HALLIBURTON

DUAL SPACED NEUTRON SPECTRAL DENSITY LOG

COMPANY	OXY USA INC.
WELL	ELLIOTT C-1B
FIELD	LEMON VICK PREEDY
COUNTY	HASKELL
STATE	KANSAS

COMPANY **OXY USA INC.**

WELL **ELLIOTT C-1B**

FIELD **LEMON VICK PREEDY**

COUNTY **HASKELL** STATE **KANSAS**

API No. 15081220030000

Location (SHL) 1981' FSL & 669' FEL

Other Services: DSN / SDL, MICROLOG, BSAT, ACRT

Sect. 28 Twp. 29S Rge. 33W

Permanent Datum GL Elev. 2946.0 ft

Log measured from KB 14.0 ft above perm. Datum

Drilling measured from KB

Elev.: K.B. 2960.0 ft, D.F. 2960.0 ft, G.L. 2946.0 ft

Date	20-Jan-13		
Run No.	ONE		
Depth - Driller	5817.00 ft		
Depth - Logger	5816.0 ft		
Bottom - Logged Interval	5772		
Top - Logged Interval	4050		
Casing - Driller	8.625 in @ 1827.0 ft	@	@
Casing - Logger	1824.0 ft		
Bit Size	7.875 in	@	@
Type Fluid in Hole	WATER BASED MUD		
Density / Viscosity	9.1 ppg / 56.00 s/qt		
PH / Fluid Loss	11.10 pH / 8.4 cptm		
Source of Sample	MUDPIT		
Rm @ Meas. Temperature	1.300 ohmm @ 70.00 degF	@	@
Rmf @ Meas. Temperature	1.10 ohmm @ 70.00 degF	@	@
Rmc @ Meas. Temperature	1.500 ohmm @ 70.00 degF	@	@
Source Rmf / Rmc	MEASURED / MEASURED		
Rm @ BHT	0.64 ohmm @ 149.0 degF	@	@
Time Since Circulation	18.5 hr		
Time on Bottom	20-Jan-13 09:56		
Max. Rec. Temperature	149.0 degF @ 5816.0 ft	@	@
Equipment / Location	10782954 / LIBERAL		
Recorded By	S. INGERSOLL		
Witnessed By	CAL WYLIE	AUSTIN GARNER	

Fold here

Service Ticket No.: 90014112 API Serial No.: 15081220030000 PGM Version: WL INSITE R3.6.0 (Build 3)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

Date	Sample No.				
Depth-Driller					
Type Fluid in Hole					
Density	Viscosity				
Ph	Fluid Loss				
Source of Sample					
Rm @ Meas. Temp		@		@	
Rmf @ Meas. Temp.		@		@	
Rmc @ Meas. Temp.		@		@	
Source Rmf	Rmc				
Rm @ BHT		@		@	
Rmf @ BHT		@		@	
Rmc @ BHT		@		@	

RESISTIVITY SCALE CHANGES

Type Log	Depth	Scale Up Hole	Scale Down Hole

RESISTIVITY EQUIPMENT DATA

Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
ONE	ACRT	N/A	CENT.	
	10929775			

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.	ONE	Run No.	ONE
Serial No.	10748374	Serial No.	10747684	Serial No.	10673803	Serial No.	10735145
Model No.	GTET	Model No.	BSAT	Model No.	SDLT	Model No.	DSNT\
Diameter	3.625"	No. of Cent.	2	Diameter	5.3"	Diameter	3.625"
Detector Model No.	GTET	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]		Serial No.	5073GW	Serial No.	DSN-4369
Distance to Source	N/A	FWDA [Y/N]		Strength	1.5 CI	Strength	15 CI

LOGGING DATA

GENERAL	GAMMA	ACOUSTIC	DENSITY	NEUTRON

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	5816	4050	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 CALCULATED 5.5 INCH CASING.

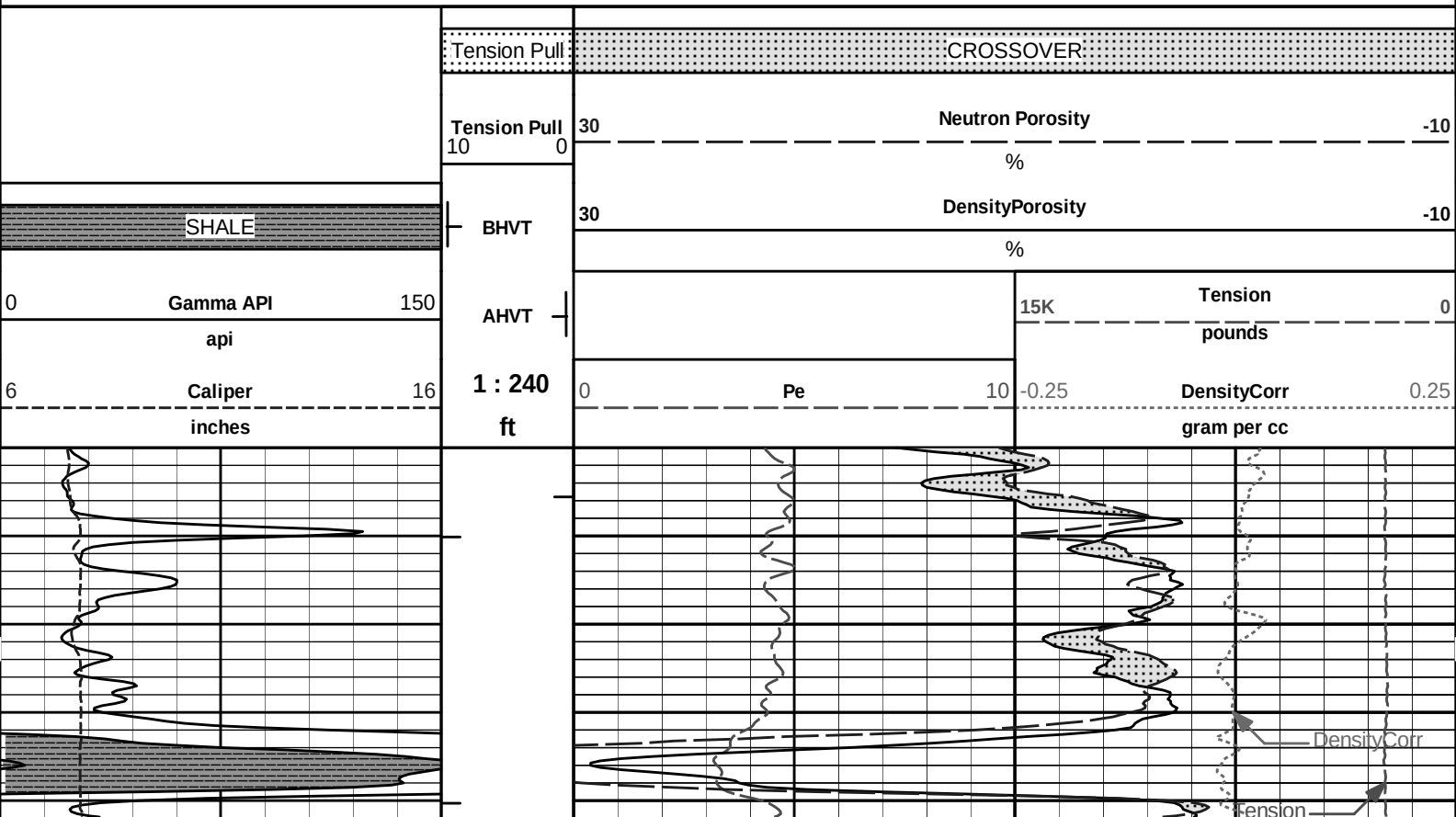
BOTTOM 150' OF SP DOES NOT REPEAT DUE TO FLUID MOVEMENT.

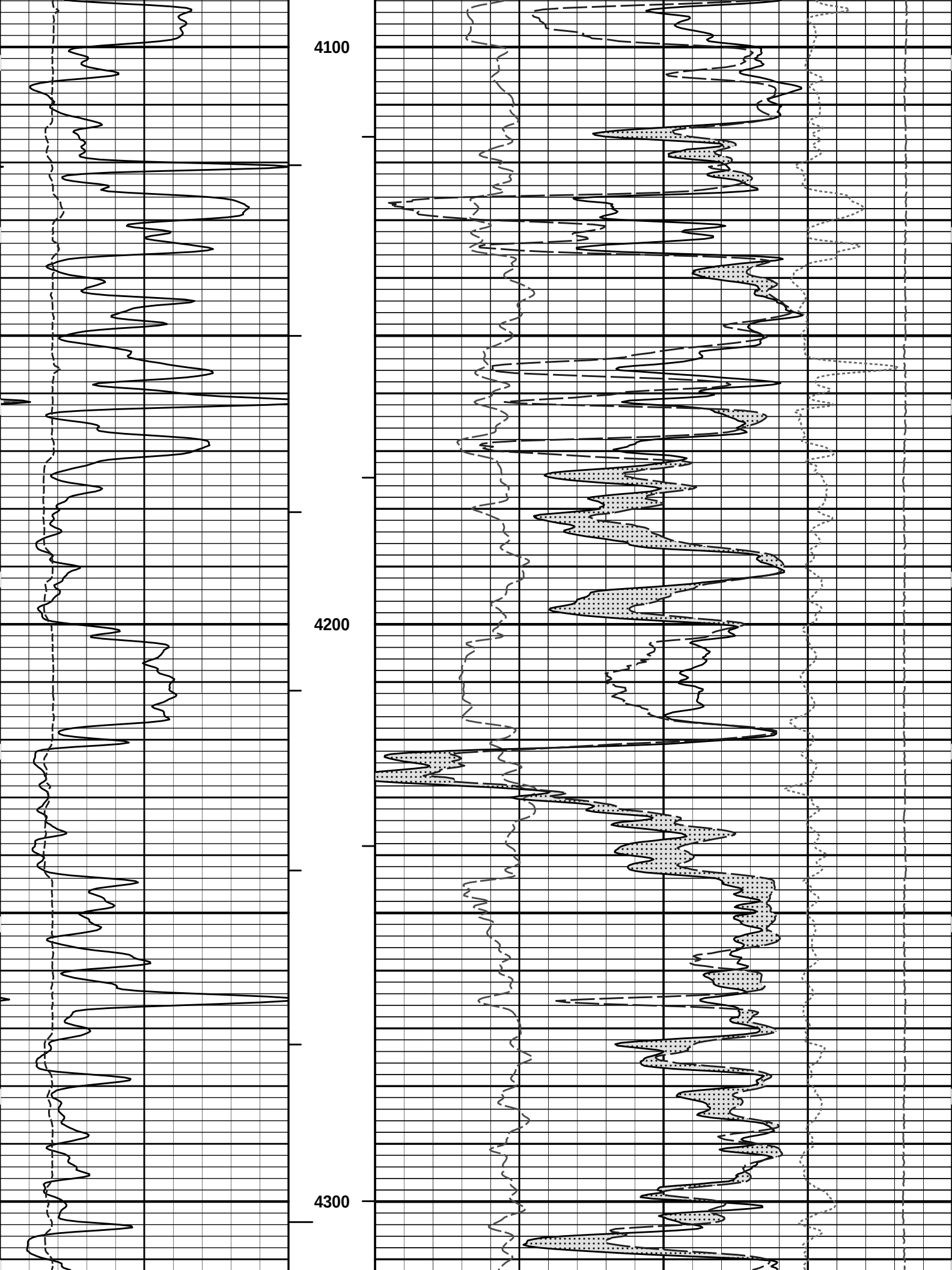
CHLORIDES REPORTED AT 500 mg/L.

HALLIBURTON

Plot Time: 20-Jan-13 14:13:48
Plot Range: 4050 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS
Plot File: \\POROSITY\Poro_IQ_5_MAIN_LIB

5 INCH MAIN LOG

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4200
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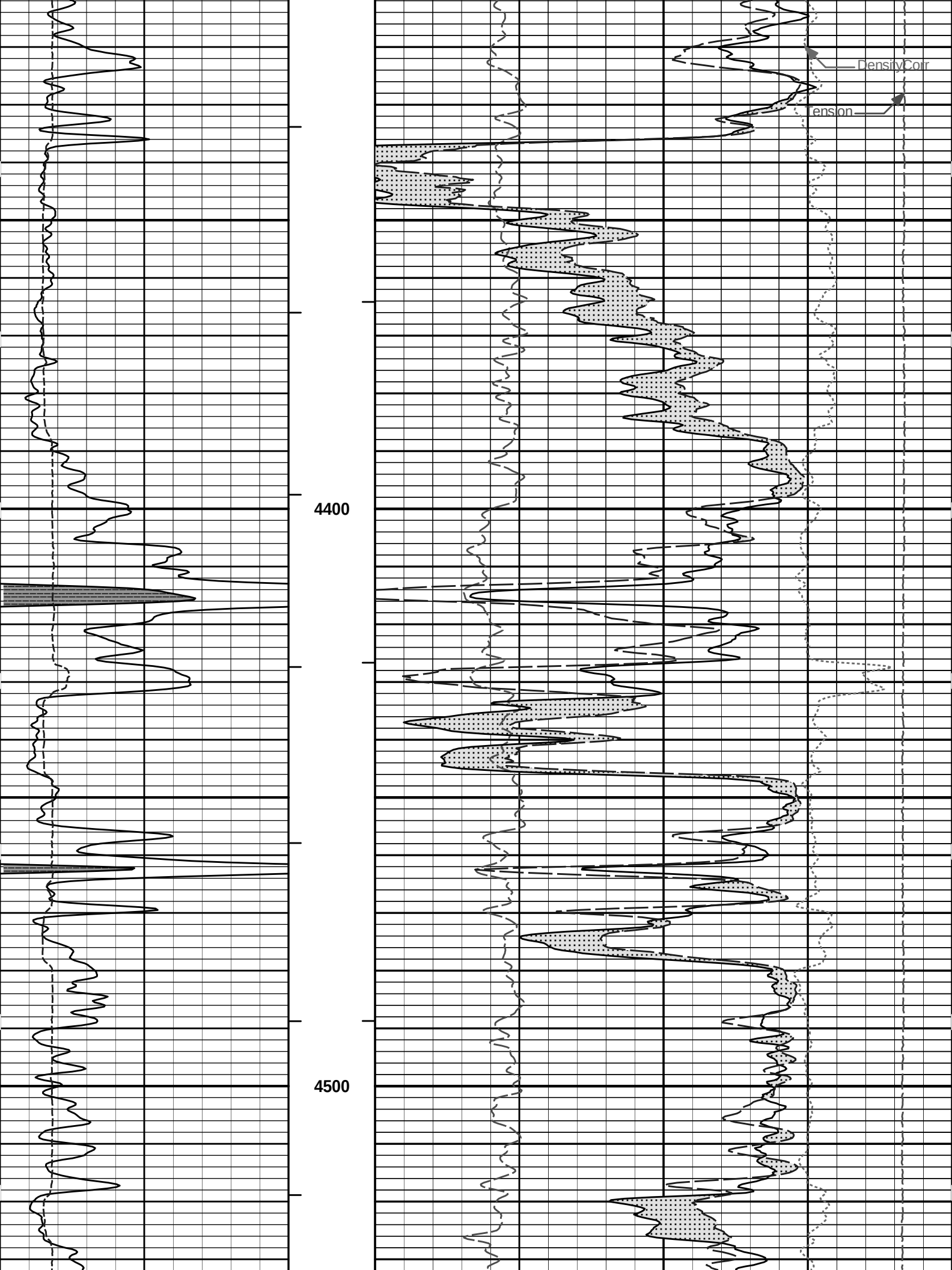
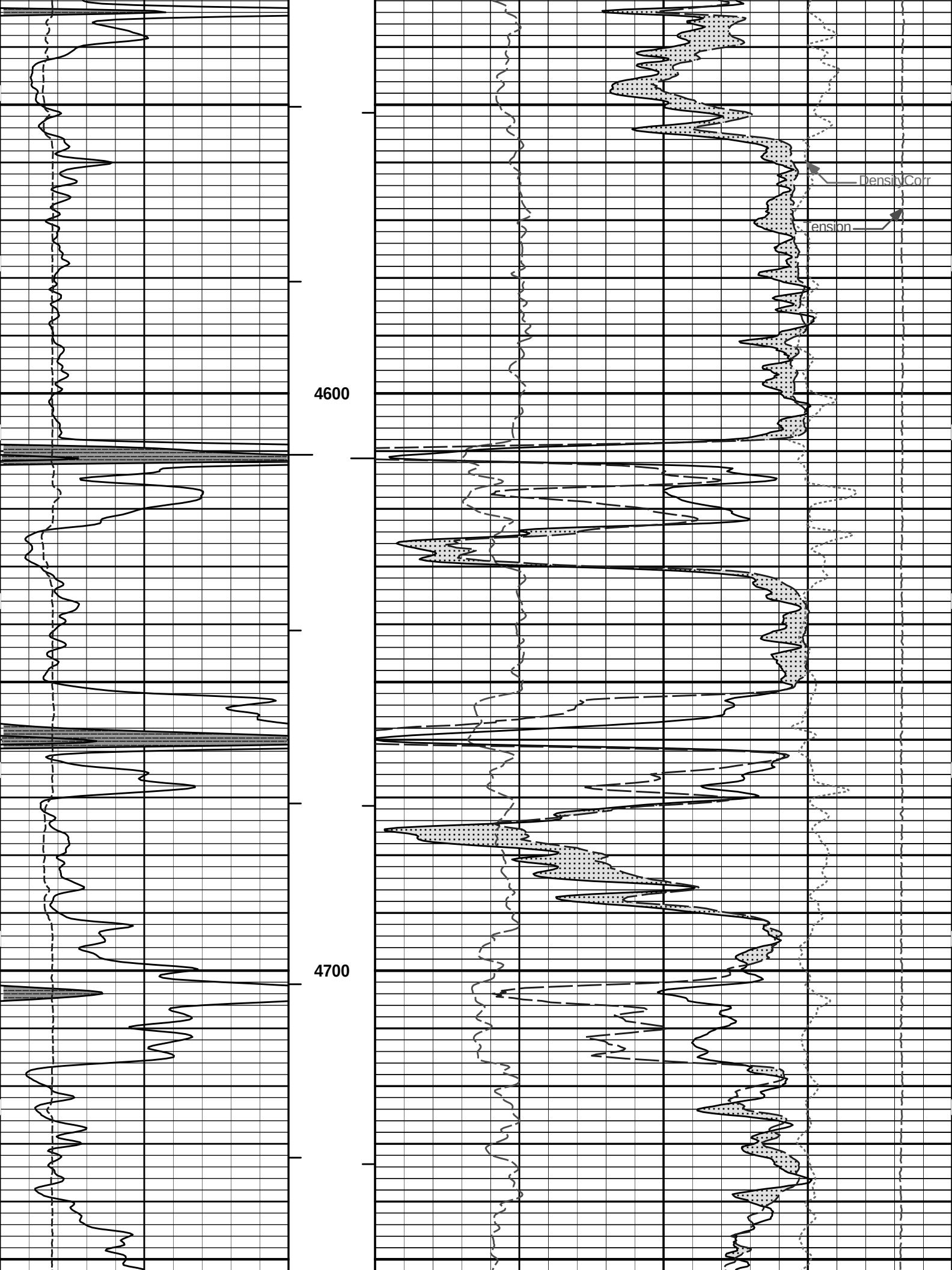

