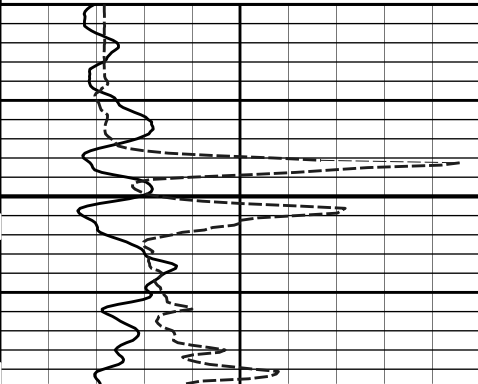
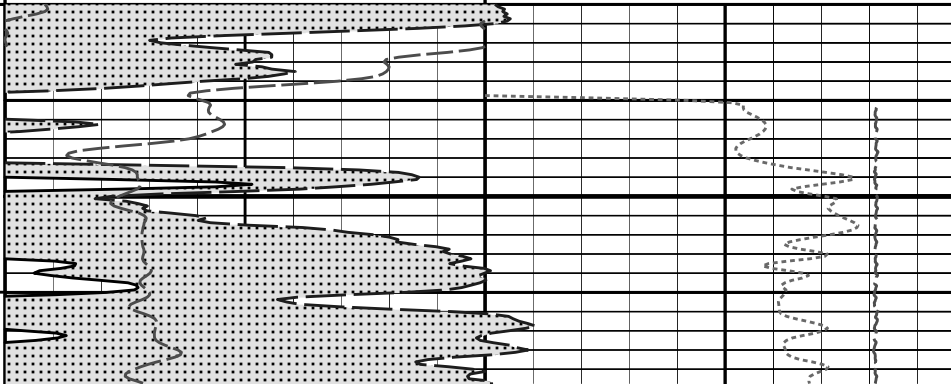


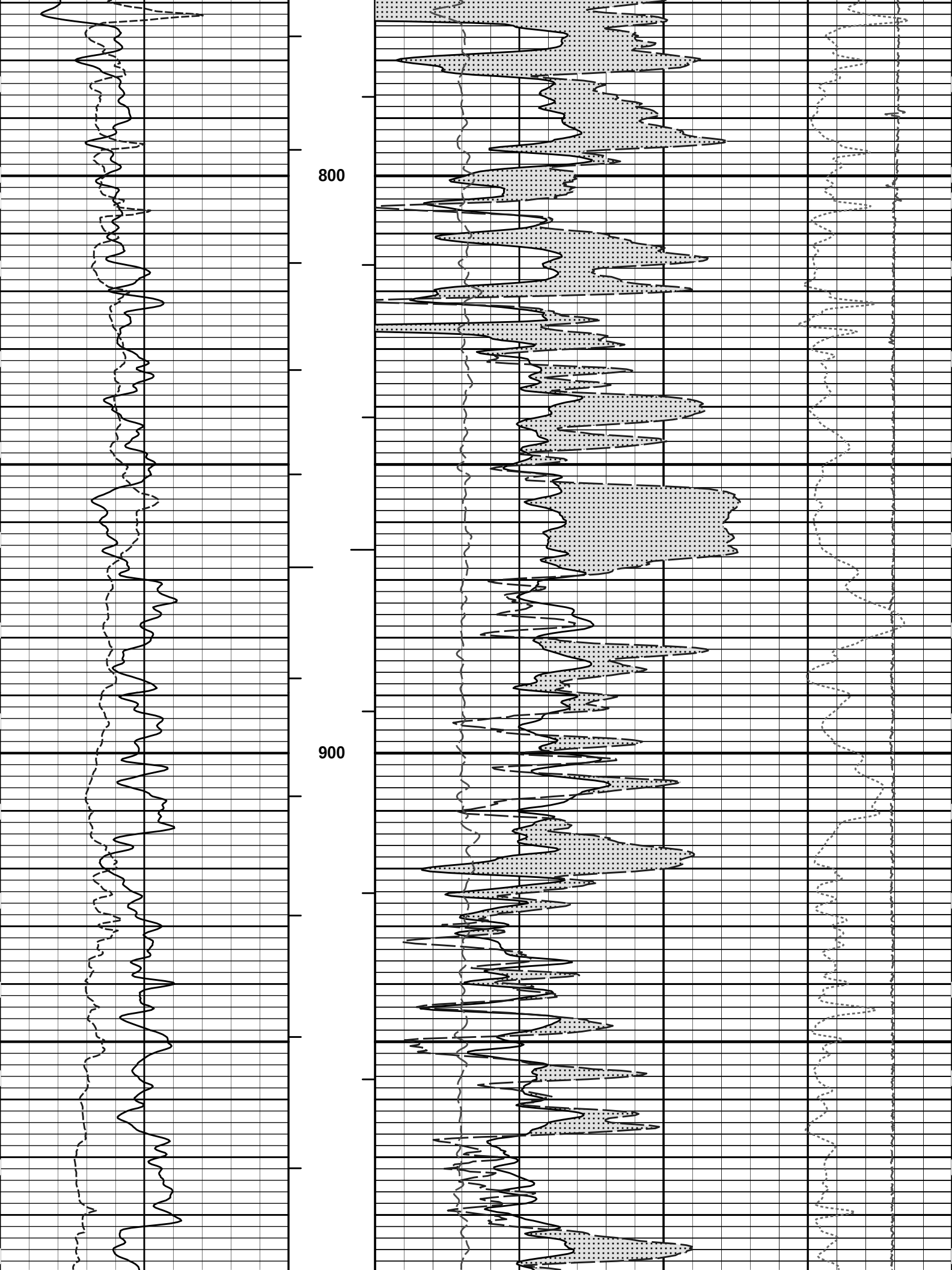
DUAL SPACED NEUTRON
SPECTRAL DENSITY
LOG

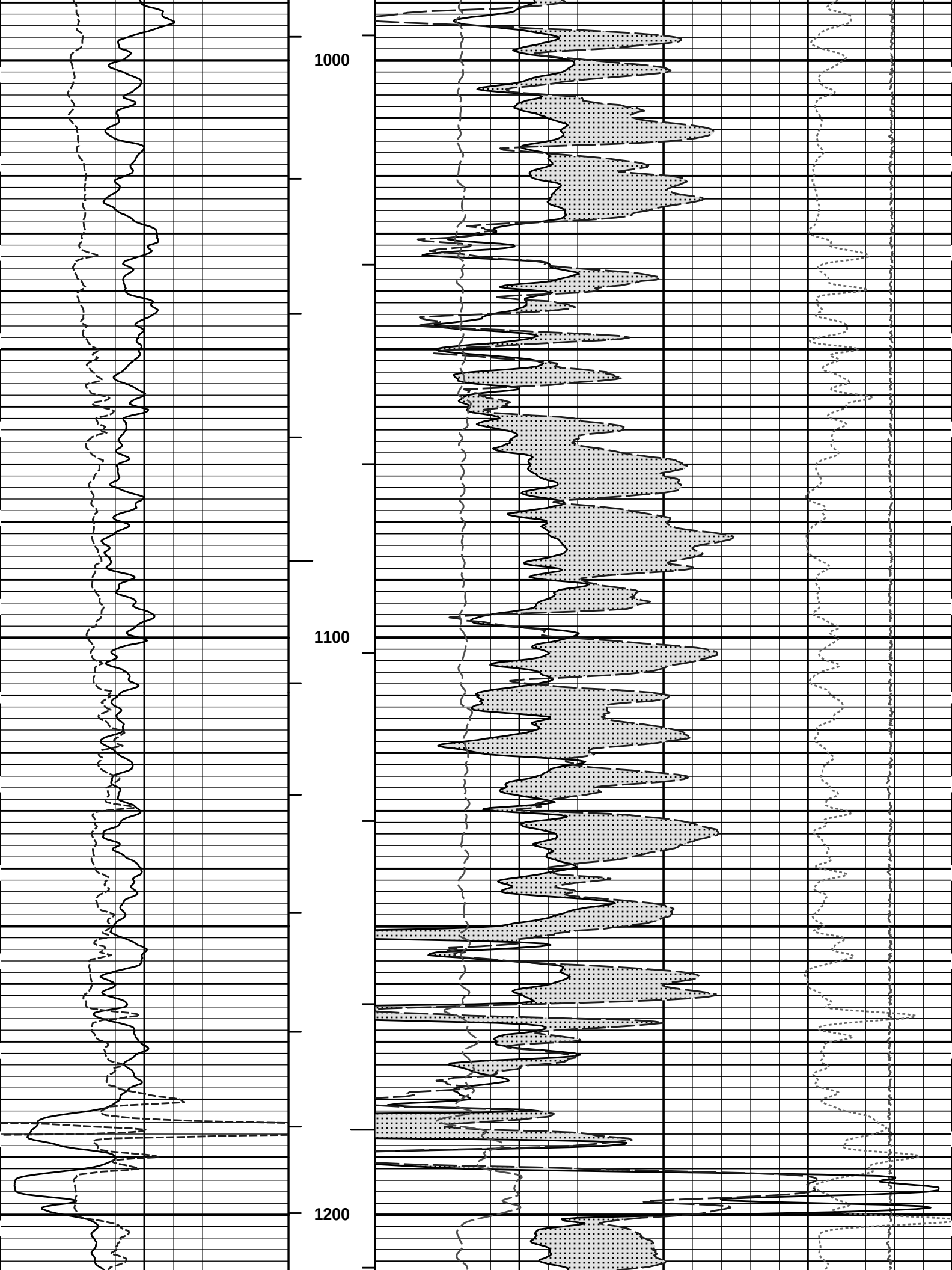
Fold here

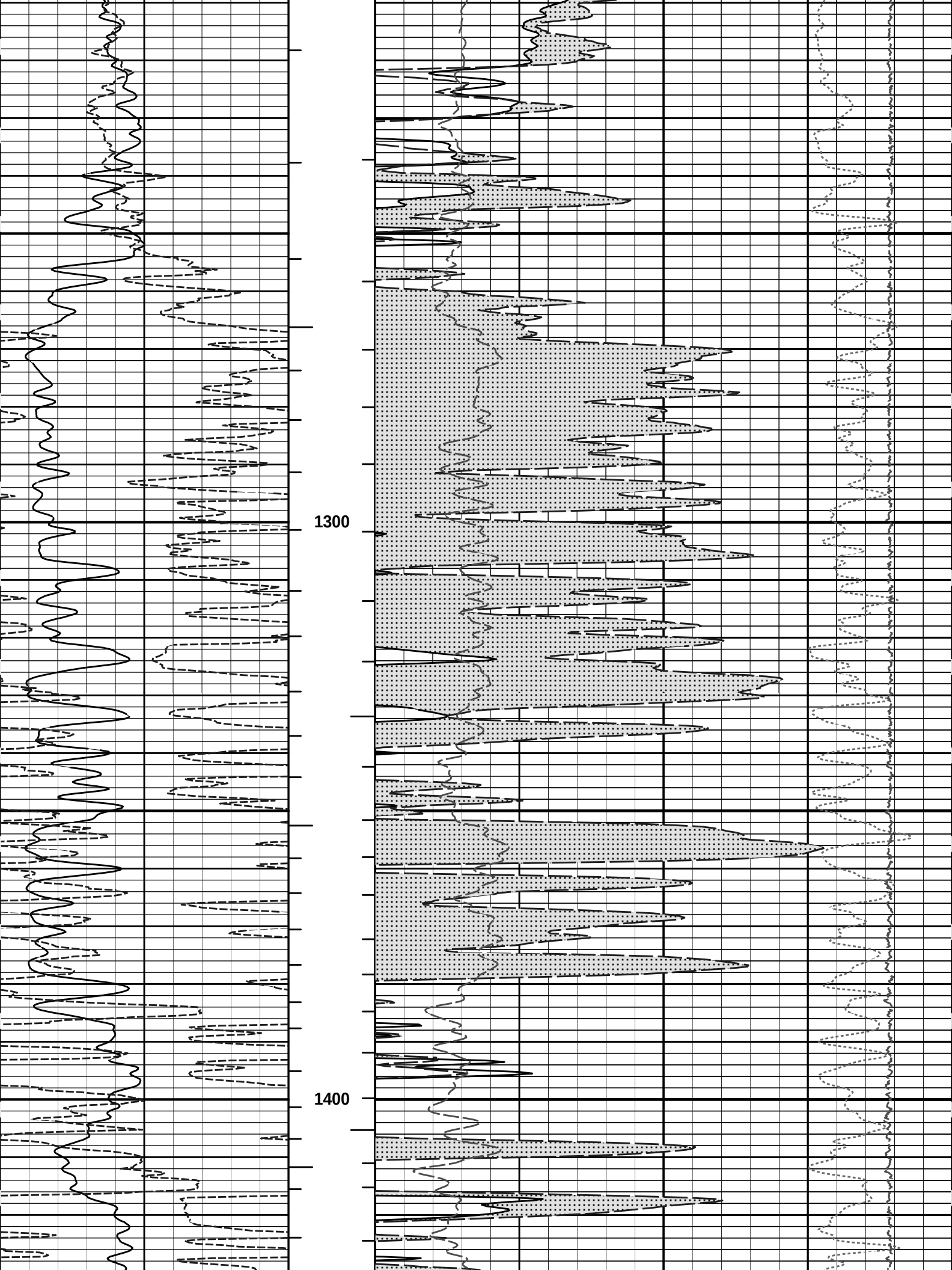
Service Ticket No.: 900661383						API Serial No.: 15-097-21765-00-00						PGM Version: WL INSITE R3.8.4 (Build 5)																	
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE												RESISTIVITY SCALE CHANGES																	
Date		Sample No.										Type Log		Depth		Scale Up Hole				Scale Down Hole									
Depth-Driller																													
Type Fluid in Hole																													
Density		Viscosity																											
Ph		Fluid Loss																											
Source of Sample												RESISTIVITY EQUIPMENT DATA																	
Rm @ Meas. Temp						@						Run No.		Tool Type & No.				Pad Type				Tool Pos.				Other			
Rmf @ Meas. Temp.						@						ONE		ACRT				N/A				1.5" S.O.							
Rmc @ Meas. Temp.						@								10929776															
Source Rmf		Rmc																											
Rm @ BHT						@																							
Rmf @ BHT						@																							
Rmc @ BHT						@																							
EQUIPMENT DATA																													
GAMMA						ACOUSTIC						DENSITY						NEUTRON											
Run No.		ONE				Run No.		ONE				Run No.		ONE				Run No.		ONE									
Serial No.		10748374				Serial No.		10753396				Serial No.		10714945				Serial No.		11019641									
Model No.		GTET				Model No.		WSTT				Model No.		SDLT				Model No.		DSNT									
Diameter		3.625"				No. of Cent.		3				Diameter		5.3"				Diameter		3.625"									
Detector Model No.		T-102				Spacing		.5'				Log Type		GAM-GAM				Log Type		NEU-NEU									
Type		SCINT										Source Type		CS-137				Source Type		AM-241BE									
Length		8"				LSA [Y/N]		YES				Serial No.		5073GW				Serial No.		DSN-436									
Distance to Source		N/A				FWDA [Y/N]		YES				Strength		1.5 CI				Strength		15 CI									
LOGGING DATA																													

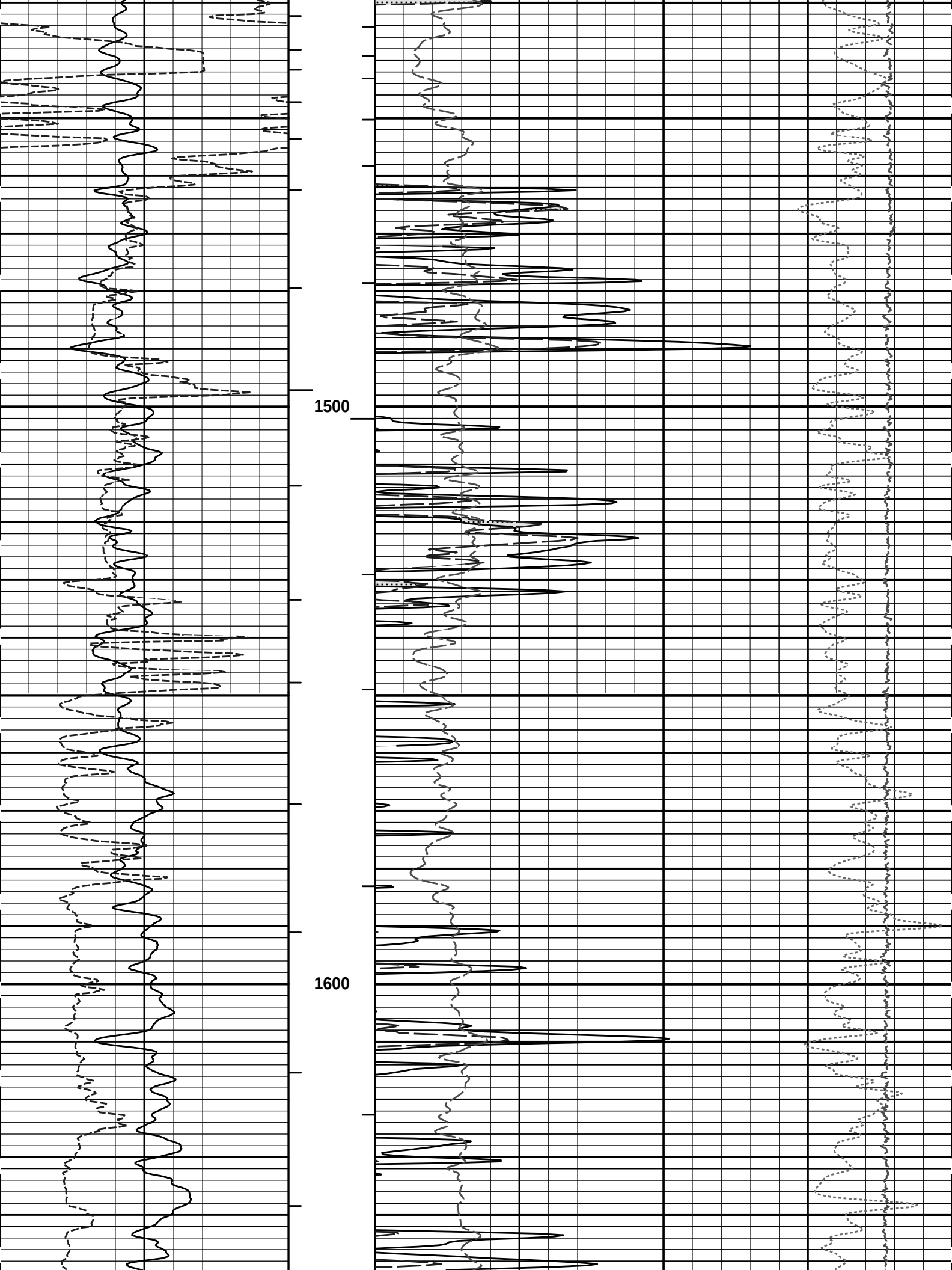
GENERAL			GAMMA		ACOUSTIC			DENSITY			NEUTRON			
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	6324	738	REC	0	150	30	-10	47.6 us/ft	30	-10	2.71 gm/cc	30	-10	LIME
DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
Remarks: ANNULAR HOLE VOLUME CACULATED FOR 5.5 INCH CASING.														
CHLORIDES REPORTED AT 22000 mg/L.														

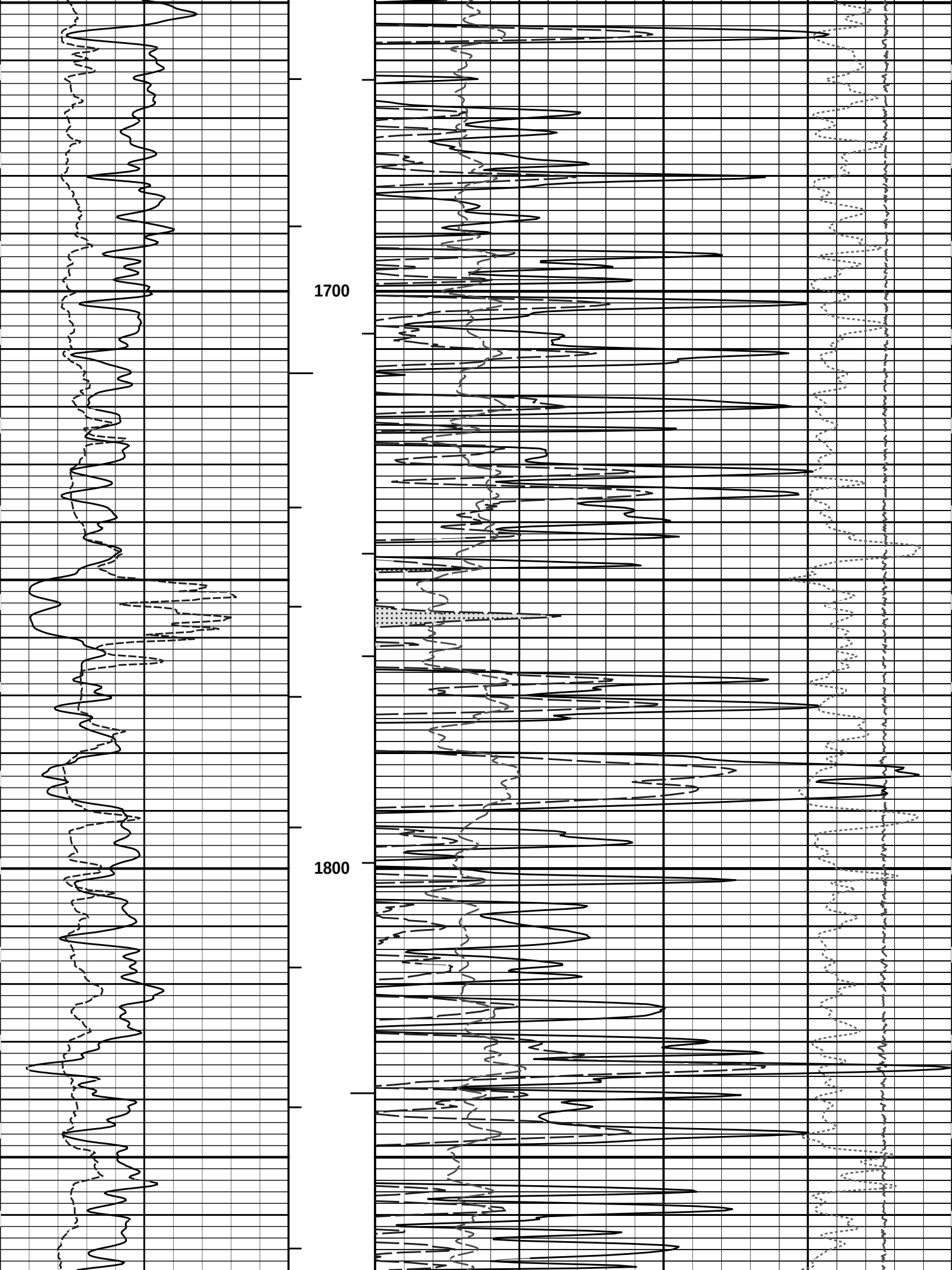
			CROSSOVER		
			30	Neutron Porosity	-10
			%		
			30	DensityPorosity	-10
			%		
0	Gamma API	150	15K		Tension
api					pounds
6	Caliper	16	0	Pe	10
inches					-0.25
					DensityCorr
					gram per cc
					

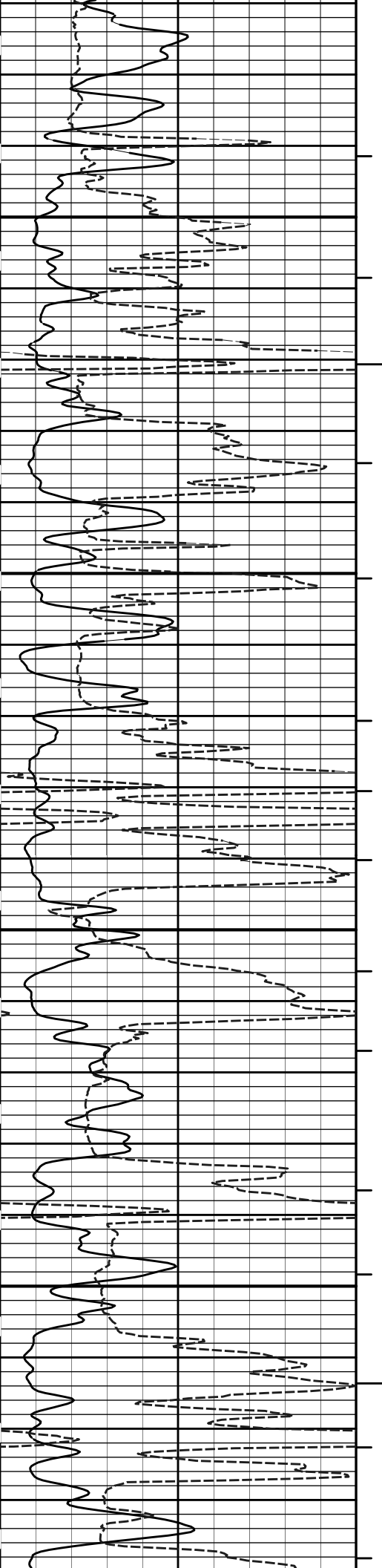






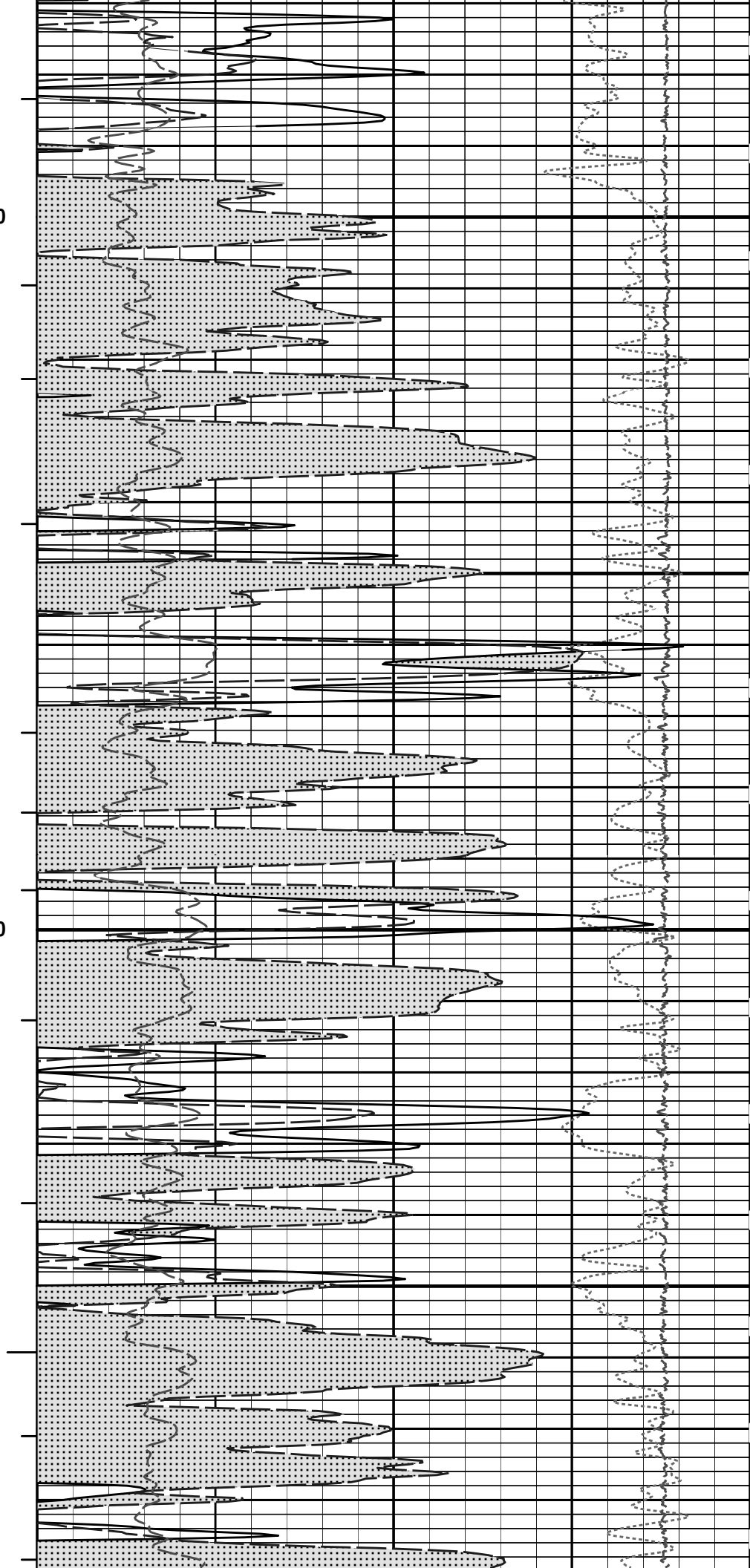


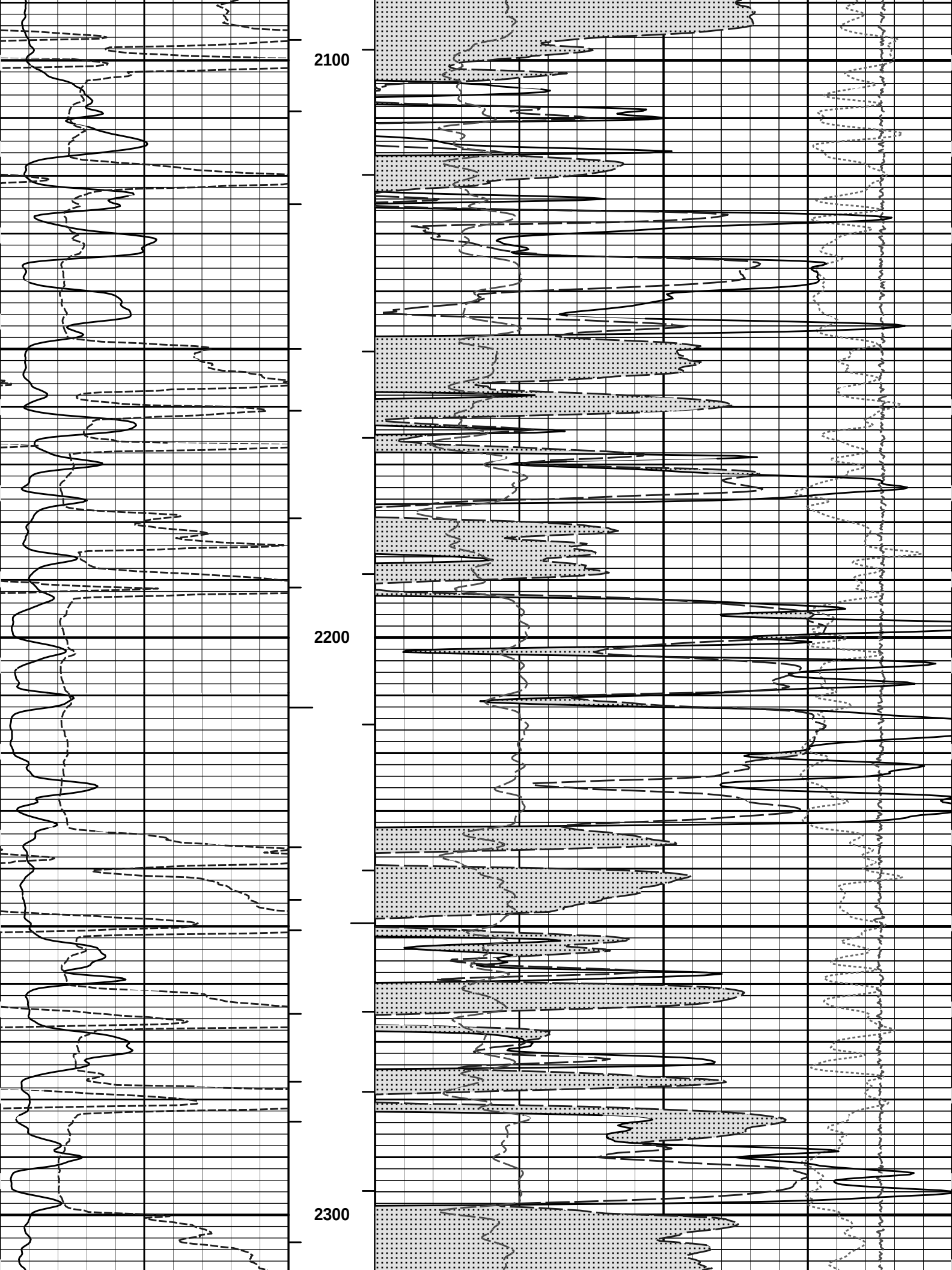


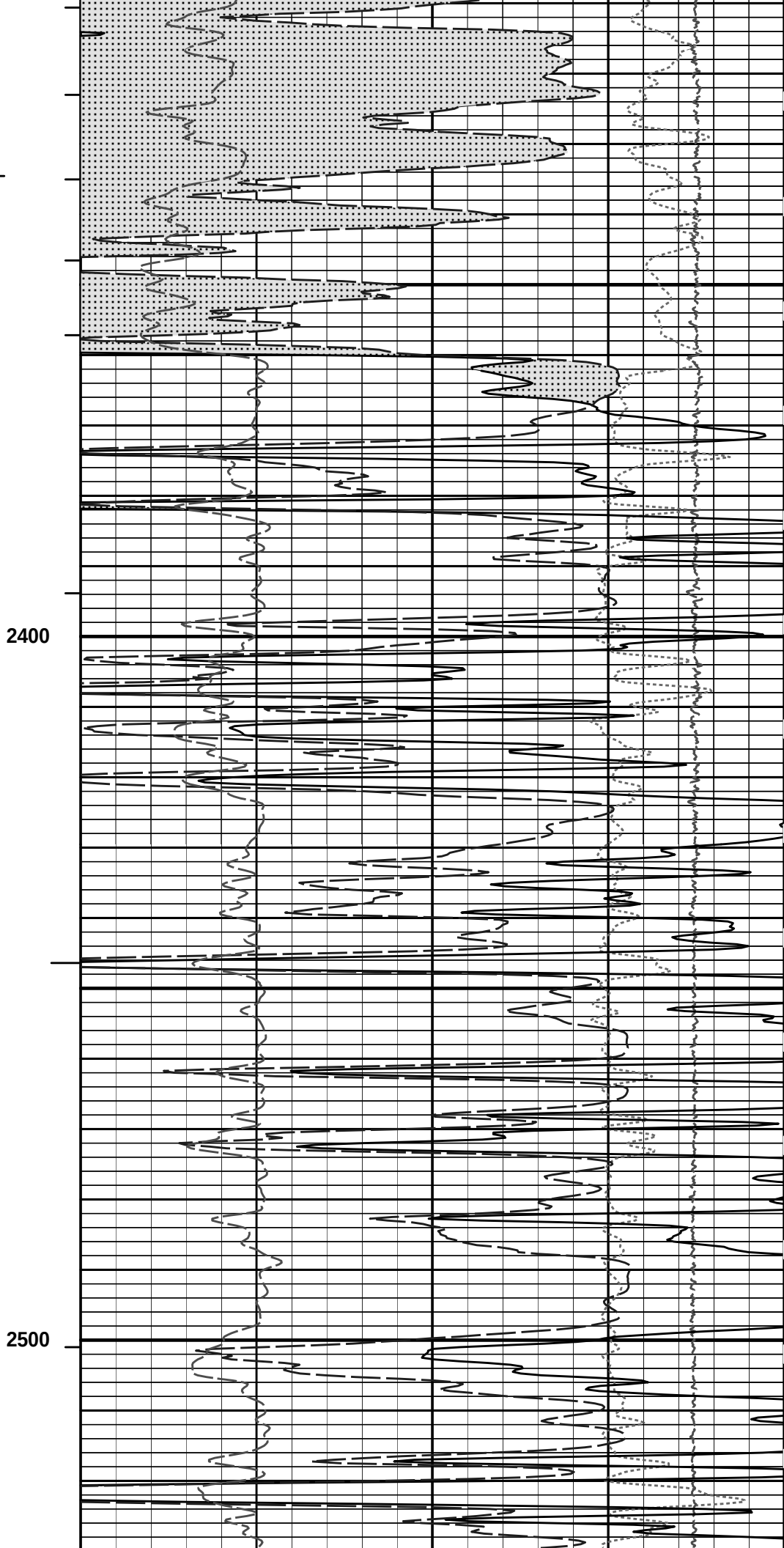
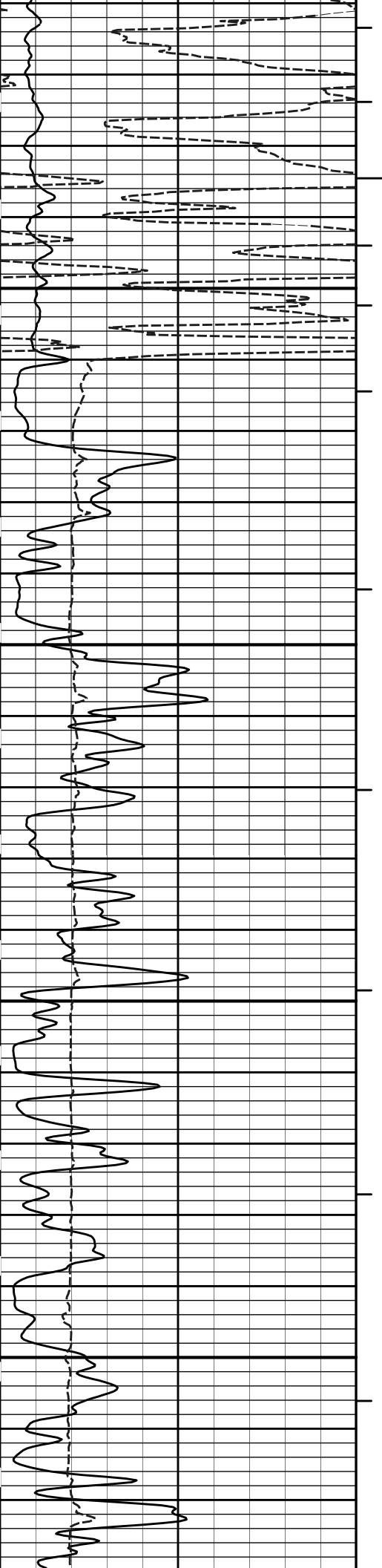


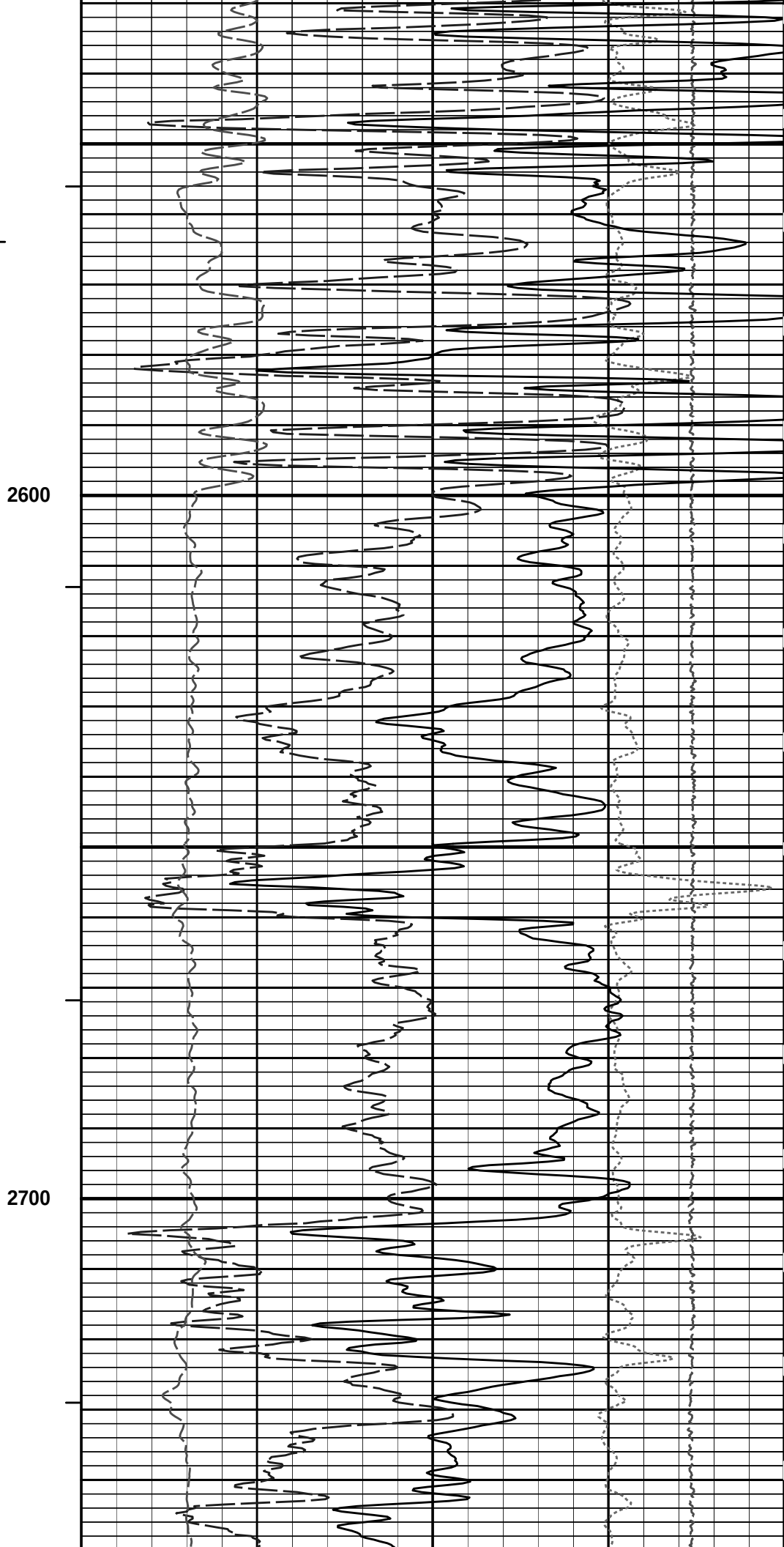
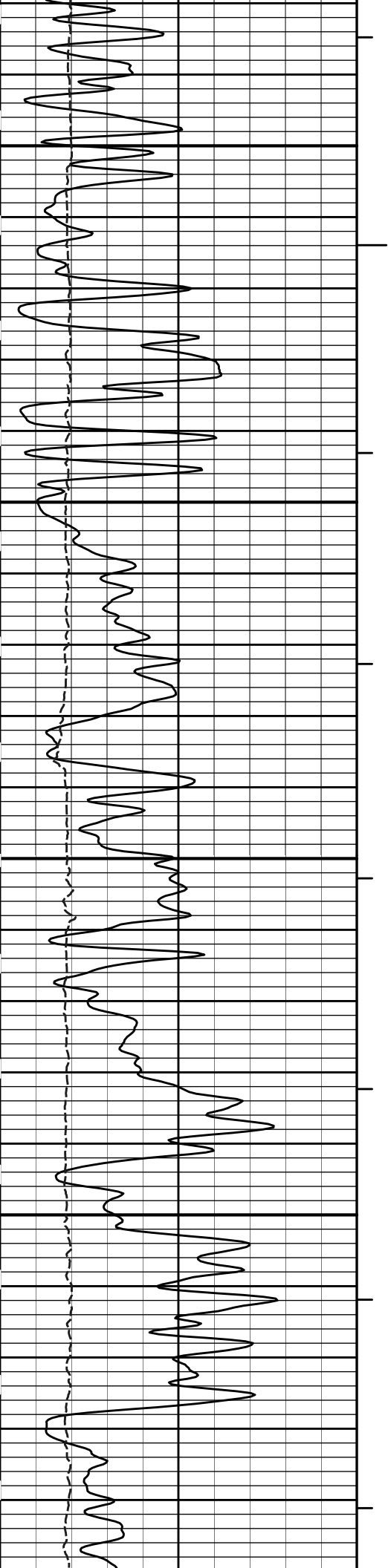
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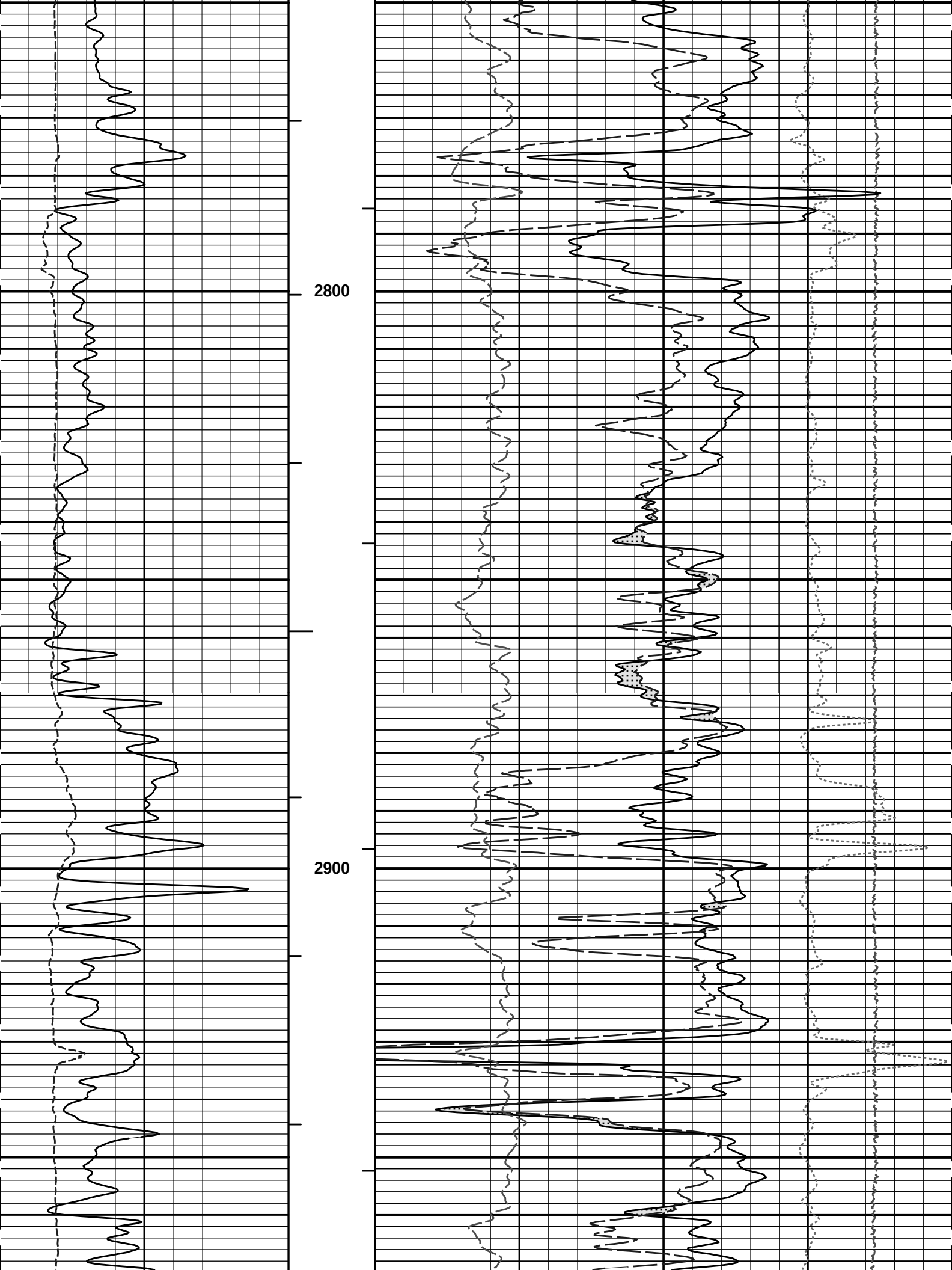
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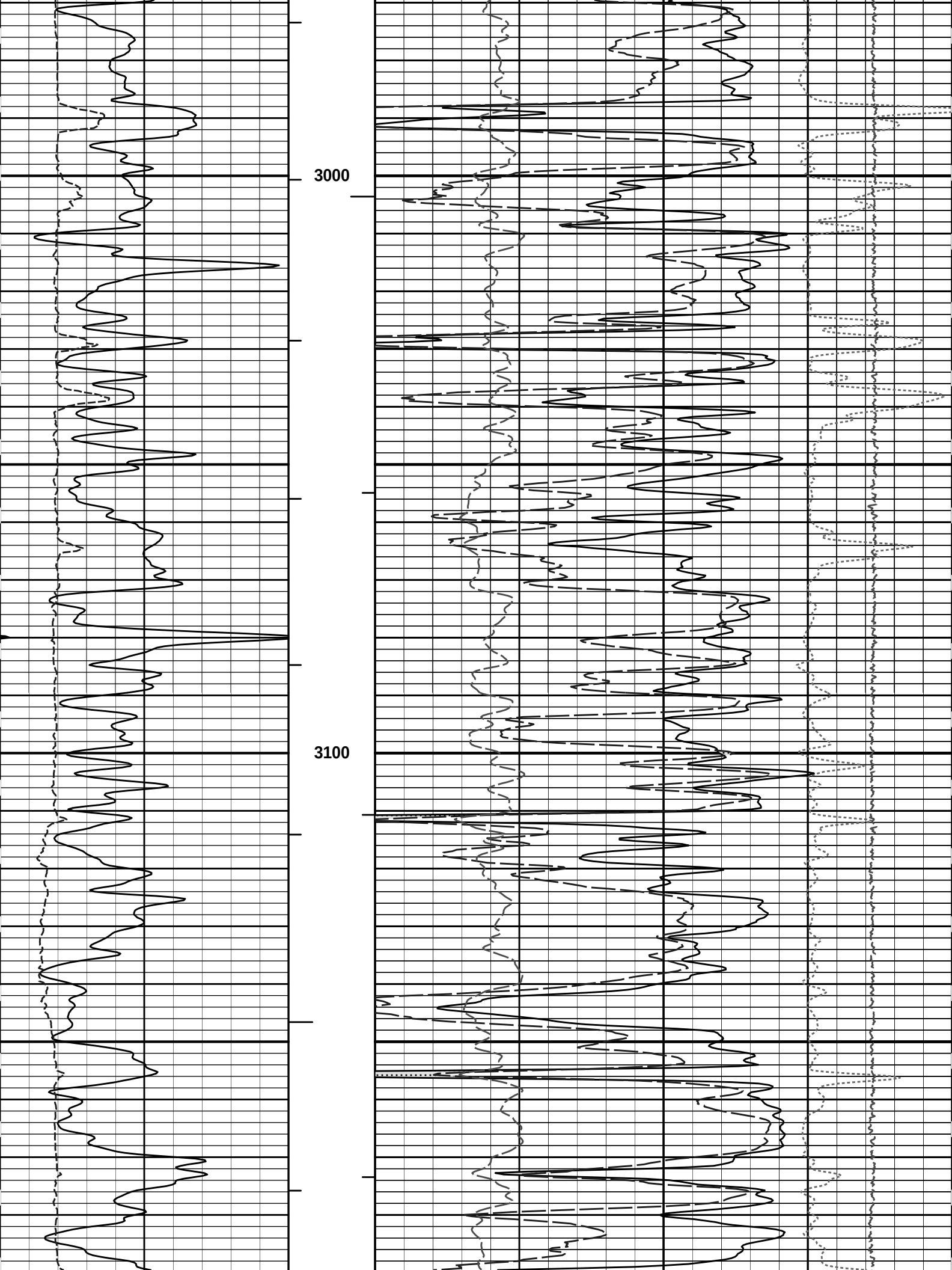


