

HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

EOG RESOURCES
TIMKEN 22 #1
WILLIS
STEVENS
KANSAS

COMPANY EOG RESOURCES
WELL TIMKEN 22 #1
FIELD WILLIS
COUNTY STEVENS
STATE KANSAS

API No. 15-189-22770
Location 1840' FNL & 780' FWL

Other Services:
BSAT
ACRT

COMPANY
WELL
FIELD
COUNTY
STATE

Sect. 22 Twp. 32S Rge. 37W

GROUND LEVEL Elev. 3121.0 ft
KELLY BUSHING 11.0 ft above perm. Datum
KELLY BUSHING Elev.: K.B. 3132.0 ft
D.F. 3131.0 ft
G.L. 3121.0 ft

Date	02-Jul-11	Run No.	ONE
Depth - Driller	6500.00 ft	Depth - Logger	6500.0 ft
Bottom - Logged Interval	6462.0 ft	Top - Logged Interval	2300.0 ft
Casing - Driller	8.625 in	Casing - Logger	1730.0 ft
Bit Size	7.875 in	Type Fluid in Hole	WATER BASED MUD
Density	9.2 ppg	Viscosity	63.00 s/qt
PH	10.00 pH	Fluid Loss	8.8 cpm
Source of Sample	FLOW LINE	Rm @ Meas. Temperature	1.380 ohmm @ 85.00 degF
Rmf @ Meas. Temperature	1.17 ohmm @ 84.00 degF	Rmc @ Meas. Temperature	1.600 ohmm @ 84.00 degF
Source Rmf	MEAS	Source Rmc	MEAS
Rm @ BHT	1.02 ohmm @ 145.0 degF	Time Since Circulation	3.7 hr
Time on Bottom	02-Jul-11 07:07	Max. Rec. Temperature	145.0 degF @ 6500.0 ft
Equipment	10546696	Location	LIBERAL
Recorded By	S. JUNG		
Witnessed By	S. MUELLER		

Fold here

Service Ticket No.: 8284031		API Serial No.: 15-189-22770		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.	11048627	Serial No.		Serial No.	I04_P84	Serial No.	11055304
Model No.	GTET	Model No.		Model No.	SDLT	Model No.	DSNT
Diameter	3.625"	No. of Cent.		Diameter	4.75"	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.	5168GW	Serial No.	DSN-424
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 Ci	Strength	15 Ci
LOGGING DATA							
GENERAL		GAMMA		DENSITY		NEUTRON	

Run No.	GENERAL		Speed ft/min	GAMMA		ACOUSTIC		Matrix	DENSITY		NEUTRON			
	Depth			Scale		Scale			Matrix	Scale		Matrix		
	From	To		L	R	L	R			L	R			
ONE	TD	2300'	REC	0	150				30	-10	2.71	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation @ _____ KOP @ _____

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 4.5 & 5.5-INCH CASINGS

GPS COORDINATES: LAT: 37° 15' N & LONG: 101° 20' W

CHLORIDES REPORTED AT 3700 MG/L LCM REPORTED AT 10 PPB

TODAY'S CREW: K. KELLY, K. KING

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

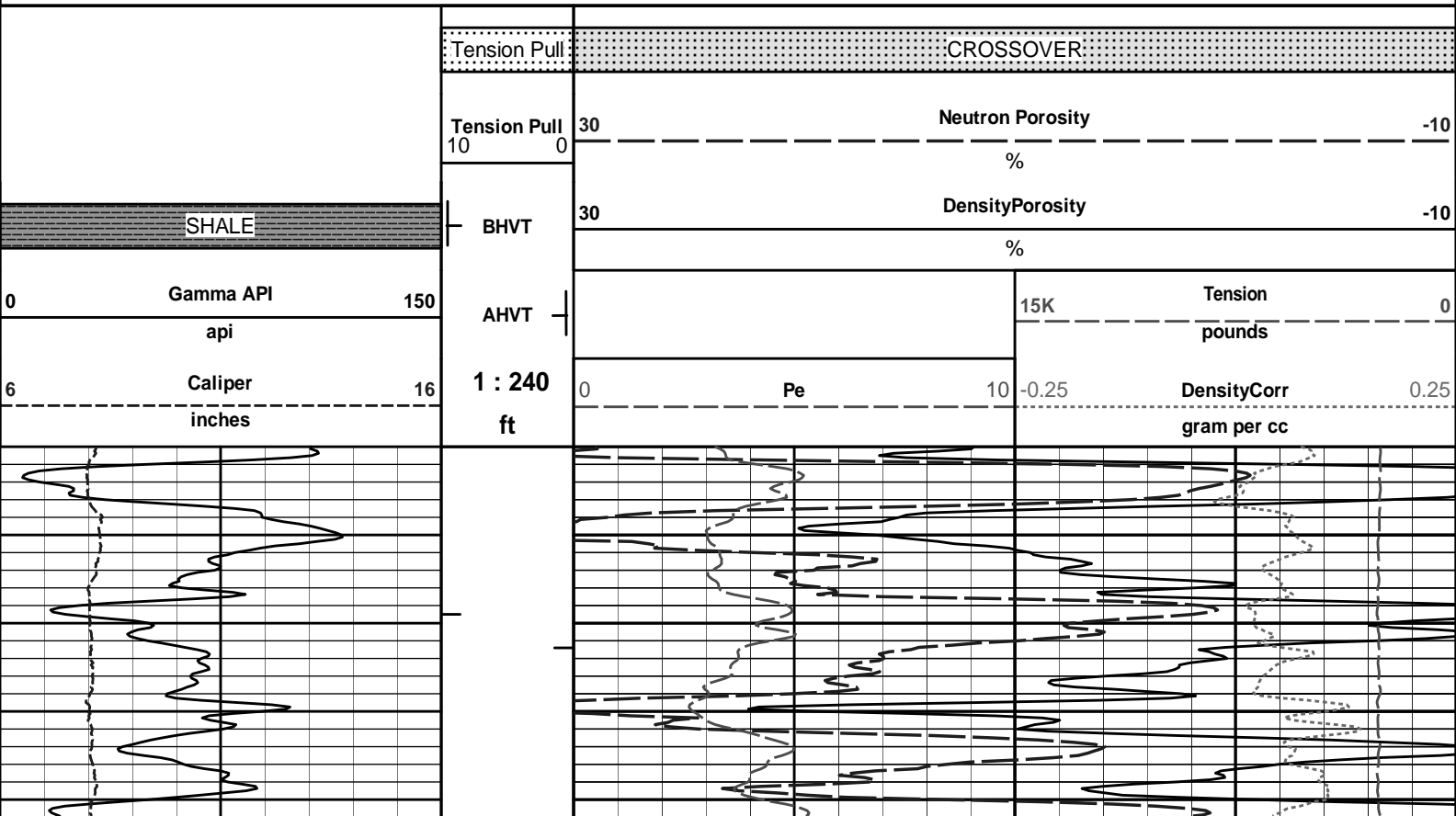
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR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

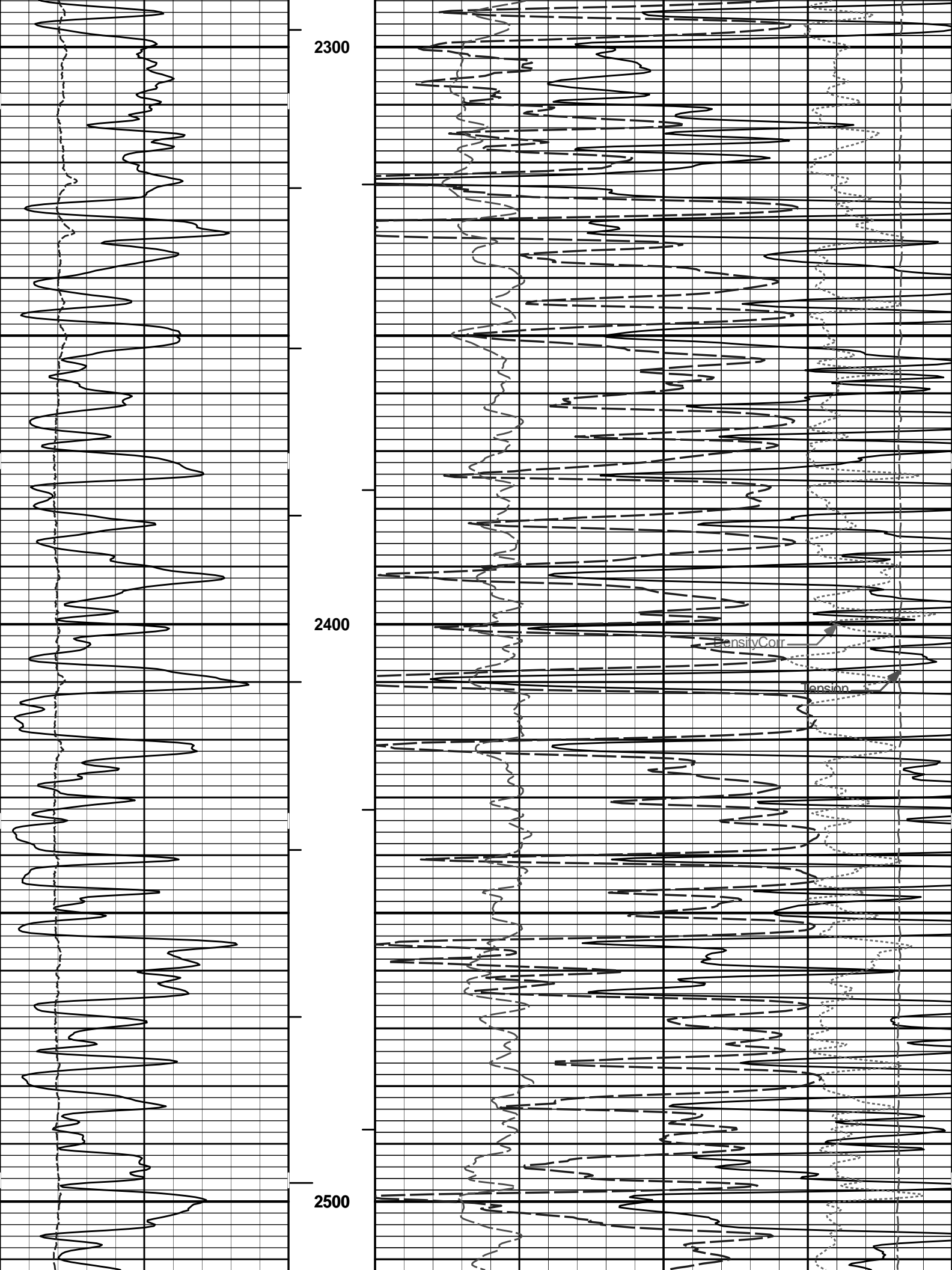
HALLIBURTON

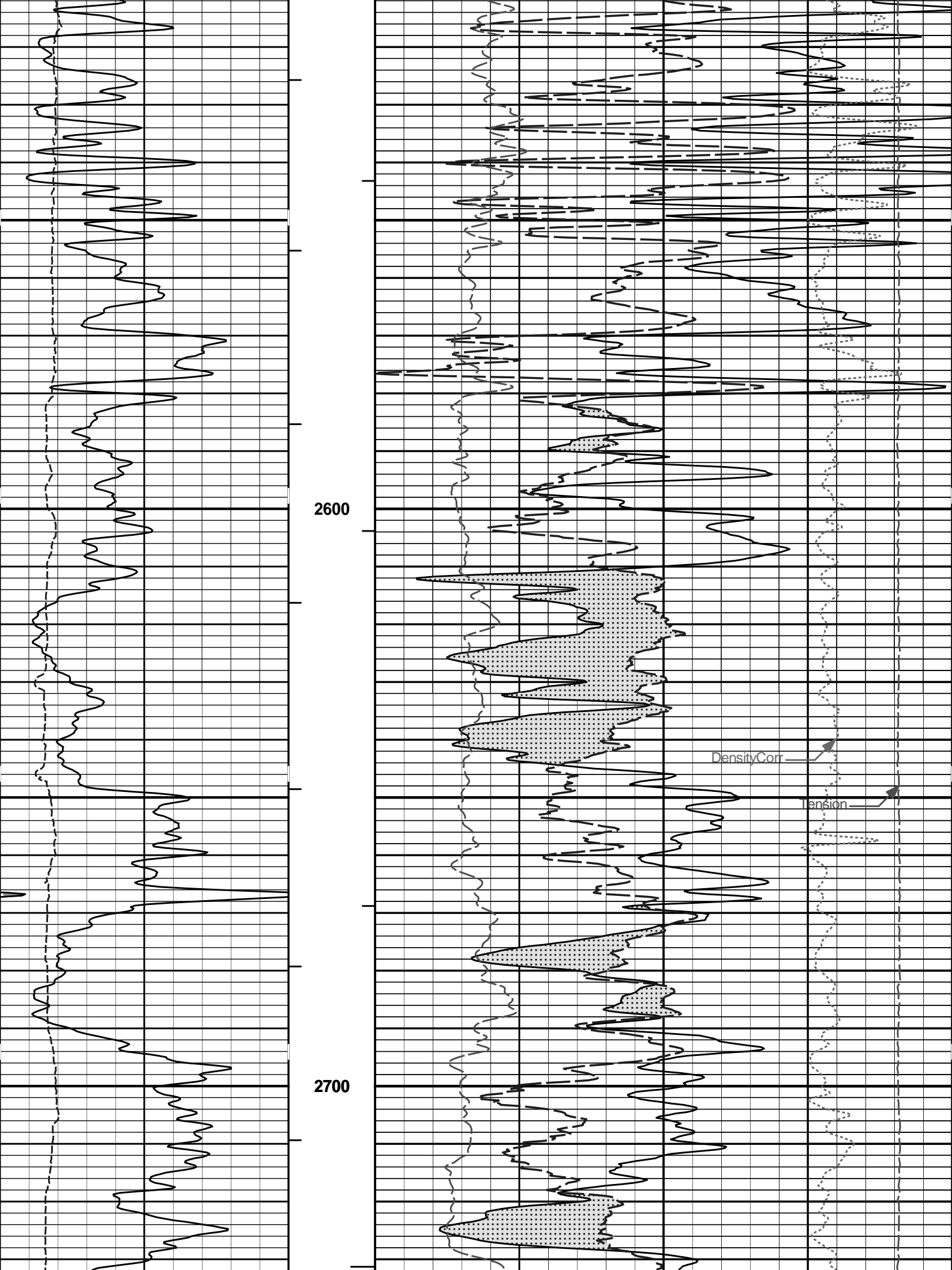


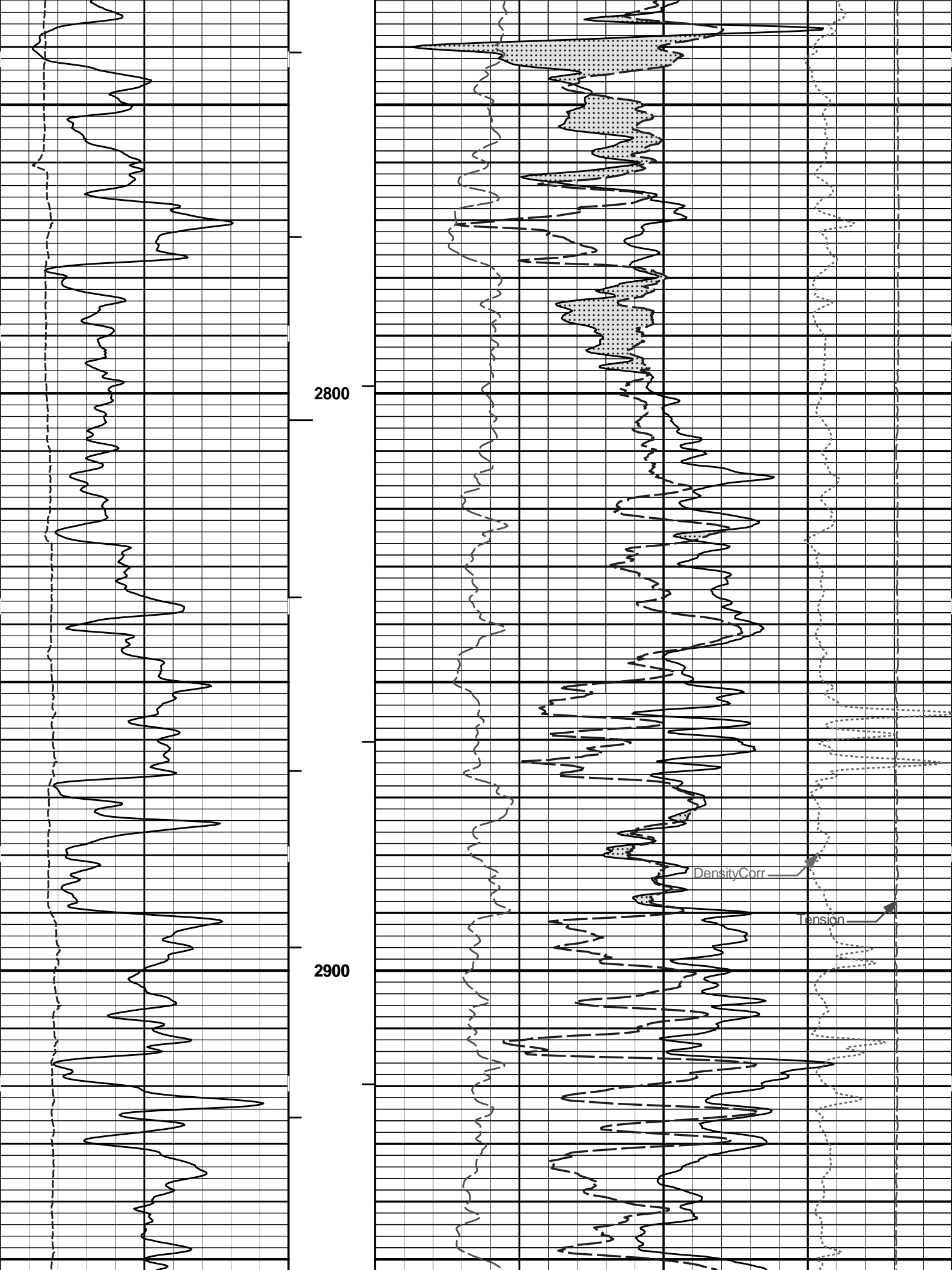
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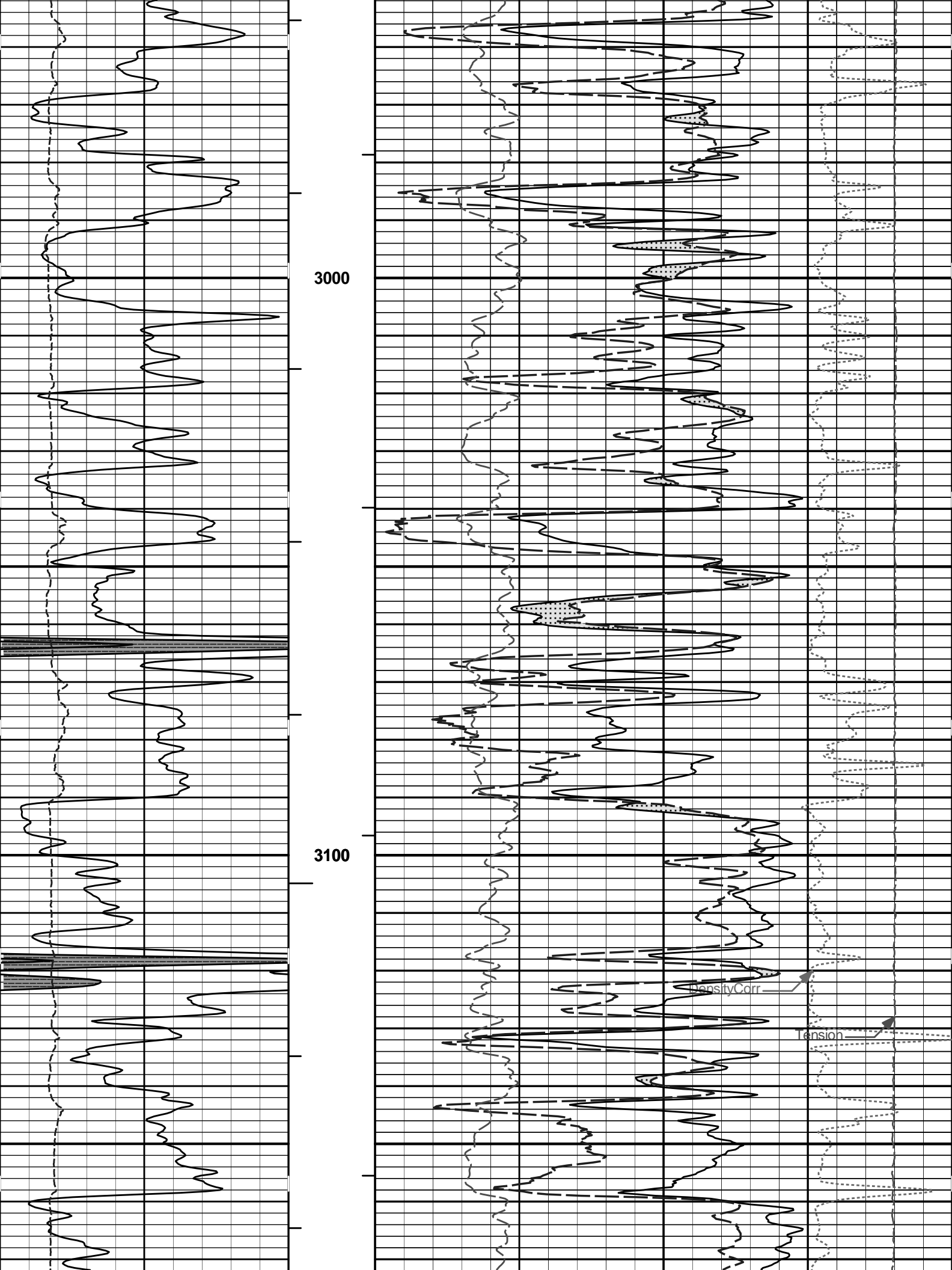
5 INCH MAIN LOG

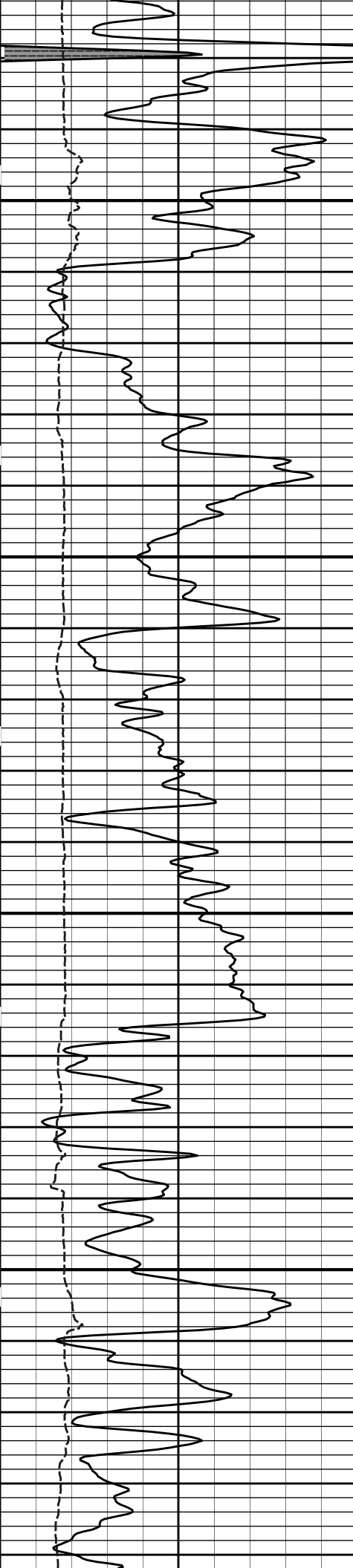






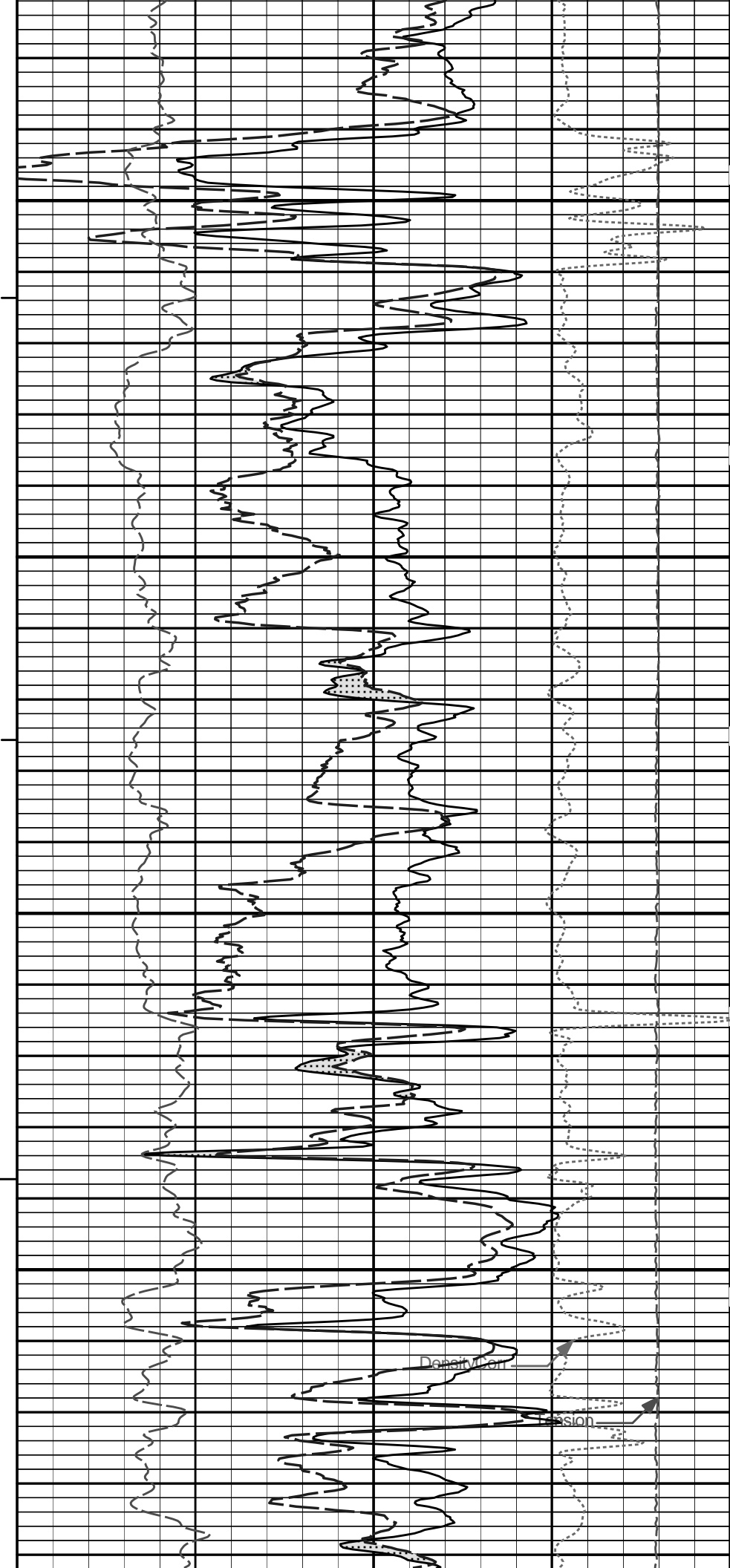






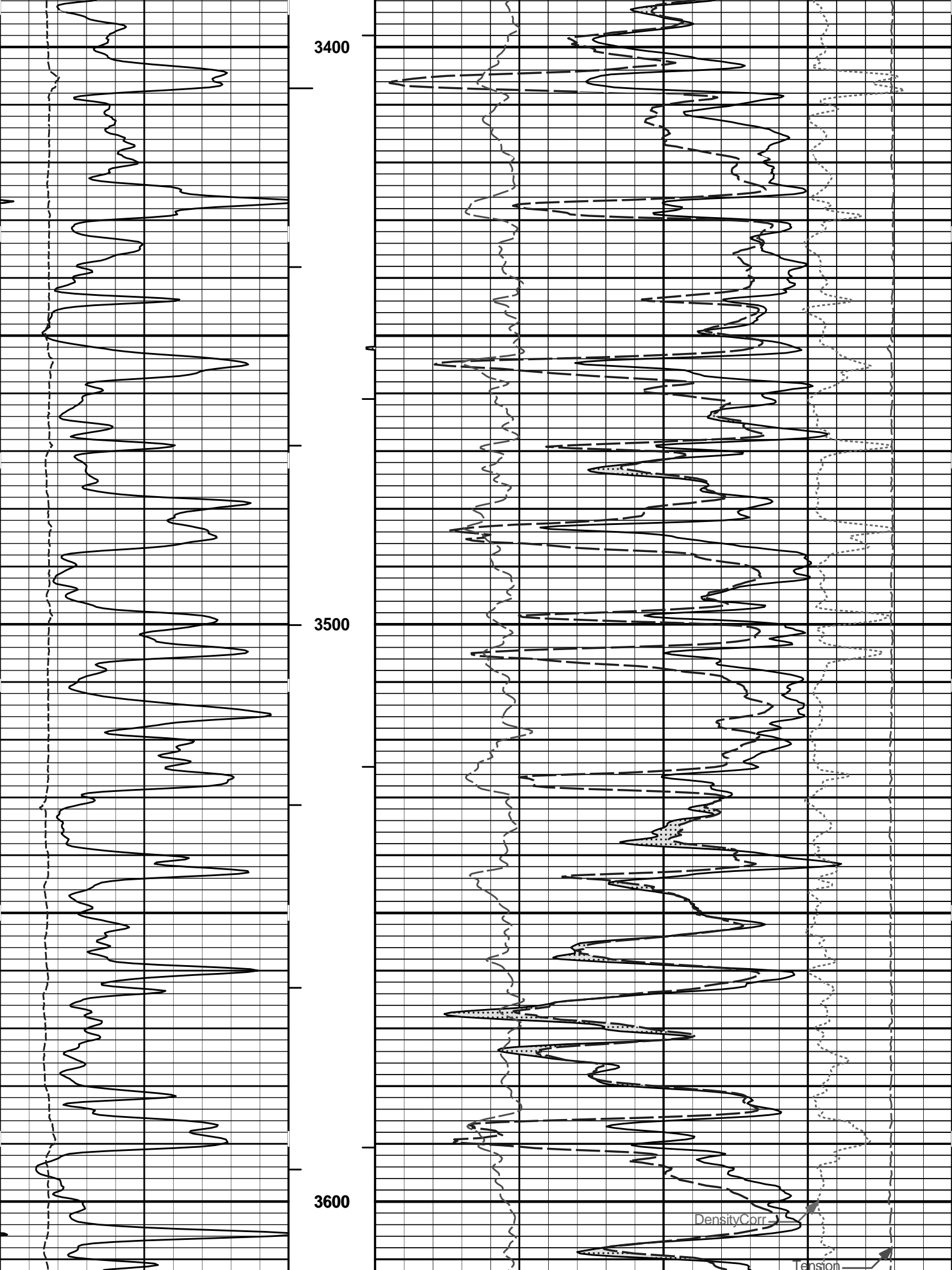
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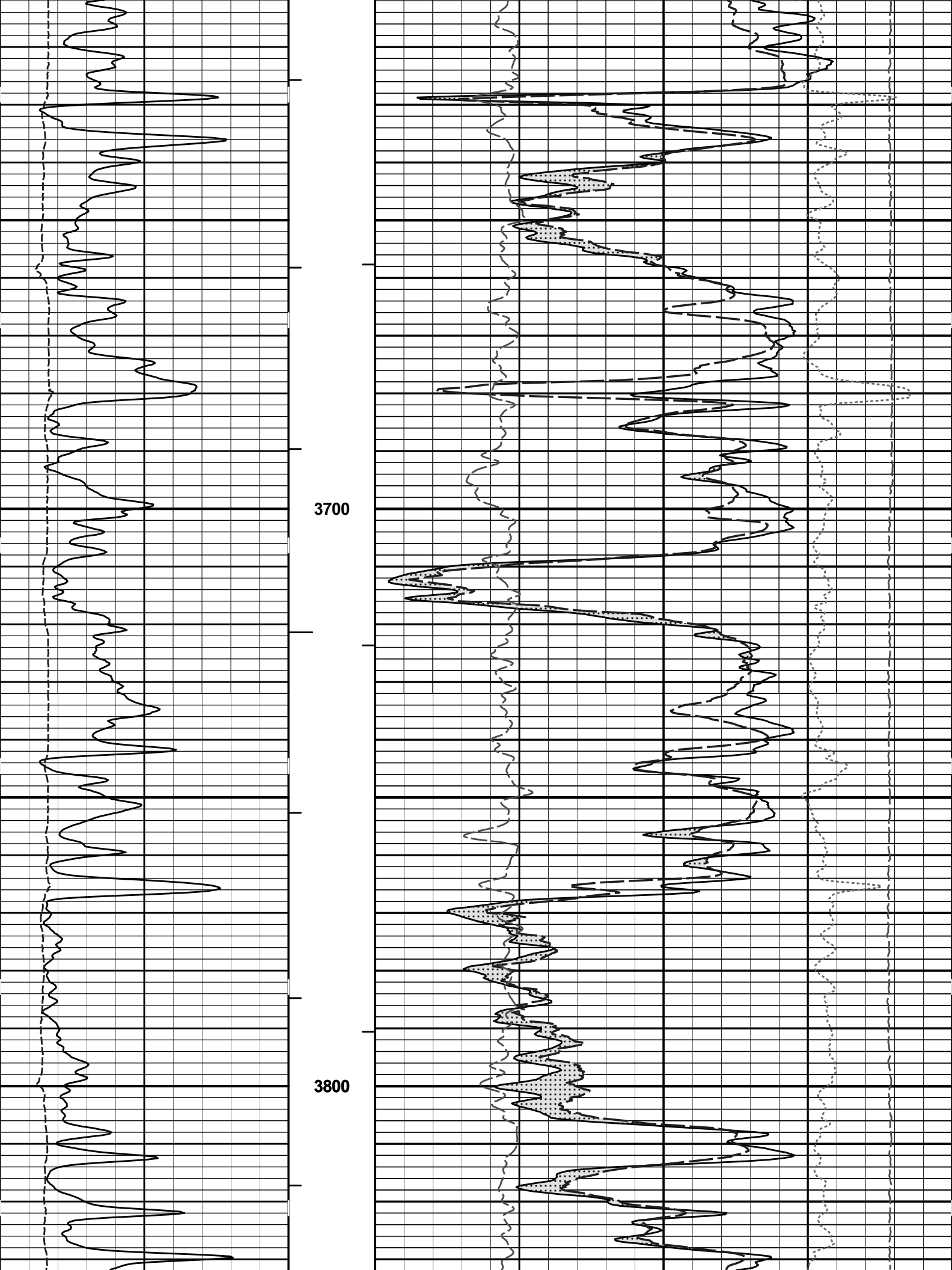
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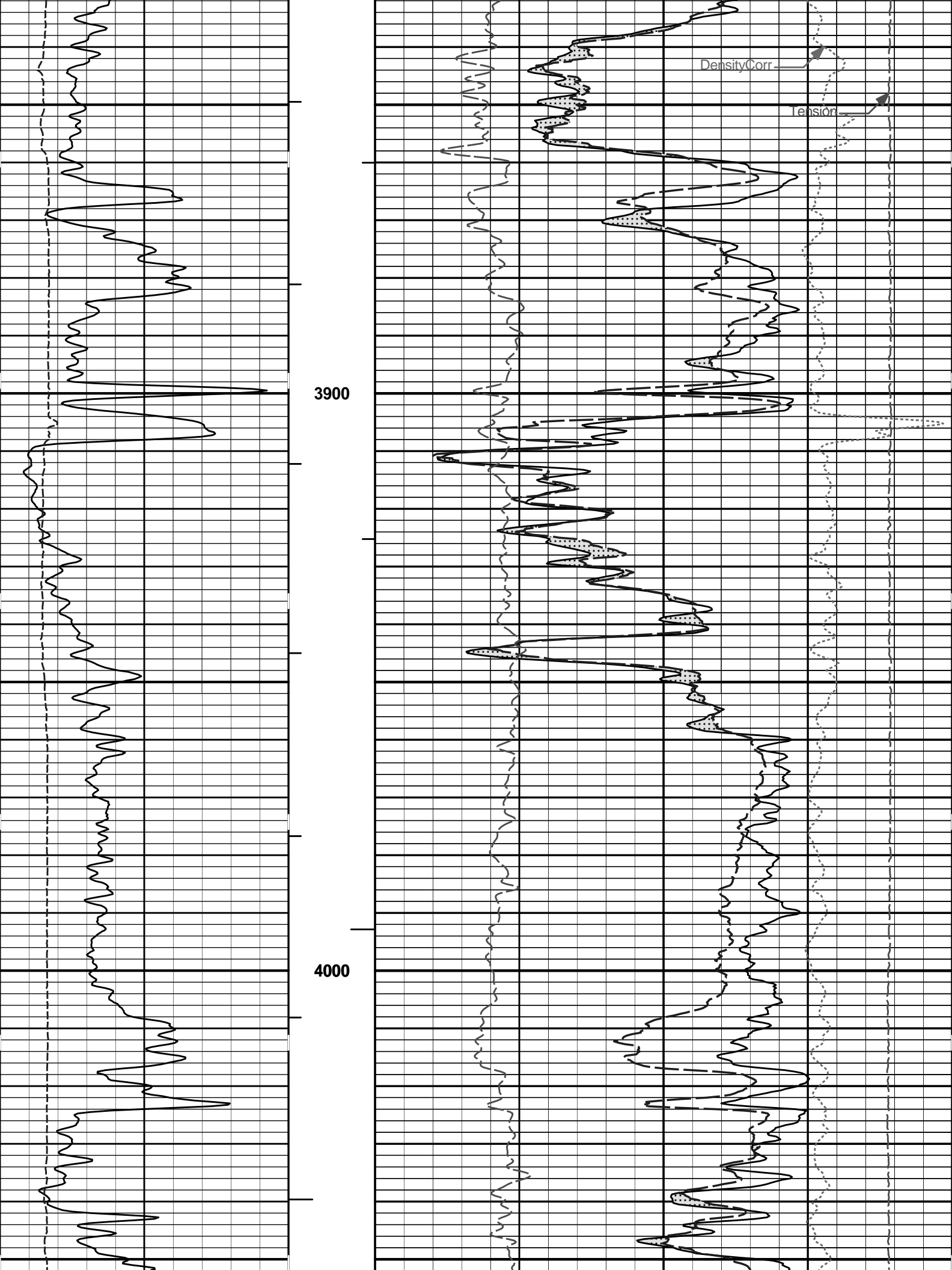


