HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY LOG

COMPANY SANDRIDGE ENERGY
WELL MAZANEC 1735 1-19
FIELD/BLOCK BEAVER CLIFF NW
COUNTY WICHITA
STATE KANSAS

COMPANY **SANDRIDGE ENERGY**

WELL **MAZANEC 1735 1-19**

FIELD/BLOCK **BEAVER CLIFF NW**

COUNTY **WICHITA** STATE **KANSAS**

API No. 15-203-20245-00-00

Location (SHL) 400' FNL & 400' FEL
SW-NE-NE-NE

Sect. 19 Twp. 17S Rge. 35W

Other Services:
DSN / SDL
MICROLOG
CSNG
ACRT
MRIL

Permanent Datum	GL	Elev. 3220.0 ft	Elev.: K.B. 3229.0 ft
Log measured from	KB	9.0 ft above perm. Datum	D.F. 3229.0 ft
Drilling measured from	KB		G.L. 3220.0 ft

Date		18-Dec-13					
Run No.		ONE					
Depth - Driller		5100.00 ft					
Depth - Logger		5103.0 ft					
Bottom - Logged Interval		5080					
Top - Logged Interval		1552					
Casing - Driller		9.625 in @ 1550.0 ft		@		@	
Casing - Logger		1552.0 ft					
Bit Size		8.750 in		@		@	
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	9.3 ppg	45.00 s/qt				
PH	Fluid Loss	10.10 pH					
Source of Sample		MUD PIT					
Rm @ Meas. Temperature		0.490 ohmm @ 75.00 degF		@		@	
Rmf @ Meas. Temperature		0.42 ohmm @ 75.00 degF		@		@	
Rmc @ Meas. Temperature		0.563 ohmm @ 75.00 degF		@		@	
Source Rmf	Rmc	CALCULATED	CALCULATED				
Rm @ BHT		0.32 ohmm @ 120.0 degF		@		@	
Time Since Circulation		5.8 hr					
Time on Bottom		18-Dec-13 02:41					
Max. Rec. Temperature		120.0 degF @ 5103.0 ft		@		@	
Equipment	Location	11230668	LIBERAL				
Recorded By		S. INGERSOLL					
Witnessed By		P. BECKELHEIMER					

Fold here

Service Ticket No.: 900977601 API Serial No.: 15-203-20245-00-00 PGM Version: WL INSITE R3.8.4 (Build 5)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@	@	@	@
Rmf @ Meas. Temp.		@	@	@	@
Rmc @ Meas. Temp.		@	@	@	@
Source Rmf	Rmc				
Rm @ BHT		@	@	@	@
Rmf @ BHT		@	@	@	@
Rmc @ BHT		@	@	@	@

RESISTIVITY SCALE CHANGES

	Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
				1.5" S.O.	
	ONE	ACRT	N/A		
		10929776			

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	Model No.	DSNT
Diameter	3.625"	No. of Cent.		Diameter	5.3"	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	AM-241BE
Length	8"	LSA [Y/N]		Serial No.	5073GW	Serial No.	DSN-436
Distance to Source	N/A	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	5080	1552	REC	0	150				30	-10	2.71 gm/cc	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 7 INCH CASING.

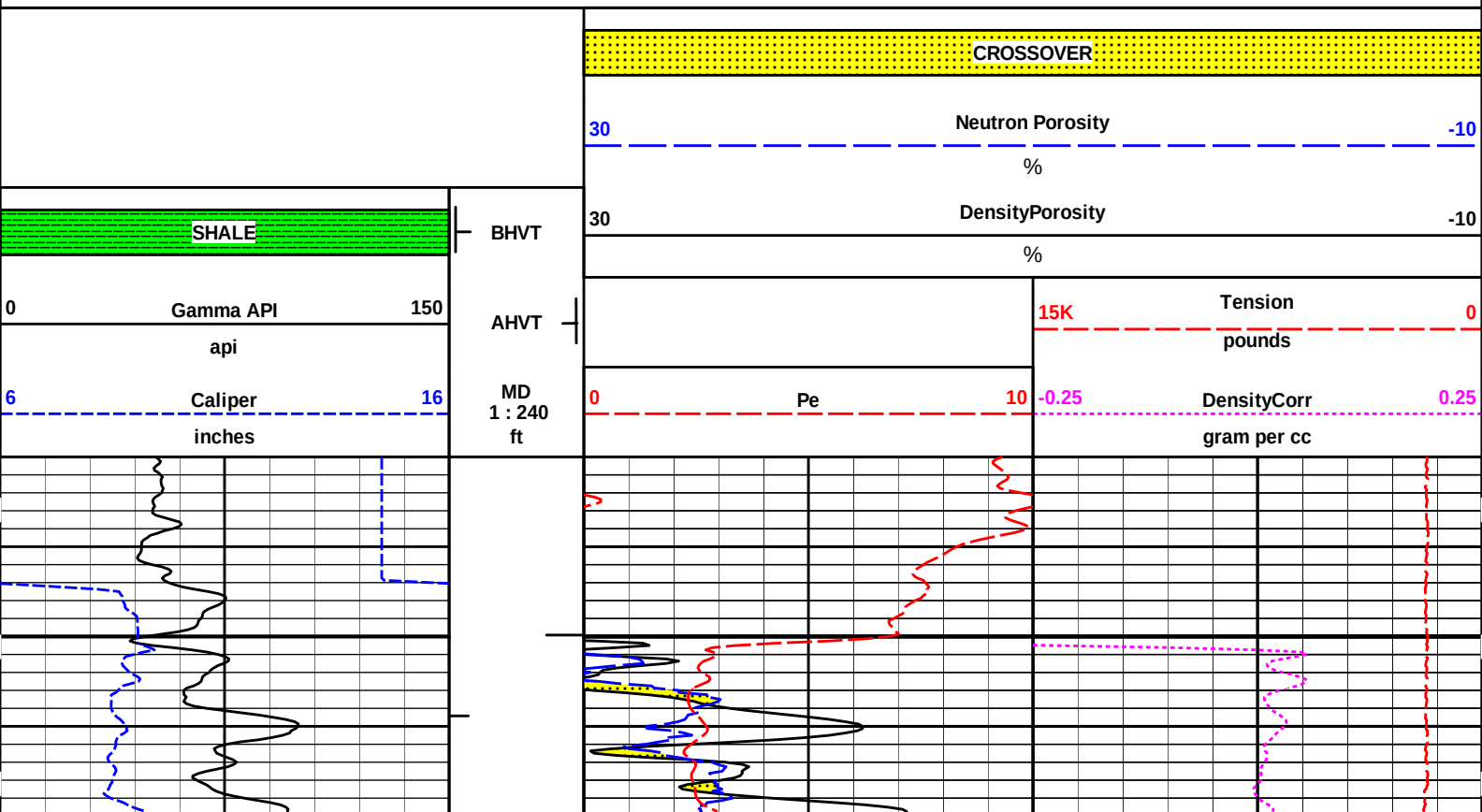
CHLORIDES REPORTED AT 18000 mg/L.

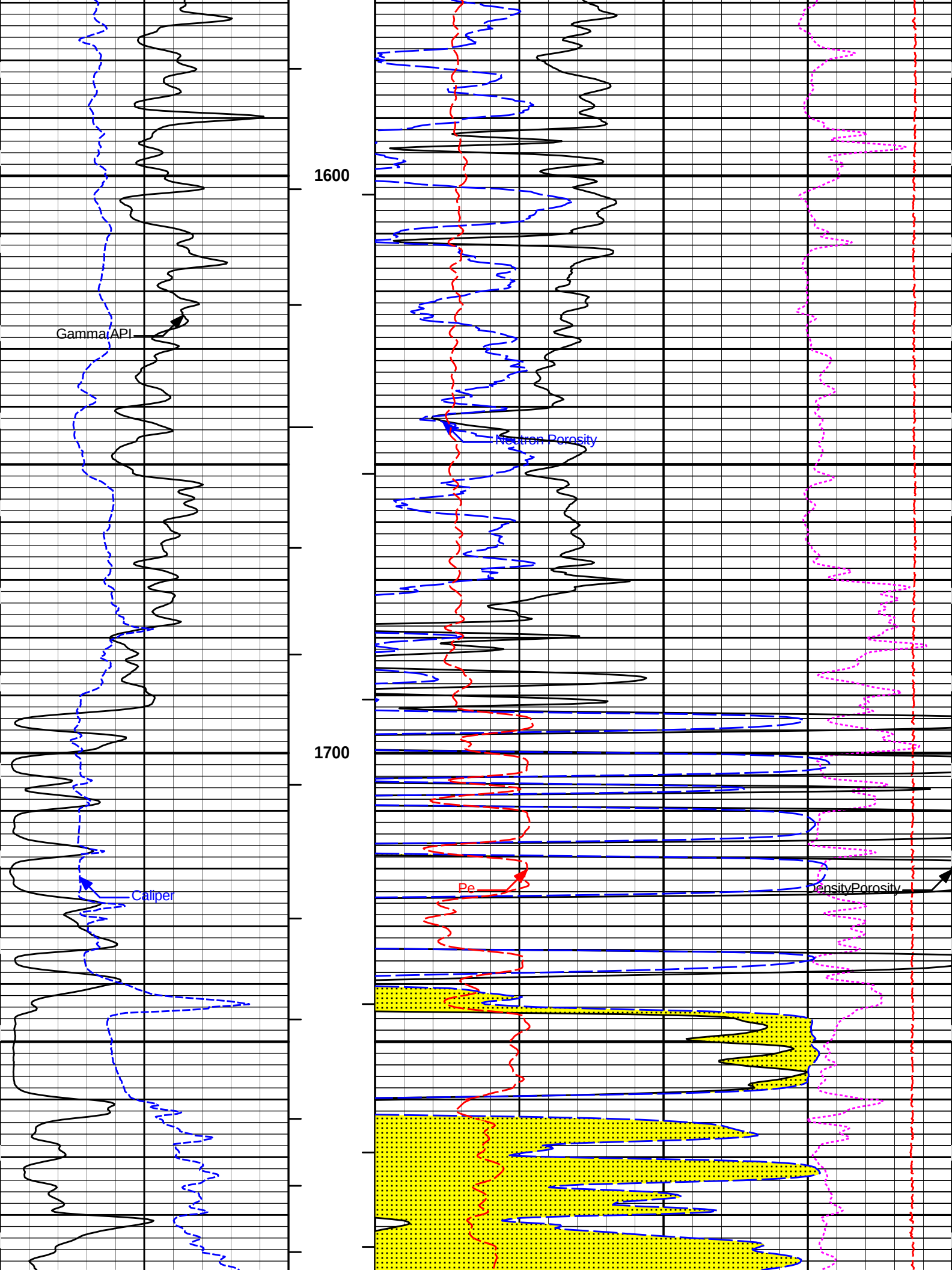
LOG SPLICED AT 2780' & 1760'.

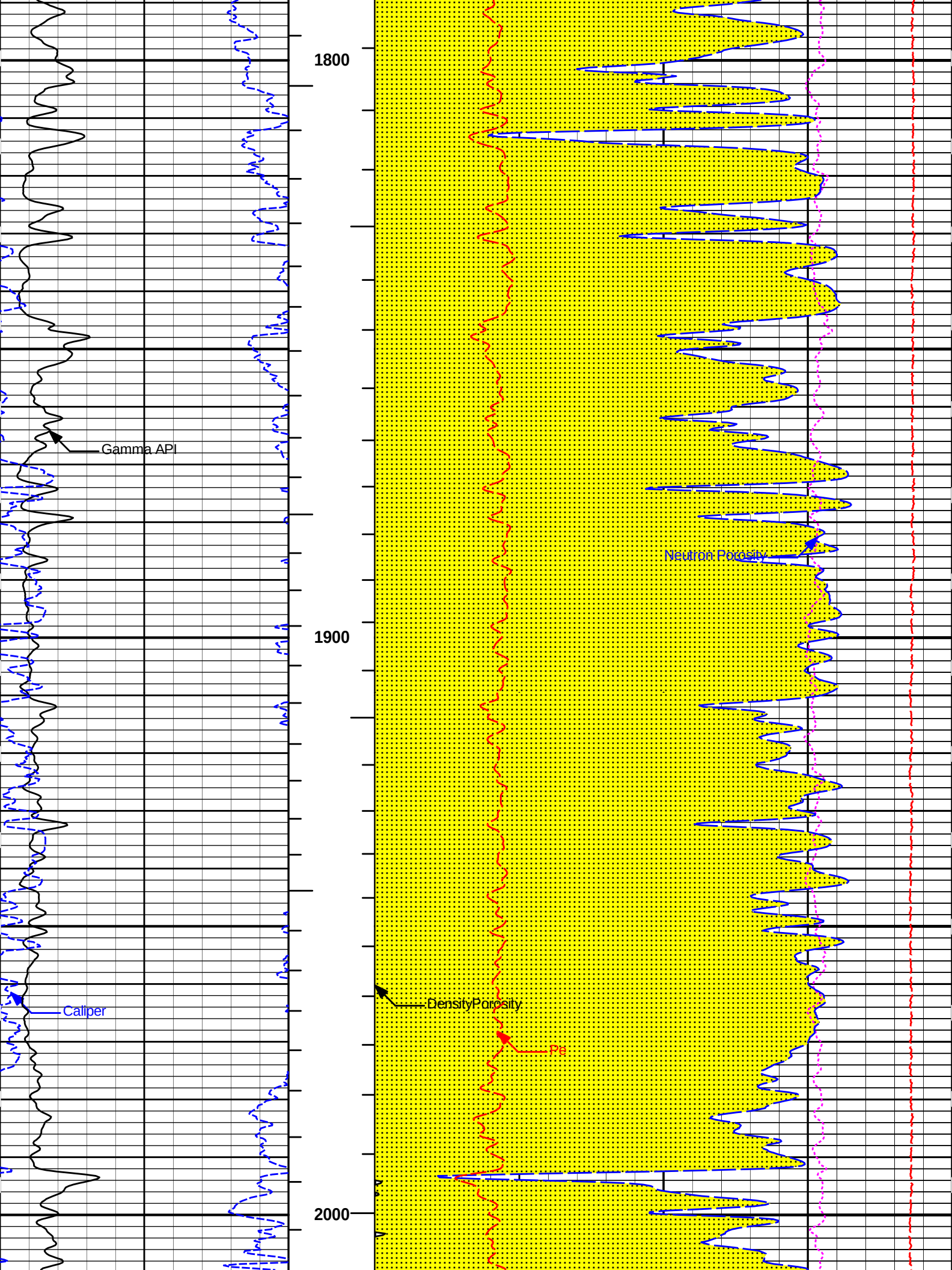
HALLIBURTON

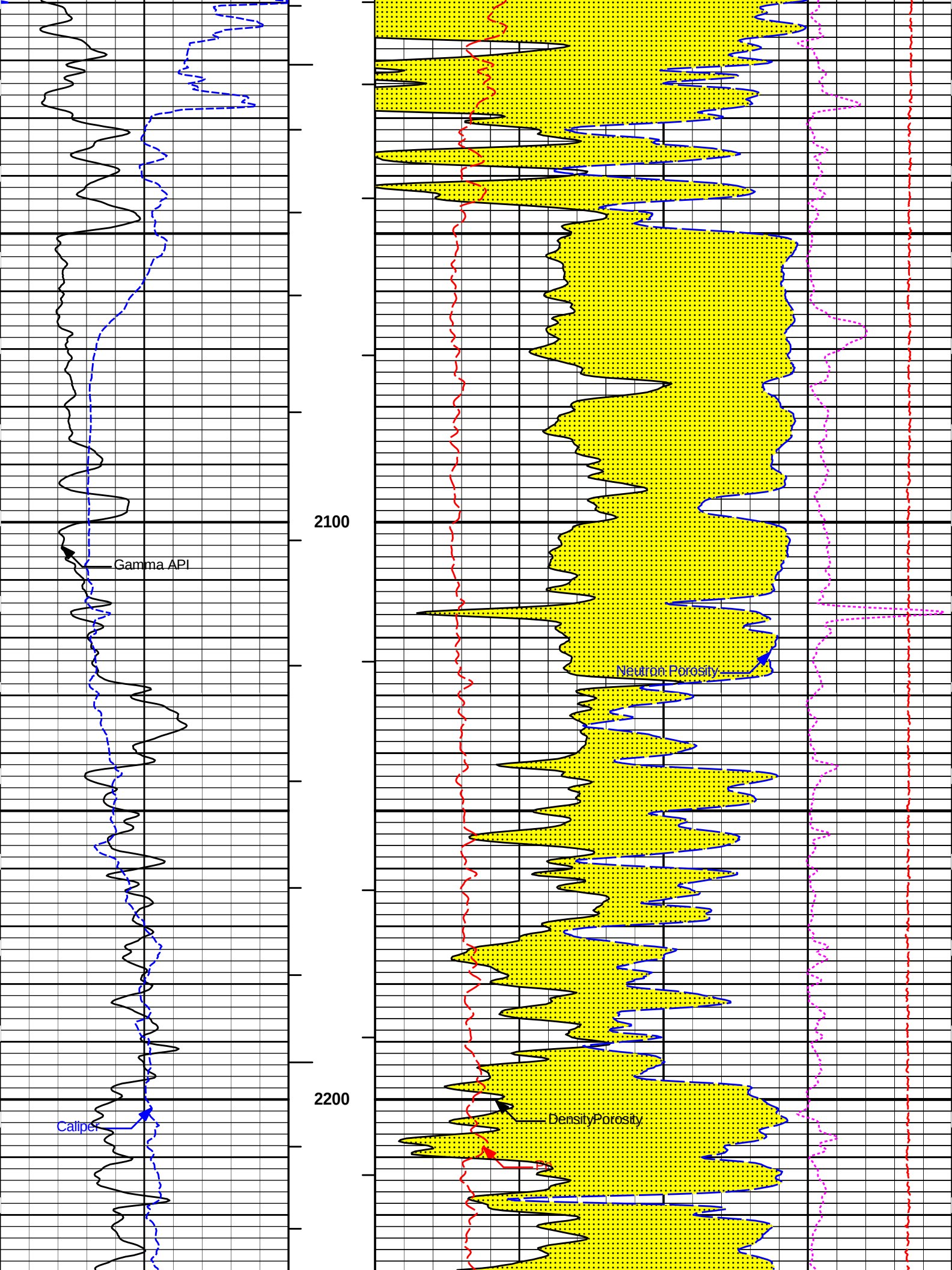
Plot Time: 18-Dec-13 10:15:04
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE
Plot File: \\POROSITY\Poro_IQ_5_MAIN_LIB

