HALLIBURTON

BOREHOLE COMPENSATED SONIC ARRAY LOG

HARTMAN OIL CO., INC. | ROSE #3-1 | AMERICAN BEAUTY | WICHITA COUNTY | KANSAS

(COMPANY | WELL | FIELD/BLOCK | COUNTY | STATE)

COMPANY **HARTMAN OIL CO., INC.**

WELL **ROSE #3-1**

FIELD/BLOCK **AMERICAN BEAUTY**

COUNTY **WICHITA COUNTY** STATE **KANSAS**

API No. 15-203-20,275

Location SE SW NW NW
1100 FNL & 570 FWL

Sect. 1 Twp. 16S Rge. 35W

Other Services:
DSNT/SDLT
ML
ACRT

Permanent Datum	GL	Elev. 3110.0 ft	Elev.: K.B. 3121.0 ft
Log measured from	KB	, 11.0 ft above perm. Datum	D.F. 3121.0 ft
Drilling measured from	KB		G.L. 3110.0 ft

Date		03-Aug-14					
Run No.		ONE					
Depth - Driller		4800.00 ft					
Depth - Logger		4800.0 ft					
Bottom - Logged Interval		4773.0 ft					
Top - Logged Interval							
Casing - Driller		8.625 in @ 356.0 ft		@		@	
Casing - Logger		348.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	10.4 ppg	55.00 s/qt				
PH	Fluid Loss	9.00 pH	12.0 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.30 ohmm @ 85.00 degF		@		@	
Rmf @ Meas. Temperature		0.20 ohmm @ 80.00 degF		@		@	
Rmc @ Meas. Temperature		0.350 ohmm @ 80.00 degF		@		@	
Source Rmf	Rmc	MEASURED	MEASURED				
Rm @ BHT		0.20 ohmm @ 128.0 degF		@		@	
Time Since Circulation		5.0 hr					
Time on Bottom		03-Aug-14 09:56					
Max. Rec. Temperature		128.0 degF @ 4800.0 ft		@		@	
Equipment	Location	15049592	ELRENO				
Recorded By		CHRIS MARLOWE					
Witnessed By		KITT NOZH					

Fold here

PGM Version: WL INSITE R4.2.0 (Build 2)

Service Ticket No.: 901558897 API Serial No.: 15-203-20,275

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

EQUIPMENT DATA

GAMMA		ACOUSTIC		DENSITY		NEUTRON	
Run No.	ONE	Run No.	ONE	Run No.		Run No.	
Serial No.	11013114	Serial No.	10939050	Serial No.		Serial No.	
Model No.	GTET	Model No.	BSAT	Model No.		Model No.	
Diameter	3.625"	No. of Cent.	2	Diameter		Diameter	
Detector Model No.	T-102	Spacing	0.5'	Log Type		Log Type	
Type	SCINT			Source Type		Source Type	
Length	8"	LSA [Y/N]	Y	Serial No.		Serial No.	
Distance to Source	10'	FWDA [Y/N]	Y	Strength		Strength	

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	TD	CSG	REC	0	150	30	-10	47.5						

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

Remarks: ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING

CHLORIDES REPORTED AT 12000 PPM

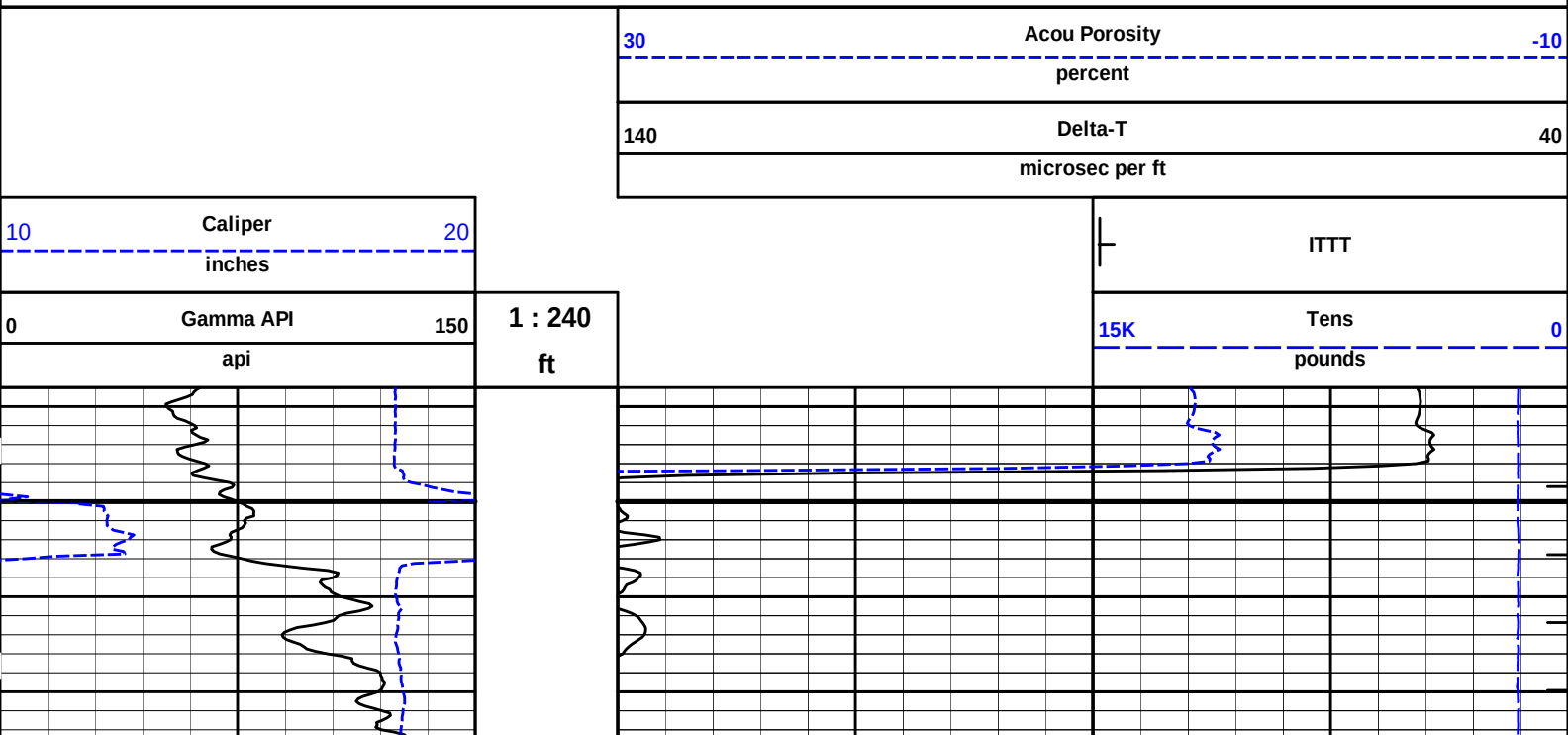
TODAY'S CREW: J. WOOD, J. SUMNER

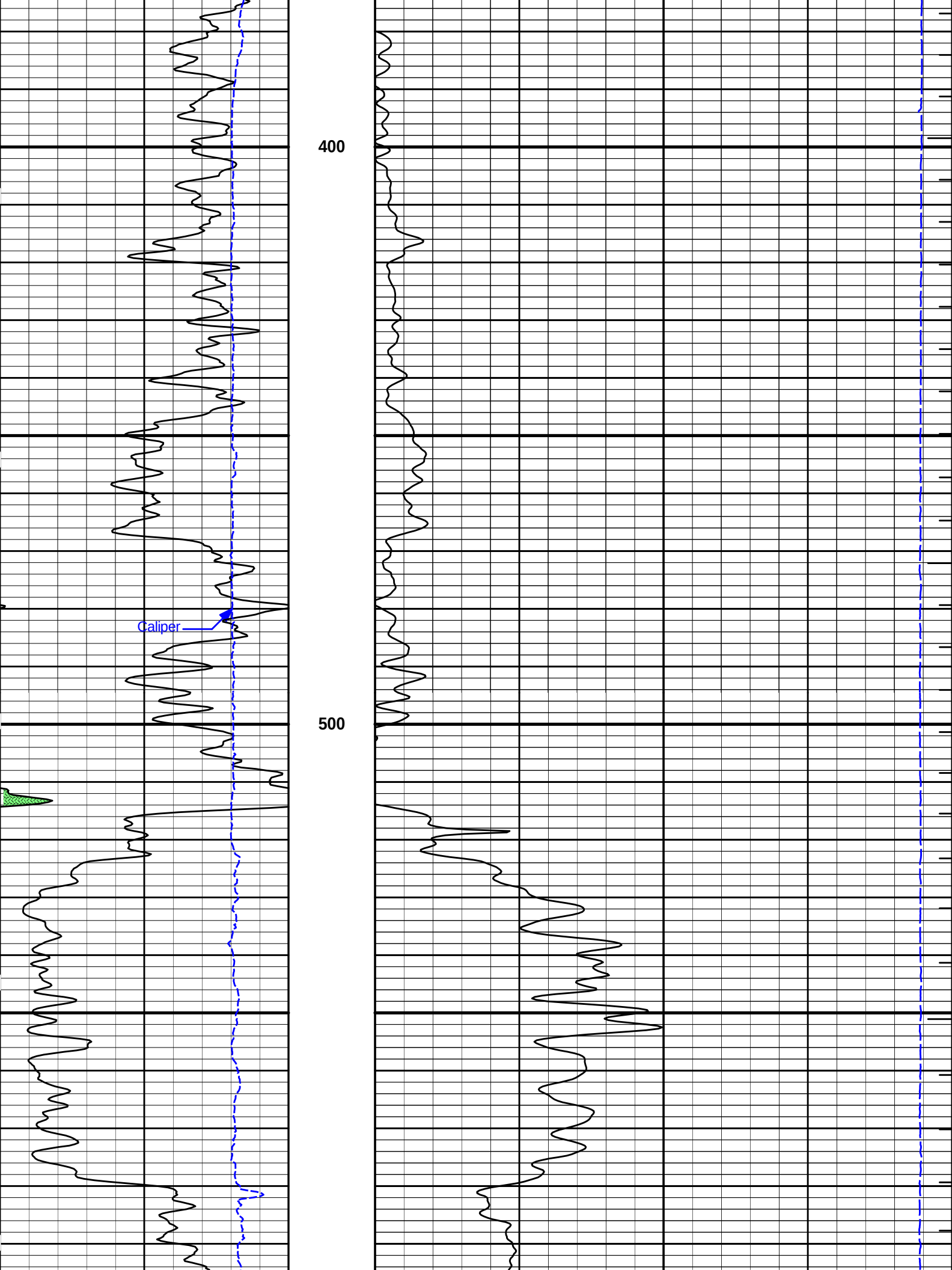
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES: PAULS VALLEY, OK

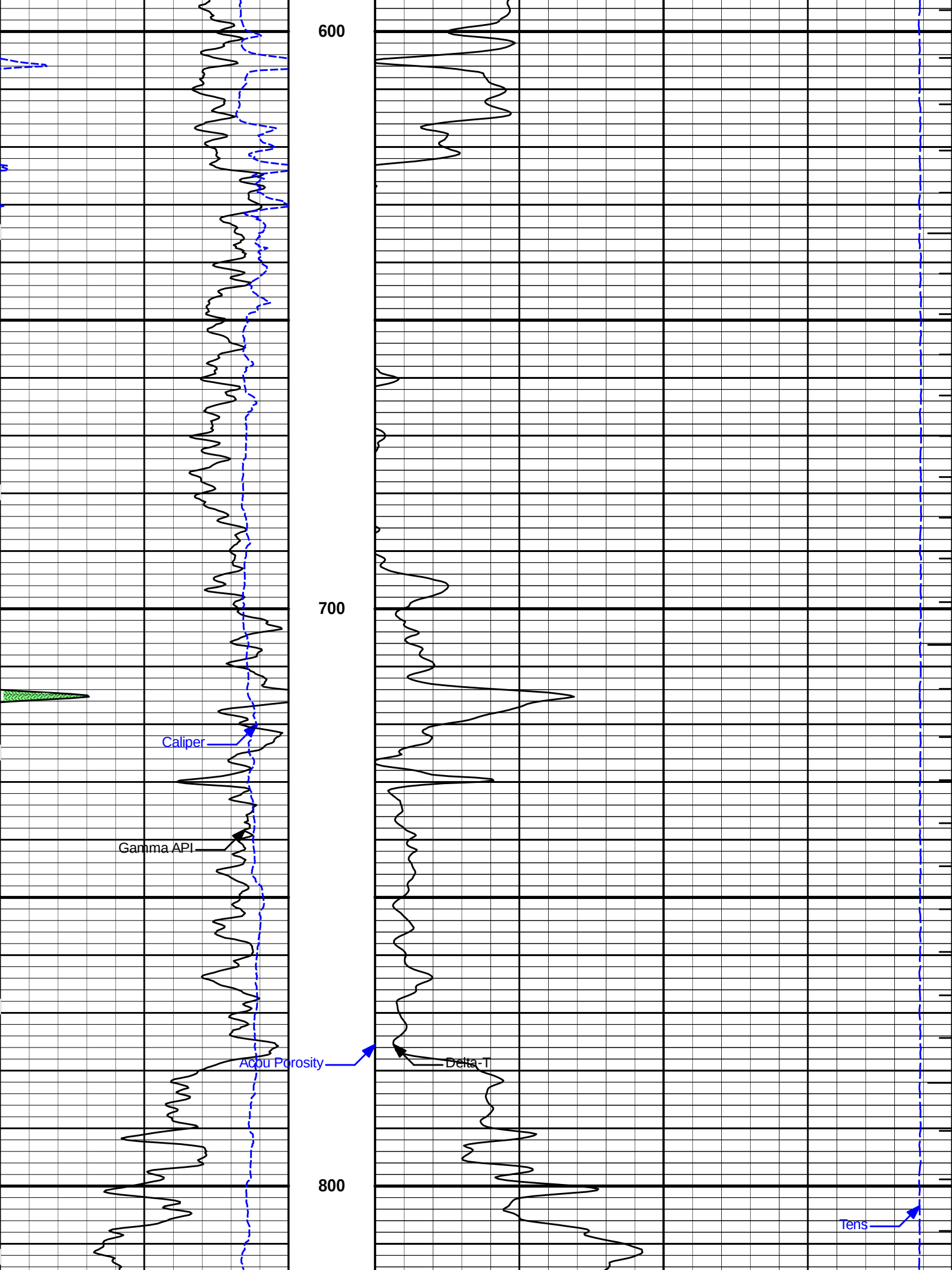
HALLIBURTON

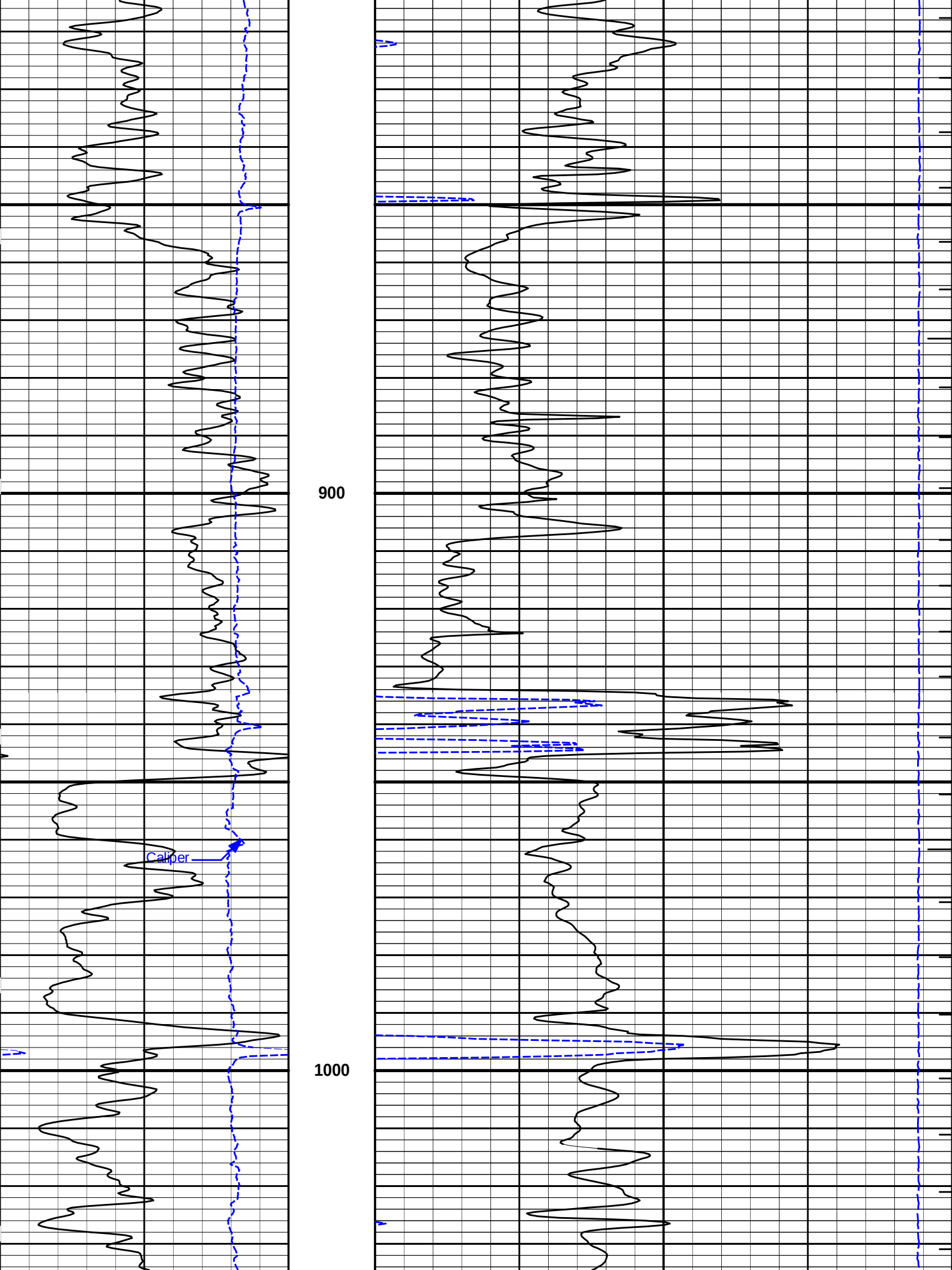
Plot Time: 03-Aug-14 13:38:05
Plot Range: 338 ft to 4803.58 ft
Data: ROSE_3_1\Well Based\DAQ-0001-003
Plot File: \\BSAT\1_BSAT_5_mainx

