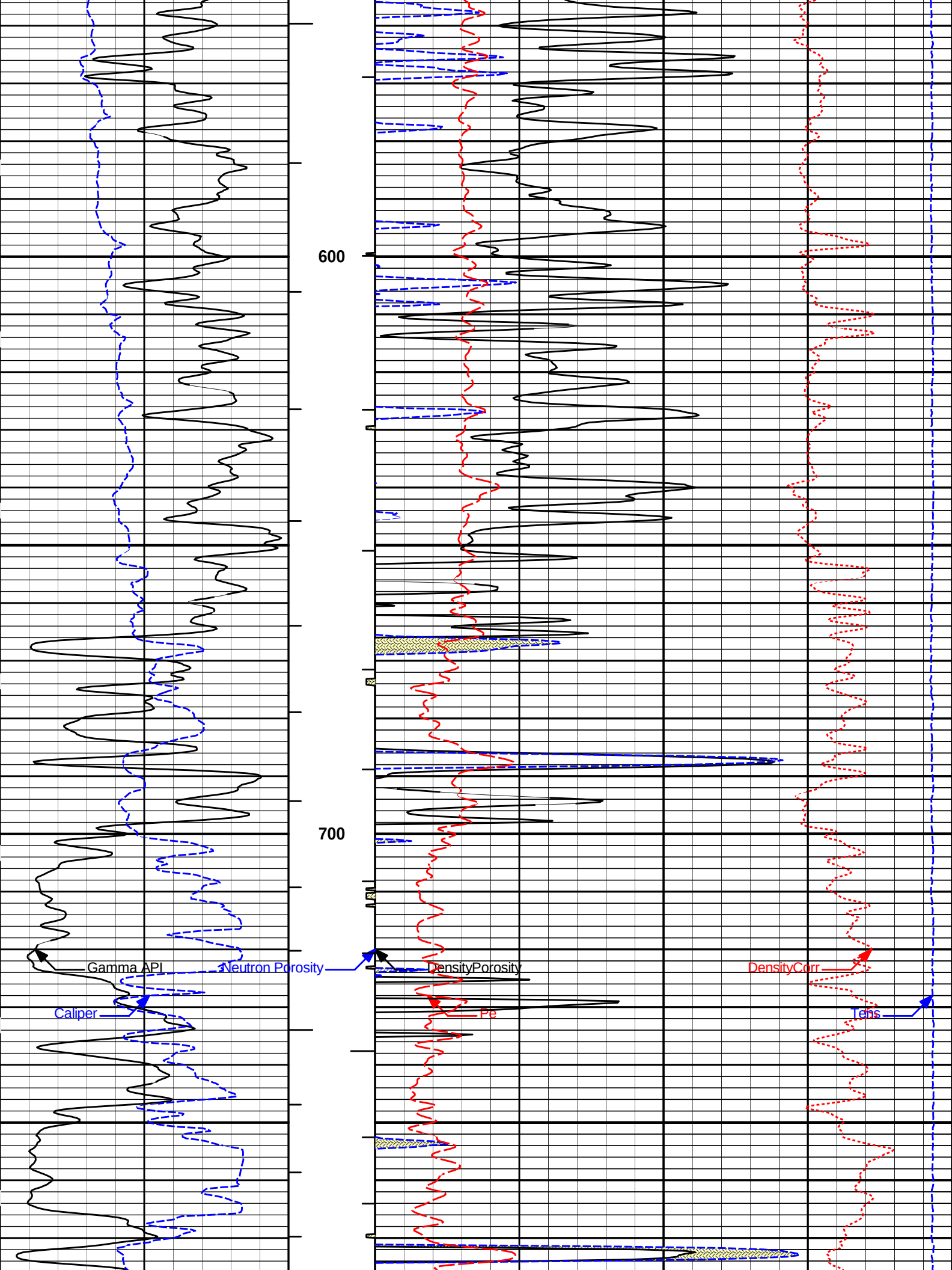


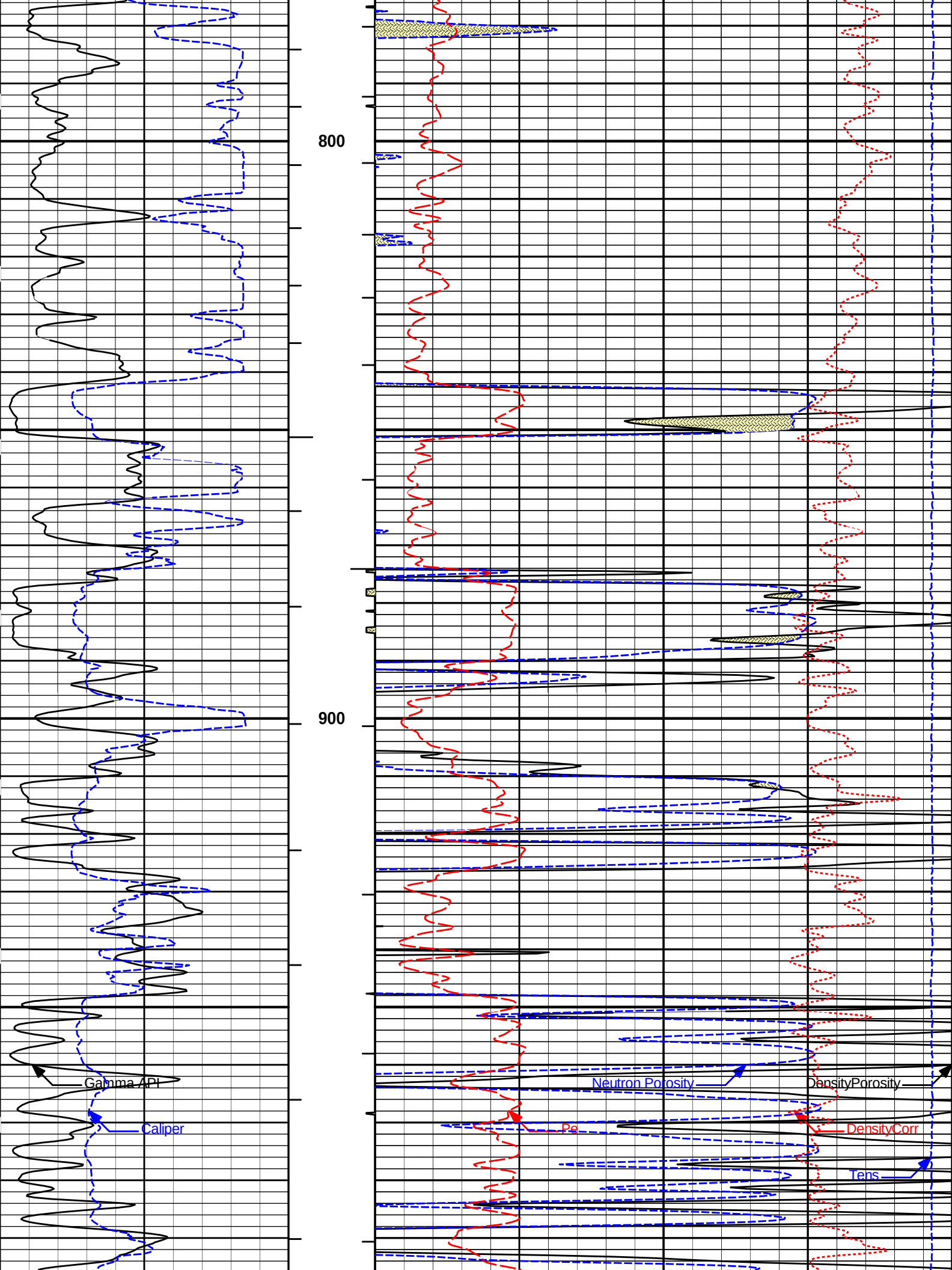
SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

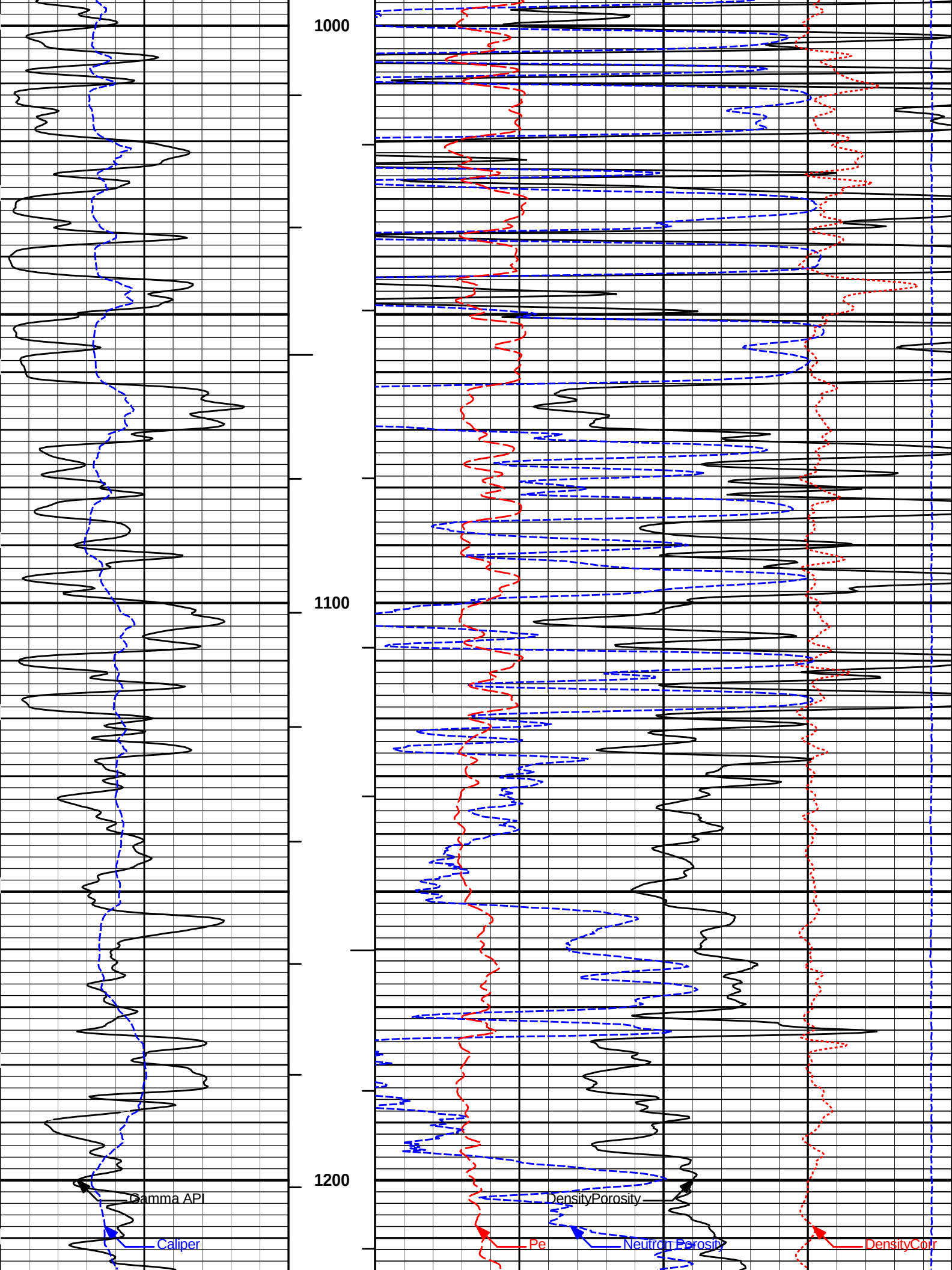
Fold here

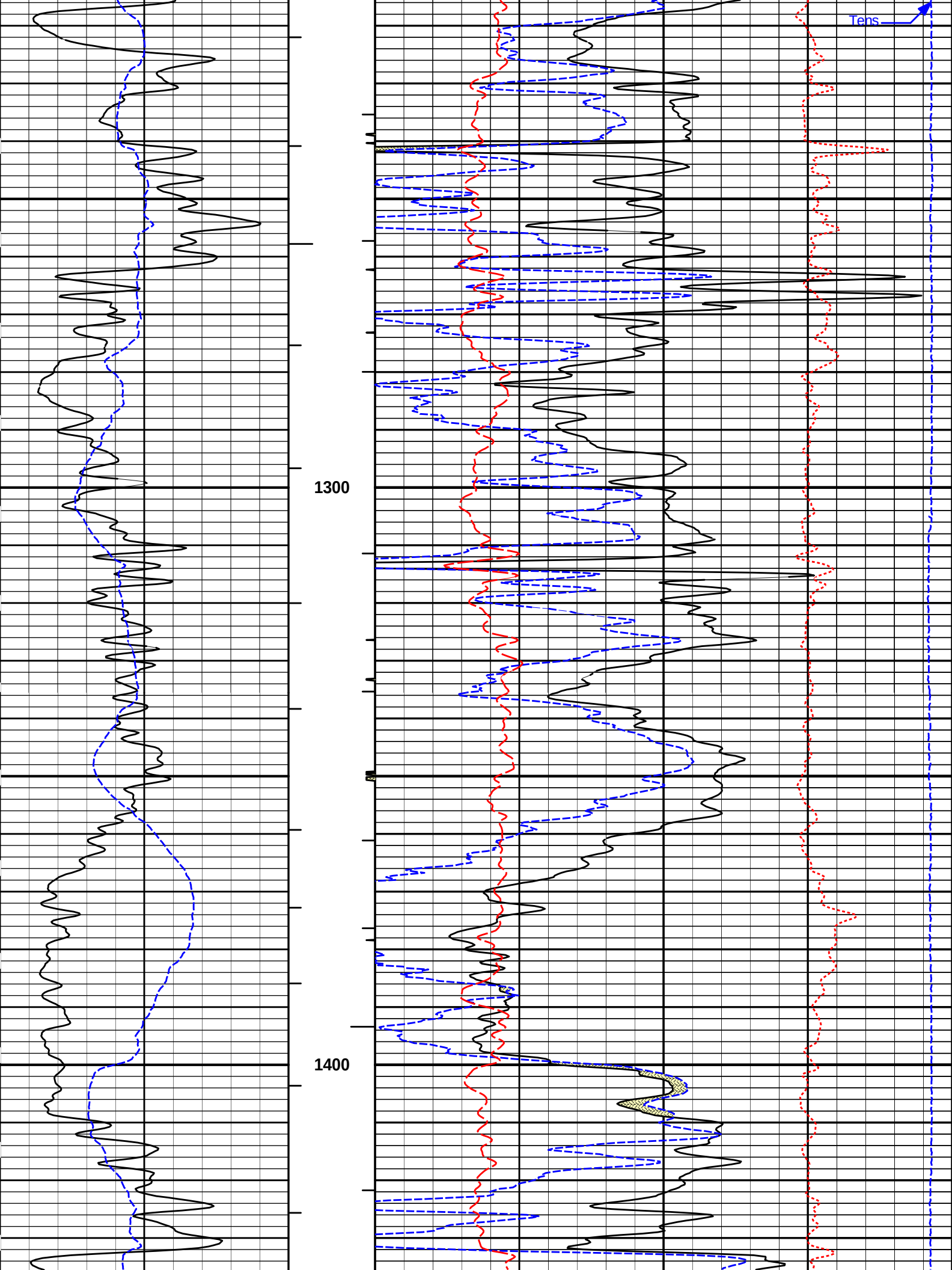
Service Ticket No.: 901193433						API Serial No.: 15-191-22721-00-00						PGM Version: WL INSITE R3.8.12 (Build 3)					
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE						RESISTIVITY SCALE CHANGES											
Date	Sample No.					Type Log	Depth	Scale Up Hole		Scale Down Hole							
Depth-Driller																	
Type Fluid in Hole																	
Density	Viscosity																
Ph	Fluid Loss																
Source of Sample						RESISTIVITY EQUIPMENT DATA											
Rm @ Meas. Temp		@		@		Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other							
Rmf @ Meas. Temp.		@		@		ONE	ACRT 202	N/A	1.5" STANDOFF	N/A							
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	Run No.	ONE								
Serial No.	114	Serial No.		Serial No.	772	Serial No.	487	Serial No.	487								
Model No.	GTET	Model No.		Model No.	SDLT	Model No.	DSNT	Model No.	DSNT								
Diameter	3.625"	No. of Cent.		Diameter	4.5 "	Diameter	3.625"	Diameter	3.625"								
Detector Model No.	A-102	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU	Log Type	NEU-NEU								
Type	SCINT.			Source Type	Cs 137	Source Type	AM 241 Be	Source Type	AM 241 Be								
Length	8"	LSA [Y/N]		Serial No.	5155GW	Serial No.	DSN 382	Serial No.	DSN 382								
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 Ci	Strength	15 Ci	Strength	15 Ci								

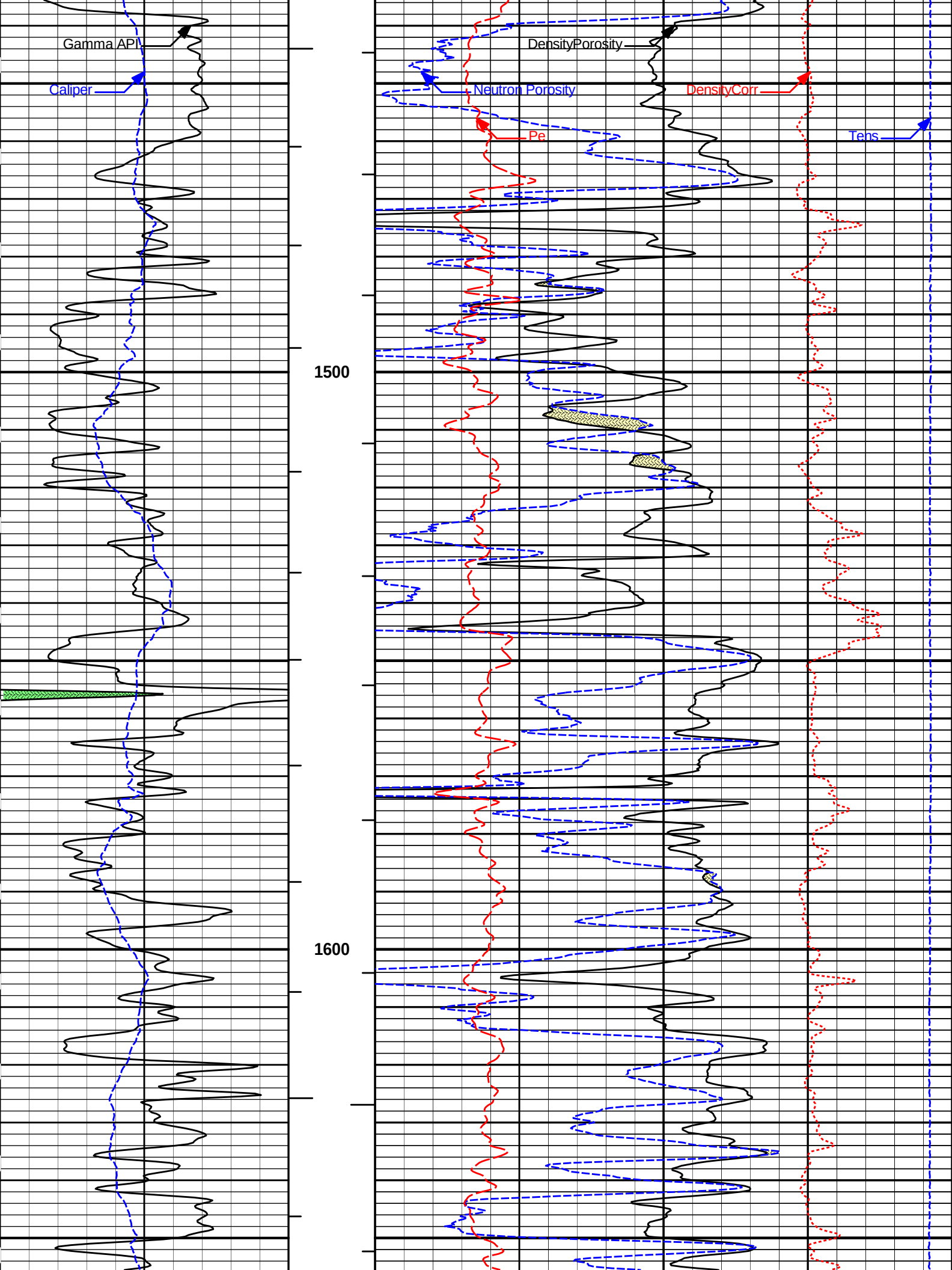
[illegible]

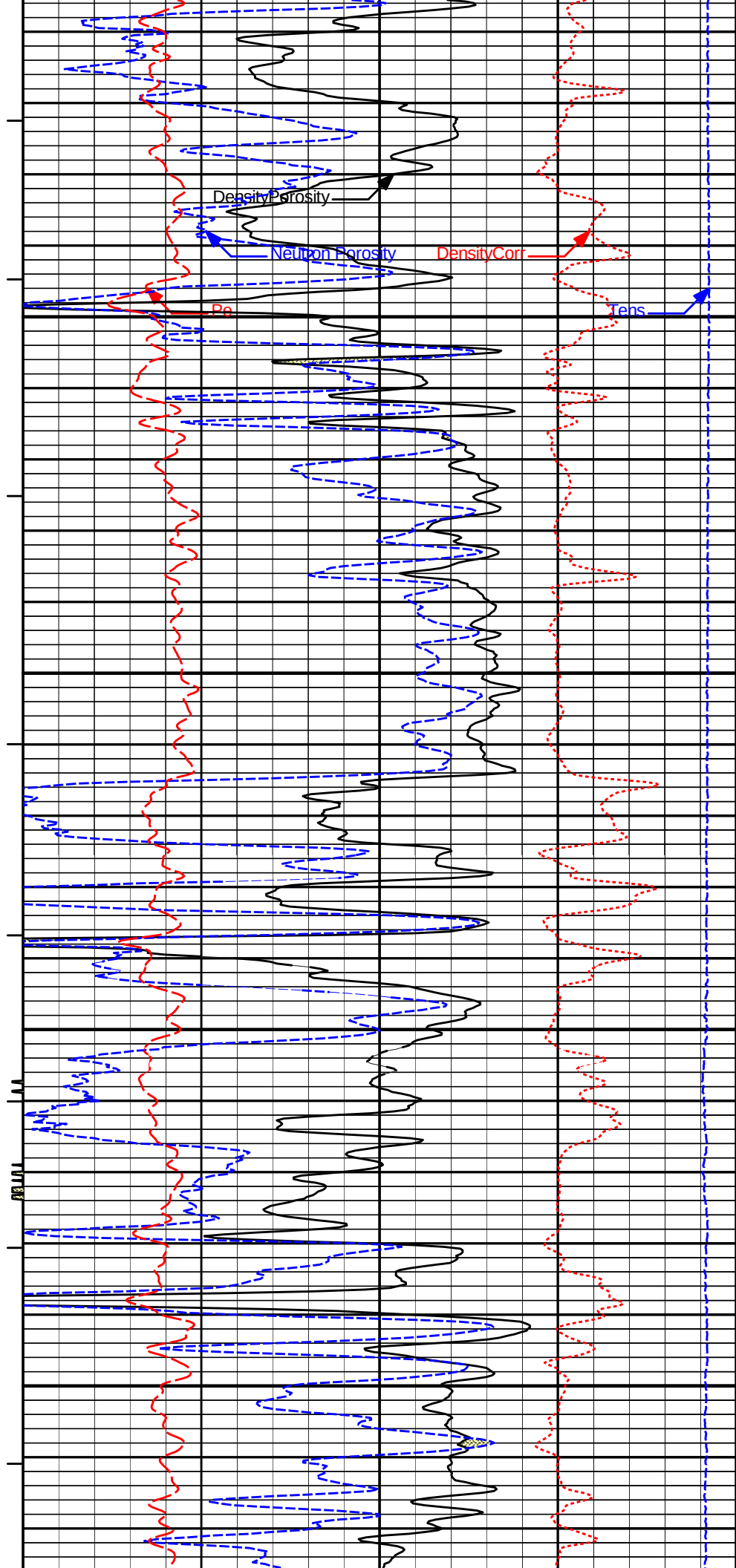
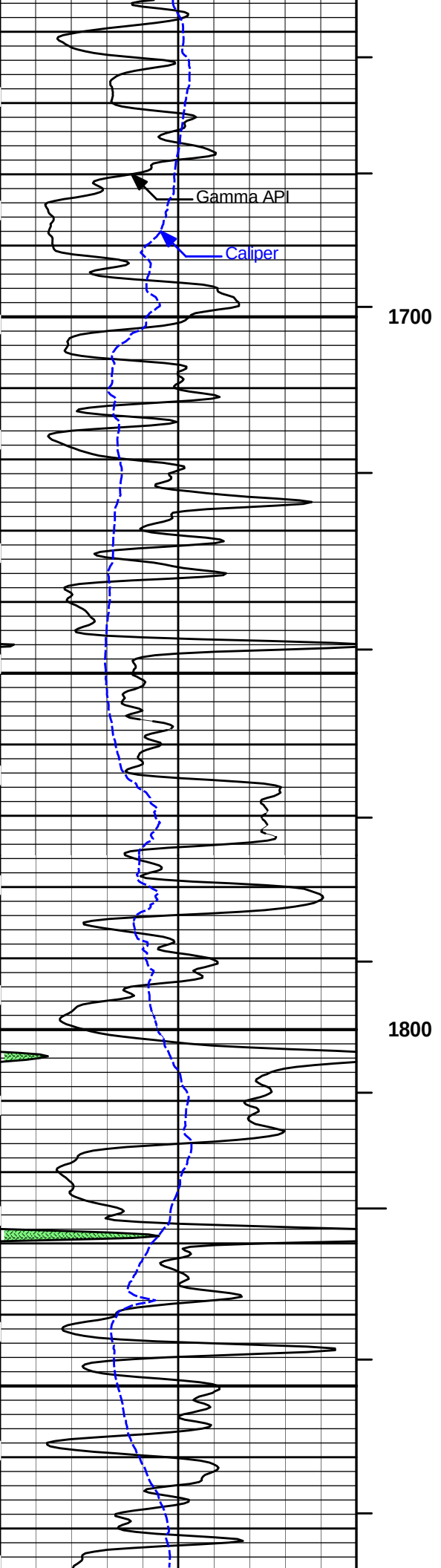


