

HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY LOG

COMPANY WELL FIELD/BLOCK COUNTY STATE	OXY USA DRUSSEL E-1 HUGOTON GAS AREA FINNEY KANSAS
Permanent Datum Log measured from Drilling measured from	API No. 15055222130000 Location 690' FSL 1300' FWL LAT: 37.831511° N LONG: 100.890960° W X 1307808.42 Y 433034.0 Sect. 36 Twp. 25S Rge. 33W Elev. 2896.0 ft G.L. 2896.0 ft
Run No. Depth - Driller Depth - Logger Bottom - Logged Interval Top - Logged Interval Casing - Driller Casing - Logger Bit Size Type Fluid in Hole Density PH Source of Sample Rm @ Meas. Temperature Rmf @ Meas. Temperature Rmc @ Meas. Temperature Source Rmf Rm @ BHT Time Since Circulation Time on Bottom Max. Rec. Temperature Equipment Recorded By Witnessed By	ONE 5361.00 ft 5365.0 ft 532.1.0 ft 3900.0 ft 8.625 in @ 1944.0 ft 1944.0 ft 7.875 in @ WATER BASED 8.6 ppg 50.00 s/qt 10.30 pH 10.4 cpm FLOWLINE 1.800 ohmm @ 75.00 degF 1.50 ohmm @ 75.00 degF 2.100 ohmm @ 75.00 degF MEASURED MEASURED 1.04 ohmm @ 135.0 degF 8.0 hr 06-May-13 01:57 135.0 degF @ 5365.0 ft 10782954 LIBERAL THOMAS HYDE A. SERNA T. HEDRICK
Date	06-May-13 Elev.: K.B. 2907.0 ft D.F. 2907.0 ft G.L. 2896.0 ft
Other Services: BSAT ACRT MICRO	

Fold here

Service Ticket No.: 900370204				API Serial No.: 15055222130000				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.	10811258			Serial No.		Serial No.	10673803	Serial No.		Serial No.	10735145				
Model No.	GTET			Model No.		Model No.	SDLT	Model No.		Model No.	DSNT				
Diameter	3.625"			No. of Cent.		Diameter	4.5"	Diameter		Diameter	3.625"				
Detector Model No.	T-102			Spacing		Log Type	GAM-GAM	Log Type		Log Type	NEU-NEU				
Type	SCINT					Source Type	Cs137	Source Type		Source Type	Am241Be				
Length	8"			LSA [Y/N]		Serial No.	5073 GW	Serial No.		Serial No.	DSN-436				
Distance to Source	10'			FWDA [Y/N]		Strength	1.5 Ci	Strength		Strength	15 Ci				
LOGGING DATA															

GENERAL			GAMMA		ACOUSTIC		DENSITY			NEUTRON				
Run No.	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	5365	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 600 MG/L

LCM REPORTED AT 2 PPB

TODAY'S CREW V. JAIME J, ALRIGHT

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

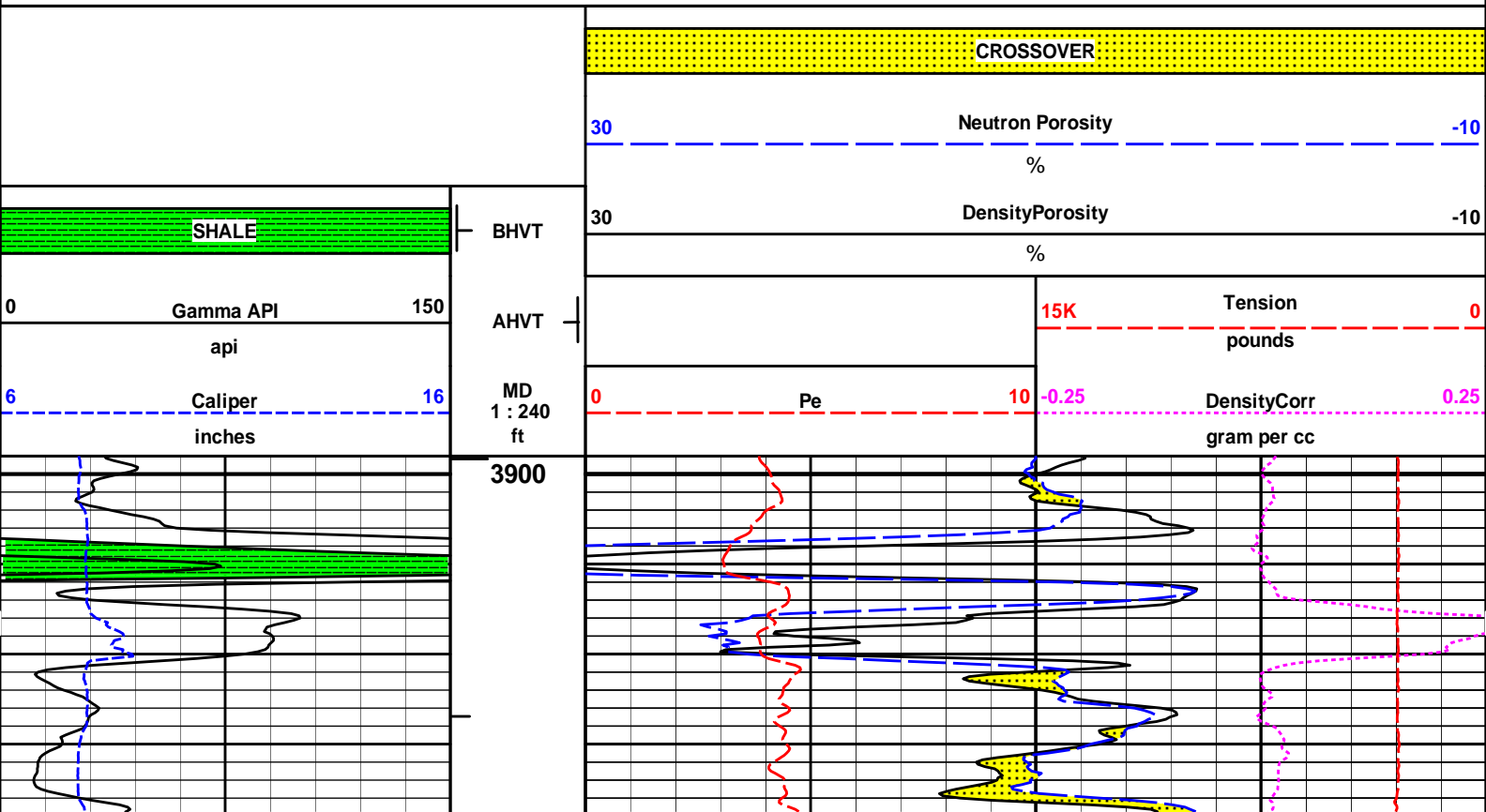
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR 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.

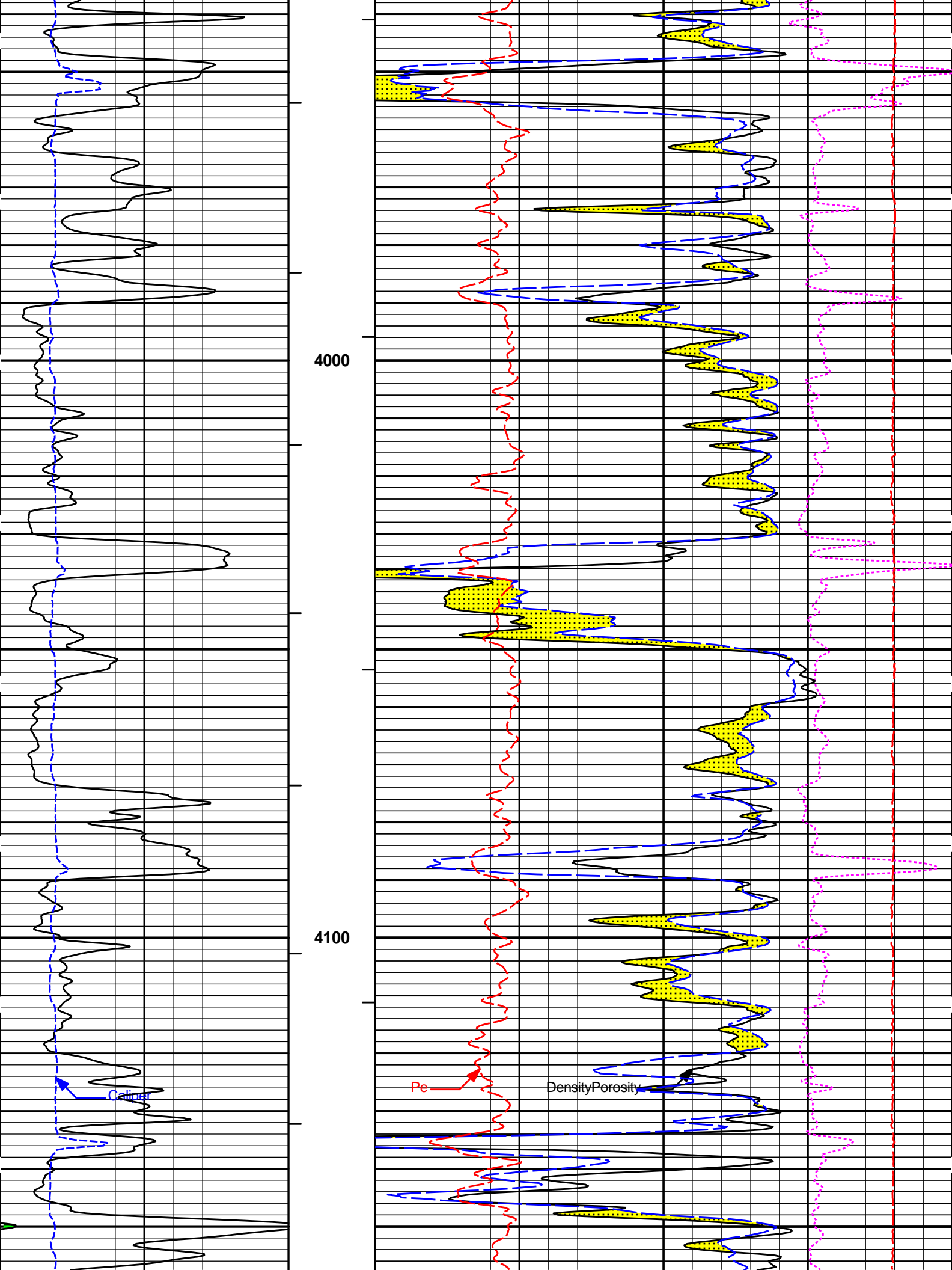
HALLIBURTON

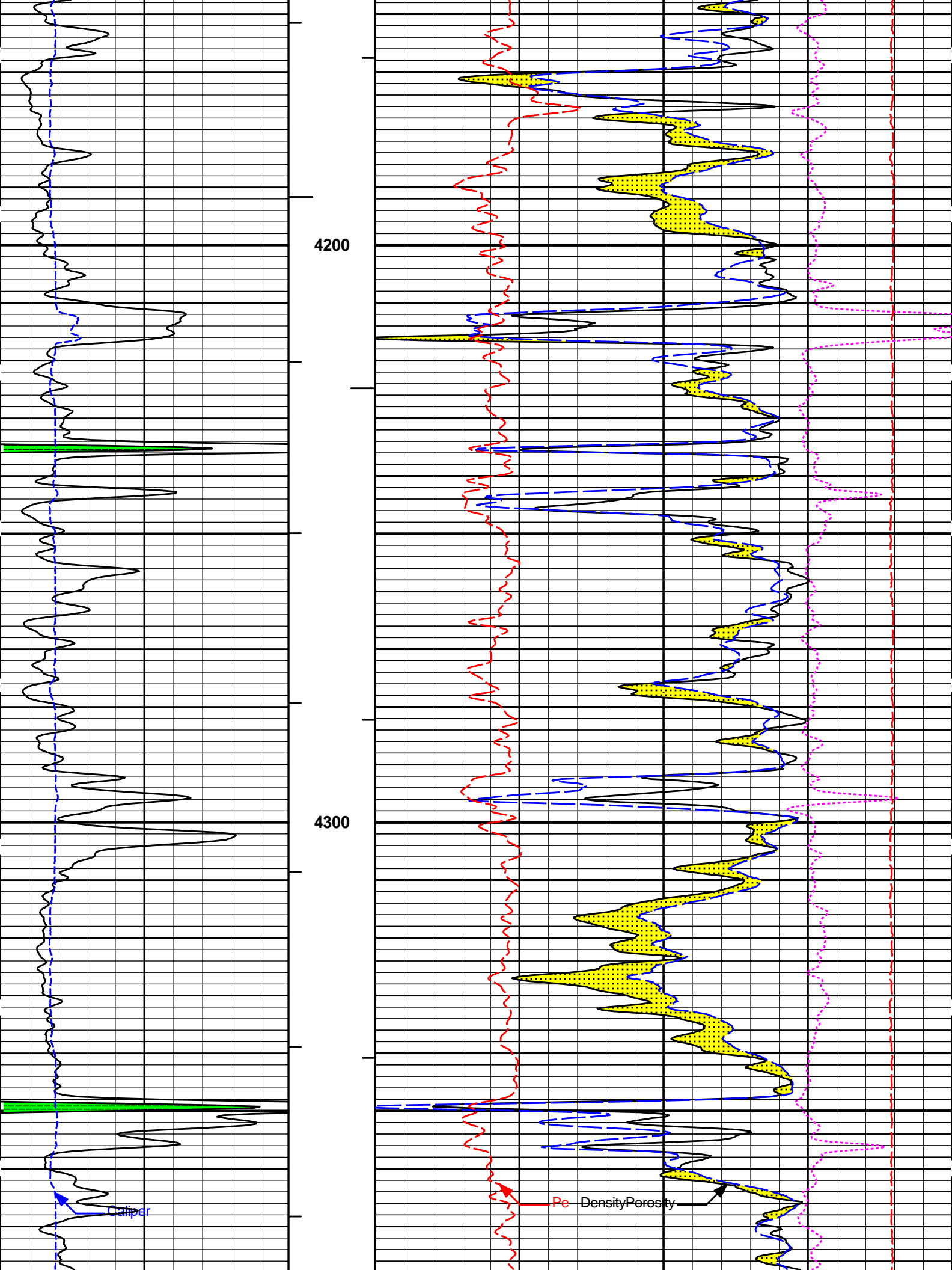


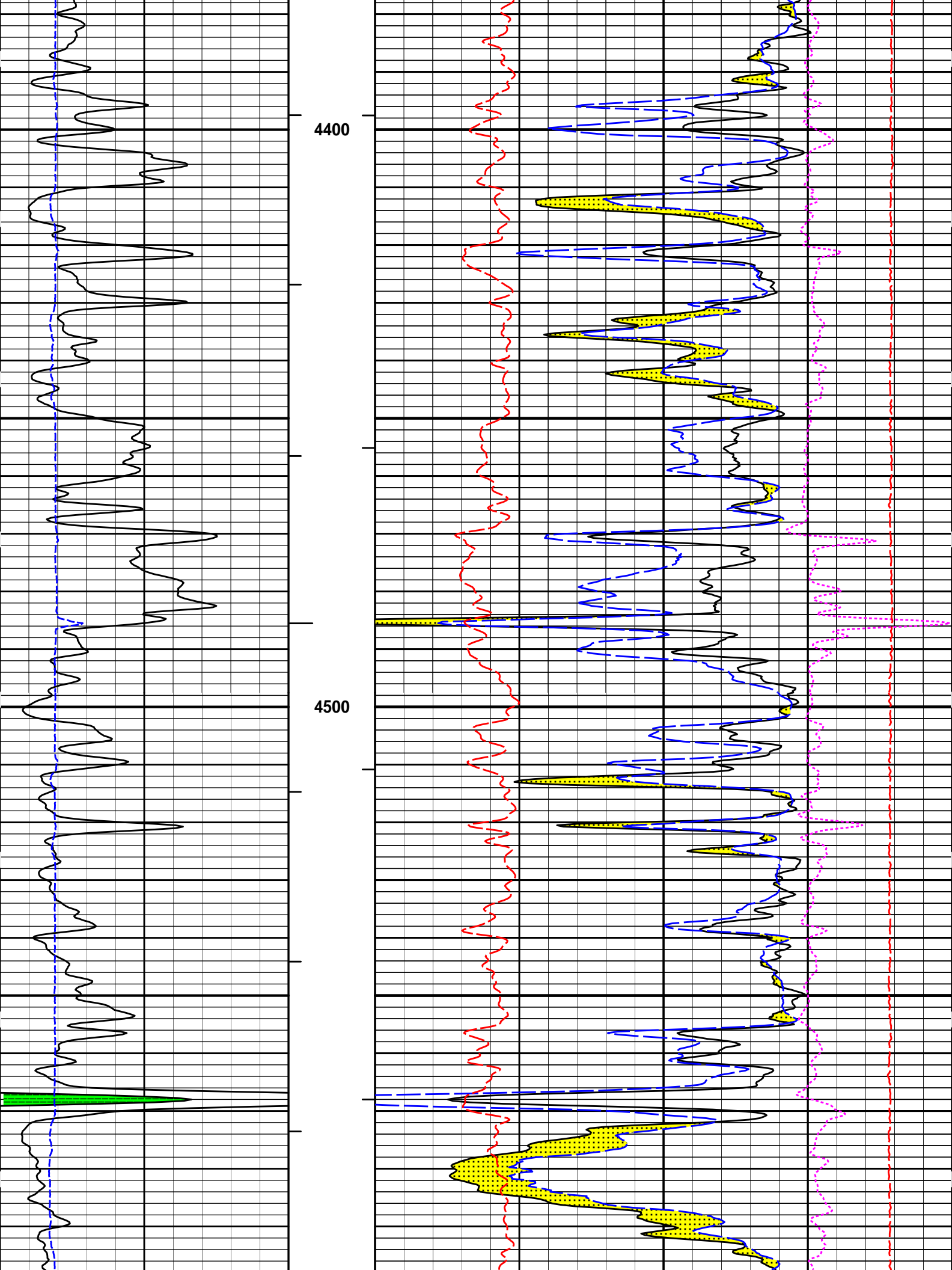
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 Data: DRUSSEL_E1\Well Based\DAQ-0001-003\
 Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