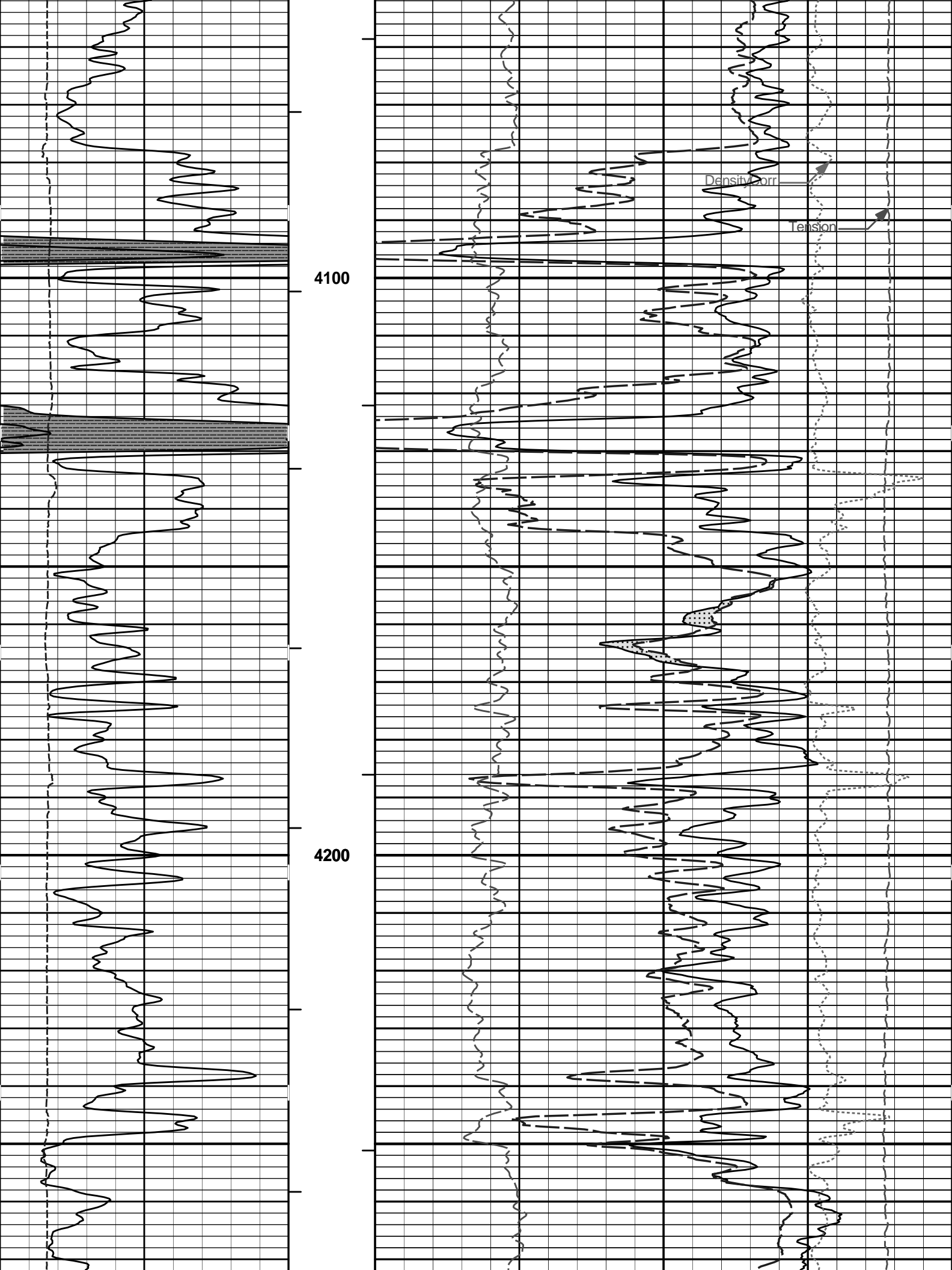
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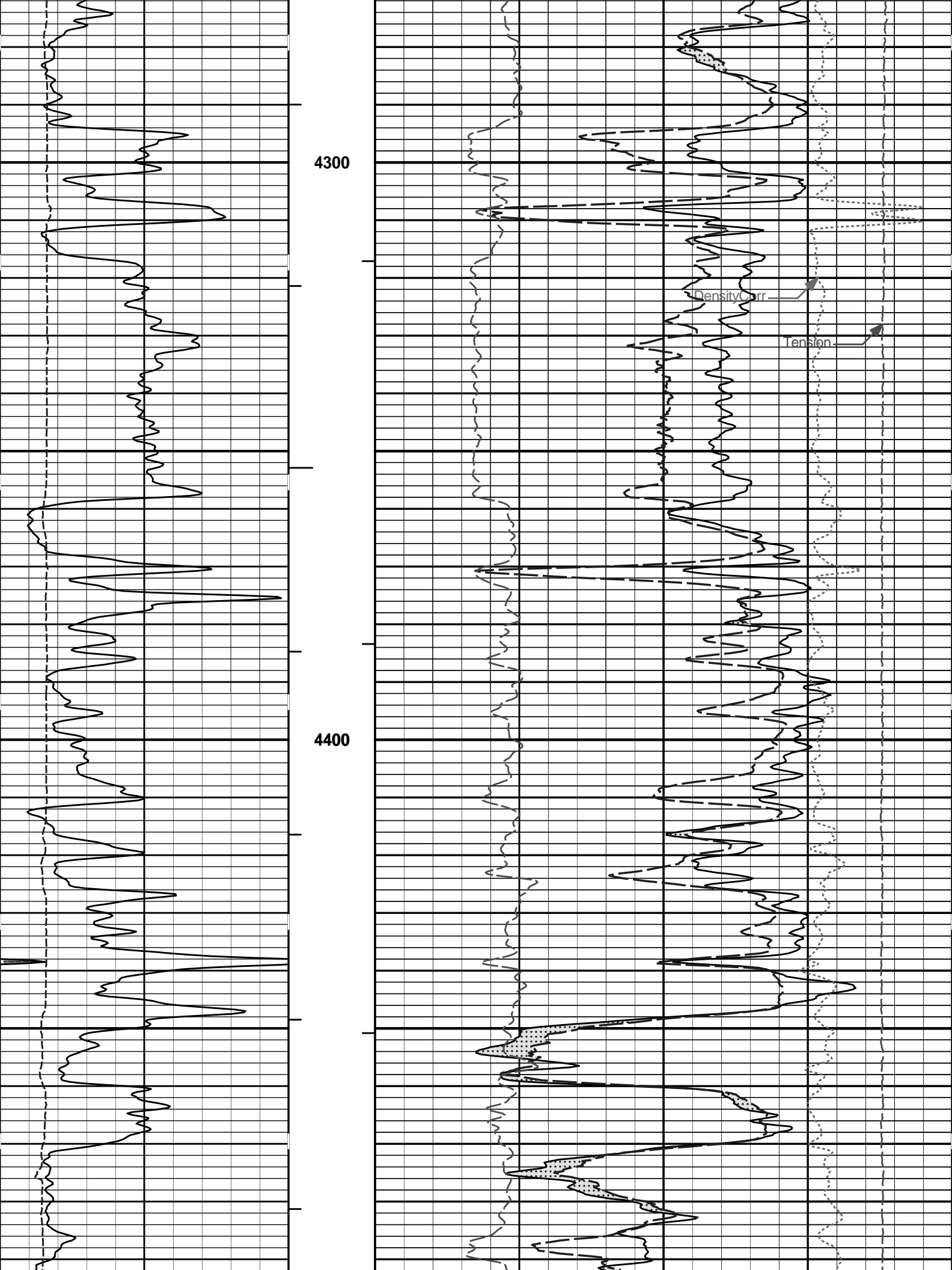
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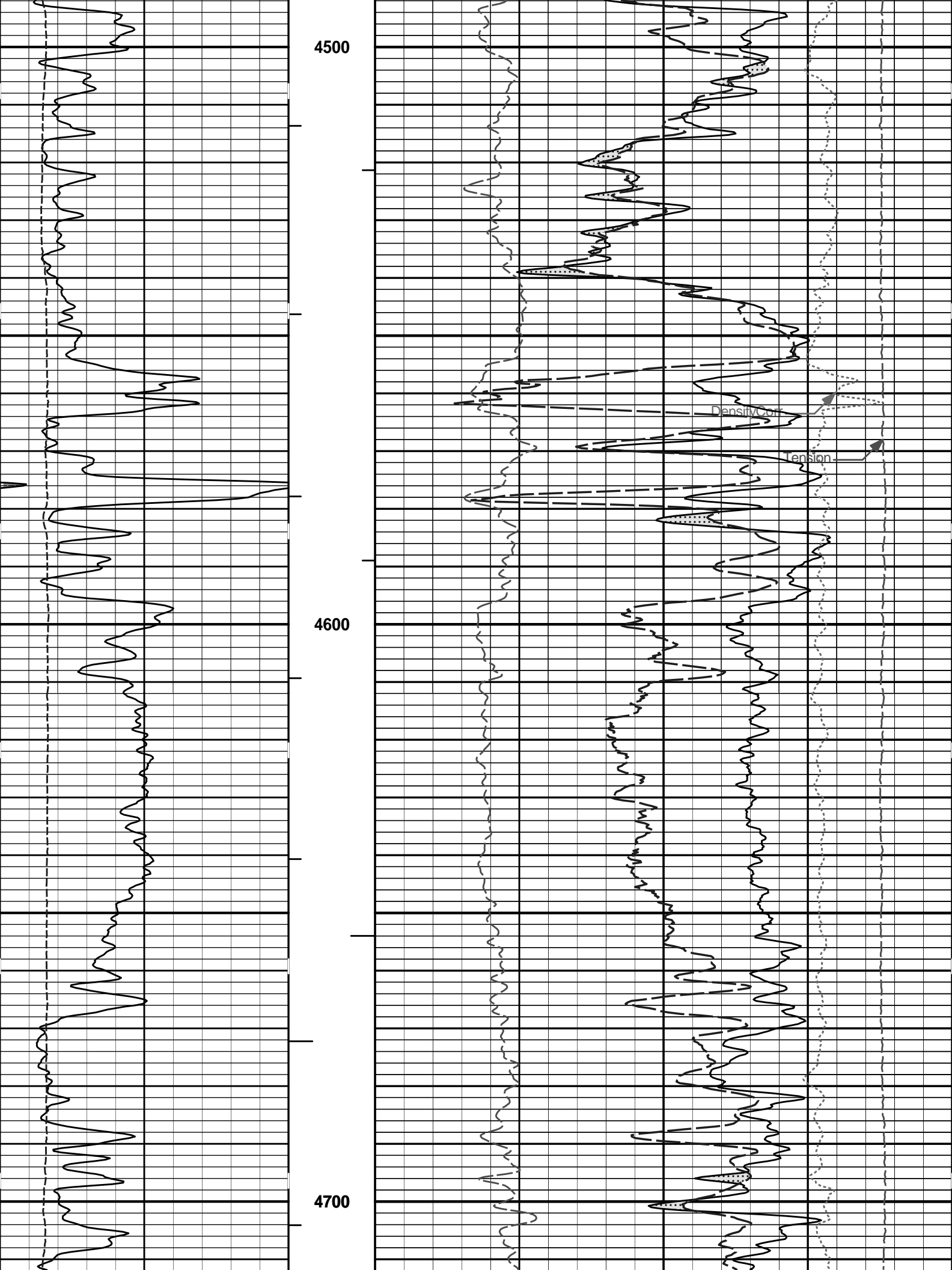


