HALLIBURTON

BOREHOLE COMPENSATED SONIC LOG

COMPANY **MERIT ENERGY COMPANY**

WELL **EAST FORK 34-1**

FIELD/BLOCK **WILDCAT**

COUNTY **SEWARD** STATE **KANSAS**

COMPANY MERIT ENERGY COMPANY
WELL EAST FORK 34-1
FIELD/BLOCK WILDCAT
COUNTY SEWARD
STATE KANSAS

API No. 15-175-22267-00-00

Location
(SHL) NW NE SE SW
2031' FWL & 1247' FSL

Sect. 34 Twp. 32S Rge. 34W

Other Services:
ACRT
SDL-DSN
MICLOG
BSAT

Permanent Datum	GL	Elev. 2896.0 ft	Elev.: K.B. 2908.0 ft
Log measured from	KB	, 12.0 ft above perm. Datum	D.F. 2906.0 ft
Drilling measured from	KB		G.L. 2896.0 ft

Date		01-May-19					
Run No.		1					
Depth - Driller		6400.0 ft					
Depth - Logger		6402.0 ft					
Bottom - Logged Interval		6392					
Top - Logged Interval		1582					
Casing - Driller		8.625 in	@ 1582.0 ft	@		@	
Casing - Logger		1582.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.20 g/cc	70.00 s/qt				
PH	Fluid Loss	11.00 pH	5.2 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		1.22 ohmm	@ 76.00 degF	@		@	
Rmf @ Meas. Temperature		0.96 ohmm	@ 74.00 degF	@		@	
Rmc @ Meas. Temperature		1.51 ohmm	@ 74.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.64 ohmm	@ 151.0 degF	@		@	
Time Since Circulation		20:00 hr					
Time on Bottom		01-May-19 01:47					
Max. Rec. Temperature		151.00 degF	@ 6402.0 ft	@		@	
Equipment	Location	12156883	EL RENO, OK				
Recorded By		WHITLOCK					
Witnessed By		MARTIN LANGE		AUSTIN GARNER			

Fold here

PGM Version: WL INSITE R6.0.8 (Build 3)

Service Ticket No.: 905666710

API No.: 15-175-22267-00-00

CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE

RESISTIVITY SCALE CHANGES

RESISTIVITY EQUIPMENT DATA

EQUIPMENT DATA

LOGGING DATA

	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
Type Log										Run No.							
Depth										Tool Type & No.							
Scale Up Hole										Pad Type							
Scale Down Hole										Tool Pos.							
										Other							

	GAMMA			ACOUSTIC			DENSITY			NEUTRON		
	Run No.	Serial No.	Model No.	Run No.	Serial No.	Model No.	Run No.	Serial No.	Model No.	Run No.	Serial No.	Model No.
Diameter												
Detector Model No.				No. of Cent.			Log Type			Log Type		
Type				Spacing			Source Type			Source Type		
Length				LSA [Y/N]			Serial No.			Serial No.		
Distance to Source				FWDA [Y/N]			Strength			Strength		

GENERAL				GAMMA			ACOUSTIC			DENSITY			NEUTRON		
Run No.	Depth From	Depth To	Speed ft/min	Scale L	Scale R	Matrix	Scale L	Scale R	Matrix	Scale L	Scale R	Matrix	Scale L	Scale R	Matrix

DIRECTIONAL INFORMATION

Maximum Deviation @	KOP @

Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

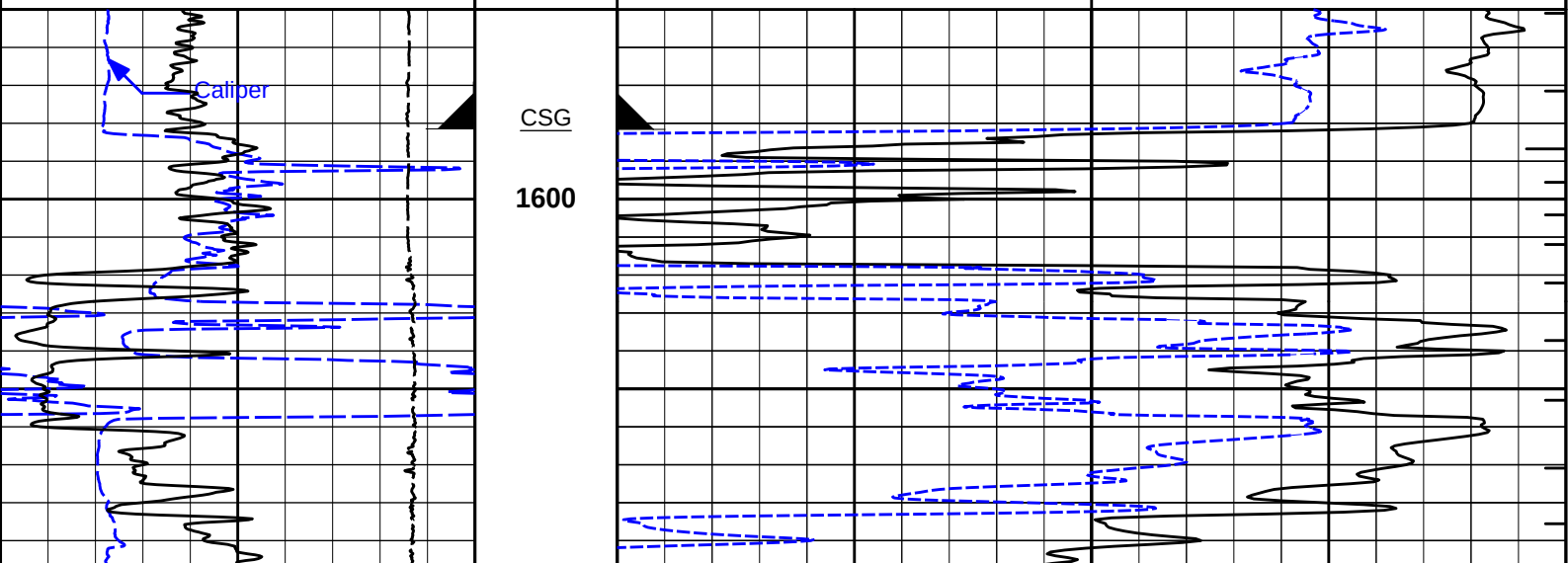
HALLIBURTON

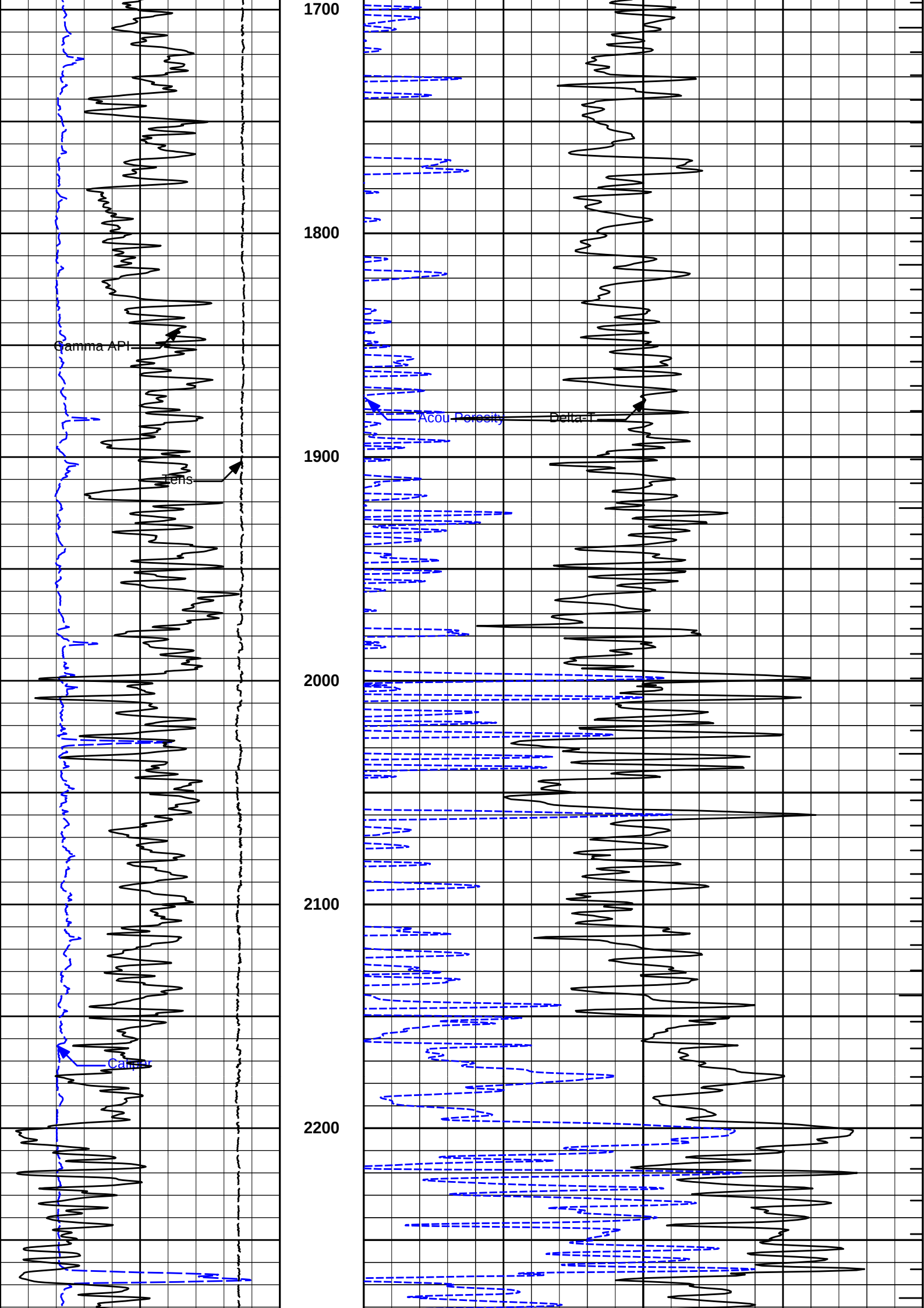
Plot Time: 01-May-19 05:32:07
Plot Range: 1550 ft to 6402 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-003
Plot File: \\BSAT\BSAT_2inch

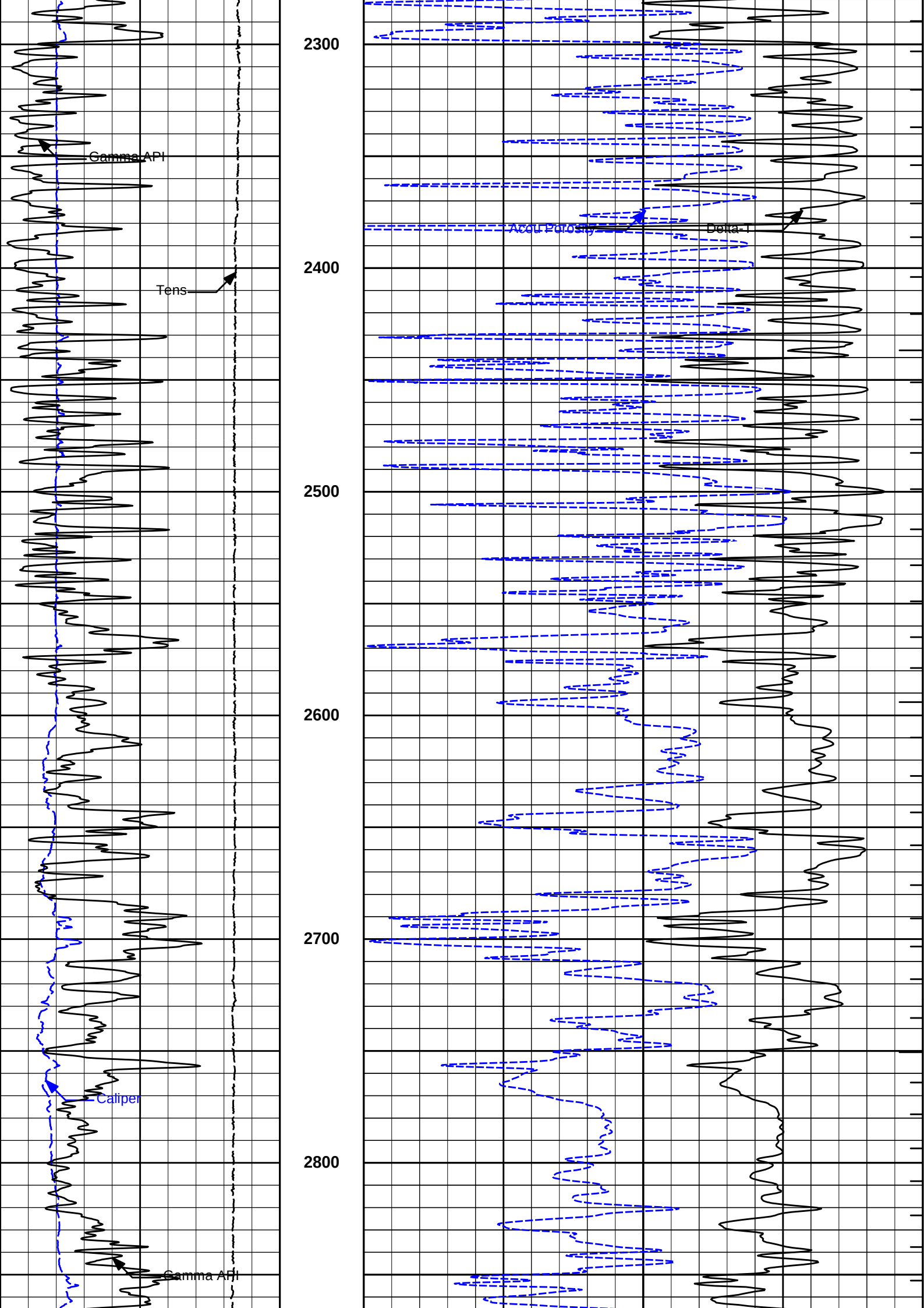
2 INCH MAIN LOG

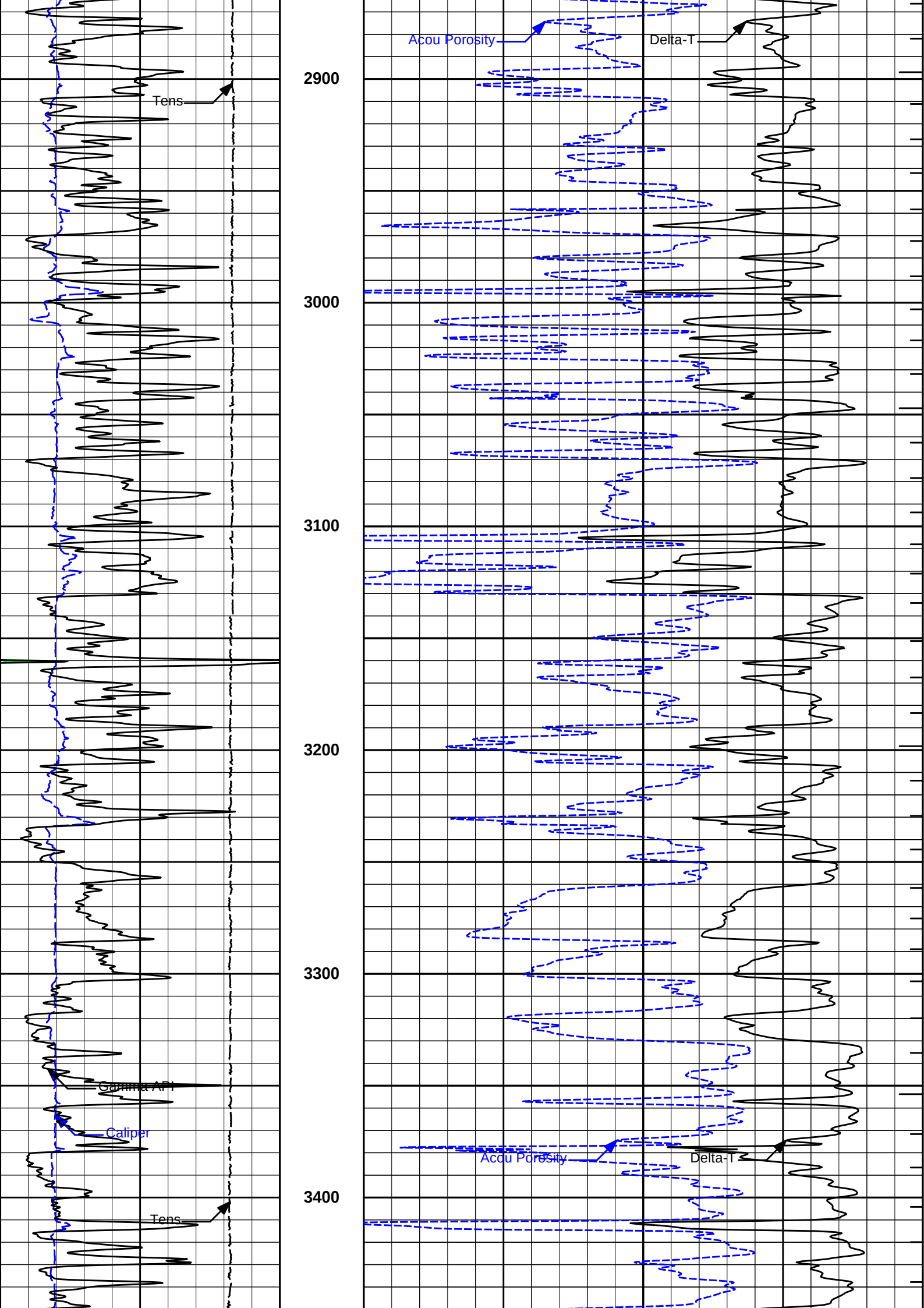
2" MAIN LOG SECTION

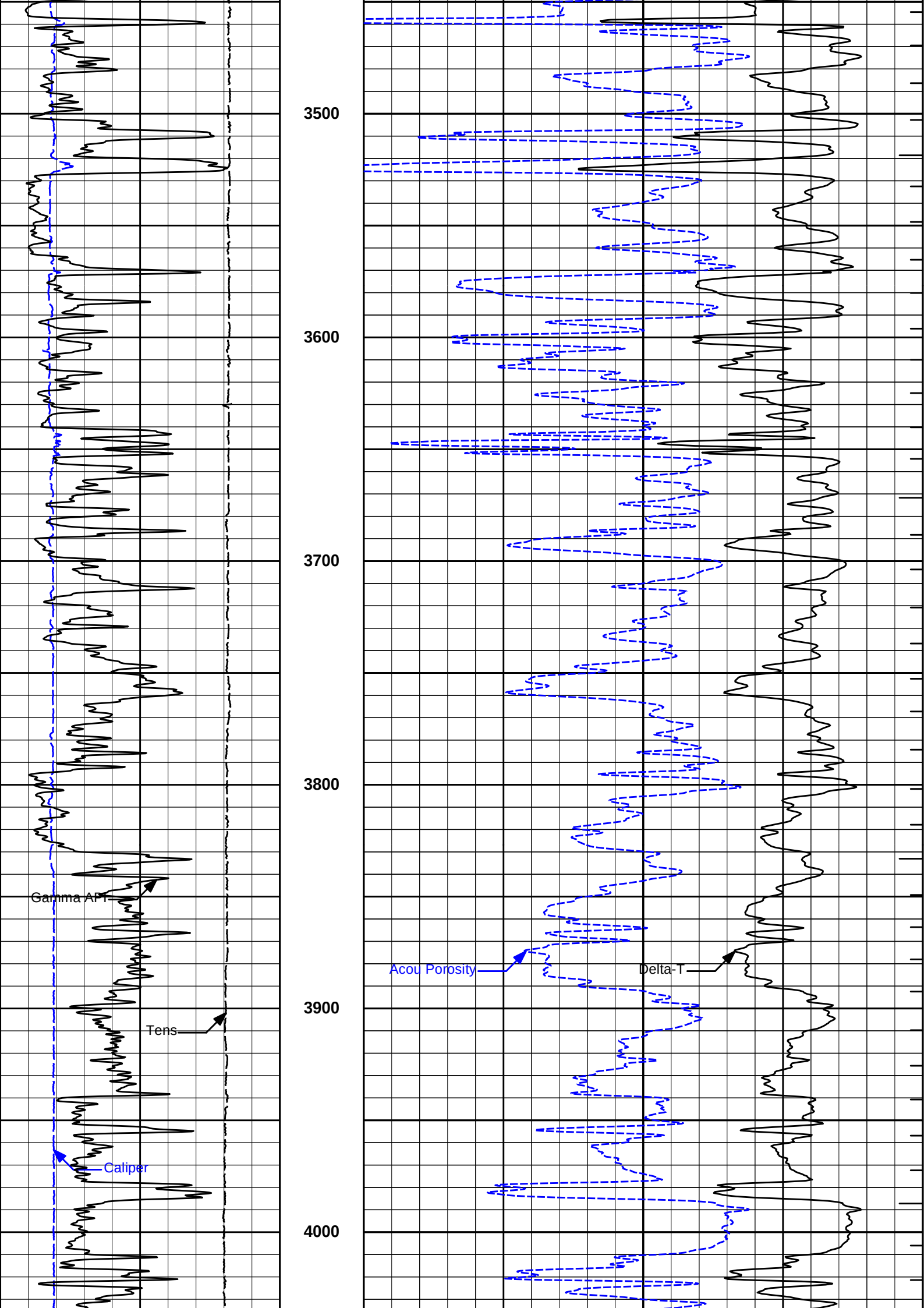
6 **CALI** 16 **inches**		140 **Delta-T** 40 **microsec per ft**
15K **Tens** 0 **pounds**		30 **Acou Porosity** -10 **percent**
0 **Gamma API** 150 **api**	**1 : 600** **ft**	**ITTT**

