[signature]
3 0362	527.36	522.65	62.92	4.71	459.73	1.02	.2	<1	[signature]
3 0363	526.08	522.09	62.01	3.99	460.08	0.87	.3	<1	[signature]
3 0364	558.44	552.35	62.42	6.09	489.93	1.24	.4	<1	[signature]
3 0365	556.41	551.51	64.06	4.90	487.45	1.01	.4	<1	[signature]
3 0366	476.99	472.20	62.85	4.79	409.34	1.17	.4	<1	[signature]
3 0367	329.34	296.00	61.89	33.34	234.11	14.24	1.0	1.7	[signature]

Remarks:

Tests Checked By: [signature] Date 1/26/93

BD-6000-806 (04/92)

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

WHC-SD-EN-DP-053, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0368 > 0383

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

Tested By [signature] Balance: 3304 Calibration Due Date 1-25-93 Vessel No. 5650

Date 1-21-93 Thermometer: 0018 Calibration Due Date 9-17-93 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
3-0368	246.15	224.17	60.23	21.98	163.94	13.41	.8	1.2	[initials]
3 0369	291.15	260.78	61.51	30.37	199.27	15.24	.4	<1	[initials]
3 0370	387.63	367.75	61.58	19.88	306.17	6.49	.3	<1	[initials]
3 0371	470.58	411.59	62.76	58.99	348.83	16.91	.7	1	[initials]
3 0372	356.73	319.58	64.77	37.15	257.81	14.41	.5	<1	[initials]
3 0373	444.78	401.27	62.95	~~43.51~~	~~338.32~~	~~12.86~~	.4	<1	[initials]
3 0374	482.89	436.98	63.99	45.91	372.99	12.31	.4	<1	[initials]
3 0375	395.47	360.84	62.56	34.63	298.28	11.61	.4	<1	[initials]
3 0376	434.94	401.74	62.66	33.20	339.08	9.79	.4	<1	[initials]
3 0377	447.92	413.49	64.14	34.43	349.35	9.86	.4	<1	[initials]
3 0378	357.85	333.55	62.43	18.30	271.12	6.75	.5	<1	[initials]
3 0379	427.41	398.12	63.63	29.29	334.49	8.76	.4	<1	[initials]
3 0380	387.28	361.38	62.29	25.90	299.09	8.66	.3	<1	[initials]
3 0381	369.27	347.23	60.67	22.04	286.56	7.69	.5	<1	[initials]
3 0382	169.25	143.85	61.97	25.40	81.88	31.02	.4	<1	[initials]
3 0383	248.77	208.58	62.81	40.19	145.77	25.57	.5	<1	[initials]

Remarks:

Tests Checked By: [signature] B-12 Date 1/26/93

SD-6000-806 (04/92)

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Remarks 3 0322 5
54-3000-022 (01/89)

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Remarks 3 0323 10

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Remarks 3 0330 45

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Remarks 3 0331 50

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Remarks 3 0332 55
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Remarks 3 0333 60
54-3000-022 (01/89)

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Remarks 3 0334 65

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Remarks 3 0335 70

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Health Physics
Remarks 3 0336 75

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Remarks 3 0337 80

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Remarks 3 0338 85

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Health Physics
Remarks 3 0339 90

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Health Physics
Remarks 3 0340 95

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Remarks 3 0341 100

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Health Physics
Remarks 3 0342 105

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Health Physics
Remarks 3 0343 110

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Remarks 3 0344 115

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Health Physics
Remarks 3 0345 120

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Health Physics
Remarks 125
3 0346
54-3000-022 (01/89)

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Health Physics
Remarks 130
3 0347
54-3000-022 (01/89)

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Health Physics
Remarks 135
3 0348

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Health Physics
Remarks 140
3 0349

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Health Physics
Remarks 145
3 0350
54-3000-022 (01/89)

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Bldg. 699-41-42 Expiration Date 12/08/92
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Health Physics
Remarks 150
3 0351
54-3000-022 (01/89)

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Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 155
3 0352
54-3000-022 (01/89)

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Health Physics
Remarks 160
3 0353
54-3000-022 (01/89)

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Health Physics
Remarks 165
3 0354

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Health Physics
Remarks 170
3 0355
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Health Physics
Remarks 175
3 0356

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Health Physics
Remarks 180
3 0357
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Health Physics
Remarks 185
3 0358

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Health Physics
Remarks 190
3 0359
54-3000-022 (01/89)

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Health Physics
Remarks 195
3 0360
54-3000-022 (01/89)

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Remarks 200
3 0361

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Remarks 3 0362 205
54-3000-022 (01/89)

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Remarks 3 0363 210
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Health Physics
Remarks 215
3 0364

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Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 220
3 0365
54-3000-022 (01/89)

RADIATION RELEASE
Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 3 0366 225
54-3000-022 (01/89)

RADIATION RELEASE
Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 3 0367 230
54-3000-022 (01/89)

RADIATION RELEASE
Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 3 0368 235

RADIATION RELEASE
Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 3 0369 240
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 255
3 0370

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 260
3 0371
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 265
3 0372
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 270
3 0373

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 275
3 0374
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 280
3 0375
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 305
3 0376
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 310
3 0377
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 315
3 0378
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 320
3 0379
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 3 0380 325

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92
Released By TEC
Health Physics
Remarks 330
3 0381
54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3 0382 335

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-41-42 Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 3 0383 340

54-3000-022 (01/89)

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

VALIDATED KDR 1/18/93 SIGNATURE DATE

Requested by:	Phone No.	Well No. 699-41-42	Date:

Sample No. (Depth)	Sample Date	Sample Description	Analysis Date	Lab No.	Results Beta/Gamma (pci/g)	Results Alpha (pci/g)
5'	7-21-92	SOIL	7-22-92	1671-92-46	16	1
10'	7-21-92		7-22-92	1672-92-47	17	<D
15'	8-6-92		8-6-92	1817-92-5	11	<D
20'	8-6-92		8-6-92	1818-92-6	9	<D
25'	8-6-92		8-6-92	1819-92-7	13	<D
30'	8-6-92		8-6-92	1820-92-8	11	<D
35'	8-6-92		8-6-92	1821-92-9	17	<D
40'	8-6-92		8-6-92	1822-92-10	14	<D
45'	8-6-92		8-6-92	1823-92-11	14	1
50'	8-6-92		8-6-92	1824-92-12	15	<D
55'	8-6-92		8-6-92	1825-92-13	10	<D
60'	8-6-92		8-6-92	1826-92-14	11	<D
65'	8-6-92		8-6-92	1827-92-15	13	<D
70'	8-6-92		8-6-92	1828-92-16	12	<D
75'	8-6-92		8-6-92	1829-92-17	11	<D
80'	8-6-92		8-6-92	1830-92-18	13	<D
85'	8-6-92		8-6-92	~~1831~~ 1831-92-19	12	<D
90'	8-6-92		8-6-92	1832-92-20	9	<D
95'	8-6-92		8-6-92	1833-92-21	10	<D
100'	8-6-92		8-6-92	1834-92-22	14	3
105'	8-6-92		8-6-92	1835-92-23	13	<D
110'	8-6-92		8-6-92	1836-92-24	14	<D
115'	8-6-92		8-6-92	1837-92-25	11	<D

Performed By: [signature] Date: 8-6-92

Supervisor Review: [signature] Date: 9/21/92

Page: 1 of 3

A-6000-829 (10/91)

9312959151 2

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:	Phone No.	Well No. 699-41-42	Date:

Sample No. (Depth)	Sample Date	Sample Description	Analysis Date	Lab No.	Results Beta/Gamma (pci/g)	Results Alpha (pci/g)
120'	8-6-92	SOIL	8-6-92	1838-92-26	15	1
125'	8-6-92		8-6-92	1839-92-27	13	<D
130'	8-6-92		8-6-92	1840-92-28	14	<D
135'	8-6-92		8-6-92	1851-92-38	16	<D
140'	8-6-92		8-6-92	1841-92-29	14	<D
145'	8-6-92		8-6-92	1842-92-30	13	<D
150'	8-6-92		8-6-92	1843-92-31	21	<D
155'	8-6-92		8-6-92	1844-92-32	10	<D
160'	8-6-92		8-6-92	1845-92-33	13	<D
165'	8-6-92		8-6-92	1846-92-34	13	1
170'	8-11-92		8-11-92	1872-92-12	12	<D
175'	8-11-92		8-11-92	1873-92-13	14	1
180'	8-11-92		8-11-92	1874-92-14	10	<D
185'	8-11-92		8-11-92	1875-92-15	11	<D
190'	8-11-92		8-11-92	1876-92-16	11	<D
195'	8-11-92		8-11-92	1877-92-17	9	<D
200'	8-11-92		8-11-92	1878-92-18	15	1
205'	8-11-92		8-11-92	1879-92-19	12	1
210'	8-11-92		8-11-92	1880-92-20	9	<D
215'	8-11-92		8-11-92	1881-92-21	11	1
220'	8-11-92		8-11-92	1882-92-22	13	1
225'	8-24-92		8-24-92	1954-92-47	10	<D
230'	8-24-92		8-24-92	1955-92-48	15	1

Performed By: [signature] Date: 8-24-92

Supervisor Review: [signature] Date: 9/21/92

Page: 2 of 3

A-6000-829 (10/91)

9 3 1 2 9 5 9 1 5 1 3

ENVIRONMENTAL RESTORATION HEALTH AND SAFETY

Requested by:	Phone No.	Well No. 699-41-42	Date:

Sample No. (Depth)	Sample Date	Sample Description	Analysis Date	Lab No.	Results Beta/Gamma (pci/g)	Results Alpha (pci/g)
235'	8-24-92	SOIL	8-24-92	1956-92-49	15	<D
240'	8-24-92		8-24-92	1957-92-50	16	<D
—	—		—	—	—	—
253.5	9-9-92		9-10-92	2230-92-46	15	1
255'	9-9-92		9-10-92	2231-92-47	12	1
260'	9-14-92		9-16-92	2328-92-41	7	<D
265'	9-14-92		9-16-92	2329-92-42	10	1
270'	9-14-92		9-16-92	2330-92-43	9	<D
275'	9-14-92		9-16-92	2331-92-44	10	<D
280'	9-14-92		9-16-92	2332-92-45	10	<D
305'	9-15-92		9-17-92	2371-92-32	8	<D
310'	9-15-92		9-17-92	2372-92-33	8	<D
315'	9-15-92		9-17-92	2373-92-34	9	<D
320'	9-15-92		9-17-92	2374-92-35	9	<D
325'	9-15-92		9-17-92	2375-92-36	8	1
330'	9-15-92		9-17-92	2376-92-37	9	<D
335'	9-15-92		9-17-92	2377-92-38	6	<D
340'	9-15-92	TD	9-17-92	2378-92-39	7	<D

Performed By: [signature] Date: 9-17-92

Supervisor Review: [signature] Date: 9/21/92

Page: 3 of 3

A-6000-829 (10/91)

9 3 1 2 9 5 9 1 5 1 5

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

2/04/93

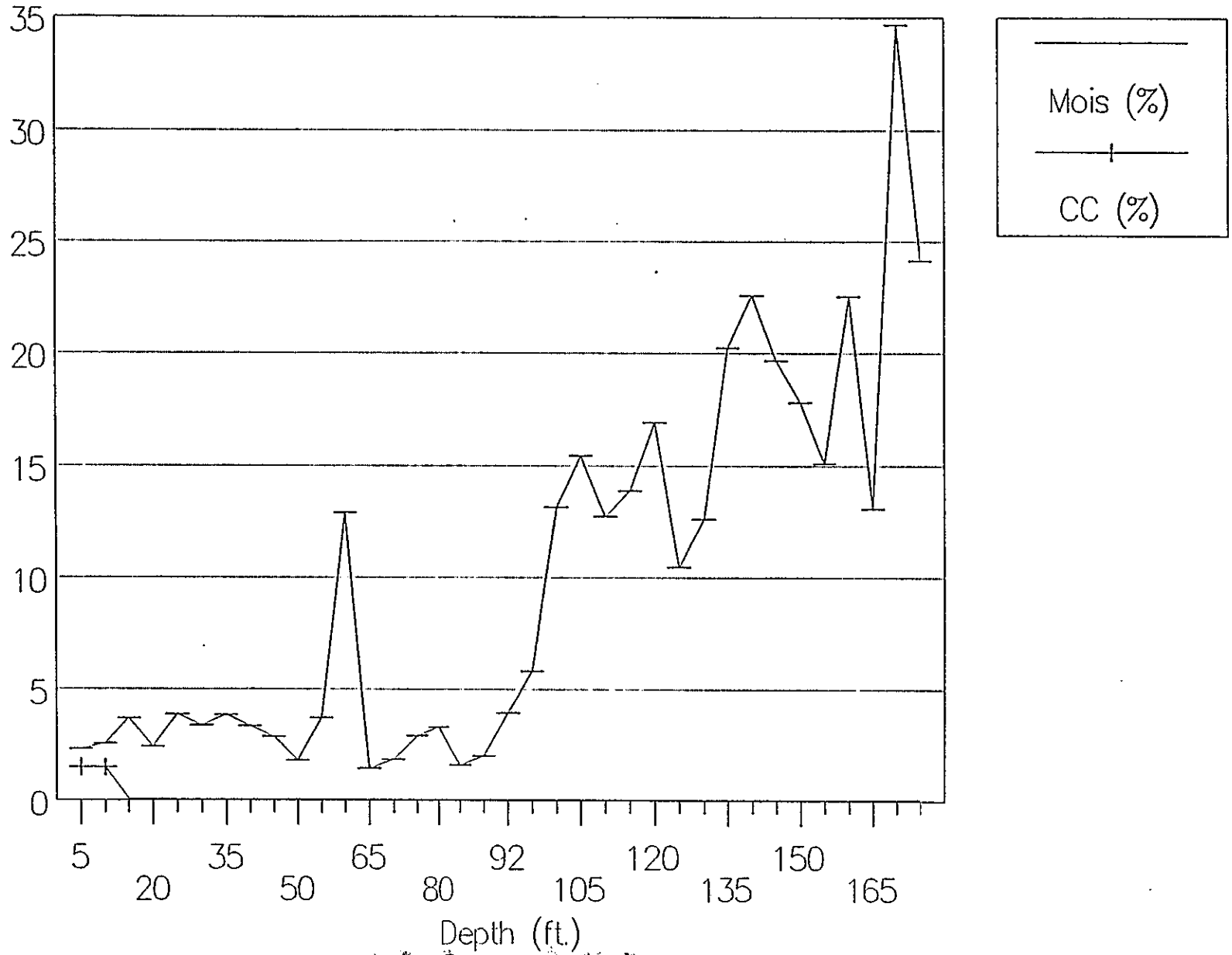
WELL 699-44-39B

VALIDATED
KDR 2/8/93
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
3-0281	699-44-39B	RCRA	123.4 - 123.9	2.31E-5								GEL 07
3-0282	699-44-39B	RCRA	N/A					7.45			<1.0	
3-0283	699-44-39B	RCRA	5'					2.32			1.5	
3-0284	699-44-39B	RCRA	10'					2.56			1.5	
3-0285	699-44-39B	RCRA	15'					3.71			<1.0	
3-0286	699-44-39B	RCRA	20'					2.43			<1.0	
3-0287	699-44-39B	RCRA	25'					3.89			<1.0	
3-0288	699-44-39B	RCRA	30'					3.38			<1.0	
3-0289	699-44-39B	RCRA	35'					3.87			<1.0	
3-0290	699-44-39B	RCRA	40'					3.37			<1.0	
3-0291	699-44-39B	RCRA	45'					2.89			<1.0	
3-0292	699-44-39B	RCRA	50'					1.82			<1.0	
3-0293	699-44-39B	RCRA	55'					3.72			<1.0	
3-0294	699-44-39B	RCRA	60'					12.91			<1.0	
3-0295	699-44-39B	RCRA	65'					1.44			<1.0	
3-0296	699-44-39B	RCRA	70'					1.87			<1.0	
3-0297	699-44-39B	RCRA	75'					2.93			<1.0	
3-0298	699-44-39B	RCRA	80'					3.32			<1.0	
3-0299	699-44-39B	RCRA	85'					1.62			<1.0	
3-0300	699-44-39B	RCRA	90'					2.02			<1.0	
3-0301	699-44-39B	RCRA	92'					3.97			<1.0	
3-0302	699-44-39B	RCRA	95'					5.82			<1.0	
3-0303	699-44-39B	RCRA	100'					13.18			<1.0	
3-0304	699-44-39B	RCRA	105'					15.46			<1.0	
3-0305	699-44-39B	RCRA	110'					12.75			<1.0	
3-0306	699-44-39B	RCRA	115'					13.89			<1.0	
3-0307	699-44-39B	RCRA	120'					16.92			<1.0	
3-0308	699-44-39B	RCRA	125'					10.47			<1.0	
3-0309	699-44-39B	RCRA	130'					12.65			<1.0	
3-0310	699-44-39B	RCRA	135'					20.25			<1.0	

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
3-0311	699-44-39B	RCRA	140'					22.61			<1.0	
3-0312	699-44-39B	RCRA	145'					19.68			<1.0	
3-0313	699-44-39B	RCRA	150'					17.83			<1.0	
3-0314	699-44-39B	RCRA	155'					15.10			<1.0	
3-0315	699-44-39B	RCRA	160'					22.57			<1.0	
3-0316	699-44-39B	RCRA	165'					13.10			<1.0	
3-0317	699-44-39B	RCRA	170'					34.70			<1.0	
3-0318	699-44-39B	RCRA	175'					24.16			<1.0	

WELL: 699-44-39B



TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	699-44-39B	DEPTH	122.4 - 123.4
SAMPLE/SPECIMEN NO	3-0280/81	COST CODE/WORK ORDER NUMBER			A6CDR
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
SATURATED HYDRAULIC CONDUCT.	1	GEL 09
SIEVE ANALYSIS	1	GEL 07

REMARKS: 2 Liners. composite to do GEL 09

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. 699-44-39B Expiration Date 12/08/92

Released By TEL
Health Physics

Remarks 123.9-124.4

54-3000-022 (01/89)

RADIATION RELEASE

Bldg. 699-44-39B Expiration Date 12/08/92

Released By TEL
Health Physics

Rem. 3 0281 123.4-123.9

54-3000-022 (01/89)

RECEIVED BY E. R. WALKER

DATE 12/

GEL 07 ☒	GEL 16 ☐	GEOTECHNICAL ENGINEERING LABORATORY GEL-07 SIEVE AND HYDROMETER ANALYSIS	Sample No. 3-0280
GEL 09 ☒	GEL 17 ☐		Page ____ of ____
GEL 10 ☐	GEL 19 ☐		
GEL 14 ☐	GEL ☐		

GEL-07 SIEVE ANALYSIS

Date _____ Calibration Due Date 4-25-93 Balance: 3310

Sample Description SAND & Gravel Sieve Time 10 (min)

Reduced By: ☒ Splitting ☐ Quartering ☐ Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed	Tested By
3 / 2	2372.2	0 / 754.6	0 / 31.8	100 / 68.2	LD Bruggeman
1½	↓	871.4	36.7	63.3	
3/4		1261.0	53.2	46.8	
3/8		1513.2	63.8	36.2	
4		1785.0	75.2	24.8	
10		1969.4	83.0	17.0	
40	201.7	67.3	33.4	11.3	
60		110.4	54.7	7.7	
100		130.4	64.7	6.0	
200		153.1	75.9	4.1	