DensityCorr
Tension
4400
4500


DensityCorr
ension
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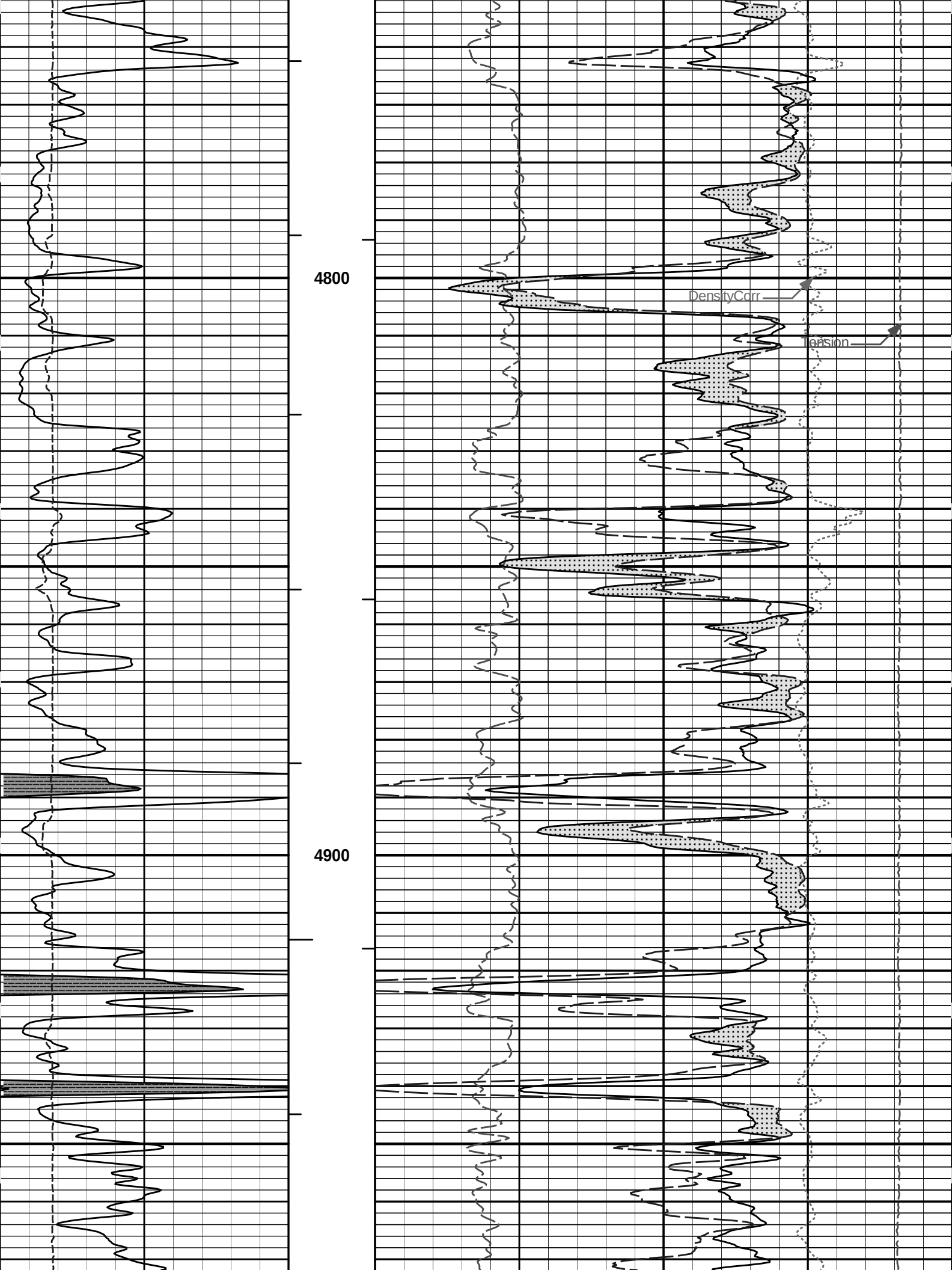
4700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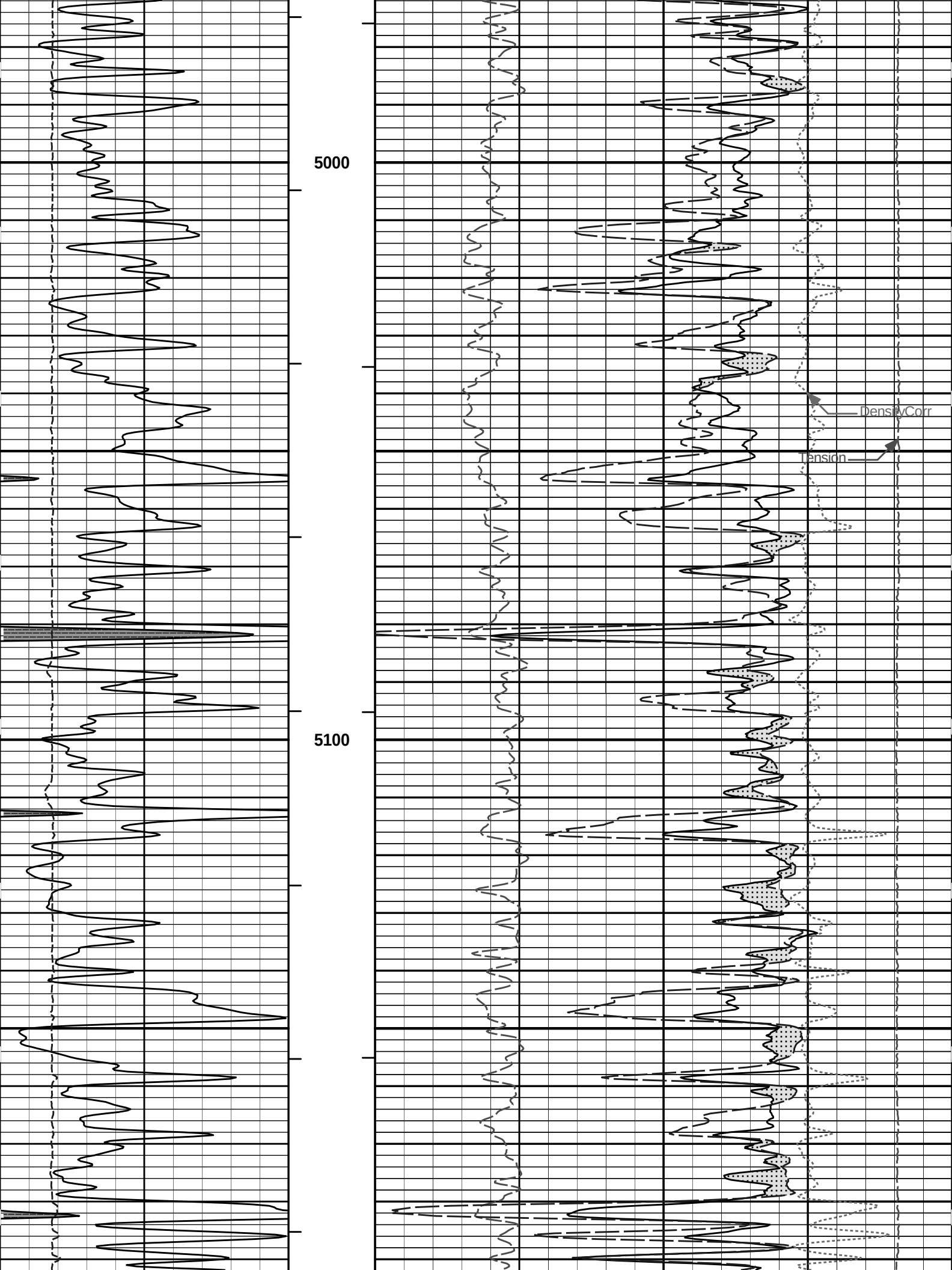
DensityCorr
Tension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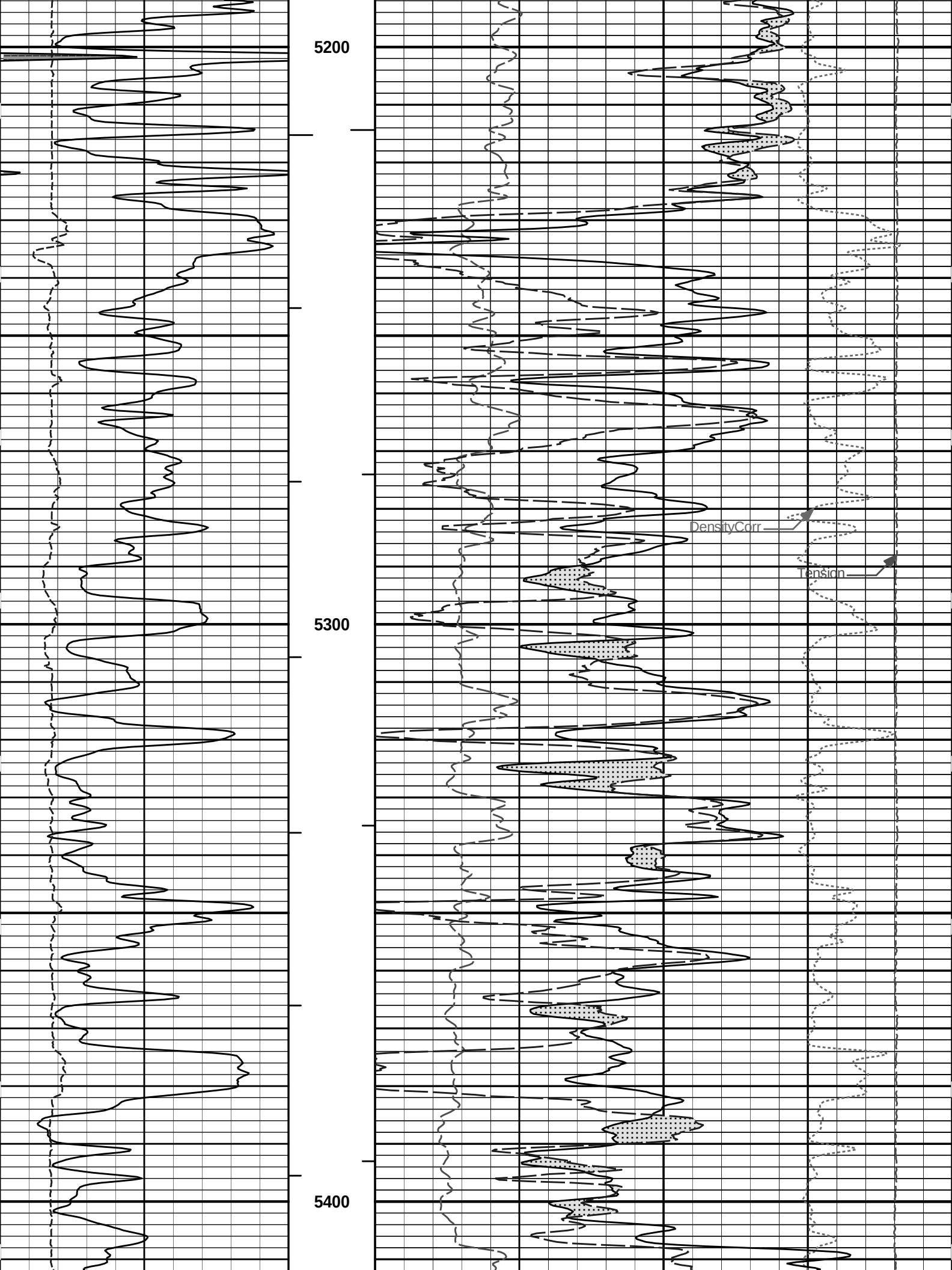
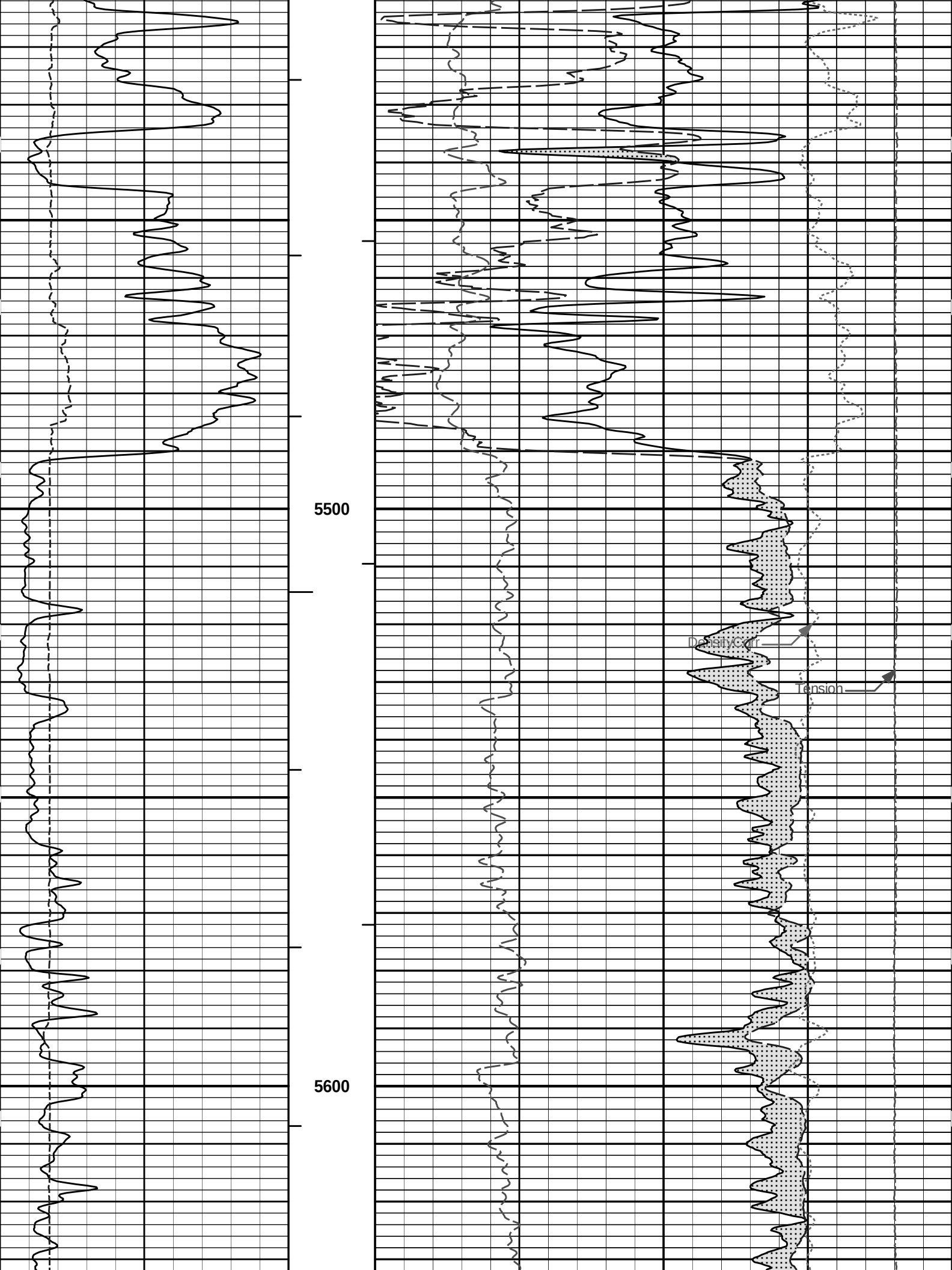
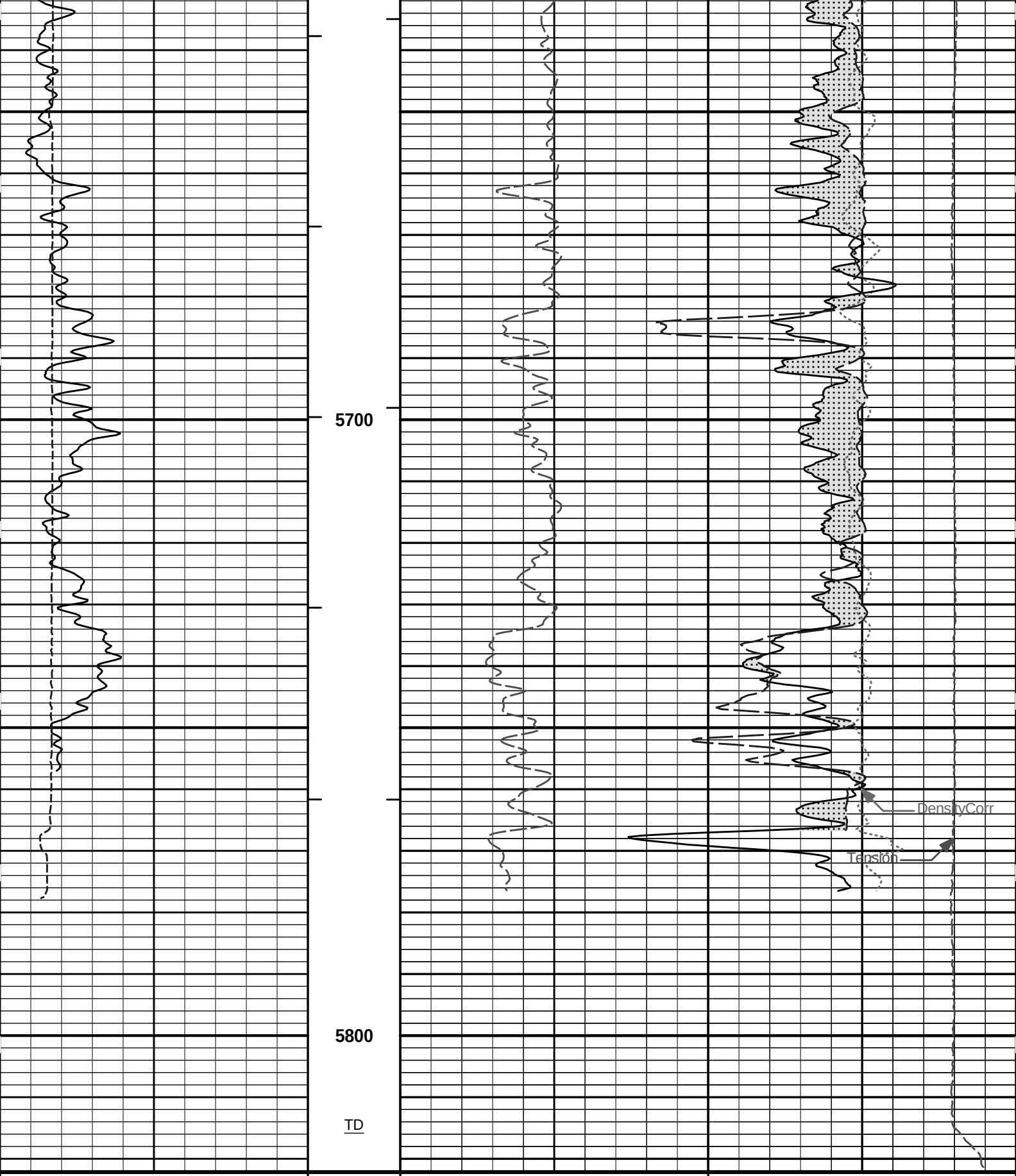
5100
DensityCorr
Tension


5200
5300
5400
DensityCorr
Tension


5500
5600
DensityCorr
Tension



6 Caliper 16	1 : 240	0 Pe 10
inches	ft	
0 Gamma API 150	AHVT	
api		
SHALE	BHVT	30 DensityPorosity -10
		%

-0.25 DensityCorr 0.25	
gram per cc	
15K Tension 0	
pounds	

Tension Pull
10 0

30 Neutron Porosity -10
%

Tension Pull

CROSSOVER

HALLIBURTON

Plot Time: 20-Jan-13 14:13:54
Plot Range: 4050 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS\
Plot File: \\POROSITY\Poro_IQ_5_MAIN_LIB

5 INCH MAIN LOG

HALLIBURTON

Plot Time: 20-Jan-13 14:13:55
Plot Range: 4095 ft to 5817.92 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_REPEAT\
Plot File: \\POROSITY\Poro_IQ_5_REP_LIB

