HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY **OXY USA INC**

WELL **KELLS H-1**

FIELD **PLEASANT PRARIE SE**

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

COMPANY OXY USA INC
WELL KELLS H-1
FIELD PLEASANT PRARIE SE
COUNTY HASKELL
STATE KANSAS

API No. 15-081-21968
Location 1402' FNL & 330' FEL

Sect. 32 Twp. 27S Rge. 33W

Other Services:
ACRT
BSAT
MICROLOG

Permanent Datum	GL	Elev. 2984.0 ft	Elev.: K.B. 3000.0 ft
Log measured from	KB	, 16.0 ft above perm. Datum	D.F. 2999.0 ft
Drilling measured from	KB		G.L. 2984.0 ft

Date		05-Mar-12					
Run No.		ONE					
Depth - Driller		5509.00 ft					
Depth - Logger		5478.0 ft					
Bottom - Logged Interval		5440.0 ft					
Top - Logged Interval		4118.0 ft					
Casing - Driller		8.625 in @ 1775.0 ft		@		@	
Casing - Logger		1776.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		WATER BASED MUD					
Density	Viscosity	9.7 ppg	40.00 s/qt				
PH	Fluid Loss	8.50 pH	12.0 cptm				
Source of Sample		FLOW LINE					
Rm @ Meas. Temperature		1.270 ohmm @ 74.00 degF		@		@	
Rmf @ Meas. Temperature		1.51 ohmm @ 51.00 degF		@		@	
Rmc @ Meas. Temperature		2.100 ohmm @ 51.00 degF		@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.74 ohmm @ 128.0 degF		@		@	
Time Since Circulation		0.0 hr					
Time on Bottom		05-Mar-12 19:18					
Max. Rec. Temperature		128.0 degF @ 5478.0 ft		@		@	
Equipment	Location	10546696	LIBERAL				
Recorded By		J. BOLLOM		C. HAVERKAMP			
Witnessed By		A. HOWSON					

Fold here

Service Ticket No.: 9323213 API Serial No.: 15-081-21968 PGM Version: WL INSITE R3.4.2 (Build 2)

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

	Sample No.	Type Log	Depth	Scale Up Hole	Scale Down Hole
Date					
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 EQUIPMENT DATA

	Run No.	Tool Type & No.	Pad Type	Tool Pos.	Other
Rm @ Meas. Temp	@				
Rmf @ Meas. Temp.	@				
Rmc @ Meas. Temp.	@				
Source Rmf	Rmc				
Rm @ BHT	@				
Rmf @ BHT	@				
Rmc @ BHT	@				

EQUIPMENT DATA

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.	ONE		ONE	ONE
Serial No.	11039640		I43_M469	11019643
Model No.	GTET		SDLT-I	DSNT-I
Diameter	3.625"		4.5"	3.625"
Detector Model No.	GTET		GAM-GAM	NEU-NEU
Type	SCINT		CS137	AM241BE
Length	8"	LSA [Y/N]	5168 GW	DSN-424
Distance to Source	10'	FWDA [Y/N]	1.5 CI	15 CI
			Strength	Strength

LOGGING DATA

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	5478	4118	REC	0	150				30	-10	2.71	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: POST TOOL SURVEYS NOT PERFORMED DUE TO LOW TEMPERATURE

LCM REPORTED AT 4 LB/BBL

CHLORIDES REPORTED AT 4500 MG/L

ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING

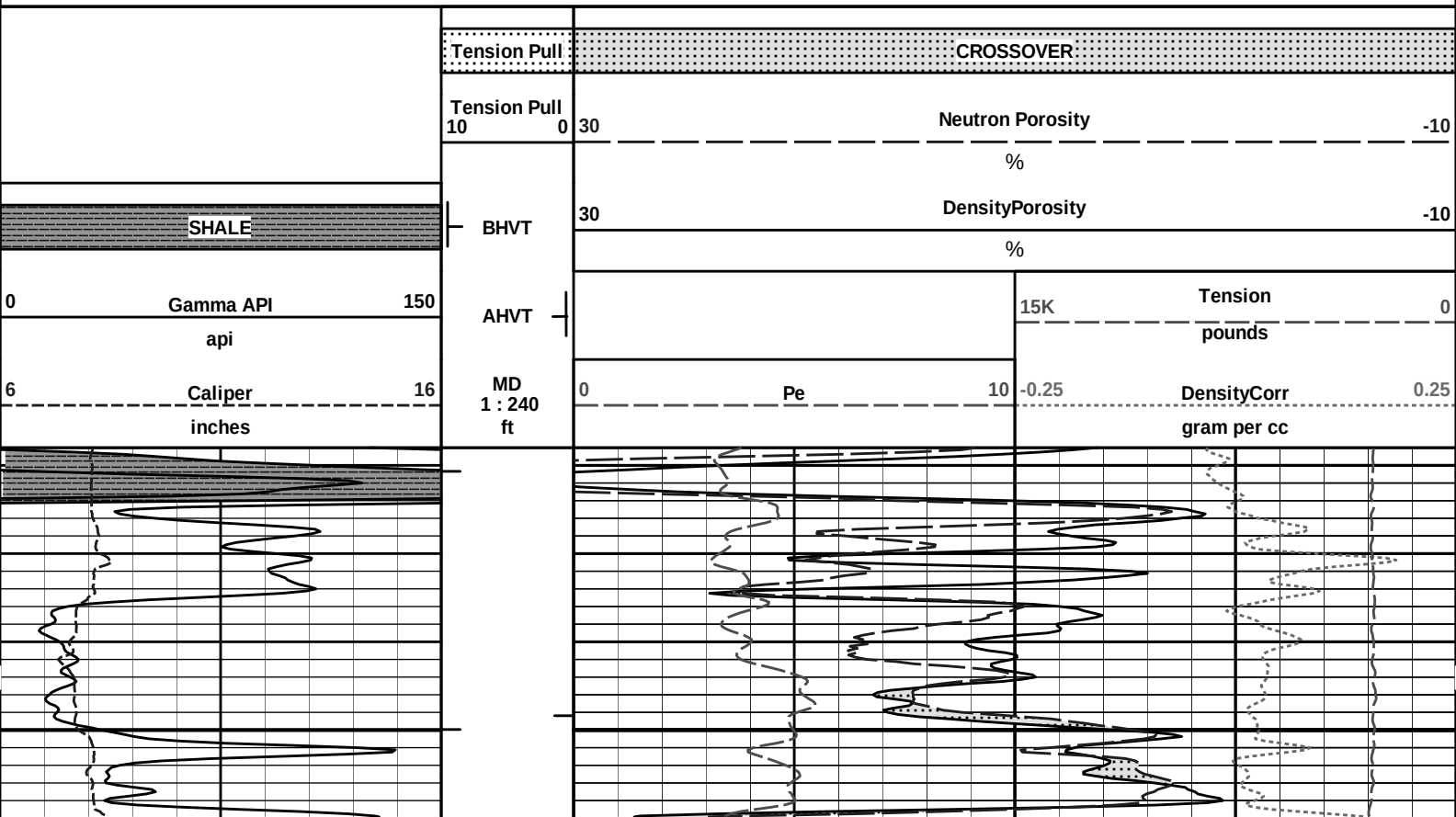
TODAY'S CREW: B. TERREL & K. KING

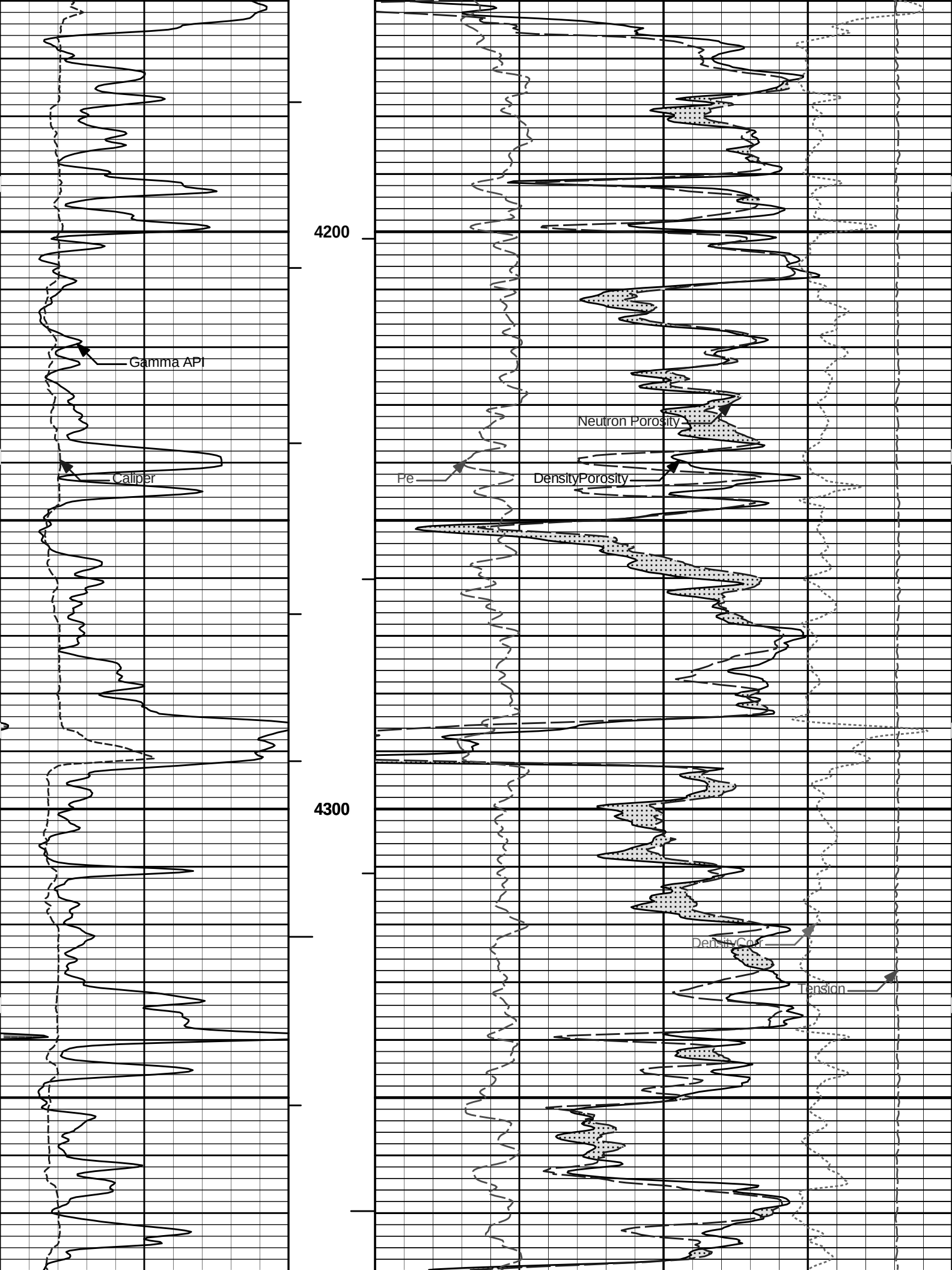
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES LIBERAL, KS. 620-624-8123

HALLIBURTON

Plot Time: 06-Mar-12 01:17:37
Plot Range: 4118 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\DETAIL
Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