Remarks: pan 101 As Recieved 2776.1-T = 2524.1
Tare 252.0 Oven Dried 2624.2-T = 2372.2

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						

NOT APPLICABLE

Remarks: _____

Tests Checked By Richard T. McIntosh Date 1/29/93

BD-6000-796 (04/92)

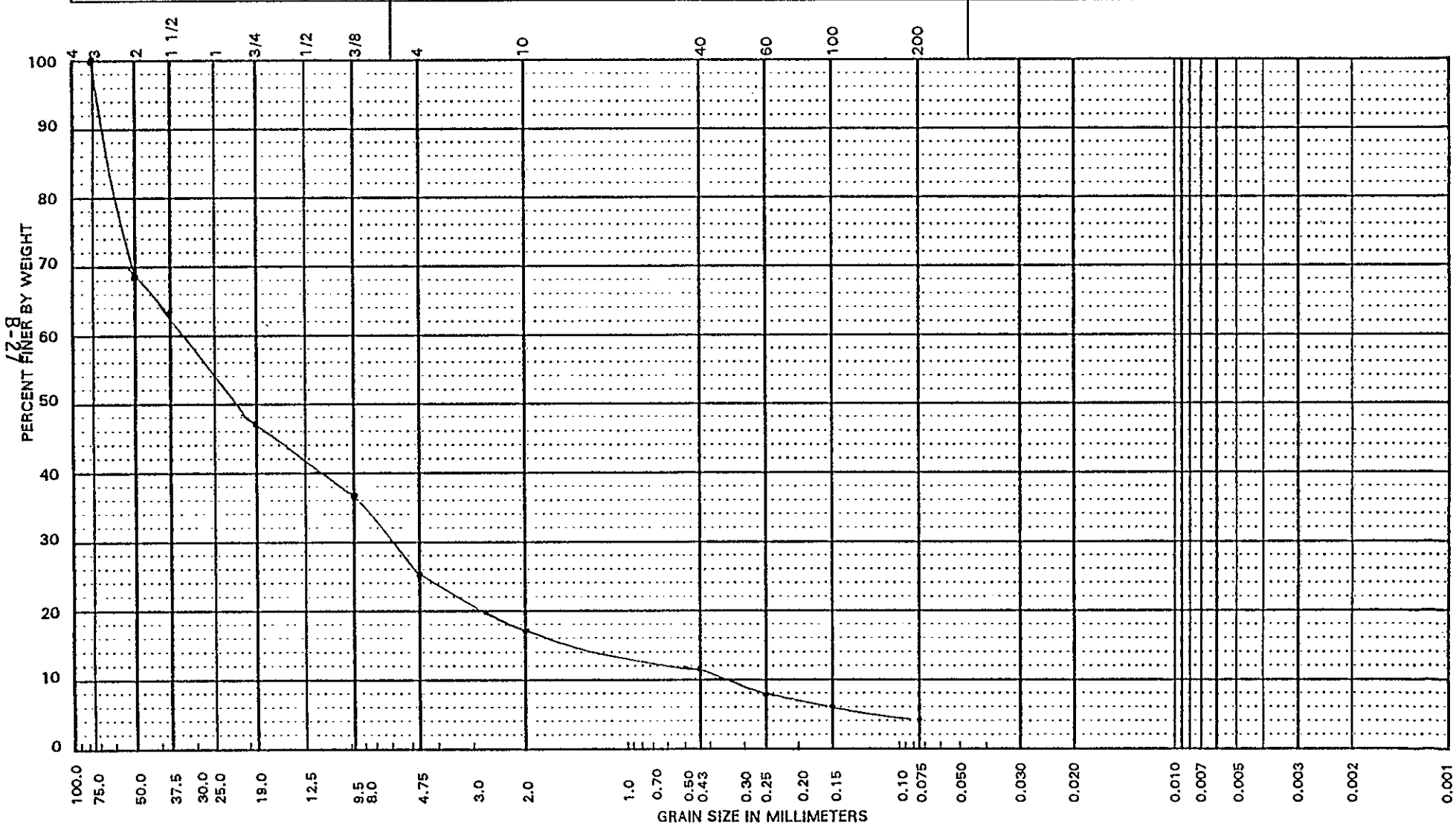
9 3 1 2 9 5 9 1 5 2 0

GEL-07 GRAIN SIZE ANALYSIS PLOT

Sample No. 3-0280

Page 1 of ____

Remarks ____



Plotted By LD Bruggeman Date 1-29-93

Plot Checked By [signature] Date 1/29/93

BD-6000-799 (04/92)

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. 3-0281 1

Page ____ of ____

Balance No. 3310 Permeameter No. 4

Test Initiated By LD Bruggeman Date 1-28-93 Procedure GEL 09 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
1/28	11:07	12:54	1:47	50.2	154.8	205.0	23.3	67.2	Clear	LDB	2.34E-05	LDB
	12:55	14:37	1:42	46.8	154.8	201.6	24.1	67.1	↓	↓	2.29E-05	↓
	14:38	15:59	1:21	36.5	154.8	191.3	24.3	67.1			2.25E-05	
1/29	8:07	8:58	:51	24.5	154.8	179.3	23.0	68.5			2.35E-05	
	8:59	10:35	1:36	45.4	154.8	200.2	23.4	68.5	↓	↓	2.31E-05	↓
								Σ =	2.31-05			

Remarks

Test Checked By Richard T. McIntosh Date 1/29/93

B-28

WHC-SD-EN-DP-053, Rev. 0

BD-6000-795 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	699-44-39B	DEPTH	122
SAMPLE/SPECIMEN NO	3-0282	COST CODE/WORK ORDER NUMBER			A6CDR
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
CALCIUM CARBONATE	1	GEL 19

REMARKS:

ARCHIVE YES ☐ NO ☐

RADIATION RELEASE

Bldg. [illegible] Expiration Date 12/08/92

Released By TEC
Health Physics

Remarks 122

3 0282

54-3000-022 (01/89)

RECEIVED BY E. R. WALKER

DATE

GEL 07 ☒	GEL 16 ☐	**GEOTECHNICAL ENGINEERING LABORATORY**	Sample No.
GEL 09 ☒	GEL 17 ☐	**GEL-14, GEL-16, GEL-19**	
GEL 10 ☐	GEL 19 ☒		Page ____ of ____
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	330.48	311.93	62.79	18.55	~~249.10~~ 249.14	7.45	J.R. Payne

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

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

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

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

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.-L. McIntosh B-30 Date 01/18/93

BD-6000-797 (04/92)

TEST REQUEST

OPERABLE UNIT	RCRA	WELL NO	699-44-39B	DEPTH	N/A
SAMPLE/SPECIMEN NO	3-0283 -> 3-0318	COST CODE/WORK ORDER NUMBER			A6CDR
REQUESTED BY: ORG	81235	PERSON	B. WILLIAMS	PHONE	6-3614
********HEIS********	N/A	MSIN	H6-06	DATE	12/10/92

TEST REQUESTED	# OF SAMPLES	TEST LAB INFORMATION
CALCIUM CARBONATE	36	GEL 19
MOISTURE CONTENT	36	GEL 14

REMARKS:

ARCHIVE YES ☐ NO ☐

TAPE RELEASE STICKER HERE

See attached Sheets.

RECEIVED BY E. R. WALKER

DATE 12/17/92

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

WHC-SD-EN-DP-053, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0301 > 0318

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

Tested By LD Bruggeman Balance: 3304 Calibration Due Date 1-25-93 Vessel No.

Date 12/29/92 Thermometer: 15 Calibration Due Date 11-19-93 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) <1.0	Calculated By
3 0301	504.05	487.22	63.18	16.83	424.04	3.97	0.4	<1.0	LDB
3 0302	291.51	279.69	59.25	12.82	220.44	5.82	0.3		
3 0303	332.36	300.82	61.59	13.18	239.23	13.18	0.4		
3 0304	311.65	278.15	61.41	33.50	216.74	15.46	0.4		
3 0305	255.97	234.18	63.25	21.79	170.93	12.75	0.4		
3 0306	312.35	281.96	63.20	30.39	218.76	13.89	0.4		
3 0307	330.60	291.55	60.82	39.05	230.73	16.92	0.5		
3 0308	485.16	444.92	60.57	40.24	384.35	10.47	0.2		
3 0309	343.78	312.11	61.78	31.67	250.33	12.65	0.3		
3 0310	413.18	354.18	62.79	59.00	291.39	20.25	0.3		
3 0311	292.07	249.66	62.05	42.41	187.61	22.61	0.4		
3 0312	362.43	313.13	62.57	49.30	250.56	19.68	0.4		
3 0313	387.02	337.70	61.08	49.32	276.62	17.83	0.4		
3 0314	385.03	342.69	62.31	42.34	280.38	15.10	0.4		
3 0315	227.09	196.90	63.14	30.19	133.76	22.57	0.4		
3 0316	227.82	208.54	61.33	19.28	147.21	13.10	0.4		
3 0317	275.44	220.44	61.95	55.00	158.49	34.70	0.4		
3 0318	353.19	296.63	62.50	56.56	234.13	24.16	0.4		

Remarks:

Tests Checked By: R. T. McSwain B-32 Date 01/04/93

BD-6000-806 (04/92)

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

WHC-SD-EN-DP-053, Rev. 0

GEOTECHNICAL ENGINEERING LABORATORY
GEL-14, GEL-19

Sample No(s). 3-0283 >0300

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

Tested By LD Bruggeman Balance: 3304 Calibration Due Date 1-25-93 Vessel No. 565-0

Date 12/29/92 Thermometer: 15 Calibration Due Date 11-19-93 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 0283	429.88	421.59	63.87	8.29	357.72	2.32	0.9	1.5	LDB
3 0284	552.75	540.48	62.04	12.27	478.44	2.56	0.9	1.5	
3 0285	471.60	457.00	63.64	14.60	393.36	3.71	0.2	<1.0	
3 0286	464.85	455.29	62.24	9.56	393.05	2.43	0.4	<1.0	
3 0287	416.78	403.49	62.02	13.29	341.47	3.89	0.4	<1.0	
3 0288	434.08	421.93	62.60	12.15	359.33	3.38	0.3	<1.0	
3 0289	449.74	435.25	61.31	14.49	373.94	3.87	0.4	<1.0	
3 0290	453.77	441.03	63.31	12.74	377.72	3.37	0.4	<1.0	
3 0291	400.54	391.05	62.13	9.49	328.92	2.89	0.3	<1.0	
3 0292	401.84	395.76	60.88	6.08	334.88	1.82	0.3	<1.0	
3 0293	491.51	476.09	61.44	15.42	414.65	3.72	0.3	<1.0	
3 0294	584.01	524.35	62.06	59.66	462.29	12.91	0.3	<1.0	
3 0295	395.40	390.65	61.56	4.75	329.09	1.44	0.3	<1.0	
3 0296	385.54	379.62	63.22	5.92	316.40	1.87	0.3	<1.0	
3 0297	374.76	365.87	62.59	8.89	303.28	2.93	0.3	<1.0	
3 0298	374.46	364.43	62.76	10.03	301.67	3.32	0.3	<1.0	
3 0299	428.40	422.53	60.22	5.87	362.31	1.62	0.3	<1.0	
3 0300	462.62	454.70	62.30	7.92	392.40	2.02	0.3	<1.0	

Remarks:

Tests Checked By: R. T. McEachern Date 01/04/93

BD-6000-806 (04/92)

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CONTENTS

Well 699-41-42 . . . . . C-1
Well 699-44-39B C-17

APPENDIX C

WELL DEVELOPMENT LOGS
PUMP INSTALLATION LOGS

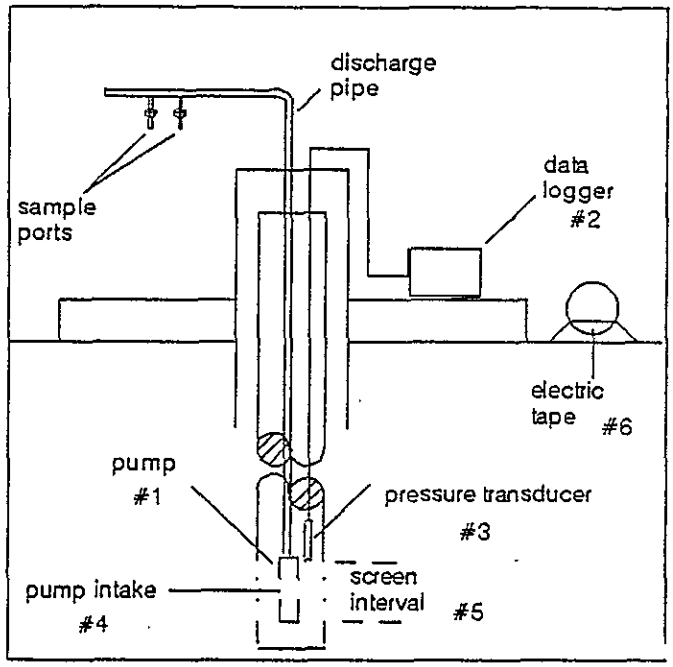
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 699-41-42 DEPTH 284.47' Btoc 6"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	Data Logger 1KB-277
#3	In-Situ Inc s/n 2110 (cal. 2-20-93)
#4	@283.26' Btoc 6"
#5	274.21-284.17' Btoc 6"
#6	Solinst s/n: ET-4 (cal. 1-08-93)

Diagram

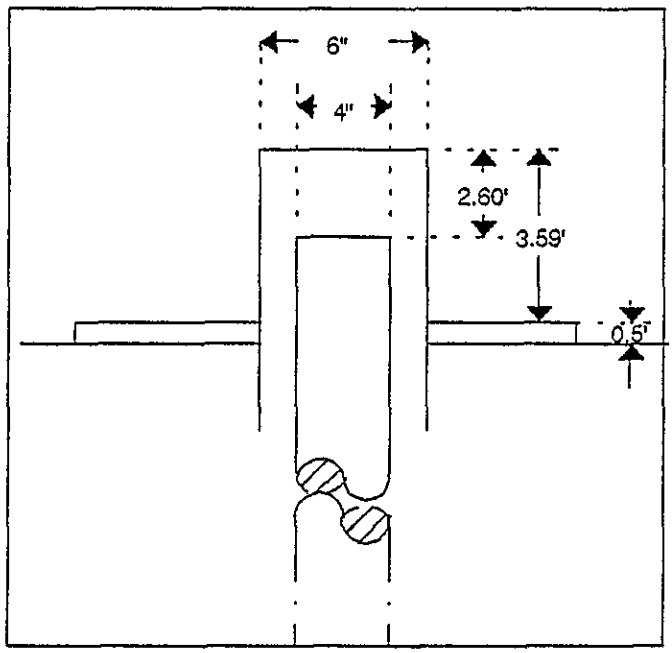


Well Head

Comments

Development started on 11/11/92. Completed 11/12. Slug Test performed 11/12.

Diagram



Signature of Recorder R. S Edrington Date 12-22-92

A-6000-417 (08/89)

WELL DEVELOPMENT FORM

Well Designation: 699-41-42 Well Depth: 284.47' BTOC

Screened Interval: 274.21-284.17' BTOC Date Well Devel. Performed: 11/11&12/92

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

AIIRLIFT: 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: 283.26BTOC Pump Start Time: 0945/11-11

Flow Rate: 11.76/12.0 Accumulated Flow: 3,936 gal Pump Stop Time: 1018/11-12

Turbidity (NTU): 39 16 13 9 9.6 7.9 8.3 8.6 6.5 [4.7] --- ---
--- --- --- --- --- --- --- --- --- --- ---

COMMENTS: Development started on 11/11, finished 11/12., TOC = 6.44'

Recorded by: R S Edrington Date: 12-22-92
Sign and Print Name

A-6000-393 (03/90)

DRAWDOWN/RECOVERY

Well Designation: 699-41-42 Date: 11-11-92

Well Depth: 284.47'BTOC Screened Interval: 274.21-284.17'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") = 644' Pump Start Time: 0944 Pump Stop Time: 1432

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Bucket Method
11-11-92	0944			5gal./25.52sec = 11.76gpm
		See Attached Data	See Attached Data	

Recorded by: Robert S. Edrington Date: 12-22-92
Sign and Print Name

BD-6000-402(03/90)

699-41-42 Drawdown

Hermit Environment Data Logger Unit# 277
Water Level (ft) below top of casing (BTOC)

Test# 1
Type: Drawdown
SWL: 232.85'
Scale Factor: 50.15

Baseline Begun:0900 11/11/92
Pump Started: 0944 11/11/92

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	232.86	-232.86
0.003	0.00006	234.00	-234.00
0.007	0.00011	233.26	-233.26
0.010	0.00017	232.70	-232.70
0.013	0.00022	232.91	-232.91
0.017	0.00028	233.04	-233.04
0.020	0.00033	233.13	-233.13
0.023	0.00039	233.19	-233.19
0.027	0.00044	233.07	-233.07
0.030	0.00050	233.07	-233.07
0.033	0.00056	233.42	-233.42
0.050	0.00083	233.61	-233.61
0.067	0.00111	233.94	-233.94
0.083	0.00139	234.25	-234.25
0.100	0.00167	234.63	-234.63
0.117	0.00194	234.98	-234.98
0.133	0.00222	235.27	-235.27
0.150	0.00250	235.55	-235.55
0.167	0.00278	235.87	-235.87
0.183	0.00306	236.15	-236.15
0.200	0.00333	236.44	-236.44
0.217	0.00361	236.72	-236.72
0.233	0.00389	237.01	-237.01
0.250	0.00417	237.26	-237.26
0.267	0.00444	237.53	-237.53
0.283	0.00472	237.79	-237.79
0.300	0.00500	238.02	-238.02
0.317	0.00528	238.28	-238.28
0.333	0.00556	238.55	-238.55
0.417	0.00695	239.70	-239.70
0.500	0.00833	240.78	-240.78
0.583	0.00972	241.79	-241.79
0.667	0.01111	242.71	-242.71
0.750	0.01250	243.60	-243.60

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	232.85	-232.85
1.00	0.02	232.83	-232.83
2.00	0.03	232.81	-232.81
3.00	0.05	232.81	-232.81
4.00	0.07	232.81	-232.81
5.00	0.08	232.80	-232.80
6.00	0.10	232.80	-232.80
7.00	0.12	232.80	-232.80
8.00	0.13	232.80	-232.80
9.00	0.15	232.78	-232.78
10.00	0.17	232.78	-232.78
11.00	0.18	232.78	-232.78
12.00	0.20	232.78	-232.78
13.00	0.22	232.78	-232.78
14.00	0.23	232.77	-232.77
15.00	0.25	232.77	-232.77
16.00	0.27	232.77	-232.77
17.00	0.28	232.77	-232.77
18.00	0.30	232.77	-232.77
19.00	0.32	232.77	-232.77
20.00	0.33	232.77	-232.77
21.00	0.35	232.77	-232.77
22.00	0.37	232.77	-232.77
23.00	0.38	232.77	-232.77
24.00	0.40	232.77	-232.77
25.00	0.42	232.77	-232.77
26.00	0.43	232.77	-232.77
27.00	0.45	232.77	-232.77
28.00	0.47	232.77	-232.77
29.00	0.48	232.77	-232.77
30.00	0.50	232.77	-232.77
31.00	0.52	232.77	-232.77
32.00	0.53	232.78	-232.78
33.00	0.55	232.77	-232.77

