

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
LOG

COMPANY		OXY USA INC.	
WELL		DRUSSEL E-4	
FIELD/BLOCK		HUGOTON GAS AREA	
COUNTY		FINNEY	
STATE		KANSAS	
Permanent Datum		GL	
Log measured from		KB	
Drilling measured from		KB	
Date		09-Oct-13	
Run No.		ONE	
Depth - Driller		5293.00 ft	
Depth - Logger		5293.0 ft	
Bottom - Logged Interval		5249.0 ft	
Top - Logged Interval		3900.0 ft	
Casing - Driller		8.625 in @ 1640.0 ft	
Casing - Logger		1640.0 ft	
Bit Size		7.875 in @	
Type Fluid in Hole		WATER BASED MUD	
Density		10.0 ppg @ 42.00 s/qt	
PH		9.90 pH @ 8.8 cp/m	
Source of Sample		MUD PIT	
Rm @ Meas. Temperature		1.300 ohmm @ 75.00 degF @	
Rmf @ Meas. Temperature		1.07 ohmm @ 75.00 degF @	
Rmc @ Meas. Temperature		1.550 ohmm @ 75.00 degF @	
Source Rmf		MEASURED	
Rm @ BHT		0.72 ohmm @ 140.0 degF @	
Time Since Circulation		5.0 hr	
Time on Bottom		09-Oct-13 08:45	
Max. Rec. Temperature		140.0 degF @ 5293.0 ft @	
Equipment		11230668 LIBERAL	
Recorded By		J. BOLLOW	
Witnessed By		G. FLAGG	

COMPANY	OXY USA INC.
WELL	DRUSSEL E-4
FIELD/BLOCK	HUGOTON GAS AREA
COUNTY	FINNEY
STATE	KANSAS
API No.	15055222400000
Location	(SHL) 414' FSL & 1672' FEL NW SE SW SE
Other Services:	MICROLOG ACRT HFDI BSAT
Sect.	36
Twp.	25S
Rge.	33W
Elev.	2889.0 ft
D.F.	2899.0 ft
G.L.	2889.0 ft

Fold here

Service Ticket No.: 900805003				API Serial No.: 15055222400000				PGM Version: WL INSITE R3.8.4 (Build 5)							
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.		@		@											
Rmc @ Meas. Temp.		@		@											
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.		10748374		Serial No.				Serial No.		10673790		Serial No.		10735145	
Model No.		GTET		Model No.				Model No.		SDLT-I		Model No.		DSNT-I	
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		CS137		Source Type		AM241BE	
Length		8'		LSA [Y/N]				Serial No.		5073GW		Serial No.		DSN-436	
Distance to Source		25'		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	5293	3900	REC	0	150				30	-10	2.71	30	-10	LIME		
DIRECTIONAL INFORMATION																
Maximum Deviation								@	KOP							@
Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING																
CHLORIDES REPORTED AT 3,000 MG/L																
LCM REPORTED AT 2 LB/BBL																
GTET-HFDT-DSNT-SDLT-BSAT-ACRT RUN IN COMBINATION																
TODAY'S CREW: F. VILLA & V. JAIME																
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS. 620-624-8123																
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.																
														HALLIBURTON		



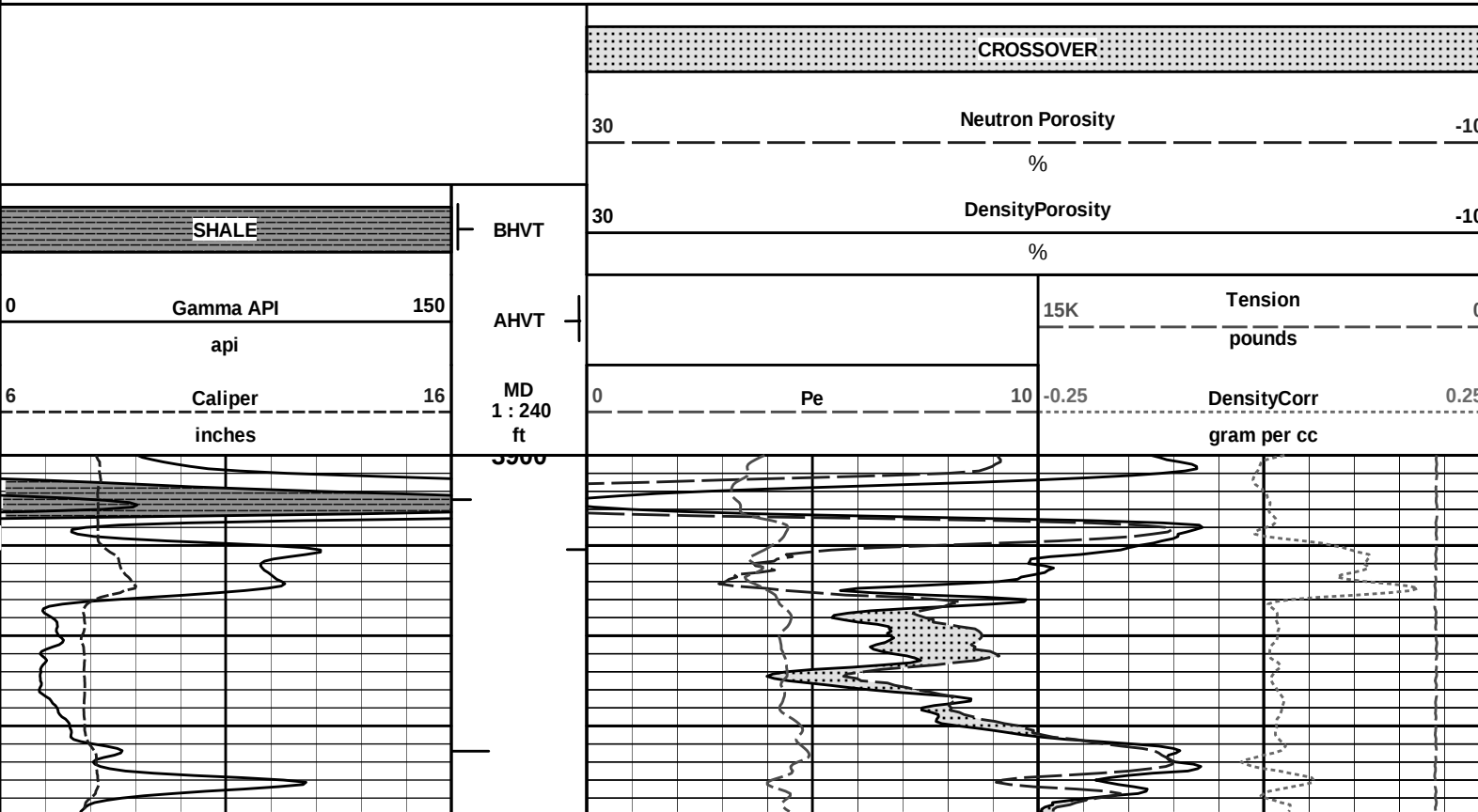
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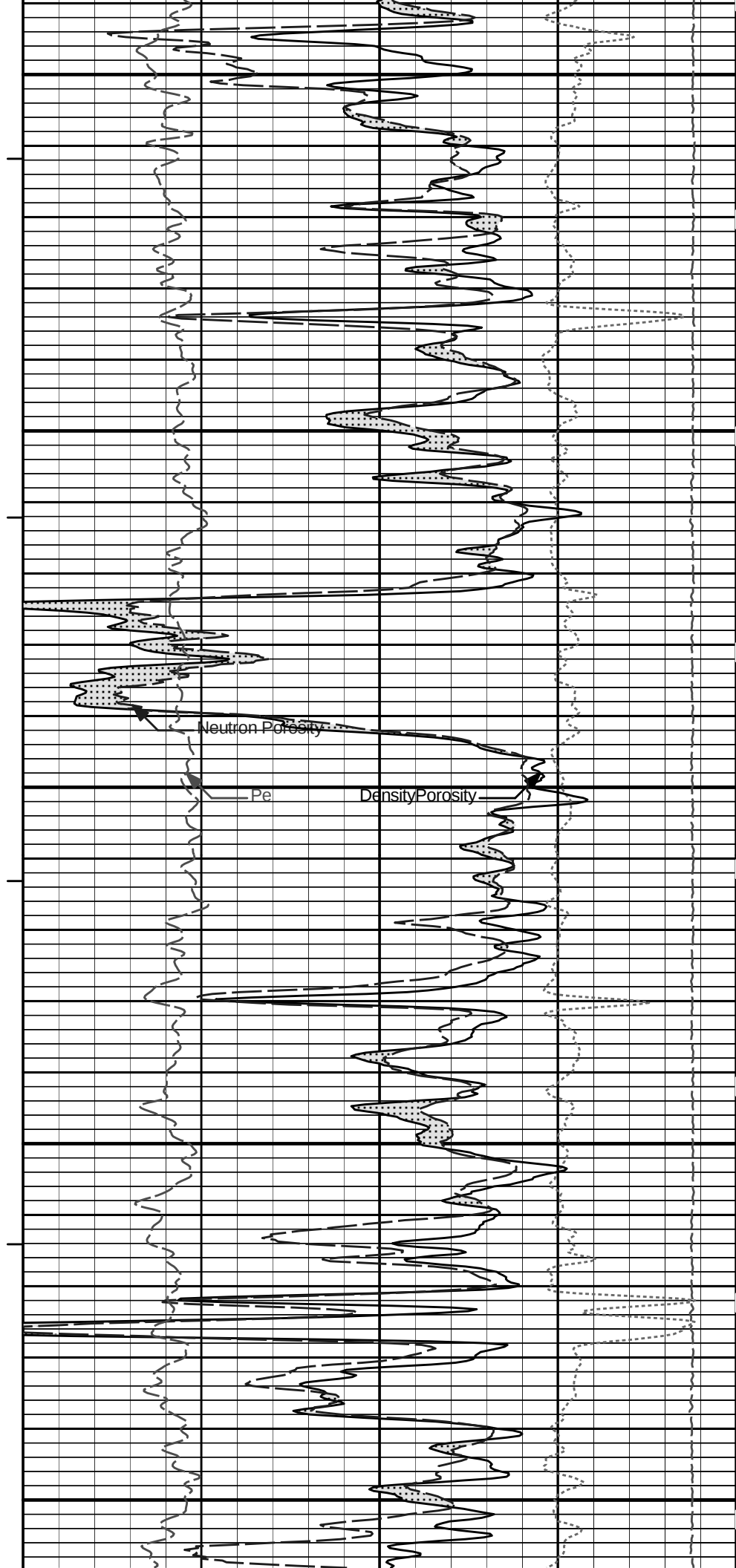
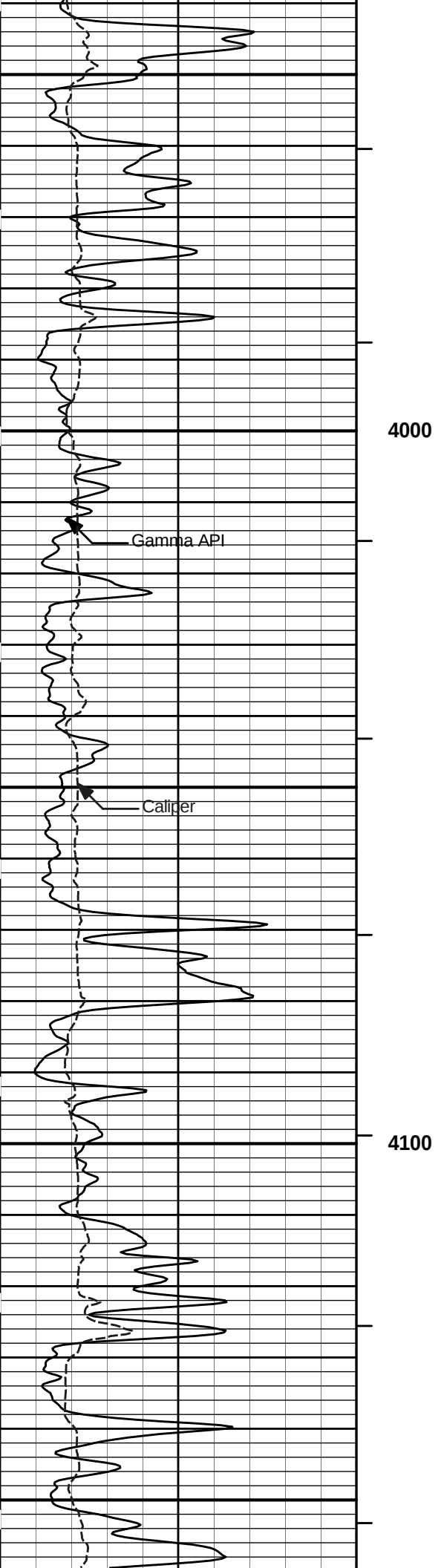
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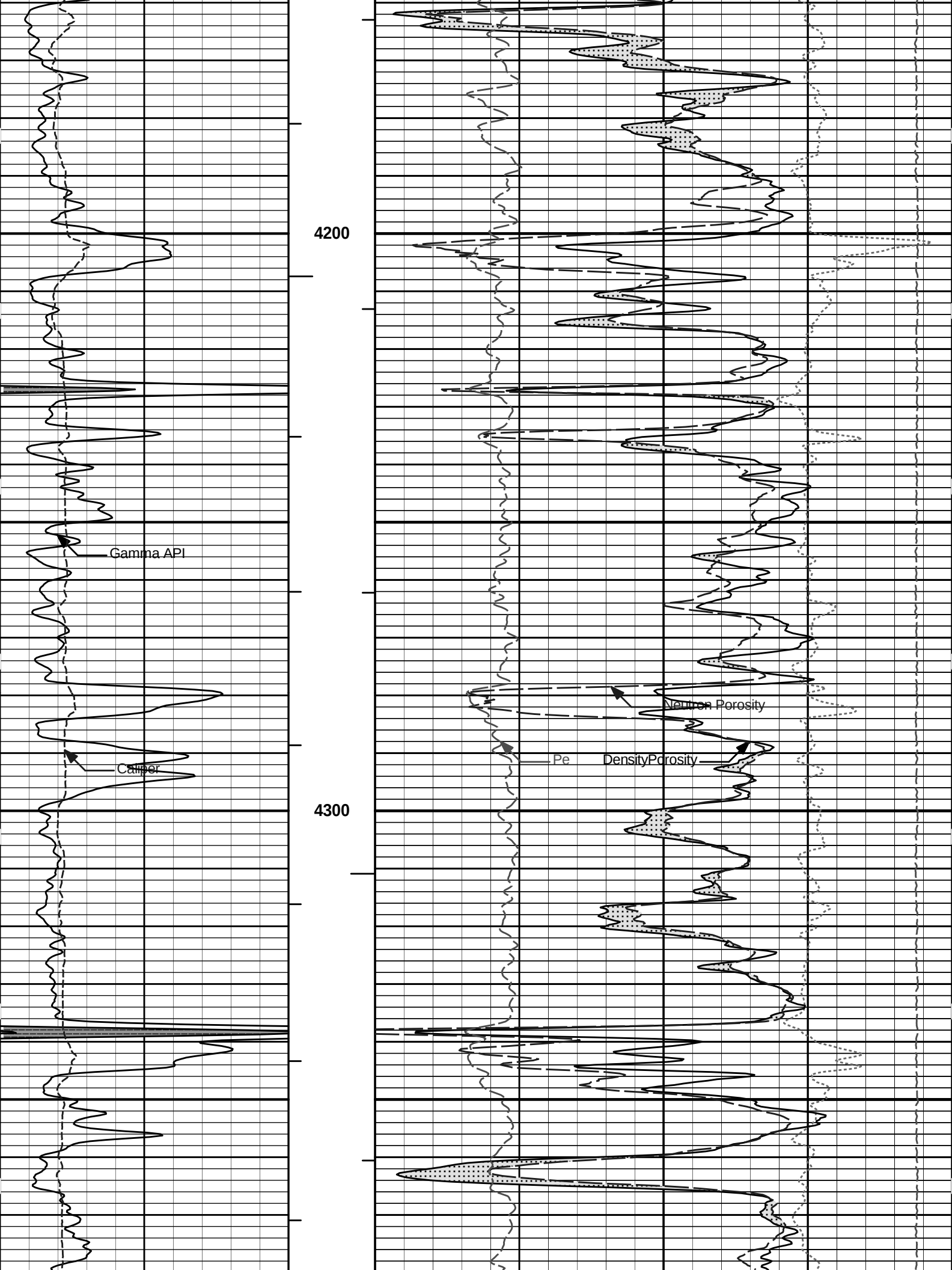
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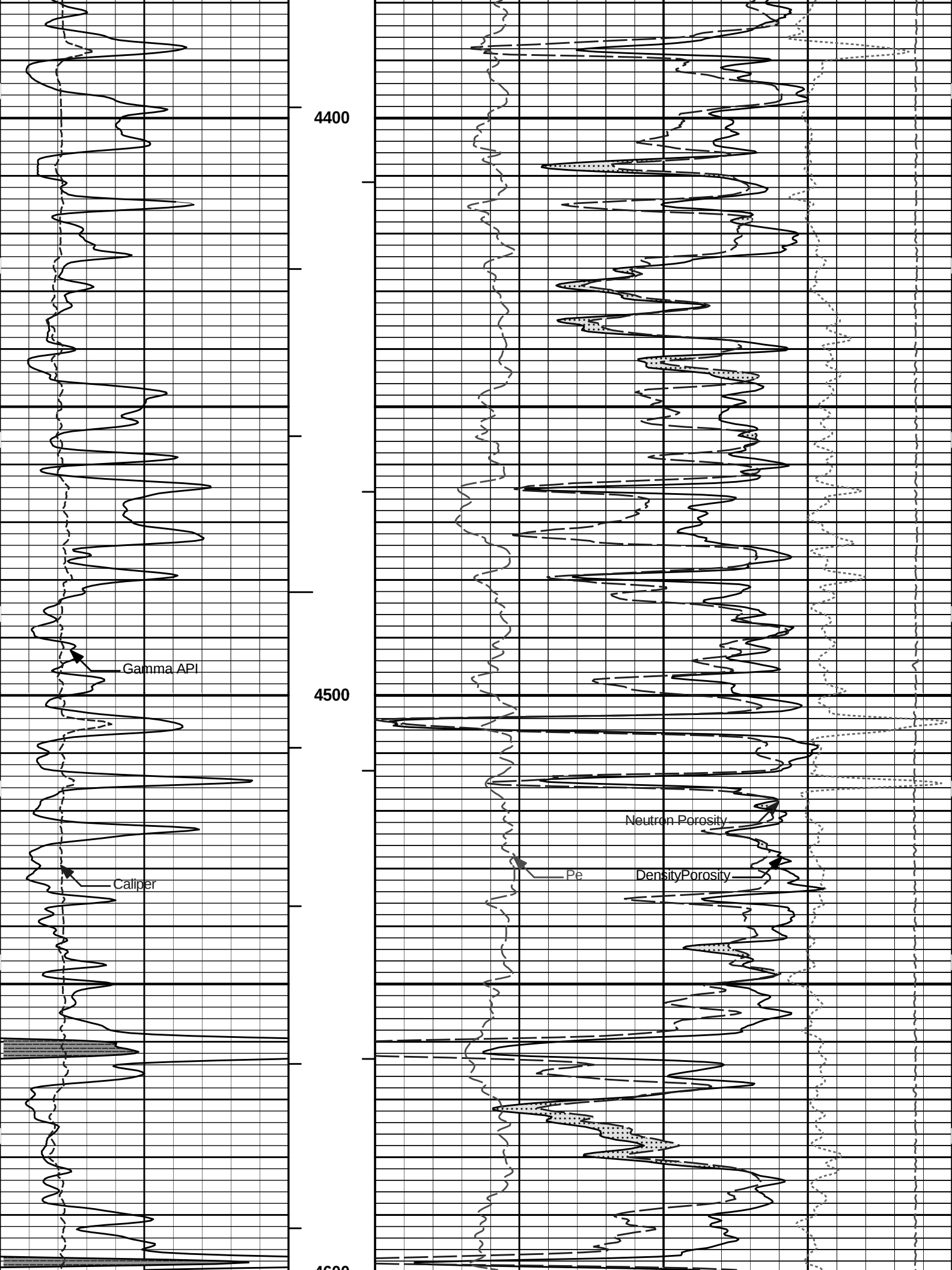
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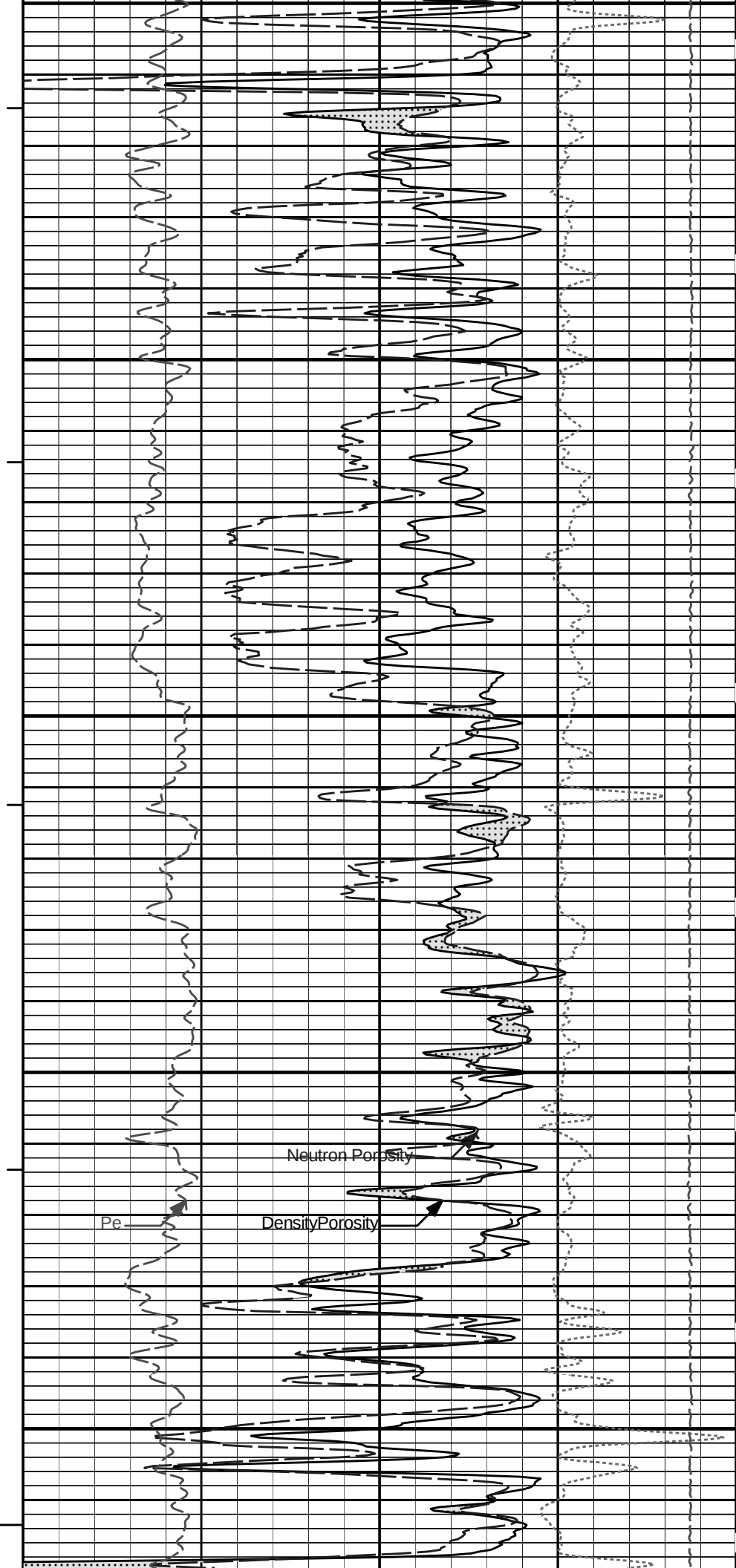
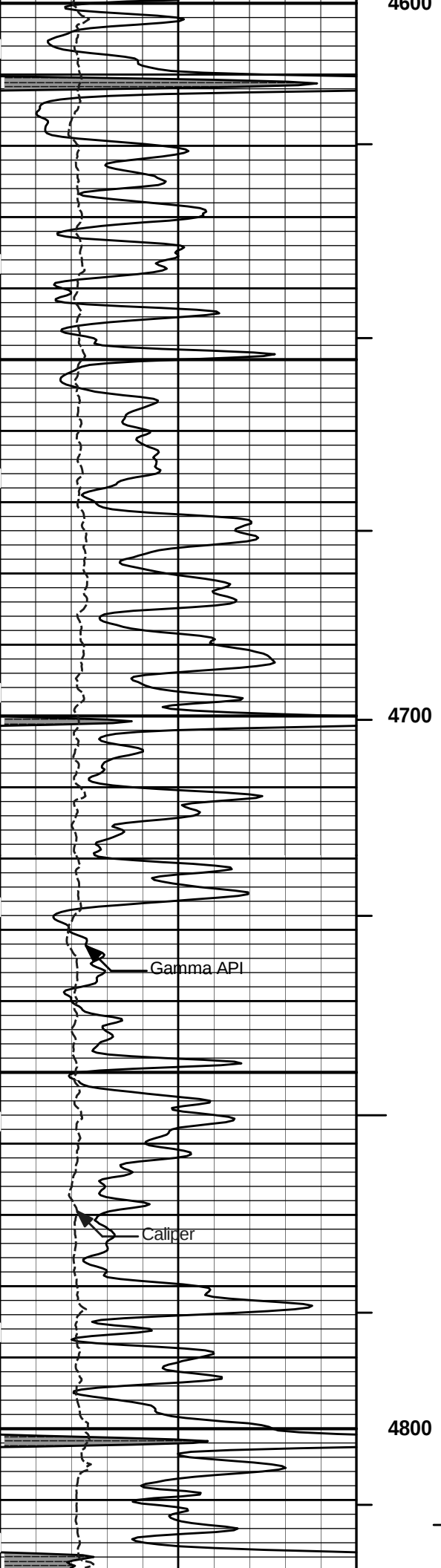
5 INCH MAIN LOG

