

HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY	WOOLSEY OPERATING
WELL	LANDWEHR A-1
FIELD	
COUNTY	HARPER
STATE	KANSAS
COMPANY	WOOLSEY OPERATING
WELL	LANDWEHR A-1
FIELD	
COUNTY	HARPER
STATE	KANSAS
API No.	15-077-21714
Location	990' FNL' & 990 FEL
Other Services:	ACRT MICRO WSTT/IDT
Secl.	20
Twp.	33S
Rge.	9W
Elev. 1347.0 ft	
Elev.: K.B.	1356.0 ft
D.F.	1355.0 ft
G.L.	1347.0 ft

Permanent Datum	GL	Elev. 1347.0 ft
Log measured from	KB	9.0 ft above perm. Datum
Drilling measured from	KB	G.L.
Date	20-Nov-10	
Run No.	1	
Depth - Driller	5050.00 ft	
Depth - Logger	5053.0 ft	
Bottom - Logged Interval	5030.0 ft	
Top - Logged Interval	1500.0 ft	
Casing - Driller	10.750 in @ 245.0 ft	@
Casing - Logger	243.0 ft	@
Bit Size	8.625 in	@
Type Fluid in Hole	WATER BASED MUD	
Density	9.2 ppg	50.00 sg/qt
PH	9.50 pH	9.6 cp/m
Source of Sample	MUD PIT	
Rm @ Meas. Temperature	0.740 ohmm @ 60.00 degF	@
Rmf @ Meas. Temperature	0.63 ohmm @ 60.00 degF	@
Rmc @ Meas. Temperature	0.890 ohmm @ 60.00 degF	@
Source Rmf	MEAS. Rmc	MEAS.
Rm @ BHT	0.09 ohmm @ 115.0 degF	@
Time Since Circulation	3.0 hr	
Time on Bottom	20-Nov-10 04:49	
Max. Rec. Temperature	115.0 degF @ 5053.0 ft	@
Equipment	10546696	LIBERAL
Recorded By	J. BOSH	
Witnessed By	C.COVEY	

Fold here

Service Ticket No.: 7786295		API Serial No.: 15-077-21714		PGM Version: WL INSITE R3.2.0 (Build 7)			
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.
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.	11039640	Serial No.		Serial No.	I43_P81	Serial No.	11019643
Model No.	GTET	Model No.		Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625	No. of Cent.		Diameter	4.5	Diameter	3.625
Detector Model No.	T-102	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	CS137	Source Type	AM241BE
Length	8"	LSA [Y/N]		Serial No.	5168 GW	Serial No.	DSN-424
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 CI	Strength	15 CI
LOGGING DATA							
GENERAL		GAMMA		ACOUSTIC		DENSITY	
						NEUTRON	

Run No.	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	1500	5030	REC	0	150				30%	-10%	2.71	30%	-10%	LIME

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 4.5 INCH CASING

CHLORIDES: 4500 PPM

GPS COORDINATES: LAT: 37°09' N LONG: 98°18' W

TODAY'S CREW: K. KING, C. PARKER

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

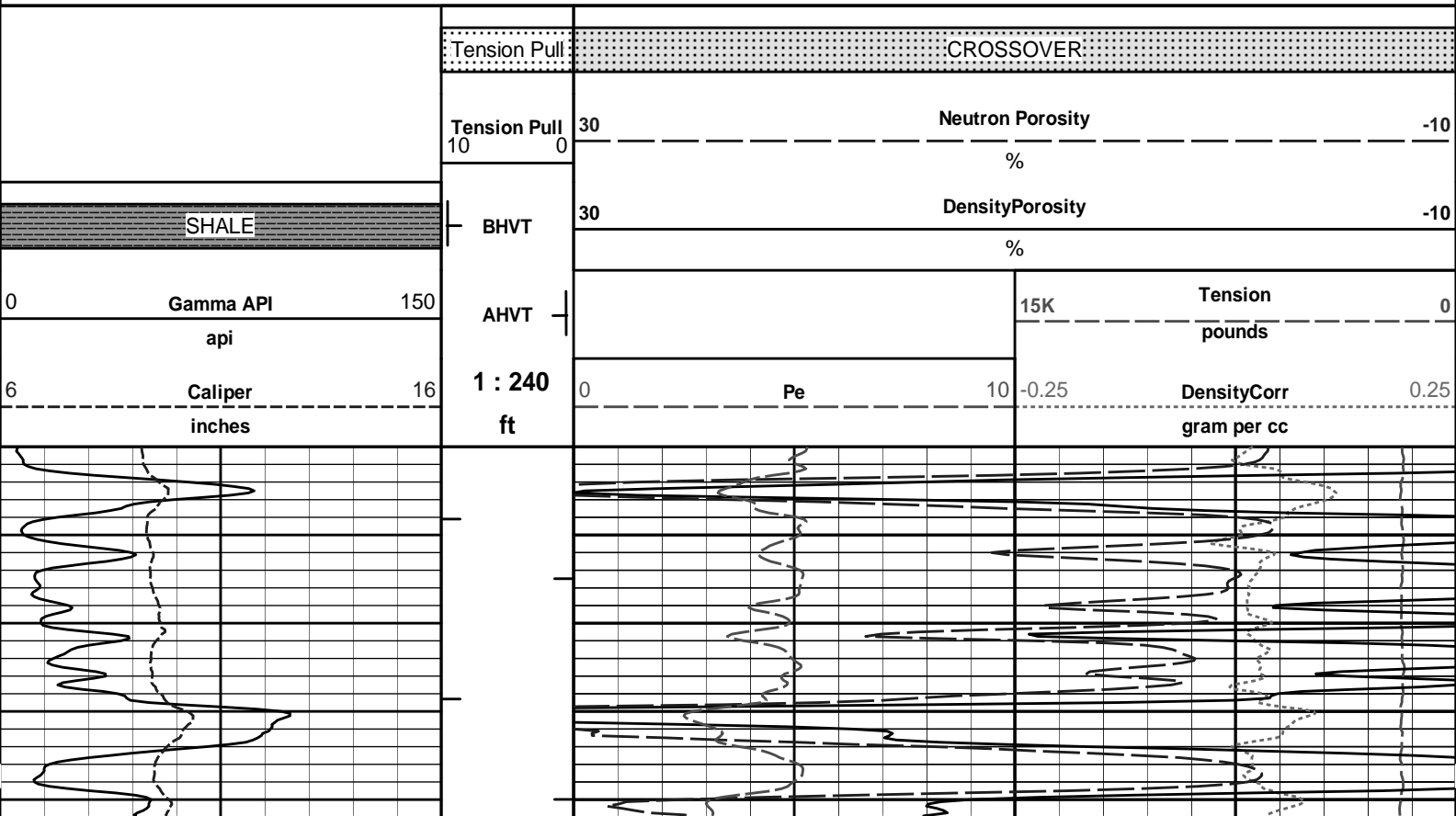
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.

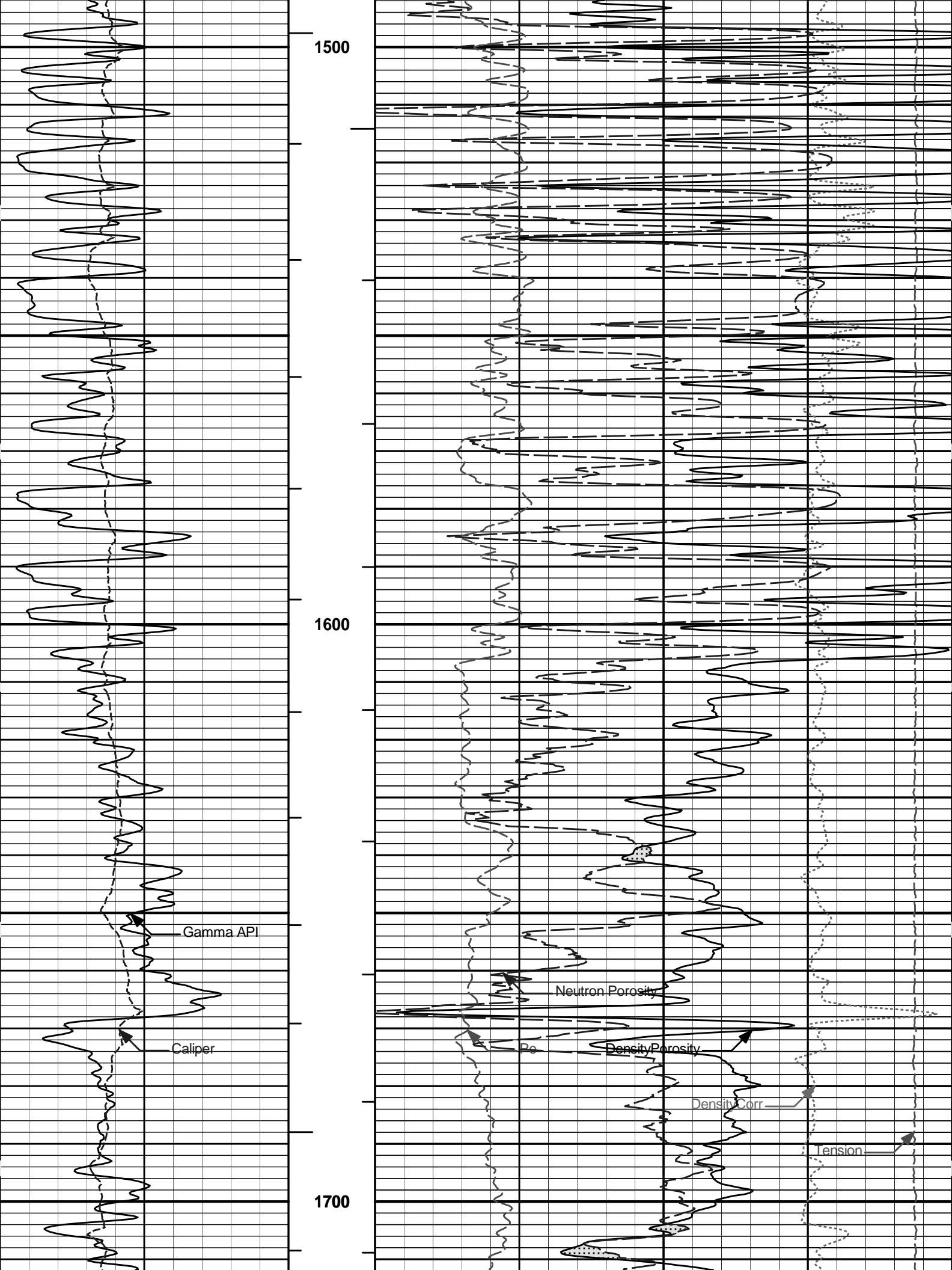
HALLIBURTON

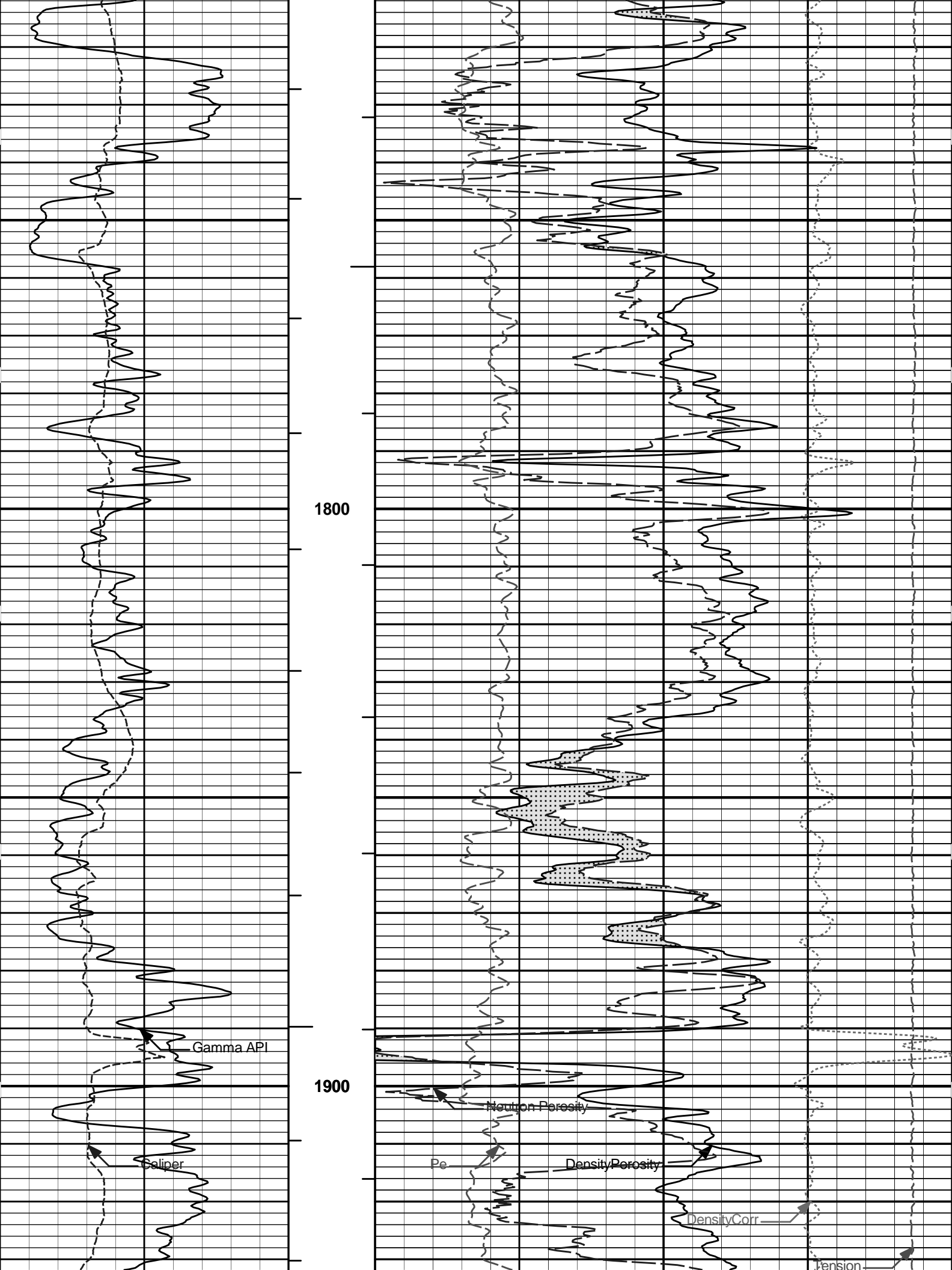


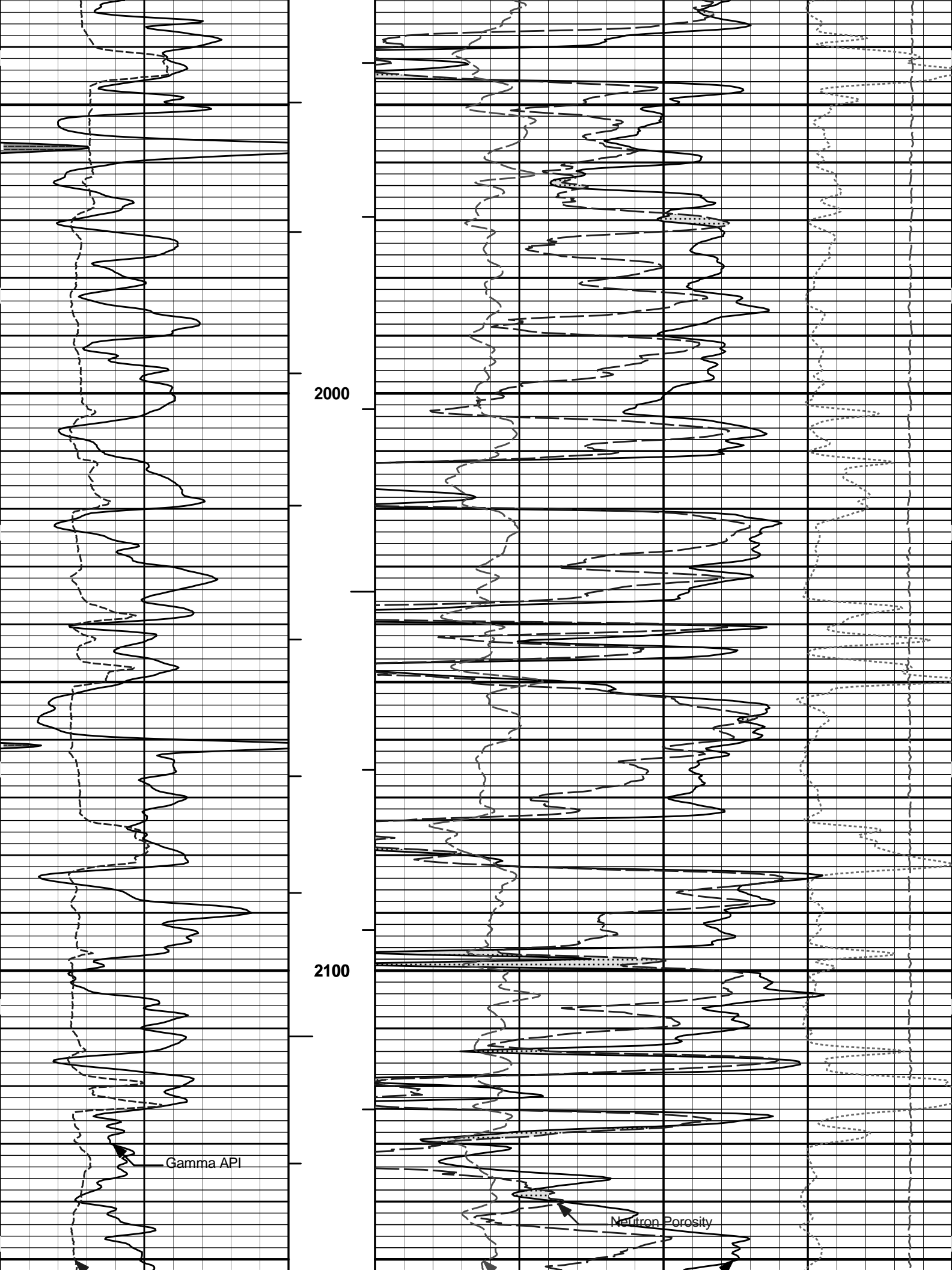
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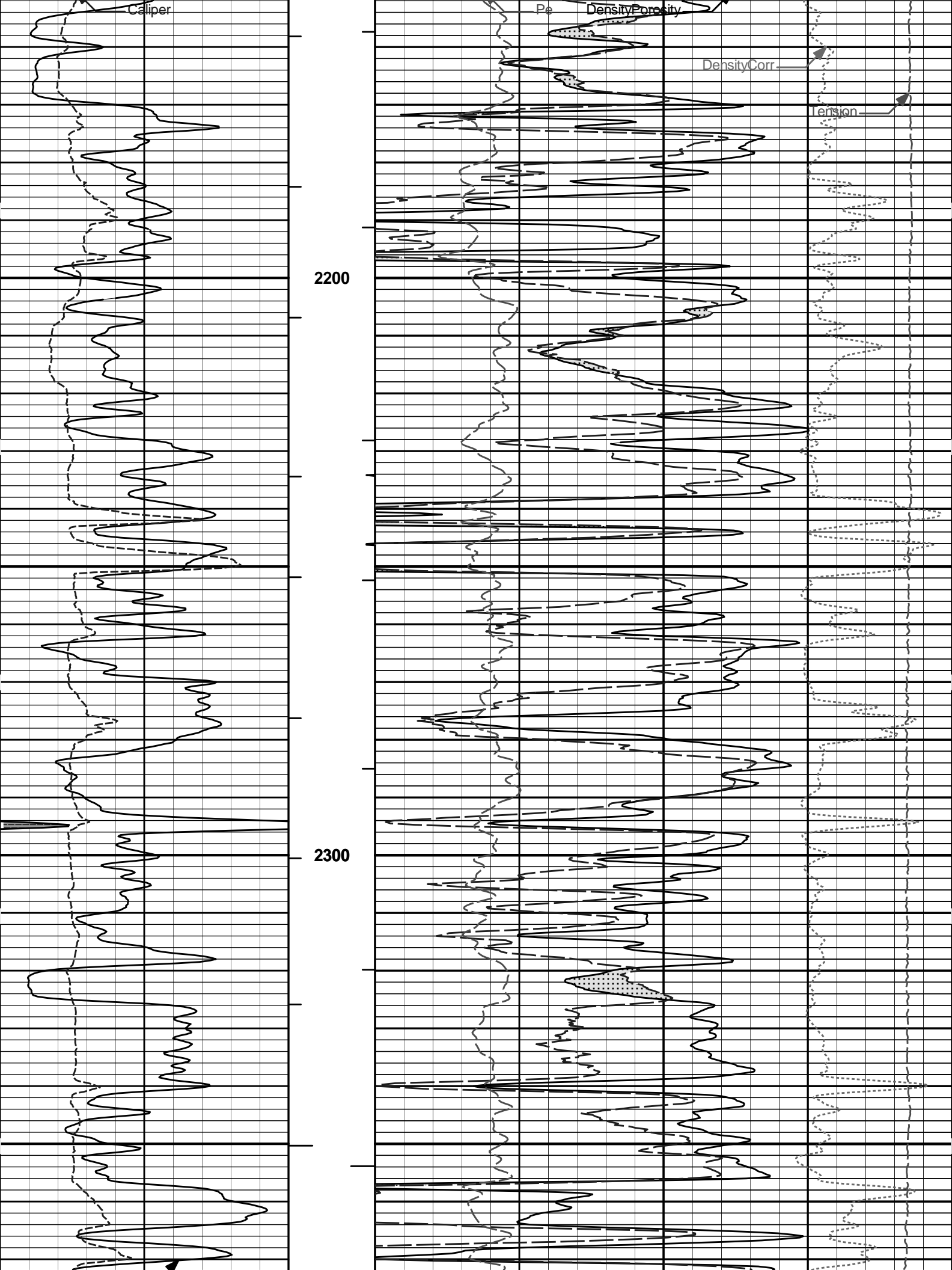
5 INCH MAIN LOG