5 INCH MAIN LOG




1600
1700
Gamma API
Caliper
Neutron Porosity
Pe
DensityPorosity


1800
1900
2000
Gamma API
Caliper
Neutron Porosity
DensityPorosity
Pe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2200
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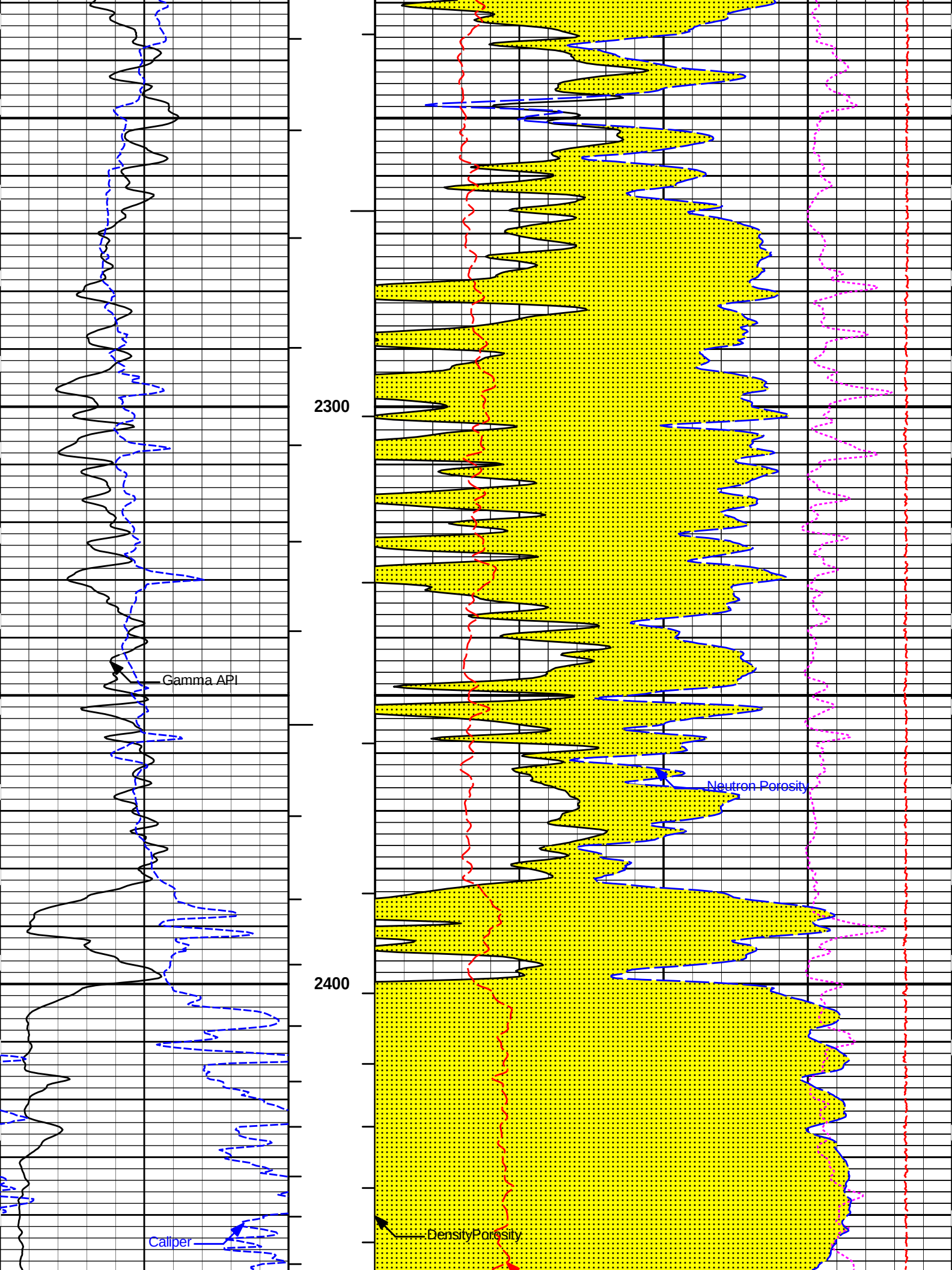
Neutron Porosity
Density Porosity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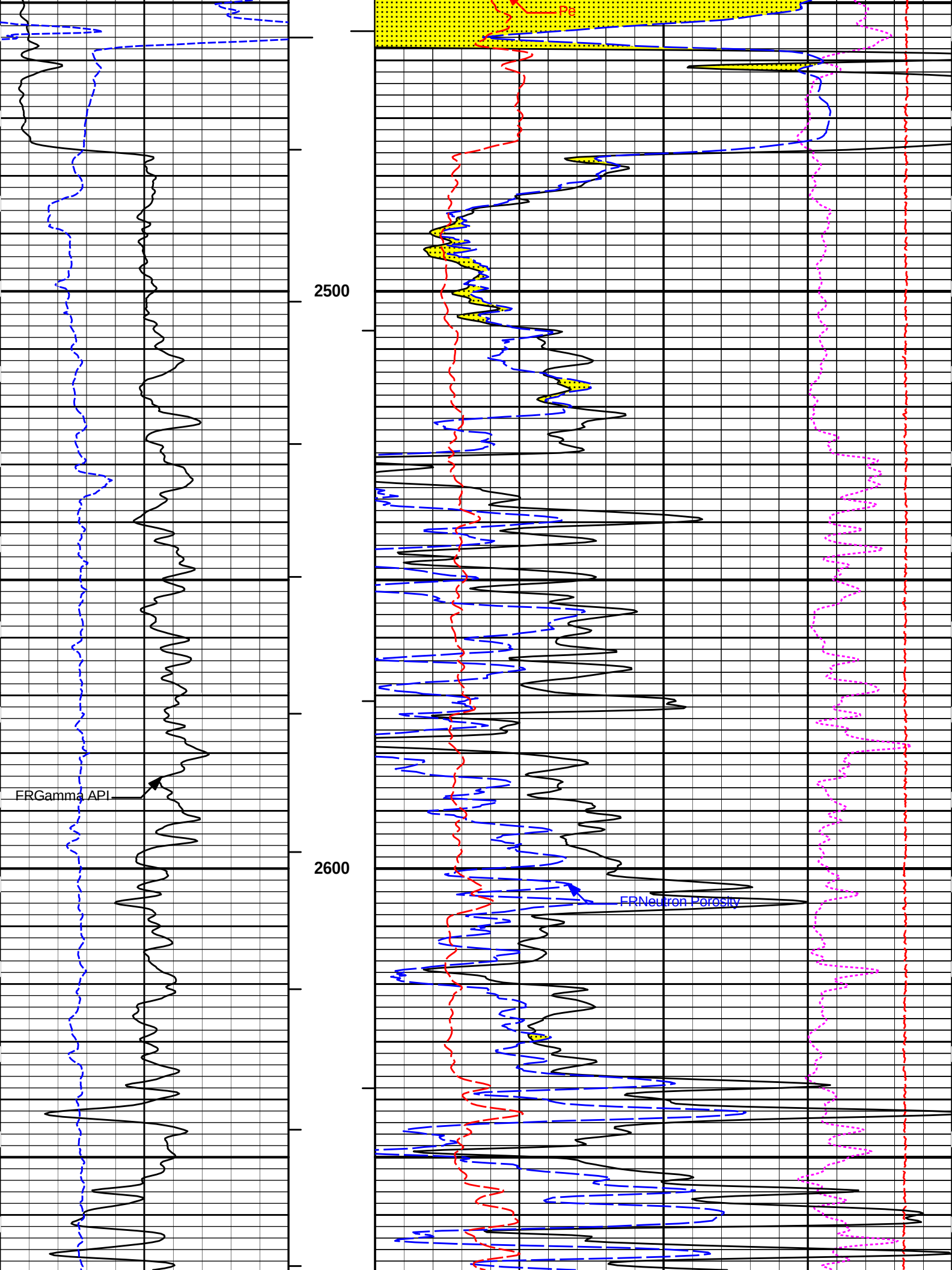
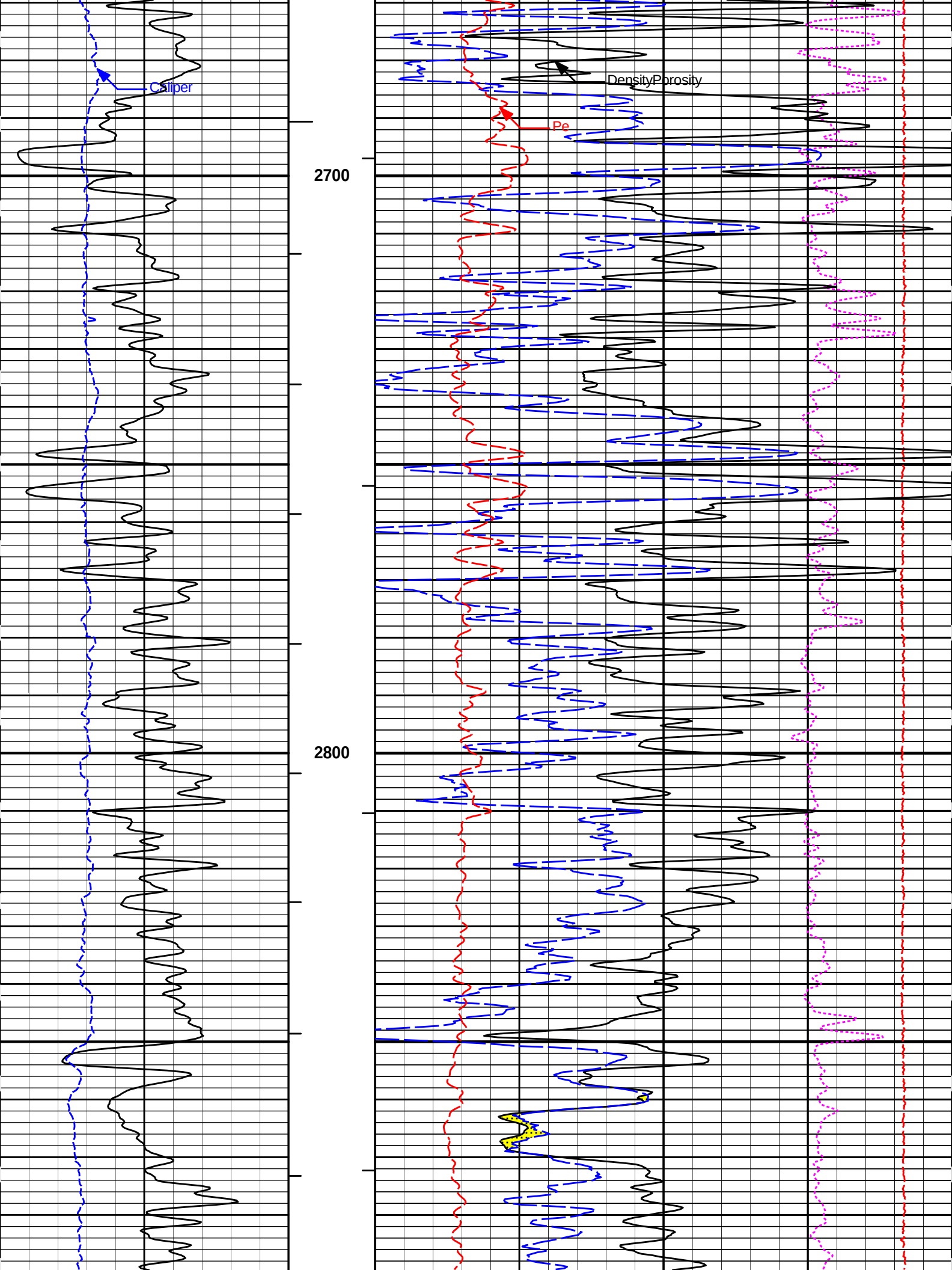
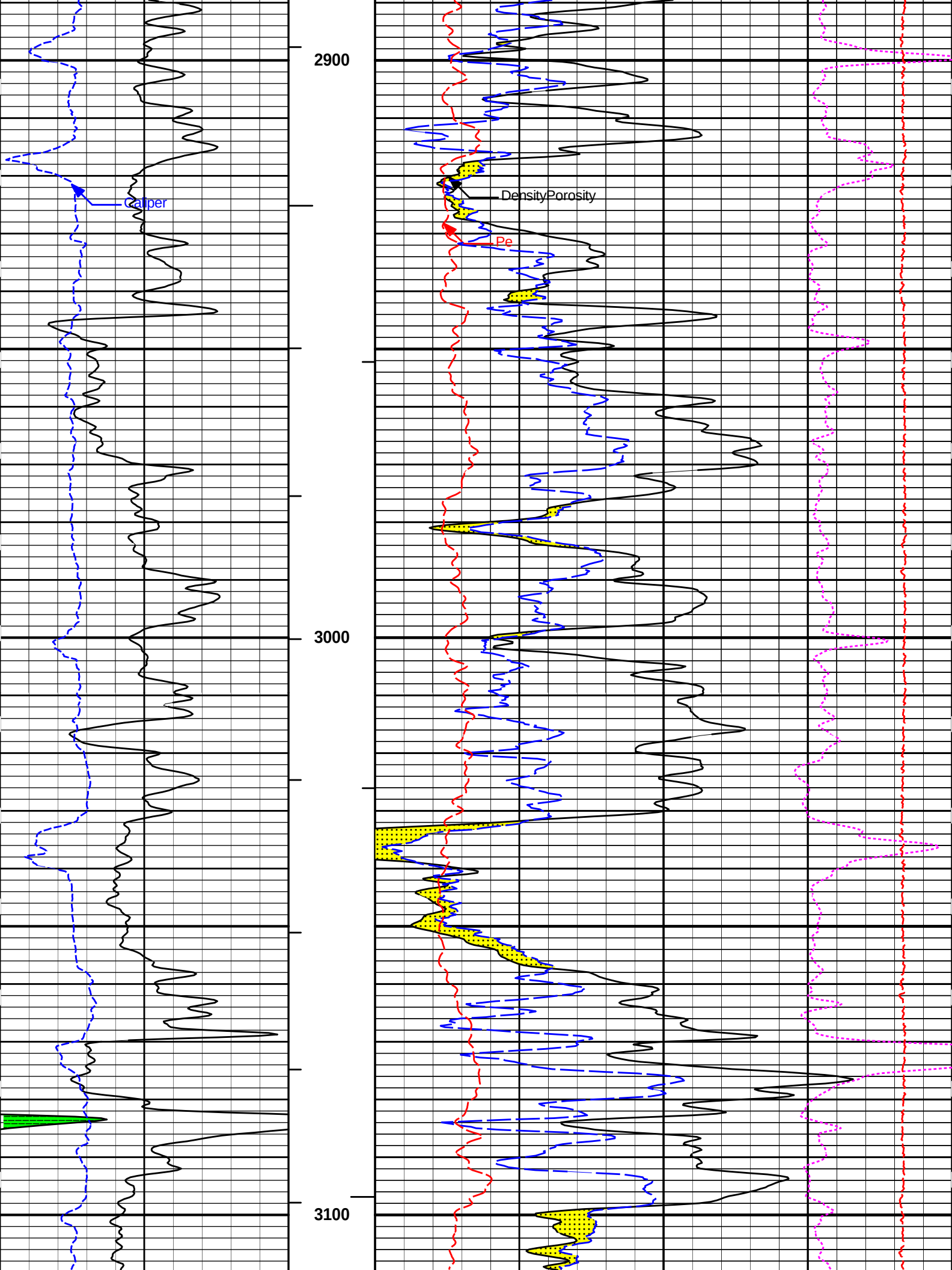
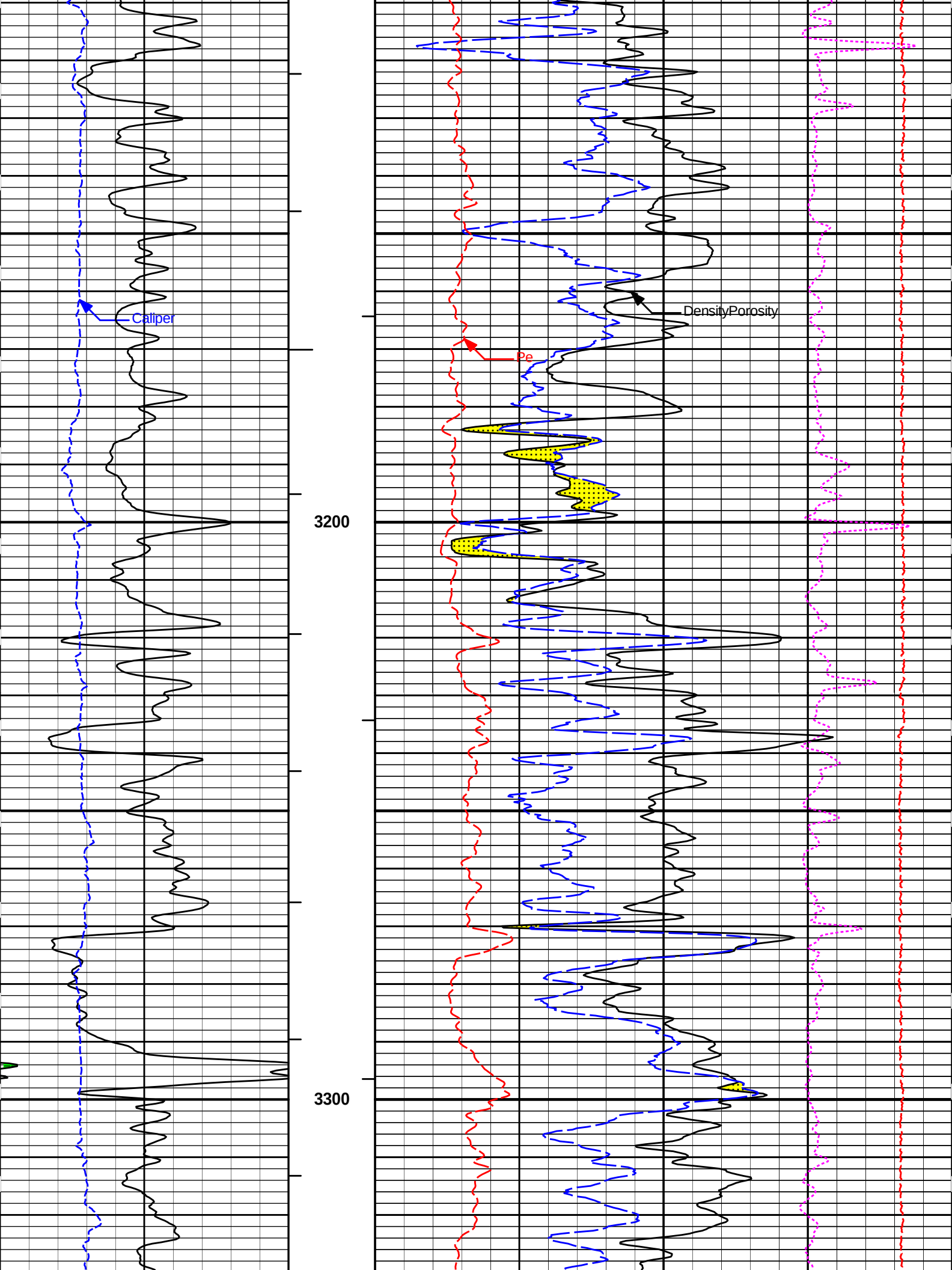
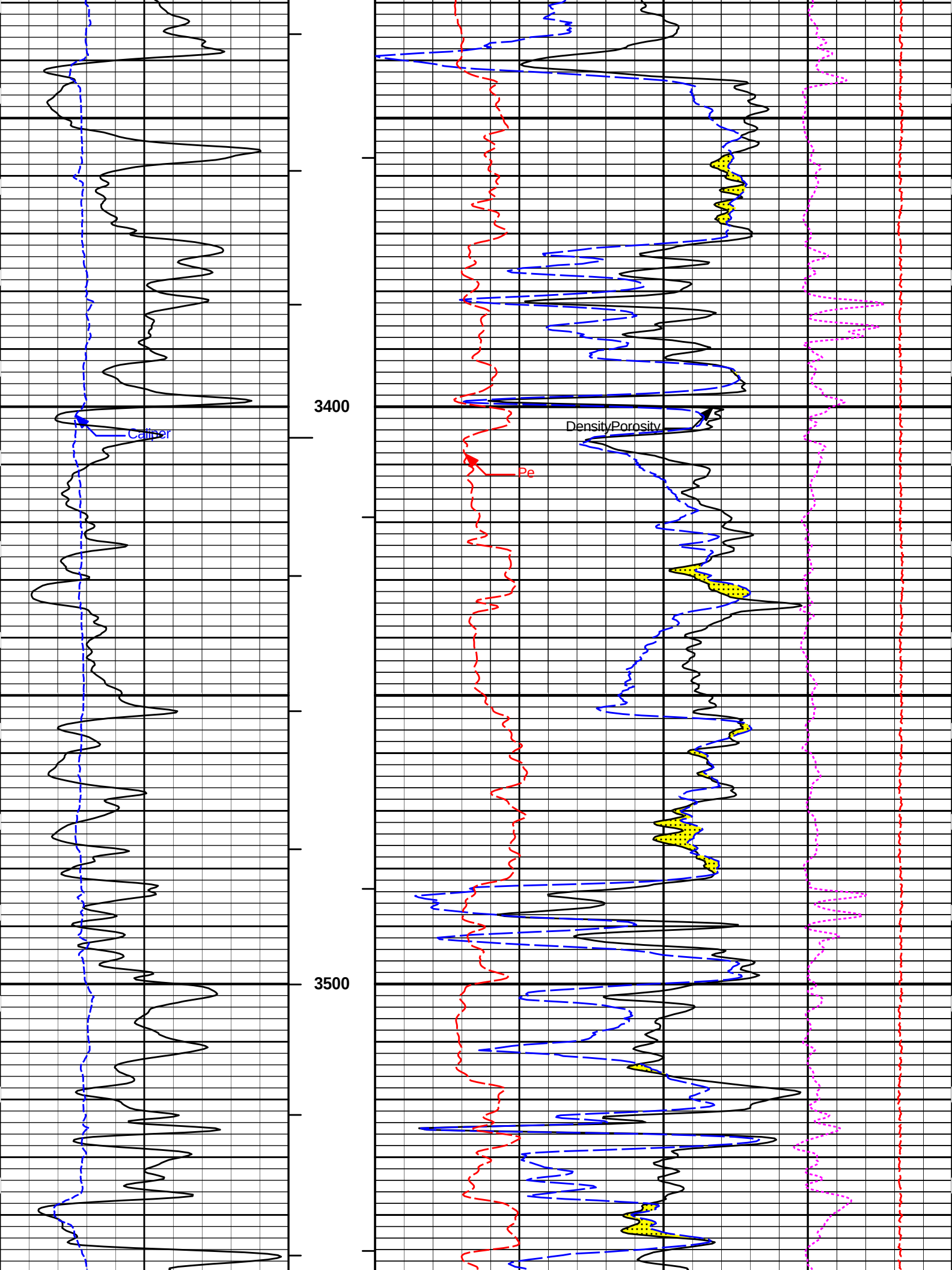
2400
Gamma API
Neutron Porosity
Caliper
DensityPoresity


