START

0023238

SEP 04 1992

ENGINEERING DATA TRANSMITTAL

1. EDT 126470

2. To: (Receiving Organization) DISTRIBUTION

3. From: (Originating Organization) Geosciences - L. C. Swanson

4. Related EDT No: N/A

5. Proj/Prog/Dept/Div: Environmental

6. Cog/Proj Engr: B.A. Williams

7. Purchase Order No: N/A

8. Originator Remarks:

Please review the attached borehole completion data package. Address comments to L. C. Swanson, H5-29 6-1438

9. Equip/Component No: N/A

10. System/Bldg/Facility: N/A

11. Receiver Remarks:

12. Major Assm Dwg No: N/A

13. Permit/Permit Application No: N/A

14. Required Response Date: August 14, 1992

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No	(C) Sheet No	(D) Rev No	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-DP-048		0	Borehole Completion Data Package for Grout Treatment Facility Well 299-E25-39	3Q	4/1	1	

SEP 1992 RECEIVED EDMC

16. KEY

Impact Level (F)	Reason for Transmittal (G)	Disposition (H) & (I)
1, 2, 3, or 4 see MRP 5.43 and EP-1.7	1. Approval 2. Release 3. Information 4. Review 5. Post-Review 6. Dist (Receipt Acknow Required)	1. Approved 2. Approved w/comment 3. Disapproved w/comment 4. Reviewed no/comment 5. Reviewed w/comment 6. Receipt acknowledged

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

(G) Reason	(H) Disp	(J) Name	(K) Signature	(L) Date	(M) MSIN	(J) Name	(K) Signature	(L) Date	(M) MSIN	(G) Reason	(H) Disp
1	1	Cog./Proj. Eng B.A. Williams		8/27/92	H4-56	EDMC (2)			H4-22		
1	1	Cog. Proj Eng Mgr. K.R. Fecht			H4-56	~~IRA Clearance~~			~~H4-17~~		
1	2	QA W.R. Thackaberry		8-24-92	H4-16	CENTRAL FILES			L8-04		
		Safety									
4	1	Env. R.L. Jackson		8/27/92	H4-56						
4	5	M.J. Hartman		24 Aug 92	H4-56						

18. Signature of EDT Originator — Date

19. N/A — Authorized Representative for Receiving Organization — Date

20. Cognizant/Project Engineer's Manager — Date

21. DOE APPROVAL (if required) Ltr No
- ☐ Approved
- ☐ Approved w/comments
- ☐ Disapproved w/comments

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SUPPORTING DOCUMENT

1. Total Pages 82

2. Title

Borehole Completion Data Package for Grout Treatment Facility Well 299-E25-39

3. Number

WHC-SD-EN-DP-048

4. Rev No.

0

5. Key Words

BOREHOLE COMPLETION; MONITORING WELLS; GROUT TREATMENT FACILITY; GROUNDWATER MONITORING

APPROVED FOR PUBLIC RELEASE
9/1/92 N. Dolis

6. Author

Name: L. C. Swanson

LC Swanson
Signature

Organization/Charge Code 81231 R31GA

7. Abstract

Well 299-E25-39 was drilled in 1990 as RCRA upgradient groundwater monitoring wells at the Grout Treatment Facility of the Hanford Site. The data package includes information on drilling, construction, development, and aquifer testing.

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9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC
DATE SEP 04 1992

9312760047 1

A-6400-073 (11/91) (EF) WEF124

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C Well Development Logs and Pump Installation Data C-1
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9 3 1 2 7 6 0 0 4 7 2

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1.0 INTRODUCTION

One new upgradient well was installed at the Grout Treatment Facility (GTF) during 1990 in support of the Hanford Federal Facility Agreement and Consent Order (Ecology et al. 1991), Milestone M-24-05. This data package presents information and data on well drilling, well completion, well development, sample pump installation, and aquifer testing for well 299-E25-39. Figure 1 shows the location of the new well in relation to the GTF and the existing groundwater monitoring network.

The groundwater monitoring plan for the GTF (WHC 1989) and the Generic Well Specification for Project W-017H (WHC 1991) provide the requirements and guidelines for the location and justification for well 299-E25-39. The well was constructed in conformance with the State of Washington Department of Ecology (Ecology 1989a, 1989b, 1990).

The GTF is in a detection monitoring program in accordance with Resource Conservation and Recovery Act of 1976 (RCRA) interim-status requirements for establishing a groundwater monitoring program (EPA 1989). Well 299-E25-39 is the most recent addition to the GTF monitoring well network, and is in an upgradient location.

The following information is included in the appendices:

- Appendix A
  - -Well summary sheet
  - -Well construction report
  - -Well survey data
  - -Borehole logs
  - -Geophysical logs
- Appendix B
  - -$CaCO_3$ and moisture content data
  - -Radiation analysis data
- Appendix C
  - -Well development form
  - -Equipment configuration and wellhead diagram
  - -Development drawdown/recovery form and data
  - -Pump installation form
- Appendix D
  - -Slug test data
  - -Aquifer test data analysis sheet
  - -Aquifer test data plots

The well location was approved by Ecology. Specific procedures for well drilling, completion, development, sampling, and reporting and record-keeping are outlined in the *Environmental Investigations and Site Characterization Manual* (WHC 1988).

9 3 1 2 7 6 0 0 4 7 4

9 3 1 2 7 6 0 0 4 7 5

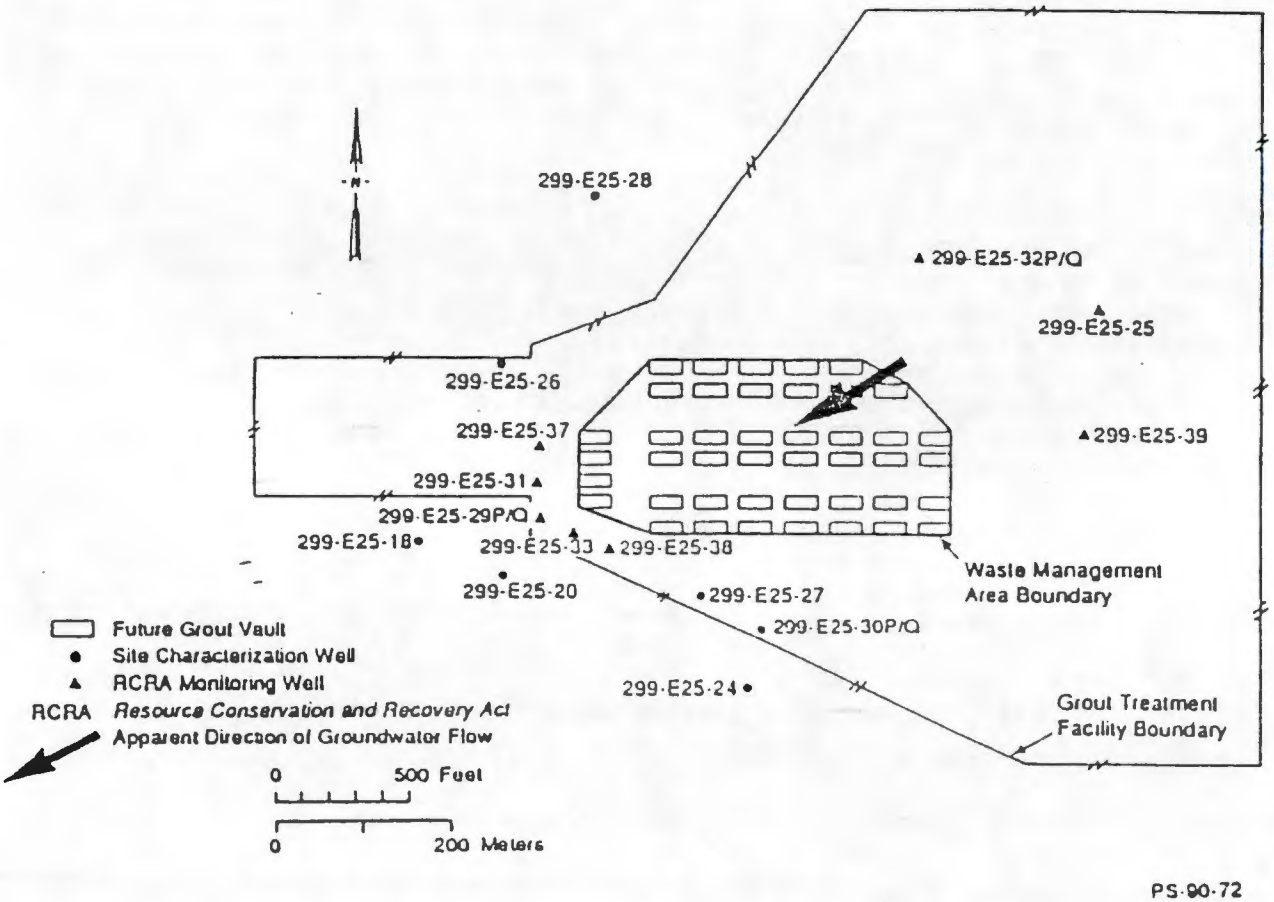

Figure 1. Location Map for Well 299-E25-39.

2.0 WELL 299-E25-39

2.1 DRILLING

Well 299-E25-39 was drilled using the cable-tool drilling method. Usually a drive barrel was used for drilling and sampling sediments. However, when the sediments were too coarse to be removed by a drive barrel, then a hard-tool bit and water were used, and the resultant slurry removed from the borehole with a bailer. Samples were then collected from the cuttings in the slurry. All cuttings, slurries, and purgewater from the borehole were contained and disposed in accordance with Westinghouse Hanford Company (Westinghouse Hanford) procedures. Temporary carbon steel casing was used to keep the borehole open while drilling. During drilling, nonpetroleum based tool and drill string lubricants were used.

Drilling began August 14, 1990, and continued until September 21, 1990, when total depth was reached at 282.4 ft below land surface (bls). The water level measured 264.0 ft bls. Total casing lengths of 290.1 ft of 8-in. diameter, 207.0 ft of 10-in. diameter, and 19.43 ft of 12-in. diameter temporary carbon steel were used to reach total depth.

The well summary sheet in Appendix A provides an as-built diagram that graphically illustrates the final well configuration and a brief description of the borehole geology. The borehole log in Appendix A illustrates the depth where different drilling methods (drive barrel or hard-tool) were used, presents a graphical representation of the geology, and includes a detailed lithological description of the sediment samples.

This well was logged with a natural-gamma geophysical probe following each casing string size reduction on August 23, 1990, and September 11, 1990, and reaching total depth on September 21, 1990. Geophysical logs from these surveys are presented in Appendix A. The geophysical log probe calibration was noted to be out of date at the time the logs were run. The probe subsequently underwent calibration and was found to be within acceptable limits.

Approximately 420 gal of raw water were added to the borehole to facilitate drilling through coarse sediments; 59 gal of this water were added to the borehole below the water table.

Samples were routinely collected during drilling operations at well 299-E25-39. Generally, samples were taken every 5 ft for lithologic description and for performing laboratory test for moisture content, calcium carbonate ($CaCO_3$) content, and radioactivity. Split tube samples were collected for sieve analysis at major lithological changes.

Additional samples were collected for lithological description and moisture content analysis approximately every 2 ft over the first 21 ft of drilling in support of performance assessment data collection. However, samples were not collected for moisture content analysis during hard-tool drilling because of the water added to the borehole during this method of drilling.

9 3 1 2 7 6 0 0 4 7 6

All samples are archived at the Hanford Geotechnical Sample Library in the 2101-M Building. Analytical results for the soil samples are presented in Appendix B. The split spoon intervals are shown in Table 1.

Table 1. Split Tube Sampling Intervals.

Sample	Collection Interval (ft bgs[1])
1	49.02 to 50.52
2	90.69 to 92.69
3	159.8 to 161.8
4	175.4 to 176.3
5	233.4 to 235.4

[1] bgs = below ground surface

During drilling, the sediment samples and wellhead were monitored with radiation detection meters and organic vapor analyzers. All measurements were recorded at levels below instrument detection limits.

2.2 WELL COMPLETION

After reaching total depth at 282.4 ft bls a straightness test of the borehole was performed on September 21, 1990, by passing approximately 20 ft of stainless-steel casing through the borehole. On October 9, 1990, the temporary 8-in. casing was backpulled to 278.4 ft bls and the borehole filled with 4.2 ft of 20-40 mesh Colorado silica sand. The water level at this time was about 264 ft. Permanent 4-in. diameter type 304 stainless steel casing and 10 slot (0.01-in) continuous wire-wrap screen were then installed. Factory welded centralizers were placed approximately every 40 ft along the 20-ft joints permanent casing. Total casing length measured 283.5 ft.

The temporary casing was backpulled using hydraulic jacks and a crane while the annular-space was filled with 20-40 mesh Colorado silica sand to 253.5 ft bls; an annular seal of bentonite pellets to 250.2 ft bls; and granular bentonite to 18.0 ft bls. The borehole was sealed to 3 ft bls with Portland Cement Grout and capped with a concrete pad. A 6-in. diameter protective casing, locking cap, and four protective posts completed the surface installation. The well was surveyed January 1, 1991 (Appendix A data).

9 3 1 2 7 6 0 0 4 7 7

2.3 WELL DEVELOPMENT AND SAMPLE PUMP INSTALLATION

Well 299-E25-39 was developed on December 10, 1990, with a submersible electric pump and a transducer. Groundwater was pumped at a flow rate of 14.1 gal/min. A total of 212 gal of water was removed from the well before reaching a turbidity value of 3.2 NTU. All development water was contained. The results of the well development tests are summarized in Appendix C.

The submersible pump was then removed from the well and a permanent Hydrostar (a tradename of Instrumentation Northwest) sampling pump installed on December 20, 1990. The sampling pump intake was set at 272.8 ft bls, about 8.8 ft below the water table. The development logs and pump installation data are presented in Appendix C.

2.4 AQUIFER TESTING

Following well completion, instantaneous slug injection and withdrawal tests were performed on October 30, 1990, at well 299-E25-39. Slug testing consisted of lowering and later withdrawing a 0.13 ft^3 slugging rod from the top of the water table, while measuring water-level changes with a transducer and data logger system.

Water-level changes were also monitored in well 299-E25-39 during well development using a transducer and data logger system. Groundwater was discharged at a constant rate from the well at 14.1 gal/min for 12 min, at which time the development criteria of $\leq$5 NTU was achieved and pumping terminated. Water-level recovery was monitored for 10 min. Appendix C contains test data and information sheets for the instantaneous slug tests and the well development testing.

2.5 TEST ANALYSIS

Aquifer test data were not analyzable for the slug and development testing because of the very small water-level changes that occurred. The maximum recorded drawdown was only 0.06 ft during the development test. Figures showing the drawdown responses during these tests are in Appendix C.

These types of observed responses are evidence that high transmissivities are present at this well. High transmissivities (>100,000 ft^2/d) are typical for the unconfined (uppermost) aquifer at the GTF, as demonstrated from past slug tests; constant discharge tests at other upgradient and downgradient wells; and the low hydraulic gradient (10^{-4} ft/ft) across the site (see DOE-RL 1988 for more detailed information).

3.0 REFERENCES

DOE-RL, 1988, *Grout Treatment Facility Dangerous Waste Permit Application*, DOE/RL-88-27, U.S. Department of Energy, Richland, Washington.

EPA, 1989, *Interim Status Standards for Owners and Operators of Permitted Waste Facilities*, Title 40 Code of Federal Regulations, Part 265, U.S. Environmental Protection Agency, Washington, D.C.

Ecology, 1989a, *Dangerous Waste Regulations*, WAC 173-303, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1989b, *Solid Waste Handling*, WAC 173-304, Washington State Department of Ecology, Olympia, Washington.

Ecology, 1990, *Minimum Standards for Construction and Maintenance of Wells*, Washington Administrative Code, Chapter 173-160, Washington State Department of Ecology, Olympia, Washington.

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

WHC, 1989, *Interim Status Ground-Water Monitoring Plan for the Grout Treatment Facility*, WHC-SD-EN-AP-006, Rev. 0, Westinghouse Hanford Company, Richland, Washington.

WHC, 1991, *Generic Specification Groundwater Monitoring Wells, Project W-017*, WHC-S-014, Rev. 6, Westinghouse Hanford Company, Richland, WA.

APPENDIX A

DRILLING AND CONSTRUCTION DATA WELL 299-E25-39

9 3 1 2 7 6 0 0 4 8 0

CONTENTS

1) Well construction report
2) Well summary sheet
3) Well survey data
4) Borehole log
5) Geophysical logs

9 3 1 2 7 6 0 0 4 8 1

144236 144393
113523 144232 144230
* ECNs 146189 124435
124427 124394
122261 124435

WHC-SD-EN-DP-048, Rev. 0

WELL CONSTRUCTION REPORT

VALIDATED DP-4
SIGNATURE/DATE 10/21/91

PAGE 1 OF 4

Page 1 of 1

Specification No. WHC-S-014 Rev No. 4 *
Project W-017 GTF
Location 299-E25-39 Grout Treatment Facility
Drilling Company Kaiser (KEH)
Driller D L Ludtke
Other (Companies) NA
Geologist(s) K.M. Hoffmann (WHC)
L.D. Walker (WHC)
R.D. Miller (WHC)

Well No. 299-E25-39 Temp. Well No. N/A
Coordinates N40,518, W 43,673
Casing Elev. 671.01' Ground Elev. ~~668.73'~~ 668.45' 10/21/91

Drilling Method
Rotary Air n/a Mud n/a
Cable Tool D 0-207', 210-262 H 186-210, 262-282'
Drilling Fluid potable water
Other NA

Geophysical Logging

Sondes	Interval	Date
Gross Gamma (DNL) in 10" casing	157.6' - 3.8'	8/23/90
Gross Gamma in 10" casing	204.1' - 150.0'	9/11/90
Gross Gamma in 8"	281.1' - 200.0'	9/21/90

Completion Data
Drilled Depth 282.35' bgs
Completed Depth 277.8' bgs
Date Started 8/13/90
Date Completed 10/16/90
Static Water Level/Date 264.55'/9/20/90

Aquifer Testing
Type Instantaneous Slug Test
Length of Test 1 hour
Volume Pumped NA
Drawdown NA
Date of Test 10/30/90

Completion Results

Cleaning
Verification Method Visual
Criteria WHC-S-014 section 7.6/WCM-7-7 EI 5.4

		Date
Drilling Tools/Rig	K.M.H.	8/13/90
Temporary Materials	K.M.H.	8/14/90
Permanent Materials	LDW	10/9/90

Material Storage/Packing
Verification Method Visual observation
Criteria WHC-S-014 4.2.2, 7.3

		Date
Mtl. Handling/Storage	LDW	10/9/90
Material Packing	LDW	10/9/90

Screen

Type	Length	Slot Size
SS type 304	~~20 screen~~ 20.3' screen	0.010 slot

Depth(s) 277.8' - 257.5' below ground

Verification Method Visual
Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.2.1
K.M. Walker Date 10/9/90

Lubricants/Additives
Verification Method Visual
Criteria WHC-S-014 section 7.2

	Identify		Date
Additives	Jet Lube Well Guard	LDW	10/9/90
Lubricants	Green Stuff	LDW	8/14/90

Drill start date

Straightness Test casing I.D. 7 3/4"
Verification Method Visual (tool test) 21.6' length 6 1/2" OD
Criteria WHC-S-014-04 (8.7)
Kenneth M. Hoffmann Date 9/21/91

Casing (permanent)