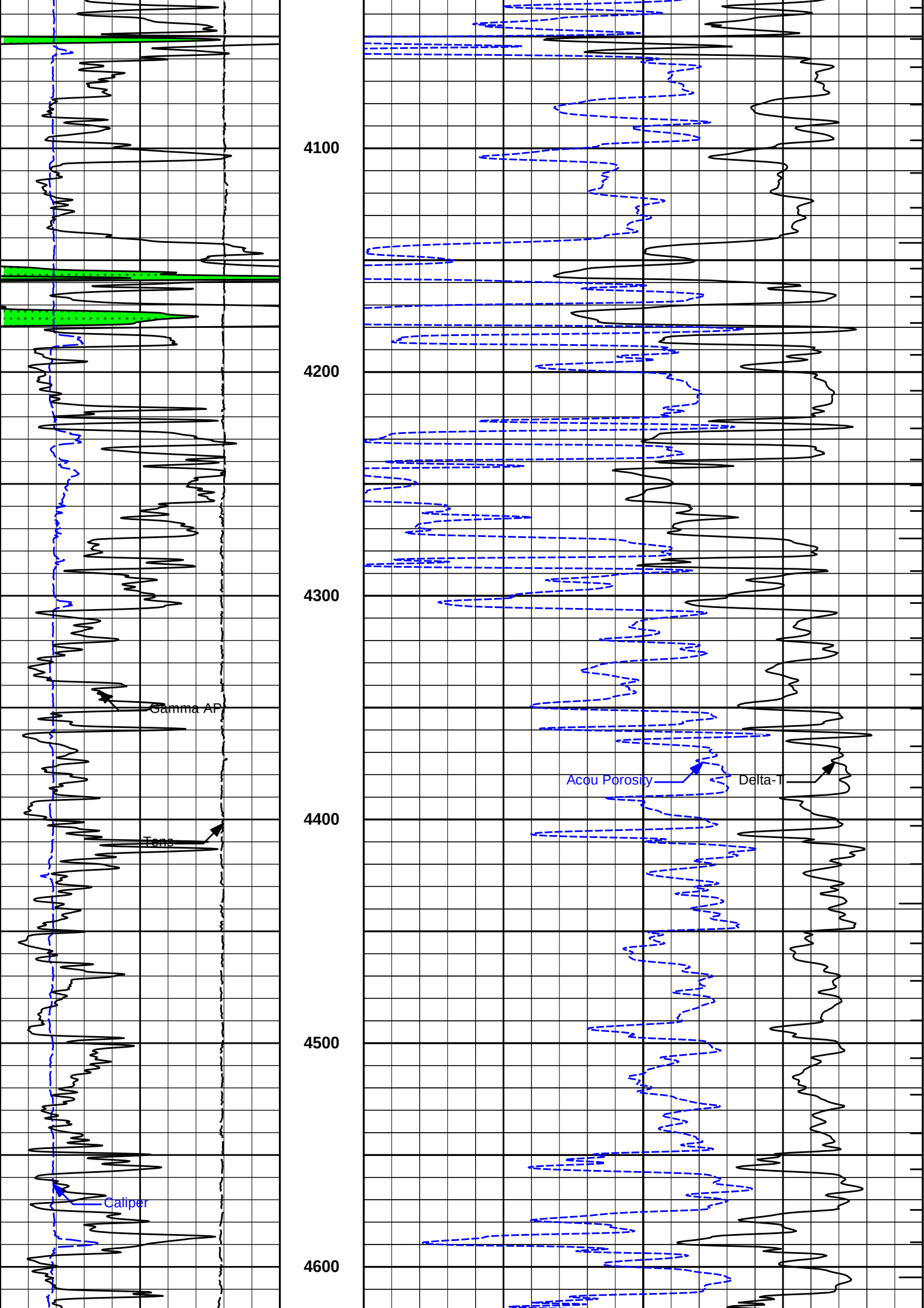


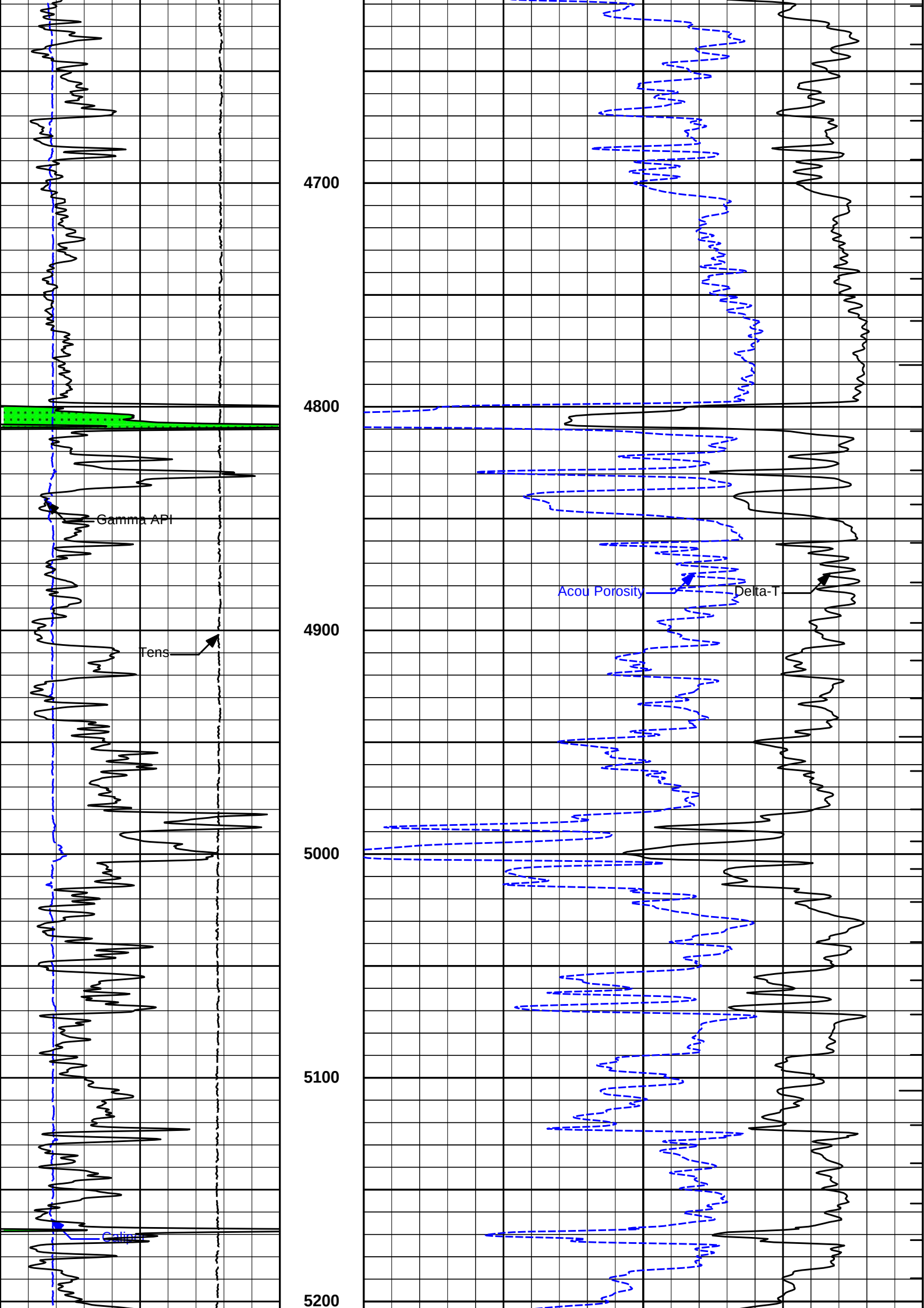

1700
1800
1900
2000
2100
2200
Gamma API
Acou Porosity
Delta-T
Lens
Caliper


Gamma API
Tens
Caliper
Gamma API
Accu-Porosity
Delta-T
2300
2400
2500
2600
2700
2800


Acou Porosity
Delta-T
Tens
2900
3000
3100
3200
3300
Gamma API
Caliper
Acou Porosity
Delta-T
3400
Tens


3500
3600
3700
3800
3900
4000
Gamma API
Tens
Caliper
Acou Porosity
Delta-T


4100
4200
4300
4400
4500
4600
Gamma API
Tens
Caliper
Acou Porosity
Delta-T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4800
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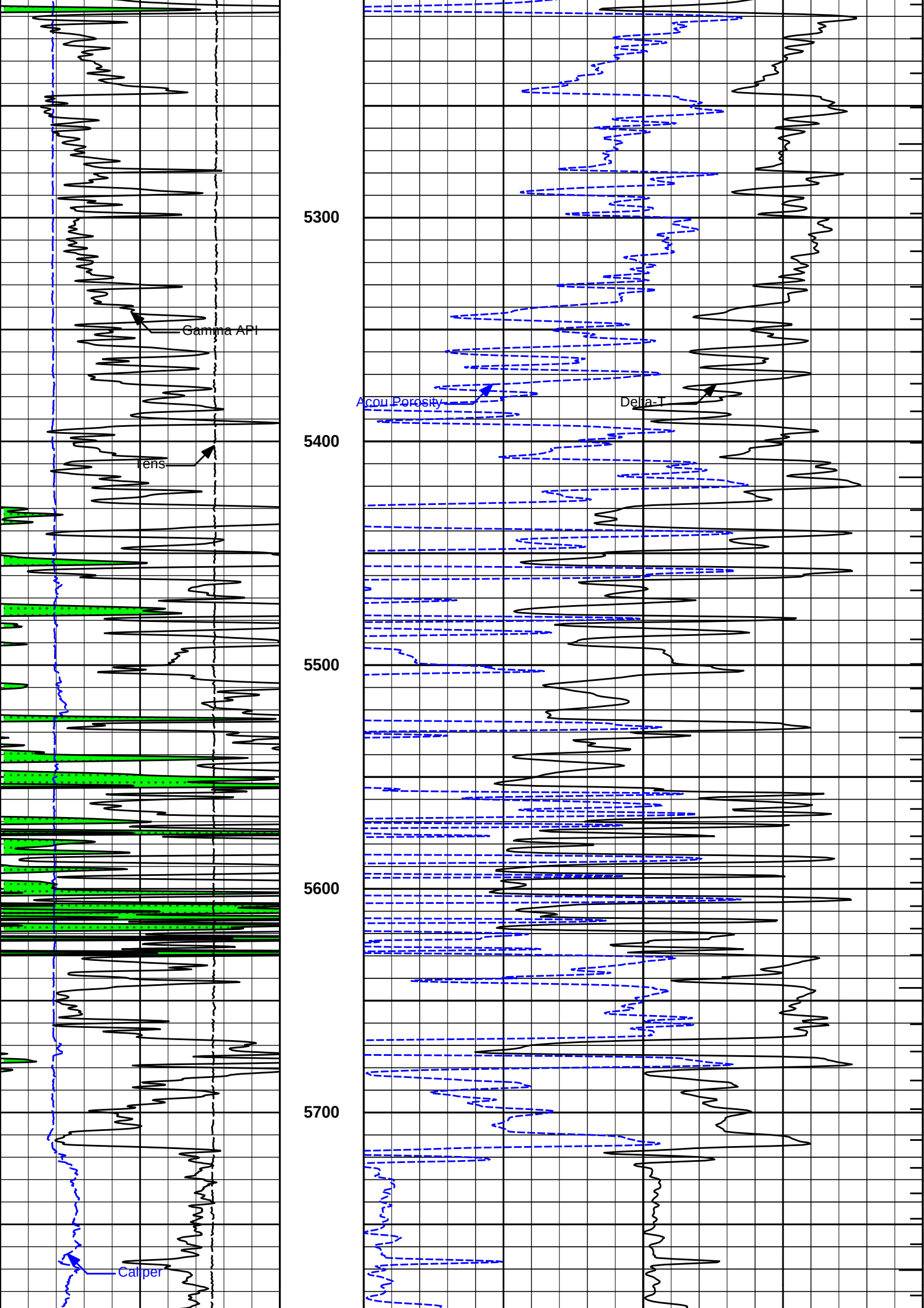
5000
5100
5200
Gamma API
Tens
Caliper
Acou Porosity
Delta-T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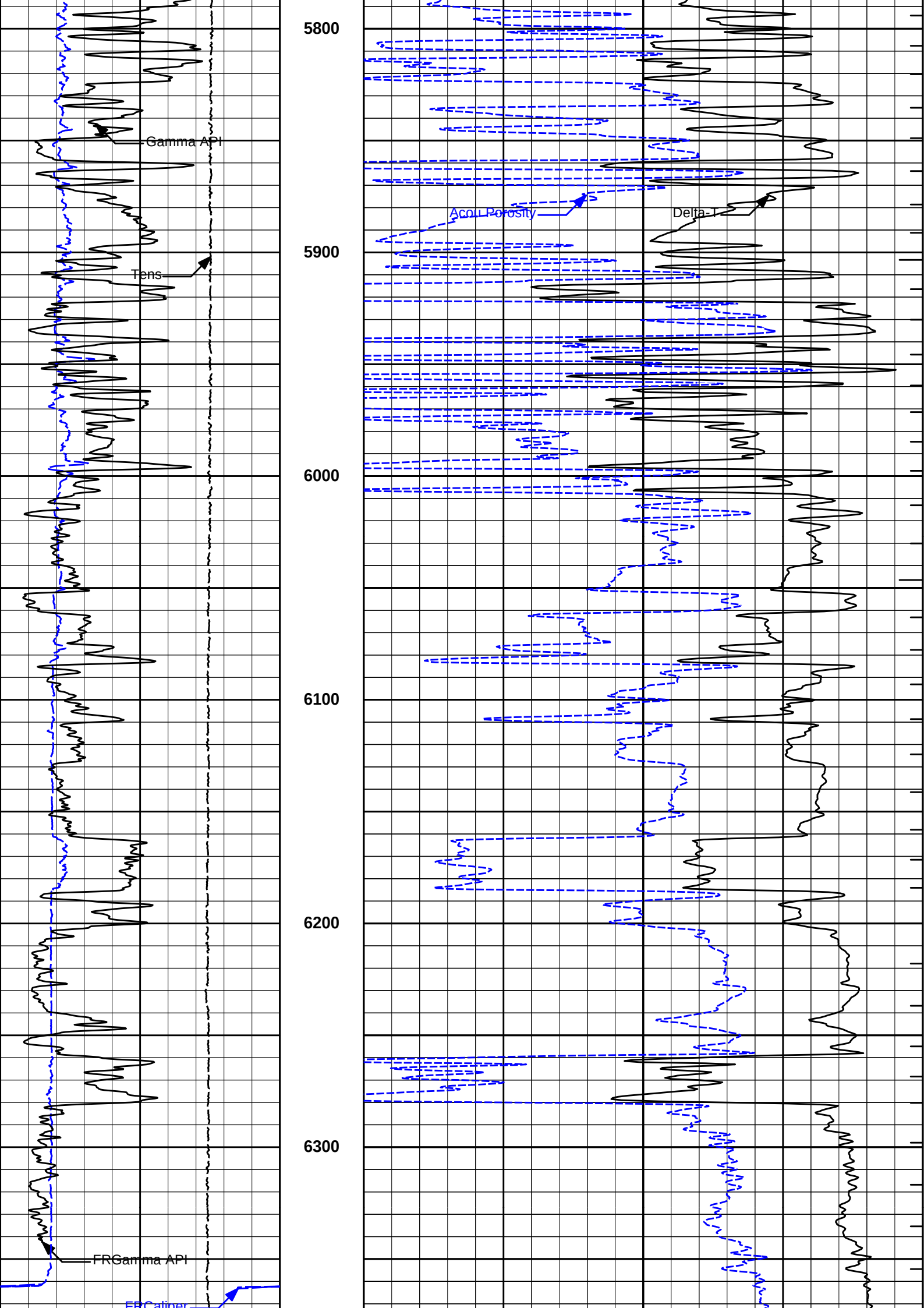
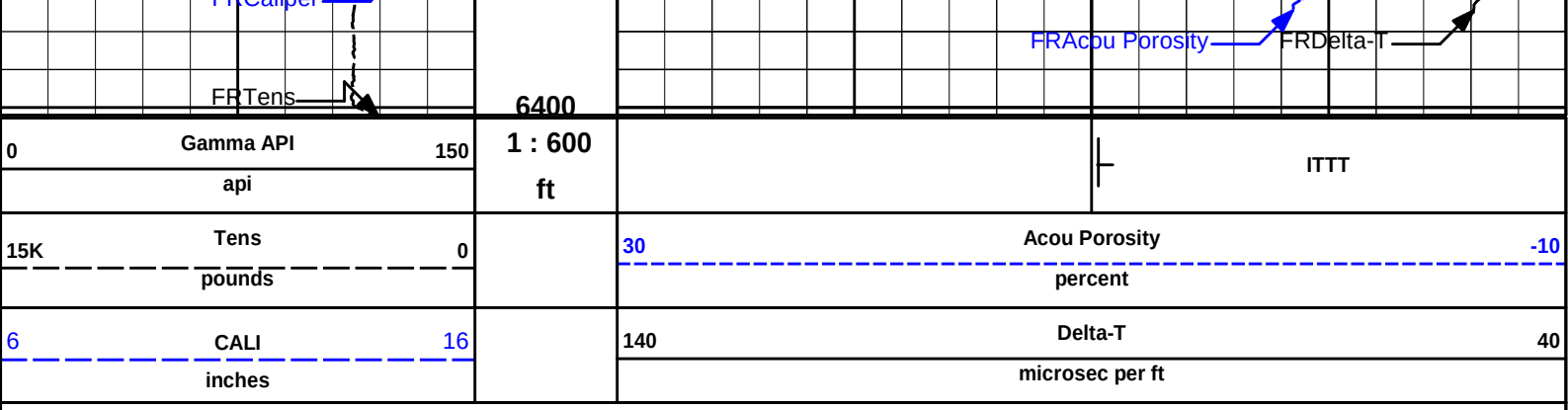
5400
5500
5600
5700
Gamma API
Tens
Acou Porosity
Delta-T
Caliper