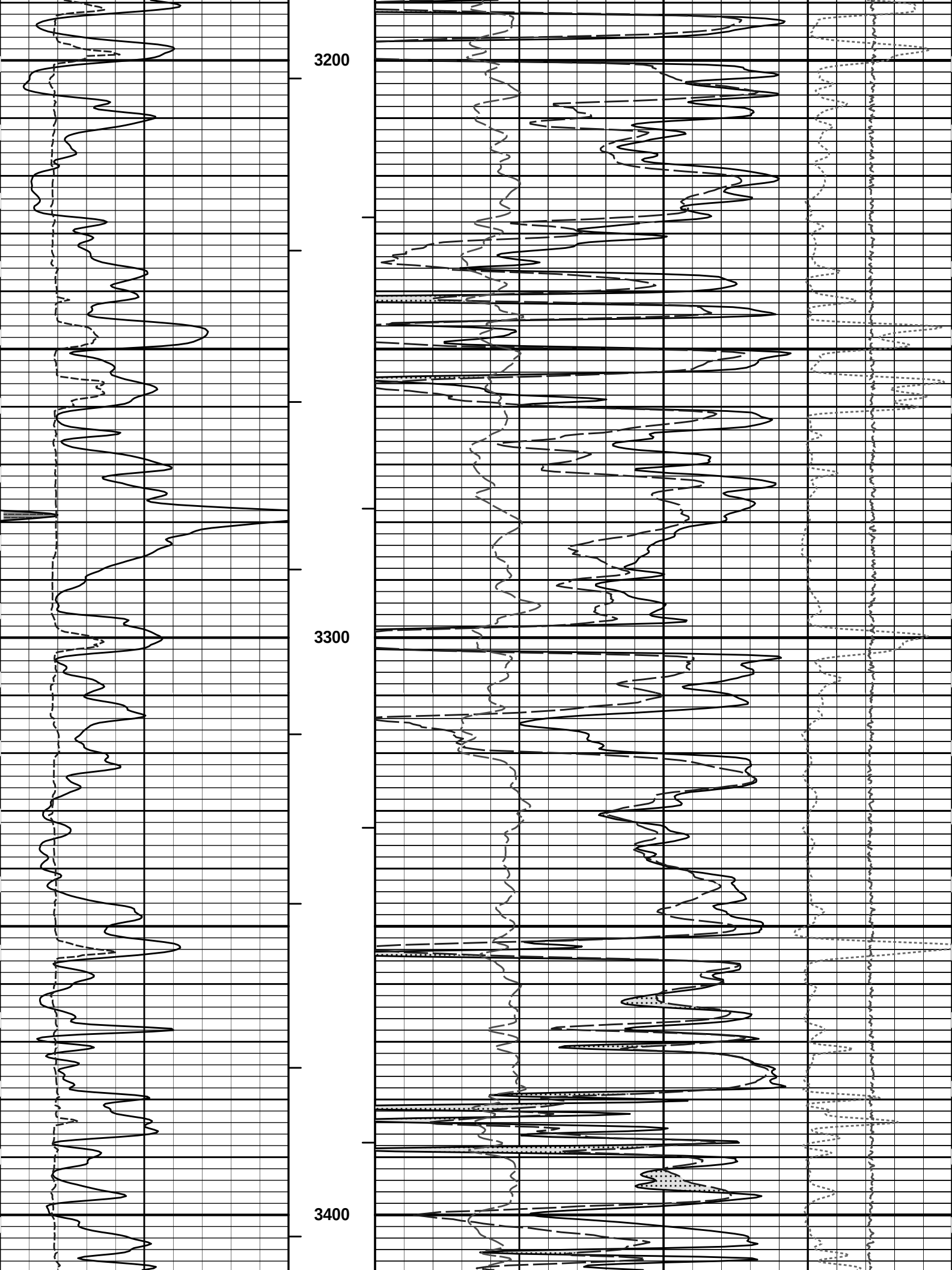


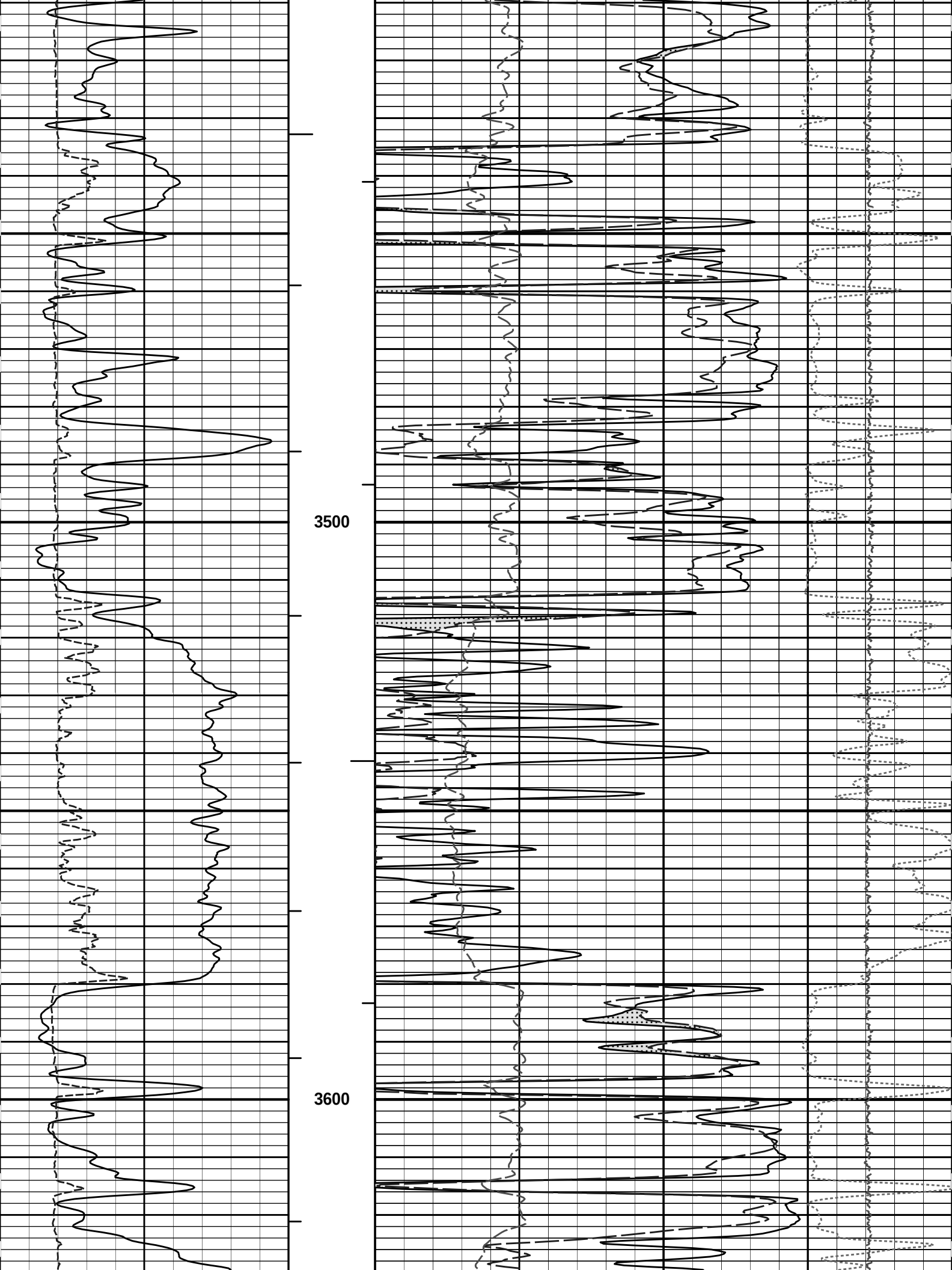


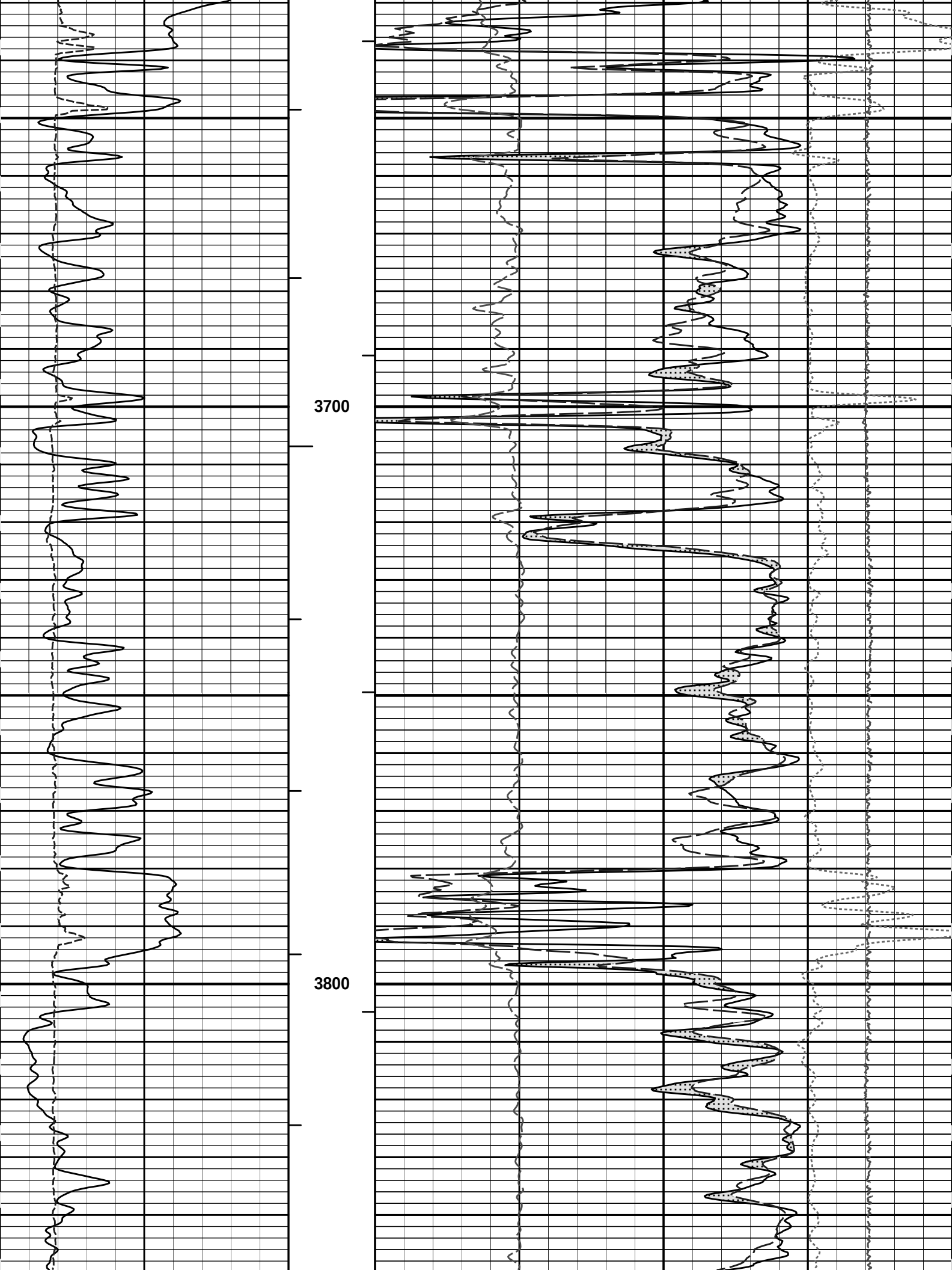


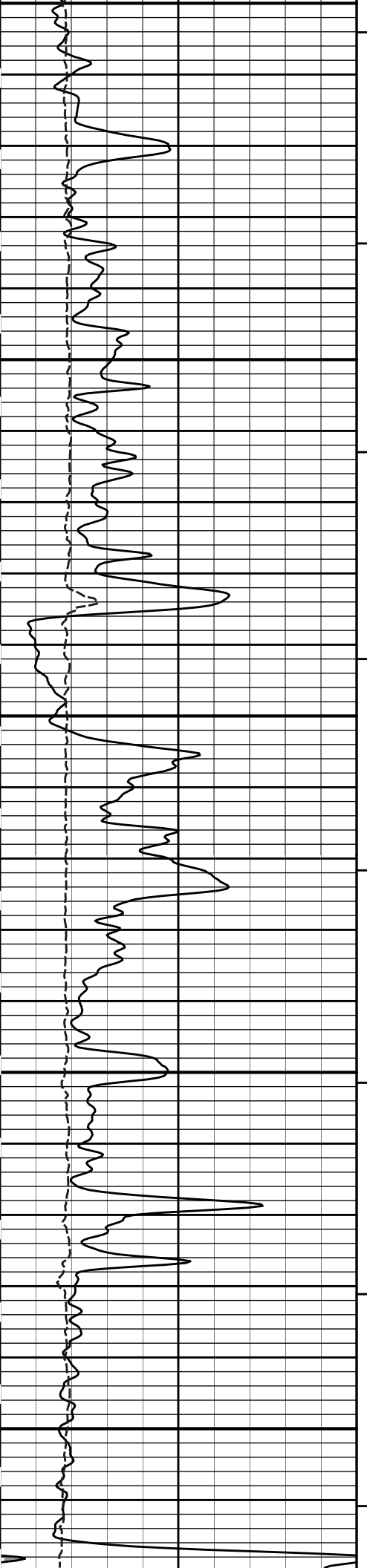




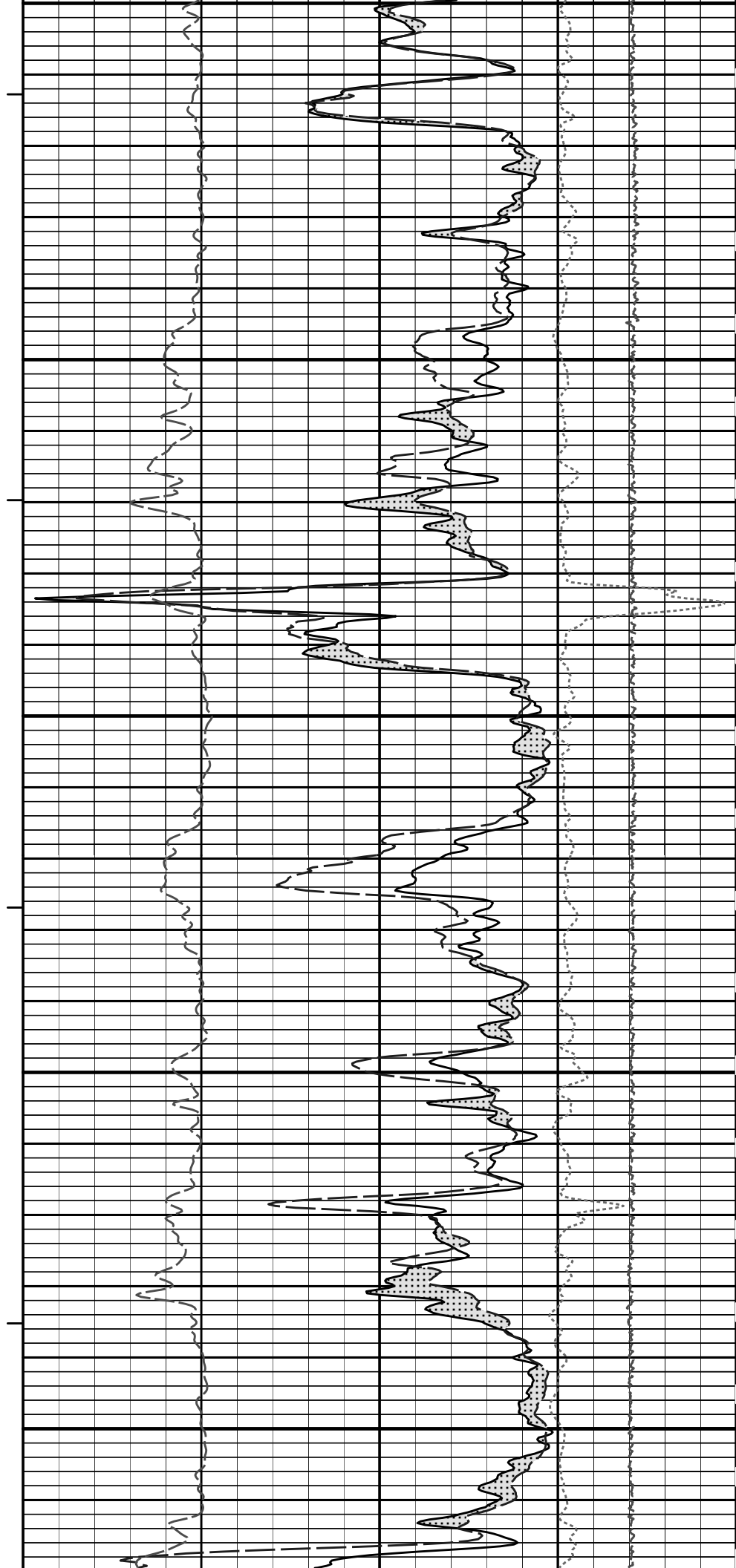




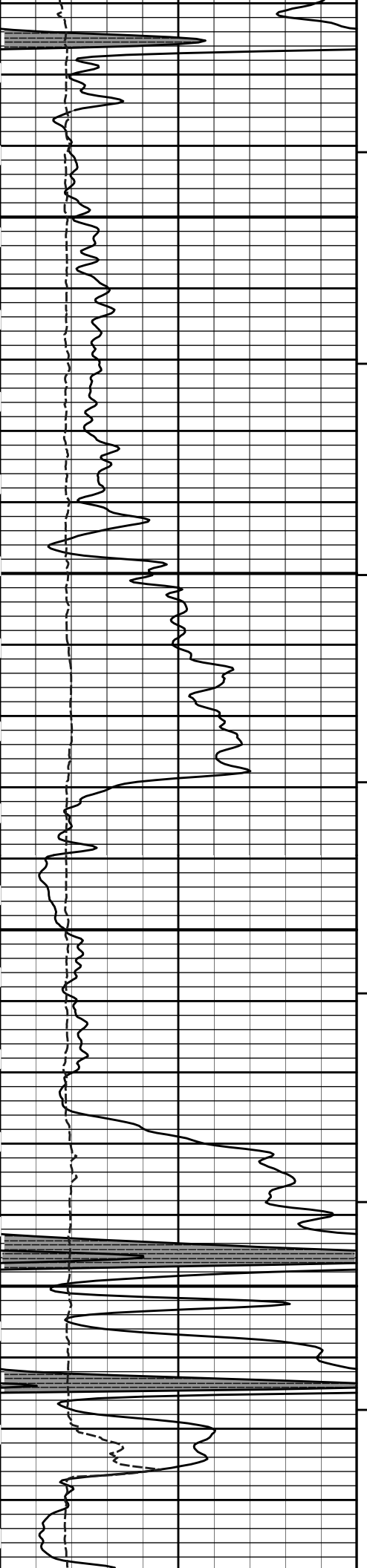




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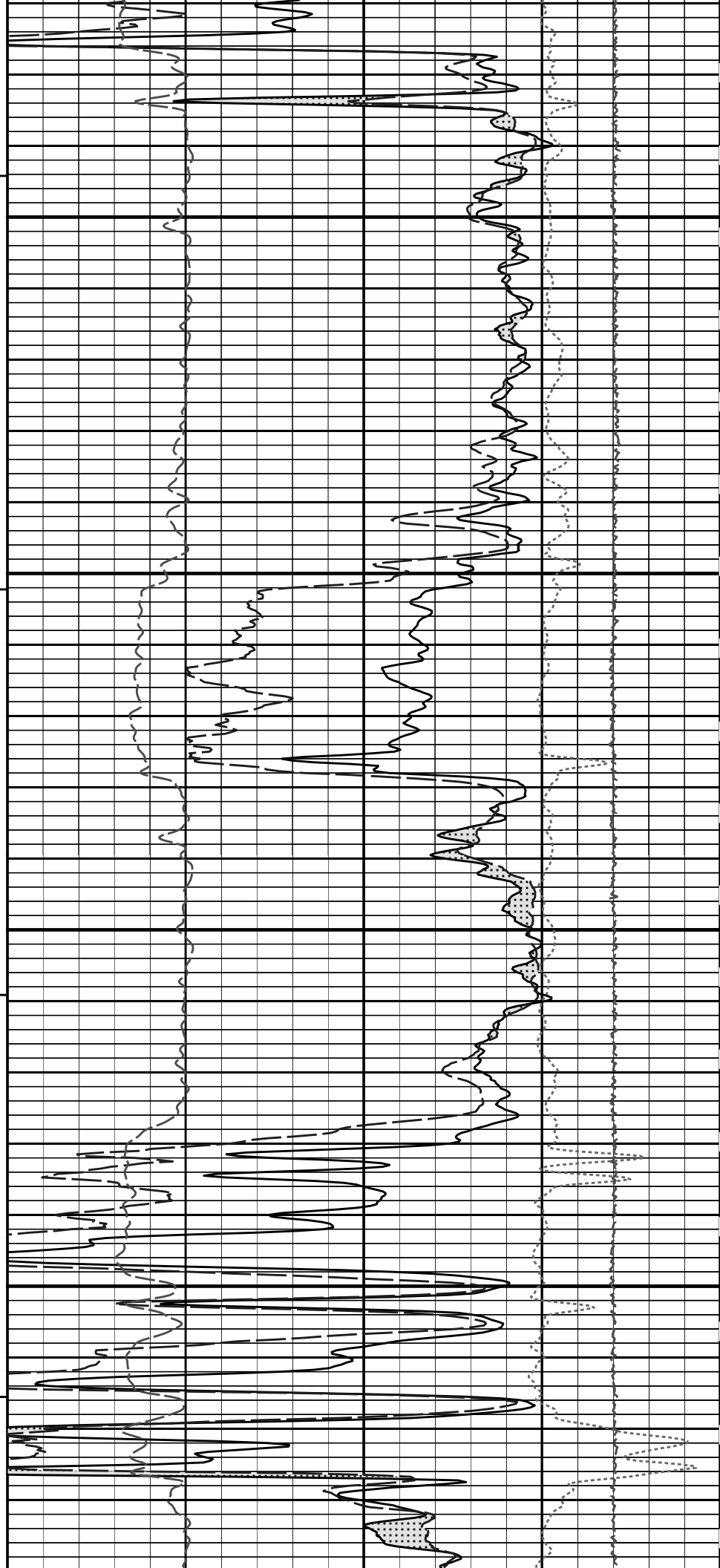


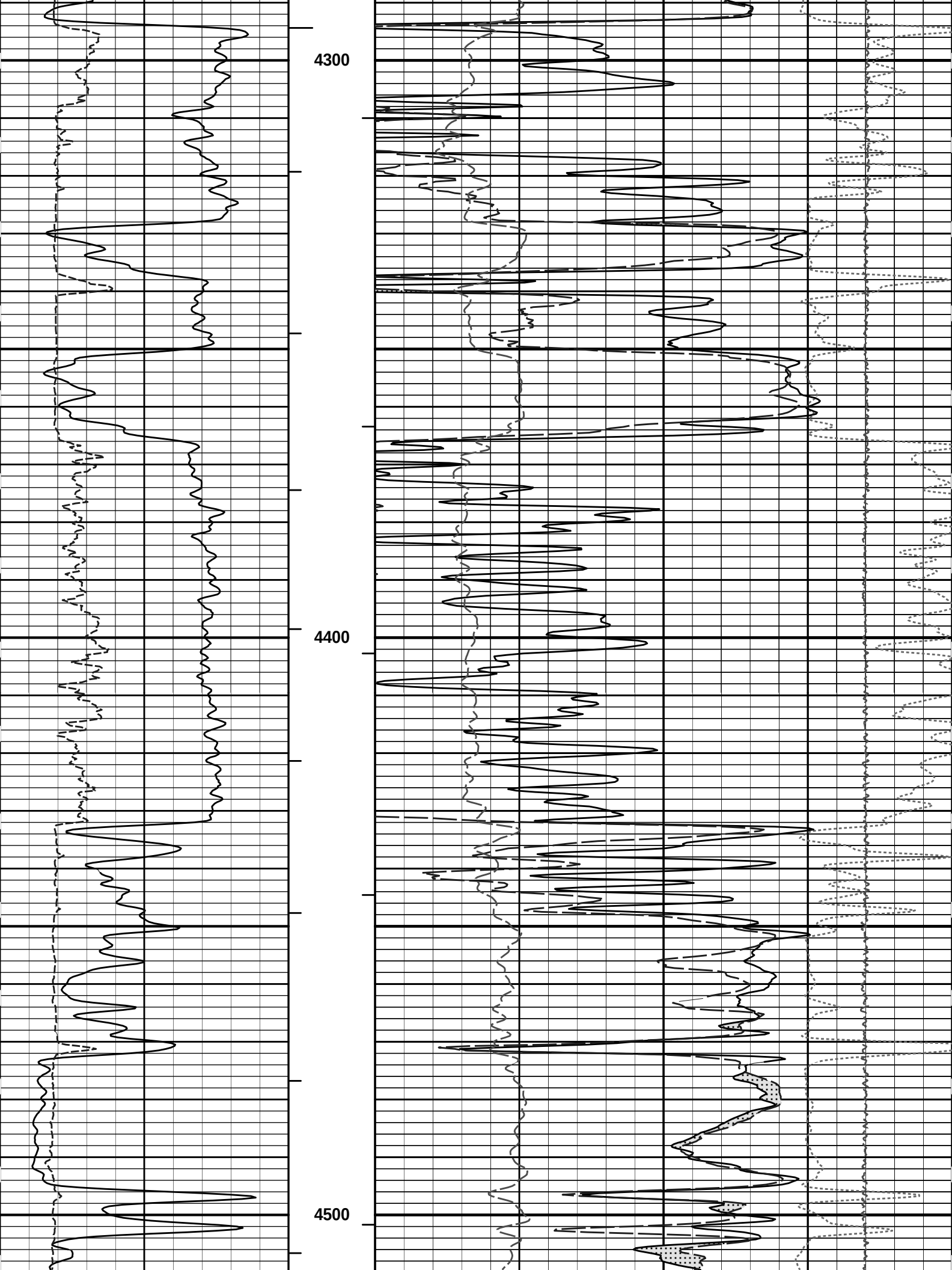
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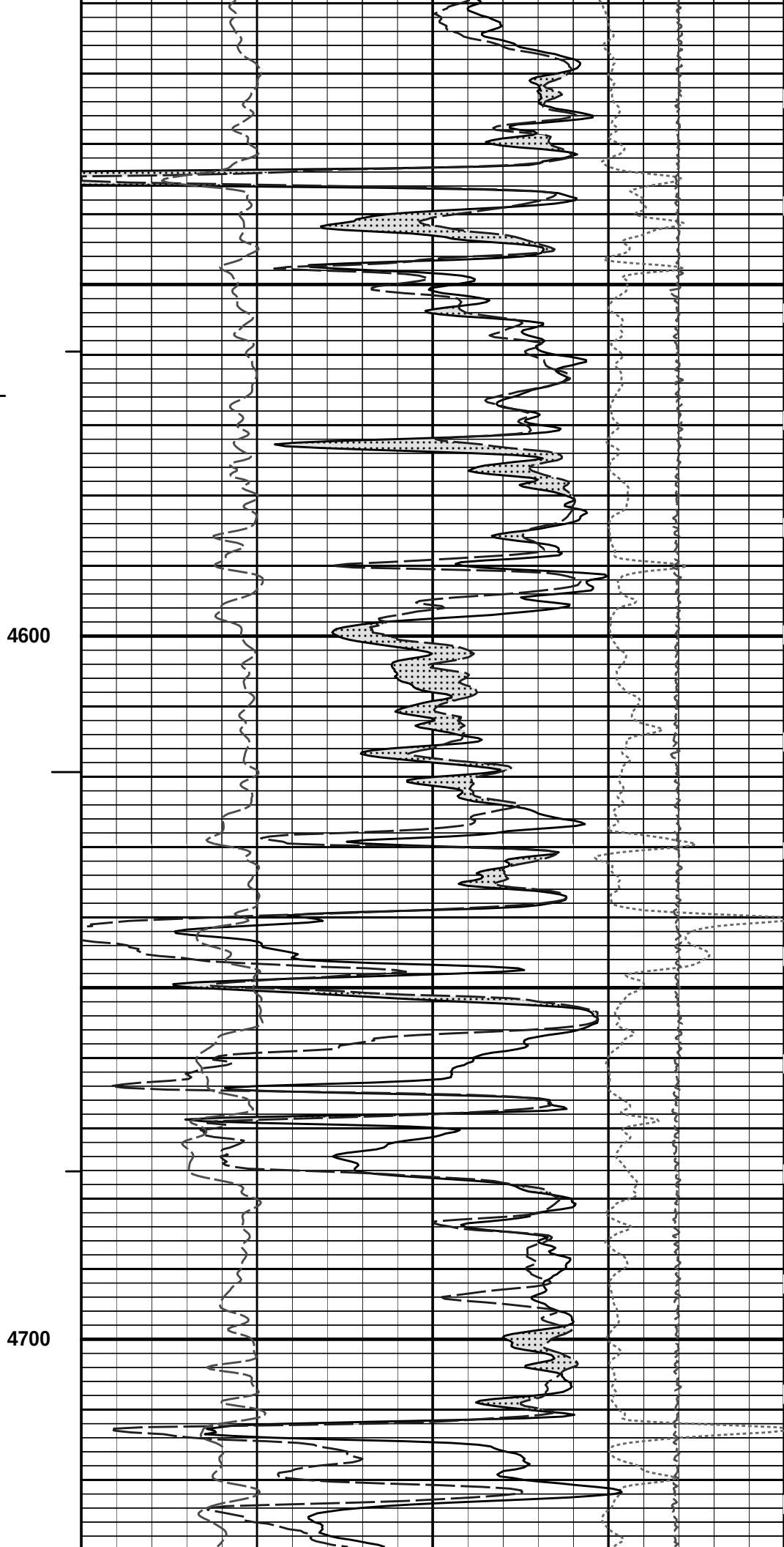
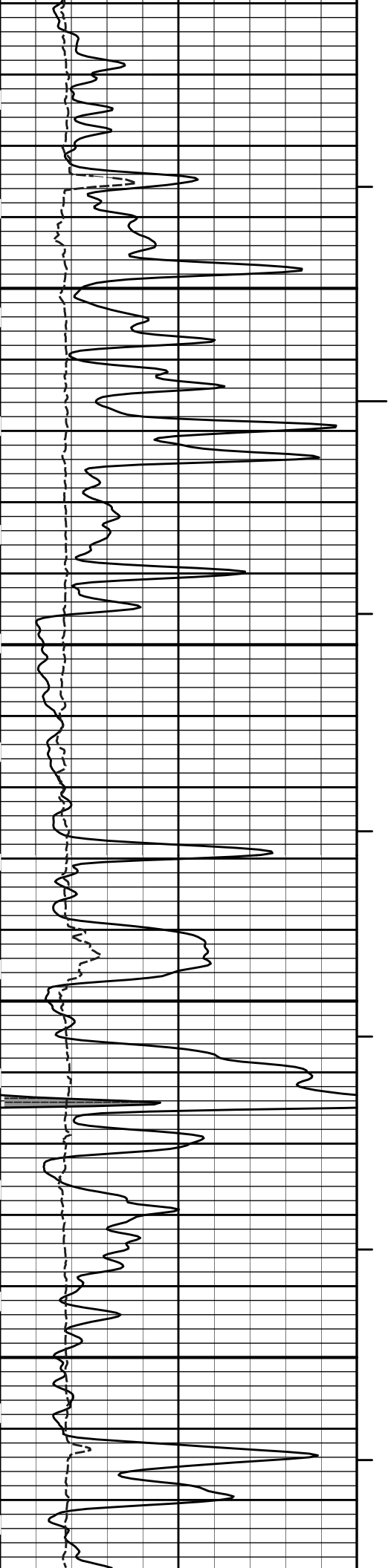


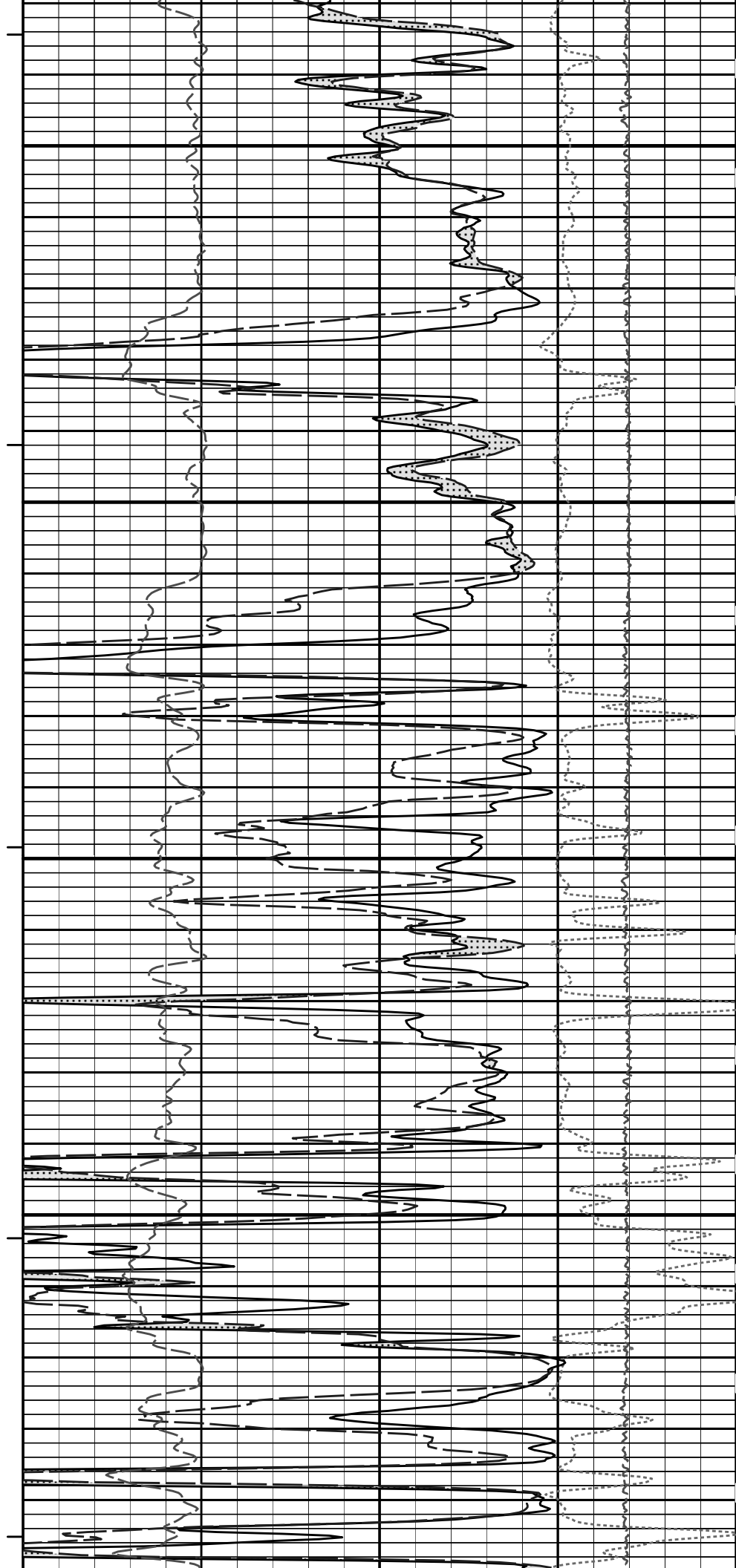
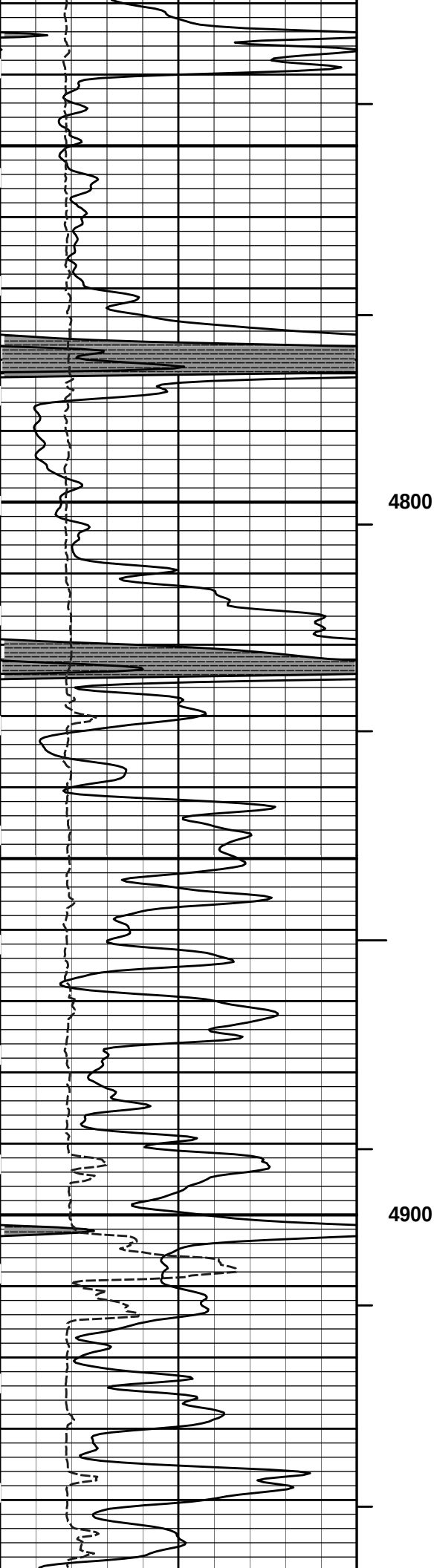
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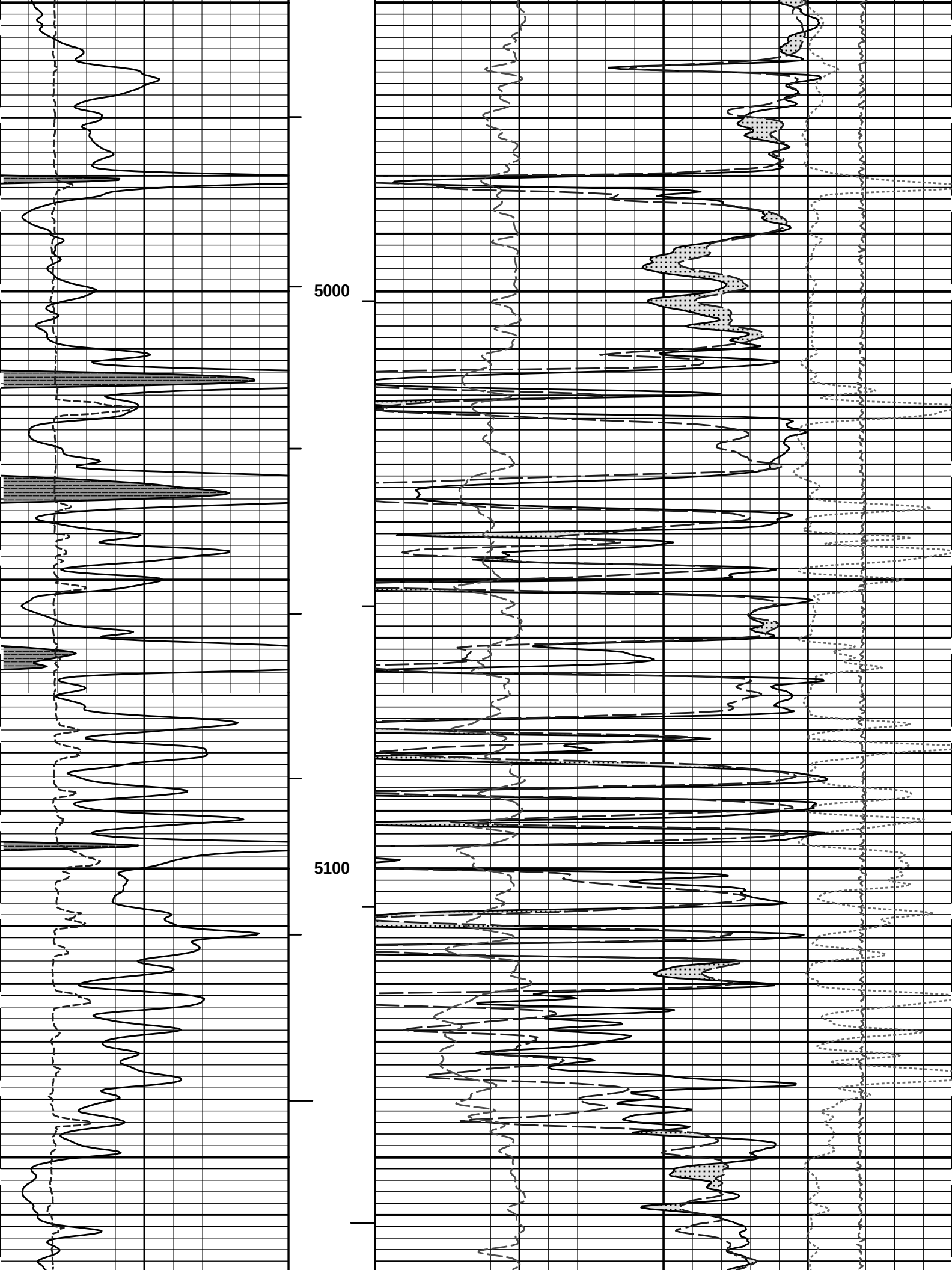
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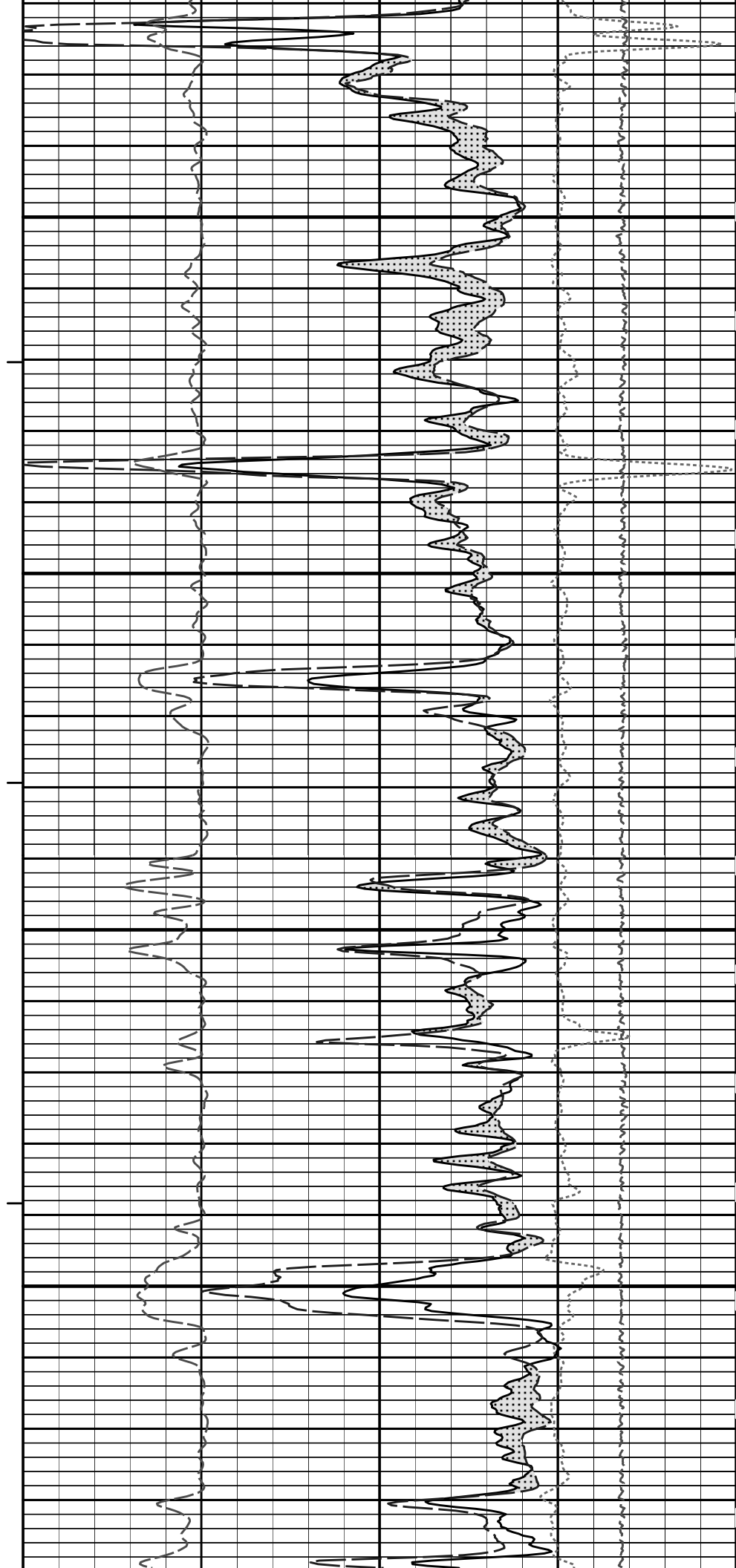
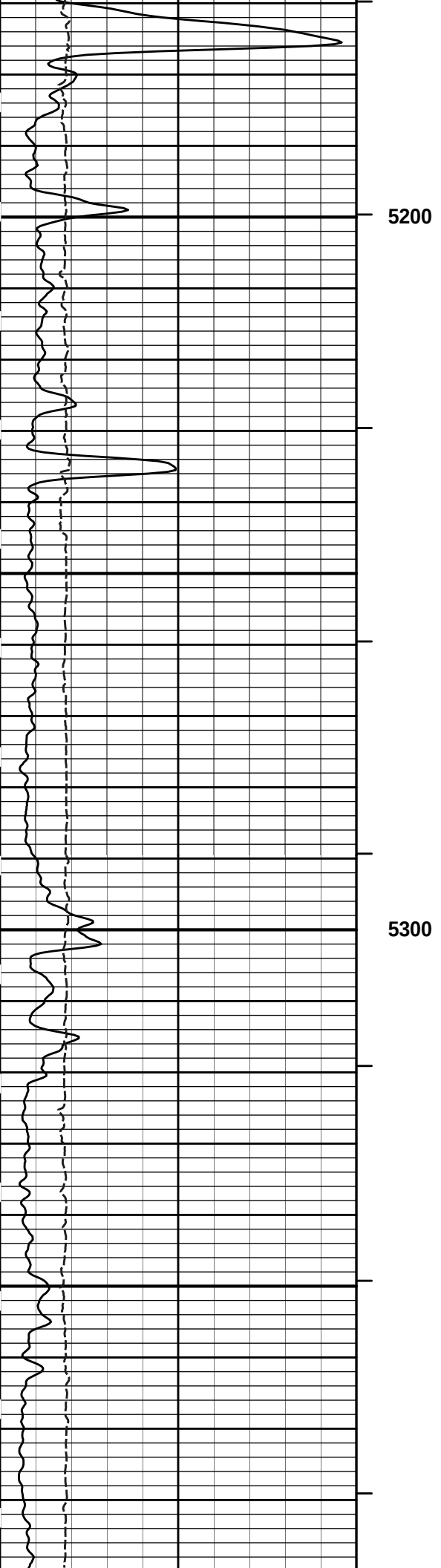


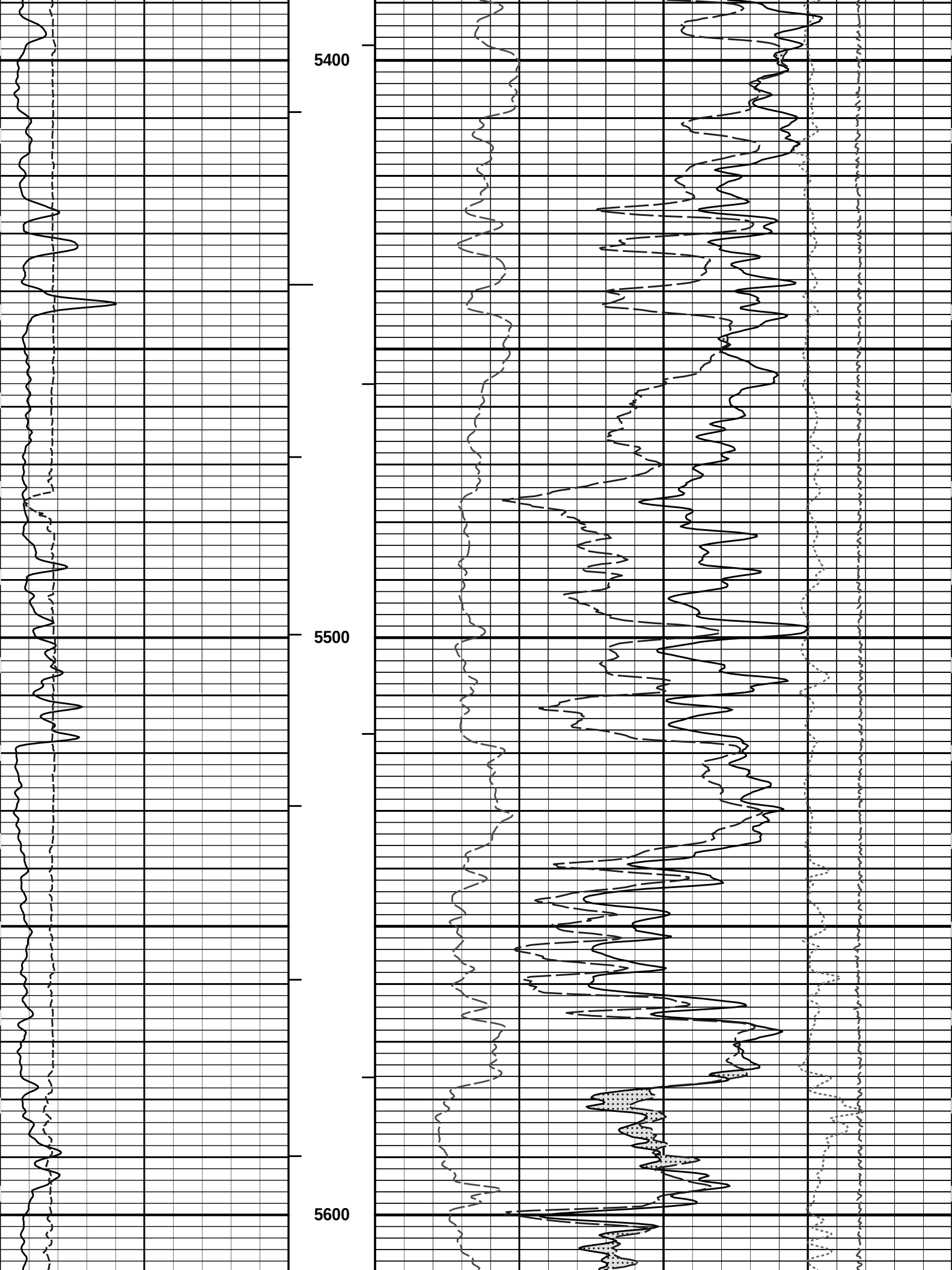


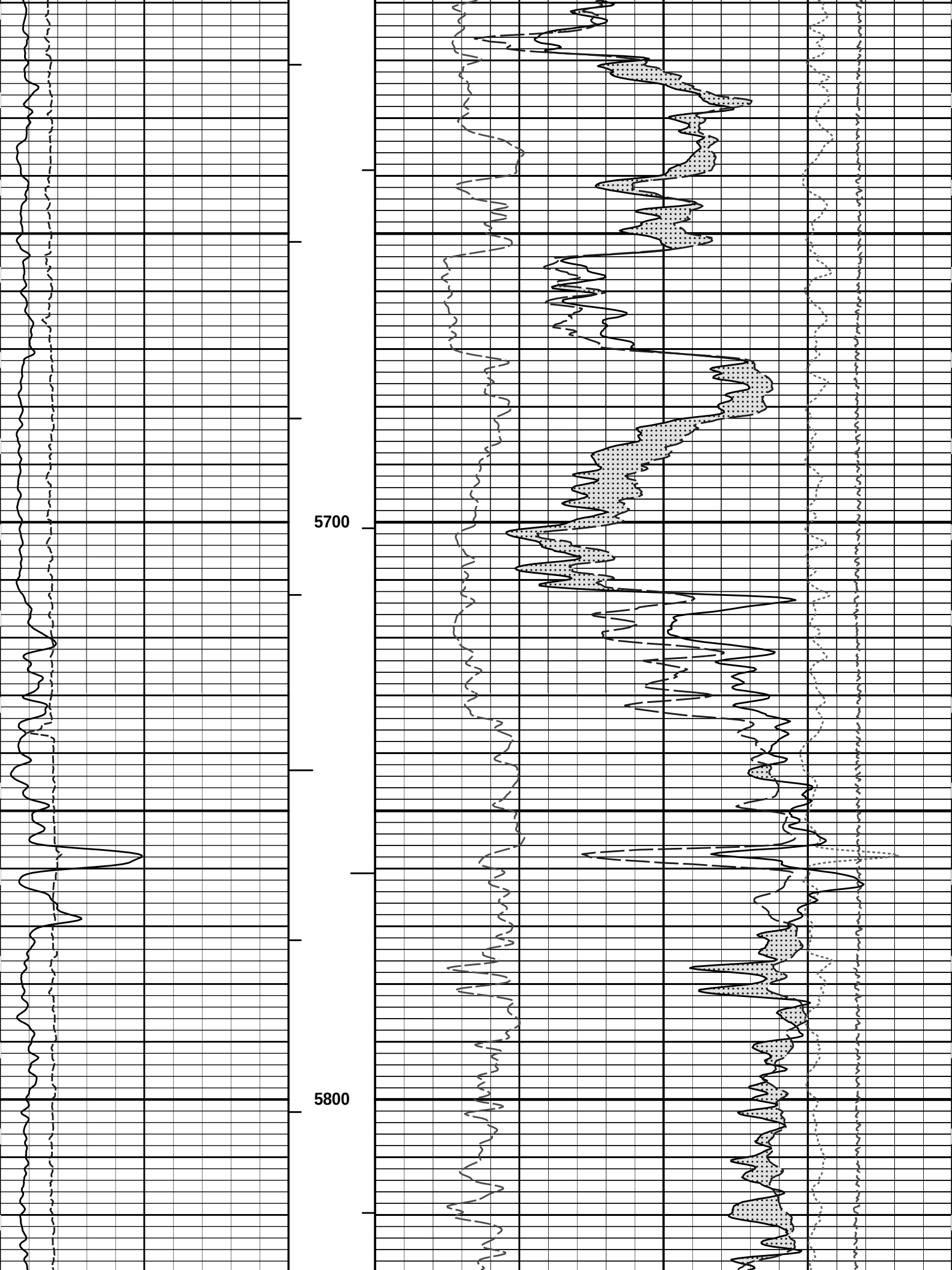


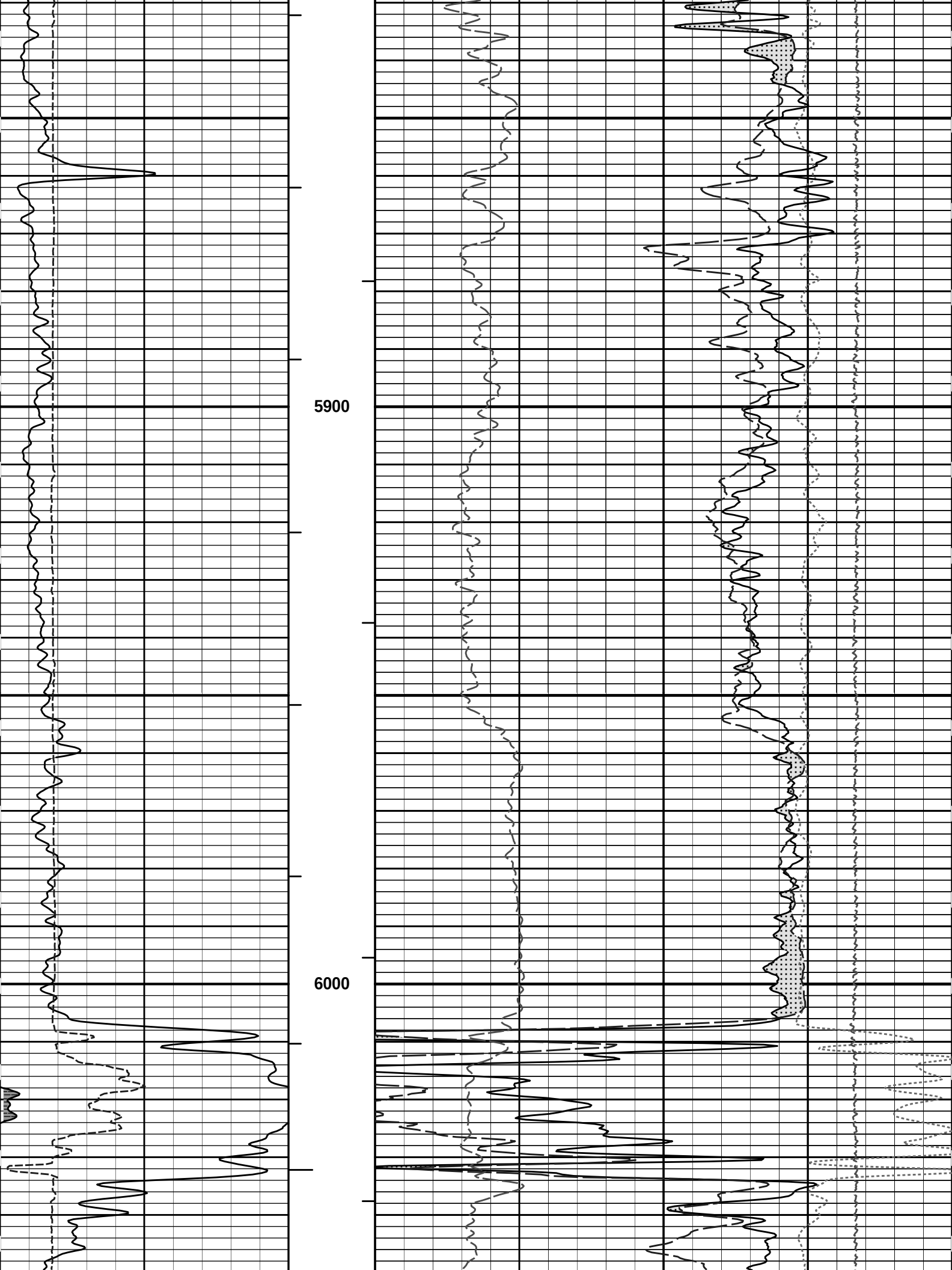


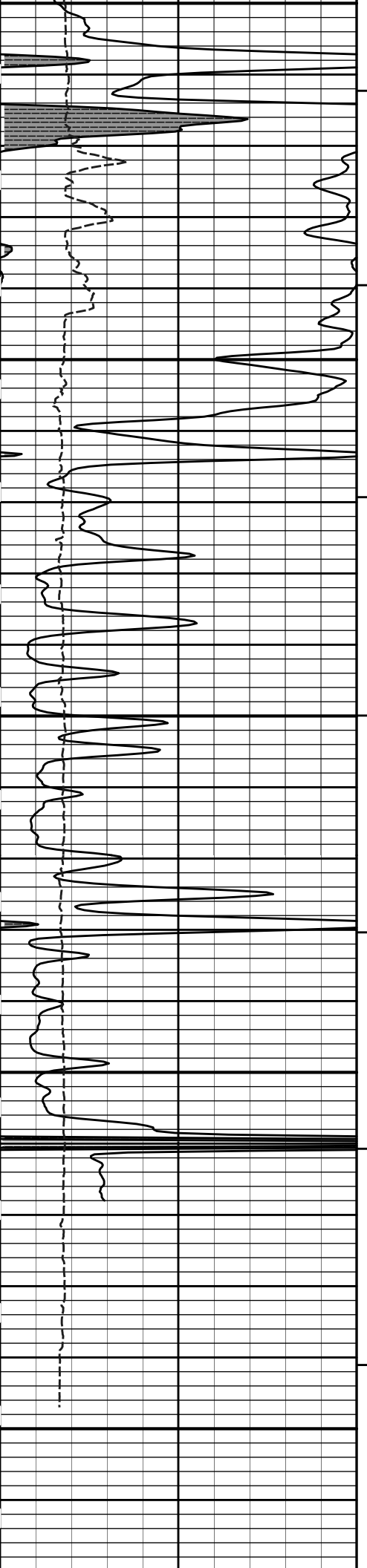






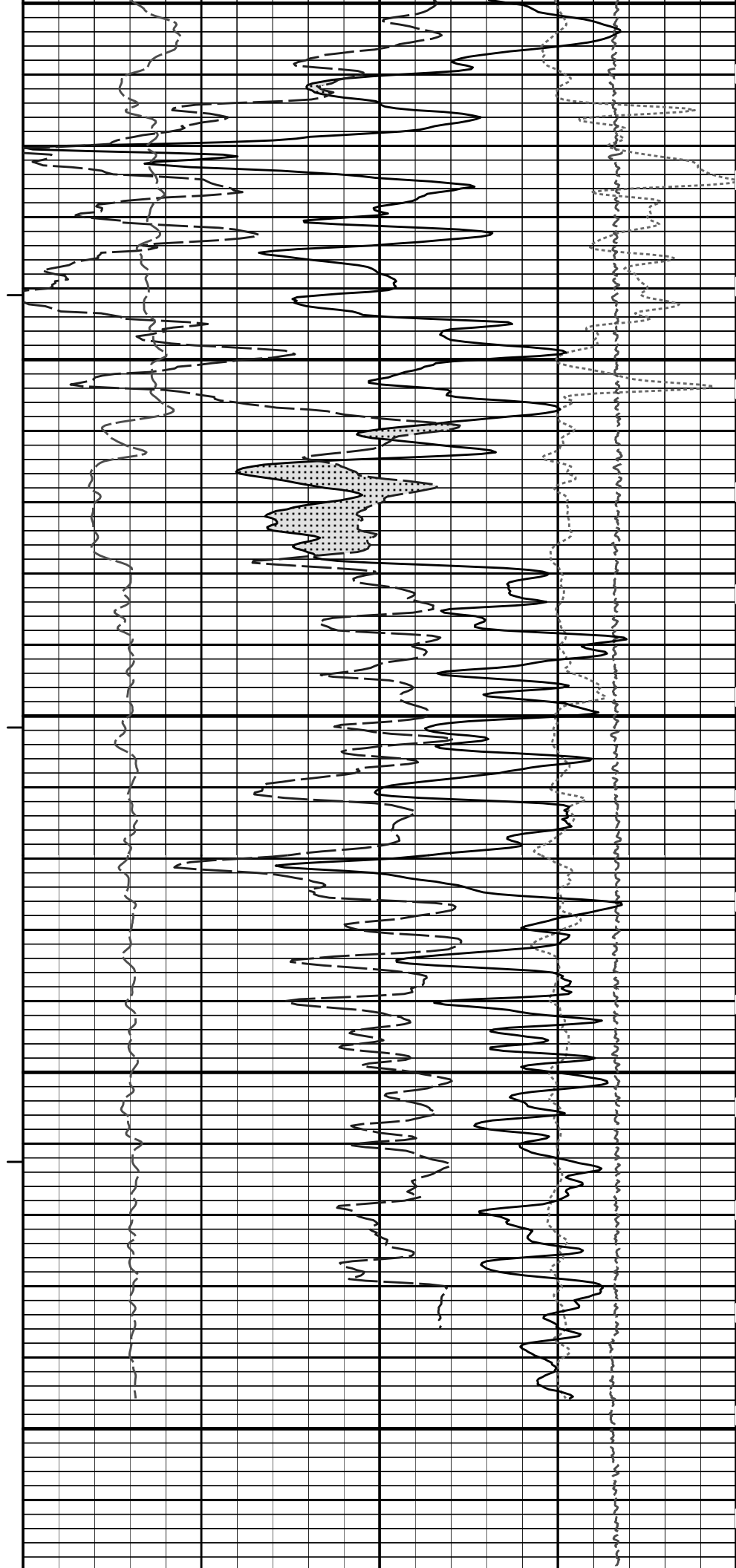






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6200

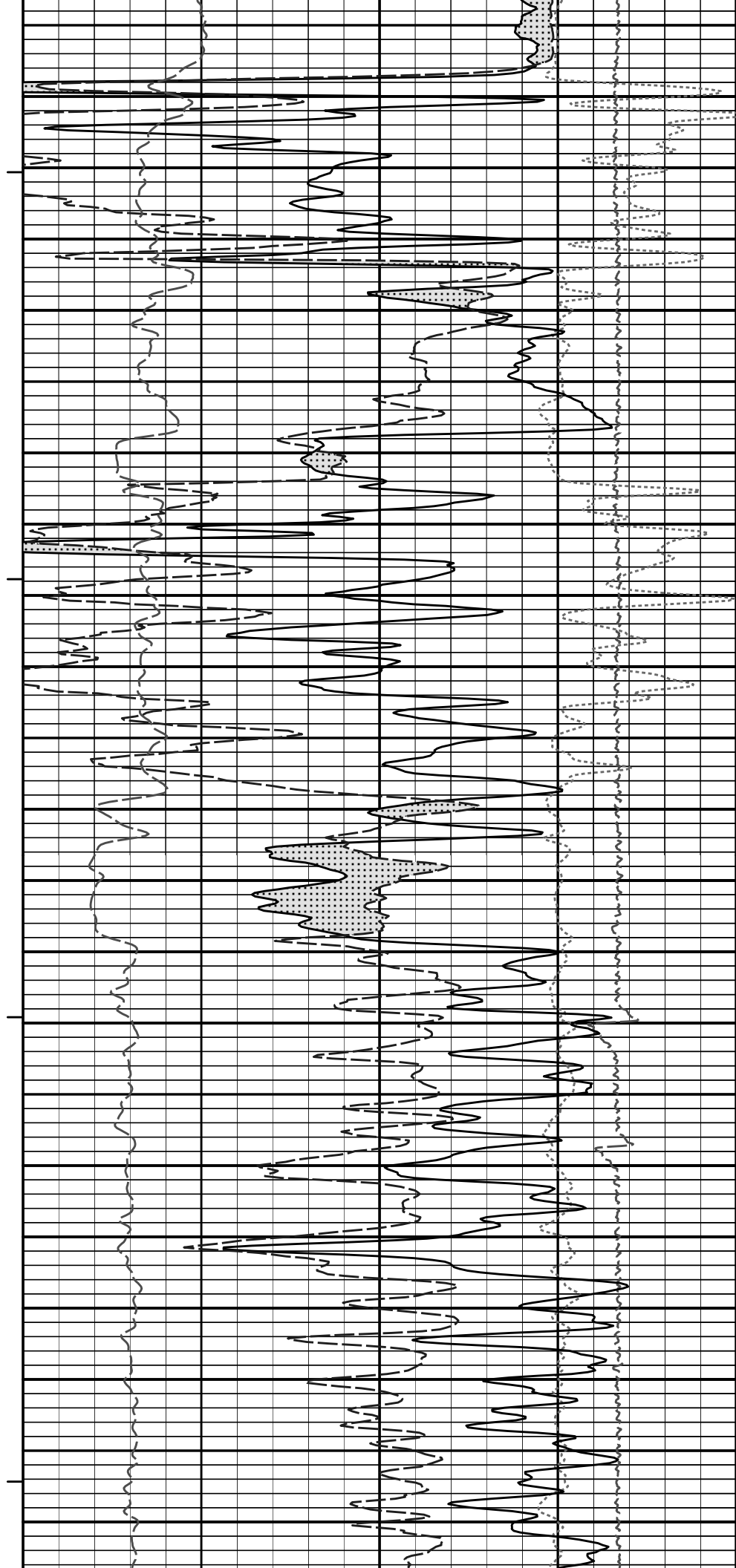
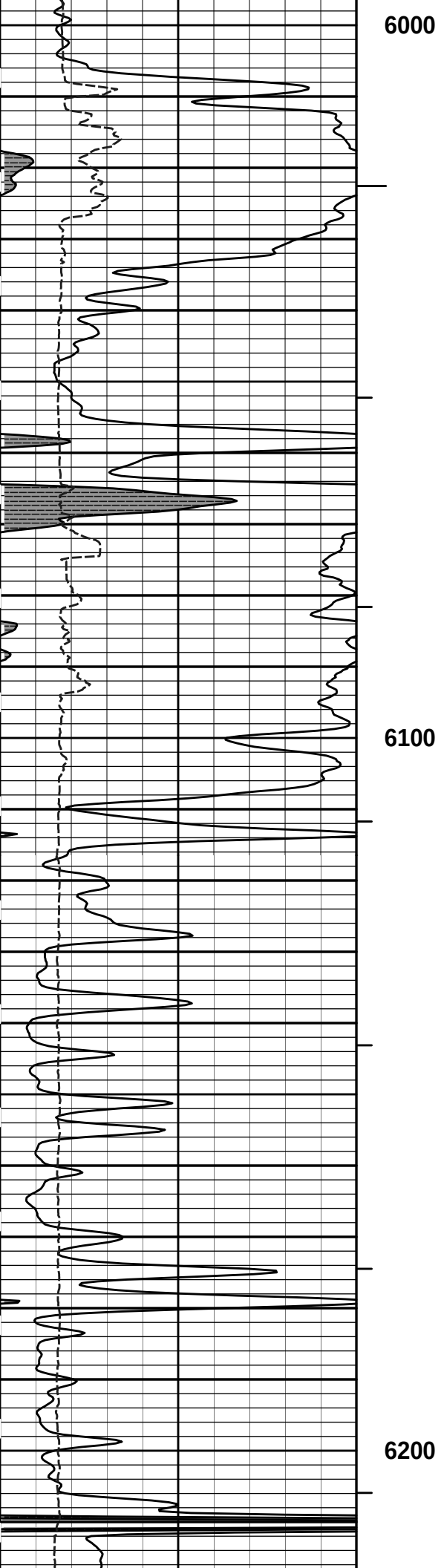