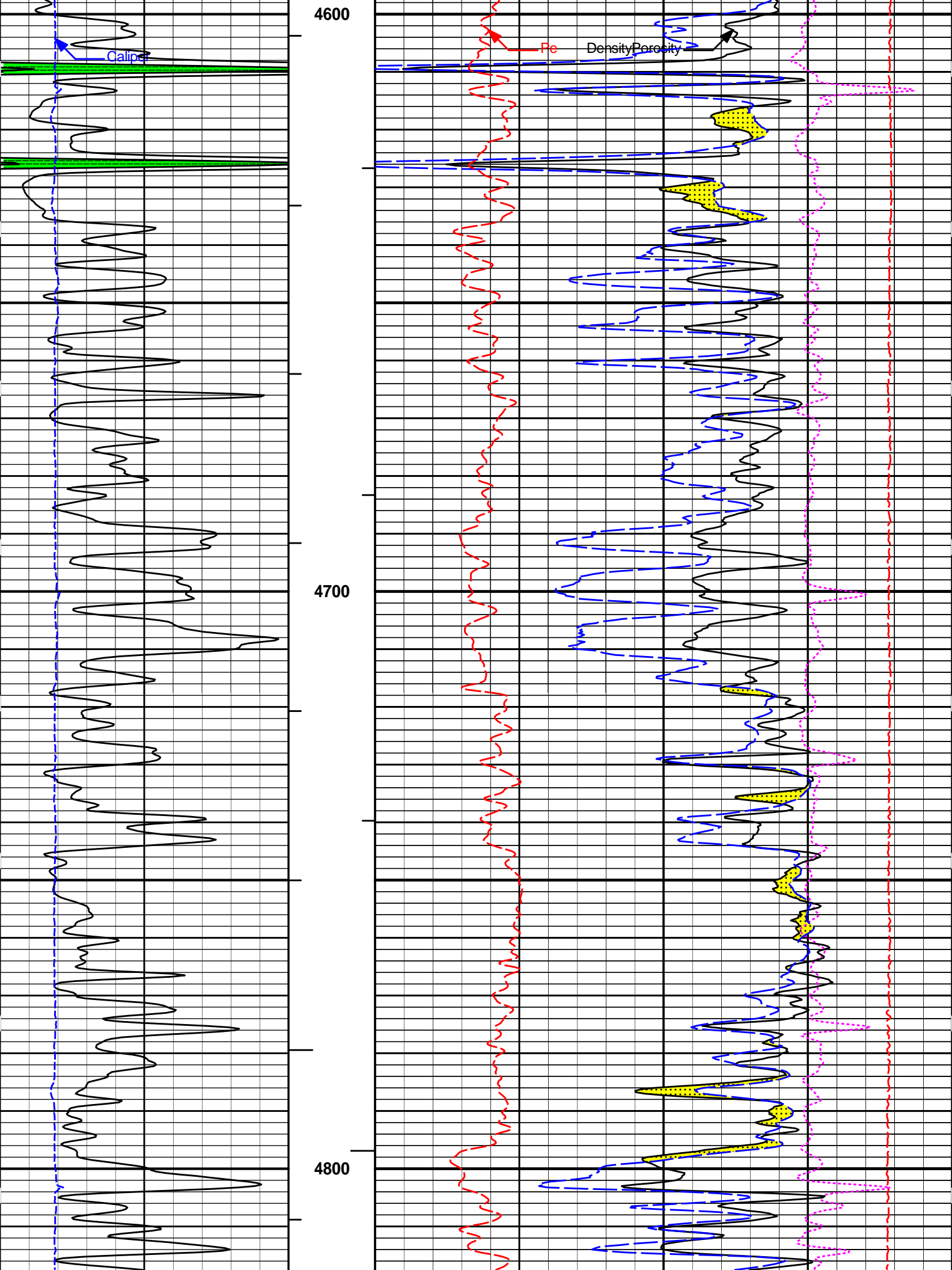
5 INCH MAIN LOG

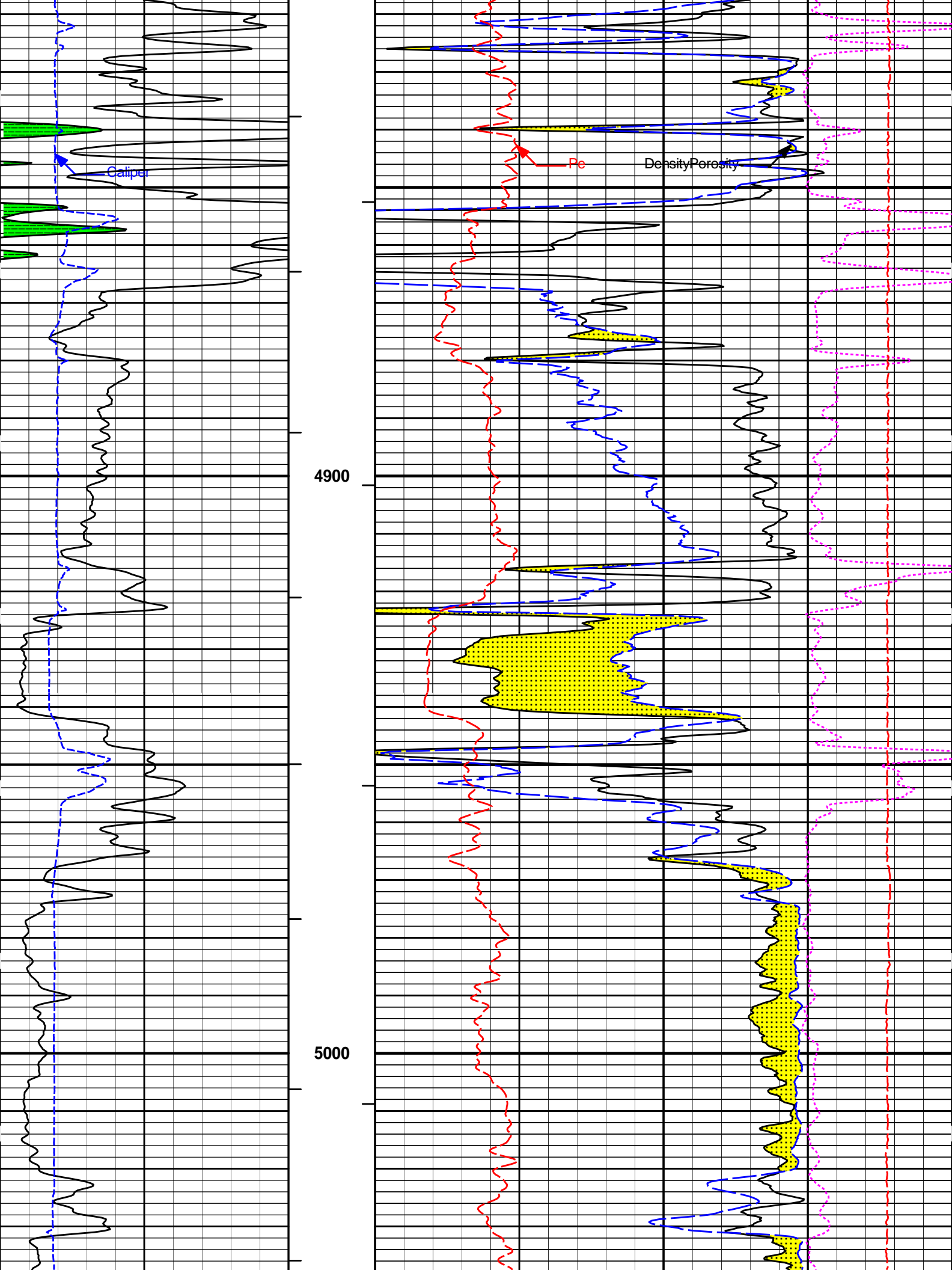


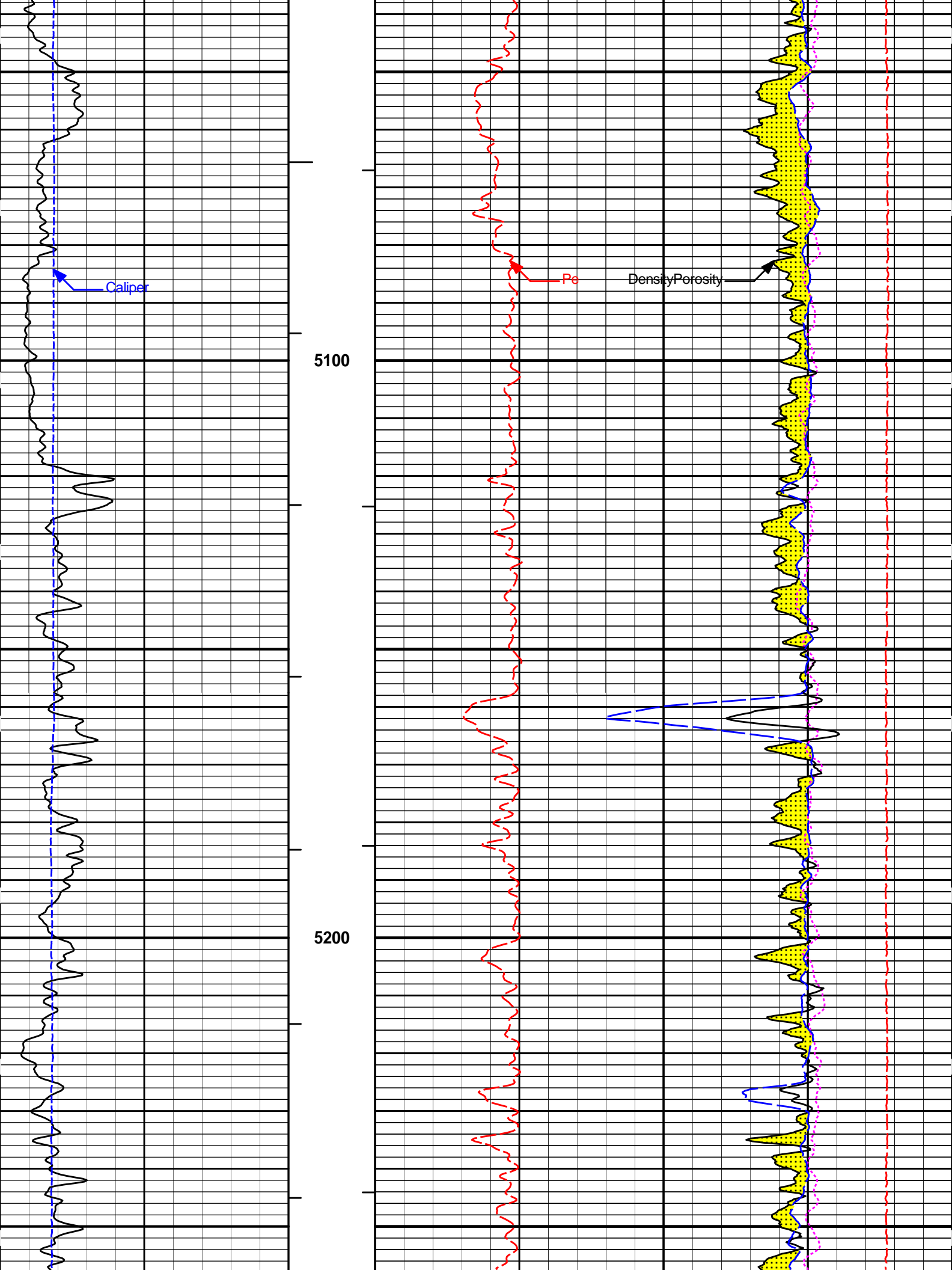


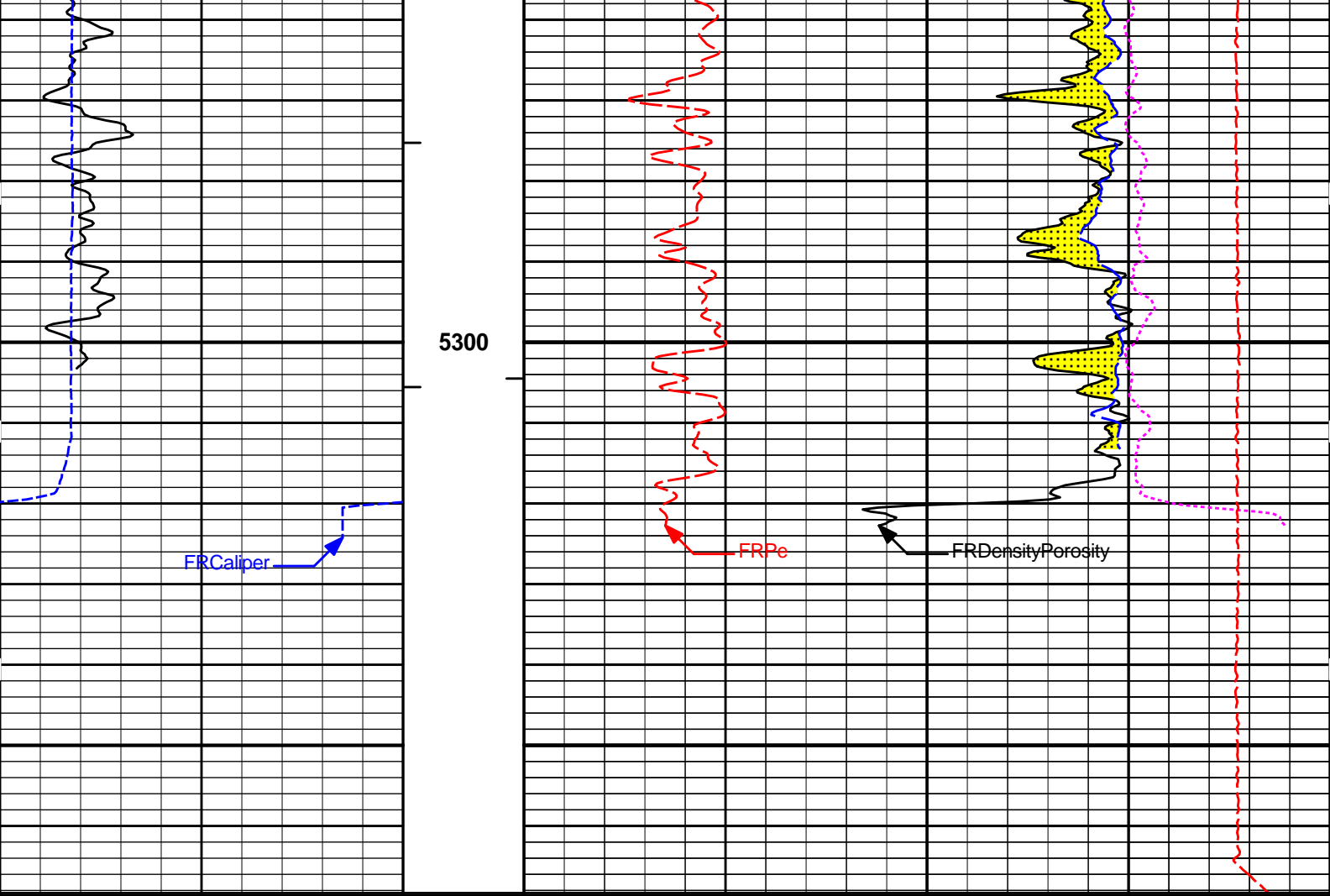












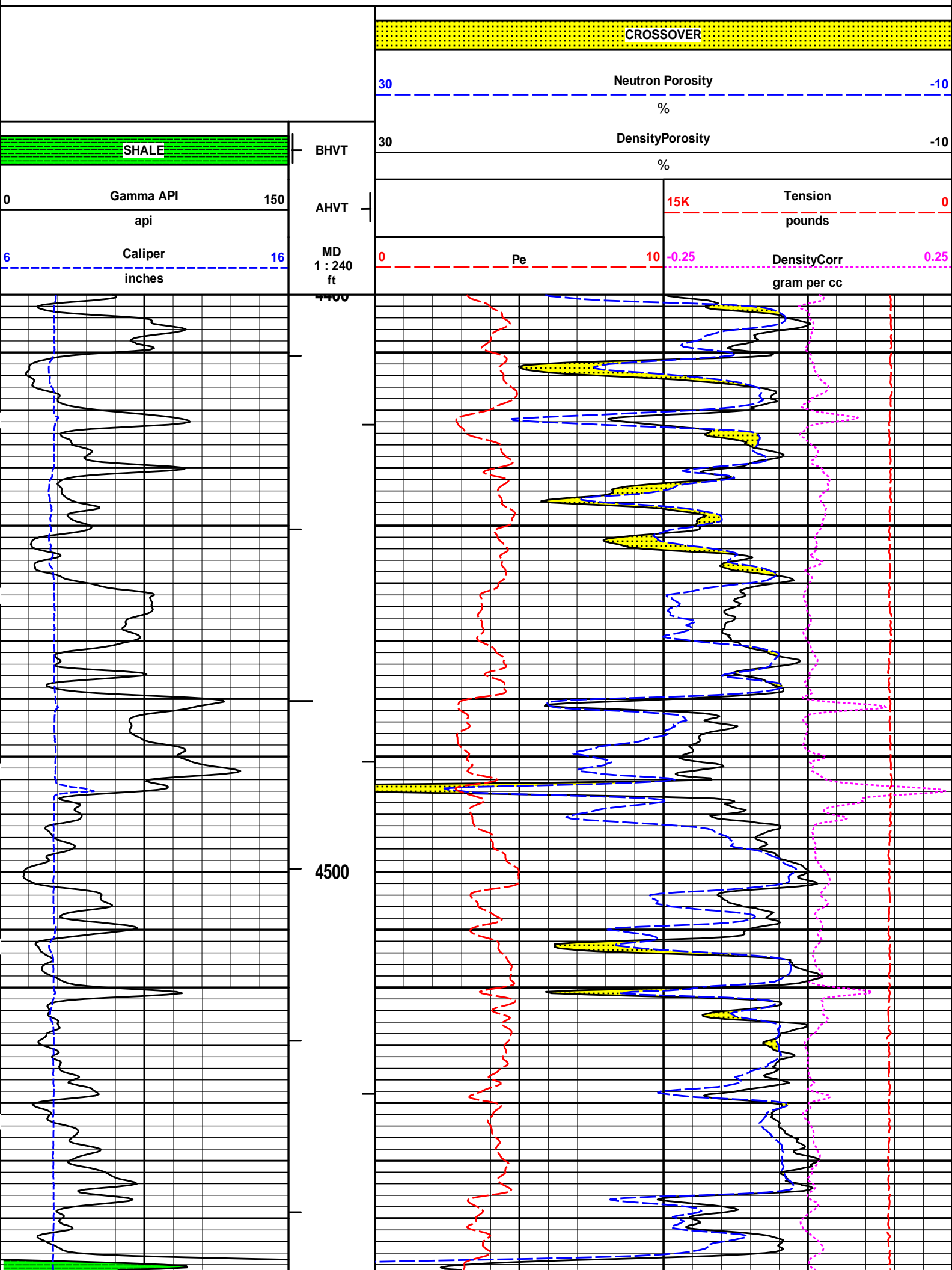
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	inches		1 : 240					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30				DensityPorosity	-10
								%	
				30				Neutron Porosity	-10
								%	
								CROSSOVER	