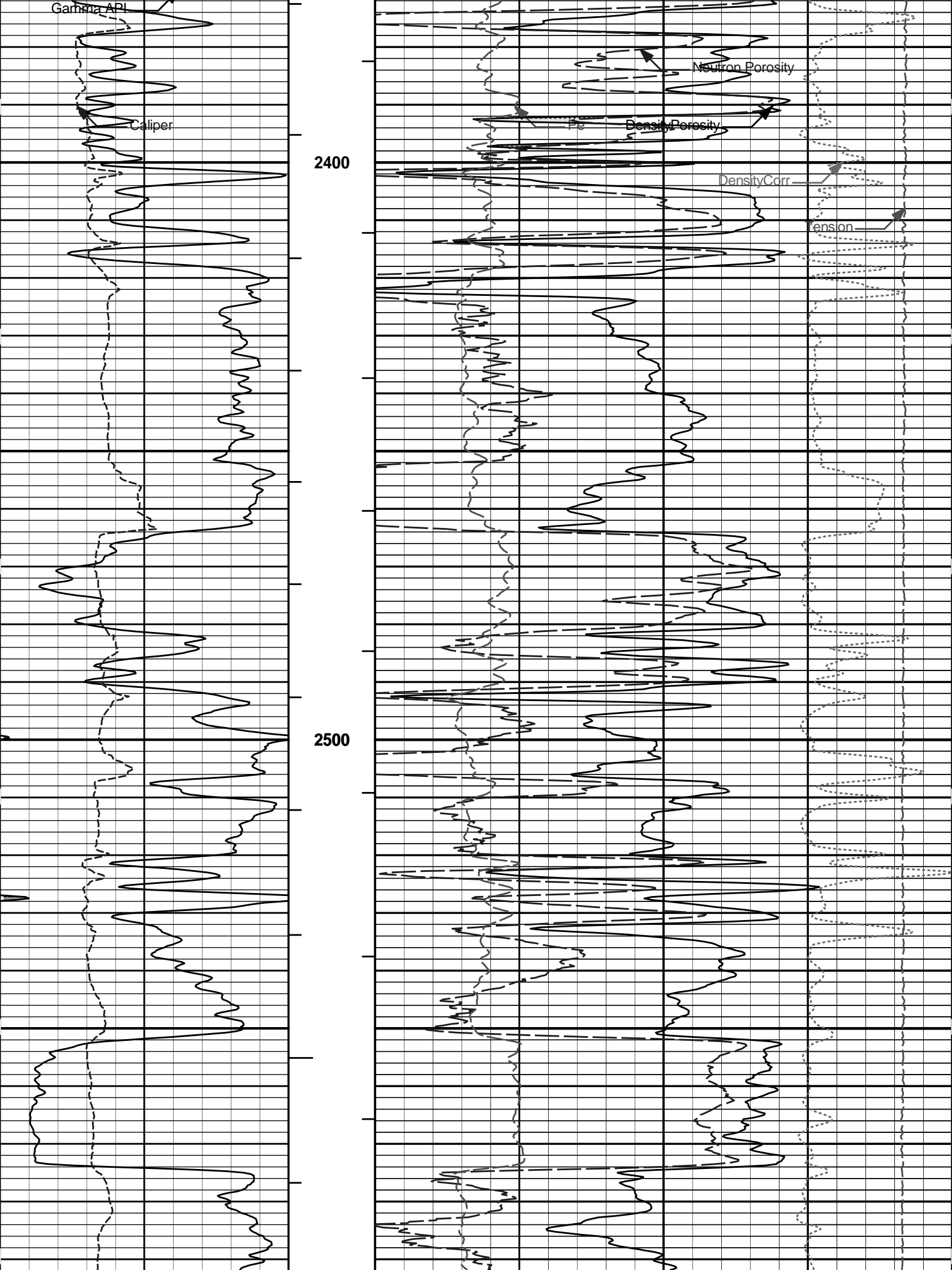


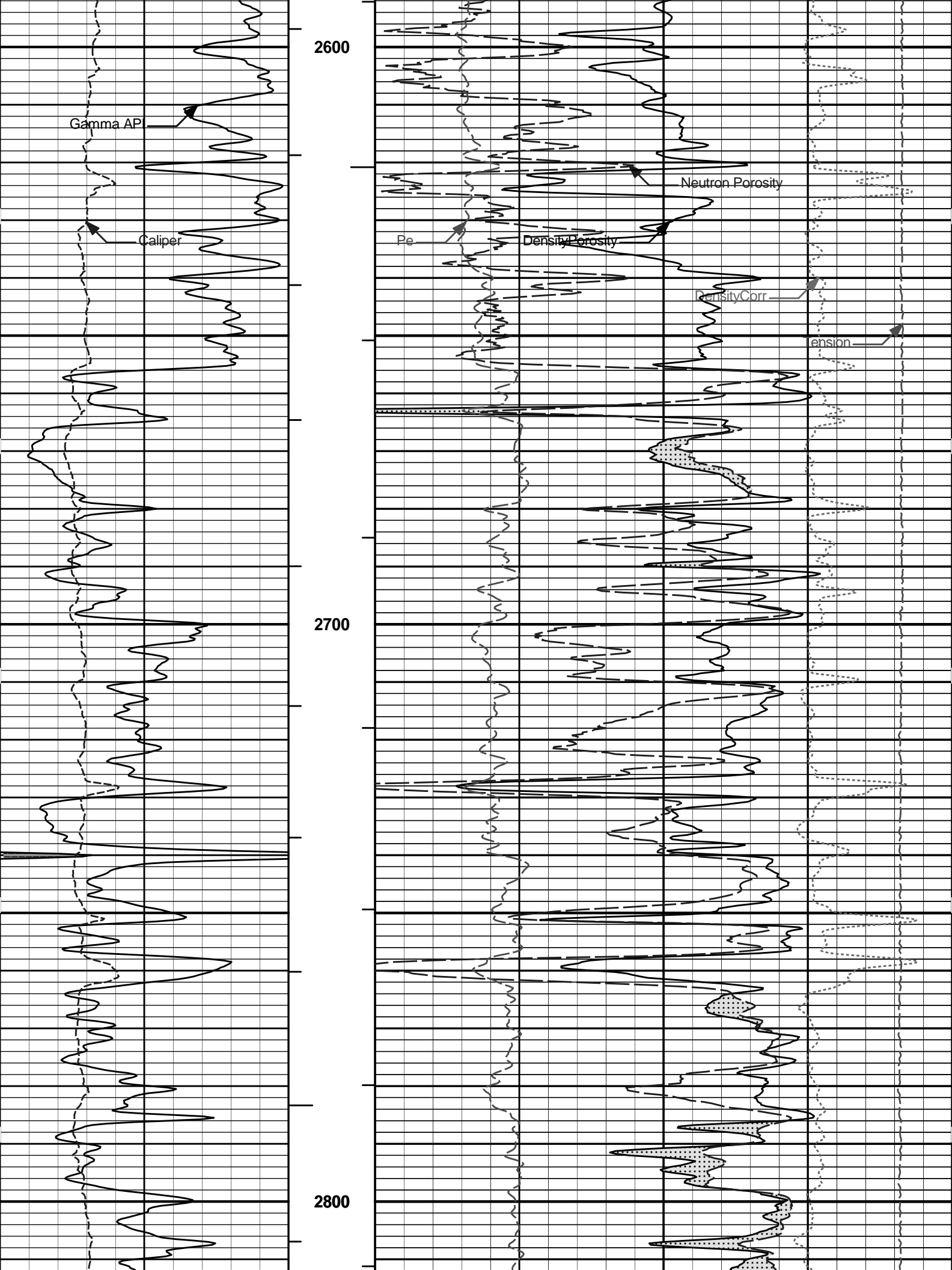


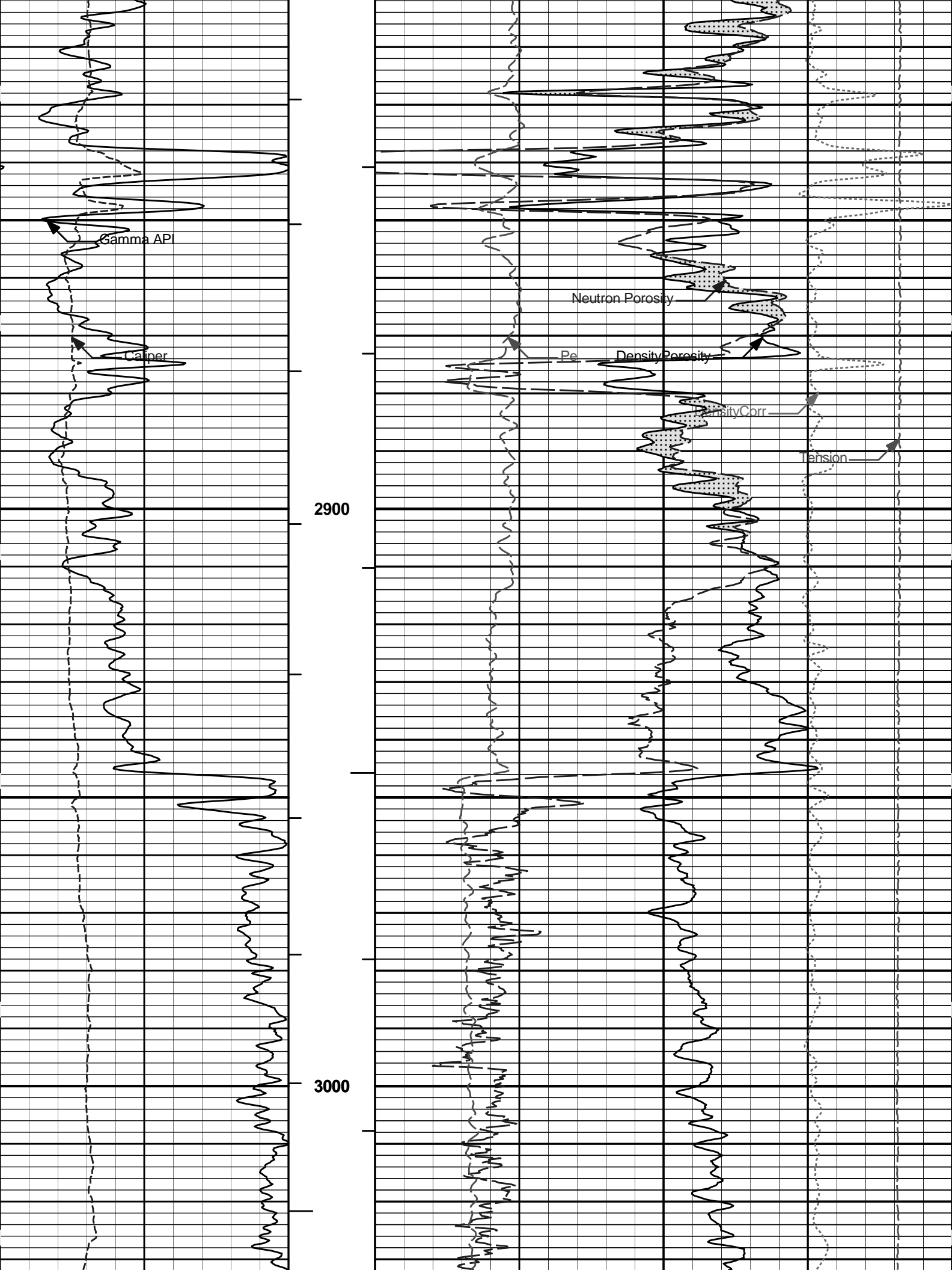


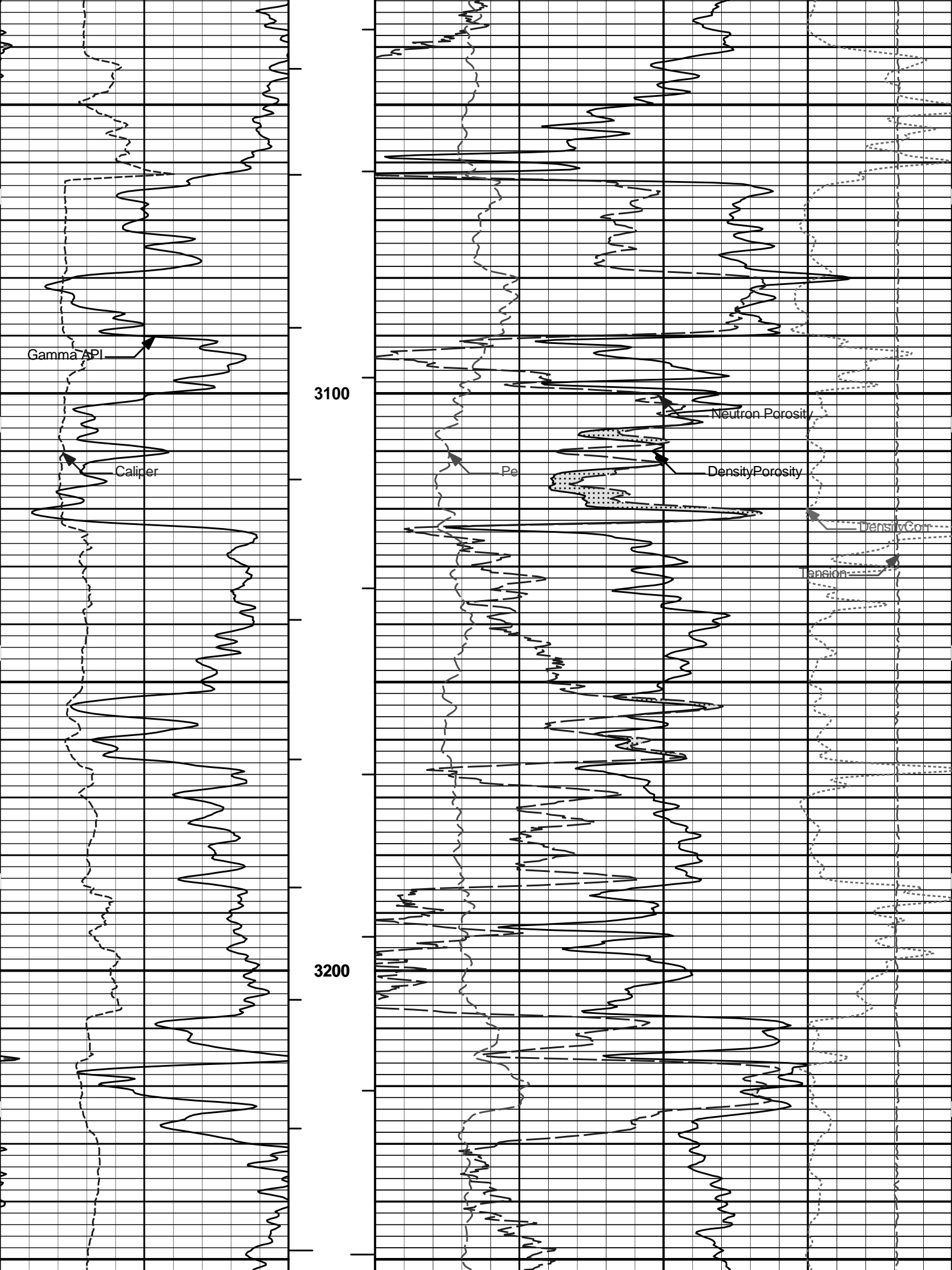


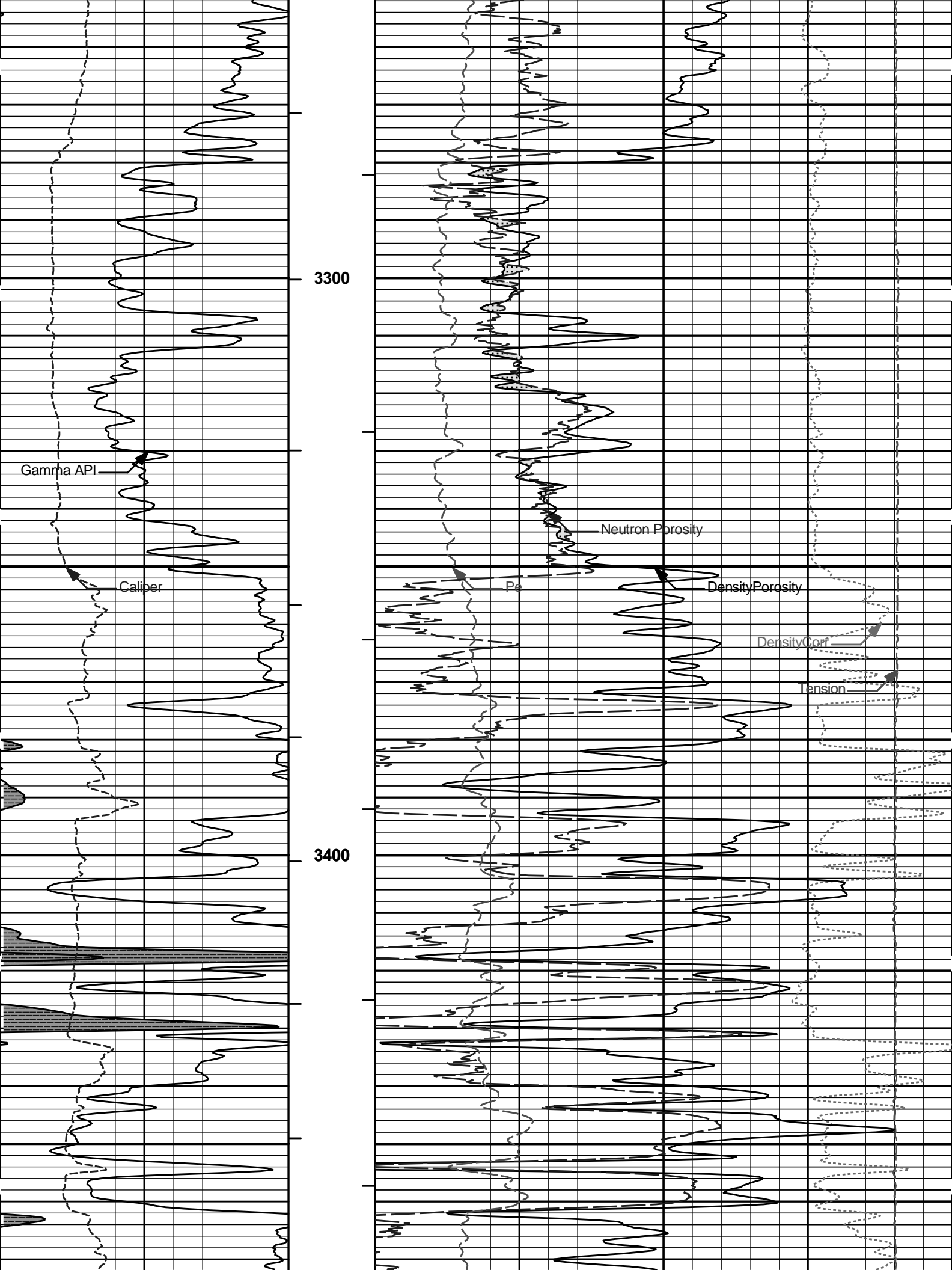


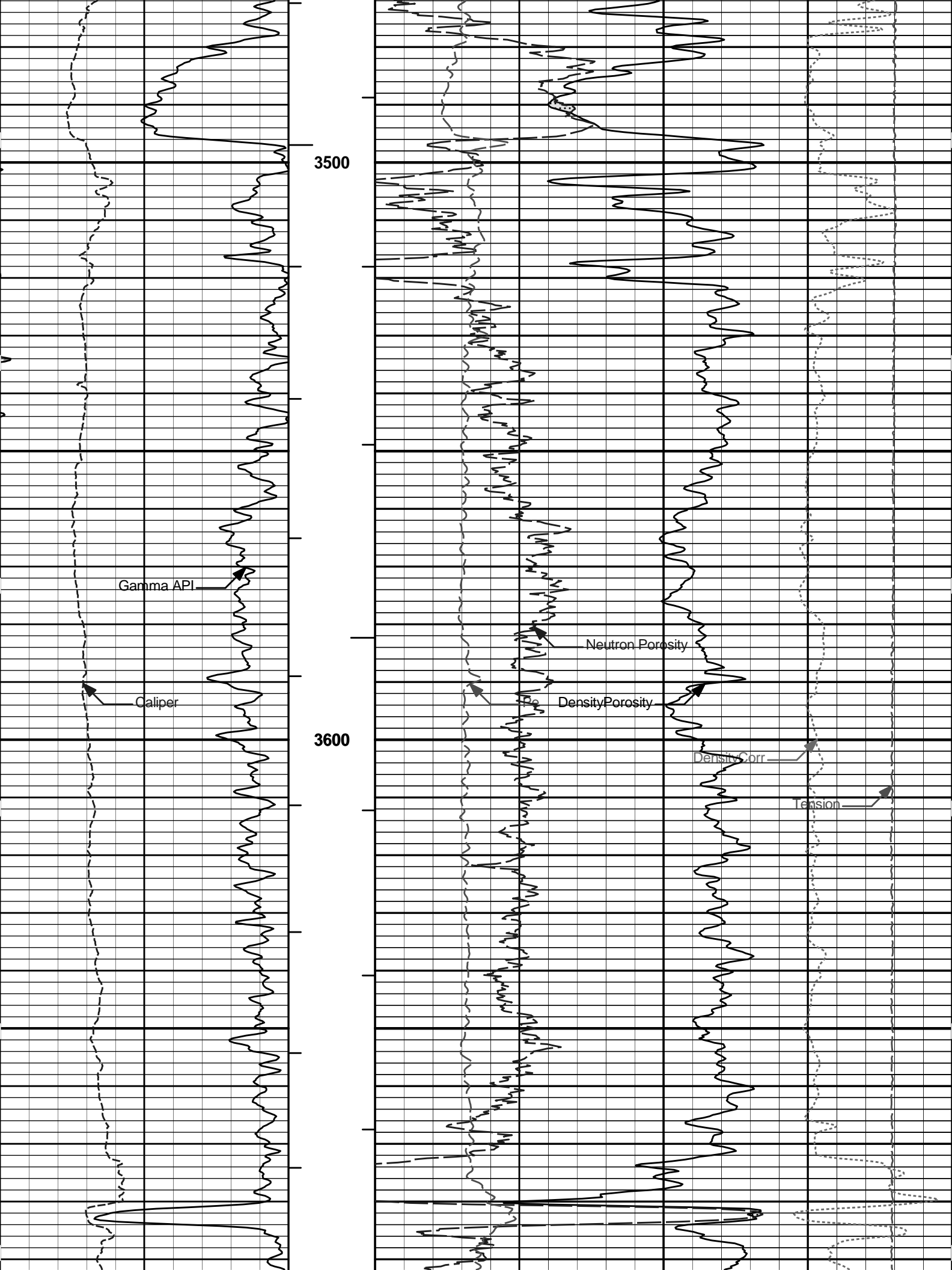


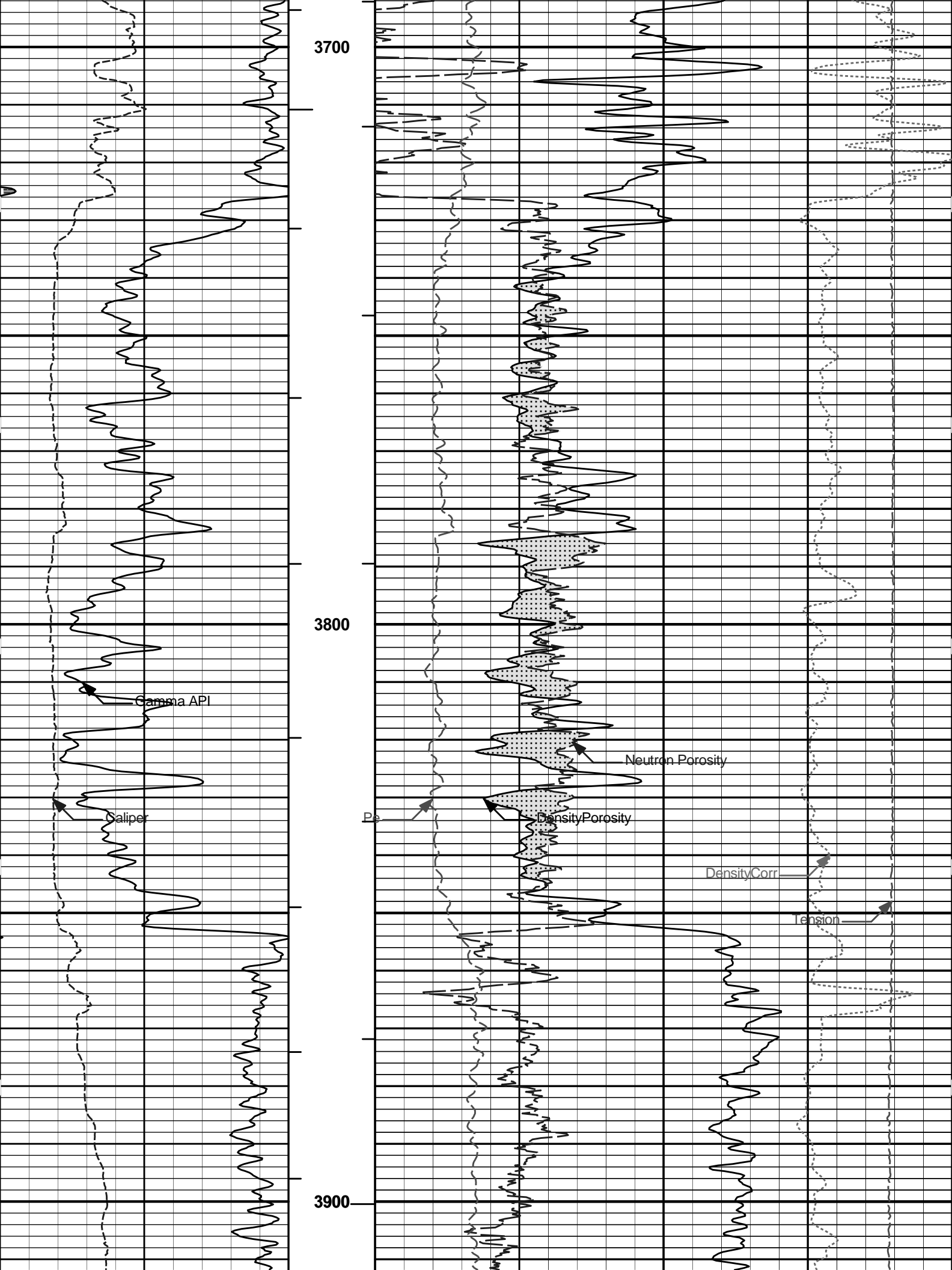


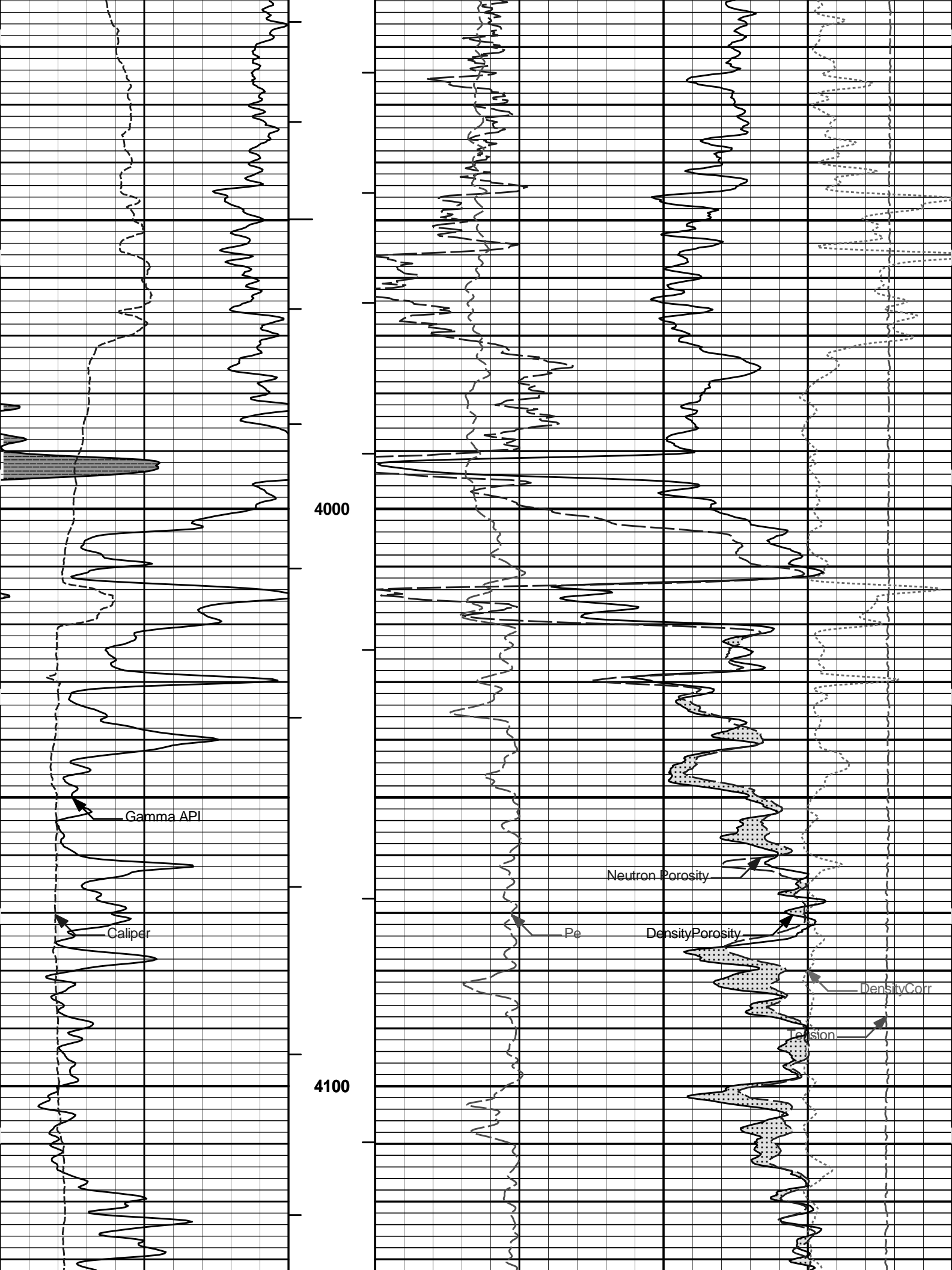


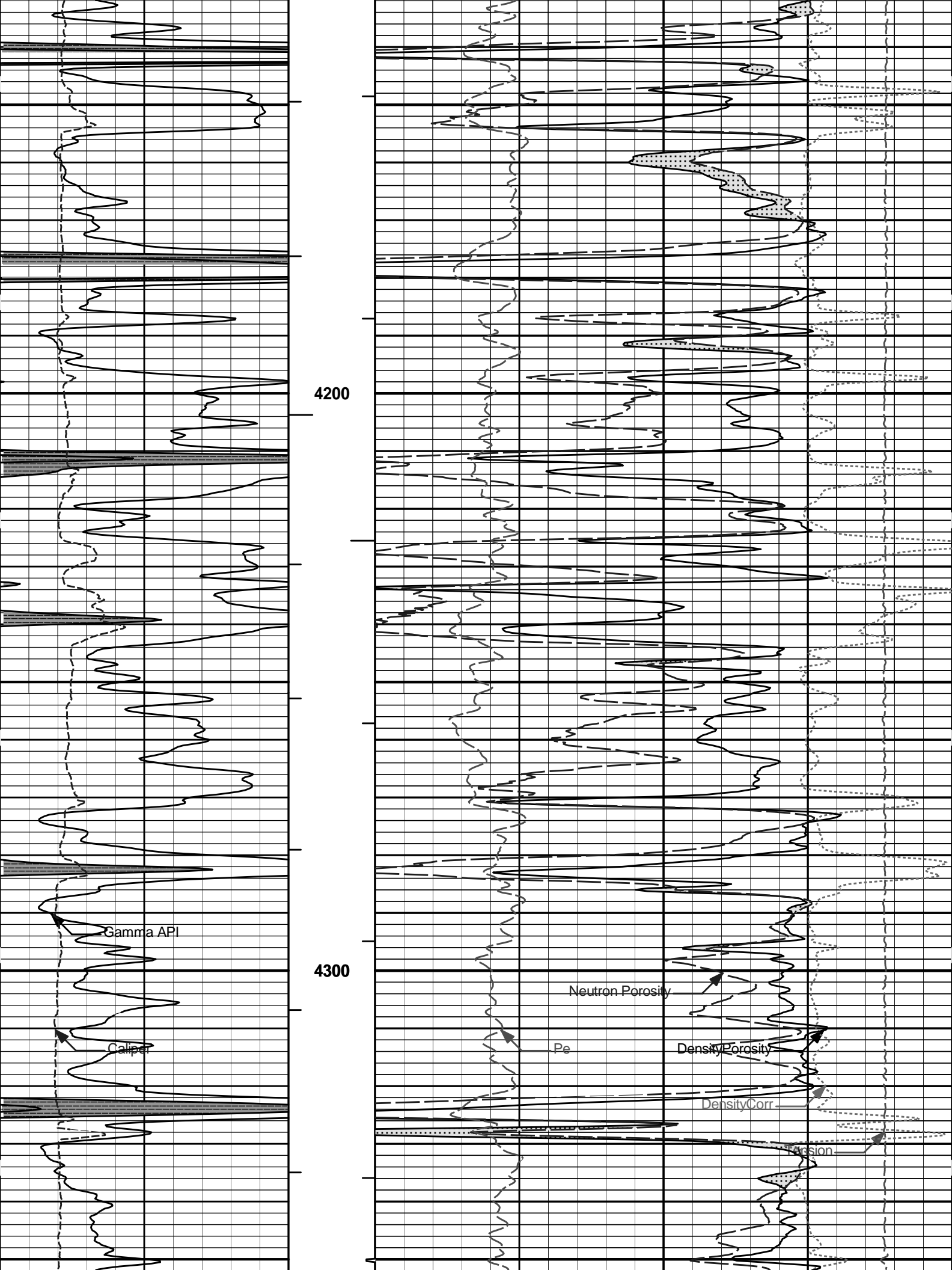


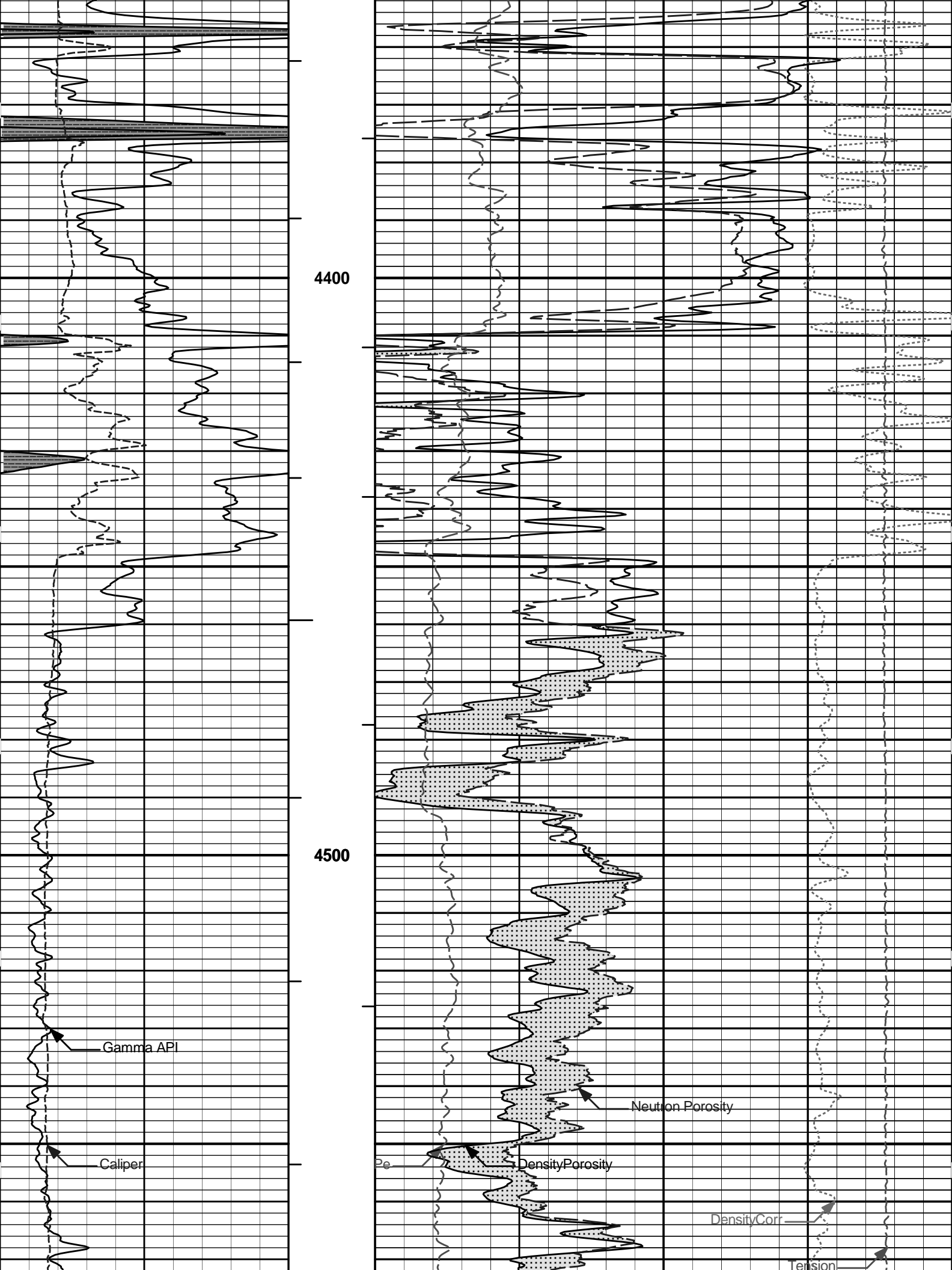


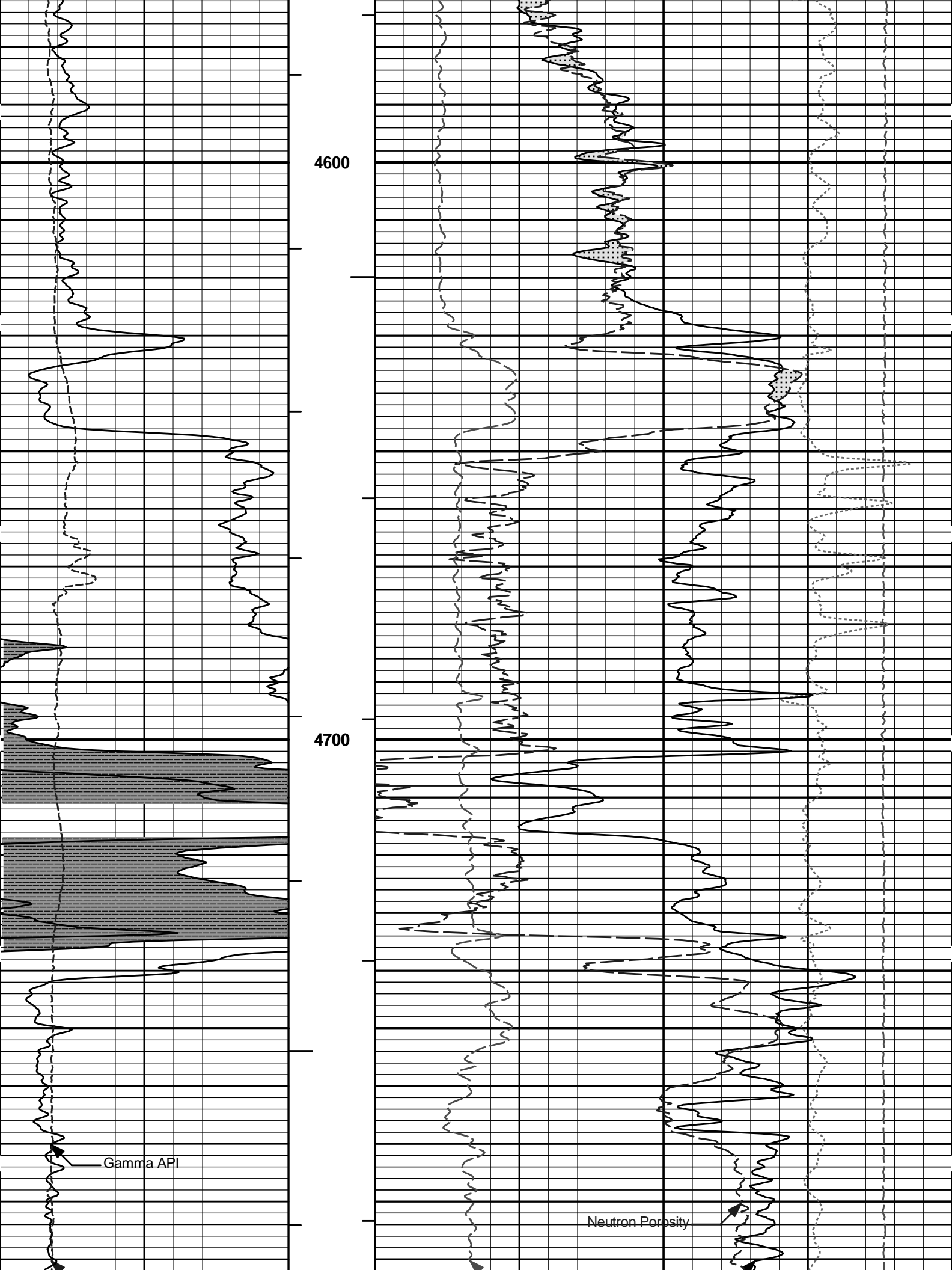










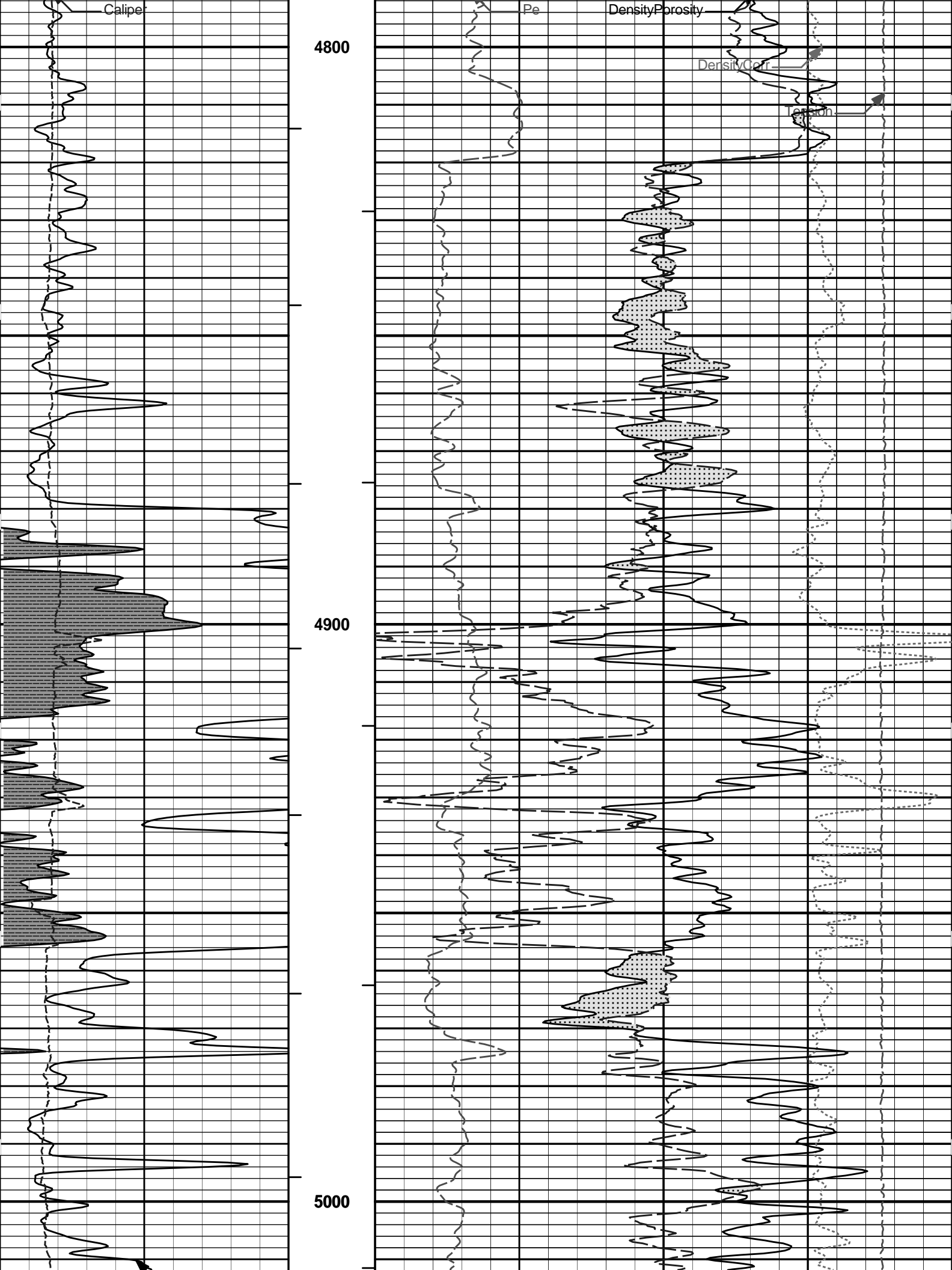


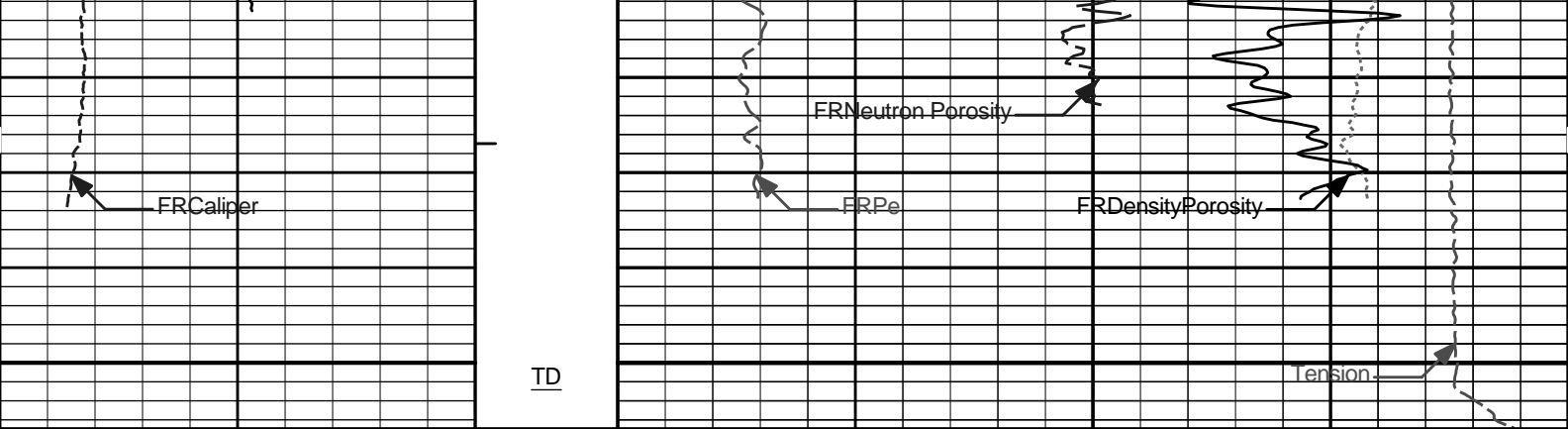
4600

4700

Gamma API

Neutron Porosity





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

HALLIBURTON Plot Time: 20-Nov-10 08:02:23
 Plot Range: 1450 ft to 5056.92 ft
 Data: LANDWEHR_A_1\Well Based\DAQ-0001-003\
 Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

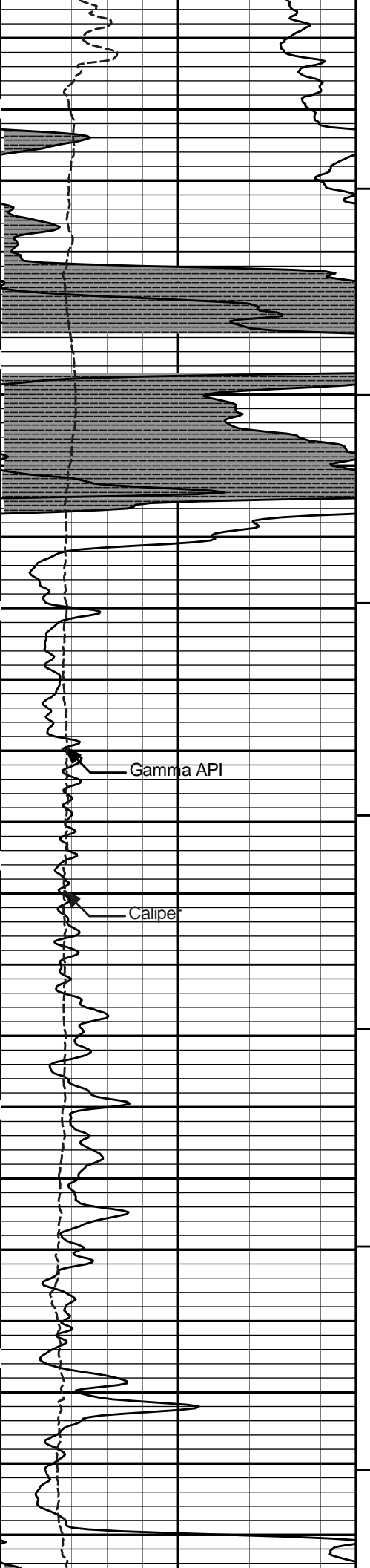
5 INCH MAIN LOG

HALLIBURTON Plot Time: 20-Nov-10 08:02:23
 Plot Range: 4650 ft to 5056.67 ft
 Data: LANDWEHR_A_1\Well Based\DAQ-0001-002\
 Plot File: \\PORO\Poro_IQ_5_REP_LIB