REPEAT SECTION

CROSSOVER

30 Neutron Porosity -10
%

30 DensityPorosity -10
%

SHALE

BHVT

0 Gamma API 150
api

AHVT

15K Tension 0
pounds

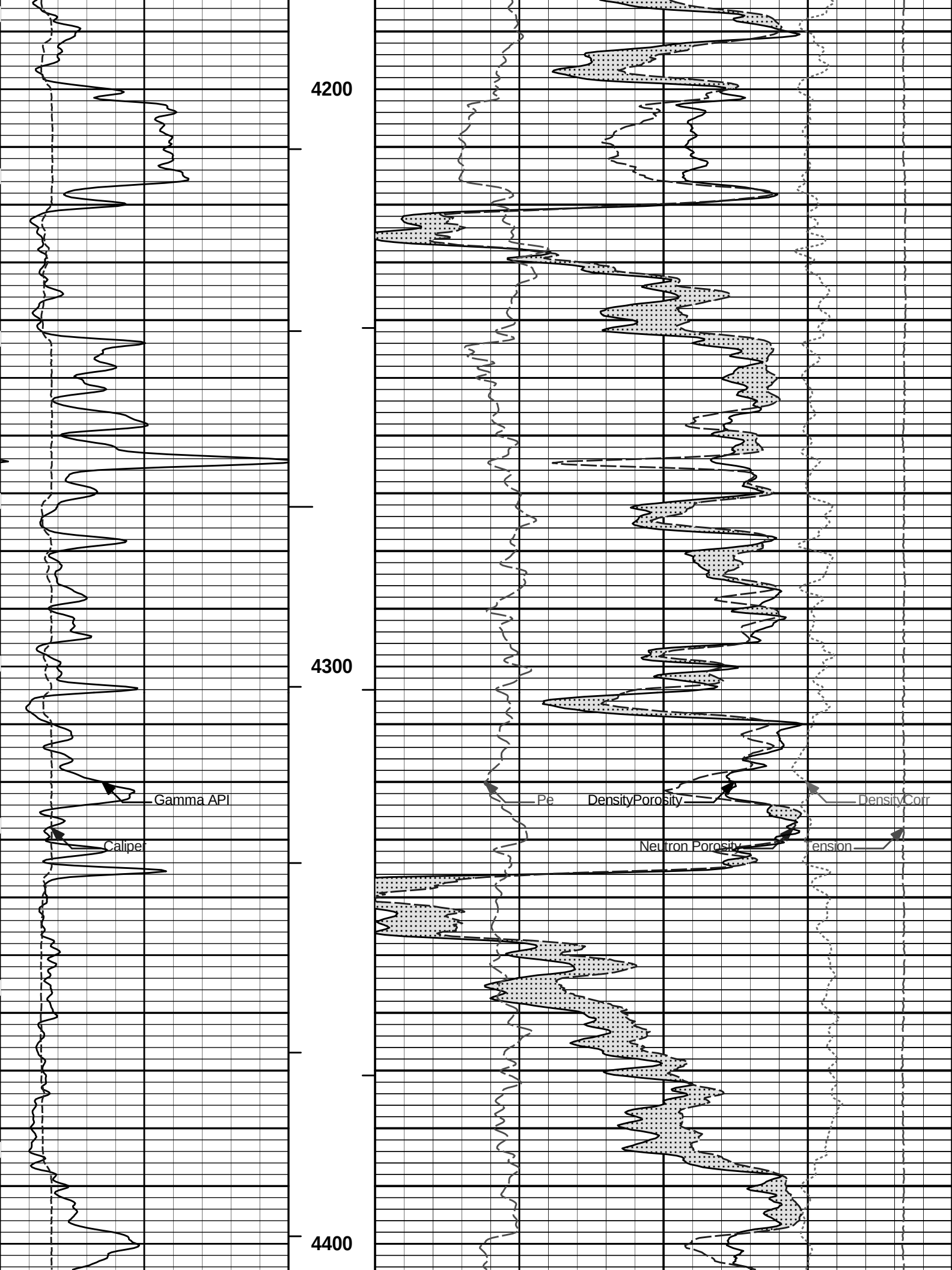
6 Caliper 16
inches

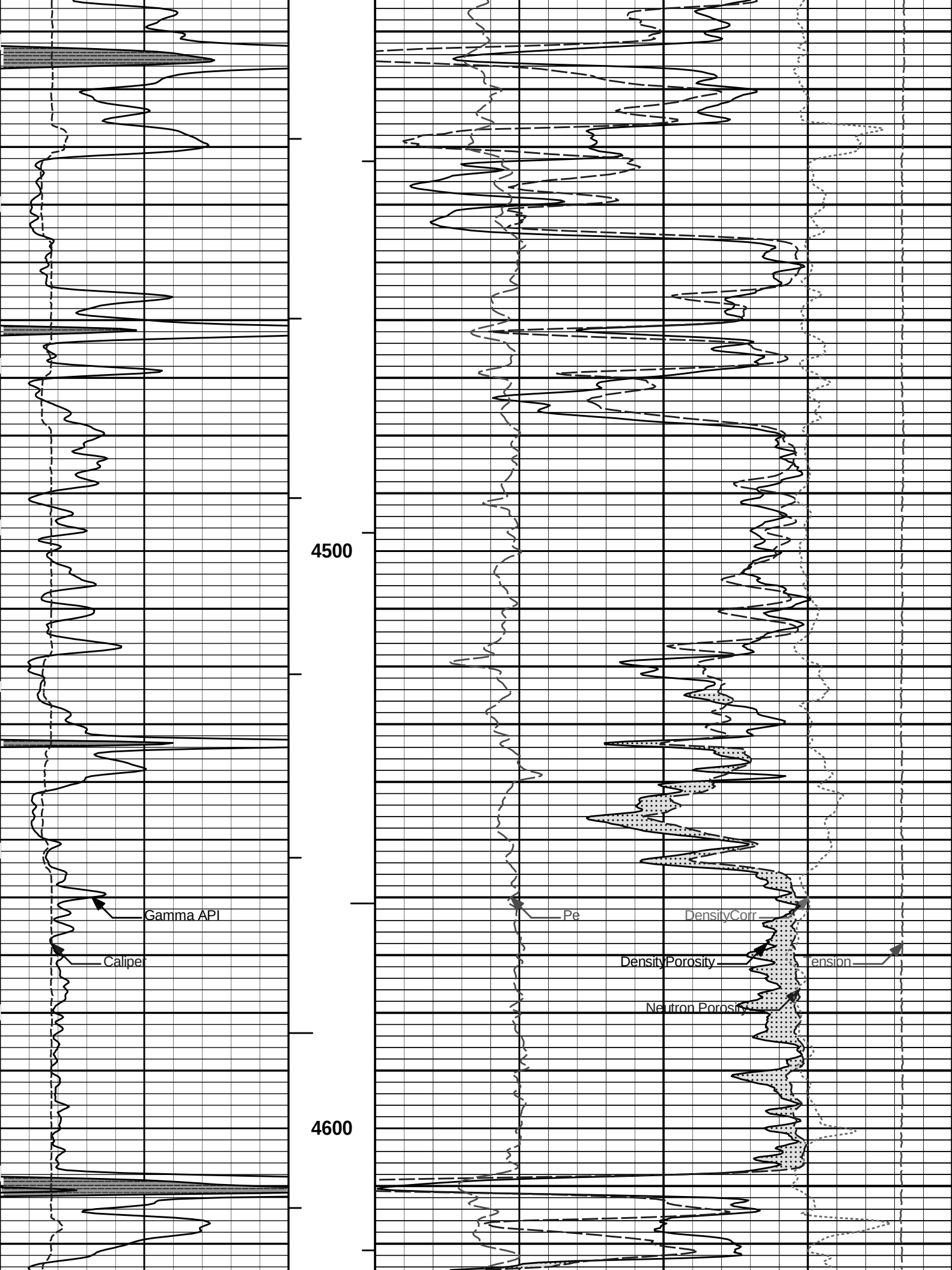
1 : 240
ft

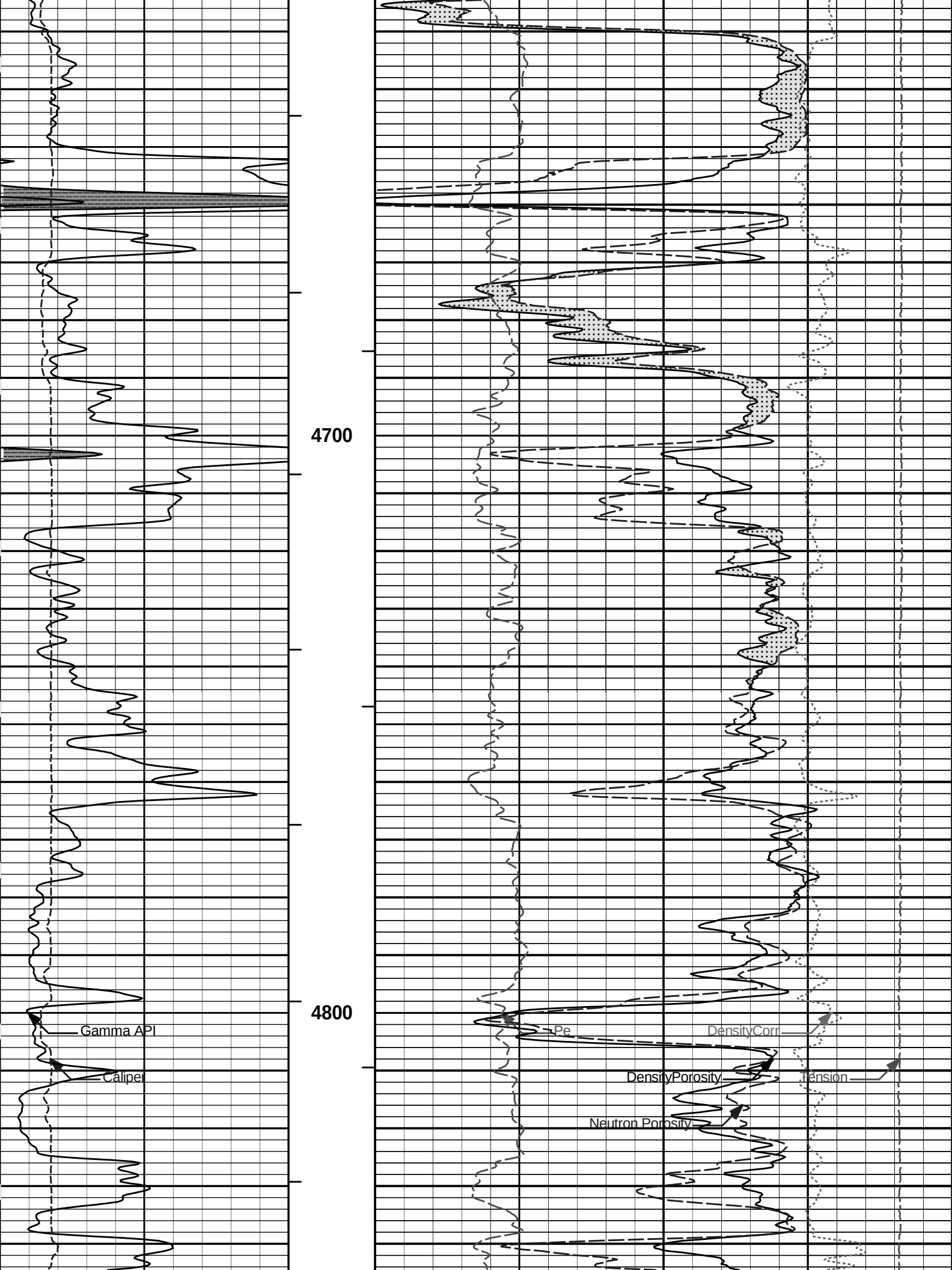
0 Pe 10

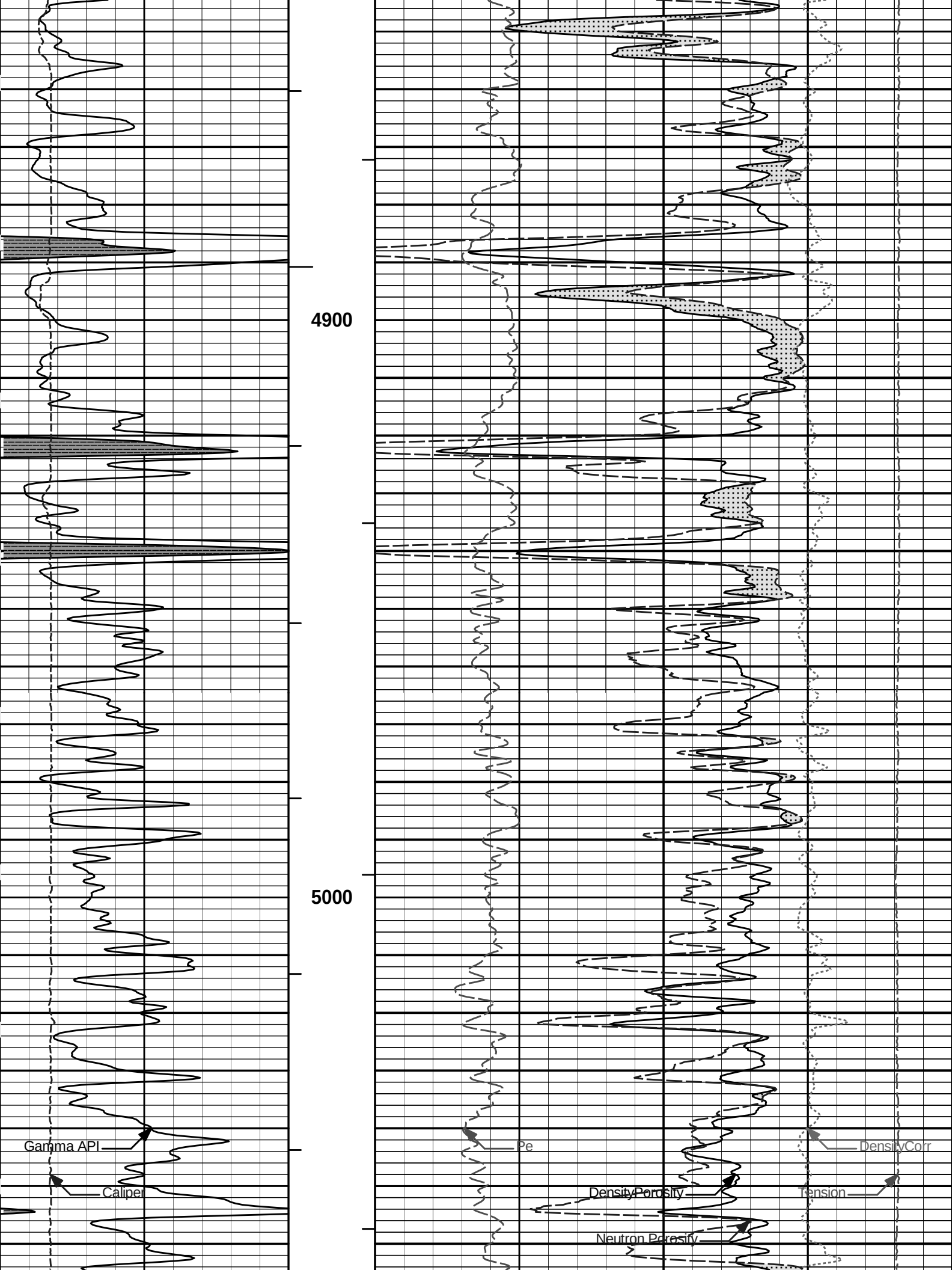
-0.25 DensityCorr 0.25
gram per cc

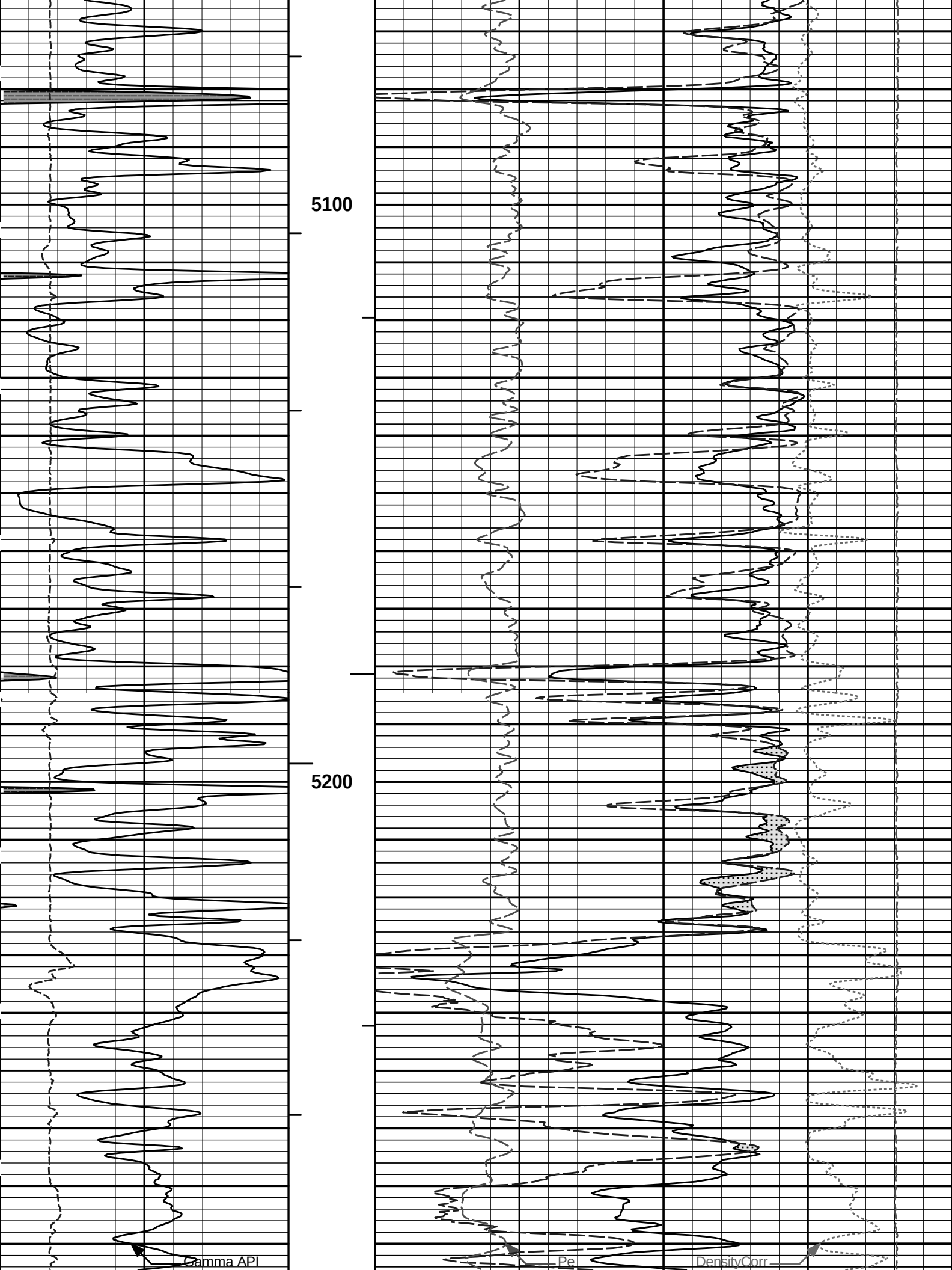
4100

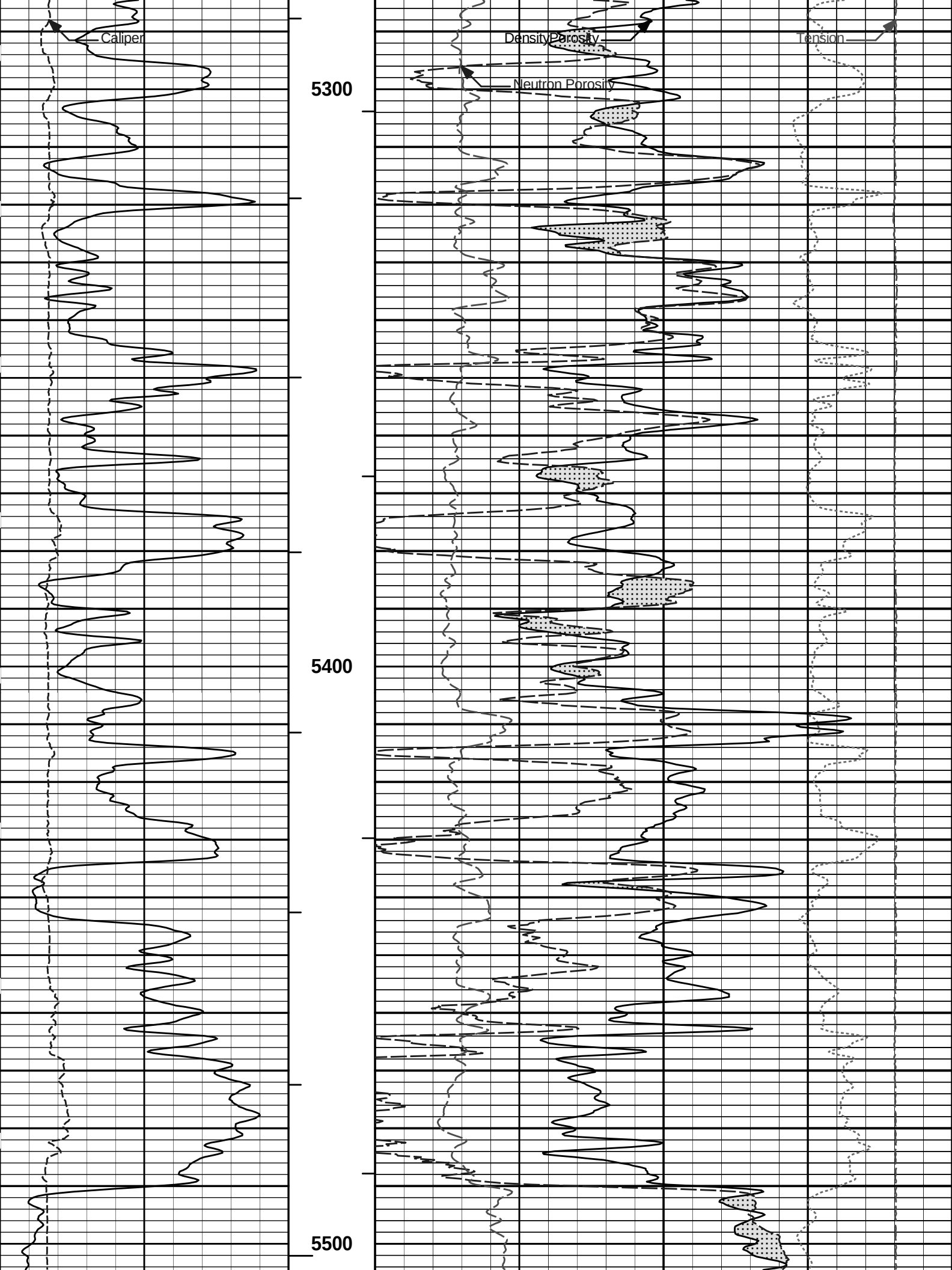

4200
4300
4400
Gamma API
Caliper
Pe
DensityPorosity
DensityCorr
Neutron Porosity
ension

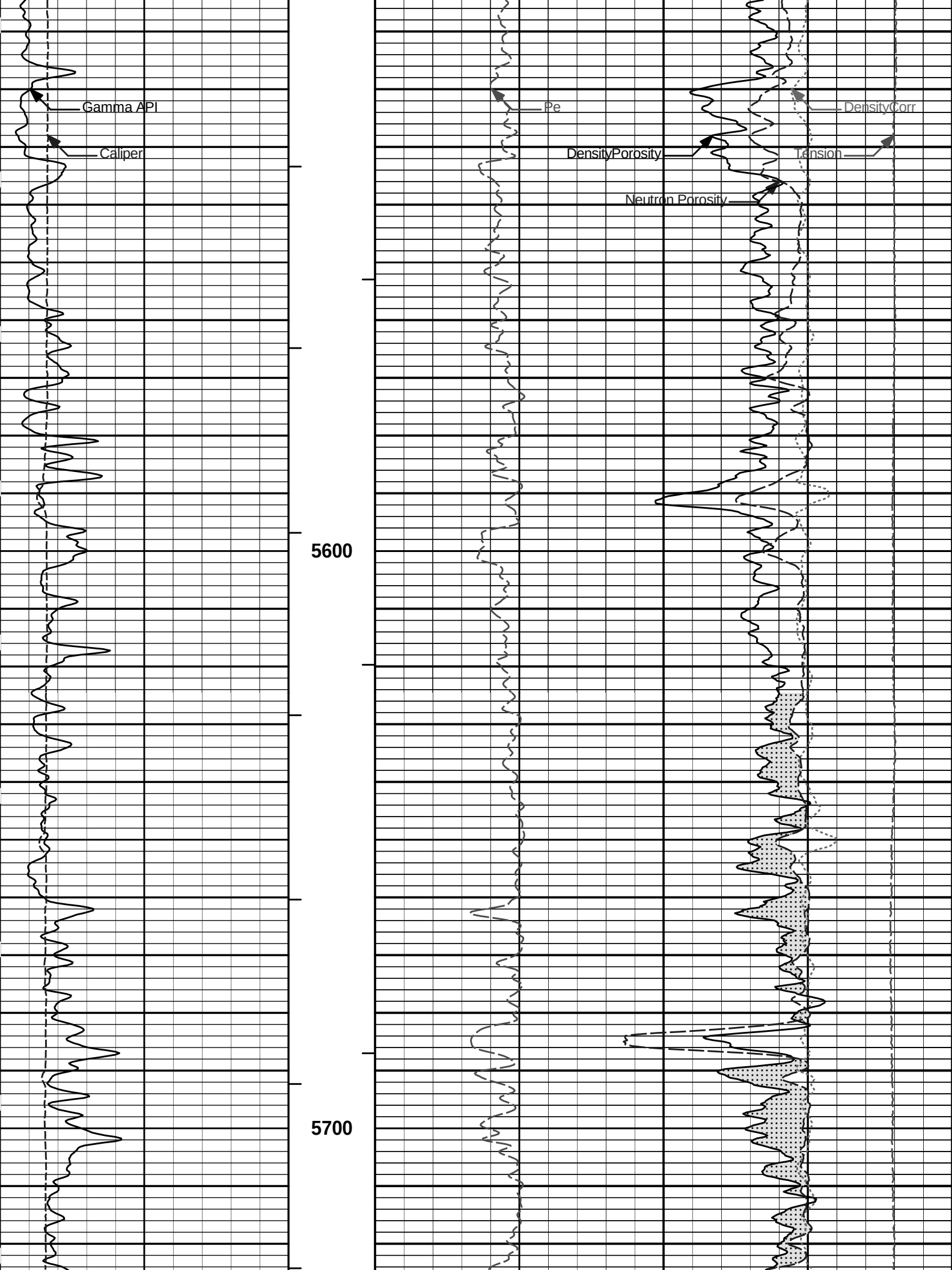

4500
4600
Gamma API
Caliper
Pe
DensityCorr
DensityPorosity
Tension
Neutron Porosity

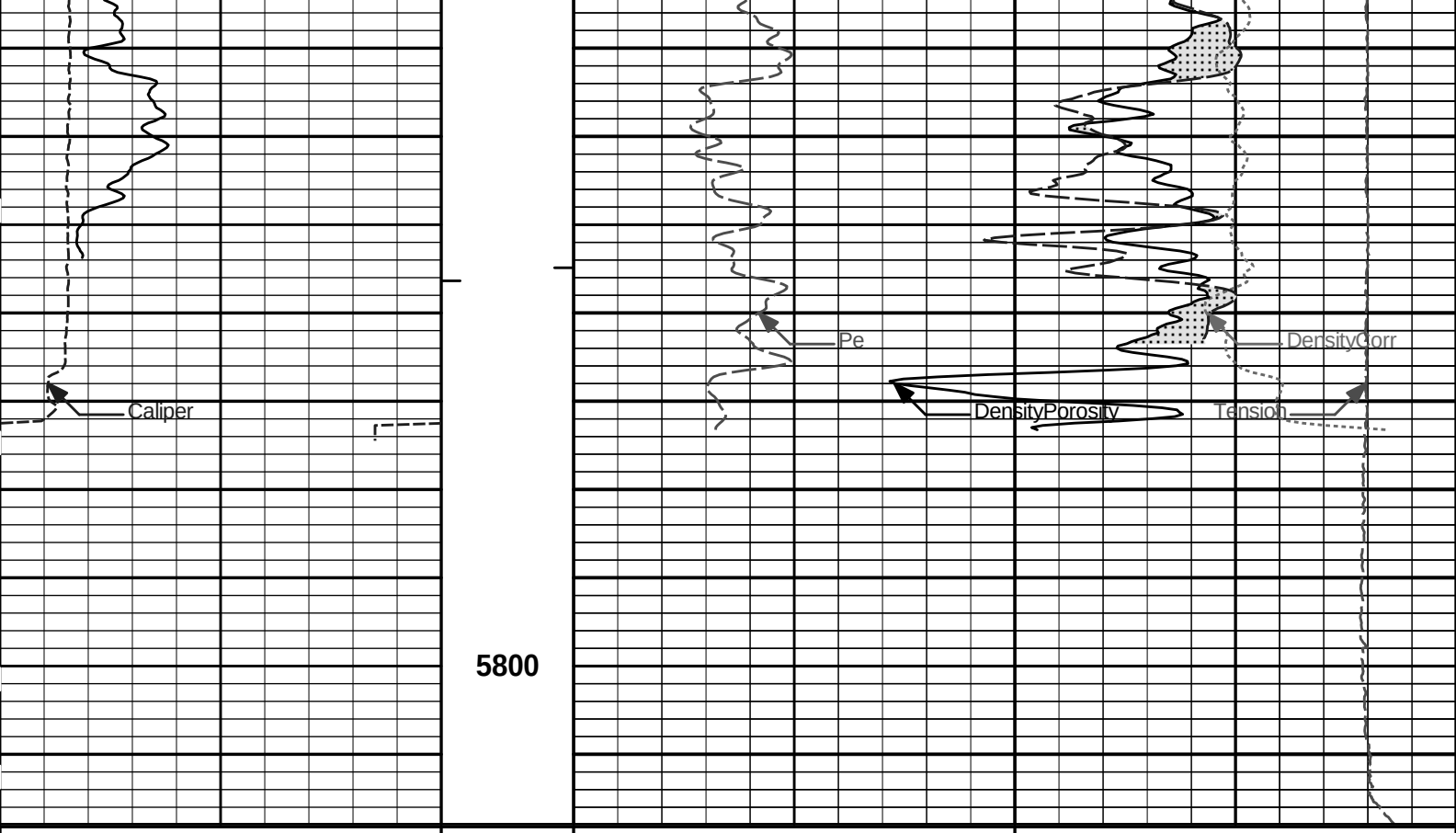

4700
4800
Gamma API
Caliper
Pe
DensityCorr
DensityPorosity
Tension
Neutron Porosity


4900
5000
Gamma API
Caliper
Pe
DensityPorosity
Neutron Peresity
DensityCorr
Tension


5100
5200
Gamma API
Pe
DensityCorr


Caliper
Density Porosity
Tension
Neutron Porosity
5300
5400
5500


Gamma API
Caliper
Pe
DensityCorr
DensityPorosity
Tension
Neutron Porosity
5600
5700



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

HALLIBURTON

Plot Time: 20-Jan-13 14:14:01
Plot Range: 4095 ft to 5817.92 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_REPEAT
Plot File: \\POROSITY\Poro_IQ_5_REP_LIB

