HALLIBURTON

COMPANY	TENGASCO, INC.
WELL	ALBERS B #3
FIELD/BLOCK	GOOD SCIENCE
COUNTY	TREGO
STATE	KANSAS

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG

COMPANY **TENGASCO, INC.**

WELL **ALBERS B #3**

FIELD/BLOCK **GOOD SCIENCE**

COUNTY **TREGO** STATE **KANSAS**

API No. 15-195-22923-00-00

Location (SHL) 1660' FNL & 2090' FEL
SE-NW-SW-NE

Other Services:
MICROLOG
ACRT

Sect. 23 Twp. 15S Rge. 25W

Permanent Datum GL Elev. 2496.0 ft
Log measured from KB 7.0 ft above perm. Datum
Drilling measured from KB

Elev.: K.B. 2503.0 ft
D.F. 2502.0 ft
G.L. 2496.0 ft

Date		23-Mar-14			
Run No.		ONE			
Depth - Driller		4629.00 ft			
Depth - Logger		4629.0 ft			
Bottom - Logged Interval		4603.0 ft			
Top - Logged Interval		3500.0 ft			
Casing - Driller		8.625 in @ 263.0 ft		@	@
Casing - Logger		263.0 ft			
Bit Size		7.875 in		@	@
Type Fluid in Hole		Water Based Mud			
Density	Viscosity	9.4 ppg	64.00 s/qt		
PH	Fluid Loss	10.50 pH	6.8 cptm		
Source of Sample		MUD PIT			
Rm @ Meas. Temperature		0.750 ohmm @ 75.00 degF		@	@
Rmf @ Meas. Temperature		0.65 ohmm @ 75.00 degF		@	@
Rmc @ Meas. Temperature		0.890 ohmm @ 75.00 degF		@	@
Source Rmf	Rmc	MEASURED	MEASURED		
Rm @ BHT		0.48 ohmm @ 120.0 degF		@	@
Time Since Circulation		4.0 hr			
Time on Bottom		23-Mar-14 10:38			
Max. Rec. Temperature		120.0 degF @ 4629.0 ft		@	@
Equipment	Location	11072142	LIBERAL		
Recorded By		J. BOLLOM			
Witnessed By		G. WAGNER			

Fold here

Service Ticket No.: 901200947 API Serial No.: 15-195-22923-00-00 PGM Version: WL INSITE R4.2.0 (Build 2)

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

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.		Run No.	ONE	Run No.	ONE
Serial No.	11048627	Serial No.		Serial No.	10844781	Serial No.	11019643
Model No.	GTET	Model No.		Model No.	SDLT-I	Model No.	DSNT-I
Diameter	3.625"	No. of Cent.		Diameter	4.5"	Diameter	3.625"
Detector Model No.	T-102	Spacing		Log Type	GAM-GAM	Log Type	NEU-NEU
Type	SCINT			Source Type	CS137	Source Type	AM241BE
Length	8'	LSA [Y/N]		Serial No.	5168GW	Serial No.	DSN-424
Distance to Source	10'	FWDA [Y/N]		Strength	1.5 CI	Strength	15 CI

LOGGING DATA

GENERAL			GAMMA		ACOUSTIC			DENSITY			NEUTRON		
Run	Depth		Speed	Scale		Scale		Matrix	Scale		Matrix	Scale		Matrix
No.	From	To	ft/min	L	R	L	R		L	R		L	R	
ONE	4629	3500	REC	0	150				30	-10	2.71	30	-10	LIME

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5-INCH CASING

CHLORIDES REPORTED AT 3,300 MG/L

LCM REPORTED AT 3 LB/BBL

GTET-DSNT-SDLT-ACRT RUN IN COMBINATION

TODAY'S CREW: M. GRAHAM & D. MILLER

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

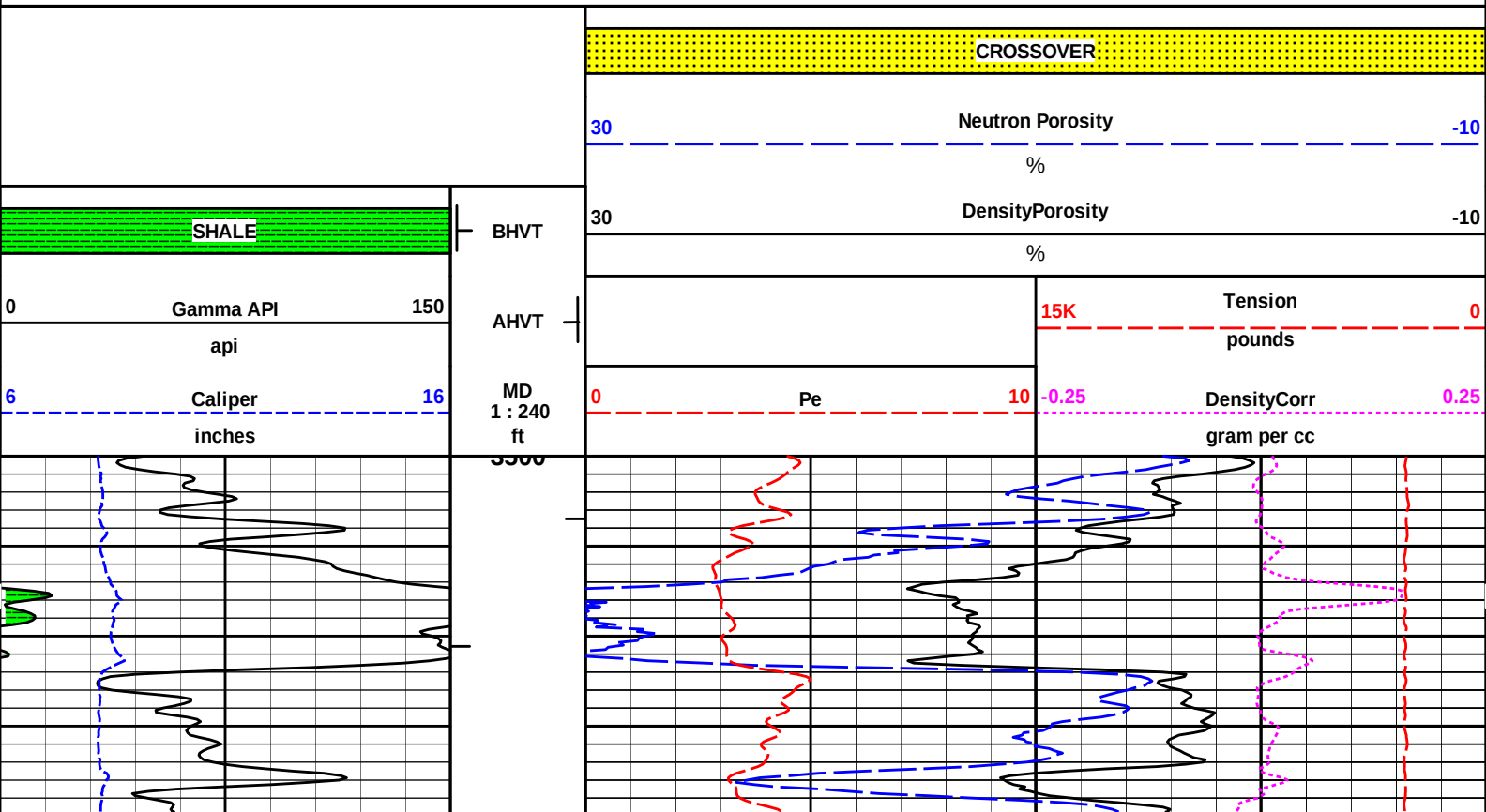
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR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