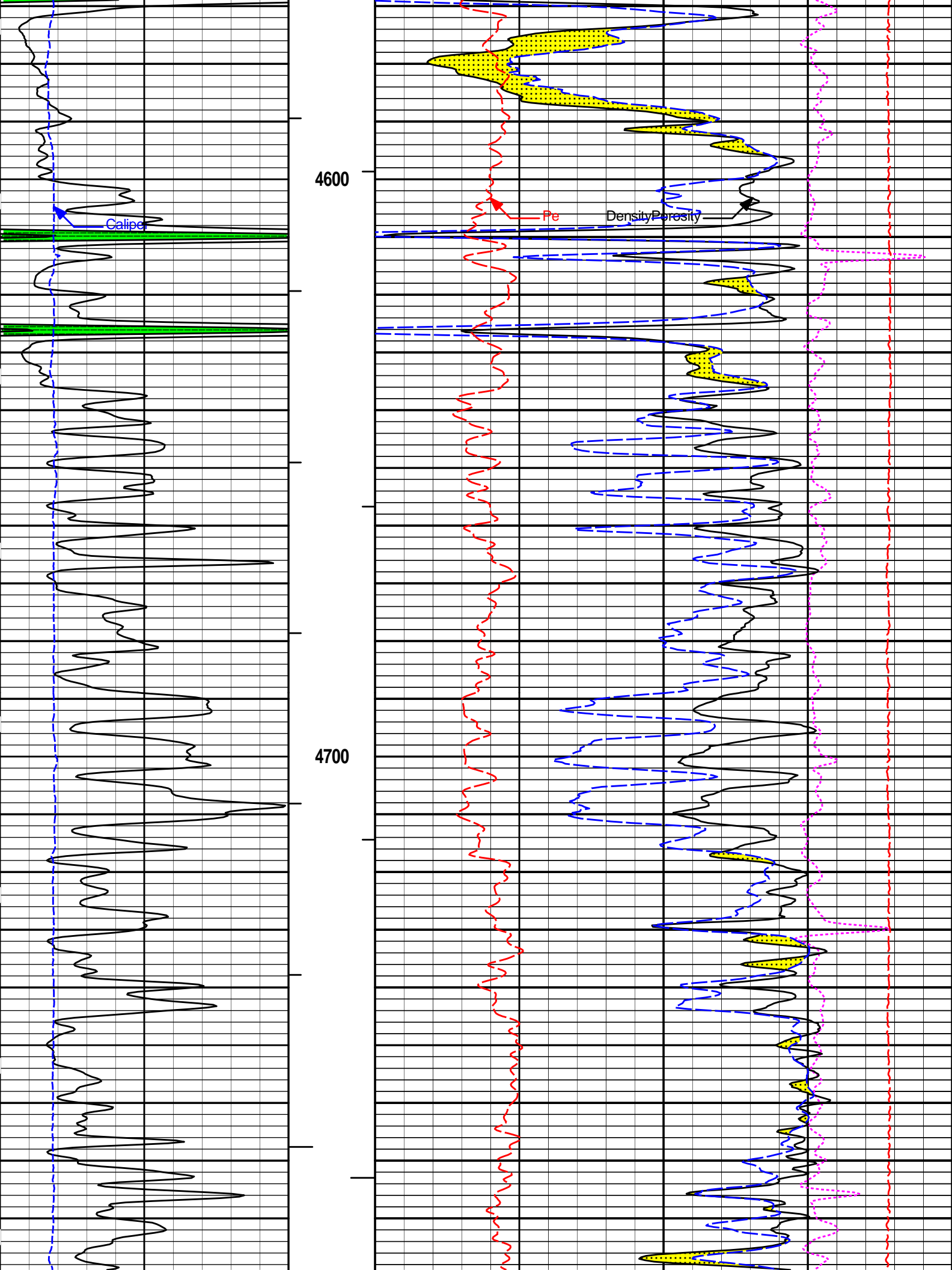
HALLIBURTON Plot Time: 06-May-13 10:48:09
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 Data: DRUSSEL_E1\Well Based\DAQ-0001-003\
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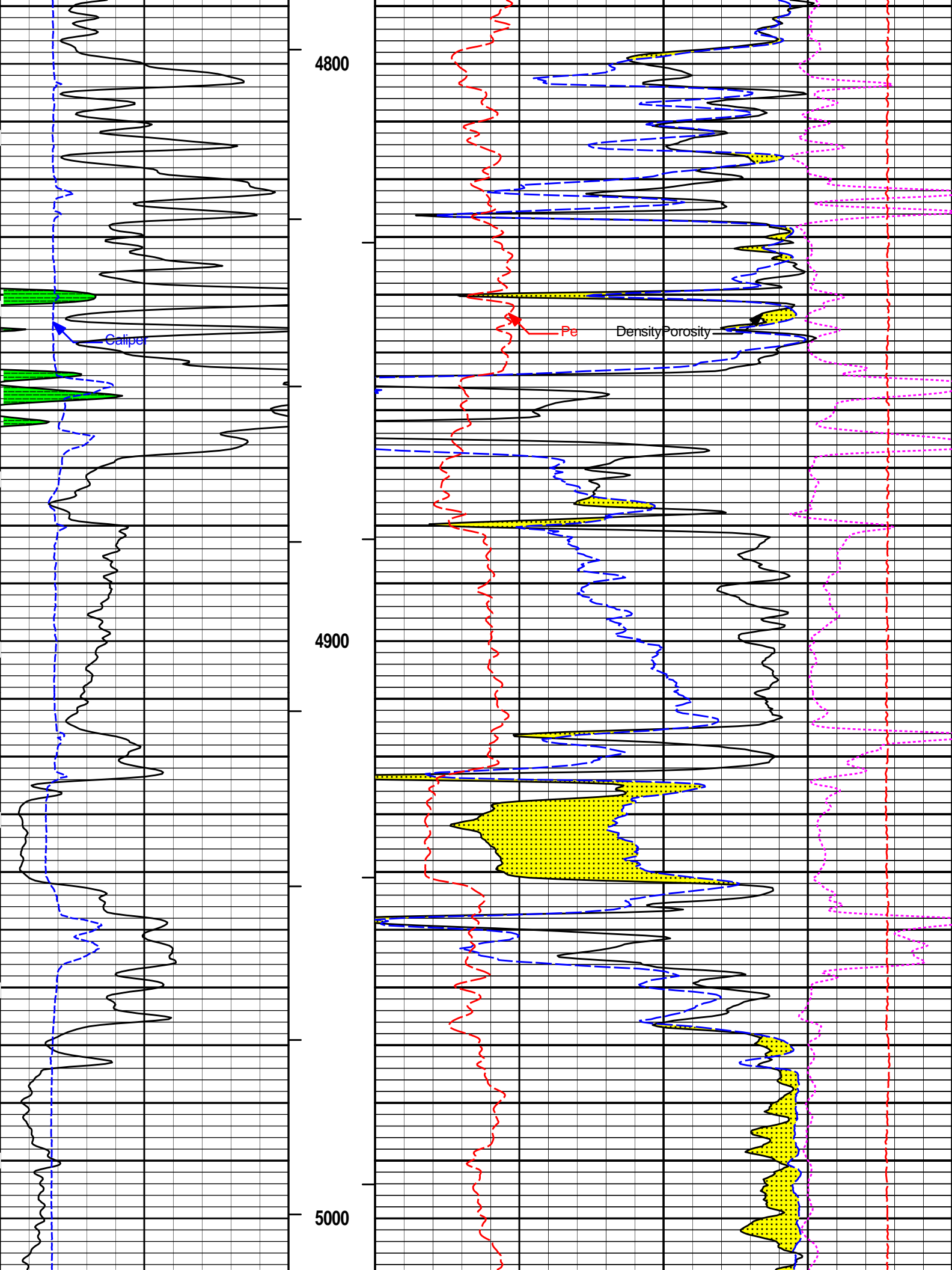
5 INCH MAIN LOG

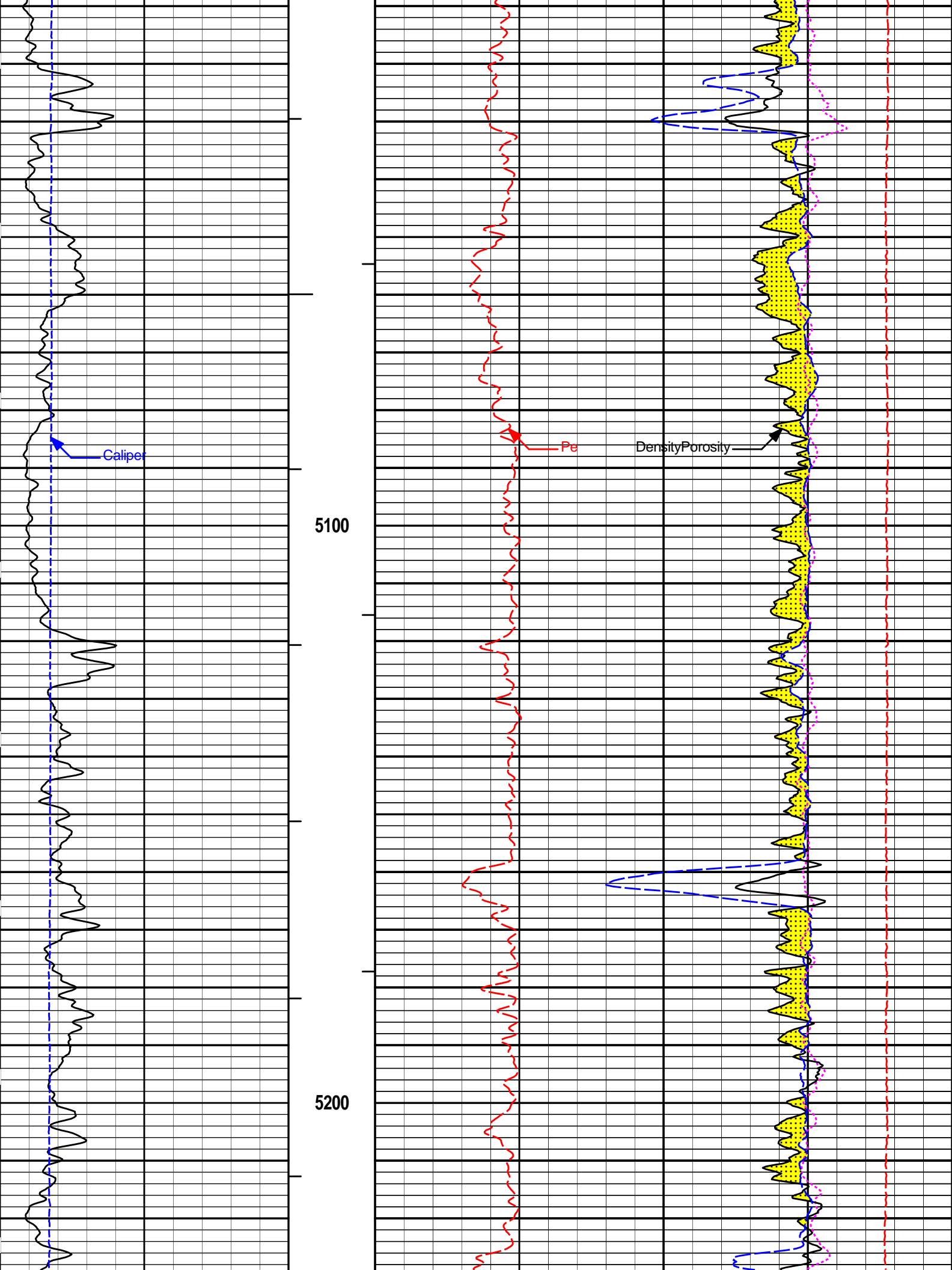
HALLIBURTON Plot Time: 06-May-13 10:48:09
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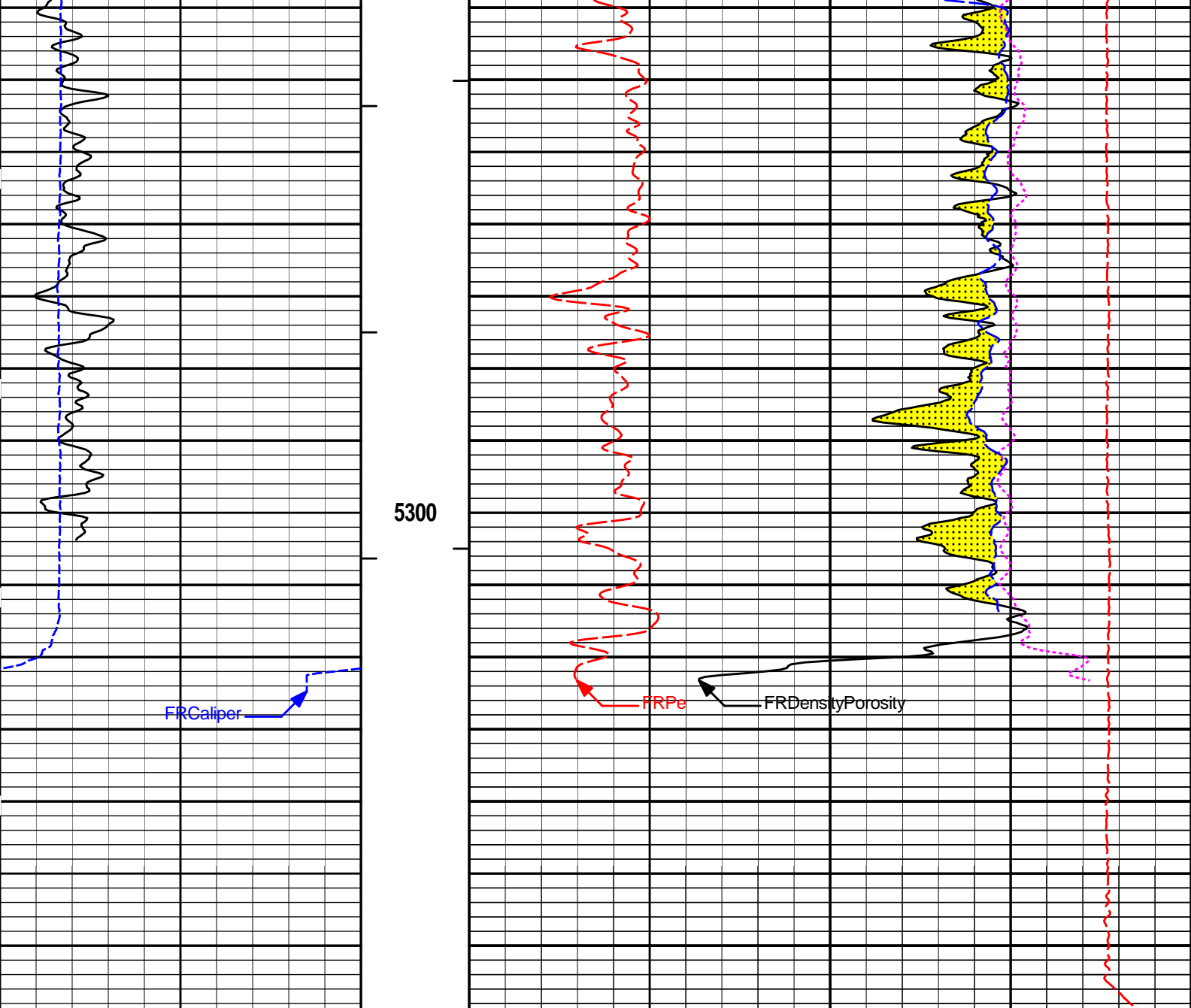
REPEAT SECTION