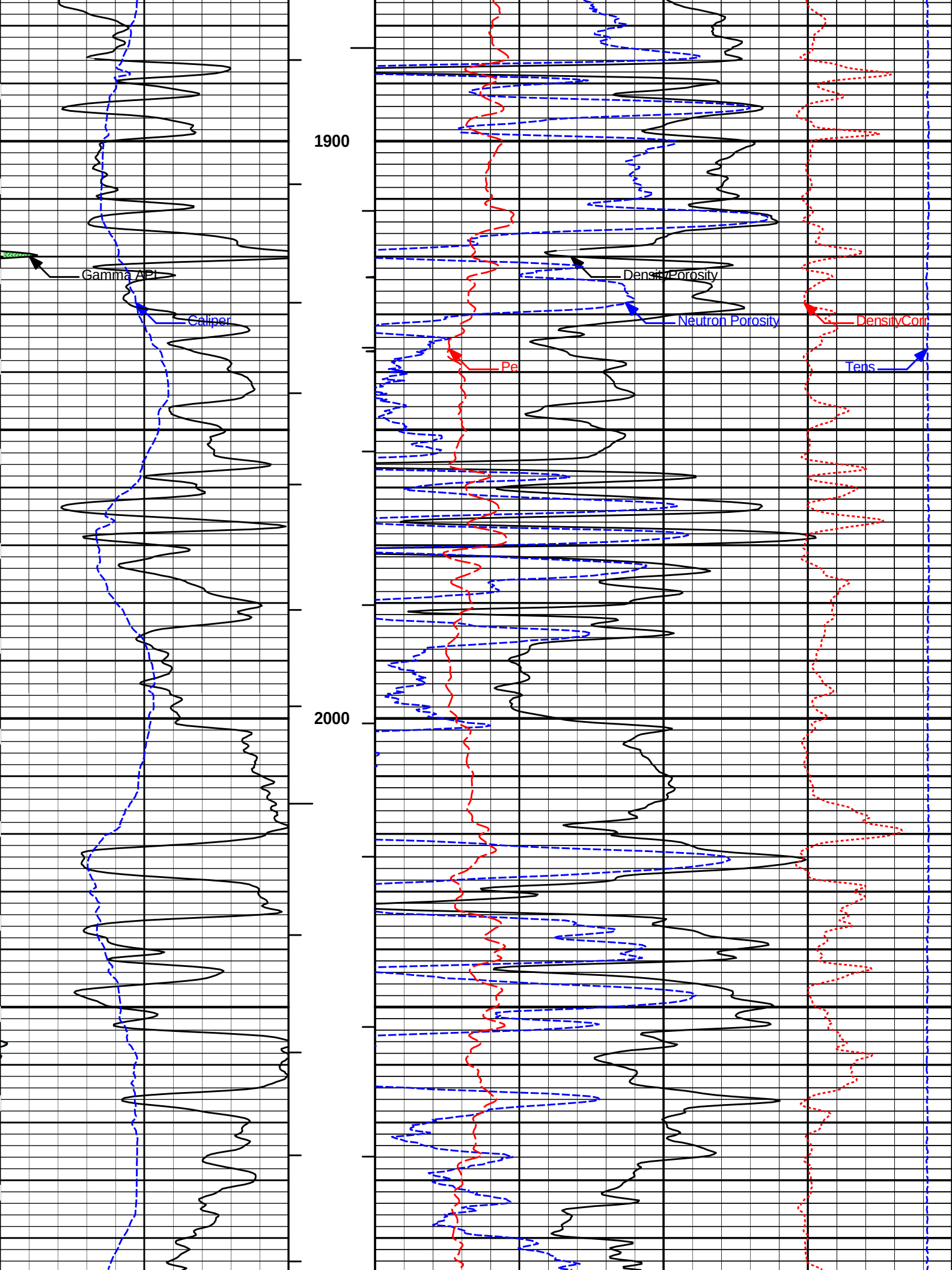


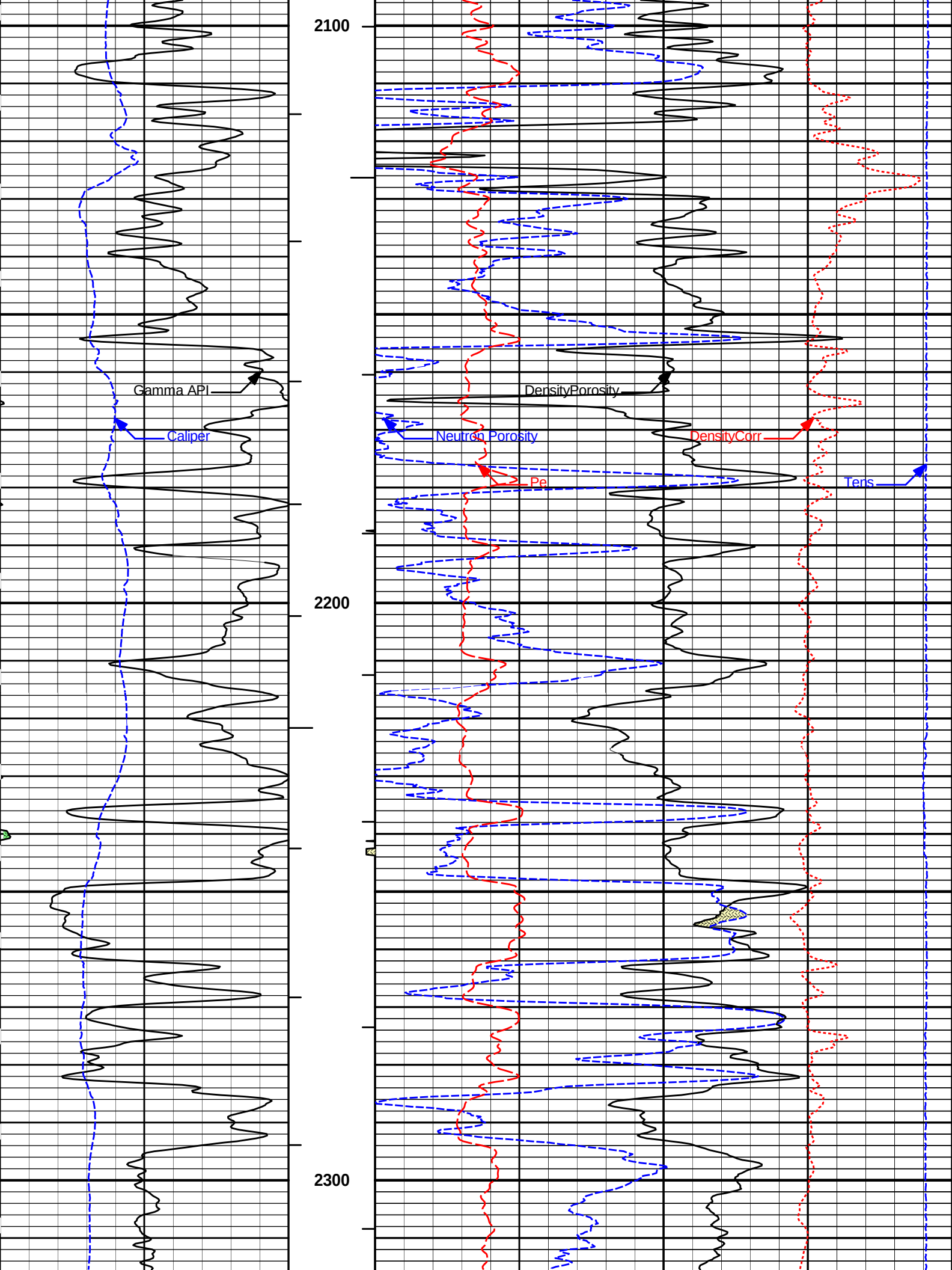


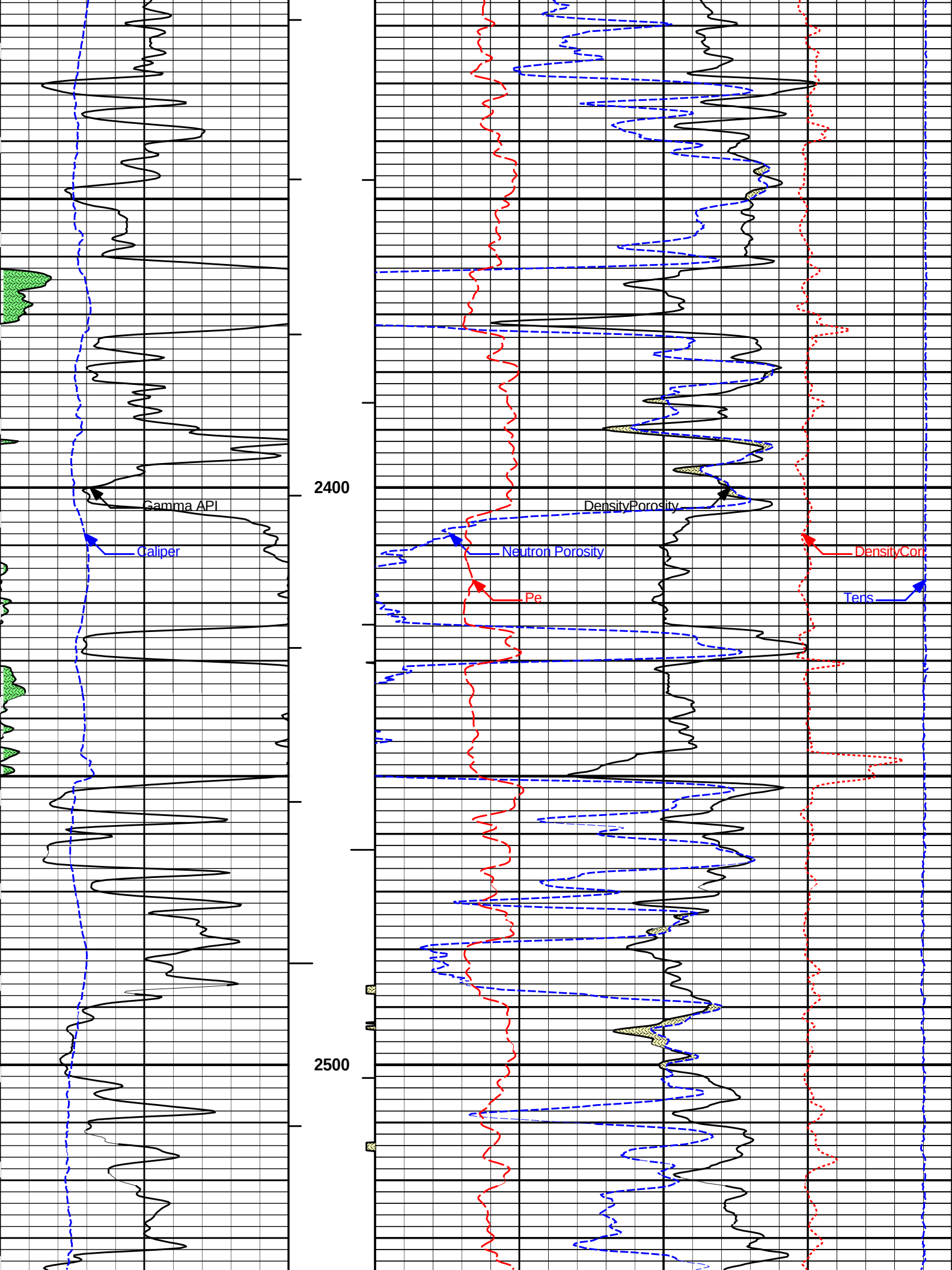


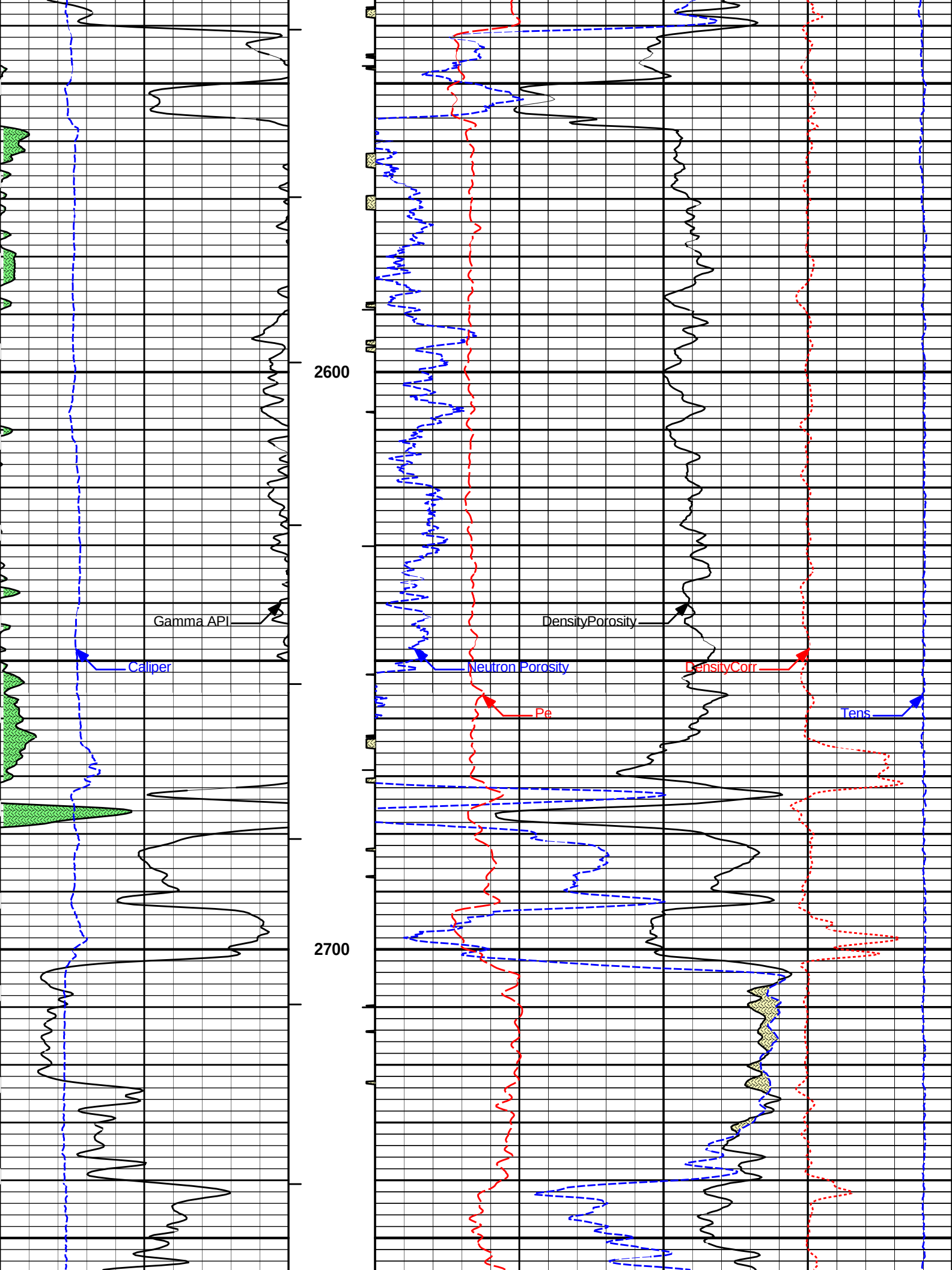


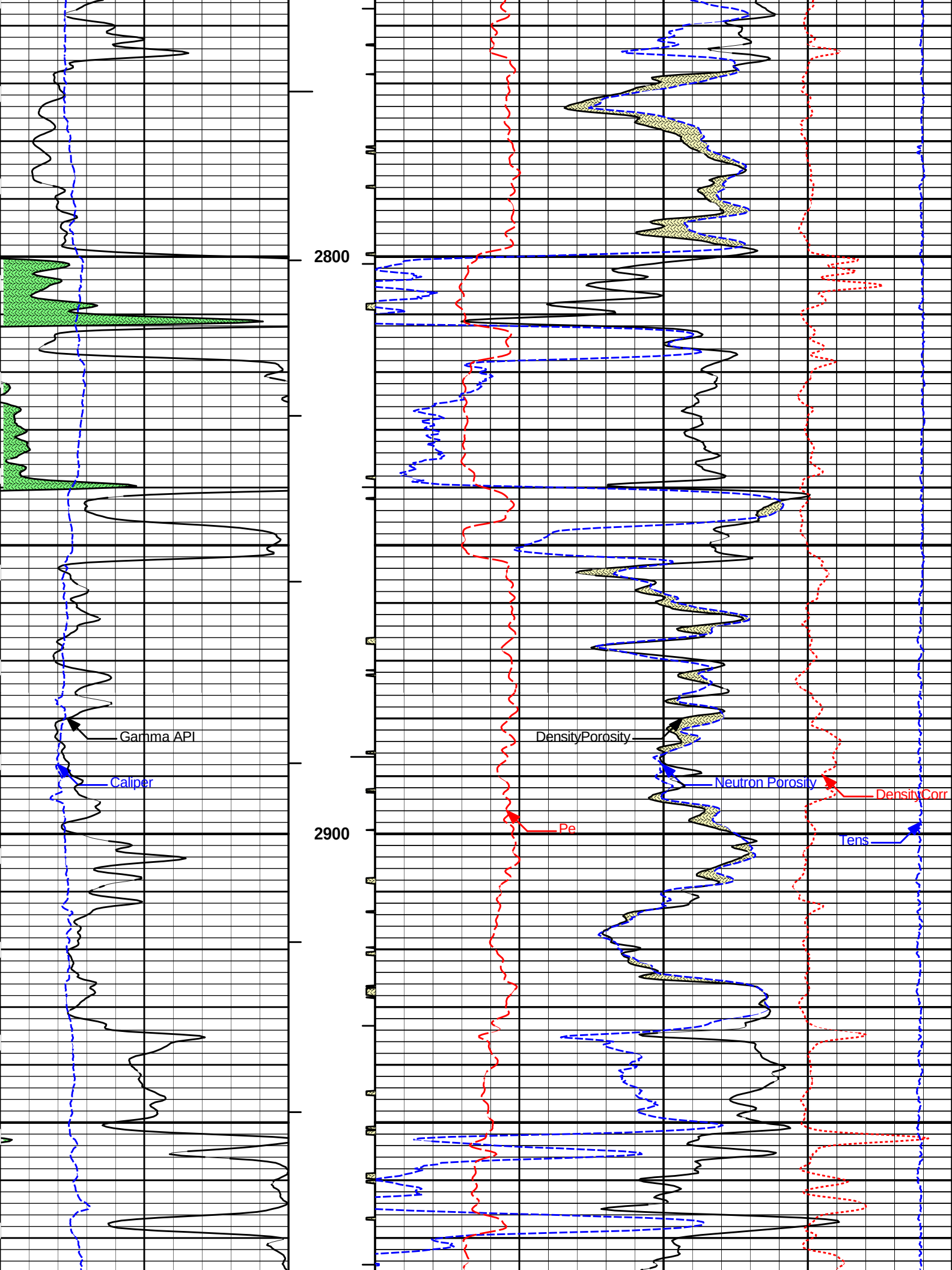


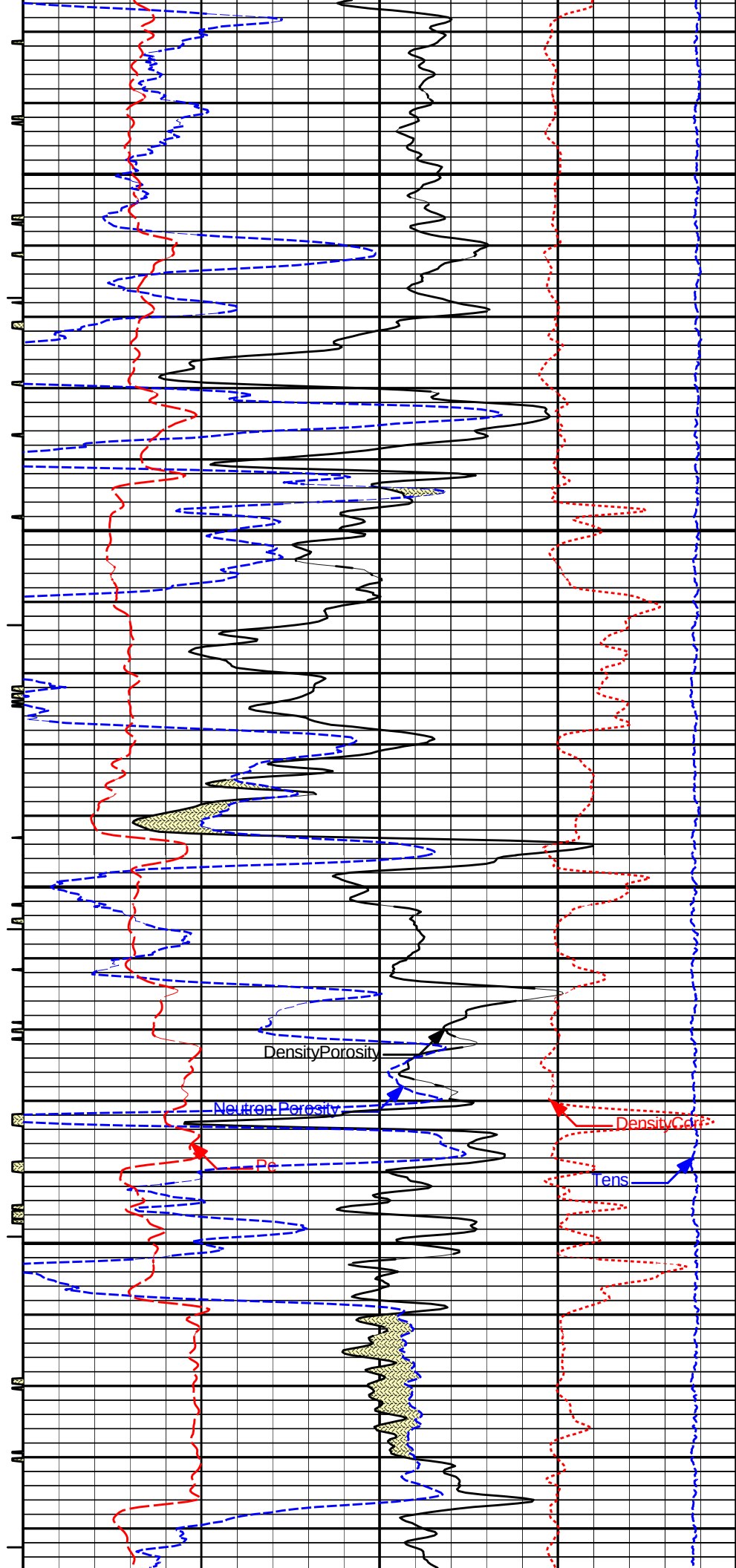
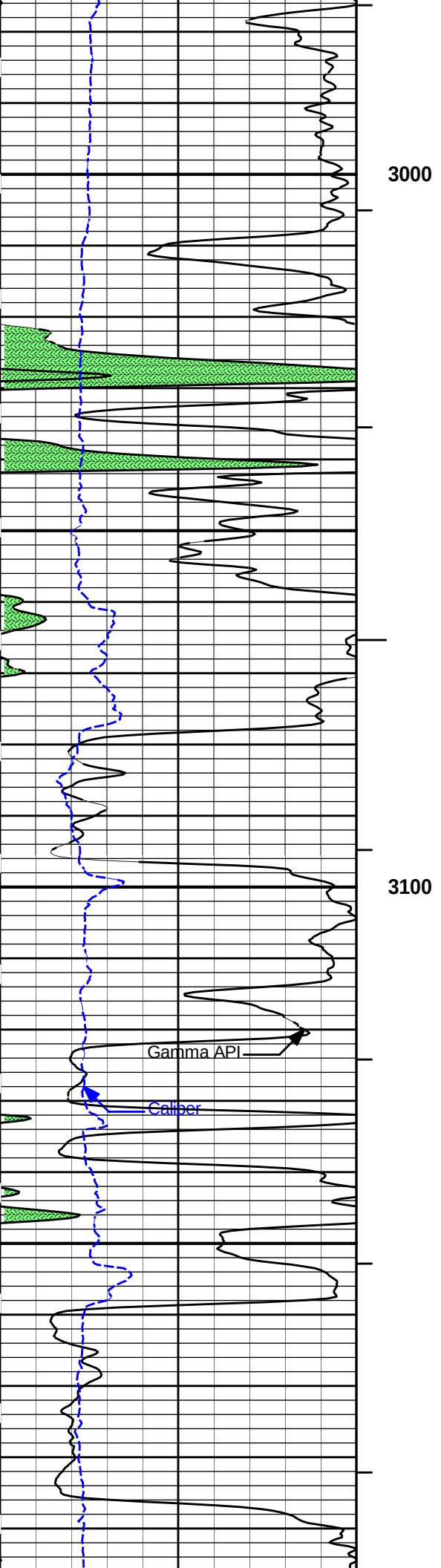