Gamma API
Tens
FRGamma API
FRCaliper
Acou Porosity
Delta-T
5800
5900
6000
6100
6200
6300



HALLIBURTON

Plot Time: 01-May-19 05:32:13
Plot Range: 1550 ft to 6402 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-003\
Plot File: \\BSAT\BSAT_2inch

2 INCH MAIN LOG

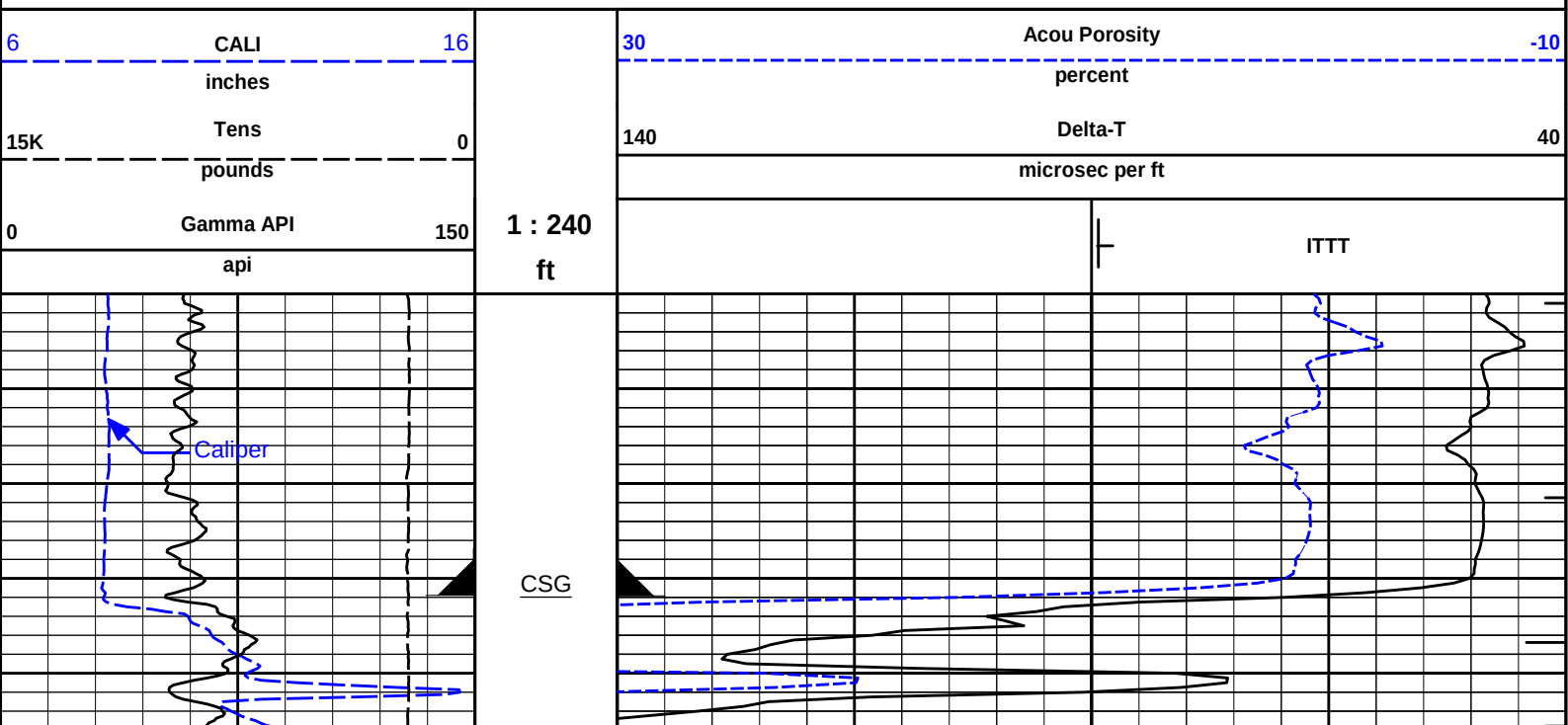
2" MAIN LOG SECTION

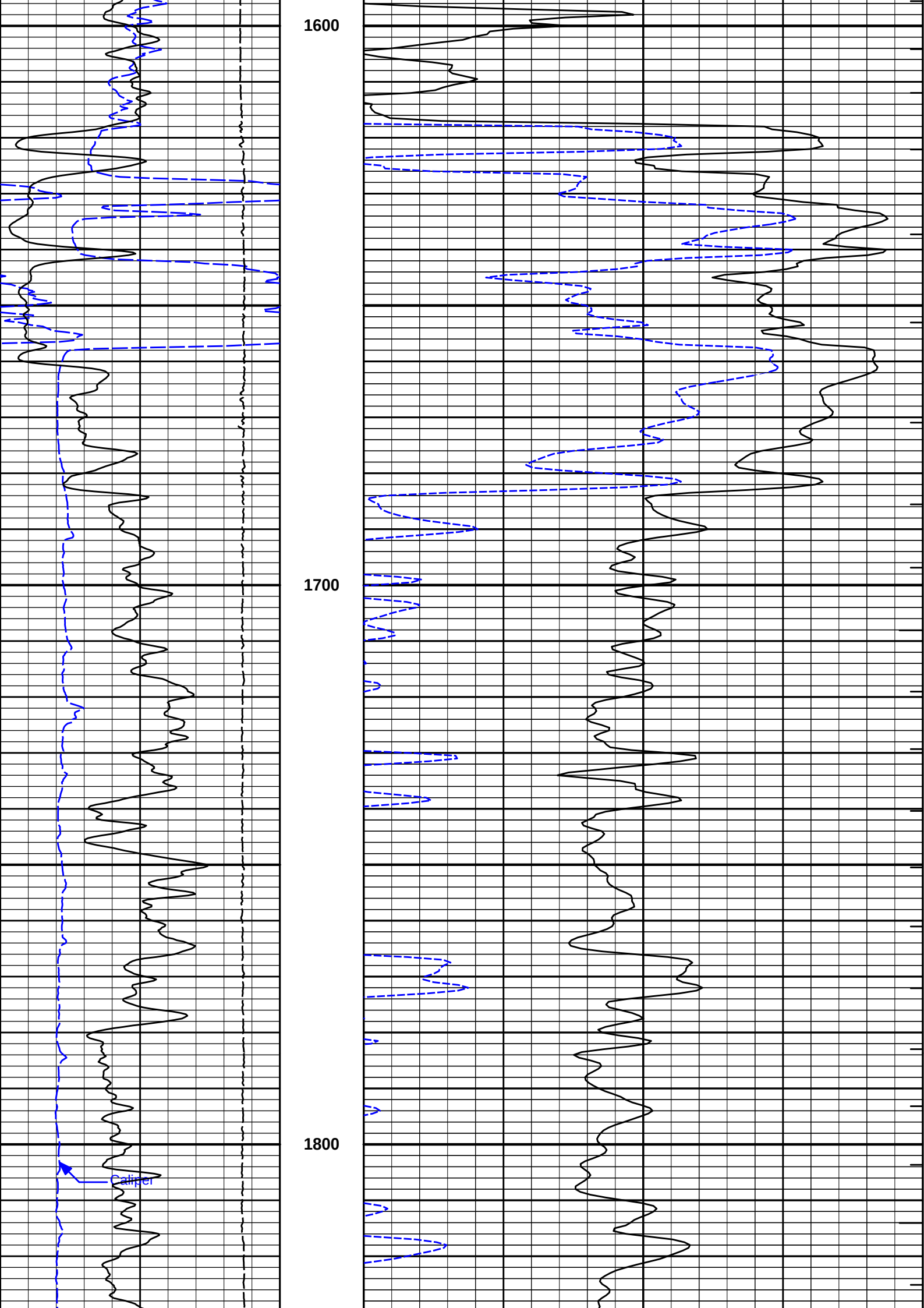
HALLIBURTON

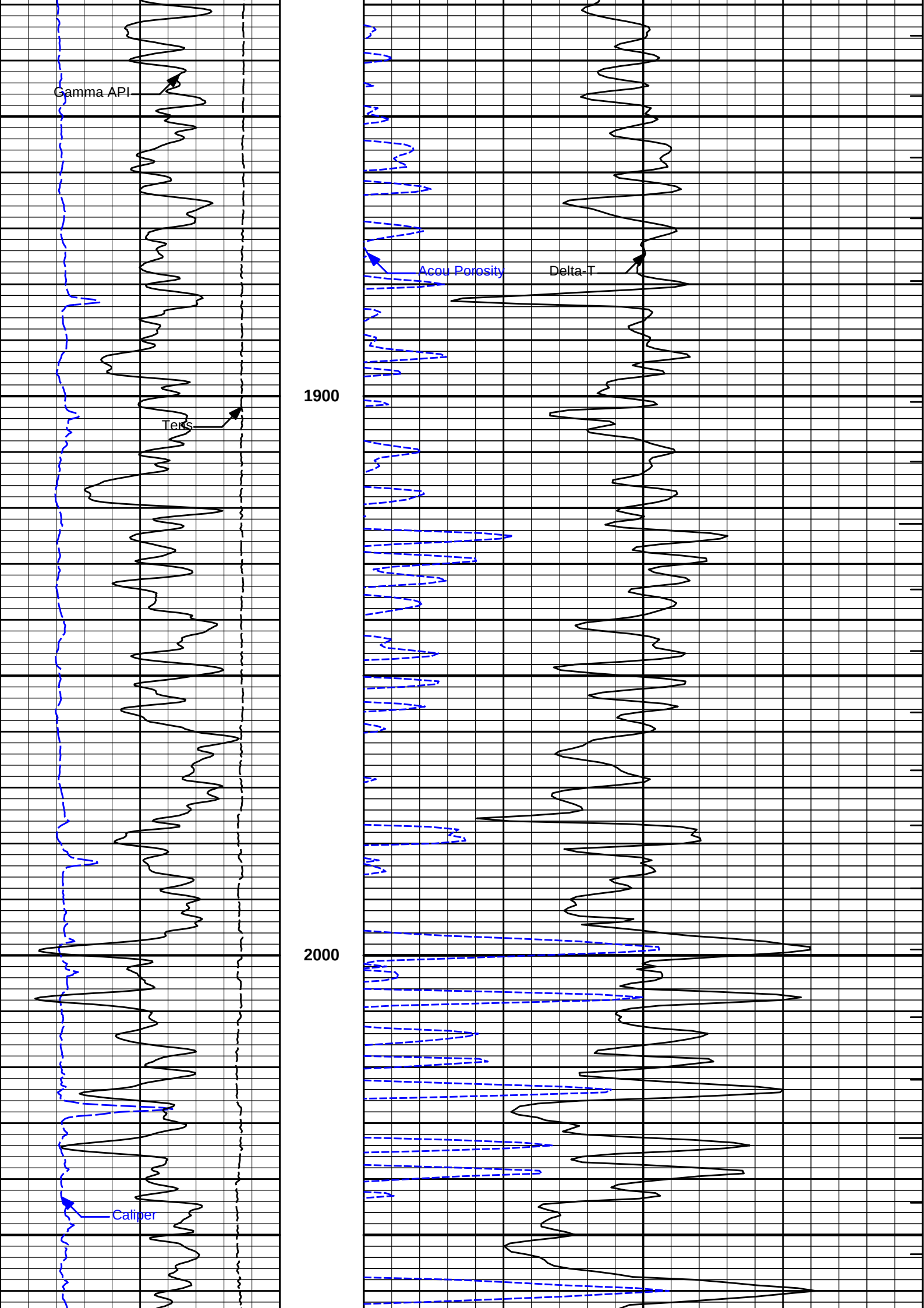
Plot Time: 01-May-19 05:32:13
Plot Range: 1550 ft to 6402 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-003\
Plot File: \\BSAT\BSAT_5inch