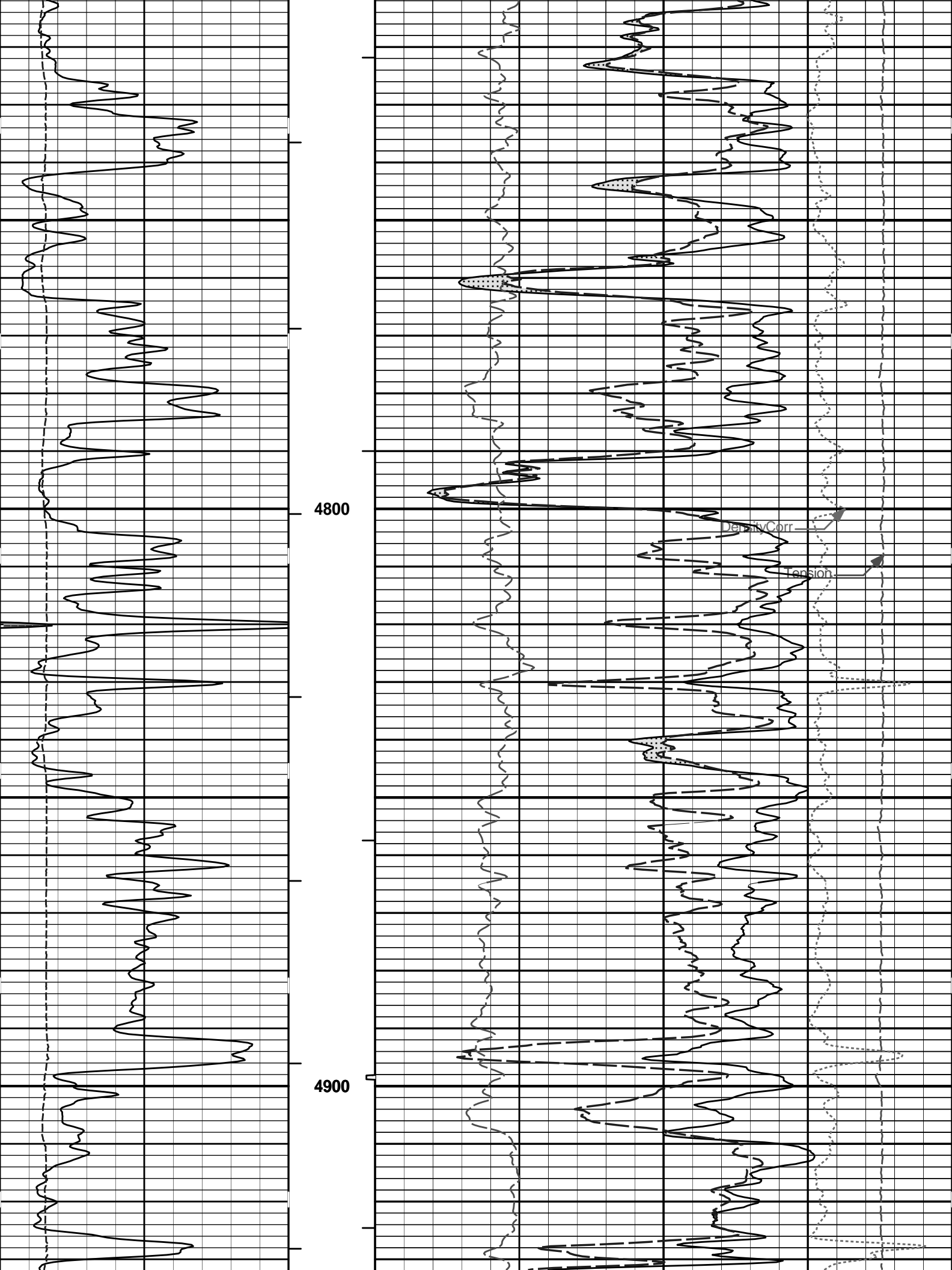


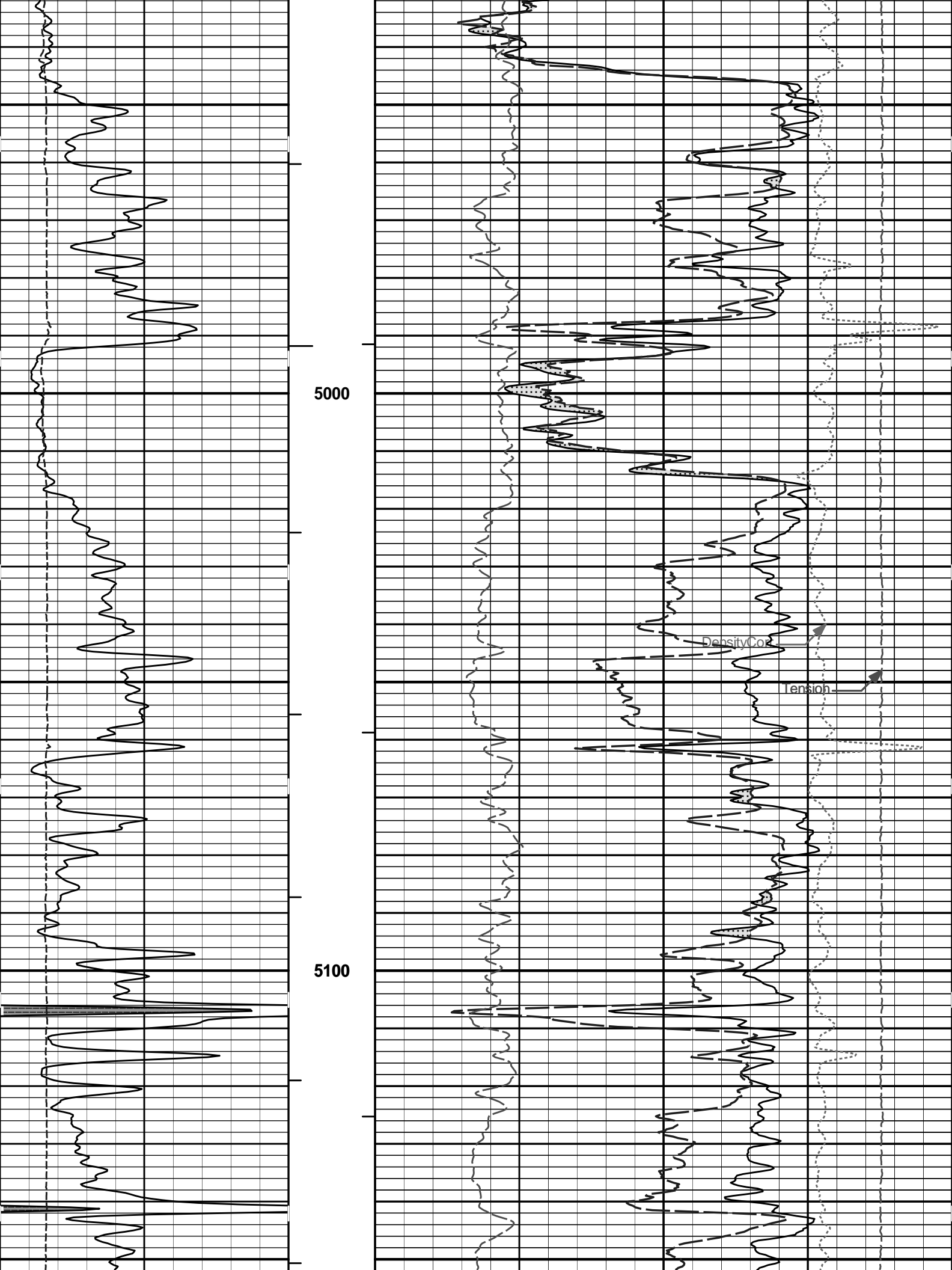


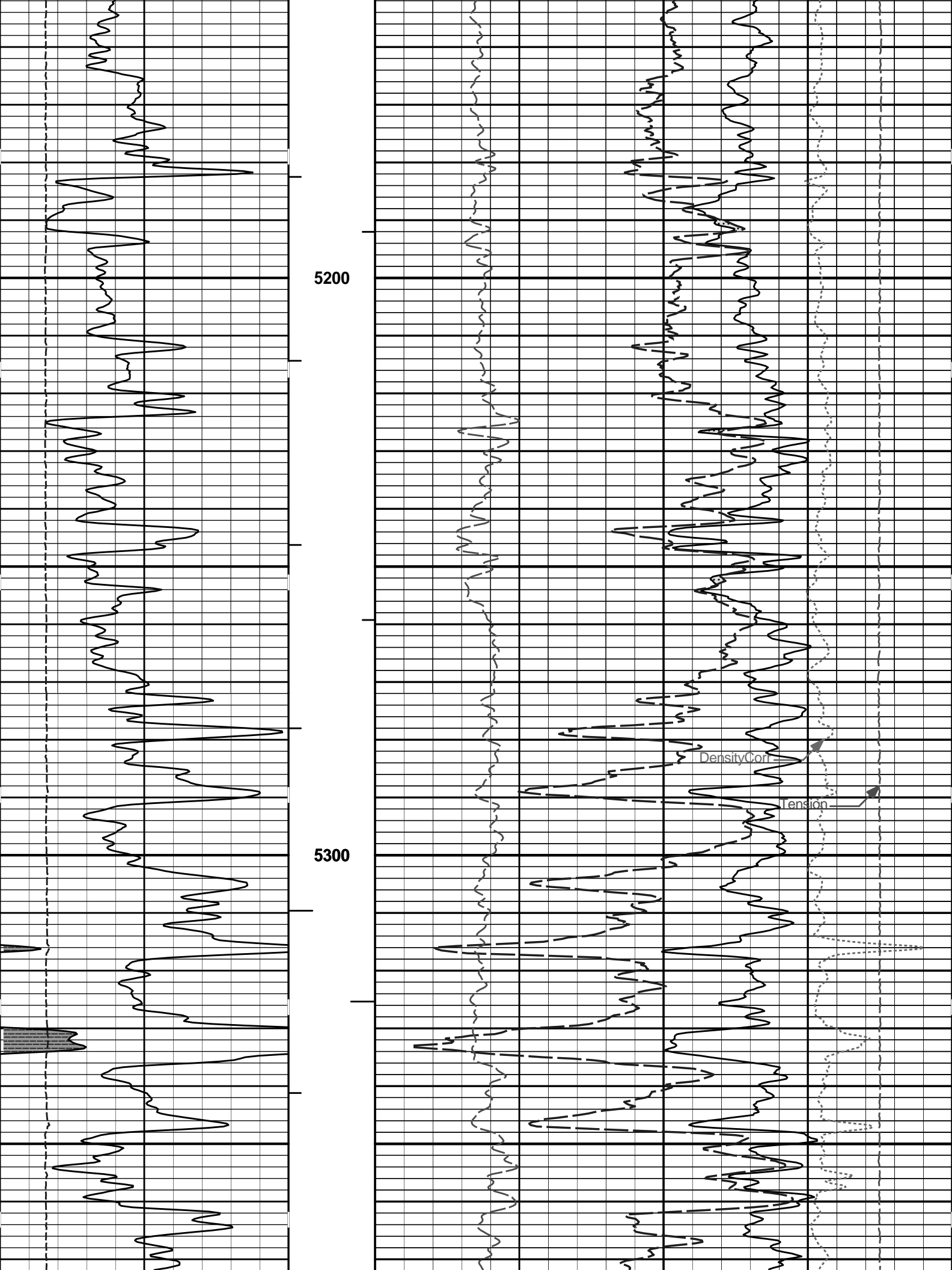


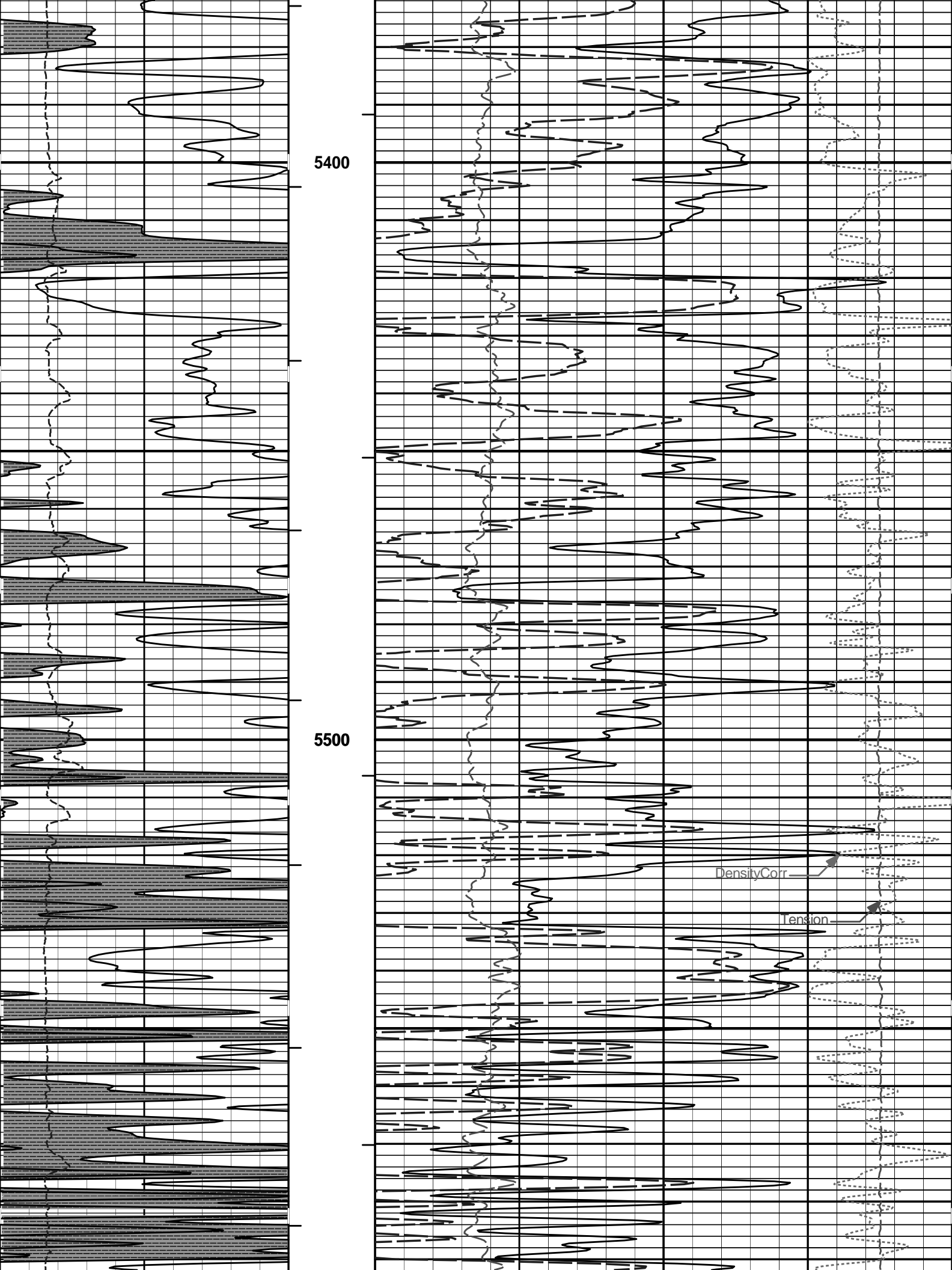


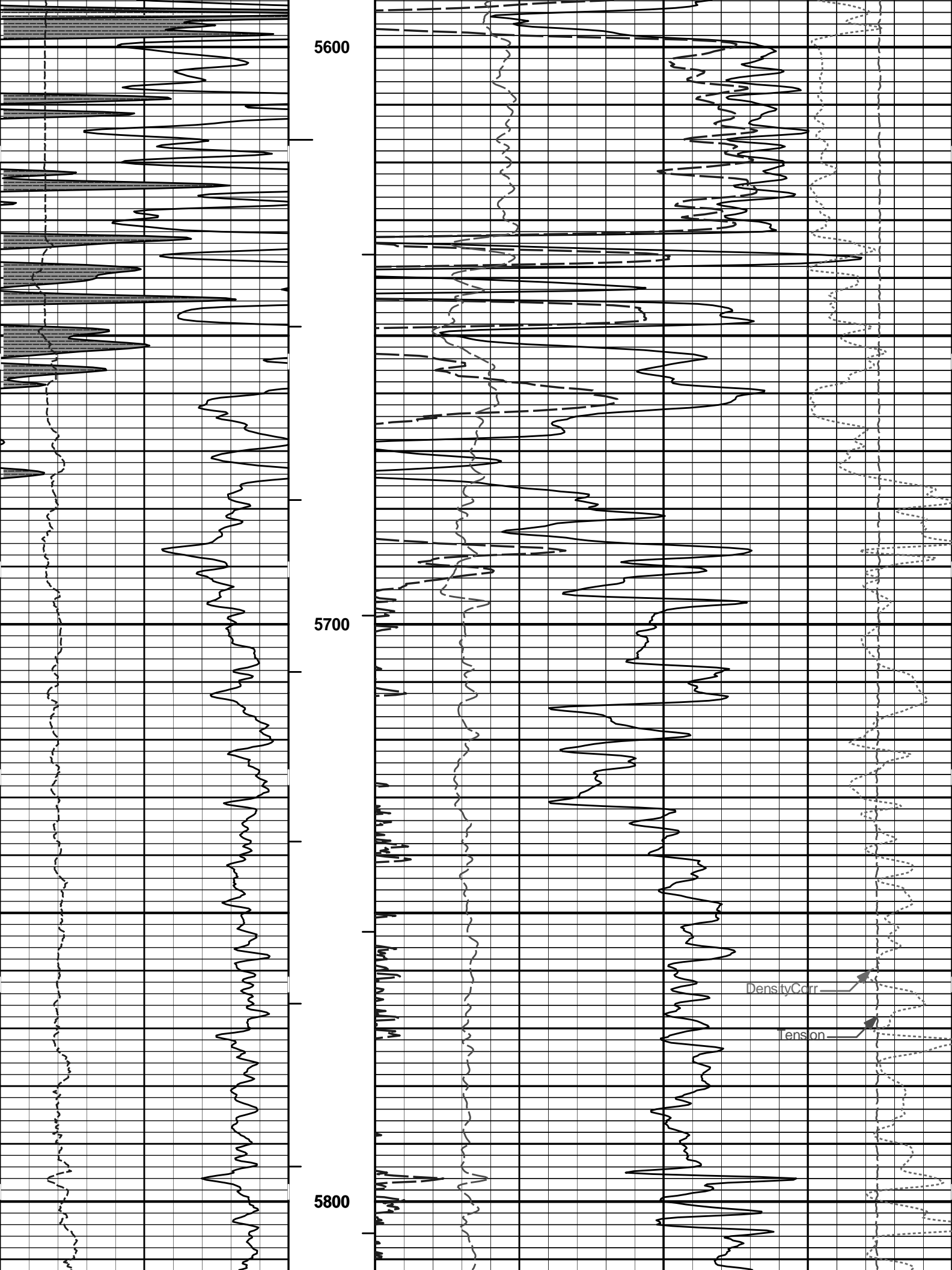


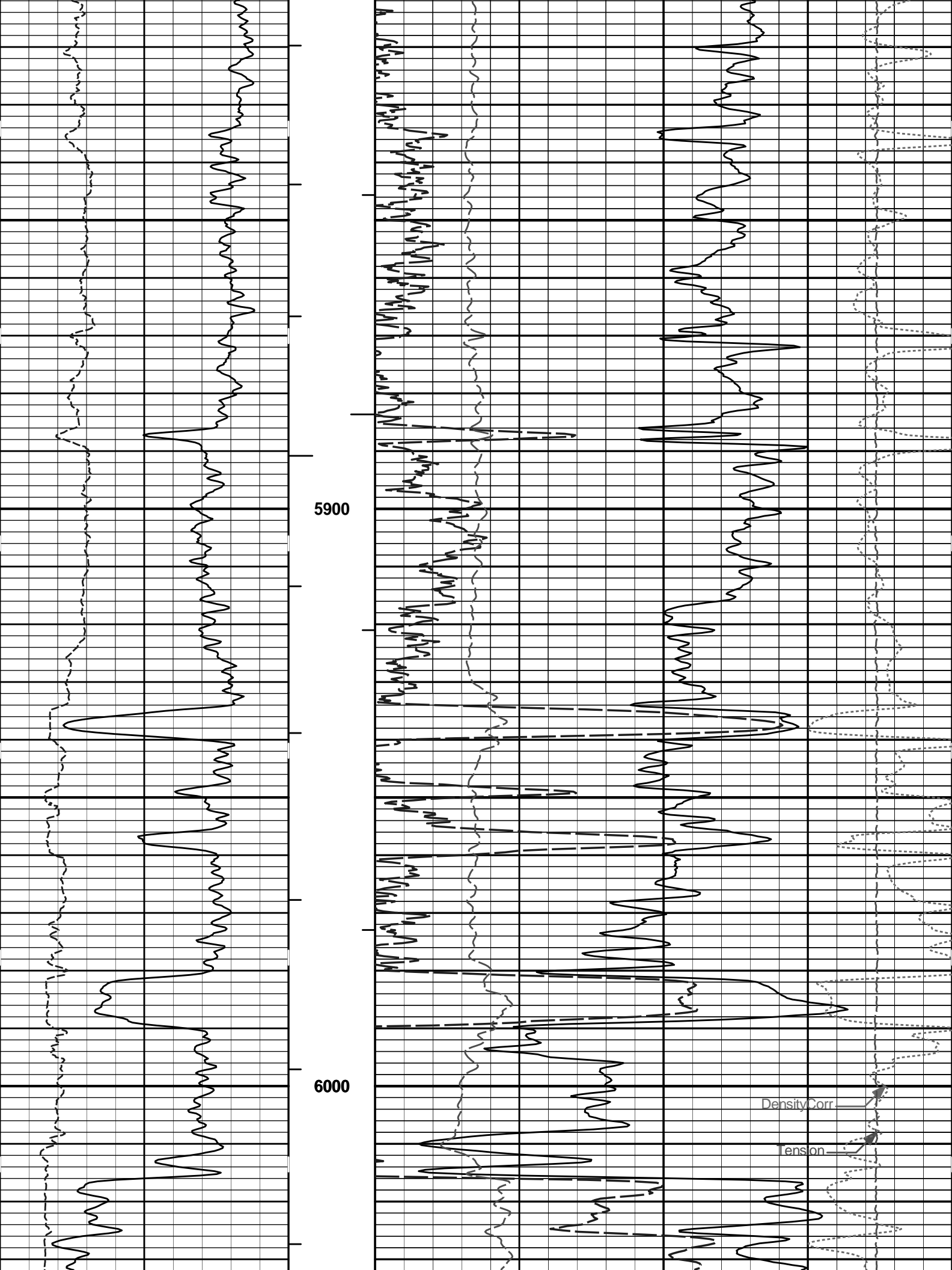


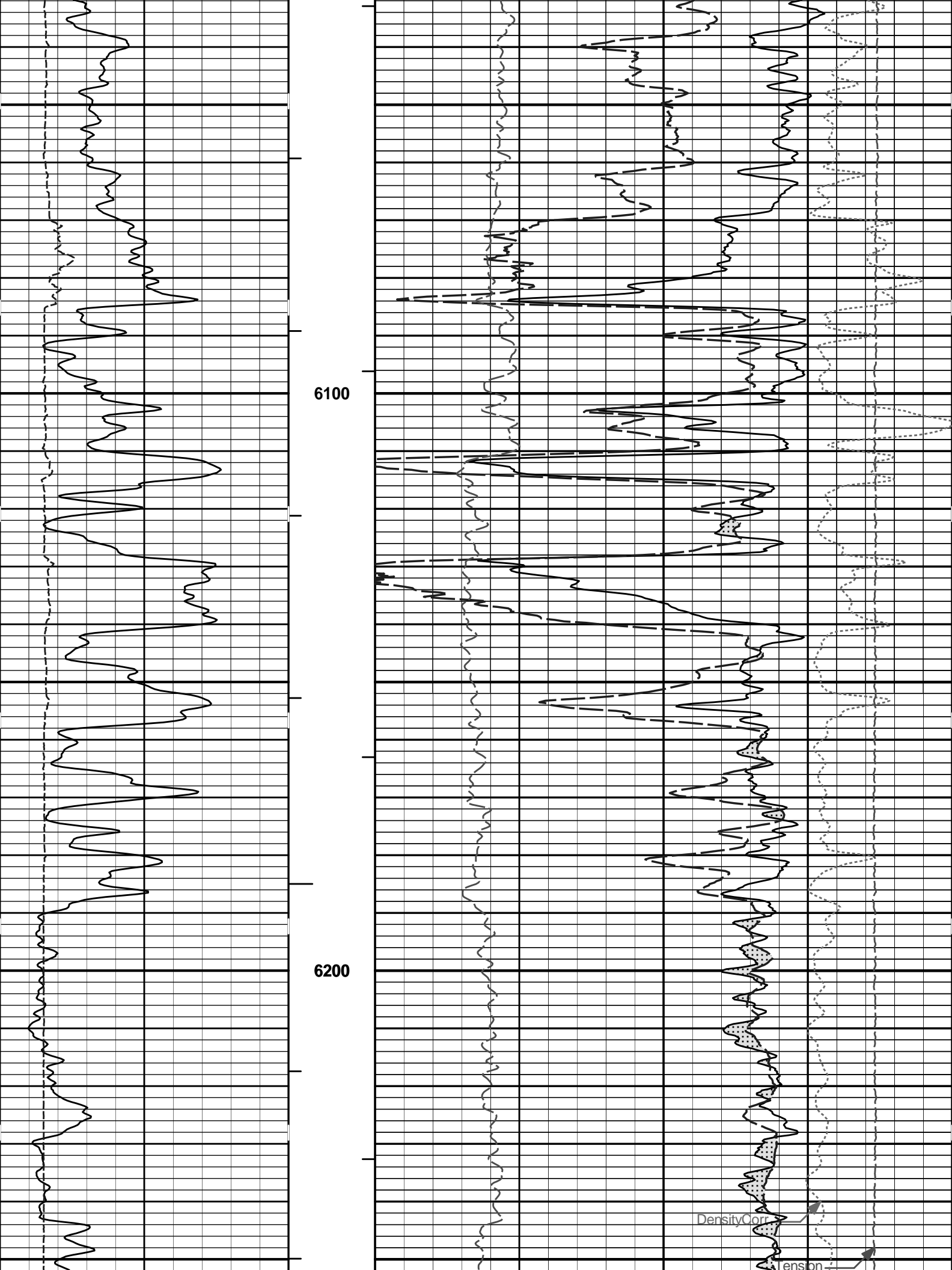


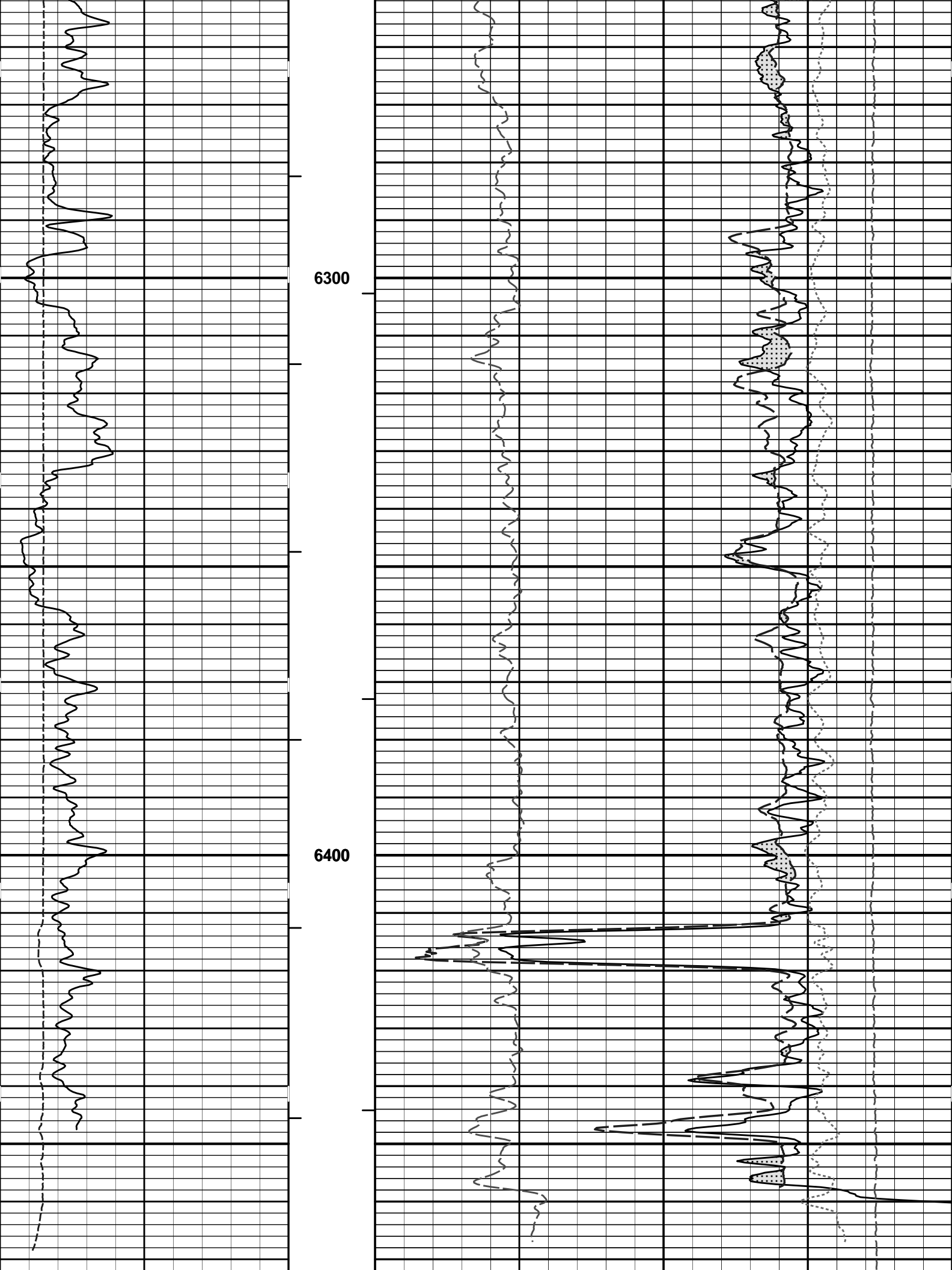


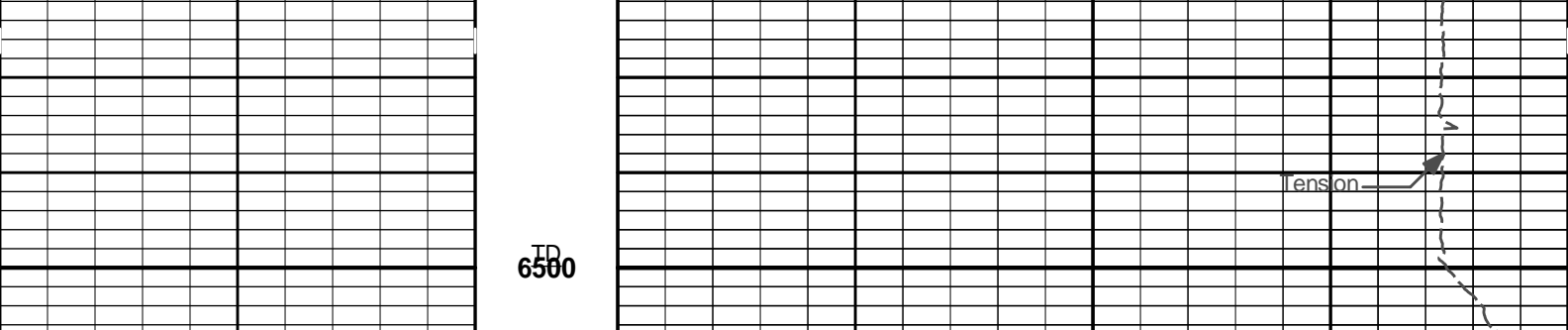












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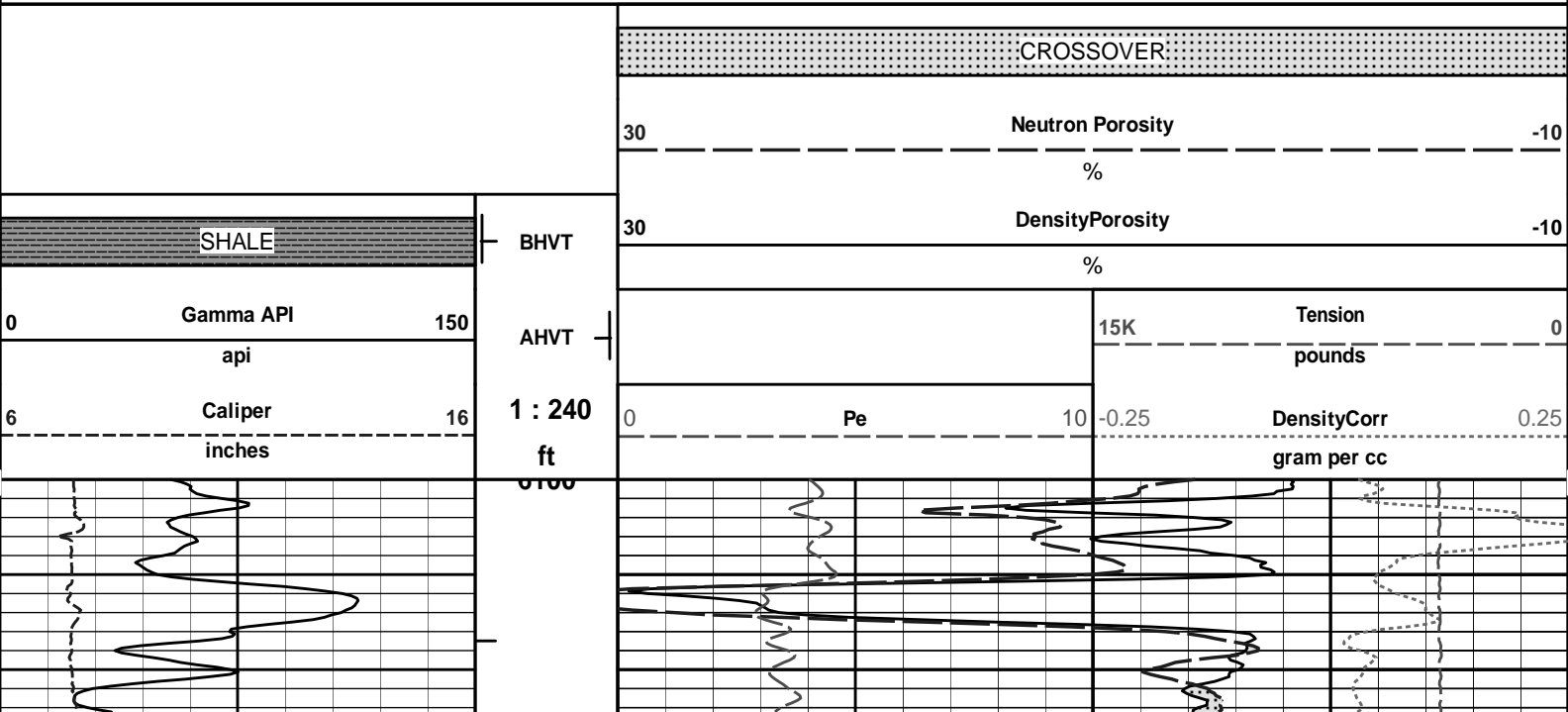
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0	Gamma API api	150		AHVT				15K	Tension
	SHALE		BHVT	30	DensityPorosity				-10
								%	
			Tension Pull	30	Neutron Porosity				-10
			10	0				%	
			Tension Pull		CROSSOVER				

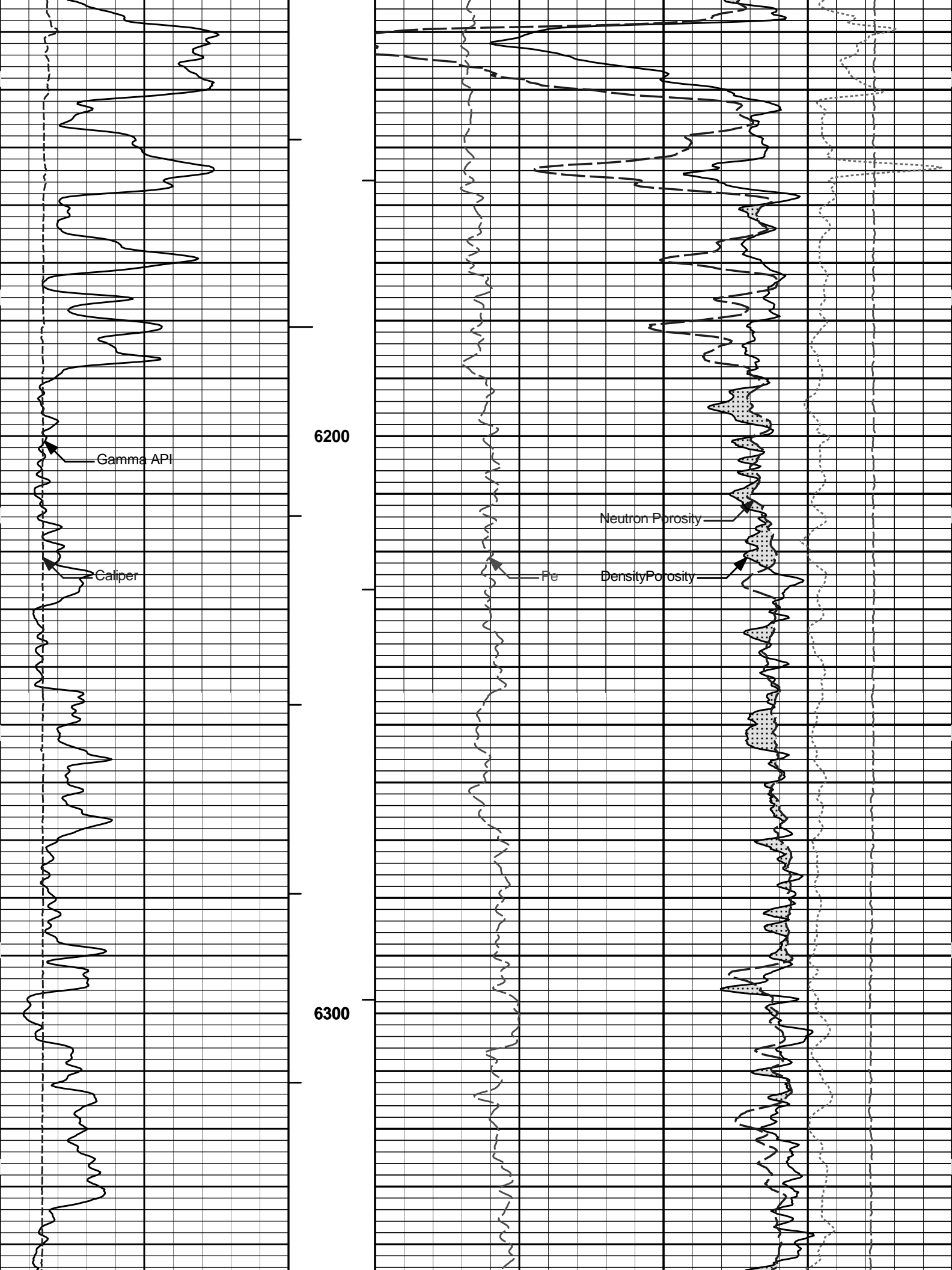
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 Data: TIMKEN_22_1\Well Based\DAQ-0001-DETAIL\
 Plot File: \\PORO\EOG_Poro_IQ_5_MAIN_LIB

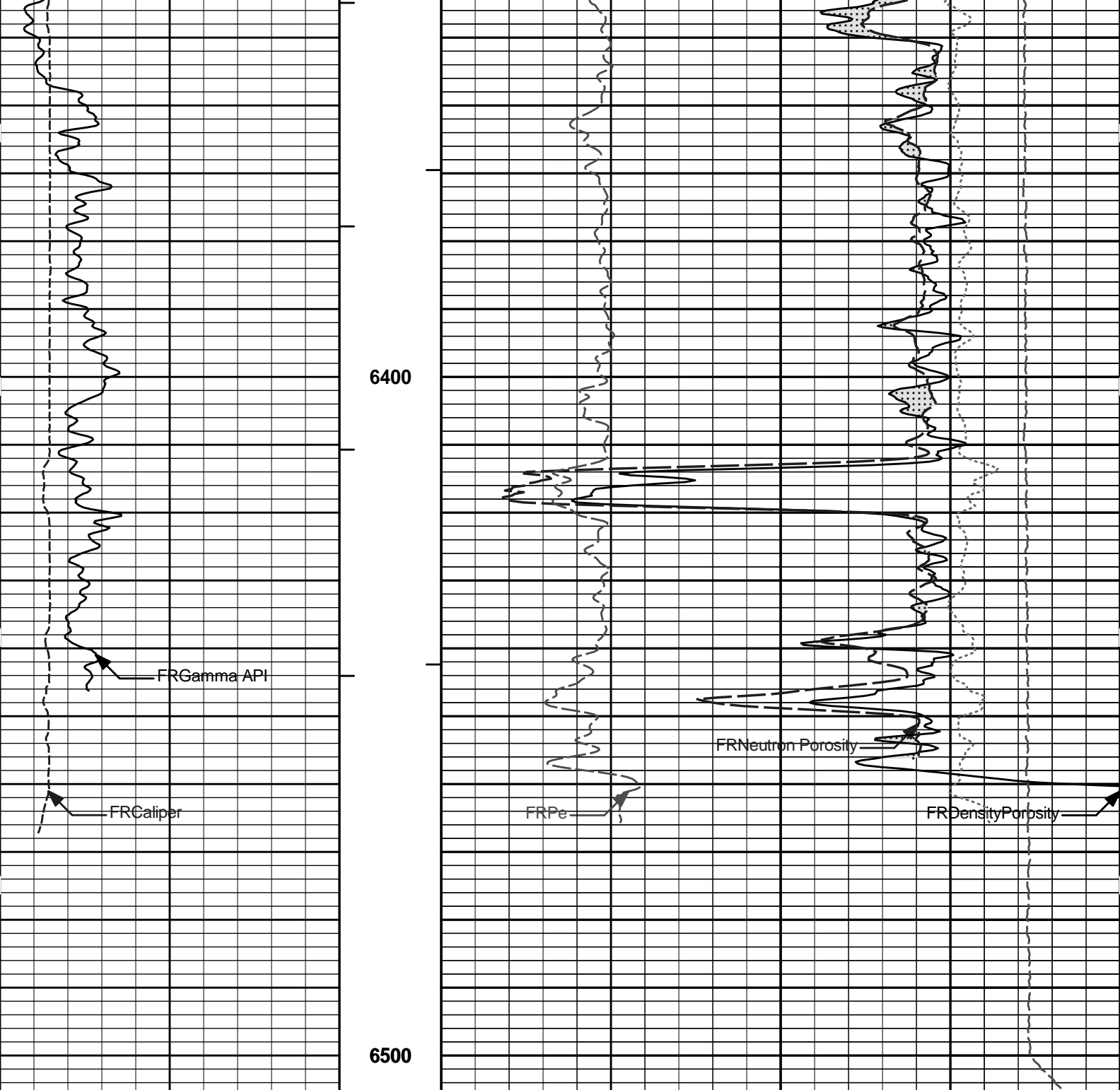
5 INCH MAIN LOG

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 Plot Range: 6100 ft to 6505.83 ft
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REPEAT SECTION







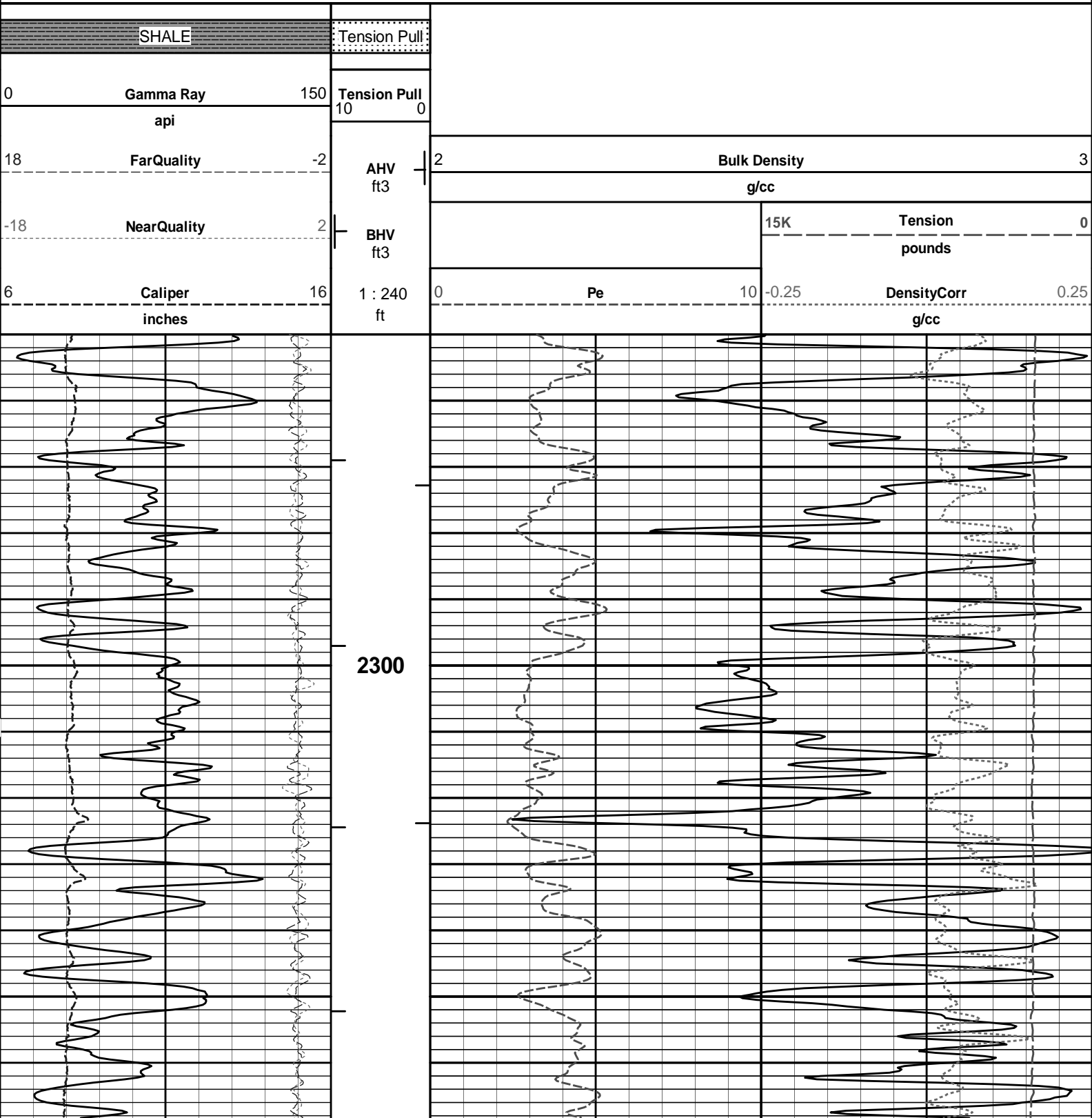
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0	Gamma API	150	BHVT	30	DensityPorosity				-10
	api					%			
	SHALE			30	Neutron Porosity				-10
					%				
					CROSSOVER				

