

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
LOG

COMPANY				HERMAN L. LOEB, LLC			
WELL				UNRUH # 4-33			
FIELD/BLOCK				EINSEL			
COUNTY				KIOWA			
STATE				KANSAS			
COMPANY		HERMAN L. LOEB, LLC		WELL		UNRUH # 4-33	
FIELD/BLOCK		EINSEL		COUNTY		KIOWA	
STATE		KANSAS		API No.		15-097-21817-00-00	
Location		(SHL) 1660' FSL & 1330' FWL NW-SW-NE-SW		Other Services:		MICROLOG ACRT MRIL	
Sect.		33		Twp.		27S	
Rge.		18W		Elev.		2197.0 ft	
G.L.		ONE		Elev.		K.B. 2206.0 ft	
Log measured from		KB		D.F.		2205.0 ft	
Drilling measured from		KB		G.L.		2197.0 ft	
Date		06-Mar-15		Run No.		ONE	
Depth - Driller		4830.00 ft		Depth - Logger		4826.0 ft	
Bottom - Logged Interval		4823.00 ft		Top - Logged Interval		3900.00 ft	
Casing - Driller		8.625 in		@		635.0 ft	
Casing - Logger		632.0 ft		@			
Bit Size		7.875 in		@			
Type Fluid in Hole		Water Based Mud		Density		9.4 ppg	
Viscosity		58.00 s/qt		PH		10.50 pH	
Fluid Loss		MUD PIT		Source of Sample		1.800 ohmm	
Rm @ Meas. Temperature		@		Rmf @ Meas. Temperature		@	
Rmc @ Meas. Temperature		@		Rmc @ Meas. Temperature		@	
MEASURED		MEASURED		Rm @ BHT		@	
Time Since Circulation		6.5000 hr		Time on Bottom		06-Mar-15 03:30:35.000	
Max. Rec. Temperature		120.0 degF		Equipment		11072142	
Location		Liberal, KS, US		Recorded By		SUHAIL BISHTI	
Witnessed By		J.CHRISTENSEN					

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Service Ticket No.: 902195698						API Serial No.: 15-097-21817-00-00						PGM Version: WL INSITE R4.6.4 (Build 3)											
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE												RESISTIVITY SCALE CHANGES											
Date		Sample No.										Type Log		Depth		Scale Up Hole			Scale Down Hole				
Depth-Driller																							
Type Fluid in Hole																							
Density		Viscosity																					
Ph		Fluid Loss																					
Source of Sample												RESISTIVITY EQUIPMENT DATA											
Rm @ Meas. Temp				@				@				Run No.		Tool Type & No.		Pad Type		Tool Pos.		Other			
Rmf @ Meas. Temp.				@				@				ONE		MICROLOG		RUBBER		ADJ		N/A			
Rmc @ Meas. Temp.				@				@						11014296									
Source Rmf		Rmc																					
Rm @ BHT				@				@															
Rmf @ BHT				@				@															
Rmc @ BHT				@				@															
EQUIPMENT DATA																							
GAMMA						ACOUSTIC						DENSITY						NEUTRON					
Run No.		ONE				Run No.						Run No.		ONE				Run No.		ONE			
Serial No.		11048627				Serial No.						Serial No.		10865884				Serial No.		11055304			
Model No.		GTET				Model No.						Model No.		SDLT				Model No.		DSNT			
Diameter		3.625"				No. of Cent.						Diameter		4.5"				Diameter		3.625"			
Detector Model No.		T-102				Spacing						Log Type		GAM-GAM				Log Type		NEU-NEU			
Type		SCINT										Source Type		CS-137				Source Type		AM241BE			
Length		8"				LSA [Y/N]						Serial No.		5168 GW				Serial No.		DSN-424			
Distance to Source		10"				FWDA [Y/N]						Strength		1.5 CI				Strength		15 CI			
LOGGING DATA																							
GENERAL						GAMMA			ACOUSTIC				DENSITY					NEUTRON					
Run		Depth		Speed		Scale			Scale		Matrix		Scale			Matrix		Scale			Matrix		
No.		From	To	ft/min		L	R		L	R			L	R				L	R				
ONE		TD	CSG	REC		0	150						30	-10		2.71	30	-10		LIME			

DIRECTIONAL INFORMATION

Maximum Deviation

©

KOP

©

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5" CASING

CHLORIDES REPORTED AT 4500 PPM

LCM REPORTED AT 2 PPM

GTET- ACBT RUN IN COMBINATION IN THE FIRST RUN

TODAY'S CREW:F.VILLA & M.GONZALEZ

THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL KS 620-624-8123

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Plot Time: 06-Mar-15 05:20:53

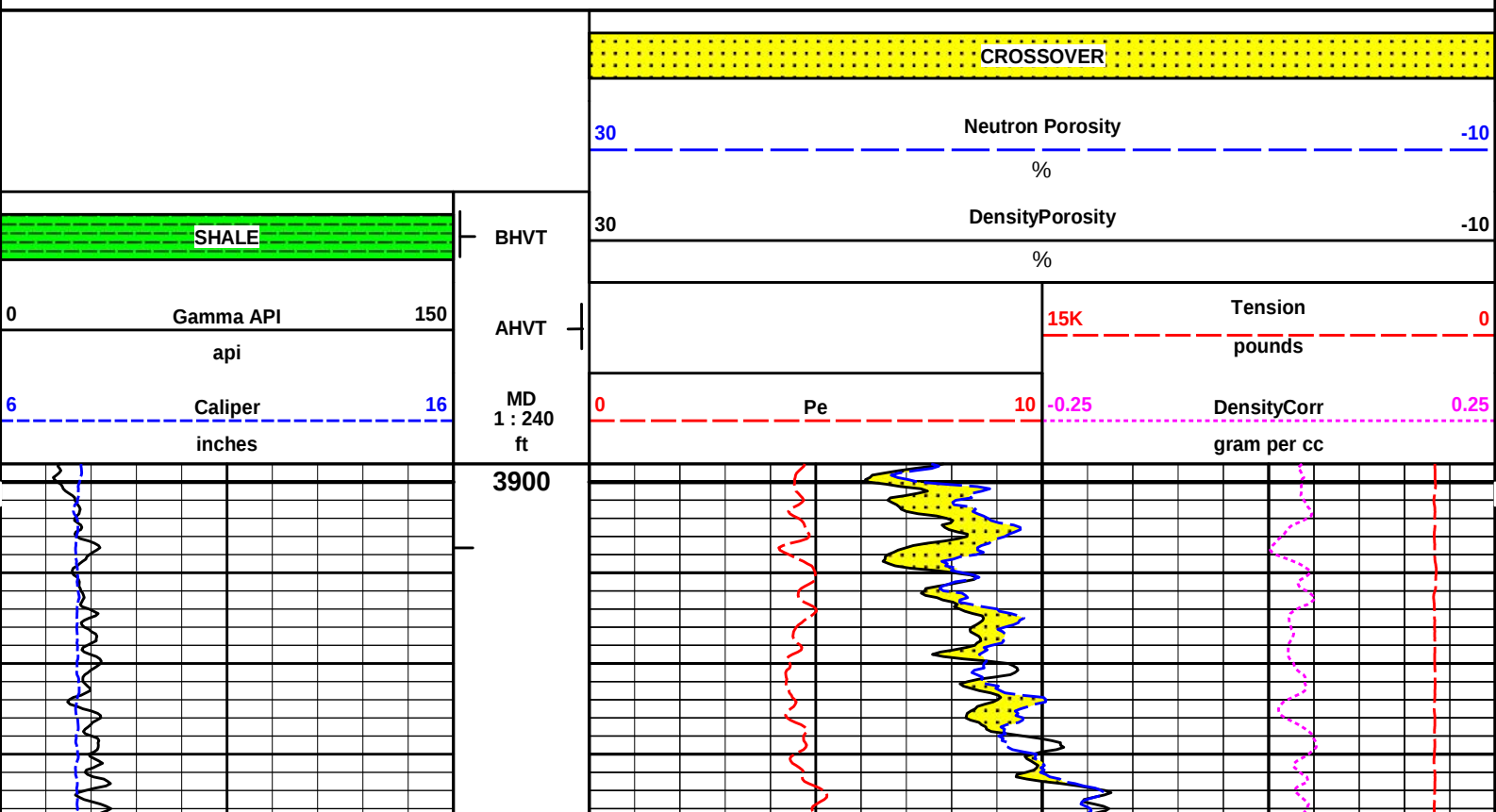
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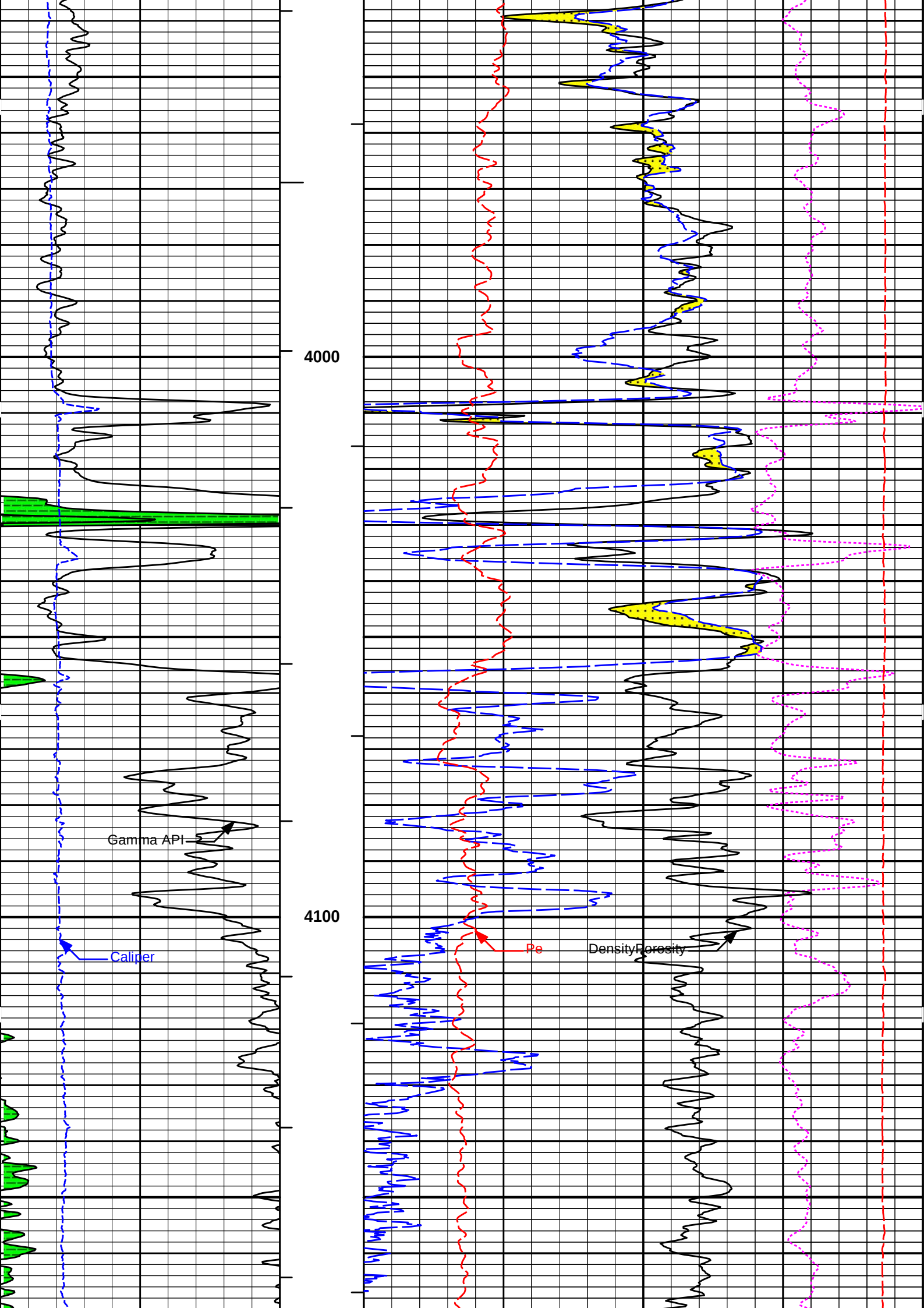
Data: UNRUH # 4-33\Well Based\DETAILS\