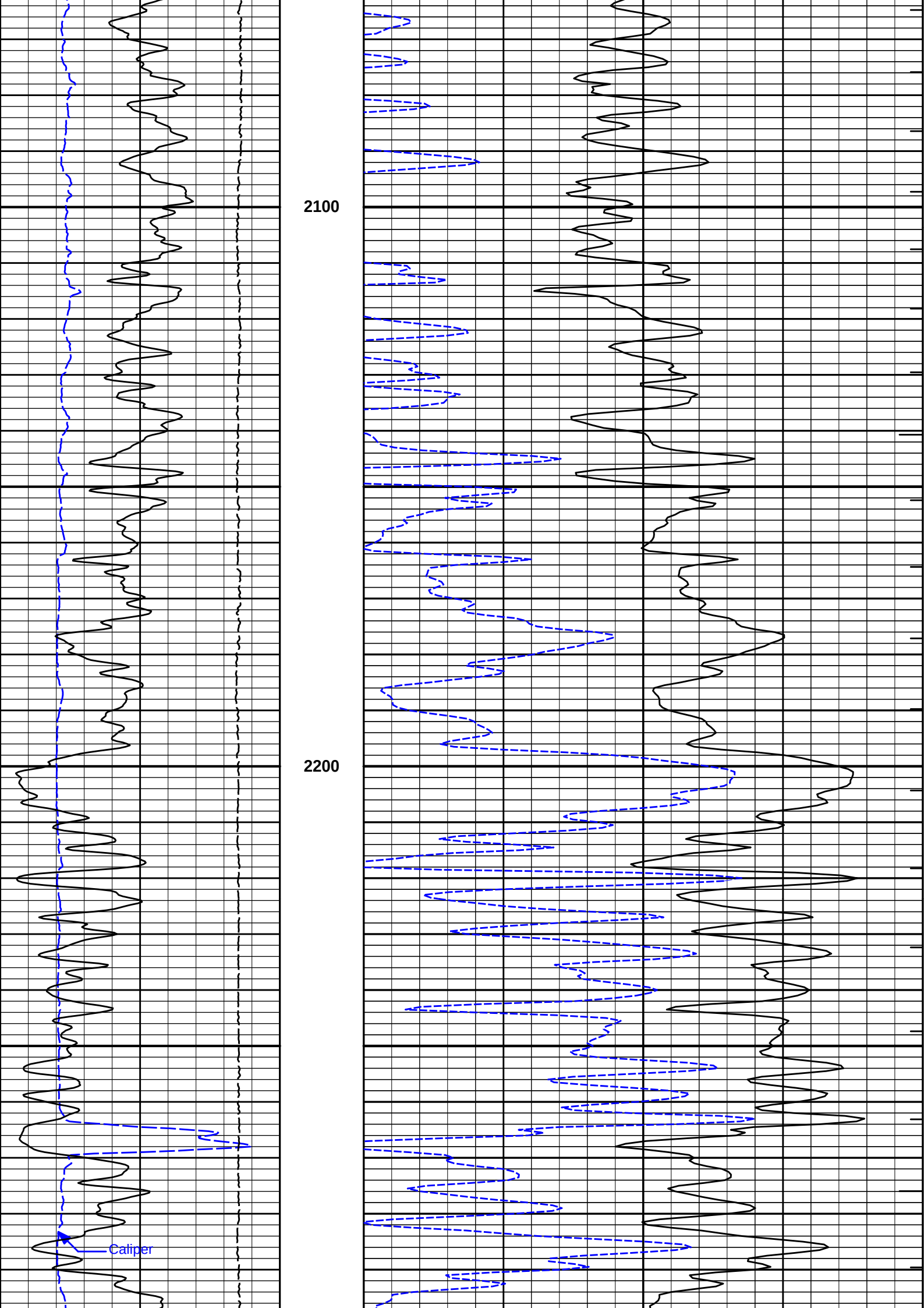
5 INCH MAIN LOG

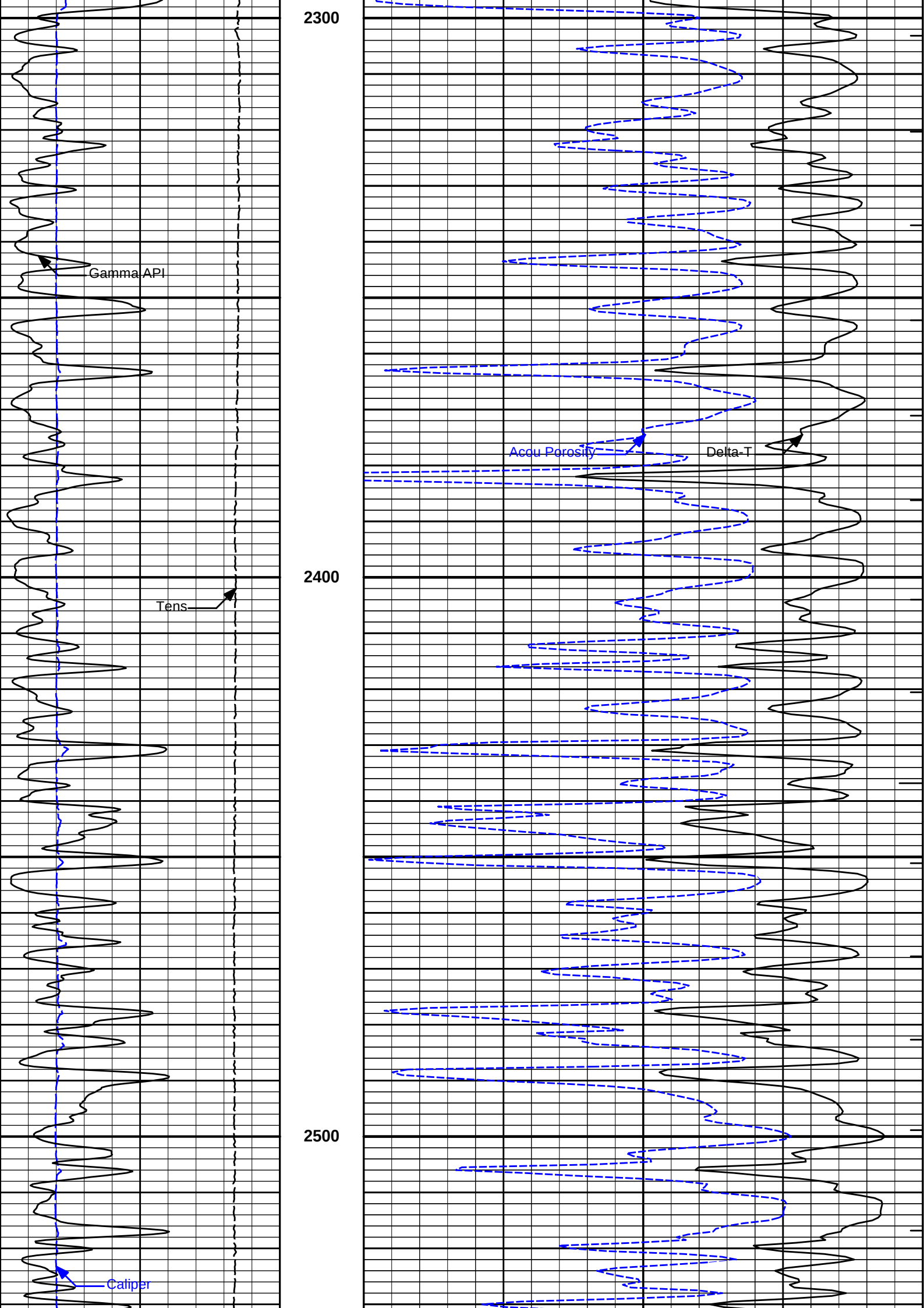
MAIN LOG SECTION




1600
1700
1800
Caliper


Gamma API
Acou Porosity
Delta-T
1900
Tens
2000
Caliper


2100
2200
Caliper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Gamma API
Acou Porosity
Delta-T
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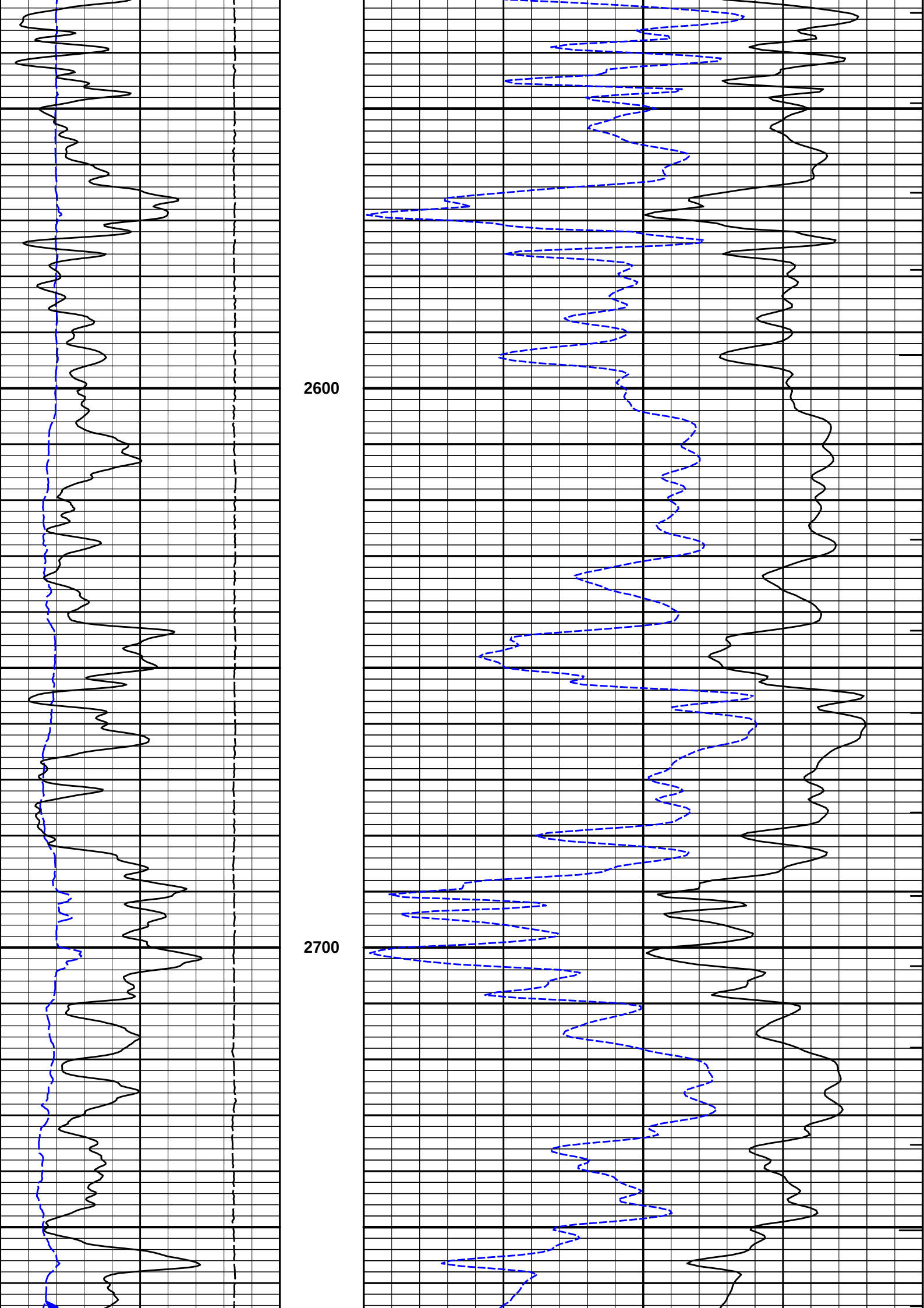
Tens
2500
Caliper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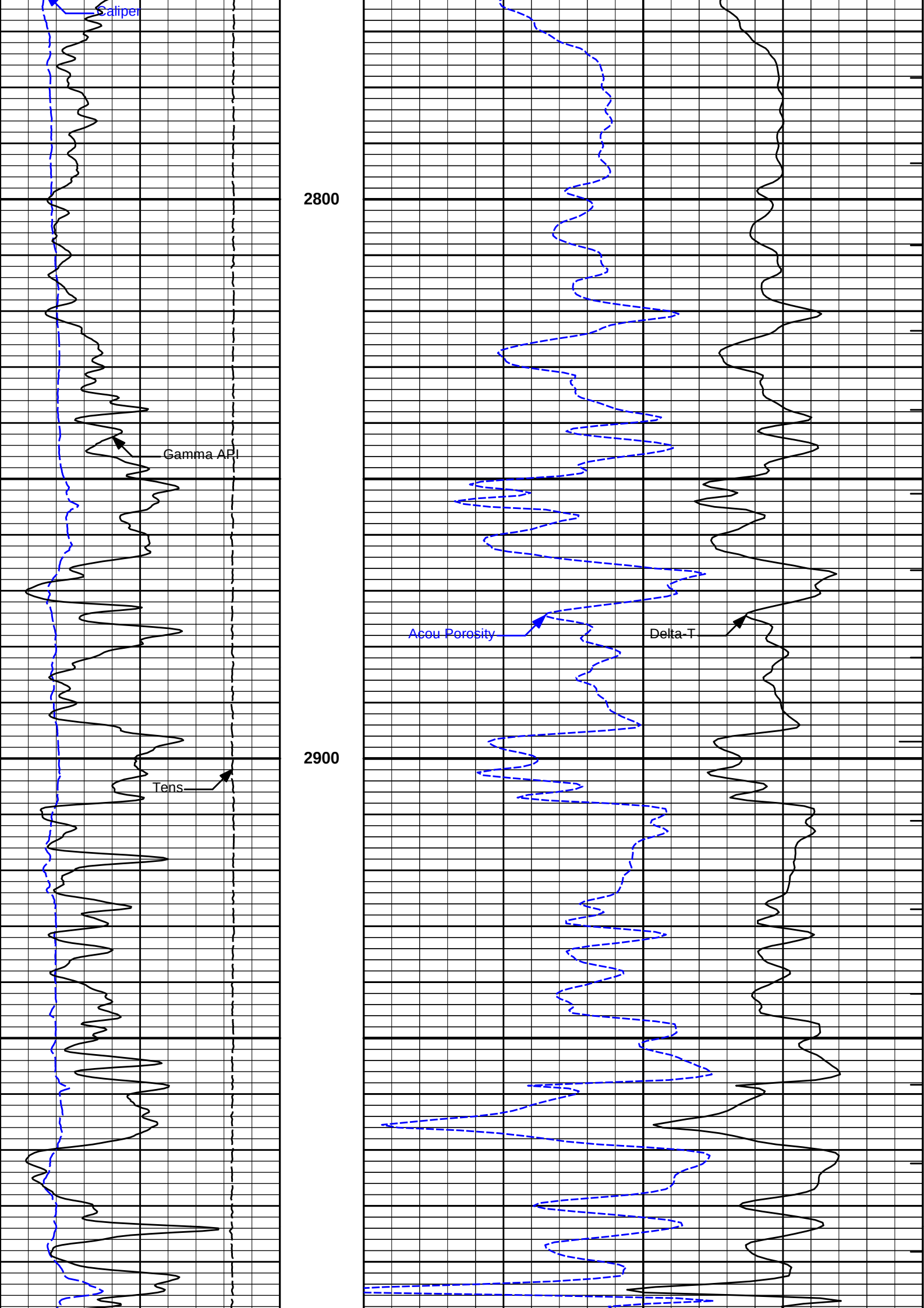
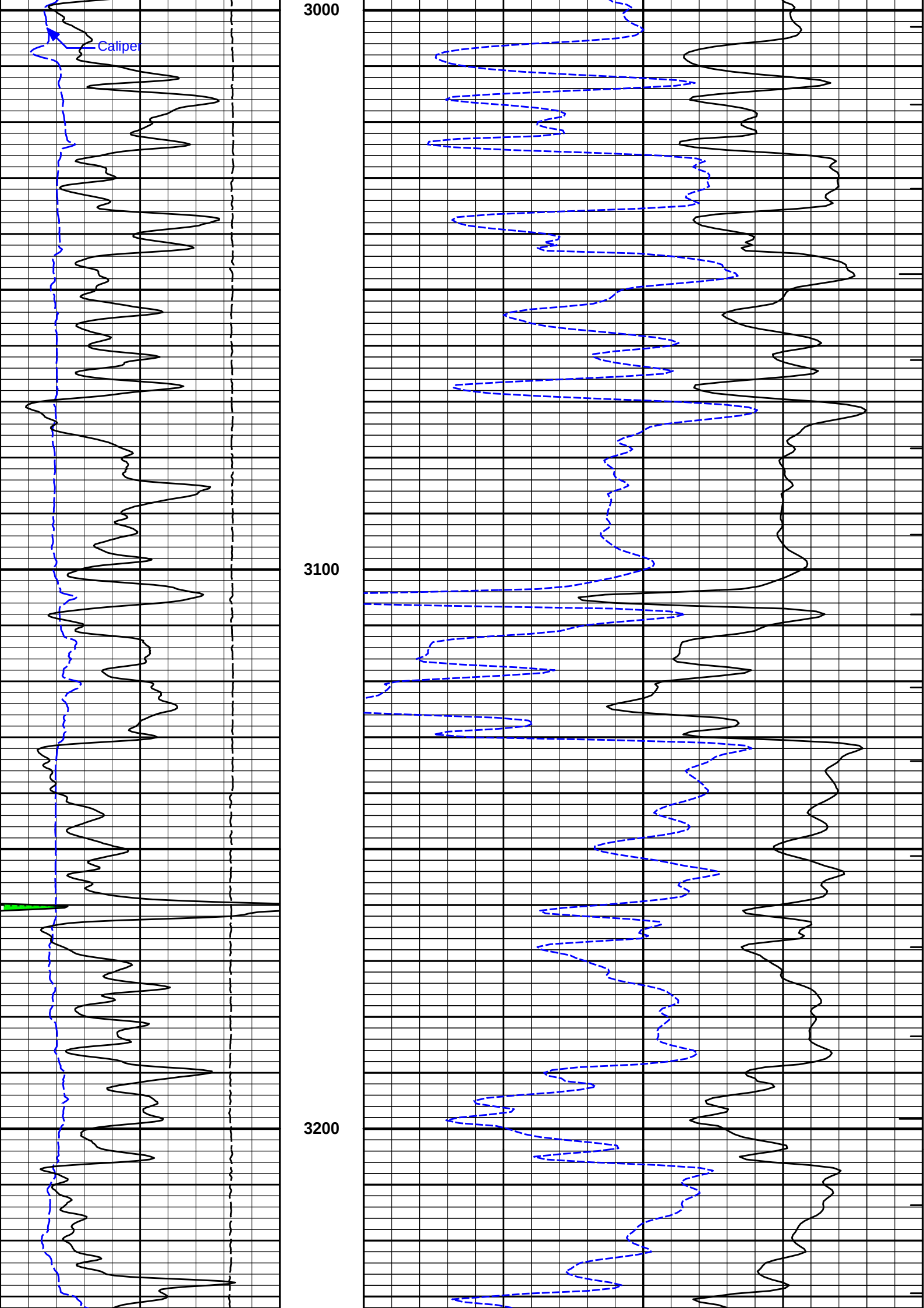
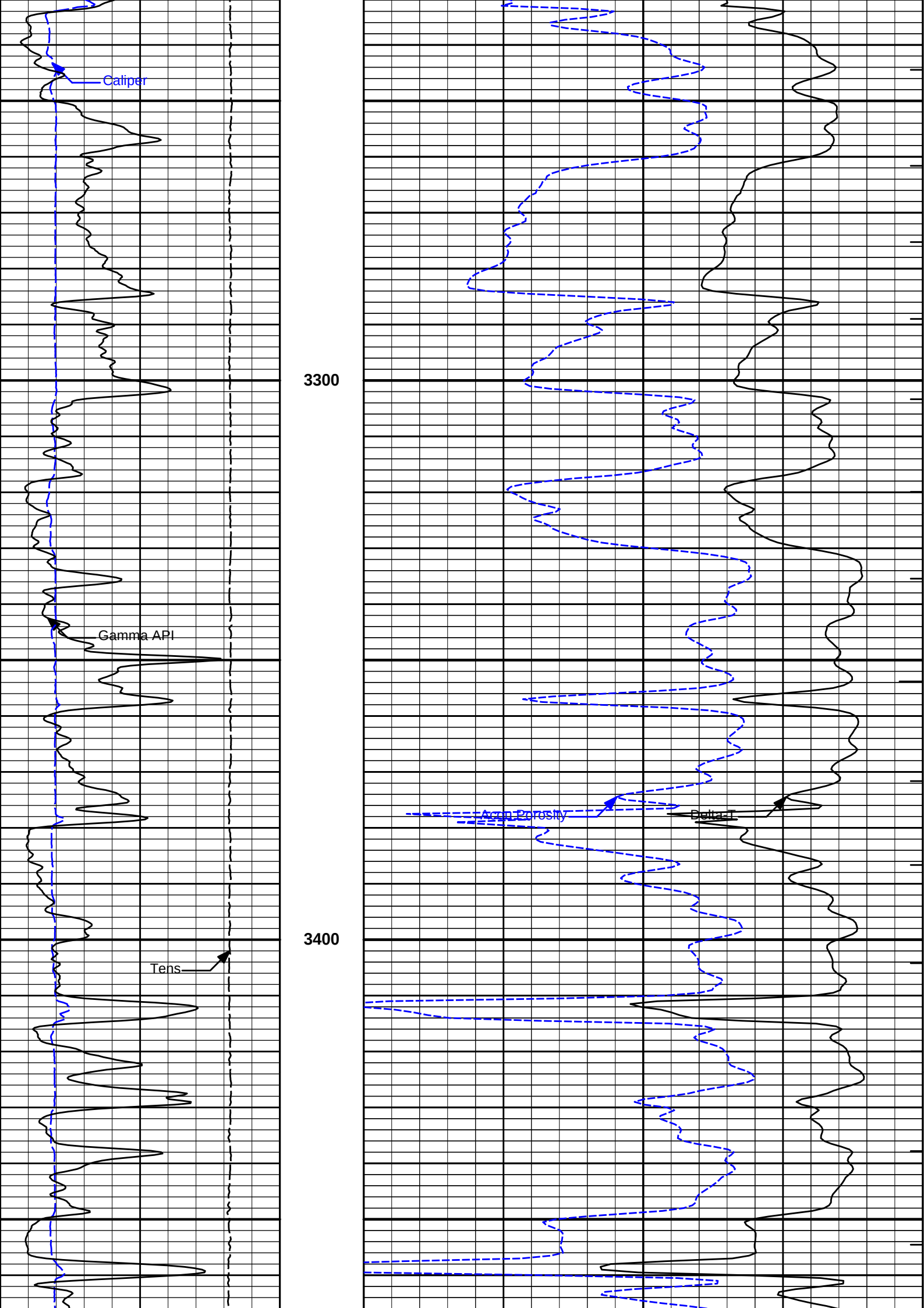
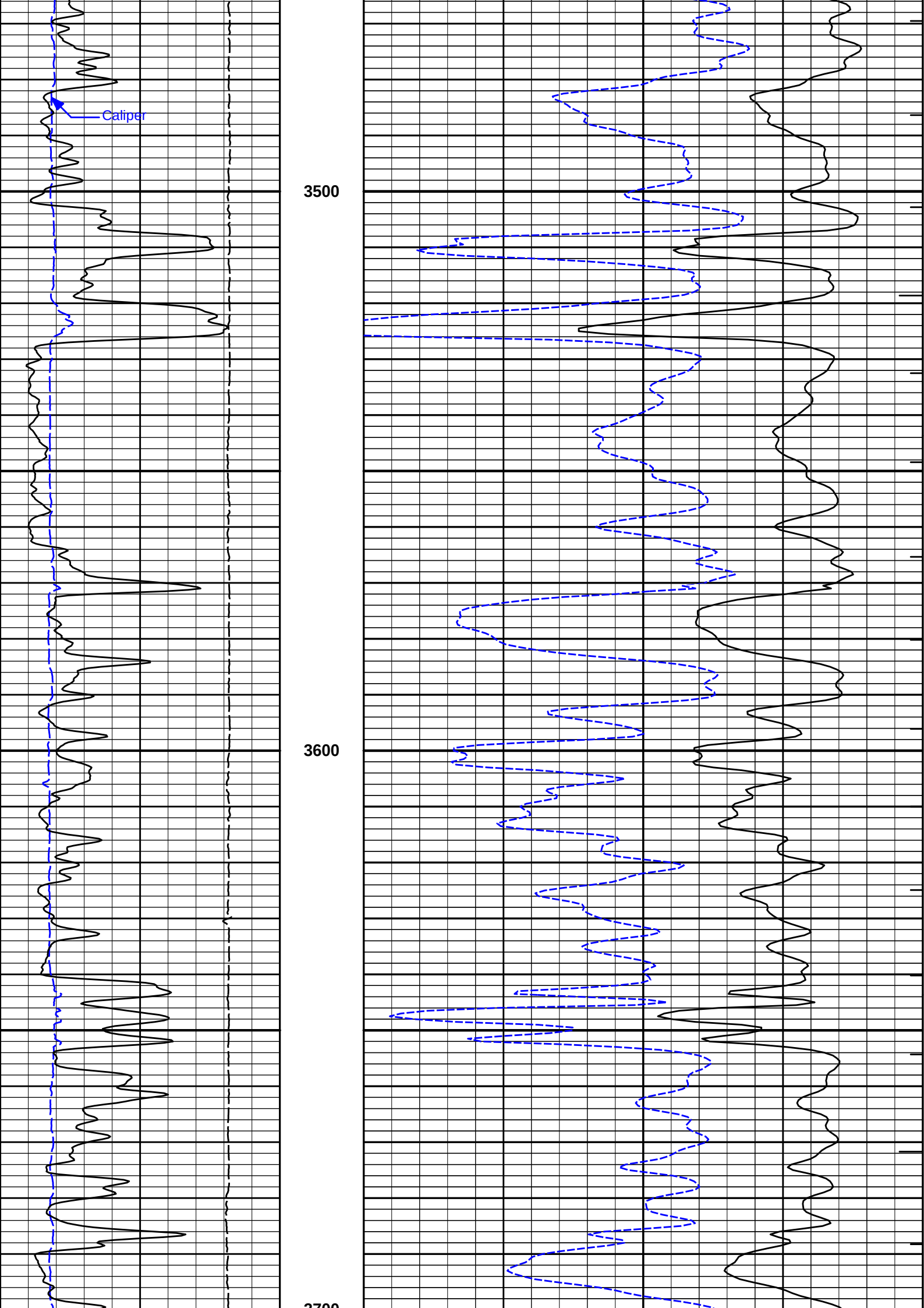