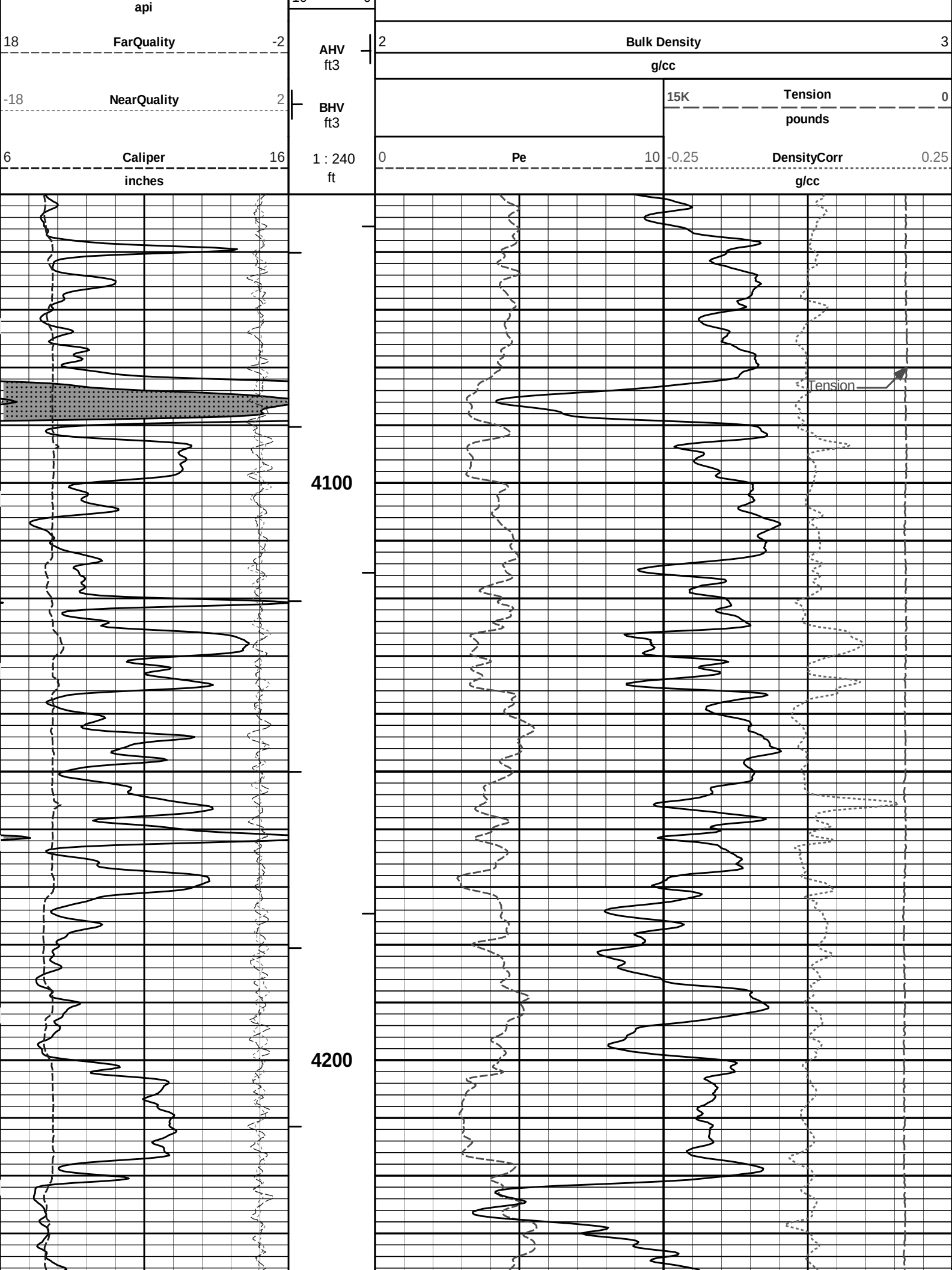
REPEAT SECTION

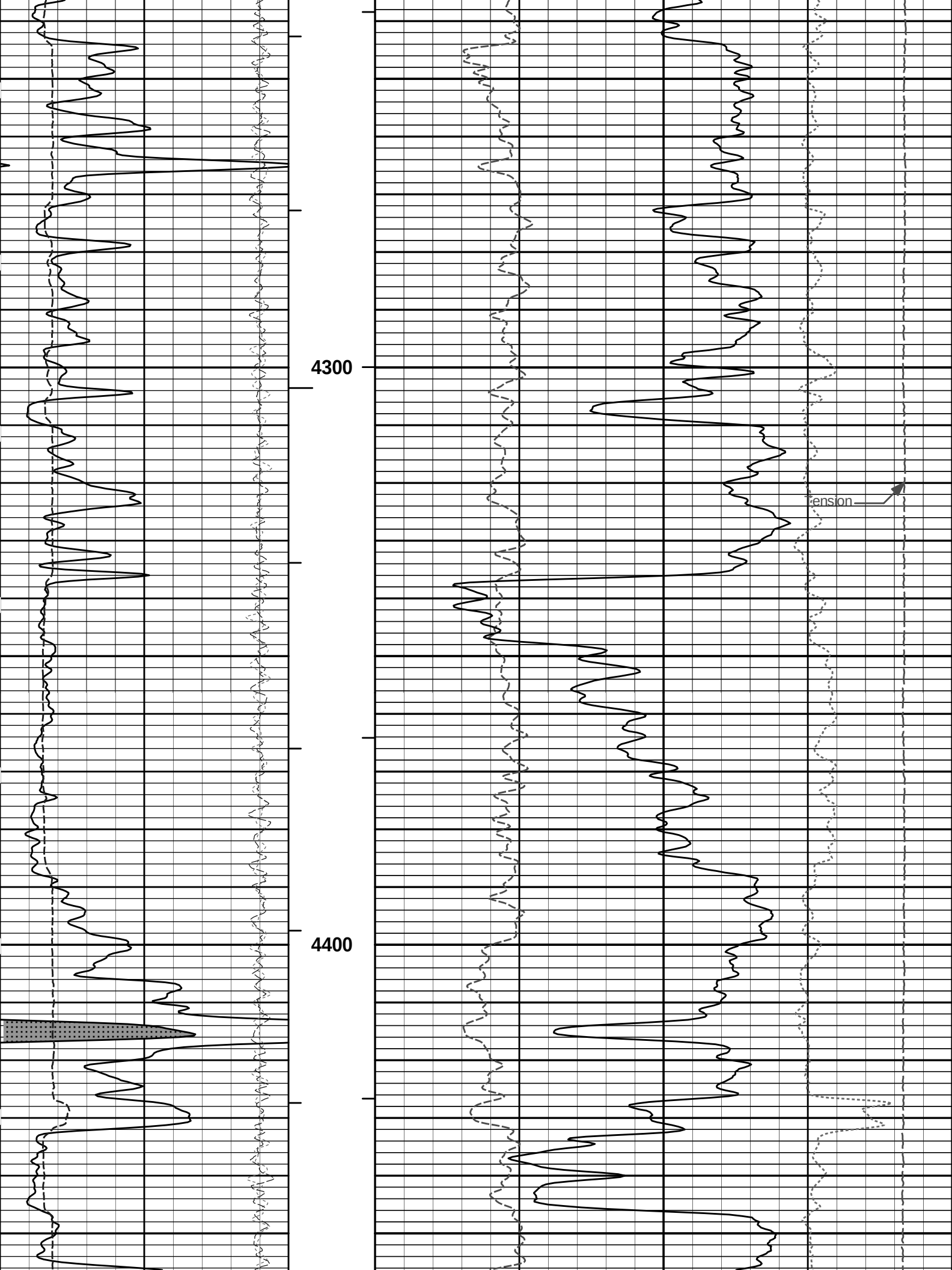
HALLIBURTON

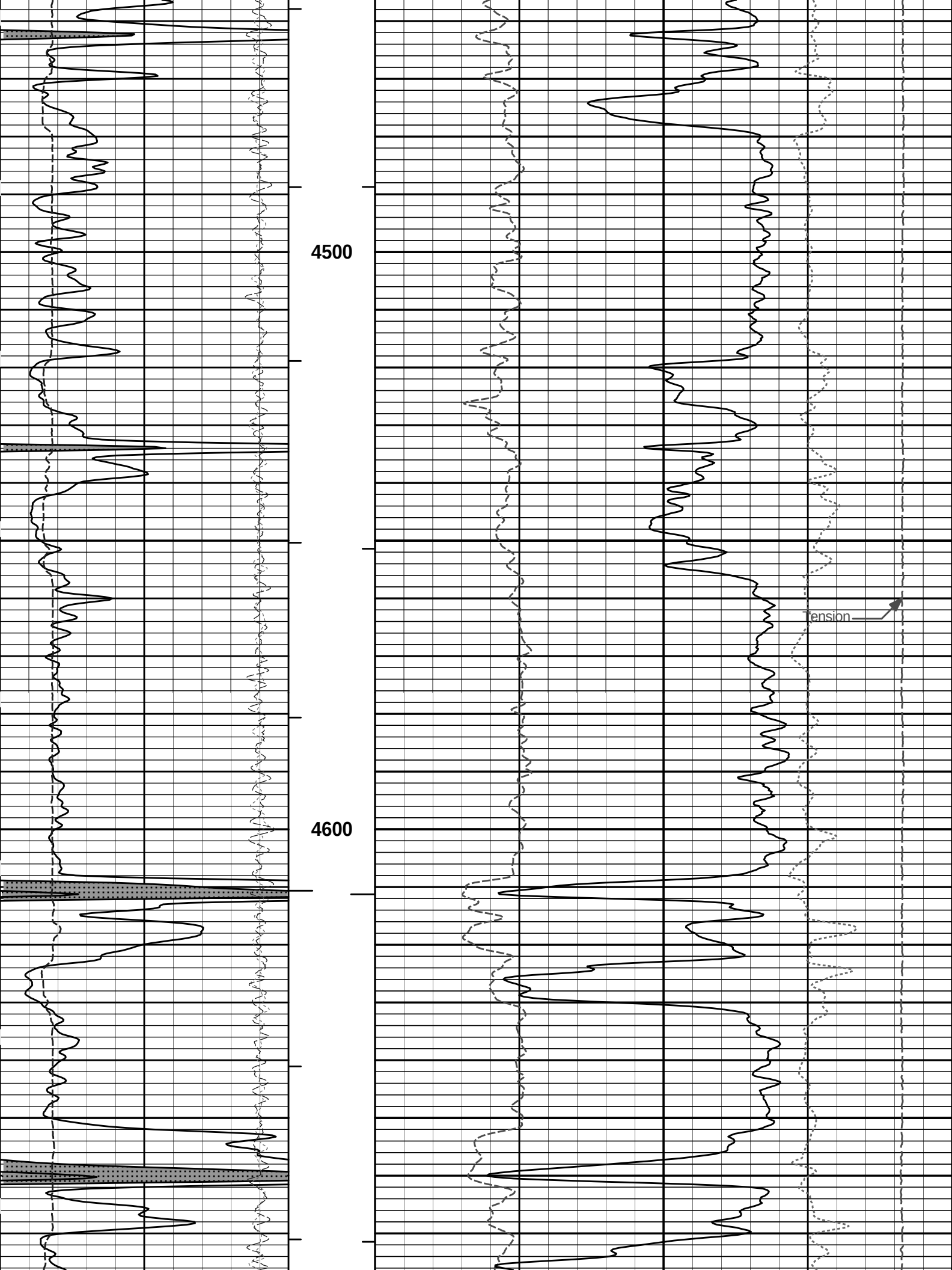
Plot Time: 20-Jan-13 14:14:01
Plot Range: 4050 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\BULKD_5_MAIN_LIB

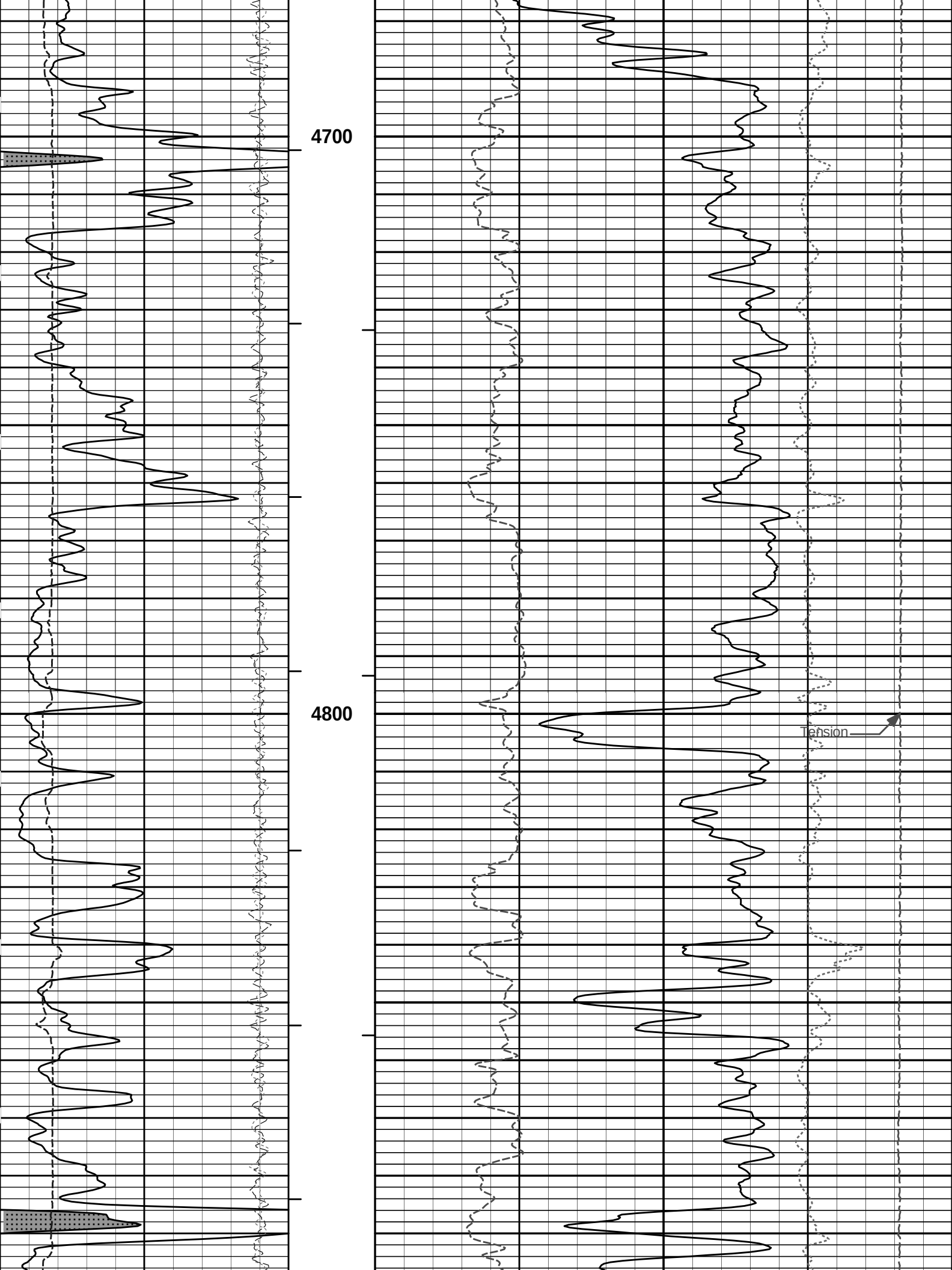
5 INCH MAIN LOG

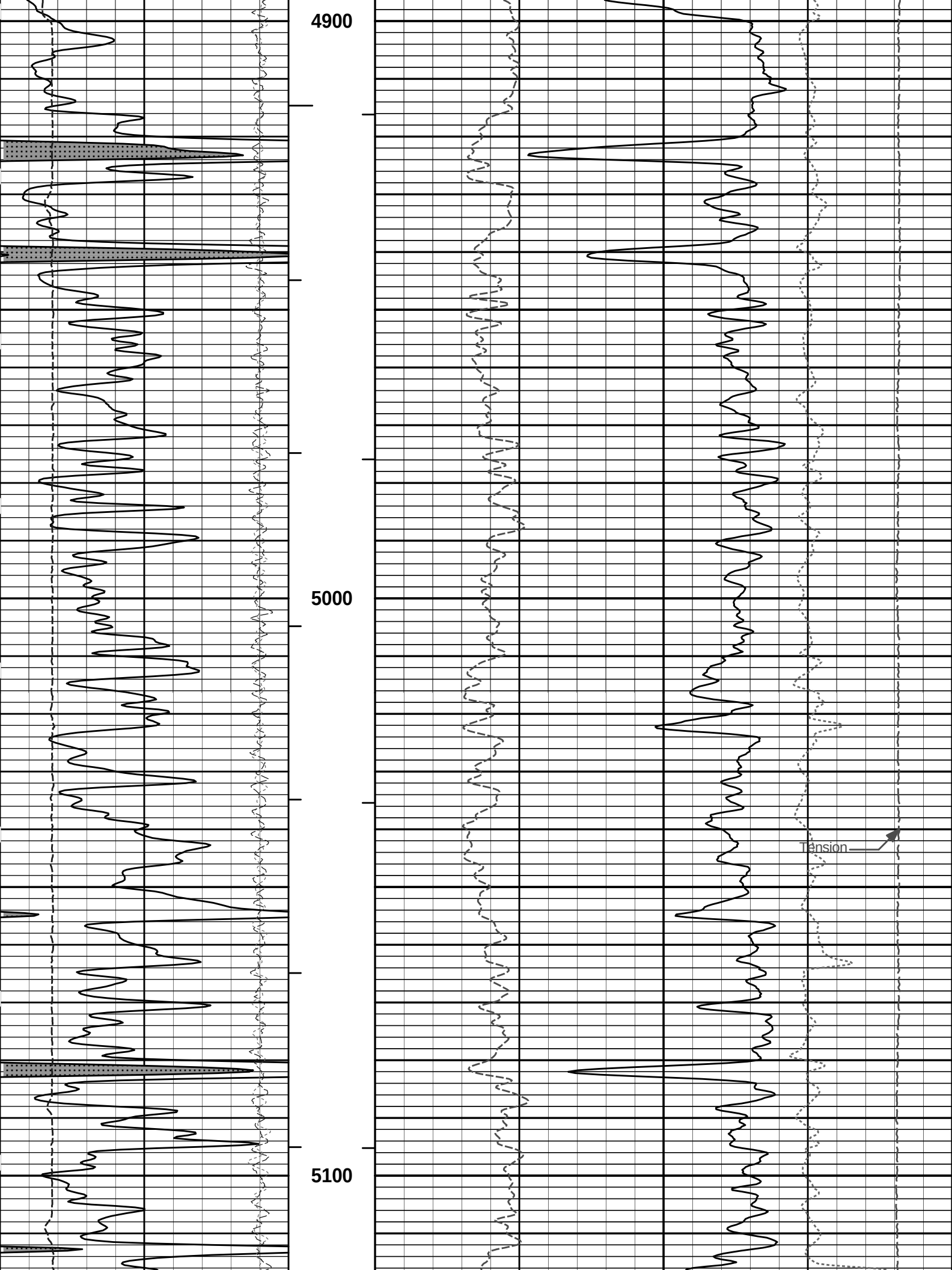
SHALE	Tension Pull
0 Gamma Ray 150	Tension Pull 10 0

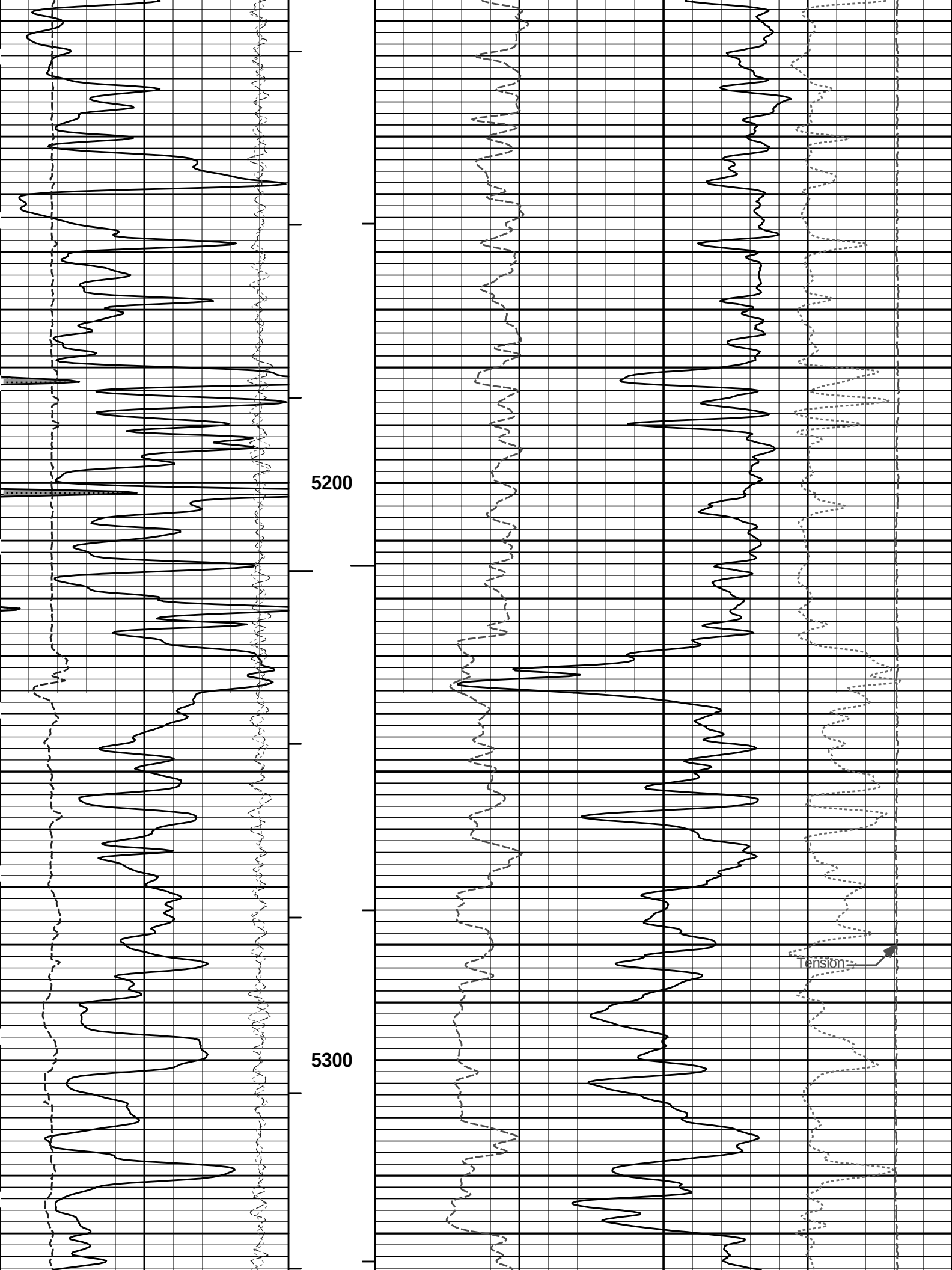

api
18
FarQuality
-2
-18
NearQuality
2
6
Caliper
16
inches
AHV
ft3
BHV
ft3
1 : 240
ft
2
Bulk Density
3
g/cc
15K
Tension
0
pounds
0
Pe
10
-0.25
DensityCorr
0.25
g/cc
Tension
4100
4200