5 INCH MAIN LOG




400
Caliper
500


600
700
800
Caliper
Gamma API
Accu Porosity
Delta-T
Tens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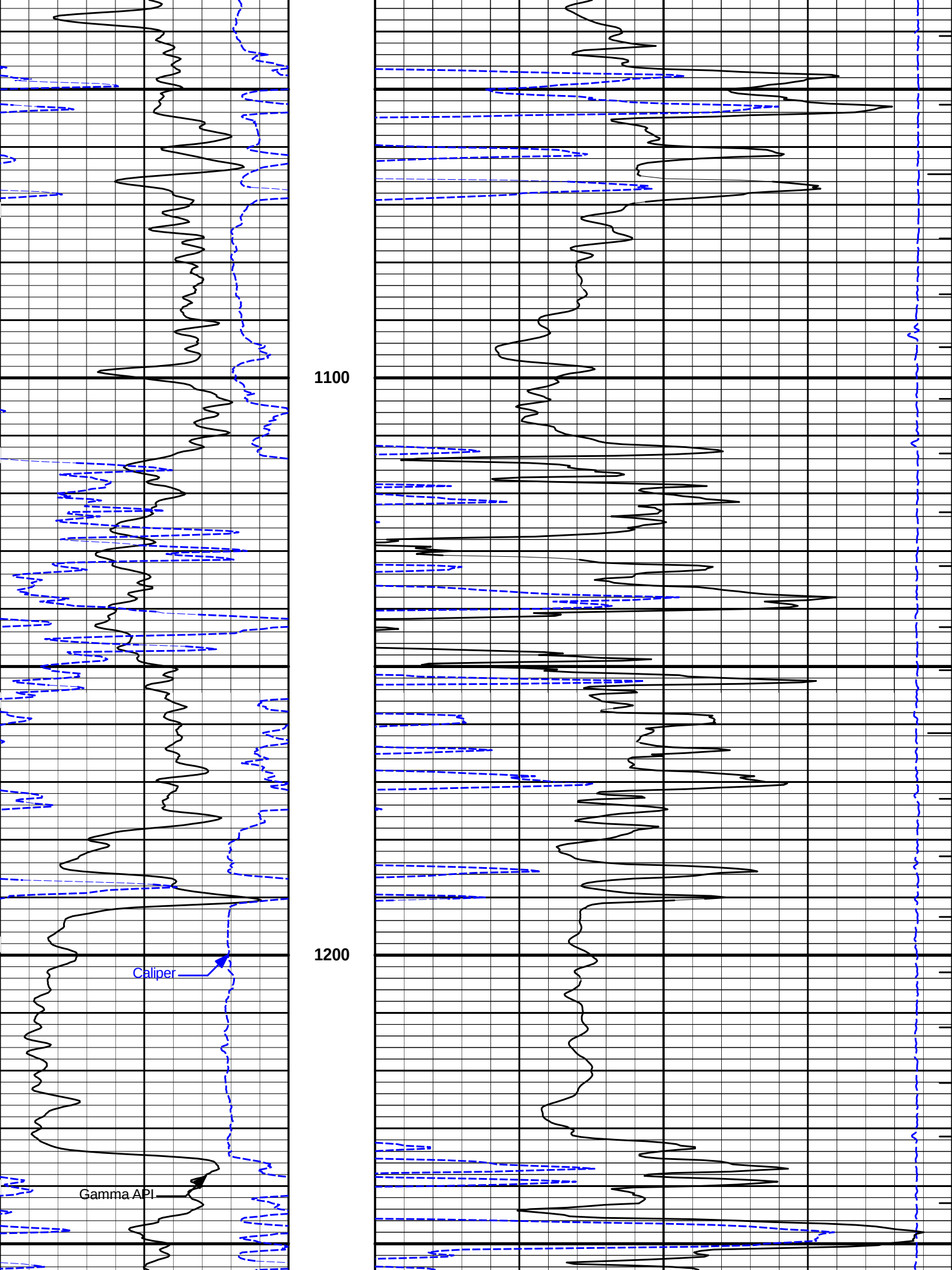
Caliper
1000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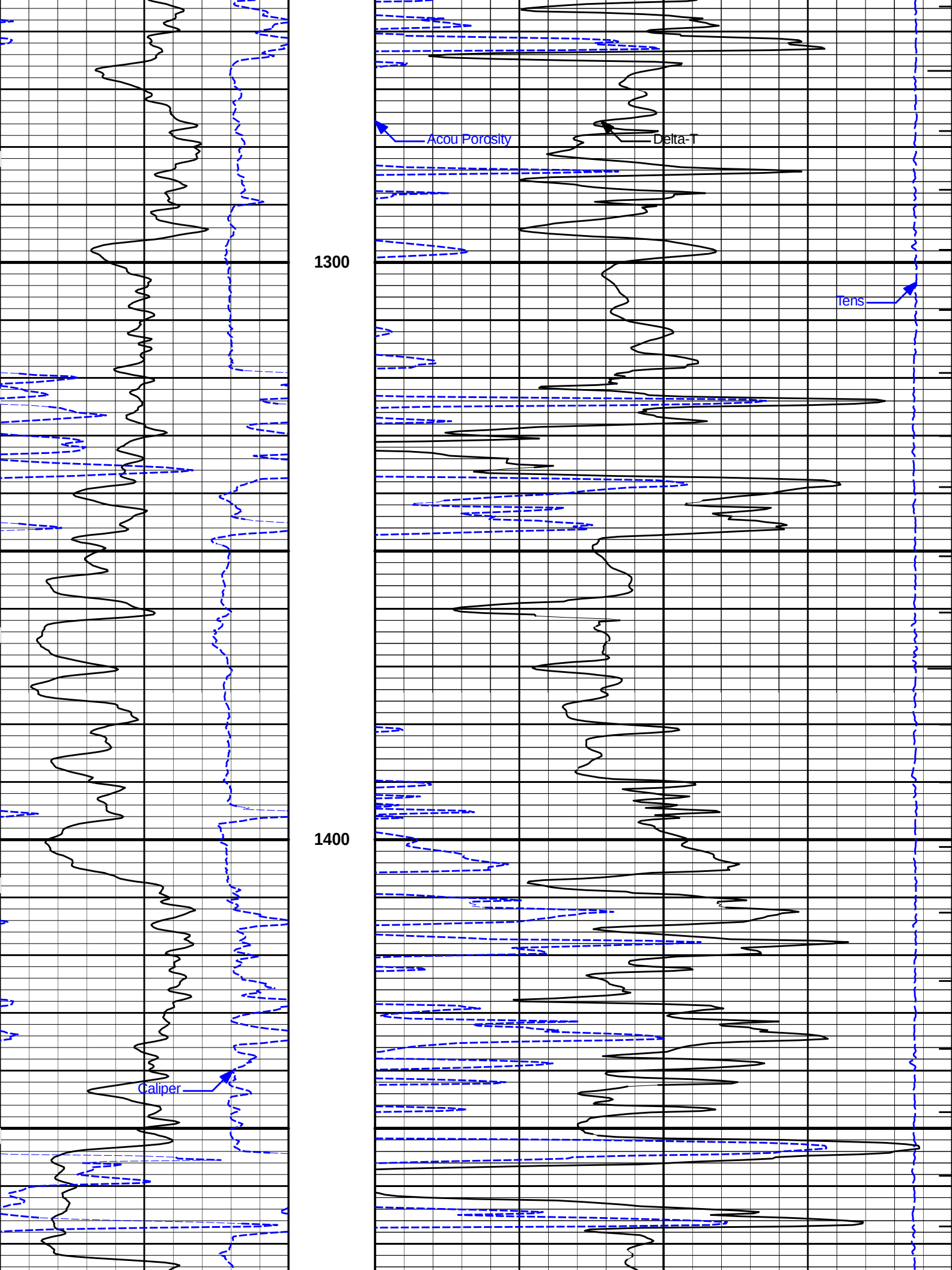
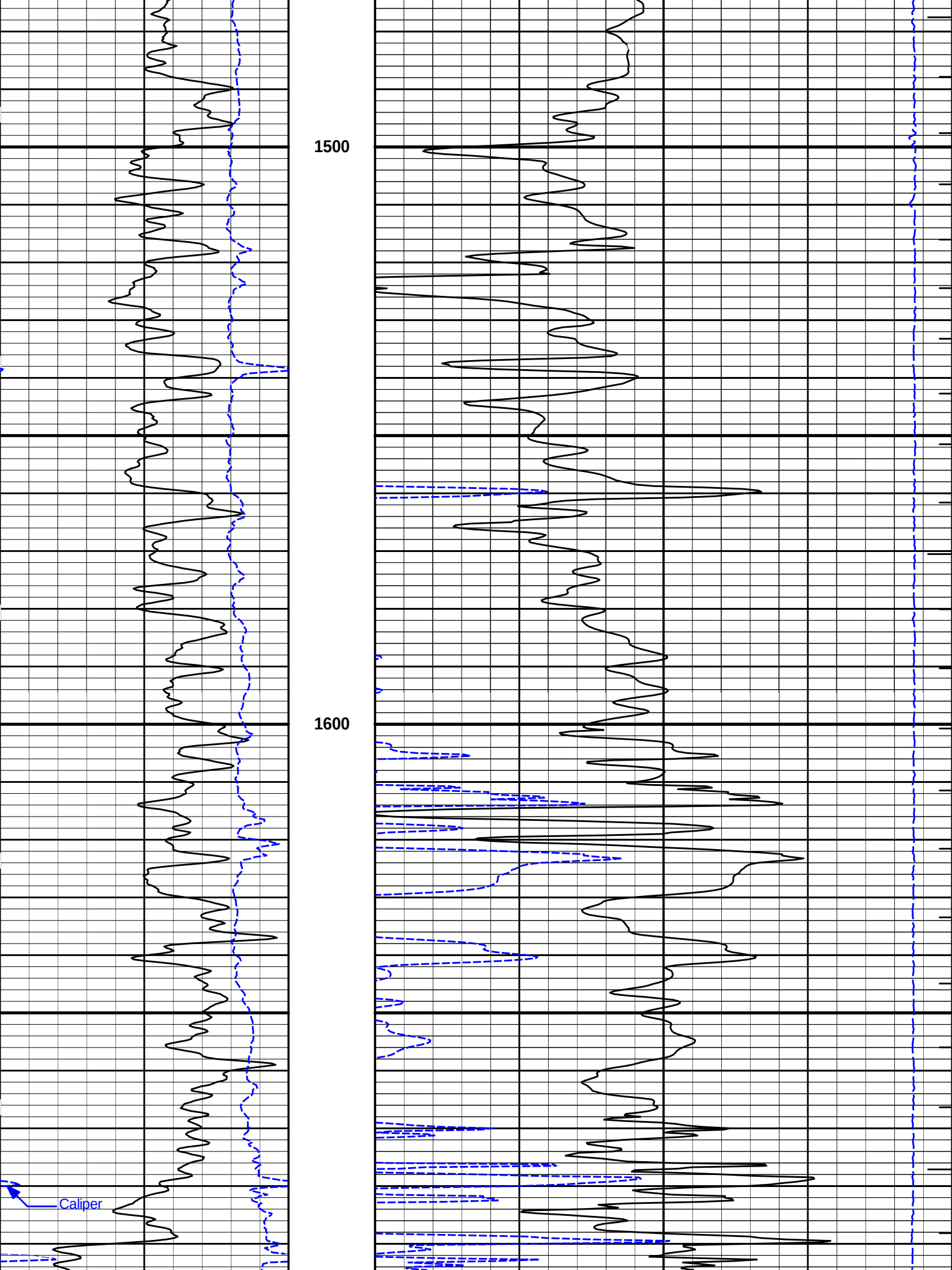
1200
Caliper
Gamma API


Acou Porosity
Delta-T
1300
Tens
1400
Caliper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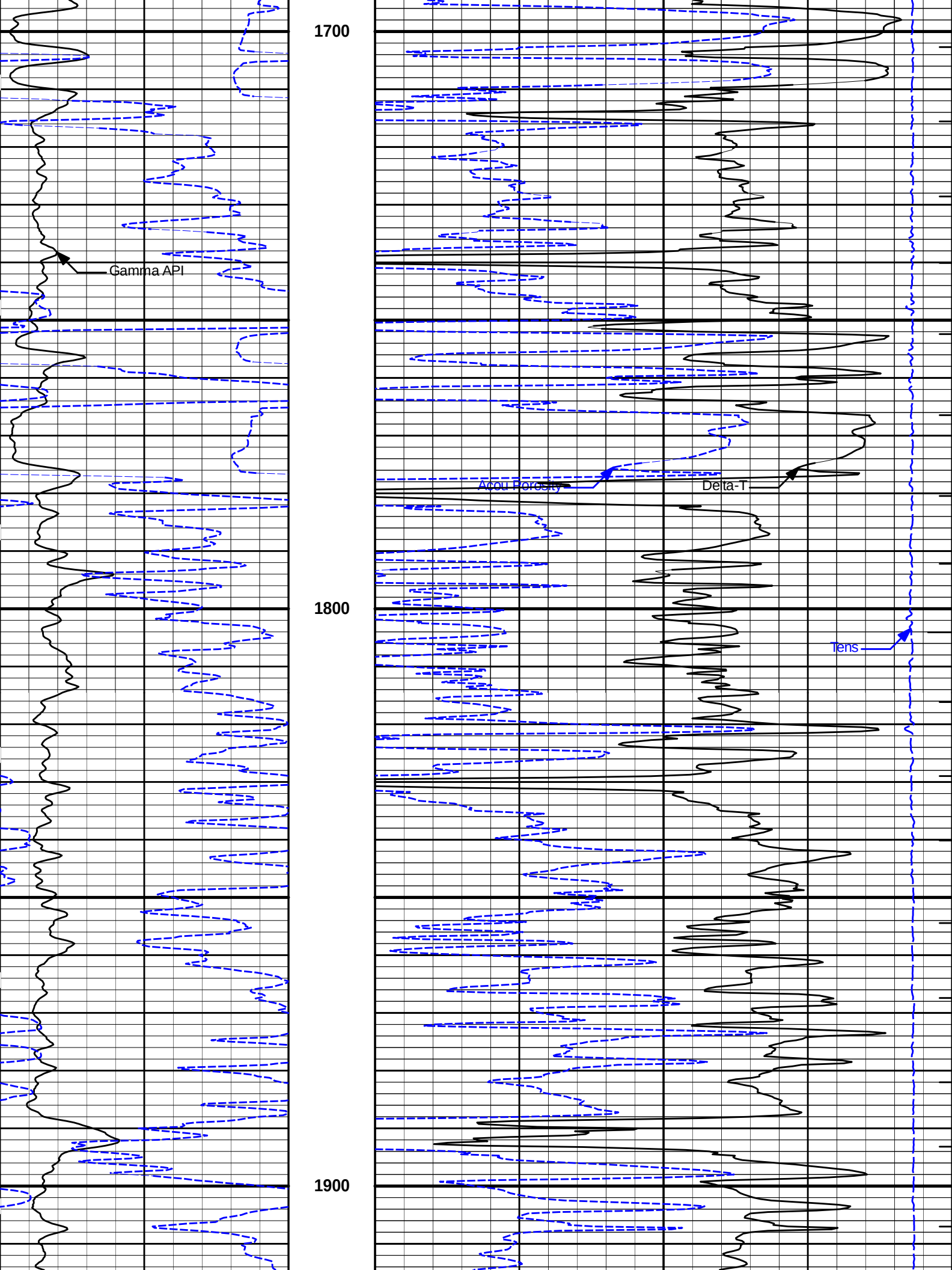
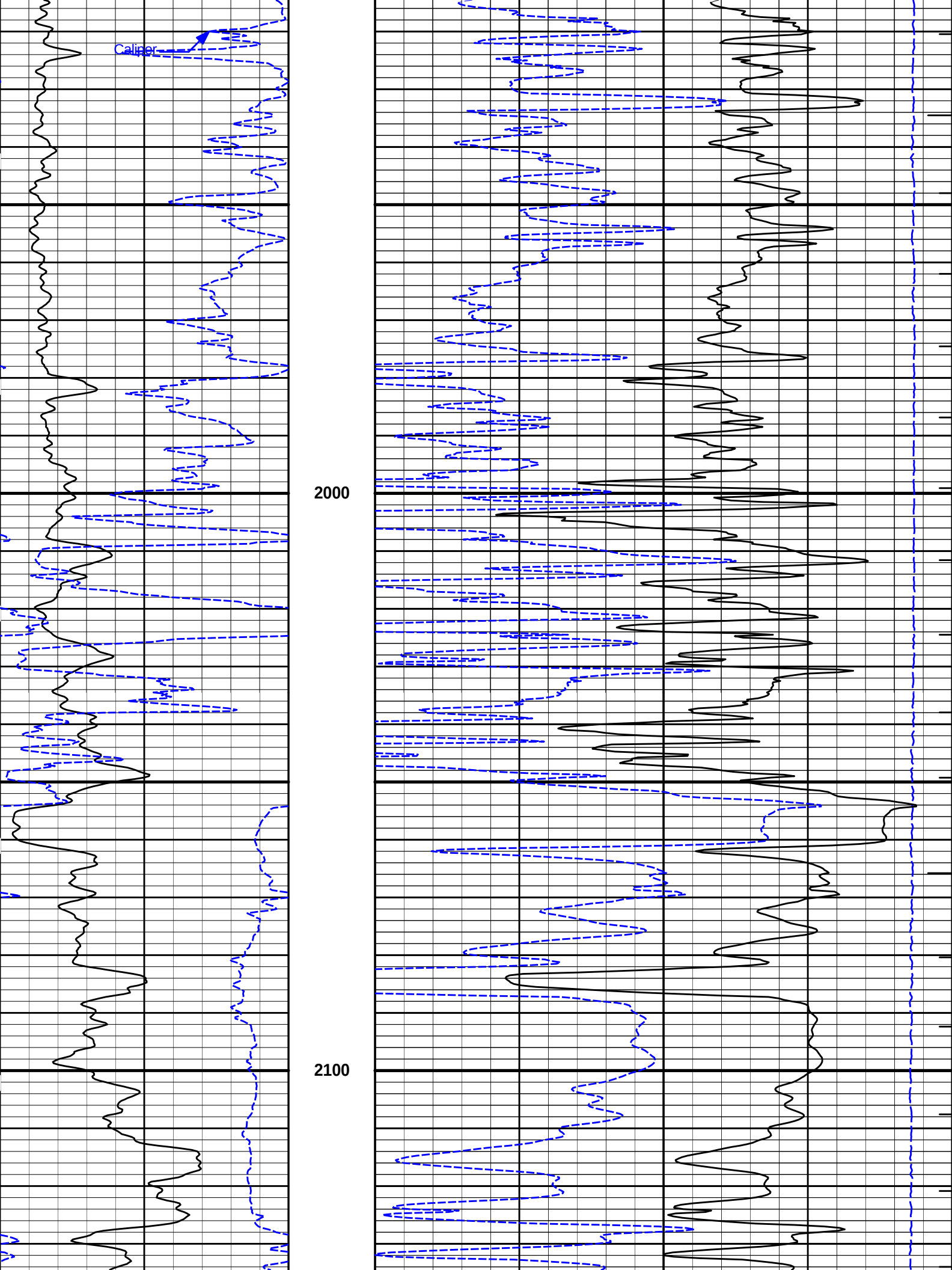
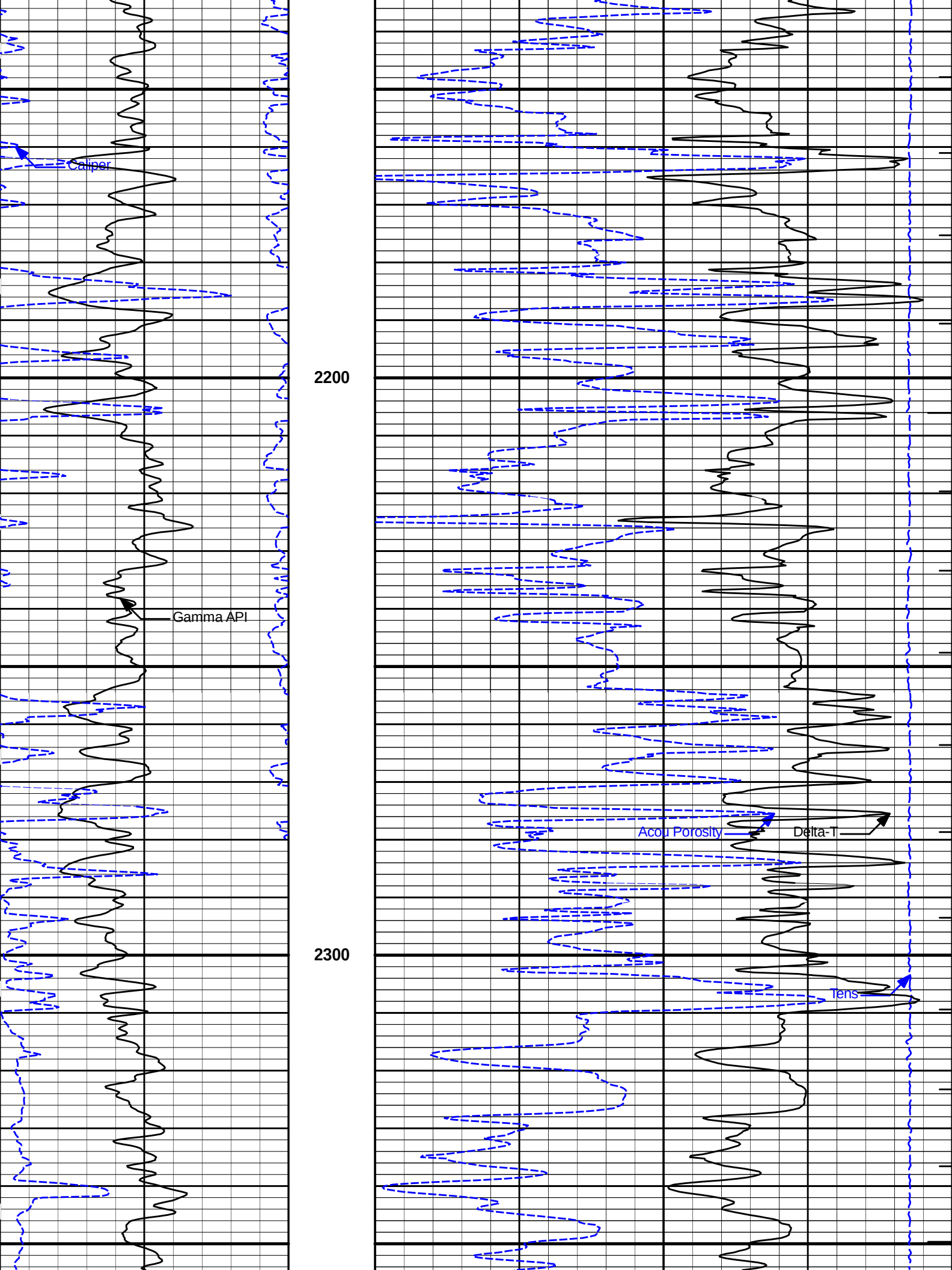
1600
Caliper