Caliper
2800
Gamma API
Acou Porosity
Delta-T
2900
Tens


Caliper
3000
3100
3200


Caliper
3300
Gamma API
Acon Porosity
Delta-T
3400
Tens


Caliper
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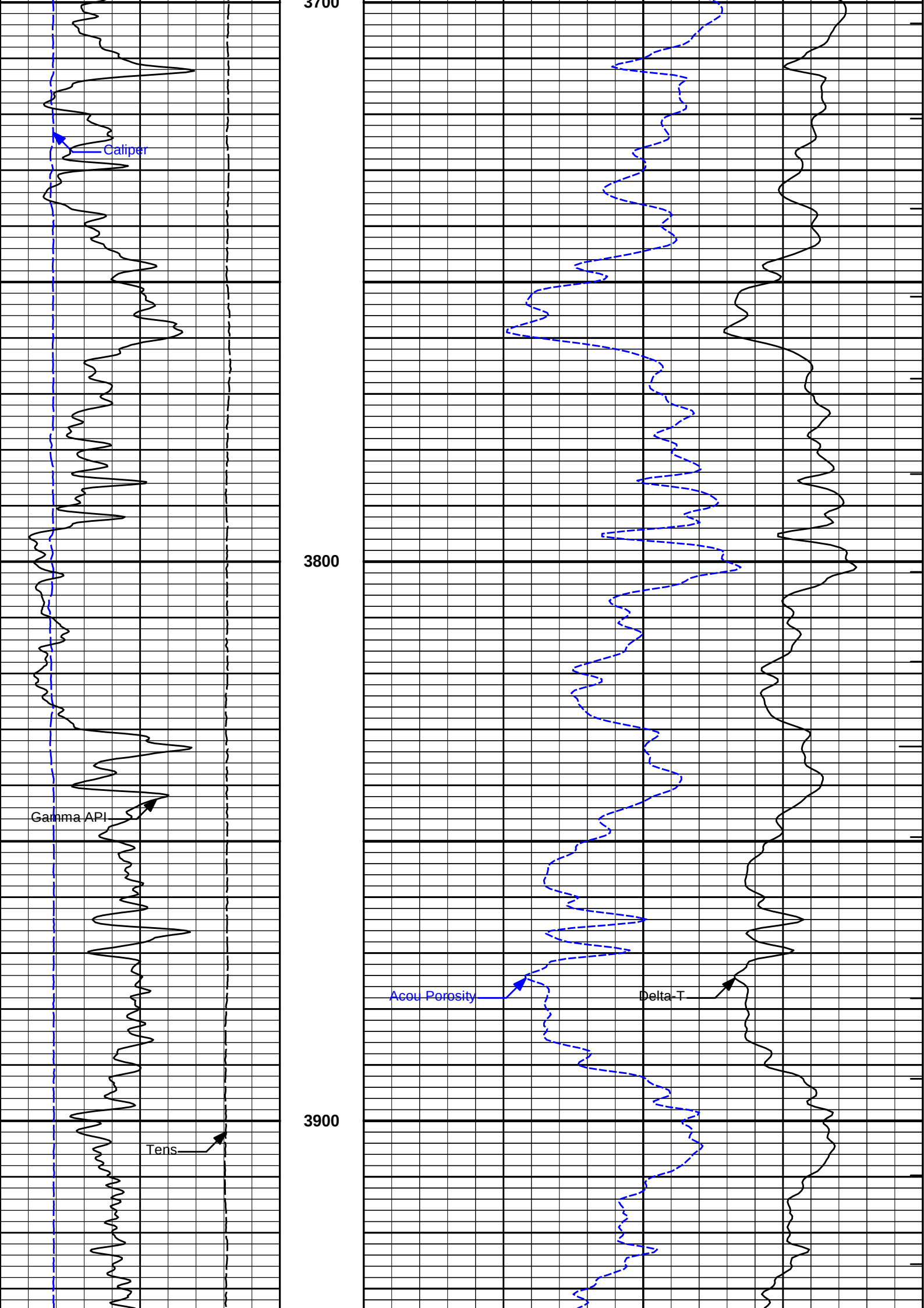
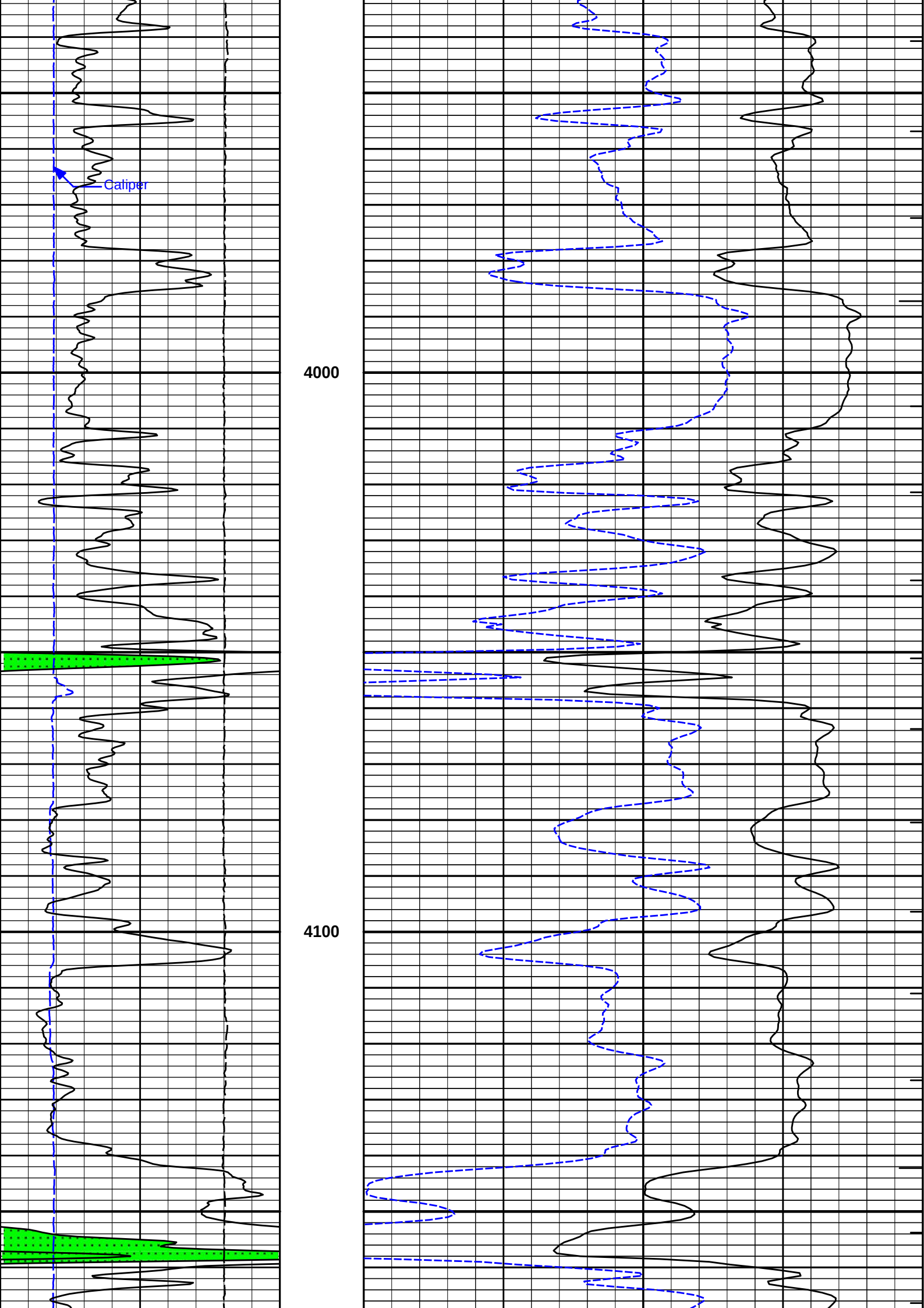
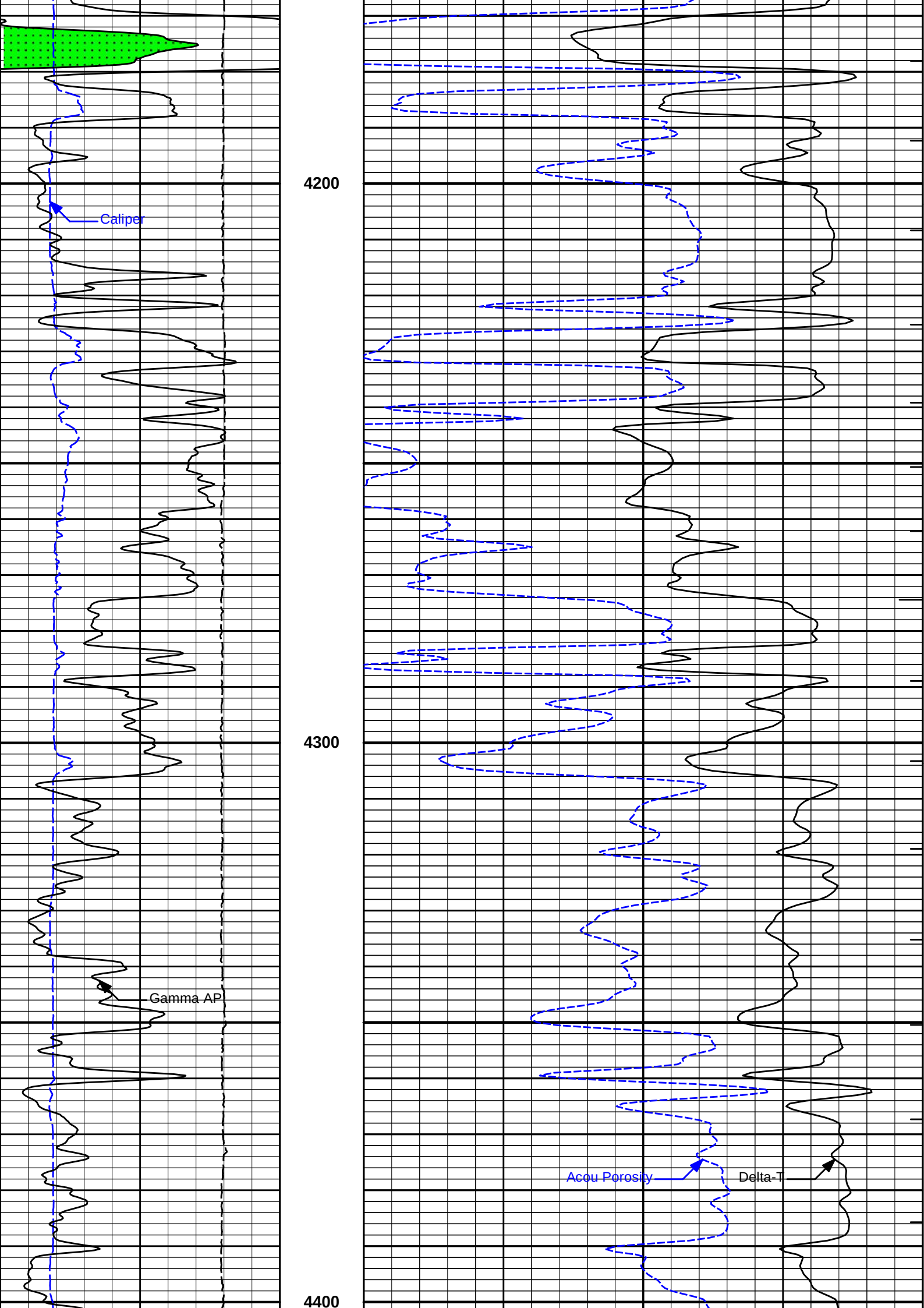
3600


3700
Caliper
3800
Gamma API
Acou Porosity
Delta-T
3900
Tens


Caliper
4000
4100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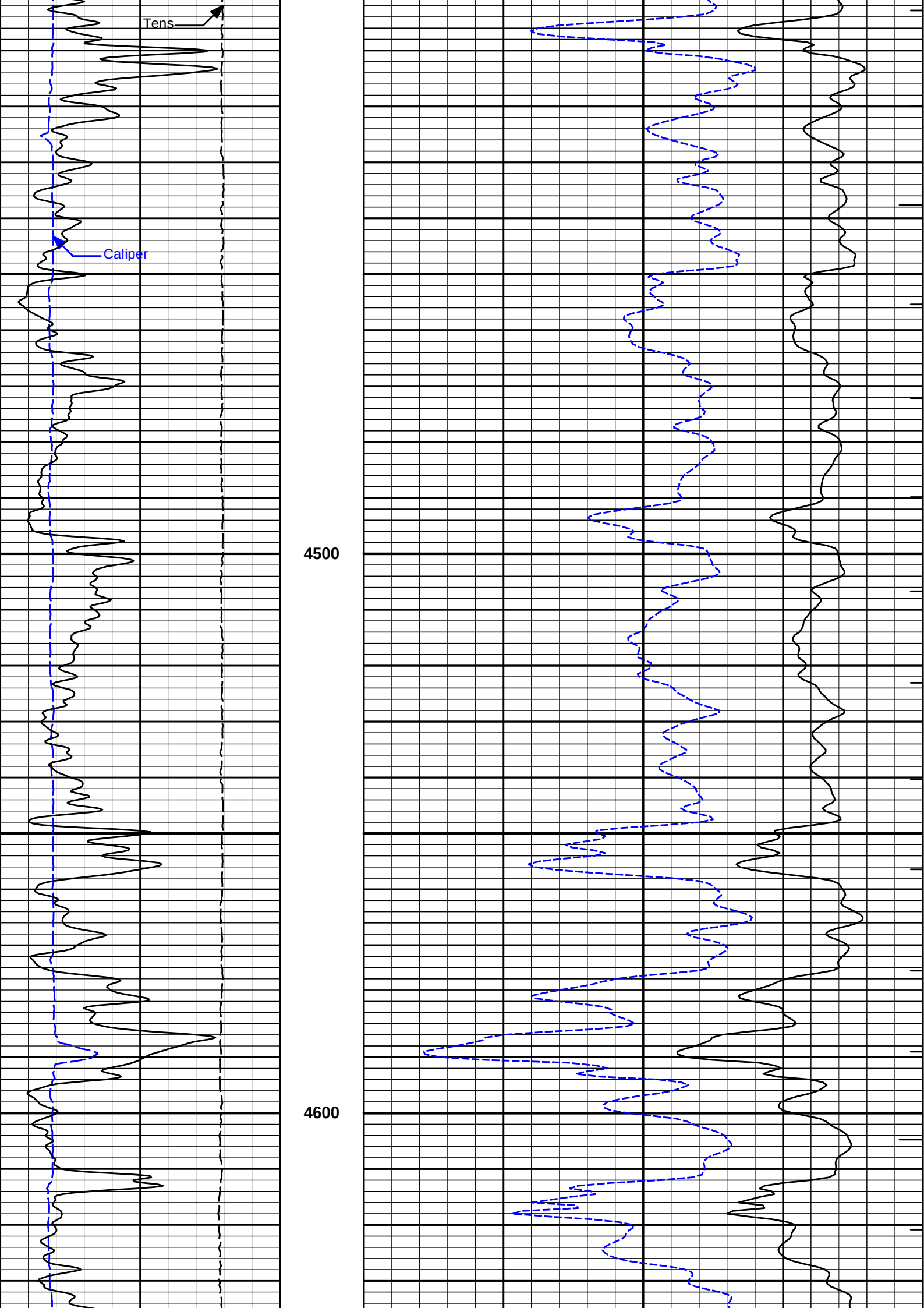
4300
4400
Caliper
Gamma AP
Acou Porosity
Delta-T