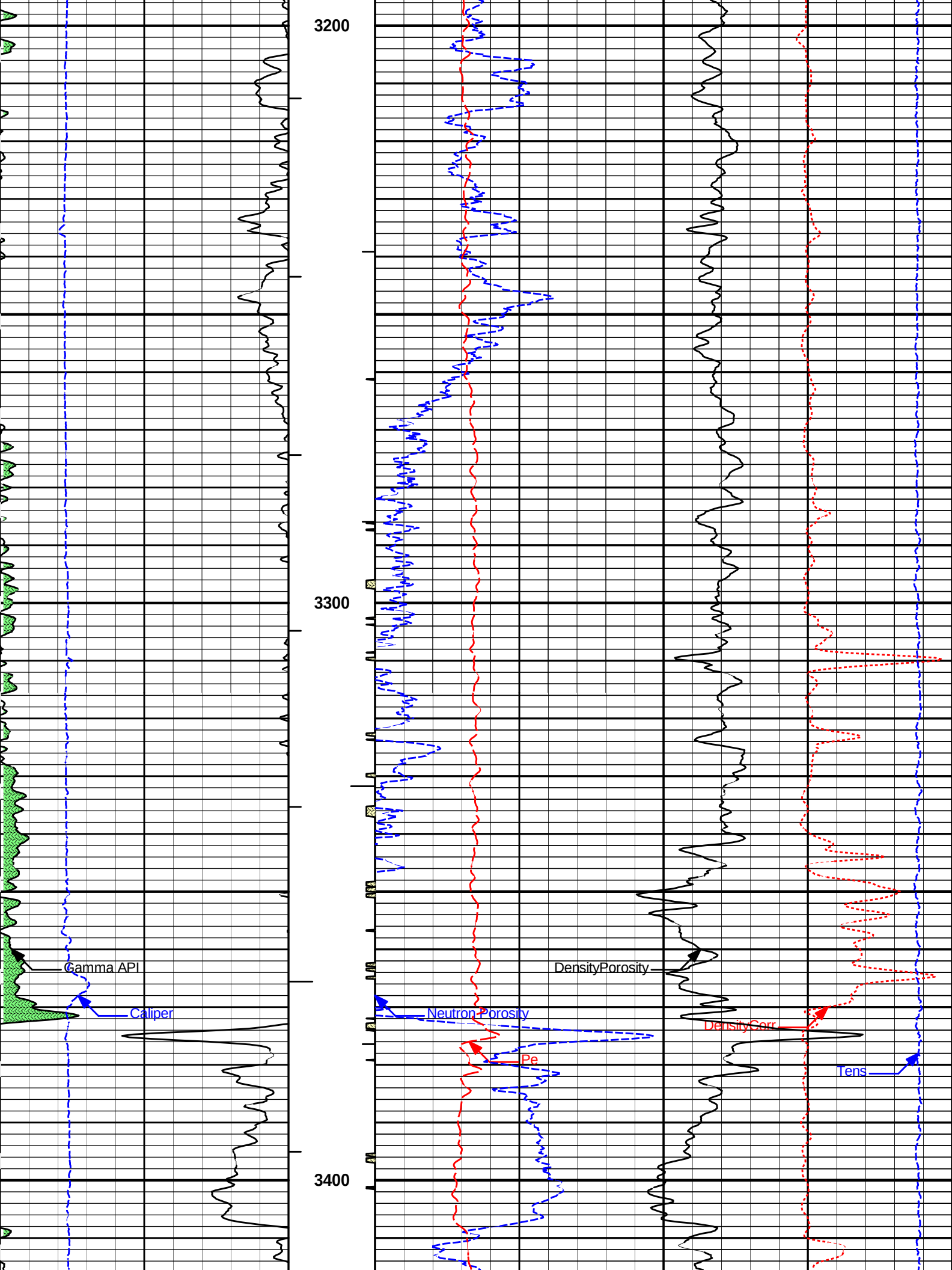


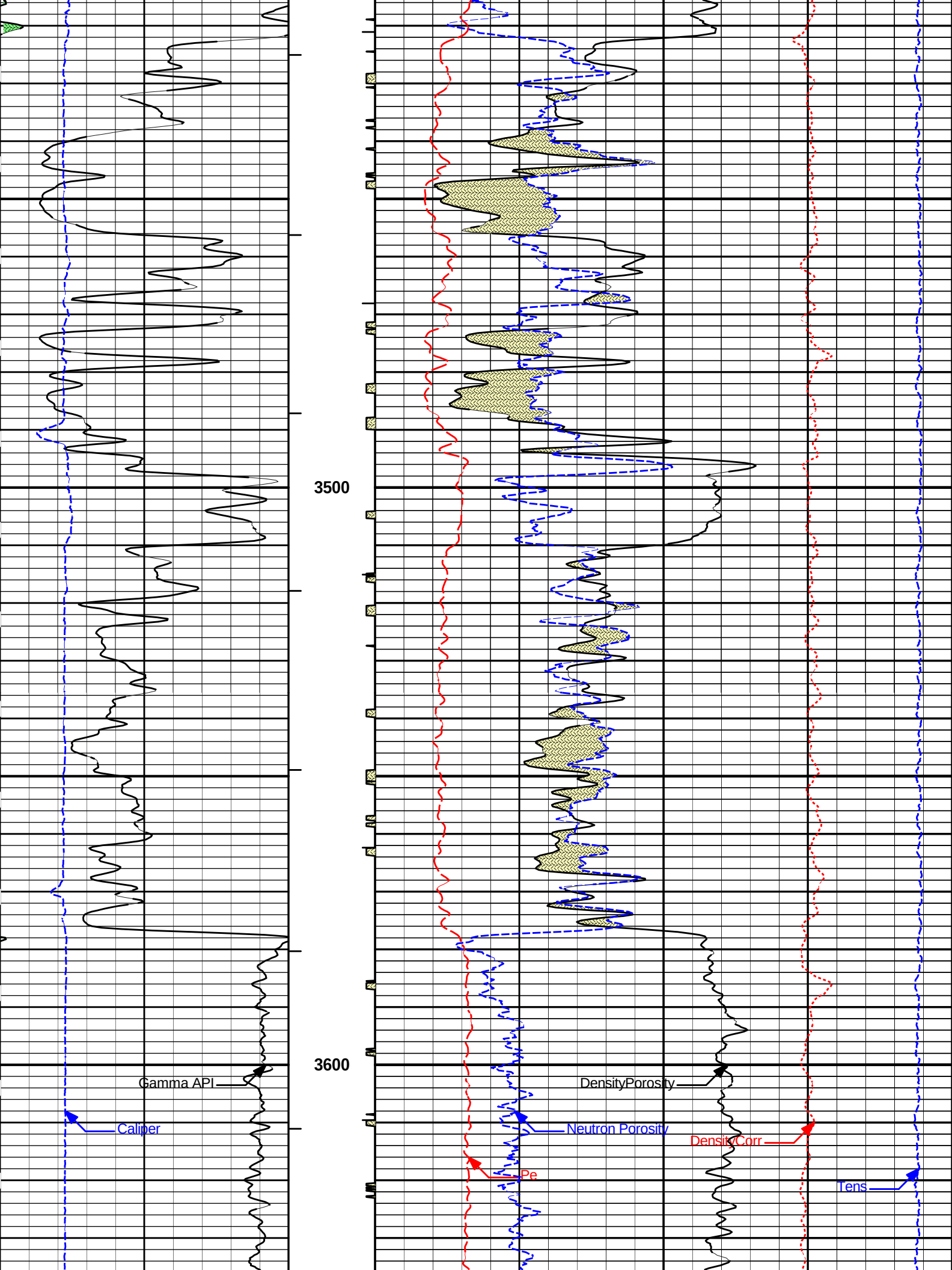


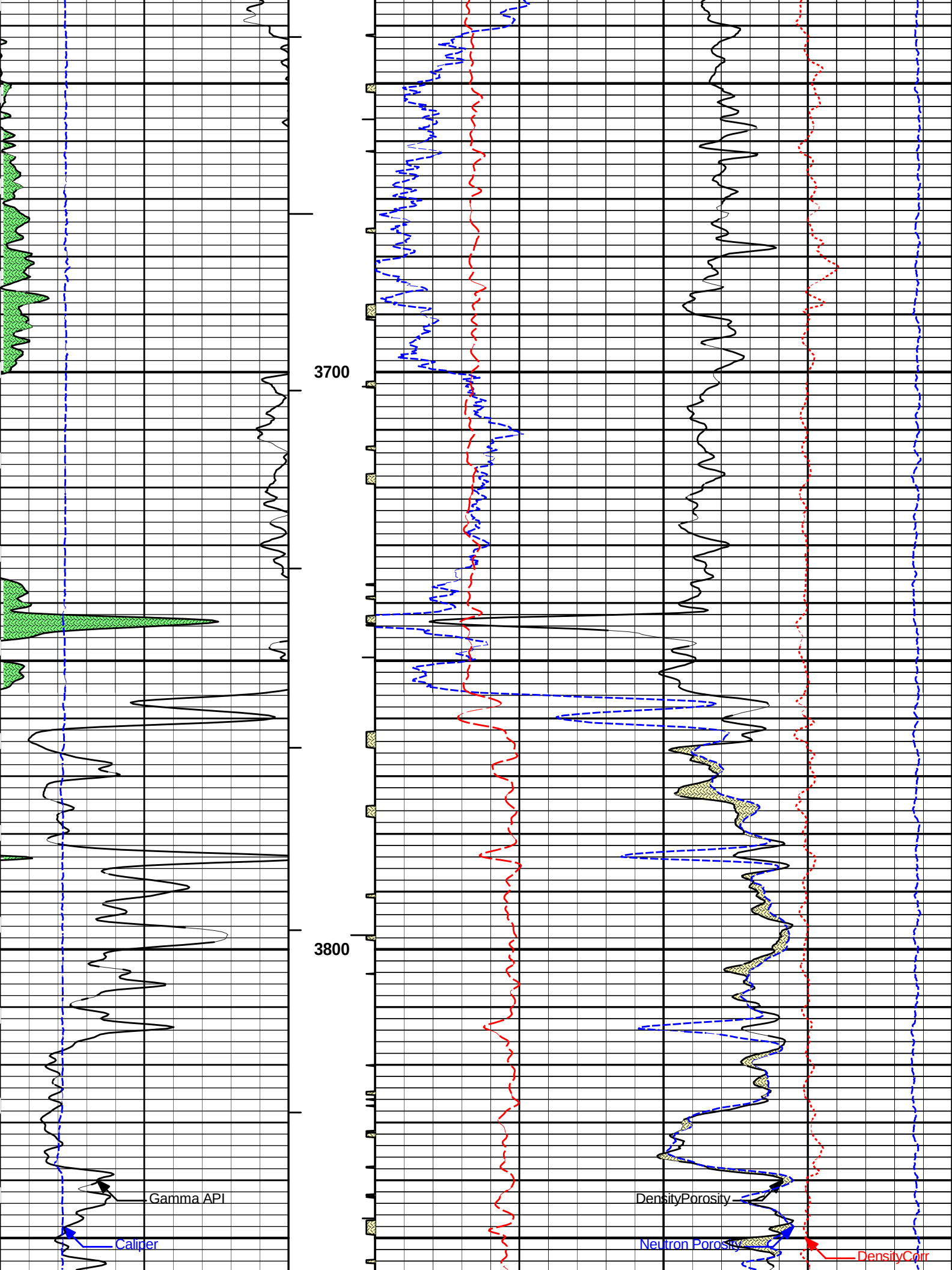


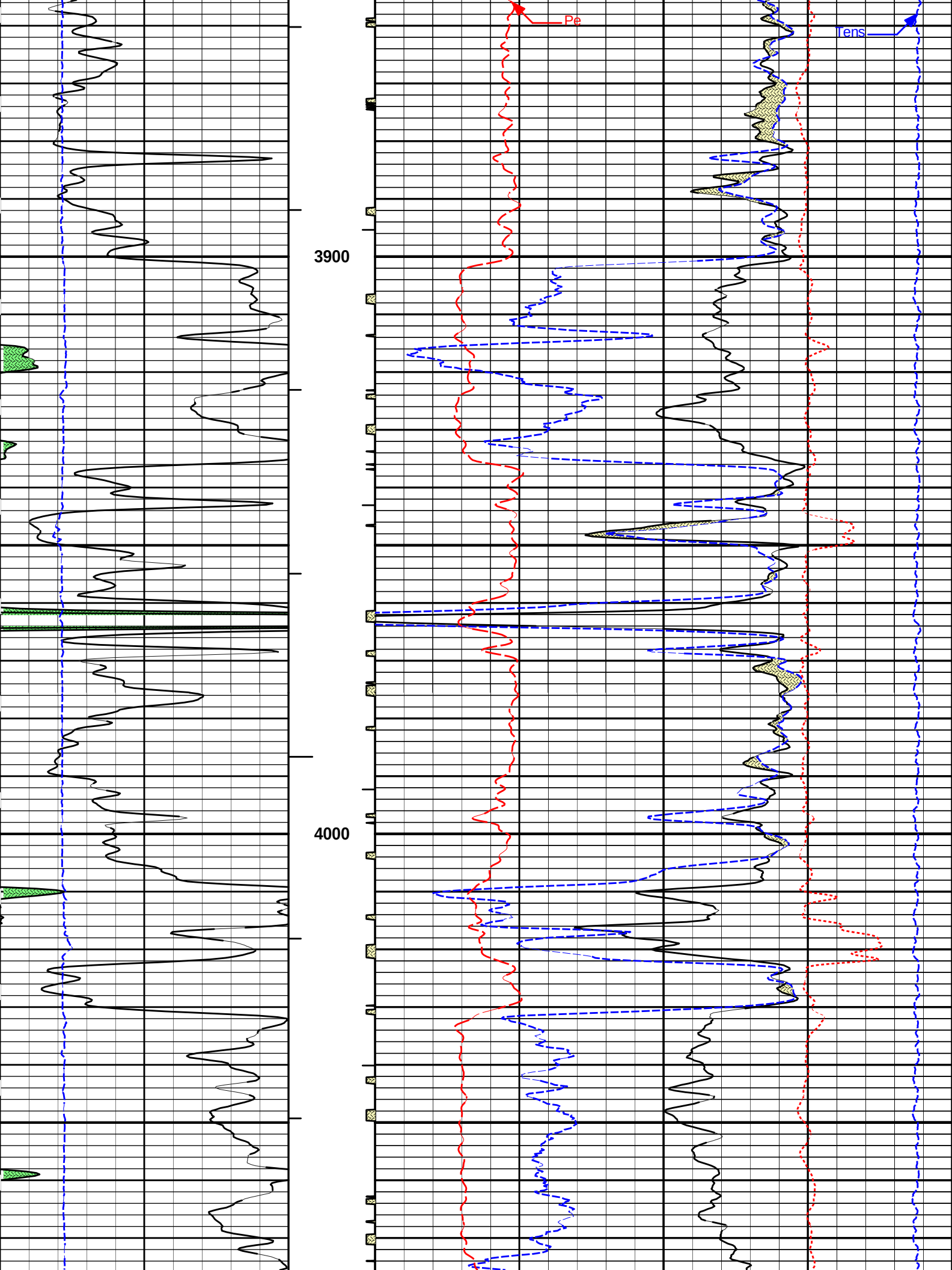


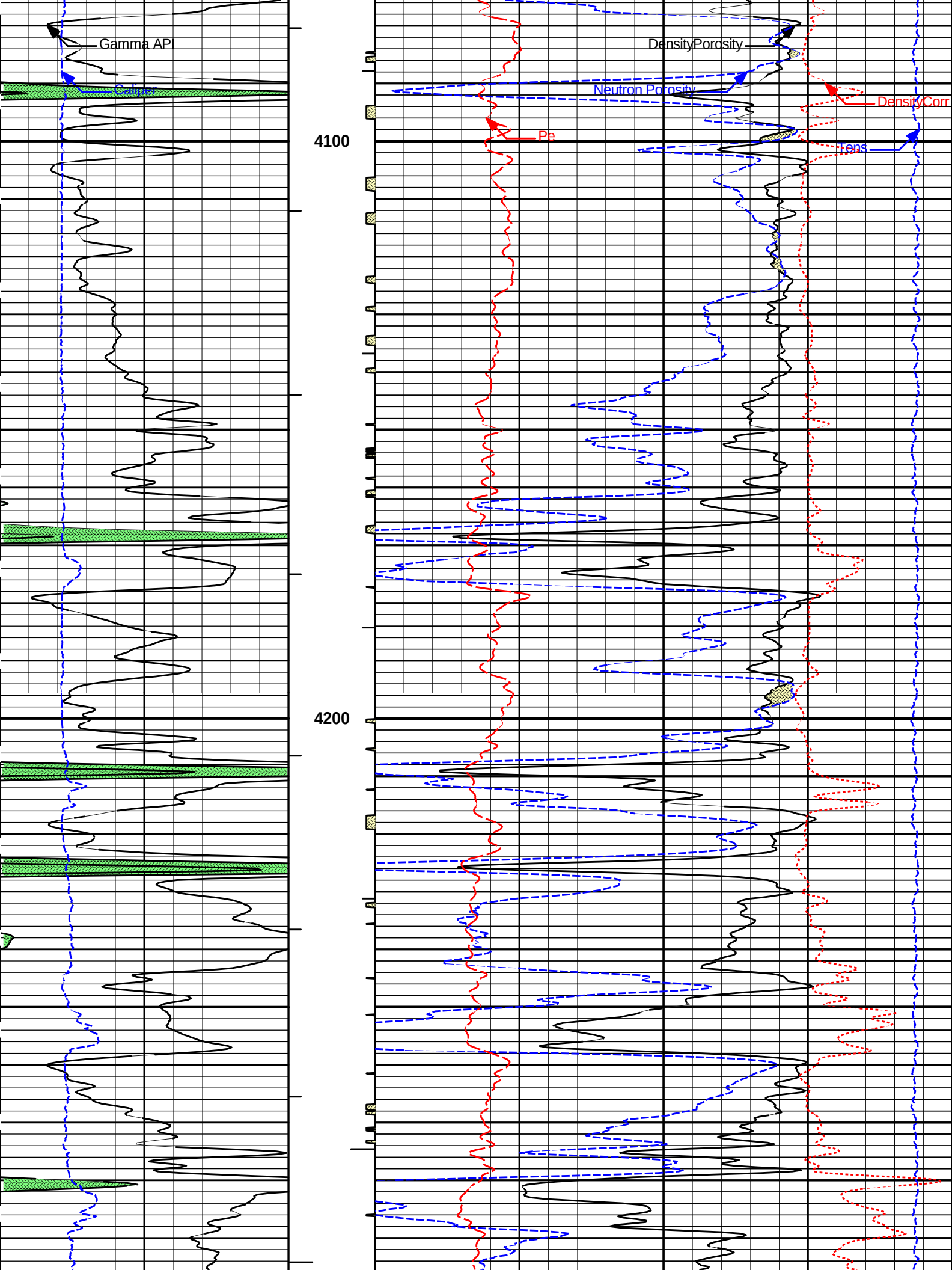


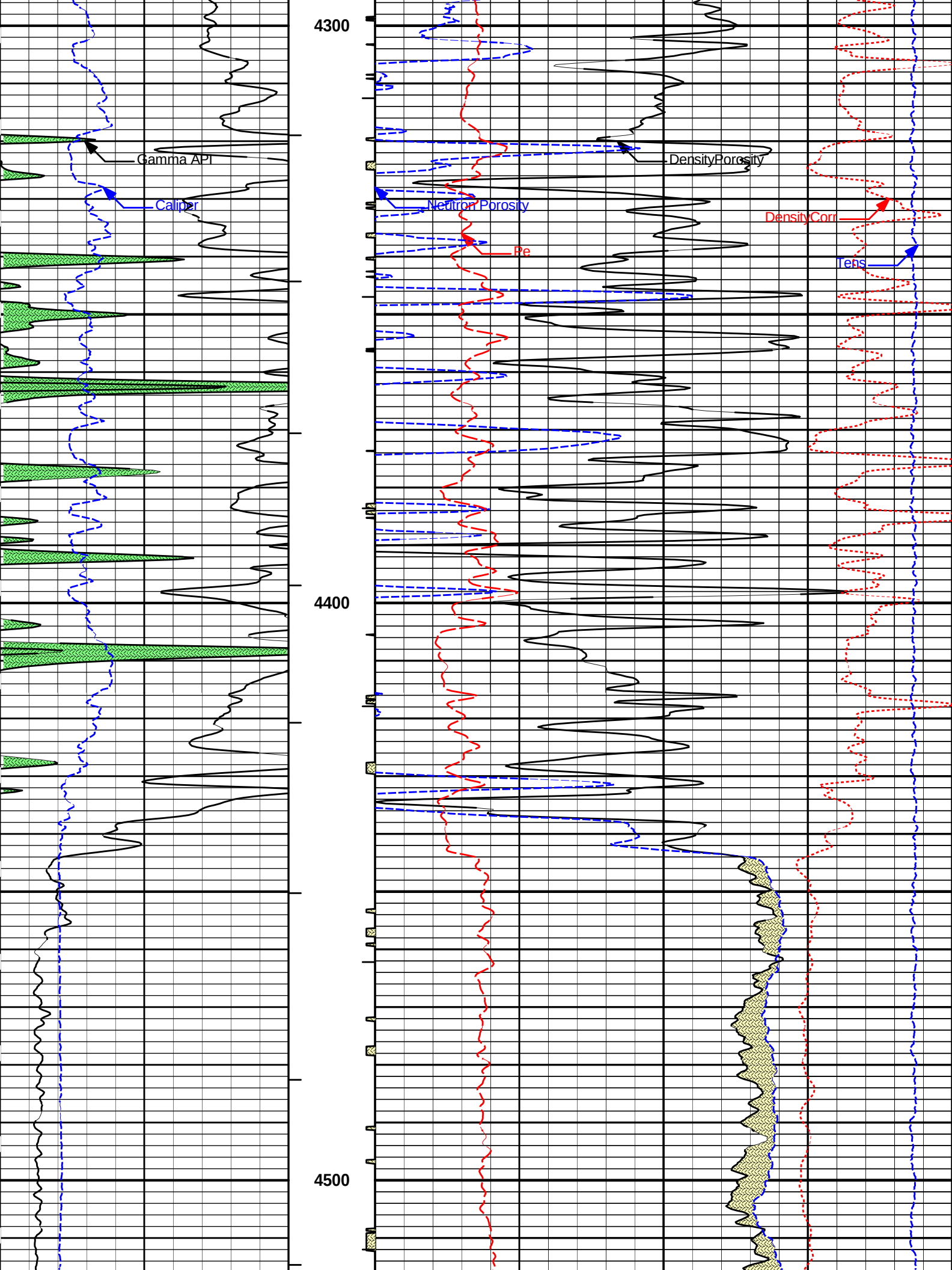


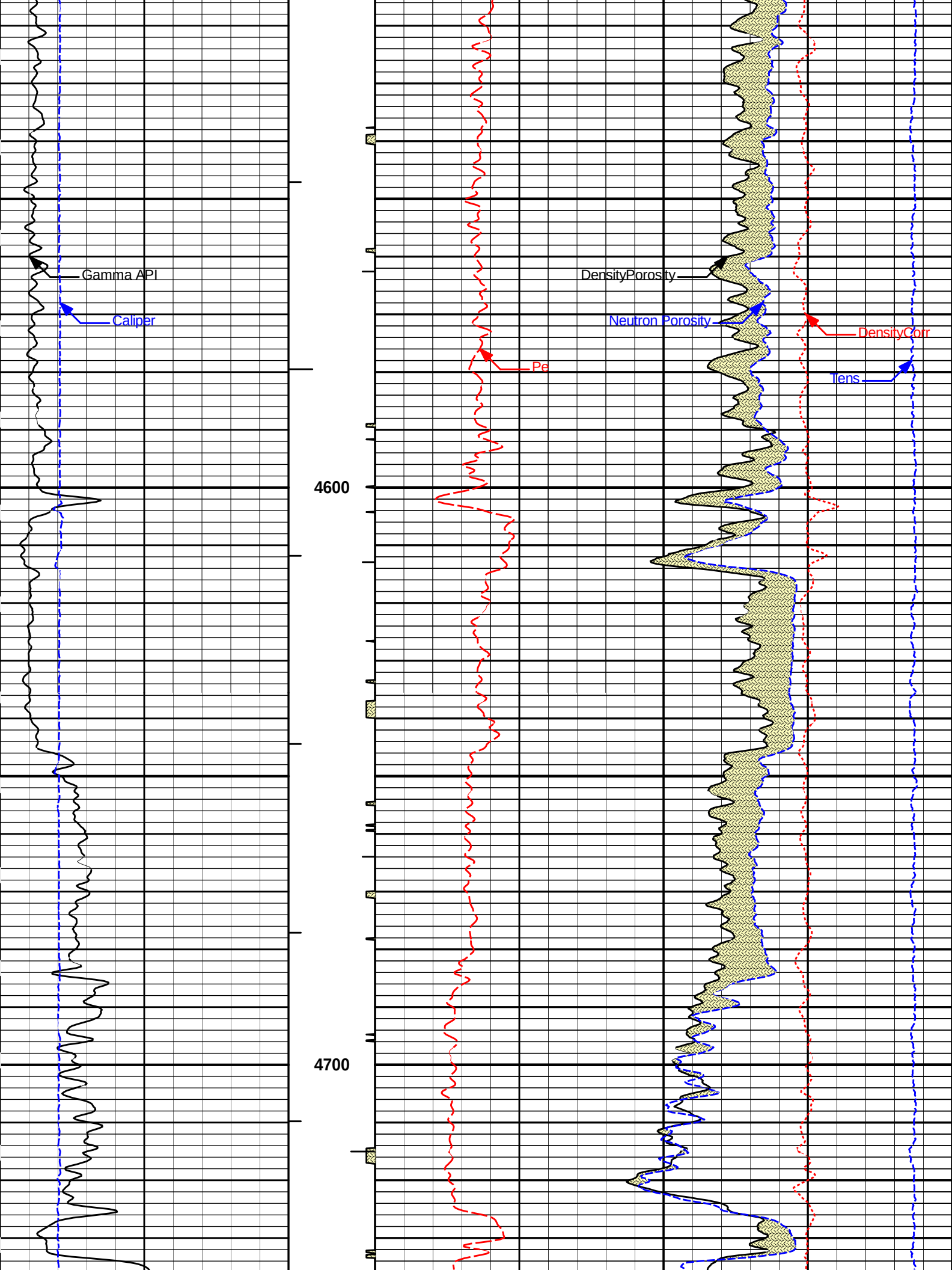


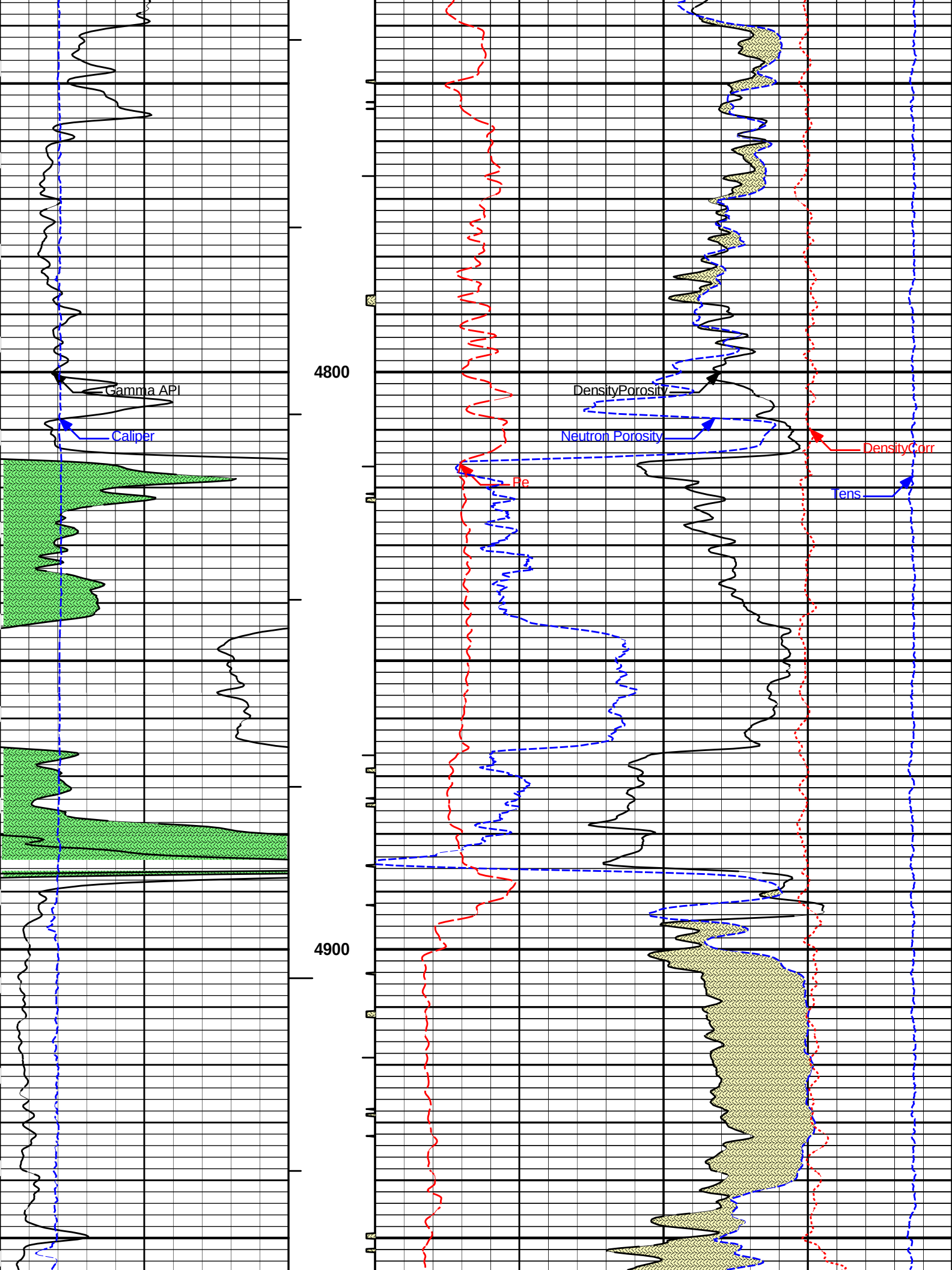


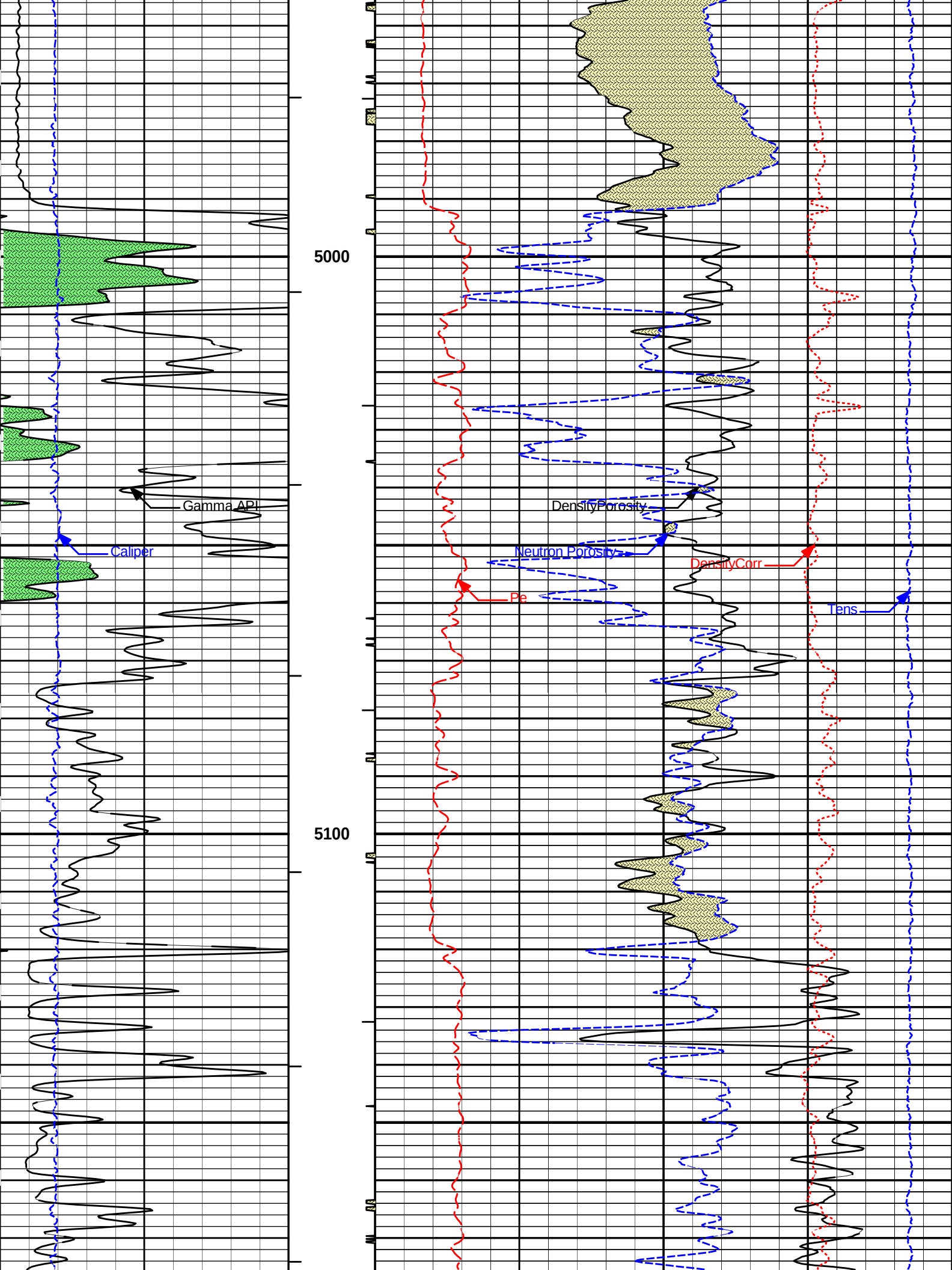


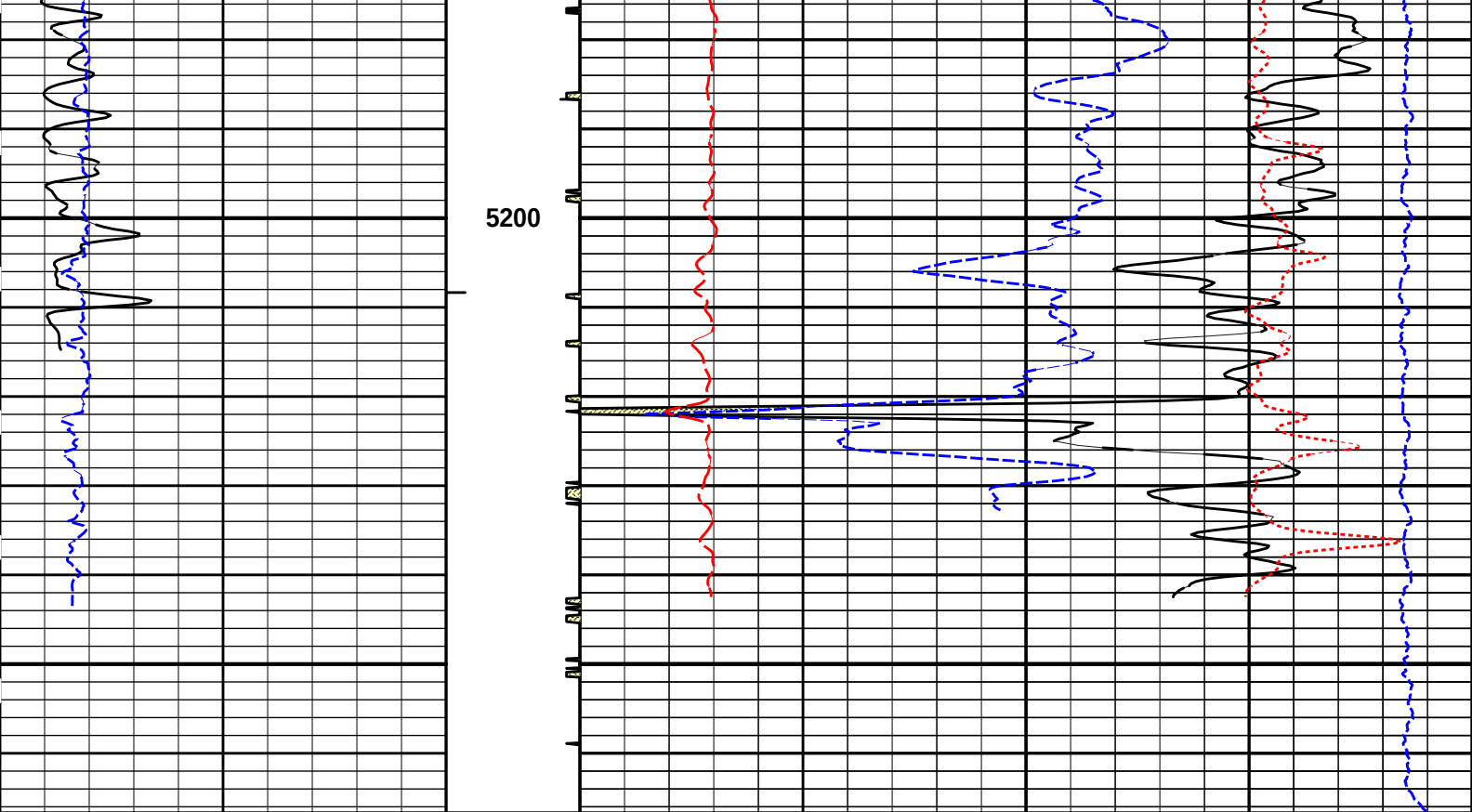












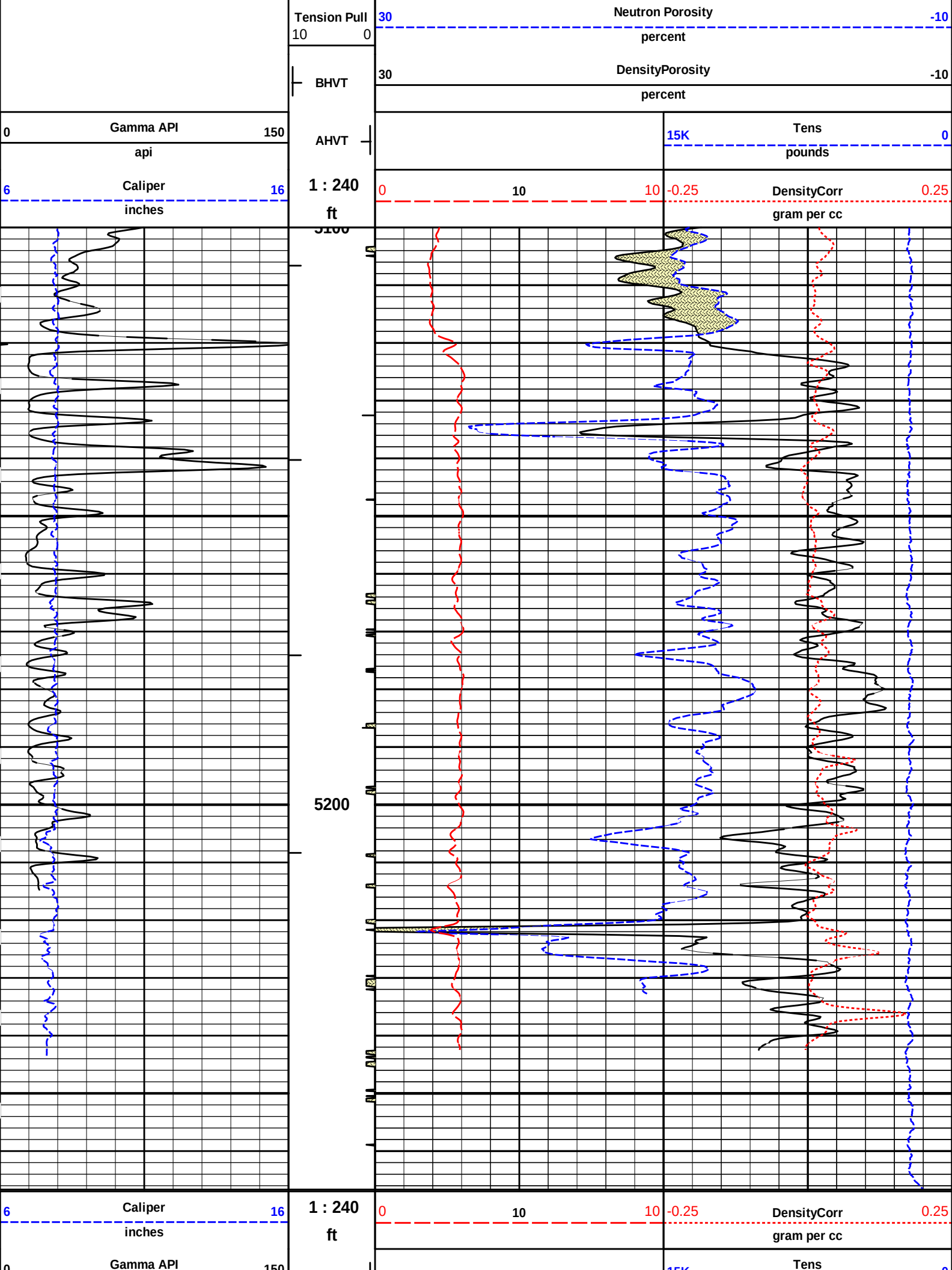
6	Caliper	16	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tens	0
	api							pounds	
			BHVT	30	DensityPorosity				-10
					percent				
			Tension Pull	30	Neutron Porosity				-10
			10 0		percent				

HALLIBURTON Plot Time: 15-Mar-14 02:41:48
Plot Range: 520 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\MAIN_PASS_RUN#1\
Plot File: \\(not saved)\1_Poro_5_mainx

5 INCH MAIN LOG