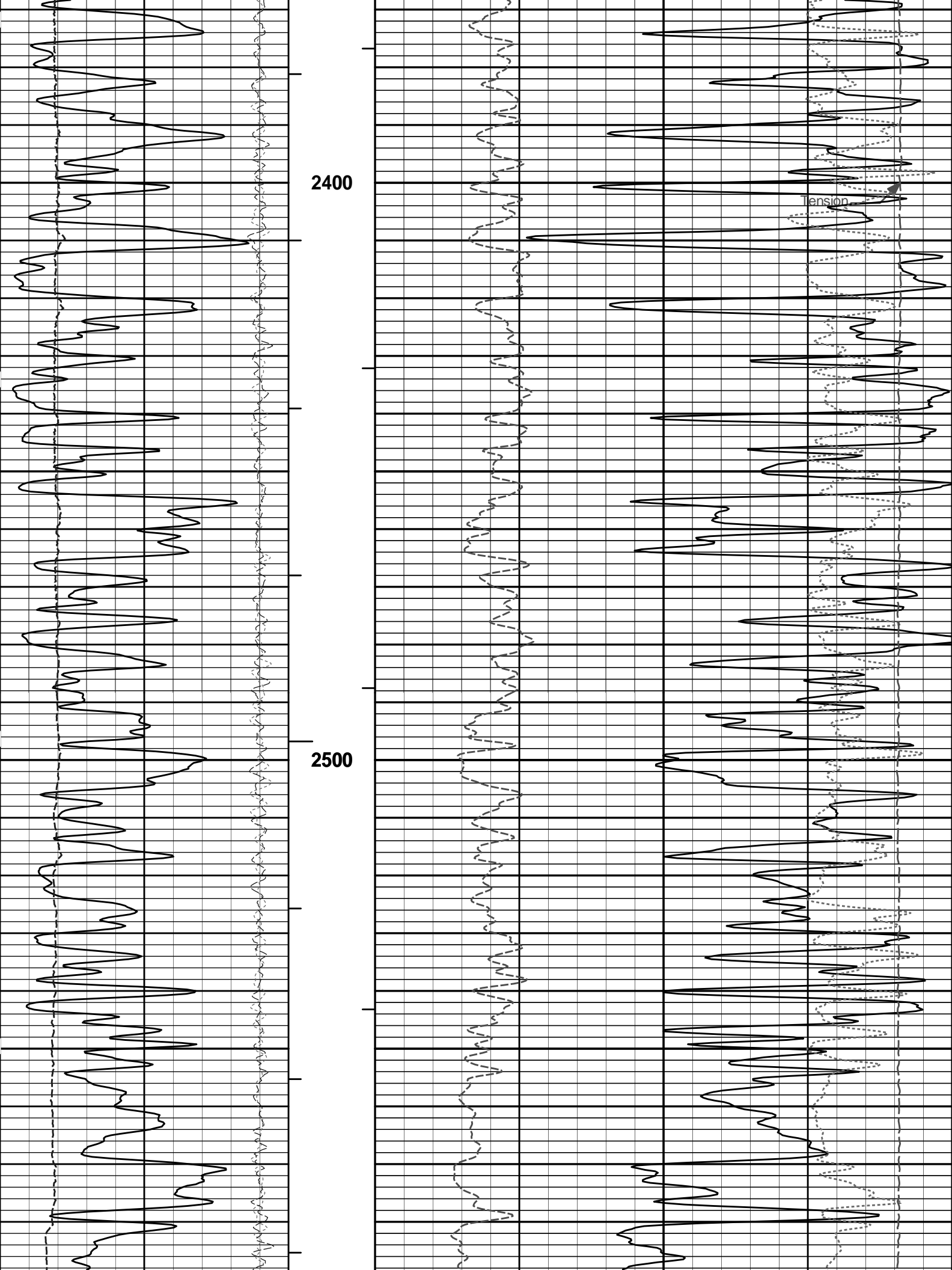
REPEAT SECTION

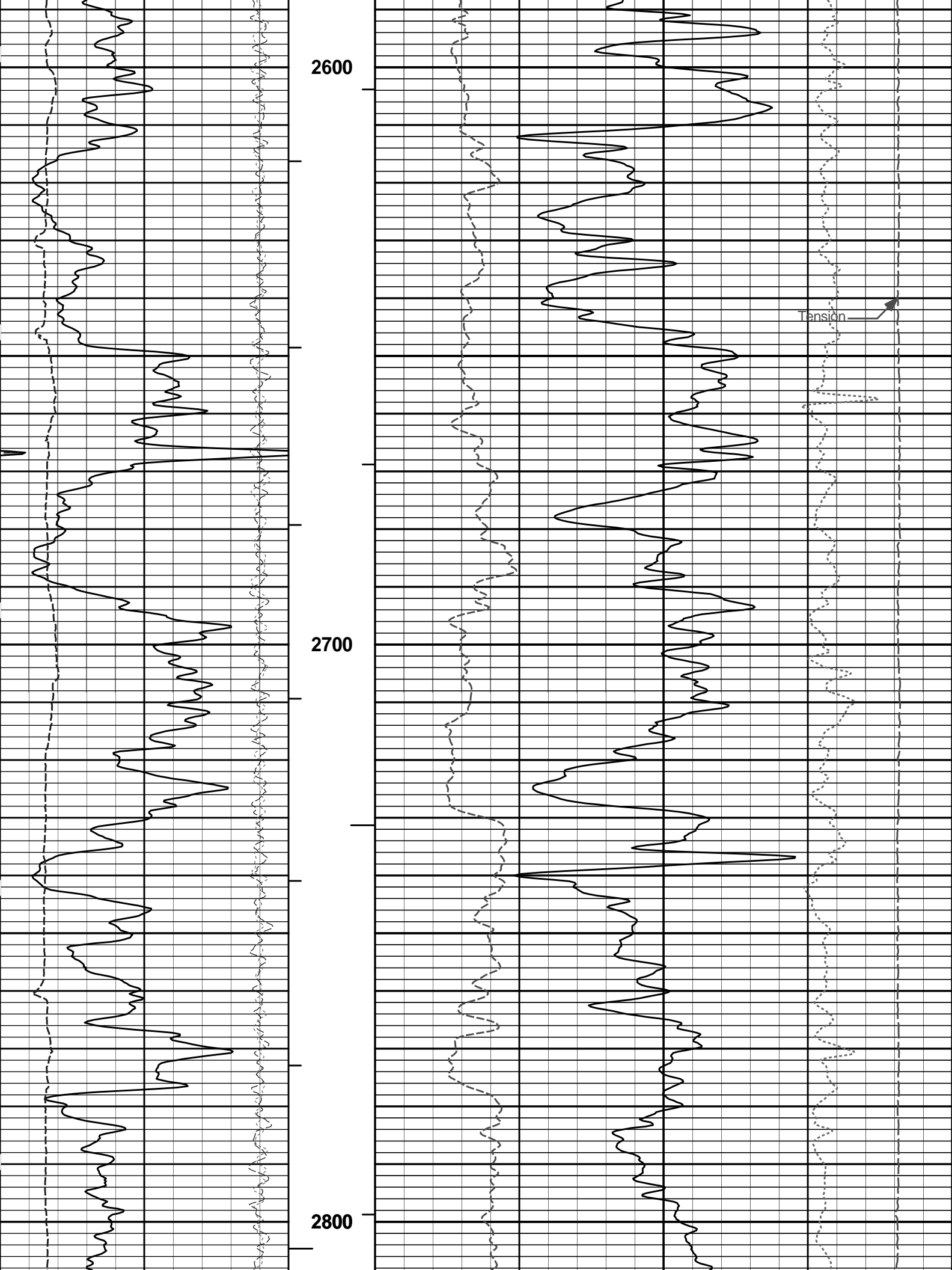
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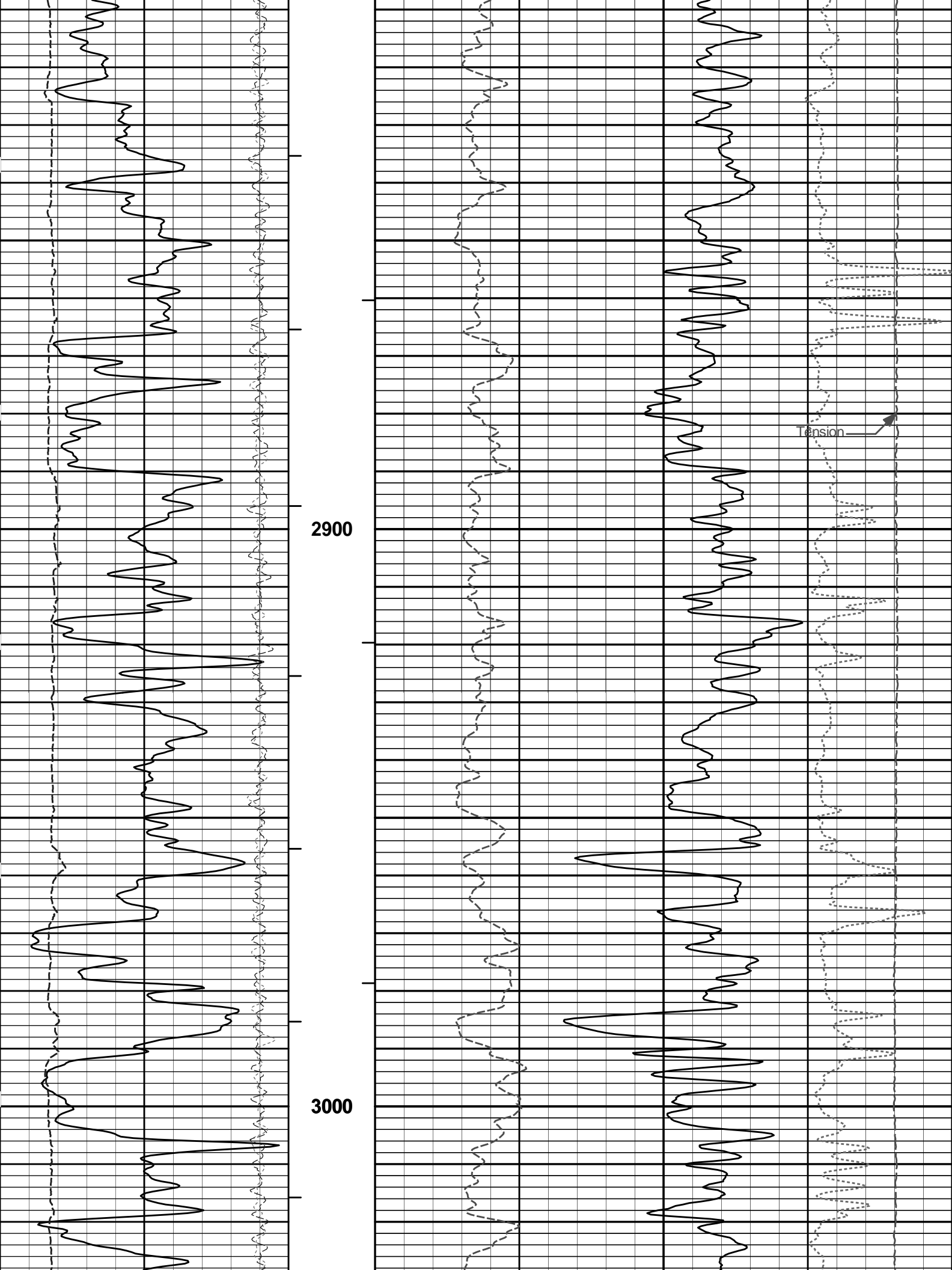
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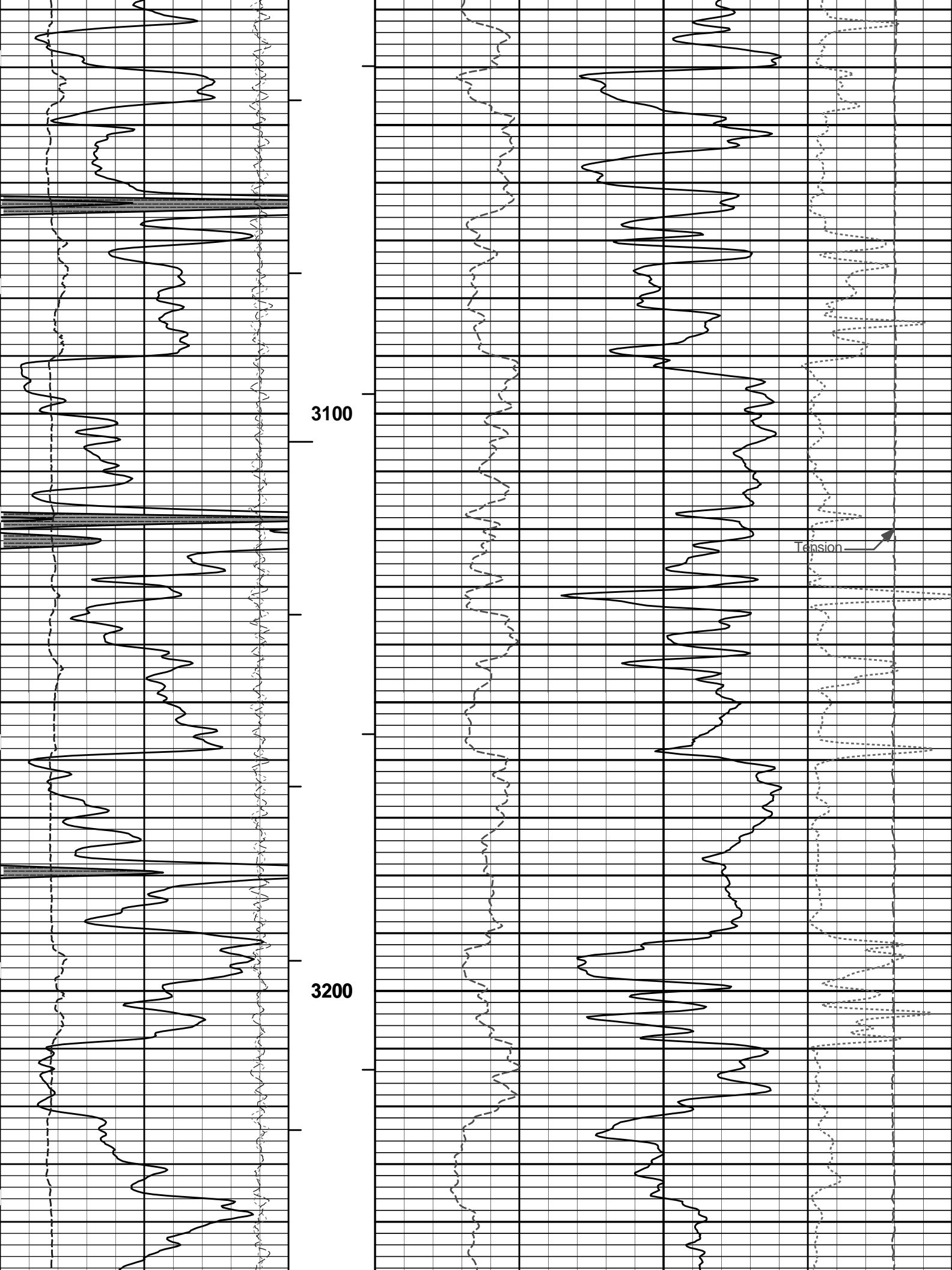
5 INCH MAIN LOG