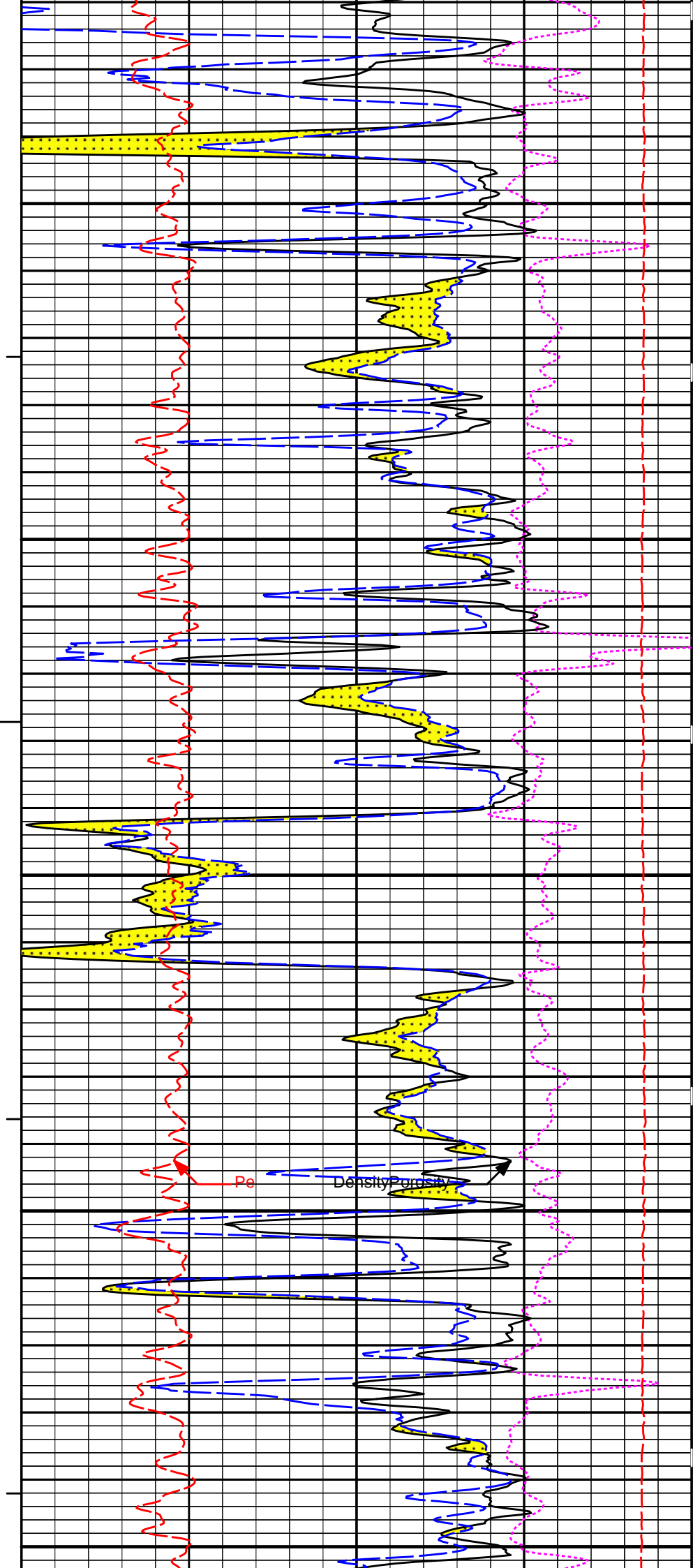
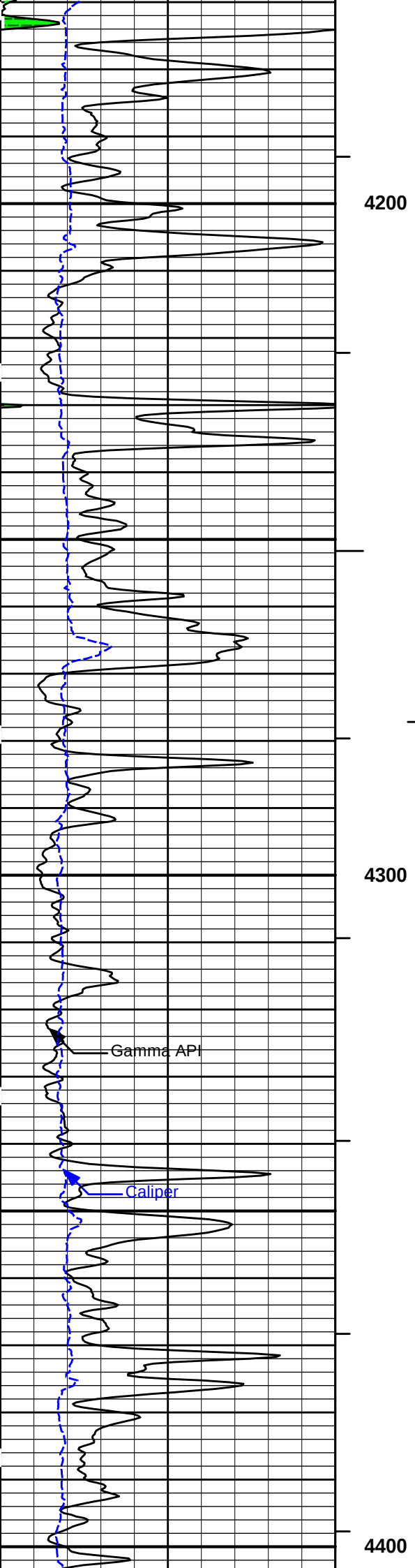
Plot File: \\PORO\Poros IO 5 MAIN LIB

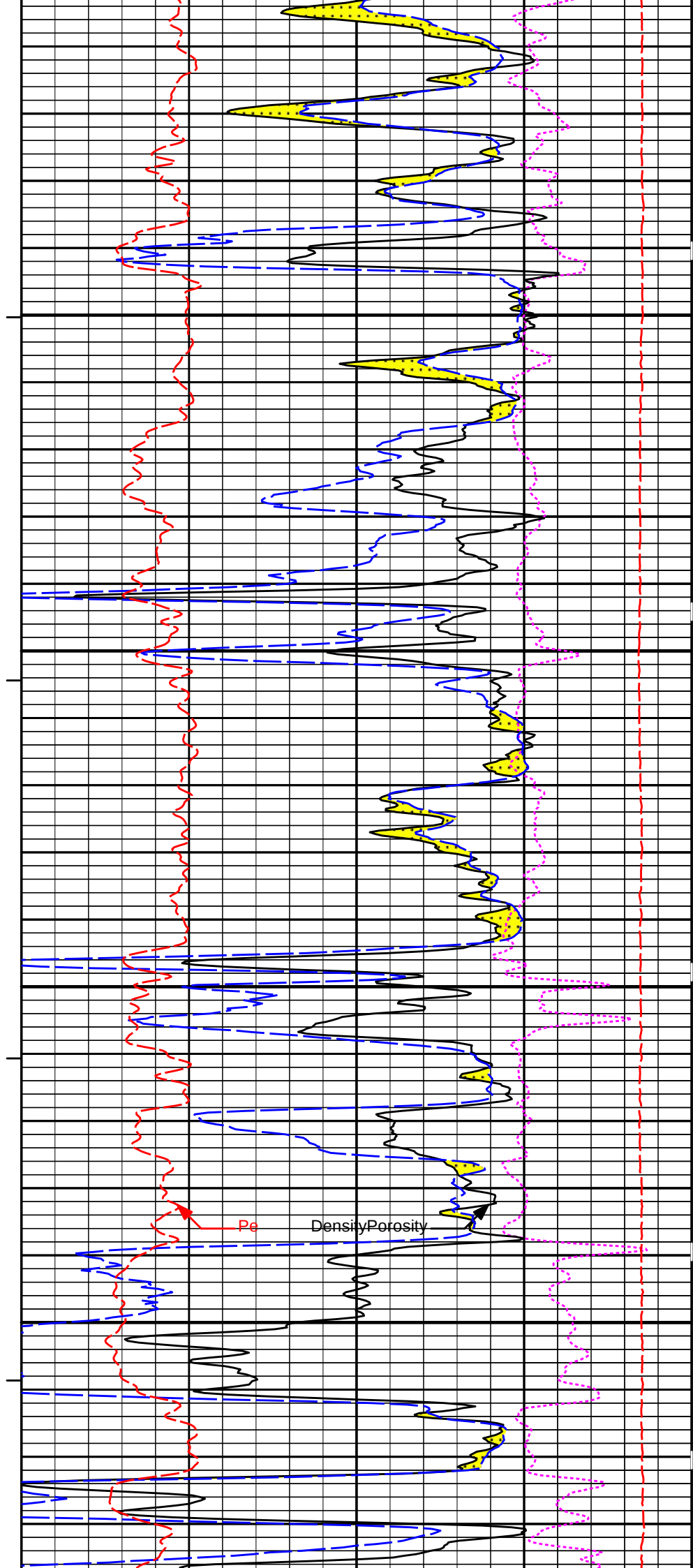
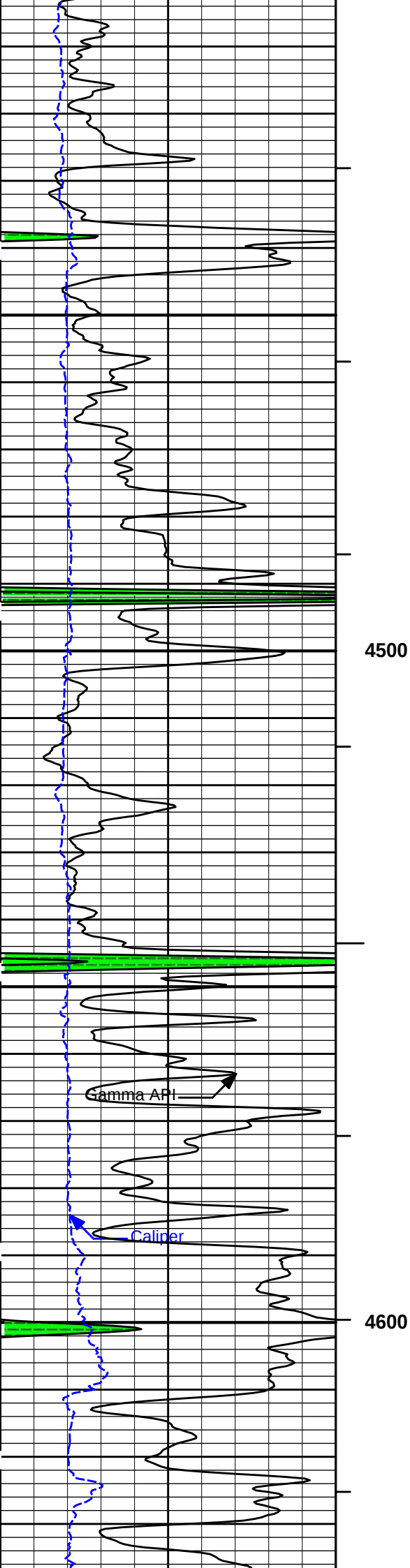
5 INCH MAIN LOG

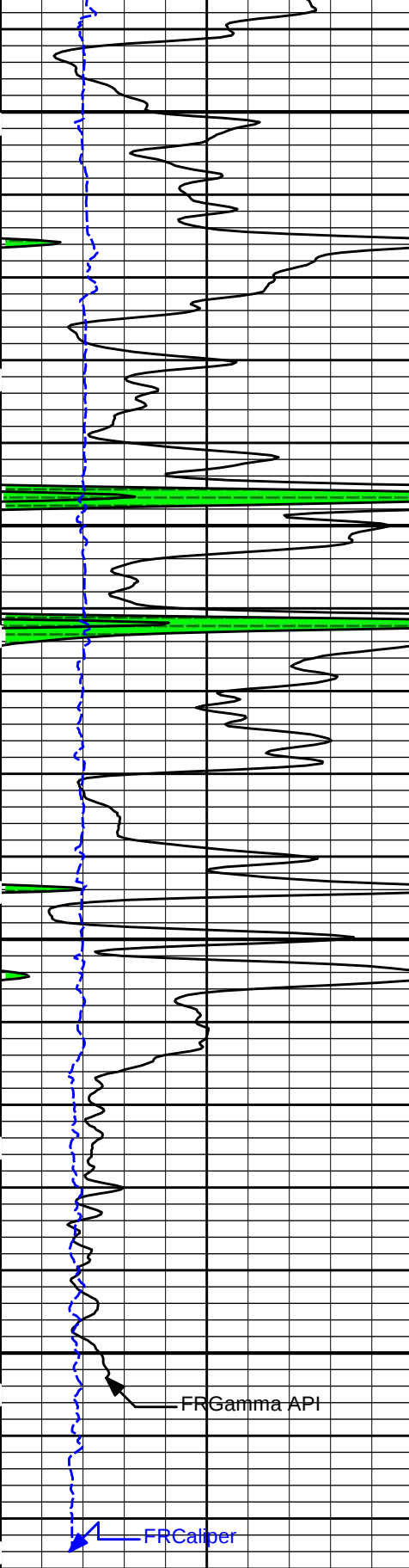
MEASURED DEPTH
MAIN SECTION 5" PER 100'











4700

4800

FRGamma API

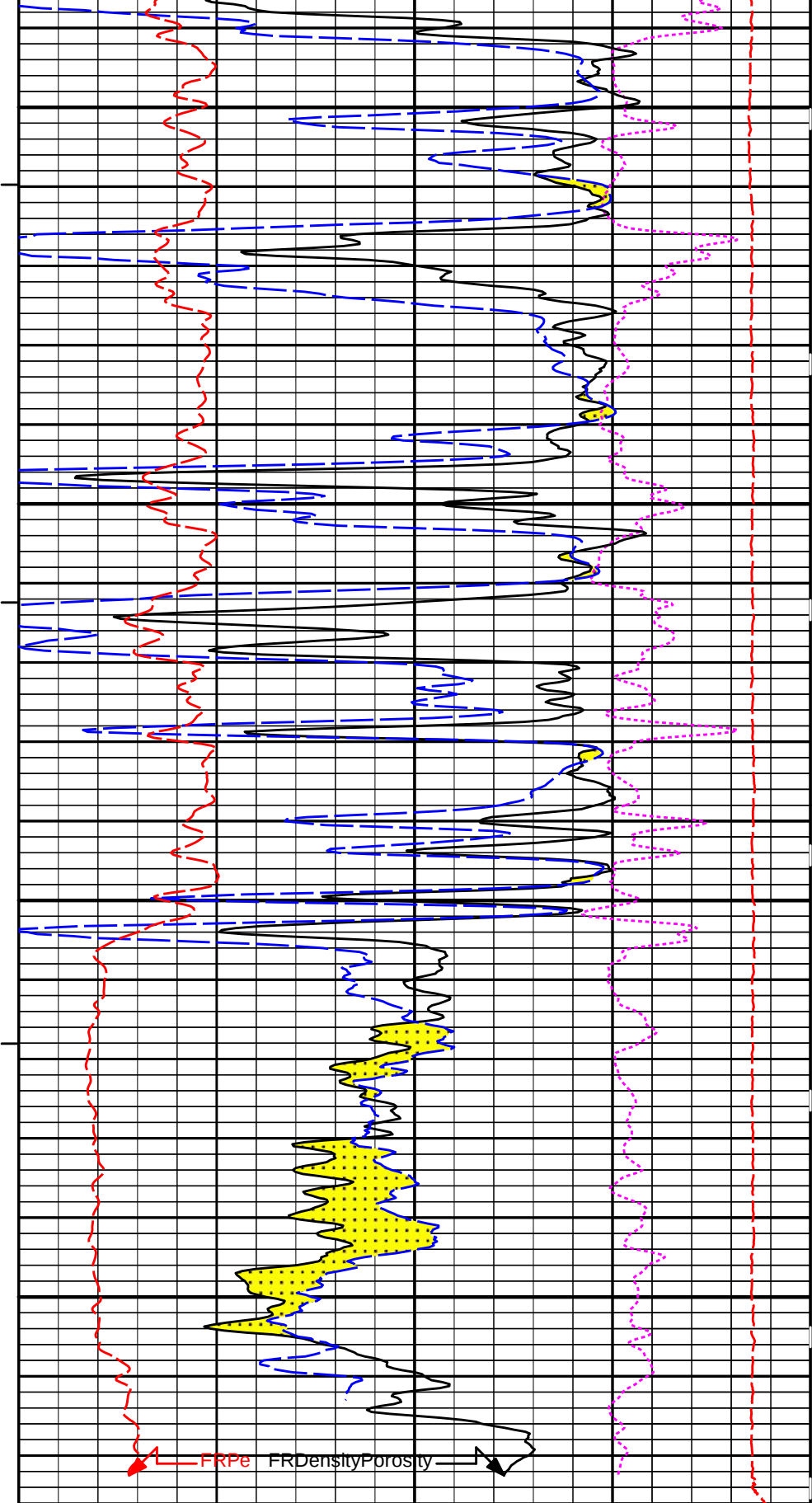
FRCaliper

6	Caliper	16
inches		
0	Gamma API	150
api		
SHALE		

MD
1 : 240
ft

AHVT

BHVT



FRPe

FRDensityPorosity

0	Pe	10	-0.25	DensityCorr	0.25
			gram per cc		
			15K	Tension	0
			pounds		
30	DensityPorosity				-10
%					

30	Neutron Porosity				-10
%					

CROSSOVER

HALLIBURTON

Plot Time: 06-Mar-15 05:20:56
Plot Range: 3898 ft to 4827.25 ft
Data: UNRUH # 4-33\Well Based\DETAILS\
Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