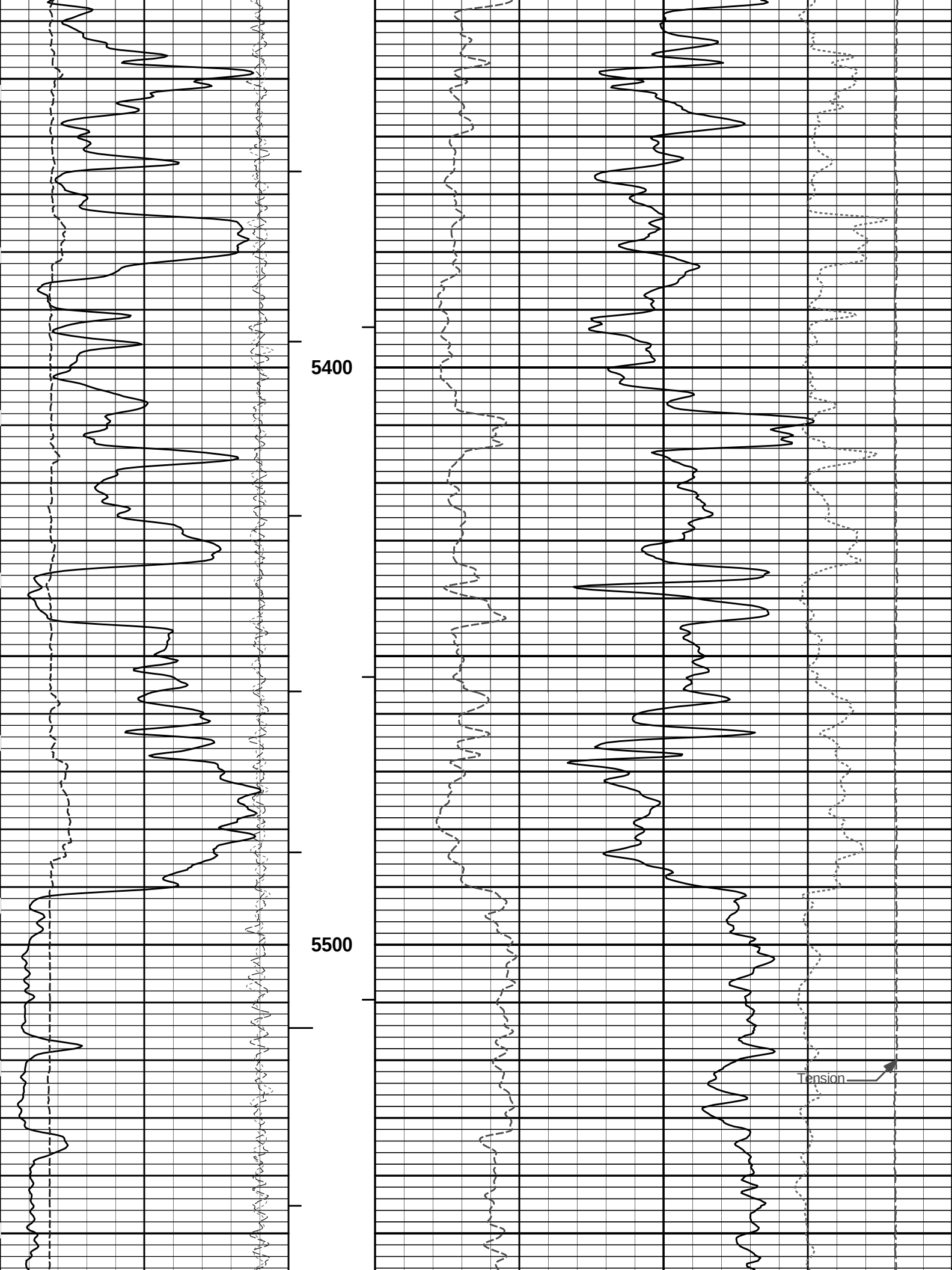

4300
4400
ension

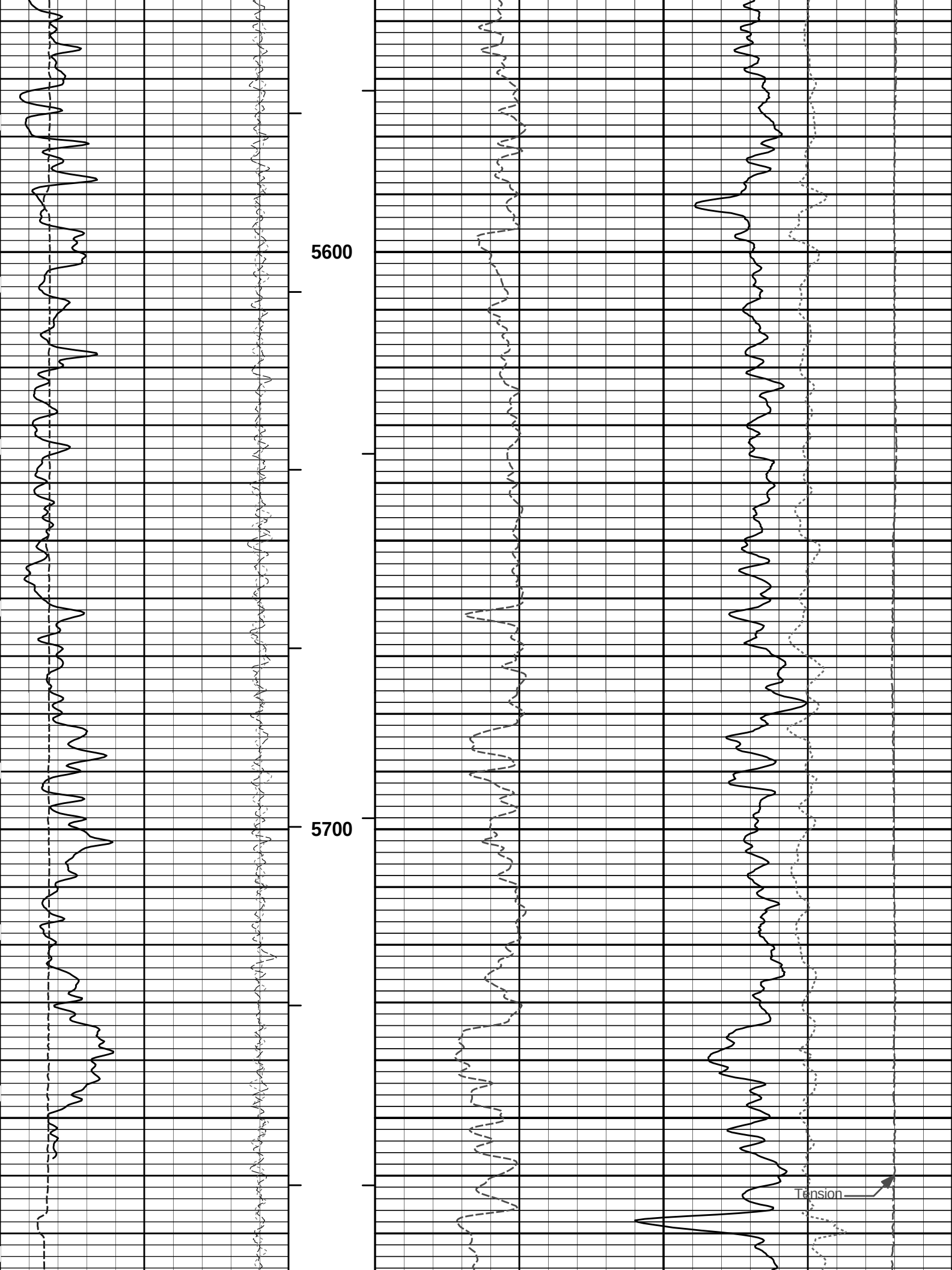

4500
4600
Tension

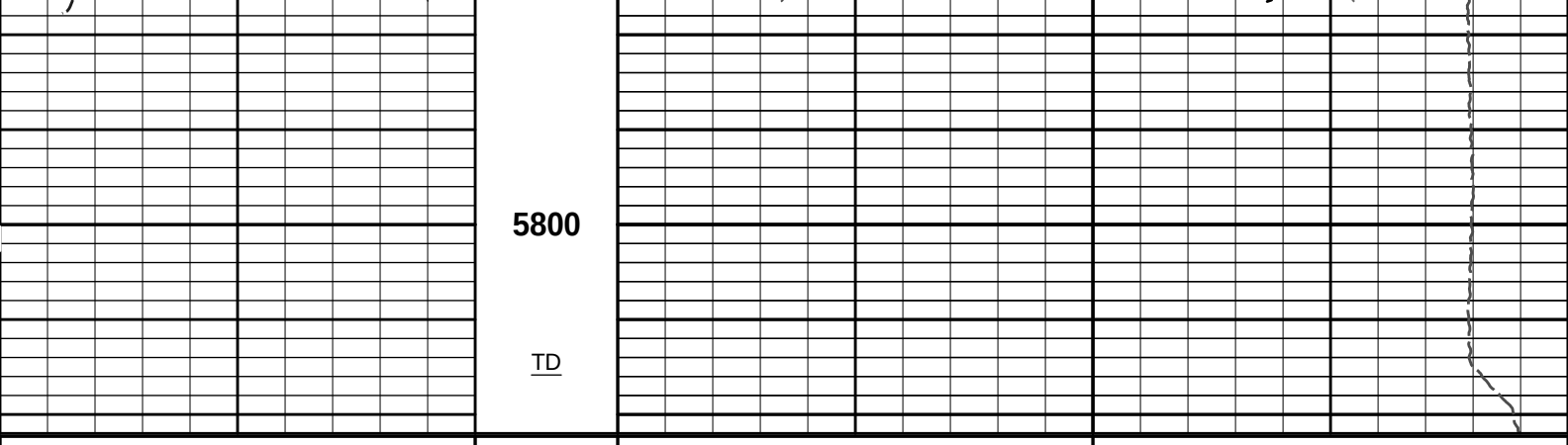

4700
4800
Tension

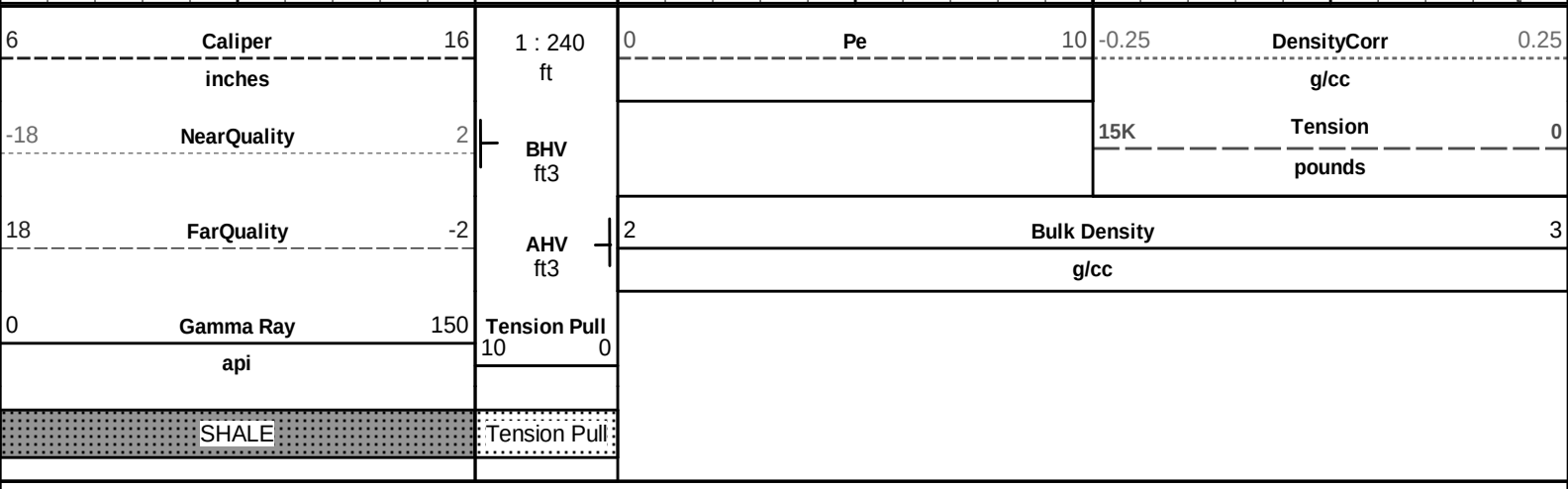

4900
5000
5100
Tension


5200
5300
Tension


5400
5500
Tension


5600
5700
Tension





HALLIBURTON

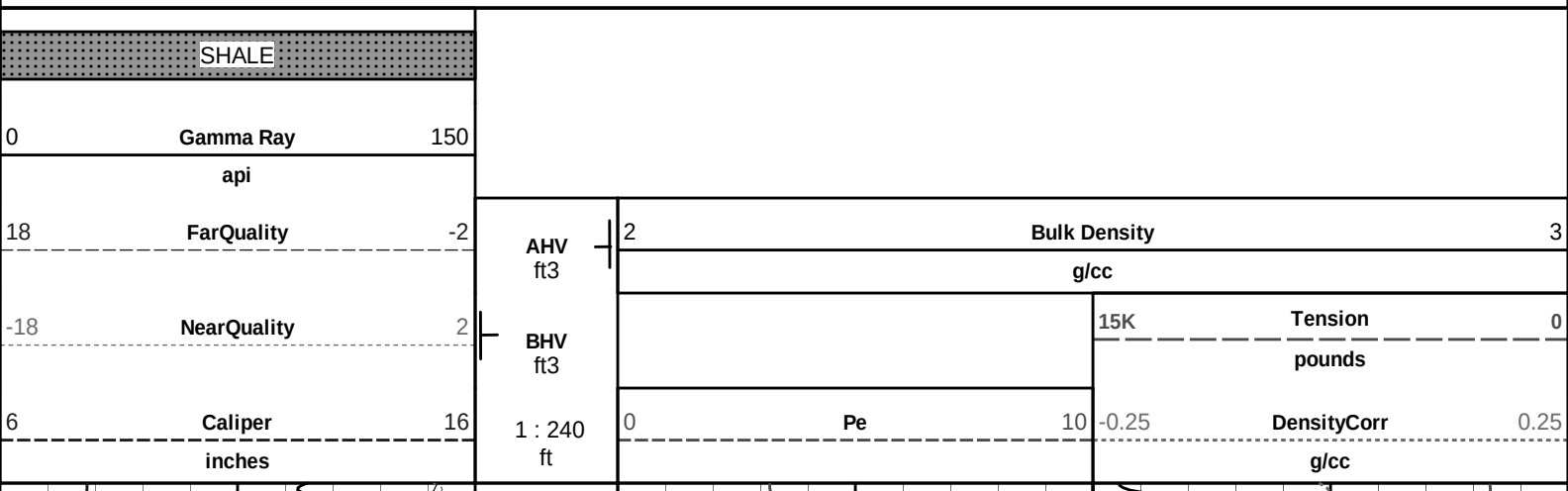
Plot Time: 20-Jan-13 14:14:04
Plot Range: 4050 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\BULKD_5_MAIN_LIB

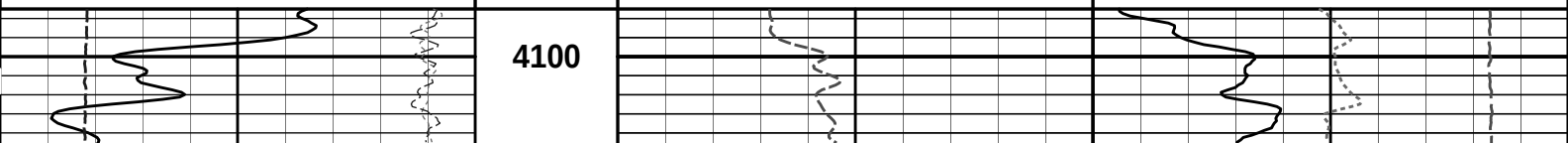
5 INCH MAIN LOG

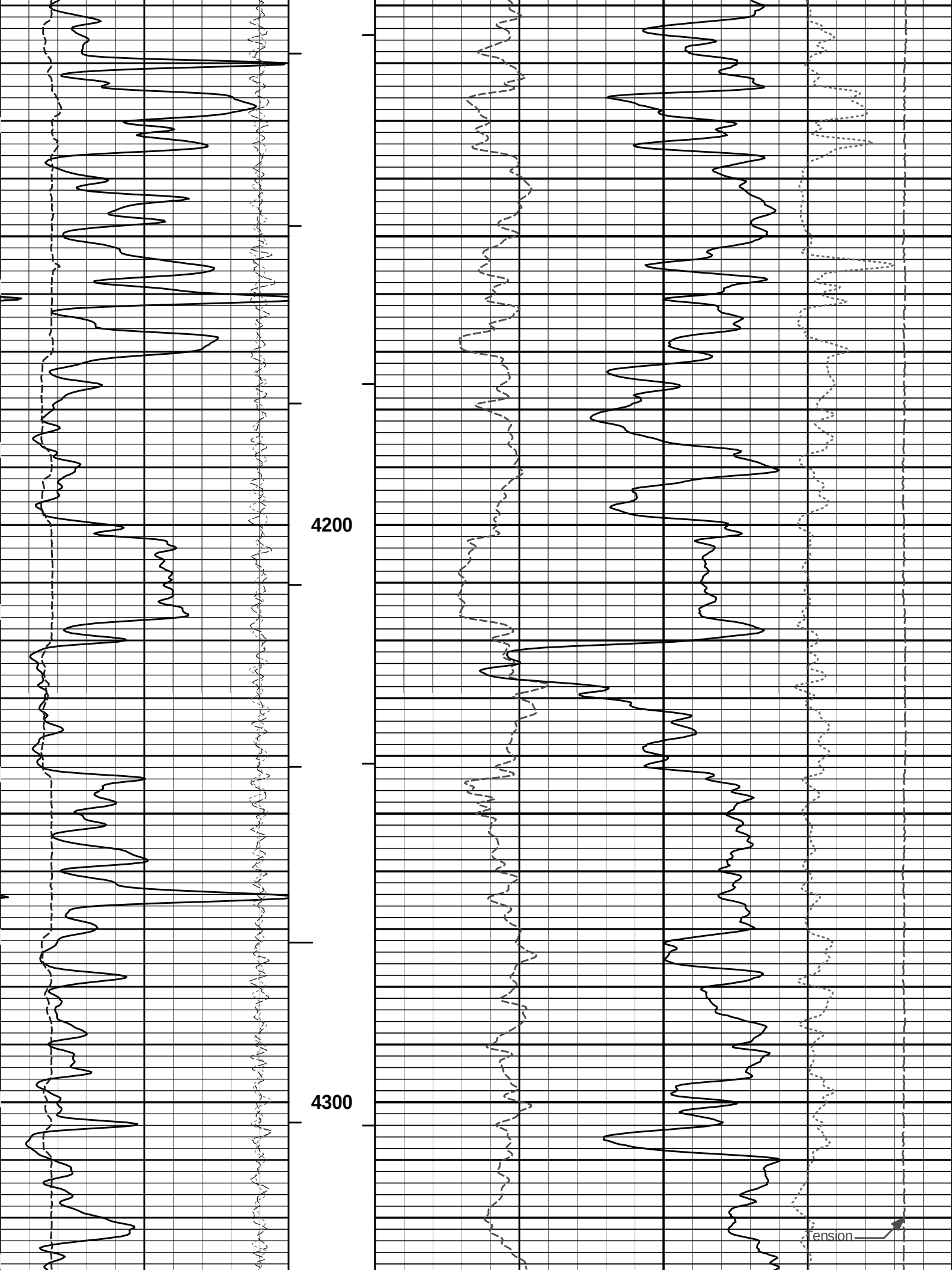
HALLIBURTON

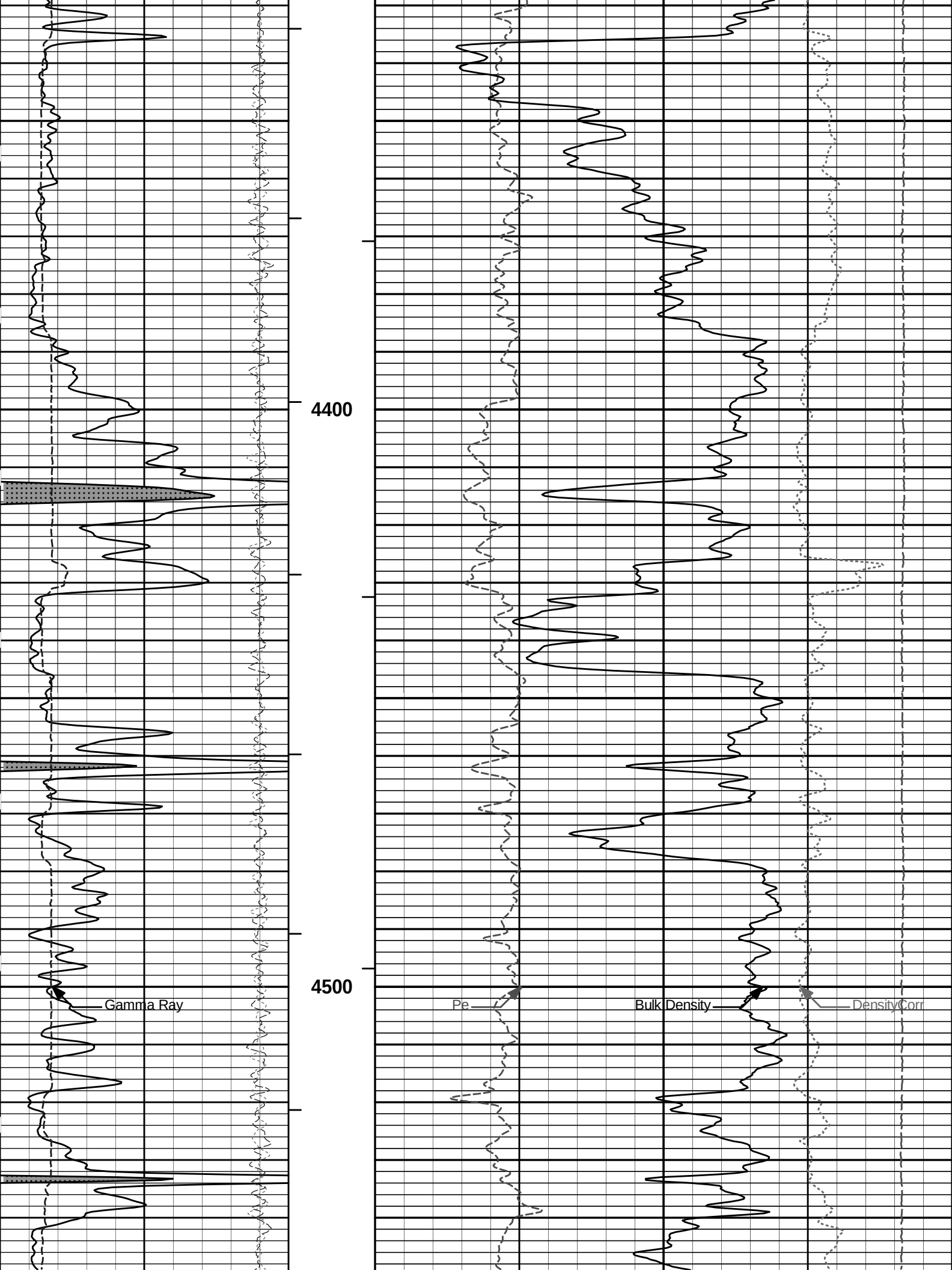
Plot Time: 20-Jan-13 14:14:04
Plot Range: 4095 ft to 5817.92 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_REPEAT
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\BULKD_5_REP_LIB