HALLIBURTON Plot Time: 15-Mar-14 02:41:48
Plot Range: 5100 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\REPEAT_PASS_RUN#1\
Plot File: \\(not saved)\1_Poro_5_rptx

REPEAT SECTION



150	api	AHVT		15K	pounds	0
		BHVT	30	DensityPorosity		-10
				percent		
		Tension Pull	30	Neutron Porosity		-10
		10	0	percent		

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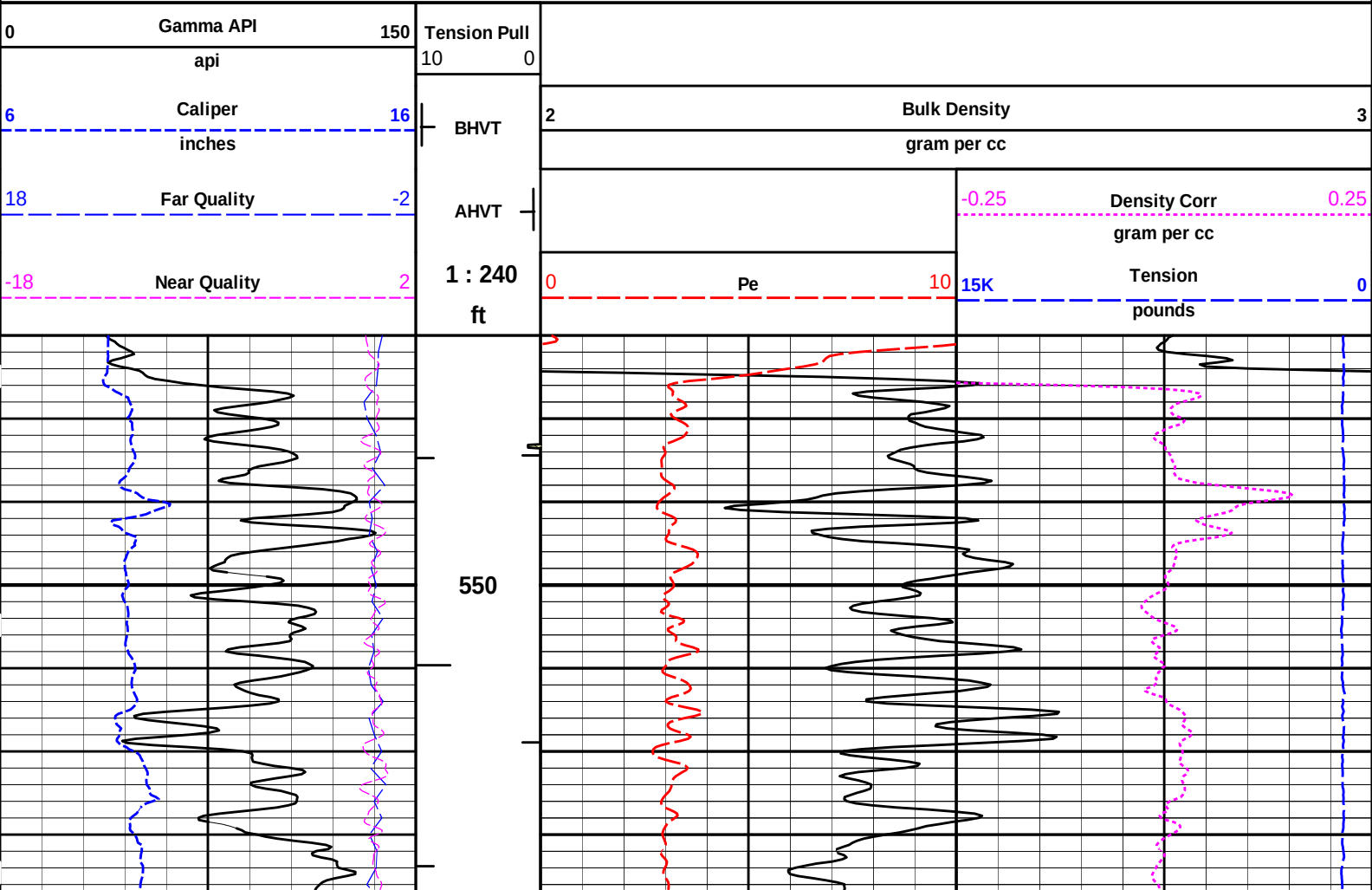
Plot Time: 15-Mar-14 02:41:49
Plot Range: 5100 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\REPEAT_PASS_RUN#1\
Plot File: \\(not saved)\1_Poro_5_rptx

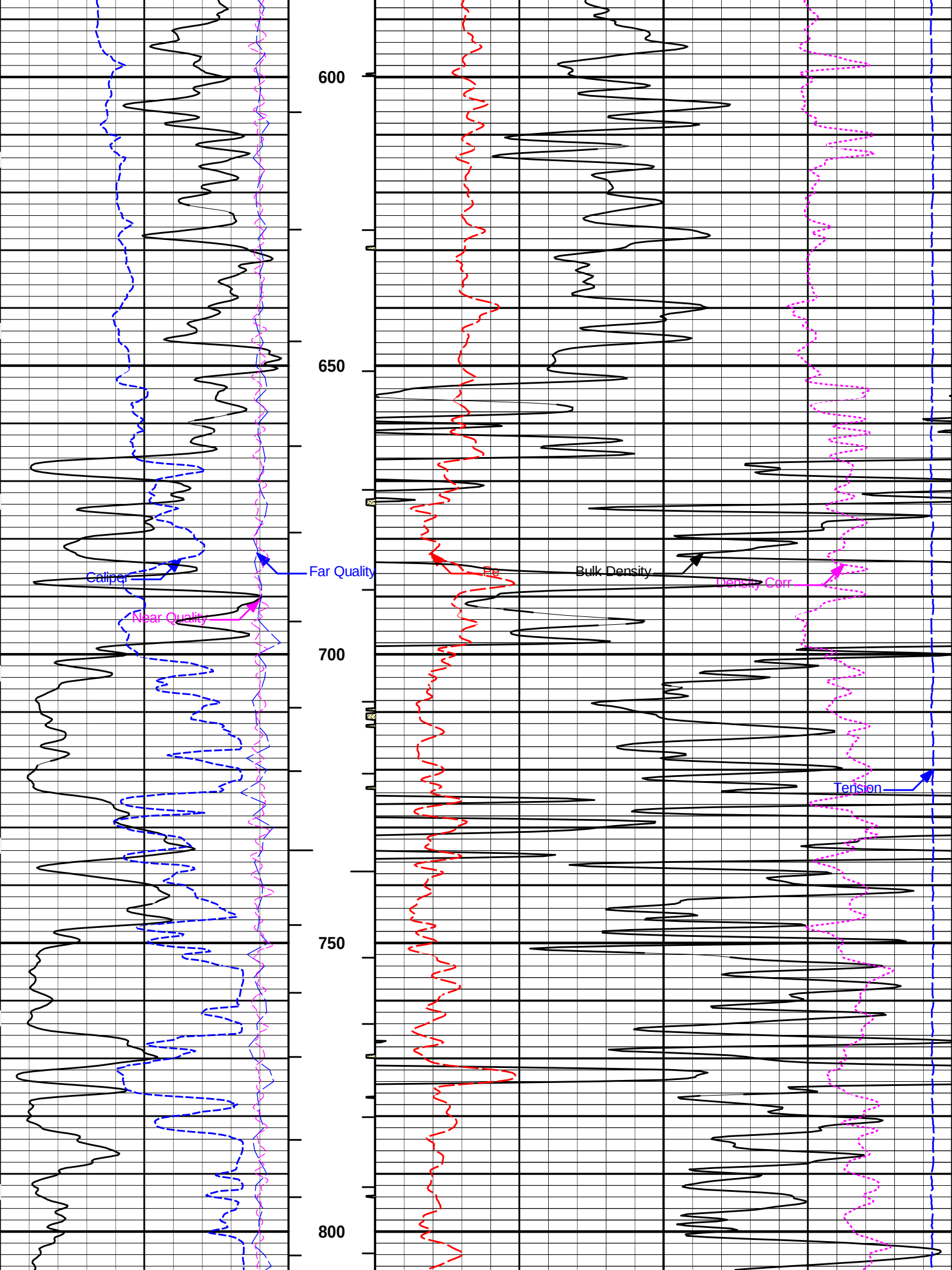
REPEAT SECTION

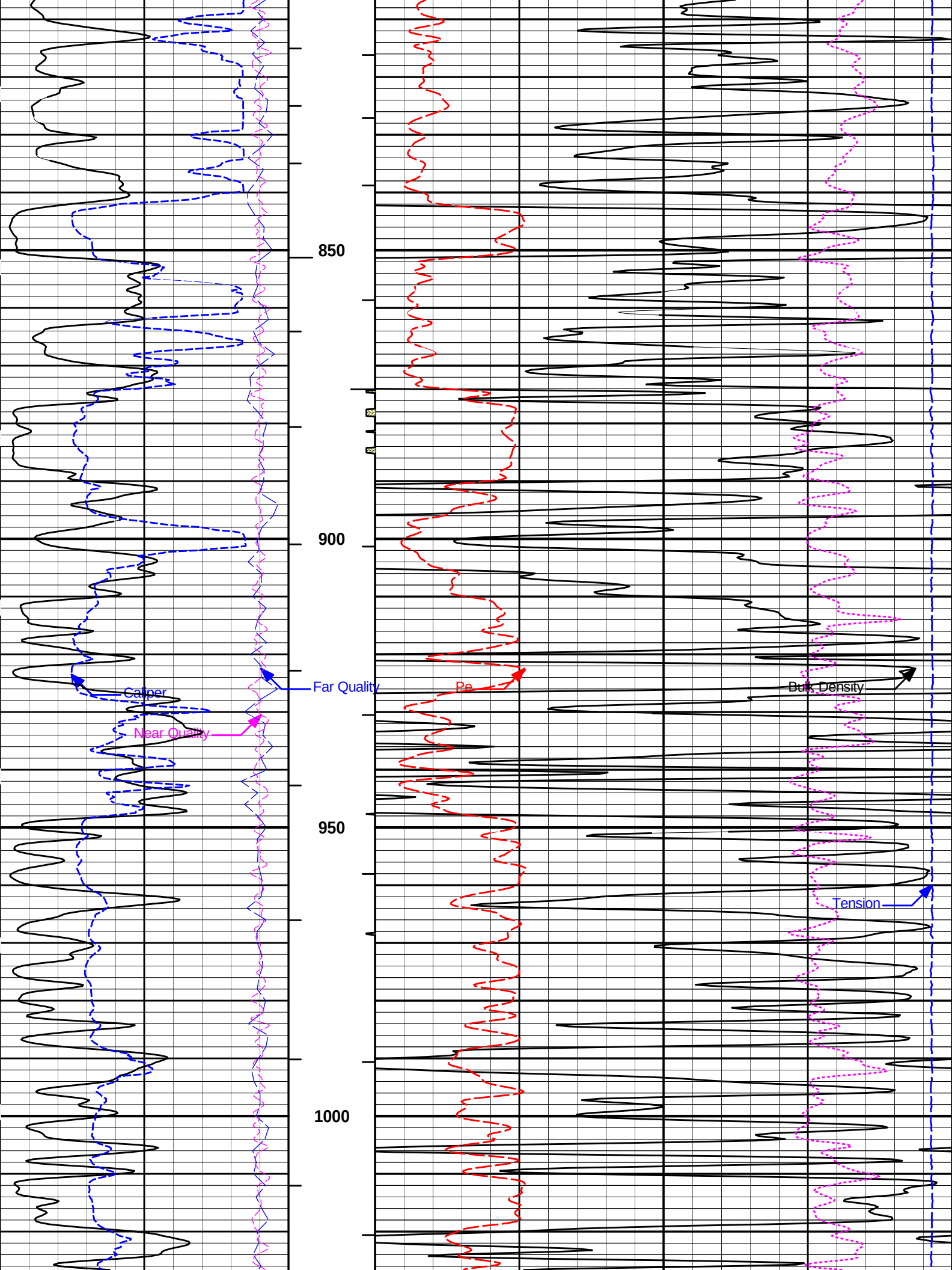
HALLIBURTON

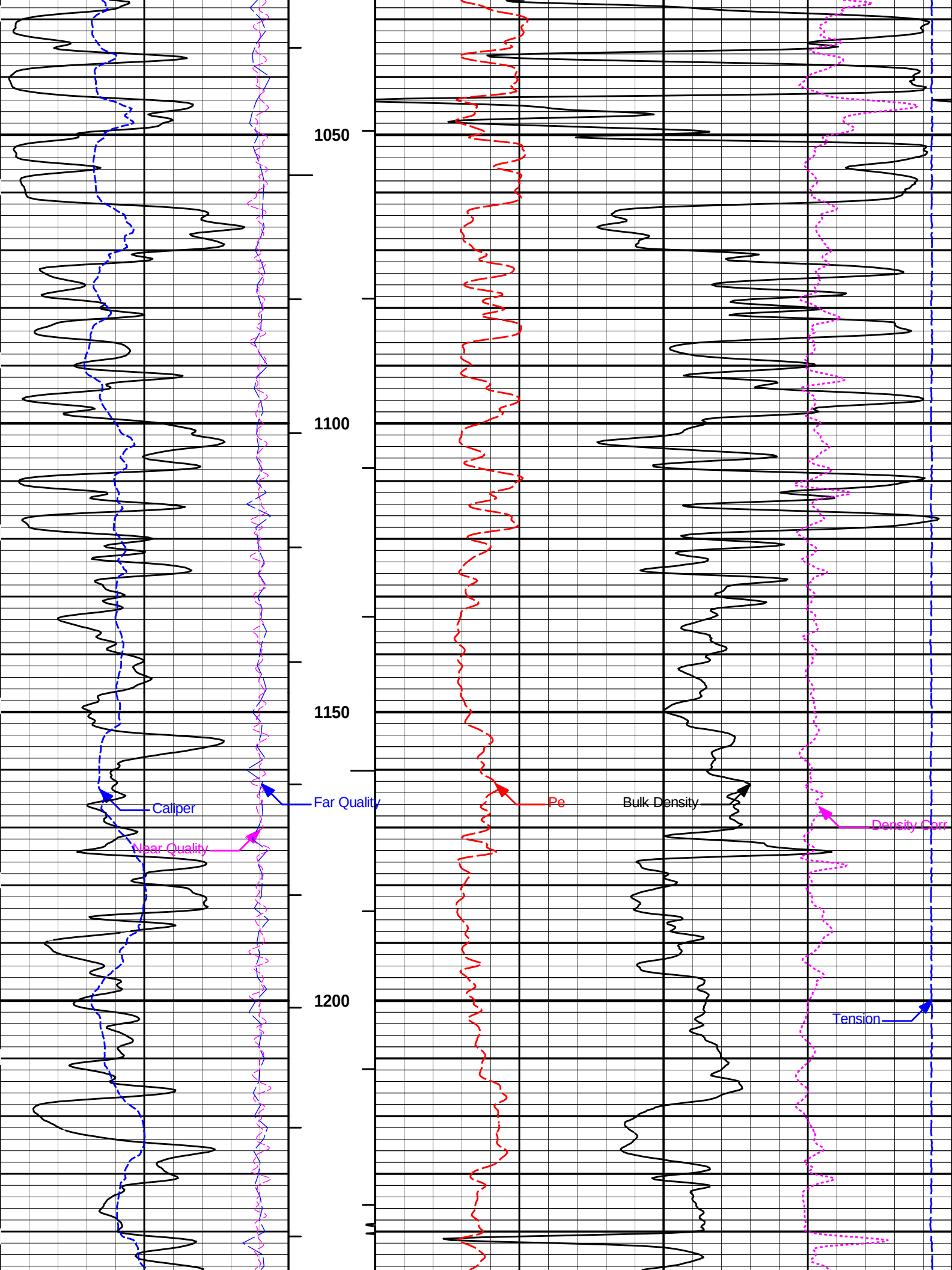
Plot Time: 15-Mar-14 02:41:50
Plot Range: 520 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\MAIN_PASS_RUN#1\
Plot File: \\(not saved)\1_Bulk_5_mainx