5 INCH MAIN LOG

MEASURED DEPTH
MAIN SECTION 5" PER 100'

HALLIBURTON

Plot Time: 06-Mar-15 05:20:56
Plot Range: 4598 ft to 4827.25 ft
Data: UNRUH # 4-33\Well Based\REPEAT\
Plot File: \\PORO\Poro_IQ_5_REP_LIB

REPEAT SECTION

CROSSOVER

30 Neutron Porosity -10
%

30 DensityPorosity -10
%

0 Gamma API 150
api

BHVT

15K Tension 0
pounds

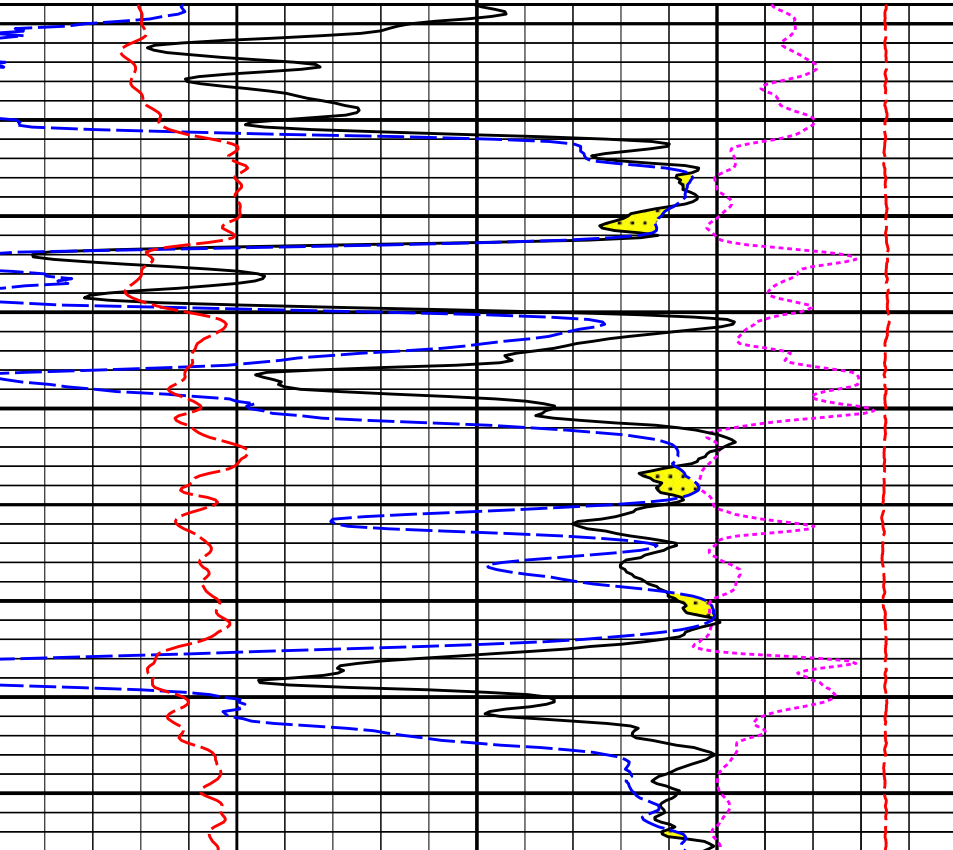
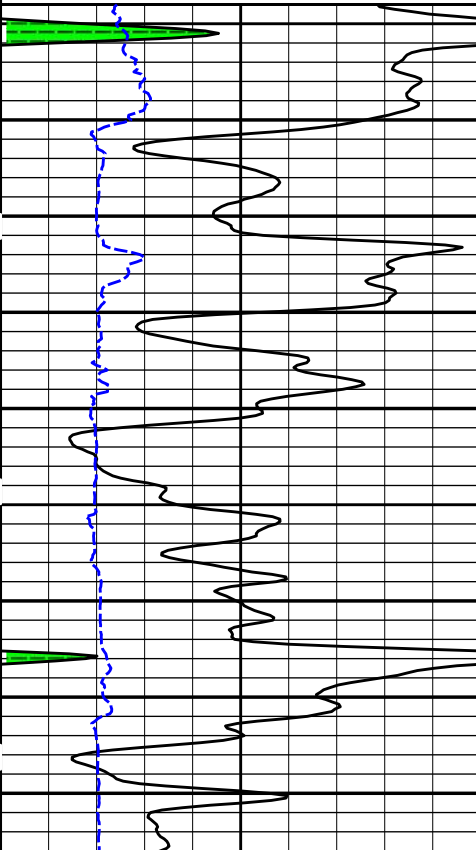
AHVT

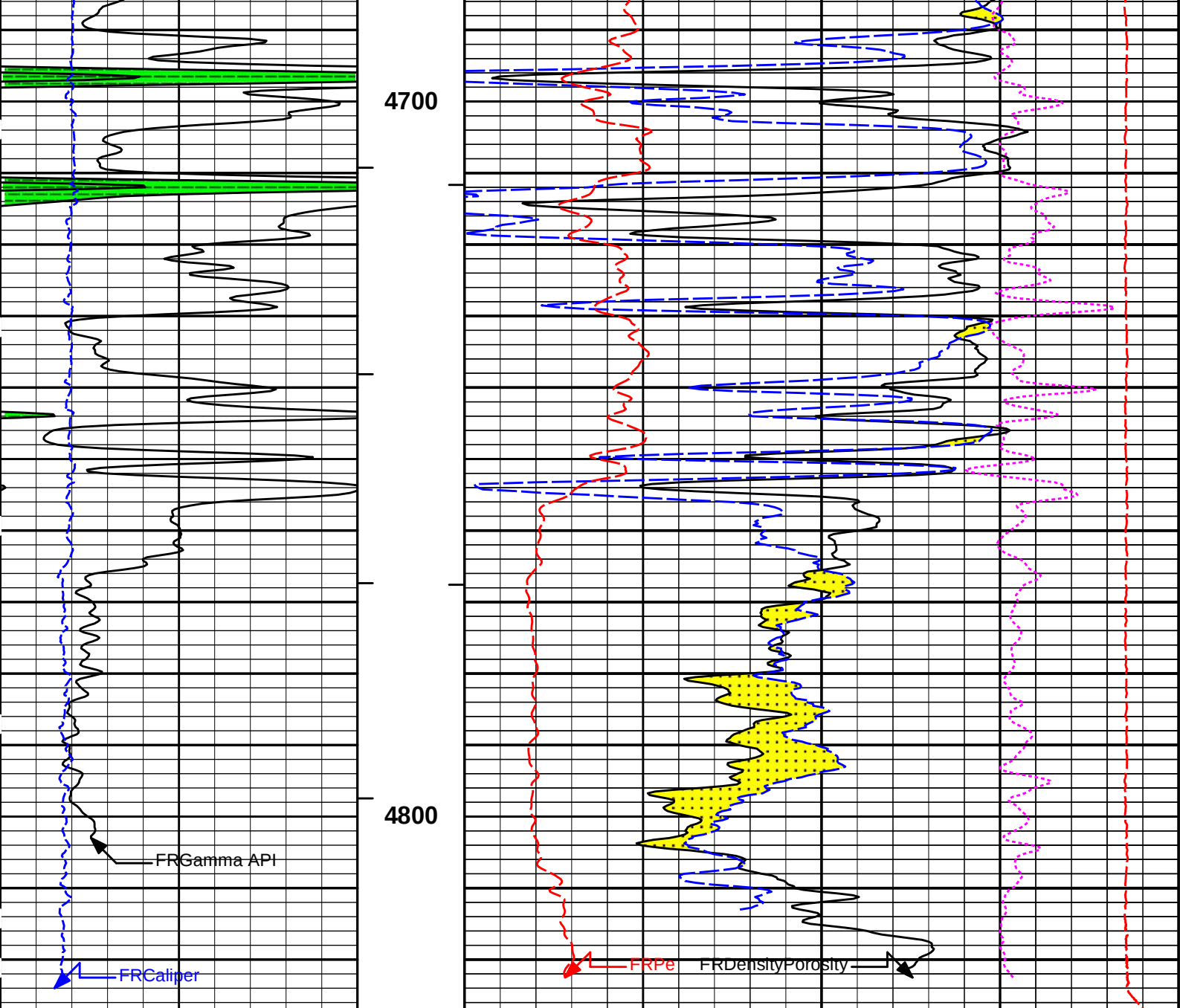
6 Caliper 16
inches

MD
1 : 240
ft

0 Pe 10 -0.25 DensityCorr 0.25
gram per cc

4600





6	Caliper	16	MD	0	Pe	10	-0.25	DensityCorr	0.25
	inches		1 : 240					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				
					CROSSOVER				

HALLIBURTON

Plot Time: 06-Mar-15 05:20:57
Plot Range: 4598 ft to 4827.25 ft
Data: UNRUH # 4-33\Well Based\REPEAT\
Plot File: \\PORO\Porosity_Q_5_REP_LIB

