

# HALLIBURTON

## SPECTRAL DENSITY DUAL SPACED NEUTRON MICROLOG

COMPANY		EOG RESOURCES	
WELL		CYNTHIA 35-3	
FIELD		WILDCAT	
COUNTY		STEVENS	
STATE		KANSAS	
Permanent Datum	GL	Elev. 3191.0 ft	
Log measured from	KB	Elev. 3202.0 ft	
Drilling measured from	KB	Elev. 3191.0 ft	
Date	19-Nov-10		
Run No.	1		
Depth - Driller	6200.00 ft		
Depth - Logger	6203.0 ft		
Bottom - Logged Interval	6165.0 ft		
Top - Logged Interval	3050.0 ft		
Casing - Driller	8.625 in @ 1736.0 ft		
Casing - Logger	1736.0 ft		
Bit Size	7.875 in		
Type Fluid in Hole	WATER BASED MUD		
Density	8.9 ppg	51.00 s/cf	
PH	9.60 pH	6.4 qpm	
Source of Sample	MUD PIT		
Rm @ Meas. Temperature	1.250 ohmm @ 70.00 degF		
Rmf @ Meas. Temperature	1.06 ohmm @ 70.00 degF		
Rmc @ Meas. Temperature	1.500 ohmm @ 70.00 degF		
Source Rmf	MEAS.		
Rm @ BHT	0.81 ohmm @ 135.0 degF		
Time Since Circulation	4.0 hr		
Time on Bottom	19-Nov-10 09:11		
Max. Rec. Temperature	135.0 degF @ 6203.0 ft		
Equipment	10546696	LIBERAL	
Recorded By	J. BOSCH		
Witnessed By	J. SESSIONS	S. MUELLER	

COMPANY EOG RESOURCES  
WELL CYNTHIA 35-3  
FIELD WILDCAT  
COUNTY STEVENS  
STATE KANSAS

API No. 15-189-22759  
Location 1225' FNL & 2130' FEL

Other Services:  
ACRT  
MICRO  
BSAT

Fold here

Service Ticket No.: 7780058      API Serial No.: 15-189-22759      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.	Other
Rmf @ Meas. Temp.		@	@	ONE	MICRO P81	RUBBER	ADJ.	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
Serial No.	1103960	Serial No.		Serial No.	143_M69	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	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	3050	6165	REC	0	150				30%	-10%	2.71	30%	-10%	LIME

DIRECTIONAL INFORMATION

Maximum Deviation @ KOP @

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 AND 4.5 INCH CASING

CHLORIDES: 800 MG/L LCM: 12

GPS COORDINATES: LAT: 37°18 N LONG: 101° 31 W

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

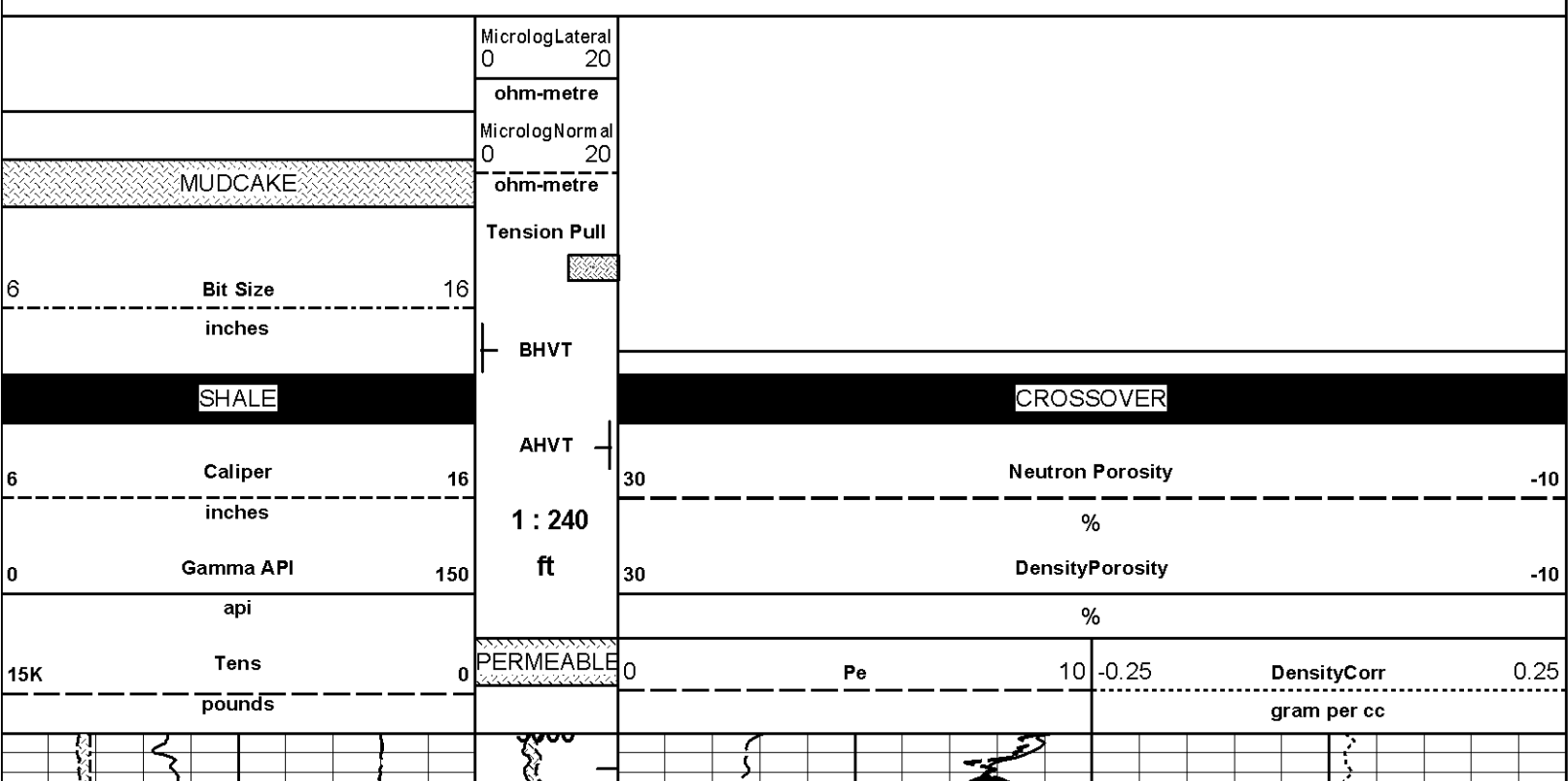
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES, LIBERAL, KS 620-624-8123

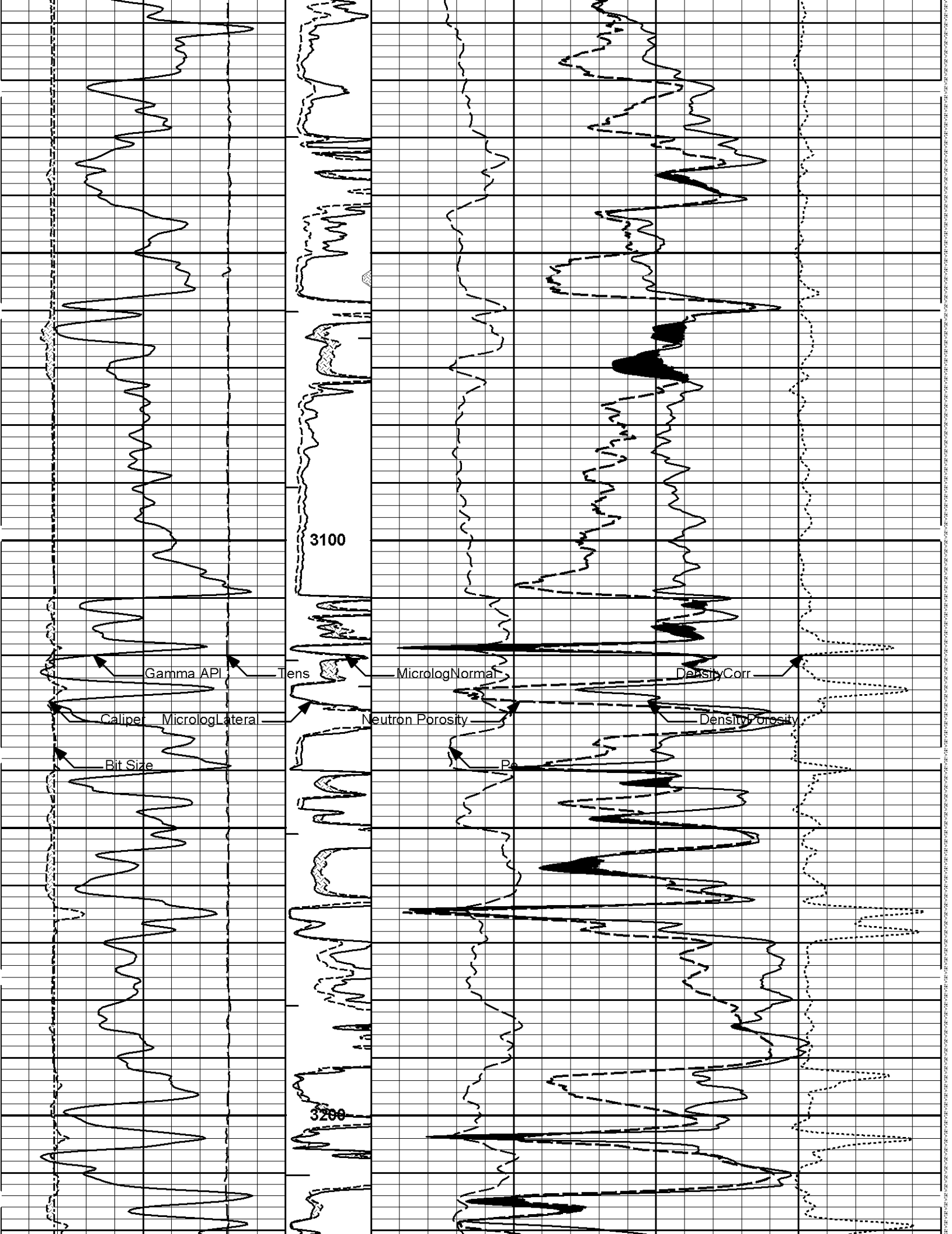
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR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