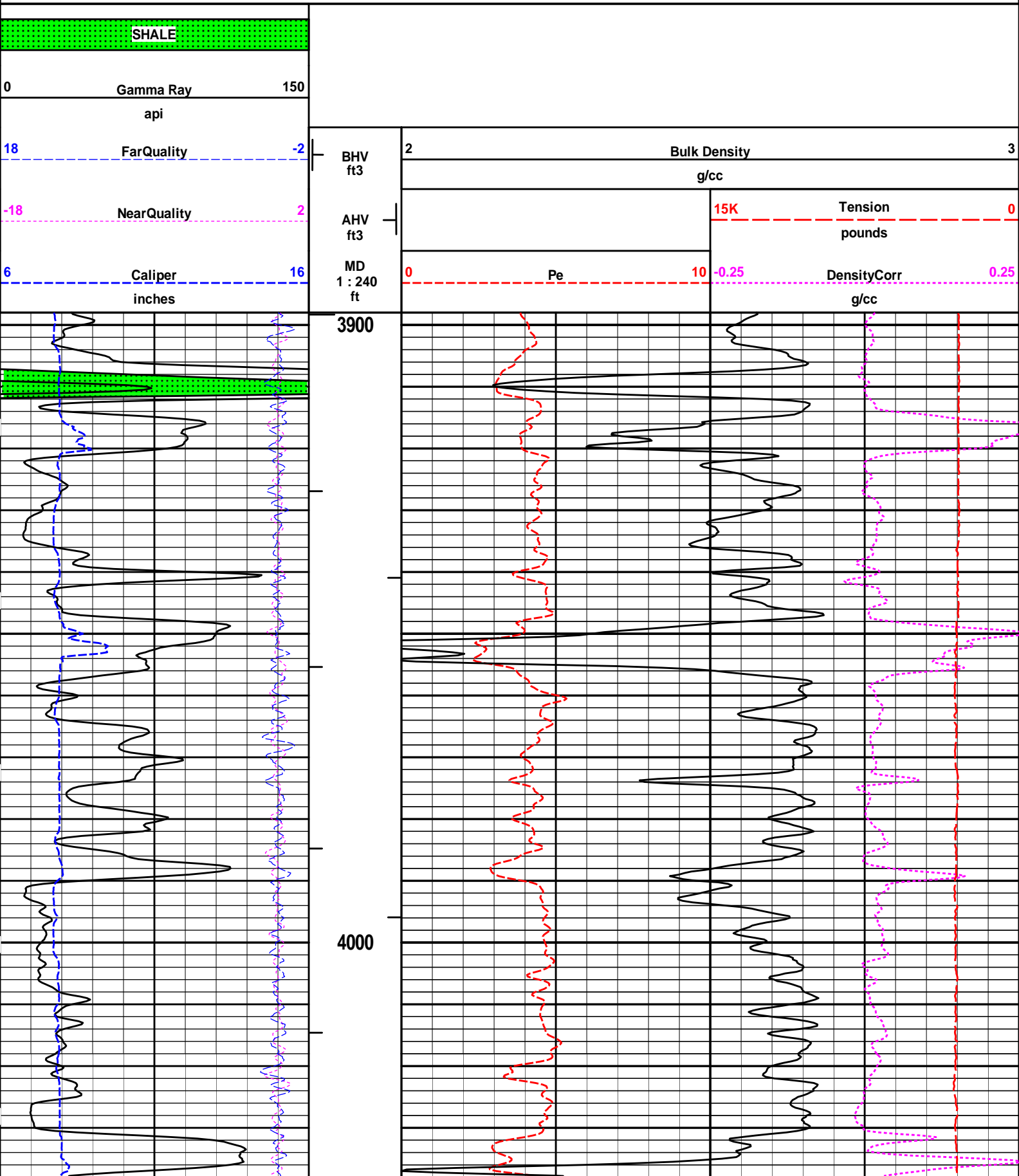
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	inches		1 : 240					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30	DensityPorosity				-10
					%				
				30	Neutron Porosity				-10
					%				
					CROSSOVER				

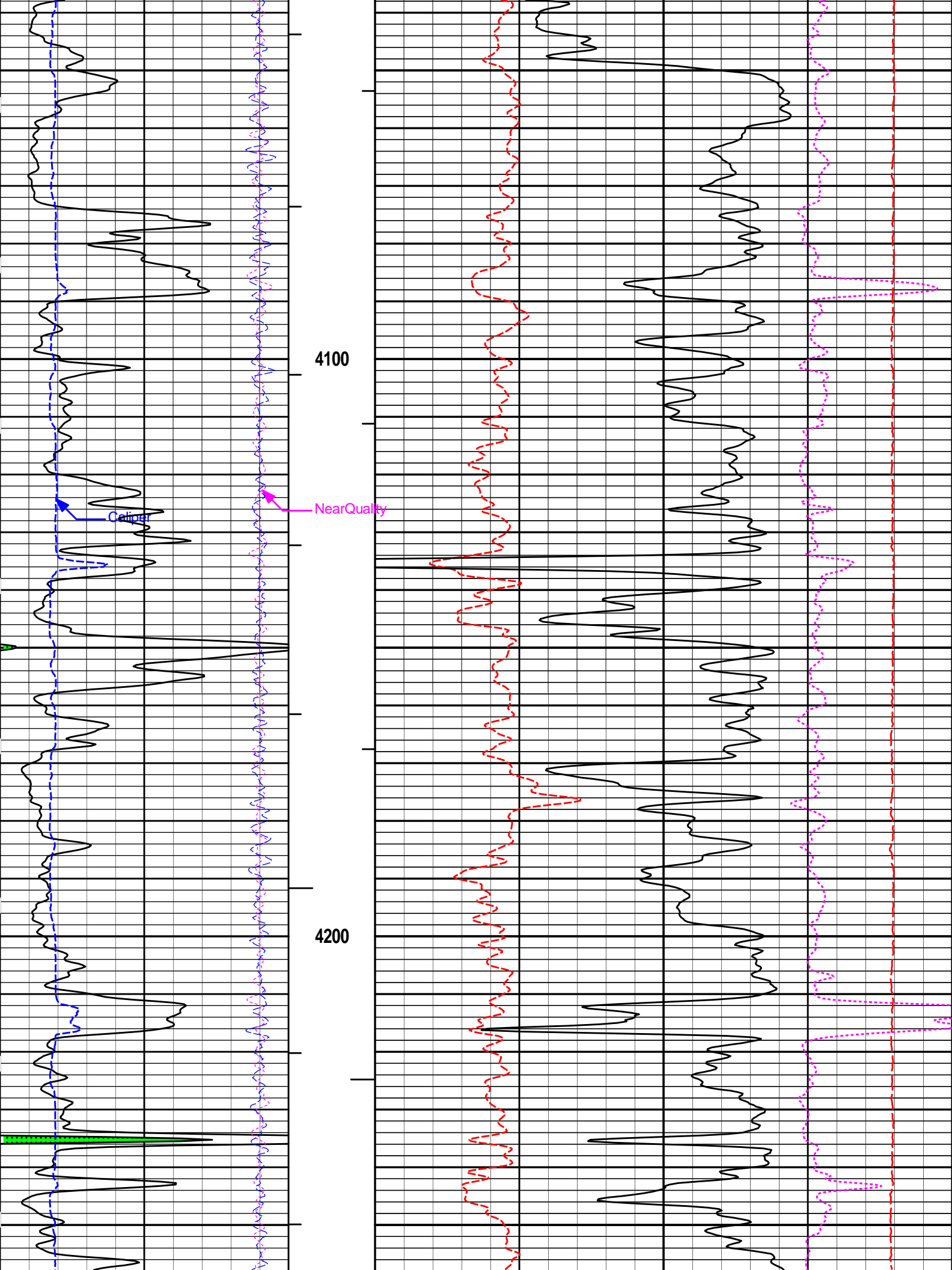
HALLIBURTON

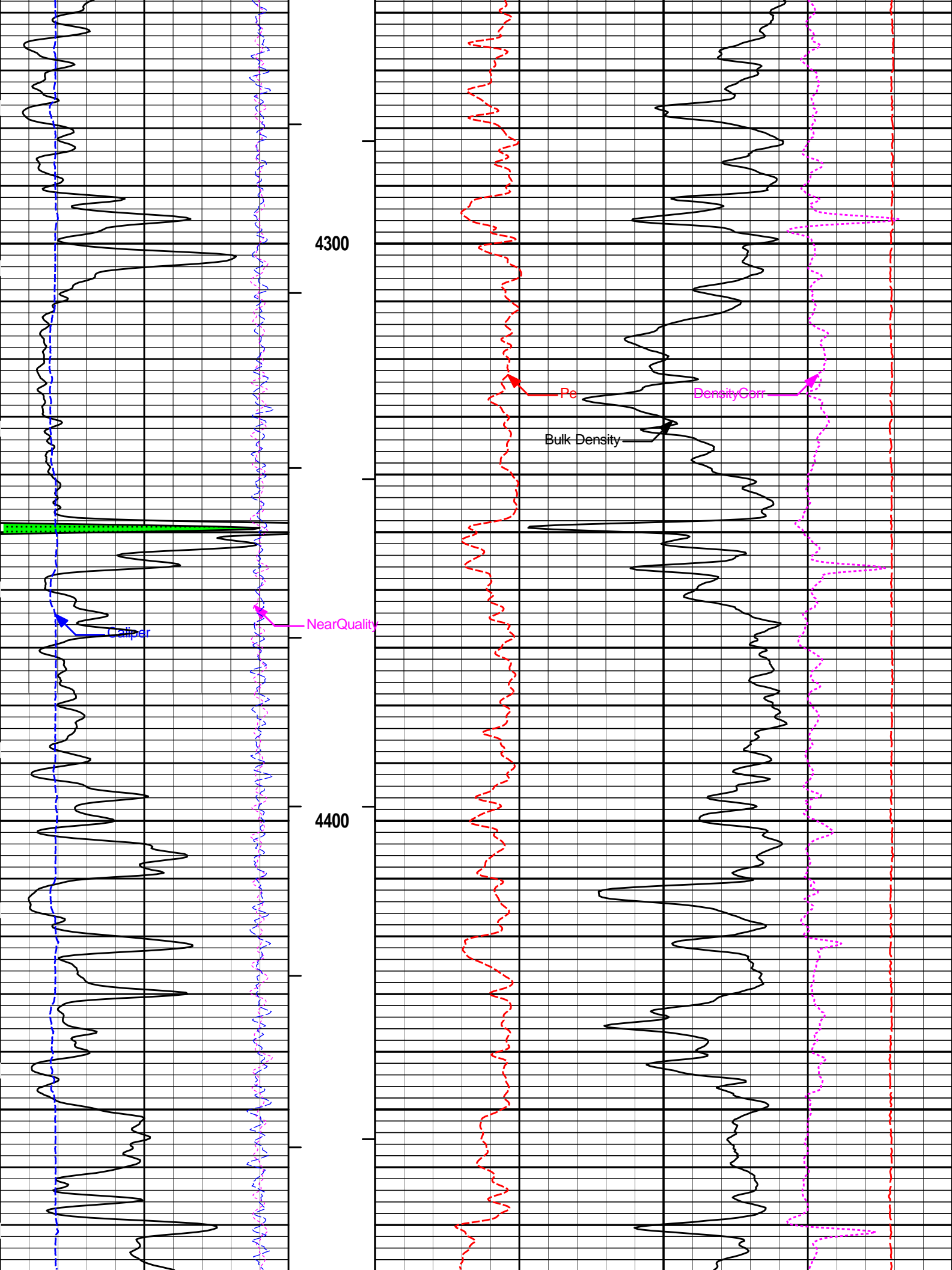
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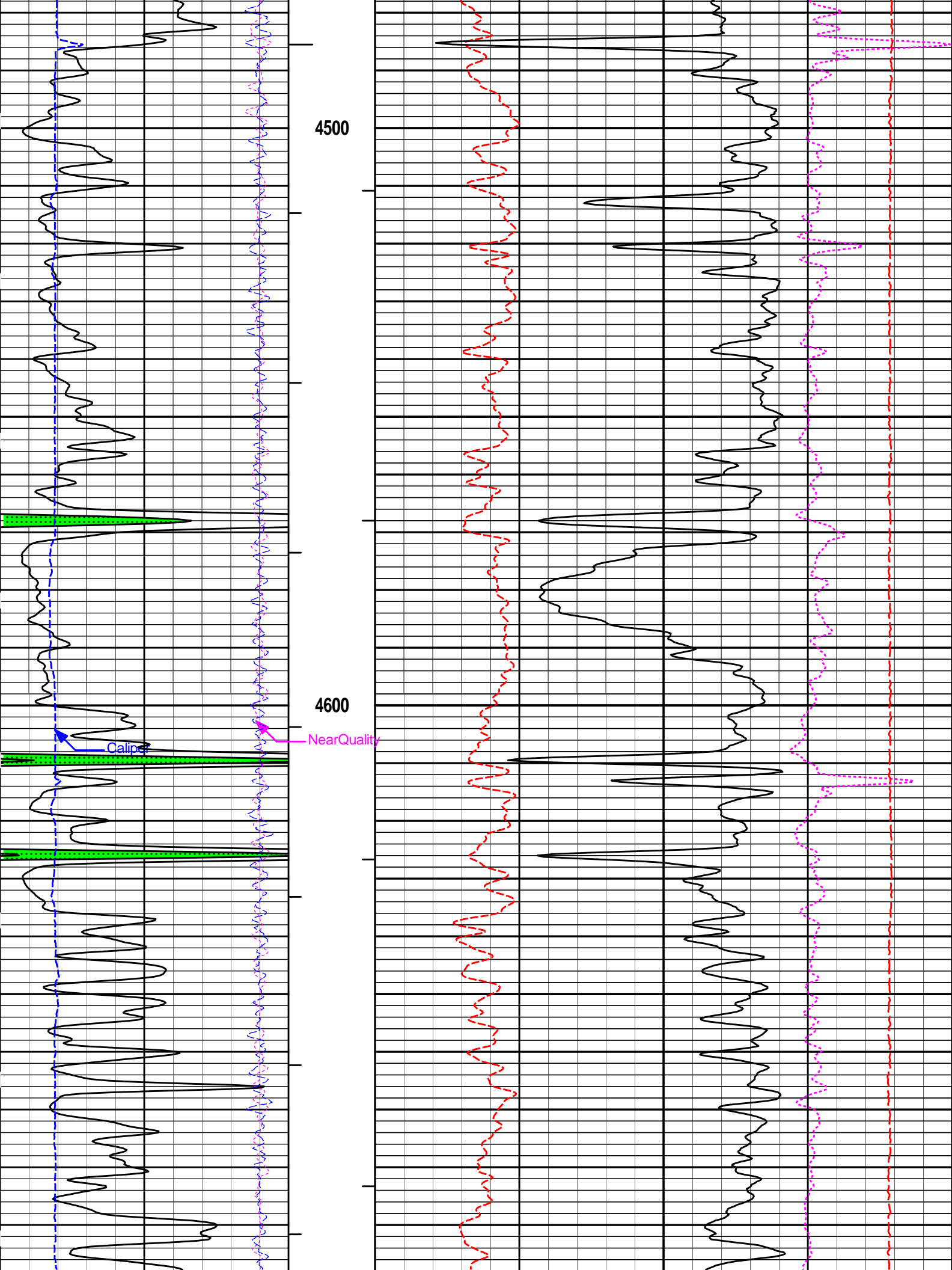
REPEAT SECTION