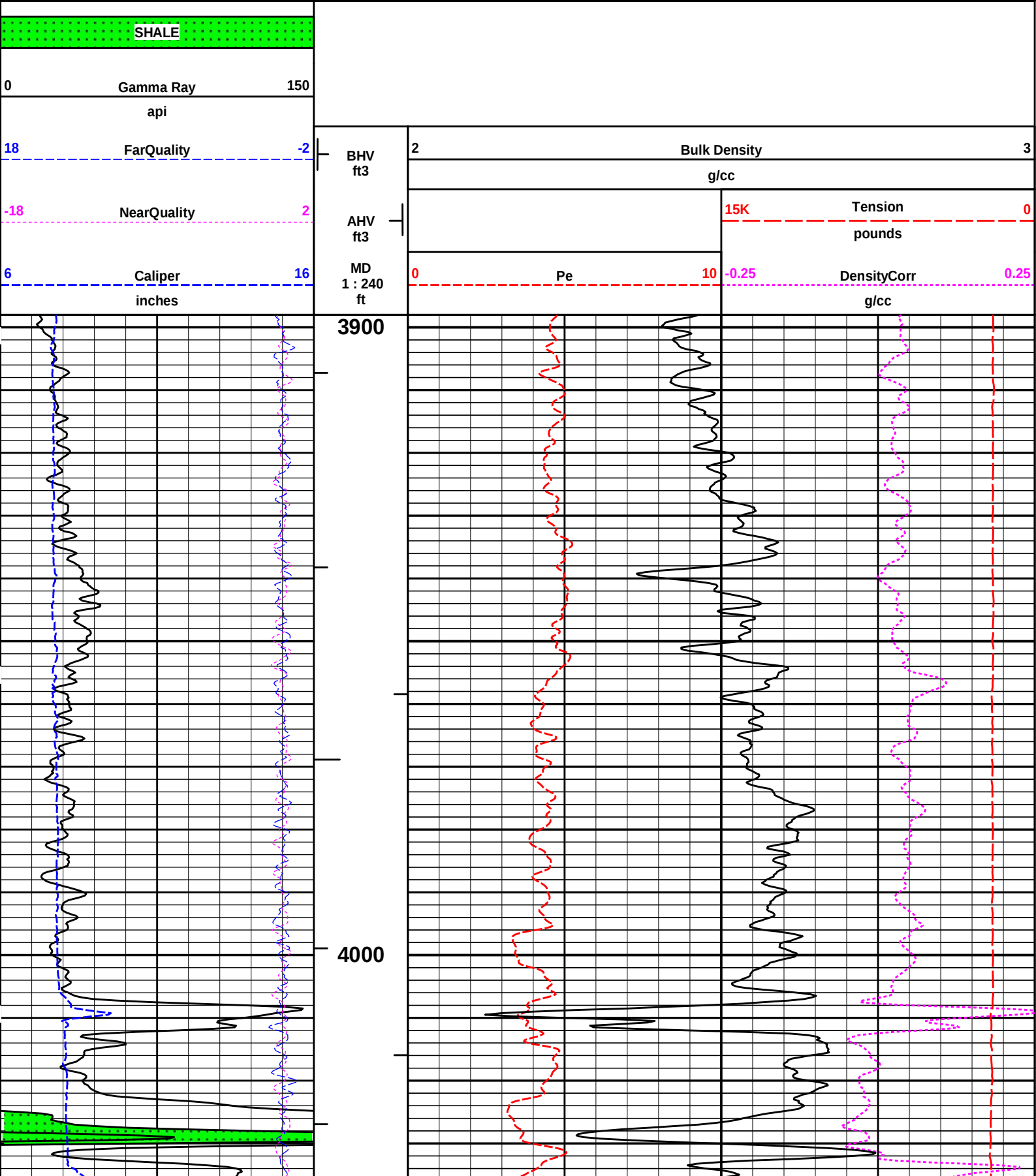
REPEAT SECTION

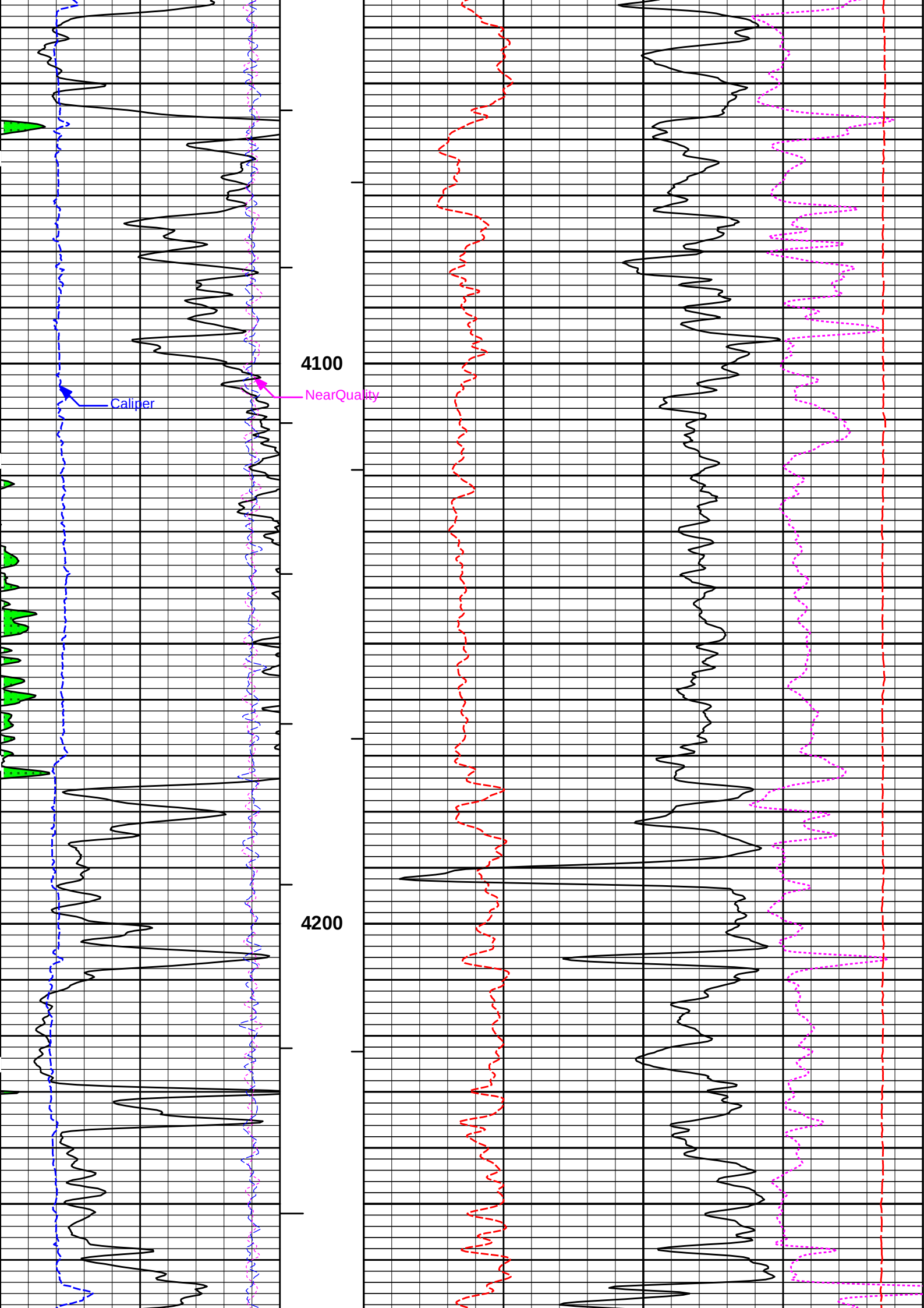
HALLIBURTON

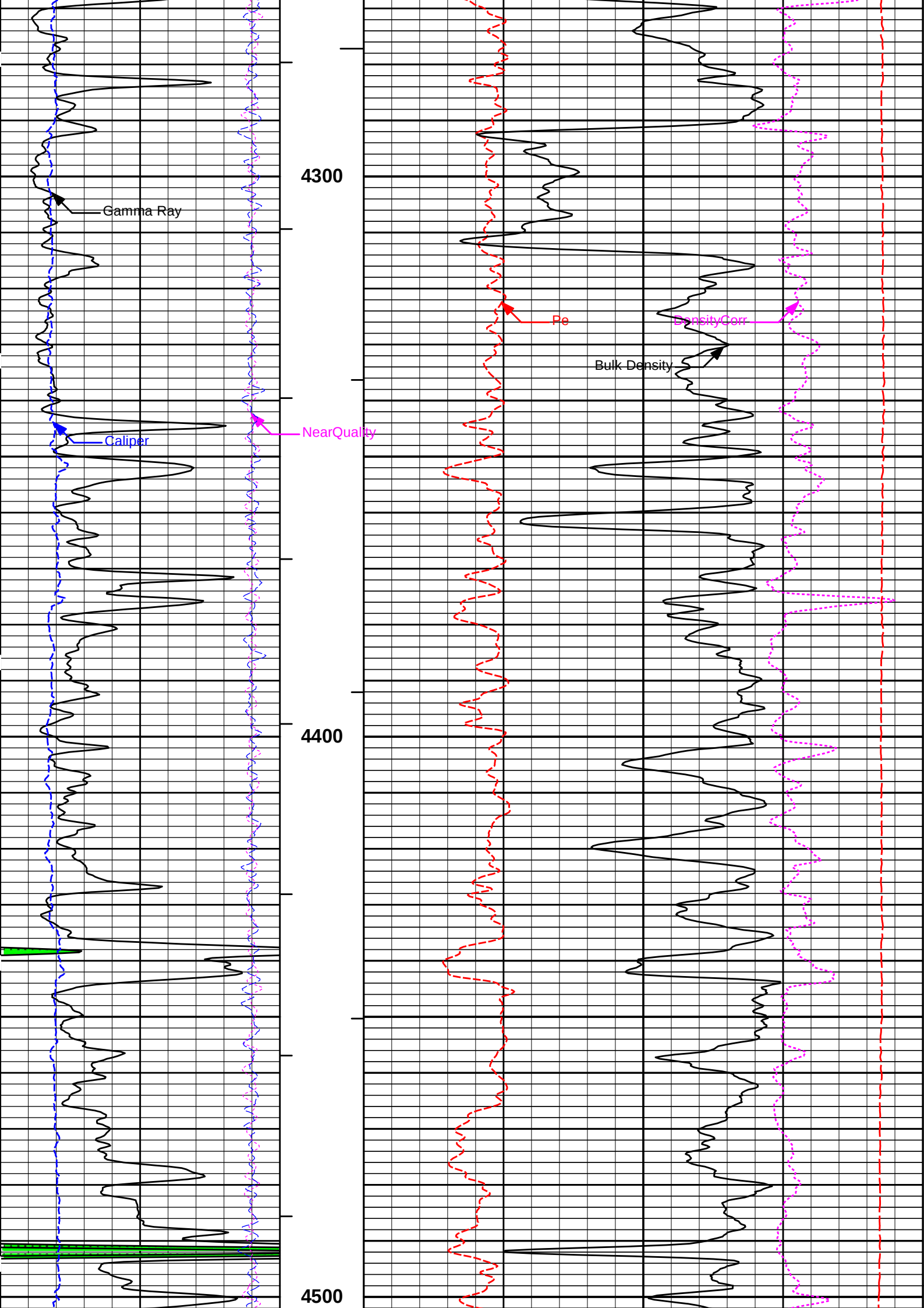
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Data: UNRUH # 4-33\Well Based\DETAILS\
Plot File: \\LOCAL\UNRUH # 4-33\Well Based\REPEAT\KID_5_MAIN_LIB

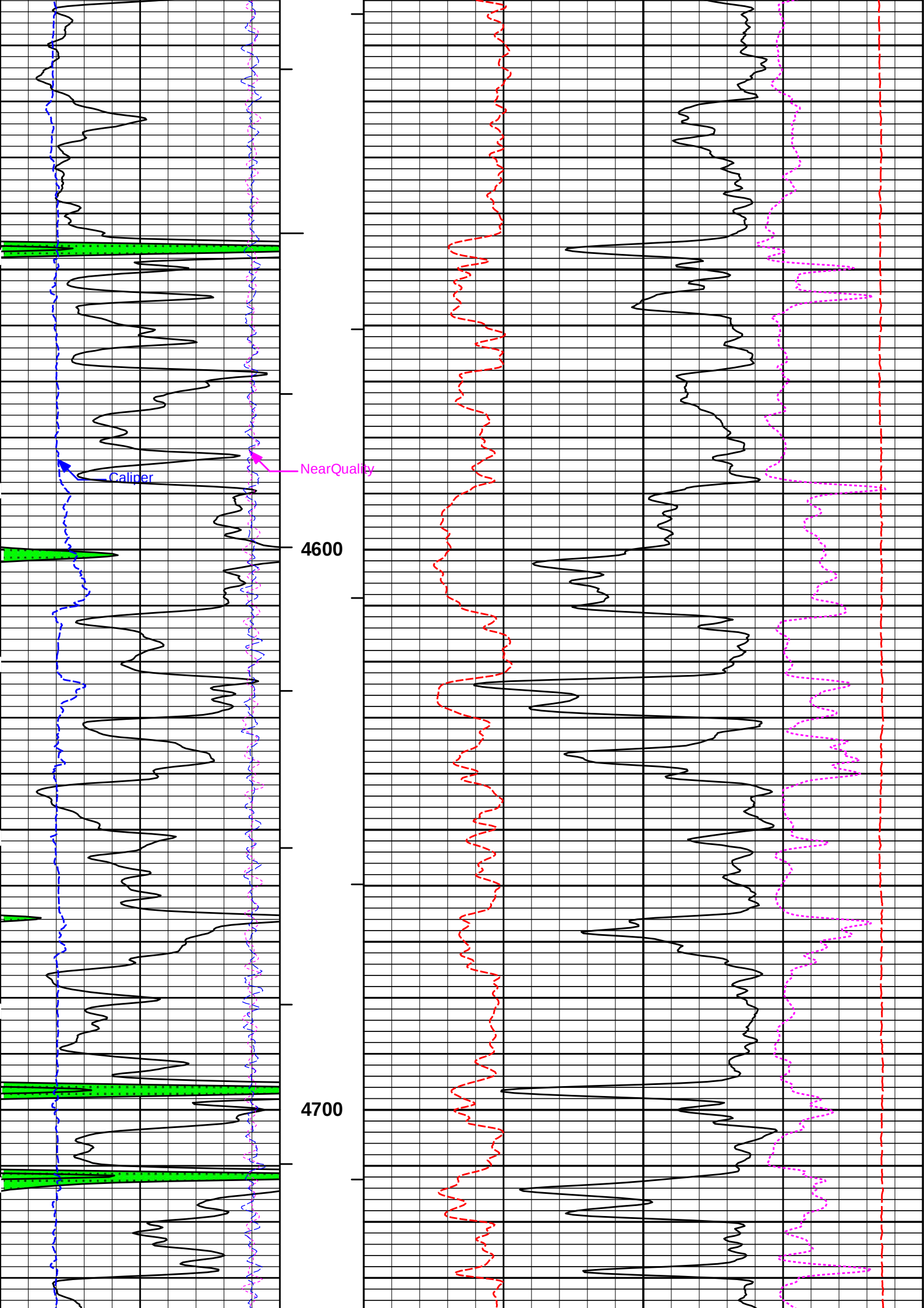
5 INCH MAIN LOG

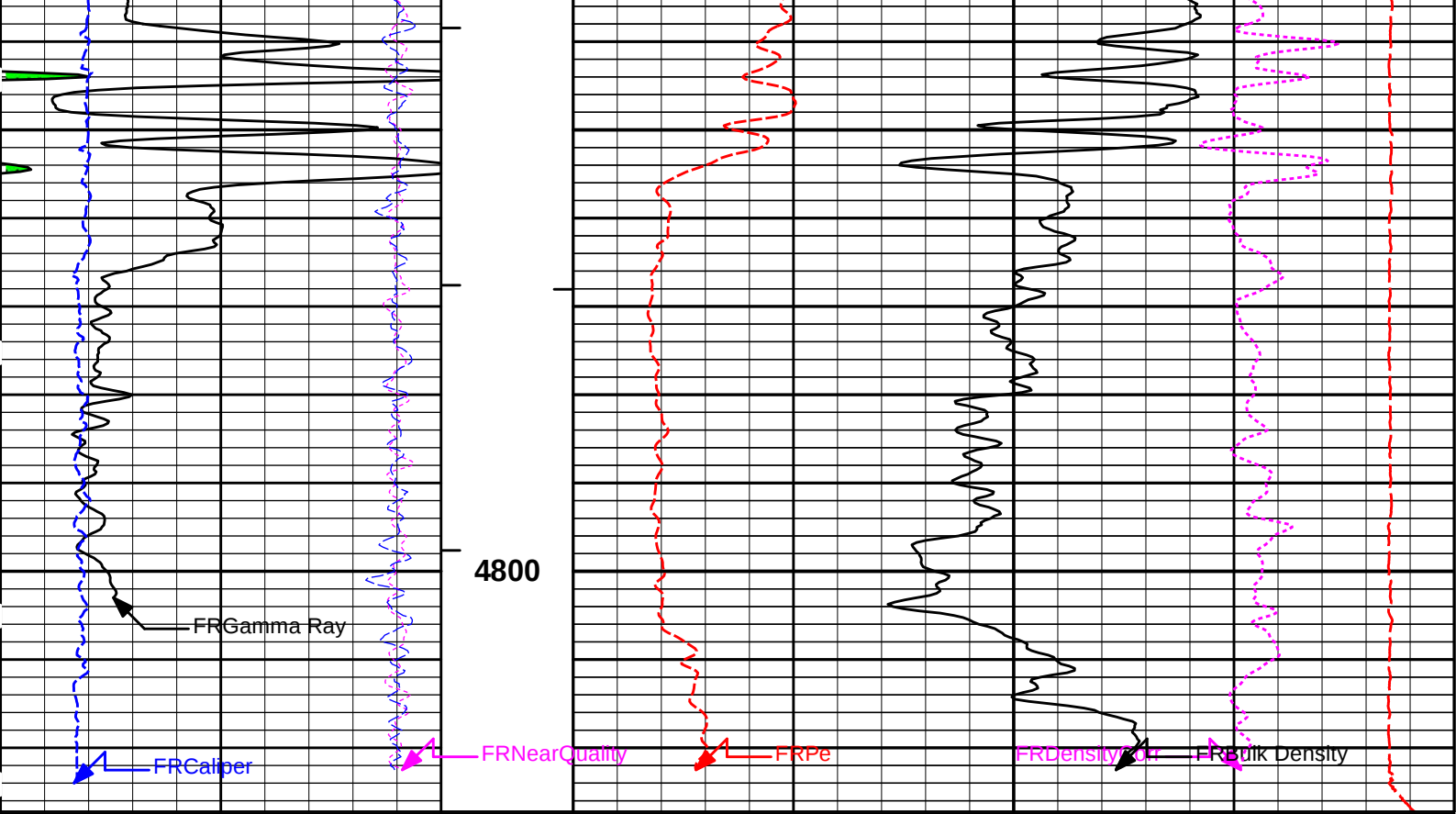
MEASURED DEPTH
MAIN SECTION 5" PER 100'