5 INCH MAIN LOG




4200
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Gamma API
Caliper
Neutron Porosity
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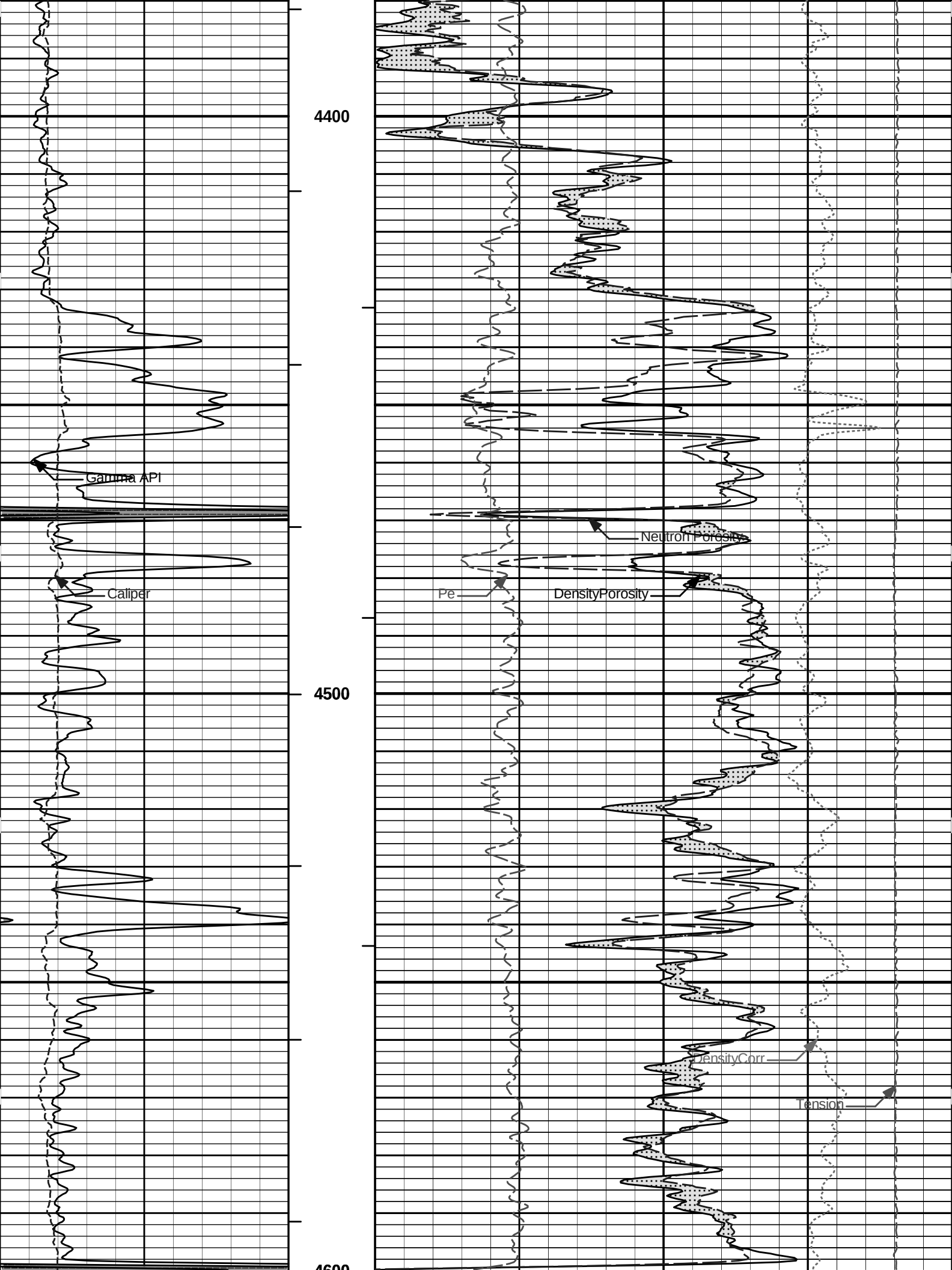
DensityPorosity
DensityCor
Tension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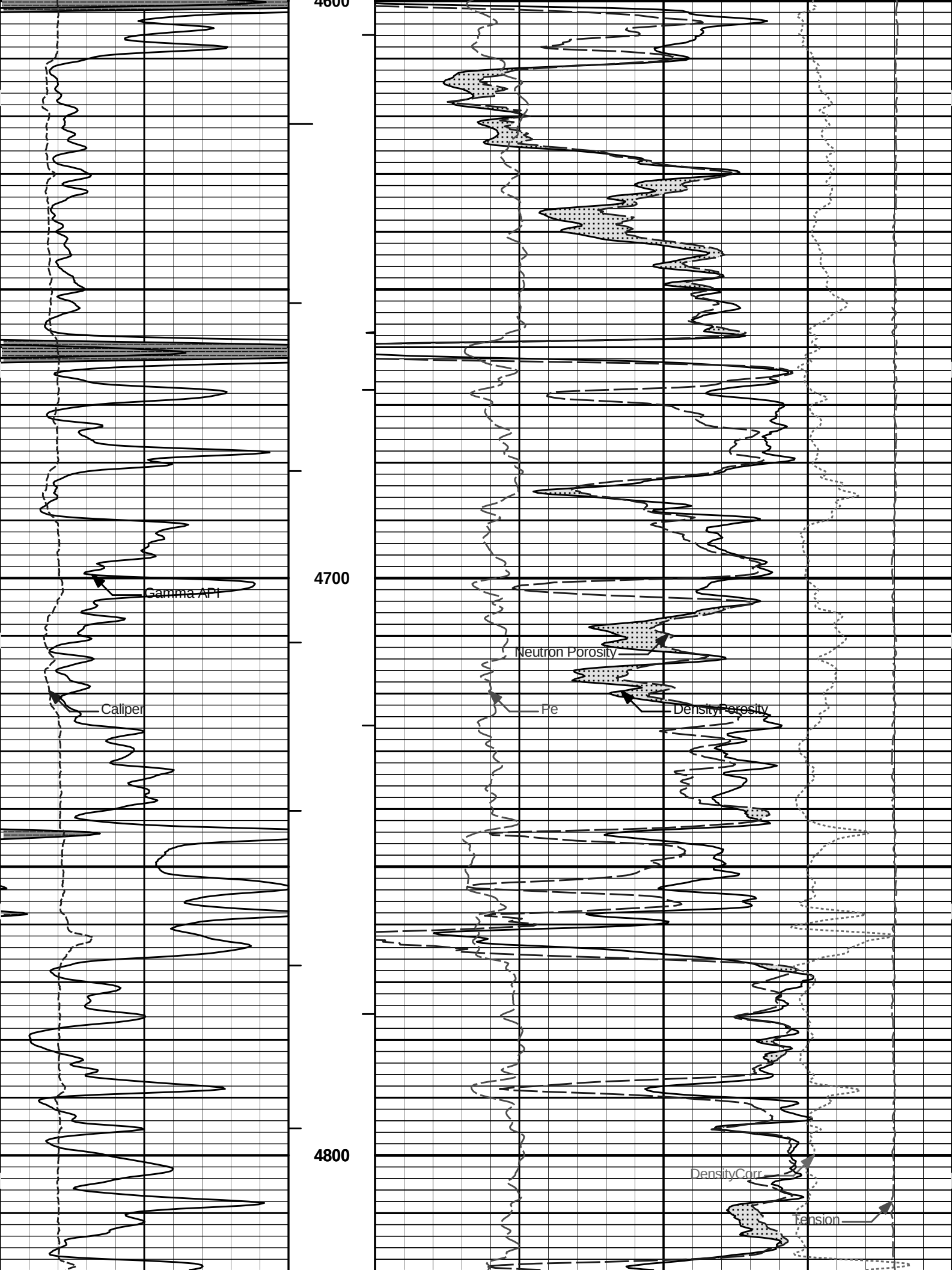
Tension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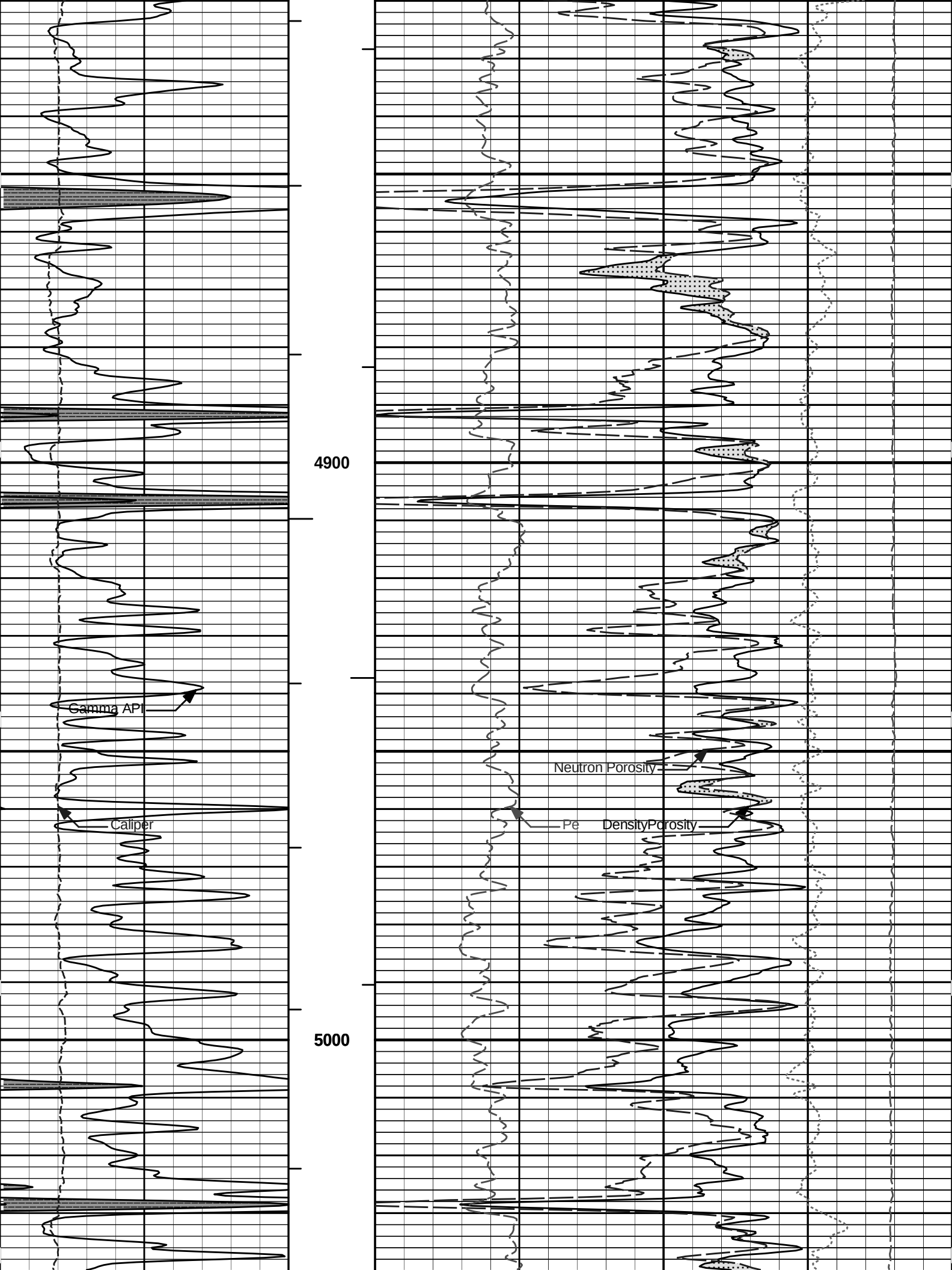
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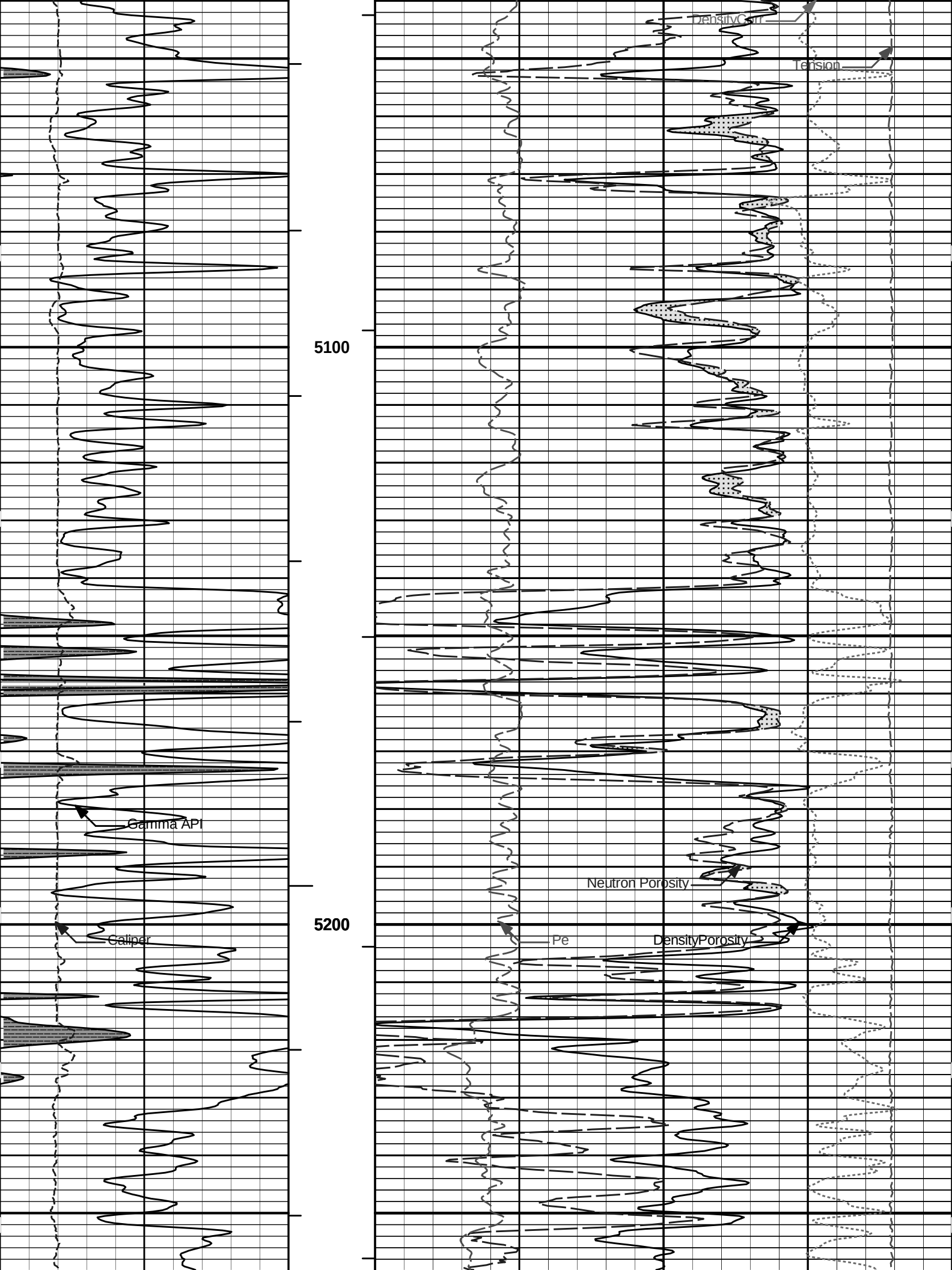
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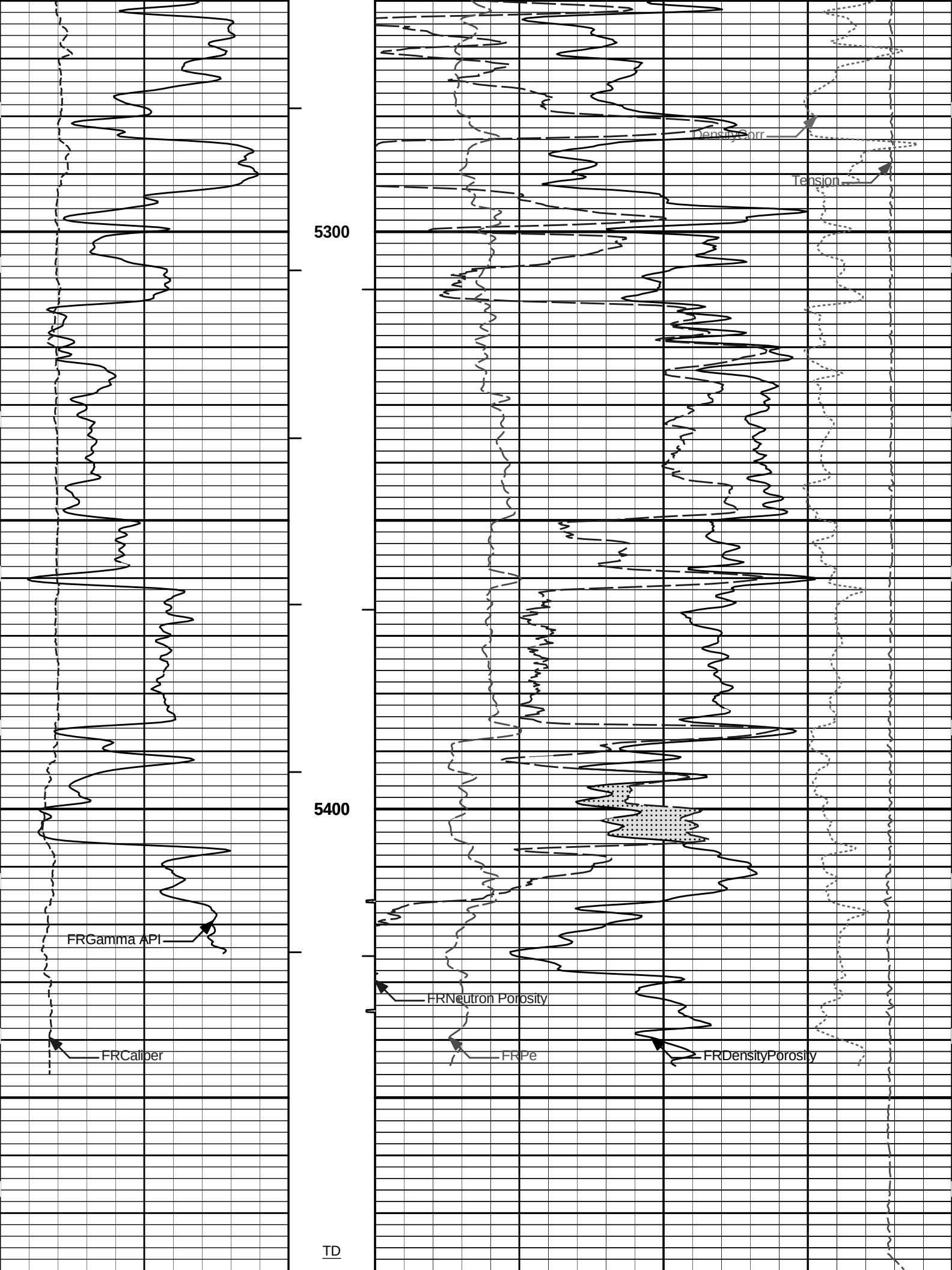
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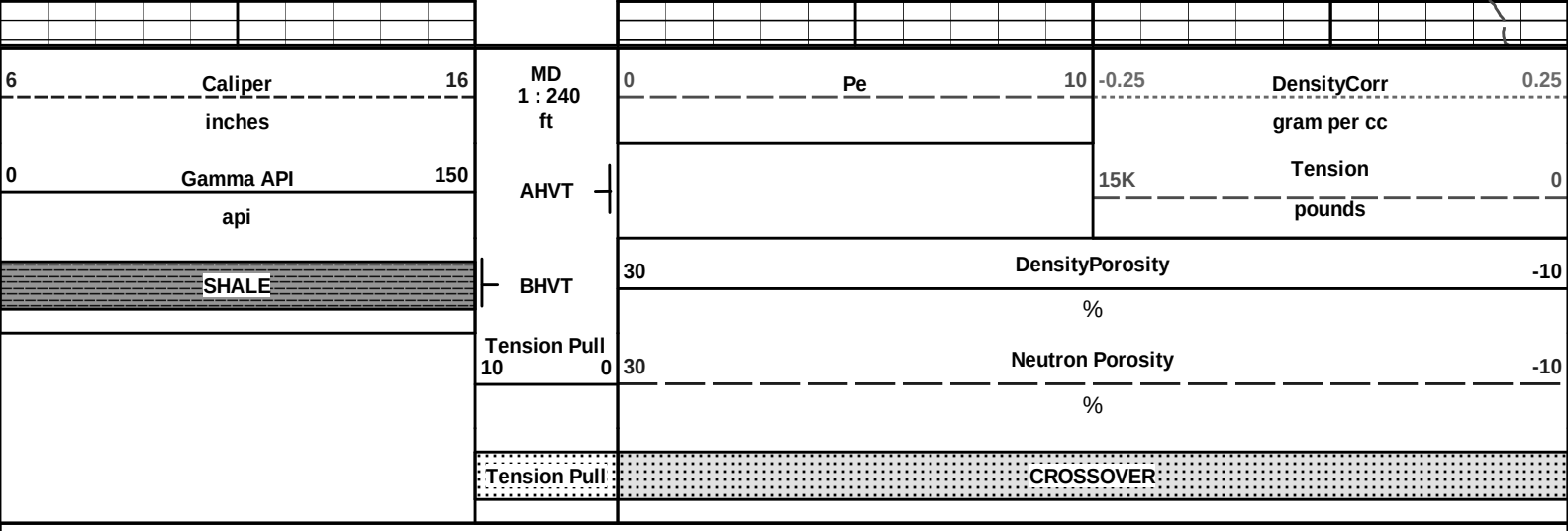