Pe
2500
2600
FRGamma API
FRNeutron Porosity


Caliper
DensityPorosity
Pe
2700
2800


2900
3000
3100
Caliper
DensityPorosity
Pe


Caliper
DensityPorosity
Pe
3200
3300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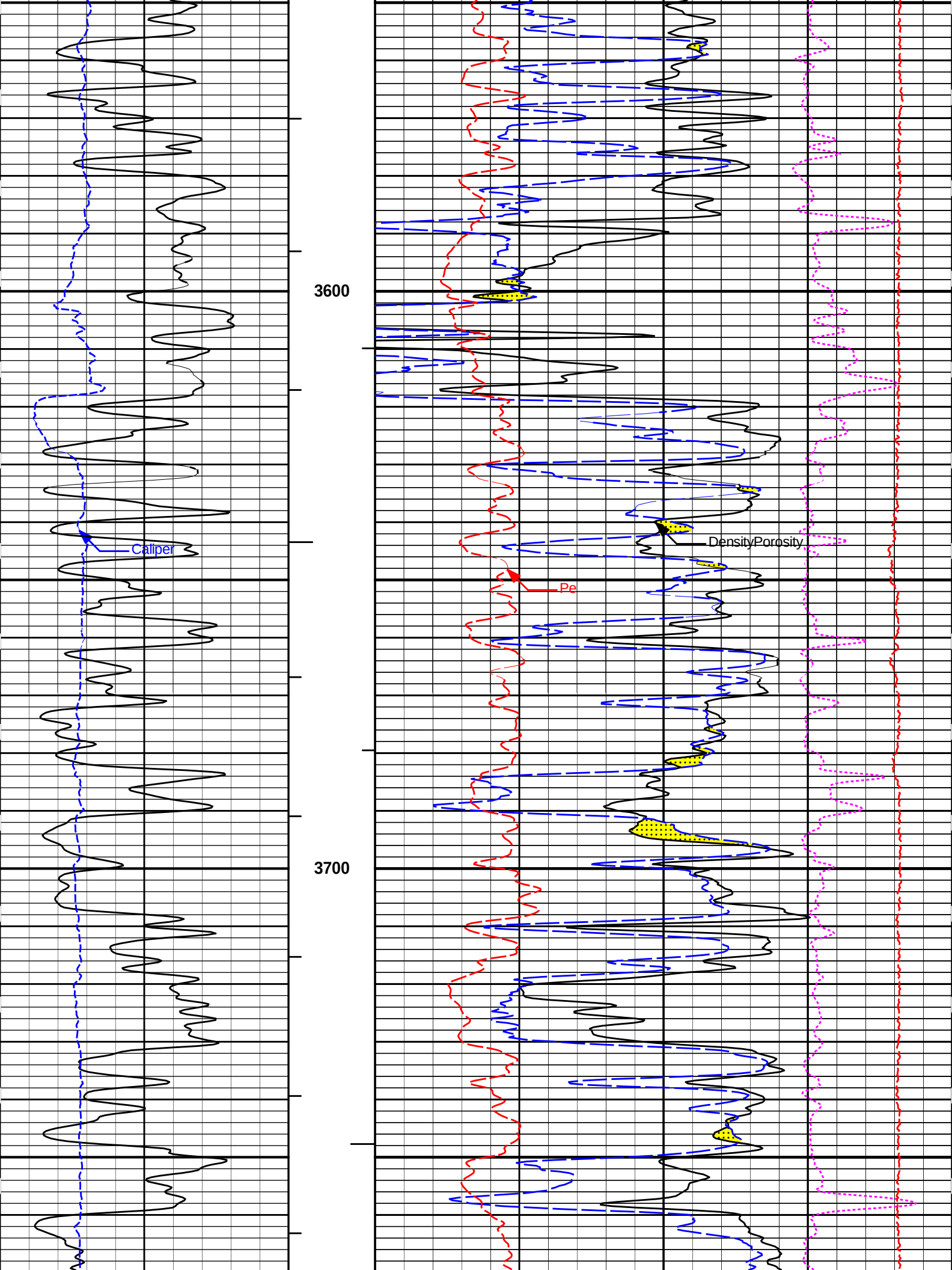
Caliper
DensityPorosity
Pe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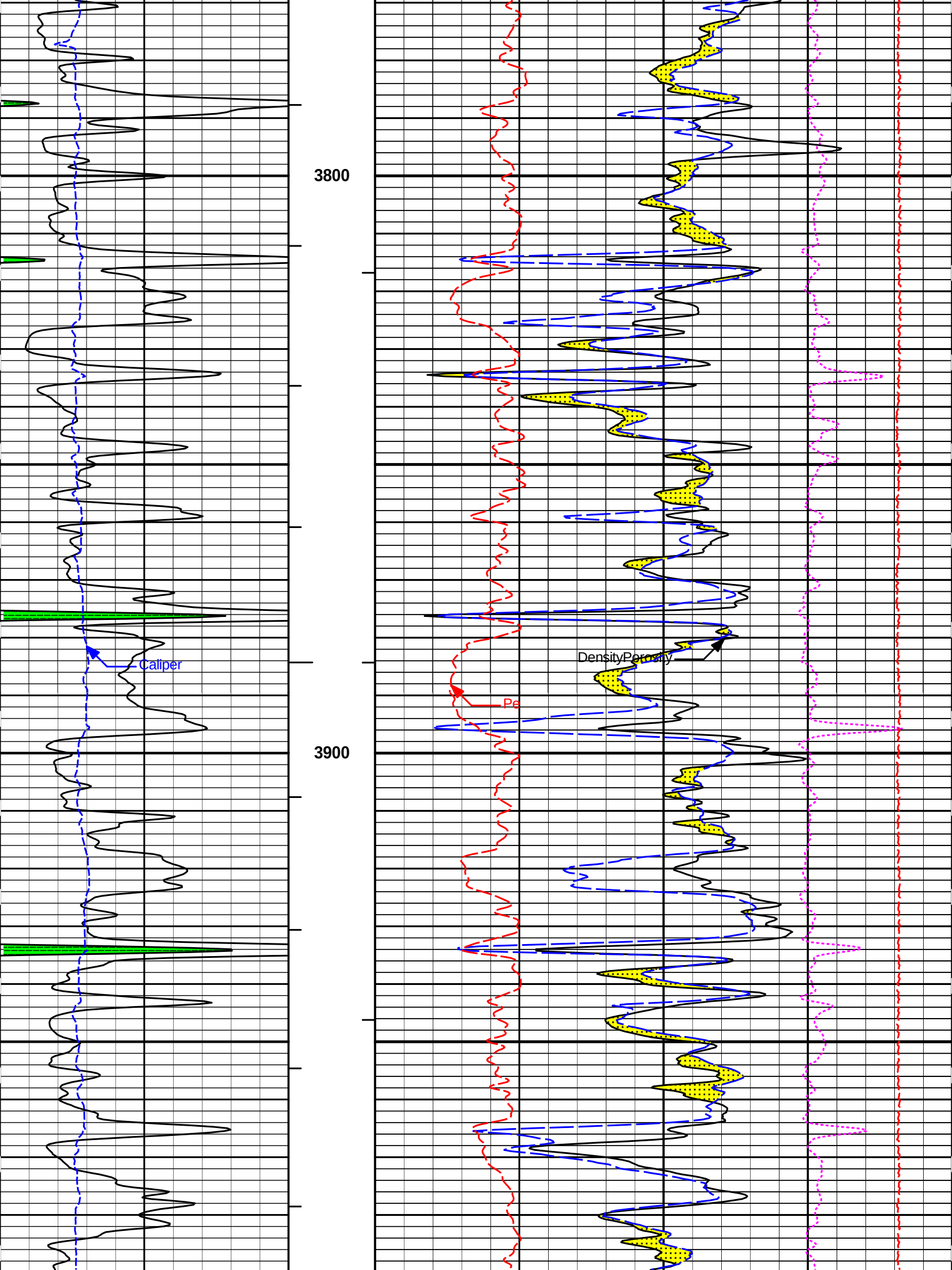
Caliper
DensityPorosity
Pe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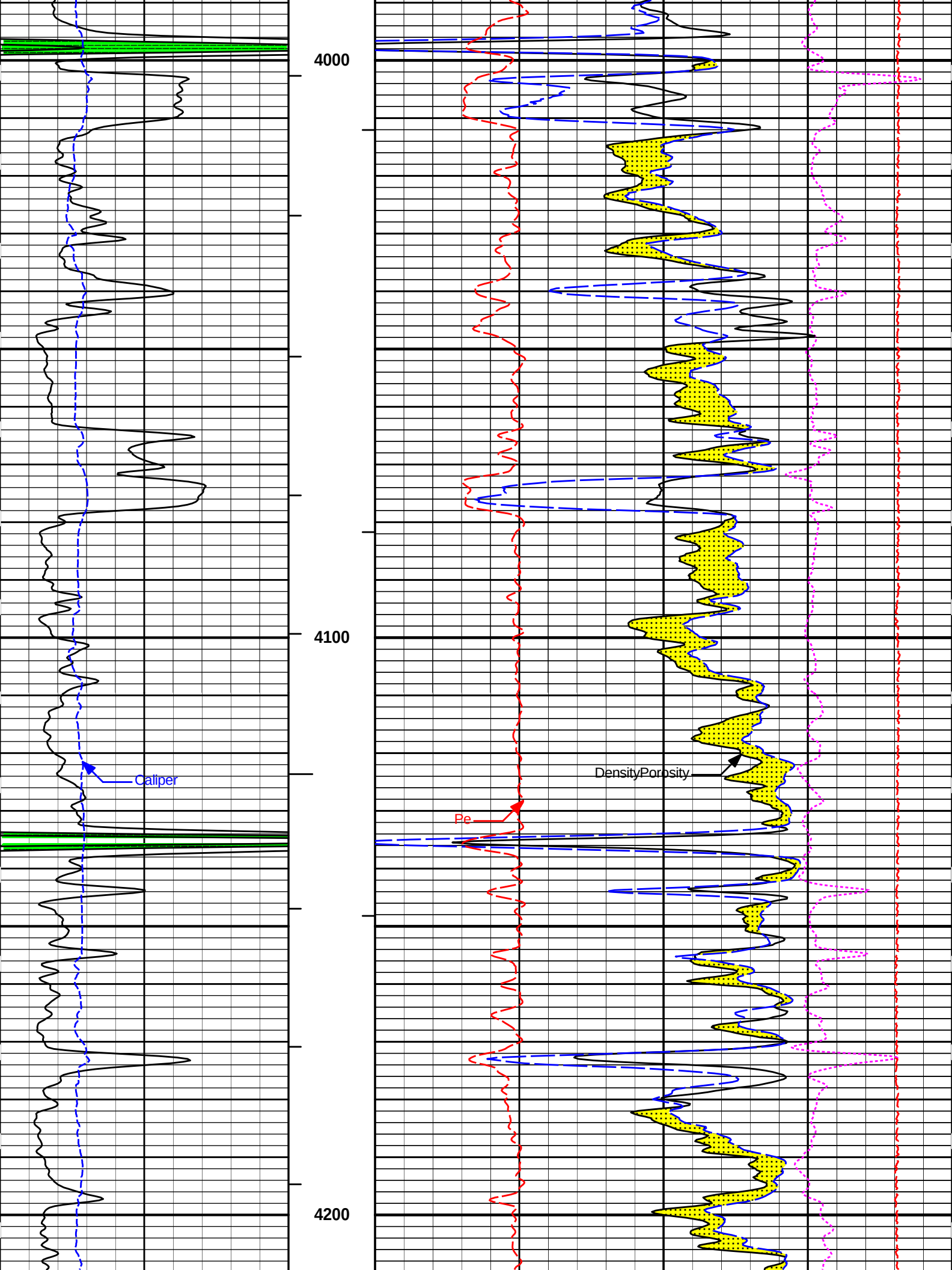
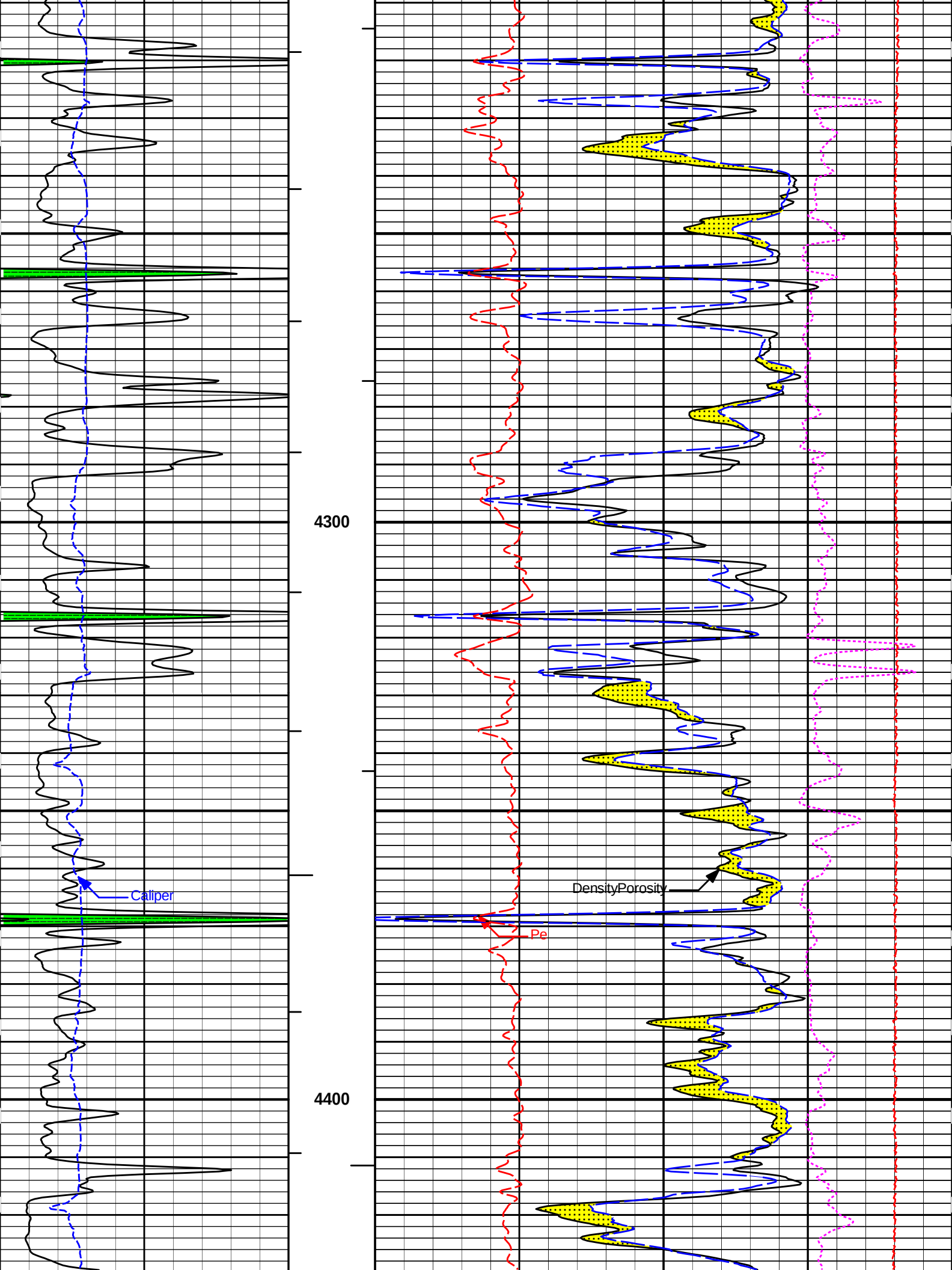
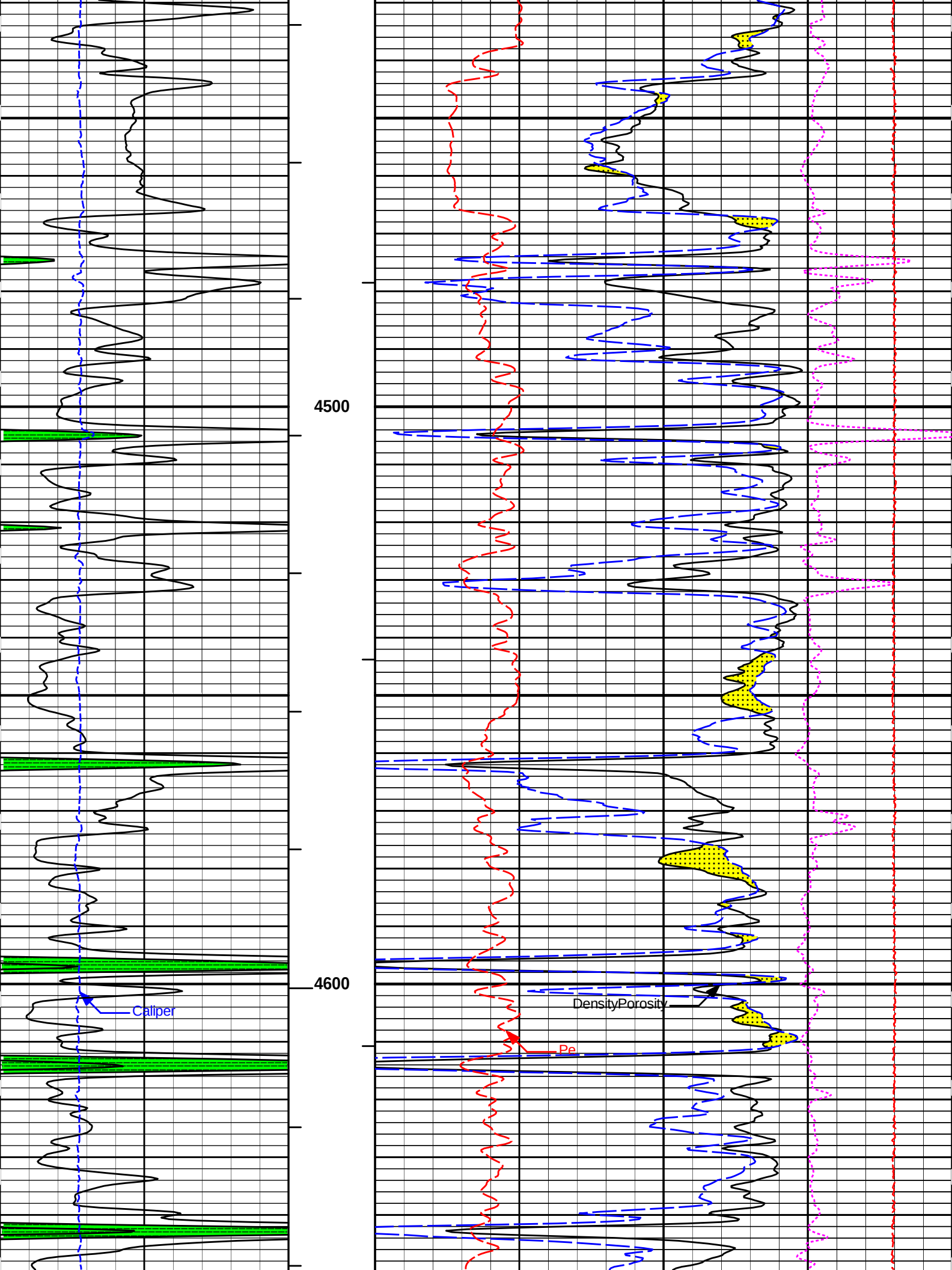
3900
Caliper
DensityPorosity
Pe


4000
4100
4200
Caliper
Pe
DensityPorosity


4300
4400
Caliper
DensityPorosity
Pe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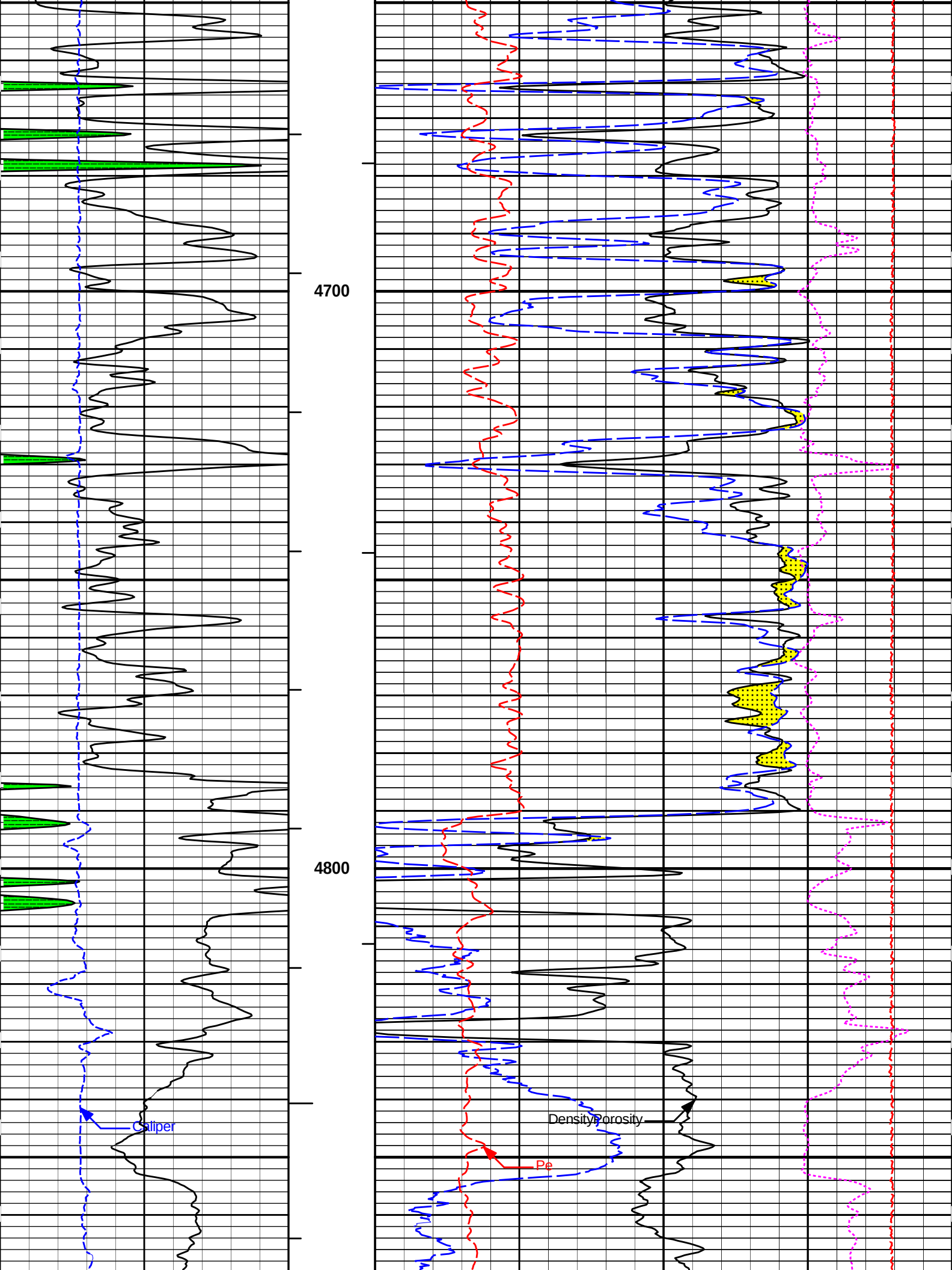
4600
Caliper
DensityPorosity
Pe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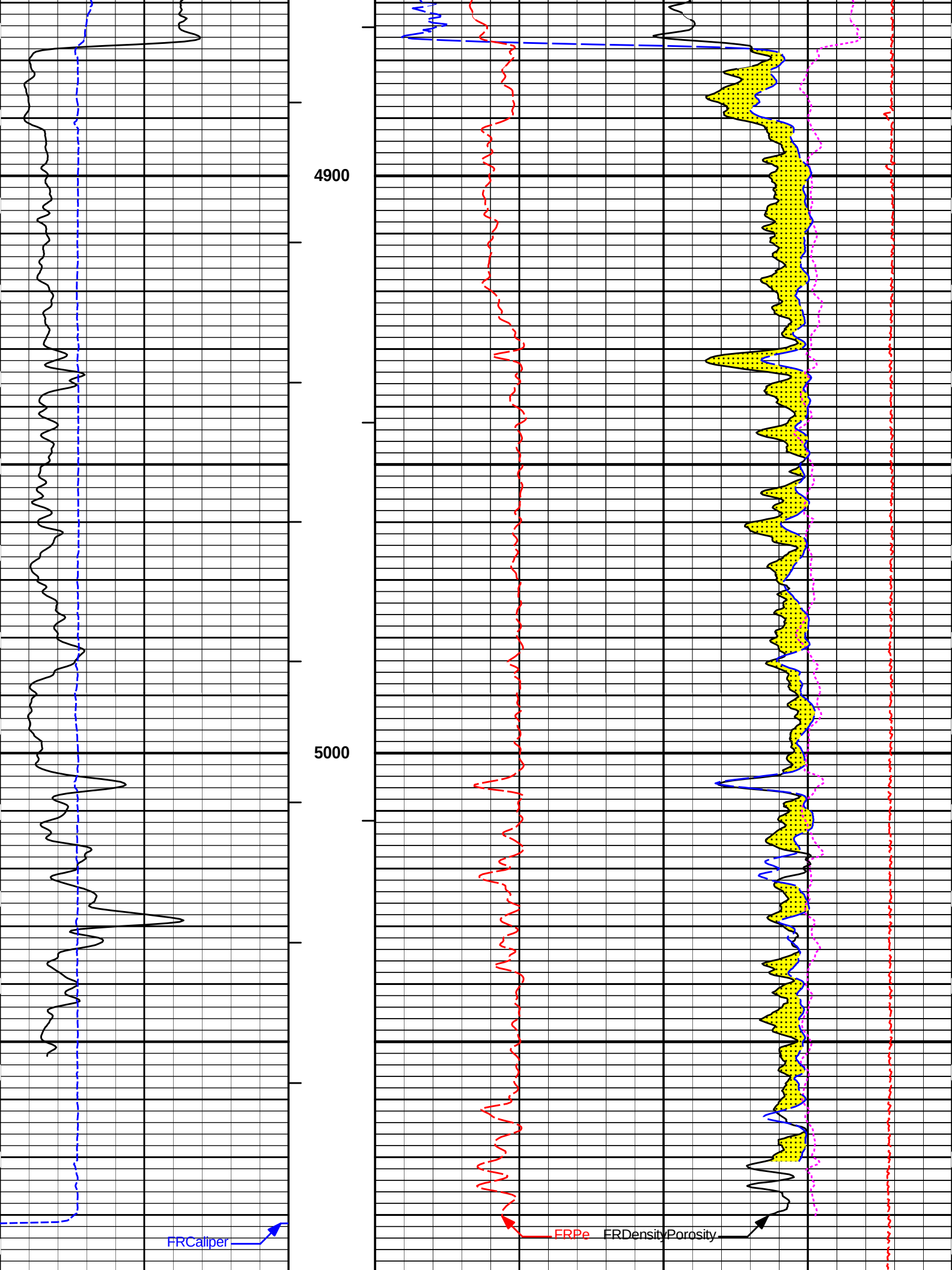
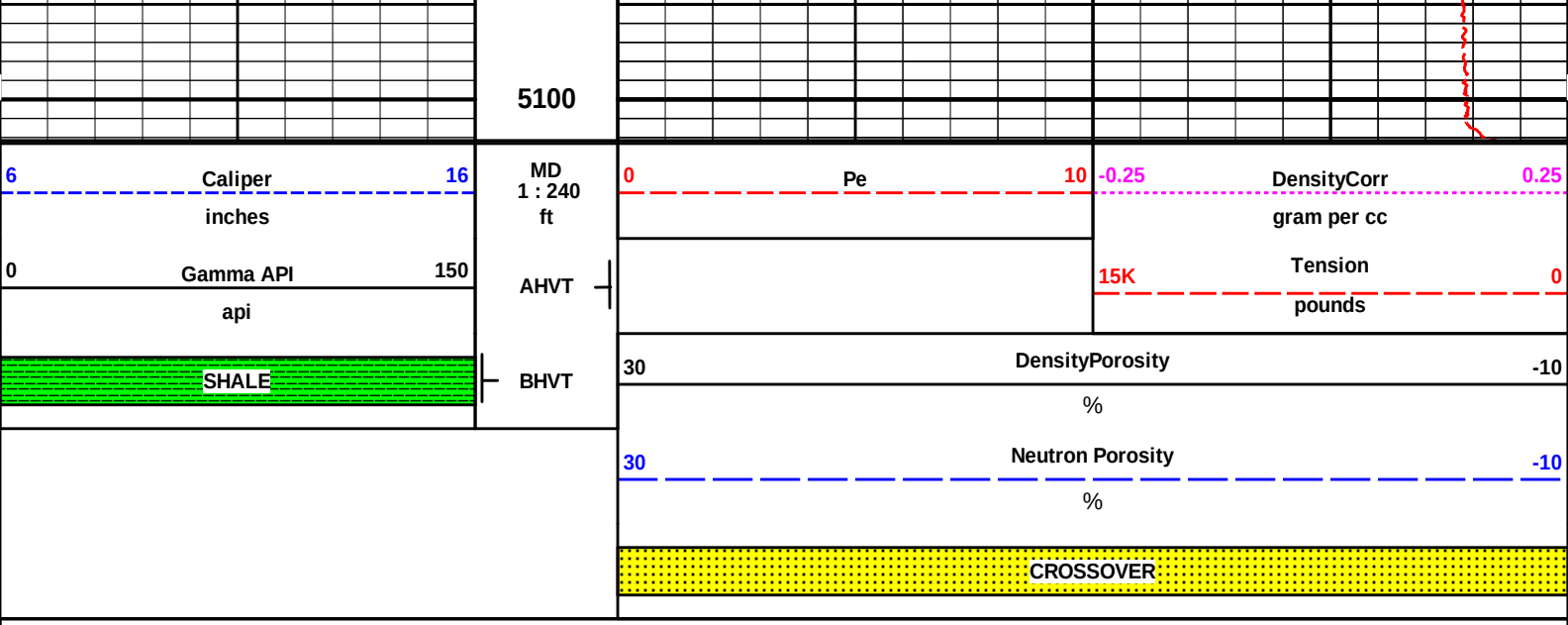
4800
Caliper
Density Porosity
Pe


4900
5000
FRCaliper
FRPe
FRDensityPorosity



HALLIBURTON

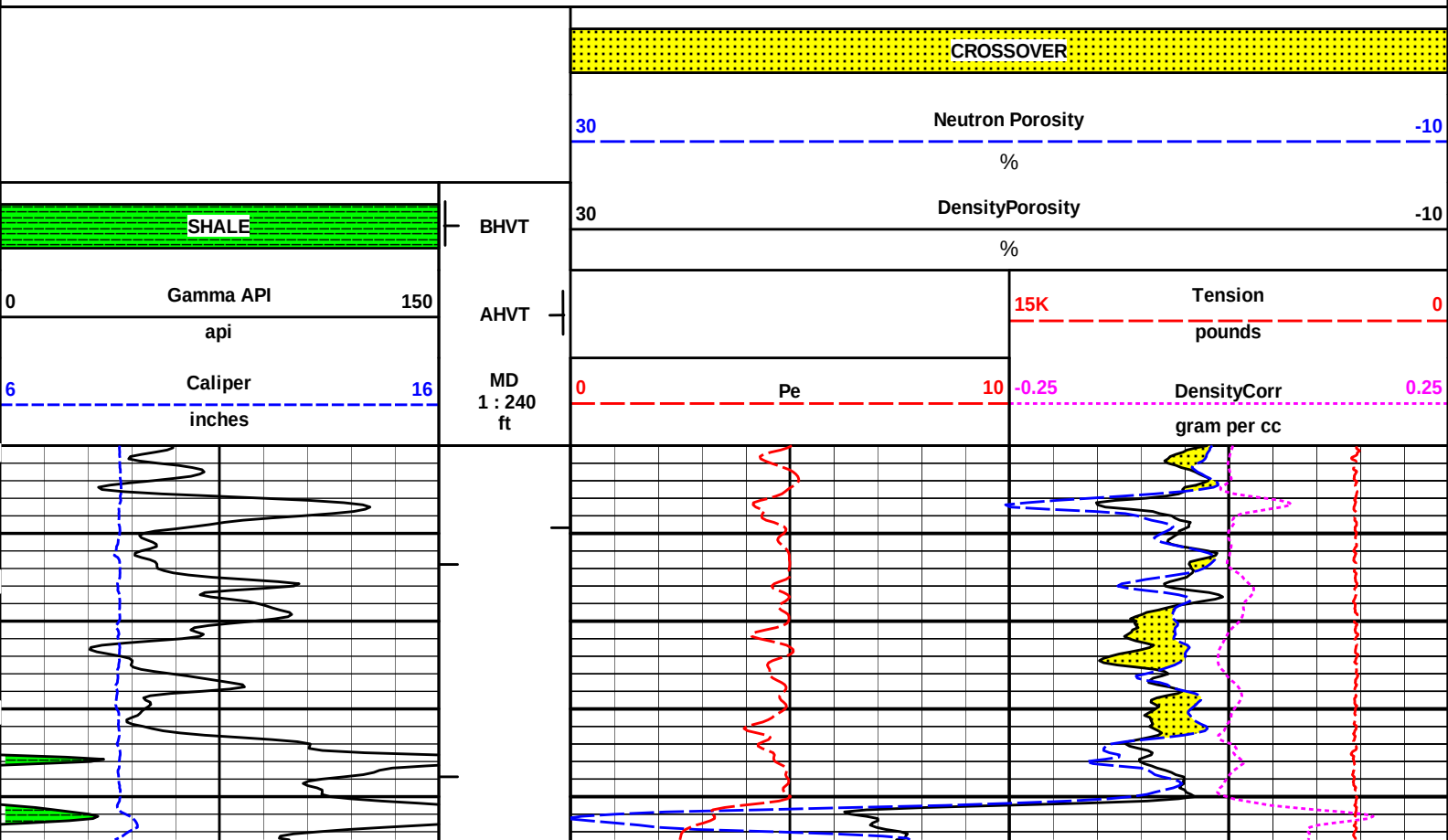
Plot Time: 18-Dec-13 10:15:50
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE\
Plot File: \\POROSITY\Poro_IQ_5_MAIN_LIB