6	Caliper	16	MD	0	Pe	10	-0.25	DensityCorr	0.25
	inches		1 : 240 ft					g/cc	
-18	NearQuality	2	AHV				15K	Tension	0
			ft3					pounds	
18	FarQuality	-2	BHV	2	Bulk Density				3
			ft3		g/cc				
0	Gamma Ray	150							
	api								
	SHALE								

HALLIBURTON

Plot Time: 06-Mar-15 05:20:59
Plot Range: 3898 ft to 4827.25 ft
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Plot File: \\-LOCAL-UNRUH # 4-33\Well Based\POROIBULKD_5_MAIN_LIB

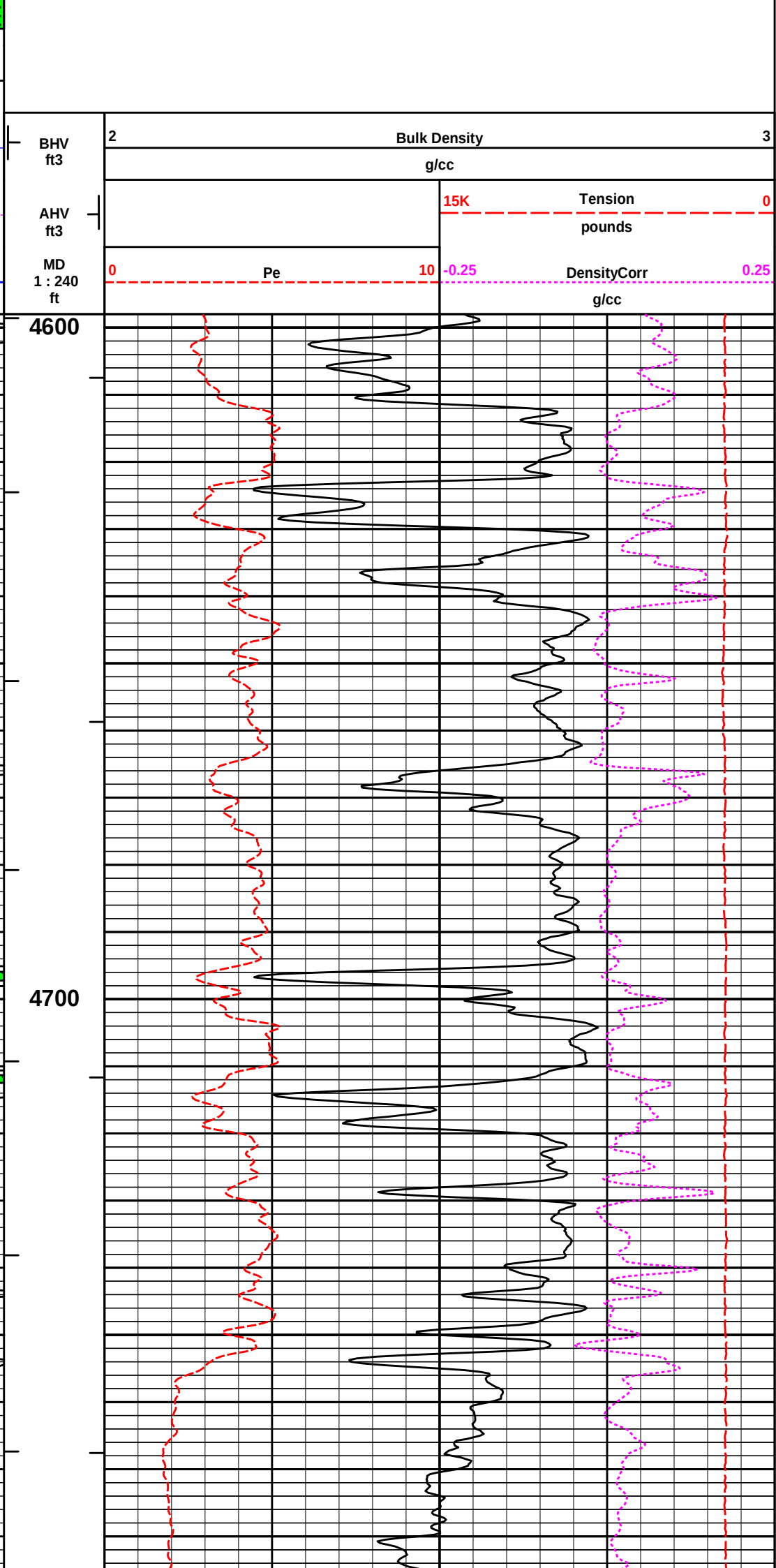
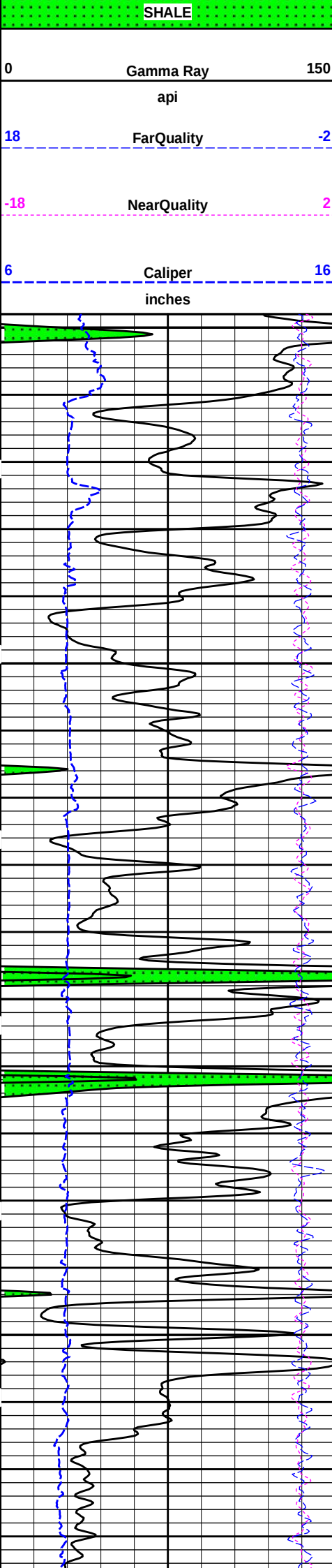
5 INCH MAIN LOG

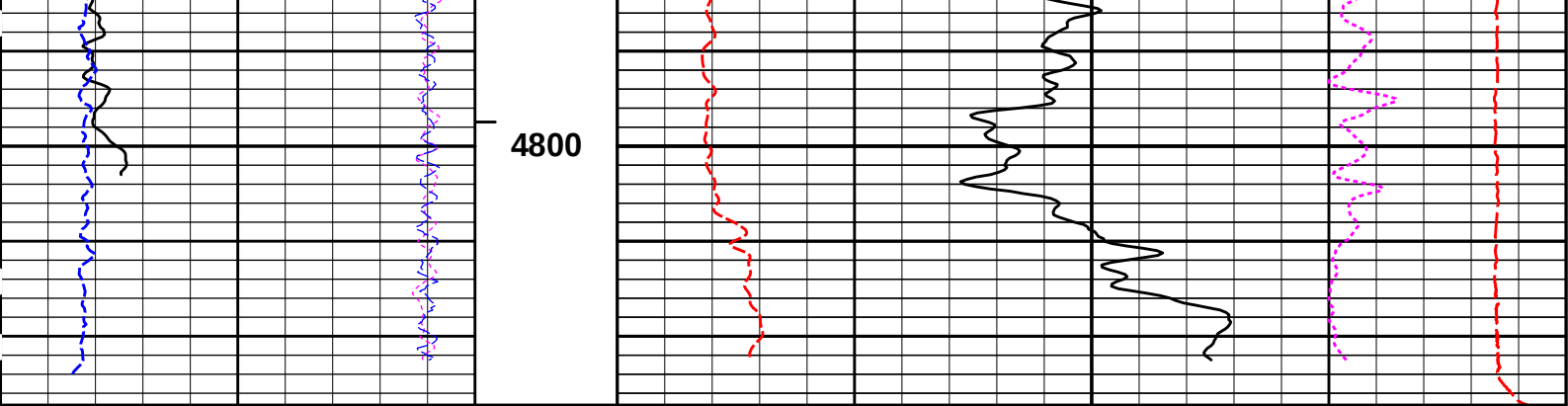
MEASURED DEPTH
MAIN SECTION 5" PER 100'

HALLIBURTON

Plot Time: 06-Mar-15 05:20:59
Plot Range: 4598 ft to 4827.25 ft
Data: UNRUH # 4-33\Well Based\REPEAT\
Plot File: \\-LOCAL-UNRUH # 4-33\Well Based\POROIBULKD_5_REP_LIB

REPEAT SECTION





6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25	
	inches							g/cc		
-18	NearQuality	2	AHV ft3				15K	Tension	0	
									pounds	
18	FarQuality	-2		BHV ft3	Bulk Density					3
							g/cc			
0	Gamma Ray	150								
	api									
SHALE										

HALLIBURTON

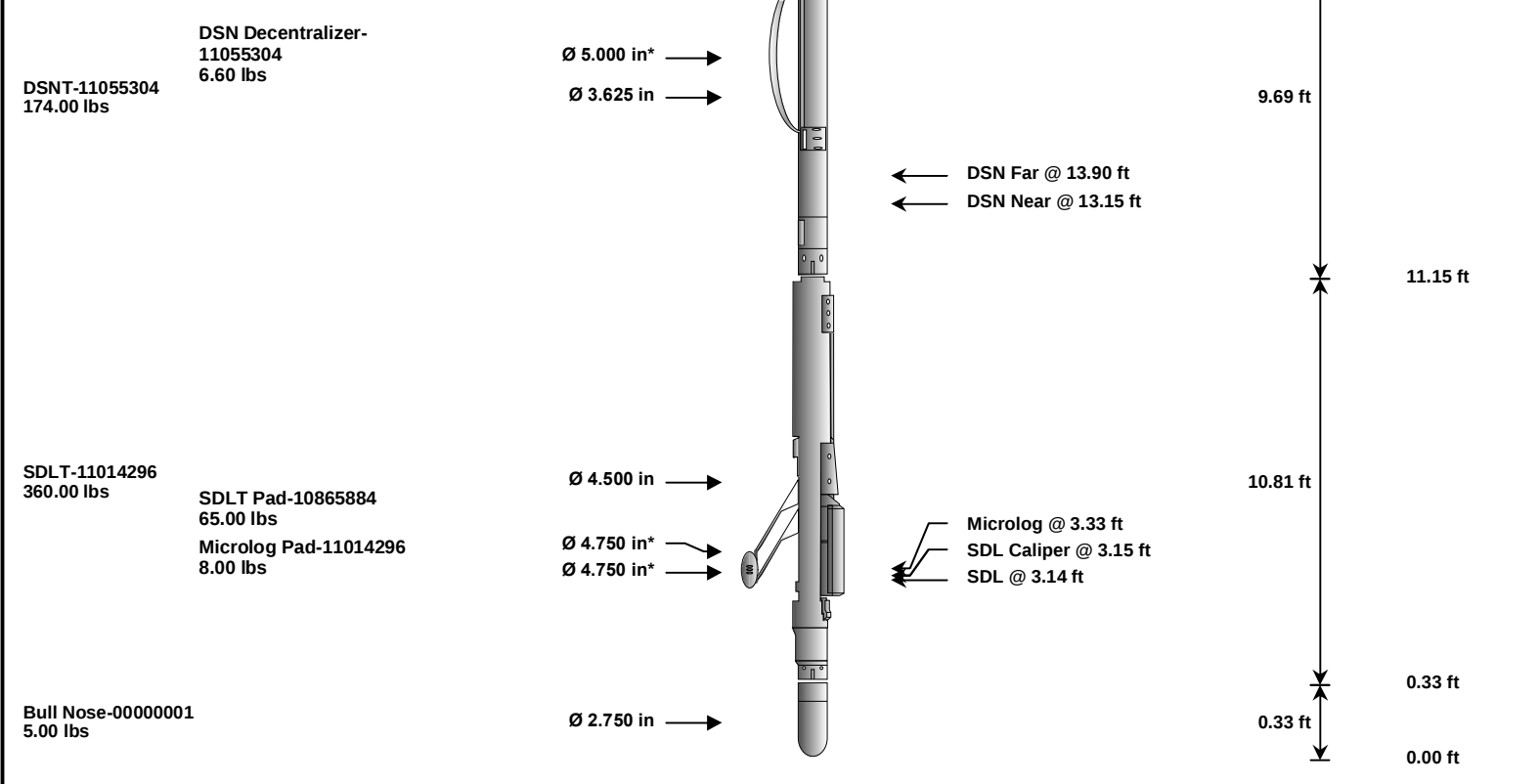
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Data: UNRUH # 4-33\Well Based\REPEAT\
Plot File: \\-LOCAL-UNRUH # 4-33\Well Based\PORO\BULKD_5_REP_LIB

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-12156658 135.00 lbs		Ø 3.625 in →		← Load Cell @ 35.66 ft ← BH Temperature @ 35.09 ft	6.25 ft	39.34 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		← SP @ 31.31 ft	3.74 ft	33.09 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →		← GammaRay @ 23.29 ft	8.52 ft	29.35 ft
					20.83 ft	



Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
RWCH	Releasable Wireline Cable Head		12156658	135.00	6.25	33.09	300.00	
SP	SP Sub		12345678	60.00	3.74	29.35	300.00	
GTET	Gamma Telemetry Tool		11048627	165.00	8.52	20.83	60.00	
DSNT	Dual Spaced Neutron		11055304	174.00	9.69	11.15	60.00	
DCNT	DSN Decentralizer		11055304	6.60	5.13	*	14.48	300.00
SDLT	Spectral Density Tool		11014296	360.00	10.81	0.33	60.00	
SDLP	Density Insite Pad		10865884	65.00	2.55	*	2.54	60.00
MICP	Microlog Pad		11014296	8.00	1.00	*	2.83	60.00
BLNS	Bull Nose		00000001	5.00	0.33	0.00	300.00	
Total				978.60	39.34			
* Not included in Total Length and Length Accumulation.								
Data: UNRUH # 4-33\0002 SP-GTET-DSN-SDL-BN\IDLE								
Date: 06-Mar-15 02:52:50								