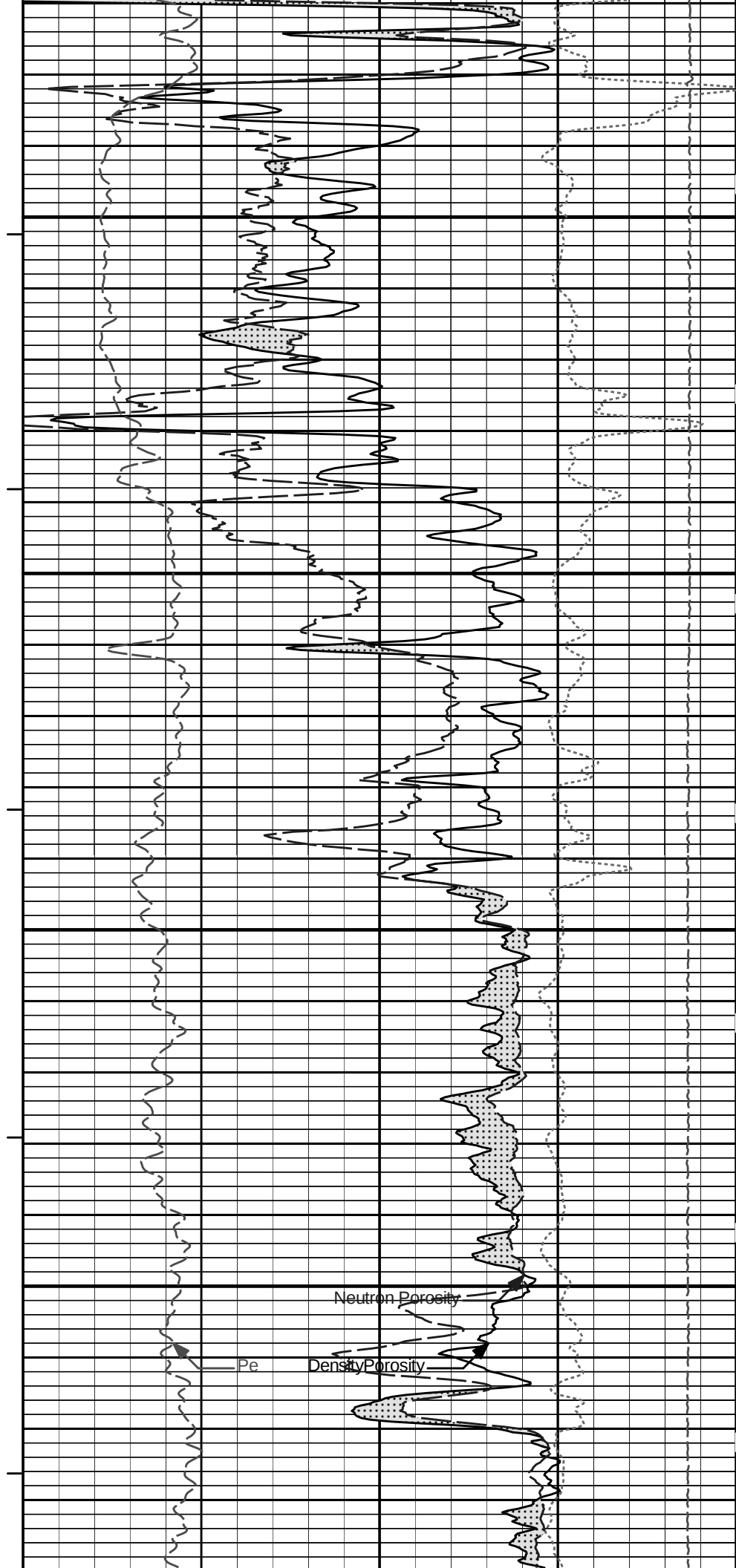
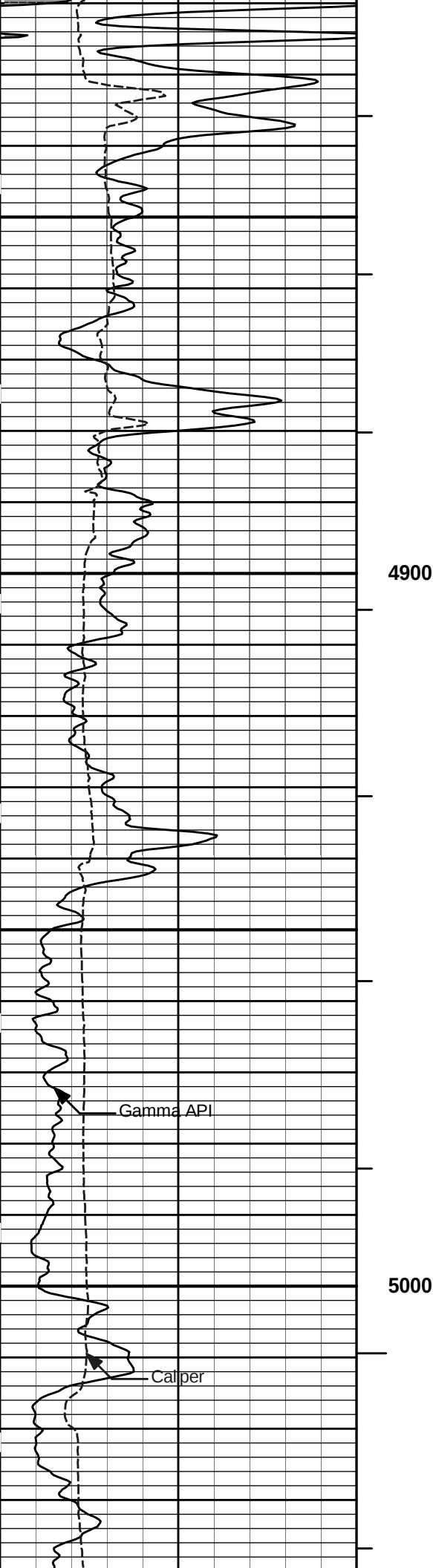


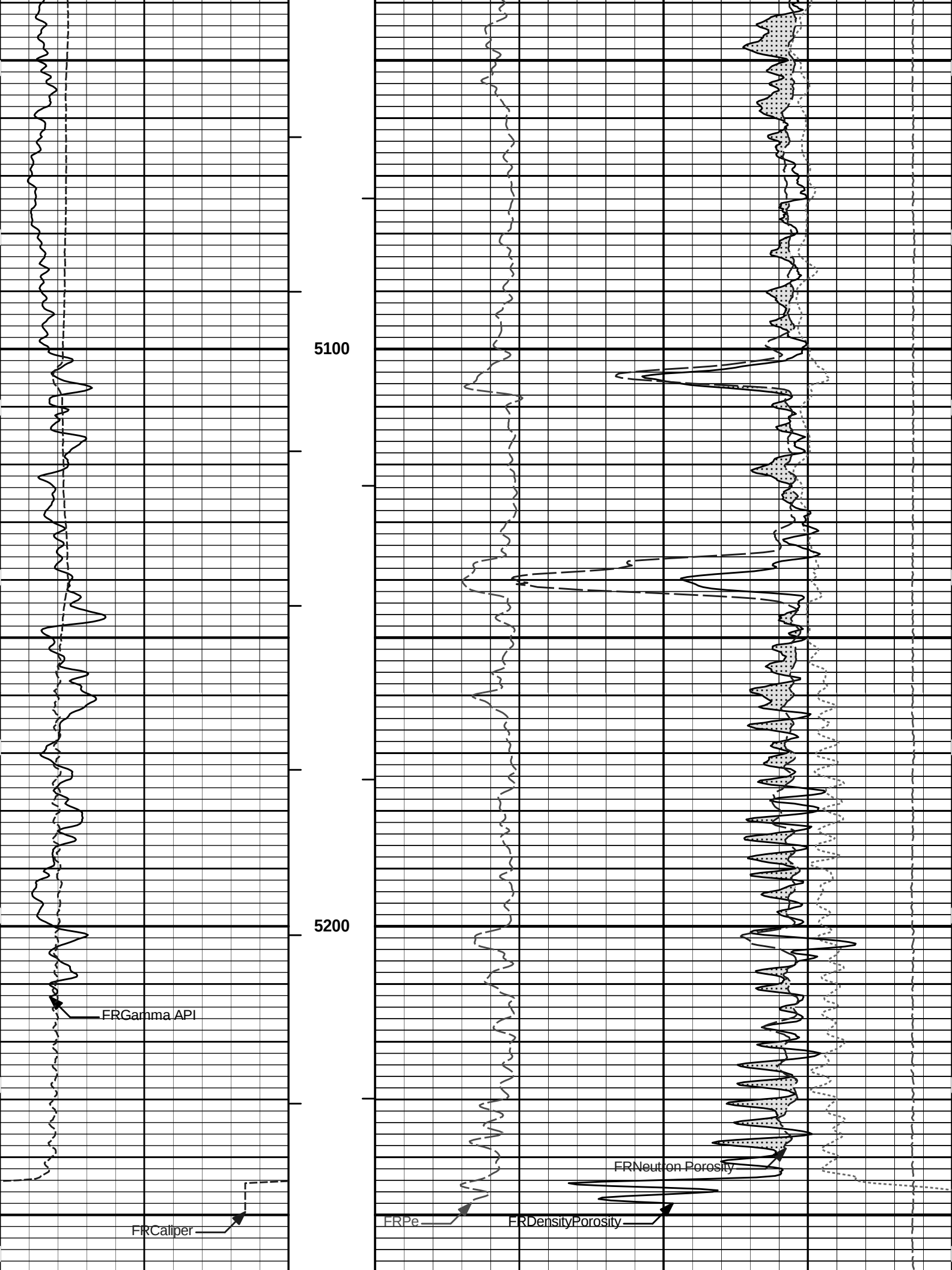


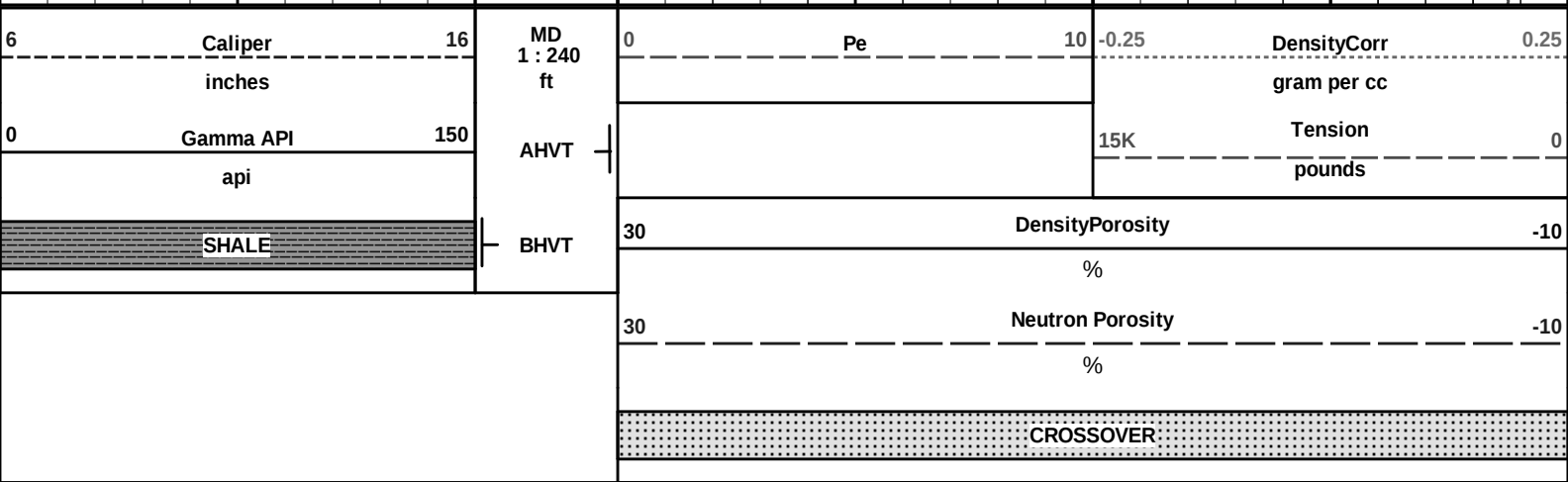
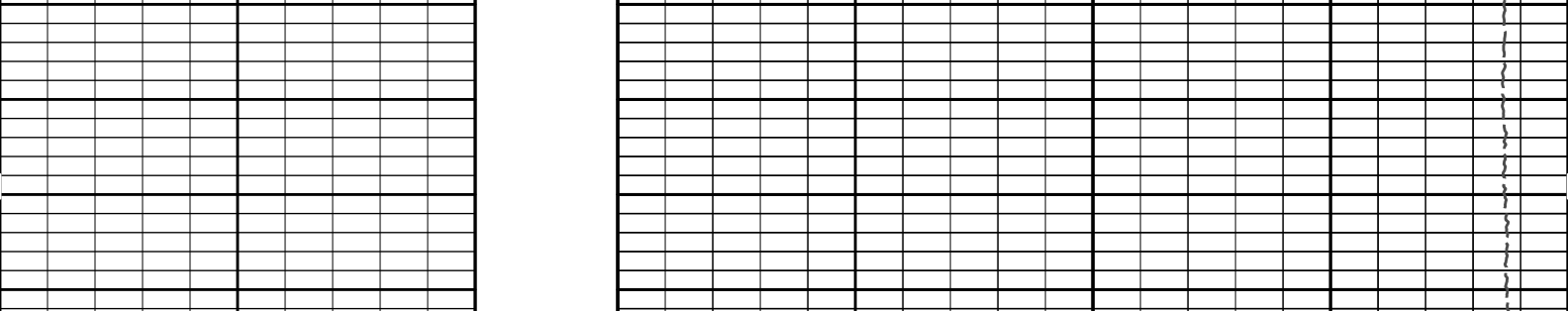