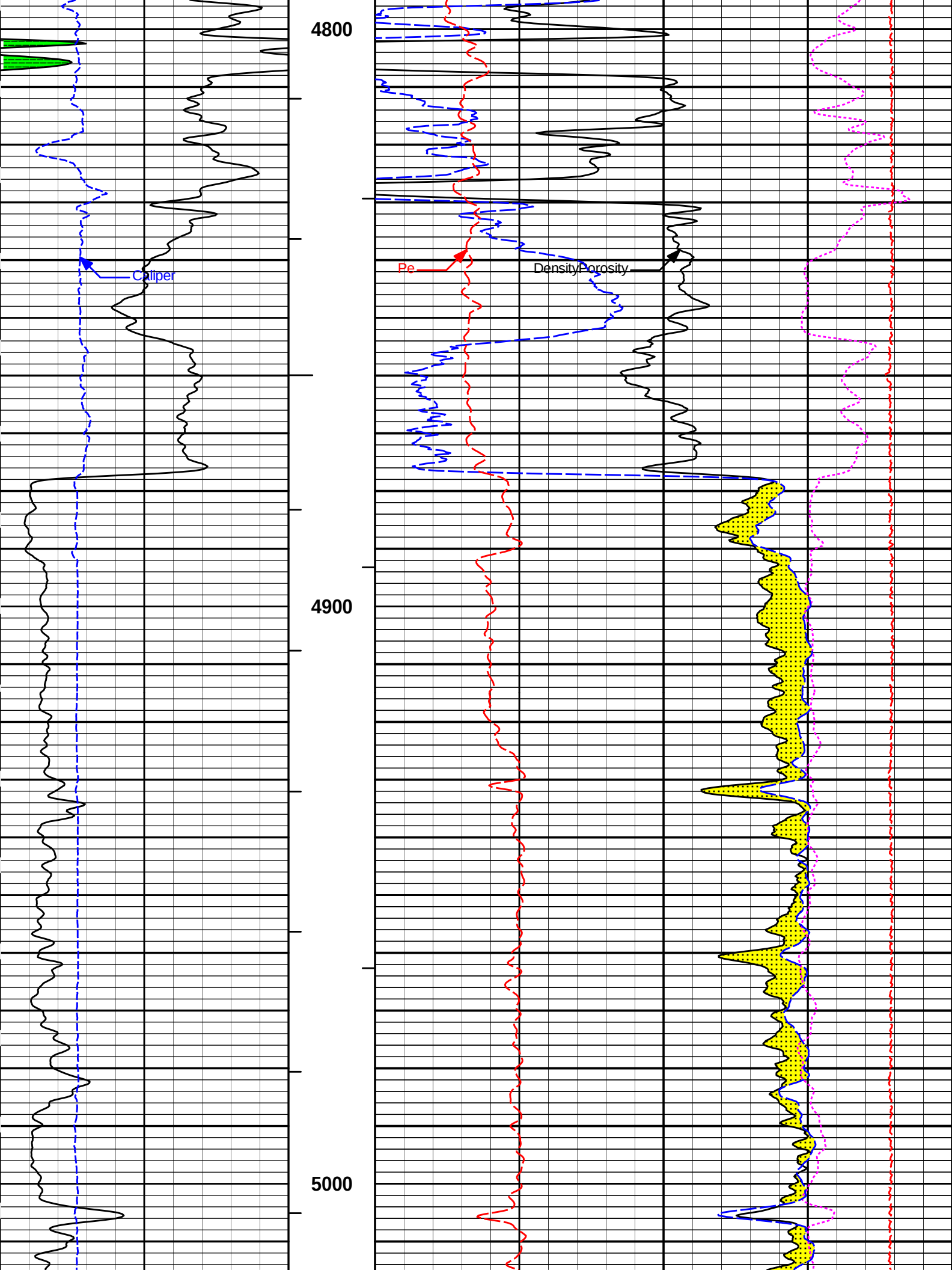
5 INCH MAIN LOG

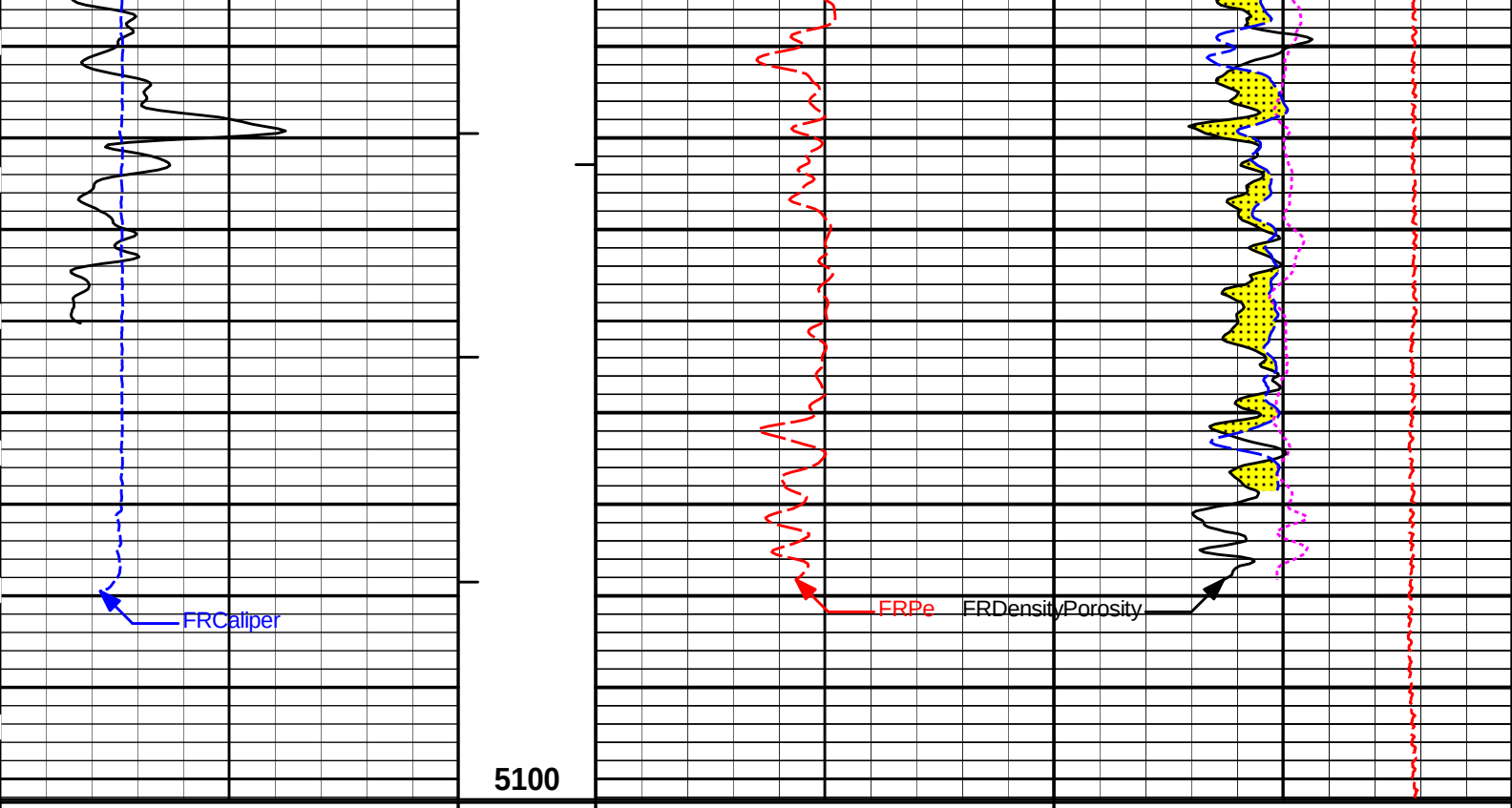
HALLIBURTON

Plot Time: 18-Dec-13 10:15:50
Plot Range: 4750 ft to 5102.25 ft
Data: MAZANEC_1735\Well Based\R1 REPEAT\
Plot File: \\POROSITY\Poro_IQ_5_REP_LIB

REPEAT SECTION




4800
4900
5000
Caliper
Pe
DensityPorosity



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

HALLIBURTON

Plot Time: 18-Dec-13 10:15:58
Plot Range: 4750 ft to 5102.25 ft
Data: MAZANEC_1735\Well Based\R1 REPEAT\
Plot File: \\POROSITY\Poro_IQ_5_REP_LIB

REPEAT SECTION

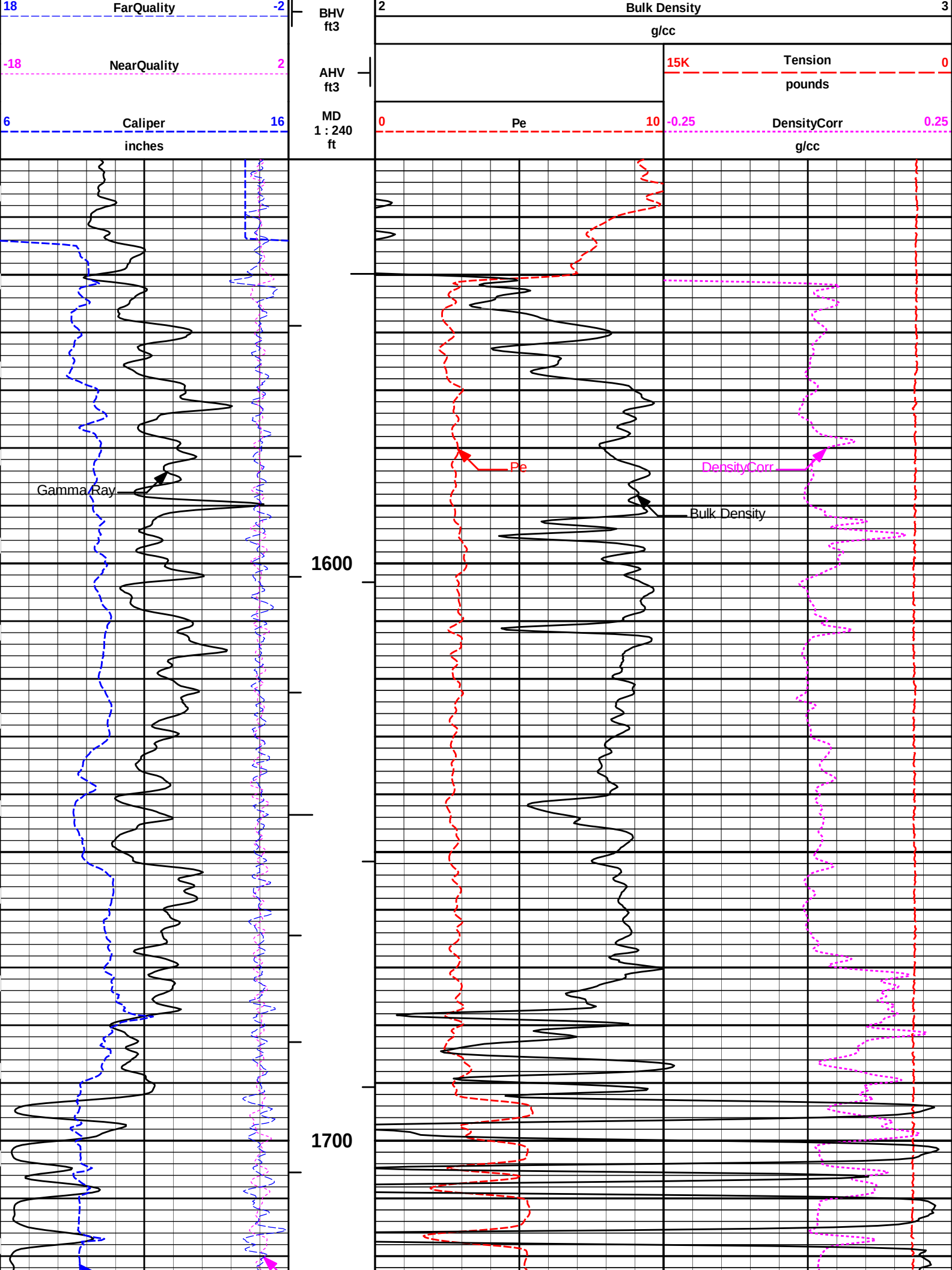
HALLIBURTON

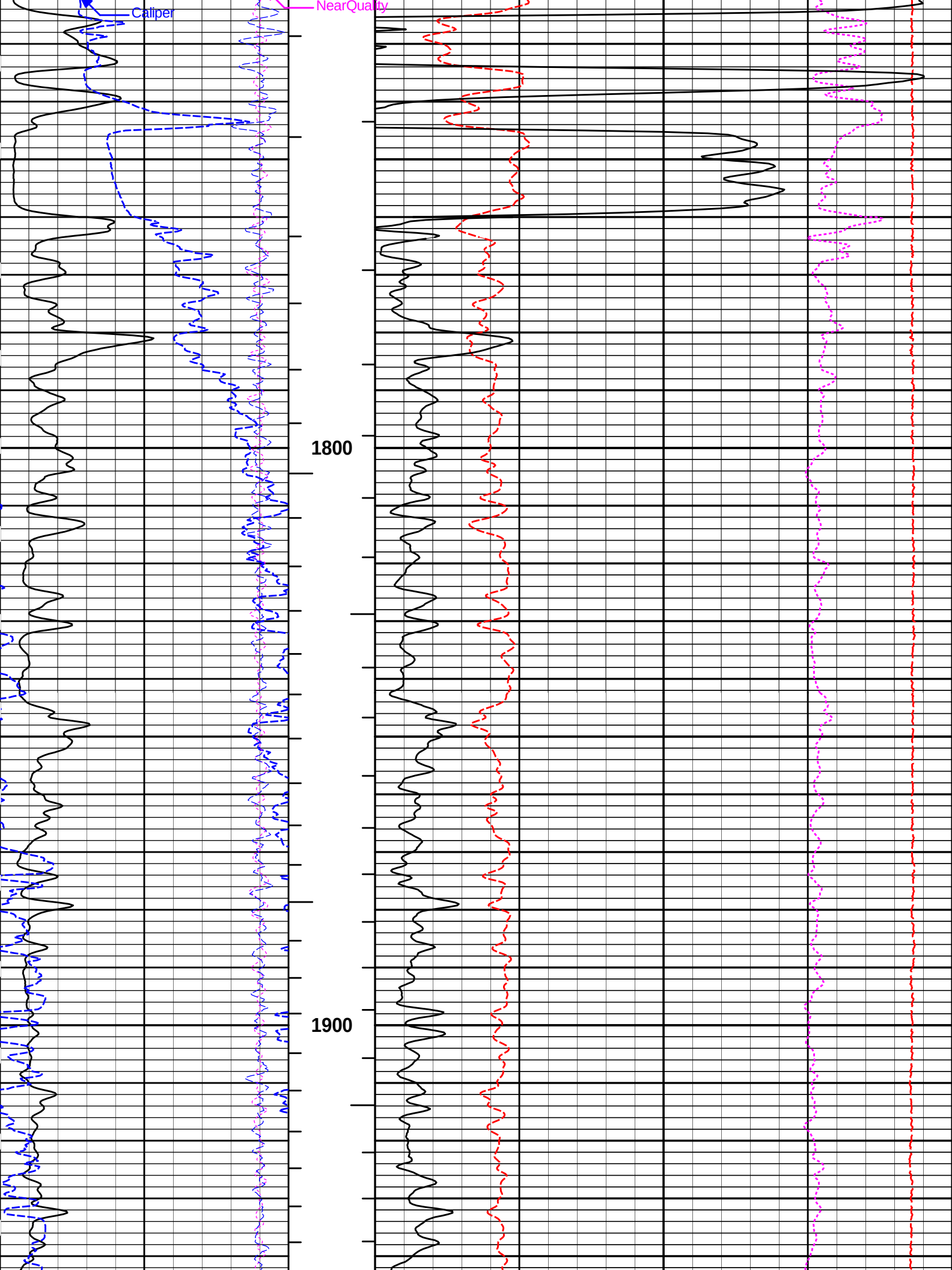
Plot Time: 18-Dec-13 10:15:58
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\BULKD_5_MAIN_LIB