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION			
Tool Name:	GTET - 11048627	Reference Calibration Date:	06-Jan-15 09:40:45
Engineer:	SUHAIL BISHTI	Calibration Date:	27-Jan-15 10:59:27
Software Version:	WL INSITE R4.4.3 (Build 6)	Calibration Version:	1
Calibrator Source S/N: Error			
Calibrator API Reference:265.00 api			
Equivalent Calibrator API Reference:269.6 api			
Measurement	Measured	Calibrated	Units
Background	54.4	54.7	api
Background + Calibrator	322.3	324.4	api
Calibrator	267.9	269.6	api
NATURAL GAMMA RAY TOOL FIELD CALIBRATION			
Tool Name:	GTET - 11048627	Reference Calibration Date:	27-Jan-15 10:59:27
Engineer:	J. BOLLOM	Calibration Date:	05-Mar-15 19:56:32
Software Version:	WL INSITE R4.6.4 (Build 3)	Calibration Version:	1
Calibrator Source S/N: Error			

Calibrator API Reference:265.00 api
Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	54.7	50.7	api
Background + Calibrator	324.4	322.9	api
Calibrator	269.6	272.2	api

Shop	Field	Difference	Tolerance
269.6	272.2	-2.6	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	DSNT - 11055304	Reference Calibration Date:	17-Dec-14 11:14:27
Engineer:	SUHAIL BISHTI	Calibration Date:	17-Dec-14 11:36:45
Software Version:	WL INSITE R4.4.3 (Build 6)	Calibration Version:	1

Logging Source S/N: DSN-424
Tank Serial Number: LIBERAL WATER TANK
Reference value assigned to Tank: 51.680
Snow Block S/N: 10013313
Calibration Tank Water Temperature: 66 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.968	0.971	0.900 - 1.100

WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2101	0.2110	0.0009	+/- 0.0020
Calibrated Ratio:	9.70	9.73	0.029	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0516	0.02000 - 0.09000

PASS/FAIL SUMMARY	
Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	DSNT - 11055304	Reference Calibration Date:	17-Dec-14 11:36:45
Engineer:	J. BOLLOM	Calibration Date:	05-Mar-15 20:09:02
Software Version:	WL INSITE R4.6.4 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN-424
Snow Block S/N: 10013313

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0516	0.0646	0.0130	+/- 0.0150

PASS/FAIL SUMMARY	
Block Change Check:	Passed
Snow Block Stat Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - 11014296	Reference Calibration Date:	25-Feb-15 19:41:02
Engineer:	J. BOLLLOM	Calibration Date:	25-Feb-15 19:46:54
Software Version:	WL INSITE R4.6.4 (Build 3)	Calibration Version:	1
Host Tool Name:	DSNT - 11055304		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-3861.77	-4048.80	-7000.00 - -1000.00
Pad Gain	0.0003832	0.0003927	0.000200 - 0.000600
Arm Offset	-3084.17	-3051.62	-5000.00 - 3000.00
Arm Gain	0.0004914	0.0004840	0.000300 - 0.000700
Arm Power	-0.000003790	-0.000002972	-0.000010000 - 0.000010000

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS

Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.02	2.00	-0.02	+/- 0.20
Medium Ring (in)	3.73	3.75	0.02	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.58	6.50	-0.08	+/- 0.20
Medium Ring (in)	8.34	8.25	-0.09	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 0.20

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
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SDLT CALIPER FIELD CALIBRATION

Tool Name:	SDLT - 11014296	Reference Calibration Date:	25-Feb-15 19:46:54
Engineer:	J. BOLLLOM	Calibration Date:	02-Mar-15 02:52:29
Software Version:	WL INSITE R4.6.4 (Build 3)	Calibration Version:	1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.80	0.05	+/- 0.10
Ring Diameter	8.25	8.20	-0.05	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT Pad - 10865884	Reference Calibration Date:	17-Dec-14 12:33:56
Engineer:	SUHAIL BISHTI	Calibration Date:	17-Dec-14 12:54:47
Software Version:	WL INSITE R4.4.3 (Build 6)	Calibration Version:	1

Logging Source S/N: 5168 GW

Aluminum Block S/N: LIBERAL ALUMINUM

Density: 2.598g/cc

Pe: 3.170

Magnesium Block S/N: LIBERAL MAGNESIUM

Density: 1.684g/cc

Pe: 2.598

Density Calibration Summary			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0410	1.0747	0.90 - 1.10
Near Dens Gain	1.0312	1.0461	0.90 - 1.10
Near Peak Gain	1.0303	1.0617	0.90 - 1.10
Near Lith Gain	1.0040	1.0051	0.90 - 1.10
Far Bar Gain	1.0145	1.0205	0.90 - 1.10
Far Dens Gain	1.0035	1.0053	0.90 - 1.10
Far Peak Gain	1.0007	1.0015	0.90 - 1.10
Far Lith Gain	0.9727	0.9728	0.90 - 1.10
Near Bar Offset	-0.1576	-0.4605	NONE
Near Dens Offset	-0.0828	-0.2093	NONE
Near Peak Offset	-0.0852	-0.3443	NONE
Near Lith Offset	0.1149	0.1051	NONE
Far Bar Offset	0.0352	-0.0122	NONE
Far Dens Offset	0.1064	0.0932	NONE
Far Peak Offset	0.0869	0.0801	NONE
Far Lith Offset	0.2443	0.2432	NONE
Near Bar Background	788.54	789.00	700 - 1450
Near Dens Background	263.02	262.51	230 - 480
Near Peak Background	116.99	115.51	100 - 210
Near Lith Background	142.21	143.14	125 - 260
Far Bar Background	490.12	489.46	450 - 900
Far Dens Background	192.35	191.99	175 - 345
Far Peak Background	74.44	76.26	70 - 140
Far Lith Background	78.96	79.45	75 - 145

Calibration Block Summary				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.680	1.684	0.004	+/- 0.015
Pe	2.508	2.552	0.044	+/- 0.150
ALUMINUM				
Density (g/cc)	2.596	2.598	0.002	+/- 0.01500
Pe	3.111	3.120	0.009	+/- 0.150

Tool Summary				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0007	+/- 0.0110	0.0010	+/- 0.0140
Magnesium Block	0.0014	+/- 0.0110	-0.0007	+/- 0.0140
Aluminum Block	0.0004	+/- 0.0110	0.0003	+/- 0.0140
Resolution	8.52	6.00 - 11.50	8.94	6.00 - 11.50
Internal Verifier(B+D+P+L)	1310	1200 - 2700	837	800 - 1700

PASS/FAIL SUMMARY	
Background Quality Check:	Passed
Background Range Check:	Passed
Background Resolution Check:	Passed
Background Verification Check:	Passed
Magnesium Quality Check:	Passed
Aluminum Quality Check:	Passed

Aluminum Quality Check:Passed

Gains Check:Passed

Changes in Calibration Blocks:Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name:SDLT Pad - 10865884

Reference Calibration Date:17-Dec-14 12:54:47

Engineer:J. BOLLUM

Calibration Date:02-Mar-15 02:49:52

Software Version:WL INSITE R4.6.4 (Build 3)

Calibration Version:1

Pad Temperature: 54.1 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1310.169	1308.110	-2.059	14.650
Far (B+D+P+L) cps	837.156	834.343	-2.813	15.912
Near Resolution	8.52	8.53	0.010	0.50
Far Resolution	8.94	9.01	0.070	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:Passed

Bkg Resolution Check:Passed

Bkg Verification Check:Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	272.2	-----	-2.6	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0516	0.0646	-----	-0.0130	+/- 0.0150	decg
SDLT-11014296						
Pad Extension	3.75	3.80	-----	-0.05	+/-0.10	in
Ring Diameter	8.25	8.20	-----	0.05	+/-0.15	in
SDLT Pad-10865884						
Near(B+D+P+L)	1310.169	1308.110	-----	2.059	+/-14.650	cps
Far(B+D+P+L)	837.156	834.343	-----	2.813	+/-15.912	cps

Data: UNRIUH # 4-3310002 SP-GTET-DSN-SDL-BNIDLE

Date: 06-Mar-15 02:58:58

HALLIBURTON

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.400	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	2.000	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4826.00	ft

	SHARED	BHT	Bottom Hole Temperature	200.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	GTET	BHSM	Borehole Size Source Tool	SDLT	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DSNO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
	DSNT	DNTP	Temperature Correction Type	None	
	DSNT	DPRS	DSN Pressure Correction Type	None	
	DSNT	SHCO	View More Correction Options	No	
	DSNT	UTVD	Use TVD for Gradient Corrections?	No	
	DSNT	LHWT	Logging Horizontal Water Tank?	No	
	DSNT	BHSM	Borehole Size Source Tool	SDLT	
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	SDLT Pad	DNOK	Process Density?	Yes	
	SDLT Pad	DNOK	Process Density EVR?	No	
	SDLT Pad	CB	Logging Calibration Blocks?	No	
	SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
	SDLT Pad	DTWN	Disable temperature warning	No	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
	SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
	SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
BOTTOM					
Data: UNRUH # 4-3310002 SP-GTET-DSN-SDL-BNIDLE				Date: 06-Mar-15 02:58:01	

HALLIBURTON INPUTS, DELAYS AND FILTERS TABLE				
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
Rwa / CrossPlot				
TPUL	Tension Pull	39.34	NO	
BS	Bit Size	39.34	NO	

HDIA	Measured Hole Diameter	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	31.31	NO	
SP	Spontaneous Potential	31.31	BLK	1.250
SPR	Raw Spontaneous Potential	31.31	NO	
SPO	Spontaneous Potential Offset	31.31	NO	
GTET				
TPUL	Tension Pull	23.29	NO	
GR	Natural Gamma Ray API	23.29	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	23.29	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	23.29	W	1.416 , 0.750
HDIA	Measured Hole Diameter	0.00	NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	13.05	NO	
RNDS	Near Detector Telemetry Counts	13.15	BLK	1.417
RFDS	Far Detector Telemetry Counts	13.90	TRI	0.583
DNTT	DSN Tool Temperature	13.15	NO	
DSNS	DSN Tool Status	13.05	NO	
ERND	Near Detector Telemetry Counts EVR	13.15	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	13.90	BLK	0.000
ENTM	DSN Tool Temperature EVR	13.15	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT				
TPUL	Tension Pull	3.15	NO	
PCAL	Pad Caliper	3.15	TRI	0.250
ACAL	Arm Caliper	3.15	TRI	0.250
SDLT Pad				
TPUL	Tension Pull	3.14	NO	
NAB	Near Above	2.96	BLK	0.920
NHI	Near Cesium High	2.96	BLK	0.920
NLO	Near Cesium Low	2.96	BLK	0.920
NVA	Near Valley	2.96	BLK	0.920
NBA	Near Barite	2.96	BLK	0.920
NDE	Near Density	2.96	BLK	0.920
NPK	Near Peak	2.96	BLK	0.920
NLI	Near Lithology	2.96	BLK	0.920
NBAU	Near Barite Unfiltered	2.96	BLK	0.250
NLIU	Near Lithology Unfiltered	2.96	BLK	0.250
FAB	Far Above	3.31	BLK	0.250
FHI	Far Cesium High	3.31	BLK	0.250
FLO	Far Cesium Low	3.31	BLK	0.250
FVA	Far Valley	3.31	BLK	0.250
FBA	Far Barite	3.31	BLK	0.250
FDE	Far Density	3.31	BLK	0.250
FPK	Far Peak	3.31	BLK	0.250
FLI	Far Lithology	3.31	BLK	0.250
PTMP	Pad Temperature	3.15	BLK	0.920
NHV	Near Detector High Voltage	2.54	NO	
FHV	Far Detector High Voltage	2.54	NO	

TMP	Instrument Temperature	2.54	NO	
DDHV	Detector High Voltage	2.54	NO	
HDIA	Measured Hole Diameter	0.00	NO	
Microlog Pad				
TPUL	Tension Pull	3.33	NO	
MINV	Microlog Lateral	3.33	BLK	0.750
MNOR	Microlog Normal	3.33	BLK	0.750
Data: UNRUH # 4-33\0002 SP-GTET-DSN-SDL-BNIDLE				Date: 06-Mar-15 02:58:21