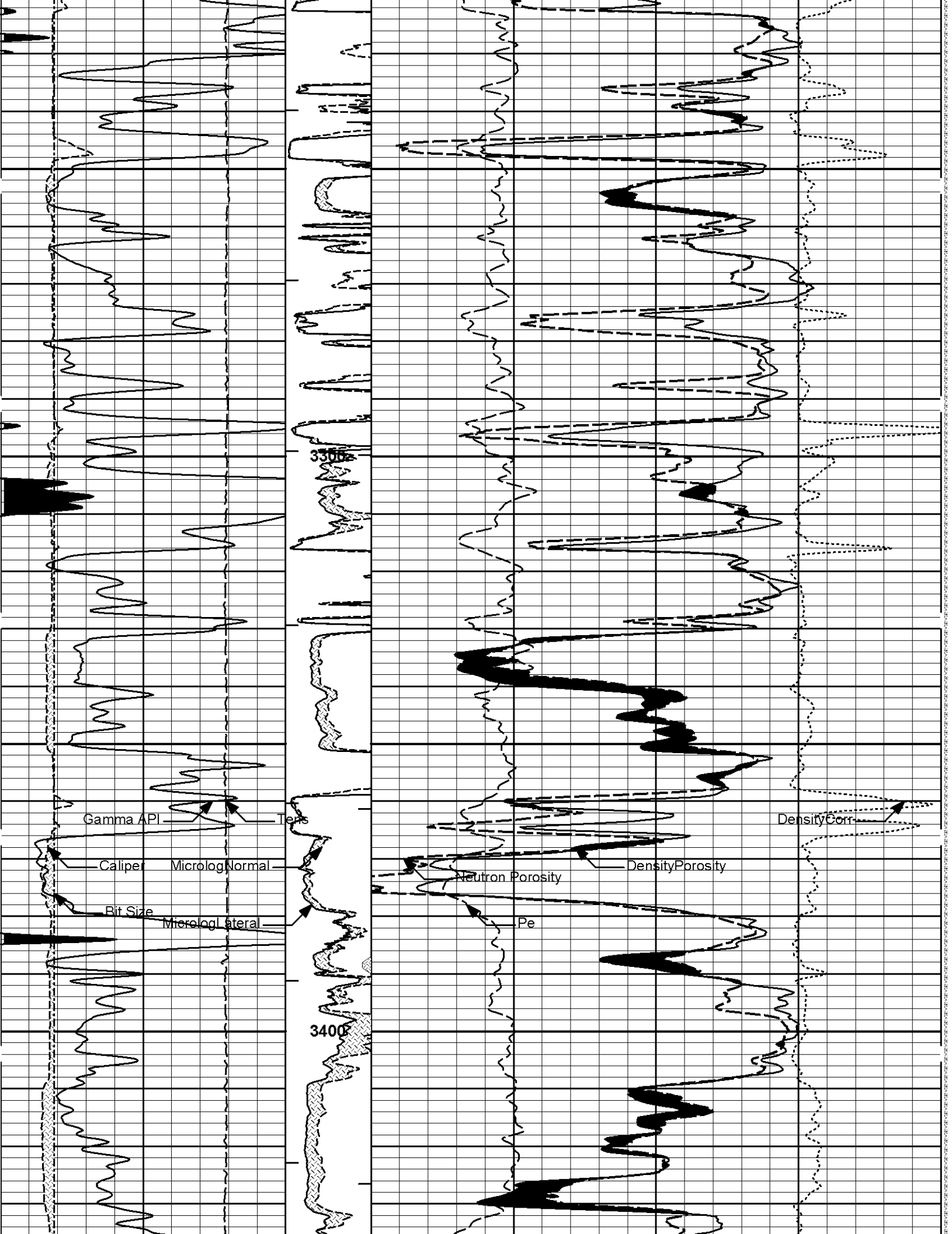
HALLIBURTON

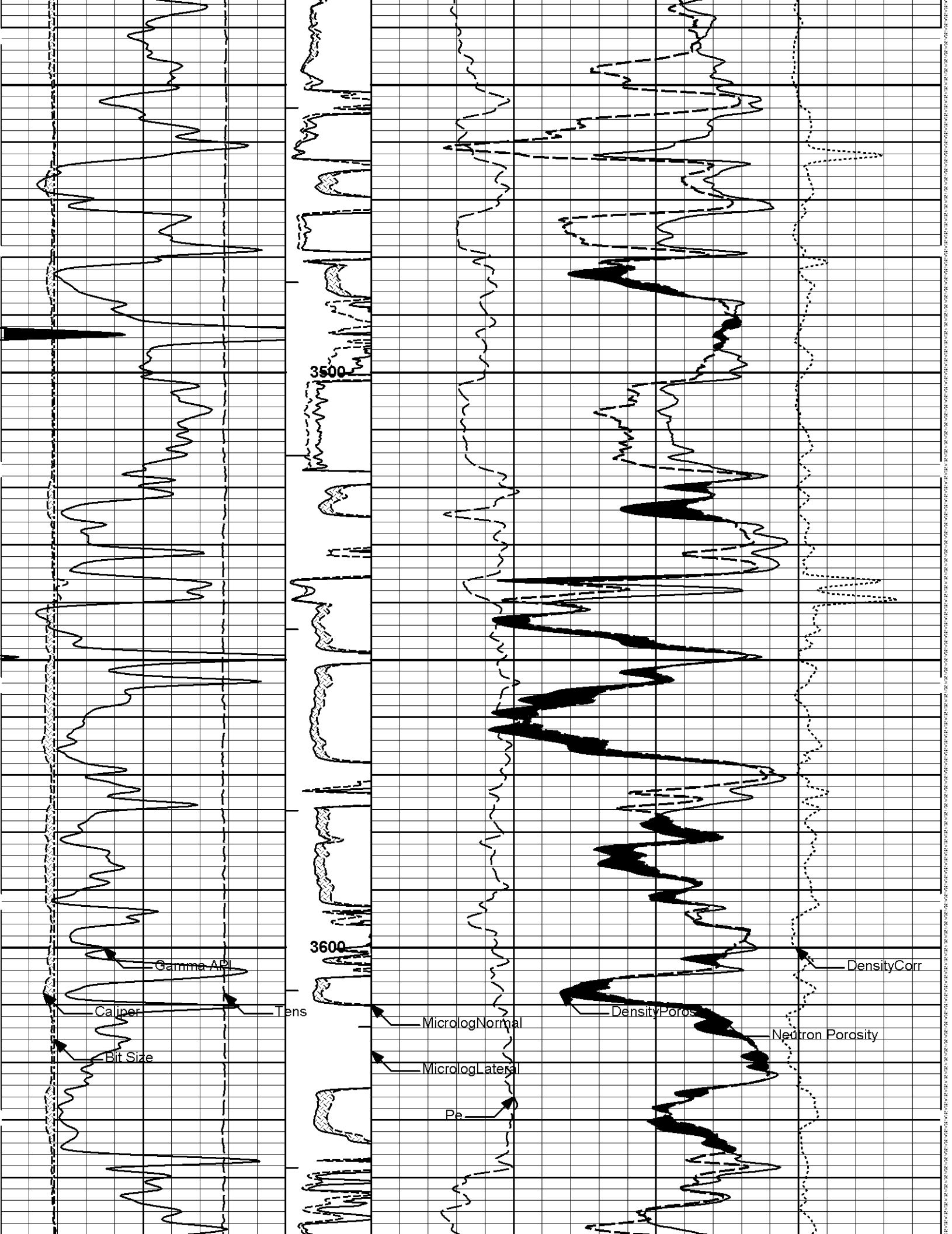
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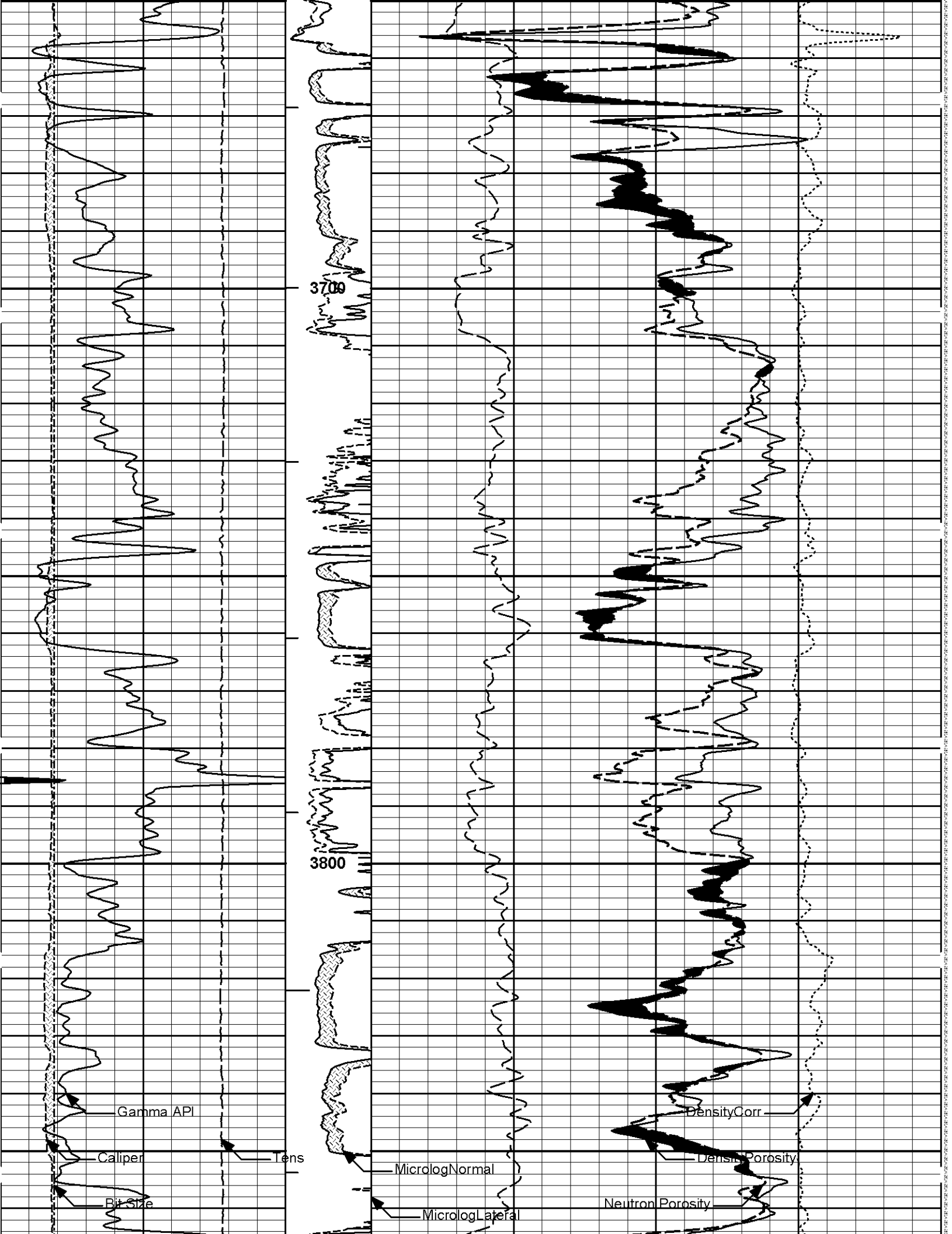
# 5 INCH MAIN LOG