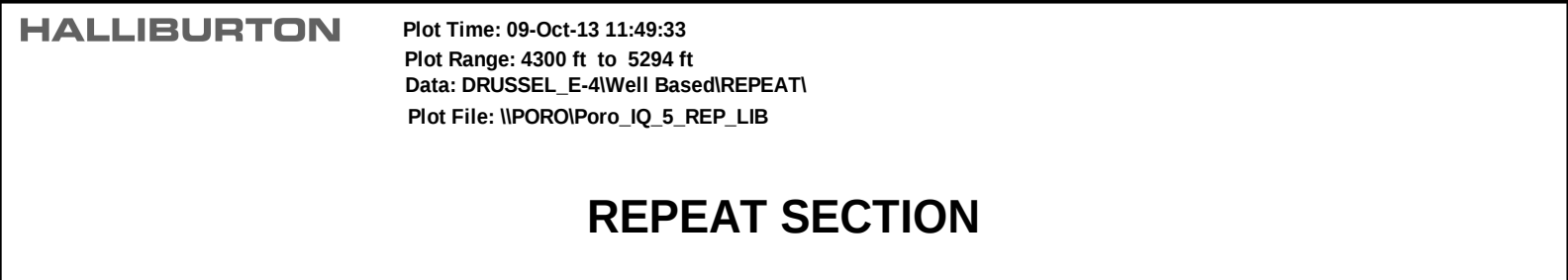




HALLIBURTON

Plot Time: 09-Oct-13 11:49:32
Plot Range: 3900 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\DETAIL\
Plot File: \\PORO\Poros_IQ_5_MAIN_LIB

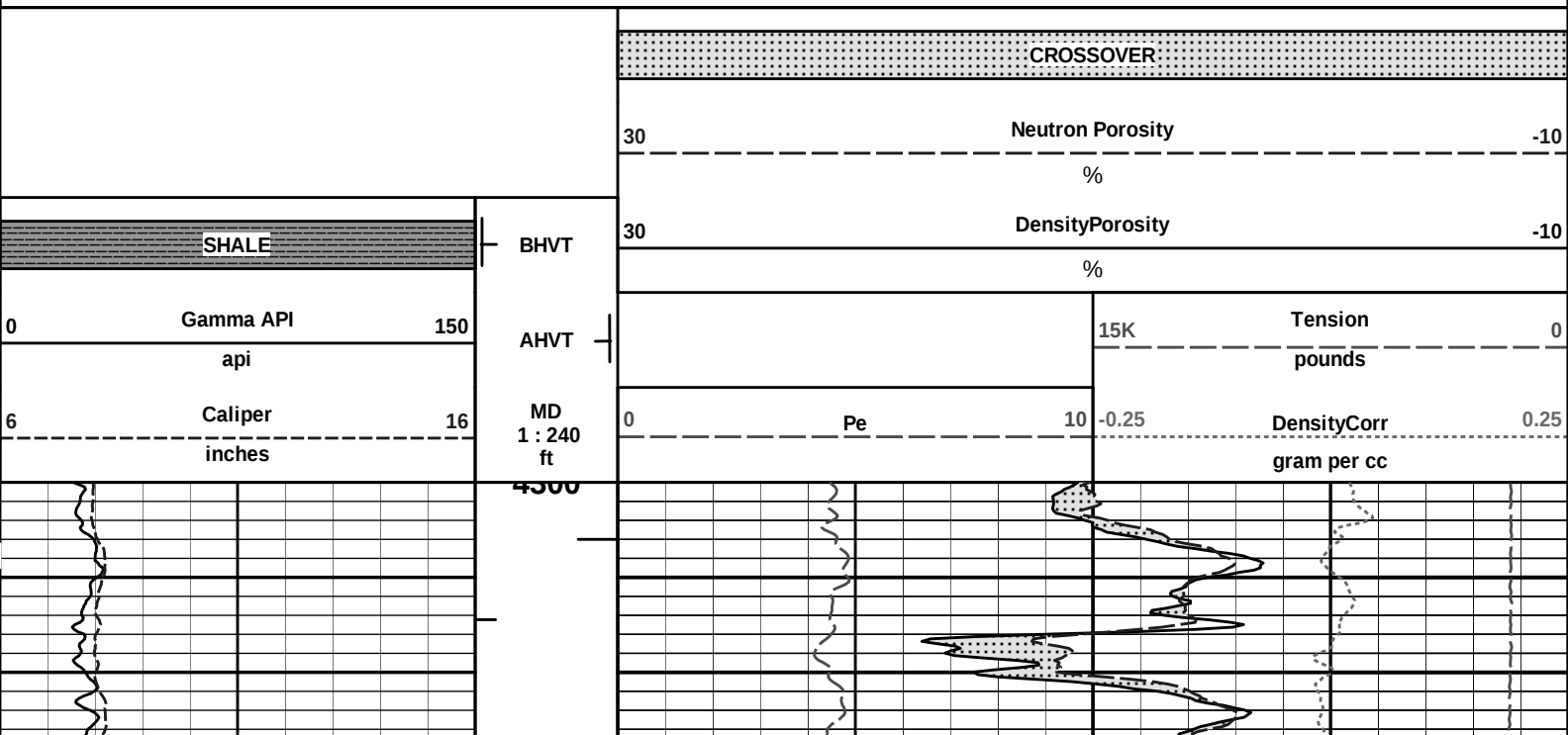
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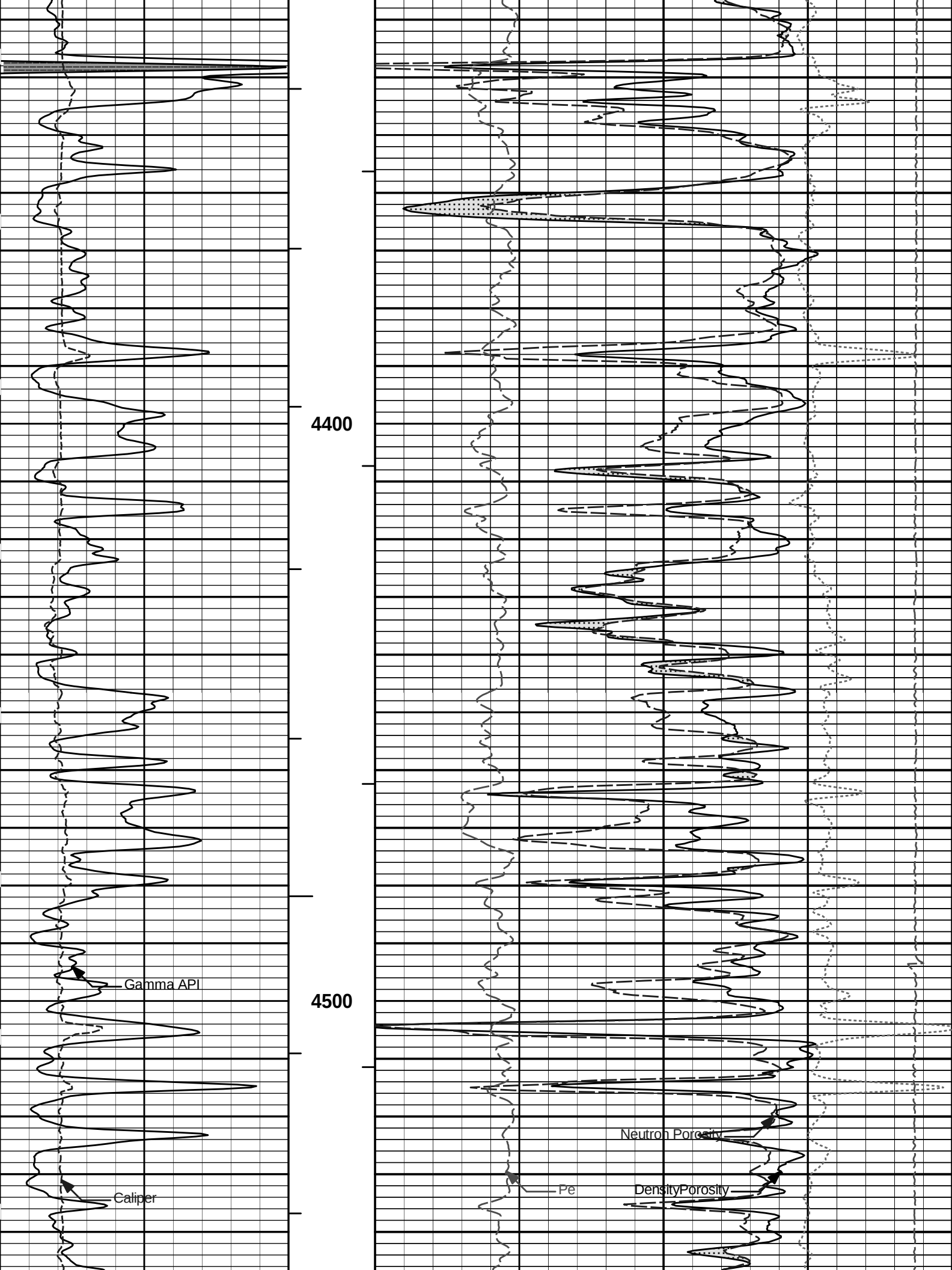


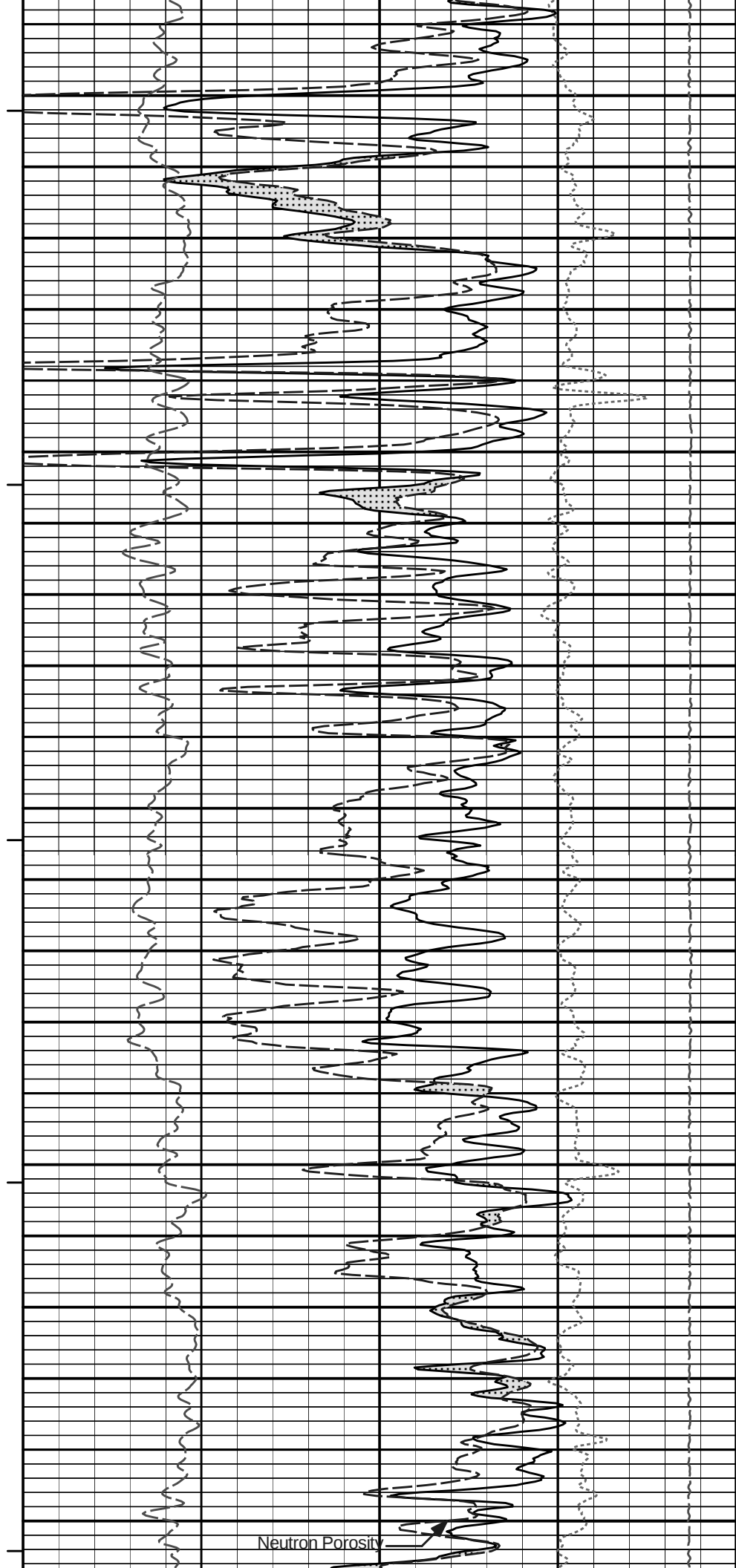
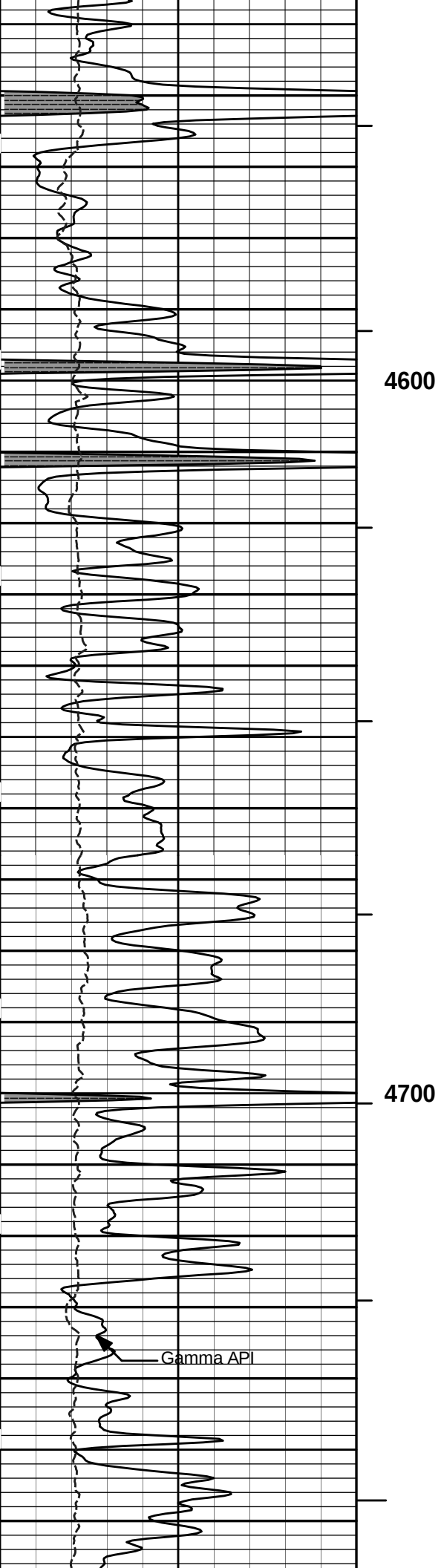
HALLIBURTON

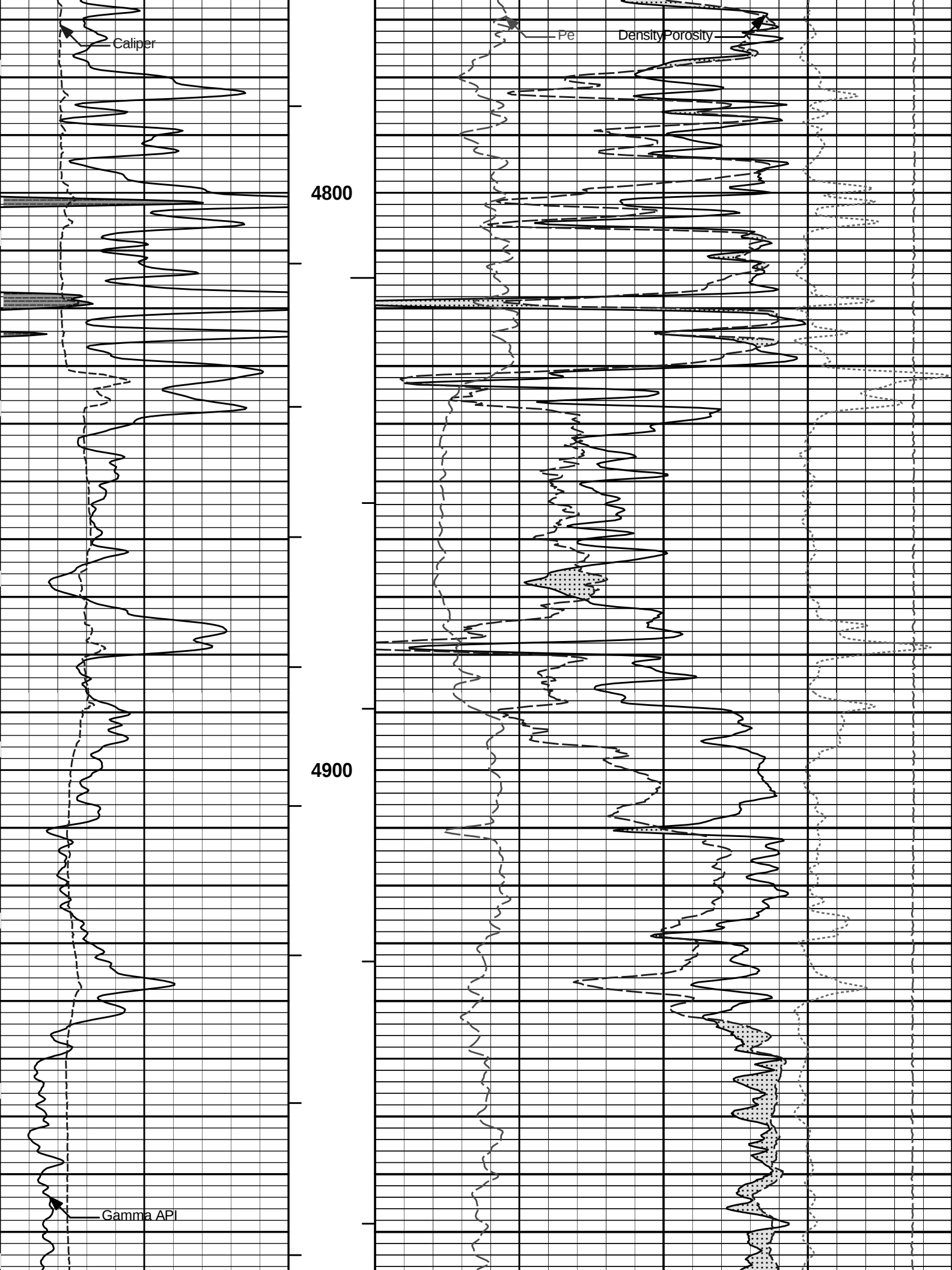
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Data: DRUSSEL_E-4\Well Based\REPEAT\
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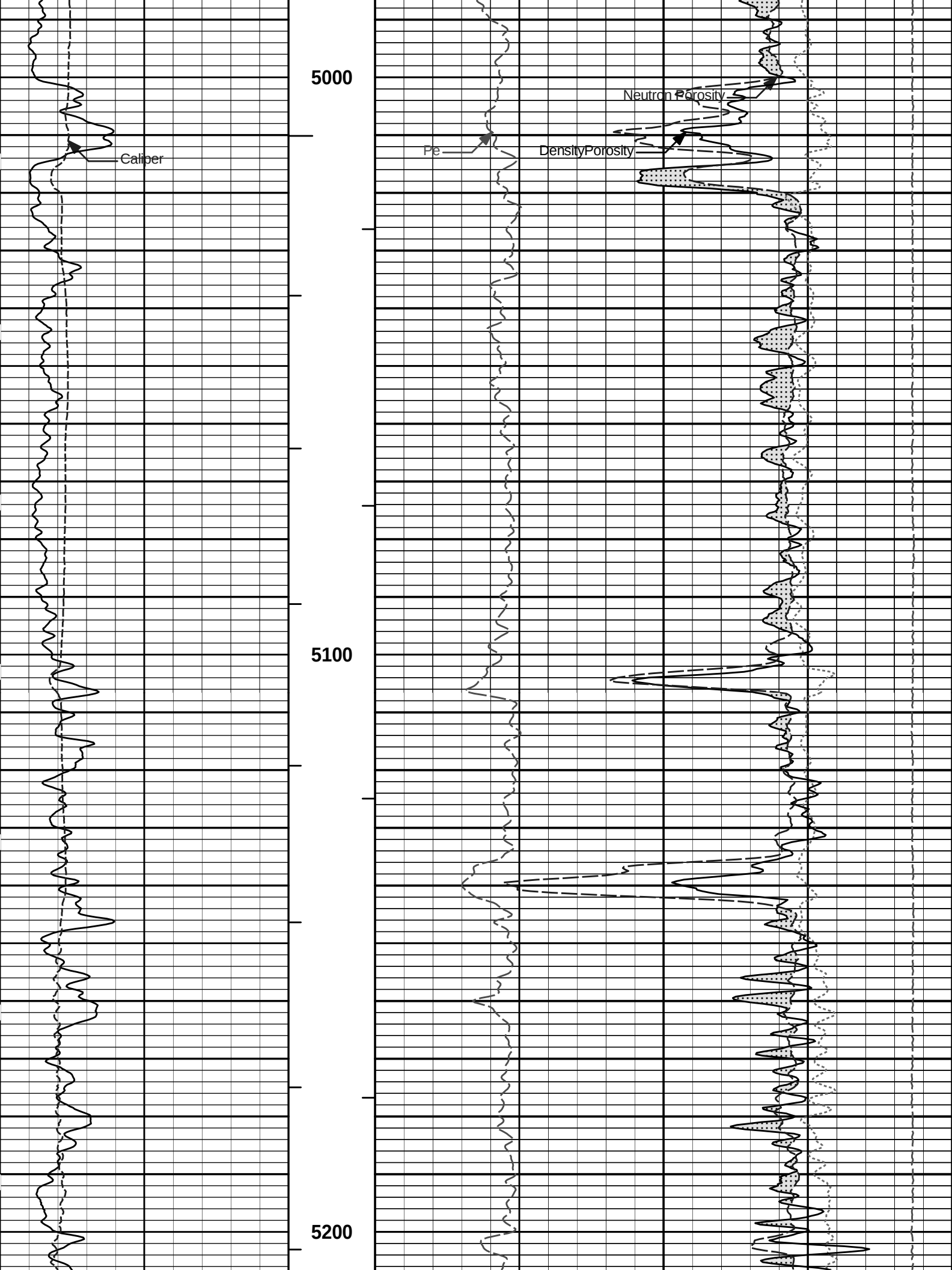
REPEAT SECTION