Tens
Caliper
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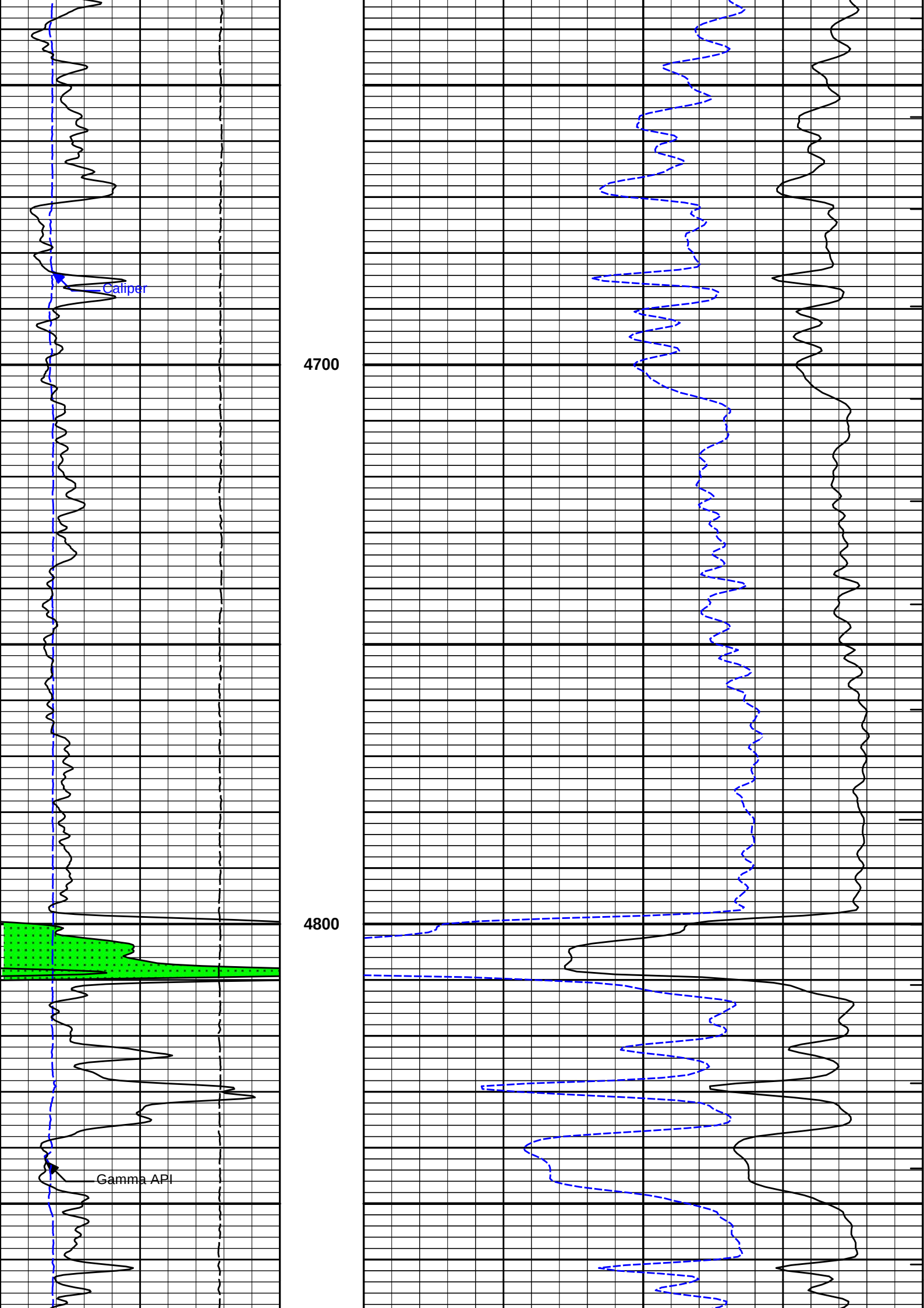
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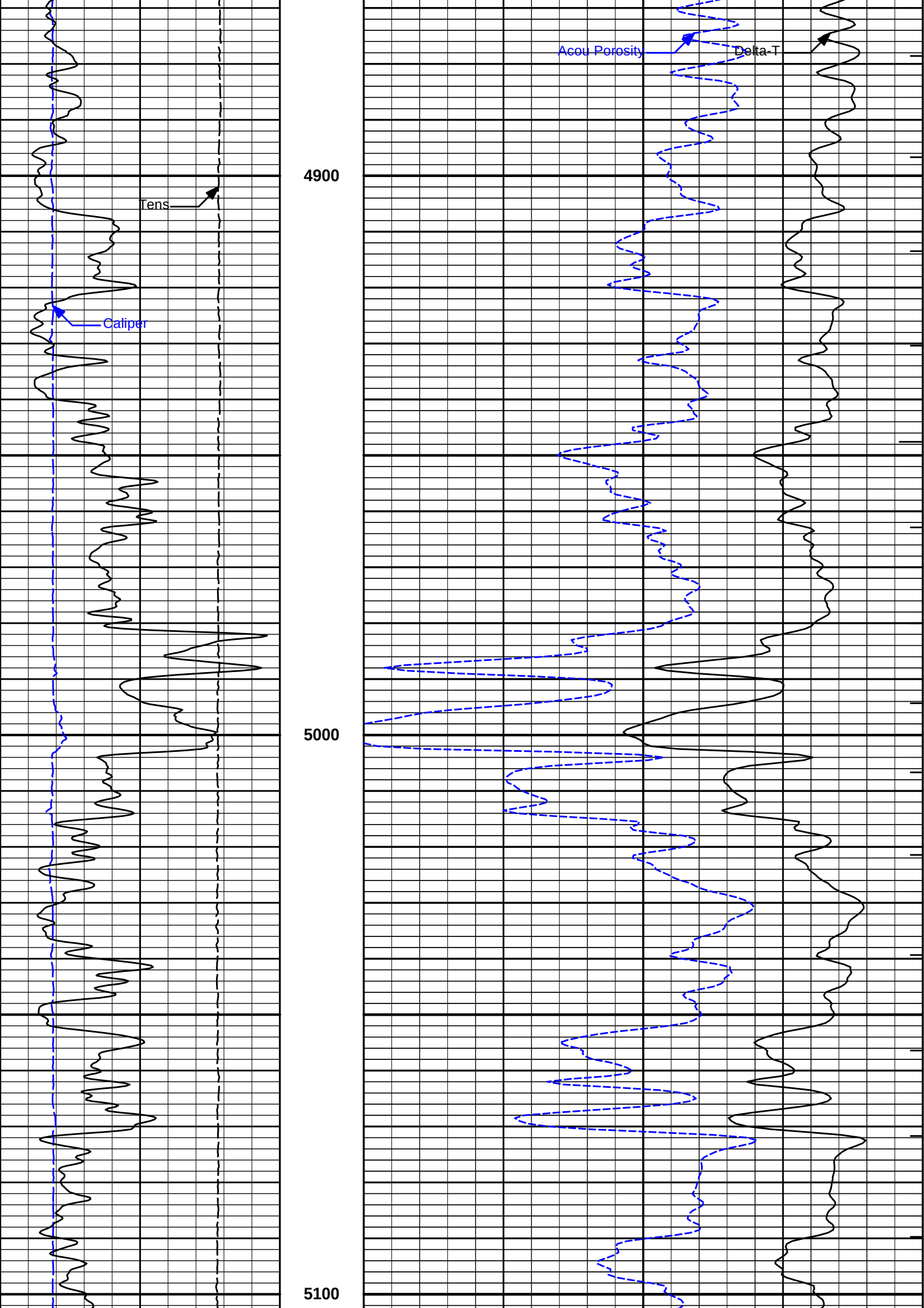
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Delta-T
Tens
Caliper
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5000
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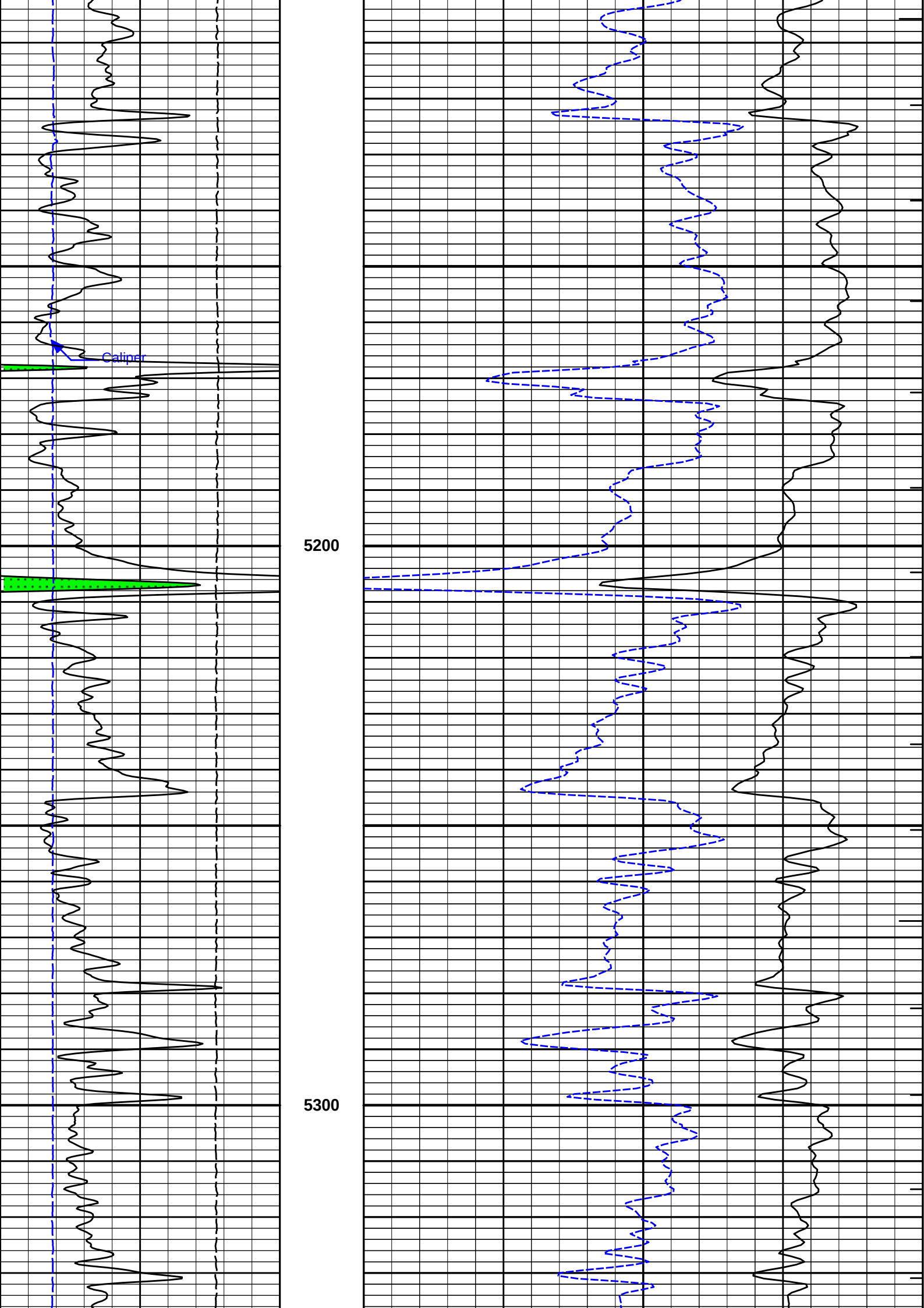
Caliper
5200
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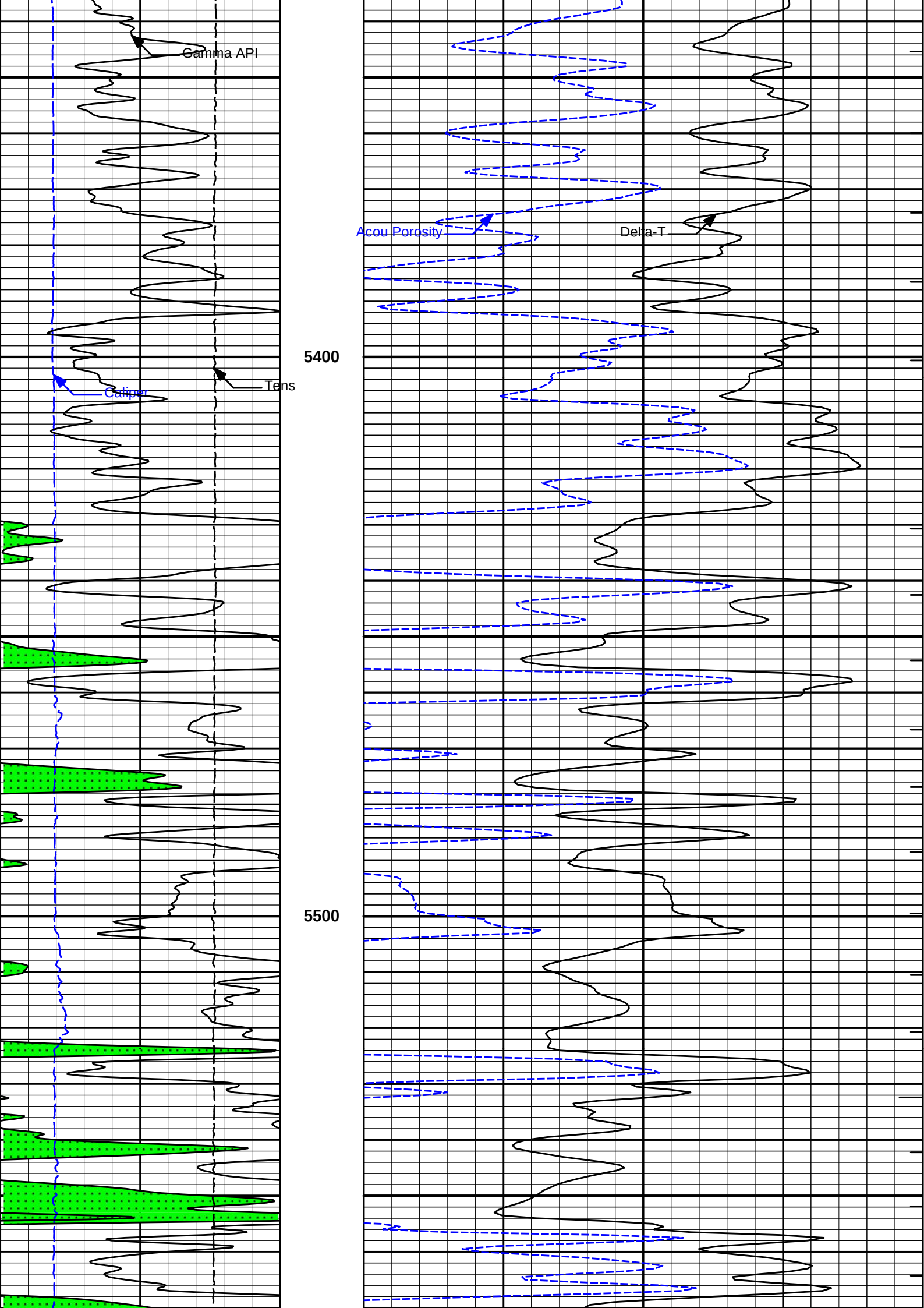
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Acou Porosity
Delta-T
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Caliper
Tens
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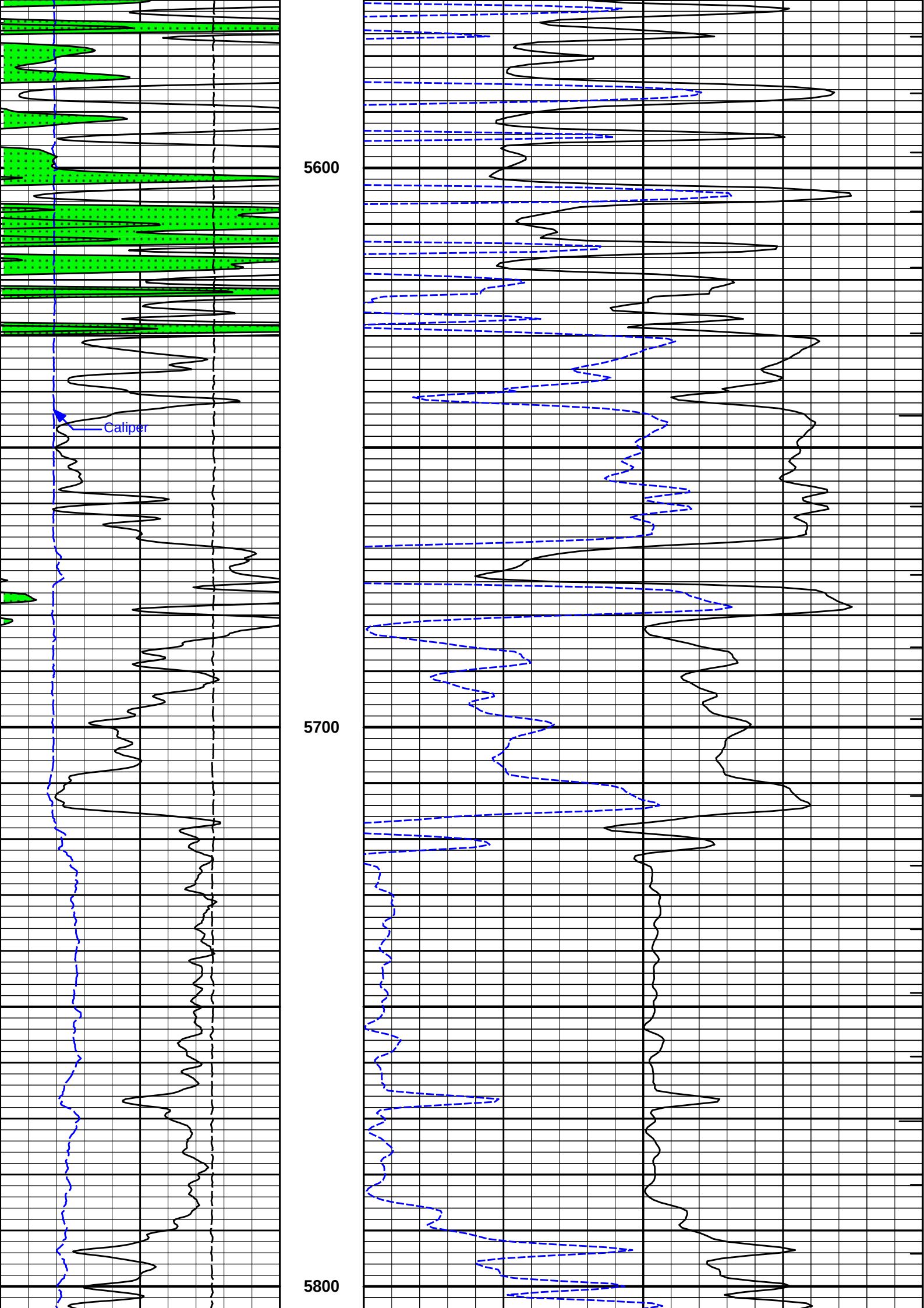
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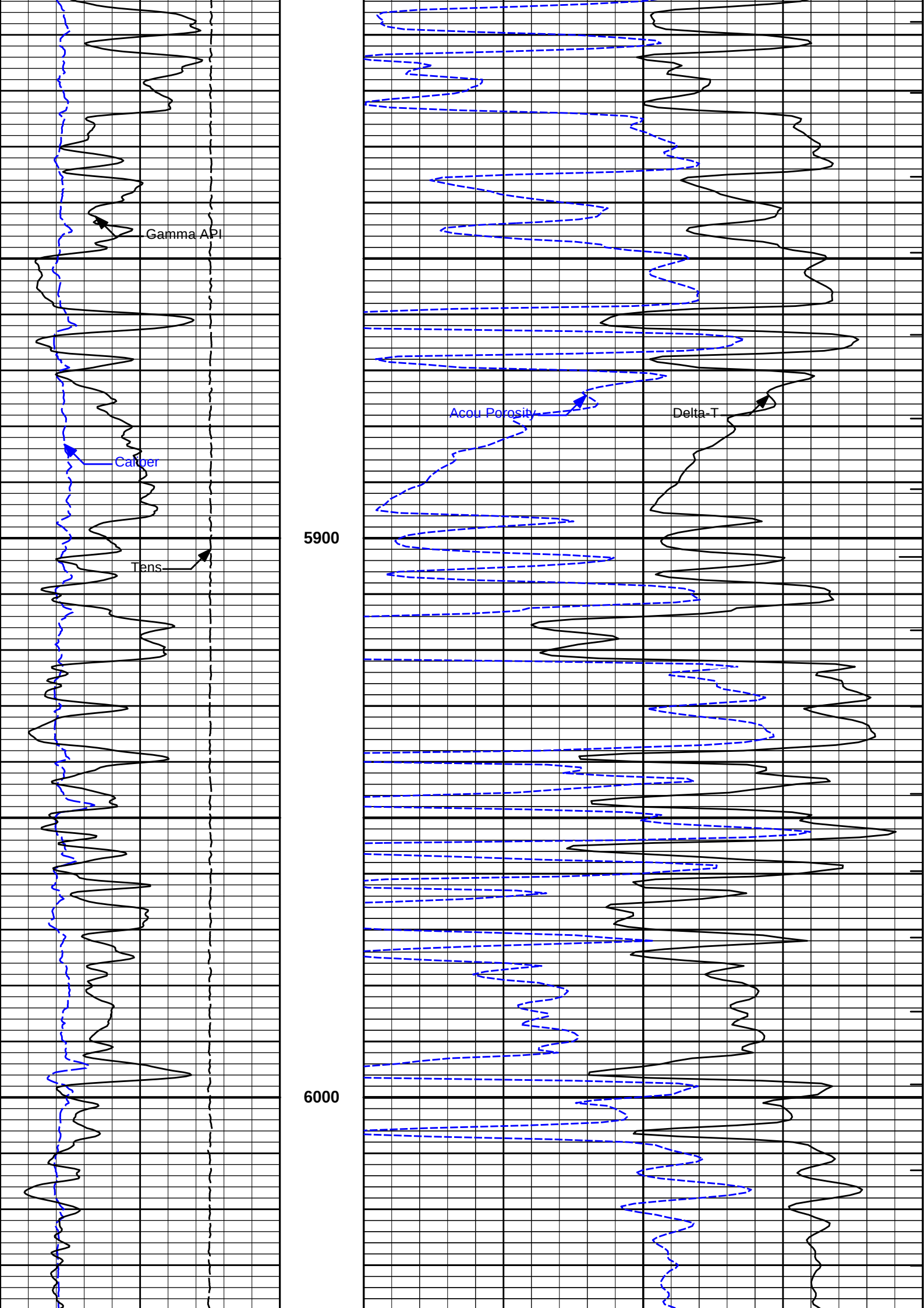
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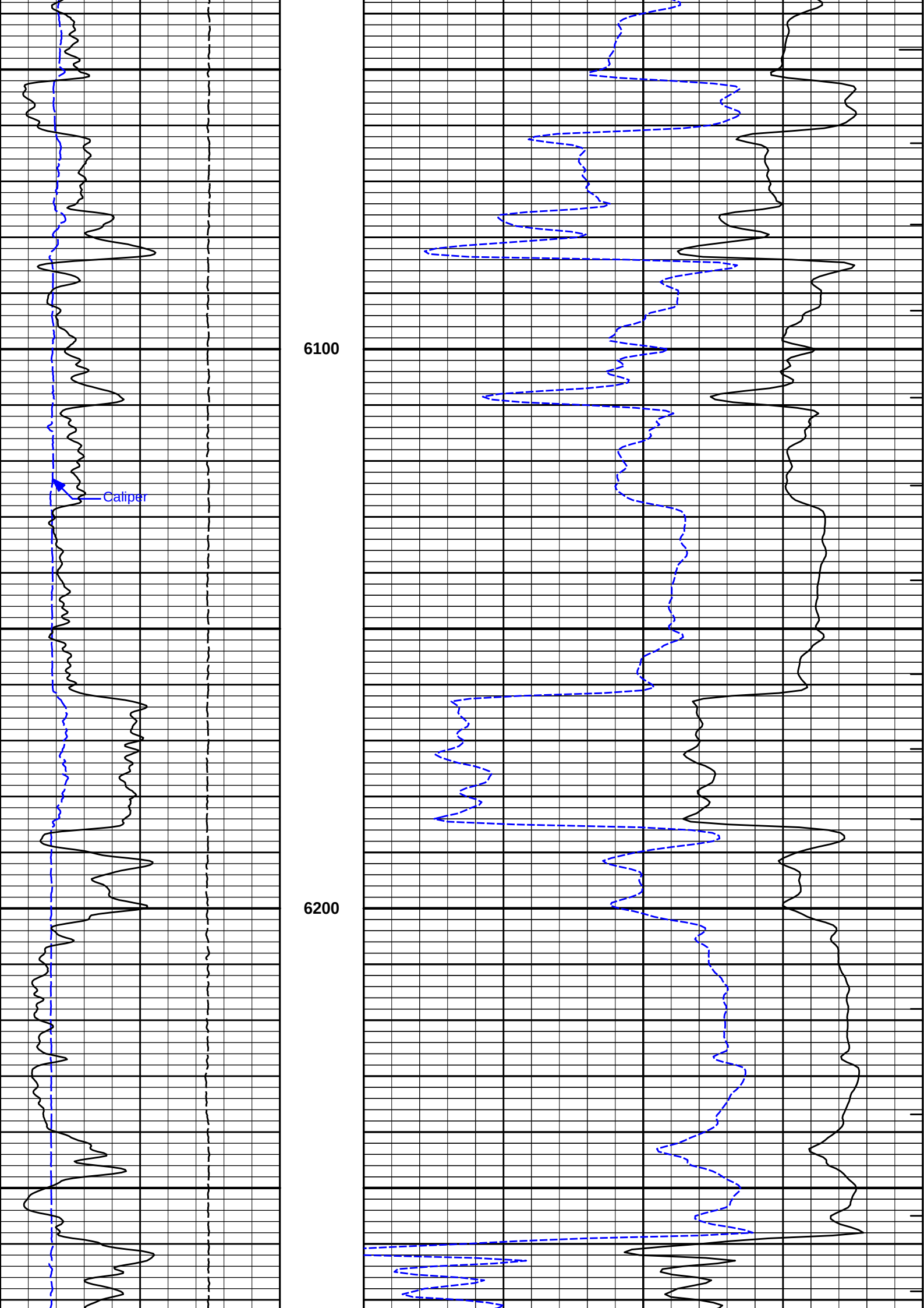
Caliper
Tens
Acou Porosity
Delta-T
5900
6000