1700
Gamma API
Acou Porosity
Delta-T
1800
Tens
1900


Caliper
2000
2100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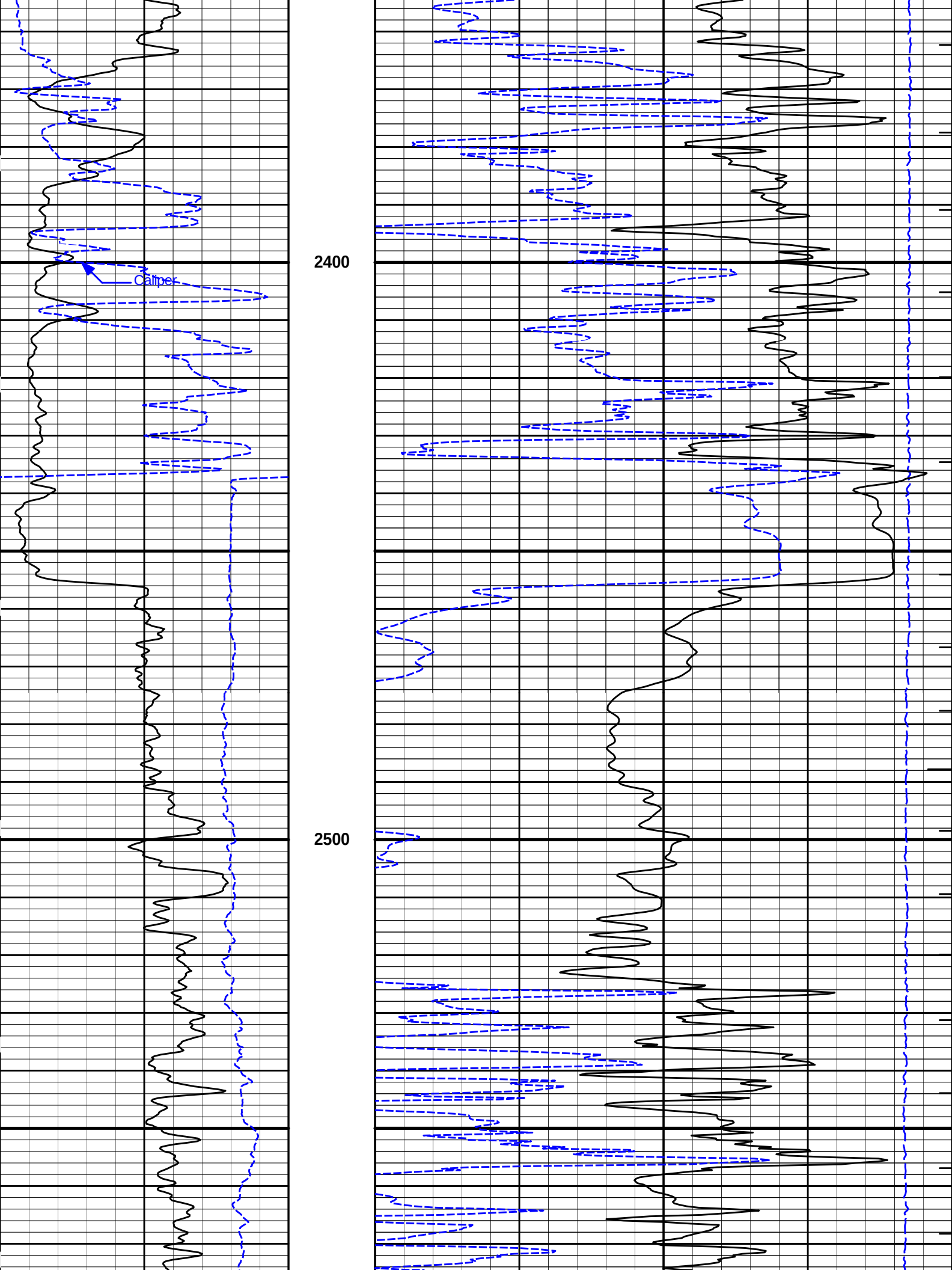
2200
Gamma API
Acou Porosity
Delta-T
2300
Tens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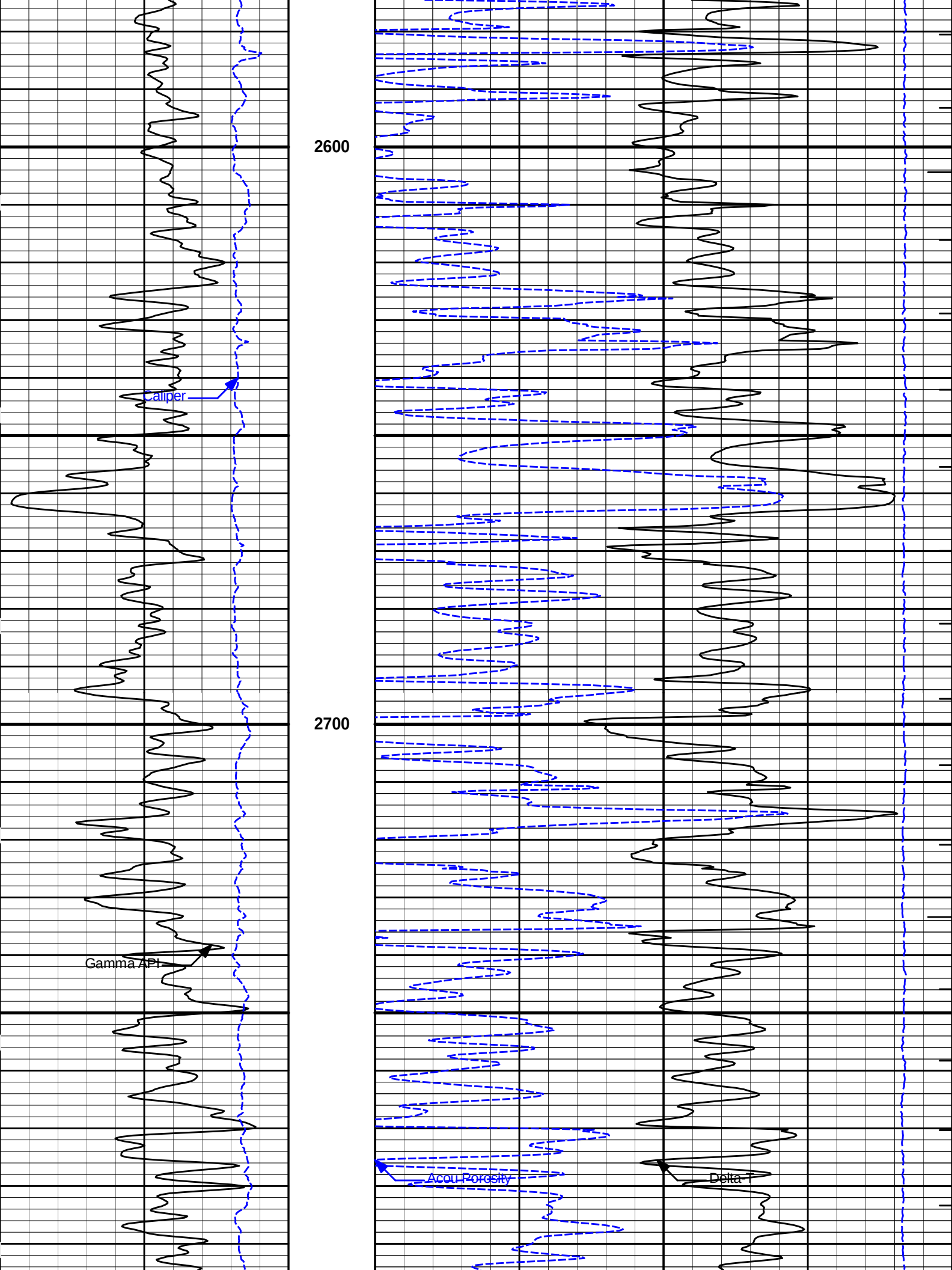
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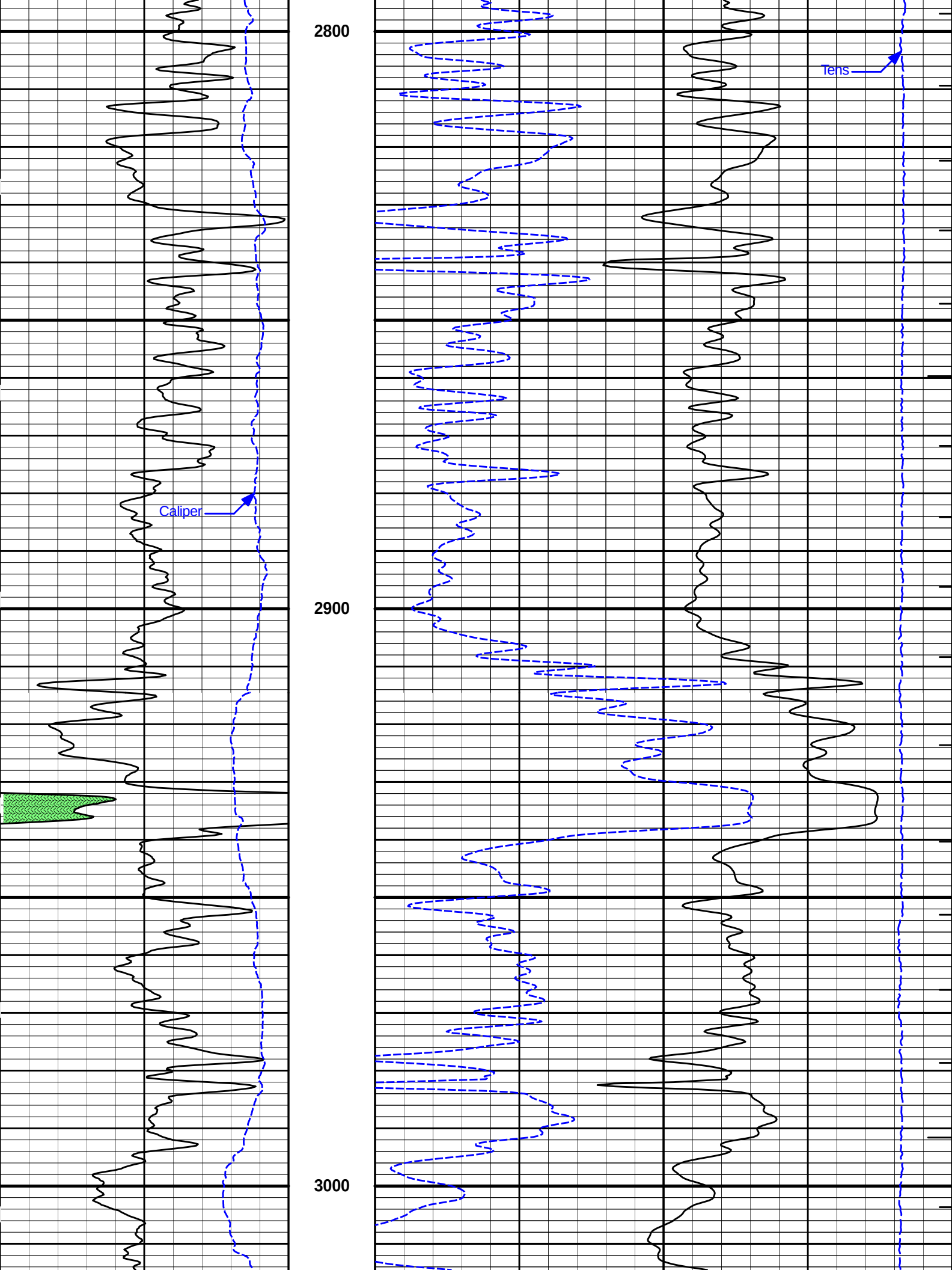
2700
Caliper
Gamma API
Acou Porosity
Delta T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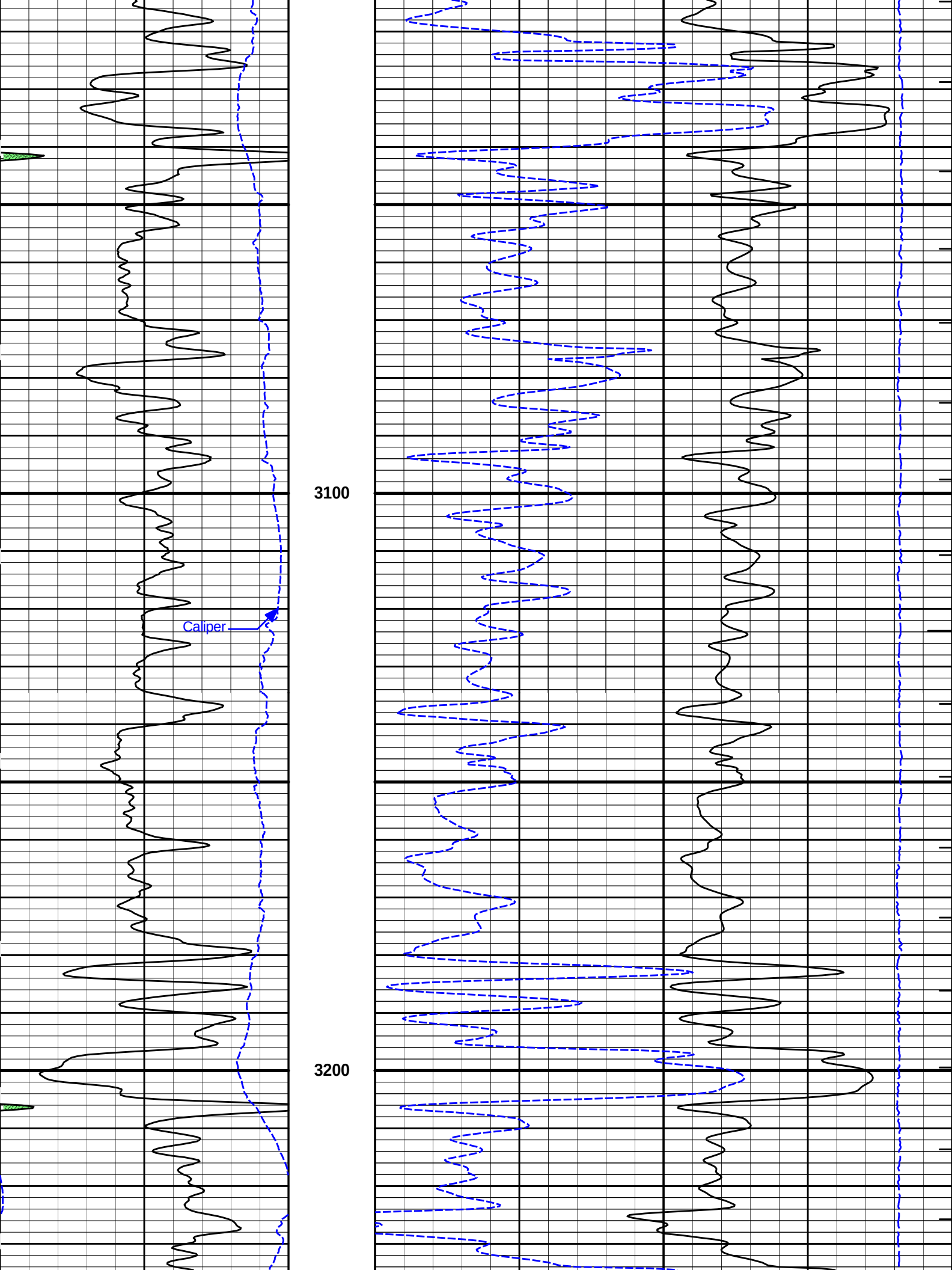
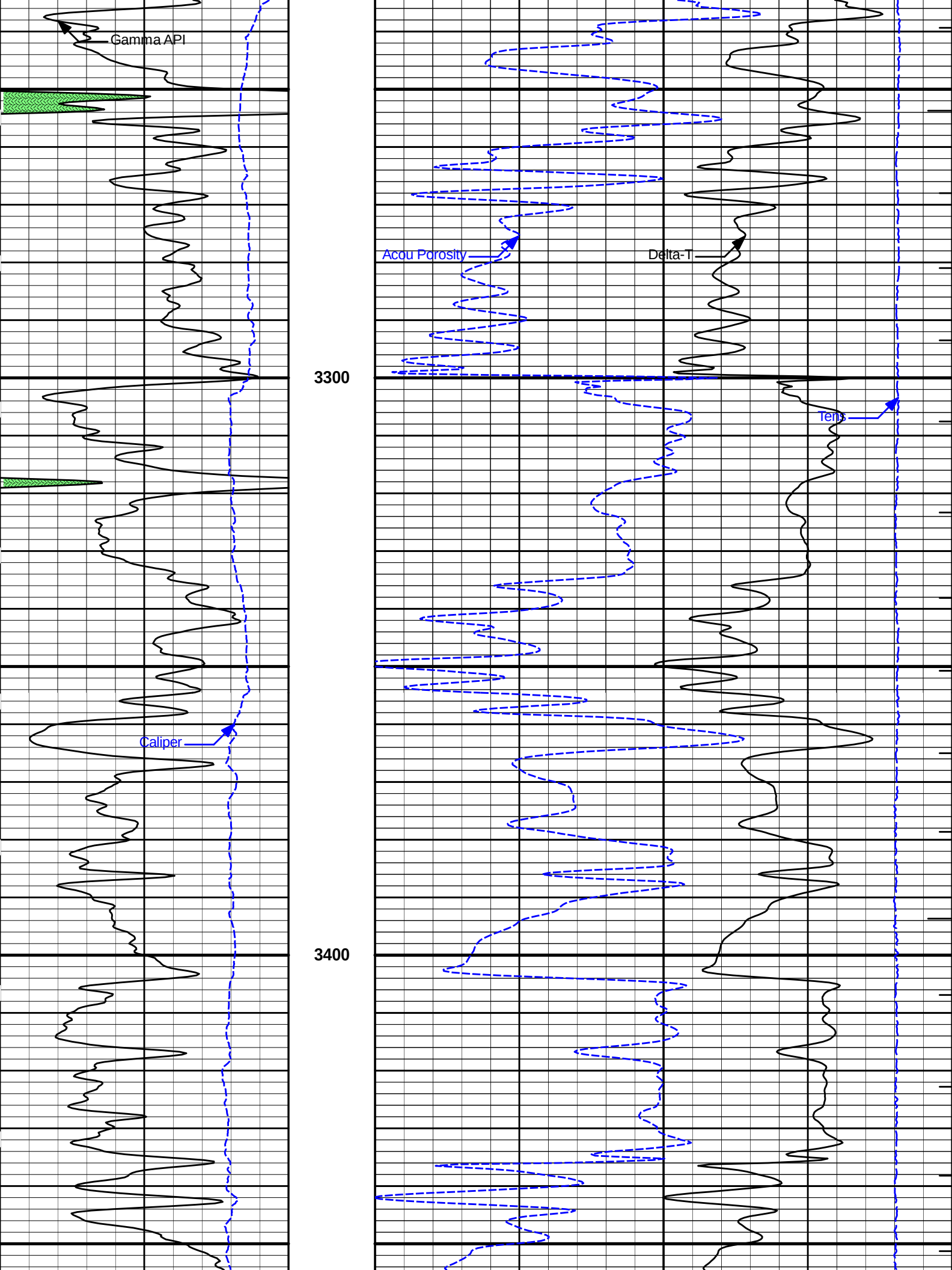
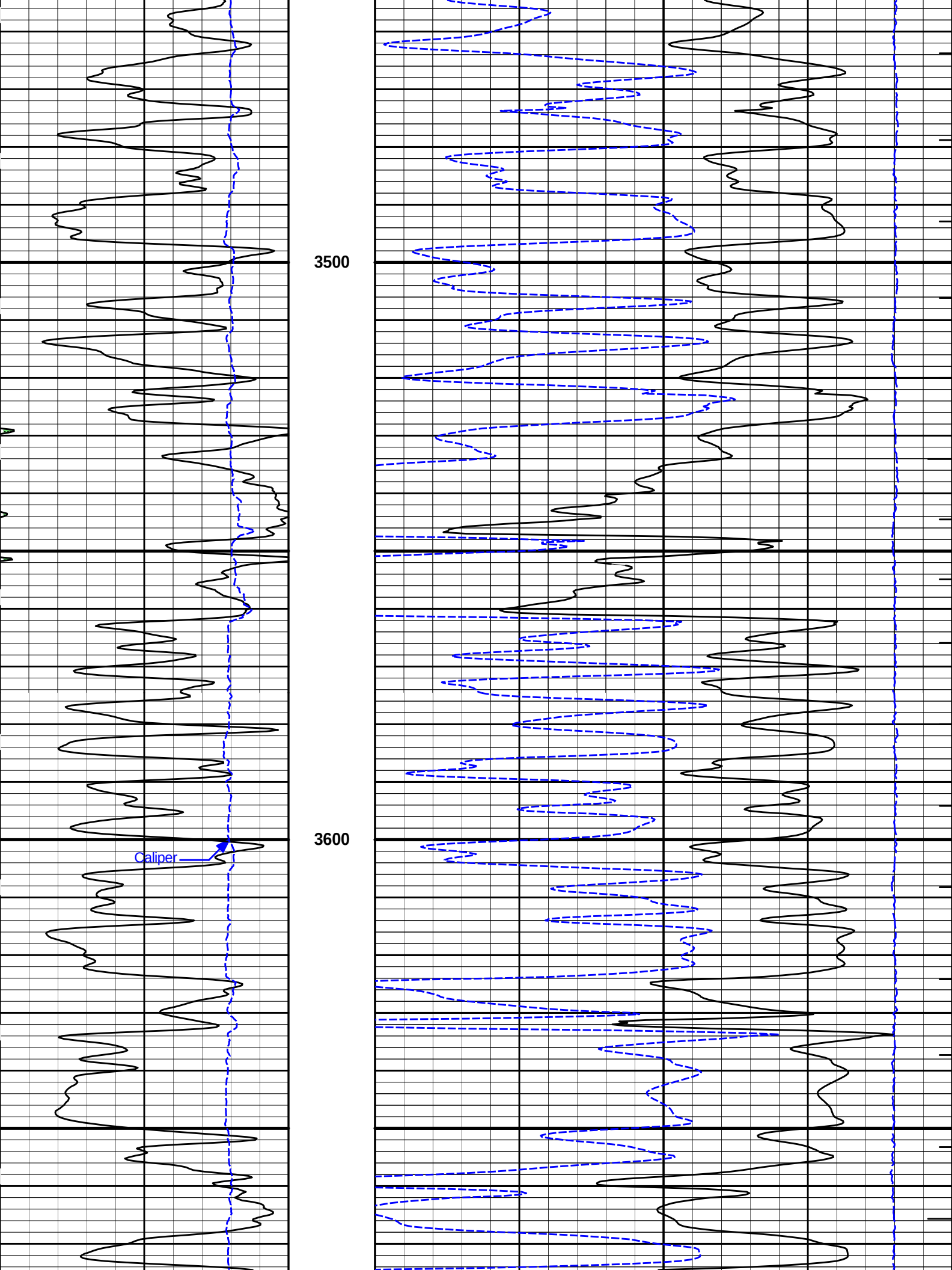
2900
3000
Caliper
Tens