HALLIBURTON

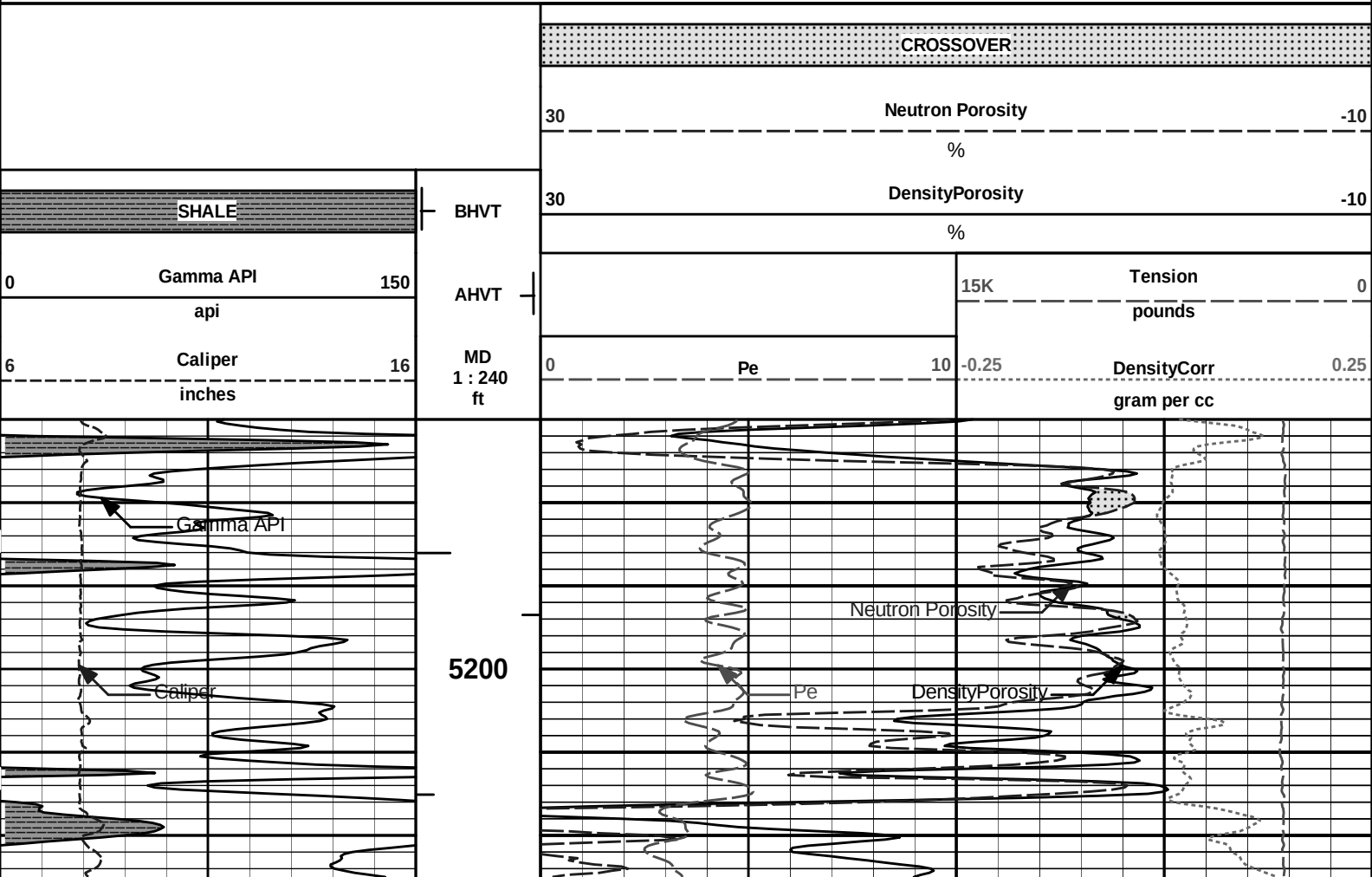
Plot Time: 06-Mar-12 01:17:41
Plot Range: 4118 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\DETAIL\
Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

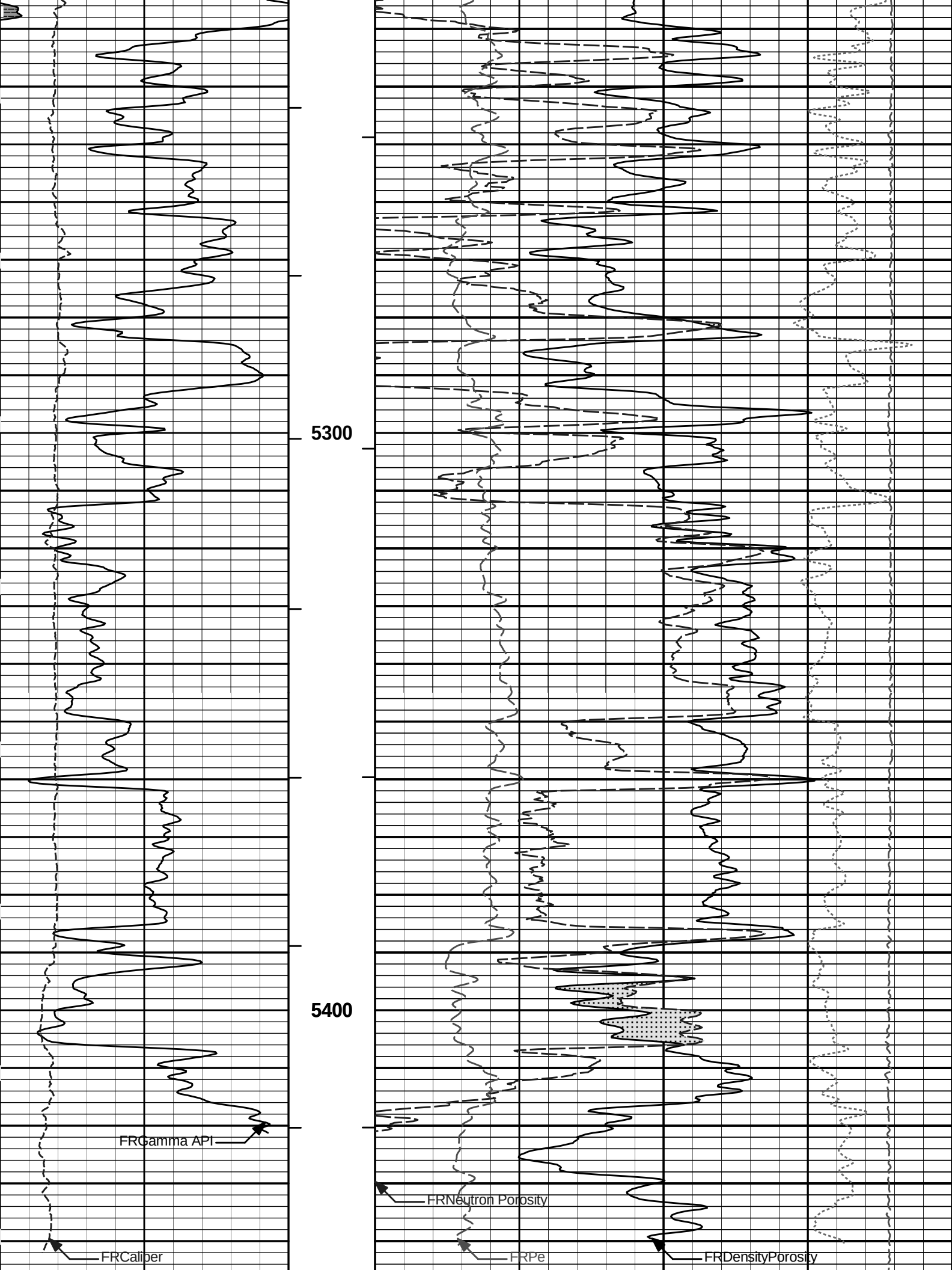
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 06-Mar-12 01:17:42
Plot Range: 5170 ft to 5480.75 ft
Data: KELLS_H_1\Well Based\REPEAT\
Plot File: \\PORO\Poro_IQ_5_REP_LIB

REPEAT SECTION

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FRNeutron Porosity
FRPe
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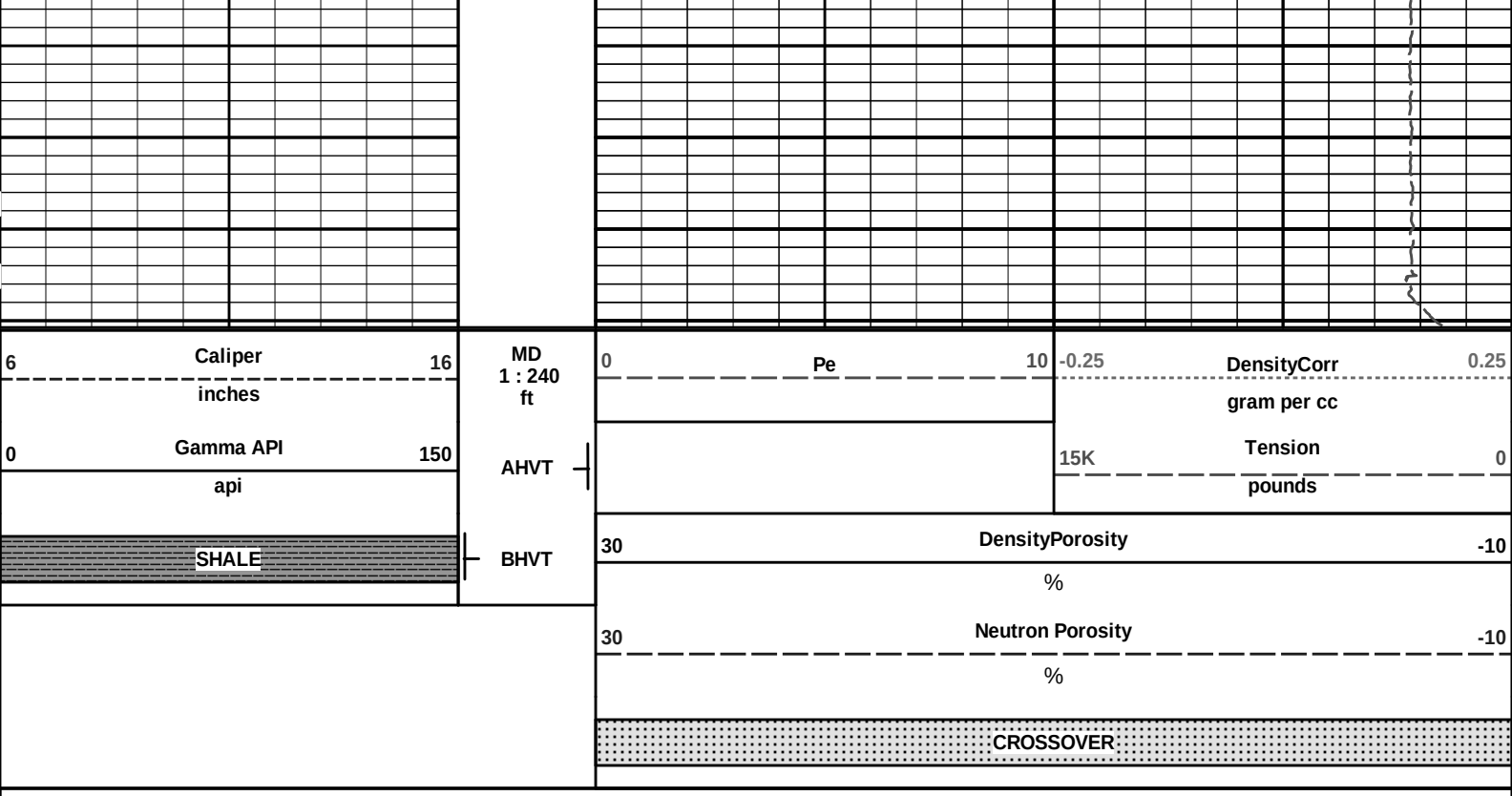


HALLIBURTON

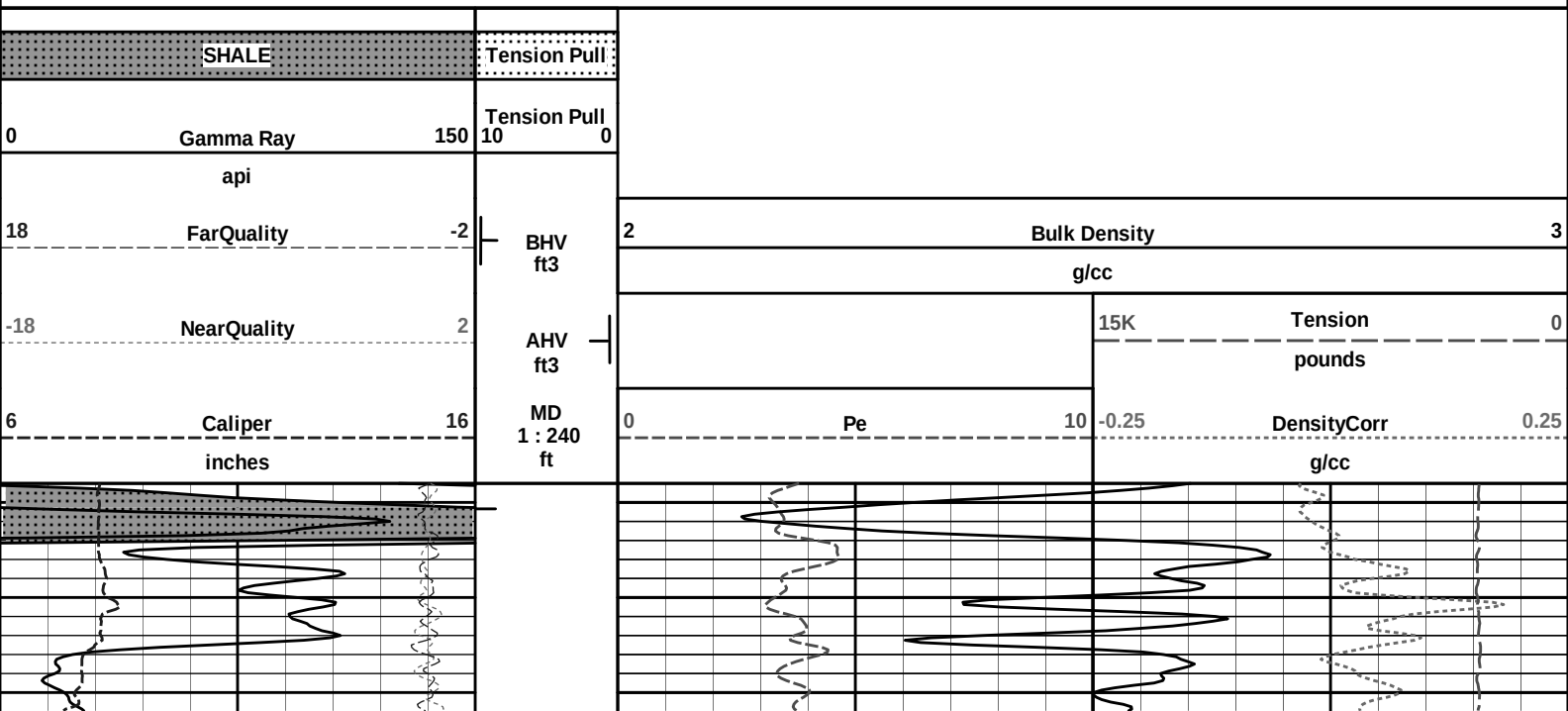
Plot Time: 06-Mar-12 01:17:43
Plot Range: 5170 ft to 5480.75 ft
Data: KELLS_H_1\Well Based\REPEAT\
Plot File: \\PORO\Poro_IQ_5_REP_LIB