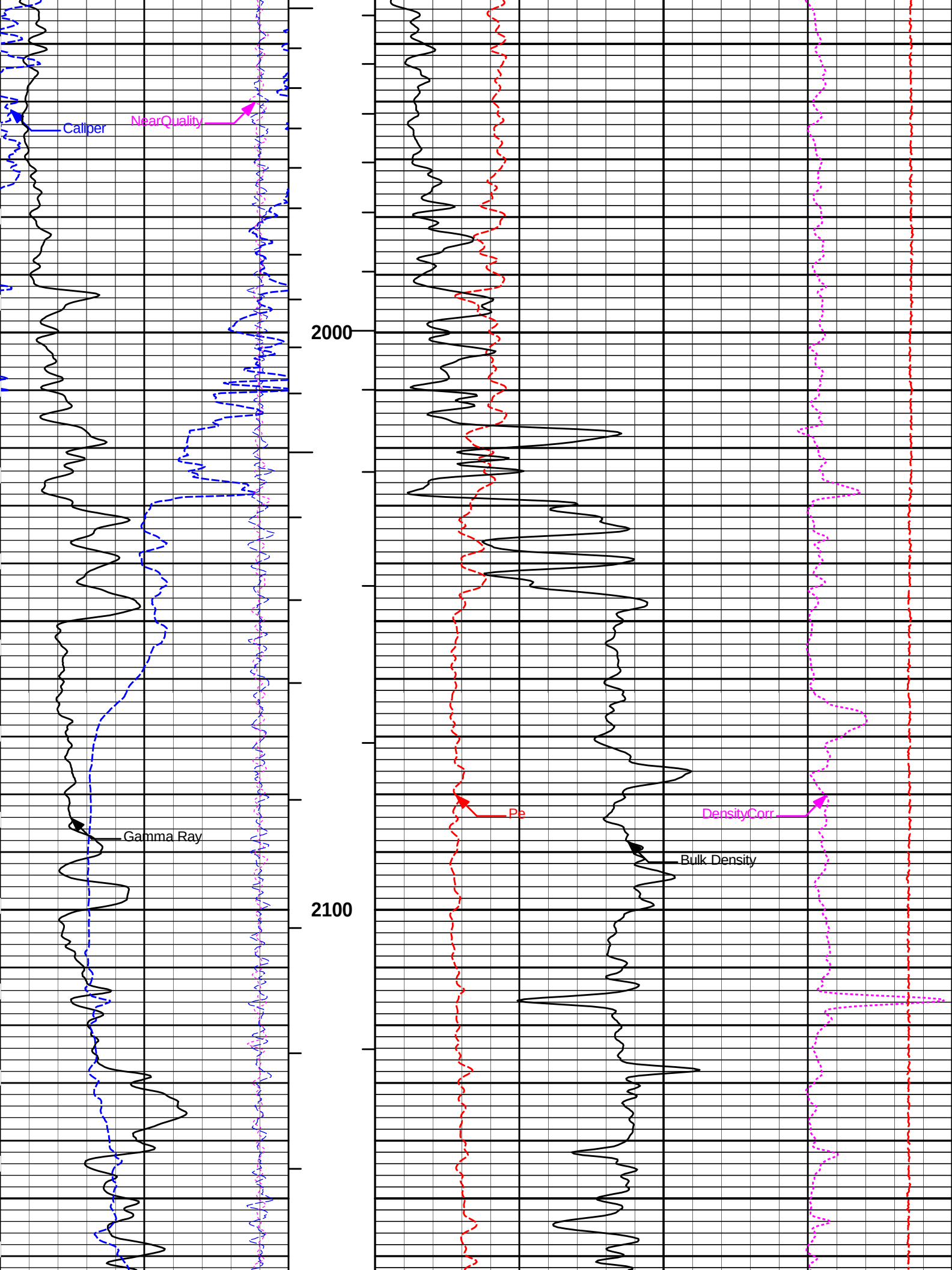
5 INCH MAIN LOG

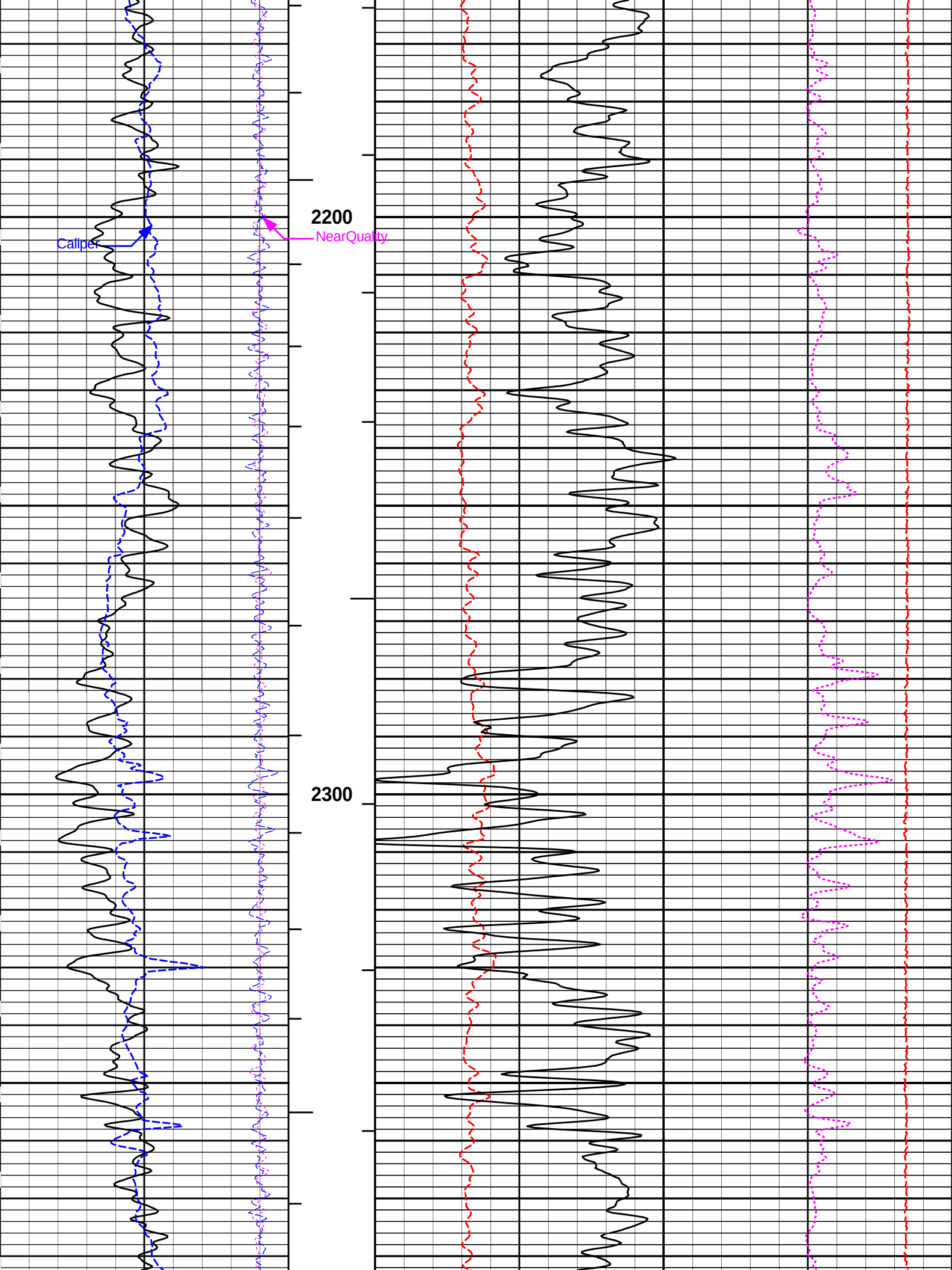
SHALE

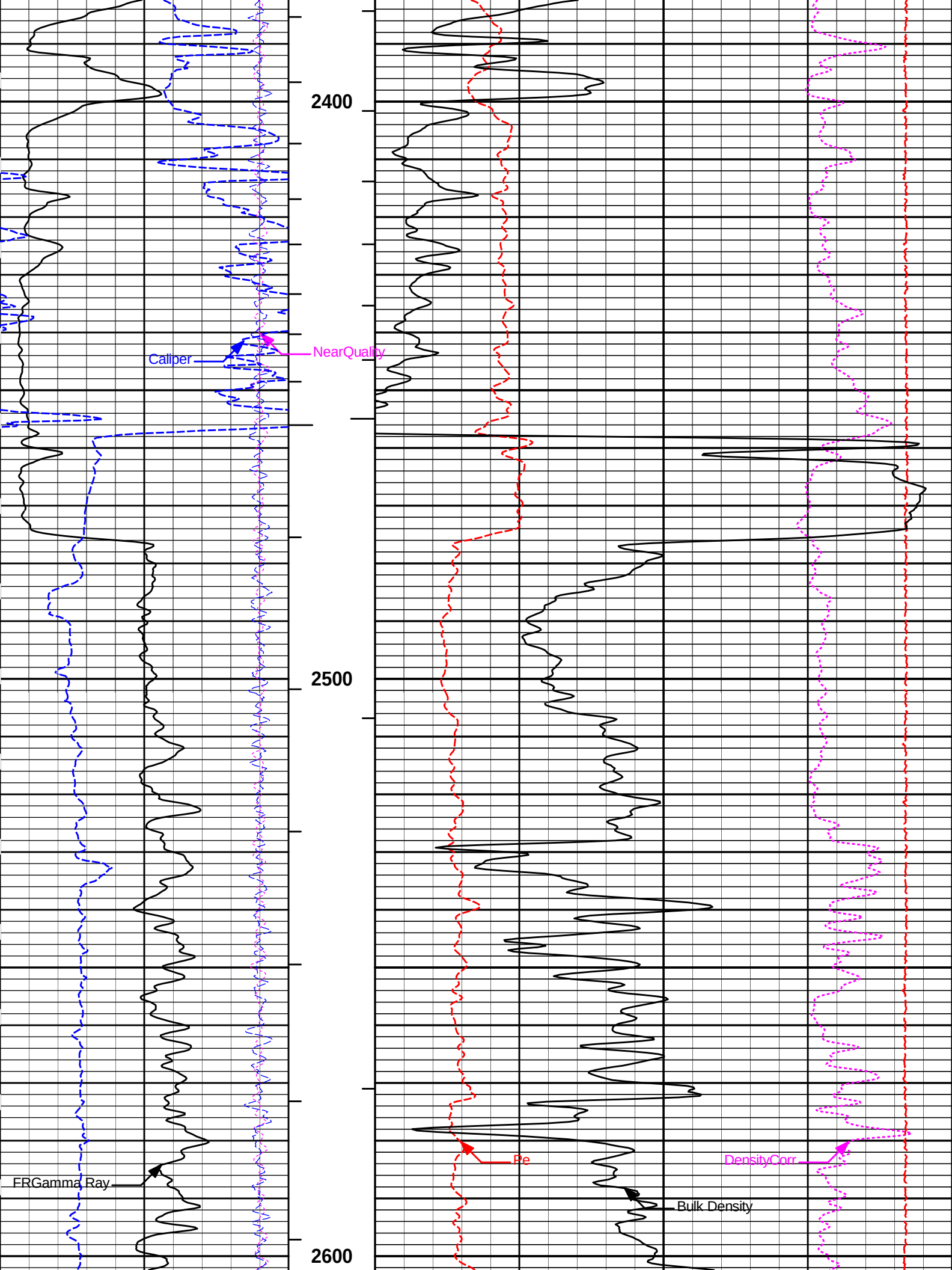
0 Gamma Ray 150
api

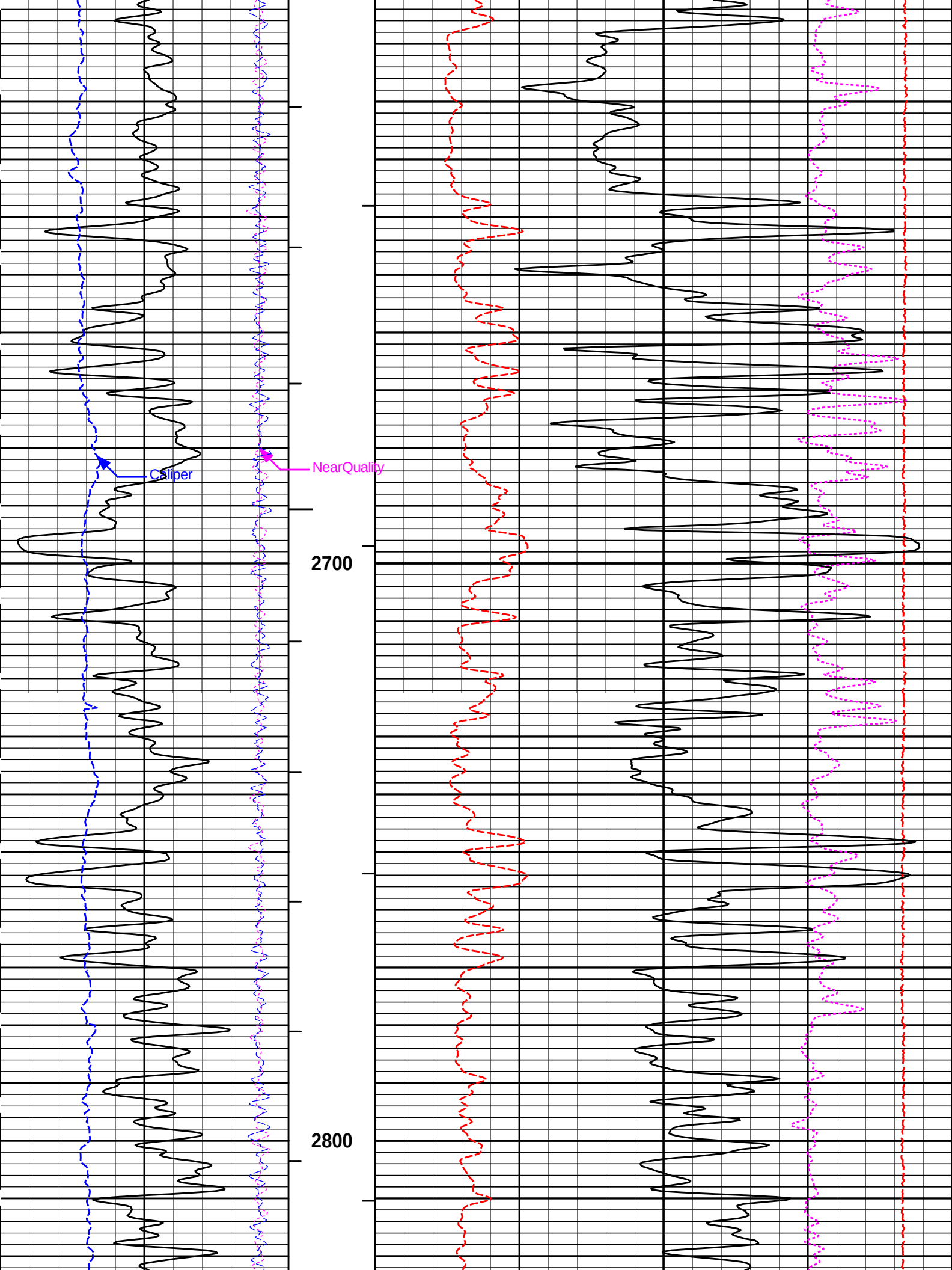

18
FarQuality
-2
-18
NearQuality
2
6
Caliper
16
inches
BHV
ft3
AHV
ft3
MD
1 : 240
ft
2
Bulk Density
3
g/cc
15K
Tension
0
pounds
0
Pe
10
-0.25
DensityCorr
0.25
g/cc
Gamma Ray
Pe
DensityCorr
Bulk Density
1600
1700