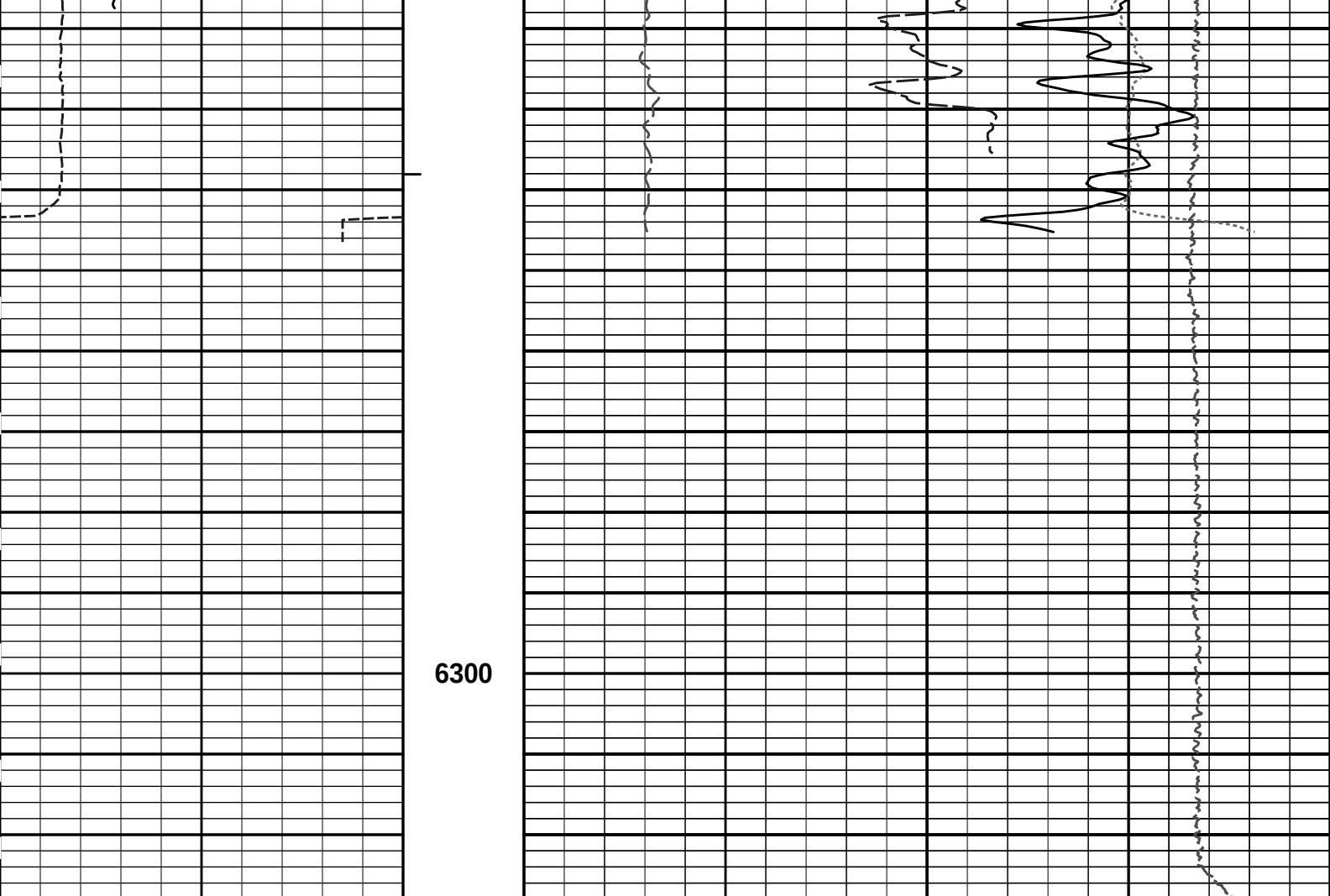
6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
	inches								gram per cc
0	Gamma API	150	AHVT				15K	Tension	0
	api								pounds
SHALE			BHVT	30	DensityPorosity				-10
								%	
				30	Neutron Porosity				-10
							%		
				CROSSOVER					

HALLIBURTON Plot Time: 16-Aug-13 11:21:34
Plot Range: 5995 ft to 6328.17 ft
Data: MILLY_3020_1-19\Well Based\R1 REPEAT\
Plot File: \\POROSITY\Poro_IQ_5_REP_LIB

REPEAT SECTION

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





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

HALLIBURTON

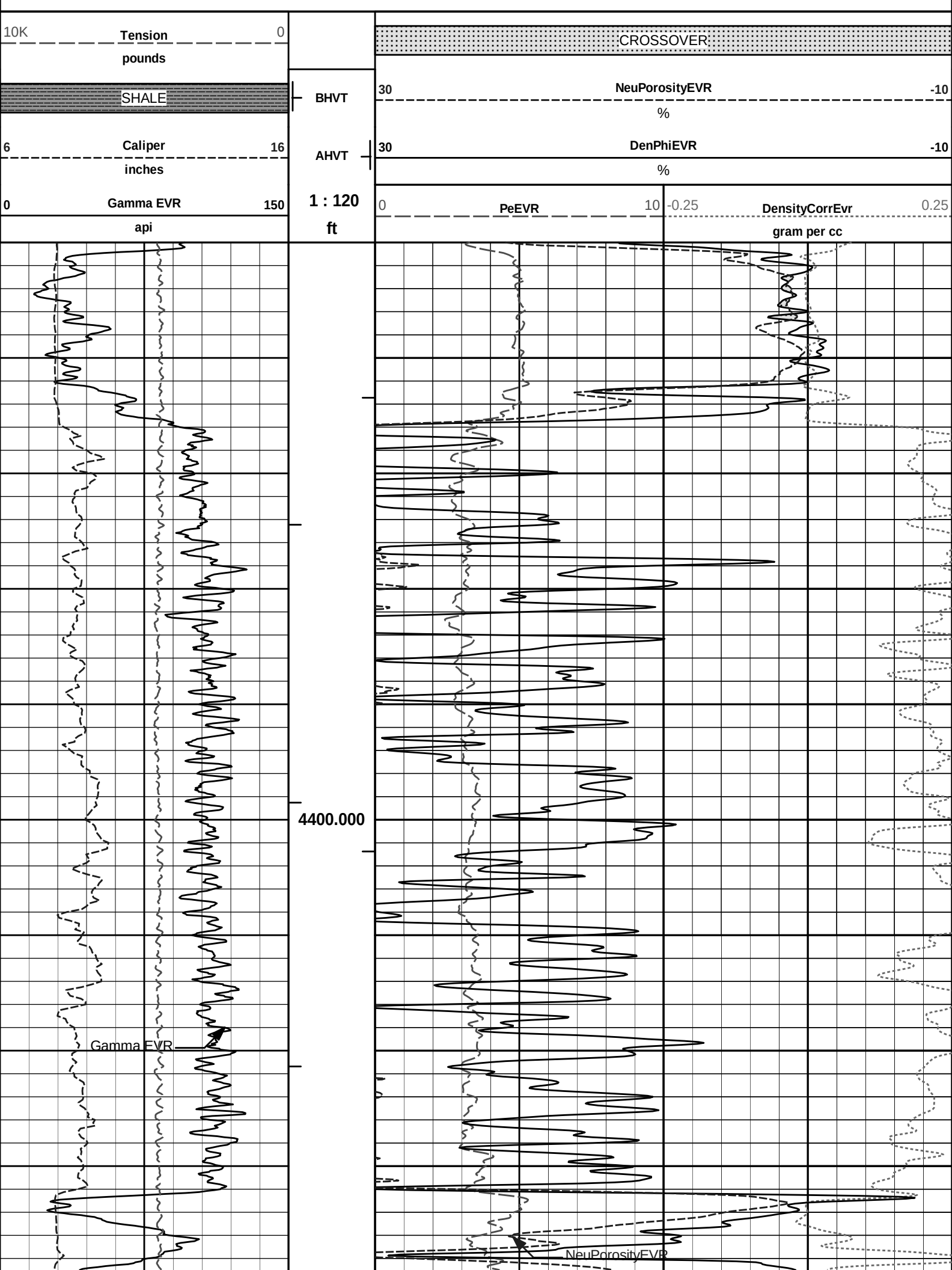
Plot Time: 16-Aug-13 11:21:54
Plot Range: 5995 ft to 6328.17 ft
Data: MILLY_3020_1-19\Well Based\IR1 REPEAT\
Plot File: \\POROSITY\IPoro_IQ_5_REP_LIB

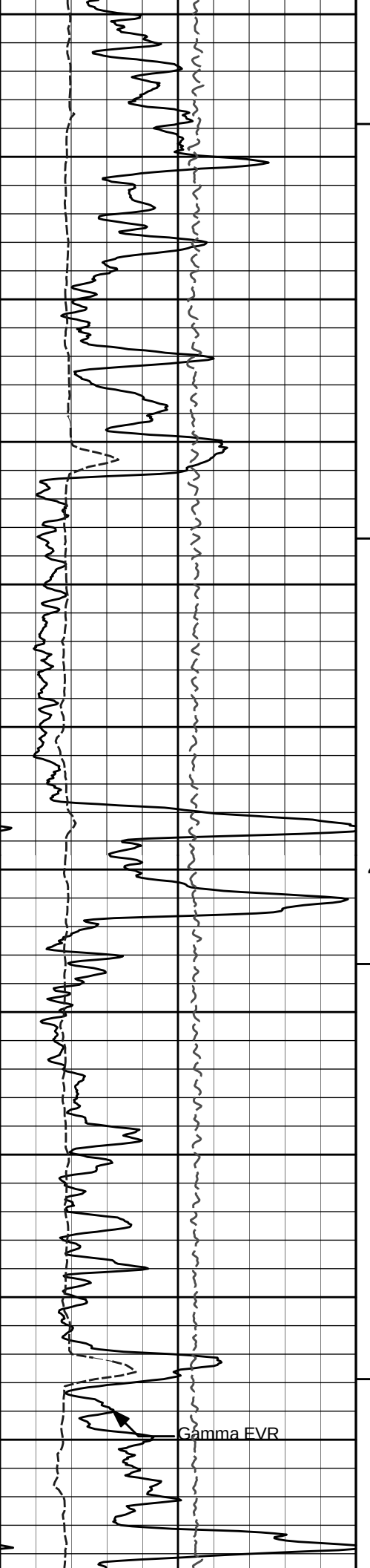
REPEAT SECTION

HALLIBURTON

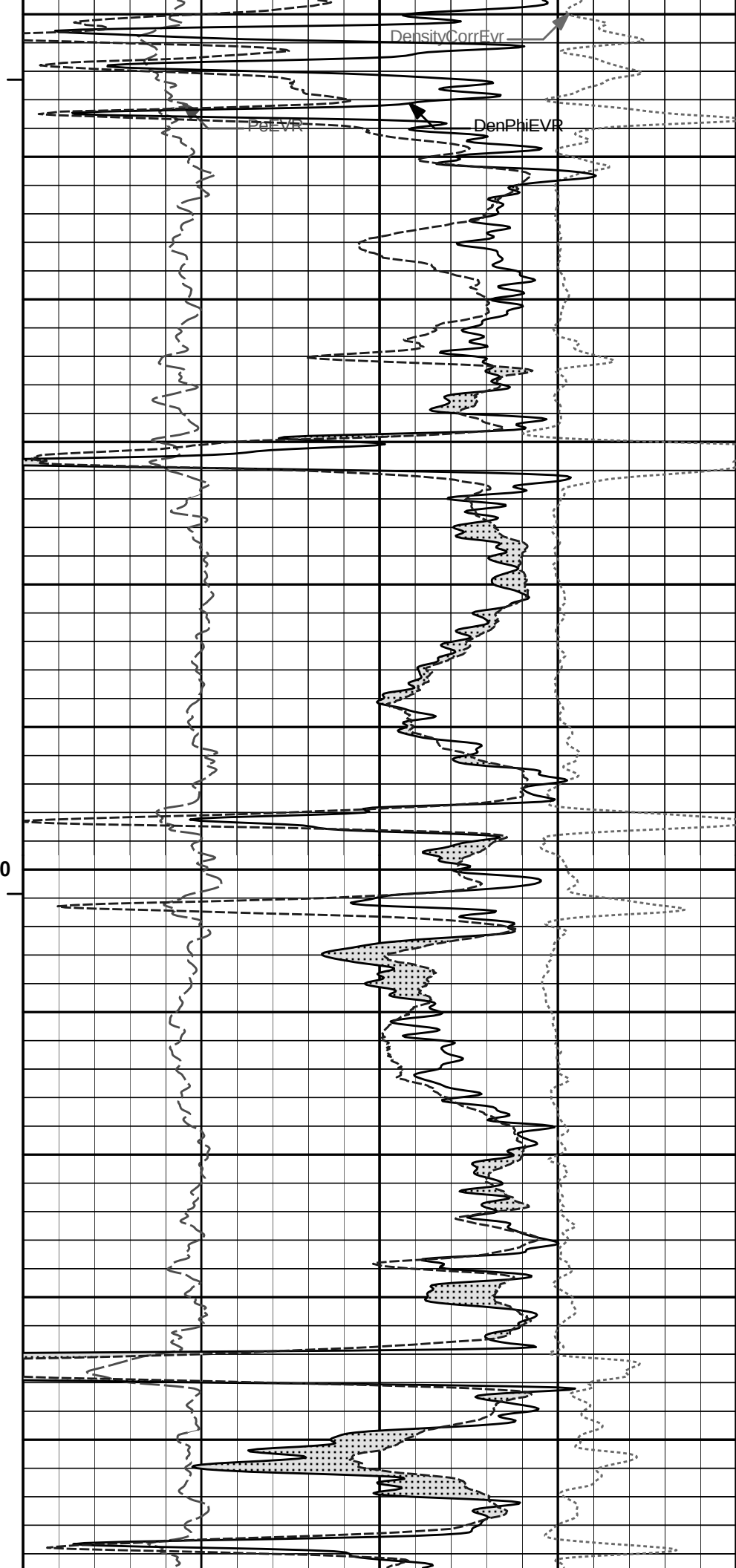
Plot Time: 16-Aug-13 11:21:54
Plot Range: 4350 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\IR1 EVR\
Plot File: \\POROSITY\IPoro_IQ_EVR_LIB

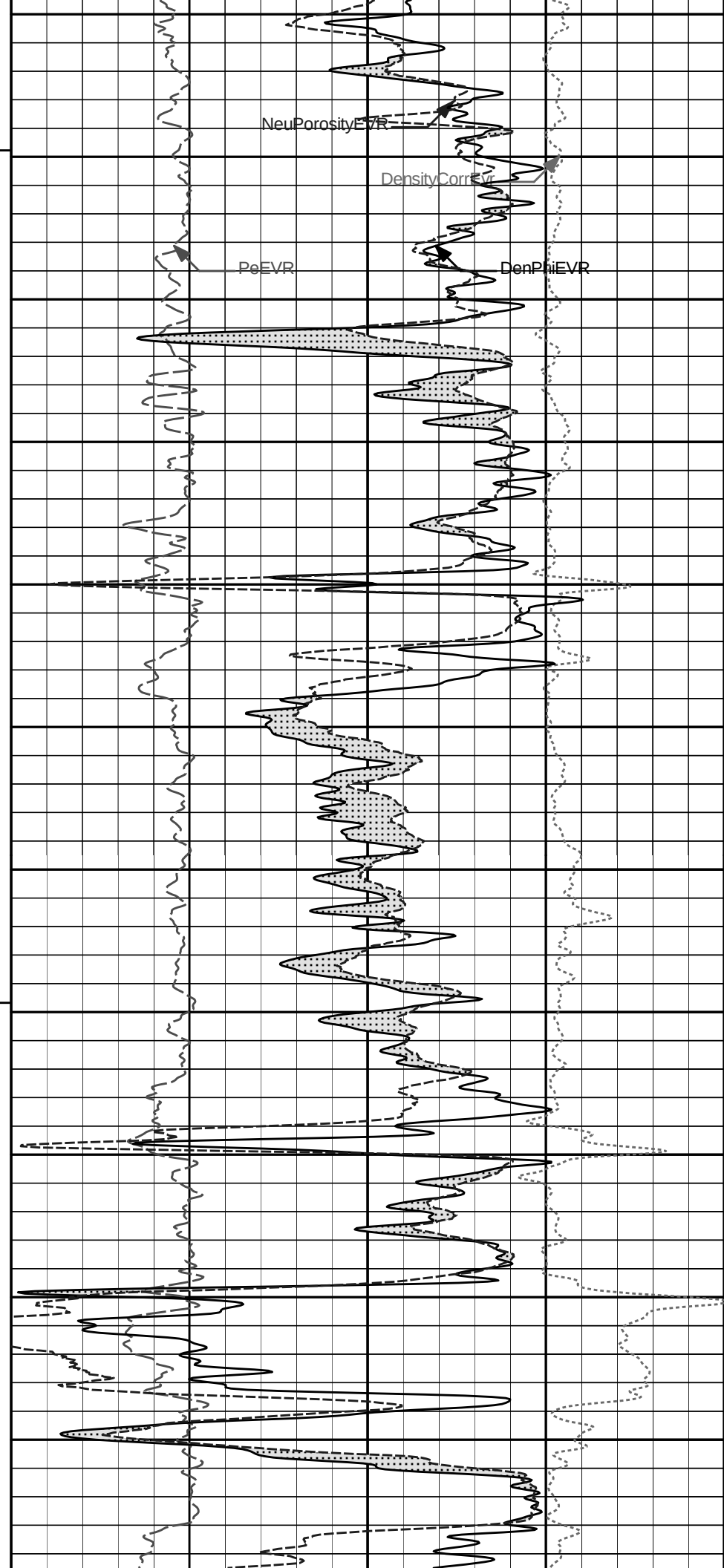
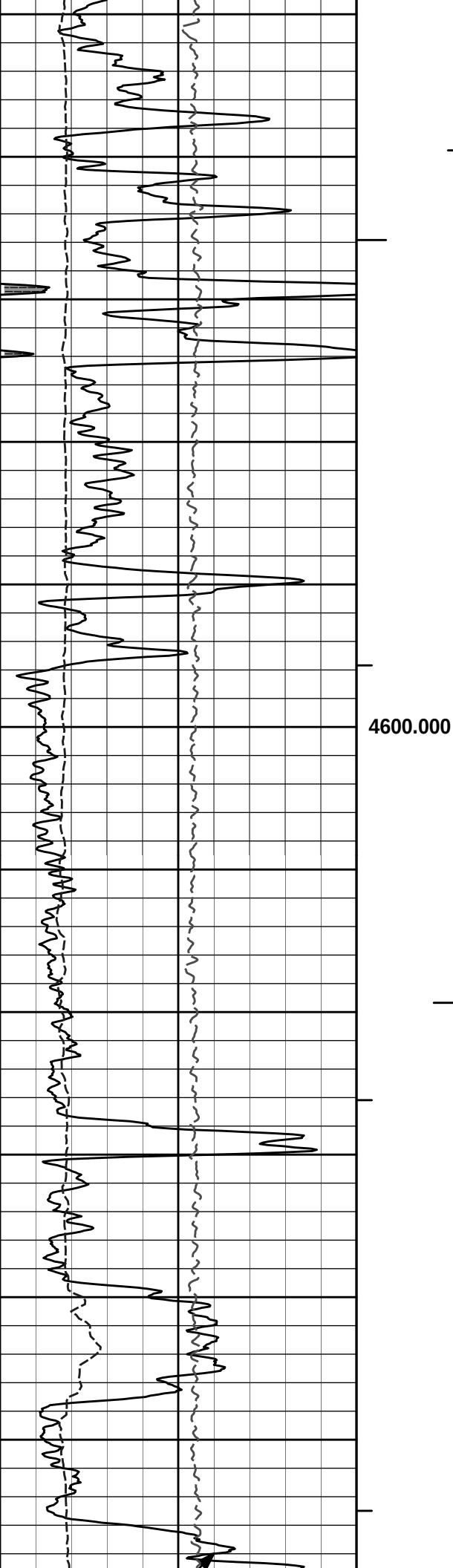
MAIN PASS 10" = 100'

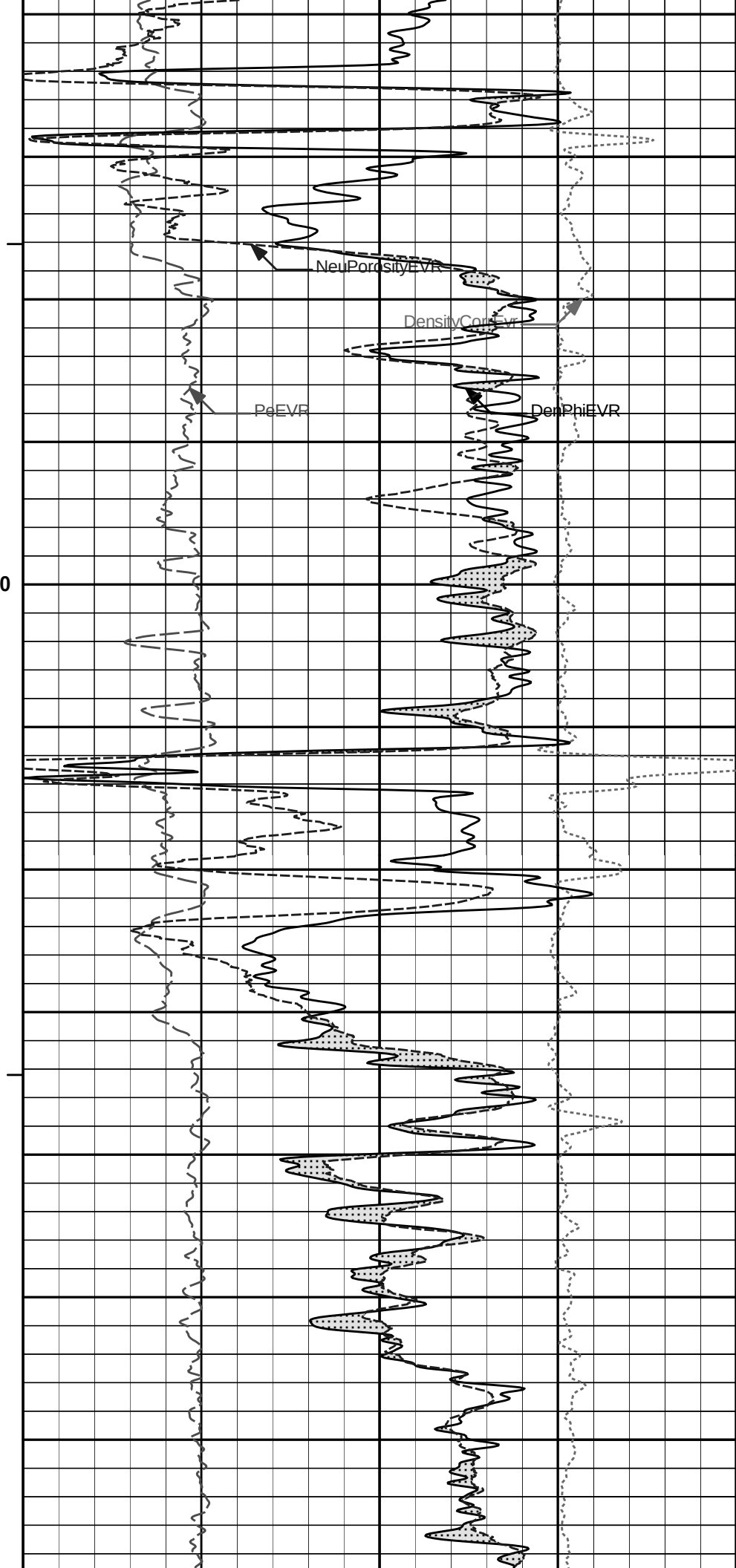
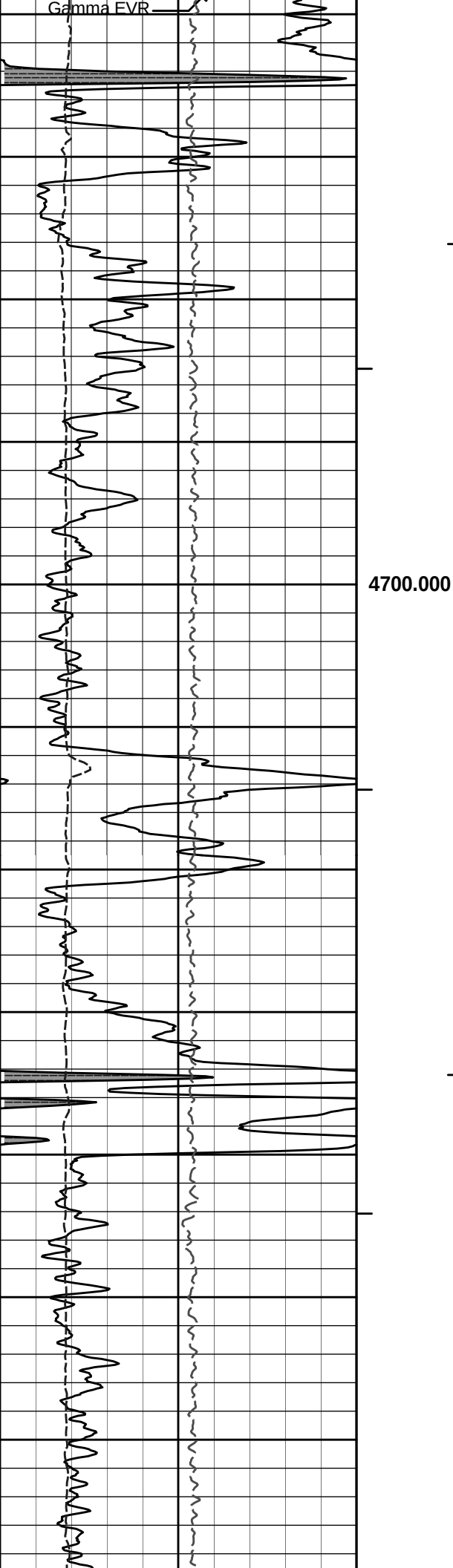


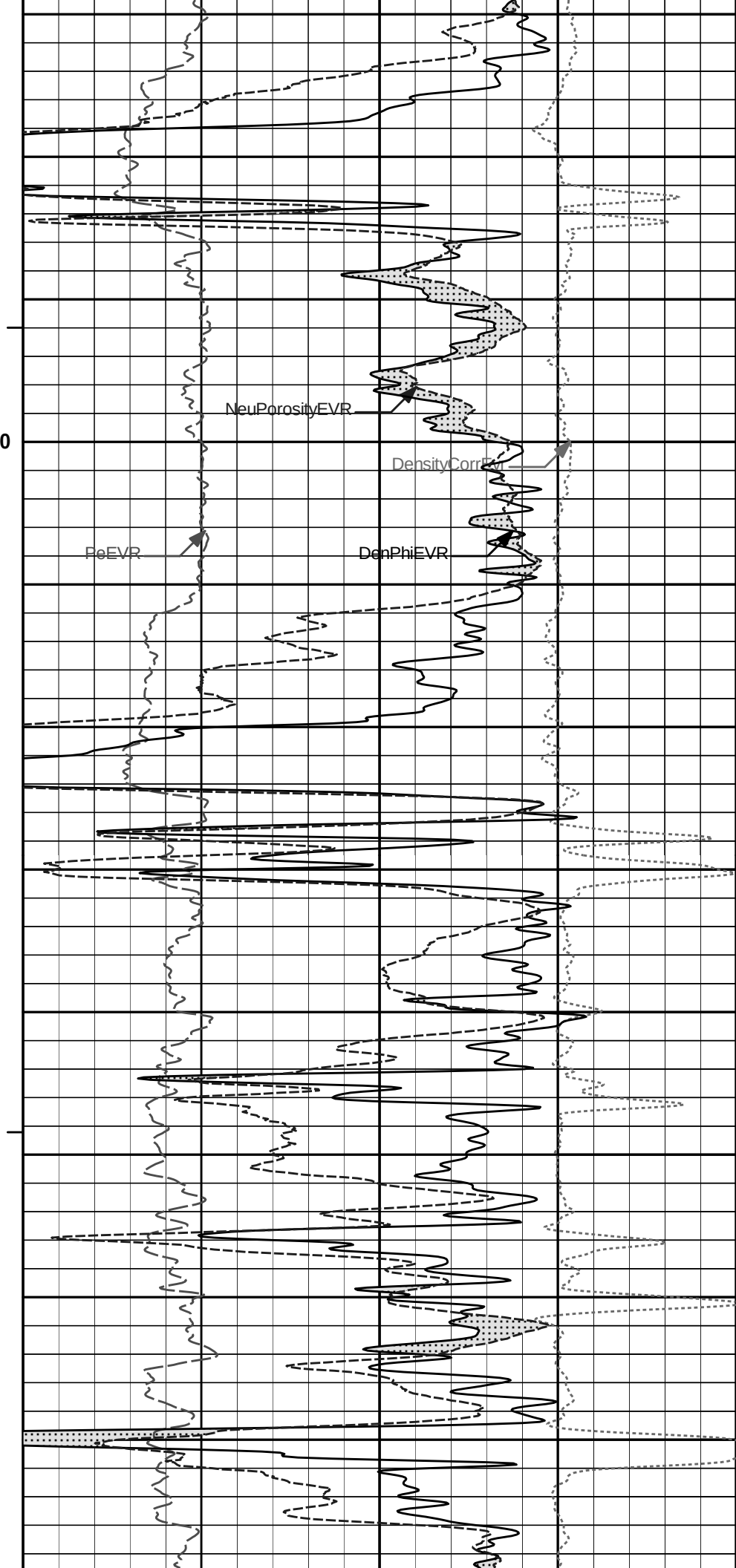
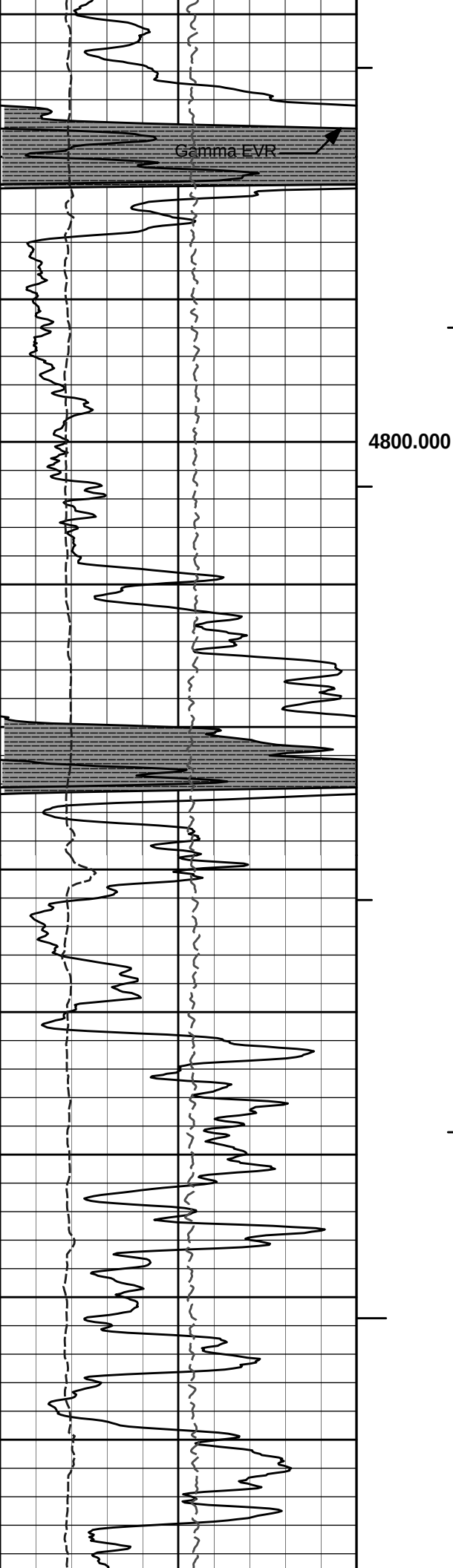


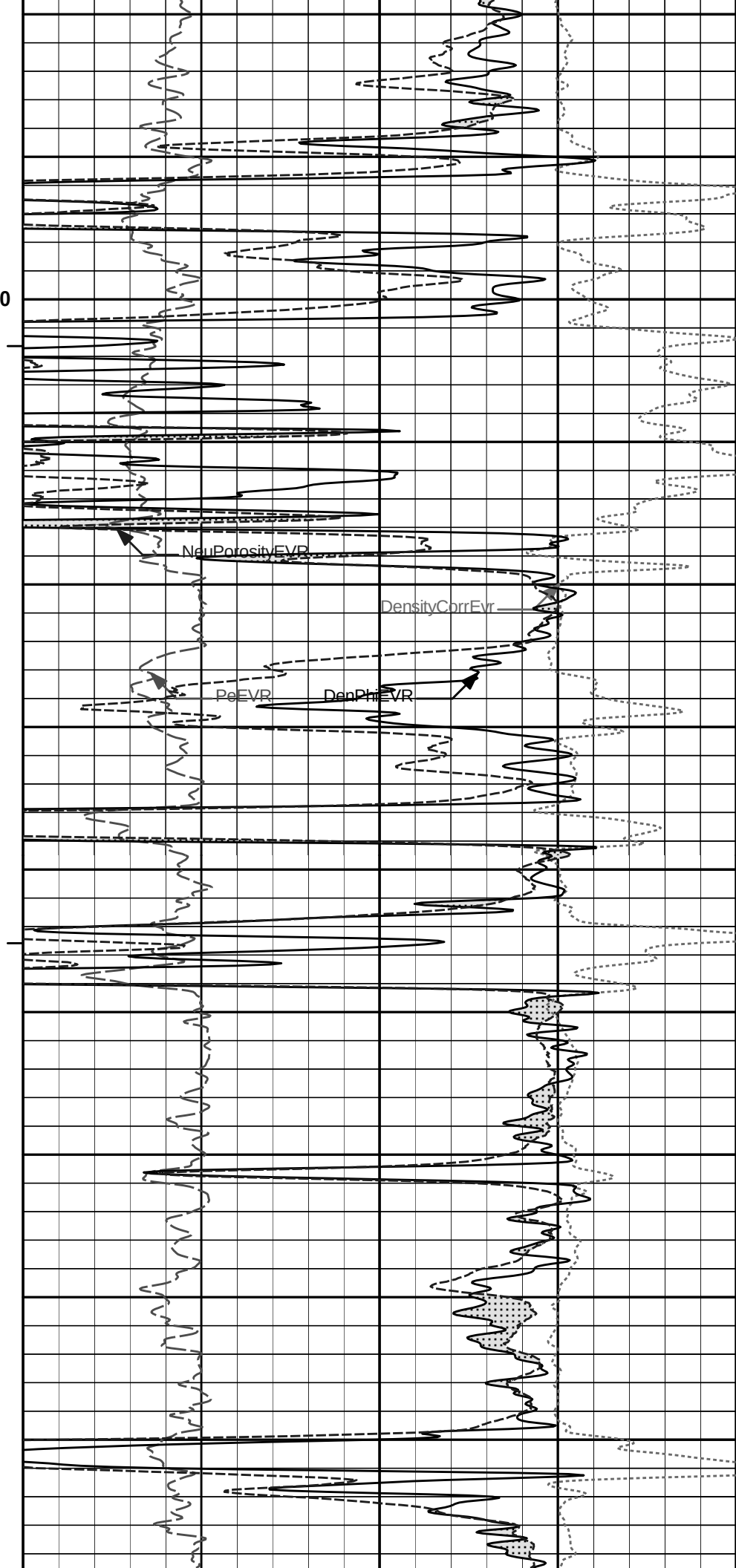
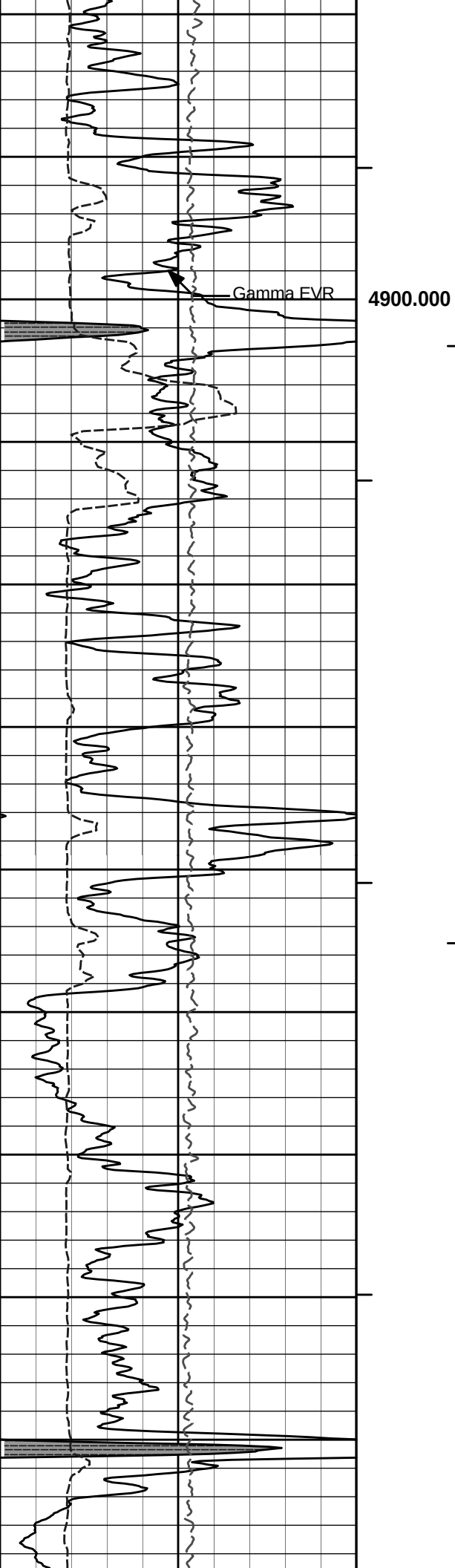
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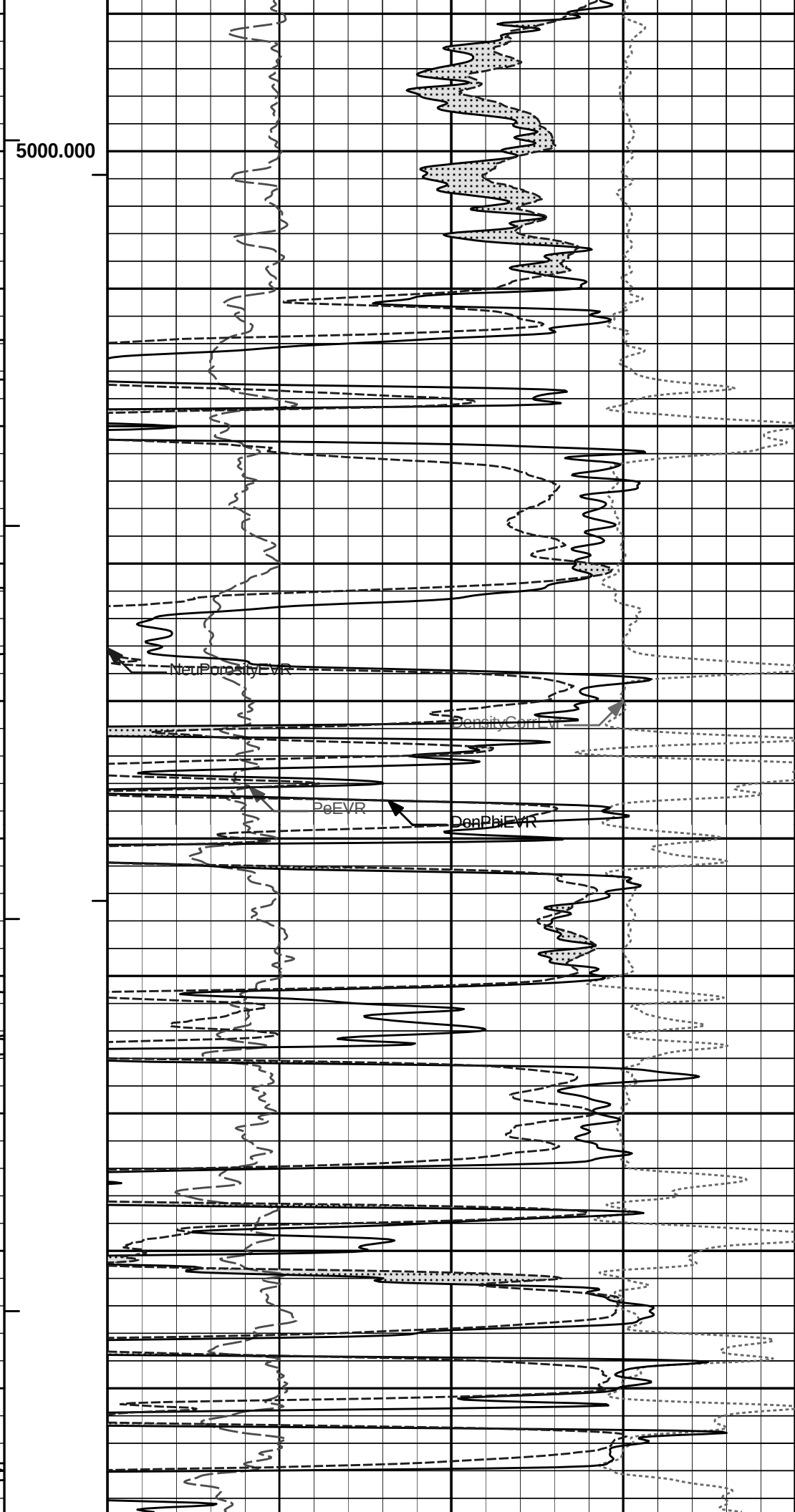
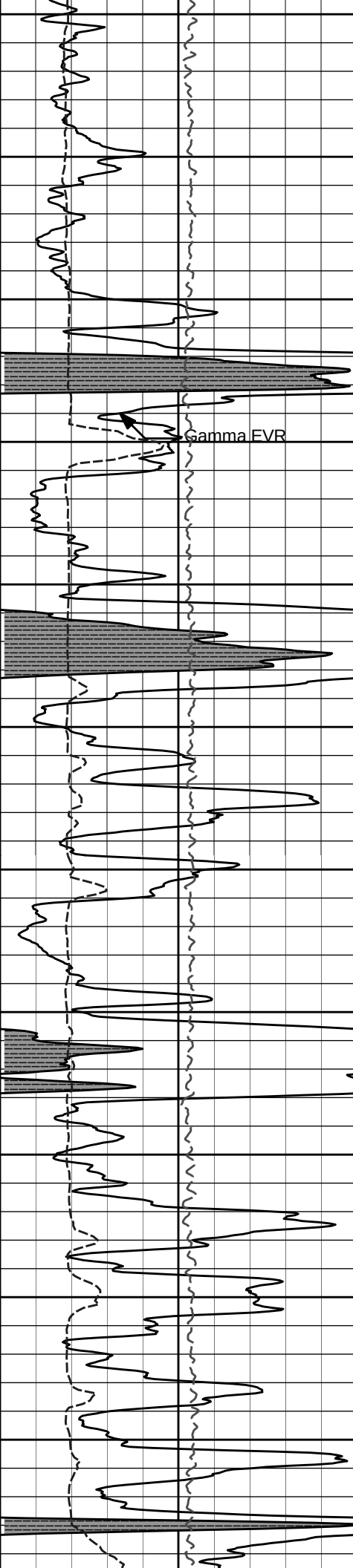


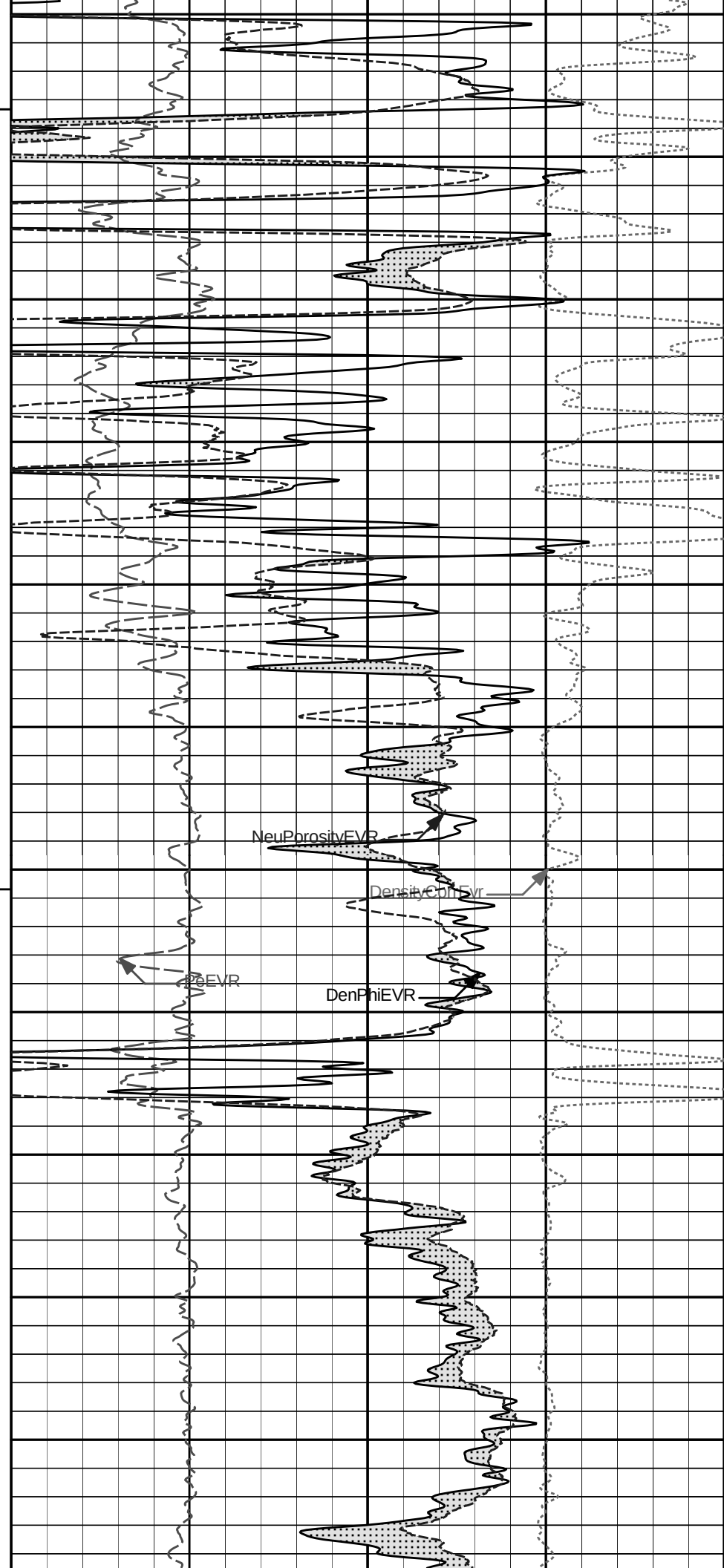
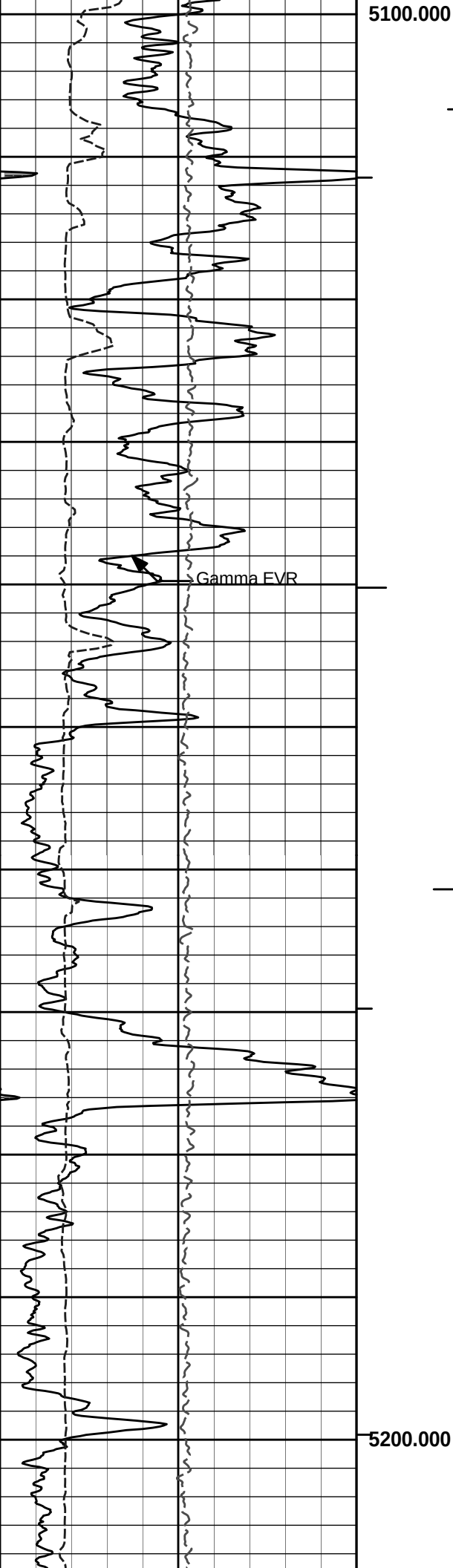


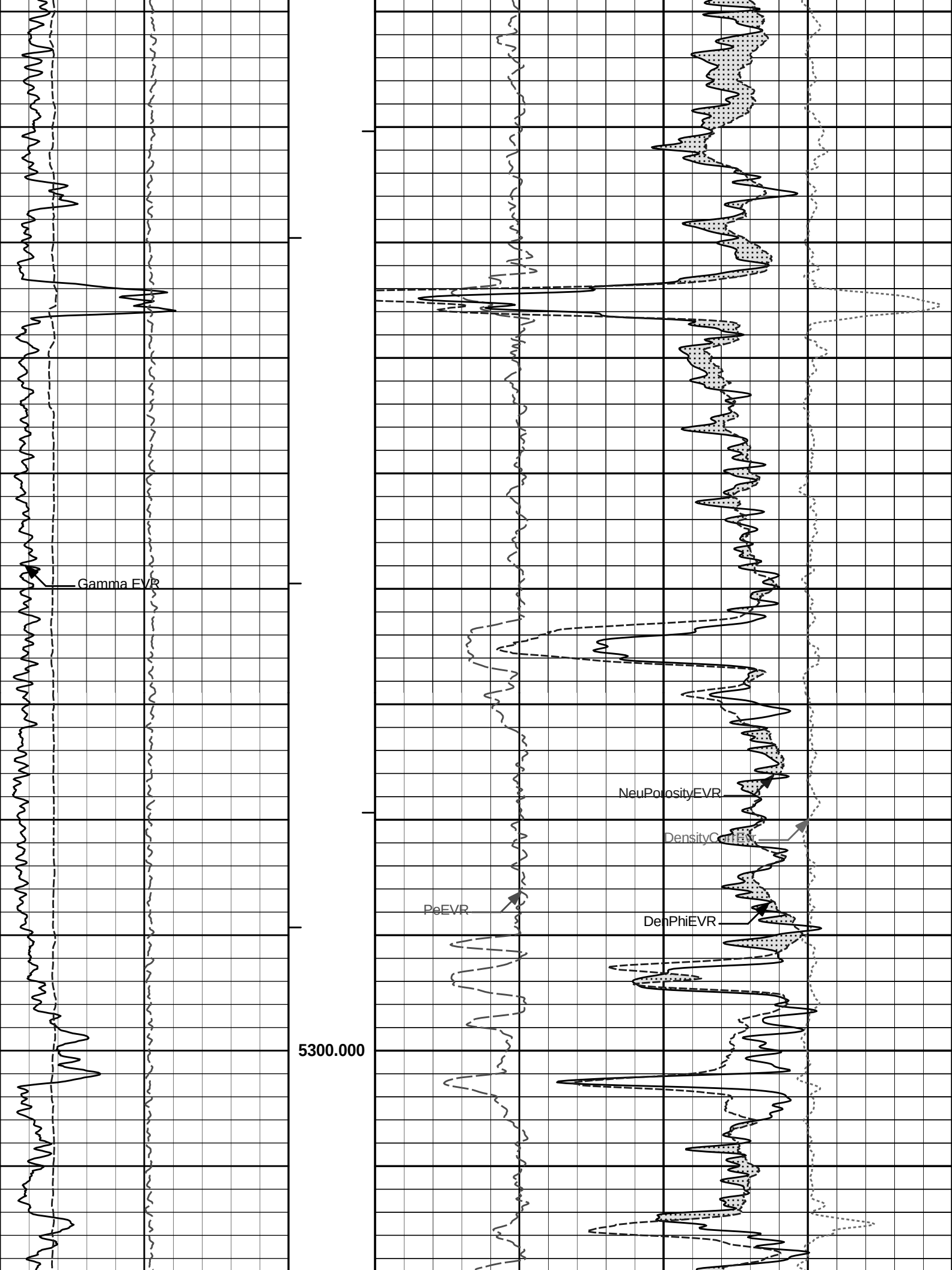


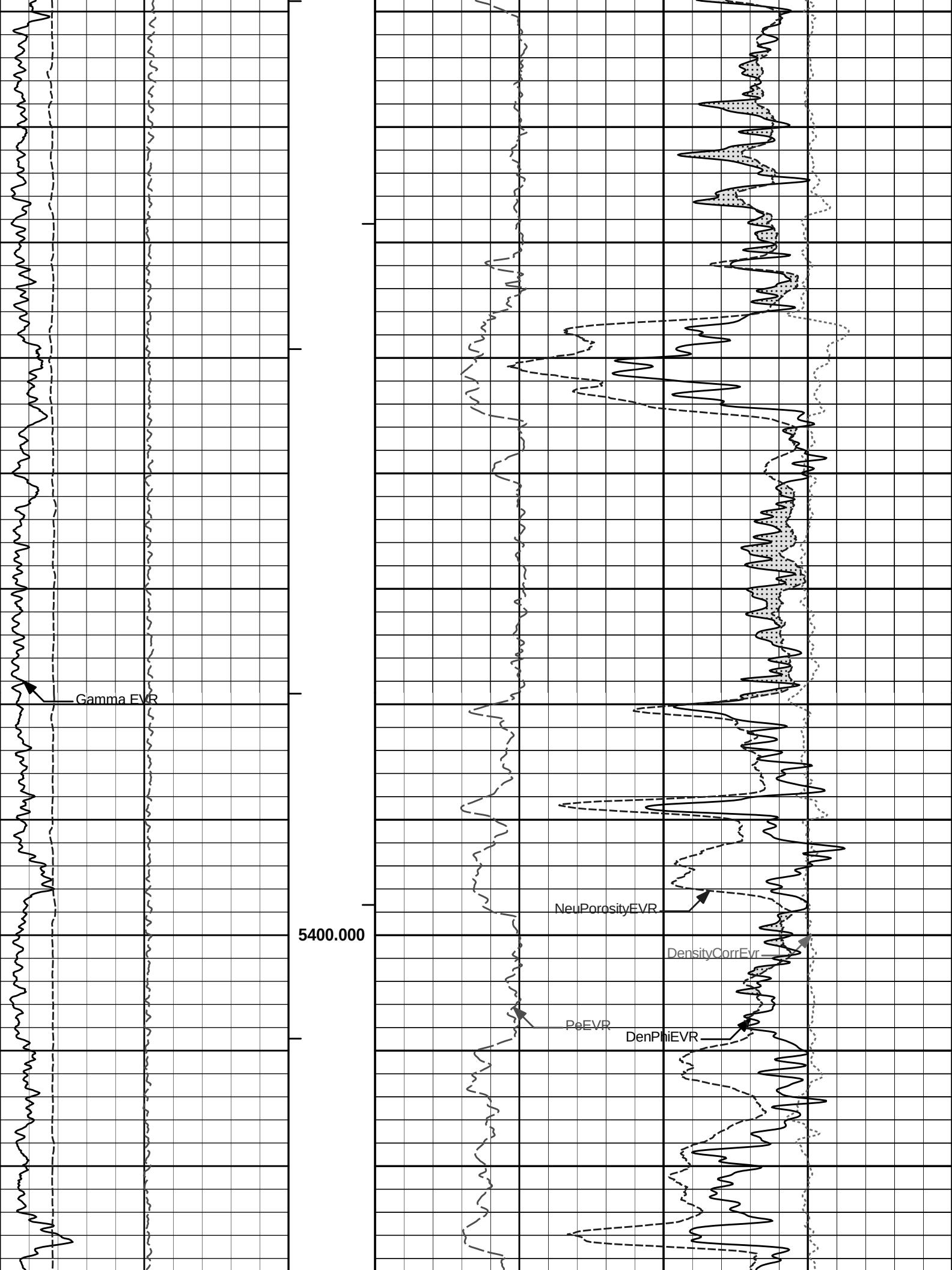


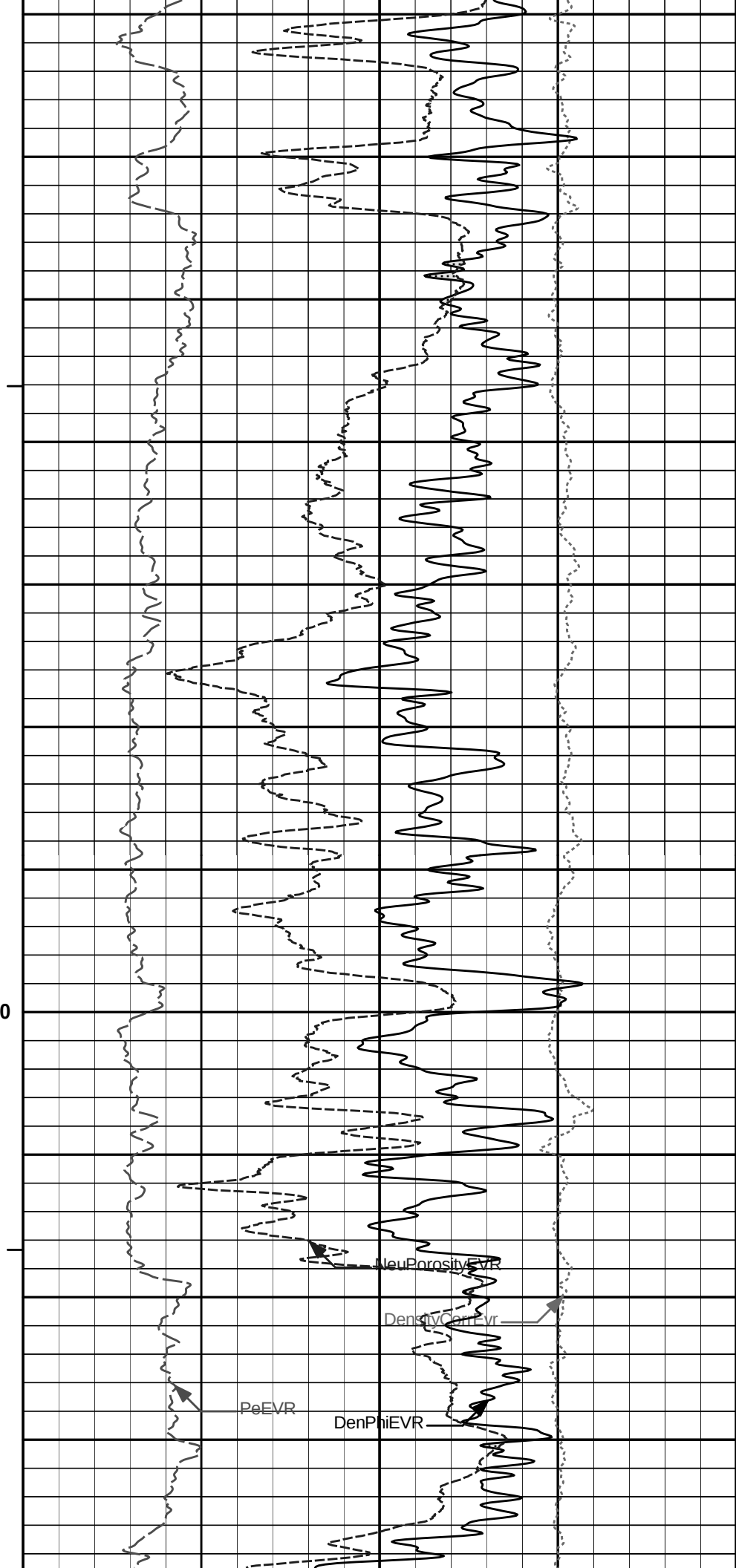
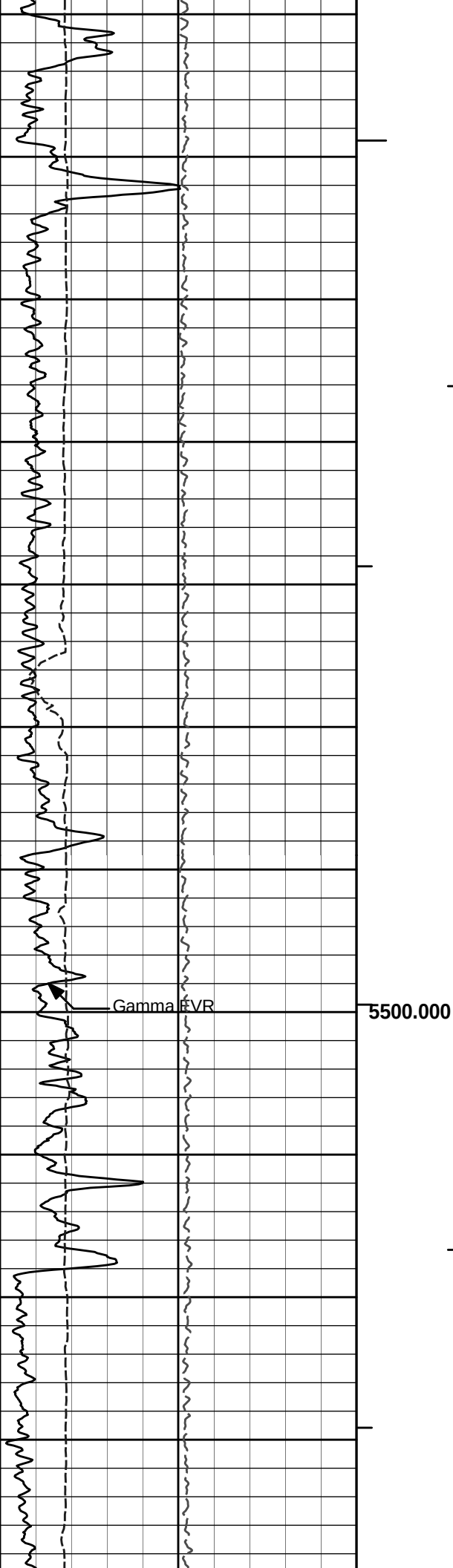