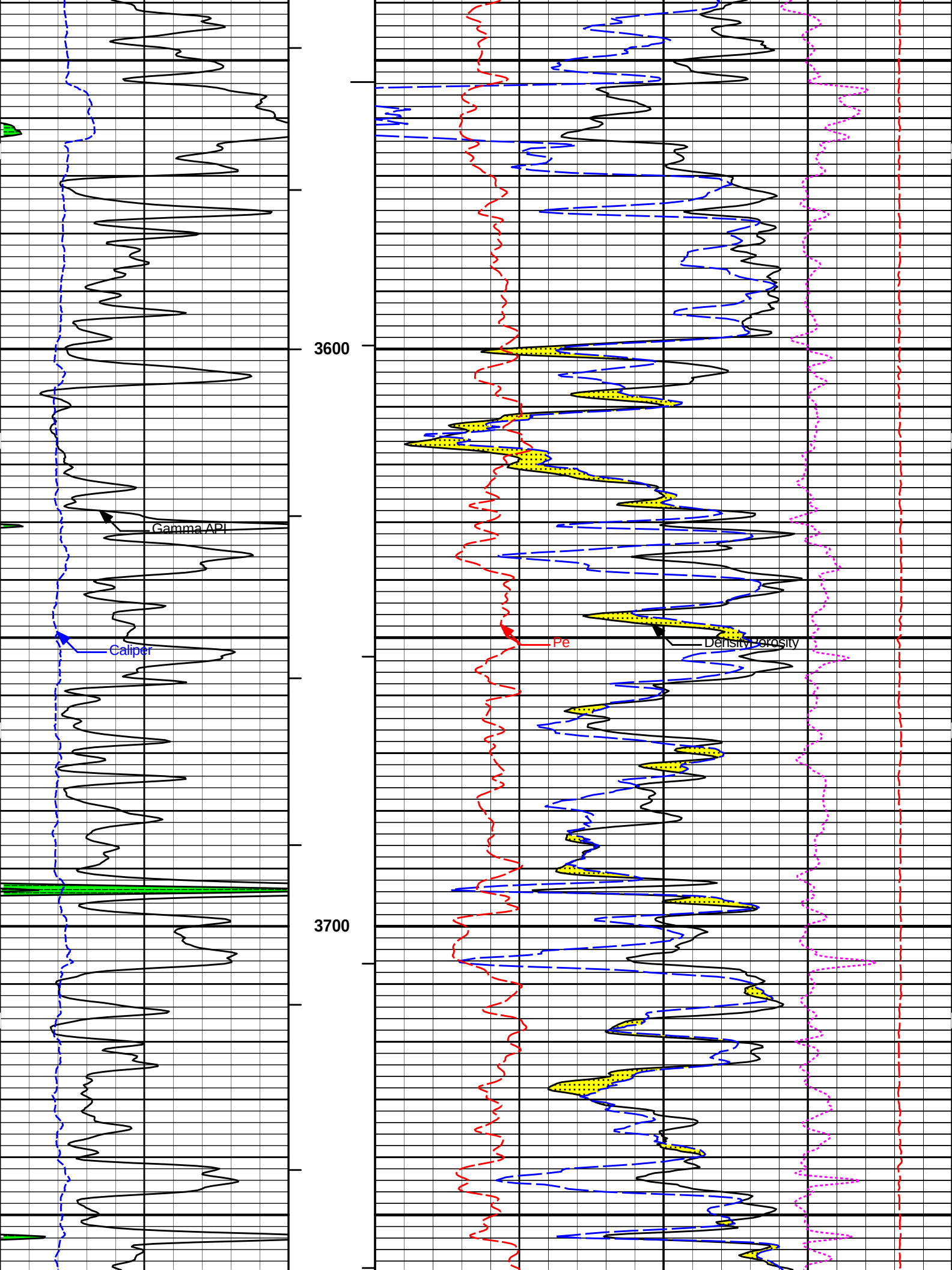
HALLIBURTON

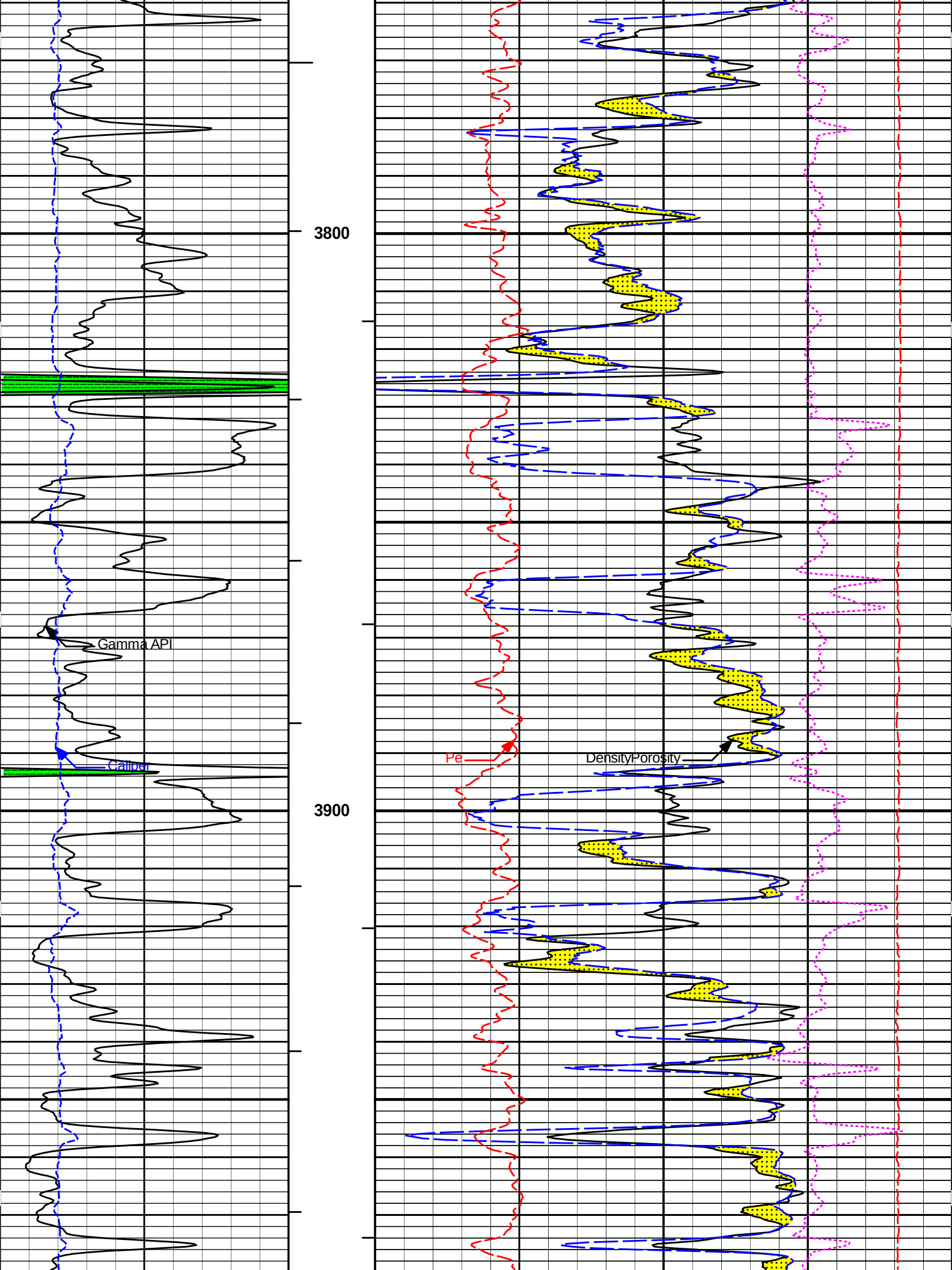
HALLIBURTON

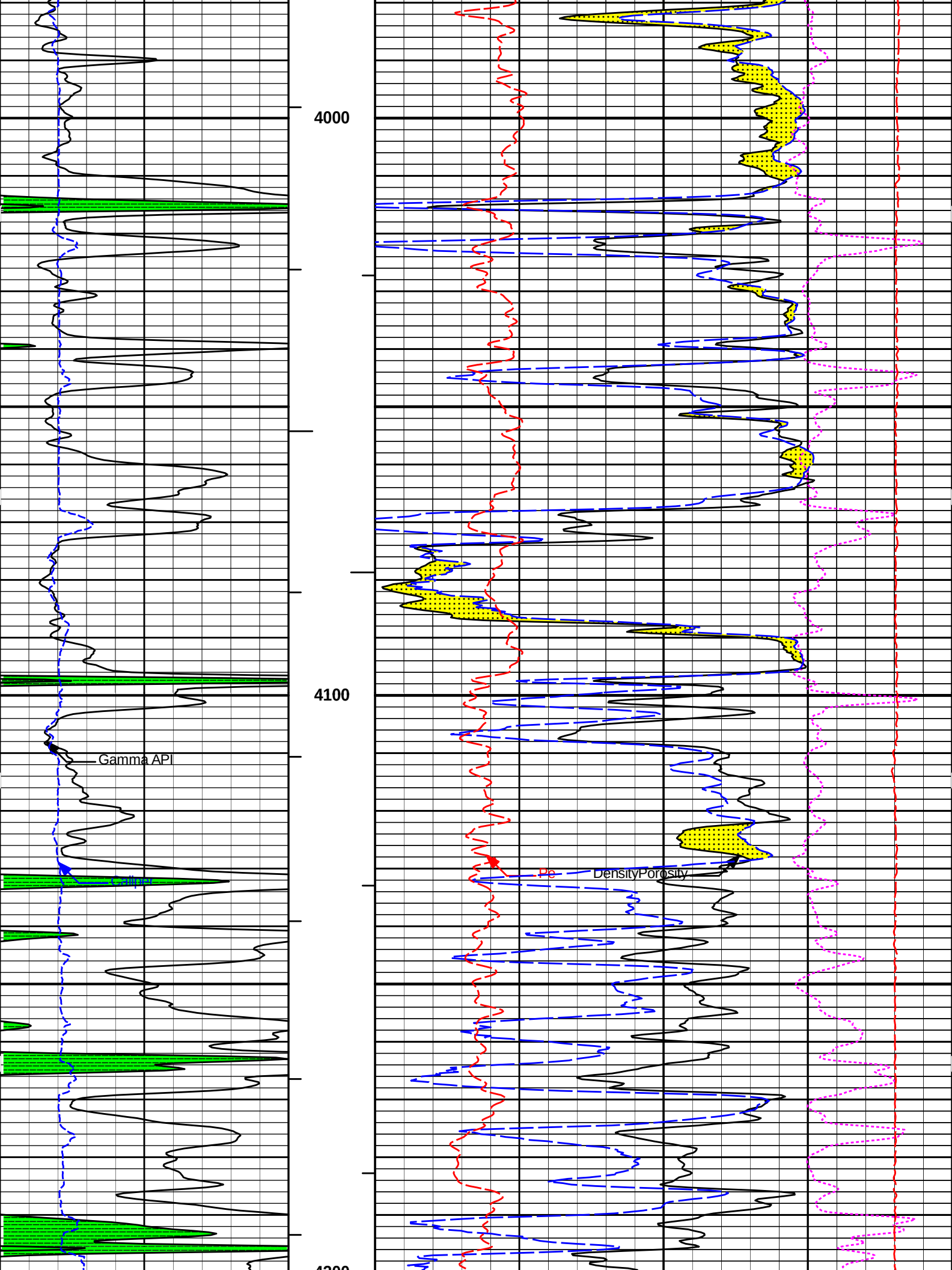
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Data: ALBERS_B_3\Well Based\DETAIL
Plot File: \\PORO\Poro_IQ_5_MAIN_LIB