Type	Size	Placement
SS - type 304	4" id. x 4 1/2" O.D.	257.5' - 4' above ground

Verification Method Visual
Criteria WHC-S-014 4.2.1, 4.2.3, 4.2.5, 12.2.1
L.D. Walker Date 10/9/90

Well Protection
Verification Method Visual
Criteria WHC-S-014 4.2.10

		Date
Protective Posts	LDW	8/21/91
Locks	LDW	8/21/91

Annular Seal
Verification Method Visual steel tape measurements Criteria WHC-S-014 REV 5 4.2.6, 4.2.7, 4.2.8, 9.5.3.1 10/21/91

Type	Interval (bgs)	Volume		Date
20-40 mesh sand	281.4' - 253.5'	10 ~~[illegible]~~ sacks	100 lb. sacks	10/9/90
3/8" dia Bentonite Pellets	253.5' - ~~248.5~~	2	50 lb. buckets	10/10/90
Granular Bentonite, 8-20 mesh	250.2' - ~~18.0'~~ 250.2' LW 10/10/90	202	50 lb sacks	10/10/90 - 10/16/90
Portland Cement, Type I & II	18.0' - 3.0'	21 - 94 lb sacks / ~~[illegible]~~ 130 gal		10/16/90

Other (initial if performed)
NA Well Abandonment LDW Downhole TV Inspection LDW Complete As-Built Diagram, Driller's/Geologist's Logs
LDW Well Development

A-1

Reviewed by (sign/print name) B.A. Williams Date 8/21/91

A-6000-436 (10/89)

9312750043 2

Re-drawn from original, which was completed by K. Hoffmann, geologist 10/21/91

WELL SUMMARY SHEET

Boring or Well No. 299-E25-39

Sheet 1 of 2

Location: Grout Treatment Facility
Project: W-017 GTF
Elevation: NGVD'29 668.45 feet
Drilling Contractor: KEH
Driller: D. L. Ludtke
Drilling Method and Equipment: Bucyrus Erie 22W - Cable Tool
Prepared By: L.D. Walker (Sign/Print Name) Date: 5-15-91
Reviewed By: (Sign/Print Name) Date: 5/17/91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Diagram		Graphic Log	Lithologic Description
12" Ø Carbon Steel				0'-7' Silty Sand
temporary casing		10		7'-14' Slightly Gravelly SAND
13.43' bls - .5 SU				
19.43' total		20		14'-20' Sand with lenses of Gravel
Type I-II Portland Cement		30		
with Al powder				
3.0' - 13.0'		40		21'-35' SAND
		50		
		60		
		70		
10' Ø Carbon Steel		80		
temporary casing				
206.28' bls - .76 SU		90		
207.04' total				
		100		85'-155' Slightly Silty SAND
		110		
Permanent Casing				
SS type 304 4" I.D.		120		
x 4 1/2" O.D.				
257.5' bgs - 4'		130		
above ground				
		140		
		150		
		160		155'-160' Slightly Silty Gravelly SAND

A 6000 384 (04/90)

WELL SUMMARY SHEET

Boring or Well No. 299-E25-39

Sheet 2 of 2

Location: Grout Treatment Facility
Project: W-017 GTF
Elevation: N/GVD'29 668.45' RAW 10/21/91
Drilling Contractor: KEH
Driller: D. L. Ludtke
Drilling Method and Equipment: Bucyrus Erie 22W - Cable Tool
Prepared By: L.D. Walker (Sign/Print Name) Date 5-15-91
Reviewed By: RAW / [illegible] (Sign/Print Name) Date 5/17/91

CONSTRUCTION DATA: Description	Diagram	Depth in Feet	GEOLOGIC/HYDROLOGIC DATA: Graphic Log	Lithologic Description
		170		160' - 170' Slightly Silty SAND
8-20 mesh Granular Bentonite 250.2' - 18.0'		180		170' - 190' Silty SAND
		190		190' - 200' Sandy GRAVEL
8" Ø Carbon Steel temporary casing 282.65' s/s + 2.35 s.u. 285.00' total		200		200 - 210' Silty Sandy GRAVEL
		210		210' - 225' Sandy GRAVEL
		220		
		230		225' - 230' Silty Sandy GRAVEL
3/8" Dia Bentonite Pellets 253.5' - 250.2'				230' - 235' Slightly Silty SAND
		240		235 - 240 SAND
20-40 mesh Silica Sand 281.4' - 253.5'		250		240' - 283' Sandy GRAVEL
		260		
SS 0.010 in continuous slot wire wrap screen 277.8' - 257.5'		270		Static water level 4/21/90 263.05' b/s
SS bottom plate factory welded on		280		
		290		

A-6000-384 (04/90)

KAISER ENGINEERS HANFORD	WHC-SD-EN-DP-048, Rev. 0 SURVEY DATA REPORT	Request No. PAGE 4 OF 4 — 9 1 2 — 0 6 1

Project/W.O. No.	Title	File No.
W-017H	LOCATE WELL #299-E25-39	W E L L — 1 1 3

KEH Job No.	Prepared By	Date	Reviewer
CR-9114	N. P. FASTABEND	1/22/91	R. Hackworth 1 1

DESCRIPTION OF WORK	ACCEPTABILITY (Within Plan Tolerance)	DISTRIBUTION	
Locate Well #299-E25-39 for horizontal and vertical position.	Yes ☐	Survey File	OR
	No ☐	Field Project File	1
	NA ☒	J. Curl	1
	TBD by Requestor ☐	J. Rieger	1
		D. Weekes	1

SURVEY RESULTS AND COMMENTS

WELL NO.	COORDINATES (C-L CASING) PLANT (FEET)	COORDINATES (C-L CASING) LAMBERT NAD'83 (METERS)	VERT. DATUM	ELEVATIONS (FEET) BRASS CAP IN CONC.	ELEVATIONS (FEET) TOP CASING, N. SIDE STAMPED "X"	ELEVATIONS (FEET) TOP HYDROSTAR BASEPLATE, N. SIDE
299-E25-39	N: 40,518	N 135,837.27	PLANT	668.23	671.01	671.02
	W: 43,673	E 576,581.88				
			NGVD'29	668.45	671.23	671.25

NOTE: Well (NGVD'29) elevations were measured from control monument SL-2 which was part of a level loop tied to a USC&GS benchmark which had a closure of 0.018 FT. in a distance of 24,987 FT.

BOREHOLE LOG

VALIDATED BY [signature] 10/21/91
SIGNATURE/DATE

Boring or Well No. 299-E25-39

Sheet 1 of 13

Location Grout Treatment Facility N40,518 W43,673

Project W-017 GTF

Elevation 668.45' 10/21/91

Drilling Contractor KEH

Driller D.L. Ludtke

Drilling Method and Equipment Bucyrus Erie 22W-Cable Tool

Logged By K. M. Hoffman

Date 8/14/90

Checked By B.A. WILLIAMS

Date 10/15/90

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
		DB			12" Ø casing - 10.75' added to hole
1	2 moist	n/a			
2					sample at 2.0'
3	2 moist 2 lith	n/a			
4				4.0 Silty SAND (80% Sand, 20% Silt) tr. vcs, 10% cs, 30% ms, 20% fs, 20% vfs, 20% silt, 60% mafic 40% felsic sands, dk gray brn (2.5Y 4/2) wet, lt. brn gray (2.5Y 6/2) wet, mod-strong rx to 10% HCL, unconsolid. loose.	2 samples at 4.0'
5	2 moist	n/a			
6					sample at 6.0'
7	2 moist 2 lith			7.0 slightly Gravelly SAND (90% Sand, 10% Gravel) 2% mp, 3% fp 5% vfp, 20% vcs 25% cs, 25% ms 10% fs, 10% vfs, tr. silt, 85% mafic 15% felsic sands, dk ol. gray (5Y/3/2) wet, ol. gray (5Y 5/2) dry, slight rx to 10% HCL, unconsolidated - loose.	2 sample at 7.0'
8.0	2 moist 2 lith				2 sample at 8.0'

A-6000-382 (11/89)

9312750048 6

Westinghouse Hanford Co.

BOREHOLE LOG

Boring or Well No 299-E25-39

Sheet 2 of 16

Location 299-E25-39 N 40,578 W 43,673

Project W-017 GTF

Elevation 668.45 [illegible] 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment Bu Cyrus Erie 22W - Cable tool

Logged By K.M. HOFFMANN Date 8/14/90 8/15/90

Checked By B.A. WILLIAMS / [illegible] Date 10/15/90

Depth (feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Name, 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
8.0		DB		Same as Above. Trace of Cobbles	12" ⌀ Casing, DB
					8-14-90
9.0					
10.0	2 moist 2 Lith	n/a		10.0' Slightly Gravelly SAND (90% Sand, 6% Gravel, 4% Silt) 2% FP, 4% VFP, 10% VCS, 40% CS, 25% MS, 10% FS, 5% VFS, 4% Silt, 80% basalt Fragments, 20% Felsic sands and Gravels, dk ol. gray (5Y 3/2) wet Olive gray (5Y 5/2) dry, no Rxn to 10% HCl, unconsolidated loose	2 Samples at 10.0'
11.0					
					to 12.0' bls 8/14/90
12.0	2 moist 2 Lith	n/a			2 Samples at 12.0'
13.0					
14.0	2 moist 2 Lith	n/a		SAND (97% Sand, 3% Silt) 80% CS, 10% MS, 7% FS, 3% Silt, 75% basaltic Fragments, 25% Felsic, dk ol. grey (5Y 3/2) wet, olive gray (5Y 5/2) Dry, no Rxn to 10% HCl, unconsolidated loose. Moderatly Sorted	8-15-90 2 Samples at 14.0'
15.0					
16.0	2 moist				2 Samples at 16.0'

A 6000-382 (05 89)

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Westinghouse Hanford Co.

BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 3 of 13

Location 299-E25-39 N40,518 W43,673

Project W-017 GTF

Elevation 668.45 [signature] 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment Bacyrus Erie 22-W Cable tool

Logged By K.M. HOFFMANN Date 8/15/90 Checked By B A WILLIAMS / [signature] Date 10/21/91

Depth (feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Name, 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
16.0	2 moist	DB		Same as above	8/15/90
					2 Sample at 16.0' DB
					8-15-90
		n/a			
17.0					
18.0	2 moist	n/a			2 Samples taken at
					18.0' DB
					12"Ø Casing total 18.83'
					to 18.33' bls 0.55 u.
19.0					
20.0	2 moist 2 Lith	n/a		20.0-Slightly Gravely Sand (5% Gravel, 93% Sand, 2% Silt) 2% Fb, 3% VFP, 5% VCS, 80% CS, 5% MS, 3% FS, 2% Silt 75% basaltic Fragments, 25 Felsic, dk. ol grey (5Y 3/2) wet, dk. grey (5Y 4/1) Dry, Slight Rxn to 10% HCl, unconsolidated	2 Samples taken at 20.0' DB
21.0	2 moist 2 Lith	n/a		Loose, moderatly Sorted	2 Samples taken at
					21.0' DB
				21.0 K.H. 10-15-90 ~~Slightly Silty~~ Sand (95% Sand, 5% Silt) 3% FS, 97% VFS, 96% volcanic ASH, 4% Basaltic Fragments, grey (7.5YR 6/N6) wet, Light grey (7.5YR 7/N7) Dry, Moderate Rxn to 10% HCl unconsolidated, loose. Well Sorted	Ash about 1.0' thick, reworked at 21.0'.
22.0					
					Start 10"Ø Casing 21.5'
					O.D. Drive shoe 0.99'
23.0					ADD
					10"Ø 10.25'
					12"Ø Stickup 6"
					Drive Barrel 3'
24.0					

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Westinghouse Hanford Co.

BOREHOLE LOG

Boring or Well No 299-E25-39

Sheet 4 of 18

Location 299-E25-39 N 40,518 W 43,677

Project W-017 GTF

Elevation 668.45' 10/21/9.

Drilling Contractor KEH

Driller D.L. LADTKE

Drilling Method and Equipment Bucyrus Erie 22-W Cable tool

Logged By K.M. HOFFMANN

Date 8/15/90

Checked By B.A. WILLIAMS

Date 10/21/9.

Depth (FEET)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Name, 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
24.0		DB			8/15/90
25.0	2 Moist 2 Lith			25.0'-Sand (95% Sand, 3% gravel, 2% silt) olive (5Y 5/3) dry, dk ol. grey (5Y 3/2) wet, Dry, moderatly sorted, sub-rounded, 2% Fb, 3% VFP, 5% VCS, 80% CS, 5% MS, 5% FS, 80% basaltic fragments 20% felsic, moderate Rxn to 10% HCl	2 Samples taken at 25.0' DB PID < det 1330
26.0					
					Drillers comment 6" silt at 27.0'-27.5'
27.0					
28.0					
29.0					
30.0	2 Moist 2 Lith			30.0-Sand (90% Sand, 5% gravel, 5% silt) olive (5Y 5/3) dry, dk ol. grey (5Y 3/2) wet, Dry, moderatly sorted, sub rounded-rounded, 5% VFP, 80% CS, 5% MS, 3% FS, 2% VFS, 5% silt, no rxn to HCl 10%, 80% basaltic frag. 20% felsic.	2 Samples taken at 30.0 DB PID < Det 1345
31.0					ADD 9.06' 10" casing for a total of 40.81' 29.68' BIS
32.0					

Westinghouse Hanford Co.

BOREHOLE LOG

Boring or Well No 299-E25-39

Sheet 5 of 18

Location 299-E25-39 N 40,518 W 43,673

Project W-017 GTF

Elevation 668.45' 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment Bucyrus Erie 22-W, Cable tool

Logged By K.M. HOFFMANN Date 8-16-90

Checked By B.A. Williams / Date 10/15/90

Depth (feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Name, 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
32.0					
33.0					End Drilling on 8/15/90 at 33.0'
34.0					
35.0	2 moist 2 Lith.			35.0' SAND (3% Gravel, 95% Sand, 2% Silt) Ol. Grey (5Y 5/2) dry, Vclk. grey (5Y 3/1) wet, Moisture Content - Dry, Moderately Sorted, Sub angular to Sub-rounded, 3% VFP, 80% CS, 7% MS, 5% FS, 2% VFS, 2% Silt NO RXN to 10% HCl, 60% basaltic Fragments 40% Felsic	SAMPLE TAKEN at 35' 2 Lith, 2 Moist PID Ldet 0754. GM Ldet.
36.0					
37.0				37.0' SMALL Cobbles - very coarse pebbles present	37.0' SMALL Cobbles Present 0805
38.0					
39.0					
40.0	2 moist 2 Lith				40.0 2 SAMPLES taken. DB

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 6 of 18

Location 299-E25-39 N 40,518 W 43,523

Project W-017 GTF

Elevation 668.45' RW 10/21/91

Drilling Contractor KEH

Driller D.L. LADTKE

Drilling Method and Equipment B.E. 22" CABLE TOOL

Logged By Ken HOFFMANN

Date 8-16-90

Checked By B.A. Williams

Date 10/15/90

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
40.0'	2 moist 2 wet	DB		40.0' sand (1% gravel, 98% sand, 1% silt)	2 SAMPLES @ 40.0' DB
				Ol. grey (5Y 5/2) dry, dk ol. grey (5Y 3/2) wet,	PID < det
				mod. sorted, subangular - subrounded, 1% VCP,	GM < det
				80% CS, 10% MS, 5% FS, 3% VFS, 1% M,	
42.5				60% basaltic frag., 40% felsic, trace VCP w/	
				calcareous cement on bottom unconsolidated, strong Rxn	
				to HCl.	Actl 10.02'
					10" Ø casing
					TOTAL 50.83'
45.0'				45.0' Sand (2% Gravel, 94% Sand, 4% M) dk.	
	DB 2 moist 2 wet			grey (5Y 4/1) Dry, very dk. grey (5Y 3/1) wet +	2 SAMPLES @ 45.0 DB
				Dry, well sorted, subangular - subrounded,	PID < det
				2% VFP, 4% VCS, 80% CS, 8% MS, 2% FS,	GM < det
				4% M, moderate Rxn to HCl. 60% basaltic frag.	
				40% Felsic, unconsolidated	
	ST-1	5/12/26 95%		sand	2 SAMPLES @ 50.0' DB
50.0'				50.0' Sand (98% sand, 2% M) olive (5Y 5/3)	PID < det
	DB 2 moist 2 wet			dry, olive grey (5Y 4/2) wet, Dry, well sorted,	GM < det
				subrounded to rounded, 10% MS, 88% FS,	
				2% M, Mod Rxn to HCl. 60% basaltic frag.	1128.5T
				40% Felsic, unconsolidated	S/T + Aken for PNL from
					49.02' bls - 50.52' bls
					ADD 9.15 10" Ø casing
					for a total of 59.98'
55.0'	2 moist 2 wet			55.0' Sand (3% Gravel, 95% Sand,	2 SAMPLES TAKEN 55.0' DB
				2% M) olive (5Y 5/3) Dry, very dk. grey	PID < det.
				(5Y 3/1) wet, Dry, well sorted, subrounded	GM < det
				to sub angular, 3% VFP, 5% VCS, 75% CS	
				10% MS, 5% FS, 2% M, Mod Rxn HCl,	
				60% basaltic frag., 40% felsic, uncon-	
				solidated.	
60.0'					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 7 of 18

Location 299-E25-39 GTF N40,518 N43,673

Project W-017 GTF

Elevation 663.45' 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment B.E. 22-W CABLE TOOL

Logged By K.M. HOFFMANN

Date 8-17-90

Checked By D.A. WILLIAMS

Date 5-10-91

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
60.0	2 moist 2 with	DB		60.0' Sand (3% gravel, 95% Sand, 2% M) Olive gray (5Y 5/2) Dry, very dk gray (5Y 3/1) wet, Dry, well sorted, Angular to Sub-rounded, 3% VFP 10% VCS 75% MS, 5% FS, 5% VFS Strong Rxn to HCl, 50% mafic, 50% felsic (Qtz, musc. mica), CaCO3 cement, unconsolidated	2 Samples at 60.0' DB PID < det. GM < det. Add on 10' casing 9.84' for a total of 69.22' End B-1-90 63.0' 1500
65.0'	2 moist 2 with	DB		65.0' SAND (4% gravel, 94% Sand, 2% M) Olive gray (5Y 5/2) dry, very dk gray (5Y 3/1) wet, Dry Soil, well sorted, SR-SA, 1% MP 3% VFP 5% CS 10% MS 2% FS, 2% VFS, 2% M, Strong Rxn to HCl 50% basaltic fragments, 50% Qtz, 10% Feldspar 5% mica 5% other, Trace of CaCO3 cement unconsolidated	2 Samples at 65.0' DB PID < det GM < det
70.0'	2 moist 2 with	DB		70.0' SAND (2% gravel 94% Sand, 4% M) olive gray (5Y 5/2) Dry gray (5Y 5/1) wet, Dry Soil, well sorted SA-SR 1% VFP, 3% VCS, 75% CS, 10% MS, 3% FS, 3% VFS 4% M, Strong Rxn to HCl, 60% basaltic fragments, 20% QTZ 15% feldspar 5% other unconsolidated.	2 Samples at 70.0' DB PID < det GM < det ADD 10' casing 9.45' for a total of ~~79.45~~ 79.27
75.0'	2 moist 2 with			75.0' SAND (96% Sand, 4% M) olive gray (5Y 5/2) Dry, very dk gray (5Y 3/1) wet, Dry Soil, well sorted, SA-SR, 60% CS, 40% MS, 40% FS, 10% VFS, 4% M, Strong Rxn to HCl, 50% basaltic frag., 30% QTZ 15% Feldspar, 5% mica, unconsolidated, VFS and M and zones are cemented w/ CaCO3	2 Samples at 75.0' DB PID < det. GM < det
80	2 with 2 moist				