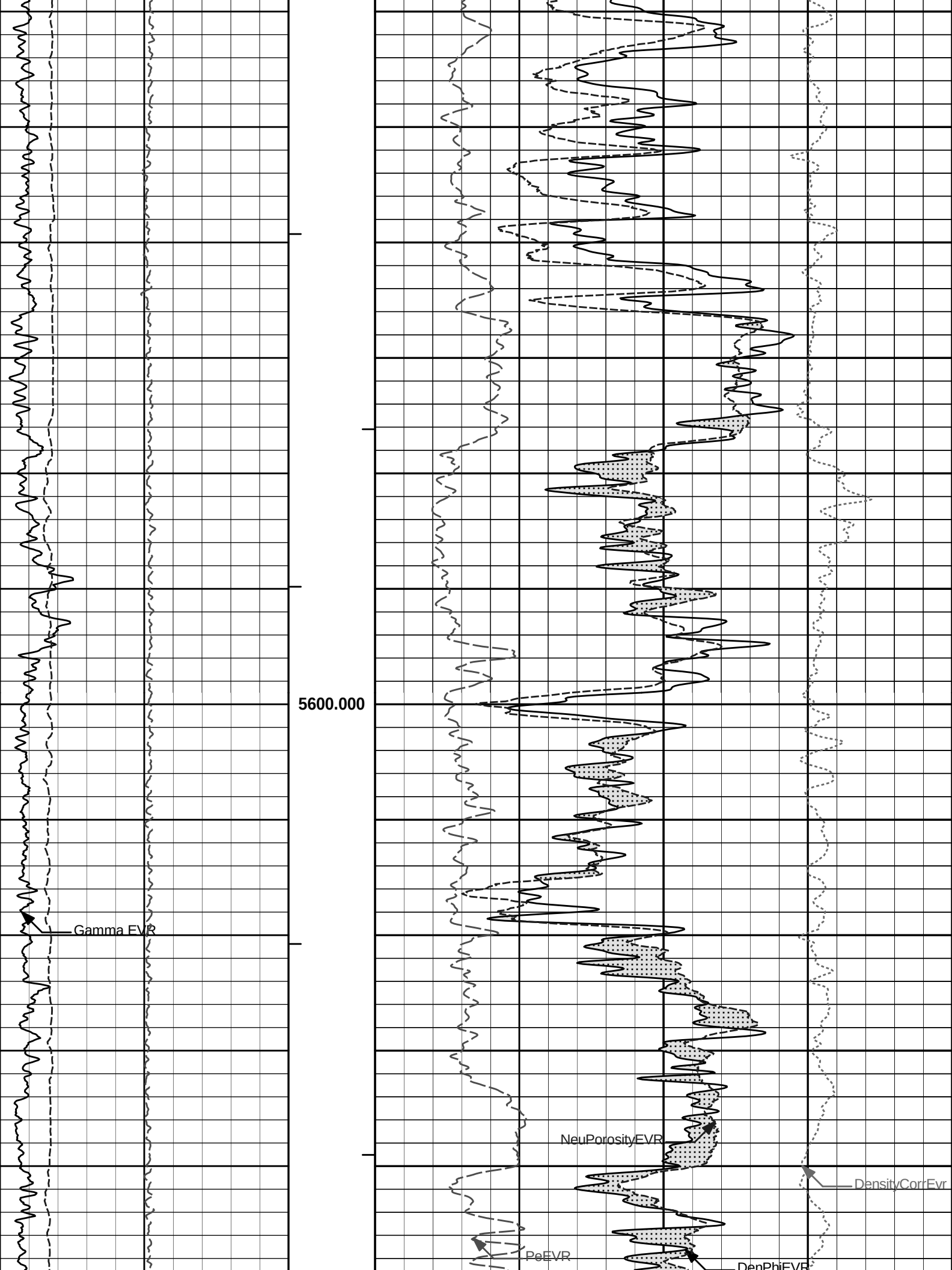


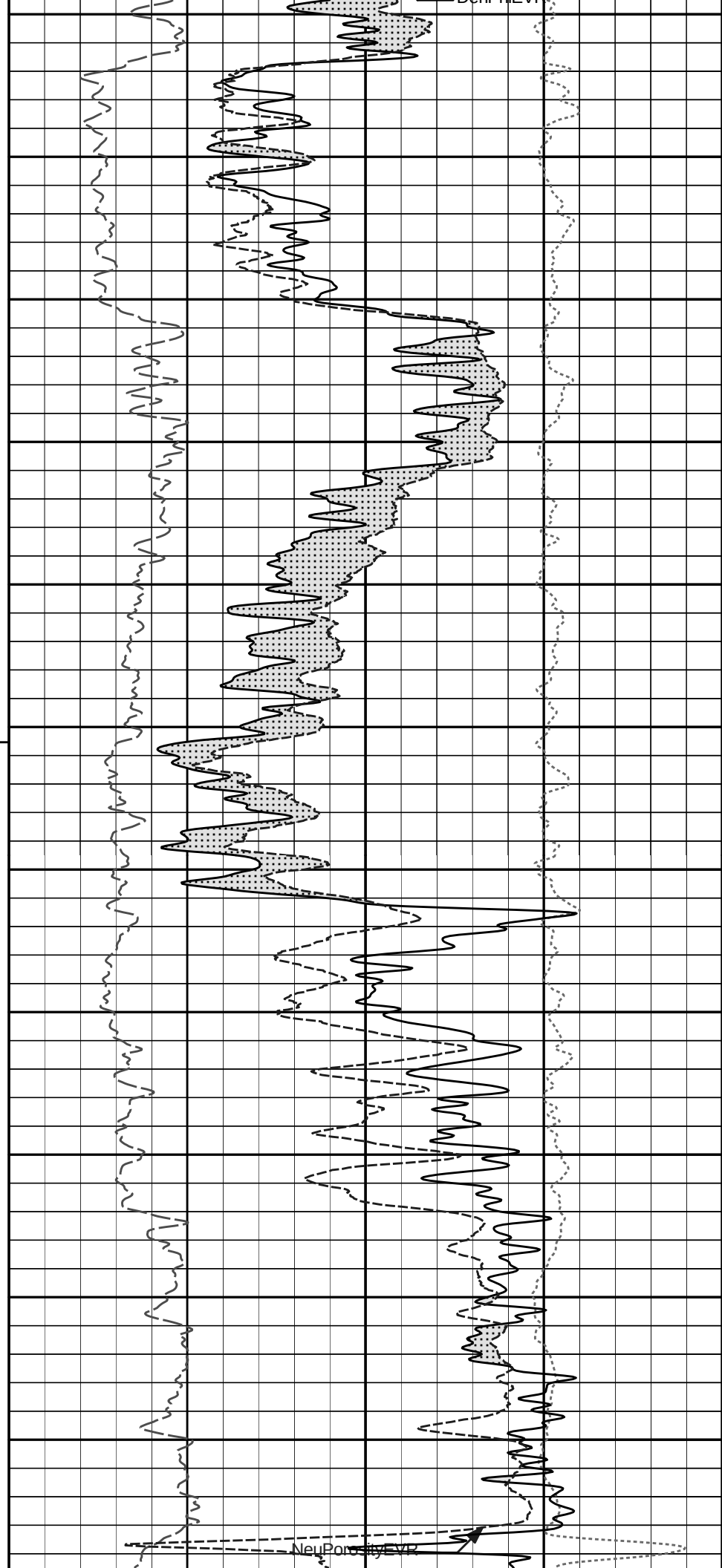
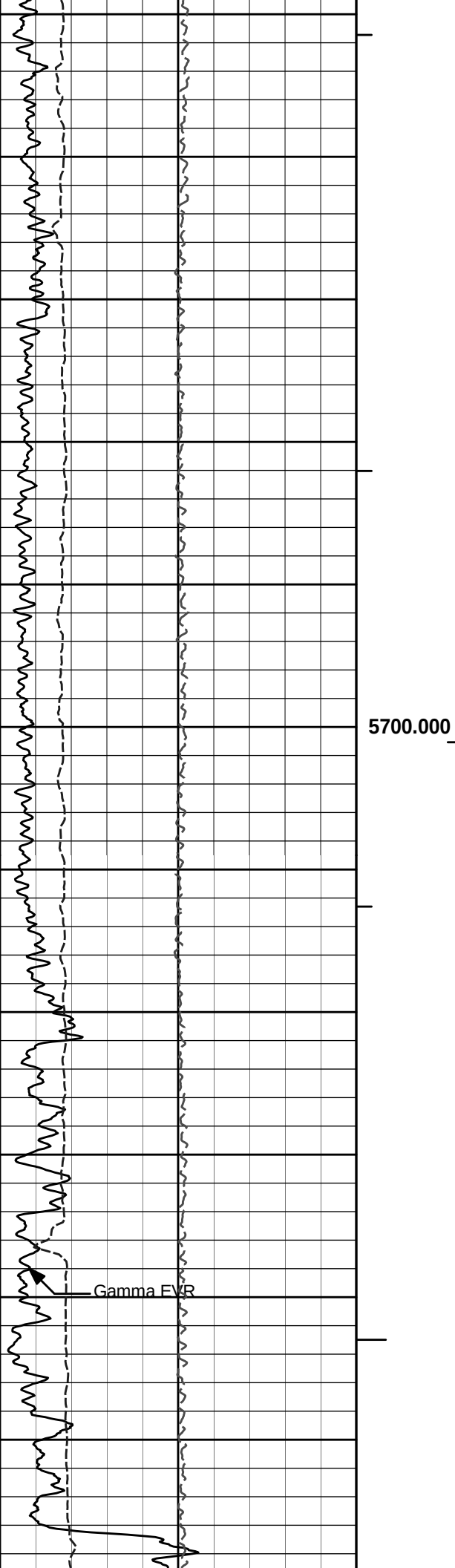


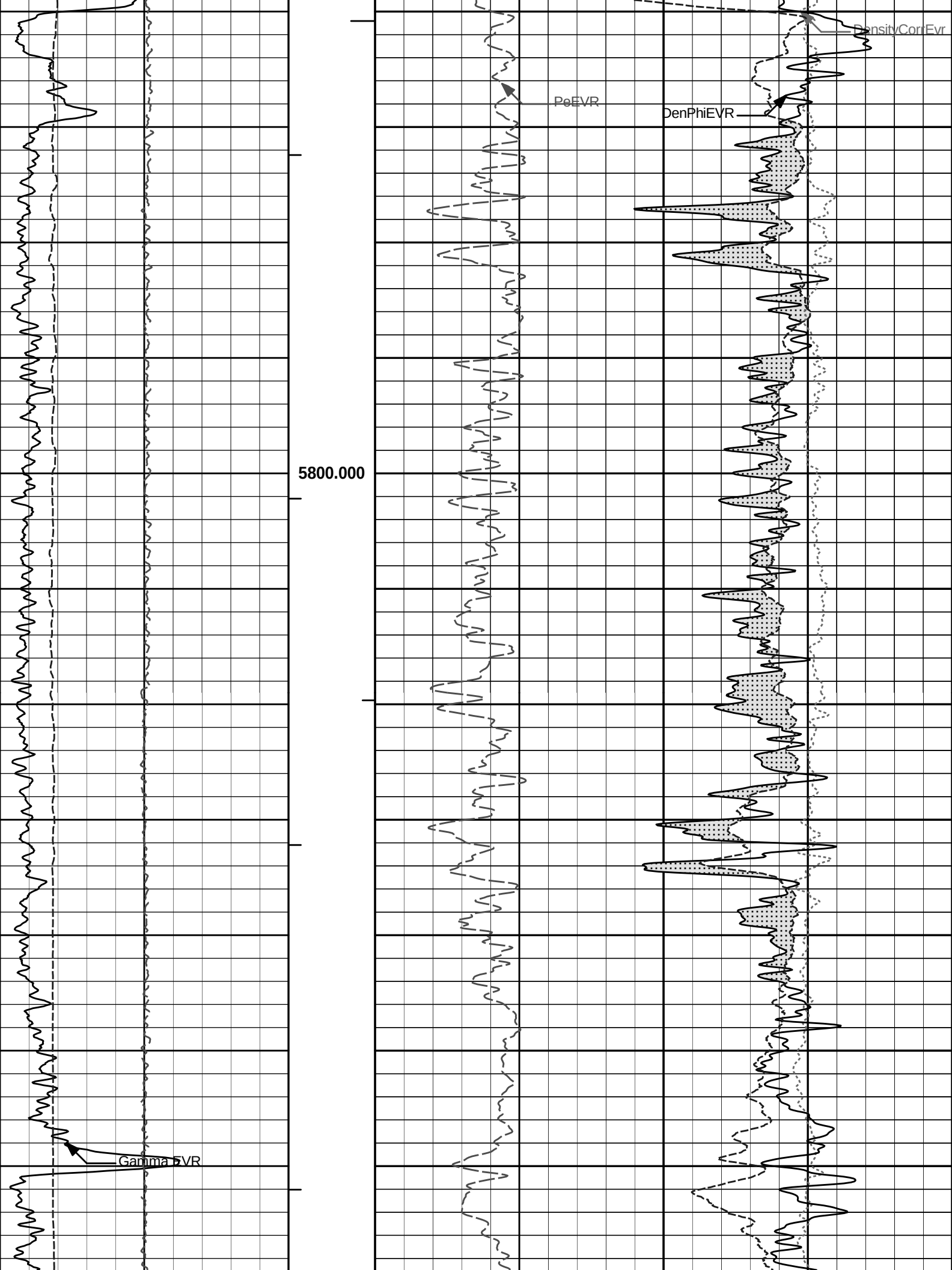


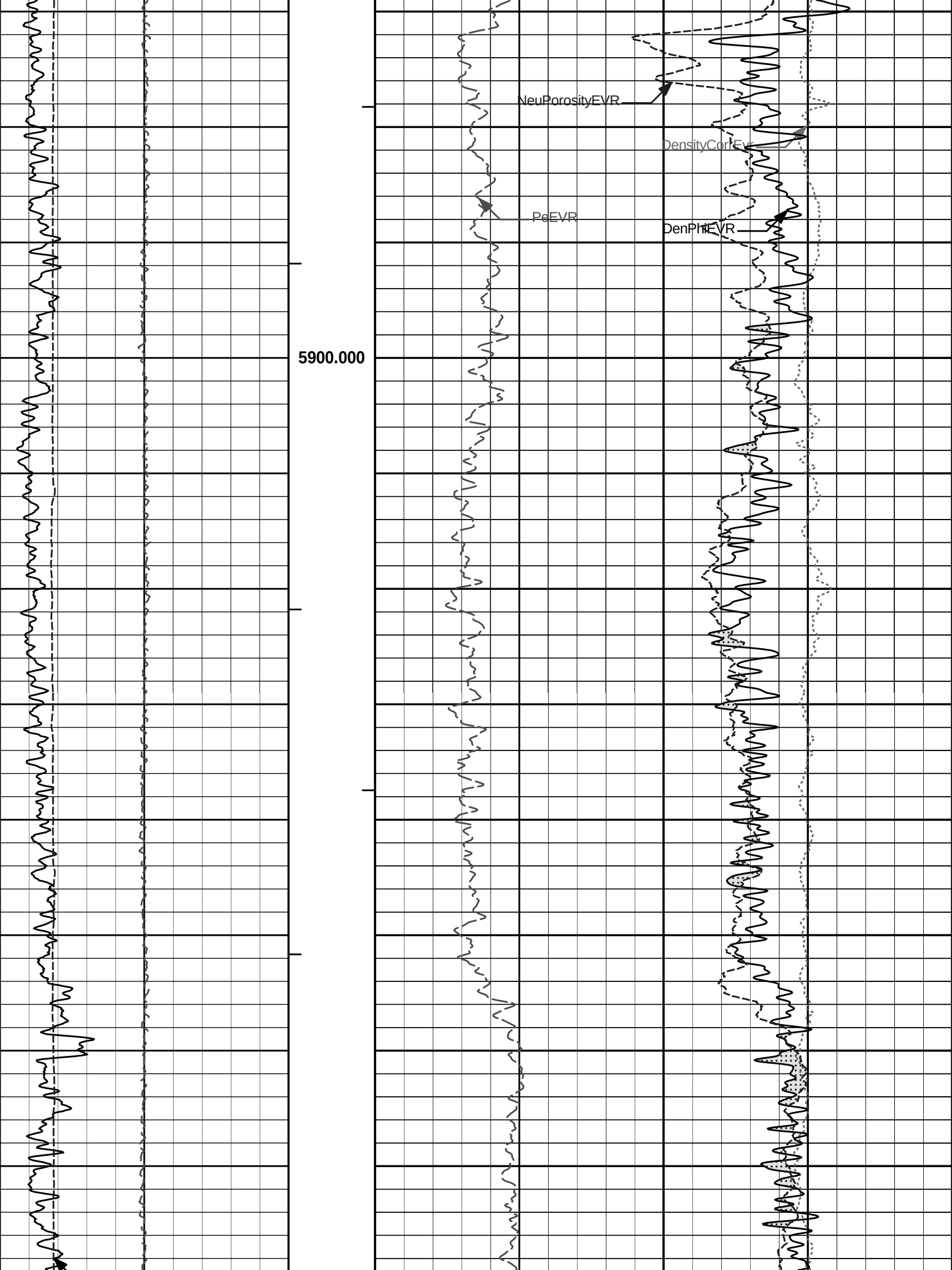


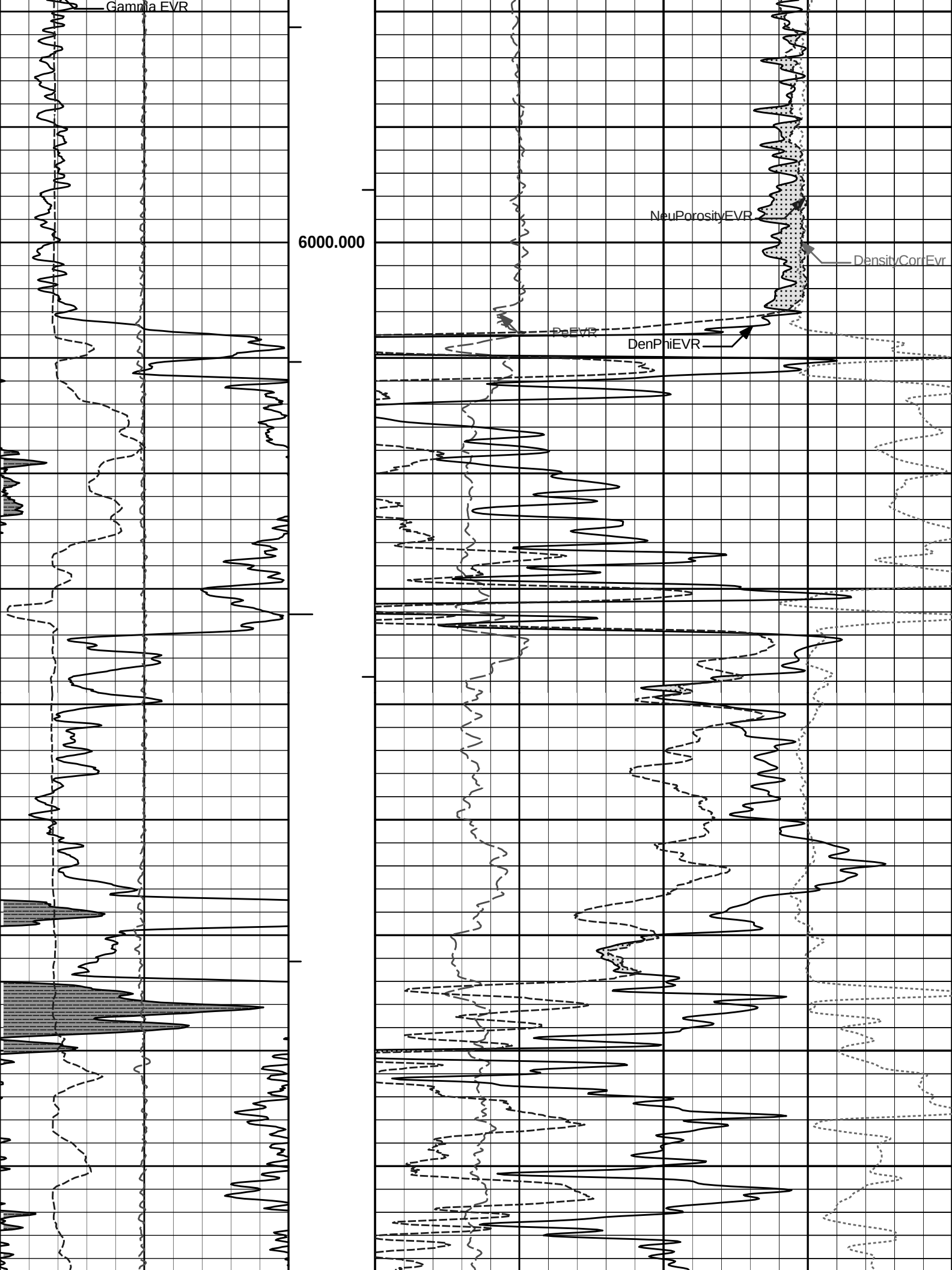


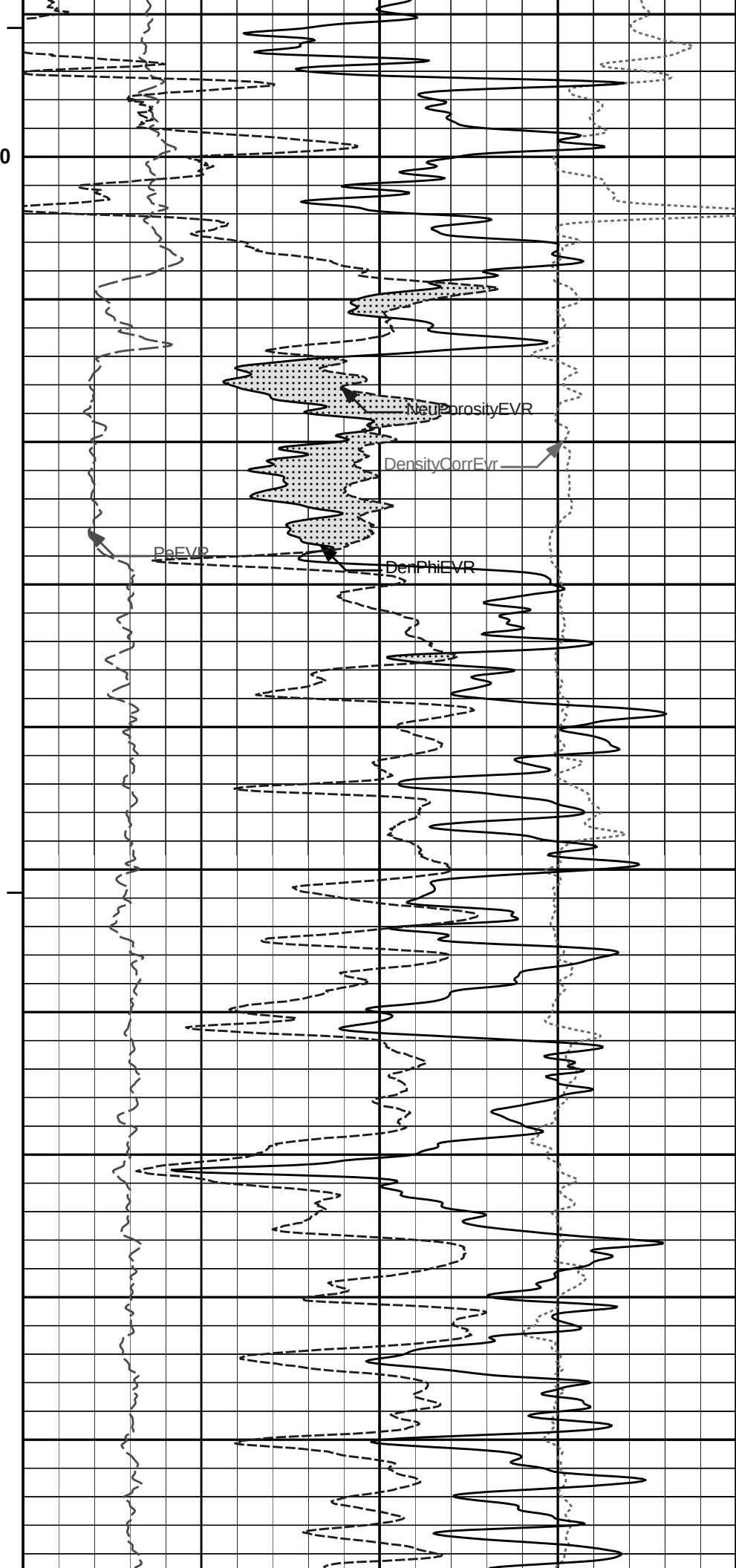
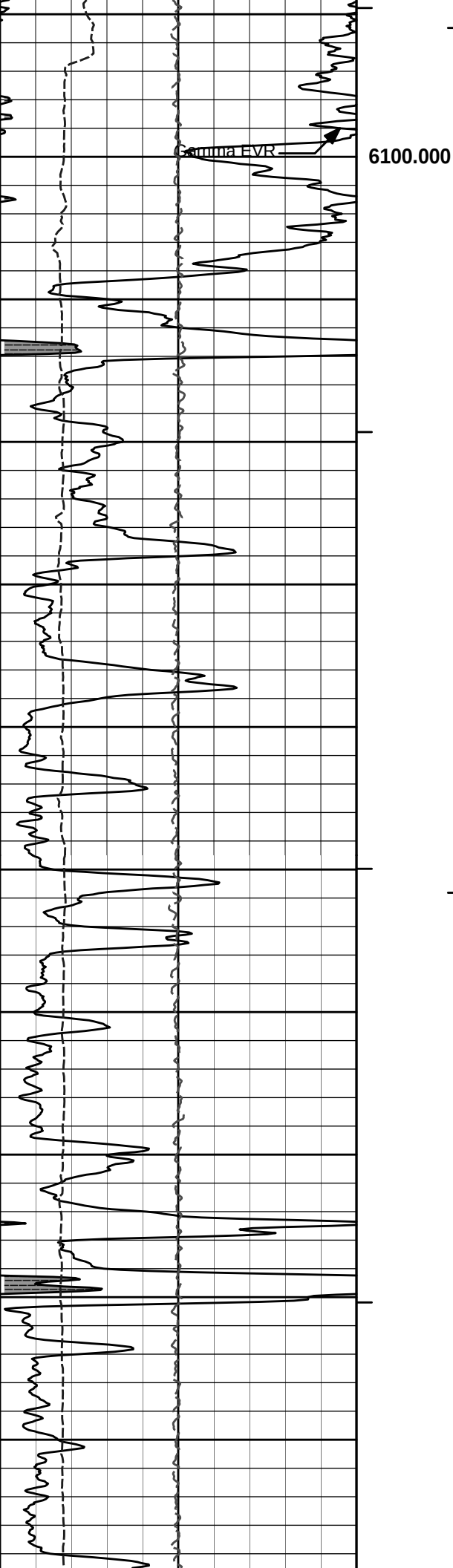


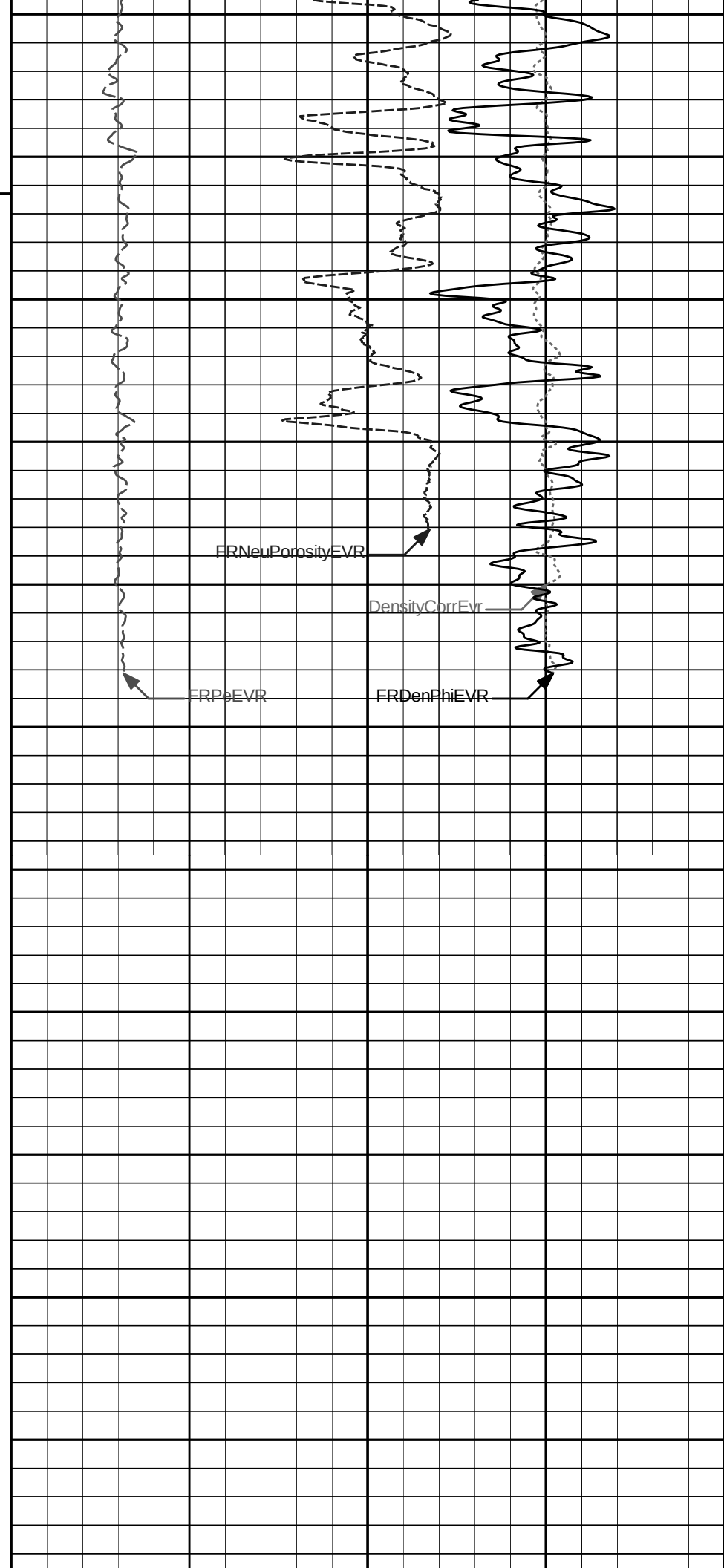
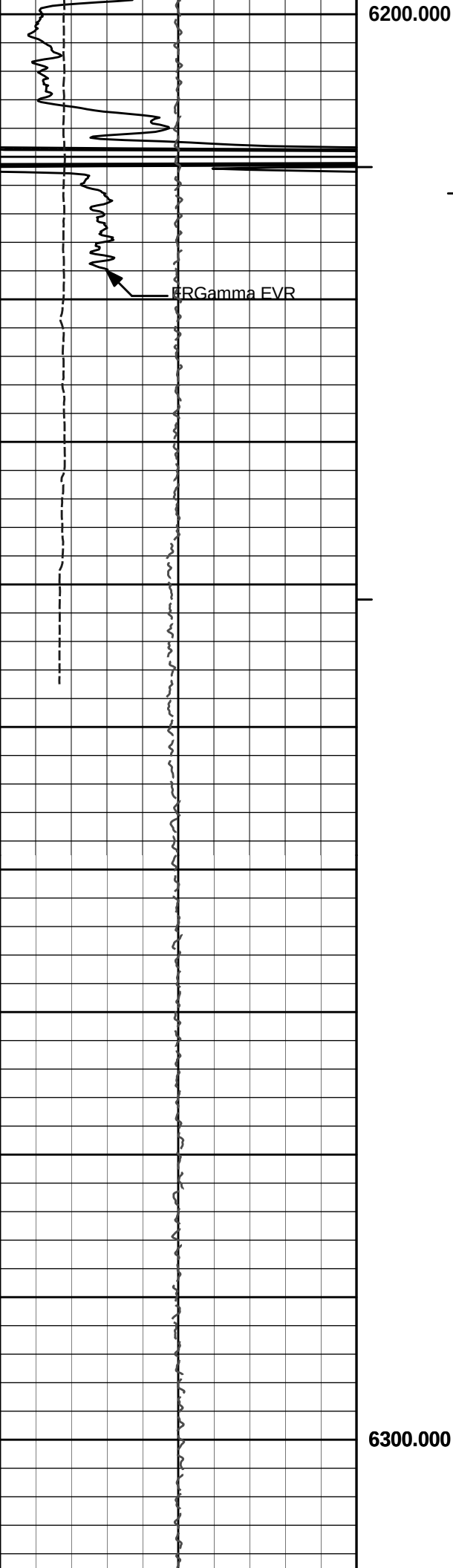


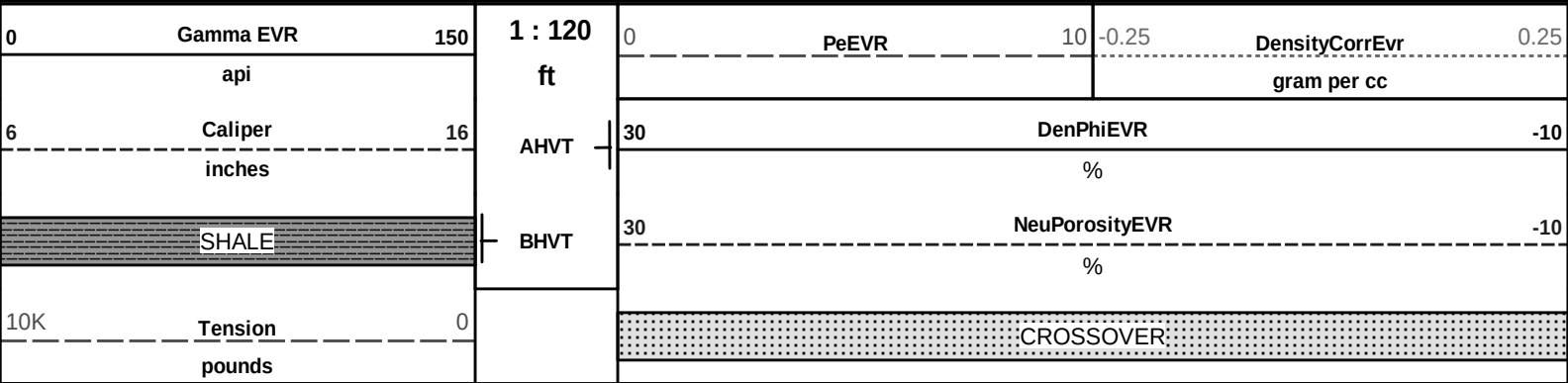
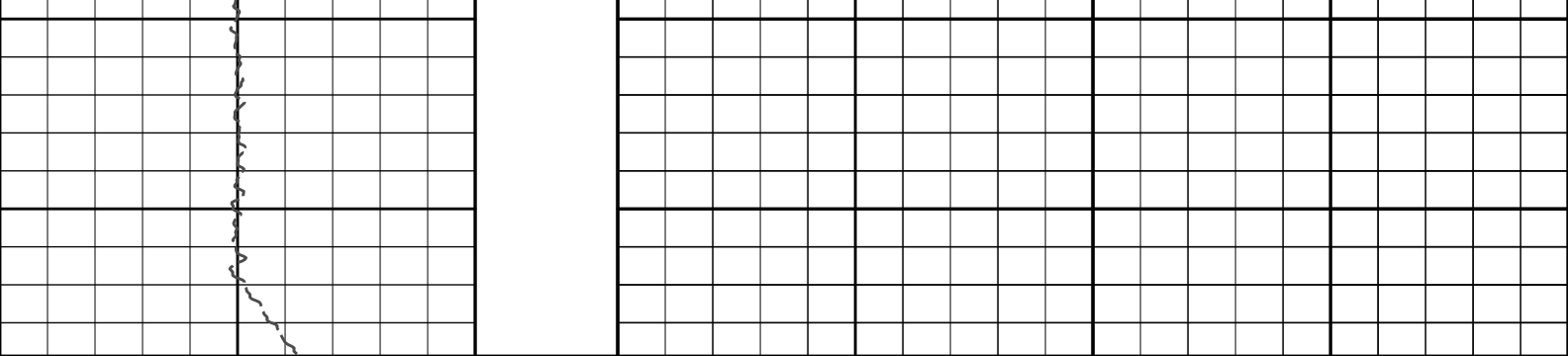












HALLIBURTON

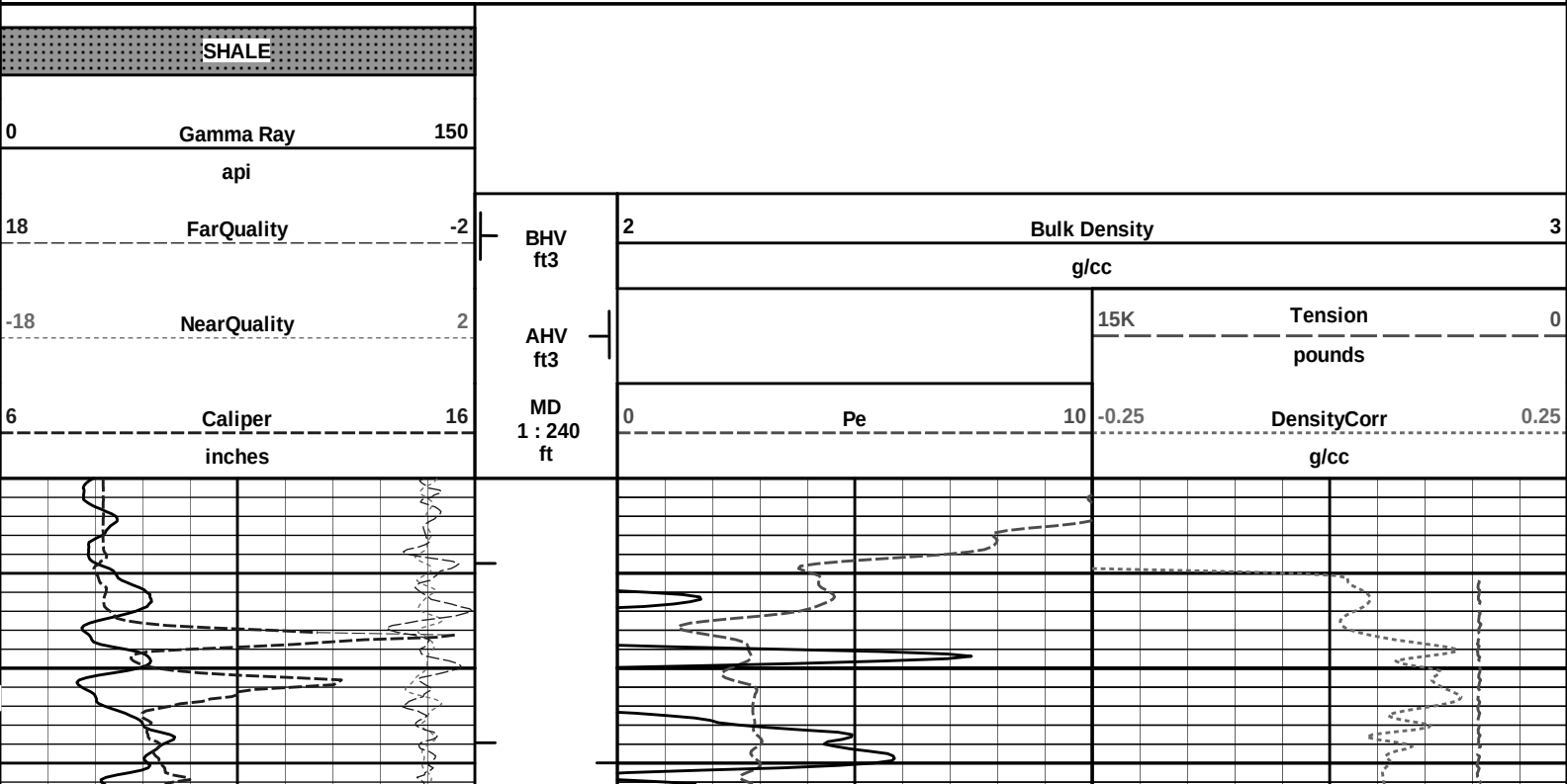
Plot Time: 16-Aug-13 11:23:14
Plot Range: 4350 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\R1 EVRI*
Plot File: \\POROSITY\Porosity_IQ_EVR_LIB

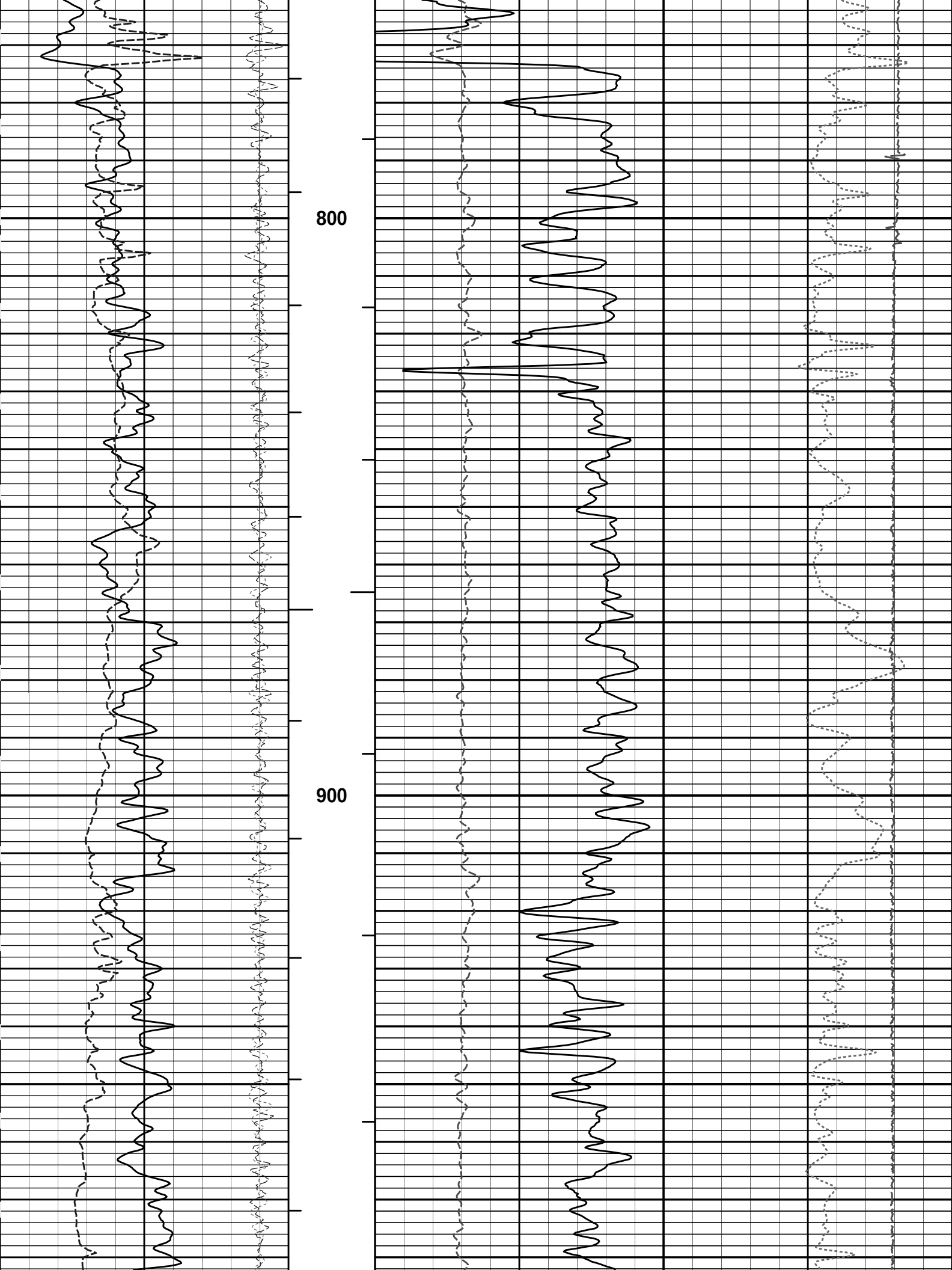
MAIN PASS 10" = 100'

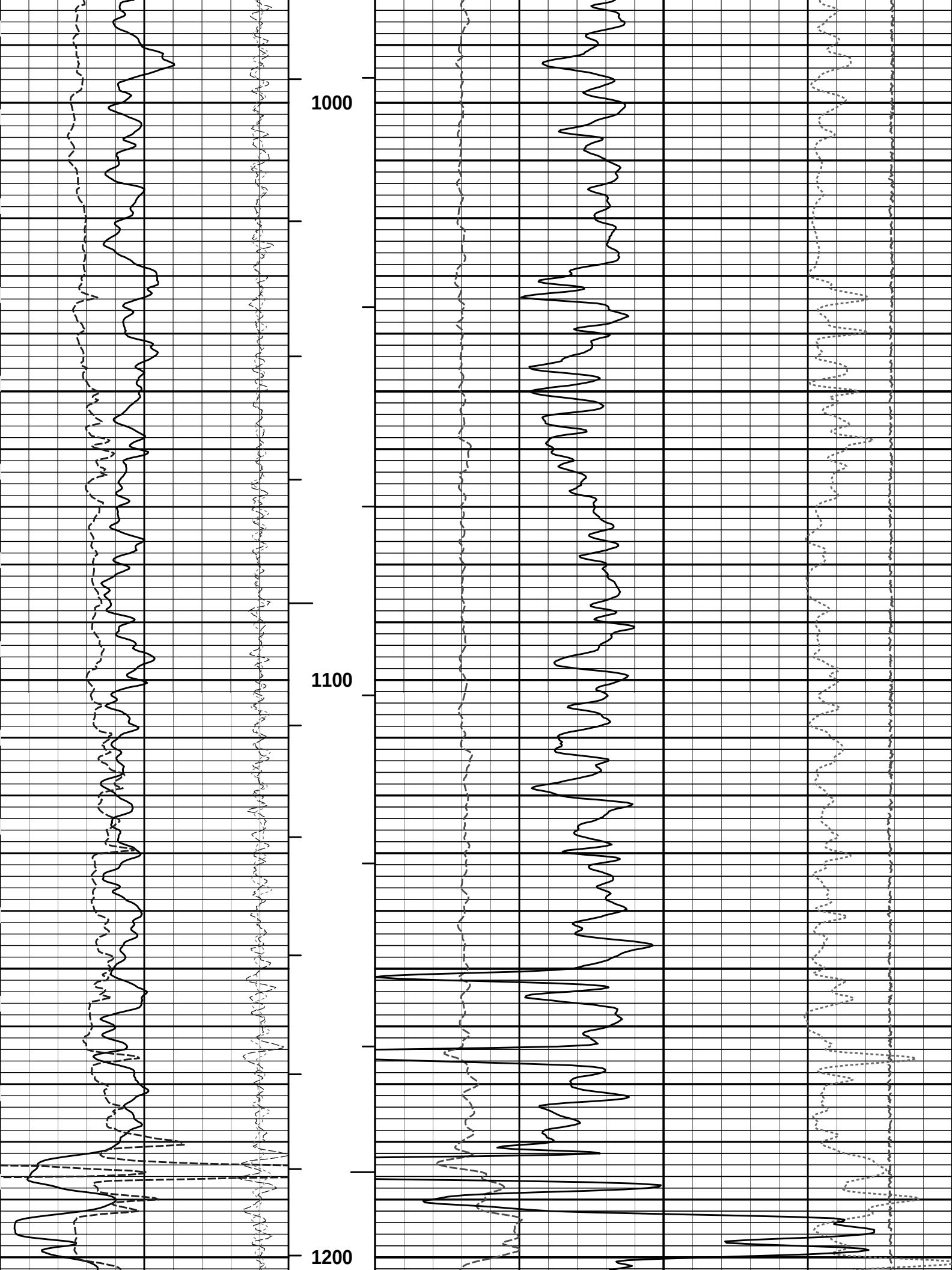
HALLIBURTON

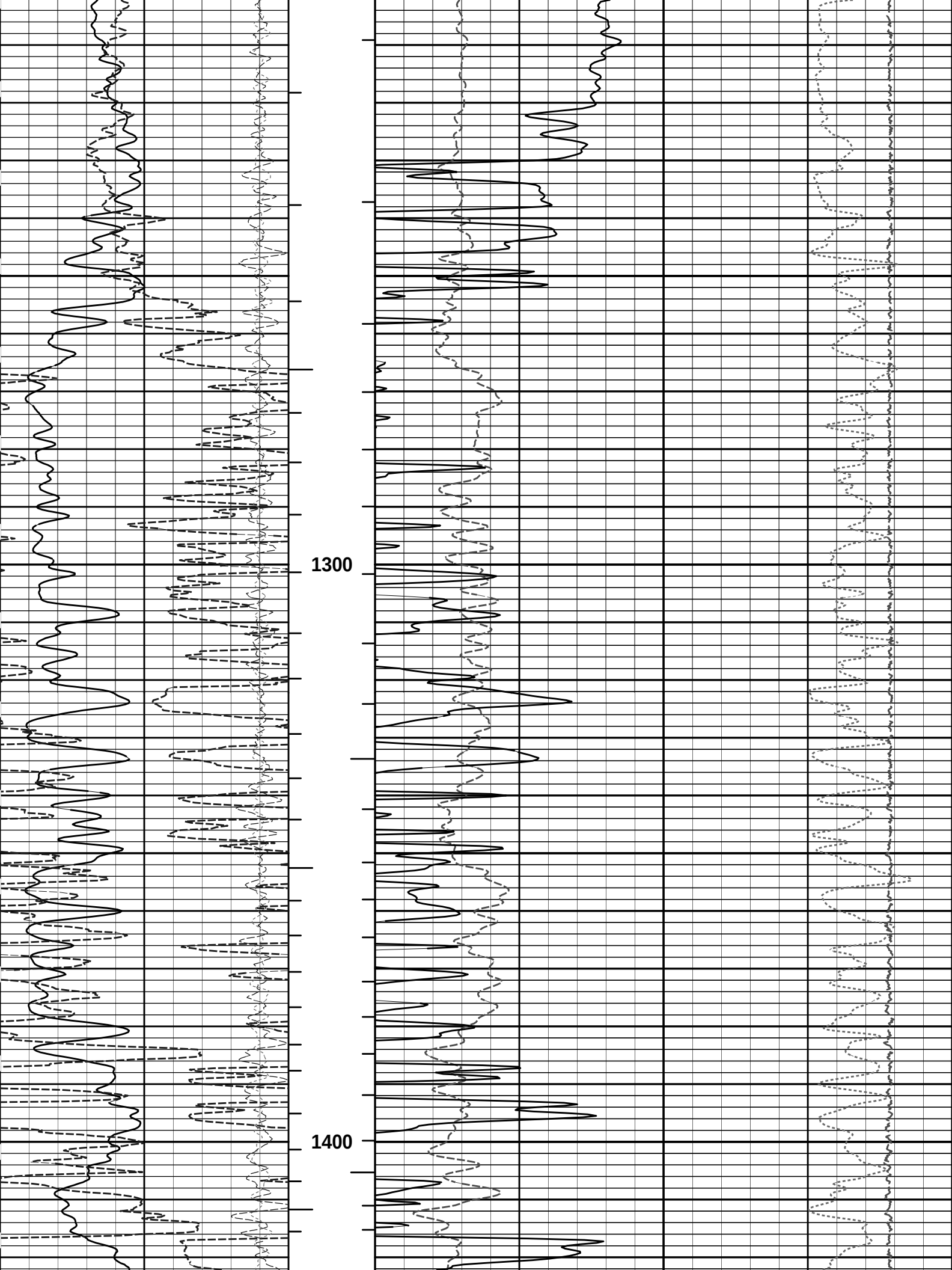
Plot Time: 16-Aug-13 11:23:14
Plot Range: 730 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\R1 CASING\
Plot File: \\LOCAL\POROSITY\BULKD_5_MAIN_LIB