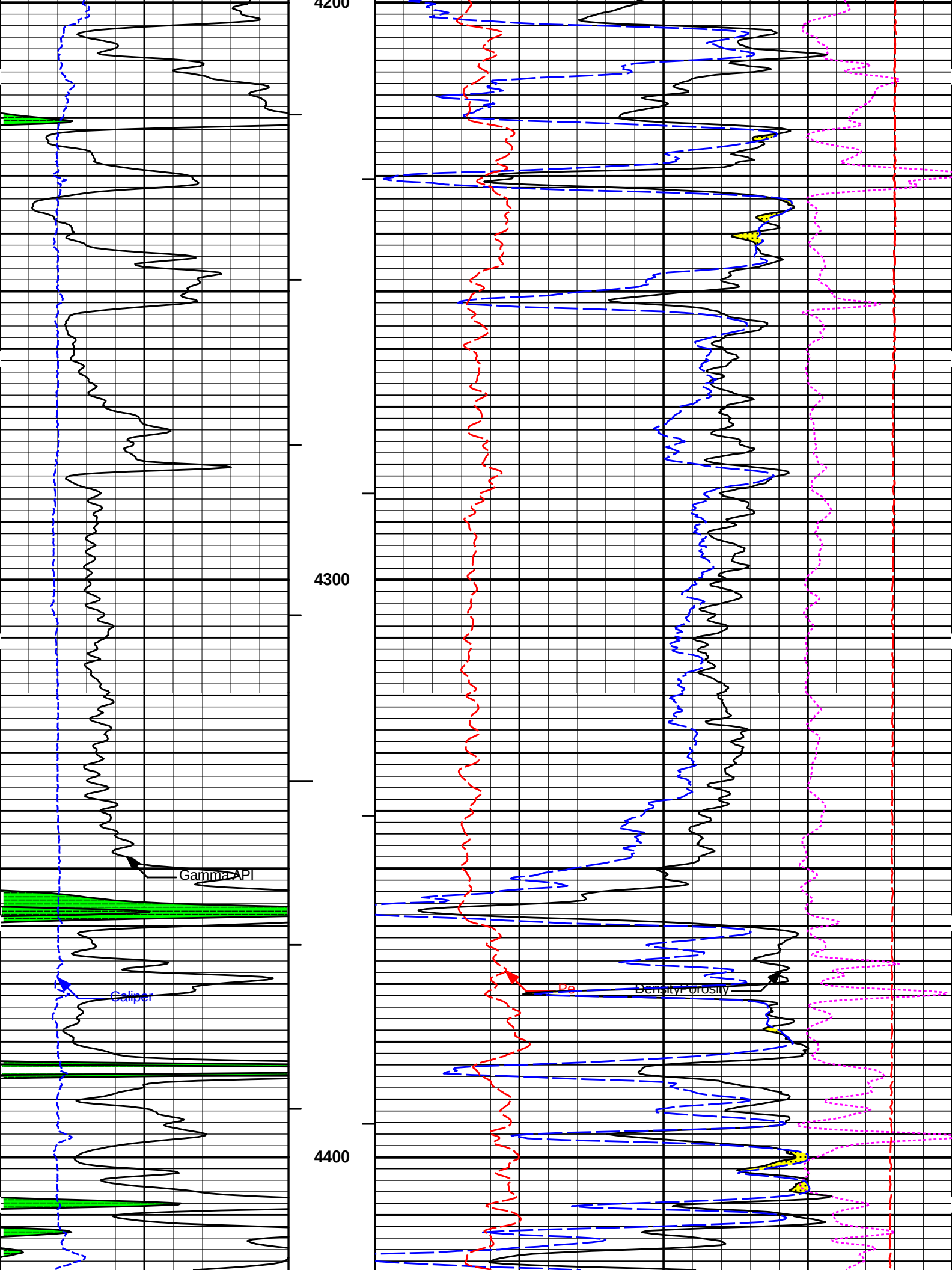
5 INCH MAIN LOG

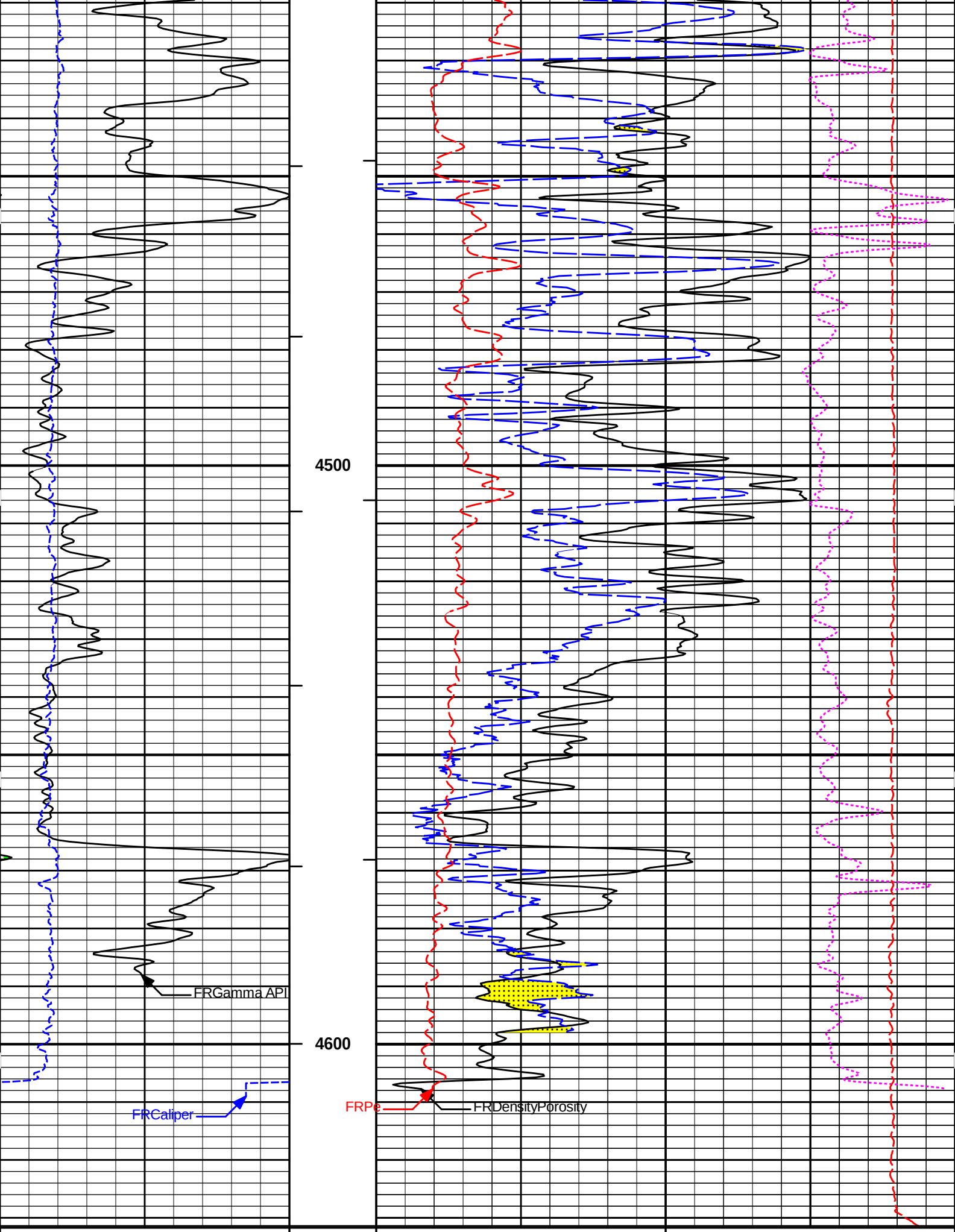



3600
3700
Gamma API
Caliper
Pe
Density Porosity

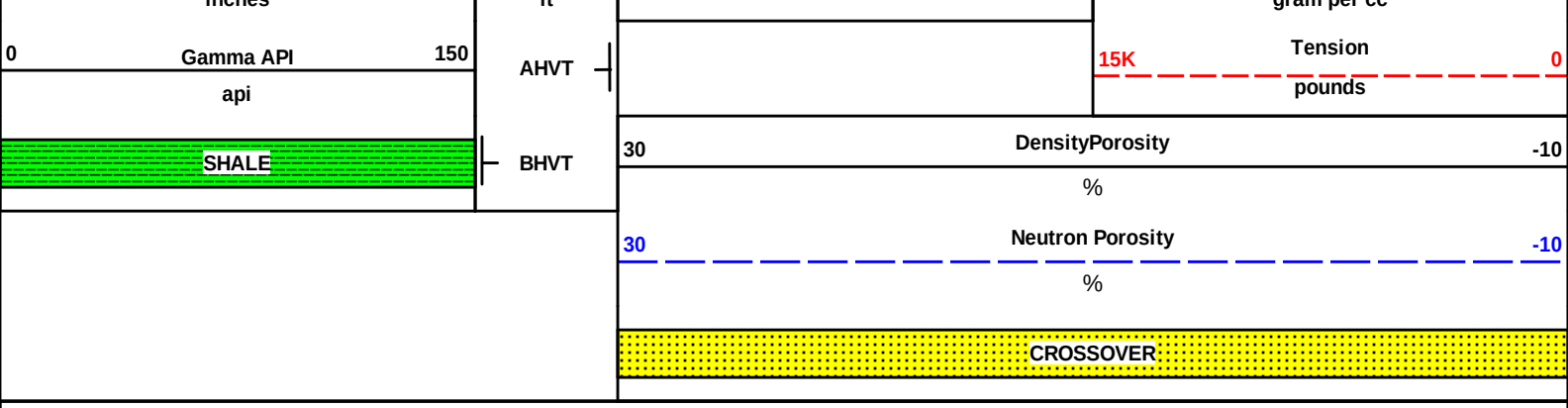

3800
3900
Gamma API
Caliper
Pe
DensityPorosity


4000
4100
Gamma API
Caliper
Pe
DensityPorosity


4200
4300
4400
Gamma API
Caliper
Pe
DensityPorosity



6	Caliper	16	MD 1 : 240	0	Pe	10	-0.25	DensityCorr	0.25
	inches		ft					gram per cc	



HALLIBURTON

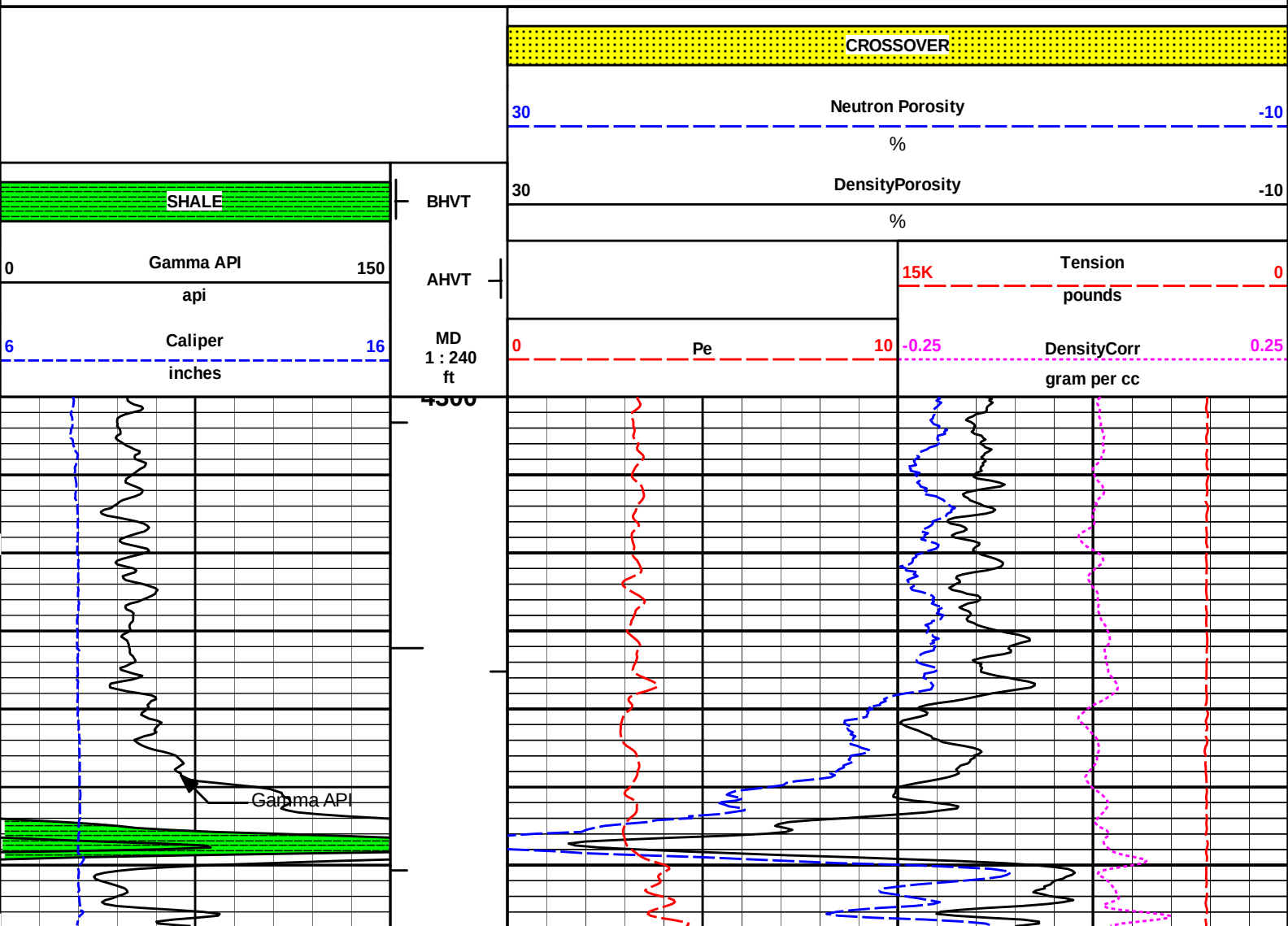
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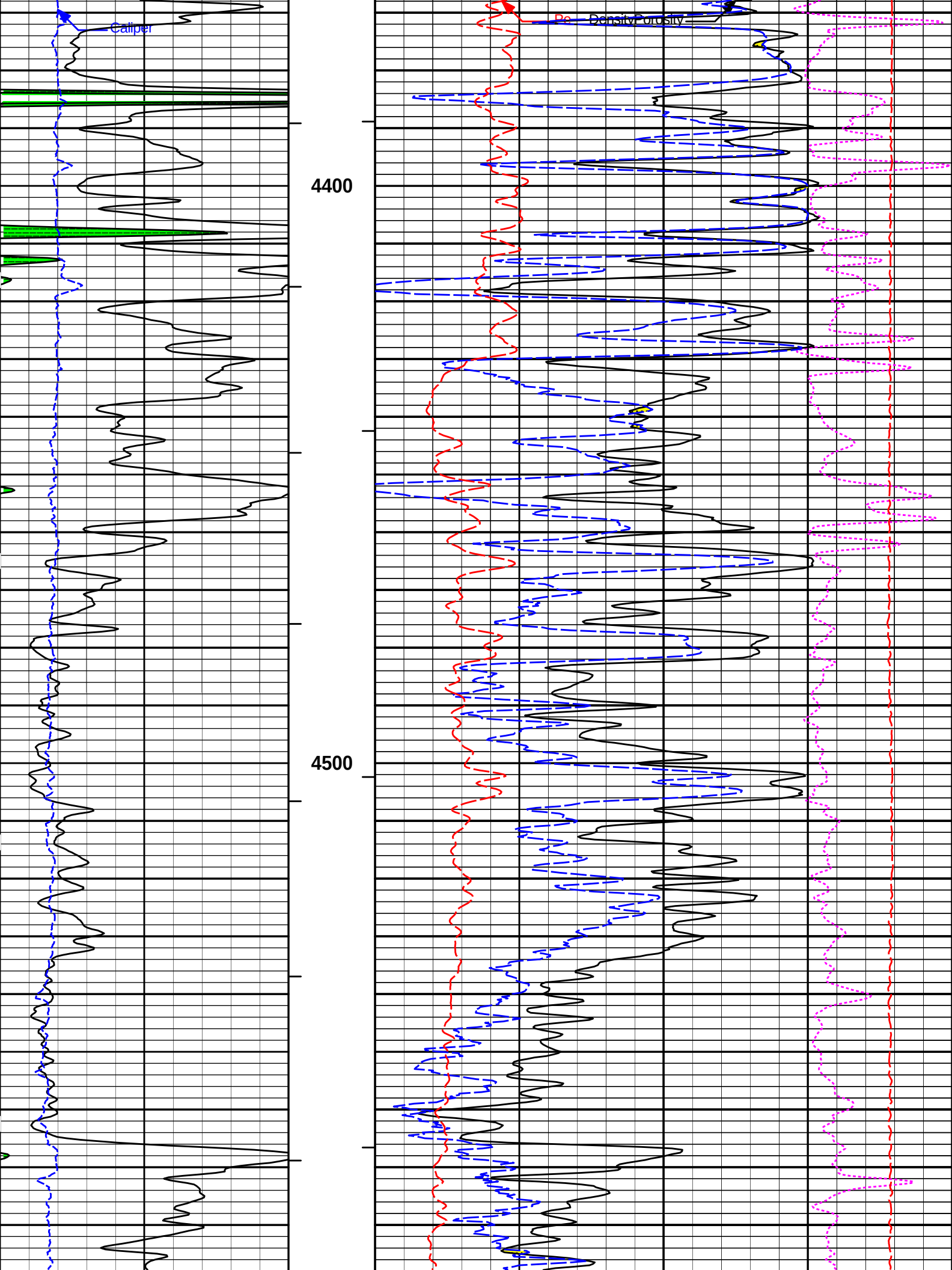
5 INCH MAIN LOG

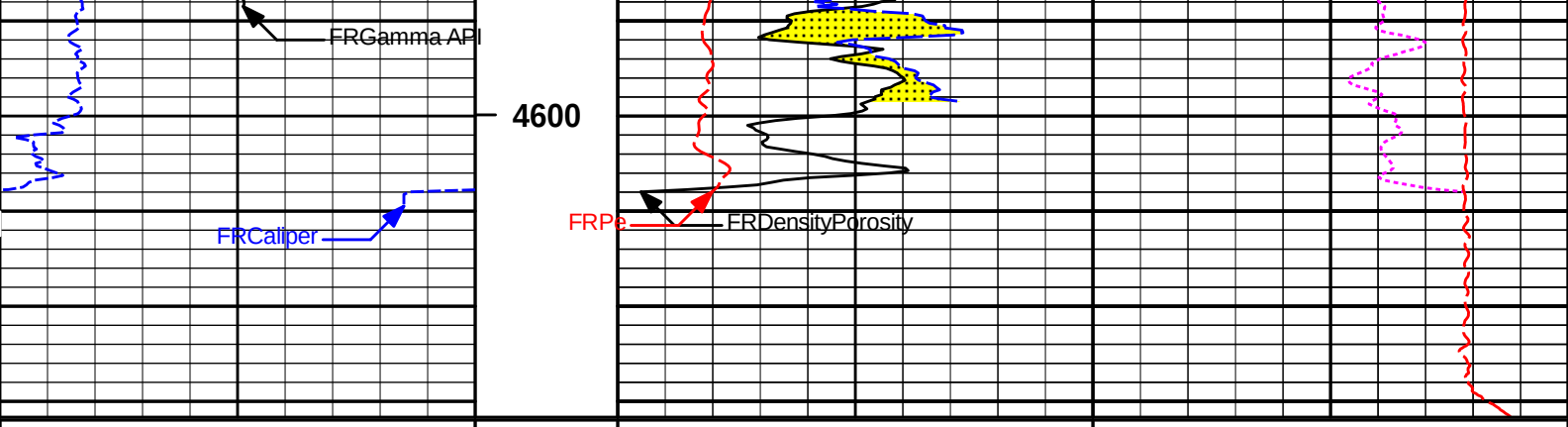
HALLIBURTON

Plot Time: 23-Mar-14 12:35:28
Plot Range: 4300 ft to 4631.67 ft
Data: ALBERS_B_3\Well Based\REPEAT\
Plot File: \\PORO\Poro_IQ_5_REP_LIB

REPEAT SECTION




Caliper
Pe
DensityPorosity
4400
4500



6 Caliper 16
inches

0 Gamma API 150
api

SHALE

MD
1 : 240
ft

AHVT

BHVT

0 Pe 10

-0.25 DensityCorr 0.25
gram per cc

15K Tension 0
pounds

30 DensityPorosity -10
%

30 Neutron Porosity -10
%

CROSSOVER

HALLIBURTON

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Plot File: \\PORO\Poro_IQ_5_REP_LIB

REPEAT SECTION

HALLIBURTON

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Plot File: \\-LOCAL-\ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\PORO\BULKD_5_MAIN_LIB