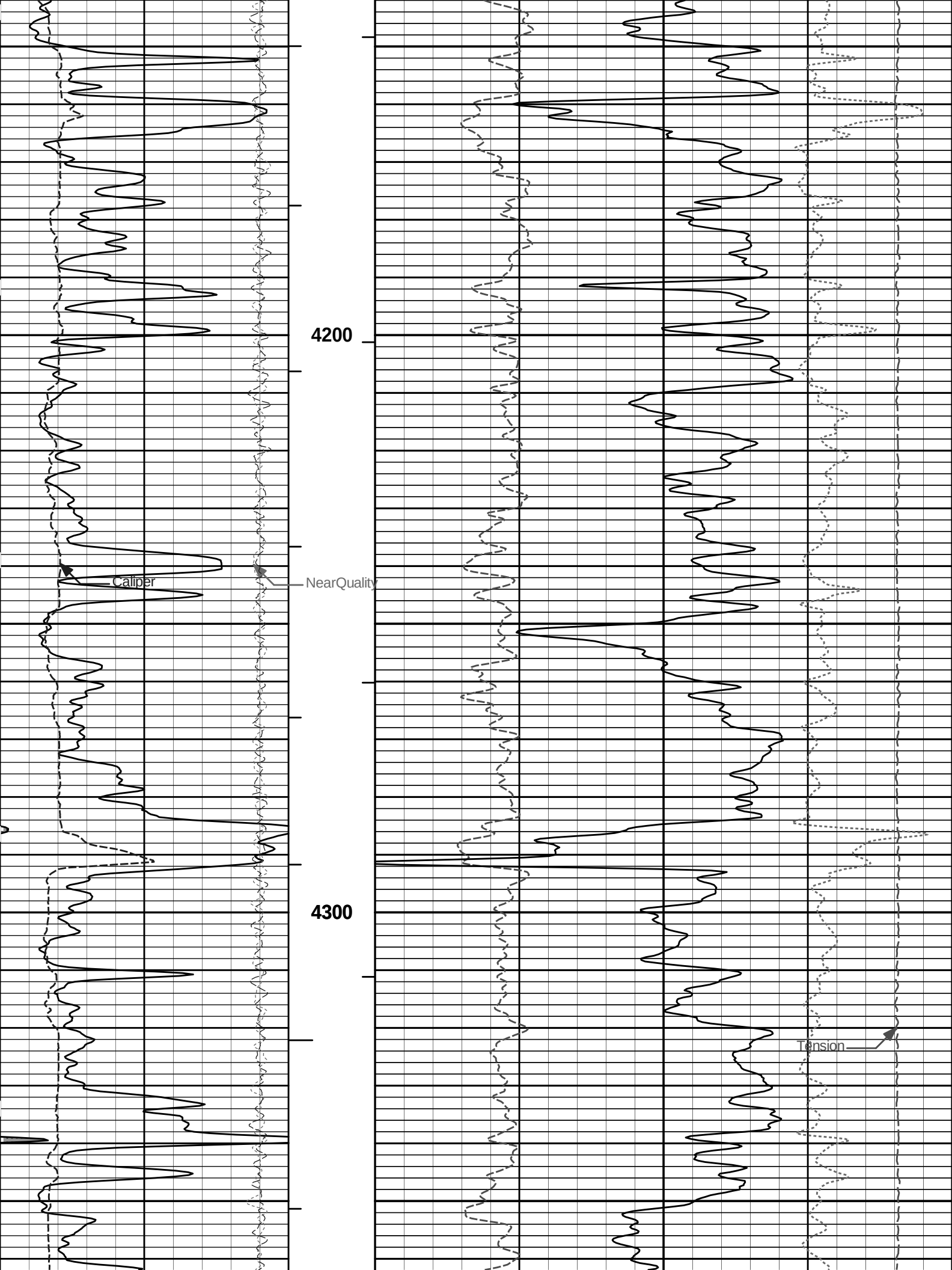
REPEAT SECTION

HALLIBURTON

Plot Time: 06-Mar-12 01:17:43
Plot Range: 4118 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\DETAIL\
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\BULKD_5_MAIN_LIB

5 INCH MAIN LOG

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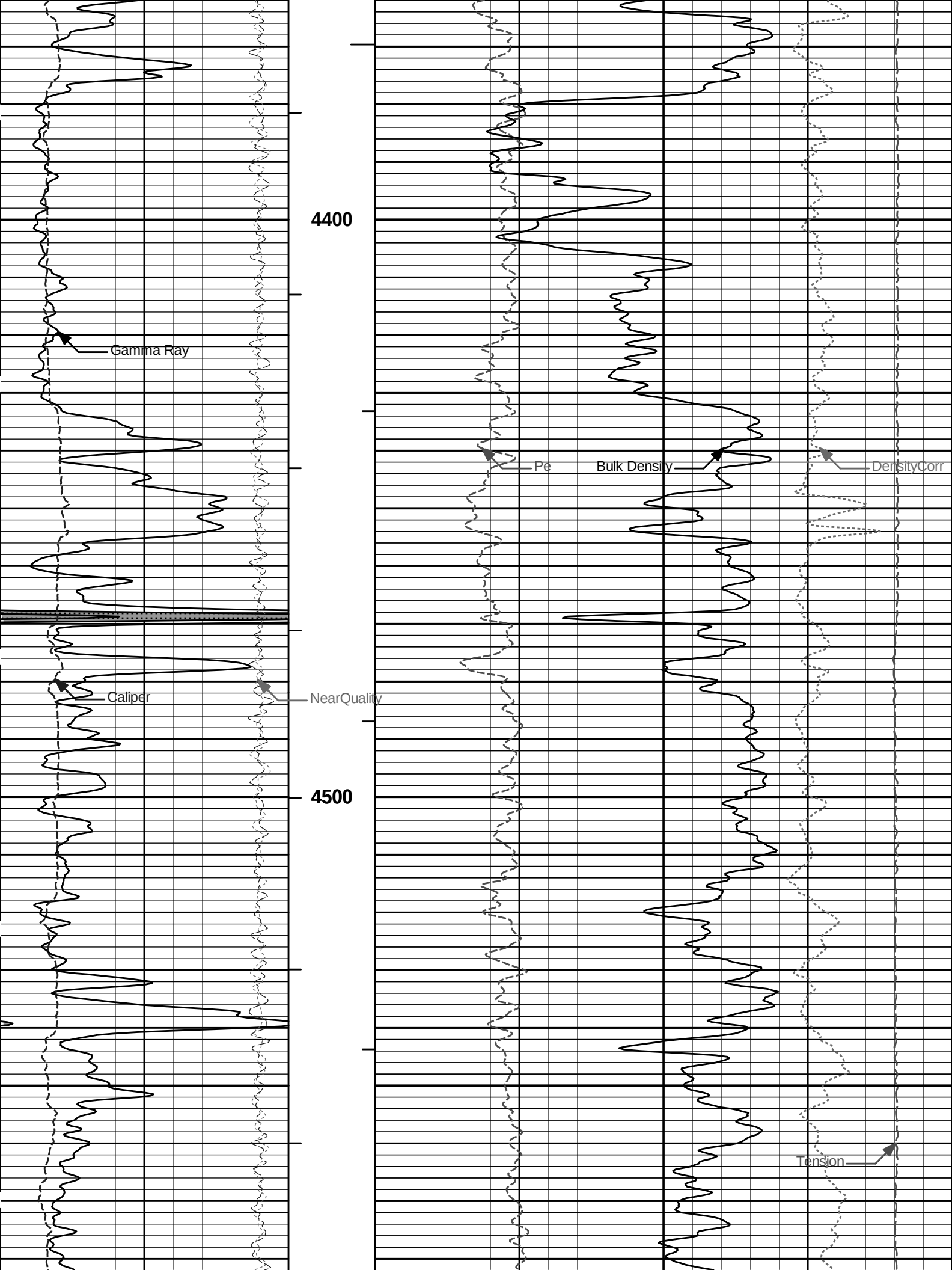
Caliper
NearQuality
Tension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Gamma Ray
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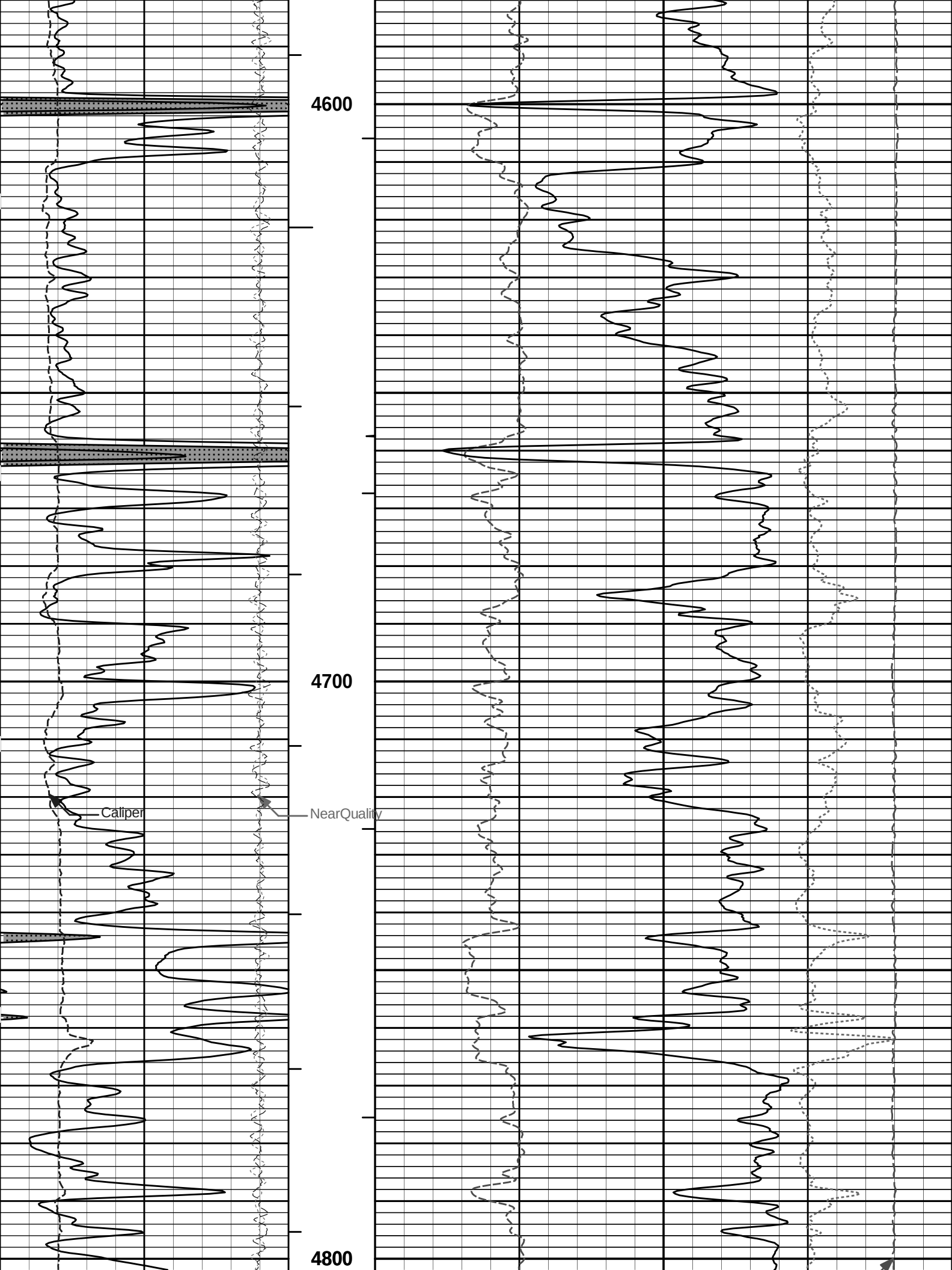
Bulk Density
DensityCorr
Caliper
NearQuality
4500
Tension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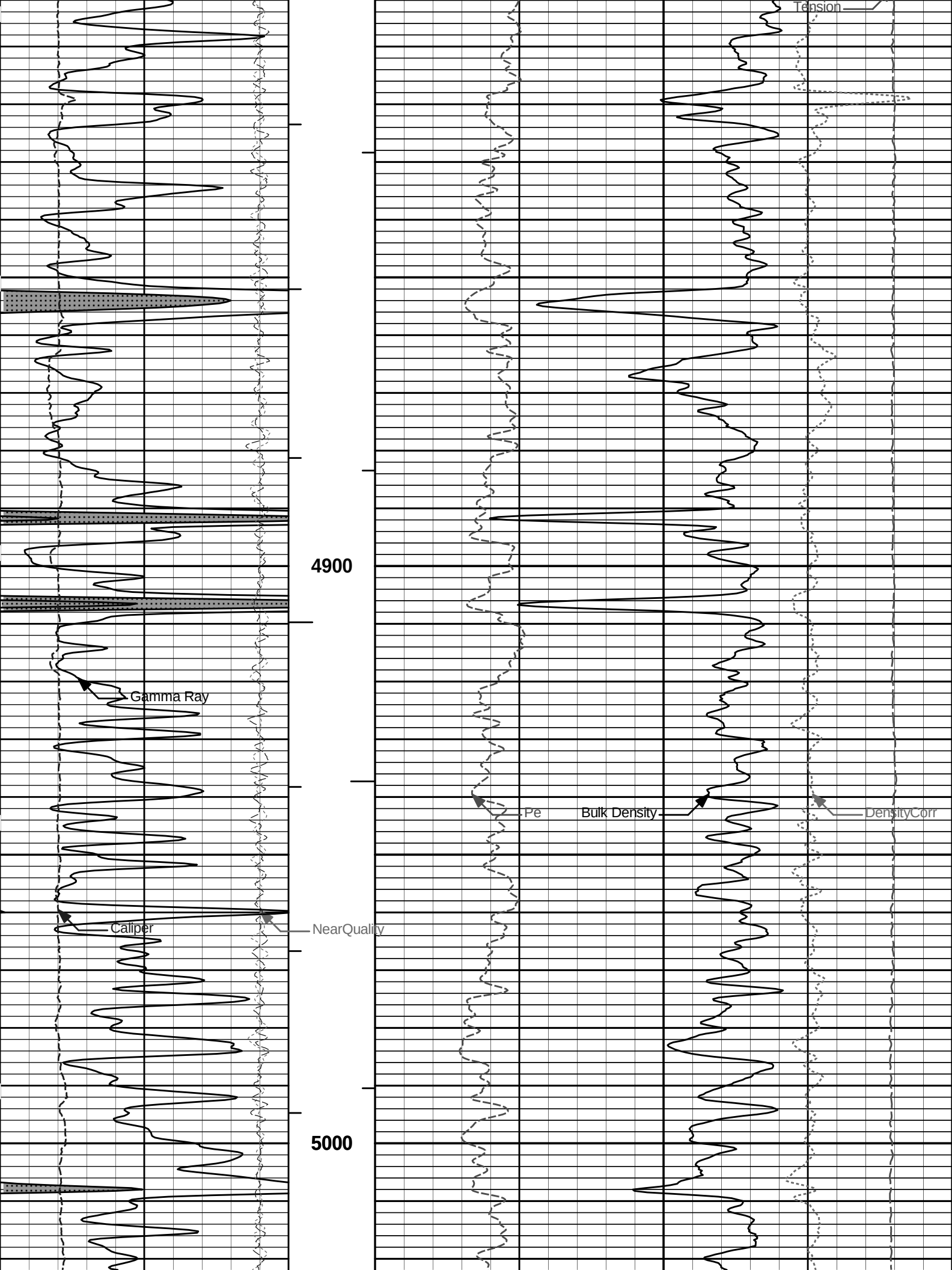
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Gamma Ray
Pe
Bulk Density
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Caliper
NearQuality
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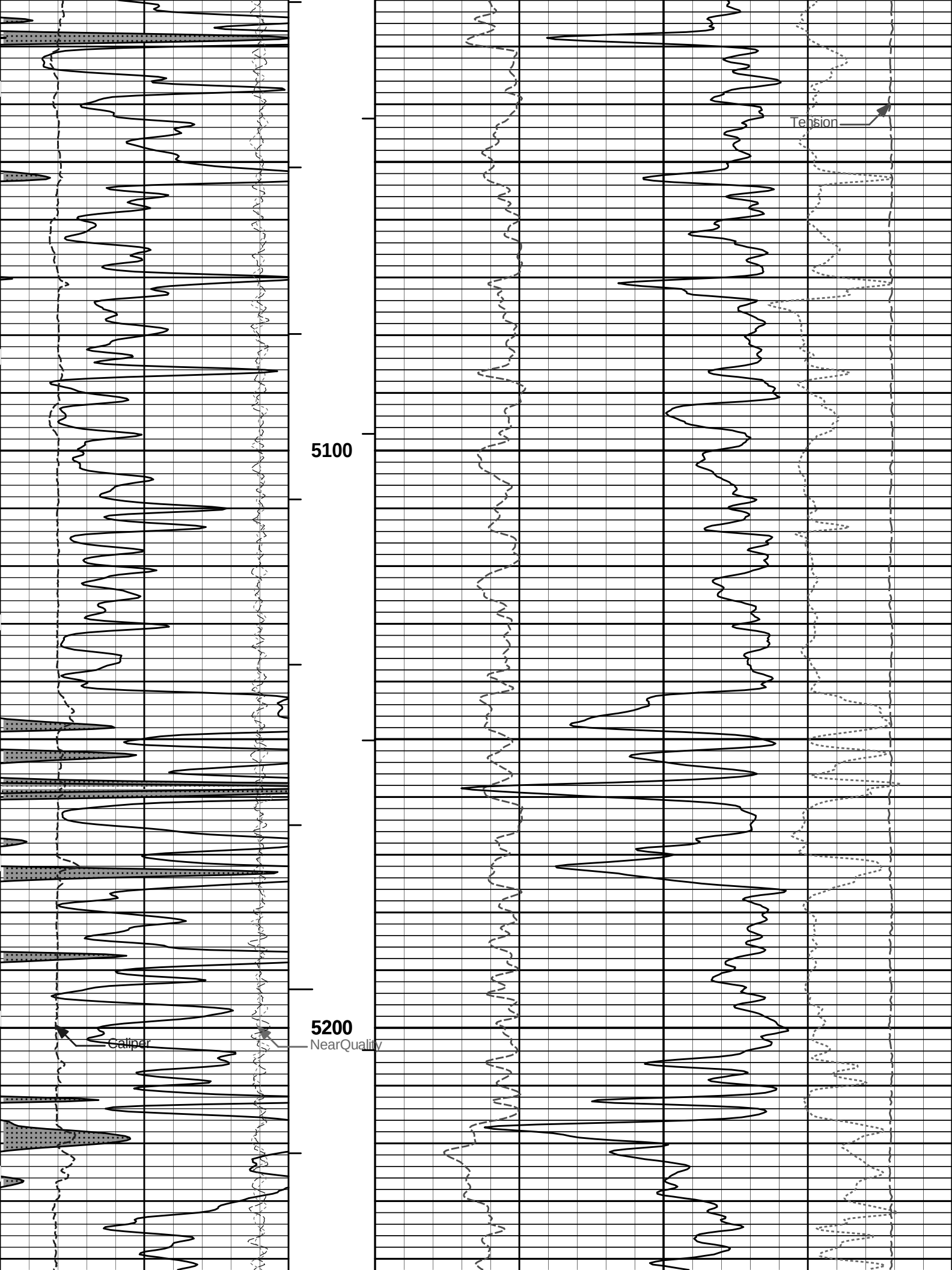
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Caliper
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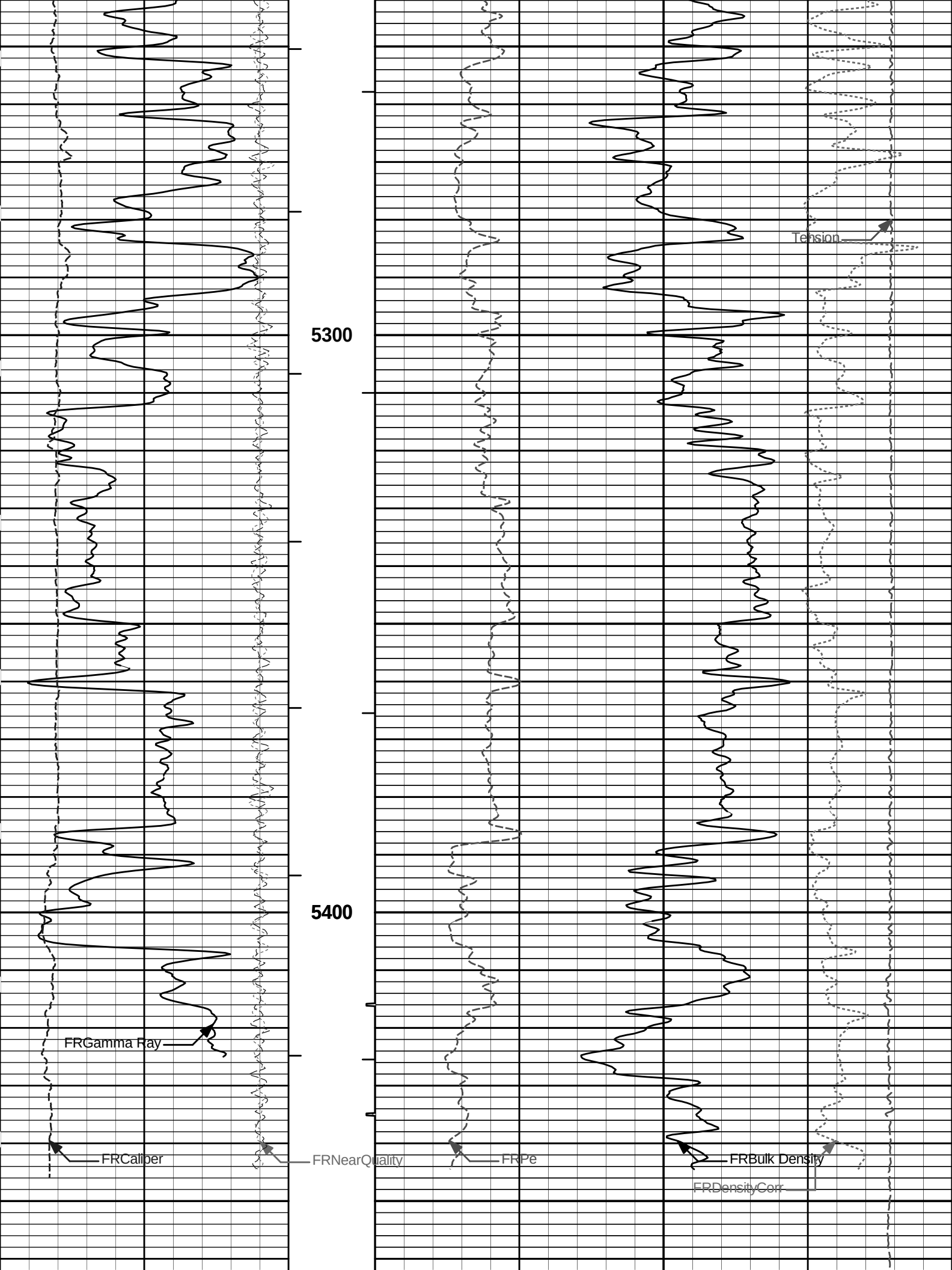
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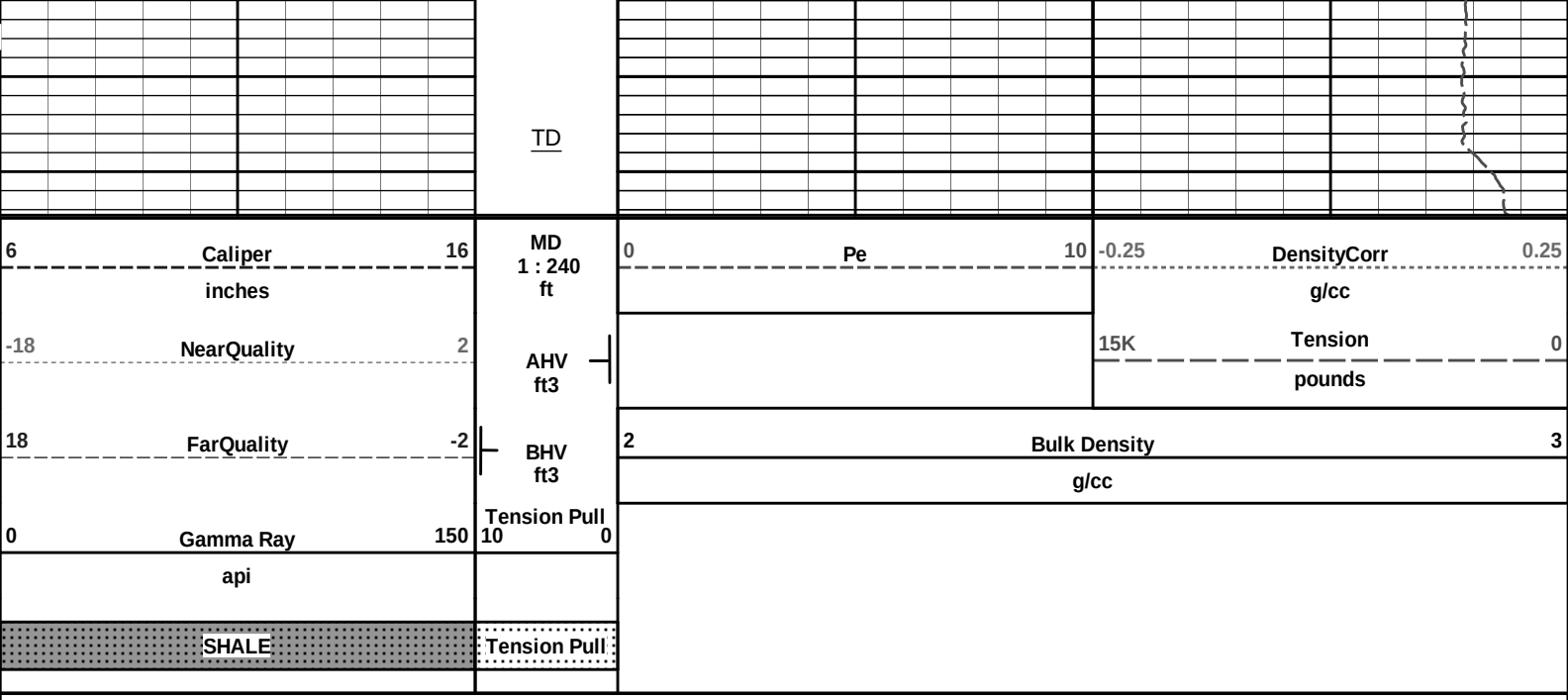
Tension
FRBulk Density
FRDensityCorr