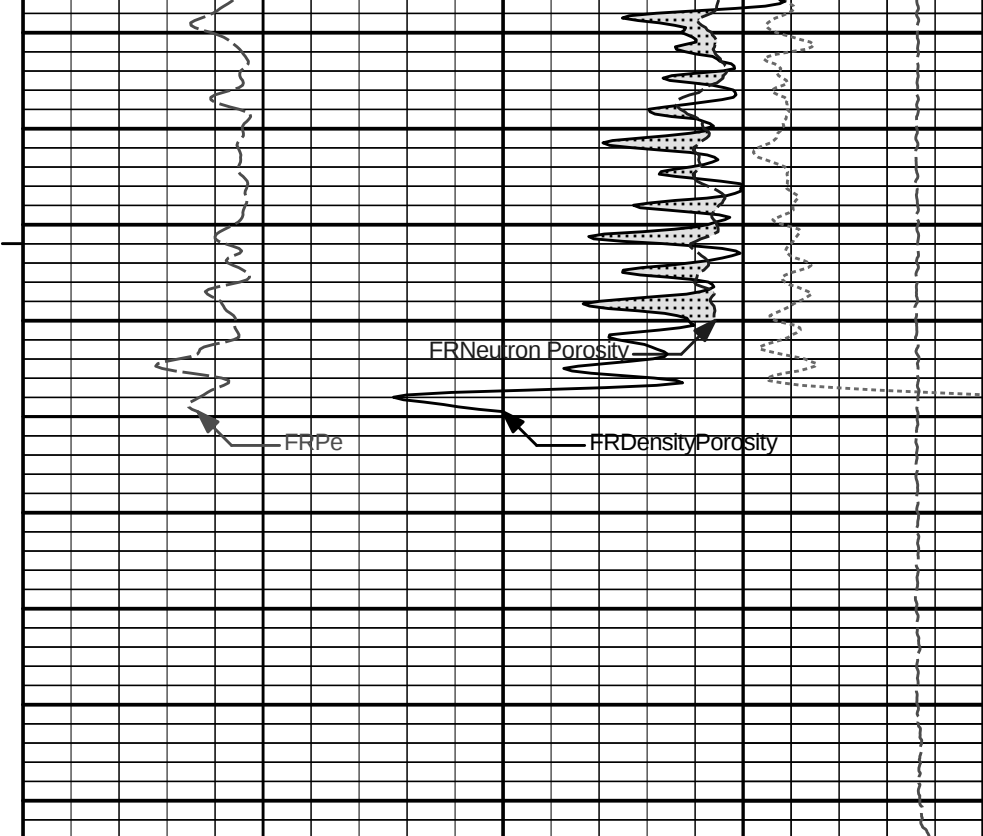
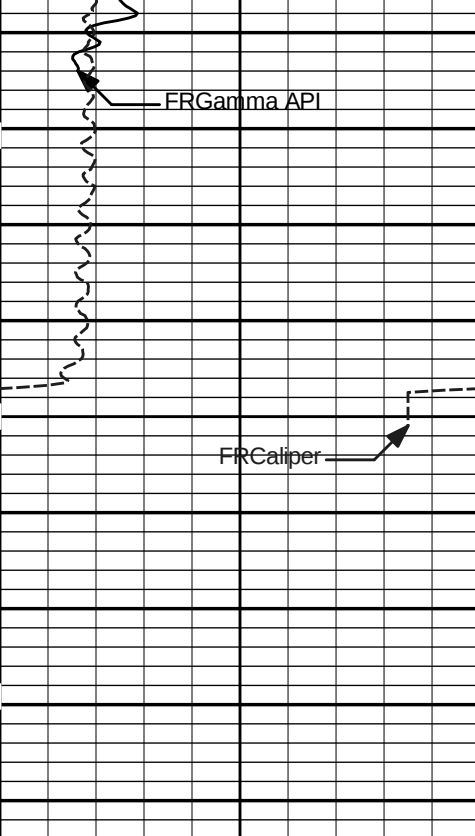












6	Caliper	16
	inches	
0	Gamma API	150
	api	
	SHALE	

MD	1 : 240	ft
AHVT		
BHVT		

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

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Plot Time: 09-Oct-13 11:49:35
Plot Range: 4300 ft to 5294 ft
Data: DRUSSEL_E-4\Well Based\REPEAT\
Plot File: \\PORO\Porosity_Q_5_REP_LIB

REPEAT SECTION

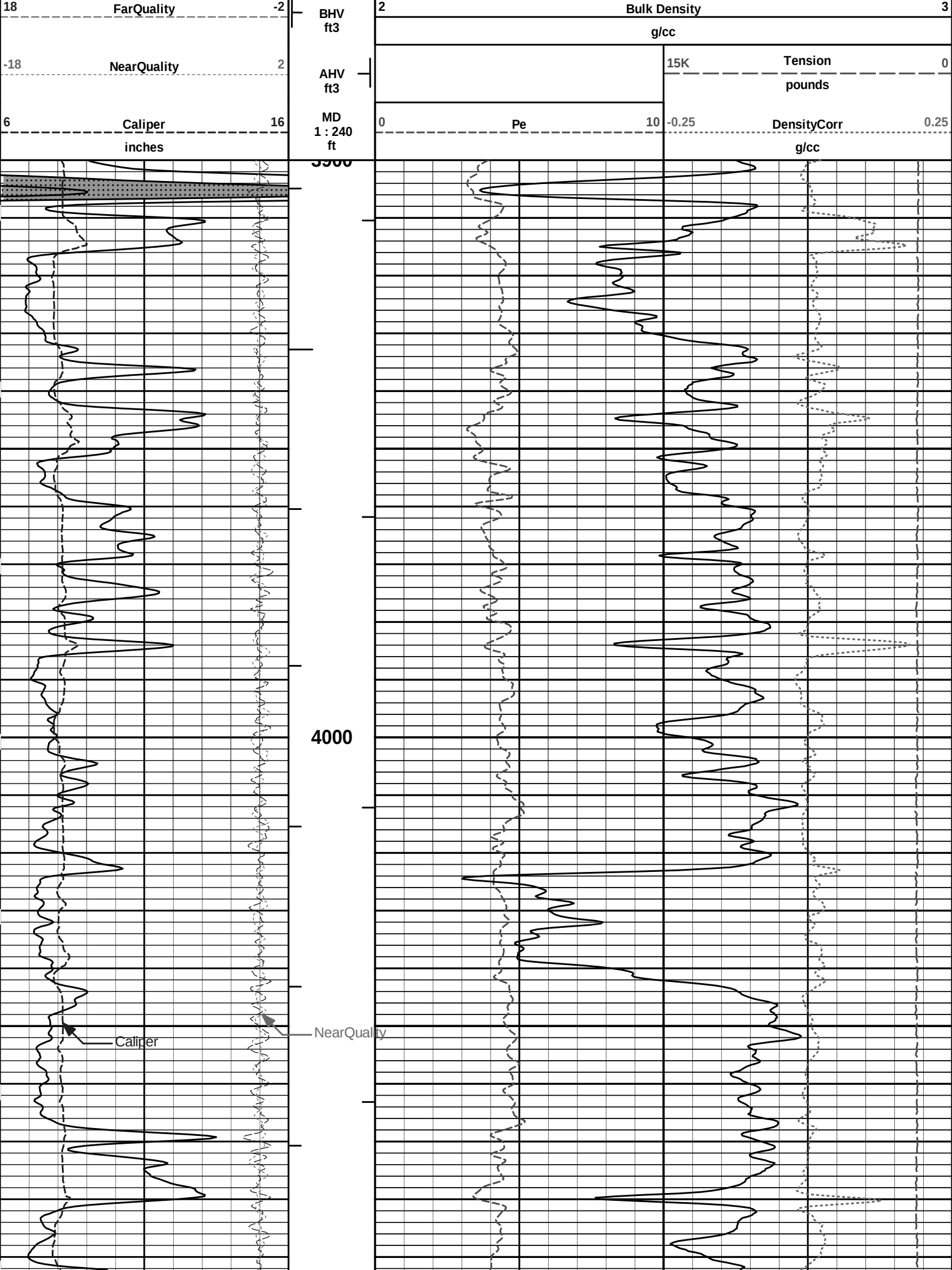
HALLIBURTON

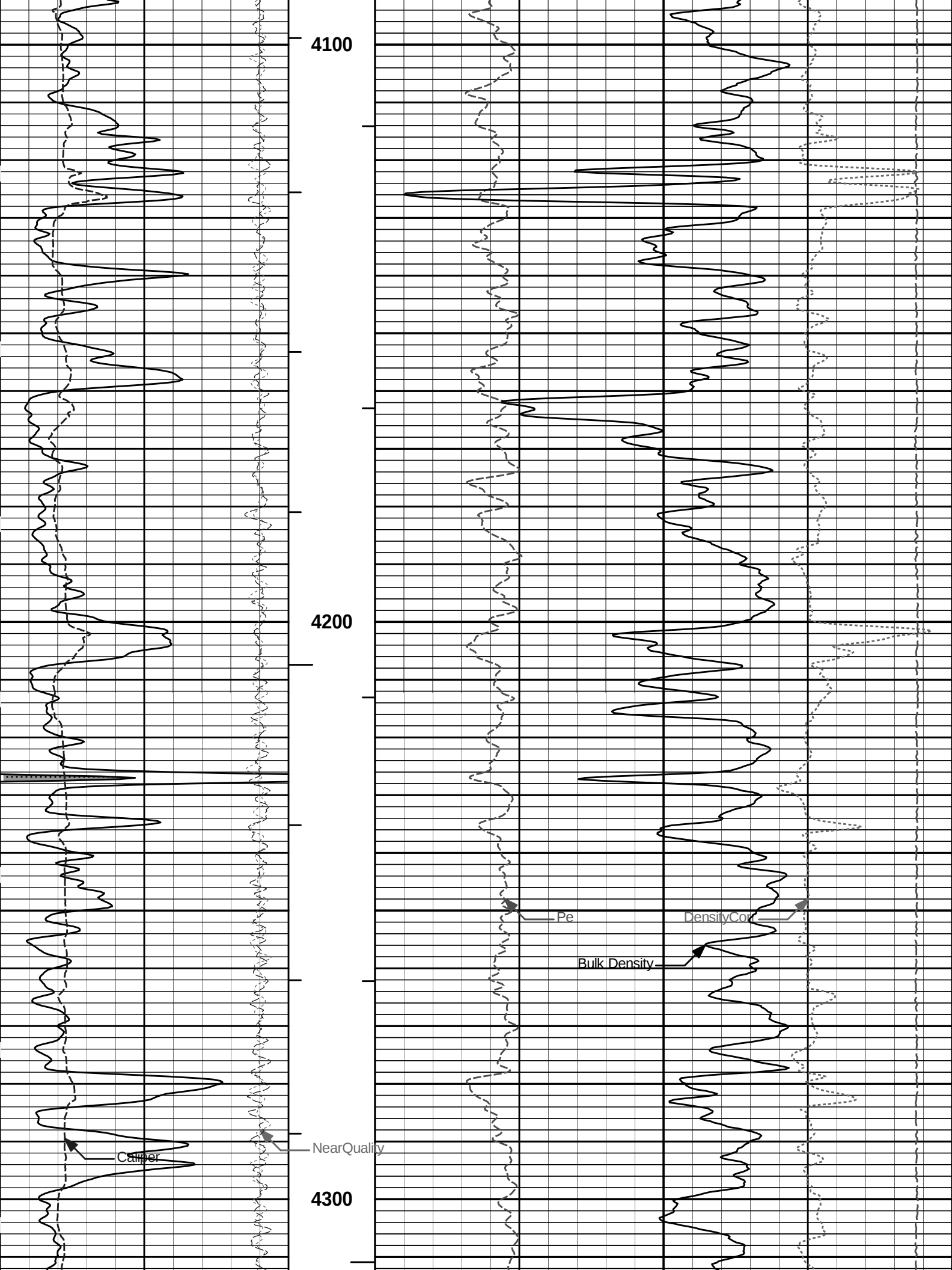
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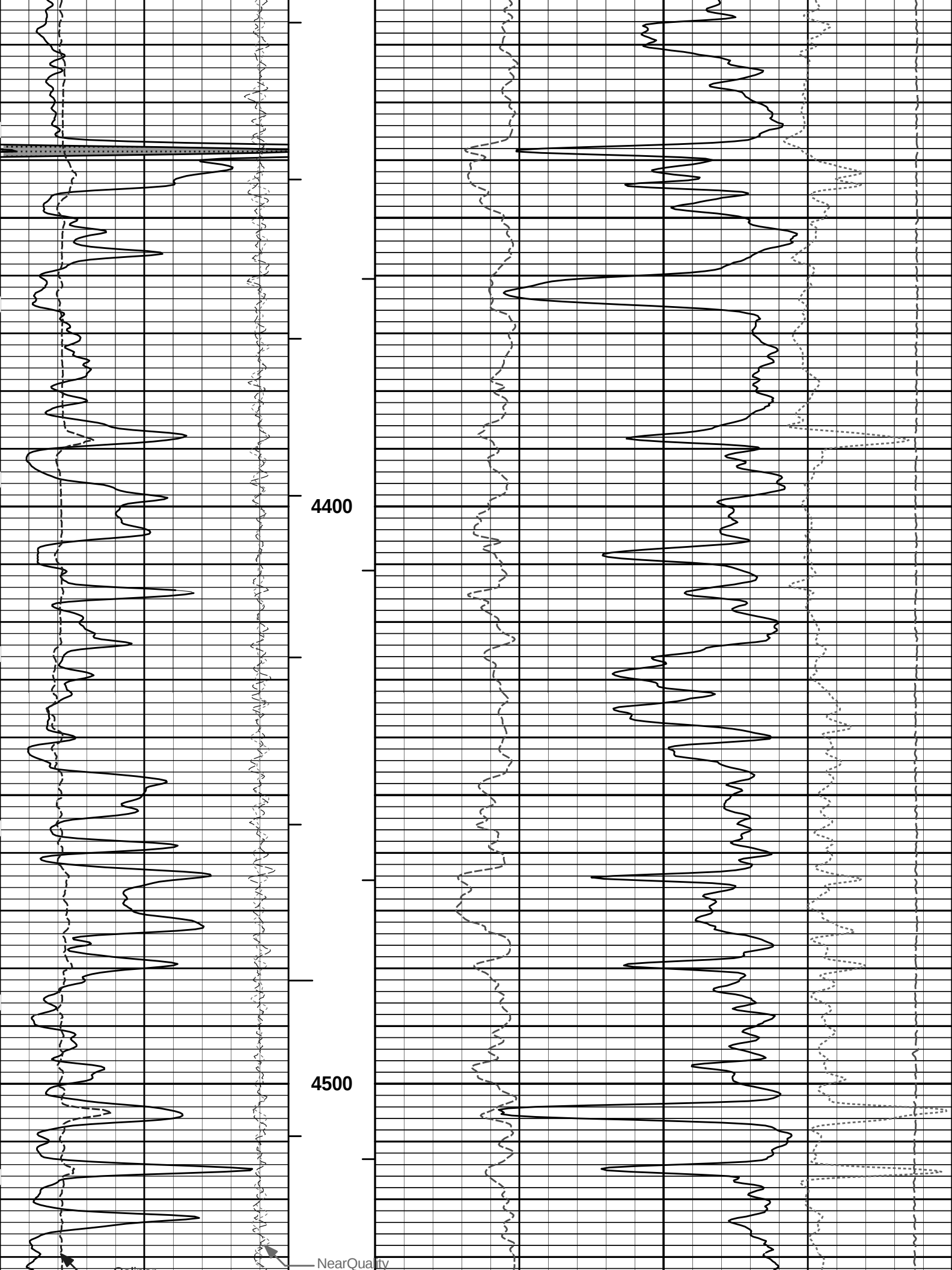
5 INCH MAIN LOG