699-41-42 Drawdown

0.833	0.01389	244.40	-244.40
0.917	0.01528	245.15	-245.15
1.000	0.01667	245.86	-245.86
1.083	0.01806	246.53	-246.53
1.167	0.01945	247.14	-247.14
1.250	0.02083	247.73	-247.73
1.333	0.02222	248.27	-248.27
1.417	0.02361	248.78	-248.78
1.500	0.02500	249.25	-249.25
1.583	0.02639	249.69	-249.69
1.667	0.02778	250.15	-250.15
1.750	0.02917	250.56	-250.56
1.833	0.03056	250.99	-250.99
1.917	0.03195	251.37	-251.37
2.000	0.03333	251.77	-251.77
2.500	0.04167	252.64	-252.64
3.000	0.05000	252.64	-252.64
3.500	0.05833	252.64	-252.64
4.000	0.06667	252.64	-252.64
4.500	0.07500	252.64	-252.64
5.000	0.08333	252.62	-252.62
5.500	0.09167	252.64	-252.64
6.000	0.10000	252.64	-252.64
6.500	0.10833	252.64	-252.64
7.000	0.11667	252.62	-252.62
7.500	0.12500	252.64	-252.64
8.000	0.13333	252.64	-252.64
8.500	0.14167	252.64	-252.64
9.000	0.15000	252.62	-252.62
9.500	0.15833	252.64	-252.64
10.000	0.16667	252.64	-252.64
12.000	0.20000	252.62	-252.62
14.000	0.23333	252.62	-252.62
16.000	0.26667	252.62	-252.62
18.000	0.30000	252.62	-252.62
20.000	0.33333	252.62	-252.62
22.000	0.36667	252.62	-252.62
24.000	0.40000	252.62	-252.62
26.000	0.43333	252.62	-252.62
28.000	0.46667	252.62	-252.62
30.000	0.50000	252.62	-252.62
32.000	0.53333	252.62	-252.62
34.00	0.57	232.77	-232.77
35.00	0.58	232.77	-232.77
36.00	0.60	232.77	-232.77
37.00	0.62	232.77	-232.77
38.00	0.63	232.77	-232.77
39.00	0.65	232.77	-232.77
40.00	0.67	232.77	-232.77
41.00	0.68	232.77	-232.77
42.00	0.70	232.77	-232.77
43.00	0.72	232.77	-232.77

699-41-42 Drawdown

34.000	0.56667	252.62	-252.62
36.000	0.60000	252.62	-252.62
38.000	0.63333	252.64	-252.64
40.000	0.66667	252.62	-252.62
42.000	0.70000	252.62	-252.62
44.000	0.73333	252.62	-252.62
46.000	0.76667	252.62	-252.62
48.000	0.80000	252.64	-252.64
50.000	0.83333	252.62	-252.62
52.000	0.86667	252.62	-252.62
54.000	0.90000	252.62	-252.62
56.000	0.93333	252.62	-252.62
58.000	0.96667	252.62	-252.62
60.000	1.00000	252.62	-252.62
62.000	1.03333	252.62	-252.62
64.000	1.06667	252.62	-252.62
66.000	1.10000	252.62	-252.62
68.000	1.13333	252.62	-252.62
70.000	1.16667	252.62	-252.62
72.000	1.20000	252.62	-252.62
74.000	1.23333	252.62	-252.62
76.000	1.26667	252.62	-252.62
78.000	1.30000	252.62	-252.62
80.000	1.33333	252.62	-252.62
82.000	1.36667	252.62	-252.62
84.000	1.40000	252.62	-252.62
86.000	1.43333	252.62	-252.62
88.000	1.46667	252.62	-252.62
90.000	1.50000	252.62	-252.62
92.000	1.53333	252.62	-252.62
94.000	1.56667	252.62	-252.62
96.000	1.60000	252.62	-252.62
98.000	1.63333	252.62	-252.62
100.000	1.66667	252.62	-252.62
110.000	1.83333	252.64	-252.64
120.000	2.00000	252.64	-252.64
130.000	2.16667	252.64	-252.64
140.000	2.33333	252.64	-252.64
150.000	2.50000	252.62	-252.62
160.000	2.66667	252.64	-252.64
170.000	2.83333	252.64	-252.64
180.000	3.00000	252.65	-252.65

9 3 1 2 3 9 1 5 3 4

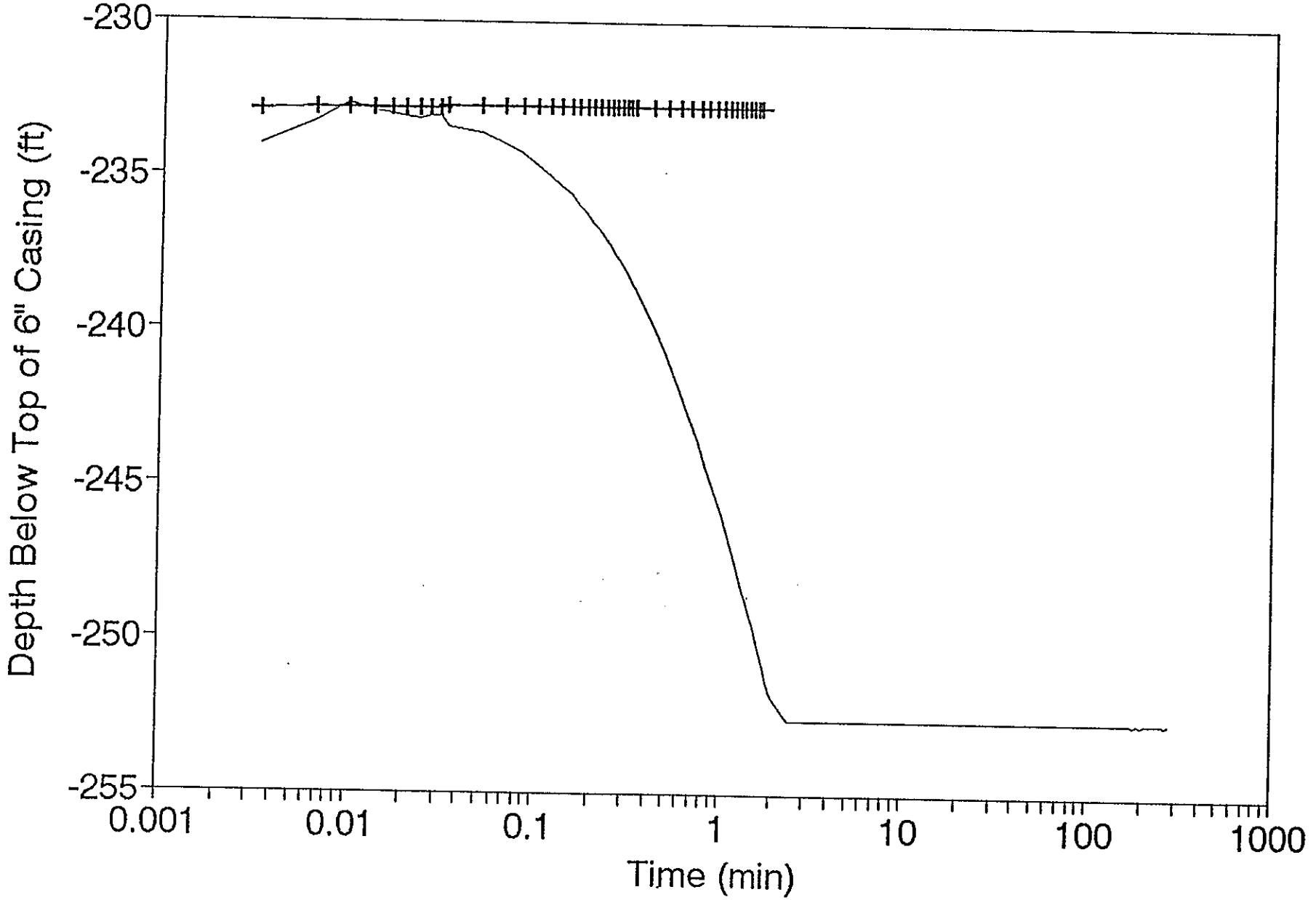
699-41-42 Drawdown

190.000	3.16667	252.64	-252.64
200.000	3.33333	252.65	-252.65
210.000	3.50000	252.64	-252.64
220.000	3.66667	252.64	-252.64
230.000	3.83333	252.64	-252.64
240.000	4.00000	252.64	-252.64
250.000	4.16667	252.64	-252.64
260.000	4.33333	252.64	-252.64
270.000	4.50000	252.65	-252.65
280.000	4.66667	252.64	-252.64

9 3 1 2 9 5 9 1 5 3 5

699-41-42 Drawdown

11-Nov-92



9 3 1 2 9 9 1 5 3 6

699-41-42 Recovery

Hermit Environment Data Logger Unit# 277
Water Level (ft) below top of casing (BTOC)

Test# 2
Type: Recovery
SWL:232.85'
Scale: 50.15

Pump Shut off: 1432 11/11/92

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	252.62	-252.62
0.003	0.00006	252.64	-252.64
0.007	0.00011	252.67	-252.67
0.010	0.00017	252.69	-252.69
0.013	0.00022	252.67	-252.67
0.017	0.00028	252.65	-252.65
0.020	0.00033	252.65	-252.65
0.023	0.00039	252.67	-252.67
0.027	0.00044	252.67	-252.67
0.030	0.00050	252.67	-252.67
0.033	0.00056	252.65	-252.65
0.050	0.00083	252.67	-252.67
0.067	0.00111	252.67	-252.67
0.083	0.00139	252.67	-252.67
0.100	0.00167	252.67	-252.67
0.117	0.00194	252.67	-252.67
0.133	0.00222	252.67	-252.67
0.150	0.00250	252.67	-252.67
0.167	0.00278	252.67	-252.67
0.183	0.00306	252.67	-252.67
0.200	0.00333	252.67	-252.67
0.217	0.00361	252.67	-252.67
0.233	0.00389	252.67	-252.67
0.250	0.00417	252.67	-252.67
0.267	0.00444	252.67	-252.67
0.283	0.00472	252.67	-252.67
0.300	0.00500	252.67	-252.67
0.317	0.00528	252.69	-252.69
0.333	0.00556	252.67	-252.67
0.417	0.00695	252.67	-252.67
0.500	0.00833	252.67	-252.67
0.583	0.00972	252.67	-252.67
0.667	0.01111	252.67	-252.67
0.750	0.01250	252.67	-252.67

699-41-42 Recovery

0.833	0.01389	252.67	-252.67
0.917	0.01528	252.67	-252.67
1.000	0.01667	252.67	-252.67
1.083	0.01806	252.67	-252.67
1.167	0.01945	252.65	-252.65
1.250	0.02083	252.65	-252.65
1.333	0.02222	252.67	-252.67
1.417	0.02361	252.67	-252.67
1.500	0.02500	252.65	-252.65
1.583	0.02639	252.65	-252.65
1.667	0.02778	252.65	-252.65
1.750	0.02917	252.62	-252.62
1.833	0.03056	251.72	-251.72
1.917	0.03195	250.85	-250.85
2.000	0.03333	250.03	-250.03
2.500	0.04167	245.77	-245.77
3.000	0.05000	242.57	-242.57
3.500	0.05833	240.46	-240.46
4.000	0.06667	239.21	-239.21
4.500	0.07500	238.51	-238.51
5.000	0.08333	237.93	-237.93
5.500	0.09167	237.37	-237.37
6.000	0.10000	236.85	-236.85
6.500	0.10833	236.38	-236.38
7.000	0.11667	235.96	-235.96
7.500	0.12500	235.58	-235.58
8.000	0.13333	235.25	-235.25
8.500	0.14167	234.95	-234.95
9.000	0.15000	234.70	-234.70
9.500	0.15833	234.44	-234.44
10.000	0.16667	234.24	-234.24
12.000	0.20000	233.67	-233.67
14.000	0.23333	233.38	-233.38
16.000	0.26667	233.21	-233.21
18.000	0.30000	233.11	-233.11
20.000	0.33333	233.05	-233.05
22.000	0.36667	233.02	-233.02
24.000	0.40000	233.00	-233.00
26.000	0.43333	232.99	-232.99
28.000	0.46667	232.97	-232.97
30.000	0.50000	232.97	-232.97
32.000	0.53333	232.97	-232.97

699-41-42 Recovery

34.000	0.56667	232.96	-232.96
36.000	0.60000	232.96	-232.96
38.000	0.63333	232.96	-232.96
40.000	0.66667	232.96	-232.96
42.000	0.70000	232.96	-232.96
44.000	0.73333	232.94	-232.94
46.000	0.76667	232.94	-232.94
48.000	0.80000	232.94	-232.94
50.000	0.83333	232.94	-232.94
52.000	0.86667	232.94	-232.94
54.000	0.90000	232.94	-232.94
56.000	0.93333	232.94	-232.94
58.000	0.96667	232.94	-232.94
60.000	1.00000	232.94	-232.94
62.000	1.03333	232.94	-232.94
64.000	1.06667	232.94	-232.94
66.000	1.10000	232.94	-232.94
68.000	1.13333	232.94	-232.94
70.000	1.16667	232.94	-232.94
72.000	1.20000	232.94	-232.94
74.000	1.23333	232.92	-232.92
76.000	1.26667	232.94	-232.94
78.000	1.30000	232.92	-232.92
80.000	1.33333	232.92	-232.92
82.000	1.36667	232.92	-232.92
84.000	1.40000	232.92	-232.92
86.000	1.43333	232.92	-232.92
88.000	1.46667	232.92	-232.92
90.000	1.50000	232.92	-232.92
92.000	1.53333	232.92	-232.92
94.000	1.56667	232.92	-232.92
96.000	1.60000	232.92	-232.92
98.000	1.63333	232.92	-232.92
100.000	1.66667	232.92	-232.92
110.000	1.83333	232.92	-232.92
120.000	2.00000	232.92	-232.92
130.000	2.16667	232.92	-232.92
140.000	2.33333	232.92	-232.92
150.000	2.50000	232.92	-232.92
160.000	2.66667	232.92	-232.92
170.000	2.83333	232.92	-232.92
180.000	3.00000	232.92	-232.92

699-41-42 Recovery

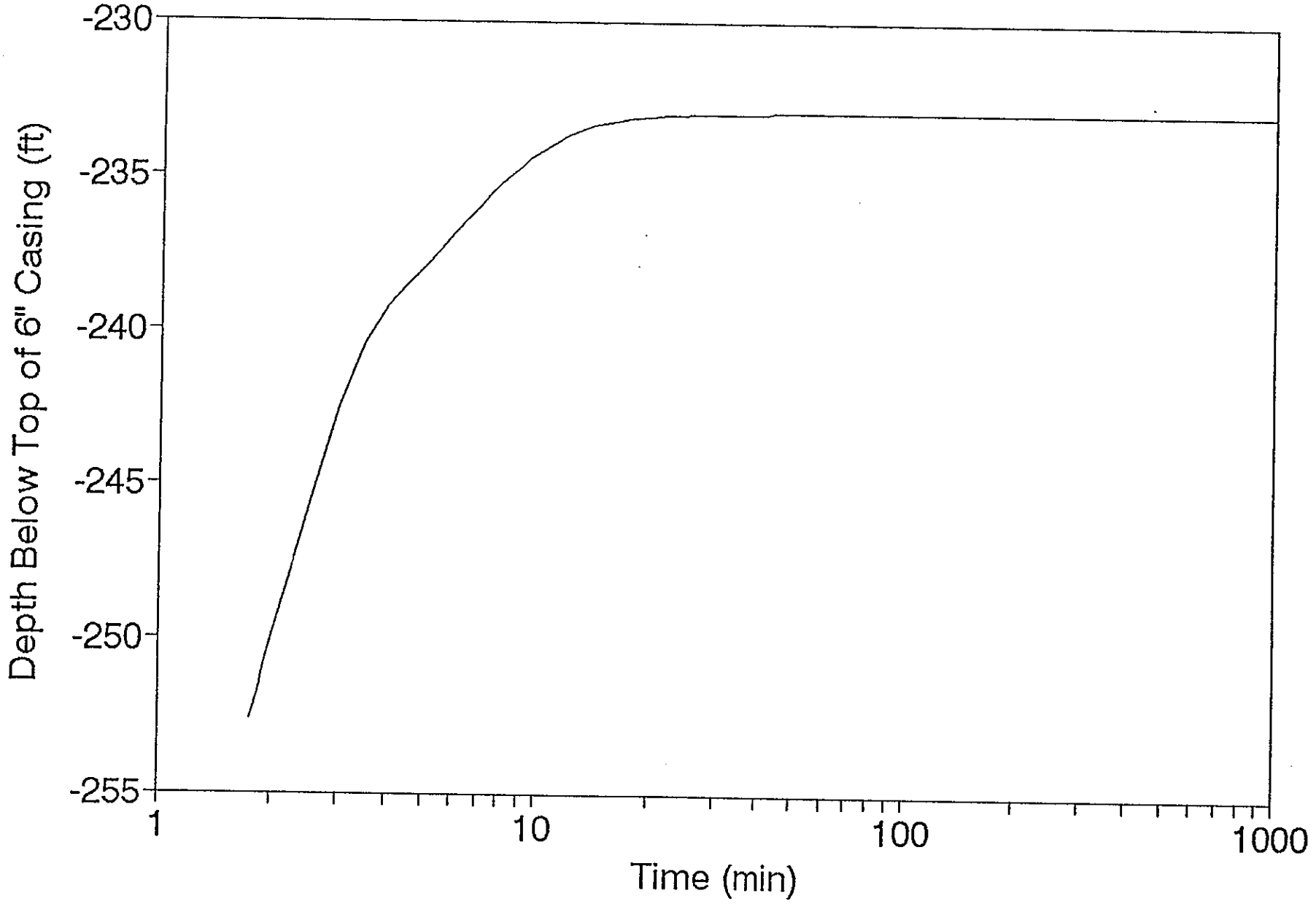
190.000	3.16667	232.92	-232.92
200.000	3.33333	232.92	-232.92
210.000	3.50000	232.92	-232.92
220.000	3.66667	232.92	-232.92
230.000	3.83333	232.92	-232.92
240.000	4.00000	232.92	-232.92
250.000	4.16667	232.92	-232.92
260.000	4.33333	232.92	-232.92
270.000	4.50000	232.92	-232.92
280.000	4.66667	232.92	-232.92
290.000	4.83333	232.92	-232.92
300.000	5.00000	232.92	-232.92
310.000	5.16667	232.92	-232.92
320.000	5.33333	232.92	-232.92
330.000	5.50000	232.92	-232.92
340.000	5.66667	232.92	-232.92
350.000	5.83333	232.92	-232.92
360.000	6.00000	232.92	-232.92
370.000	6.16667	232.92	-232.92
380.000	6.33333	232.92	-232.92
390.000	6.50000	232.92	-232.92
400.000	6.66667	232.92	-232.92
410.000	6.83333	232.92	-232.92
420.000	7.00000	232.92	-232.92
430.000	7.16667	232.92	-232.92
440.000	7.33333	232.92	-232.92
450.000	7.50000	232.92	-232.92
460.000	7.66667	232.92	-232.92
470.000	7.83333	232.92	-232.92
480.000	8.00000	232.92	-232.92
490.000	8.16667	232.92	-232.92
500.000	8.33333	232.92	-232.92
510.000	8.50000	232.92	-232.92
520.000	8.66667	232.92	-232.92
530.000	8.83333	232.92	-232.92
540.000	9.00000	232.92	-232.92
550.000	9.16667	232.92	-232.92
560.000	9.33333	232.92	-232.92
570.000	9.50000	232.92	-232.92
580.000	9.66667	232.94	-232.94
590.000	9.83333	232.94	-232.94
600.000	10.00000	232.92	-232.92