5 INCH MAIN LOG

SHALE

0 Gamma Ray 150
api

18 FarQuality -2

-18 NearQuality 2

6 Caliper 16
inches

BHV
ft3

AHV
ft3

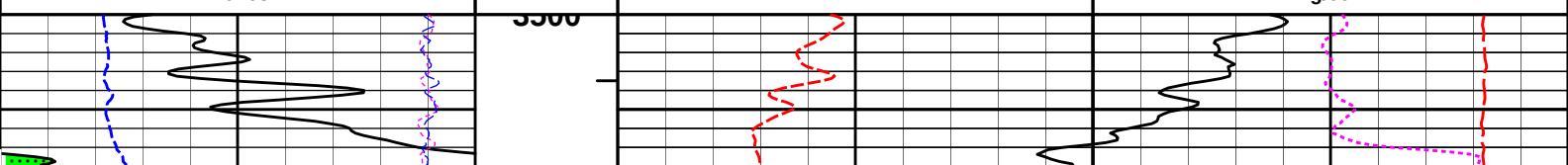
MD
1 : 240
ft

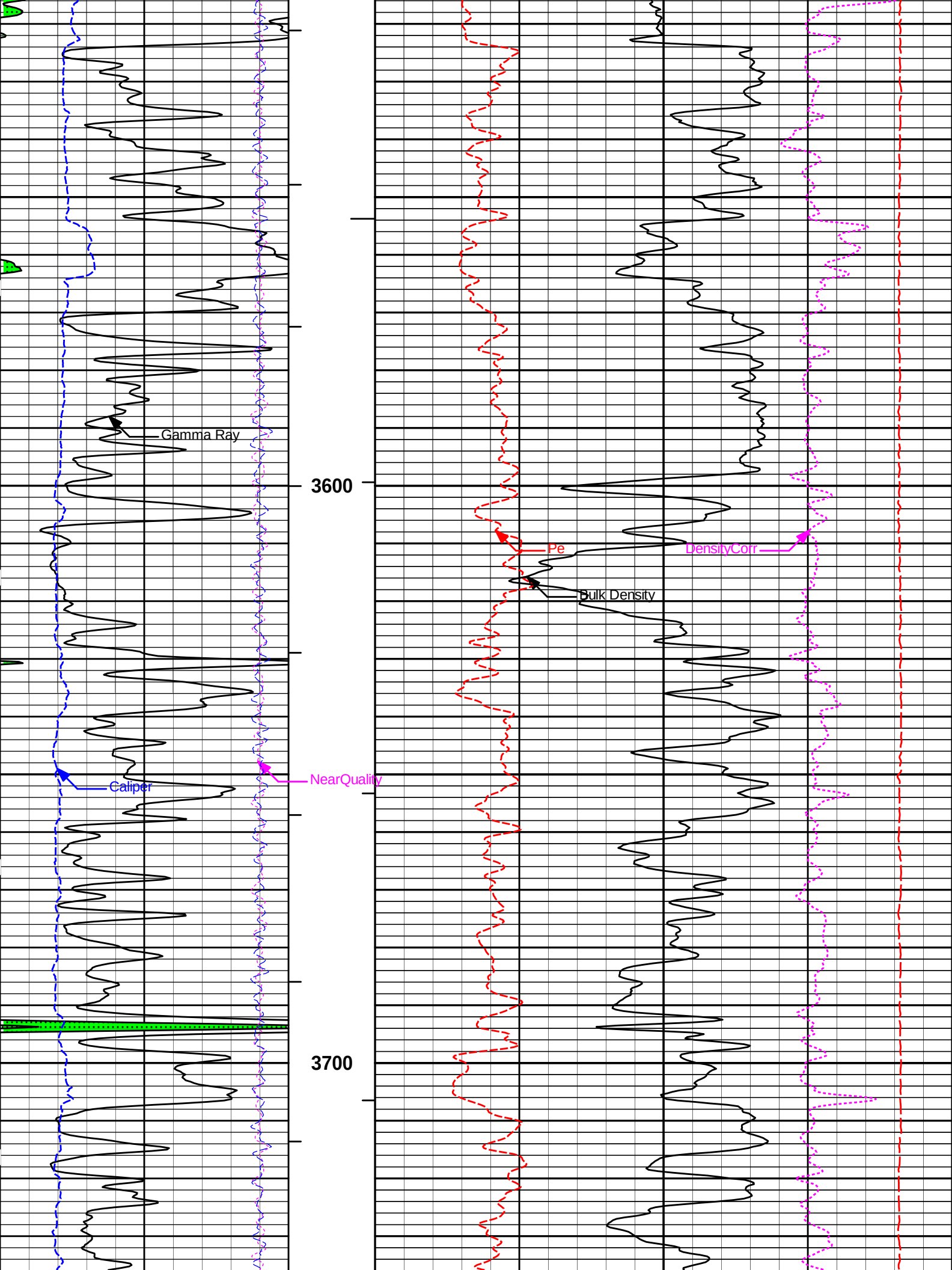
2 Bulk Density 3
g/cc

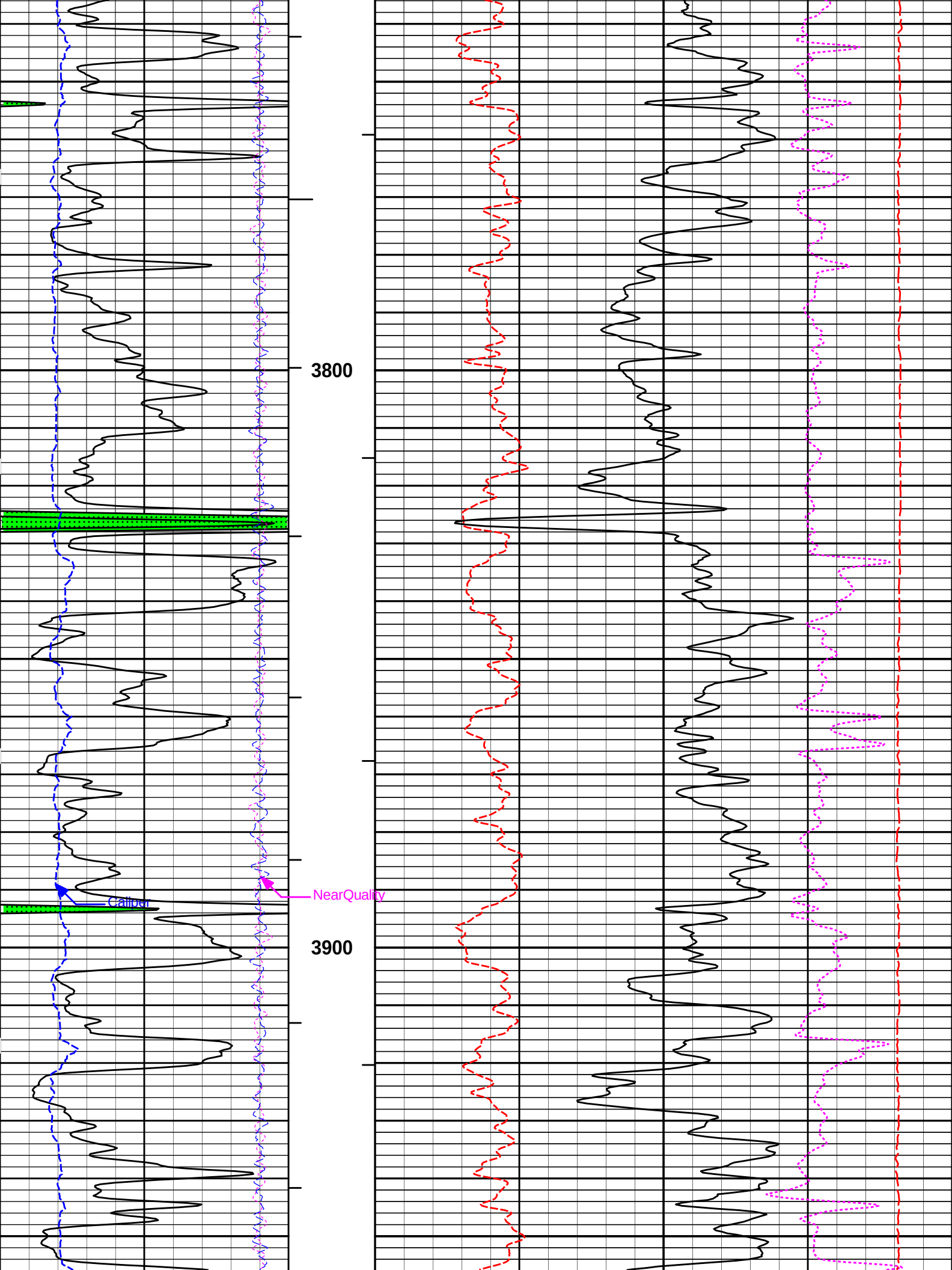
15K Tension 0
pounds

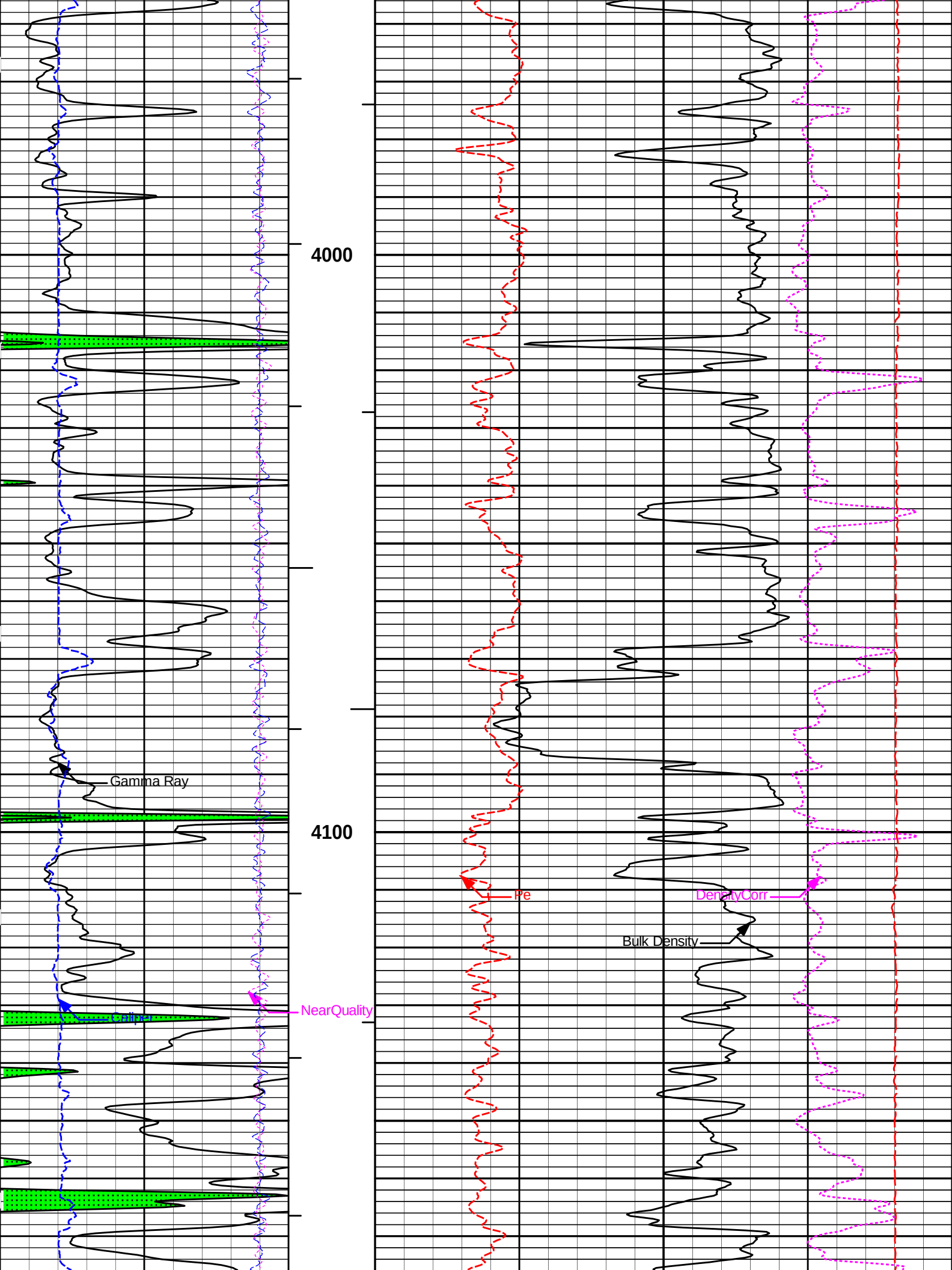
0 Pe 10

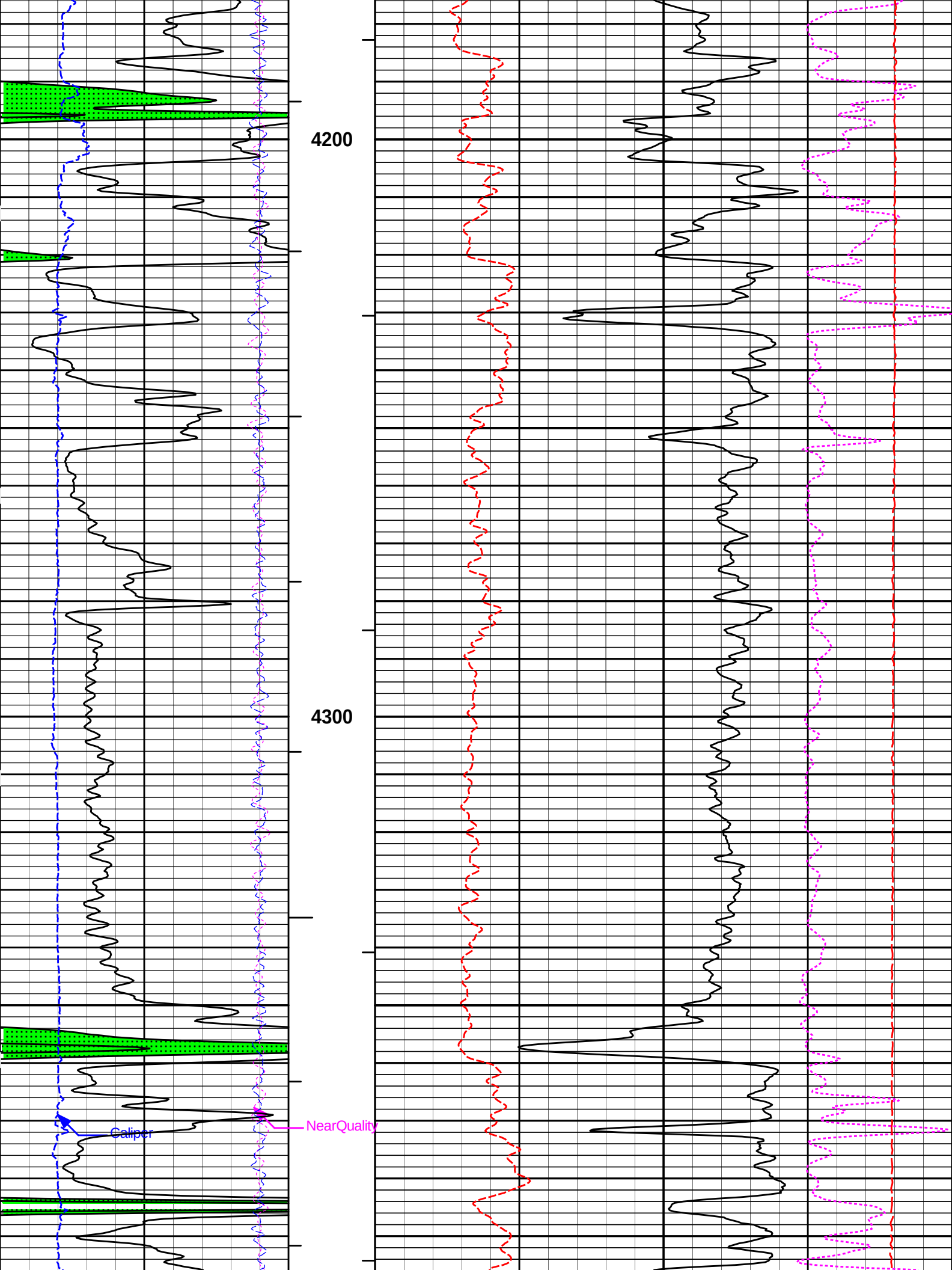
-0.25 DensityCorr 0.25
g/cc

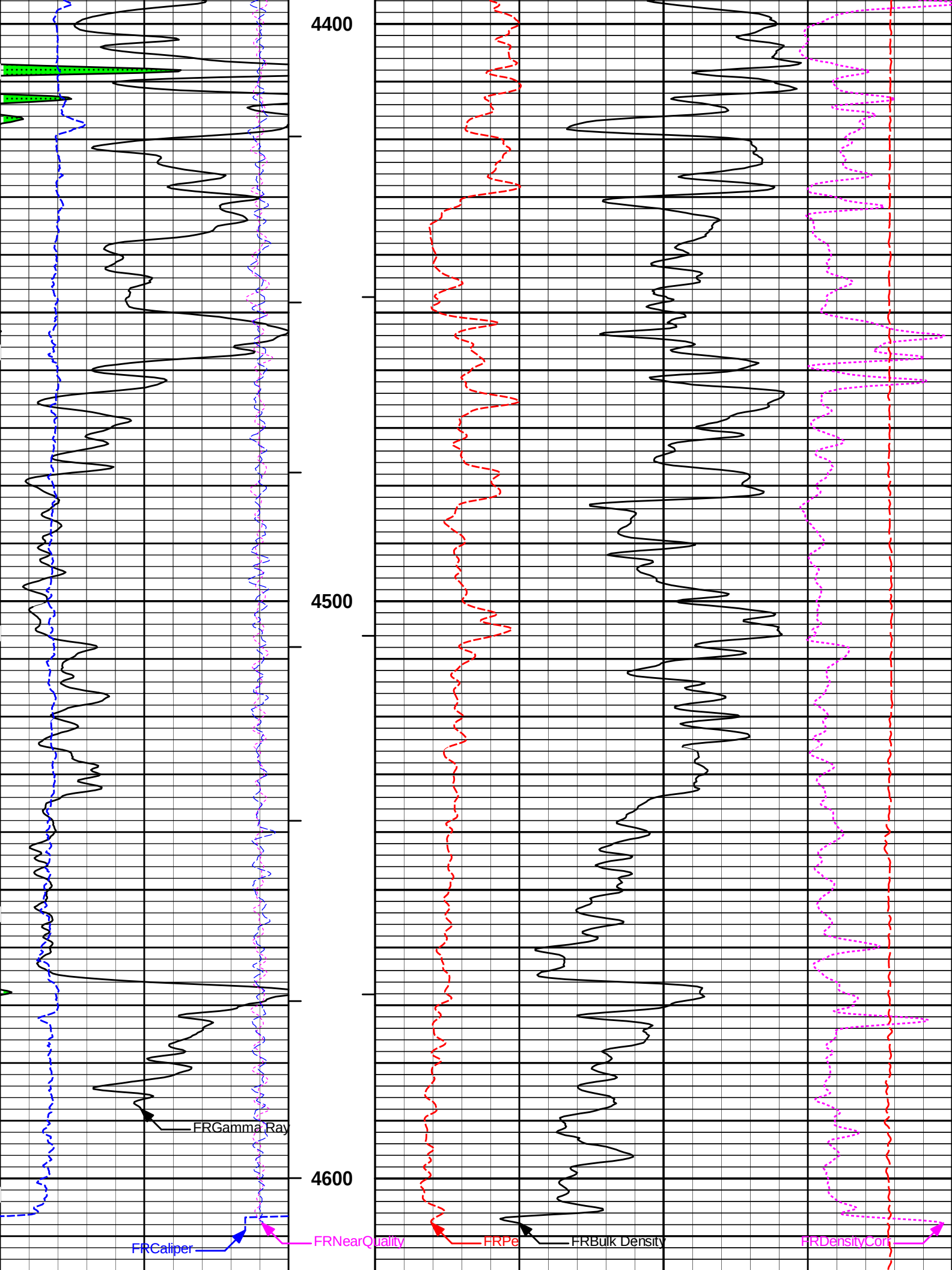


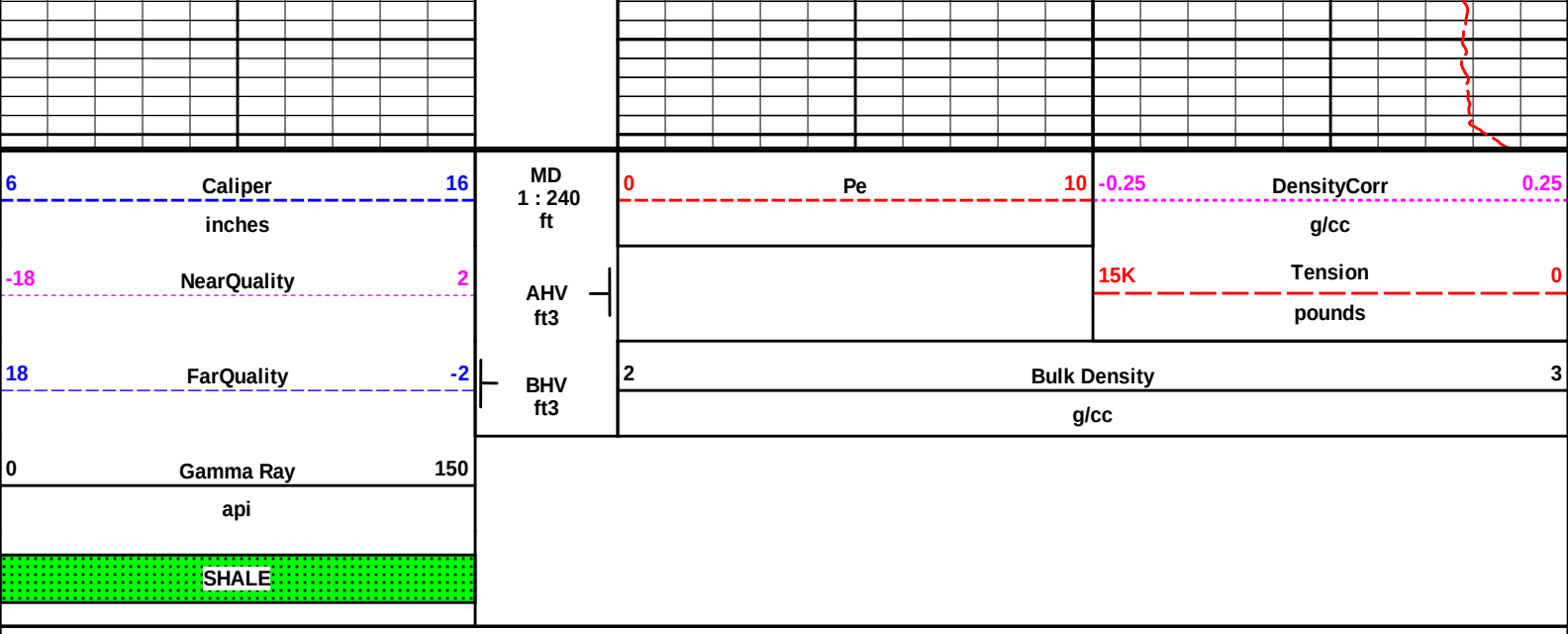

Gamma Ray
3600
Pe
DensityCorr
Bulk Density
Caliper
NearQuality
3700


3800
3900
Caliber
NearQuality


4000
4100
Gamma Ray
Caliper
NearQuality
Pe
DensityCorr
Bulk Density


4200
4300
Caliper
NearQuality


4400
4500
4600
FRGamma Ray
FRCaliper
FRNearQuality
FRPe
FRBulk Density
FRDensityCorr