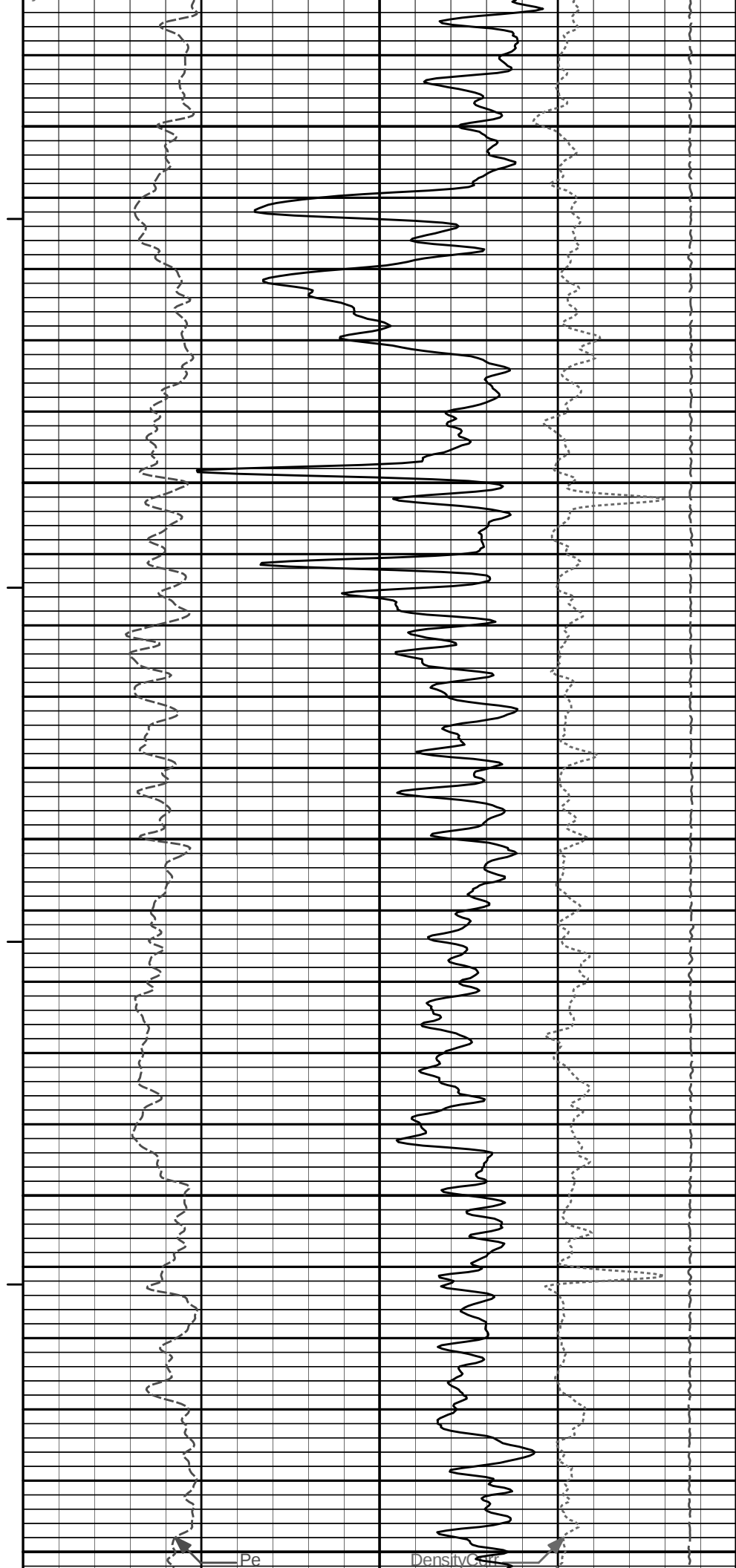
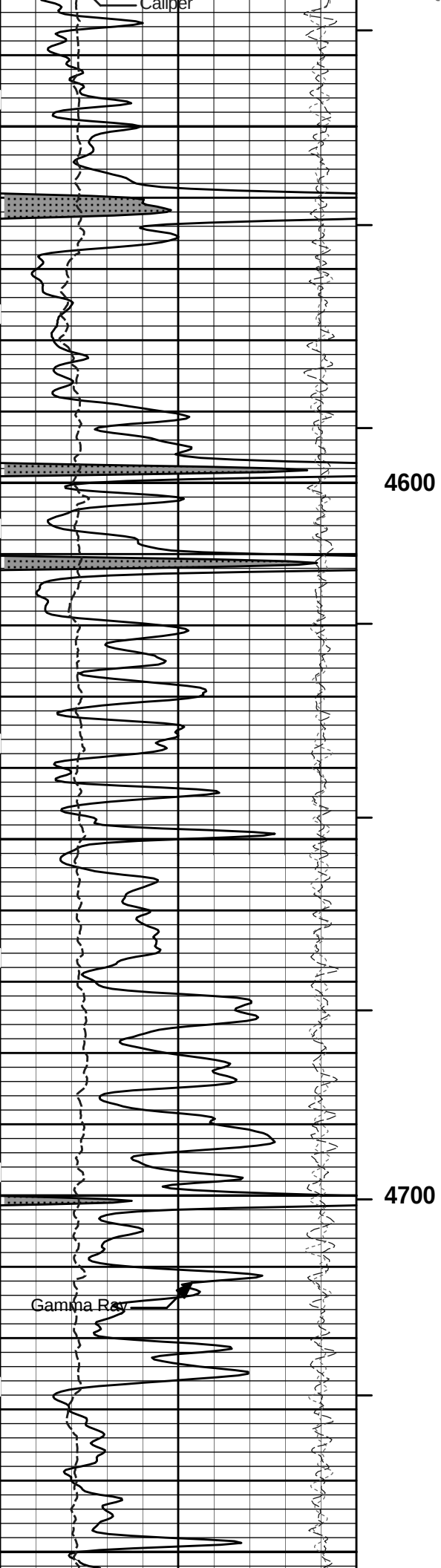
	SHALE	
0	Gamma Ray	150
	api	

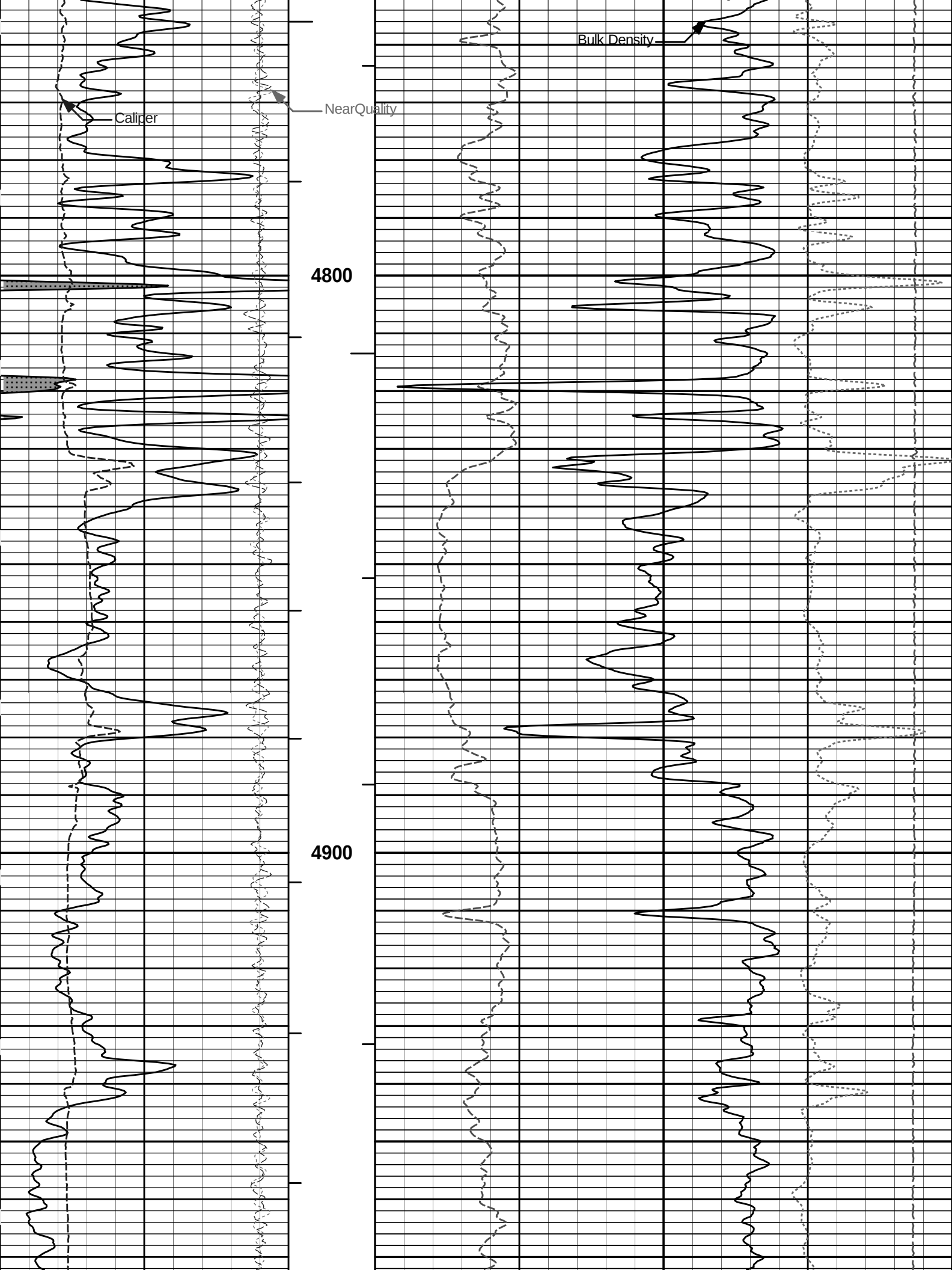
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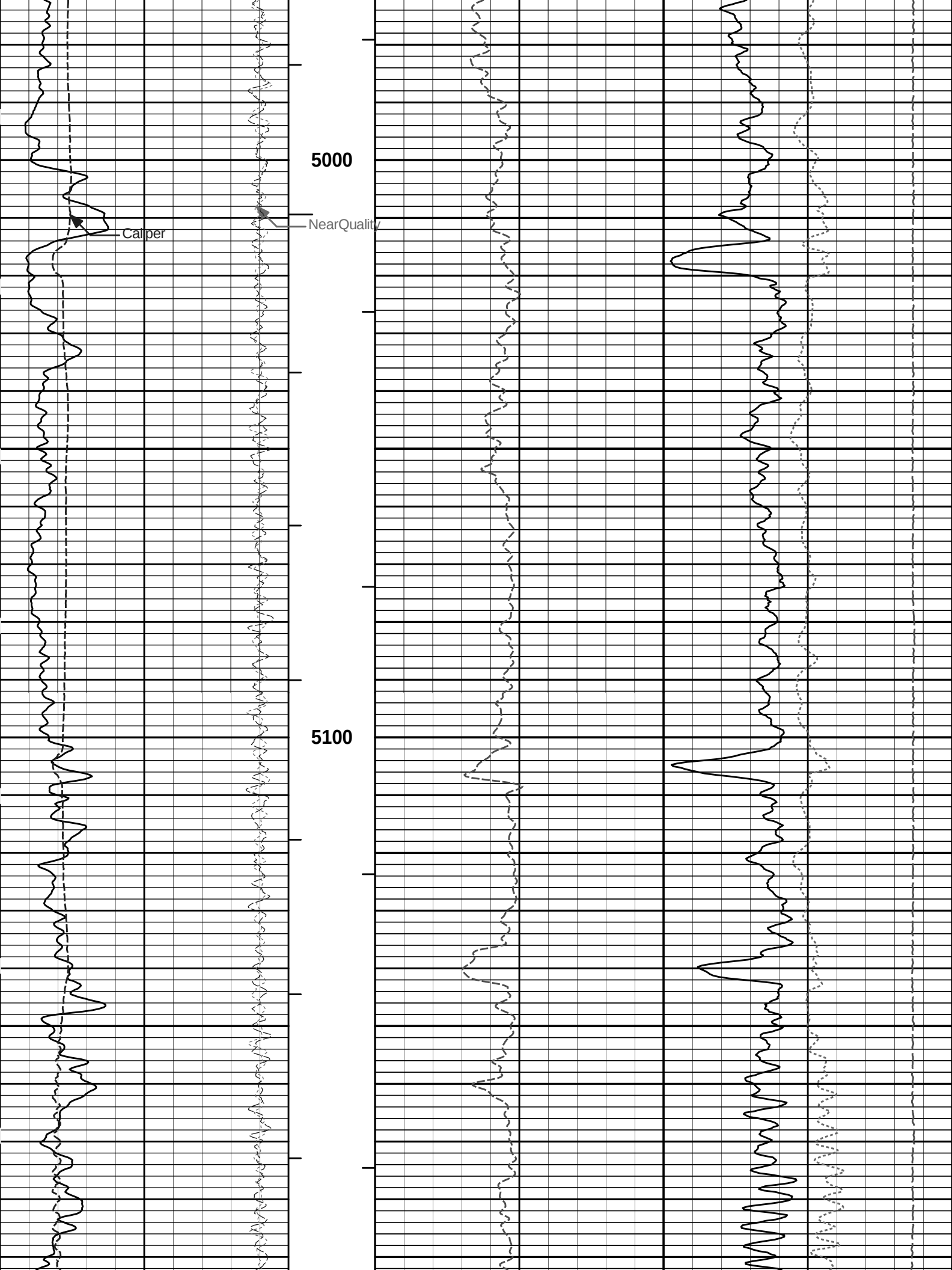


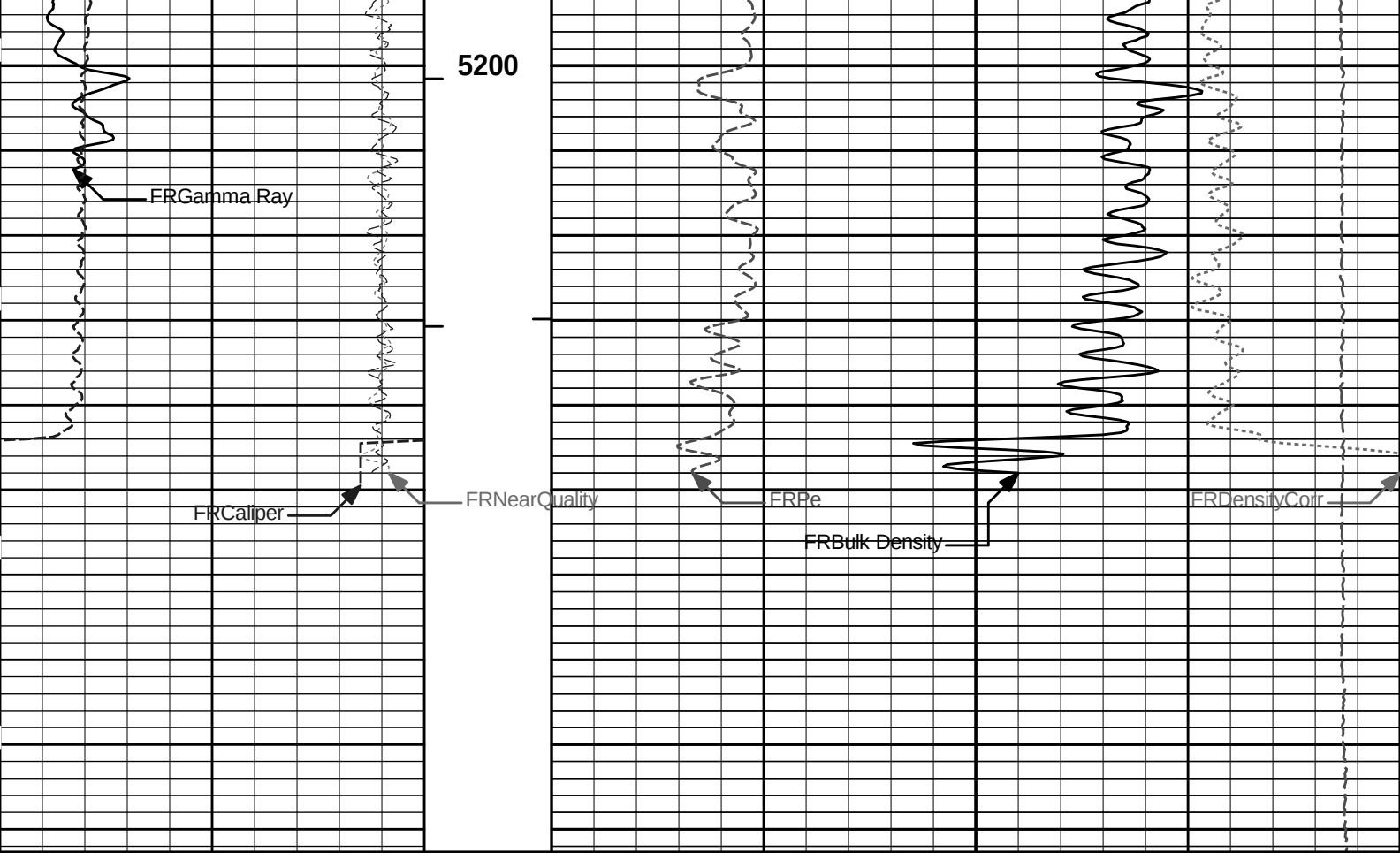












6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
	inches							g/cc	
-18	NearQuality	2	AHV ft3				15K	Tension	0
									pounds
18	FarQuality	-2	BHV ft3		2		Bulk Density		3
							g/cc		
0	Gamma Ray	150							
	api								
	SHALE								

HALLIBURTON

Plot Time: 09-Oct-13 11:49:39
Plot Range: 3900 ft to 5292.67 ft
Data: DRUSSEL_E-4\Well Based\DETAIL\
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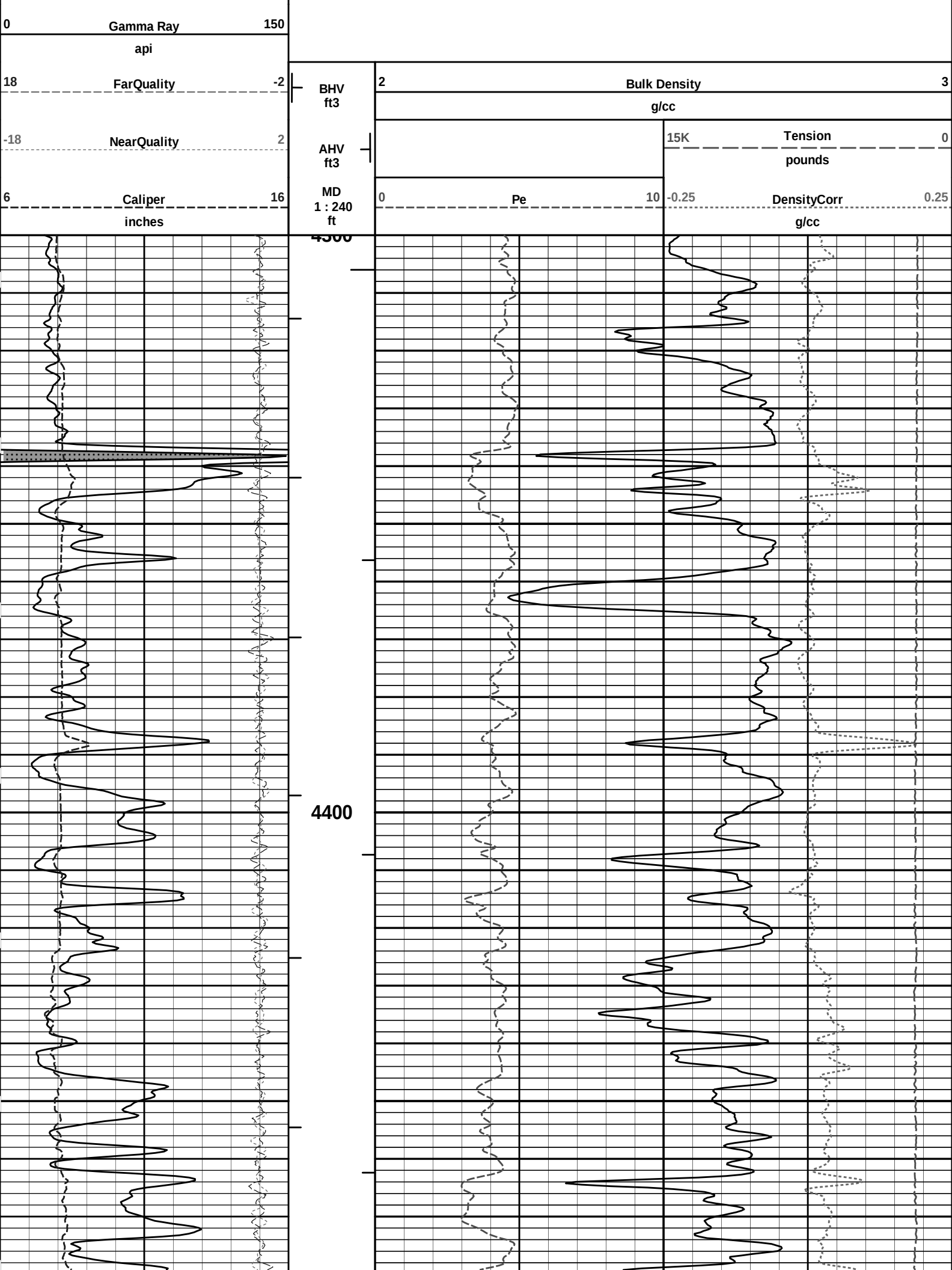
5 INCH MAIN LOG