6100
Caliper
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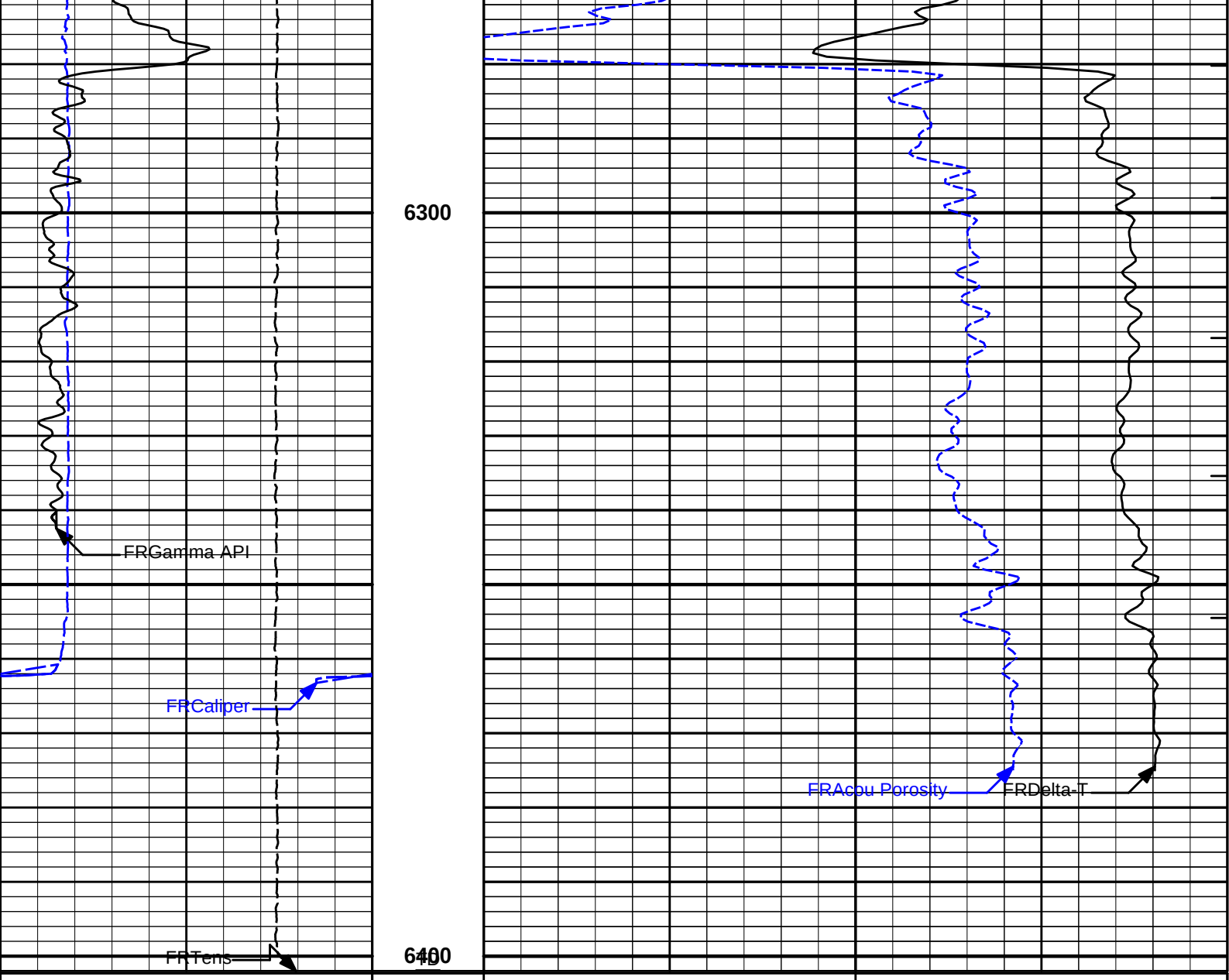


0 Gamma API 150 api	1 : 240 ft	ITTT
15K Tens 0 pounds		140 Delta-T 40 microsec per ft
6 CALI 16 inches		30 Acou Porosity -10 percent

HALLIBURTON

Plot Time: 01-May-19 05:32:19
Plot Range: 1550 ft to 6402 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-003\
Plot File: \\BSAT\BSAT_5inch

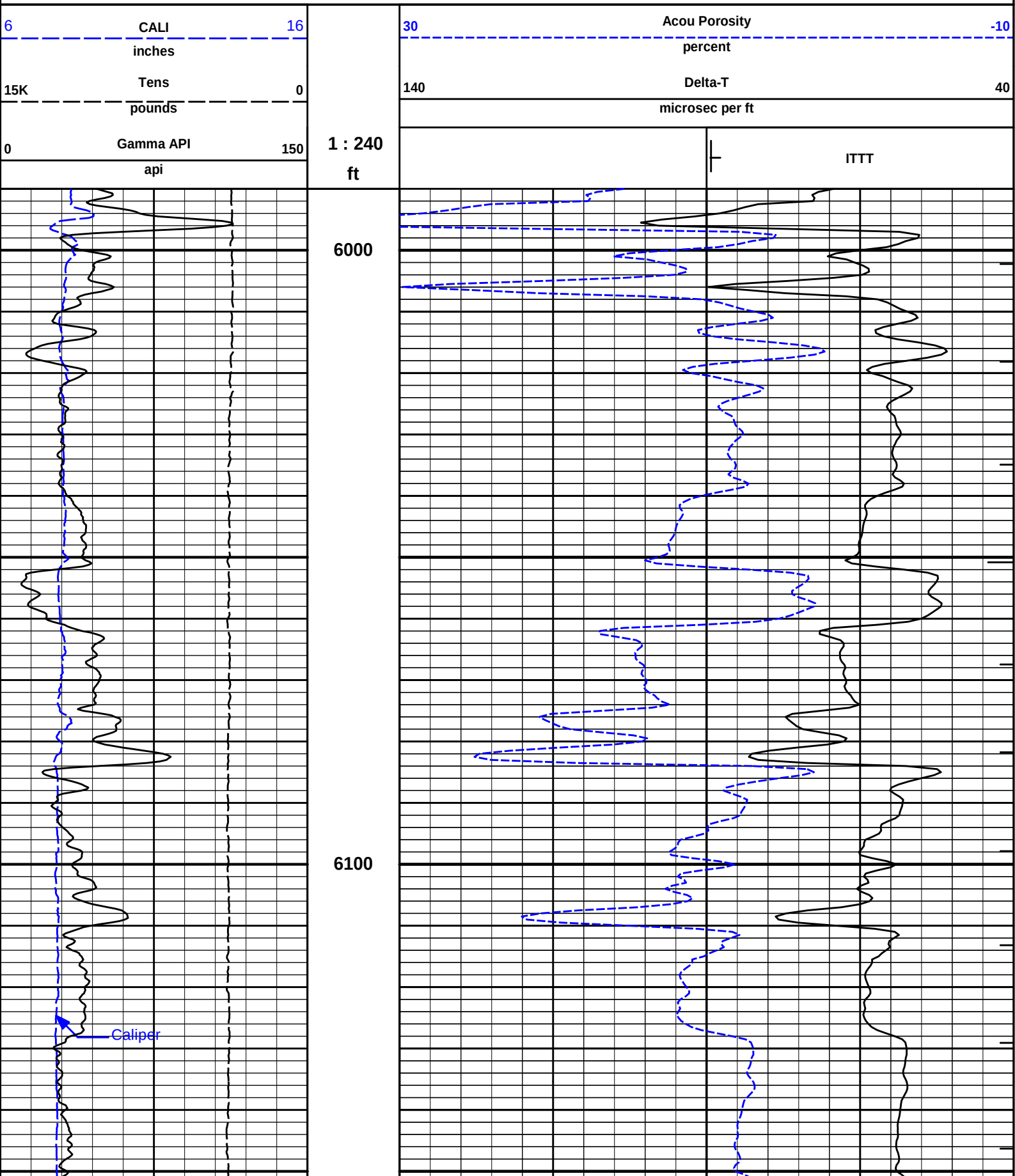
5 INCH MAIN LOG

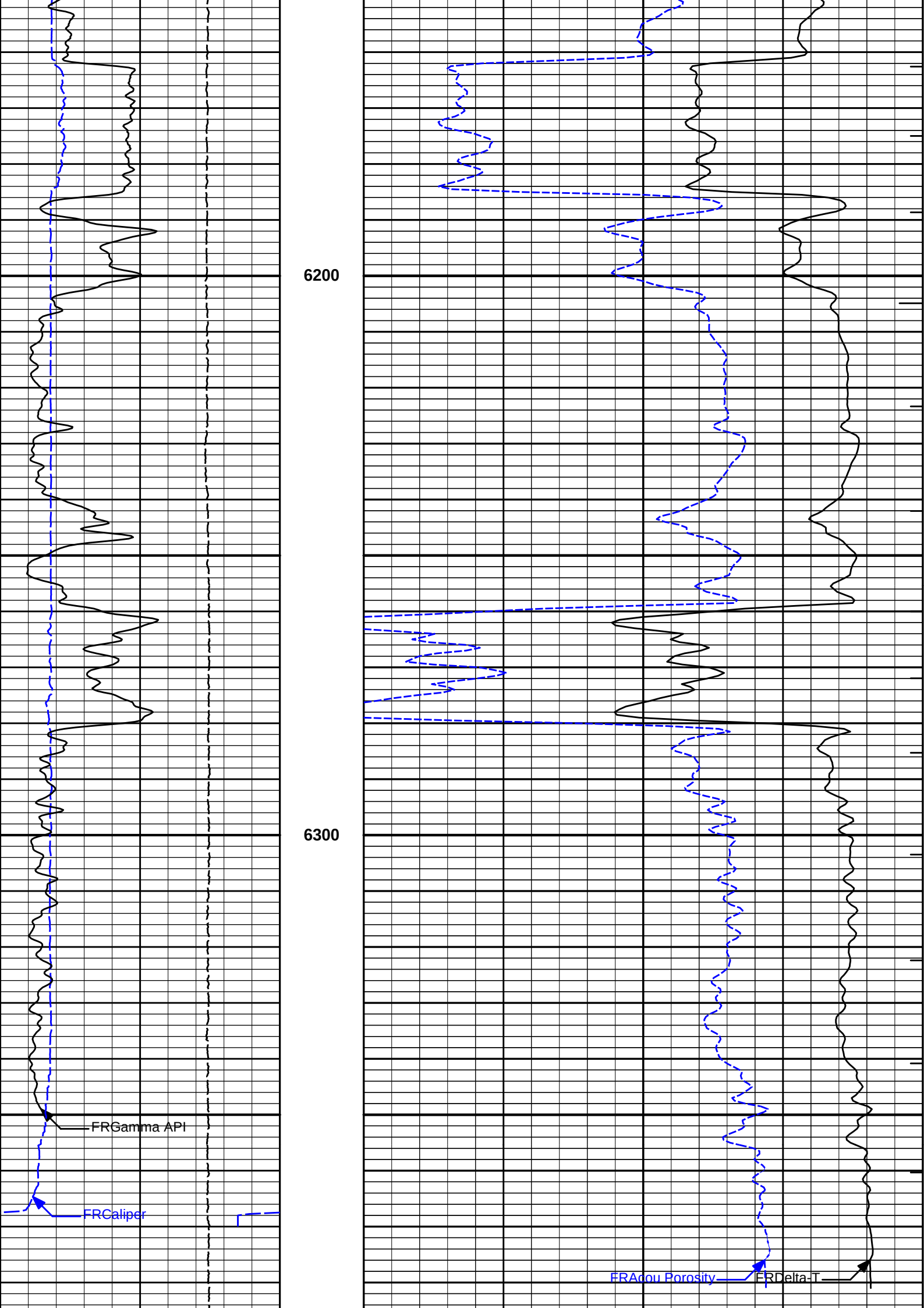
MAIN LOG SECTION

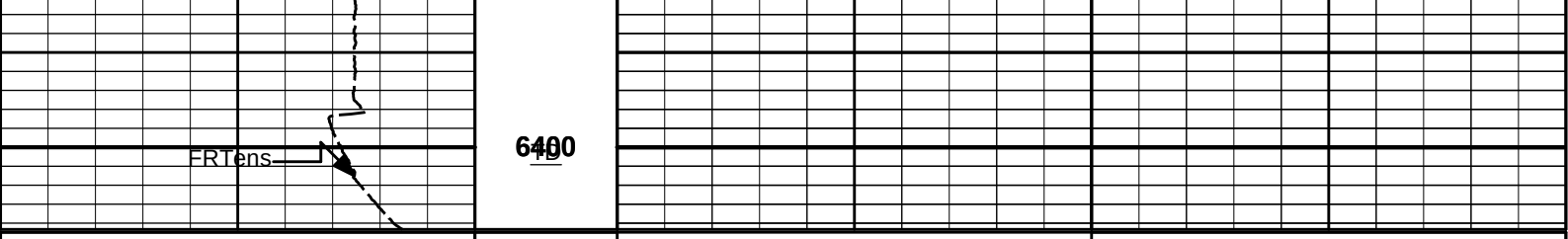
HALLIBURTON

Plot Time: 01-May-19 05:32:19
Plot Range: 5990 ft to 6408.67 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-002\
Plot File: \\BSAT\BSAT_5inch

REPEAT SECTION




6200
6300
FRGamma API
FRCaliper
FRAdou Porosity
FRDelta-T



HALLIBURTON

Plot Time: 01-May-19 05:32:21
Plot Range: 5990 ft to 6408.67 ft
Data: MERIT_EAST-FORK\Well Based\DAQ-0001-002\
Plot File: \\BSAT\BSAT_5inch

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	**Depth Panel - 00000032**	**Reference Calibration Date:**	**16-Mar-16 11:27:47**
Engineer:	**WOLTEMATH**	**Calibration Date:**	**23-Apr-19 21:27:33**
Software Version:	**WL INSITE R6.0.8 (Build 3)**	**Calibration Version:**	**1**

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10072.80	-778.11	0.00	lbs
High	17464.09	7985.85	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	**RWCH - 12345678**	**Reference Calibration Date:**	**15-Apr-19 18:22:25**
Engineer:	**WHITLOCK**	**Calibration Date:**	**18-Apr-19 03:48:27**
Software Version:	**WL INSITE R6.0.8 (Build 3)**	**Calibration Version:**	**1**

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-299.38	84.78	0.00	lbs
High	13416.42	4123.59	1450.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11013113**	**Reference Calibration Date:**	**25-Feb-19 14:17:44**
Engineer:	**WHITLOCK**	**Calibration Date:**	**17-Apr-19 14:54:48**
Software Version:	**WL INSITE R6.0.8 (Build 3)**	**Calibration Version:**	**1**

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Measurement	Measured	Calibrated	Units
Background	25.4	25.1	api
Background + Calibrator	254.2	251.0	api
Calibrator	228.8	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11013113 **Reference Calibration Date:** 17-Apr-19 14:54:48

Engineer: WHITLOCK **Calibration Date:** 26-Apr-19 10:24:46

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Calibrator Source S/N: TB-79

Calibrator API Reference:222.00 api

Equivalent Calibrator API Reference:225.9 api

Field Verification	Shop	Field	Units
Background	25.1	25.2	api
Background + Calibrator	251.0	249.4	api
Calibrator	225.9	224.2	api

Shop	Field	Difference	Tolerance
225.9	224.2	1.7	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11055304 **Reference Calibration Date:** 19-Apr-19 12:59:35

Engineer: WHITLOCK **Calibration Date:** 19-Apr-19 13:31:18

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Logging Source S/N: DSN-436

Tank Serial Number: EL RENO

Reference value assigned to Tank: 56.100

Snow Block S/N: 12156883

Calibration Tank Water Temperature: 71 degF

Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS

Measurement	Prev. Value	New Value	Control Limit On New Value
Gain:	1.04550	1.04715	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):	0.2353	0.2358	0.0005	+/- 0.0020
Calibrated Ratio:	10.5429	10.5596	0.017	+/- 0.050

VERIFIER

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0694	0.02000 - 0.09000

PASS/FAIL SUMMARY

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

DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name: DSNT - 11055304 **Reference Calibration Date:** 19-Apr-19 13:31:18