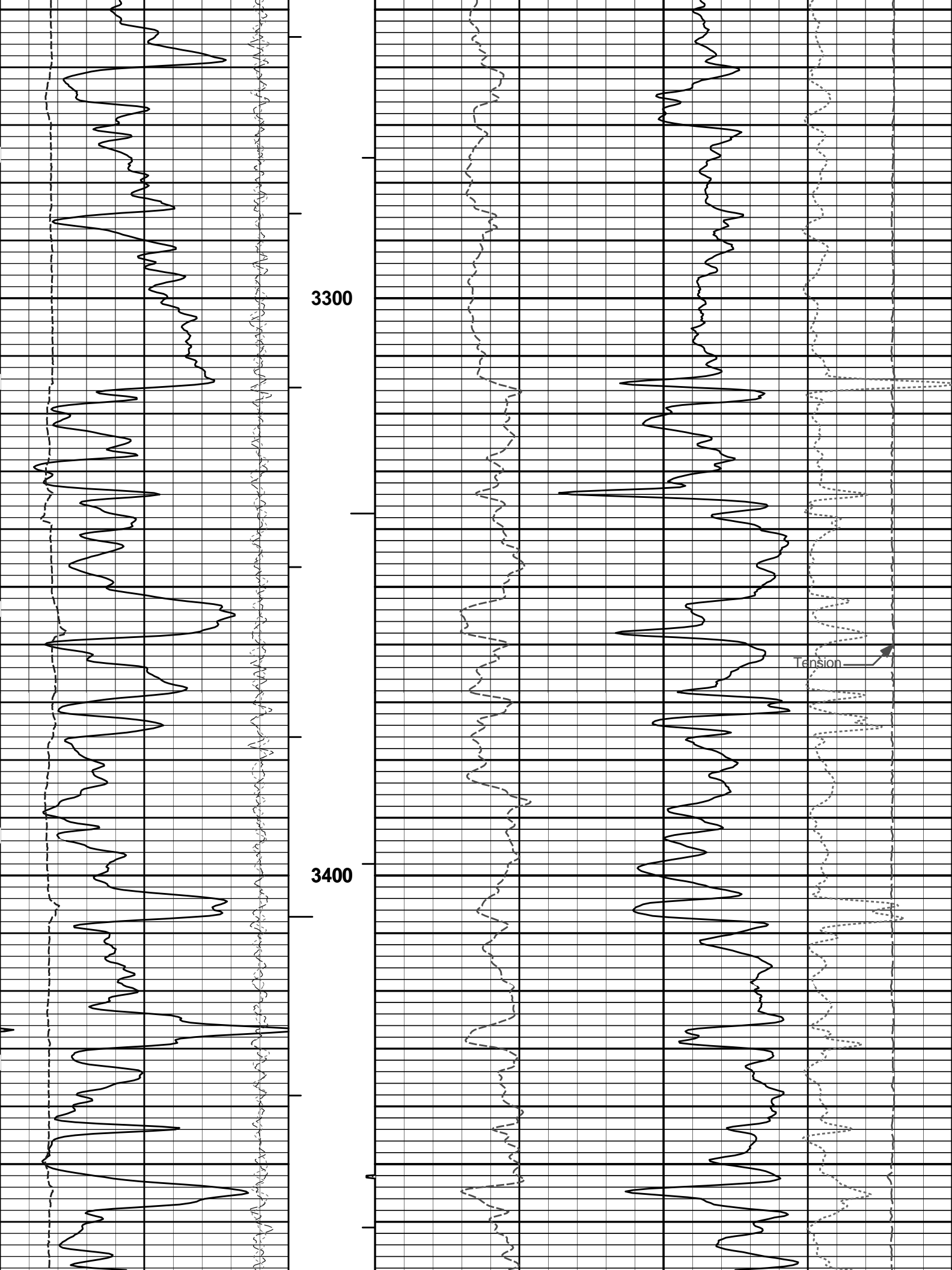


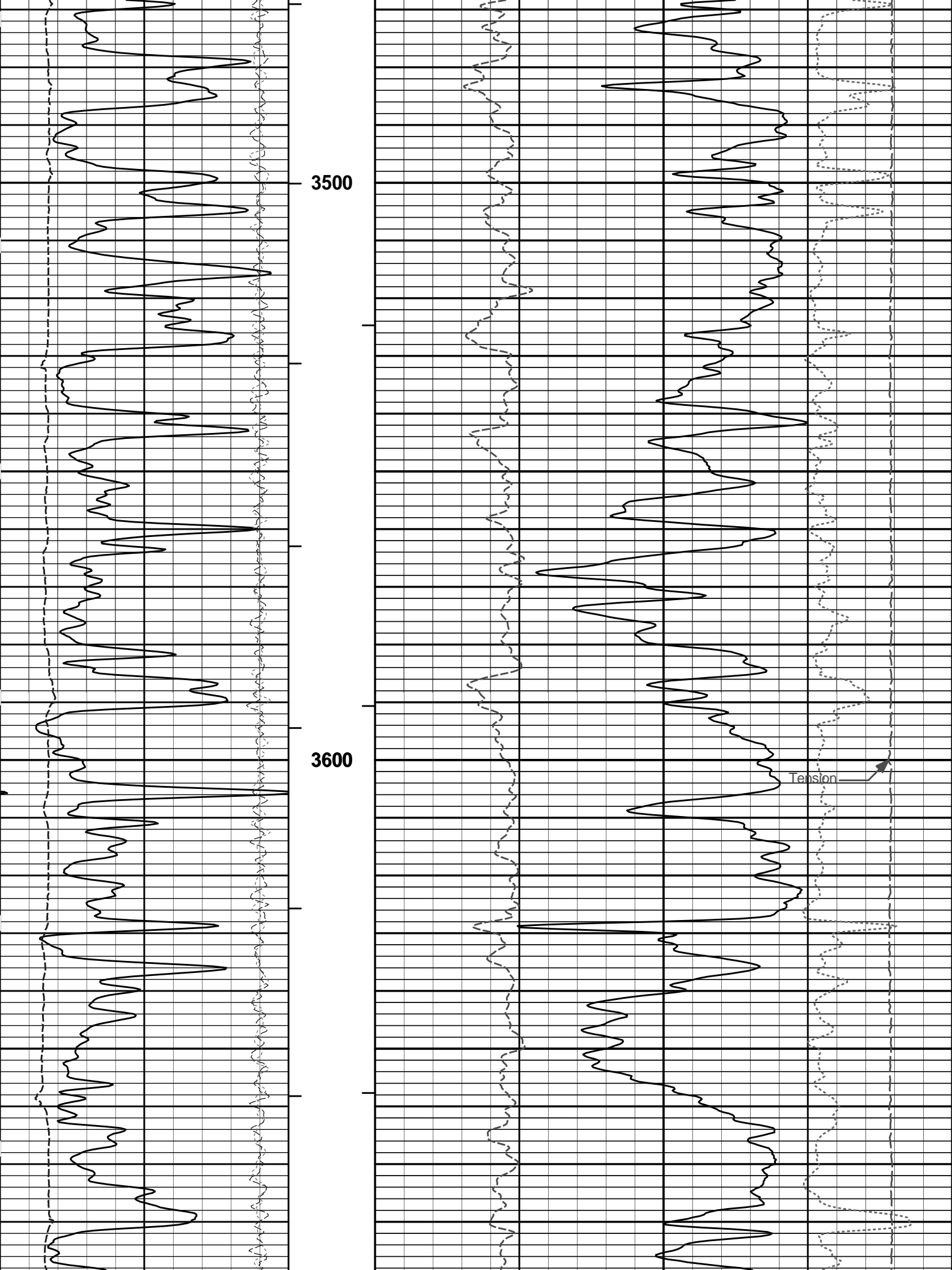


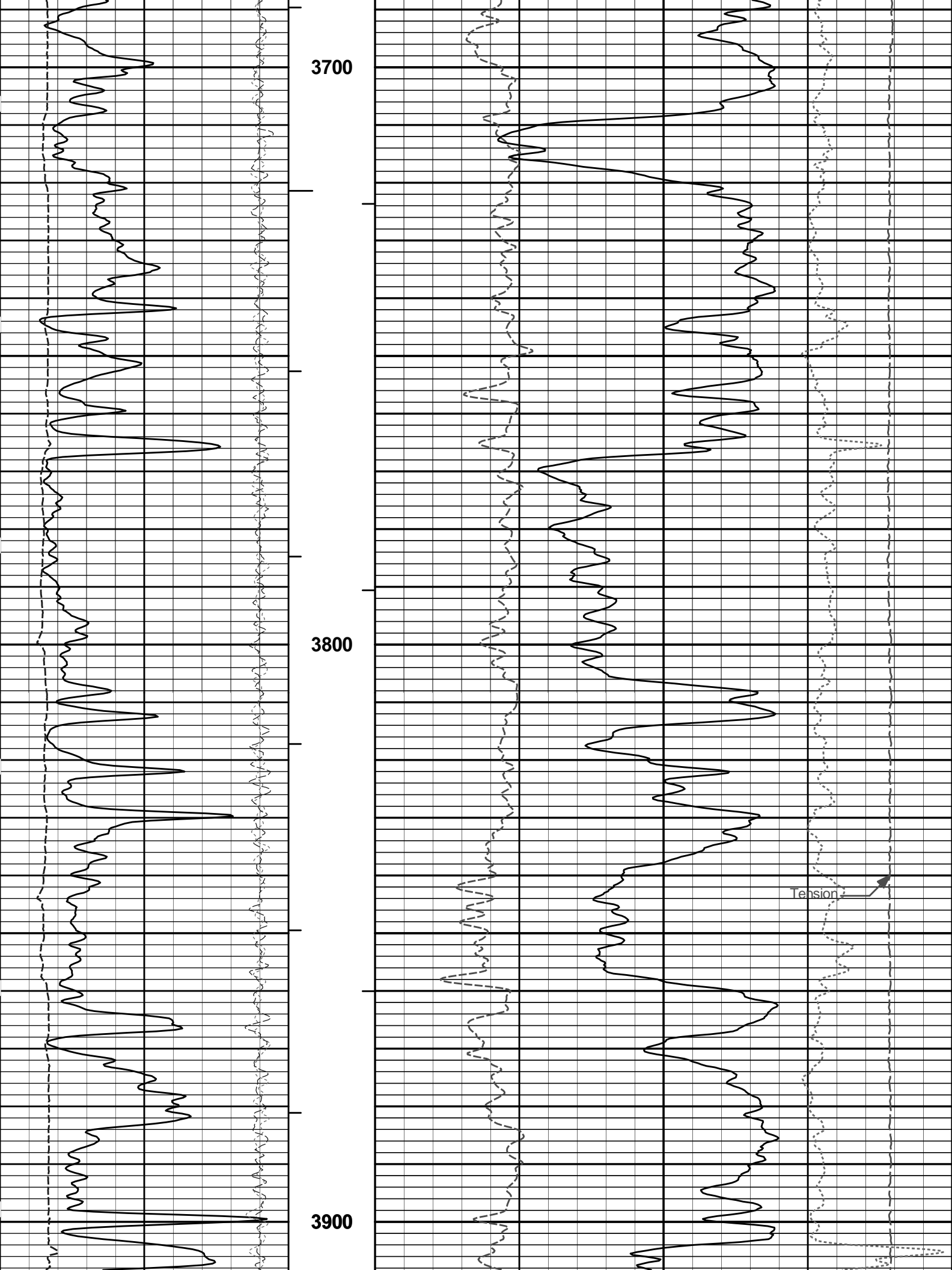


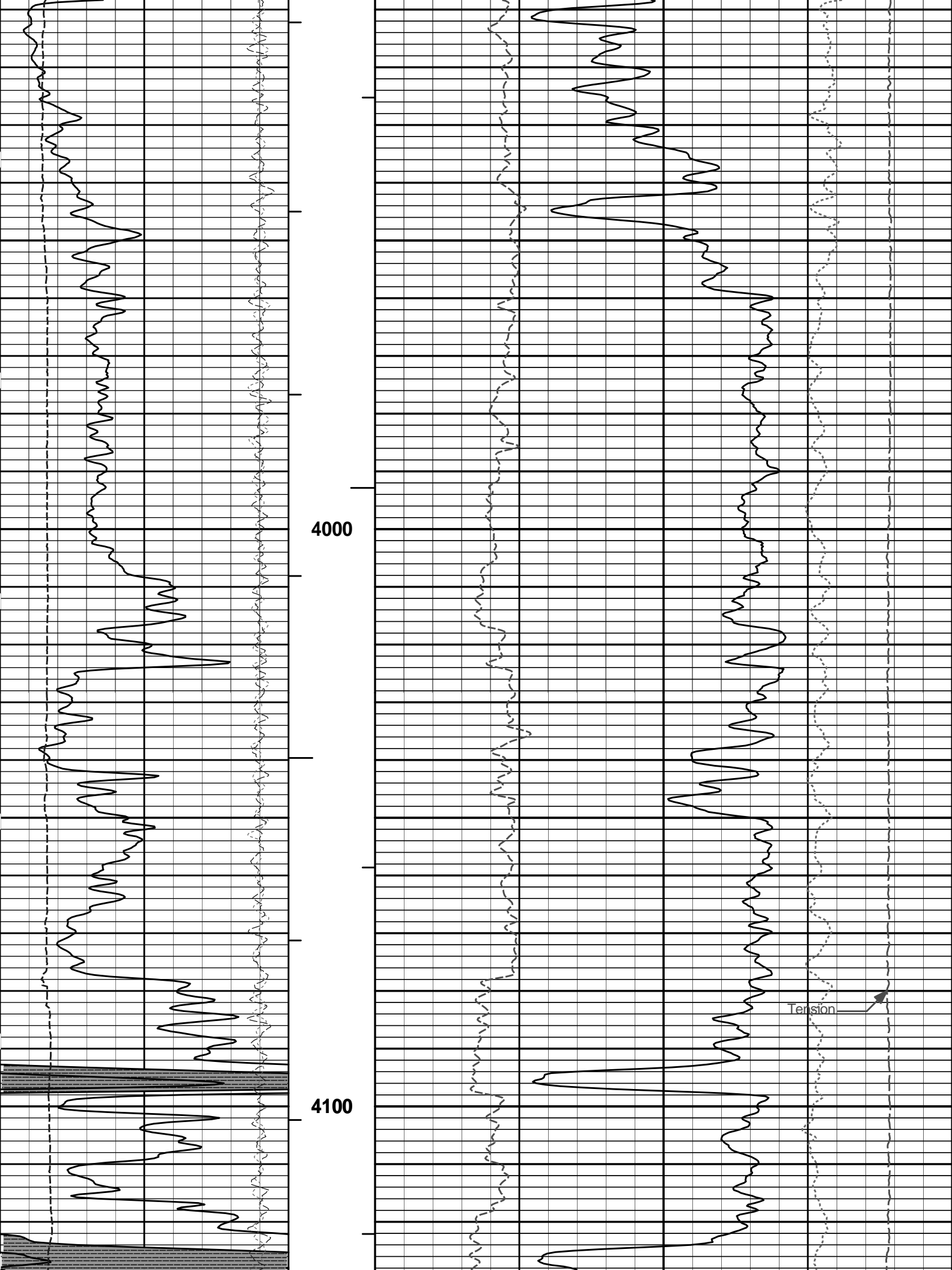


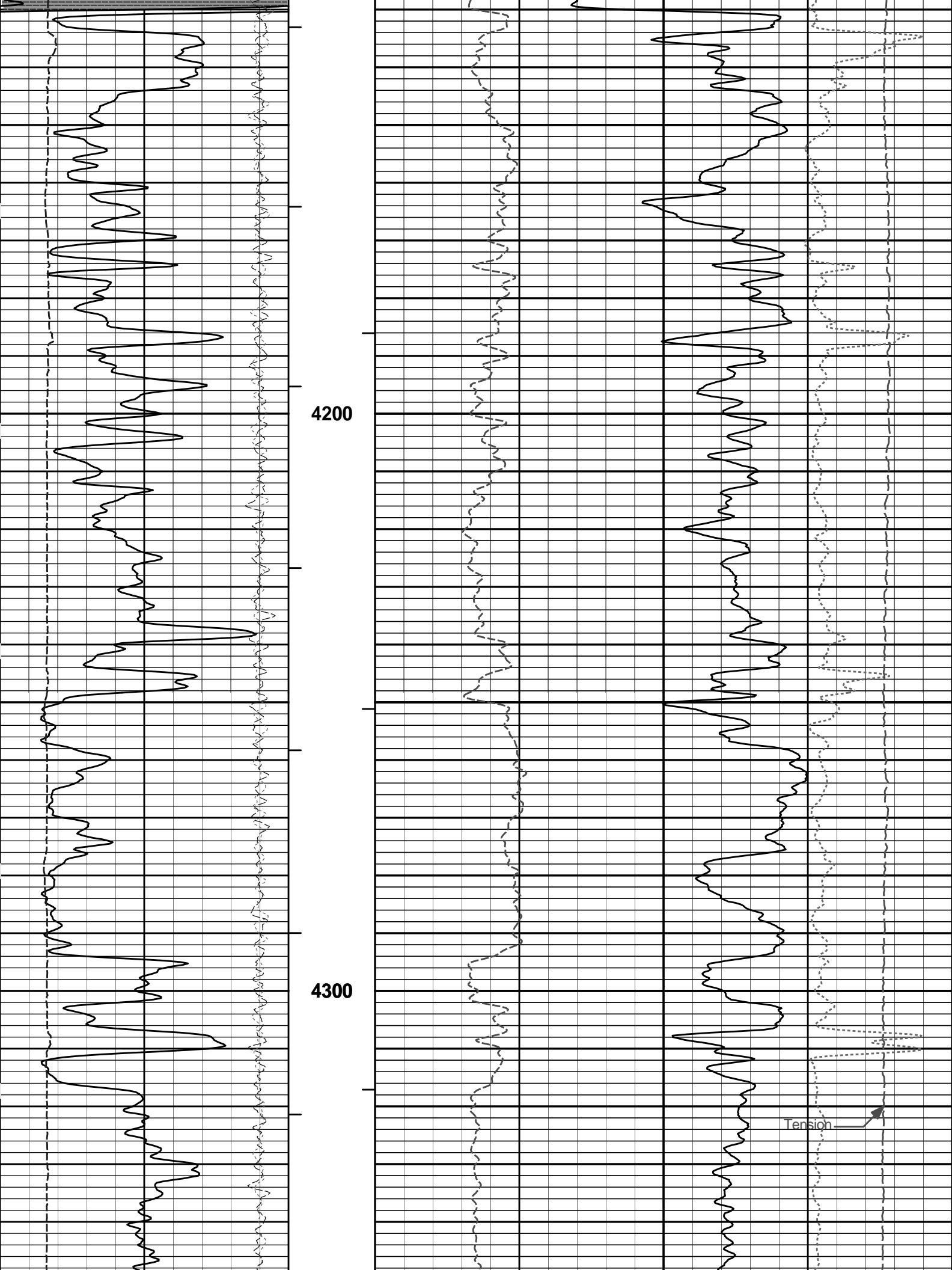


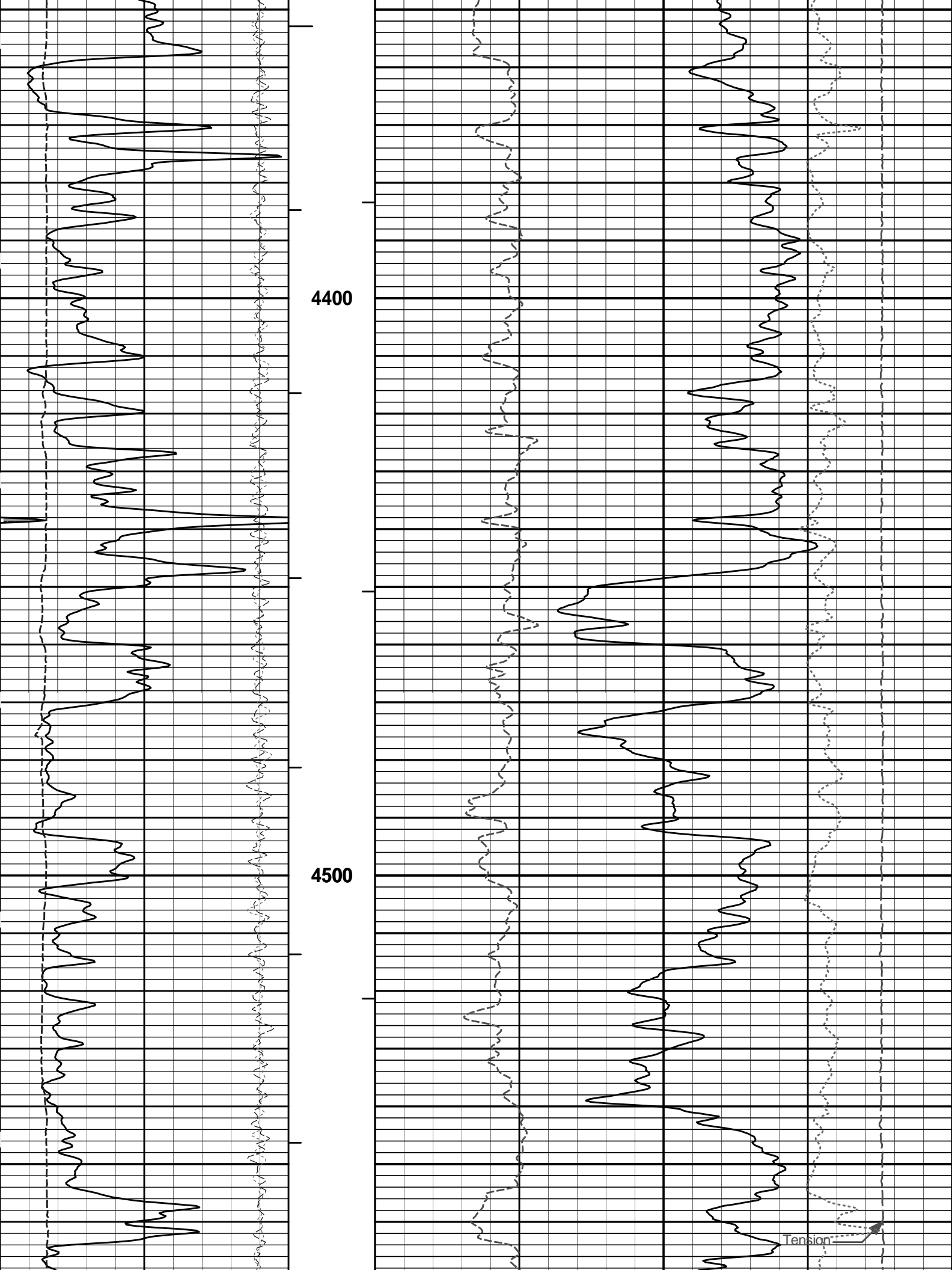


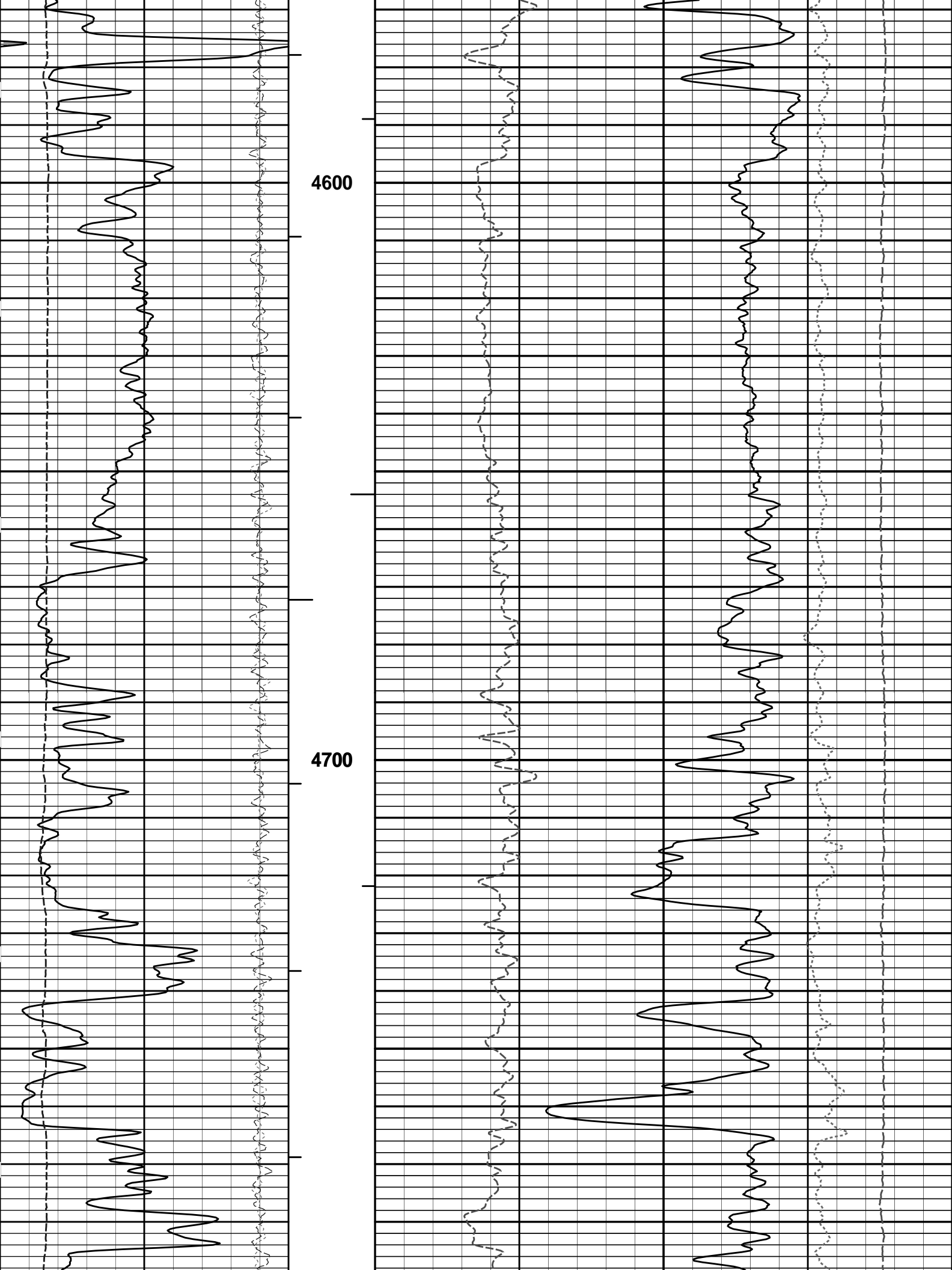


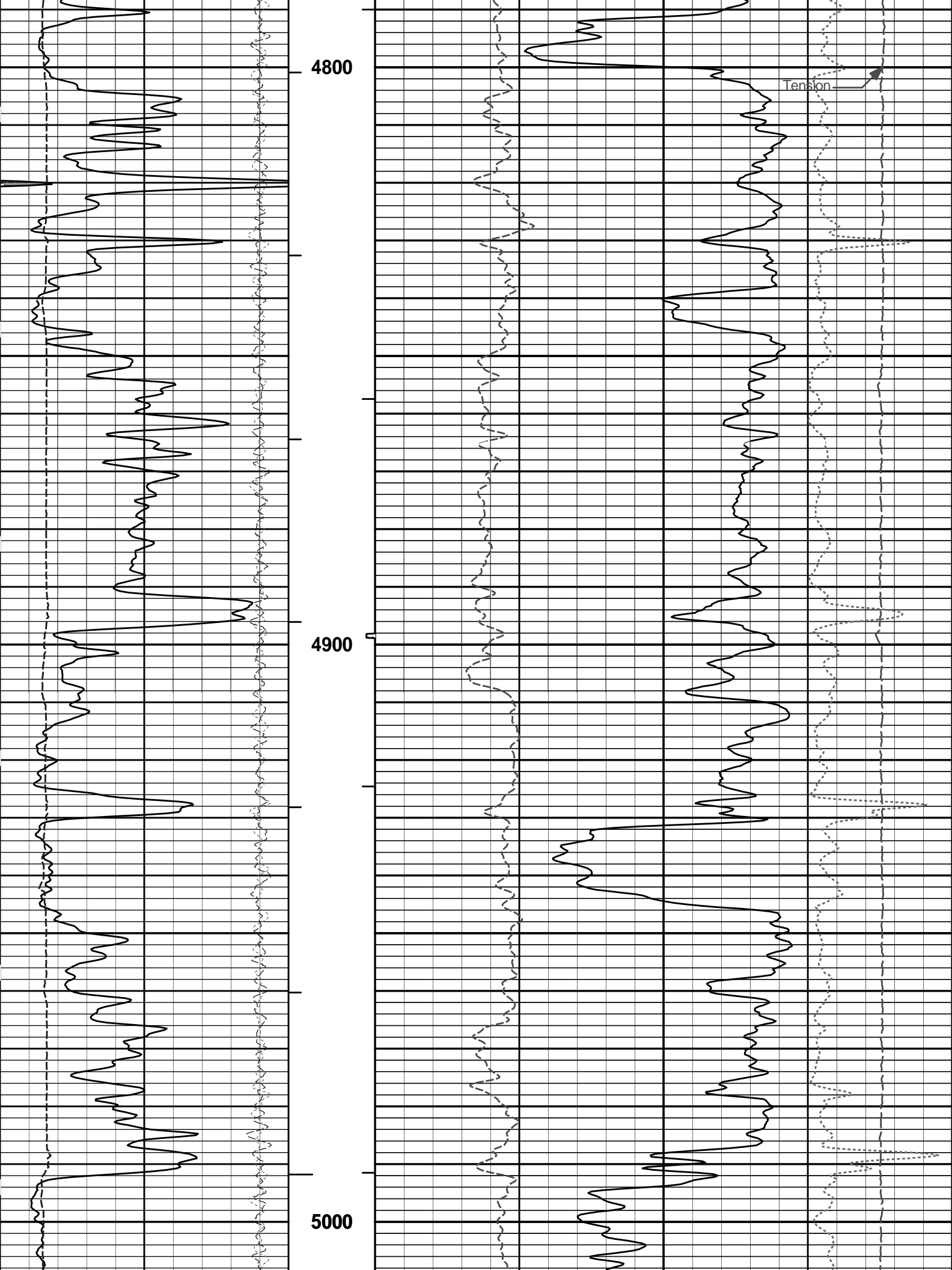


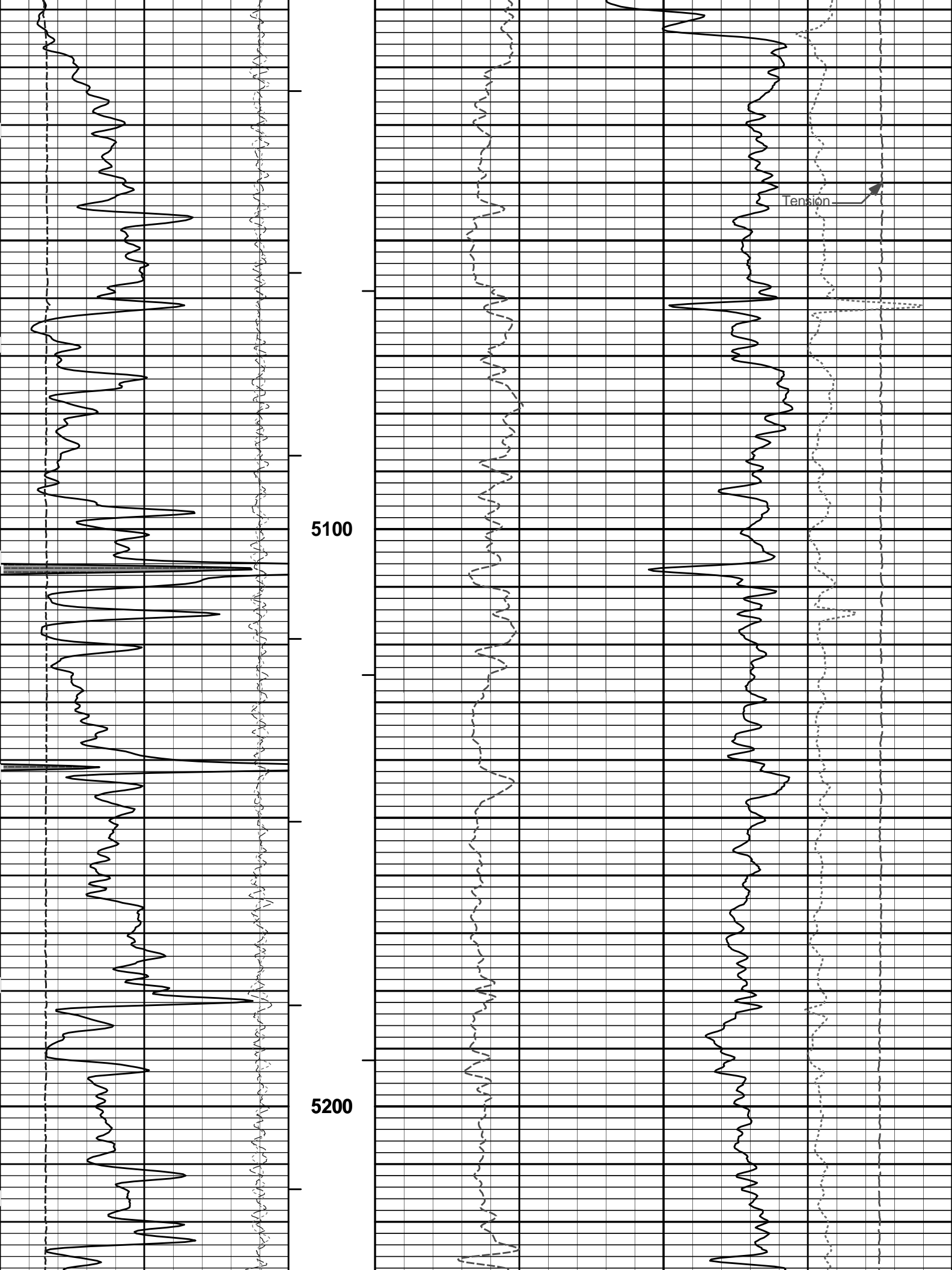


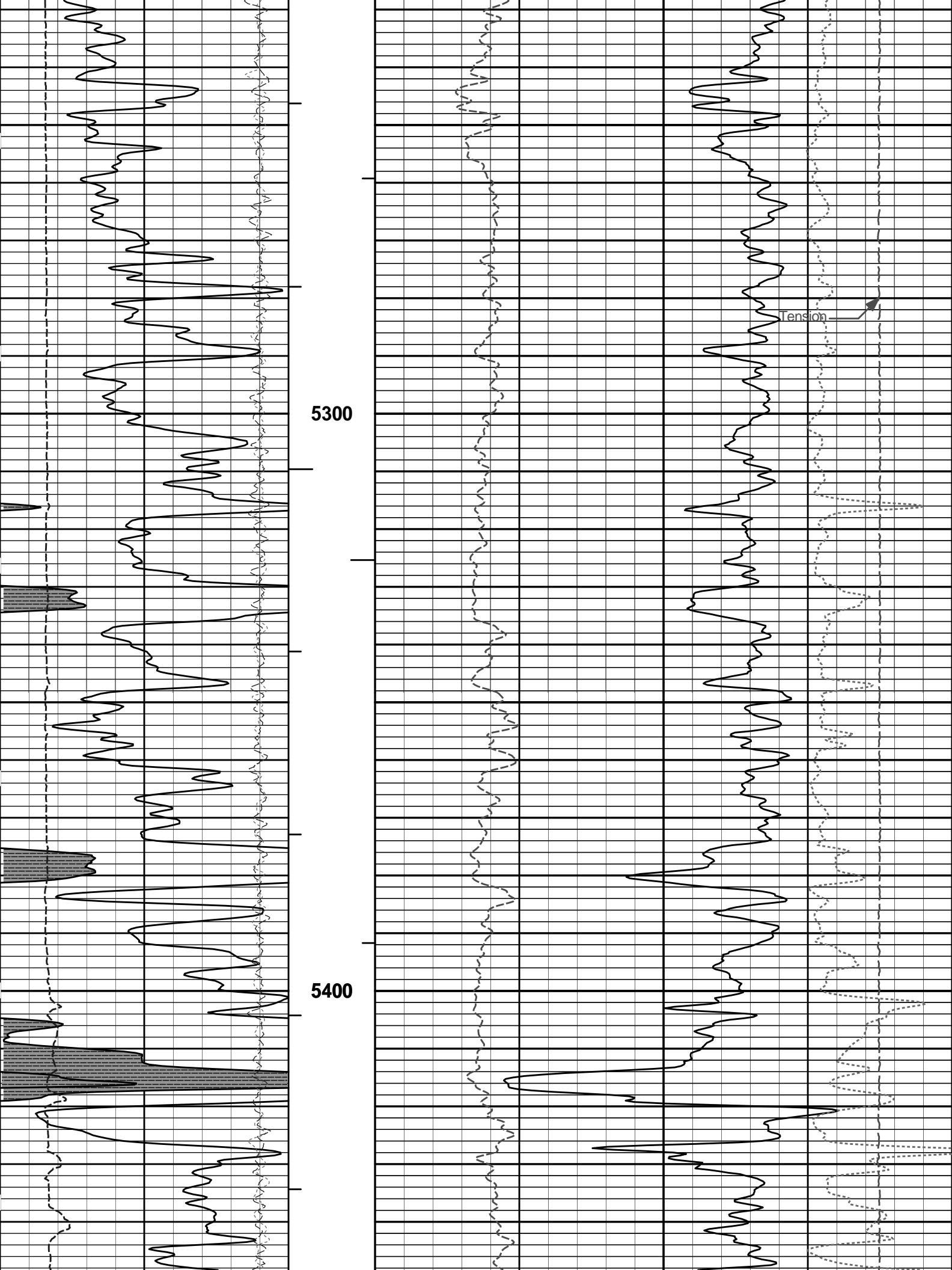


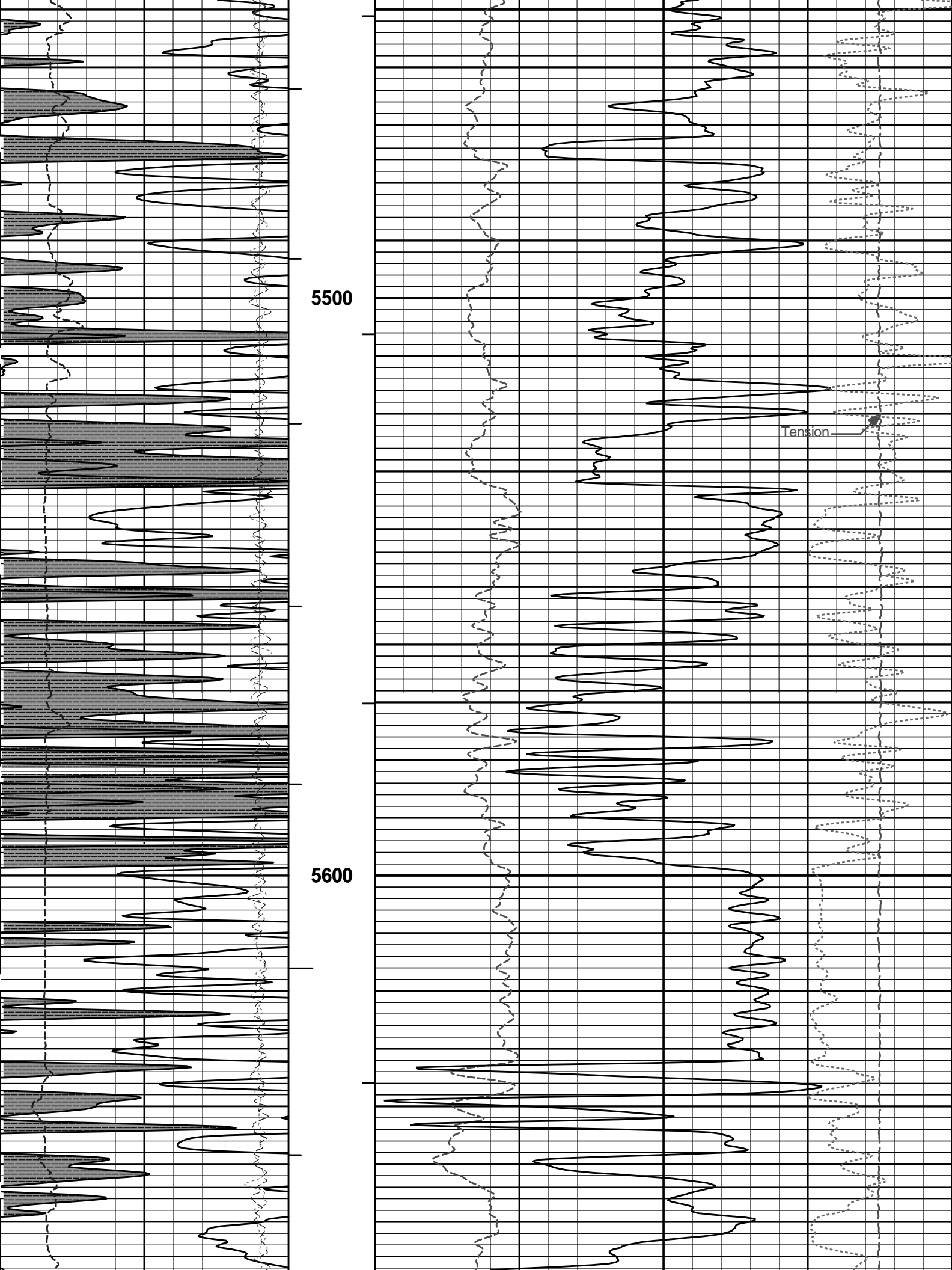


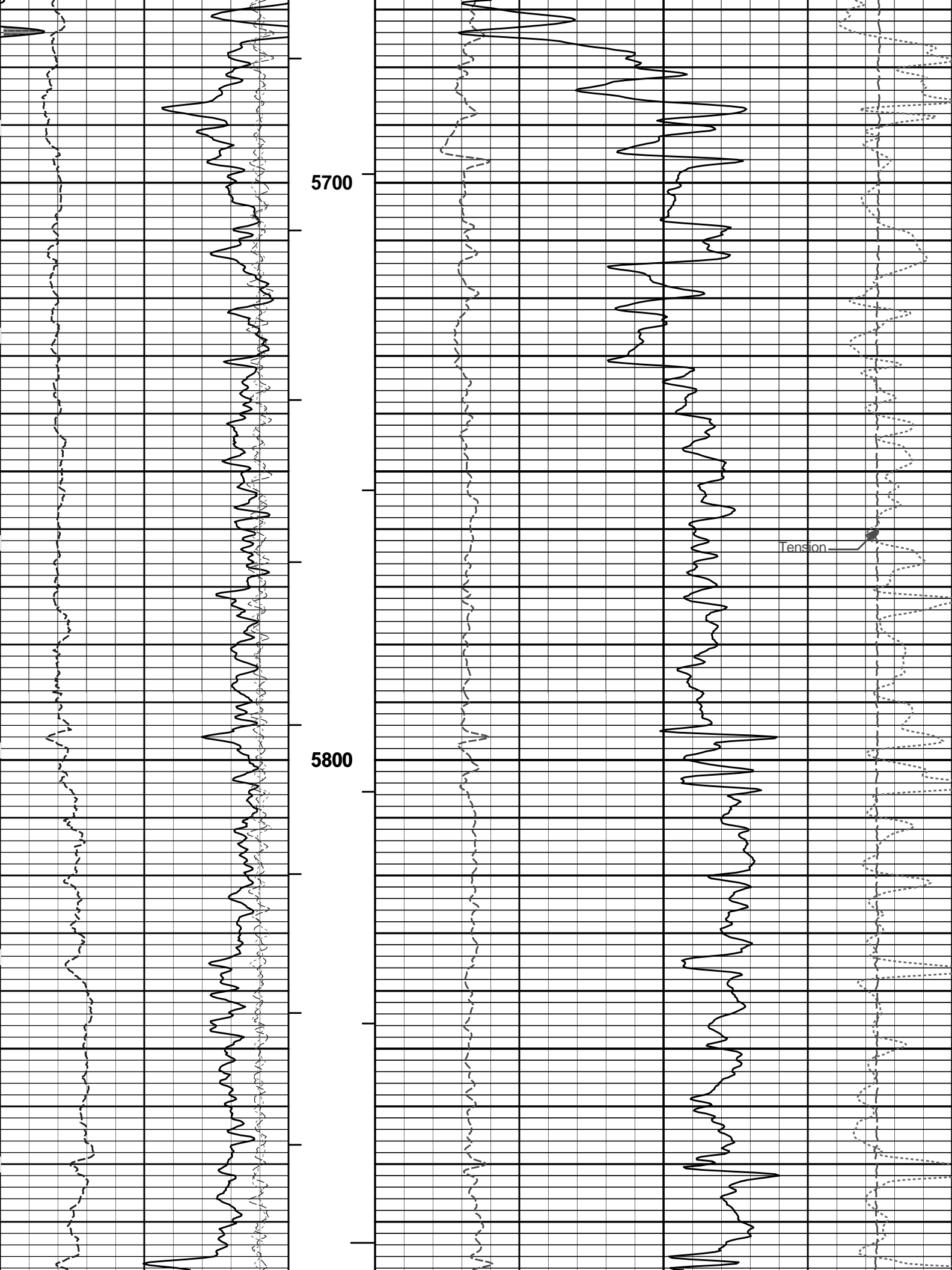


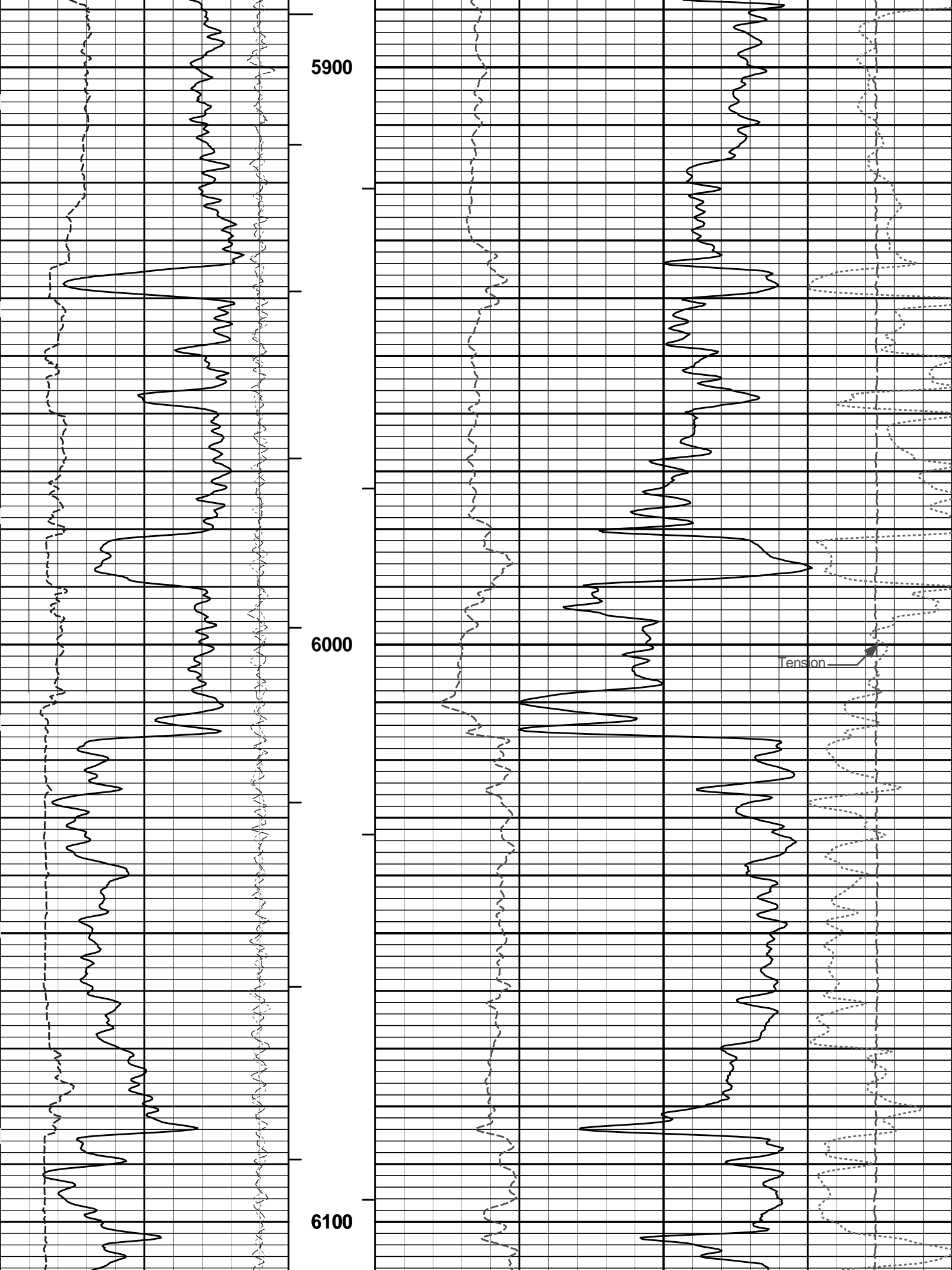


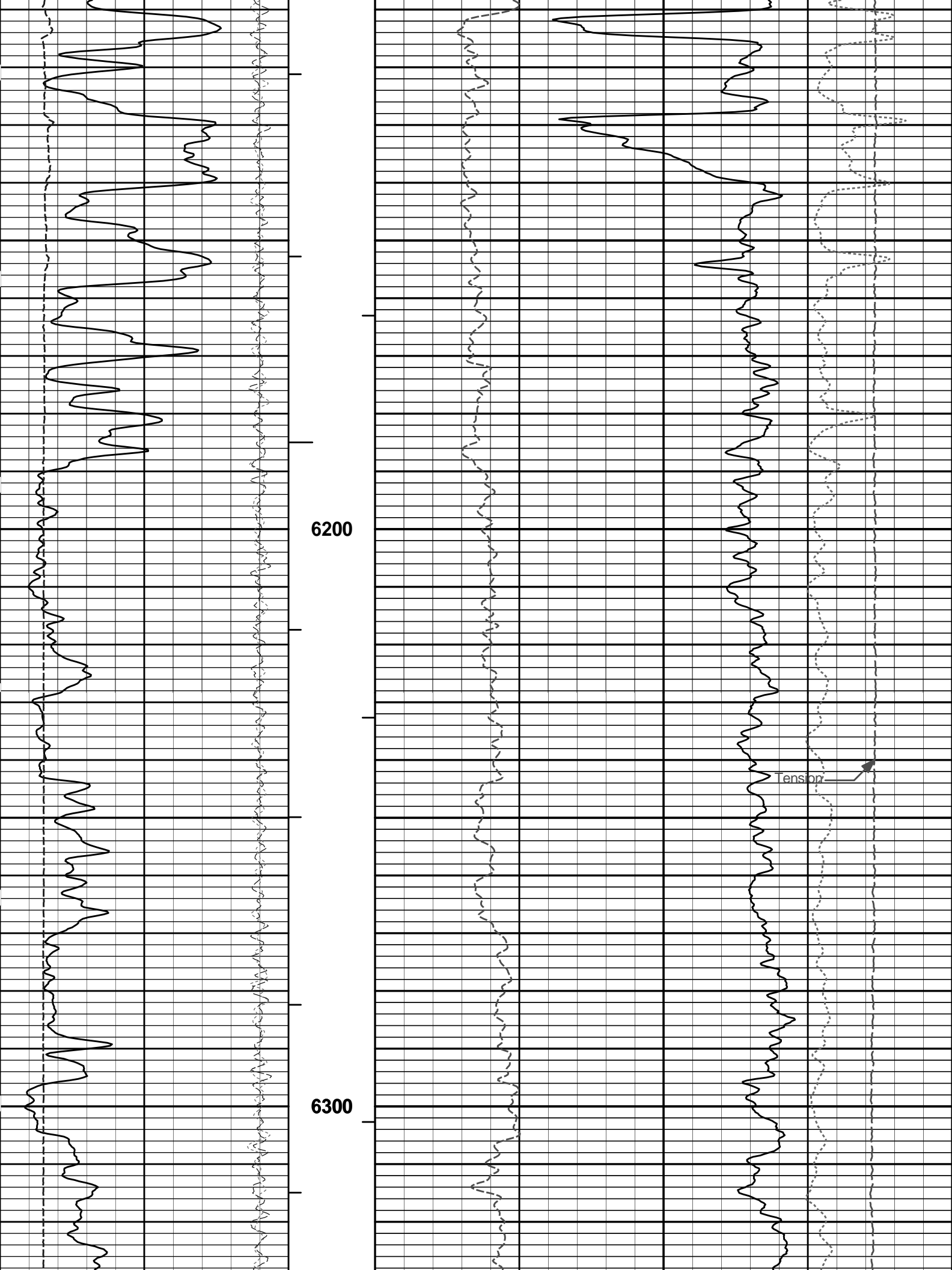


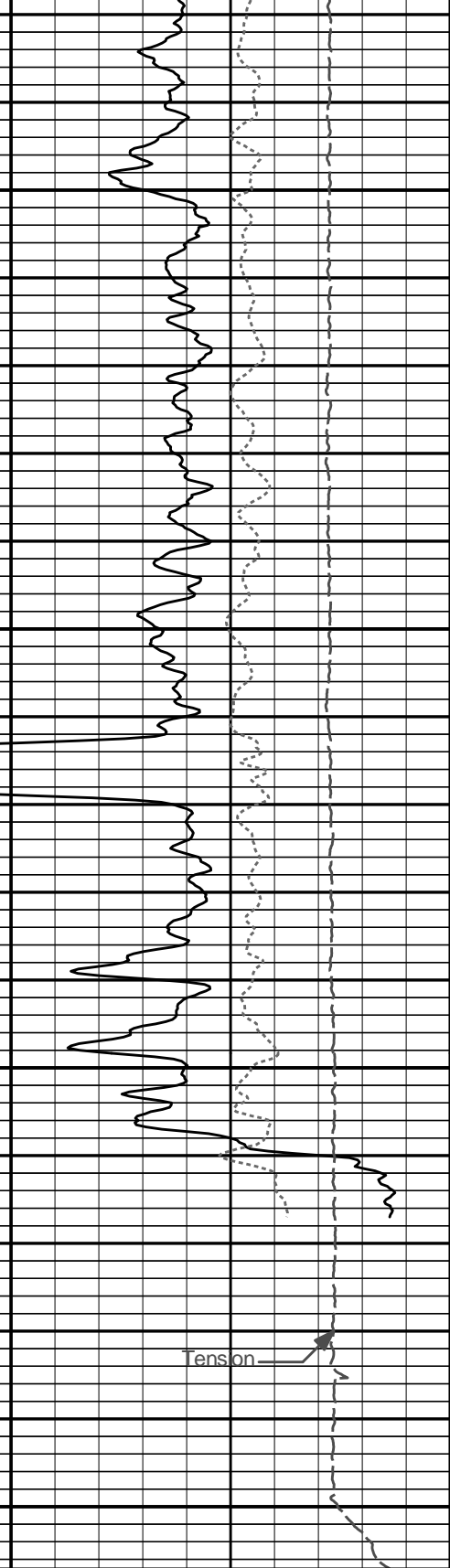
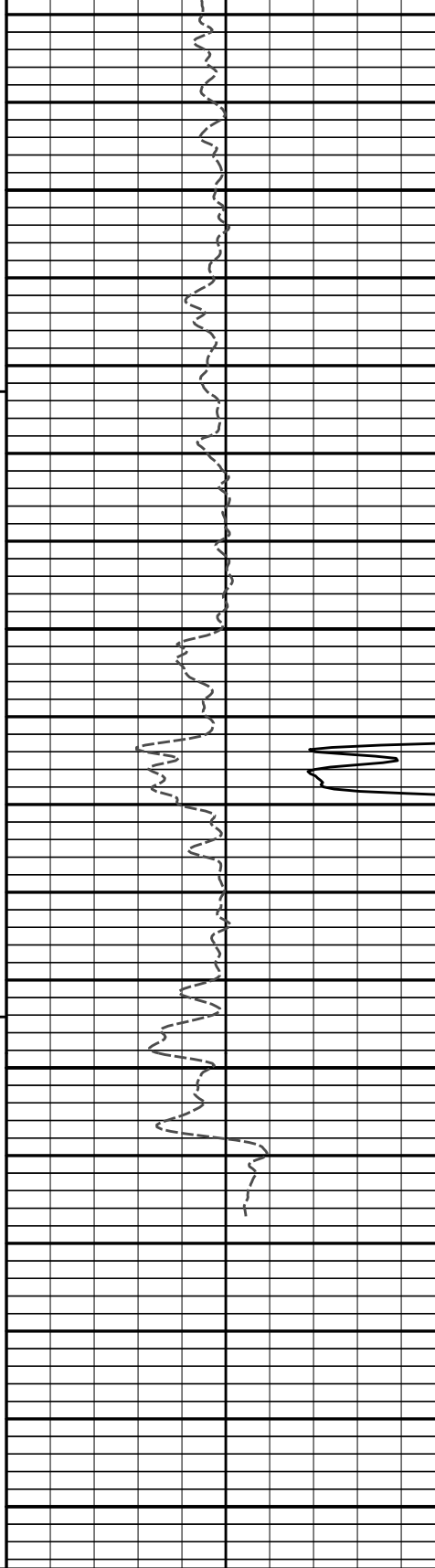
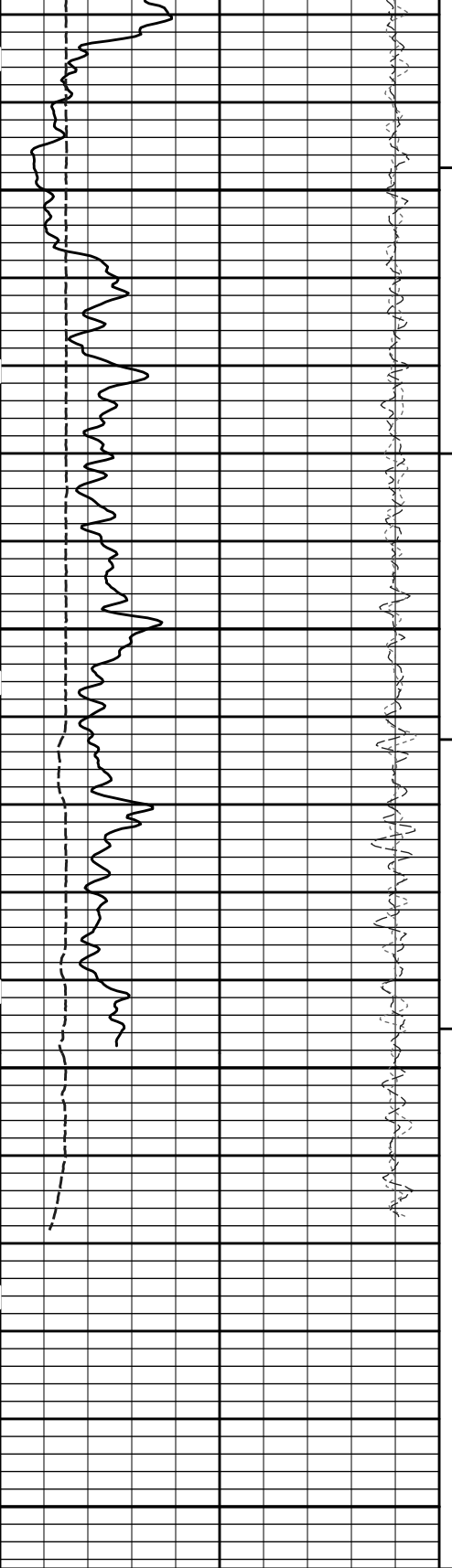












