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ENGINEERING DATA TRANSMITTAL

Page 1 of 1

1. EDT 159241

2. To: (Receiving Organization) Distribution	3. From: (Originating Organization) B. A. Williams - Geosciences	4. Related EDT No.: N/A
5. Proj./Prog./Dept./Div.: Environmental Division	6. Cog. Engr.: B. A. Williams 10/5/92	7. Purchase Order No.: N/A
8. Originator Remarks: For review and approval of the attached borehole completion data package. Forward comments to B. A. Williams, H4-56, 6-3416.		9. Equip./Component No.: N/A
		10. System/Bldg./Facility: N/A
11. Receiver Remarks:		12. Major Assm. Dwg. No.: N/A
		13. Permit/Permit Application No.: N/A
		14. Required Response Date: October 7, 1992

NOV 1992 RECEIVED EDMC

15. DATA TRANSMITTED

(A) Item No.	(B) Document/Drawing No.	(C) Sheet No.	(D) Rev. No.	(E) Title or Description of Data Transmitted	(F) Impact Level	(G) Reason for Transmittal	(H) Originator Disposition	(I) Receiver Disposition
1	WHC-SD-EN-DP-045		0	Borehole Completion Data Package for DOE 216-S-10 Facility, CY 1991		3Q	1/4	

16. KEY

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

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

(G) Reason	(H) Disp.	(J) Name (K) Signature (L) Date (M) MSIN	(J) Name (K) Signature (L) Date (M) MSIN	(G) Reason	(H) Disp.
1/4	1	Cog.Eng. B. A. Williams (4) H4-56 10/7/92	EDMC (2) H4-22	3	
1/4	1	Cog. Mgr. R. L. Jackson H4-56 10/9/92	CENTRAL Files L8-04	3	
1/4	1	QA W. R. Thackaberry H4-16 10-12-92			
		Safety			
		Env.			
1	1	L. C. Swanson 10/6/92 H4-56			

18.	19.	20.	21. DOE APPROVAL (if required) Ltr. No. N/A
B. A. Williams 10/2/92 Signature of EDT Originator / Date	K. R. Fecht Authorized Representative for Receiving Organization / Date	R. L. Jackson Cognizant/Project Engineer's Manager / Date	[] Approved [] Approved w/comments [] Disapproved w/comments

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

BD-7400-172-1 (02/89)

SUPPORTING DOCUMENT

1. Total Pages 237

2. Title	3. Number	4. Rev No.
Borehole Completion Data Package for the 216-S-10 Facility, CY 1991	WHC-SD-EN-BP-045	0

5. Key Words	6. Author
Borehole Completion, RCRA, Monitoring wells, CY 1991, S-10 Facility	Name: B. A. Williams Signature Organization/Charge Code 81231/R46D1

APPROVED FOR PUBLIC RELEASE
10/12/92 N. Doles

7. Abstract

Wells 299,W26-7, 299-W26-10 and 299-W26-12 were installed in CY 1991 as RCRA compliant groundwater monitoring wells around the S-10 facility of the Hanford Site. The data package summarized the installation activities and included information and records on drilling, construction, development, sampling, and aquifer testing. An interpretation of the aquifer test results is included in the appendix.

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9. Impact Level 3Q

10. RELEASE STAMP

OFFICIAL RELEASE BY WHC (20)
DATE OCT 12 1992
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1.0 INTRODUCTION

Three new RCRA groundwater monitoring wells were installed around the S-10 facility in CY 1991, in support of Tri-Party Agreement milestone M-24-13. Installation of the wells took place between February, 1991 and April, 1991. The addition of these new wells; 299-W26-7, 299-W26-10, and 299-W26-12, increases the monitoring network to six wells; two upgradient, three downgradient and one perched zone well.

The S-10 facility (Pond and Ditch) is located south of the 200 West Area. The location of the network wells is illustrated in Figure 1-1. Location coordinates, and surveyed elevations for the new wells are listed in Table 1-1. The groundwater monitoring plan for the S-10 RCRA facility (WHC 1990) describes the hydrogeology of the area, and provides justification for the new wells and their locations. The wells were constructed to the specifications described in WHC-S-014 (WHC 1991) and comply with the Washington Administrative Code (WAC 173-160, WAC 173-303/304). Well construction, completion, and documentation followed procedures outlined in the *Environmental Investigations and Site Characterization Manual* (WHC 1988).

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

For each well, the following data and documents are included in appendices:

Appendix A:

- Well Summary Sheet
- Well Construction Report
- Borehole Log
- Geophysical Log

Appendix B:

- Physical Sampling Data Results

Appendix C:

- Well Development Log
- Pump Installation Record

Appendix D:

- Development drawdown and recovery data
- Slug test data
- Aquifer test analysis

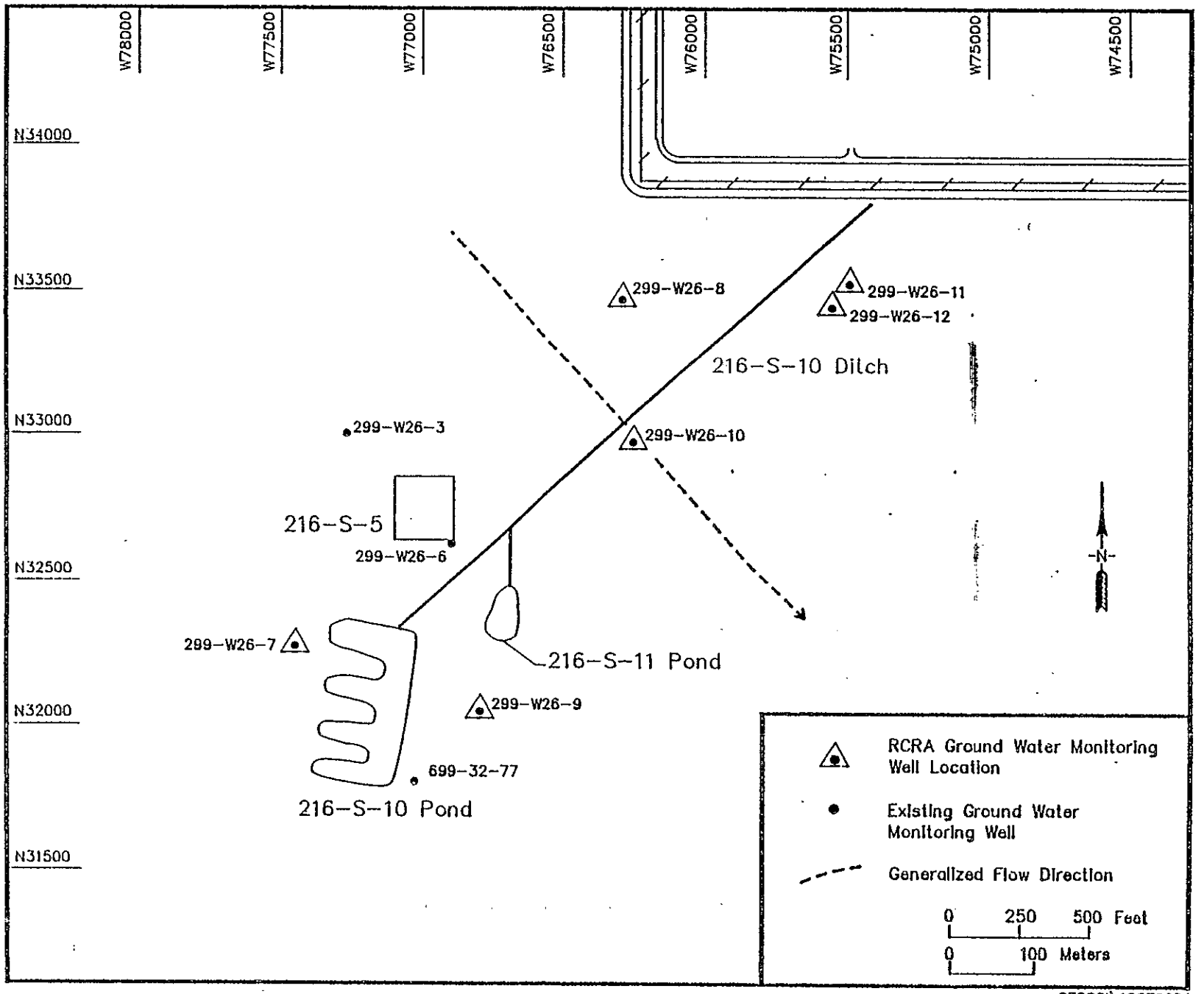

Figure 1-1. Monitoring Well Location for the 216-S-10 Facility.

Table 1-1. Survey Data for Groundwater Monitoring Wells Installed at the S-10 Facility in 1991.

Well	Datum or coordinate system[a]	Coordinates center of casing	Elevations (feet) Brass Marker in Concrete	Top Hydrostar Plate North Side	Top Outer Casing North Side
299 W26-7	Hanford	N: 32,094 W: 7,348	N/A	N/A	N/A
	Lambert or NGVD'29	N: 133,242.42 E: 566,325.45	648.59	652.00	651.99
299 W26-10	Hanford	N: 32,933 W: 76,172	N/A	N/A	N/A
	Lambert or NGVD'29	N: 133,499.11 E: 566,683.22	667.19	670.89	670.87
299 W26-12	Hanford	N: 33,557 W: 75,456	N/A	N/A	N/A
	Lanbert or NGVD'29	N: 133,689.86 E: 566,900.97	672.25	675.70	675.69

[a]Lambert WCS83S coordinates in meters.

NGVD'29 elevations are feet above the National Geodetic Vertical Datum of 1929; S-10 elevations in feet above mean sea level.
N/A = not available.

* corrected from typographical error in survey report

S-10 elevations and coordinates are most comparable to survey data for other wells currently in the groundwater database.

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

2.0 WELL 299-W26-7

2.1 DRILLING

Well 299-W26-7 was drilled by Kaiser Engineers Hanford (KEH) using cable tool drilling equipment. Drilling began on March 4, 1991, and a total depth (TD) of 206.9 ft below land surface (bls) was reached on March 27, 1991. Static water was measured at 186.3 ft bls. The Well Construction Report in Appendix A summarizes all the drilling and construction activities. The well as-built diagram is included on the Well Summary Sheet (Appendix A).

During drilling temporary casing was installed to maintain an open borehole: 12-in dia. casing was set from surface to 19.5 ft bls, 10-in dia. was set from surface to 140.5 ft bls, and 8-in dia. was set from surface to 205.0 ft bls. A gross gamma log was run through casing consecutively after the 10-in and 8-in dia. casing strings were set. Geophysical logs are in Appendix A.

KEH conducted chemical health and safety monitoring during drilling and detected no contamination. WHC Health Physics Technicians (HPT) performed radiological surveys on all samples and drill cuttings with no detections above site background levels.

The geologic section is comprised of unconsolidated silty sand to semi-consolidated sandy gravel. A detailed lithologic description is documented on the Borehole Log in Appendix A. Sediment samples were collected at depths of approximately every 5 ft for calcium carbonate analysis, radiological screening, and lithological archiving. Samples were also collected for moisture analysis at each interval until the water table was encountered. Samples were taken by drive barrel sampler to a depth of 155 ft. Hard tool drilling was required beyond this depth and samples were collected via a bailer. Two split spoon samples were taken, one at 192.5 ft and the second at 205 ft, respectively, for grain size analysis to aid in screen size selection. All physical data results are reported in Appendix B.

2.2 WELL COMPLETION

Construction of well 299-W26-7 began on April 8, 1991, and was completed on April 15, 1991. The well is designed as a shallow upgradient groundwater monitoring well with the screen installed to intersect the water table. Approximately 20 ft of 4-in dia., 5 slot (0.005-in) wire wound screen was installed from 184.2 to 205.2 ft bls. Water level in the screen was 187 ft bls. All permanent casing and screen is 4-in dia., type 304 stainless steel. The casing and screen has stainless steel centralizers for proper alignment in the borehole. All temporary casings and drilling shoes were removed as fill and annular sealing materials were added. The filter pack consisted of 20-40 mesh Colorado silica sand added from TD-180.7 ft bls. The annular seal

consists of 0.25-in bentonite pellets from 180.7 to 176.3 ft bls, 8-20 mesh bentonite crumbles from 176.3 to 18.4 ft bls, and Portland cement from 18.4 to 3.2 ft bls. A 6-in dia. stainless steel protective casing with pump base plate, locking well cap (installed over the well casing), and four posts were set into a reinforced concrete surface pad. The well identification number was stenciled onto the protective casing and one post and engraved into a brass cap placed on the north side of the concrete surface pad. The well head and surrounding area was then cleaned up and inspected.

2.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Development of 299-W26-7 began on May 6, 1991. A temporary submersible pump was used to remove 8,285 gal of water from the well until turbidity measured 4.3 Nephelometric Turbidity Units (NTU). Water level drawdown and recovery data was measured with a transducer in the well during development and is included in Appendix D. A well development log is included in Appendix C. A permanent Hydrostar (a trademark of Instrumentation Northwest) sampling pump was installed and tested in 299-W26-7 on May 13, 1991. The pump intake is set at 207.2 ft bls. A pump installation record is included in Appendix C.

2.4 AQUIFER TESTING

A slug injection/withdrawal test was conducted in 299-W26-7 on May 9, 1991, after development. The data and interpretation is included in Appendix D.

3.0 WELL 299-W26-10

3.1 DRILLING

Well 299-W26-10 was drilled by KEH using cable tool drilling equipment. Drilling began on February 19, 1991, and a TD of 222.3 ft bls was reached on March 22, 1991. Static water was measured at 203.7 ft bls. The Well Construction Report in Appendix A summarizes all the drilling and construction activities. The well as-built diagram is included on the Well Summary Sheet (Appendix A).

During drilling temporary casing was installed to maintain an open borehole: 12-in dia. casing was set from surface to 19.3 ft bls, 10-in dia. was set from surface to 159.0 ft bls, and 8-in dia. was set from surface to 223.0 ft bls. A Gross gamma log was run through casing consecutively after the 10-in and 8-in dia. casing strings were set. Geophysical logs are in Appendix A.

KEH conducted chemical health and safety monitoring during drilling and detected no contamination. HPT performed radiological surveys on all samples and drill cuttings with no detections above site background levels.

The geologic section is comprised of unconsolidated silty sand to semi-consolidated sandy gravel. A detailed lithologic description is documented on the Borehole Log in Appendix A. Sediment samples were collected at depths of approximately every 5 ft for calcium carbonate analysis, radiological screening, and lithological archiving. Samples were also collected for moisture analysis at each interval until the water table was encountered. Samples were taken by drive barrel sampler to a depth of 170 ft. Hard tool drilling was required beyond this depth and samples were collected via a bailer. Two split spoon samples were taken, one at 215 ft and the second at 220 ft, respectively, for grain size analysis to aid in screen size selection. All physical data results are reported in Appendix B.

3.2 WELL COMPLETION

Construction of well 299-W26-10 began on March 25, 1991, and was completed on April 4, 1991. The well is designed as a shallow downgradient groundwater monitoring well with the screen installed to intersect the water table. Approximately 20 ft of 4-in dia., 10 slot (0.01-in) wire wound screen was installed from 221.3 to 201.2 ft bls. Water level in the screen was 203.1 ft bls. All permanent casing and screen is 4-in dia., type 304 stainless steel. The casing and screen has stainless steel centralizers for proper alignment in the borehole. All temporary casings and drilling shoes were removed as fill and annular sealing materials were added. The filter pack consisted of 10-20 mesh Colorado silica sand added from TD-197.8 ft bls. The annular seal consists of 0.25-in bentonite pellets from 193.5 to 197.8 ft bls, 8-20 mesh bentonite crumbles from 193.5 to 20.4 ft bls, and Portland cement from 20.4 to 2.8 ft bls. A 6-in dia. stainless steel protective casing with pump base plate, locking well cap (installed over the well casing), and four posts were set into a reinforced concrete surface pad. The well identification number was stenciled onto the protective casing and one post and engraved into a brass cap placed on the north side of the concrete surface pad. The well head and surrounding area was then cleaned up and inspected.

3.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Development of 299-W26-10 began on May 1, 1991. A temporary submersible pump was used to remove over 4,050 gal of water from the well until turbidity measured 4.8 NTU. Water level drawdown and recovery data was measured with a transducer in the well during development and is included in Appendix D. A well development log is included in Appendix C.

A permanent Hydrostar sampling pump was installed and tested in 299-W26-10 on May 3, 1991. The pump intake is set at 220.2 ft bls. The pump installation record is included in Appendix C.

3.4 AQUIFER TESTING

A slug injection/withdrawal test was conducted in 299-W26-10 on May 3, 1991, after development. The data and interpretation are included in Appendix D.

4.0 WELL 299-W26-12

4.1 DRILLING

Well 299-W26-12 was drilled by KEH using cable tool drilling equipment. Drilling began on February 13, 1991, and a TD of 230.4 ft bls was reached on March 13, 1991. Perched water was encountered at 140.3 ft within a sandy silt interval similar to offset well 299-W26-11. The static water level was measured at 210.7 ft bls. The Well Construction Report in Appendix A summarizes all the drilling and construction activities. The well as-built diagram is included on the Well Summary Sheet (Appendix A).

During drilling temporary casing was installed to maintain an open borehole: 12-in dia. casing was set from surface to 22.7 ft bls, 10-in dia. was set from surface to 152.6 ft bls to seal of the perched zone, and 8-in dia. was set from surface to 229.5 ft bls. A Gross gamma log was run through casing consecutively after the 10-in and 8-in dia. casing strings were set. Geophysical logs are in Appendix A.

KEH conducted chemical health and safety monitoring during drilling and detected no contamination. HPT performed radiological surveys on all samples and drill cuttings with no detections above site background levels.

The geologic section is comprised of unconsolidated sandy silt to semi-consolidated sandy gravel. A detailed lithologic description is documented on the Borehole Log in Appendix A.

Sediment samples were collected at depths of approximately every 5 ft for calcium carbonate analysis, radiological screening, and lithological archiving. Samples were also collected for moisture analysis at each interval until the water table was encountered. Samples were taken by drive barrel sampler to a depth of approximately 187 ft. Hard tool drilling was required beyond this depth and samples were collected via a bailer. Four split spoon samples were taken between 148 and 157 ft. The samples were never analyzed and are archived at the 2101-M Library. Sieve analysis was performed on four grab samples taken at TD to aid in screen size selection. All physical data results are reported in Appendix B.

4.2 WELL COMPLETION

Construction of well 299-W26-12 began on March 15, 1991, and was completed on March 29, 1991. The well is designed as a shallow downgradient groundwater monitoring well with the screen installed to intersect the water table. Approximately 20 ft of 4-in dia., 10 slot (0.01-in) wire wound screen was installed from 207.2 to 227.9 ft bls. Water level in the screen was 210.5 ft bls. All permanent casing and screen is 4-in dia., type 304 stainless steel. The casing and screen has stainless steel centralizers for proper alignment in the borehole. All temporary casings and drilling shoes were removed as fill and annular sealing materials were added. The filter pack consisted of 20-40 mesh Colorado silica sand added from TD-204 ft bls. The annular seal consists of 0.25-in bentonite pellets from 204 to 199.5 ft bls, 8-20 mesh bentonite crumbles from 199.5 to 152.6 ft bls, bentonite slurry from 152.6 to 128.8 ft bls (to seal perched interval), 8-20 mesh crumbles from

128.8 to 20 ft bls, and Portland cement from 20.0 to 3.4 ft bls. A 6-in dia. stainless steel protective casing with pump base plate, locking well cap (installed over the well casing), and four posts were set into a reinforced concrete surface pad. The well identification number was stenciled onto the protective casing and one post and engraved into a brass cap placed on the north side of the concrete surface pad. The well head and surrounding area was then cleaned up and inspected.

4.3 WELL DEVELOPMENT AND PUMP INSTALLATION

Well 299-W26-12 was developed on May 10, 1991. A temporary submersible pump was used to remove 123 gal of water from the well until turbidity measured 3.0 NTU. Water level drawdown and recovery data were measured with a transducer in the well during development and is included in Appendix D. A well development log is included in Appendix C. A permanent Hydrostar sampling pump was installed and tested in 299-W26-12 on May 10, 1991. The pump intake is set at 228.9 ft bls. A pump installation record is included in Appendix C.

4.4 AQUIFER TESTING

A slug injection/withdrawal test was conducted in 299-W26-12 on May 9, 1991. The data and interpretation are included in Appendix D.

5.0 REFERENCES

Ecology, 1992, *Minimum Standards for Construction and Maintenance of Wells*, WAC 173-160, Washington State Department of Ecology.

Ecology, 1992, *Dangerous Waste Regulations/Solid Waste Handling*, WAC 173-303/304, Washington State Department of Ecology.

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

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

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

APPENDIX A

DRILLING AND CONSTRUCTION DATA

9413223.1705

CONTENTS

WELL SUMMARY SHEETS
WELL CONSTRUCTION REPORTS
BOREHOLE LOGS
GEOPHYSICAL LOGS

9413223.1706

WELL 299-W26-7

9413223.1707

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5-17 POND

WELL 299-W26-7

DRILLING

START DATE	FINISH DATE	TOTAL DAYS	CURRENT DEPTH	FINAL DEPTH	DEPTH TO WATER	WATER ADDED(GAL)
3-4-91	3-27-91	17	N/A	206.9	3-21-91 186.7' 3-22-91 186.3'	65

DOWN HOLE COMPLETION

START DATE	FINISH DATE	TOTAL DAYS	DEPTH TO WATER	DEPTH TO BOTTOM	DEPTH OF SCREEN	WATER ADDED/ REMOVED (GAL)
4-8-91	4-15-91	6	4-8-91 187.0'	205.5	184.2 - 205.2'	30

DEVELOPMENT AND ASSOCIATED ACTIVITIES

TV CAMERA DATE	AQUIFER TEST DATE	DEVELOPMENT DATE	HYDROSTAR PLACEMENT DATE	WATER REMOVED(GAL)
N/A	5-6-91 5-7-91 5-8-91 5-9-91	5-6-91 5-7-91 5-8-91 5-9-91	5-13-91	8285

COMMENTS:

VALIDATION SIGNATURE/DATE 2/4/92

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WELL CONSTRUCTION REPORT

Specification No. ~~RCRA W-017~~ 3/11/91 cd WHC-S-014 Rev No. 5

ECNs 144240, 144241

Project RCRA W-017 - S10

Location S of 200W; S-10 Ditch

Drilling Company Kaiser Engineers Hanford

Driller D. Ludke, L. Butting, G. Thomas

Other (Companies)

Geologist(s) C. D. Delaney
SW Callison (EBASCO)
B. Jones (Ebasco) cd 3/14/91

Well No. 299-W26-7 Temp. Well No. N/A

Coordinates N 133,242.42, E 516,325.45 Lambe

Casing Elev. ~~652.00'NB~~ 651.99' Ground Elev. 648.59'

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-0.4 5.2, 5.3, 7.5, EII 6.7 sec 6.2

			Initials	Date
Rotary	Air N/A	Mud N/A	N/A	N/A
Cable Tool	D 3/4/91 0-154'	H 154'-207'	CD	3/13/91
Raw Water Drilling Fluid	none	65 gal	SWC	3/22/91
Split spoon Other		192.5'-194.5' 205'-207'	SWC	3/22/91

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	140.8 - 3.3'	3/14/91
Gross Gamma	110' - 205	3/26/91
	-	
	-	
	-	

Completion Data

Drilled Depth 206.9 (b/s)

Completed Depth 205.19'

Date Started 3/4/91

Date Completed 4/15/91

Static Water Level/Date 186.36 b/s 3/22/91

Aquifer Testing

Type INSTANEOUS SLUG INJECTION/W HYDRAULIC

Flow Meter I.D. No. - NA -

Cal Due Date - NA -

Length of Test 1HR.

Volume Pumped - NA -

Drawdown - NA -

Date of Test 5-9-91

Completion Results

Cleaning

Verification Method Visual Inspection (and direct observation of drilling cleaning)

Criteria WHC-S-014 7.6 7.7 4.2.2, WHC-CN-7-7 sec. 5.4

split spoon SWC 3/21/91

	Initials	Date
Drilling Tools/Rig	SWC	3/5/91
Temporary Materials	SWC	3/5/91
Permanent Materials	* CDD see comments	3/14/91

Screen

Type	Length	Slot Size
4"ϕ Stainless steel	20.71'	0.05

Depth(s) 184.18' - 205.19'

Verification Method Verify using steel tape

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

Initials DEJ Date 4/8/91

Material Storage/Packing

Verification Method Visual Observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	D.EJ	4/8/91
Material Packing	DEJ	4/8/91

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw Water	SWC	3/19/91
Lubricants	Well Guard	CD	3/14/91

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 8.2

Initials SWC RG Date 3/22/91

A-6000-436 (09/90)

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WELL CONSTRUCTION REPORT
(continuation sheet)

299-W26-7

Casing (permanent)

Type	Size	Placement
Stainless Steel	4" KR	+3.9 to ~~184.18~~ 205.19'

Verification Method: Verify using steel tape

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

Initials: DBJ Date: 4/8/91

Well Protection

Verification Method: Visual, Measure w/ tape

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	[illegible]	6/28/91
Protective Casing	[illegible]	6/28/91
Site Restored	[illegible]	6/28/91
Cap, Hasp and Lock	[illegible]	6/28/91
Surface Pad	[illegible]	6/28/91

Annular Seal/Filter Pack

Verification Method: Verify using steel tape Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.3.1 ~~or 5.3.2~~ DBJ 4/9/91

Type	Interval	Volume	Initials	Date
SSI 20/40 Silica Sand	205.5 - 180.7	21.5 sks = 24.05 cu ft	KR	4/12/91
1/4" Bent Pellets	180.7' - 176.3'	3 bags = 1.86 cu ft.	KR	4/12/91
8-20 mesh Bent. Crumbles	176.3' - 18.4'	141 sks = 100.11 cu/ft	KR	4/15/91
Grout Cement {7 bags Cmnt + 28oz Alumn + 42 gal H2O/bag}	18.4' - 3.2'	12.57 cu/ft	KR	4/15/91

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-S-014 3.4 & 4.2.10, 4.2.12

	Initials	Date
Measurement Point/Surveyed	ECL	1/24/92
Protective Casing/Brass Cap Surveyed	ECL	1/24/92
Well Number Stenciled	ECL	1/24/92
Brass Cap Labeled	ECL	1/24/92

Pump Installation

Verification Method: Visual Observation

Criteria: WHC-S-014 4.2.11, 4.2.2

	Initials	Date
Pump Decon/Prep	JAC	5-13-91
Installed	JAC	5-13-91
Pump Tested	[illegible]	6/28/91

Other (initial if performed)

N/A Well Abandonment N/A Downhole TV Inspection SWC Complete As-Built Diagram, Driller's/Geologist's Logs

5-9-91 JAC Well Development

Comments/Remarks * Decon papers have been accepted for temporary materials as of 3/24/91

Reviewed By (Sign/Print Name): Edward C. Lefuse / EDWARD C. LEFUSE Date: 12/20/91

A-6000-436 (09/90)

WELL SUMMARY SHEET

Boring or Well No. **299-W26-7**
Northing 133242.42 Easting 566325.45
Sheet 1 of 3

Location: SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 648.59
Drilling Contractor: KEH
Driller: D LUDTKE, et al.
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: BA WILLIAMS (Sign/Print Name) Date: 5-13-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
CEMENT (0' TO 18.4')				0-8' Silty SAND
		10		8-110' SAND Small amount of gravel to 13'
12" TEMPORARY CARBON STEEL CASING SET AT 19.53'		20		
		30		
8-20 MESH BENTONITE CRUMBLES (18.4' TO 176.3')		40		
		50		Small silt lense at 47'
		60		
		70		SAND as above, slightly silty (from 65' to 70') Fining downward to 70' becoming slightly silty
	Inches 28 20 12 8 4 0 4 8 12 20 28	80	C/Z S P C/B	

WELL SUMMARY SHEET

Boring or Well No. **299-W26-7**
Northing 133242.42 Easting 566325.45
Sheet 2 of 3

Location: SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 648.59
Drilling Contractor: KEH
Driller: D LUDTKE, et al.
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: BA Williams (Sign/Print Name) Date: 5-13-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
		90		
		100		
		110		110-120′ SAND with occasional silt lenses (111-111.5′ Silt lense)
		120		(118-118.5′ Silt lense)
				124-125.5′ SILT and CLAY 125.5-133′ Silty SAND
		130		
				133-142′ Silty Sandy GRAVEL
10" TEMPORARY CARBON STEEL CASING SET AT 140.5′		140		142-155′ Sandy GRAVEL
4" DIAM T-304 SCH 5 STAINLESS STEEL PERM CASING WITH CENTRALIZERS		150		
				155-206.9′ Silty Sandy GRAVEL
		160		

Inches 28 20 12 8 4 0 4 8 12 20 28

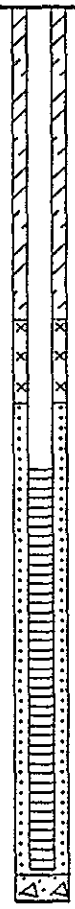
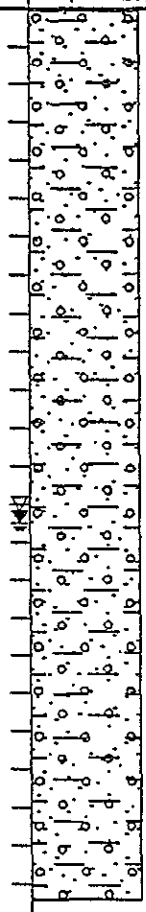
C/Z S P C/B

9413773.1713

WELL SUMMARY SHEET

Boring or Well No. **299-W26-7**
Northing 133242.42 Easting 566325.45
Sheet 3 of 3

Location: SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 648.59
Drilling Contractor: KEH
Driller: D LUDTKE, et al.
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: BAWRIN (Sign/Print Name) Date: 5-13-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
3/8" MESH BENTONITE PELLETS (176.3' TO 180.7')		170		
STATIC WATER LEVEL AT 187.0' (4/8/91)		180		
20-40 MESH SILICA SAND FILTER PACK (180.7' TO 205.5')		190		
4" DIAM 5-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN (184.18' TO 205.19')		200		
8" TEMPORARY CARBON STEEL CASING SET AT 205.0'				
SLUFF (205.5' TO 206.9') TOTAL DEPTH = 206.9'		210		
		220		
		230		
	Inches 28 20 12 8 4 0 4 8 12 20 28	240	C/Z S P C/B	

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 1 of 11

Location S-17 pond south of 200W

Project W-017 S-17 pond

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Cullison (Sign/Print Name) Stacey W. Cullison Date 3/5/91

Reviewed By IRA WILLIAMS (Sign/Print Name) Date 3/8/91

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
0					
	2 lith 1 moist 1 rad	DB		(5') silty SAND (85% sand, 15% silt) CS-15% MS-15% FS-35% VFS-20% silt 2.5Y 5/4 lt. olive brown (dry) silt 2.5Y 4/4 olive brown (wet) damp sample, 75% mafic 25% felsic No 10% HCL rxn, trace mica flakes	3/5/91 cd - casing depth cd = 0 surveyed clean w/SIP+GM silt caught in top of DB
5'					
	2 lith 1 moist 1 rad	DB		(10') SAND (95% sand 5% silt) VCS-20% CS-25% MS-30% FS-15% VFS-10% damp sample, 85% mafic 15% felsic No 10% HCL rxn, minute trace of mica dk grey sand	3/5/91 cd = 0 sample is more coarse and has less silt than previous sample, surveyed clean w/SIP+GM
10'					small amount of gravel in cuttings CP, open hole is caving in, dry cuttings
	2 lith 1 moist 1 rad	DB		(15') SAND (95% sand 5% silt) MS-15% FS-40% VFS-40% damp sample, 2.5Y 5/4 lt. olive brown 80% mafic 20% felsic No 10% HCL rxn mica flakes present	3/5/91 12" CS casing cd = 14' sample is lighter in color and finer than previous sample, more mica flakes than in previous sample, no gravel surveyed clean w/SIP+GM
15'					
20'					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 2 of 11

Location S-17 pond South of 200 W

Project W-017 S-17 pond

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date 3/5/91

Reviewed By D. A. Williams (Sign/Print Name) Date 3/8/91

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
20'	2 lith 1 moist 1 rad	DB		(20') SAND (95% sand 5% silt) MS-15% FS-40% VFS-40% 2.5Y 5/4 olive brown, damp sample 80% mafic 20% felsic, No 10% HCL rxn mica flakes present	3/5/91 12" CS casing cd ≈ 19.5' same as previous sample surveyed clean w/ SIP + GM
25'	2 lith 1 moist 1 rad	DB		(25') SAND (95% sand 5% silt) same as above, more moisture, still classified as damp mica flakes present	3/5/91 12" CS casing cd ≈ 19.5' sample has more moisture than previous sample surveyed clean w/ SIP + GM
30'	2 lith 1 moist 1 rad	DB		(30') SAND (95% sand 5% silt) same as above mica flakes present	3/5/91 12" casing depth ≈ 19.5' more mica flakes surveyed clean w/ SIP + GM
35'	2 lith 1 moist 1 rad	DB		(35') SAND (95% sand 5% silt) same as above No 10% HCL rxn mica flakes present	3/6/91 10" CS casing cd ≈ 34' surveyed clean w/ SIP + GM
40'					

A-6000-382 (04/90)

9113273.1716

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 3 of 11

Location S-17 pond south of 200W

Project W-017 S-17 pond

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date 3/6/91

Reviewed By [signature] / B A Williams (Sign/Print Name) Date 3/15/91

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
40'	2 lith 1 moist 1 rad	DB		(40') SAND (95% sand 5% silt) MS-15% FS-40% VFS-40% 2.5Y 5/4 olive brown, damp sample 75% mafic 25% felsic, some 10% HCL rxn mica flakes present	3/6/91 10" cs casing cd ≈ 39' surveyed clean w/ SIP+GM
45'	2 lith 1 moist 1 rad	DB		(45') SAND (95% sand 5% silt) same as above	3/6/91 10" cs casing cd ≈ 39' surveyed clean w/ SIP+GM Small silt layer @ 47'
50'	(1) HPT (2) Lithology (3) Moisture	DB		(50') SAND (98% sand ≤2% fines) Pale Brown (10YR 6/3) Moist to Very Pale Brown (10YR 7/3) Dry. SANDS are composed of 10% fine SAND 88% Very fine Sand. Very Well Sorted, Clean, Moist to Dry, loose, unconsolidated. Very slight Rx to HCl	Casing advanced to 39' Surveyed by PID/GM all clean
55'	(1) HPT (2) Lithology (3) Moisture	DB		(55') SAND (98% SAND, ≤2% fines) Light Brownish gray (10YR 6/2) Dry to Brown (10YR 5/3) wet. SANDS composed of 20% fine SANDS. 78% V.F.S. ≤2% fine Very well Sorted, Slightly Moist, loose, unconsolidated clean. No Rx to HCl.	Casing to 39' Surveyed by P.D/GM/BA All clean
60'	(1) HPT (2) Lithology (3) Moisture	DB		(60') SAND (97% SAND ≤3% fines)	Casing to 59'

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No 299-W26-7

Sheet 4 of 11

Location S-17 pond South of 200W

Project W-017 S-17 pond

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller D. LUDKE, G. THOMAS

Drilling Method and Equipment Cable Tool

Prepared By D B. Jones / D Brent Jones (Sign/Print Name) Date 3/8/91

Reviewed By BA WILLIAMS / (Sign/Print Name) Date 3/15/91

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'				(60) SAND (97% SAND ≤ 3% fines) Light brownish gray (10YR 6/2) Dry to brown (10YR 5/3) wet. Sands composed of (8% MS 80% FS 9% VFS, ≤3% fines) 65% mafic (basaltic, 25% Qtzic, 10% other Moist, loose, uncemented, slt Rx to 10% HCL.	Casing to 59'. End of shift 3/8
					Start shift 3/11 Casing to 60'
	(1) HPT (1) Moisture (2) Lithology	85% DB			
65'				65' SAND (98% SAND ≤ 2% fines) Light grayish brown (10YR 6/2) Dry to Brown (10YR 5/3) wet. Sands composed of 10% MS, 78% FS, 10% VFS, ≤2% fines. 60% mafic 40% Qtzic 10% other Trace chlorite, muscovite, FeOx staining. Moist to dry, loose, uncemented, No Rx to 10% HCl.	
				(Fining downward)	
	(1) HPT (1) Moisture (2) Lith.	DB		(70) Slightly silty SAND (10% silt 90% sand) Pale brown (10YR 6/3) Dry to Brown (10YR 5/3) wet. Sands are composed of 12% MS, 60% FS 18% VFS, 60% mafic 40% felsic. Sands are loose well sorted clean, uncemented. Occasional thinly laminated silt layer (horizontal). Dry, No Rx to 10% HCl. Fine silts (≤1cm Thick) w/ medium sands. v8 different laminae	Casing to 60' No Rad. detected
75'	(1) HPT (1) Moisture (2) Lith.	DB		(75) SAND (98% SAND, ≤2% fines) Pale brown (10YR 6/3) Dry Brown (10YR 5/3) wet. Sands composed of 5% MS, 55% FS, 33% VFS, ≤2% fines. 60% mafic, 30% basaltic 10% other Dry, loose, clean, Very well Sorted No Rx to 10% HCl. Moderate K, M. No Structure observable	Casing to 60' No Rad. detected
80'				(80) SAND (97% SAND, ≤3% fines)	Casing to 60' No Rad detected

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 5 of 11

Location 200 West, South; S-17 Pond
Project W017 / S-17 pond
Elevation 648.59 BRASS CAP
Drilling Contractor KAISER Engineering, HANFORD
Driller D. Ludke, G. Thomas
Drilling Method and Equipment B.E. 22W; Cable
Prepared By D.B. Jones (Sign/Print Name) Date 3/6/01
Reviewed By (Sign/Print Name) Date 3/15/91

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
80.0	(1) HPT (1) Moisture (2) Lithology	DB		(80) SAND (97% SAND, ≤3% fines) (2.5YR 6/3) light yellowish brown Dry to (10YR 5/3) Brown, wet. Sands Dis. 3% MS 55% fine S, 39% VFS, 56% felsic, 40% mafic & other. Dry, loose, uncemented, Medium n.k. no Rx to 10% HCl. Brown very well sorted	Casing to 60 No Rad detected
	(1) No-Skin (1) HPT (2) Lith	DB		(85) SAND (96% SAND, 4% fines) Light yellowish brown (2.5YR 6/3) Dry to (10YR 5/3) brown, wet. Same as above.	
90.0	1 moisture 1 Rad 2 Lith	DB		Sand (95% Sand, 5% Silt) (2.5Y 6/3) Lt. yellow brown v. well srt, same as above	No rad haz or chem haz detected w/ field instruments
					fining (greater % of silt)
95.0	1 moisture 1 Rad 2 Lith	DB		Sand (90% VFS, 10% Silt) 60% felsic, 40% mafic, 2.5Y 5.2 grayish brown, 5% moisture content, partially consolidated, thin laminations visible, moderately well sorted, well rounded grains, no reaction to HCl	
100.0					

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 6 of 11

Location: S-17 Pond S of 200W

Project: W-017 S-17 Pond

Elevation: 648.59 BRASS CAP

Drilling Contractor: KEH

Driller: Darrel Ludke

Drilling Method and Equipment: Cable Tool

Prepared By: Cynthia Delaney/C Delaney (Sign/Print Name) Date 3/10/91

Reviewed By: R.D. Mike (Sign/Print Name) Date 3/14/91

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
100	1 Rad 1 moisture & lithology	DB		Sand (95% FS, 5% silt) 70% felsic, 30% matics, 2.5Y5.2 grayish brown, 5% moisture content, mod w srt, well rounded, slight reaction to HCl	No chem or rad haz detected
105	1 Rad 1 moisture & Lith	DB		Sand (95% FS, 5% SIH) 70% felsic, 30% matic same as above	No chem or rad haz detected
110	1 Rad 1 moisture & Lith	DB		Sand (90% VFS, 10% silt) 70% felsic, 30% matic, 2.5Y5.2 grayish brown, 5% moisture content, mod w srt, well rounded some consolidated lenses of silt, No reaction to HCl	No chem or rad haz detected
111	111' (1 Rad 1 moisture & Lith)	DB		(111') Silt (80% Silt, 20% VFS) 75% felsic, 25% matic, well srt, 2.5Y/5/2 (Grayish brown) well laminated, consolidated, mod reaction to HCl	Change in lith at 111 to silt samples taken, no chem or rad haz detected silt lense ~ .5' thick
115	1 Rad 1 moisture & Lith	DB		Silty Sand (70% VFS, 30% Silt) 70% felsic, 30% matic, 2.5Y5.2 (grayish brown), 5% moisture content, mod w srt, well rounded, some consolidated lenses of silt, sl. reaction to HCl	No chem or rad haz detected massive silt lense at 118' (No increase in moisture) ~ .5' thick
120					

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 7 of 11

Location S-17 Pond SOT 200W

Project W-017 S-17 Pond

Elevation 648.59 BRASS CAP

Drilling Contractor KEH

Driller Darrel Ludke

Drilling Method and Equipment Cable Tool

Prepared By Cynthia Delaney/C. Delaney (Sign/Print Name) Date 3/13/91

Reviewed By R.D. Miller (Sign/Print Name) Date 3/14/91

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
120	1 Rad 2 Lith 1 moisture	DB		Silty sand (75% VFS, 25% Silt) 5Y/5/2 (Olive Gray), 5% moisture content, v well srt, well rounded, 70% felsic, 30% mafic, st. reaction to HCl, sample swells w/ H2O added	VFS w/ silt lenses ~3-4" thick
125	1 Rad 2 Lith 1 moisture	DB		Silt and clay 5Y/4/2 (Olive Gray) 5% moisture content, well srt mod reaction to HCl, well consolidated + massive	
130	1 Rad 2 Lith 1 moisture	DB		Silty sand (40% FS, 30% VFS, 30% silt) 50% felsic, 50% mafic, 2.5Y 4/3 (Olive Brown) No moisture, well srt, well rounded, mod reaction to HCl,	Higher % of basalt
132	1 Rad 2 Lith 1 moisture	DB		Unconsolidated (132') Silty sand (30% CS, 20% MS, 20% FS, 30% silt) 30% Felsic, 70% mafic, 2.5Y 5/2 (Grayish brown) matrix,	4" lense of silt Higher % of basalt, clay clasts in a sand matrix (mottled)
134	(Gravel)				Gravel at 134'
135	1 Rad 2 Lith 1 moisture	DB		Clay clasts - 7.5YR 7/2 Pinkish gray, 5% moisture, med srt, well rounded grains, clay clasts angular, matrix effervesses w/ HCl, clay clasts do not, consolidated (135') Silty sandy Gravel, 40% Gravel, 50% Sand, 10% Silt (10% MP, 10% FP, 20% VFP, 10% VCS, 10% CS, 10% MS, 10% FS, 10% VFS, 10% Silt) 5Y 4/1 (Dark Gray) No moisture, poor srt, sub rounded-angular 50% mafic, 50% felsic, react ion to HCl	
140					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 8 of 11

Location S-17 pond South of 200W

Project W-017

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/15/91

Reviewed By R D Miller (Sign/Print Name)

Date 3/20/91

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
140'	2lith 1moist 1rad	DB		silty sandy gravel, same as above, partially consolidated	
					consolidated silt lense (w/ gravel) at 132'.
145'	2 lith 1moist 1rad	DB		(145') sandy GRAVEL (60% gravel 40% sand ≥5% silt) VCP-10% CP-15% MP-15% FP-10% VFP-10% VCS-10% CS-15% MS-10% FS-5% color 10YR 4/6 dk yellowish brown damp sample. 70% mafic 30% felsic No mica present, No 10% HCL rxn 3/15/91	3/15/91 8" cs casing surveyed clean w/ SIP graphic log was done by Cindy Delaney up to 150' after that it was done by Stacey Callison
150'	2 lith 1moist 1rad	DB		(150') sandy GRAVEL (55% gravel, 35% sand 5% silt) same as above	3/15/91 8" cs casing surveyed clean w/ SIP
155'	2 lith 1CaCO3 1rad	HT		(155') silty sandy GRAVEL (40% gravel, 45% sand, 15% silt) MP-5% FP-20% VFP-15% VCS-15% CS-15% MS-10% FS-5% silt 2.5Y 4/3 olive brown (wet) silt si 2.5Y 6/2 lt yellowish brown (dry) 80% mafic 20% felsic, No mica angular, No 10% HCL rxn	3/19/91 8" cs casing cd ≈ 154' bls surveyed clean w/ SIP
160'					

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 9 of 11

Location S-17 pond south of 200W

Project W-017

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/19/91

Reviewed By [illegible] (Sign/Print Name)

Date 3/20/91

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
160'	2 lith 1 $CaCO_3$ 1 rad	HT		(160') silty sandy GRAVEL (40% gravel, 45% sand, 15% silt) FP-20% VFP-20% VCS-15% CS-15% MS-10% FS-5% silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 6/3 lt. yellowish brown (dry) 80% mafic 20% felsic, No mica angular + subangular No 10% HCl rxn	3/19/91 8" cs casing cd = 160' bls surveyed clean w/SIP
165'	2 lith 1 $CaCO_3$ 1 rad	HT		(165') silty sandy GRAVEL (40% gravel 45% sand 15% silt) same as above	3/19/91 8" cs casing cd = 162' bls surveyed clean w/SIP
170'	2 lith 1 $CaCO_3$ 1 rad	HT		(170') silty sandy GRAVEL (40% gravel 45% sand 15% silt) same as above	3/20/91 8" cs casing cd = 162' bls surveyed clean w/SIP
175'	2 lith 1 $CaCO_3$ 1 rad	HT		(175') silty sandy GRAVEL (40% gravel 45% sand, 15% silt) MP-10% FP-15% VFP-15% VCS-15% CS-15% MS-10% FS-5% same as above	3/20/91 8" cs casing cd = 162' bls surveyed clean w/SIP sample became more coarse than previous sample
180'					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 10 of 11

Location S-17 Pond South of 200W

Project W-017

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Collison (Sign/Print Name) Stacey W. Collison

Date 3/20/91

Reviewed By R.D. Miller (Sign/Print Name)

Date 3/21/91

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
180'	2 lith 1 $CaCO_3$ 1 rad	HT		(180') silty sandy GRAVEL (40% gravel 45% sand 15% silt) MP-10% FP-15% VFP-15% VCS-15% CS-15% MS-10% FS-5%, silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 4/3 lt yellowish brown (dry) 80% mafic 20% felsic No mica angular - sub angular No 10% HCL rxn	3/20/91 8" CS casing cd ≈ 162' bls surveyed clean w/ SIP
185'	2 lith 1 $CaCO_3$ 1 rad	HT		(185') silty sandy GRAVEL (40% gravel 45% sand 15% silt) same as above	3/20/91 8" CS casing cd ≈ 181' bls surveyed clean w/ SIP
		▽		Water level @ ~ 187' bls	
190'	2 lith 1 $CaCO_3$ 1 rad	HT		(190') silty sandy GRAVEL (40% gravel 45% sand 15% silt) same as above	3/21/91 8" CS casing cd ≈ 181' bls surveyed clean w/ SIP
192.5'	2 lith 1 $CaCO_3$ 1 rad	ST 18/40/75/120		(192.5'-194.5') silty sandy GRAVEL (60% gravel 25% sand, 15% silt) SC-20% VCP-10% CP-10% MP-10% FP-5% VFP-5% VCS-15% CS-10%, fat silt silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 4/3 lt. yellowish brown (dry) damp sample 60% mafic 40% felsic No 10% HCL rxn, mottled, gravel was rounded and sub-rounded	3/21/91 8" CS casing cd ≈ 181' bls clean w/ SIP fat silt, more cobbles more felsics in sample than previous
195'	2 lith 1 $CaCO_3$ 1 rad	HT		(195') silty sandy GRAVEL (40% gravel 45% sand 15% silt) MP-10% FP-15% VFP-15% VCS-15% CS-15% MS-10% FS-5% silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 4/3 lt. yellowish brown (dry) 40% mafic 20% felsic No mica angular - sub angular No 10% HCL rxn	3/21/91 8" CS casing cd ≈ 181' bls surveyed clean w/ SIP
200'					

BOREHOLE LOG

Boring or Well No. 299-W26-7

Sheet 11 of 11

Location 5-17 Pond South of 200W

Project W-017 5-10 trench

Elevation 648.59 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Darrel Ludtke

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/21/91

Reviewed By R.D. Miller (Sign/Print Name)

Date 3/25/91

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
200'	2 lith 1 $CaCO_3$ 1 rad	HT		(200') silty sandy GRAVEL (40% gravel 45% sand 15% silt) MP-10% FP-15%	3/21/91 8" cs casing cd @ 181' b/s
				VFP-15%, VCS-15% CS-15%, MS-10%, FS-5%	surveyed clean w/ SIP
				silt 2.5Y 4/3 olive brown (wet)	
				silt 2.5Y 6/3 lt. yellowish brown (dry)	
				80% mafic 20% felsic. No mica	
				angular-subangular. No 10% HCL rxn	
	2 lith 1 $CaCO_3$ 1 rad	ST		(205'-207') silty sandy GRAVEL	3/21/91 8" cs casing
205'				(60% gravel, 25% sand, 15% silt)	cd @ 205' b/s
				SC-20%, VCP-10%, CP-10%, MP-10%, FP-5%	surveyed clean w/ SIP
				VFP-5%, VCS-15% CS-10%	flowing sands
				silt 2.5Y 4/3 olive brown (wet)	
				silt 2.5Y 6/3 lt. yellowish brown (dry)	
207'			TD	dump sample, 60% mafic 40% felsic	
				No 10% HCL rxn, mottled, gravel was	
				rounded + subrounded	
210'					
215'					

A-6000-382 (04/90)

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WELL 299-W26-10

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CR9474 MTL / CR9475 EST

WELL 299-W26-10

DRILLING

START DATE	FINISH DATE	TOTAL DAYS	CURRENT DEPTH	FINAL DEPTH	DEPTH TO WATER	WATER ADDED(GAL)
2-19-91	3-22-91	20	N/A	222.3	3-15-91 206.4' PM 203.7' 3-18-91 202.5' 3-19-91 214.6'	187

DOWN HOLE COMPLETION

START DATE	FINISH DATE	TOTAL DAYS	DEPTH TO WATER	DEPTH TO BOTTOM	DEPTH OF SCREEN	WATER ADDED/ REMOVED (GAL)
3-25-91	4-4-91	4	3-25-91 209.9 4-2-91 203.1 4-4-91 203.1	218.2	201.2' - 221.3'	30 GALLONS ADDED TO PREVENT HE 30 GALLONS REMOVED TO DEVELO FILTER PACK

DEVELOPMENT AND ASSOCIATED ACTIVITIES

TV CAMERA DATE	AQUIFER TEST DATE	DEVELOPMENT DATE	HYDROSTAR PLACEMENT DATE	WATER REMOVED(GAL)
N/A	5-1-91 5-2-91 5-3-91	5-1-91 5-2-91 5-3-91	5-3-91	4048+

COMMENTS:

WELL CONSTRUCTION REPORT

SIGNATURE/DATE 6/4/92

Specification No. WHC-S-014 Rev No. 5

ECNs 144241 144240 2/27/91 SW

Project ~~WHC-SD-EN-AP-018~~ W-017 S-10 Ditch

Location S-10 South end of 200 W'

Drilling Company Kaiser Engineers Hanford

Driller 2/20/91 SWC ~~Mike~~ Mel Thoreson

Other (Companies)

Geologist(s) Stacey W. Callison (EBASCO)

Well No. 299-W26-10 Temp. Well No. NA

Coordinates N 133,499.11, E 566,683.22 Lambert NAD

Casing Elev. 670.85' Ground Elev. 667.19'

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-014 5.2, 5.3, 7.5, EII 6.7 sec 6.2

			Initials	Date
Rotary	Air NA	Mud NA	NA	NA
Cable Tool	D 0'-169'	H 169'-222.3'	SWC	3/18/91
Raw Water Drilling Fluid	0	156 gal	SWC	3/18/91
Other				

Geophysical Logging

Sondes	Interval	Date
gross gamma log	0' - 162'	3/8/91
gross gamma log	140' - 221'	3/8/91
	-	
	-	
	-	

Completion Data

Drilled Depth 222.3' bls

Completed Depth 219.32' bls

Date Started 2/19/91

Date Completed 4/4/91

Static Water Level/Date 202.47' bls 3/18/91

Aquifer Testing

Type Instantaneous Slug Injection/Withdrawal

Flow Meter I.D. No. - NA -

Cal. Due Date - NA -

Length of Test 1 Hr

Volume Pumped - NA -

Drawdown - NA -

Date of Test 5-3-91

Completion Results

Cleaning

Verification Method Visual Inspection (and direct observation of drill rig cleaning)

Criteria WHC-S-014 7.6, 4.2.2, WHC-CN-7-7 sec 5.4 Split Spoon. SWC 2/26/91

	Initials	Date
Drilling Tools/Rig	SWC	2/20/91
Temporary Materials	SWC	2/20/91
Permanent Materials	BGW	4/1/91

Screen

Type	Length	Slot Size
4" Ø 304SS continuous wire wrap	20.40'	10 slot

Depth(s) ~~219.32~~ - ~~199.92~~ BW 4/4/91

221.29' - 201.19'

Verification Method Verify using steel tape 2/27/91 SWC

Criteria WHC-S-014 4.2.3, 4.2.5, ~~12.2.2~~ 12.2.1, 4.2.1

Initials KH BW Date 3/25/91 4/4/91

Material Storage/Packing

Verification Method Visual Observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	BGW	4/1/91
Material Packing	BGW	4/1/91

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	Raw Water	SWC	3/13/91
Lubricants	Well guard	SWC	3/12/91

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 8.2

Initials SWC Date 3/18/91

A-6000-436 (09/90)

295

WELL CONSTRUCTION REPORT
(continuation sheet)

299-W26-10

Casing (permanent)

Type	Size	Placement
Type 304 SS Sch 5	4" Ø	0.00' - ~~219.32'~~ 221.59' BW 4/4/91

Verification Method: Verify using steel tape

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

Initials: LH Date: 4/25/91

Well Protection

Verification Method: Visual, Measure w/ tape

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	ECW	1/24/92
Protective Casing	ECW	1/24/92
Site Restored	ECW	1/24/92
Cap, Hasp and Lock	ECW	1/24/92
Surface Pad	ECW	1/24/92

Annular Seal/Filter Pack

Verification Method: Verify using steel tape

Criteria: WHC-S-014 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.3.1 or 5.3.2

Type	Interval	Volume	Initials	Date
Filter Pack 10-20 Silica sand	223.01' - 197.8'	17-100# SKS	BGW	4/2/91
3/8" Volclay Bentonite Pellets	197.8' - 193.5'	7-50# buckts	BGW	4/3/91
8-20 mesh Bentonite Crumbles	193.5' - 20.4'	195-50# SKS	BGW	4/4/91
Portland Type I & II cement	20.4' - 2.8'	20 SKS 94# SKS	BGW	4/4/91

Well Survey/Labeling

Verification Method: Review of Survey Report

Criteria: WHC-S-014

	Initials	Date
Measurement Point/Surveyed	ECW	1/24/92
Protective Casing/Brass Cap Surveyed	ECW	1/24/92
Well Number Stenciled	ECW	1/24/92
Brass Cap Labeled	ECW	1/24/92

Pump Installation

Verification Method: Visual Observation

Criteria: WHC-S-014 4.2.11 4.2.2

	Initials	Date
Pump Decon/Prep	V.A.C.	5-3-91
Installed	V.A.C	5-3-91
Pump Tested	V.A.C	6-28-91

Other (initial if performed)

N/A Well Abandonment N/A Downhole TV Inspection BGW X Complete As-Built Diagram, Driller's/Geologist's Logs

_____ Well Development

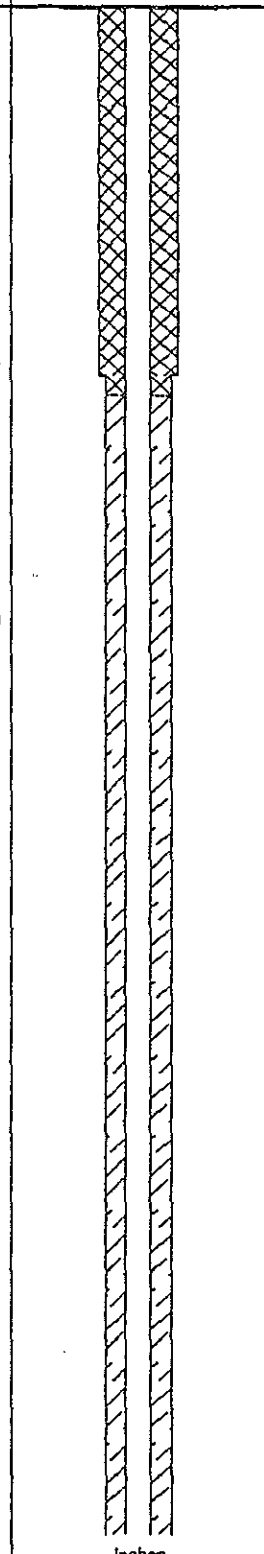
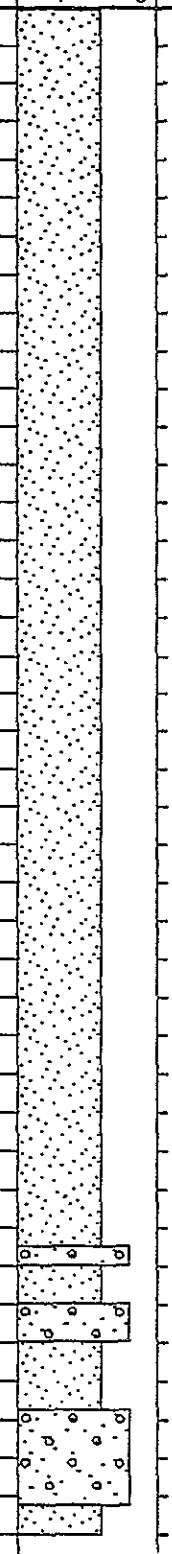
Comments/Remarks

Reviewed By (Sign/Print Name): BA Williams Date: 2/4/92

WELL SUMMARY SHEET

Boring or Well No. 299-W26-10
Northing 133499.11 Easting 566683.22
Sheet 1 of 3

Location: S-10 DITCH SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 667.19
Drilling Contractor: KEH
Driller: M. THORESON
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: BA WILLIAMS (Sign/Print Name) Date: 5-3-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
CEMENT (0' TO 20.4')		10		0-60' Slightly silty SAND
12" TEMPORARY CARBON STEEL CASING SET AT 19.32'		20		
8-20 MESH BENTONITE CRUMBLES (20.4' TO 193.5')		30		
		40		
		50		
		60		
		70		65-66' Slightly silty sandy GRAVEL 66-68' Slightly silty SAND 68-70' Slightly silty sandy GRAVEL 70-73.5' Slightly silty SAND 73.5-78.5' Slightly silty sandy GRAVEL
		80		78.5-115' Slightly silty SAND