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 8 of 18

Location 299-E25-39 GTF N40,518 W43,633 Project W-017 GTF

Elevation 668.45 10/21/91 Drilling Contractor KEH

Driller D.L. LUDTKE Drilling Method and Equipment Bucyrus Erie 27-W Cable tool

Logged By Ken HOFFMANN Date 8-17-90 Checked By E.A. JULIANS / Date 5-10-91

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
70.0'	2 Mon 2 Mon.st	DB		ECO SAND (95% SAND, 5% M) Olive	2 Samples at 5 Gal
				Gray (5Y 5/2) Dry, very lt gray (5Y 3/1)	PID < det
				Wet. Dry Soil well Sorted, SA-SR, 5%	Gm < det
				CS 40% MS, 40 FS, 15% VFS. Strong	
				Rxn to HCl, 50% basaltic Frag. 30% QTZ, 15%	
				Feldspar, 5% mica, trace chlorite, VFS oxidate	
				20% cemented w/ calcite	
					Add 10" casing 8.71' for
					a total of 37.98'
				End of SAND (85%	End of 8-17-90
85.0'	2 Mon 2 Mon	DB		SILGHTLY SILTY SAND (85%	
				Sand, 15% M) light yellow Sh Brown	
				(2.5Y 6/3) Dry, Olive Brown (2.5Y 4/4)	Sample at 85.0 DB
				wet well sorted, SA-SR, 5% CS, 10%	
				MS, 30% FS, 40% VFS, 15% Silt, Strong	
				Rxn to HCl, 70% basaltic Frag. 60% QTZ,	
				20% Feldspar, 5% mica, 5% other, Slightly	
				Indurated	
90.0'	DB 2 mon 2 mon			90.0' - Slightly Silty SAND (83% Sand	depth to bottom for S/T
	90.0'			15% Silt 2% Gravel) lt red brn (2.5YR 6/6)	89.10' bls + 5.55' casing - 20.50 =
	S/T 2' sample	10/22/35/40 S/K		dry Ol. brn (2.5Y 4/4) wet, 1% fe 1% vfp	90.69' bls
	92.0'	100%		5% vcs 5% cs, 20% ms, 25% fs 30% vfs	
				mod sorted SA-SR sand, SE gravel,	
				strong rx to 10% HCl, 40% mafic 60%	
				felsic, trace of vcp - sm. cobble, trace	ADD 8.59' 10" casing for a
				Mica flakes	total of 96.57'
				95.0' SLIGHTLY SILTY SAND (85% Sand,	
95.0'	2 mon 2 mon			15% Mud) Olive gray (5Y 5/2) very lt	2 Samples at 95.0' DB
				Gray (5Y 3/1) wet, Dry Soil, 5% VCS,	PID < det
				40% CS 25% MS, 10 FS, 5% VFS, 15% Silt,	Gm < det.
				well sorted, SA-SR, Strong Rxn to HCl,	
				Slightly indurated w/ CaCO3, 60% MAFIC,	
				40% felsic, Trace of large cobbles	
100.0					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 9 of 18

Location 299-E25-39 GTF N40,518 W 43,673

Project W-017 GTF

Elevation 668.45 [illegible] 10/21/91

Drilling Contractor KEH

Driller D.L. LaDIKE

Drilling Method and Equipment Bucyrus Erie 22-W cable tool

Logged By Ken HOFFMANN Date 8-20-90

Checked By R.A. WILLIAMS / [illegible] Date 10/15/90

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
100	2 moist 2 lith	DB		100.0' SLIGHTLY SILTY SAND (90% Sand 10% M) olive Gray (5Y 4/2) Dry, DK olive Gray (5Y 3/1) Wet, Dry Soil, 2% VCS, 10% CS, 50% MS, 28% FS, 10% Silt, Well Sorted, SA-SR, [illegible] Indurated w/ [illegible], Strong Rxn - HCl	2 samples at 100.0' DB ADD 7.62' 10" casing for a total of 84.19' End of 8-20-90 On site 0700 8/21/90 continue welding; depth of hole 100.0'
105	2 moist 2 lith	DB		105.0' SLIGHTLY SILTY SAND 95% Sand, 15% Silt, tr Gravel Tr Fn peb, 5% v.crse sand, 30% CS 40% MS, 10% FS, 15% silt Dry, lt brownish grey (2.5Y 6/2), wet 2.5Y 4/2, mod sorted, SA-SR, slightly cemented (indurated), mod rxn to HCl 40% mafics, 60% Felsics, tr Fe stain	SSO surveys drill spoils - no haz mat detected HPT surveys spoils - no rad detected
110	2 moist 2 lith	DB		110.0' SLIGHTLY SILTY SAND 90% Sand, 10% Silt. Tr v. Fn pebs, 5% v.crse sand, 10% CS, 40% MS, 30% FS, 5% vFS, 10% Silt, Dry from hole. greyish brn (2.5Y 5/2) wet color 2.5Y3/2 mod to well sorted, SA-SR, no cement, sl rxn to HCl, 60% mafics 40% Felsics, tr mica	DB samples at 110.0' haz mat < det., rad < det Weld 9.96' of 10" dia carbon steel casing total casing 114.15'
115	2 moist 2 lith	DB		115.0' SLIGHTLY SILTY SAND 90% Sand 10% Silt. 10% v CS, 20% CS, 40% MS, 15% FS, 5% v FS, 10% Silt. Sample dry, 2.5Y 5/2. Wet sample 2.5Y3/2. mod to well sorted SA, $CaCO_3$ cement, which breaks up coming out of Drive Barrel Strong rxn to HCl. 40% mafics, 60% Felsics.	DB sample at 115.0' No haz mat or rad detected
120					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 10 of 18

Location 299-E25-39, Grout Treatment Fac. Project W-017 GTF N 40,518 W 43,673

Elevation 668.45' 10/21/91 Drilling Contractor KEH

Driller D.L. Ludke Drilling Method and Equipment Bucyrus Erie 22-W Cable Tool

Logged By L.D. Walker Date 8/21/90 Checked By DA WILLIAMS / [illegible] Date 5-10-91

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 moist 2 lith	DB		120.0' SLIGHTLY SILTY SAND	DB sample at 120.0'
				90% Sand, 10% Silt 5% CS	Weld 8.56' of 10" dia
				40% MS, 30% FS, 15% very FS 10%	carbon steel casing total
				Silt Sample dry from hole, 2.5Y 5/2,	of 122.71 feet
				2.5Y 3/2 when water added. Sub sub	No rad or haz mat
				ang 65% mafics 35% Felsic frags, tr	detected in 120.0' sample
				mica strong rxn to HCl - CaCO3 cement	
				125.0' SLIGHTLY SILTY SAND	DB sample at 125.0'
125	2 moist 2 lith	DB		85% Sand, 15% Silt, 10% CS,	no haz mat or rad
				20% MS, 40% FS, 15% vFS, 15%	detected in field
				Silt Dry from hole, 2.5Y 5/2,	
				2.5Y 3/2 when water added. Sub ang	
				to sub rounded, mod-well sorted,	
				55% mafics, 45% felsics, tr mica	
				strong HCl rxn	
					no haz or rad detected
				130.0' SLIGHTLY SILTY SAND	DB Sample at 130.0'
130	2 moist 2 lith	DB		80% Sand, 20% Silt 15% MS,	End shift 1500 hrs
				45% FS, 20% vFS, 20% Silt Dry	8/21/90 Bottom of hole
				from hole, 2.5Y 5/2 add water to	130.0', Casing at 127.38'
				make 2.5Y 3/2. mod-well sorted,	below ground surface
				sub rounded pred. 50% mafics, 50%	0700 8/22/90 Begin
				Felsics, strong HCl rxn - weak CaCO3	shift
				cement	Weld 9.33' of 10" dia
					carbon steel casing total
					length 132.54'
					DB sample at 135.0'
135	2 moist 2 lith	DB		135.0' Slightly Silty SAND	haz mat & det, rad & det
				(80%) Sand, (20%) Silt. (20%) MS.	
				(45%) FS (15%) vFS. Dry from hole, lt	
				brownish grey (10YR 6/2) wet color dk	
				greyish brown (10YR 4/2) Mod-Well	
				sorted, sub-rounded, (35%) mafics (65%)	
				Felsics, strong rxn to HCl mod	
				cemented w/ CaCO3	weld 9.57' of 10" dia
					carbon steel casing
140					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 11 of 18

Location 299-E25-39, GTF N40,518 W43,673

Project W-017 GTF

Elevation 668.45' [illegible] 10/21/91

Drilling Contractor KEH

Driller D.L. Ludke

Drilling Method and Equipment Bucyrus Erie 22W Cable Tool

Logged By L.D. Walker Date 8/22/90

Checked By BA WILLIAMS [illegible] Date 9/13/90

Depth (ft) (140)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	2 moist 2 lith	DB		140.0' Slightly Silty SAND (80%) Sand, (20%) silt tr vF pebs (20%) MS (50%) FS (10%) vFS Dry from hole. lt brownish grey (10YR 6/2) wet dk greyish brown (10YR 4/2) well sorted, (30%) mafic minerals, mod HCl rxn, very little CaCO3 cement	DB sample at 140.0', no haz mat or rad detected Cont. driving 10" dia carbon steel casing
145	2 moist 2 lith	DB		145.0' Slightly Silty SAND (85%) Sand (15%) Silt (20%) MS (50%) FS (10%) vFS Dry from hole. lt brownish grey (2.5Y 6/2) wet color dk greyish brown (2.5Y 4/2) mod to well sorted (35%) mafics (65%) Felsic mod HCl rxn, tr mica	DB sample at 145.0' PID < det rad < det Weld 8.32' of 10" dia carbon steel casing - total now 150.43'
150	2 moist 2 lith	DB		150.0' Slightly Silty SAND (90%) Sand, (10%) silt tr vFn pebs (5%) vCS (10%) CS (40%) MS (30%) FS (5%) vFS (10%) silt Dry from hole. lt. grey (10YR 7/2) wet color dk greyish brown (10YR 4/2) mod sorted, (30%) mafics (70%) Felsic minerals tr mica, sl rxn to HCl	DB sample 150.0' PID < det., rad < det Total 158.46' total Weld 8.03' 10" dia carbon steel casing End shift 8/22/90 Casing at 148.32' bls bottom of hole at 153' bls
155	2 moist 2 lith	DB		155.0' Slightly Silty Slightly Gravelly SAND - (10%) Gravel (80%) Sand (10%) Silt. (4%) Fn pebs, (6%) vFn pebs, (20%) vCS (30%) CS (20%) MS (10%) F-vF sand (10%) Silt Dry from hole, greyish brown (10YR 5/2) wet color dk grey (10YR 4/1) mod sorted. SR-SA, (45%) mafic minerals, (55%) Felsics. Sl rxn to HCl Tr v crse pebs and cobble fragments.	Begin shift 8/23/90 DB sample at 155.0' at 0810. No haz mat or rad detected with field inst.
160	2 moist 2 lith	DB		159.5' lith change to very fine sand and silt. Description on next page	

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 12 of 18

Location 299-E25-39 N 40,518 W 43,673

Project W-017 GTF

Elevation 668.45' 10/21/91

Drilling Contractor KEH

Driller D L Ludlke

Drilling Method and Equipment Bucyrus Erie 22-W Cable Tool

Logged By L. D. Walker

Date 8/23/90 Checked By BA Williams

Date 9/12/90

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
160	S/T	8/14/30/35 75%		160.0' Silt, SAND	DB sample at 160.0'
				(70%) very fine sand (25%) silt	no haz mat or rad det
	161.82			Dry from hole, very pale brown (10YR 7/3)	
				wet color dk brown (10YR 4/3) well	Gross Gamma [illegible]
				sorted SA-SR (90%) felsic minerals	log run 3.5 to 157.6' thru
				(10%) mafics, tr mica strong rxn to HCl	the 10" carbon steel casing
					Re-start for 8" OD end casing
2DM 1 Lith	2 moist 2 lith			160a - Slightly Silty SAND (5% Gravel,	End shift 8/23/90
	2 lith 2 moist	DB		85% sand, 10% Silt), lt. gray (10YR 7/2)	10" casing at 157.5' [illegible]
165				dry, gray brn (10YR 5/2) wet, tr m.p.	bottom of hole 157.5' (Gamma [illegible])
				2% fp 3% vfp, 10% vcs 15% cs 20% ms 20%	Begin [illegible] 8/24/90 [illegible]
				fs 20% vfs, 10% silt, poorly sorted, gravel	8" to carbon steel casing
				is 40% mafic 60% felsic - SA-R, sand is	End shift - total 8" casing
				25% mafic 75% felsic - SA-R, strong	169.40'
1 Lith				rx to 10% HCL, dry, trace micaceous	Begin shift 8/27/90
				f. sands, slightly cemented.	
					sample at 165a' - pid = <det
					HPT = <det
	2 moist 2 lith	DB		170.0 - Slightly Silty SAND (1% Gravel,	sample at 170.0' pid = <det
170				90% Sand 9% Silt) lt. gray (10YR 7/2) dry	HPT = <det
				gray brn (10YR 5/2) wet, tr fp, 1% vfp, 10%	
				vcs, 15% cs 25% ms 20% fs 20% vfs, 9%	
				silt, poorly sorted, gravel 50% mafic 50%	add 10.15'-8' for 179.55'
				felsic, SA-SR, sand 25% mafic 75% felsic	and weld.
				SA-SR strong rx to 10% HCL, dry	LW drilling
				trace of f. micaceous sands.	in drilling
					Driller notes change at 174'
	2 moist 2 lith	DB		175.0' - Silty Sandy GRAVEL	DB sample at 175.0
175				(50% Gravel 45% Sand, 5% Silt)	PID = < det HPT = < det
	S/T	4/7/10/26 45%		1% CP, 19% MP, 15% FP 15% vFP, 20%	S/T sample 175.42'-176.32'
	176.32			v CS, 15% CS, 10% MS, 5% F-vFS,	PID = < det, HPT = < det
				5% silt. Dry from hole. Dry color grey brn	
				(10YR 5/2), wet v dk brn (10YR 2/2).	
				Poorly sorted, SR-Ang, 80% mafics,	
				20% felsic minerals, strong rxn to 10%	
				HCl, tr mica, no cement.	
	2 moist 2 lith	DB			DB sample at 180.0' PID < det, HPT < det

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 13 of 18

Location 299-E25-39 N 40,518 W 43,673

Project W-017 GTF

Elevation 668.45 [signature] 10/21/91

Drilling Contractor KEH

Driller D.L. Ludtke

Drilling Method and Equipment Bucyrus Erie 22-W Cable Tool

Logged By L.D. Walker Date 8/27/90

Checked By BA Williams [signature] Date 7/13/90

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
180		DB		180.0' - Silty Sandy GRAVEL (55% Gravel, 40% Sand, 5% Silt). 1% CP, 14% MP, 20% FP, 20% vFP, 15% vCS, 10% CS, 5% MS, 10% F-vFS, 5% Silt Dry from hole, grey brn (10YR 5/2) wet color v dk ~~gr~~ brn (10YR 2/2). Poorly sorted, rounded to sub-ang, sand and gravel 75% mafic 25% Felsic, tr fn gr mica, strong rxn to 10% HCl	continue drilling with 8" DB, 8" Ø casing (carbon steel) add ~~9.5~~ 9.51' 8" dia casing - total 189.06' End shift - casing and bottom of hole at 183'
185	2moist 2Lith	DB		185' - SILTY SANDY GRAVEL (60% gravel 30% SAND, 10% M) gray (10YR 6/1) Dry, very DK gray (10YR 3/1) wet, Dry Soil, 2% LC, 20% VCP 20% CP 5% MP, 5% FP, 10% VFP, 20% VCS, 5% CS, 3% MS, 2% FS 10% Silt, Poorly sorted, rounded - sub-angular, Strong Rxn to HCl 75% mafic 25% Felsic	Sample at 185' DB PID <det GM <det. ADD 4 gal water to well
190	2Lith	DB		190' SANDY GRAVEL (65% Gravel, 30% SAND, 5% M) Very dk gray (10YR 3/1) wet, 5% LC, 5% SC, 10% VCP 10% CP, 10% MP, 10% FP, 10% VFP 20% VCS, 5% CS, 5% MS, 5% Silt, Strong Rxn to HCl Poorly Sorted, Angular to Sub rounded, Gravel Pot on 40% Felsic, 25% Mafic, Sand to [illegible] 70% mafic, 10% Felsic, unconsolidated	ADD 9.47' 8" ø for a total of 198.53' PID <det GM <det End 8-28-90 Quartzite Pockets
195	2moist 2Lith	DB		190' SANDY GRAVEL (60% Gravel, 30% SAND, 10% M) gray (10YR 6/1) Dry, very DK. gray (10YR 3/1) wet, 5% LC, 5% SC, 10% VCP, 10% CP, 10% MP, 10% FP, 10% VFP, 20% VCS, 5% CS, 3% MS, 2% FS, 10% Silt, Poorly sorted, Angular - Rounded, Strong Rxn to HCl, Dry Soil, 50% felsic 50% Basaltic, unconsolidated	2 Samples at 195' PID <det GM <det
200					

A-6000-382 (11/89)

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BOREHOLE LOG

Boring or Well No. 299-E25-39

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Location 299-E25-39 200 East GTF N 40,518 W 43,673 Project W-017 GTF

Elevation 668.45' [signature] 10/21/91 Drilling Contractor KEH

Driller D L. LUDTKE Drilling Method and Equipment Cable tool Bucyrus Erie [illegible]

Logged By Ken HOFFMANN Date 9/14/90 8/29/90 Checked By DA. Jillians [signature] Date 10/15/90

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
200	2 lith 2 moist	DB		200' silty sandy GRAVEL (60% gravel, 25% sand, 15% M) gray (10YR 6/1) dry, very dk gray (10YR 3/1) wet, 5% LC, 5% SC, 10% VCP, 10% CP, 10% MP, 10% FP, 10% VFP, 5% VCS, 5% CS, 5% MS, 5% FS, 5% VFS, 10% silt, 5% mud, poorly sorted, rounded-angular, strong rx to HCl, unconsolidated, 60% mafic, 40% felsic, dry soil	PID <det, sample at 200' GM <det, [illegible]
205	2 lith 2 moist	DB		205' silty sandy GRAVEL (45% gravel, 35% sand, 20% M) gray (5Y 6/1) dry, very dk gray (5Y 3/1) wet, 5% VCP, 5% CP, 5% MP, 10% FP, 5% VFP, 5% VCS, 10% CS, 5% MS, 5% FS, 5% VFS, 15% silt, 5% clay, poorly sorted, angular-rounded, strong rx to HCl, unconsolidated, 60% mafic, 40% felsic, dry soil	SAMPLE at 205' DB PID <det GM <det End 8-29-90
	2 lith	HT			
210				210.0' - Sandy GRAVEL (55% Gravel, 40% Sand 5% Silt), gray (5Y 6/1) dry, v. dk gray (5Y 3/1) wet, 5% vcp, 10% cp, 10% mp, 15% fp, 15% vfp, 10% vcs, 10% cs, 10% ms, 5% fs, 5% vfs, 5% silt, v. poorly sorted, A-SR gravel, A-SR sand, strong rx to 10% HCL, 70% mafic, 30% felsic, unconsolidated wet (from HT)	sample at 210' HT w/ sand pump, PID = <det. end of day 9/13/90
	2 moist 2 lith	DB		215.0' - Sandy GRAVEL (55% Gravel, 40% Sand 5% Silt, same as above trace of sm cobbles, no rx to 10% HCL, ~~dry~~ ~~wet~~ (from HT)? wet RM 9/14/90	1043 - PID = <det, GM = <det
215					
220					