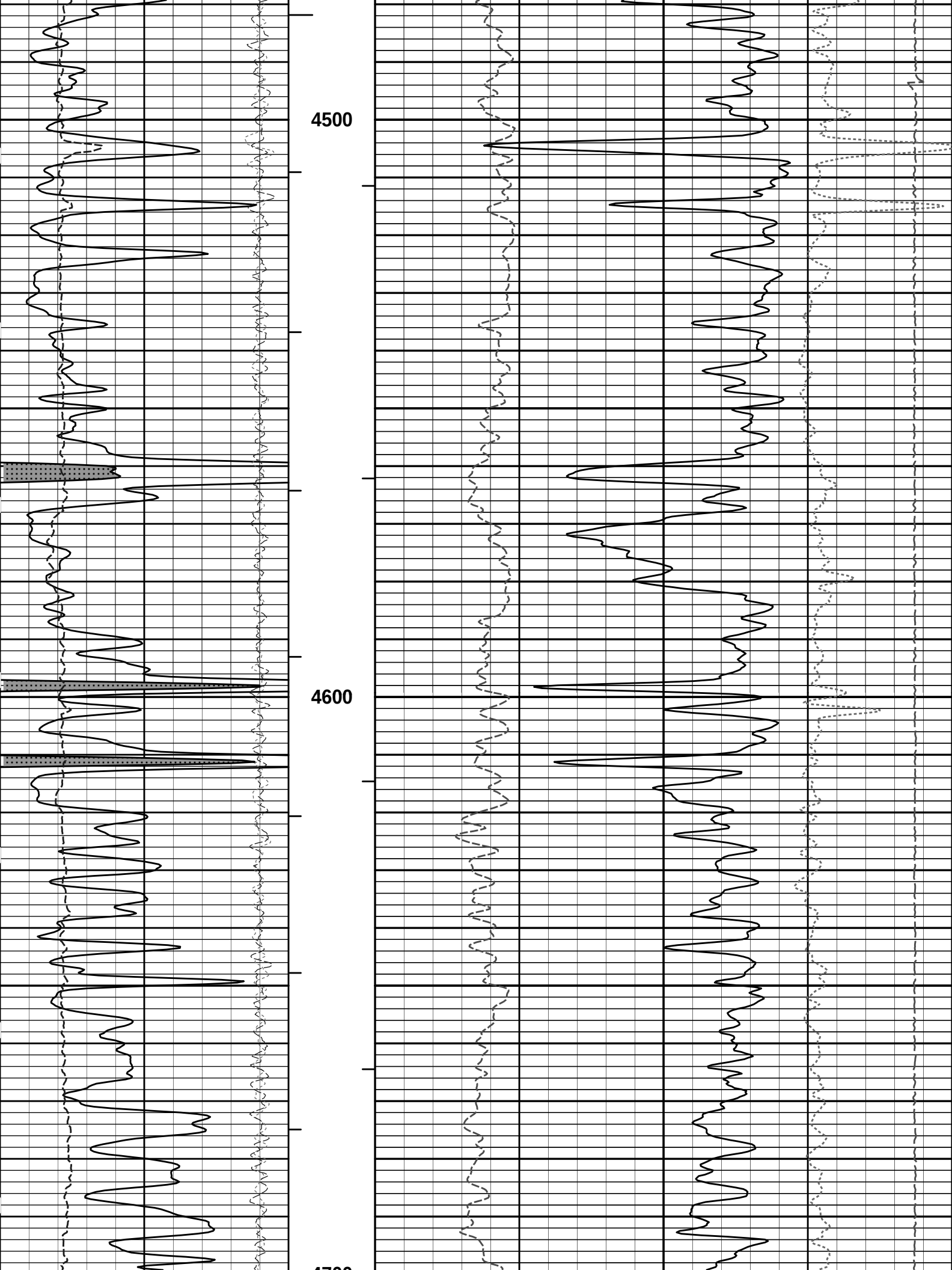
HALLIBURTON

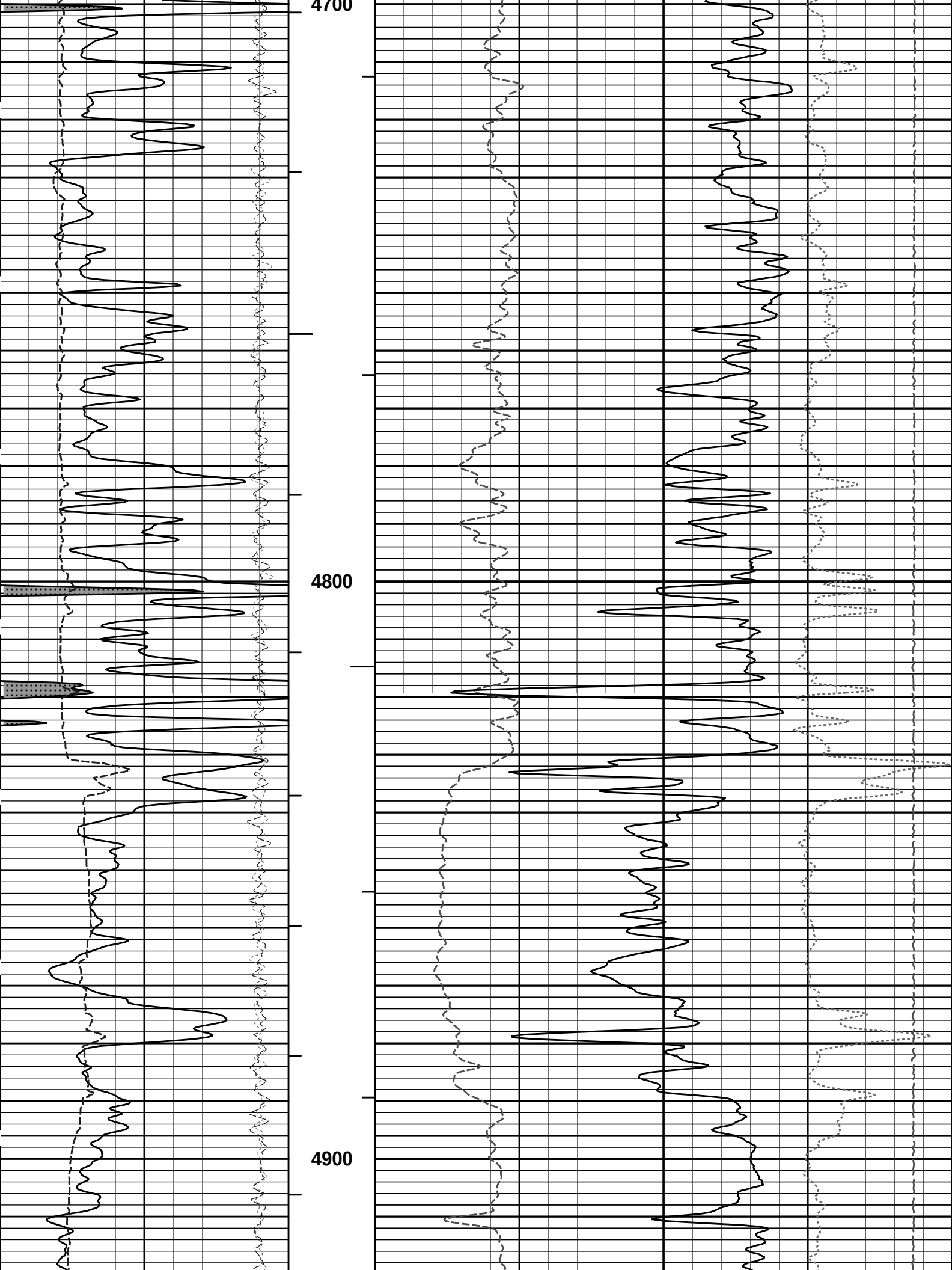
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Data: DRUSSEL_E-4\Well Based\REPEAT\
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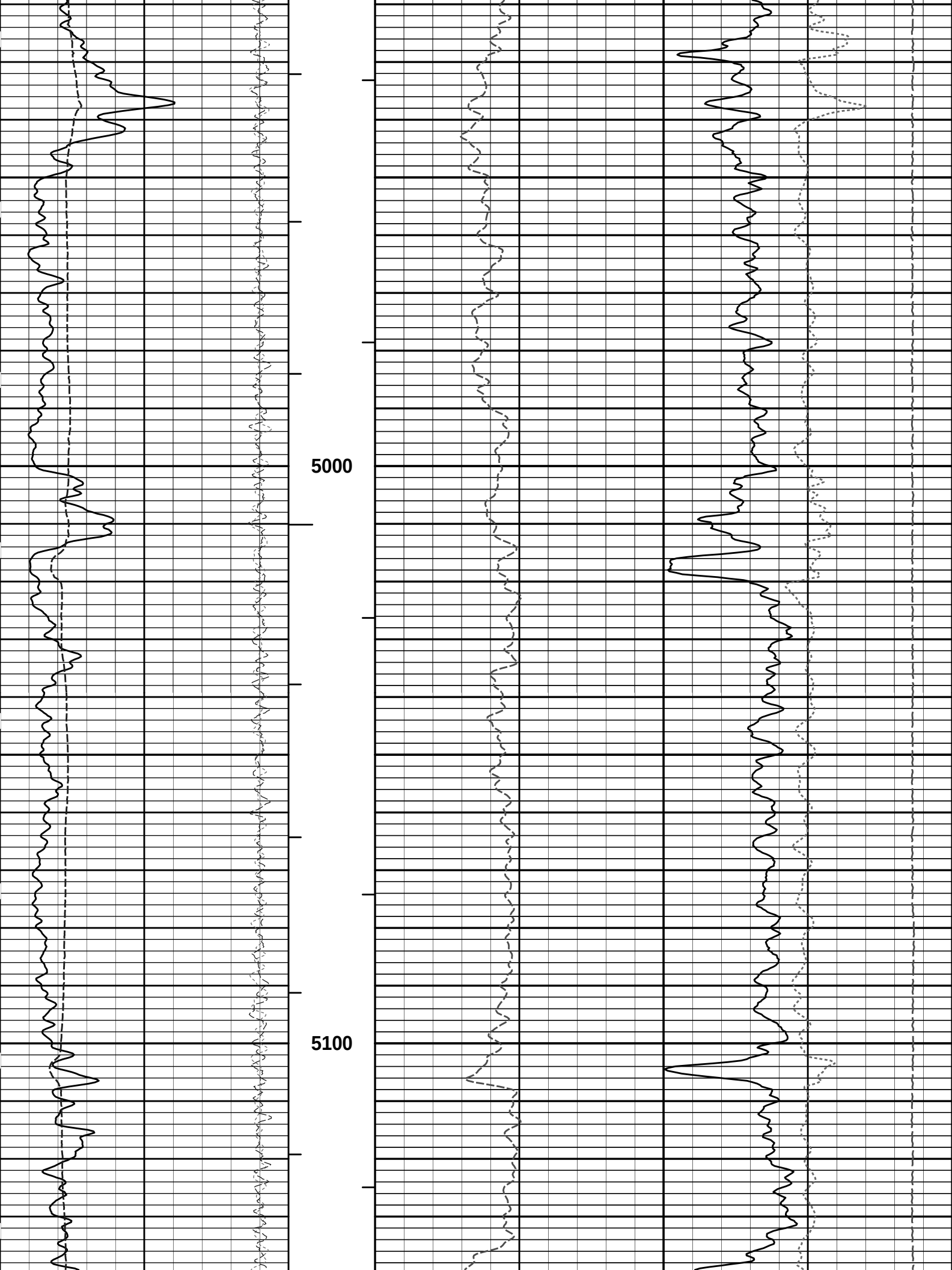
REPEAT SECTION

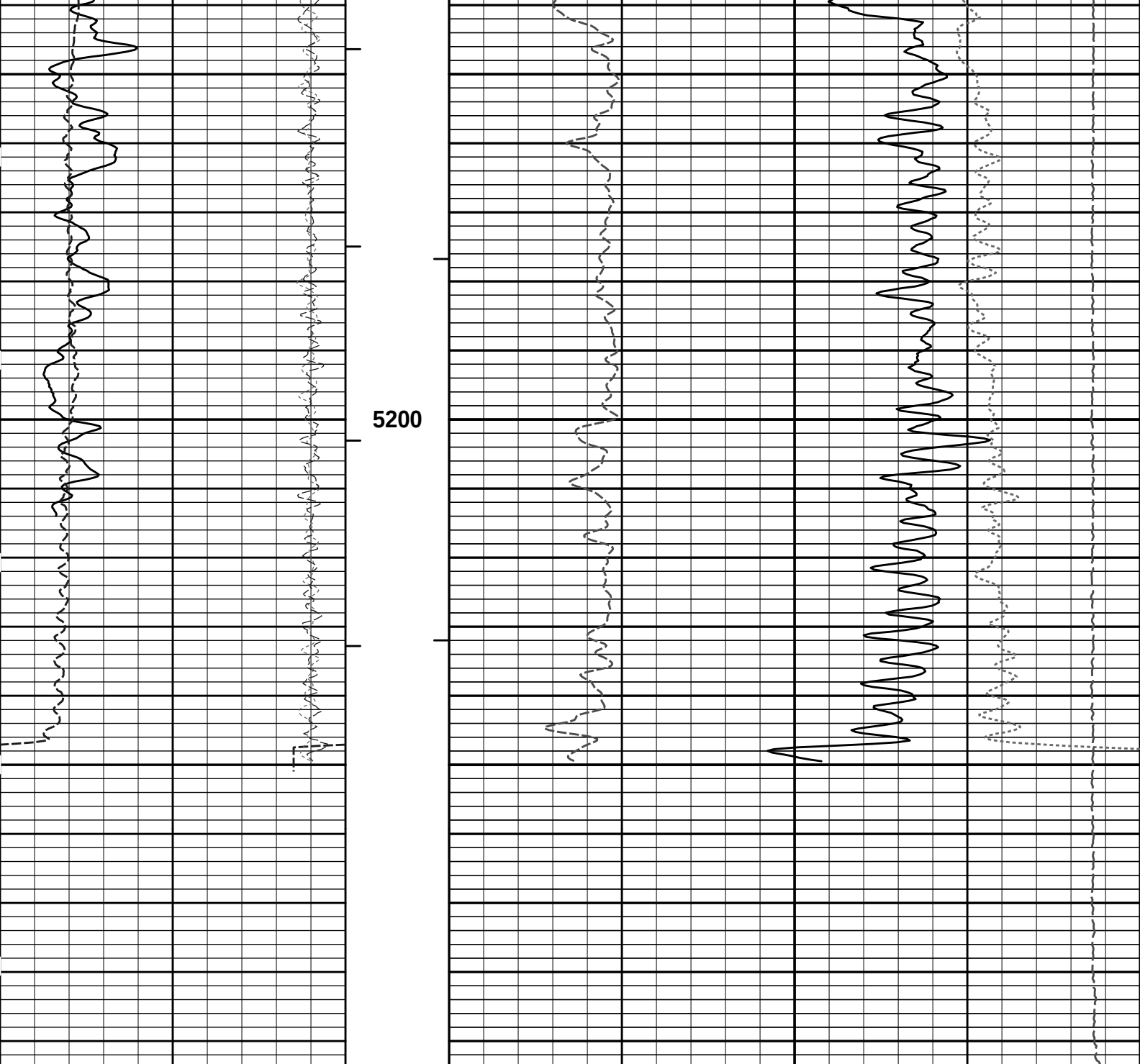
SHALE











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

HALLIBURTON

Plot Time: 09-Oct-13 11:49:41
Plot Range: 4300 ft to 5294 ft
Data: DRUSSEL_E-4\Well Based\REPEAT\
Plot File: \\LOCAL-IDRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CHIPORO\BULKD_5_REP_LIB

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						96.42 ft
RWCH-11435227 135.00 lbs		Ø 3.625 in →		← Load Cell @ 92.74 ft ← BH Temperature @ 92.17 ft	6.25 ft	90.17 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		← SP @ 88.39 ft	3.74 ft	86.43 ft
GTET-10748374 165.00 lbs		Ø 3.625 in →		← GammaRay @ 80.37 ft	8.52 ft	77.91 ft
HFDT-I- I258M331P434 435.00 lbs		Ø 4.500 in →		Receiver Upper @ 64.93 ft - HFDT-I Receiver @ 64.83 ft - Receiver Middle @ 64.83 ft - HFDT Microlog @ 64.78 ft - Receiver Lower @ 64.73 ft - HFDT-I Caliper @ 64.59 ft ← HFDT-I Pad @ 64.06 ft	16.14 ft	61.78 ft
	DSN Decentralizer - Large Hole-00000001 6.60 lbs	Ø 5.000 in* →				52.09 ft
DSNT-10735145 174.00 lbs		Ø 3.625 in →		← DSN Far @ 54.84 ft ← DSN Near @ 54.09 ft	9.69 ft	

SDLT-10673803
360.00 lbs

SDLT Pad-10673790
65.00 lbs
Microlog Pad-10673803
8.00 lbs

Ø 4.500 in →

Ø 4.750 in* →
Ø 4.750 in* →

Microlog @ 44.28 ft
SDL Caliper @ 44.09 ft
SDL @ 44.08 ft

10.81 ft

41.28 ft

IQ Flex-10000954
140.00 lbs

Ø 3.625 in →

5.67 ft

35.61 ft

Centralizer 25-00000002
8.00 lbs

Ø 4.000 in* →

BSAT-10747684
300.00 lbs

Ø 3.625 in →

← Sonic Receivers @ 27.09 ft

15.77 ft

19.83 ft

ACRt Instrument-
10929776
50.00 lbs

Centralizer 25-00000003
8.00 lbs

Ø 3.625 in →
Ø 4.000 in* →

5.03 ft

14.80 ft

← Mud Resistivity @ 13.44 ft

← ACRt @ 9.46 ft

ACRt Sonde-
10929775
200.00 lbs

Ø 3.625 in →

14.22 ft

Cabbage Head-
00000954
10.00 lbs

Ø 3.625 in →
Ø 6.000 in →

0.58 ft

0.58 ft

0.00 ft

Serial

Weight Length

Accumulated

Max.Log.

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Length (ft)	Speed (fpm)
RWCH	Releasable Wireline Cable Head	11435227	135.00	6.25	90.17	300.00
SP	SP Sub	12345678	60.00	3.74	86.43	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52	77.91	60.00
HFDT	High Frequency Dielectric Tool	I258M331P434	435.00	16.14	61.78	30.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69	52.09	60.00
DCNT	DSN Decentralizer Large Hole	00000001	6.60	9.42	*	55.42 300.00
SDLT	Spectral Density Tool	10673803	360.00	10.81	41.28	60.00
MICP	Microlog Pad	10673803	8.00	1.00	*	43.78 60.00
SDLP	Density Insite Pad	10673790	65.00	2.55	*	43.49 60.00
IQF	IQ Flex tool	10000954	140.00	5.67	35.61	300.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77	19.83	60.00
OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	*	32.75 300.00
ACRt	Array Compensated True Resistivity Instrument Section	10929776	50.00	5.03	14.80	300.00
OBCEN	Centralizer - 25 in. Overbody	00000003	8.00	2.08	*	16.12 300.00
ACRt	Array Compensated True Resistivity Sonde Section	10929775	200.00	14.22	0.58	300.00
CBHD	Cabbage Head	00000954	10.00	0.58	0.00	300.00
Total			2,124.60	96.42		
* Not included in Total Length and Length Accumulation.						
Data: DRUSSEL_E-4\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CH\IDLE					Date: 09-Oct-13 08:49:41	

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 10748374

Engineer:THOMAS HYDE

Software Version:WL INSITE R3.8.4 (Build 5)

Reference Calibration Date:02-Aug-13 14:20:06

Calibration Date:03-Sep-13 10:36:47

Calibration Version:1

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Measurement	Measured	Calibrated	Units
Background	44.2	44.4	api
Background + Calibrator	275.0	276.4	api
Calibrator	230.8	232.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:GTET - 10748374

Engineer:J. BOLLOM

Software Version:WL INSITE R3.8.4 (Build 5)

Reference Calibration Date:03-Sep-13 10:36:47

Calibration Date:07-Oct-13 07:57:36

Calibration Version:1

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Field Verification	Shop	Field	Units
Background	44.4	35.1	api
Background + Calibrator	276.4	270.6	api
Calibrator	232.0	235.5	api

Shop	Field	Difference	Tolerance
232.0	235.5	-3.5	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:DSNT - 10735145

Engineer:J. BOLLOM

Software Version:WL INSITE R3.8.4 (Build 5)

Reference Calibration Date:03-Sep-13 11:53:51

Calibration Date:07-Oct-13 07:57:36

Calibration Version:1

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Field Verification	Shop	Field	Units
Background	44.4	35.1	api
Background + Calibrator	276.4	270.6	api
Calibrator	232.0	235.5	api

Shop	Field	Difference	Tolerance
232.0	235.5	-3.5	+/- 9.00

Tool Name:	DSNT - 10735145	Reference Calibration Date:	03-Sep-13 11:03:01
Engineer:	THOMAS HYDE	Calibration Date:	03-Sep-13 12:03:57
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

Logging Source S/N: DSN-436
Tank Serial Number: 105060
Reference value assigned to Tank: 51.680
Snow Block S/N: 08910
Calibration Tank Water Temperature: 70 degF
Min. Tool Housing Outside Diameter: 3.620 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value