Inches 28 20 12 8 4 0 4 8 12 20 28

C/Z S P C/B

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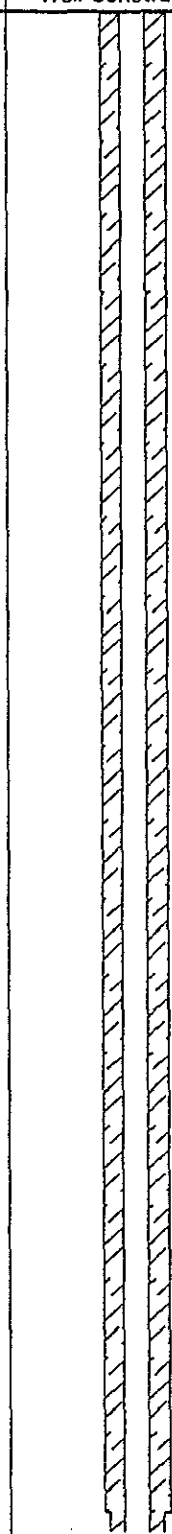
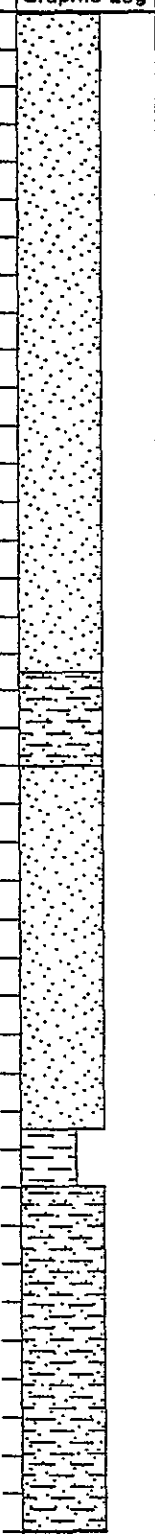
WELL SUMMARY SHEET

Boring or Well No. **299-W26-10**
Northing 133499.11 Easting 566683.22
Sheet 2 of 3

Location: S-10 DITCH SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 667.19
Drilling Contractor: KEH
Driller: M. THORESON
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: [illegible] (Sign/Print Name) Date: 5-3-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
4" DIAM T-304 SCH 5 STAINLESS STEEL PERM CASING WITH CENTRALIZERS		90		
		100		
		110		
		120		115-120′ Silty SAND 120-135′ Slightly silty SAND
		130		(4" silt lense at 130′)
		140		139-142′ SILT 142-160′ Silty SAND
		150		
10" TEMPORARY CARBON STEEL CASING SET AT 159.03′		160		

Inches 28 20 12 8 4 0 4 8 12 20 28

C/Z S P C/8

WELL SUMMARY SHEET

Boring or Well No. **299-W26-10**
Northing 133499.11 Easting 566683.22
Sheet 3 of 3

Location: S-10 DITCH SOUTH OF 200 WEST
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 667.19
Drilling Contractor: KEH
Driller: M. THORESON
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: SW CALLISON (Sign/Print Name)
Reviewed By: [signature] / BA WILLIAMS (Sign/Print Name) Date: 5-3-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
				160-162′ Gravelly SAND (sharp contact, thin white band at 160′; some gravel have white CaCO3 cement which reacts very strongly to HCL)
		170		162-166.5′ Slightly silty SAND (Silt lenses at 162′)
				166.5-170′ Sandy GRAVEL (Gravel has white CaCO3 cement)
				170-215′ Silty sandy GRAVEL (bit jumped down from 174′ to 176′)
		180		
		190		
3/8" MESH BENTONITE PELLETS (193.5′ TO 197.8′)				
10-20 MESH SILICA SAND FILTER PACK (197.8′ TO 223.01′)		200		
STATIC WATER LEVEL AT 203.1′ (4/4/91)				
4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN (201.19′ TO 221.59′)		210		
				215-220′ Sandy GRAVEL
8" TEMPORARY CARBON STEEL CASING SET AT 223.01′		220		220-223.01′ Slightly silty sandy GRAVEL
TOTAL DEPTH = 223.01′				
		230		
	Inches 28 20 12 8 4 0 4 8 12 20 28	240	C/Z S P C/B	

BOREHOLE LOG

VALIDATED 2/4/91 SIGNATURE/DATE

Boring or Well No. 299-W26-10

Sheet 1 of 12

Location S-10 South of 200W

Project W-017, S-10 FACILITY

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment CABLE TOOL

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date

Reviewed By BA Wilhard (Sign/Print Name) Date 2/25/91

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
		CB			
5'	2 lith 1 moist 1 rad			(5') slightly silty SAND (10% silt 90% sand) CS-30%, MS-20%, FS-20%, VFS-20% silt 2.5Y 6/3 yellowish brown, dry, 80% mafic 20% felsic, moderate rxn to 10% HCL	2/20/91, using jars to CB 12" casing 10.05' total surveyed clean w/ SIP
10'	2 lith 1 moist 1 rad	CB		(10') slightly silty SAND (10% silt 90% sand) CS-30% MS-20% FS-20% VFS-20% silt 2.5Y 5/3 lt olive brown, dry 80% mafic 20% felsic NO 10% HCL rxn	2/20/91 12" casing surveyed clean w/SIP
15'	2 lith 1 moist 1 rad			(15') slightly silty SAND (10% silt 90% sand) CS-45% MS-20%, FS-15%, VFS-10%, silt same as above, dry 80% mafic, 20% felsic No 10% HCL rxn sand is much coarser sample has silty fine sand lenses (30% silt, 70% VFS)	2/21/91 12" casing surveyed clean w/SIP
20'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 2 of 12

Location 5-10 South of 200W

Project

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment CABLE TOOL

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date

Reviewed By R A Williams (Sign/Print Name)

Date 3/4/91

Depth (20')	Sample Type and No.	Sample Blows or Recovery	Graphic Log	Sample Description: Soil Classification, Particle Size Distribution, Color, Moisture Content, Sorting, Angularity, Mineralogy, Reaction to HCl.	Comments: Depth of Casing, Drilling Rate, Casing Size & Type, Bit Size, Water Level
	2 lith 1 moist 1 rad	DB		(20') slightly silty SAND (10% silt 90% sand) CS-20% MS-25% FS-25% VFS-20% silt 2.5Y 5/3 lt olive brown, dry. 80% mafic 20% felsic, No 10% HCL rxn sand is less coarse than previous sample	2/21/91 12" casing sample surveyed down w/SIP + MSA
25'	2 lith 1 moist 1 rad	DB		(25') slightly silty SAND (10% silt 90% sand) MS-20% FS-35% VFS-35% silt 2.5Y 4/3 yellowish brown, dry 80% mafic 20% felsic, No 10% HCL rxn sand is less coarse than previous sample	2/21/91 10" casing sample surveyed down w/SIP + MSA
30'	2 lith 1 moist 1 rad	DB		(30') slightly silty SAND same as above No 10% HCL rxn	2/21/91 10" casing sample surveyed down w/SIP + MSA
35'	2 lith 1 moist 1 rad	DB		(35') slightly silty SAND same as above No 10% HCL rxn	2/21/91 10" casing sample surveyed down w/SIP
40'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 3 of 12

Location 5-10 South of 200W
Project 5-10
Elevation 667.19 BRASS CAP
Drilling Contractor Kaiser Engineers Hanford
Driller Mel Thoreson
Drilling Method and Equipment CABLE TOOL
Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison
Date
Reviewed By BA WILLIAMS (Sign/Print Name)
Date 3/4/91

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
	2 lith 1 moist 1 rad	DB		(40') slightly silty SAND (10% silt 90% sand) MS-20% FS-35% VFS-35% silt 2.5Y 6/3 yellowish brown, dry 80% mafic 20% felsic, NO 10% HCL rxn	2/25/91 10" CS casing casing depth - cd = 37' bls sample surveyed clean w/SIP
				44' 1/2" thick clay lense, grey in color, dry and crumbly, ~4 ~~str~~ layers two small ~~pebbles~~ cobbles in lense 2/25/91 SWC	→ mod. 10% HCL rxn
45'	2 lith 1 moist 1 rad	DB		(45') slightly silty SAND (10% silt 90% sand) MS-20% FS-35% VFS-35% silt 2.5Y 6/3 yellowish brown, dry 70% mafic 30% felsic No 10% HCL rxn	2/25/91 10" CS casing cd = 44' bls simple surveyed clean w/SIP
50'	2 lith 1 moist 1 rad	DB		(50') slightly silty SAND (10% silt 90% sand) MS-20% FS-35% VFS-35% silt 2.5Y 6/3 yellowish brown, dry 70% mafic 30% felsic. moderate 10% HCL rxn more clay lenses	2/28/91 10" CS casing cd = ~~5~~47' bls sample surveyed clean w/SIP more noticeable moisture but still classified as dry
55'	2 lith 1 moist 1 rad	DB		(55') slightly silty SAND (10% silt 90% sand) MS-20% FS-35% VFS-35% silt 2.5Y 6/3 yellowish brown, dry 70% mafic 30% felsic No clay lenses present	2/25/91 10" CS casing cd = ~~5~~47' bls sample surveyed clean w/SIP
60'					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 4 of 12

Location S-10 ditch South of 200 W

Project S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Date

Reviewed By [illegible] / BA WILLIAMS (Sign/Print Name) Date 3/4/91

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
60	2 lith 1 moist 1 rad	DB		(60') slightly silty SAND (10% silt 90% sand)	2/26/91 10" CS casing
				MS-10% FS-40% VFS-40%	cd ≈ 59'
				silt 2.5Y 4/3 yellowish brown, damp	surveyed clean w/ SIP
				and compactable, 60% mafic 40% felsic	more moisture present
				mod. 10% HCL rxn	finer sand
				mica flakes present	
				(63') sandy SILT lense (70% silt 30% sand)	
				2" thick	
				(65') slightly silty sandy GRAVEL	2/26/91 10" CS casing
65'	2 lith 1 moist 1 rad	DB		(10% silt, 40% gravel, 50% sand)	cd ≈ 61'
				gravel SC-10% VCP-15% CP-5% MP-5%	surveyed clean w/ SIP
				FP-5%, sand MS-10% FS-20% VFS-20%	
				silt 2.5Y 4/3 yellowish brown, damp	
				60% mafic 40% felsic, mod. 10% HCL rxn	
				mica flakes present	
68'	2 lith 1 moist 1 rad	DB		(68') silty sandy GRAVEL (15% silt, 30% gravel	2/26/91 10" CS casing
				55% sand), damp, mod. 10% HCL rxn	cd ≈ 65'
				gravel - SC-10% CP-10% MP-5% FP-5%	surveyed clean w/ SIP
				sand - MS-10% FS-20% VFS-25%	
70'	2 lith 1 moist 1 rad	DB		silt - 2.5Y 4/3 yellowish brown 60% mafic	and darker in color
				40% felsic, mica flakes present	hard slow drilling
				(70') slightly silty SAND (10% silt 90% sand)	& cuttings becoming more silty)
				MS-10% FS-40% VFS-40%	2/27/91 10" CS casing
				silt 2.5Y 4/3 yellowish brown damp	cd ≈ 65'
				60% mafic 40% felsic, mod. 10% HCL rxn	surveyed clean w/ SIP
				mica flakes present	
				gravel starts @ ~73.5'	
				(75') slightly silty sandy GRAVEL	2/27/91 10" CS casing
75'	2 lith 1 moist 1 rad	DB		(10% silt, 50% gravel, 40% sand)	cd ≈ 69'
				gravel SC-20% CP-15% MP-10% FP-5%	surveyed clean w/ SIP & dat
				sand MS-15% FS-15% VFS-10%	
				silt 2.5Y 4/3 yellowish brown, damp	very hard drilling, CB is getting
				60% mafic 40% felsic mod 10% HCL rxn	slowed up may have to go to
				mica flakes present	HT
					1 large rounded cobble
				gravel ends @ ~74.5'	found at 76'
80'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 5 of 12

Location S-10 ditch South of 200W

Project S-10

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date

Reviewed By RA Williams (Sign/Print Name)

Date 3/4/91

Depth feet (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
80'	2 lith 1 moist 1 rad	DB		(80') slightly silty SAND (10% silt 90% sand) MS-10% FS-40% VFS-40% silt 2.5Y 4/3 yellowish brown (dry) silt 2.5Y 4/3 olive brown (wet), dry sample 60% mafic 40% felsic, some 10% HCl rxn mica flakes present	2/28/91 10" cs casing cd ≈ 78' surveyed clean w/SIP less moisture present than in previous samples
85'	2 lith 1 moist 1 rad	DB		(85') slightly silty SAND (90% sand 10% silt) same as above, damp sample mod. 10% HCL rxn, mica flakes present	2/28/91 10" cs casing cd ≈ 79' surveyed clean w/SIP
90'	2 lith 1 moist 1 rad	DB		(90') slightly silty SAND (90% sand 10% silt) same as above, mica flakes present strong 10% HCL rxn in some areas of sample	2/28/91 10" cs casing cd ≈ 79' surveyed clean w/SIP
95'	2 lith 1 moist 1 rad	DB		(95') slightly silty SAND (90% sand 10% silt) same as above damp, mod 10% HCL rxn, mica flakes	2/28/91 10" cs casing cd ≈ 79' surveyed clean w/SIP
100'					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 6 of 12

Location S-10 ditch South of 200W

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date

Reviewed By BA Dillard (Sign/Print Name) Date 3/4/91

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
100'	2 lith 1 moist 1 rad	DB		(100') slightly silty SAND (90% sand 10% silt) MS-10% FS-40% VFS-40% silt 2.5Y 6/3 yellowish brown (dry) silt 2.5Y 4/3 olive brown (wet) damp sample, 60% mafic 40% felsic some 10% HCL rxn, mica flakes present	2/28/91 10" cs casing cd ≈ 99' b/s surveyed clean w/SIP more moisture than previous sample
105'	2 lith 1 moist 1 rad	DB		(105') slightly silty SAND (90% sand 10% silt) same as above damp sample, some 10% HCL rxn mica flakes present	2/28/91 10" cs casing cd ≈ 101' b/s surveyed clean w/SIP + GM more moisture than previous sample
110'	2 lith 1 moist 1 rad	DB		(110') slightly silty SAND (90% sand 10% silt) same as above damp sample, some 10% HCL rxn mica flakes present	3/1/91 10" cs casing cd ≈ 110' b/s surveyed clean w/SIP
115'	2 lith 1 moist 1 rad	DB		(115') slightly silty SAND (90% sand 10% silt) same as above damp sample, some 10% HCL rxn mica flakes present	3/1/91 10" cs casing cd ≈ 112' b/s surveyed clean w/SIP
120'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 7 of 12

Location S-10 ditch south of 200W

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool, drive barrel

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/4/91

Reviewed By JA Williams / [illegible] (Sign/Print Name)

Date 3/8/91

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
120'	2 lith 1 moist 1 rad	DB		(120') silty sand SAND (85% sand 15% silt)	3/1/91 10" cs casing
				MS-10% FS-35% VFS-40%	cd ≈ 119'
				silt 2.5Y 5/4 lt. olive brown (dry)	surveyed clean w/ SIP
				silt 2.5Y 4/3 olive brown (wet)	
				damp sample, 60% mafic 40% felsic	sample has more silt and is
				some 10% HCL rxn, mica flakes present	more compactable,
					more moisture than previous
					sample
	2 lith 1 moist 1 rad	DB		(125') slightly silty SAND (90% sand 10% silt)	3/1/91 10" cs casing
125'				MS-10% FS-40% VFS-40%	cd ≈ 120'
				silt 2.5Y 6/3 yellowish brown (dry)	surveyed clean w/ SIP
				silt 2.5Y 4/3 olive brown (wet)	sample appears to have less silt
				damp sample, 60% mafic 40% felsic	and less moisture than
				mod 10% HCL rxn, mica flakes present	previous sample
	2 lith 1 moist 1 rad	DB		(130') slightly silty SAND (90% sand 10% silt)	3/4/91 10" cs casing
				same as above, same 10% HCL rxn	cd ≈ 129'
130'				4" silt lense present @ 130' (100% silt)	surveyed clean w/ SIP
				2" silt 2.5Y 4/3 olive brown, damp	lense was intact as it came
					out of the DB
	2 lith 1 moist 1 rad	DB		(135') slightly silty SAND (90% sand 10% silt)	3/4/91 10" cs casing
135'				MS-10% FS-40% VFS-40%	cd ≈ 129'
				silt 2.5 6/3 yellowish brown (dry)	surveyed clean w/ SIP
				silt 2.5 4/3 olive brown (wet)	sample has less moisture
				damp sample, 60% mafic 40% felsic	and silt than previous
				mod 10% HCL rxn, mica flakes present	sample
140'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 8 of 12

Location S-10 ditch South of 200W

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool / Drive Barrel

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/7/91

Reviewed By [signature] / BA Williams (Sign/Print Name)

Date 10/8/92

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
140'	2 lith 1 moist 1 rad	DB		@140') SILT (95% silt, 5% sand)	3/7/91 10" CS casing
				silt 2.5Y 4/3 olive brown (wet)	silt starts @ ~139' b/s
				silt 2.5Y 6/3 yellowish brown (dry)	silt came out of DB intact
				damp sample, strong 10% HCL rxn	surveyed clean w/ SIP
				small mica flakes present, fat silt	
					1 course pebble w/ very strong 10% HCL
				gradational contact	rxn found in cuttings
	2 lith 1 moist 1 rad	DB		(145') silty SAND (80% sand 20% silt) FS-35% VFS-45%	3/7/91 10" CS casing cd ≈ 141'
145'				silt 2.5Y 4/3 olive brown (wet)	sample has less moisture than
				silt 2.5 6/3 yellowish brown (dry)	previous sample
				damp sample, strong 10% HCL rxn	surveyed clean w/ SIP
				small mica flakes present,	
	2 lith 1 moist 1 rad	DB		(150') silty SAND (80% sand 20% silt) 80% VFS	3/7/91 10" CS casing cd ≈ 141'
150'				silt 2.5Y 4/3 olive brown (wet)	very fine sands
				silt 2.5Y 6/3 yellowish brown (dry)	surveyed clean w/ SIP
				damp sample, 80% mafic, 20% felsic	
				strong 10% HCL rxn, small mica flakes	
	2 lith 1 moist 1 rad	DB		(155') silty SAND (85% sand 15% silt) MS-10% FS-40% VFS-35%	3/7/91 10" CS casing cd ≈ 141'
155'				silt 2.5 4/3 olive brown (wet)	sand has become coarser
				silt 2.5 6/3 yellowish brown (dry)	surveyed clean w/ SIP
				damp sample 80% mafic 20% felsic	
				No 10% HCL rxn, small mica flakes	
				sharp contact, thin white band @	
160'				contact	

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 9 of 12

Location S-10 ditch South of 200W

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison

Date 3/8/91

Reviewed By R.D. Miller (Sign/Print Name)

Date 3/15/91

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
160'	2 lith 1 moist 1 rad	DB		(160') gravelly SAND (75% sand, 20% gravel, 5% silt) gravel MP-5% FP-10% VFP-5% sand VCS-15% CS-15% MS-15% FS-15% VFS-15% silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 6/3 yellowish brown (dry) dry sample, 80% mafic 20% felsic very strong 10% HCL rxn, No noticeable mica flakes	3/8/91 10" CS casing cd ≈ 150' b/s sample is much more coarse and has less moisture, surveyed clean w/ SIP some gravel pieces have white rinds that react very strongly w/ the 10% HCL, rust stained silt lenses @ 162'
165'	2 lith 1 moist 1 rad	DB		(165') slightly silty SAND (90% sand, 10% silt) MS-40% FS-30% VFS-20% silt 2.5Y 4/3 olive brown (wet) silt 2.5Y 6/3 yellowish brown (dry) damp sample, 80% mafic 20% felsic very strong 10% HCL rxn, No mica	3/8/91 cd ≈ 159' b/s sample has more moisture and is finer than the previous sample, surveyed clean w/ SIP
165'	2 lith 1 moist 1 rad	DB		(165') sandy GRAVEL (60% gravel 35% sand, 5% silt) SC-30% VCP-15% CP-10% MP-5% VCS-15% CS-10% MS-5% FS-5%, damp sample, 90% mafic 10% felsic very strong 10% HCL rxn No mica, heavily mottled rust colored,	3/8/91 cd ≈ 159', gravel has rinds which react very strongly w/ 10% HCL surveyed clean w/ SIP open hole 10" casing set @ 159.03'
170'	2 lith 1 $CaCO_3$ 1 rad	HT	no contact	(170') silty sandy GRAVEL (40% gravel, 45% sand, 15% silt) CP-5% MP-20% FP-10% VFP-5% VCS-15% CS-15% MS-15% silt (2.5Y 4/3 olive brown (wet) silt 2.5Y 6/3 yellowish brown (dry) 90% mafic 10% felsic, No mica very strong 10% HCL rxn	3/13/91 cd ≈ 159' b/s 8" casing HT sample ignore contact line HT bit jumped down 2' from ~174'-176' surveyed clean w/ SIP 3/13/91 SWC
175'	2 lith 1 $CaCO_3$ 1 rad	HT		(175') silty sandy GRAVEL (30% gravel 55% sand 15% silt) MP-5% FP-10% VFP-15% VCS-15% CS-16% MS-15% FS-10% silt (2.5Y 4/3 olive brown (wet) silt 2.5Y 6/3 yellowish brown (dry) 90% mafic 10% felsic, No mica ~~very strong~~ 10% HCL rxn moderate 3/13/91 SWC	3/13/91 ~~cd ≈ 159'~~ 8" CS casing cd ≈ 159' b/s surveyed clean w/ SIP sample is less coarse than previous sample
180'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 10 of 12

Location S-10 ditch south of 200W

Project W-017 S-10 ditch

Elevation 669.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date 3/13/91

Reviewed By R.D. Miller (Sign/Print Name) Date 3/15/91

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
180'	2 lith 1 $CaCO_3$ 1 rad	HT		(180') silty sandy GRAVEL (50% gravel, 35% sand 15% silt) MP-15% FP-20% VFP-15% VCS-15% CS-10% MS-5% FS-5%	3/13/91 8" CS casing cd ≈ 177' b/s surveyed clean w/ SIP
				silt 2.5Y 4/3 olive brown (wet)	
				silt 2.5Y 6/3 yellowish brown (dry)	
				90% mafic 10% felsic. No mica	
				moderate 10% HCL rxn	
	2 lith 1 $CaCO_3$ 1 rad	HT		(185') silty sandy GRAVEL (50% gravel 35% sand 15% silt) same as above	3/13/91 8" CS casing cd ≈ 177' b/s surveyed clean w/ SIP
185'					
	2 lith 1 $CaCO_3$ 1 rad	HT		(190') silty sandy GRAVEL (55% gravel 30% sand 15% silt) MP-15% VFP-20% FP-20% VCS-10% CS-10% MS-10%	3/13/91 8" CS casing cd ≈ 177' b/s surveyed clean w/ SIP
190'				silt 2.5Y 4/3 olive brown (wet)	
				silt 2.5Y 6/3 yellowish brown (dry)	
				90% mafic 10% felsic, No mica	samples becoming more coarse
				mod. 10% HCL rxn	
	2 lith 1 $CaCO_3$ 1 rad	HT		(195') silty sandy GRAVEL (60% gravel 25% sand 15% silt) MP-20% FP-20% VFP-20% VCS-15% CS-5% MS-5%	3/13/91 8" CS casing cd ≈ 177' b/s surveyed clean w/ SIP
195'				silt 2.5Y 4/3 olive brown (wet)	
				silt 2.5Y 6/3 yellowish brown (dry)	
				90% mafic 10% felsic, No mica	
				mod 10% HCL rxn	
200'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 11 of 12

Location S-10 ditch

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thoreson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date 3/14/91

Reviewed By Kent Reynolds (Sign/Print Name) Date 1/28/92

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
200'	2 lith	HT		(200') silty sandy GRAVEL (60% gravel	3/14/91 8" CS casing
	1 $CaCO_3$			25% sand 15% silt) CP-5% MP-20%	cd ≈ 197' bls
	1 rad			FP-20% VFP-15% VCS-15% CS-5% MS-5%	surveyed clean w/ SIP
				silt 2.5Y 4/3 olive brown (wet)	
202.4'		▽		silt 2.5Y 4/3 yellowish brown (dry)	
				90% mafic 10% felsic, No mica	drilling rate slowing
				No 10% HCL rxn	
	2 lith				
	1 $CaCO_3$			(205') silty sandy GRAVEL (60% gravel	3/14/91 8" CS casing
205'	1 rad	HT		25% sand 15% silt) same as above	cd ≈ 197' bls
					surveyed clean w/ SIP
		▽ 3/19/91 SWC		~~water table~~ level 3/19/91	
				3/15/91 SWC	
				true water level @ 202.4' bls	
	2 lith			(210') silty sandy GRAVEL (60% gravel	3/14/91 8" CS casing
	1 $CaCO_3$			~~25% sand 15% silt) same as above~~ 3/15/91 SWC	cd ≈ 197' bls
210'	1 rad	HT		MP-20% FP-15% VFP-15% VCS-15%	surveyed clean w/ SIP
				CS-10% MS-10%	
				silt 2.5Y 4/3 olive brown (wet)	sample became less
				silt 2.5Y 4/3 yellowish brown (dry)	coarse from previous sample
				90% mafic 10% felsic, No mica	
				No 10% HCL rxn	
				3/15/91 SWC	
	2 lith				
	1 $CaCO_3$			(215'-217') ~~silty~~ sandy GRAVEL	3/15/91 8" CS casing
215'	1 rad	ST		(70% gravel, 25% sand, 5% silt)	cd ≈ 197' bls
		24/51/72		SC-20% VCP-15% CP-10% MP-10%	surveyed clean w/ SIP
				FP-10% VFP-5% VCS-10% CS-10% MS-5%	
				90% mafic 10% felsic, No mica	
		first 6" 0 (slough)		No 10% HCL rxn	
220'					

BOREHOLE LOG

Boring or Well No. 299-W26-10

Sheet 12 of 12

Location S-10 ditch South of 200W

Project W-017 S-10 ditch

Elevation 667.19 BRASS CAP

Drilling Contractor Kaiser Engineers Hanford

Driller Mel Thorson

Drilling Method and Equipment Cable Tool

Prepared By Stacey W. Callison (Sign/Print Name) Stacey W. Callison Date 3/15/91

Reviewed By Kent Reynolds (Sign/Print Name) Date 1/29/92

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
220'	2 lith 1 $CaCO_3$ 1 rad	8/28/82/ 75 ST		(220'-222') slightly silty sandy GRAVEL	3/18/91 8" cs casing
				(70% gravel, 20% sand, 10% silt)	cd = 218' bls
				SC - 20% VCP - 15% CP - 10% MP - 10%	surveyed clean w/ SIP
				FP - 10% VFP - 5% VCS - 10% CS - 10%	
				silt (2.5Y 5/4 lt. olive brown (wet)	sample turned lighter in color
			TD	moist sample, 50% mafic 50% felsic	more felsics
				No mica mottled and staining 3/18/91	~~clay~~ trace clay
				noticeable, No 10% HCL rxn	
225'					
				Hole TD @ 222.3' bls	
230'					

A-6000-382 (04/90)

WELL 299-W26-12

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S-10 · TRENCH

WELL 299-W26-12

DRILLING

START DATE	FINISH DATE	TOTAL DAYS	CURRENT DEPTH	FINAL DEPTH	DEPTH TO WATER	WATER ADDED(GAL)
2-13-91	3-13-91	19	N/A	230.4	2-26-91 140.3' 2-27-91 131.2' 3-11-91 209.2' 3-12-91 209.9' 3-13-91 210.7'	55

DOWN HOLE COMPLETION

START DATE	FINISH DATE	TOTAL DAYS	DEPTH TO WATER	DEPTH TO BOTTOM	DEPTH OF SCREEN	WATER ADDED/ REMOVED (GAL)
3-15-91	3-29-91	8	3-15-91 210.5'	228.3'	207.2'-227.9'	40 GAL REMOVED TO DEVELOP FILTER PACK 126 GAL ADDED BENTONITE GR 93 GAL ADDED CEMENT GROUT

DEVELOPMENT AND ASSOCIATED ACTIVITIES

TV CAMERA DATE	AQUIFER TEST DATE	DEVELOPMENT DATE	HYDROSTAR PLACEMENT DATE	WATER REMOVED(GAL)
N/A	5-9-91	5-10-91	5-10-91	~~43~~ + 90 GAL

COMMENTS:

WELL CONSTRUCTION REPORT

Specification No. WHC-S-014 Rev No. 5

ECNs 144241, 144240

Project W-017

Location S. POND & DITCH

Drilling Company KEH

Driller L.D. BALTENA

Other (Companies)

Geologist(s) K.M. HOFFMANN, J.J. CONANT, C.D. DEININGER

Well No. 299-W26-12 Temp. Well No. N/A

Coordinates N: 133,689.86; E: 566,900.97 (LAMBERT)

Casing Elev. 675.69' NGVD Ground Elev. 672.25 BRASS CAP

Drilling Method

Verification Method Visual Observation

Criteria WHC-S-014 5.2, 5.3, 7.5, EID-7 Sec 6.2

			Initials	Date
Rotary	Air N/A	Mud N/A	N/A	N/A
Cable Tool	D 0'-187'	H 187'-230.4'	K.H.	3/11/91
Drilling Fluid	RAW WATER	55 GALLONS	K.H	3/11/91
Other	N.A.			

Geophysical Logging

Sondes	Interval	Date
Gross Gamma	0' - 151.1'	2/27/91
Gross Gamma	120' - 227.3'	3/13/91
	-	
	-	
	-	

Completion Data

Drilled Depth 230.4

Completed Depth 227.93

Date Started 2/13/91

Date Completed 3/29/91

Static Water Level/Date 210.7' bls / 3/12/91
3/15/91 210.5'

Aquifer Testing

Type INSTANTANEOUS SLUG

Flow Meter I.D. No. - NA -

Cal. Due Date - NA -

Length of Test 1 HR

Volume Pumped - NA -

Drawdown - NA -

Date of Test 5-10-91

Completion Results

Cleaning

Verification Method Visual Inspection (Direct observation)

Criteria WHC-S-014 7.10, 4.2.2, 7.7 & Drill Rig Cleaning

	Initials	Date
Drilling Tools/Rig	KMH	2/13/91
Temporary Materials	KMH	2/13/91
Permanent Materials	KMH	3/25/91

Screen

Type	Length	Slot Size
4" Ø 304 stainless, wire wrap	20.72'	10

Depth(s) 227.93' - 207.21'

Verification Method Verify using steel tape

Criteria WHC-S-014 4.2.3, 4.2.5, 12.2.1, 4.7.1.

Initials RC Date 3/21/91

Material Storage/Packing

Verification Method Visual Observation

Criteria WHC-S-014 4.2.2, 7.3

	Initials	Date
Mtl. Handling/Storage	KH.	2/28/91
Material Packing	KMH	3/26/91

Lubricants/Additives

Verification Method Visual Observation

Criteria WHC-S-014 7.2

	Identify	Initials	Date
Additives	RAW WATER	KMH	2/28/91 2/25/91
Lubricants	WELL GUARD	KMH	2/13/91

Straightness Test

Verification Method Visual Observation

Criteria WHC-S-014 8.2

Initials Ken Hoffmann KH Date 3/13/91
Ken Hoffmann, Robert Taylor, Tyler Ro

A-6000-436 (09/90)

295

WELL CONSTRUCTION REPORT
(continuation sheet)

299-W26-12

Casing (permanent)

Type	Size	Placement
TYPE 304 SS Sch 5	4" Ø	0.00 - 227.93
		-
		-
		-

Verification Method: Verify using Steel TAPE

Criteria: WHC-S-014 4.21, 4.2.4, 4.2.5, 12.2.1

Initials: KMH Date: 3/26/91

Well Protection

Verification Method: VISUAL, MEASURE w/ TAPE

Criteria: WHC-S-014 4.2.10

	Initials	Date
Protective Posts	[illegible]	6/28/91
Protective Casing	[illegible]	6/28/91
Site Restored	[illegible]	6/28/91
Cap, Hasp and Lock	[illegible]	6/28/91
Surface Pad	[illegible]	6/28/91

Annular Seal/Filter Pack

Verification Method: Measure w/ steel tape Criteria: WHC S-014, 4.2.6, 4.2.7, 4.2.8, 4.2.9, 5.3.

Type	Interval	Volume	Initials	Date
20-40 mesh Sand	227.93 - 204	10.5 SKs	R	3/21/91
Bentonite pellets 3/8"	204 - 199.46	2.5 BKTS (125 #)	[illegible] 2/10/92	3/19/91
Bentonite Crumbles	199.80 - 152.2 (115.2 ') (20.0')	21 SKS	KH.	3/26/91
Bentonite Slurry	152.2 - 3.4 (20.0') (148.8') KH.	9 SKS	KH	3/27/91
Cement		16 SKS	KH	3/29/91

Well Survey/Labeling

Verification Method: REVIEW OF SURVEY REPORT

Criteria: WHC-S-014

	Initials	Date
Measurement Point/Surveyed	ECL	1/24/92
Protective Casing/Brass Cap Surveyed	ECL	1/24/92
Well Number Stenciled	ECL	1/24/92
Brass Cap Labeled	ECL	1/24/92

Pump Installation

Verification Method: VISUAL OBSERVATION

Criteria: WHC-S-014, 4.2.2, 4.2.11

	Initials	Date
Pump Decon/Prep	J.A.C	5-10-91
Installed	J.A.C	5-10-91
Pump Tested	J.A.C.	5-10-91

Other (initial if performed)

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

J.A.C 5-10-91 Well Development

Comments/Remarks

Reviewed By (Sign/Print Name): Edward C. Rafuse / Edward C. Rafuse Date: 1/29/92 ECL 1/29/92

A-6000-436 (09/90)

WELL SUMMARY SHEET

Boring or Well No. **299-W26-12**
Northing 133689.86 Easting 566900.97
Sheet 1 of 3

Location 75' NE OF S-10 TRENCH
Project W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation 672.25
Drilling Contractor KEH
Driller LD BULTENA
Drilling Method and Equipment CABLE TOOL BE 22W
Prepared by K HOFFMAN (Sign/Print Name)
Reviewed By RA WILLIAMS (Sign/Print Name) Date 5-10-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
CEMENT (0' TO 20.0')				0-10' Slightly gravelly SAND
		10		10-20' SAND
12" TEMPORARY CARBON STEEL CASING SET AT 22.7'		20		20-25' Gravelly SAND
				25-45' SAND
		30		
8-20 MESH BENTONITE CRUMBLES (20.0' TO 128.8')				
		40		
				45-55' Slightly silty SAND
		50		
				55-70' SAND
		60		
		70		70-71' Sandy SILT
				71-78' SAND
				78-79.5' Sandy GRAVEL
		80		

Inches 28 20 12 8 4 0 4 8 12 20 28

C/Z S P C/B

WELL SUMMARY SHEET

Boring or Well No. **299-W26-12**
Northing 133689.86 Easting 566900.97
Sheet 2 of 3

Location: 75' NE OF S-10 TRENCH
Project: W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation: 672.25
Drilling Contractor: KEH
Driller: LD BULTENA
Drilling Method and Equipment: CABLE TOOL BE 22W
Prepared by: K HOFFMAN (Sign/Print Name)
Reviewed By: [signature] (Sign/Print Name) Date: 5-10-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
4" DIAM T-304 SCH 5 STAINLESS STEEL PERM CASING WITH CENTRALIZERS		90		79.5-124' SAND
		100		
		110		(114-116' Silt lenses)
		120		124-130' Silty SAND with occasional silt lenses
BENTONITE SLURRY (128.8' TO 152.55')		130		130-151' Slightly silty SAND
		140		
PERCHED/SATURATED FORMATION AT 146.3' (2/26/91)				
10" TEMPORARY CARBON STEEL CASING SET AT 152.55'		150		151-157' Sandy SILT
		160		157-162' SAND with silt lenses

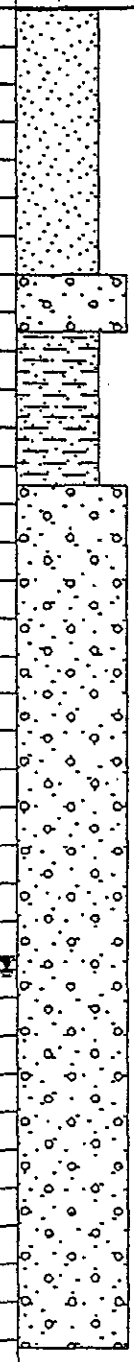
Inches: 28 20 12 8 4 0 4 8 12 20 28

C/Z S P C/B

WELL SUMMARY SHEET

Boring or Well No. **299-W26-12**
Northing 133689.86 Easting 566900.97
Sheet 3 of 3

Location 75' NE OF S-10 TRENCH
Project W-017H/S-10 POND RCRA GROUNDWATER MONITORING WELL INSTALLATION
Elevation 672.25
Drilling Contractor KEH
Driller LD BULTENA
Drilling Method and Equipment CABLE TOOL BE 22W
Prepared by K HOFFMAN (Sign/Print Name)
Reviewed By DA WILLIAMS (Sign/Print Name) Date 5-10-91

CONSTRUCTION DATA		Depth in Feet	GEOLOGIC/HYDROLOGIC DATA	
Description	Well Construction		Graphic Log	Lithologic Description
8-20 MESH BENTONITE CRUMBLES (152.55' TO 199.8')		170 180 190 200 210 220 230 240		162-165' Slightly silty SAND 165-174' SAND 174-177' Sandy GRAVEL 177-188' Silty SAND (Paleosol at 177') (179-180' Trace gravel) (180-185' Trace cobbles) 185-230.4' Sandy GRAVEL
3/8" MESH BENTONITE PELLETS (199.8' TO 204.0')				
20-40 MESH SILICA SAND FILTER PACK (204.0' TO 227.93')				
STATIC WATER LEVEL AT 210.7' (3/12/91)				
4" DIAM 10-SLOT T-304 STAINLESS STEEL CONTINUOUS WIREWRAP SCREEN (207.21' TO 227.93')				
SLUFF (227.93' TO 230.4')				
8" TEMPORARY CARBON STEEL CASING SET AT 229.5'				
TOTAL DEPTH = 230.4'				

Inches 28 20 12 8 4 0 4 8 12 20 28

C/Z S P C/B

VALIDATED
2/4/92
SIGNATURE/DATE

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 1 of 12

Location 75' NE S-10 trench
Project W-017 / SST S-10
Elevation 672.25 BRASS CAP
Drilling Contractor KEH
Driller L.D. Bultema
Drilling Method and Equipment Cable tool 22-W B.E.
Logged By Ken HOFFMANN
Date 2/13/91
Checked By
Date 2/25/91

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
		DB			
5	2 Archive 1 Moisture 1 HPT			SLIGHTLY GRAVELLY SAND (7% Gravel, 90% Sand, 3% Silt) lt. brown gray 2.5Y 6/2 Dry, dk. grayish brn 2.5Y 4/2 wet; 3% FP, 4% VFP, 20% VCS, 15% CS, 20% MS, 20% FS, 15% VFS, 3% Silt; Dry Soil, Strong Rxn to 10% HCl, Unconsolidated, Moderatly Sorted, Subrounded, 70% Mafic, 30% Felsic	No Chem HAZ. det.
					ADD CASING for a total of 23.20'
10	2 Archive 1 Moisture 1 HPT.			SLIGHTLY GRAVELLY SAND - SAME as Above.	No Chem HAZ. det.
					END Shift 2/13/91
15	2 Archive 1 Moisture 1 HPT			15.0' SAND (97% Sand 3% Silt) Grayish Brown 2.5Y 5/2 Dry, very dk grayish Brown 2.5Y 3/2 wet; 10% CS 50% MS, 20% FS, 17% VFS, 3% Silt Dry Soil, Well sorted, No Rxn to 10% HCl, SA-SR, 60% Mafic, 40% Felsic	No Chem. HAZ det w/ 6iP
20					

A-6000-382 (11/89)

9413273.1755

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 2 of 12

Location 75' NE S-10 trench

Project W-017 / S-10

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D Baltrena

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

Prepared By Ken HOFFMAN Ken Hoffman (Sign/Print Name) Date 2/14/91

Reviewed By BA WILLIAMS (Sign/Print Name) Date 2/25/91

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
20	1 Moisture 1 HPT 2 Archive	DB		SAND (97% SAND, 3% silt) Grayish Brown 2.5Y 5/2 Dry, very dk grayish Brown 2.5Y 3/2 Wet, 10% CS, 50% MS, 20% FS, 17% VFS, 3% silt Dry Soil, Well sorted, No Rxn to 10% HCl SA-SR 60% Mafic, 40% felsic	No Chem HAZ. det w/SiP
	2 Archive 1 Moisture 1 HPT				
25				GRAVELLY SAND (15% gravel, 82% SAND 3% silt) DK gray 2.5Y 4/0 Dry, Very DK gray 2.5Y 3/0 Wet, 5% MP, 3% FP 8% VFP, 2% VCS, 20% CS, 20% MS, 30% FS, 10% VFS, 3% silt, Dry Soil, Well Sorted Slight Rxn to HCl, SR-SA, 60% Mafic, 40% felsic	Rem Rnd Joint 10" Total 40 gal. *Note distinctive color change From brownish above to blackish hue
	2 Archive 1 Moisture 1 HPT				
30				SAND (97% SAND, 3% silt) Lt. brownish gray 2.5Y 6/2 Dry, grayish brown 2.5Y 5/2 Wet, 7% VCS, 10% CS, 50% MS, 20% FS, 10% VFS, 3% silt, Dry Soil Moderate Rxn to 10% HCl, Well sorted, SR 50% Mafic, 50% felsic	No Chem HAZ. det w/SiP MSA Lel
	2 Archive 1 Moisture 1 HPT				
35				SAND (97% SAND 3% silt) Same as above	No Chem HAZ. det. w/ SiP MSA Lel
40					

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BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 3 of 12

Location 75' NE S-10 trench

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D. Bulterra

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

Prepared By Kim Hoffmann Ken Hoffman (Sign/Print Name) Date 2/14/91

Reviewed By [signature] / BA Williams (Sign/Print Name) Date 2/25/91

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
40	1 MPT 2 Archive 1 Moisture	DB		SAND (95% SAND, 5% silt) grayish brown 2.5Y 5/2 Dry, dk grayish brown 2.5Y 4/2 wet, 5% CS, 30% MS, 30% FS, 30% VFS, 5% Silt, Moderate Rxn to 10% HCl, Dry soil, well sorted, SR-, 50% mafic 50% felsic, Fines are poorly cemented	No Chem HAZ det W/ SIP + MSALeL
	2 Archive 1 Moisture 1 MPT				
45				SAND (95% SAND, 5% Silt) - Same as above.	No Chem HAZ det w/ SIP + MSALeL
	2 Archive 1 Moisture 1 MPT				
50				SLIGHTLY SILTY SAND (87% SAND, 13% Silt) light brownish gray (10YR 6/2 Dry dark gray 10YR, 4/1 wet, 7% CS, 20% MS, 20% FS, 40% VFS, 13% Silt, Strong Rxn to 10% HCl, well sorted, Dry soil, unconsolidated	No Chem HAZ det. W/ SIP
55				SLIGHTLY SILTY SAND (87% SAND, 13% Silt) Same as above	No Chem HAZ det W/ SIP
60					

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 4 of 12

Location 75' NE 5-10 Trench

Project W017

Elevation 672.25 BRASS CAP

Drilling Contractor YEH

Driller L.D. Buttenn

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

Prepared By Ken Hoffman (Sign/Print Name) Date 2/15/91

Reviewed By B.A. Williams (Sign/Print Name) Date 2/25/91

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	1 Moisture 1 HPT 2 Archive	DB		SAND (95% Sand, 5% silt) Brown 10YR 5/3 Dry, Dk Brown 10YR 4/3 wet, 15% CS, 50% MS, 10% FS, 20% VFS, 5% silt, mod Rxn to 10% HCl, Dry soil, unconsolidated, well sorted, 50% mafic 50% felsic	No Chem HAZ. det. w/ SIP
	2 Archive 1 Moisture 1 HPT				
65	1			SAND (95% Sand, 5% silt) same as above	No Chem HAZ det w/ SIP
	2 Archive 1 HPT 1 Moisture				No Chem HAZ. det w/ SIP
70				SANDY SILT (40% sand, 60% silt) Dark Brown 10YR 4/3 wet, 40% VFS, 60% silt, moist, mod. Rxn to HCl, Consolidated, well sorted	
71	2 Archive 1 HPT 1 Moisture				
75	2 Arch 1 HPT 1 moist			(75') SAND (100% sand) lt. brown dry, VCS-30%, CS-20%, MS-20%, FS-20%, VFS-10%, NO 10% HCL rxn, 70 felsic, 30% mafic	No chem haz det w/ SIP
78'	2 Arch 1 HPT 1 moist	DB		(78') sandy GRAVEL (5% silt) (40% gravel 60% sand) lt. brown, dry, large cobbles-30%, small cob-10% VCS-12%, CS-12%, MS-12%, FS-12% VFS-12% well rounded gravel, mod. rxn to 10% HCL	2/15/91 No chem det w/ SIP
80					

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BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 5 of 12

Location 75' NE S-10 Trench
Project W-017
Elevation 672.25 BRASS CAP
Drilling Contractor Kaiser Engineers Hanford
Driller LD Bultema
Drilling Method and Equipment Cable Tool
Prepared By Ron Hoffman, Ron Hoffman (Sign/Print Name) Date 2/14/91
Reviewed By [signature] / BA Williams (Sign/Print Name) Date 2/25/91

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
80	2 Arch 1 moist 1 HPT	DB		(80') SAND (100% Sand), lt. brown dry, VCS-30% CS-20% MS-20% FS-20% VFS-10% No 10% HCl rxn. 70% felsic, 30% mafic	2/15/91 No chem det w/SIP
85'	2 Arch 1 moist 1 HPT	DB		(85') SAND (100% sand) same as above	2/15/91 No chem det w/SIP
90	2 Arch. 1 Moist. 1 HPT.	DB		(90') SAND (95% Sand 5% Silt) lt. brownish gray 10YR 6/2 Dry, dk. grayish brown 10YR 4/2 wet 60% MS, 10% FS, 25% VFS, 5% Silt, Dry Soil, well sorted Slight Rxn to 10% HCl, 65% felsic 35% mafic.	No Chem Haz det w/ SIP
95	2 Arch. 1 moist. 1 HPT.	DB		95' SAND (95% Sand, 5% Silt) same as above	No Chem Haz det. w/ SIP
100					

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BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 6 of 12

Location 75' NE 5-10 trench

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D. Bultena

Drilling Method and Equipment Cable tool BIE 22-W

Prepared By Ken Hoffmann (Sign/Print Name) Date 2/26/91

Reviewed By BA Williams (Sign/Print Name) Date 3/25/91

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
100	2 Arch 1 HPT. 1 Moist	DB		SAND (97% Sand, 3% Silt) Lt. brown gray 10YR 6/2 Dry, dk. grayish brown 10YR 4/2 wet, 65% MS, 20% FS, 17% VFS, 3% silt, Moist Soil, well Sorted Sl. Rxn to HCl 65% Felsic, 35% mafic	No Chem HAZ. det w/ SID * Note 15 moisture det.
105	2 Arch 1 HPT moist.	DB		SAND (100% Sand) Cl. Olive brown 2.5Y 5/4 wet. 10% CS. 20% MS, 50% FS, 20% VFS, Moist Sand, well Sorted Slight Rxn to 10% HCl, 70% Lithic, 30% Felsic, R-SA, unconsolidated	No Chem HAZ det.
110	2 Arch 1 HPT moist	DB		SAND (100% Sand) Same as Above	No Chem HAZ. det
115	2 Arch 1 HPT moist	DB		SAND with Silt Lenses: Sand is Same as Above. Silt: light olive brown 2.5Y 5/6 wet, Mod. Rxn to HCl, Some iron staining, well Sorted, moist.	No Chem HAZ det.
120					

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 7 of 12

Location 75' N.E. of S-10 TRENCH

Project W017/S-10

Elevation 672.75 BRASS CAP

Drilling Contractor KAISER ENGINEERS, HANFORD

Driller L.D. Bultena

Drilling Method and Equipment BE 22W - CABLE

Prepared By Ken Hoffman (Sign/Print Name) Date 2/25/91

Reviewed By [signature] / BA Williams (Sign/Print Name) Date 3/4/91

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
120	1 Moist 2 Arch 1 HPT			SAND (93% SAND, <2% fines) Yellowish Brown (10YR 5/4) Moist, Pale brown (10YR 6/3) Dry. Moist Sands composed of (10% MS, 70% FS, 18% VFS, ≤2% fines). Clean, well sorted, uncemented, No Rx to HCL. Massive Structureless, fine Mica abundant. Fining downward Silt% increasing (124-124.5') thinly laminated Silty Fine SAND to Fine Sandy SILT. Moisture content increasing	Boring advanced to ~100'
	2 Arch. 1 Moist 1 HPT				Casing advanced to 119.5'
125				125') Silty SAND (20% Silt 80% Sand) Grayish brown (10YR 5/2) wet. Brown (10YR 5/3) Dry Sands Composed of (40% FS, 40% VFS, 20% fines) Abundant Small Muscovite flakes. Medium grade Very well sorted. Moist to Wet. Horizontally laminated, No Rx to HCL.	
	1 HPT 2 Arch 1 moist				
130				130' SLIGHTLY SILTY SAND (90% SAND, 10% Silt) dark yellowish brown 10YR 4/4 wet, light yellowish brown 10YR 6/4 Dry, 10% MS, 50% FS, 30% VFS, 10% Silt, Moist Soil, well sorted, Strong Rx to 10% HCl,	No Chem HAZ det.
	1 HPT 2 Arch. 1 Moist				
135				135' SLIGHTLY SILTY SAND (90% Sand, 10% Silt). Same as above	No Chem HAZ det
140					

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 8 of 12

Location 75' NE 5-10 trench.

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D. Bullcwa

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

Prepared By Ken Hoffman Ken Hoffman (Sign/Print Name) Date 2/27/91

Reviewed By RJ / DA WILLIAMS (Sign/Print Name) Date 3/4/91

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
140	2 Arch 1 Moist 1 HPT.	DB		140' SLIGHTLY SILTY SAND (90% Sand, 10% Silt) Very dk grayish brown 10YR 3/2 wet, 10% MS, 40% FS, 40% VFS, 10% silt, moist Soil, strong Rx to 10% HCl, well sorted unconsolidated, 70% felsic, 30% Lithic	NO HAZARDS
145	2 Arch 1 HPT 1 Arch.	DB		145' SLIGHTLY SILTY SAND (90% sand, 10% silt) same as above wet	NO HAZARDS E-TAPE WATER at 140.3' BWS End 2/28/91
148	1 HPT	S/T 98%		148' SLIGHTLY SILTY SAND (Same as above)	NO HAZARDS
150	DB 1 HPT 2 Arch 1 Moist	S/T		151' SANDY SILT (40% SAND, 60% MUD) DK Yellowish brown 10YR 4/4 wet, 40% VFS, 50% Silt, 10% mud/clay, trace thin laminations w/ Fe stains, mod. Rx to HCl, Stiff/competent, moist	END 2/28/91 NO HAZARDS E-TAPE WATER at 146.3' BWS
	1 HPT	95%			
	1 HPT	S/T 100% Recovery		154' CLASTIC DIKE? SAND FRACTION 10% MS 40% FS, 50% VFS DK yellowish brown well sorted, MUD fraction: 80% silt, 20% clay, Trace Fe stains, Lithologies at oblique Angle 60°-90° moist	NO HAZARDS
155	DB 1 HPT 1 Moist 1 Arch				
	1 HPT	S/T 100% Recovery		157' SAND (95% sand 5% silt) DK. yellowish Brown trace mud, ~~80%~~ VM 70% FS, 75% VFS, 5% silt, Moist	NO HAZARDS
160					

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BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 9 of 12

Location 75' NE of S-10 Trench

Project W-017

Elevation 672.25 Brass Cap

Drilling Contractor KEH

Driller L.D. Baltema

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

Prepared By Ken Hoffman / Ken Hoffman (Sign/Print Name) Date 3/1/91

Reviewed By BA Williams / B. (Sign/Print Name) Date 3/4/91

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
160	2 Arch 1 Moist 1 HPT	DB		160' SAND w/ Lenses of Silt/Clay. Fine Sand: 20% FS, 80% VFS, DK. Yellowish Brown to YR 4/4 wet, Lenses of Clay: 60% Silt 40% Clay w/ Iron Stringers. Mod Rxn to 10% HCl,	No HAZ. det.
165	2 Arch 1 HPT 1 Moist	DB		165' SLIGHTLY SILTY SAND (85% SAND 15% MUD) 15% CS 20% MS, 40% FS, 10% VFS, 10% silt, 5% clay, Brown 10YR 4/3, wet, Mod. Rxn to HCl, clay Present in Stringers in SAND.	No HAZ. det.
170	2 Arch 1 HPT 1 Moist	DB		170' SAND (100% SAND) 30% MS, 40% FS, 30% FS, Brown 10YR 4/3, wet, well Sorted, 70% felsic, 30% mafic mod. Rx to HCl	No HAZ. det.
175	2 Arch 1 HPT 1 Moist	DB		175' SANDY GRAVEL (35% gravel) 65% SAND) Basaltic gravel 5% FMP, 20% FP, 10% VFP, 35% MS, 20% FS 10% VFS	No HAZ det.
	2 Arch 1 HPT 1 Moist	DB		177' Paleosol - Weathered Basalt Pebbles w/ yellow-orange clay matrix, Iron Stains.	No HAZ. det.
180					

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 10 of 12

Location 75' NE S/O Trench 1

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D. Bailey

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

Prepared By Ken Hoffmann (Sign/Print Name) Date 3/1/91

Reviewed By DA Williams (Sign/Print Name) Date 3/15/91

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
180	2 Arch. 1 MPT 1 moist	DB		SILTY SAND (75% SAND, 25% MUD) Brownish Yellow ~~Brownish Yellow~~ 10YR 6/8 wet, 40% MS, 20% FS, 15% VFS, 5% silt, 20% clay, NO Rxn to HCl, mod. sorted. Weathered Appearance.	NO HAZ. det.
	2 Arch 1 MPT 1 moist	DB		SILTY SAND (75% SAND, 25% MUD) Brownish Yellow 10YR 6/8 wet, 40% MS, 20% FS, 15% VFS, 5% silt 20% Clay, Weathered Appearance, No Rxn to HCl, Trace cobbles (basaltic) Poorly Sorted,	NO HAZ. det.
185		HT			at 187' bk slick to HARD tool ADD 8 gallons water
	2 Arch 1 MPT	HT Bailer		190' SANDY GRAVEL (60% gravel, 35% SAND, 5% MUD) Medium to Fine Pebble size Gravel, 60% BASALT, 40% Exotics (Chert, meta-morphics, Ign Rxs) Hard to Drill MIDDLE Ringold?	190' Sample was taken w/ Dart valve Bailer.
190					192' Switch BACK to DB
	1 MPT 2 Arch	DB		195 SANDY GRAVEL (60% gravel, 35% SAND 5% MUD) Same as ABOVE	Moist. sample not taken because of water added.
195					196' START HT
200					

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W26-12

Sheet 11 of 12

Location 75' NE 5-10 Trench

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEM

Driller L.D. Bultena

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

Prepared By Ron Hoffmann (Sign/Print Name) Date 3/11/91

Reviewed By Kent Rudolph (Sign/Print Name) Date 1/28/92

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
200	2 Arch. 1 HPT	HT		200' SANDY GRAVEL (60% gravel, 35% sand, 5% MUD) Medium to Large pebble size. 60% felsic, 40% basalt flags, poorly sorted	No moisture sample taken due to H_2O added W/ HT Drilling
205	2 Arch 1 HPT	HT		205' SANDY GRAVEL (60% gravel, 35% sand, 5% MUD) Same as Above.	No Moisture Sample taken due to H_2O Added.
210	2 Arch 1 HPT	HT		210' SANDY GRAVEL (60% gravel, 35% sand, 5% MUD) Same as above.	No Moisture samples taken
215	2 Arch 1 HPT.	HT		215' SANDY GRAVEL (60% gravel, 30-35% sand Trace MUD - same as Above.	No moisture samples taken

A-6000-382 (04/90)

BOREHOLE LOG

Boring or Well No. 299-W20-12

Sheet 12 of 12

Location 25 NE S-10 Trench

Project W-017

Elevation 672.25 BRASS CAP

Drilling Contractor KEH

Driller L.D. Baltema

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

Prepared By Ken Hoffman Ken Hoffman (Sign/Print Name) Date 3/12/91

Reviewed By Kent Reynolds Kent Reynolds (Sign/Print Name) Date 1/28/92

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
220	2 Arch. 1 HPT	HT		220' SANDY GRAVEL (60% gravel, 35% sand, 5% MUD) medium to large pebble trace cobble, 60-65% felsic content. Hard to drill. formation not making much water.	
225	2 Arch. 1 HPT	HT		225' SANDY GRAVEL (60% gravel 35% sand, 5% MUD) SAME AS ABOVE.	
					Static Water 210.7' bls 3/13/91
					Drill depth 230.4'
230					

A-6000-382 (04/90)

Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

Well No. 299-W26-7 Area 200W Date 3/14/91

Log Run #1 Log Type Gross Gamma

Elevation Datum top of brass cap Elevation 648.59'

Survey Coordinates 133,242.42 N 566,325.45 E

Log Measured From Ground Surface

Location Description West of S-10 Trench

Ground Surface Elevation 648.59'

Surface Temperature 2.0°C Weather Overcast - Cool

BOREHOLE INFORMATION

Driller Darrel Ludtke

Drill Rig Type Cable Tool	Bit Type/Diameter Drive Barrel / 10"
Borehole Diameter(s)/Depth 12"/19.5' 10"/141.5'	
Depth Driller 141.45'	Depth Logger 141.4'
Liquid Level NA	Liquid Density NA
Temperature NA	

CASING RECORD

Type 12" Carbon Steel Sch.40	Interval +0.4' - 19.53'
Type 10" Carbon Steel Sch.40	Interval +1.8' - 140.47'
Type	Interval
Type	Interval

Well Screen Interval NA

Comments: Return Error = +0.3' high

Centralizer was used.

Cable Smear showed ~600 c/m w/GM & 100 c/m w/PAM after logging run.