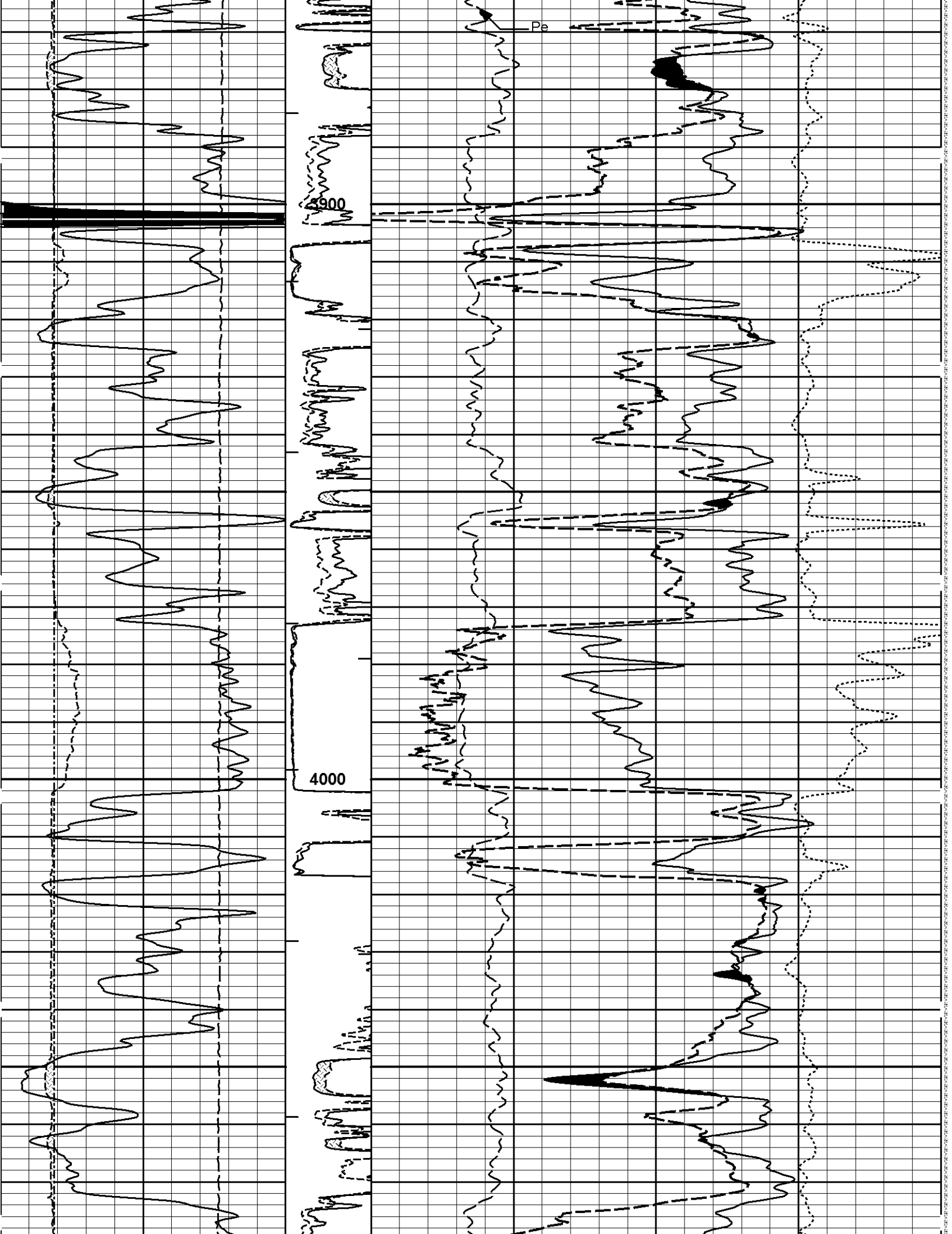


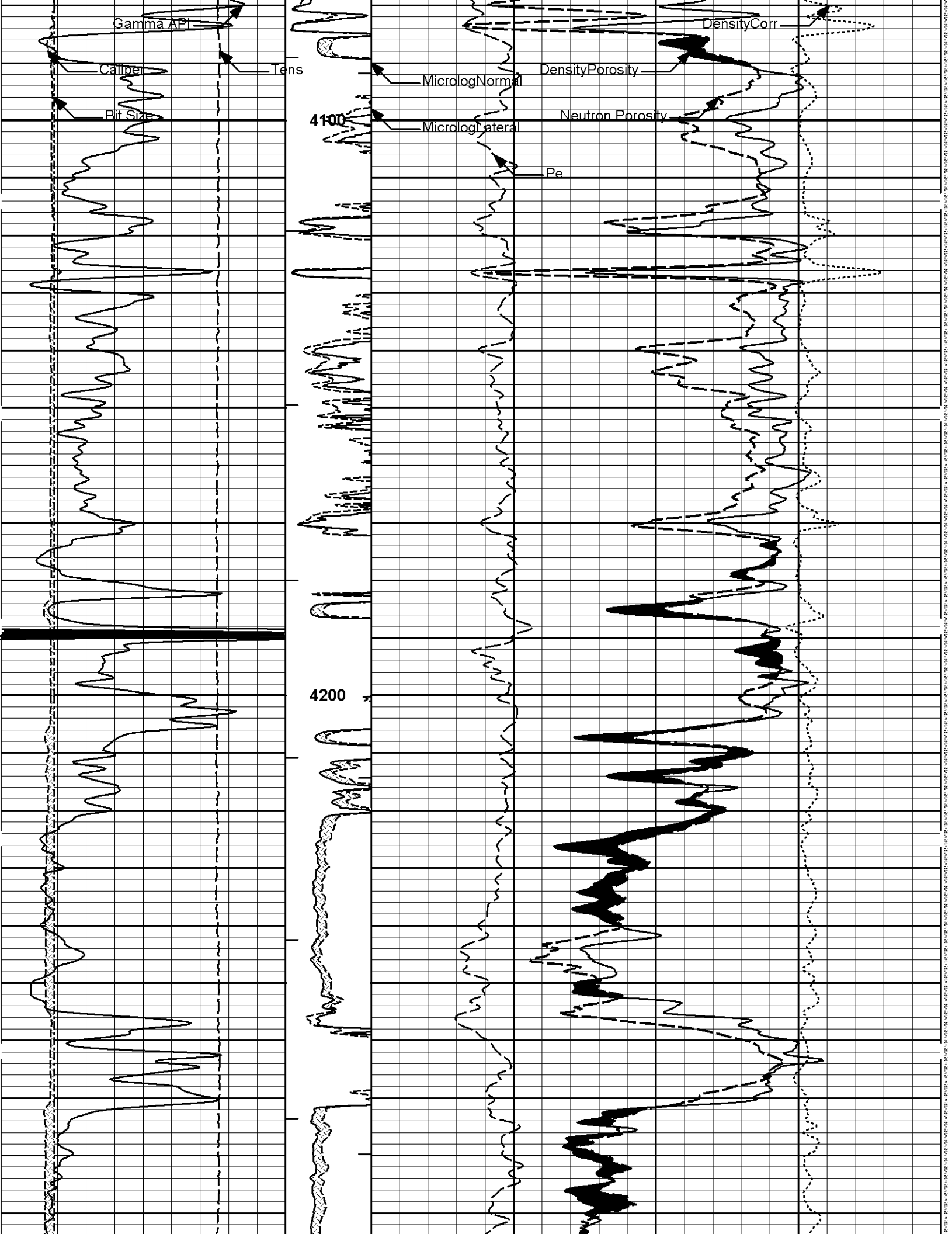


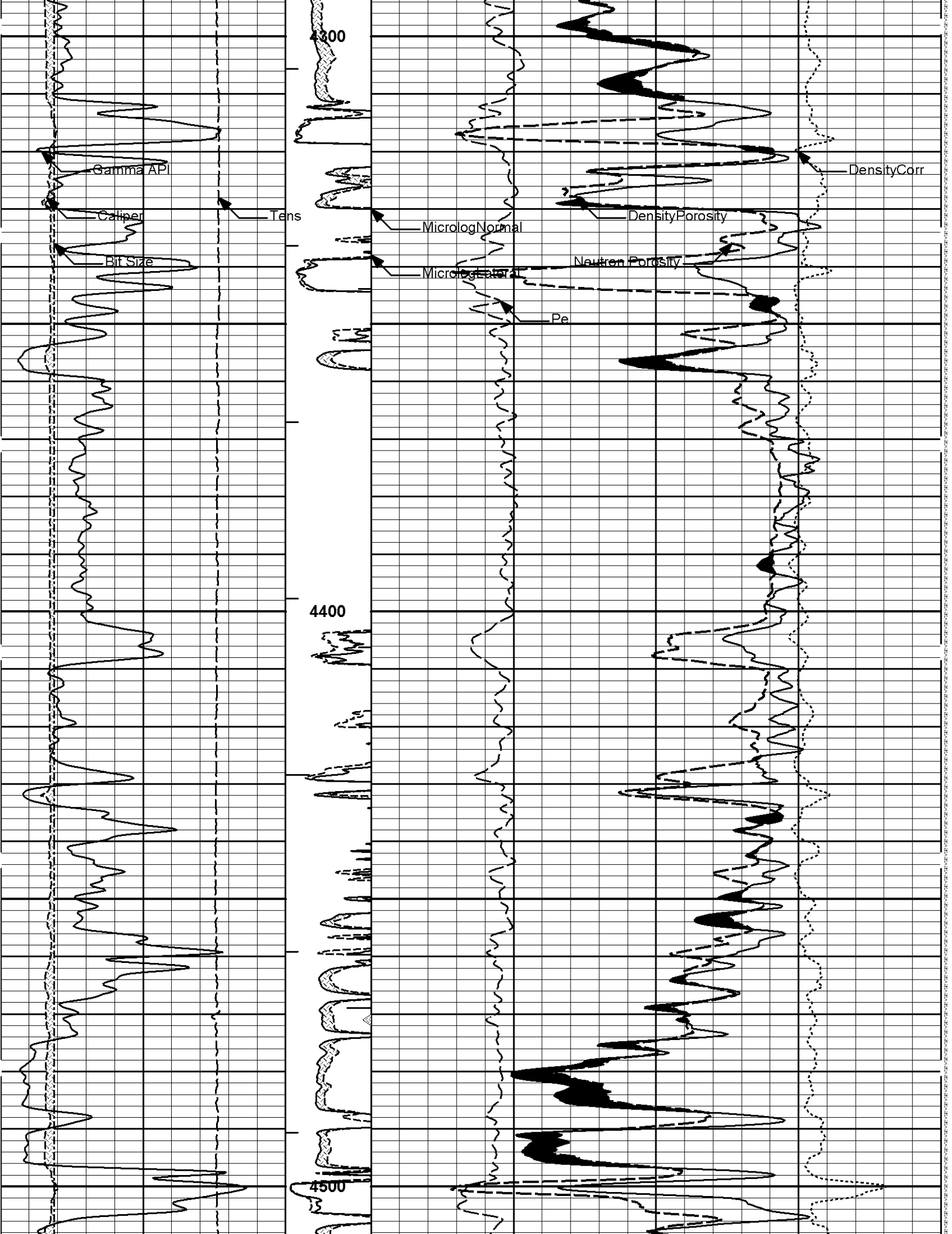


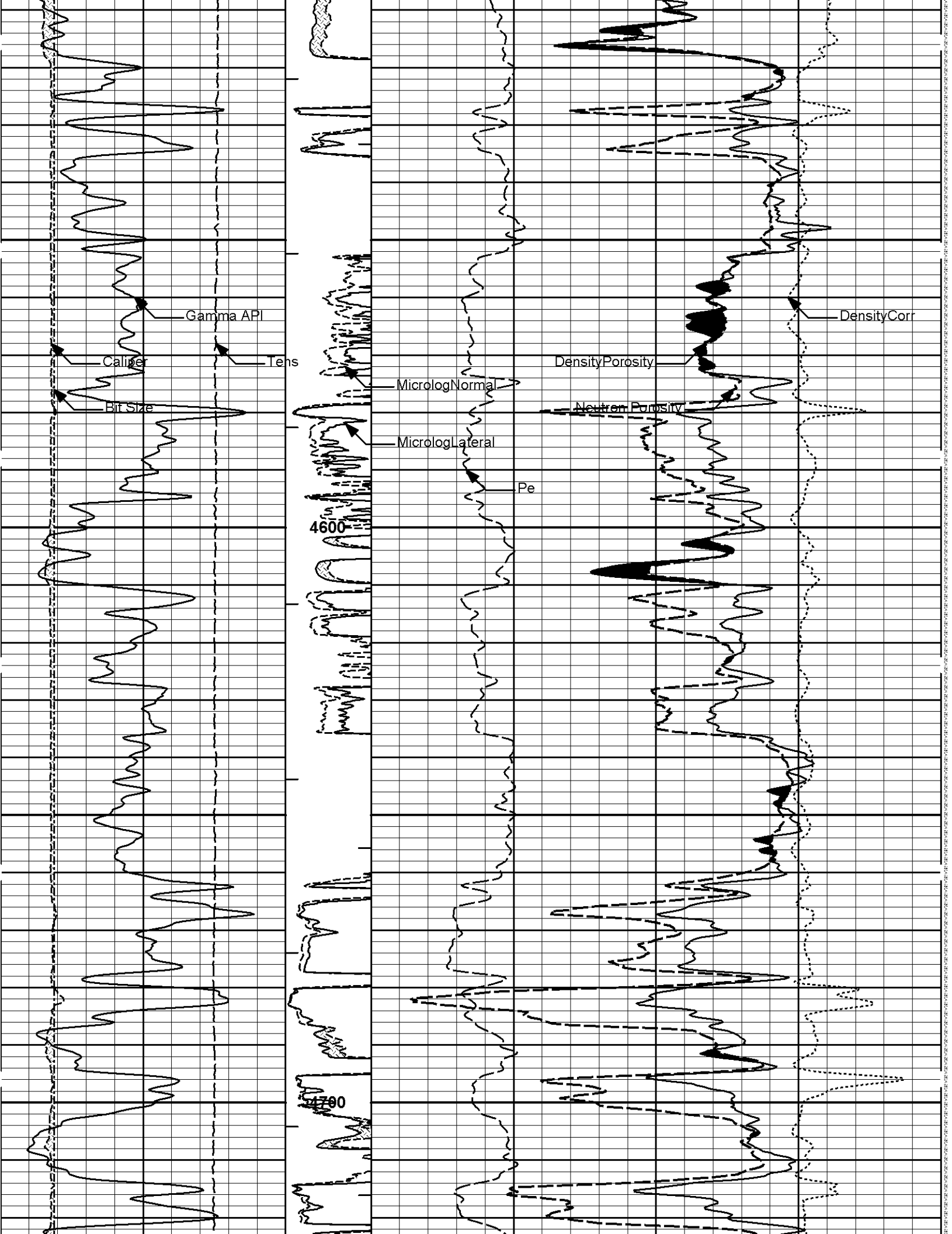