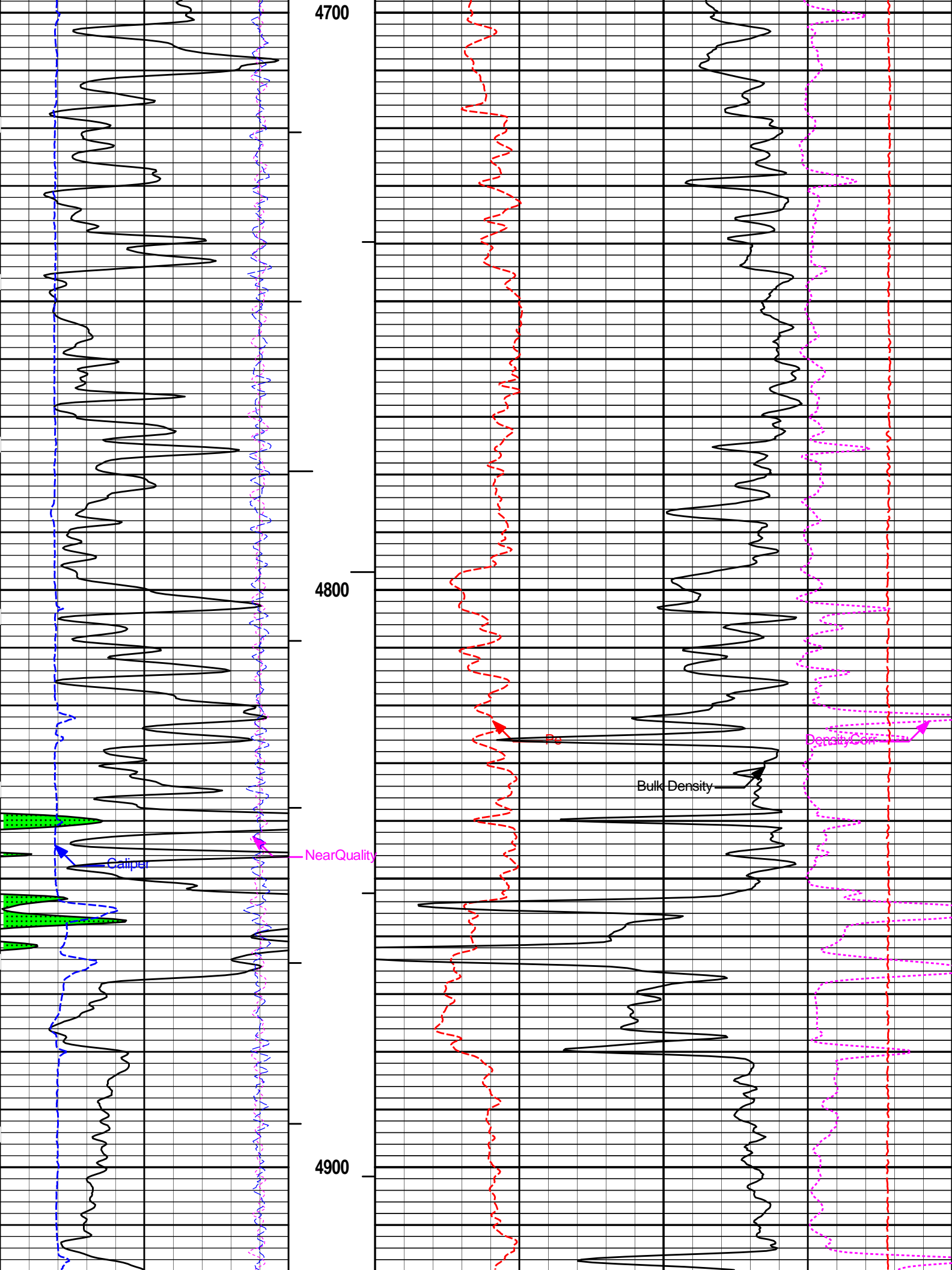
5 INCH MAIN LOG

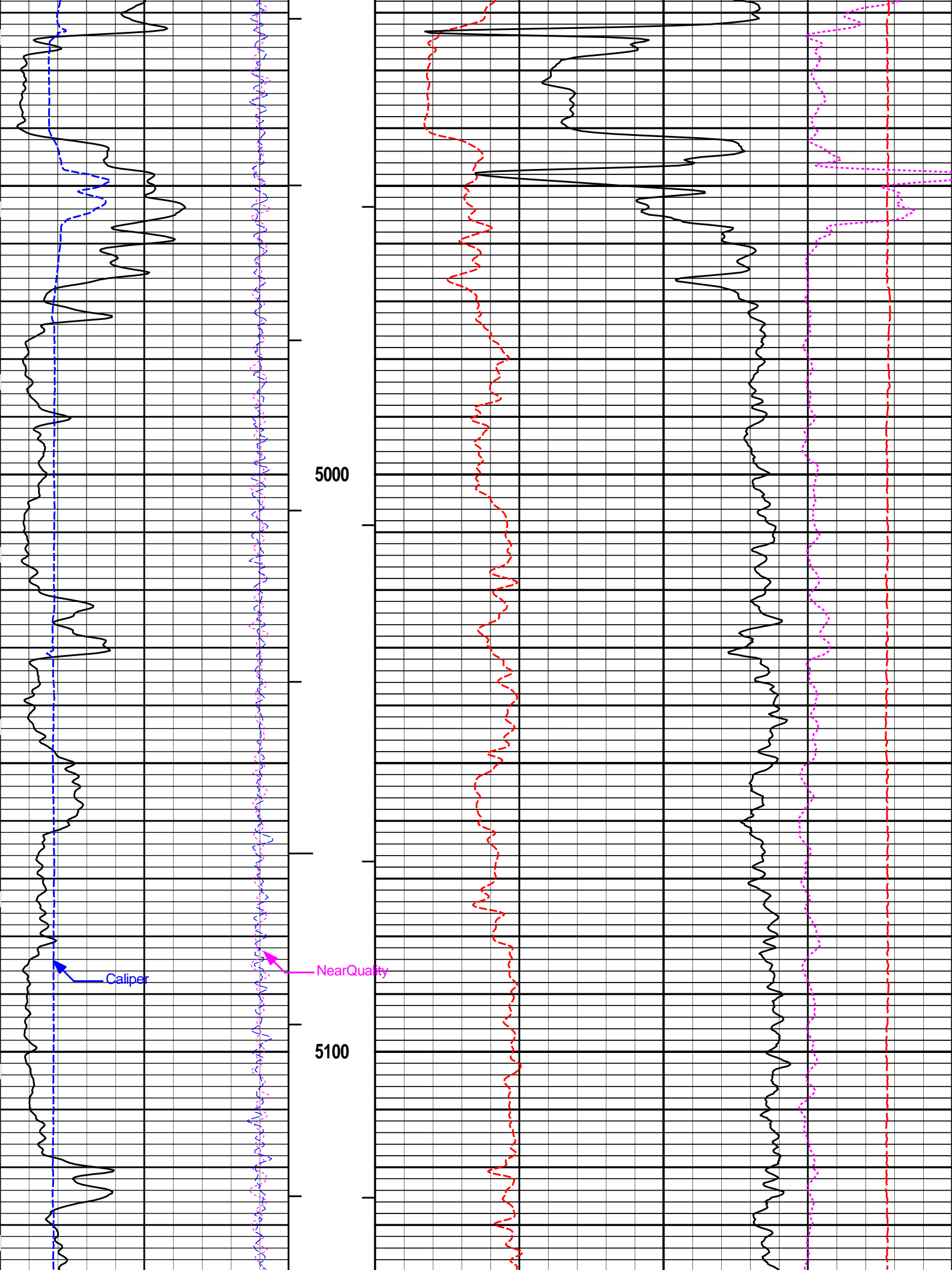


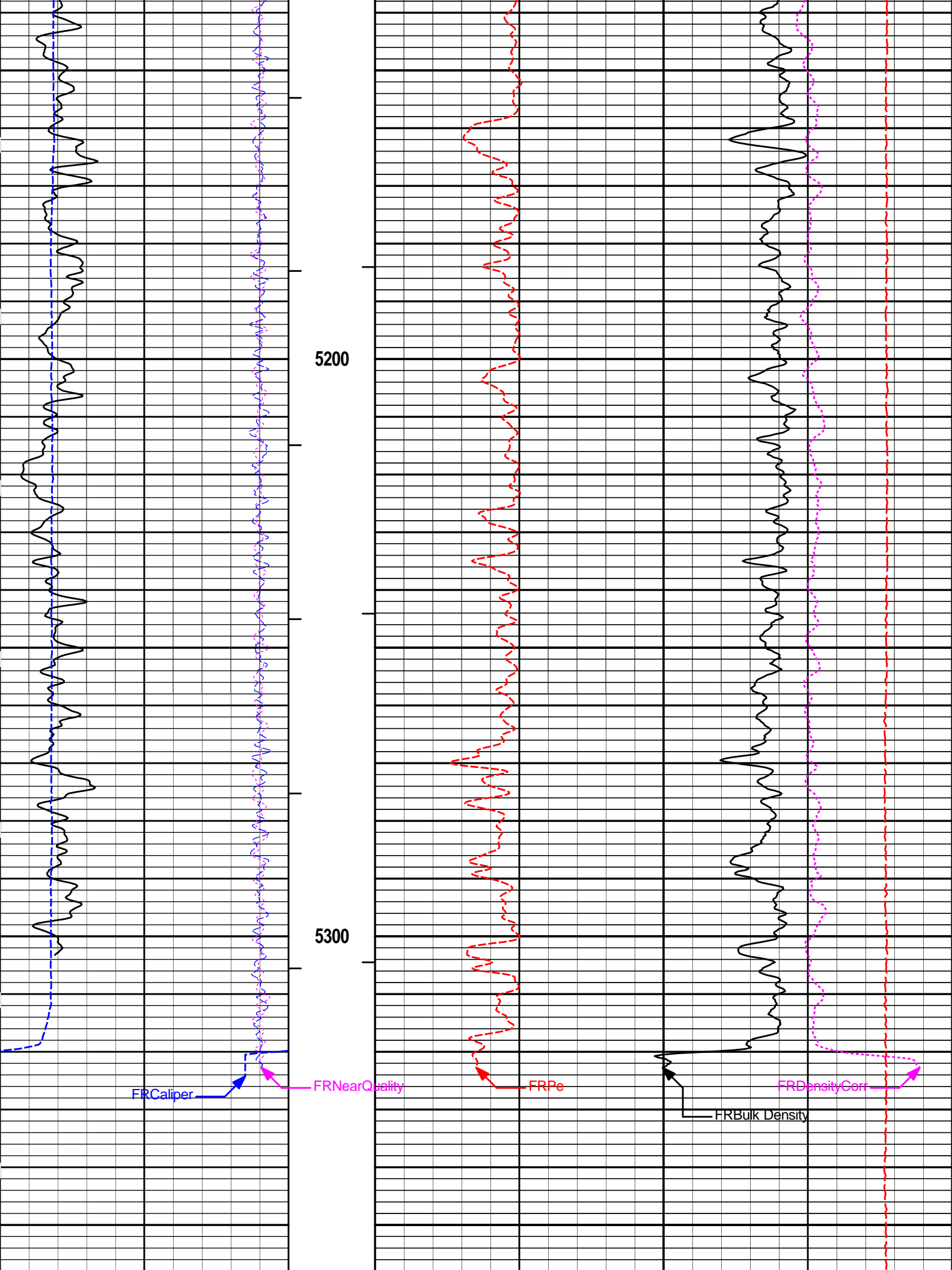












6	Caliper	16
	inches	
-18	NearQuality	2
18	FarQuality	-2
0	Gamma Ray	150
	api	
SHALE		

MD 1 : 240 ft	0	Pe	10
AHV ft3			
BHV ft3	2	Bulk Density	
		g/cc	

-0.25	DensityCorr	0.25
	g/cc	
15K	Tension	0
	pounds	

HALLIBURTON

Plot Time: 06-May-13 10:48:25
 Plot Range: 3898 ft to 5368.33 ft
 Data: DRUSSEL_E1\Well Based\DAQ-0001-003\
 Plot File: \\LOCAL-DRUSSEL_E1\0001 SP-GTET-DSN-SDL-ACRT-CHIPORO\BULKD_5_MAIN_LIB

5 INCH MAIN LOG

HALLIBURTON

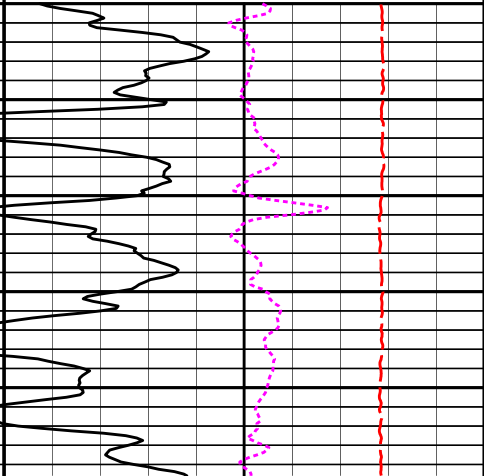
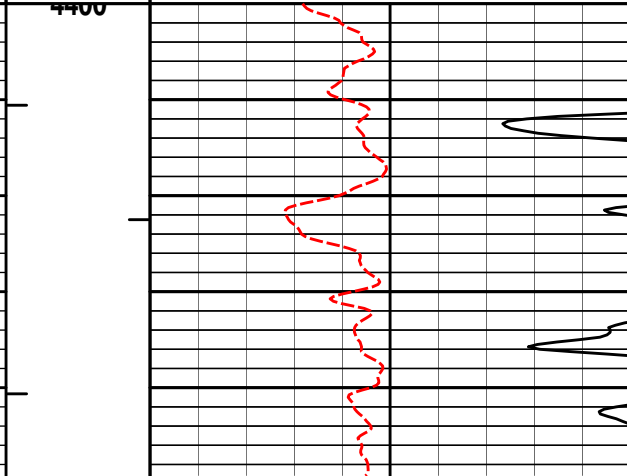
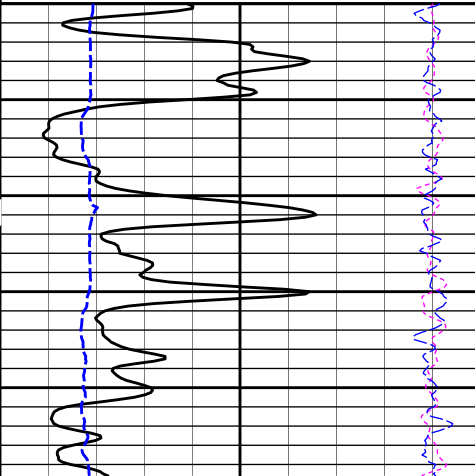
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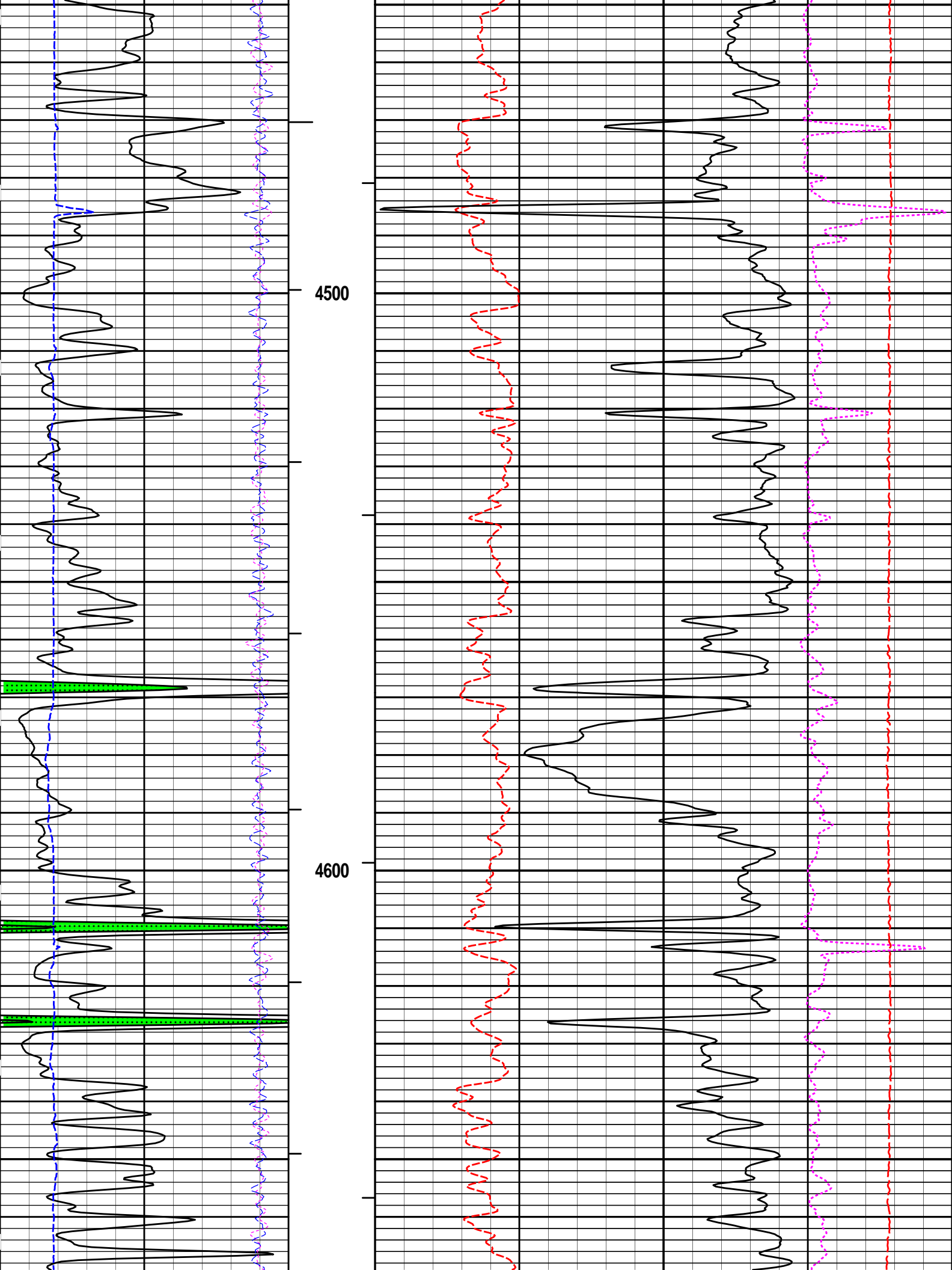
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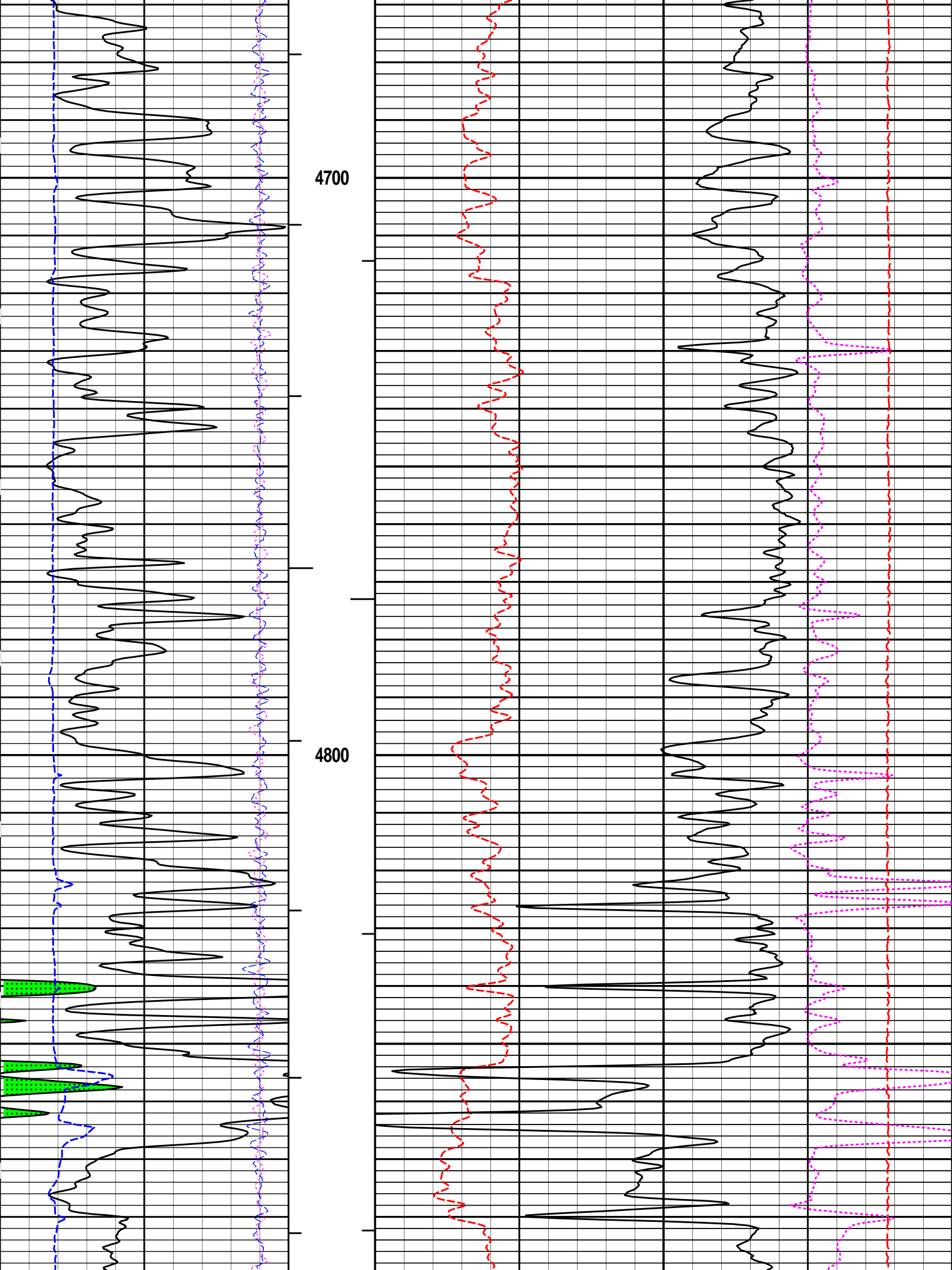
SHALE		
0	Gamma Ray	150
	api	
18	FarQuality	-2
-18	NearQuality	2
6	Caliper	16
	inches	