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 8/90 | Calibration Reference PNL-7460 UC-606

Calibration/Probe Factor 7.87×10^{-2} eU P/M/C/S | Base Calibration Datum (eU): Position 1 291.4 eU | Position 2 48.5 eU

Dead Time 17.8 usec. | Warm Up Time > 15 min

LOGGING INFORMATION

Log Interval From 140.8' | To 3.3'

Rerun(s) 140.8' to 95.0' | 50.0' to 15.0'

Pre Survey Verification: Position 1 ~~277.4 eU~~ AVOP 3/14/91 2810 eU | Position 2 48.7 eU | Background 55 c/s

Base Calibration Difference: Position 1 10.4' | Position 2 0.2 eU

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

Start Time 0800 | Completion Time 1000

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

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

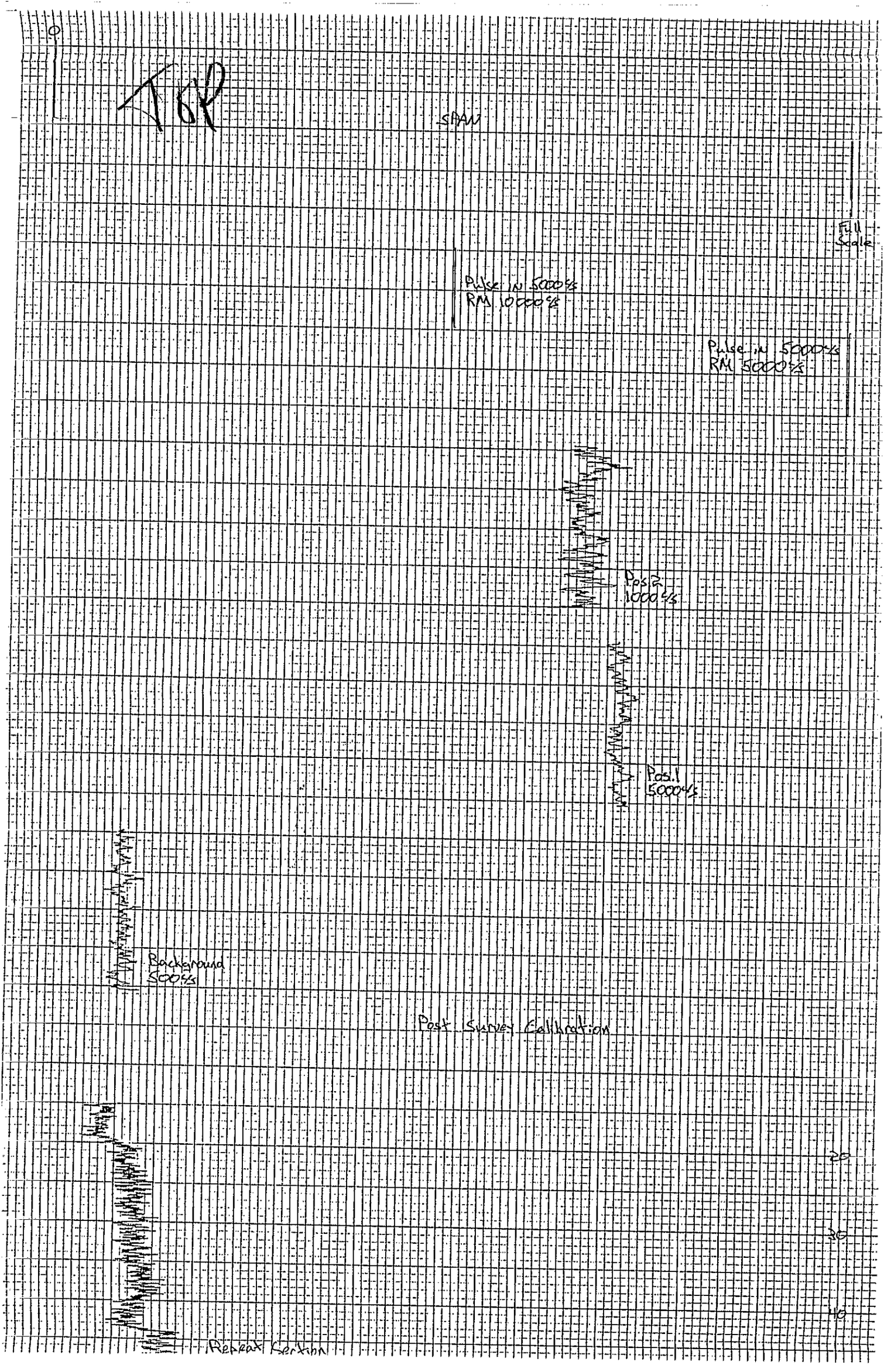
Post Survey Verification: Position 1 277.4 eU | Position 2 48.8 eU | Background 50 c/s

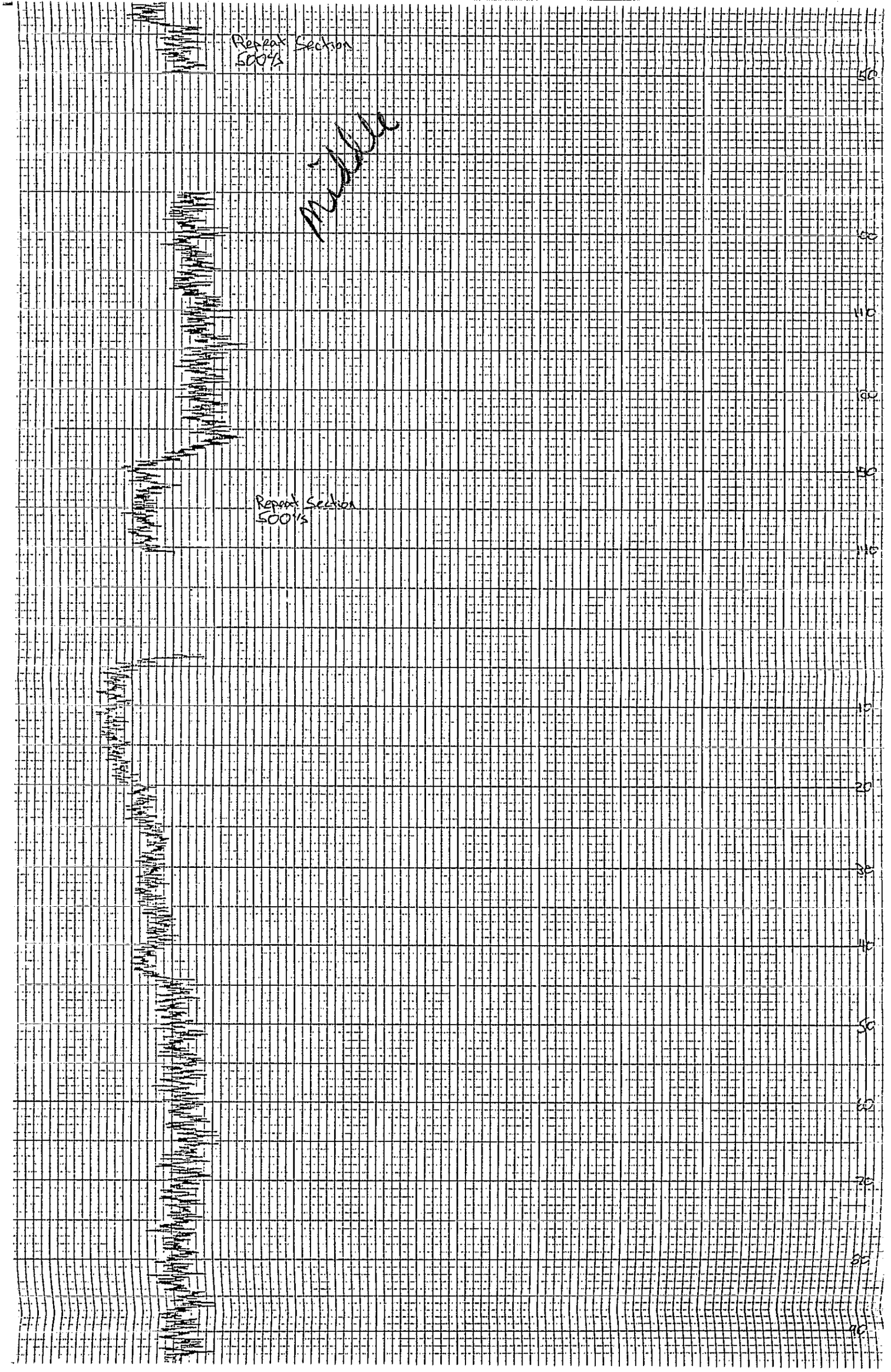
Percent Change: Position 1 1.3% | Position 2 0.2%

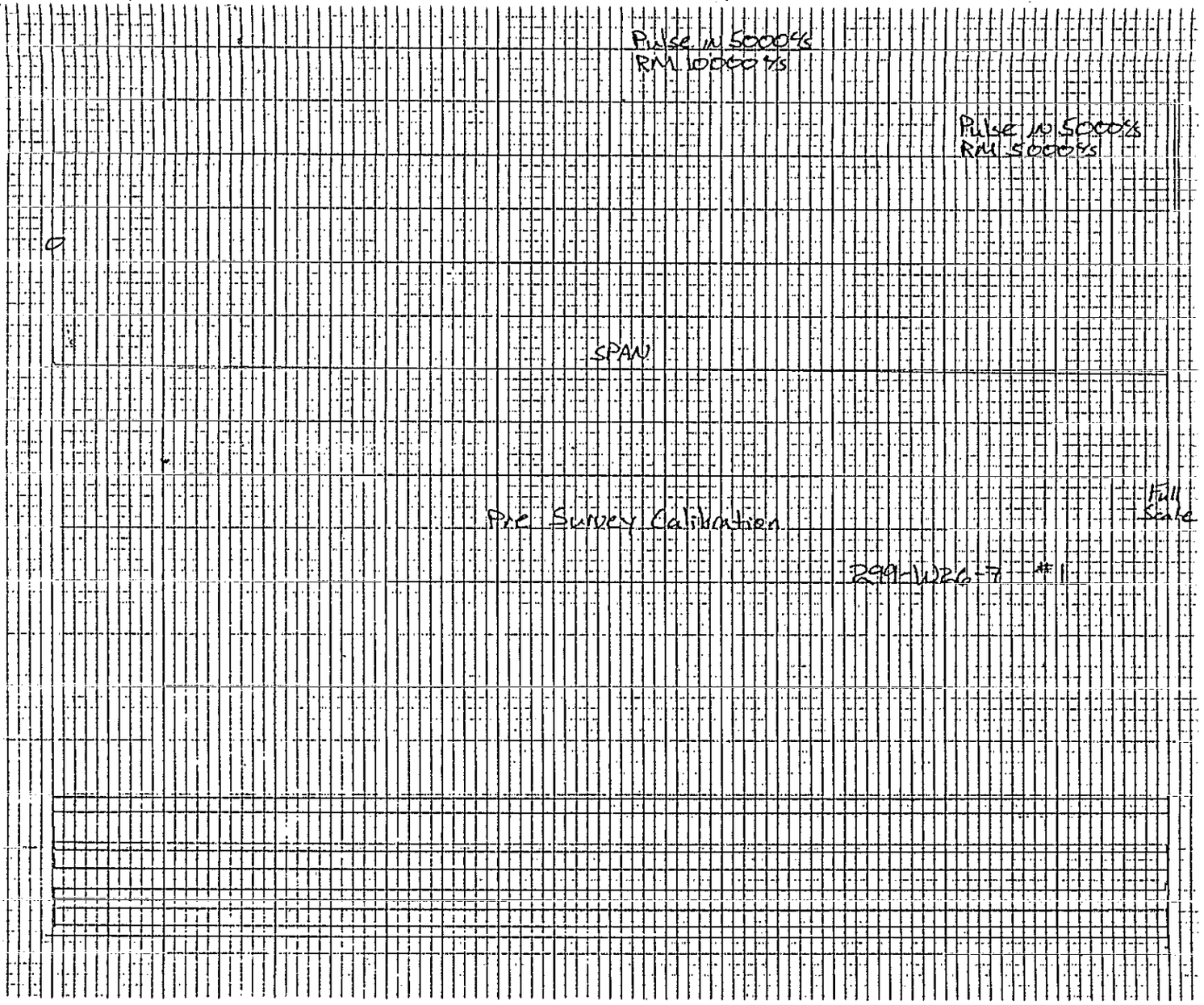
Comments Return Error = +0.3' high

Centralizer used.

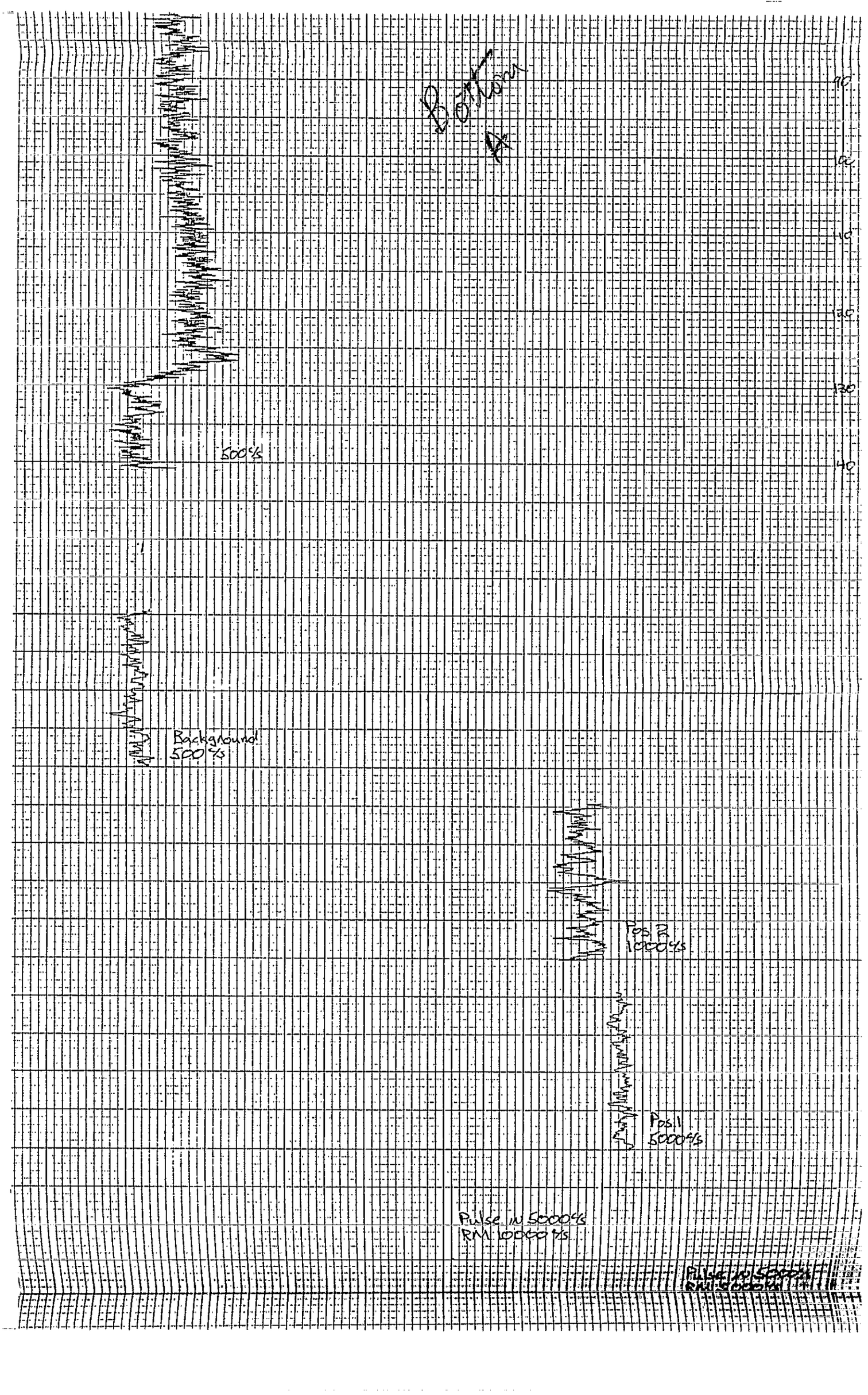
Witnessed and Verified by: (sign and print name) Kent Reynolds | Date: 3/14/91


TKR
SPAN
Full Scale
Pulse IN 5000 c/s
RM 10000 c/s
Pulse IN 5000 c/s
RM 5000 c/s
Pos 2
1000 c/s
Pos 1
5000 c/s
Background
500 c/s
Post Survey Calibration
20
30
40
Retract Section


Repeat Section
500'/s
Middle
Repeat Section
500'/s
50
00
10
00
50
10
15
20
30
40
50
60
70
80
90


Pulse in 5000%
RM 10000%
Pulse in 5000%
RM 5000%
0
SPAN
Full Scale
Pre Survey Calibration
299-W26-7 #1

Bottom B


Bottom
90
100
110
120
130
140
500 c/s
Background
500 c/s
Pos B
1000 c/s
Pos II
5000 c/s
Pulse in 5000 c/s
RM 10000 c/s

Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

Well No. 299-W26-7 Area 200W Date 3/26/91

Log Run #2 Log Type Gross Gamma

Elevation Datum top of brass cap Elevation 648.59'

Survey Coordinates 133,242.42 N 566,325.45 E

Log Measured From Ground Surface

Location Description West of S-10 Trench

Ground Surface Elevation 648.59'

Surface Temperature 3.0° C Weather Clear - Cool

BOREHOLE INFORMATION

Driller Darrel Ludtke

Drill Rig Type Cable Tool Bit Type/Diameter Hard Tool / 8"

Borehole Diameter(s)/Depth 12"/19.5' 10"/146.5' 8"/206.5'

Depth Driller 206.5' Depth Logger 205.6'

Liquid Level 187.0' Liquid ~~Density~~ Appearance Muddy

Temperature 17.5°C

CASING RECORD

Type 12" Carbon Steel Sch.40	Interval +0.47' - 19.53'
Type 10" Carbon Steel Sch.40	Interval +1.8' - 140.5'
Type 8" Carbon Steel Sch.40	Interval +3.0 - 205.0'
Type	Interval

Well Screen Interval NA

Comments: Return Error = +0.15' high
Centralizer was used.

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: 8/90 | Calibration Reference: PNL-7460 UC-606

Calibration/Probe Factor: 7.87×10^{-2} eU p/m/c/s | Base Calibration Datum (eU): Position 1: 291.4 eU | Position 2: 48.5 eU

Dead Time: 17.8 usec. | Warm Up Time: >15 min

LOGGING INFORMATION

Log Interval From: 204.9' | To: 110.0'

Rerun(s): 203.9' to 160.0'

Pre Survey Verification: Position 1: 279.4 eU | Position 2: 47.6 eU | Background: 50 c/s

Base Calibration Difference: Position 1: 12.0 eU | Position 2: 0.9 eU

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

Start Time: 0730 | Completion Time: 0915

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: 271.5 eU | Position 2: 48.0 eU | Background: 50 c/s

Percent Change: Position 1: 2.8% | Position 2: 0.8%

Comments: Return Error = +0.15' high

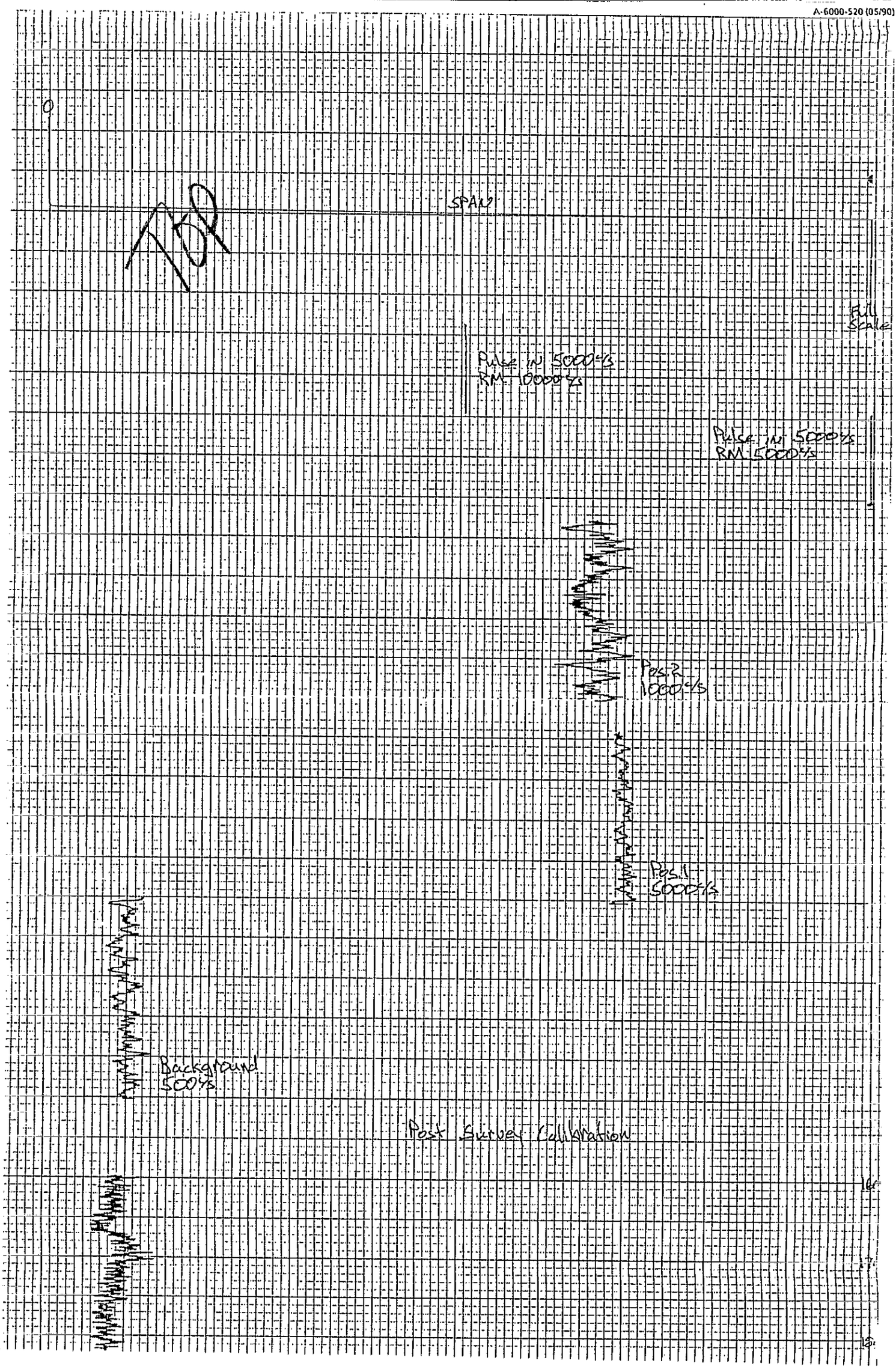
Centralizer used.

Witnessed and Verified by: (sign and print name) Steven E. Kos STEVEN E. KOS | Date: 3/26/91

A-6000-520 (05/90)

Witnessed and Verified by: (sign and print name) Steven E. Kos STEVEN E. KOS Date: 3/26/91

A-6000-520 (05/90)



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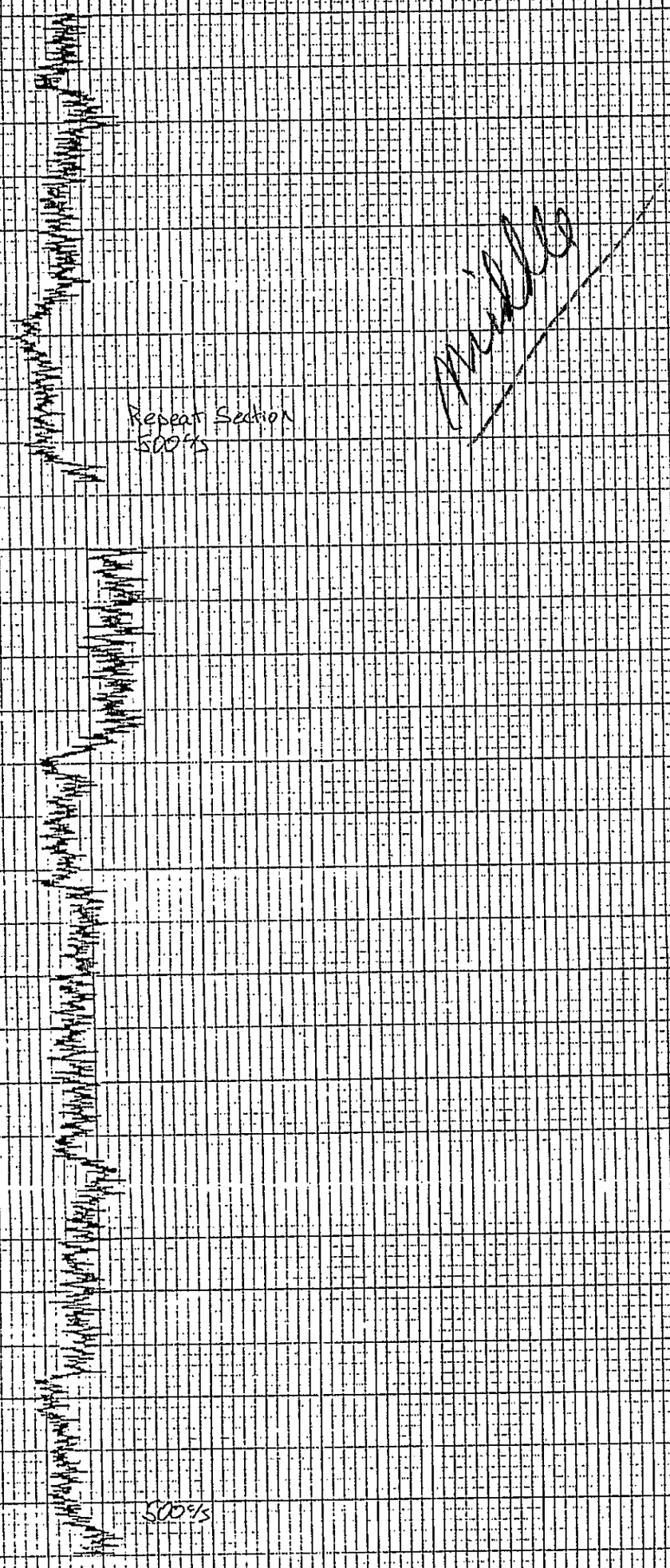

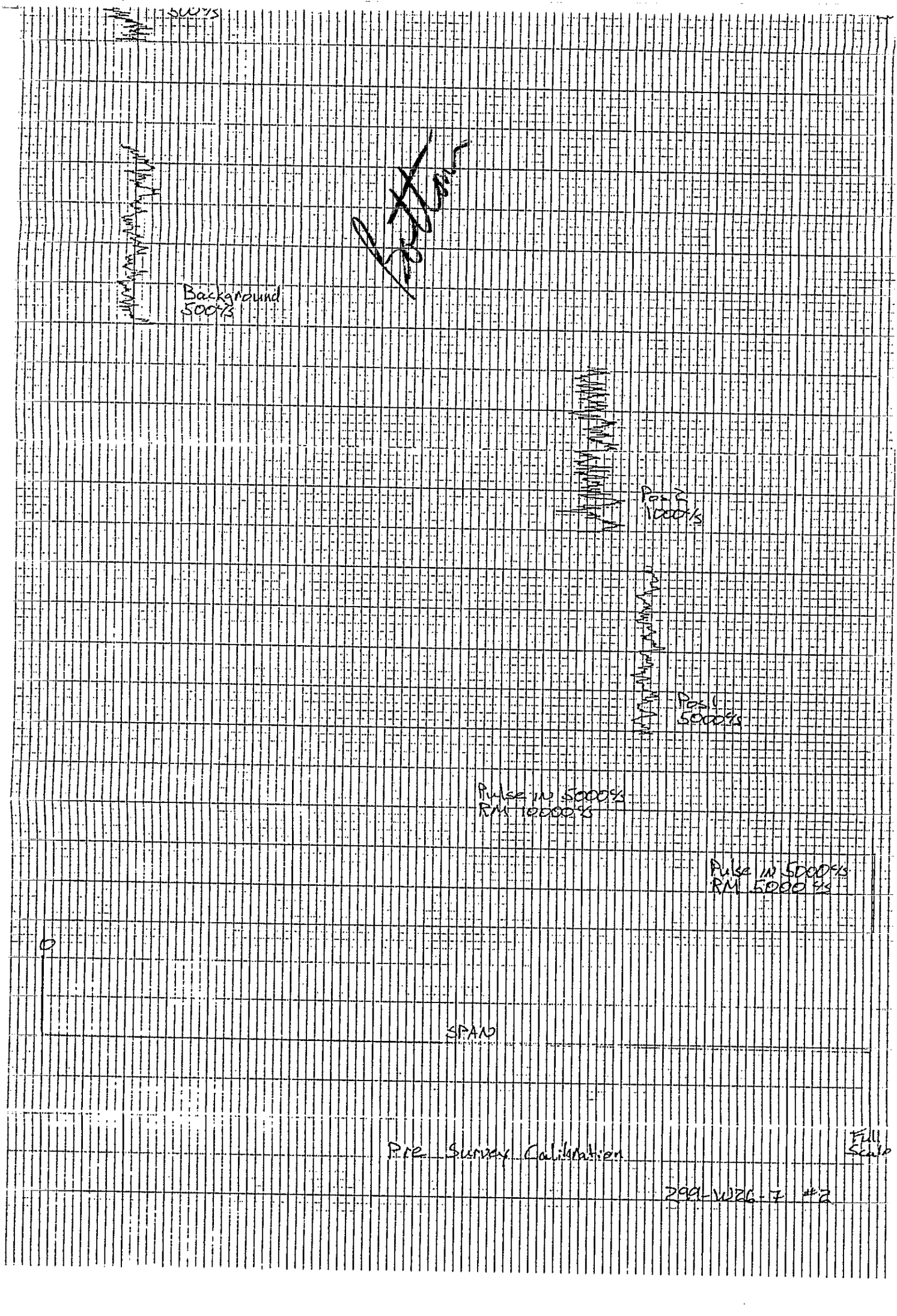
500cps
Background
500cps
Pos 2
1000cps
Pos 1
500cps
Pulse in 5000cps
RM 10000cps
Pulse in 5000cps
RM 5000cps
0
SPAN
Pre Survey Calibration
Full Scale
299-W26-7 #2

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Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

Well No. 299-W26-10 Area 200W Date 3/8/91

Log Run #1 Log Type Gross Gamma

Elevation Datum top of brass cap Elevation 667.19'

Survey Coordinates 133,499.11 N 566,683.22 E

Log Measured From Ground Surface

Location Description East side of S-10 Trench

Ground Surface Elevation 667.19'

Surface Temperature 13.8°C Weather Clear Warm

BOREHOLE INFORMATION

Driller Mel Thorenson

Drill Rig Type Cable Tool	Bit Type/Diameter 10"/Drive Barrel
Borehole Diameter(s)/Depth 12"/19.3' 10"/162.0'	
Depth Driller 163.0'	Depth Logger 162.0'
Liquid Level NA	Liquid Density NA

Temperature NA

CASING RECORD

Type 12" Carbon Steel sch. 40	Interval +0.92' - 19.3'
Type 10" Carbon Steel sch. 40	Interval +1.5' - 160.77'
Type	Interval
Type	Interval

Well Screen Interval NA

Comments: Return Error = +0.12' high
Centralizer was used

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: 8/90 | Calibration Reference: PNL-7460 UC-606

Calibration/Probe Factor: 7.87×10^{-2} eU P/M/C/S | Base Calibration Datum (eU): Position 1: 291.4 eU | Position 2: 48.5 eU

Dead Time: 17.8 μsec. | Warm Up Time: >15 min

LOGGING INFORMATION

Log Interval From: 162.0' | To: 3.6'

Rerun(s): 162.0' to 140.0' 80.0' to 50.0'

Pre Survey Verification: Position 1: 275.1 eU | Position 2: 48.8 eU | Background: 55 c/s

Base Calibration Difference: Position 1: 16.3 eU | Position 2: 0.3 eU

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

Start Time: 1320 | Completion Time: 1500

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: 265.2 eU | Position 2: 49.2 eU | Background: 55 c/s

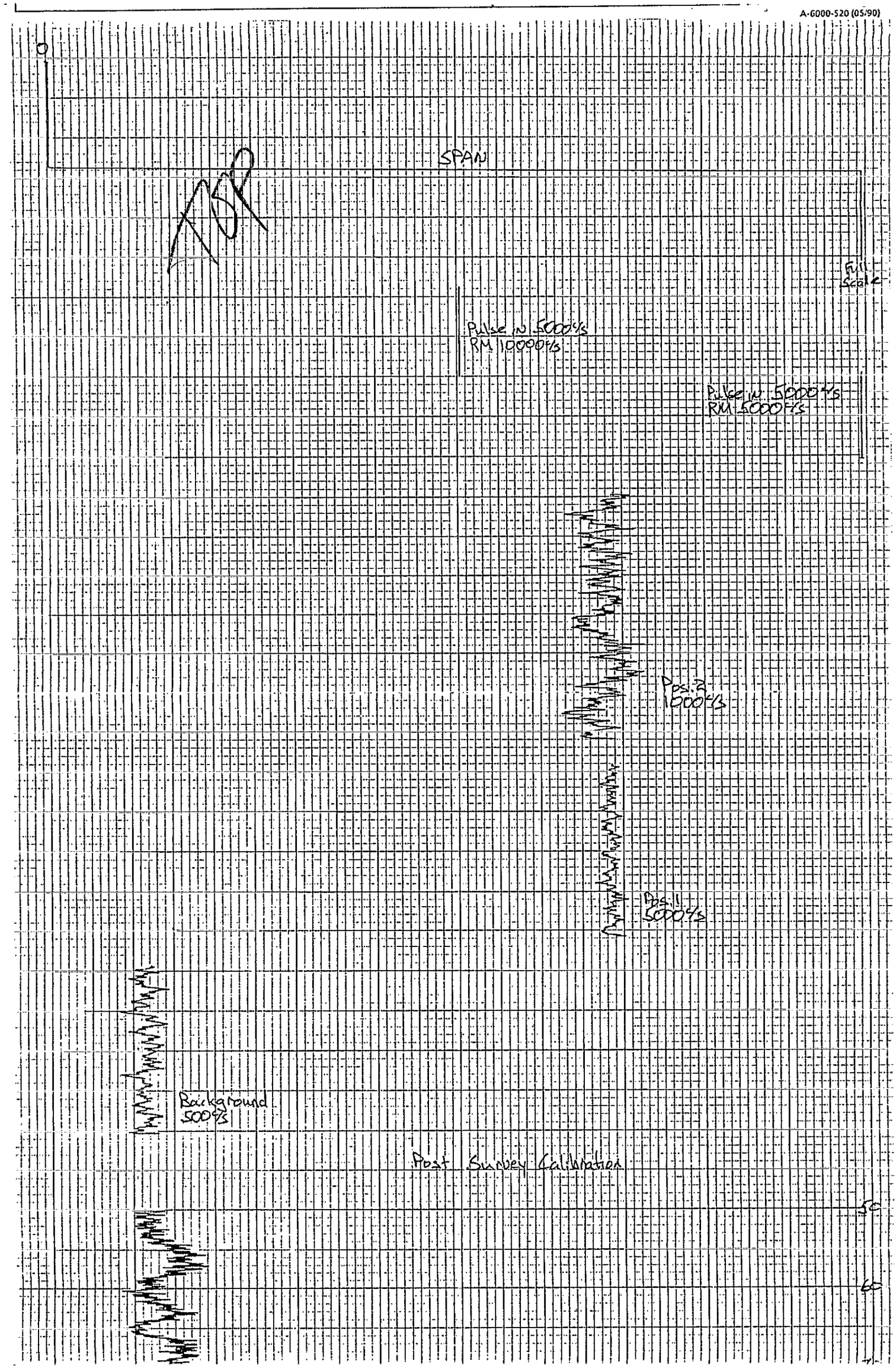
Percent Change: Position 1: 3.6% | Position 2: 0.8%

Comments: Return Error = +0.12' high
Centralizer used.

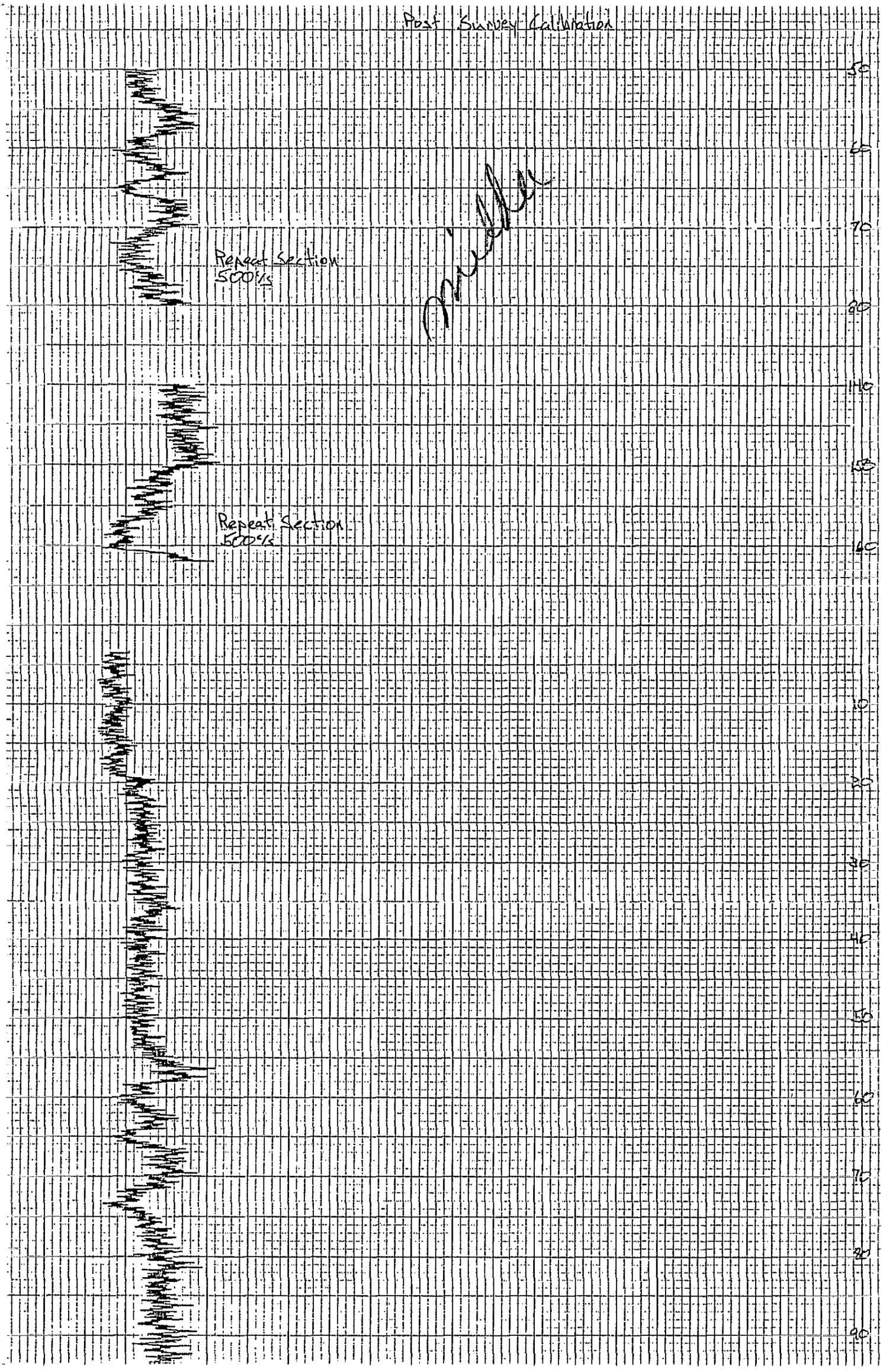
Witnessed and Verified by: (sign and print name) RANDALL PRICE Randall Price | Date: 8 MAR 91

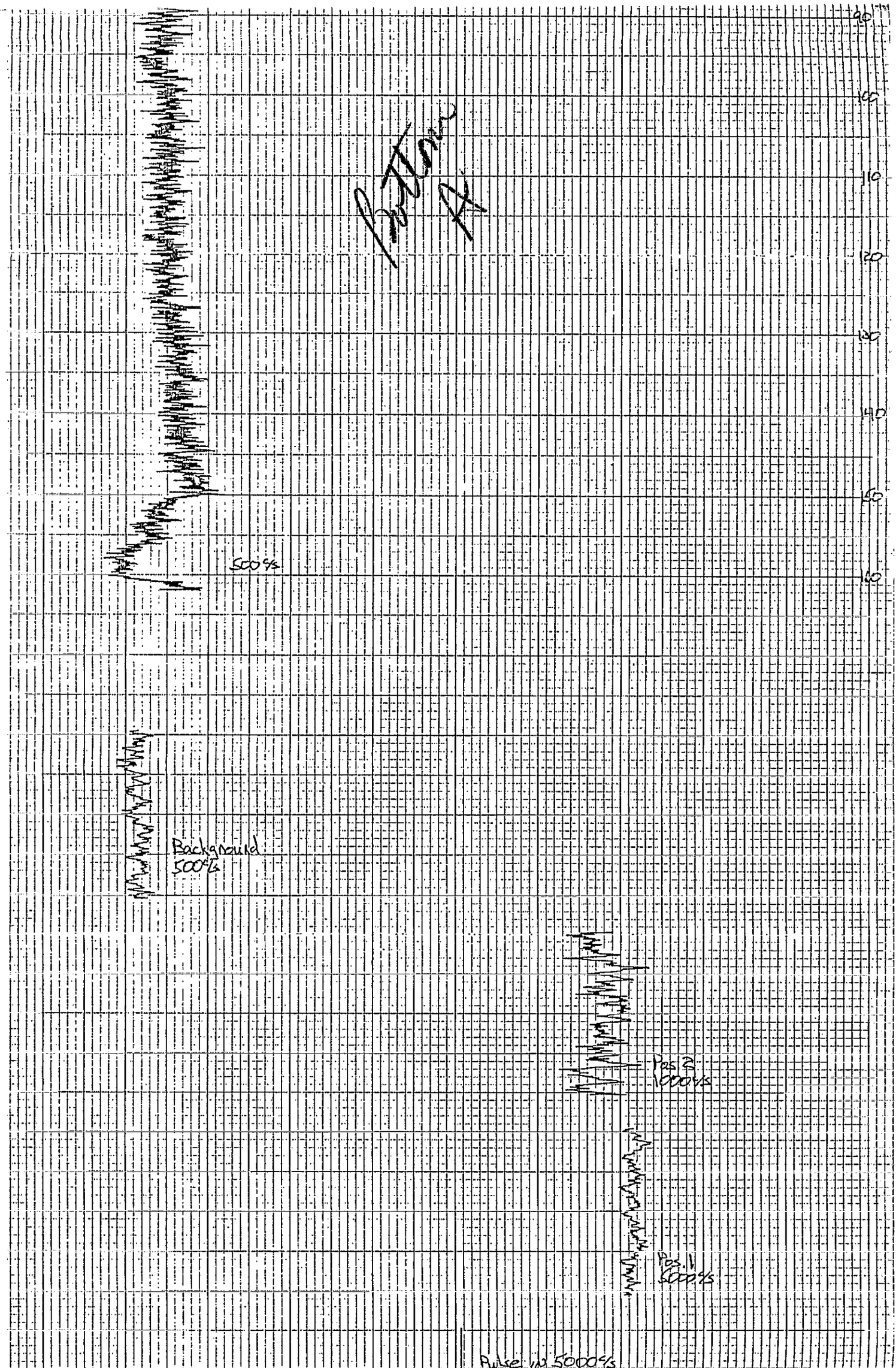
A-6000-520 (05/90)

A-6000-520 (05/90)



Post Survey Calibration




90
100
110
120
130
140
150
160
Pulse #
500 g/s
Background
500 g/s
Pos. 2
5000 g/s
Pos. 1
5000 g/s
Pulse in 5000 g/s

Pulse in 5000%
RM 5000%

Pulse in 5000%
RM 5000%

0

SPAN

Pre Survey Calibration

Full Scale

299-W26-10 #1

Bottom
B

Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

Well No. 299-W26-10 Area 200W Date 3/19/91

Log Run #2 Log Type Gross Gamma

Elevation Datum top of brass cap Elevation 667.19'

Survey Coordinates 133,499.11 N 566,683.22 E

Log Measured From Ground Surface

Location Description East of S-10 Trench

Ground Surface Elevation 667.19'

Surface Temperature 5.2°C Weather Overcast cool

BOREHOLE INFORMATION

Driller Mel Thorensen

Drill Rig Type Cable Tool Bit Type/Diameter Hand Tool/8"

Borehole Diameter(s)/Depth 12"/19.3' 10"/159.1' 8"/223.0'

Depth Driller 222.4' Depth Logger 222.4'

Liquid Level 202.5' Liquid ~~Density~~ Appearance Muddy

Temperature 15.3°C

CASING RECORD

Type 12" Carbon Steel Sch. 40 Interval +0.7' - 19.32'

Type 10" Carbon Steel Sch. 40 Interval +1.1' - 159.03'

Type 8" Carbon Steel Sch. 40 Interval +2.2' - 223.01'

Type Interval

Well Screen Interval NA

Comments: Return Error = +0.05'

Centralizer was 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: 8/90 — Calibration Reference: PNL-7460 WC-606

Calibration/Probe Factor: 7.87×10^{-2} eU P/M/C/S — Base Calibration Datum (eU): Position 1: 291.4 eU — Position 2: 48.5 eU

Dead Time: 17.8 usec. — Warm Up Time: > 15 min

LOGGING INFORMATION

AWP 3/19/91

Log Interval From: ~~222.4~~ 221.8' — To: 140.0'

Rerun(s): 221.8' to 195.0' 170.0' to 140.0'

Pre Survey Verification: Position 1: 275.1 eU — Position 2: 48.8 eU — Background: 55 c/s

Base Calibration Difference: Position 1: 16.3 eU — Position 2: 0.3 eU

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

Start Time: 0720 — Completion Time: 0900

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

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

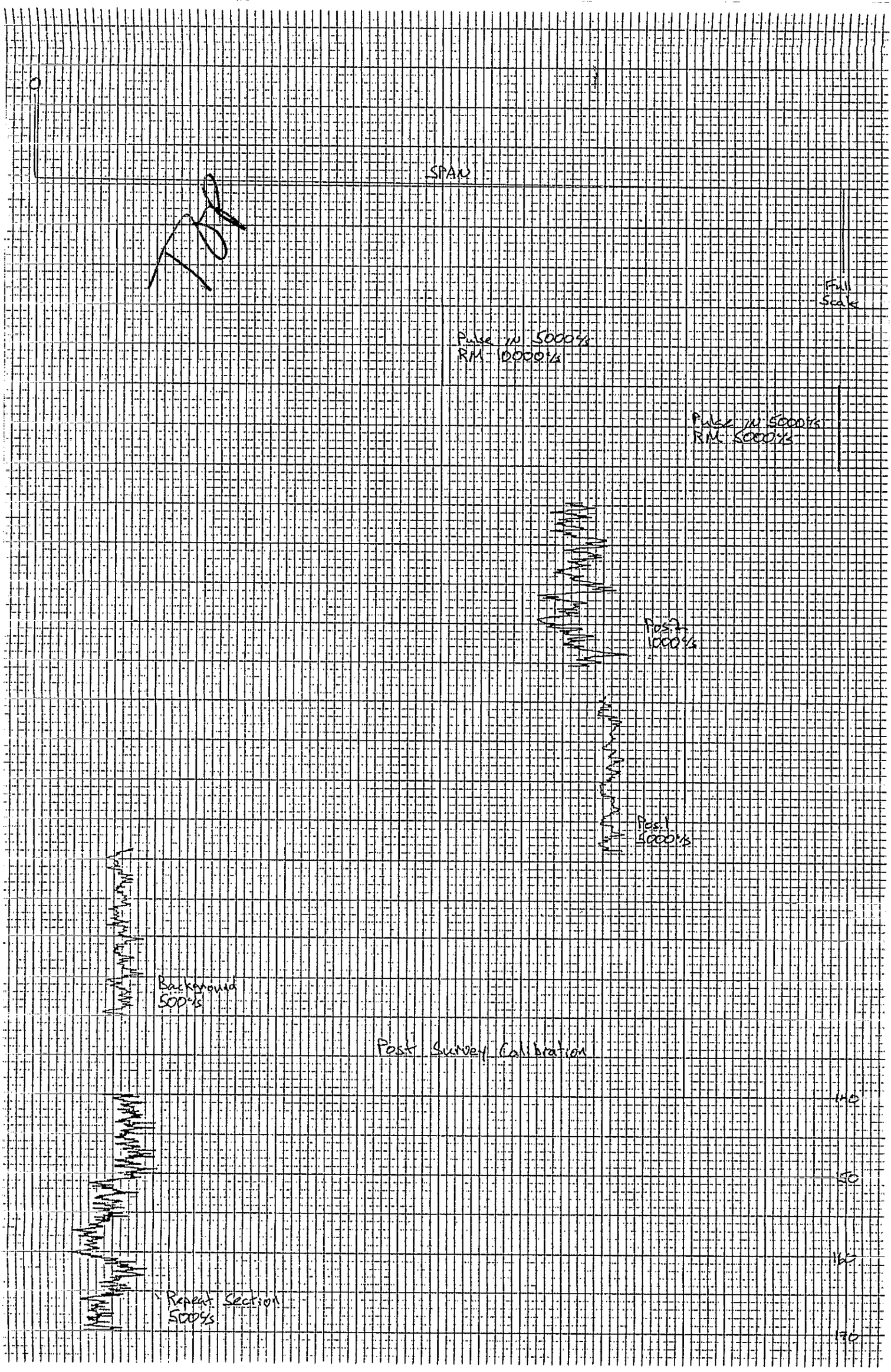
Post Survey Verification: Position 1: 275.1 eU — Position 2: 48.4 eU — Background: 55 c/s

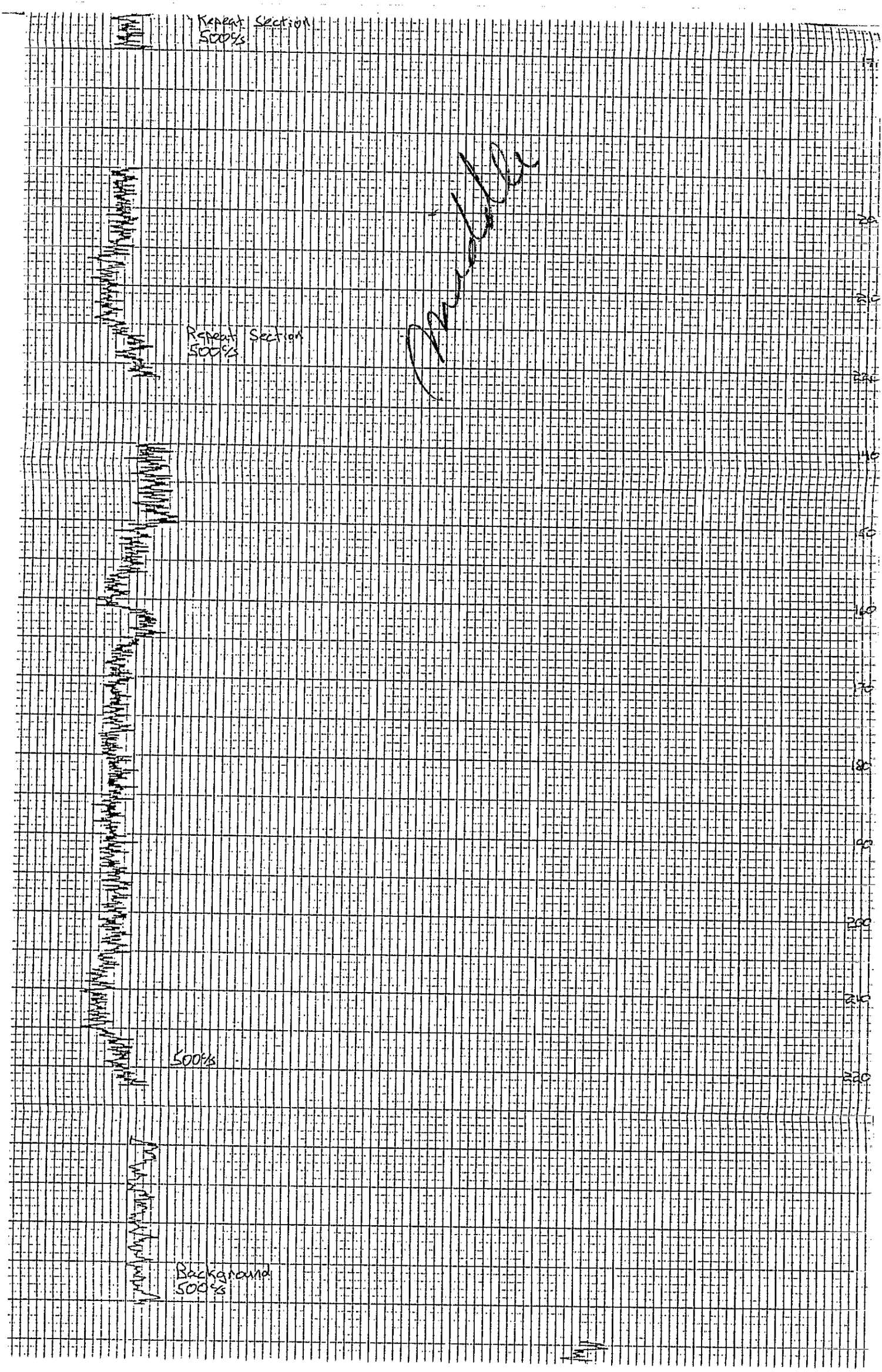
Percent Change: Position 1: 0.0% — Position 2: 0.8%

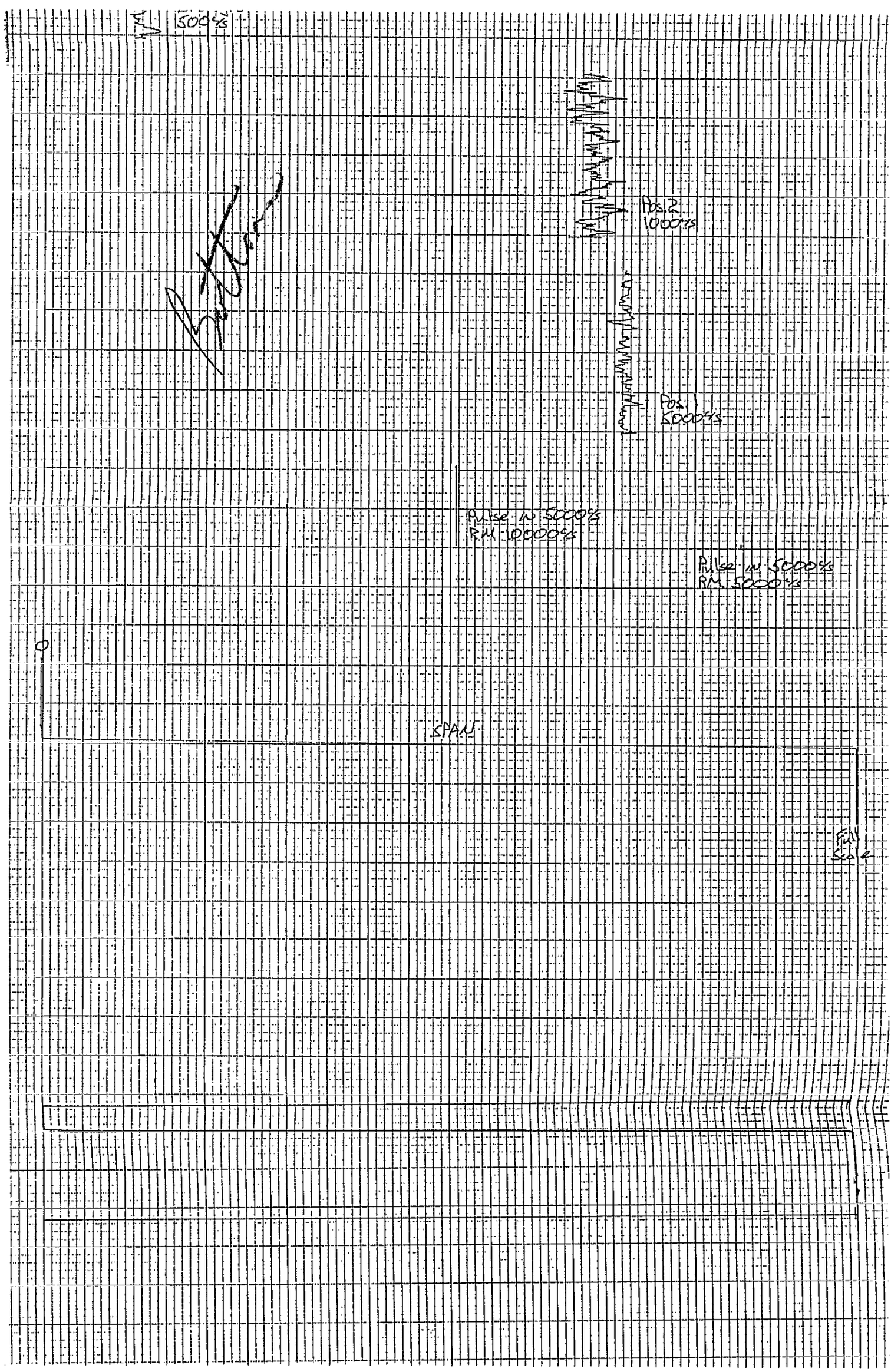
Comments: Return Error = +0.05' high

- Centralizer used.
- Depth was set wrong on chart ~~→~~ Subtract 0.6' from depths

Verified by: (sign and print name) [signature] / Kent Reynolds — Date: 3/19/91


0
SPAN
Full Scale
Pulse IN 5000%
RM 10000%
Pulse IN 5000%
RM 5000%
Pos 2
1000%
Pos 1
5000%
Background
500%
Post Survey Calibration
140
150
160
170
Repeat Section
500%


Repeat Section
500%s
Repeat Section
500%s
500%s
Background
500%s


500%
Pos. 2
1000%
Pos. 1
500%
Pulse in 5000%
RM 10000%
Pulse in 5000%
RM 5000%
0
SPAN
FULL
SCALE

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Westinghouse Hanford Company	LOG HEADER	Page 1 of 2

Well No. 299-W26-12 Area 200W Date 2/27/91

Log Run #1 Log Type Gross Gamma

Elevation Datum ground elevation Elevation 672.25' (top of brass cap)

Survey Coordinates 133,689.86 N 566,900.77 E

Log Measured From Ground Surface

Location Description S-10 Trench

Ground Surface Elevation 672.25'

Surface Temperature 12.4°C Weather Clear-Warm

BOREHOLE INFORMATION

Driller Lenny Bultena

Drill Rig Type Cable Tool	Bit Type/Diameter Drive Barrel/10"
Borehole Diameter(s)/Depth 12"/22.7' 10"/152.0'	
Depth Driller 152.0'	Depth Logger 151.1'
Liquid Level NA	Liquid Density NA
Temperature NA	

CASING RECORD

Type 12" Carbon Steel Sch. 40	Interval +0.4' - 22.7'
Type 10" Carbon Steel Sch. 40	Interval +5.25' - 152.09'
Type	Interval
Type	Interval

Well Screen Interval NA

Comments: Return error +0.15' high

~1.0' mud on bottom of borehole

Centralizer was used.