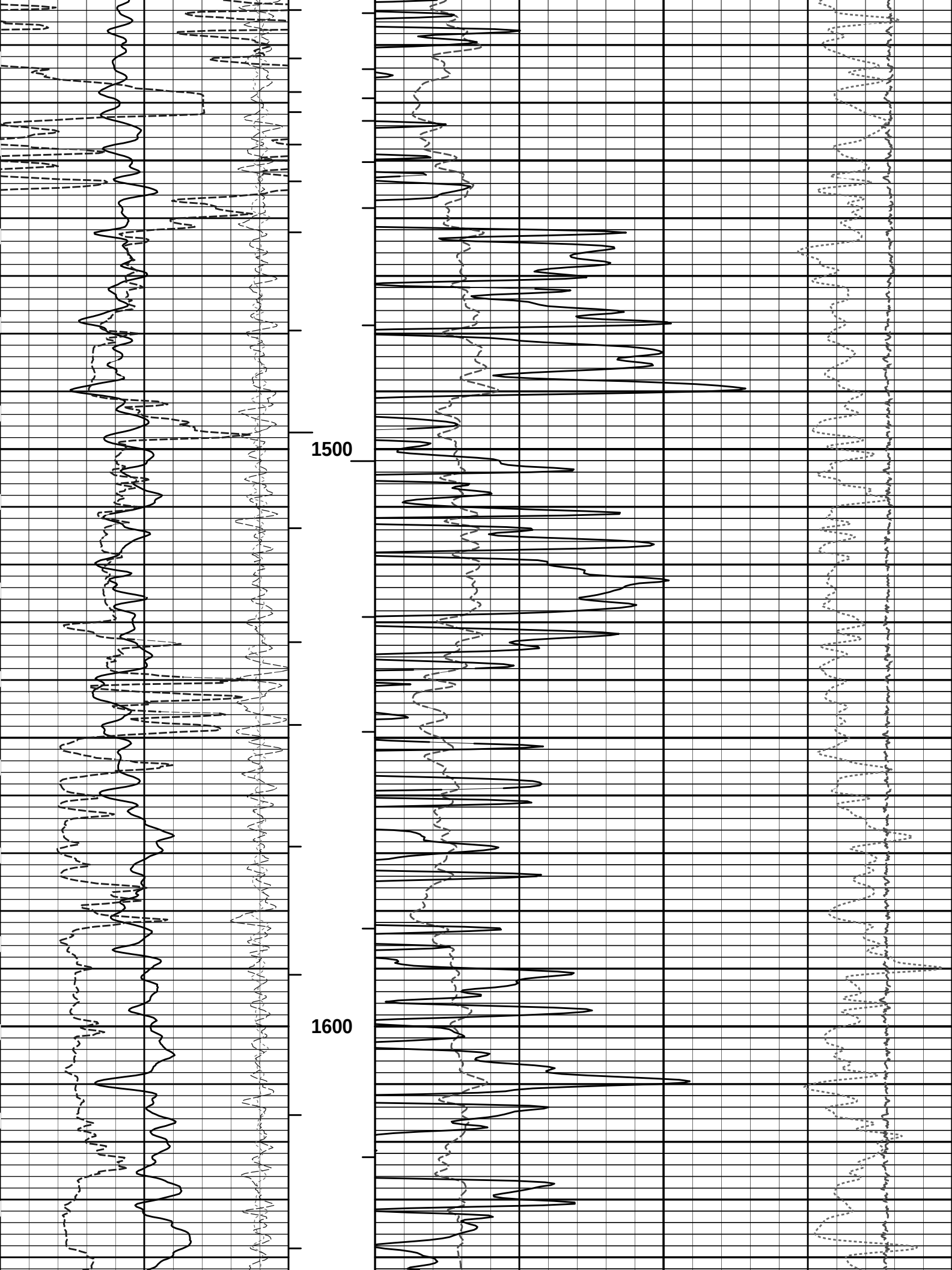
5 INCH MAIN LOG

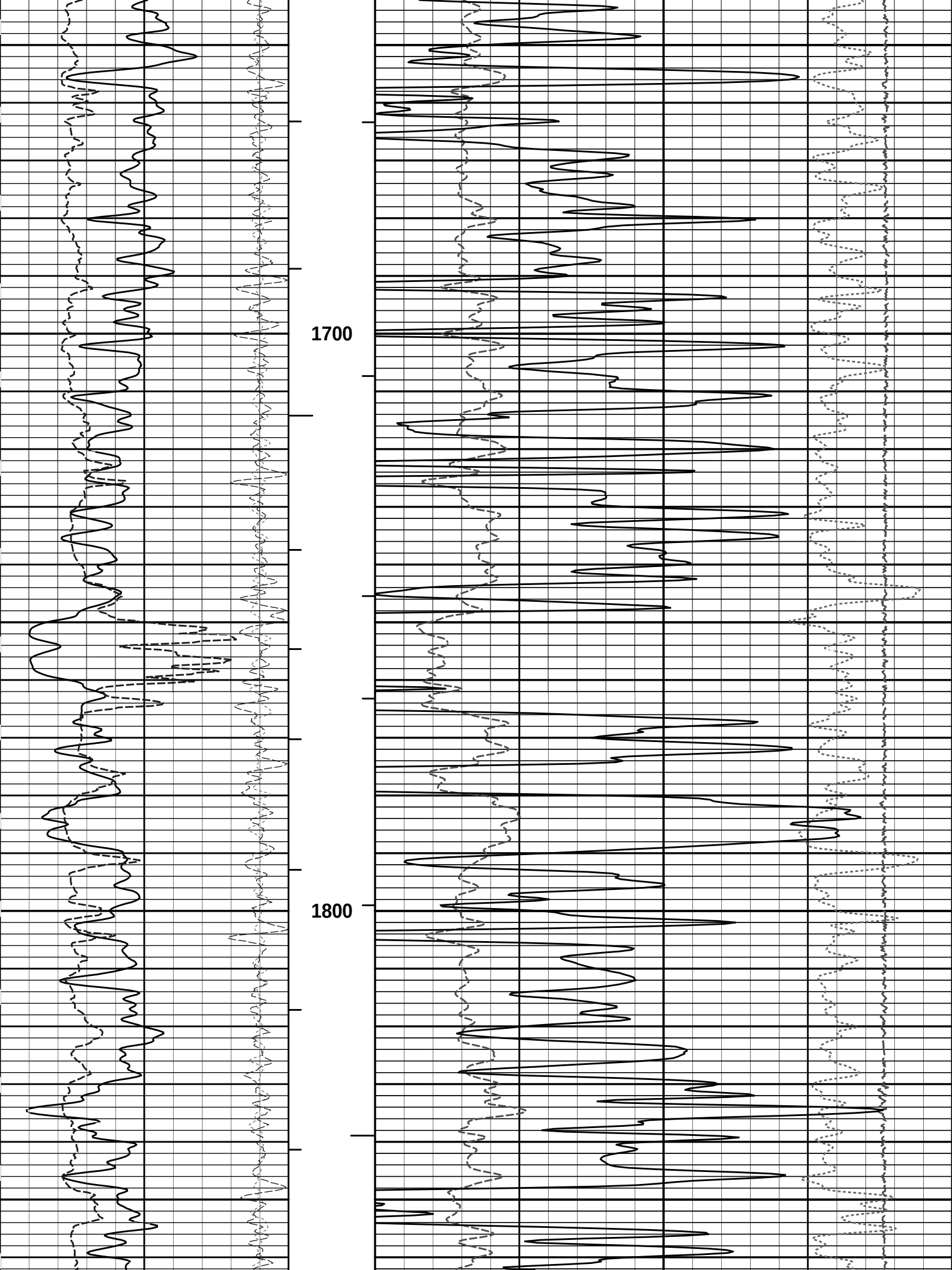


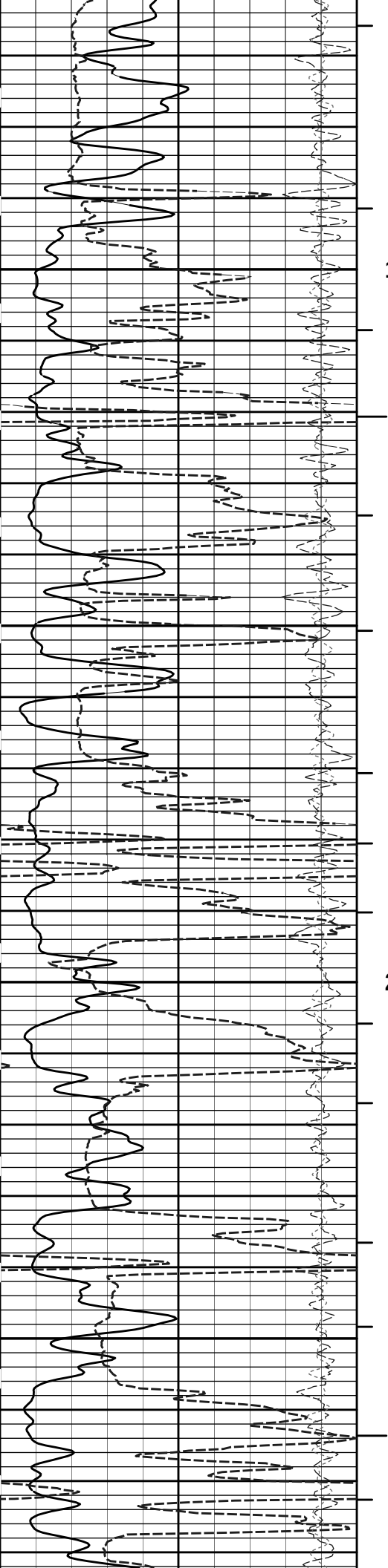






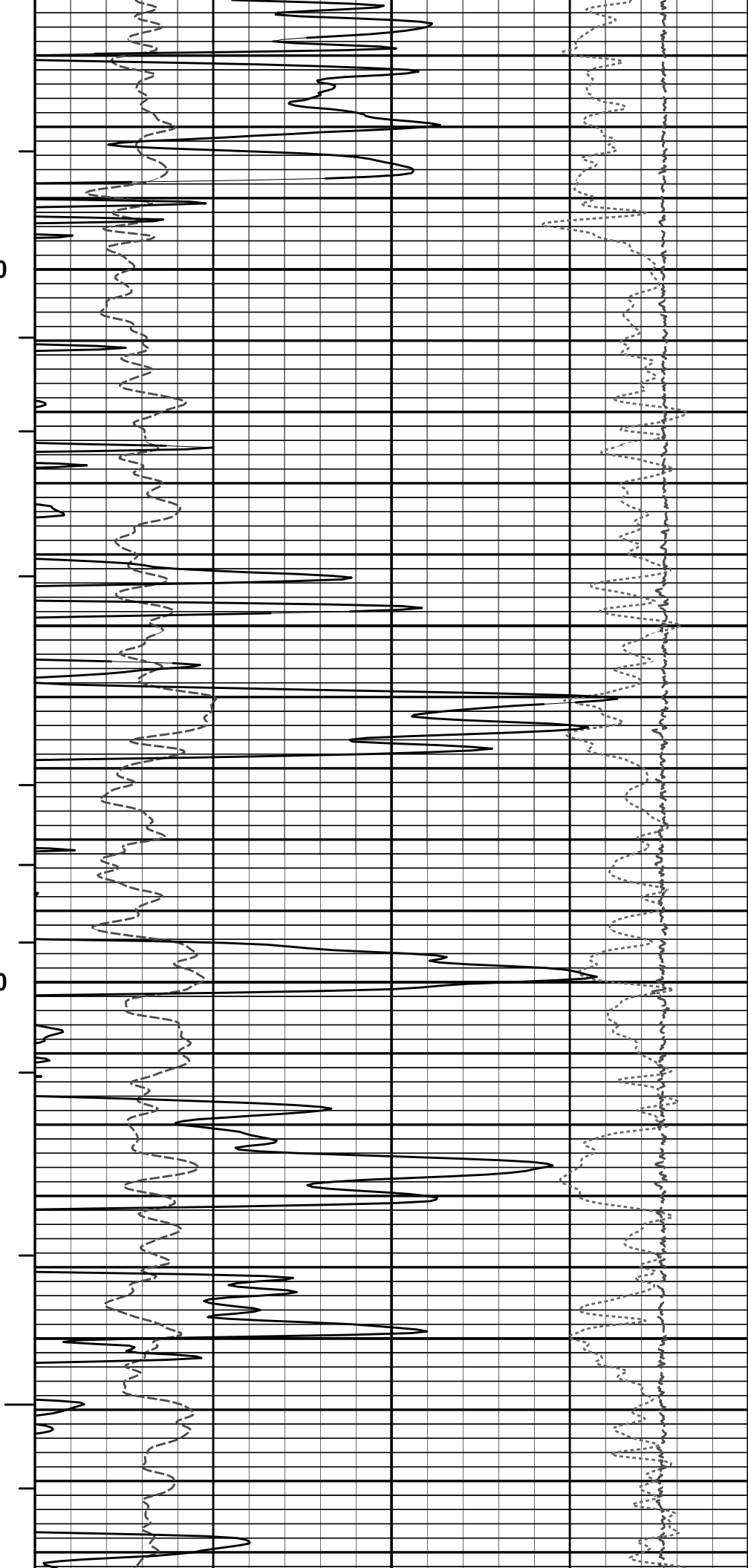


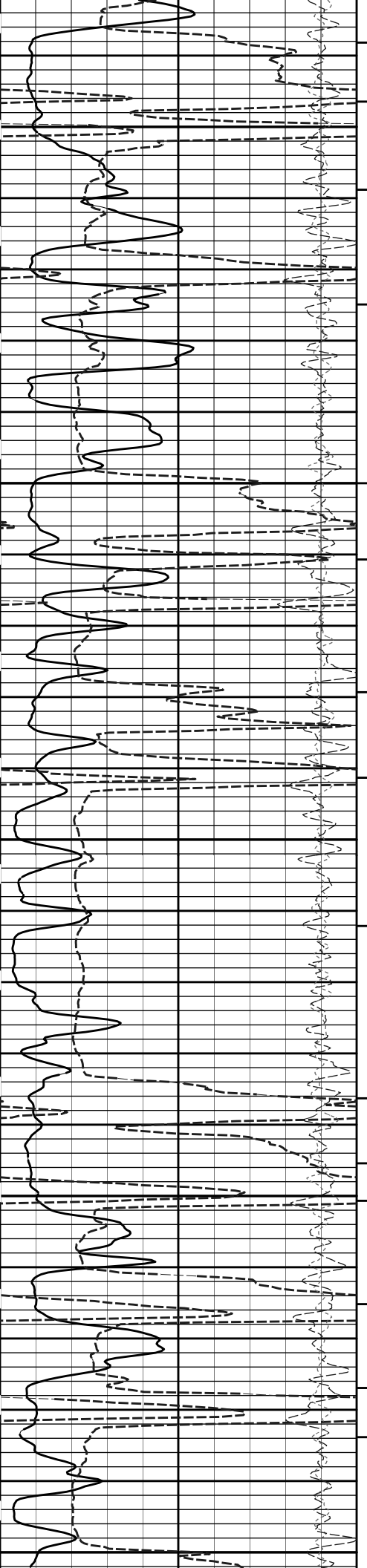




1900

2000

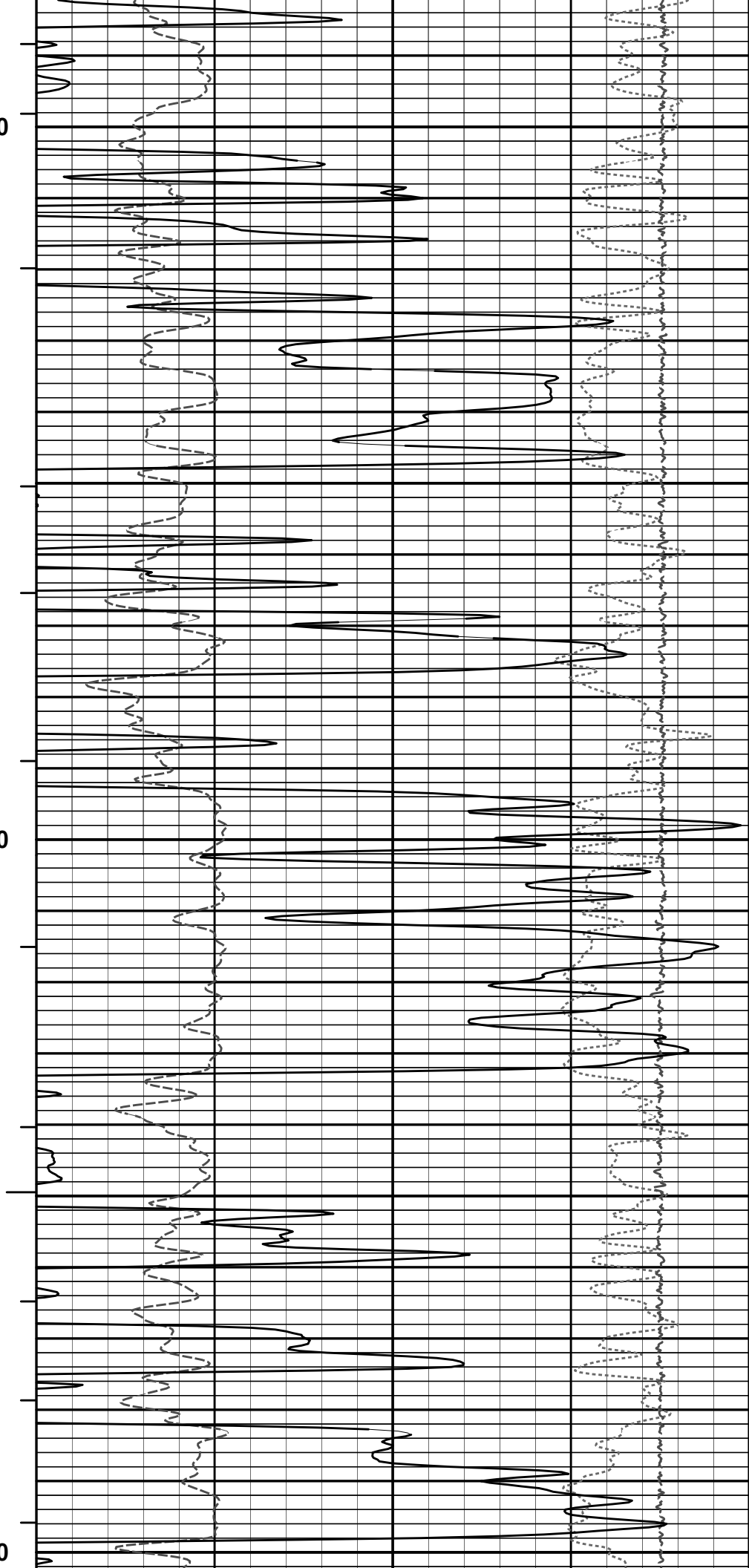


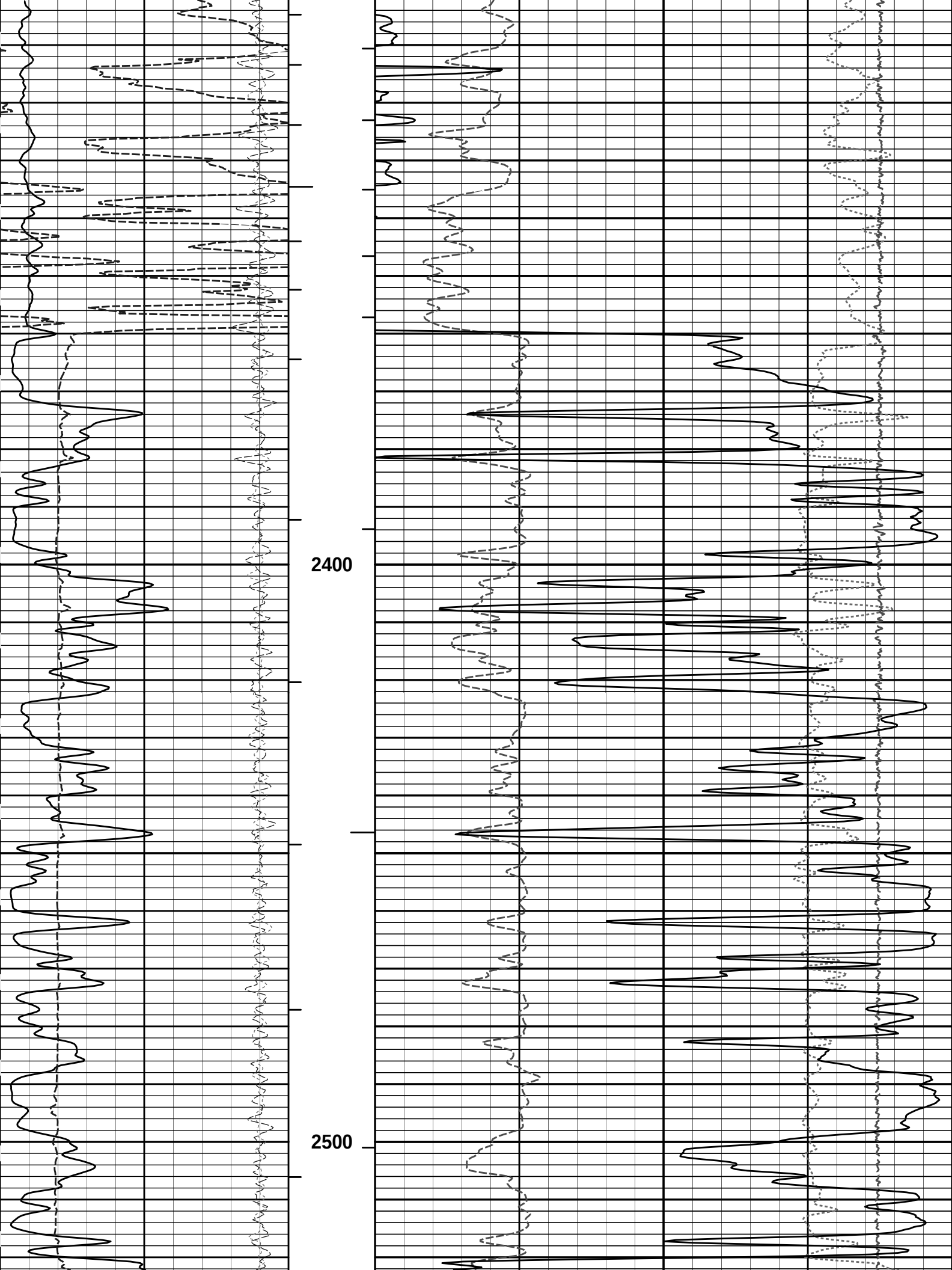


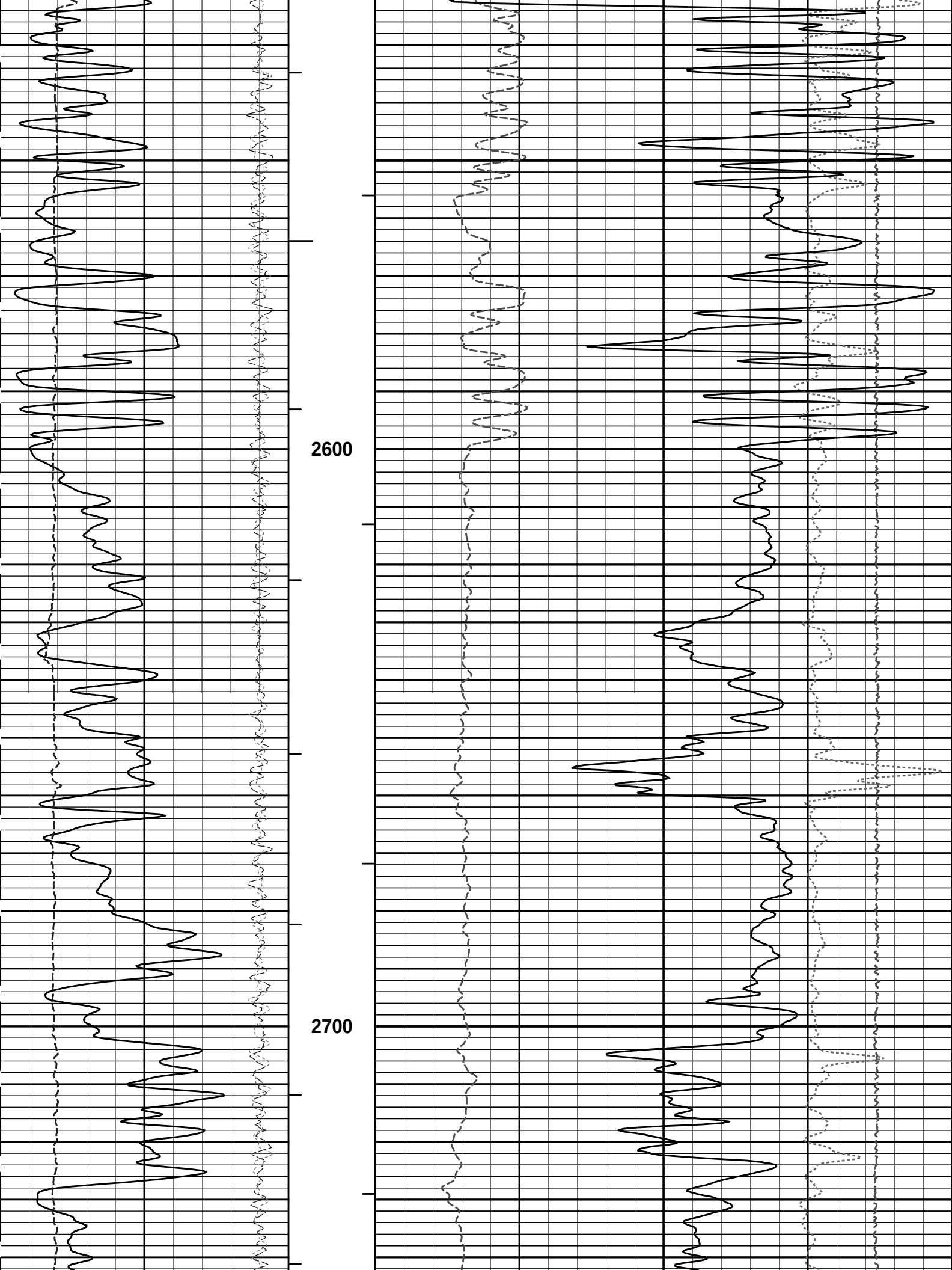
2100

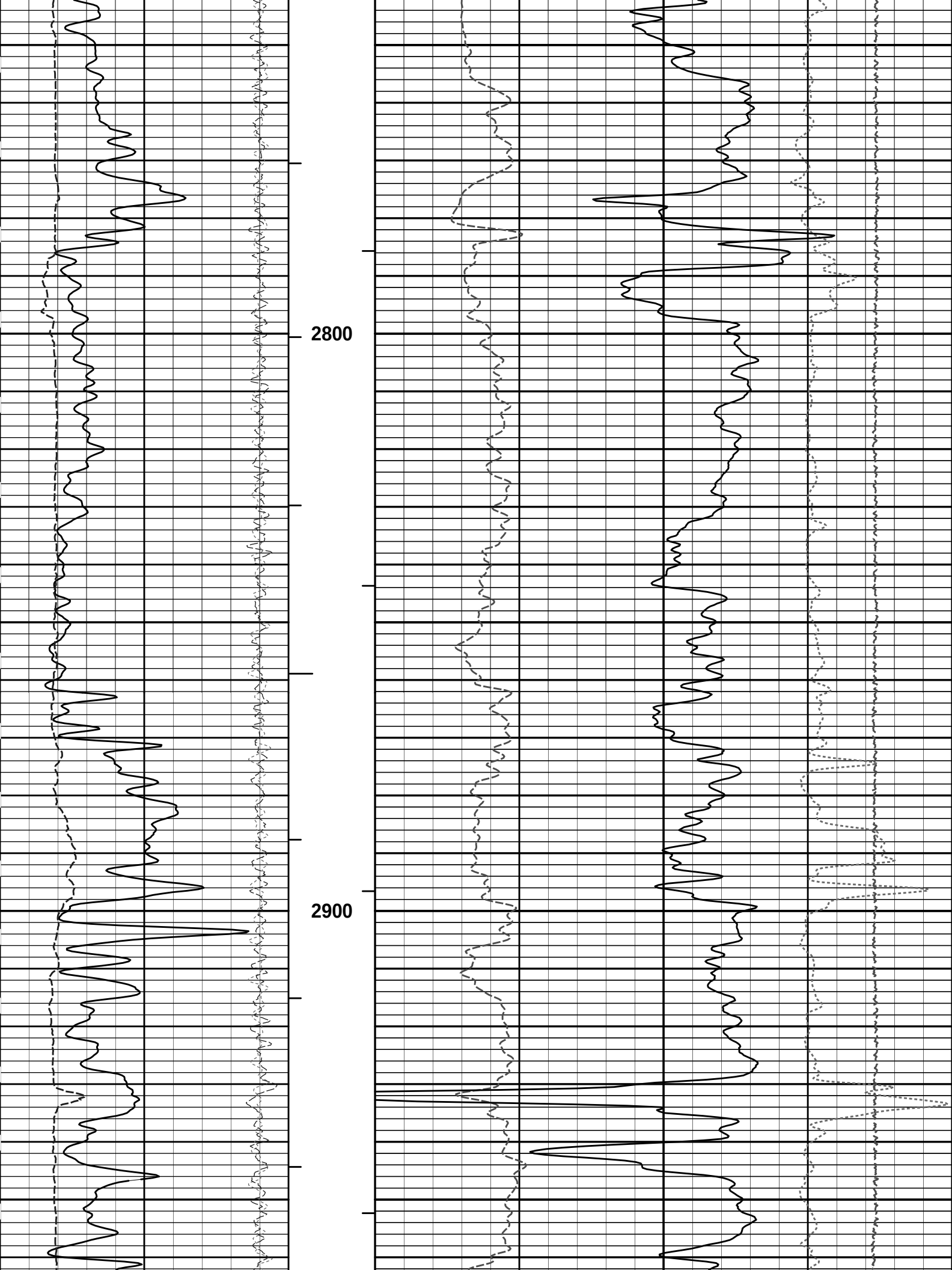
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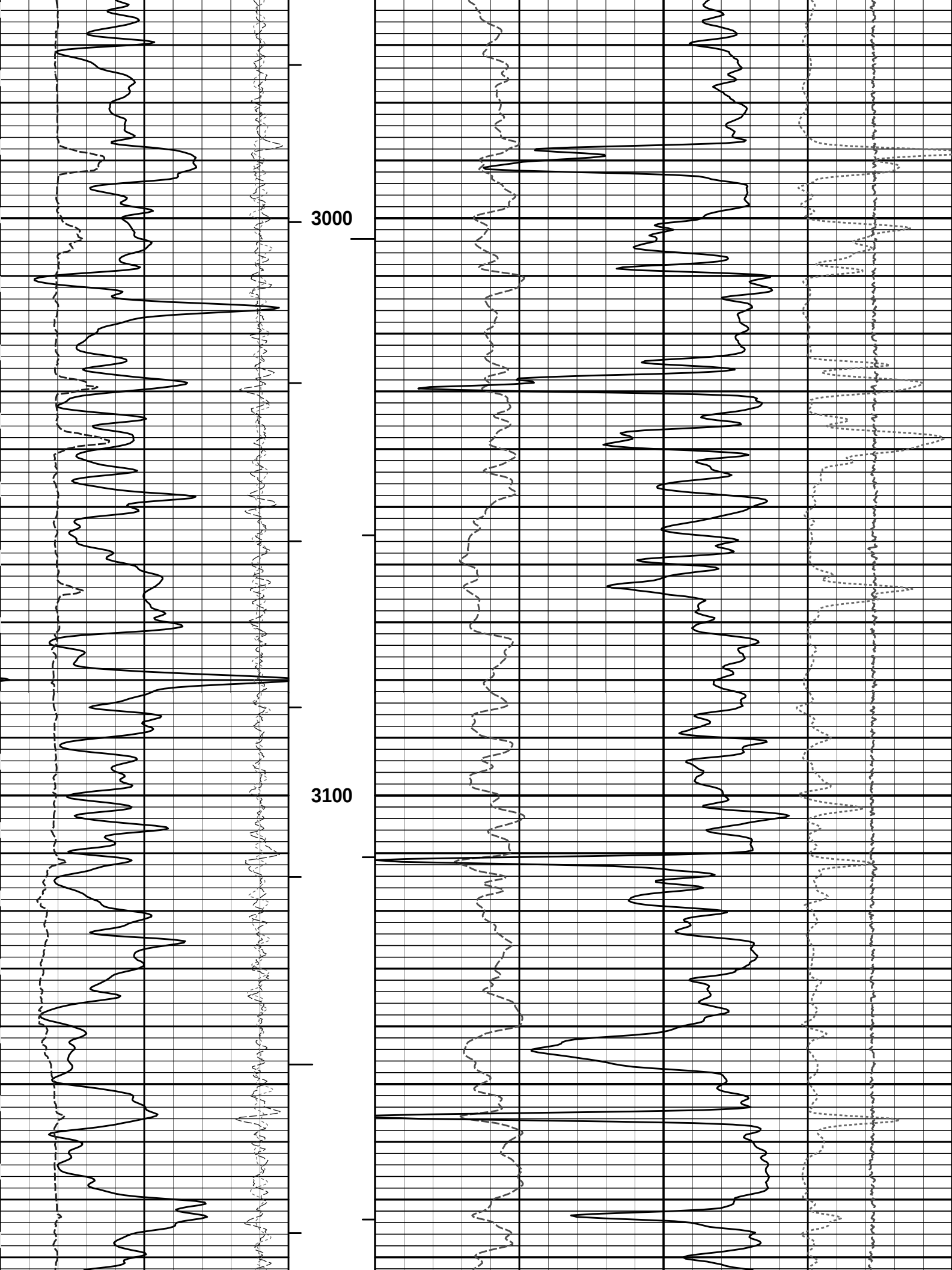
2300

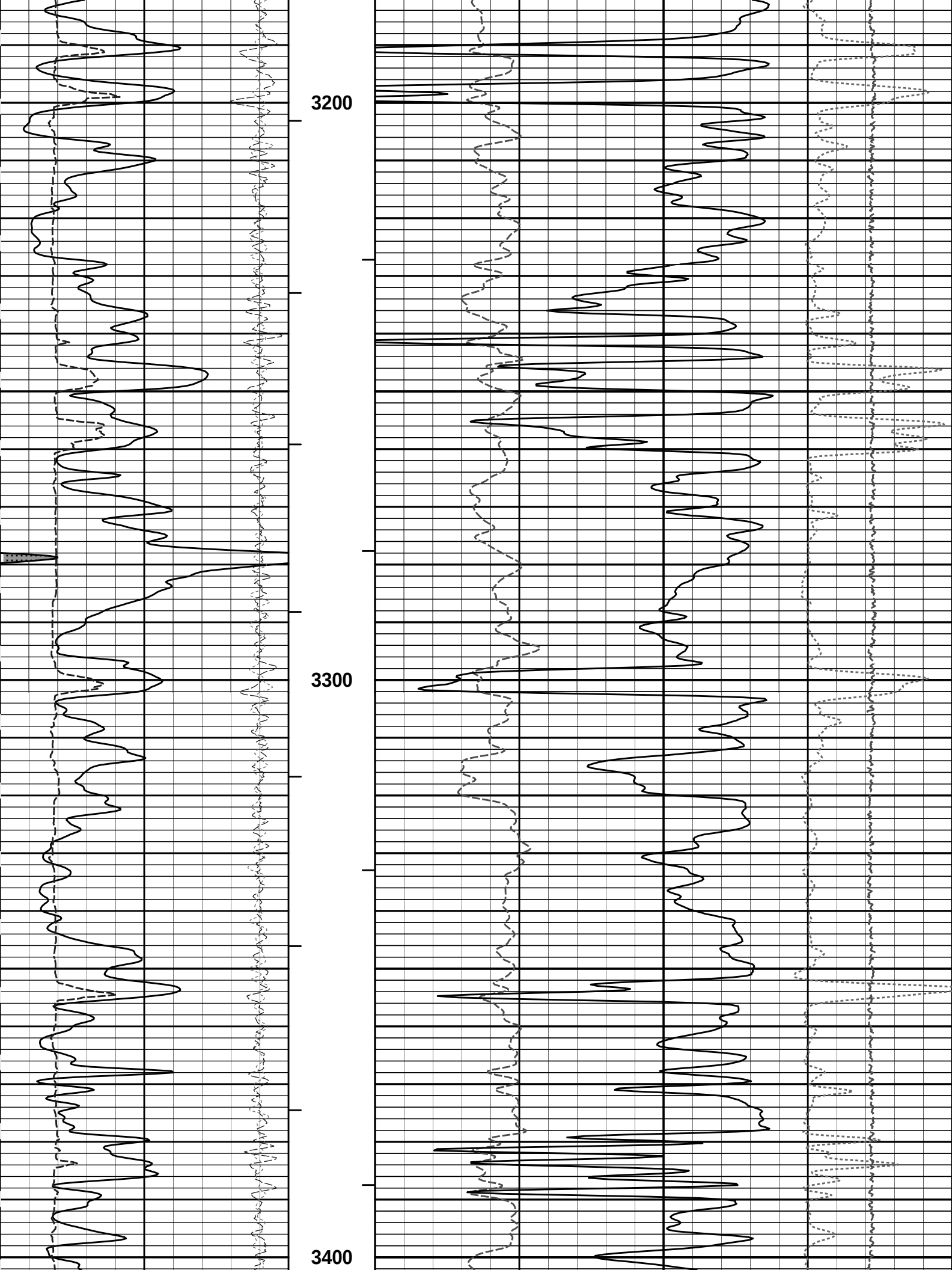


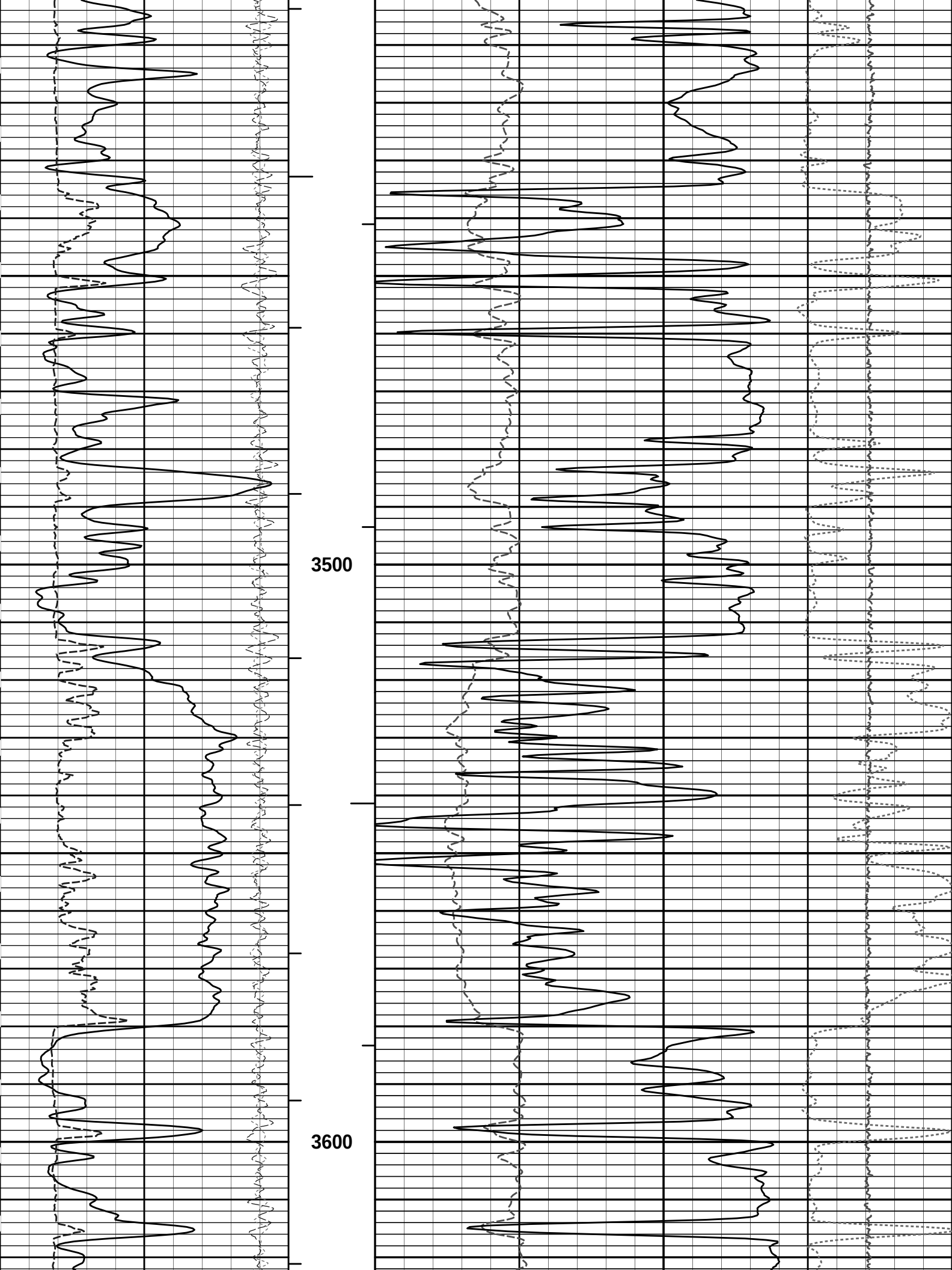


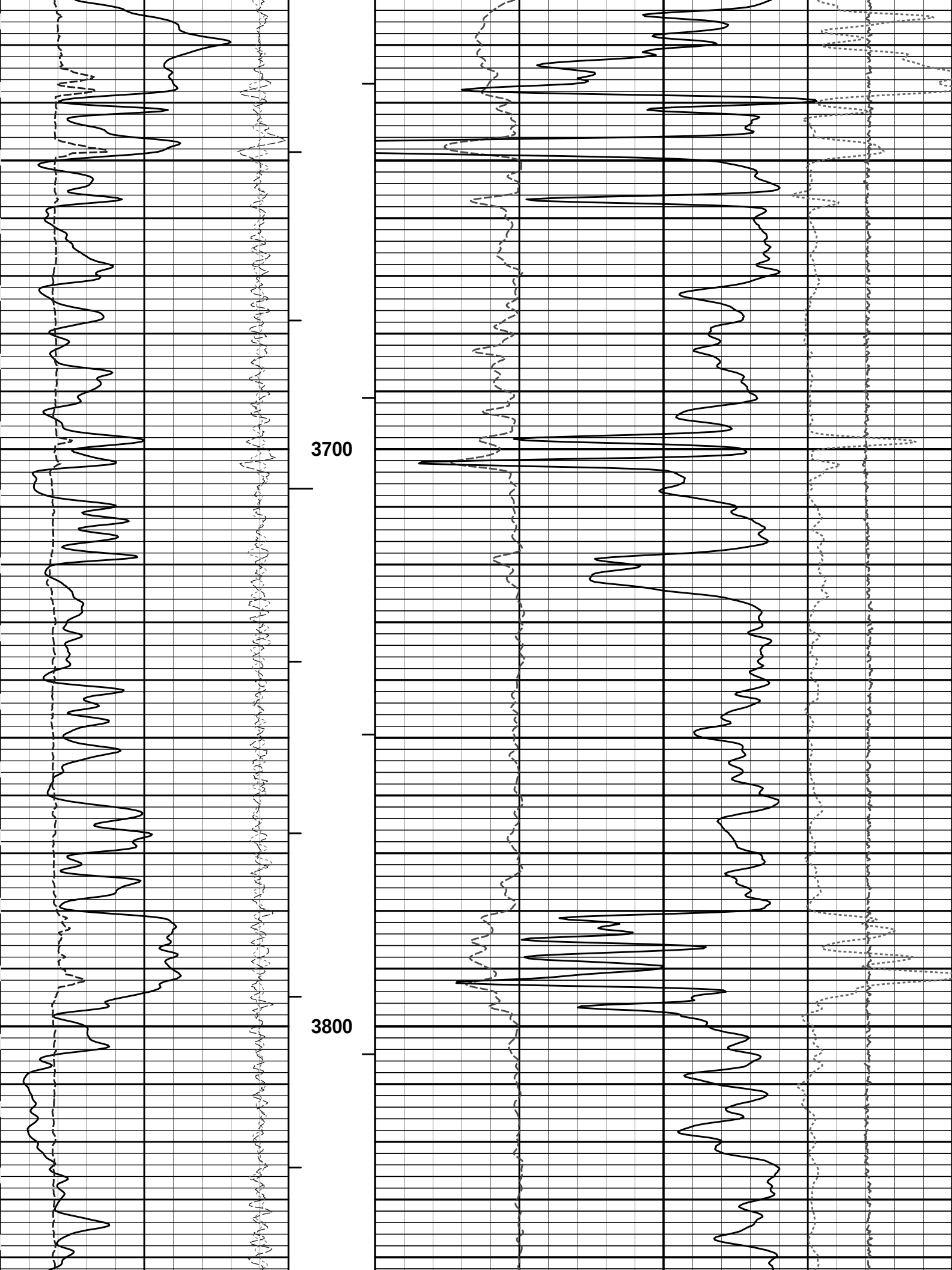


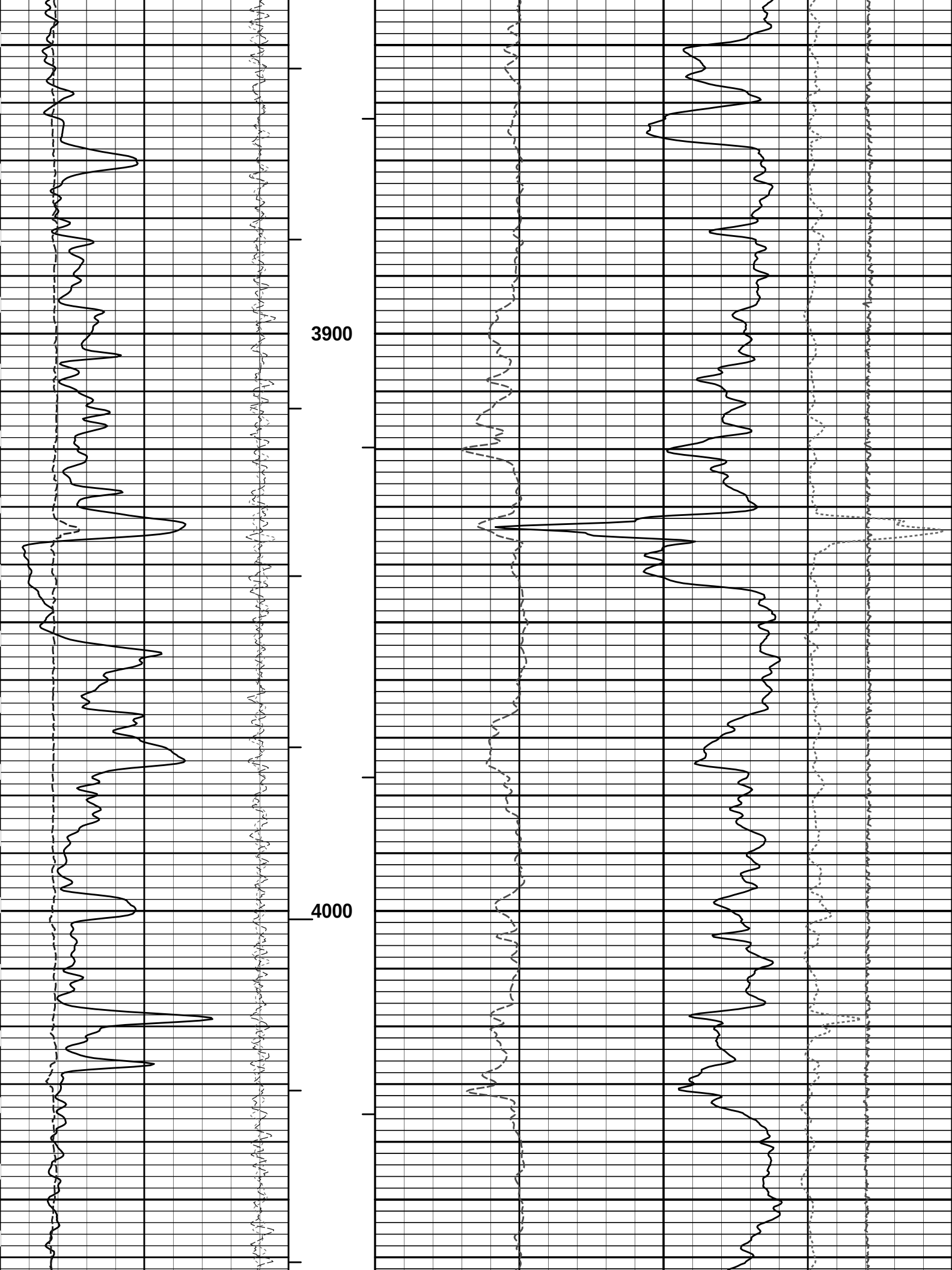


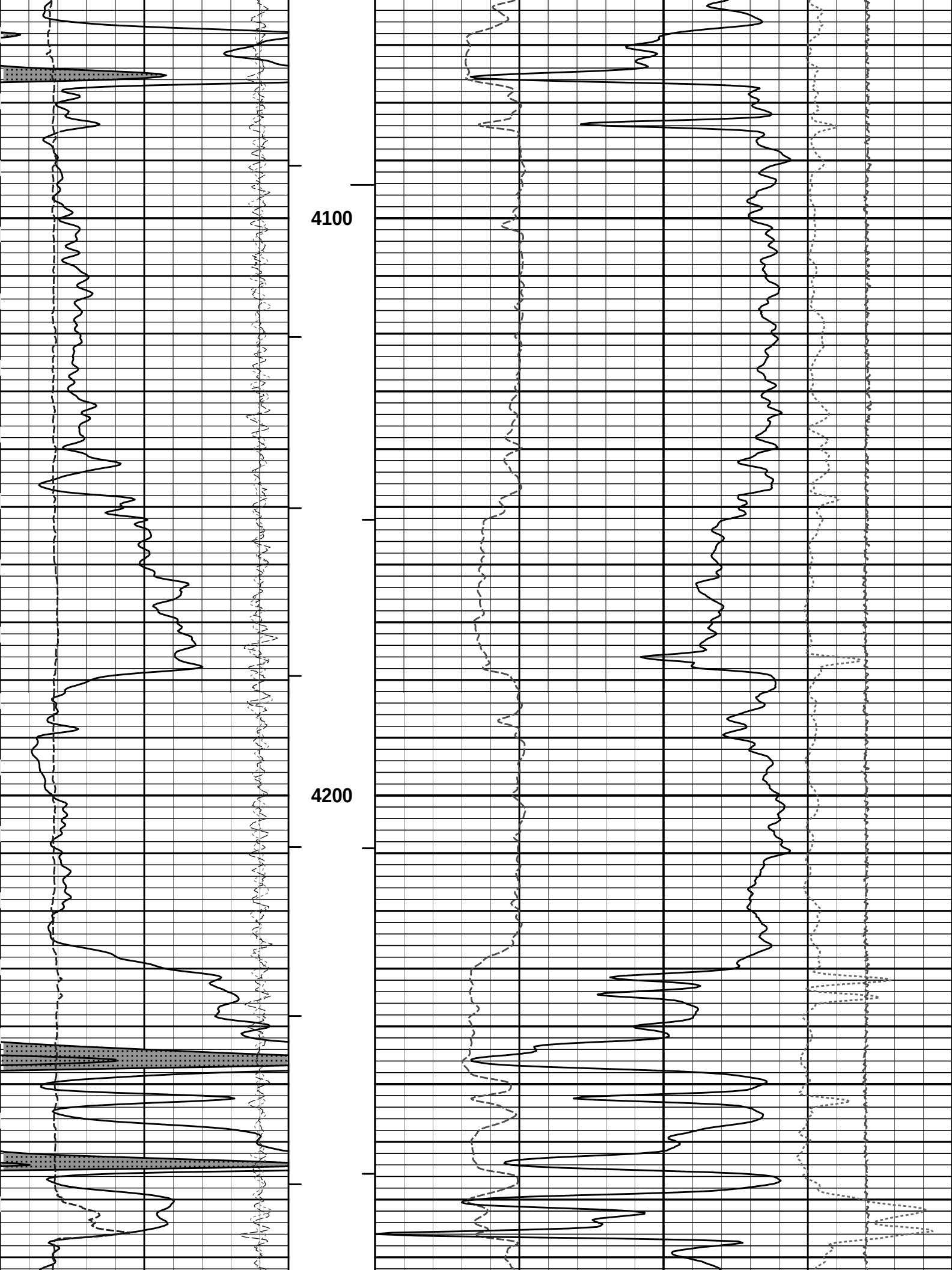


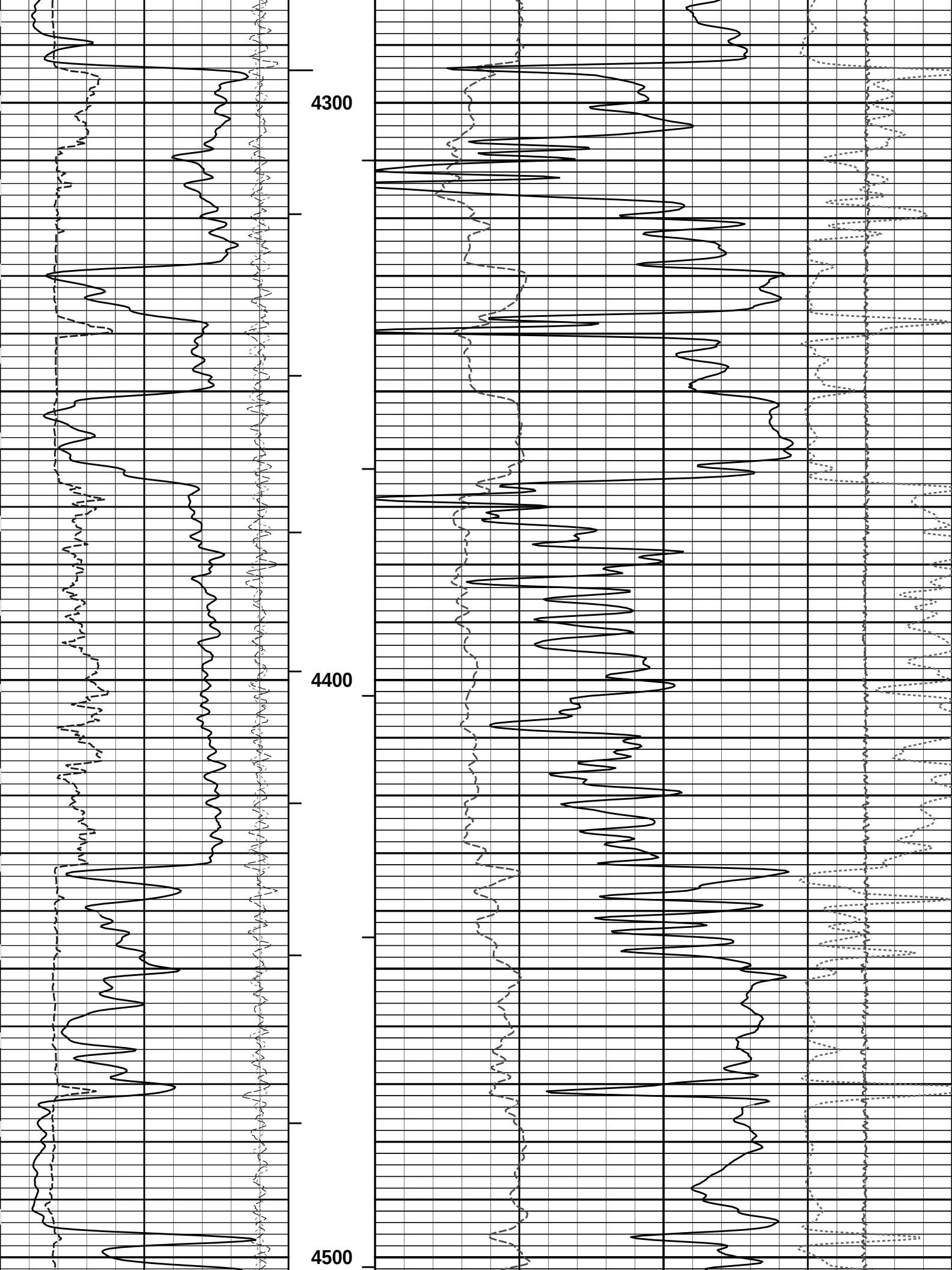


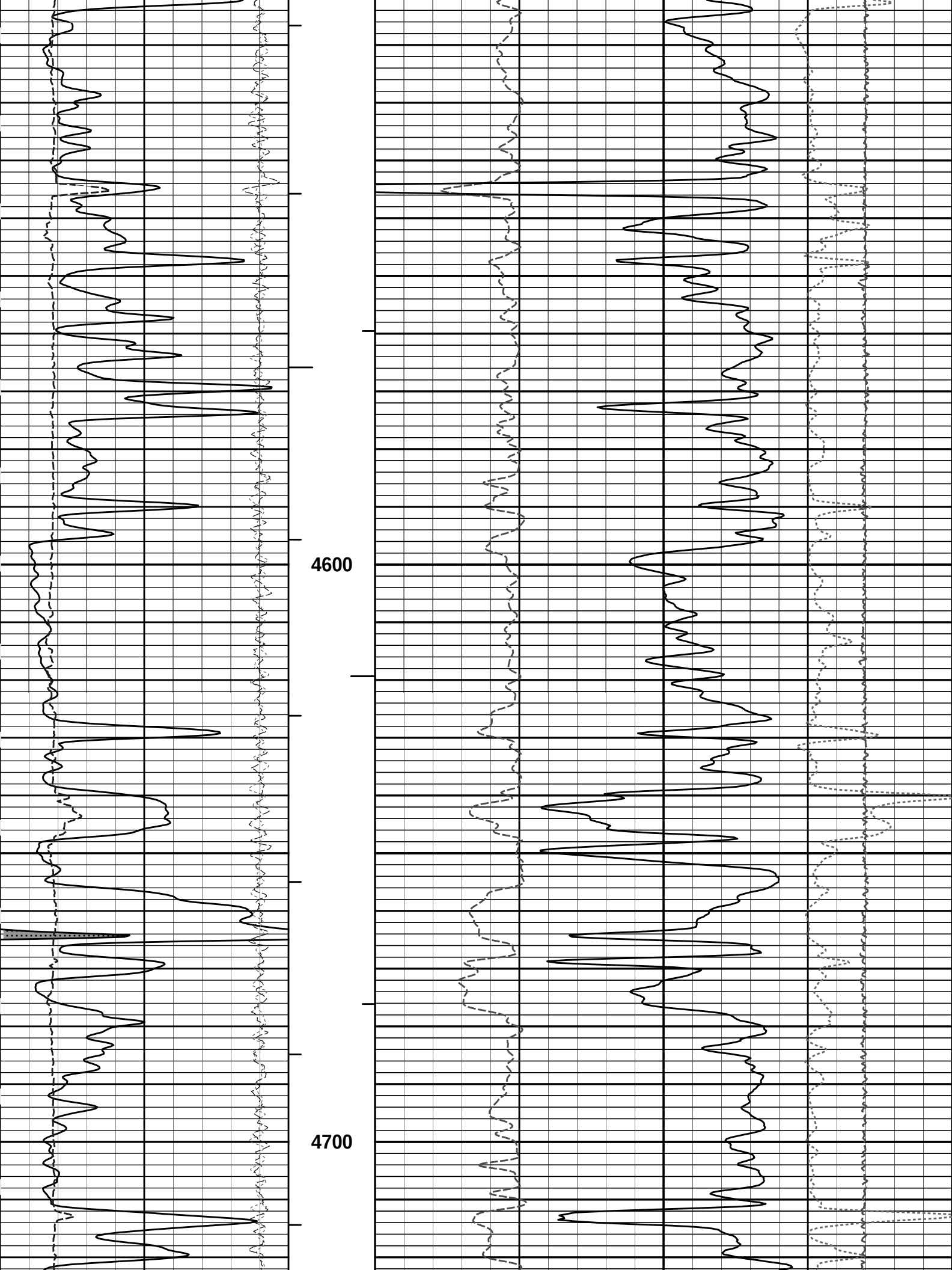


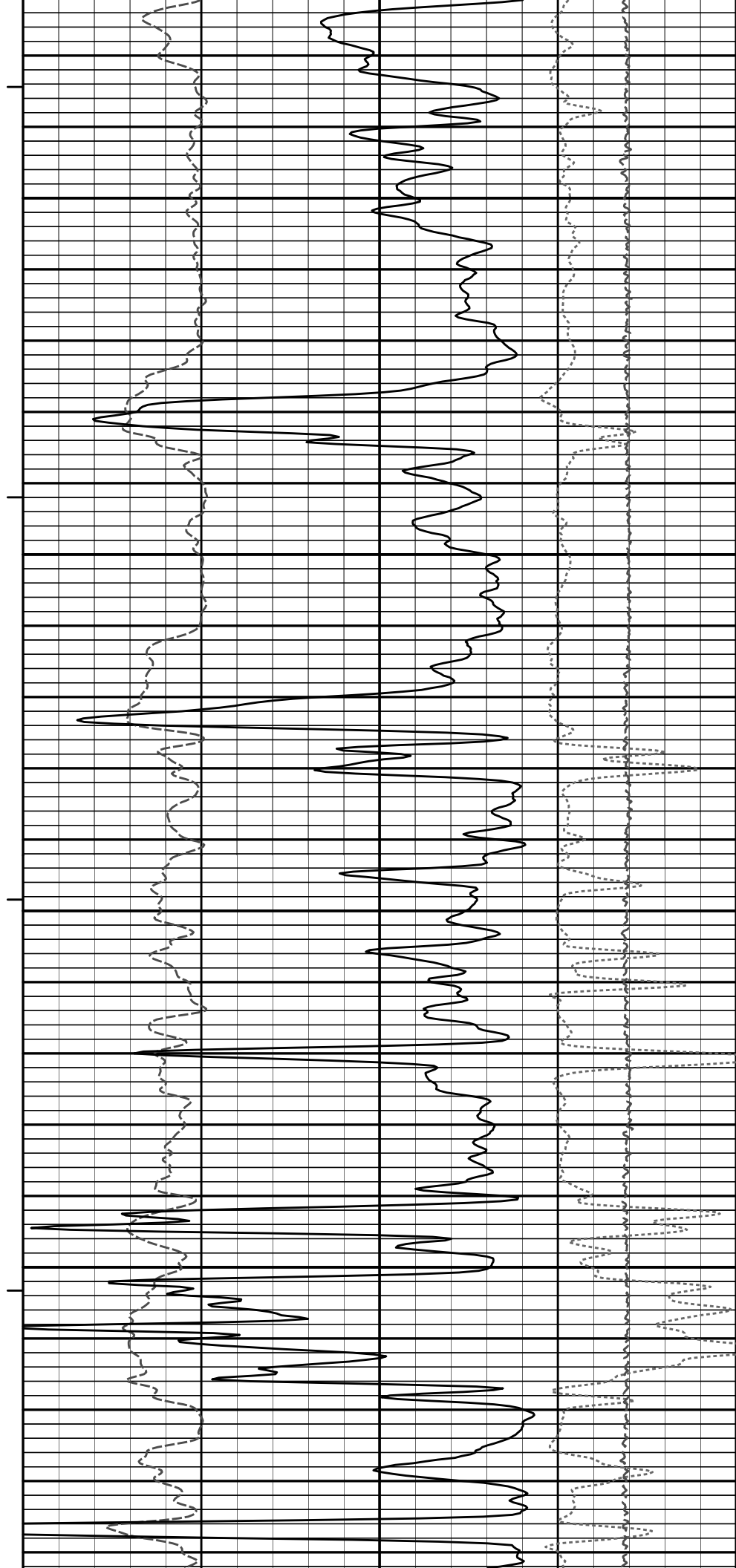
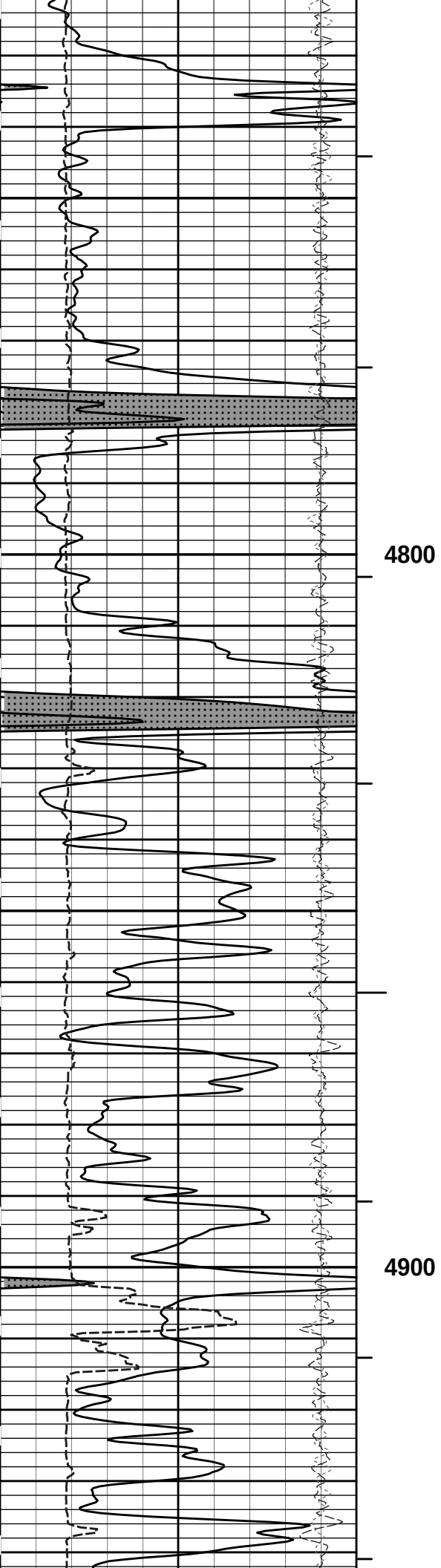