6	Caliper	16
	inches	
-18	NearQuality	2
18	FarQuality	-2
0	Gamma Ray	150
	api	

1 : 240	
ft	
BHV	ft3
AHV	ft3
Tension Pull	10 0

0	Pe	10
15K		
2	Bulk Density	3
	g/cc	

-0.25	DensityCorr	0.25
	g/cc	
	Tension	0
	pounds	

SHALE

Tension Pull

HALLIBURTON

Plot Time: 02-Jul-11 10:20:44

Plot Range: 2250 ft to 6507.08 ft

Data: TIMKEN_22_1\Well Based\DAQ-0001-DETAIL\

Plot File: \\LOCAL-TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIPORO\BULKD_5_MAIN_LIB

5 INCH MAIN LOG

HALLIBURTON

Plot Time: 02-Jul-11 10:20:44

Plot Range: 6100 ft to 6505.83 ft

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Plot File: \\LOCAL-TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIPORO\BULKD_5_REP_LIB

REPEAT SECTION

SHALE

0 Gamma Ray 150

api

18 FarQuality -2

NearQuality

-18 NearQuality 2

Caliper

6 Caliper 16

inches

AHV
ft3

BHV
ft3

1 : 240
ft

Bulk Density

g/cc

15K

Tension

pounds

Pe

10

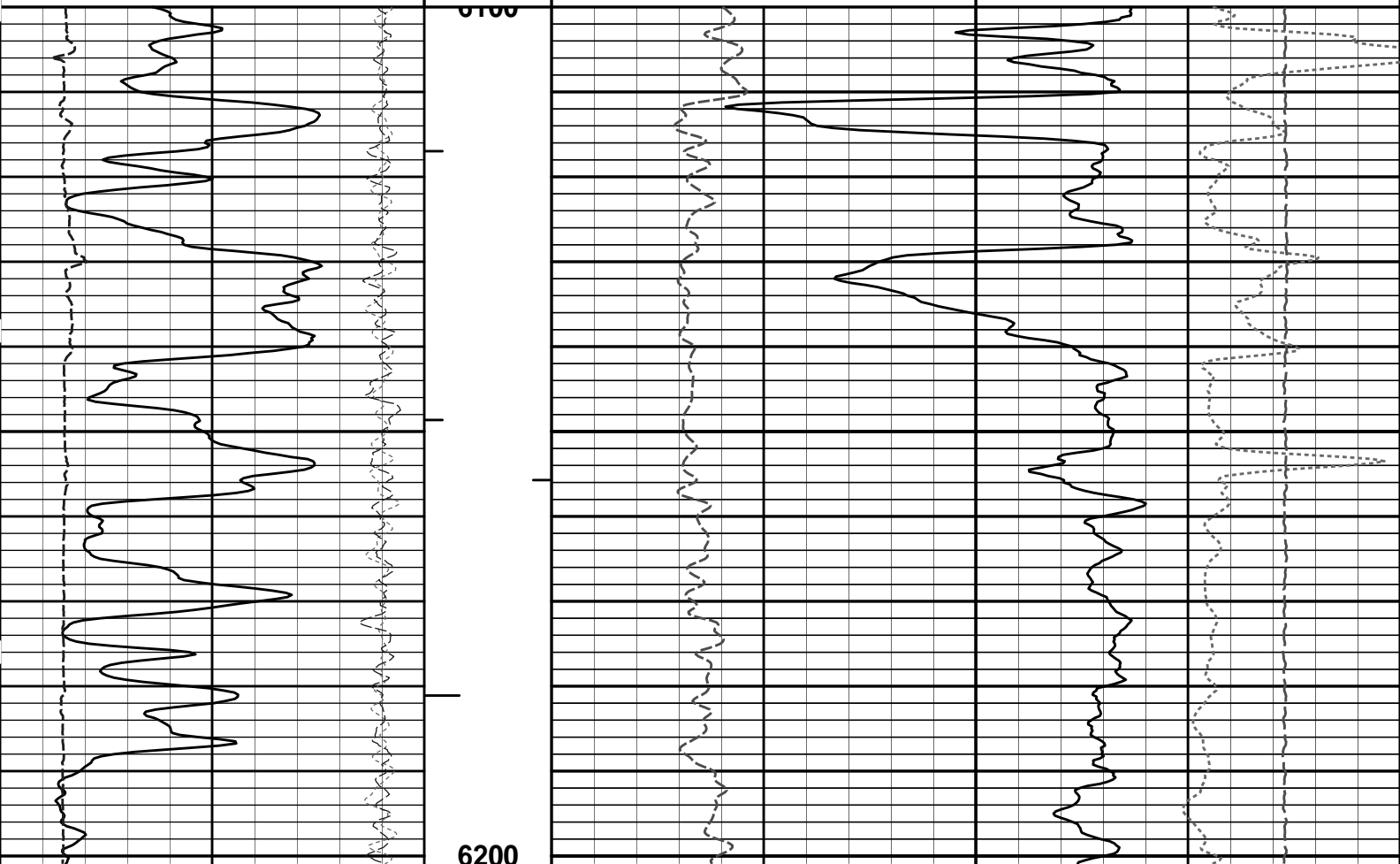
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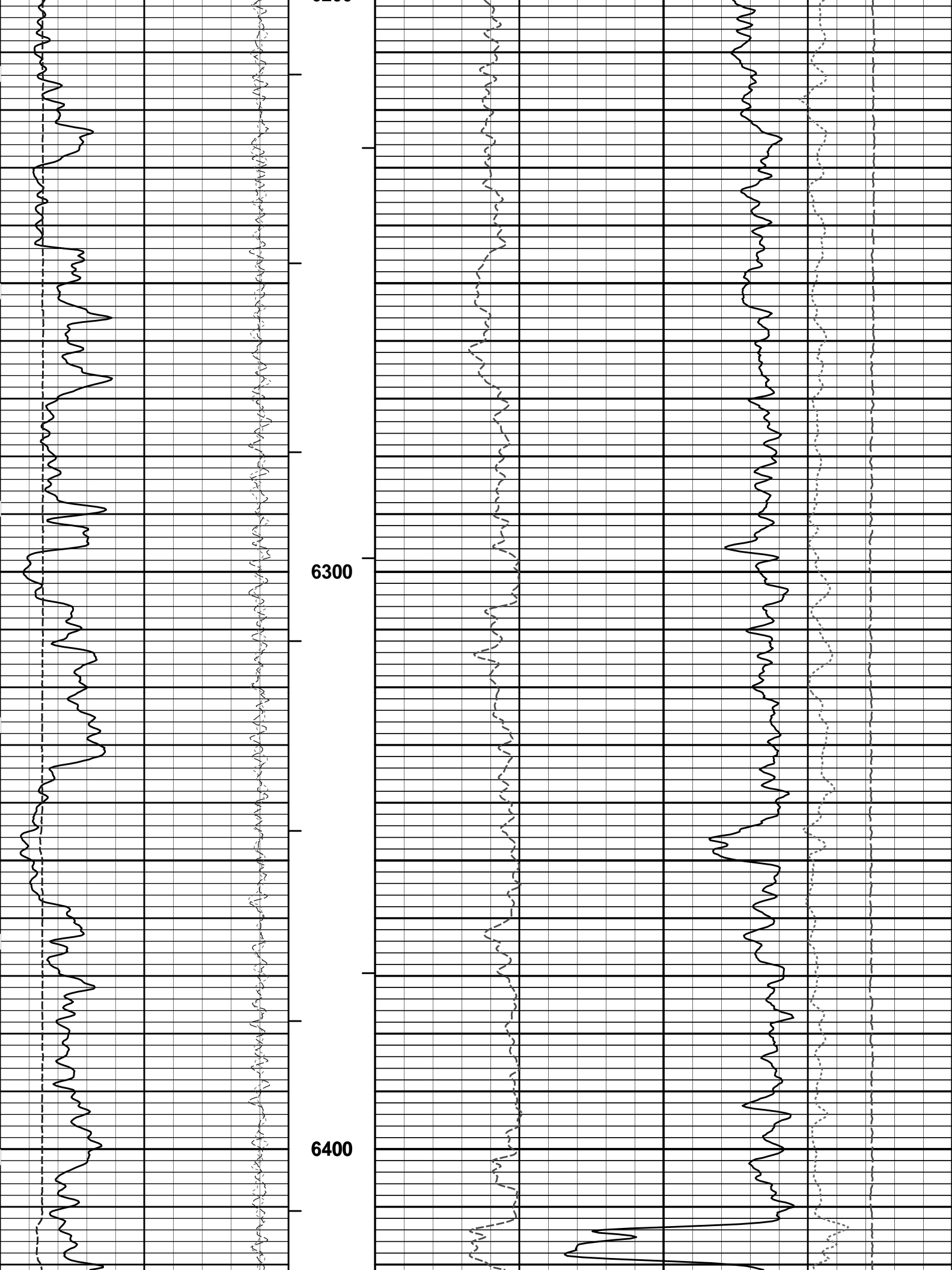
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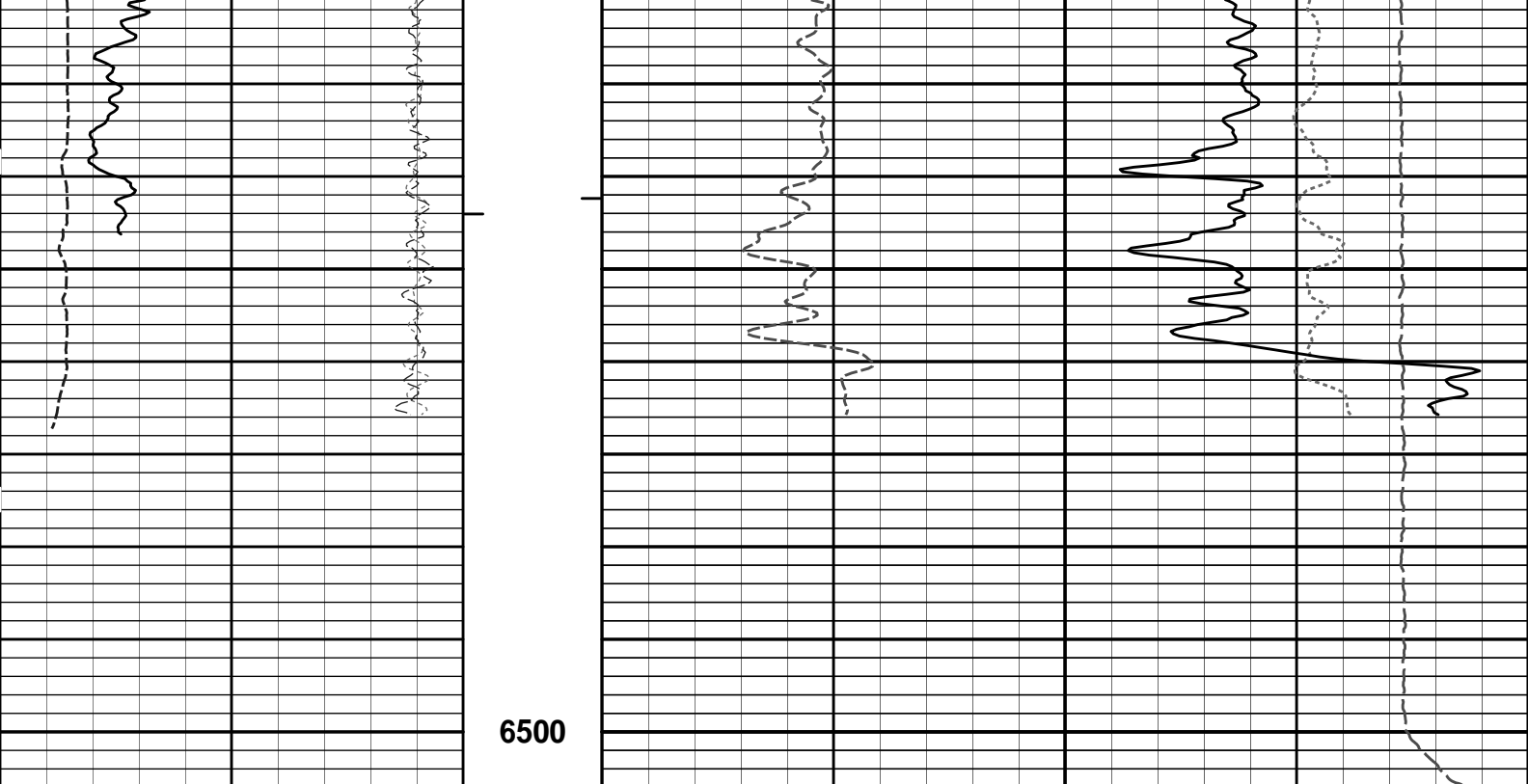
g/cc

6100

6200







6500

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

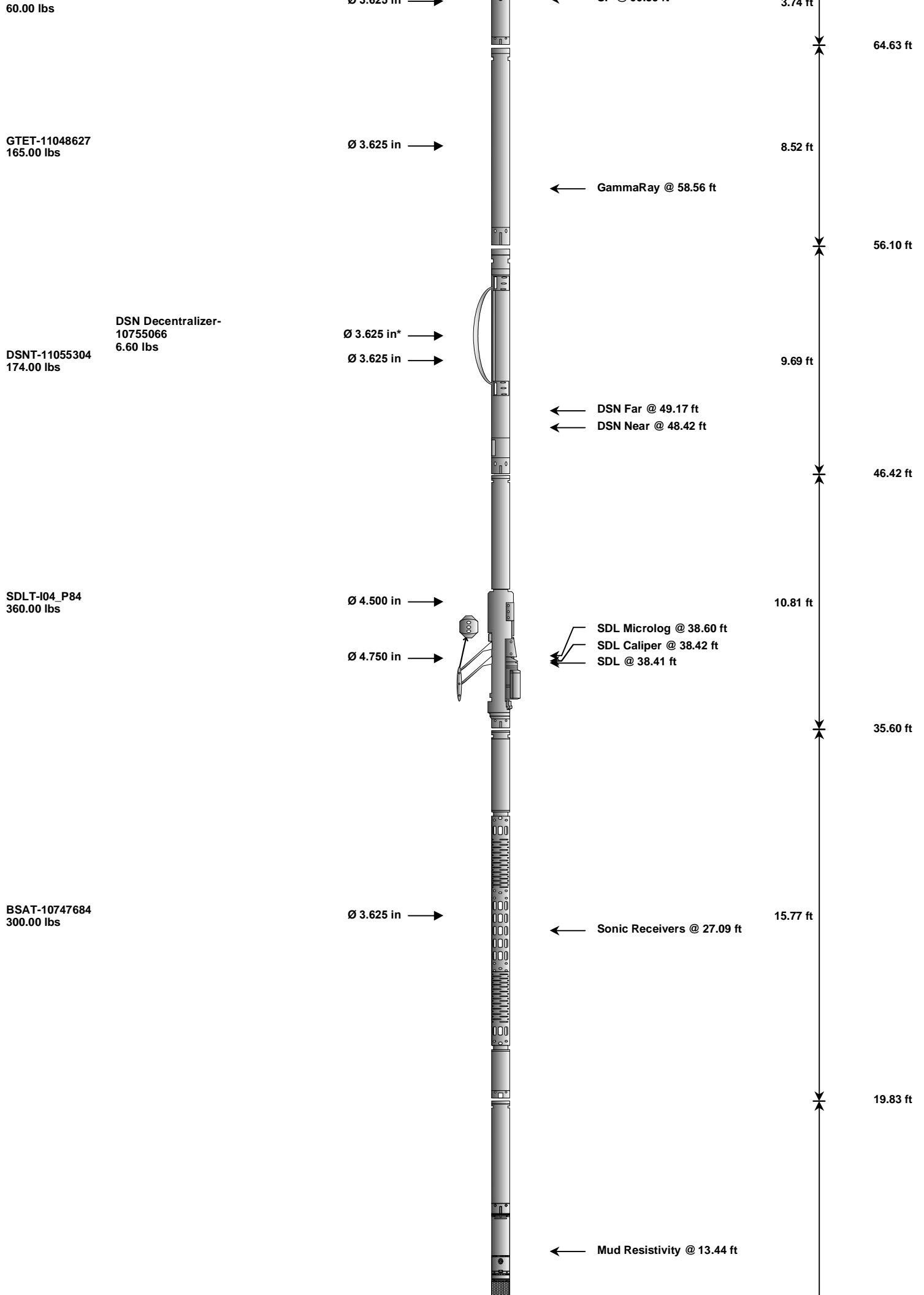
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REPEAT SECTION

HALLIBURTON

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 @ 71.31 ft	3.03 ft	72.34 ft
XOHD-TRK696 20.00 lbs		Ø 2.750 in Ø 3.625 in			0.95 ft	69.31 ft
SP Sub-PROT01		Ø 3.625 in		← SP @ 66.59 ft	0.71 ft	68.36 ft



60.00 lbs

Ø 3.625 in →

3.74 ft

64.63 ft

GTET-11048627
165.00 lbs

Ø 3.625 in →

8.52 ft

← GammaRay @ 58.56 ft

56.10 ft

DSN Decentralizer-
10755066
6.60 lbs

DSNT-11055304
174.00 lbs

Ø 3.625 in* →

Ø 3.625 in →

9.69 ft

← DSN Far @ 49.17 ft
← DSN Near @ 48.42 ft

46.42 ft

SDLT-I04_P84
360.00 lbs

Ø 4.500 in →

Ø 4.750 in →

10.81 ft

← SDL Microlog @ 38.60 ft
← SDL Caliper @ 38.42 ft
← SDL @ 38.41 ft

35.60 ft

BSAT-10747684
300.00 lbs

Ø 3.625 in →

15.77 ft

← Sonic Receivers @ 27.09 ft

19.83 ft

← Mud Resistivity @ 13.44 ft

ACRt-I962_S909
250.00 lbs

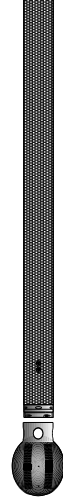
Ø 3.625 in →

← ACRt @ 9.46 ft

19.25 ft

Cabbage Head-
TRK696
5.00 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	11048627	165.00	8.52	56.10	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69	46.42	60.00
DCNT	DSN Decentralizer	10755066	6.60	5.13 *	49.75	300.00
SDLT	Spectral Density Tool	I04_P84	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	I962_S909	250.00	19.25	0.58	300.00
CBHD	Cabbage Head	TRK696	5.00	0.58	0.00	300.00

Total **1,378.10** **72.34**

* Not included in Total Length and Length Accumulation.

Data: TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDLE

Date: 02-Jul-11 08:33:19

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11048627 Reference Calibration Date: 30-Jun-11 14:28:57
 Engineer: S. JUNG Calibration Date: 02-Jul-11 03:38:33
 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	47.5	43.8	api
Background + Calibrator	334.6	308.8	api
Calibrator	261.3	265.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11048627 Reference Calibration Date: 02-Jul-11 03:38:33
 Engineer: S. JUNG Calibration Date: 02-Jul-11 03:42:54
 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
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Field Verification	Shop	Field	Units
Background	43.8	46.4	api
Background + Calibrator	308.8	307.8	api
Calibrator	265.0	261.4	api

Shop	Field	Difference	Tolerance
265.0	261.4	3.6	+/- 9.00

NATURAL GAMMA RAY TOOL POST CALIBRATION

Tool Name: GTET - 11048627 **Reference Calibration Date:** 02-Jul-11 03:42:54
Engineer: S. JUNG **Calibration Date:** 02-Jul-11 10:06:53
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	46.4	37.3	api
Background + Calibrator	307.8	301.7	api
Calibrator	261.4	264.5	api

Shop	Field	Post	Difference	Tolerance
265.0	261.4	264.5	-3.1	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11055304 **Reference Calibration Date:** 13-Jun-11 11:26:45
Engineer: J. BOSH **Calibration Date:** 13-Jun-11 11:38:55
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: 81 degF
 Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.989	0.985	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):	0.2122	0.2110	0.0012	+/- 0.0020
Calibrated Ratio:	9.77	9.73	0.041	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0652	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 - 11055304

Reference Calibration Date: 13-Jun-11 11:38:55

Engineer: S. JUNG

Calibration Date: 02-Jul-11 03:47:44

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):	0.0652	0.0756	0.0104	+/- 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 - 11055304

Reference Calibration Date: 02-Jul-11 03:47:44

Engineer: S. JUNG

Calibration Date: 02-Jul-11 10:11:53

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):	0.0756	0.0816	0.0061	+/- 0.0150

PASS/FAIL SUMMARY

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT - I04_P84

Reference Calibration Date: 09-Jun-11 11:46:34

Engineer: J. BOSH

Calibration Date: 09-Jun-11 12:12:05

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	1.0424	0.9730	0.90 - 1.10
Near Dens Gain	1.0011	0.9539	0.90 - 1.10
Near Peak Gain	1.0002	0.9164	0.90 - 1.10
Near Lith Gain	0.9977	0.9029	0.90 - 1.10
Far Bar Gain	1.0138	1.0050	0.90 - 1.10
Far Dens Gain	1.0012	0.9943	0.90 - 1.10
Far Peak Gain	0.9928	0.9896	0.90 - 1.10
Far Lith Gain	0.9692	0.9637	0.90 - 1.10

Near Bar Offset

-0.2425

0.3892

NONE

Near Bar Offset	-0.2425	0.3692	NONE
Near Dens Offset	0.1113	0.5216	NONE
Near Peak Offset	0.0872	0.7836	NONE
Near Lith Offset	0.0717	0.8593	NONE
Far Bar Offset	-0.0382	0.0327	NONE
Far Dens Offset	0.0399	0.0960	NONE
Far Peak Offset	0.0724	0.0937	NONE
Far Lith Offset	0.2020	0.2445	NONE

Near Bar Background	769.95	772.91	700 - 1450
Near Dens Background	248.97	250.52	230 - 480
Near Peak Background	109.11	109.08	100 - 210
Near Lith Background	135.52	135.85	125 - 260
Far Bar Background	534.90	534.97	450 - 900
Far Dens Background	208.46	209.79	175 - 345
Far Peak Background	82.15	82.95	70 - 140
Far Lith Background	85.04	86.15	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.692	1.684	-0.008	+/- 0.015
Pe	2.461	2.559	0.098	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.598	0.001	+/- 0.01500
Pe	3.132	3.131	-0.001	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0008	+/- 0.0110	0.0013	+/- 0.0140
Magnesium Block	-0.0003	+/- 0.0110	0.0003	+/- 0.0140
Aluminum Block	-0.0006	+/- 0.0110	0.0015	+/- 0.0140
Resolution	9.11	6.00 - 11.50	8.84	6.00 - 11.50
Internal Verifier(B+D+P+L)	1268	1200 - 2700	914	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 - I04_P84	Reference Calibration Date:	09-Jun-11 12:12:05
Engineer:	S. JUNG	Calibration Date:	02-Jul-11 03:43:33
Software Version:	WL INSITE R3.2.0 (Build 7)	Calibration Version:	1

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1268.355	1269.967	1.612	14.431
Far (B+D+P+L) cps	913.857	918.475	4.618	16.400
Near Resolution	9.11	9.29	0.180	0.50
Far Resolution	8.84	9.31	0.470	1.00

PASS/FAIL SUMMARY

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

SPECTRAL DENSITY POST CHECKTool Name: **SDLT - I04_P84**Reference Calibration Date: **02-Jul-11 03:43:33**Engineer: **S. JUNG**Calibration Date: **02-Jul-11 10:09:07**Software Version: **WL INSITE R3.2.0 (Build 7)**Calibration Version: **1****DENSITY POST CALIBRATION SUMMARY**

Measurement	Field	Post	Change	Control Limit +/-
Near (B+D+P+L) cps	1269.967	1271.392	1.425	14.431
Far (B+D+P+L) cps	918.475	911.398	-7.077	16.400
Near Resolution	9.29	9.24	-0.050	0.50
Far Resolution	9.31	9.18	-0.130	1.00

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATIONTool Name: **SDLT - I04_P84**Reference Calibration Date: **10-May-11 16:29:51**Engineer: **J. BOSH**Calibration Date: **13-Jun-11 12:18:39**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	-2523.75	-2064.16	-7000.00 - -1000.00
Pad Gain	0.0003926	0.0003693	0.000200 - 0.000600
Arm Offset	-1809.41	-2442.62	-5000.00 - 3000.00
Arm Gain	0.0005135	0.0005106	0.000300 - 0.000700
Arm Power	-0.000005105	-0.000005201	-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)	1.95	2.00	0.05	+/- 0.20
Medium Ring (in)	3.81	3.75	-0.06	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.65	6.50	-0.15	+/- 0.20
Medium Ring (in)	9.49	9.35	-0.14	+/- 0.20

Medium Ring (in)	8.40	8.25	-0.15	+/- 0.20
Large Ring (in)	15.16	15.00	-0.16	+/- 0.20

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY

Calibration-Coefficients Range Check:	Passed
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SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - I04_P84	Reference Calibration Date: 13-Jun-11 12:18:39
Engineer: S. JUNG	Calibration Date: 02-Jul-11 03:53:02
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	3.67	-0.08	+/- 0.10
Ring Diameter	8.25	8.29	0.04	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

SDLT CALIPER POST CALIBRATION

Tool Name: SDLT - I04_P84	Reference Calibration Date: 02-Jul-11 03:53:02
Engineer: S. JUNG	Calibration Date: 02-Jul-11 10:15:43
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	3.67	3.74	0.07	+/- 0.10
Ring Diameter	8.29	8.24	-0.04	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	265.0	261.4	264.5	-3.1	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0652	0.0756	0.0816	-0.0060	+/- 0.0150	decp
SDLT-I04_P84						
Near(B+D+P+L)	1268.355	1269.967	1271.392	-1.425	+/-14.431	cps
Far(B+D+P+L)	913.857	918.475	911.398	7.077	+/-16.400	cps
Pad Extension	3.75	3.67	3.74	-0.07	+/-0.10	in
Ring Diameter	8.25	8.29	8.24	0.050	+/-0.15	in

Data: TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDL

Date: 02-Jul-11 10:17:05

PARAMETERS REPORT

Depth (ft)	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.200	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	1.380	ohmm
	SHARED	TRM	Temperature of Mud	85.0	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	6500.00	ft
	SHARED	BHT	Bottom Hole Temperature	145.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	1.17	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	84.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position	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	0.250	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	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?	5000	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 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	

BOTTOM

Data: TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIDL

Date: 02-Jul-11 08:33:55

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INPUTS, DELAYS AND FILTERS TABLE

Mnemonic	Input Description	Delay (ft)	Filter Type	Filter Length (ft)
Depth Panel				
TENS	Tension	0.00	NO	
CH_HOS				
DHTN	Downhole Tension	0.00	BLK	0.000
SP Sub				
PLTC	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	
GTET				
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	
DSNT				
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

ERNR	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	
SDLT				
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
BSAT				
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: TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHNDLE

Date: 02-Jul-11 08:34:14

HALLIBURTON

Plot Time: 02-Jul-11 10:20:54

Plot Range: 1720 ft to 6507.08 ft

Data: TIMKEN_22_1\Well Based\DAQ-0001-CSG\

Plot File: \\-LOCAL-TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIPOROAHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

AHV PLOT CALCULATED FOR 5.5" CASING

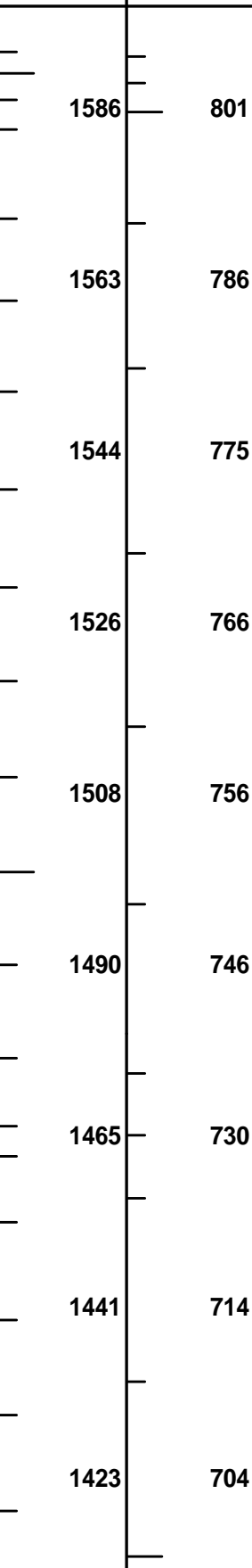
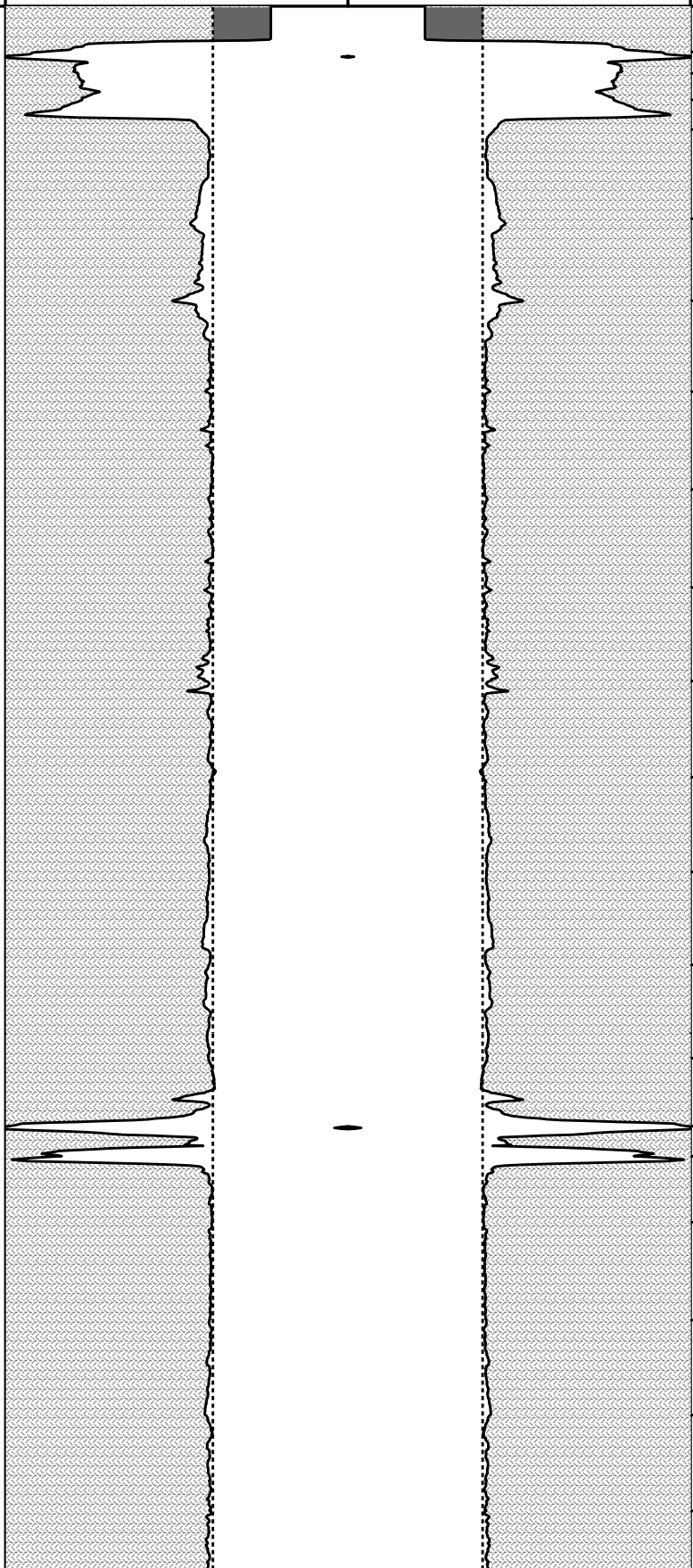
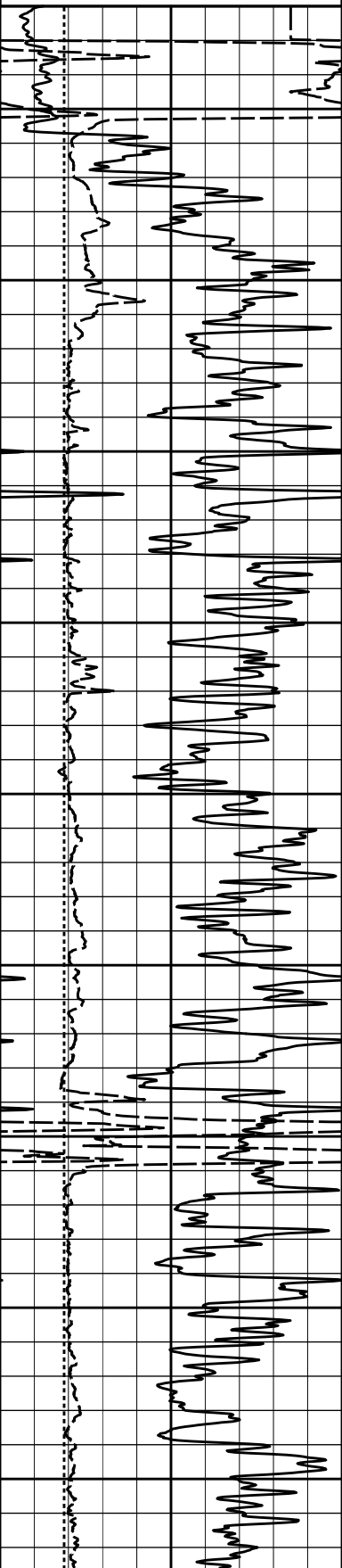
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	api	
6	Bit Size	16
	inches	
6	Caliper	16
	inches	