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: 8/90 — Calibration Reference: PNL-7460 UC-606

Calibration/Probe Factor: 7.87×10^{-2} eU p/m/c/s — Base Calibration Datum (eU): Position 1: 291.4 eU — Position 2: 48.5 eU

Dead Time: 17.8 usec. — Warm Up Time: >15 min

LOGGING INFORMATION

Log Interval From: 151.1' ~~to 0.0'~~ AWF 2/27/91 — To: 0.0'

Rerun(s): 151.1' to 120.0' 90.0' to 60.0'

Pre Survey Verification: Position 1: 274.3 eU — Position 2: 48.0 eU — Background: 65 c/s

Base Calibration Difference: Position 1: 17.1 eU — Position 2: 0.5 eU

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

Start Time: 1230 — Completion Time: 1430

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: 274.3 eU — Position 2: 46.8 eU — Background: 65 c/s

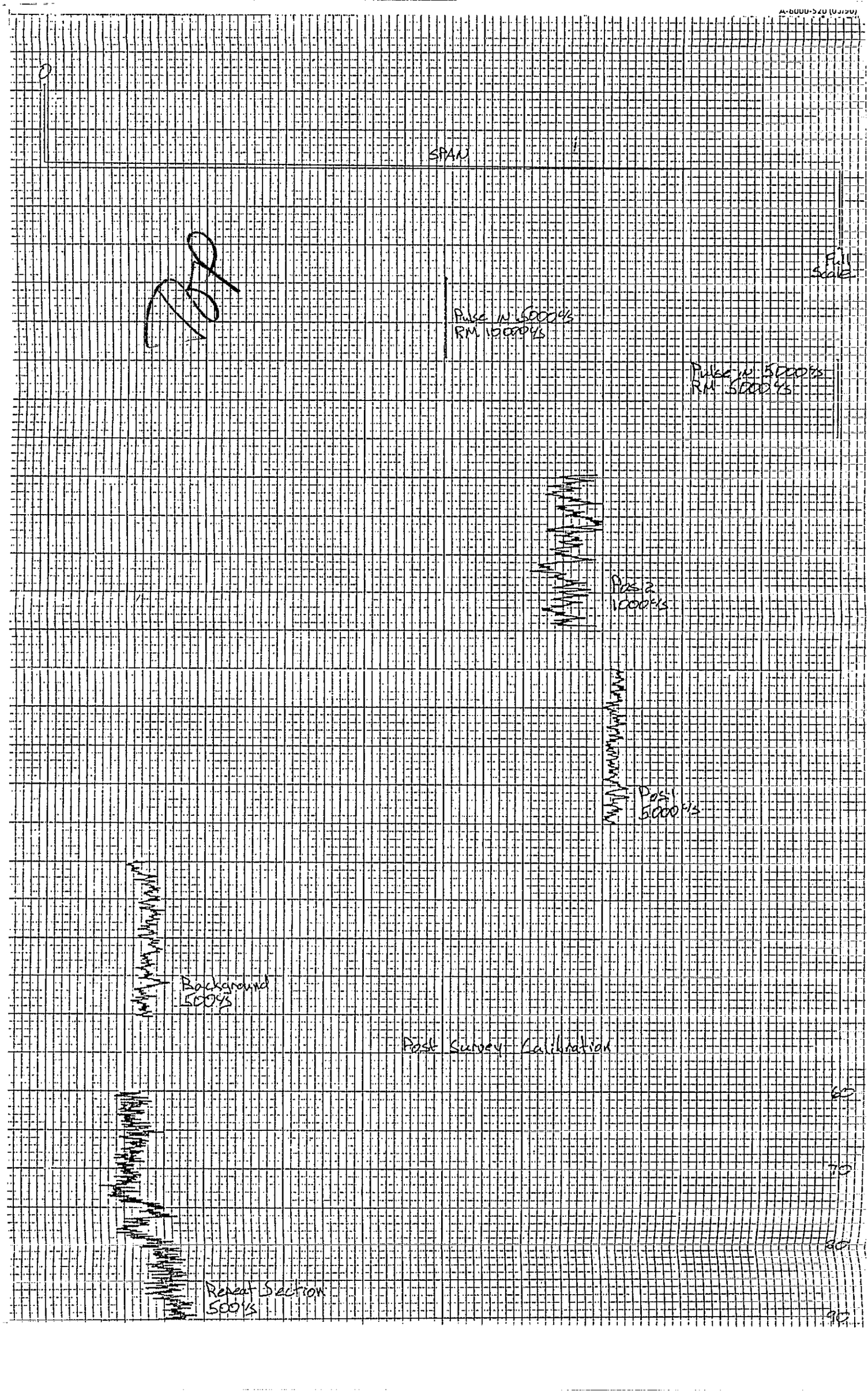
Percent Change: Position 1: 0.0 % — Position 2: ~~2.5~~ % AWF 2/27/91 1.8 %

Comments: Return Error = 0.15' high

Centralizer used.

Witnessed and Verified by: (sign and print name) Steven E. Kos STEVEN E. KOS — Date: 2/27/91

A-6000-520 (05/90)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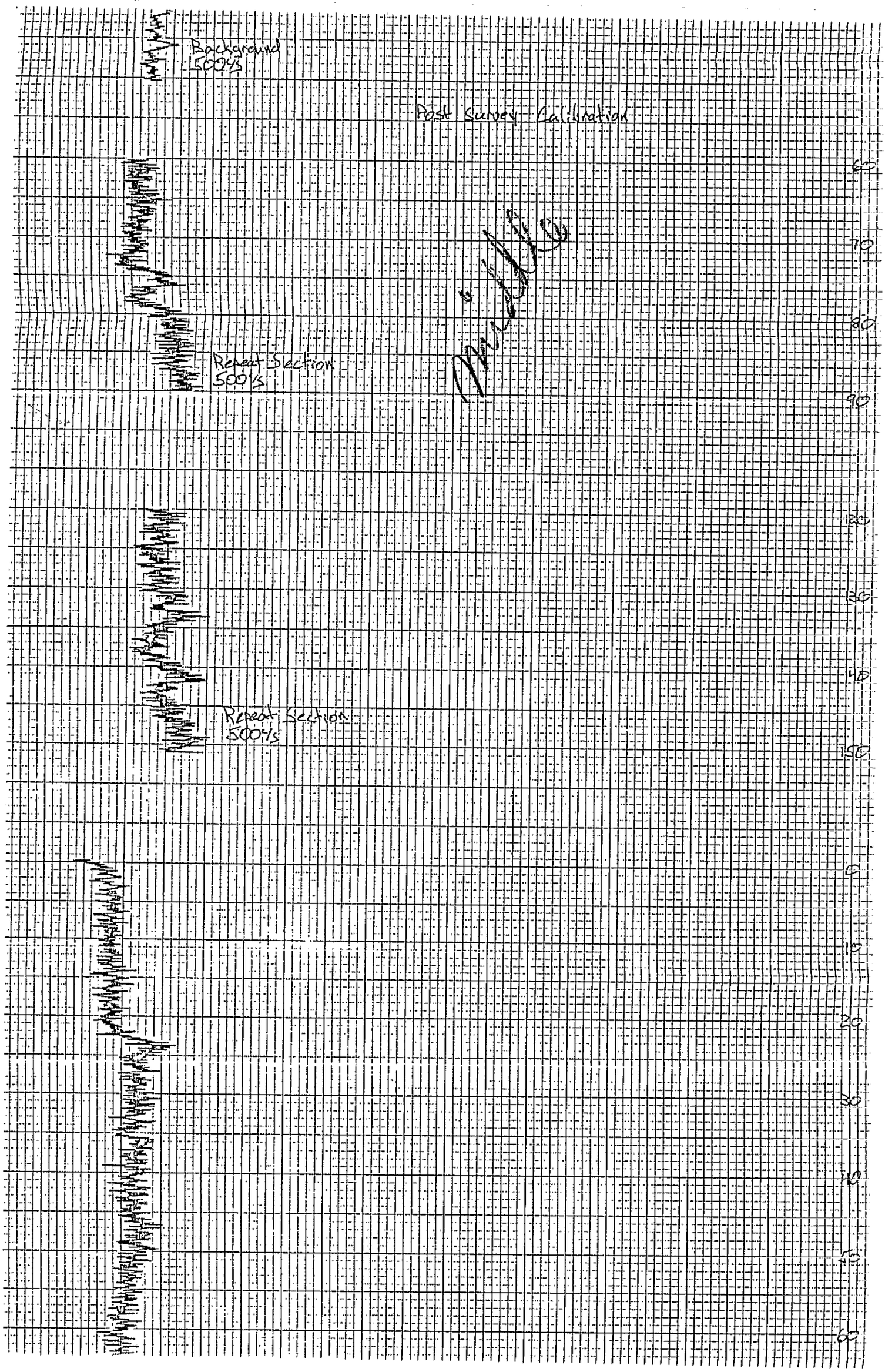
SPAN
Full Scale
Pulse IN 5000 v/s
RM 10000 v/s
Pulse IN 5000 v/s
RM 5000 v/s
Pos 2
1000 v/s
Pos 1
5000 v/s
Background
500 v/s
Post Survey Calibration
60
70
80
Repeat Section
500 v/s
90


Background
500 ys
Post Survey Calibration
Repeat Section
500 ys
Repeat Section
500 ys

Bottom
500c/s
Background
500c/s
Pos. 2
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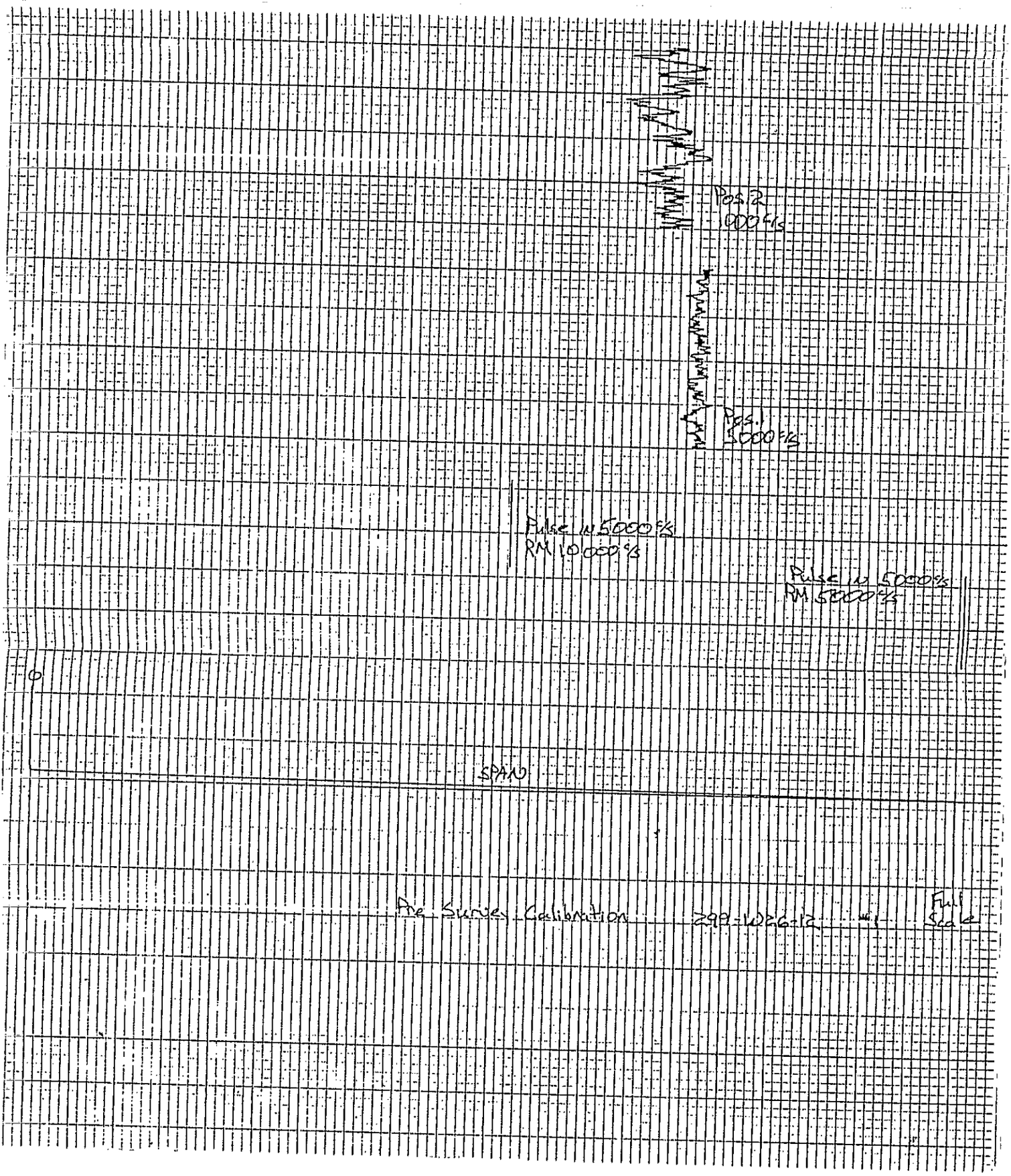
90
100
110
120
130
140
150


Pos. 2
1000 f/s
Pos. 1
5000 f/s
Pulse in 5000 f/s
RM 10000 f/s
Pulse in 5000 f/s
RM 5000 f/s
0
SPAN
Pre Survey Calibration
298-1026-12
Full Scale

Bottom B

Westinghouse Hanford Company | LOG HEADER | Page 1 of 2

Well No. 299-W26-12 Area 200W Date 3/13/91

Log Run #2 Log Type Gross Gamma

Elevation Datum ground elevation Elevation 672.25' (top of brass cap)

Survey Coordinates 133,689.86 N 566,900.97 E

Log Measured From Ground Surface

Location Description S-10 Trench

Ground Surface Elevation 672.25'

Surface Temperature 7.5 °C Weather Clear - Cool

BOREHOLE INFORMATION

Driller Lenny Buttena

Drill Rig Type Cable Tool | Bit Type/Diameter Hand Tool / 8"

Borehole Diameter(s)/Depth 12"/22.7' 10"/152.6' 8"/229.1'

Depth Driller 228.2' | Depth Logger 228.3'

Liquid Level 210.7' | Liquid ~~Density~~ Appearance Cloudy

Temperature 16.2 °C

CASING RECORD

Type 12" Carbon Steel Sch. 40 | Interval +0.6' - 22.70'

Type 10" Carbon Steel Sch. 40 | Interval +0.8' - 152.55'

Type 8" Carbon Steel Sch. 40 | Interval +1.1' - 229.05'

Type | Interval

Well Screen Interval NA

Comments: Return Error = +4.0' high

Centralizer was used

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 8/90 | Calibration Reference PNL-7460 UC-606

Calibration/Probe Factor 7.87×10^{-2} eU P/M/C/S | Base Calibration Datum (eU): Position 1 291.4 eU | Position 2 48.5 eU

Dead Time 17.8 μsec. | Warm Up Time >15 min

LOGGING INFORMATION

Log Interval From 227.3' | To 120.0'

Rerun(s) 227.3' to 190.0 180.0' to 160.0'

Pre Survey Verification: Position 1 282.1 eU | Position 2 48.7 eU | Background 65 c/s

Base Calibration Difference: Position 1 9.3 eU | Position 2 0.2 eU

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

Start Time 0745 | Completion Time 0915

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

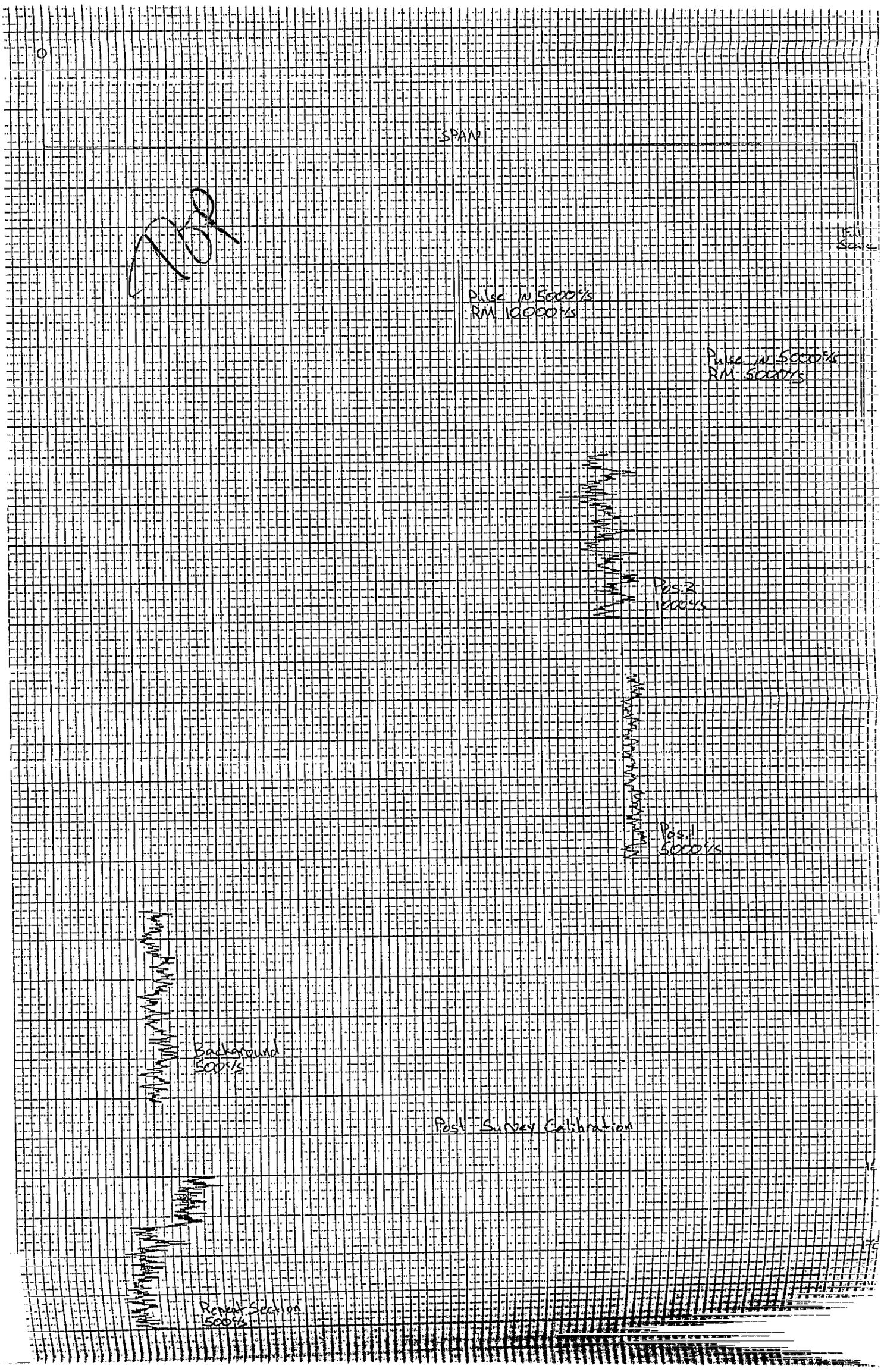
Chart Recorder Horizontal Scale, CPS/in. 50 c/s/in. | Time Constant(s) TC-1

Post Survey Verification: Position 1 276.2 eU | Position 2 49.2 eU | Background 65 c/s

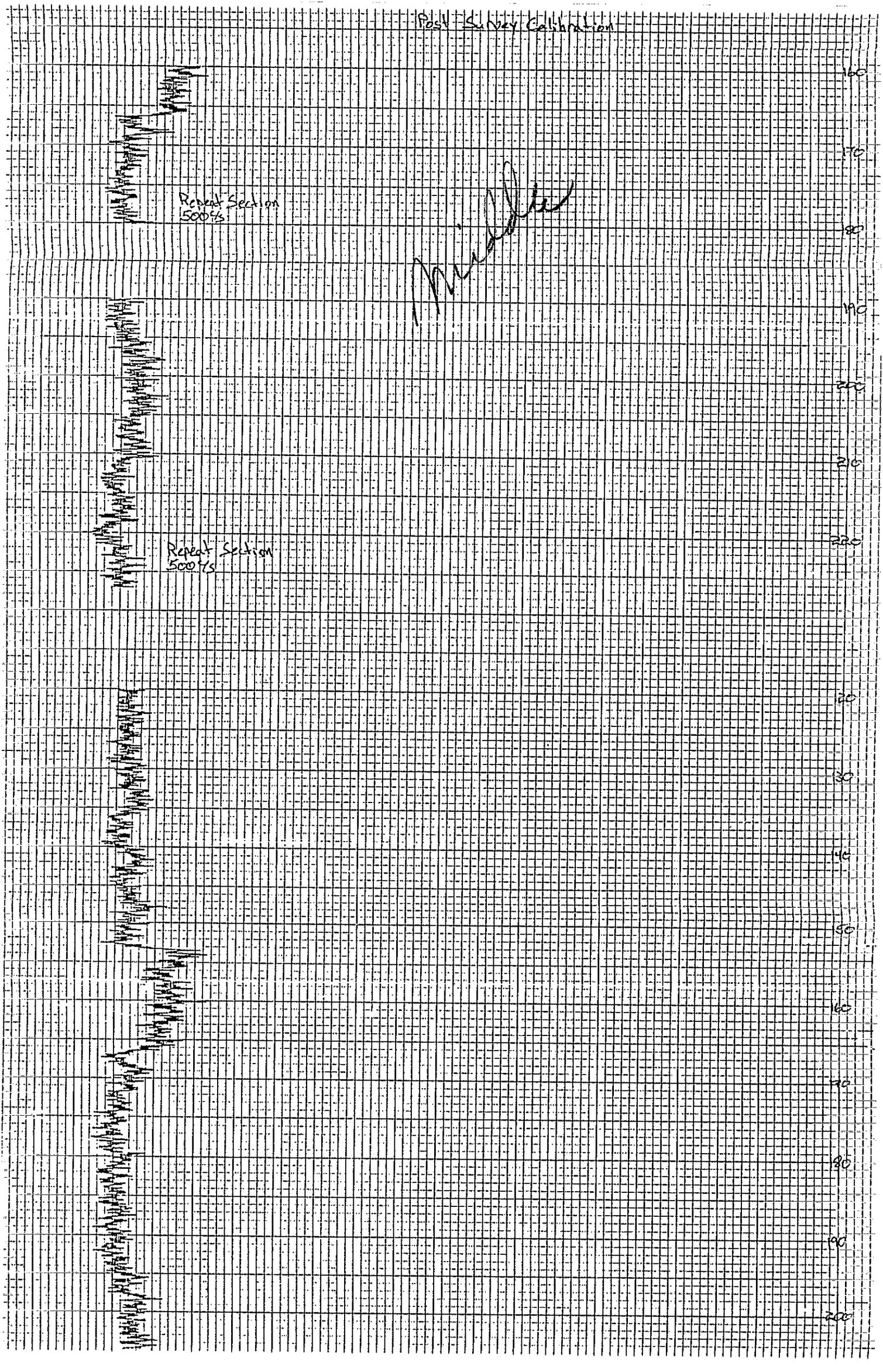
Percent Change: Position 1 2.1% | Position 2 1.0%

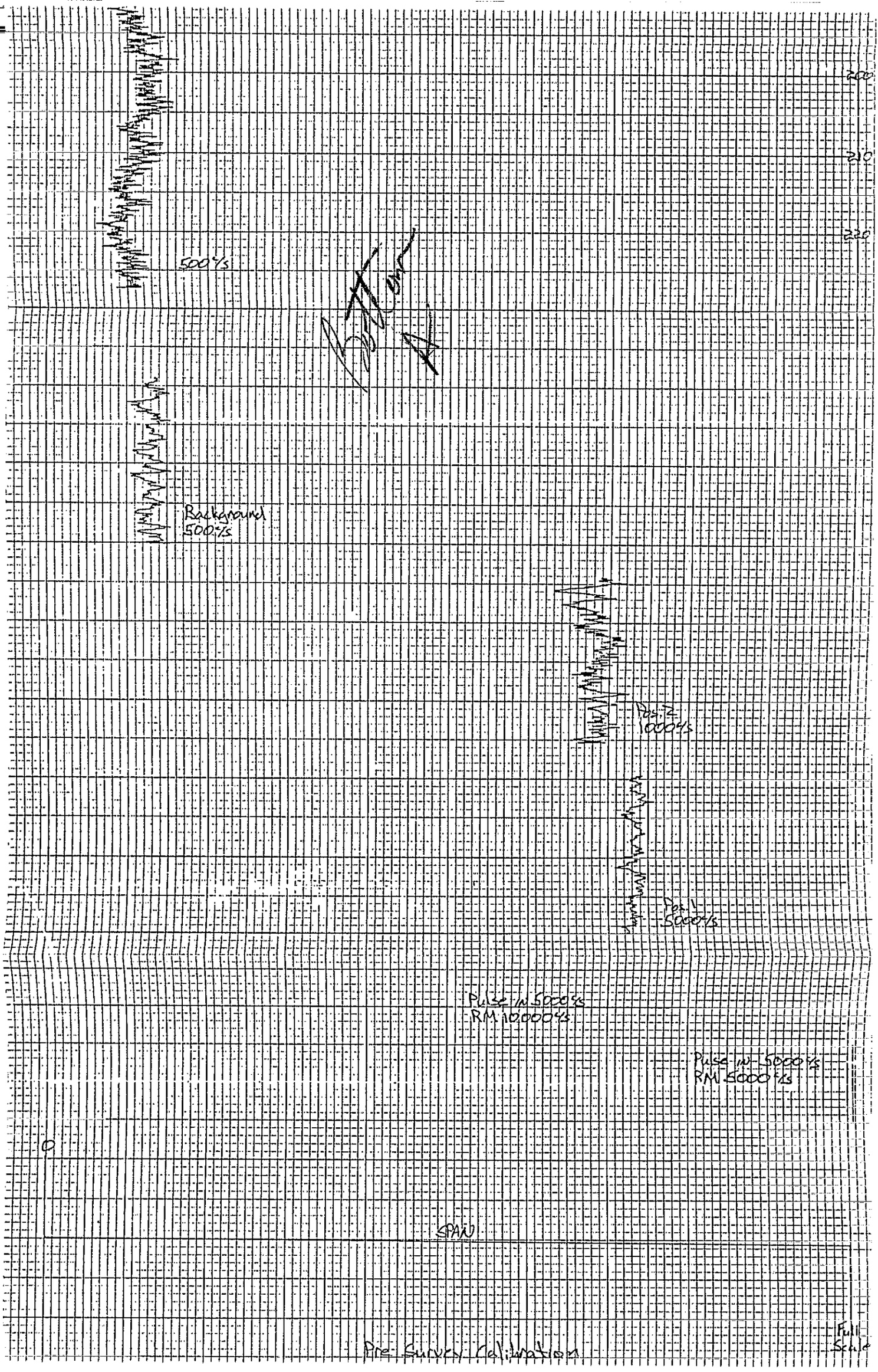
Comments Return Error = +0.4' high
Centralizer used.

Witnessed and Verified by: (sign and print name) Kent Reynolds / Kent Reynolds | Date: 3/13/91


SPAN
Pulse IN 5000'/s
RM 10000'/s
Pulse IN 5000'/s
RM 5000'/s
Pos. 2
1000'/s
Pos. 1
5000'/s
Background
500'/s
Post Survey Calibration
Repeat Section
500'/s

Post Survey Calibration





Pre-Survey Calibration

SPAN

Pre Survey Calibration

299-W26-12 #2

Bottom

B

APPENDIX B

PHYSICAL SAMPLING DATA RESULTS

9413224.1773

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WELL 299-W26-7

9413223.1775

9413223.1776

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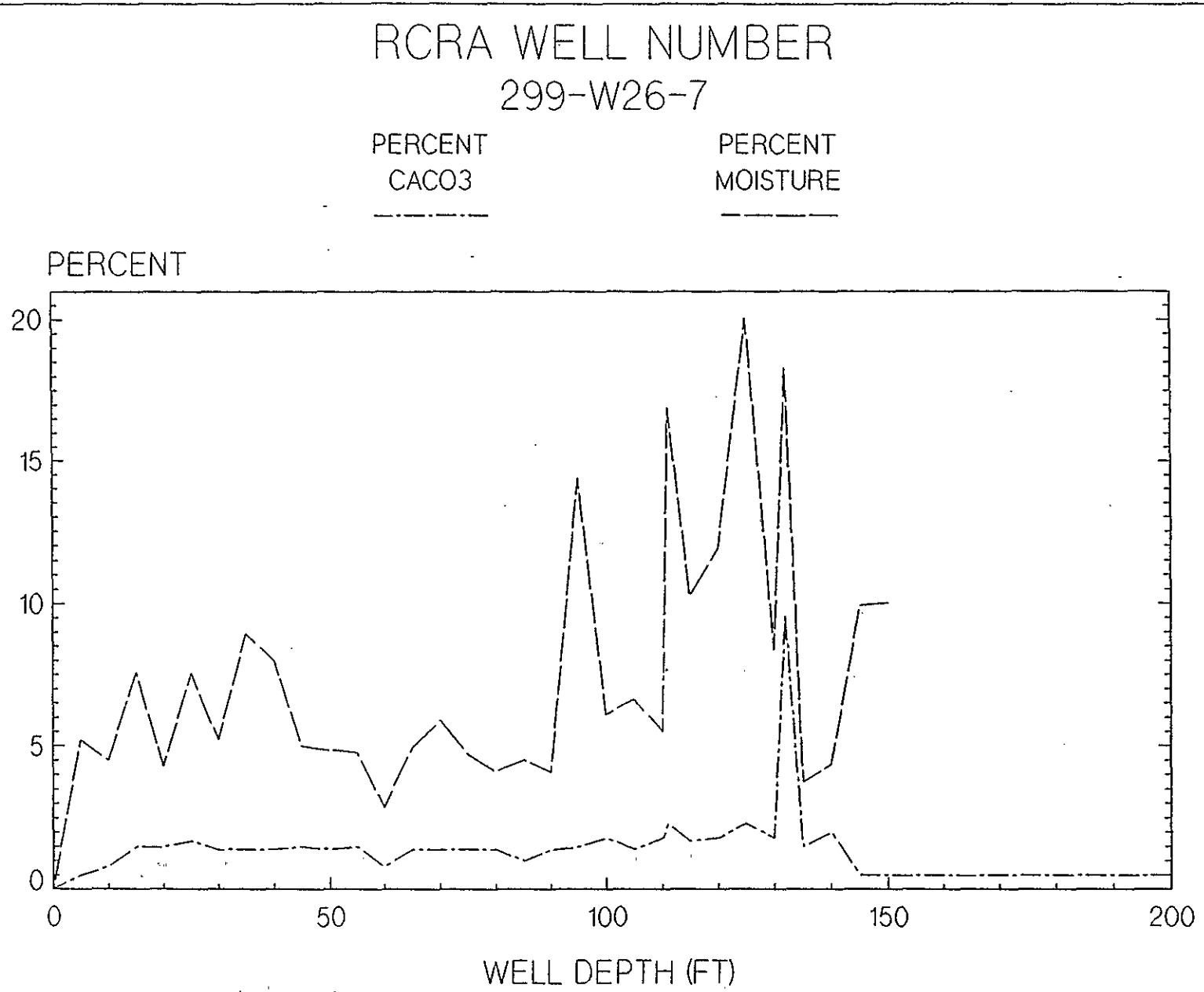

RCRA WELL NUMBER
299-W26-7
PERCENT CACO3
PERCENT MOISTURE
PERCENT
20
15
10
5
0
0
50
100
150
200
WELL DEPTH (FT)

2-W26-7.XLT

293

	A	B	C
1	WELL 299-W26-7		
2			
3	Depth	CaCO3	Moisture
4	ft.	Wt. %	Wt. %
5			
6	5	0.5	5.21
7	10	0.8	4.5
8	15	1.5	7.6
9	20	1.5	4.29
10	25	1.7	7.56
11	30	1.4	5.23
12	35	1.4	8.96
13	40	1.4	8.01
14	45	1.5	4.99
15	50	1.4	4.87
16	55	1.5	4.78
17	60	0.8	2.89
18	65	1.4	4.96
19	70	1.4	5.9
20	75	1.4	4.69
21	80	1.4	4.12
22	85	1	4.51
23	90	1.4	4.09
24	95	1.5	14.41
25	100	1.8	6.11
26	105	1.4	6.63
27	110	1.8	5.51
28	111	2.3	16.9
29	115	1.7	10.25
30	120	1.8	11.91
31	125	2.3	20.07
32	130	1.8	8.39
33	132	9.6	18.28
34	135	1.5	3.76
35	140	2	4.35
36	145	0.5	9.92
37	150	0.5	10.02
38	155	0.5	
39	160	0.5	
40	165	0.5	
41	170	0.5	
42	175	0.5	
43	180	0.5	
44	185	0.5	
45	190	0.5	
46	195	0.5	
47	194.5	0.5	

9413223.1778

3g3

	A	B	C
48	200	0.5	
49	207	0.5	

9413273.1779

9413223.1780

TEST REQUEST

SAMPLE/SPECIMEN NO. 1-0655 COST CODE/WORK ORDER NO. WJ3V1

REQUESTED BY: ORG. 81232 PERSON R. Miller DATE 3-26-91

TEST REQUESTED	NO. OF SAMPLES	TEST LAB INFORMATION (PROCEDURE USED)
SIEVE ANALYSIS	1	ETAL-07

REMARKS 299-W26-7
192.5-194.5

RECEIVED BY: J.L. ENGLAND DATE 3-26-91

APPROVED BY: J.L. ENGLAND DATE 3-26-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1.0655 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-27-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 6-21-91
Thermometer: ETAL- 0007 Calibration Due Date 6-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
1 1/2	1117.0	0	0	100
1	↓	390.8	35.0	65.0
3/4		519.2	46.5	53.5
1/2		583.0	52.2	47.8
3/8		645.2	57.8	42.2
4	↓	773.4	69.2	30.8
10	179.7	39.4	21.9	78.1
40	↓	90.5	50.4	15.3
60		101.1	56.3	13.5
100		109.5	60.9	12.0
200	↓	118.7	66.1	10.4
N/A	N/A	N/A	N/A	N/A

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING

C = Percentage of material passing a 200 Sieve N/A %
D = Original Dry Weight of Sample N/A g
E = Dry Weight of Sample After Washing/Sieve N/A g
C = <(D-E)/D>*100

Remarks
WASHED FINE GRADING

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: [signature] Date 3/28/91

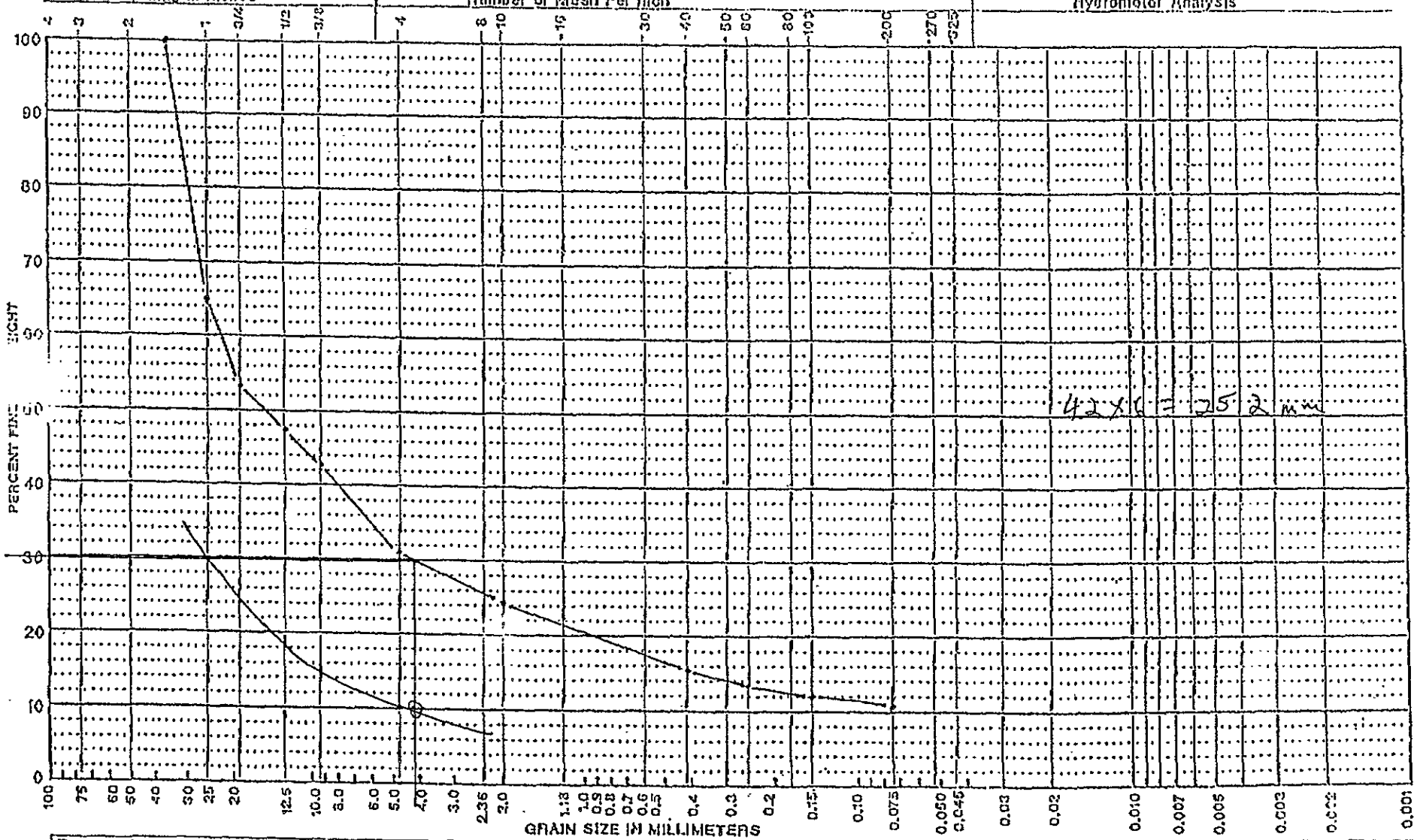
A-6400-204(2-87)

GRAIN SIZE ANALYSIS

Sample No. 1-0655 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 3-27-91



Remarks SANDY GRAVEL

299-W26-7 192.5-194.5'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: Date 3/28/91

SIEVE ANALYSIS DATA SHEET

Sample No. L-0655 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-27-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 6-21-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SAND Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
4	179.7	0	0	100
10		39.4	21.9	78.1
40		90.5	50.4	49.6
60		101.1	56.3	43.7
100		109.5	60.9	39.1
200		118.7	66.1	33.9
N/A	N/A	N/A	N/A	N/A

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: [signature] Date 3/28/91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS

Sample No. 1-06656

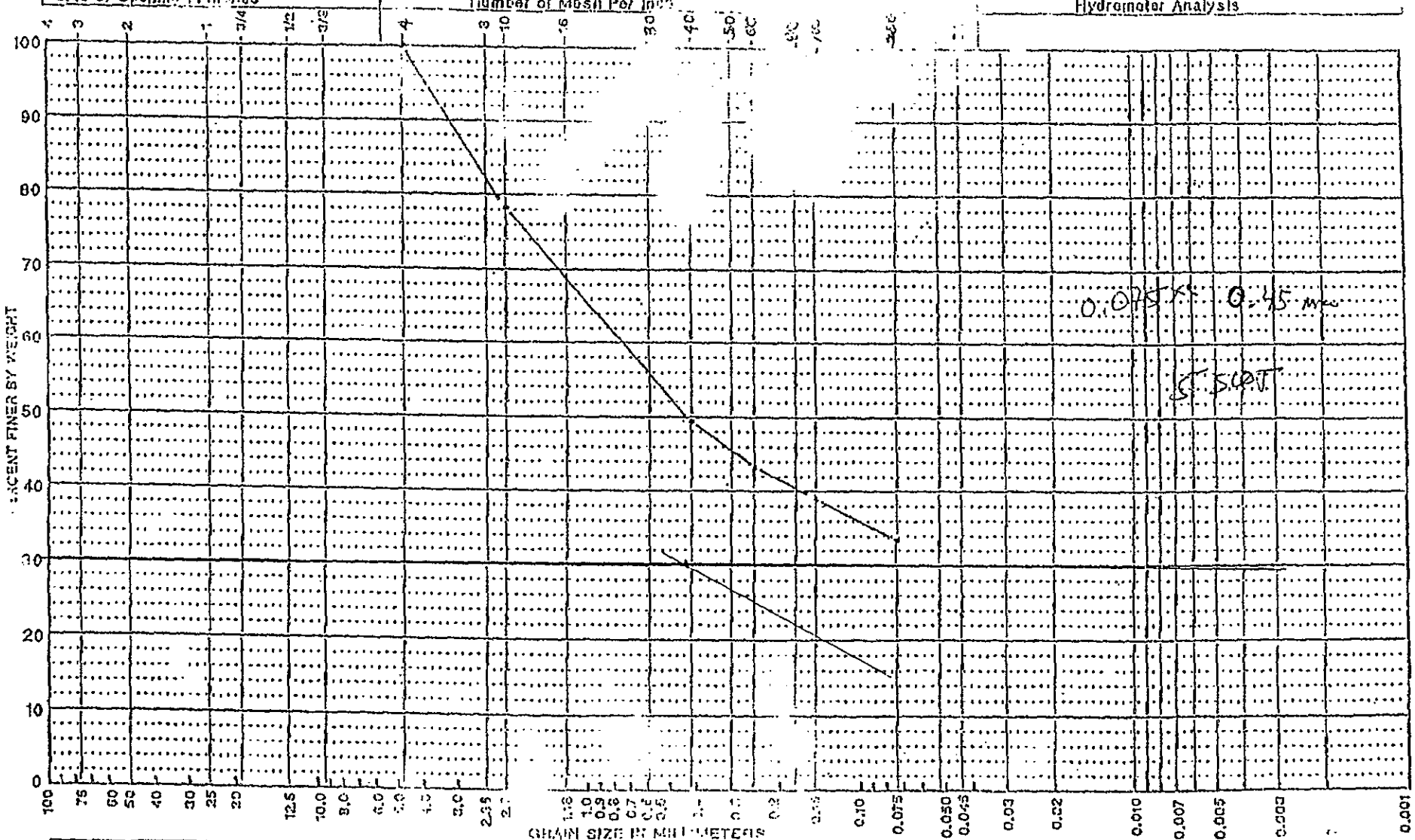
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-16-89

Performed By JERRY L. SIMONAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 3.27.91



Remarks SS NO

299-W26-7 192.6 - 194.5'.

All data accurately and completely recorded. The test was trained and used calibrated instruments.

Date 3/28/91

9W3723.1785

TEST REQUEST

ECIMEN NO. 1-0656 COST CODE/WORK ORDER NO. [illegible]

BY: ORG. 81232 PERSON R. Miller DATE 3-[illegible]-91

ESTED	NO. OF SAMPLES	TEST LAB I (PROCEDURE [illegible]
S[illegible] ANALYSIS	1	ETAL-07

REMARKS 299-W26-7
205-207'

RECEIVED BY: J.L. ENGLAND DATE 3-26-91

APPROVED BY J.L. ENGLAND DATE 3-26-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0656 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-27-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 3-27-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
2	1342.1	0	0	100
1½		327.4	24.4	75.6
1		470.4	35.1	64.9
3/4		580.5	43.3	56.7
½		715.8	53.3	46.7
3/8		793.8	59.2	40.8
4		933.3	69.5	30.5
10	200.4	41.6	20.8	79.2
40		89.4	44.6	16.9
60		111.7	55.7	13.5
100		129.7	64.7	10.8
200		145.1	72.4	8.4

Finess Modules (FM) N/A (See ASTM C 136-85, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED FINE GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: [illegible] Date 3/28/91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. L-0656

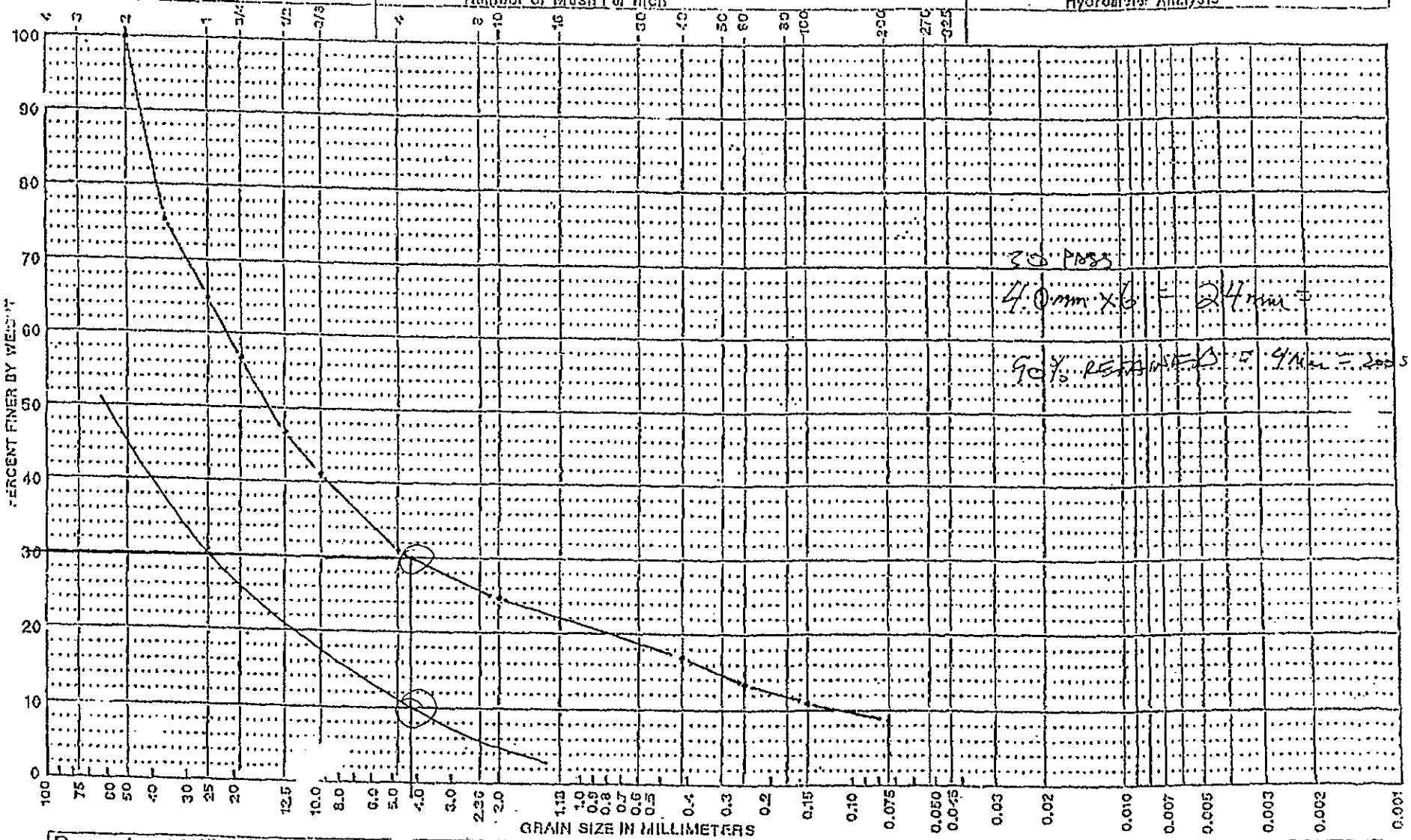
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 8-27-91



Remarks SANDY GRAVEL

299-W26-7 206'-207'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: Date 3/28/91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0656 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-27-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 6-21-91
mometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sampl- Description SAND Sieve Time 10 (min)

educed by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
4	200.4	0	0	100
10		41.6	20.8	79.2
40		89.4	44.6	55.4
60		111.7	55.7	44.3
100		129.7	64.7	36.3
200		145.1	72.4	27.6
N/A	N/A	N/A	N/A	N/A

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: [signature] Date 3/28/91

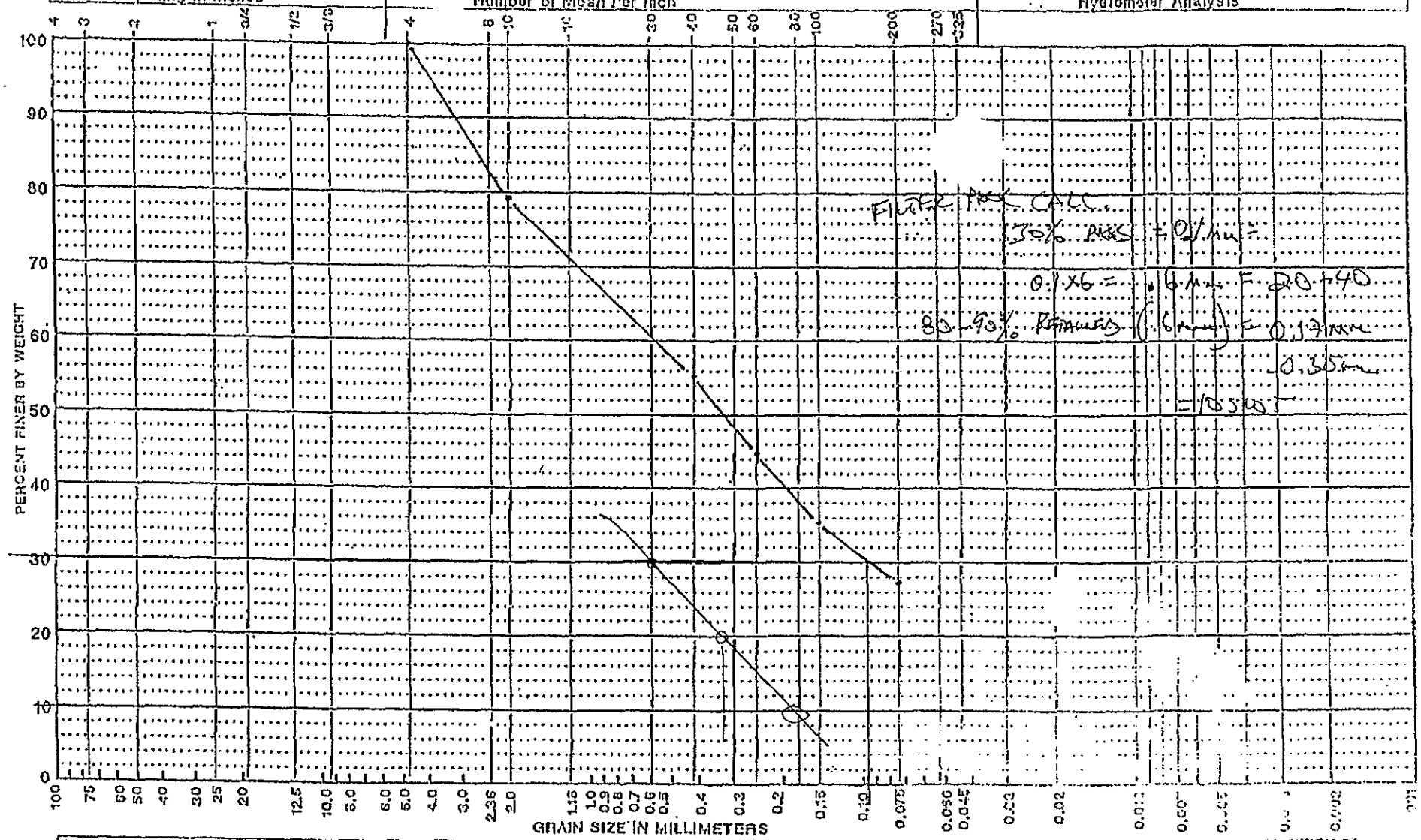
A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0656 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 3-27-91



Remarks SAND

299-W26-7 206-207'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: [signature] 3/28/91

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WELL 299-W26-10

9413223.1791

9413223.1792

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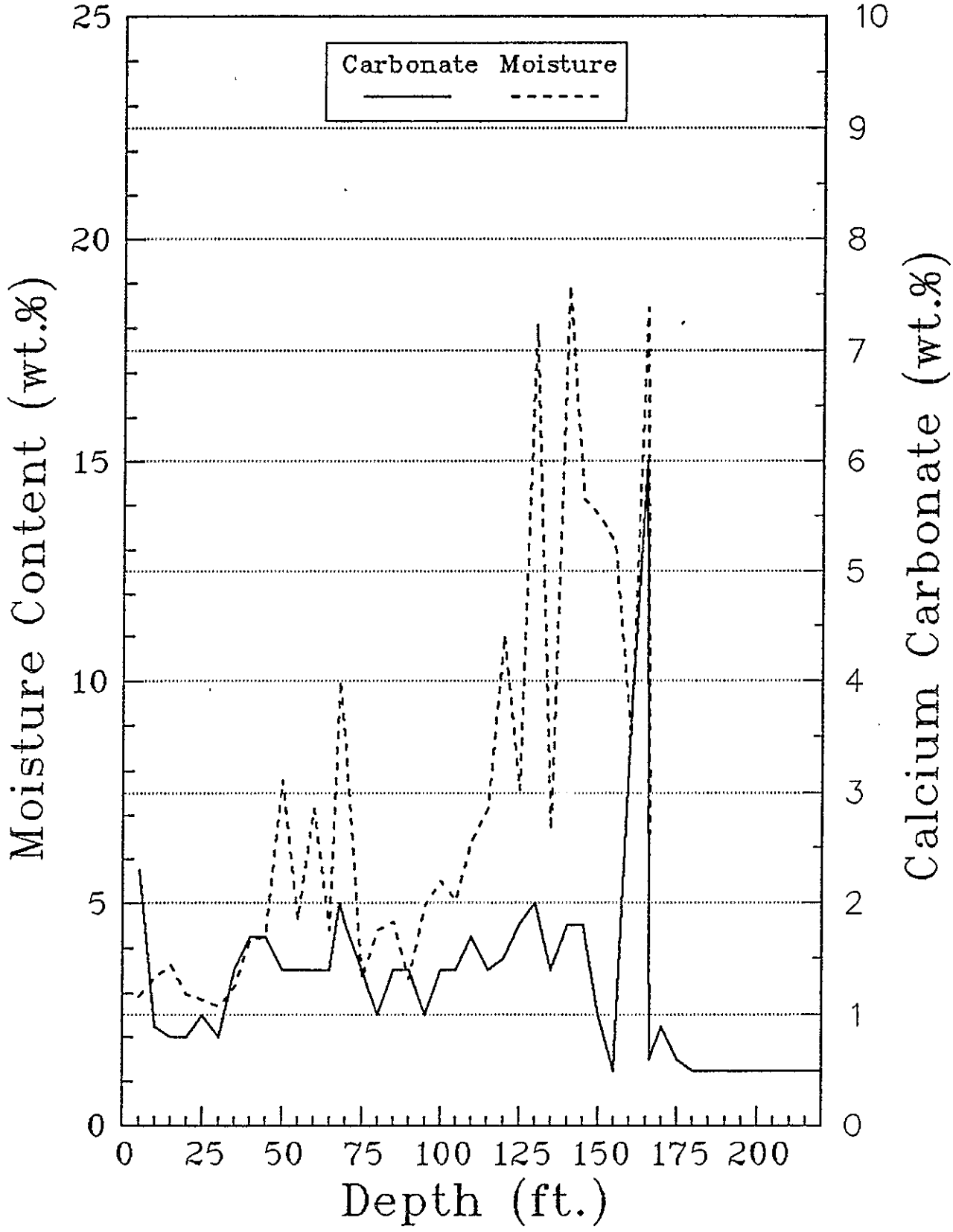
VALIDATED
3-3-92
SIGNATURE/DATE

192

Well 299-W26-10



9413223.1793

W26-10.WK1

292

	A	B	C
1	WELL 299-W26-10		
2			
3	Depth	CaCO3	Moisture
4	ft.	Wt. %	Wt. %
5	0	-	
6	5	2.3	2.93
7	10	0.9	3.33
8	15	0.8	3.61
9	20	0.8	2.97
10	25	1	2.84
11	30	0.8	2.69
12	35	1.4	3.11
13	40	1.7	4.16
14	45	1.7	4.24
15	50	1.4	7.78
16	55	1.4	4.63
17	60	1.4	7.15
18	65	1.4	4.4
19	68	2	10
20	70	1.8	8.53
21	75	1.4	3.3
22	80	1	4.4
23	85	1.4	4.57
24	90	1.4	3.32
25	95	1	4.95
26	100	1.4	5.48
27	105	1.4	5.06
28	110	1.7	6.37
29	115	1.4	7.16
30	120	1.5	11
31	125	1.8	7.58
32	130	2	18.06
33	135	1.4	6.55
34	140	1.8	18.94
35	145	1.8	14.12
36	150	1	13.73
37	155	0.5	13.13
38	160	3.6	8.76
39	165	6	18.45
40	166.5	0.6	6.58
41	170	0.9	
42	175	0.6	
43	180	0.5	
44	185	0.5	
45	190	0.5	
46	195	0.5	
47	200	0.5	
48	205	0.5	
49	210	0.5	
50	215	0.5	
51	220-222	0.5	

9413273.1791

9413273.1795

TEST REQUEST

SAMPLE/SPECIMEN NO. 1-0583 COST CODE/WORK ORDER NO. WJ3V1

REQUESTED BY: ORG. 81232 PERSON R. MILLER DATE 3-19-91

TEST REQUESTED	NO. OF SAMPLES	TEST LAB INFORMATION (PROCEDURE USED)
SIEVE	1	ETAL-07

REMARKS 299-W26-10
215-217'

RECEIVED BY: R.G. ALEXANDER DATE 3-19-91

APPROVED BY: R.G. ALEXANDER DATE 3-19-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0583 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3 20 91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-87
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 3-25-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
1 1/2	1359.3	0	0	100
1	↓	56.0	4.1	95.9
3/4		234.4	17.2	82.8
1/2		416.8	30.7	69.3
3/8		494.1	36.4	63.6
4		659.3	48.5	51.5
10	157.5	38.1	24.2	39.0
40	↑	94.2	59.8	20.7
60		106.5	67.6	16.7
100	↓	114.7	72.8	14.0
200		123.3	78.3	11.2
N/A	N/A	N/A	N/A	N/A

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED FINE GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By; R.G. ALEXANDER Date 3-20-91