Gain:	0.943	0.943	0.900 - 1.100
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WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change

Porosity (decp):	0.2107	0.2107	0.0000	+/- 0.0020
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Calibrated Ratio:	9.72	9.72	0.001	+/- 0.050
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VERIFIER		
Measurement	Value	Control Limit

Snow-Block Porosity (decp):	0.0845	0.02000 - 0.09000
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PASS/FAIL SUMMARY	
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Background Check:	Passed
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Gain-Range Check:	Passed
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Snow-Block Check:	Passed
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DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 10673803	Reference Calibration Date:	21-Aug-13 17:09:07
Engineer:	THOMAS HYDE	Calibration Date:	03-Sep-13 10:49:57
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1
Host Tool Name:	DSNT - 10735145		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value

Pad Offset	-3811.53	-4050.92	-7000.00 - -1000.00
------------	----------	----------	---------------------

Pad Gain	0.0003778	0.0003790	0.000200 - 0.000600
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Arm Offset	-4629.72	-4892.26	-5000.00 - 3000.00
------------	----------	----------	--------------------

Arm Gain	0.0005026	0.0005353	0.000300 - 0.000700
----------	-----------	-----------	---------------------

Arm Power	-0.000005005	-0.000006958	-0.000010000 - 0.000010000
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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)	2.08	2.00	-0.08	+/- 0.20
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Medium Ring (in)	3.83	3.75	-0.08	+/- 0.20
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RING DIAMETER:

Small Ring (in)	6.60	6.50	-0.10	+/- 0.20
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Small Ring (in)	8.00	8.00	0.10	+/- 0.20
Medium Ring (in)	8.28	8.25	-0.03	+/- 0.20
Large Ring (in)	15.09	15.00	-0.09	+/- 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 - 10673803	Reference Calibration Date:	03-Sep-13 10:49:57
Engineer:	J. BOLLUM	Calibration Date:	07-Oct-13 08:18:51
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.71	-0.04	+/- 0.10
Ring Diameter	8.25	8.37	0.12	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT Pad - 10673790	Reference Calibration Date:	08-Aug-13 12:18:40
Engineer:	THOMAS HYDE	Calibration Date:	03-Sep-13 10:17:54
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

Logging Source S/N: 5073GW		
Aluminum Block S/N: LIBERAL ALUMINUM	Density: 2.598g/cc	Pe: 3.170
Magnesium Block S/N: LIBERAL MAG BLOCK	Density: 1.684g/cc	Pe: 2.598

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0310	0.9915	0.90 - 1.10
Near Dens Gain	1.0240	0.9778	0.90 - 1.10
Near Peak Gain	1.0107	0.9349	0.90 - 1.10
Near Lith Gain	0.9863	0.9039	0.90 - 1.10
Far Bar Gain	1.0114	1.0102	0.90 - 1.10
Far Dens Gain	0.9990	0.9966	0.90 - 1.10
Far Peak Gain	0.9909	0.9895	0.90 - 1.10
Far Lith Gain	0.9602	0.9605	0.90 - 1.10
Near Bar Offset	-0.0338	0.3212	NONE
Near Dens Offset	0.0320	0.4330	NONE
Near Peak Offset	0.1573	0.7795	NONE
Near Lith Offset	0.3427	1.0171	NONE
Far Bar Offset	0.0670	0.0759	NONE
Far Dens Offset	0.1464	0.1670	NONE
Far Peak Offset	0.1685	0.1799	NONE
Far Lith Offset	0.3264	0.3250	NONE
Near Bar Background	860.94	857.08	700 - 1450
Near Dens Background	881.84	881.14	800 - 1400

Near Dens Background	281.24	281.14	230 - 480
Near Peak Background	124.02	123.18	100 - 210
Near Lith Background	152.19	153.00	125 - 260
Far Bar Background	574.26	577.65	450 - 900
Far Dens Background	226.77	226.51	175 - 345
Far Peak Background	90.55	90.03	70 - 140
Far Lith Background	93.84	94.13	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.692	1.684	-0.008	+/- 0.015
Pe	2.487	2.562	0.075	+/- 0.150
ALUMINUM				
Density (g/cc)	2.594	2.598	0.004	+/- 0.01500
Pe	3.161	3.131	-0.030	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0007	+/- 0.0110	-0.0021	+/- 0.0140
Magnesium Block	0.0006	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	0.0012	+/- 0.0110	0.0001	+/- 0.0140
Resolution	8.63	6.00 - 11.50	8.94	6.00 - 11.50
Internal Verifier(B+D+P+L)	1414	1200 - 2700	988	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
Gains Check:	Passed
Changes in Calibration Blocks:	Passed

SPECTRAL DENSITY FIELD CHECK

Tool Name: SDLT Pad - 10673790

Reference Calibration Date: 03-Sep-13 10:17:54

Engineer: J. BOLLUM

Calibration Date: 07-Oct-13 08:16:47

Software Version: WL INSITE R3.8.4 (Build 5)

Calibration Version: 1

Pad Temperature: 60.7 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1414.388	1412.369	-2.019	15.183
Far (B+D+P+L) cps	988.324	982.811	-5.513	16.856
Near Resolution	8.63	8.80	0.170	0.50
Far Resolution	8.94	9.40	0.460	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-10748374						
Gamma Ray Calibrator	232.0	235.5	-----	-3.5	+/- 9.00	api
DSNT-10735145						
Snow-Block Porosity	0.0845	-----	-----	0.0000	+/- -.--	decp
SDLT-10673803						
Pad Extension	3.75	3.71	-----	0.04	+/-0.10	in
Ring Diameter	8.25	8.37	-----	-0.12	+/-0.15	in
SDLT Pad-10673790						
Near(B+D+P+L)	1414.388	1412.369	-----	2.019	+/-15.183	cps
Far(B+D+P+L)	988.324	982.811	-----	5.513	+/-16.856	cps
Data: DBUSSEL_E-410001.SP-GTET-HEDT-DSN-SDLT-ELEX-BSAT-ACRT-CH001.09-Oct-13 08:57 Dn @1637.5f Date: 09-Oct-13 10:22:24						
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	10.000	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	5293.00	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		
	SHARED	BHSM	Borehole Size 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	
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	
HFDT-I	HFOK	Do HFDT Calculations?	Yes	
HFDT-I	RMF	Mud Filtrate Resistivity	0.70	ohmm
HFDT-I	RMFT	Temperature of Mud Filtrate	132.00	degF
HFDT-I	MDIL	Matrix Dielectric Constant	8.000	
HFDT-I	HRTC	HFDT Insite Temperature Correction Source	PADTEMP1	
HFDT-I	CLOK	Process Caliper Outputs?	Yes	
HFDT-I	SAO	SDL Backup Arm Offset	0.00	in
HFDT-I	PAO	Pad Arm Offset	0.00	in
HFDT-I	MLOK	Process MicroLog Outputs?	Yes	
HFDT-I	MINO	Microlog Lateral Offset	0.00	ohmm
HFDT-I	MNOO	Microlog Normal Offset	0.00	ohmm
DSNT	DNOK	Process DSN?	Yes	
DSNT	DEOK	Process DSN EVR?	No	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	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	
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
Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	5000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	User define	
BSAT	DTMA	Delta -T Matrix	47.60	uspf
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt Sonde	RTOK	Process ACRt?	Yes	
ACRt Sonde	MNSO	Minimum Tool Standoff	1.50	in
ACRt Sonde	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
ACRt Sonde	TPOS	Tool Position	Free Hanging	
ACRt Sonde	RMOP	Rmud Source	Mud Cell	
ACRt Sonde	RMIN	Minimum Resistivity for MAP	0.20	ohmm
ACRt Sonde	RMIN	Maximum Resistivity for MAP	200.00	ohmm
ACRt Sonde	THQY	Threshold Quality	0.50	
ACRt Sonde	MRFX	Fixed mud resistivity	2000	ohmm

BOTTOM

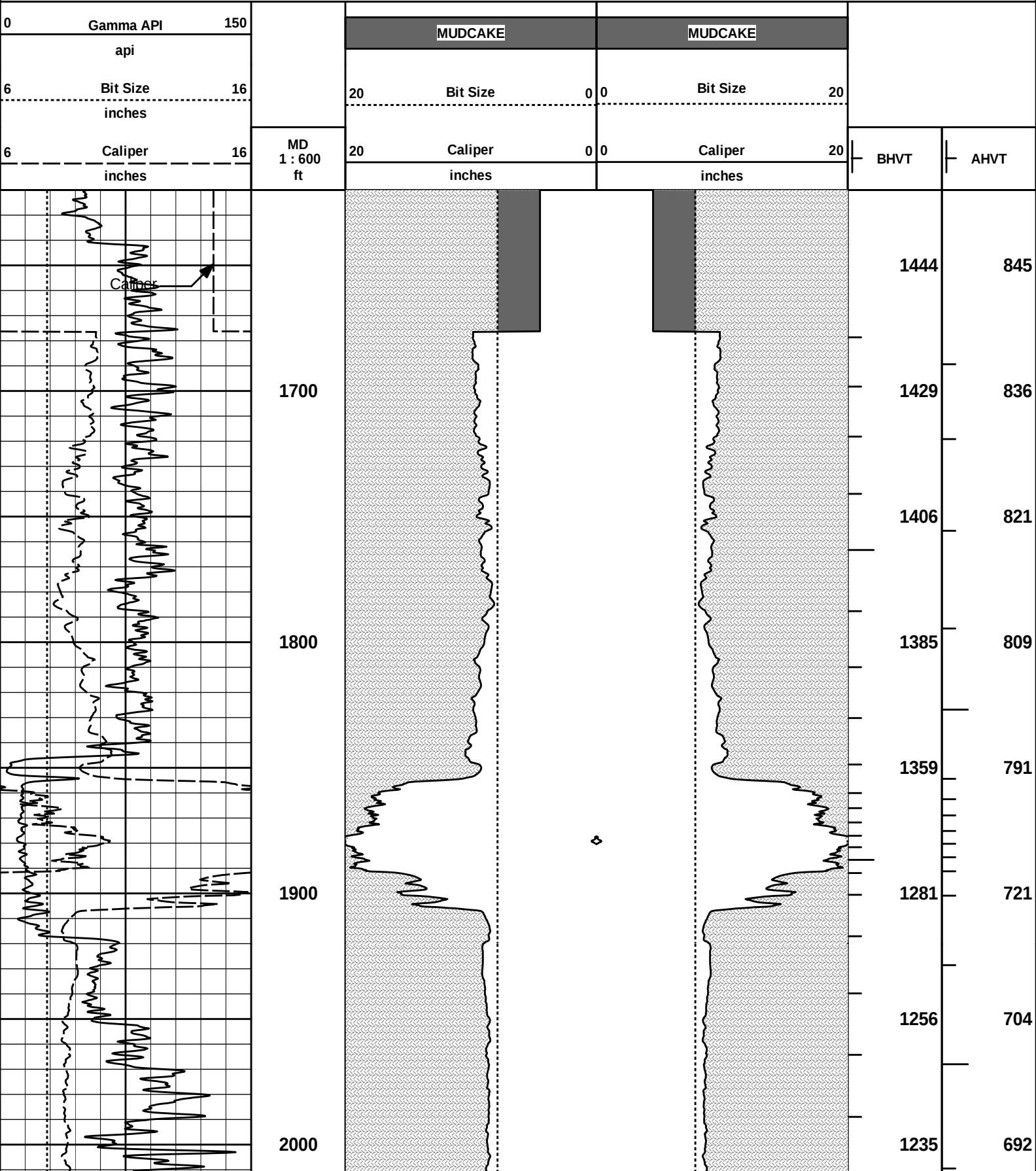
INPUTS, DELAYS AND FILTERS TABLE

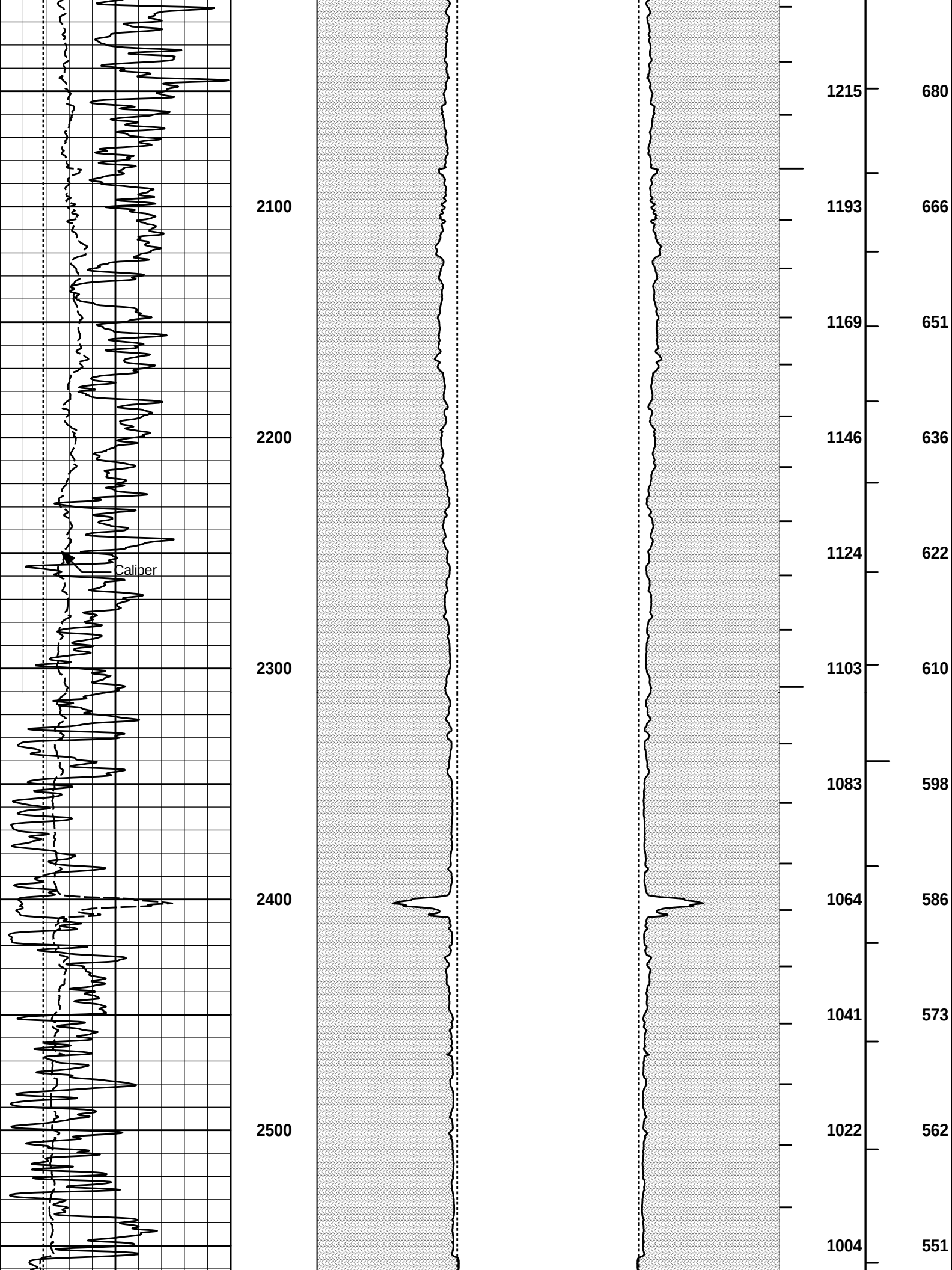
Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
RWCH				
DHTN	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	88.39	NO	
SP	Spontaneous Potential	88.39	BLK	1.250
SPR	Raw Spontaneous Potential	88.39	NO	
SPO	Spontaneous Potential Offset	88.39	NO	
GTET				
TPUL	Tension Pull	80.37	NO	
GR	Natural Gamma Ray API	80.37	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	80.37	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	80.37	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
HFDT-I				
TPUL	Tension Pull	64.83	NO	
IUXU	HFDT Insite In-phase Component of Upper Receiver - TXUon TXLoff	64.83	NO	
QUXU	HFDT Insite Quadrature Component of Upper Receiver - TXUon TXLof	64.83	NO	
IMXU	HFDT Insite In-phase Component of Middle Receiver TXUon TXLoff	64.83	NO	
QMXU	HFDT Insite Quadrature Component of Middle Receiver TXUon TXLof	64.83	NO	
ILXU	HFDT Insite In-phase Component of Lower Receiver TXUon TXLoff	64.83	NO	
QLXU	HFDT Insite Quadrature Component of Lower Receiver TXUon TXLoff	64.83	NO	
IUXL	HFDT Insite In-phase Component of Upper Receiver TXUoff TXLon	64.83	NO	
QUXL	HFDT Insite Quadrature Component of Upper Receiver TXUoff TXLon	64.83	NO	
IMXL	HFDT Insite In-phase Component of Middle Receiver TXUoff TXLon	64.83	NO	
QMXL	HFDT Insite Quadrature Component of Middle Receiver TXUoff TXLo	64.83	NO	
ILXL	HFDT Insite In-phase Component of Lower Receiver TXUoff TXLon	64.83	NO	
QLXL	HFDT Insite Quadrature Component of Lower Receiver TXUoff TXLon	64.83	NO	
TEX1	HFDTInsite External Pad Temperature Measurement 1	64.06	NO	
TEX2	HFDTInsite External Pad Temperature Measurement 2	64.06	NO	
STAT	HFDT Insite Pad Status Word	64.83	NO	
TPUL	Tension Pull	64.59	NO	
PCAL	Pad Caliper	64.59	TRI	0.250
ACAL	Arm Caliper	64.59	TRI	0.250
TPUL	Tension Pull	64.78	NO	
MINV	Microlog Lateral	64.78	BLK	0.750
MNOR	Microlog Normal	64.78	BLK	0.750

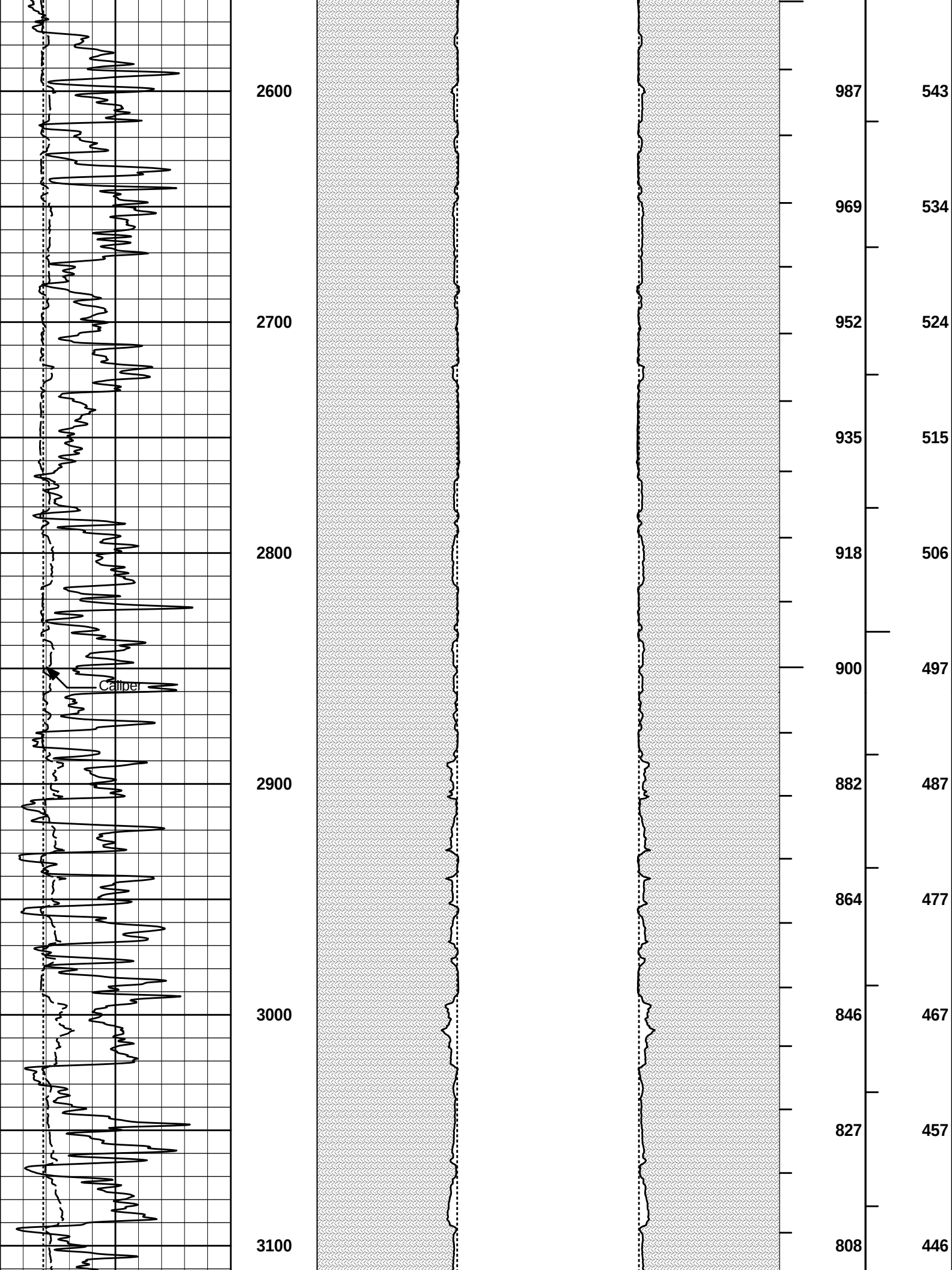
DSNT				
TPUL	Tension Pull	53.99	NO	
RNDS	Near Detector Telemetry Counts	54.09	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.84	TRI	0.583
DNTT	DSN Tool Temperature	54.09	NO	
DSNS	DSN Tool Status	53.99	NO	
ERND	Near Detector Telemetry Counts EVR	54.09	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.84	BLK	0.000
ENTM	DSN Tool Temperature EVR	54.09	NO	
SDLT				
TPUL	Tension Pull	44.09	NO	
PCAL	Pad Caliper	44.09	TRI	0.250
ACAL	Arm Caliper	44.09	TRI	0.250
BSAT				
TPUL	Tension Pull	27.09	NO	
STAT	Status	27.09	NO	
DLYT	Delay Time	27.09	NO	
SI	Sample Interval	27.09	NO	
TXRX	Raw Telemetry 10 Receivers	27.09	NO	
FRMC	Tool Frame Count	27.09	NO	
GMOD	Gain processing mode	19.83	NO	
ACRt Sonde				
TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000