HALLIBURTON

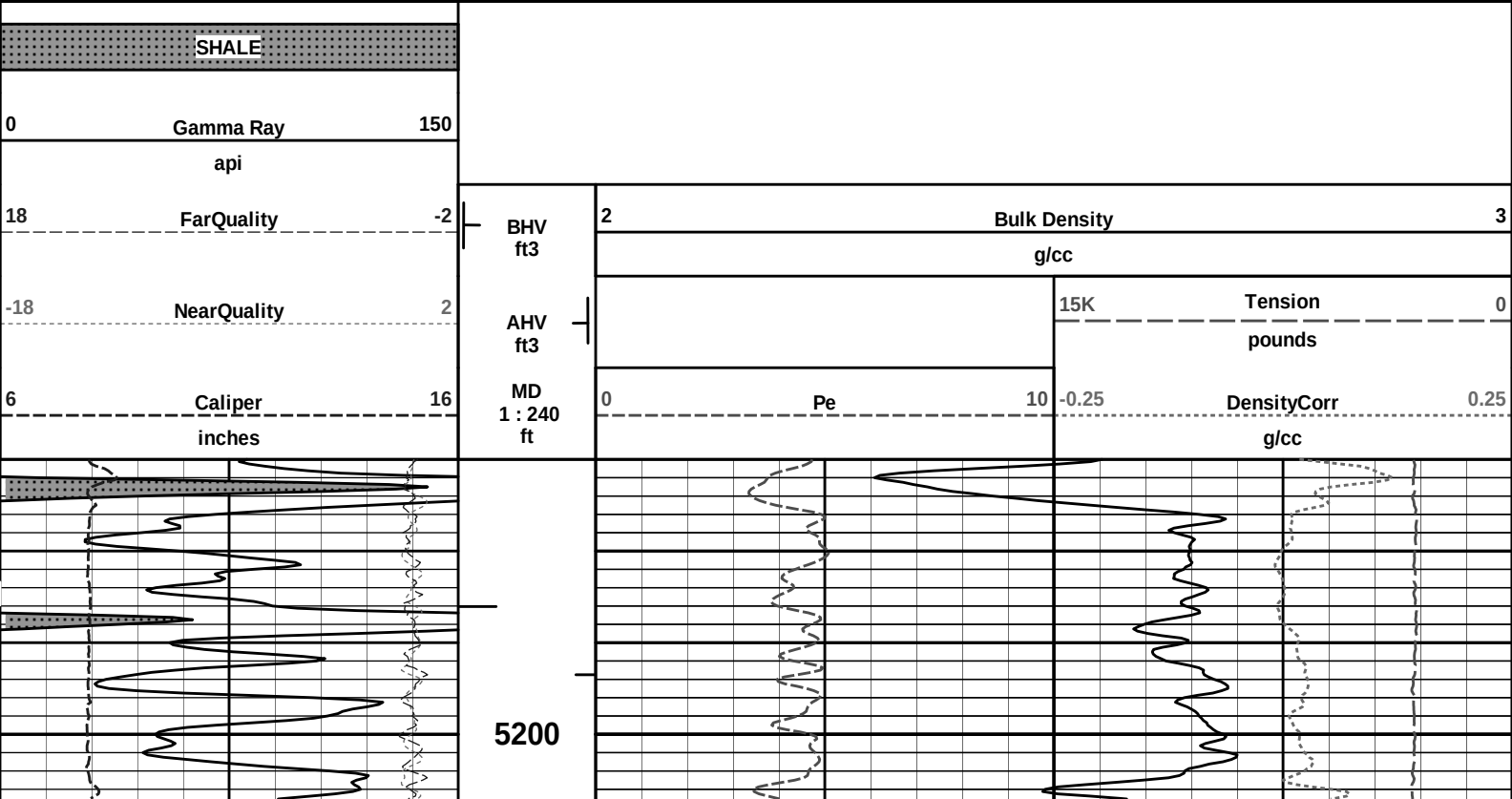
Plot Time: 06-Mar-12 01:17:45
Plot Range: 4118 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\DETAIL\
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\BULKD_5_MAIN_LIB