REPEAT SECTION

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



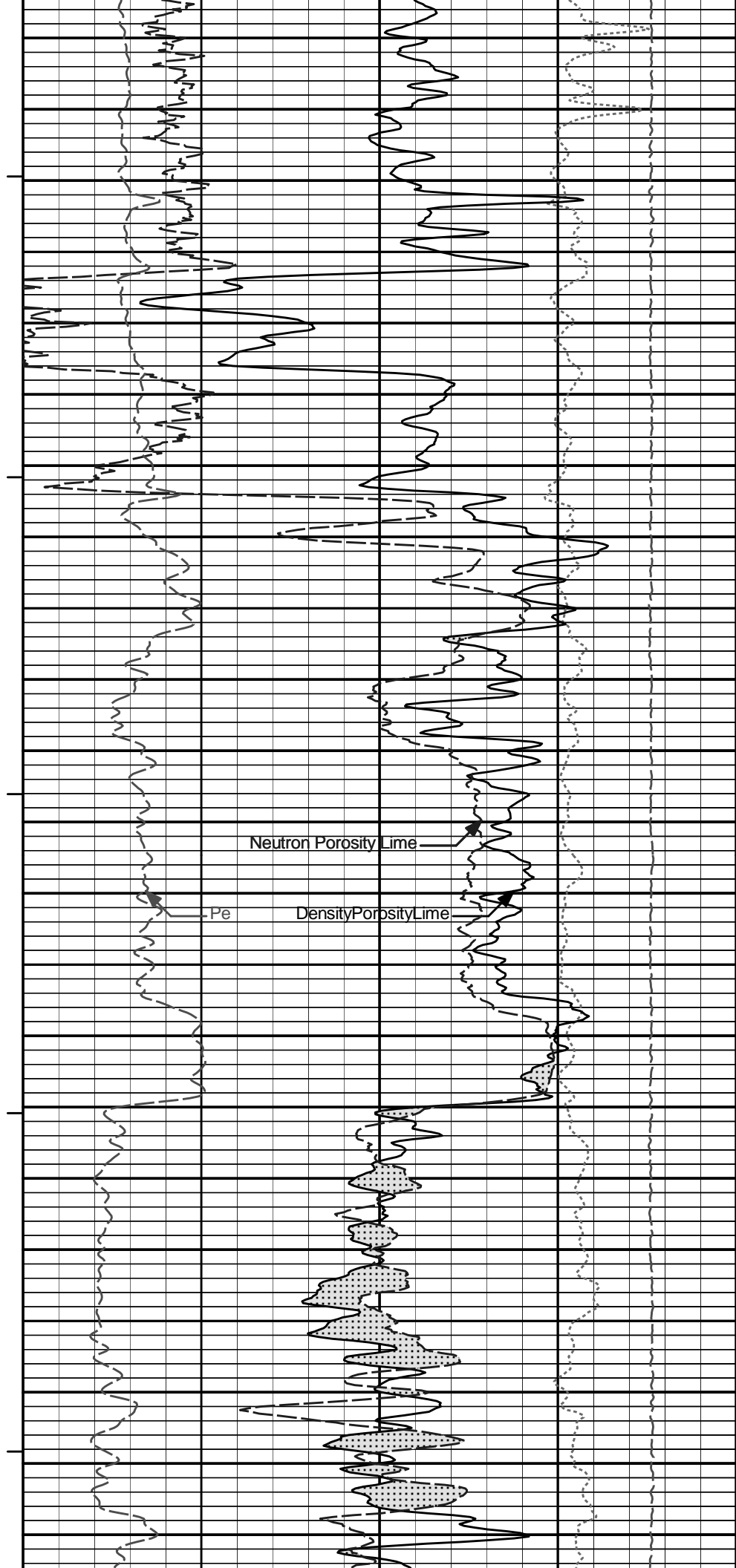


4700

Gamma API

Caliper

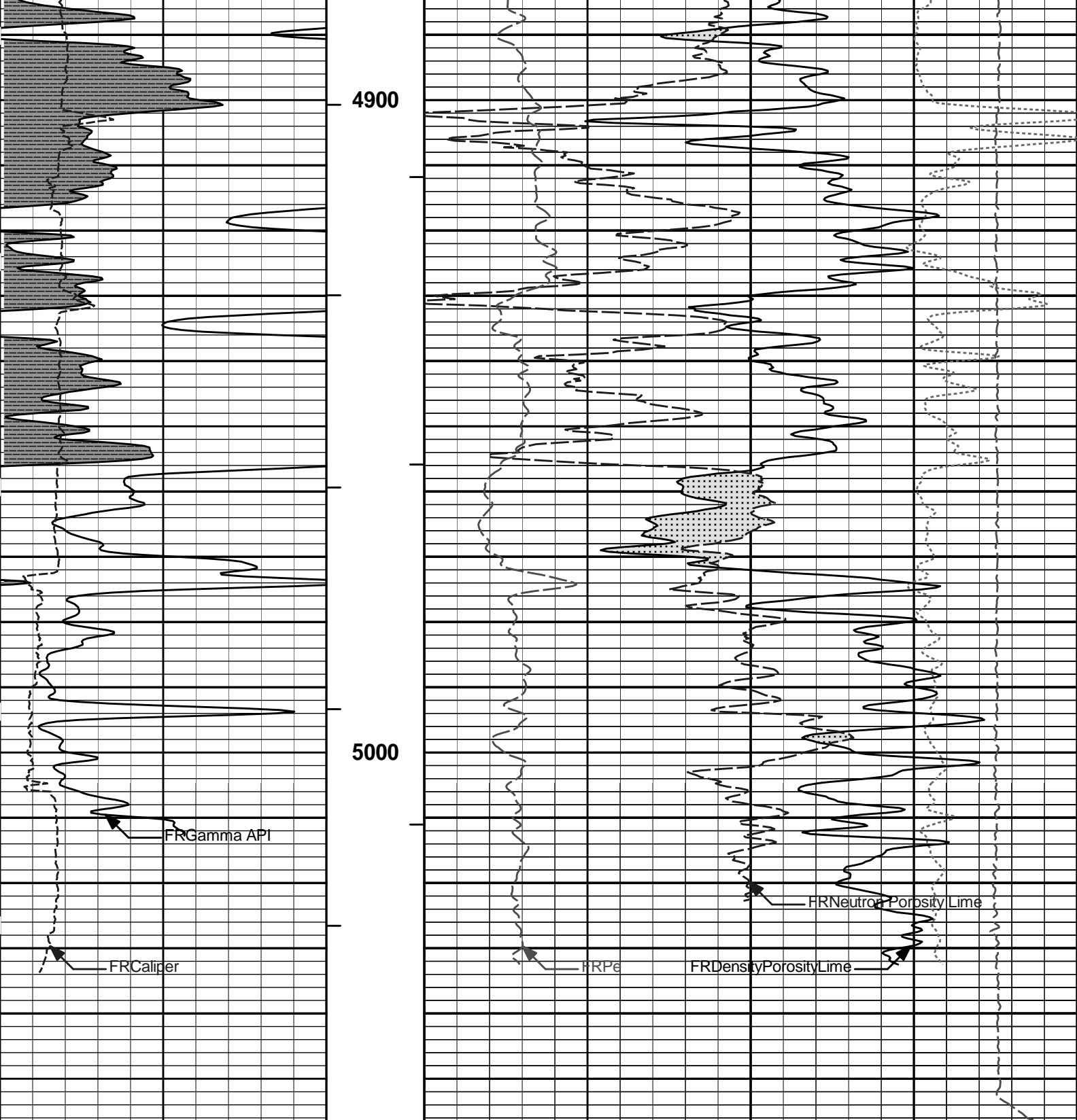
4800



Neutron Porosity Lime

Pe

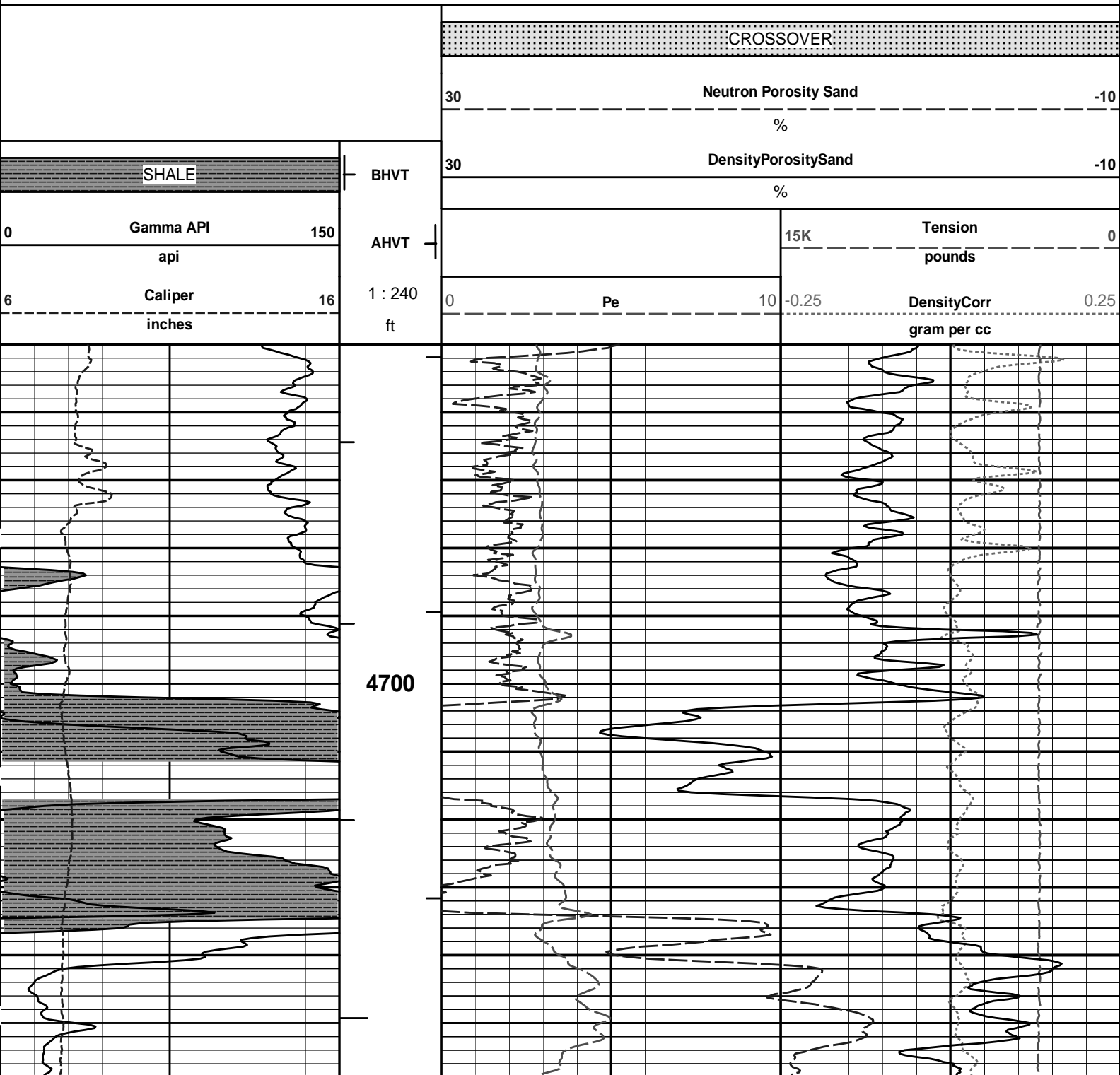
Density Porosity Lime

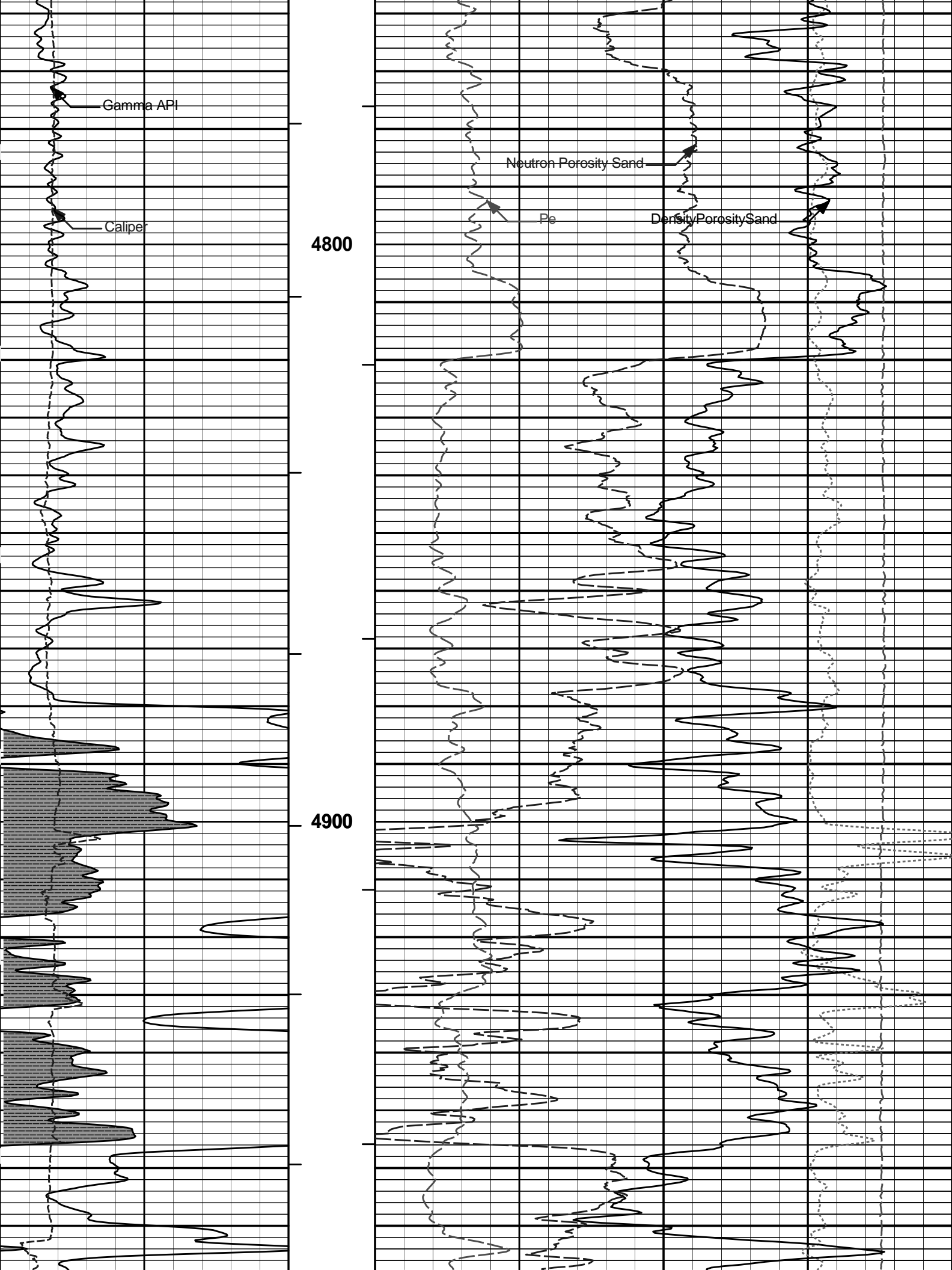


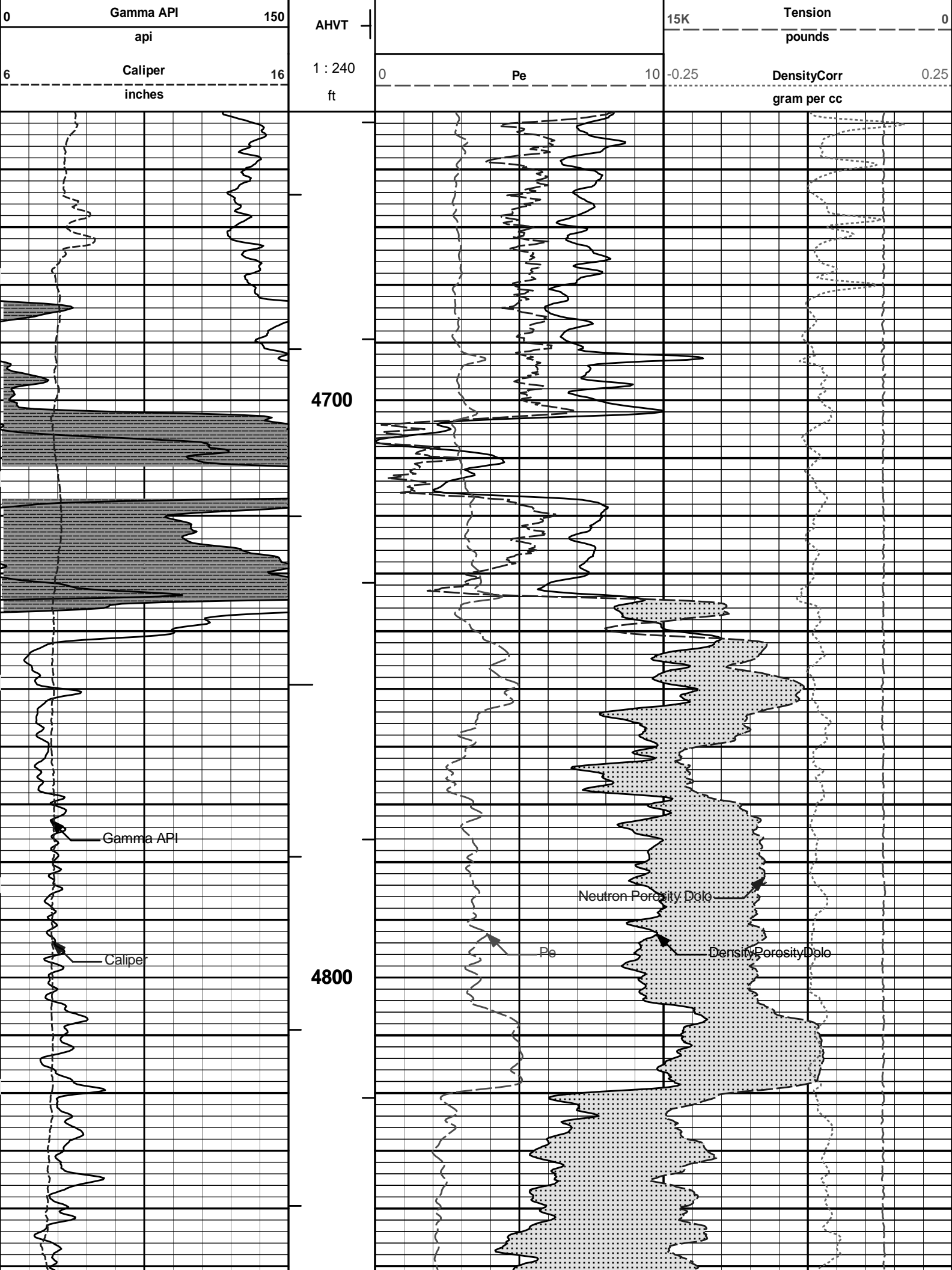
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	inches		ft					gram per cc	
0	Gamma API	150	AHVT				15K	Tension	0
	api							pounds	
	SHALE		BHVT	30	DensityPorosityLime				-10
					%				
				30	Neutron Porosity Lime				-10
					%				
					CROSSOVER				

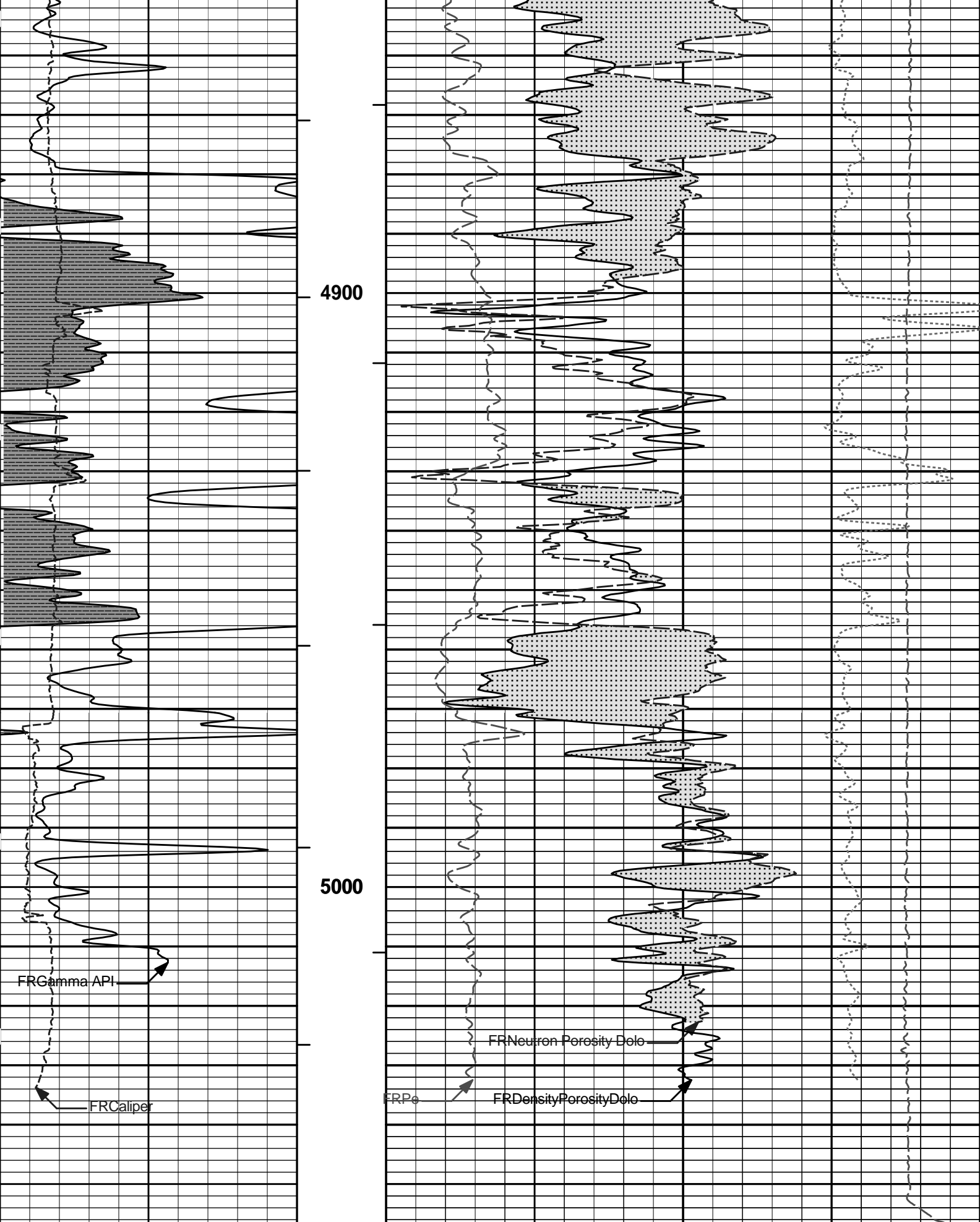
REPEAT SECTION

REPEAT SECTION









6 Caliper 16
inches

0 Gamma API 150

1 : 240
ft

0 Pe 10 -0.25

15K

DensityCorr 0.25
gram per cc

Tension

api	AHVT		15K	pounds
SHALE	BHVT	30	DensityPorosityDolo	-10
			%	
		30	Neutron Porosity Dolo	-10
			%	
			CROSSOVER	

HALLIBURTON

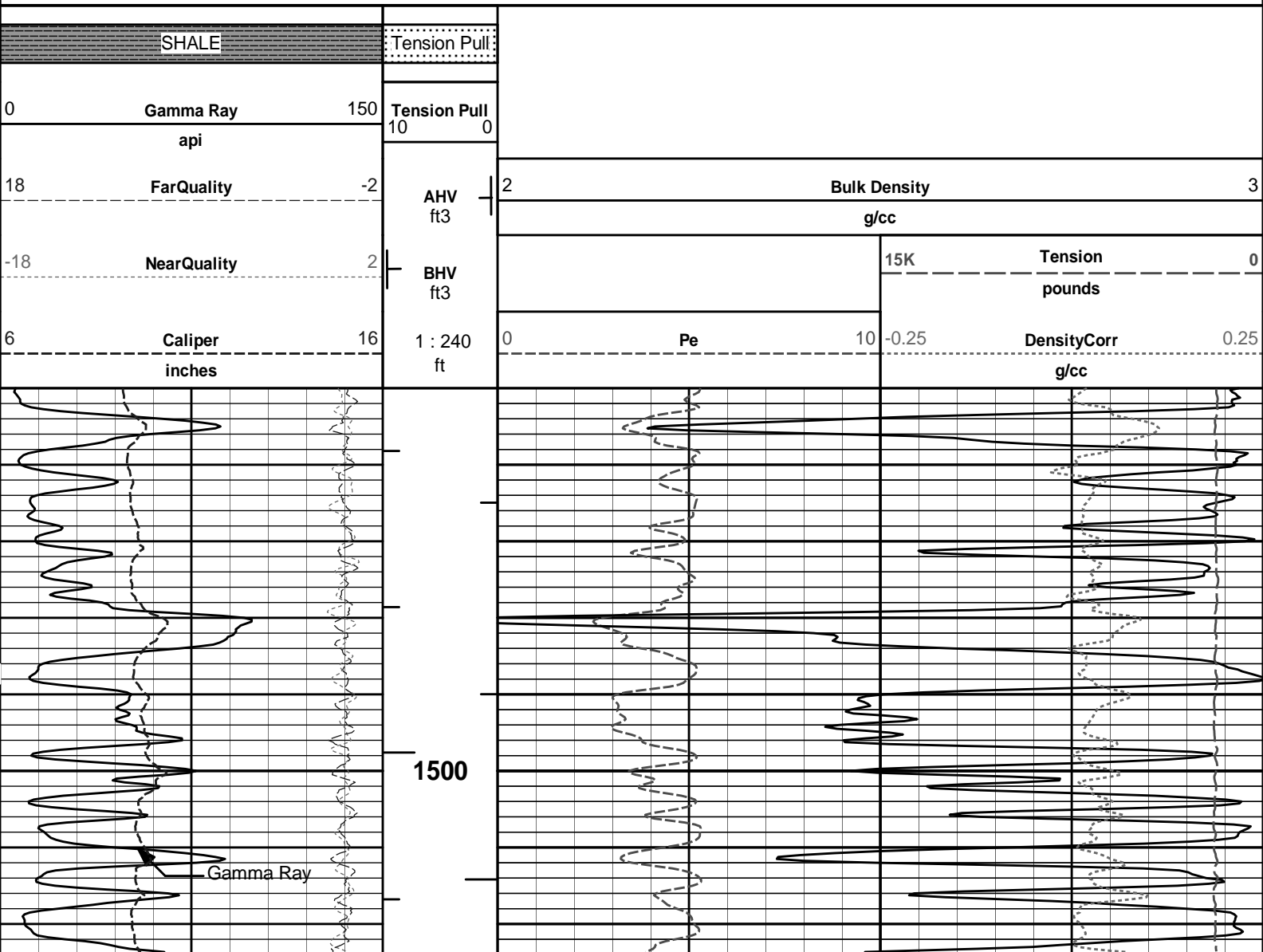
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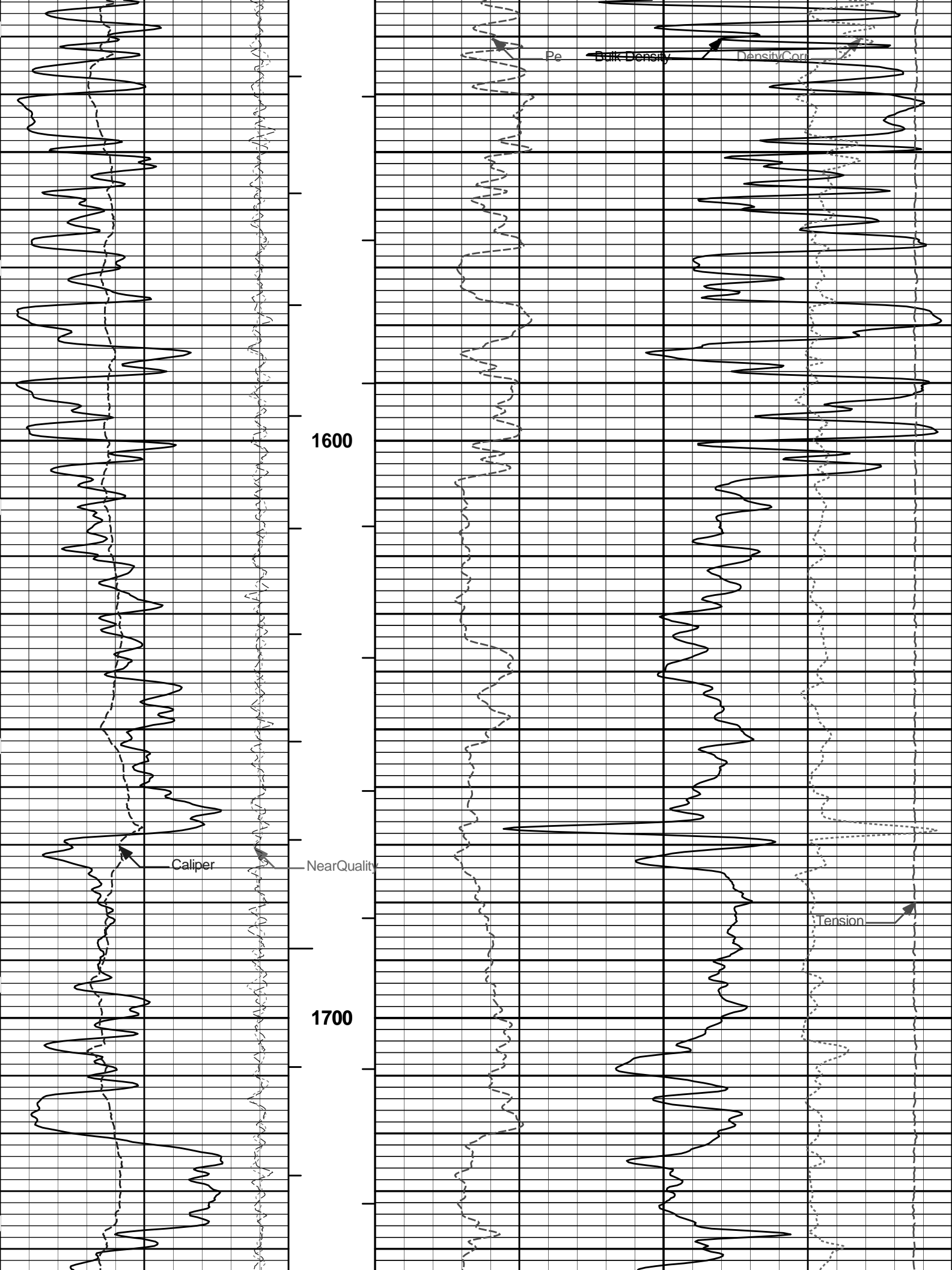
REPEAT SECTION