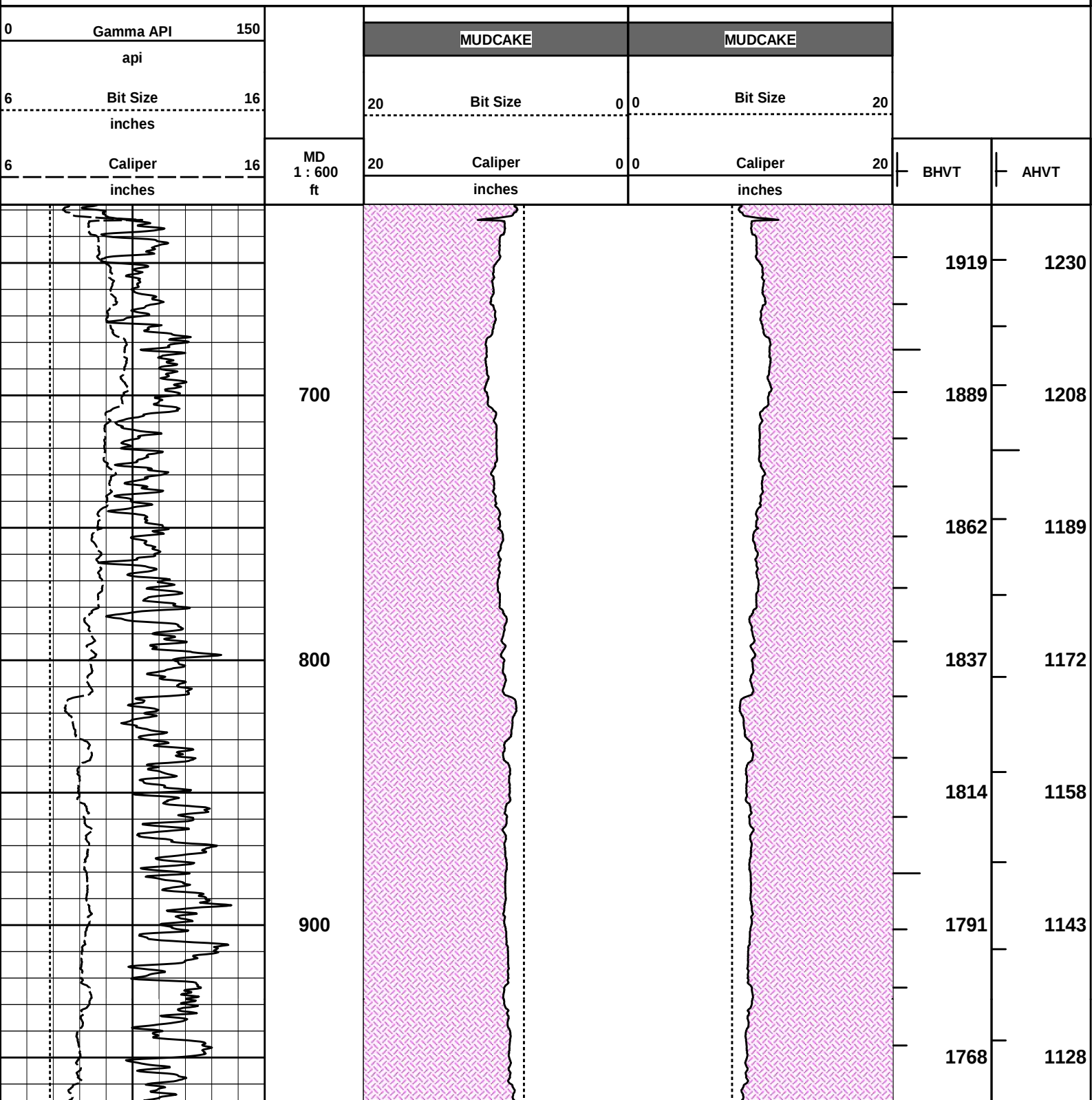
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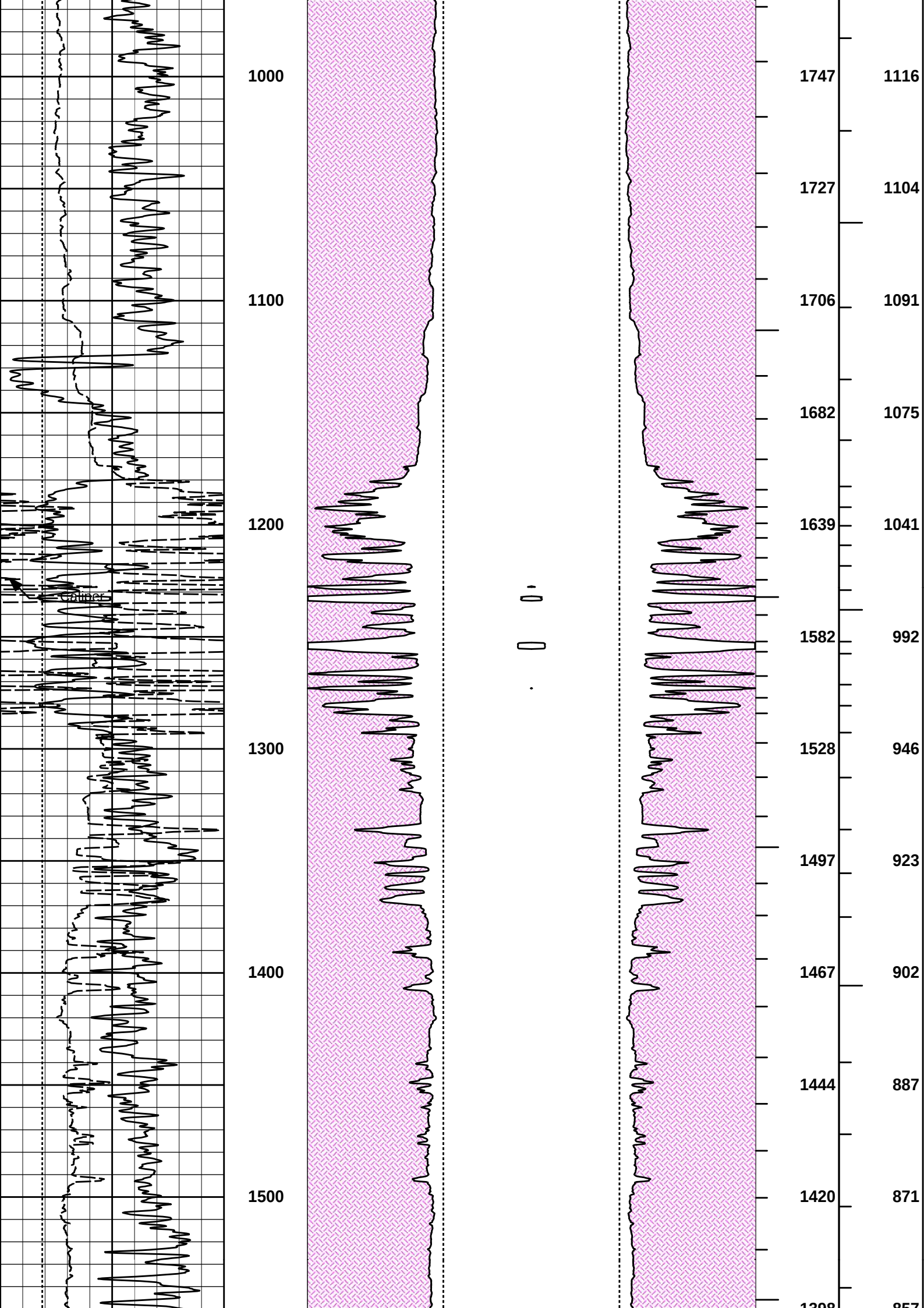
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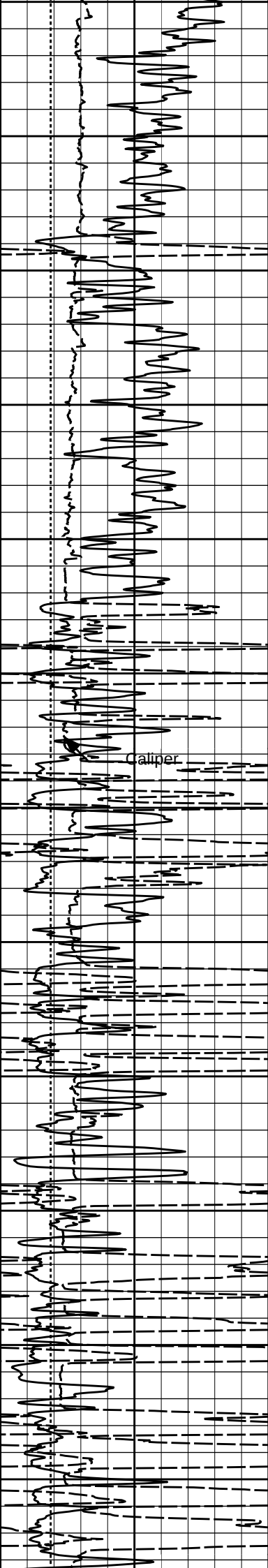
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ANNULAR HOLE VOLUME PLOT







1600

1700

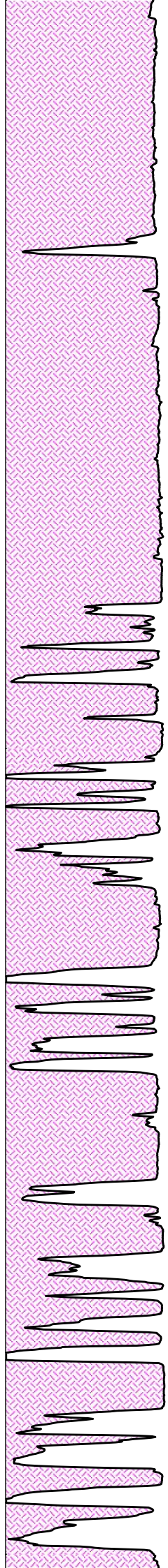
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Caliper