A-6000-382 (11/89)

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 15 of 18

Location 200 E/GTF N 40,518 N 43,673

Project W017

Elevation 668.45' 10/21/91

Drilling Contractor Kaiser

Driller D.L. Ludtke

Drilling Method and Equipment Cable Tool, Bucyrus Erie 22

Logged By R.D. Miller

Date 9/14/90

Checked By B.A. Williams

Date 10/5/90

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
220				220.0' - Sandy GRAVEL (46% Gravel, 46% Sand, 8% Silt), gray (5Y 6/1) dry, v.dk gray (5Y 3/1) wet, 6% vcp, 10% cp 10% mp 10% fp 10% vfp, 10% vcs 10% cs 10% ms 10% fs, 6% vfs, 8% silt, very poorly sorted, A-SR gravel, A-SR sand, slight rx to 10% HCL, 50% mafic 50% felsic, gravel, 40% mafic 60% felsic sand, trace of sm cobbles, dry.	1104 - PID = <det, gm = <det add 9.32' 8"ø casing = 223.32'
225	2 moist 2 lith	DB			
				225.0' - Silty Sandy GRAVEL (45% Gravel, 40% Sand, 15% Silt) ~~5% pebbles~~ gray (5Y 6/1) dry, v.dk. gray (5Y 3/1) wet, 5% vcp 10% cp 5% mp 10% fp 15% vfp 5% vcs 5% cs 10% ms 10% fs 10% vfs, 15% Silt, v. poorly sorted, A-SR sand & gravel, 40% mafic 60% felsic, sand and gravel, trace sm. cobble, dry	1339. PID = <det, gm = <det add 10.54' 8"ø = 233.86'
230	3 moist 2 lith	DB		230.0' SLIGHTLY SILTY SAND (85% SAND) 15% Silt) light olive gray (5Y 6/2) Dry olive gray (5Y 5/2) wet, 10% VCS 50% CS 10% MS 10% FS 5% VFS 15% Silt, moderately sorted, A-R sand, 40% MAFIC 60% FELSIC, trace cobbles, mica, strong RXN HCl, dry soil, unconsolidated, moderately cemented	PID = <det GM = <det SPL - SRCN 233.4' - 235.4'
	Spl: 233.4' 4 bowl 80% recovery	ST 9/14/90 2" 2"			
235				235.0 SAND (95% SAND, 5% Silt) light gray (5Y 7/2) Dry, olive gray (5Y 5/2) wet 10% VCS 50% CS 20% MS 10% FS 5% VFS 5% Silt moderately well sorted, SA-R, 60% felsic 40% mafic, strong RXN to HCl, Dry soil, unconsolidated,	PID = <det GM = <det add VCSS 8"ø = 244.51
	2 moist 2 with	DB			
240					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

Sheet 16 of 18

Location 200 E/GTF N 40,518 W 43,673

Project W-017

Elevation 668.45' 10/21/91

Drilling Contractor KEH

Driller D. L. Lattice

Drilling Method and Equipment Cable tool Bucket Auger 22 in

Logged By K M. Hoffmann

Date 9/17/90

Checked By B.A. Williams / D.

Date 10/15/90

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
240	21th 2moist.	DB		240.0' Sandy GRAVEL (70% Gravel, 25% Sand 5% Silt) grayish brown (2.5Y 5/2) Dry, dk olive gray (5Y 3/2) wet, 5% LC, 5% SC, mod. VCP 10% CP 10% MP 15% FP, 20% VFP, 5% VCS 5% CS 5% MS 5% FS 5% VFS, 5% Silt Poorly Sorted, A-R, Strong Rxn to HCl Dry Soil [illegible]	D.D Lder 6in Lder
245	21th 2moist	DB		245.0' Same as above	D.D Lder 6in Lder
					End 9/17/90
250	21th 2moist	DB		250.0' Sandy GRAVEL (60% Sand, 35% Gravel, 5% Silt) Light grey (10YR 7/2) Dry, dark grayish brown (10YR 4/2) wet, 5% MP 15% FP 15% VFP 20% VCS, 30% CS 5% MS 5% FS 5% Silt Moderatly Sorted, A-R, Strong Rxn to HCl, Dry Soil, Unconsolidated 55% felsic, 45% mafic	D.D Lder 6in Lder
255	21th 2moist.			255.0' Sandy GRAVEL (60% Sand, 35% Gravel, 5% Silt) Light grey (10YR 7/2) Dry, dark grayish brown (10YR 4/2) wet, 5% MP 15% FP 15% VFP, 20% VCS, 10% CS, 15% MS, 5% FS, 10% FS, 5% Silt, Moderatly Sorted, Slightly Cemented with $CaCO_3$, A-R, Strong Rxn to HCl, Dry Soil, 55% felsic, 45% mafic	D.D Lder 6in Lder
260					

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BOREHOLE LOG

Boring or Well No. 299-E25-39

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Location 200 EAST GTF N 40,518 W 43,673

Project W-017

Elevation 668.45' [signature] 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment Cable tool. Bucyrus Erie 22-W

Logged By Ken HOFFMANN Date 9/18/90

Checked By R.A. WILLIAMS [signature] Date 5-1-91

Depth (Feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
260	2Lith 2Moist	DB		260'- Sandy GRAVEL (50% Gravel 45% Sand, 5% Silt) Light Olive gray (5Y 6/2) Dry, olive gray (5Y 4/2) wet, 5% SC, 10% VCP, 10% CP, 10% MP, 10% FP, 5% VFP, 10% VCS, 20% CS, 10% MS, 5% FS, 5% Silt, Poorly Sorted, A-R, Strong Rxn to HCl, Dry Soil, Unconsolidated 60% Felsic, 40% Mafic.	PID Ldet ~~PID L~~ K.H. GM Ldet
		HT			
265	2Lith	HT		265.0' Sandy GRAVEL (60% gravel, 30% Sand, 10% Silt) 5Y 5/2 Olive gray Dry, dk olive gray (5Y 3/2) wet; 5% LC, 5% SC, 10% VCP, 5% CP, 15% MP, 10% FP, 10% VFP, 5% CS, 10% MS, 10% FS, 5% VFS, 10% Silt, Poorly Sorted, 75% Felsic, 25% Mafic Gravels; 50% Felsic, 50% Mafic Sands, unconsolidated	PID Ldet GM Ldet
270	2Lith	HT		270.0'- Same as above	PID Ldet
275	2Lith	HT		275.0' Sandy GRAVEL (75% gravel 20% Sand, 5% Silt) - dk grayish Brown (2.5Y 4/2) wet, 5% LC, 10% SC, 10% VCP, 5% CP, 15% MP, 10% FP, 10% VFP, 15% VCS, 5% CS, 5% MS, 5% FS, 5% Silt, Poorly Sorted, 75% Felsic, 25% Mafic of Gravels, Wet Soil, Exotic Felsic's (Metamorphics and Ign.), R-SA	PID Ldet
280					

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WHC-SD-EN-DP-048, Rev. 0

BOREHOLE LOG

Boring or Well No. 299-E25-39

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Location 200 EAST GTF 299-E25-39 N40,518 W43,673

Project W-017

Elevation 668.45' 10/21/91

Drilling Contractor KEH

Driller D.L. LUDTKE

Drilling Method and Equipment Bucyrus Erie 22-W Cable tool

Logged By Ken HOFFMANN

Date 9/21/90

Checked By B.A. WILLIAMS

Date 5-10-91

Depth (feet)	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
280	2Lith	HT		280 0- Sandy Gravel (75% gravel, 20% Sand, 5% S.lt) (5Y 5/2) light olive gray DRY, (5Y 4/2) Olive gray wet, 5% LC, 10% SC, 10% VCP	PID 2det
				5% CP, 15% MP, 10% FP, 10% VFP, 5% VSC, 5% CS, 5% MS, 5% FS, 5% Silt, B-A, wet Soil, Poorly Sorted, 70% Felsic, 30% mafic of Gravels	STATIC WATER = 265.3' bls
					8"Ø = 282.35 bls
285				Total Depth - ~~[illegible]~~ 282.35 bls	Total Depth 281.10' bls
					Static Water Written 265.3' bls
290					

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Westinghouse Hanford Company | VALIDATED SIGNATURE/DATE 11/1/90 | LOG HEADER WHC-SD-EN-DP-048, Rev. 0 | Page 1 of 2

Well No. 299-E25-39 Area 200 E Date 8/23/90

Log Run #1 Log Type Gross Gamma

Elevation Datum Top of 10" Casing Elevation 668.45

Survey Coordinates 40,518 N 43,673 W E

Log Measured From Ground Surface

Location Description Grout

Ground Surface Elevation

Surface Temperature 26.0°C Weather Sunny - Warm

BOREHOLE INFORMATION

Driller Darrel Luttke

Drill Rig Type Cable Tool	Bit Type/Diameter 10" Core Barrel
Borehole Diameter(s)/Depth 12"/18'	10"/158.34'
Depth Driller 158.3'	Depth Logger 157.7'
Liquid Level N/A Above Water Table	Liquid Density N/A
Temperature N/A	

CASING RECORD

Type 12" Carbon Steel Sch. 40	Interval 18' - +0.5'
Type 10" Carbon Steel Sch. 40	Interval 157.05' - +1.41' Casing thickness 0.380
Type	Interval
Type	Interval

Well Screen Interval N/A

Comments: Return error = 0.35'
Calibration out of Date.

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. CG-27A97

Base Calibration Date 12/88 | Calibration Reference WHC-EP-0246

Calibration/Probe Factor 8.53×10^{-2} cll P/m/c/s | Base Calibration Datum (eU): Position 1 | Position 2

Dead Time 7.4 μsec. | Warm Up Time >15 min

LOGGING INFORMATION

Log Interval From 157.6' | To 3.8'

Rerun(s) 157.7' to 125.0' & 30.0'-3.9'

Pre Survey Verification: Position 1 293 cll P/m/c/s | Position 2 50 cll P/m/c/s | Background 60 c/s

Base Calibration Difference: Position 1 | Position 2

Logging Speed 5 Ft/min. | Rerun Scales, CPS/in. 50 c/s/in

Start Time 1130 | Completion Time

Chart Speed(s), f/in. 10 Ft/in

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

Post Survey Verification: Position 1 298 cll P/m/c/s | Position 2 51 cll P/m/c/s | Background 60 c/s

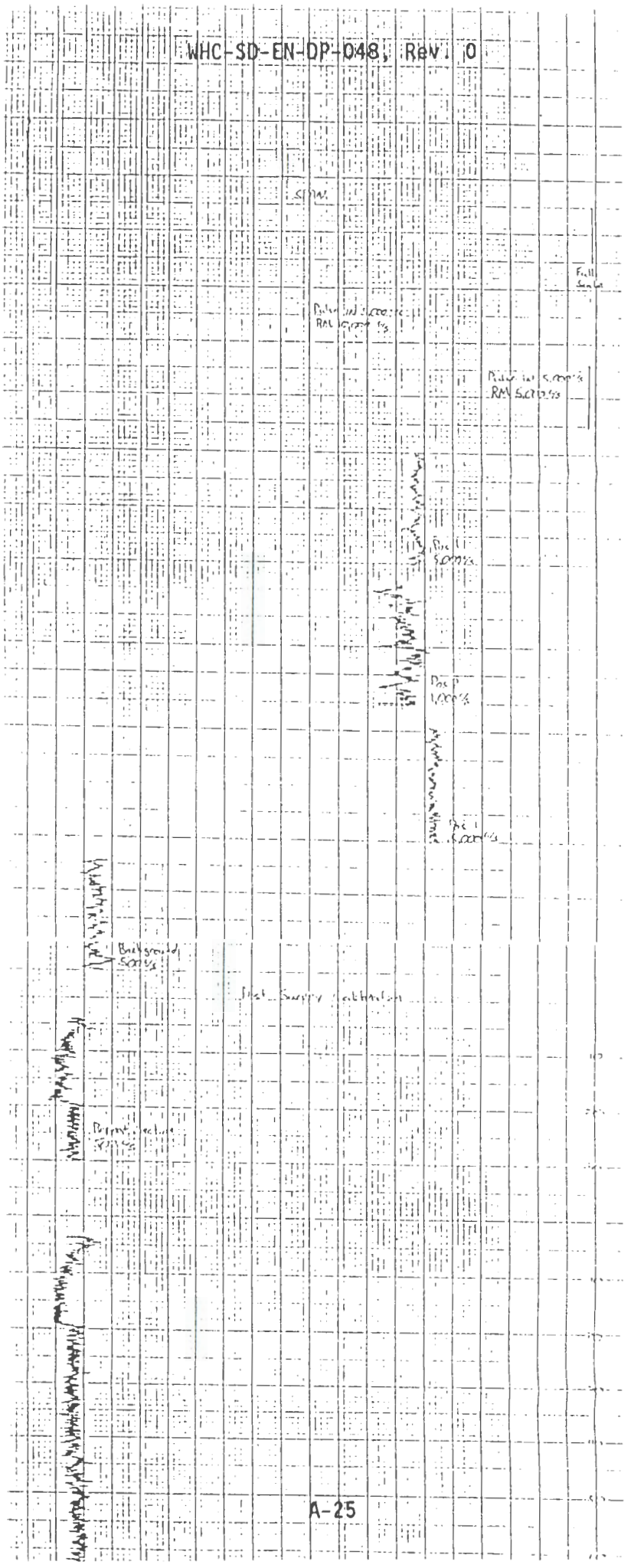
Percent Change: Position 1 1.7% | Position 2 2.0%

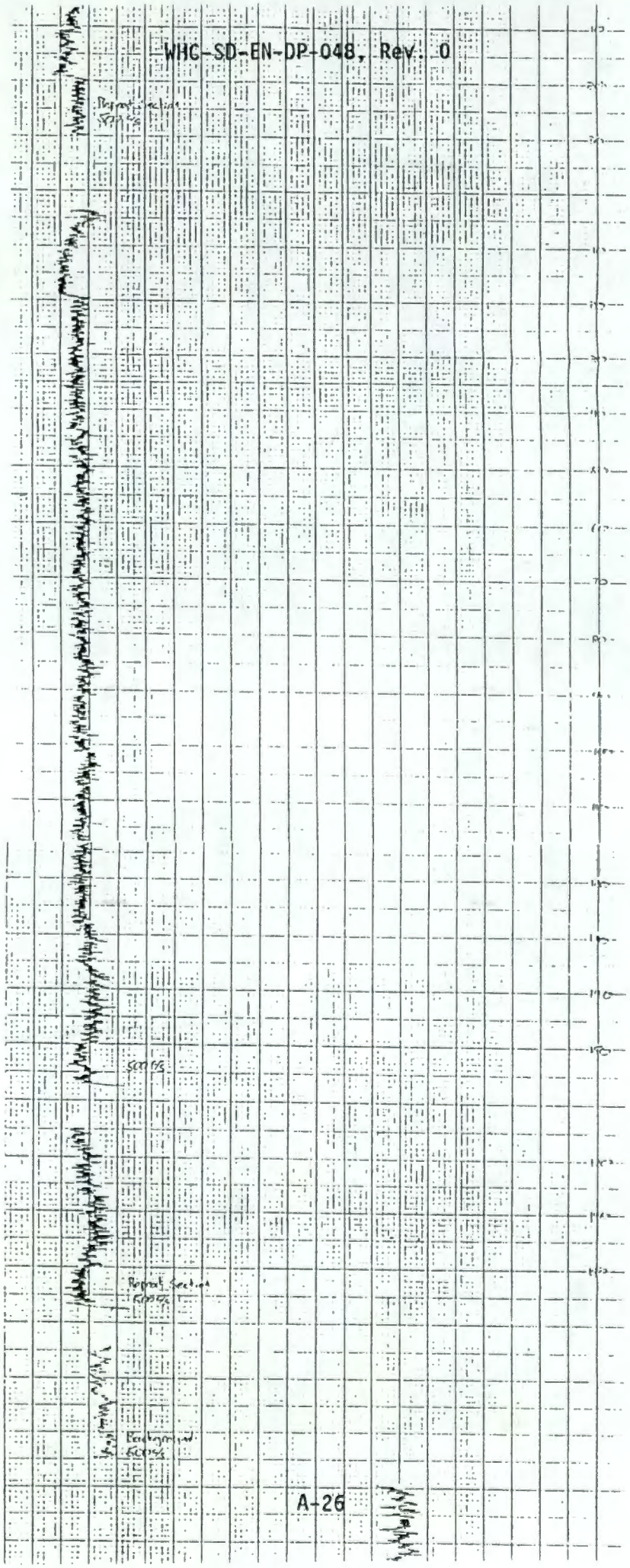
Comments Return Error = 0.35'
Calibration out of Date.

Witnessed and Verified by: (sign and print name) Randall Price Randall Price | Date: 23 Aug 90

A-6000-520 (

WHC-SD-EN-DP-048, Rev. 0





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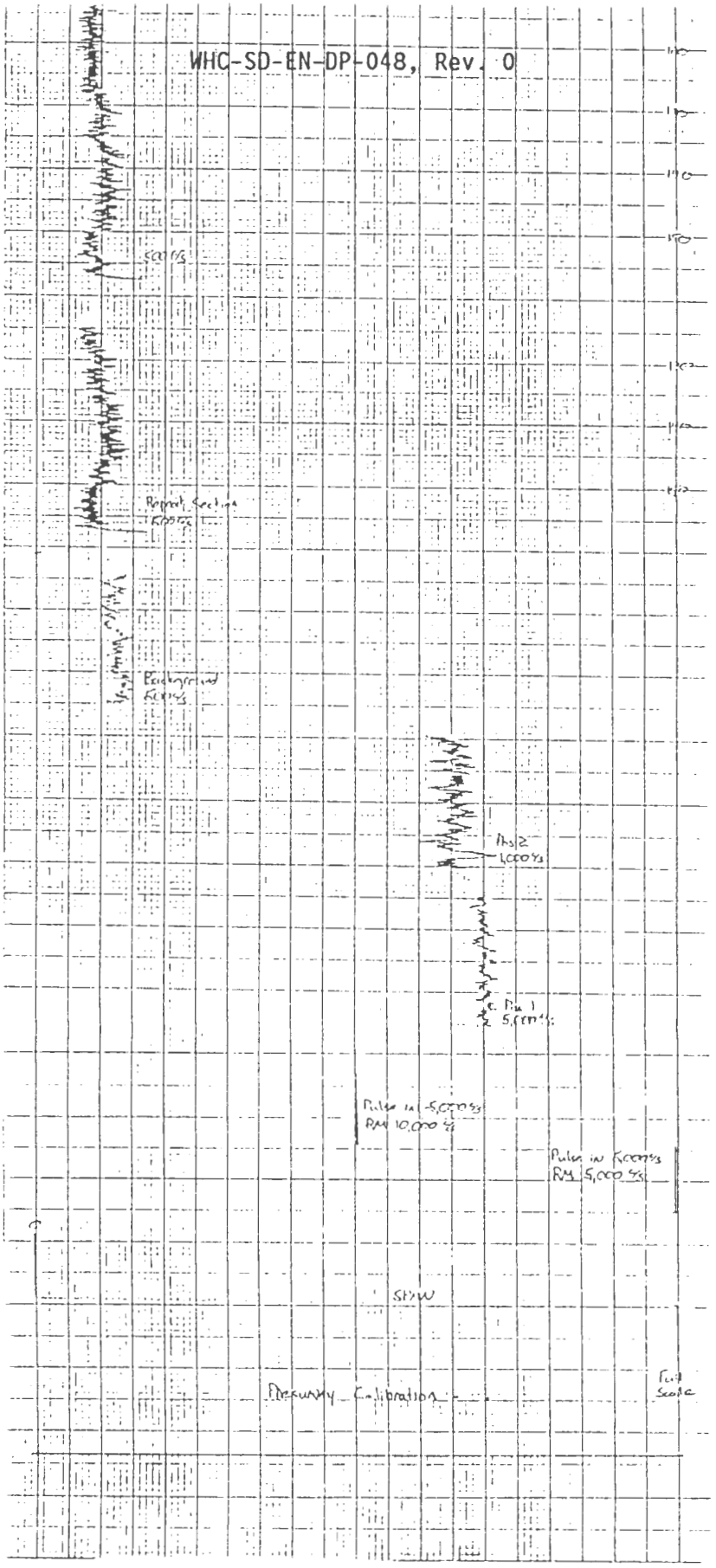
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RM 10,000 psi
Pulse in 5,000 psi
RM 5,000 psi
SHW
Pressure Calibration
Full Scale

Westinghouse Hanford Company | LOG HEADER | Page 1 of 2

VALIDATED SIGNATURE/DATE

Well No. 299-E25-39 Area 200E Date 9/11/90

Log Run #2 Log Type Gross Gamma

Elevation Datum Top of 10" C.S. Casing Elevation 668.45

Survey Coordinates 40,578 N 43,673 W E

Log Measured From Ground Surface

Location Description Grout Site

Ground Surface Elevation

Surface Temperature 35.6°C Weather Hot - Sunny

BOREHOLE INFORMATION

Driller Darrel Ludtke

Drill Rig Type Cable Tool | Bit Type/Diameter Hand Tool/10"

Borehole Diameter(s)/Depth 12"/18.3' 10/204.1'

Depth Driller 206.0' | Depth Logger 204.1'

Liquid Level N/A | Liquid ~~Density~~ N/A

Temperature N/A

CASING RECORD

Type 12" Carbon Steel Sch. 40 | Interval +0.5' - 18.3'

Type 10" Carbon Steel Sch. 40 | Interval +3.0' - 206.0'

Type | Interval

Type | Interval

Well Screen Interval N/A

Comments: Return Error = 0.2' high
Calibration out of Date.