3100
Caliper
3200


Gamma API
Acou Porosity
Delta-T
3300
Tens
Caliper
3400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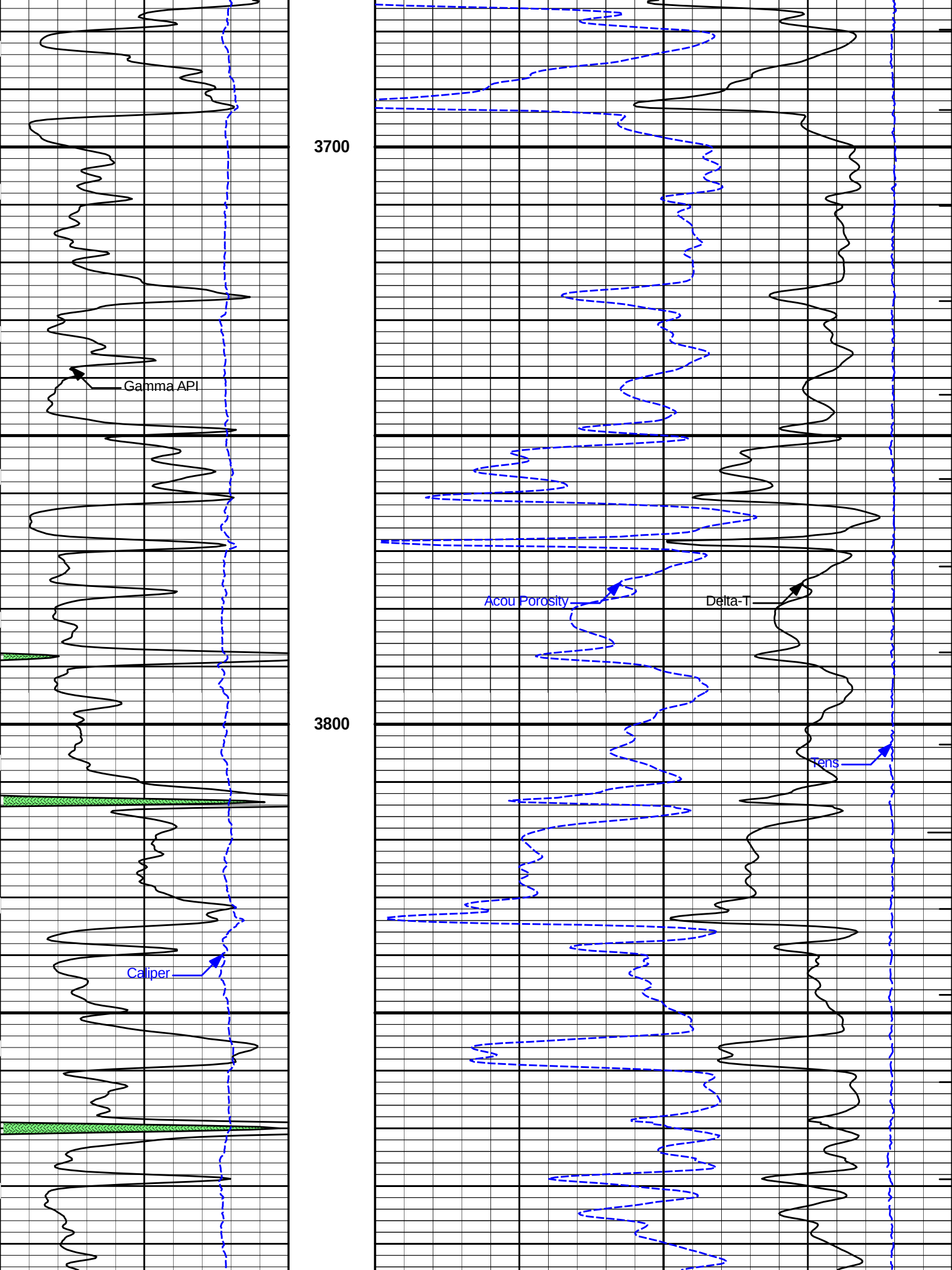
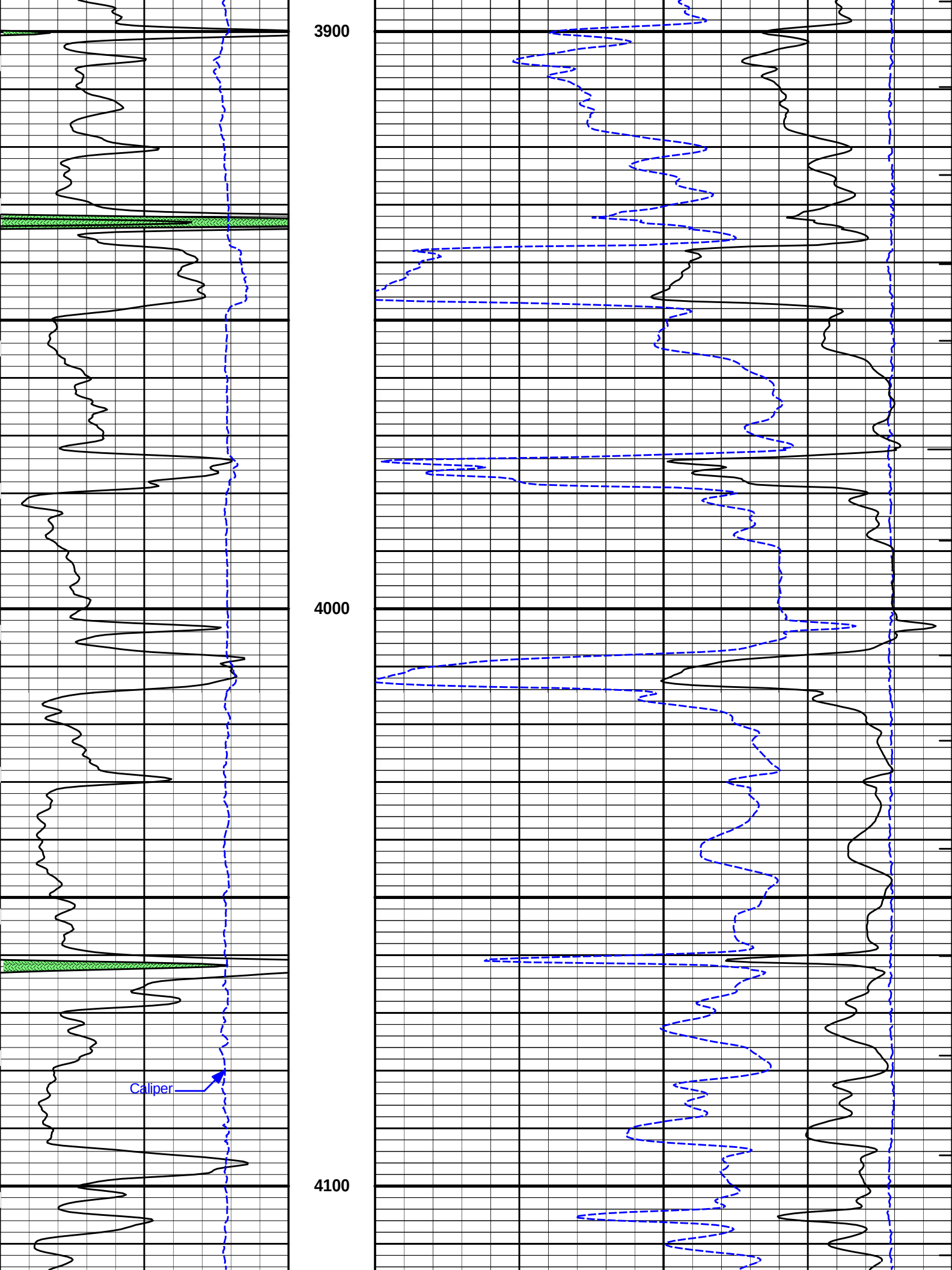
3600
Caliper