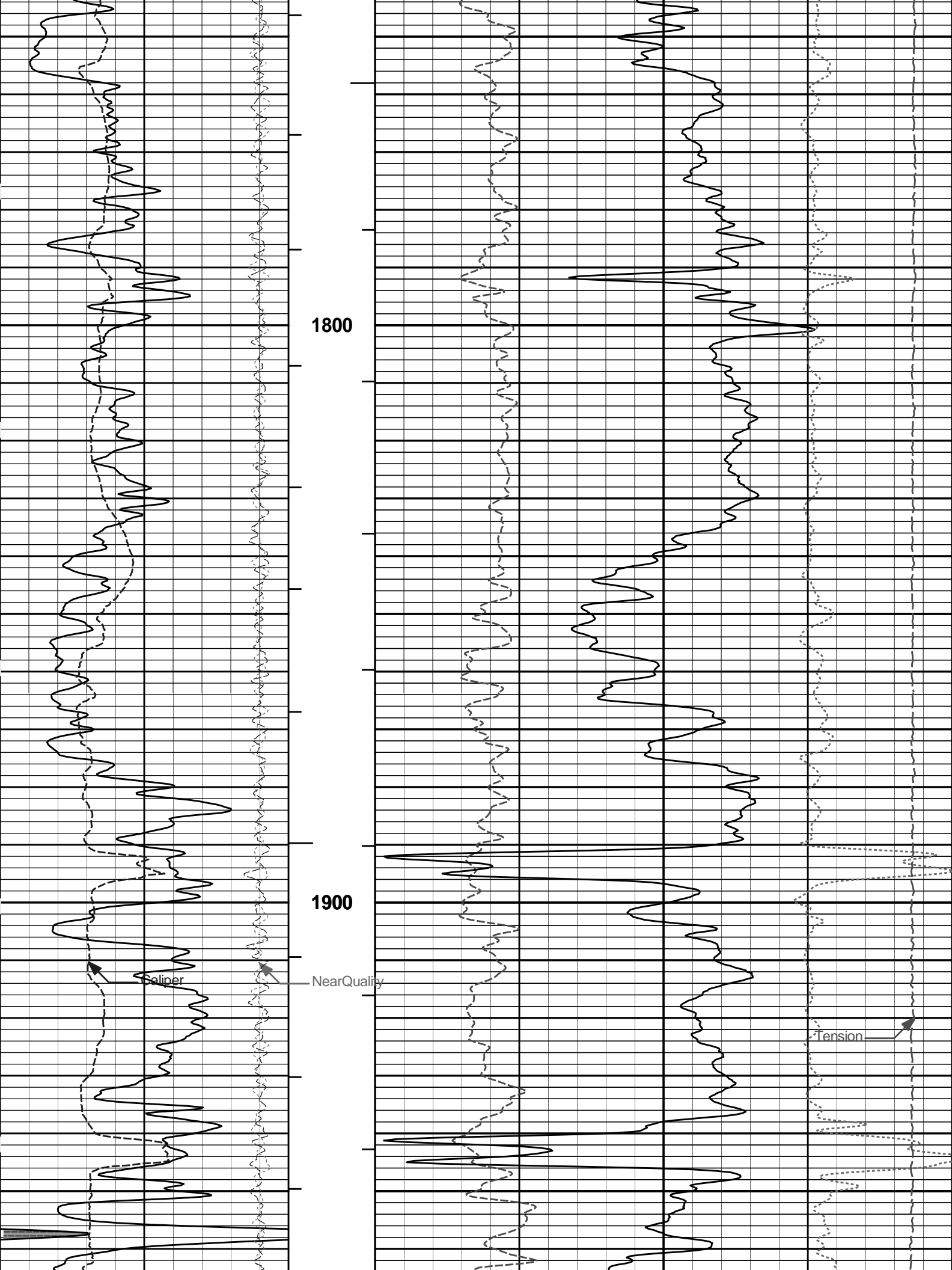
HALLIBURTON

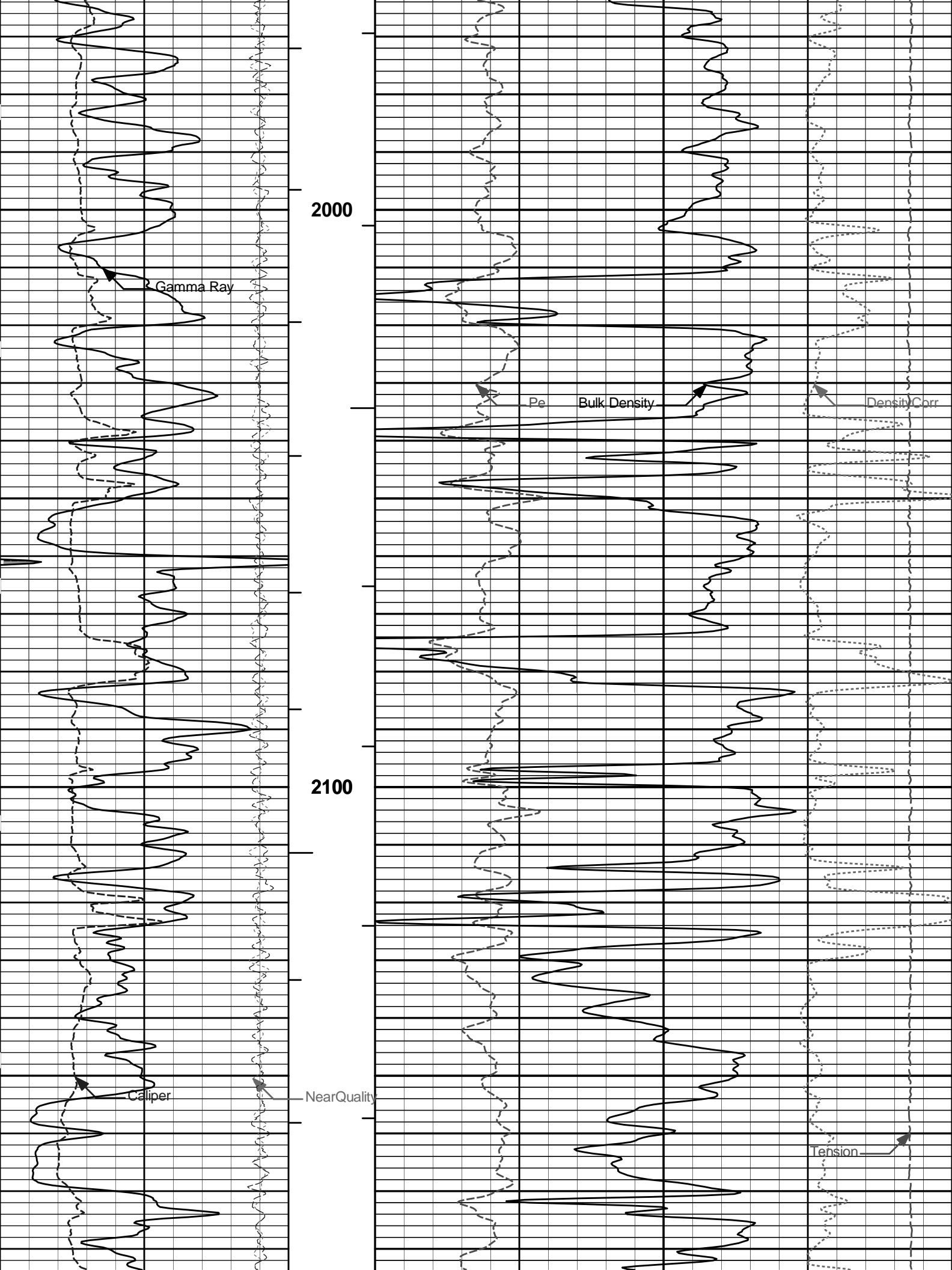
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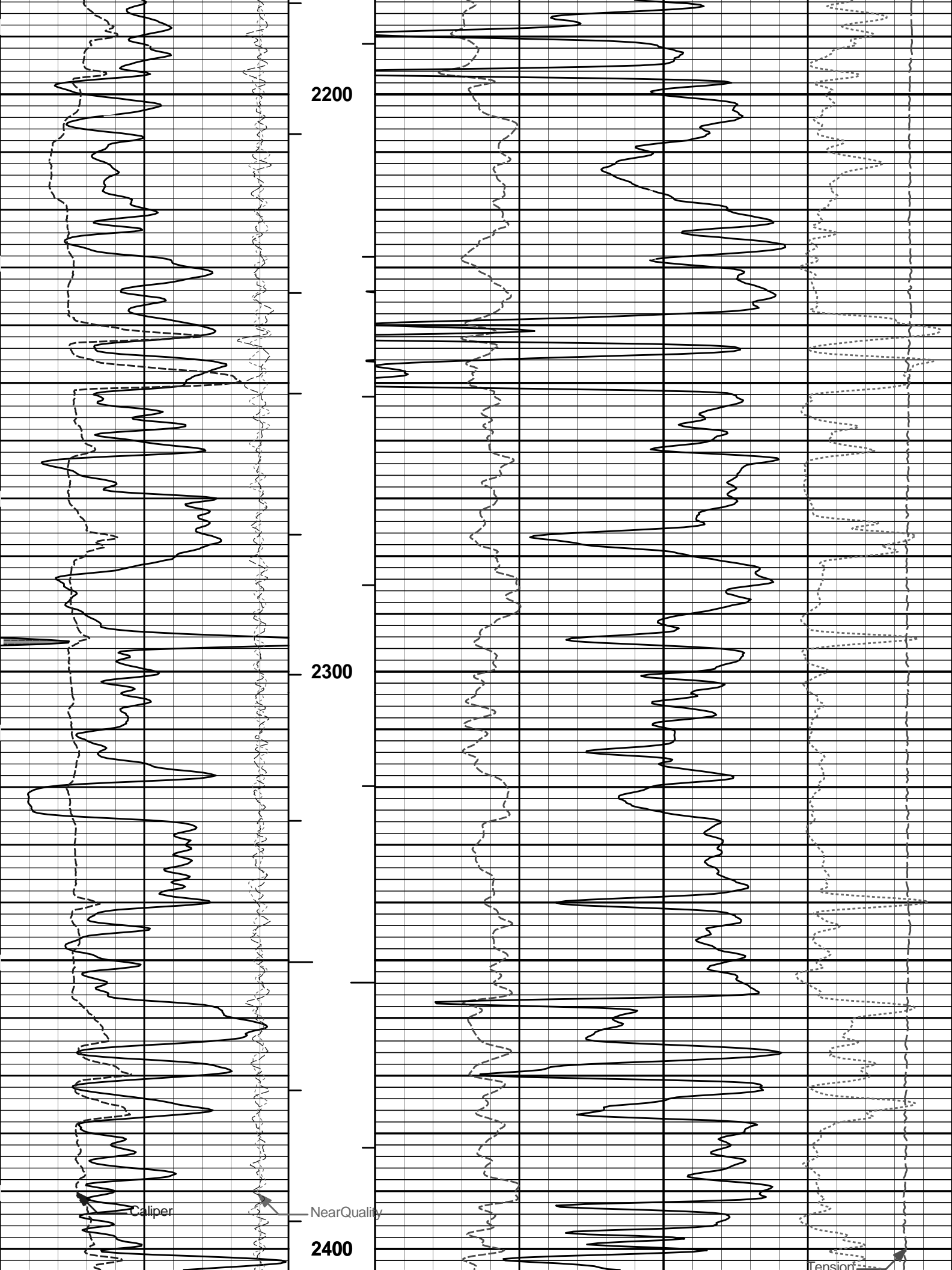
5 INCH MAIN LOG