Engineer: WHITLOCK **Calibration Date:** 26-Apr-19 10:34:06

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Logging Source S/N: DSN-436

Snow Block S/N: 12156883

NEUTRON FIELD-CHECK SUMMARY

	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0694	0.0707	0.0012	+/- 0.0150

PASS/FAIL SUMMARY

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

DENSITY CALIPER SHOP CALIBRATION

Tool Name: SDLT - 10960494 **Reference Calibration Date:** 01-Jan-70 00:00:00

Engineer: WHITLOCK **Calibration Date:** 19-Apr-19 15:10:24

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Host Tool Name: DSNT - 11055304

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4116.41	-4116.41	-7000.00 - -1000.00
Pad Gain	0.0003782	0.0003782	0.0002000 - 0.0006000
Arm Offset	-2612.76	-2612.76	-5000.00 - 3000.00
Arm Gain	0.0005131	0.0005131	0.000300 - 0.000700
Arm Power	-0.000004627	-0.000004627	-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:** 19-Apr-19 15:10:24

Engineer: WHITLOCK **Calibration Date:** 19-Apr-19 15:12:12

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.75	0.00	+/- 0.10
Ring Diameter	8.25	8.25	-0.00	+/- 0.15

PASS/FAIL SUMMARY

Pad Extension Check:	Passed
Diameter Check:	Passed

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11830728**	**Reference Calibration Date:**	**31-Oct-18 14:22:50**
Engineer:	**WHITLOCK**	**Calibration Date:**	**27-Mar-19 11:06:32**
Software Version:	**WL INSITE R6.0.2 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 11830684**		

TYPICAL GAIN RANGE

Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0408	1.05	0.95	1.0181	1.05	0.95	1.0095	1.05
A2 (50")	0.95	1.0367	1.05	0.95	1.0155	1.05	0.95	1.0105	1.05
A3 (29")	0.95	1.0317	1.05	0.95	1.0098	1.05	0.95	1.0024	1.05
A4 (17")	0.95	1.0385	1.05	0.95	1.0148	1.05	0.95	1.0094	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0181	1.05	0.95	1.0119	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.0267	1.05	0.95	1.0201	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	-0.236	-5.186	-5.852
A2 (50")	0.946	-3.552	-5.481
A3 (29")	-12.619	-4.085	-3.872
A4 (17")	-94.869	-29.774	-24.286
A5 (10")	N/A	-74.930	-36.896
A6 (6")	N/A	293.687	156.113

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.84	1.3
36K	1.0	1.81	2.0
72K	1.0	1.08	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	0.99	1.05

PASS/FAIL SUMMARY

GAIN RANGE CHK	PASS
SONDE OFFSET CHK	PASS

TOOL OK TO LOG

QUALITY CHECK SHOP CALIBRATION

Tool Name:	**ACRt Sonde - 11830728**	**Reference Calibration Date:**	**27-Mar-19 11:08:08**
Engineer:	**WHITLOCK**	**Calibration Date:**	**27-Mar-19 11:09:33**
Software Version:	**WL INSITE R6.0.2 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**ACRt Instrument - 11830684**		

STANDARD DEVIATIONS

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A2 (50")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A3 (29")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A4 (17")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass
A5 (10")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

A6 (6")	0.000	< 0.750	Pass	0.000	< 0.750	Pass	0.000	< 0.750	Pass

AVERAGES

	R12KHz			R36KHz			R72KHz		
	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail	Measured (mmho/m)	Expected (mmho/m)	Pass/Fail
A1 (80")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.005	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.003	> -0.500	Pass
A4 (17")	-0.002	> -0.500	Pass	-0.007	> -0.500	Pass	-0.024	> -0.500	Pass
A5 (10")	-0.010	> -0.500	Pass	-0.017	> -0.500	Pass	-0.036	> -0.500	Pass
A6 (6")	0.014	< 0.500	Pass	0.063	< 0.500	Pass	0.138	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-214207680.000	-214179520.000	28160.000	10708976.000	Pass
A2 (50")	-206708368.000	-206673776.000	34592.000	10333688.800	Pass
A3 (29")	-201738432.000	-201708688.000	29744.000	10085434.400	Pass
A4 (17")	-201131136.000	-201103920.000	27216.000	10055196.000	Pass
A5 (10")	-201166688.000	-201139392.000	27296.000	10056969.600	Pass
A6 (6")	-200820928.000	-200790224.000	30704.000	10039511.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	49716636.000	49685420.000	31216.000	2484271.000	Pass
A2 (50")	35654644.000	35621340.000	33304.000	1781067.000	Pass
A3 (29")	29652460.000	29621220.000	31240.000	1481061.000	Pass
A4 (17")	29377682.000	29345894.000	31788.000	1467294.700	Pass
A5 (10")	28976940.000	28946928.000	30012.000	1447346.400	Pass
A6 (6")	27667190.000	27635410.000	31780.000	1381770.500	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-93174168.000	-93165432.000	8736.000	4658271.600	Pass
A2 (50")	-90798624.000	-90786864.000	11760.000	4539343.200	Pass
A3 (29")	-88522848.000	-88513168.000	9680.000	4425658.400	Pass
A4 (17")	-88712168.000	-88700376.000	11792.000	4435018.800	Pass
A5 (10")	-87283416.000	-87271512.000	11904.000	4363575.600	Pass
A6 (6")	-88347128.000	-88335576.000	11552.000	4416778.800	Pass

PASS/FAIL SUMMARY

Std Deviation Verification	Pass
Average Verification	Pass
Gain Tolerance Verification	Pass

MICRO LOG SHOP CALIBRATION

Tool Name:	**Microlog Pad - 10960494**	**Reference Calibration Date:**	**09-Jan-16 16:38:49**
Engineer:	**WHITLOCK**	**Calibration Date:**	**19-Apr-19 15:03:30**
Software Version:	**WL INSITE R6.0.8 (Build 3)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11055304**		

CALIBRATION COEFFICIENT SUMMARY

Measurement	Micro Log Normal	Micro Log Lateral

	Measured	Calibrated	Measured	Calibrated	Units
Tool Zero	0.00	-0.11	0.00	-0.01	ohmm
Calibration Point #1	0.11	0.00	0.01	0.00	ohmm
Calibration Point #2	20.61	20.00	23.36	20.00	ohmm
Internal Reference	20.50	19.89	23.34	19.98	ohmm

Measurement	Micro Log Normal Tool Value	Micro Log Lateral Tool Value	Units
Tool Zero	-1.03	1.14	V
Calibration Point #1	27.13	4.08	V
Calibration Point #2	5346.13	6899.88	V
Internal Reference	5316.31	6893.17	V

MICRO LOG FIELD CHECK

Tool Name: Microlog Pad - 10960494 **Reference Calibration Date:** 19-Apr-19 15:03:30

Engineer: WHITLOCK **Calibration Date:** 29-Apr-19 09:51:09

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.11	-0.10	-0.01	-0.01	ohmm
Internal Reference	19.89	19.91	19.98	20.00	ohmm

Summary

Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.89	19.91	-0.02	+/- 0.80
Microlog Lateral	19.98	20.00	-0.02	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 11213308 **Reference Calibration Date:** 14-Dec-18 11:15:00

Engineer: WHITLOCK **Calibration Date:** 20-Feb-19 12:17:03

Software Version: WL INSITE R5.8.9 (Build 6) **Calibration Version:** 1

Logging Source S/N: 5475GW

Aluminum Block S/N: El Reno Aluminum Block Density: 2.581g/cc Pe: 3.170

Magnesium Block S/N: El Reno Magnesium Block Density: 1.687g/cc Pe: 2.594

DENSITY CALIBRATION SUMMARY

Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	0.9935	0.9902	0.90 - 1.10
Near Dens Gain	0.9891	0.9881	0.90 - 1.10
Near Peak Gain	1.0020	1.0148	0.90 - 1.10
Near Lith Gain	1.0071	1.0175	0.90 - 1.10
Far Bar Gain	1.0015	1.0048	0.90 - 1.10
Far Dens Gain	0.9919	0.9938	0.90 - 1.10
Far Peak Gain	0.9878	0.9921	0.90 - 1.10
Far Lith Gain	0.9743	0.9808	0.90 - 1.10
Near Bar Offset	0.1918	0.2246	NONE
Near Dens Offset	0.2308	0.2401	NONE
Near Peak Offset	0.0959	-0.0122	NONE
Near Lith Offset	0.0296	-0.0574	NONE
Far Bar Offset	0.0411	0.0135	NONE
Far Dens Offset	0.1442	0.1314	NONE
Far Peak Offset	0.1660	0.1305	NONE
Far Lith Offset	0.2364	0.1860	NONE
Near Bar Background	937.48	939.15	700 - 1450
Near Dens Background	311.57	312.43	230 - 480

Near Peak Background	135.23	136.70	100 - 210
Near Lith Background	166.58	166.31	125 - 260
Far Bar Background	479.15	478.16	450 - 900
Far Dens Background	191.75	190.12	175 - 345
Far Peak Background	77.50	76.92	70 - 140
Far Lith Background	79.00	78.81	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.689	1.687	-0.002	+/- 0.015
Pe	2.556	2.551	-0.005	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.581	0.001	+/- 0.01500
Pe	3.107	3.123	0.016	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	-0.0000	+/- 0.0110	-0.0004	+/- 0.0140
Magnesium Block	-0.0005	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	-0.0013	+/- 0.0110	0.0004	+/- 0.0140
Resolution	9.27	6.00 - 11.50	9.45	6.00 - 11.50
Internal Verifier(B+D+P+L)	1555	1200 - 2700	824	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 - 11213308 **Reference Calibration Date:** 20-Feb-19 12:17:03

Engineer: WHITLOCK **Calibration Date:** 29-Apr-19 09:53:55

Software Version: WL INSITE R6.0.8 (Build 3) **Calibration Version:** 1

Pad Temperature: 78.8 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1554.595	1544.138	-10.457	15.869
Far (B+D+P+L) cps	824.007	811.331	-12.676	15.826
Near Resolution	9.27	9.15	-0.120	0.50
Far Resolution	9.45	9.35	-0.100	1.00

PASS/FAIL SUMMARY

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

CALIBRATION SUMMARY

CALIBRATION SUMMARY

Sensor	Shop	Field	Post	Difference	Tolerance	Units
Depth Panel-00000032						
Tension Zero	0.00	----------	----------	0.00	----------	lbs
Tension Cal	7830.00	----------	----------	0.00	----------	lbs
RWCH-12345678						
DH Tension Zero	0.00	----------	----------	0.00	----------	lbs
DH Tension Cal	1450.00	----------	----------	0.00	----------	lbs
GTET-11013113						
Gamma Ray Calibrator	225.9	224.2	----------	1.7	+/- 9.00	api
DSNT-11055304						
Snow-Block Porosity	0.0694	0.0707	----------	-0.0013	+/- 0.0150	decp
SDLT-10960494						
Pad Extension	3.75	3.75	----------	0.00	+/-0.10	in
Ring Diameter	8.25	8.25	----------	0.00	+/-0.15	in
ACRt Sonde-11830728						
Mud Cell	0.99	----------	----------	0	----------	ohm-m
Microlog Pad-10960494						
MicroLog Normal	19.89	19.91	----------	-0.02	+/-0.80	ohmm
MicroLog Lateral	19.98	20.00	----------	-0.02	+/-0.80	ohmm
SDLT Pad-11213308						
Near(B+D+P+L)	1554.595	1544.138	----------	10.457	+/-15.869	cps
Far(B+D+P+L)	824.007	811.331	----------	12.676	+/-15.826	cps

Data: MERIT_EAST-FORK\0001 GTET-DSN-SDL-BSAT-ACRT\IDLE **Date: 01-May-19 01:11:43**

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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	9.200	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	1.500	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	CSTR	Compressive Strength	1000.00	psia
	SHARED	ST	Surface Temperature	75.0	degF
	SHARED	TD	Total Well Depth	6400.00	ft
	SHARED	BHT	Bottom Hole Temperature	144.0	degF
	SHARED	SVTM	Navigation and Survey Master Tool	NONE	
	SHARED	AZTM	High Res Z Accelerometer Master Tool	GTET	
	SHARED	TEMM	CBM Temperature Master Tool	GTET	
	SHARED	SOCI	Source of Casing Information	Parameters	
	SHARED	MSAL	Water-base mud filtrate salinity	0.00	ppm
	Rwa / CrossPlot	XPOK	Process Crossplot?	Yes	
	Rwa / CrossPlot	FCHO	Select Source of F	Automatic	
	Rwa /	AFAC	Archie A factor	0.6200	

CrossPlot				
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	
Rwa / CrossPlot	ROIN	Input for RO Calculation	Rwa	
GTET	GROK	Process Gamma Ray?	Yes	
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	DNTT	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	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog 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	
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 Pore Fluid	189.00	uspf
BSAT	DTMT	Delta -T Matrix Type	Limestone 47.6	
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	RMAX	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	
ACRt Sonde	MBFL	Apply Corkscrew Effect?	No	

BOTTOM

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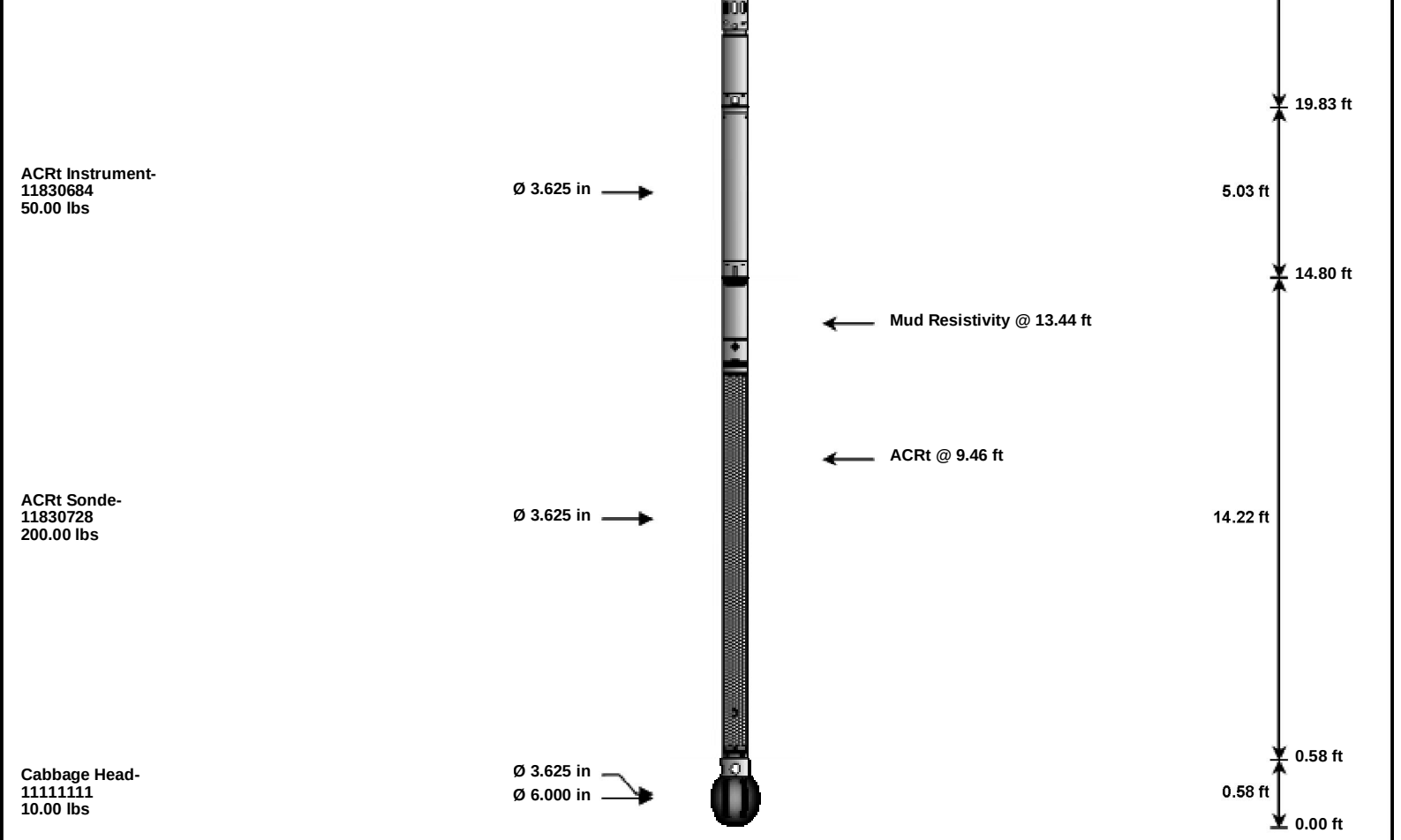
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Sensors @ Delays	Length	Accumulated Length
		Ø 2.310 in	Fishing Neck @ 73.73 ft		74.61 ft
RWCH-12345678 135.00 lbs		Ø 3.625 in	Load Cell @ 70.93 ft BH Temperature @ 70.36 ft	6.25 ft	
	Weak Point Solid-11111111 0.01 lbs	Ø 0.010 in*			68.36 ft
SP Sub-11812437 60.00 lbs		Ø 3.625 in	SP @ 66.59 ft	3.74 ft	
			Z-Accelerometer @ 64.17 ft		64.63 ft
GTET-11013113 165.00 lbs		Ø 3.625 in	GammaRay @ 58.56 ft	8.52 ft	
					56.11 ft
DSNT-11055304 174.00 lbs	DSN Decentralizer-11055304 6.60 lbs	Ø 5.000 in* Ø 3.625 in	DSN Far @ 49.17 ft DSN Near @ 48.42 ft	9.69 ft	
					46.42 ft
SDLT-10960494 360.00 lbs	SDLT Pad-11213308 65.00 lbs Microlog Pad-10960494 8.00 lbs RAM-Cs137-54750000 1.00 lbs	Ø 4.500 in Ø 4.500 in* Ø 4.750 in* Ø 0.800 in*	Microlog @ 38.61 ft SDL Caliper @ 38.42 ft SDL @ 38.41 ft	10.81 ft	
					35.61 ft
BSAT-12173982 300.00 lbs		Ø 3.625 in	Receiver Array @ 27.09 ft Sonic Receivers @ 27.09 ft	15.77 ft	



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)		Accumulated Length (ft)	Max.Log. Speed (fpm)
RWCH	Releasable Wireline Cable Head	12345678	135.00	6.25		68.36	300.00
WPSS	Weak Point Solid	11111111	0.01	0.01	*	68.36	300.00
SP	SP Sub	11812437	60.00	3.74		64.63	300.00
GTET	Gamma Telemetry Tool	11013113	165.00	8.52		56.11	60.00
DSNT	Dual Spaced Neutron	11055304	174.00	9.69		46.42	60.00
DCNT	DSN Decentralizer	11055304	6.60	5.13	*	49.75	300.00
SDLT	Spectral Density Tool	10960494	360.00	10.81		35.61	60.00
SDLP	Density Insite Pad	11213308	65.00	2.55	*	37.82	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	54750000	1.00	0.80	*	38.05	300.00
MICP	Microlog Pad	10960494	8.00	1.00	*	38.11	60.00
BSAT	Borehole Sonic Array Tool	12173982	300.00	15.77		19.83	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11830684	50.00	5.03		14.80	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11830728	200.00	14.22		0.58	120.00
CBHD	Cabbage Head	11111111	10.00	0.58		0.00	300.00
Total			**1,534.61**	**74.61**			

* Not included in Total Length and Length Accumulation.

Data: MERIT_EAST-FORK\0001 GTET-DSN-SDL-BSAT-ACRT\IDLE **Date: 01-May-19 01:14:17**