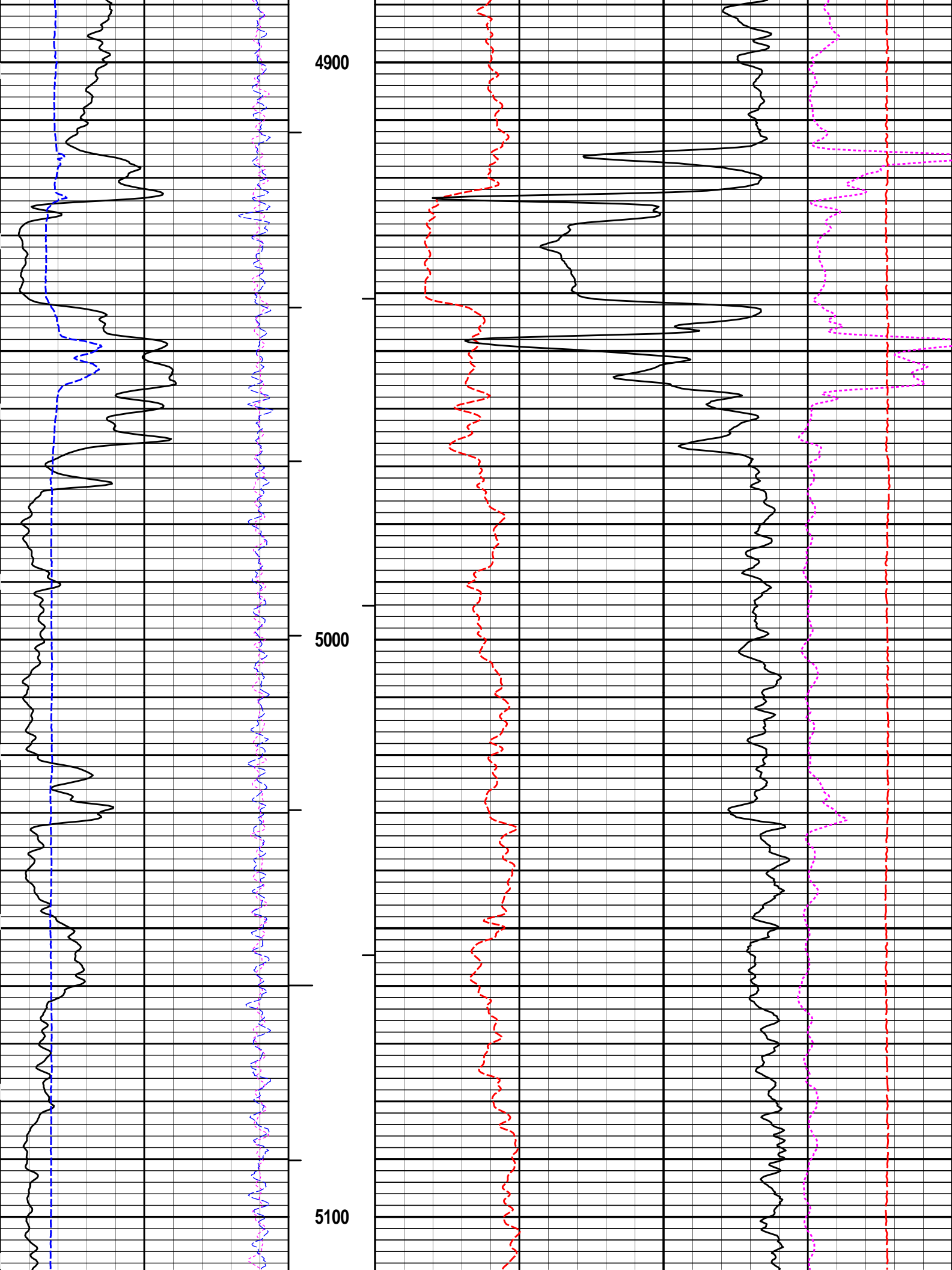
BHV ft3	2	Bulk Density		3
		g/cc		
AHV ft3		15K	Tension	0
			pounds	
MD 1 : 240 ft	0	Pe	10	-0.25
				DensityCorr
				g/cc

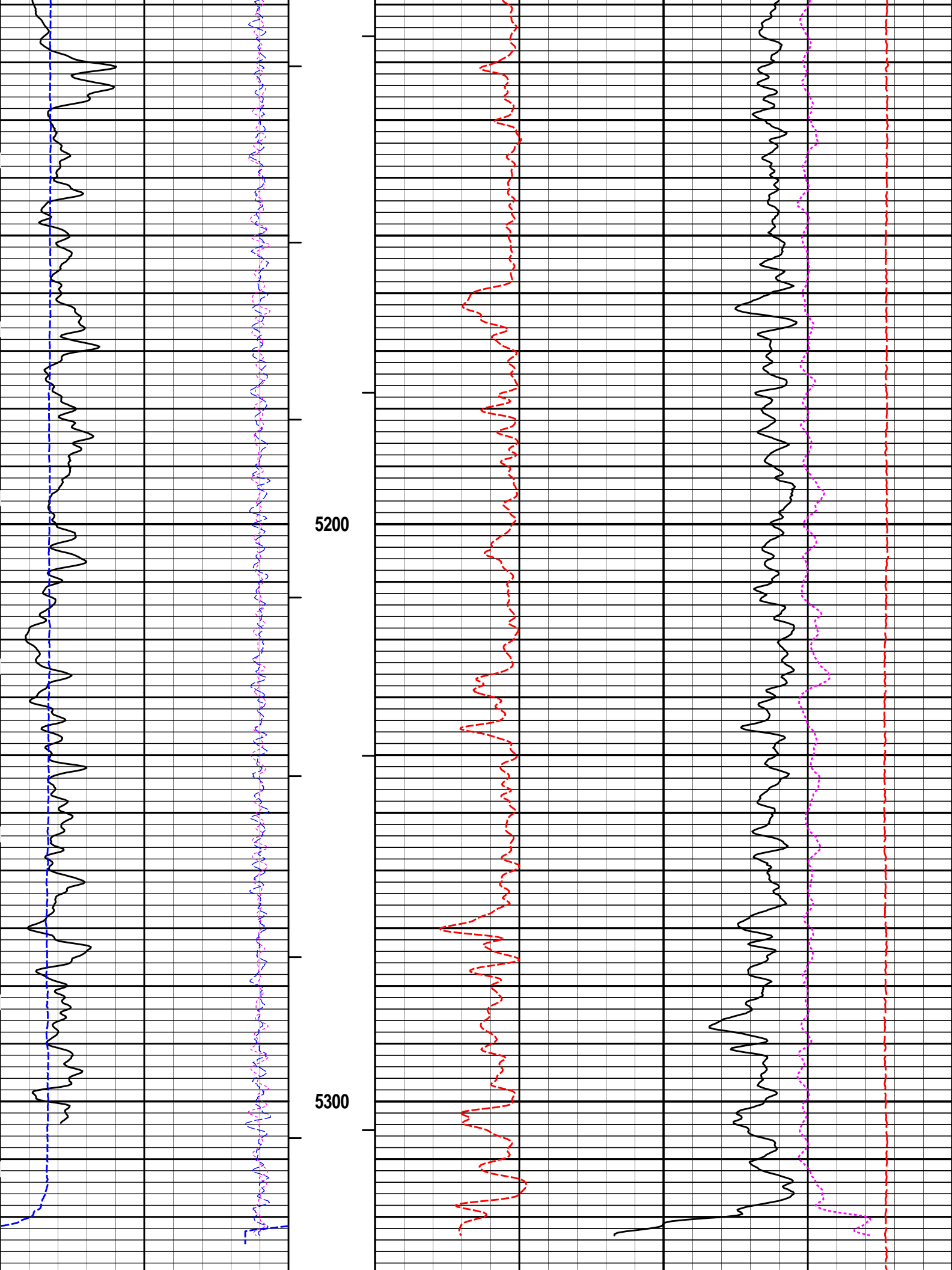
-0.25	DensityCorr	0.25
	g/cc	
15K	Tension	0
	pounds	

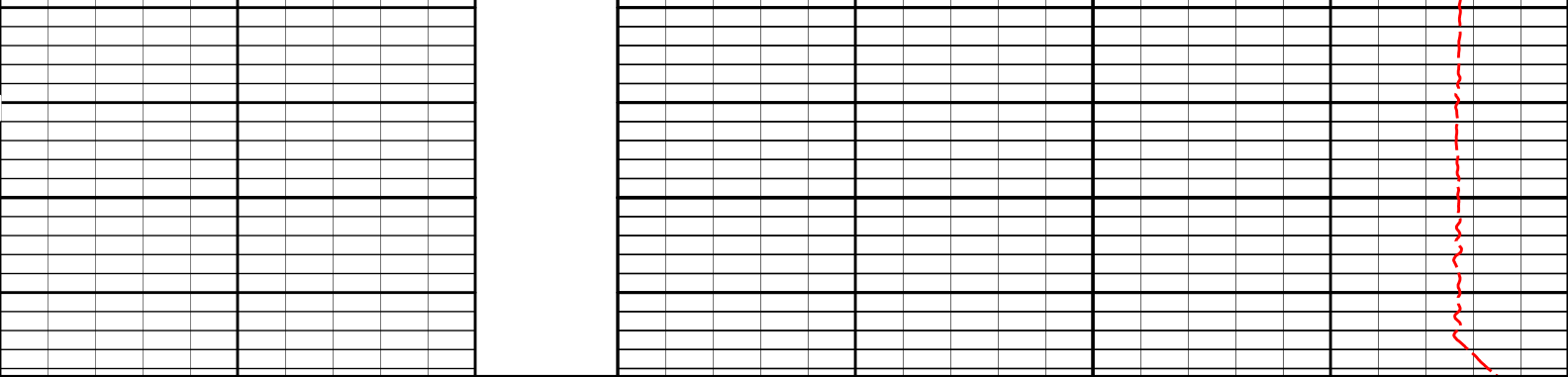












6	Caliper	16	MD	0	Pe	10	-0.25	DensityCorr	0.25
	inches		1 : 240					g/cc	
-18	NearQuality	2	AHV				15K	Tension	0
			ft3					pounds	
18	FarQuality	-2	BHV	2	Bulk Density				3
			ft3		g/cc				
0	Gamma Ray	150							
	api								
	SHALE								

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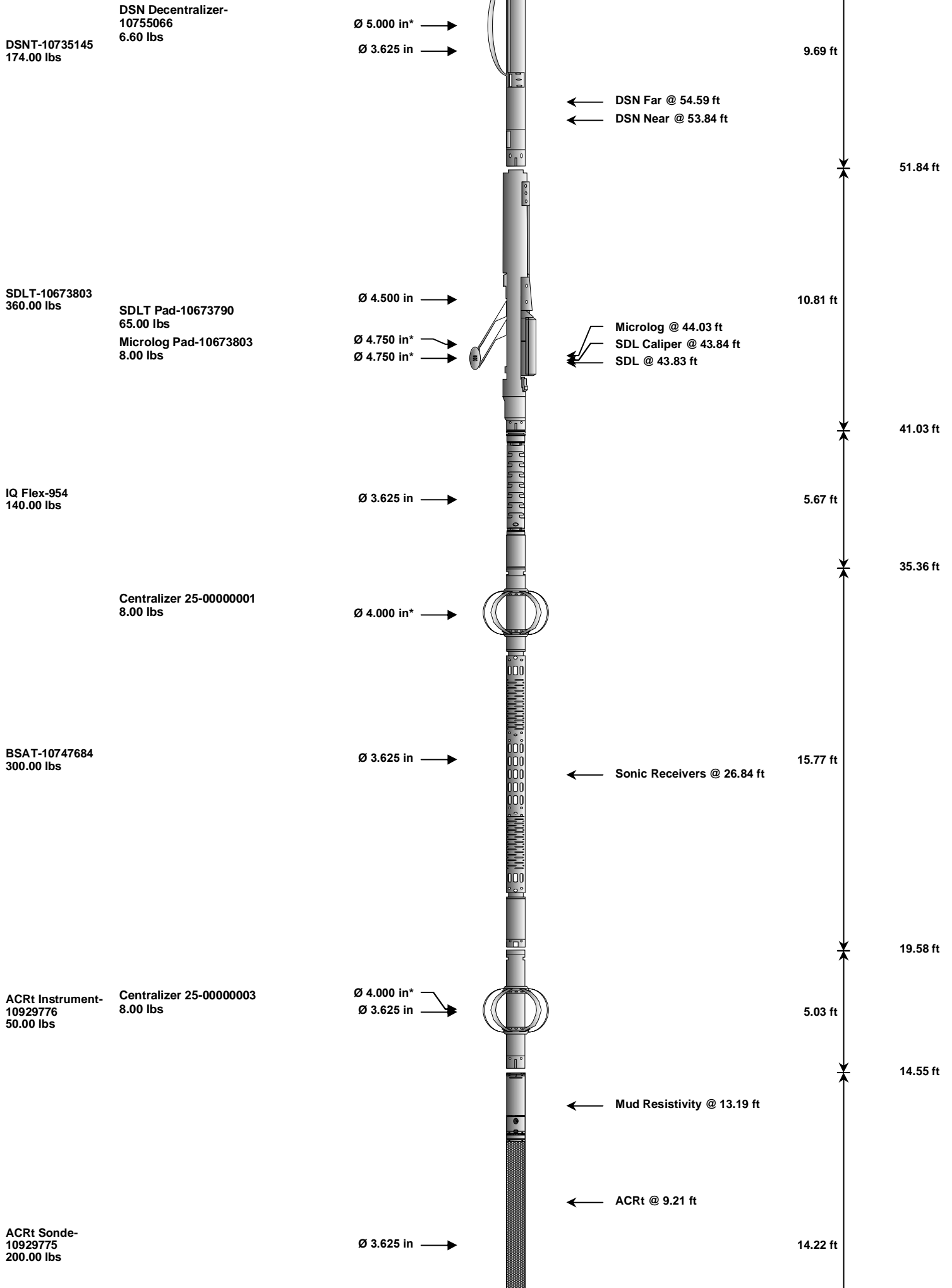
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REPEAT SECTION

HALLIBURTON

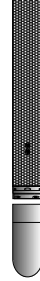
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-954 37.50 lbs		Ø 2.750 in →		← Temperature @ 76.74 ft	3.03 ft	77.77 ft
XOHD-00000001 20.00 lbs		Ø 2.750 in → Ø 3.625 in →			0.95 ft	74.74 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		← SP @ 72.01 ft	3.74 ft	73.79 ft
						70.05 ft
GTET-10811258 165.00 lbs		Ø 3.625 in →		← GammaRay @ 63.99 ft	8.52 ft	61.53 ft



Bull Nose-001
5.00 lbs

Ø 2.750 in →



0.33 ft
0.33 ft
0.00 ft

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max. Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	954	37.50	3.03	74.74	300.00
XOHD	Hostile to Dits Cross Over	00000001	20.00	0.95	73.79	300.00
SP	SP Sub	12345678	60.00	3.74	70.05	300.00
GTET	Gamma Telemetry Tool	10811258	165.00	8.52	61.53	60.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69	51.84	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13 *	55.17	300.00
SDLT	Spectral Density Tool	10673803	360.00	10.81	41.03	60.00
MICP	Microlog Pad	10673803	8.00	1.00 *	43.53	60.00
SDLP	Density Insite Pad	10673790	65.00	2.55 *	43.24	60.00
IQF	IQ Flex tool	954	140.00	5.67	35.36	300.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77	19.58	60.00
OBCEN	Centralizer - 25 in. Overbody	00000001	8.00	2.08 *	32.40	300.00
ACRt	Array Compensated True Resistivity Instrument Section	10929776	50.00	5.03	14.55	300.00
OBCEN	Centralizer - 25 in. Overbody	00000003	8.00	2.08 *	16.04	300.00
ACRt	Array Compensated True Resistivity Sonde Section	10929775	200.00	14.22	0.33	300.00
BLNS	Bull Nose	001	5.00	0.33	0.00	300.00
Total			1,607.10	77.77		

* Not included in Total Length and Length Accumulation.