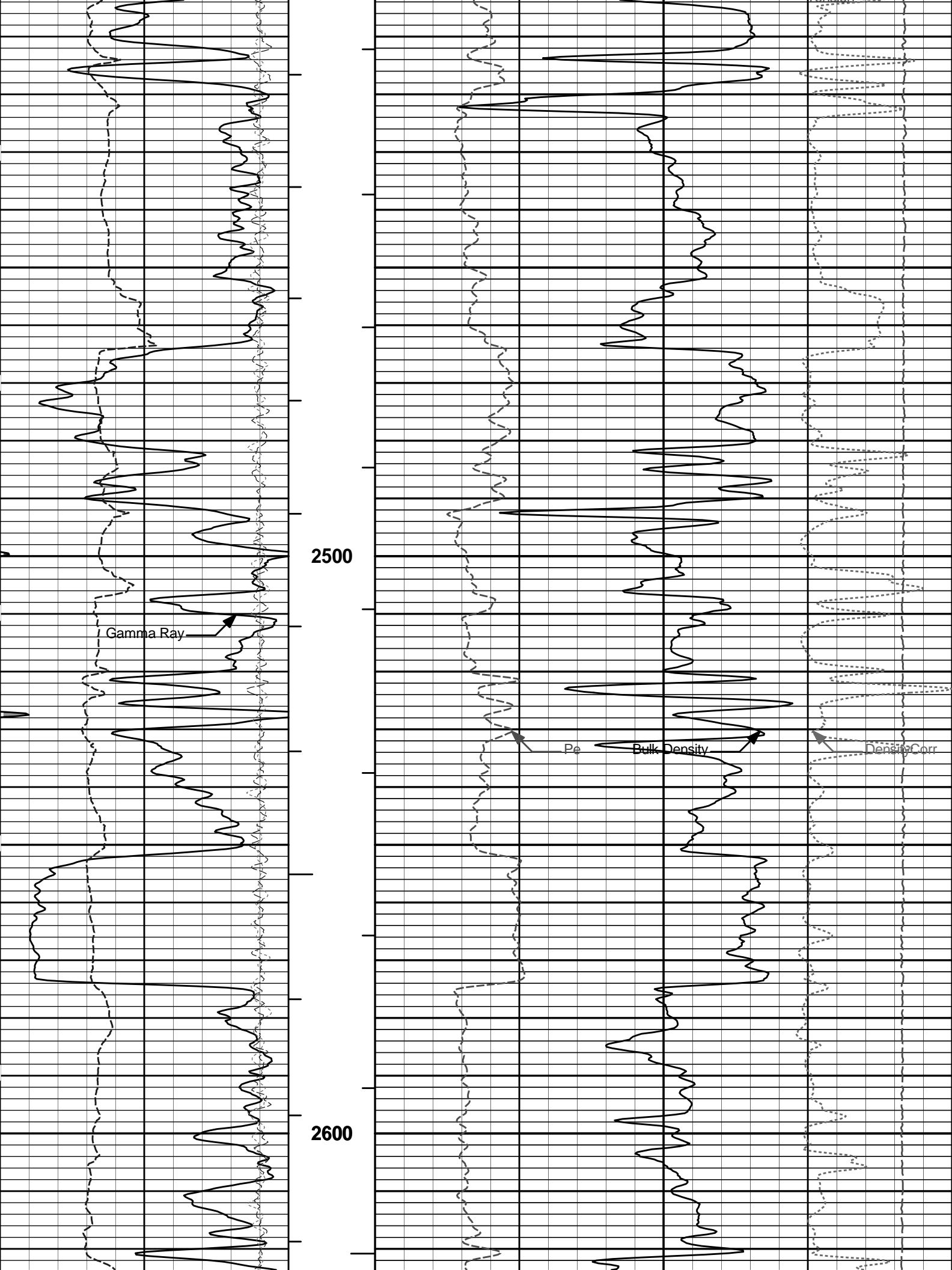


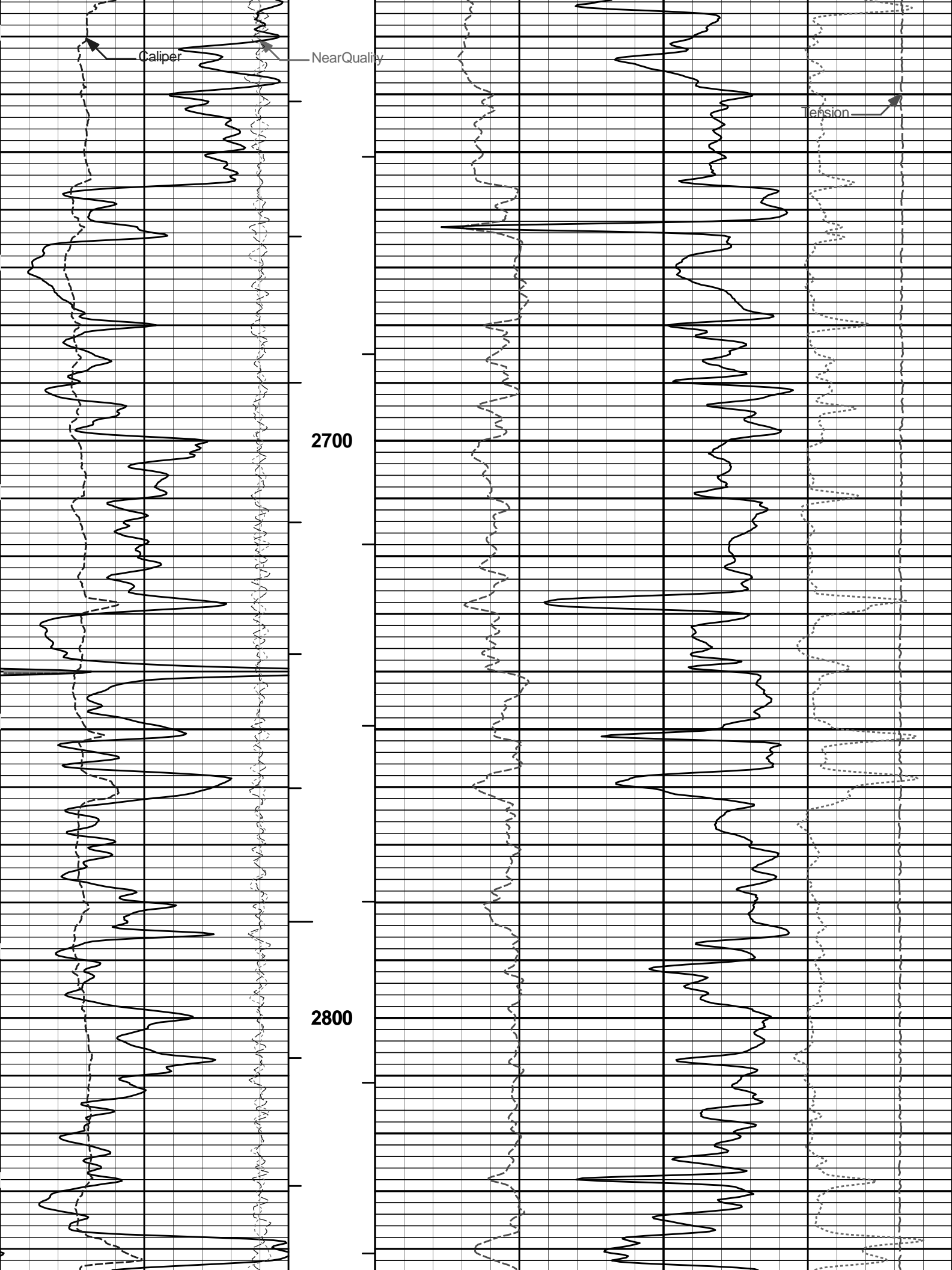


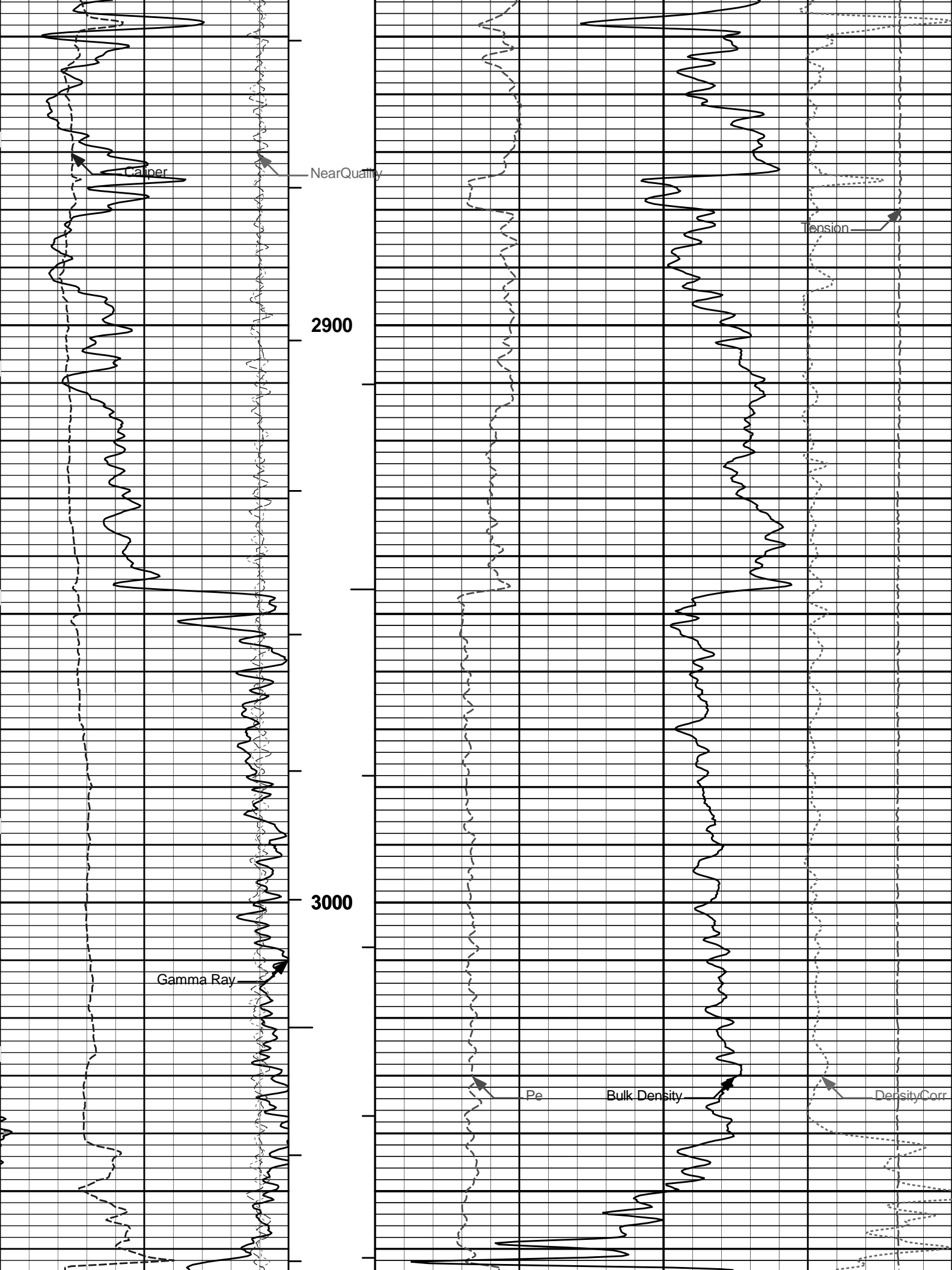


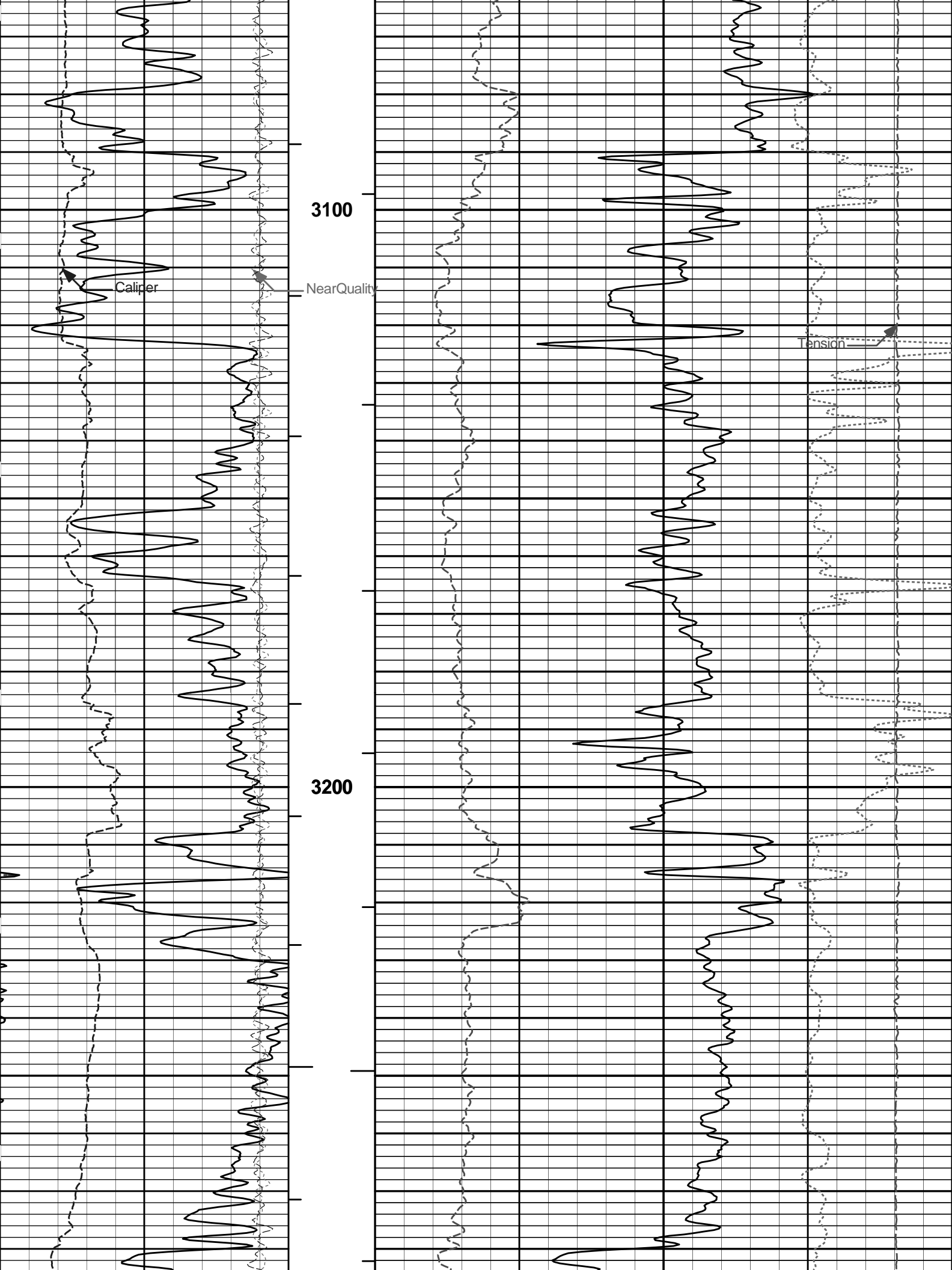


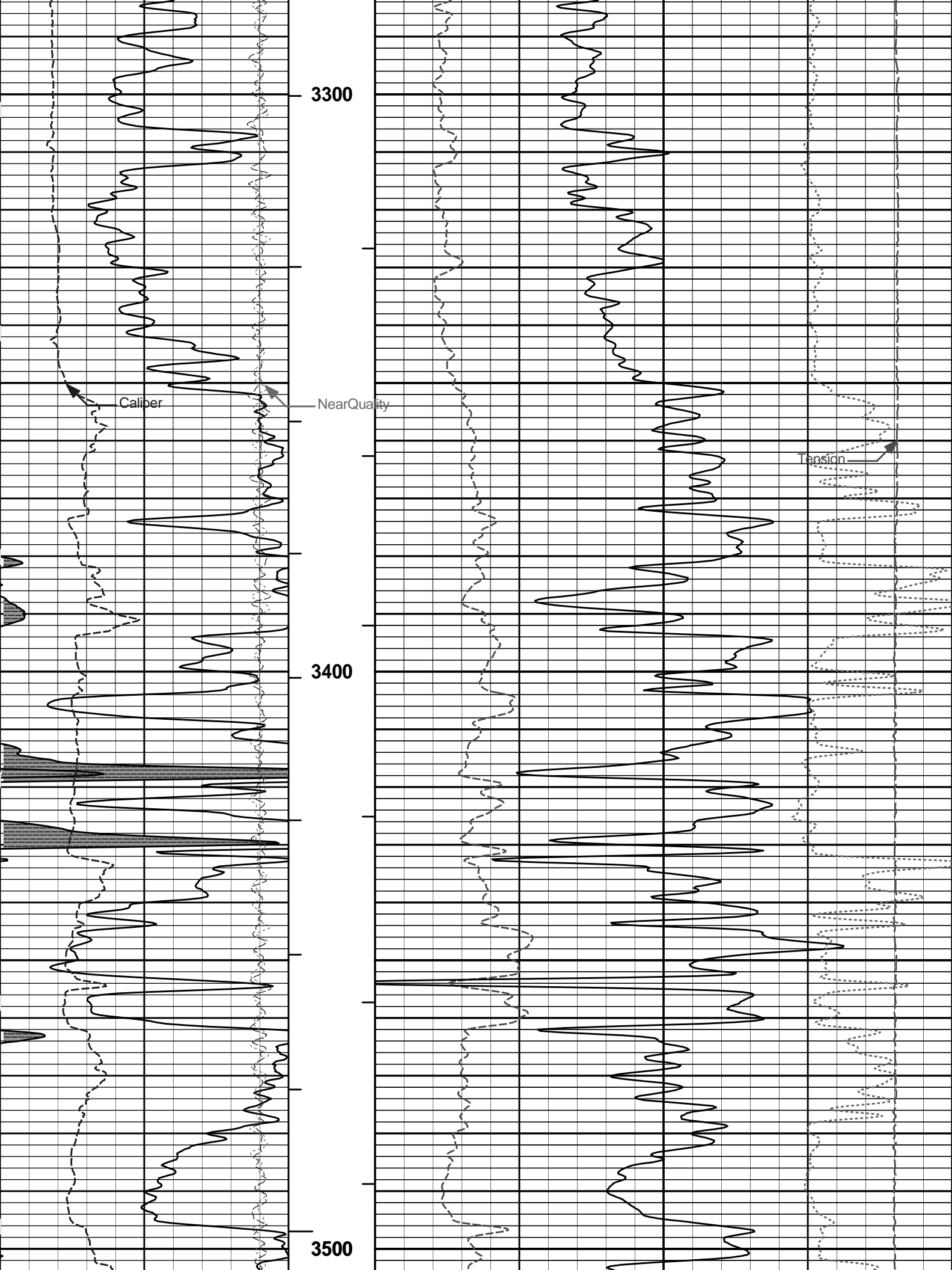


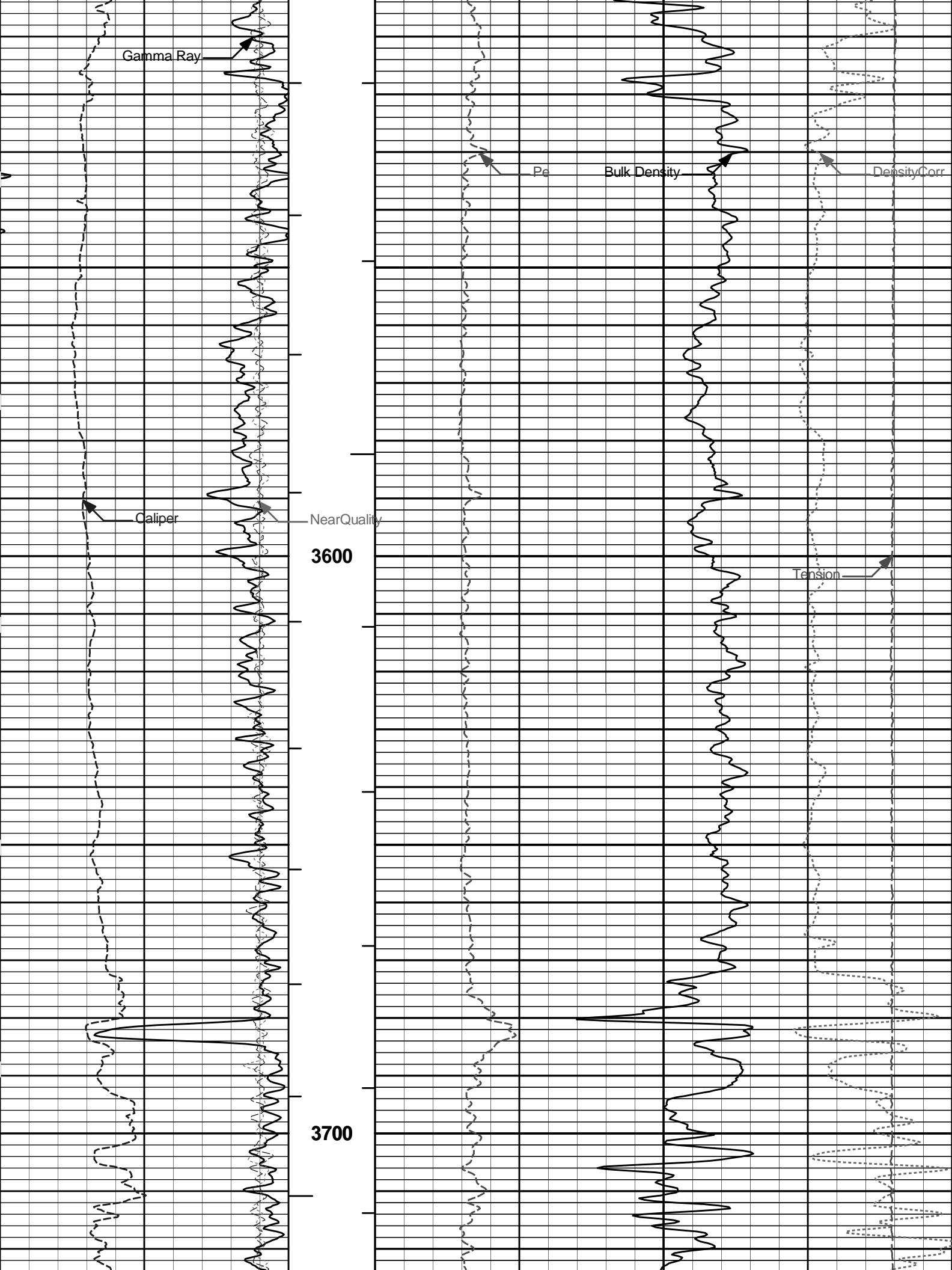


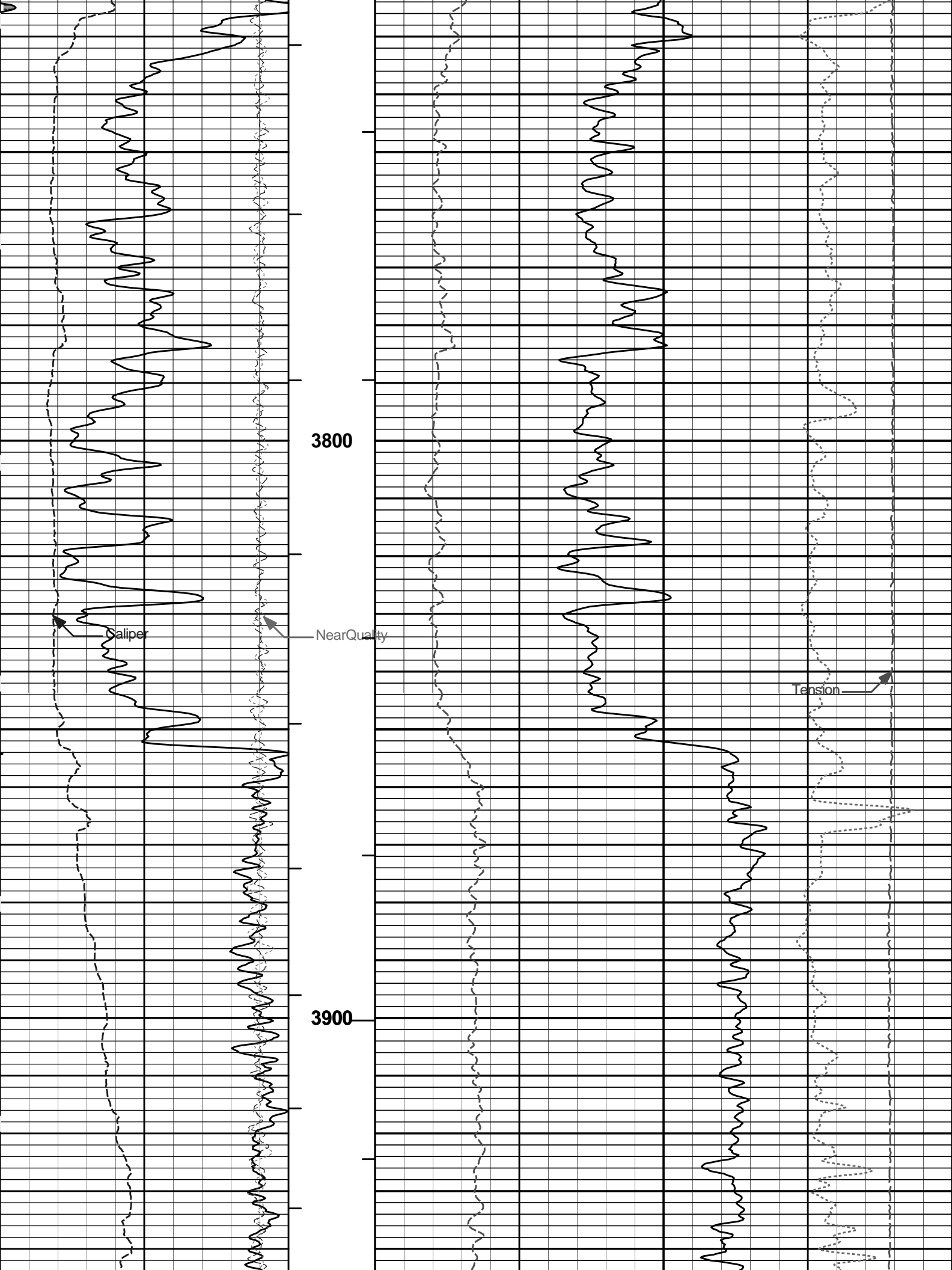


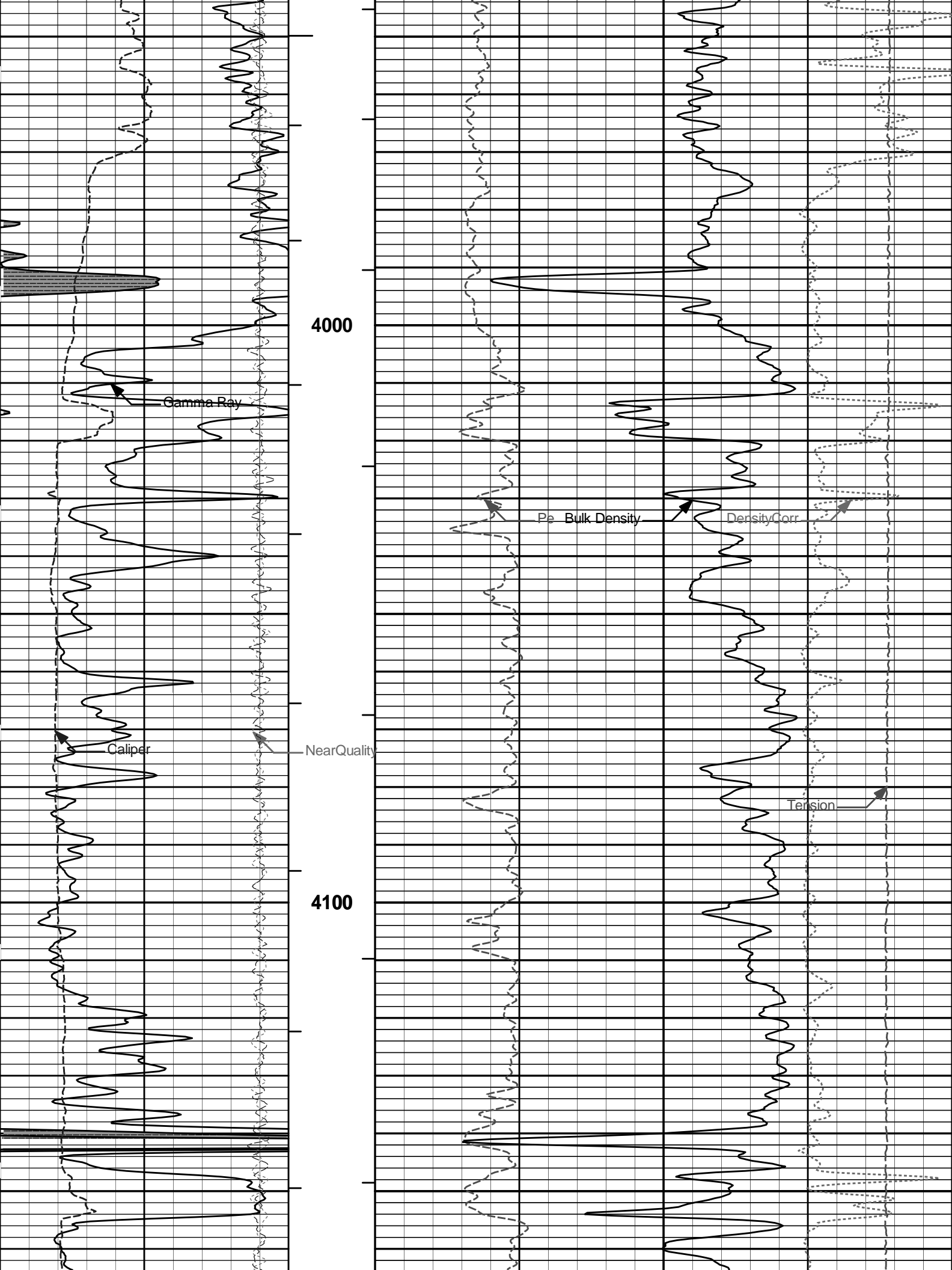


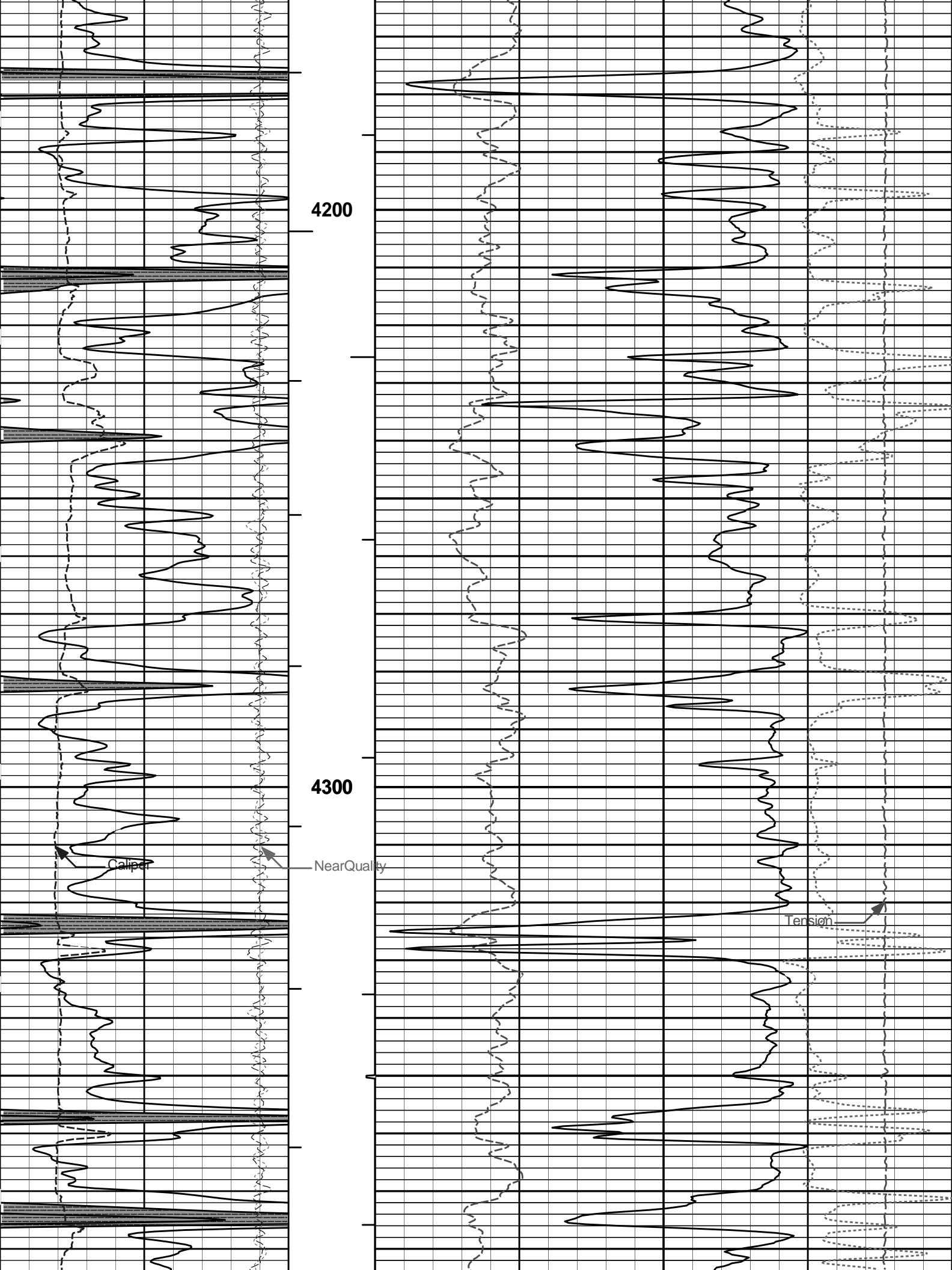


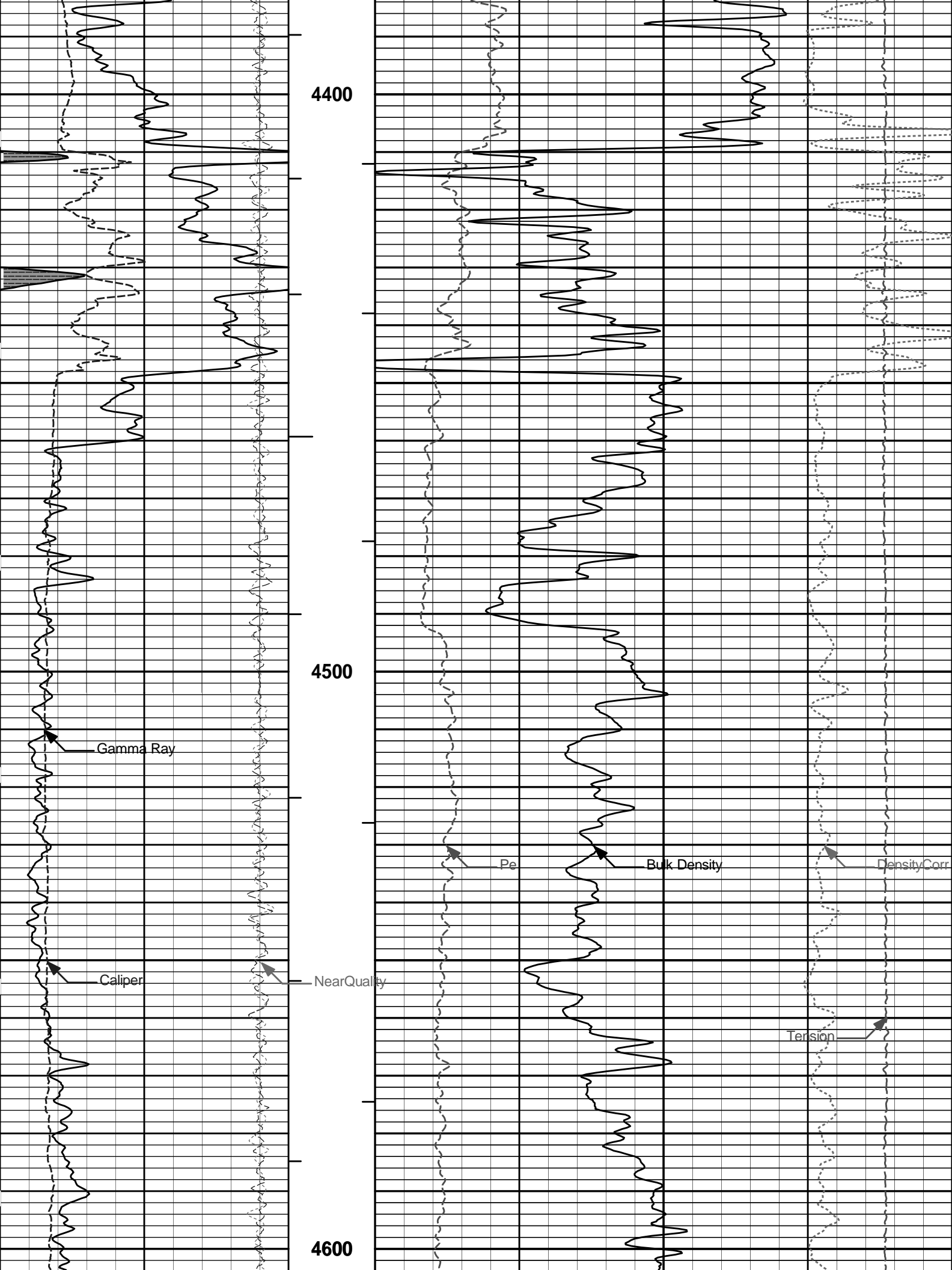


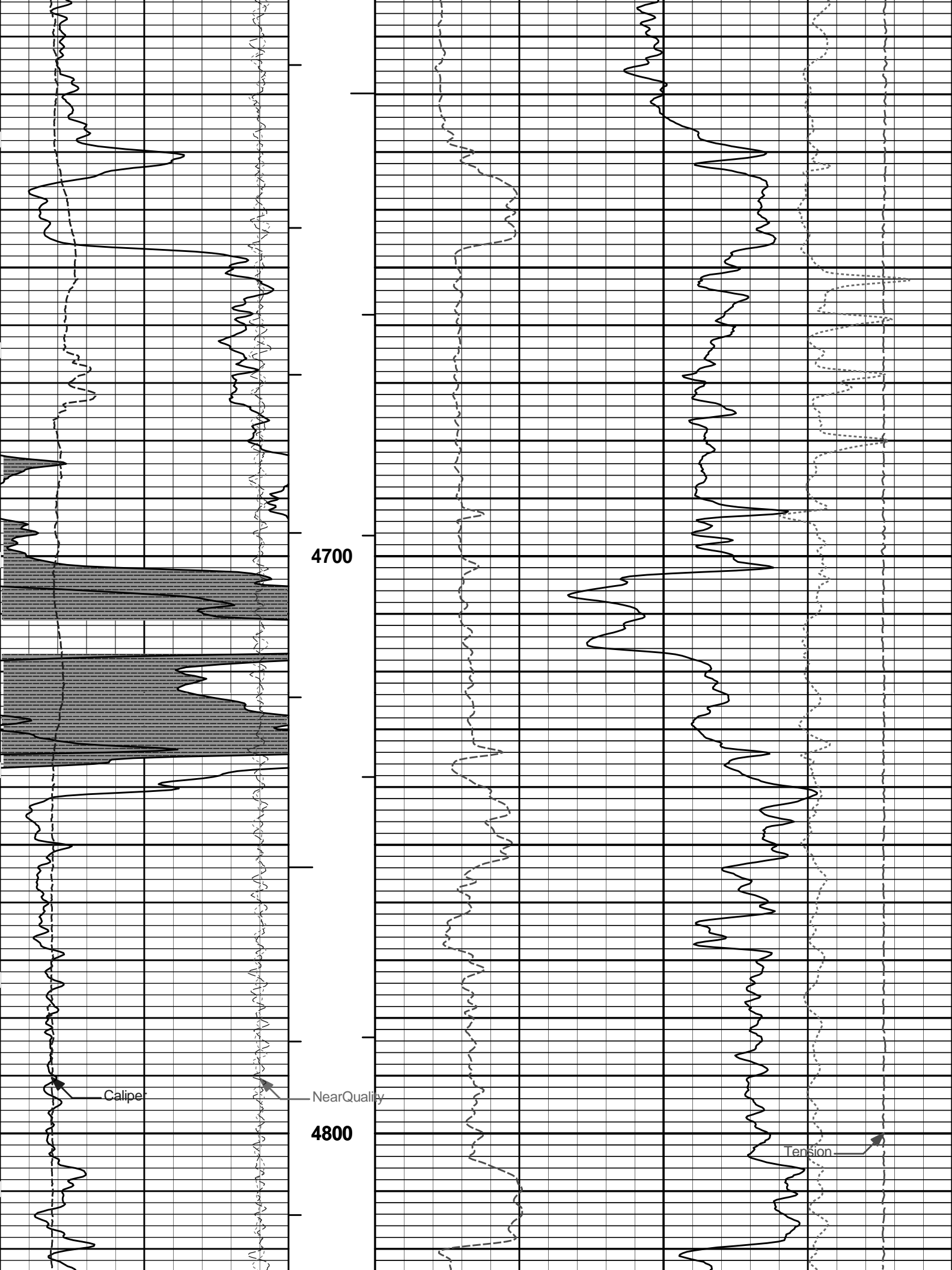