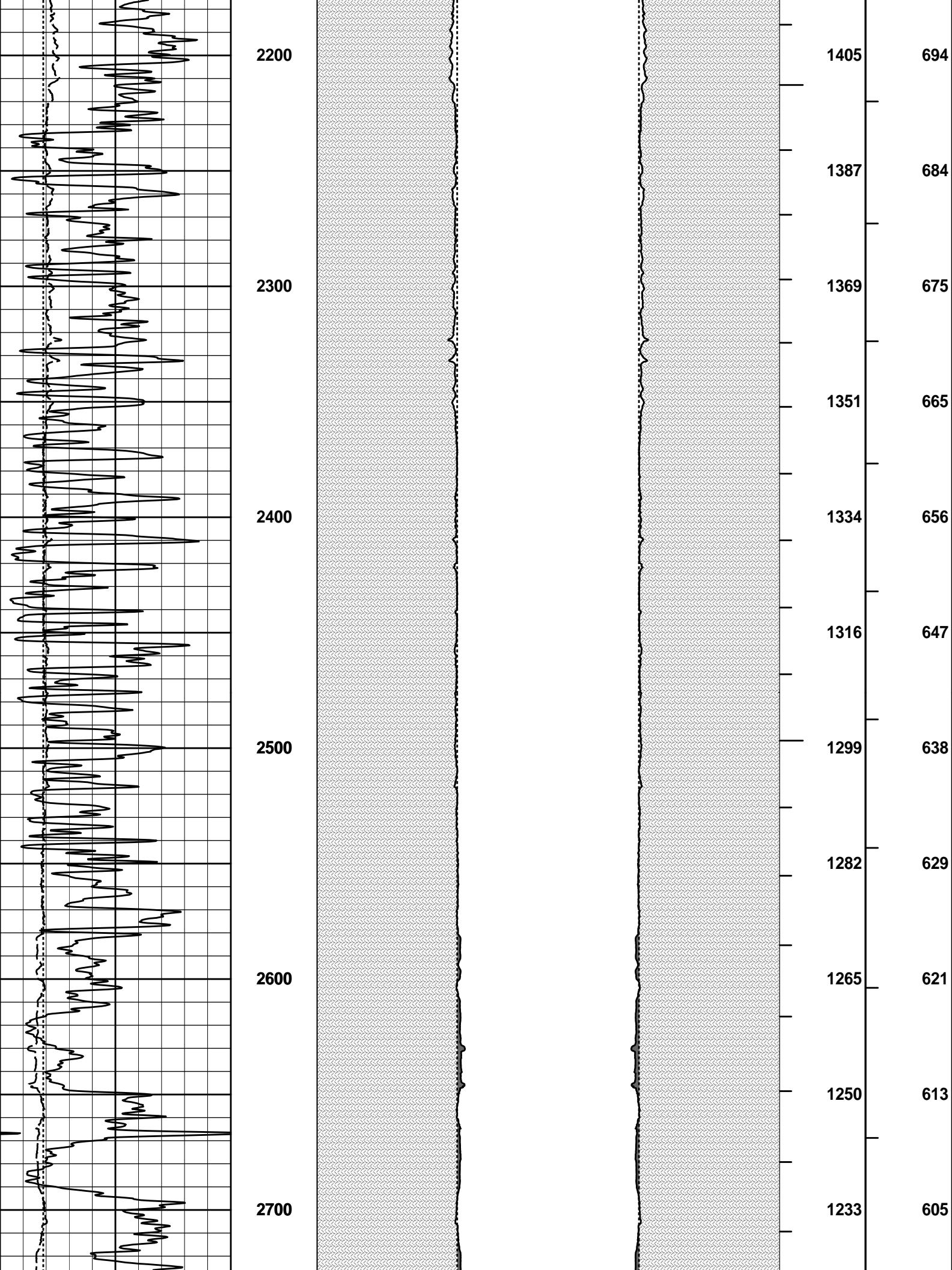
1 : 600
ft

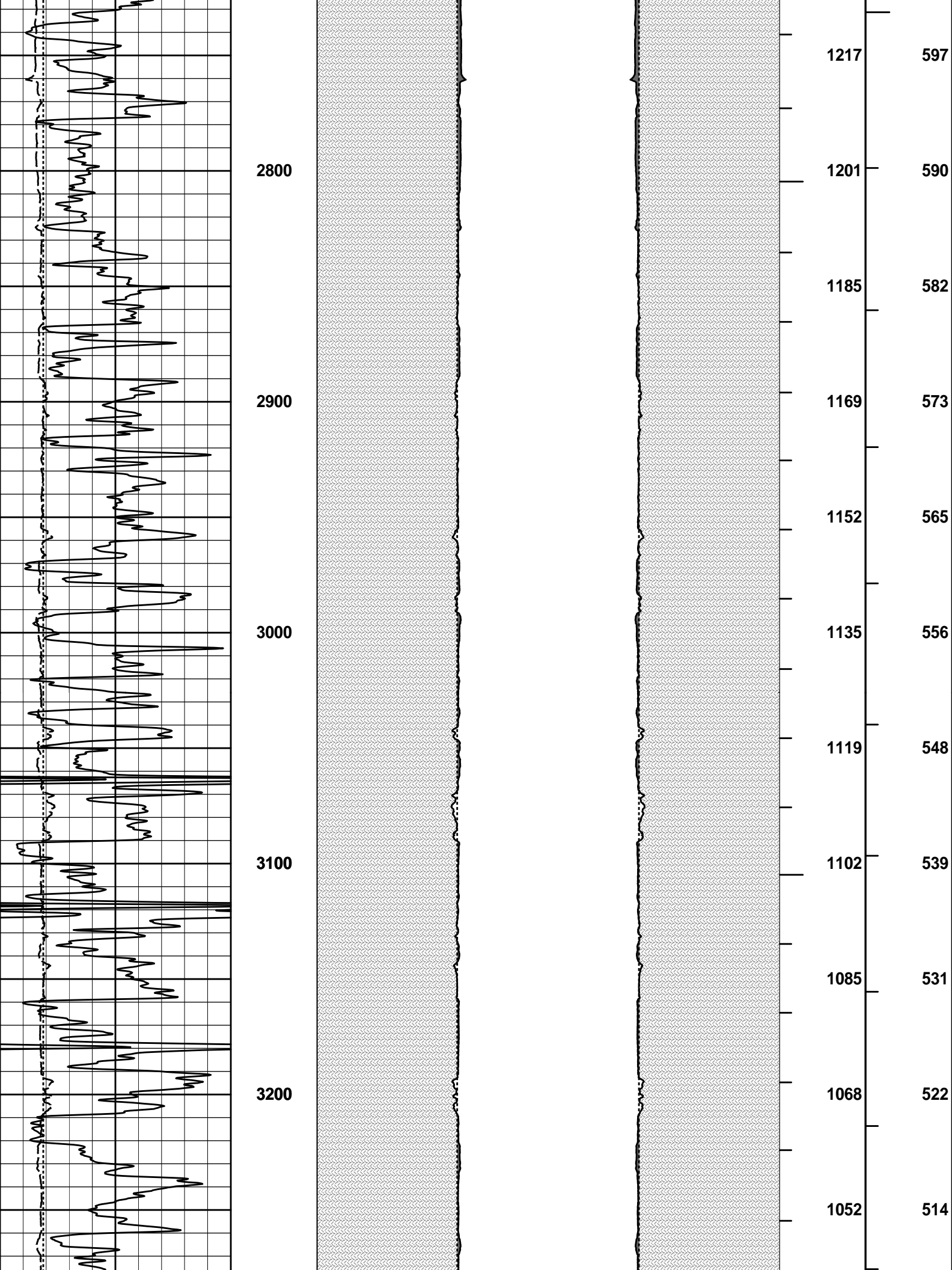
MUDCAKE	
20	Bit Size
	inches
20	Caliper
	inches

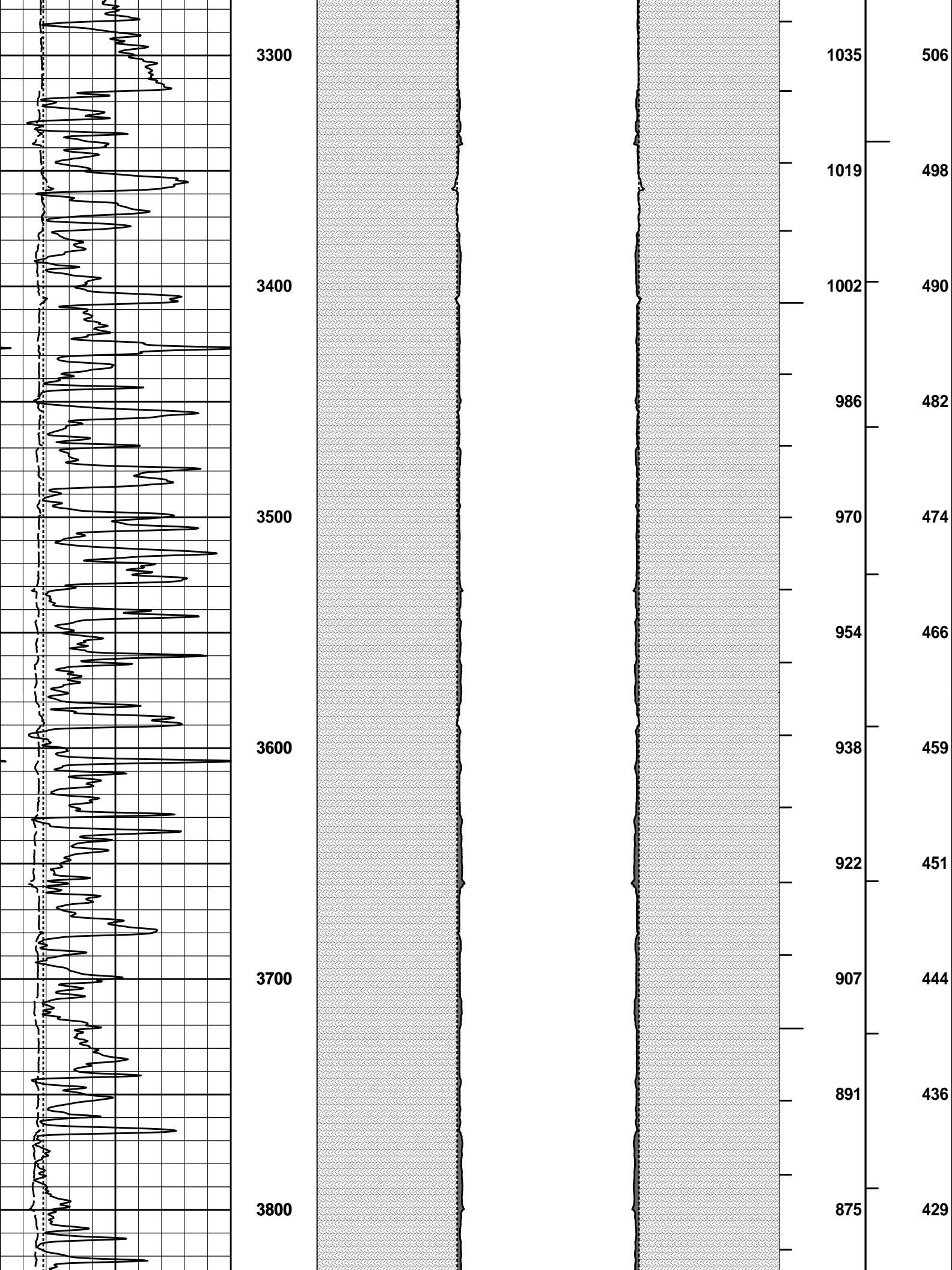
MUDCAKE	
0 0	Bit Size
	inches
0 0	Caliper
	inches

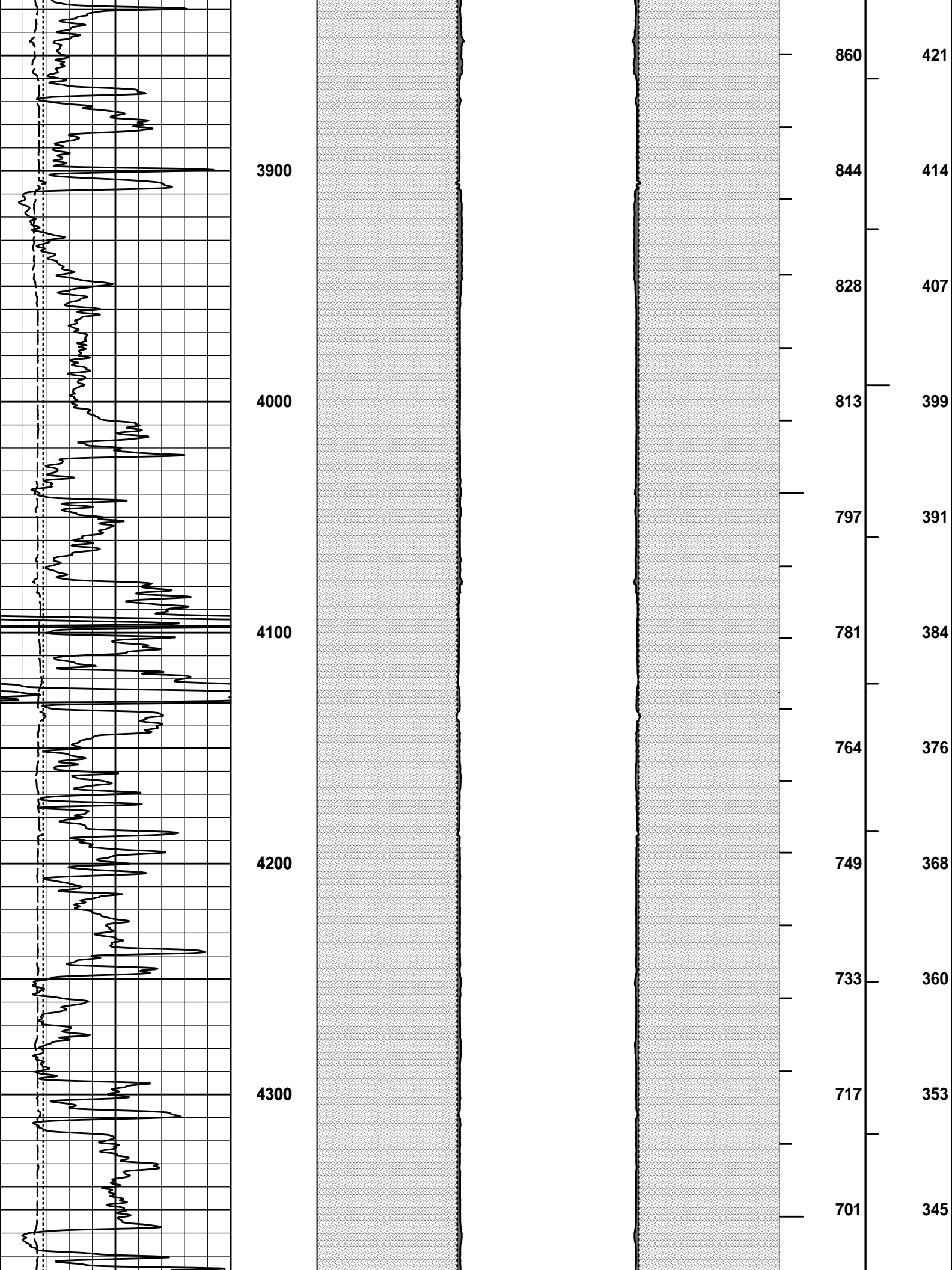
BHVT	AHVT
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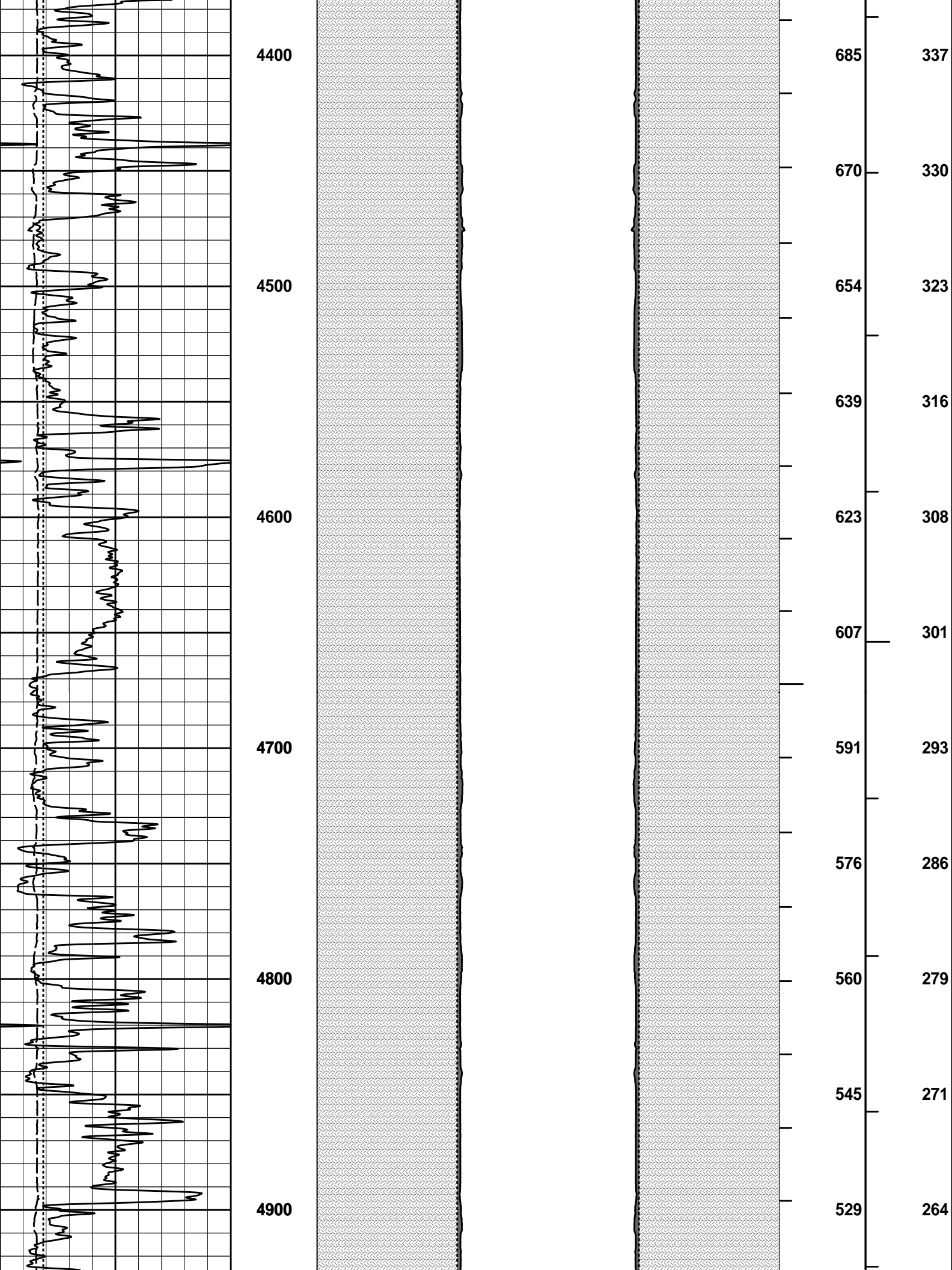