699-41-42 Recovery

610.000	10.16667	232.92	-232.92
620.000	10.33333	232.92	-232.92
630.000	10.50000	232.92	-232.92
640.000	10.66667	232.92	-232.92
650.000	10.83333	232.92	-232.92
660.000	11.00000	232.92	-232.92
670.000	11.16667	232.92	-232.92
680.000	11.33333	232.92	-232.92
690.000	11.50000	232.92	-232.92
700.000	11.66667	232.92	-232.92
710.000	11.83333	232.92	-232.92
720.000	12.00000	232.92	-232.92
730.000	12.16667	232.91	-232.91
740.000	12.33333	232.91	-232.91
750.000	12.50000	232.91	-232.91
760.000	12.66667	232.91	-232.91
770.000	12.83333	232.91	-232.91
780.000	13.00000	232.91	-232.91
790.000	13.16667	232.91	-232.91
800.000	13.33333	232.91	-232.91
810.000	13.50000	232.91	-232.91
820.000	13.66667	232.91	-232.91
830.000	13.83333	232.91	-232.91
840.000	14.00000	232.91	-232.91
850.000	14.16667	232.91	-232.91
860.000	14.33333	232.91	-232.91
870.000	14.50000	232.91	-232.91
880.000	14.66667	232.91	-232.91
890.000	14.83333	232.91	-232.91
900.000	15.00000	232.91	-232.91
910.000	15.16667	232.91	-232.91
920.000	15.33333	232.91	-232.91
930.000	15.50000	232.91	-232.91
940.000	15.66667	232.91	-232.91
950.000	15.83333	232.91	-232.91
960.000	16.00000	232.91	-232.91
970.000	16.16667	232.91	-232.91
980.000	16.33333	232.91	-232.91
990.000	16.50000	232.91	-232.91
1000.000	16.66667	232.91	-232.91

699-41-42 Recovery

11-Nov-92



FOR INFORMATION ONLY

Well Development Information Checklist

Well No. 699-41-42 Date: 11/10/92

WELL INFORMATION

A. Outer Casing Diameter 6"

B. Inner Casing Diameter 4"

C. Difference in stick-up . '

D. Stick-up of outer casing . '

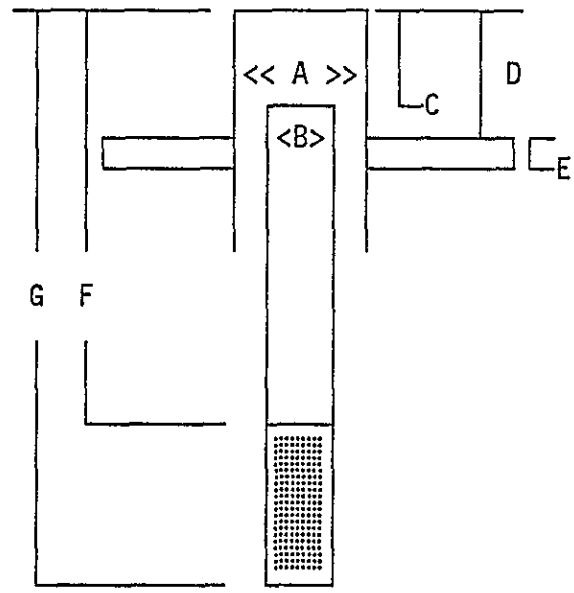
E. Thickness of well pad 0.5'

F. Depth to Water (BTOC) 232.85'

G. Total depth of Hole (BTOC) 284.47'

H. Screened Interval (BTOC) 274.21-284.17'

I. Screen length 9.96'



DEVELOPMENT INFORMATION

J. Depth of Development pump intake . 283.26' BTOC

K. Depth (below water) of Transducer during drawdown/recovery. 20.14'

L. Depth (below water) of Transducer during slug test. 51.54'

EQUIPMENT INFORMATION

	Serial #	Calibration date
Hermit	1KB-277	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 Started on 11/11/92 finished 11/12/92. Pump started 0945 (11/11) at 11.76 gpm, shutoff 1432 after reaching 8.3 NTU and pumping 3,000 gallons. Pump started 0900 (11/12) at 12.00 gpm, shutoff 1018 after reaching 4.7 NTU and pumping 936 gallons for a total of 3,936 gallons during development. Slug test performed on 11/12/92, slug in at 1253, withdrawal 1329.

TOC = 644'

BTOC = Below Top Of Casing.

FOR INFORMATION ONLY

SAMPLING PUMP INSTALLATION FORM

Project: W017/B-Pond Well Number: 699-41-42

Pump Type: Hydrostar Pump Model: 8001

Date Installed: 11/12/92 Installed By: B. Strode

Depth to Water: 232.85 Ft BTOC* Depth to Bottom: 123.44 Ft BTOC

Reported Depth of water: 232.85(11/11/92)

Screened Interval: 274.21 -284.17 Ft BTOC

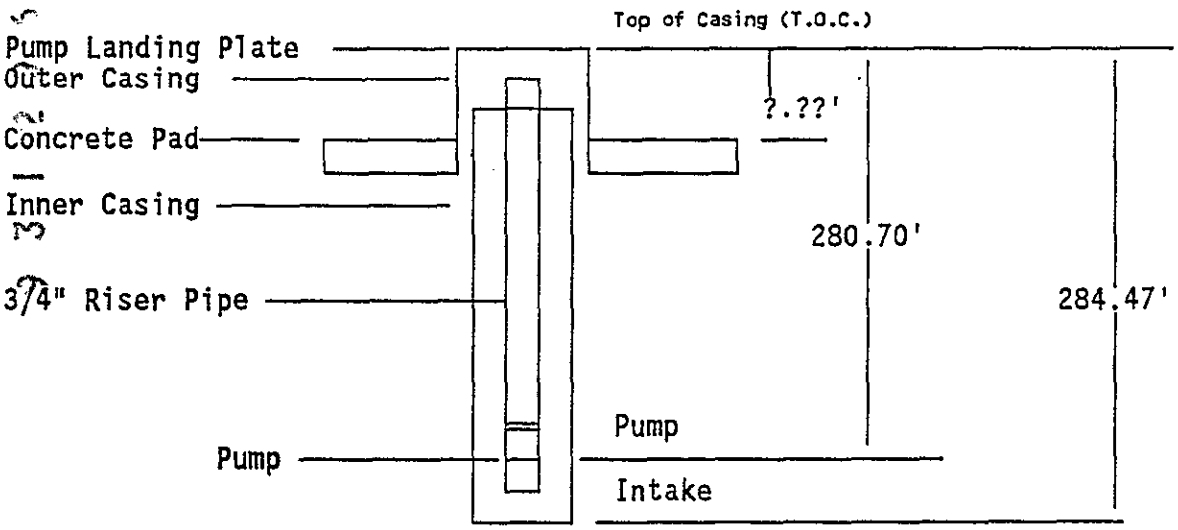
Pump/Riser Pipe Description:

Pipe:	3/4" Stainless steel
Pump Length:	4.31'
Pump Screen Length:	1.91'
Material Cleaning:	Manufacturer
Distance pump off bottom:	1.86'

Comments: Pump tested (11/12/92), produced 2.20 gpm at 26.7 strokes/min

PUMP INSTALLATION SKETCH

Total Material Length: 282.61 Ft Depth to Pump intake: 280.70 Ft BTOC



Completed By: RS Edrington Date: 12/22/92

* BTOC - Below Top Of Casing

VALIDATED
KDR 1/19/93
SIGNATURE/DATE

p. 1 of 13

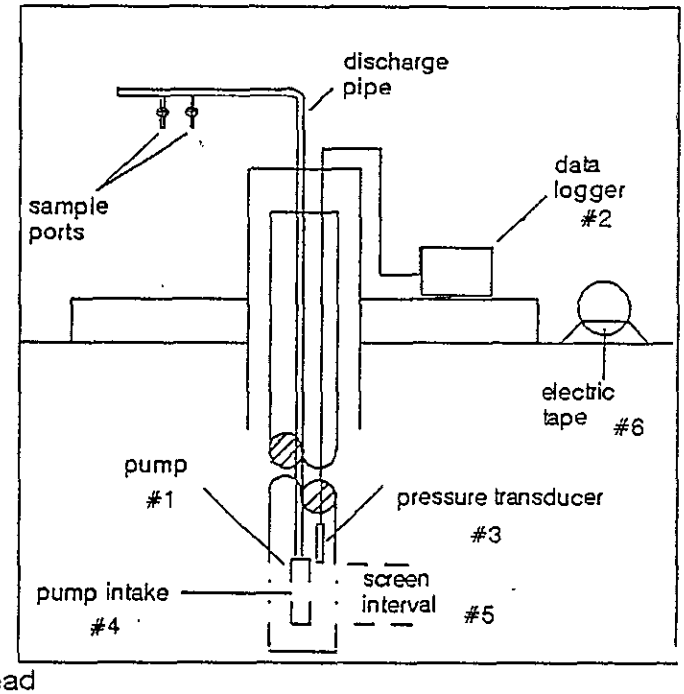
EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

WELL DESIGNATION 699-44-39B DEPTH 123.44' Btoc 6"

Equipment Configuration

Item	Description
#1	1.5 hp. Grundfos submersible
#2	Data Logger 1KB-700/277
#3	In-Situ Inc s/n 2110 (cal. 2-20-93)
#4	@122.44 Btoc 6"
#5	103.44-123.44' Btoc 6"
#6	Solinst s/n: ET-4 (cal. 1-08-93)

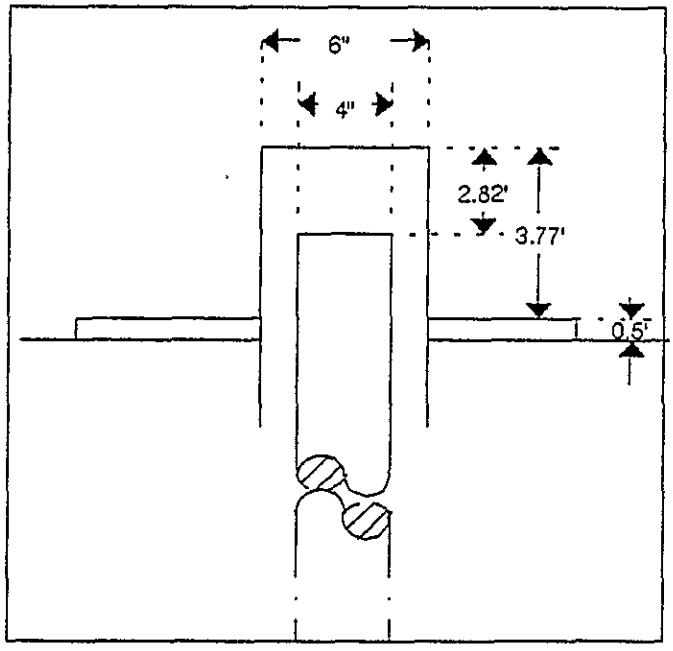
Diagram



Well Head

Comments

Diagram



Signature of Recorder R. S Edrington Date 12-22-92

A-6000-417 (08/89)

9 3 1 2 9 6 9 1 5 1 5

WELL DEVELOPMENT FORM

Well Designation: 699-44-39B Well Depth: 123.44' BTOC

Screened Interval: 103.44-123.44' BTOC Date Well Devel. Performed: 11/09/92

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: 122.4'BTOC Pump Start Time: 1310

Flow Rate: 13.40 gpm Accumulated Flow: 2,550 gal Pump Stop Time: 1615

Turbidity (NTU): 67 14 8 6.7 $\boxed{3.7}$ --- --- --- --- --- --- ---

--- --- --- --- --- --- --- --- --- --- ---

COMMENTS: _____

Recorded by: R S Edrington Date: 12-22-92

Sign and Print Name

A-6000-393 (03/90)

DRAWDOWN/RECOVERY

Well Designation: 699-44-39B Date: 11-09-92

Well Depth: 123.44'BTOC Screened Interval: 103.44-123.44'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: 1310 Pump Stop Time: 1615

Time		Water Level		Discharge
Date	Time	Reading Units:	Water Level Units:	Reading Bucket Method
11-09-92	1310			5gal./22.41sec = 13.4 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)

699-44-39B Drawdown

Hermit Environment Data Logger Unit# 700
Water Level (ft) below top of casing (BTOC)

Test# 1
Type: Drawdown
SWL: 94.56'
Scale Factor: 50.15

Baseline Begun: 1228 11/09/92
Pump Started: 1310 11/09/92

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	94.33	-94.33
0.003	0.00006	94.63	-94.63
0.007	0.00011	94.82	-94.82
0.010	0.00017	94.90	-94.90
0.013	0.00022	95.00	-95.00
0.017	0.00028	95.11	-95.11
0.020	0.00033	94.98	-94.98
0.023	0.00039	94.98	-94.98
0.027	0.00044	95.16	-95.16
0.030	0.00050	95.24	-95.24
0.033	0.00056	95.22	-95.22
0.050	0.00083	95.49	-95.49
0.067	0.00111	95.70	-95.70
0.083	0.00139	95.84	-95.84
0.100	0.00167	96.00	-96.00
0.117	0.00194	96.14	-96.14
0.133	0.00222	96.25	-96.25
0.150	0.00250	96.36	-96.36
0.167	0.00278	96.47	-96.47
0.183	0.00306	96.58	-96.58
0.200	0.00333	96.68	-96.68
0.217	0.00361	96.76	-96.76
0.233	0.00389	96.82	-96.82
0.250	0.00417	96.88	-96.88
0.267	0.00444	96.95	-96.95
0.283	0.00472	97.03	-97.03
0.300	0.00500	97.09	-97.09
0.317	0.00528	97.14	-97.14
0.333	0.00556	97.17	-97.17
0.417	0.00695	97.34	-97.34
0.500	0.00833	97.47	-97.47
0.583	0.00972	97.56	-97.56
0.667	0.01111	97.60	-97.60
0.750	0.01250	97.67	-97.67

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	94.56	-94.56
1.00	0.02	94.54	-94.54
2.00	0.03	94.52	-94.52
3.00	0.05	94.51	-94.51
4.00	0.07	94.49	-94.49
5.00	0.08	94.49	-94.49
6.00	0.10	94.49	-94.49
7.00	0.12	94.49	-94.49
8.00	0.13	94.48	-94.48
9.00	0.15	94.48	-94.48
10.00	0.17	94.48	-94.48
11.00	0.18	94.46	-94.46
12.00	0.20	94.46	-94.46
13.00	0.22	94.44	-94.44
14.00	0.23	94.46	-94.46
15.00	0.25	94.46	-94.46
16.00	0.27	94.44	-94.44
17.00	0.28	94.44	-94.44
18.00	0.30	94.44	-94.44
19.00	0.32	94.44	-94.44
20.00	0.33	94.44	-94.44
21.00	0.35	94.44	-94.44
22.00	0.37	94.44	-94.44
23.00	0.38	94.44	-94.44
24.00	0.40	94.44	-94.44
25.00	0.42	94.44	-94.44
26.00	0.43	94.44	-94.44
27.00	0.45	94.44	-94.44
28.00	0.47	94.44	-94.44
29.00	0.48	94.44	-94.44
30.00	0.50	94.44	-94.44
31.00	0.52	94.44	-94.44
32.00	0.53	94.44	-94.44
33.00	0.55	94.44	-94.44

699-44-39B Drawdown

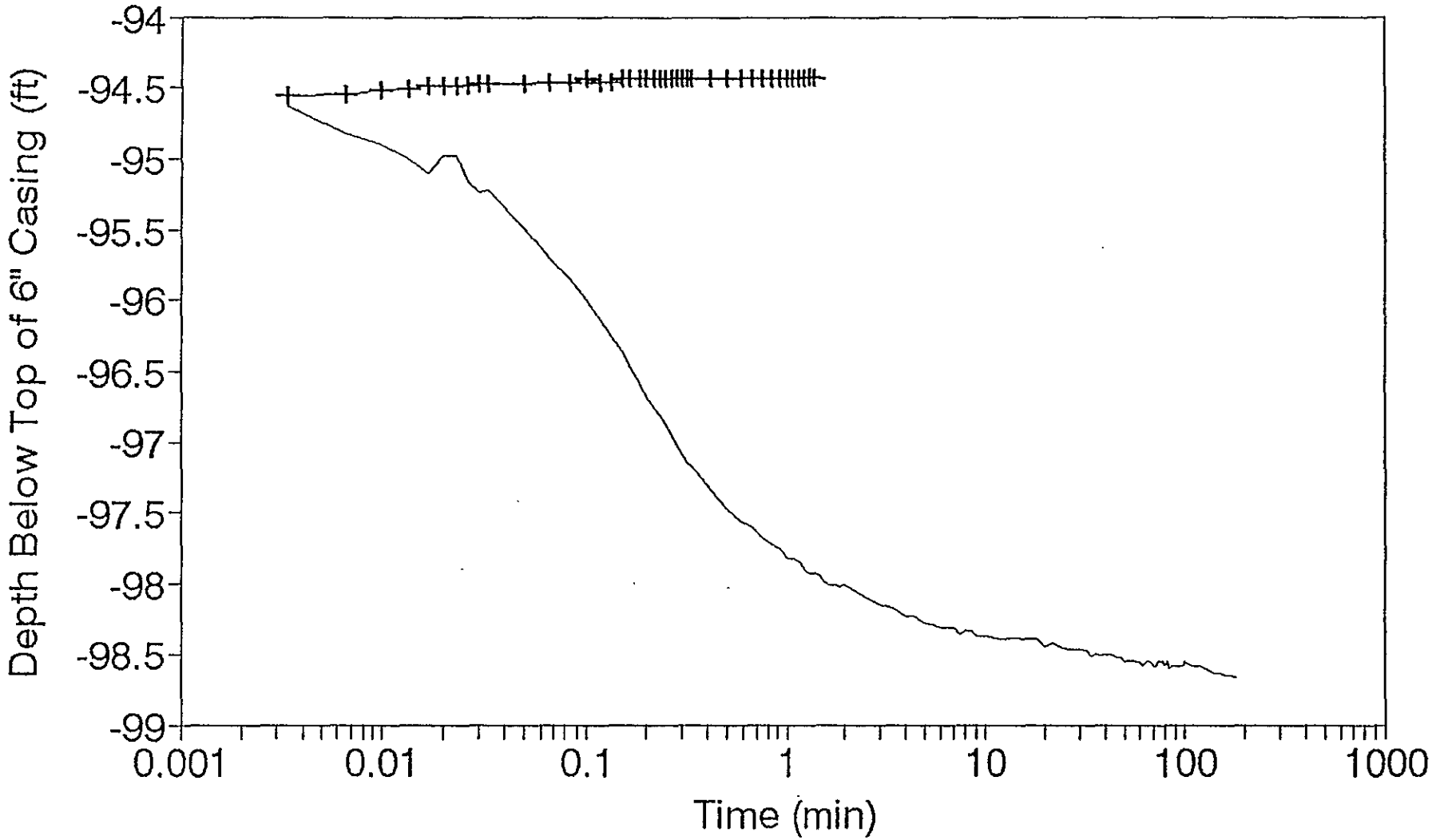
0.833	0.01389	97.72	-97.72
0.917	0.01528	97.75	-97.75
1.000	0.01667	97.82	-97.82
1.083	0.01806	97.82	-97.82
1.167	0.01945	97.85	-97.85
1.250	0.02083	97.90	-97.90
1.333	0.02222	97.93	-97.93
1.417	0.02361	97.93	-97.93
1.500	0.02500	97.94	-97.94
1.583	0.02639	97.98	-97.98
1.667	0.02778	98.01	-98.01
1.750	0.02917	98.01	-98.01
1.833	0.03056	98.01	-98.01
1.917	0.03195	98.02	-98.02
2.000	0.03333	98.01	-98.01
2.500	0.04167	98.09	-98.09
3.000	0.05000	98.15	-98.15
3.500	0.05833	98.18	-98.18
4.000	0.06667	98.23	-98.23
4.500	0.07500	98.23	-98.23
5.000	0.08333	98.28	-98.28
5.500	0.09167	98.29	-98.29
6.000	0.10000	98.32	-98.32
6.500	0.10833	98.32	-98.32
7.000	0.11667	98.32	-98.32
7.500	0.12500	98.36	-98.36
8.000	0.13333	98.34	-98.34
8.500	0.14167	98.34	-98.34
9.000	0.15000	98.37	-98.37
9.500	0.15833	98.37	-98.37
10.000	0.16667	98.37	-98.37
12.000	0.20000	98.40	-98.40
14.000	0.23333	98.39	-98.39
16.000	0.26667	98.40	-98.40
18.000	0.30000	98.40	-98.40
20.000	0.33333	98.45	-98.45
22.000	0.36667	98.42	-98.42
24.000	0.40000	98.45	-98.45
26.000	0.43333	98.47	-98.47
28.000	0.46667	98.47	-98.47
30.000	0.50000	98.47	-98.47
32.000	0.53333	98.48	-98.48
34.00	0.57	94.44	-94.44
35.00	0.58	94.44	-94.44
36.00	0.60	94.44	-94.44
37.00	0.62	94.44	-94.44
38.00	0.63	94.44	-94.44
39.00	0.65	94.43	-94.43
40.00	0.67	94.44	-94.44