DRAFT DOCUMENT

A-6000-520 (05/90)

EQUIPMENT DATA

Logging Company PNL

Operator(s) Alan Pearson

Equipment Brand MLS | Equipment Type Analog

Tool Type Gamma Ray | Serial No. CG-27A97

Base Calibration Date 12/88 | Calibration Reference WHC-EP-0246

Calibration/Probe Factor 8.53×10^{-2} eU P/m/c/s | Base Calibration Datum (eU): Position 1 | Position 2

Dead Time 7.4 μsec. | Warm Up Time >15 min

LOGGING INFORMATION

Log Interval From 204.1' | To 150.0'

Rerun(s) 204.1' to 170.0'

Pre Survey Verification: Position 1 297 eU P/m/c/s | Position 2 52 eU P/m/c/s | Background 65 c/s

Base Calibration Difference: Position 1 | Position 2

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

Start Time 1515 | Completion Time 1600

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

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

Post Survey Verification: Position 1 302 eU P/m/c/s | Position 2 53 eU P/m/c/s | Background 60 c/s

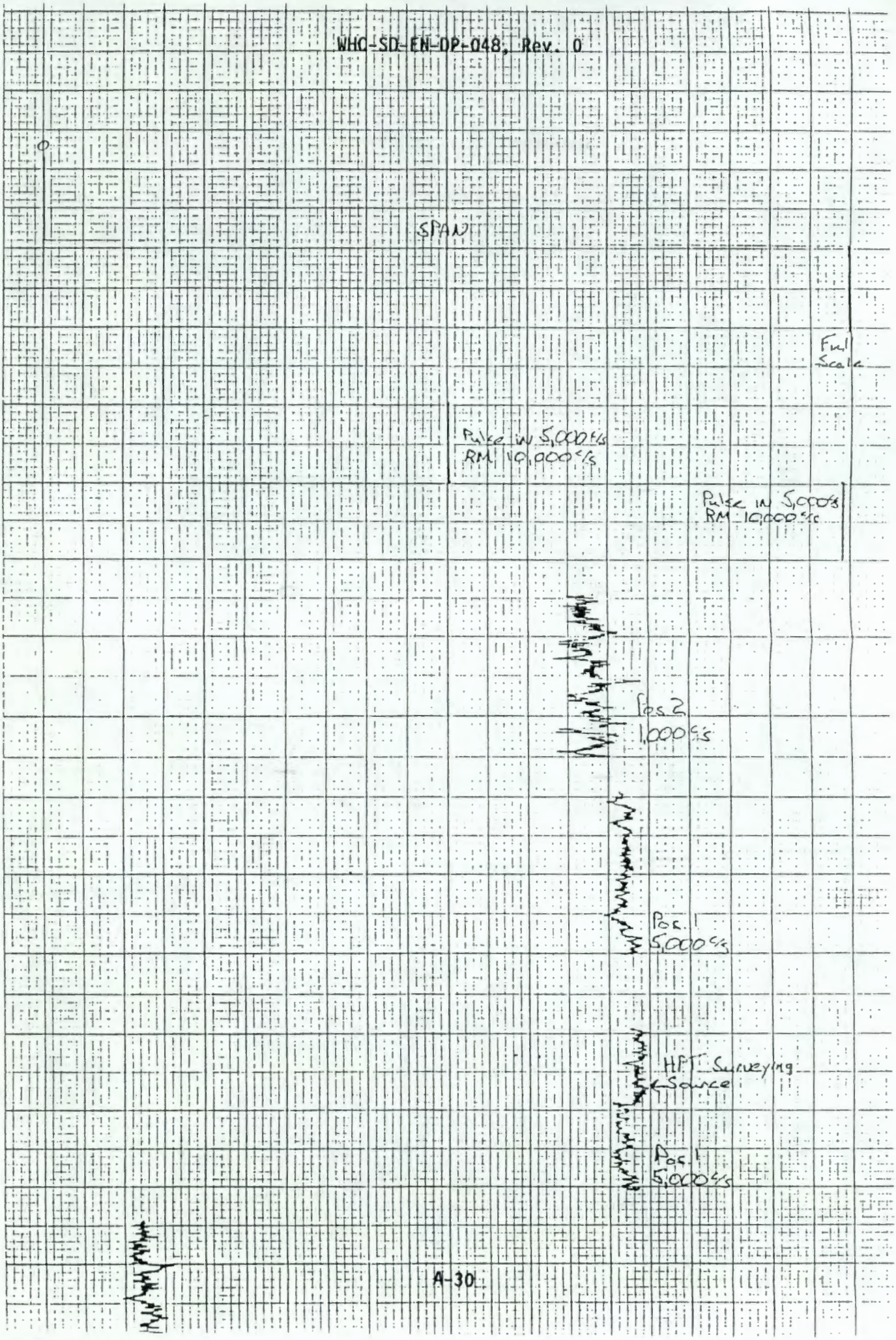
Percent Change: Position 1 1.7% | Position 2 1.9%

Comments Return Error = 0.2' high
Calibration out of Date.

Witnessed and Verified by: (sign and print name) Steven E. Kos STEVEN E. KOS | Date: 9/11/90

A-6000-520 (05/90)

WHC-SD-EN-DP-048, Rev. 0



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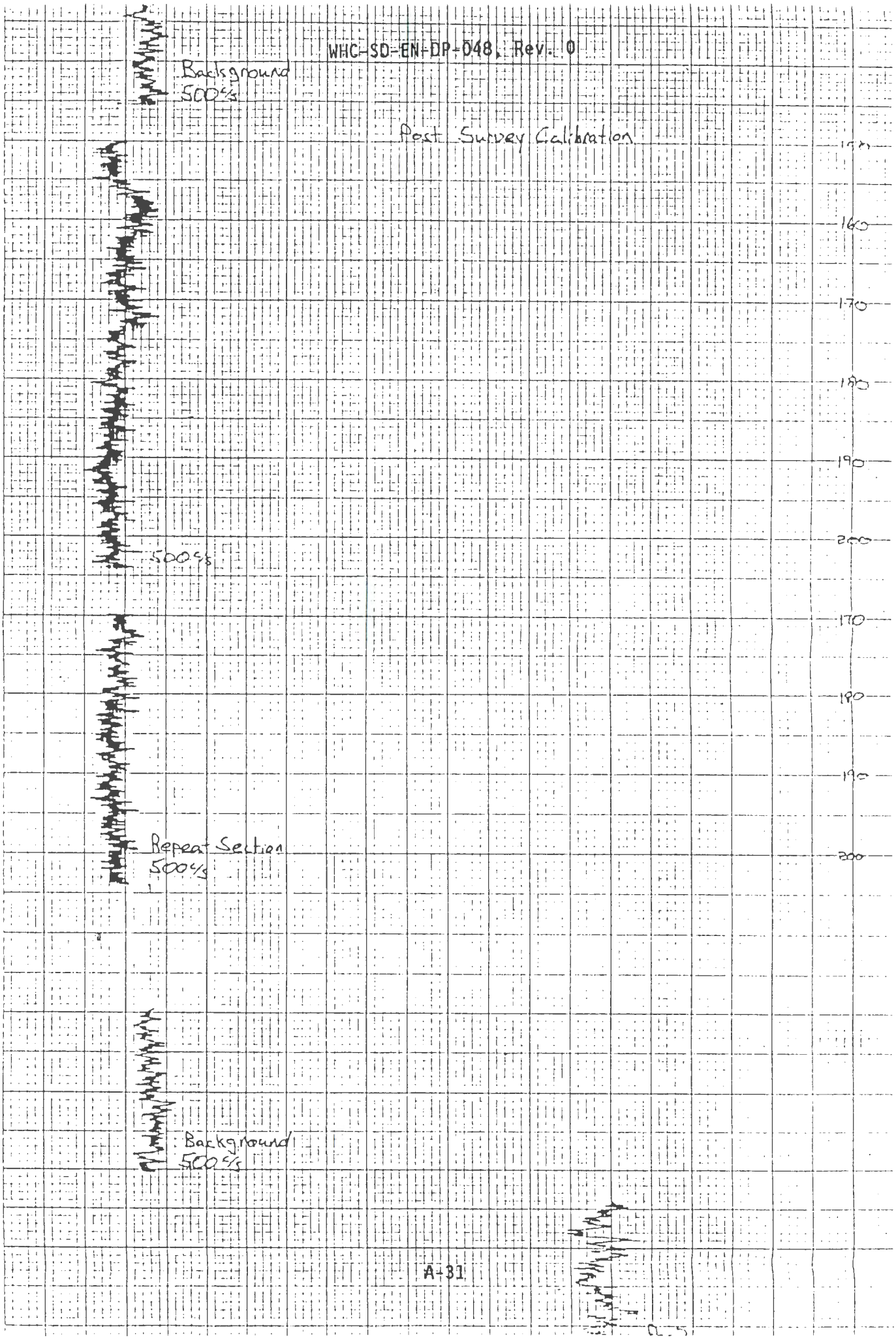
Background
500 c/s
Post Survey Calibration
150
160
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180
190
200
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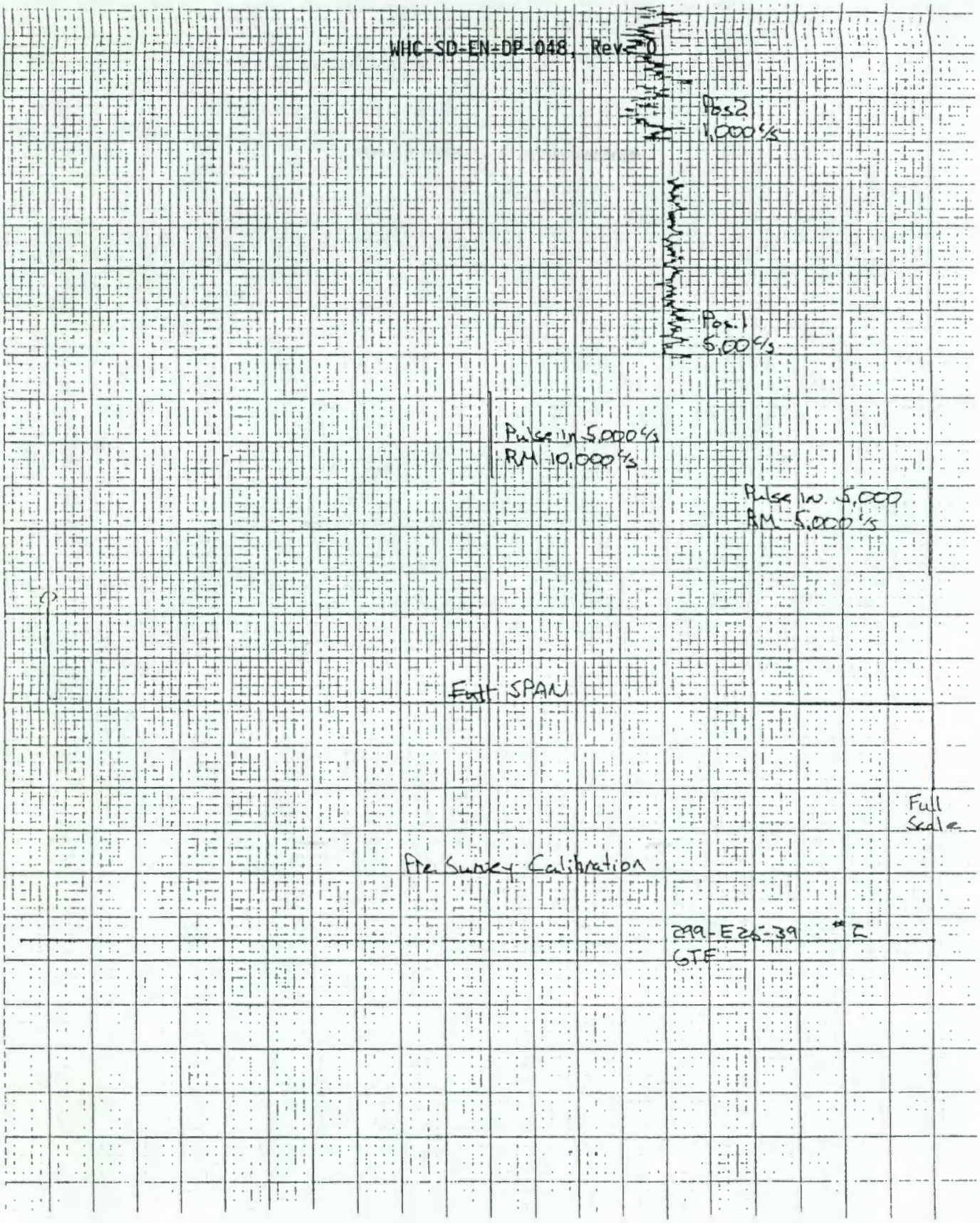
170
180
190
200
Repeat Section
500 c/s
Background
500 c/s


Pos 2
1,000 c/s
Pos. 1
5,000 c/s
Pulse in 5,000 c/s
RM 10,000 c/s
Pulse in 5,000
RM 5,000 c/s
Full SPAN
Full Scale
Pre Survey Calibration
299-E26-39
GTF

Westinghouse Hanford Company	VALIDATED Rev 11/1/91 SIGNATURE/DATE	LOG HEADER	Page 1 of 2

Well No. 299-E25-39 Area 200E Date 9/21/90

Log Run #3 Log Type Gross Gamma

Elevation Datum Top of 8" L.S. Casing Elevation 668.45'

Survey Coordinates 40,518' N 43,673 W E

~~Log Measured~~ From Ground Surface

Location Description Grout Facility

Ground Surface Elevation

Surface Temperature 23.8°C Weather Warm-Sunny

BOREHOLE INFORMATION

Driller Darrel Luttke

Drill Rig Type Cable Tool	Bit Type/Diameter Hard Tool / 8"
Borehole Diameter(s)/Depth 12"/18.9' ; 10"/206.3' , 8"/282.7'	
Depth Driller 281.9'	Depth Logger 281.1'
Liquid Level 263.6'	Liquid ~~Density~~ Appearance Cloudy
Temperature 15.6°C	

CASING RECORD AWP 9/21/90

Type 12" Carbon Steel Sch. 40	Interval 18.9' - ~~+2.4'~~ +0.8' s.u.
Type 10" Carbon Steel Sch. 40	Interval 206.3' - +1.0' s.u.
Type 8" Carbon Steel Sch. 40	Interval 282.7' - +2.4' s.u.
Type	Interval

Well Screen Interval N/A

Comments: Return Error = 0.4' low
Calibration out of Date
Line Speed Gauge & Footage counter were erratic but accurate.