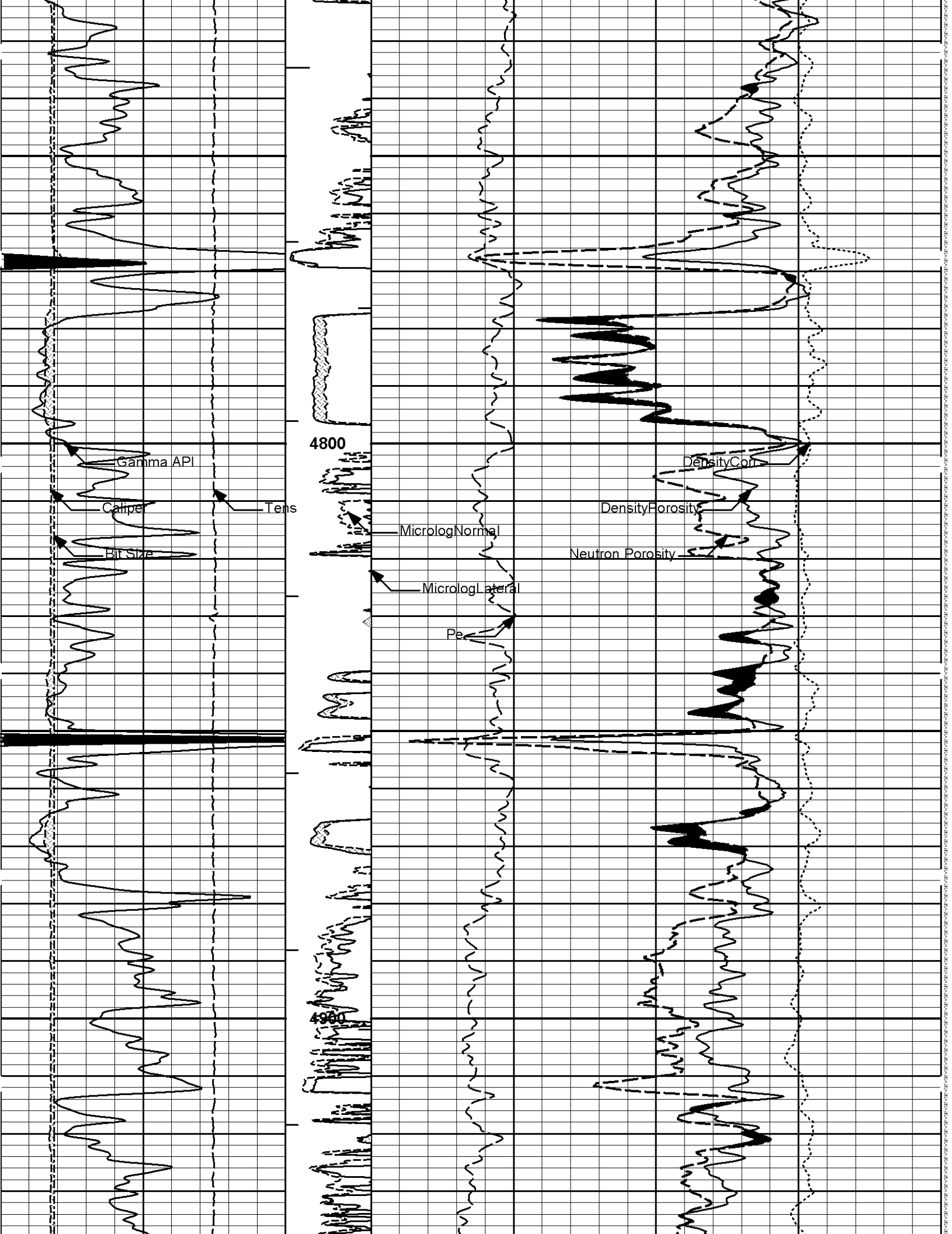


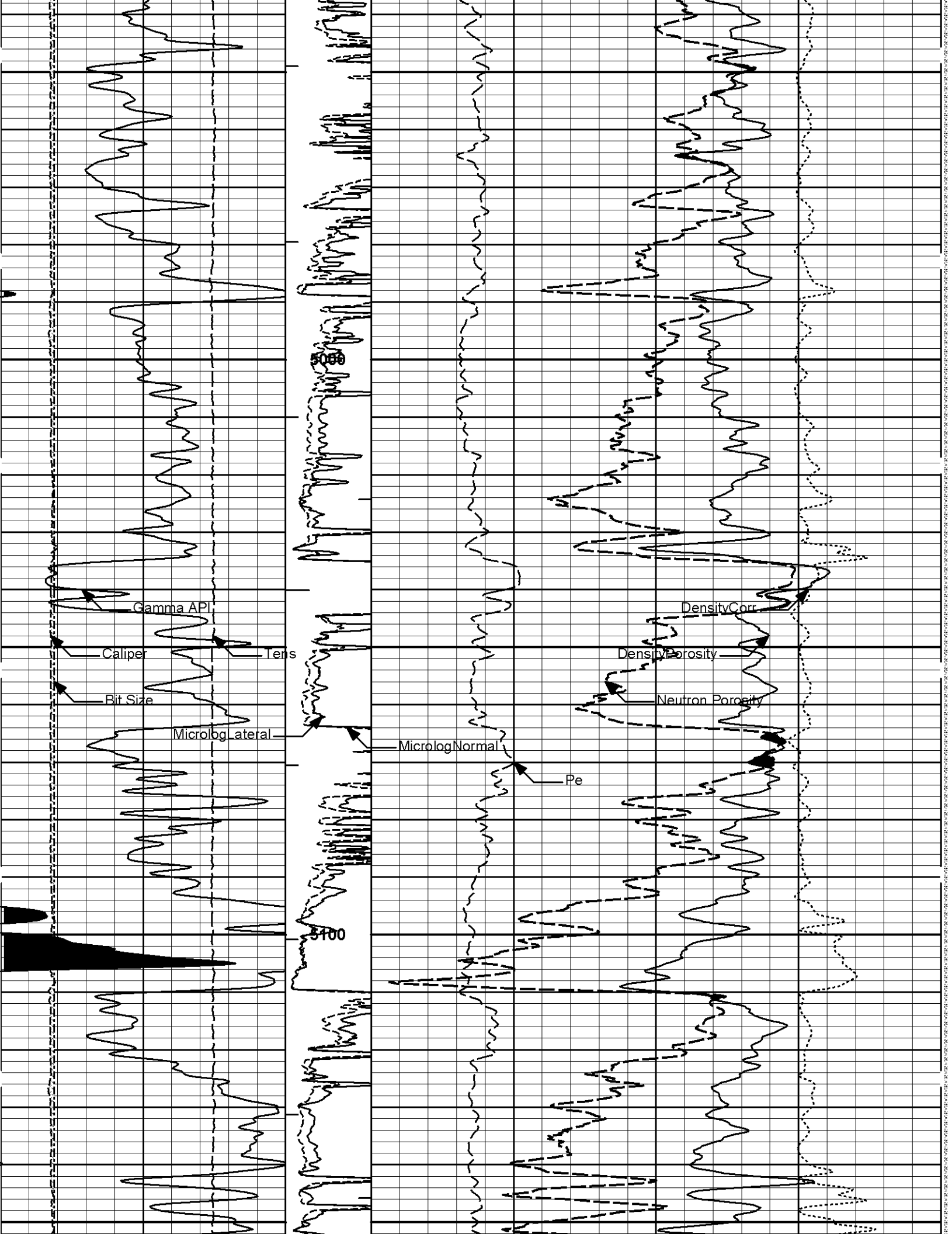


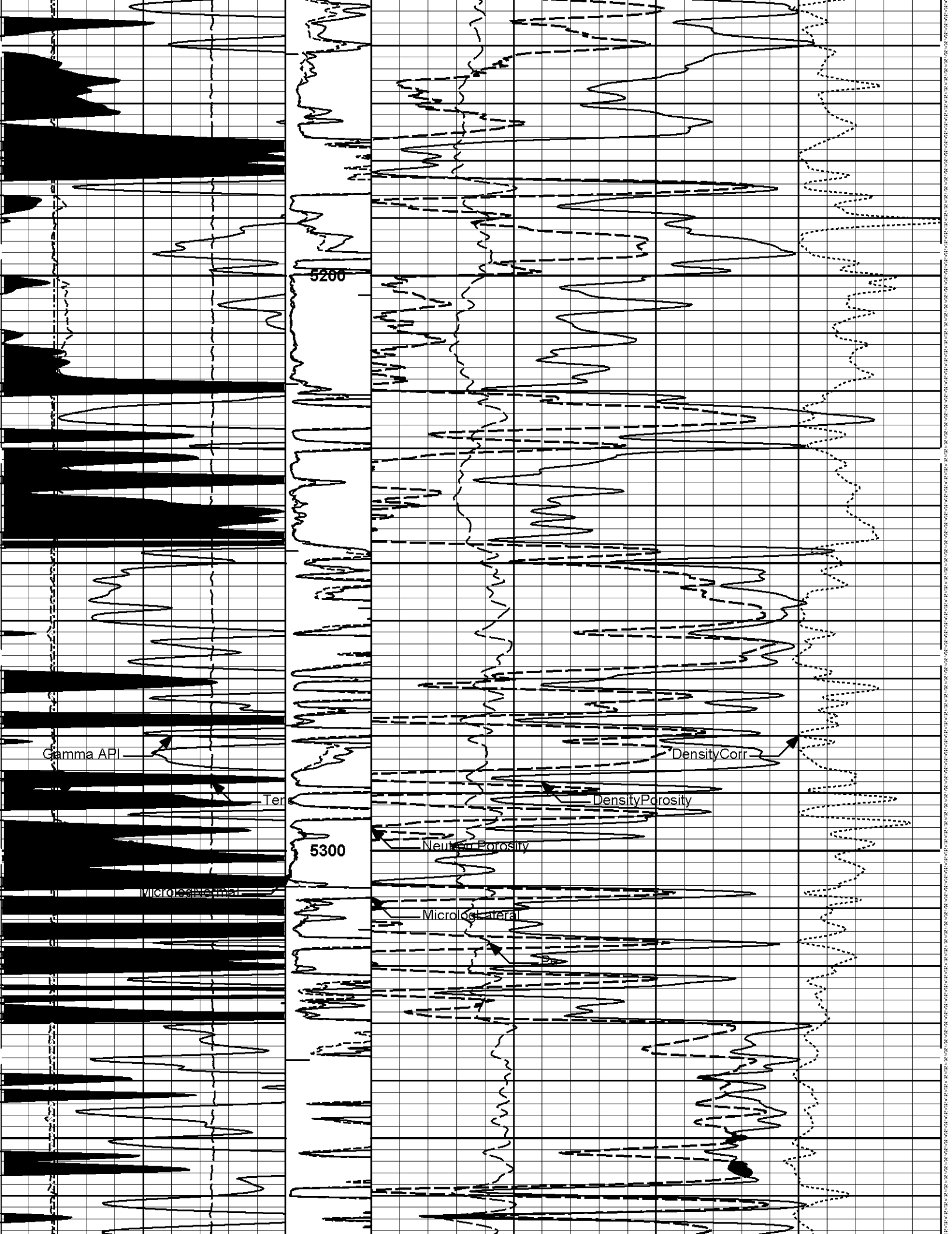


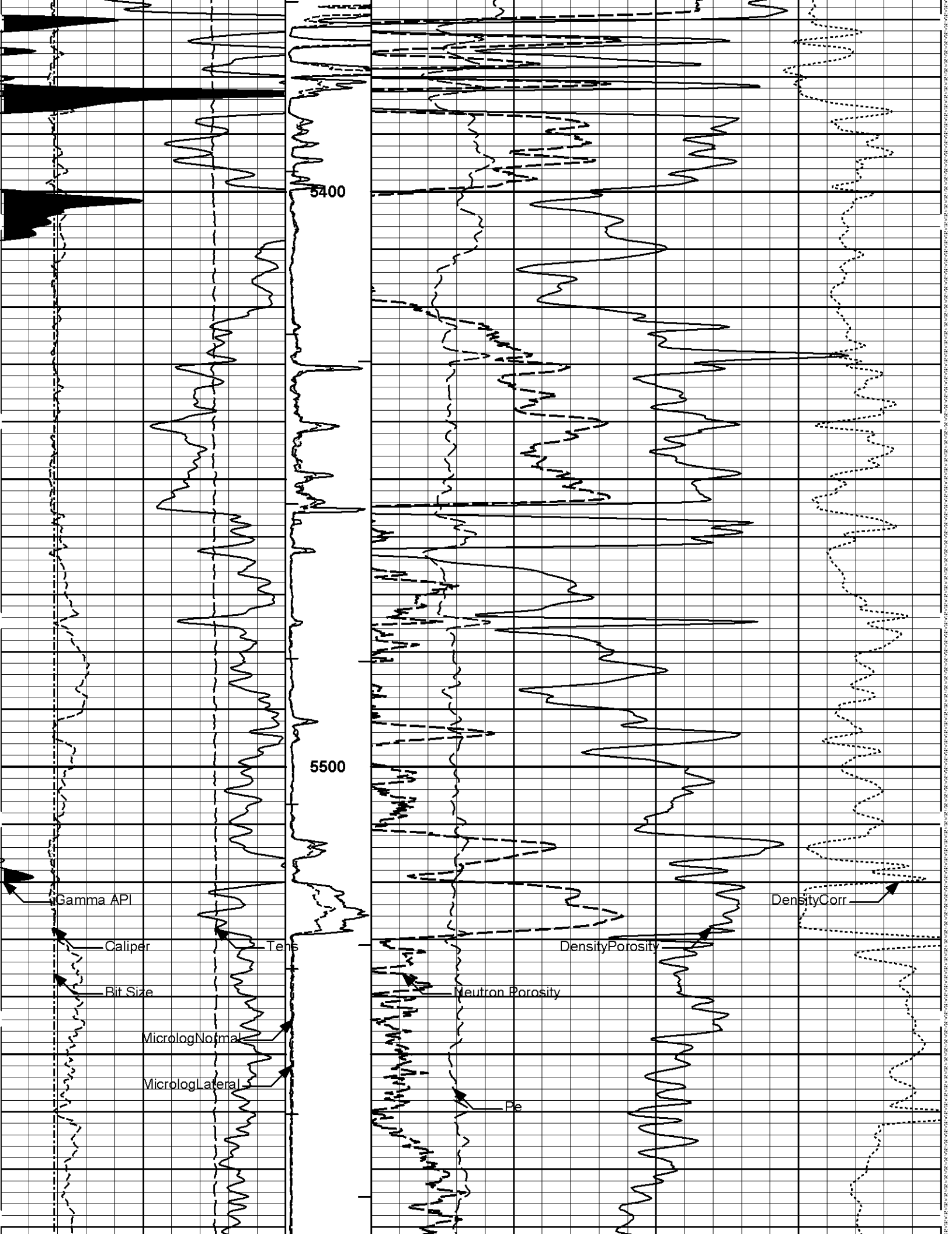