699-44-39B Drawdown

34.000	0.56667	98.51	-98.51
36.000	0.60000	98.50	-98.50
38.000	0.63333	98.51	-98.51
40.000	0.66667	98.50	-98.50
42.000	0.70000	98.50	-98.50
44.000	0.73333	98.51	-98.51
46.000	0.76667	98.53	-98.53
48.000	0.80000	98.53	-98.53
50.000	0.83333	98.56	-98.56
52.000	0.86667	98.55	-98.55
54.000	0.90000	98.55	-98.55
56.000	0.93333	98.55	-98.55
58.000	0.96667	98.56	-98.56
60.000	1.00000	98.56	-98.56
62.000	1.03333	98.58	-98.58
64.000	1.06667	98.56	-98.56
66.000	1.10000	98.55	-98.55
68.000	1.13333	98.56	-98.56
70.000	1.16667	98.58	-98.58
72.000	1.20000	98.58	-98.58
74.000	1.23333	98.55	-98.55
76.000	1.26667	98.56	-98.56
78.000	1.30000	98.55	-98.55
80.000	1.33333	98.58	-98.58
82.000	1.36667	98.56	-98.56
84.000	1.40000	98.61	-98.61
86.000	1.43333	98.58	-98.58
88.000	1.46667	98.59	-98.59
90.000	1.50000	98.59	-98.59
92.000	1.53333	98.59	-98.59
94.000	1.56667	98.59	-98.59
96.000	1.60000	98.58	-98.58
98.000	1.63333	98.59	-98.59
100.000	1.66667	98.56	-98.56
110.000	1.83333	98.59	-98.59
120.000	2.00000	98.59	-98.59
130.000	2.16667	98.61	-98.61
140.000	2.33333	98.64	-98.64
150.000	2.50000	98.64	-98.64
160.000	2.66667	98.66	-98.66
170.000	2.83333	98.66	-98.66
180.000	3.00000	98.67	-98.67

699-44-39B Drawdown

09-Nov-92



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699-44-39B Recovery

Hermit Environment Data Logger Unit# 700
Water Level (ft) below top of casing (BTOC)

Test# 2
Type: Recovery
SWL: 94.56'
Scale:50.15

Pump Shut off: 1615 11/09/92

Time:min	Time:hrs	D-T-W:Ft	d(WL):Ft
0.000	0.00000	97.88	-97.88
0.003	0.00006	97.98	-97.98
0.007	0.00011	98.47	-98.47
0.010	0.00017	98.40	-98.40
0.013	0.00022	98.40	-98.40
0.017	0.00028	98.31	-98.31
0.020	0.00033	98.23	-98.23
0.023	0.00039	98.15	-98.15
0.027	0.00044	98.07	-98.07
0.030	0.00050	98.01	-98.01
0.033	0.00056	97.91	-97.91
0.050	0.00083	97.58	-97.58
0.067	0.00111	97.26	-97.26
0.083	0.00139	96.98	-96.98
0.100	0.00167	96.72	-96.72
0.117	0.00194	96.49	-96.49
0.133	0.00222	96.27	-96.27
0.150	0.00250	96.08	-96.08
0.167	0.00278	95.90	-95.90
0.183	0.00306	95.73	-95.73
0.200	0.00333	95.58	-95.58
0.217	0.00361	95.46	-95.46
0.233	0.00389	95.33	-95.33
0.250	0.00417	95.24	-95.24
0.267	0.00444	95.14	-95.14
0.283	0.00472	95.06	-95.06
0.300	0.00500	94.98	-94.98
0.317	0.00528	122.79	-122.79
0.333	0.00556	102.71	-102.71
0.417	0.00695	90.55	-90.55
0.500	0.00833	86.50	-86.50
0.583	0.00972	82.44	-82.44
0.667	0.01111	82.44	-82.44
0.750	0.01250	82.44	-82.44

699-44-39B Recovery

0.833	0.01389	86.50	-86.50
0.917	0.01528	86.50	-86.50
1.000	0.01667	90.55	-90.55
1.083	0.01806	90.55	-90.55
1.167	0.01945	94.60	-94.60
1.250	0.02083	98.66	-98.66
1.333	0.02222	102.71	-102.71
1.417	0.02361	106.76	-106.76
1.500	0.02500	106.76	-106.76
1.583	0.02639	110.82	-110.82
1.667	0.02778	114.87	-114.87
1.750	0.02917	118.92	-118.92
1.833	0.03056	122.98	-122.98
1.917	0.03195	5.43	-5.43
2.000	0.03333	9.48	-9.48
2.500	0.04167	5.43	-5.43
3.000	0.05000	5.43	-5.43
3.500	0.05833	5.43	-5.43
4.000	0.06667	1.37	-1.37
4.500	0.07500	1.37	-1.37
5.000	0.08333	1.37	-1.37
5.500	0.09167	-2.67	2.67
6.000	0.10000	-2.67	2.67
6.500	0.10833	-2.67	2.67
7.000	0.11667	-2.67	2.67
7.500	0.12500	-2.67	2.67
8.000	0.13333	-2.67	2.67
8.500	0.14167	-2.67	2.67
9.000	0.15000	-2.67	2.67
9.500	0.15833	122.98	-122.98
10.000	0.16667	122.98	-122.98
12.000	0.20000	118.92	-118.92
14.000	0.23333	118.92	-118.92
16.000	0.26667	118.92	-118.92
18.000	0.30000	118.92	-118.92
20.000	0.33333	114.87	-114.87
22.000	0.36667	114.87	-114.87
24.000	0.40000	114.87	-114.87
26.000	0.43333	114.87	-114.87
28.000	0.46667	114.87	-114.87
30.000	0.50000	114.87	-114.87
32.000	0.53333	114.87	-114.87

699-44-39B Recovery

34.000	0.56667	114.87	-114.87
36.000	0.60000	114.87	-114.87
38.000	0.63333	114.87	-114.87
40.000	0.66667	114.87	-114.87
42.000	0.70000	110.82	-110.82
44.000	0.73333	110.82	-110.82
46.000	0.76667	110.82	-110.82
48.000	0.80000	110.82	-110.82
50.000	0.83333	110.82	-110.82
52.000	0.86667	110.82	-110.82
54.000	0.90000	110.82	-110.82
56.000	0.93333	110.82	-110.82
58.000	0.96667	110.82	-110.82
60.000	1.00000	110.82	-110.82
62.000	1.03333	110.82	-110.82
64.000	1.06667	110.82	-110.82
66.000	1.10000	110.82	-110.82
68.000	1.13333	110.82	-110.82
70.000	1.16667	110.82	-110.82
72.000	1.20000	110.82	-110.82
74.000	1.23333	110.82	-110.82
76.000	1.26667	110.82	-110.82
78.000	1.30000	110.82	-110.82
80.000	1.33333	110.82	-110.82
82.000	1.36667	110.82	-110.82
84.000	1.40000	110.82	-110.82
86.000	1.43333	110.82	-110.82
88.000	1.46667	110.82	-110.82
90.000	1.50000	110.82	-110.82
92.000	1.53333	110.82	-110.82
94.000	1.56667	110.82	-110.82
96.000	1.60000	110.82	-110.82
98.000	1.63333	110.82	-110.82
100.000	1.66667	110.82	-110.82
110.000	1.83333	106.76	-106.76
120.000	2.00000	110.82	-110.82
130.000	2.16667	106.76	-106.76
140.000	2.33333	106.76	-106.76
150.000	2.50000	106.76	-106.76
160.000	2.66667	106.76	-106.76
170.000	2.83333	106.76	-106.76
180.000	3.00000	106.76	-106.76

699-44-39B Recovery

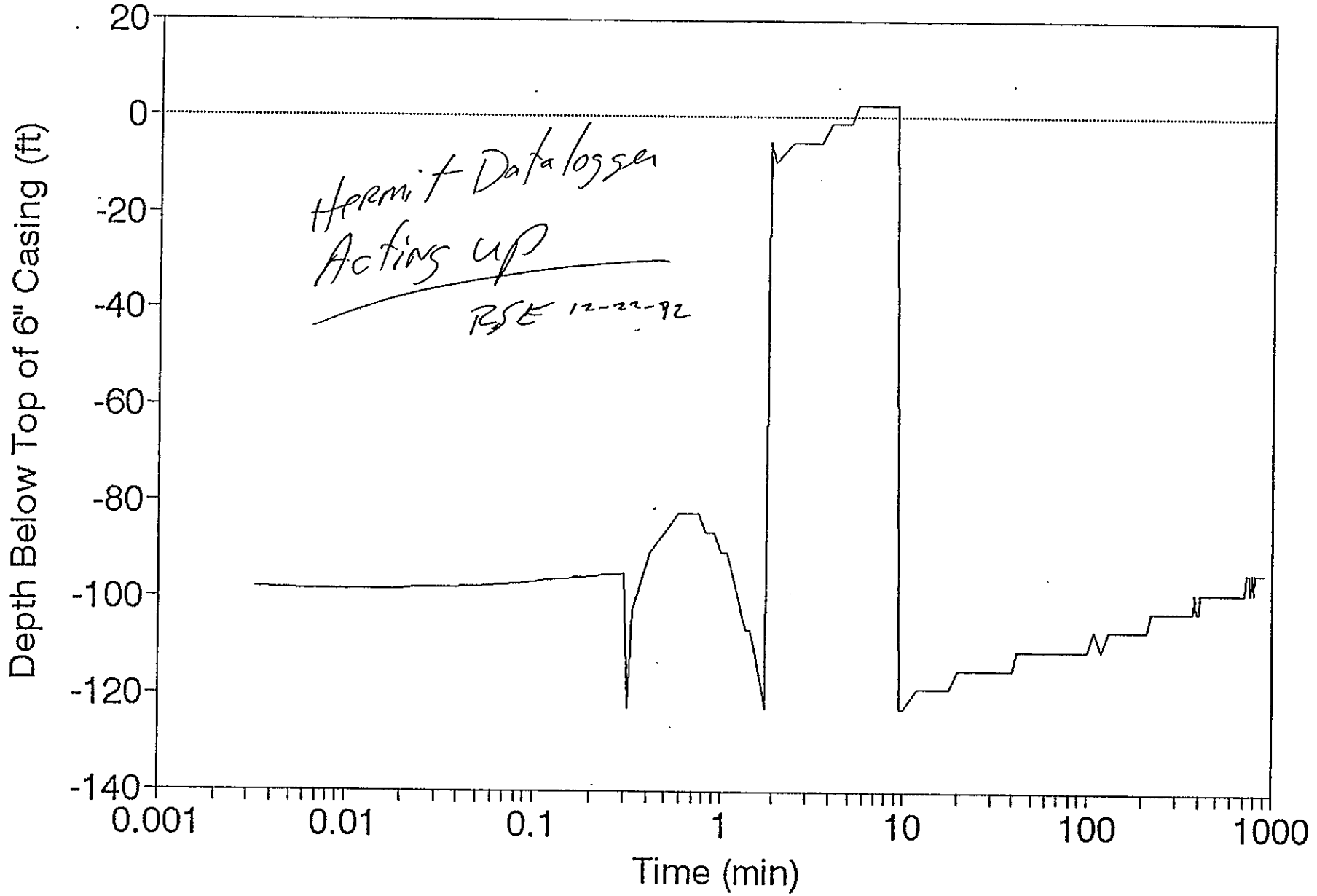
190.000	3.16667	106.76	-106.76
200.000	3.33333	106.76	-106.76
210.000	3.50000	106.76	-106.76
220.000	3.66667	102.71	-102.71
230.000	3.83333	102.71	-102.71
240.000	4.00000	102.71	-102.71
250.000	4.16667	102.71	-102.71
260.000	4.33333	102.71	-102.71
270.000	4.50000	102.71	-102.71
280.000	4.66667	102.71	-102.71
290.000	4.83333	102.71	-102.71
300.000	5.00000	102.71	-102.71
310.000	5.16667	102.71	-102.71
320.000	5.33333	102.71	-102.71
330.000	5.50000	102.71	-102.71
340.000	5.66667	102.71	-102.71
350.000	5.83333	102.71	-102.71
360.000	6.00000	102.71	-102.71
370.000	6.16667	102.71	-102.71
380.000	6.33333	98.66	-98.66
390.000	6.50000	102.71	-102.71
400.000	6.66667	102.71	-102.71
410.000	6.83333	98.66	-98.66
420.000	7.00000	98.66	-98.66
430.000	7.16667	98.66	-98.66
440.000	7.33333	98.66	-98.66
450.000	7.50000	98.66	-98.66
460.000	7.66667	98.66	-98.66
470.000	7.83333	98.66	-98.66
480.000	8.00000	98.66	-98.66
490.000	8.16667	98.66	-98.66
500.000	8.33333	98.66	-98.66
510.000	8.50000	98.66	-98.66
520.000	8.66667	98.66	-98.66
530.000	8.83333	98.66	-98.66
540.000	9.00000	98.66	-98.66
550.000	9.16667	98.66	-98.66
560.000	9.33333	98.66	-98.66
570.000	9.50000	98.66	-98.66
580.000	9.66667	98.66	-98.66
590.000	9.83333	98.66	-98.66
600.000	10.00000	98.66	-98.66

699-44-39B Recovery

610.000	10.16667	98.66	-98.66
620.000	10.33333	98.66	-98.66
630.000	10.50000	98.66	-98.66
640.000	10.66667	98.66	-98.66
650.000	10.83333	98.66	-98.66
660.000	11.00000	98.66	-98.66
670.000	11.16667	98.66	-98.66
680.000	11.33333	98.66	-98.66
690.000	11.50000	98.66	-98.66
700.000	11.66667	98.66	-98.66
710.000	11.83333	98.66	-98.66
720.000	12.00000	98.66	-98.66
730.000	12.16667	94.60	-94.60
740.000	12.33333	94.60	-94.60
750.000	12.50000	94.60	-94.60
760.000	12.66667	98.66	-98.66
770.000	12.83333	98.66	-98.66
780.000	13.00000	94.60	-94.60
790.000	13.16667	94.60	-94.60
800.000	13.33333	98.66	-98.66
810.000	13.50000	94.60	-94.60
820.000	13.66667	94.60	-94.60
830.000	13.83333	94.60	-94.60
840.000	14.00000	94.60	-94.60
850.000	14.16667	94.60	-94.60
860.000	14.33333	94.60	-94.60
870.000	14.50000	94.60	-94.60
880.000	14.66667	94.60	-94.60
890.000	14.83333	94.60	-94.60
900.000	15.00000	94.60	-94.60
910.000	15.16667	94.60	-94.60

699-44-39B Recovery

09-Nov-92



FOR INFORMATION ONLY

Well Development Information Checklist

Well No. 699-44-39B

Date: 11/09/92

WELL INFORMATION

A. Outer Casing Diameter 6"

B. Inner Casing Diameter 4"

C. Difference in stick-up 2.82'

D. Stick-up of outer casing 3.77'

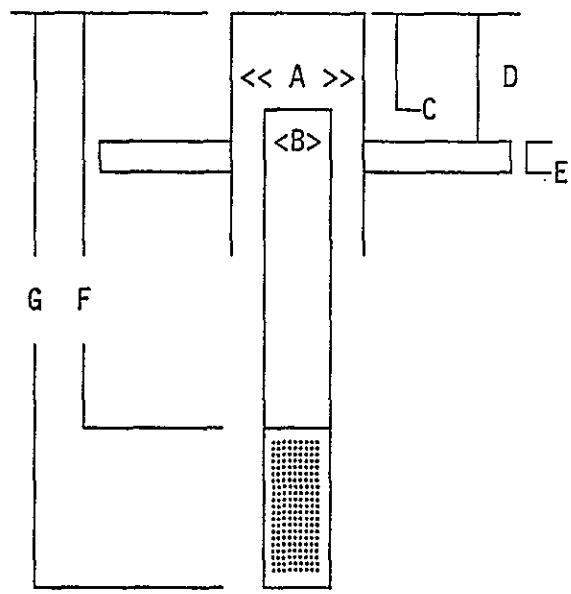
E. Thickness of well pad 0.5'

F. Depth to Water (BTOC) 94.56'

G. Total depth of Hole (BTOC) 123.44'

H. Screened Interval (BTOC) 103.44-123.44'

I. Screen length 20.0'



DEVELOPMENT INFORMATION

J. Depth of Development pump intake . 122.44' BTOC

K. Depth (below water) of Transducer during drawdown/recovery. 25.04'

L. Depth (below water) of Transducer during slug test. 25.16'

EQUIPMENT INFORMATION

	Serial #	Calibration date
Hermit	1KB-700	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 performed on 11/09/92. Pump started 1310 at 13.4 gpm, shutoff 1615 after reaching 3.7 NTU and pumping 2,550 gallons. Slug test performed on 11/10/92, slug in at 0921, withdrawal 1038.

E.C.K. 12/21/92

BTOC = Below Top Of Casing.