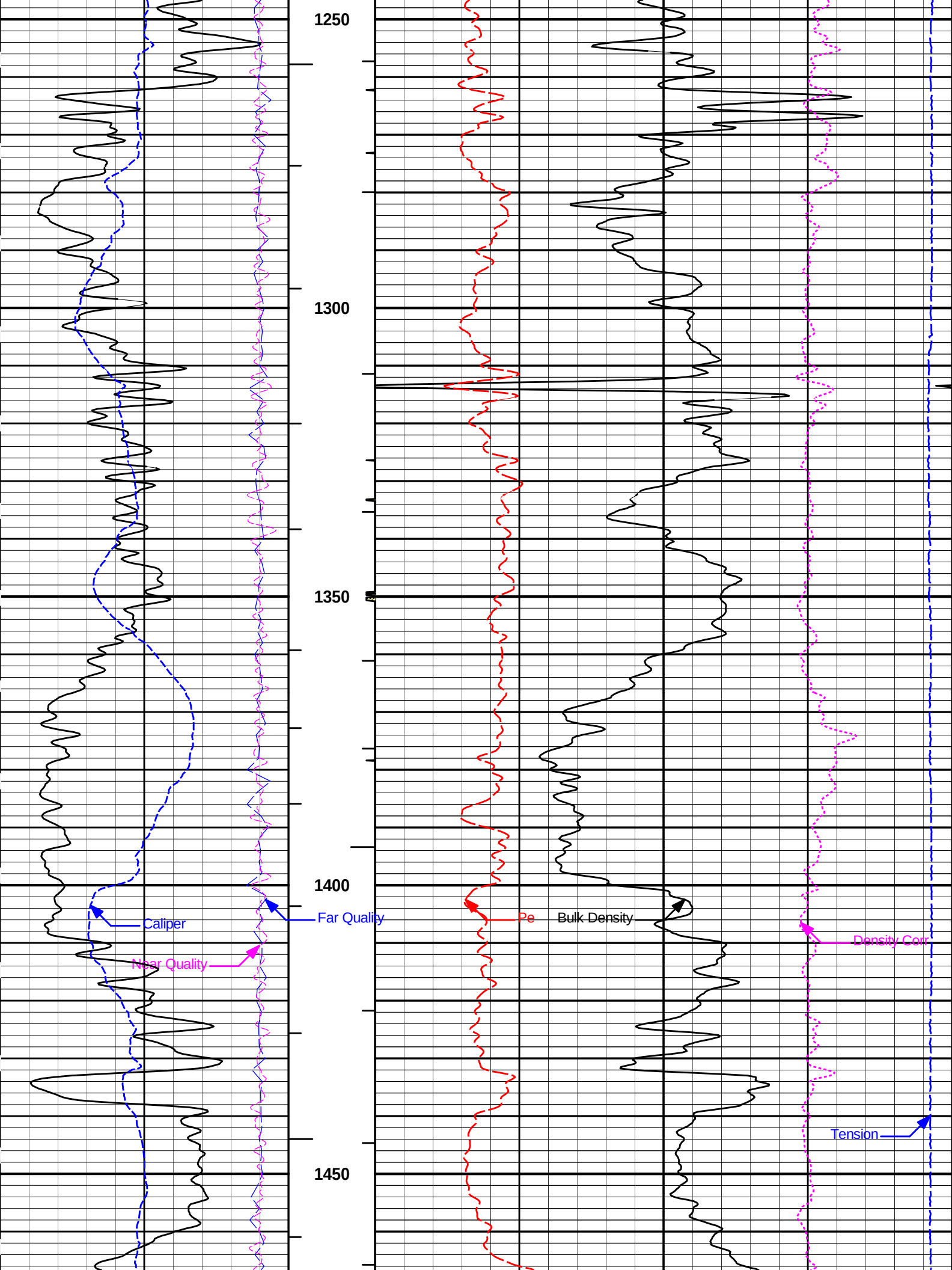
5 INCH MAIN LOG

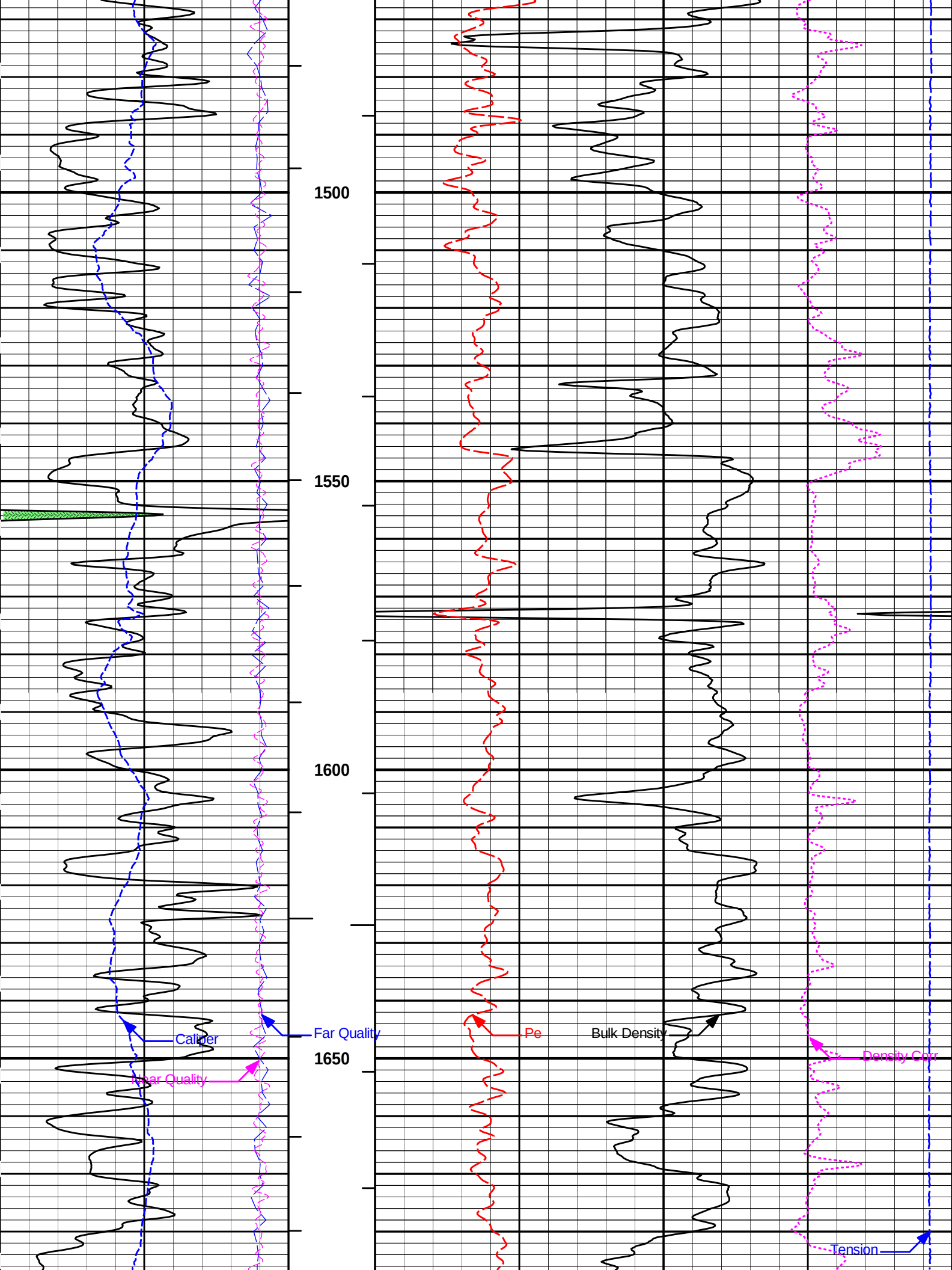


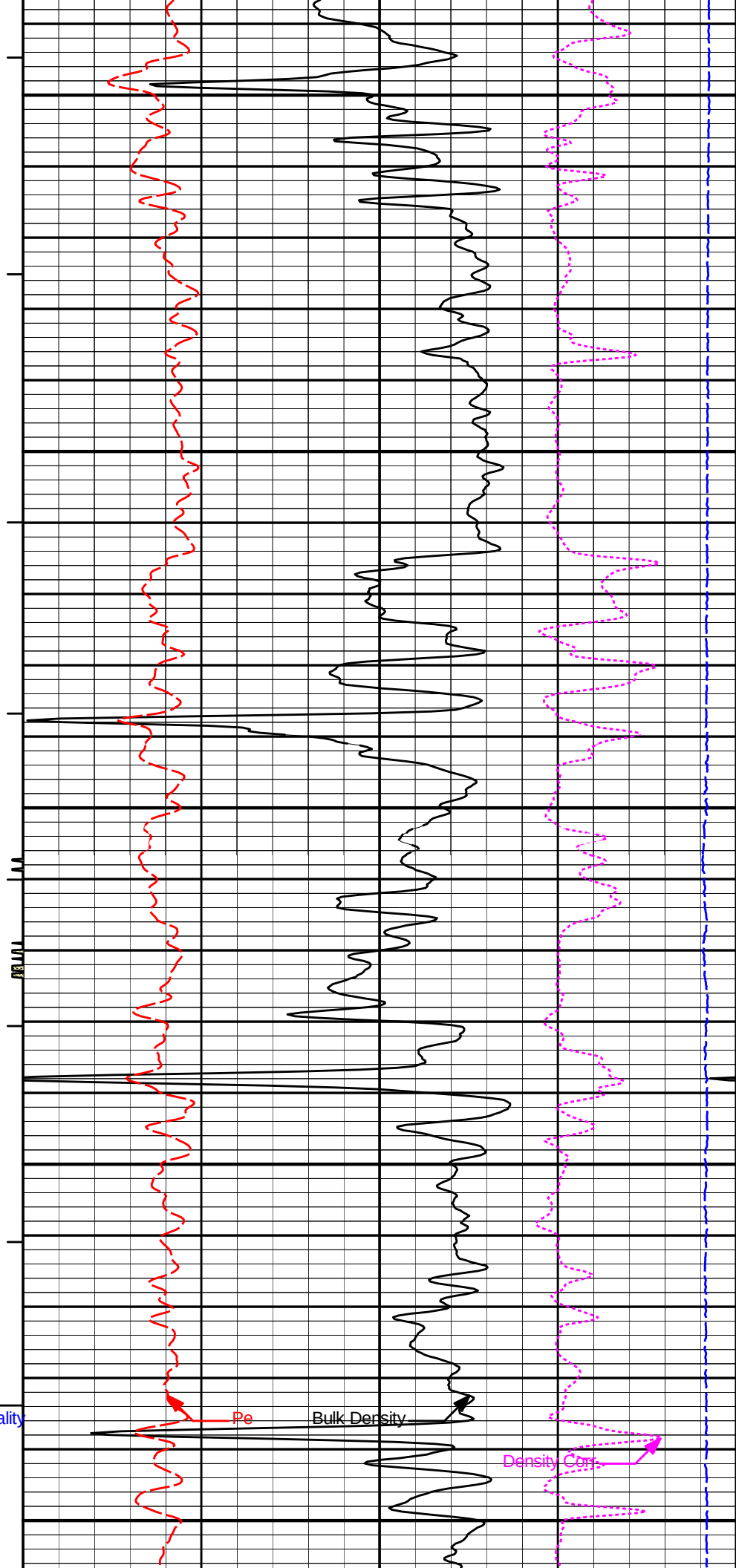
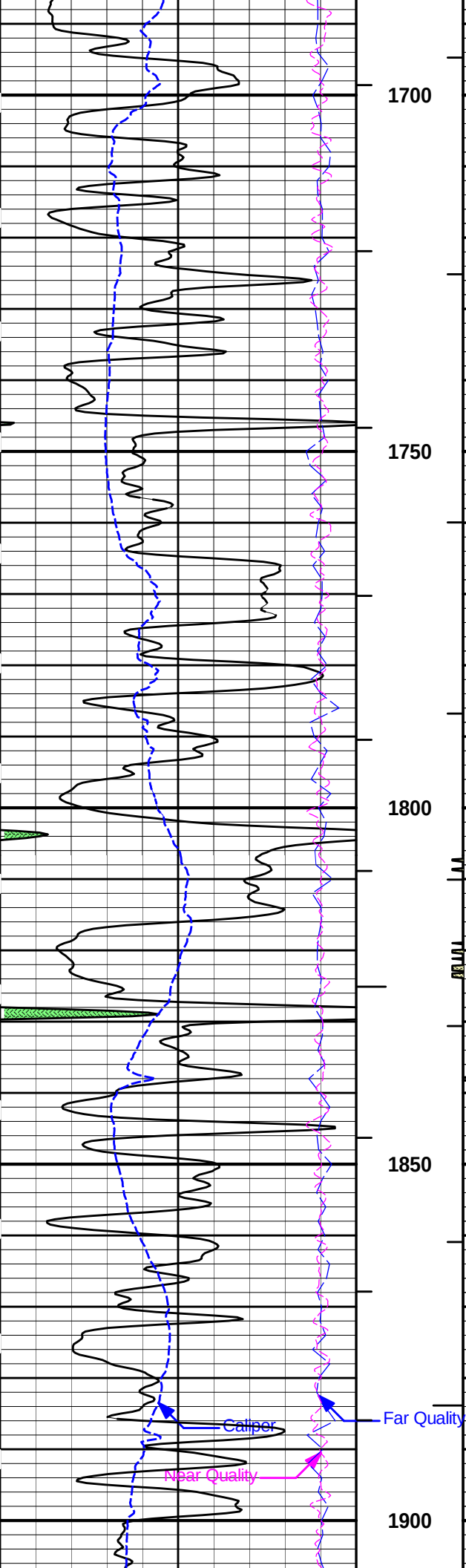