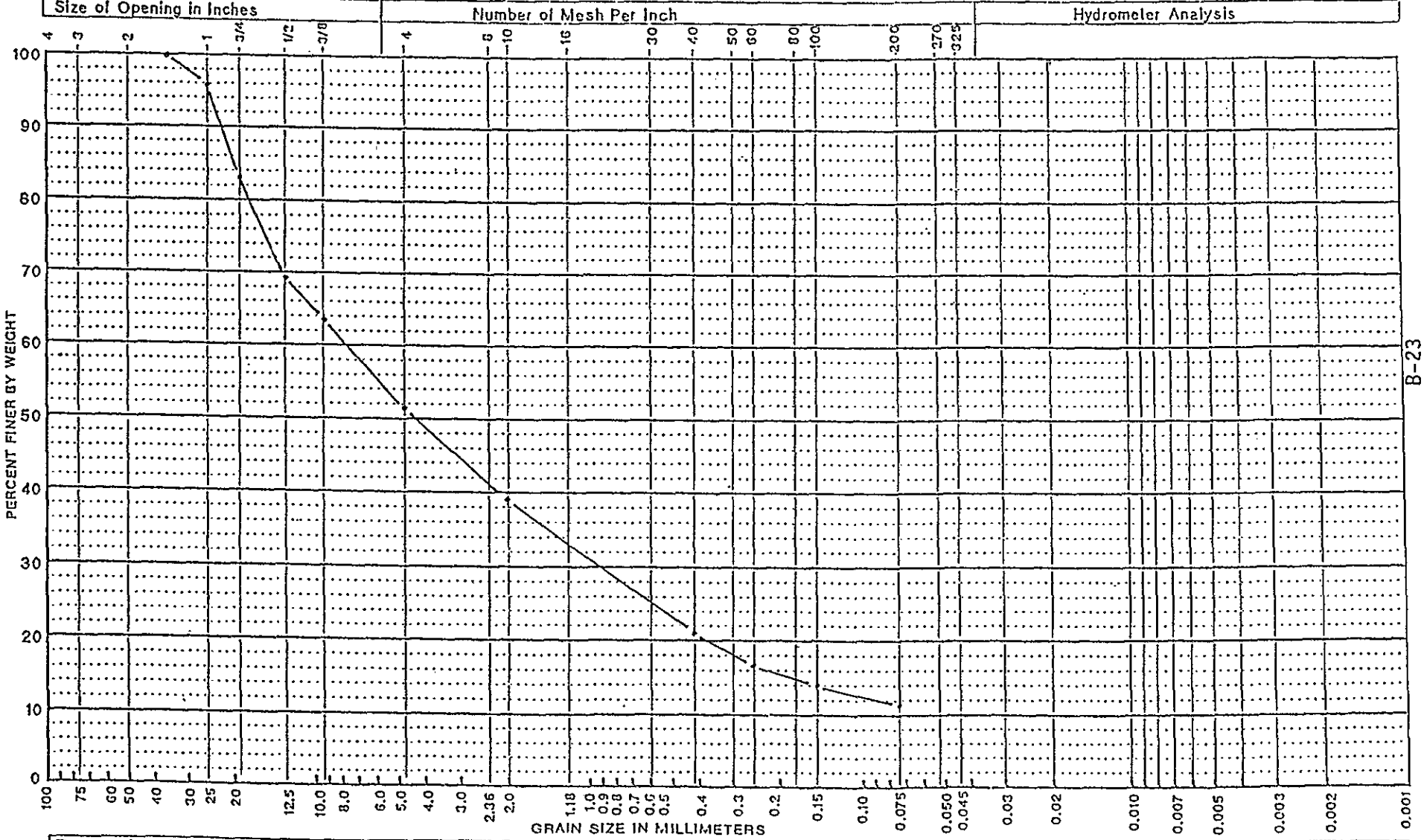
A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0583 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 3-20-91



Remarks SANDY GRAVEL

299-W26-10 215-217'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 3-20-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0593 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-20-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 3-25-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
4	157.5	0	0	100
10	↓	38.1	24.2	75.8
40	↓	94.2	59.8	40.2
60	↓	106.5	67.6	32.4
100	↓	114.7	72.8	27.2
200	↓	123.3	78.3	21.7
N/A	N/A	N/A	N/A	N/A
↓	↓	↓	↓	↓

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: R.G. ALEXANDER Date 3-20-91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0583

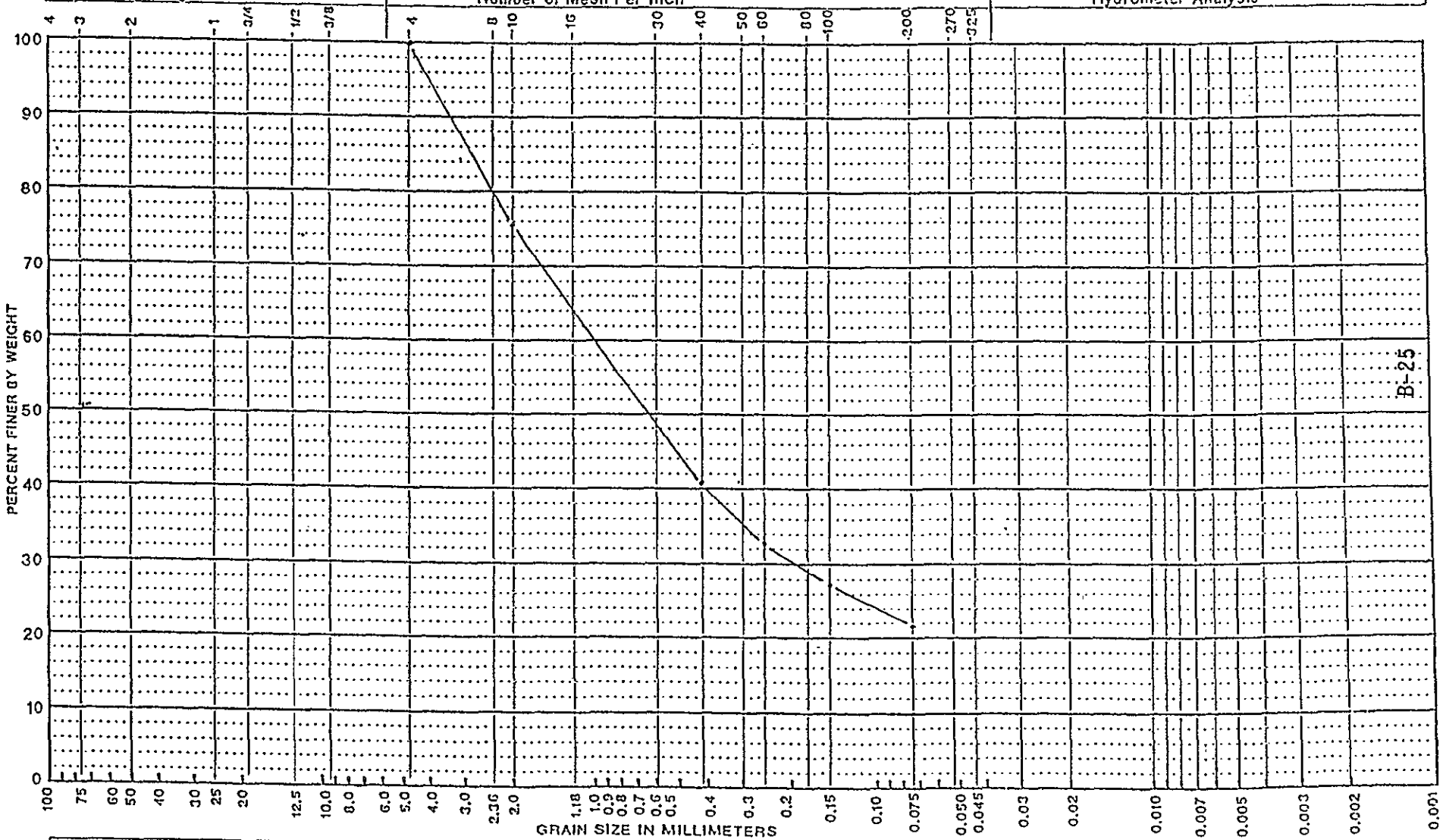
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 3-20-91



Remarks #4 MINUS

299-W26-10 215-217'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R. G. ALEXANDER Date 3-20-91

B-25

WHC-SD-EN-DP-045, Rev. 0

9413223.1799

9413223.1850

TEST REQUEST

SAMPLE/SPECIMEN NO. 1-0584 COST CODE/WORK ORDER NO. WJ3V1

REQUESTED BY: ORG. 81232 PERSON R. MILLER DATE 3-19-91

TEST REQUESTED	NO. OF SAMPLES	TEST LAB INFORMATION (PROCEDURE USED)
SIEVE	1	ETAL-07

REMARKS 299-W26-10
220-222'

RECEIVED BY: R.G. ALEXANDER DATE 3-19-91

APPROVED BY: R.G. ALEXANDER DATE 3-19-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0584 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-20-91
Procedure No: ETAL-07 Rev. -1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 3-25-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
1 1/2	1347.1	0	0	100
1		215.3	16.0	84.0
3/4		490.6	35.7	64.3
1/2		636.1	47.2	52.8
3/8		727.3	54.0	46.0
4		861.9	64.0	36.0
10	125.8	21.8	17.3	29.8
40		45.1	35.9	23.1
60		60.5	48.1	18.7
100		78.7	62.6	13.5
200		93.6	74.4	9.2
N/A	N/A	N/A	N/A	N/A

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: R.G. ALEXANDER Date 3-20-91

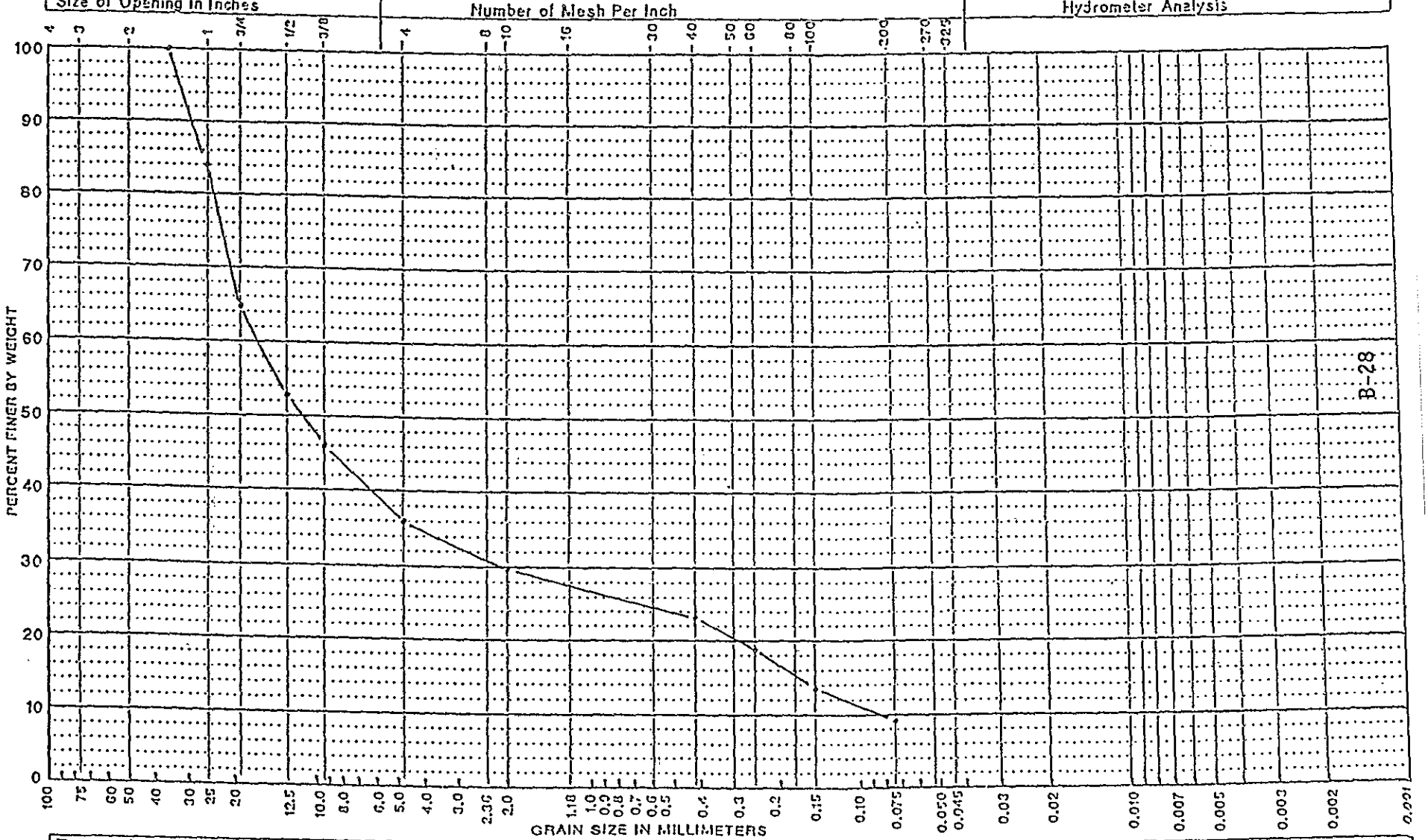
A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0584 Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89 Plotted By JERRY L. ENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A Date 3-20-91



Remarks SANDY GRAVEL

299-W26-10 220'-222'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 3-20-91

B-28

WHC-SD-EN-DP-045, Rev. 0

9112225.1802

SIEVE ANALYSIS DATA SHEET

Sample No. 1-0584 Page 1 of 1

Tested By: JERRY L. ENGLAND Date 3-20-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 3-26-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-99
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
4	126.8	0	0	100
10	↓	21.9	17.3	82.7
40	↓	45.1	35.9	64.1
60	↓	60.5	48.1	51.9
100	↓	78.7	62.6	37.4
200	↓	93.6	74.4	25.6
N/A	N/A	N/A	N/A	N/A
↓	↓	↓	↓	↓

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By; R.G. ALEXANDER Date 3-20-91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-0584

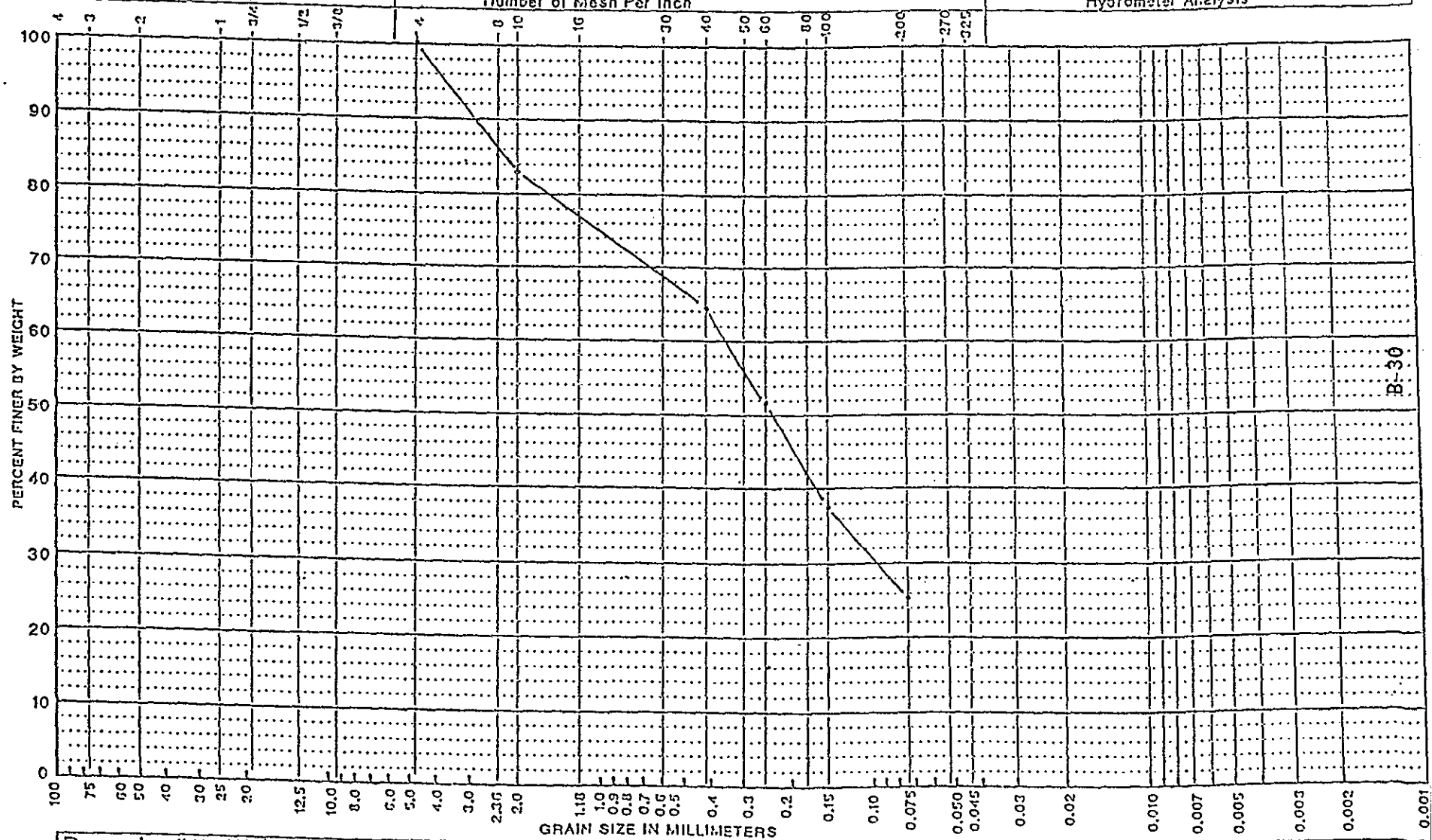
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-16-89

Plotted By JERRY LENGLAND

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 3-20-91



Remarks #4 MINUS

299-W26-10 220-222'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: R.G. ALEXANDER Date 3-20-91

B-30

WHC-SD-EN-DP-045, Rev. 0

WELL 299-W26-12

9413223.1805

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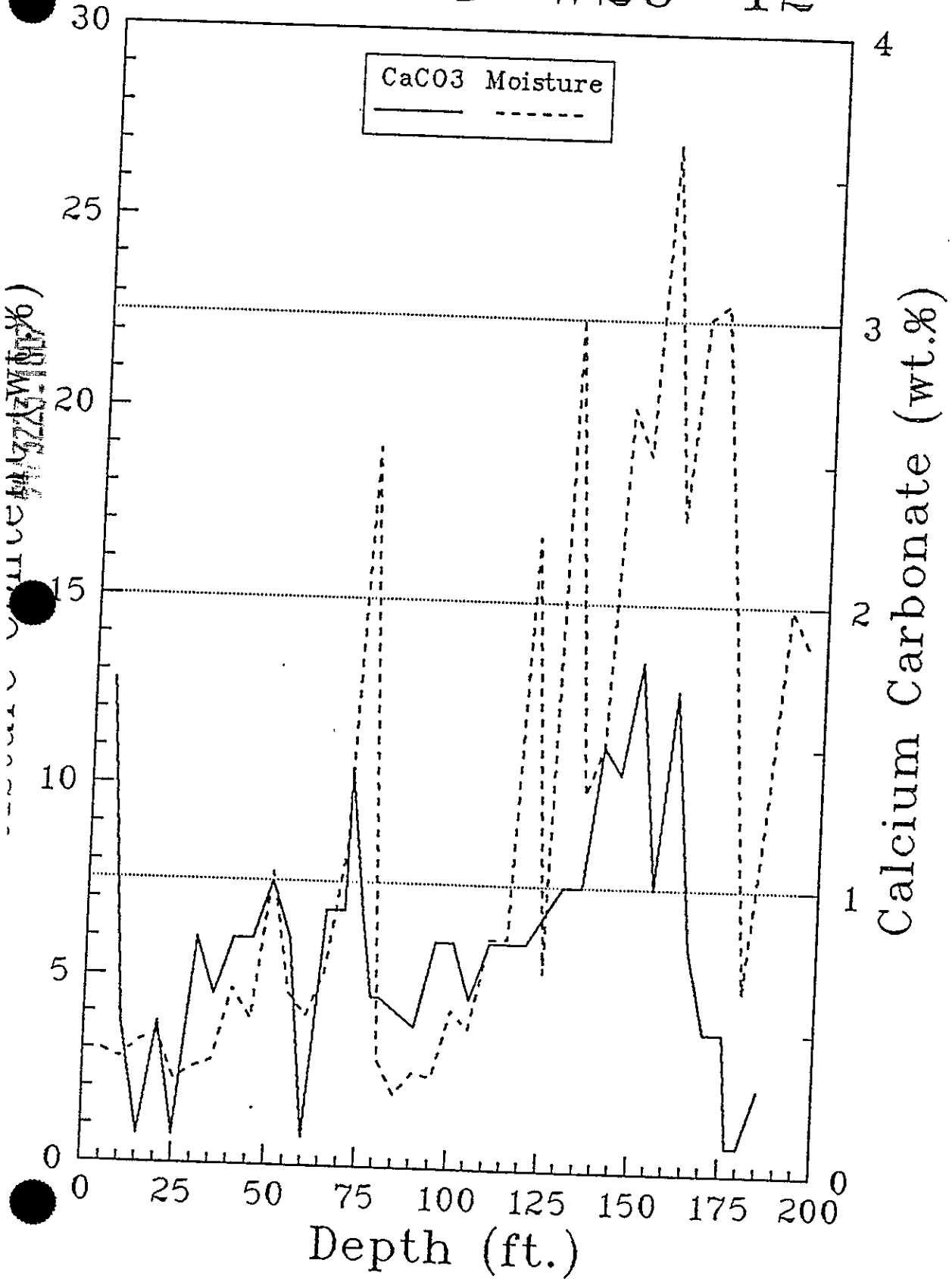
KDR 2/19/92

1g2

WELL 299-W26-12



TEST REQUEST

SAMPLE/SPECIMEN NO. 1-1413 COST CODE/WORK ORDER NO. WJ3V1

REQUESTED BY: ORG. 81231 PERSON B. WILLIAMS DATE 7-3-91

TEST REQUESTED	NO. OF SAMPLES	TEST LAB INFORMATION (PROCEDURE USED)
SIEVE ANALYSIS	1	ETAL-07

REMARKS 299-E26-12
230'

RECEIVED BY: R.G. ALEXANDER DATE 7-3-91

APPROVED BY: R.G. ALEXANDER DATE 7-3-91

ARCHIVE

RADIATION RELEASE

Bldg. _____ Expiration Date 7-3-91

Released By _____ Health Physics

Remarks <D <D

299-E26-12

230'

54-3000-022 (01/89)

SIEVE ANALYSIS DATA SHEET

Sample No. 1-1413 Page 1 of 1

Tested By: R.G. ALEXANDER Date 7-8-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 9-21-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
BALANCE : ETAL- 3304 Calibration Due Date 9-21-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
2"	1447.8	Ø	Ø	100
1½		Ø	Ø	100
1		270.1	18.7	81.3
¾		406.9	28.1	71.9
½		534.0	34.9	63.1
⅜		650.0	44.9	55.1
#4		834.4	57.6	42.4
#10	163.66	62.52	38.2	26.2
#40		143.66	87.8	5.2
#60		151.10	92.3	3.3
#100		155.21	94.8	2.2
#200		158.58	96.9	1.3

Finess Modules (FM) _____ (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	WASH GRADING
D = Original Dry Weight of Sample	N/A g	
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: M.G. Bachelu Date 7-9-91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1413

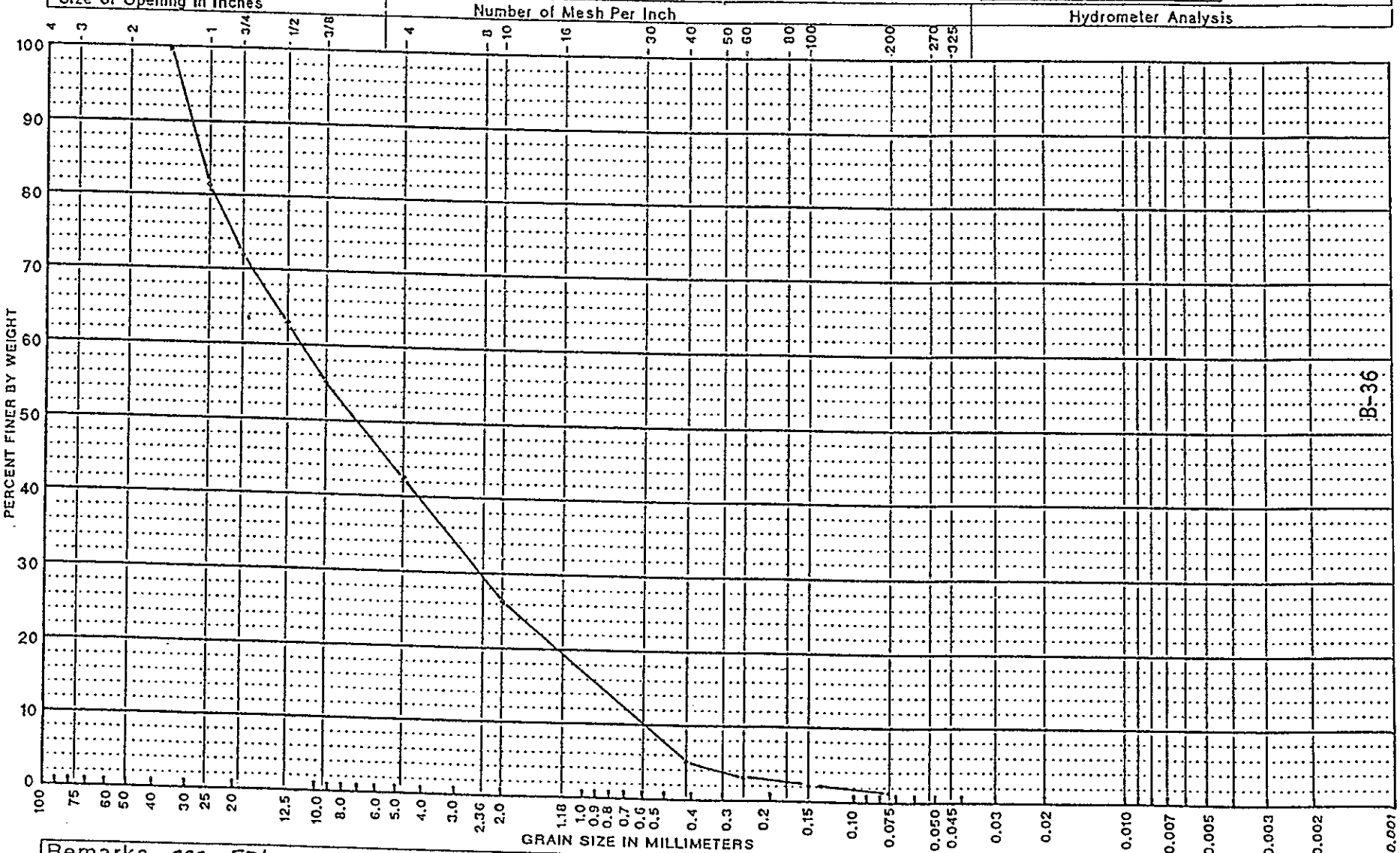
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By R.G. ALEXANDER

Date 7-9-91



Remarks 299-E26-12 230'

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: M.G. Barchus Date 7-9-91

B-36

WHC-SD-EN-DP-045, Rev. 0

9142223.1810

SIEVE ANALYSIS DATA SHEET

Sample No. 1-1413 Page 1 of 1

Tested By: R.G. ALEXANDER Date 7-8-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3304 Calibration Due Date 9-21-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
#4	163.66	Ø	Ø	100
#10		62.52	38.2	61.8
#40		143.66	87.8	12.2
#60		151.10	92.3	7.7
#100		155.21	94.8	5.2
#200		158.58	96.9	3.1

Finess Modules (FM) _____ (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percemtage of material passing a 200 Sieve	N/A %	WASHED GRADING
D = Original Dry Weight of Sample	N/A g	
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: M.A. Baechler Date 7-9-91

A-6400-204(2-87)

9413223.1812

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1413

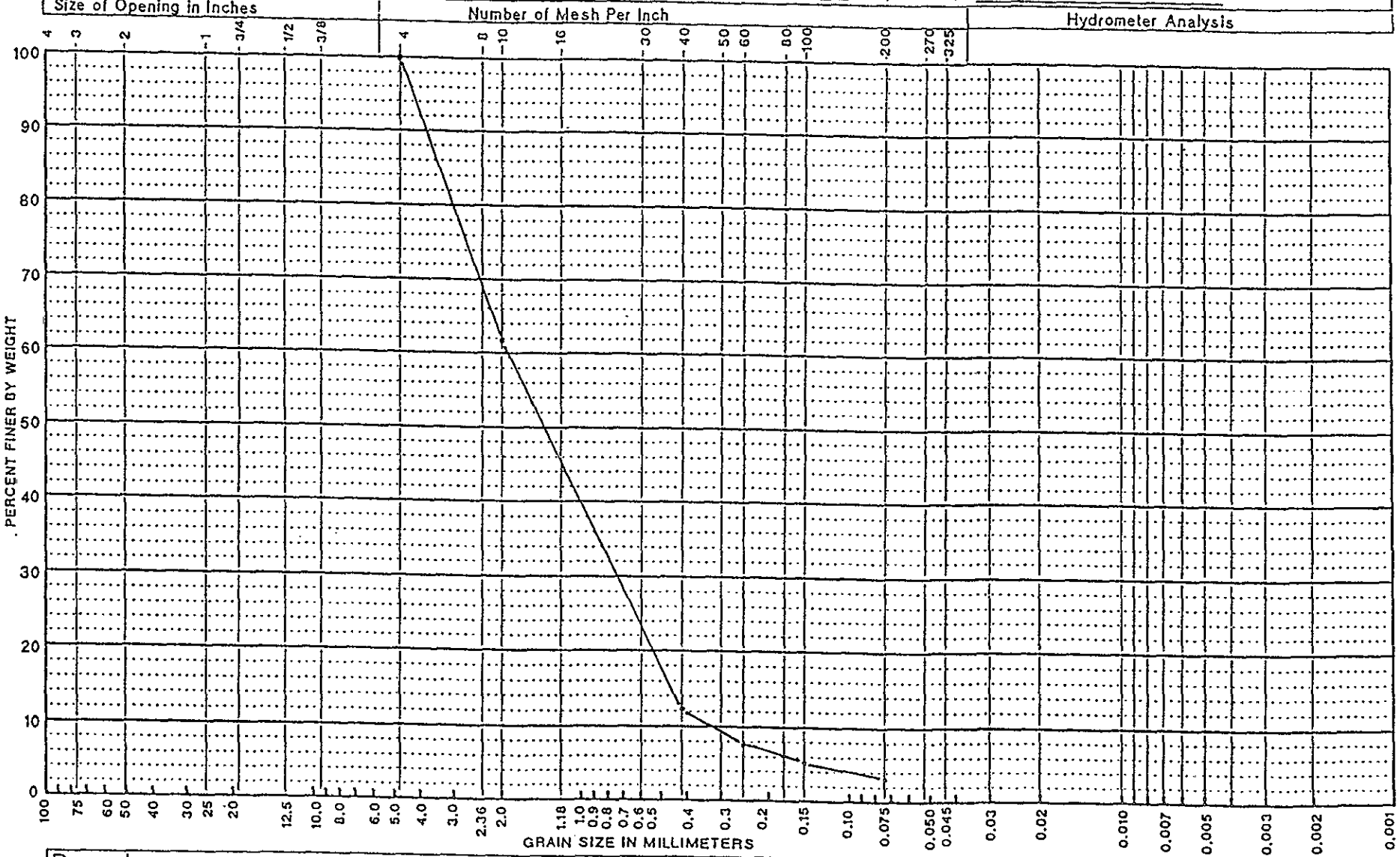
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By R.G. ALEXANDER

Date 7-9-91



Remarks 299-E26-12 230'
-#4

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: M.G. Zaechler Date 7-9-91

TEST REQUEST

SAMPLE/SPECIMEN NO. 1-1414 COST CODE/WORK ORDER NO. WJ3V1

REQUESTED BY: ORG. 81231 PERSON B. WILLIAMS DATE 7-3-91

TEST REQUESTED	NO. OF SAMPLES	TEST LAB INFORMATION (PROCEDURE USED)
SIEVE ANALYSIS	1	ETAL-07

REMARKS 299-E26-12 ~~240~~ 240' 220' [illegible] RECEIVED BY: R.G. ALEXANDER DATE 7-3-91

APPROVED BY: R.G. ALEXANDER DATE 7-3-91

ARCHIVE

RADIATION RELEASE

Bldg. _____ Expiration Date 7-3-91

Released By [signature] Health Physics

Remarks <D <D

~~299~~ E-26-12 240'

54-3000-022 (01/89)

SIEVE ANALYSIS DATA SHEET

Sample No. 1-1414 Page 1 of 1

Tested By: R.G. ALEXANDER Date 7-8-91
Procedure No: ETAC-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 9-21-91
Thermometer: ETAL- 0007 Calibration Due Date 8-1-91
BALANCE : ETAL- 3304 Calibration Due Date 9-21-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
2"	1447.2	Ø	Ø	100
1 1/2		134.3	9.3	90.7
1		342.4	23.7	76.3
3/4		531.4	36.7	63.3
1/2		647.6	44.7	55.3
3/8		731.7	50.6	49.4
#4		858.2	59.3	40.7
#10	150.96	446.72	30.9	28.1
#40		124.88	81.4	7.6
#60		134.94	89.4	4.3
#100		140.68	93.2	2.8
#200		144.60	95.8	1.7

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By; M.G. Boechler Date 7-9-91

A-6400-204(2-87)

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1414

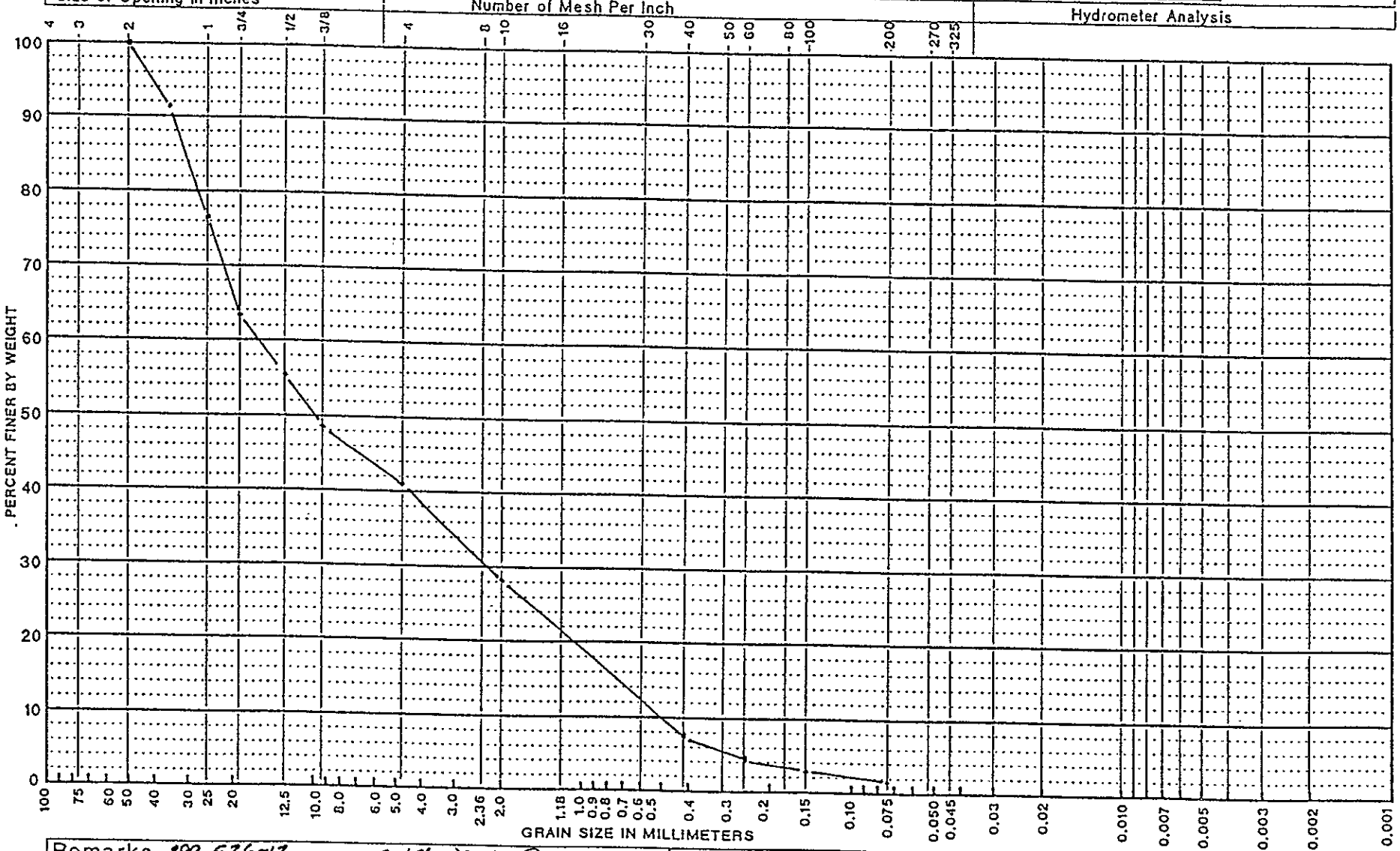
Page ____ of ____

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Test Plan No. N/A Rev. N/A Date Issued N/A

Plotted By R.G. ALEXANDER

Date 7-9-91



Remarks 299-E26-12 ~~240'~~ 230' 7/3/92

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: M.G. Bauchler Date 7-9-91

SIEVE ANALYSIS DATA SHEET

Sample No. 1-14154 Page 1 of 1

Tested By: R.G. ALEXANDER Date 7-8-91
Procedure No: ETAL-07 Rev. 1 Date Issued 11-15-89
Test Plan No: N/A Rev. N/A Date Issued N/A
Balance: ETAL- 3310 Calibration Due Date 9-21-91
Thermometer: ETAL- 0607 Calibration Due Date 8-1-91
BALANCE : ETAL- 3304 Calibration Due Date 9-21-91
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A
N/A : ETAL- N/A Calibration Due Date N/A

Sample Description SANDY GRAVEL Sieve Time 10 (min)

Reduced by (X) Splitting ( ) Quartering ( ) Stockpile

Sieve Size	Sample Weight	Cumulative Wt. Retained	Cumulative % Retained	Cumulative % Passed
#4	150.96	Ø	Ø	100
#10		46.72	30.9	69.1
#40		122.88	81.4	18.6
#60		134.94	89.4	10.6
#100		140.63	93.2	6.8
#200		144.60	95.8	4.2

Finess Modules (FM) N/A (See ASTM C 136-83, Section 8.2)

MATERIALS FINER THAN NO. 200 SIEVE BY WASHING		Remarks
C = Percentage of material passing a 200 Sieve	N/A %	
D = Original Dry Weight of Sample	N/A g	WASHED GRADING
E = Dry Weight of Sample After Washing/Sieve	N/A g	
C = <(D-E)/D>*100		

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.
Checked By: M.A. Baechler Date 7-9-91

A-6400-204(2-87)

9113223.1816

9413223.1917

GRAIN SIZE ANALYSIS PLOT

Sample No. 1-1414

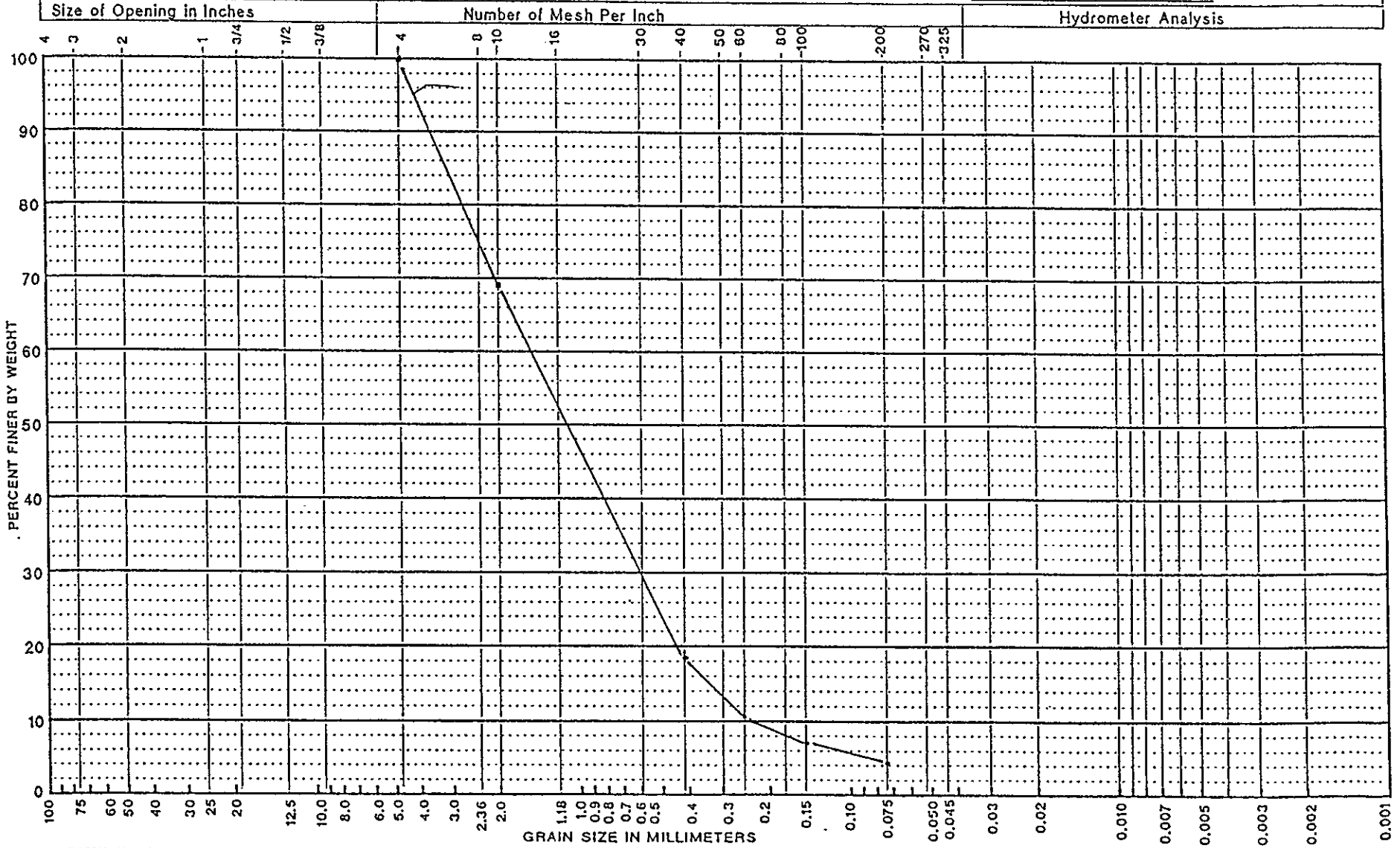
Page 1 of 1

Procedure No. ETAL-07 Rev. 1 Date Issued 11-15-89

Plotted By R.G. ALEXANDER

Test Plan No. N/A Rev. N/A Date Issued N/A

Date 7-9-91



Remarks 299-E26-12 ~~240'~~ 230' 7/8/92
- #4

All data are accurately and completely recorded. The test operator was trained and used calibrated instruments.

Checked By: M.G. Baechler Date 7-9-91

9413223.1818

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APPENDIX C

WELL DEVELOPMENT AND PUMP INSTALLATION

9413223.1819

CONTENTS

WELL DEVELOPMENT LOGS
PUMP INSTALLATION RECORDS

9413223.1920

WELL DEVELOPMENT FORM

Page 1 of 1

Well Designation 299-W26-7 Well Depth 209.33' T.O.C. 6"

Screened Interval 209.33'-188.32' T.O.C. 6" Date Well Development is Performed 5-6, 8, 9, 1991 (4 Days)

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

AIRLIFT

Depth of Eductor Pipe _____ Airlift Start Time _____

Flow Rate _____ Accumulated Flow _____ Airlift Stop Time _____

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

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

MECHANICAL PUMPING

Pumping Technique CONSTANT DISCHARGE Pump Depth 207.54' Pump Start Time 5-6: 1120, 5-7: 1250, 5-8: 1110, 5-9: 0937

Flow Rate 11.5 GPM Accumulated Flow 12 hrs 20 min @ 11.5 GPM = 8510 GALS. Pump Stop Time 5-6: 1505, 5-7: 1455, 5-8: 1500, 5-9: 1217

Turbidity 6-6-91: >100, 150, 64, 60, 35, 24, 23, 20, 18, 90, 43, 24, 26, 20, 19, 15

5-7: 31, 40, >100, 31, 23, 20, 13, 6.9, 9.1, 6.3, 38, 14, 7.6, 7.0, 5.5, 4.3

5-8 / 5-9

Comments DEVELOPMENT SPANNED 4 DAYS

Signature of Recorder James A. Coates JAMES A. COATES Date 5-14-91

Sign and Print Name

A-6000-393 (03/90)

9413223.1821

SAMPLING PUMP INSTALLATION FORM

191

Project: W017 / S-10 Ditch

Well Number 299-W26-7

Pump Type Hydrostar

Pump Model 8001

Date Installed: 5/13/91

Installed by: B. Strode / D. Hickman

Depth to water: 190.21' BTOC

Depth to Bottom 209.33' BTOC

Reported Depth to water: _____

Screened Interval: 209.33' - 188.32' BTOC

Pump/Riser Pipe Description:

pipe: ~~4"~~ 3/4" S.S.

pump length: 4.26'

pump screen length 2.0'

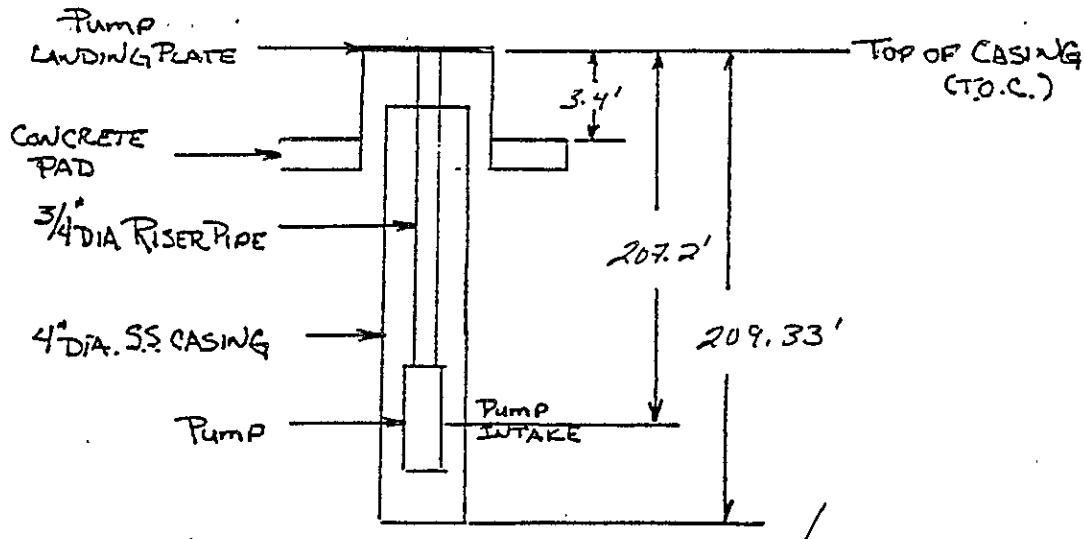
material cleaning: manufacturer

Comments:

PUMP INSTALLATION SKETCH

Total material length 209.2'

Loc. of pump intake: 207.2'



Completed By: James A Cairns

Date: 5/13/91

Rev 2/10/92

WELL CHECK LIST

Well Number: 299-W26-7 Location: S-10 FACILITY

Date: 2/5/92

	Yes	No
Hasp on protective casing	✓	
Lock	✓	
Proper cap fit	✓	
Well ID number on brass cap	✓	
Protective post painted	✓	
Well ID number stenciled on post	✓	
Well ID number stenciled on protective casing	✓	✗
Survey mark on casing		✓
Stock tank		✓
Site neat	✓	

Comments:

Signature: [signature] Date: 2/5/92

9413223.1823

WELL DEVELOPMENT FORM

Page 1 of 1

Well Designation 299-W26-10 Well Depth 225.53' T.O.C. 6"

Screened Interval 225.53'-205.43' T.O.C. 6" Date Well Development is Performed 5-1-91, 5-2-91, 5-3-91.

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

AIRLIFT

Depth of Eductor Pipe _____ Airlift Start Time _____

Flow Rate _____ Accumulated Flow _____ Airlift Stop Time _____

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

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

MECHANICAL PUMPING

	5-1	5-2	5-3
Pump Start Time	1231	0705	0704
Pump Stop Time	1556	0816	1020
		(470 min.)	

Pumping Technique CONSTANT DISCHARGE Pump Depth ~~225.7~~ JAC. 223.9' Pump Start Time

Flow Rate 11.56 gpm Accumulated Flow 5405

Turbidity (NTUs) 5-1-91: >100, 73, 66, 43, 37, 39, 76, 55, 27, 36, 20, 19, 9.5, 8.0, 7.0, 16.0, 7.0, 12, 15
5-2-91: 45, 14, 9.5, 15, 83, 82, 20, 9.1, 8.0, 12.0, 6.5, 6.6, 7.5, 7.0, 5.4, 7.3, 4.6
5-3-91:

Comments 3 DAYS TO DEVELOPE.

Signature of Recorder James A. Coates. JAMES A. COATES Date 5-14-91
Sign and Print Name

A-6000-393 (03/90)

9413273.1871

SAMPLING PUMP INSTALLATION FORM

Project: W017 / S-10 Ditch

Well Number 299-W26-10

Pump Type Hydrostar

Pump Model 8001

Date Installed: 5-3-91

Installed by: B. Strode / D. Kruger

Depth to water: 210.55' BTOC

Depth to Bottom 225.53' BTOC

Reported Depth to water: ~~210.55' BTOC~~ JAC

Screened Interval: 225.53' - 205.43' BTOC

Pump/Riser Pipe Description:

pipe: 3/4" S.S.

pump length: 4.44'

pump screen length 2.0'

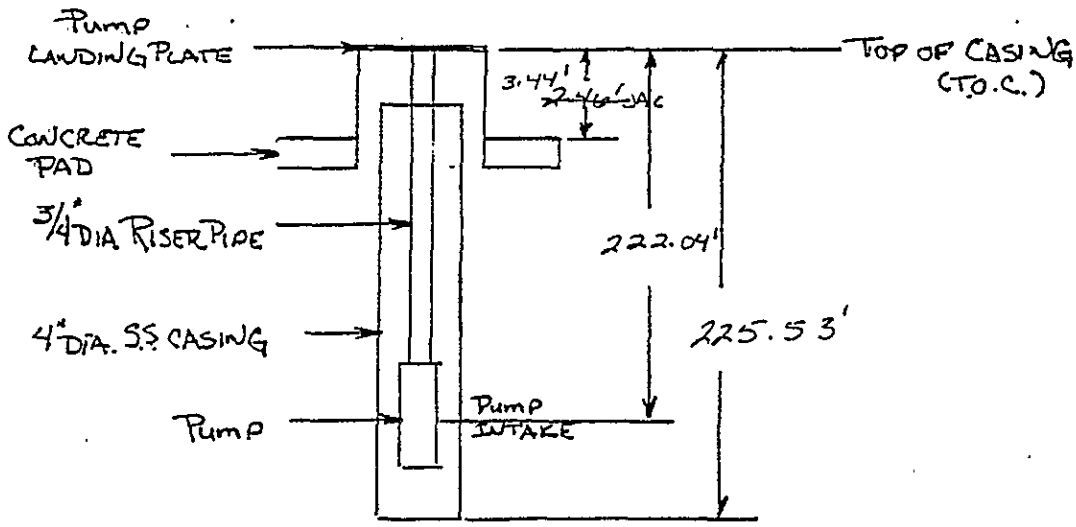
material cleaning: Manufacturer

Comments:

PUMP INSTALLATION SKETCH

Total material length 224.04'

Loc. of pump intake: 222.04'



Completed By: James A. Cates

Date: 5-3-91

Page a 1

VALIDATED
2/10/92
SIGNATURE/DATE

WELL CHECK LIST

Well Number: 299-~~E~~W026-10 Location: S-70 FACILITY

Date: 2/5/92

	Yes	No
Hasp on protective casing	✓	
Lock	✓	
Proper cap fit	✓	
Well ID number on brass cap	✓	
Protective post painted	✓	
Well ID number stenciled on post	✓	
Well ID number stenciled on protective casing	✓	
Survey mark on casing		✓
Stock tank		✓
Site neat	✓	

Comments:

Signature: [signature] Date: 2/5/92

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WELL DEVELOPMENT FORM

Page 1 of 1

Well Designation 299-W26-12 Well Depth 232.13' T.O.C. 6"

Screened Interval 232.13'-211.41' T.O.C. 6" Date Well Development is Performed 5-09-91 : 5-10-91

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

AIRLIFT

Depth of Eductor Pipe _____ Airlift Start Time _____

Flow Rate _____ Accumulated Flow _____ Airlift Stop Time _____

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

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

MECHANICAL PUMPING

	5-09-91	5-10-91
Pump Start Time	1608	0815
Pump Stop Time	1640	0843

Pumping Technique CONSTANT DISCHARGE Pump Depth 228.98' T.O.C. 6" Pump Start Time 1608 | 0815

Flow Rate 1.5 GPM Accumulated Flow 90 GALS Pump Stop Time 1640 | 0843

Turbidity 70 NTU, 34 NTU, 3.0 NTU, —, —, —, —, —

—, —, —, —, —, —, —, —

Comments BEGAN TESTING 5-09-91 BUT INITIAL FLOWRATE OF 11.5 GPM PULLED 1/2 HEAD TO PUMP INTAKE ALMOST IMMEDIATELY. INITIAL DATA NO GOOD - FINE-AC ADJUSTED FLOW UNTIL PRESSURE READING ON HERMIT WAS HOLDING ≈ 1.5 GPM. LATE - RESTART 5-10-91

Signature of Recorder ~~James A. Coates~~ James A. Coates Date 5-14-91

Sign and Print Name

A-6000-393 (03/90)

9413223.1827

SAMPLING PUMP INSTALLATION FORM

1 of 1

Project: W017 / S-10 ditch

Well Number 299-W26-12

Pump Type Hydrostar

Pump Model 8001

Date Installed: 5-10-91

Installed by: B. Strode / L. Hickman

Depth to water: 220.08

Depth to Bottom 232.13' BTOC

Reported Depth to water: _____

Screened Interval: 232.13'-211.41' BTOC

Pump/Riser Pipe Description:

pipe: 3/4" SS

pump length: 4.25'

pump screen length 2.0'

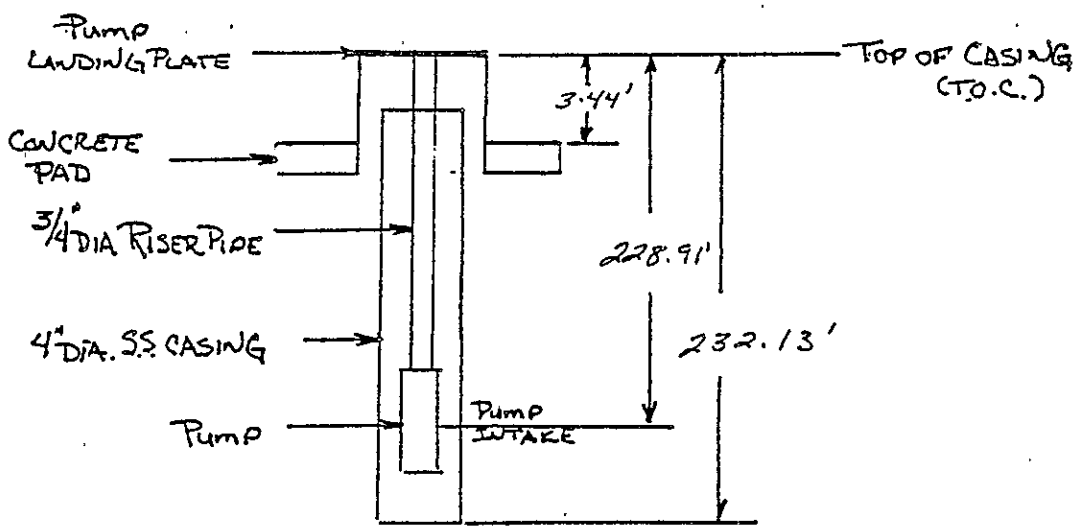
material cleaning: manufacturer

Comments:

PUMP INSTALLATION SKETCH

Total material length 230.91'

Loc. of pump intake: 228.91'



Completed By: James A. Coates

Date: 5-10-91

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2/10/92
SIGNATURE

WELL CHECK LIST

Well Number: 299-W26-12 Location: S-10 FACILITY

Date: 2/5/92

	Yes	No
Hasp on protective casing	✓	
Lock	✓	
Proper cap fit	✓	
Well ID number on brass cap	✓	
Protective post painted	✓	
Well ID number stenciled on post	✓	
Well ID number stenciled on protective casing	✓	
Survey mark on casing		✓
Stock tank		✓
Site neat	✓	

Comments:

Signature: [signature] Date: 2/5/92

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APPENDIX D

AQUIFER TESTS AND INTERPRETATION

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CONTENTS

DEVELOPMENT DRAWDOWN AND RECOVERY DATA
SLUG TEST DATA
AQUIFER TEST ANALYSIS

9413223.1332

D.0 INTRODUCTION

This appendix includes descriptions and interpretations of slug injection/withdrawal tests and well development activities conducted in wells 299-W26-7, 299-W26-10, and 299-W26-12 during 1991.

All of the well tests were performed in the Middle Ringold unit of the unconfined aquifer. This is the upper most saturated unit in the unconfined aquifer, which includes at least two other distinct units. The aquifer is over 250 ft thick and may exhibit both unconfining and semiconfined conditions.

The Middle Ringold unit has been described in the S-10 Groundwater Monitoring Plan (WHC 1990) as a coarse grained facies representing channel-fill deposits composed of gravel to sandy gravel. This gravel is compacted and contains varying amounts of cement and void filling sands and silts, which have created variable porosity and permeability. To date no geologic or lithologic relationships exist to explain this variability or its distribution.

9413223.1833

D.1 SUMMARY OF AQUIFER TEST RESULTS

Table D-1 presents results of aquifer tests performed in wells 299-W26-7, 299-W26-10, and 299-W26-12. Slug withdrawal data were analyzed by the Bouwer (1989) method which is applicable to unconfined aquifers. Values of hydraulic conductivity (K) ranged from 5 to 77 ft/day. Values for transmissivity (T) for the saturated screen interval ranged from 87 to 1,160 ft^2/day. The values of T and K derived from the development data vary slightly from the results derived from the slug data and may be due to effects of sandpack and delayed yield.

The values reflect the variable permeability of the Middle Ringold unit. These calculated values fall within the range of K reported in Graham et al. (1981), for hydraulic properties in the 200 Separations Areas. At best, the slug tests presented in this appendix provide a rough estimate of aquifer properties near the borehole.

D.2 WELL DEVELOPMENT TESTS

Following completion, each well was developed by installing a submersible pump and pumping at a steady rate until the turbidity of the formation water reached levels below 5 NTU. Water level drawdown and recovery were measured during well development with an in situ pressure transducer and recorded on a data logger.