FOR INFORMATION ONLY

SAMPLING PUMP INSTALLATION FORM

Project: W017/B-Pond

Well Number: 699-44-39B

Pump Type: Hydrostar

Pump Model: 8001

Date Installed: 11/10/92

Installed By: B. Strode

Depth to Water: 94.65 Ft BTOC*

Depth to Bottom: 123.44 Ft BTOC

Reported Depth of water: 94.56(11/09/92)

Screened Interval: 103.44 -123.44 Ft BTOC

Pump/Riser Pipe Description:

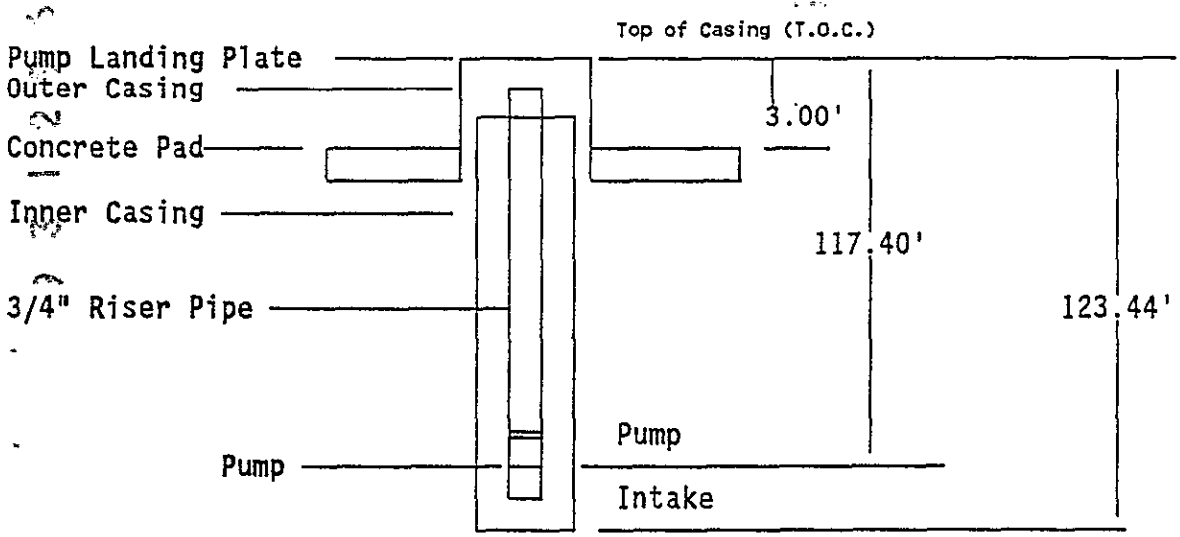
Pipe:	3/4" Stainless steel
Pump Length:	4.31'
Pump Screen Length:	1.91'
Material Cleaning:	Manufacturer
Distance pump off bottom:	N/D

Comments: Pump tested (11/10/92), produced 3.45 gpm at 41.0 strokes/min

PUMP INSTALLATION SKETCH

Total Material Length: 119.40 Ft

Depth to Pump intake: 117.40 Ft BTOC



Completed By: RS Edrington

Date: 12/22/92

* BTOC - Below Top Of Casing

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APPENDIX D

AQUIFER TEST RESULTS

9 3 1 2 9 6 1 5 6 0

CONTENTS

Well 699-41-42 . . . . . D-1
Well 699-44-39B D-12

AQUIFER TEST RESULTS

Two RCRA-compliant groundwater monitoring wells were drilled at the 216-B-3 Pond System in 1992. Slug injection/withdrawal tests were conducted in each of these wells to determine hydraulic conductivity and transmissivity values of the uppermost aquifer beneath the B Pond site. All tests were conducted in the fluvial gravel A unit. This unit is partially confined by the lower mud sequence in the fluvial gravel A unit. This unit is partially confined by the low mud sequence in the eastern portion of the B Pond area.

The slug injection/withdrawal analyses were conducted using the Bouwer and Rice method (1976 and 1989). Assumptions inherent to Bouwer and Rice include: (1) drawdown of the water table surface is negligible, (2) vadose flow/contribution is negligible, (3) head losses due to the well are negligible, and (4) the aquifer is homogenious and isotropic in the area influenced by the test. Although the method assumes a water table aquifer, the method is applicable to situations where the upper boundary of the aquifer is an impermeable or semipermeable confining layer.

The estimated values of hydraulic conductivity are about 30 ft/day. Transmissivity values ranged from 562 to 568 ft^2/day (Table D-1). Because of interbedded silts and clays and cementation in and above the Ringold Unit A, these values may not be representative of lateral and vertical lithologic variability.

Table D-1. Aquifer Test Results.

Well number	Confined/ unconfined	Type of test	Date of test	Analysis method	Test interval	K ft/day	T ft^2/day
699-41-42	unconfined	slug injection	11/12/92	not analyzable	270.33-280.59	--	--
699-41-42	unconfined	slug withdrawal	11/12/92	not analyzable	270.33-280.59	--	--
699-44-39B	confined	slug injection	11/10/92	Bouwer and Rice	98.94-118.86	29	568
699-44-39B	confined	slug withdrawal	11/10/92	Bouwer and Rice	98.94-118.86	28	562

NOTES:

Correction made for filter pack influence.
Conversion from K to T is for screened interval.

REFERENCES

Bouwer, H., 1989, "The Bouwer and Rice Slug Test -- An Update", Ground Water 27(3):304-309.

Bouwer, H., and R. C. Rice, 1976, "A Slug Test for Determining Hydraulic Conductivity of the Unconfined Aquifers with Completely or Partially Penetrating Wells", Water Resources Research 12:423-428.

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VALIDATED KDR 1/18/93
SIGNATURE/DATE

P 1 of 9

BOREHOLE TEST INFORMATION

Borehole 699-41-42 Borehole Diameter 4 in. Hanford Coordinates N/A

Interval Tested 232.85-284.17' Depth Interval 232.85-284.17' Test Type: Instantaneous Slug

Borehole Depth: 284.47' 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: 1KB277
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"

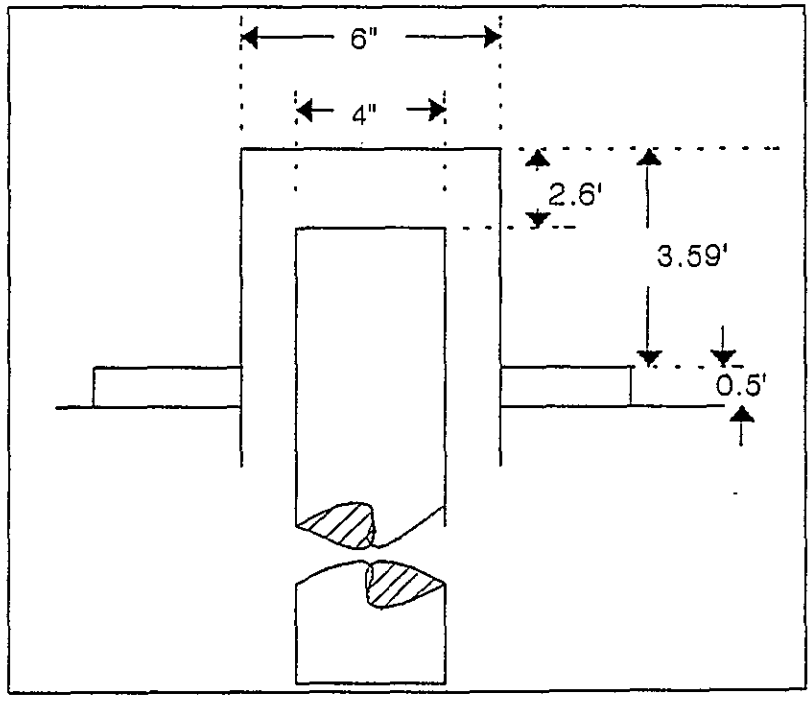
Elevation: N/A

Electric Sounder: TOC 6"

Steel Tape: TOC 6"

Pressure Transducer: TOC 6"

WELL HEAD DIAGRAM



COMMENTS

TOC @ 644' above sea level.

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

Sign and Print Name

INSTANTANEOUS SLUG TEST DATA SHEET: INJECTION

Borehole: 699-41-42

Interval Tested: 232.85 -284.17' Btoc 6"

Depth To Water: 232.85' Btoc 6"

Depth to Transducer: 51.54' BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

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

Time:	Start	End
Baseline	1233	1252
Injection	1253	1305

Date: 11-12-92

Initial Pressure (Pi): 232.85

Slug Level/Pressure (Pmax) 232.53

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)

Hermit Environment Data Logger Unit# 277

Test# 4 Water Level (ft) below top of casing (BTOC)

Type: Slug Injection

Baseline Begun: 1233 11/12/92

SWL: 232.84'

Slug Injected: 1253 11/12/92

Scale: 50.15

Slug Volume: 0.13 Cu ft

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	232.85	-232.85
0.003	0.00006	232.86	-232.86
0.007	0.00011	232.86	-232.86
0.010	0.00017	232.86	-232.86
0.013	0.00022	232.86	-232.86
0.017	0.00028	232.86	-232.86
0.020	0.00033	232.58	-232.58
0.023	0.00039	232.89	-232.89
0.027	0.00044	232.70	-232.70
0.030	0.00050	232.42	-232.42
0.033	0.00056	232.54	-232.54
0.050	0.00083	232.54	-232.54
0.067	0.00111	232.53	-232.53
0.083	0.00139	232.54	-232.54
0.100	0.00167	232.56	-232.56
0.117	0.00194	232.58	-232.58
0.133	0.00222	232.58	-232.58
0.150	0.00250	232.59	-232.59
0.167	0.00278	232.59	-232.59
0.183	0.00306	232.61	-232.61
0.200	0.00333	232.61	-232.61
0.217	0.00361	232.61	-232.61
0.233	0.00389	232.62	-232.62
0.250	0.00417	232.64	-232.64
0.267	0.00444	232.64	-232.64
0.283	0.00472	232.64	-232.64
0.300	0.00500	232.64	-232.64
0.317	0.00528	232.64	-232.64
0.333	0.00556	232.66	-232.66
0.417	0.00695	232.67	-232.67
0.500	0.00833	232.69	-232.69
0.583	0.00972	232.69	-232.69
0.667	0.01111	232.70	-232.70
0.750	0.01250	232.72	-232.72

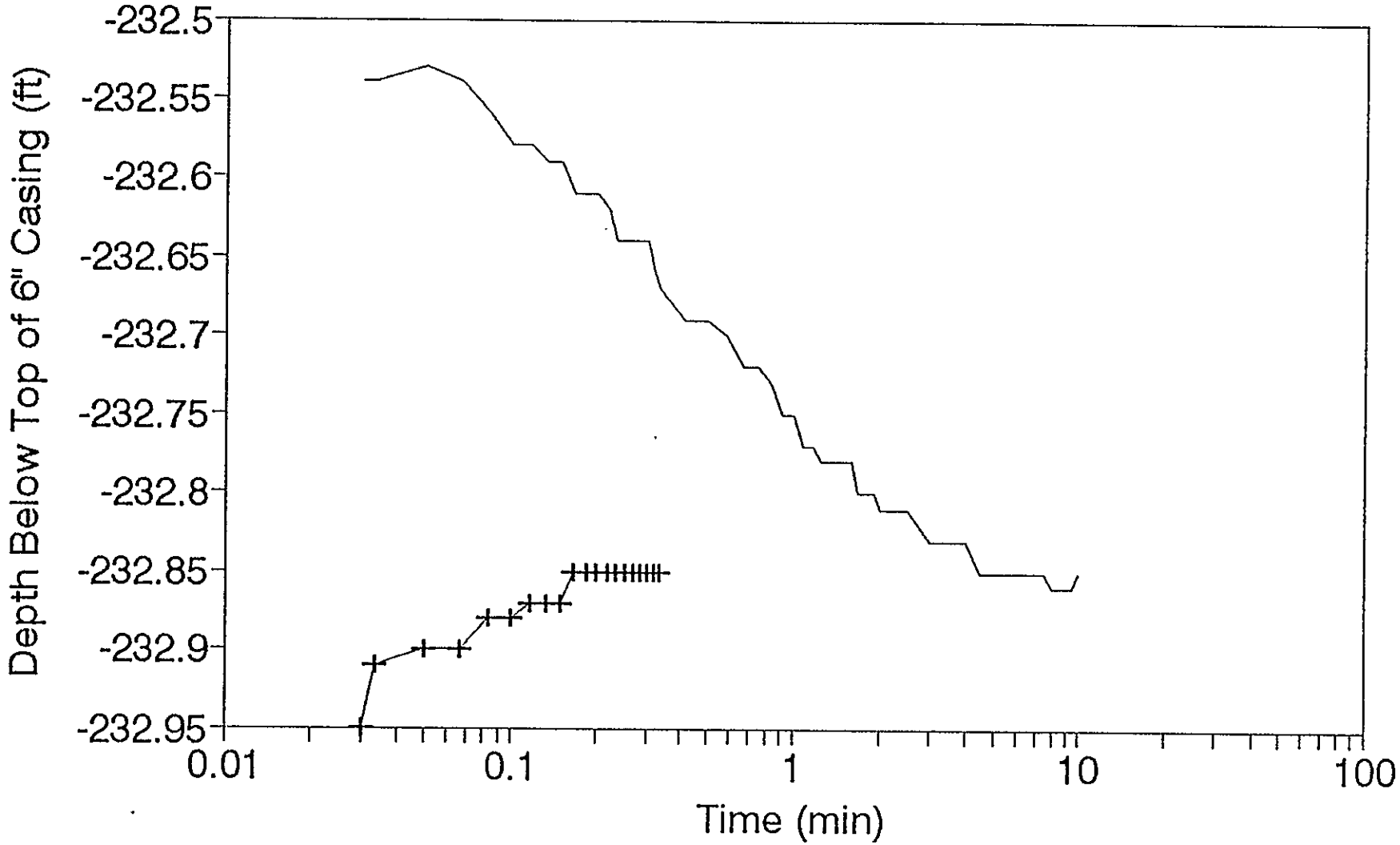
Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	232.95	-232.95
1.00	0.02	232.91	-232.91
2.00	0.03	232.90	-232.90
3.00	0.05	232.90	-232.90
4.00	0.07	232.88	-232.88
5.00	0.08	232.88	-232.88
6.00	0.10	232.87	-232.87
7.00	0.12	232.87	-232.87
8.00	0.13	232.87	-232.87
9.00	0.15	232.85	-232.85
10.00	0.17	232.85	-232.85
11.00	0.18	232.85	-232.85
12.00	0.20	232.85	-232.85
13.00	0.22	232.85	-232.85
14.00	0.23	232.85	-232.85
15.00	0.25	232.85	-232.85
16.00	0.27	232.85	-232.85
17.00	0.28	232.85	-232.85
18.00	0.30	232.85	-232.85
19.00	0.32	232.85	-232.85

0.833	0.01389	232.72	-232.72
0.917	0.01528	232.73	-232.73
1.000	0.01667	232.75	-232.75
1.083	0.01806	232.75	-232.75
1.167	0.01945	232.77	-232.77
1.250	0.02083	232.77	-232.77
1.333	0.02222	232.78	-232.78
1.417	0.02361	232.78	-232.78
1.500	0.02500	232.78	-232.78
1.583	0.02639	232.78	-232.78
1.667	0.02778	232.78	-232.78
1.750	0.02917	232.80	-232.80
1.833	0.03056	232.80	-232.80
1.917	0.03195	232.80	-232.80
2.000	0.03333	232.80	-232.80
2.500	0.04167	232.81	-232.81
3.000	0.05000	232.81	-232.81
3.500	0.05833	232.83	-232.83
4.000	0.06667	232.83	-232.83
4.500	0.07500	232.83	-232.83
5.000	0.08333	232.85	-232.85
5.500	0.09167	232.85	-232.85
6.000	0.10000	232.85	-232.85
6.500	0.10833	232.85	-232.85
7.000	0.11667	232.85	-232.85
7.500	0.12500	232.85	-232.85
8.000	0.13333	232.85	-232.85
8.500	0.14167	232.86	-232.86
9.000	0.15000	232.86	-232.86
9.500	0.15833	232.86	-232.86
10.000	0.16667	232.86	-232.86
12.000	0.20000	232.85	-232.85

9 3 1 2 9 3 9 1 5 6 8

699-41-42 Slug Injection

12-Nov-92



Slug Injection — Baseline

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL

Borehole: 699-41-42

Interval Tested: 232.85 -284.17' Btoc 6"

Depth To Water: 232.85' Btoc 6"

Depth to Transducer: 51.54' BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1307	1325
Injection	1329	1343

Date: 11-12-92

Initial Pressure (Pi): 232.85

Slug Level/Pressure (Pmax) 233.30

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)

p.789

699-41-42 Slug Withdrawal

Hermit Environment Data Logger Unit# 277

Test# 6 Water Level (ft) below top of casing (BTOC)

Type: Slug Withdrawal Baseline Begun:1307 11/12/92

SWL: 232.85' Slug Withdrawn: 1329 11/12/92

Scale:50.15 Slug Volume: 0.13 Cu ft

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	232.86	-232.86
0.003	0.00006	232.86	-232.86
0.007	0.00011	233.10	-233.10
0.010	0.00017	233.24	-233.24
0.013	0.00022	233.30	-233.30
0.017	0.00028	233.23	-233.23
0.020	0.00033	233.13	-233.13
0.023	0.00039	233.10	-233.10
0.027	0.00044	233.13	-233.13
0.030	0.00050	233.15	-233.15
0.033	0.00056	233.15	-233.15
0.050	0.00083	233.13	-233.13
0.067	0.00111	233.11	-233.11
0.083	0.00139	233.10	-233.10
0.100	0.00167	233.10	-233.10
0.117	0.00194	233.10	-233.10
0.133	0.00222	233.11	-233.11
0.150	0.00250	233.10	-233.10
0.167	0.00278	233.10	-233.10
0.183	0.00306	233.08	-233.08
0.200	0.00333	233.08	-233.08
0.217	0.00361	233.07	-233.07
0.233	0.00389	233.07	-233.07
0.250	0.00417	233.07	-233.07
0.267	0.00444	233.07	-233.07
0.283	0.00472	233.05	-233.05
0.300	0.00500	233.05	-233.05
0.317	0.00528	233.05	-233.05
0.333	0.00556	233.05	-233.05
0.417	0.00695	233.04	-233.04
0.500	0.00833	233.02	-233.02
0.583	0.00972	233.00	-233.00
0.667	0.01111	232.99	-232.99
0.750	0.01250	232.99	-232.99

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	232.85	-232.85
1.00	0.02	232.85	-232.85
2.00	0.03	232.85	-232.85
3.00	0.05	232.83	-232.83
4.00	0.07	232.83	-232.83
5.00	0.08	232.85	-232.85
6.00	0.10	232.83	-232.83
7.00	0.12	232.83	-232.83
8.00	0.13	232.85	-232.85
9.00	0.15	232.85	-232.85
10.00	0.17	232.85	-232.85
11.00	0.18	232.85	-232.85
12.00	0.20	232.85	-232.85
13.00	0.22	232.85	-232.85
14.00	0.23	232.85	-232.85
15.00	0.25	232.85	-232.85
16.00	0.27	232.85	-232.85
17.00	0.28	232.85	-232.85
18.00	0.30	232.85	-232.85