Data: DRUSSEL_E1\0001 SP-GTET-DSN-SDL-ACRT-CHIDLE Date: 06-May-13 01:59:55

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 10811258	Reference Calibration Date: 15-Apr-13 13:29:21
Engineer: S. INGERSOLL	Calibration Date: 28-Apr-13 06:43:47
Software Version: WL INSITE R3.8.4 (Build 5)	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	21.8	21.9	api
Background + Calibrator	252.7	253.9	api
Calibrator	230.9	232.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 10811258	Reference Calibration Date: 28-Apr-13 06:43:47
Engineer: THOMAS HYDE	Calibration Date: 06-May-13 01:47:31
Software Version: WL INSITE R3.8.4 (Build 5)	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	21.9	21.3	api
Background + Calibrator	253.9	254.4	api
Calibrator	232.0	233.1	api

Shop	Field	Difference	Tolerance
232.0	233.1	-1.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 10735145 **Reference Calibration Date:** 06-Apr-13 14:26:57
Engineer: S. INGERSOLL **Calibration Date:** 06-Apr-13 14:46:21
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: 68 degF
 Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.939	0.943	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):	0.2097	0.2110	0.0012	+/- 0.0020
Calibrated Ratio:	9.69	9.73	0.042	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0557	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 - 10735145 **Reference Calibration Date:** 06-Apr-13 14:46:21
Engineer: THOMAS HYDE **Calibration Date:** 06-May-13 01:44:25
Software Version: WL INSITE R3.8.4 (Build 5) **Calibration Version:** 1

Logging Source S/N: DSN-436
 Snow Block S/N: 08910

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0557	0.0574	0.0016	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10673803

Reference Calibration Date: 12-Mar-13 13:18:16

Engineer: S. INGERSOLL

Calibration Date: 06-Apr-13 11:17:59

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	-3673.34	-3914.89	-7000.00 - -1000.00
Pad Gain	0.0003767	0.0003787	0.000200 - 0.000600
Arm Offset	-4510.72	-4687.37	-5000.00 - 3000.00
Arm Gain	0.0005258	0.0005214	0.000300 - 0.000700
Arm Power	-0.000005867	-0.000005578	-0.000010000 - 0.000010000

The ring diameter is computed from: $\text{DIAMETER} = \text{PAD EXTENSION} + \text{ARM EXTENSION} + \text{TOOL DIAMETER}$

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
Medium Ring (in)	3.82	3.75	-0.07	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.69	6.50	-0.19	+/- 0.20
Medium Ring (in)	8.45	8.25	-0.20	+/- 0.20
Large Ring (in)	15.17	15.00	-0.17	+/- 0.20

PASS/FAIL SUMMARY

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

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check: Passed

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10673803

Reference Calibration Date: 06-Apr-13 11:17:59

Engineer: THOMAS HYDE

Calibration Date: 06-May-13 01:48:35

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	3.76	0.01	+/- 0.10
Ring Diameter	8.25	8.28	0.03	+/- 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-Mar-13 10:59:51

Engineer: S. INGERSOLL

Calibration Date: 06-Apr-13 10:52:32

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

Calibration Version: 1

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0454	1.0398	0.90 - 1.10
Near Dens Gain	1.0294	1.0240	0.90 - 1.10
Near Peak Gain	1.0365	1.0258	0.90 - 1.10
Near Lith Gain	1.0200	0.9927	0.90 - 1.10
Far Bar Gain	1.0122	1.0104	0.90 - 1.10
Far Dens Gain	0.9984	0.9996	0.90 - 1.10
Far Peak Gain	0.9923	0.9901	0.90 - 1.10
Far Lith Gain	0.9628	0.9649	0.90 - 1.10
Near Bar Offset	-0.1593	-0.1092	NONE
Near Dens Offset	-0.0054	0.0392	NONE
Near Peak Offset	-0.0399	0.0451	NONE
Near Lith Offset	0.0863	0.3094	NONE
Far Bar Offset	0.0668	0.0814	NONE
Far Dens Offset	0.1592	0.1474	NONE
Far Peak Offset	0.1733	0.1907	NONE
Far Lith Offset	0.3389	0.3173	NONE
Near Bar Background	865.49	868.29	700 - 1450
Near Dens Background	284.22	285.68	230 - 480
Near Peak Background	124.49	124.18	100 - 210
Near Lith Background	154.41	154.56	125 - 260
Far Bar Background	581.01	578.73	450 - 900
Far Dens Background	229.46	226.38	175 - 345
Far Peak Background	91.16	89.43	70 - 140
Far Lith Background	95.46	94.98	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.685	1.684	-0.001	+/- 0.015
Pe	2.526	2.557	0.031	+/- 0.150
ALUMINUM				
Density (g/cc)	2.600	2.598	-0.002	+/- 0.01500
Pe	3.135	3.126	-0.009	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0001	+/- 0.0110	-0.0002	+/- 0.0140
Magnesium Block	0.0000	+/- 0.0110	0.0011	+/- 0.0140
Aluminum Block	0.0003	+/- 0.0110	0.0000	+/- 0.0140
Resolution	8.65	6.00 - 11.50	8.96	6.00 - 11.50
Internal Verifier(B+D+P+L)	1433	1200 - 2700	990	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: 06-Apr-13 10:52:32

Engineer: THOMAS HYDE

Calibration Date: 06-May-13 01:42:34

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

Calibration Version: 1

Pad Temperature: 71.7 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1432.712	1431.497	-1.215	15.275
Far (B+D+P+L) cps	989.522	990.760	1.238	16.863
Near Resolution	8.65	8.71	0.060	0.50
Far Resolution	8.96	8.99	0.030	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-10811258						
Gamma Ray Calibrator	232.0	233.1	-----	-1.1	+/- 9.00	api
DSNT-10735145						
Snow-Block Porosity	0.0557	0.0574	-----	-0.0017	+/- 0.0150	decp
SDLT-10673803						
Pad Extension	3.75	3.76	-----	-0.01	+/-0.10	in
Ring Diameter	8.25	8.28	-----	-0.03	+/-0.15	in
SDLT Pad-10673790						
Near(B+D+P+L)	1432.712	1431.497	-----	1.215	+/-15.275	cps
Far(B+D+P+L)	989.522	990.760	-----	-1.238	+/-16.863	cps

Data: DRUSSEL E1\0001 SP-GTET-DSN-SDI -ACRT-CHMDLE

Date: 06-May-13 08:01:14

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	8.600	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	5361.00	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	
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 Up	
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

Data: DRUSSEL_E1\0001 SP-GTET-DSN-SDL-ACRT-CHIDLE

Date: 06-May-13 08:17:58

HALLIBURTON

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
CH_HOS				
DHTN	Downhole Tension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	72.01	NO	
SP	Spontaneous Potential	72.01	BLK	1.250
SPR	Raw Spontaneous Potential	72.01	NO	
SPO	Spontaneous Potential Offset	72.01	NO	
GTET				
TPUL	Tension Pull	63.99	NO	
GR	Natural Gamma Ray API	63.99	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	63.99	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	63.99	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	53.74	NO	
RNDS	Near Detector Telemetry Counts	53.84	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.59	TRI	0.583
DNTT	DSN Tool Temperature	53.84	NO	
DSNS	DSN Tool Status	53.74	NO	
ERNR	Near Detector Telemetry Counts EVR	53.84	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.59	BLK	0.000
ENTM	DSN Tool Temperature EVR	53.84	NO	
SDLT				
TPUL	Tension Pull	43.84	NO	
PCAL	Pad Caliper	43.84	TRI	0.250
ACAL	Arm Caliper	43.84	TRI	0.250

BSAT

TPUL	Tension Pull	26.84	NO
STAT	Status	26.84	NO
DLYT	Delay Time	26.84	NO
SI	Sample Interval	26.84	NO
TXRX	Raw Telemetry 10 Receivers	26.84	NO
FRMC	Tool Frame Count	26.84	NO
GMOD	Gain processing mode	19.58	NO

ACRt Sonde

TPUL	Tension Pull	2.73	NO	
F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000
RMUD	Mud Resistivity	12.52	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.73	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000

TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000
ITMP	Instrument Temperature	2.73	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.73	NO	
TIDV	Instrument Temperature Derivative	2.73	NO	
TUDV	Upper Temperature Derivative	2.73	NO	
TLDV	Lower Temperature Derivative	2.73	NO	
TRBD	Receiver Board Temperature	2.73	NO	

SDLT Pad

TPUL	Tension Pull	43.83	NO	
NAB	Near Above	43.66	BLK	0.920
NHI	Near Cesium High	43.66	BLK	0.920
NLO	Near Cesium Low	43.66	BLK	0.920
NVA	Near Valley	43.66	BLK	0.920
NBA	Near Barite	43.66	BLK	0.920
NDE	Near Density	43.66	BLK	0.920
NPK	Near Peak	43.66	BLK	0.920
NLI	Near Lithology	43.66	BLK	0.920
NBAU	Near Barite Unfiltered	43.66	BLK	0.250
NLIU	Near Lithology Unfiltered	43.66	BLK	0.250
FAB	Far Above	44.01	BLK	0.250
FHI	Far Cesium High	44.01	BLK	0.250
FLO	Far Cesium Low	44.01	BLK	0.250
FVA	Far Valley	44.01	BLK	0.250
FBA	Far Barite	44.01	BLK	0.250
FDE	Far Density	44.01	BLK	0.250
FPK	Far Peak	44.01	BLK	0.250
FLI	Far Lithology	44.01	BLK	0.250
PTMP	Pad Temperature	43.84	BLK	0.920
NHV	Near Detector High Voltage	43.24	NO	
FHV	Far Detector High Voltage	43.24	NO	
ITMP	Instrument Temperature	43.24	NO	
DDHV	Detector High Voltage	43.24	NO	

Microlog Pad

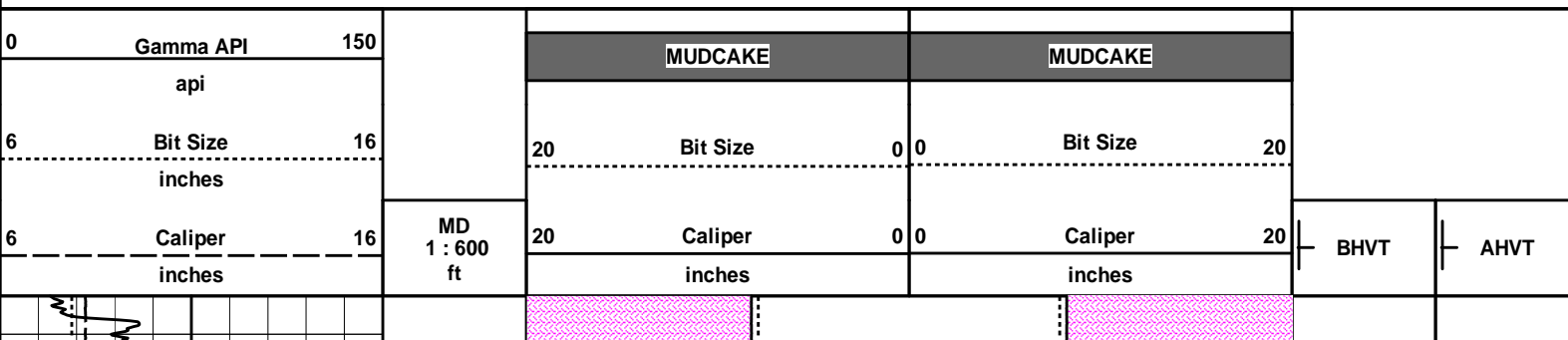
TPUL	Tension Pull	44.03	NO	
MINV	Microlog Lateral	44.03	BLK	0.750
MNOR	Microlog Normal	44.03	BLK	0.750

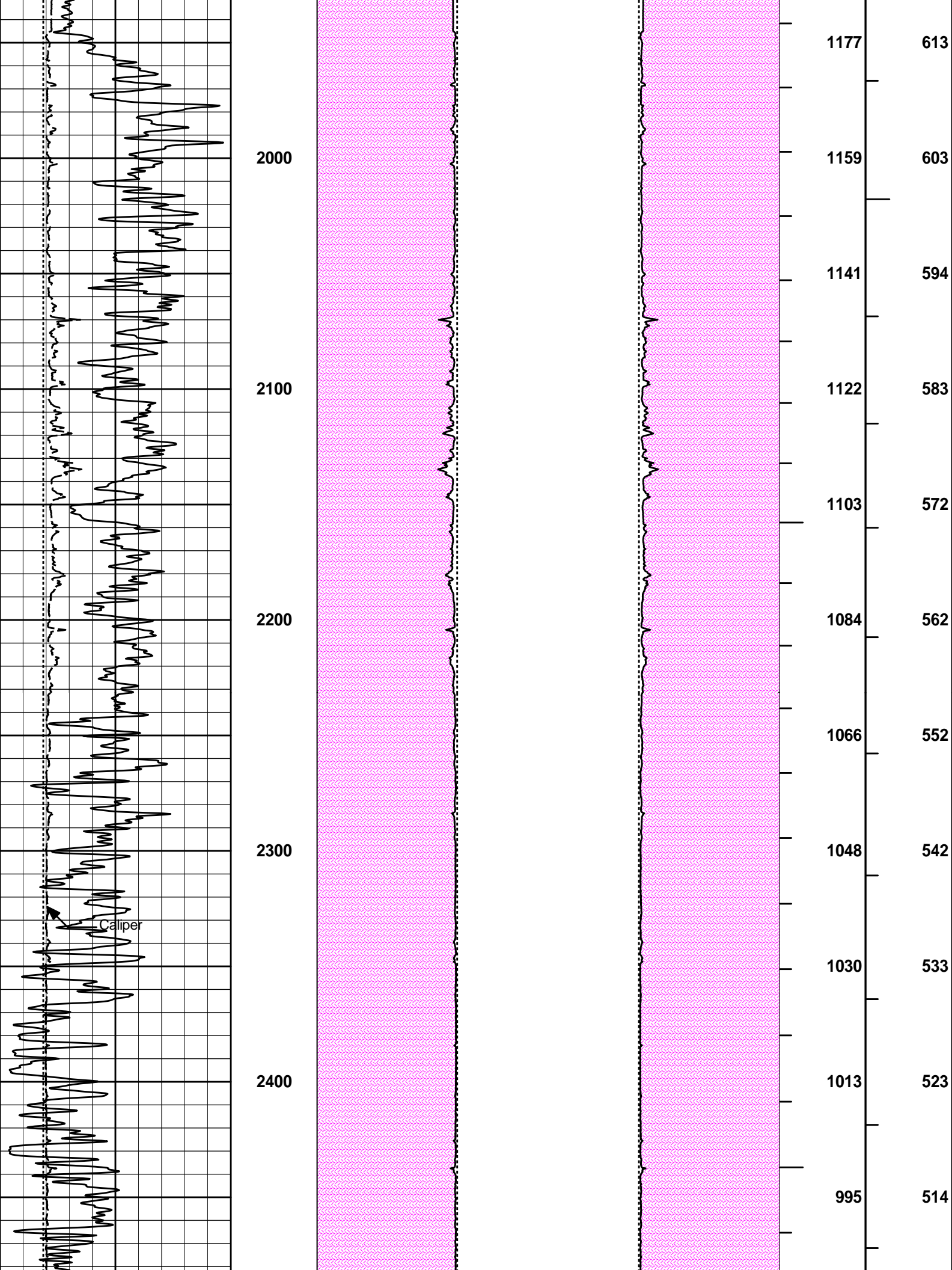
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Date: 06-May-13 08:20:34

HALLIBURTON Plot Time: 06-May-13 10:48:29
 Plot Range: 1920 ft to 5368.33 ft
 Data: DRUSSEL_E1\Well Based\DAQ-0001-003\
 Plot File: \\-LOCAL-DRUSSEL_E1\0001 SP-GTET-DSN-SDL-ACRT-CHPOROAHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT