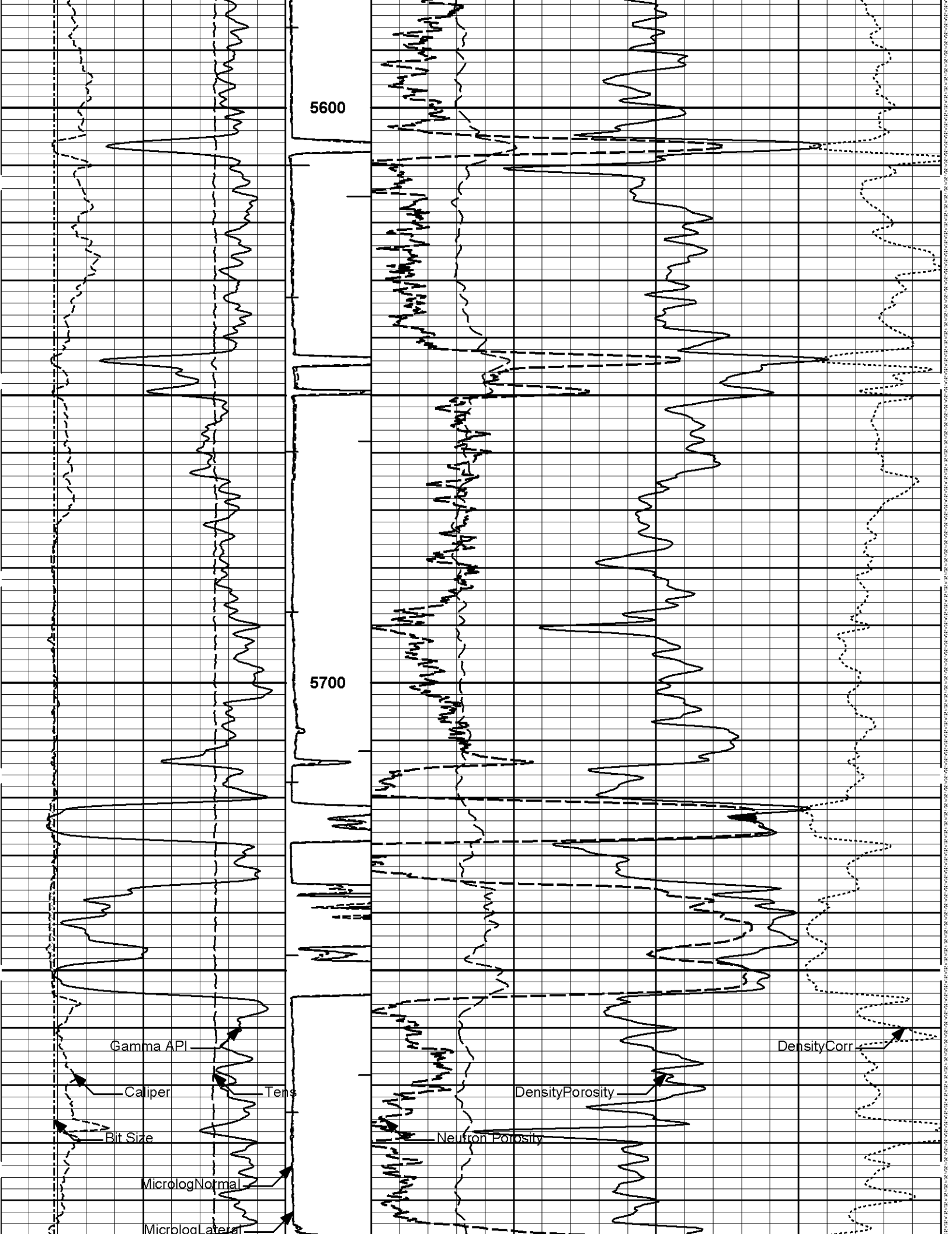














5800

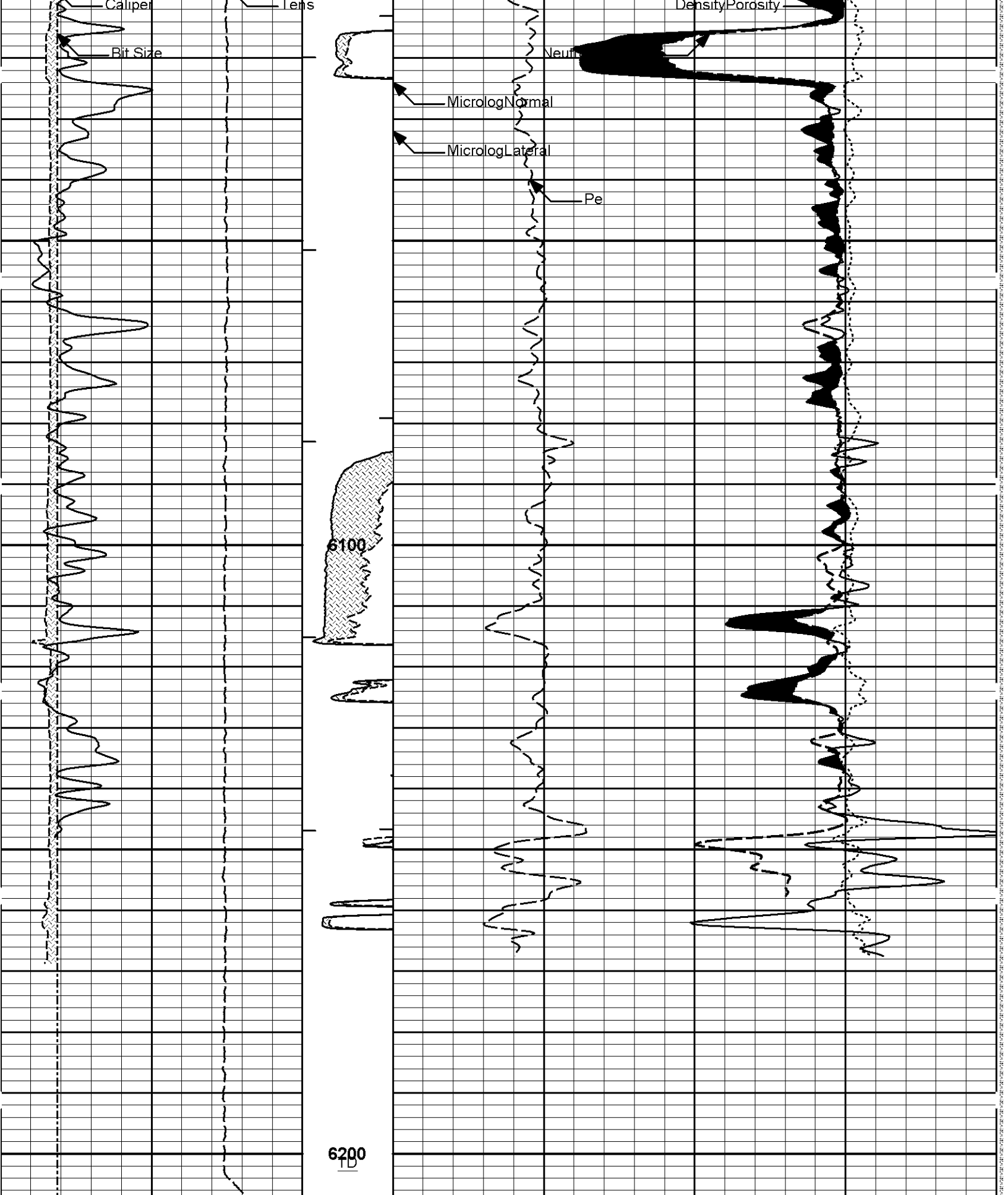
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5900

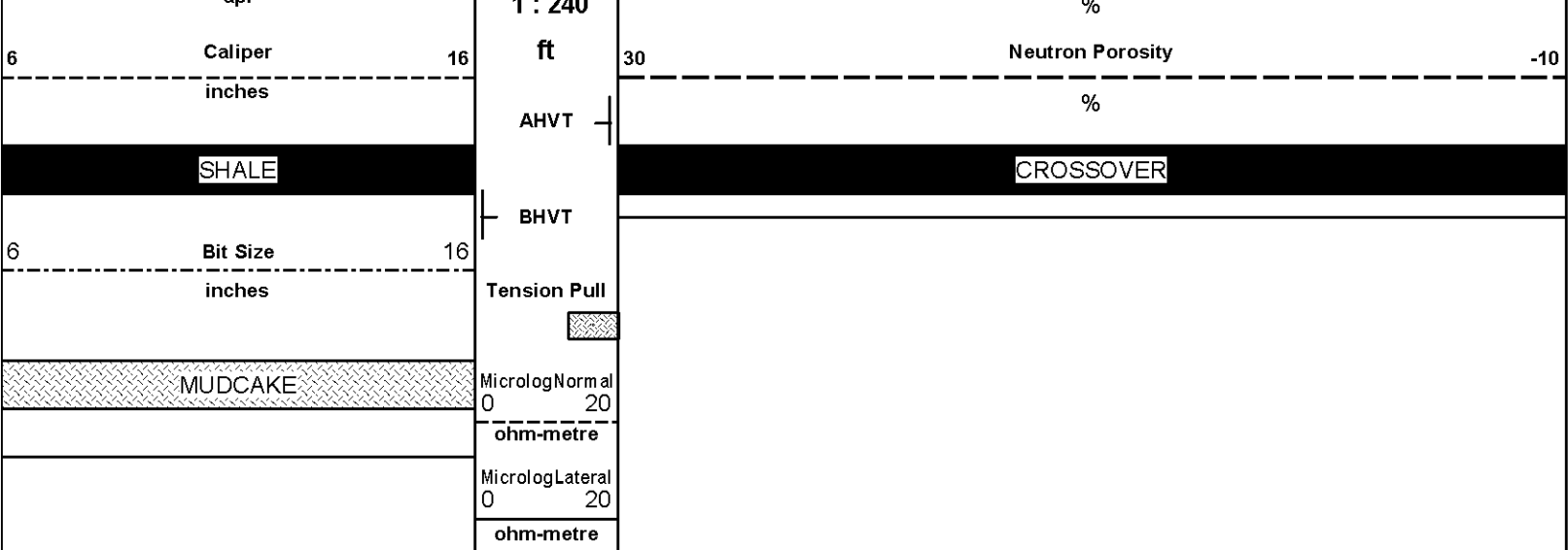
6000

Gamma API

DensityCorr



15K	Tens	0	0	Pe	10	-0.25	DensityCorr	0.25
	pounds		PERMEABLE				gram per cc	
0	Gamma API	150		DensityPorosity				-10
	api		1 - 240					