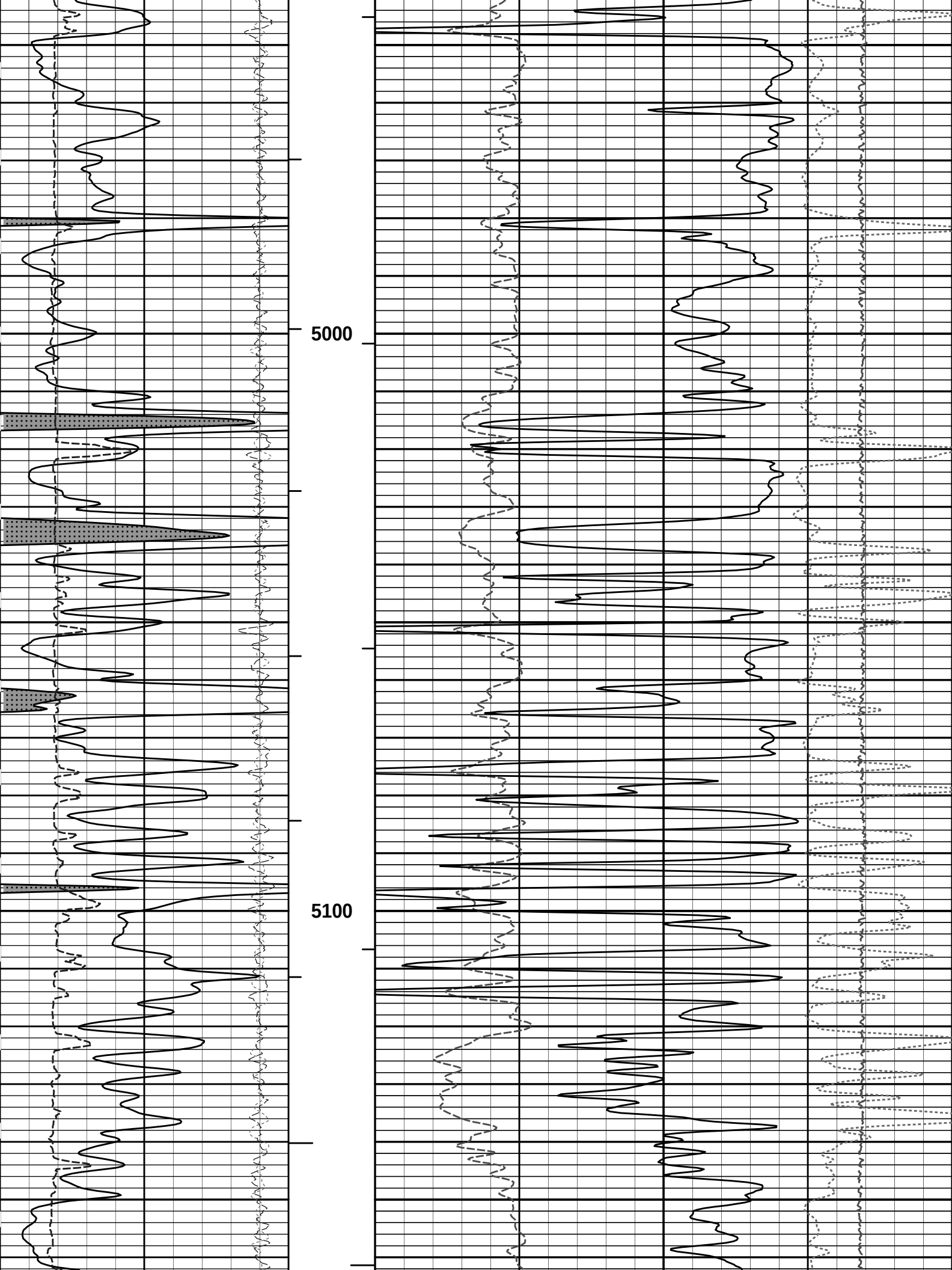


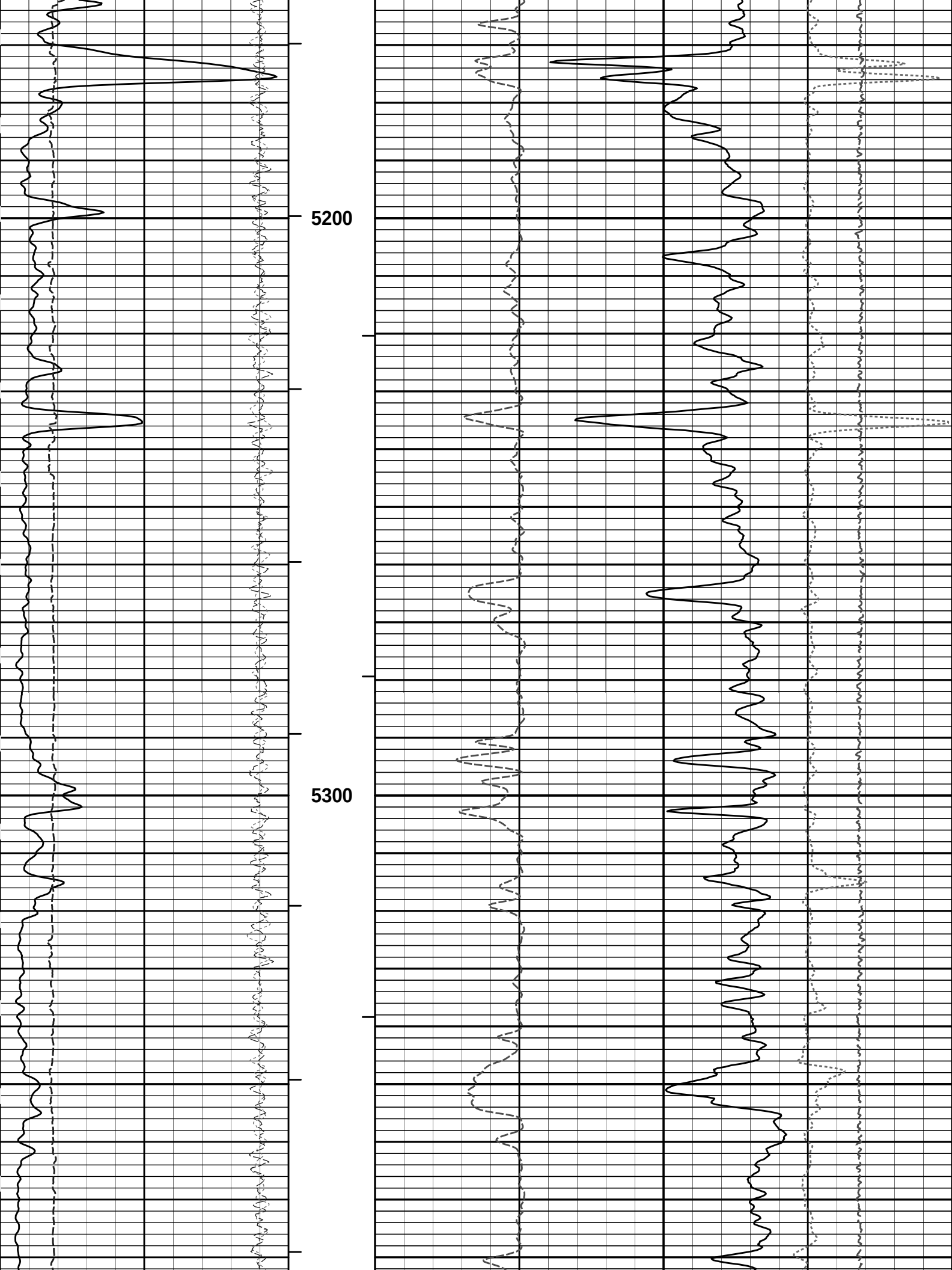


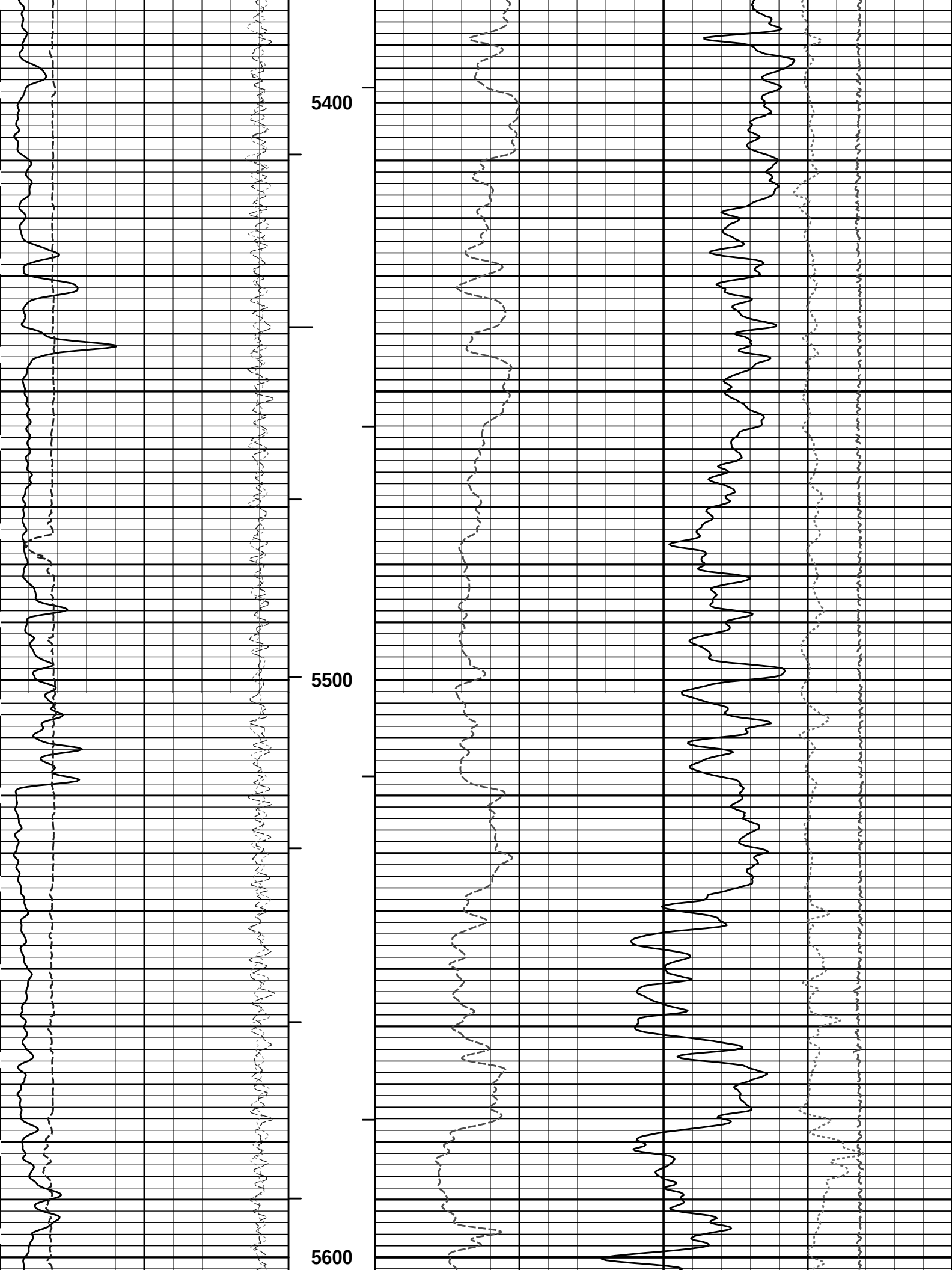


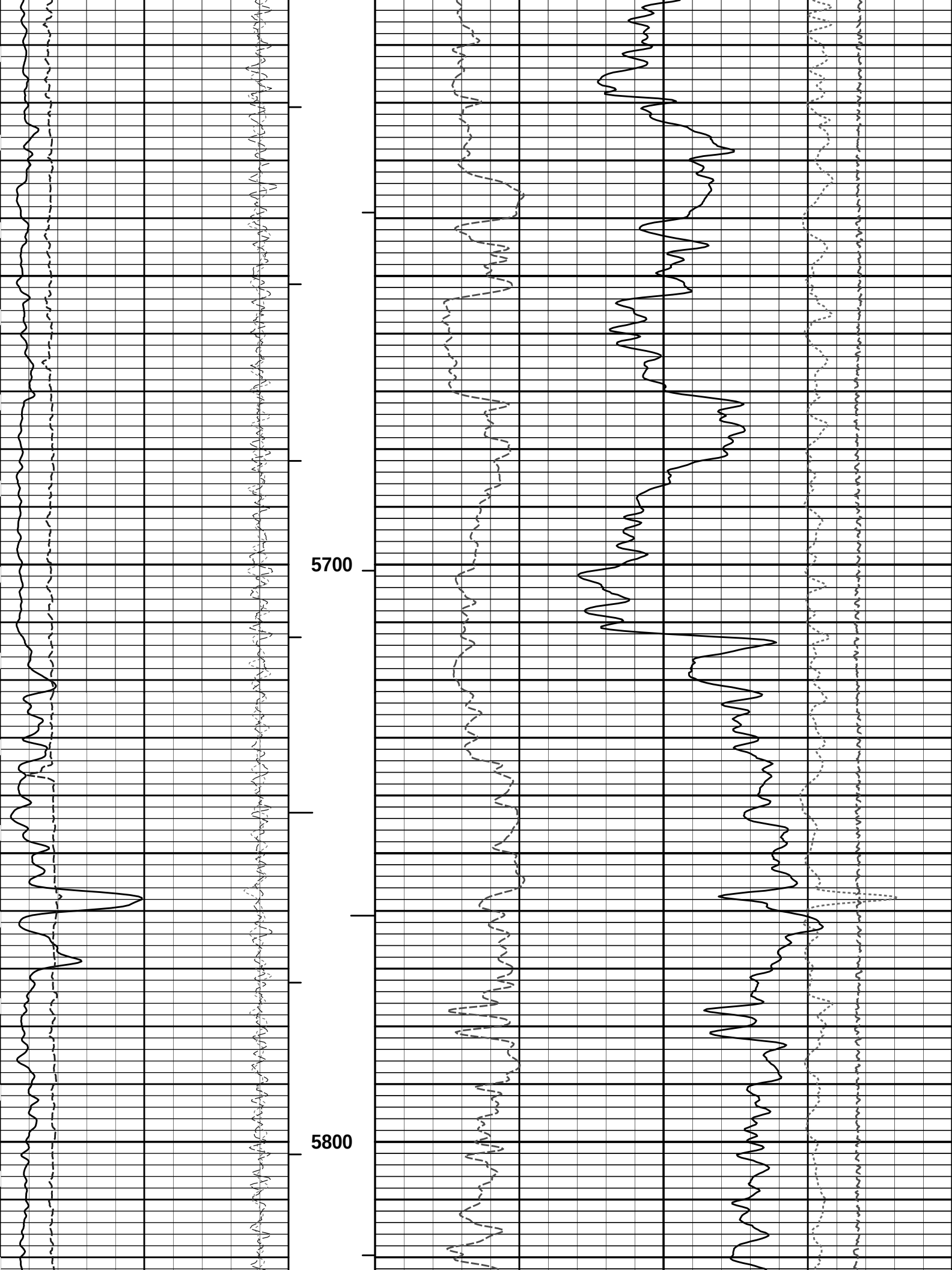


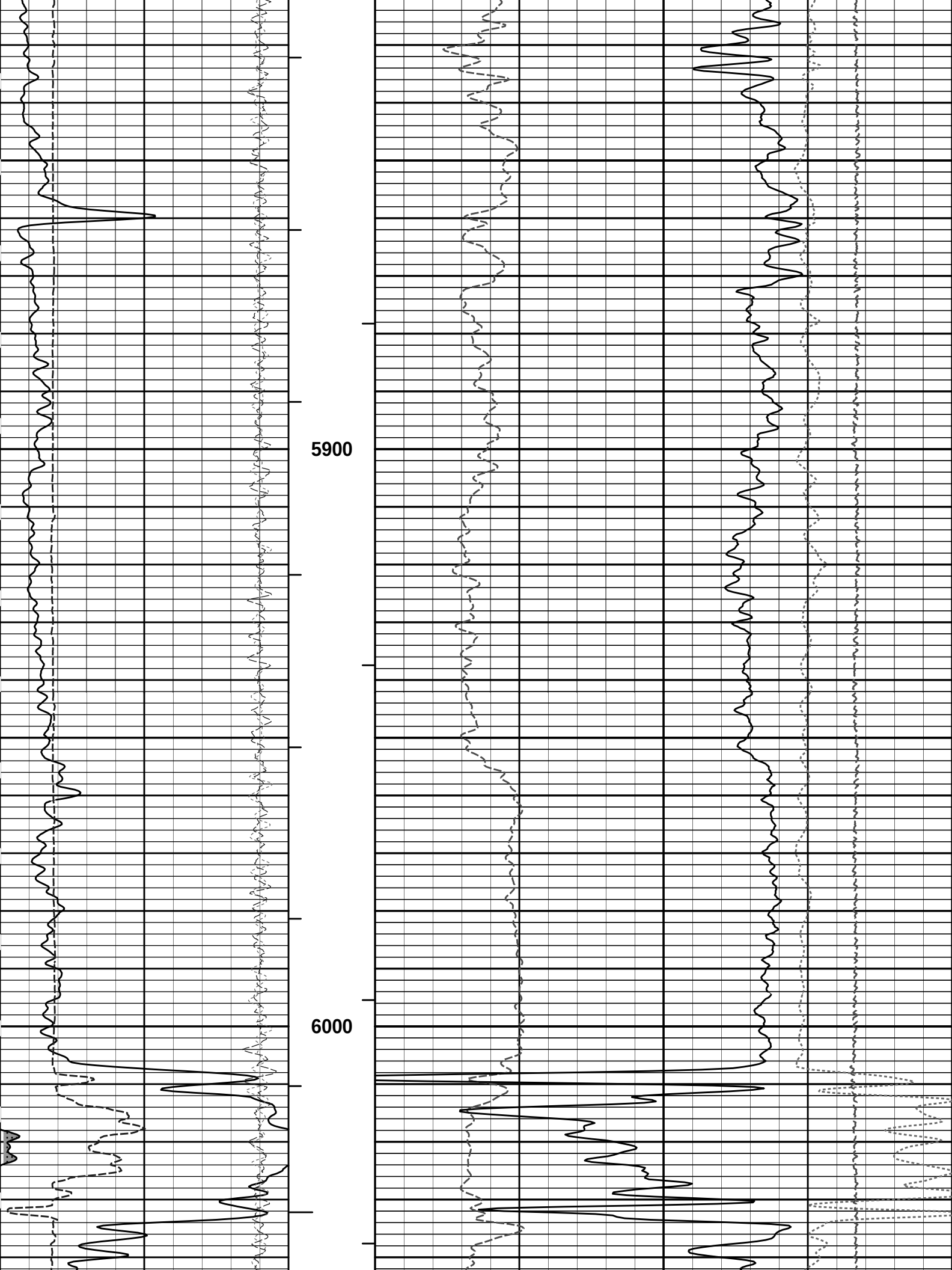


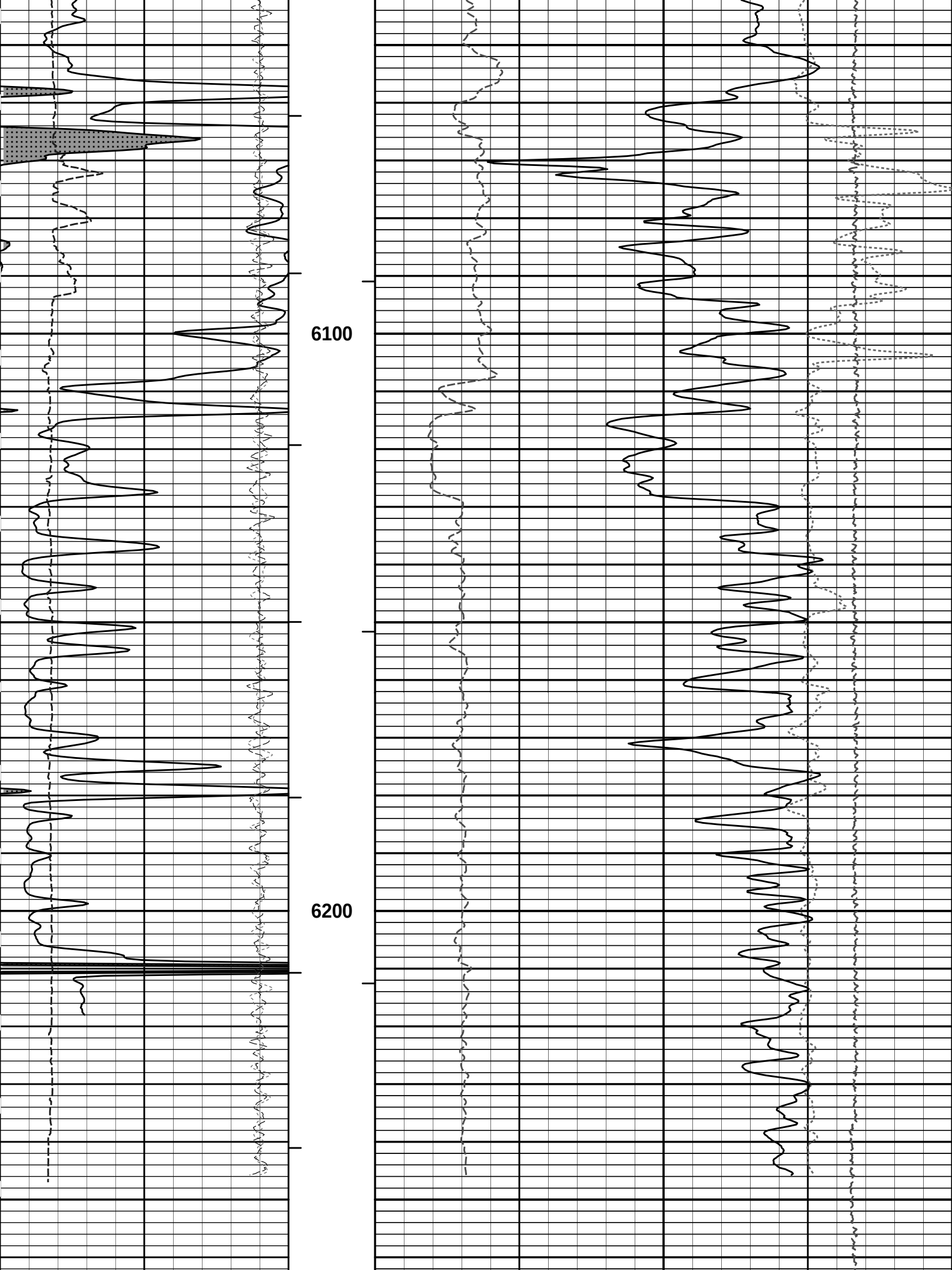


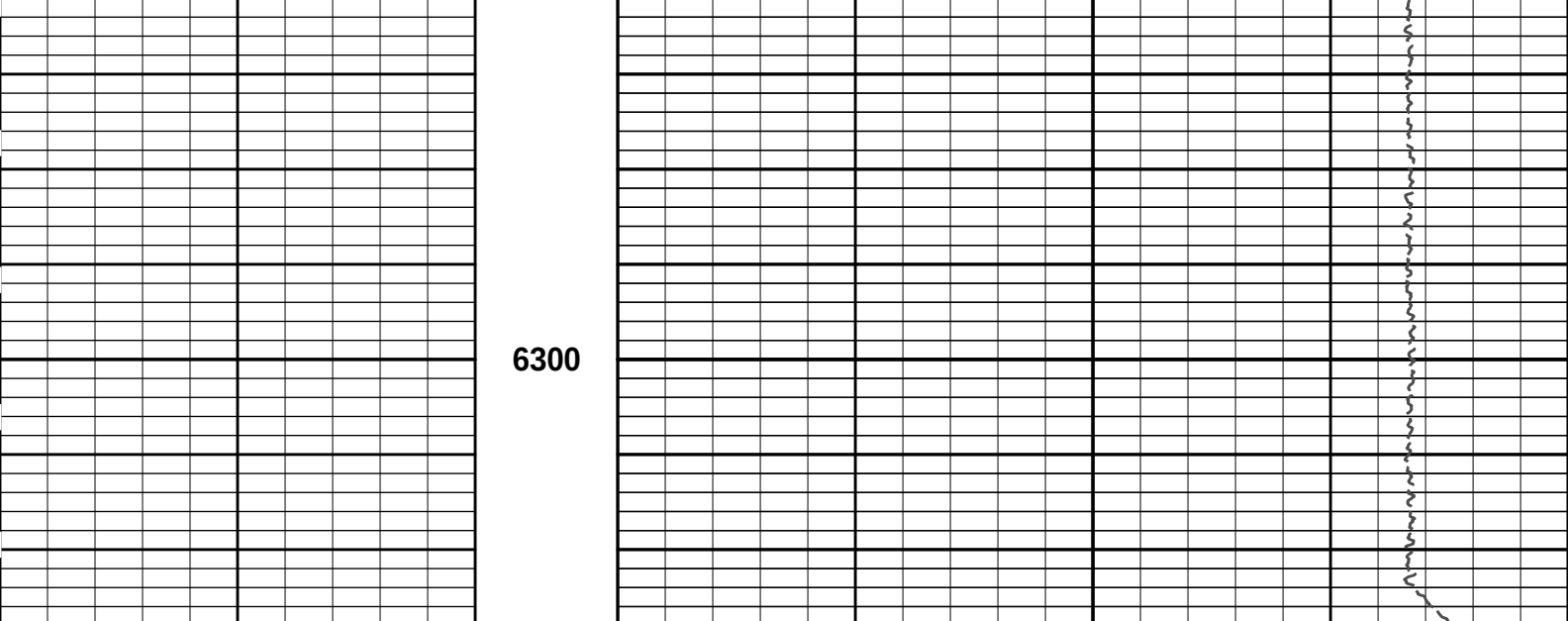












6	Caliper	16	MD 1 : 240 ft	0	Pe	10	-0.25	DensityCorr	0.25
	inches								
-18	NearQuality	2							
18	FarQuality	-2							
			AHV ft3	15K	Tension	0			
			BHV ft3	2	Bulk Density	3			
0	Gamma Ray	150							
	api								
	SHALE								

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Plot Time: 16-Aug-13 11:23:44
Plot Range: 730 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\IR1 CASING\
Plot File: \\-LOCAL-IPOROSITY\BULKD_5_MAIN_LIB

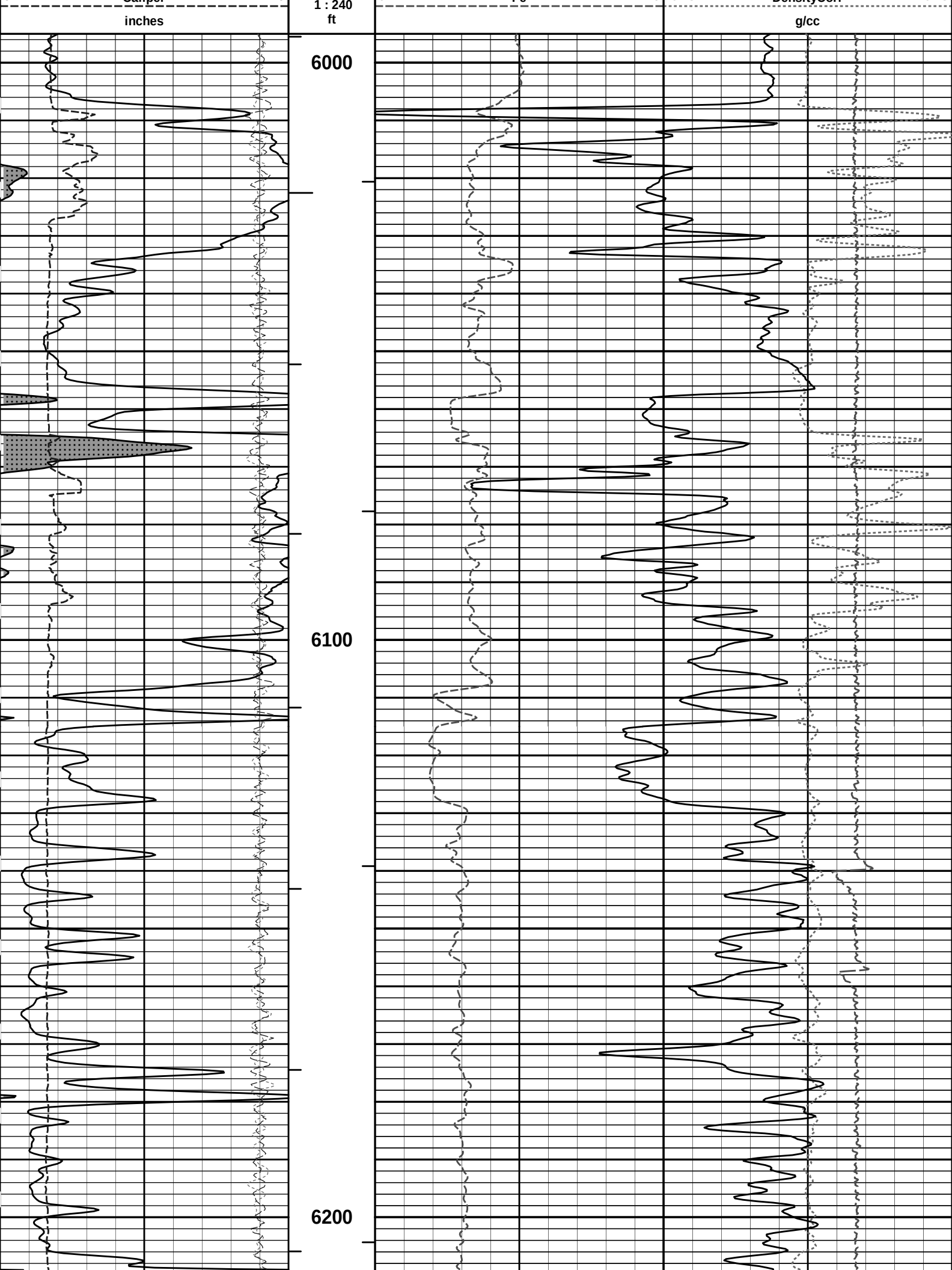
5 INCH MAIN LOG

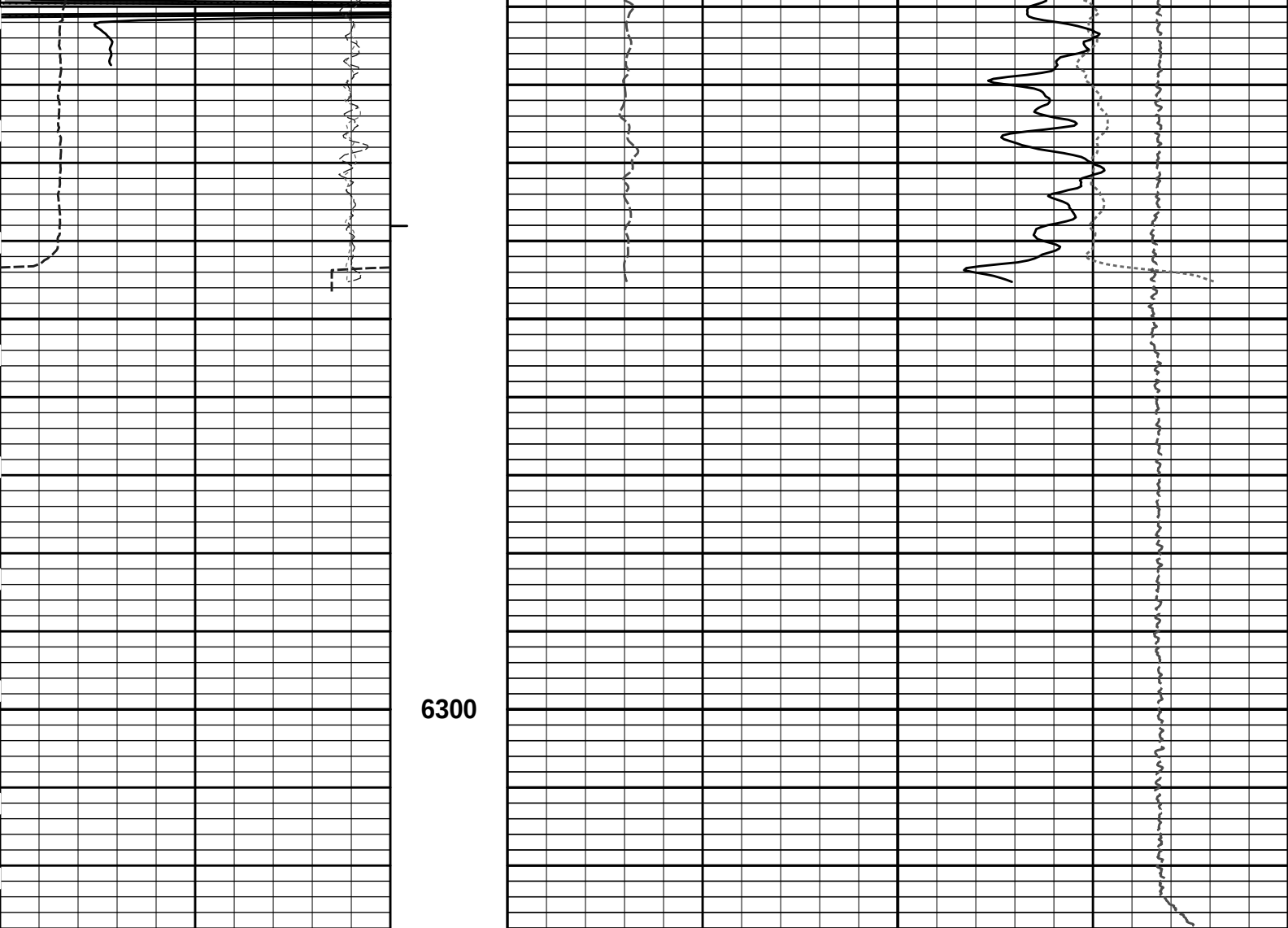
HALLIBURTON

Plot Time: 16-Aug-13 11:23:45
Plot Range: 5995 ft to 6328.17 ft
Data: MILLY_3020_1-19\Well Based\IR1 REPEAT\
Plot File: \\-LOCAL-IPOROSITY\BULKD_5_REP_LIB

REPEAT SECTION

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





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

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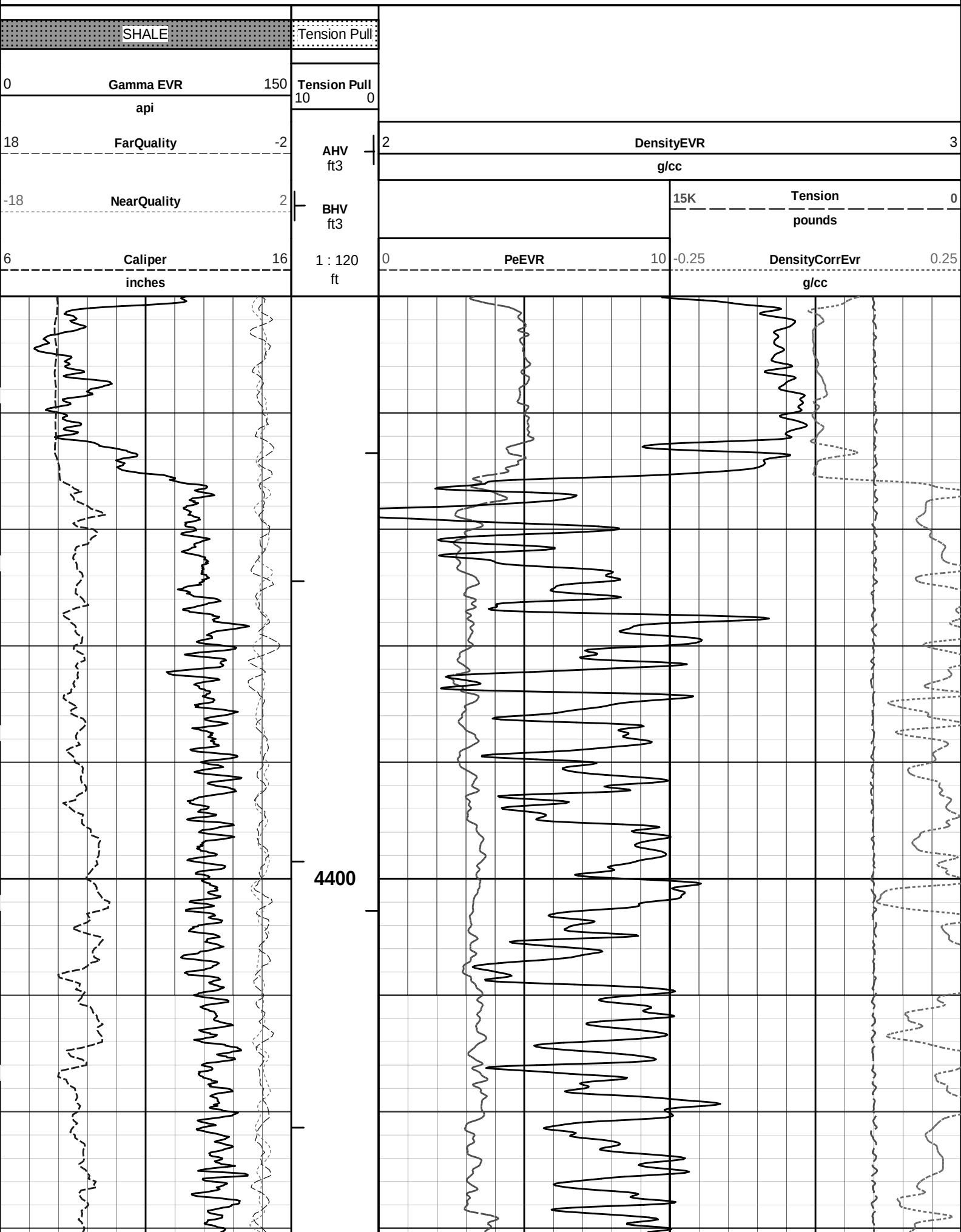
Plot Time: 16-Aug-13 11:23:49
Plot Range: 5995 ft to 6328.17 ft
Data: MILLY_3020_1-19\Well Based\IR1 REPEAT\
Plot File: \\-LOCAL-IPOROSITY\BULKD_5_REP_LIB

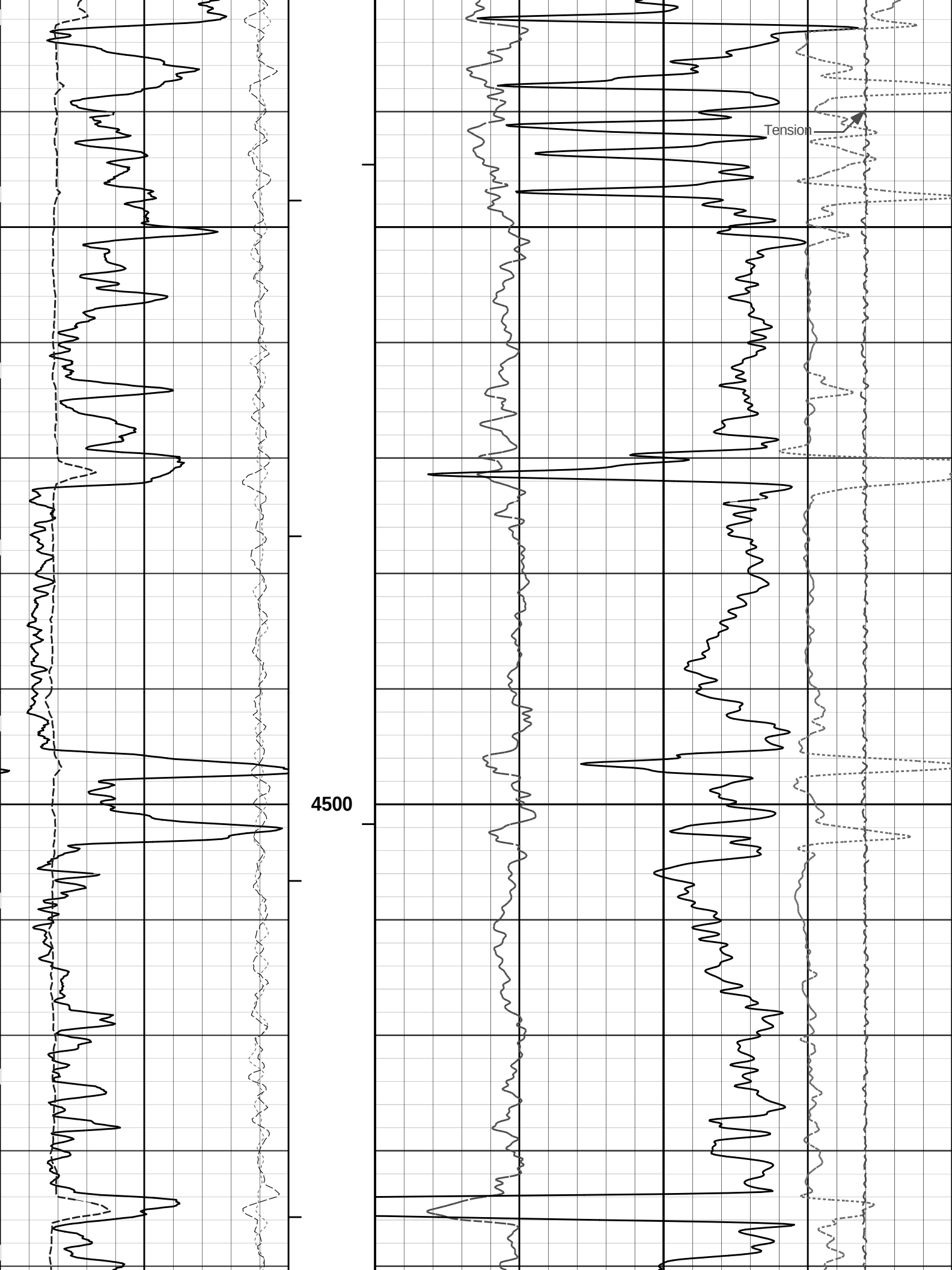
REPEAT SECTION

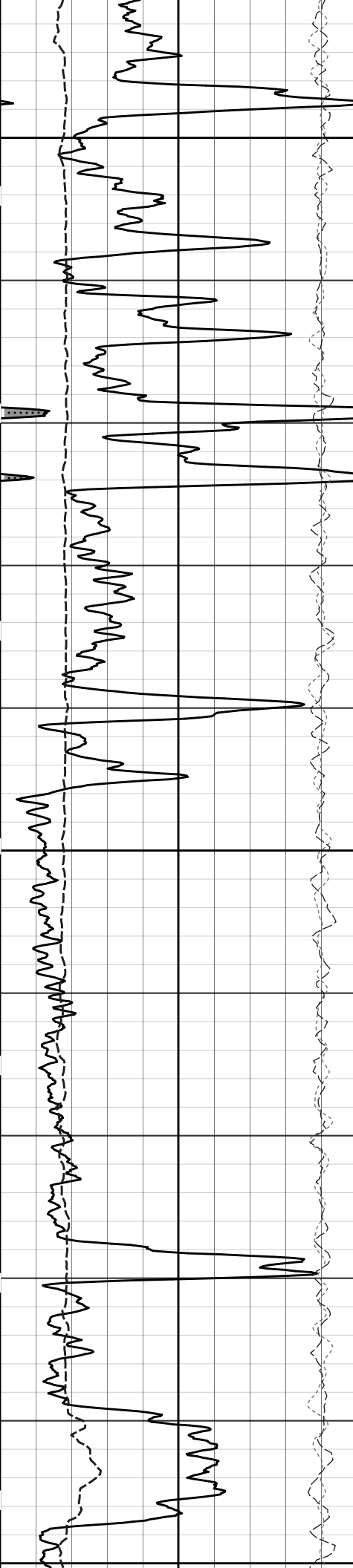
HALLIBURTON

Plot Time: 16-Aug-13 11:23:50
Plot Range: 4350 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\IR1 EVR\
Plot File: \\-LOCAL-IPOROSITY\BULKD_5_EVR

5 INCH MAIN LOG

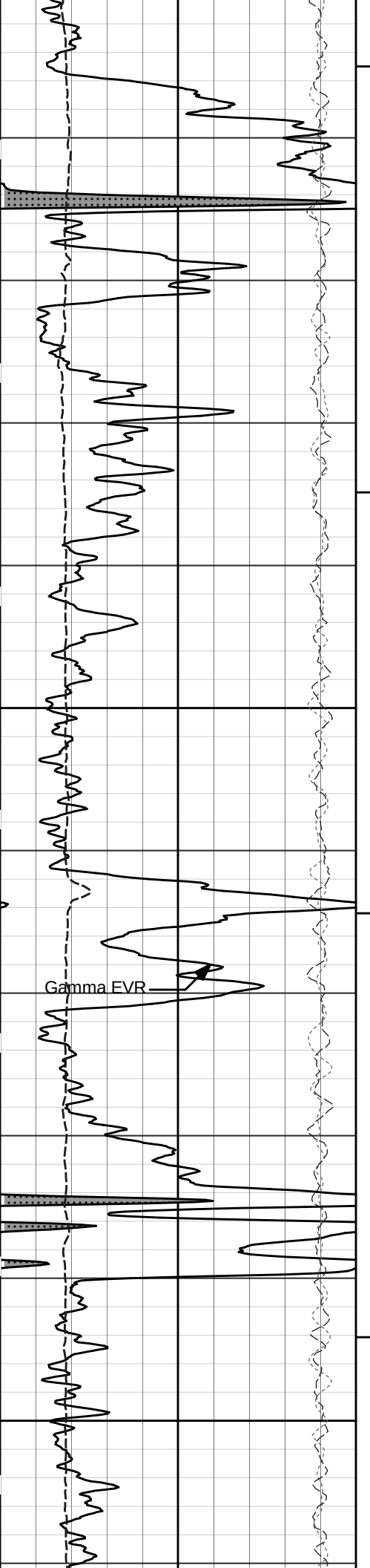




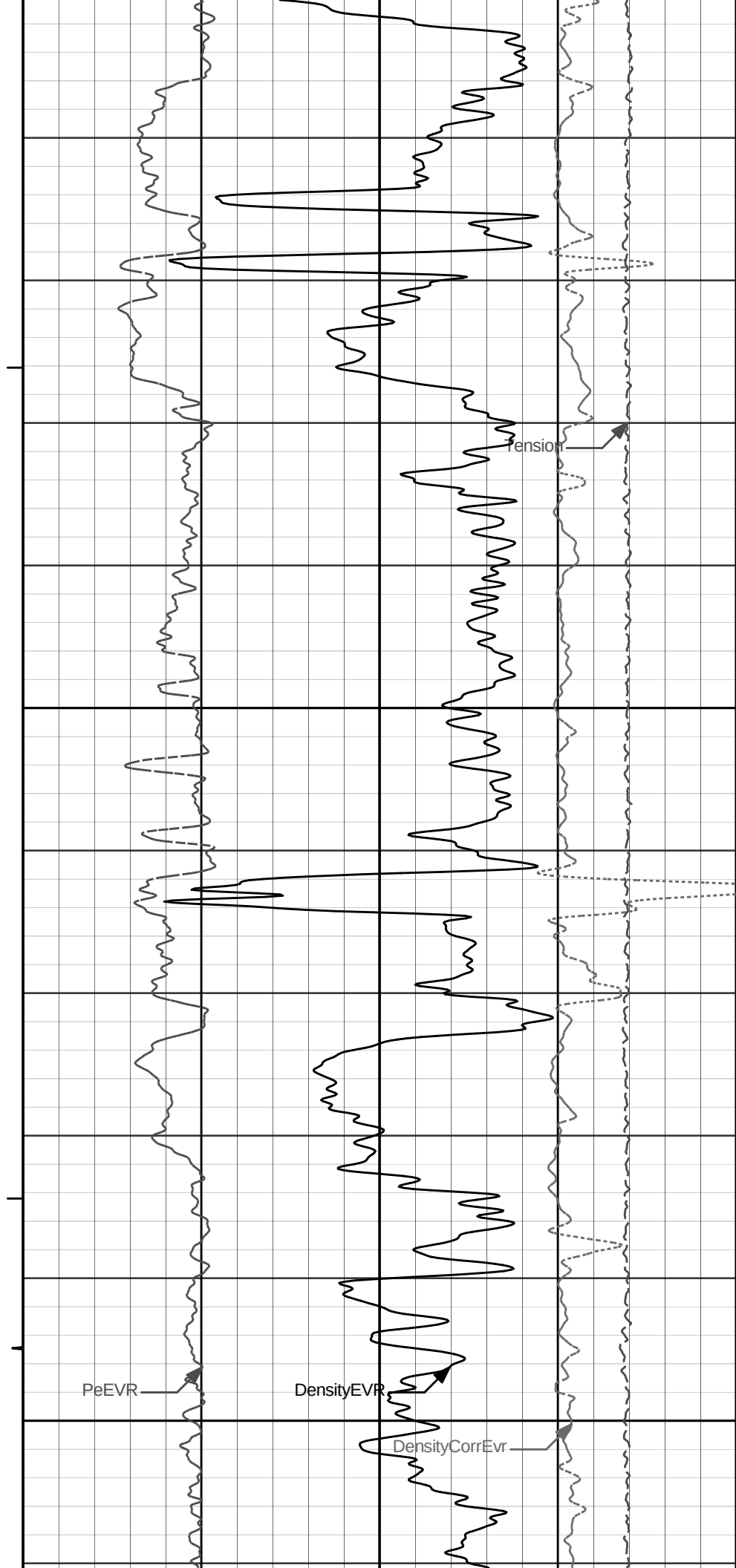


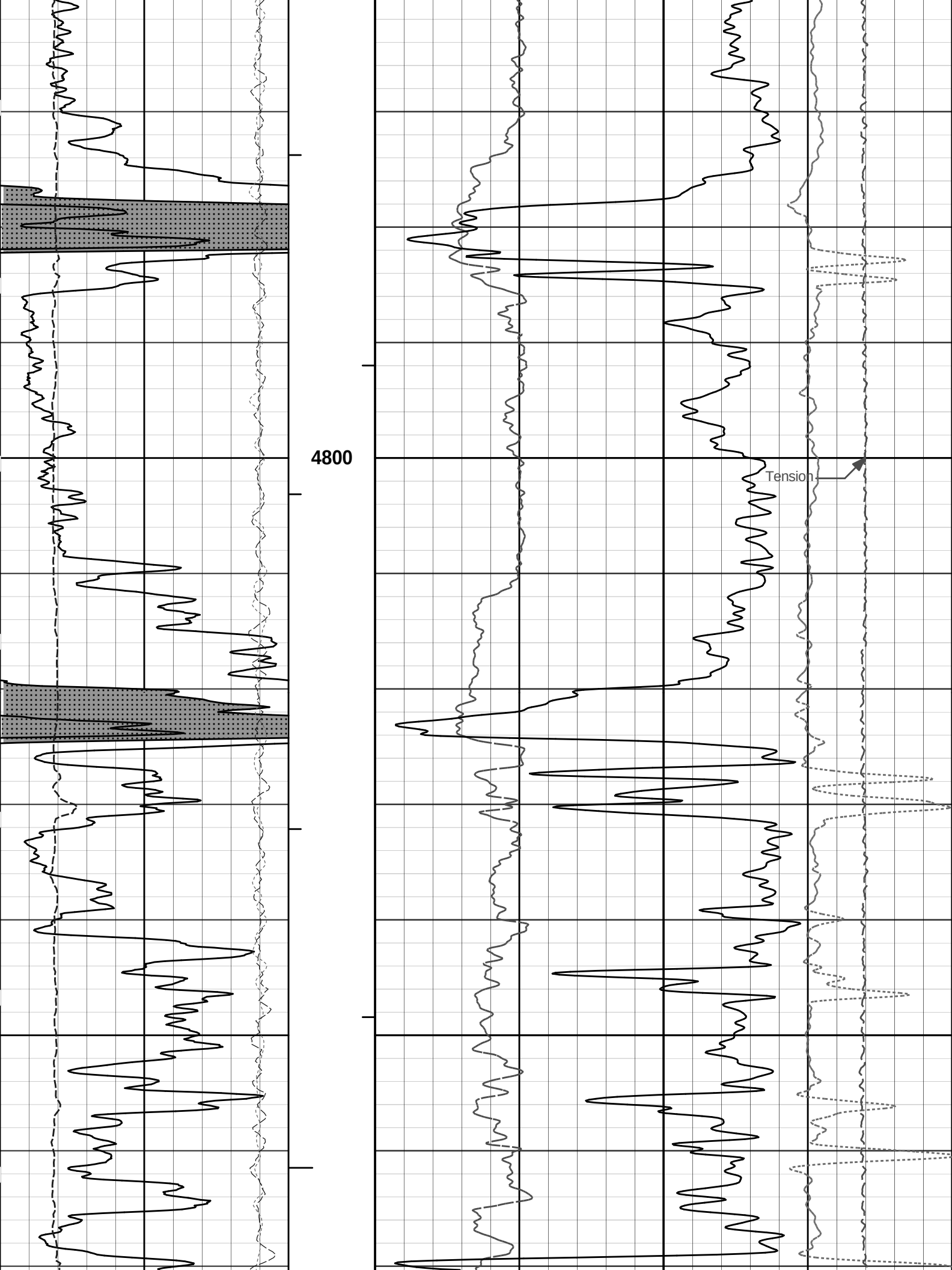
4600

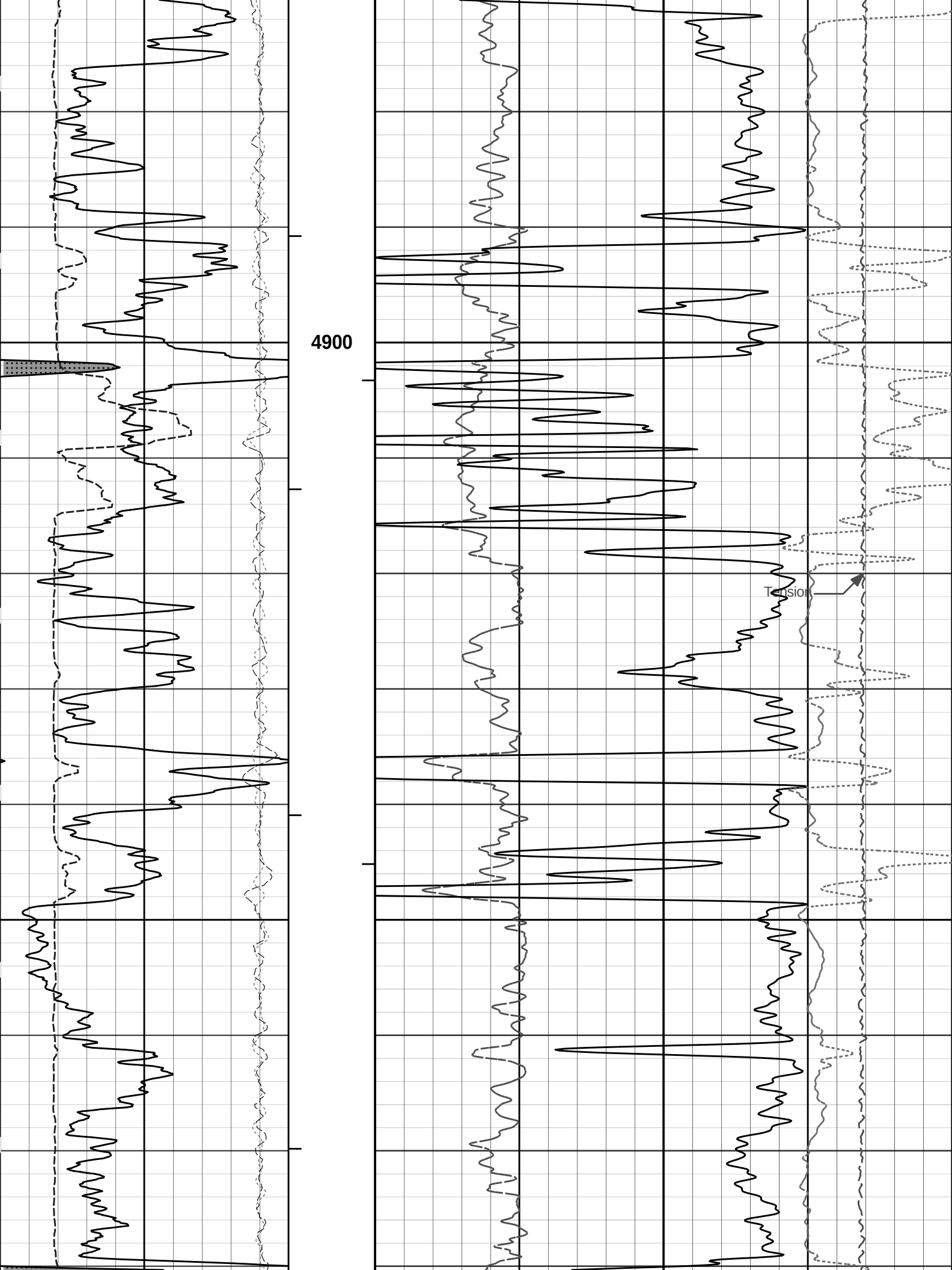


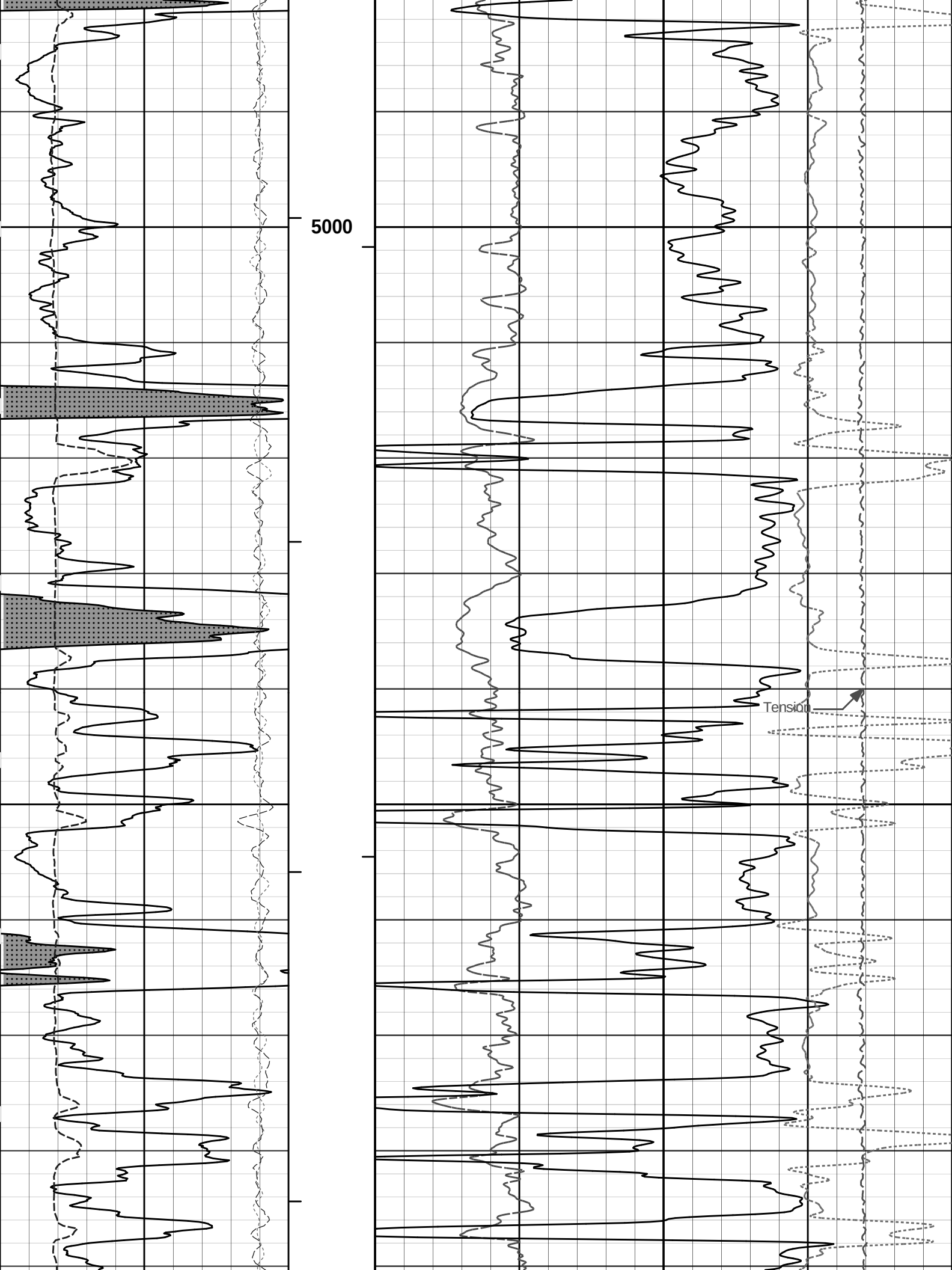


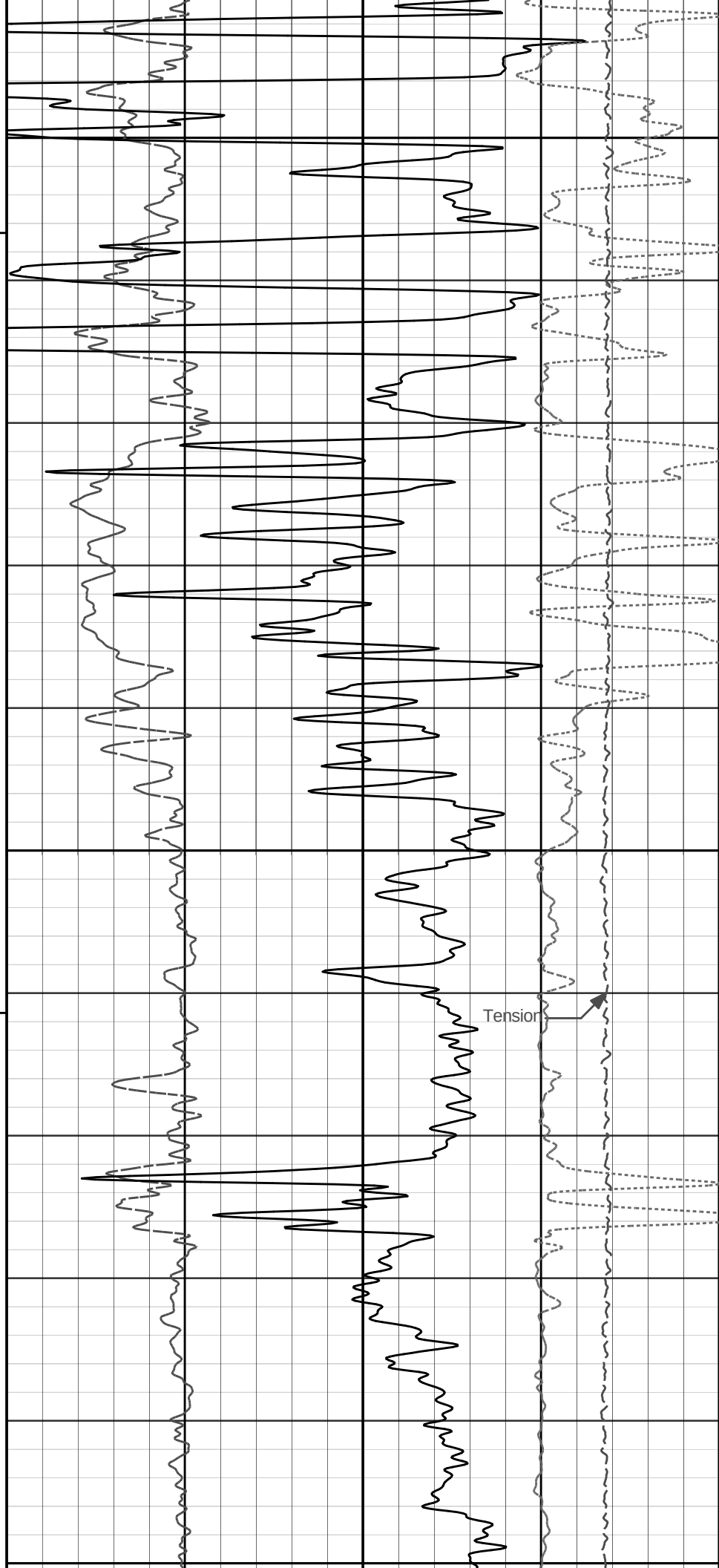
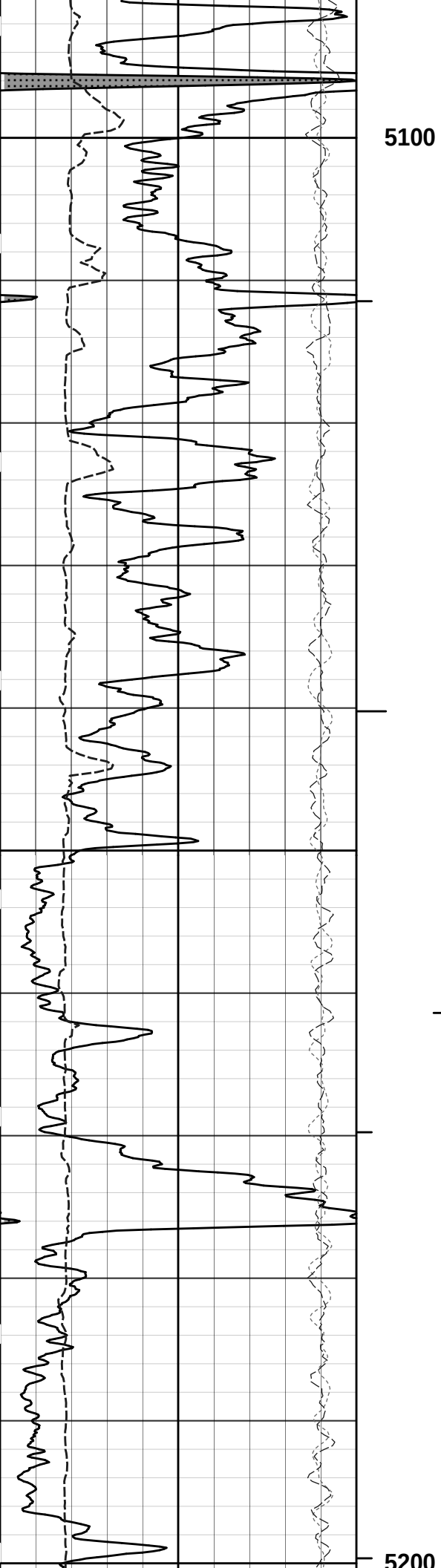
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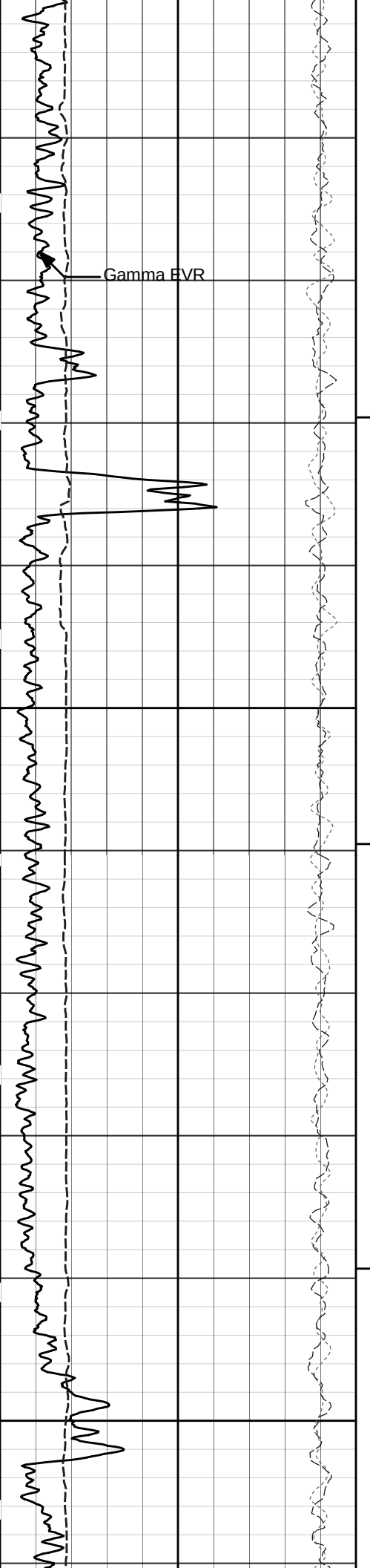