2000

2100

2200

2300

2400

Caliper

1177

613

1159

603

1141

594

1122

583

1103

572

1084

562

1066

552

1048

542

1030

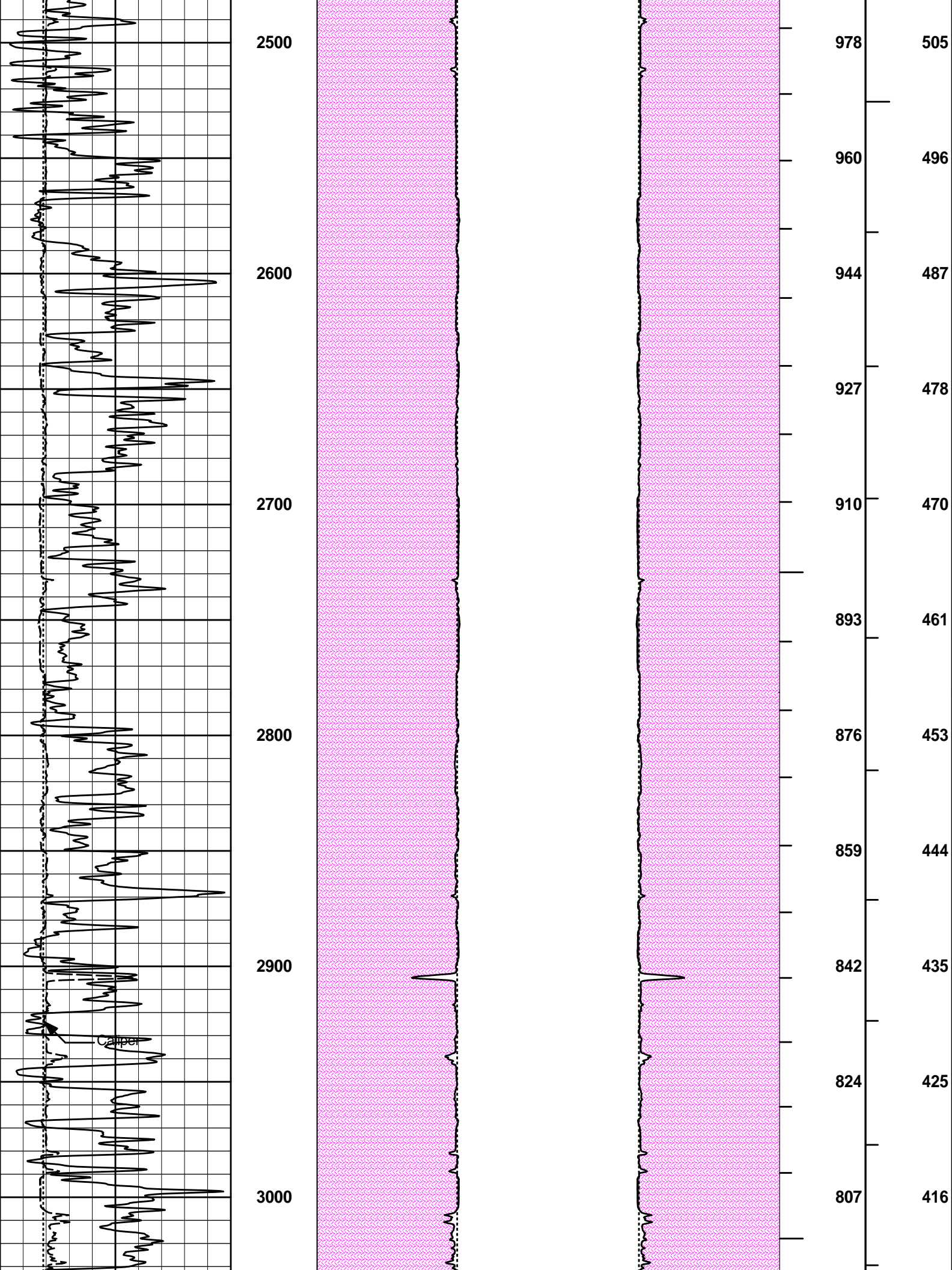
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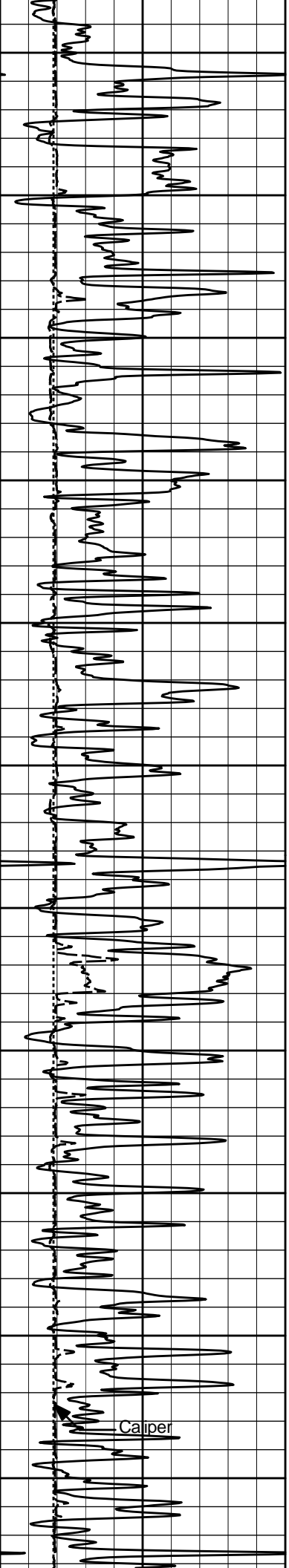
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995

514





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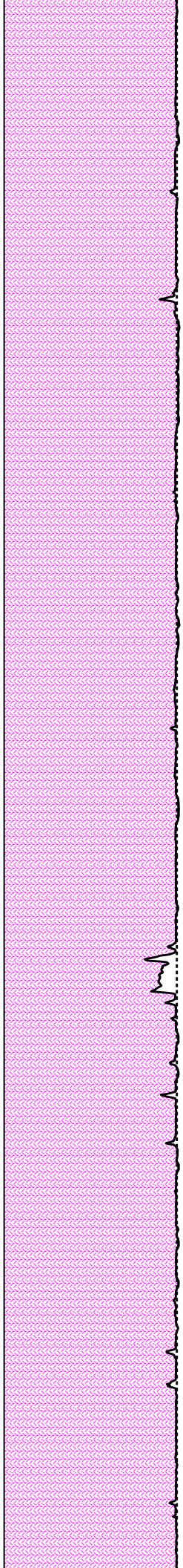
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3300

3400

3500

Caiper



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406

771

397

754

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737

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686

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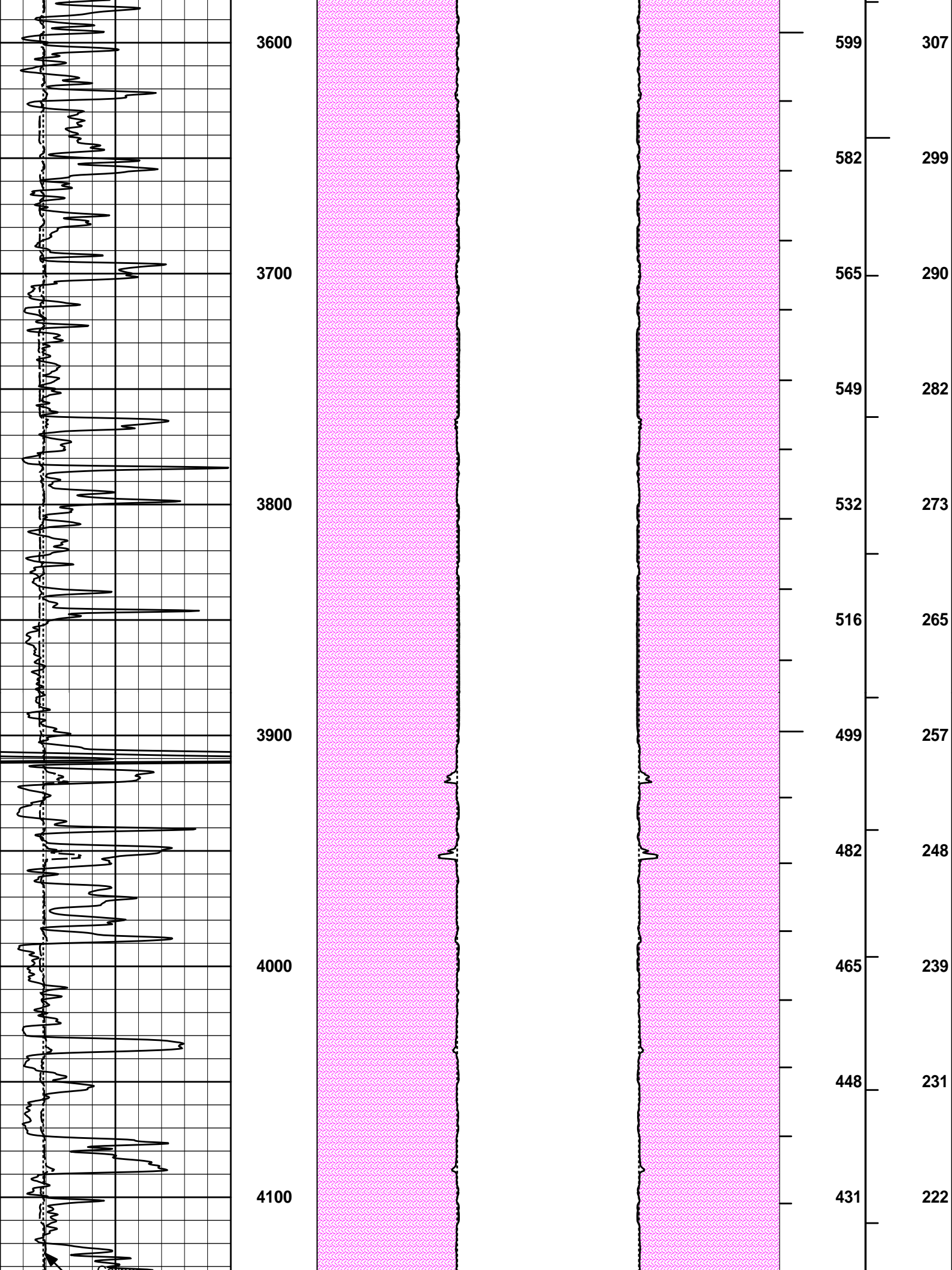
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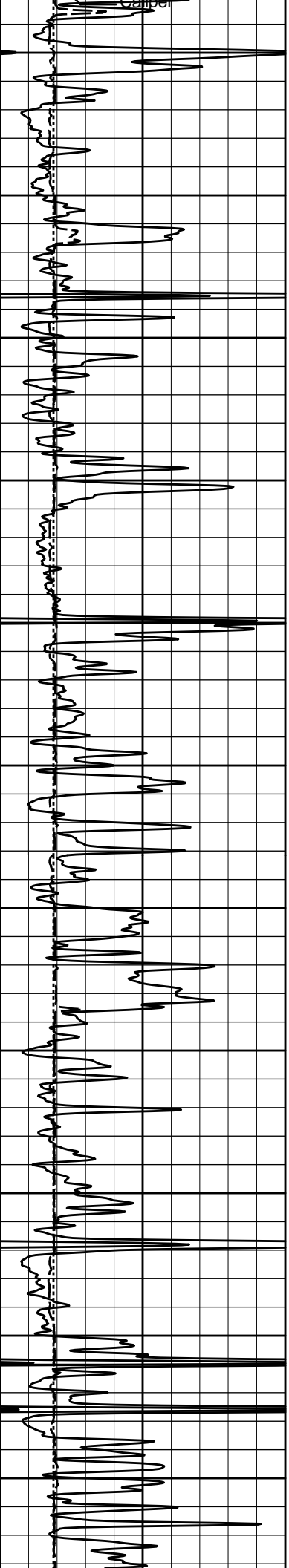
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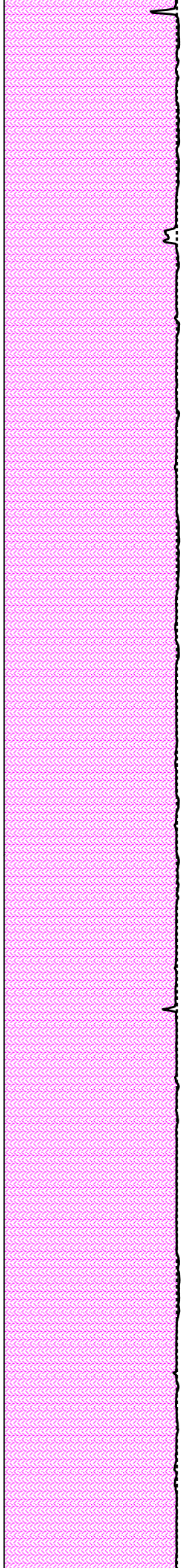
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4500

4600



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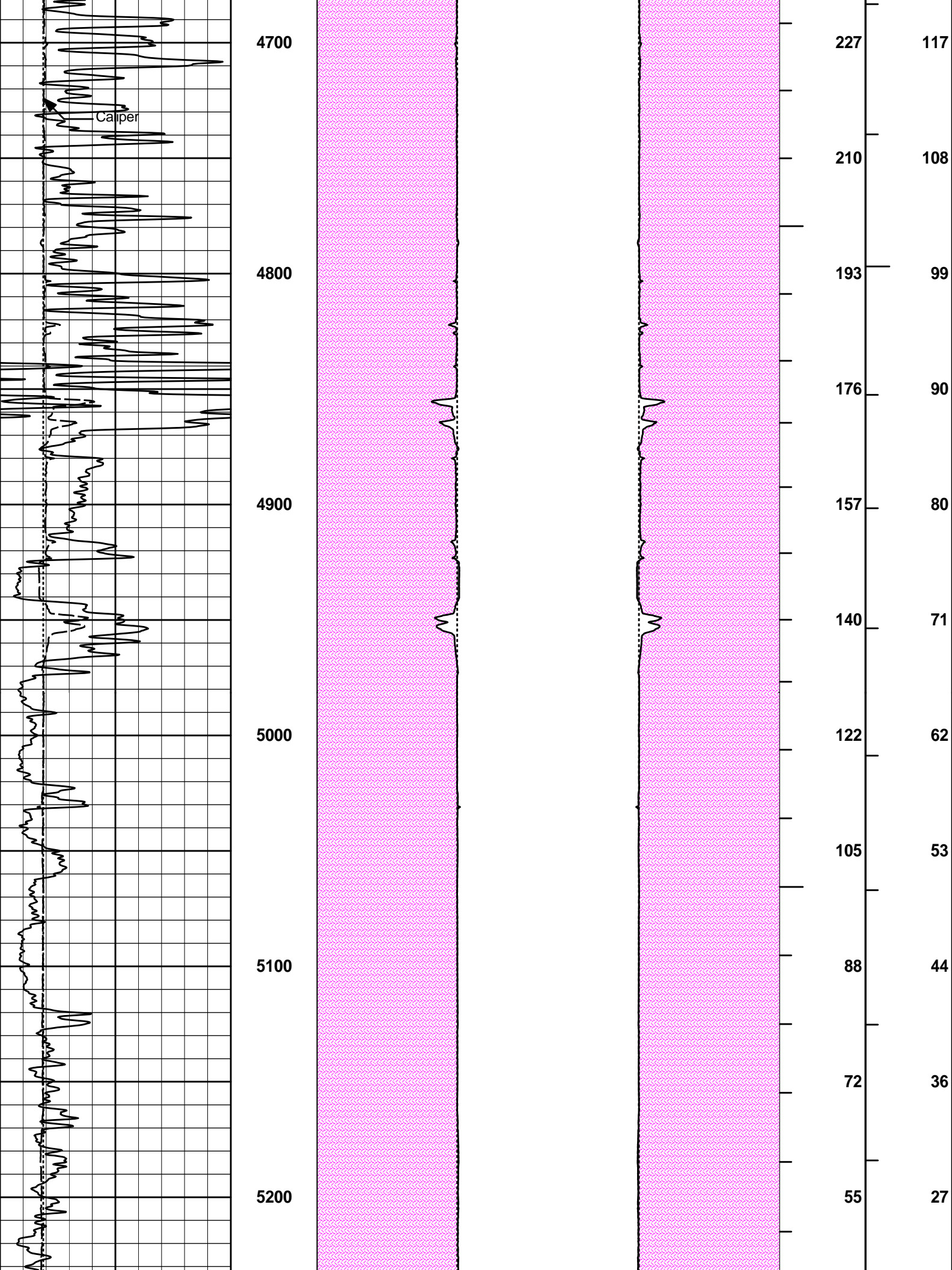
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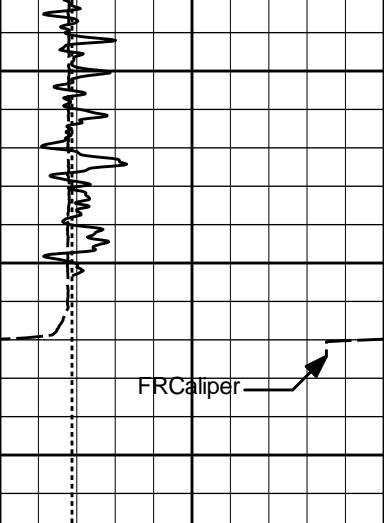
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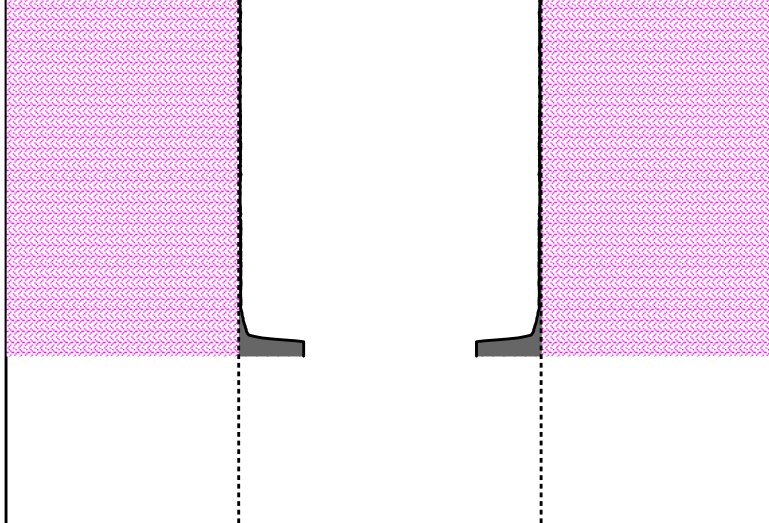
135

126





5300



38

19

22

11

6	Caliper	16
	inches	
6	Bit Size	16
	inches	
0	Gamma API	150
	api	

MD 1 : 600 ft

20	Caliper	0 0	Caliper	20
	inches		inches	
20	Bit Size	0 0	Bit Size	20
MUDCAKE		MUDCAKE		

	BHVT	AHVT
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HALLIBURTON

Plot Time: 06-May-13 10:48:37
 Plot Range: 1920 ft to 5368.33 ft
 Data: DRUSSEL_E1\Well Based\DAQ-0001-003\
 Plot File: \\-LOCAL-DRUSSEL_E1\0001 SP-GTET-DSN-SDL-ACRT-CHPORVAHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

COMPANY	OXY USA		
WELL	DRUSSEL E-1		
FIELD	HUGOTON GAS AREA		
COUNTY	FINNEY	STATE	KANSAS

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
LOG