9 3 1 2 9 5 9 1 5 7 0

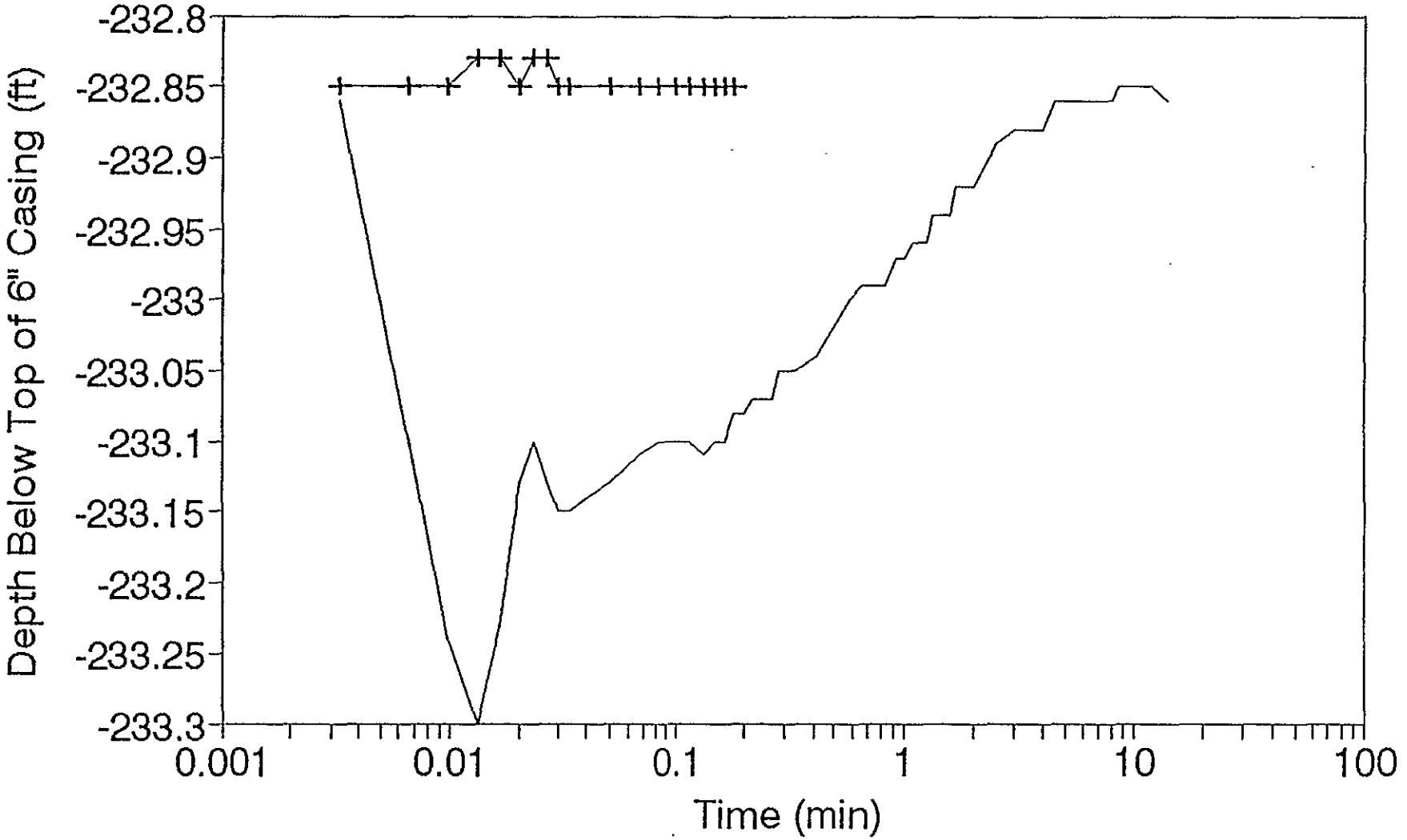
p. 8 of 9

699-41-42 Slug Withdrawal

0.833	0.01389	232.99	-232.99
0.917	0.01528	232.97	-232.97
1.000	0.01667	232.97	-232.97
1.083	0.01806	232.96	-232.96
1.167	0.01945	232.96	-232.96
1.250	0.02083	232.96	-232.96
1.333	0.02222	232.94	-232.94
1.417	0.02361	232.94	-232.94
1.500	0.02500	232.94	-232.94
1.583	0.02639	232.94	-232.94
1.667	0.02778	232.92	-232.92
1.750	0.02917	232.92	-232.92
1.833	0.03056	232.92	-232.92
1.917	0.03195	232.92	-232.92
2.000	0.03333	232.92	-232.92
2.500	0.04167	232.89	-232.89
3.000	0.05000	232.88	-232.88
3.500	0.05833	232.88	-232.88
4.000	0.06667	232.88	-232.88
4.500	0.07500	232.86	-232.86
5.000	0.08333	232.86	-232.86
5.500	0.09167	232.86	-232.86
6.000	0.10000	232.86	-232.86
6.500	0.10833	232.86	-232.86
7.000	0.11667	232.86	-232.86
7.500	0.12500	232.86	-232.86
8.000	0.13333	232.86	-232.86
8.500	0.14167	232.85	-232.85
9.000	0.15000	232.85	-232.85
9.500	0.15833	232.85	-232.85
10.000	0.16667	232.85	-232.85
12.000	0.20000	232.85	-232.85
14.000	0.23333	232.86	-232.86

699-41-42 Slug Withdrawal

12-Nov-92



Slug Withdrawal — Baseline

Well Number: 699-41-42

Dimensions in ft unless otherwise specified

Project: B Pond System

Date of Test: 11/12/92

Type of Test: Slug Injection

Slugging Rod Dimensions, L: 6.0

D: .167

Theoretical head displacement in 4 inch casing: 1.57

Location of Field Records and Data: RCRA Project File

Head change within screened interval: N/A

Depth below land surface/top of 6" of tested zone: 250.59 270.33-280.57

Radius of casing, Rc: .167

Radius of well, Rw: .333

Distance from WT to bottom of tested interval, Lw: 51.8

Length of saturated screen interval, Le: 10.3

Thickness of aquifer, H: 80

Estimated Porosity of Sand Pack: .25

For Bouwer and Rice Analysis

Time correction applied to data (min):

Intial Head change, Yo:

Arbitrary time value on straight line, Tc (min):

Head at Tc, Yt:

Comments: SWL 232.85
Data not [illegible]. Total [illegible] in head was 2.5'.

Name (print): Signature: Date:

9312959157 3

Well Number: 699-41-42

Dimensions in ft unless otherwise specified

Project: B Pond System

Date of Test: 11/2/92

Type of Test: Slug Withdrawal

Slugging Rod Dimensions, L: 6.10

D: .167

Theoretical head displacement in 4 inch casing: 1.57

Location of Field Records and Data: [illegible]

Head change within screened interval: NO

Depth below land surface/top of 6" of tested zone: 250.59

Radius of casing, Rc: .167

Radius of well, Rw: .333

Distance from WT to bottom of tested interval, Lw: 51.8

Length of saturated screen interval, Le: 10.3

Thickness of aquifer, H: 40

Estimated Porosity of Sand Pack: .25

For Bouwer and Rice Analysis

Time correction applied to data (min):

Intial Head change, Yo:

Arbitrary time value on straight line, Tc (min):

Head at Tc, Yt:

Comments: Level not [illegible] Total change [illegible] < .5'

Name (print): Signature: Date:

VALIDATED
KDR 1/18/93
SIGNATURE/DATE

BOREHOLE TEST INFORMATION

Borehole 699-44-39B Borehole Diameter 4 in. Hanford Coordinates N/A

Interval Tested 103.44-123.44' Depth Interval 103.44-123.44' Test Type: Instantaneous Slug

Borehole Depth: 123.44' 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: 1KB277
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"

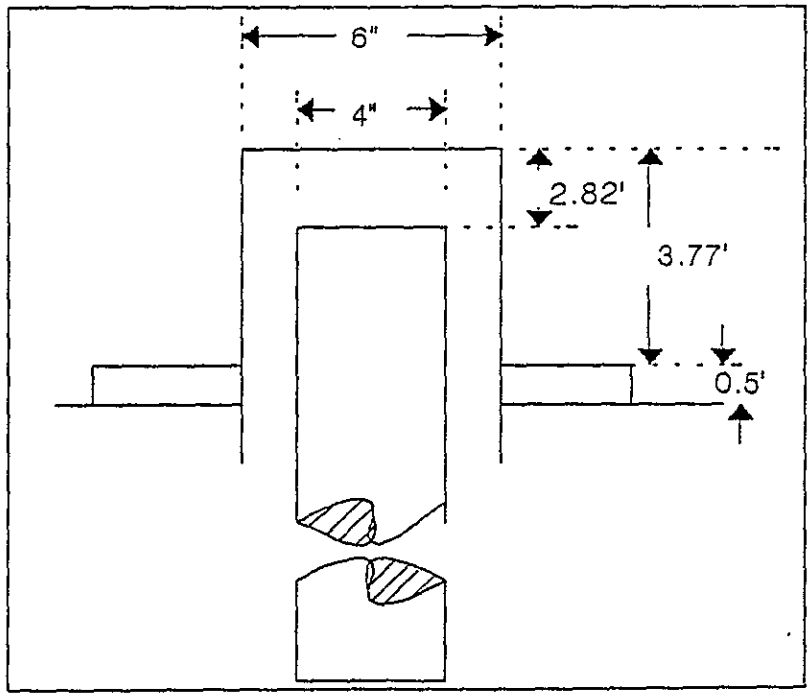
Elevation: N/A

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

Page 1 of 4

Borehole: 699-44-39B

Interval Tested: 123.44 - ~~94.65'~~ 103.44' 1/11/93 Btoc 6"

Depth To Water: 94.65' Btoc 6"

Depth to Transducer: 25.16' BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time: Start End

Baseline 1138 1149

Injection 1150 1208

Date: 11-10-92

Initial Pressure (Pi): 94.65'

Slug Level/Pressure (Pmax) 93.09

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)

699-44-39B Slug Injection

Hermit Environment Data Logger Unit# 277

Test# 4 Water Level (ft) below top of casing (BTOC)

Type: Slug Injection Baseline Begun: 1138 11/10/92

SWL: 94.65' Slug Injected:1150 11/10/92

Scale: 50.15 Slug Volume: 0.13 Cu ft

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	93.35	-93.35
0.003	0.00006	93.09	-93.09
0.007	0.00011	93.31	-93.31
0.010	0.00017	92.67	-92.67
0.013	0.00022	92.41	-92.41
0.017	0.00028	93.30	-93.30
0.020	0.00033	93.90	-93.90
0.023	0.00039	94.27	-94.27
0.027	0.00044	93.52	-93.52
0.030	0.00050	93.85	-93.85
0.033	0.00056	93.63	-93.63
0.050	0.00083	93.88	-93.88
0.067	0.00111	93.68	-93.68
0.083	0.00139	94.03	-94.03
0.100	0.00167	94.15	-94.15
0.117	0.00194	94.14	-94.14
0.133	0.00222	94.31	-94.31
0.150	0.00250	94.30	-94.30
0.167	0.00278	94.38	-94.38
0.183	0.00306	94.42	-94.42
0.200	0.00333	94.47	-94.47
0.217	0.00361	94.49	-94.49
0.233	0.00389	94.52	-94.52
0.250	0.00417	94.57	-94.57
0.267	0.00444	94.58	-94.58
0.283	0.00472	94.58	-94.58
0.300	0.00500	94.60	-94.60
0.317	0.00528	94.61	-94.61
0.333	0.00556	94.61	-94.61
0.417	0.00695	94.65	-94.65
0.500	0.00833	94.65	-94.65
0.583	0.00972	94.66	-94.66
0.667	0.01111	94.66	-94.66
0.750	0.01250	94.66	-94.66

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	94.65	-94.65
1.00	0.02	94.65	-94.65
2.00	0.03	94.65	-94.65
3.00	0.05	94.65	-94.65
4.00	0.07	94.65	-94.65
5.00	0.08	94.65	-94.65
6.00	0.10	94.65	-94.65
7.00	0.12	94.65	-94.65
8.00	0.13	94.65	-94.65
9.00	0.15	94.65	-94.65
10.00	0.17	94.65	-94.65
11.00	0.18	94.65	-94.65

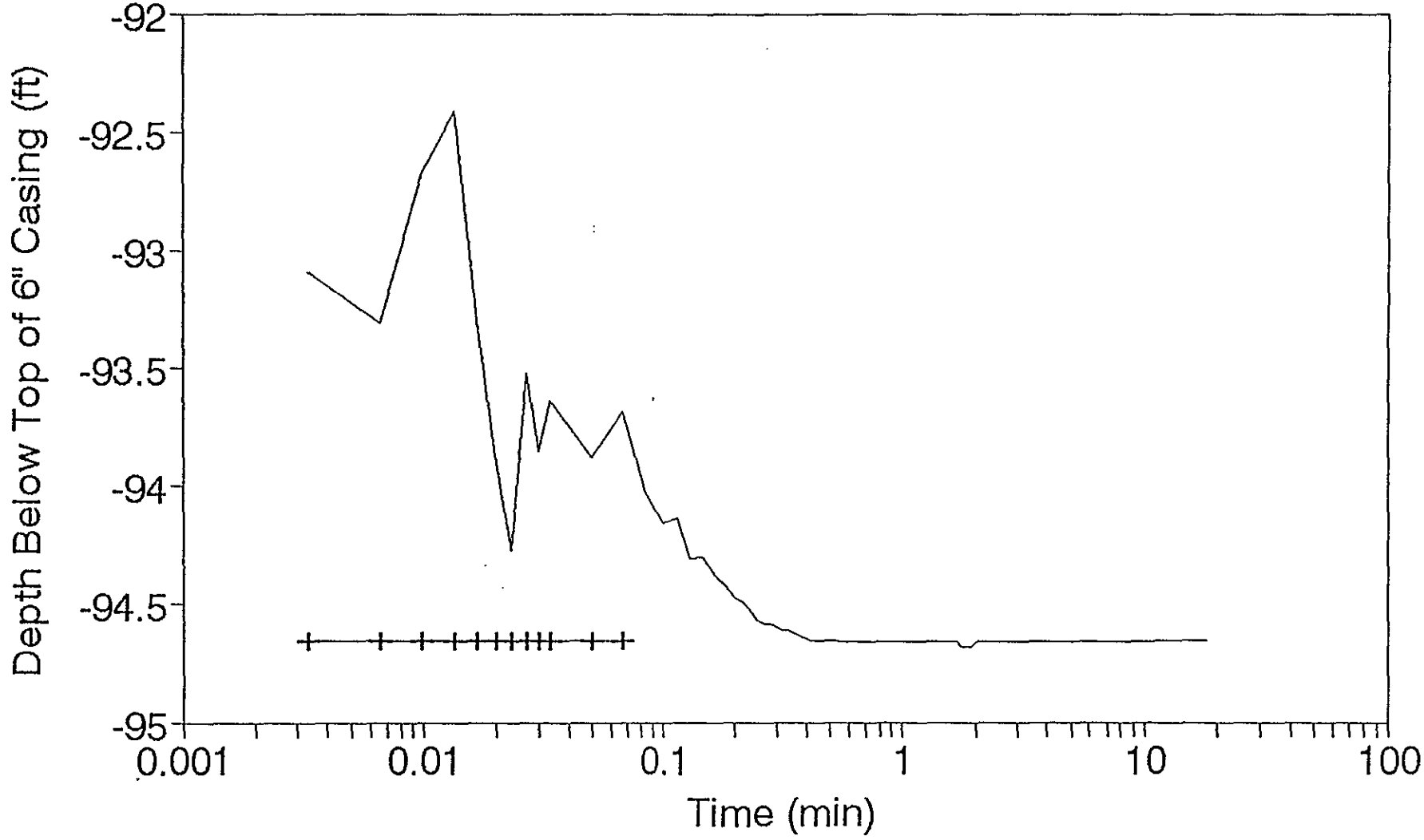
699-44-39B Slug Injection

0.833	0.01389	94.66	-94.66
0.917	0.01528	94.66	-94.66
1.000	0.01667	94.66	-94.66
1.083	0.01806	94.66	-94.66
1.167	0.01945	94.66	-94.66
1.250	0.02083	94.66	-94.66
1.333	0.02222	94.66	-94.66
1.417	0.02361	94.66	-94.66
1.500	0.02500	94.66	-94.66
1.583	0.02639	94.66	-94.66
1.667	0.02778	94.66	-94.66
1.750	0.02917	94.68	-94.68
1.833	0.03056	94.68	-94.68
1.917	0.03195	94.68	-94.68
2.000	0.03333	94.66	-94.66
2.500	0.04167	94.66	-94.66
3.000	0.05000	94.66	-94.66
3.500	0.05833	94.66	-94.66
4.000	0.06667	94.66	-94.66
4.500	0.07500	94.66	-94.66
5.000	0.08333	94.66	-94.66
5.500	0.09167	94.66	-94.66
6.000	0.10000	94.66	-94.66
6.500	0.10833	94.66	-94.66
7.000	0.11667	94.66	-94.66
7.500	0.12500	94.66	-94.66
8.000	0.13333	94.66	-94.66
8.500	0.14167	94.66	-94.66
9.000	0.15000	94.66	-94.66
9.500	0.15833	94.66	-94.66
10.000	0.16667	94.66	-94.66
12.000	0.20000	94.65	-94.65
14.000	0.23333	94.65	-94.65
16.000	0.26667	94.65	-94.65
18.000	0.30000	94.65	-94.65

9 3 1 2 9 5 9 1 5 7 9

699-44-39B Slug injection

10-Nov-92



Slug Injection — Baseline

INSTANTANEOUS SLUG TEST DATA SHEET: WITHDRAWAL

Borehole: 699-44-39B

Interval Tested: 123.44 - ~~94.65'~~ 103.44' Btoc 6" RS 1/11/93

Depth To Water: 94.65' Btoc 6"

Depth to Transducer: 25.16' BWL

Measured by: Robert S. Edrington

Slug Volume: 0.13 cu. ft.