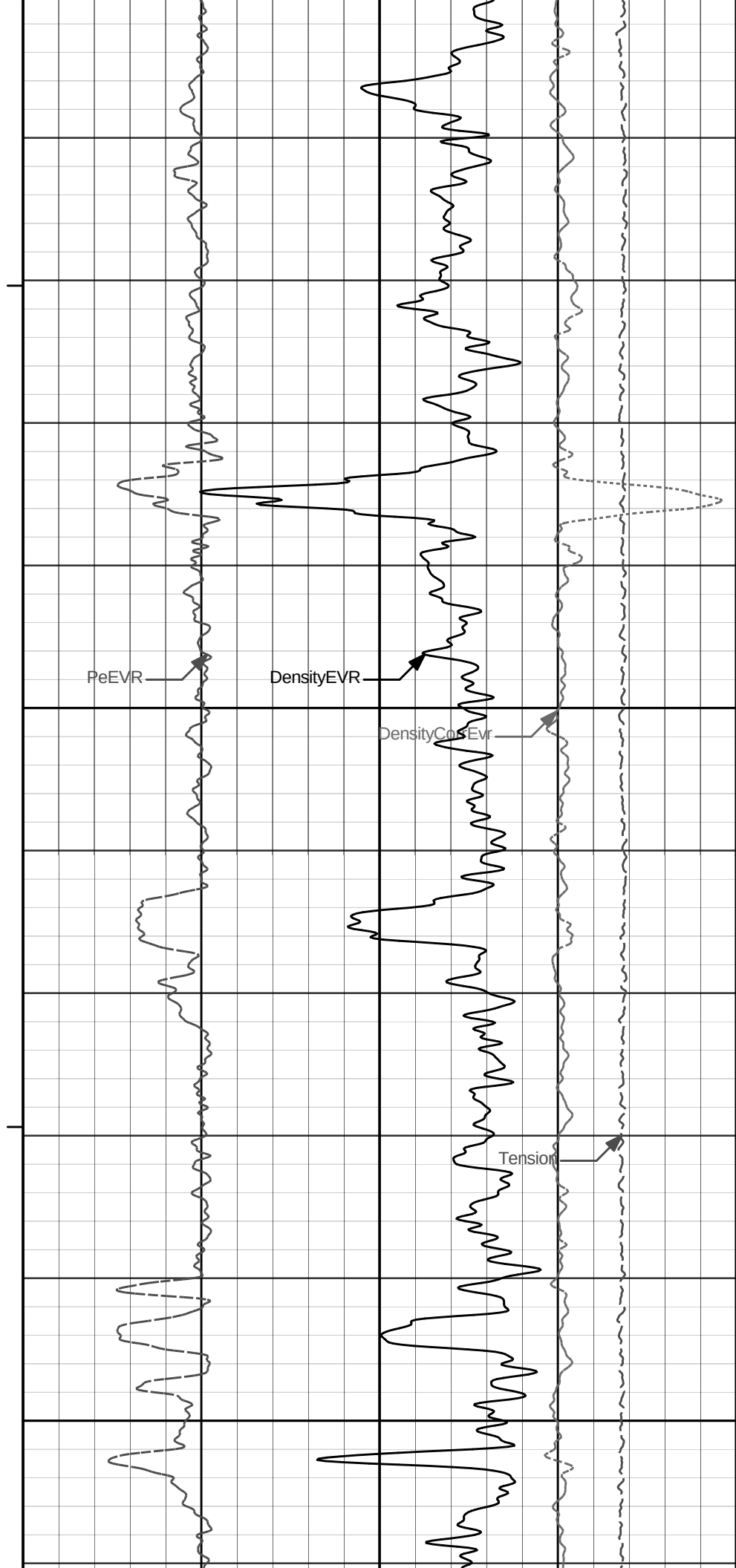


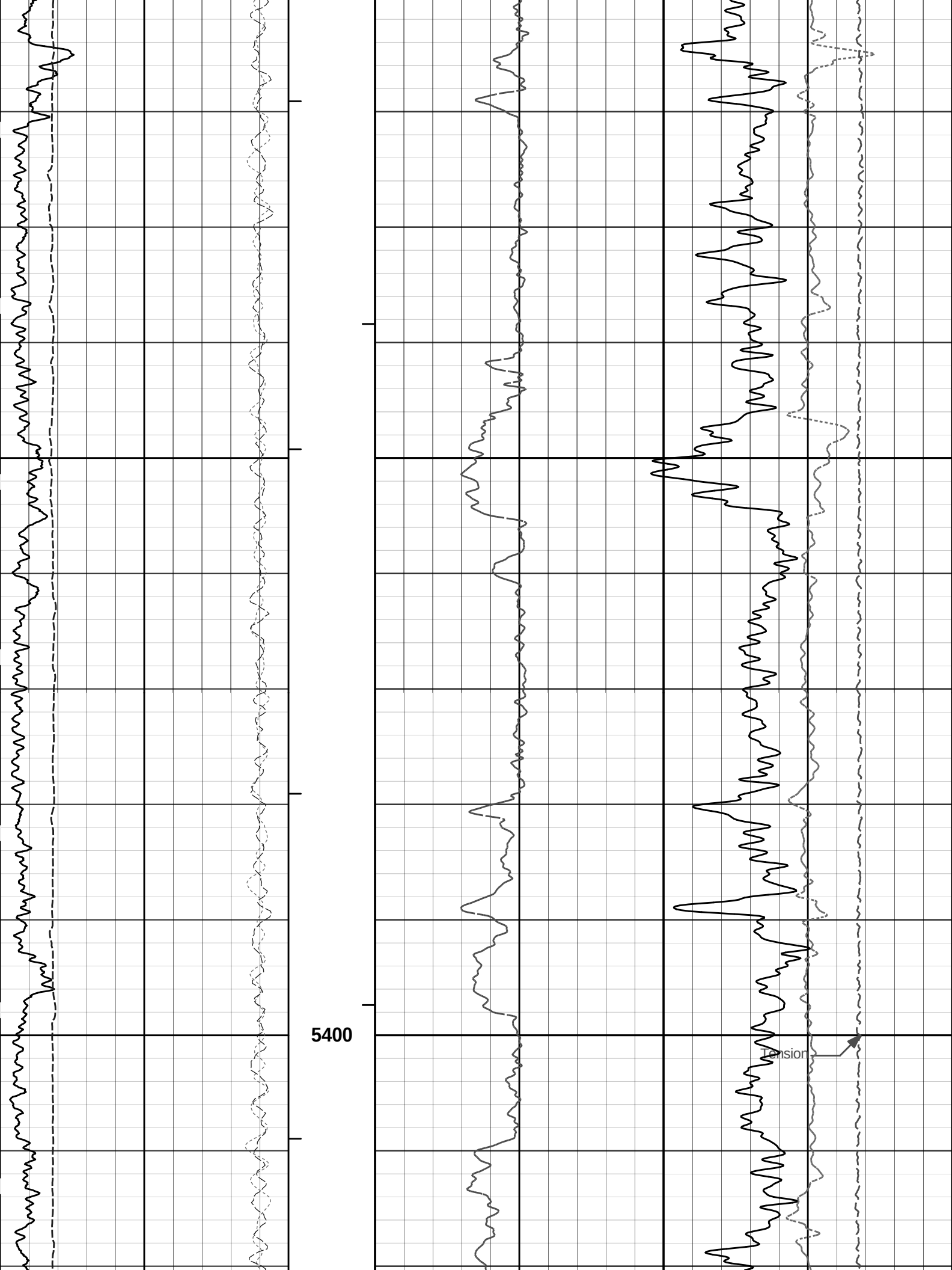


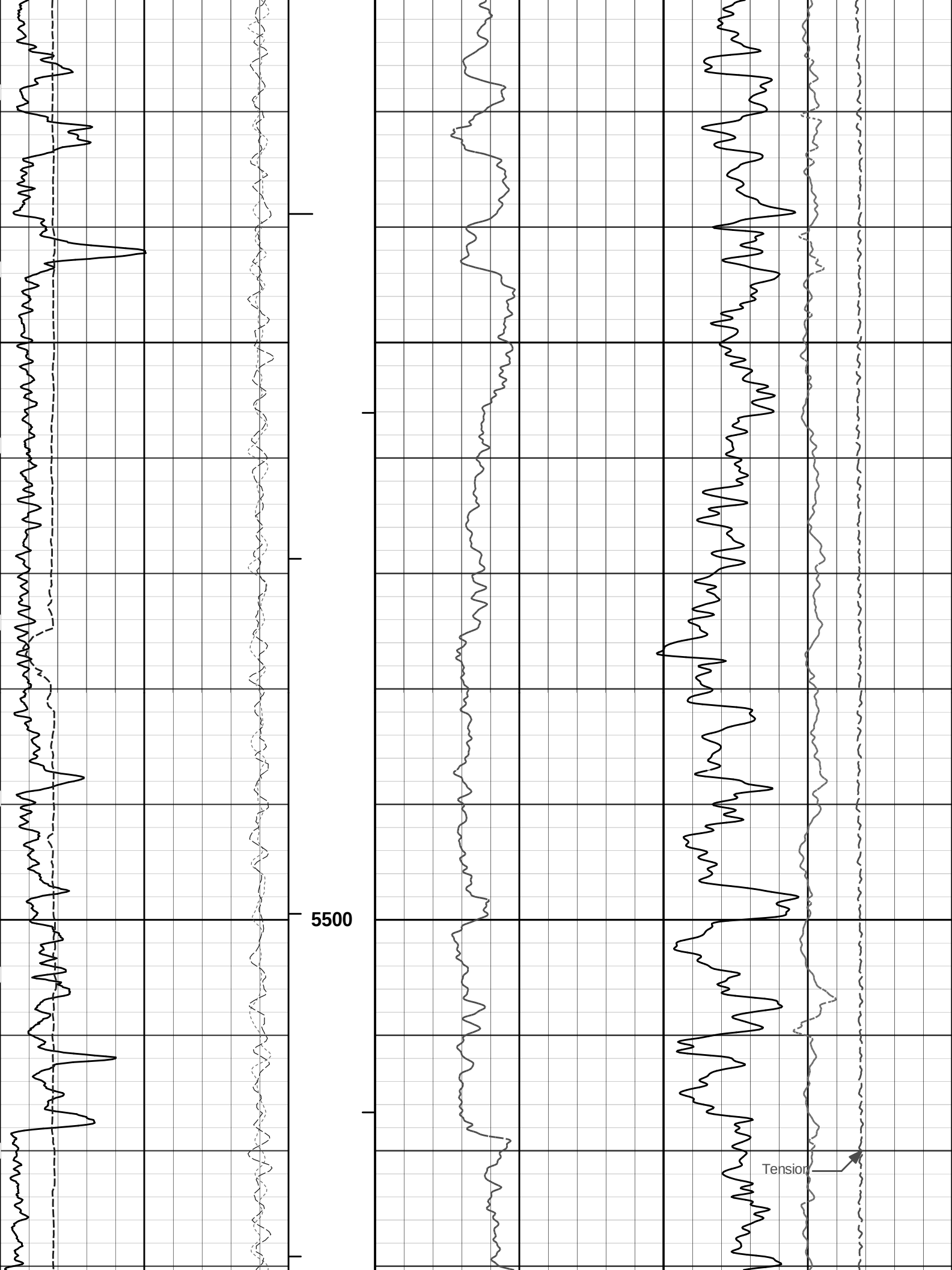


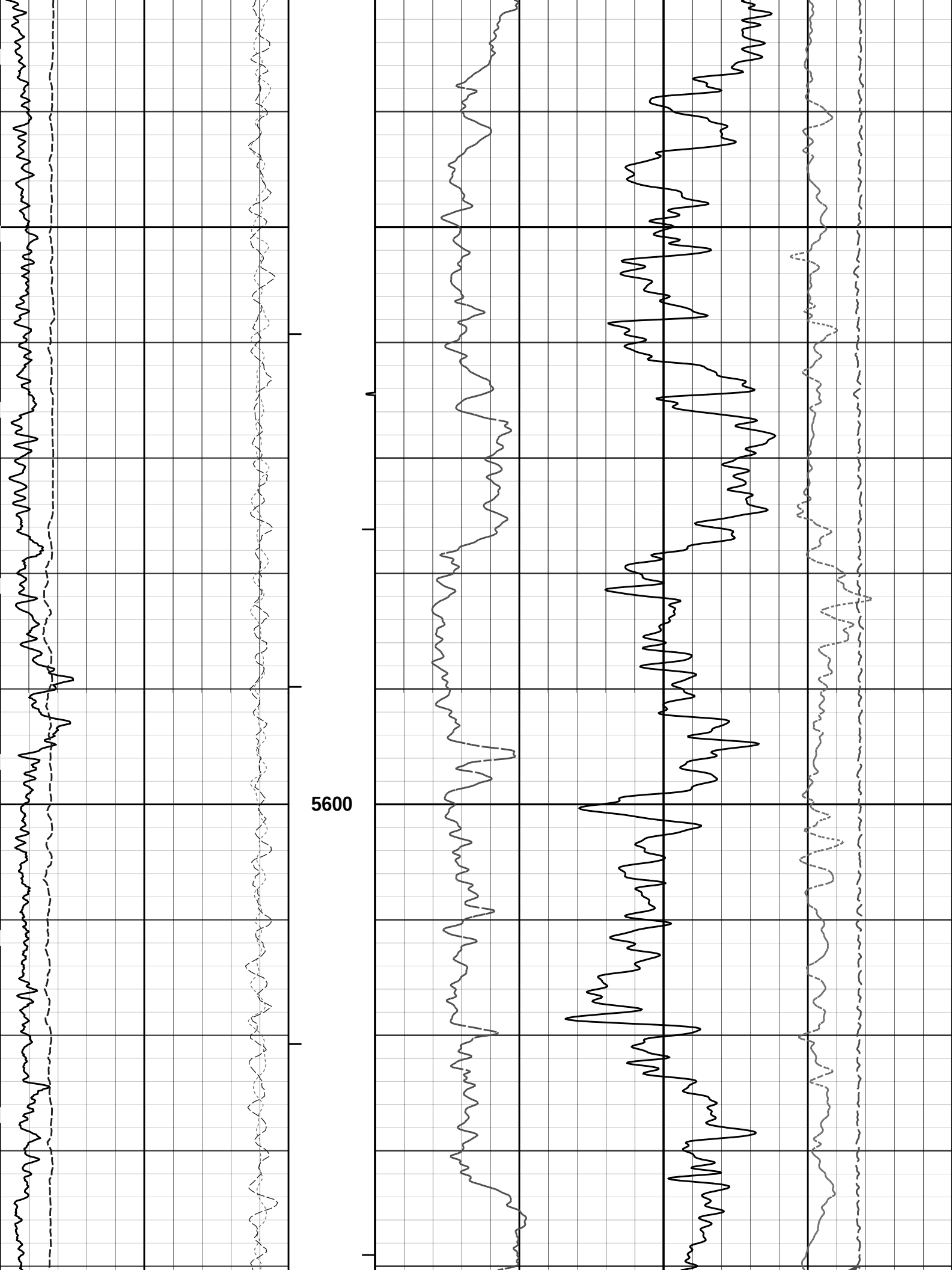


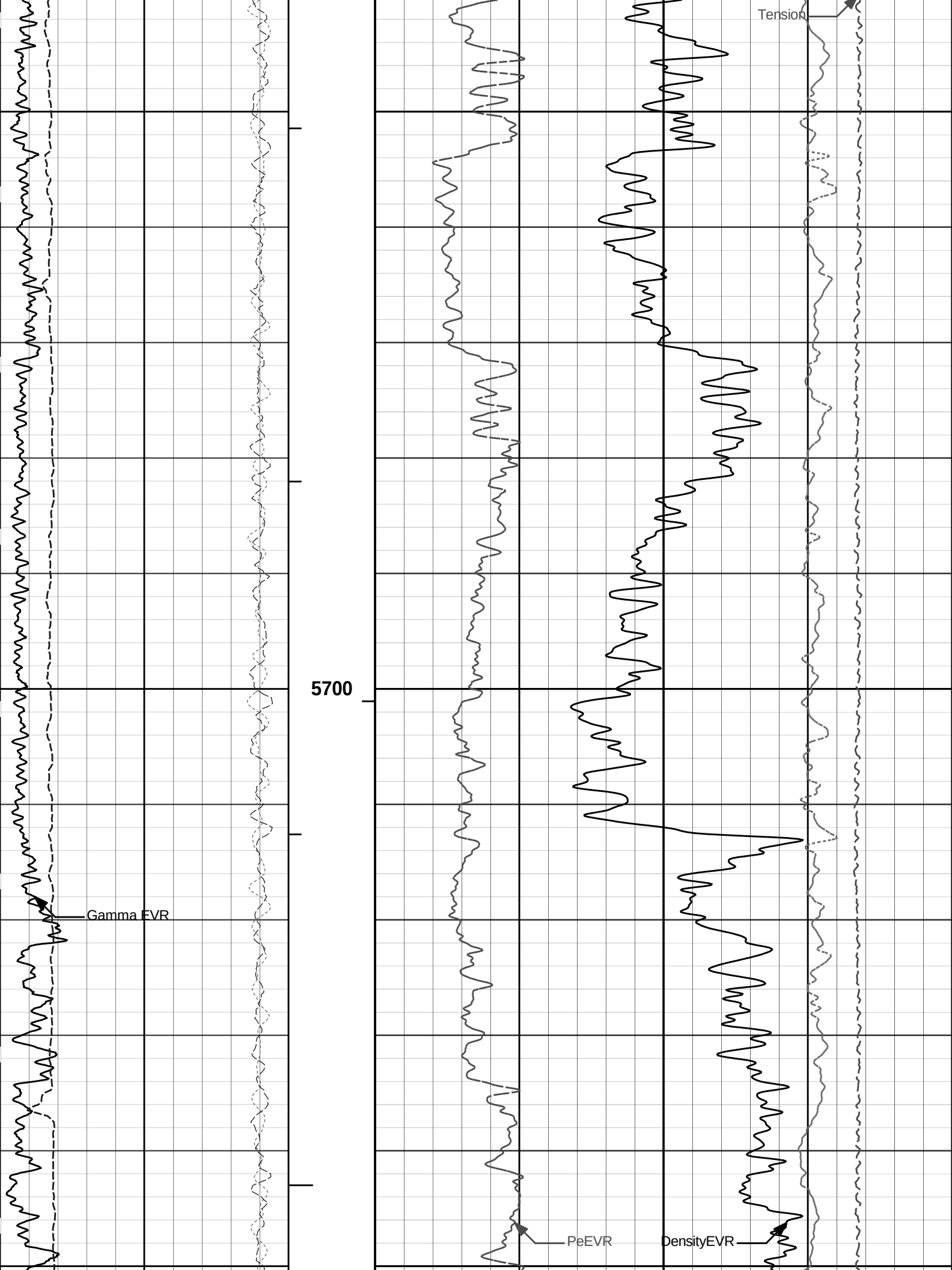
5300

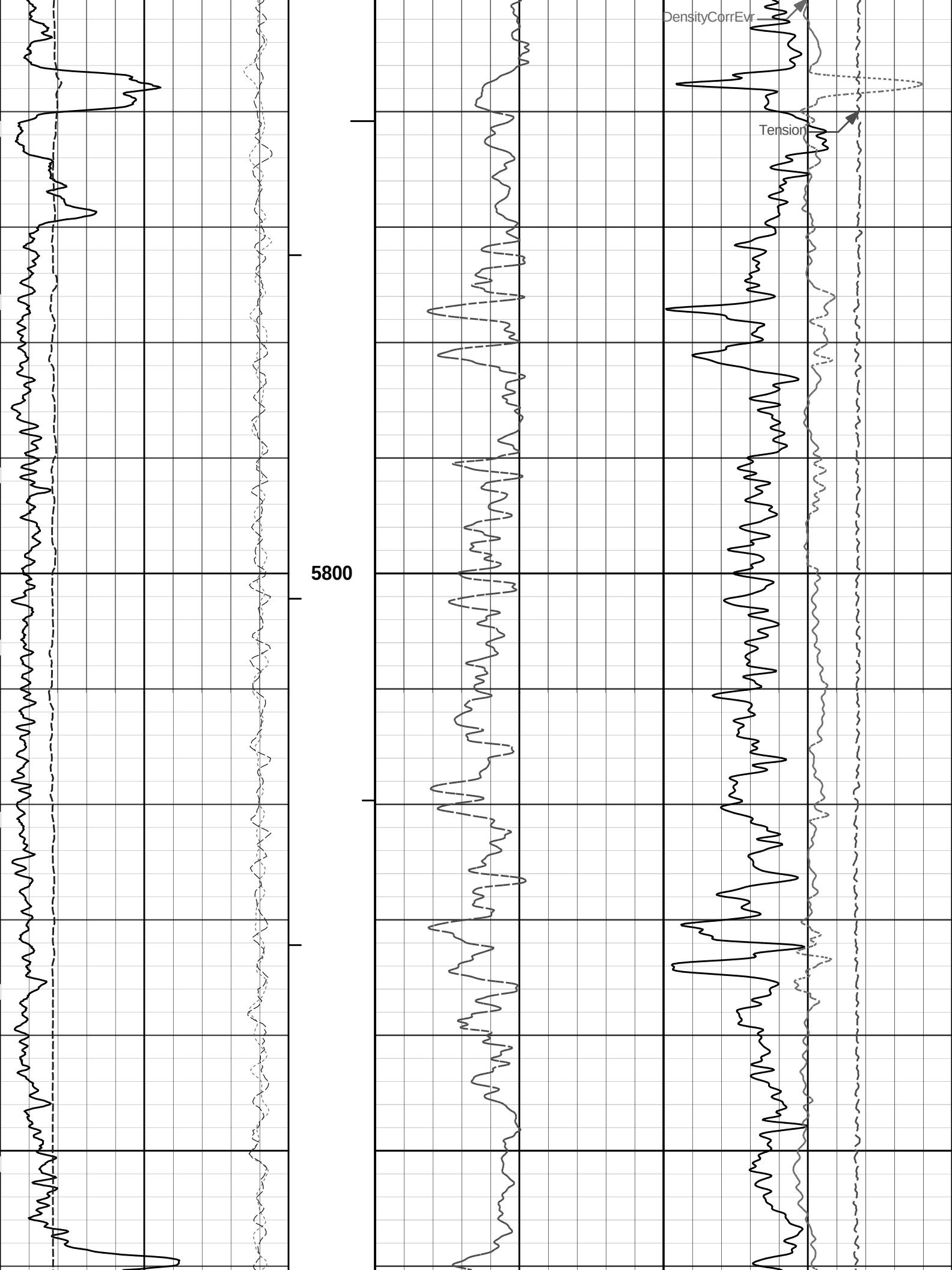


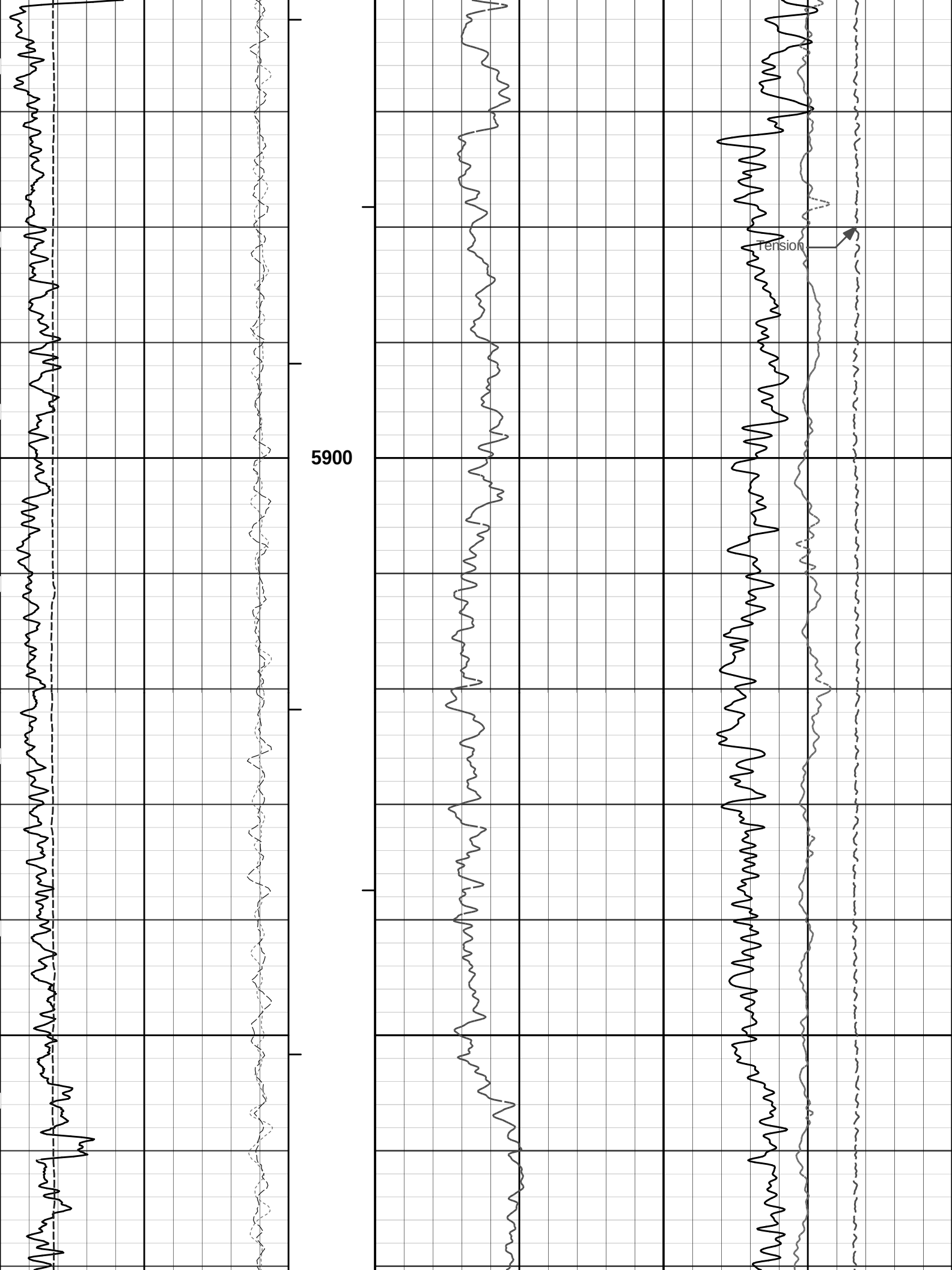


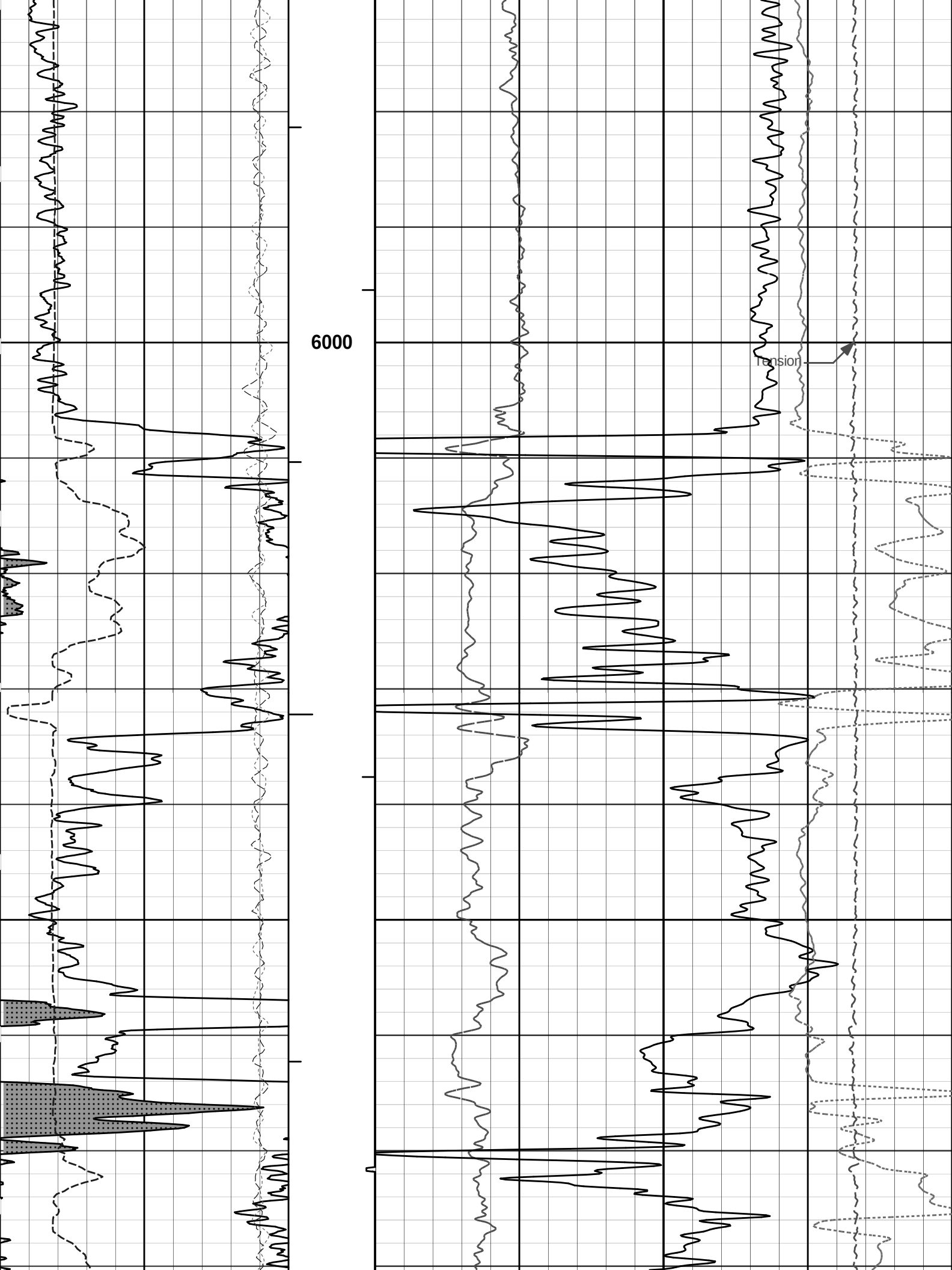


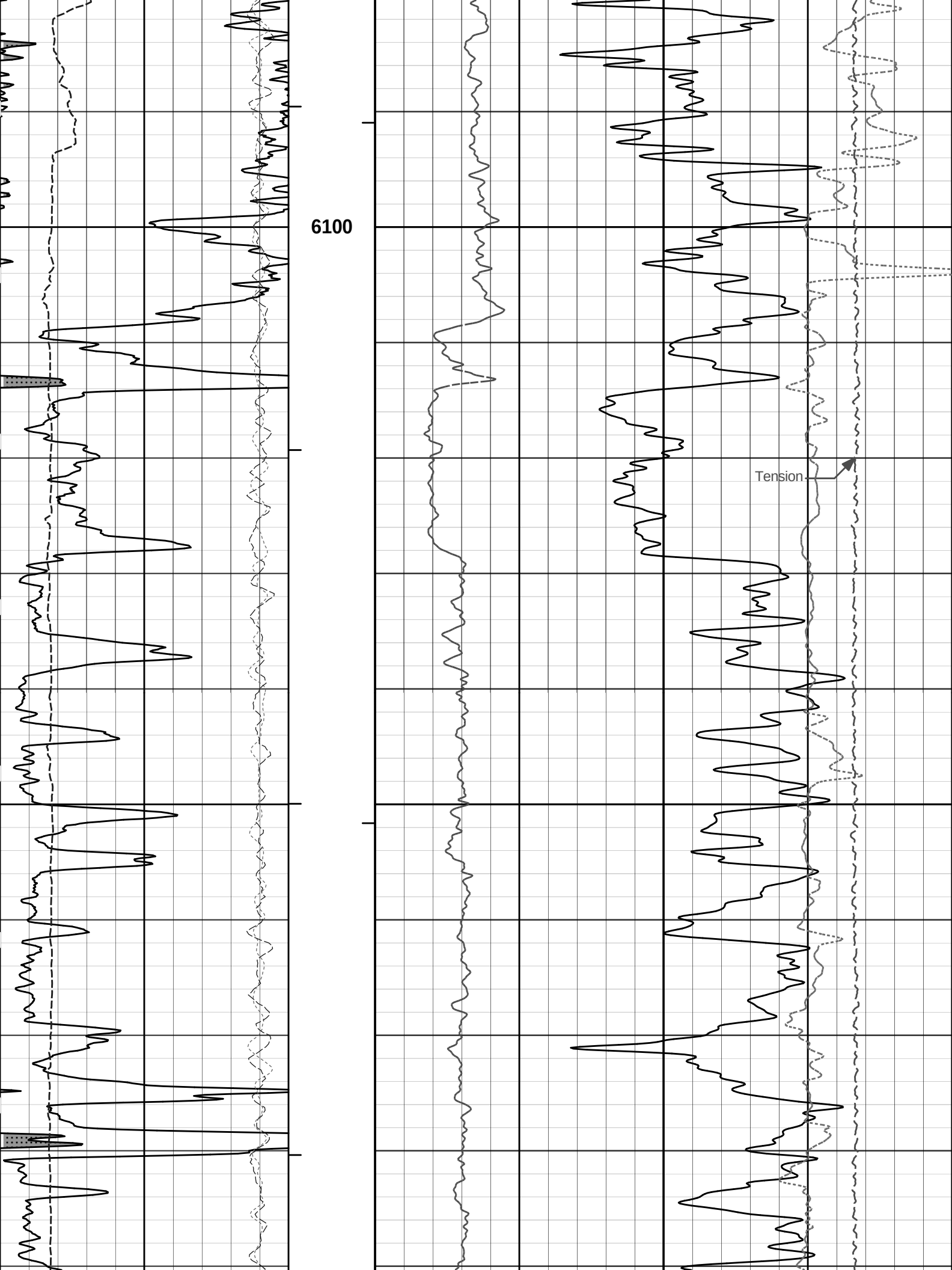


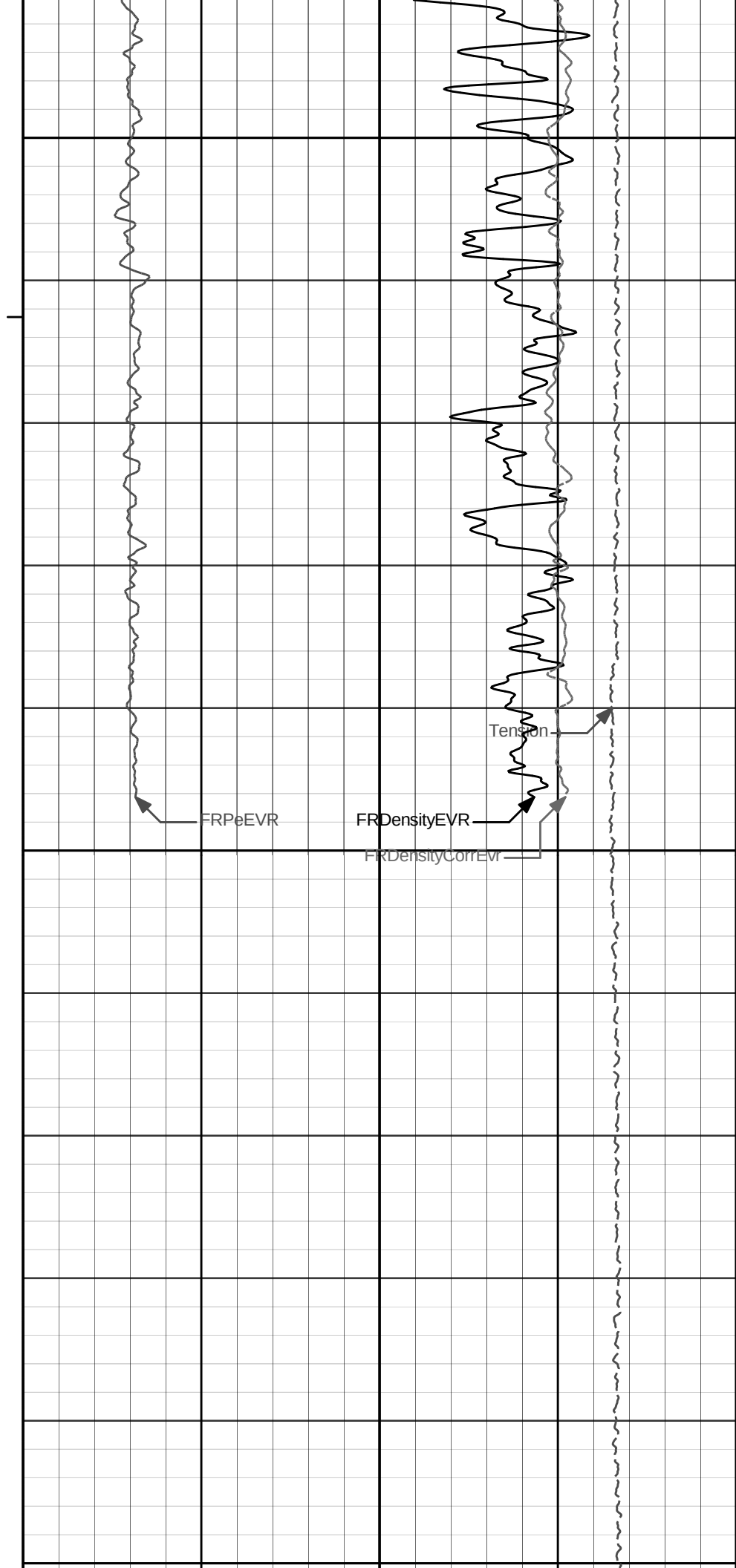
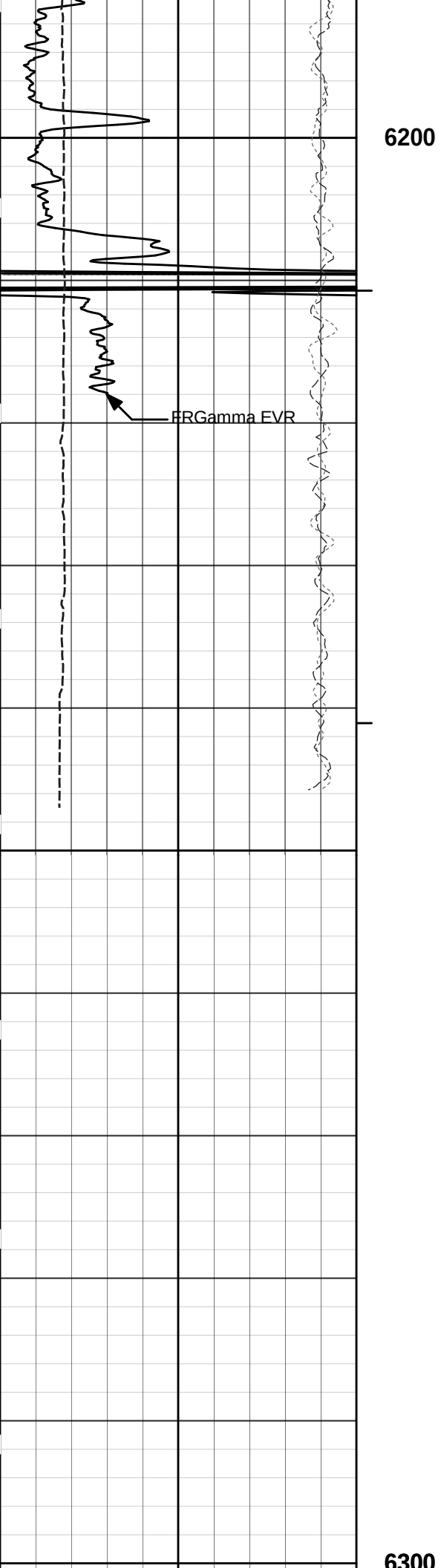


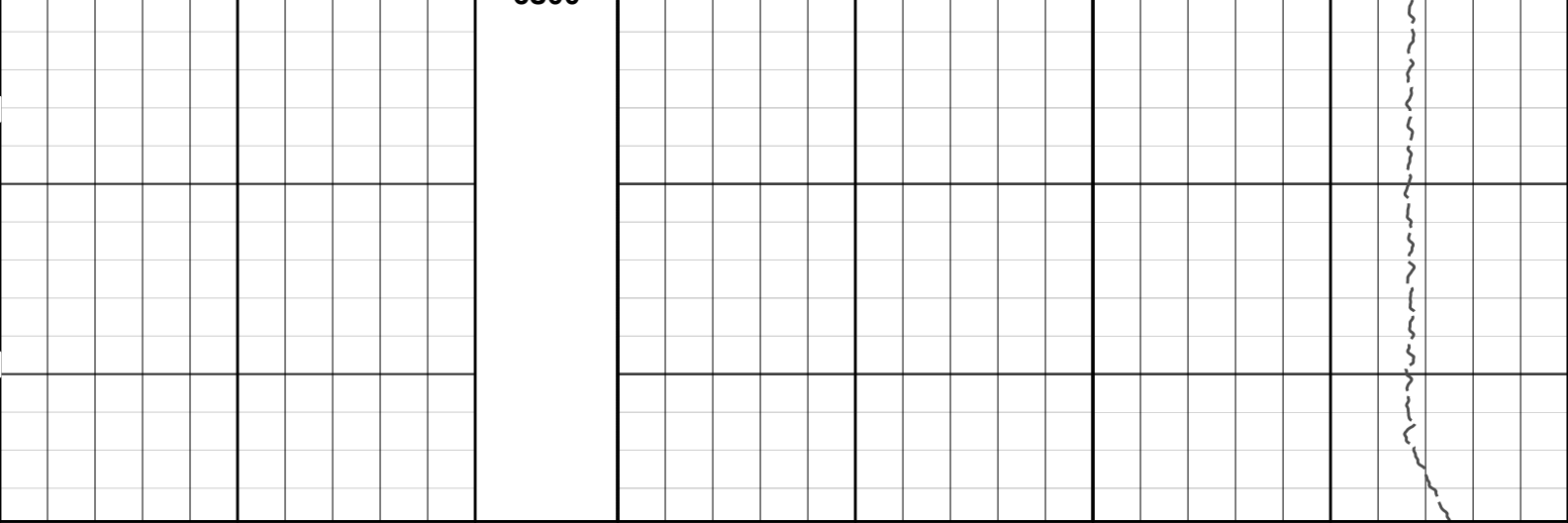












6	Caliper	16	1 : 120	0	PeEVR	10	-0.25	DensityCorrEvr	0.25
	inches		ft					g/cc	
-18	NearQuality	2	BHV				15K	Tension	0
			ft3					pounds	
18	FarQuality	-2	AHV	2	DensityEVR				3
			ft3		g/cc				
0	Gamma EVR	150	Tension Pull						
	api		10 0						
	SHALE		Tension Pull						

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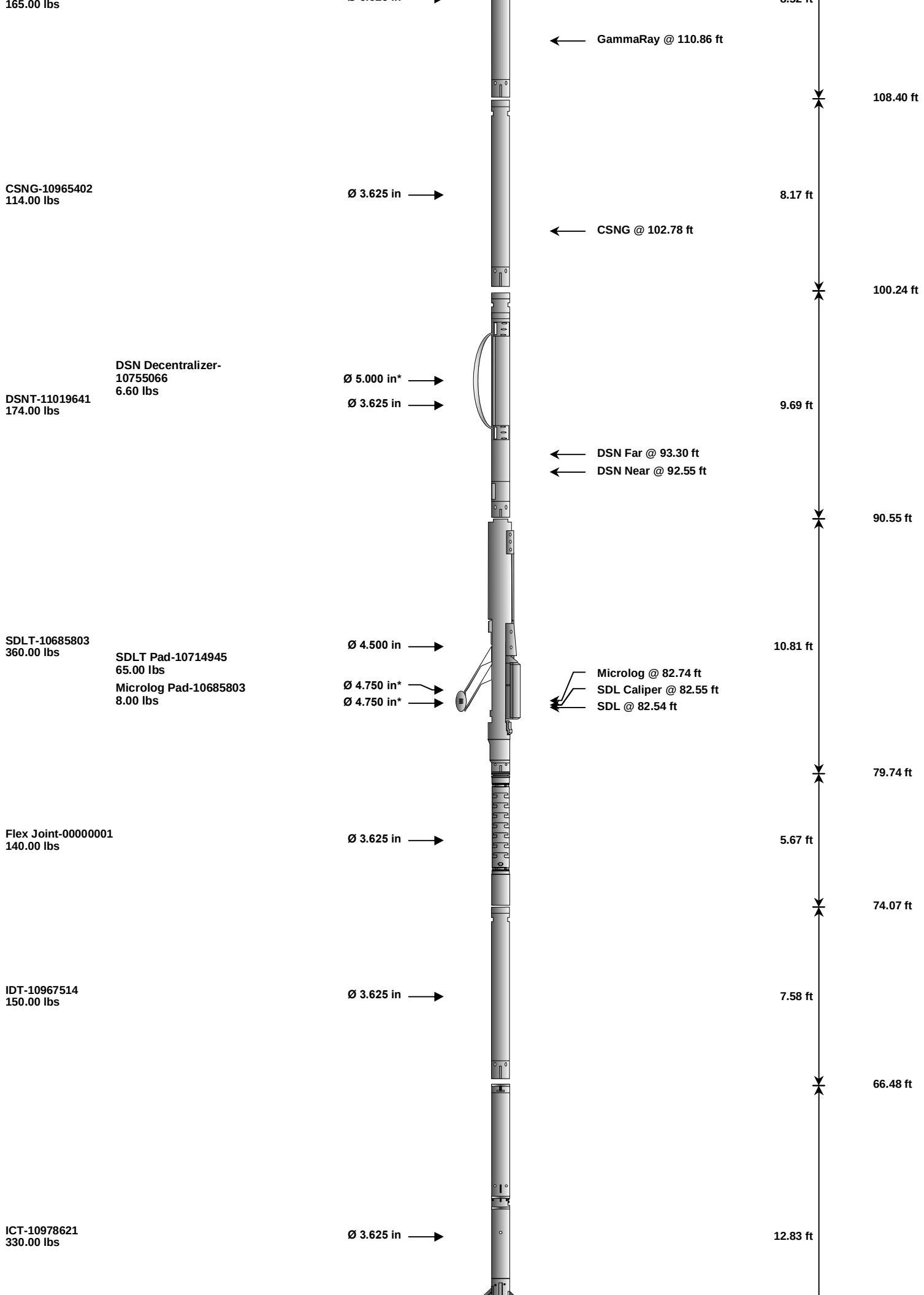
Plot Time: 16-Aug-13 11:24:13
Plot Range: 4350 ft to 6327.75 ft
Data: MILLY_3020_1-19\Well Based\IR1 EVR\
Plot File: \\-LOCAL-\\POROSITY\\BULKD_5_EVR

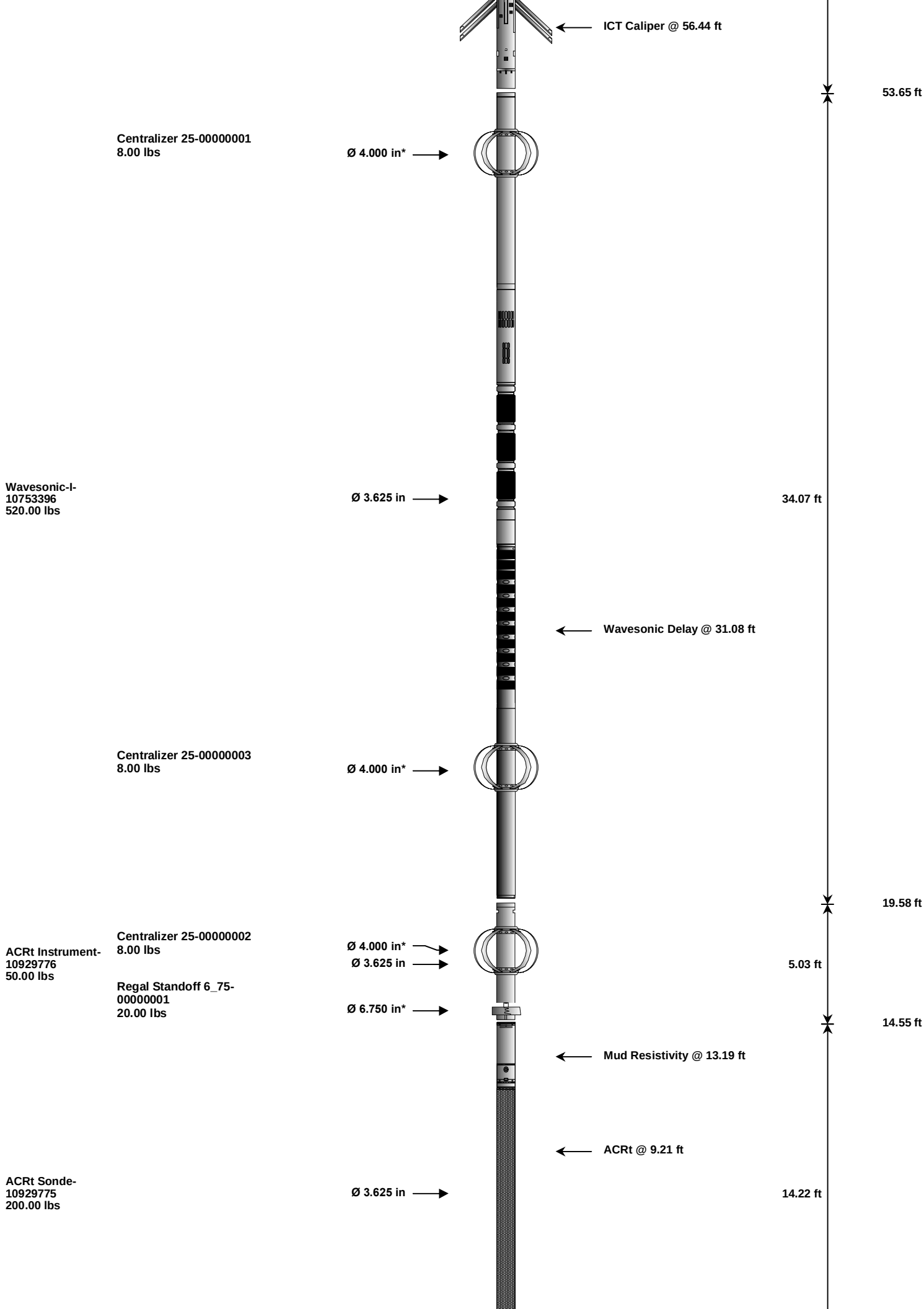
5 INCH MAIN LOG

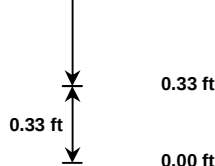
HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
RWCH-12027542 135.00 lbs		Ø 3.625 in		← Load Cell @ 123.23 ft ← BH Temperature @ 122.66 ft	6.25 ft	126.91 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in		← SP @ 118.88 ft	3.74 ft	120.66 ft
GTET-10748374		Ø 3.625 in			8.52 ft	116.92 ft





Bull Nose-00000001 5.00 lbs		Ø 2.750 in →				
Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12027542	135.00	6.25	120.66	300.00
SP	SP Sub	12345678	60.00	3.74	116.92	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52	108.40	60.00
CSNG	Compensated Spectral Natural Gamma	10965402	114.00	8.17	100.24	15.00
DSNT	Dual Spaced Neutron	11019641	174.00	9.69	90.55	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13	* 93.88	300.00
SDLT	Spectral Density Tool	10685803	360.00	10.81	79.74	60.00
MICP	Microlog Pad	10685803	8.00	1.00	* 82.24	60.00
SDLP	Density Insite Pad	10714945	65.00	2.55	* 81.95	60.00
FLEX	Flex Joint	00000001	140.00	5.67	74.07	300.00
IDT	Insite Directional Tool	10967514	150.00	7.58	66.48	30.00
ICT	Six Independent Arm Caliper	10978621	330.00	12.83	53.65	30.00
WSTT	WaveSonic Insite	10753396	520.00	34.07	19.58	30.00
OBCEN	Centralizer - 25 in. Overbody	00000001	8.00	2.08	* 50.05	300.00
OBCEN	Centralizer - 25 in. Overbody	00000003	8.00	2.08	* 24.17	300.00
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
OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	* 16.55	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			2,526.60	126.91		
* Not included in Total Length and Length Accumulation.						
Data: MILLY_3020_1-19\0003 SP-GTET-CSNG-DSN-SDL-FLEX-IDT-ICT-WAVE-ACRT-BN\IDLE						
Date: 15-Aug-13 20:02:16						

HALLIBURTON					
PARAMETERS REPORT					
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	GTET	GEOK	Process Gamma Ray EVR?	No	
	DSNT	DEOK	Process DSN EVR?	No	
	SDLT Pad	DNOK	Process Density EVR?	No	
4200.00					
	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	9.200	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	0.200	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	6322.00	ft

SHARED	BHT	Bottom Hole Temperature	150.0	degF
SHARED	SVTM	Navigation and Survey Master Tool	IDT	
SHARED	AZTM	High Res Z Accelerometer Master Tool	IDT	
SHARED	TEMM	Temperature Master Tool	NONE	
SHARED	BHSM	Borehole Size Master Tool	ICT	
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?	Yes	
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?	Yes	
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?	Yes	
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	
IDT	WRTI	Survey Writing Interval	30	ft
IDT	SOPT	Smoothing Option	None	
ICT	CLOK	Process Caliper Outputs?	Yes	
ICT	DARM	Disable Caliper Arm	No	
ICT	ATDS	Arm To Disable	0	
ICT	REPM	Method to replace arm?	Caliper Average	
ICT	ARMV	Diameter to use for disabled arm	0.00	in
ICT	DARM	Disable Second Caliper Arm	No	
ICT	ATDS	Second Arm To Disable	0	