3700
3800
Gamma API
Caliper
Acou Porosity
Delta-T
Tens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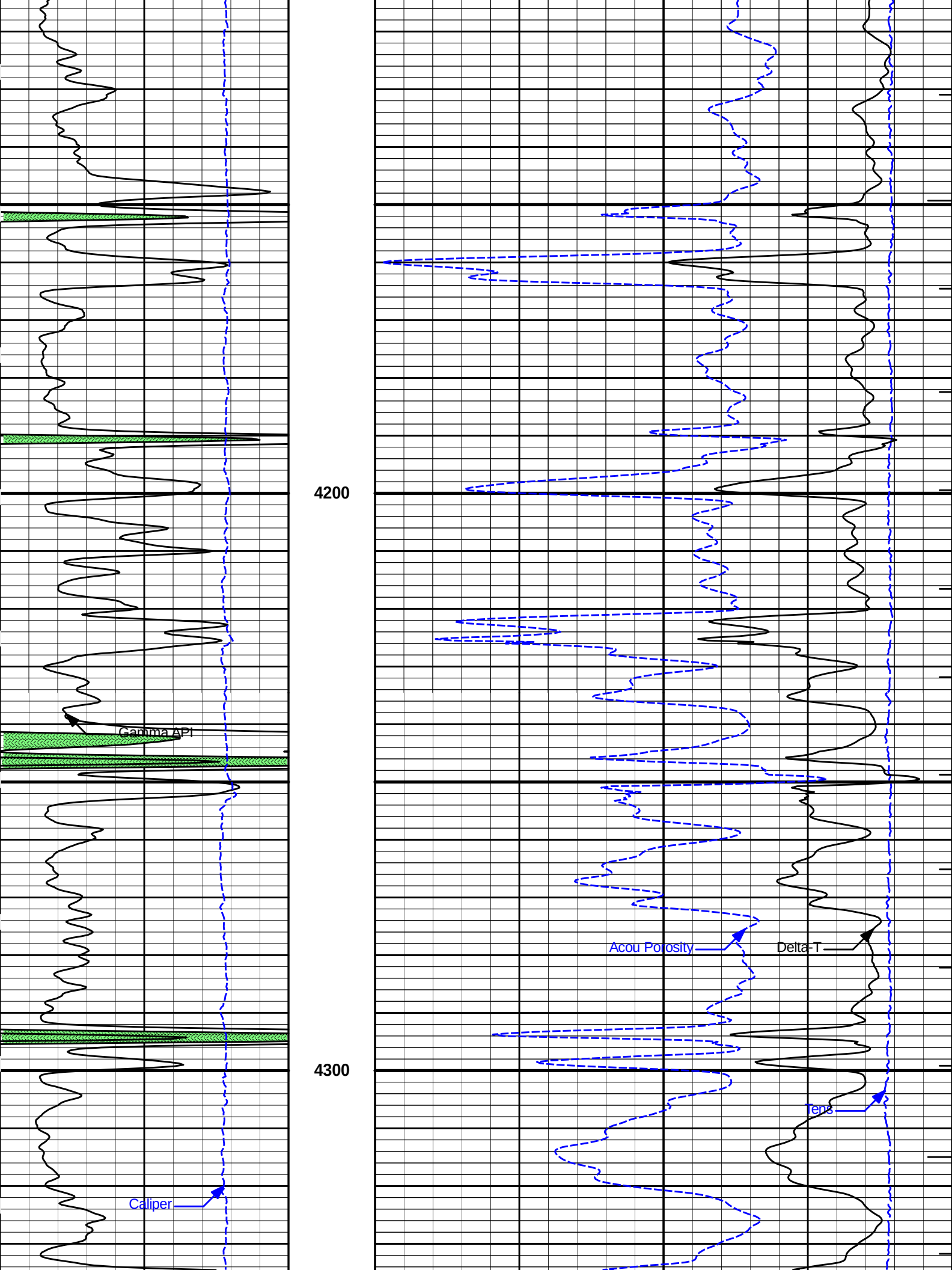
4000
4100
Caliper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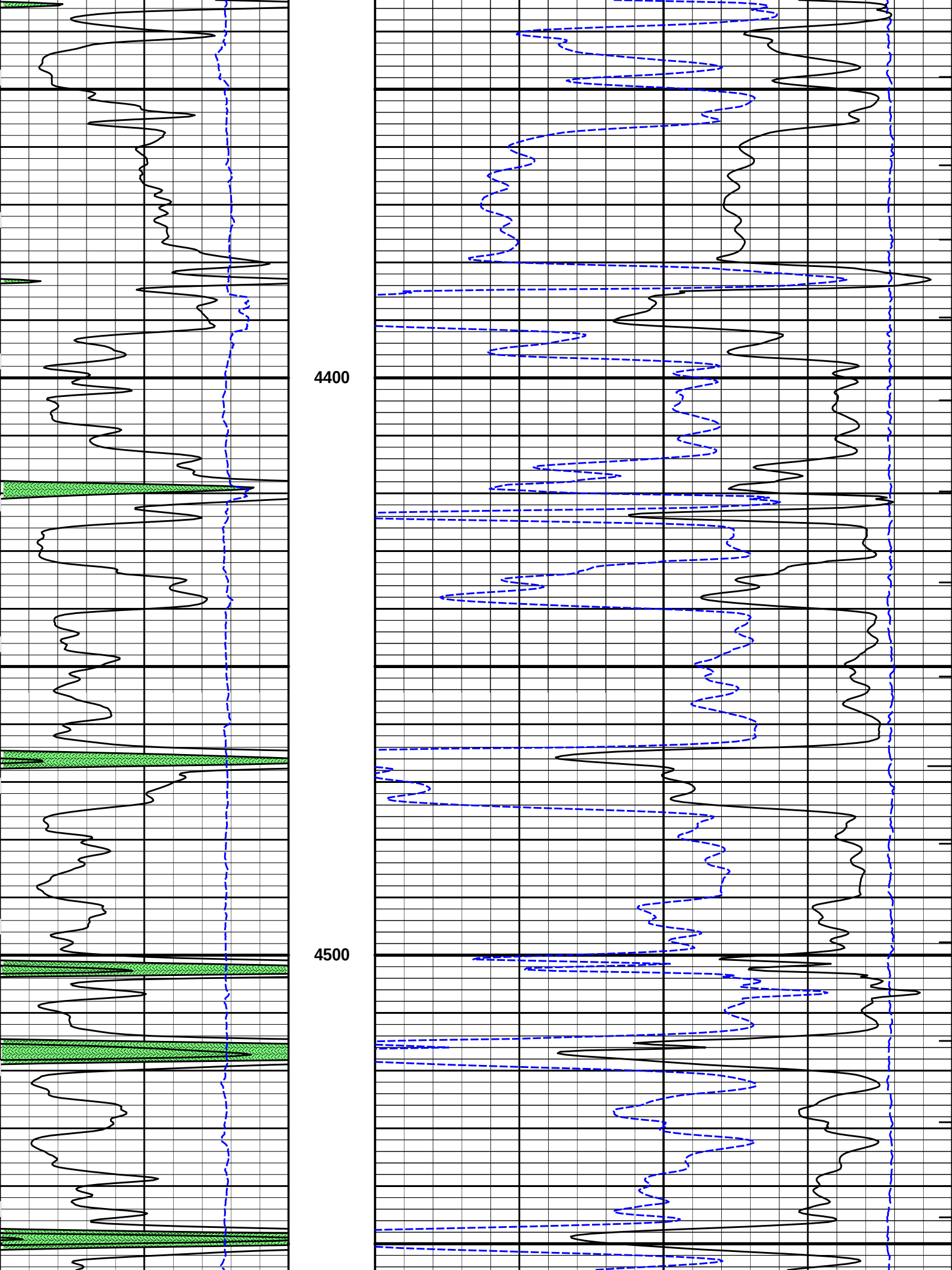
4300
Gamma API
Caliper
Acou Porosity
Delta-T
Tens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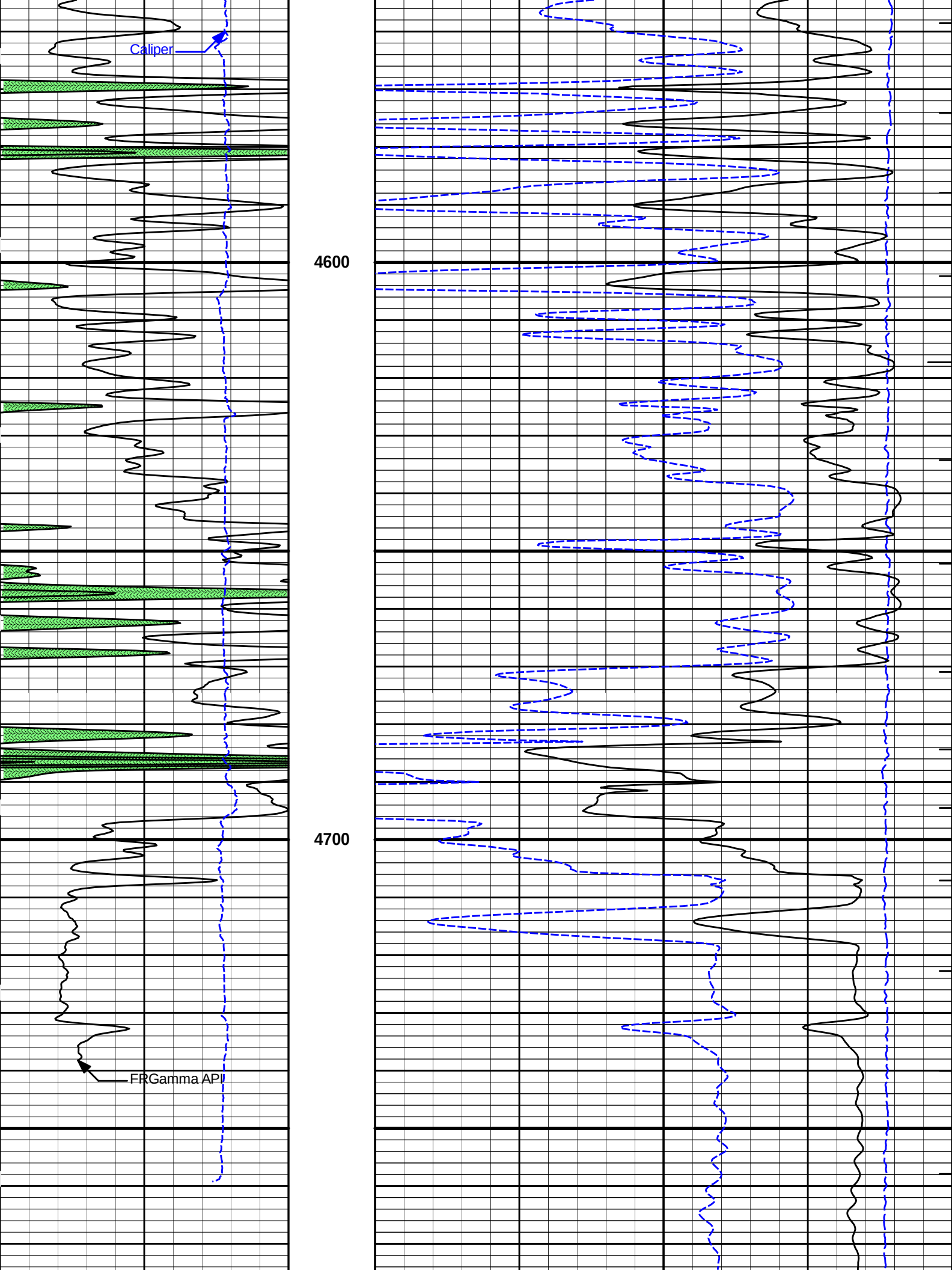
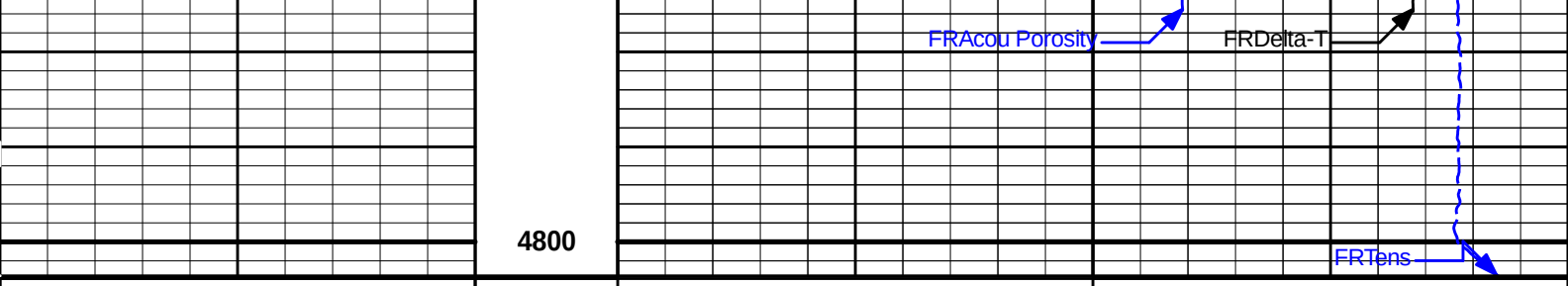

Caliper
4600
4700
FRGamma API



HALLIBURTON

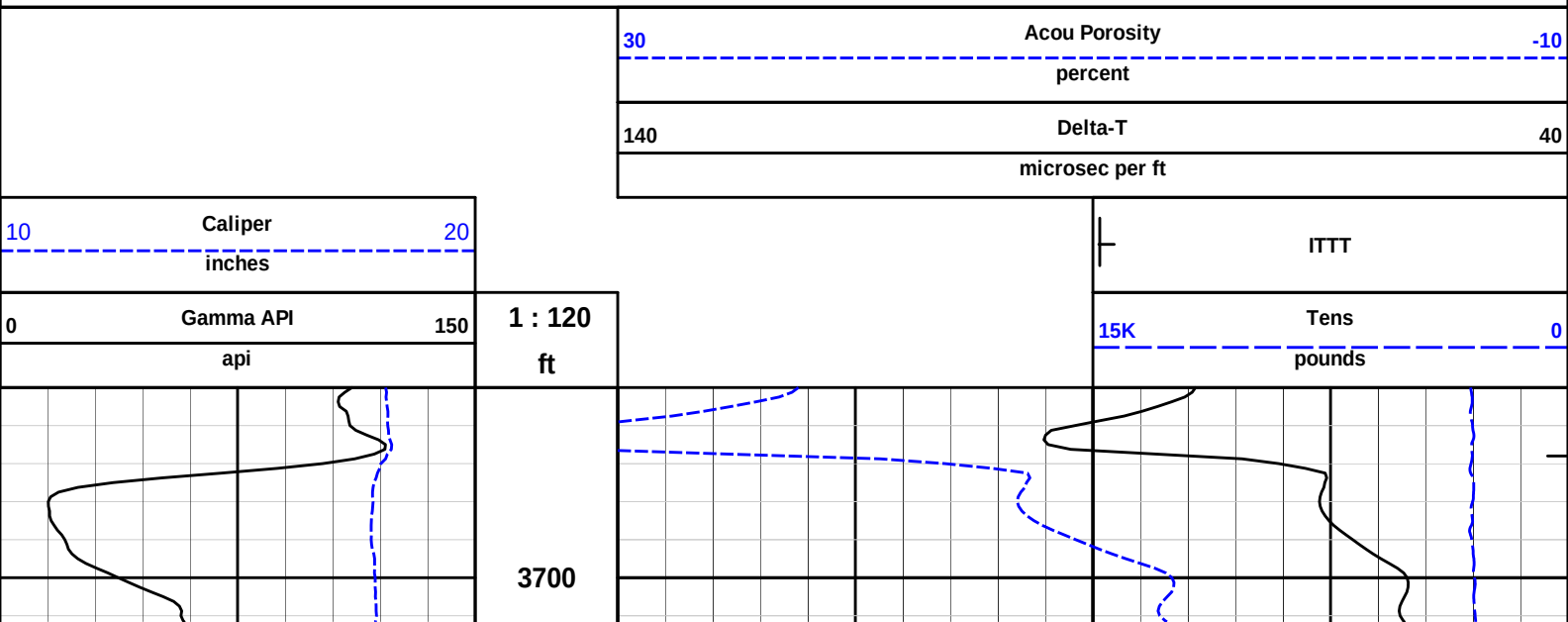
Plot Time: 03-Aug-14 13:38:08
Plot Range: 338 ft to 4803.58 ft
Data: ROSE_3_1\Well Based\DAQ-0001-003\
Plot File: \\BSAT\1_BSAT_5_mainx