HALLIBURTON

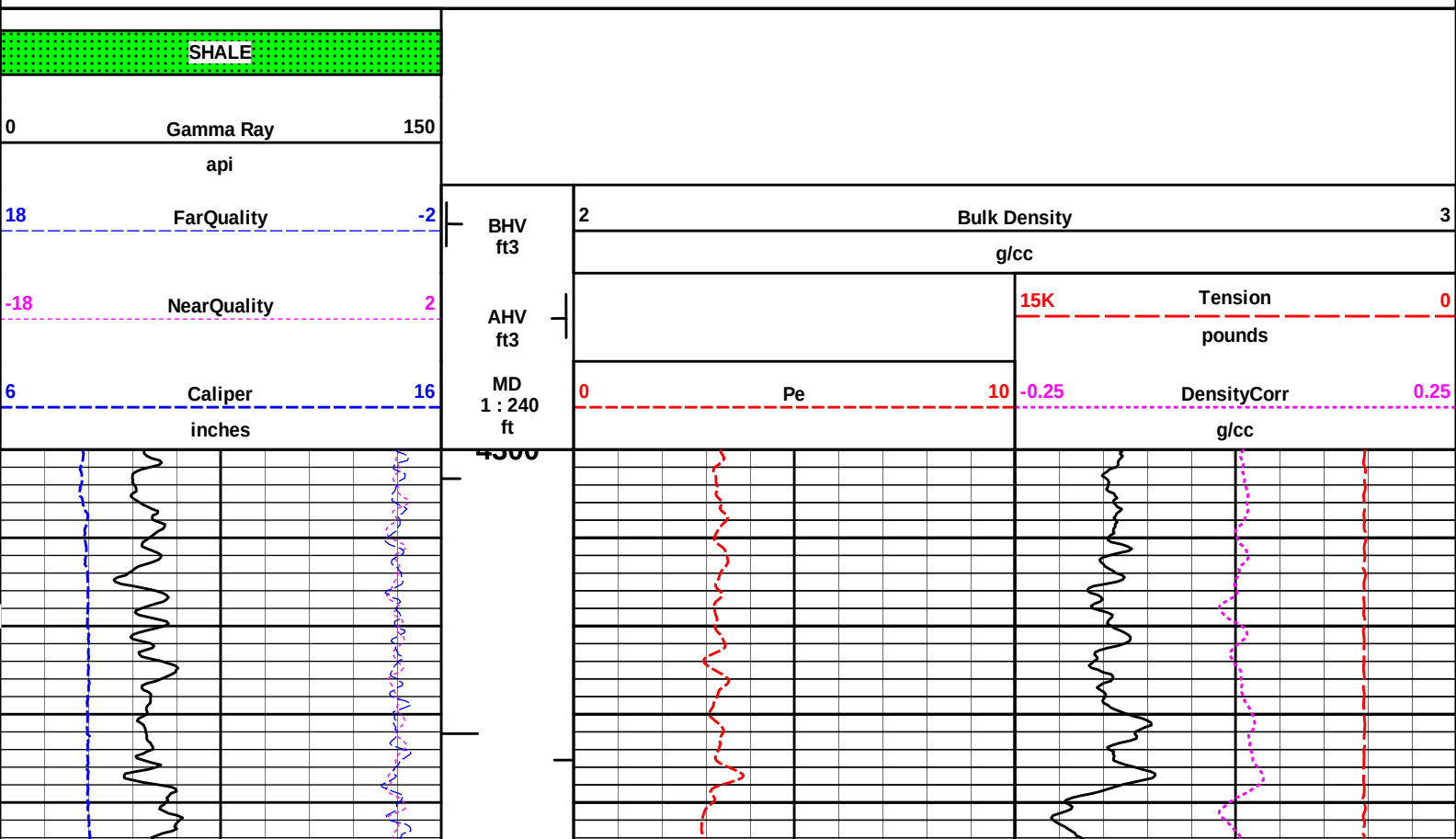
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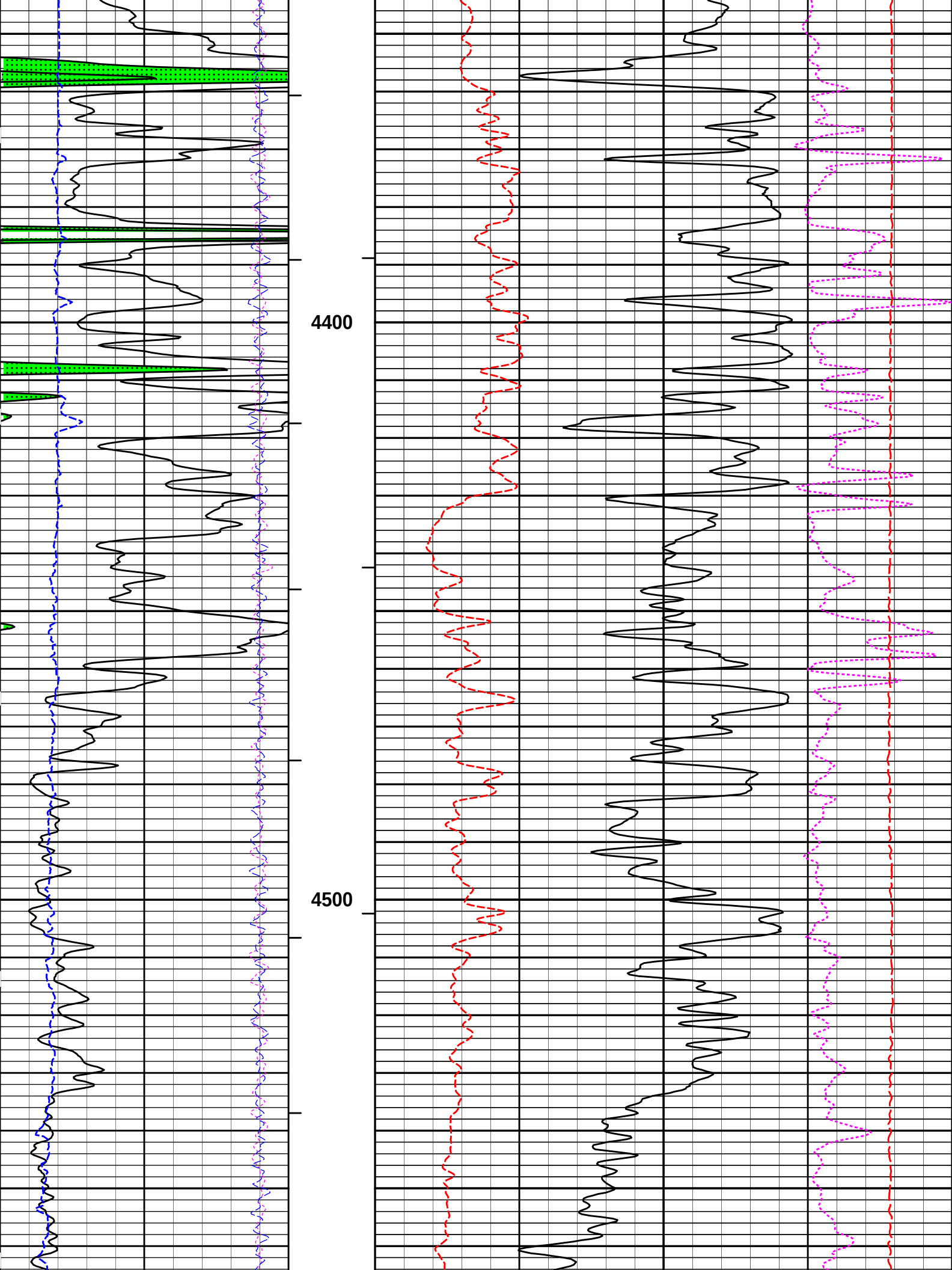
5 INCH MAIN LOG

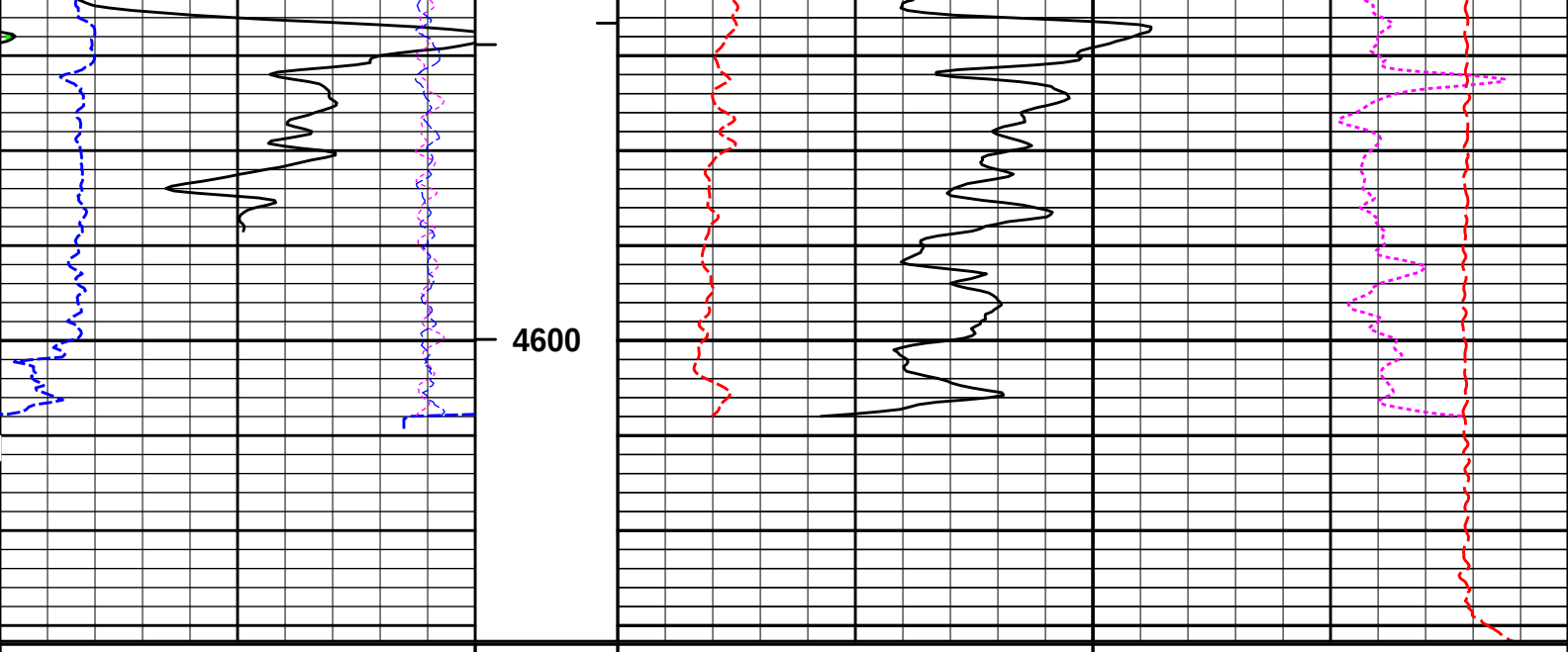
HALLIBURTON

Plot Time: 23-Mar-14 12:35:31
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Plot File: \\-LOCAL-\ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\PORO\BULKD_5_REP_LIB

REPEAT SECTION




4400
4500



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

HALLIBURTON

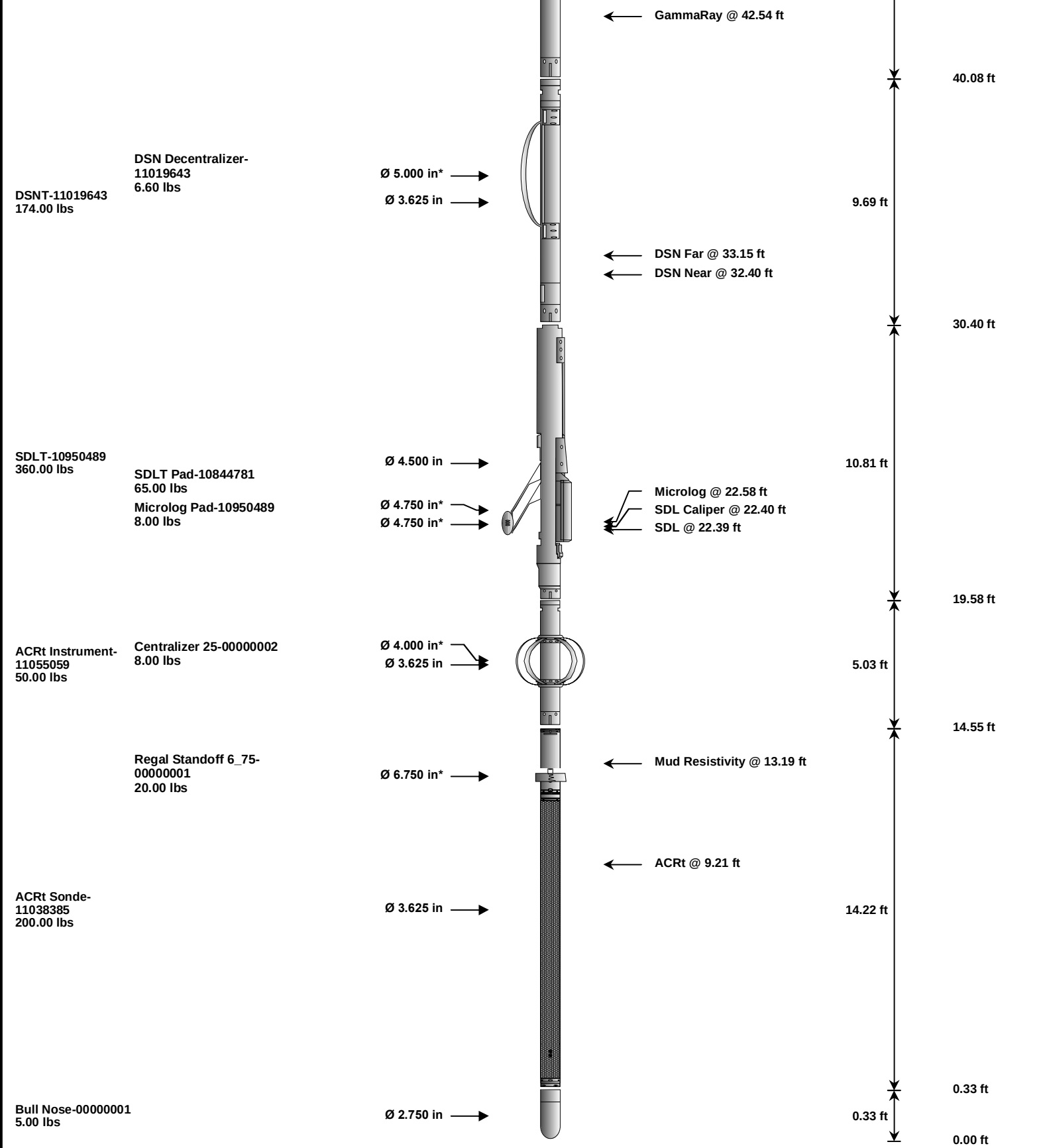
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Plot File: \\-LOCAL-\ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\PORO\BULKD_5_REP_LIB

REPEAT SECTION

HALLIBURTON

TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
Cable Head-12345678 30.00 lbs		Ø 3.625 in →			1.92 ft	54.26 ft
SP Sub-12345678 60.00 lbs		Ø 3.625 in →		← SP @ 50.56 ft	3.74 ft	52.34 ft
GTET-11048627 165.00 lbs		Ø 3.625 in →			8.52 ft	48.60 ft



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
CH	Standard OH Cable Head	12345678	30.00	1.92		52.34	300.00
SP	SP Sub	12345678	60.00	3.74		48.60	300.00
GTET	Gamma Telemetry Tool	11048627	165.00	8.52		40.08	60.00
DSNT	Dual Spaced Neutron	11019643	174.00	9.69		30.40	60.00
DCNT	DSN Decentralizer	11019643	6.60	5.13	*	33.73	300.00
SDLT	Spectral Density Tool	10950489	360.00	10.81		19.58	60.00
SDLP	Density Insite Pad	10844781	65.00	2.55	*	21.79	60.00
MICP	Microlog Pad	10950489	8.00	1.00	*	22.08	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03		14.55	120.00

OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	*	16.12	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22		0.33	120.00
RSOF	Regal Standoff 6.75in	00000001	20.00	0.52	*	12.42	300.00
BLNS	Bull Nose	00000001	5.00	0.33		0.00	300.00
Total			**1,151.60**	**54.26**			

* Not included in Total Length and Length Accumulation.