A-6000-520 (05/90)

9312760514

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 12/88 — Calibration Reference WHC-EP-0246

Calibration/Probe Factor 8.53×10^{-2} ell P/M/C/S — Base Calibration Datum (eU): Position 1 — Position 2

Dead Time 7.4 μs — Warm Up Time >15 min

LOGGING INFORMATION

Log Interval From 281.1' — To 600.0'

Rerun(s) 281.1' to 250.1'

Pre Survey Verification: Position 1 297 ell P/M/C/S Position 2 52 ell P/M/C/S Background 65 C/S

Base Calibration Difference: Position 1 Position 2

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

Start Time 0920 — Completion Time 1045

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

Chart Recorder Horizontal Scale, CPS/in. 50 C/S/in. — Time Constant(s) TC=1

Post Survey Verification: Position 1 293 ell P/M/C/S Position 2 52 ell P/M/C/S Background 65 C/S

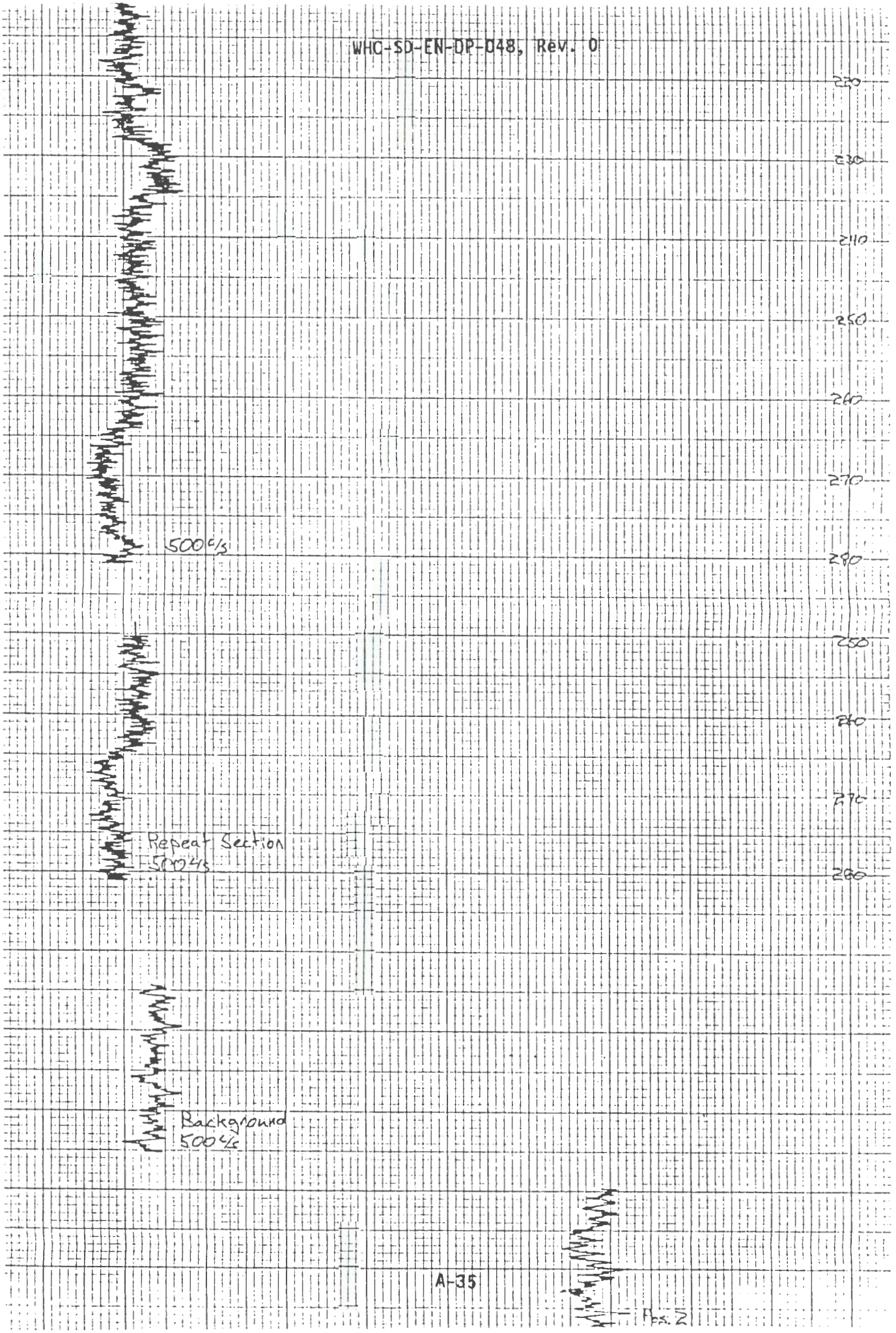
Percent Change: Position 1 1.4% Position 2 0.0%

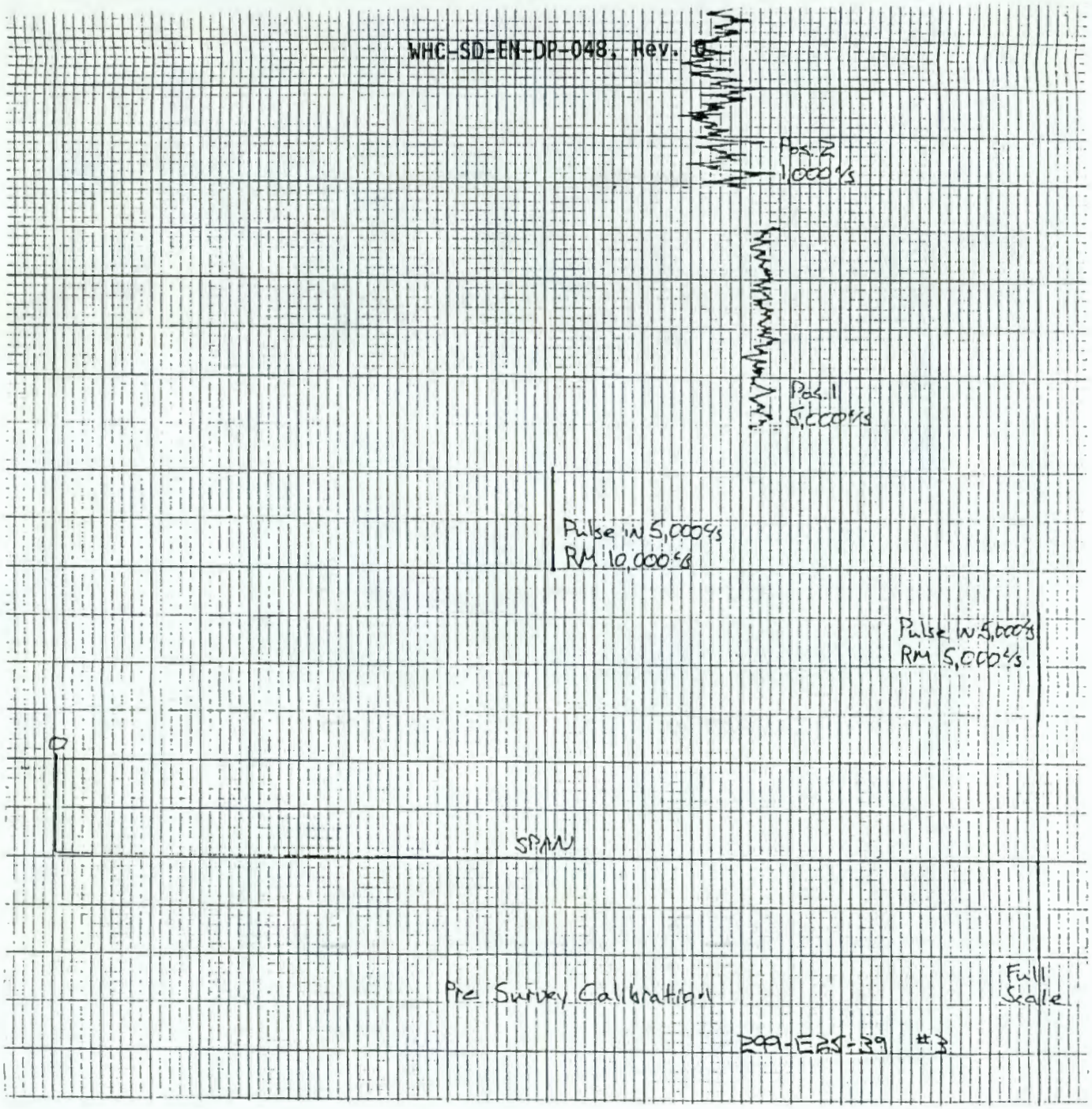
Comments Return error = 0.4' low
Calibration out of Date

Witnessed and Verified by: (sign and print name) Steven E. Kos STEVEN E. KOS — Date: 9-21-90

A-6000-520 (05/90)

WHC-SD-EN-DP-048, Rev. 0


220
230
240
250
260
270
280
290
250
260
270
280
500 c/s
Repeat Section
500 c/s
Background
500 c/s
Pos. 2



9 3 1 2 7 6 0 0 5 1 7

APPENDIX B

SEDIMENT SAMPLE DATA FOR WELL 299-E25-39

9 3 1 2 7 6 0 0 5 1 8

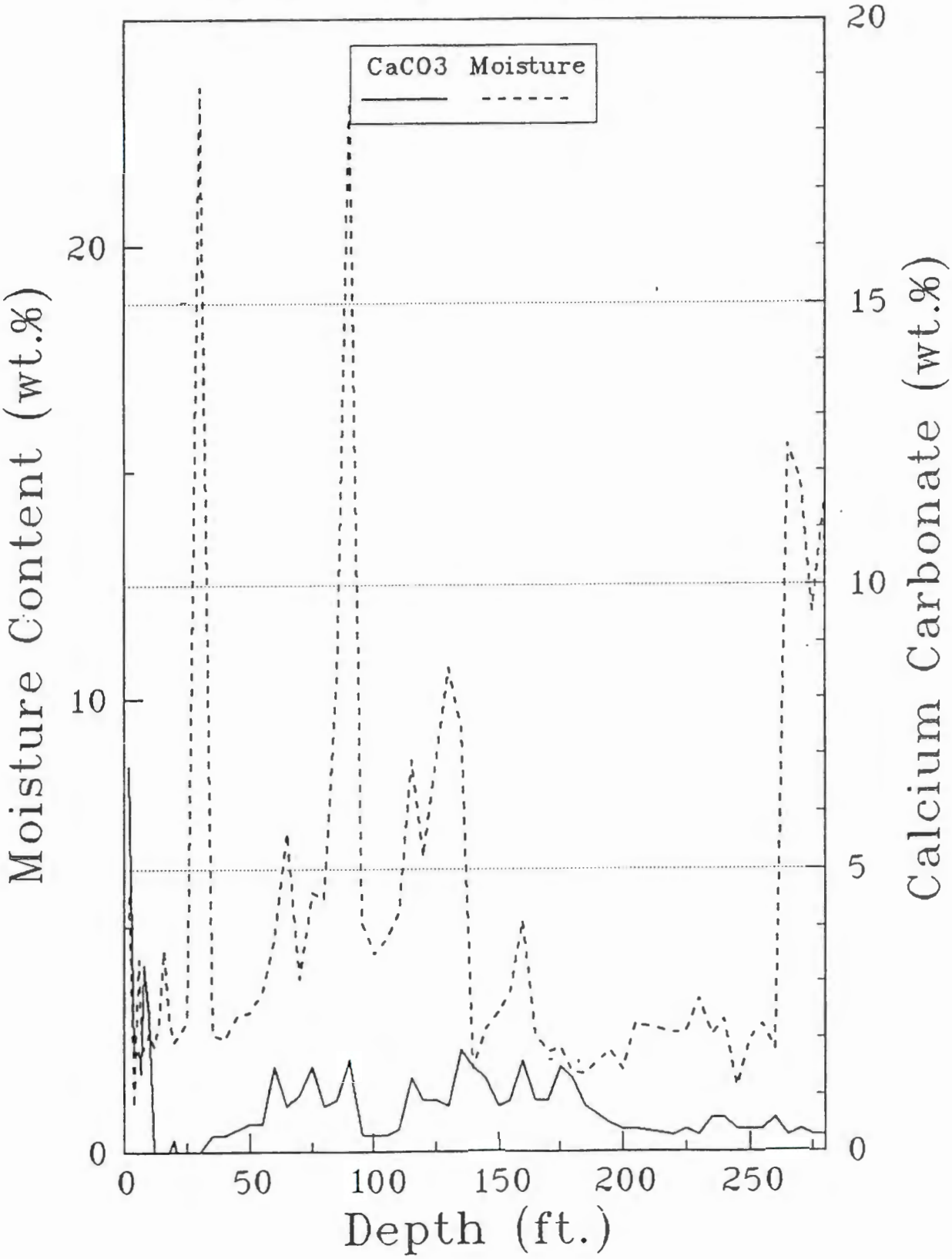
CONTENTS

1) $CaCO_3$ and moisture content data
2) Radiation analysis (sample analysis requests)

9 3 1 2 7 6 0 0 5 1 9

9 3 1 2 7 6 0 0 5 2 0

WELL 299-E25-39



2 of 3

	A	B	C
1	WELL 299-E25-39		
2			
3	Depth	CaCO3	Moisture
4	ft.	Wt. %	Wt. %
5			
6	2	6.8	5.66
7	4	1.7	1
8	6	1.8	4.24
9	7	1.4	2.69
10	8	3.3	2.26
11	10	2.4	2.62
12	12	0	2.32
13	14	0	2.86
14	16	0	4.45
15	18	0	2.92
16	20	0.2	2.44
17	21	0	2.53
18	25	0	2.86
19	30	0	23.46
20	35	0.3	2.58
21	40	0.3	2.47
22	45	0.4	2.98
23	50	0.5	3.08
24	55	0.5	3.55
25	60	1.5	4.69
26	65	0.8	7.06
27	70	1	3.83
28	75	1.5	5.74
29	80	0.8	5.58
30	85	0.9	10.41
31	90	1.6	23.14
32	95	0.3	5.07
33	100	0.3	4.37
34	105	0.3	4.69
35	110	0.4	5.31
36	115	1.3	8.62
37	120	0.9	6.52
38	125	0.9	8.58
39	130	0.8	10.68
40	135	1.8	9.32
41	140	1.5	1.83
42	145	1.3	2.71
43	150	0.8	3.08
44	155	0.9	3.51
45	160	1.6	5.12
46	165	0.9	2.61
47	170	0.9	2.2

9 3 1 2 7 6 0 0 5 2 1

	A	B	C
48	175	1.5	2.31
49	180	1.3	1.75
50	185	0.8	1.72
51	195	0.5	2.25
52	200	0.4	1.82
53	205	0.4	2.81
54	220	0.3	2.63
55	225	0.4	2.65
56	230	0.3	3.38
57	235	0.6	2.57
58	240	0.6	2.91
59	245	0.4	1.44
60	250	0.4	2.49
61	255	0.4	2.8
62	260	0.6	2.27
63	265	0.3	15.59
64	270	0.4	14.79
65	275	0.3	11.91
66	280	0.3	14.54

VALIDATED P.5
SIGNATURE/DATE 8/21/91

SAMPLE ANALYSIS REQUESTS WHC-SD-EN-DP-048, Rev. 0 1/5
299E 25-39
***
183-KE Health Physics Lab

Requested By: G. HAUGER
Phone Number: 3-3031
Date: 8/27/90

Send To: -SAME-
ATTN: ROY ORAHOOD

Sample No.	Sample Date	Sample Description	** 183-KE Lab Use Only ** Analysis Date	Lab. No.	Beta/Gamma/Alpha Results (pCi/gm)	Alpha Results (pCi/gm)
25-39 6'	8-15-90	SOIL	8-90	780-90	<200	<60
21'	8-15-90	SOIL	8-90	781-90	<200	<60
185'		MW 8/27/90		782-90		
190'		MW 8/27/90		783-90		
25-39 25'	8-15-90	SOIL	8-90	784-90	<200	<60
" 30'	8-15-90	"	8-90	785-90	<200	<60
" 35	8-16-90	"	8-90	786-90	<200	<60
" 40	8-16-90	"	8-90	787-90	<200	<60
" 45	8-16-90	"	8-90	788-90	<200	<60
" 50	8-16-90	"	8-90	789-90	<200	<60
" 55	8-16-90	"	8-90	814-90	<200	<60
" 60	8-16-90	"	8-90	815-90	<200	<60
" 65	8-17-90	"	8-90	816-90	<200	<60
" 70	8-17-90	"	8-90	817-90	<200	<60
" 75	8-17-90	"	8-90	818-90	<200	<60
" 80	8-17-90	"	8-90	819-90	<200	<60
" 85	8-20-90	"	8-90	820-90	<200	<60
" 90	8-20-90	"	8-90	821-90	<200	<60
" 95	8-20-90	"	8-90	822-90	<200	<60
" 100	8-21-90	"	8-90	823-90	<200	<60
" 105'	8-21-90	"	8-90	824-90	<200	<60

Performed By: [signature] B-4 Date: 8/27/90

SAMPLE ANALYSIS REQUESTS WHC-SD-EN-DP-048, Rev. 0 2/5

***

183-KE Health Physics Lab

Requested By: G- HAUSER

Phone Number: 3-3031

Date: 8-22-90

Send To:

			** 183-KE Lab Use Only **			
ample No.	Sample Date	Sample Description	Analysis Date	Lab. No.	Beta/Gamma/~~Alpha~~ Results (pCi/gm)	Alpha Results (pCi/gm)
6-11-180	7-26-90	Soil	N/A	698-90	<200	<60
9-150	7-26-90	Soil	N/A	699-90	<200	<60
40-180	8-15-90	Soil	N/A	779-90	<200	<60
70-185	8-15-90	Soil	N/A	782-90	<200	<60
70-190	8-15-90	Soil	N/A	783-90	<200	<60
-39-25	8-16-90	Soil	N/A	784-90	<200	<60
-39-30'	8-16-90	Soil	N/A	785-90	<200	<60
-39-35	8-16-90	Soil	N/A	786-90	<200	<60
-39-40	8-16-90	Soil	N/A	787-90	<200	<60
39-45	8-16-90	Soil	N/A	788-90	<200	<60
39-50	8-16-90	Soil	N/A	789-90	<200	<60
-2-30'	8-16-90	Soil	N/A	792-90	<200	<60
-2-70	8-16-90	Soil	N/A	795-90	<200	<60
-2-80	8-16-90	Soil	N/A	796-90	<200	<60
-2-90	8-16-90	Soil	N/A	797-90	<200	<60
-2-100	8-16-90	Soil	N/A	798-90	<200	<60
-2-120	8-16-90	Soil	N/A	799-90	<200	<60
-2-130	8-16-90	Soil	N/A	800-90	<200	<60
2-140	8-16-90	Soil	N/A	801-90	<200	<60
-2-160	8-16-90	Soil	N/A	802-90	<200	<60
-2-180	8-16-90	Soil	N/A	803-90	<200	<60

Performed By: [signature]

Date: 8-22-90

SAMPLE ANALYSIS REQUESTS
***
183-KE Health Physics Lab

WHC-SD-EN-DP-048, Rev. ~~0~~ 5

Requested By: G. HAUGER
Phone Number: 3-3031
Date: 8/27/90

Send To: - SAME -
ATTN: ROY OSWOOD

Sample No.	Sample Date	Sample Description	** 183-KE Lab Use Only ** Analysis Date	Lab. No.	Beta/Gamma ~~ALPHA~~ Results (pCi/gm)	Alpha Results (pCi/gm)
≤25-39 110'	8-21-90	SOIL	8-90	825-90	<200	<60
115'	8-21-90	"	8-90	826-90	<200	<60
120'	8-21-90	"	8-90	827-90	<200	<60
125'	8-22-90	"	8-90	828-90	<200	<60
130'	8-22-90	"	8-90	830-90	<200	<60
135'	8-22-90	"	8-90	831-90	<200	<60
140'	8-22-90	"	8-90	832-90	<200	<60
145'	8-22-90	"	8-90	833-90	<200	<60
2'	8-23-90	"	8-90	834-90	<200	<60
4'	8-23-90	"	8-90	835-90	<200	<60
6'	8-23-90	"	8-90	836-90	<200	<60
8'	8-23-90	"	8-90	837-90	<200	<60
10'	8-23-90	"	8-90	838-90	<200	<60
12'	8-23-90	"	8-90	839-90	<200	<60

8/27/90

Performed By: [signature]

Date: 8/27/90

Reviewed By 10-15-90

SAMPLE ANALYSIS REQUESTS
*** WHC-SD-EN-DP-048, Rev. 0 4/5
183-KE Health Physics Lab

Requested By: G. HAUGER
Phone Number: 3-3031
Date: 8/28/90

Send To: -SAME-
ATTN: ROY CRAWFORD

Sample No.	Sample Date	Sample Description	** 183-KE Lab Use Only ** Analysis Date	Lab. No.	Beta/Gamma Results (pCi/gm)	Alpha Result (pCi/gm)
E25-39 14'	8-23-90	SOIL	8-90	840-90	<200	<60
" 16'	8-23-90	"	8-90	841-90	<200	<60
" 18'	8-23-90	"	8-90	842-90	<200	<60
" 20'	8-23-90	"	8-90	843-90	<200	<60
" 150'	8-23-90	"	8-90	844-90	<200	<60
" 155'	8-23-90	"	8-90	845-90	<200	<60
" 160'	8-23-90	"	8-90	846-90	<200	<60
" 165'	8-27-90	"	8-90	878-90	<200	<60
" 170'	8-27-90	"	8-90	879-90	<200	<60
" 175'	8-27-90	"	8-90	880-90	<200	<60
" 180'	8-27-90	"	8-90	881-90	<200	<60

Performed By: [signature] B-7 Date: 8/28/90

Requested By: G. HAUGER
Phone Number: 3-3031
Date: 8/30/90

Send To: -SAME-
ATTN: ROY ORAHOOD

Sample No.	Sample Date	Sample Description	** 183-KE Lab Use Only ** Analysis Date	Lab. No.	Beta/Gamma/~~ALPHA~~ Results (pCi/gm)	Alpha Result (pCi/gm)
~~E339~~ 185'	8-28-90	SOIL	8-30-90	915-90	<200	<60
" 190'	8-29-90	SOIL	8-30-90	916-90	<200	<60
" 195'	8-29-90	SOIL	8-30-90	917-90	<200	<60
" 200'	8-29-90	SOIL	8-30-90	918-90	<200	<60
" 205'	8-29-90	SOIL	8-30-90	919-90	<200	<60

9312760052

8/30/90

Performed By: [signature] B-8 Date: 8/30/90

10-15-90
[signature]

APPENDIX C

WELL DEVELOPMENT AND PUMP INSTALLATION DATA FOR WELL 299-E25-39

9 3 1 2 7 6 0 0 5 2 8

CONTENTS

1) Well development form
2) Equipment configuration and wellhead diagram
3) Development drawdown/recovery form and data
4) Pump installation form

9 3 1 2 7 6 0 0 5 2 9

VALIDATED pr 8

SIGNATURE/DATE

WELL DEVELOPMENT FORM

10/21/91

 10/21/91

Well Designation 2-E25-39. Well Depth 277.8' From Ground.