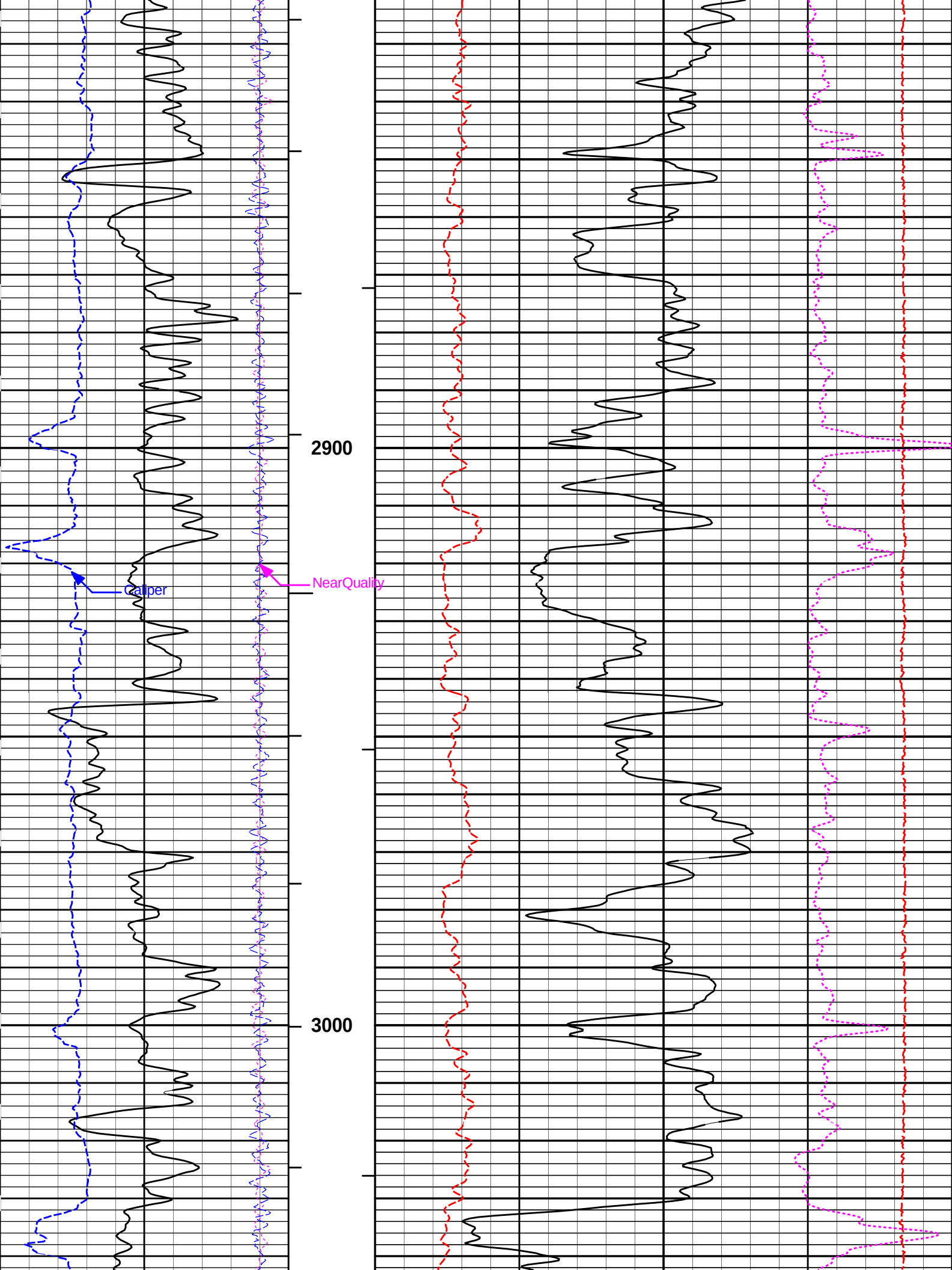

Caliper
NearQuality
1800
1900

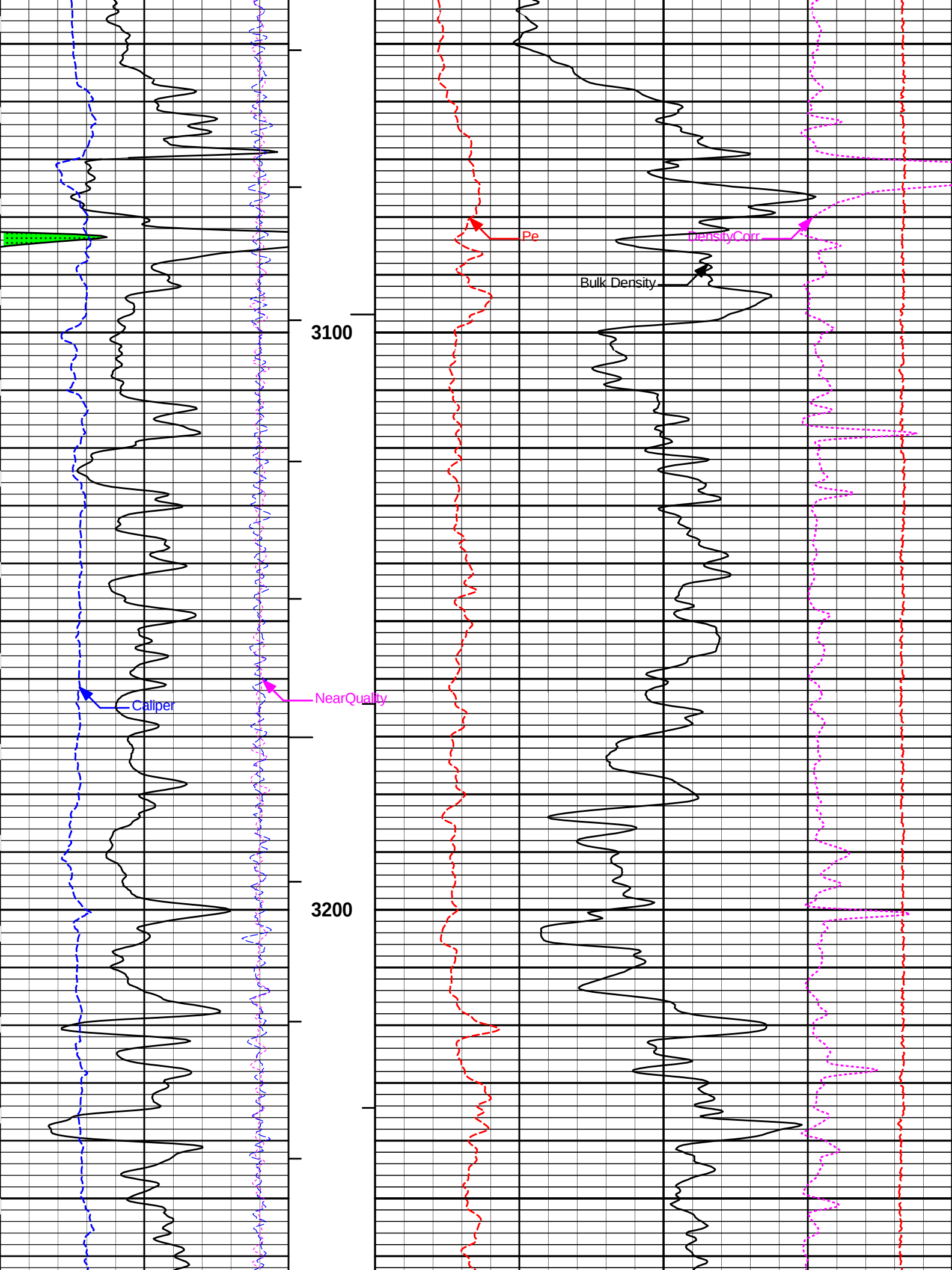

Caliper
NearQuality
2000
Gamma Ray
Pe
DensityCorr
Bulk Density
2100

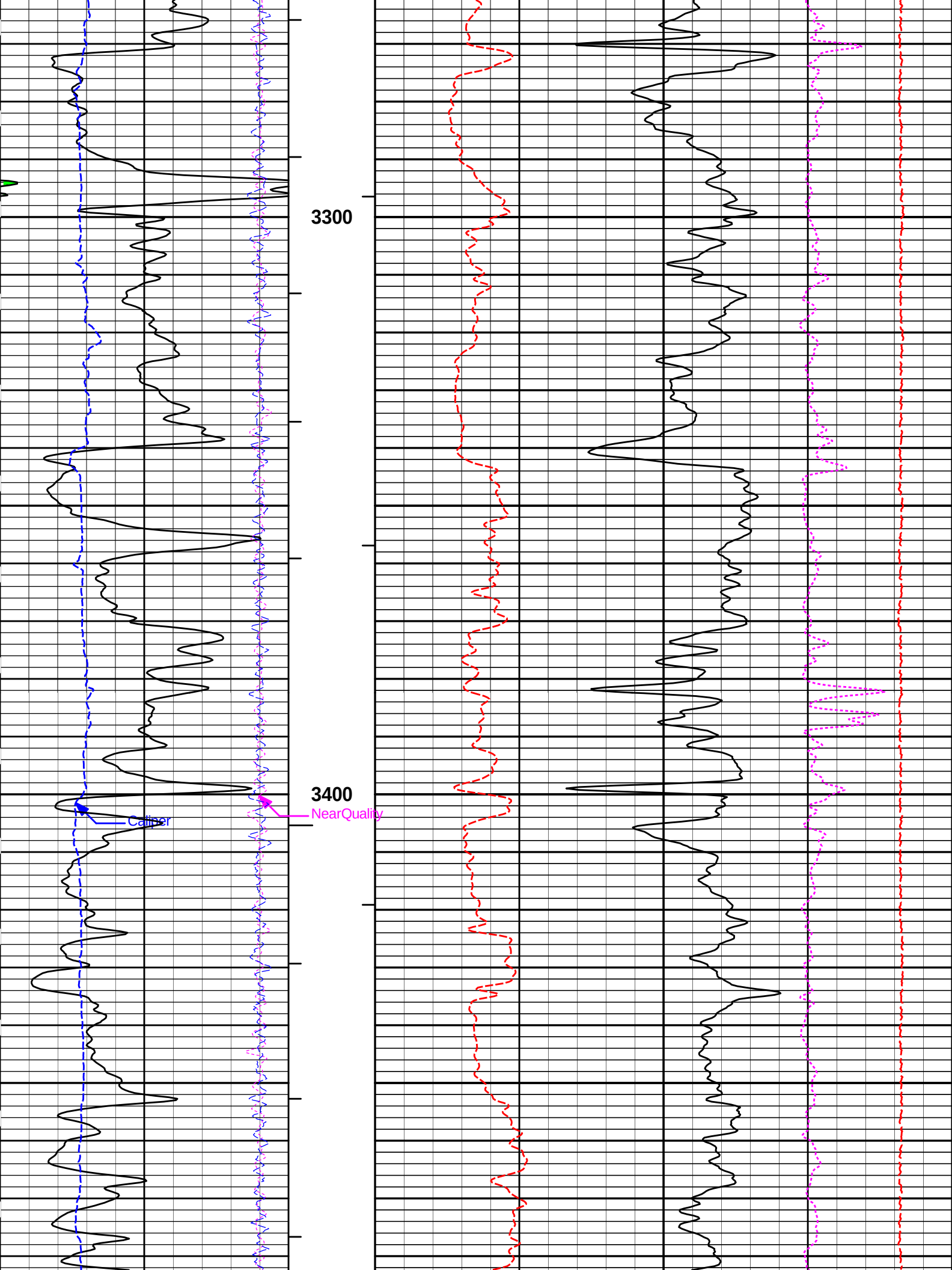

2200
2300
Caliper
NearQuality


2400
2500
2600
Caliper
NearQuality
ERGamma Ray
Pe
Bulk Density
DensityCorr


Caliper
NearQuality
2700
2800


2900
3000
Caliper
NearQuality


Pe
DensityCorr
Bulk Density
3100
Caliper
NearQuality
3200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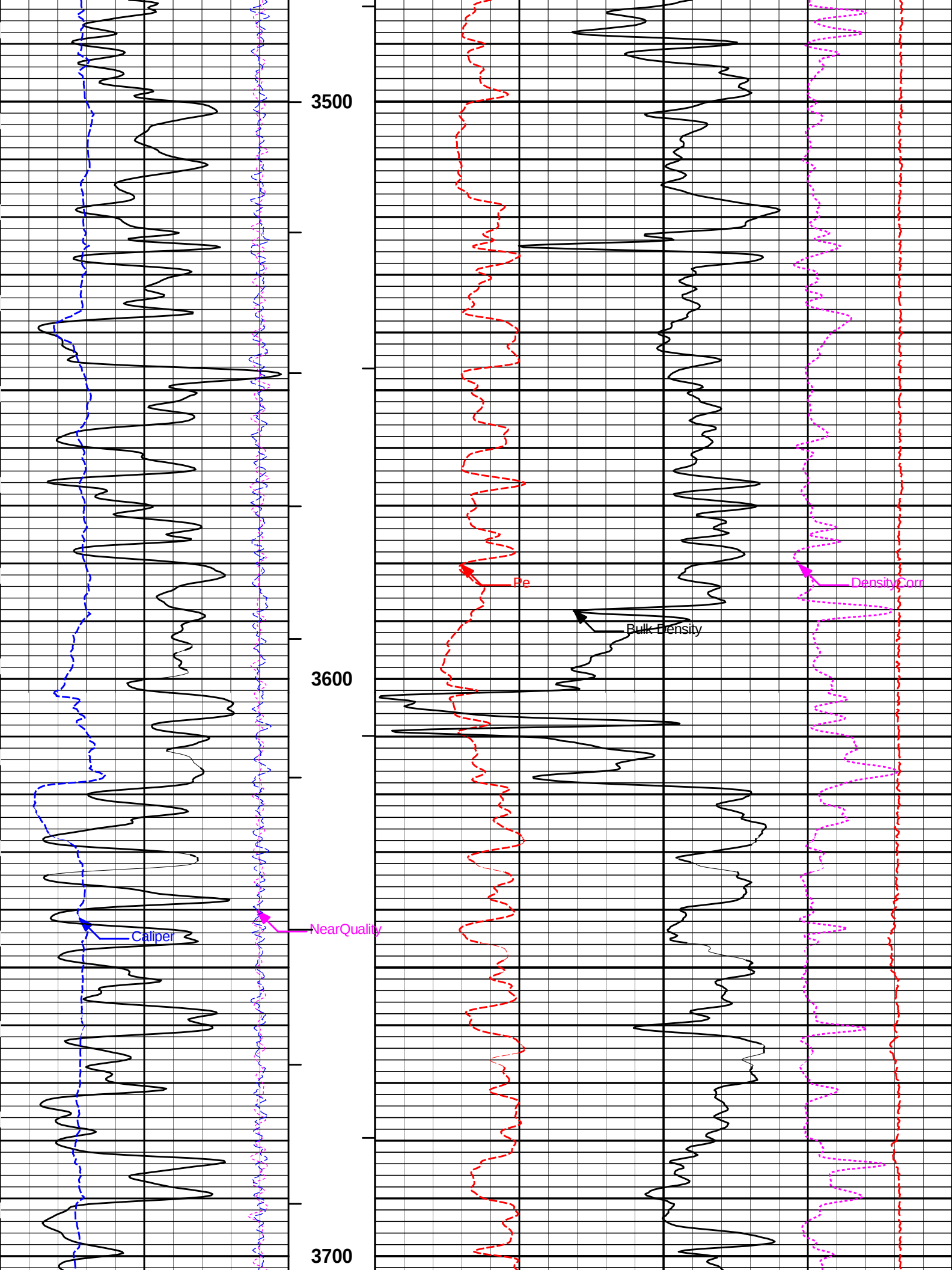
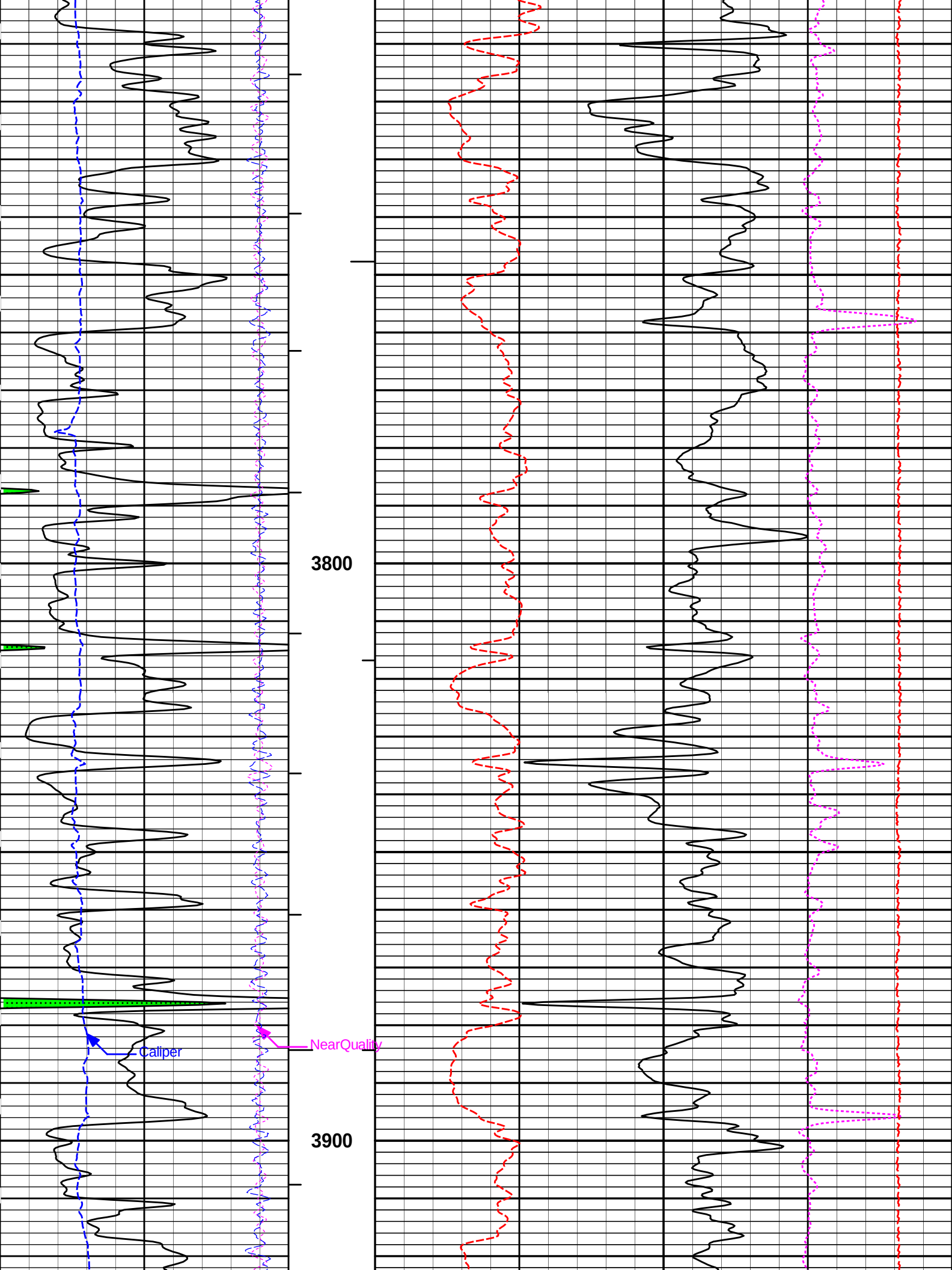
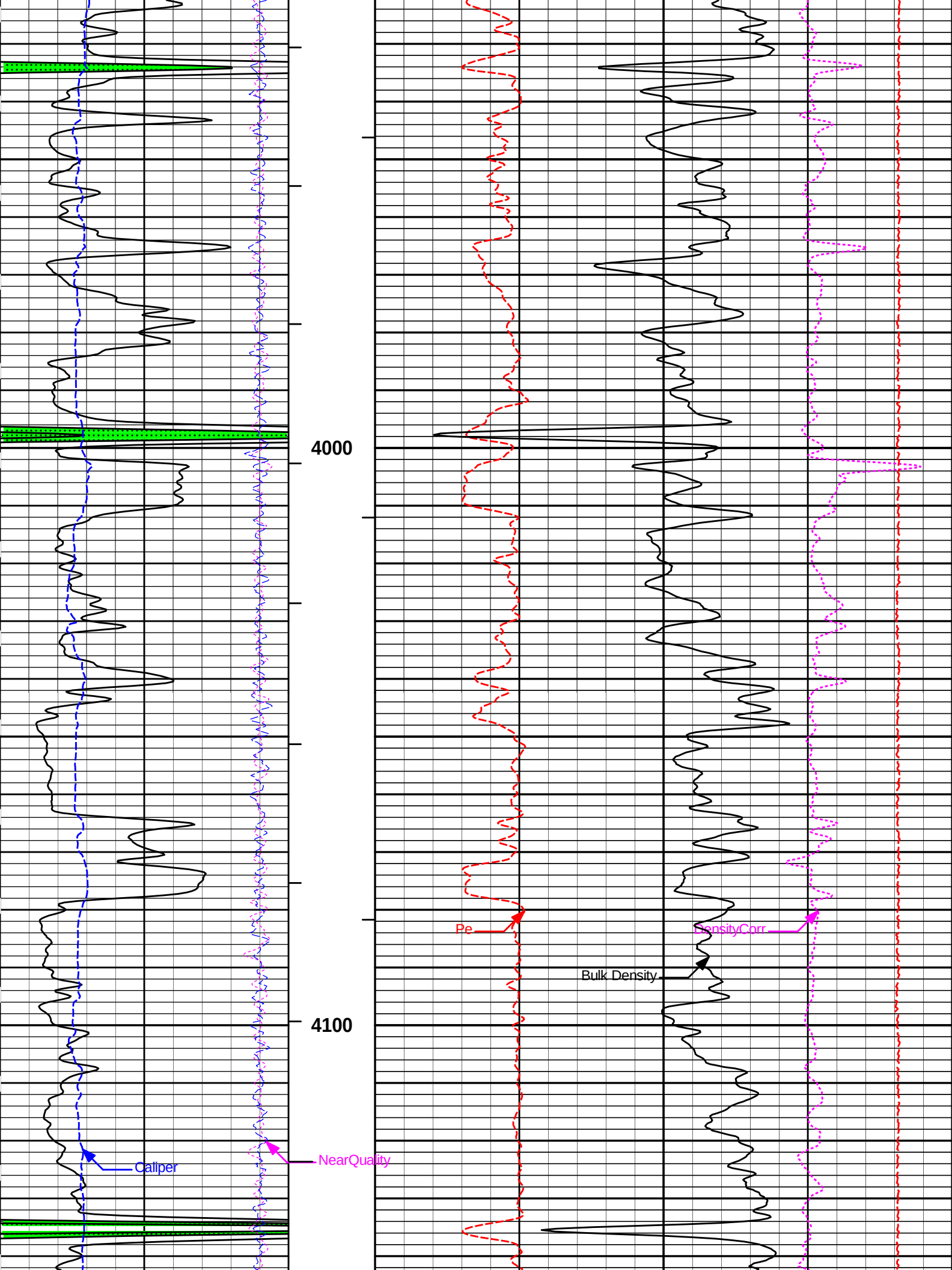
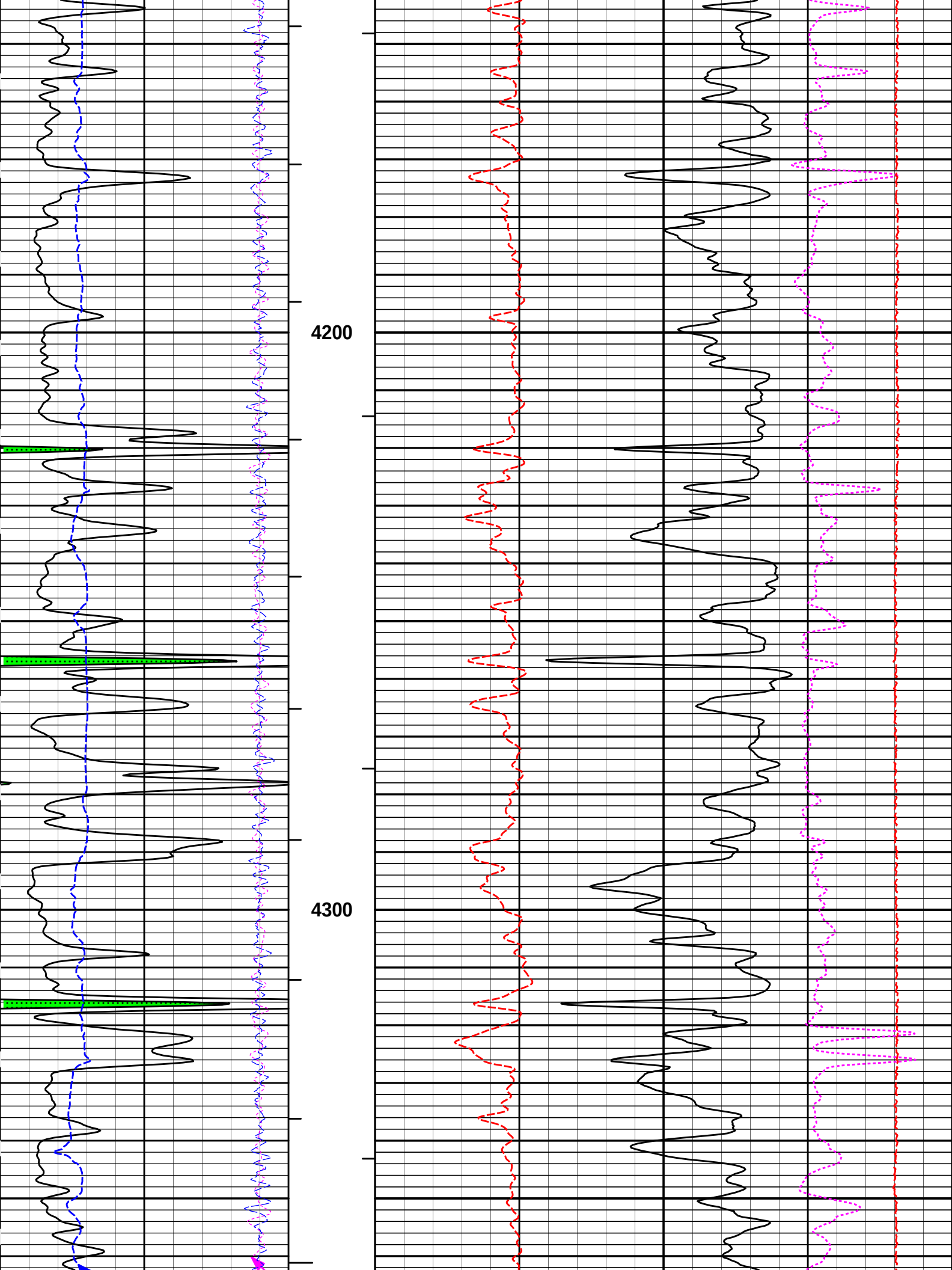
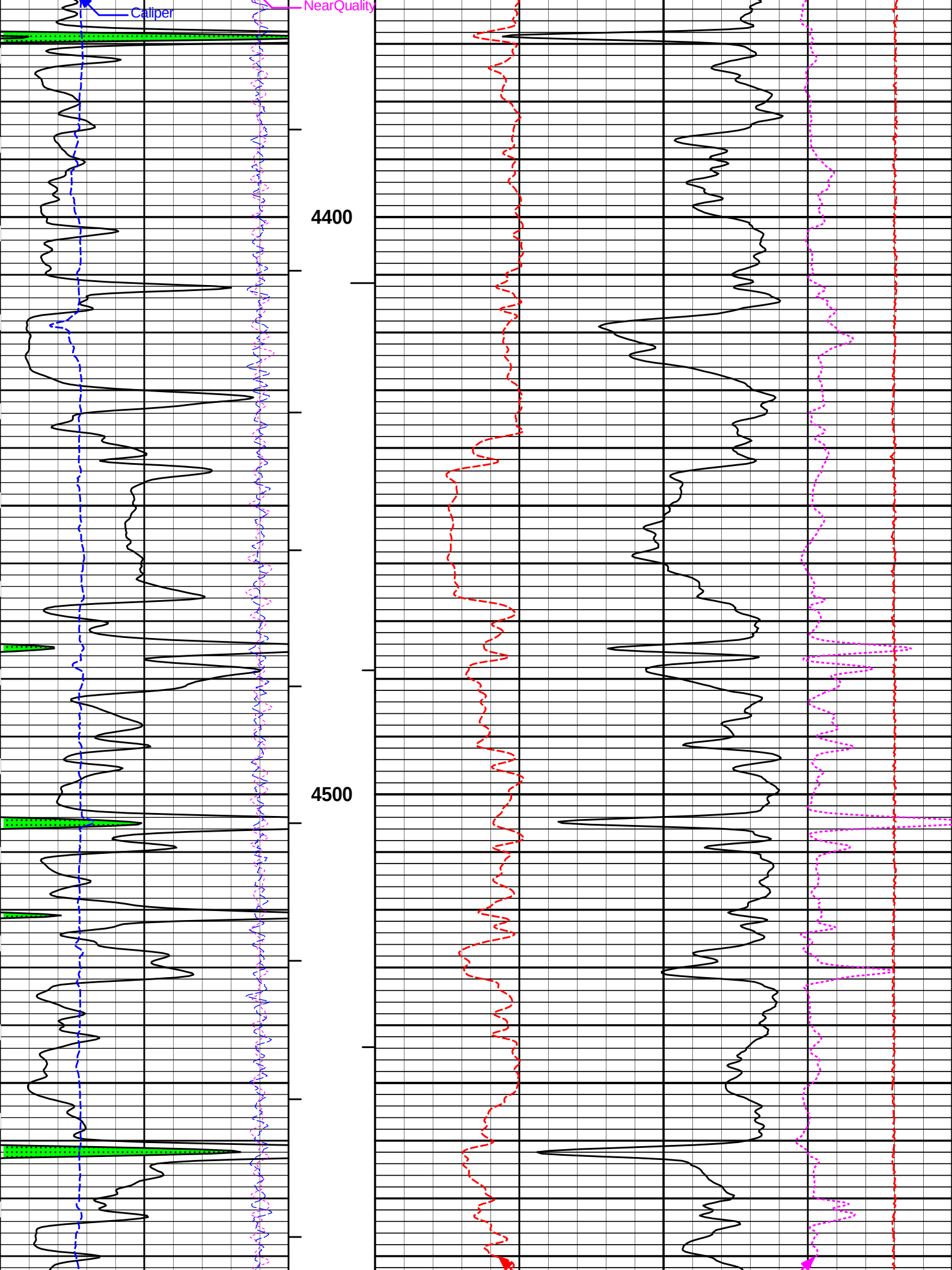
3400
Caliper
NearQuality

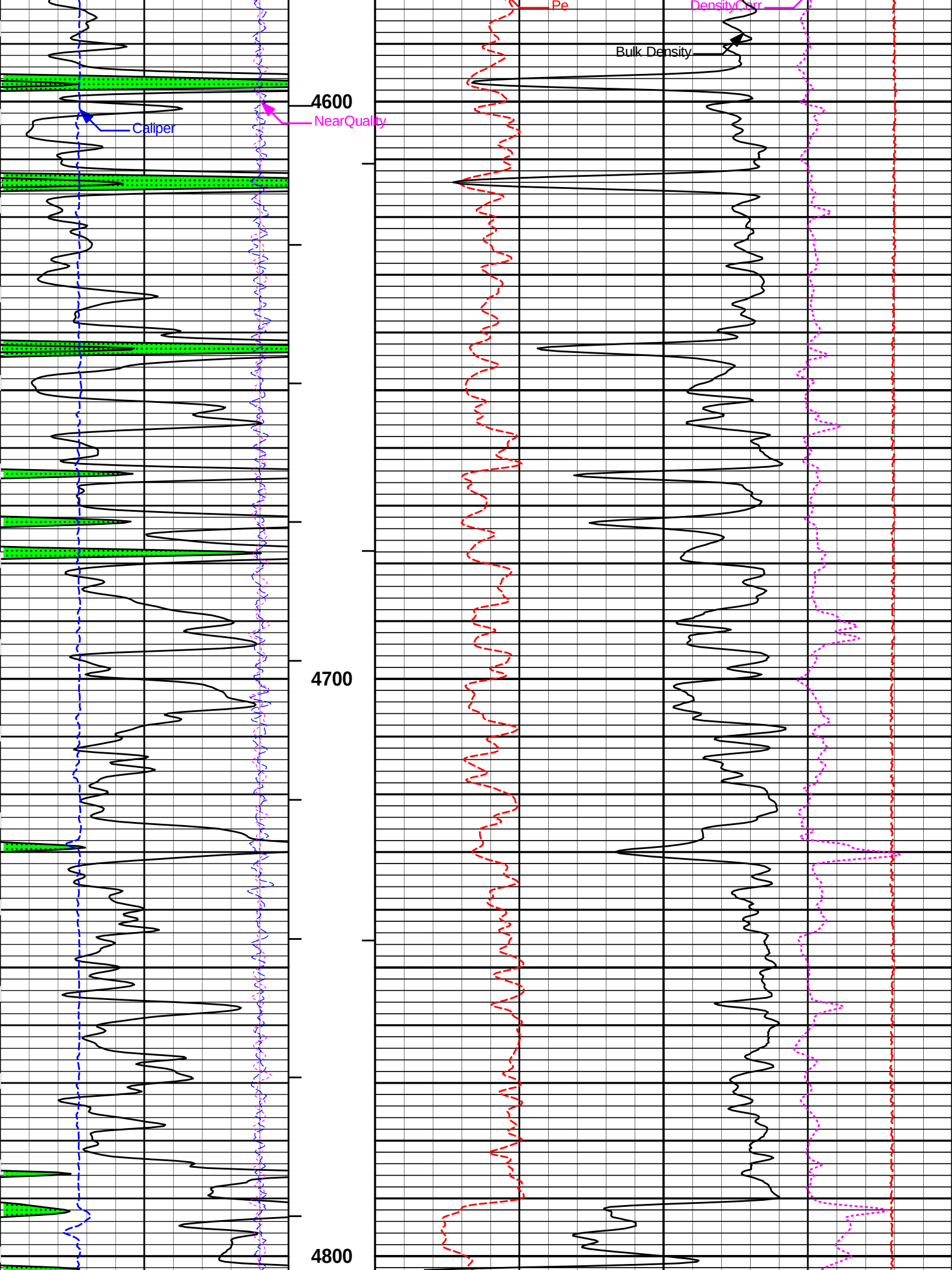

3500
3600
3700
Caliper
NearQuality
Pe
Bulk Density
DensityCorr

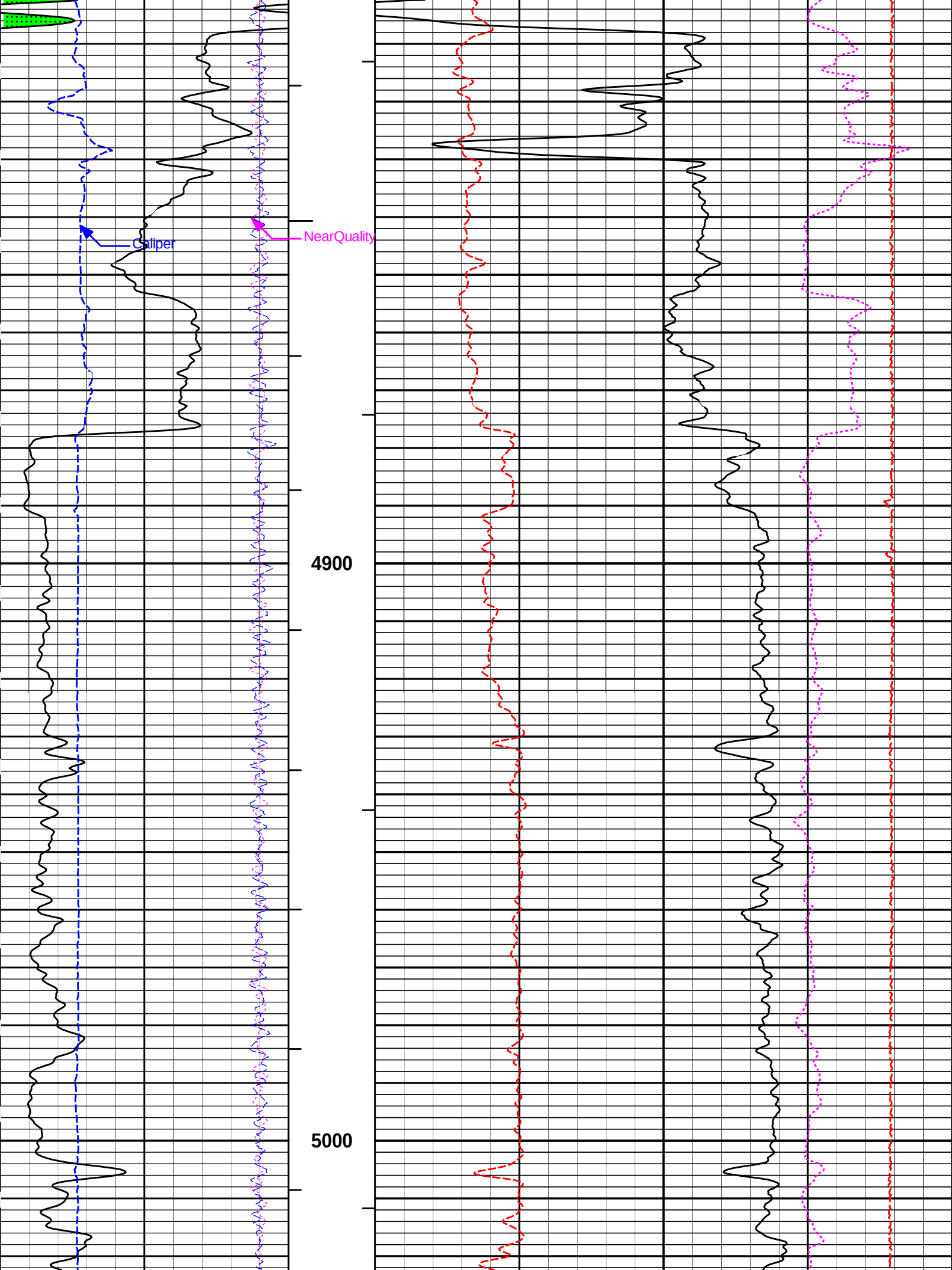

3800
3900
Caliper
NearQuality

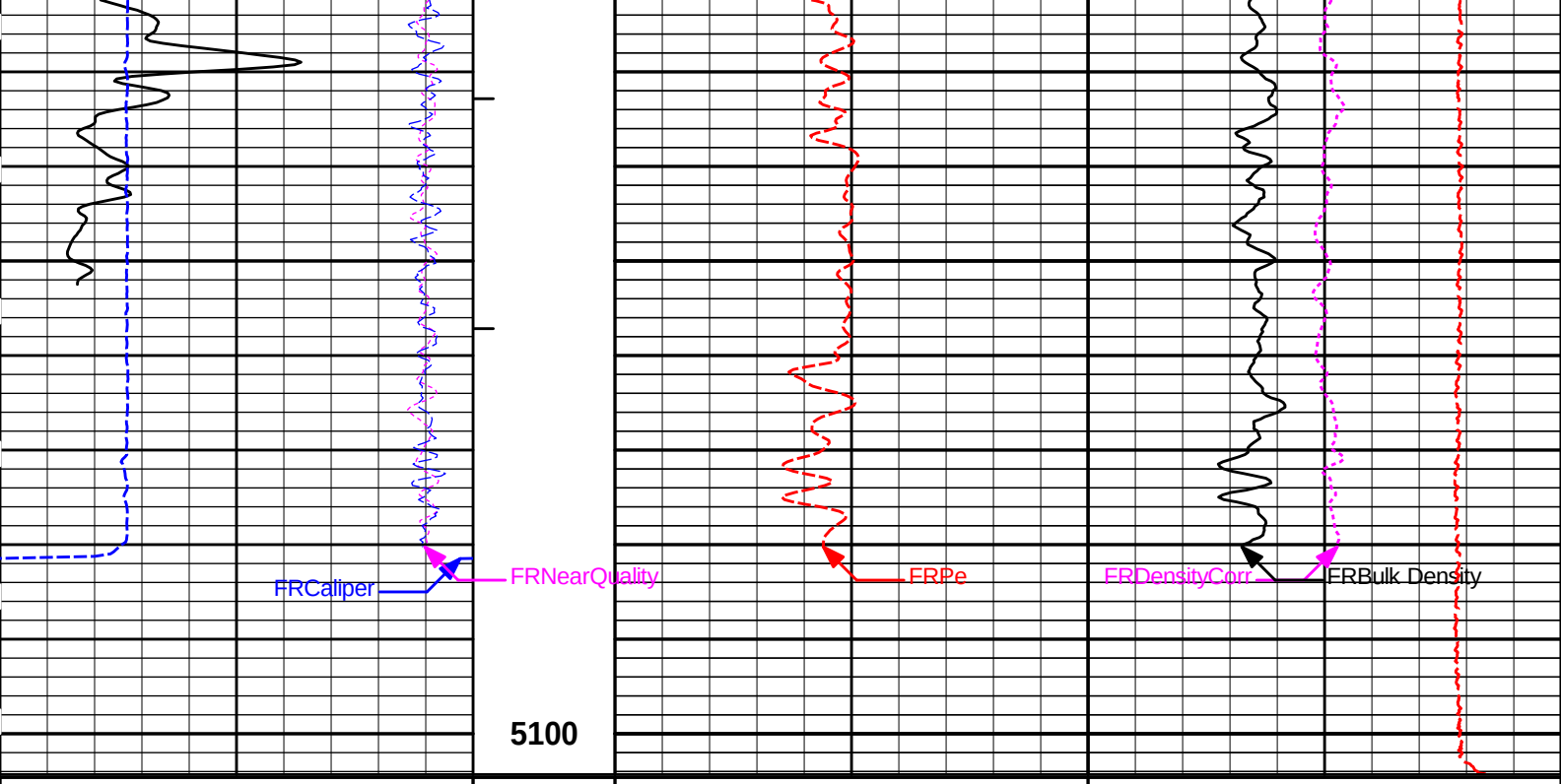

4000
4100
Caliper
NearQuality
Pe
DensityCorr
Bulk Density


4200
4300


Caliper
NearQuality
4400
4500


Pe
DensityCorr
Bulk Density
Caliper
NearQuality
4600
4700
4800


Caliper
NearQuality
4900
5000



6 Caliper 16 inches	MD 1 : 240 ft	0 Pe 10 -0.25 DensityCorr 0.25 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: 18-Dec-13 10:16:02
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\BULKD_5_MAIN_LIB