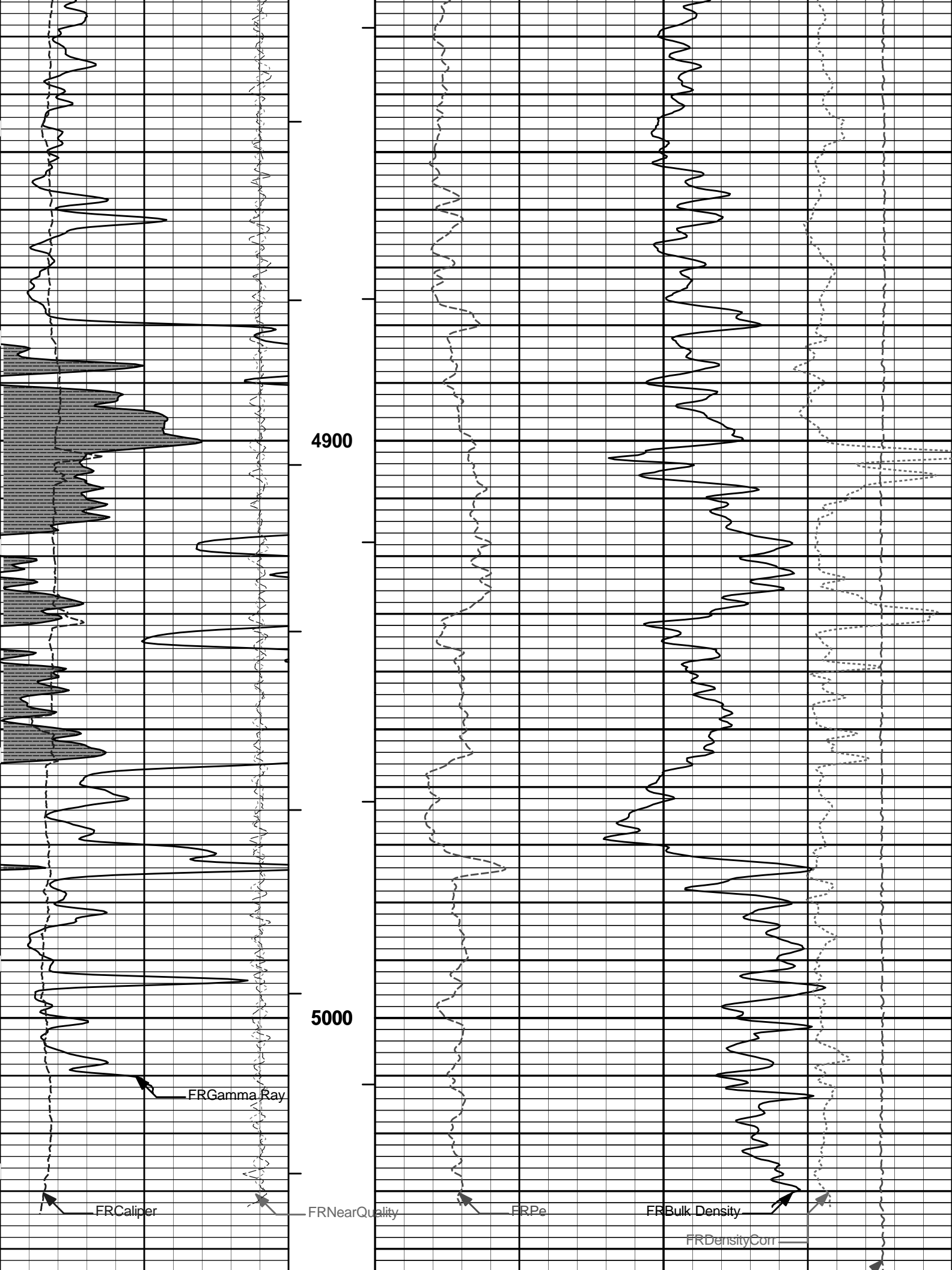
4700

Caliper

NearQuality

4800

Tension



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

HALLIBURTON

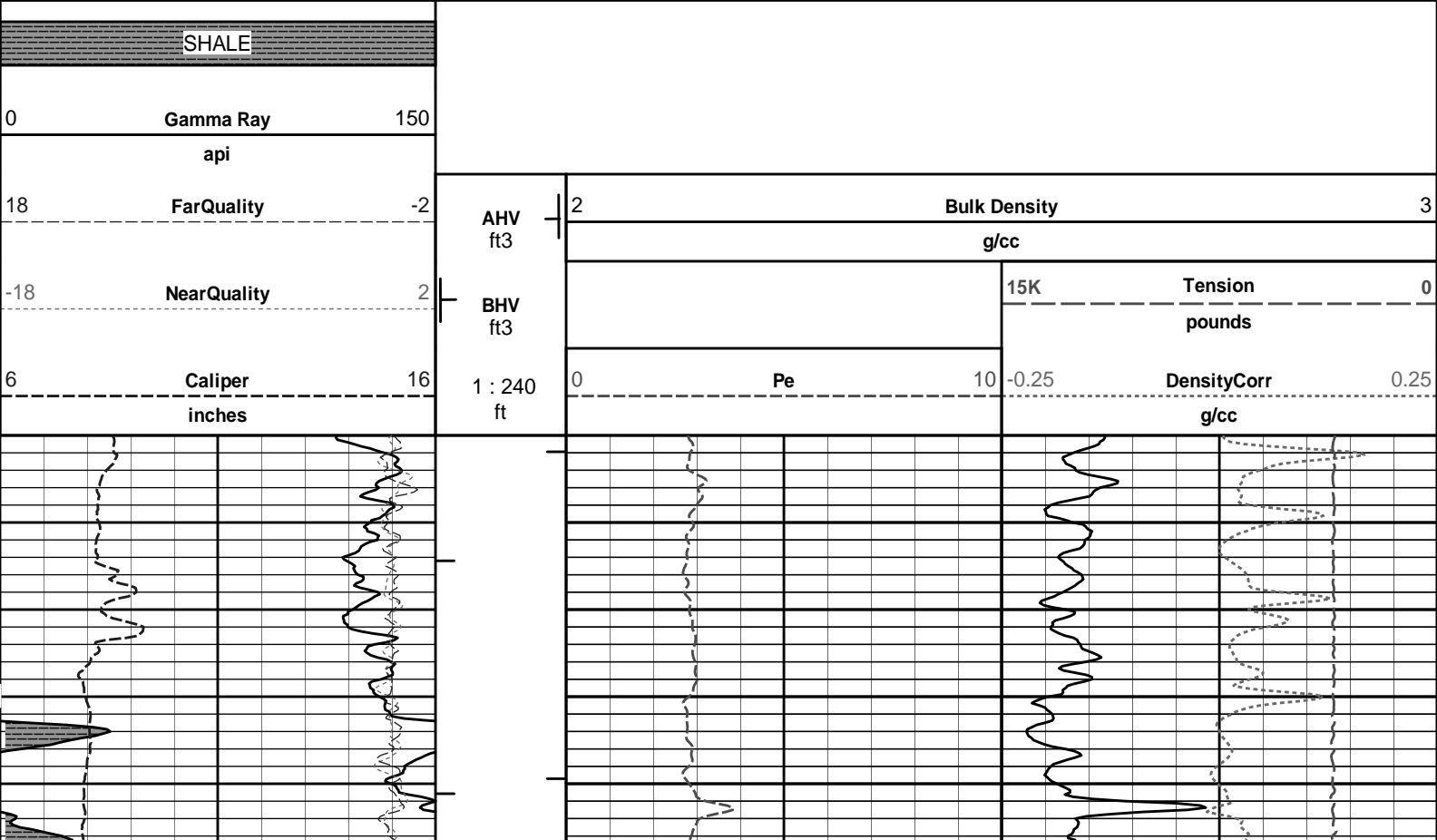
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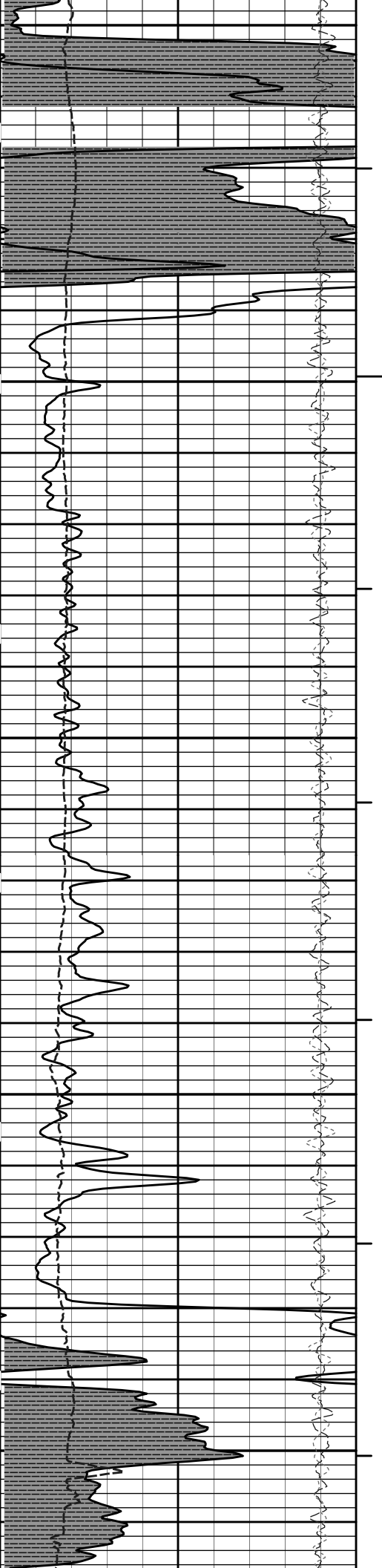
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 20-Nov-10 08:03:06
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REPEAT SECTION