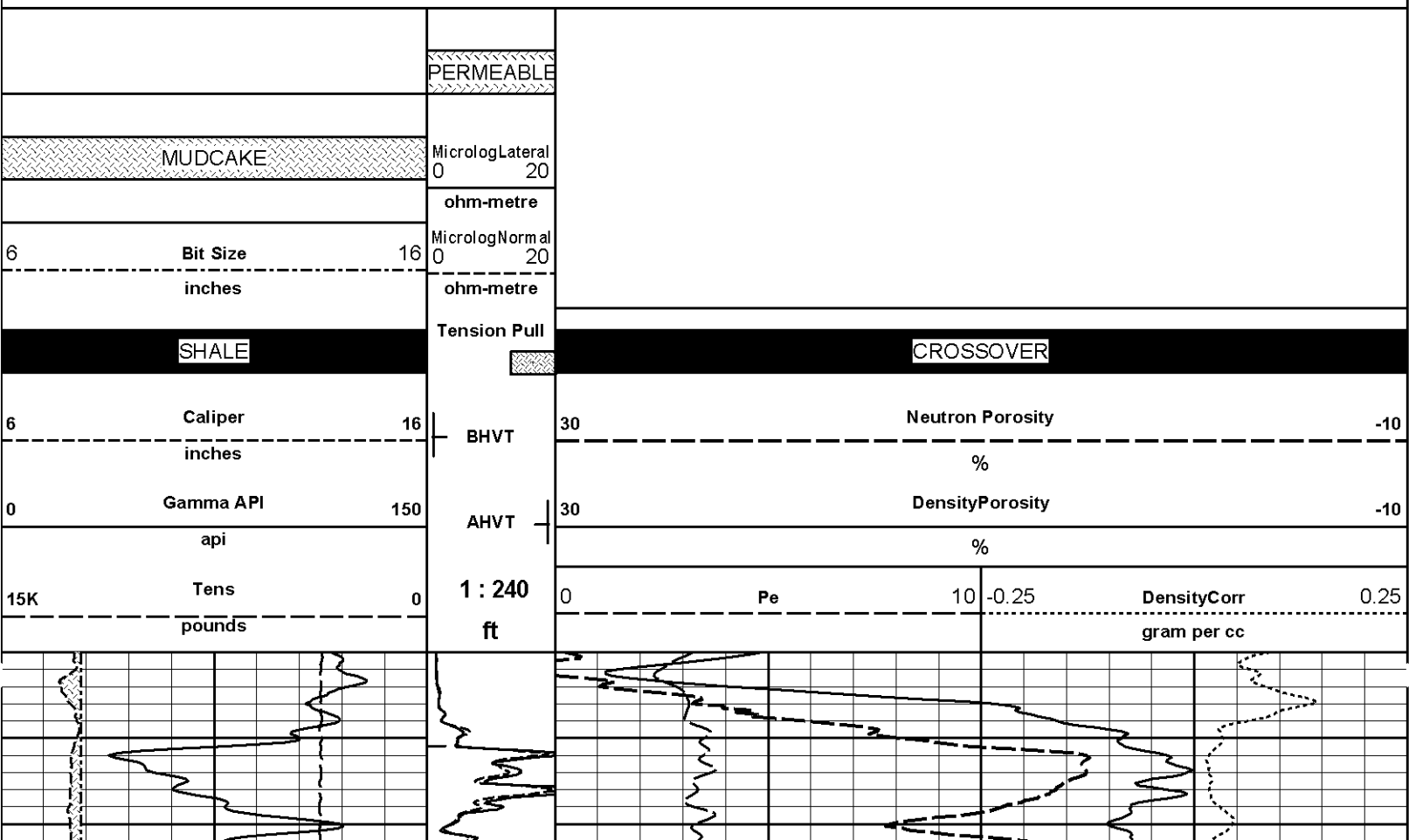


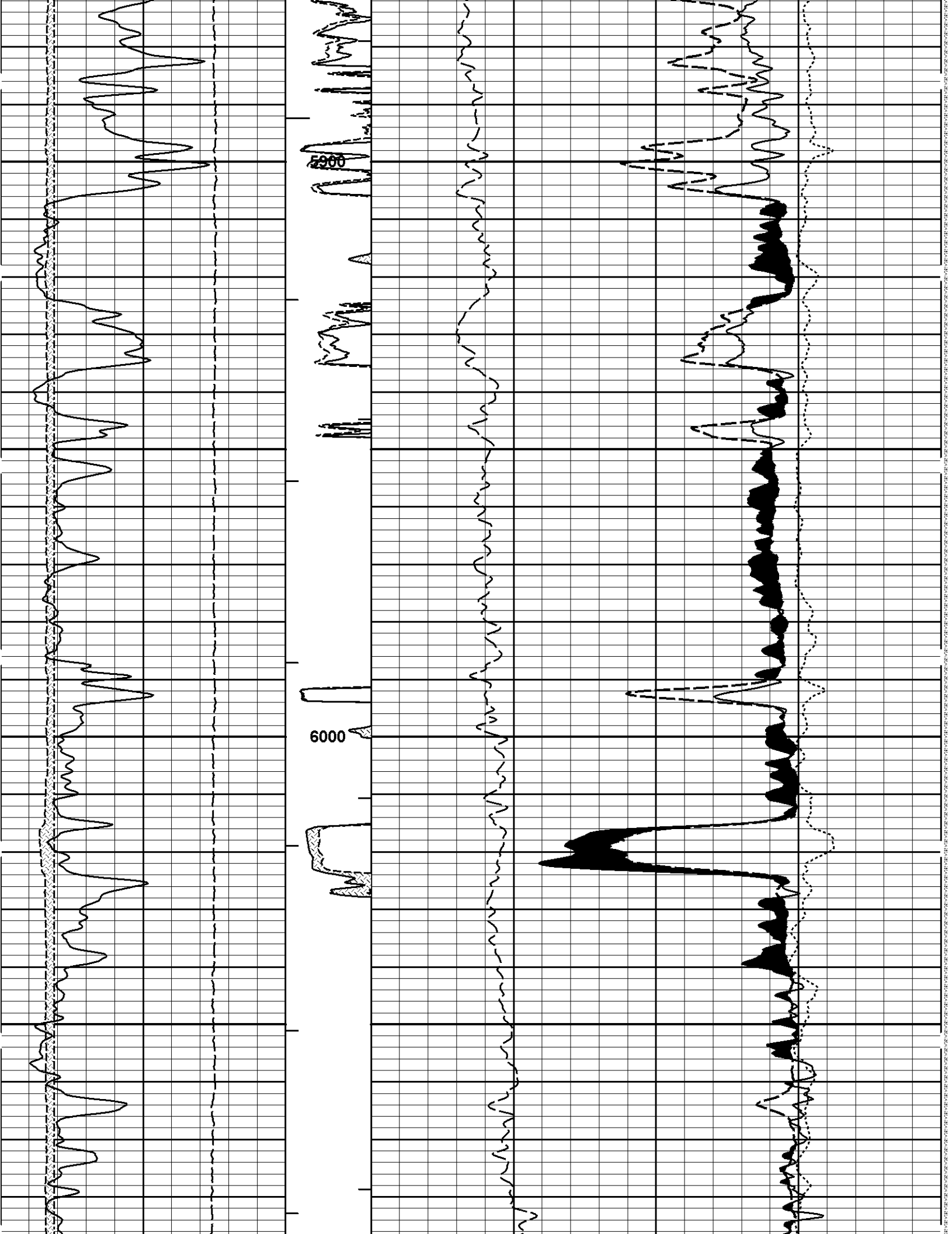
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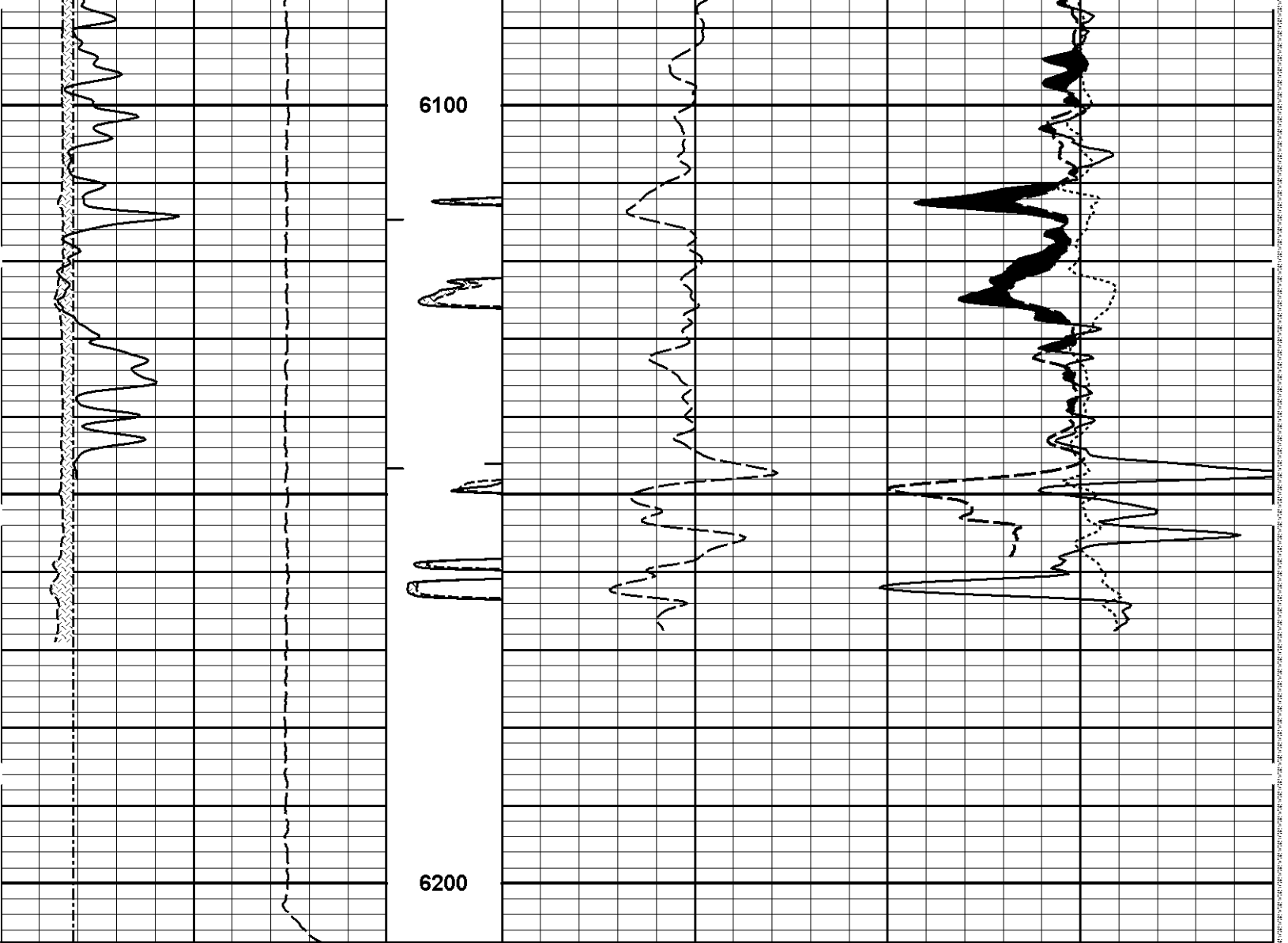
### 5 INCH MAIN LOG

Plot Time: 19-Nov-10 18:21:51  
 Plot Range: 5850 ft to 6207.58 ft  
 Data: CYNTHIA\_35\_3\Well Based\DAQ-0001-002\  
 Plot File: \\POROML\EOG\_POROML\_5\_REPEAT\_IQ

### 5 INCH REPEAT







15K	Tens	0	1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	pounds		ft					gram per cc	
0	Gamma API	150	AHVT	30	DensityPorosity				-10
	api				%				
6	Caliper	16	BHVT	30	Neutron Porosity				-10
	inches				%				
	SHALE		Tension Pull		CROSSOVER				
6	Bit Size	16	MicrologNormal	0					
	inches		ohm-metre	20					
	MUDCAKE		MicrologLateral	0					
			ohm-metre	20					
			PERMEABLE						

Plot Time: 19-Nov-10 18:21:55  
 Plot Range: 5850 ft to 6207.58 ft  
 Data: CYNTHIA\_35\_3\Well Based\DAQ-0001-002\  
 Plot File: \\POROMLIEOG\_POROML\_5\_REPEAT\_IQ



BSAT-10747684  
300.00 lbs

Ø 3.625 in →

← Sonic Receivers @ 27.09 ft

15.77 ft

19.83 ft

ACRt-I5059\_S8385  
250.00 lbs

Ø 3.625 in →

← Mud Resistivity @ 13.44 ft

19.25 ft

← ACRt @ 9.46 ft

Cabbage Head-  
TRK696  
10.00 lbs

Ø 3.625 in →  
Ø 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	69.31	300.00
XOHD	Hostile to Dits Cross Over	TRK696	20.00	0.95	68.36	300.00
SP	SP Sub	PROT01	60.00	3.74	64.63	300.00
GTET	Gamma Telemetry Tool	11039640	165.00	8.52	56.10	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69	46.42	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13 *	49.75	300.00
SDLT	Spectral Density Tool	I43_P81	360.00	10.81	35.60	60.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77	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
<b>Total</b>			<b>1,383.10</b>	<b>72.34</b>		

\* Not included in Total Length and Length Accumulation.

Data: CYNTHIA\_35\_3\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE  
Date: 19-Nov-10 10:09:09

**HALLIBURTON**

**CALIBRATION REPORT**

**NATURAL GAMMA RAY TOOL SHOP CALIBRATION**

Tool Name: GTET - 11039640

Reference Calibration Date: 18-Nov-10 15:33:32

Tool Name: GTET - 11039640

Reference Calibration Date: 18-Nov-10 15:40:50

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: W.MILLER

Calibration Date: 18-Nov-10 15:43:20

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	102.7	api
Background + Calibrator	375.1	373.4	api
Calibrator	269.6	270.7	api

Shop	Field	Difference	Tolerance
269.6	270.7	-1.1	+/- 9.00

### NATURAL GAMMA RAY TOOL POST CALIBRATION

Tool Name: GTET - 11039640

Reference Calibration Date: 18-Nov-10 15:43:20

Engineer: J. BOSH

Calibration Date: 19-Nov-10 13:41:58

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	102.7	54.6	api
Background + Calibrator	373.4	327.5	api
Calibrator	270.7	272.9	api

Shop	Field	Post	Difference	Tolerance
269.6	270.7	272.9	-2.2	+/- 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**

<b>Tool Name:</b> DSNT - 11019643	<b>Reference Calibration Date:</b> 05-Nov-10 14:17:11
<b>Engineer:</b> W.MILLER	<b>Calibration Date:</b> 18-Nov-10 15:19:43
<b>Software Version:</b> WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b> 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	0.0649	0.0013	+/- 0.0150

**PASS/FAIL SUMMARY**

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

**DUAL SPACED NEUTRON POST CALIBRATION**

<b>Tool Name:</b> DSNT - 11019643	<b>Reference Calibration Date:</b> 18-Nov-10 15:19:43
<b>Engineer:</b> J. BOSH	<b>Calibration Date:</b> 19-Nov-10 13:47:55
<b>Software Version:</b> WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b> 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):	0.0649	0.0705	0.0056	+/- 0.0150