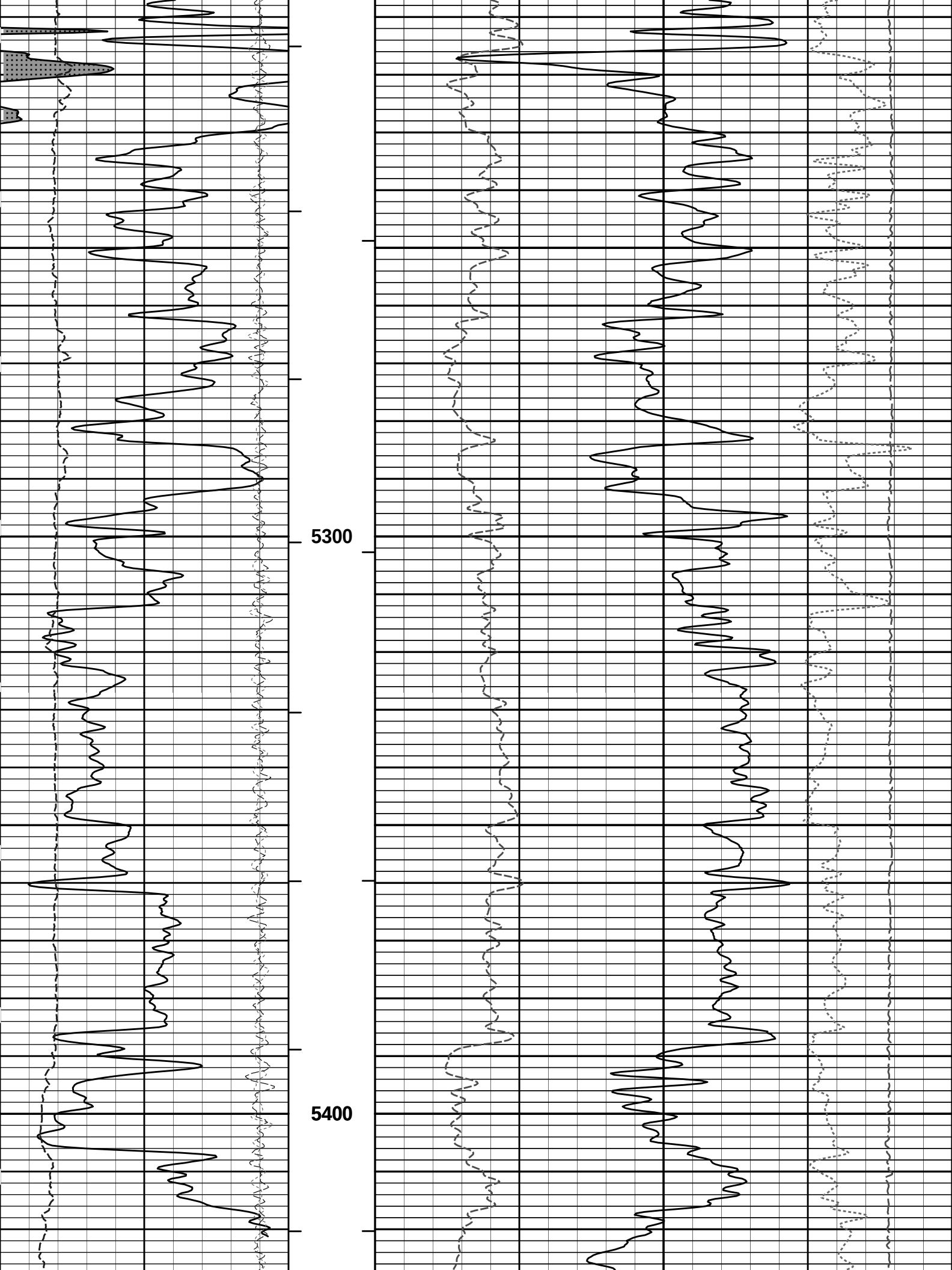
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 06-Mar-12 01:17:45
Plot Range: 5170 ft to 5480.75 ft
Data: KELLS_H_1\Well Based\REPEAT\
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\BULKD_5_REP_LIB

REPEAT SECTION

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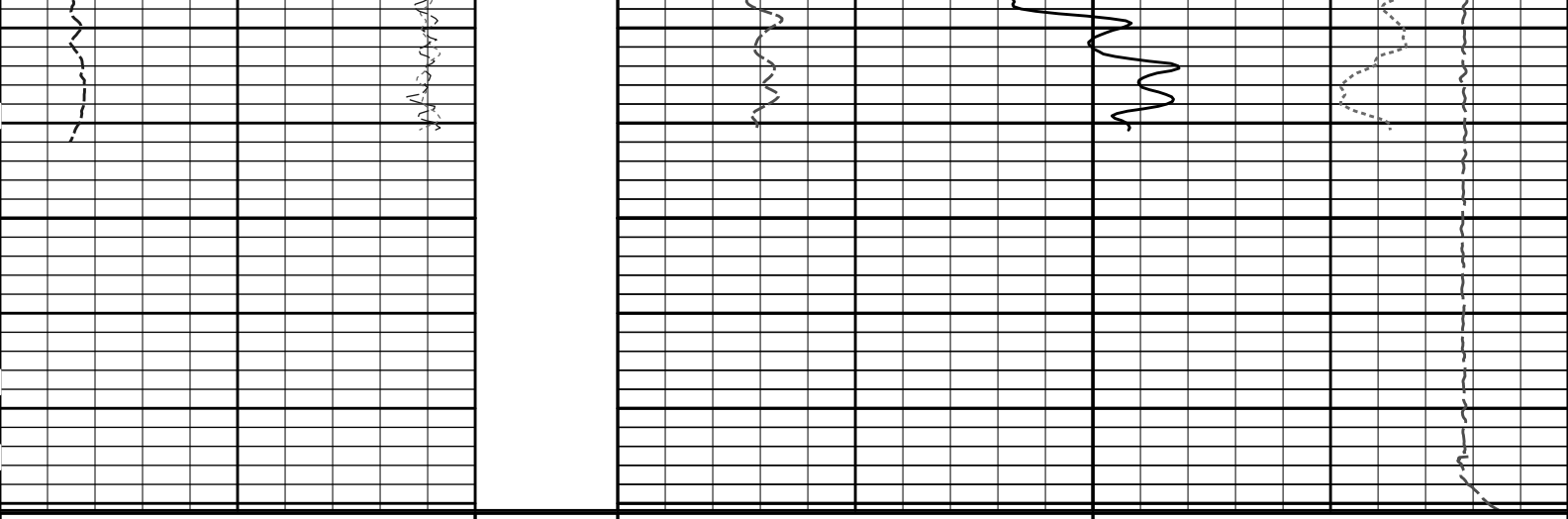

HALLIBURTON

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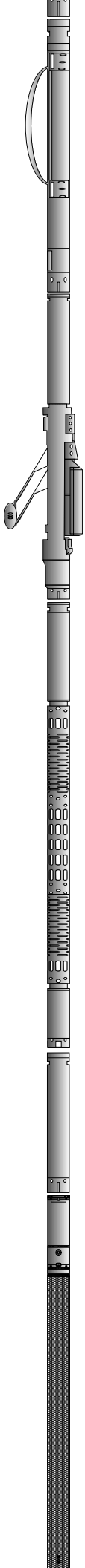
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\BULKD_5_REP_LIB

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 @ 70.36 ft	3.03 ft	71.39 ft
SP Sub-001 60.00 lbs		Ø 3.625 in		SP @ 66.59 ft	3.74 ft	68.36 ft
GTET-11039640 165.00 lbs		Ø 3.625 in		GammaRay @ 58.56 ft	8.52 ft	64.63 ft



56.11 ft

DSN Decentralizer-
11005605
6.60 lbs

Ø 5.000 in*

DSNT-11019643
174.00 lbs

Ø 3.625 in

9.69 ft

DSN Far @ 49.17 ft

DSN Near @ 48.42 ft

46.42 ft

SDLT-I43_M469
360.00 lbs

Ø 4.500 in

10.81 ft

SDLT Pad-P81
65.00 lbs

Microlog Pad-M469
8.00 lbs

Ø 4.750 in*

Ø 4.750 in*

Microlog @ 38.61 ft

SDL Caliper @ 38.42 ft

SDL @ 38.41 ft

35.61 ft

BSAT-10747684
300.00 lbs

Ø 3.625 in

15.77 ft

Sonic Receivers @ 27.09 ft

19.83 ft

ACRt Instrument-
I962
50.00 lbs

Ø 3.625 in

5.03 ft

14.80 ft

Mud Resistivity @ 13.44 ft

ACRt @ 9.46 ft

ACRt Sonde-
I962_S909
200.00 lbs

Ø 3.625 in

14.22 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		68.36	300.00
SP	SP Sub	001	60.00	3.74		64.63	300.00
GTET	Gamma Telemetry Tool	11039640	165.00	8.52		56.11	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69		46.42	60.00
DCNT	DSN Decentralizer	11005605	6.60	5.13	*	49.75	300.00
SDLT	Spectral Density Tool	I43_M469	360.00	10.81		35.61	60.00
MICP	Microlog Pad	M469	8.00	1.00	*	38.11	60.00
SDLP	Density Insite Pad	P81	65.00	2.55	*	37.82	60.00
BSAT	Borehole Sonic Array Tool	10747684	300.00	15.77		19.83	60.00
ACRt	Array Compensated True Resistivity Instrument Section	I962	50.00	5.03		14.80	300.00
ACRt	Array Compensated True Resistivity	I962_S909	200.00	14.22		0.58	300.00
CBHD	Cabbage Head	TRK696	10.00	0.58		0.00	300.00
Total			**1,436.10**	**71.39**			

* Not included in Total Length and Length Accumulation.

Data: KELLS_H_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 05-Mar-12 18:51:41**

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11039640 **Reference Calibration Date:** 27-Jan-12 07:52:04

Engineer: C. MARLOWE **Calibration Date:** 22-Feb-12 20:28:49

Software Version: WL INSITE R3.4.2 (Build 2) **Calibration Version:** 1

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Measurement	Measured	Calibrated	Units
Background	48.5	48.8	api
Background + Calibrator	316.6	318.4	api
Calibrator	268.1	269.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11039640 **Reference Calibration Date:** 22-Feb-12 20:28:49

Engineer: J. BOLLOM **Calibration Date:** 05-Mar-12 18:18:43

Software Version: WL INSITE R3.4.2 (Build 2) **Calibration Version:** 1

Calibrator Source S/N: TB146

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	48.8	52.9	api
Background + Calibrator	318.4	321.3	api
Calibrator	269.6	268.4	api

Shop	Field	Difference	Tolerance
269.6	268.4	1.2	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11019643**	**Reference Calibration Date:**	**16-Feb-12 08:54:03**
Engineer:	**C.PARKER**	**Calibration Date:**	**16-Feb-12 09:05:04**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: 696
Tank Serial Number: LIBERAL_NEUTRON
Reference value assigned to Tank: 51.680
Snow Block S/N: 696
Calibration Tank Water Temperature: 62 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.955	0.956	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):	0.2107	0.2110	0.0002	+/- 0.0020
Calibrated Ratio:	9.72	9.73	0.007	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0734	0.02000 - 0.09000

PASS/FAIL SUMMARY

Background Check:	Passed
Gain-Range Check:	Passed
Snow-Block Check:	Passed

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	**DSNT - 11019643**	**Reference Calibration Date:**	**16-Feb-12 09:05:04**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**05-Mar-12 18:24:07**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: 696
Snow Block S/N: 696

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0734	0.0600	-0.0134	+/- 0.0150

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - I43_M469**	**Reference Calibration Date:**	**16-Feb-12 10:03:14**
Engineer:	**C.PARKER**	**Calibration Date:**	**16-Feb-12 10:07:31**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**Calibration Version:**	**1**

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-1784.89	-1917.62	-7000.00 - -1000.00
Pad Gain	0.0003910	0.0003971	0.000200 - 0.000600
Arm Offset	-330.31	-137.08	-5000.00 - 3000.00
Arm Gain	0.0005187	0.0005069	0.000300 - 0.000700
Arm Power	-0.000006098	-0.000005316	-0.000010 - 0.000010

The ring diameter is computed from: DIAMETER = PAD EXTENSION + ARM EXTENSION + TOOL DIAMETER

Tool Diameter: 4.50 in

CALIBRATION RINGS				
Measurement	Current Reading (Previous Coeff.)	Calibrated (New Coeff.)	Change	Control Limit On New Value
PAD EXTENSION:				
Small Ring (in)	2.02	2.00	-0.02	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.28	8.25	-0.03	+/- 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 - I43_M469 **Reference Calibration Date:** 16-Feb-12 10:07:31

Engineer: J. BOLLOM **Calibration Date:** 05-Mar-12 18:28:58

Software Version: WL INSITE R3.4.2 (Build 2) **Calibration Version:** 1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.81	0.06	+/- 0.10
Ring Diameter	8.25	8.32	0.07	+/- 0.15

PASS/FAIL SUMMARY	
Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name: ACRt Sonde - I962_S909 **Reference Calibration Date:** 24-Jan-12 09:31:40

Engineer: C. HAVERKAMP **Calibration Date:** 24-Feb-12 13:24:09

Software Version: WL INSITE R3.4.2 (Build 2) **Calibration Version:** 1

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0168	1.05	0.95	1.0229	1.05	0.95	1.0207	1.05
A2 (50")	0.95	1.0114	1.05	0.95	1.0172	1.05	0.95	1.0165	1.05
A3 (29")	0.95	1.0025	1.05	0.95	1.0075	1.05	0.95	1.0045	1.05
A4 (17")	0.95	1.0042	1.05	0.95	1.0069	1.05	0.95	1.0066	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0047	1.05	0.95	1.0023	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9883	1.05	0.95	0.9861	1.05

TYPICAL SONDE OFFSET RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	-5	-0.741	2	-6	-4.230	-2	-8	-4.258	-2
A2 (50")	-7	-1.770	-1	-6	-3.669	-2	-7	-4.211	-2
A3 (29")	-27	-14.223	-9	-9	-4.442	-3	-7	-2.621	-1
A4 (17")	-180	-101.737	-60	-45	-30.295	-15	-39	-25.948	-13
A5 (10")	N/A	N/A	N/A	-150	-100.527	-50	-80	-45.910	-10
A6 (6")	N/A	N/A	N/A	175	282.721	525	90	148.160	270

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.8813	1.3
36K	1.0	1.3484	2.0
72K	1.0	1.5779	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.002	1.05

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - P81
Engineer: C.PARKER
Software Version: WL INSITE R3.4.2 (Build 2)
Reference Calibration Date: 16-Feb-12 09:32:29
Calibration Date: 16-Feb-12 09:50:51
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: 2.598

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0007	1.0390	0.90 - 1.10
Near Dens Gain	0.9863	1.0240	0.90 - 1.10
Near Peak Gain	0.9638	1.0214	0.90 - 1.10
Near Lith Gain	0.9505	0.9895	0.90 - 1.10
Far Bar Gain	1.0070	1.0126	0.90 - 1.10
Far Dens Gain	0.9953	1.0029	0.90 - 1.10
Far Peak Gain	0.9892	0.9950	0.90 - 1.10
Far Lith Gain	0.9673	0.9741	0.90 - 1.10
Near Bar Offset	0.1494	-0.1966	NONE
Near Dens Offset	0.2613	-0.0657	NONE
Near Peak Offset	0.4387	-0.0378	NONE
Near Lith Offset	0.5394	0.2188	NONE
Far Bar Offset	0.0283	-0.0164	NONE
Far Dens Offset	0.1237	0.0609	NONE
Far Peak Offset	0.1380	0.0956	NONE
Far Lith Offset	0.2818	0.2321	NONE
Near Bar Background	823.63	824.58	700 - 1450
Near Dens Background	269.31	269.85	230 - 480
Near Peak Background	117.39	117.18	100 - 210
Near Lith Background	146.50	146.84	125 - 260
Far Bar Background	536.19	537.63	450 - 900
Far Dens Background	209.96	210.26	175 - 345
Far Peak Background	83.75	84.87	70 - 140
Far Lith Background	88.57	87.09	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.679	1.684	0.005	+/- 0.015
Pe	2.565	2.557	-0.008	+/- 0.150
ALUMINUM				
Density (g/cc)	2.597	2.598	0.001	+/- 0.01500
Pe	3.116	3.126	0.010	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0011	+/- 0.0110	0.0000	+/- 0.0140
Magnesium Block	-0.0008	+/- 0.0110	-0.0013	+/- 0.0140
Aluminum Block	-0.0006	+/- 0.0110	-0.0011	+/- 0.0140
Resolution	9.43	6.00 - 11.50	8.92	6.00 - 11.50
Internal Verifier(B+D+P+L)	1358	1200 - 2700	920	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 - P81
Engineer: J. BOLLOM
Software Version: WL INSITE R3.4.2 (Build 2)
Reference Calibration Date: 16-Feb-12 09:50:51
Calibration Date: 05-Mar-12 18:18:49
Calibration Version: 1