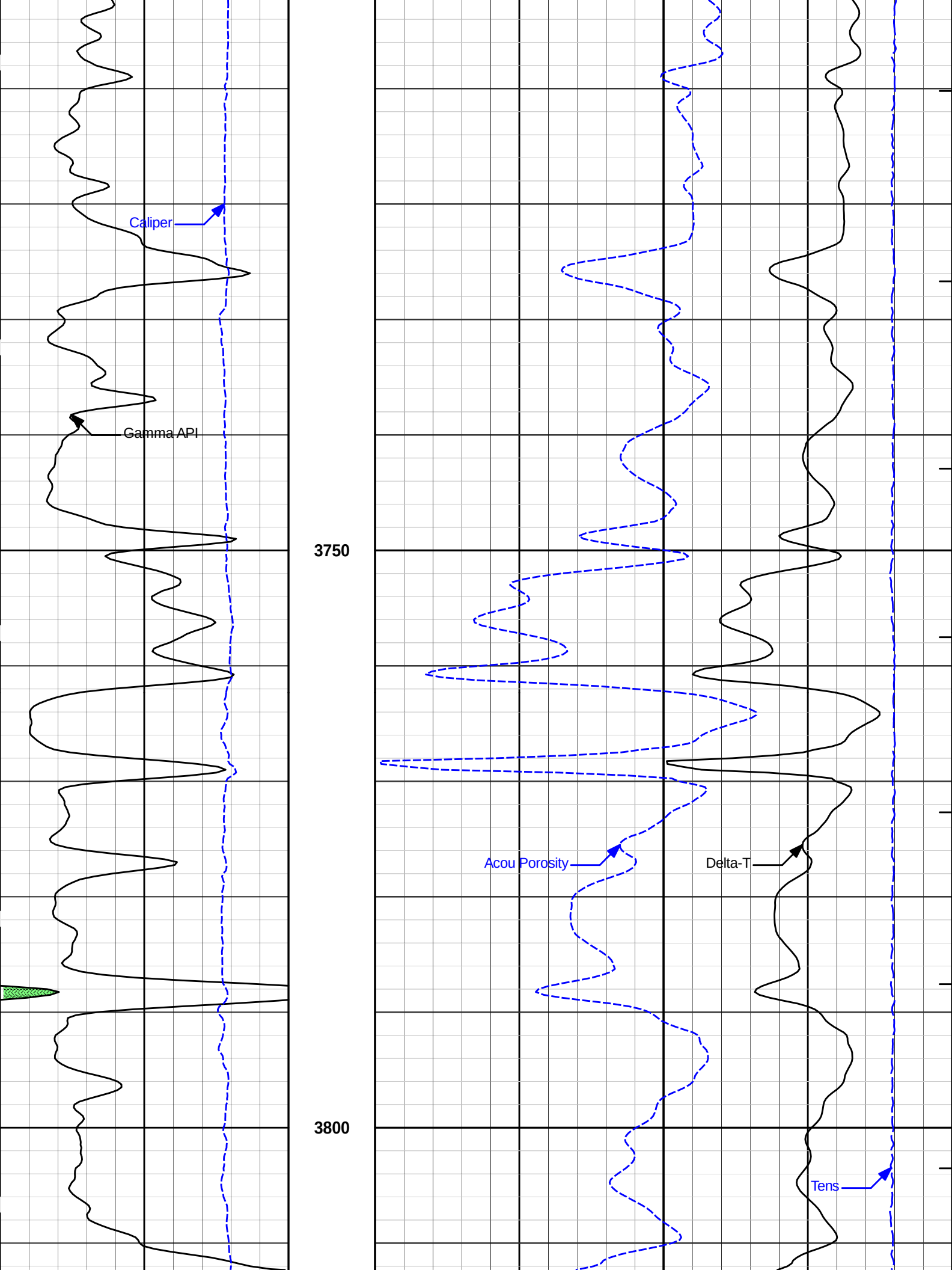
5 INCH MAIN LOG

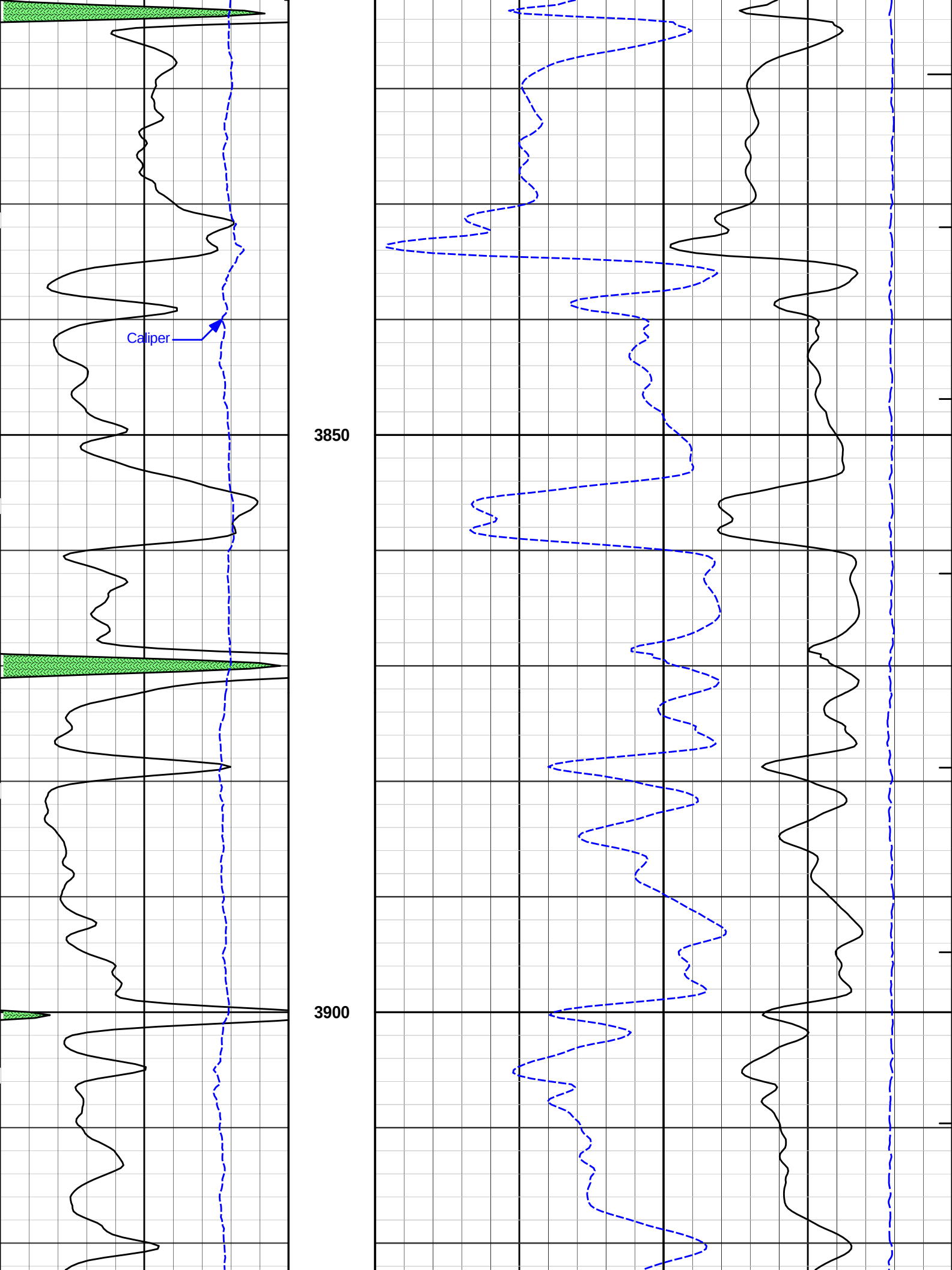
HALLIBURTON

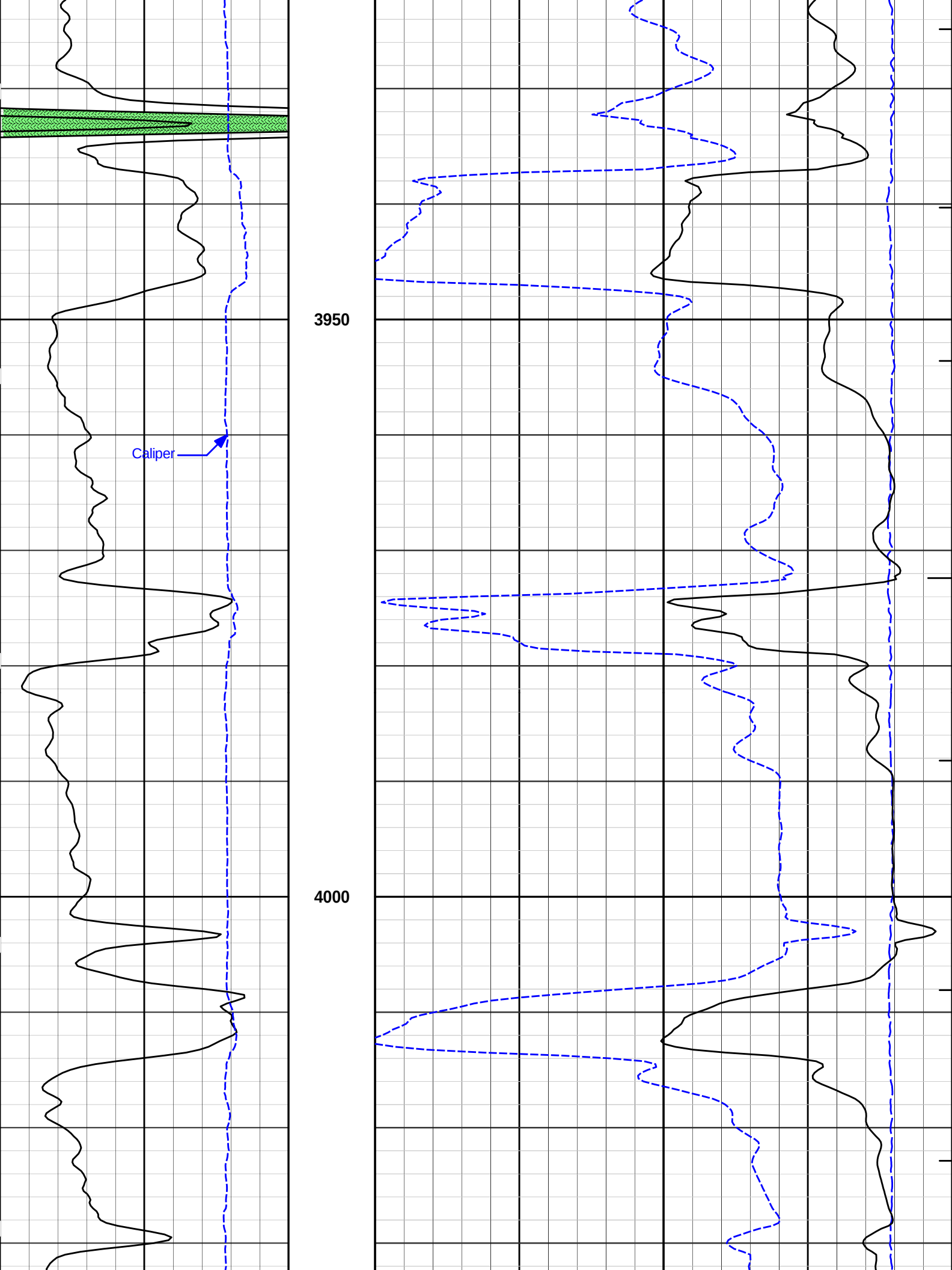
Plot Time: 03-Aug-14 13:38:08
Plot Range: 3690 ft to 4803.58 ft
Data: ROSE_3_1\Well Based\DAQ-0001-003\
Plot File: \\BSAT\1_BSAT_5_mainx

10 INCH MAIN LOG




Caliper
Gamma API
3750
Acou Porosity
Delta-T
3800
Tens


Caliper
3850
3900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Caliper
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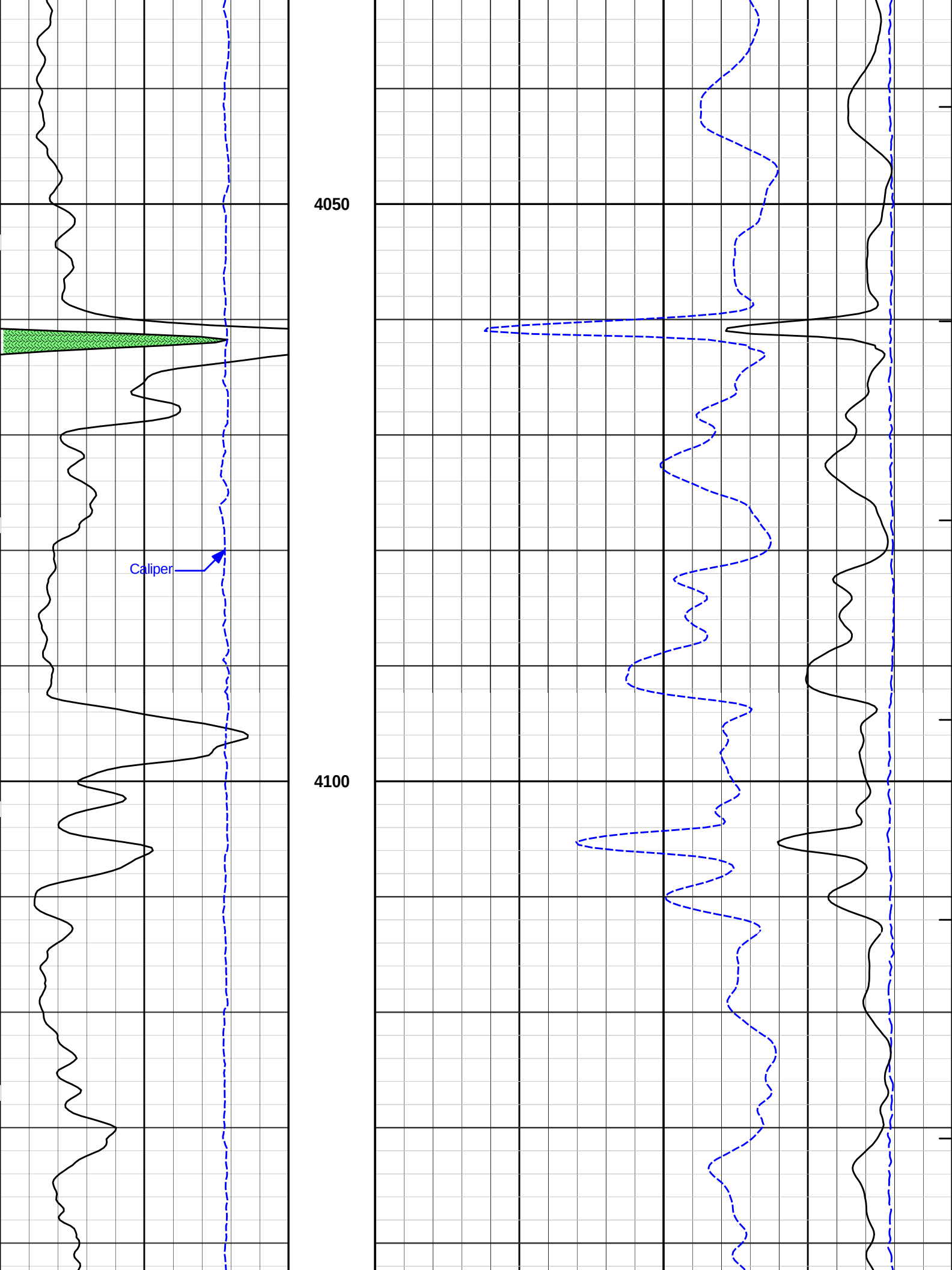
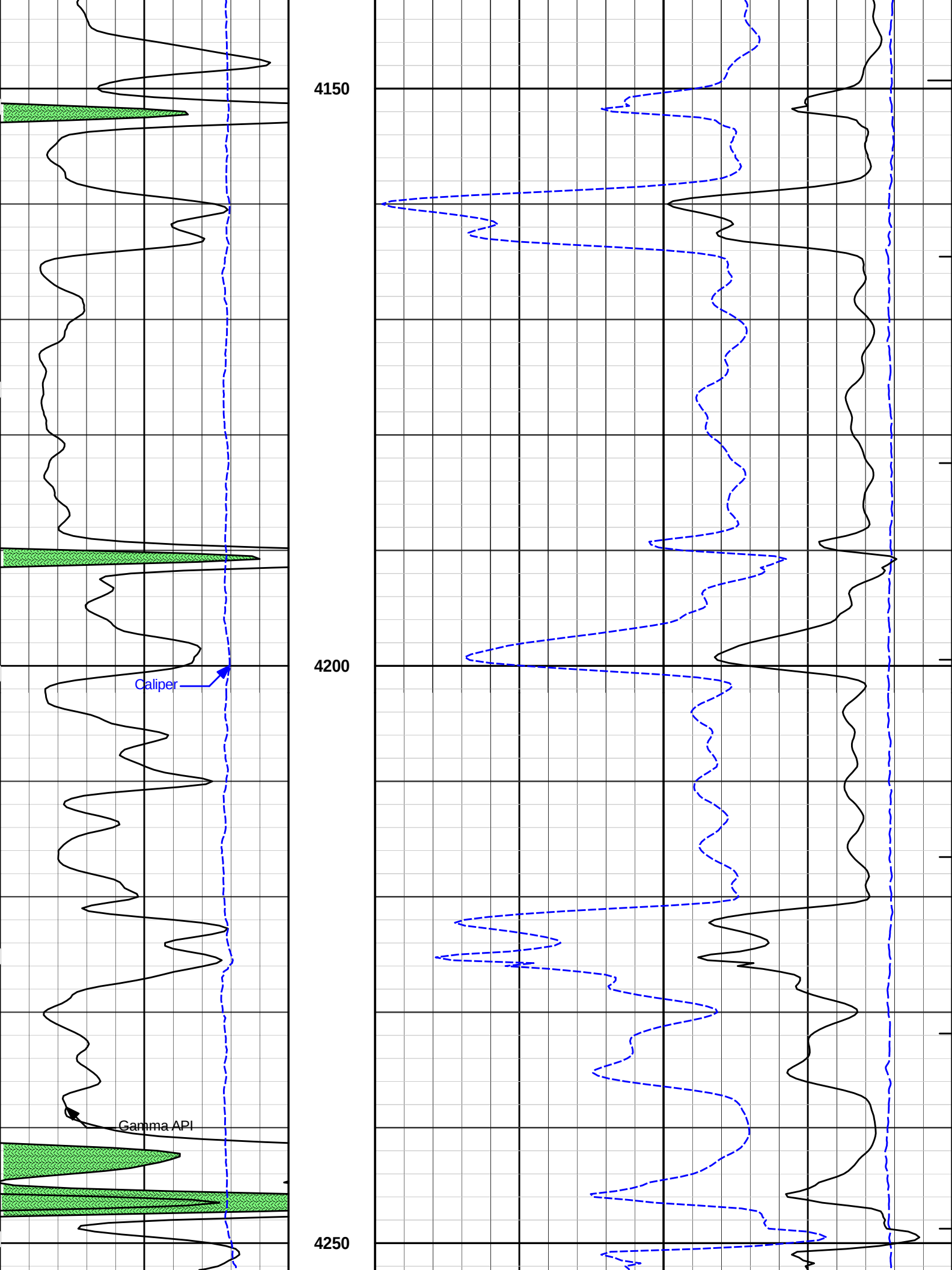