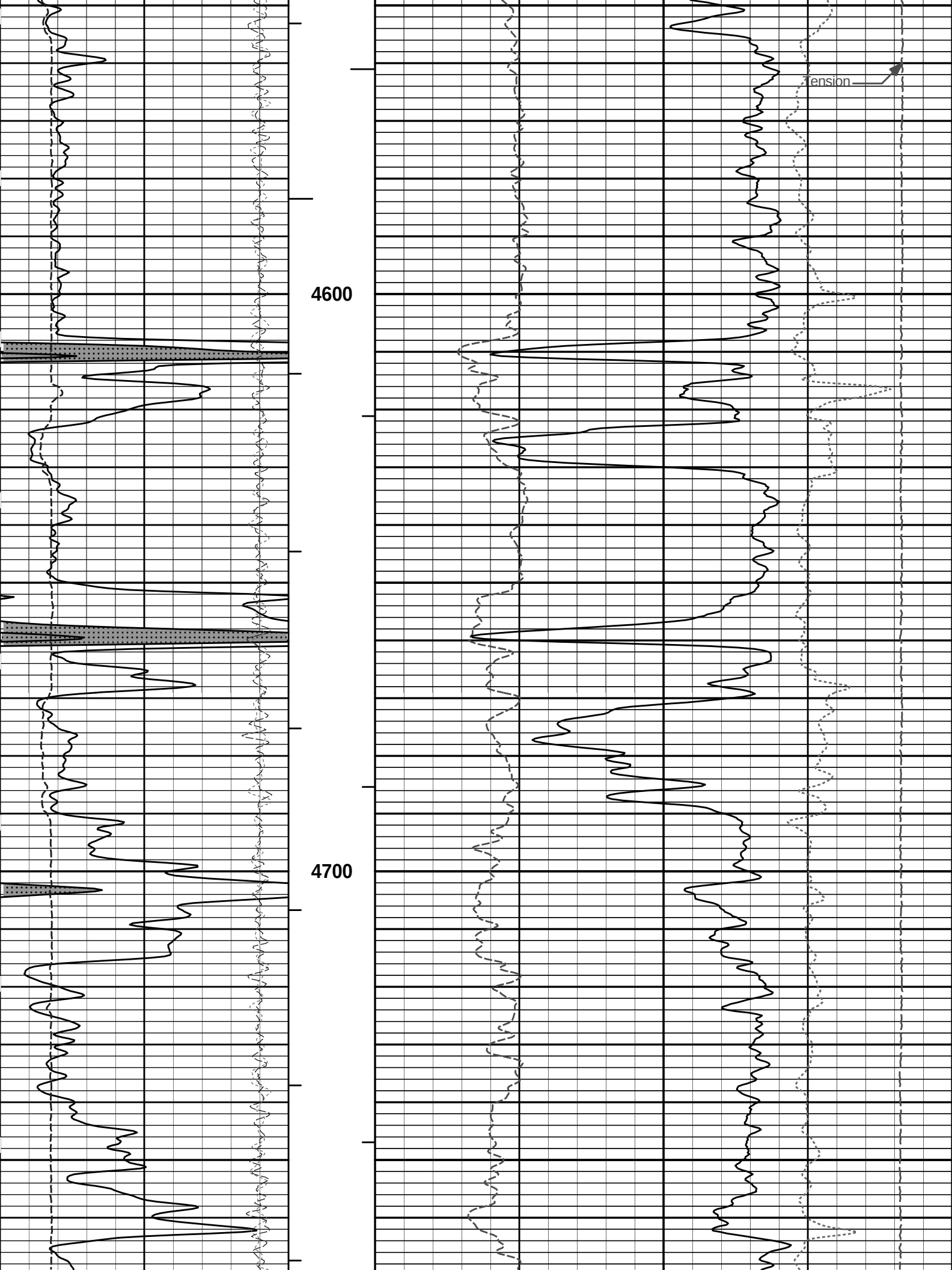
REPEAT SECTION

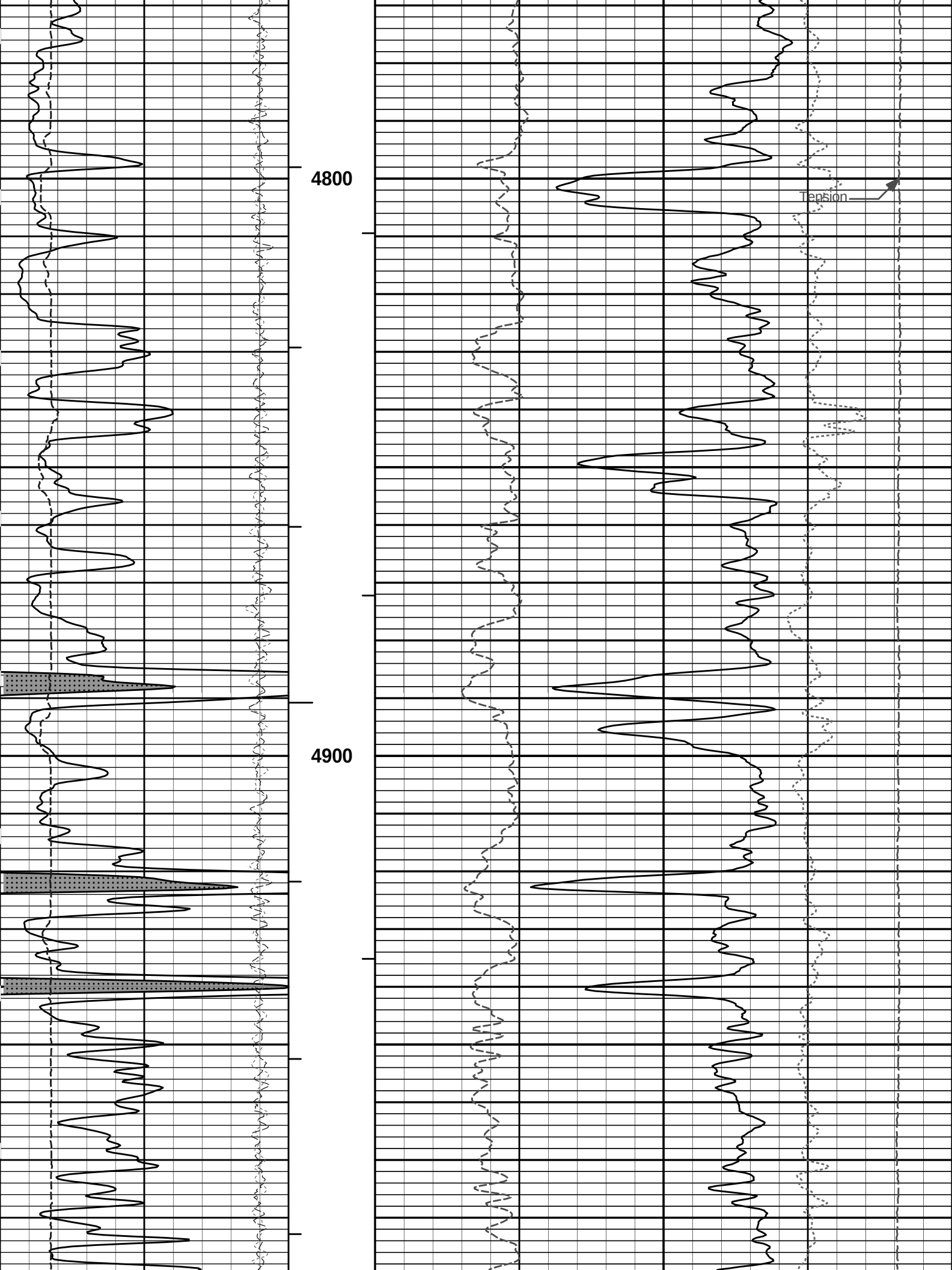


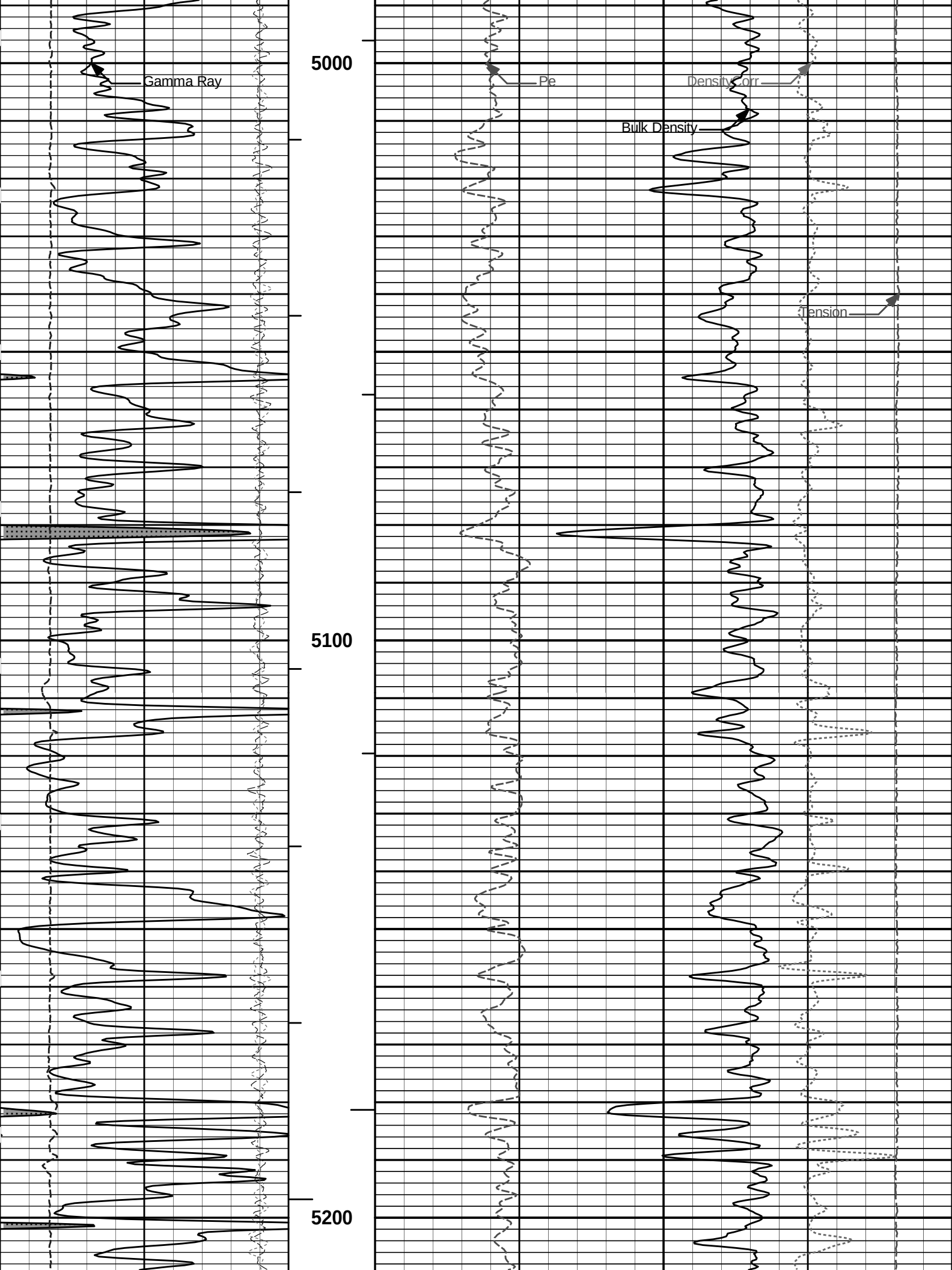


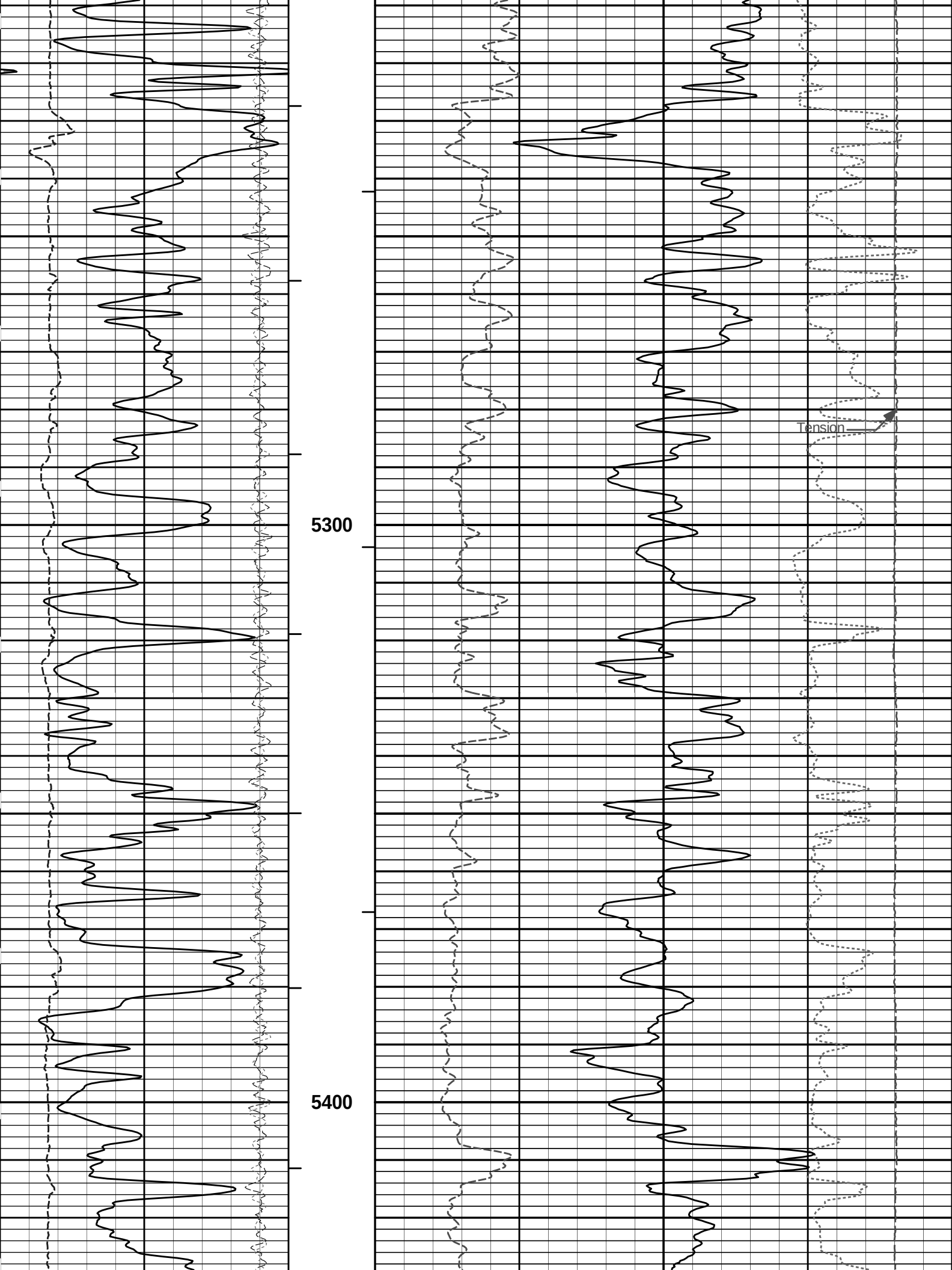

4200
4300
ension

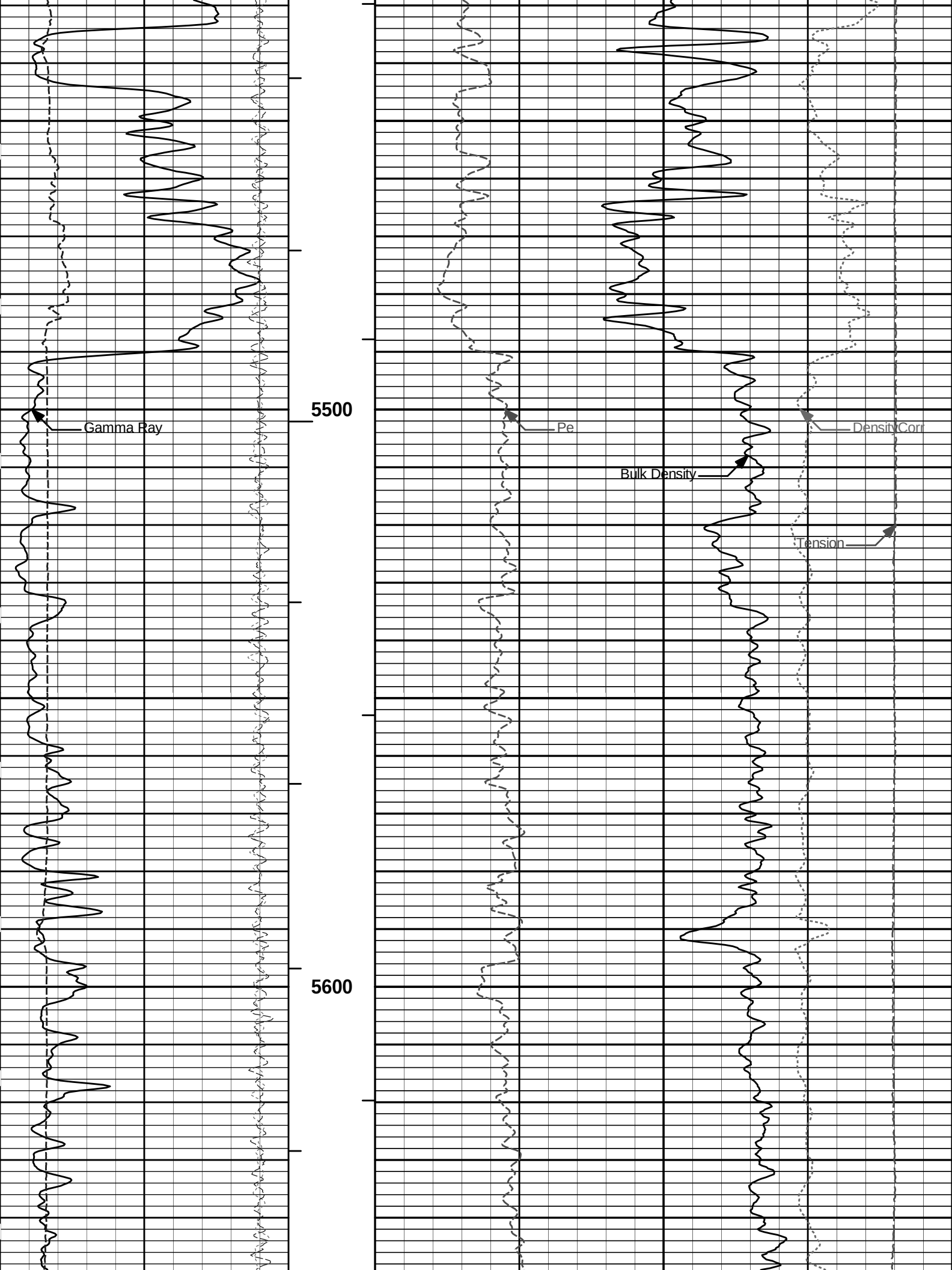

4400
4500
Gamma Ray
Pe
Bulk Density
DensityCorr

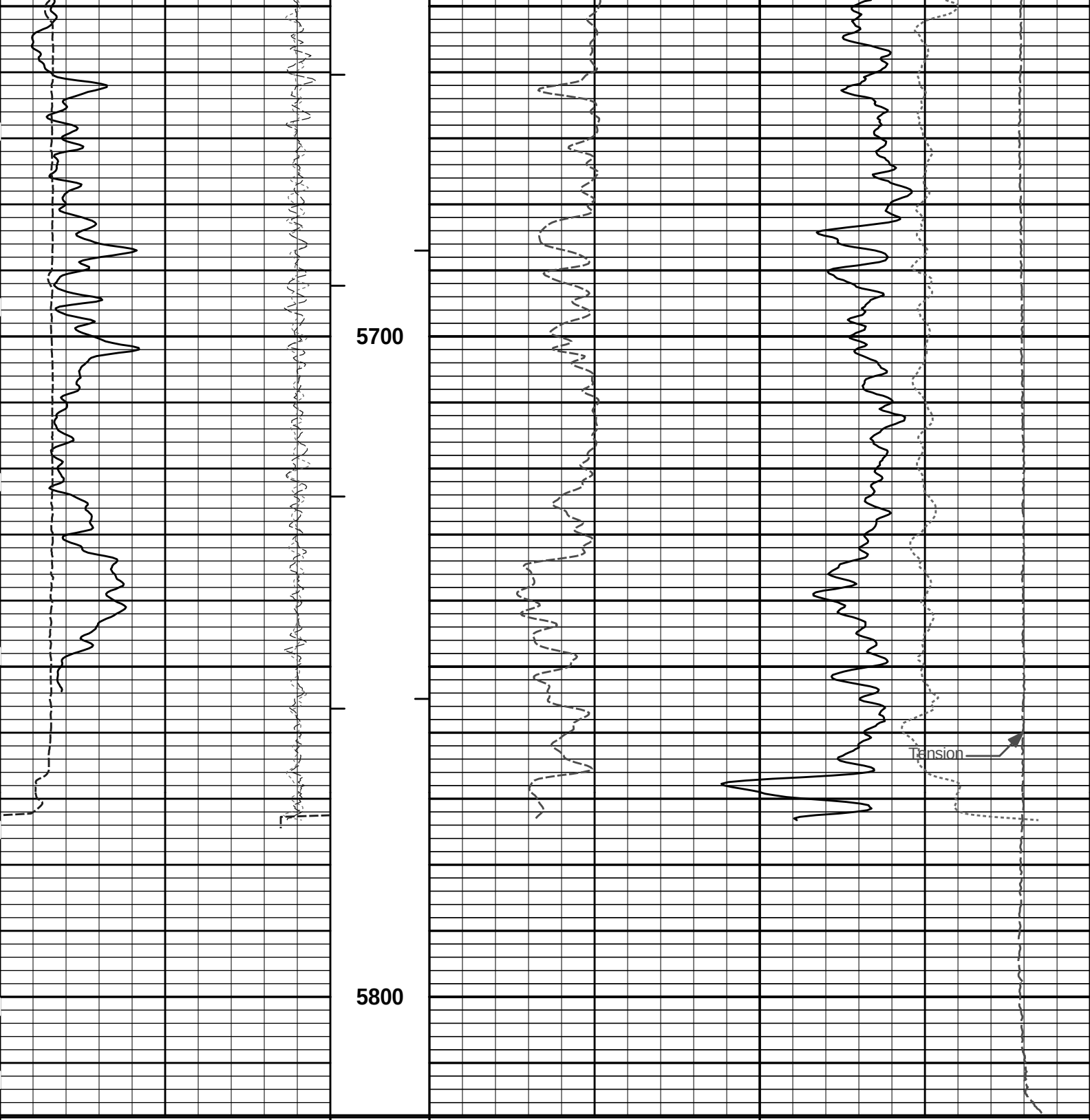

Tension
4600
4700


4800
4900
Tension


Gamma Ray
5000
Pe
Density Corr
Bulk Density
Tension
5100
5200


5300
5400
Tension


5500
5600
Gamma Ray
Pe
DensityCorr
Bulk Density
Tension



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

HALLIBURTON

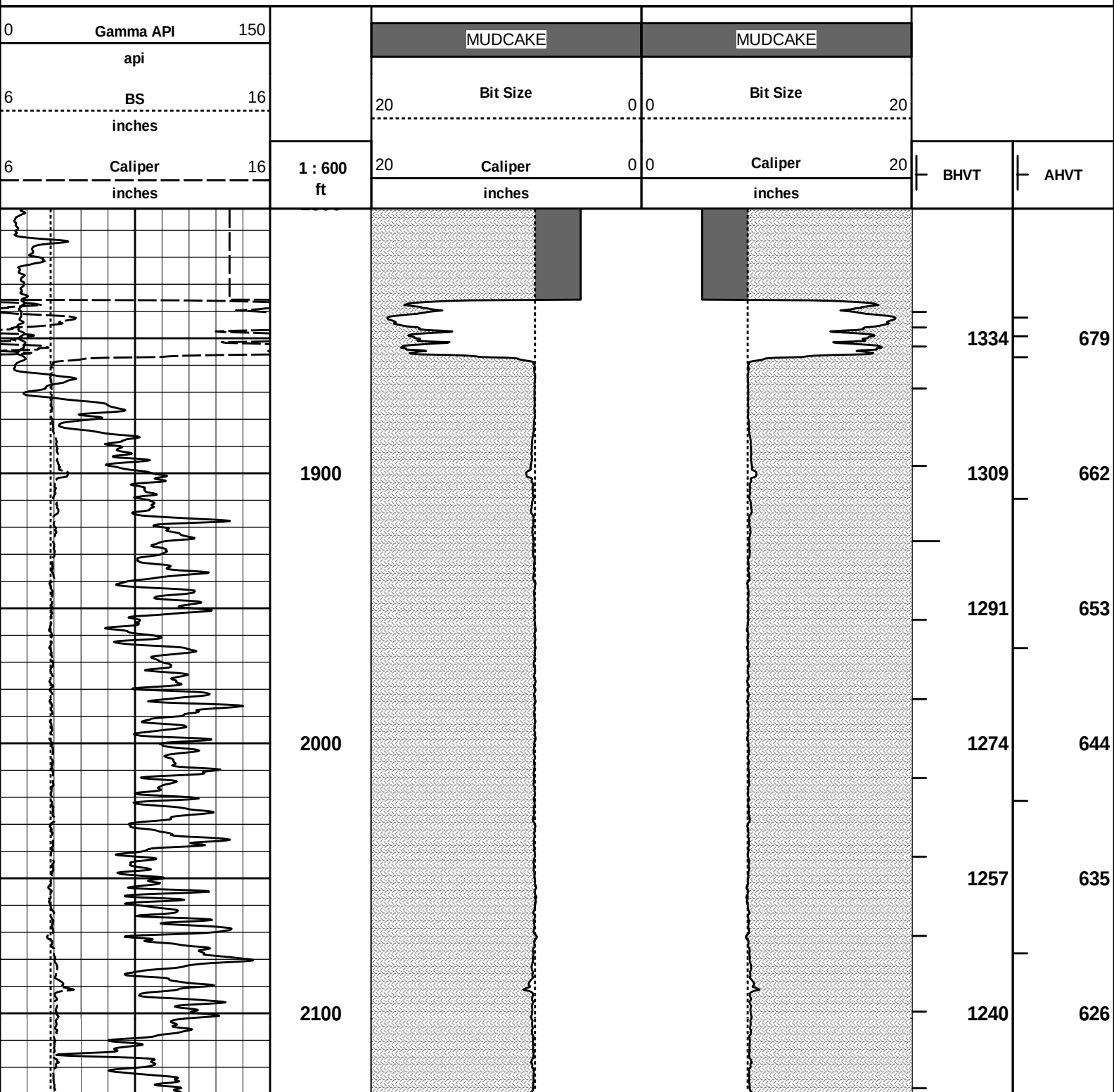
Plot Time: 20-Jan-13 14:14:06
Plot Range: 4095 ft to 5817.92 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_REPEAT\
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\BULKD_5_REP_LIB