Pad Temperature: 74.5 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1358.449	1358.934	0.485	14.900
Far (B+D+P+L) cps	919.854	929.193	9.339	16.438
Near Resolution	9.43	9.54	0.110	0.50
Far Resolution	8.92	9.32	0.400	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 - M469
Reference Calibration Date: 20-Jan-12 09:25:17

Engineer:	**C.PARKER**	**Calibration Date:**	**16-Feb-12 10:13:03**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**Calibration Version:**	**1**

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal		Micro Log Lateral		
	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	-0.06	-0.07	-0.06	-0.01	ohmm
Calibration Point #1	0.00	0.00	-0.04	0.00	ohmm
Calibration Point #2	20.03	20.00	20.01	20.00	ohmm
Internal Reference	19.97	19.94	20.00	19.99	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-0.02	0.03	V
Calibration Point #1	17.53	4.88	V
Calibration Point #2	5362.47	7021.63	V
Internal Reference	5346.02	7018.61	V

MICRO LOG FIELD CHECK

Tool Name:	**Microlog Pad - M469**	**Reference Calibration Date:**	**16-Feb-12 10:13:03**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**05-Mar-12 18:30:04**
Software Version:	**WL INSITE R3.4.2 (Build 2)**	**Calibration Version:**	**1**

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.07	-0.07	-0.01	-0.01	ohmm
Internal Reference	19.94	19.92	19.99	19.97	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.94	19.92	0.02	+/- 0.80
Microlog Lateral	19.99	19.97	0.02	+/- 0.80

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11039640						
Gamma Ray Calibrator	269.6	268.4	----------	1.2	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0734	0.0600	----------	0.0134	+/- 0.0150	decp
SDLT-I43_M469						
Pad Extension	3.75	3.81	----------	-0.06	+/-0.10	in
Ring Diameter	8.25	8.32	----------	-0.070	+/-0.15	in
ACRt Sonde-I962_S909						
Mud Cell	1.002	----------	----------	0.000	----------	ohm-m
SDLT Pad-P81						
Near(B+D+P+L)	1358.449	1358.934	----------	-0.485	+/-14.900	cps
Far(B+D+P+L)	919.854	929.193	----------	-9.339	+/-16.438	cps
Microlog Pad-M469						
MicroLog Normal	19.94	19.92	----------	0.02	+/-0.80	ohmm
MicroLog Lateral	19.99	19.97	----------	0.02	+/-0.80	ohmm

Data: KELLS_H_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 05-Mar-12 18:54:44**

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	9.700	ppg
	SHARED	WAGT	Weighting Agent	Natural	
	SHARED	BSAL	Borehole salinity	4500.00	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	5509.00	ft
	SHARED	BHT	Bottom Hole Temperature	200.0	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
	Microlog 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	
BOTTOM					

Data: KELLS_H_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 05-Mar-12 18:52:16**

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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	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

ERND	Near Detector Telemetry Counts EVR	48.42	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	49.17	BLK	0.000
ENTM	DSN Tool Temperature EVR	48.42	NO	
	SDLT			
TPUL	Tension Pull	38.42	NO	
PCAL	Pad Caliper	38.42	TRI	0.250
ACAL	Arm Caliper	38.42	TRI	0.250
	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 Sonde			
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

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	

SDLT Pad				
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	37.81	NO	
FHV	Far Detector High Voltage	37.81	NO	
ITMP	Instrument Temperature	37.81	NO	
DDHV	Detector High Voltage	37.81	NO	

Microlog Pad				
TPUL	Tension Pull	38.60	NO	
MINV	Microlog Lateral	38.60	BLK	0.750
MNOR	Microlog Normal	38.60	BLK	0.750

Data: KELLS_H_1\0001 SP-GTET-DSN-SDL-BSAT-ACRT-CH\IDLE **Date: 05-Mar-12 18:52:37**

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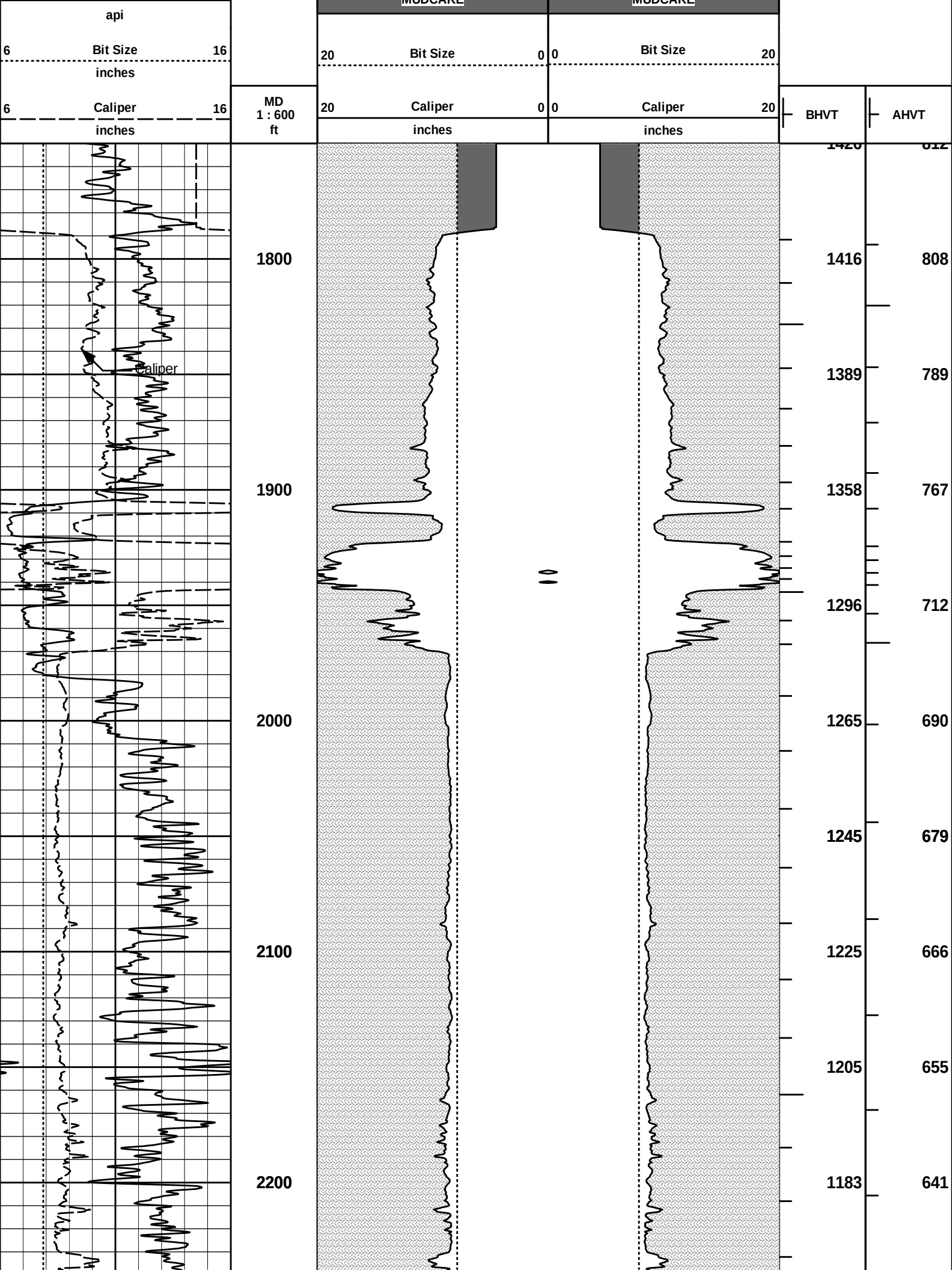
Plot Time: 06-Mar-12 01:17:47
Plot Range: 1750 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\CASING
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT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1 : 600
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AHVT
Caliper
1800
1900
2000
2100
2200
1416
808
1389
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1358
767
1296
712
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690
1245
679
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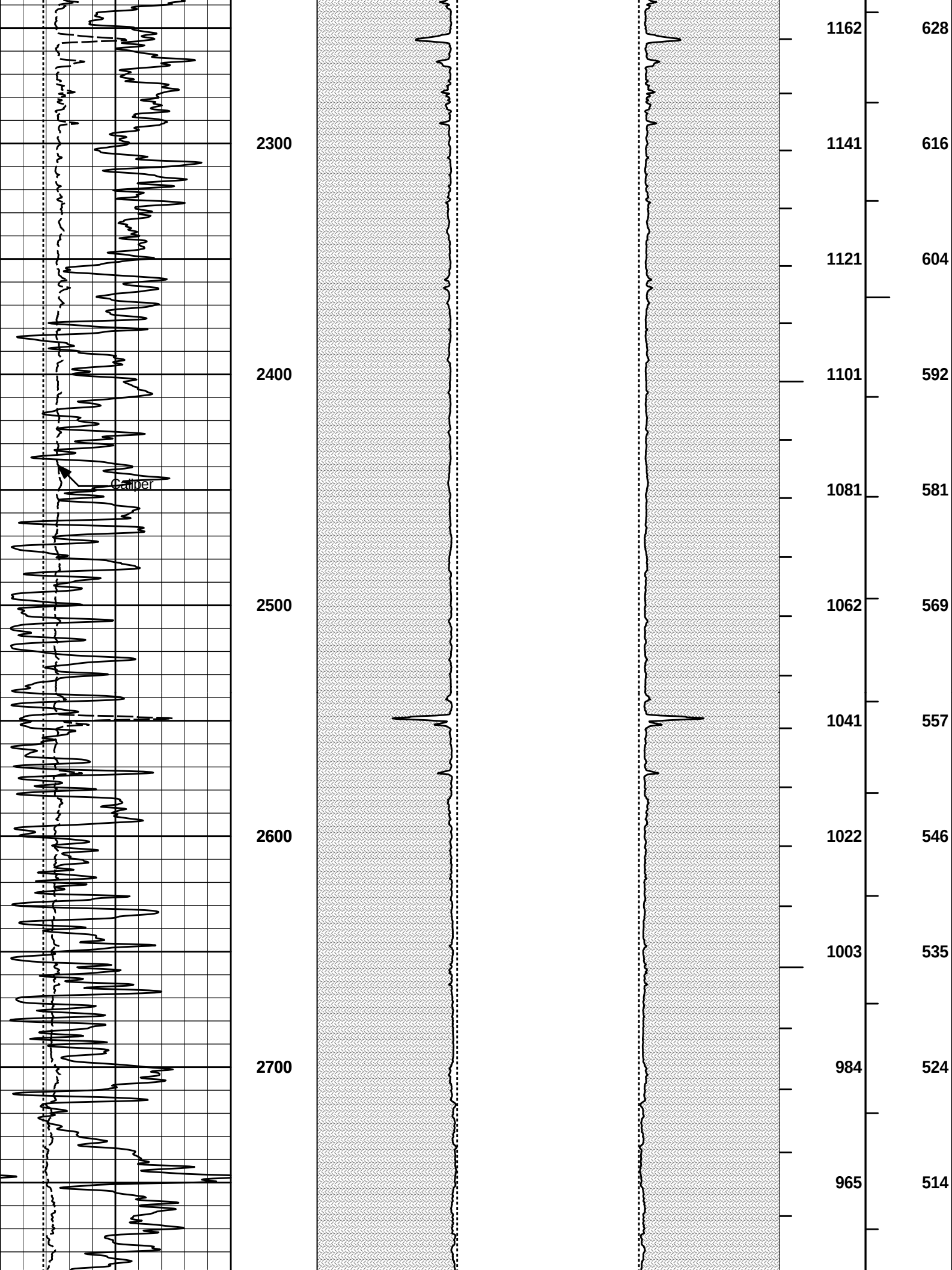
666
1205
655
1183
641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1041
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604
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557
546
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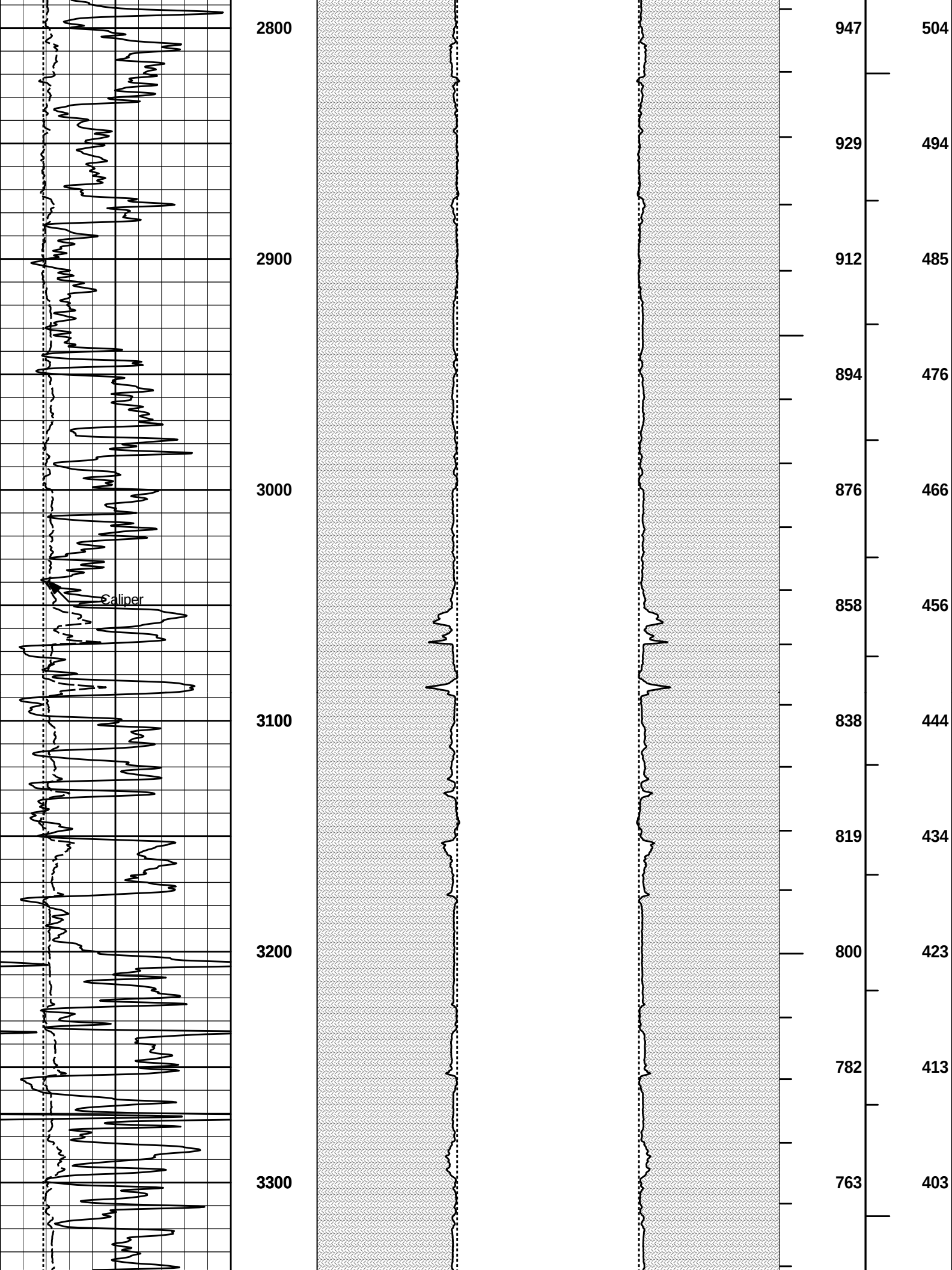
524
514