**PASS/FAIL SUMMARY**

Block Change Check:	Passed
Snow Block Stat 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	0.3047	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
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
<b>MAGNESIUM</b>				
Density (g/cc)	1.684	1.684	-0.000	+/- 0.015
Pe	2.580	2.545	-0.035	+/- 0.150
<b>ALUMINUM</b>				
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**

<b>Tool Name:</b> SDLT - I43_P81	<b>Reference Calibration Date:</b> 18-Nov-10 14:33:14
<b>Engineer:</b> W.MILLER	<b>Calibration Date:</b> 18-Nov-10 14:39:32
<b>Software Version:</b> WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b> 1

Pad Temperature: 61.1 degF

**DENSITY FIELD CALIBRATION SUMMARY**

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1401.877	1401.028	-0.849	15.120
Far (B+D+P+L) cps	948.688	946.332	-2.356	16.616
Near Resolution	9.42	9.55	0.130	0.50
Far Resolution	8.87	8.87	0.000	1.00

**PASS/FAIL SUMMARY**

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

**SPECTRAL DENSITY POST CHECK**

<b>Tool Name:</b> SDLT - I43_P81	<b>Reference Calibration Date:</b> 18-Nov-10 14:39:32
<b>Engineer:</b> J. BOSH	<b>Calibration Date:</b> 19-Nov-10 13:41:56
<b>Software Version:</b> WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b> 1

Pad Temperature: 75.1 degF

**DENSITY POST CALIBRATION SUMMARY**

Measurement	Field	Post	Change	Control Limit +/-
Near (B+D+P+L) cps	1401.028	1398.210	-2.818	15.120
Far (B+D+P+L) cps	946.332	950.287	3.955	16.616
Near Resolution	9.55	9.64	0.090	0.50
Far Resolution	8.87	9.13	0.260	1.00

**PASS/FAIL SUMMARY**

Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed

**MICRO LOG SHOP CALIBRATION**

<b>Tool Name:</b>	SDLT - I43_P81	<b>Reference Calibration Date:</b>	23-Sep-10 08:31:40
<b>Engineer:</b>	T. BRIDGEMAN	<b>Calibration Date:</b>	22-Oct-10 16:26:46
<b>Software Version:</b>	WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b>	1

**CALIBRATION COEFFICIENT SUMMARY**

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.07	-0.06	-0.01	-0.12	ohmm
Calibration Point #1	-0.00	0.00	0.12	0.00	ohmm
Calibration Point #2	21.02	20.00	21.96	20.00	ohmm
Internal Reference	20.95	19.94	21.50	19.58	ohmm

Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero		0.93		
Calibration Point #1		18.27		41.74	V
Calibration Point #2		5361.50		7050.40	V
Internal Reference		5344.46		6903.72	V

**MICRO LOG FIELD CHECK**

<b>Tool Name:</b>	SDLT - I43_P81	<b>Reference Calibration Date:</b>	22-Oct-10 16:26:46
<b>Engineer:</b>	J. BOSH	<b>Calibration Date:</b>	18-Nov-10 23:59:48
<b>Software Version:</b>	WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b>	1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.06	-0.07	-0.12	-0.12	ohmm
Internal Reference	19.94	19.88	19.58	19.51	ohmm

**Summary**

Signal	Shop	Field	Difference	Tolerance
Microlog Normal	19.94	19.88	0.06	+/- 0.80
Microlog Lateral	19.58	19.51	0.07	+/- 0.80

**MICRO LOG POST CHECK**

<b>Tool Name:</b>	SDLT - I43_P81	<b>Reference Calibration Date:</b>	18-Nov-10 23:59:48
<b>Engineer:</b>	J. BOSH	<b>Calibration Date:</b>	19-Nov-10 12:41:44
<b>Software Version:</b>	WL INSITE R3.2.0 (Build 7)	<b>Calibration Version:</b>	1

Measurement	Micro Log Normal		Micro Log Lateral		Units
	Field	Post	Field	Post	
Tool Zero	-0.07	-0.07	-0.12	-0.12	ohmm
Internal Reference	19.88	20.06	19.51	19.75	ohmm

**Summary**

Signal	Field	Post	Difference	Tolerance
Microlog Normal	19.88	20.06	0.18	+/- 0.80
Microlog Lateral	19.51	19.75	0.24	+/- 0.80

**DENSITY CALIPER SHOP CALIBRATION**

<b>Tool Name:</b>	SDLT - I43_P81	<b>Reference Calibration Date:</b>	23-Oct-10 17:23:32
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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: 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)	2.05	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: W.MILLER

Calibration Date: 18-Nov-10 15:08:04

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	3.78	0.03	+/- 0.10
Ring Diameter	8.25	8.31	0.06	+/- 0.15

**PASS/FAIL SUMMARY**

Pad Extension Check: Passed

Diameter Check: Passed

**SDLT CALIPER POST CALIBRATION**

Tool Name: SDLT - I43\_P81

Reference Calibration Date: 18-Nov-10 15:08:04

Engineer: J. BOSH

Calibration Date: 19-Nov-10 13:51:58

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	3.78	3.85	0.08	+/- 0.10

**PASS/FAIL SUMMARY**

Pad Extension Check:

Passed

Diameter Check:

Passed

**CALIBRATION SUMMARY**

Sensor	Shop	Field	Post	Difference	Tolerance	Units
<b>GTET-11039640</b>						
Gamma Ray Calibrator	269.6	270.7	272.9	-2.2	+/- 9.00	api
<b>DSNT-11019643</b>						
Snow-Block Porosity	0.0636	0.0649	0.0705	-0.0056	+/- 0.0150	decp
<b>SDLT-I43_P81</b>						
Near(B+D+P+L)	1401.877	1401.028	1398.210	2.818	+/-15.120	cps
Far(B+D+P+L)	948.688	946.332	950.287	-3.955	+/-16.616	cps
MicroLog Normal	19.94	19.88	20.06	-0.18	+/-0.80	ohmm
MicroLog Lateral	19.58	19.51	19.75	-0.24	+/-0.80	ohmm
Pad Extension	3.75	3.78	3.85	-0.07	+/-0.10	in
Ring Diameter	8.25	8.31	8.29	0.020	+/-0.15	in

Data: CYNTHIA\_35\_3\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE

Date: 19-Nov-10 13:54:29

**HALLIBURTON****PARAMETERS REPORT**

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	
2990.00	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	8.900	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	1.250	ohmm
	SHARED	TRM	Temperature of Mud	75.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	6200.00	ft
	SHARED	BHT	Bottom Hole Temperature	135.0	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	
BSAT	MBOK	Compute BCAS Results?	Yes	
BSAT	FLLO	Frequency Filter Low Pass Value?	7000	Hz
BSAT	FLHI	Frequency Filter High Pass Value?	27000	Hz
BSAT	DTFL	Delta -T Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	User define	
BSAT	DTMA	Delta -T Matrix	47.60	uspf
BSAT	DTSH	Delta -T Shale	100.00	uspf
BSAT	SPEQ	Acoustic Porosity Equation	Wylie	
ACRt	RTOK	Process ACRt?	Yes	
ACRt	MNSO	Minimum Tool Standoff	1.50	in
ACRt	TCS1	Temperature Correction Source	FP Lwr & FP Up	
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	

BOTTOM \_\_\_\_\_

Data: CYNTHIA\_35\_3\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDLE Date: 19-Nov-10 10:47:26

# HALLIBURTON

## INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
<b>Depth Panel</b>				
TENS	Tension	0.00	NO	
<b>CH_HOS</b>				
DHTN	DownholeTension	0.00	BLK	0.000
<b>SP Sub</b>				
PLTC	Plot Control Mask	66.58	NO	

ETC	Plot Control Mask	66.58	NO	
SP	Spontaneous Potential	66.58	BLK	1.250
SPR	Raw Spontaneous Potential	66.58	NO	
SPO	Spontaneous Potential Offset	66.58	NO	
<b>GTET</b>				
TPUL	Tension Pull	58.56	NO	
GR	Natural Gamma Ray API	58.56	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	58.56	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	58.56	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
<b>DSNT</b>				
TPUL	Tension Pull	48.32	NO	
RNDS	Near Detector Telemetry Counts	48.42	BLK	1.417
RFDS	Far Detector Telemetry Counts	49.17	TRI	0.583
DNTT	DSN Tool Temperature	48.42	NO	
DSNS	DSN Tool Status	48.32	NO	
ERND	Near Detector Telemetry Counts EVR	48.42	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	49.17	BLK	0.000
ENTM	DSN Tool Temperature EVR	48.42	NO	
<b>SDLT</b>				
TPUL	Tension Pull	38.41	NO	
NAB	Near Above	38.24	BLK	0.920
NHI	Near Cesium High	38.24	BLK	0.920
NLO	Near Cesium Low	38.24	BLK	0.920
NVA	Near Valley	38.24	BLK	0.920
NBA	Near Barite	38.24	BLK	0.920
NDE	Near Density	38.24	BLK	0.920
NPK	Near Peak	38.24	BLK	0.920
NLI	Near Lithology	38.24	BLK	0.920
NBAU	Near Barite Unfiltered	38.24	BLK	0.250
NLIU	Near Lithology Unfiltered	38.24	BLK	0.250
FAB	Far Above	38.58	BLK	0.250
FHI	Far Cesium High	38.58	BLK	0.250
FLO	Far Cesium Low	38.58	BLK	0.250
FVA	Far Valley	38.58	BLK	0.250
FBA	Far Barite	38.58	BLK	0.250
FDE	Far Density	38.58	BLK	0.250
FPK	Far Peak	38.58	BLK	0.250
FLI	Far Lithology	38.58	BLK	0.250
PTMP	Pad Temperature	38.42	BLK	0.920
NHV	Near Detector High Voltage	35.60	NO	
FHV	Far Detector High Voltage	35.60	NO	
ITMP	Instrument Temperature	35.60	NO	
DDHV	Detector High Voltage	35.60	NO	
TPUL	Tension Pull	38.42	NO	
PCAL	Pad Caliper	38.42	TRI	0.250
ACAL	Arm Caliper	38.42	TRI	0.250
TPUL	Tension Pull	38.60	NO	
MINV	Microlog Lateral	38.60	BLK	0.750
MNOR	Microlog Normal	38.60	BLK	0.750

**PCAT**

## BSA1

TPUL	Tension Pull	27.09	NO
STAT	Status	27.09	NO
DLYT	Delay Time	27.09	NO
SI	Sample Interval	27.09	NO
TXRX	Raw Telemetry 10 Receivers	27.09	NO
FRMC	Tool Frame Count	27.09	NO

## ACRt

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	

Data: CYNTHIA\_35\_3\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE

Date: 19-Nov-10 10:47:43

COMPANY      **EOG RESOURCES**

WELL          **CYNTHIA 35-3**

FIELD        **WILDCAT**

COUNTY      **STEVENS**

STATE

**KANSAS**

**HALLIBURTON**

**SPECTRAL DENSITY  
DUAL SPACED NEUTRON  
MICROLOG**