4050
4100
Caliper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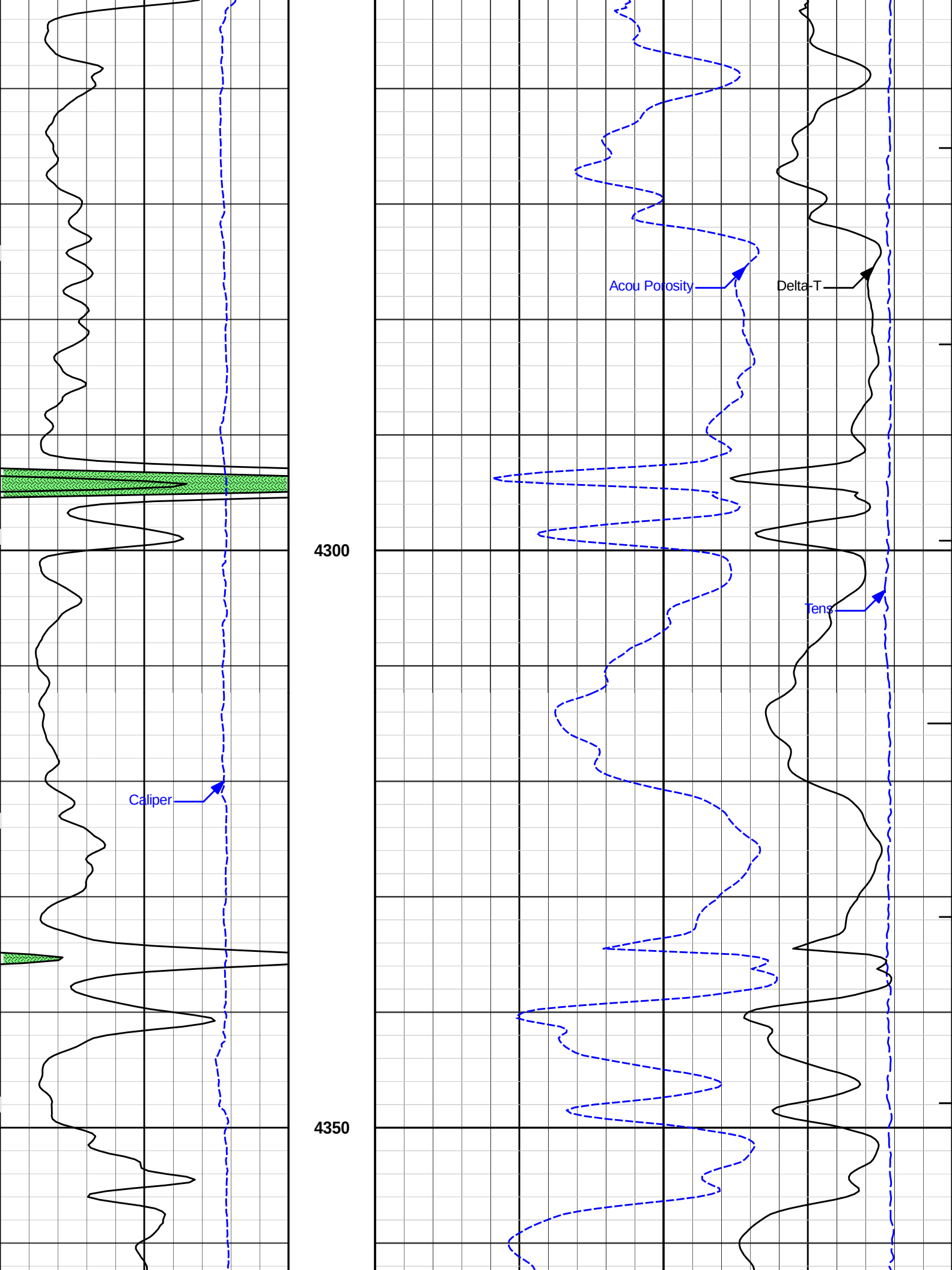
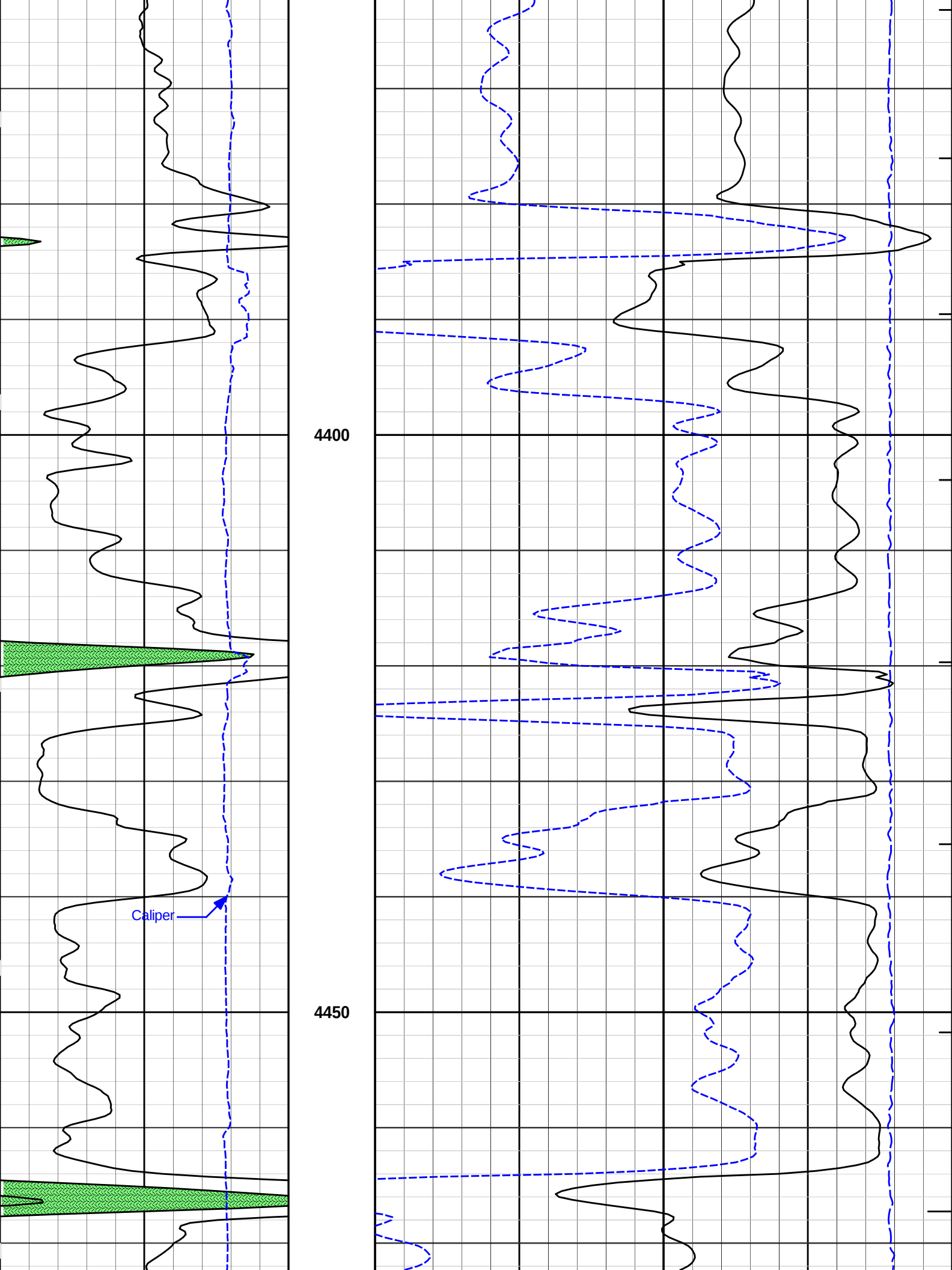
4200
4250
Caliper
Gamma API


Acou Porosity
Delta-T
4300
Tens
Caliper
4350


4400
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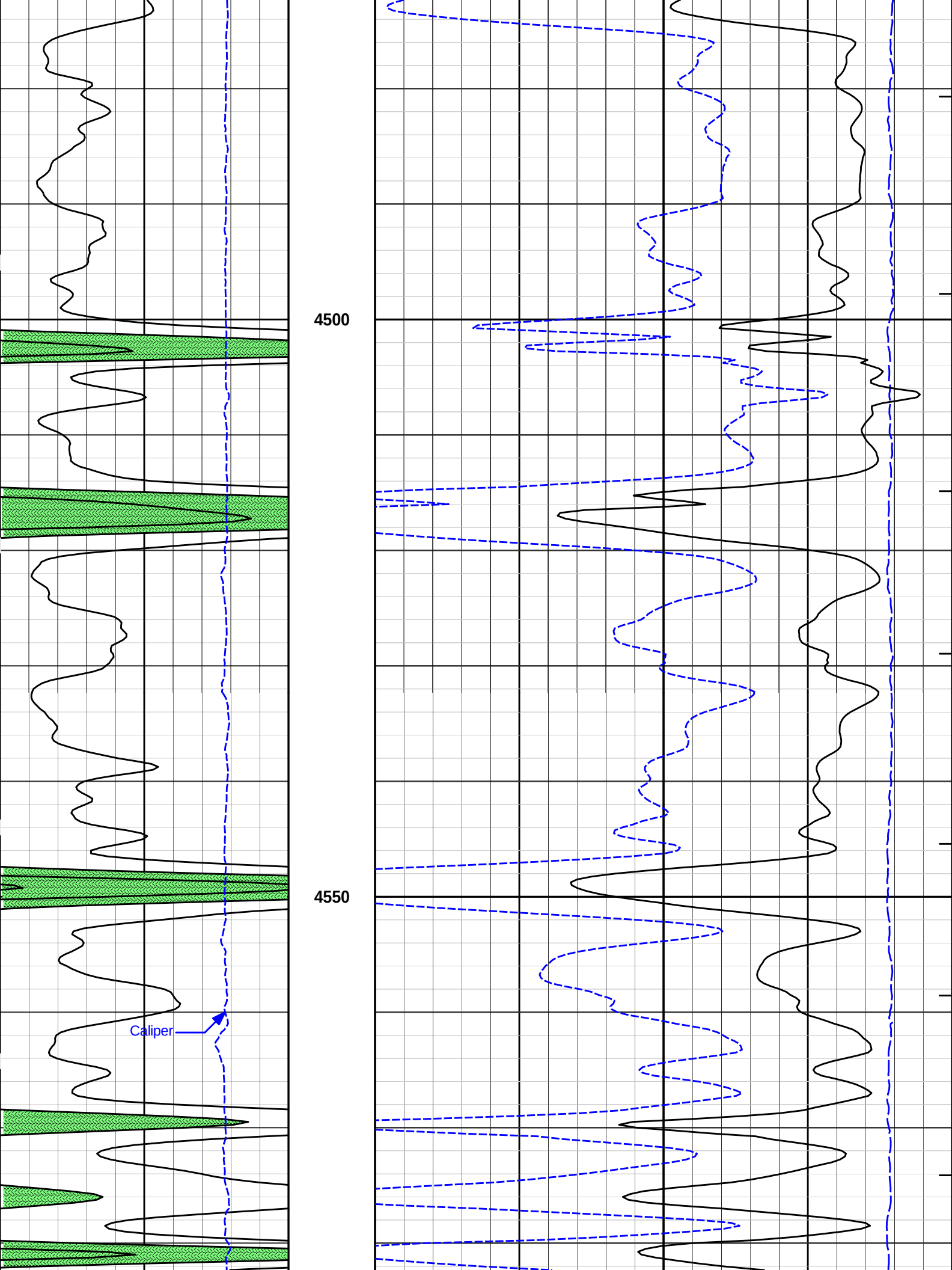
Caliper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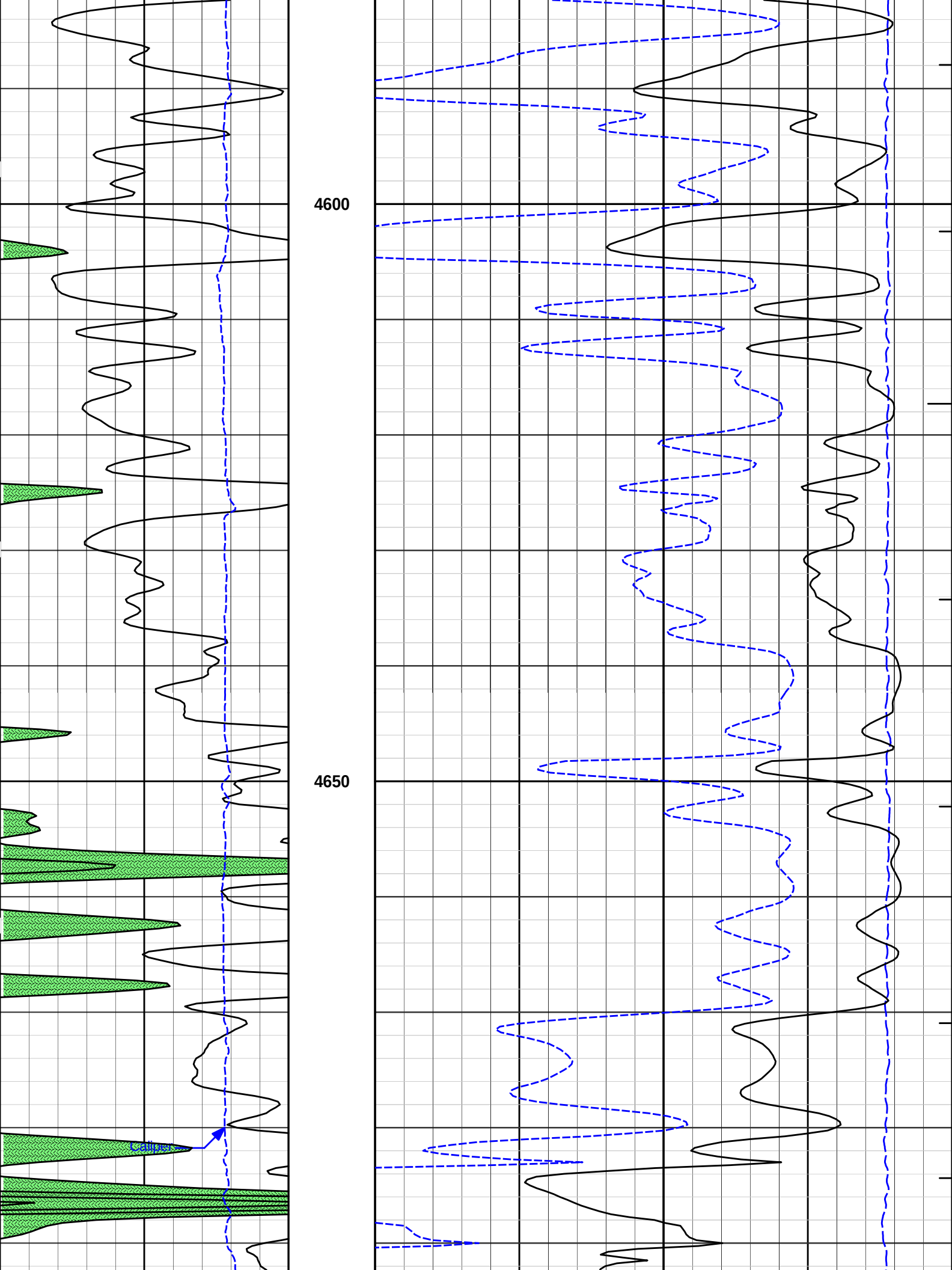
Caliper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4650
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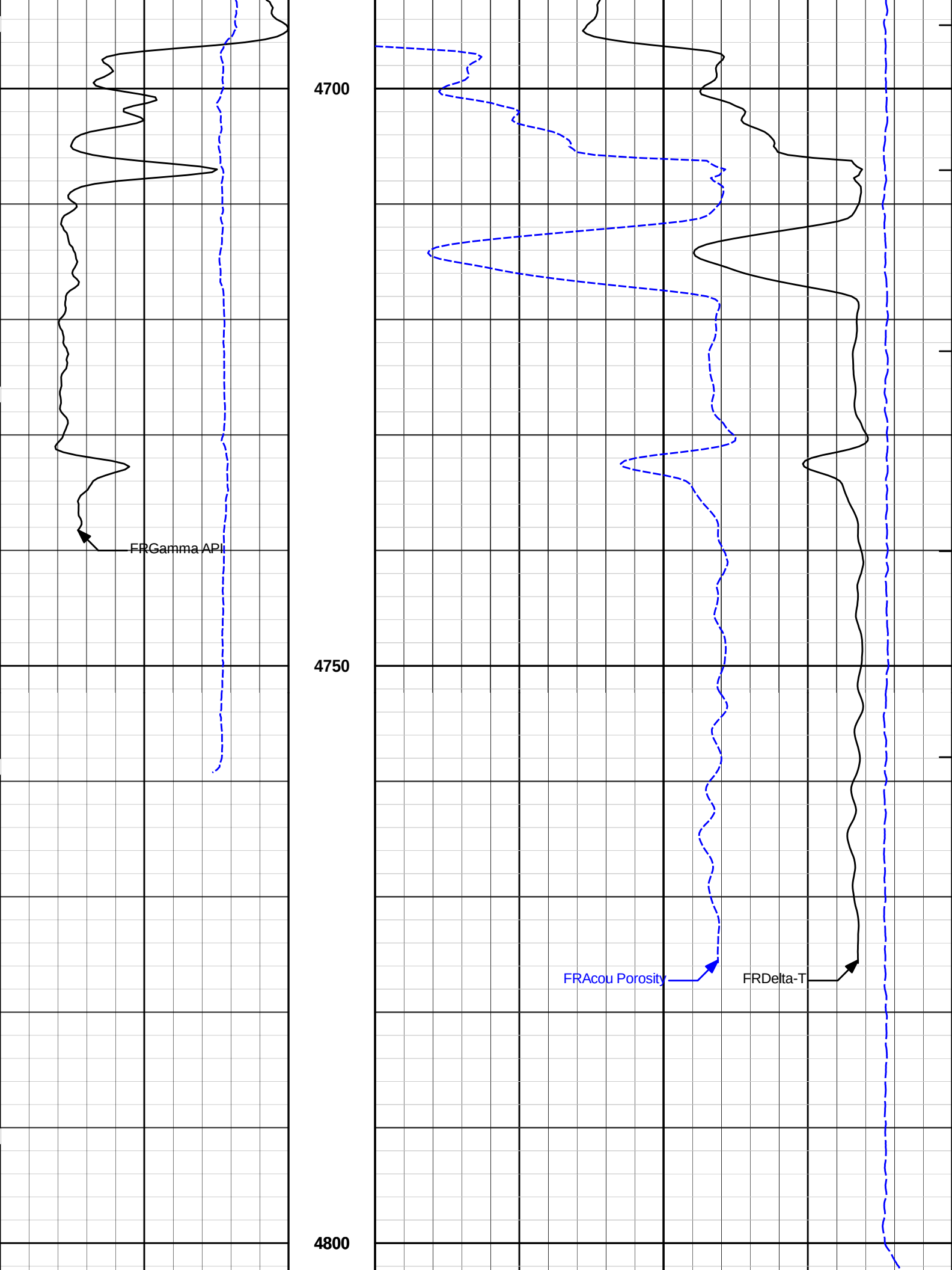
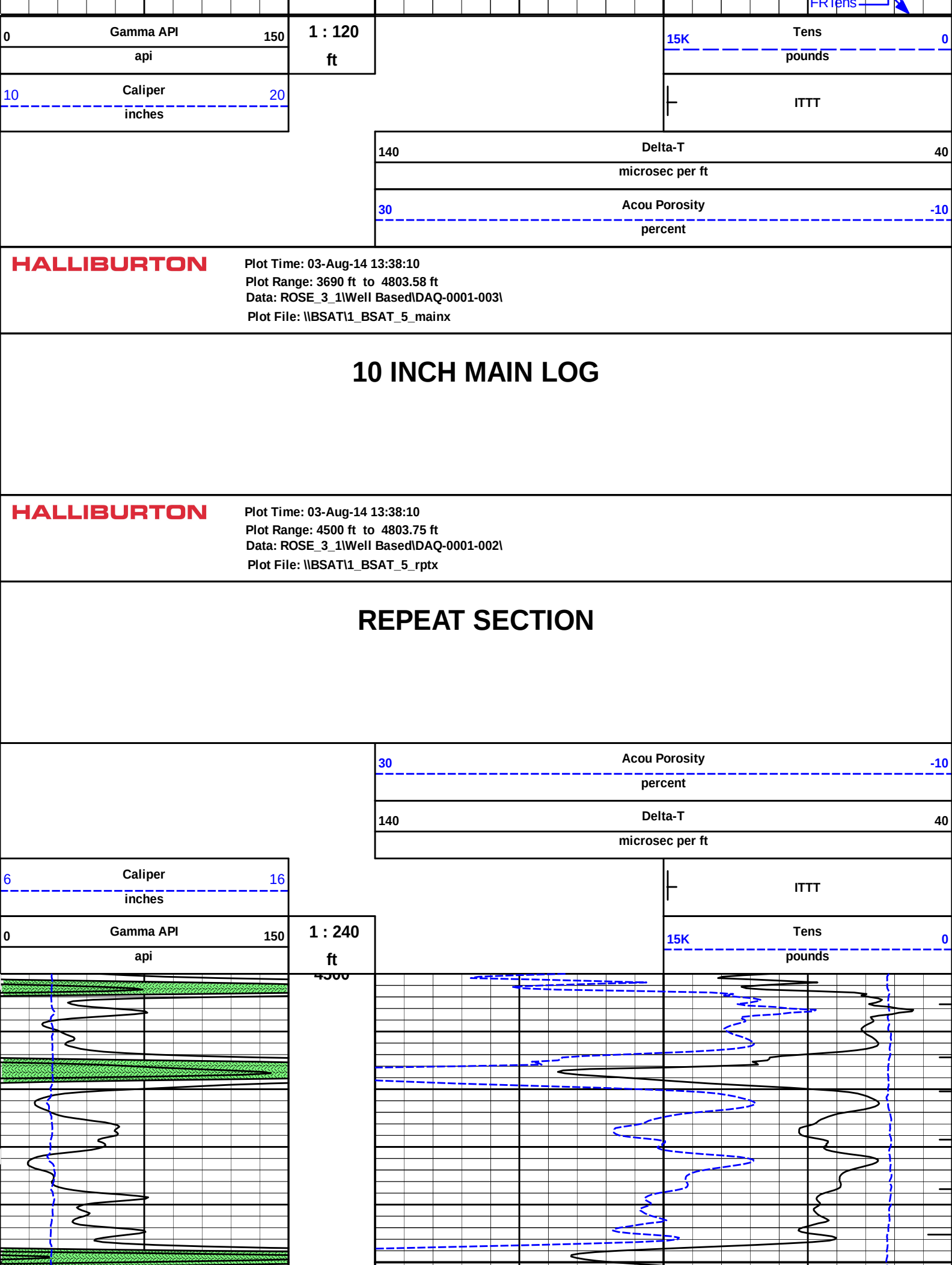
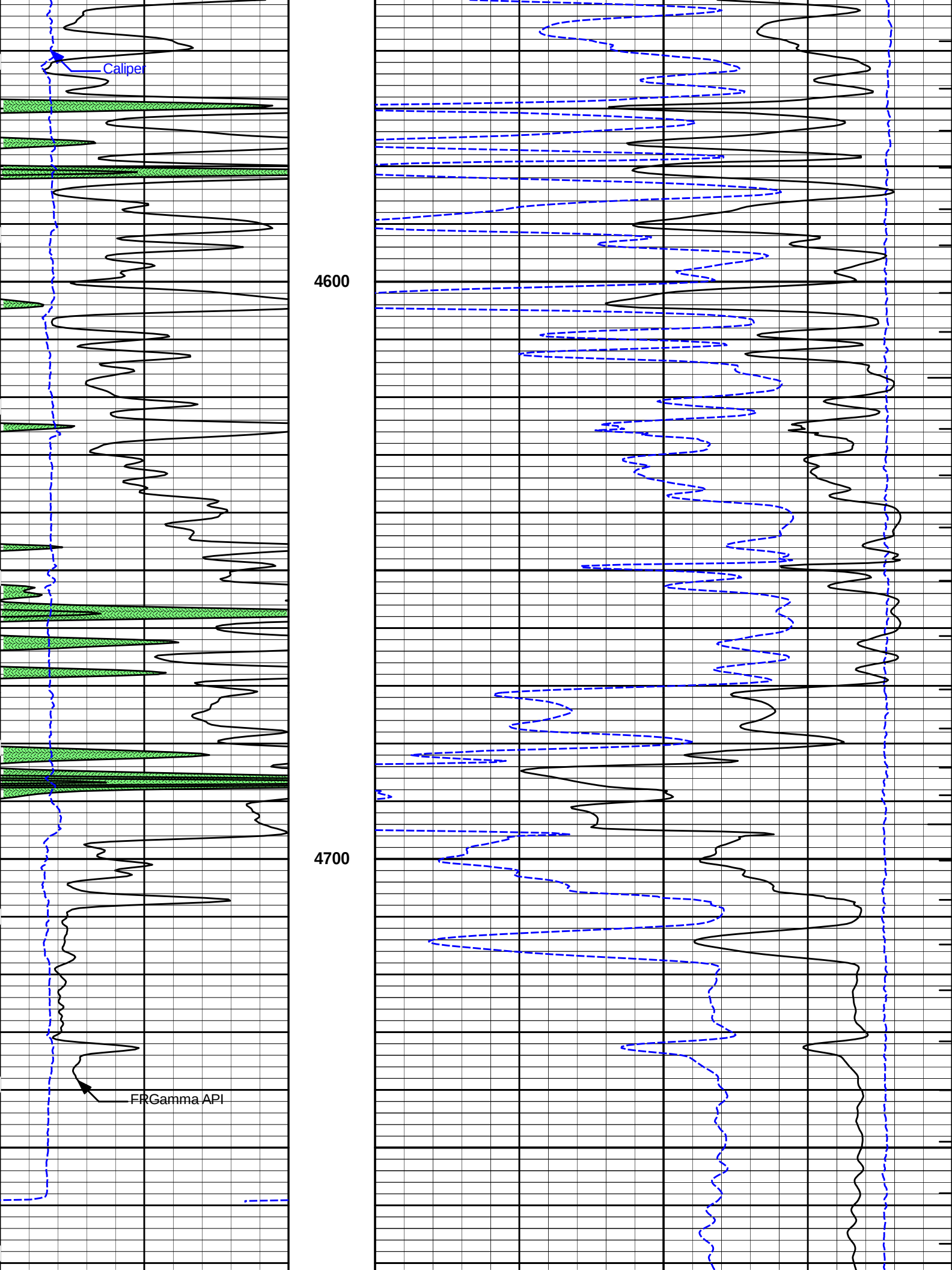
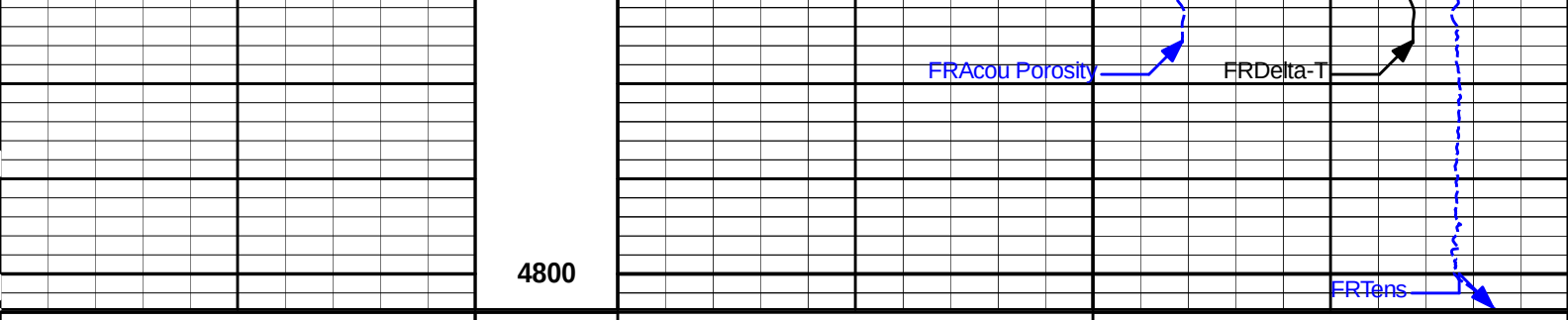