Screened Interval 257.5'-277.8' Date Well Development is Performed 12/10/90.

BAILING

Water Level Prior to Bailing _____ Time of Measurement _____

Volume of Bailer _____ Number of Bails Removed _____ Gallons _____

Summary Description of Water Removed _____

Water Level After Bailing _____ Time of Measurement _____

SURGE BLOCK

Type of Surge Block _____ Dimension of Surge Block _____

TD BEFORE	STROKE LENGTH	STROKE FREQUENCY	SURGE INTERVAL	SURGE TIME	TD AFTER	TD DIFFERENCE
			N/A			

AIRLIFT

Depth of Eductor Pipe _____ Airlift Start Time _____

Flow Rate _____ Accumulated Flow _____ Airlift Stop Time _____

Turbidity _____, _____, _____, _____, _____, _____, _____, _____

_____, _____, _____, _____, _____, _____, _____, _____

MECHANICAL PUMPING

Pumping Technique Constant Pump Depth 275' From Surface Pump Start Time 07:54

Flow Rate 14.1 gpm. Accumulated Flow 211.5 Pump Stop Time 08:09

Turbidity >100 NTU, 18 NTU, 3.2 NTU, N/A, N/A, _____, _____

N/A, _____, _____, _____, _____, _____, _____, _____

Comments No Flow Meter. Flow Rate Calculated with a Stopwatch and 5 gal Bucket.

Signature of Recorder W. A. Jordan W. A. Jordan Date 12/10/90.

Sign and Print Name

A-6000-393 (03/90)

9312760053 0

EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

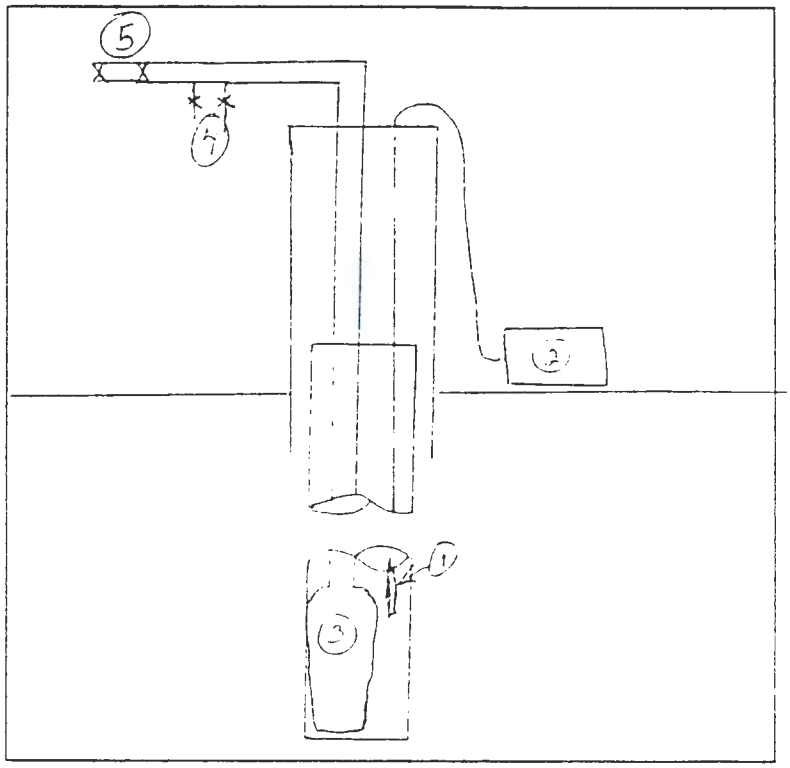
Well Designation 2-E25-39 Depth 277.8' From Ground.

Equipment Configuration

Item	Description
1	InSitu Transducer S.N 2302
2	Insitu Logger S.N 1KB246
3	Pump.
4	Sample Port
5	Shut off Valves.

N/A

Diagram

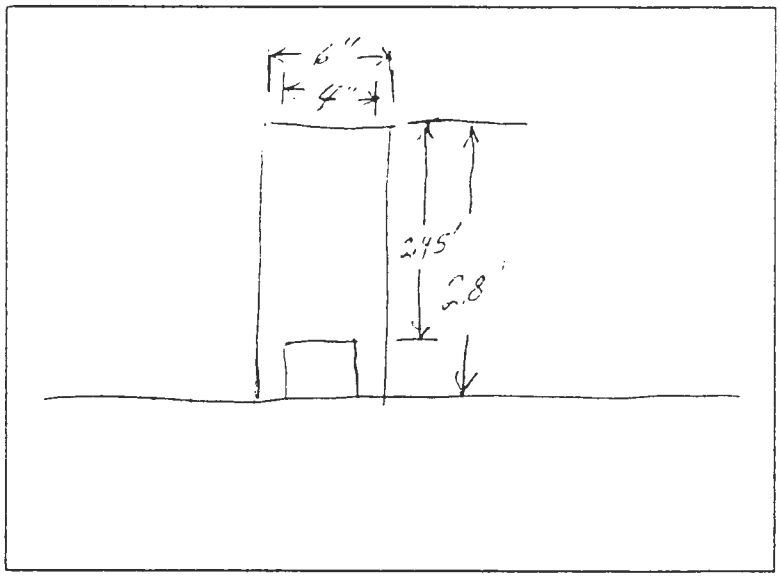


Well Head

Comments

N/A.

Diagram



Signature of Recorder W.A. Jordan W.A. Jordan Date 12/10/90

A-6000-417 (08/89)

WHC-SD-EN-DP-048, Rev. 0

DRAWDOWN/RECOVERY

10/21/91

Well Designation 2-E25-39 Date 12/10/90.

Well Depth 277.8' Below ground. Screened Interval 257.5' — 277.8' Below Ground

Pumping Method Constant Discharge.

Equipment Used to Measure Water Level E-Tape + Pressure Transducer S.N. ET-5 & 2302 Calibation Due 4/21/91 & 4/23/90

Equipment Used to Measure Flow N/A S.N. N/A Calibation Due N/A

Measuring Point Top of Casing Pump Start Time 07:54 Pump Stop Time 08.09.

Time		Water Level		Discharge
Date	Time	Reading Unit:	Water Level Unit:	Reading Unit:

See Attached. (Discharge measured by Bucket to be 1.61 GPM)

9312760532

Signature of Recorder W. A. Jordan. W. A. Jordan Date 12/10/90.

Sign and Print Name

A-6000-402 (03/90)

SE1000B
Environmental Logger
12/10 11:25

Unit# 00001 Test# 0

INPUT 1: Level (F) TOC

Reference	266.43
Scale factor	50.13
Offset	0.00

Step# 0 12/10 07:54

Elapsed Time	Value
0.0000	266.54
0.0033	266.55
0.0066	266.52
0.0099	266.52
0.0133	266.54
0.0166	266.57
0.0200	266.55
0.0233	266.55
0.0266	266.58
0.0300	266.60
0.0333	266.60
0.0500	266.58
0.0666	266.57
0.0833	266.55
0.1000	266.57
0.1166	266.55
0.1333	266.55
0.1500	266.55
0.1666	266.55
0.1833	266.55
0.2000	266.55
0.2166	266.55
0.2333	266.55
0.2500	266.55
0.2666	266.55
0.2833	266.55
0.3000	266.55
0.3166	266.55
0.3333	266.54
0.4167	266.57
0.5000	266.55
0.5833	266.54
0.6667	266.54
0.7500	266.54
0.8333	266.52
0.9167	266.54
1.0000	266.50
1.0833	266.50
1.1667	266.54
1.2500	266.54
1.3333	266.52
1.4166	266.50
1.5000	266.50

P. 5 of 8

1.5833	266.52
1.6667	266.50
1.7500	266.54
1.8333	266.50
1.9167	266.52
2.0000	266.50
2.5000	266.54
3.0000	266.52
3.5000	266.54
4.0000	266.52
4.5000	266.54
5.0000	266.52
5.5000	266.54
6.0000	266.50
6.5000	266.54
7.0000	266.52
7.5000	266.52
8.0000	266.50
8.5000	266.52
9.0000	266.54
9.5000	266.52
10.0000	266.52
12.0000	266.52

END

9312760053 4

SE1000B
Environmental Logger
12/10 11:20

Unit# 00001 Test# 1

INPUT 1: Level (F) TOC

Reference	266.52
Scale factor	50.13
Offset	0.00

Step# 0 12/10 08:09

Elapsed Time	Value
0.0000	266.37
0.0033	266.39
0.0066	266.40
0.0099	266.40
0.0133	266.40
0.0166	266.40
0.0200	266.39
0.0233	266.39
0.0266	266.37
0.0300	266.37
0.0333	266.36
0.0500	266.37
0.0666	266.37
0.0833	266.37
0.1000	266.37
0.1166	266.37
0.1333	266.37
0.1500	266.37
0.1666	266.37
0.1833	266.37
0.2000	266.37
0.2166	266.37
0.2333	266.39
0.2500	266.37
0.2666	266.39
0.2833	266.37
0.3000	266.39
0.3166	266.37
0.3333	266.37
0.4167	266.37
0.5000	266.37
0.5833	266.39
0.6667	266.39
0.7500	266.39
0.8333	266.39
0.9167	266.39
1.0000	266.39
1.0833	266.39
1.1667	266.40
1.2500	266.40
1.3333	266.40
1.4166	266.40
1.5000	266.42

1.5833	266.42
1.6667	266.42
1.7500	266.42
1.8333	266.42
1.9167	266.42
2.0000	266.42
2.5000	266.42
3.0000	266.42
3.5000	266.42
4.0000	266.42
4.5000	266.44
5.0000	266.42
5.5000	266.44
6.0000	266.44
6.5000	266.42
7.0000	266.44
7.5000	266.42
8.0000	266.42
8.5000	266.42
9.0000	266.42
9.5000	266.42
10.0000	266.42

END

9 3 1 2 7 6 0 0 5 3 6

P. 8 of 8 1/1

SAMPLING PUMP INSTALLATION FORM

10/21/91

Project: Grout Well Number: 25-39

Pump Type: Hydrostar Pump Model: H8001

Date Installed: 12-20-90 Installed by: KEH (Brett Strode) PNL (DW Glover)

Depth-to-Water: 266.5 Depth-to-Bottom: 279.0

Reported Depth-to-Bottom: Not available Date: —

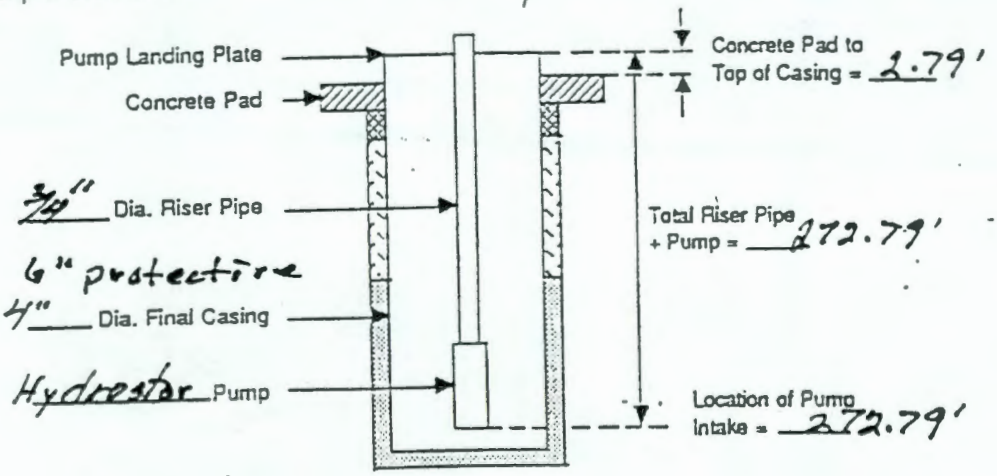
Screened Interval: 20.0' Saturated Screened Interval: 12.5'

Pump Riser Pipe Description: 3/4" sch 40 - 10' sections with shorter makeup sections

Additional Comments:

Pump Installed at 272.5' (Ideal)
1st section + Pump = 12.25'
6th Section 10.02'
10th Section 10.02'
17th Section 10.03'
23rd Section 10.02'
27th Section w/ Mount Plate 10.05 to Bottom of plate.

Sketch of Pump Installation:



Completed By: Donald W. Glover Date: 12-20-90

A-1850-008 (4/89)
S3902066.1

9312760053 7

APPENDIX D

SLUG TEST DATA WELL 299-E25-39

9 3 1 2 7 6 0 0 5 3 8

CONTENTS

1) Instantaneous slug test data sheet and data
2) Equipment configuration and wellhead diagram
3) Aquifer test summary sheet and test plots

9 3 1 2 7 6 0 0 5 3 9

VALIDATED 8/21/91

WHC-SD-EN-DP-048, Rev. 0

INSTANTANEOUS SLUG TEST DATA SHEET

SIGNATURE/DATE 10/31/91

Borehole 299-E 25-39

Interval Tested Water Surface to Bottom of Hole.

Depth to Water 265.05'

Date 10/30/90

Measured by W. A. Jordan

Slug Volume 226.2 in³ Barometer Reading (Beginning) N/A (End) N/A

Time 10:32

Transducer Measurement Units Feet.

Depth to Transducer N/A.

Initial Pressure (P_i) 265.05'

Slug Level or Pressure (P_{max}) 265.43'

Borehole Diameter 4"

Time Observed	Time Elapsed	Pressure Trans. Measurement	Time Observed	Time Elapsed	Pressure Trans. Measurement	Time Observed	Time Elapsed	Pressure Trans. Measurement

See Attached.

9312710054 0

Recorded by W. A. Jordan W. A. Jordan (Sign and Print Name) 10/30/90. (Date)

BD-6000-293 (07/90)

Well 299-E25-39

Slug Withdrawal

SE1000B
Environmental Logger
10/30 13:54

Unit# 00001 Test# 4

INPUT 1: Level (F) TOC

Reference 265.05
Scale factor 50.15
Offset 0.00

Step# 0 10/30 10:32

Time	Time:min	D-T-W:Ft
1032	0	265.09
1032.003	0.0033	265.17
1032.006	0.0066	265.14
1032.009	0.0099	265.19
1032.013	0.0133	265.25
1032.016	0.0166	265.35
1032.02	0.02	265.43
1032.023	0.0233	265.41
1032.026	0.0266	265.33
1032.03	0.03	265.25
1032.033	0.0333	265.17
1032.05	0.05	264.95
1032.066	0.0666	265.01
1032.083	0.0833	265.03
1032.1	0.1	265.01
1032.116	0.1166	265.01
1032.133	0.1333	265.01
1032.15	0.15	265.01
1032.166	0.1666	265.01
1032.183	0.1833	265.01
1032.2	0.2	265.01
1032.216	0.2166	265.01
1032.233	0.2333	265.01
1032.25	0.25	265.01
1032.266	0.2666	265.01
1032.283	0.2833	265.01
1032.3	0.3	265.01
1032.316	0.3166	265.01
1032.333	0.3333	265.01
1032.416	0.4167	265.01
1032.5	0.5	265.01
1032.583	0.5833	265.01
1032.666	0.6667	265.01
1032.75	0.75	265.01
1032.833	0.8333	265.01
1032.916	0.9167	265.01
1033	1	265.01
1033.083	1.0833	265.01
1033.166	1.1667	265.01
1033.25	1.25	265.01
1033.333	1.3333	265.01
1033.416	1.4166	265.01
1033.5	1.5	265.01

9312750054

W. A. Jordan
W. A. Jordan

Slug Withdrawal.

1033.583	1.5833	265.01
1033.666	1.6667	265.01
1033.75	1.75	265.01
1033.833	1.8333	265.01
1033.916	1.9167	265.01
1034	2	265.01
1034.5	2.5	265.01
1035	3	265.01
1035.5	3.5	265.01
1036	4	265.01
1036.5	4.5	265.01
1037	5	265.01
1037.5	5.5	265.01
1038	6	265.01
1038.5	6.5	265.01
1039	7	265.01
1039.5	7.5	265.01
1040	8	265.01
1040.5	8.5	265.01
1041	9	265.01
1041.5	9.5	265.01
1042	10	265.01

9312760054 2

W.A. Jordan
W.A. Jordan

WHC-SD-EN-DP-048, Rev. 0

INSTANTANEOUS SLUG TEST DATA SHEET

10/21/91

Borehole 299-E25-39

Time 10:01

Interval Tested Water surface to Bottom of Hole

Transducer Measurement Units ~~Feet of H_2O~~ Water 10/31/90

Depth to Water 265.05'

Depth to Transducer N/A.

Date 10/30/90

Initial Pressure (P_i) 265.05'

Measured by W.A. Jordan

Slug Level or Pressure (P_{max}) 265.41'

Slug Volume 226.2 m^3

Barometer Reading (Beginning) N/A (End) N/A

Borehole Diameter 4"

Time Observed	Time Elapsed	Pressure Trans. Measurement	Time Observed	Time Elapsed	Pressure Trans. Measurement	Time Observed	Time Elapsed	Pressure Trans. Measurement

See Attached.

9312760054

Recorded by W. A. Jordan W. A. Jordan (Sign and Print Name) 10/30/90 (Date)

BD-6000-293 (07/90)

Well 299-E25-39

Page 2 of 3

Slug Injection.