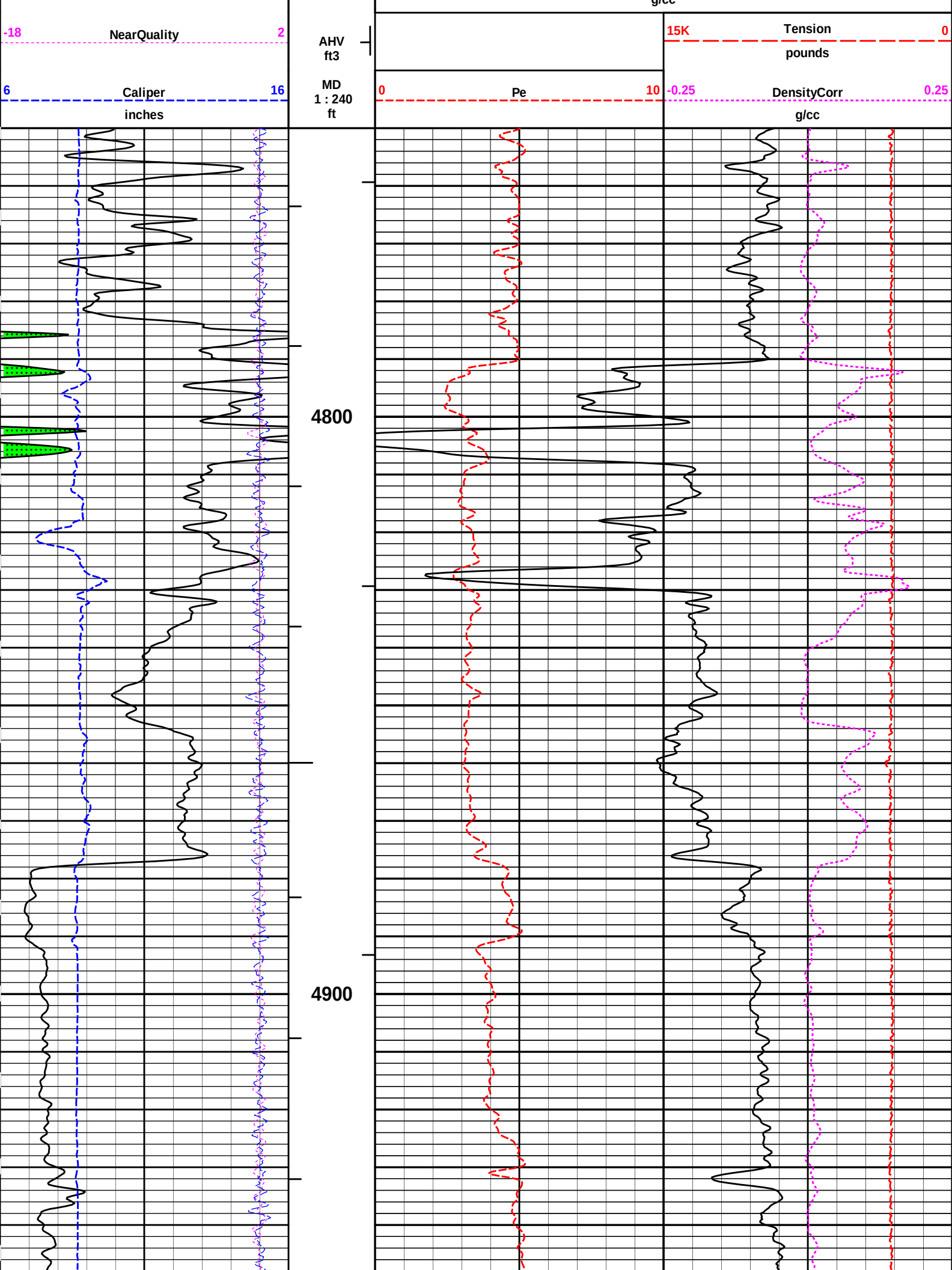
5 INCH MAIN LOG

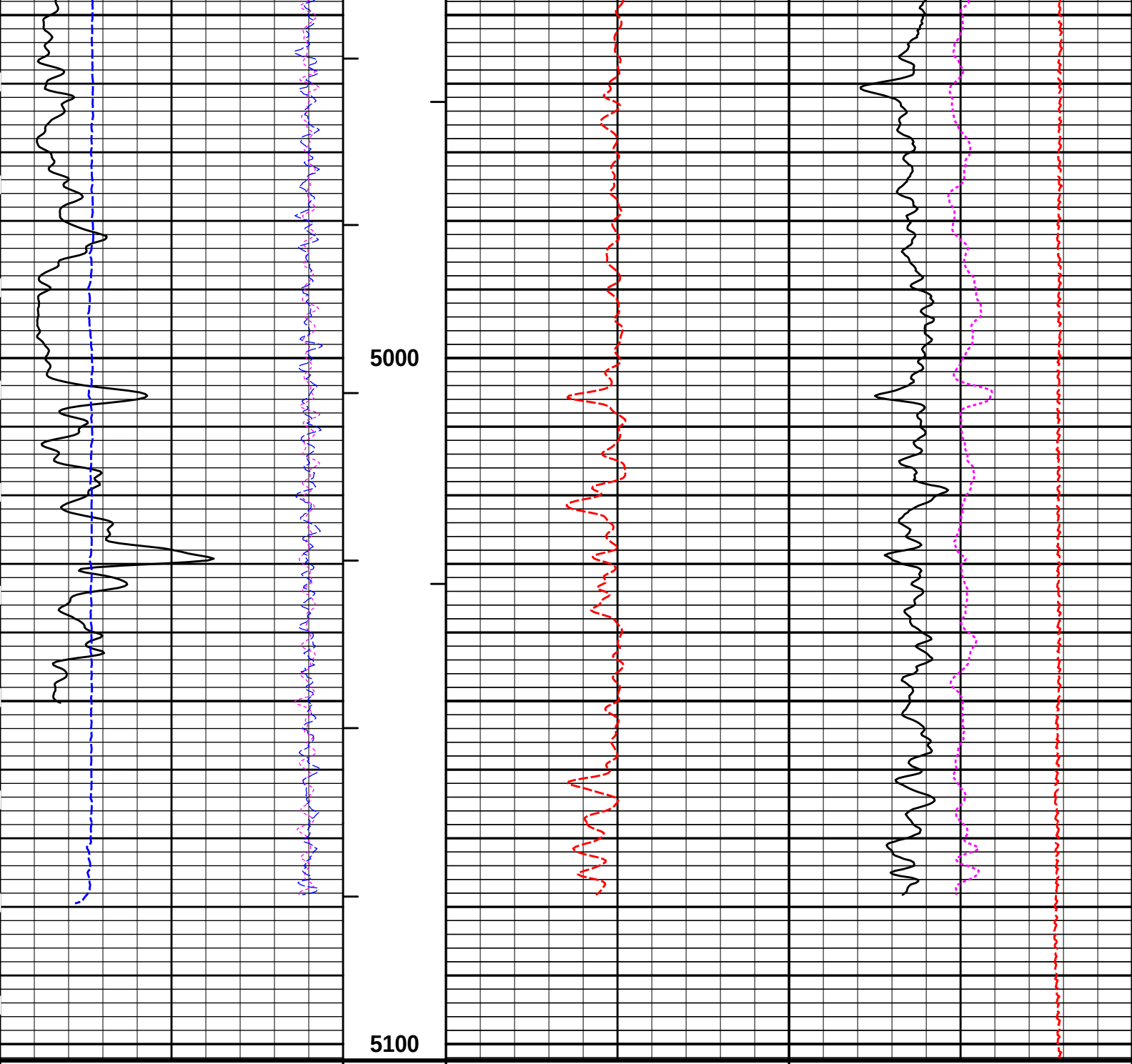
HALLIBURTON

Plot Time: 18-Dec-13 10:16:02
Plot Range: 4750 ft to 5102.25 ft
Data: MAZANEC_1735\Well Based\R1 REPEAT\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\BULKD_5_REP_LIB

REPEAT SECTION

SHALE		
0 Gamma Ray 150 api		
18 FarQuality -2	BHV ft3	2 Bulk Density 3 g/cc


-18
NearQuality
2
6
Caliper
16
inches
AHV
ft3
MD
1 : 240
ft
0
Pe
10
g/cc
15K
Tension
0
pounds
-0.25
DensityCorr
0.25
g/cc
4800
4900



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

HALLIBURTON

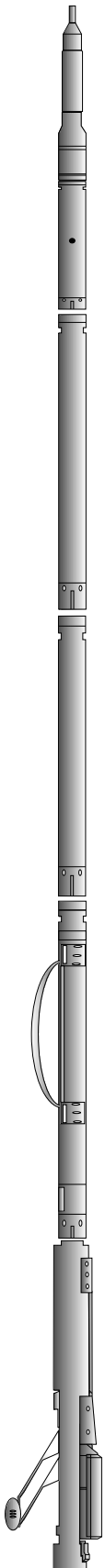
Plot Time: 18-Dec-13 10:16:04
Plot Range: 4750 ft to 5102.25 ft
Data: MAZANEC_1735\Well Based\R1 REPEAT\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\BULKD_5_REP_LIB

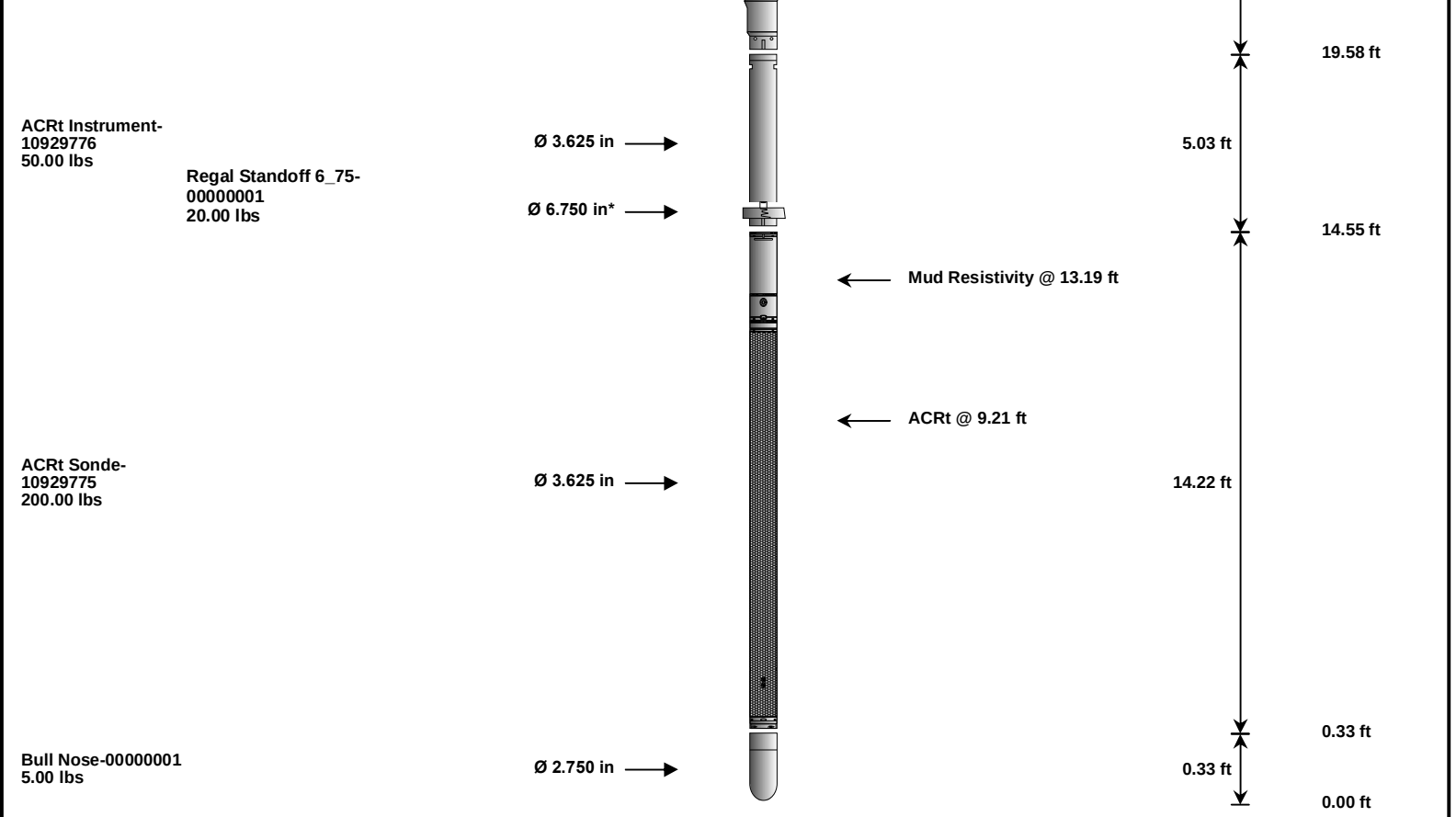
REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						64.49 ft
CH_HOS-954 37.50 lbs		Ø 2.750 in		Temperature @ 63.46 ft	3.03 ft	
						61.46 ft
XOHD-00000001 20.00 lbs		Ø 2.750 in Ø 3.625 in			0.95 ft	
						60.51 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in		SP @ 58.73 ft	3.74 ft	
						56.77 ft
GTET-10748374 165.00 lbs		Ø 3.625 in		GammaRay @ 50.71 ft	8.52 ft	
						48.25 ft
CSNG-11830417 114.00 lbs		Ø 3.625 in		CSNG @ 42.62 ft	8.17 ft	
						40.08 ft
DSNT-10735145 174.00 lbs	DSN Decentralizer-10755066 6.60 lbs	Ø 5.000 in* Ø 3.625 in		DSN Far @ 33.15 ft DSN Near @ 32.40 ft	9.69 ft	
						30.40 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 @ 22.58 ft SDL Caliper @ 22.40 ft SDL @ 22.39 ft	10.81 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		61.46	300.00
XOHD	Hostile to Dits Cross Over	00000001	20.00	0.95		60.51	300.00
SP	SP Sub	12345678	60.00	3.74		56.77	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52		48.25	60.00
CSNG	Compensated Spectral Natural Gamma	11830417	114.00	8.17		40.08	15.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69		30.40	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	10673803	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	10673790	65.00	2.55	*	21.79	60.00
MICP	Microlog Pad	10673803	8.00	1.00	*	22.08	60.00
ACRt	Array Compensated True Resistivity Instrument Section	10929776	50.00	5.03		14.55	300.00
RSOF	Regal Standoff 6.75in	00000001	20.00	0.52	*	14.87	300.00
ACRt	Array Compensated True Resistivity Sonde Section	10929775	200.00	14.22		0.33	300.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,285.10**	**64.49**			

* Not included in Total Length and Length Accumulation.

Data: MAZANEC_1735\0001 SP-GTET-CSNG-DSN-SDL-ACRT-BN\IDLE **Date: 18-Dec-13 01:12:48**

HALLIBURTON

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	8.750	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.300	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	1.000	ohmm
SHARED	TRM	Temperature of Mud	75.0	degF
SHARED	CSD	Logging Interval is Cased?	No	
SHARED	ICOD	AHV Casing OD	7.000	in
SHARED	ST	Surface Temperature	75.0	degF
SHARED	TD	Total Well Depth	5100.00	ft
SHARED	BHT	Bottom Hole Temperature	130.0	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	
CSNG	CGOK	Process CSNG Data?	Yes	
CSNG	CENT	Is Tool Centralized?	No	
CSNG	GBOK	Gamma Enviromental Corrections?	Yes	
CSNG	BARF	Barite Correction Factor	1.00	
CSNG	ORDG	Use Fixed Gain	No	
CSNG	ORDO	Use Fixed Offset	No	
CSNG	ORDR	Use Fixed Resolution Degradation Factor	No	
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	

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

Data: MAZANEC_1735\0001 SP-GTET-CSNG-DSN-SDL-ACRT-BN\002 18-Dec-13 01:44 Dn @1418.3f **Date: 18-Dec-13 02:02:11**

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 10748374**	**Reference Calibration Date:**	**11-Oct-13 12:41:08**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**25-Nov-13 16:08:30**
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	48.3	47.5	api
Background + Calibrator	284.0	279.5	api
Calibrator	235.7	232.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 10748374**	**Reference Calibration Date:**	**25-Nov-13 16:08:30**
Engineer:	**S. INGERSOLL**	**Calibration Date:**	**17-Dec-13 16:42:52**
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	47.5	44.8	api
Background + Calibrator	279.5	278.9	api
Calibrator	232.0	234.1	api

Shop	Field	Difference	Tolerance
232.0	234.1	-2.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 10735145**	**Reference Calibration Date:**	**11-Oct-13 10:26:50**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**25-Nov-13 16:01:00**
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: 65 degF

Min. Tool Housing Outside Diameter: 3.620 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.937	0.934	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):	0.2116	0.2106	0.0010	+/- 0.0020
Calibrated Ratio:	9.75	9.72	0.034	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0542	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:**	**25-Nov-13 16:01:00**
Engineer:	**S. INGERSOLL**	**Calibration Date:**	**17-Dec-13 16:51:44**
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):	0.0542	0.0675	0.0133	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10673803**	**Reference Calibration Date:**	**25-Nov-13 13:08:55**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**25-Nov-13 15:18:24**
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	-4294.16	-4768.02	-7000.00 - -1000.00
Pad Gain	0.0003841	0.0004084	0.000200 - 0.000600
Arm Offset	-4940.33	-4669.95	-5000.00 - 3000.00
Arm Gain	0.0005202	0.0005357	0.000300 - 0.000700
Arm Power	-0.000005111	-0.000005963	-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)	2.06	2.00	-0.06	+/- 0.20
Medium Ring (in)	3.71	3.75	0.04	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.51	6.50	-0.01	+/- 0.20
Medium Ring (in)	8.23	8.25	0.02	+/- 0.20
Large Ring (in)	15.03	15.00	-0.03	+/- 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:**	**25-Nov-13 15:18:24**
Engineer:	**S. INGERSOLL**	**Calibration Date:**	**17-Dec-13 16:42:41**
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	3.72	-0.03	+/- 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:**	**11-Oct-13 11:56:50**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**25-Nov-13 12:49:33**
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	1.0604	1.0559	0.90 - 1.10
Near Dens Gain	1.0496	1.0423	0.90 - 1.10
Near Peak Gain	1.0680	1.0682	0.90 - 1.10
Near Lith Gain	1.0418	1.0451	0.90 - 1.10
Far Bar Gain	1.0101	1.0112	0.90 - 1.10
Far Dens Gain	0.9986	0.9981	0.90 - 1.10
Far Peak Gain	0.9913	0.9917	0.90 - 1.10
Far Lith Gain	0.9641	0.9619	0.90 - 1.10
Near Bar Offset	-0.3009	-0.2494	NONE

Near Dens Offset	-0.1903	-0.1137	NONE
Near Peak Offset	-0.3149	-0.3005	NONE
Near Lith Offset	-0.1105	-0.1162	NONE
Far Bar Offset	0.0802	0.0764	NONE
Far Dens Offset	0.1520	0.1627	NONE
Far Peak Offset	0.1689	0.1700	NONE
Far Lith Offset	0.3034	0.3262	NONE

Near Bar Background	855.34	855.66	700 - 1450
Near Dens Background	279.45	280.02	230 - 480
Near Peak Background	123.75	123.12	100 - 210
Near Lith Background	151.38	151.38	125 - 260
Far Bar Background	574.82	571.53	450 - 900
Far Dens Background	225.45	225.90	175 - 345
Far Peak Background	88.86	90.02	70 - 140
Far Lith Background	92.22	93.21	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.675	1.684	0.009	+/- 0.015
Pe	2.635	2.554	-0.081	+/- 0.150
ALUMINUM				
Density (g/cc)	2.585	2.598	0.013	+/- 0.01500
Pe	3.180	3.122	-0.058	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0013	+/- 0.0110	-0.0020	+/- 0.0140
Magnesium Block	0.0013	+/- 0.0110	0.0008	+/- 0.0140
Aluminum Block	0.0011	+/- 0.0110	-0.0006	+/- 0.0140
Resolution	8.65	6.00 - 11.50	8.94	6.00 - 11.50
Internal Verifier(B+D+P+L)	1410	1200 - 2700	981	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: 25-Nov-13 12:49:33
Engineer: S. INGERSOLL
Calibration Date: 17-Dec-13 16:29:17
Software Version: WL INSITE R3.8.4 (Build 5)
Calibration Version: 1

Pad Temperature: 68.2 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	**Shop**	**Field**	**Change**	**Control Limit +/-**
Near (B+D+P+L) cps	1410.180	1404.643	-5.537	15.162
Far (B+D+P+L) cps	980.652	982.460	1.808	16.810
Near Resolution	8.65	8.67	0.020	0.50
Far Resolution	8.94	9.06	0.120	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	234.1	----------	-2.1	+/- 9.00	api
DSNT-10735145						
Snow-Block Porosity	0.0542	0.0675	----------	-0.0133	+/- 0.0150	decp
SDLT-10673803						
Pad Extension	3.75	3.72	----------	0.03	+/-0.10	in
Ring Diameter	8.25	8.37	----------	-0.12	+/-0.15	in
SDLT Pad-10673790						
Near(B+D+P+L)	1410.180	1404.643	----------	5.537	+/-15.162	cps
Far(B+D+P+L)	980.652	982.460	----------	-1.808	+/-16.810	cps

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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	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	58.73	NO	
SP	Spontaneous Potential	58.73	BLK	1.250
SPR	Raw Spontaneous Potential	58.73	NO	
SPO	Spontaneous Potential Offset	58.73	NO	
GTET				
TPUL	Tension Pull	50.71	NO	
GR	Natural Gamma Ray API	50.71	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	50.71	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	50.71	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
CSNG				
TPUL	Tension Pull	42.62	NO	

STAT	Status	42.62	NO	
FRMC	Tool Frame Count	42.62	BLK	0.250
TFRM	Total Frames	42.62	NO	
LSPD	Line Speed	42.62	BLK	0.250
CTIM	Accumulation time for sample	42.62	BLK	0.250
NOIS	Spectral Noise	42.62	BLK	0.250
STAB	Stabilizer Voltage in mv	42.62	BLK	0.250
STBP	Stabilizer 60 KEV Peak	42.62	BLK	0.250
AMER	Americium	42.62	BLK	0.250
FTMP	Flask PCB Temperature	42.62	BLK	0.250
SPEL	Low Energy Spectrum	42.62	BLK	0.250
SPEH	High Energy Spectrum	42.62	BLK	0.250
SSP	Stabilization Energy Spectrum	42.62	BLK	0.250
CSPC	CSNG Lo Hi Spectrum Data	42.62	NO	
	DSNT			
TPUL	Tension Pull	32.30	NO	
RNDS	Near Detector Telemetry Counts	32.40	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.15	TRI	0.583
DNTT	DSN Tool Temperature	32.40	NO	
DSNS	DSN Tool Status	32.30	NO	
ERND	Near Detector Telemetry Counts EVR	32.40	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.15	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.40	NO	
	SDLT			
TPUL	Tension Pull	22.40	NO	
PCAL	Pad Caliper	22.40	TRI	0.250
ACAL	Arm Caliper	22.40	TRI	0.250
	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

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	22.39	NO	
NAB	Near Above	22.21	BLK	0.920
NHI	Near Cesium High	22.21	BLK	0.920
NLO	Near Cesium Low	22.21	BLK	0.920
NVA	Near Valley	22.21	BLK	0.920
NBA	Near Barite	22.21	BLK	0.920
NDE	Near Density	22.21	BLK	0.920
NPK	Near Peak	22.21	BLK	0.920
NLI	Near Lithology	22.21	BLK	0.920
NBAU	Near Barite Unfiltered	22.21	BLK	0.250
NLIU	Near Lithology Unfiltered	22.21	BLK	0.250
FAB	Far Above	22.56	BLK	0.250
FHI	Far Cesium High	22.56	BLK	0.250
FLO	Far Cesium Low	22.56	BLK	0.250
FVA	Far Valley	22.56	BLK	0.250
FBA	Far Barite	22.56	BLK	0.250
FDE	Far Density	22.56	BLK	0.250
FPK	Far Peak	22.56	BLK	0.250
FLI	Far Lithology	22.56	BLK	0.250
PTMP	Pad Temperature	22.40	BLK	0.920
NHV	Near Detector High Voltage	21.79	NO	
FHV	Far Detector High Voltage	21.79	NO	
ITMP	Instrument Temperature	21.79	NO	
DDHV	Detector High Voltage	21.79	NO	

Microlog Pad

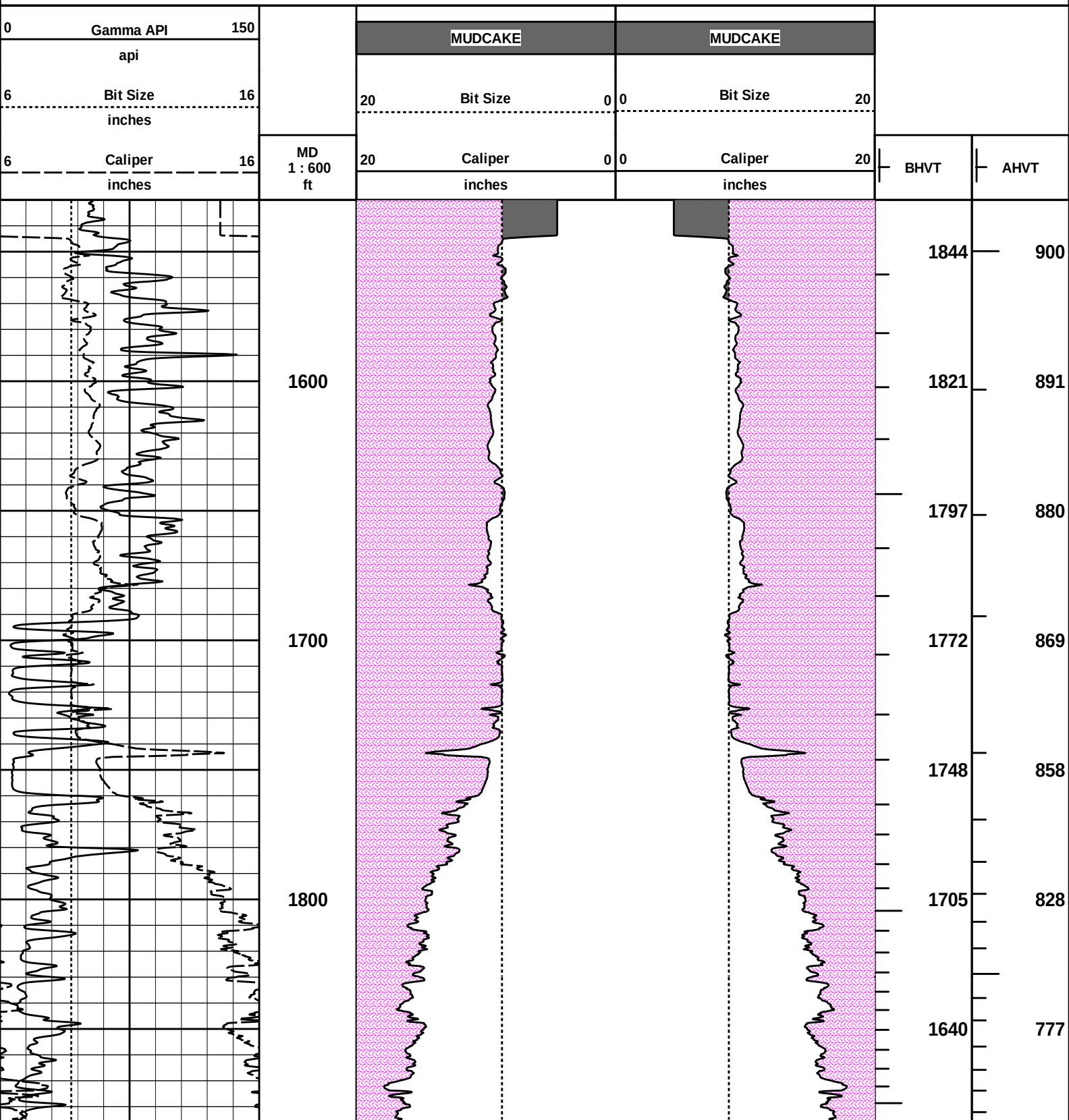
TPUL	Tension Pull	22.58	NO	
MINV	Microlog Lateral	22.58	BLK	0.750
MNOR	Microlog Normal	22.58	BLK	0.750