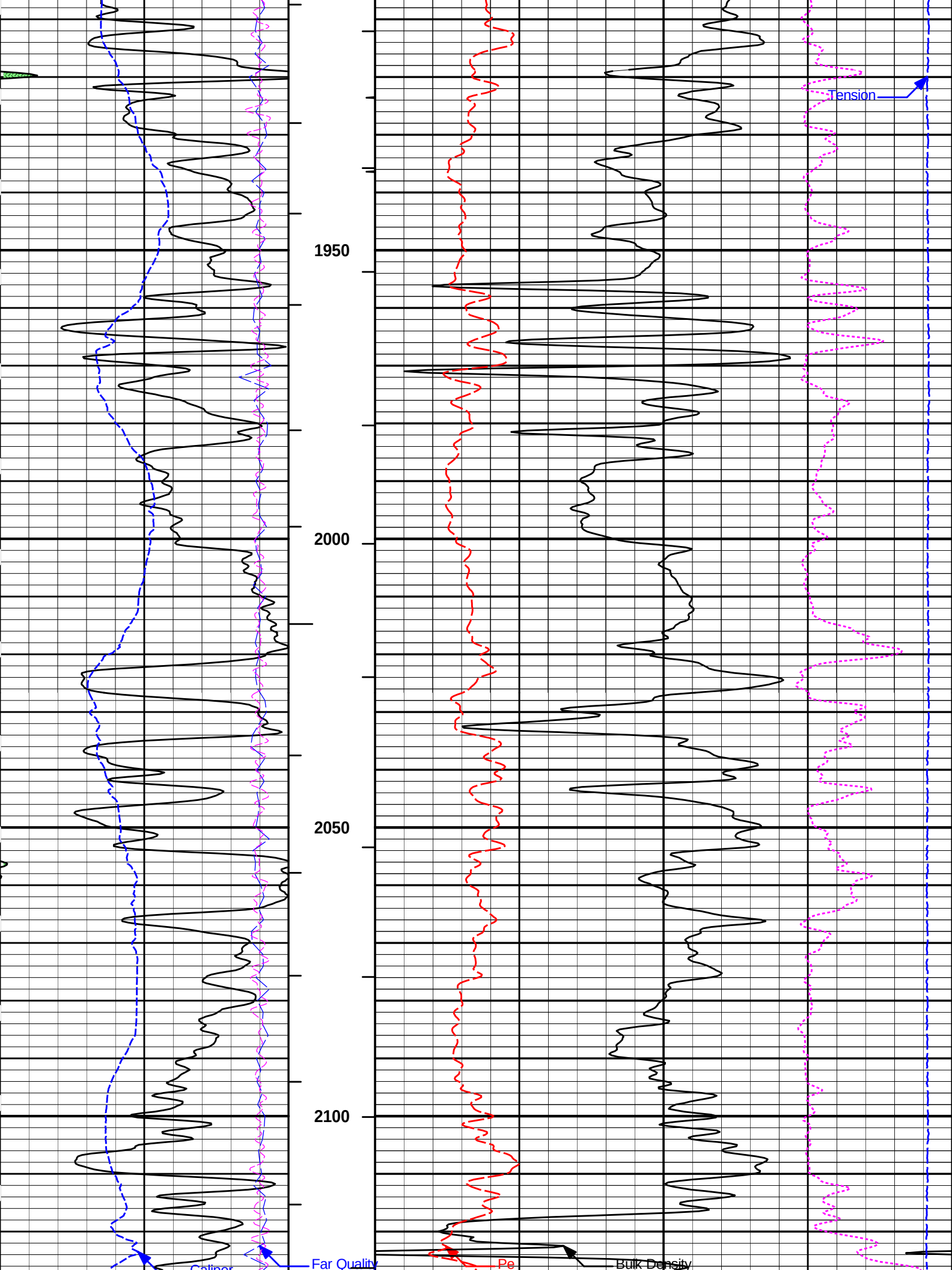


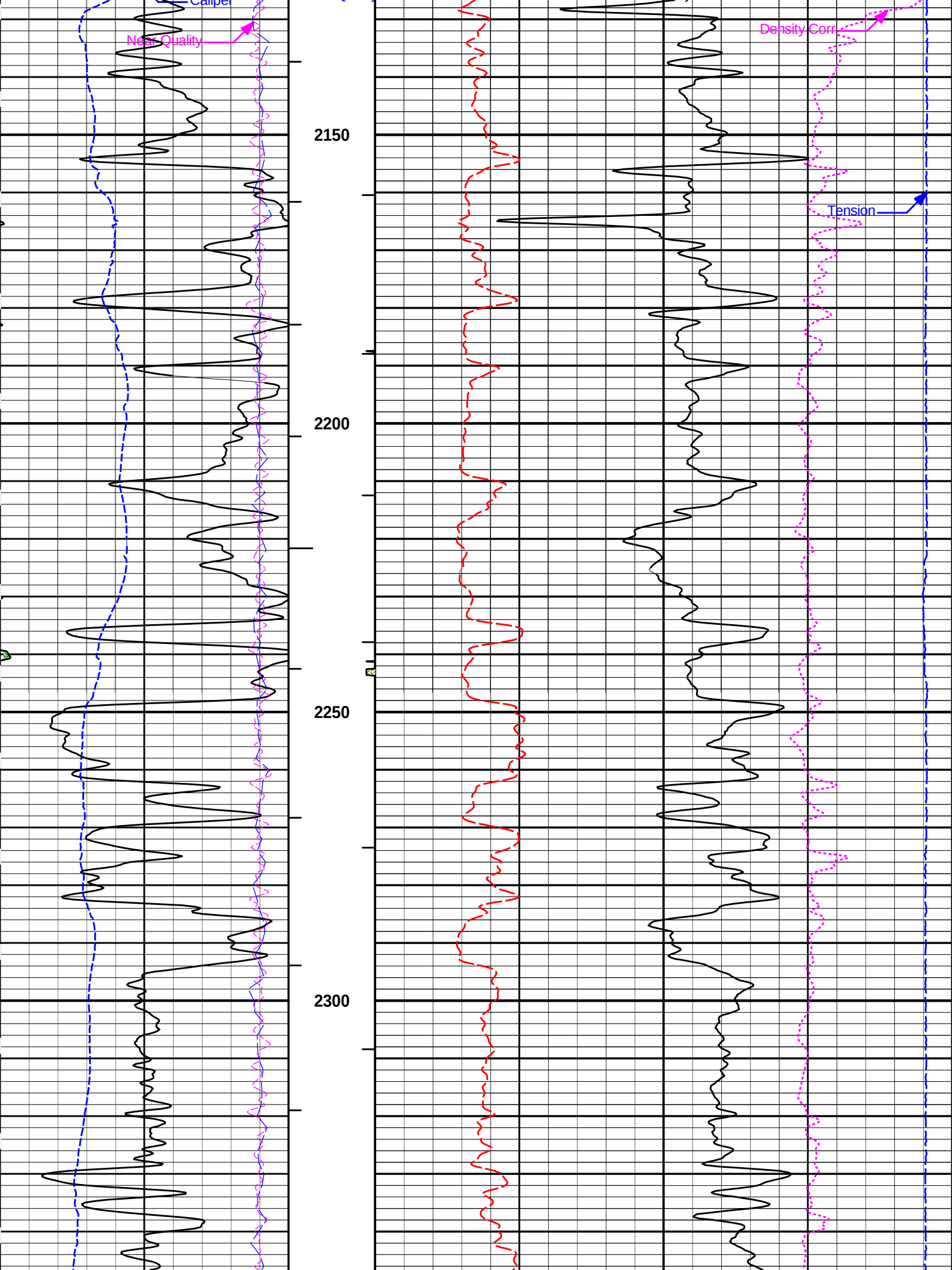


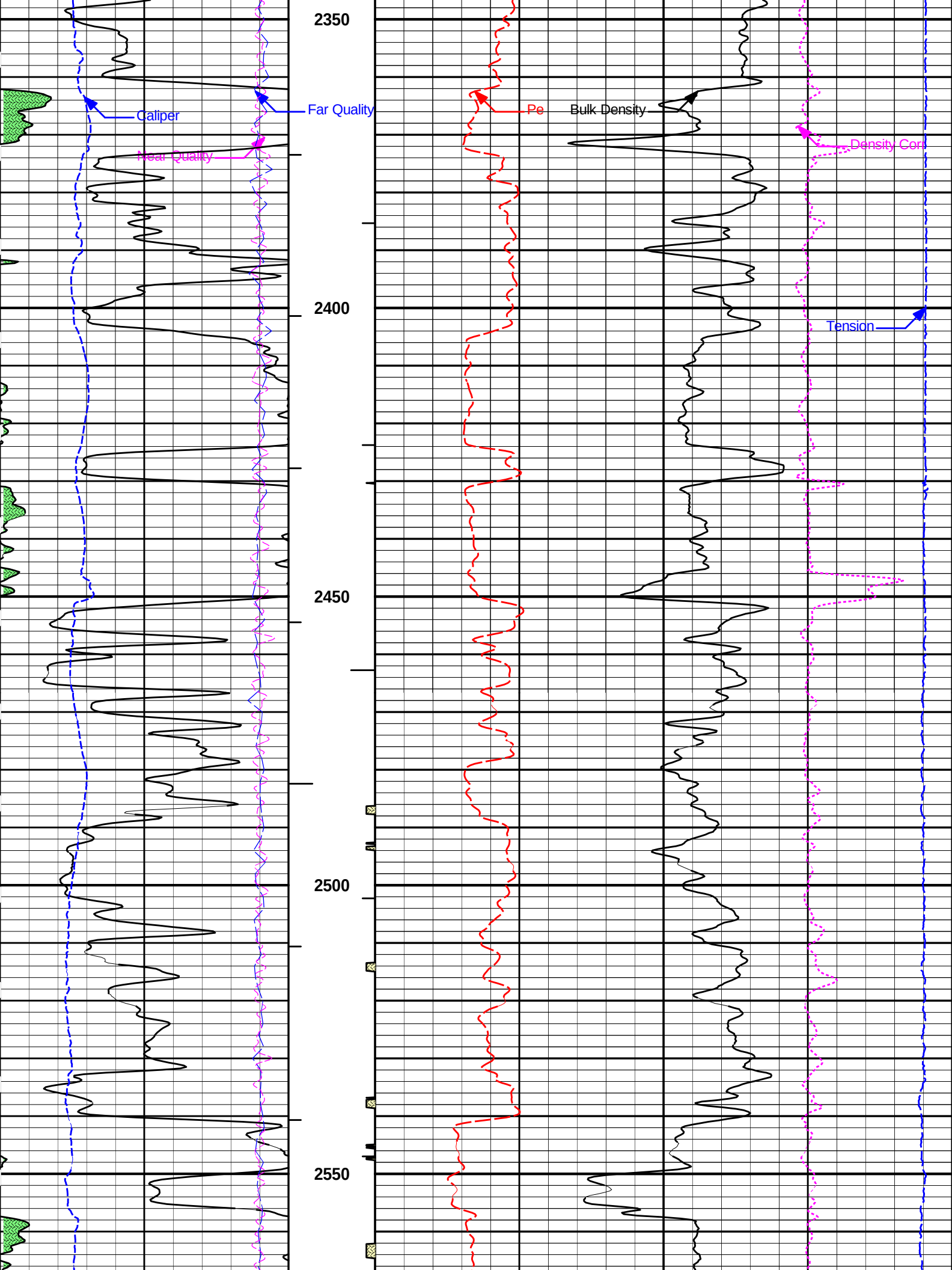


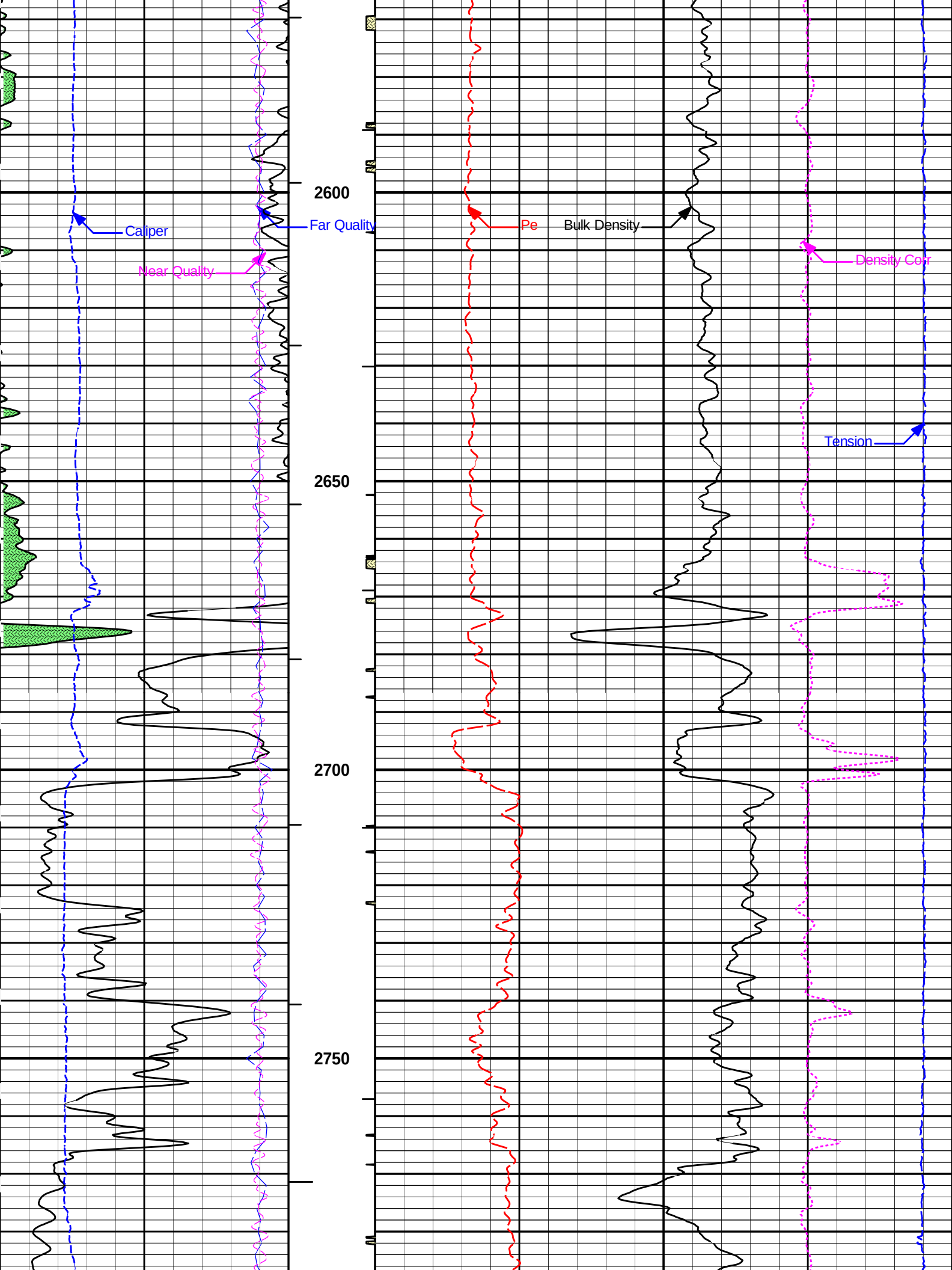


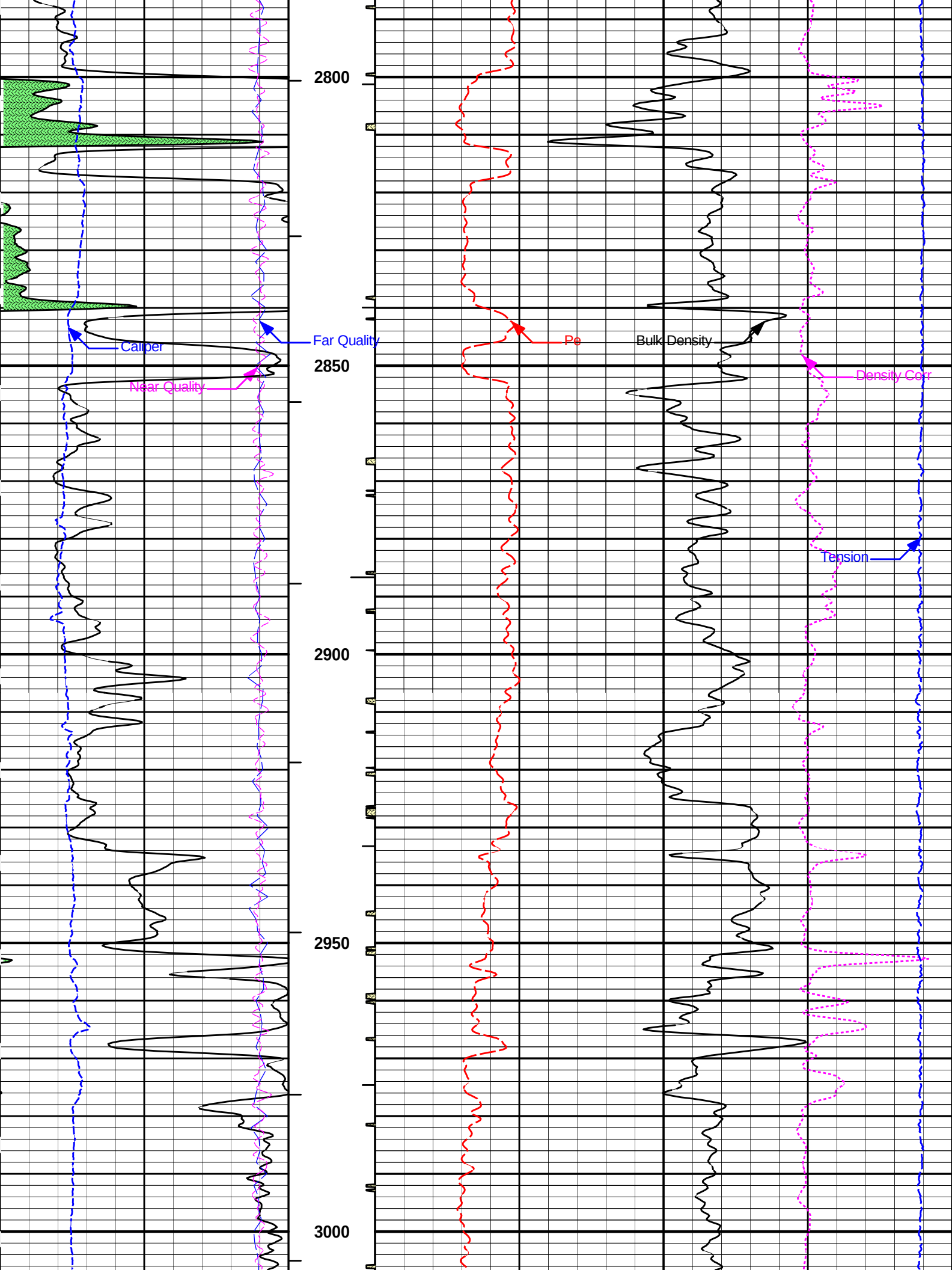


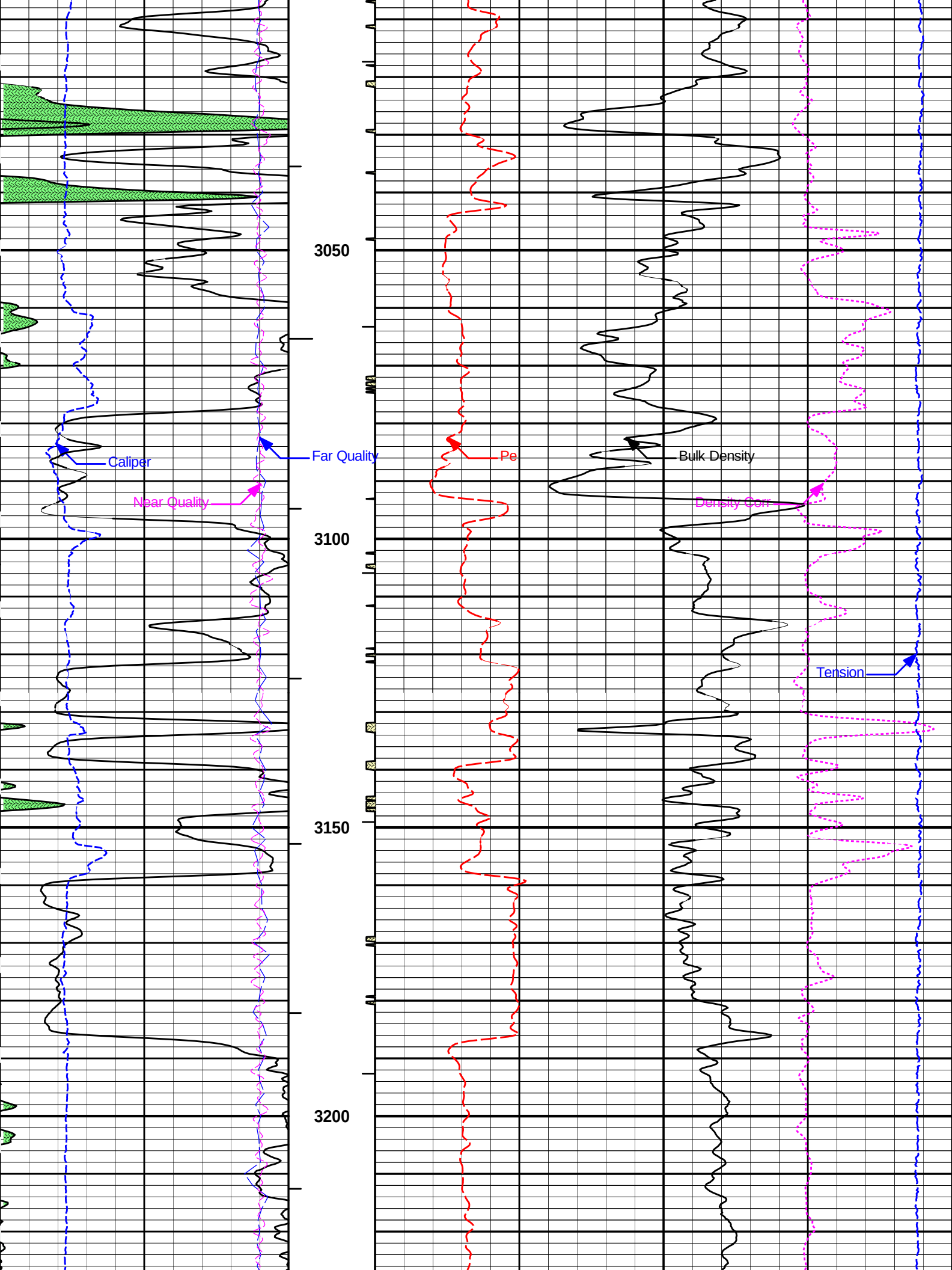


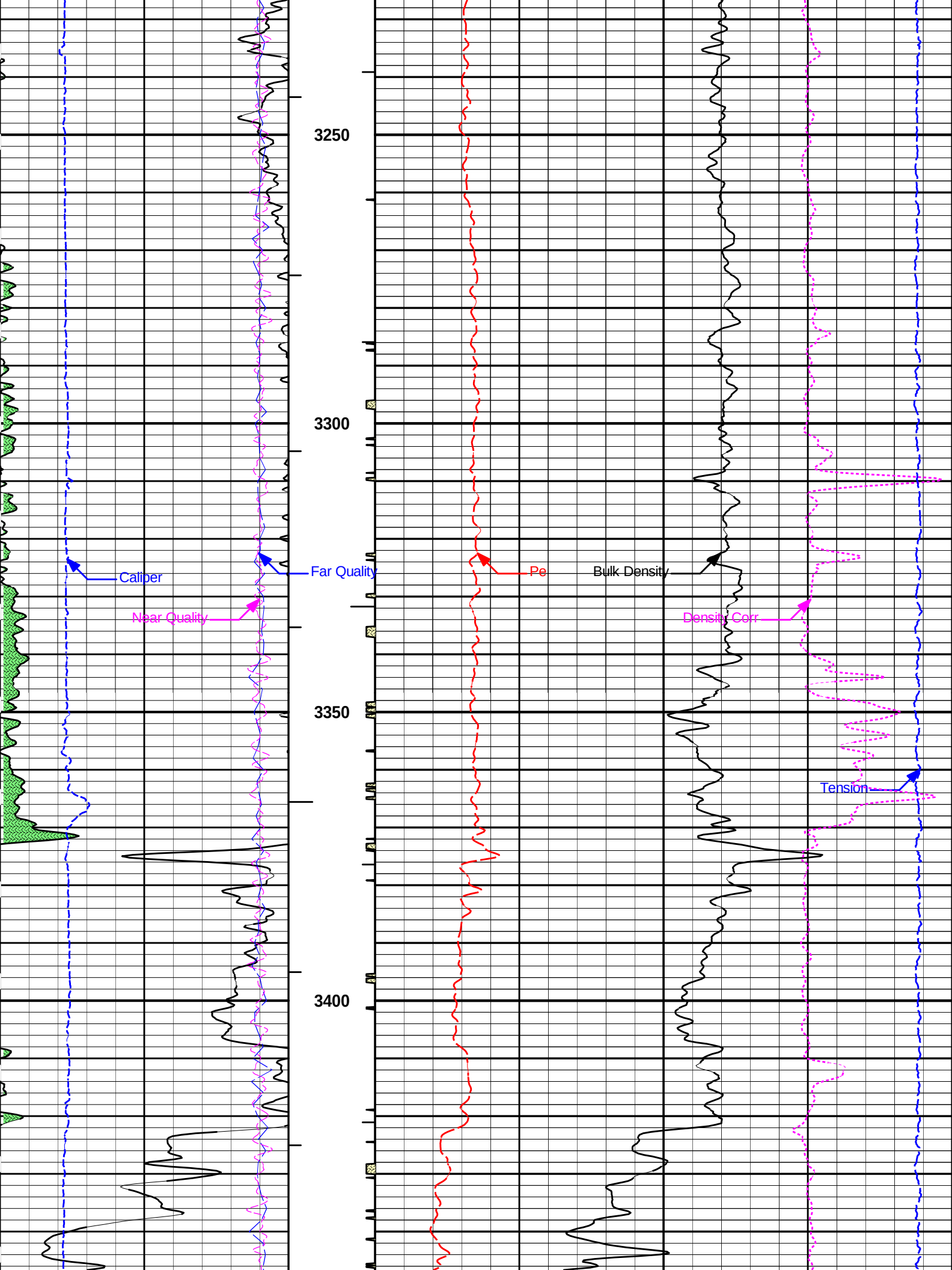


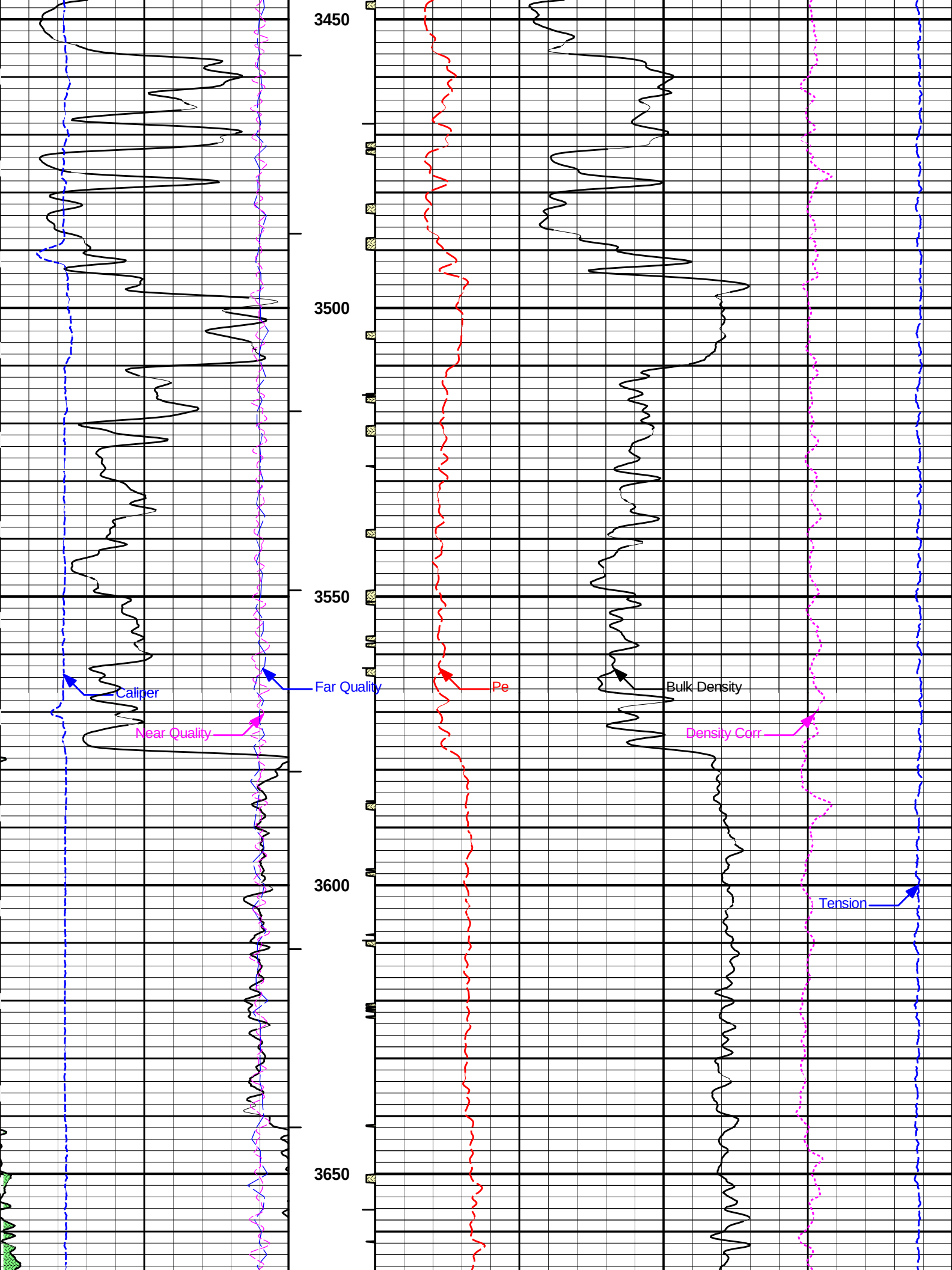


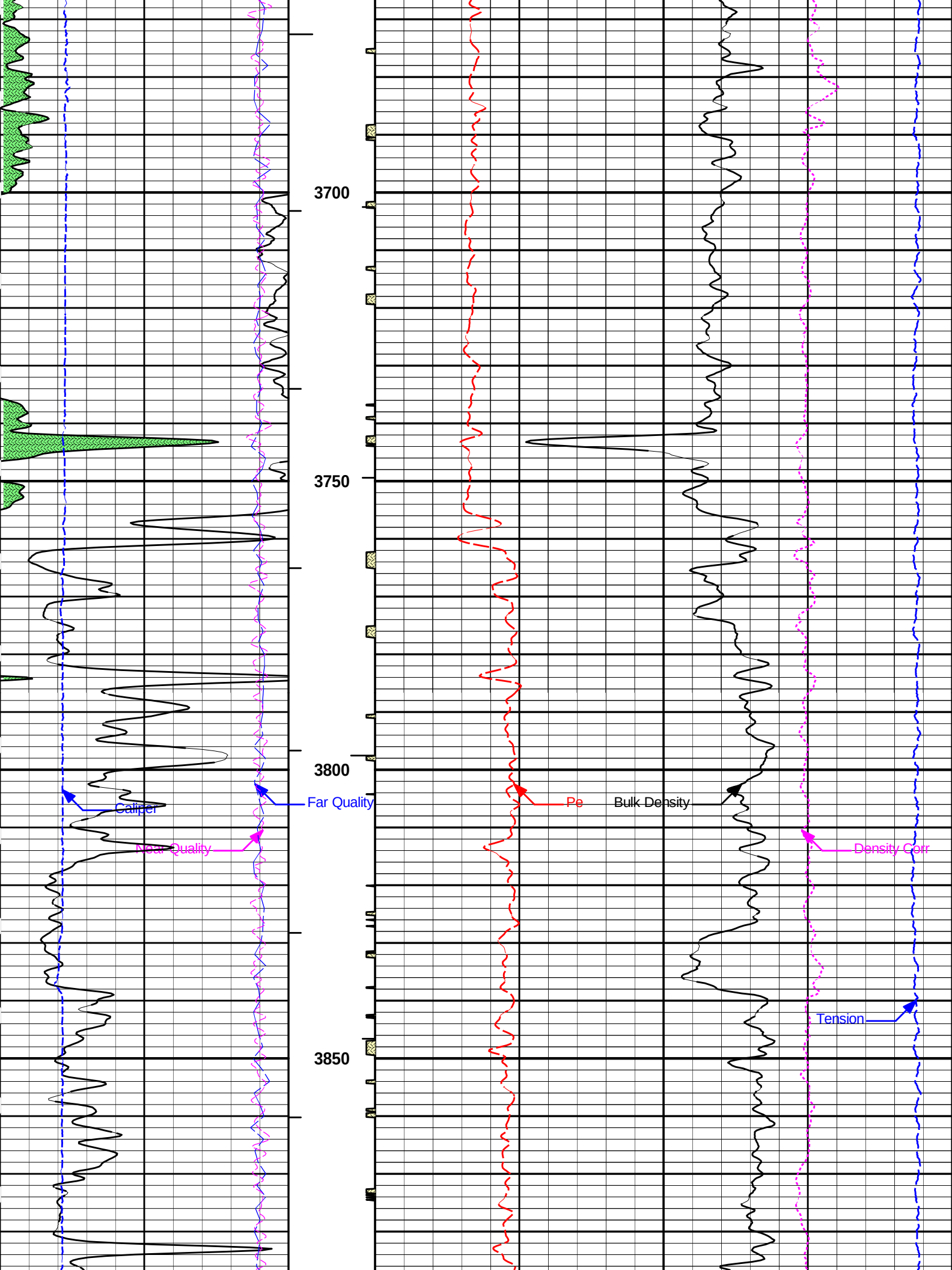


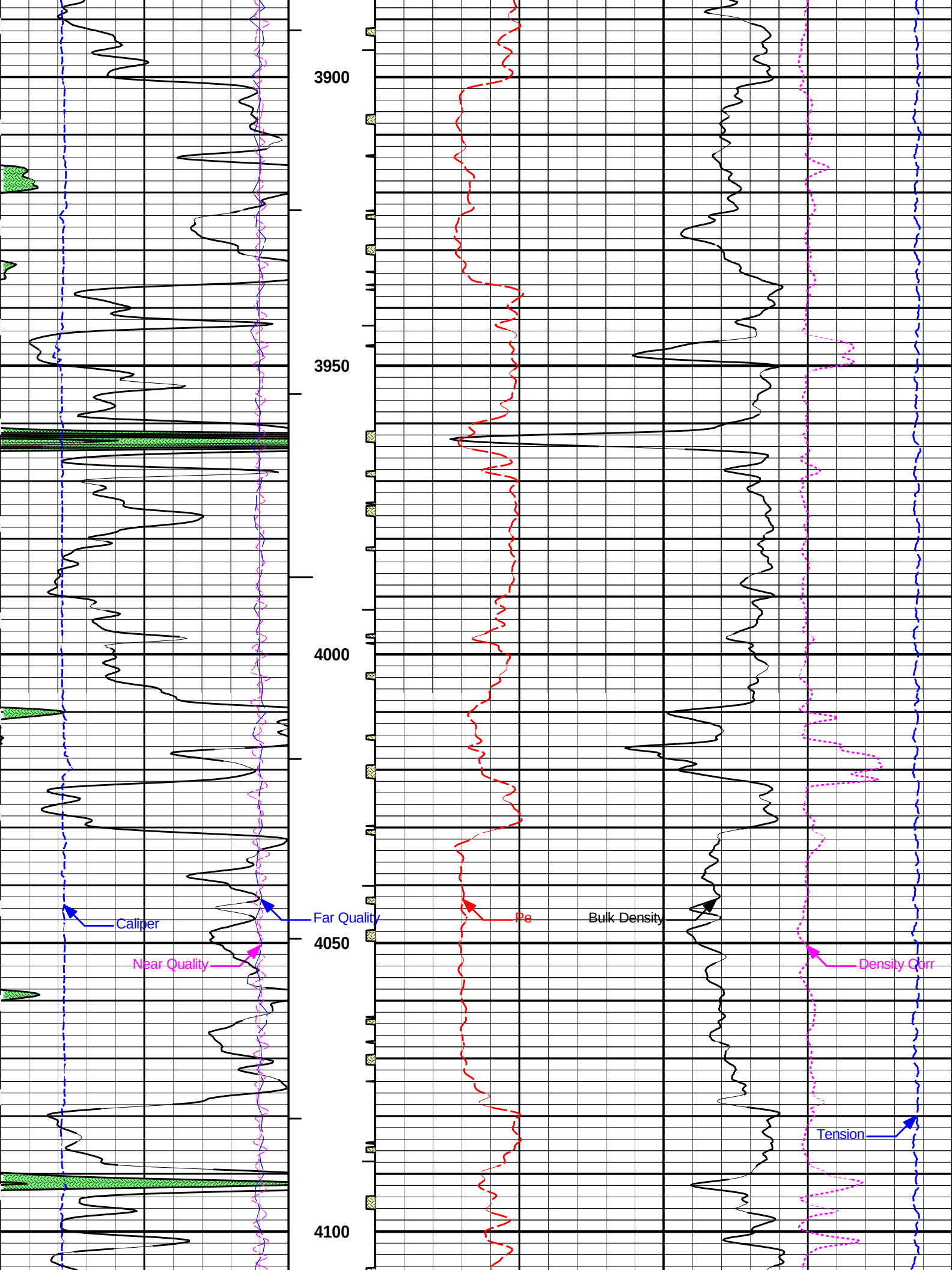


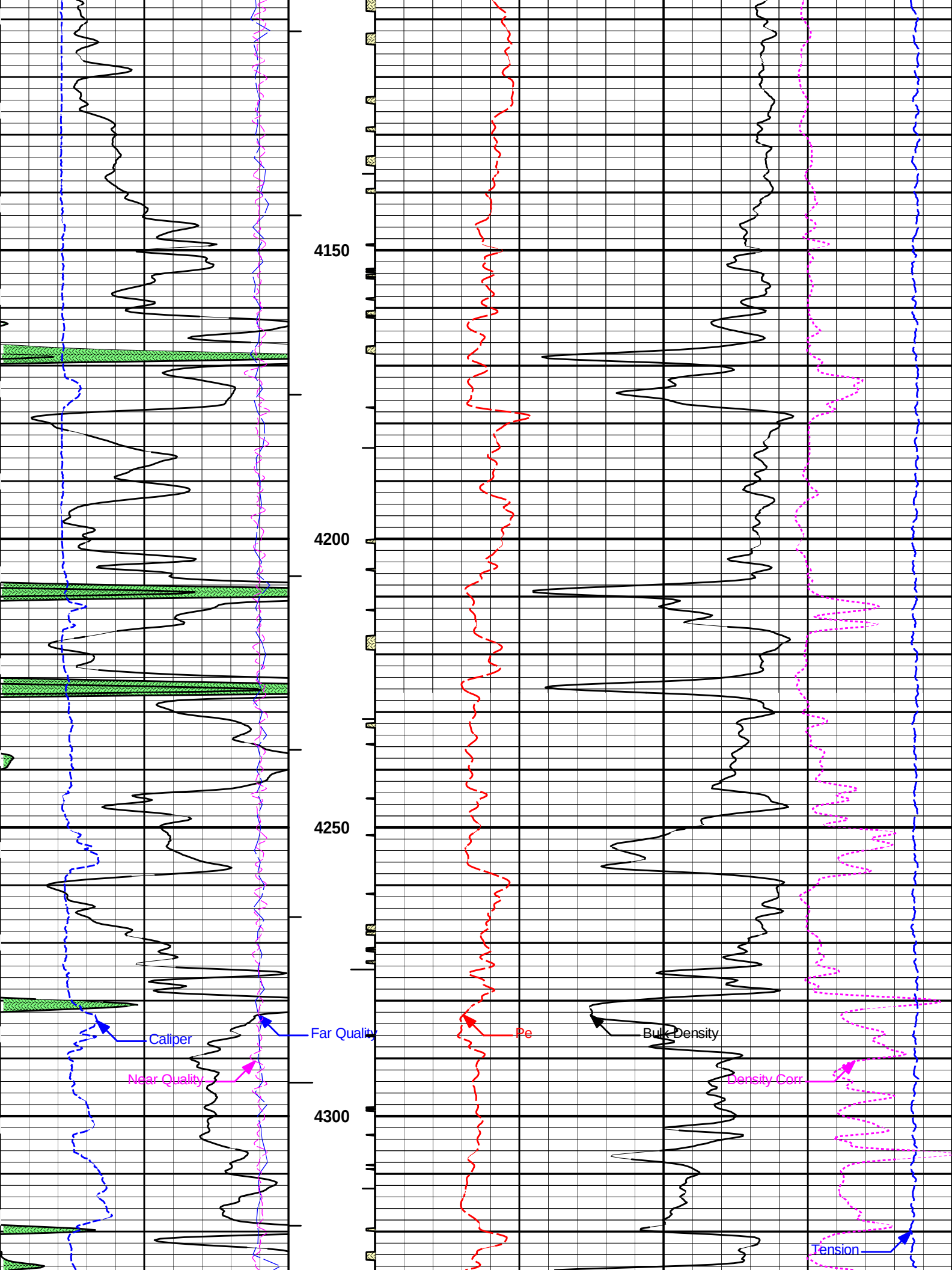


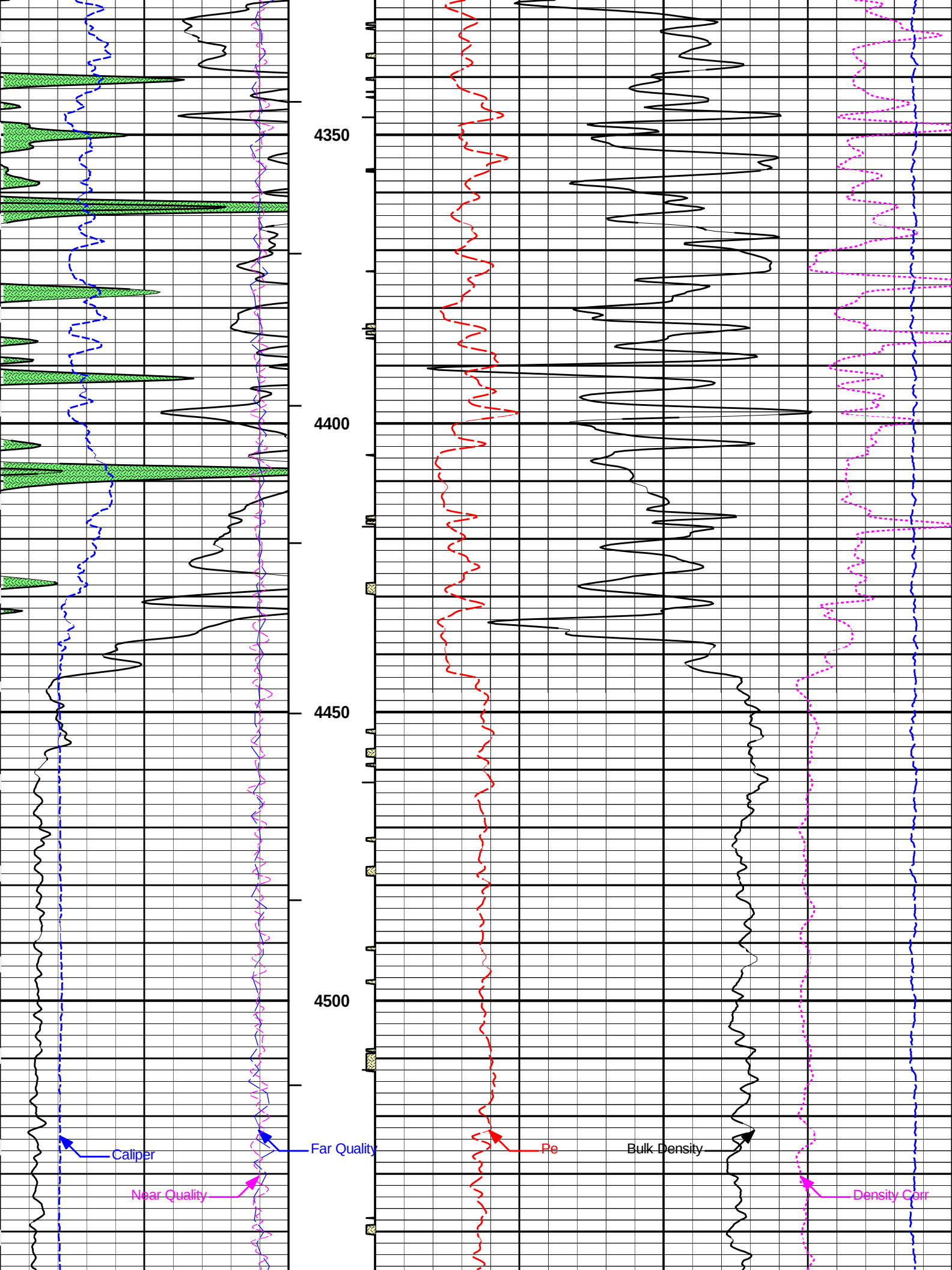


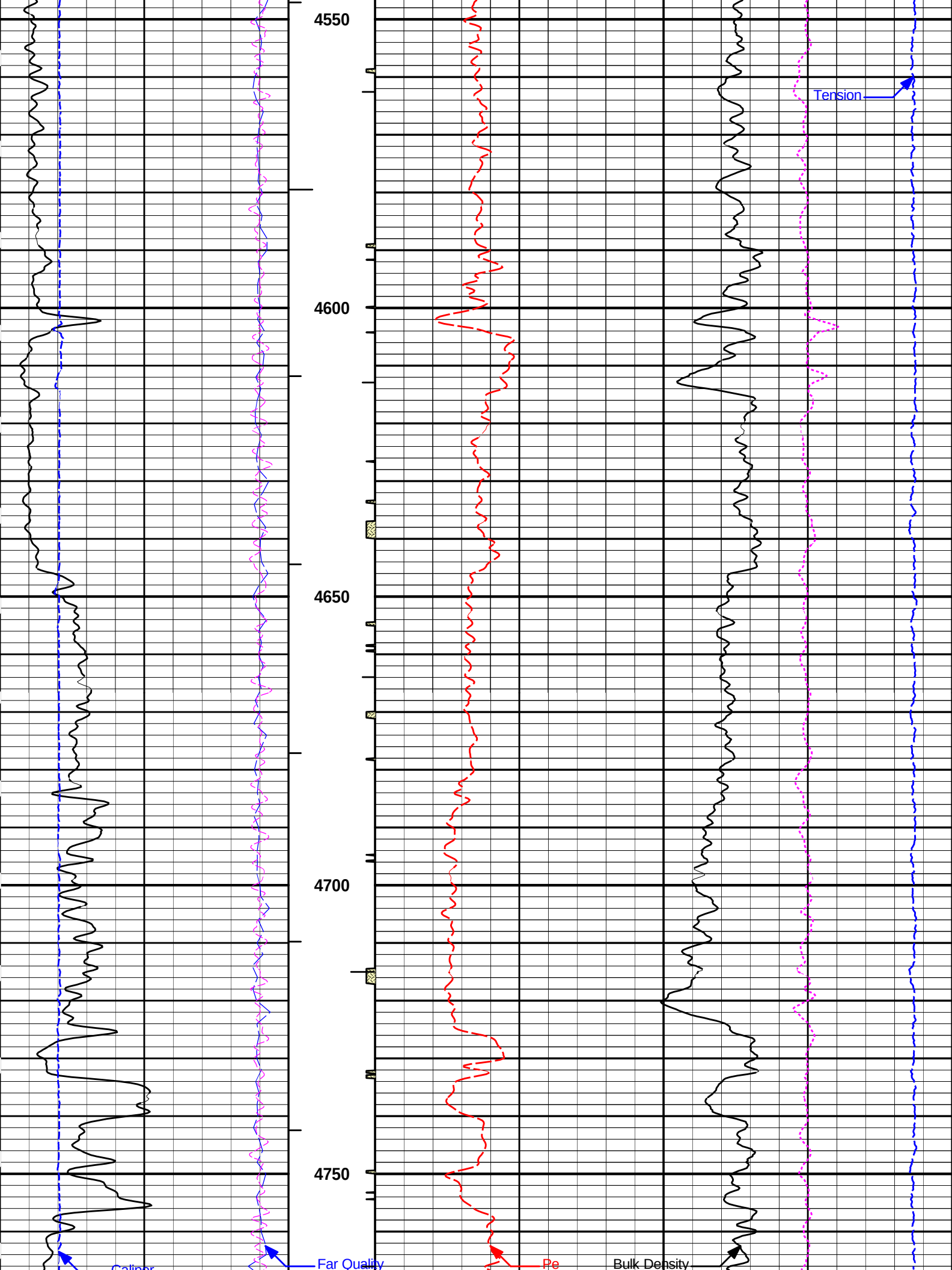


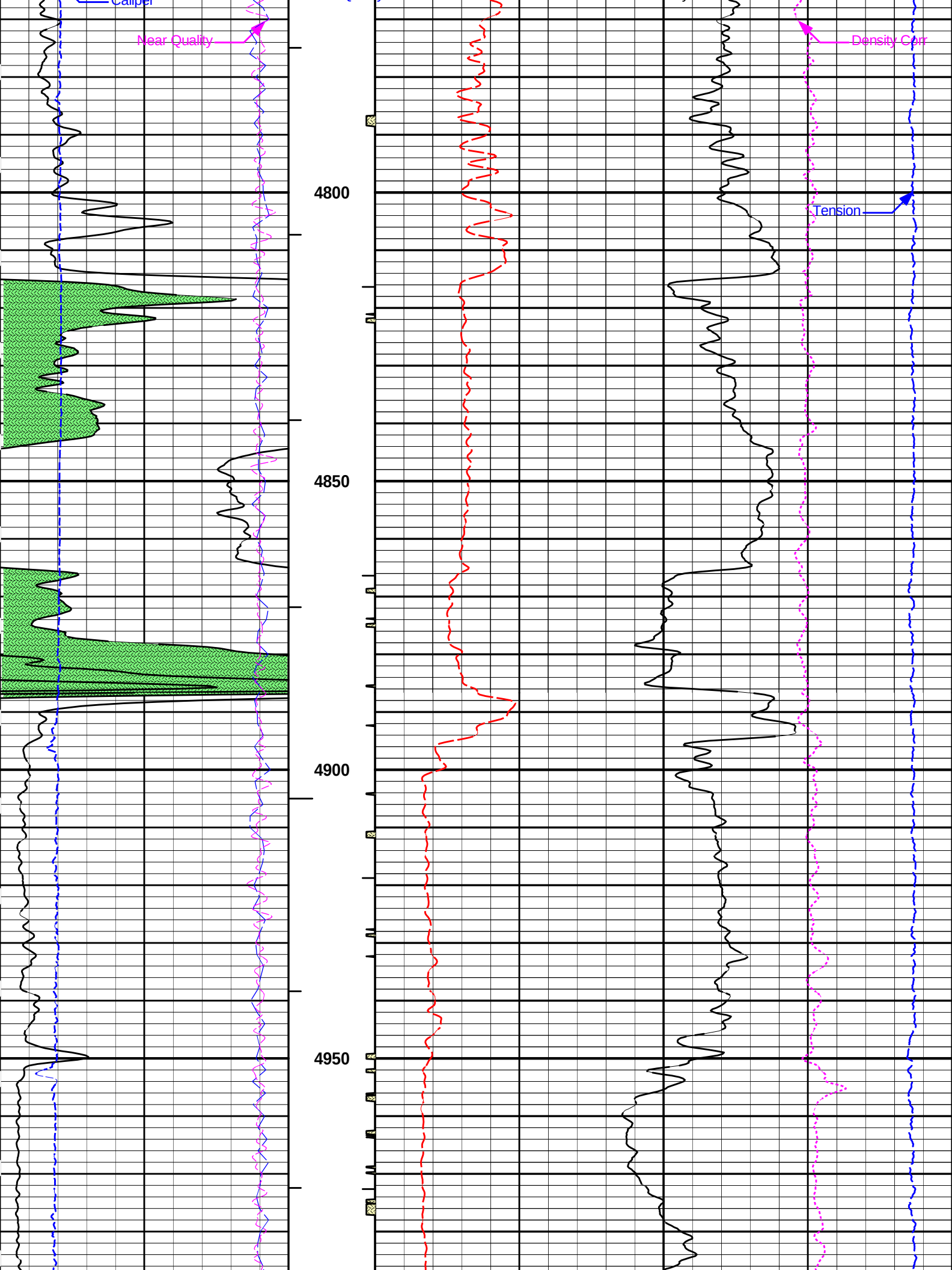


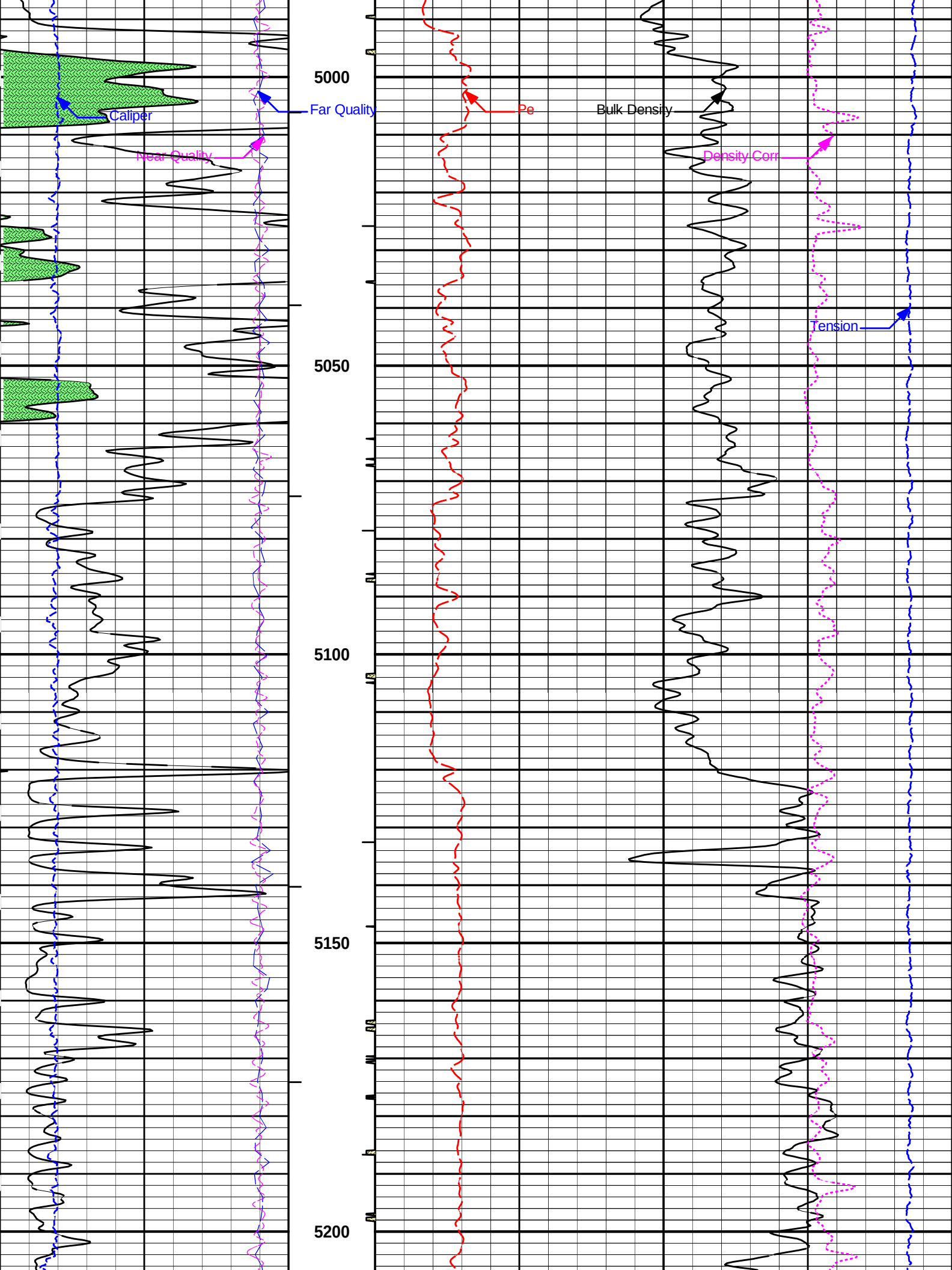


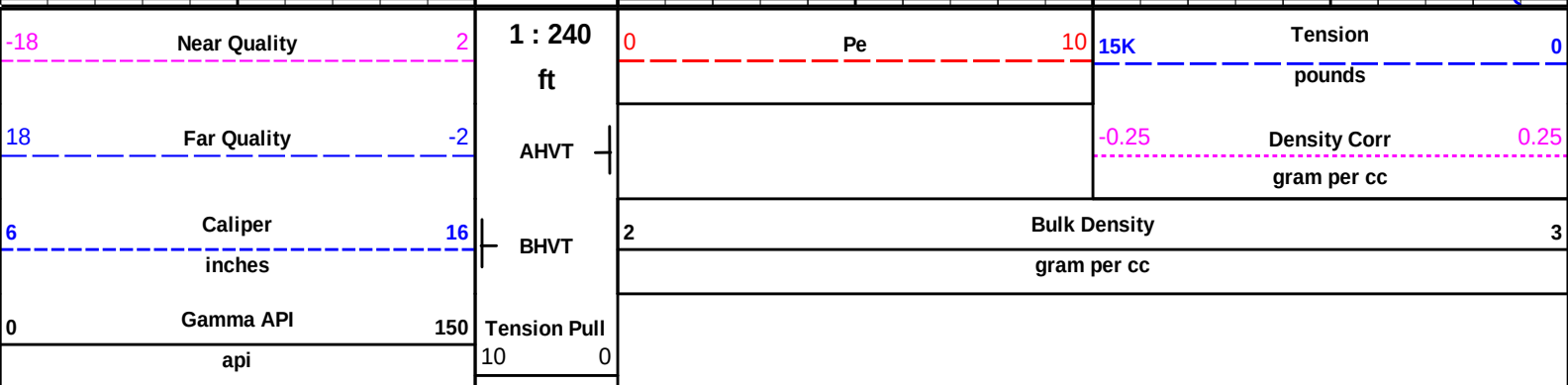












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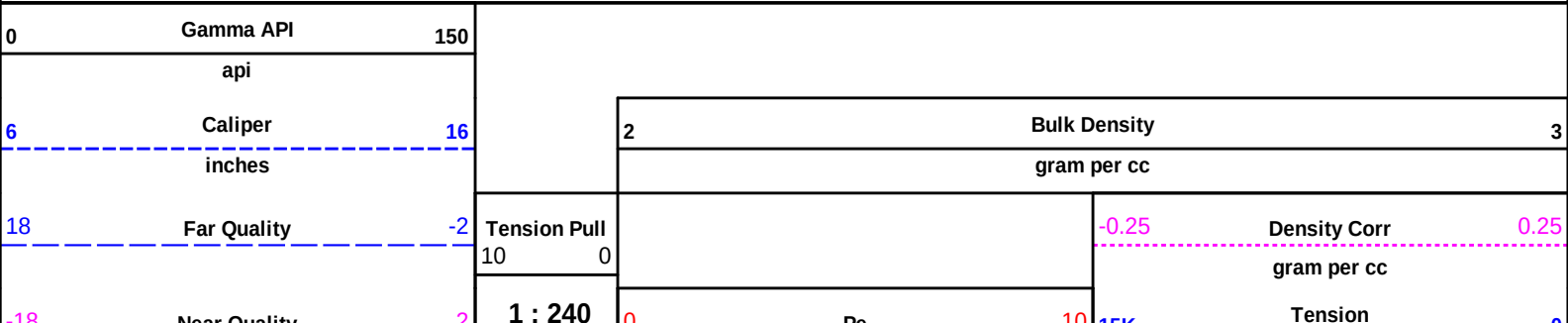
Plot Time: 15-Mar-14 02:41:54
Plot Range: 520 ft to 5266.67 ft
Data: {ActiveWell}Well Based\MAIN_PASS_RUN#1
Plot File: \\(not saved)\1_Bulk_5_mainx

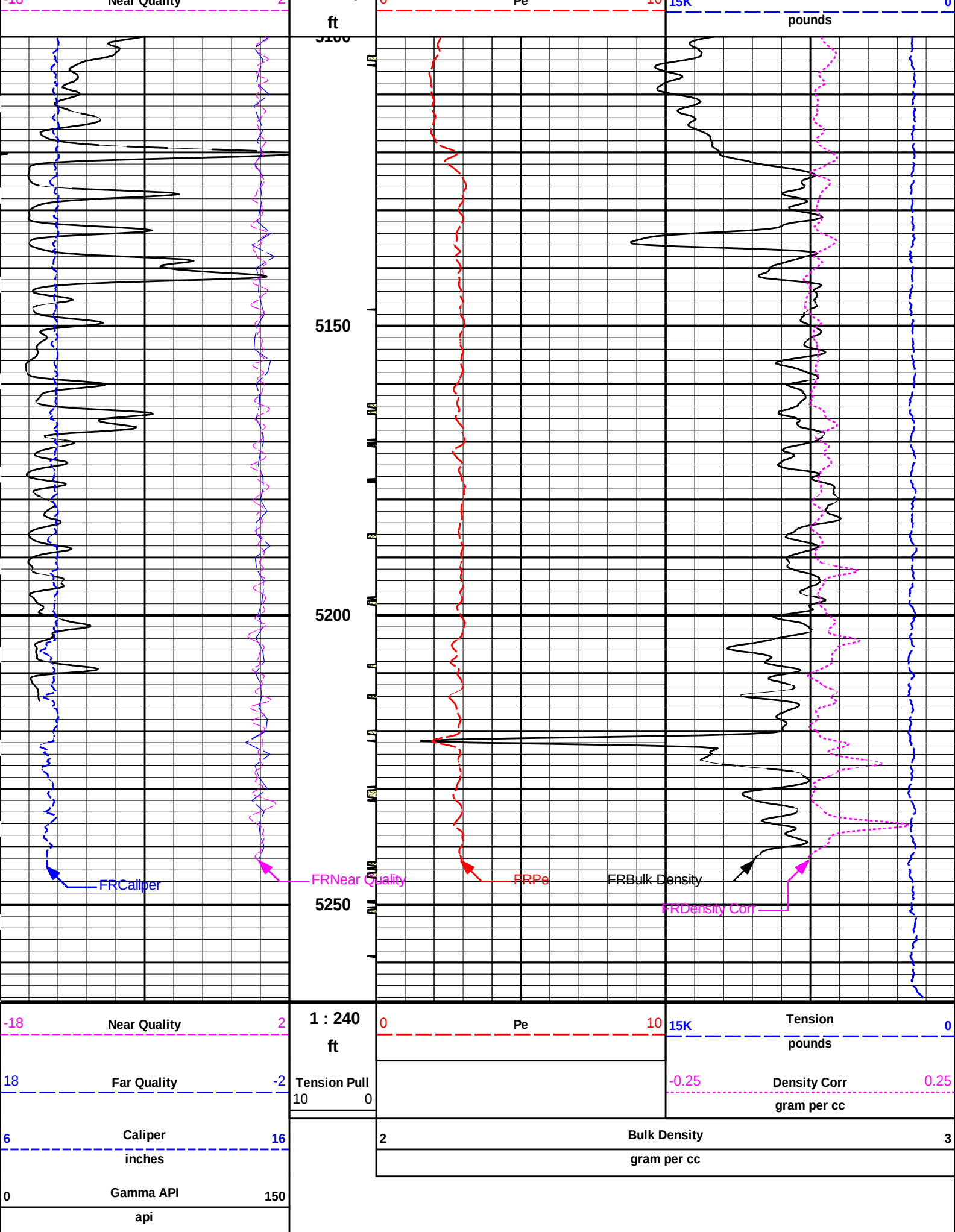
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 15-Mar-14 02:41:54
Plot Range: 5100 ft to 5266.67 ft
Data: {ActiveWell}\Well Based\REPEAT_PASS_RUN#1
Plot File: \\(not saved)\1_Bulk_5_rptx

REPEAT SECTION





REPEAT SECTION

HALLIBURTON

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	1200.00	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	4.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	5258.00	ft
	SHARED	BHT	Bottom Hole Temperature	110.0	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	BARE	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: BLITZBERG_1_30\0001 TRIPLE_CSNG\002 14-Mar-14 21:50 Up @5267.0f			Date: 15-Mar-14 02:00:37	

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:GTET - 11013114

Engineer:Christopher Marlowe

Software Version:WL INSITE R3.8.12 (Build 3)

Reference Calibration Date:24-Jan-14 16:46:08

Calibration Date:12-Mar-14 09:20:13

Calibration Version:1

Calibrator Source S/N: 150

Calibrator API Reference:264.00 api

Equivalent Calibrator API Reference:268.6 api

Measurement	Measured	Calibrated	Units
Background	30.4	31.9	api
Background + Calibrator	287.0	300.5	api
Calibrator	256.6	268.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:GTET - 11013114

Engineer:Jeremy Cothren

Reference Calibration Date:12-Mar-14 09:20:13

Calibration Date:14-Mar-14 17:30:34

Software Version: WL INSITE R3.8.12 (Build 3)

Calibration Version: 1

Calibrator Source S/N: 150

Calibrator API Reference:264.00 api

Equivalent Calibrator API Reference:268.6 api

Field Verification	Shop	Field	Units
Background	31.9	31.0	api
Background + Calibrator	300.5	292.9	api
Calibrator	268.6	261.9	api

Shop	Field	Difference	Tolerance
268.6	261.9	6.7	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION			
Tool Name:	DSNT - 11020487	Reference Calibration Date:	18-Dec-13 11:14:07
Engineer:	Jeremy Cothren	Calibration Date:	29-Jan-14 11:17:00
Software Version:	WL INSITE R3.8.12 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN382

Tank Serial Number: 10730320

Reference value assigned to Tank: 56.100

Snow Block S/N: 1001324790

Calibration Tank Water Temperature: 47 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS				
Measurement	Prev. Value	New Value	Control Limit On New Value	
Gain:	1.004	1.000	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):	0.2371	0.2358	0.0013	+/- 0.0020
Calibrated Ratio:	10.60	10.56	0.045	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0789	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 - 11020487	Reference Calibration Date:	29-Jan-14 11:17:00
Engineer:	Christopher Marlowe	Calibration Date:	03-Mar-14 19:26:00
Software Version:	WL INSITE R3.8.12 (Build 3)	Calibration Version:	1

Logging Source S/N: DSN382				
Snow Block S/N: 1001324790				
NEUTRON FIELD-CHECK SUMMARY				
Shop		Field	Difference	Control Limit On Change

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	SDLT Pad - 10844772	Reference Calibration Date:	29-Jan-14 15:48:22
Engineer:	Jeremy Cothren	Calibration Date:	13-Mar-14 11:53:17
Software Version:	WL INSITE R3.8.12 (Build 3)	Calibration Version:	1

Logging Source S/N: 5155GW		
Aluminum Block S/N: 63074	Density: 2.585g/cc	Pe: 3.140
Magnesium Block S/N: 63386	Density: 1.683g/cc	Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0033	1.0025	0.90 - 1.10
Near Dens Gain	1.0039	1.0043	0.90 - 1.10
Near Peak Gain	0.9966	0.9965	0.90 - 1.10
Near Lith Gain	0.9830	0.9822	0.90 - 1.10