SE1000B
Environmental Logger
10/30 13:59

Unit# 00001 Test# 2

INPUT 1: Level (F) TOC

Reference 265.05
Scale factor 50.15
Offset 0.00

Step# 0 10/30 10:01

Time	E-time	D-T-W:Ft
1001	0	265.05
1001.003	0.0033	264.97
1001.006	0.0066	265.06
1001.009	0.0099	265
1001.013	0.0133	265
1001.016	0.0166	264.98
1001.02	0.02	264.82
1001.023	0.0233	264.78
1001.026	0.0266	264.79
1001.03	0.03	264.71
1001.033	0.0333	264.7
1001.05	0.05	265.41
1001.066	0.0666	265.11
1001.083	0.0833	265.05
1001.1	0.1	265.05
1001.116	0.1166	265.05
1001.133	0.1333	265.05
1001.15	0.15	265.05
1001.166	0.1666	265.05
1001.183	0.1833	265.05
1001.2	0.2	265.05
1001.216	0.2166	265.05
1001.233	0.2333	265.05
1001.25	0.25	265.05
1001.266	0.2666	265.05
1001.283	0.2833	265.05
1001.3	0.3	265.05
1001.316	0.3166	265.05
1001.333	0.3333	265.05
1001.416	0.4167	265.05
1001.5	0.5	265.05
1001.583	0.5833	265.05
1001.666	0.6667	265.05
1001.75	0.75	265.05
1001.833	0.8333	265.05
1001.916	0.9167	265.05
1002	1	265.05
1002.083	1.0833	265.05
1002.166	1.1667	265.05
1002.25	1.25	265.05
1002.333	1.3333	265.05
1002.416	1.4166	265.05
1002.5	1.5	265.05

9312750544

W.A. Jordan
W.A. Jordan

1002.583	1.5833	265.05
1002.666	1.6667	265.05
1002.75	1.75	265.05
1002.833	1.8333	265.05
1002.916	1.9167	265.05
1003	2	265.05
1003.5	2.5	265.05
1004	3	265.05
1004.5	3.5	265.05
1005	4	265.05
1005.5	4.5	265.05
1006	5	265.05
1006.5	5.5	265.03
1007	6	265.05
1007.5	6.5	265.05
1008	7	265.03
1008.5	7.5	265.03
1009	8	265.05
1009.5	8.5	265.03
1010	9	265.03
1010.5	9.5	265.03
1011	10	265.03
1013	12	265.03
1015	14	265.03

W. A. Jordan
W. A. Jordan

EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

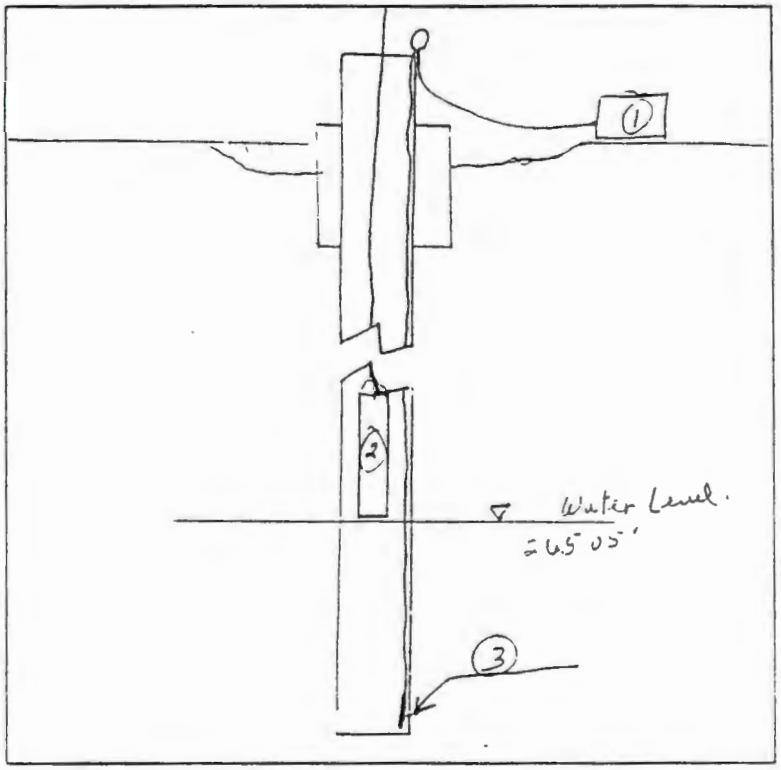
Well Designation 299-E25-39 Depth to bottom 277' from Top of Casing

Equipment Configuration

Item	Description
1	Hermit 1000B S.N. 1KB246
2	Slug Rod 2"x6'
3	InSitu Transducer S.N. 2110

N/A

Diagram

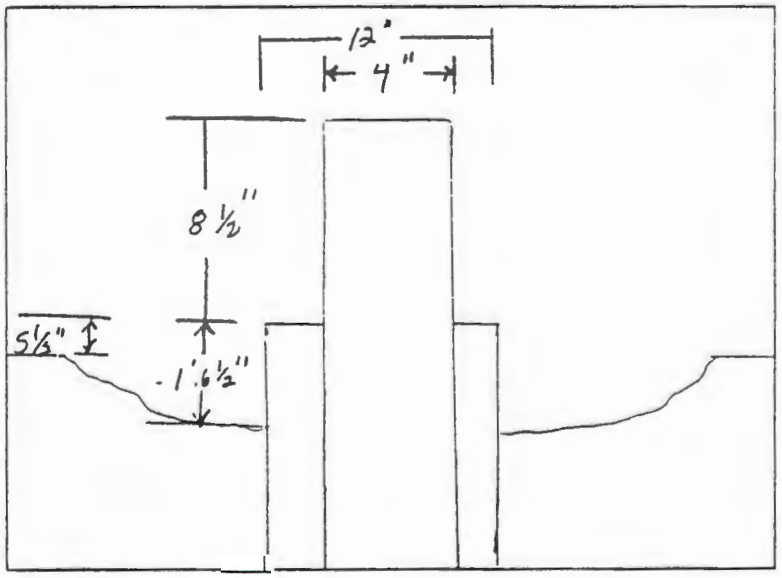


Well Head

Comments

No Surface Seal (Pad) was poured at the time. There was a depression around the well casing.

Diagram



Signature of Recorder W.A. Jordan W.A. Jordan Date 10/30/90.

A-6000-417 (08/89)

9312760054 6

Well 299-E25-39.
Slug Injection Baseline

80±9

SE1000B
Environmental Logger
10/30 14:01

Unit# 00001 Test# 1

INPUT 1: Level (F) TOC

Reference 265.05
Scale factor 50.15
Offset 0.00

Step# 0 10/30 09:47

Time	E-time	D-T-W:Ft
947	0	265.05
948	1	265.05
949	2	265.06
950	3	265.05
951	4	265.05
952	5	265.05
953	6	265.05
954	7	265.05
955	8	265.05
956	9	265.05
957	10	265.05
958	11	265.05
959	12	265.03

W.A. Jordan

W.A. Jordan

Well 299-E25-39

Slug Withdrawal Baseline

SE1000B
Environmental Logger
10/30 13:58

Unit# 00001 Test# 3

INPUT 1: Level (F) TOC

Reference 265.05
Scale factor 50.15
Offset 0.00

Step# 0 10/30 10:19

Time	E-Time	D-T-W:Ft
1019	0	265.03
1020	1	265.03
1021	2	265.03
1022	3	265.03
1023	4	265.03
1024	5	265.03
1025	6	265.03
1026	7	265.03
1027	8	265.03
1028	9	265.03
1029	10	265.03

9 3 1 2 7 6 0 0 5 4 8

W.A. Jordan

W.A. Jordan

AQUIFER TEST DATA ANALYSIS SHEET

WELL NAME: 299-E25-39; Grout Treatment Facility

TEST TYPE: Slug Test and Development Monitoring (constant discharge)

WELL INFORMATION-

Test Date.....10/30/90 (slug); 12/10/90 (development)

Aquifer.....Unconfined (Hanford formation)

Aquifer Interval.....~264 to ~305 ft bls[1]

Screened Interval.....257.5 to 277.8 ft bls

Measurement Device(s)...Pressure transducer and electric tape

Depth-To-Water.....266.05 ft (slug); 266.43 ft (development) btoc[2]

TEST INFORMATION-

Analysis Method(s).....N/A

Test Duration.....<30 sec (slug); 15 mins (development)

Rod Volume.....0.13 ft^3

Maximum Drawdown.....0.4 ft (slug); 0.06 ft (development)

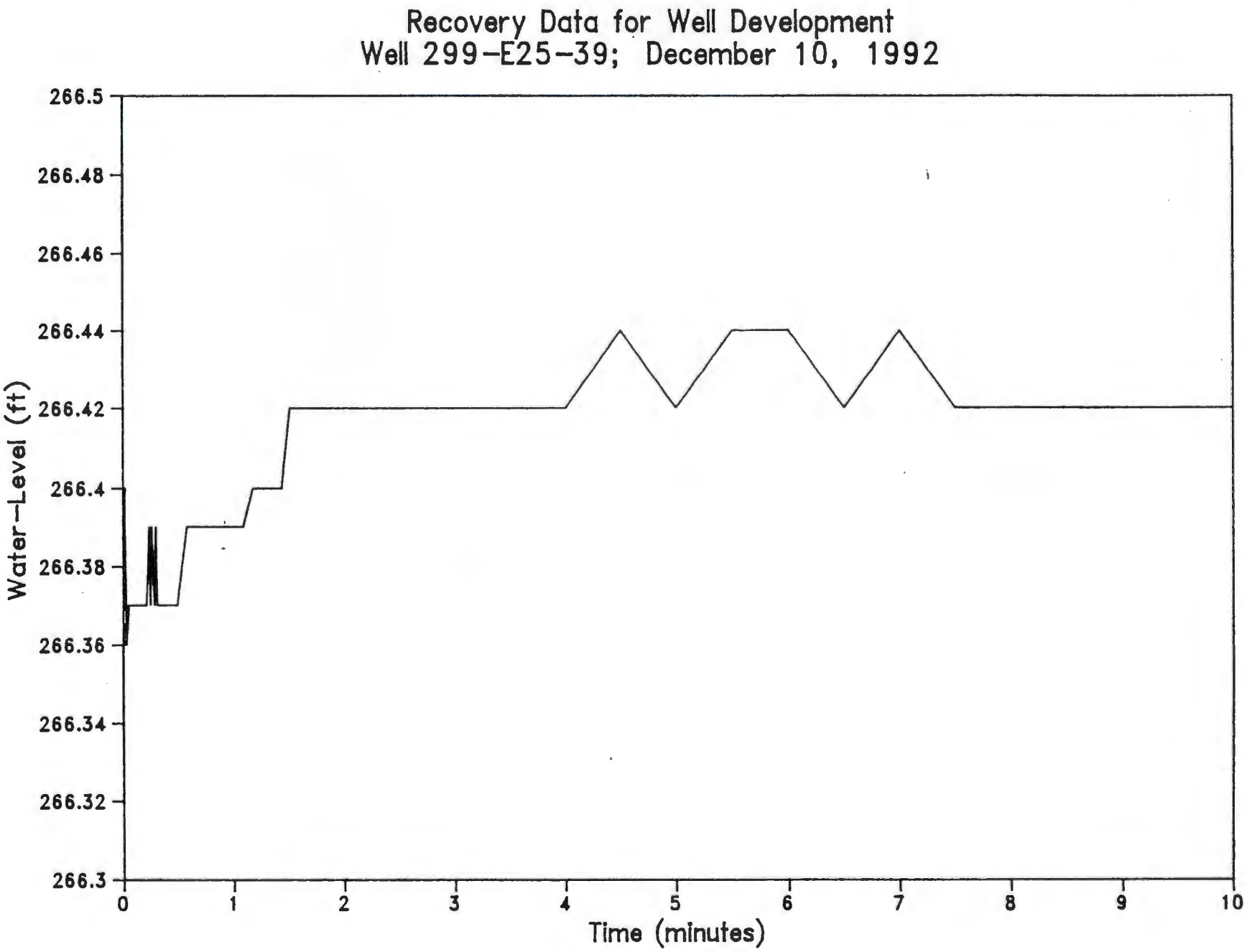
Discharge Rate.....14.1 gpm (development)

ANALYSIS RESULTS AND DISCUSSION-

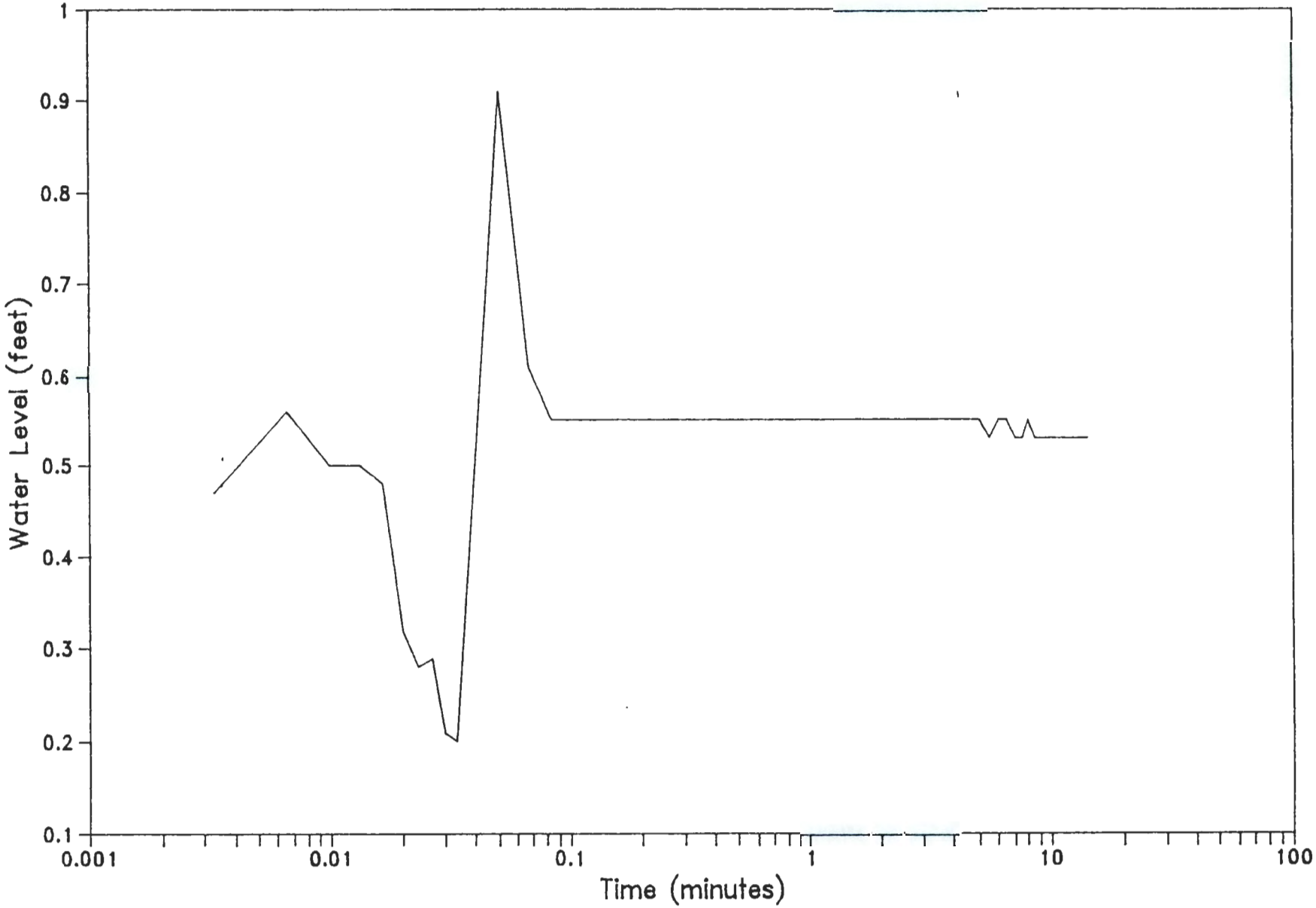
A reasonable analysis was not feasible for both the slug test and the development constant discharge test, given the minimal water-level responses. The water-level response during the slug test was too quick; and drawdown during development was insufficient to analyze (about 0.06 ft total). The observed responses are typical of a highly transmissive aquifer. Plots of the slug test data and the development drawdown are attached.

1. bls = below ground surface
2. btoc = below top of casing

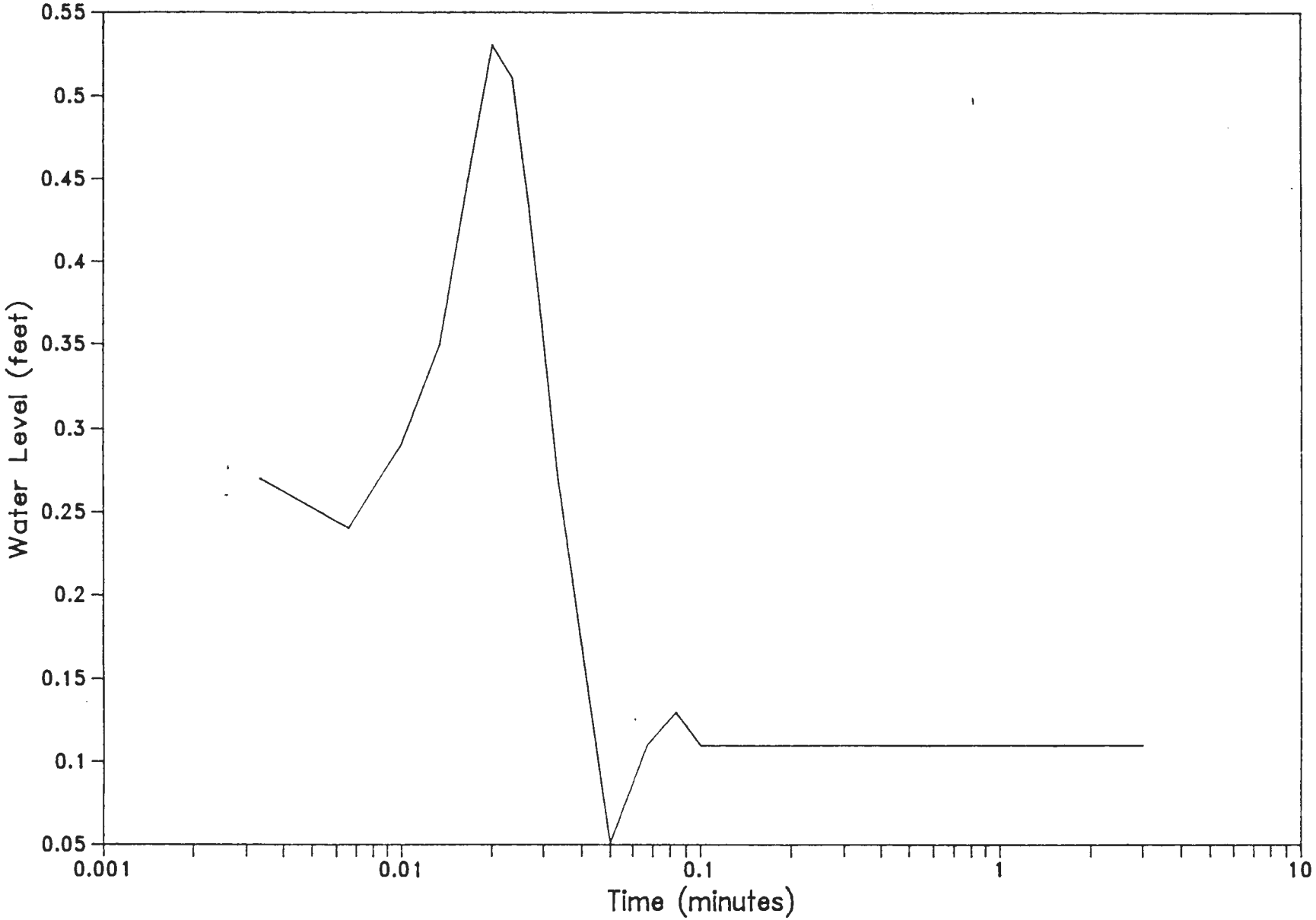
9 3 1 2 7 6 0 0 5 4 9


Recovery Data for Well Development
Well 299-E25-39; December 10, 1992
Water-Level (ft)
266.5
266.48
266.46
266.44
266.42
266.4
266.38
266.36
266.34
266.32
266.3
0
1
2
3
4
5
6
7
8
9
10
Time (minutes)

Slug Injection Test at Well 299-E25-39
Grout Facility; October 30, 1990



Slug Withdrawal Test at Well 299-E25-39
Grout Facility; October 30, 1990



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9312760053

BD-7600-062 (08/91) WEF074

Part 1

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