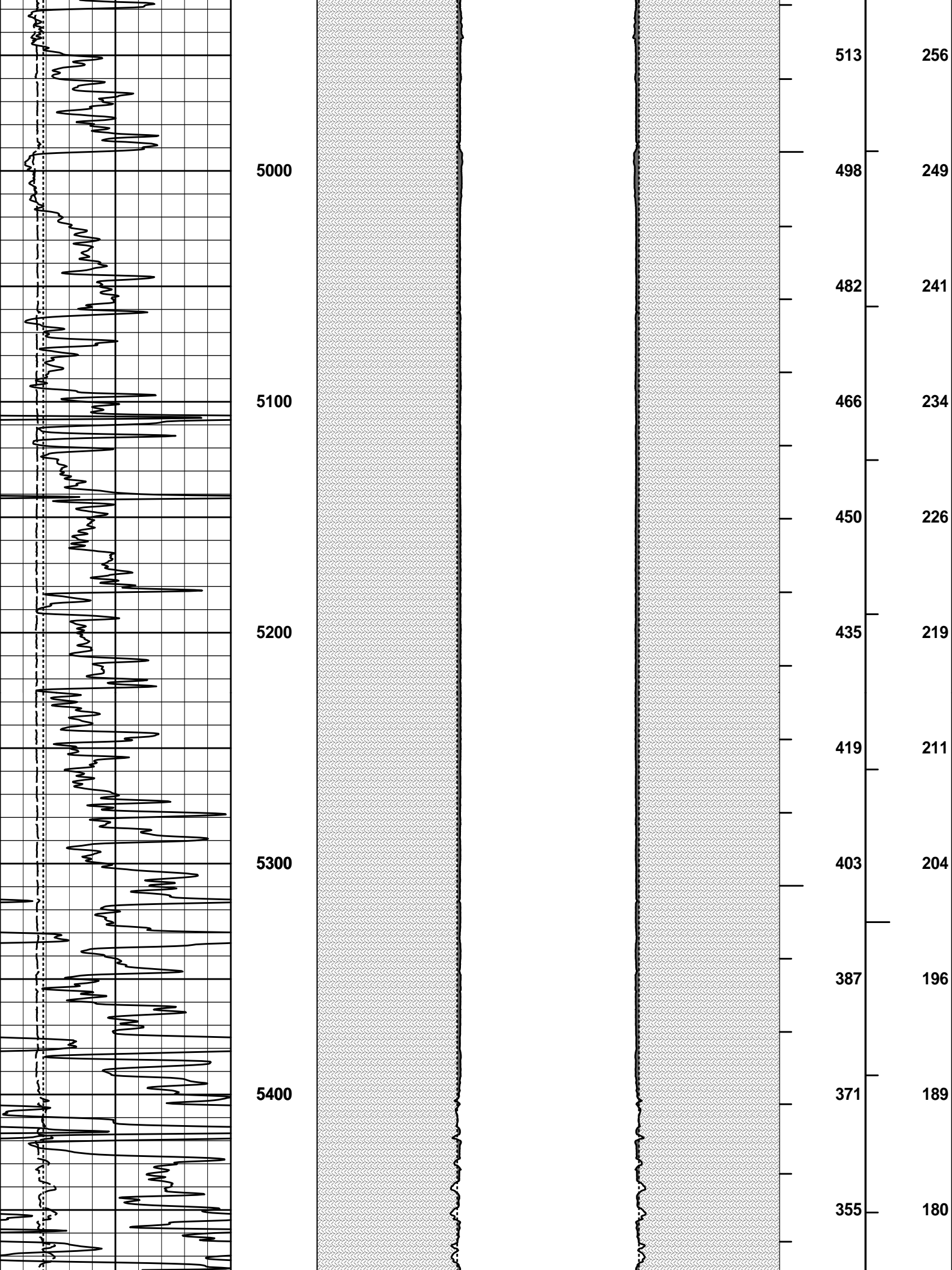


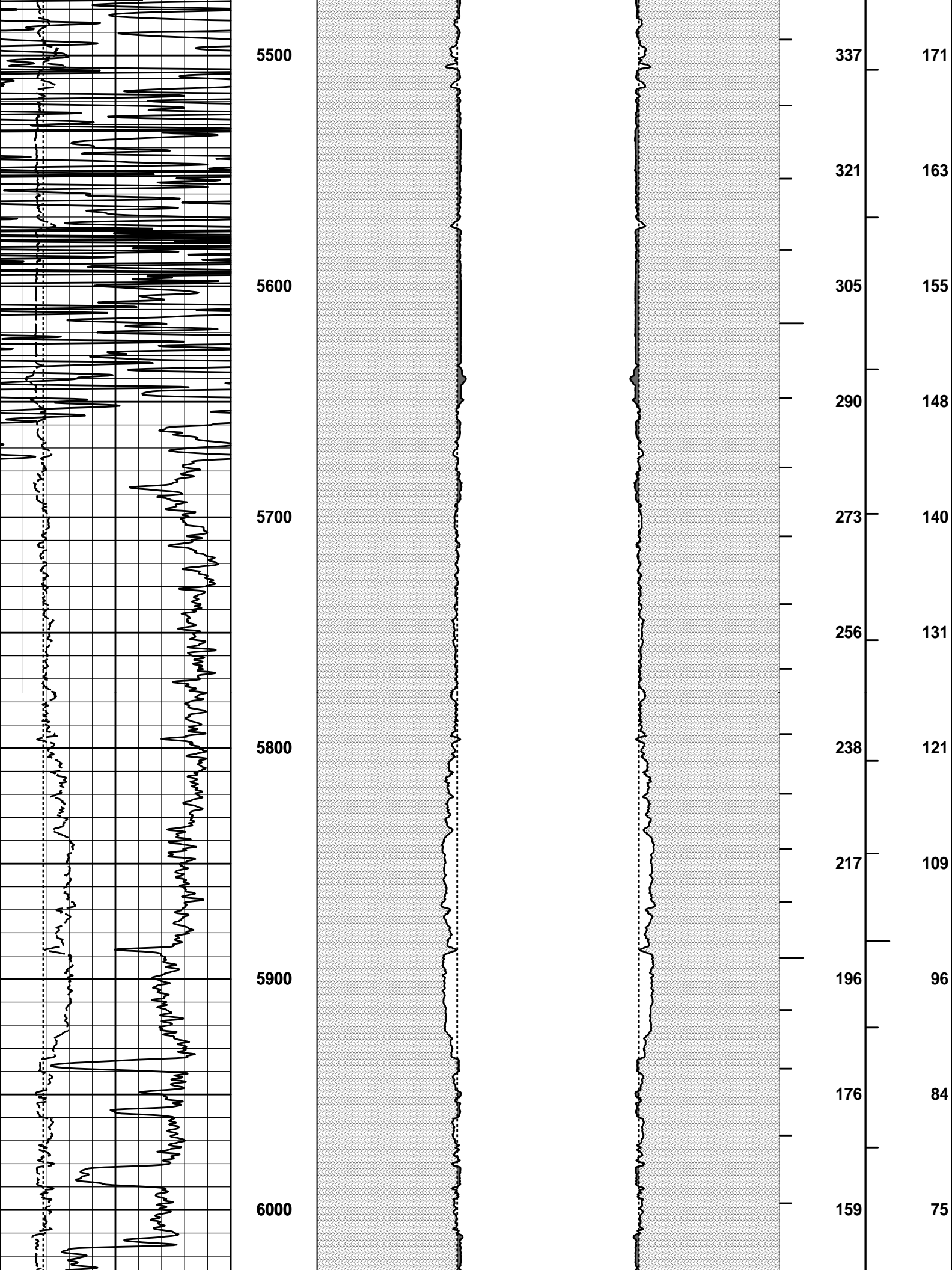


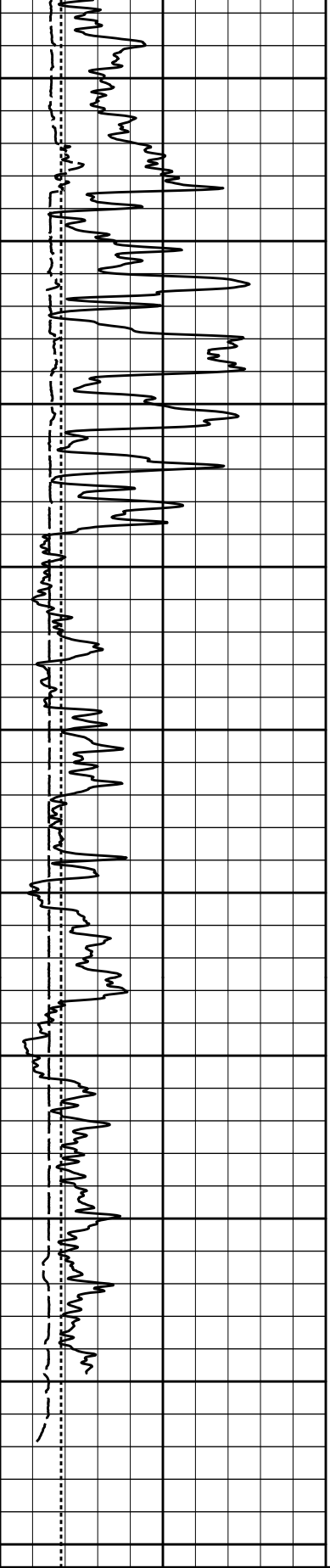












6100

6200

6300

6400

6500

143

127

111

95

80

65

49

34

19

67

59

52

45

38

30

23

16

9

6	Caliper	16
	inches	
6	Bit Size	16
	inches	
0	Gamma API	150

1 : 600
ft

20	Caliper	0 0
	inches	
20	Bit Size	0 0
MUDCAKE		

20	Caliper	20
	inches	
20	Bit Size	20
MUDCAKE		

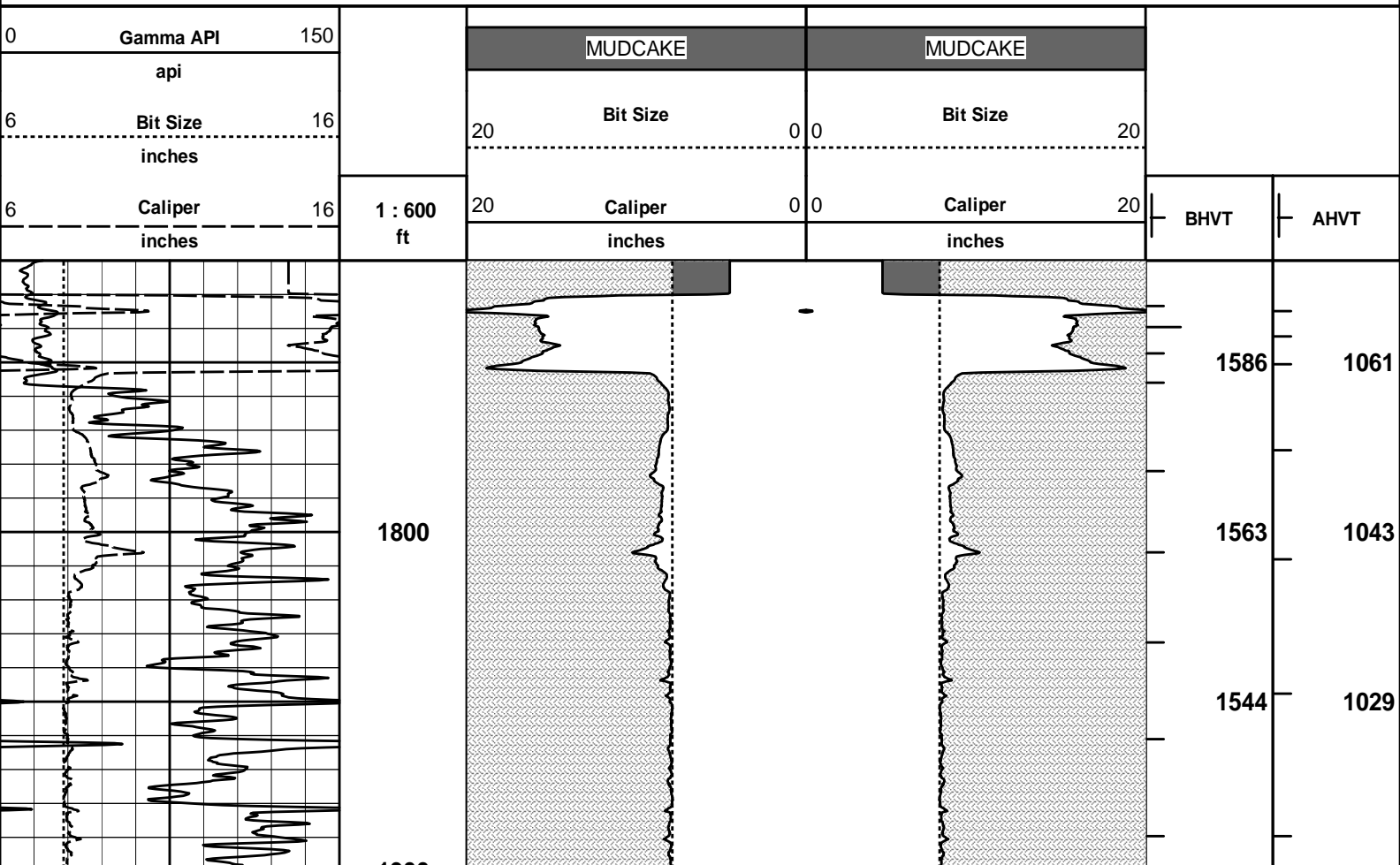
BHVT	AHVT
------	------

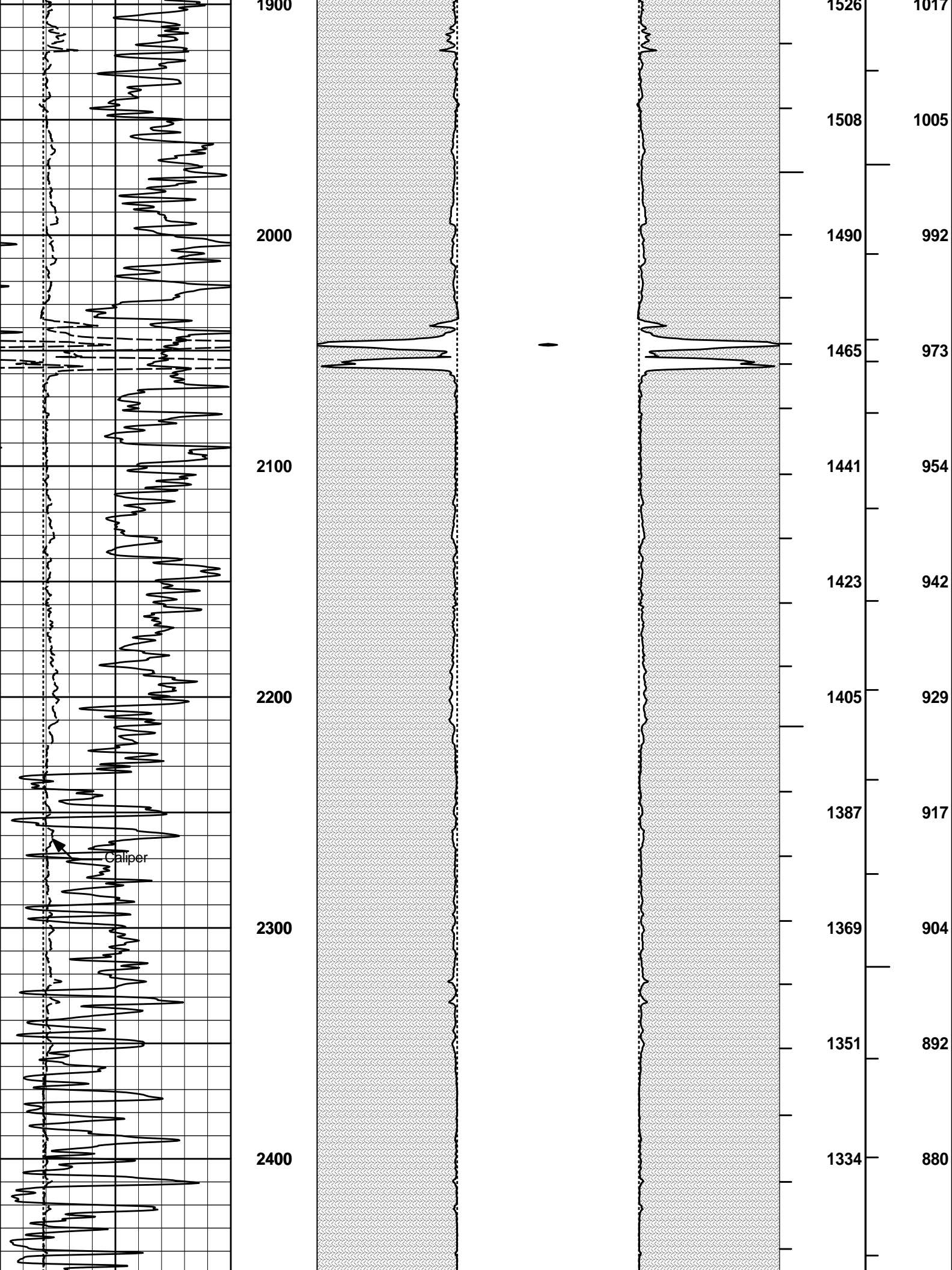
ANNULAR HOLE VOLUME PLOT

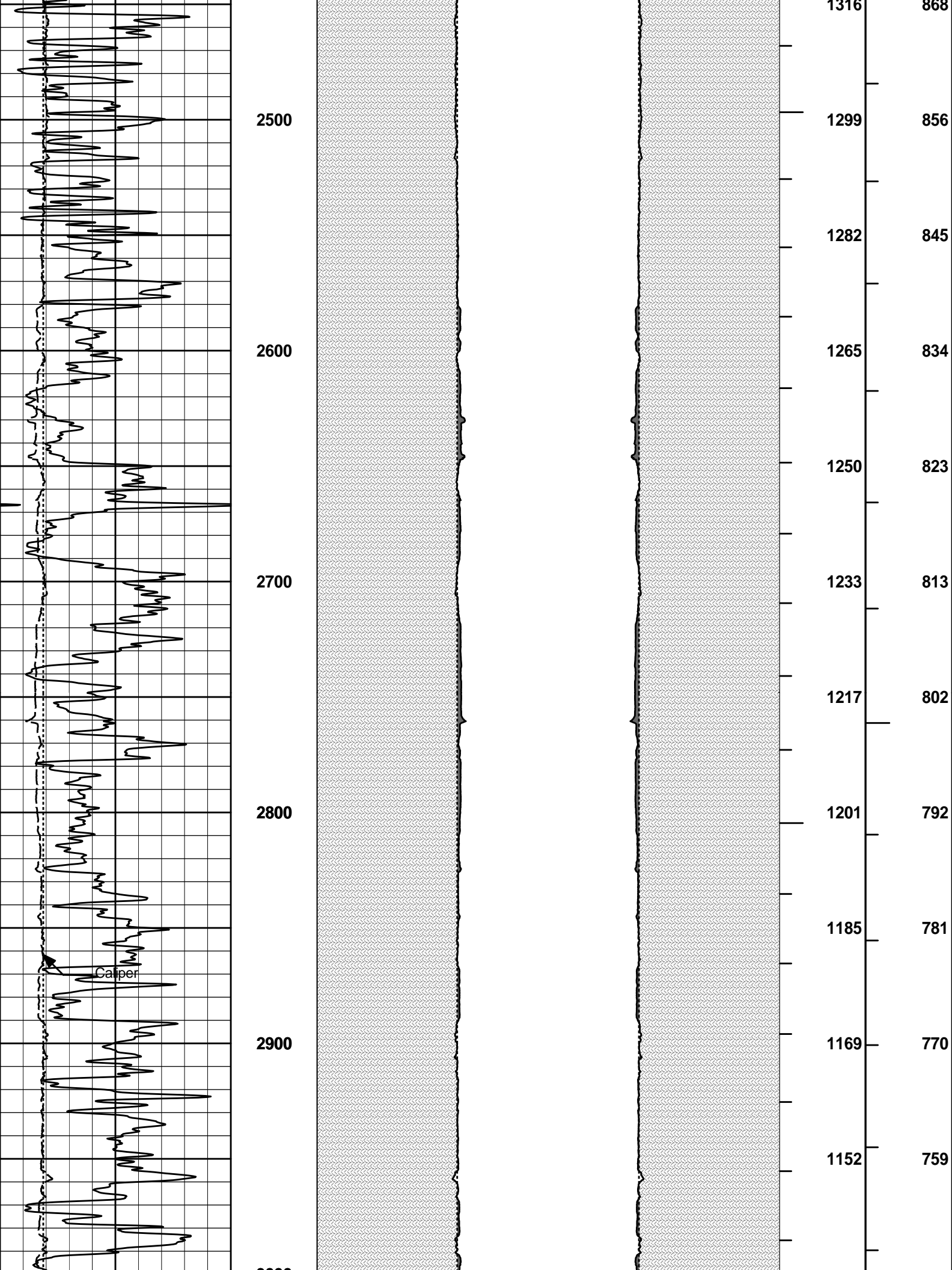
AHV PLOT CALCULATED FOR 5.5" CASING

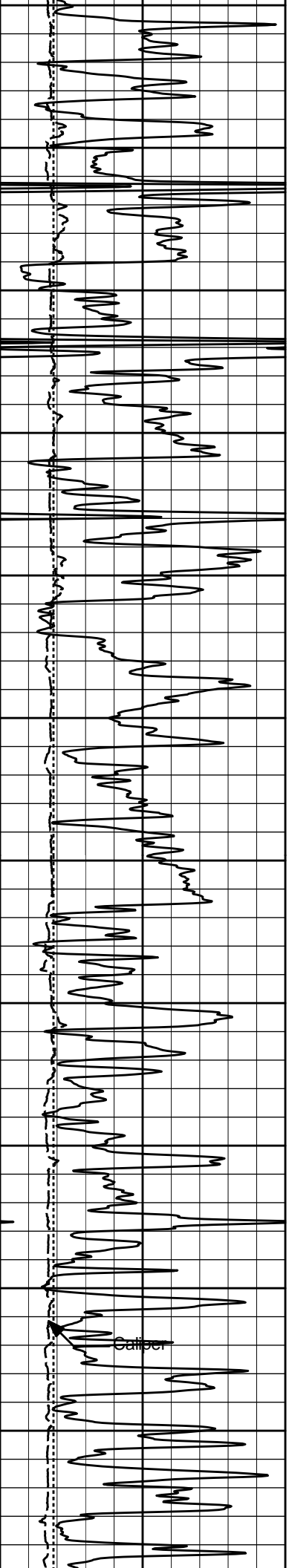
ANNULAR HOLE VOLUME PLOT

AHV PLOT CALCULATED FOR 4.5" CASING

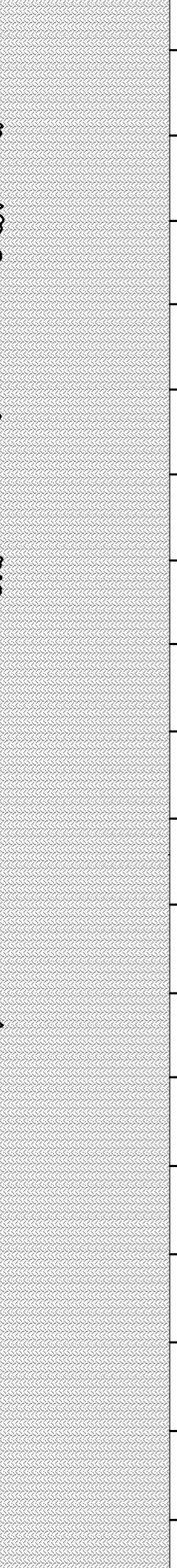
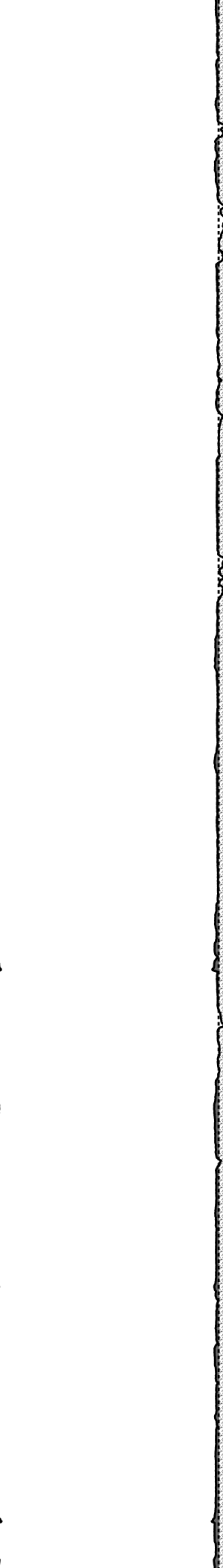
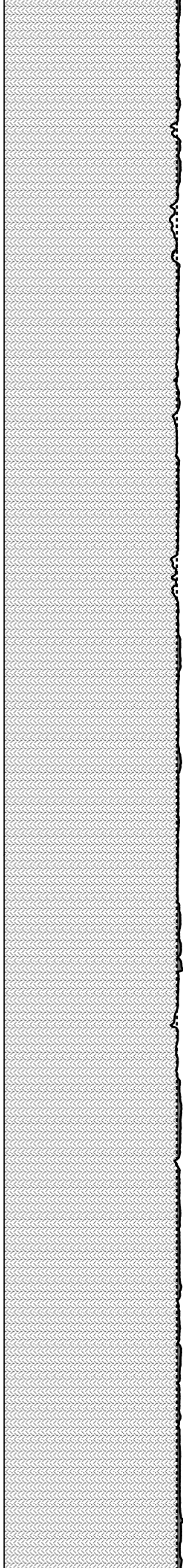




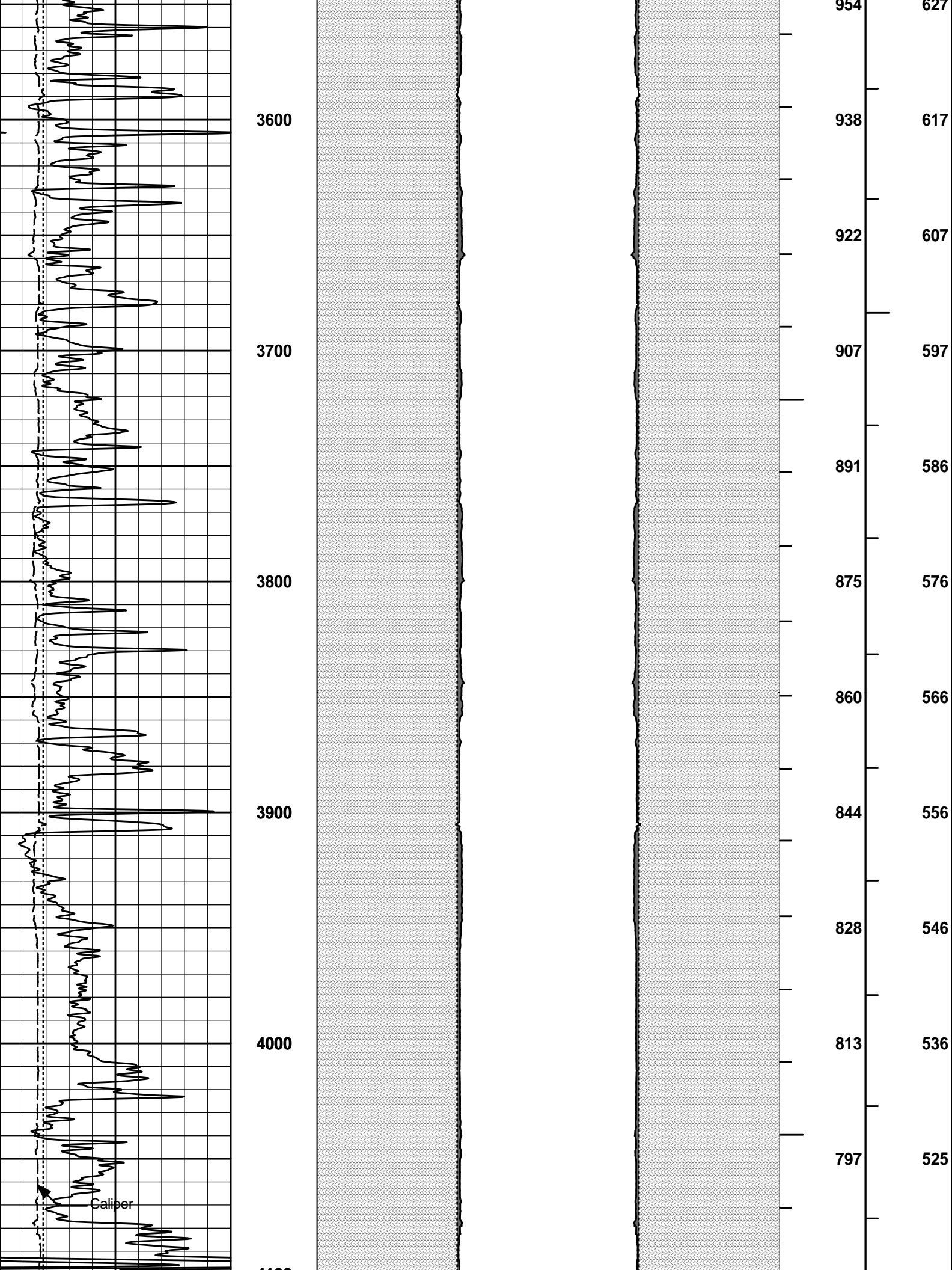


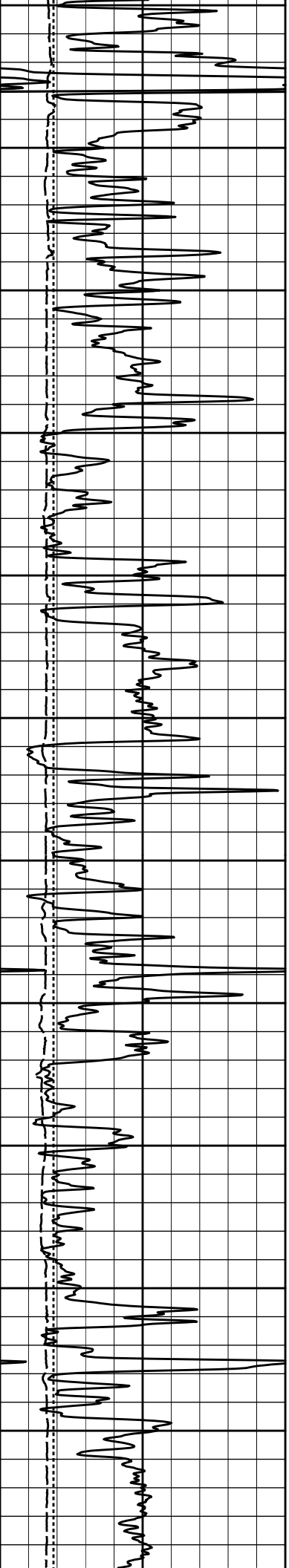


3000
3100
3200
3300
3400
3500



1135 748
1119 737
1102 725
1085 714
1068 703
1052 692
1035 681
1019 670
1002 659
986 649
970 638





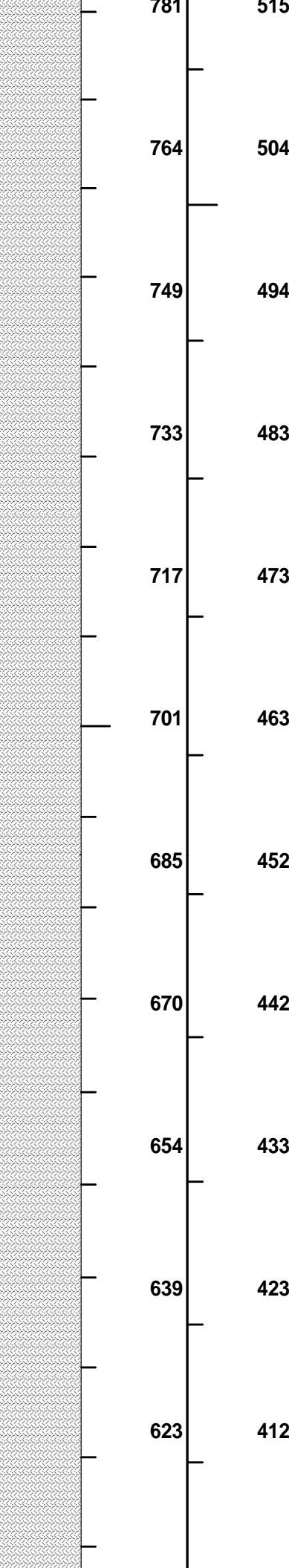
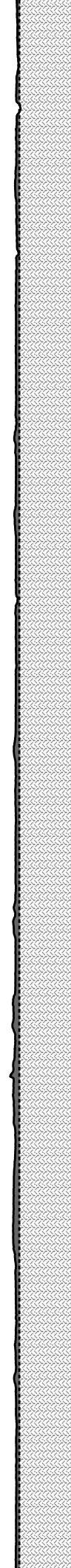
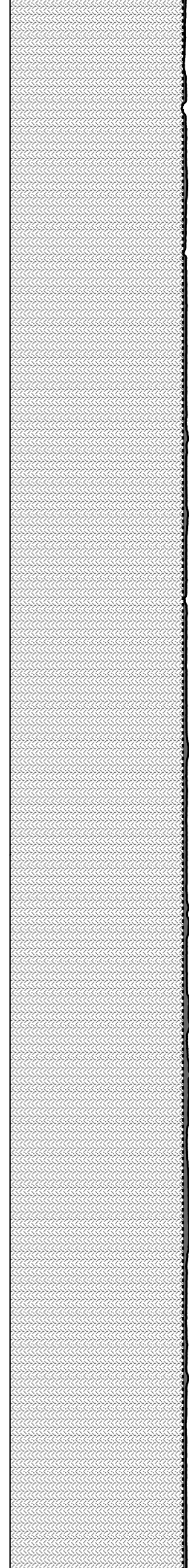
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4300

4400

4500

4600



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764

749

733

717

701

685

670

654

639

623

515

504

494

483

473

463

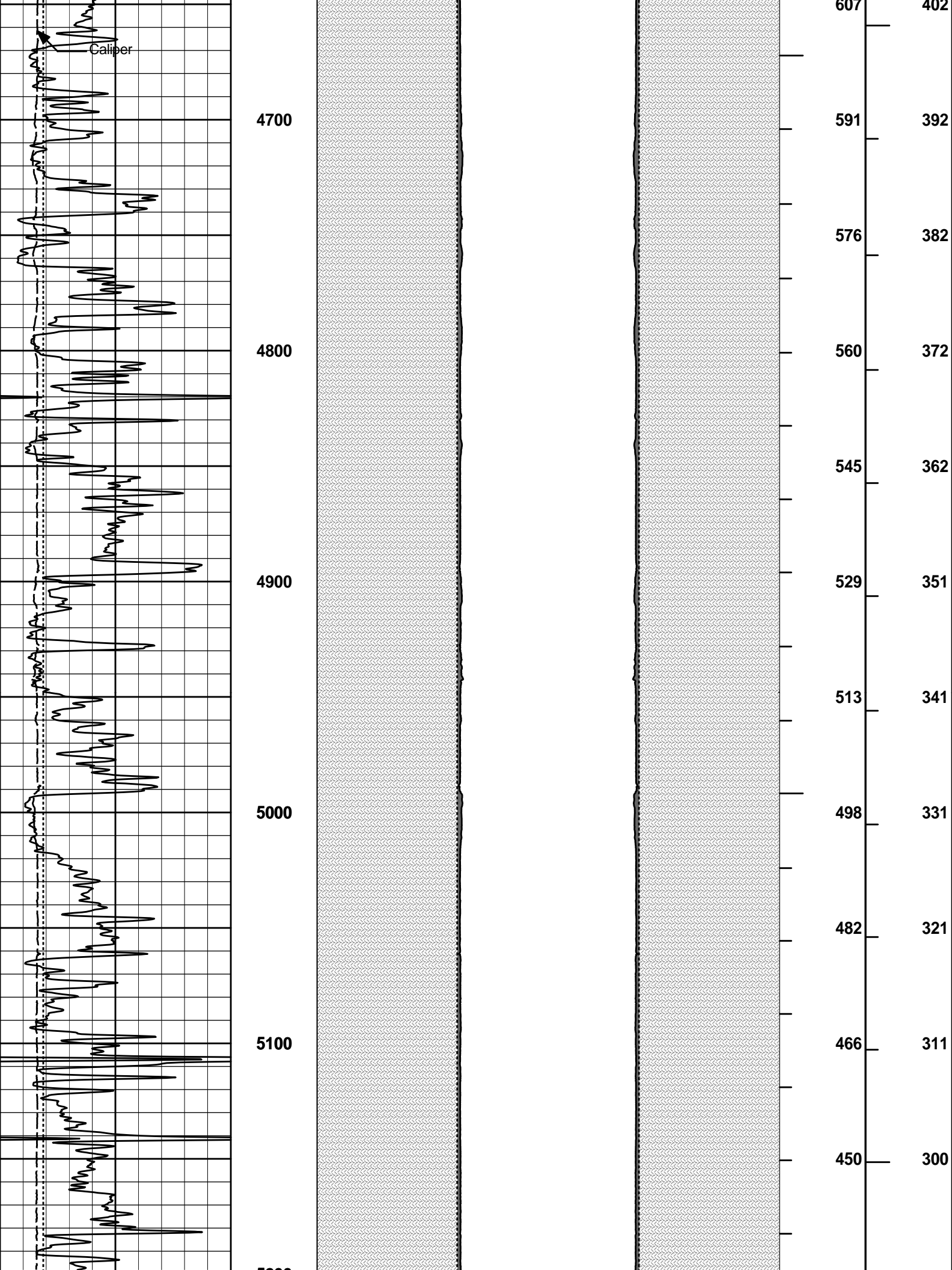
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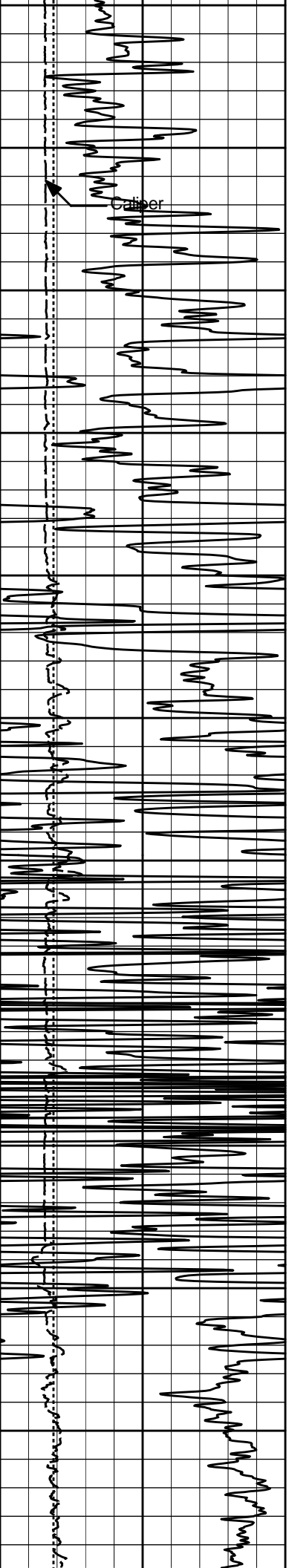
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412





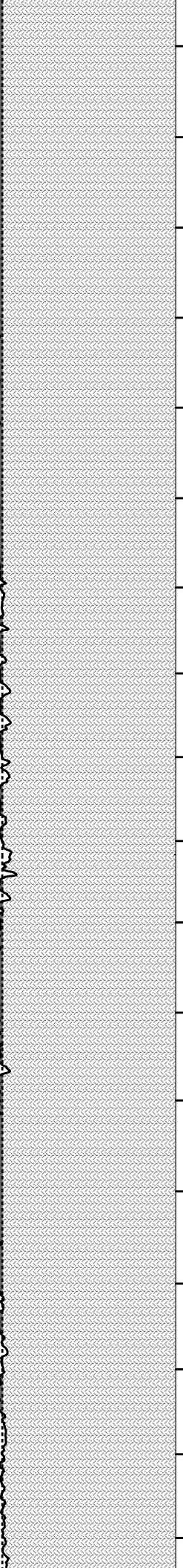
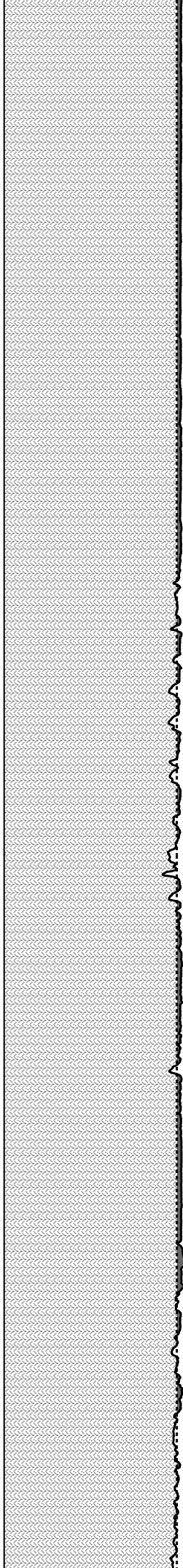
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5400

5500

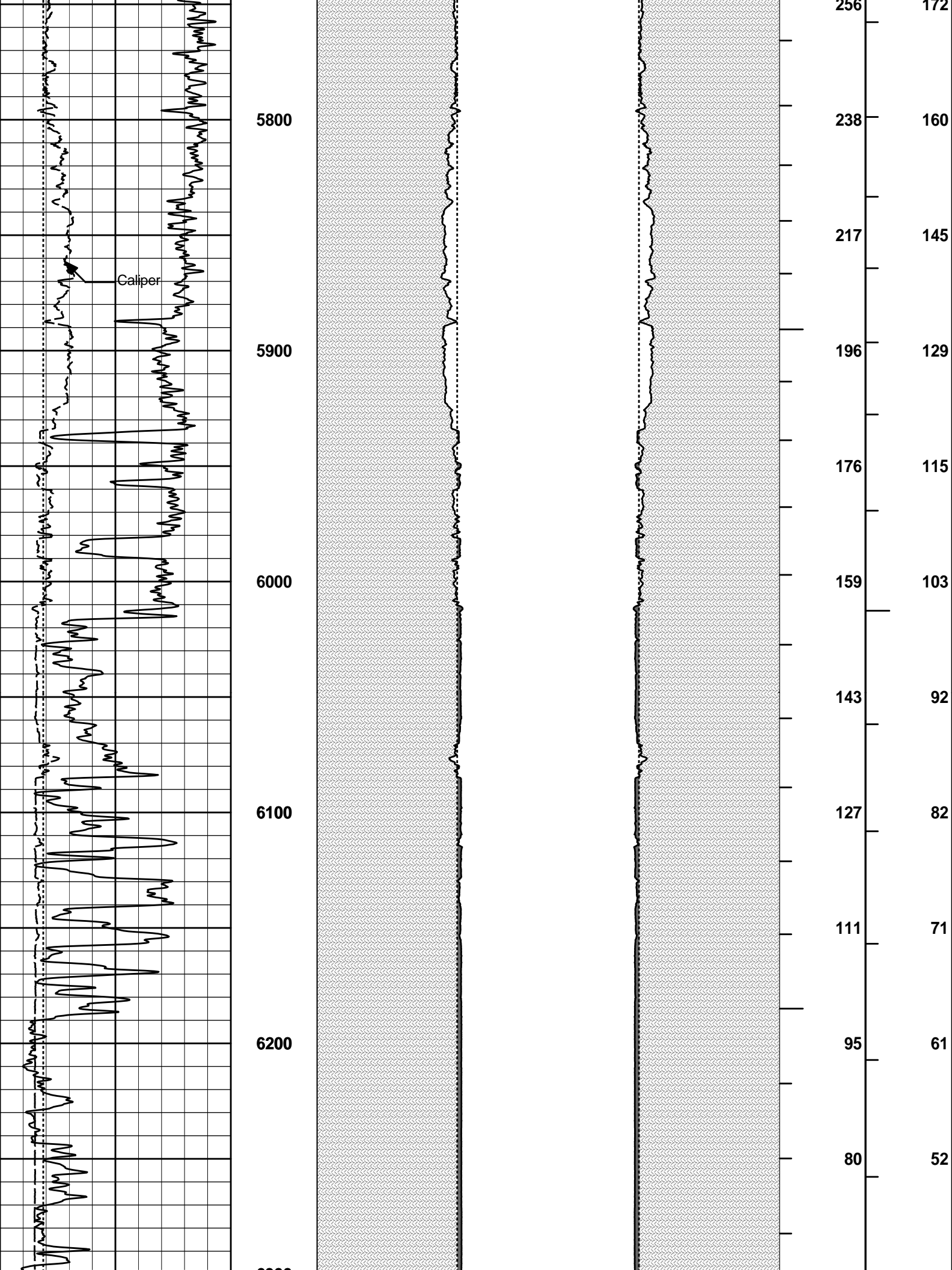
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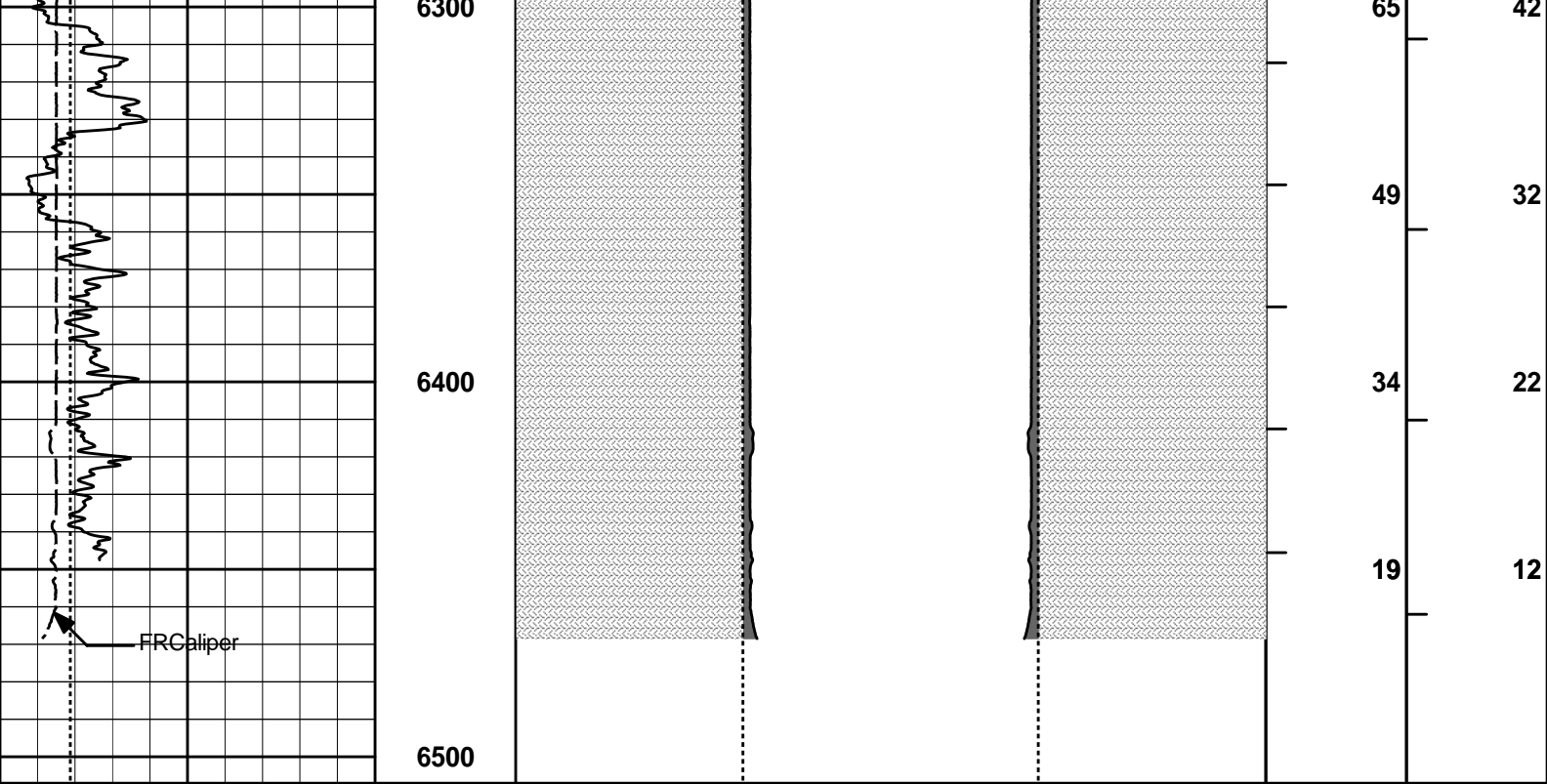
5700



435
419
403
387
371
355
337
321
305
290
273

290
280
270
259
249
238
226
215
205
195
184





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

HALLIBURTON

Plot Time: 02-Jul-11 10:21:27
 Plot Range: 1720 ft to 6507.08 ft
 Data: TIMKEN_22_1\Well Based\DAQ-0001-CSG_4_5\
 Plot File: \\LOCAL-TIMKEN_22_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CHIPOROVAHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

AHV PLOT CALCULATED FOR 4.5" CASING

COMPANY	EOG RESOURCES		
WELL	TIMKEN 22 #1		
FIELD	WILLIS		
COUNTY	STEVENS	STATE	KANSAS

HALLIBURTON

SPECTRAL DENSITY
 DUAL SPACED NEUTRON
 LOG