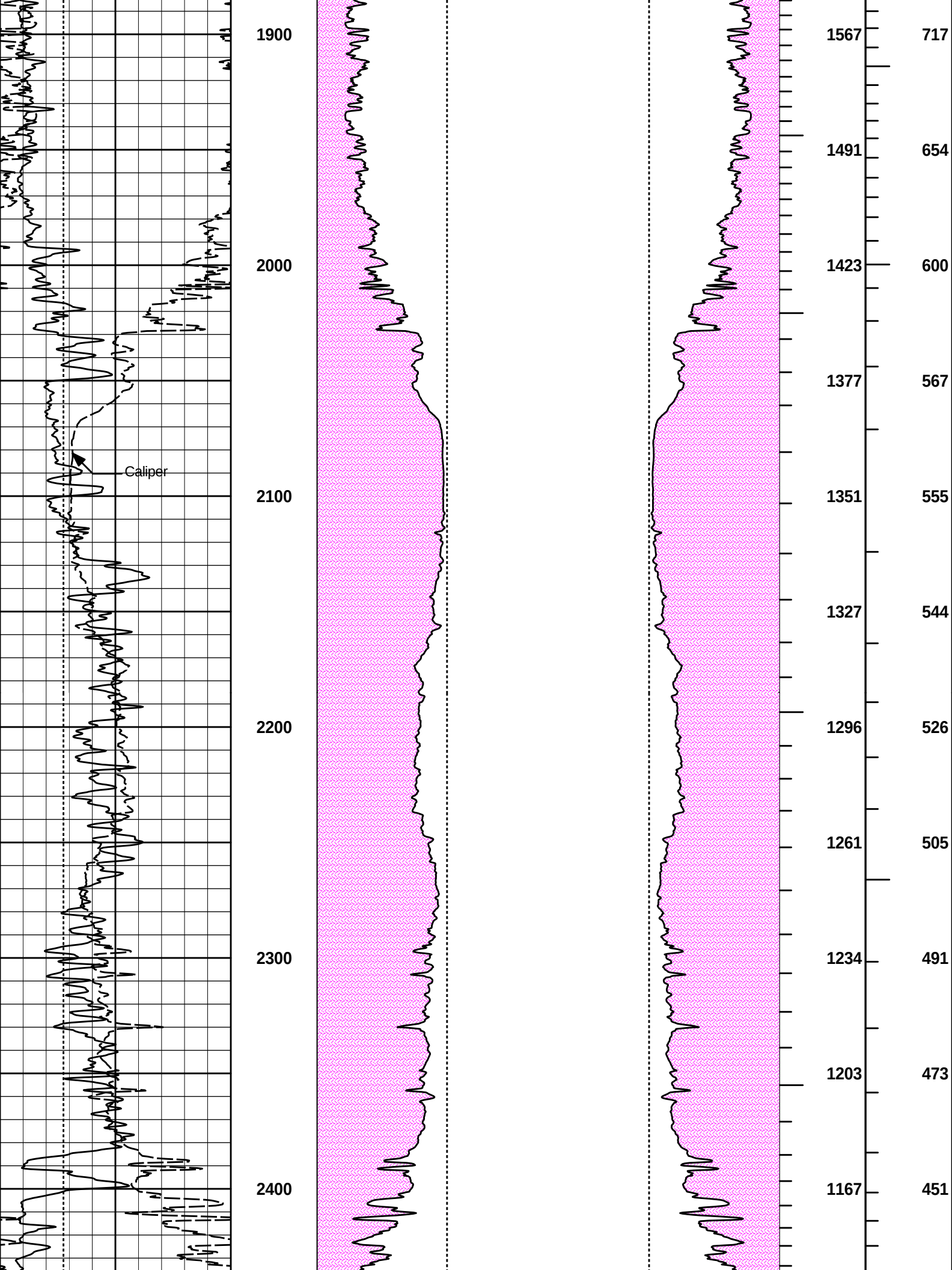
Data: MAZANEC_1735\0001 SP-GTET-CSNG-DSN-SDL-ACRT-BN\002 18-Dec-13 01:44 Dn @1418.3f Date: 18-Dec-13 02:01:45

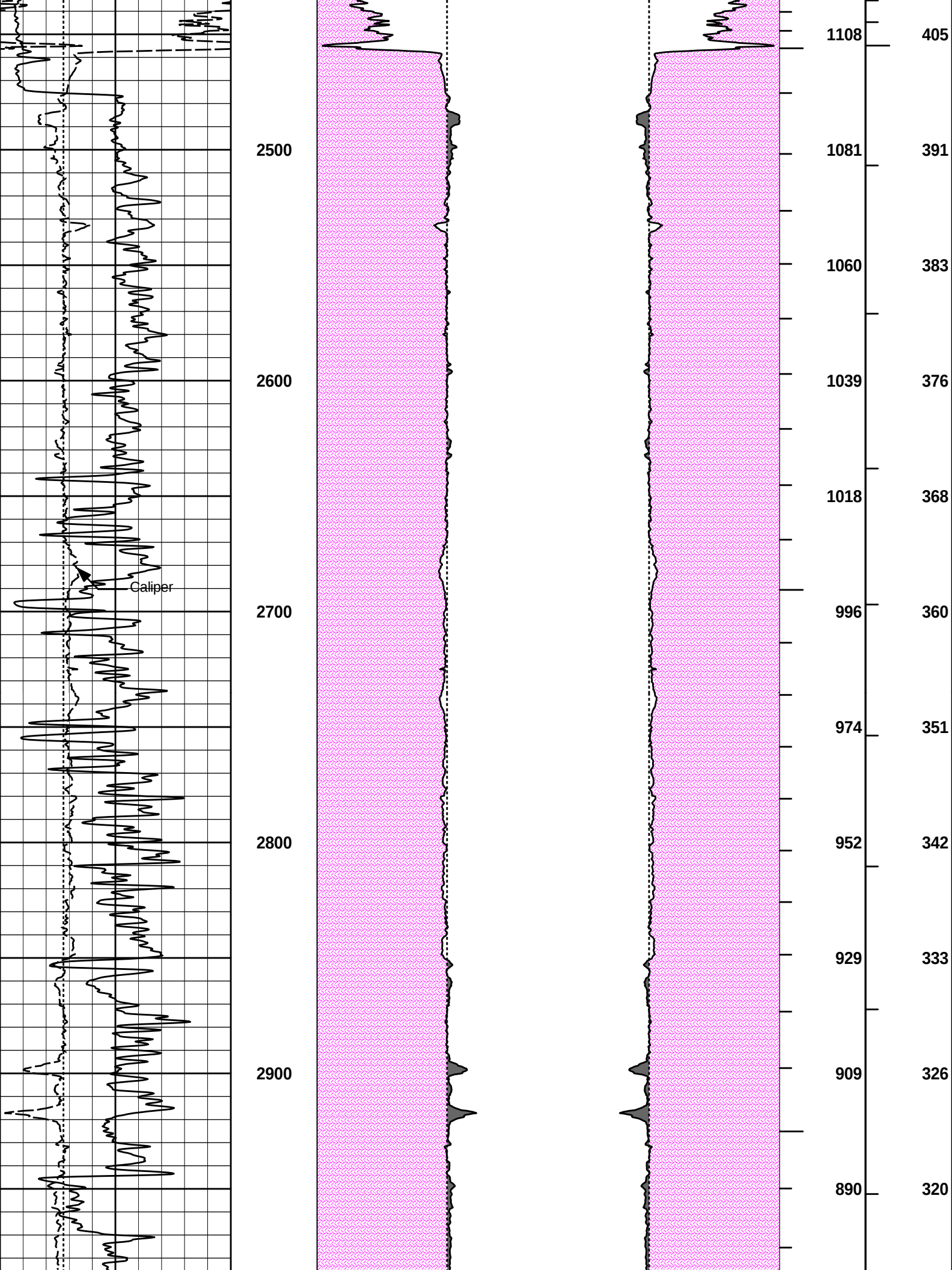
HALLIBURTON

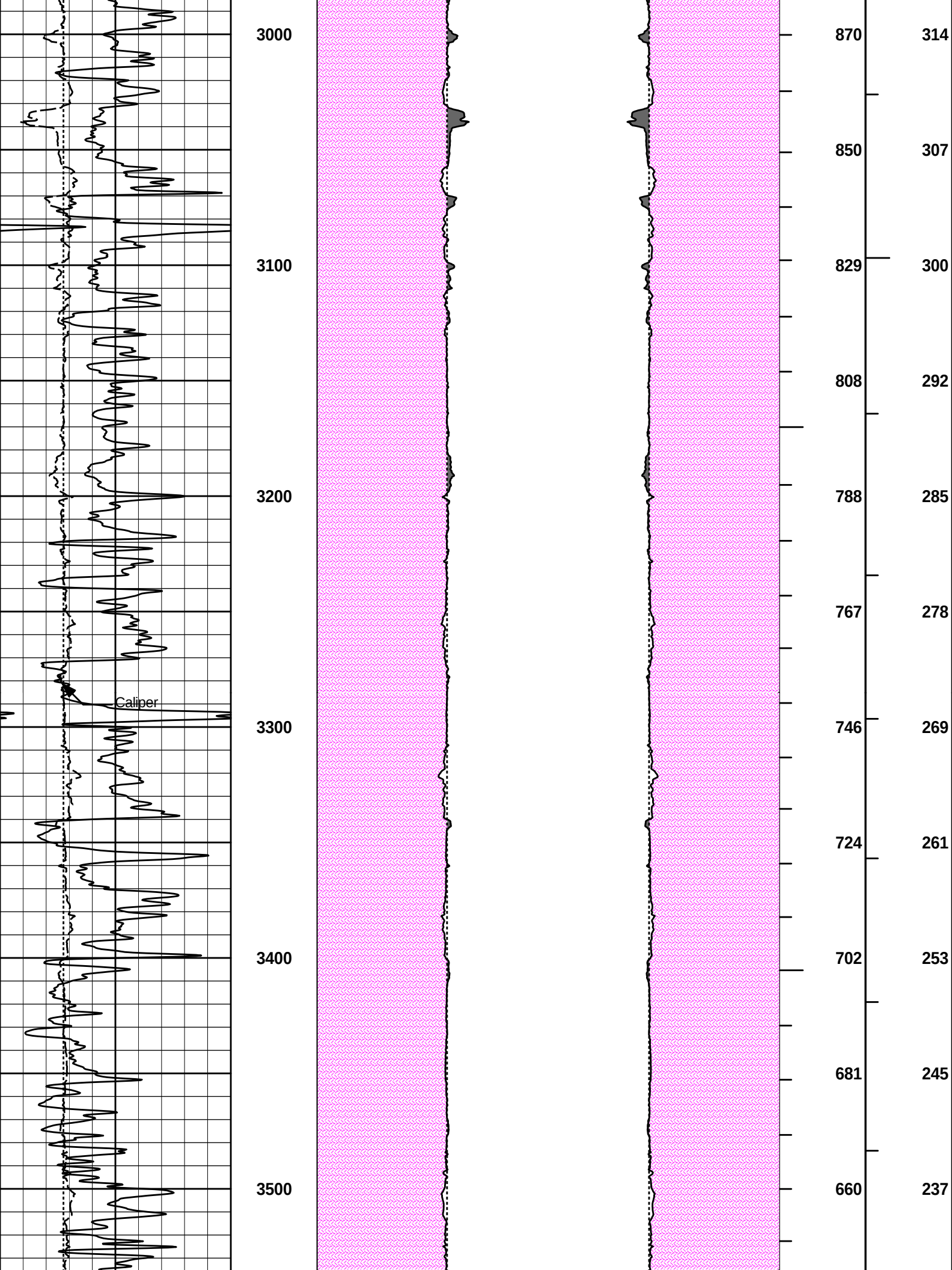
Plot Time: 18-Dec-13 10:16:04
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\AHV_2_IQ_LIB

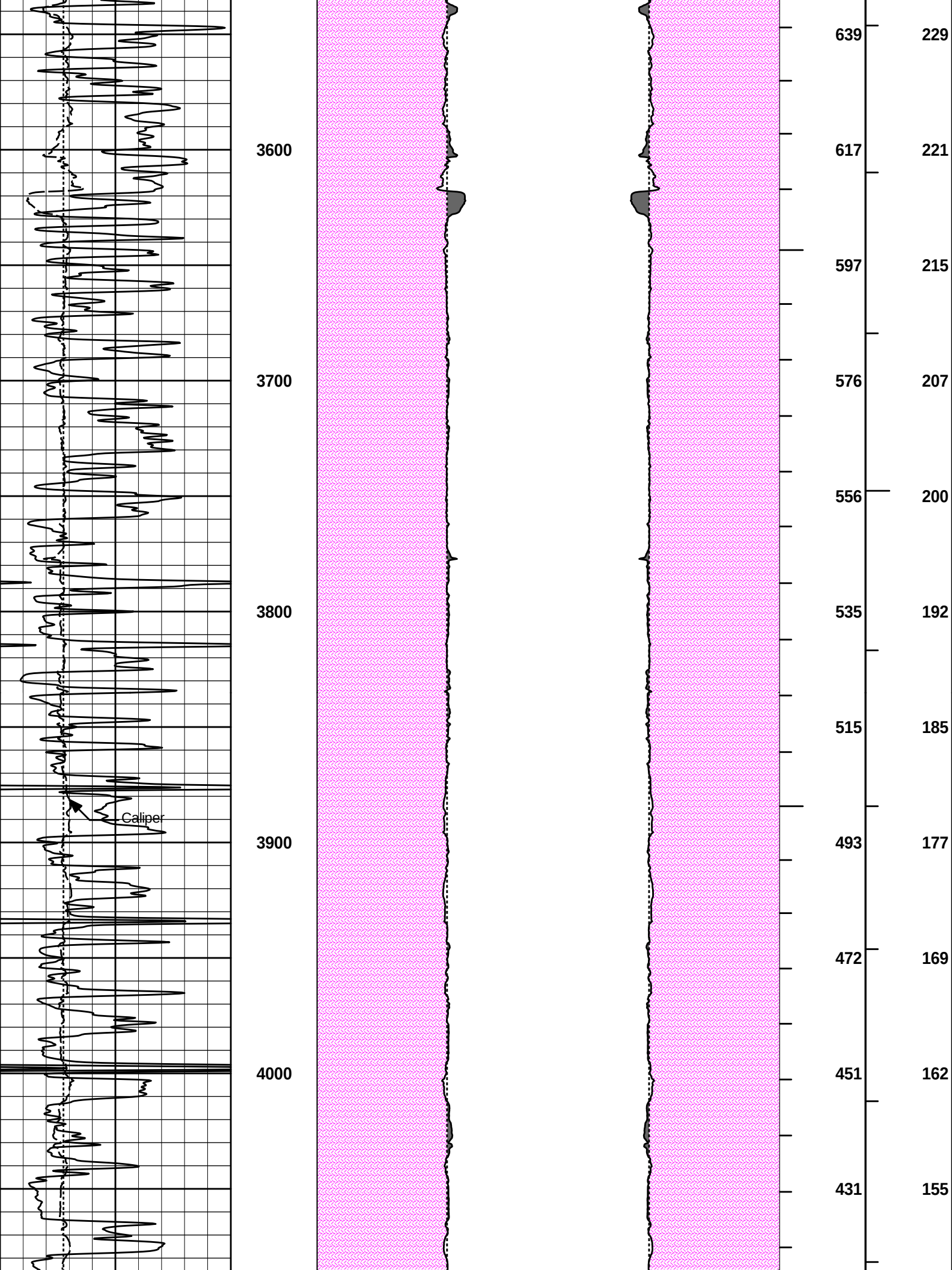
ANNULAR HOLE VOLUME PLOT




Caliper
1900
2000
2100
2200
2300
2400
1567
1491
1423
1377
1351
1327
1296
1261
1234
1203
1167
717
654
600
567
555
544
526
505
491
473
451


Caliper
2500
2600
2700
2800
2900
1108
1081
1060
1039
1018
996
974
952
929
909
890
405
391
383
376
368
360
351
342
333
326
320


Caliper
3000
3100
3200
3300
3400
3500
870
850
829
808
788
767
746
724
702
681
660
314
307
300
292
285
278
269
261
253
245
237


Caliper
3600
3700
3800
3900
4000
639
617
597
576
556
535
515
493
472
451
431
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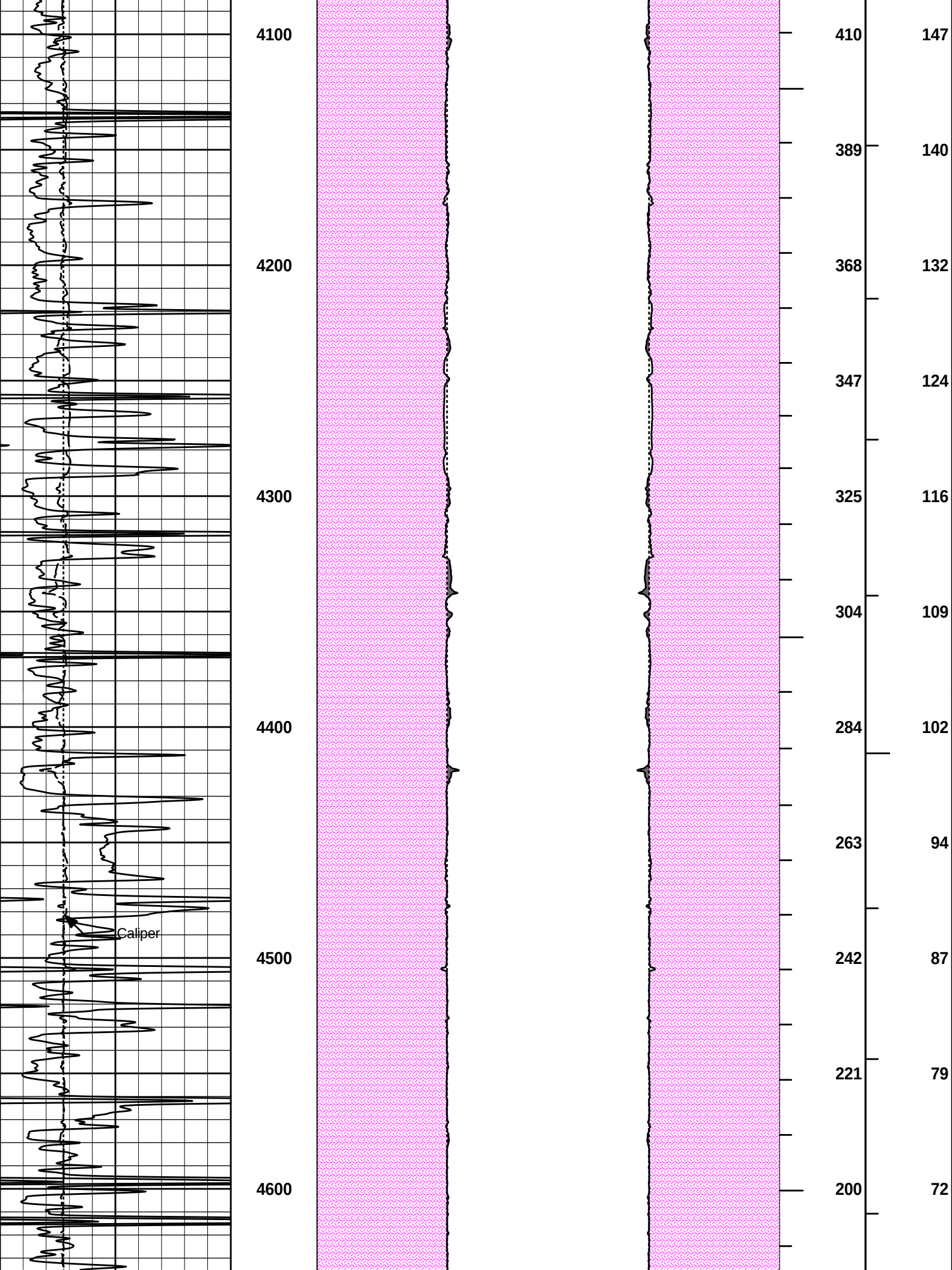
221
215
207
200
192
185
177
169
162
155


4100
4200
4300
4400
4500
4600
Caliper
410
389
368
347
325
304
284
263
242
221
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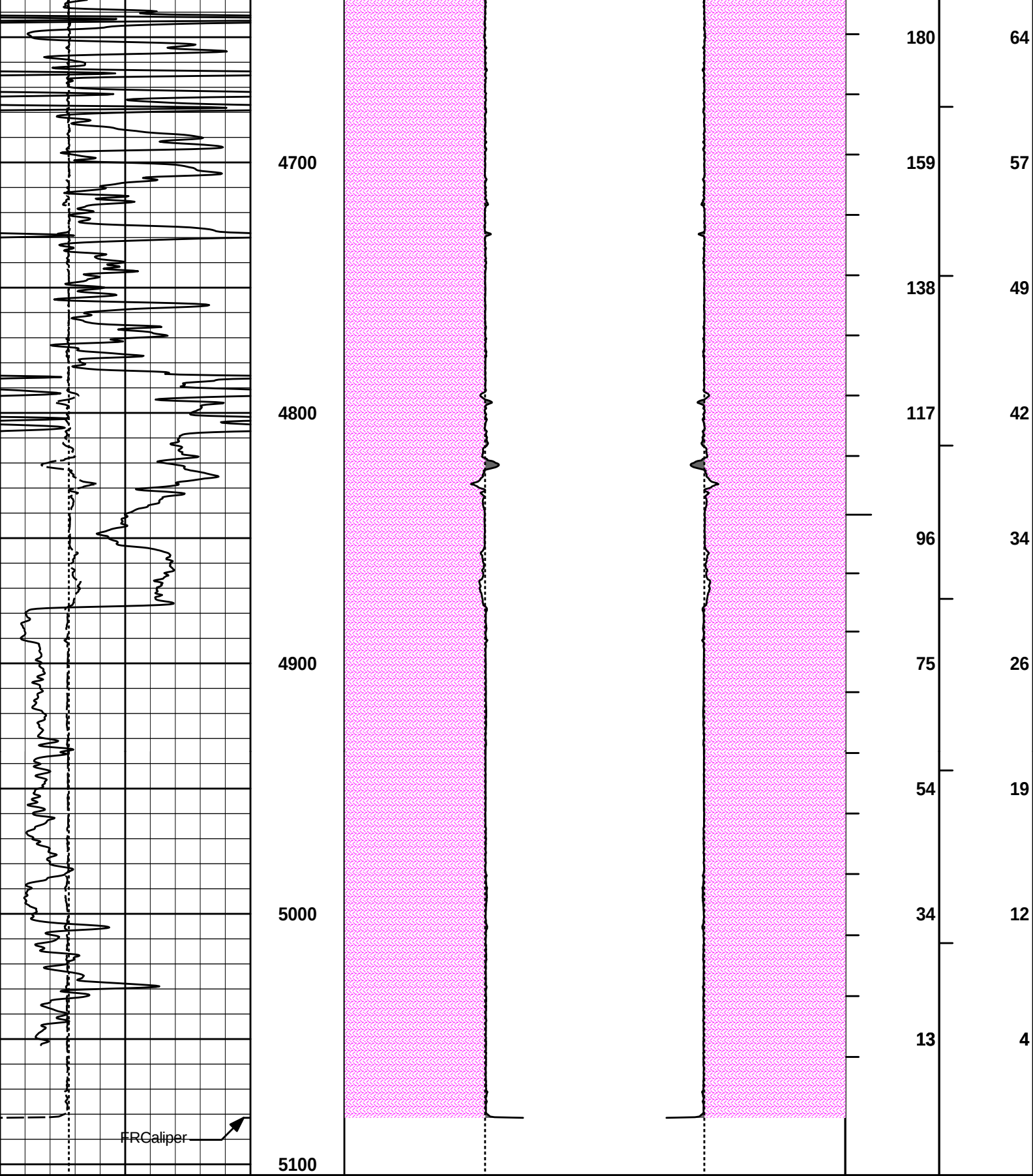
140
132
124
116
109
102
94
87
79
72



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

HALLIBURTON

Plot Time: 18-Dec-13 10:16:08
Plot Range: 1530 ft to 5104.33 ft
Data: MAZANEC_1735\Well Based\R1 CASING SPLICE\
Plot File: \\-LOCAL-\MAZANEC_1735\Well Based\POROSITY\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

COMPANY	**SANDRIDGE ENERGY**		
WELL	**MAZANEC 1735 1-19**		
FIELD	**BEAVER CLIFF NW**		
COUNTY	**WICHITA**	STATE	**KANSAS**

HALLIBURTON	**DUAL SPACED NEUTRON SPECTRAL DENSITY LOG**