ICT	REPM	Method to replace second arm?	Caliper Average	
ICT	ARMV	Diameter to use for second disabled arm	0.00	in
ICT	NAVS	Navigation Source Tool	IDT	
ICT	CL1O	Radius 1 Offset	0.0	in
ICT	CL2O	Radius 2 Offset	0.0	in
ICT	CL3O	Radius 3 Offset	0.0	in
ICT	CL4O	Radius 4 Offset	0.0	in
ICT	CL5O	Radius 5 Offset	0.0	in
ICT	CL6O	Radius 6 Offset	0.0	in
ICT	BHVC	Radius type for borehole volume calcuations	Elliptical	
Wavesonic-I	WSOK	Process WSTT?	Yes	
Wavesonic-I	AFIL	Adaptive Filtering?	No	
Wavesonic-I	PINT	Process 1 Sample and Skip	0	
Wavesonic-I	PROM	Process Mode: M=1,MX=2,MY=3,MXY=4	4	
Wavesonic-I	DTSH	Delta -T Shale	100.00	uspf
Wavesonic-I	DTMT	Delta -T Matrix Type	User define	
Wavesonic-I	DTMA	Delta -T Matrix	47.60	uspf
Wavesonic-I	DTFL	Delta -T Fluid	189.00	uspf
Wavesonic-I	RHOM	Matrix Density	2.7100	g/cc
Wavesonic-I	RHOF	Fluid Density	1.0000	g/cc
Wavesonic-I	SMTH	Semblance Threshold	0.25	
Wavesonic-I	VPVS	VPVS Ratio for Porosity	1.40	
Wavesonic-I	APEQ	Acoustic Porosity Equation	Wylie	
Wavesonic-I	NAVS	Navigation Source Tool	IDT	
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: MILLY_3020_1-19\0003 SP-GTET-CSNG-DSN-SDL-FLEX-IDT-ICT-WAVE-ACRT-BN\004 15-Aug-13 22:31 Up @6330.0f			Date: 16-Aug-13 04:34:33	

HALLIBURTON				
CALIBRATION REPORT				
NATURAL GAMMA RAY TOOL SHOP CALIBRATION				
Tool Name:	GTET - 10748374		Reference Calibration Date:	25-Jul-13 22:09:38
Engineer:	THOMAS HYDE		Calibration Date:	02-Aug-13 14:20:06
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	41.8	41.9	api
	Background + Calibrator	273.2	273.9	api
	Calibrator	231.4	232.0	api
NATURAL GAMMA RAY TOOL FIELD CALIBRATION				

Tool Name:	GTET - 10748374	Reference Calibration Date:	02-Aug-13 14:20:06																
Engineer:	S. INGERSOLL	Calibration Date:	14-Aug-13 12:44:26																
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																			
<table> <tr> <th>Field Verification</th><th>Shop</th><th>Field</th><th>Units</th></tr> <tr> <td>Background</td><td>41.9</td><td>56.8</td><td>api</td></tr> <tr> <td>Background + Calibrator</td><td>273.9</td><td>290.3</td><td>api</td></tr> <tr> <td>Calibrator</td><td>232.0</td><td>233.5</td><td>api</td></tr> </table>				Field Verification	Shop	Field	Units	Background	41.9	56.8	api	Background + Calibrator	273.9	290.3	api	Calibrator	232.0	233.5	api
Field Verification	Shop	Field	Units																
Background	41.9	56.8	api																
Background + Calibrator	273.9	290.3	api																
Calibrator	232.0	233.5	api																
<table> <tr> <th>Shop</th><th>Field</th><th>Difference</th><th>Tolerance</th></tr> <tr> <td>232.0</td><td>233.5</td><td>-1.5</td><td>+/- 9.00</td></tr> </table>				Shop	Field	Difference	Tolerance	232.0	233.5	-1.5	+/- 9.00								
Shop	Field	Difference	Tolerance																
232.0	233.5	-1.5	+/- 9.00																

DUAL SPACED NEUTRON SHOP CALIBRATION			
Tool Name:	DSNT - 11019641	Reference Calibration Date:	25-Jul-13 21:50:26
Engineer:	THOMAS HYDE	Calibration Date:	25-Jul-13 22:02:36
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

Logging Source S/N: DSN-436
Tank Serial Number: 105060
Reference value assigned to Tank: 51.680
Snow Block S/N: 08910
Calibration Tank Water Temperature: 68 degF
Min. Tool Housing Outside Diameter: 3.620 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.941	0.941	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):	0.2106	0.2107	0.0000	+/- 0.0020
Calibrated Ratio:	9.72	9.72	0.001	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0601	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 - 11019641	Reference Calibration Date:	25-Jul-13 22:02:36
Engineer:	S. INGERSOLL	Calibration Date:	10-Aug-13 10:44:19
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 (decg):	0.0601	0.0726	0.0125	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 10685803	Reference Calibration Date:	07-Aug-13 13:48:16
Engineer:	S. INGERSOLL	Calibration Date:	07-Aug-13 14:09:51
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1
Host Tool Name:	DSNT - 11019641		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4676.75	-4646.73	-7000.00 - -1000.00
Pad Gain	0.0003849	0.0003849	0.000200 - 0.000600
Arm Offset	-2740.75	-1909.26	-5000.00 - 3000.00
Arm Gain	0.0005601	0.0004592	0.000300 - 0.000700
Arm Power	-0.000007798	-0.000001398	-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)	1.99	2.00	0.01	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.43	6.50	0.07	+/- 0.20
Medium Ring (in)	8.40	8.25	-0.15	+/- 0.20
Large Ring (in)	15.00	15.00	0.00	+/- 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 - 10685803	Reference Calibration Date:	07-Aug-13 14:09:51
Engineer:	S. INGERSOLL	Calibration Date:	14-Aug-13 12:40:14
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	3.74	-0.01	+/- 0.10
Ring Diameter	8.25	8.24	-0.01	+/- 0.15

PASS/FAIL SUMMARY	
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Pad Extension Check:

Passed

Diameter Check:

Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10714945

Reference Calibration Date: 01-Jul-13 14:08:35

Engineer: S. INGERSOLL

Calibration Date: 08-Aug-13 14:33:02

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	1.0190	1.0388	0.90 - 1.10
Near Dens Gain	1.0055	1.0170	0.90 - 1.10
Near Peak Gain	0.9973	1.0228	0.90 - 1.10
Near Lith Gain	0.9673	0.9941	0.90 - 1.10
Far Bar Gain	1.0096	1.0113	0.90 - 1.10
Far Dens Gain	0.9992	1.0021	0.90 - 1.10
Far Peak Gain	0.9922	0.9966	0.90 - 1.10
Far Lith Gain	0.9685	0.9720	0.90 - 1.10
Near Bar Offset	0.1073	-0.0733	NONE
Near Dens Offset	0.1984	0.0979	NONE
Near Peak Offset	0.2397	0.0284	NONE
Near Lith Offset	0.4494	0.2218	NONE
Far Bar Offset	0.1082	0.0922	NONE
Far Dens Offset	0.1856	0.1623	NONE
Far Peak Offset	0.2417	0.2014	NONE
Far Lith Offset	0.3935	0.3537	NONE
Near Bar Background	968.09	969.80	700 - 1450
Near Dens Background	321.51	321.20	230 - 480
Near Peak Background	140.99	141.23	100 - 210
Near Lith Background	172.42	172.03	125 - 260
Far Bar Background	497.07	493.95	450 - 900
Far Dens Background	191.83	192.00	175 - 345
Far Peak Background	75.56	75.79	70 - 140
Far Lith Background	79.53	79.52	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.682	1.684	0.002	+/- 0.015
Pe	2.550	2.562	0.012	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.598	0.001	+/- 0.01500
Pe	3.100	3.131	0.031	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits

QUALITY				
Background	-0.0006	+/- 0.0110	-0.0000	+/- 0.0140
Magnesium Block	-0.0008	+/- 0.0110	0.0010	+/- 0.0140
Aluminum Block	0.0018	+/- 0.0110	0.0018	+/- 0.0140
Resolution	9.81	6.00 - 11.50	9.23	6.00 - 11.50
Internal Verifier(B+D+P+L)	1604	1200 - 2700	841	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 - 10714945	Reference Calibration Date:	08-Aug-13 14:33:02
Engineer:	S. INGERSOLL	Calibration Date:	14-Aug-13 12:32:20
Software Version:	WL INSITE R3.8.4 (Build 5)	Calibration Version:	1

Pad Temperature: 78.8 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1604.262	1601.088	-3.174	16.105
Far (B+D+P+L) cps	841.262	841.663	0.401	15.938
Near Resolution	9.81	9.93	0.120	0.50
Far Resolution	9.23	9.50	0.270	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	233.5	-----	-1.5	+/- 9.00	api
DSNT-11019641						
Snow-Block Porosity	0.0601	0.0726	-----	-0.0125	+/- 0.0150	decp
SDLT-10685803						
Pad Extension	3.75	3.74	-----	0.01	+/-0.10	in
Ring Diameter	8.25	8.24	-----	0.01	+/-0.15	in
SDLT Pad-10714945						
Near(B+D+P+L)	1604.262	1601.088	-----	3.174	+/-16.105	cps
Far(B+D+P+L)	841.262	841.663	-----	-0.401	+/-15.938	cps

Data: MILL Y 2020 1-19I0003 SP-GTET-CSNG-DSN-SDI -FLEX-IDT-ICT-WAVE-ACRT-BN004 15-Aug-13 22:31 Un @6330.0f Date: 16-Aug-13 04:36:05

HALLIBURTON

INPUTS, DELAYS AND FILTERS TABLE

Mnemonic		Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel					
TENS	Tension		0.00	NO	
RWCH					
DHTN	DownholeTension		0.00	BLK	0.000
SP Sub					
PLTC	Plot Control Mask		118.88	NO	
SP	Spontaneous Potential		118.88	BLK	1.250
SPR	Raw Spontaneous Potential		118.88	NO	
SPO	Spontaneous Potential Offset		118.88	NO	
GTET					
TPUL	Tension Pull		110.86	NO	
GR	Natural Gamma Ray API		110.86	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API		110.86	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution		110.86	W	1.416 , 0.750
ACCZ	Accelerometer Z		0.00	BLK	0.083
DEVI	Inclination		0.00	NO	
CSNG					
TPUL	Tension Pull		102.78	NO	
STAT	Status		102.78	NO	
FRMC	Tool Frame Count		102.78	BLK	0.250
TFRM	Total Frames		102.78	NO	
LSPD	Line Speed		102.78	BLK	0.250
CTIM	Accumulation time for sample		102.78	BLK	0.250
NOIS	Spectral Noise		102.78	BLK	0.250
STAB	Stabilizer Voltage in mv		102.78	BLK	0.250
STBP	Stabilizer 60 KEV Peak		102.78	BLK	0.250
AMER	Americium		102.78	BLK	0.250
FTMP	Flask PCB Temperature		102.78	BLK	0.250
SPEL	Low Energy Spectrum		102.78	BLK	0.250
SPEH	High Energy Spectrum		102.78	BLK	0.250
SSP	Stabilization Energy Spectrum		102.78	BLK	0.250
CSPC	CSNG Lo Hi Spectrum Data		102.78	NO	
DSNT					
TPUL	Tension Pull		92.45	NO	
RNDS	Near Detector Telemetry Counts		92.55	BLK	1.417
RFDS	Far Detector Telemetry Counts		93.30	TRI	0.583
DNTT	DSN Tool Temperature		92.55	NO	
DSNS	DSN Tool Status		92.45	NO	
ERND	Near Detector Telemetry Counts EVR		92.55	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR		93.30	BLK	0.000
ENTM	DSN Tool Temperature EVR		92.55	NO	
SDLT					
TPUL	Tension Pull		82.55	NO	
PCAL	Pad Caliper		82.55	TRI	0.250
ACAL	Arm Caliper		82.55	TRI	0.250
IDT					
TPUL	Tension Pull		67.48	NO	

ACCX	Accelerometer X	67.48	NO	
ACCY	Accelerometer Y	67.48	NO	
ACCZ	Accelerometer Z	67.48	NO	
MAGX	magnetometer x with unit	67.48	NO	
MAGY	Magnetometer Y with unit	67.48	NO	
MAGZ	magnetometer z with unit	67.48	NO	
IAMP	Accelerometer Temperature	67.48	NO	
MTMP	Magnetometer Temperature	67.48	NO	
ICT				
TPUL	Tension Pull	56.44	NO	
	Arm Potentiometer excitation V	53.65	NO	
	Caliper 1 measurement	56.44	BLK	1.250
	Caliper 2 measurement	56.44	BLK	1.250
	Caliper 3 measurement	56.44	BLK	1.250
	Caliper 4 measurement	56.44	BLK	1.250
	Caliper 5 measurement	56.44	BLK	1.250
	Caliper 6 measurement	56.44	BLK	1.250
	Caliper Global measurement	56.44	BLK	1.250
MOTI	Motor Current	53.65	NO	
MOT1	Motor Voltage Monitor 1	53.65	NO	
STA1	Status word #1	53.65	NO	
STA2	Status word #2	53.65	NO	
PRES	Caliper percentage of total compression of the spring	53.65	NO	
HAZI	Hole Azimuth	56.44	NO	
RB	Relative Bearing	56.44	NO	
AZI1	PAD1 Azimuth	56.44	NO	
DEVI	Inclination	56.44	NO	
Wavesonic-I				
TPUL	Tension Pull	31.08	NO	
DPSX	Dipole Source X StructureI	19.58	NO	
DPSY	Dipole Source Y StructureI	19.58	NO	
DPSM	Monopole Source Structure	19.58	NO	
WVST	Wavesonic Compressed Data	31.08	NO	
TPUL	Tension Pull	31.08	NO	
XMS1	Wave Sonic Status Word 1	19.58	NO	
XMS2	Wave Sonic Status Word 2	19.58	NO	
XMS1	Wave Sonic XMITStatus Word 1	19.58	NO	
XMS1	Wave Sonic XMITStatus Word 2	19.58	NO	
F1HA	Dipole 1 HV After	19.58	NO	
F1HB	Dipole 1 HV Before	19.58	NO	
F2HA	Dipole 2 HV After	19.58	NO	
F2HB	Dipole 2 HV Before	19.58	NO	
F3HA	Monopole HV After	19.58	NO	
F3HB	Monopole HV Before	19.58	NO	
INVT	Input Voltage	19.58	NO	
5VOL	5 Volts	19.58	NO	
MI5A	Minus 5 Volts Analog	19.58	NO	
ITMP	Instrument Temperature	19.58	NO	
PL5A	Plus 5 Volts Analog	19.58	NO	
5VD	Plus 5 Volts Digital	19.58	NO	
TCUR	Tool Current	19.58	NO	
SUPV	Supply Voltage	19.58	NO	
PRVT	Preregulated voltage	19.58	NO	
PRVT	Preregulated voltage X-Y-Z	19.58	NO	

PRVT	Pre-regulated voltage Xmitter	19.58	NO
TEMP	Temperature	19.58	NO
ACQN	Acquisition Number	19.58	NO
XDP	Delay Reference	31.08	NO
MITM	MIT Mode	31.08	NO
VERS	Version	19.58	NO
D1CT	Dipole 1 Compressed Word Count	31.08	NO
D2CT	Dipole 2 Compressed Word Count	31.08	NO
MCNT	Monopole Compressed Word Count	31.08	NO
SEQN	Sequence Number	19.58	NO
FREV	Firmware Revision	19.58	NO
MSMP	Monopole Sample Rate	19.58	NO
MSMP	Dipole Sample Rate	19.58	NO
MFWF	Monopole Firing Waveform	19.58	NO
MFRQ	Monopole Frequency	19.58	NO
MDLY	Monopole Delay	19.58	NO
DXWF	Dipole X Firing Waveform	19.58	NO
XFRQ	Dipole X Frequency	19.58	NO
XDLY	Dipole X Delay	19.58	NO
DYWF	Dipole Y Firing Waveform	19.58	NO
YFRQ	Dipole Y Frequency	19.58	NO
YDLY	Dipole Y Delay	19.58	NO
DPSX	Dipole Source X Structure1	19.58	NO
DPSY	Dipole Source Y Structure1	19.58	NO
DPSM	Monopole Source Structure	19.58	NO
WVST	Wavesonic Compressed Data	31.08	NO
AUTM	Auto Mode	19.58	NO
SONM	tool mode for sonic - 0 for normal or 3 for calibration	19.58	NO
MSL	Monopole Lower Travel Time	31.08	NO
MSH	Monopole Upper Travel Time	31.08	NO
MLFC	Monopole-1 Lower Filter Bandpass Frequency Cut-off	19.58	NO
MUFC	Monopole-1 Upper Filter Bandpass Frequency Cut-off	19.58	NO
DLTT	Dipole Lower Travel Time	19.58	NO
DUTT	Dipole Upper Travel Time	19.58	NO
DLFC	Dipole Lower Filter Bandpass Frequency Cut-off	19.58	NO
DUFC	Dipole Upper Filter Bandpass Frequency Cut-off	19.58	NO
MUTE	WaveSonic Mute/Enable Channels and Sides map	19.58	NO
MUTS	Mute/Enable Sides	19.58	NO
WSRB	Relative Bearing	31.08	NO
WSAZ	WSX Azimuth Pad 1	31.08	NO
TPUL	Tension Pull	31.08	NO
WMP	Summed array of Monopole for SIDES - A,B,C,D	31.08	NO
WXX	Dipole X for SIDES - A-C	31.08	NO
WYY	Dipole Y for SIDES - B-D	31.08	NO
WXY	Dipole X for SIDES - B-D	31.08	NO
WYX	Dipole Y for SIDES - A-C	31.08	NO
TPUL	Tension Pull	31.08	NO
WMA	Monopole Waveform Side A - Channel 1 to Channel 8 Receivers	31.08	NO
WMB	Monopole Waveform Side B - Channel 1 to Channel 8 Receivers	31.08	NO
WMC	Monopole Waveform Side C - Channel 1 to Channel 8 Receivers	31.08	NO
WMD	Monopole Waveform Side D - Channel 1 to Channel 8 Receivers	31.08	NO
WXA	Dipole X Waveform Side A - Channel 1 to Channel 8 Receivers	31.08	NO
WXB	Dipole X Waveform Side B - Channel 1 to Channel 8	31.08	NO

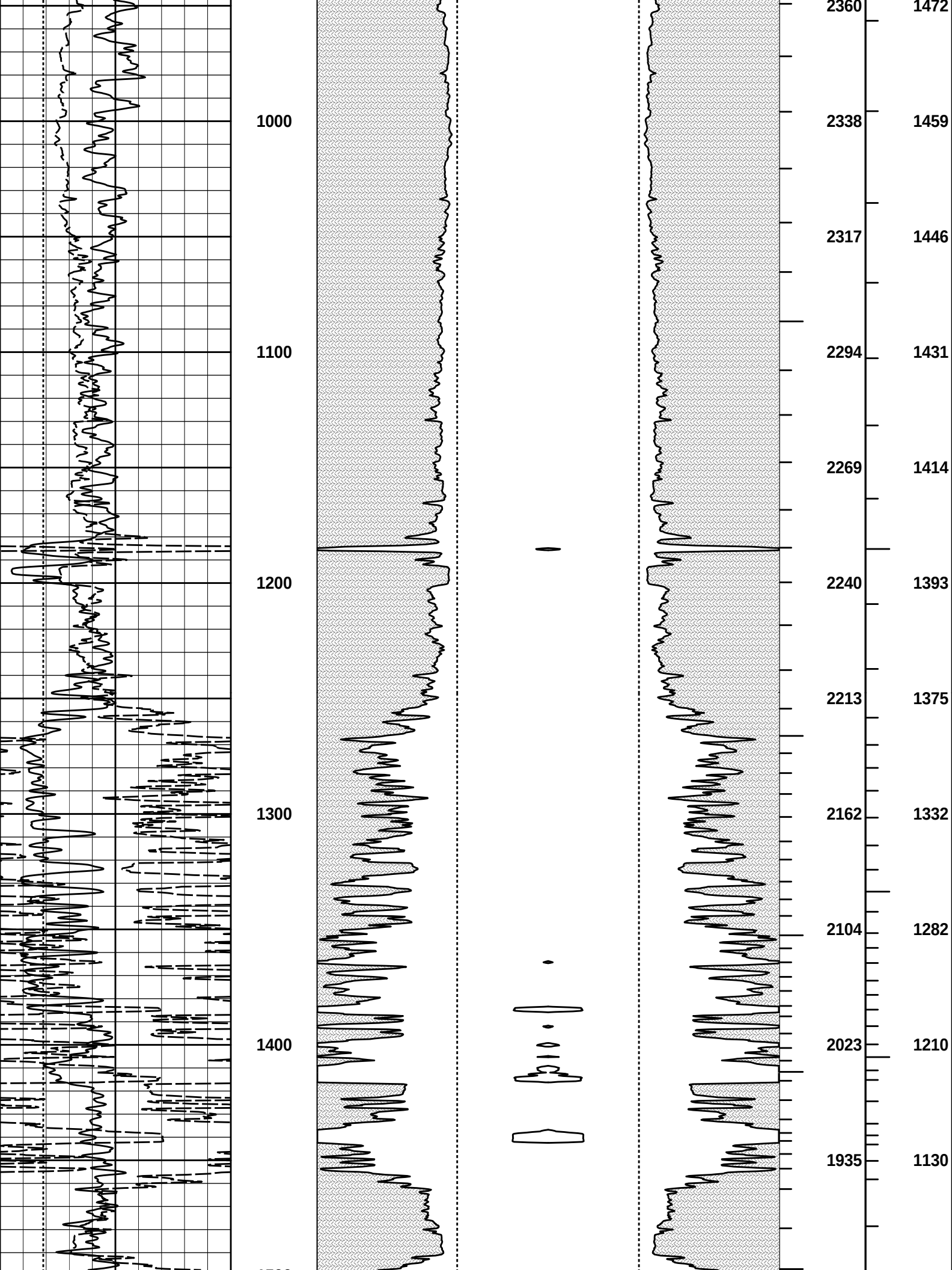
	Receivers	19.58	NO	
WXC	Dipole X Waveform Side C - Channel 1 to Channel 8 Receivers	31.08	NO	
WXD	Dipole X Waveform Side D - Channel 1 to Channel 8 Receivers	31.08	NO	
WYA	Dipole Y Waveform Side A - Channel 1 to Channel 8 Receivers	31.08	NO	
WYB	Dipole Y Waveform Side B - Channel 1 to Channel 8 Receivers	31.08	NO	
WYC	Dipole Y Waveform Side C - Channel 1 to Channel 8 Receivers	31.08	NO	
WYD	Dipole Y Waveform Side D - Channel 1 to Channel 8 Receivers	31.08	NO	
GAR1	Gain Side A Receiver 1	19.58	NO	
GAR2	Gain Side A Receiver 2	19.58	NO	
GAR3	Gain Side A Receiver 3	19.58	NO	
GAR4	Gain Side A Receiver 4	19.58	NO	
GAR5	Gain Side A Receiver 5	19.58	NO	
GAR6	Gain Side A Receiver 6	19.58	NO	
GAR7	Gain Side A Receiver 7	19.58	NO	
GAR8	Gain Side A Receiver 8	19.58	NO	
GBR1	Gain Side B Receiver 1	19.58	NO	
GBR2	Gain Side B Receiver 2	19.58	NO	
GBR3	Gain Side B Receiver 3	19.58	NO	
GBR4	Gain Side B Receiver 4	19.58	NO	
GBR5	Gain Side B Receiver 5	19.58	NO	
GBR6	Gain Side B Receiver 6	19.58	NO	
GBR7	Gain Side B Receiver 7	19.58	NO	
GBR8	Gain Side B Receiver 8	19.58	NO	
GCR1	Gain Side C Receiver 1	19.58	NO	
GCR2	Gain Side C Receiver 2	19.58	NO	
GCR3	Gain Side C Receiver 3	19.58	NO	
GCR4	Gain Side C Receiver 4	19.58	NO	
GCR5	Gain Side C Receiver 5	19.58	NO	
GCR6	Gain Side C Receiver 6	19.58	NO	
GCR7	Gain Side C Receiver 7	19.58	NO	
GCR8	Gain Side C Receiver 8	19.58	NO	
GDR1	Gain Side D Receiver 1	19.58	NO	
GDR2	Gain Side D Receiver 2	19.58	NO	
GDR3	Gain Side D Receiver 3	19.58	NO	
GDR4	Gain Side D Receiver 4	19.58	NO	
GDR5	Gain Side D Receiver 5	19.58	NO	
GDR6	Gain Side D Receiver 6	19.58	NO	
GDR7	Gain Side D Receiver 7	19.58	NO	
GDR8	Gain Side D Receiver 8	19.58	NO	
ACRt Sonde				
TPUL	Tension Pull	2.73	NO	
F1R1	ACRT 12KHz - 80in R value	8.98	BLK	0.000
F1X1	ACRT 12KHz - 80in X value	8.98	BLK	0.000
F1R2	ACRT 12KHz - 50in R value	6.48	BLK	0.000
F1X2	ACRT 12KHz - 50in X value	6.48	BLK	0.000
F1R3	ACRT 12KHz - 29in R value	4.98	BLK	0.000
F1X3	ACRT 12KHz - 29in X value	4.98	BLK	0.000
F1R4	ACRT 12KHz - 17in R value	3.98	BLK	0.000
F1X4	ACRT 12KHz - 17in X value	3.98	BLK	0.000
F1R5	ACRT 12KHz - 10in R value	3.48	BLK	0.000
F1X5	ACRT 12KHz - 10in X value	3.48	BLK	0.000
F1R6	ACRT 12KHz - 6in R value	3.23	BLK	0.000

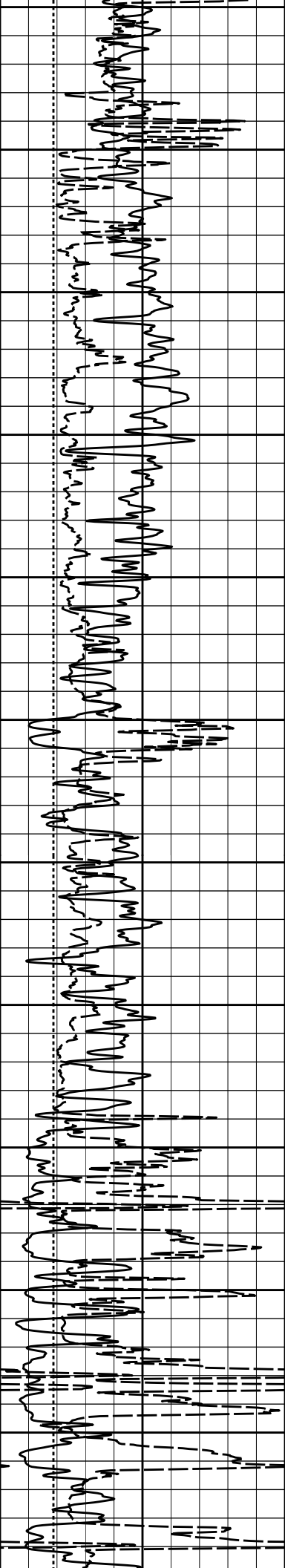
F1X6	ACRT 12KHz - 6in X value	3.23	BLK	0.000
F2R1	ACRT 36KHz - 80in R value	8.98	BLK	0.000
F2X1	ACRT 36KHz - 80in X value	8.98	BLK	0.000
F2R2	ACRT 36KHz - 50in R value	6.48	BLK	0.000
F2X2	ACRT 36KHz - 50in X value	6.48	BLK	0.000
F2R3	ACRT 36KHz - 29in R value	4.98	BLK	0.000
F2X3	ACRT 36KHz - 29in X value	4.98	BLK	0.000
F2R4	ACRT 36KHz - 17in R value	3.98	BLK	0.000
F2X4	ACRT 36KHz - 17in X value	3.98	BLK	0.000
F2R5	ACRT 36KHz - 10in R value	3.48	BLK	0.000
F2X5	ACRT 36KHz - 10in X value	3.48	BLK	0.000
F2R6	ACRT 36KHz - 6in R value	3.23	BLK	0.000
F2X6	ACRT 36KHz - 6in X value	3.23	BLK	0.000
F3R1	ACRT 72KHz - 80in R value	8.98	BLK	0.000
F3X1	ACRT 72KHz - 80in X value	8.98	BLK	0.000
F3R2	ACRT 72KHz - 50in R value	6.48	BLK	0.000
F3X2	ACRT 72KHz - 50in X value	6.48	BLK	0.000
F3R3	ACRT 72KHz - 29in R value	4.98	BLK	0.000
F3X3	ACRT 72KHz - 29in X value	4.98	BLK	0.000
F3R4	ACRT 72KHz - 17in R value	3.98	BLK	0.000
F3X4	ACRT 72KHz - 17in X value	3.98	BLK	0.000
F3R5	ACRT 72KHz - 10in R value	3.48	BLK	0.000
F3X5	ACRT 72KHz - 10in X value	3.48	BLK	0.000
F3R6	ACRT 72KHz - 6in R value	3.23	BLK	0.000
F3X6	ACRT 72KHz - 6in X value	3.23	BLK	0.000
RMUD	Mud Resistivity	12.52	BLK	0.000
F1RT	Transmitter Current Raw 12K X Receiver	2.73	BLK	0.000
F1XT	Transmitter Reference 12 KHz Imaginary Signal	2.73	BLK	0.000
F2RT	Transmitter Reference 36 KHz Real Signal	2.73	BLK	0.000
F2XT	Transmitter Reference 36 KHz Imaginary Signal	2.73	BLK	0.000
F3RT	Transmitter Reference 72 KHz Real Signal	2.73	BLK	0.000
F3XT	Transmitter Reference 72 KHz Imaginary Signal	2.73	BLK	0.000
TFPU	Upper Feedpipe Temperature Calculated	2.73	BLK	0.000
TFPL	Lower Feedpipe Temperature Calculated	2.73	BLK	0.000
ITMP	Instrument Temperature	2.73	BLK	0.000
TCVA	Temperature Correction Values Loop Off	2.73	NO	
TIDV	Instrument Temperature Derivative	2.73	NO	
TUDV	Upper Temperature Derivative	2.73	NO	
TLDV	Lower Temperature Derivative	2.73	NO	
TRBD	Receiver Board Temperature	2.73	NO	
SDLT Pad				
TPUL	Tension Pull	82.54	NO	
NAB	Near Above	82.37	BLK	0.920
NHI	Near Cesium High	82.37	BLK	0.920
NLO	Near Cesium Low	82.37	BLK	0.920
NVA	Near Valley	82.37	BLK	0.920
NBA	Near Barite	82.37	BLK	0.920
NDE	Near Density	82.37	BLK	0.920
NPK	Near Peak	82.37	BLK	0.920
NLI	Near Lithology	82.37	BLK	0.920
NBAU	Near Barite Unfiltered	82.37	BLK	0.250
NLIU	Near Lithology Unfiltered	82.37	BLK	0.250
FAB	Far Above	82.72	BLK	0.250
FHI	Far Cesium High	82.72	BLK	0.250

FLO	Far Cesium Low	82.72	BLK	0.250
FVA	Far Valley	82.72	BLK	0.250
FBA	Far Barite	82.72	BLK	0.250
FDE	Far Density	82.72	BLK	0.250
FPK	Far Peak	82.72	BLK	0.250
FLI	Far Lithology	82.72	BLK	0.250
PTMP	Pad Temperature	82.55	BLK	0.920
NHV	Near Detector High Voltage	81.95	NO	
FHV	Far Detector High Voltage	81.95	NO	
ITMP	Instrument Temperature	81.95	NO	
DDHV	Detector High Voltage	81.95	NO	

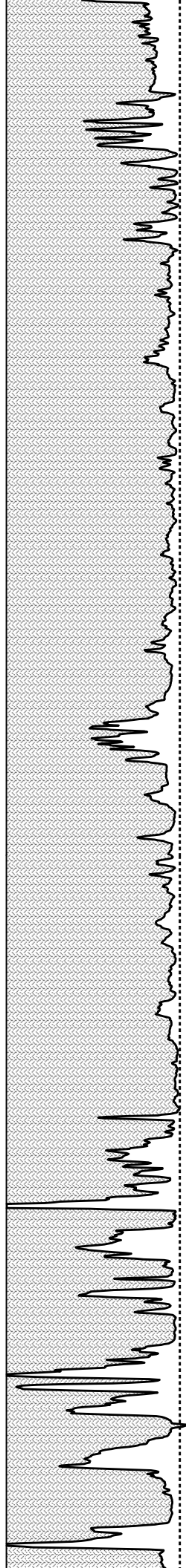
HALLIBURTON

ANNULAR HOLE VOLUME PLOT

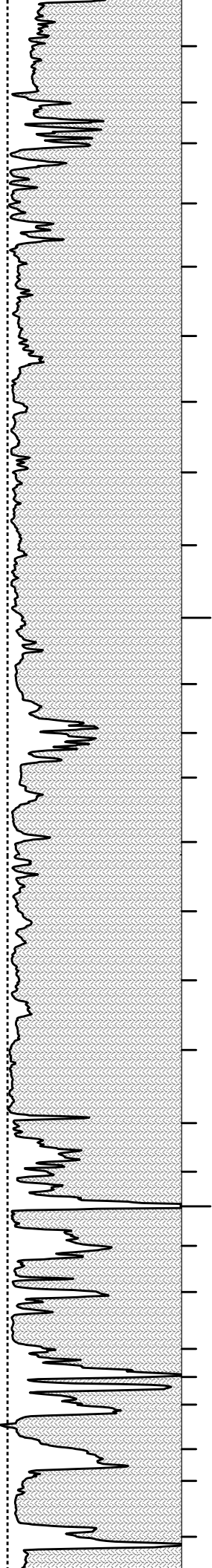




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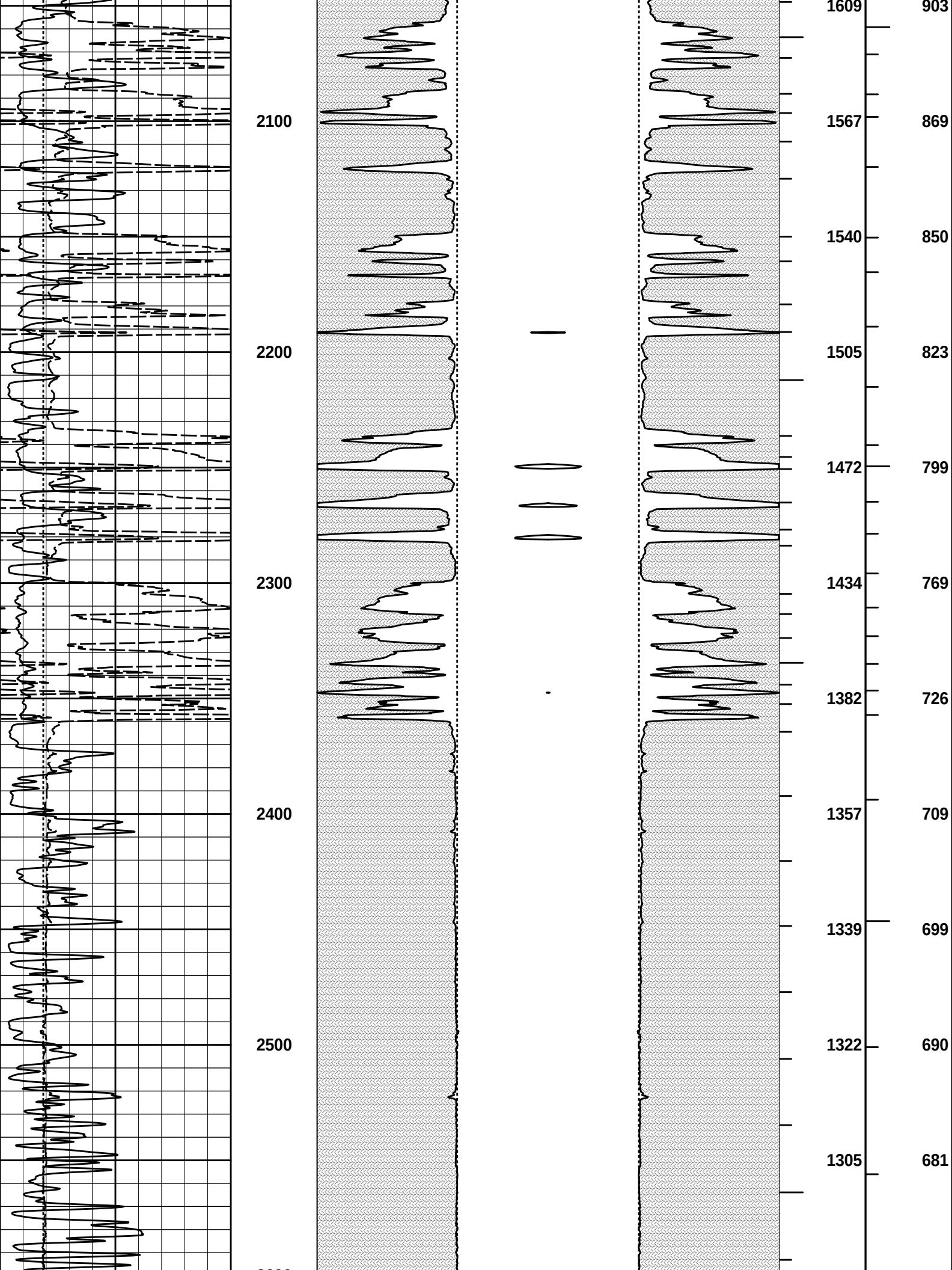
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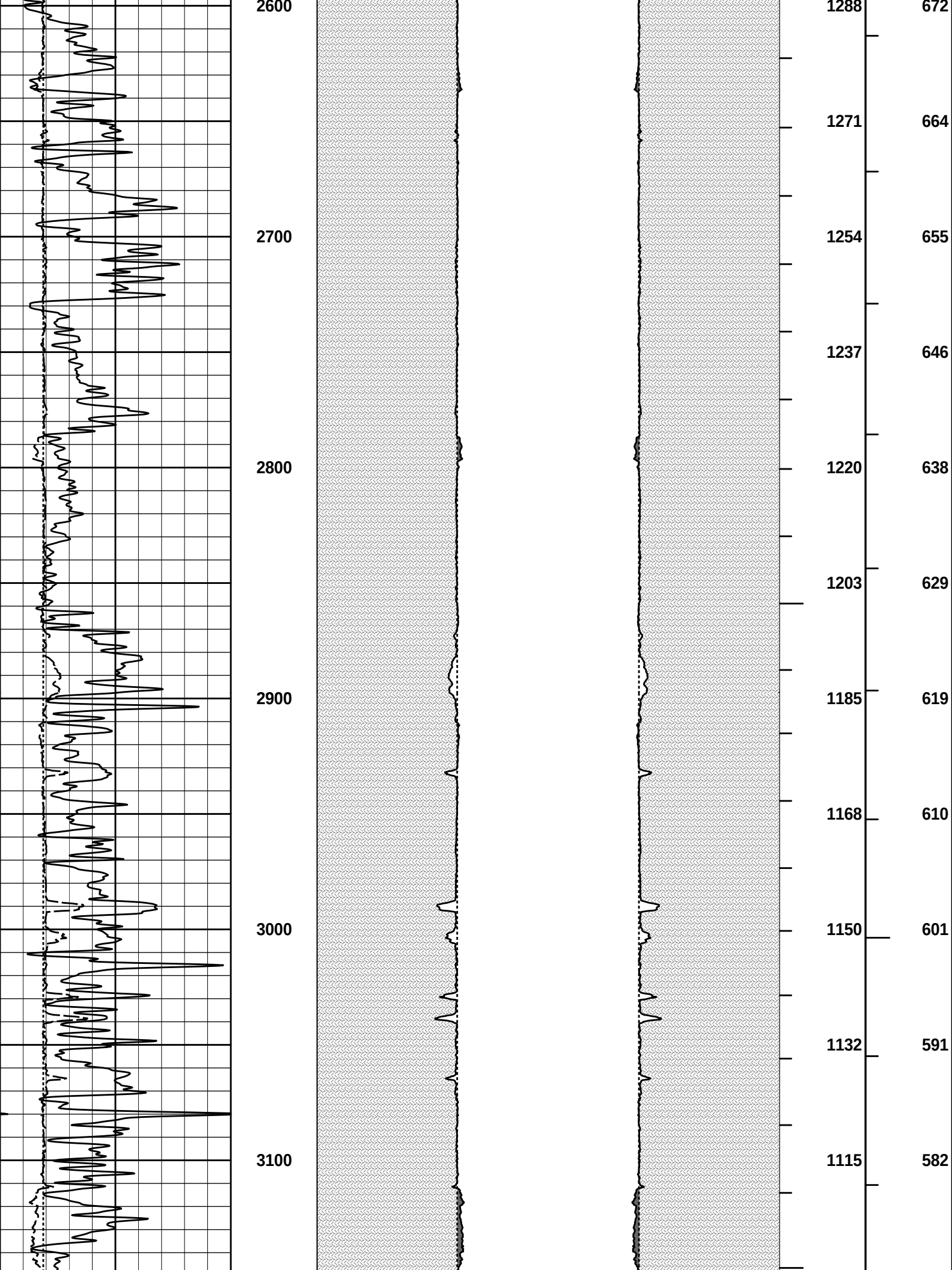


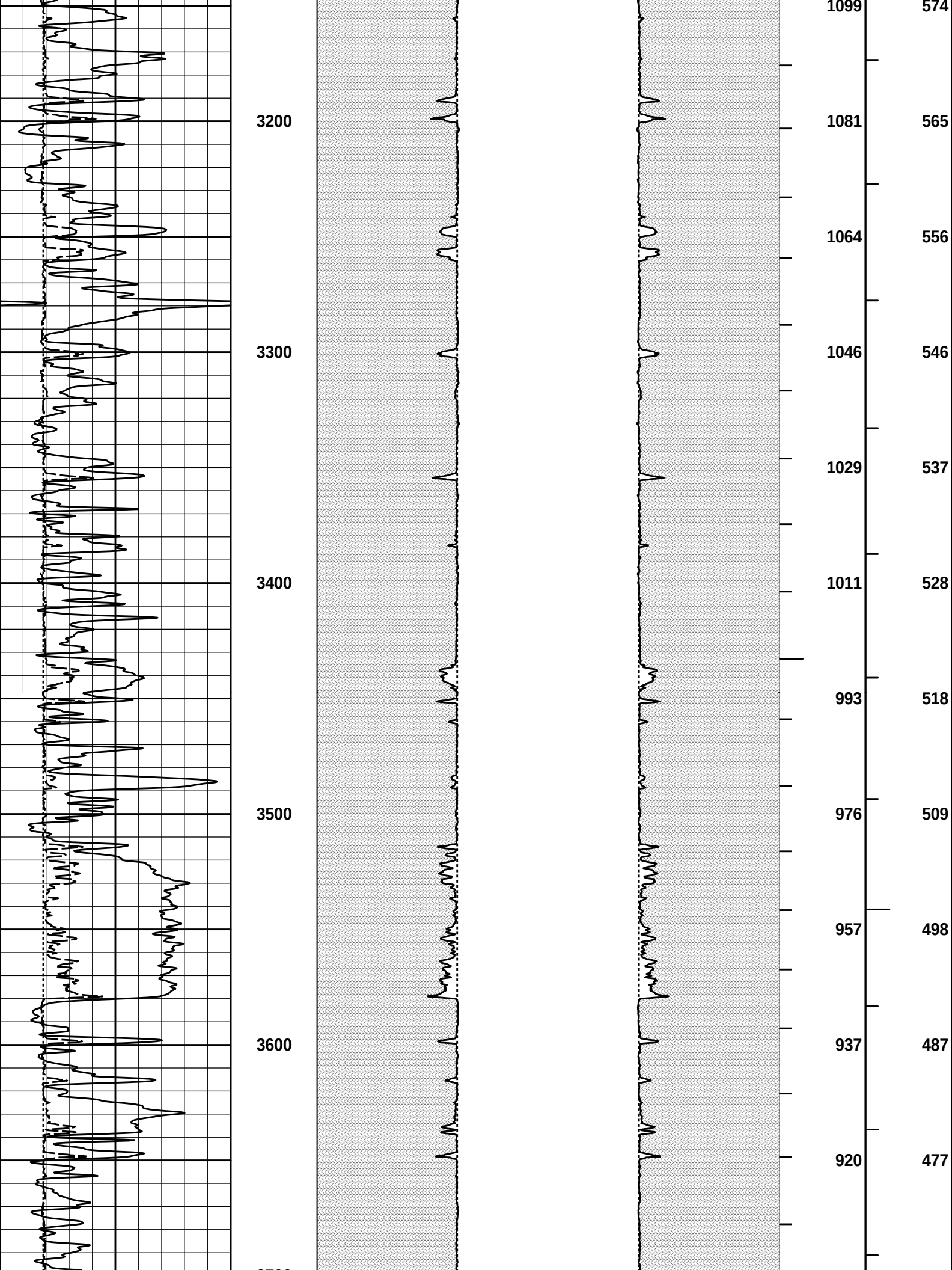
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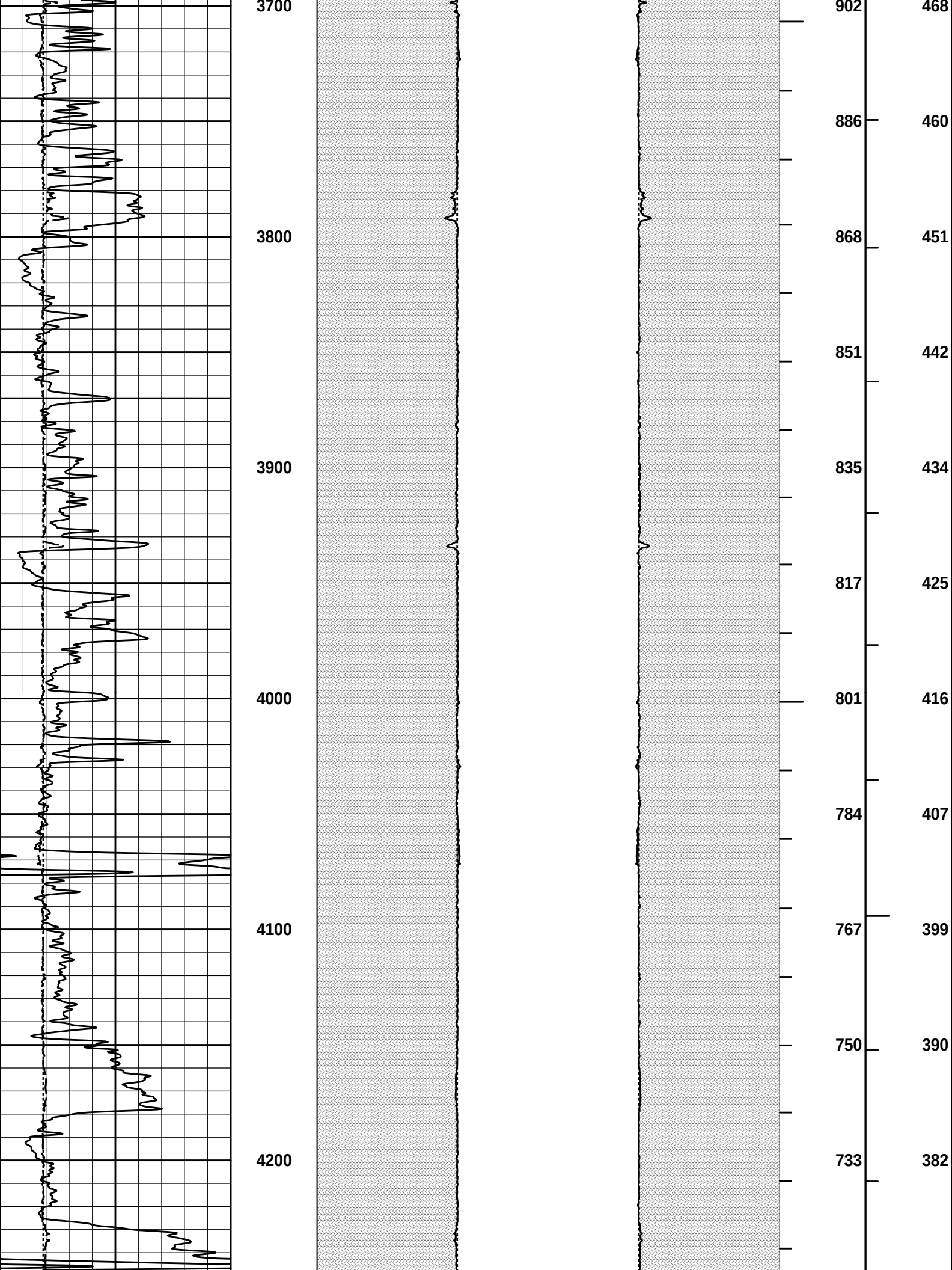
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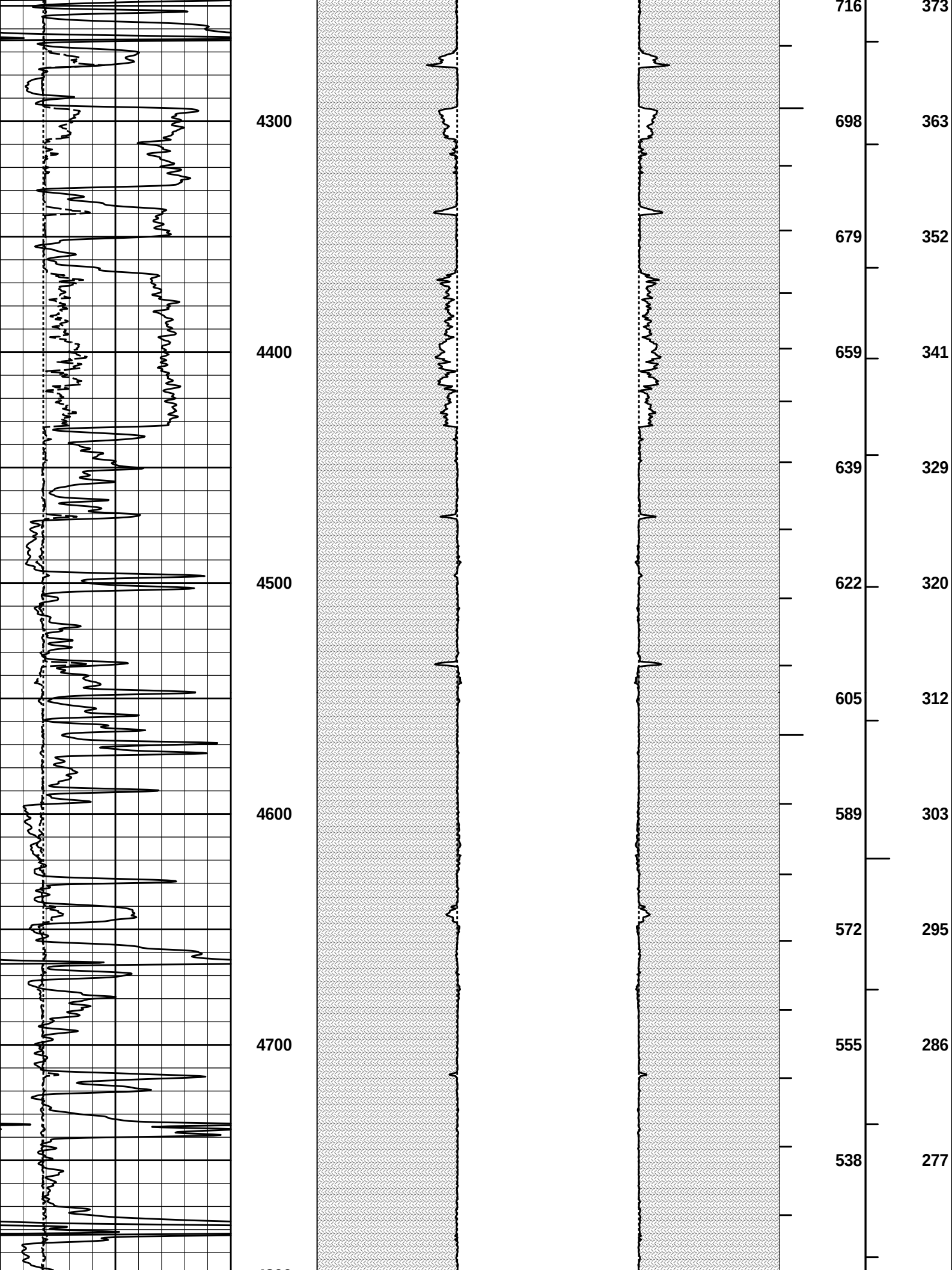
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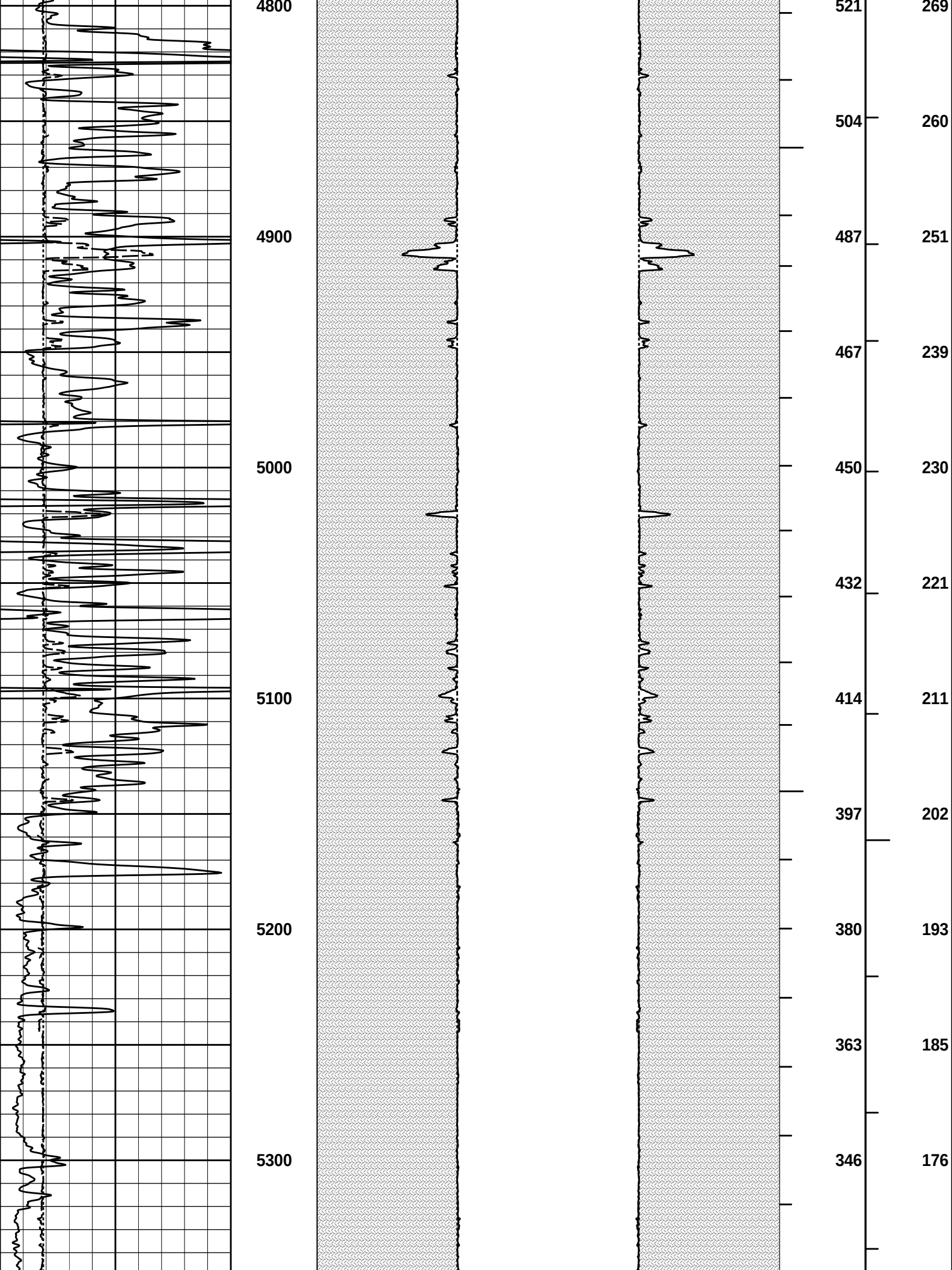


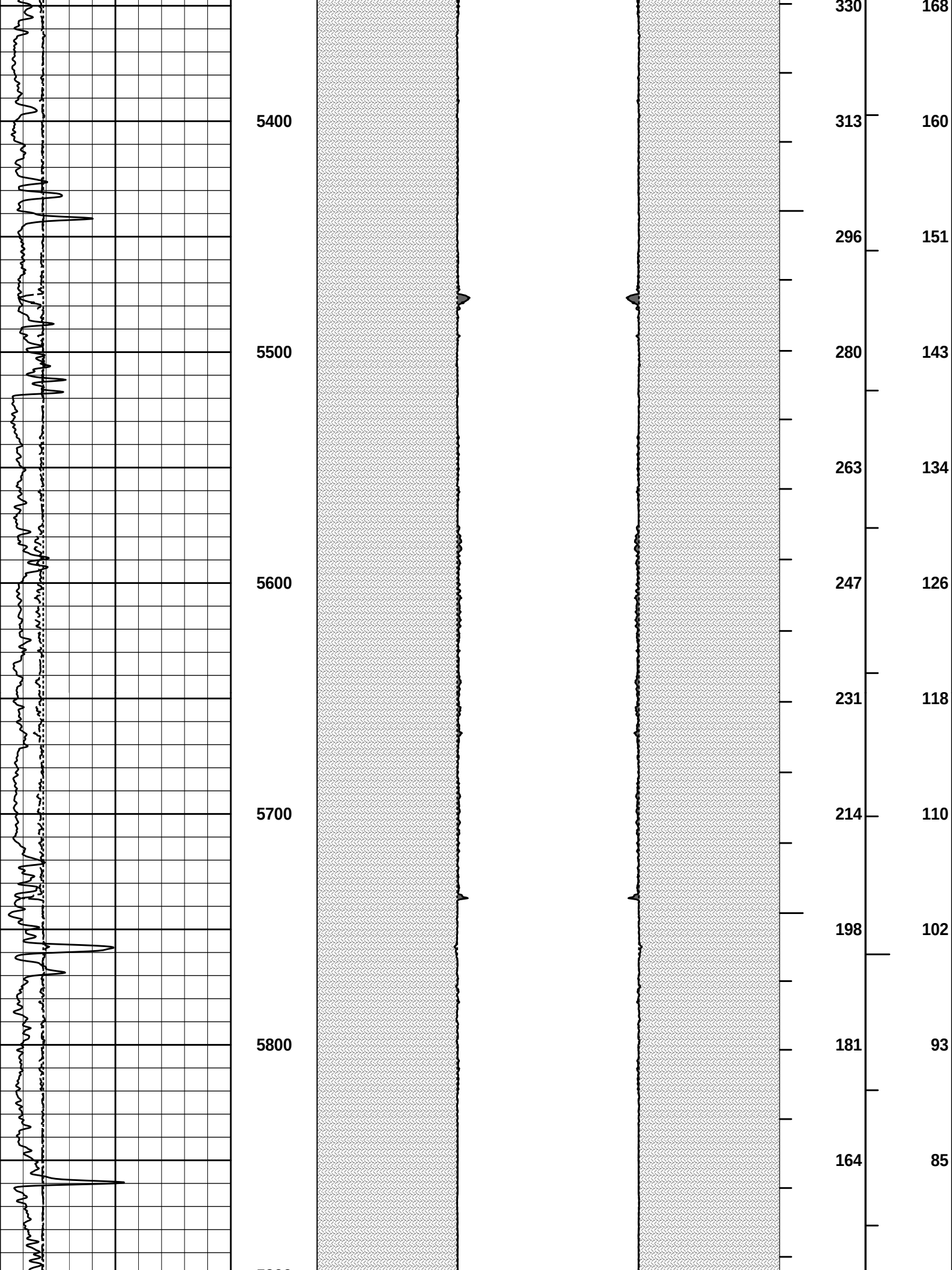












ANNULAR HOLE VOLUME PLOT

COMPANY	SANDRIDGE ENERGY		
WELL	MILLY 3020 1-19		
FIELD	EXCEL SOUTHWEST		
COUNTY	KIOWA	STATE	KANSAS

HALLIBURTON

DUAL SPACED NEUTRON
SPECTRAL DENSITY
LOG