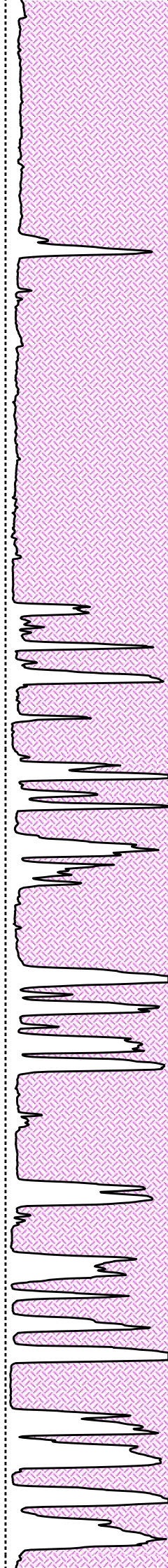


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0

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1376

1328

1281

1209

1156

1037

857

844

825

812

800

781

751

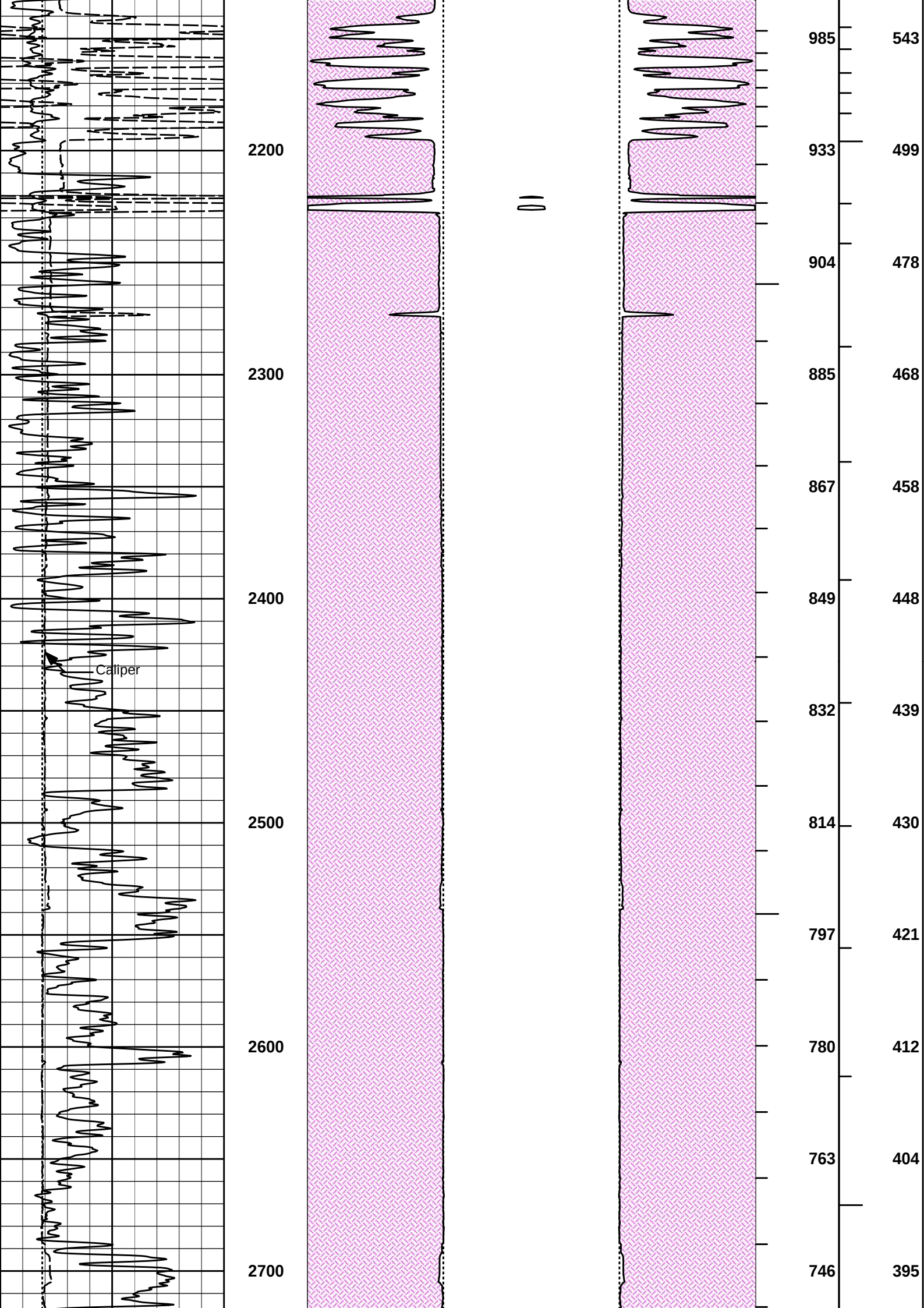
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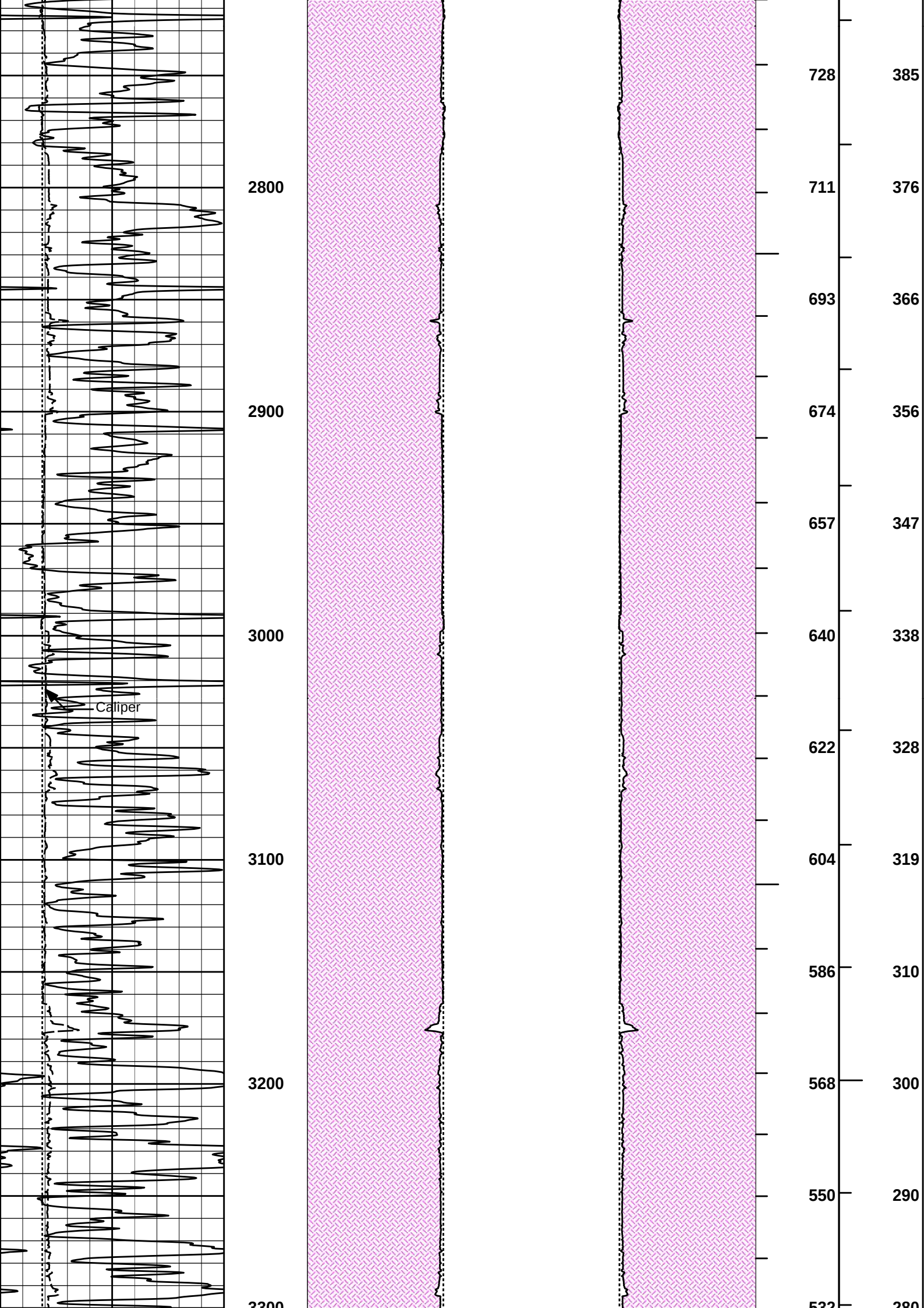
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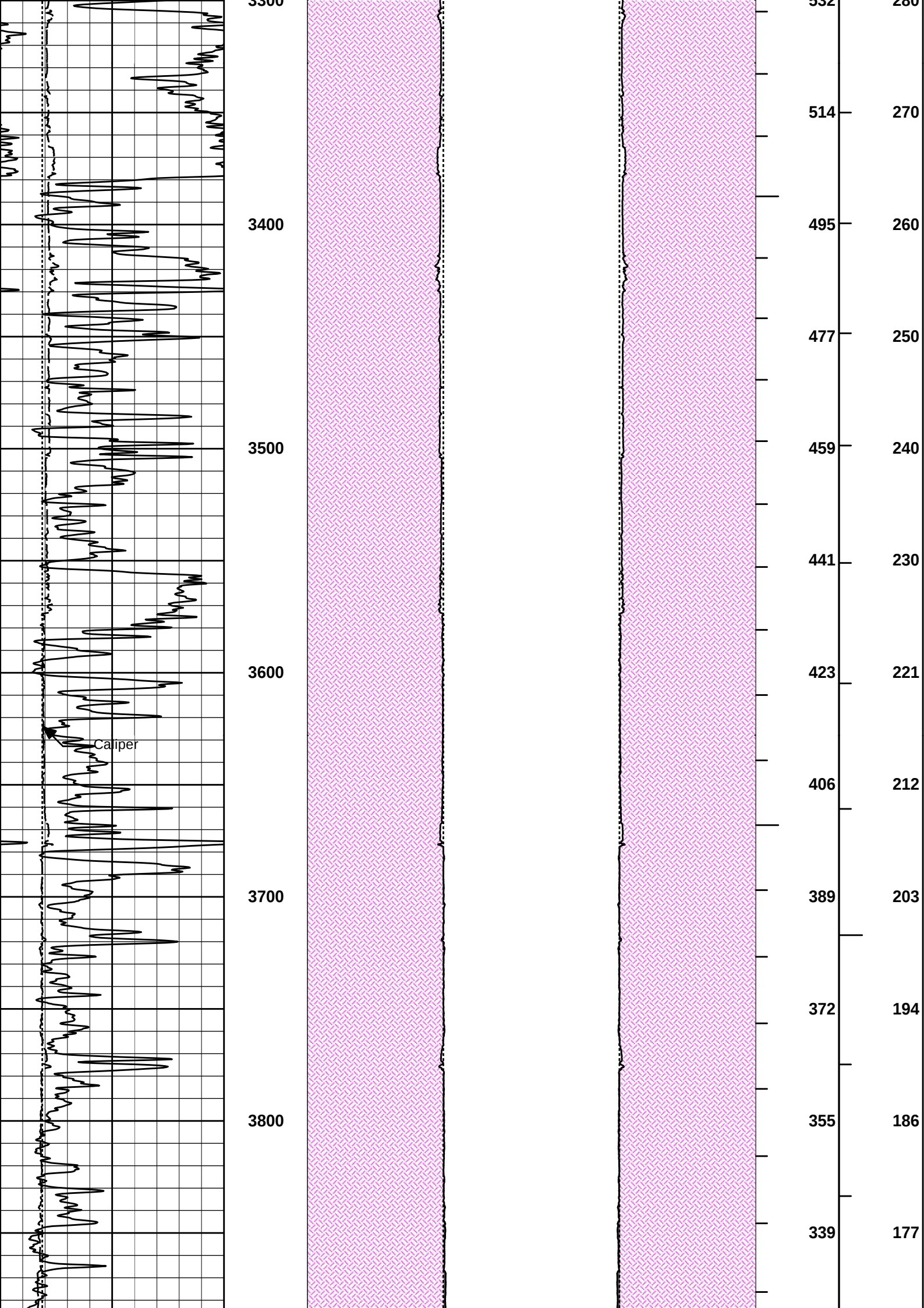
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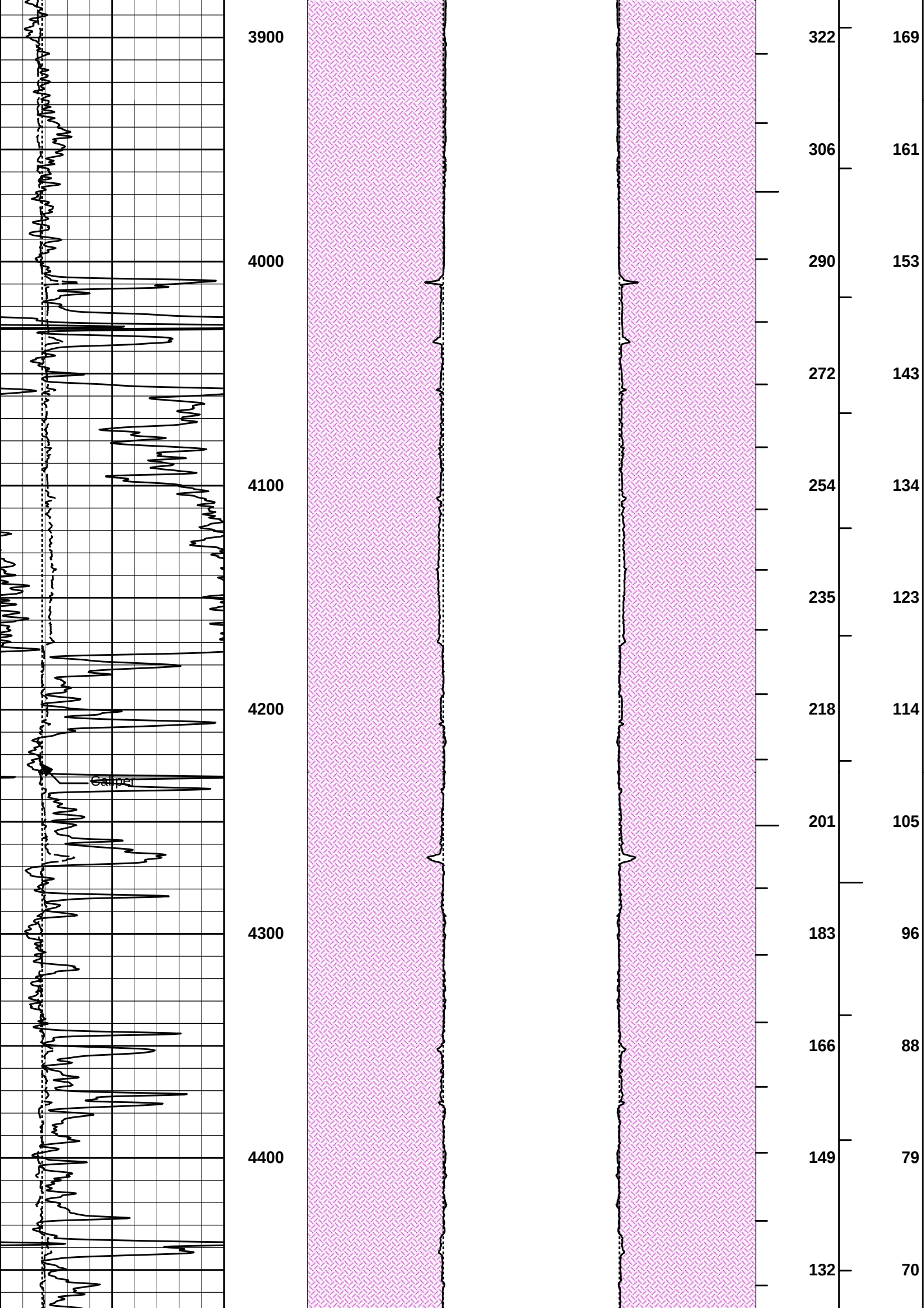
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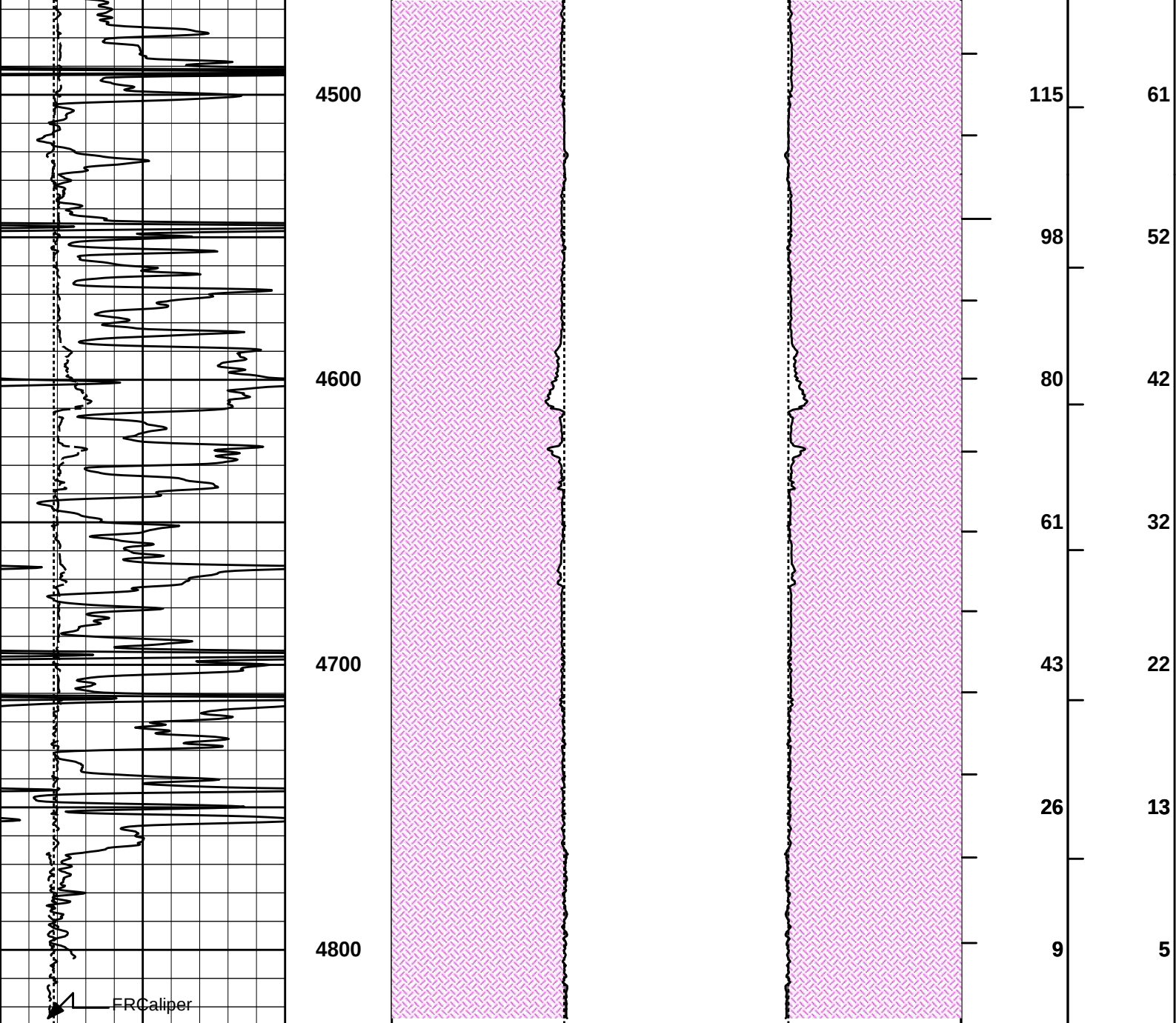
587











6	Caliper	16	MD 1 : 600 ft	20	Caliper	0 0	20	BHVT	AHVT
	inches				inches				
6	Bit Size	16		20	Bit Size	0 0	20		
	inches								
0	Gamma API	150			MUDCAKE		MUDCAKE		
	api								

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Plot Time: 06-Mar-15 05:21:09
Plot Range: 628 ft to 4827.25 ft
Data: UNRUH # 4-33\Well Based\MAIN\
Plot File: \\-LOCAL-UNRUH # 4-33\Well Based\PORO\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

COMPANY	HERMAN L. LOEB, LLC
WELL	UNRUH # 4-33
FIELD	EINSEL
COUNTY	KIOWA
STATE	KANSAS

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
LOG