4700
4750
4800
FRGamma API
FRAcou Porosity
FRDelta-T


FRTens
0
Gamma API
150
api
1 : 120
ft
15K
Tens
0
pounds
10
Caliper
20
inches
ITTT
140
Delta-T
40
microsec per ft
30
Acou Porosity
-10
percent
HALLIBURTON
Plot Time: 03-Aug-14 13:38:10
Plot Range: 3690 ft to 4803.58 ft
Data: ROSE_3_1\Well Based\DAQ-0001-003\
Plot File: \\BSAT\1_BSAT_5_mainx
10 INCH MAIN LOG
HALLIBURTON
Plot Time: 03-Aug-14 13:38:10
Plot Range: 4500 ft to 4803.75 ft
Data: ROSE_3_1\Well Based\DAQ-0001-002\
Plot File: \\BSAT\1_BSAT_5_rptx
REPEAT SECTION
30
Acou Porosity
-10
percent
140
Delta-T
40
microsec per ft
6
Caliper
16
inches
ITTT
0
Gamma API
150
api
1 : 240
ft
15K
Tens
0
pounds


Caliper
4600
4700
FRGamma API



HALLIBURTON

Plot Time: 03-Aug-14 13:38:11
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Data: ROSE_3_1\Well Based\DAQ-0001-002\
Plot File: \\BSAT\1_BSAT_5_rptx

REPEAT SECTION

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	10.400	ppg
	SHARED	WAGT	Weighting Agent	Barite	
	SHARED	BSAL	Borehole salinity	0.00	ppm
	SHARED	FSAL	Formation Salinity NaCl	0.00	ppm
	SHARED	KPCT	Percent K in Mud by Weight?	0.00	%
	SHARED	RMUD	Mud Resistivity	0.300	ohmm
	SHARED	TRM	Temperature of Mud	85.0	degF
	SHARED	CSD	Logging Interval is Cased?	No	
	SHARED	ICOD	AHV Casing OD	5.500	in
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	4800.00	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	
	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?	Yes	
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?	Yes	
DSNT	NLIT	Neutron Lithology	Limestone	
DSNT	DNSO	DSN Standoff - 0.25 in (6.35 mm) Recommended	0.250	in
DSNT	DNTP	Temperature Correction Type	None	
DSNT	DPRS	DSN Pressure Correction Type	None	
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
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?	Yes	
SDLT Pad	CB	Logging Calibration Blocks?	No	
SDLT Pad	SPVT	SDLT Pad Temperature Valid?	Yes	
SDLT Pad	DTWN	Disable temperature warning	No	
SDLT Pad	DMA	Formation Density Matrix	2.710	g/cc
SDLT Pad	DFL	Formation Density Fluid	1.000	g/cc
SDLT Pad	BHSM	Borehole Size Source Tool	SDLT	
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	Limestone 47.5	
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
ACRt Sonde	BHSM	Borehole Size Source Tool	SDLT	

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CALIBRATION REPORT

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11013114**	**Reference Calibration Date:**	**17-Mar-14 06:39:24**
Engineer:	**CHRIS MARLOWE**	**Calibration Date:**	**03-Aug-14 08:05:20**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: 150

Calibrator API Reference:264.00 api

Equivalent Calibrator API Reference:268.6 api

Measurement	Measured	Calibrated	Units
Background	45.6	44.4	api
Background + Calibrator	321.9	313.0	api
Calibrator	276.2	268.6	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11013114**	**Reference Calibration Date:**	**03-Aug-14 08:05:20**
Engineer:	**CHRIS MARLOWE**	**Calibration Date:**	**03-Aug-14 08:08:41**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**

Calibrator Source S/N: 150

Calibrator API Reference:264.00 api

Equivalent Calibrator API Reference:268.6 api

Field Verification	Shop	Field	Units
Background	44.4	44.3	api
Background + Calibrator	313.0	309.6	api
Calibrator	268.6	265.3	api

Shop	Field	Difference	Tolerance
268.6	265.3	3.3	+/- 9.00

DENSITY CALIPER SHOP CALIBRATION

Tool Name:	**SDLT - 10960494**	**Reference Calibration Date:**	**01-Jan-70 00:00:00**
Engineer:	**Jeremy Cothren**	**Calibration Date:**	**13-Jul-14 14:48:10**
Software Version:	**WL INSITE R4.2.0 (Build 2)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11019641_PLEASE**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-2813.20	-2813.20	-7000.00 - -1000.00
Pad Gain	0.0003699	0.0003699	0.000200 - 0.000600
Arm Offset	-1093.04	-1093.04	-5000.00 - 3000.00
Arm Gain	0.0005299	0.0005299	0.000300 - 0.000700
Arm Power	-0.000005875	-0.000005875	-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)	6.50	6.50	0.00	+/- 0.20
Medium Ring (in)	8.25	8.25	0.00	+/- 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 - 10960494
Reference Calibration Date: 13-Jul-14 14:48:10
Engineer: CHRIS MARLOWE
Calibration Date: 03-Aug-14 08:09:34
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	3.66	-0.09	+/- 0.10
Ring Diameter	8.25	8.27	0.02	+/- 0.15

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

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
GTET-11013114						
Gamma Ray Calibrator	268.6	265.3	----------	3.3	+/- 9.00	api
SDLT-10960494						
Pad Extension	3.75	3.66	----------	0.09	+/-0.10	in
Ring Diameter	8.25	8.27	----------	-0.02	+/-0.15	in

Data: ROSE_3_1\0001 QUAD_BSAT\003 03-Aug-14 09:56 Up @4803.8f
Date: 03-Aug-14 11:58:04

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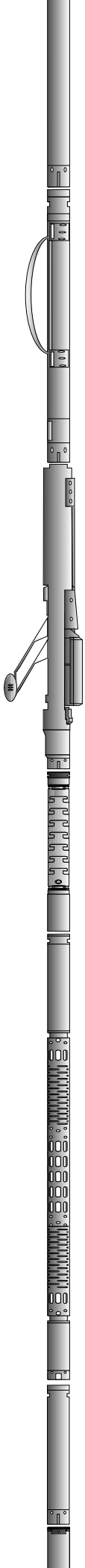
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
CH_HOS-590_RED 37.50 lbs		Ø 2.750 in		Temperature @ 73.25 ft	3.03 ft	74.27 ft
XOHD-12345678 20.00 lbs		Ø 2.750 in Ø 3.625 in			0.95 ft	71.25 ft
						70.30 ft



GTET-11013114
165.00 lbs

Ø 3.625 in

8.52 ft

GammaRay @ 64.23 ft

61.78 ft

DSN Decentralizer-10993115
6.60 lbs

Ø 5.000 in*

DSNT-11019641_PLEASE
174.00 lbs

Ø 3.625 in

9.69 ft

DSN Far @ 54.84 ft

DSN Near @ 54.09 ft

52.09 ft

SDLT-10960494
360.00 lbs

Ø 4.500 in

10.81 ft

SDLT Pad-10844774
65.00 lbs

Microlog Pad-10960494
8.00 lbs

Ø 4.750 in*

Ø 4.750 in*

Microlog @ 44.28 ft

SDL Caliper @ 44.09 ft

SDL @ 44.08 ft

41.28 ft

IQ Flex-00000001
140.00 lbs

Ø 3.625 in

5.67 ft

35.61 ft

BSAT-10939050
300.00 lbs

Ø 3.625 in

15.77 ft

Sonic Receivers @ 27.09 ft

19.83 ft

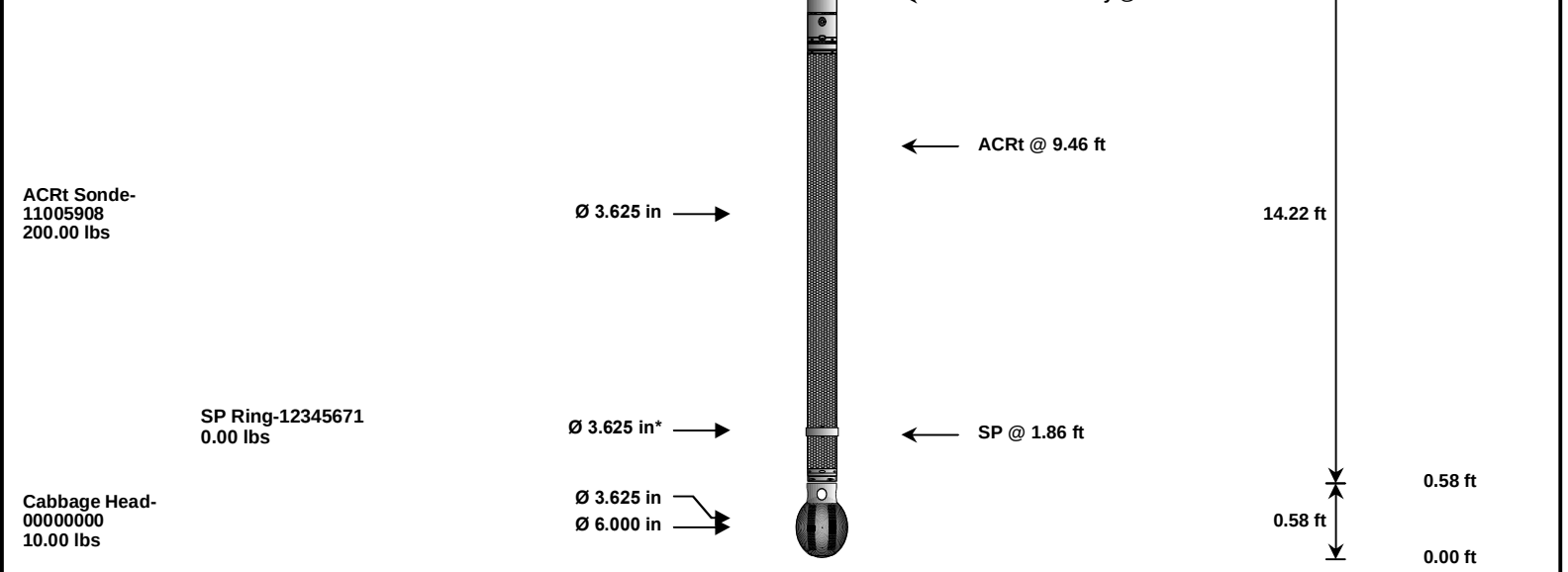
ACRt Instrument-11026095
50.00 lbs

Ø 3.625 in

5.03 ft

14.80 ft

Mud Resistivity @ 13.44 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	590_RED	37.50	3.03		71.25	300.00
XOHD	Hostile to Dits Cross Over	12345678	20.00	0.95		70.30	300.00
GTET	Gamma Telemetry Tool	11013114	165.00	8.52		61.78	60.00
DSNT	Dual Spaced Neutron	11019641_PLEASE	174.00	9.69		52.09	60.00
DCNT	DSN Decentralizer	10993115	6.60	5.13	*	55.42	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81		41.28	60.00
SDLP	Density Insite Pad	10844774	65.00	2.55	*	43.49	60.00
MICP	Microlog Pad	10960494	8.00	1.00	*	43.78	60.00
IQF	IQ Flex tool	00000001	140.00	5.67		35.61	300.00
BSAT	Borehole Sonic Array Tool	10939050	300.00	15.77		19.83	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11026095	50.00	5.03		14.80	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11005908	200.00	14.22		0.58	120.00
SP	SP Ring	12345671	0.00	0.25	*	1.86	300.00
CBHD	Cabbage Head	00000000	10.00	0.58		0.00	300.00
Total			**1,536.10**	**74.27**			

* Not included in Total Length and Length Accumulation.

Data: ROSE_3_1\0001 QUAD_BSAT\IDLE **Date: 03-Aug-14 07:38:17**

COMPANY	**HARTMAN OIL CO., INC.**		
WELL	**ROSE #3-1**		
FIELD	**AMERICAN BEAUTY**		
COUNTY	**WICHITA COUNTY**	STATE	**KANSAS**

HALLIBURTON

BOREHOLE COMPENSATED SONIC ARRAY LOG