Data: ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\IDLE **Date: 23-Mar-14 09:52:17**

HALLIBURTON

CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11048627**	**Reference Calibration Date:**	**06-Feb-14 08:33:07**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**20-Mar-14 10:12:25**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: Error

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Measurement	Measured	Calibrated	Units
Background	63.0	63.6	api
Background + Calibrator	330.4	333.2	api
Calibrator	267.4	269.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11048627**	**Reference Calibration Date:**	**20-Mar-14 10:12:25**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**20-Mar-14 10:15:17**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: Error

Calibrator API Reference:265.00 api

Equivalent Calibrator API Reference:269.6 api

Field Verification	Shop	Field	Units
Background	63.6	64.2	api
Background + Calibrator	333.2	335.3	api
Calibrator	269.6	271.1	api

Shop	Field	Difference	Tolerance
269.6	271.1	-1.5	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name:	**DSNT - 11019643**	**Reference Calibration Date:**	**19-Feb-14 19:13:33**
Engineer:	**J. BOLLOM**	**Calibration Date:**	**19-Mar-14 16:12:58**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Logging Source S/N: DSN-424

Tank Serial Number: LIBERAL WATER TANK

Reference value assigned to Tank: 51.680

Snow Block S/N: 10013313

Calibration Tank Water Temperature: 65 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	0.954	0.959	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):	0.2095	0.2110	0.0014	+/- 0.0020
Calibrated Ratio:	9.68	9.73	0.048	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0619	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:** 19-Mar-14 16:12:58

Engineer: J. BOLLOM **Calibration Date:** 19-Mar-14 16:16:11

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Logging Source S/N: DSN-424

Snow Block S/N: 10013313

NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0619	0.0577	-0.0042	+/- 0.0150

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10950489 **Reference Calibration Date:** 12-Mar-14 18:14:50

Engineer: SHELDON INGERSOLL **Calibration Date:** 12-Mar-14 18:19:39

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Host Tool Name: DSNT - 11019643

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2556.15	-2597.21	-7000.00 - -1000.00
Pad Gain	0.0004213	0.0004250	0.000200 - 0.000600
Arm Offset	-294.03	-1108.00	-5000.00 - 3000.00
Arm Gain	0.0004826	0.0005701	0.000300 - 0.000700
Arm Power	-0.000003449	-0.000008460	-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	Calibrated	Change	Control Limit On

Measurement	(Previous Coeff.)	(New Coeff.)	Change	New Value
PAD EXTENSION:				
Small Ring (in)	2.00	2.00	0.00	+/- 0.20
Medium Ring (in)	3.73	3.75	0.02	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.58	6.50	-0.08	+/- 0.20
Medium Ring (in)	8.15	8.25	0.10	+/- 0.20
Large Ring (in)	15.05	15.00	-0.05	+/- 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 - 10950489 **Reference Calibration Date:** 12-Mar-14 18:19:39

Engineer: J. BOLLOM **Calibration Date:** 19-Mar-14 14:59:54

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.79	0.04	+/- 0.10
Ring Diameter	8.25	8.35	0.10	+/- 0.15

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

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10844781 **Reference Calibration Date:** 19-Feb-14 16:58:18

Engineer: J. BOLLOM **Calibration Date:** 19-Mar-14 15:32:31

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Logging Source S/N: 5168 GW

Aluminum Block S/N: LIBERAL ALUMINUM Density: 2.598g/cc Pe: 3.170

Magnesium Block S/N: LIBERAL MAGNESIUM Density: 1.684g/cc Pe: 2.598

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0376	1.0374	0.90 - 1.10
Near Dens Gain	1.0266	1.0261	0.90 - 1.10
Near Peak Gain	1.0296	1.0044	0.90 - 1.10
Near Lith Gain	1.0081	1.0112	0.90 - 1.10
Far Bar Gain	1.0082	1.0120	0.90 - 1.10
Far Dens Gain	0.9990	1.0016	0.90 - 1.10
Far Peak Gain	0.9959	0.9978	0.90 - 1.10
Far Lith Gain	0.9731	0.9728	0.90 - 1.10
Near Bar Offset	-0.1310	-0.1248	NONE
Near Dens Offset	-0.0368	-0.0271	NONE
Near Peak Offset	-0.0519	0.1660	NONE
Near Lith Offset	0.1192	0.1070	NONE
Far Bar Offset	0.0627	0.0315	NONE

Far Dens Offset	0.1313	0.1090	NONE
Far Peak Offset	0.1101	0.0971	NONE
Far Lith Offset	0.2407	0.2450	NONE

Near Bar Background	787.16	787.75	700 - 1450
Near Dens Background	258.09	257.45	230 - 480
Near Peak Background	112.39	112.51	100 - 210
Near Lith Background	140.27	139.16	125 - 260
Far Bar Background	513.16	512.88	450 - 900
Far Dens Background	201.94	202.29	175 - 345
Far Peak Background	80.35	81.82	70 - 140
Far Lith Background	83.13	83.10	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.682	1.684	0.002	+/- 0.015
Pe	2.625	2.552	-0.073	+/- 0.150
ALUMINUM				
Density (g/cc)	2.589	2.598	0.009	+/- 0.01500
Pe	3.174	3.120	-0.054	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0011	+/- 0.0110	-0.0004	+/- 0.0140
Magnesium Block	0.0005	+/- 0.0110	-0.0009	+/- 0.0140
Aluminum Block	-0.0010	+/- 0.0110	-0.0007	+/- 0.0140
Resolution	9.40	6.00 - 11.50	8.87	6.00 - 11.50
Internal Verifier(B+D+P+L)	1297	1200 - 2700	880	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 - 10844781 **Reference Calibration Date:** 19-Mar-14 15:32:31

Engineer: J. BOLLOM **Calibration Date:** 19-Mar-14 15:40:12

Software Version: WL INSITE R4.2.0 (Build 2) **Calibration Version:** 1

Pad Temperature: 70.4 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1296.880	1295.215	-1.665	14.581

Far (B+D+P+L) cps	880.086	883.166	3.080	16.188
Near Resolution	9.40	9.61	0.210	0.50
Far Resolution	8.87	9.43	0.560	1.00

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

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11048627						
Gamma Ray Calibrator	269.6	271.1	----------	-1.5	+/- 9.00	api
DSNT-11019643						
Snow-Block Porosity	0.0619	0.0577	----------	0.0042	+/- 0.0150	decp
SDLT-10950489						
Pad Extension	3.75	3.79	----------	-0.04	+/-0.10	in
Ring Diameter	8.25	8.35	----------	-0.10	+/-0.15	in
SDLT Pad-10844781						
Near(B+D+P+L)	1296.880	1295.215	----------	1.665	+/-14.581	cps
Far(B+D+P+L)	880.086	883.166	----------	-3.080	+/-16.188	cps

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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	9.400	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	4629.00	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	
	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	
	Rwa / CrossPlot	BHSM	Borehole Size Source Tool	SDLT	
	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	
	GTET	BHSM	Borehole Size Source Tool	SDLT	
	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	
	DSNT	BHSM	Borehole Size Source Tool	SDLT	
	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
	SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
	Microlog Pad	MLOK	Process MicroLog Outputs?	Yes	
	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
	ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	

BOTTOM

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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	

Rwa / CrossPlot				
TPUL	Tension Pull	54.26	NO	
BS	Bit Size	54.26	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SP Sub				
PLTC	Plot Control Mask	50.56	NO	
SP	Spontaneous Potential	50.56	BLK	1.250
SPR	Raw Spontaneous Potential	50.56	NO	
SPO	Spontaneous Potential Offset	50.56	NO	
GTET				
TPUL	Tension Pull	42.54	NO	
GR	Natural Gamma Ray API	42.54	TRI	1.750
GRU	Unfiltered Natural Gamma Ray API	42.54	NO	
EGR	Natural Gamma Ray API with Enhanced Vertical Resolution	42.54	W	1.416 , 0.750
HDIA	Measured Hole Diameter	0.00	NO	
ACCZ	Accelerometer Z	0.00	BLK	0.083
DEVI	Inclination	0.00	NO	
DSNT				
TPUL	Tension Pull	32.30	NO	
RNDS	Near Detector Telemetry Counts	32.40	BLK	1.417
RFDS	Far Detector Telemetry Counts	33.15	TRI	0.583
DNTT	DSN Tool Temperature	32.40	NO	
DSNS	DSN Tool Status	32.30	NO	
ERND	Near Detector Telemetry Counts EVR	32.40	BLK	0.000
ERFD	Far Detector Telemetry Counts EVR	33.15	BLK	0.000
ENTM	DSN Tool Temperature EVR	32.40	NO	
HDIA	Measured Hole Diameter	0.00	NO	
SDLT				
TPUL	Tension Pull	22.40	NO	
PCAL	Pad Caliper	22.40	TRI	0.250
ACAL	Arm Caliper	22.40	TRI	0.250
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	
HDIA	Measured Hole Diameter	0.00	NO	

SDLT Pad

TPUL	Tension Pull	22.39	NO	
NAB	Near Above	22.21	BLK	0.920
NHI	Near Cesium High	22.21	BLK	0.920
NLO	Near Cesium Low	22.21	BLK	0.920
NVA	Near Valley	22.21	BLK	0.920
NBA	Near Barite	22.21	BLK	0.920
NDE	Near Density	22.21	BLK	0.920
NPK	Near Peak	22.21	BLK	0.920
NLI	Near Lithology	22.21	BLK	0.920
NBAU	Near Barite Unfiltered	22.21	BLK	0.250
NLIU	Near Lithology Unfiltered	22.21	BLK	0.250
FAB	Far Above	22.56	BLK	0.250
FHI	Far Cesium High	22.56	BLK	0.250
FLO	Far Cesium Low	22.56	BLK	0.250
FVA	Far Valley	22.56	BLK	0.250
FBA	Far Barite	22.56	BLK	0.250
FDE	Far Density	22.56	BLK	0.250
FPK	Far Peak	22.56	BLK	0.250
FLI	Far Lithology	22.56	BLK	0.250

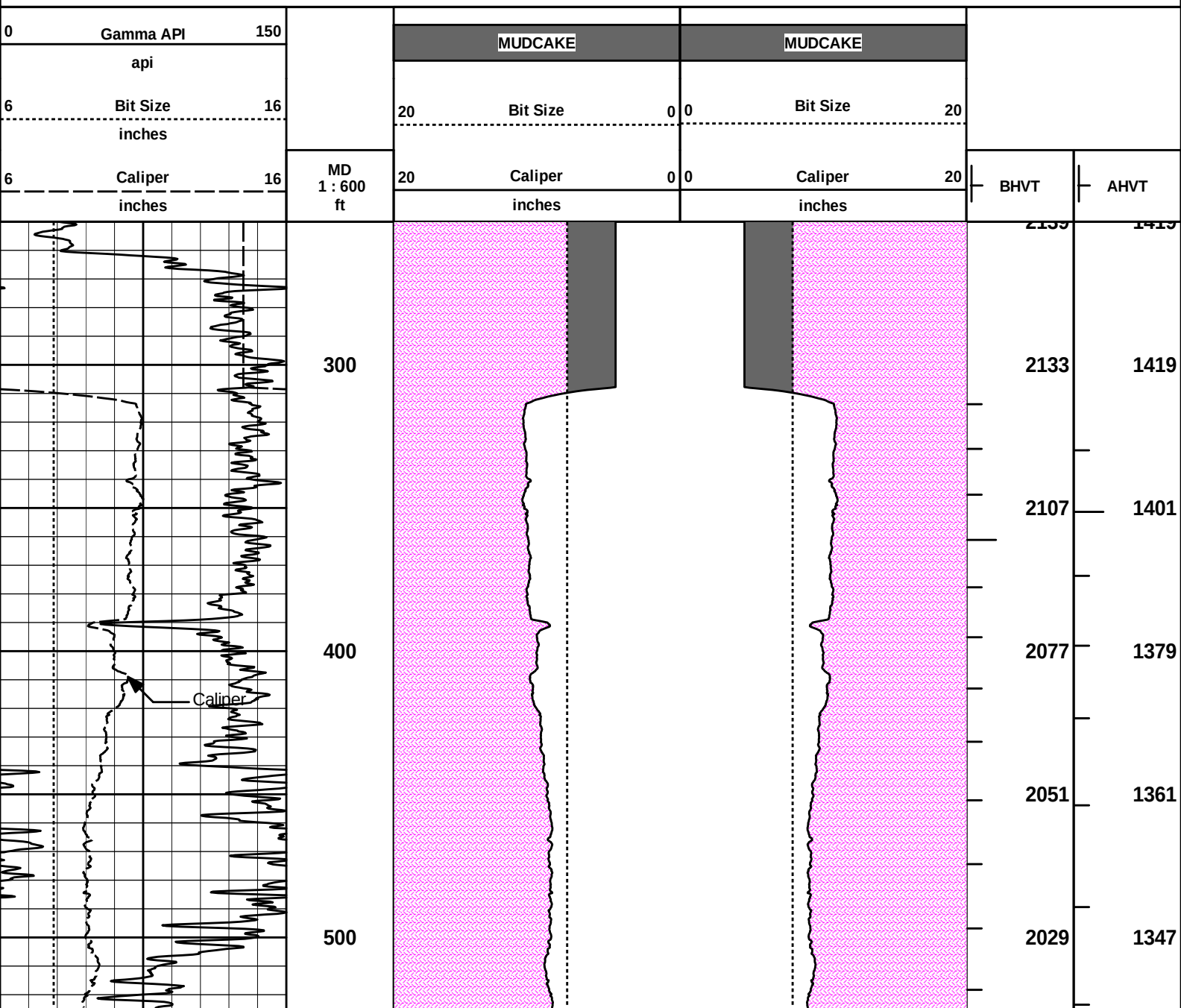
PTMP	Pad Temperature	22.40	BLK	0.920
NHV	Near Detector High Voltage	21.79	NO	
FHV	Far Detector High Voltage	21.79	NO	
ITMP	Instrument Temperature	21.79	NO	
DDHV	Detector High Voltage	21.79	NO	
HDIA	Measured Hole Diameter	0.00	NO	
	Microlog Pad			
TPUL	Tension Pull	22.58	NO	
MINV	Microlog Lateral	22.58	BLK	0.750
MNOR	Microlog Normal	22.58	BLK	0.750