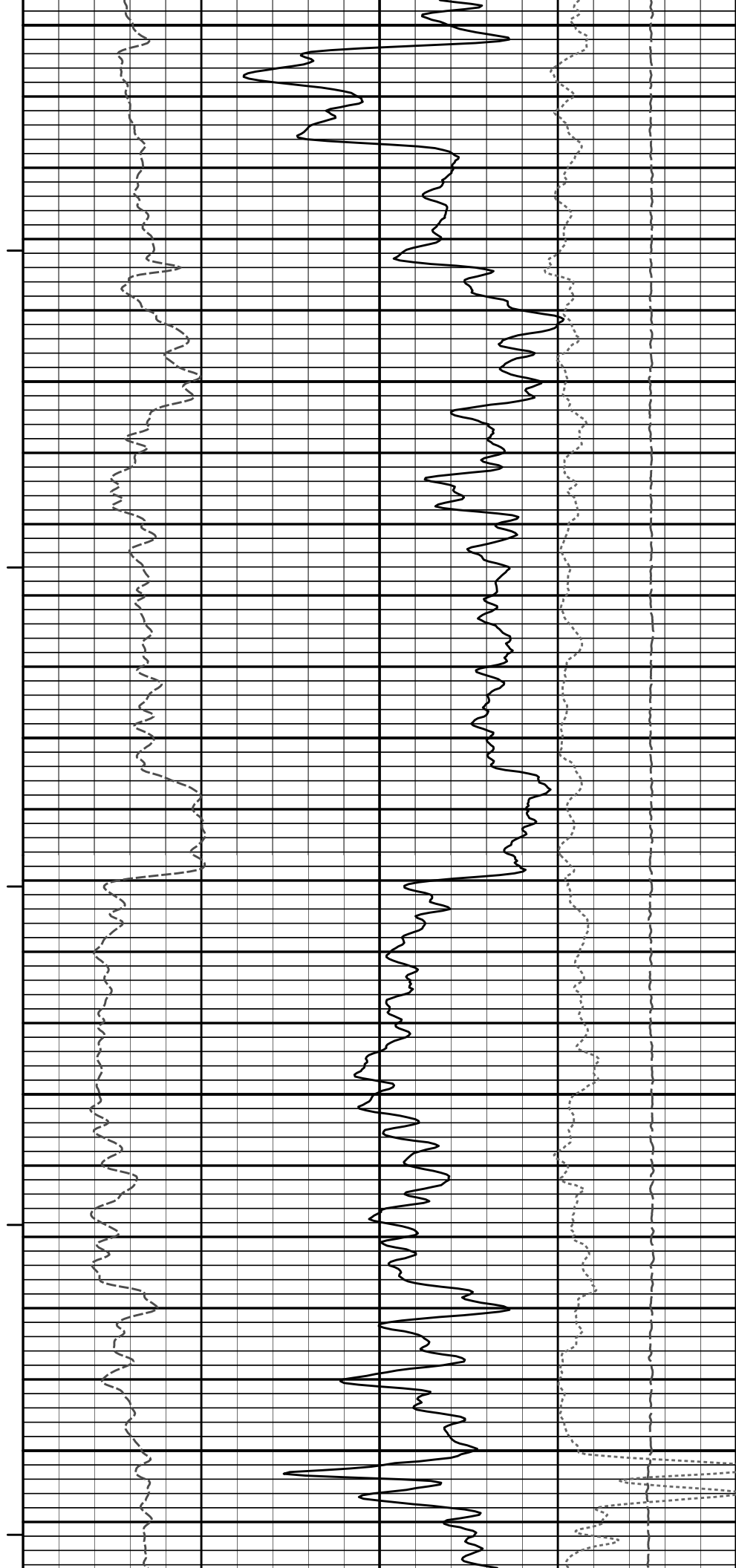


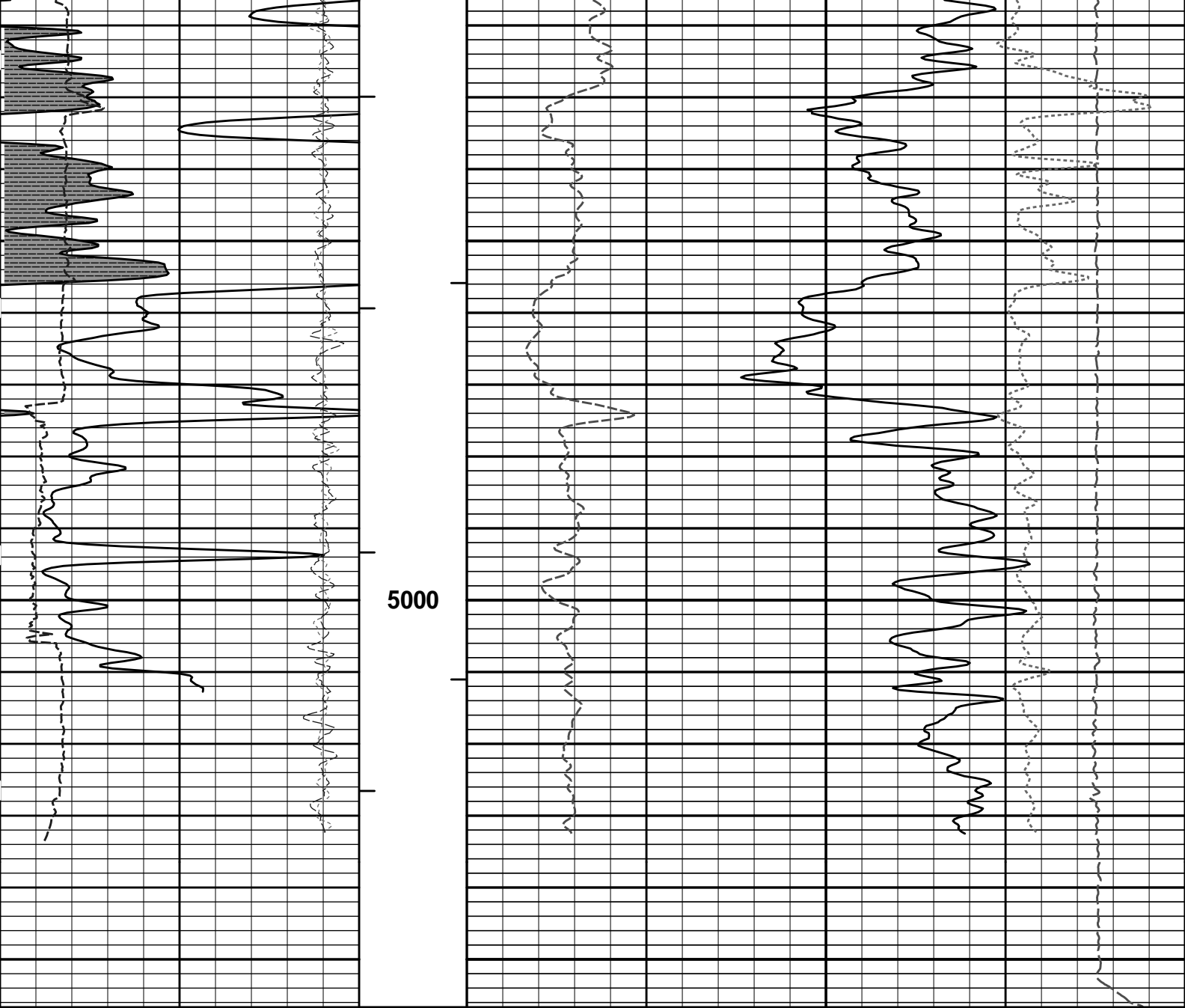


4700

4800

4900





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

HALLIBURTON

Plot Time: 20-Nov-10 08:03:09
 Plot Range: 4650 ft to 5056.67 ft
 Data: LANDWEHR_A_1\Well Based\DAQ-0001-002\
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REPEAT SECTION

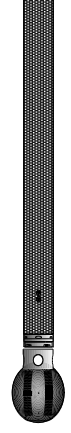
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-CH_696 37.50 lbs		Ø 2.750 in →		← Temperature @ 55.54 ft	3.03 ft	56.57 ft
XOHD-TRK696 20.00 lbs		Ø 2.750 in → Ø 3.625 in →		← SP @ 50.81 ft	0.95 ft	53.54 ft
SP Sub-PROT01 60.00 lbs		Ø 3.625 in →		← GammaRay @ 42.79 ft	3.74 ft	52.59 ft
GTET-11039640 165.00 lbs		Ø 3.625 in →			8.52 ft	48.85 ft
DSN Decentralizer- 10755066 6.60 lbs		Ø 3.625 in* → Ø 3.625 in →			9.69 ft	40.33 ft
DSNT-11019643 174.00 lbs				← DSN Far @ 33.39 ft ← DSN Near @ 32.64 ft		30.64 ft
SDLT-143_P81 360.00 lbs		Ø 4.500 in → Ø 4.750 in →		← SDL Microlog @ 22.83 ft ← SDL Caliper @ 22.65 ft ← SDL @ 22.64 ft	10.81 ft	19.83 ft
				← Mud Resistivity @ 13.44 ft		
ACRt-I5059_S8385 250.00 lbs		Ø 3.625 in →			19.25 ft	

← ACRT @ 9.46 ft

Cabbage Head-
TRK696
10.00 lbs

∅ 3.625 in
∅ 6.000 in



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	CH_696	37.50	3.03	53.54	300.00
XOHD	Hostile to Dits Cross Over	TRK696	20.00	0.95	52.59	300.00
SP	SP Sub	PROT01	60.00	3.74	48.85	300.00
GTET	Gamma Telemetry Tool	11039640	165.00	8.52	40.33	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69	30.64	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	* 33.97	300.00
SDLT	Spectral Density Tool	I43_P81	360.00	10.81	19.83	60.00
ACRT	Array Compensated True Resistivity	I5059_S8385	250.00	19.25	0.58	300.00
CBHD	Cabbage Head	TRK696	10.00	0.58	0.00	300.00
Total			1,083.10	56.57		

* Not included in Total Length and Length Accumulation.

Data: LANDWEHR_A_1\0001 SP-GTET-DSN-SDL-ACRT-CHIDLE Date: 20-Nov-10 02:32:39

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11039640	Reference Calibration Date: 18-Nov-10 15:33:32
Engineer: W.MILLER	Calibration Date: 18-Nov-10 15:40:50
Software Version: WL INSITE R3.2.0 (Build 7)	Calibration Version: 1

Calibrator Source S/N: TB 146
Calibrator API Reference:265.00 api
Equivalent Calibrator API Reference:269.6 api

Measurement	Measured	Calibrated	Units
Background	128.9	105.5	api
Background + Calibrator	458.5	375.1	api
Calibrator	246.2	269.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11039640	Reference Calibration Date: 18-Nov-10 15:40:50
Engineer: J. BOSH	Calibration Date: 20-Nov-10 02:10:05
Software Version: WL INSITE R3.2.0 (Build 7)	Calibration Version: 1

Calibrator Source S/N: TB 146
Calibrator API Reference:265.00 api
Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	105.5	44.7	api
Background + Calibrator	375.1	318.8	api

Shop	Field	Difference	Tolerance
269.6	274.1	-4.5	+/- 9.00

NATURAL GAMMA RAY TOOL POST CALIBRATION

Tool Name: GTET - 11039640

Reference Calibration Date: 20-Nov-10 02:10:05

Engineer: J. BOSH

Calibration Date: 20-Nov-10 07:29:03

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Calibrator Source S/N: TB 146

Calibrator API Reference:265.00 api

Calibrator API Reference:269.6 api

Post Verification	Field	Post	Units
Background	44.7	46.9	api
Background + Calibrator	318.8	323.9	api
Calibrator	274.1	277.0	api

Shop	Field	Post	Difference	Tolerance
269.6	274.1	277.0	-2.9	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11019643

Reference Calibration Date: 06-Oct-10 11:38:45

Engineer: T. BRIDGEMAN

Calibration Date: 05-Nov-10 14:17:11

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Logging Source S/N: DSN-424

Tank Serial Number: LIB-105060

Reference value assigned to Tank: 51.680

Snow Block S/N: 696 BLOCK

Calibration Tank Water Temperature: 61 degF

Min. Tool Housing Outside Diameter: 3.620 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.955	0.953	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):	0.2111	0.2106	0.0005	+/- 0.0020
Calibrated Ratio:	9.73	9.72	0.017	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0636	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 - 11019643

Reference Calibration Date: 05-Nov-10 14:17:11

Engineer: J. BOSH

Calibration Date: 20-Nov-10 02:23:47

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Logging Source S/N: DSN-424

Snow Block S/N: 696 BLOCK

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0636	0.0653	0.0017	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

DUAL SPACED NEUTRON POST CALIBRATION

Tool Name: DSNT - 11019643

Reference Calibration Date: 20-Nov-10 02:23:47

Engineer: J. BOSH

Calibration Date: 20-Nov-10 07:33:28

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Logging Source S/N: DSN-424

Snow Block S/N: 696 BLOCK

NEUTRON POST-CHECK SUMMARY

	Field Value	Post Value	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0653	0.0782	0.0130	+/- 0.0150

PASS/FAIL SUMMARY

Block Change Check:	Passed
Snow Block Stat Check:	Passed
Temperature Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT - I43_P81

Reference Calibration Date: 22-Oct-10 11:02:01

Engineer: W.MILLER

Calibration Date: 18-Nov-10 14:33:14

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

Logging Source S/N: 5168GW

Aluminum Block S/N: LIBERAL

Density: 2.598g/cc

Pe: 3.170

Magnesium Block S/N: LIBERAL

Density: 1.684g/cc

Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0250	1.0139	0.90 - 1.10
Near Dens Gain	1.0069	1.0119	0.90 - 1.10
Near Peak Gain	1.0111	0.9975	0.90 - 1.10
Near Lith Gain	0.9713	0.9945	0.90 - 1.10
Far Bar Gain	1.0107	1.0110	0.90 - 1.10
Far Dens Gain	1.0027	1.0013	0.90 - 1.10
Far Peak Gain	0.9986	0.9959	0.90 - 1.10
Far Lith Gain	0.9803	0.9777	0.90 - 1.10

Near Bar Offset -0.1238 -0.0173 NONE

Near Dens Offset 0.0217 -0.0190 NONE

Near Peak Offset -0.0243 0.0929 NONE

Near Lith Offset 0.0017 0.1150 NONE

Near Lith Offset	0.3047	0.1150	NONE
Far Bar Offset	-0.0531	-0.0536	NONE
Far Dens Offset	0.0068	0.0242	NONE
Far Peak Offset	0.0075	0.0377	NONE
Far Lith Offset	0.1235	0.1586	NONE
<hr/>			
Near Bar Background	853.19	850.69	700 - 1450
Near Dens Background	278.09	281.06	230 - 480
Near Peak Background	123.24	121.80	100 - 210
Near Lith Background	150.52	148.32	125 - 260
Far Bar Background	557.49	557.26	450 - 900
Far Dens Background	218.65	216.20	175 - 345
Far Peak Background	86.58	85.98	70 - 140
Far Lith Background	88.33	89.25	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.684	1.684	-0.000	+/- 0.015
Pe	2.580	2.545	-0.035	+/- 0.150
ALUMINUM				
Density (g/cc)	2.598	2.598	-0.000	+/- 0.01500
Pe	3.096	3.117	0.021	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0005	+/- 0.0110	-0.0006	+/- 0.0140
Magnesium Block	-0.0010	+/- 0.0110	-0.0001	+/- 0.0140
Aluminum Block	0.0003	+/- 0.0110	0.0009	+/- 0.0140
Resolution	9.42	6.00 - 11.50	8.87	6.00 - 11.50
Internal Verifier(B+D+P+L)	1402	1200 - 2700	949	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 - I43_P81	Reference Calibration Date: 18-Nov-10 14:33:14
Engineer: J. BOSH	Calibration Date: 20-Nov-10 02:20:43
Software Version: WL INSITE R3.2.0 (Build 7)	Calibration Version: 1

Pad Temperature: 54.1 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-

Near (B+D+P+L) cps	1401.877	1395.912	-5.965	15.120
Far (B+D+P+L) cps	948.688	950.580	1.892	16.616
Near Resolution	9.42	9.66	0.240	0.50
Far Resolution	8.87	9.42	0.550	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

SPECTRAL DENSITY POST CHECK

Tool Name: SDLT - I43_P81	Reference Calibration Date: 20-Nov-10 02:20:43
Engineer: J. BOSH	Calibration Date: 20-Nov-10 07:31:14
Software Version: WL INSITE R3.2.0 (Build 7)	Calibration Version: 1

Pad Temperature: 68.2 degF

DENSITY POST CALIBRATION SUMMARY

Measurement	Field	Post	Change	Control Limit +/-
Near (B+D+P+L) cps	1395.912	1402.420	6.508	15.120
Far (B+D+P+L) cps	950.580	949.370	-1.210	16.616
Near Resolution	9.66	9.48	-0.180	0.50
Far Resolution	9.42	9.23	-0.190	1.00

PASS/FAIL SUMMARY

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - I43_P81	Reference Calibration Date: 23-Oct-10 17:23:32
Engineer: W.MILLER	Calibration Date: 18-Nov-10 15:05:13
Software Version: WL INSITE R3.2.0 (Build 7)	Calibration Version: 1

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1832.69	-2406.25	-7000.00 - -1000.00
Pad Gain	0.0003809	0.0004169	0.000200 - 0.000600
Arm Offset	178.72	-304.70	-5000.00 - 3000.00
Arm Gain	0.0005073	0.0005905	0.000300 - 0.000700
Arm Power	-0.000004104	-0.000008883	-0.000010 - 0.000010

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)	2.05	2.00	-0.05	+/- 0.20
Medium Ring (in)	3.64	3.75	0.11	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.70	6.50	-0.20	+/- 0.20
Medium Ring (in)	8.28	8.25	-0.03	+/- 0.20
Large Ring (in)	15.18	15.00	-0.18	+/- 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 - I43_P81

Reference Calibration Date: 18-Nov-10 15:05:13

Engineer: J. BOSH

Calibration Date: 20-Nov-10 02:30:07

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.66	-0.09	+/- 0.10
Ring Diameter	8.25	8.12	-0.13	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check: Passed

Diameter Check: Passed

SDLT CALIPER POST CALIBRATION

Tool Name: SDLT - I43_P81

Reference Calibration Date: 20-Nov-10 02:30:07

Engineer: J. BOSH

Calibration Date: 20-Nov-10 07:41:31

Software Version: WL INSITE R3.2.0 (Build 7)

Calibration Version: 1

MEASURED CALIPER VALUES

Measurement	Field	Post	Change	Control Limit On New Value
Pad Extension	3.66	3.76	0.10	+/- 0.10
Ring Diameter	8.12	8.11	-0.01	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check: Passed

Diameter Check: Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11039640						
Gamma Ray Calibrator	269.6	274.1	277.0	-2.9	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0636	0.0653	0.0782	-0.0129	+/- 0.0150	decp
SDLT-I43_P81						
Near(B+D+P+L)	1401.877	1395.912	1402.420	-6.508	+/-15.120	cps
Far(B+D+P+L)	948.688	950.580	949.370	1.210	+/-16.616	cps
Pad Extension	3.75	3.66	3.76	-0.10	+/-0.10	in
Ring Diameter	8.25	8.12	8.11	0.010	+/-0.15	in

Data: LANDWEHR_A_1\0001 SP-GTET-DSN-SDL-ACRT-CHMDLE

Date: 20-Nov-10 07:43:11

HALLIBURTON**PARAMETERS REPORT**

Depth

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	DSNT	DNOK	Process DSN?	No	
	SDLT	DNOK	Process Density?	No	
	SDLT	MLOK	Process MicroLog Outputs?	No	
1440.00					
	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	9.600	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	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	0.740	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	5050.00	ft
	SHARED	BHT	Bottom Hole Temperature	115.0	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	
	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	Centered	
	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	0.300	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	DNOK	Process Density?	Yes	
	SDLT	DNOK	Process Density EVR?	No	
	SDLT	CB	Logging Calibration Blocks?	No	
	SDLT	SPVT	SDLT Pad Temperature Valid?	Yes	
	SDLT	DTWN	Disable temperature warning	No	
	SDLT	DMA	Formation Density Matrix	2.710	g/cc
	SDLT	DFL	Formation Density Fluid	1.000	g/cc
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	SDLT	MLOK	Process MicroLog Outputs?	Yes	
	ACRt	RTOK	Process ACRt?	Yes	
	ACRt	MNSO	Minimum Tool Standoff	1.50	in
	ACRt	TCS1	Temperature Correction Source	FP Lwr & FP Upr	
	ACRt	TPOS	Tool Position	Free Hanging	
	ACRt	RMOP	Rmud Source	Mud Cell	
	ACRt	RMIN	Minimum Resistivity for MAP	0.20	ohmm
	ACRt	RMIN	Maximum Resistivity for MAP	200.00	ohmm
	ACRt	THQY	Threshold Quality	0.50	

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	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	50.81	NO	
SP	Spontaneous Potential	50.81	BLK	1.250
SPR	Raw Spontaneous Potential	50.81	NO	
SPO	Spontaneous Potential Offset	50.81	NO	
GTET				
TPUL	Tension Pull	42.79	NO	
GR	Natural Gamma Ray API	42.79	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	42.79	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.79	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	32.54	NO	
RNDS	Near Detector Telemetry Counts	32.64	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.39	TRI	0.583
DNTT	DSN Tool Temperature	32.64	NO	
DSNS	DSN Tool Status	32.54	NO	
ERND	Near Detector Telemetry Counts EVR	32.64	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.39	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.64	NO	
SDLT				
TPUL	Tension Pull	22.64	NO	
NAB	Near Above	22.46	BLK	0.920
NHI	Near Cesium High	22.46	BLK	0.920
NLO	Near Cesium Low	22.46	BLK	0.920
NVA	Near Valley	22.46	BLK	0.920
NBA	Near Barite	22.46	BLK	0.920
NDE	Near Density	22.46	BLK	0.920
NPK	Near Peak	22.46	BLK	0.920
NLI	Near Lithology	22.46	BLK	0.920
NBAU	Near Barite Unfiltered	22.46	BLK	0.250
NLIU	Near Lithology Unfiltered	22.46	BLK	0.250
FAB	Far Above	22.81	BLK	0.250
FHI	Far Cesium High	22.81	BLK	0.250
FLO	Far Cesium Low	22.81	BLK	0.250
FVA	Far Valley	22.81	BLK	0.250
FBA	Far Barite	22.81	BLK	0.250

FDE	Far Density	22.81	BLK	0.250
FPK	Far Peak	22.81	BLK	0.250
FLI	Far Lithology	22.81	BLK	0.250
PTMP	Pad Temperature	22.65	BLK	0.920
NHV	Near Detector High Voltage	19.83	NO	
FHV	Far Detector High Voltage	19.83	NO	
ITMP	Instrument Temperature	19.83	NO	
DDHV	Detector High Voltage	19.83	NO	
TPUL	Tension Pull	22.65	NO	
PCAL	Pad Caliper	22.65	TRI	0.250
ACAL	Arm Caliper	22.65	TRI	0.250
TPUL	Tension Pull	22.83	NO	
MINV	Microlog Lateral	22.83	BLK	0.750
MNOR	Microlog Normal	22.83	BLK	0.750

ACRt				
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TPUL	Tension Pull	2.97	NO	
F1R1	ACRT 12KHz - 80in R value	9.22	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	9.22	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.72	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.72	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	5.22	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	5.22	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	4.22	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	4.22	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.72	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.72	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.47	BLK	0.000
F1X6	ACRT 12KHz - 6in X value	3.47	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	9.22	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	9.22	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.72	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.72	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	5.22	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	5.22	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	4.22	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	4.22	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.72	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.72	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.47	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.47	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	9.22	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	9.22	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.72	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.72	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	5.22	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	5.22	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	4.22	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	4.22	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.72	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.72	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.47	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.47	BLK	0.000
RMUD	Mud Resistivity	12.76	BLK	0.000
F1RT	Transmitter Reference 12 KHz Real Signal	2.97	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.97	BLK	0.000

F2RT	Transmitter Reference 36 KHz Real Signal	2.97	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.97	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.97	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.97	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.97	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.97	BLK	0.000
ITMP	Instrument Temperature	2.97	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.97	NO	
TIDV	Instrument Temperature Derivative	2.97	NO	
TUDV	Upper Temperature Derivative	2.97	NO	
TLDV	Lower Temperature Derivative	2.97	NO	
TRBD	Receiver Board Temperature	2.97	NO	