Table D-1. Summary of Aquifer Testing in CY 1991 Wells.

WELL	TEST TYPE	ANALYSIS METHOD	K(FT/DAY)	T(FT^2/DAY)
W26-7	SLUG/INJECT	BOUWER AND RICE	N/A	N/A
	SLUG/WDRWL	BOUWER AND RICE	90	1,686[a]
	DEV/DRAW	COOPER/JACOB	60[a]	1,160
	DEV/RECOV	COOPER/JACOB	N/A	N/A
W26-10	SLUG/INJECT	BOUWER AND RICE	N/A	N/A
	SLUG/WDRWL	BOUWER AND RICE	77	1,160[a]
	DEV/DRAW	COOPER/JACOB	270[a]	4,050
	DEV/RECOV	COOPER/JACOB	N/A	N/A
W26-12	SLUG/INJECT	BOUWER AND RICE	17	299[a]
	SLUG/WDRWL	BOUWER AND RICE	5	87[a]
	DEV/DRAW	COOPER/JACOB	N/A	N/A
	DEV/RECOV	COOPER/JACOB	N/A	N/A

[a]Values derived from the equation T=Kb, where b=the saturated screened interval measured in feet.

The Cooper and Jacob (1946) method was used to analyze the development data. The analytical assumptions inherent in this method are described in detail in the hydrology literature (for example, Kruseman and De Ridder, 1983). Some of the assumptions are violated by testing in unconfined aquifers, and because of the completed well configuration.

The following additional corrections and assumptions were applied to the data antecedent to analysis:

- The saturated aquifer thickness was corrected using the Jacob (1963) equation S_0-S_0^2/2b
- Early time data were affected by borehole storage and well efficiency losses and therefore early time data was not used in the analysis
- The estimated transmissivity only applies to the saturated screened interval because the well screen only penetrates the upper portion of the aquifer
- Delayed gravity drainage effects were minimal in the late-time data
- The tests were of short-enough duration that pre-test trends were not considered significant
- The pumping rates during development were constant.

The data along with the analysis results are contained in this appendix.

In some cases, several data sets exist for each well which correspond to multiple development activities. Only the analysis of the most complete data set from each well is presented here. Data from well 299-W26-12 was not analyzed because of variable pumping rates.

D.3 SLUG INJECTION AND WITHDRAWAL TESTS

A 0.13-ft^3 rod was used to perform slug injection and withdrawal tests following well development. Water level changes during injection and withdrawal of the slug rod were measured with an in situ pressure transducer and the data was collected on a data logger. This data along with the analysis results are contained in this appendix.

The slug withdrawal results are interpreted to be more representative than the slug injection tests. The withdrawal tests consistently have less water level fluctuations (i.e., reduced disturbance) and are therefore expected to be more representative of the saturated aquifer formation than the injection tests.

The data was evaluated using the Bouwer and Rice method (Bouwer 1976). The calculations assume a fully or partially penetrated, unconfined aquifer. Slug tests stress a relatively small portion of the aquifer immediately around the borehole. For this reason, results only apply to the tested interval. Aquifer parameters for W26-7 were not calculated because the water level data was not saved.

D.4 REFERENCES

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

Cooper, H. H., Jr., and C. E. Jacob, 1946, "a generalized graphical method for evaluating formation constants and summarizing well-field history," in *American Geophysical Union Transactions*, V. 27, no. 4, pp. 526-534.

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

Jacob, C. E., 1963, "Determining the Permeability of Water Table Aquifers," *USGS Water Supply Paper*, WSP 1536-1, pp. 278-292.

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

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WELL 299-W26-7

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AQUIFER TEST SUMMARY

WELL 299-W26-7, WELL DEVELOPMENT

Purpose of Test: Estimation of aquifer parameters; hydraulic conductivity and transmissivity.

Methodology: Cooper and Jacobs analysis of drawdown (withdrawal) data gathered during well development.

Test Interval: Water table to bottom of screened interval, 190.21 ft below top of casing (btc) to 209.33 ft btc, respectively. Total saturated thickness = 19.12 ft.

Aquifer Thickness: Uppermost unconfined thickness=250' (estimated from WHC-SD-EN-AP-018, Rev. 0).

Geologic Interval Tested: Silty sandy gravel unit of the middle Ringold Formation (geology of aquifer is assumed homogeneous for these calculations).

Test Date: 7, May 91 Pump Rate: 11.5 gal/min (2,214 ft^3/day)

Test Duration: Test withdrawal: 110.0 min (1.83 hr); recovery monitored 10 min (0.1667 hr).

Maximum Drawdown: Test = 12.46 ft

9413224.1859

WELL CONFIGURATION

Screen Length: 20 ft (209.33 ft btc to 188.32 ft btc), continuous wire wrap

Screen Diameter: 4 in (0.333 ft) Screen Slot Size: 5-Slot (0.005 in)

Borehole Diameter: 8 in (0.667 ft), includes screen plus 20-40 mesh silica sand filter pack. Filter Sand Porosity: 0.25 (estimated)

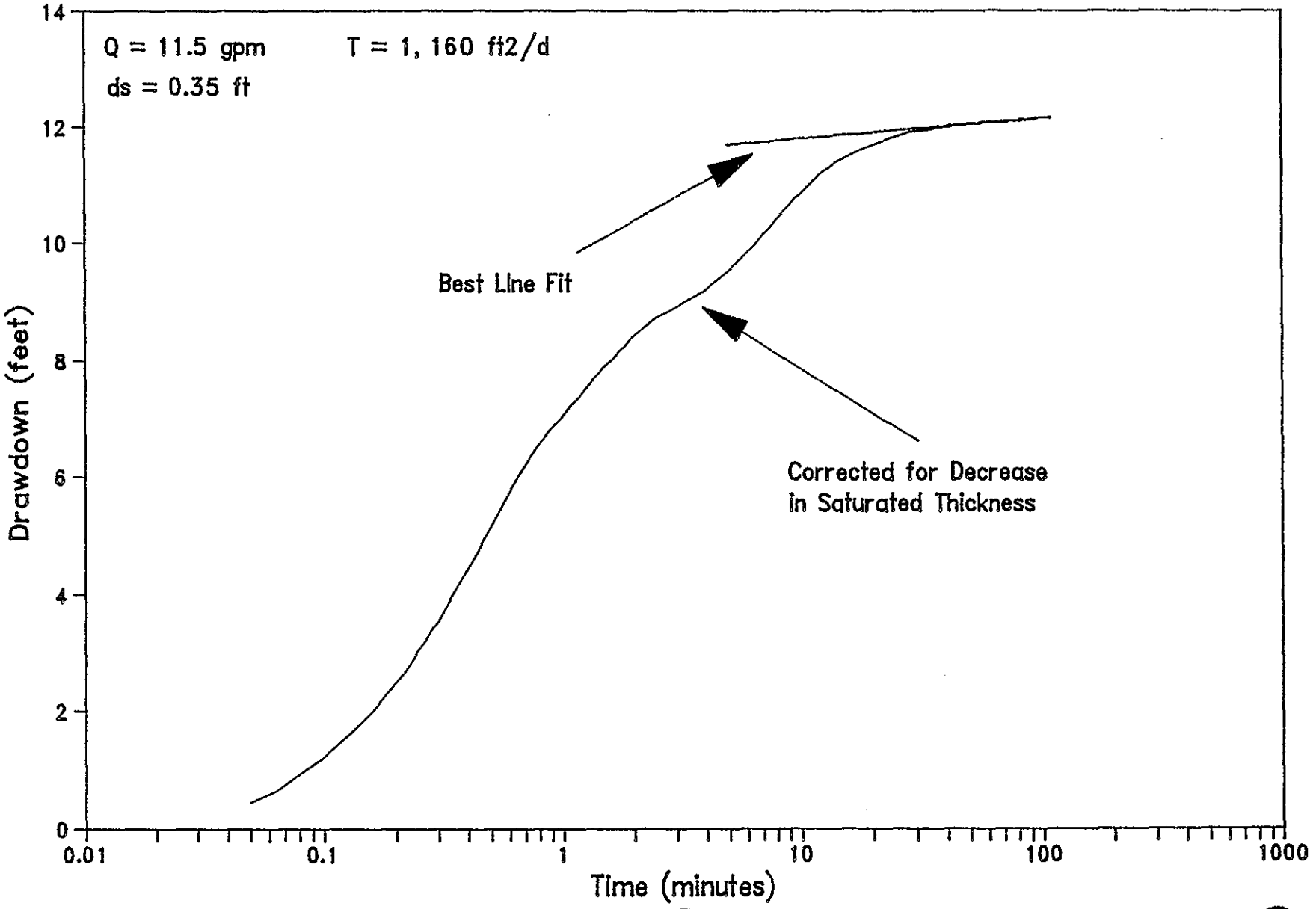
TEST RESULTS 299-W26-07:

DATA SOURCE	TRANSMISSIVITY (ft^2/d)	HYDRAULIC CONDUCTIVITY (ft/d)*	STORATIVITY
Withdrawal	1,160	60	N/A
Recovery	N/A	N/A	N/A

*Hydraulic conductivity estimated by dividing transmissivity by the screened aquifer thickness.

Remarks: Time - drawdown plot was corrected for decreasing saturated thickness and a best fit line was selected and analyzed by ISOAQX (a trademark of HydraLogic, Missoula, Montana) computer software. Late data was selected to avoid the effects of borehole storage.

Development Drawdown Analysis
Well W26-07; May 7, 1992



DRAWDOWN/RECOVERY

Well Designation 299-W26-7 Date 5-6-91 to 5-9-91

Well Depth 209.33' T.O.C. 6" Screened Interval 209.33' - 188.32' T.O.C. 6"

Pumping Method CONSTANT DISCHARGE

Equipment Used to Measure Water Level E.TAPE / TRANSDUCER S.N ET-5 / 1989 Calibration Due 8-21-91 / 5-11-91

Equipment Used to Measure Flow — NA — S.N. — NA — Calibration Due — NA —

Measuring Point TOP OF CASING 6" (T.O.C. 6") Pump Start Time 5-6 1120, 5-7 1250, 5-8 1110, 5-9 0937 Pump Stop Time 1505, 1455, 1500, 1217

Time		Water Level		Discharge
Date	Time	Reading Unit:	Water Level Unit:	Reading Unit:
				BUCKET METHOD.
				5 GALS / 26 SEC = 11.5 GPM.
		SEE		
		ATTACHED		

Signature of Recorder James A. Coates JAMES A. COATES Date 5-15-91
Sign and Print Name

A-6000-402 (03/90)

EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

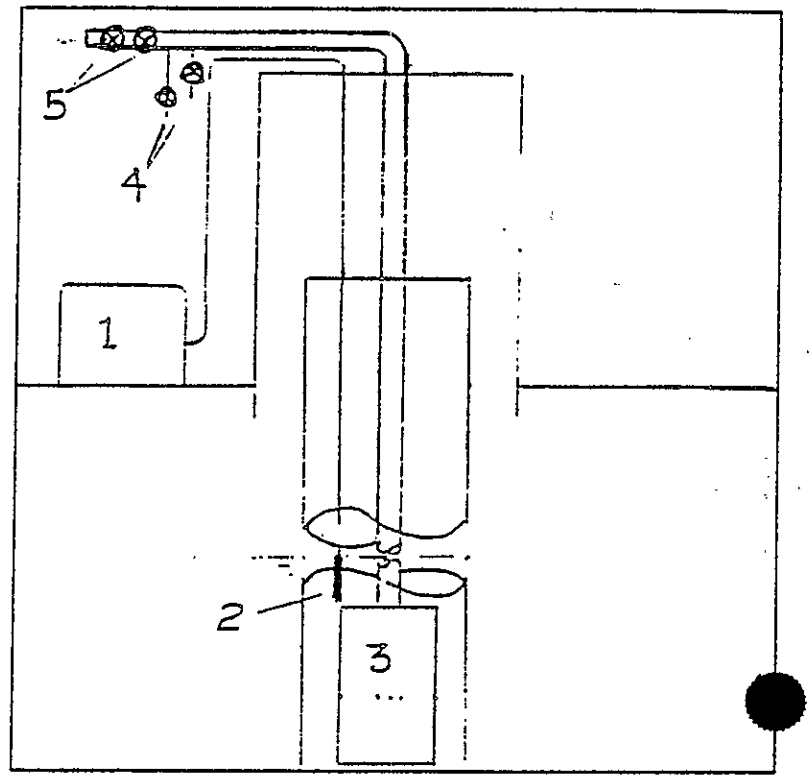
Page 1 of 1

Well Designation 299-W26-7 · Depth 209.33 T.O.C. 6"

Equipment Configuration

Item	Description
1	HERMIT DATA LOG. SN-
2	TRANSDUCER SN-
3	PUMP
4	SAMPLING PORTS
5	SHUT OFF VALVES

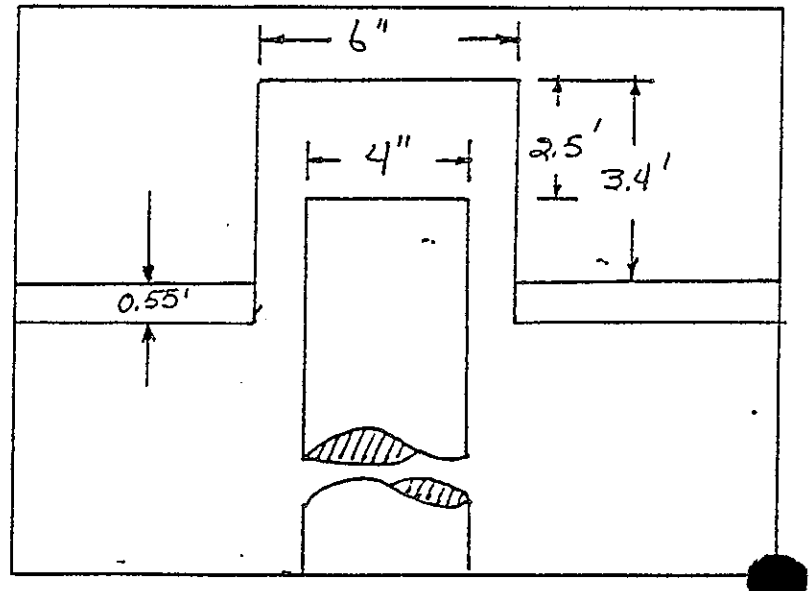
Diagram



Well Head

Comments

Diagram



Signature of Recorder JAMES A. COATES JAMES A. COATES Date 5-15-91

A-6000-417 (08/89)

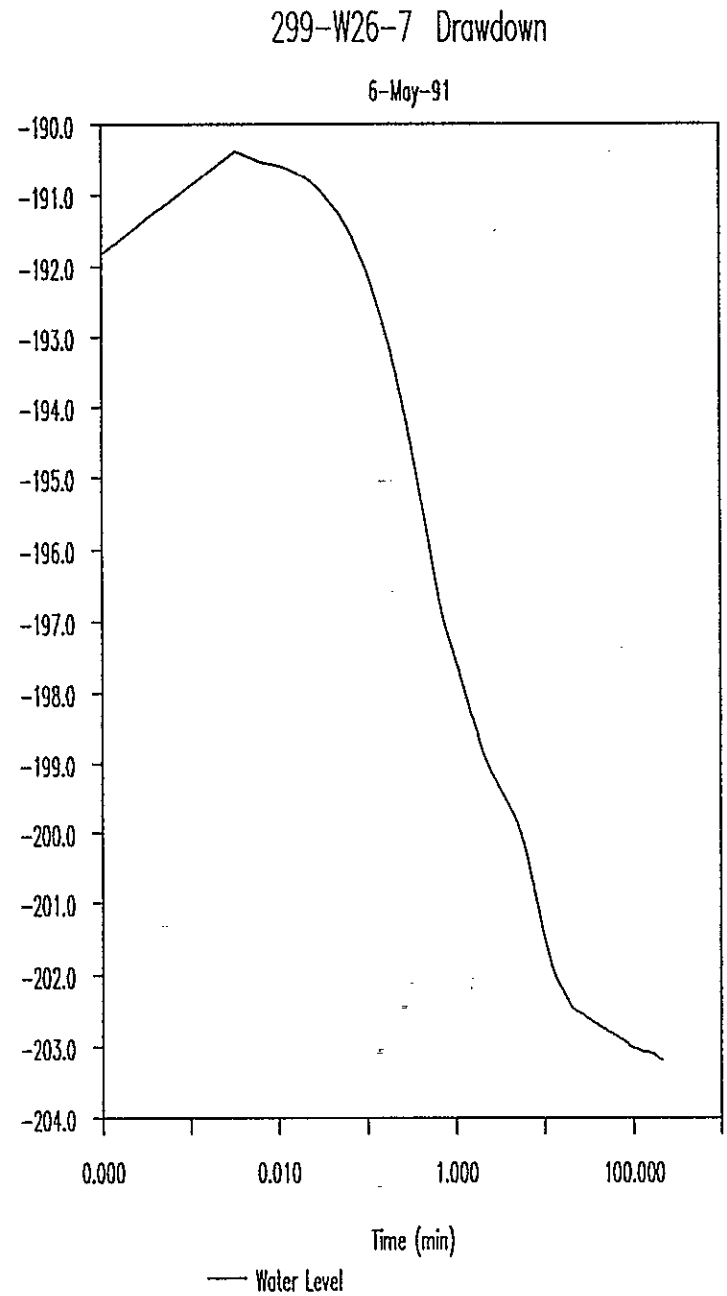
299-W26-7 Drawdown

Hermit Environmental Data Logger Unit# 00700
Test# 0 **Drawdown**
Water Level in feet below top of casing (BTOC)

Static Water Level	190.25'
Scale factor	10.11
Pump Rate	11.50 gpm

Pump Started: 05/06/01 11:18

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	191.82	-191.82
0.003	0.00006	190.37	-190.37
0.007	0.00011	190.53	-190.53
0.010	0.00017	190.58	-190.58
0.013	0.00022	190.64	-190.64
0.017	0.00028	190.69	-190.69
0.020	0.00033	190.75	-190.75
0.023	0.00039	190.80	-190.80
0.027	0.00044	190.87	-190.87
0.030	0.00050	190.93	-190.93
0.033	0.00056	190.99	-190.99
0.050	0.00083	191.27	-191.27
0.067	0.00111	191.55	-191.55
0.083	0.00139	191.82	-191.82
0.100	0.00167	192.06	-192.06
0.117	0.00194	192.29	-192.29
0.133	0.00222	192.54	-192.54
0.150	0.00250	192.74	-192.74
0.167	0.00278	192.95	-192.95
0.183	0.00306	193.15	-193.15
0.200	0.00333	193.35	-193.35
0.217	0.00361	193.54	-193.54
0.233	0.00389	193.72	-193.72
0.250	0.00417	193.89	-193.89
0.267	0.00444	194.07	-194.07
0.283	0.00472	194.23	-194.23
0.300	0.00500	194.39	-194.39
0.317	0.00528	194.53	-194.53
0.333	0.00556	194.69	-194.69
0.417	0.00695	195.34	-195.34
0.500	0.00833	195.89	-195.89
0.583	0.00972	196.34	-196.34
0.667	0.01111	196.74	-196.74
0.750	0.01250	197.02	-197.02
0.833	0.01389	197.21	-197.21



299-W26-7 Drawdown

0.917	0.01528	197.38	-197.38
1.000	0.01667	197.54	-197.54
1.083	0.01805	197.68	-197.68
1.167	0.01945	197.82	-197.82
1.250	0.02083	197.94	-197.94
1.333	0.02222	198.07	-198.07
1.417	0.02361	198.17	-198.17
1.500	0.02500	198.28	-198.28
1.583	0.02639	198.36	-198.36
1.667	0.02778	198.45	-198.45
1.750	0.02917	198.53	-198.53
1.833	0.03056	198.62	-198.62
1.917	0.03195	198.71	-198.71
2.000	0.03333	198.79	-198.79
2.500	0.04167	199.09	-199.09
3.000	0.05000	199.30	-199.30
3.500	0.05833	199.46	-199.46
4.000	0.06667	199.61	-199.61
4.500	0.07500	199.74	-199.74
5.000	0.08333	199.87	-199.87
5.500	0.09167	200.02	-200.02
6.000	0.10000	200.17	-200.17
6.500	0.10833	200.36	-200.36
7.000	0.11667	200.56	-200.56
7.500	0.12500	200.73	-200.73
8.000	0.13333	200.93	-200.93
8.500	0.14167	201.08	-201.08
9.000	0.15000	201.23	-201.23
9.500	0.15833	201.37	-201.37
10.000	0.16667	201.49	-201.49
12.000	0.20000	201.87	-201.87
14.000	0.23333	202.08	-202.08
16.000	0.26667	202.21	-202.21
18.000	0.30000	202.33	-202.33
20.000	0.33333	202.45	-202.45
22.000	0.36667	202.49	-202.49
24.000	0.40000	202.51	-202.51
26.000	0.43333	202.53	-202.53
28.000	0.46667	202.56	-202.56
30.000	0.50000	202.59	-202.59
32.000	0.53333	202.61	-202.61
34.000	0.56667	202.64	-202.64
36.000	0.60000	202.66	-202.66
38.000	0.63333	202.67	-202.67
40.000	0.66667	202.68	-202.68
42.000	0.70000	202.72	-202.72
44.000	0.73333	202.72	-202.72

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299-W26-7 Drawdown

46.000	0.76667	202.74	-202.74
48.000	0.80000	202.74	-202.74
50.000	0.83333	202.76	-202.76
52.000	0.86667	202.78	-202.78
54.000	0.90000	202.78	-202.78
56.000	0.93333	202.80	-202.80
58.000	0.96667	202.81	-202.81
60.000	1.00000	202.83	-202.83
62.000	1.03333	202.83	-202.83
64.000	1.06667	202.84	-202.84
66.000	1.10000	202.85	-202.85
68.000	1.13333	202.87	-202.87
70.000	1.16667	202.88	-202.88
72.000	1.20000	202.89	-202.89
74.000	1.23333	202.89	-202.89
76.000	1.26667	202.90	-202.90
78.000	1.30000	202.91	-202.91
80.000	1.33333	202.92	-202.92
82.000	1.36667	202.93	-202.93
84.000	1.40000	202.94	-202.94
86.000	1.43333	202.95	-202.95
88.000	1.46667	202.96	-202.96
90.000	1.50000	202.98	-202.98
92.000	1.53333	202.99	-202.99
94.000	1.56667	203.00	-203.00
96.000	1.60000	203.00	-203.00
98.000	1.63333	203.00	-203.00
100.000	1.66667	203.01	-203.01
110.000	1.83333	203.03	-203.03
120.000	2.00000	203.05	-203.05
130.000	2.16667	203.07	-203.07
140.000	2.33333	203.06	-203.06
150.000	2.50000	203.08	-203.08
160.000	2.66667	203.10	-203.10
170.000	2.83333	203.10	-203.10
180.000	3.00000	203.13	-203.13
190.000	3.16667	203.15	-203.15
200.000	3.33333	203.18	-203.18
210.000	3.50000	203.19	-203.19

9413223.1845

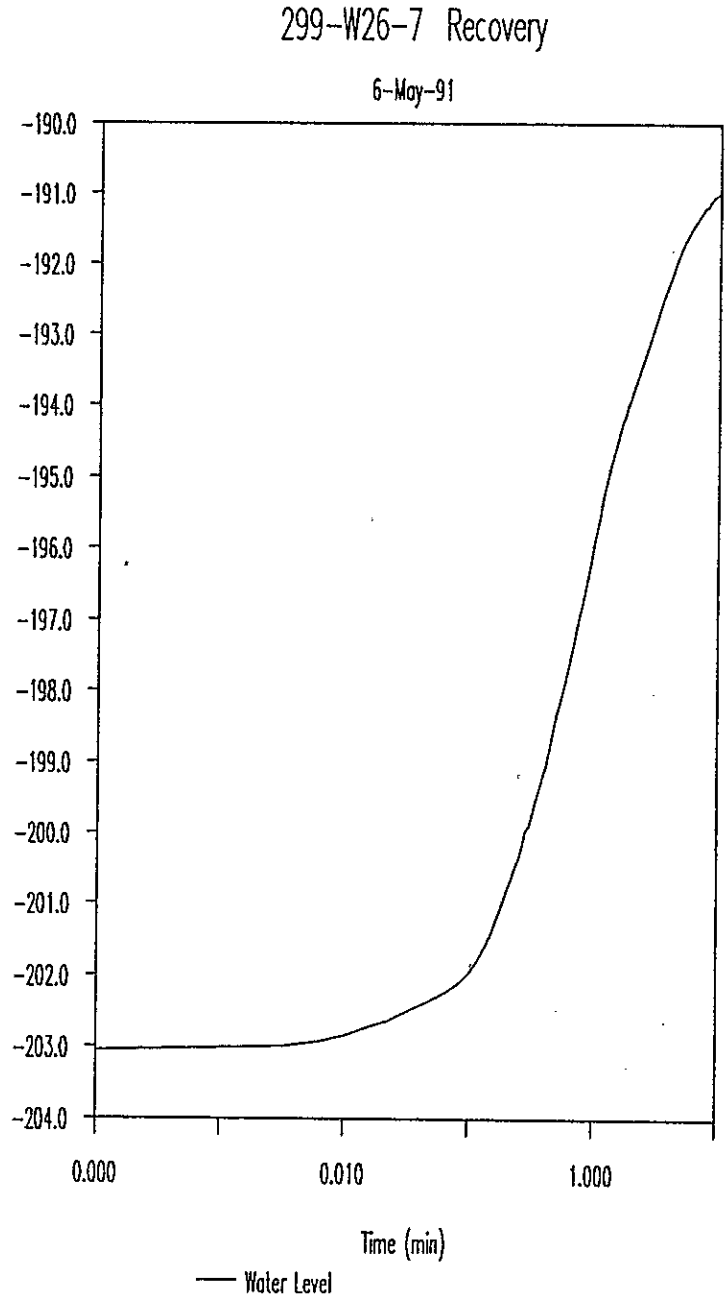
299-W26-7 Recovery

Hermit Environmental Data Logger Unit# 00700
Test# 1 **Recovery**
Water Level in feet below top of casing (BTOC)

Static Water Level 190.25'
Scale factor 10.11

Pump Shut off: 05/06 14:53

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	203.05	-203.05
0.003	0.00006	202.99	-202.99
0.007	0.00011	202.92	-202.92
0.010	0.00017	202.85	-202.85
0.013	0.00022	202.77	-202.77
0.017	0.00028	202.71	-202.71
0.020	0.00033	202.66	-202.66
0.023	0.00039	202.62	-202.62
0.027	0.00044	202.57	-202.57
0.030	0.00050	202.52	-202.52
0.033	0.00056	202.49	-202.49
0.050	0.00083	202.34	-202.34
0.067	0.00111	202.22	-202.22
0.083	0.00139	202.10	-202.10
0.100	0.00167	201.97	-201.97
0.117	0.00194	201.81	-201.81
0.133	0.00222	201.62	-201.62
0.150	0.00250	201.43	-201.43
0.167	0.00278	201.24	-201.24
0.183	0.00306	201.03	-201.03
0.200	0.00333	200.84	-200.84
0.217	0.00361	200.66	-200.66
0.233	0.00389	200.49	-200.49
0.250	0.00417	200.36	-200.36
0.267	0.00444	200.18	-200.18
0.283	0.00472	199.96	-199.96
0.300	0.00500	199.90	-199.90
0.317	0.00528	199.77	-199.77
0.333	0.00556	199.62	-199.62
0.417	0.00695	199.03	-199.03
0.500	0.00833	198.35	-198.35
0.583	0.00972	197.88	-197.88
0.667	0.01111	197.42	-197.42
0.750	0.01250	196.99	-196.99
0.833	0.01389	196.63	-196.63
0.917	0.01528	196.26	-196.26



299-W26-7 Recovery

1.000	0.01667	195.89	-195.89
1.083	0.01805	195.57	-195.57
1.167	0.01945	195.29	-195.29
1.250	0.02083	195.05	-195.05
1.333	0.02222	194.86	-194.86
1.417	0.02361	194.68	-194.68
1.500	0.02500	194.52	-194.52
1.583	0.02639	194.37	-194.37
1.667	0.02778	194.24	-194.24
1.750	0.02917	194.11	-194.11
1.833	0.03056	194.00	-194.00
1.917	0.03195	193.91	-193.91
2.000	0.03333	193.81	-193.81
2.500	0.04167	193.30	-193.30
3.000	0.05000	192.86	-192.86
3.500	0.05833	192.50	-192.50
4.000	0.06667	192.21	-192.21
4.500	0.07500	191.94	-191.94
5.000	0.08333	191.74	-191.74
5.500	0.09167	191.59	-191.59
6.000	0.10000	191.47	-191.47
6.500	0.10833	191.37	-191.37
7.000	0.11667	191.28	-191.28
7.500	0.12500	191.21	-191.21
8.000	0.13333	191.15	-191.15
8.500	0.14167	191.09	-191.09
9.000	0.15000	191.04	-191.04
9.500	0.15833	191.00	-191.00
10.000	0.16667	190.97	-190.97

9413223.1847

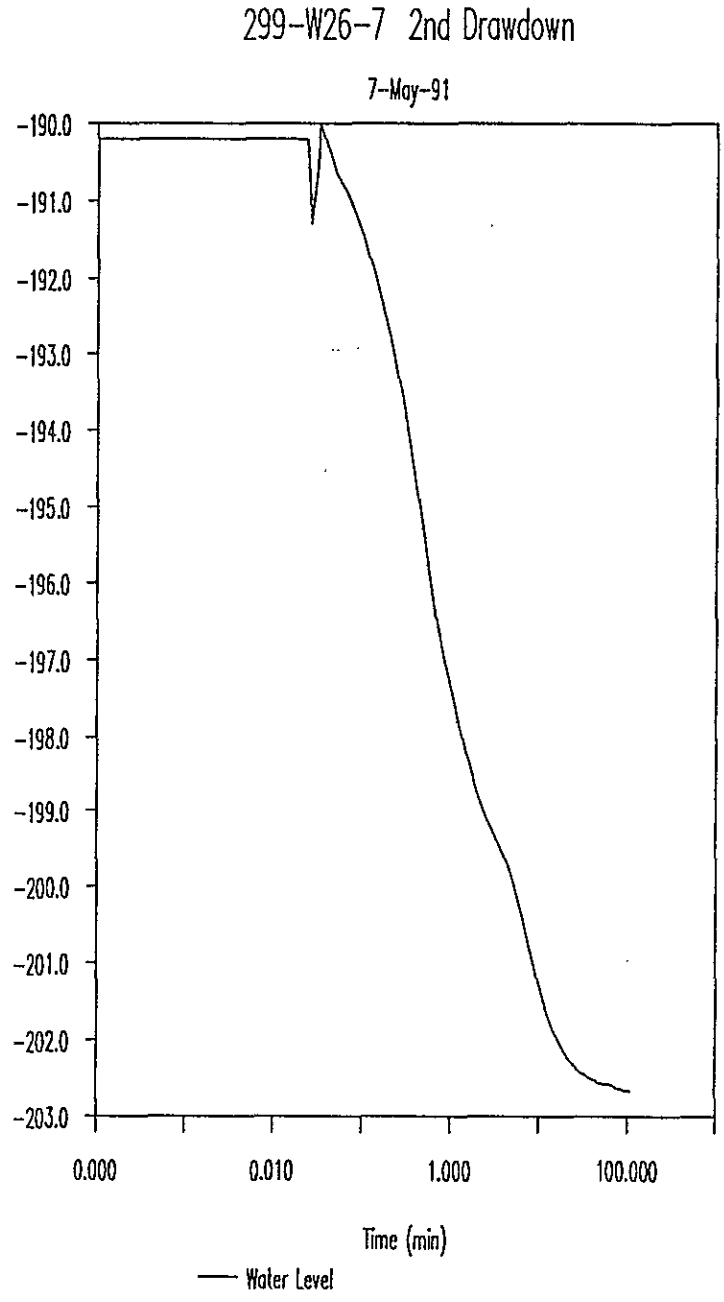
299-W26-7 2nd Drawdown

Hermit Environmental Data Logger Unit# 00700
Test# 0 **Drawdown**
Water Level in feet below top of casing (BTOC)

Static Water Level	190.21
Scale factor	10.11
Pump Rate	11.50 gpm

Pump Started: 05/07 12:46

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	190.20	-190.20
0.003	0.00006	190.20	-190.20
0.007	0.00011	190.20	-190.20
0.010	0.00017	190.20	-190.20
0.013	0.00022	190.20	-190.20
0.017	0.00028	190.20	-190.20
0.020	0.00033	190.21	-190.21
0.023	0.00039	190.21	-190.21
0.027	0.00044	191.29	-191.29
0.030	0.00050	190.66	-190.66
0.033	0.00056	190.00	-190.00
0.050	0.00083	190.65	-190.65
0.067	0.00111	190.90	-190.90
0.083	0.00139	191.20	-191.20
0.100	0.00167	191.44	-191.44
0.117	0.00194	191.68	-191.68
0.133	0.00222	191.90	-191.90
0.150	0.00250	192.12	-192.12
0.167	0.00278	192.32	-192.32
0.183	0.00306	192.54	-192.54
0.200	0.00333	192.72	-192.72
0.217	0.00361	192.91	-192.91
0.233	0.00389	193.09	-193.09
0.250	0.00417	193.28	-193.28
0.267	0.00444	193.44	-193.44
0.283	0.00472	193.62	-193.62
0.300	0.00500	193.78	-193.78
0.317	0.00528	193.94	-193.94
0.333	0.00556	194.10	-194.10
0.417	0.00695	194.81	-194.81
0.500	0.00833	195.42	-195.42
0.583	0.00972	195.93	-195.93
0.667	0.01111	196.37	-196.37
0.750	0.01250	196.72	-196.72
0.833	0.01389	196.97	-196.97



299-W26-7 2nd Drawdown

0.917	0.01528	197.17	-197.17
1.000	0.01667	197.36	-197.36
1.083	0.01805	197.53	-197.53
1.167	0.01945	197.69	-197.69
1.250	0.02083	197.84	-197.84
1.333	0.02222	197.97	-197.97
1.417	0.02361	198.10	-198.10
1.500	0.02500	198.22	-198.22
1.583	0.02639	198.32	-198.32
1.667	0.02778	198.42	-198.42
1.750	0.02917	198.51	-198.51
1.833	0.03056	198.61	-198.61
1.917	0.03195	198.69	-198.69
2.000	0.03333	198.76	-198.76
2.500	0.04167	199.08	-199.08
3.000	0.05000	199.28	-199.28
3.500	0.05833	199.44	-199.44
4.000	0.06667	199.59	-199.59
4.500	0.07500	199.76	-199.76
5.000	0.08333	199.92	-199.92
5.500	0.09167	200.09	-200.09
6.000	0.10000	200.24	-200.24
6.500	0.10833	200.41	-200.41
7.000	0.11667	200.56	-200.56
7.500	0.12500	200.72	-200.72
8.000	0.13333	200.85	-200.85
8.500	0.14167	200.98	-200.98
9.000	0.15000	201.09	-201.09
9.500	0.15833	201.21	-201.21
10.000	0.16667	201.30	-201.30
12.000	0.20000	201.64	-201.64
14.000	0.23333	201.84	-201.84
16.000	0.26667	201.97	-201.97
18.000	0.30000	202.10	-202.10
20.000	0.33333	202.18	-202.18
22.000	0.36667	202.25	-202.25
24.000	0.40000	202.30	-202.30
26.000	0.43333	202.34	-202.34
28.000	0.46667	202.40	-202.40
30.000	0.50000	202.43	-202.43
32.000	0.53333	202.44	-202.44
34.000	0.56667	202.46	-202.46
36.000	0.60000	202.48	-202.48
38.000	0.63333	202.49	-202.49
40.000	0.66667	202.51	-202.51
42.000	0.70000	202.52	-202.52
44.000	0.73333	202.53	-202.53

9413223.1840

299-W26-7 2nd Drawdown

46.000	0.76667	202.55	-202.55
48.000	0.80000	202.56	-202.56
50.000	0.83333	202.57	-202.57
52.000	0.86667	202.56	-202.56
54.000	0.90000	202.57	-202.57
56.000	0.93333	202.58	-202.58
58.000	0.96667	202.58	-202.58
60.000	1.00000	202.58	-202.58
62.000	1.03333	202.58	-202.58
64.000	1.06667	202.59	-202.59
66.000	1.10000	202.59	-202.59
68.000	1.13333	202.59	-202.59
70.000	1.16667	202.60	-202.60
72.000	1.20000	202.60	-202.60
74.000	1.23333	202.62	-202.62
76.000	1.26667	202.62	-202.62
78.000	1.30000	202.63	-202.63
80.000	1.33333	202.63	-202.63
82.000	1.36667	202.63	-202.63
84.000	1.40000	202.64	-202.64
86.000	1.43333	202.63	-202.63
88.000	1.46667	202.65	-202.65
90.000	1.50000	202.65	-202.65
92.000	1.53333	202.66	-202.66
94.000	1.56667	202.67	-202.67
96.000	1.60000	202.67	-202.67
98.000	1.63333	202.66	-202.66
100.000	1.66667	202.66	-202.66
110.000	1.83333	202.67	-202.67

9413223.1850

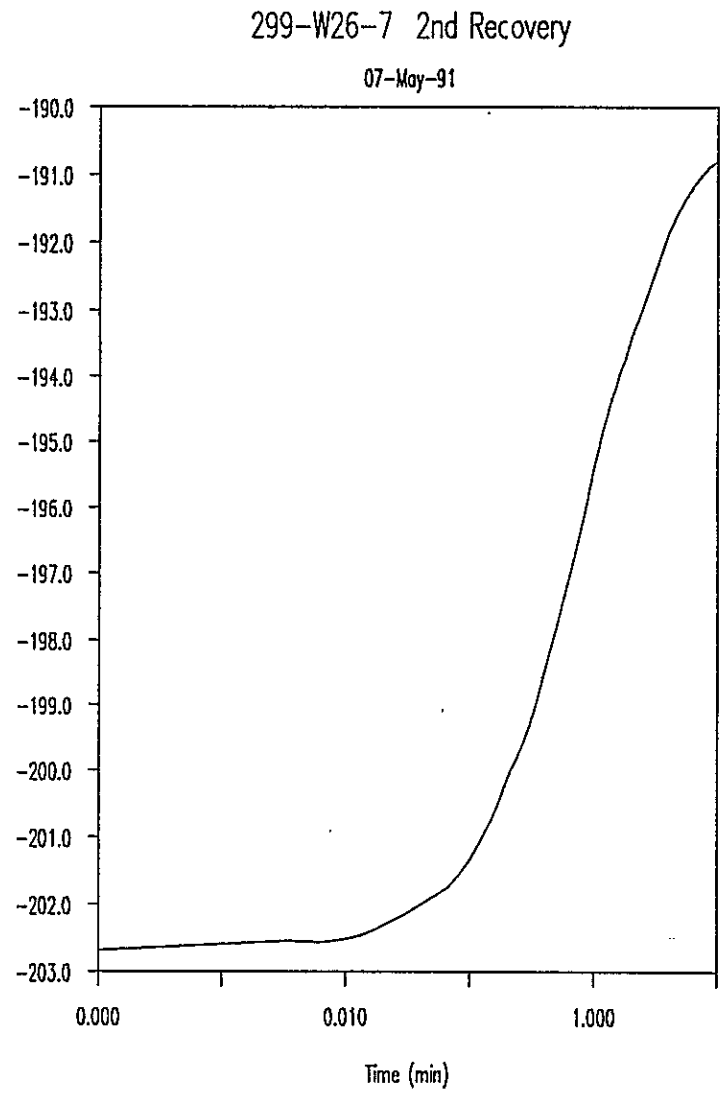
299-W26-7 2nd Recovery

Hermit Data Logger Unit# 00700
Test# 1 **2nd Recovery**
Water Level in feet below top of casing (BTOC)

Static Water Level 190.21' BTOC
Scale factor 10.11

Pump Shut off: 05/07/91 14:39

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	202.68	-202.68
0.003	0.00006	202.54	-202.54
0.007	0.00011	202.56	-202.56
0.010	0.00017	202.52	-202.52
0.013	0.00022	202.46	-202.46
0.017	0.00028	202.39	-202.39
0.020	0.00033	202.31	-202.31
0.023	0.00039	202.25	-202.25
0.027	0.00044	202.19	-202.19
0.030	0.00050	202.15	-202.15
0.033	0.00056	202.10	-202.10
0.050	0.00083	201.90	-201.90
0.067	0.00111	201.74	-201.74
0.083	0.00139	201.54	-201.54
0.100	0.00167	201.33	-201.33
0.117	0.00194	201.12	-201.12
0.133	0.00222	200.92	-200.92
0.150	0.00250	200.73	-200.73
0.167	0.00278	200.54	-200.54
0.183	0.00306	200.33	-200.33
0.200	0.00333	200.14	-200.14
0.217	0.00361	199.97	-199.97
0.233	0.00389	199.85	-199.85
0.250	0.00417	199.71	-199.71
0.267	0.00444	199.58	-199.58
0.283	0.00472	199.45	-199.45
0.300	0.00500	199.31	-199.31
0.317	0.00528	199.18	-199.18
0.333	0.00556	199.04	-199.04
0.417	0.00695	198.33	-198.33



299-W26-7 2nd Recovery

0.500	0.00833	197.80	-197.80
0.583	0.00972	197.29	-197.29
0.667	0.01111	196.87	-196.87
0.750	0.01250	196.50	-196.50
0.833	0.01389	196.11	-196.11
0.917	0.01528	195.71	-195.71
1.000	0.01667	195.37	-195.37
1.083	0.01805	195.09	-195.09
1.167	0.01945	194.86	-194.86
1.250	0.02083	194.65	-194.65
1.333	0.02222	194.45	-194.45
1.417	0.02361	194.29	-194.29
1.500	0.02500	194.14	-194.14
1.583	0.02639	194.00	-194.00
1.667	0.02778	193.87	-193.87
1.750	0.02917	193.76	-193.76
1.833	0.03056	193.65	-193.65
1.917	0.03195	193.52	-193.52
2.000	0.03333	193.41	-193.41
2.500	0.04167	192.92	-192.92
3.000	0.05000	192.50	-192.50
3.500	0.05833	192.17	-192.17
4.000	0.06667	191.86	-191.86
4.500	0.07500	191.65	-191.65
5.000	0.08333	191.49	-191.49
5.500	0.09167	191.35	-191.35
6.000	0.10000	191.24	-191.24
6.500	0.10833	191.14	-191.14
7.000	0.11667	191.06	-191.06
7.500	0.12500	191.00	-191.00
8.000	0.13333	190.94	-190.94
8.500	0.14167	190.89	-190.89
9.000	0.15000	190.85	-190.85
9.500	0.15833	190.82	-190.82
10.000	0.16667	190.78	-190.78

9413273.1852

AQUIFER TEST SUMMARY

WELL 299-W26-7, Slug Injection and Withdrawal

Purpose of Test: Estimation of aquifer parameters; hydraulic conductivity and transmissivity.

Methodology: Bouwer and Rice analysis of slug injection and withdrawal data.

Test Interval: Water table to bottom of screened interval, 190.60 ft below top of casing (btoc) to 209.33 ft btoc. Total saturated thickness = 18.73 ft.

Aquifer Thickness: Uppermost unconfined thickness=250' (estimated from WHC-SD-EN-AP-018, Rev. 0).

Geologic Interval Tested: Silty sandy gravel unit of the middle Ringold Formation (geology of aquifer is assumed homogeneous for these calculations).

Test Date: 13, May 91 Slug dimensions: 2-in dia./6-in length (0.13 ft^3)

Test Duration: Injection: 14.0 min (0.233 hr); Withdrawal: 10 min (0.167 hrs).

Initial head change: NA

WELL CONFIGURATION

Screen Length: 20 ft (209.33 ft btoc to 188.32 ft btoc), continuous wire wrap

Screen/casing Diameter: 4 in (0.333 ft) Slot Size: 5-Slot (0.005 in)

Borehole Diameter: 8 in (0.667 ft), includes screen plus 20-40 mesh silica sand filter pack. Filter Sand Porosity: 0.25 (estimated)

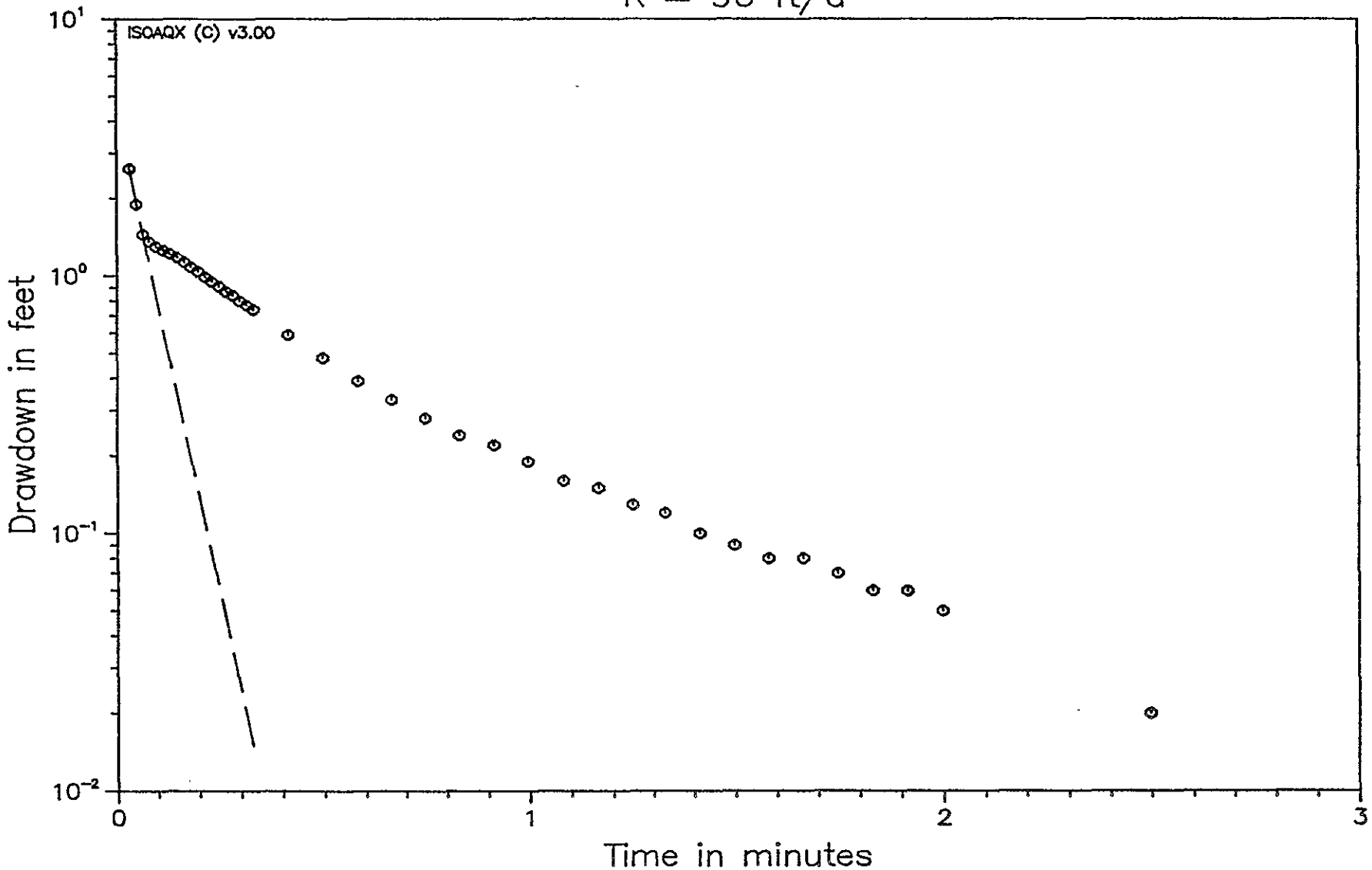
TEST RESULTS 299-W26-7:

METHOD DATA SOURCE	TRANSMISSIVITY (ft^2/d)	HYDRAULIC CONDUCTIVITY (ft/d)*	STORATIVITY
Bouwer & Rice: Injection	N/A	N/A	N/A
Bouwer & Rice: Withdrawal	1686	90	N/A
Cooper et al.: Withdrawal	N/A	N/A	N/A

*Bouwer and Rice method estimates hydraulic conductivity; Copper et al. estimates transmissivity. The transmissivity can be estimated by the equation T=Kb, where b = screened aquifer thickness.

Remarks: Analysis of injection test data not attempted because of fluctuating water level data which would produce invalid results.

Slug Withdrawal Test at Well 299-W26-07
Tested May 7, 1991
K = 90 ft/d



BOREHOLE TEST INFORMATION

Borehole 299-W26-7 Borehole Diameter 4" Hanford Coordinates NA

Interval Tested 209.33'-188.32' T.O.C. 6" Depth Interval 209.33'-188.32' T.O.C. 6"

Test Type INSTANTANEOUS SLUG INJECTION/WITHDRAWAL Borehole Depth 209.33 T.O.C. 6"

Instruction Used WHC-CM-7-7-EII 10.1

EQUIPMENT

NAME	DESCRIPTION
ELECTRIC SOUNDER	SOUNST SN-ET-5
DATA LOGGER.	IN-SITU INC. SN.-ICB-7000
PRESSURE TRANSDUCER	IN-SITU INC. S.N.- 1989.
SLUGGING ROD	6.0' X 2" DIA. + (5%) = .1373 ft³ (NOTE *)
STEEL MEASURING TAPE	500' GRADUATED STEEL TAPE

MEASUREMENT DATUM

Control Datum TOP OF CASING 6" (T.O.C. 6")

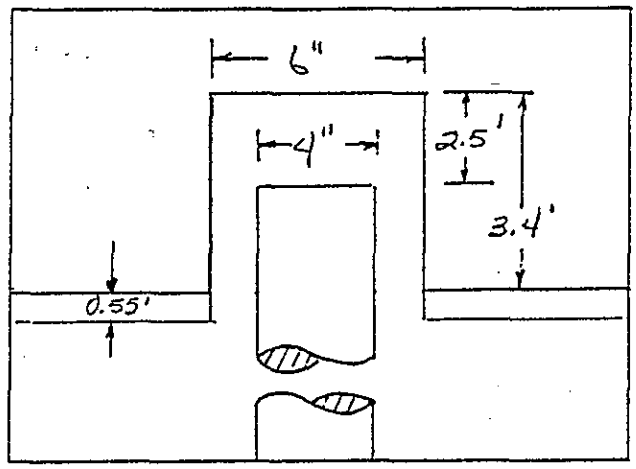
Elevation NA

Electric Sounder T.O.C. 6"

Steel Tape T.O.C. 6"

Pressure Transducer T.O.C. 6"

WELL HEAD DIAGRAM



COMMENTS

* THE SLUGGING ROD IS INJECTED ABOUT 7' BELOW H_2O LINE. AN ESTIMATE OF ADDITION VOLUME FROM BAIL, COUPLING & 1/2 FOOT OF CABLE IS 5% VOLUME OF SLUG.

6.0' x 2" DIA = .1308 ft³ + 5% = .1373 ft³.
x .05
.0065 =

Recorded by JAMES A. COATES (signature) JAMES A. COATES 5-15-91

Sign and Print Name Date

BD-6000-295 (05/89)

INSTANTANEOUS SLUG TEST DATA SHEET -INJECTION-

Page 1 of 4

Borehole 299-W26-7

Interval Tested 209.33'-188.32 T.O.C. 6"

Depth to Water 190.21' T.O.C. 6"

Date 5-9-91

Measured by JAMES A. COATES

Slug Volume .1373 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time START TIMES - 1320 BASELINE / 1337 INJECTION.

Transducer Measurement Units FEET.

Depth to Transducer 16.96'

Initial Pressure (P_i) 190.63'

Slug Level or Pressure (P_{max}) 187.41'

Borehole Diameter 4"

Time		Pressure Trans. Measurement	Time		Pressure Trans. Measurement	Time		Pressure Trans. Measurement
Observed	Elapsed		Observed	Elapsed		Observed	Elapsed	
		SEE ATTACHED			SEE ATTACHED			

Recorded by JAMES A. COATES (Sign and Print Name) JAMES A. COATES 5-15-91 (Date)

BD-6000-293 (07/90)

2-W26-7 Baseline Injection. Page 2 of 4

SE1000B
Environmental Logger
05/13 14:32

Unit# 00700 Test# 0

INPUT 1: Level (F) TOC

Reference 190.60
Scale factor 10.11
Offset 0.00

Step# 0 05/09 13:20

O-Time	E-Time	D-T-W:Ft
1320	0	190.63
1321	1	190.63
1322	2	190.62
1323	3	190.62
1324	4	190.62
1325	5	190.62
1326	6	190.62
1327	7	190.61
1328	8	190.61
1329	9	190.6
1330	10	190.6
1331	11	190.6
1332	12	190.59
1333	13	190.59
1334	14	190.6

9413224.1857

2-W26-7 ~~Baseline~~ Injection Page 3 of 4

SE1000B
Environmental Logger
05/13 14:29

Unit# 00700 Test# 1

INPUT 1: Level (F) TOC

Reference 190.60
Scale factor 10.11
Offset 0.00

Step# 0 05/09 13:37

O-Time	E-Time	D-T-W:Ft
1337	0	190.62
1337.003	0.0033	189.5
1337.006	0.0066	187.84
1337.009	0.0099	188.51
1337.013	0.0133	187.41
1337.016	0.0166	188.58
1337.02	0.02	188.65
1337.023	0.0233	194.37
1337.026	0.0266	190.71
1337.03	0.03	187.88
1337.033	0.0333	187.9
1337.05	0.05	189.2
1337.066	0.0666	189.94
1337.083	0.0833	190.25
1337.1	0.1	190.24
1337.116	0.1166	190.19
1337.133	0.1333	190.14
1337.15	0.15	190.13
1337.166	0.1666	190.15
1337.183	0.1833	190.16
1337.2	0.2	190.18
1337.216	0.2166	190.18
1337.233	0.2333	190.18
1337.25	0.25	190.2
1337.266	0.2666	190.2
1337.283	0.2833	190.21
1337.3	0.3	190.21
1337.316	0.3166	190.22
1337.333	0.3333	190.23
1337.416	0.4167	190.24
1337.5	0.5	190.26
1337.583	0.5833	190.28
1337.666	0.6667	190.3
1337.75	0.75	190.31
1337.833	0.8333	190.32
1337.916	0.9167	190.34
1338	1	190.35
1338.083	1.0833	190.36
1338.166	1.1667	190.37
1338.25	1.25	190.38
1338.333	1.3333	190.39
1338.416	1.4166	190.39
1338.5	1.5	190.4

9413223.1858

2-W26-7 Injection

Page 4 of 4

1338.583	1.5833	190.41
1338.666	1.6667	190.42
1338.75	1.75	190.42
1338.833	1.8333	190.43
1338.916	1.9167	190.43
1339	2	190.44
1339.5	2.5	190.46
1340	3	190.48
1340.5	3.5	190.49
1341	4	190.5
1341.5	4.5	190.51
1342	5	190.52
1342.5	5.5	190.52
1343	6	190.53
1343.5	6.5	190.53
1344	7	190.53
1344.5	7.5	190.54
1345	8	190.53
1345.5	8.5	190.53
1346	9	190.53
1346.5	9.5	190.54
1347	10	190.54
1349	12	190.54
1351	14	190.54

9413223.1959

INSTANTANEOUS SLUG TEST DATA SHEET

-WITHDRAWAL-

Page 1 of 4

Borehole 299-W26-7

Interval Tested 209.33'-188.32 T.O.C. 6"

Depth to Water 190.21' T.O.C. 6"

Date 5-9-91

Measured by JAMES A. COATES

Slug Volume .1373 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time SMER TIMES - 1354 BASE LINE / 1408 WITHDRAWAL

Transducer Measurement Units FEET

Depth to Transducer 16.96'

Initial Pressure (P_i) 190.53'

Slug Level or Pressure (P_{max}) 194.96

Borehole Diameter 4"

Time		Pressure	Time		Pressure	Time		Pressure
Observed	Elapsed	Trans. Measurement	Observed	Elapsed	Trans. Measurement	Observed	Elapsed	Trans. Measurement
		SEE ATTACHED			SEE ATTACHED			

Recorded by JAMES A. COATES (Sign and Print Name) JAMES A. COATES 5-15-91 (Date)

BD-6000-293 (07/90)

2-W26-7 Baseline Withdrawal. P. 7 of 9 Page 2 of 4

SE1000B
Environmental Logger
05/15 07:55

Unit# 00700 Test# 2

INPUT 1: Level (F) TOC

Reference 190.60
Scale factor 10.11
Offset 0.00

Step# 0 05/09 13:53

O-Time	E-Time	D-T-W:Ft
1353	0	190.54
1354	1	190.54
1355	2	190.53
1356	3	190.53
1357	4	190.54
1358	5	190.54
1359	6	190.53
1400	7	190.53
1401	8	190.53
1402	9	190.53
1403	10	190.53
1404	11	190.53

9413223.1861

2-W26-7 Withdrawal

P. 8 of 7
Page 3 of 4

SE1000B
Environmental Logger
05/13 14:24

Unit# 00700 Test# 3

INPUT 1: Level (F) TOC

Reference 190.60
Scale factor 10.11
Offset 0.00

Step# 0 05/09 14:08

O-Time	E-Time	D-T-W:Ft
1408	0	194.96
1408.003	0.0033	194.09
1408.006	0.0066	190.14
1408.009	0.0099	190.53
1408.013	0.0133	191.53
1408.016	0.0166	194.07
1408.02	0.02	193.35
1408.023	0.0233	191.64
1408.026	0.0266	191.33
1408.03	0.03	192.58
1408.033	0.0333	193.21
1408.05	0.05	192.5
1408.066	0.0666	192.05
1408.083	0.0833	191.96
1408.1	0.1	191.9
1408.116	0.1166	191.86
1408.133	0.1333	191.82
1408.15	0.15	191.78
1408.166	0.1666	191.73
1408.183	0.1833	191.68
1408.2	0.2	191.64
1408.216	0.2166	191.59
1408.233	0.2333	191.55
1408.25	0.25	191.51
1408.266	0.2666	191.47
1408.283	0.2833	191.44
1408.3	0.3	191.4
1408.316	0.3166	191.37
1408.333	0.3333	191.34
1408.416	0.4167	191.19
1408.5	0.5	191.08
1408.583	0.5833	190.99
1408.666	0.6667	190.93
1408.75	0.75	190.88
1408.833	0.8333	190.84
1408.916	0.9167	190.82
1409	1	190.79
1409.083	1.0833	190.76
1409.166	1.1667	190.75
1409.25	1.25	190.73
1409.333	1.3333	190.72
1409.416	1.4166	190.7
1409.5	1.5	190.69

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2-W26-7 Withdrawal

1409.583	1.5833	190.68
1409.666	1.6667	190.68
1409.75	1.75	190.67
1409.833	1.8333	190.66
1409.916	1.9167	190.66
1410	2	190.65
1410.5	2.5	190.62
1411	3	190.6
1411.5	3.5	190.59
1412	4	190.58
1412.5	4.5	190.57
1413	5	190.56
1413.5	5.5	190.55
1414	6	190.55
1414.5	6.5	190.54
1415	7	190.54
1415.5	7.5	190.54
1416	8	190.53
1416.5	8.5	190.53
1417	9	190.53
1417.5	9.5	190.53
1418	10	190.52

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WELL 299-W26-10

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AQUIFER TEST SUMMARY

WELL 299-W26-10, WELL DEVELOPMENT

Purpose of Test: Estimation of aquifer parameters; hydraulic conductivity and transmissivity.