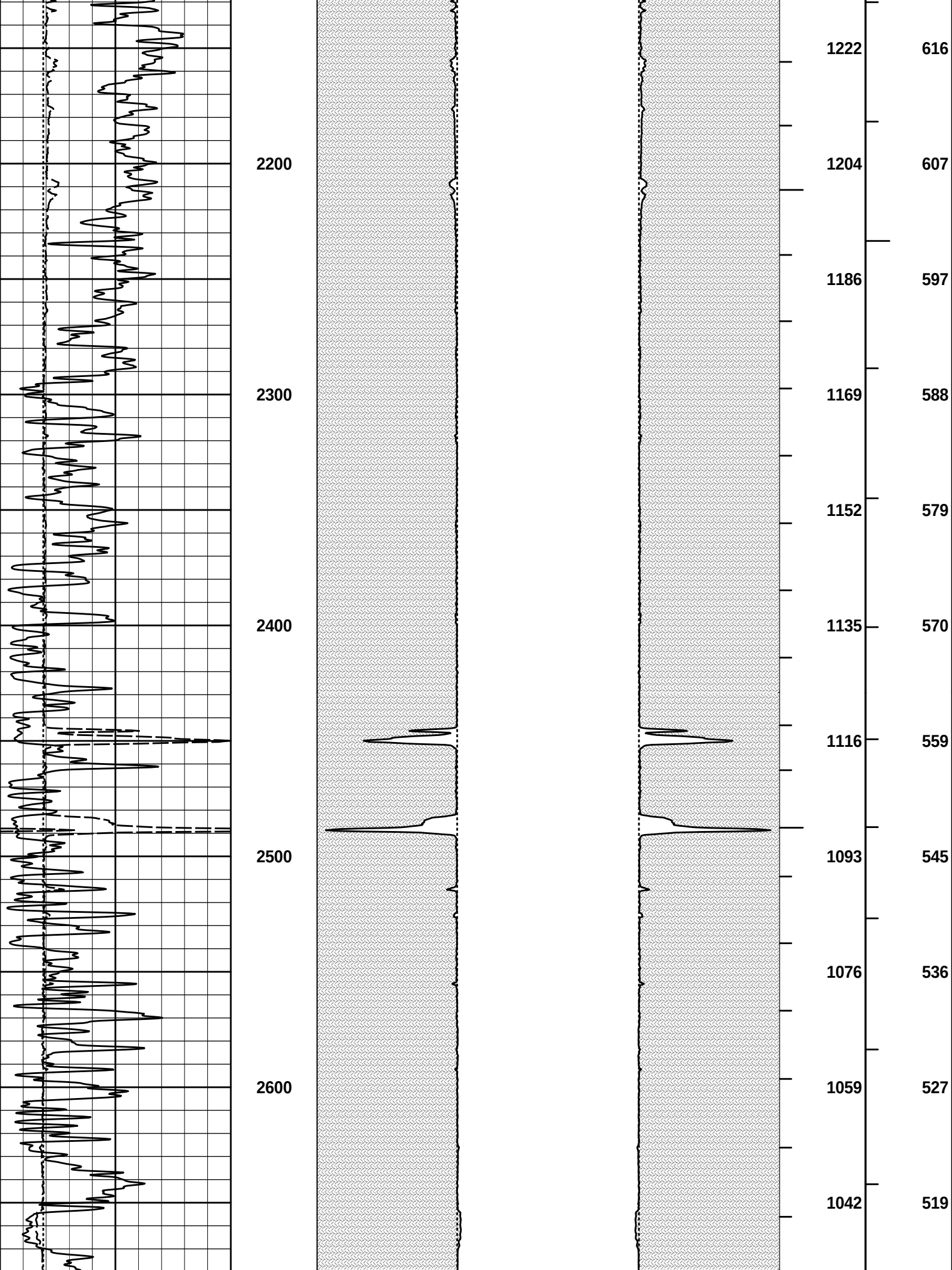
REPEAT SECTION

HALLIBURTON

Plot Time: 20-Jan-13 14:14:06
Plot Range: 1802 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS\
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\AHV_5_5_INCH_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT (5.5 INCH)

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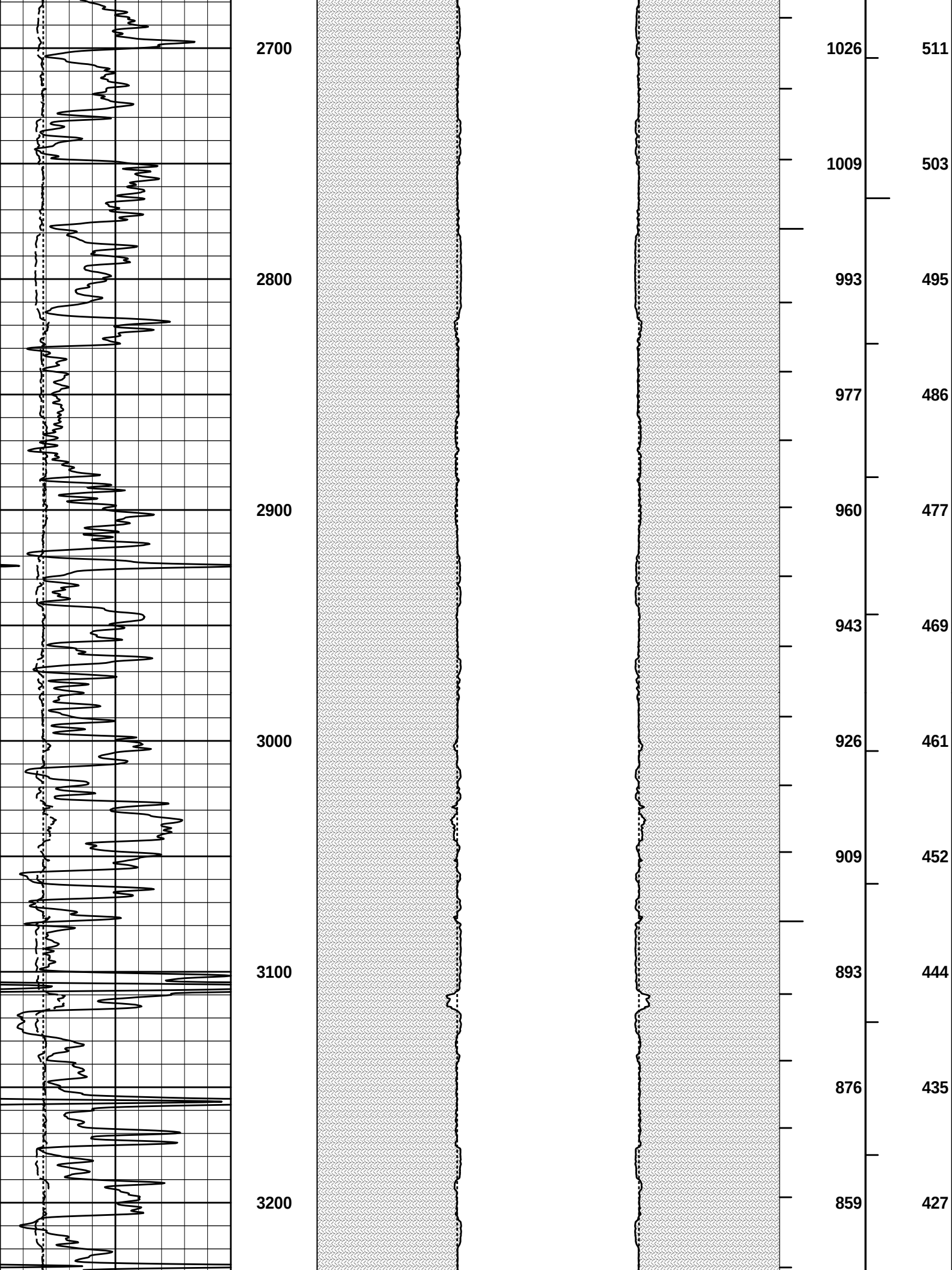
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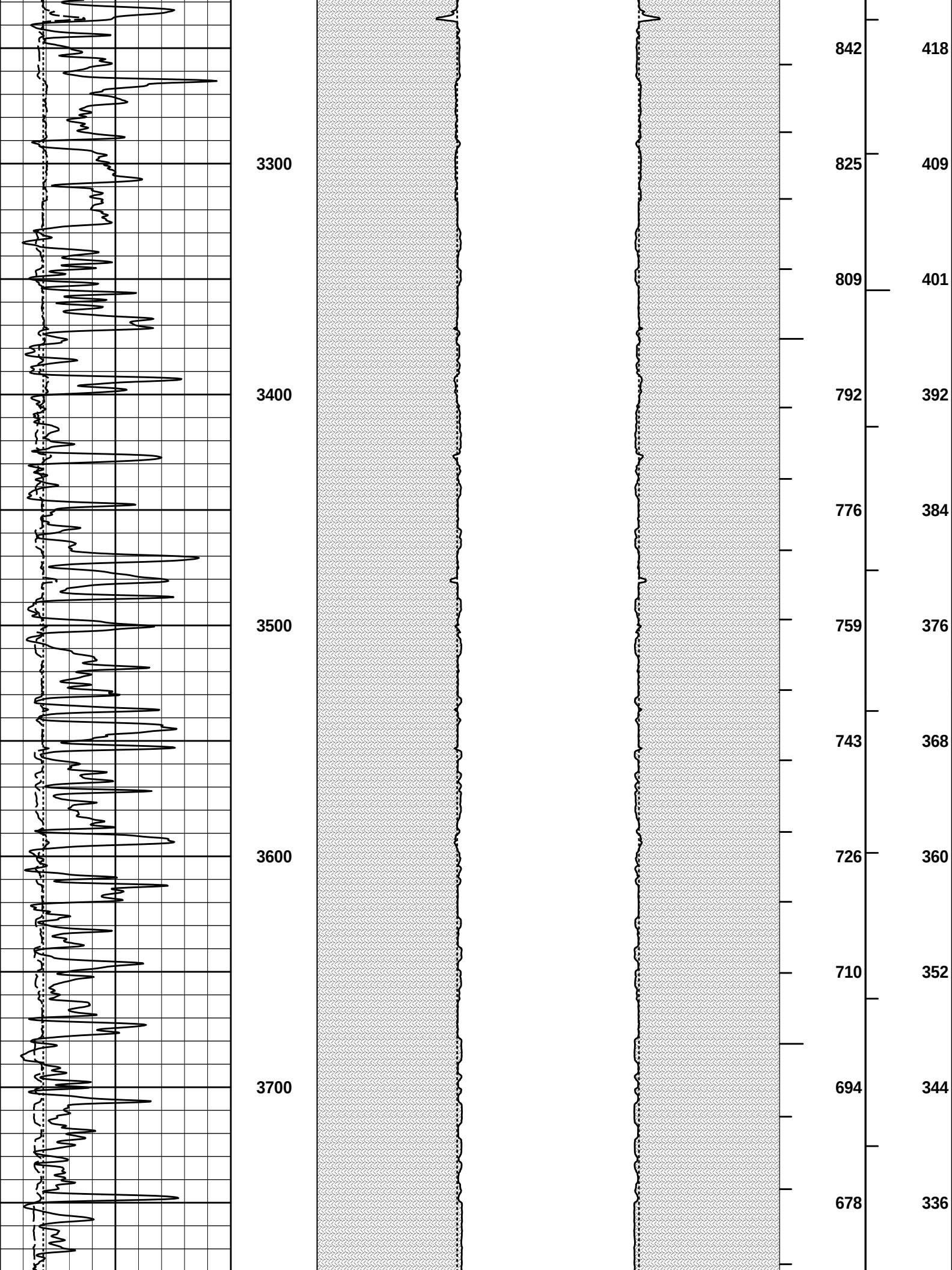
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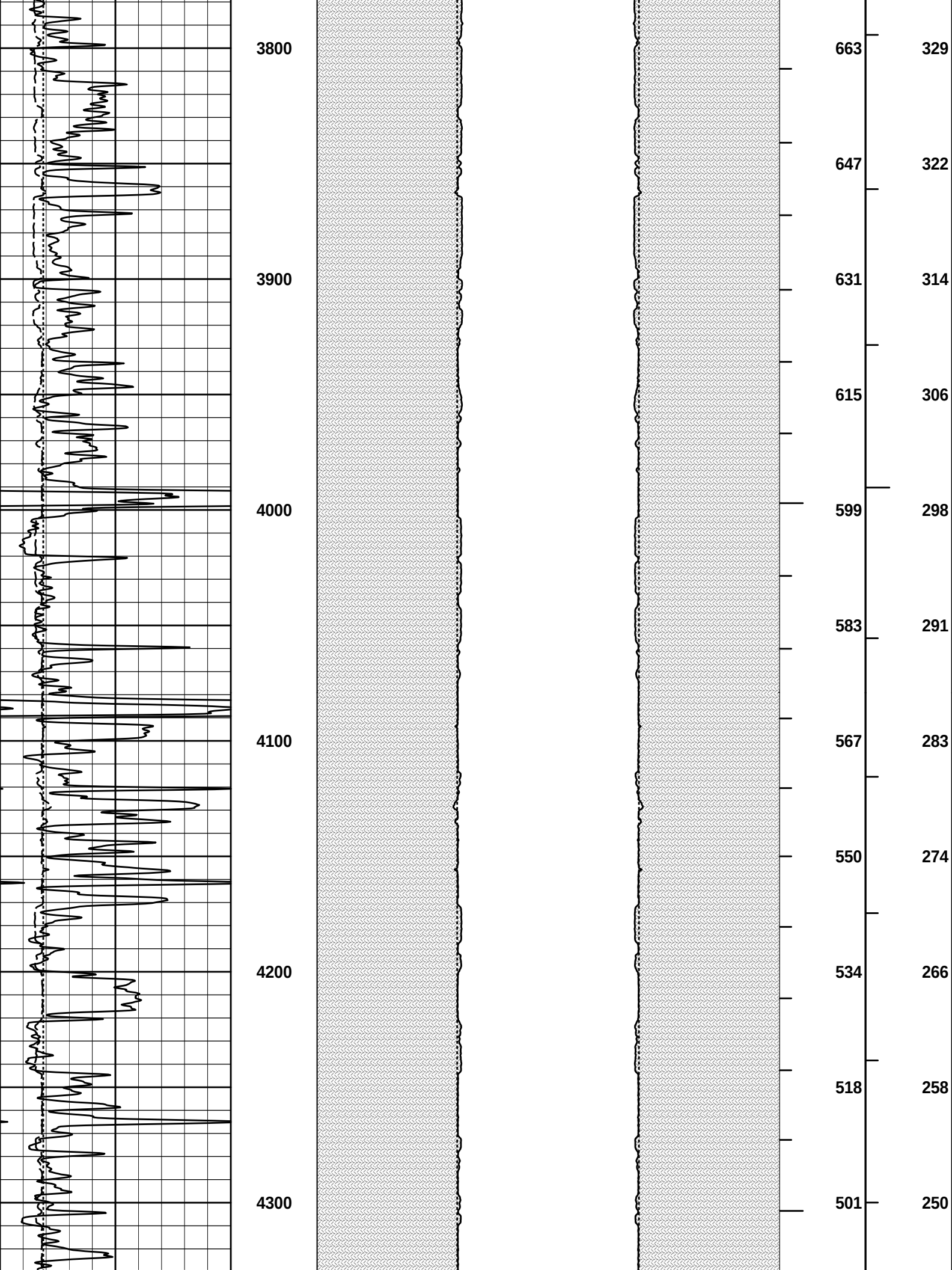
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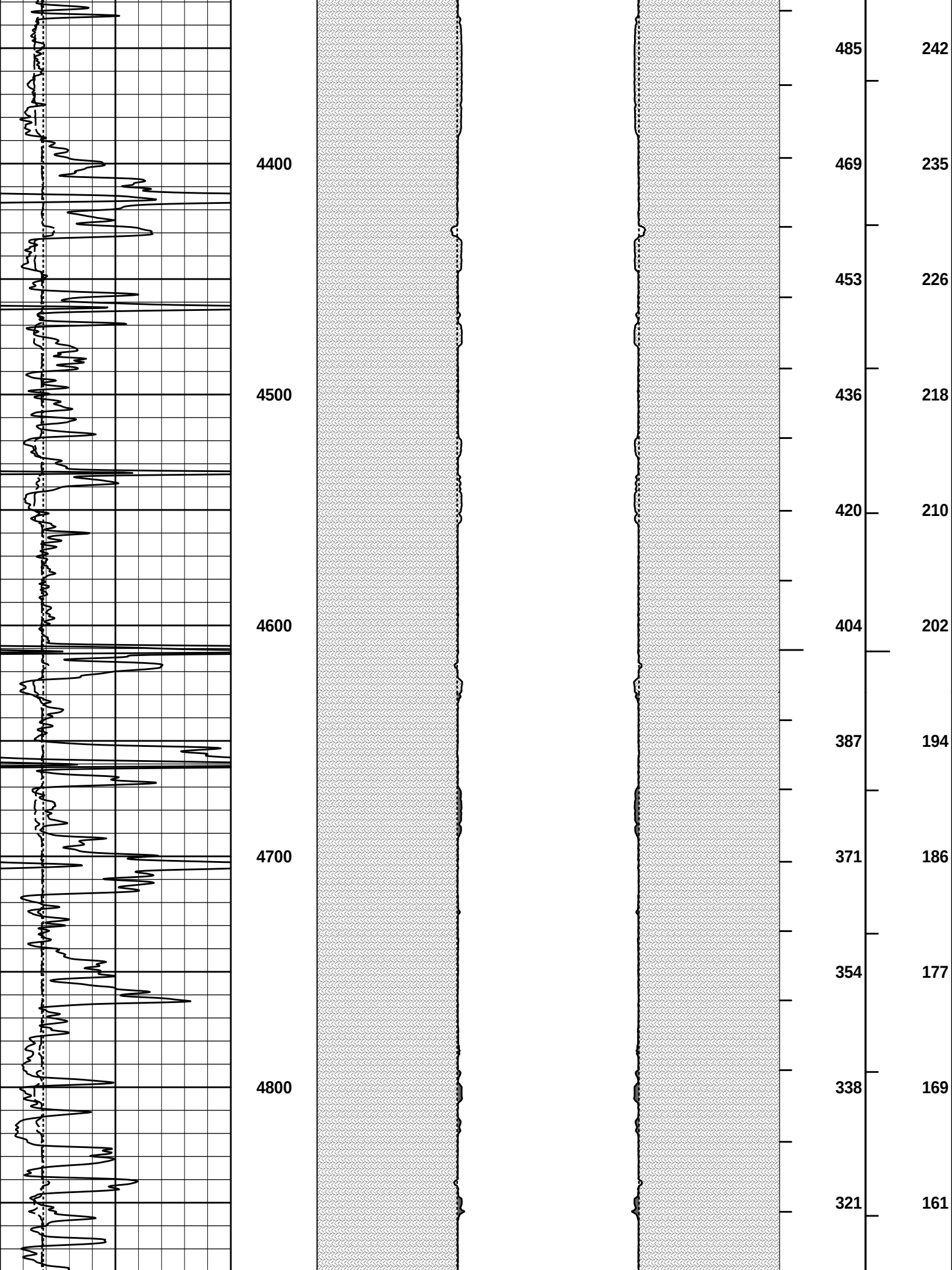
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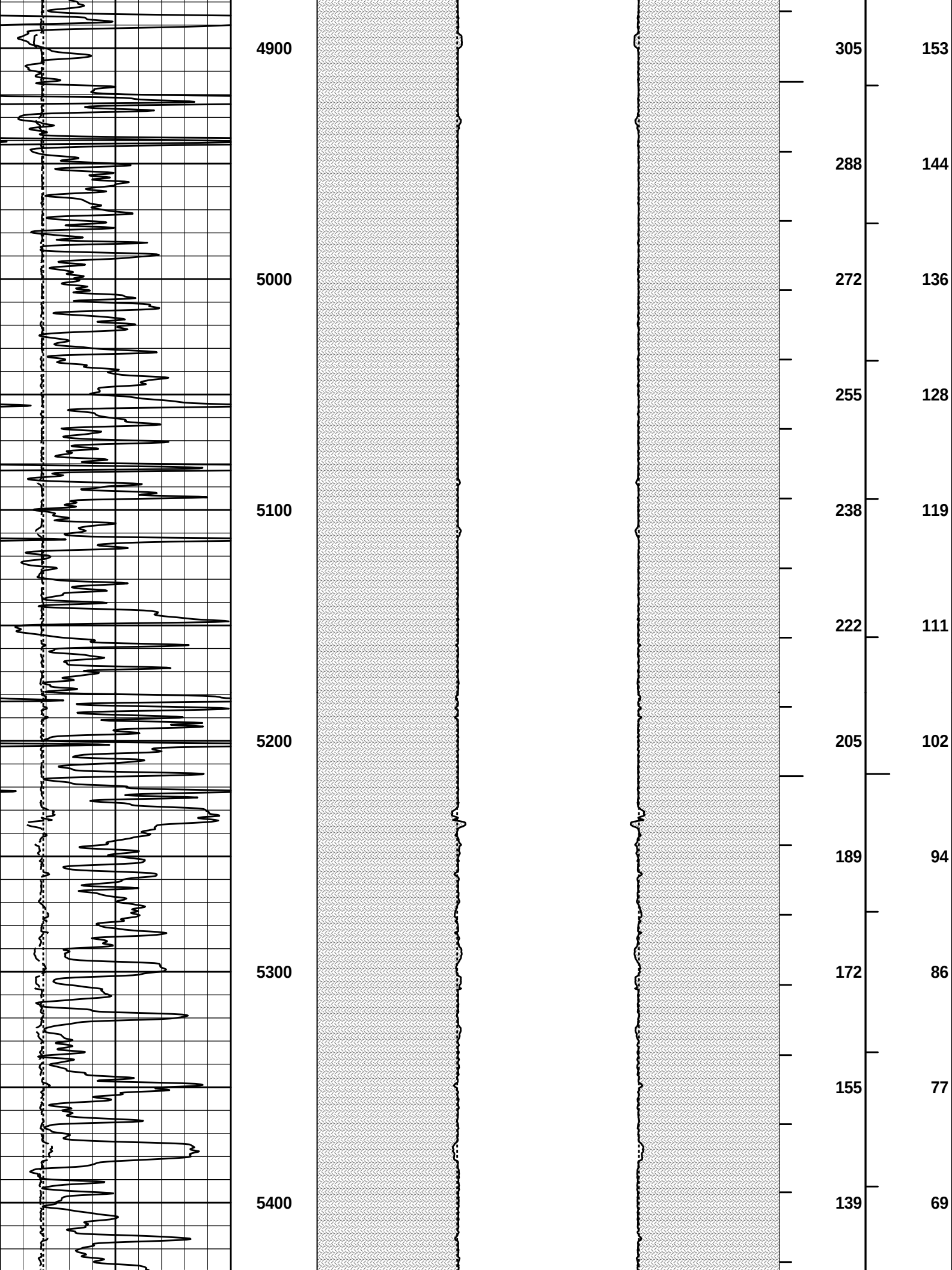
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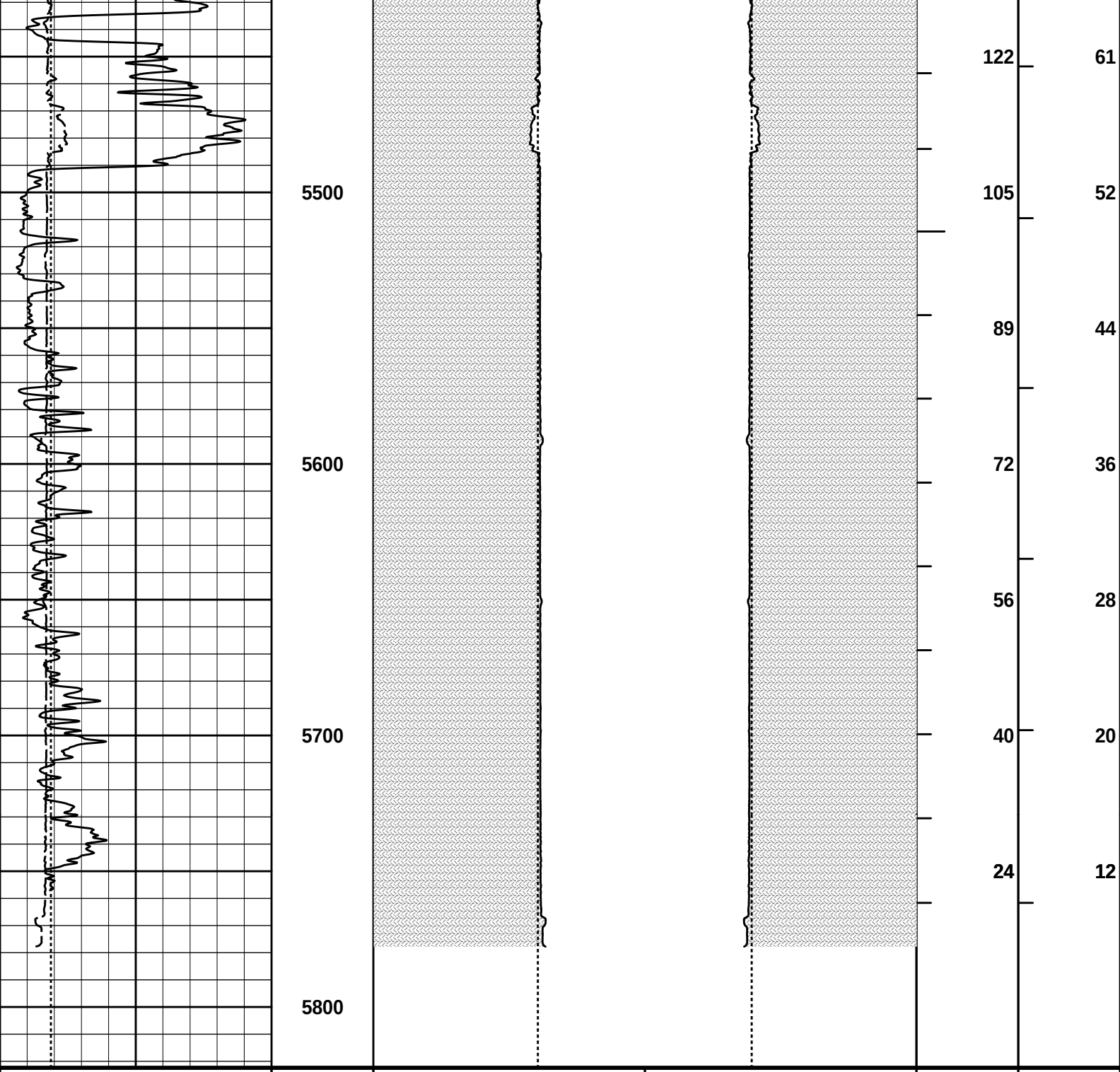