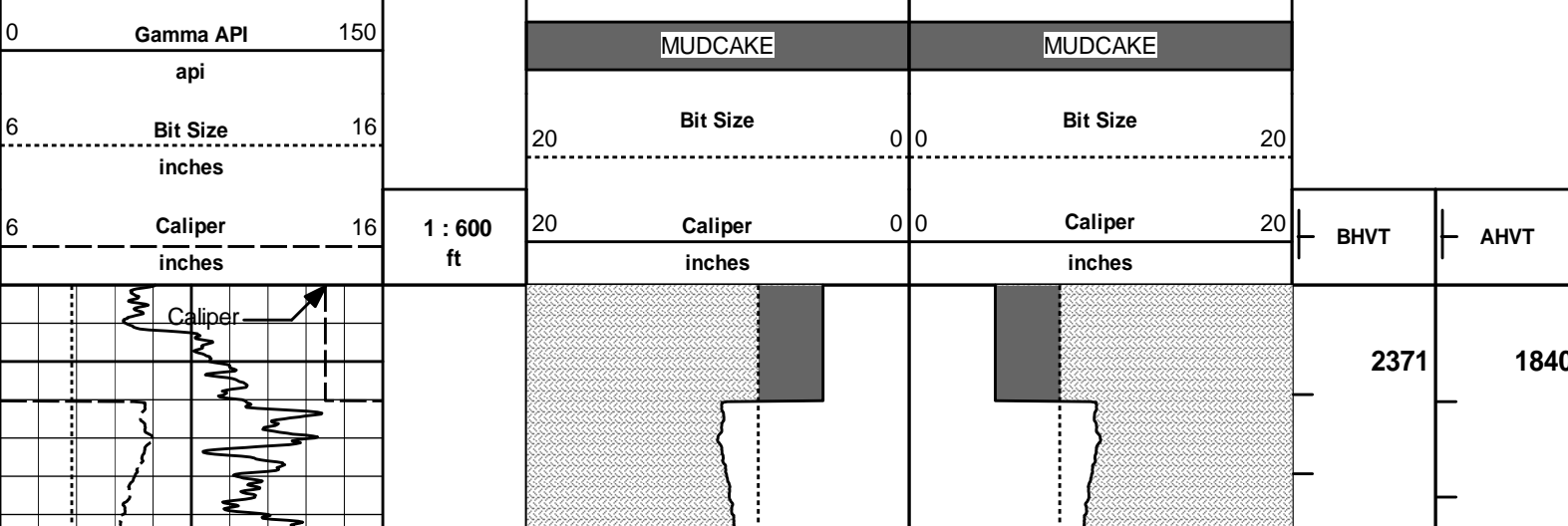
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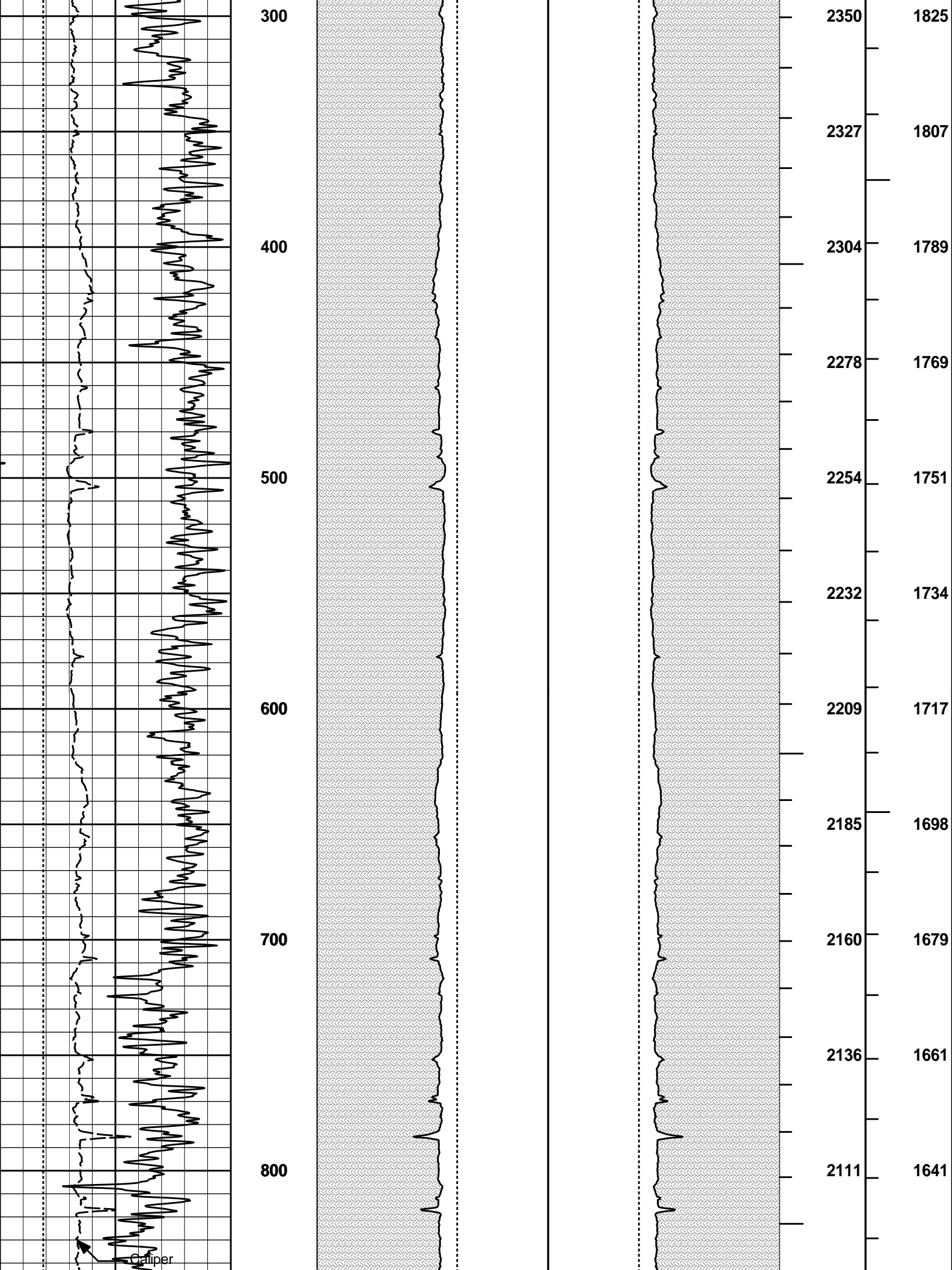
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WELL	LANDWEHR A-1		
FIELD			
COUNTY	HARPER	STATE	KANSAS

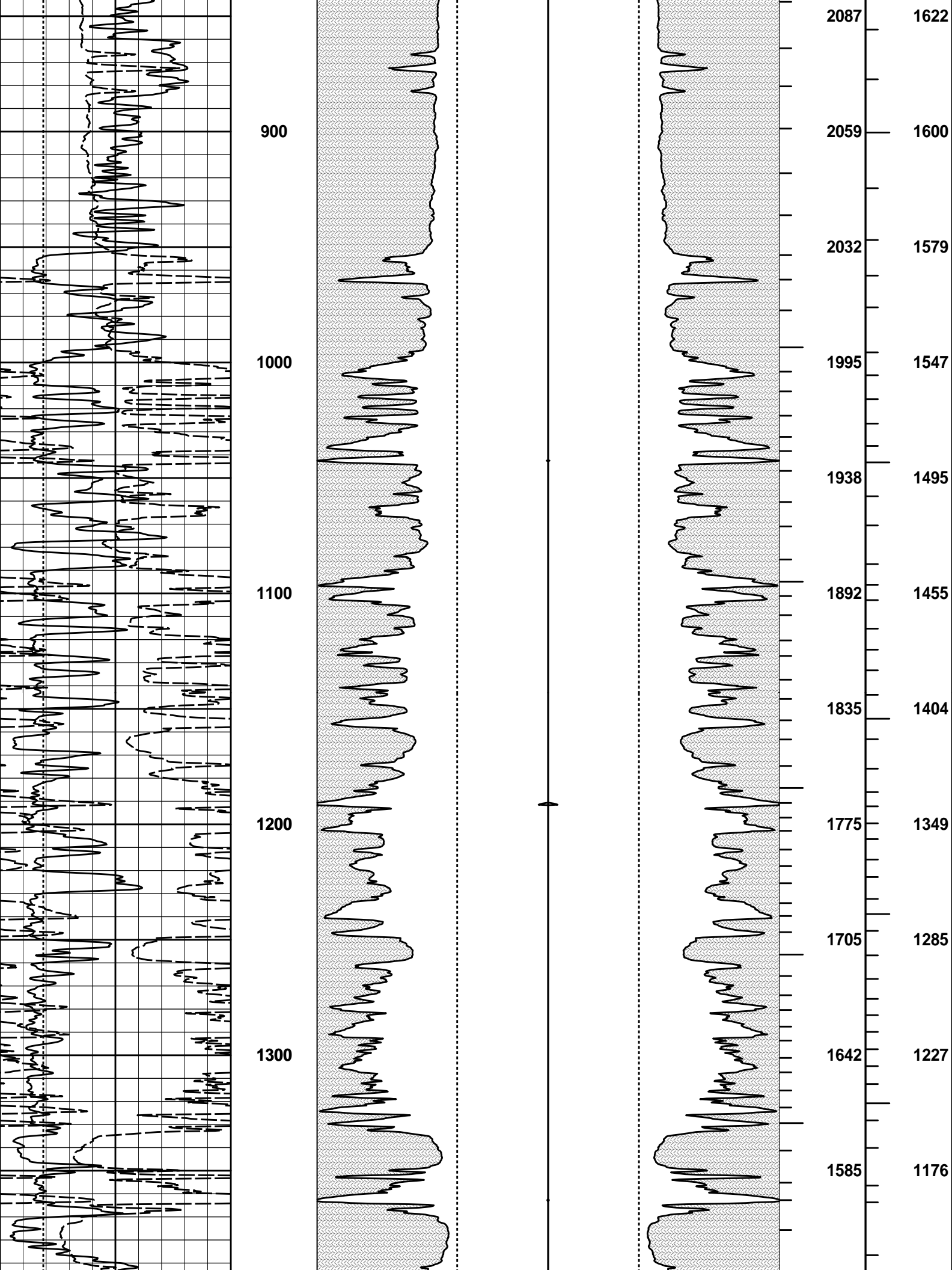
<h1>HALLIBURTON</h1>	SPECTRAL DENSITY DUAL SPACED NEUTRON LOG
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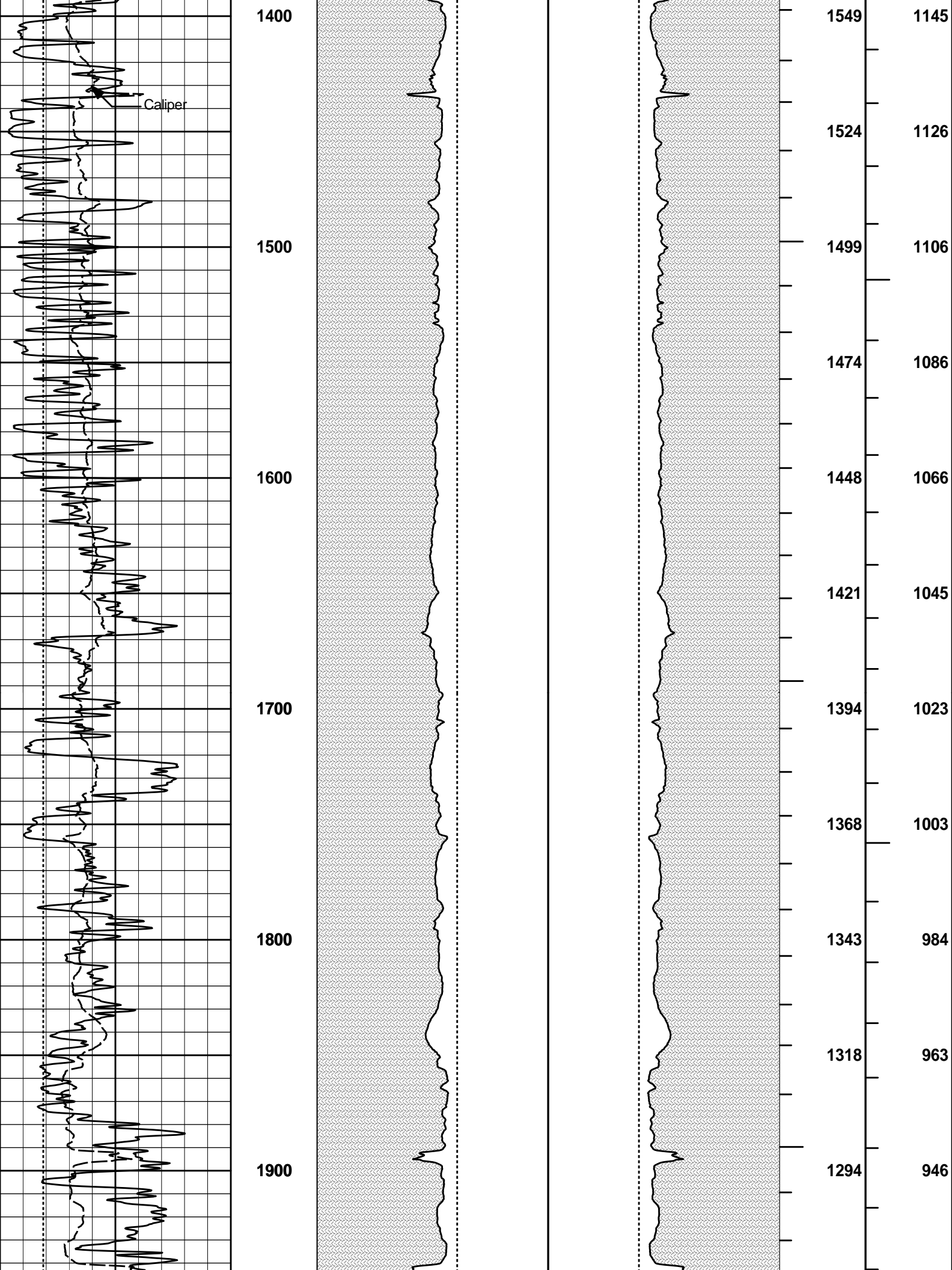
<h2>HALLIBURTON</h2>	<p>Plot Time: 20-Nov-10 08:03:14 Plot Range: 230 ft to 5056.92 ft Data: LANDWEHR_A_1\Well Based\DAQ-0001-003\ Plot File: \\-LOCAL-LANDWEHR_A_1\0001 SP-GTET-DSN-SDL-ACRT-CHIPOROAHV_2_IQ_LIB</p> <h1 style="text-align: center;">ANNULAR HOLE VOLUME PLOT</h1>
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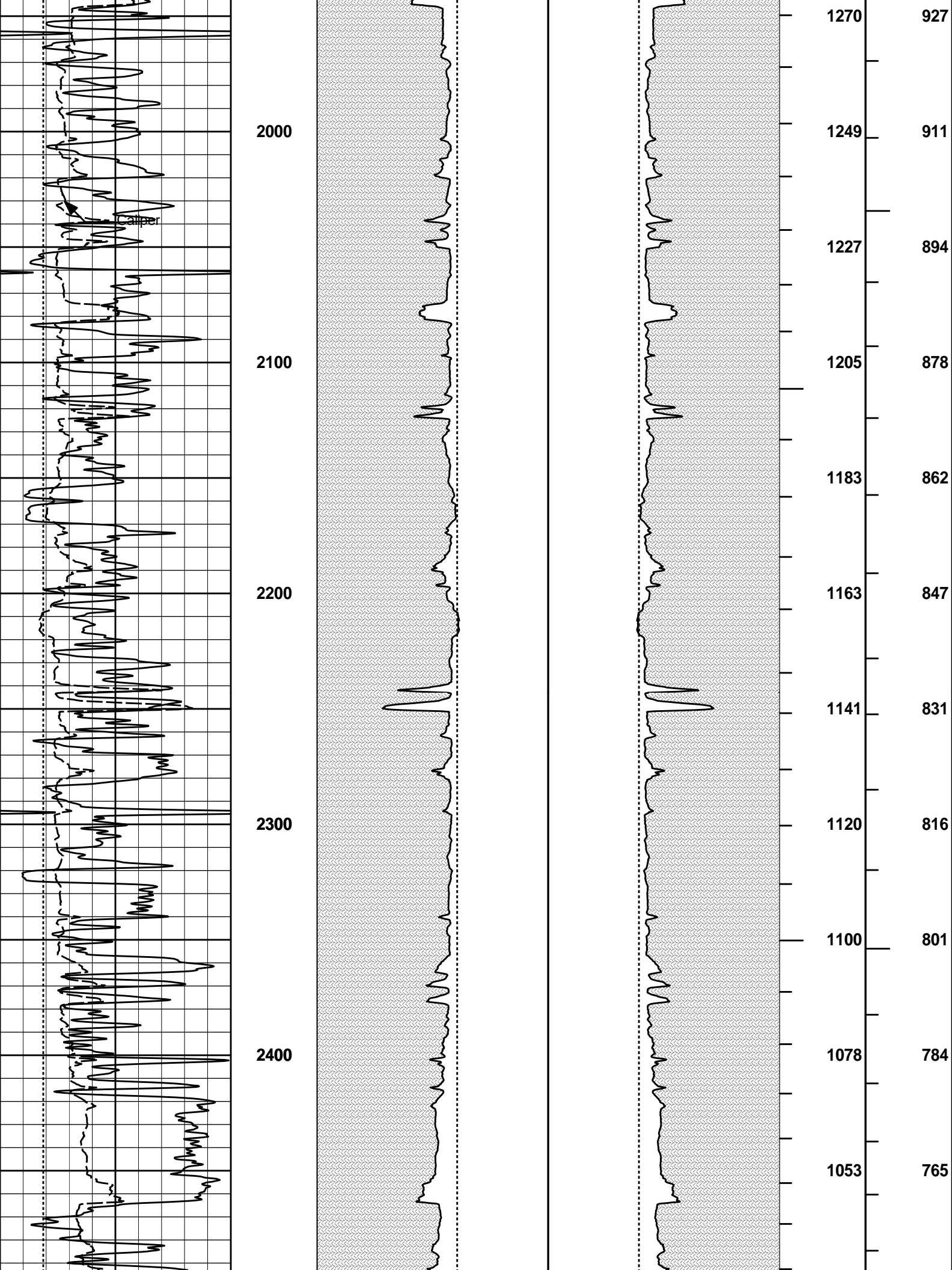
AHV PLOT CALCULATED FOR 4.5" CASING

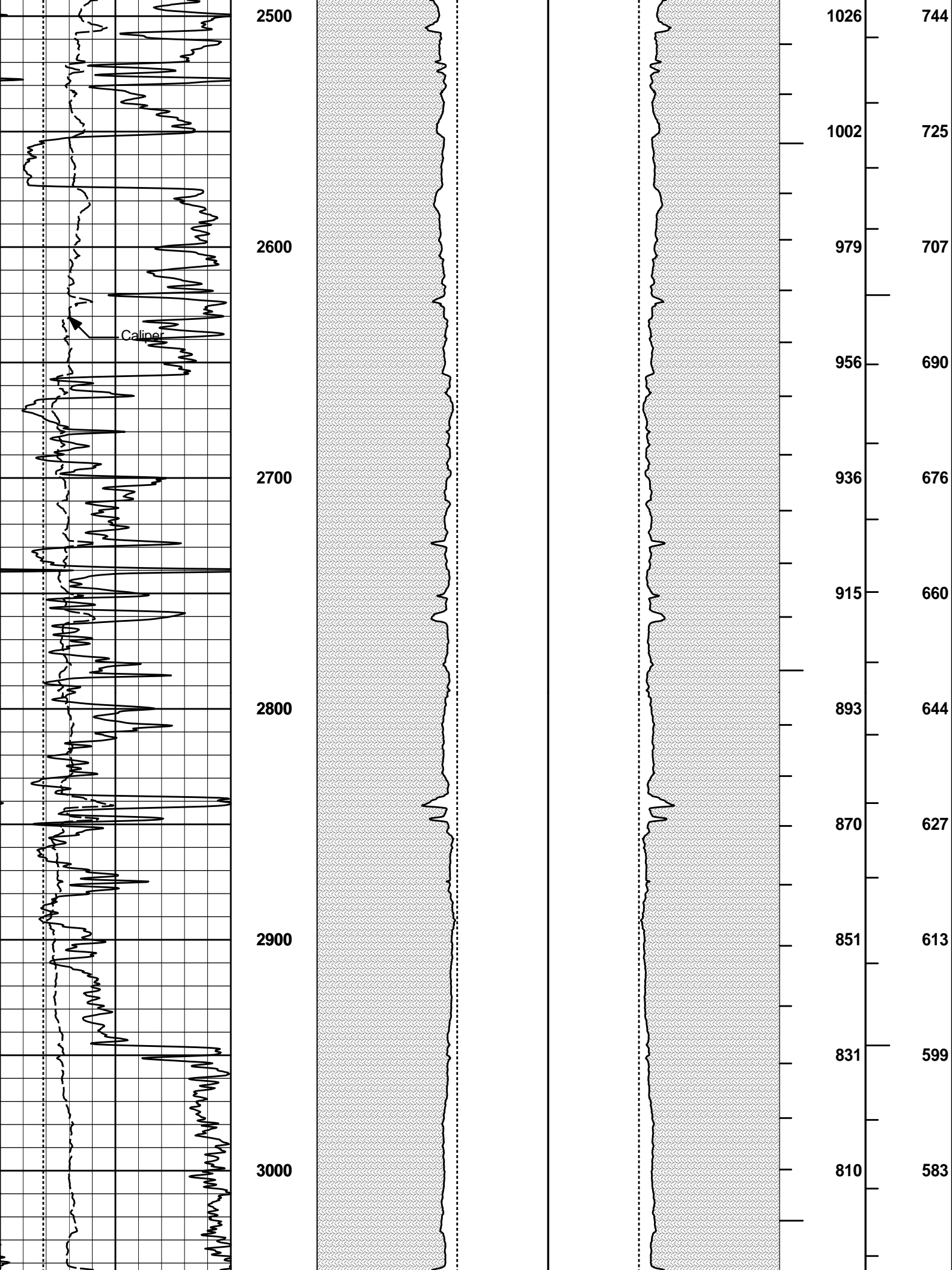


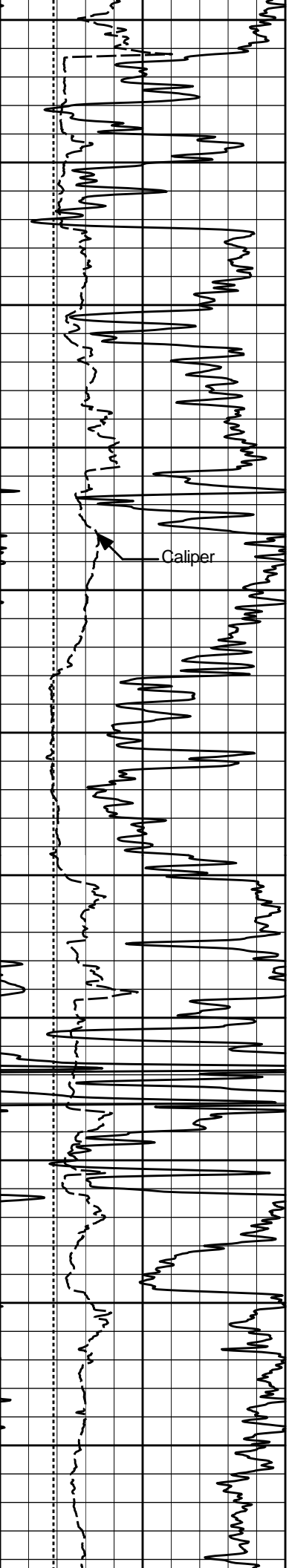












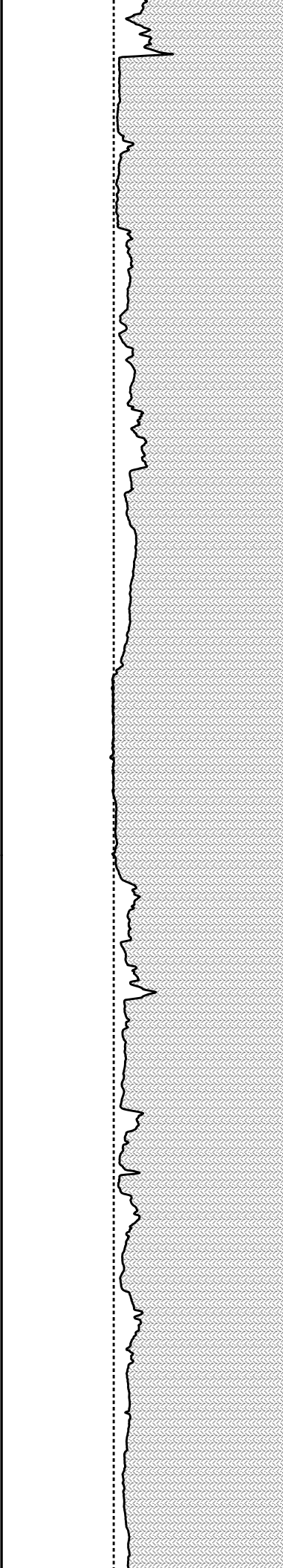
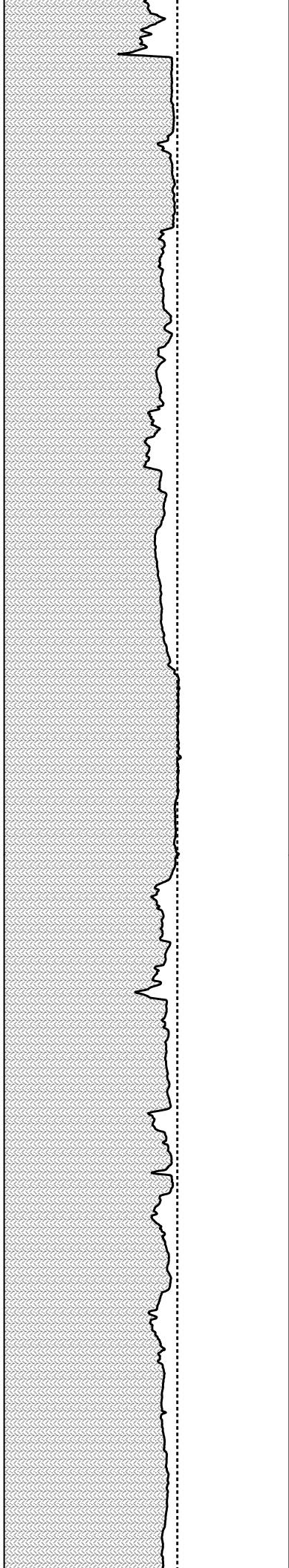
3100

3200

3300

3400

3500



787

765

745

723

699

680

663

640

620

599

576

565

549

535

518

500

486

474

457

442

427

410