Methodology: Cooper and Jacobs analysis of drawdown (withdrawal) data gathered during well development.

Test Interval: Water table to bottom of screened interval; 210.55 ft below top of casing (btoc) to 225.53 ft btoc. Total saturated thickness = 14.98 ft.

Aquifer Thickness: Uppermost unconfined thickness=250' (estimated from WHC-SD-EN-AP-018, Rev. 0).

Geologic Interval Tested: Sandy gravel to silty sandy gravel unit of the middle Ringold Formation (geology of aquifer is assumed homogeneous for these calculations).

Test Date: 3, May 91 Pump Rate: 11.5 gal/min (2,214 ft^3/day)

Test Duration: Withdrawal: 110.0 min (1.83 hr); recovery monitored 12 min (0.20 hrs).

Maximum Drawdown: 2.23 ft

WELL CONFIGURATION

Screen Length: 20 ft (225.53 ft btoc to 205.43 ft btoc), continuous wire wrap

Screen Diameter: 4 in (0.333 ft) Screen Slot Size: 10-Slot (0.01 in)

Borehole Diameter: 8 in (0.667 ft), includes screen plus 10-20 mesh silica sand filter pack. Filter Sand Porosity: 0.25 (estimated)

TEST RESULTS 299-W26-10:

DATA SOURCE	TRANSMISSIVITY CONDUCTIVITY (ft^2/d)	HYDRAULIC (ft/d)*	STORATIVITY
Withdrawal	4,050	270	N/A
Recovery	N/A	N/A	N/A

*Hydraulic conductivity estimated by dividing transmissivity by the screened aquifer thickness.

Remarks: Data was plotted on a Time - Drawdown plot and a best fit line was selected and analyzed by ISOAQX (a trademark of HydraLogic, Missoula, Montana) computer software. Late data was selected to avoid the effects of borehole storage.

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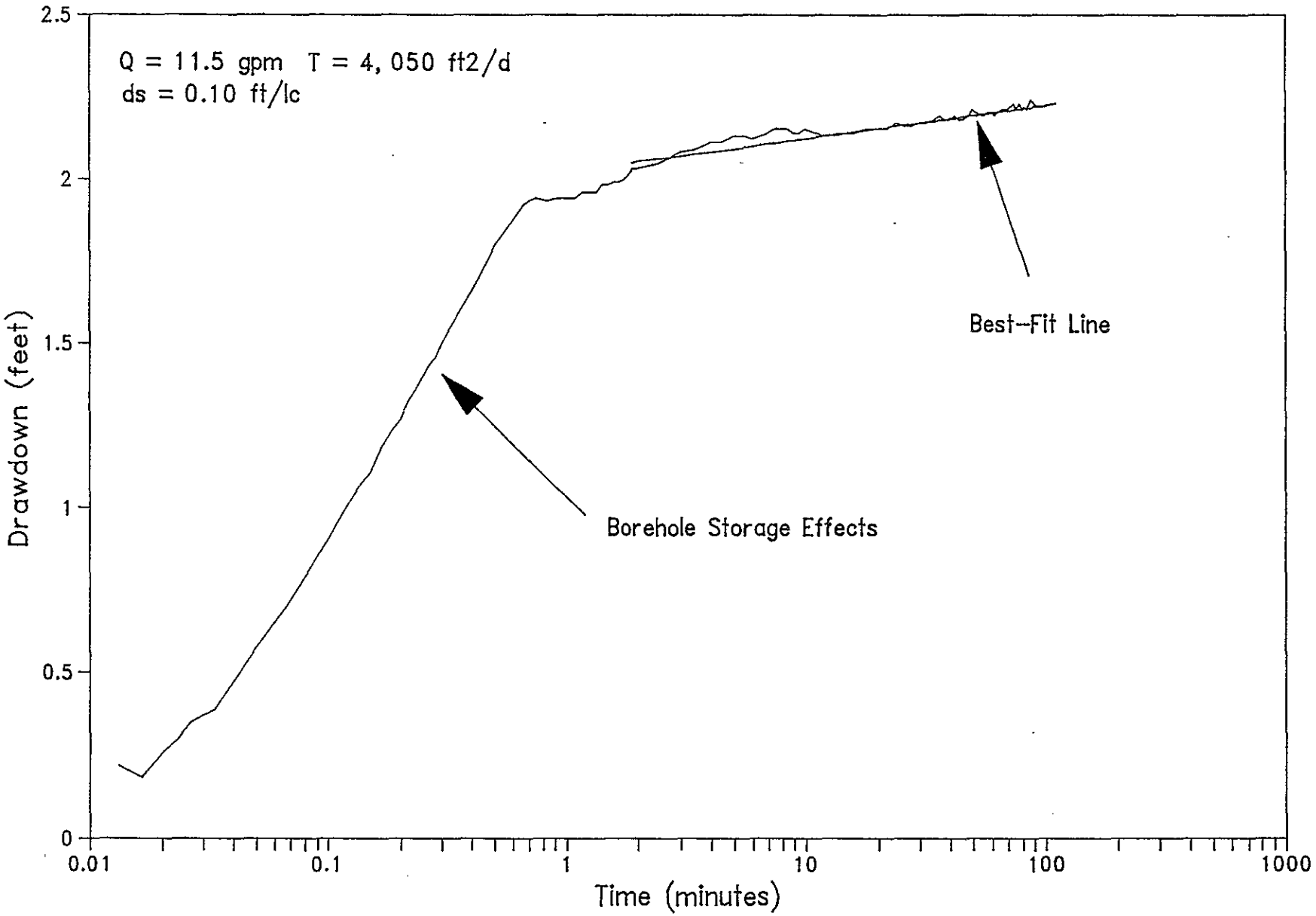
Development Drawdown Analysis
Well W26-10; May 3, 1992



EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

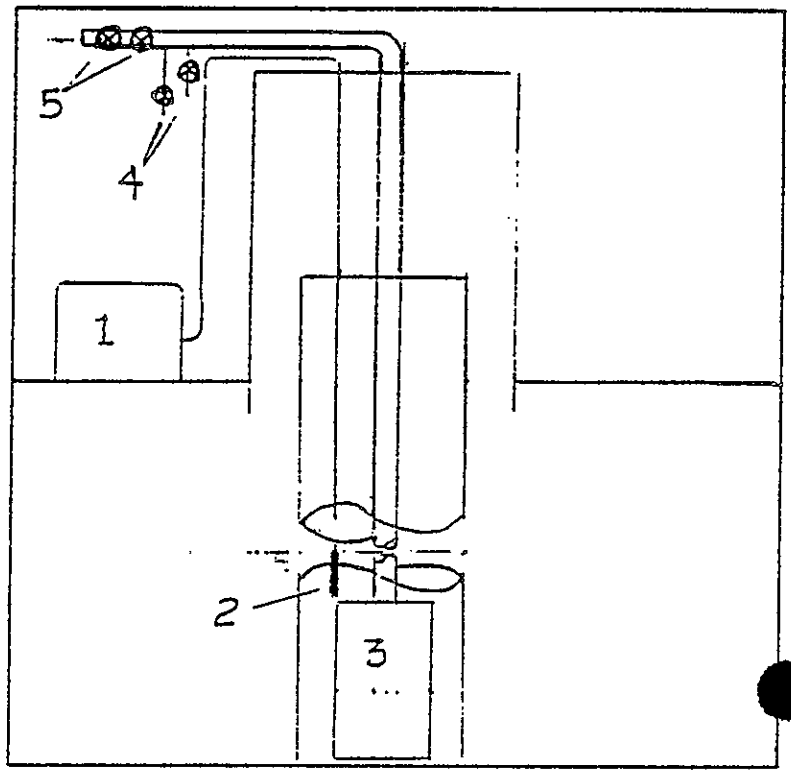
Page 1 of 1

Well Designation 299-W26-10 · Depth 225.53' T.O.C. 6"

Equipment Configuration

Item	Description
1	HERMIT DATA LOG. SN-1KB-700
2	TRANSDUCER SN-1989
3	PUMP
4	SAMPLING PORTS
5	SHUT OFF VALVES

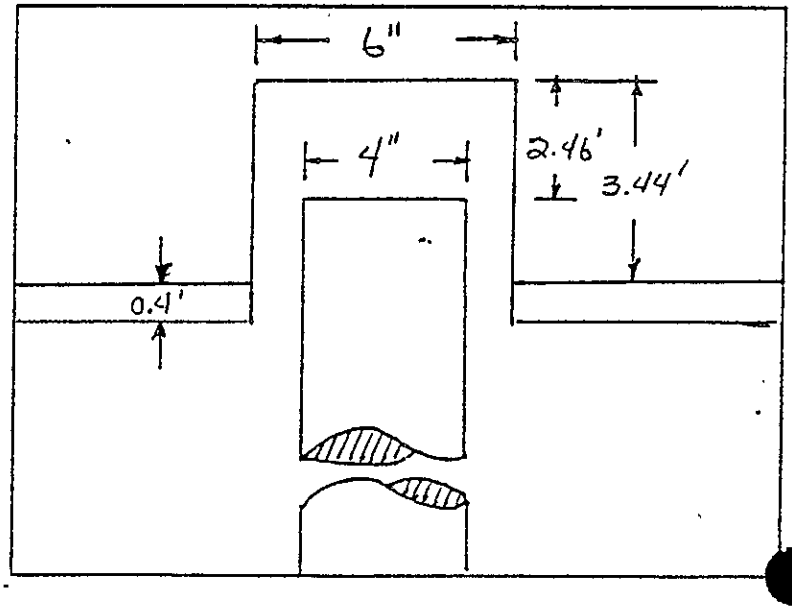
Diagram



Well Head

Comments

Diagram



Signature of Recorder James A. Coates JAMES A. COATES Date 5-14-91

A-6000-417 (08/89)

DRAWDOWN/RECOVERY

Well Designation 299-W26-10 Date 5-3-91

Well Depth 225.53' T.O.C. 6" Screened Interval 225.53' - 205.43' T.O.C. 6"

Pumping Method CONSTANT DISCHARGE

Equipment Used to Measure Water Level E-TAPE / TRANSDUCER S.N. ET-5 / 1989 Calibration Due 8-25-91 / 5-10-91

Equipment Used to Measure Flow — NA — S.N. — NA — Calibration Due — NA —

Measuring Point TOP OF CASING 6" (T.O.C. 6") Pump Start Time 0822. Pump Stop Time 1020.

Time		Water Level		Discharge
Date	Time	Reading Unit:	Water Level Unit:	Reading Unit:
				BUCKET METHOD.
				5 GALS / 26 SEC 11.5 GPM
		SEE		
		ATTACHED		

Signature of Recorder James A. Coates James A. Coates Date 5-14-91
Sign and Print Name

A-6000-402 (03/90)

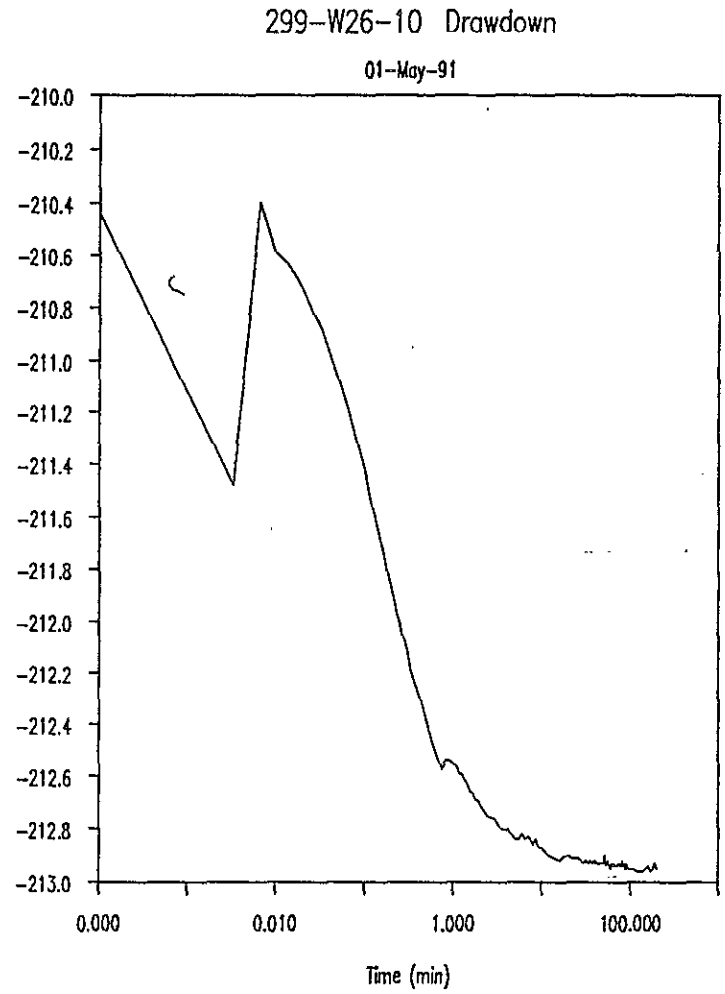
299-W26-10 Drawdown

Hermit Data Logger Unit# 00758
Test # 1 **Drawdown**
Water Level in feet below top of Casing (BTOC)

Static Water Level 210.44' BTOC
Scale factor 10.11
Pump Rate 11.50 gpm

Pump started: 05/01/91 12:30

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	210.44	-210.44
0.003	0.00006	211.48	-211.48
0.007	0.00011	210.40	-210.40
0.010	0.00017	210.59	-210.59
0.013	0.00022	210.63	-210.63
0.017	0.00028	210.68	-210.68
0.020	0.00033	210.73	-210.73
0.023	0.00039	210.78	-210.78
0.027	0.00044	210.82	-210.82
0.030	0.00050	210.86	-210.86
0.033	0.00056	210.89	-210.89
0.050	0.00083	211.06	-211.06
0.067	0.00111	211.20	-211.20
0.083	0.00139	211.32	-211.32
0.100	0.00167	211.42	-211.42
0.117	0.00194	211.52	-211.52
0.133	0.00222	211.61	-211.61
0.150	0.00250	211.68	-211.68
0.167	0.00278	211.74	-211.74
0.183	0.00306	211.82	-211.82
0.200	0.00333	211.87	-211.87
0.217	0.00361	211.92	-211.92
0.233	0.00389	211.97	-211.97
0.250	0.00417	212.00	-212.00
0.267	0.00444	212.05	-212.05
0.283	0.00472	212.08	-212.08
0.300	0.00500	212.11	-212.11
0.317	0.00528	212.15	-212.15
0.333	0.00556	212.19	-212.19



299-W26-10 Drawdown

0.417	0.00695	212.29	-212.29
0.500	0.00833	212.39	-212.39
0.583	0.00972	212.46	-212.46
0.667	0.01111	212.52	-212.52
0.750	0.01250	212.57	-212.57
0.833	0.01389	212.54	-212.54
0.917	0.01528	212.54	-212.54
1.000	0.01667	212.55	-212.55
1.083	0.01805	212.56	-212.56
1.167	0.01945	212.59	-212.59
1.250	0.02083	212.59	-212.59
1.333	0.02222	212.61	-212.61
1.417	0.02361	212.62	-212.62
1.500	0.02500	212.64	-212.64
1.583	0.02639	212.66	-212.66
1.667	0.02778	212.66	-212.66
1.750	0.02917	212.68	-212.68
1.833	0.03056	212.69	-212.69
1.917	0.03195	212.69	-212.69
2.000	0.03333	212.70	-212.70
2.500	0.04167	212.75	-212.75
3.000	0.05000	212.76	-212.76
3.500	0.05833	212.80	-212.80
4.000	0.06667	212.80	-212.80
4.500	0.07500	212.82	-212.82
5.000	0.08333	212.84	-212.84
5.500	0.09167	212.84	-212.84
6.000	0.10000	212.82	-212.82
6.500	0.10833	212.84	-212.84
7.000	0.11667	212.83	-212.83
7.500	0.12500	212.84	-212.84
8.000	0.13333	212.86	-212.86
8.500	0.14167	212.84	-212.84
9.000	0.15000	212.86	-212.86
9.500	0.15833	212.87	-212.87
10.000	0.16667	212.87	-212.87
12.000	0.20000	212.90	-212.90
14.000	0.23333	212.91	-212.91
16.000	0.26667	212.92	-212.92
18.000	0.30000	212.90	-212.90
20.000	0.33333	212.90	-212.90
22.000	0.36667	212.91	-212.91

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299-W26-10 Drawdown

24.000	0.40000	212.91	-212.91
26.000	0.43333	212.91	-212.91
28.000	0.46667	212.92	-212.92
30.000	0.50000	212.93	-212.93
32.000	0.53333	212.92	-212.92
34.000	0.56667	212.93	-212.93
36.000	0.60000	212.92	-212.92
38.000	0.63333	212.93	-212.93
40.000	0.66667	212.92	-212.92
42.000	0.70000	212.93	-212.93
44.000	0.73333	212.93	-212.93
46.000	0.76667	212.93	-212.93
48.000	0.80000	212.93	-212.93
50.000	0.83333	212.93	-212.93
52.000	0.86667	212.90	-212.90
54.000	0.90000	212.94	-212.94
56.000	0.93333	212.92	-212.92
58.000	0.96667	212.94	-212.94
60.000	1.00000	212.95	-212.95
62.000	1.03333	212.93	-212.93
64.000	1.06667	212.94	-212.94
66.000	1.10000	212.93	-212.93
68.000	1.13333	212.94	-212.94
70.000	1.16667	212.94	-212.94
72.000	1.20000	212.94	-212.94
74.000	1.23333	212.93	-212.93
76.000	1.26667	212.93	-212.93
78.000	1.30000	212.94	-212.94
80.000	1.33333	212.94	-212.94
82.000	1.36667	212.92	-212.92
84.000	1.40000	212.94	-212.94
86.000	1.43333	212.93	-212.93
88.000	1.46667	212.95	-212.95
90.000	1.50000	212.93	-212.93
92.000	1.53333	212.94	-212.94
94.000	1.56667	212.95	-212.95
96.000	1.60000	212.95	-212.95
98.000	1.63333	212.95	-212.95
100.000	1.66667	212.95	-212.95
110.000	1.83333	212.95	-212.95
120.000	2.00000	212.96	-212.96
130.000	2.16667	212.96	-212.96

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299-W26-10 Drawdown

140.000	2.33333	212.96	-212.96
150.000	2.50000	212.95	-212.95
160.000	2.66667	212.94	-212.94
170.000	2.83333	212.96	-212.96
180.000	3.00000	212.95	-212.95
190.000	3.16667	212.93	-212.93
200.000	3.33333	212.95	-212.95

9413224.1875

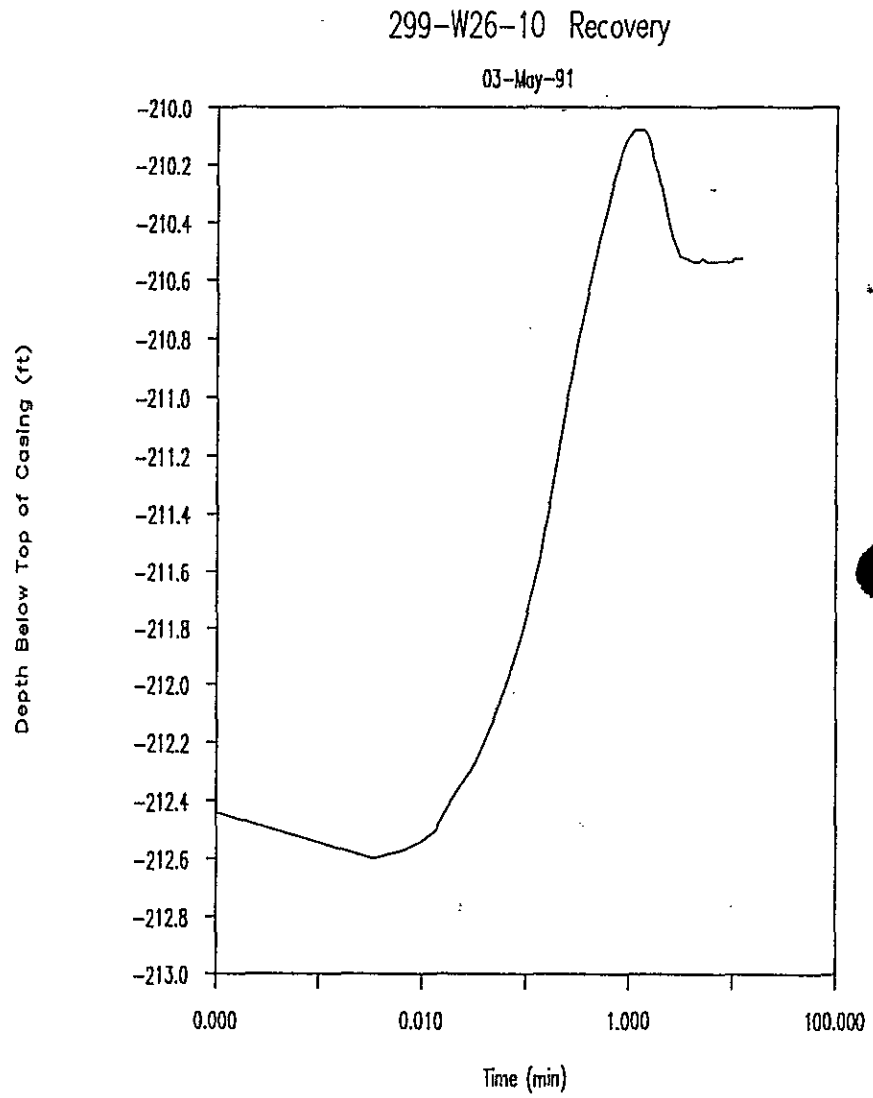
299-W26-10 Recovery

Hermit Data Logger Unit# 00700
Test# 1 **Recovery**
Water Level in feet below top of casing (BTOC)

Static Water Level 212.78' BTOC
Scale factor 10.11

Pump Shut off: 05/03/91 10:21

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	212.44	-212.44
0.003	0.00006	212.60	-212.60
0.007	0.00011	212.57	-212.57
0.010	0.00017	212.54	-212.54
0.013	0.00022	212.50	-212.50
0.017	0.00028	212.44	-212.44
0.020	0.00033	212.39	-212.39
0.023	0.00039	212.35	-212.35
0.027	0.00044	212.32	-212.32
0.030	0.00050	212.29	-212.29
0.033	0.00056	212.26	-212.26
0.050	0.00083	212.11	-212.11
0.067	0.00111	211.99	-211.99
0.083	0.00139	211.87	-211.87
0.100	0.00167	211.76	-211.76
0.117	0.00194	211.66	-211.66
0.133	0.00222	211.56	-211.56
0.150	0.00250	211.46	-211.46
0.167	0.00278	211.37	-211.37
0.183	0.00306	211.29	-211.29
0.200	0.00333	211.21	-211.21
0.217	0.00361	211.14	-211.14
0.233	0.00389	211.07	-211.07
0.250	0.00417	211.00	-211.00
0.267	0.00444	210.95	-210.95
0.283	0.00472	210.90	-210.90
0.300	0.00500	210.84	-210.84
0.317	0.00528	210.80	-210.80
0.333	0.00556	210.76	-210.76
0.417	0.00695	210.60	-210.60



299-W26-10 Recovery

0.500	0.00833	210.47	-210.47
0.583	0.00972	210.37	-210.37
0.667	0.01111	210.28	-210.28
0.750	0.01250	210.22	-210.22
0.833	0.01389	210.16	-210.16
0.917	0.01528	210.12	-210.12
1.000	0.01667	210.10	-210.10
1.083	0.01805	210.08	-210.08
1.167	0.01945	210.08	-210.08
1.250	0.02083	210.08	-210.08
1.333	0.02222	210.08	-210.08
1.417	0.02361	210.09	-210.09
1.500	0.02500	210.11	-210.11
1.583	0.02639	210.14	-210.14
1.667	0.02778	210.18	-210.18
1.750	0.02917	210.21	-210.21
1.833	0.03056	210.23	-210.23
1.917	0.03195	210.26	-210.26
2.000	0.03333	210.29	-210.29
2.500	0.04167	210.45	-210.45
3.000	0.05000	210.52	-210.52
3.500	0.05833	210.53	-210.53
4.000	0.06667	210.54	-210.54
4.500	0.07500	210.54	-210.54
5.000	0.08333	210.53	-210.53
5.500	0.09167	210.54	-210.54
6.000	0.10000	210.54	-210.54
6.500	0.10833	210.54	-210.54
7.000	0.11667	210.54	-210.54
7.500	0.12500	210.54	-210.54
8.000	0.13333	210.54	-210.54
8.500	0.14167	210.54	-210.54
9.000	0.15000	210.54	-210.54
9.500	0.15833	210.54	-210.54
10.000	0.16667	210.53	-210.53
12.000	0.20000	210.53	-210.53

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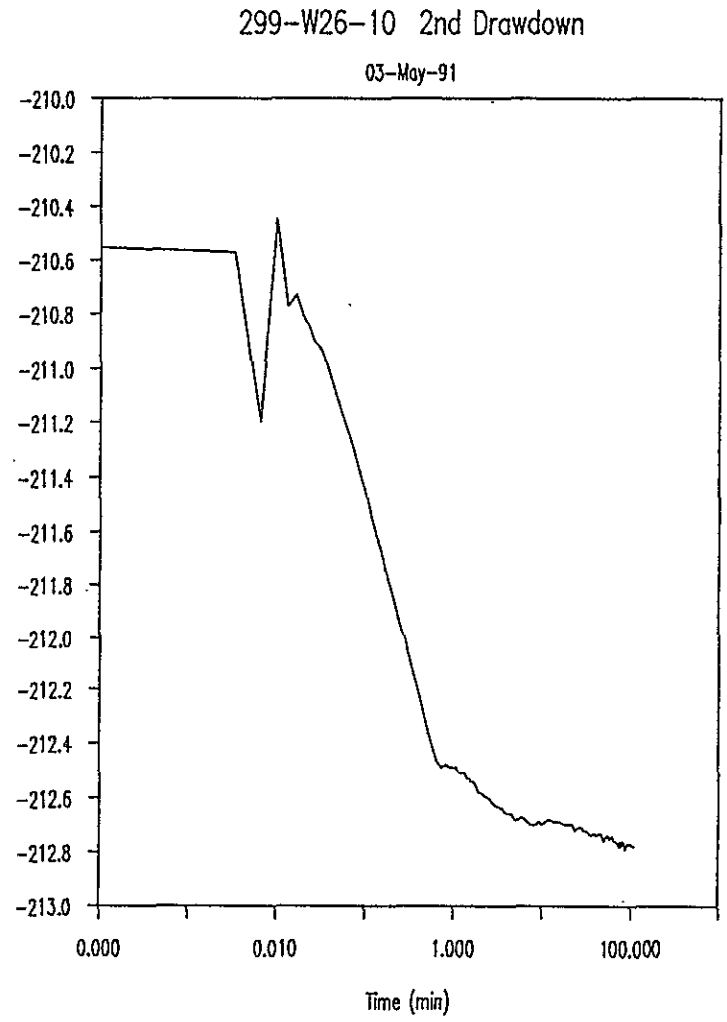
299-W26-10 2nd Drawdown

Hermit Data Logger Unit# 00700
Test# 0 **2nd Drawdown**
Water Level in feet below top of casing (BTOC)

Static Water Level 210.55' BTOC
Scale factor 10.11
Pump Rate 11.50 gpm

Pump Started: 05/03/91 08:22

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	210.55	-210.55
0.003	0.00006	210.57	-210.57
0.007	0.00011	211.20	-211.20
0.010	0.00017	210.45	-210.45
0.013	0.00022	210.77	-210.77
0.017	0.00028	210.73	-210.73
0.020	0.00033	210.81	-210.81
0.023	0.00039	210.85	-210.85
0.027	0.00044	210.90	-210.90
0.030	0.00050	210.92	-210.92
0.033	0.00056	210.94	-210.94
0.050	0.00083	211.13	-211.13
0.067	0.00111	211.25	-211.25
0.083	0.00139	211.36	-211.36
0.100	0.00167	211.45	-211.45
0.117	0.00194	211.54	-211.54
0.133	0.00222	211.61	-211.61
0.150	0.00250	211.66	-211.66
0.167	0.00278	211.73	-211.73
0.183	0.00306	211.78	-211.78
0.200	0.00333	211.82	-211.82
0.217	0.00361	211.87	-211.87
0.233	0.00389	211.91	-211.91
0.250	0.00417	211.95	-211.95
0.267	0.00444	211.98	-211.98
0.283	0.00472	212.01	-212.01
0.300	0.00500	212.05	-212.05
0.317	0.00528	212.08	-212.08
0.333	0.00556	212.11	-212.11



299-W26-10 2nd Drawdown

0.417	0.00695	212.23	-212.23
0.500	0.00833	212.34	-212.34
0.583	0.00972	212.41	-212.41
0.667	0.01111	212.47	-212.47
0.750	0.01250	212.49	-212.49
0.833	0.01389	212.48	-212.48
0.917	0.01528	212.49	-212.49
1.000	0.01667	212.49	-212.49
1.083	0.01805	212.49	-212.49
1.167	0.01945	212.51	-212.51
1.250	0.02083	212.51	-212.51
1.333	0.02222	212.51	-212.51
1.417	0.02361	212.53	-212.53
1.500	0.02500	212.53	-212.53
1.583	0.02639	212.54	-212.54
1.667	0.02778	212.54	-212.54
1.750	0.02917	212.55	-212.55
1.833	0.03056	212.56	-212.56
1.917	0.03195	212.58	-212.58
2.000	0.03333	212.58	-212.58
2.500	0.04167	212.60	-212.60
3.000	0.05000	212.63	-212.63
3.500	0.05833	212.64	-212.64
4.000	0.06667	212.66	-212.66
4.500	0.07500	212.66	-212.66
5.000	0.08333	212.68	-212.68
5.500	0.09167	212.68	-212.68
6.000	0.10000	212.67	-212.67
6.500	0.10833	212.68	-212.68
7.000	0.11667	212.69	-212.69
7.500	0.12500	212.70	-212.70
8.000	0.13333	212.70	-212.70
8.500	0.14167	212.70	-212.70
9.000	0.15000	212.69	-212.69
9.500	0.15833	212.69	-212.69
10.000	0.16667	212.70	-212.70
12.000	0.20000	212.68	-212.68
14.000	0.23333	212.69	-212.69
16.000	0.26667	212.69	-212.69
18.000	0.30000	212.70	-212.70
20.000	0.33333	212.70	-212.70
22.000	0.36667	212.70	-212.70

9413223.1879

299-W26-10 2nd Drawdown

24.000	0.40000	212.72	-212.72
26.000	0.43333	212.71	-212.71
28.000	0.46667	212.71	-212.71
30.000	0.50000	212.72	-212.72
32.000	0.53333	212.72	-212.72
34.000	0.56667	212.73	-212.73
36.000	0.60000	212.74	-212.74
38.000	0.63333	212.73	-212.73
40.000	0.66667	212.73	-212.73
42.000	0.70000	212.74	-212.74
44.000	0.73333	212.73	-212.73
46.000	0.76667	212.73	-212.73
48.000	0.80000	212.74	-212.74
50.000	0.83333	212.76	-212.76
52.000	0.86667	212.75	-212.75
54.000	0.90000	212.74	-212.74
56.000	0.93333	212.74	-212.74
58.000	0.96667	212.75	-212.75
60.000	1.00000	212.75	-212.75
62.000	1.03333	212.74	-212.74
64.000	1.06667	212.75	-212.75
66.000	1.10000	212.76	-212.76
68.000	1.13333	212.76	-212.76
70.000	1.16667	212.76	-212.76
72.000	1.20000	212.77	-212.77
74.000	1.23333	212.78	-212.78
76.000	1.26667	212.76	-212.76
78.000	1.30000	212.78	-212.78
80.000	1.33333	212.76	-212.76
82.000	1.36667	212.77	-212.77
84.000	1.40000	212.76	-212.76
86.000	1.43333	212.78	-212.78
88.000	1.46667	212.79	-212.79
90.000	1.50000	212.78	-212.78
92.000	1.53333	212.77	-212.77
94.000	1.56667	212.77	-212.77
96.000	1.60000	212.77	-212.77
98.000	1.63333	212.77	-212.77
100.000	1.66667	212.77	-212.77
110.000	1.83333	212.78	-212.78

9413223.1880

AQUIFER TEST SUMMARY

WELL 299-W26-10, Slug Injection and Withdrawal

Purpose of Test: Estimation of aquifer parameters; hydraulic conductivity and transmissivity.

Methodology: Bouwer and Rice analysis of slug injection and withdrawal data.

Test Interval: Water table to bottom of screened interval, 210.55 ft below top of casing (btoc) to 225.53 ft btoc. Total saturated thickness = 14.98 ft.

Aquifer Thickness: Uppermost unconfined thickness=250' (estimated from WHC-SD-EN-AP-018, Rev. 0).

Geologic Interval Tested: Silty sandy gravel unit of the middle Ringold Formation (geology of aquifer is assumed homogeneous for these calculations).

Test Date: 3, May 91 Slug dimensions: 2-in dia./6-in length (0.13 ft^3)

Test Duration: Injection: 10.0 min (0.167 hr); Withdrawal: 14 min (0.23 hrs).

Initial head change: 1.82 ft

WELL CONFIGURATION

Screen Length: 20 ft (225.53 ft btoc to 2205.43 ft btoc), continuous wire wrap

Screen/casing Diameter: 4 in (0.333 ft) Slot Size: 10-Slot (0.01 in)

Borehole Diameter: 8 in (0.667 ft), includes screen plus 10-20 mesh silica sand filter pack. Filter Sand Porosity: 0.25 (estimated)

TEST RESULTS 299-W26-10:

METHOD DATA SOURCE	TRANSMISSIVITY CONDUCTIVITY (ft^2/d)	HYDRAULIC (ft/d)*	STORATIVITY
Bouwer & Rice: Injection	N/A	N/A	N/A
Bouwer & Rice: Withdrawal	1,160	77	N/A
Cooper et al.: Withdrawal	N/A	N/A	N/A

*Bouwer and Rice method estimates hydraulic conductivity; Copper et al . estimates transmissivity. The transmissivity can be estimated by the equation T=Kb, where b = screened aquifer thickness.

Remarks: Analysis of injection test data not attempted because of fluctuating water level data which would produce in invalid results.

9413223.1882

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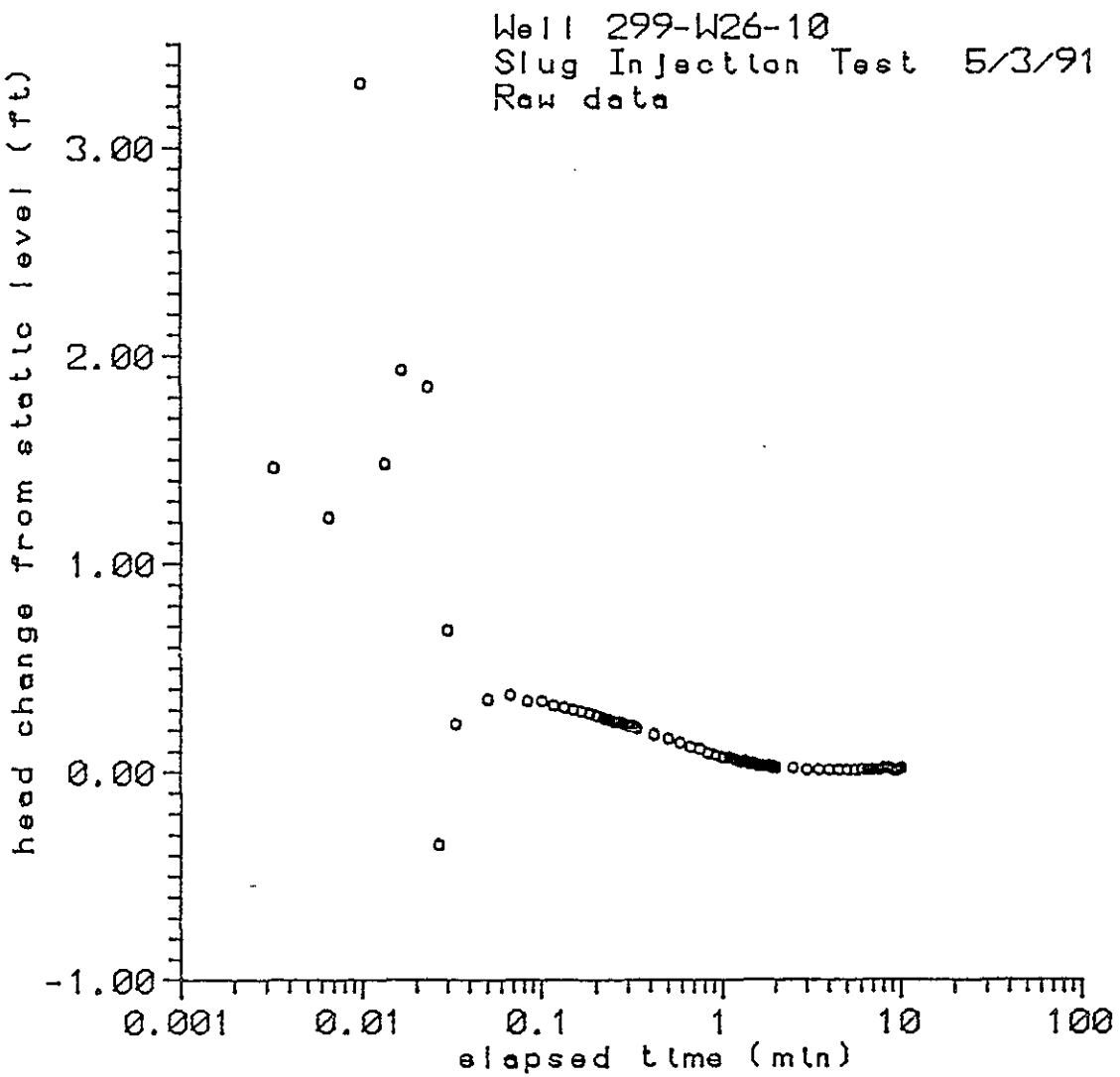
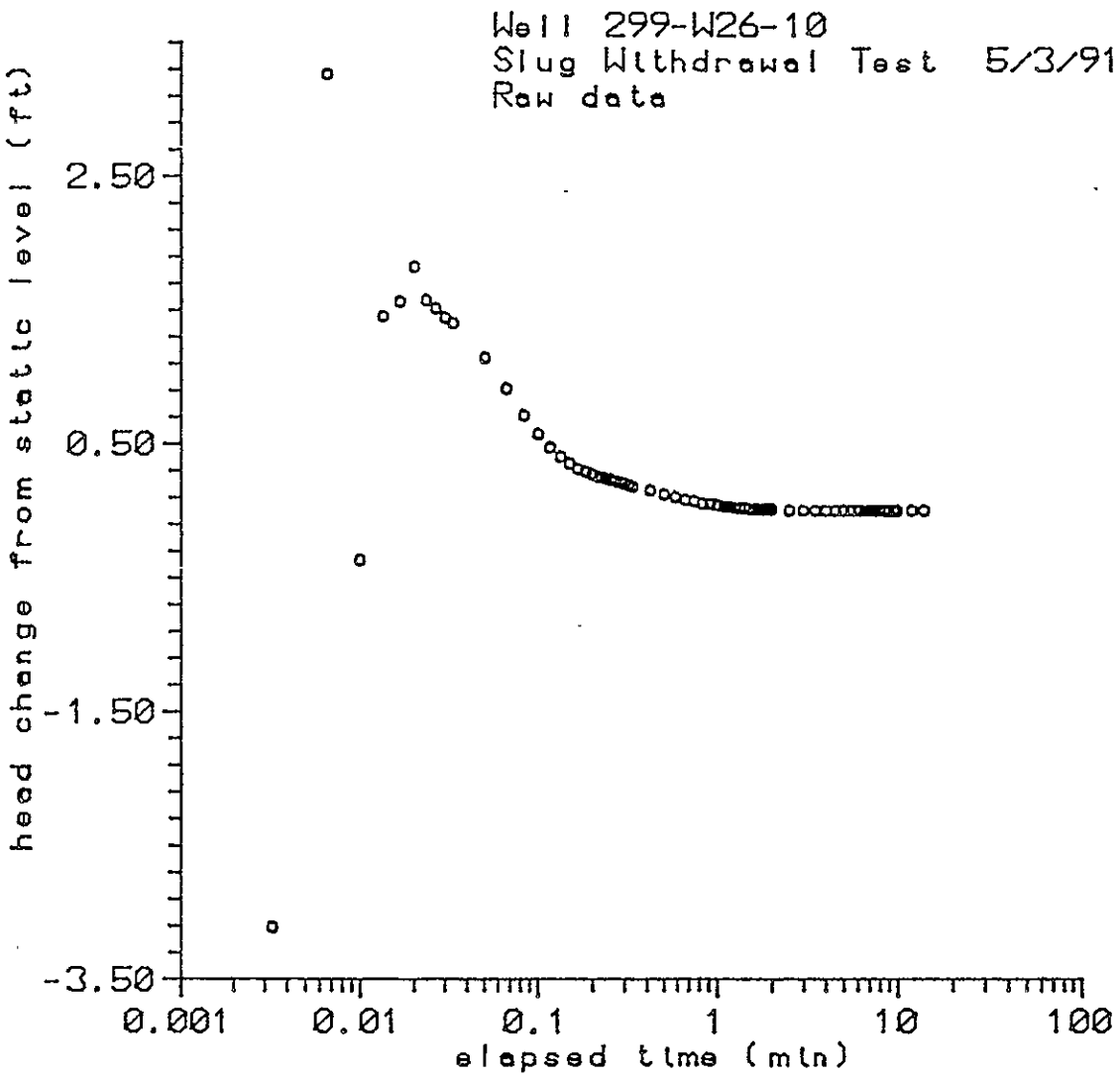
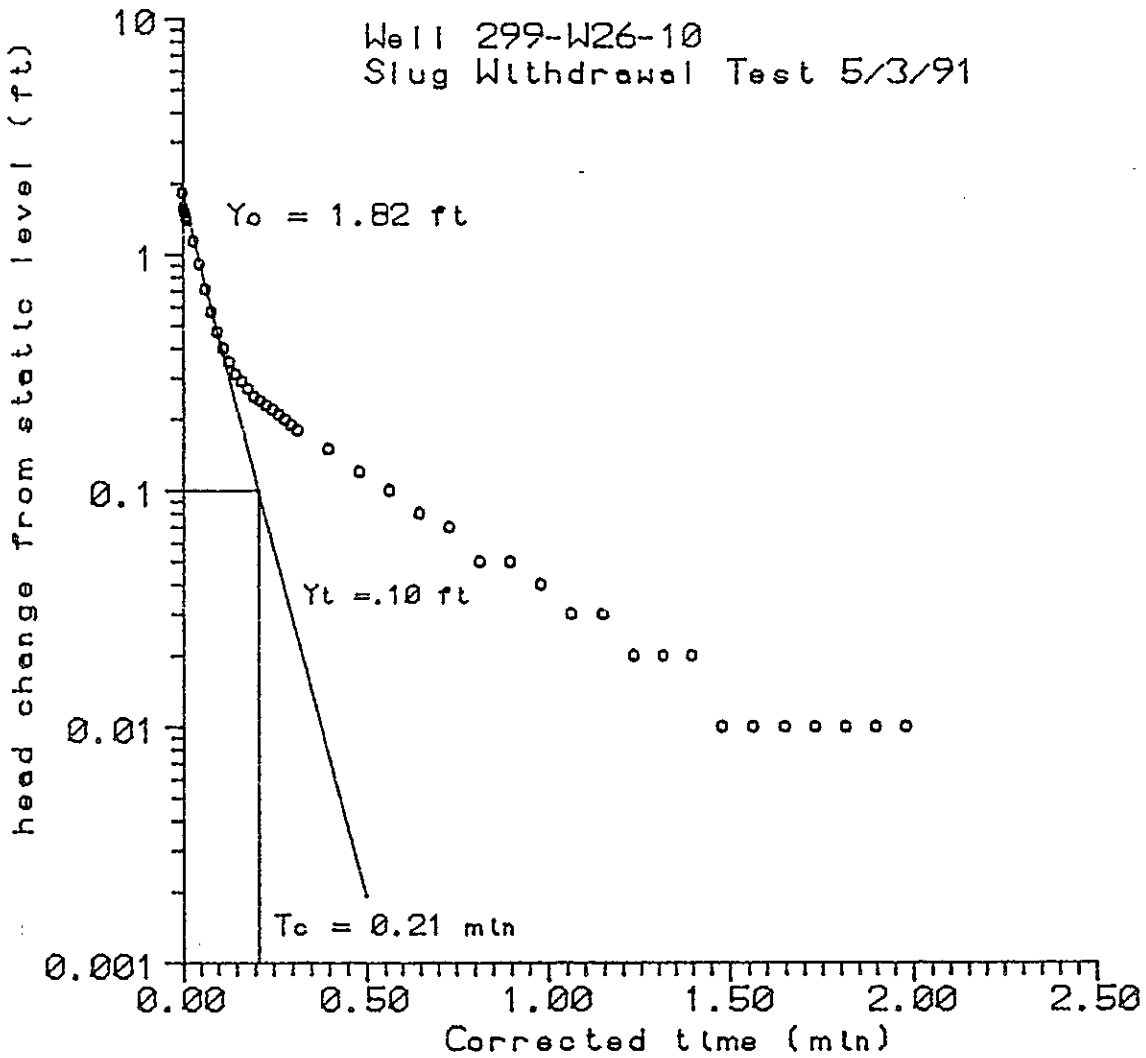
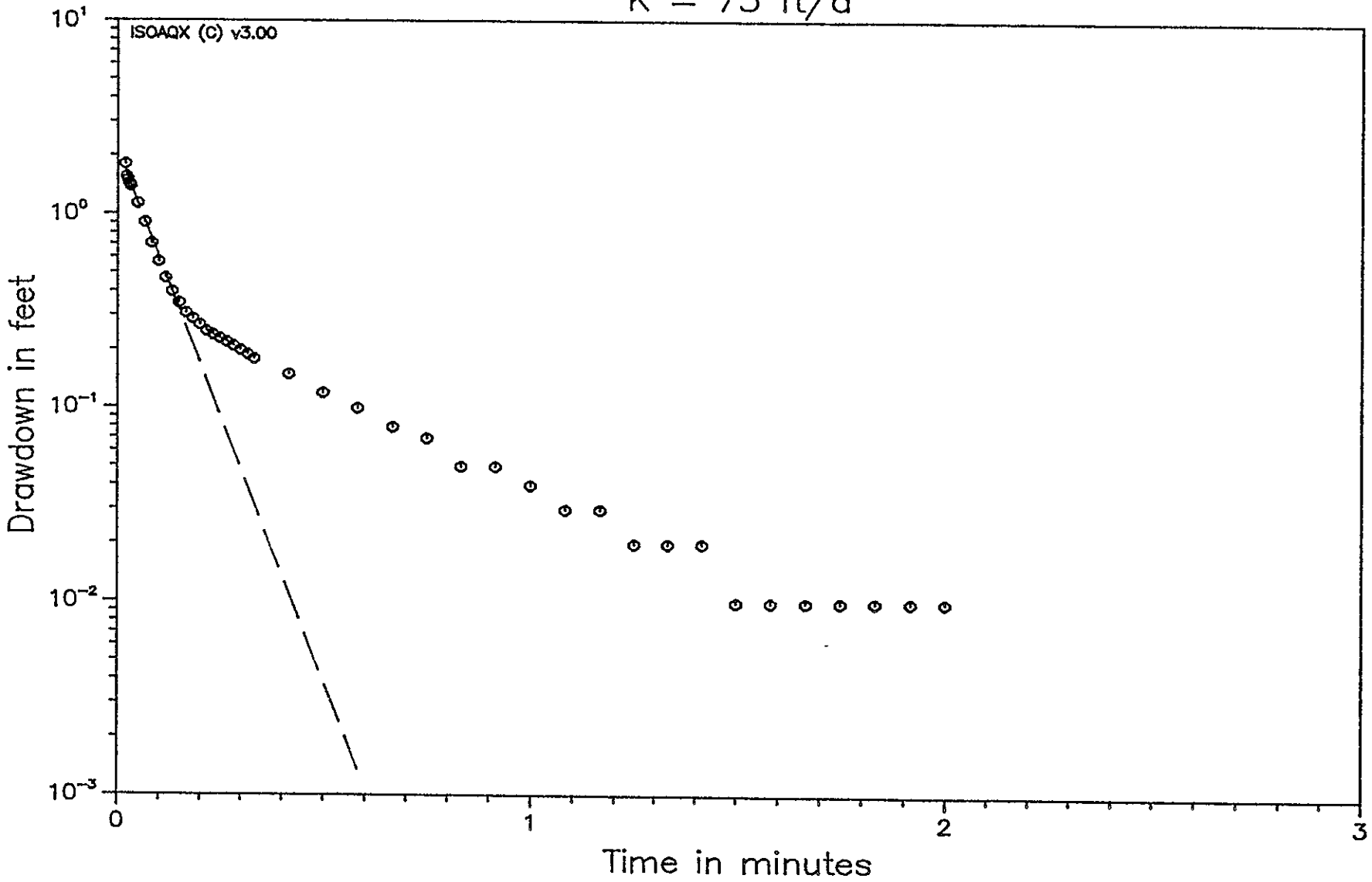

Well 299-W26-10
Slug Injection Test 5/3/91
Raw data
head change from static level (ft)
3.00
2.00
1.00
0.00
-1.00
0.001
0.01
0.1
1
10
100
elapsed time (min)


Well 299-W26-10
Slug Withdrawal Test 5/3/91
Raw data
head change from static level (ft)
2.50
0.50
-1.50
-3.50
0.001
0.01
0.1
1
10
100
elapsed time (min)


Well 299-W26-10
Slug Withdrawal Test 5/3/91
Yo = 1.82 ft
Yt =.10 ft
Tc = 0.21 min
head change from static level (ft)
10
1
0.1
0.01
0.001
0.00
0.50
1.00
1.50
2.00
2.50
Corrected time (min)

Slug Withdrawal Test at Well 299-W26-10
Tested May 3, 1991
K = 75 ft/d



299-W26-10 Slug Withdrawal Test 5/3/91
****
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.
****
****
RADIUS OF CASING USED IN CALCULATIONS HAS BEEN
CORRECTED FOR THE THICKNESS OF GRAVEL OR SAND
PACK DUE TO WATER LEVEL CHANGES IN THE SCREEN OR
OPEN INTERVAL OF WELL.
****

Rc (ft)	Rw (ft)	Le (ft)	Lw (ft)	H (ft)
.2205	.3330	15.1500	15.1500	200.0000

****
Le/Rw = 45.4954900
A= 2.9846410
B= 4.810528E-001
C= 2.5928120
SANDPACK POROSITY= 2.500000E-001
t (min)= 2.100000E-001
Yo/Yt= 4.7619050
Yo= (ft) 1.8200000
Yt= (ft) 1.000000E-001
1/t ln(Yo/Yt)= 13.8162900
ln[(H-Lw)/Rw]= 6.0000000
ln(Re/Rw)= 2.3970300
****
K (ft/day) = 76.5542800
****
T OF THE SATURATED SCREEN INTERVAL
(ft2/day)= 1159.7970000
****

BOREHOLE TEST INFORMATION

VALIDATED 2/4/92 SIGNATURE/DATE

Borehole 299-W26-10 Borehole Diameter 4" Hanford Coordinates — NA —

Interval Tested 225.53'-205.43' T.O.C. 6" Depth Interval 225.53'-205.43' T.O.C. 6"

Test Type INSTANTANEOUS SLUG INJECTION / WITH DRAWDOWN Borehole Depth 225.53' T.O.C. 6"

Instruction Used WHC-CM-7-7-EII 10.1

EQUIPMENT

NAME	DESCRIPTION
ELECTRIC SOUNDER	SOUNST SN-ET-5 (8-25-91)
DATA LOGGER.	IN-SITU INC. SN.- IKB-700
PRESSURE TRANSDUCER	IN-SITU INC. S.N.- 1989.
SLUGGING ROD	6.0'X2.0" (.1373ft³ INCLUDES ~~CONNECT~~ SEE NOTE *
STEEL MEASURING TAPE	500' GRADUATED STEEL TAPE

MEASUREMENT DATUM

Control Datum TOP OF CASING 6" (T.O.C. 6")

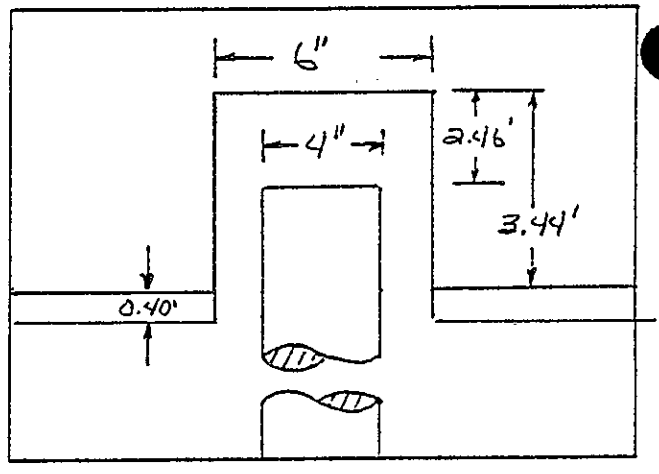
Elevation NA

Electric Sounder T.O.C. 6"

Steel Tape T.O.C. 6"

Pressure Transducer T.O.C. 6"

WELL HEAD DIAGRAM



COMMENTS

* NOTE - SLUGGING ROD VOLUME INCLUDES CONNECTING SYSTEM AND 1 FT OF CABLE.

Recorded by: JAMES A. COATES JAMES A. COATES 5-14-91

Sign and Print Name Date

8D-6000-295 (05/89)

9113223.1888

INSTANTANEOUS SLUG TEST DATA SHEET -INJECTION-

Page 1 of 1

Borehole 299-W6-10

Interval Tested 225.53'-205.43' T.O.C. 6"

Depth to Water 210.34' T.O.C. 6"

Date 5-3-91

Measured by JAMES A. COATES

Slug Volume 0.1373 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time START TIME: 1123 BASELINE / 1143 INJECTION

Transducer Measurement Units FEET.

Depth to Transducer 11.35

Initial Pressure (P_i) 210.55'

Slug Level or Pressure (P_{max}) 207.24.

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			SEE ATTACHED			

Recorded by JAMES A. COATES JAMES A. COATES (Sign and Print Name) 5-14-91 (Date)

BD-6000-293 (07/90)

 299-W26-10 INJECTION Page 2 of 4 BASE LINE

SE1000B
Environmental Logger
05/03 16:48

Unit# 00700 Test# 2

INPUT 1: Level (F) TOC

Reference 210.55
Scale factor 10.11
Offset 0.00

Step# 0 05/03 11:26

O-Time	E-Time	D-T-W:Ft
1126	0	210.55
1127	1	210.54
1128	2	210.54
1129	3	210.54
1130	4	210.54
1131	5	210.54
1132	6	210.54
1133	7	210.54
1134	8	210.55
1135	9	210.54
1136	10	210.54
1137	11	210.54
1138	12	210.54
1139	13	210.55

9413224.1850

INJECTION
299-W26-10
Page 3 of 4

SE1000B
Environmental Logger
05/03 16:46

Unit# 00700 Test# 3

INPUT 1: Level (F) TOC

Reference 210.55
Scale factor 10.11
Offset 0.00

Step# 0 05/03 11:42

O-Time	E-Time	D-T-W:Ft
1142	0	209.37
1142.003	0.0033	209.09
1142.006	0.0066	209.33
1142.009	0.0099	207.24
1142.013	0.0133	209.07
1142.016	0.0166	208.62
1142.02	0.02	215.91
1142.023	0.0233	208.7
1142.026	0.0266	210.9
1142.03	0.03	209.87
1142.033	0.0333	210.32
1142.05	0.05	210.2
1142.066	0.0666	210.18
1142.083	0.0833	210.21
1142.1	0.1	210.21
1142.116	0.1166	210.23
1142.133	0.1333	210.24
1142.15	0.15	210.25
1142.166	0.1666	210.26
1142.183	0.1833	210.27
1142.2	0.2	210.28
1142.216	0.2166	210.29
1142.233	0.2333	210.3
1142.25	0.25	210.31
1142.266	0.2666	210.31
1142.283	0.2833	210.32
1142.3	0.3	210.33
1142.316	0.3166	210.33
1142.333	0.3333	210.34
1142.416	0.4167	210.37
1142.5	0.5	210.39
1142.583	0.5833	210.41
1142.666	0.6667	210.43
1142.75	0.75	210.44
1142.833	0.8333	210.46
1142.916	0.9167	210.47
1143	1	210.48
1143.083	1.0833	210.48
1143.166	1.1667	210.49
1143.25	1.25	210.5
1143.333	1.3333	210.5
1143.416	1.4166	210.51
1143.5	1.5	210.51

9413223.1891

299-W26-10 Page 4 of 4.