Barometric Reading:

Beginning: N/A End: N/A

Time:	Start	End
Baseline	1209	1222
Injection	1223	1243

Date: 11-10-92

Initial Pressure (Pi): 94.65'

Slug Level/Pressure (Pmax) 96.53

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)

p. 7 of 9

699-44-39B Slug Withdrawal

Hermit Environment Data Logger Unit# 277

Test# 3 Water Level (ft) below top of casing (BTOC)

Type: Slug Withdrawal Baseline Begun: 1209 11/10/92

SWL: 94.65' Slug Withdrawn: 1223 11/10/92

Scale:50.15 Slug Volume: 0.13 Cu ft

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	95.48	-95.48
0.003	0.00006	94.39	-94.39
0.007	0.00011	95.52	-95.52
0.010	0.00017	96.45	-96.45
0.013	0.00022	96.53	-96.53
0.017	0.00028	96.18	-96.18
0.020	0.00033	96.18	-96.18
0.023	0.00039	96.18	-96.18
0.027	0.00044	96.09	-96.09
0.030	0.00050	96.07	-96.07
0.033	0.00056	96.01	-96.01
0.050	0.00083	95.80	-95.80
0.067	0.00111	95.63	-95.63
0.083	0.00139	95.48	-95.48
0.100	0.00167	95.37	-95.37
0.117	0.00194	95.26	-95.26
0.133	0.00222	95.17	-95.17
0.150	0.00250	95.10	-95.10
0.167	0.00278	95.03	-95.03
0.183	0.00306	94.98	-94.98
0.200	0.00333	94.93	-94.93
0.217	0.00361	94.88	-94.88
0.233	0.00389	94.85	-94.85
0.250	0.00417	94.82	-94.82
0.267	0.00444	94.80	-94.80
0.283	0.00472	94.77	-94.77
0.300	0.00500	94.76	-94.76
0.317	0.00528	94.74	-94.74
0.333	0.00556	94.72	-94.72
0.417	0.00695	94.69	-94.69
0.500	0.00833	94.68	-94.68
0.583	0.00972	94.66	-94.66
0.667	0.01111	94.66	-94.66
0.750	0.01250	94.66	-94.66

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.00	0.00	94.66	-94.66
1.00	0.02	94.65	-94.65
2.00	0.03	94.65	-94.65
3.00	0.05	94.65	-94.65
4.00	0.07	94.65	-94.65
5.00	0.08	94.66	-94.66
6.00	0.10	94.65	-94.65
7.00	0.12	94.65	-94.65
8.00	0.13	94.65	-94.65
9.00	0.15	94.65	-94.65
10.00	0.17	94.65	-94.65
11.00	0.18	94.65	-94.65
12.00	0.20	94.65	-94.65
13.00	0.22	94.65	-94.65

p. 8 of 9

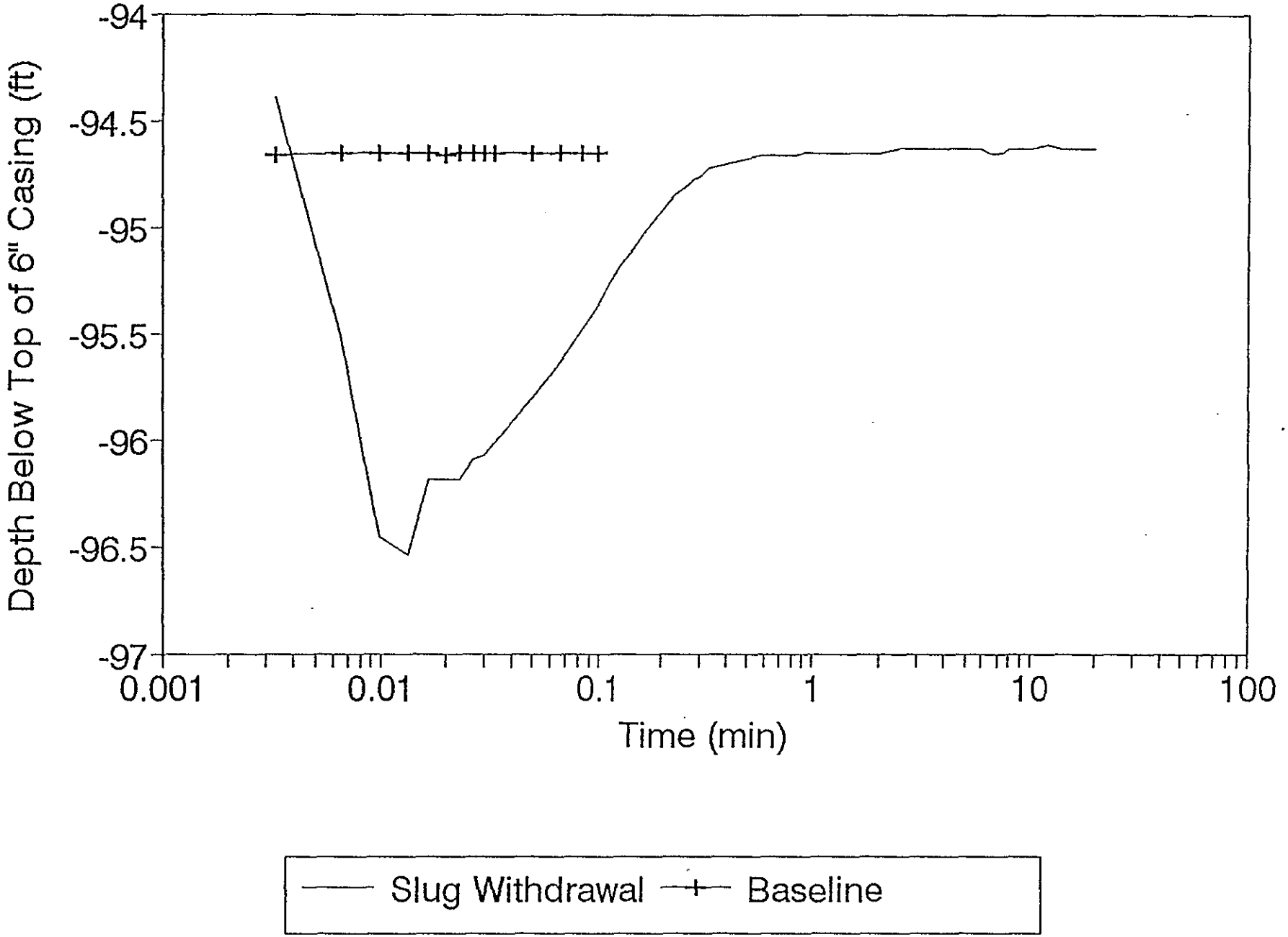
699-44-39B Slug Withdrawal

0.833	0.01389	94.66	-94.66
0.917	0.01528	94.65	-94.65
1.000	0.01667	94.65	-94.65
1.083	0.01806	94.65	-94.65
1.167	0.01945	94.65	-94.65
1.250	0.02083	94.65	-94.65
1.333	0.02222	94.65	-94.65
1.417	0.02361	94.65	-94.65
1.500	0.02500	94.65	-94.65
1.583	0.02639	94.65	-94.65
1.667	0.02778	94.65	-94.65
1.750	0.02917	94.65	-94.65
1.833	0.03056	94.65	-94.65
1.917	0.03195	94.65	-94.65
2.000	0.03333	94.65	-94.65
2.500	0.04167	94.63	-94.63
3.000	0.05000	94.63	-94.63
3.500	0.05833	94.63	-94.63
4.000	0.06667	94.63	-94.63
4.500	0.07500	94.63	-94.63
5.000	0.08333	94.63	-94.63
5.500	0.09167	94.63	-94.63
6.000	0.10000	94.63	-94.63
6.500	0.10833	94.65	-94.65
7.000	0.11667	94.65	-94.65
7.500	0.12500	94.65	-94.65
8.000	0.13333	94.63	-94.63
8.500	0.14167	94.63	-94.63
9.000	0.15000	94.63	-94.63
9.500	0.15833	94.63	-94.63
10.000	0.16667	94.63	-94.63
12.000	0.20000	94.61	-94.61
14.000	0.23333	94.63	-94.63
16.000	0.26667	94.63	-94.63
18.000	0.30000	94.63	-94.63
20.000	0.33333	94.63	-94.63

9 3 1 2 9 5 9 1 5 3 3

699-44-39B Slug Withdrawal

10-Nov-92



Well Number: 699-44-39B

Dimensions in ft unless otherwise specified

Project: B Pond System

Date of Test: 11/10/92

Type of Test: Slug injection

Slugging Rod Dimensions, L: 6.40

D: .167

Theoretical head displacement in 4 inch casing: 1.57

Location of Field Records and Data: RCRA [illegible] File

Head change within screened interval: no

Depth below land surface/top of 6" of tested zone: 118.86 78.94-118.

Radius of casing, Rc: .167

Radius of well, Rw: .333

Distance from WT to bottom of tested interval, Lw: 28.5

Length of saturated screen interval, Le: 19.9

Thickness of aquifer, H: 81.6

Estimated Porosity of Sand Pack: .25

For Bouwer and Rice Analysis

Time correction applied to data (min): .027

Intial Head change, Yo: 1.07

Arbitrary time value on straight line, Tc (min): .24

Head at Tc, Yt: .1

Comments: SWL 90.37

Basalt [illegible] 172'

Name (print): Signature: Date:

699-44-39B

****

THE BELOW HYDRAULIC CONDUCTIVITY VALUE WAS CALCULATED
USING THE BOUWER AND RICE SLUG TEST METHOD.
SOURCE= "THE BOUWER AND RICE SLUG TEST-AN UPDATE"
GROUND WATER, VOL 27, NO. 3, MAY-JUNE 1989.

****

Rc (ft)	Rw (ft)	Le (ft)	Lw (ft)	H (ft)
.1670	.3330	19.9000	28.5000	81.6000

****

Le/Rw = 59.7597600
A= 3.3231830
B= 5.482054E-001
C= 3.0164010
t (min)= 2.400000E-001
1/t= 4.1666670
Yo= (ft) 1.0700000
Yt= (ft) 1.000000E-001
1/t ln(Yo/Yt)= 9.8760160
ln[(H-Lw)/Rw]= 5.0717900
ln(Re/Rw)= 2.8624350

****

K (ft/day) = 28.5252700

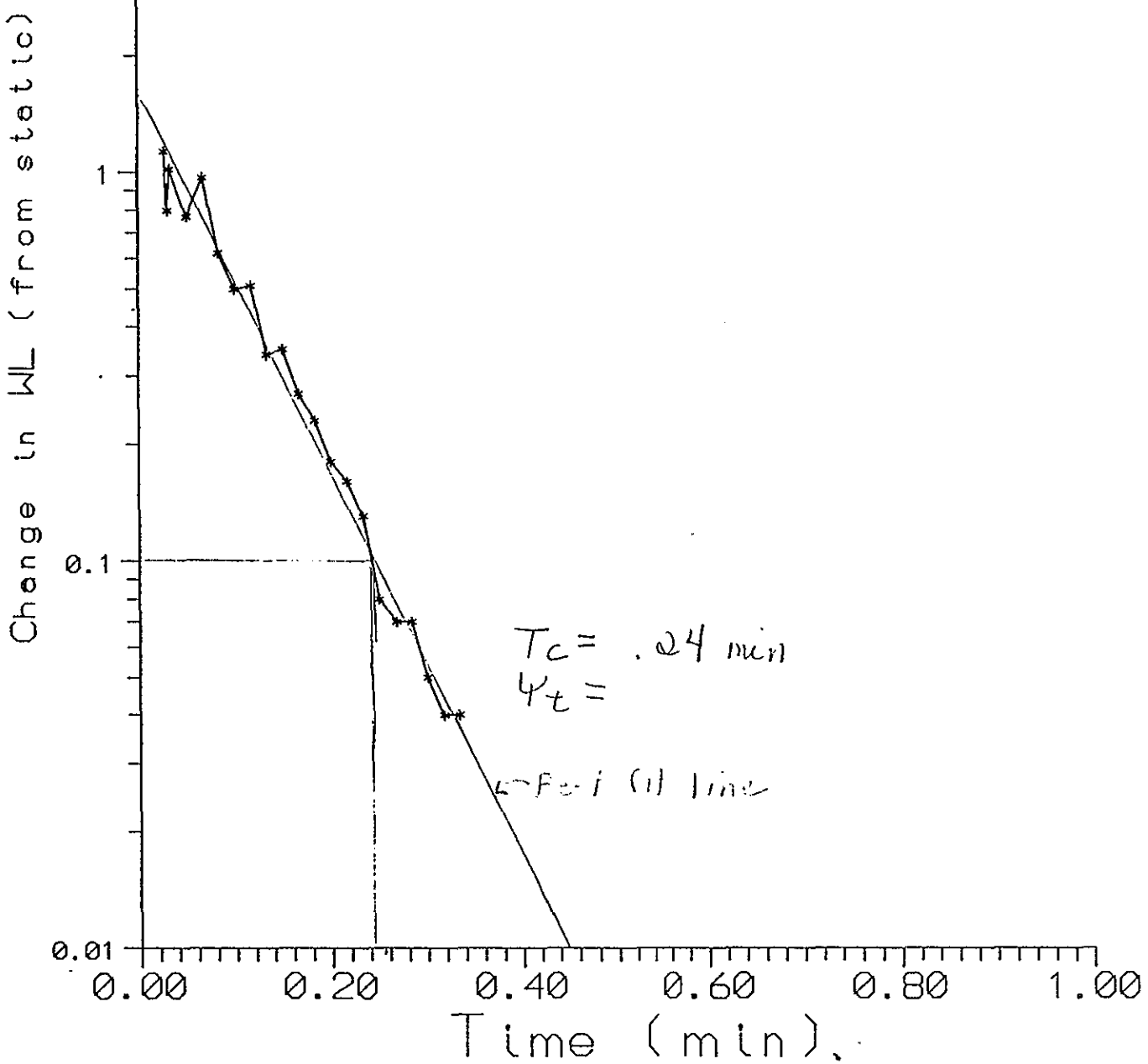
****

T OF THE SATURATED SCREEN INTERVAL
(ft2/day)= 567.6528000

****

9 3 1 2 9 5 9 1 5 3 6

Well 699-44-39B Slug Injection Test Ho=
Test Interval: 98.94-118.86
11/10/92



Well Number: 699-44-39B

Dimensions in ft unless otherwise specified

Project: 8 Pond System

Date of Test: 11/10/92

Type of Test: Slug Withdrawal

Slugging Rod Dimensions, L: 6.0

D: .167

Theoretical head displacement in 4 inch casing: 1.57

Location of Field Records and Data: RCRA Rec'd File

Head change within screened interval: no

Depth below land surface/top of 6" of tested zone: 118.86

Radius of casing, Rc: .167

Radius of well, Rw: .333

Distance from WT to bottom of tested interval, Lw: 28.5

Length of saturated screen interval, Le: 19.9

Thickness of aquifer, H: 81.6

Estimated Porosity of Sand Pack: .25

For Bouwer and Rice Analysis

Time correction applied to data (min): .013

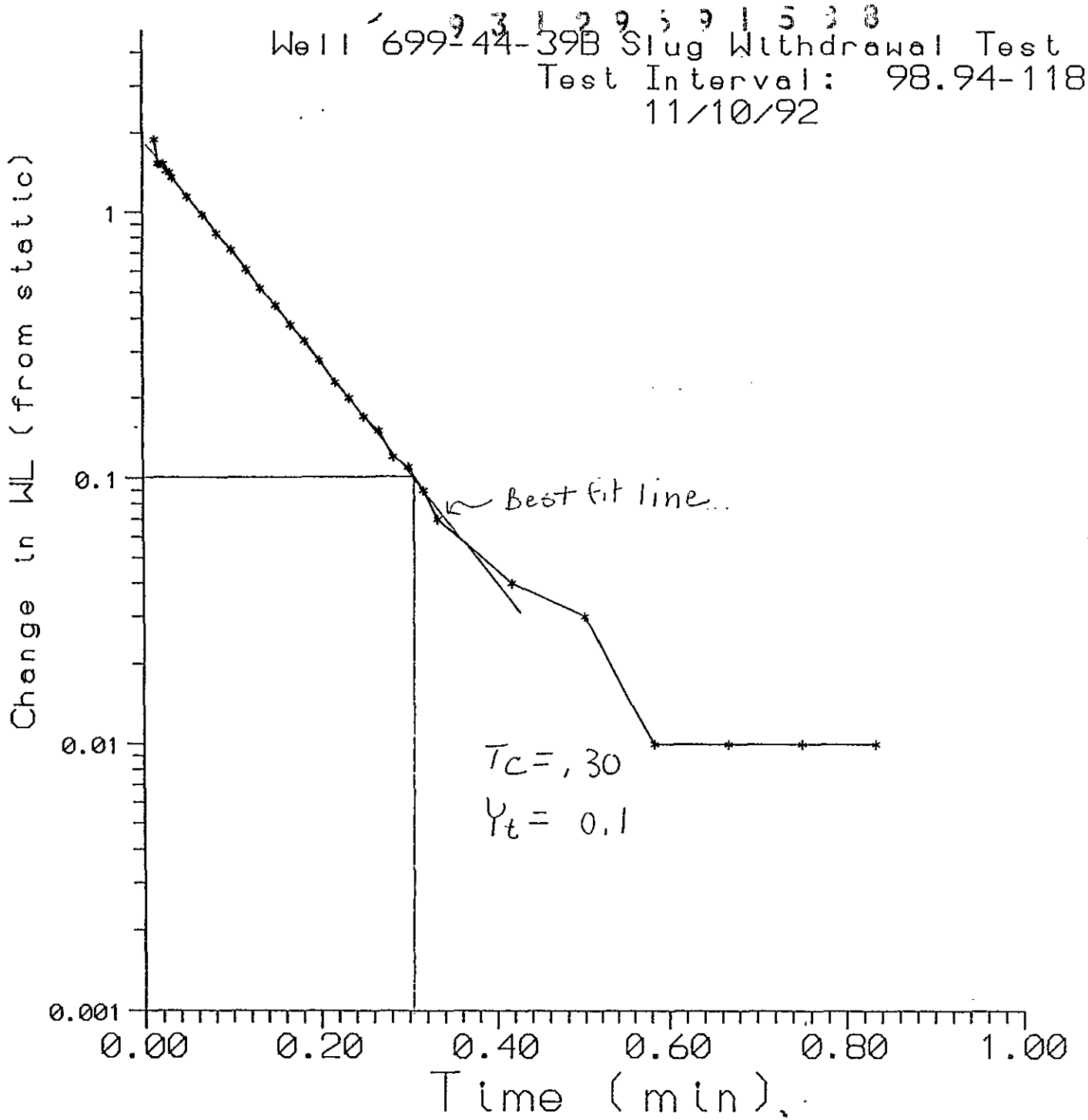
Intial Head change, Yo: 1.88

Arbitrary time value on straight line, Tc (min): .30

Head at Tc, Yt: 0.1

Comments:

Name (print): Signature: Date:


Well 699-44-39B Slug Withdrawal Test Ho=1.88'
Test Interval: 98.94-118.86
11/10/92
Change in WL (from static)
1
0.1
0.01
0.001
0.00
0.20
0.40
0.60
0.80
1.00
Time (min)
Best fit line
Tc=.30
Yt= 0.1

699-44-39b

****

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Rc (ft)	Rw (ft)	Le (ft)	Lw (ft)	H (ft)
.1670	.3330	19.9000	28.5000	81.6000

****

Le/Rw = 59.7597600
A= 3.3231830
B= 5.482054E-001
C= 3.0164010
t (min)= 3.000000E-001
1/t= 3.3333330
Yo= (ft) 1.8800000
Yt= (ft) 1.000000E-001
1/t ln(Yo/Yt)= 9.7795220
ln[(H-Lw)/Rw]= 5.0717900
ln(Re/Rw)= 2.8624350

****

K (ft/day) = 28.2465600

****

T OF THE SATURATED SCREEN INTERVAL
(ft2/day)= 562.1066000

****

Date Received: 3/9/93 CS

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-053, Rev. 0

List attachments: NA

Date Release Required: March 3, 1992

Title: Borehole Completion Data Package for the CY 1992 216-B-3 Pond Drilling Project

Unclassified Category: UC-

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
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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 [X] No
Will material be handed out? [] Yes [X] 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	[]	[X]			
Patent - General Counsel	[]	[X]			
Legal - General Counsel	~~[X]~~	[X]	~~B. D. Williamson~~		
Applied Technology/Export Controlled Information or International Program	[]	[X]			
WHC Program/Project	[]	[X]			
Communications	[]	[X]			
RL Program/Project	[]	[X]			
Publication Services	[X]	[]	LA Brown	LA Brown	3/16/93
Other Program/Project	[]	[X]			

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
C. D. Delaney C. D. Delaney 2/24/93

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

Responsible Manager (Printed/Signature) Date
R. L. Jackson R. Jackson 03/03/93

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 3/9/93

Date Cancelled | Date Disapproved

BD-7600-062 (08/91) WEF074

Part 1

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