6 Caliper 16 inches	1 : 600 ft	20 Caliper 0 inches / Bit Size 20 0
6 BS 16 inches		
0 Gamma API 150 api		MUDCAKE

0 Caliper 20 inches / Bit Size 0 20	BHVT	AHVT
MUDCAKE		

HALLIBURTON

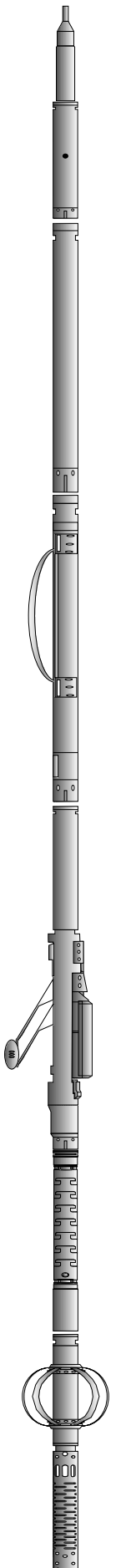
Plot Time: 20-Jan-13 14:14:18
Plot Range: 1802 ft to 5822 ft
Data: ELLIOTT_C-1B\Well Based\ELLIOTT_C-1B_MAIN_PASS\
Plot File: \\-LOCAL-\ELLIOTT_C-1B\Well Based\POROSITY\AHV_5_5_INCH_2_IQ_LIB

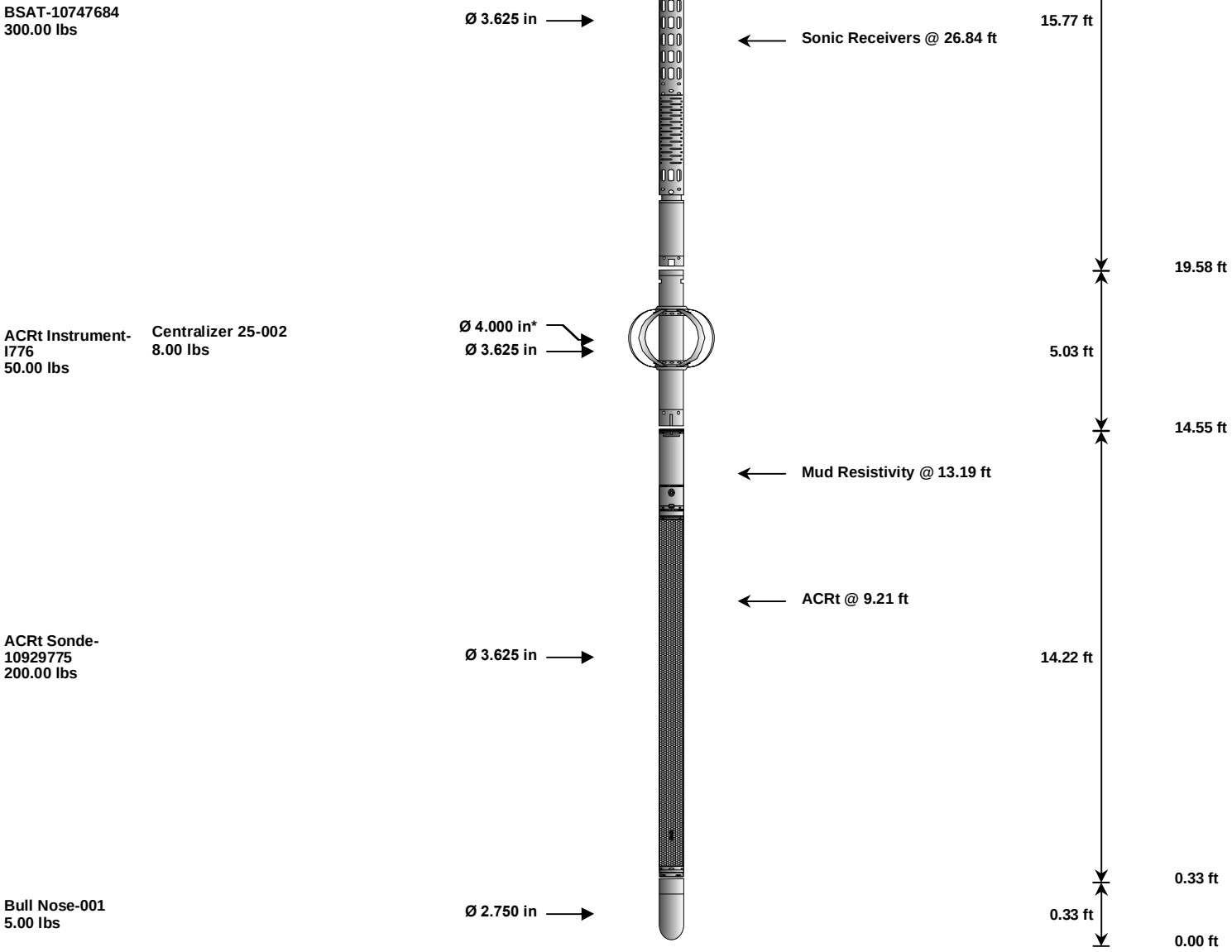
ANNULAR HOLE VOLUME PLOT (5.5 INCH)

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Sensors @ Delays	Length	Accumulated Length
					76.82 ft
CH_HOS-954 37.50 lbs		Ø 2.750 in	Temperature @ 75.79 ft	3.03 ft	
					73.79 ft
SP Sub-TRK954 60.00 lbs		Ø 3.625 in	SP @ 72.01 ft	3.74 ft	
					70.05 ft
GTET-10748374 165.00 lbs		Ø 3.625 in		8.52 ft	
			GammaRay @ 63.99 ft		
					61.53 ft
	DSN Decentralizer-10735145 6.60 lbs	Ø 5.000 in*			
DSNT-10735145 174.00 lbs		Ø 3.625 in		9.69 ft	
			DSN Far @ 54.59 ft DSN Near @ 53.84 ft		
					51.84 ft
SDLT-10673803 360.00 lbs		Ø 4.500 in		10.81 ft	
	SDLT Pad-10673790 65.00 lbs				
	Microlog Pad-10673803 8.00 lbs	Ø 4.750 in*	Microlog @ 44.03 ft		
		Ø 4.750 in*	SDL Caliper @ 43.84 ft SDL @ 43.83 ft		
					41.03 ft
Flex Joint-10989947 140.00 lbs		Ø 3.625 in		5.67 ft	
					35.36 ft
	Centralizer 25-001 8.00 lbs	Ø 4.000 in*			





Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	954	37.50	3.03		73.79	300.00
SP	SP Sub	TRK954	60.00	3.74		70.05	300.00
GTET	Gamma Telemetry Tool	10748374	165.00	8.52		61.53	60.00
DSNT	Dual Spaced Neutron	10735145	174.00	9.69		51.84	60.00
DCNT	DSN Decentralizer	10735145	6.60	5.13	*	55.17	300.00
SDLT	Spectral Density Tool	10673803	360.00	10.81		41.03	60.00
MICP	Microlog Pad	10673803	8.00	1.00	*	43.53	60.00
SDLP	Density Insite Pad	10673790	65.00	2.55	*	43.24	60.00
FLEX	Flex Joint	10989947	140.00	5.67		35.36	300.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77		19.58	60.00
OBCEN	Centralizer - 25 in. Overbody	001	8.00	2.08	*	32.34	300.00
ACRt	Array Compensated True Resistivity Instrument Section	I776	50.00	5.03		14.55	300.00
OBCEN	Centralizer - 25 in. Overbody	002	8.00	2.08	*	16.27	300.00
ACRt	Array Compensated True Resistivity Sonde Section	10929775	200.00	14.22		0.33	300.00
BLNS	Bull Nose	001	5.00	0.33		0.00	300.00
Total			**1,587.10**	**76.82**			

* Not included in Total Length and Length Accumulation.

Data: ELLIOTT_C-1B\0001 SP-GTET-DSN-SDL-FLEX-BSAT-ACRT-BN\006 20-Jan-13 09:56 Up @5820.0f **Date: 20-Jan-13 12:04:25**

HALLIBURTON

PARAMETERS REPORT

Depth ((ft))	Tool Name	Mnemonic	Description	Value	Units
TOP					
	SHARED	BS	Bit Size	7.875	in
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No	
	SHARED	MDBS	Mud Base	Water	
	SHARED	MDWT	Borehole Fluid Weight	9.100	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	2.000	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	5817.00	ft
	SHARED	BHT	Bottom Hole Temperature	130.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	Temperature Master Tool	NONE	
	SHARED	BHSM	Borehole Size Master Tool	NONE	
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa / CrossPlot	AFAC	Archie A factor	0.6200	
	Rwa / CrossPlot	MFAC	Archie M factor	2.1500	
	Rwa / CrossPlot	RMFR	Rmf Reference	0.10	ohmm
	Rwa / CrossPlot	TMFR	Rmf Ref Temp	75.00	degF
	Rwa / CrossPlot	RWA	Resistivity of Formation Water	0.05	ohmm
	Rwa / CrossPlot	ADP	Use Air Porosity to calculate CrossplotPhi	No	
	GTET	GROK	Process Gamma Ray?	Yes	
	GTET	GRSO	Gamma Tool Standoff	0.000	in
	GTET	GEOK	Process Gamma Ray EVR?	No	
	GTET	TPOS	Tool Position for Gamma Ray Tools.	Eccentered	
	DSNT	DNOK	Process DSN?	Yes	
	DSNT	DEOK	Process DSN EVR?	No	
	DSNT	NLIT	Neutron Lithology	Limestone	
	DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
	DSNT	DNTP	Temperature Correction Type	None	
	DSNT	DPRS	DSN Pressure Correction Type	None	
	DSNT	SHCO	View More Correction Options	No	
	DSNT	UTVD	Use TVD for Gradient Corrections?	No	
	DSNT	LHWT	Logging Horizontal Water Tank?	No	
	SDLT	CLOK	Process Caliper Outputs?	Yes	
	SDLT Pad	DNOK	Process Density?	Yes	
	SDLT Pad	DNOK	Process Density EVR?	No	
	SDLT Pad	CB	Logging Calibration Blocks?	No	
	SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
	SDLT Pad	DTWN	Disable temperature warning	No	
	SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
	SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
	Micrologg Pad	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 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

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: **GTET - 10748374** **Reference Calibration Date:** **19-Dec-12 08:49:49**

Engineer: **T. HYDE** **Calibration Date:** **17-Jan-13 13:03:23**

Software Version: **WL INSITE R3.6.0 (Build 3)** **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	47.0	47.4	api
Background + Calibrator	277.4	279.4	api
Calibrator	230.4	232.0	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: **GTET - 10748374** **Reference Calibration Date:** **17-Jan-13 13:03:23**

Engineer: **S. INGERSOLL** **Calibration Date:** **20-Jan-13 06:30:11**

Software Version: **WL INSITE R3.6.0 (Build 3)** **Calibration Version:** **1**

Calibrator Source S/N: TB-185

Calibrator API Reference:228.00 api

Equivalent Calibrator API Reference:232.0 api

Field Verification	Shop	Field	Units
Background	47.4	29.1	api
Background + Calibrator	279.4	264.1	api
Calibrator	232.0	235.0	api

Shop	Field	Difference	Tolerance
232.0	235.0	-3.0	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 10735145**	**Reference Calibration Date:**	**16-Jan-13 11:01:55**
Engineer:	**T. HYDE**	**Calibration Date:**	**16-Jan-13 11:22:17**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-436
Tank Serial Number: 105060
Reference value assigned to Tank: 51.680
Snow Block S/N: TRK_954
Calibration Tank Water Temperature: 60 degF
Min. Tool Housing Outside Diameter: 3.620 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.942	0.938	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):	0.2119	0.2106	0.0012	+/- 0.0020
Calibrated Ratio:	9.76	9.72	0.042	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0647	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 - 10735145**	**Reference Calibration Date:**	**16-Jan-13 11:22:17**
Engineer:	**S. INGERSOLL**	**Calibration Date:**	**20-Jan-13 06:36:33**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-436
Snow Block S/N: TRK_954

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0647	0.0617	-0.0030	+/- 0.0150

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10673803**	**Reference Calibration Date:**	**17-Jan-13 12:49:23**
Engineer:	**T. HYDE**	**Calibration Date:**	**17-Jan-13 12:54:06**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 10735145**		

CALIBRATION COEFFICIENTS			
Measurement	**Previous Value**	**New Value**	**Control Limit On New Value**
Pad Offset	-4248.56	-4260.08	-7000.00 - -1000.00
Pad Gain	0.0003791	0.0003793	0.000200 - 0.000600
Arm Offset	-3809.03	-3741.95	-5000.00 - 3000.00
Arm Gain	0.0005254	0.0005191	0.000300 - 0.000700
Arm Power	-0.000005762	-0.000005410	-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)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.75	3.75	0.00	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.49	6.50	0.01	+/- 0.20
Medium Ring (in)	8.26	8.25	-0.01	+/- 0.20
Large Ring (in)	15.01	15.00	-0.01	+/- 0.20

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed
Ring-Measurement Check:	Passed

PASS/FAIL SUMMARY	
Calibration-Coefficients Range Check:	Passed

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name:	**SDLT Pad - 10673790**	**Reference Calibration Date:**	**27-Dec-12 13:04:11**
Engineer:	**S. INGERSOLL**	**Calibration Date:**	**27-Dec-12 13:23:10**
Software Version:	**WL INSITE R3.6.0 (Build 3)**	**Calibration Version:**	**1**

Logging Source S/N: 5073GW

Aluminum Block S/N: 63061	Density: 2.591g/cc	Pe: 3.170
Magnesium Block S/N: 63393	Density: 1.690g/cc	Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	**Previous Value**	**New Value**	**Control Limit**
Near Bar Gain	1.0336	1.0212	0.90 - 1.10
Near Dens Gain	1.0033	1.0061	0.90 - 1.10
Near Peak Gain	1.0063	1.0109	0.90 - 1.10
Near Lith Gain	0.9884	0.9983	0.90 - 1.10
Far Bar Gain	0.9968	0.9979	0.90 - 1.10
Far Dens Gain	0.9839	0.9850	0.90 - 1.10
Far Peak Gain	0.9792	0.9810	0.90 - 1.10
Far Lith Gain	0.9541	0.9550	0.90 - 1.10
Near Bar Offset	-0.0441	0.0688	NONE
Near Dens Offset	0.2131	0.1864	NONE
Near Peak Offset	0.1900	0.1519	NONE
Near Lith Offset	0.3262	0.2411	NONE
Far Bar Offset	0.1841	0.1740	NONE
Far Dens Offset	0.2779	0.2673	NONE
Far Peak Offset	0.2780	0.2604	NONE
Far Lith Offset	0.4055	0.3959	NONE

Near Bar Background	883.46	884.43	700 - 1450
Near Dens Background	290.31	288.90	230 - 480
Near Peak Background	126.15	125.81	100 - 210
Near Lith Background	156.17	156.65	125 - 260
Far Bar Background	582.36	580.05	450 - 900
Far Dens Background	228.49	228.29	175 - 345
Far Peak Background	90.91	90.03	70 - 140
Far Lith Background	93.37	95.46	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.690	1.690	-0.000	+/- 0.015
Pe	2.547	2.552	0.005	+/- 0.150
ALUMINUM				
Density (g/cc)	2.589	2.591	0.002	+/- 0.01500
Pe	3.087	3.125	0.038	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0004	+/- 0.0110	0.0005	+/- 0.0140
Magnesium Block	-0.0007	+/- 0.0110	-0.0017	+/- 0.0140
Aluminum Block	0.0004	+/- 0.0110	0.0011	+/- 0.0140
Resolution	9.40	6.00 - 11.50	8.97	6.00 - 11.50
Internal Verifier(B+D+P+L)	1456	1200 - 2700	994	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 - 10673790 **Reference Calibration Date:** 27-Dec-12 13:23:10

Engineer: S. INGERSOLL **Calibration Date:** 20-Jan-13 06:47:05

Software Version: WL INSITE R3.6.0 (Build 3) **Calibration Version:** 1

Pad Temperature: 40.0 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1455.792	1450.677	-5.115	15.389
Far (B+D+P+L) cps	993.832	995.863	2.031	16.889
Near Resolution	9.40	9.79	0.390	0.50
Far Resolution	8.97	9.43	0.460	1.00

PASS/FAIL SUMMARY	
Bkg Quality Check:	Passed
Bkg Resolution Check:	Passed
Bkg Verification Check:	Passed

MICRO LOG SHOP CALIBRATION

Tool Name: Microlog Pad - 10673803
Reference Calibration Date: 12-Dec-12 13:15:00
Engineer: T. HYDE
Calibration Date: 17-Jan-13 12:59:59
Software Version: WL INSITE R3.6.0 (Build 3)
Calibration Version: 1
Host Tool Name: DSNT - 10735145

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.08	-0.09	0.00	-0.01	ohmm
Calibration Point #1	0.01	0.00	0.01	0.00	ohmm
Calibration Point #2	19.99	20.00	19.97	20.00	ohmm
Internal Reference	19.92	19.93	19.97	19.99	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-2.61	1.80	V
Calibration Point #1	20.64	4.23	V
Calibration Point #2	5390.51	7008.01	V
Internal Reference	5370.42	7006.04	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10673803
Reference Calibration Date: 17-Jan-13 12:59:59
Engineer: S. INGERSOLL
Calibration Date: 20-Jan-13 06:26:38
Software Version: WL INSITE R3.6.0 (Build 3)
Calibration Version: 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.09	-0.11	-0.01	-0.00	ohmm
Internal Reference	19.93	19.81	19.99	19.88	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.93	19.81	0.12	+/- 0.80
Microlog Lateral	19.99	19.88	0.11	+/- 0.80

SDLT CALIPER FIELD CALIBRATION

Tool Name: SDLT - 10673803
Reference Calibration Date: 17-Jan-13 12:54:06
Engineer: S. INGERSOLL
Calibration Date: 20-Jan-13 06:42:48
Software Version: WL INSITE R3.6.0 (Build 3)
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	8.36	0.11	+/- 0.15

PASS/FAIL SUMMARY	

Pad Extension Check:	Passed
Diameter Check:	Passed

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-10748374						
Gamma Ray Calibrator	232.0	235.0	----------	-3.0	+/- 9.00	api
DSNT-10735145						
Snow-Block Porosity	0.0647	0.0617	----------	0.0030	+/- 0.0150	decp
SDLT-10673803						
Pad Extension	3.75	3.74	----------	0.01	+/-0.10	in
Ring Diameter	8.25	8.36	----------	-0.11	+/-0.15	in
SDLT Pad-10673790						
Near(B+D+P+L)	1455.792	1450.677	----------	5.115	+/-15.389	cps
Far(B+D+P+L)	993.832	995.863	----------	-2.031	+/-16.889	cps
Microlog Pad-10673803						
MicroLog Normal	19.93	19.81	----------	0.12	+/-0.80	ohmm
MicroLog Lateral	19.99	19.88	----------	0.11	+/-0.80	ohmm

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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	DownholeTension	0.00	BLK	0.000
SP Sub				
PLTC	Plot Control Mask	72.01	NO	
SP	Spontaneous Potential	72.01	BLK	1.250
SPR	Raw Spontaneous Potential	72.01	NO	
SPO	Spontaneous Potential Offset	72.01	NO	
GTET				
TPUL	Tension Pull	63.99	NO	
GR	Natural Gamma Ray API	63.99	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	63.99	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	63.99	W	1.416 , 0.750
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	53.74	NO	
RNDS	Near Detector Telemetry Counts	53.84	BLK	1.417
RFDS	Far Detector Telemetry Counts	54.59	TRI	0.583
DNTT	DSN Tool Temperature	53.84	NO	
DSNS	DSN Tool Status	53.74	NO	
ERND	Near Detector Telemetry Counts EVR	53.84	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	54.59	BLK	0.000
ENTM	DSN Tool Temperature EVR	53.84	NO	

SDLT				
TPUL	Tension Pull	43.84	NO	
PCAL	Pad Caliper	43.84	TRI	0.250
ACAL	Arm Caliper	43.84	TRI	0.250
BSAT				
TPUL	Tension Pull	26.84	NO	
STAT	Status	26.84	NO	
DLYT	Delay Time	26.84	NO	
SI	Sample Interval	26.84	NO	
TXRX	Raw Telemetry 10 Receivers	26.84	NO	
FRMC	Tool Frame Count	26.84	NO	
GMOD	Gain processing mode	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 Reference 12 KHz Real Signal	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	43.83	NO	
NAB	Near Above	43.66	BLK	0.920
NHI	Near Cesium High	43.66	BLK	0.920
NLO	Near Cesium Low	43.66	BLK	0.920
NVA	Near Valley	43.66	BLK	0.920
NBA	Near Barite	43.66	BLK	0.920
NDE	Near Density	43.66	BLK	0.920
NPK	Near Peak	43.66	BLK	0.920
NLI	Near Lithology	43.66	BLK	0.920
NBAU	Near Barite Unfiltered	43.66	BLK	0.250
NLIU	Near Lithology Unfiltered	43.66	BLK	0.250
FAB	Far Above	44.01	BLK	0.250
FHI	Far Cesium High	44.01	BLK	0.250
FLO	Far Cesium Low	44.01	BLK	0.250
FVA	Far Valley	44.01	BLK	0.250
FBA	Far Barite	44.01	BLK	0.250
FDE	Far Density	44.01	BLK	0.250
FPK	Far Peak	44.01	BLK	0.250
FLI	Far Lithology	44.01	BLK	0.250
PTMP	Pad Temperature	43.84	BLK	0.920
NHV	Near Detector High Voltage	43.24	NO	
FHV	Far Detector High Voltage	43.24	NO	
ITMP	Instrument Temperature	43.24	NO	
DDHV	Detector High Voltage	43.24	NO	

Microlog Pad

TPUL	Tension Pull	44.03	NO	
MINV	Microlog Lateral	44.03	BLK	0.750
MNOR	Microlog Normal	44.03	BLK	0.750

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COMPANY	**OXY USA INC.**		
WELL	**ELLIOTT C-1B**		
FIELD	**LEMON VICK PREEDY**		
COUNTY	**HASKELL**	STATE	**KANSAS**

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DUAL SPACED NEUTRON SPECTRAL DENSITY

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