1143.583	1.5833	210.52
1143.666	1.6667	210.52
1143.75	1.75	210.52
1143.833	1.8333	210.52
1143.916	1.9167	210.53
1144	2	210.53
1144.5	2.5	210.53
1145	3	210.54
1145.5	3.5	210.54
1146	4	210.54
1146.5	4.5	210.54
1147	5	210.54
1147.5	5.5	210.54
1148	6	210.54
1148.5	6.5	210.54
1149	7	210.54
1149.5	7.5	210.54
1150	8	210.53
1150.5	8.5	210.53
1151	9	210.54
1151.5	9.5	210.54
1152	10	210.53

9413223.1892

INSTANTANEOUS SLUG TEST DATA SHEET
-WITHDRAWAL-

Borehole 299-W26-10

Interval Tested 225.53'-205.43' T.O.C. 6"

Depth to Water 210.34' T.O.C. 6"

Date 5-3-91

Measured by JAMES A. COATES

Slug Volume 0.137 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time START TIMES 1155 BASE LINE / 1210 WITHDRAWAL

Transducer Measurement Units FEET

Depth to Transducer 11.35' BWL

Initial Pressure (P_i) 210.55'

Slug Level or Pressure (P_{max}) 213.81'

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			SEE ATTACHED			

Recorded by JAMES A. COATES (Sign and Print Name) JAMES A. COATES 5-14-91 (Date)

BD-6000-293 (07/90)

WITHDRAWAL BASELINE
299-W26-10

Page 2 of 4

SE1000B
Environmental Logger
05/03 16:45

Unit# 00700 Test# 4

INPUT 1: Level (F) TOC

Reference 210.55
Scale factor 10.11
Offset 0.00

Step# 0 05/03 11:55

O-Time	E-Time	D-T-W:Ft
1155	0	210.55
1156	1	210.54
1157	2	210.55
1158	3	210.55
1159	4	210.55
1200	5	210.55
1201	6	210.55
1202	7	210.54
1203	8	210.54
1204	9	210.55
1205	10	210.55
1206	11	210.55
1207	12	210.55

9413223.1894

WITHDRAWAL
299-W26-10

PAGE 3 OF 4

SE1000B
Environmental Logger
05/03 16:40

Unit# 00700 Test# 5

INPUT 1: Level (F) TOC

Reference 210.55
Scale factor 10.11
Offset 0.00

Step# 0 05/03 12:09

O-Time	E-Time	D-T-W:Ft
1209	0	213.24
1209.003	0.0033	207.44
1209.006	0.0066	213.81
1209.009	0.0099	210.18
1209.013	0.0133	212
1209.016	0.0166	212.11
1209.02	0.02	212.37
1209.023	0.0233	212.12
1209.026	0.0266	212.06
1209.03	0.03	211.99
1209.033	0.0333	211.95
1209.05	0.05	211.69
1209.066	0.0666	211.46
1209.083	0.0833	211.26
1209.1	0.1	211.12
1209.116	0.1166	211.02
1209.133	0.1333	210.95
1209.15	0.15	210.9
1209.166	0.1666	210.86
1209.183	0.1833	210.84
1209.2	0.2	210.82
1209.216	0.2166	210.8
1209.233	0.2333	210.79
1209.25	0.25	210.78
1209.266	0.2666	210.77
1209.283	0.2833	210.76
1209.3	0.3	210.75
1209.316	0.3166	210.74
1209.333	0.3333	210.73
1209.416	0.4167	210.7
1209.5	0.5	210.67
1209.583	0.5833	210.65
1209.666	0.6667	210.63
1209.75	0.75	210.62
1209.833	0.8333	210.6
1209.916	0.9167	210.6
1210	1	210.59
1210.083	1.0833	210.58
1210.166	1.1667	210.58
1210.25	1.25	210.57
1210.333	1.3333	210.57
1210.416	1.4166	210.57
1210.5	1.5	210.56

OCT 27 1995

 299-W26-10 WITHDRAWAL Page 4 of 4

1210.583	1.5833	210.56
1210.666	1.6667	210.56
1210.75	1.75	210.56
1210.833	1.8333	210.56
1210.916	1.9167	210.56
1211	2	210.56
1211.5	2.5	210.55
1212	3	210.55
1212.5	3.5	210.55
1213	4	210.55
1213.5	4.5	210.55
1214	5	210.55
1214.5	5.5	210.55
1215	6	210.55
1215.5	6.5	210.55
1216	7	210.55
1216.5	7.5	210.55
1217	8	210.55
1217.5	8.5	210.55
1218	9	210.55
1218.5	9.5	210.55
1219	10	210.55
1221	12	210.55
1223	14	210.55

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WELL 299-W26-12

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AQUIFER TEST SUMMARY

WELL 299-W26-12, Slug Injection and Withdrawal

Purpose of Test: Estimation of aquifer parameters; hydraulic conductivity and transmissivity.

Methodology: Bouwer and Rice analysis of slug injection and withdrawal data.

Test Interval: Water table to bottom of screened interval, 214.26 ft below top of casing (btoc) to 232.13 ft btoc. Total saturated thickness = 17.87 ft.

Aquifer Thickness: Uppermost unconfined thickness=250' (estimated from WHC-SD-EN-AP-018, Rev. 0).

Geologic Interval Tested: Silty sandy gravel unit of the middle Ringold Formation (geology of aquifer is assumed homogeneous for these calculations).

Test Date: 10, May 91 Slug dimensions: 2-in dia/6-in length (0.13 ft^3)

Test Duration: Injection: 10.0 min. (0.167 hr.) ; Withdrawal: 16.0 min. (0.267 hr.)

Initial head change: 1.05 ft

9413223.1859

WELL CONFIGURATION

Screen Length: 20 ft (211.41 ft btoc to 232.13 ft btoc), continuous wire wrap

Screen/casing Diameter: 4 in (0.333 ft) Slot Size: 10-Slot (0.01 in)

Borehole Diameter: 8 in (0.667 ft), includes screen plus 20-40 mesh silica sand filter pack. Filter Sand Porosity: 0.25 (estimated)

TEST RESULTS 299-W26-12:

METHOD DATA SOURCE	TRANSMISSIVITY CONDUCTIVITY (ft^2/d)	HYDRAULIC (ft/d)*	STORATIVITY
Bouwer & Rice: Injection	89	5	N/A
Bouwer & Rice: Withdrawal	286	16	N/A
Cooper et al.: Withdrawal	N/A	N/A	N/A

*Bouwer and Rice method estimates hydraulic conductivity; Copper et al. estimates transmissivity. The transmissivity can be estimated by the equation T=Kb, where b = screened aquifer thickness.

Remarks: The recording of data was initiated after/during rod immersion therefore the exact time t=0 is unknown. Water level varied greatly prior to steady decline. Limited number of points available to determine straight line for slug withdrawal analysis.

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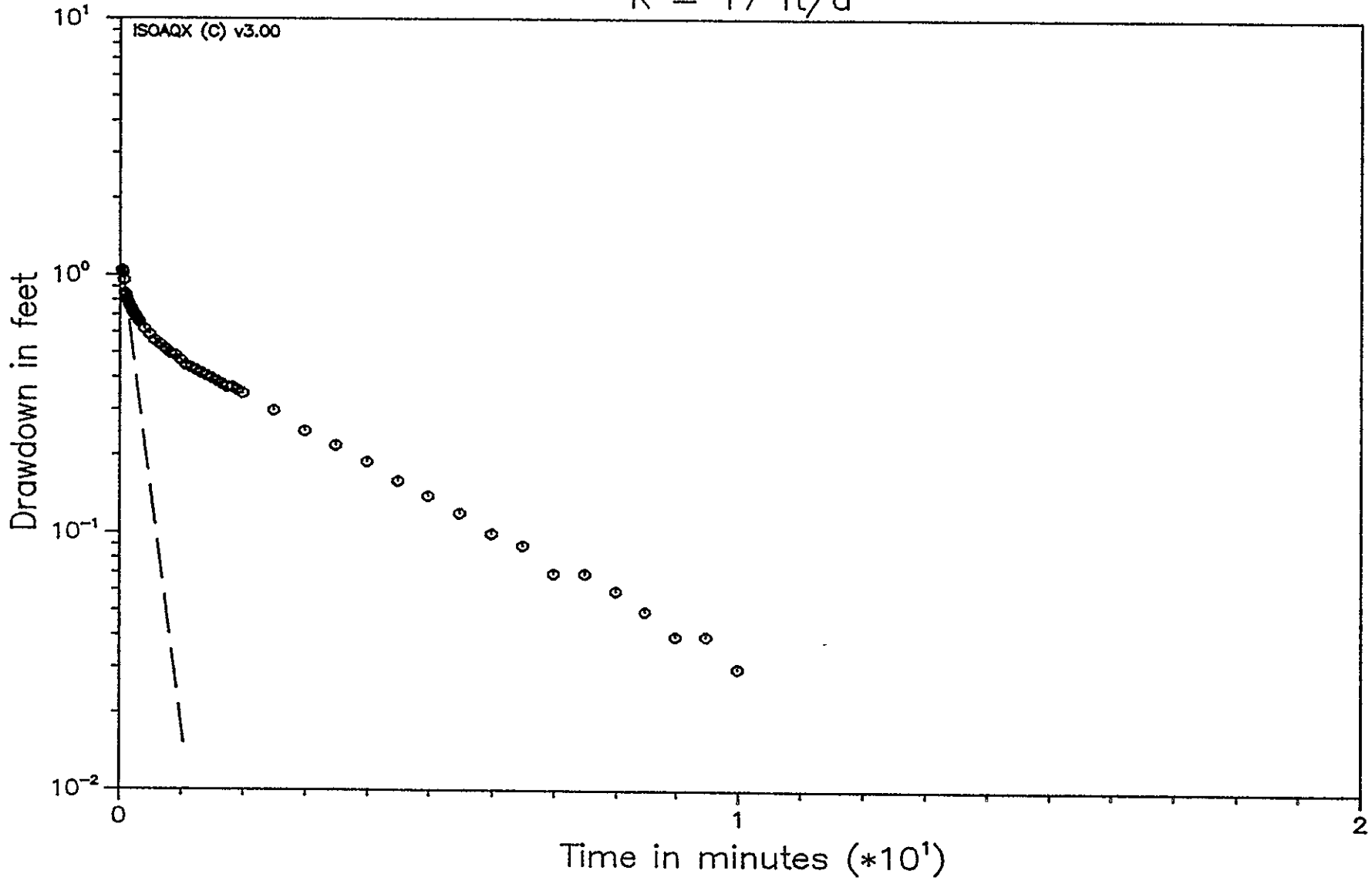
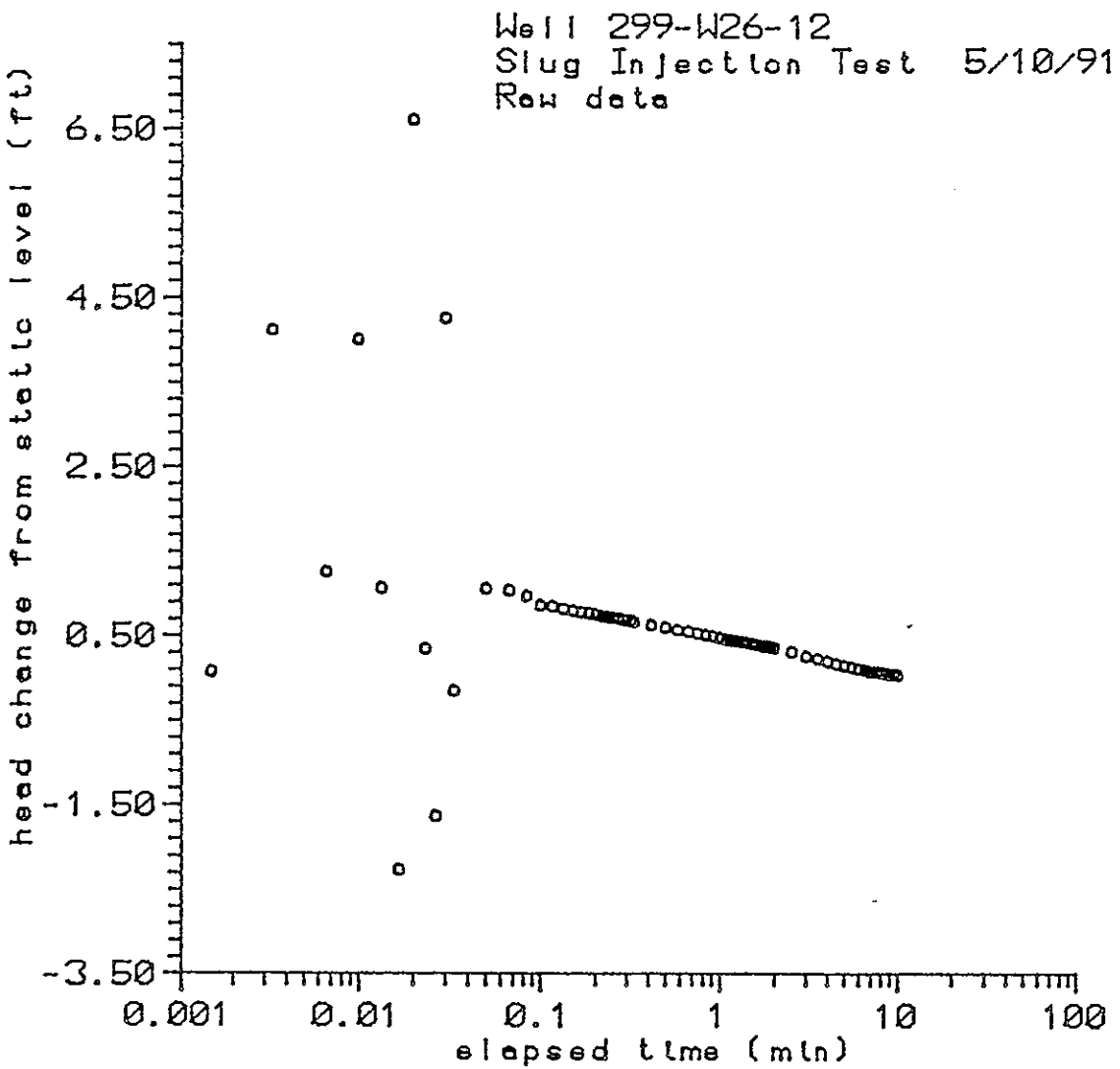
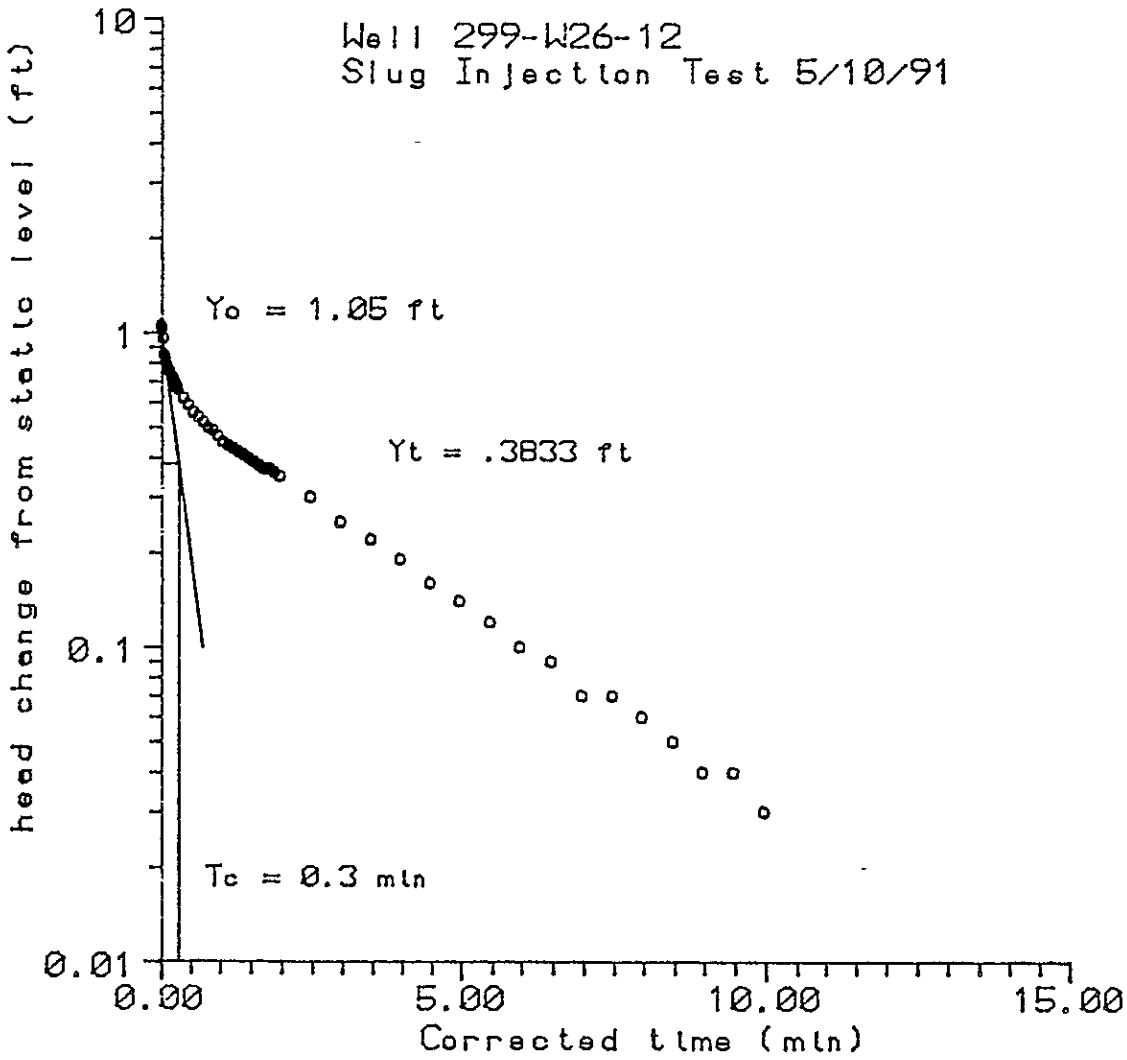
Slug Injection Test at Well 299–W26–12
Tested May 10, 1991
K = 17 ft/d




Well 299-W26-12
Slug Injection Test 5/10/91
Raw data
head change from static level (ft)
6.50
4.50
2.50
0.50
-1.50
-3.50
0.001
0.01
0.1
1
10
100
elapsed time (min)

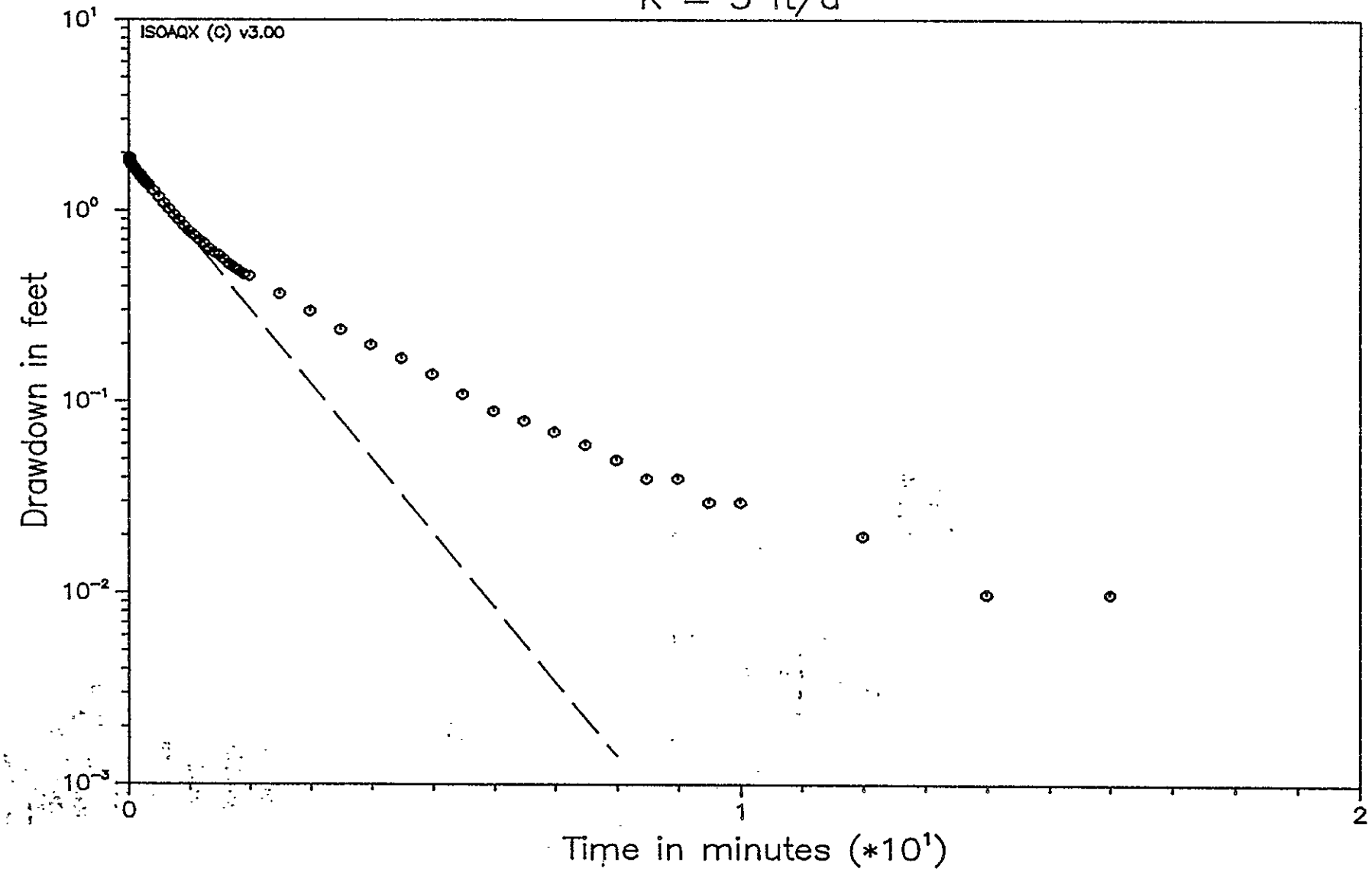

Well 299-W26-12
Slug Injection Test 5/10/91
Yo = 1.05 ft
Yt = .3833 ft
Tc = 0.3 min
head change from static level (ft)
10
1
0.1
0.01
0.00
5.00
10.00
15.00
Corrected time (min)

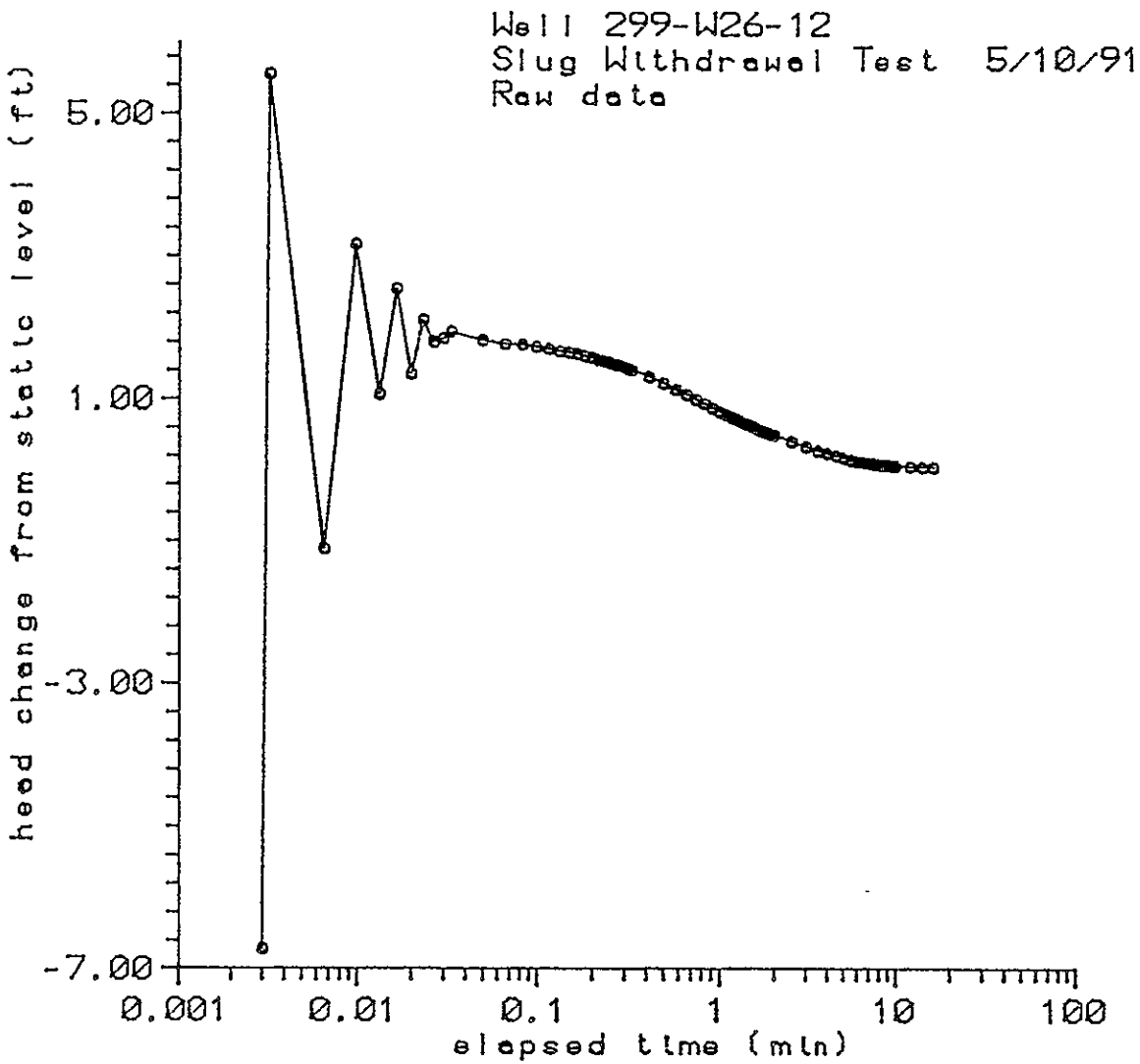
299-W26-12 Slug Injection Test 5/10/91
****
THE BELOW HYDRAULIC CONDUCTIVITY VALUE WAS CALCULATED
USING THE BOUWER AND RICE SLUG TEST METHOD.
SOURCE= "THE BOUWER AND RICE SLUG TEST-AN UPDATE"
GROUND WATER, VOL 27, NO. 3, MAY-JUNE 1989.
****
****
RADIUS OF CASING USED IN CALCULATIONS HAS BEEN
CORRECTED FOR THE THICKNESS OF GRAVEL OR SAND
PACK DUE TO WATER LEVEL CHANGES IN THE SCREEN OR
OPEN INTERVAL OF WELL.
****

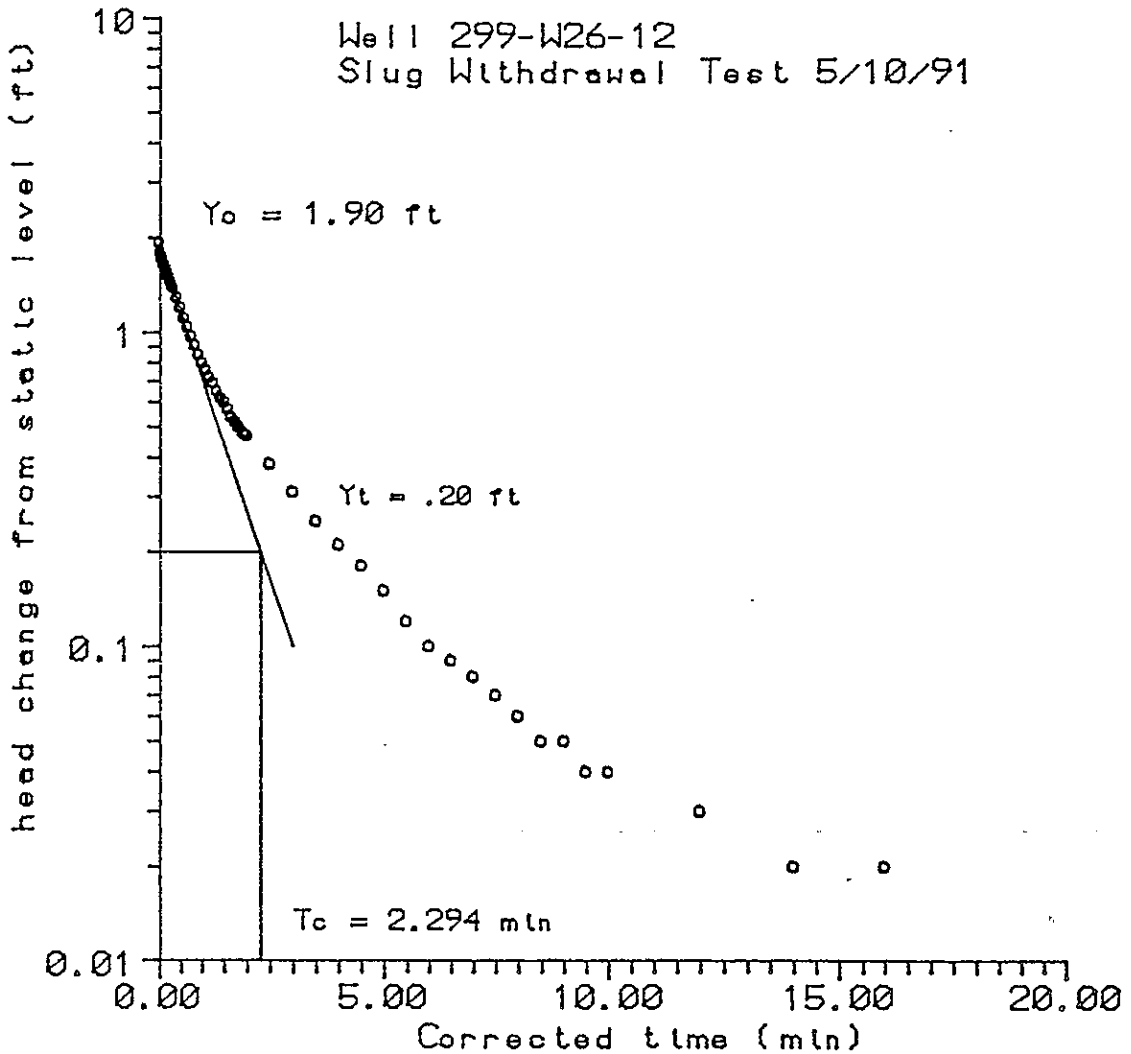
Rc (ft)	Rw (ft)	Le (ft)	Lw (ft)	H (ft)
.2205	.3330	18.0200	18.0200	200.0000

****
Le/Rw = 54.1141200
A= 3.2102570
B= 5.289381E-001
C= 2.8551000
SANDPACK POROSITY= 2.500000E-001
t (min)= 3.000000E-001
1/t= 3.3333330
Yo= (ft) 1.0500000
Yt= (ft) 3.833000E-001
1/t ln(Yo/Yt)= 3.3590910
ln[(H-Lw)/Rw]= 6.0000000
ln(Re/Rw)= 2.5407510
****
K (ft/day) = 16.5861700
****
T OF THE SATURATED SCREEN INTERVAL
(ft2/day)= 298.8829000
****

Slug Withdrawal Test at Well 299–W26–12
Tested May 10, 1991
K = 5 ft/d




Well 299-W26-12
Slug Withdrawal Test 5/10/91
Raw data
head change from static level (ft)
5.00
1.00
-3.00
-7.00
0.001
0.01
0.1
1
10
100
elapsed time (min)


Well 299-W26-12
Slug Withdrawal Test 5/10/91
Yo = 1.90 ft
Yt = .20 ft
Tc = 2.294 min
head change from static level (ft)
10
1
0.1
0.01
0.00
5.00
10.00
15.00
20.00
Corrected time (min)

299-W26-12 Slug Withdrawal Test 5/10/91
****
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.
****
****
RADIUS OF CASING USED IN CALCULATIONS HAS BEEN
CORRECTED FOR THE THICKNESS OF GRAVEL OR SAND
PACK DUE TO WATER LEVEL CHANGES IN THE SCREEN OR
OPEN INTERVAL OF WELL.
****

Rc (ft)	Rw (ft)	Le (ft)	Lw (ft)	H (ft)
.2205	.3330	18.0200	18.0200	200.0000

****
Le/Rw = 54.1141200
A= 3.2102570
B= 5.289381E-001
C= 2.8551000
SANDPACK POROSITY= 2.500000E-001
t(min)= 2.2940000
1/t= 4.359198E-001
Yo= (ft) 1.9000000
Yt= (ft) 2.000000E-001
1/t ln(Yo/Yt)= 9.813827E-001
ln[(H-Lw)/Rw]= 6.0000000
ln(Re/Rw)= 2.5407510
****
K (ft/day) = 4.8457700
****
T OF THE SATURATED SCREEN INTERVAL
(ft2/day)= 87.3207900
****

BOREHOLE TEST INFORMATION

2/4/92

Borehole 299-W26-12 Borehole Diameter 4" Hanford Coordinates —NA—

Interval Tested 232.13'-211.41' T.O.C. 6" Depth Interval 232.13'-211.41'

Test Type INSTANTANEOUS SLUG INJECTION/WITHDRAWAL Borehole Depth 232.13' T.O.C. 6"

Instruction Used WHC-CM-7-7-EII 10.1

EQUIPMENT

NAME	DESCRIPTION
ELECTRIC SOUNDER	SOLINST ET-5
DATA LOGGER	IN-SITU INC. SN IKB-700
PRESSURE TRANSDUCER.	IN-SITU INC. SN 1989
SLUGGING ROD.	6.0'x2"DIA. = .132 ft³
STEEL MEASURING TAPE.	500' GRADUATED STEEL TAPE.

MEASUREMENT DATUM

Control Datum TOP OF CASING 6" (T.O.C. 6")

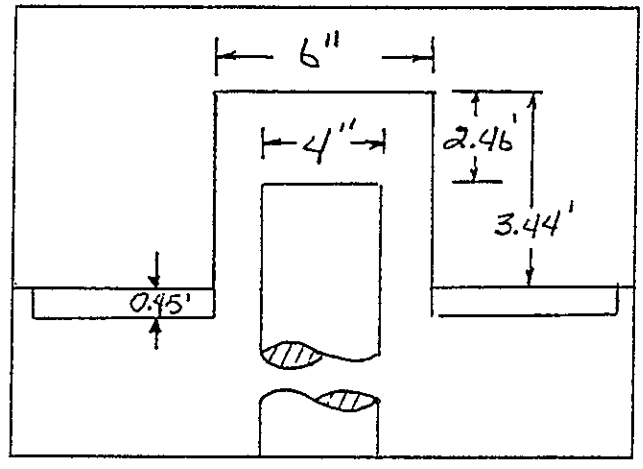
Elevation NA

Electric Sounder T.O.C. 6"

Steel Tape T.O.C. 6"

Pressure Transducer T.O.C. 6"

WELL HEAD DIAGRAM



COMMENTS

Recorded by: JAMES A. COATES James A. Coates 5-17-91

Sign and Print Name Date

BD-6000-295 (05/89)

9413224.1909

INSTANTANEOUS SLUG TEST DATA SHEET

INJECTION BASELINE & INJECTION.

Borehole 299-W26-12

Interval Tested 232.13' To 211.41' T.O.C. 6"

Depth to Water 214.11' T.O.C 6"

Date 5-10-91

Measured by ~~TOP~~ N.A.C. JAMES A. COATES

Slug Volume 0.13271 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time START TIME 0938 BASELINE INJ. / 0953 INJECTION

Transducer Measurement Units FEET

Depth to Transducer 14.41' bwl

Initial Pressure (P_i) 214.26'

Slug Level or Pressure (P_{max}) 207.66

Borehole Diameter 4"

Time		Pressure Trans. Measurement	Time		Pressure Trans. Measurement	Time		Pressure Trans. Measurement
Observed	Elapsed		Observed	Elapsed		Observed	Elapsed	
		SEE ATTACHED						

Recorded by JAMES A COATES JAMES A COATES (Sign and Print Name) 5-17-91 (Date)

BD-6000-293 (07/90)

2-W26-12 Baseline Injection Page 2 of 4

SE1000B
Environmental Logger
05/13 14:12

Unit# 00700 Test# 6

INPUT 1: Level (F) TOC

Reference 214.26
Scale factor 10.11
Offset 0.00

Step# 0 05/10 09:38

O-Time	E-Time	D-T-W:Ft
938	0	214.26
939	1	214.26
940	2	214.26
941	3	214.26
942	4	214.26
943	5	214.26
944	6	214.26
945	7	214.26
946	8	214.26
947	9	214.26
948	10	214.26
949	11	214.26
950	12	214.26

9413223.1911

2-w26-12 Injection

Page 3 of 4

SE1000B
Environmental Logger
05/13 14:08

Unit# 00700 Test# 7

INPUT 1: Level (F) TOC

Reference 214.26
Scale factor 10.11
Offset 0.00

Step# 0 05/10 09:52

O-Time	E-Time	D-T-W:Ft
952	0	214.19
952.0033	0.0033	210.15
952.0066	0.0066	213.01
952.0099	0.0099	210.26
952.0133	0.0133	213.2
952.0166	0.0166	216.53
952.02	0.02	207.66
952.0233	0.0233	213.92
952.0266	0.0266	215.9
952.03	0.03	210.01
952.0333	0.0333	214.42
952.05	0.05	213.21
952.0666	0.0666	213.23
952.0833	0.0833	213.3
952.1	0.1	213.41
952.1166	0.1166	213.42
952.1333	0.1333	213.45
952.15	0.15	213.47
952.1666	0.1666	213.49
952.1833	0.1833	213.5
952.2	0.2	213.51
952.2166	0.2166	213.53
952.2333	0.2333	213.54
952.25	0.25	213.55
952.2666	0.2666	213.56
952.2833	0.2833	213.57
952.3	0.3	213.58
952.3166	0.3166	213.59
952.3333	0.3333	213.6
952.4167	0.4167	213.64
952.5	0.5	213.67
952.5833	0.5833	213.7
952.6667	0.6667	213.72
952.75	0.75	213.74
952.8333	0.8333	213.76
952.9167	0.9167	213.77
953	1	213.79
953.0833	1.0833	213.81
953.1667	1.1667	213.82
953.25	1.25	213.83
953.3333	1.3333	213.84
953.4166	1.4166	213.85
953.5	1.5	213.86

9413223.1912

953.5833	1.5833	213.87
953.6667	1.6667	213.88
953.75	1.75	213.89
953.8333	1.8333	213.89
953.9167	1.9167	213.9
954	2	213.91
954.5	2.5	213.96
955	3	214.01
955.5	3.5	214.04
956	4	214.07
956.5	4.5	214.1
957	5	214.12
957.5	5.5	214.14
958	6	214.16
958.5	6.5	214.17
959	7	214.19
959.5	7.5	214.19
1000	8	214.2
1000.5	8.5	214.21
1001	9	214.22
1001.5	9.5	214.22
1002	10	214.23

94.5224.913

INSTANTANEOUS SLUG TEST DATA SHEET

-WITHDRAWAL-

Page 1 of 4

Borehole 299-W26-12

Interval Tested 232.13'-211.41' T.O.C. 6"

Depth to Water 214.11 T.O.C. 6'

Date 5-10-91

Measured by JAMES A. COATES

Slug Volume 0.132 ft³ Barometer Reading (Beginning) -NA- (End) -NA-

Time START TIMES BASELINE 1004 / 1024 WITHDRAWAL.

Transducer Measurement Units FEET

Depth to Transducer 14.41' BWL.

Initial Pressure (P_i) 214.25

Slug Level or Pressure (P_{max}) 219.8.

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						

Recorded by JAMES A. COATES (Sign and Print Name) 5-17-91 (Date)

2-W26-12 Baseline Withdrawal. Page 2 of 4

SE1000B
Environmental Logger
05/13 14:06

Unit# 00700 Test# 8

INPUT 1: Level (F) TOC

Reference 214.26
Scale factor 10.11
Offset 0.00

Step# 0 05/10 10:04

O-Time	E-Time	D-T-W:Ft
1004	0	214.24
1005	1	214.24
1006	2	214.25
1007	3	214.25
1008	4	214.25
1009	5	214.25
1010	6	214.25
1011	7	214.25
1012	8	214.25
1013	9	214.25
1014	10	214.25
1015	11	214.25
1016	12	214.25
1017	13	214.26
1018	14	214.25
1019	15	214.25
1020	16	214.25
1021	17	214.25
1022	18	214.25

9413223.0915

2-W26-12 Withdrawal

Page 3 of 4

SE1000B
Environmental Logger
05/13 13:38

Unit# 00700 Test# 9

INPUT 1: Level (F) TOC

Reference 214.26
Scale factor 10.11
Offset 0.00

Step# 0 05/10 10:23

O-Time	E-Time	D-T-W:Ft
1023	0	207.52
1023.003	0.0033	219.8
1023.006	0.0066	213.13
1023.009	0.0099	217.4
1023.013	0.0133	215.3
1023.016	0.0166	216.78
1023.02	0.02	215.58
1023.023	0.0233	216.34
1023.026	0.0266	216.03
1023.03	0.03	216.08
1023.033	0.0333	216.17
1023.05	0.05	216.05
1023.066	0.0666	216
1023.083	0.0833	215.99
1023.1	0.1	215.96
1023.116	0.1166	215.93
1023.133	0.1333	215.9
1023.15	0.15	215.88
1023.166	0.1666	215.86
1023.183	0.1833	215.83
1023.2	0.2	215.81
1023.216	0.2166	215.78
1023.233	0.2333	215.76
1023.25	0.25	215.74
1023.266	0.2666	215.71
1023.283	0.2833	215.7
1023.3	0.3	215.68
1023.316	0.3166	215.65
1023.333	0.3333	215.64
1023.416	0.4167	215.54
1023.5	0.5	215.45
1023.583	0.5833	215.36
1023.666	0.6667	215.29
1023.75	0.75	215.22
1023.833	0.8333	215.16
1023.916	0.9167	215.1
1024	1	215.05
1024.083	1.0833	215.01
1024.166	1.1667	214.97
1024.25	1.25	214.94
1024.333	1.3333	214.9
1024.416	1.4166	214.87
1024.5	1.5	214.85

9413223.916

2-W26-12 Withdrawal.

Page 4 of 4

1024.583	1.5833	214.82
1024.666	1.6667	214.79
1024.75	1.75	214.77
1024.833	1.8333	214.75
1024.916	1.9167	214.73
1025	2	214.72
1025.5	2.5	214.63
1026	3	214.56
1026.5	3.5	214.5
1027	4	214.46
1027.5	4.5	214.43
1028	5	214.4
1028.5	5.5	214.37
1029	6	214.35
1029.5	6.5	214.34
1030	7	214.33
1030.5	7.5	214.32
1031	8	214.31
1031.5	8.5	214.3
1032	9	214.3
1032.5	9.5	214.29
1033	10	214.29
1035	12	214.28
1037	14	214.27
1039	16	214.27

9413223.1917

EQUIPMENT CONFIGURATION AND WELL HEAD DIAGRAM

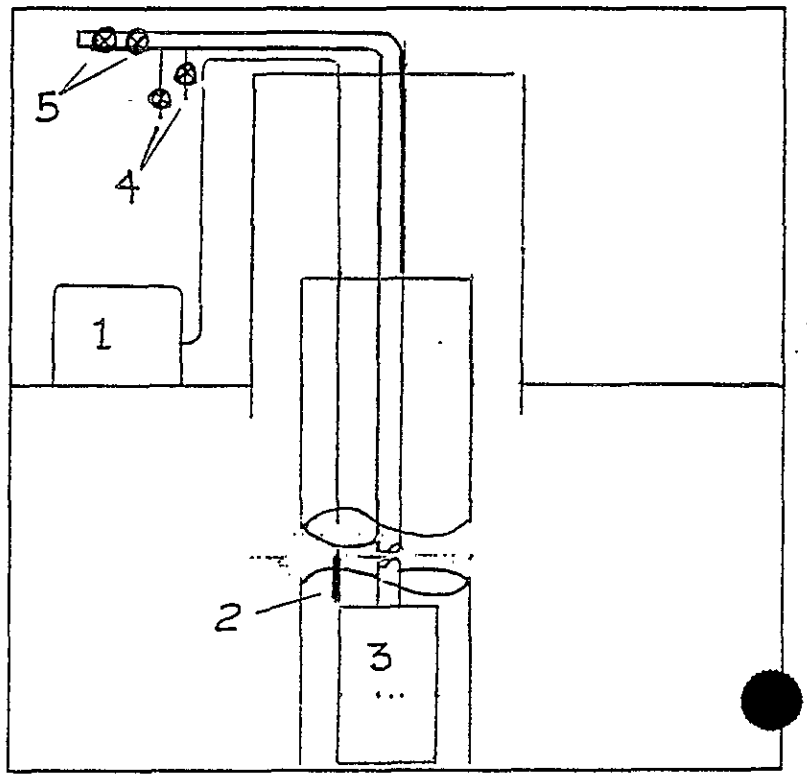
Page 1 of 1

Well Designation 299-W26-12 Depth 232.13 T.O.C. 6"

Equipment Configuration

Item	Description
1	HERMIT DATA LOG. SN-163700
2	TRANSDUCER SN- 1989
3	PUMP
4	SAMPLING PORTS
5	SHUT OFF VALVES

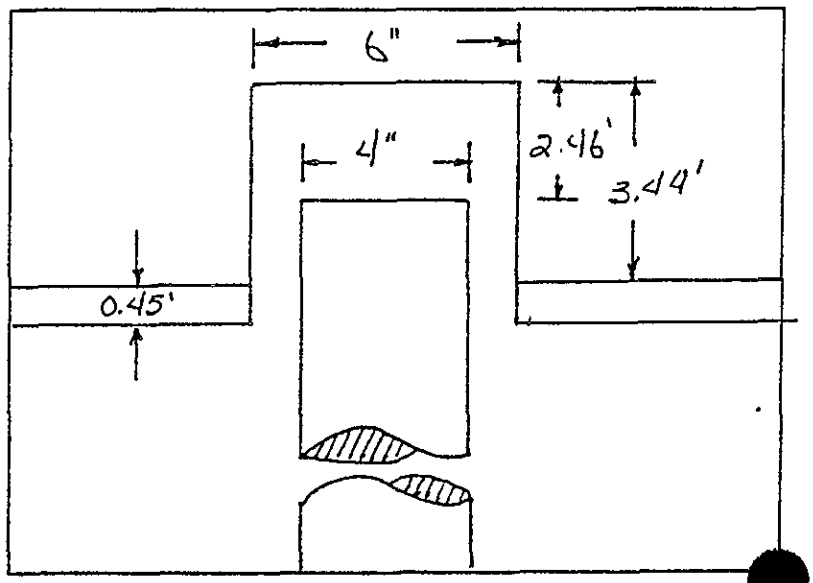
Diagram



Well Head

Comments

Diagram



Signature of Recorder James A. Cowles James A. Cowles Date 5-15-91

A-6000-417 (08/89)

DRAWDOWN/RECOVERY

Well Designation 299-W26-12 Date 5-9-91; 5-10-91

Well Depth 232.13' T.O.C. 6" Screened Interval 232.13'-211.41 T.O.C. 6"

Pumping Method CONSTANT DISCHARGE

Equipment Used to Measure Water Level E. TAPE / TRANSDUCER S.N. ET-5 / 1989 Calibration Due 8-25-91 / 5-10-91

Equipment Used to Measure Flow — N/A — S.N. — N/A — Calibration Due — N/A —

Measuring Point TOP OF 6" CASING (T.O.C. 6") Pump Start Time 1608 / 0815 Pump Stop Time 1640 (5-9-91) / 0843. (5-10-91)

Time		Water Level		Discharge
Date	Time	Reading Unit:	Water Level Unit:	Reading Unit:
				BUCKET METHOD
				3 GALS / 2 min = 1.5 GPM = ~~40 GALS~~ JAC 5-14-91
				= 90 GALS
		SEE		
		ATTACHED.		

Signature of Recorder James A. Coates James A. Coates Date 5-15-91
Sign and Print Name

A-6000-402 (03/90)

9413273.1913

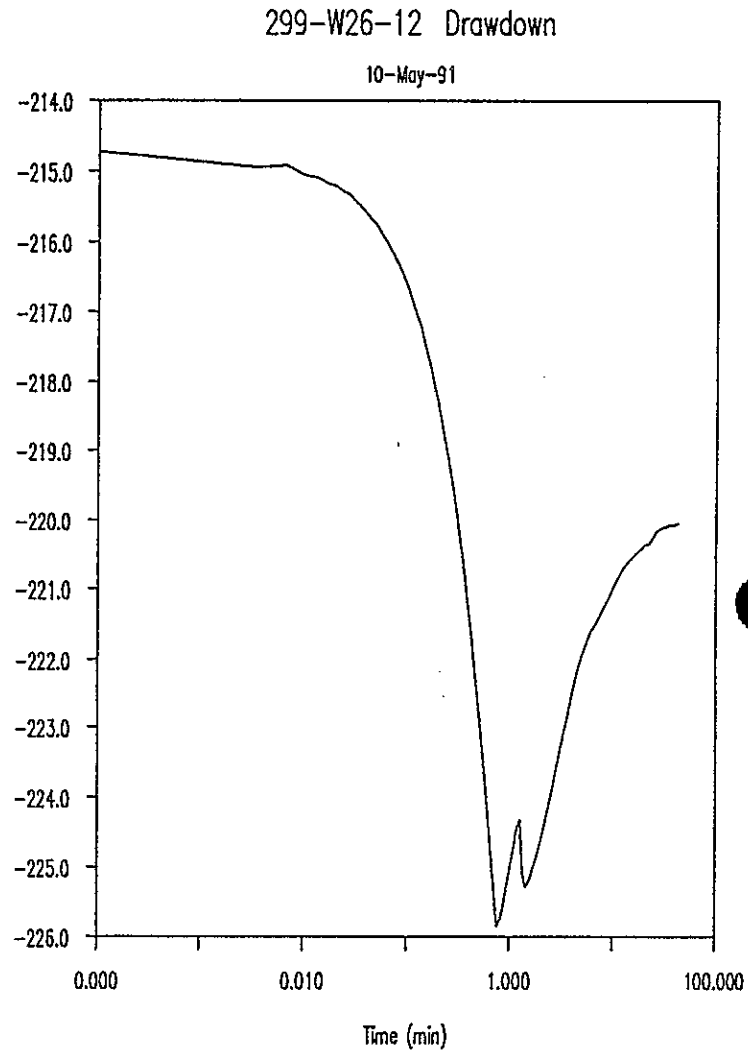
299-W26-12 Drawdown

Hermit Data Logger Unit# 00700
Test# 4 **Drawdown**
Water Level in feet below top of casing (BTOC)

Static Water Level 214.26' BTOC
Scale factor 10.11
Pump Rate 1.50 gpm

Pump Started: 05/10/91 07:34

Time:min	Time:hrs	D-T-W:Ft	d(BTOC)
0.000	0.00000	214.73	-214.73
0.003	0.00006	214.94	-214.94
0.007	0.00011	214.92	-214.92
0.010	0.00017	215.05	-215.05
0.013	0.00022	215.08	-215.08
0.017	0.00028	215.17	-215.17
0.020	0.00033	215.20	-215.20
0.023	0.00039	215.27	-215.27
0.027	0.00044	215.32	-215.32
0.030	0.00050	215.40	-215.40
0.033	0.00056	215.46	-215.46
0.050	0.00083	215.78	-215.78
0.067	0.00111	216.07	-216.07
0.083	0.00139	216.36	-216.36
0.100	0.00167	216.66	-216.66
0.117	0.00194	216.95	-216.95
0.133	0.00222	217.22	-217.22
0.150	0.00250	217.51	-217.51
0.167	0.00278	217.79	-217.79
0.183	0.00306	218.07	-218.07
0.200	0.00333	218.33	-218.33
0.217	0.00361	218.61	-218.61
0.233	0.00389	218.87	-218.87
0.250	0.00417	219.13	-219.13
0.267	0.00444	219.40	-219.40
0.283	0.00472	219.66	-219.66
0.300	0.00500	219.92	-219.92
0.317	0.00528	220.17	-220.17
0.333	0.00556	220.43	-220.43



299-W26-12 Drawdown

0.417	0.00695	221.65	-221.65
0.500	0.00833	222.81	-222.81
0.583	0.00972	223.91	-223.91
0.667	0.01111	224.94	-224.94
0.750	0.01250	225.85	-225.85
0.833	0.01389	225.71	-225.71
0.917	0.01528	225.37	-225.37
1.000	0.01667	225.05	-225.05
1.083	0.01805	224.75	-224.75
1.167	0.01945	224.45	-224.45
1.250	0.02083	224.32	-224.32
1.333	0.02222	225.08	-225.08
1.417	0.02361	225.29	-225.29
1.500	0.02500	225.24	-225.24
1.583	0.02639	225.14	-225.14
1.667	0.02778	225.03	-225.03
1.750	0.02917	224.92	-224.92
1.833	0.03056	224.81	-224.81
1.917	0.03195	224.70	-224.70
2.000	0.03333	224.59	-224.59
2.500	0.04167	223.96	-223.96
3.000	0.05000	223.38	-223.38
3.500	0.05833	222.89	-222.89
4.000	0.06667	222.46	-222.46
4.500	0.07500	222.13	-222.13
5.000	0.08333	221.92	-221.92
5.500	0.09167	221.74	-221.74
6.000	0.10000	221.61	-221.61
6.500	0.10833	221.53	-221.53
7.000	0.11667	221.43	-221.43
7.500	0.12500	221.35	-221.35
8.000	0.13333	221.26	-221.26
8.500	0.14167	221.19	-221.19
9.000	0.15000	221.12	-221.12
9.500	0.15833	221.03	-221.03
10.000	0.16667	220.97	-220.97
12.000	0.20000	220.75	-220.75
14.000	0.23333	220.60	-220.60
16.000	0.26667	220.51	-220.51
18.000	0.30000	220.43	-220.43
20.000	0.33333	220.37	-220.37
22.000	0.36667	220.35	-220.35

/26-12 Drawdown

.000	0.40000	220.24	-220.24
000	0.43333	220.16	-220.16
.000	0.46667	220.14	-220.14
.000	0.50000	220.10	-220.10
.000	0.53333	220.10	-220.10
.000	0.56667	220.07	-220.07
.000	0.60000	220.08	-220.08
.000	0.63333	220.07	-220.07
.000	0.66667	220.06	-220.06
.000	0.70000	220.05	-220.05

9413224.1922

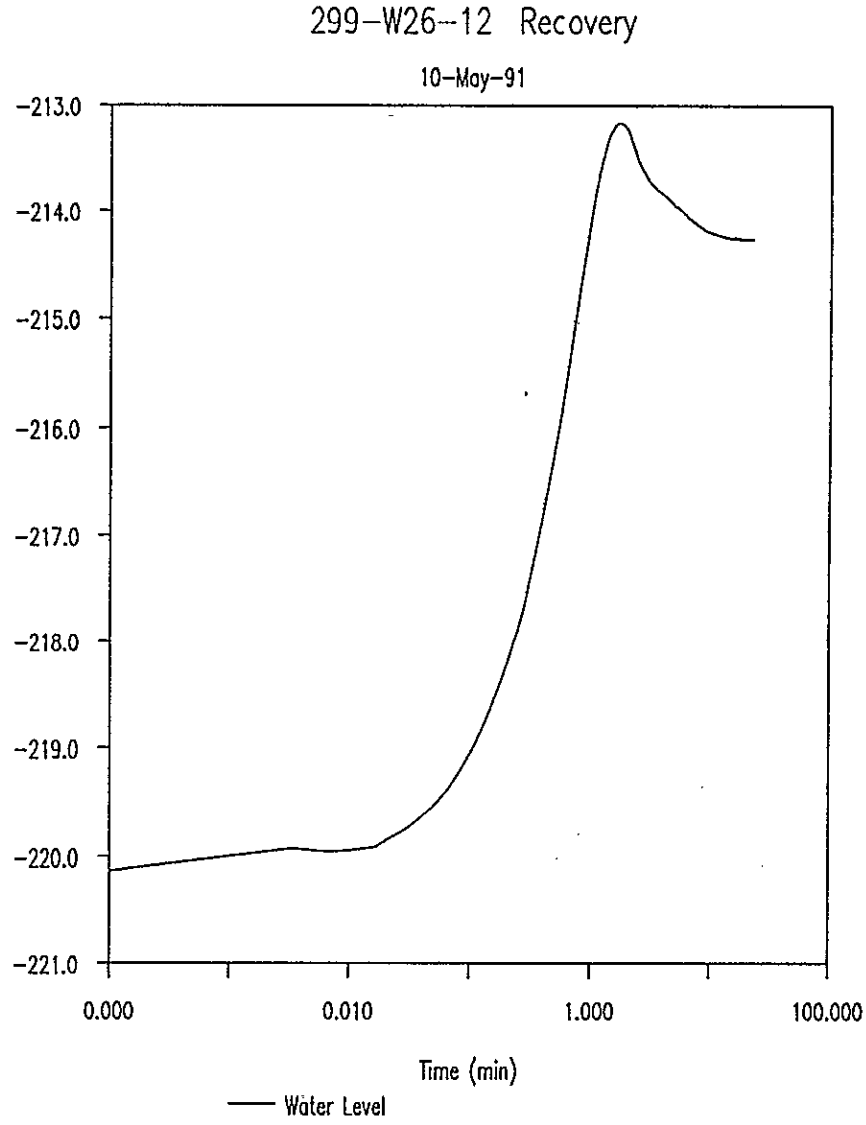
299-W26-12 Recovery

Hermit Environmental Data Logger Unit# 00700
Test# 5 **Recovery**
Water Level in feet below top of casing (BTOC)

Static Water Level 220.08'
Scale factor 10.11

Pump Shut off: 05/10/91 08:19

Time:min	D-T-W:Ft	d(BTOC)
0.000	220.13	-220.13
0.003	219.93	-219.93
0.007	219.96	-219.96
0.010	219.95	-219.95
0.013	219.93	-219.93
0.017	219.92	-219.92
0.020	219.86	-219.86
0.023	219.82	-219.82
0.027	219.78	-219.78
0.030	219.75	-219.75
0.033	219.71	-219.71
0.050	219.54	-219.54
0.067	219.38	-219.38
0.083	219.22	-219.22
0.100	219.06	-219.06
0.117	218.92	-218.92
0.133	218.78	-218.78
0.150	218.64	-218.64
0.167	218.51	-218.51
0.183	218.38	-218.38
0.200	218.25	-218.25
0.217	218.13	-218.13
0.233	218.00	-218.00
0.250	217.89	-217.89
0.267	217.77	-217.77
0.283	217.65	-217.65
0.300	217.53	-217.53
0.317	217.41	-217.41
0.333	217.30	-217.30
0.417	216.76	-216.76
0.500	216.25	-216.25
0.583	215.82	-215.82
0.667	215.39	-215.39
0.750	215.00	-215.00
0.833	214.66	-214.66
0.917	214.36	-214.36



299-W26-12 Recovery

1.000	214.08	-214.08
1.083	213.84	-213.84
1.167	213.65	-213.65
1.250	213.49	-213.49
1.333	213.37	-213.37
1.417	213.28	-213.28
1.500	213.23	-213.23
1.583	213.19	-213.19
1.667	213.17	-213.17
1.750	213.17	-213.17
1.833	213.18	-213.18
1.917	213.20	-213.20
2.000	213.23	-213.23
2.500	213.54	-213.54
3.000	213.72	-213.72
3.500	213.80	-213.80
4.000	213.85	-213.85
4.500	213.90	-213.90
5.000	213.95	-213.95
5.500	213.99	-213.99
6.000	214.03	-214.03
6.500	214.07	-214.07
7.000	214.10	-214.10
7.500	214.13	-214.13
8.000	214.15	-214.15
8.500	214.17	-214.17
9.000	214.19	-214.19
9.500	214.20	-214.20
10.000	214.21	-214.21
12.000	214.24	-214.24
14.000	214.26	-214.26
16.000	214.26	-214.26
18.000	214.27	-214.27
20.000	214.27	-214.27
22.000	214.27	-214.27

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Author/Requestor (Printed/Signature): B.A. Williams — Date: 9-30-92

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