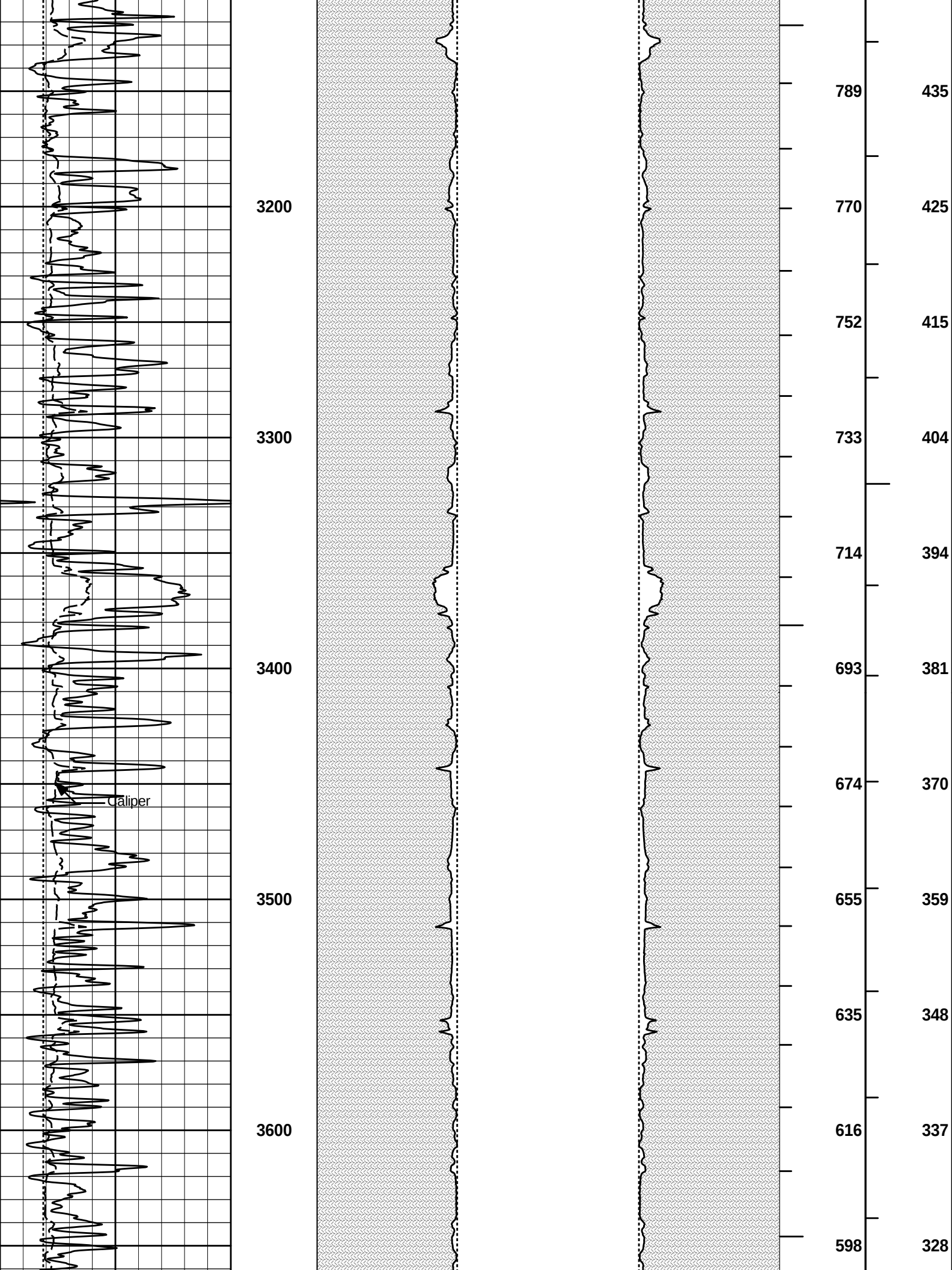
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	
SDLT Pad				
TPUL	Tension Pull	44.08	NO	
NAB	Near Above	43.90	BLK	0.920
NHI	Near Cesium High	43.90	BLK	0.920
NLO	Near Cesium Low	43.90	BLK	0.920
NVA	Near Valley	43.90	BLK	0.920
NBA	Near Barite	43.90	BLK	0.920
NDE	Near Density	43.90	BLK	0.920
NPK	Near Peak	43.90	BLK	0.920
NLI	Near Lithology	43.90	BLK	0.920
NBAU	Near Barite Unfiltered	43.90	BLK	0.250
NLIU	Near Lithology Unfiltered	43.90	BLK	0.250
FAB	Far Above	44.26	BLK	0.250
FHI	Far Cesium High	44.26	BLK	0.250
FLO	Far Cesium Low	44.26	BLK	0.250
FVA	Far Valley	44.26	BLK	0.250
FBA	Far Barite	44.26	BLK	0.250
FDE	Far Density	44.26	BLK	0.250
FPK	Far Peak	44.26	BLK	0.250
FLI	Far Lithology	44.26	BLK	0.250
PTMP	Pad Temperature	44.09	BLK	0.920
NHV	Near Detector High Voltage	43.49	NO	
FHV	Far Detector High Voltage	43.49	NO	
ITMP	Instrument Temperature	43.49	NO	
DDHV	Detector High Voltage	43.49	NO	
Microlog Pad				
TPUL	Tension Pull	44.28	NO	
MINV	Microlog Lateral	44.28	BLK	0.750
MNOR	Microlog Normal	44.28	BLK	0.750
Data: DRUSSEL_E-4I0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CHIIDLE			Date: 09-Oct-13 08:50:08	

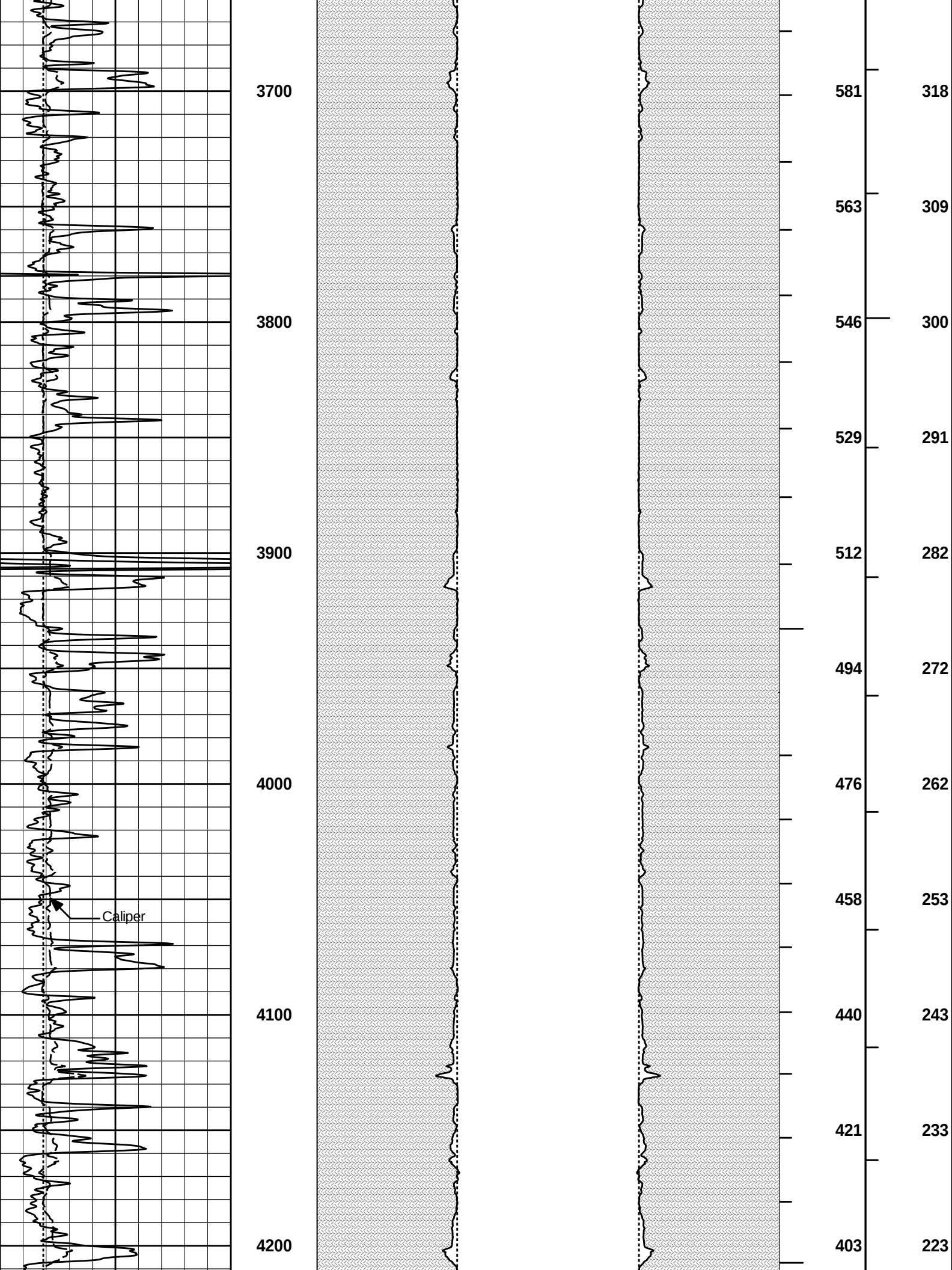
ANNULAR HOLE VOLUME PLOT

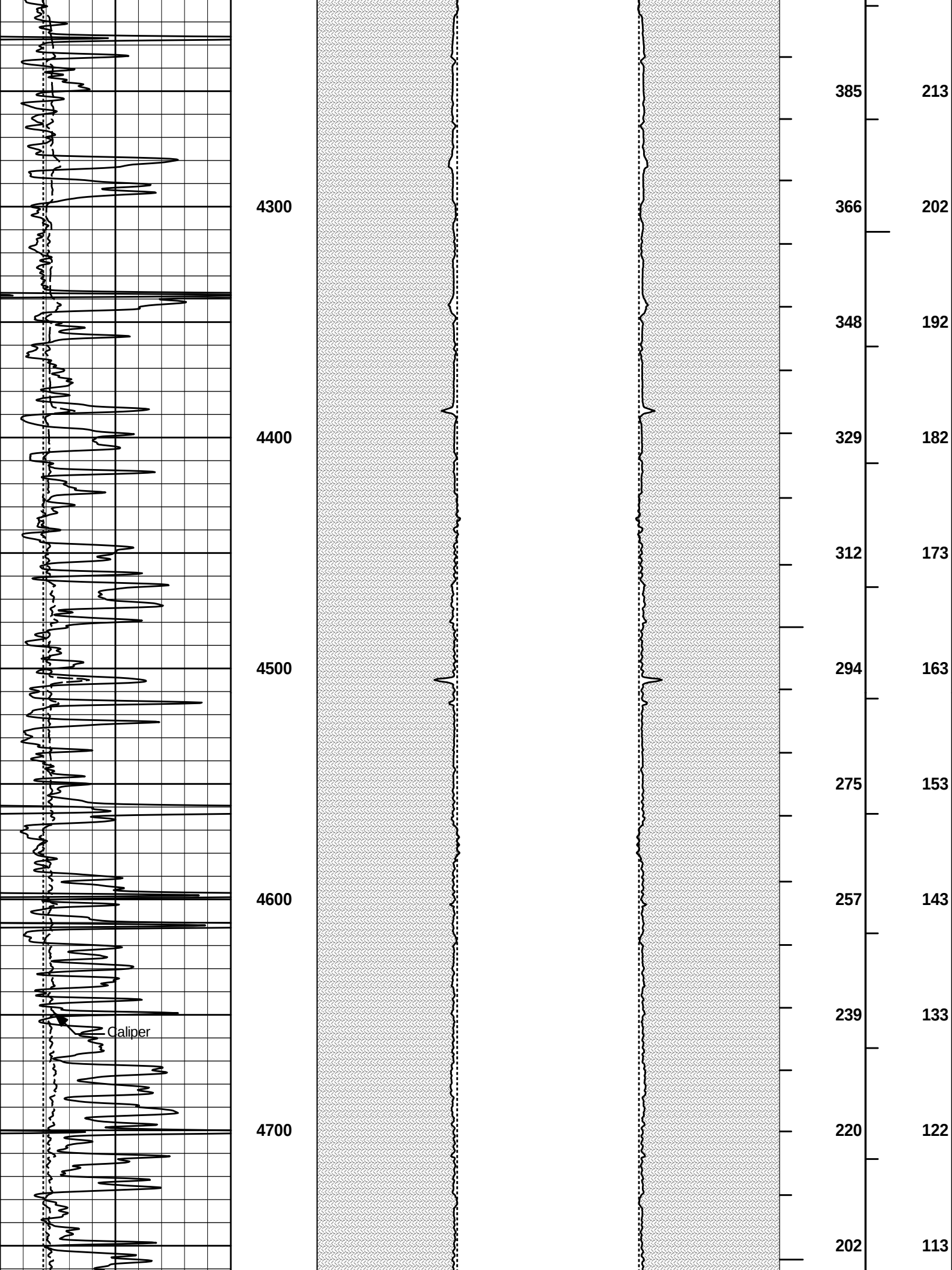


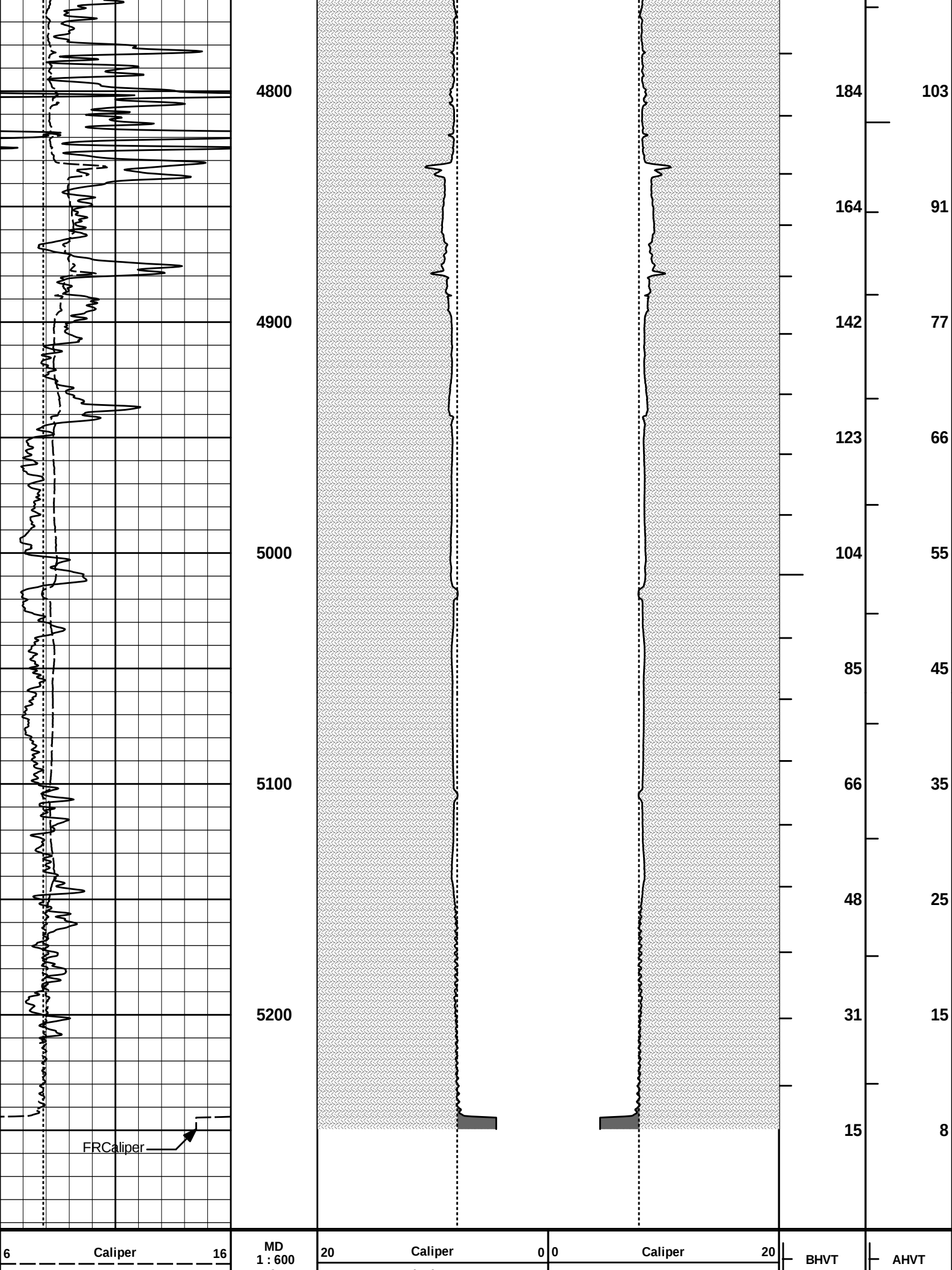












inches		ft		inches		inches	
6	Bit Size	16		20	Bit Size	0	0
inches						20	
0	Gamma API	150		MUDCAKE		MUDCAKE	
api							
HALLIBURTON Plot Time: 09-Oct-13 11:49:47 Plot Range: 1620 ft to 5292.67 ft Data: DRUSSEL_E-4\Well Based\CASING\ Plot File: \\-LOCAL-\\DRUSSEL_E-4\\0001 SP-GTET-HFDT-DSN-SDL-FLEX-BSAT-ACRT-CHIPORO\\AHV_2_IQ_LIB							
ANNULAR HOLE VOLUME PLOT							
COMPANY OXY USA INC. WELL DRUSSEL E-4 FIELD HUGOTON GAS AREA COUNTY FINNEY STATE KANSAS							
HALLIBURTON				SPECTRAL DENSITY DUAL SPACED NEUTRON LOG			