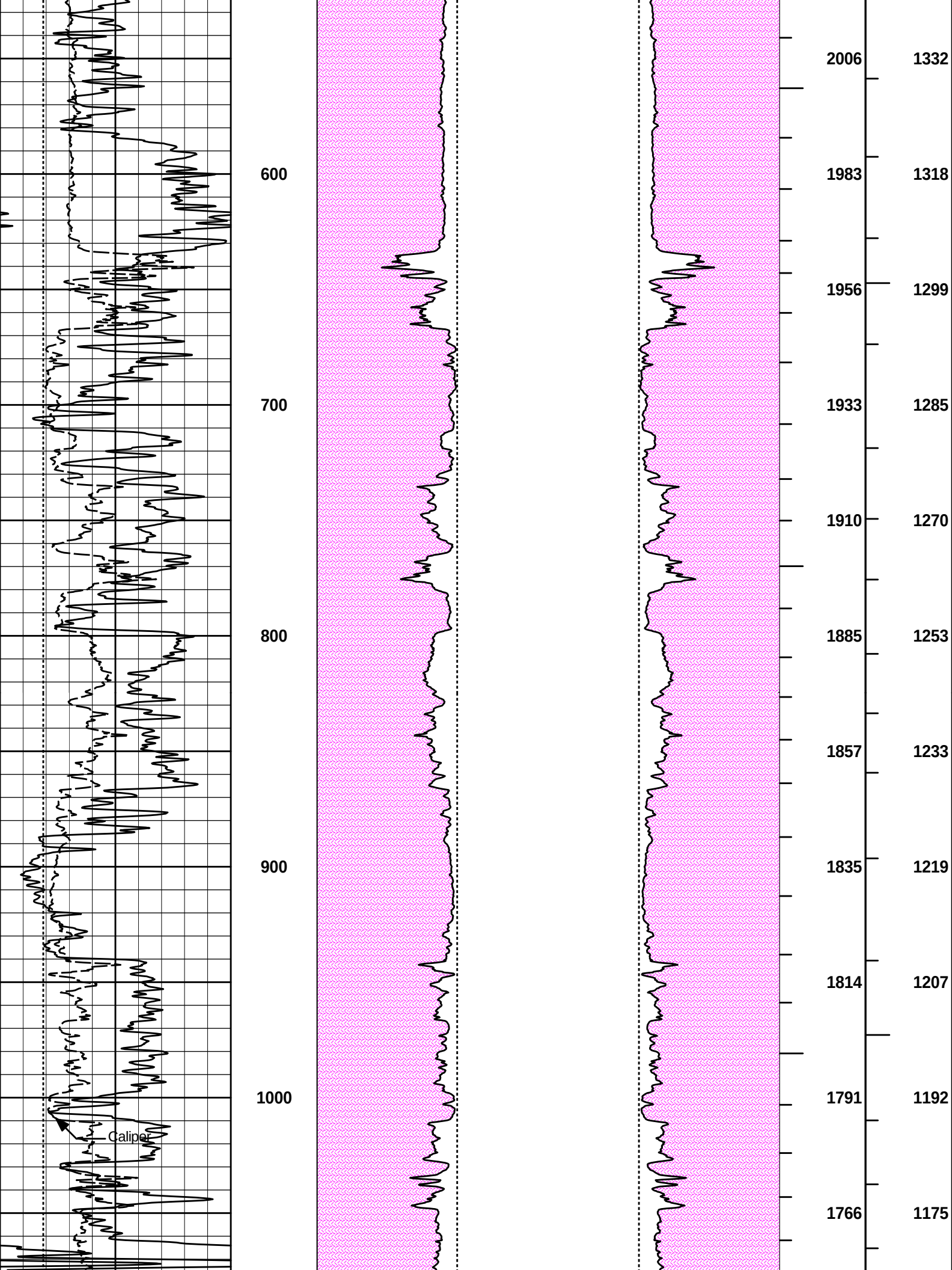
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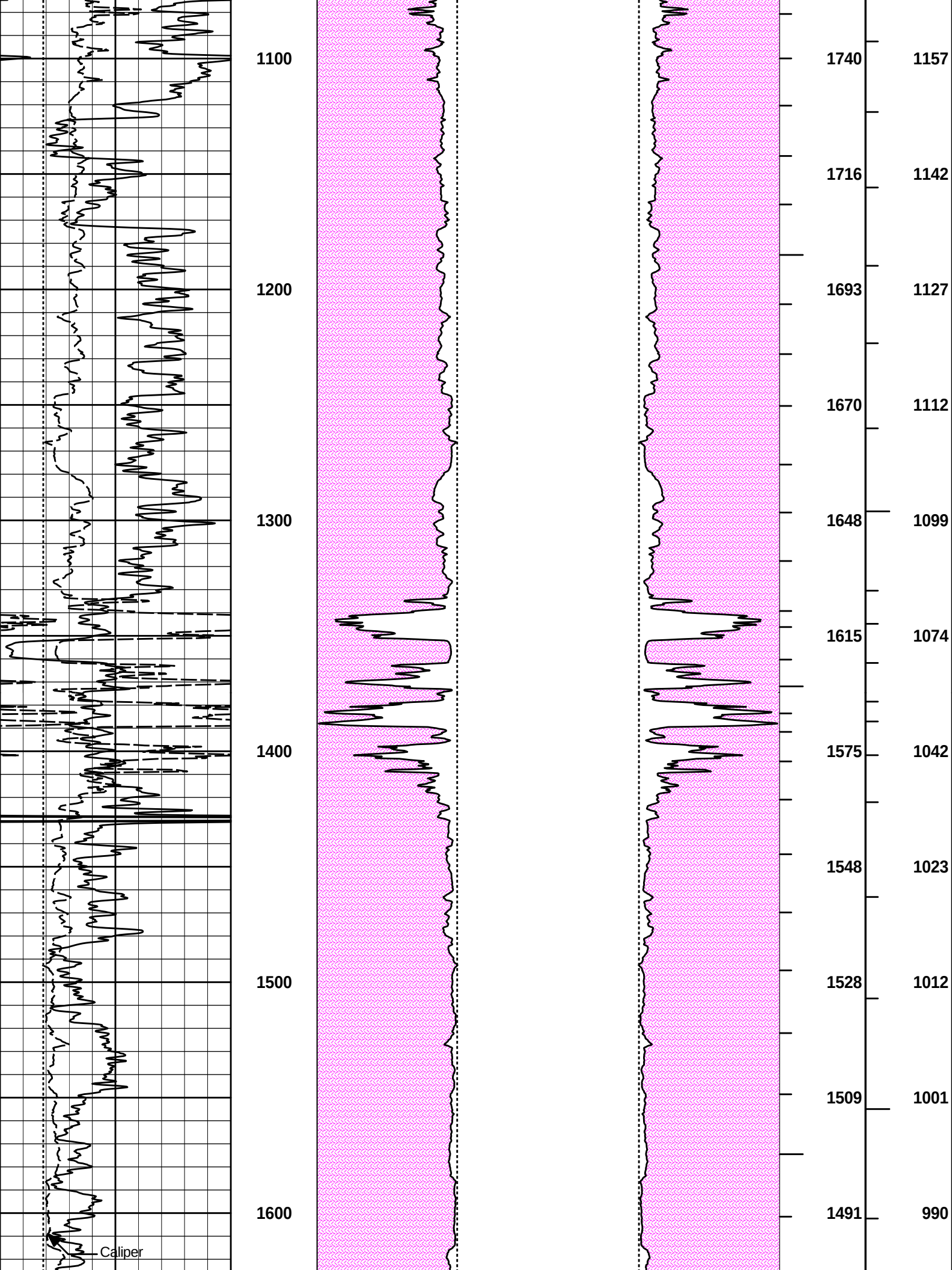
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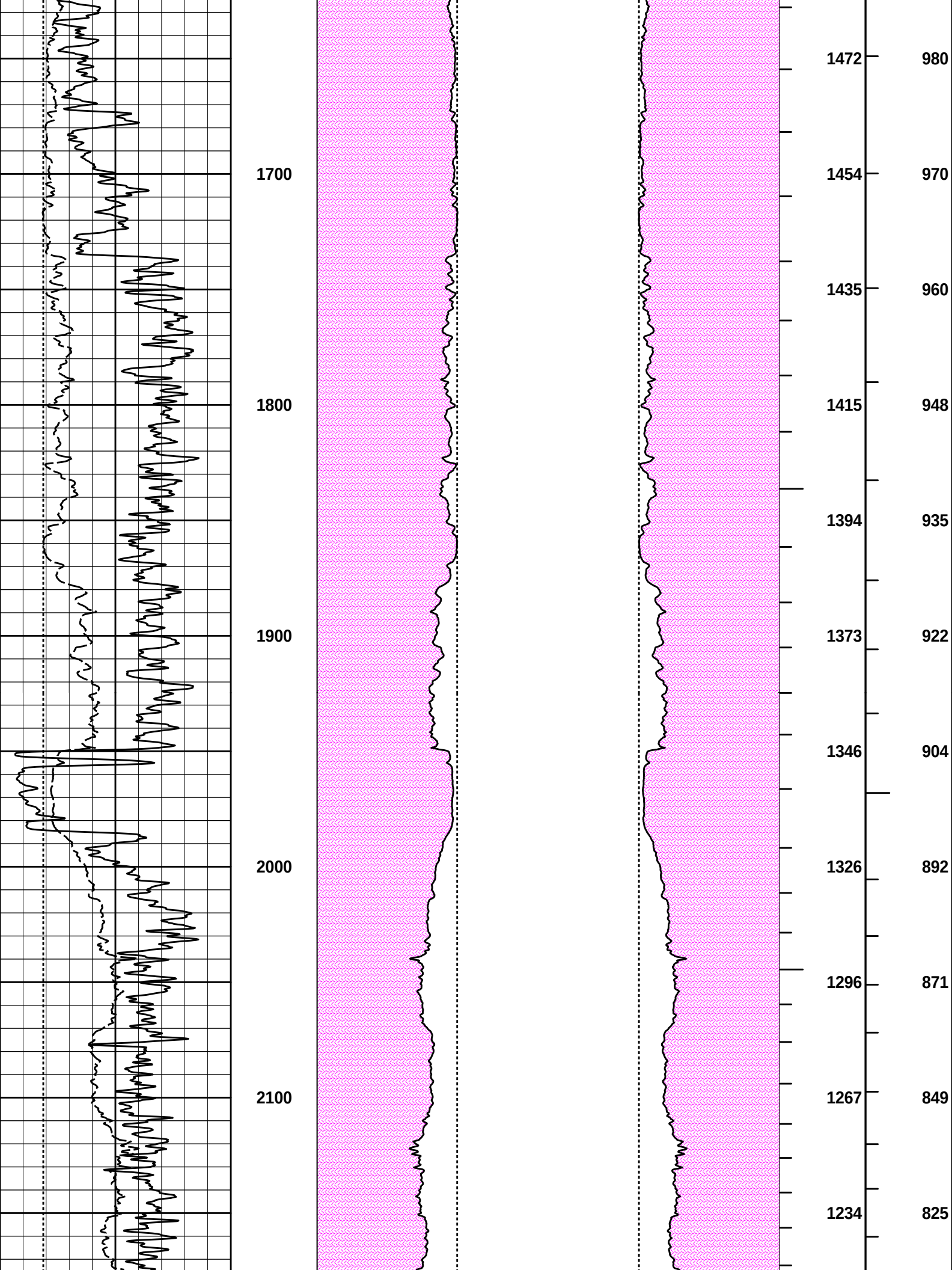
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Plot Range: 250 ft to 4631.42 ft
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Plot File: \\-LOCAL-\ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\PORO\AHV_2_IQ_LIB