2800
2900
3000
3100
3200
3300
Caliper
947
929
912
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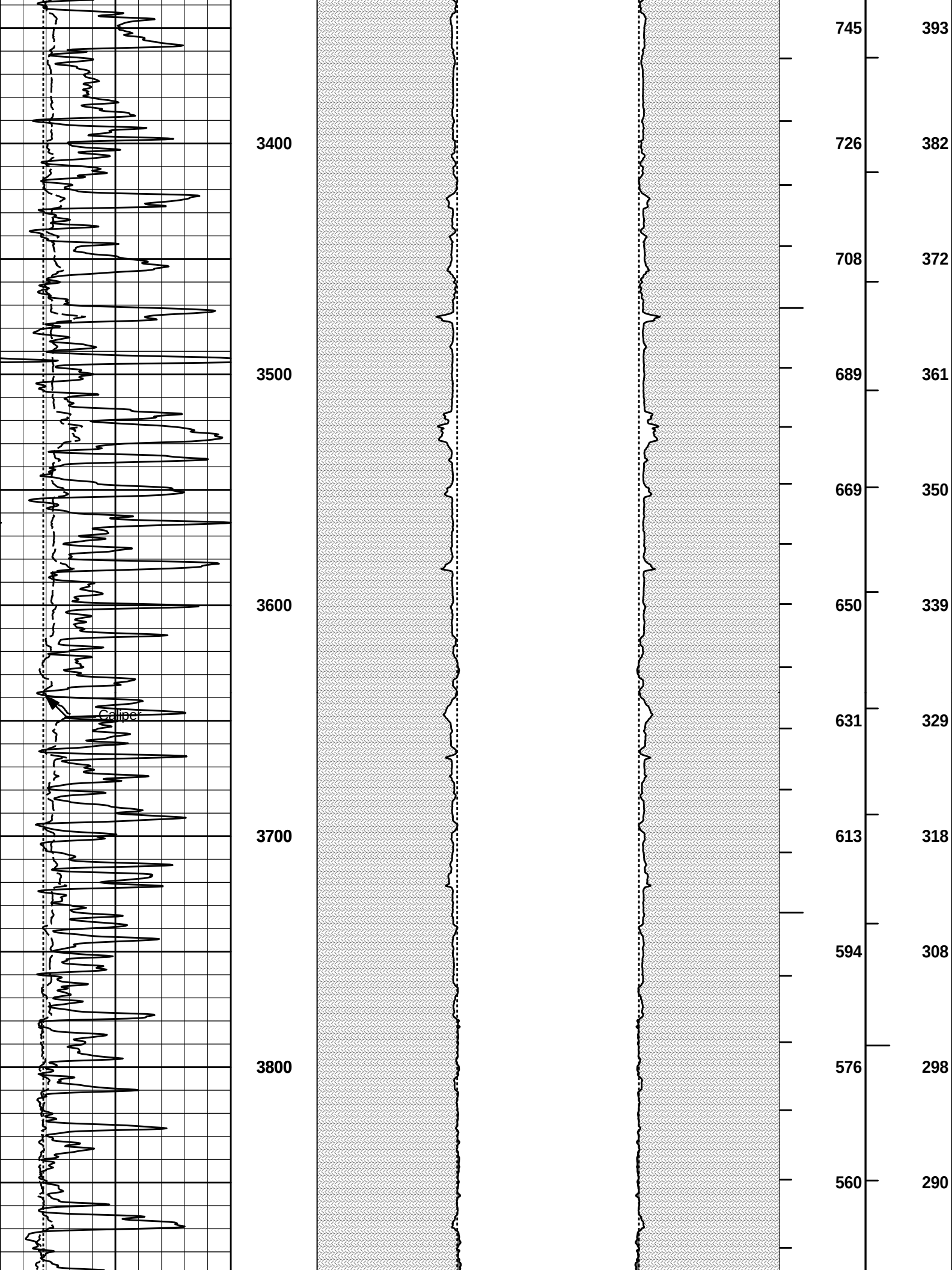
3400
3500
3600
3700
3800
Caliper
745
726
708
689
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631
613
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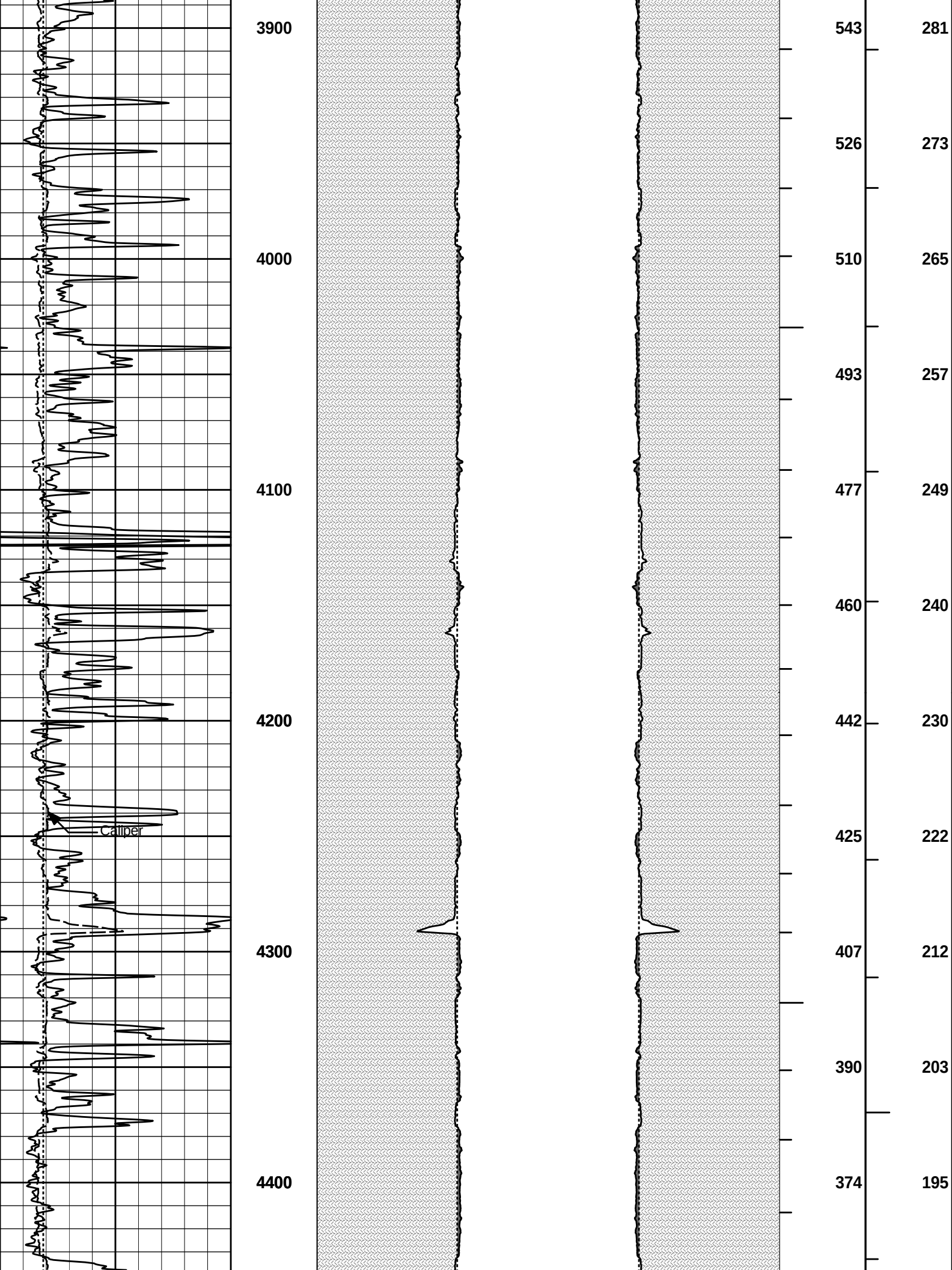
308
298
290


3900
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4100
4200
4300
4400
Caliper
543
526
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493
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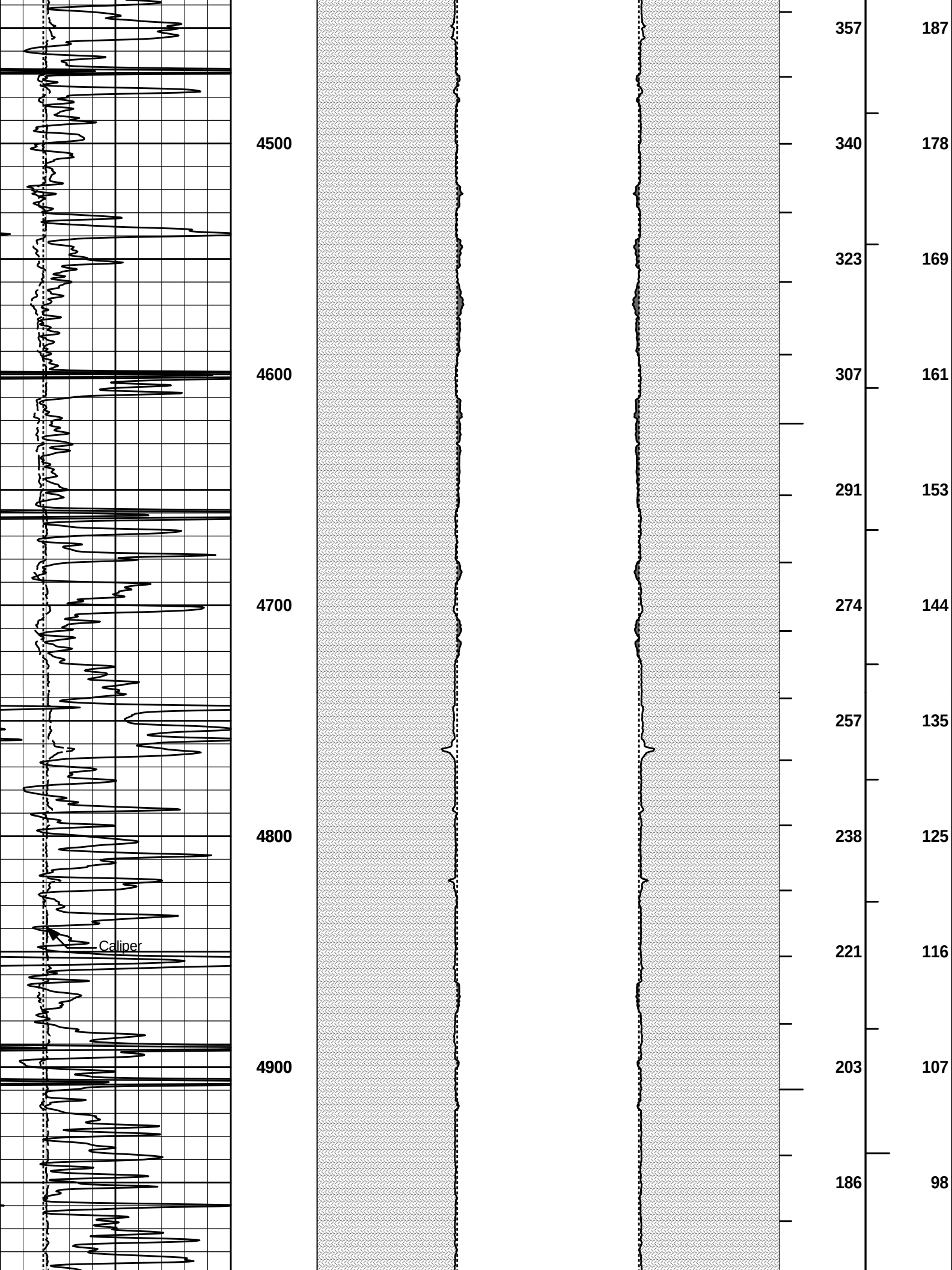
203
195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4600
4700
4800
4900
Caliper
357
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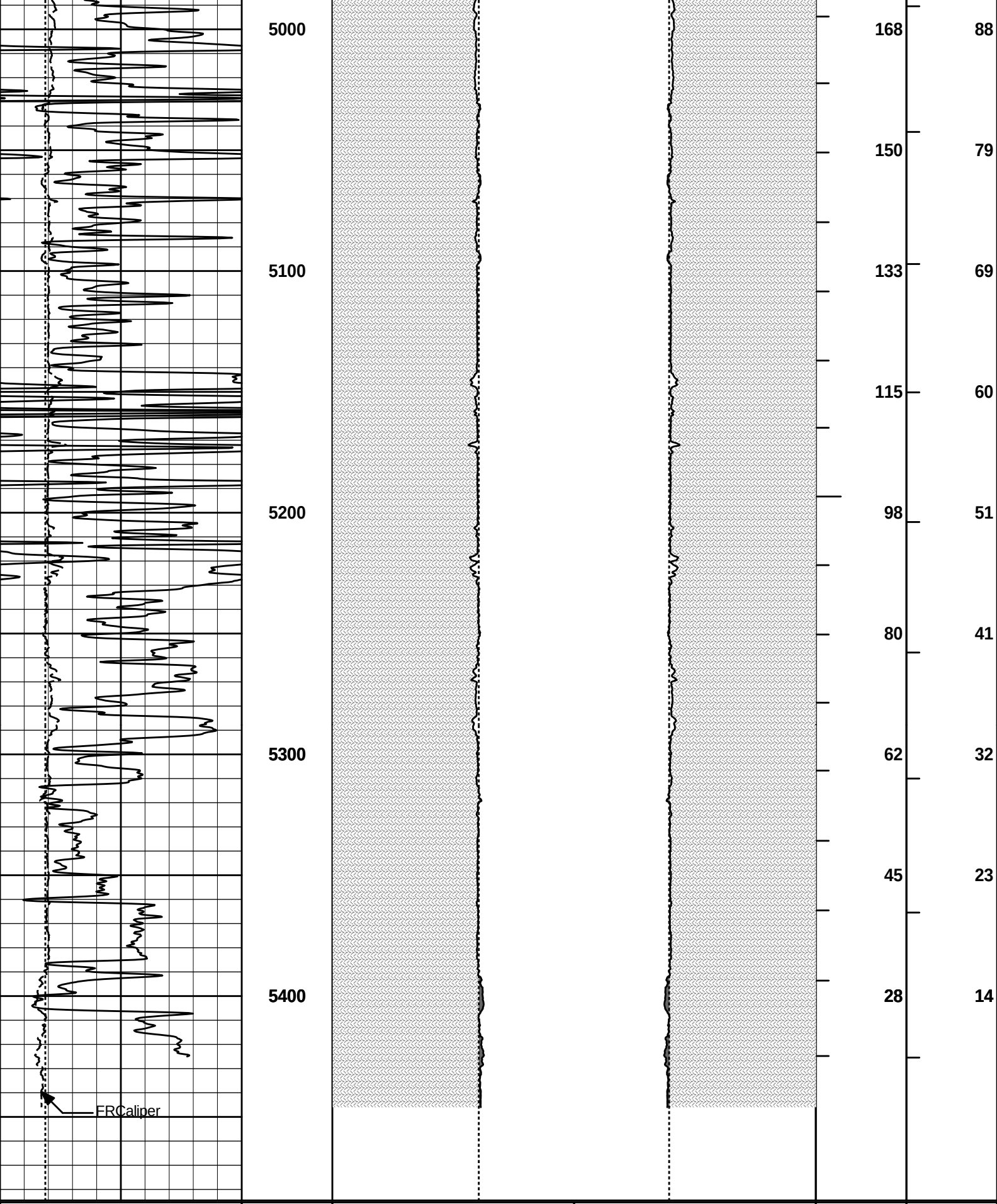
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5200
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5400
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98
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79
69
60
51
41
32
23
14
FRCaliper
6
Caliper
16
inches
6
Bit Size
16
inches
MD
1 : 600
ft
20
Caliper
0
inches
20
Bit Size
0
0
Caliper
20
inches
0
Bit Size
20
BHVT
AHVT

0	Gamma API	150
	api	

MUDCAKE	MUDCAKE

HALLIBURTON

Plot Time: 06-Mar-12 01:17:50
Plot Range: 1750 ft to 5484.58 ft
Data: KELLS_H_1\Well Based\CASING
Plot File: \\-LOCAL-\KELLS_H_1\0002 SP-GTET-DSN-SDL-BSAT-ACRT-CH\PORO\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

COMPANY	**OXY USA INC**		
WELL	**KELLS H-1**		
FIELD	**PLEASANT PRARIE SE**		
COUNTY	**HASKELL**	STATE	**KANSAS**

HALLIBURTON

SPECTRAL DENSITY
DUAL SPACED NEUTRON
LOG