Far Bar Gain	0.9979	0.9981	0.90 - 1.10
Far Dens Gain	0.9862	0.9861	0.90 - 1.10
Far Peak Gain	0.9801	0.9801	0.90 - 1.10
Far Lith Gain	0.9606	0.9605	0.90 - 1.10
Near Bar Offset	0.1493	0.1561	NONE
Near Dens Offset	0.1249	0.1213	NONE
Near Peak Offset	0.1867	0.1868	NONE
Near Lith Offset	0.2856	0.2922	NONE
Far Bar Offset	0.1417	0.1400	NONE
Far Dens Offset	0.2293	0.2295	NONE
Far Peak Offset	0.2550	0.2549	NONE
Far Lith Offset	0.3479	0.3481	NONE
Near Bar Background	873.06	873.28	700 - 1450
Near Dens Background	283.59	283.48	230 - 480
Near Peak Background	121.59	121.59	100 - 210
Near Lith Background	152.50	152.43	125 - 260
Far Bar Background	520.57	520.63	450 - 900
Far Dens Background	203.88	204.02	175 - 345
Far Peak Background	79.45	79.40	70 - 140
Far Lith Background	83.53	83.51	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.683	1.683	-0.000	+/- 0.015
Pe	2.546	2.547	0.001	+/- 0.150
ALUMINUM				
Density (g/cc)	2.585	2.585	0.000	+/- 0.01500
Pe	3.090	3.091	0.001	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0001	+/- 0.0110	-0.0013	+/- 0.0140
Magnesium Block	-0.0027	+/- 0.0110	-0.0040	+/- 0.0140
Aluminum Block	-0.0009	+/- 0.0110	0.0006	+/- 0.0140
Resolution	9.55	6.00 - 11.50	9.71	6.00 - 11.50
Internal Verifier(B+D+P+L)	1431	1200 - 2700	888	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 - 10844772	Reference Calibration Date:	13-Mar-14 11:53:17
Engineer:	Jeremy Cothren	Calibration Date:	14-Mar-14 17:31:32
Software Version:	WL INSITE R3.8.12 (Build 3)	Calibration Version:	1

Pad Temperature: 75.2 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1430.784	1435.193	4.409	15.265
Far (B+D+P+L) cps	887.550	893.110	5.560	16.235
Near Resolution	9.55	9.56	0.010	0.50
Far Resolution	9.71	10.34	0.630	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-11013114						
Gamma Ray Calibrator	268.6	261.9	-----	6.7	+/- 9.00	api
DSNT-11020487						
Snow-Block Porosity	0.0789	0.0656	-----	0.0133	+/- 0.0150	decP
SDLT Pad-10844772						
Near(B+D+P+L)	1430.784	1435.193	-----	-4.409	+/-15.265	cps
Far(B+D+P+L)	887.550	893.110	-----	-5.560	+/-16.235	cps

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-RED 37.50 lbs		Ø 2.750 in →		← Temperature @ 59.97 ft	3.03 ft	60.99 ft
XOHD-00000001 20.00 lbs		Ø 2.750 in → Ø 3.625 in →			0.95 ft	57.97 ft
GTET-11013114 165.00 lbs		Ø 3.625 in →		← GammaRay @ 50.95 ft	8.52 ft	57.02 ft
CSNG-10736164 114.00 lbs	UnivWearRing3.6-10736164 5.00 lbs	Ø 4.200 in* → Ø 3.625 in →		← CSNG @ 42.87 ft	8.17 ft	48.50 ft
DSNT-11020487 174.00 lbs	DSN Decentralizer-10993115 6.60 lbs	Ø 5.000 in* → Ø 3.625 in →		← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft	9.69 ft	40.33 ft
SDLT-10951306 360.00 lbs	SDLT Pad-10844772 65.00 lbs Microlog Pad-10951306 8.00 lbs	Ø 4.500 in → Ø 4.750 in* → Ø 4.750 in* →		Microlog @ 22.83 ft SDL Caliper @ 22.65 ft SDL @ 22.64 ft	10.81 ft	30.64 ft
ACRT Instrument-11302822 50.00 lbs		Ø 3.625 in →		← Mud Resistivity @ 13.44 ft	5.03 ft	19.83 ft
					14.80 ft	14.80 ft

ACRt Sonde-
11335202
200.00 lbs

SP Ring-12345671
0.00 lbs

Cabbage Head-
00000001
10.00 lbs

Ø 3.625 in →

Ø 3.625 in* →

Ø 3.625 in →
Ø 6.000 in →

← ACRt @ 9.46 ft

← SP @ 1.86 ft

14.22 ft

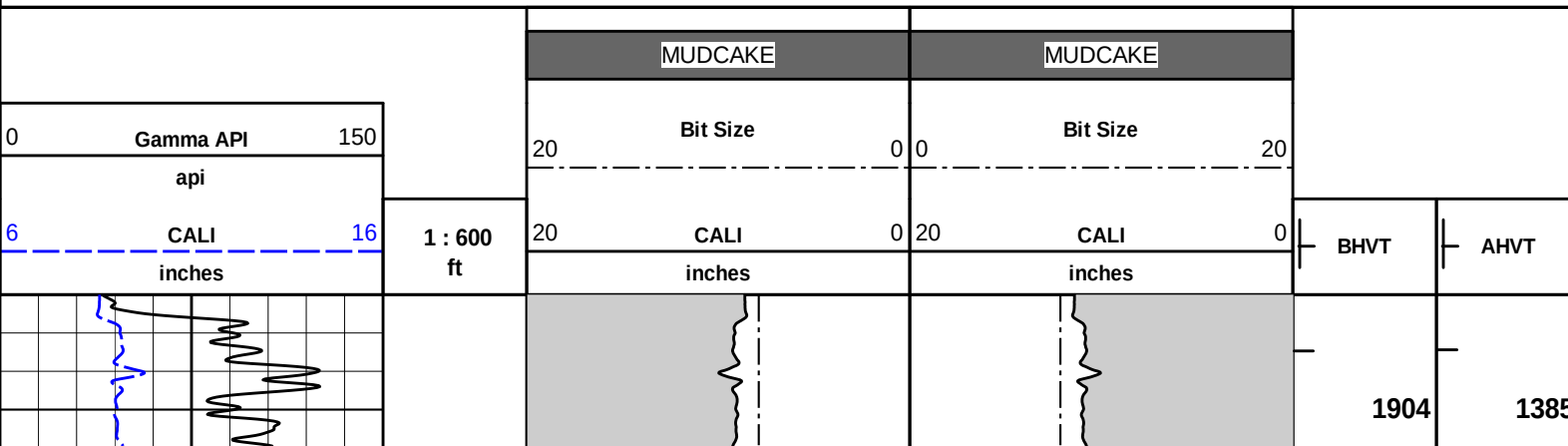
0.58 ft
0.58 ft
0.00 ft

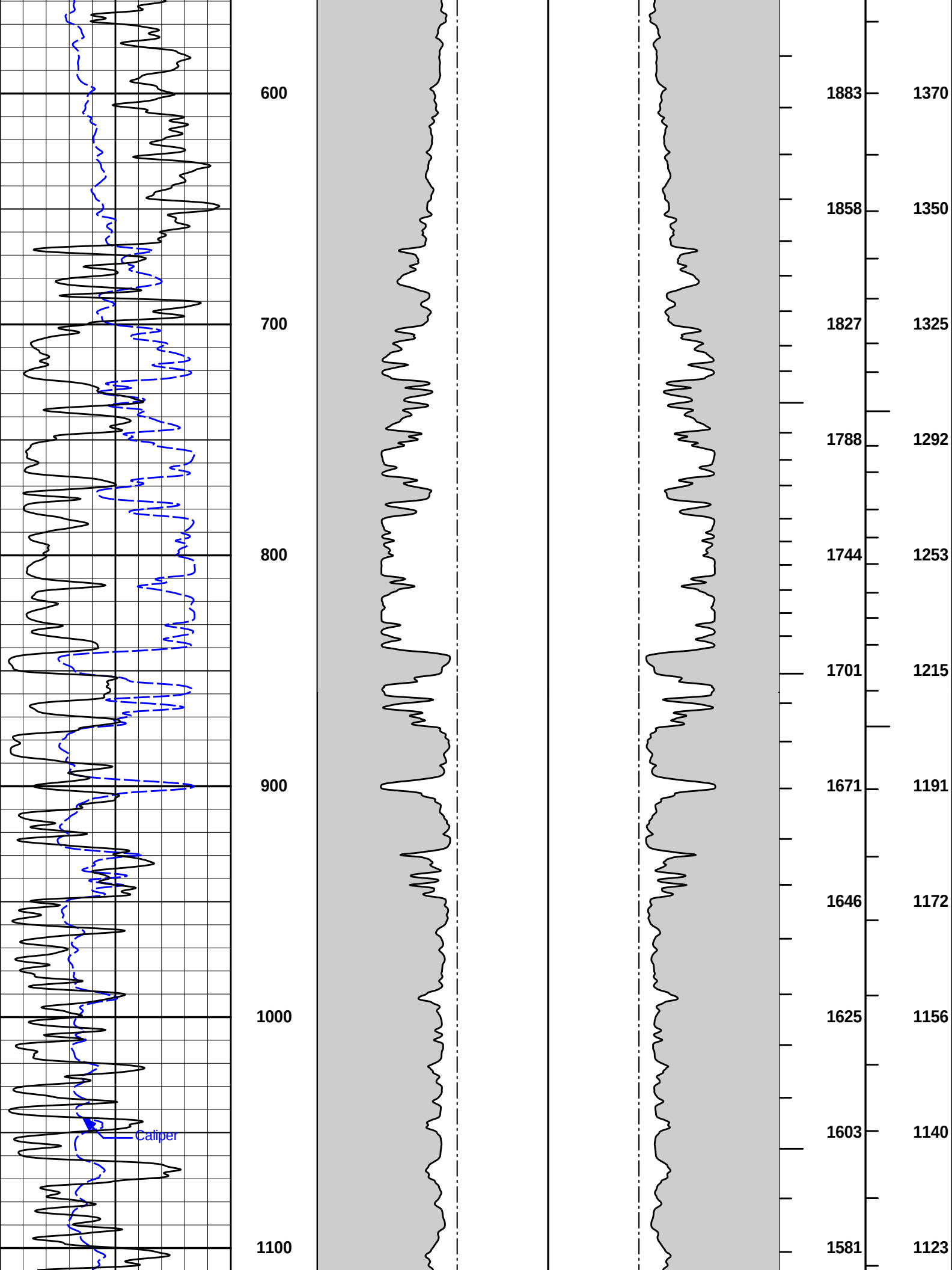
Mnemonic		Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
CH_HOS	Hostile Cable Head with Load Cell		RED	37.50	3.03	57.97	300.00	
XOHD	Hostile to Dits Cross Over		00000001	20.00	0.95	57.02	300.00	
GTET	Gamma Telemetry Tool		11013114	165.00	8.52	48.50	60.00	
CSNG	Compensated Spectral Natural Gamma		10736164	114.00	8.17	40.33	15.00	
UWR3P6	Universal Wear Ring 3 5-8 inch		10736164	5.00	0.35	*	44.41	300.00
DSNT	Dual Spaced Neutron		11020487	174.00	9.69	30.64	60.00	
DCNT	DSN Decentralizer		10993115	6.60	5.13	*	33.97	300.00
SDLT	Spectral Density Tool		10951306	360.00	10.81	19.83	60.00	
MICP	Microlog Pad		10951306	8.00	1.00	*	22.33	60.00
SDLP	Density Insite Pad		10844772	65.00	2.55	*	22.04	60.00
ACRt	Array Compensated True Resistivity Instrument Section		11302822	50.00	5.03	14.80	300.00	
ACRt	Array Compensated True Resistivity Sonde Section		11335202	200.00	14.22	0.58	300.00	
SP	SP Ring		12345671	0.00	0.25	*	1.86	300.00
CBHD	Cabbage Head		00000001	10.00	0.58	0.00	300.00	
Total				1,215.10	60.99			
* Not included in Total Length and Length Accumulation.								
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Date: 14-Mar-14 21:17:26								