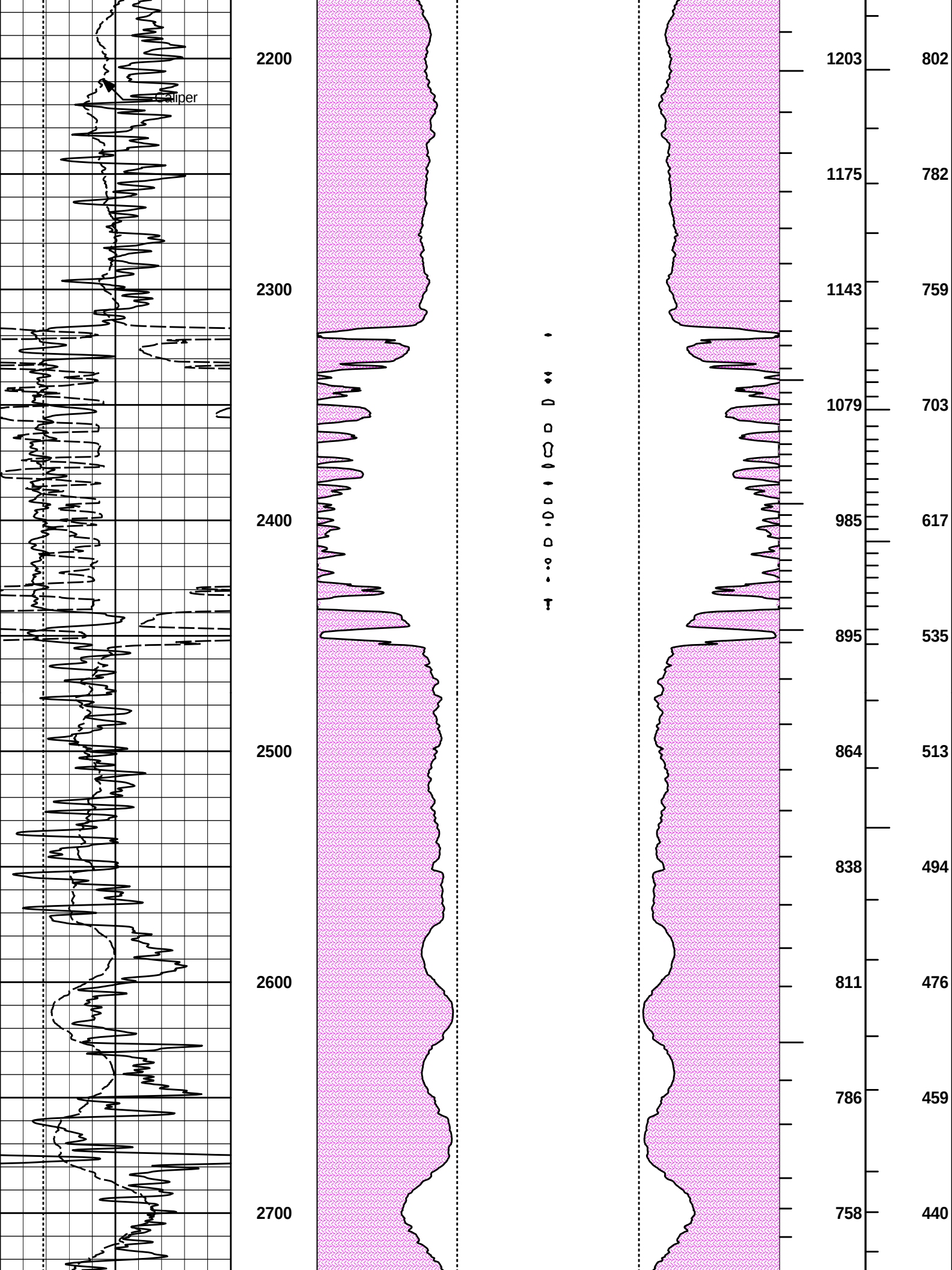
ANNULAR HOLE VOLUME PLOT

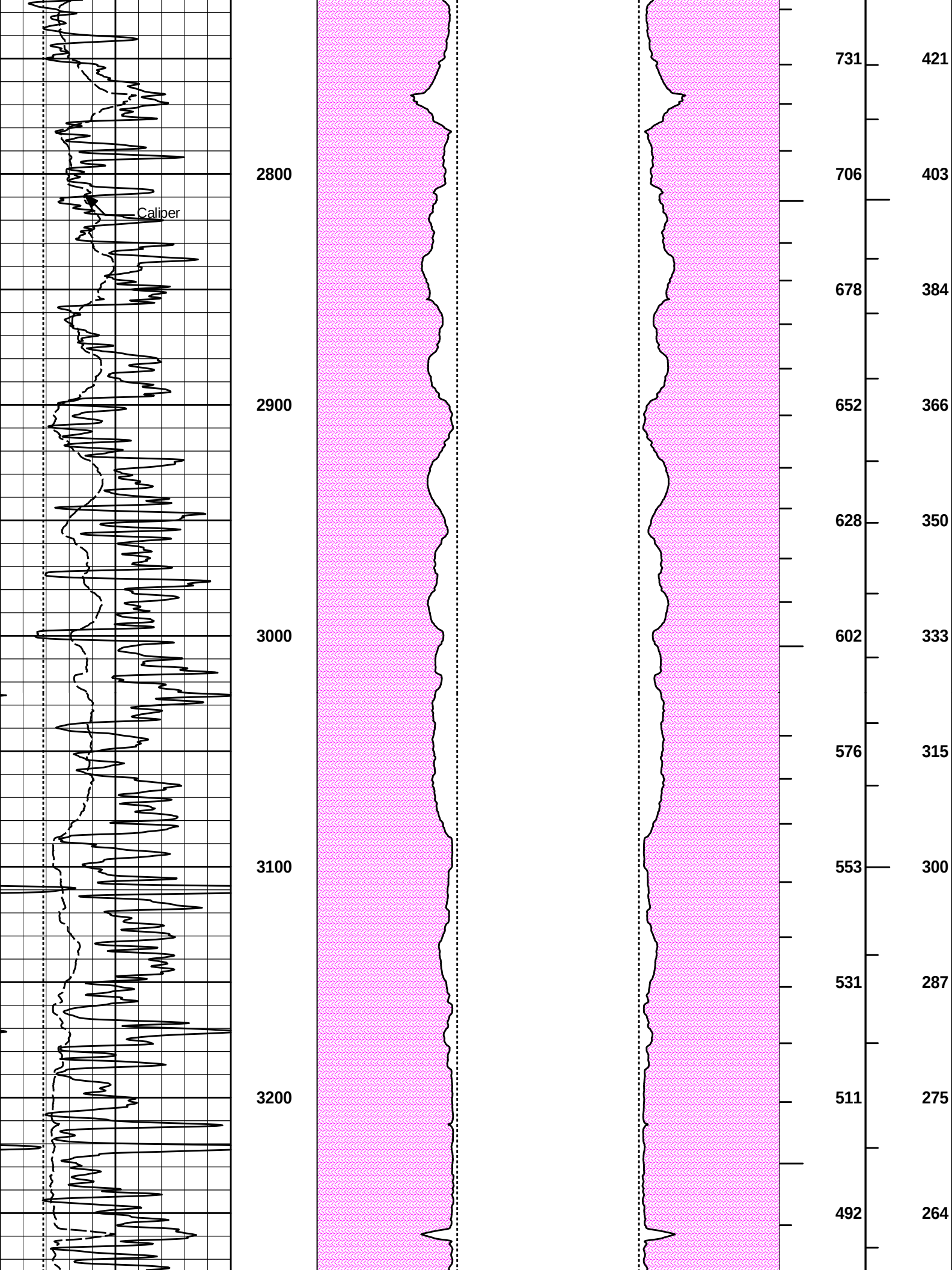


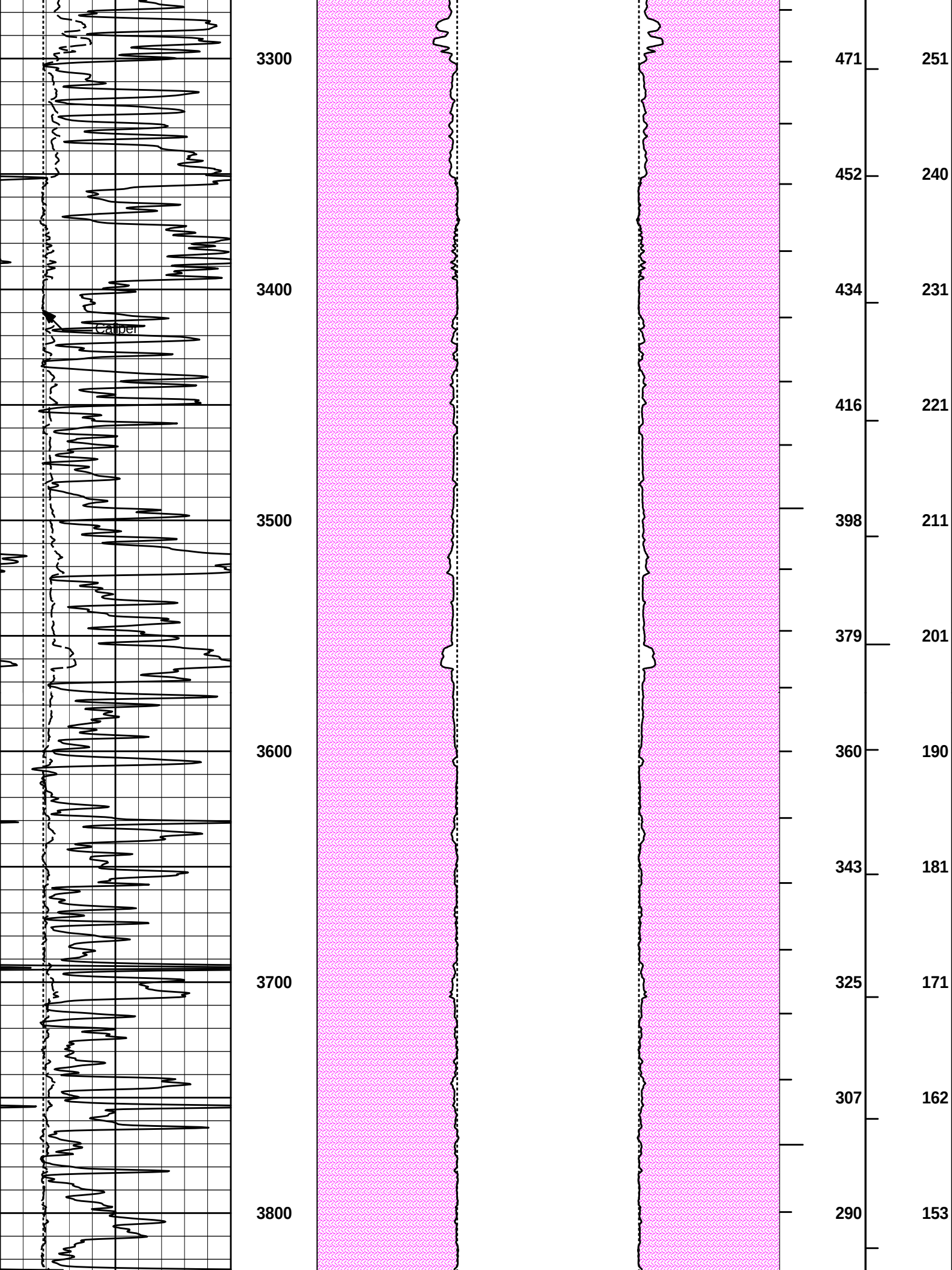

600
700
800
900
1000
Caliper
2006
1983
1956
1933
1910
1885
1857
1835
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1192
1175

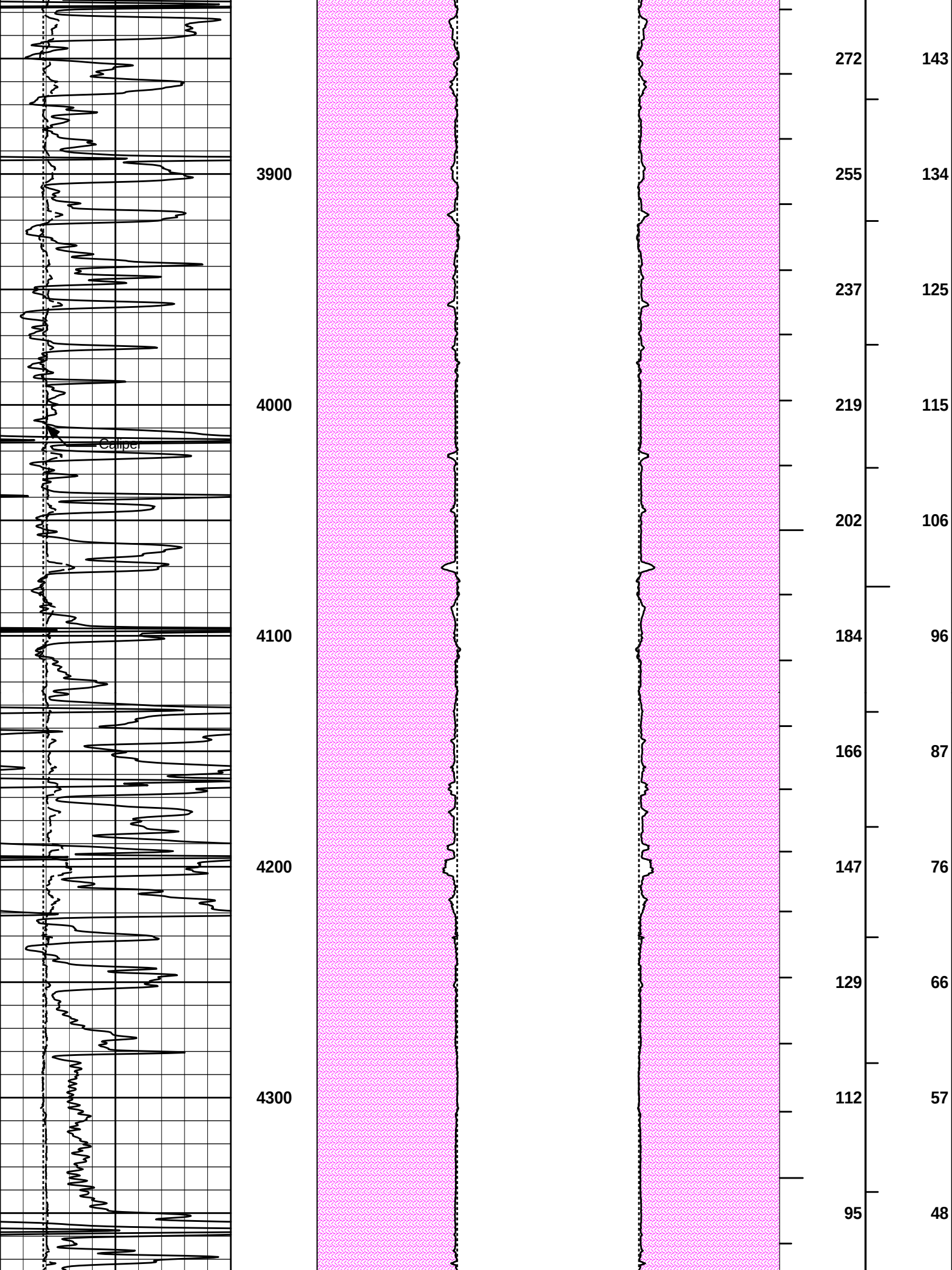

1100
1200
1300
1400
1500
1600
1740
1716
1693
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1615
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1042
1023
1012
1001
990
Caliper

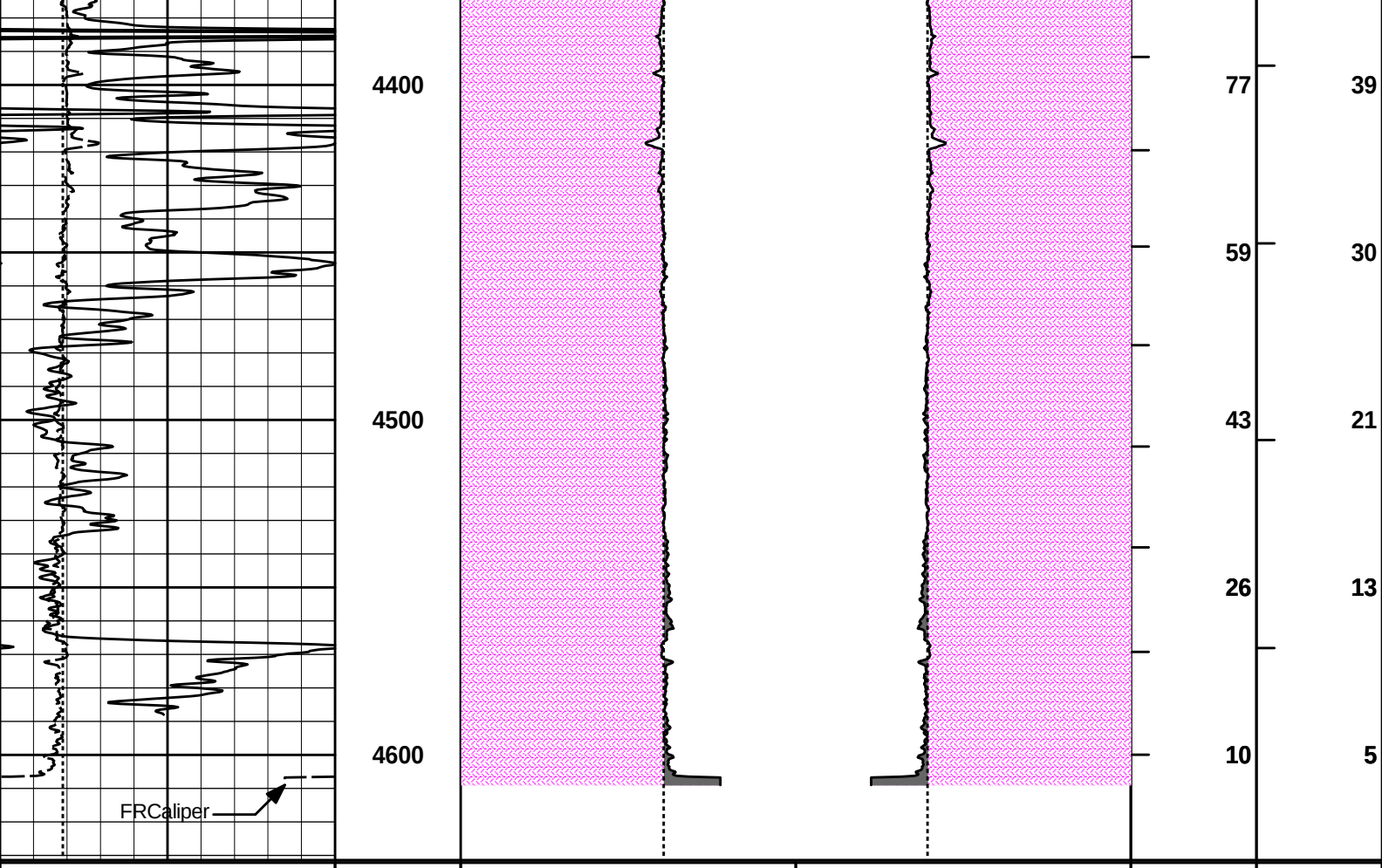

1700
1800
1900
2000
2100
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1454
1435
1415
1394
1373
1346
1326
1296
1267
1234
980
970
960
948
935
922
904
892
871
849
825


Caliper
2200
2300
2400
2500
2600
2700
1203
1175
1143
1079
985
895
864
838
811
786
758
802
782
759
703
617
535
513
494
476
459
440


Caliper
2800
2900
3000
3100
3200
731
706
678
652
628
602
576
553
531
511
492
421
403
384
366
350
333
315
300
287
275
264


3300
3400
3500
3600
3700
3800
Caliper
471
452
434
416
398
379
360
343
325
307
290
251
240
231
221
211
201
190
181
171
162
153


Caliper
3900
4000
4100
4200
4300
272
255
237
219
202
184
166
147
129
112
95
143
134
125
115
106
96
87
76
66
57
48



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

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Plot Time: 23-Mar-14 12:35:35
Plot Range: 250 ft to 4631.42 ft
Data: ALBERS_B_3\Well Based\CASING\
Plot File: \\-LOCAL-\ALBERS_B_3\0001 SP-GTET-DSNT-SDLT-ACRT-BN\PORO\AHV_2_IQ_LIB

ANNULAR HOLE VOLUME PLOT

COMPANY	**TENGASCO, INC.**		
WELL	**ALBERS B #3**		
FIELD	**GOOD SCIENCE**		
COUNTY	**TREGO**	STATE	**KANSAS**

HALLIBURTON

SPECTRAL DENSITY DUAL SPACED NEUTRON LOG