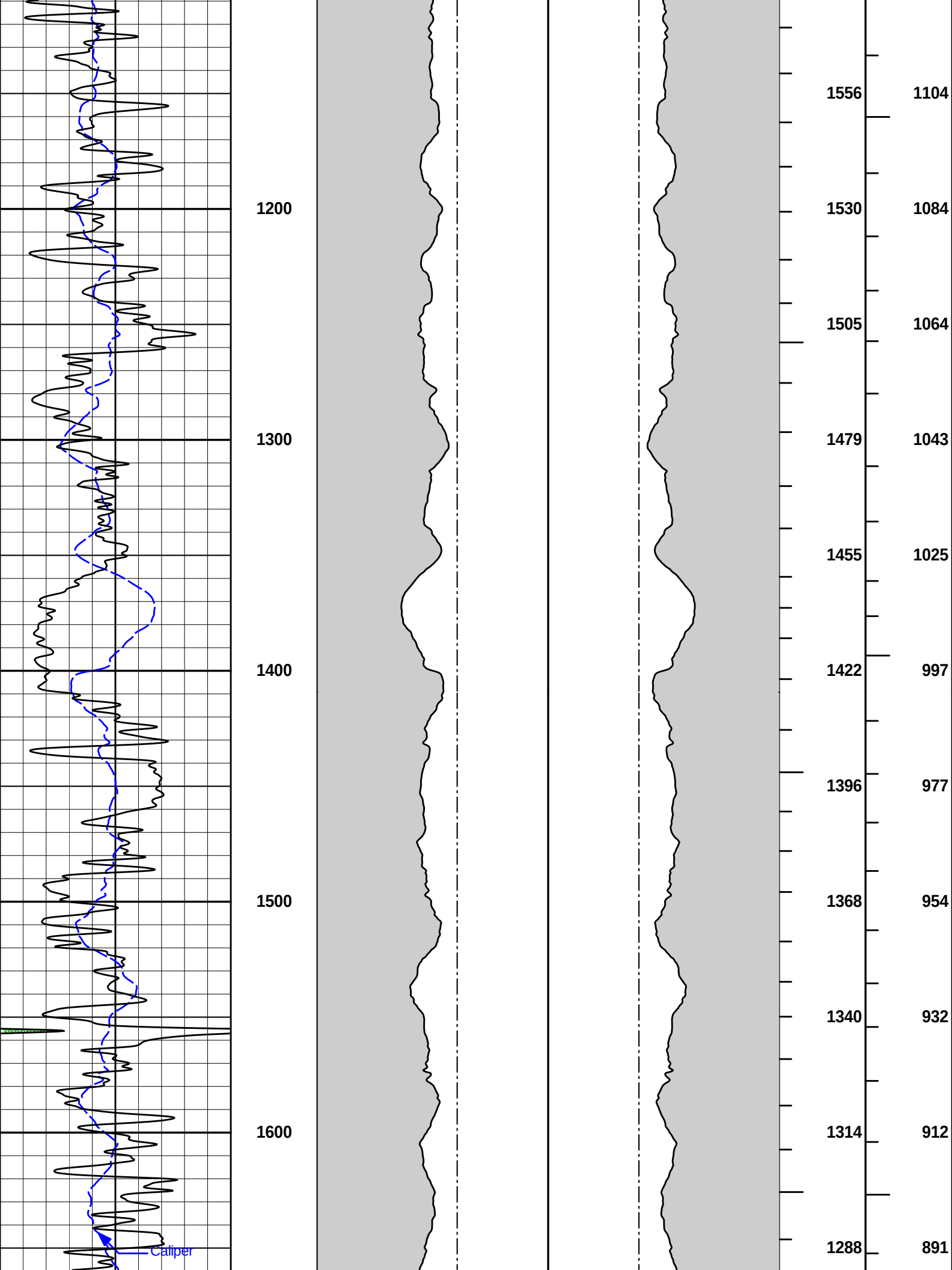
HALLIBURTON

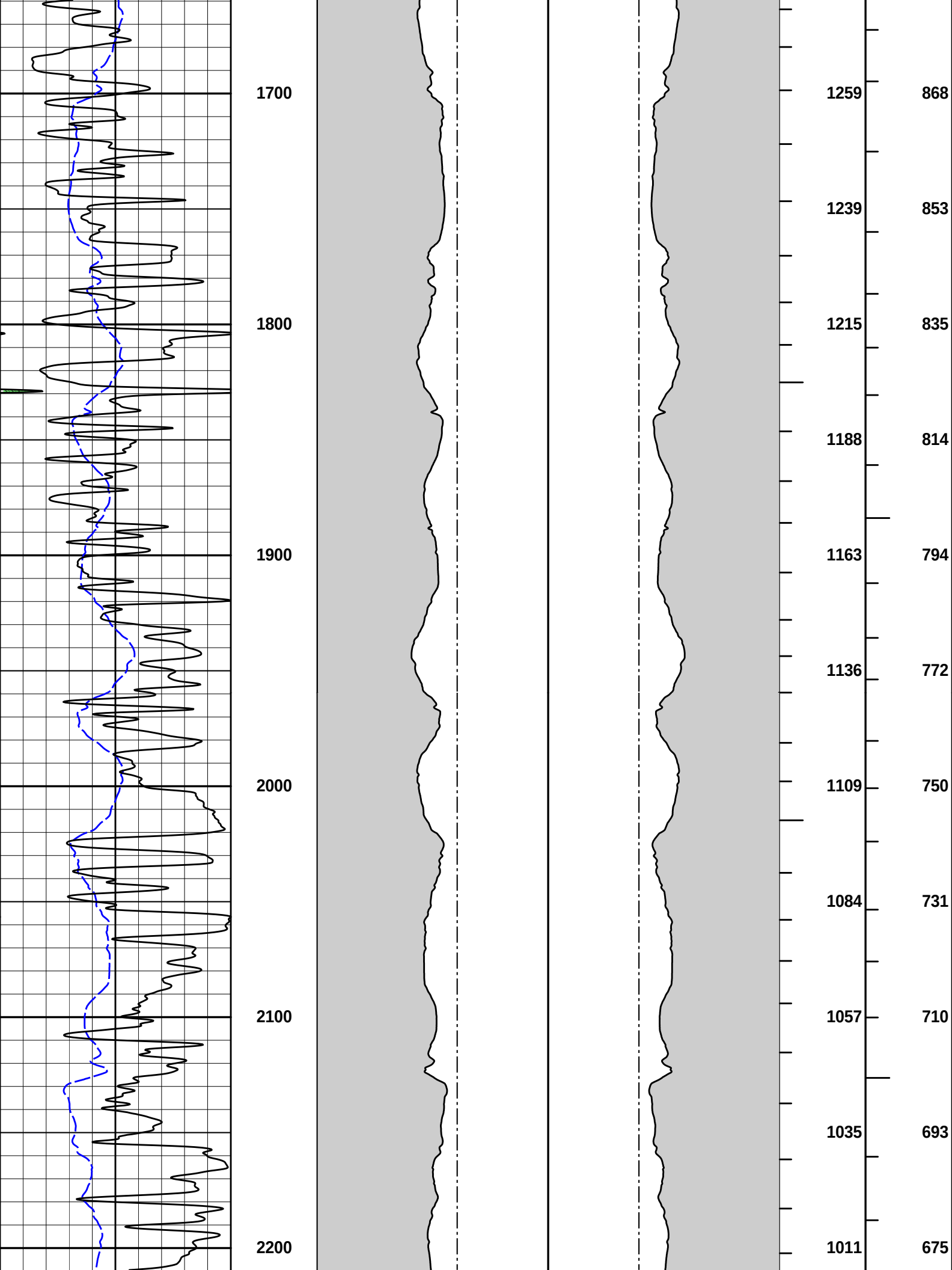
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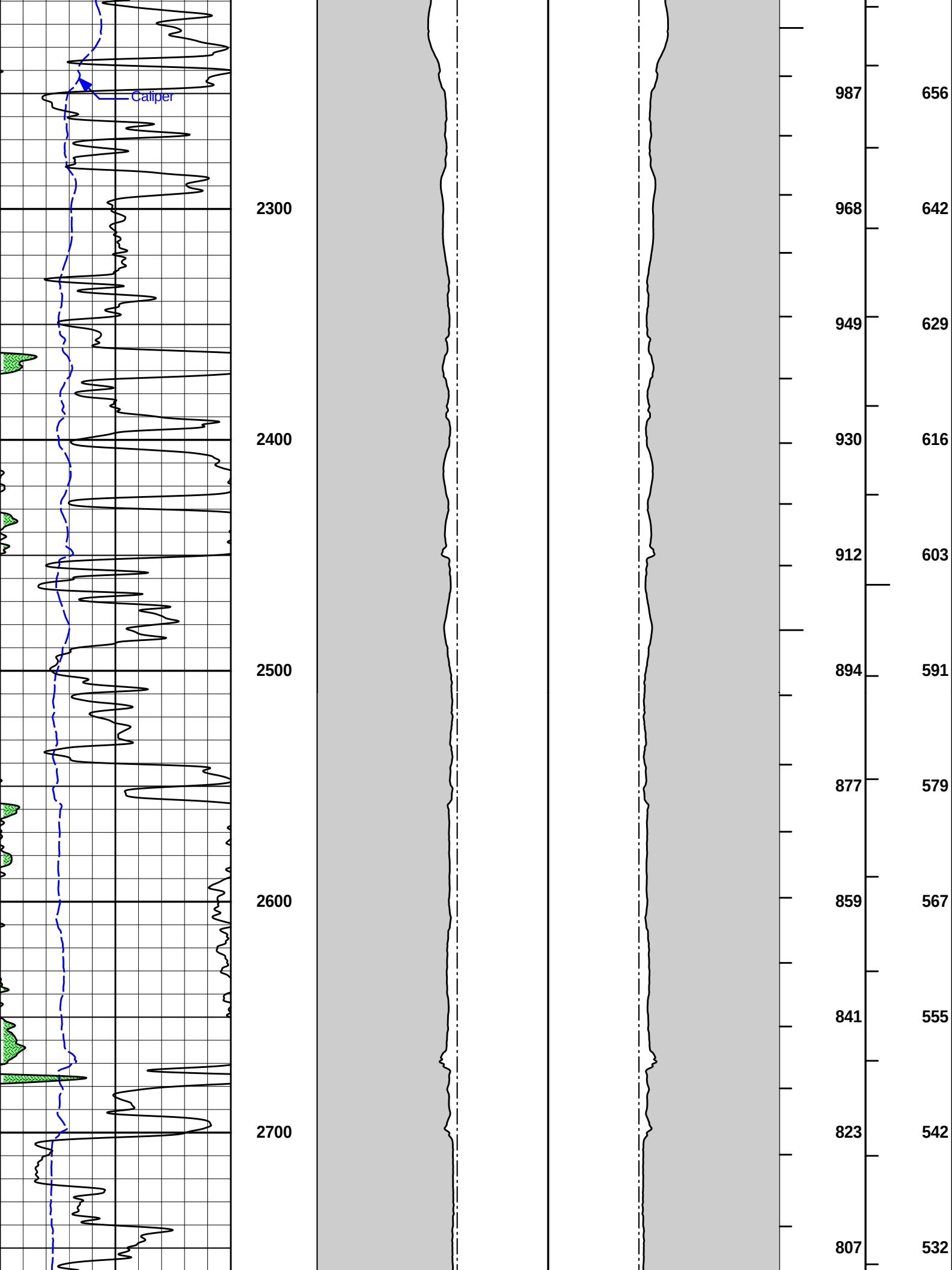
ANNULAR HOLE VOLUME PLOT

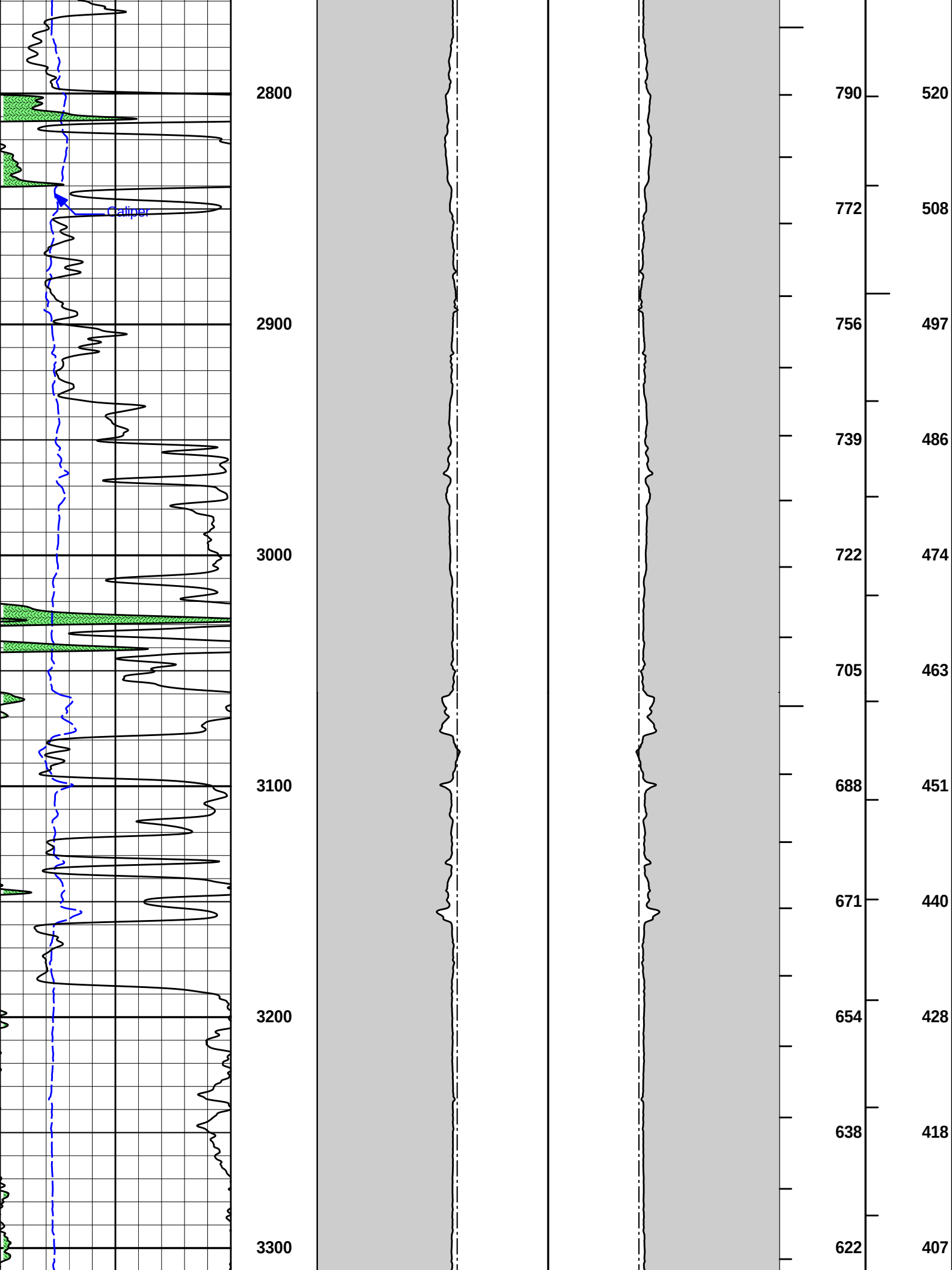


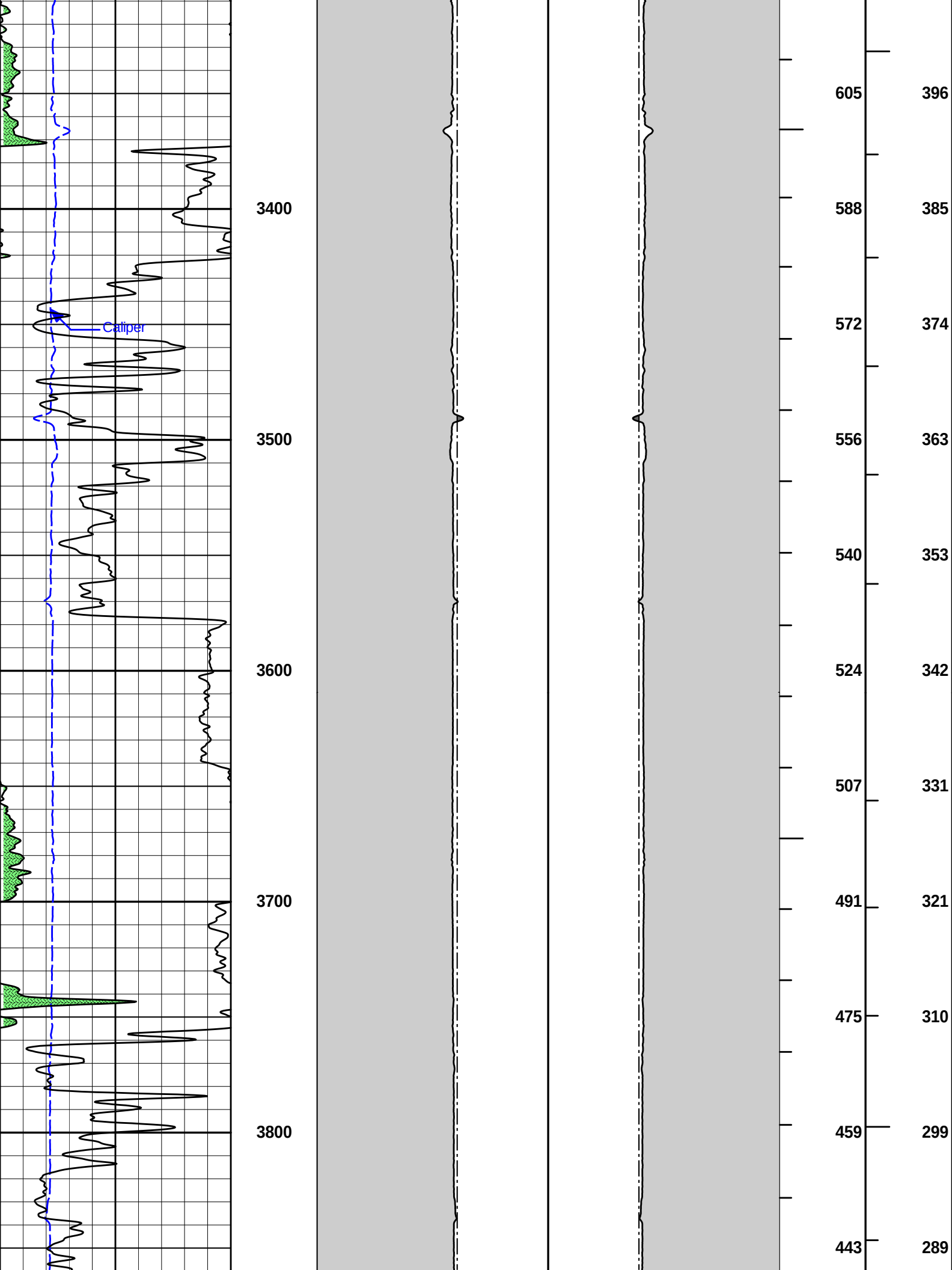


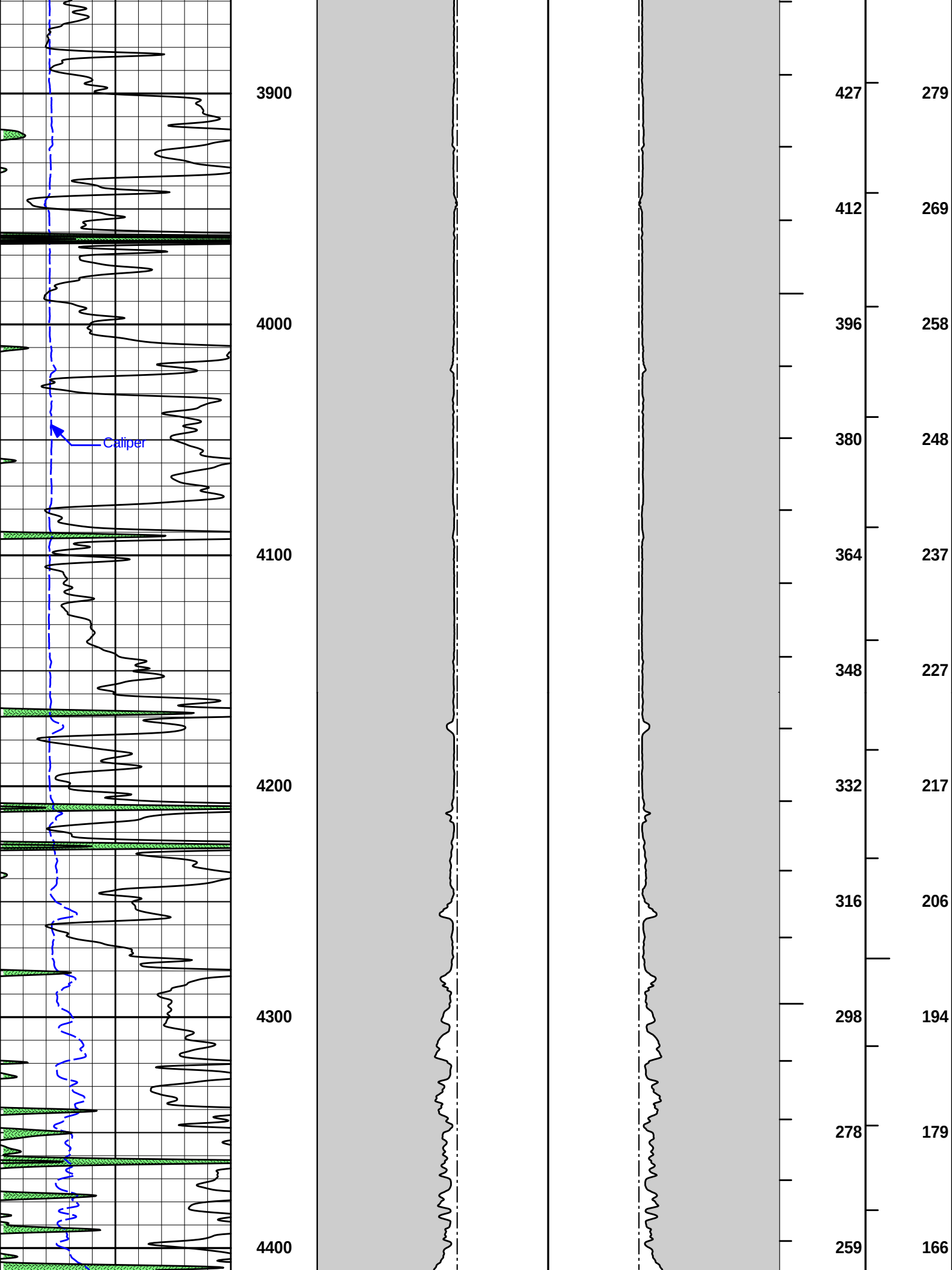


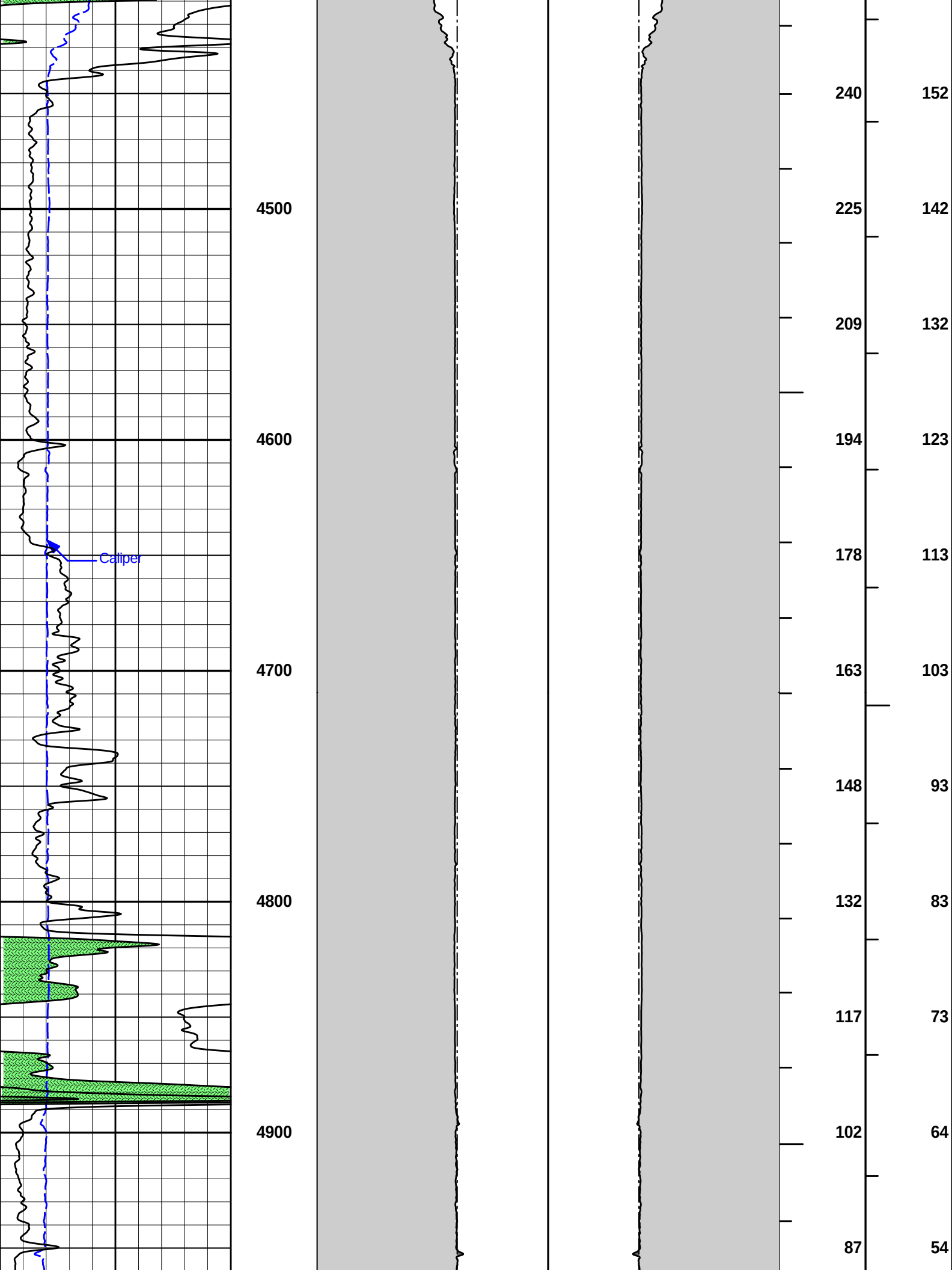


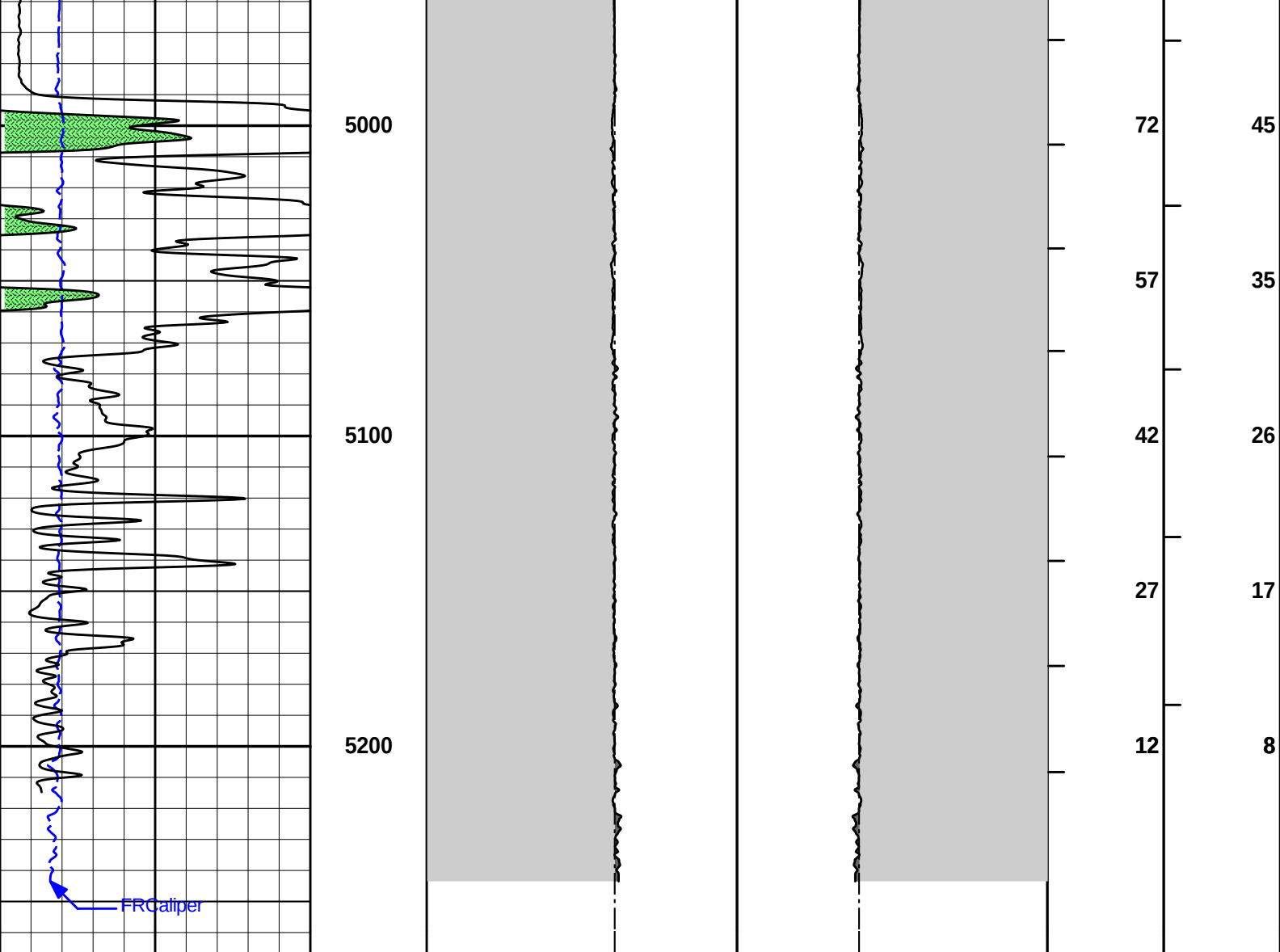












6CALI16 inches 0Gamma API150 api	1 : 600 ft	20	CALI	0	20	CALI	0	BHVT	AHVT
			inches			inches			
		20	Bit Size	0	0	Bit Size	20		
			MUDCAKE			MUDCAKE			

HALLIBURTON

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ANNULAR HOLE VOLUME PLOT

COMPANY SANDRIDGE
WELL BLITZBERG SWD 3404 1-30
FIELD NW CALDWELL

COUNTY	SUMNER	STATE	KANSAS
HALLIBURTON		SPECTRAL DENSITY DUAL SPACED NEUTRON LOG	