

HALLIBURTON

BOREHOLE
COMPENSATED
SONIC
LOG

COMPANY				JOLEN OPERATING CO.			
WELL				SELLARD 1-22			
FIELD/BLOCK				WILDCAT			
COUNTY				FORD			
STATE				KANSAS			
Permanent Datum Log measured from Drilling measured from		GL		Elev. 2492.0 ft		Elev.: K.B.	
		KB		10.0 ft above perm. Datum		D.F.	
		KB				G.L.	
						2502.0 ft	
						2500.0 ft	
Date	22-Oct-17						
Run No.	1						
Depth - Driller	5430.0 ft						
Depth - Logger	5425.0 ft						
Bottom - Logged Interval	5415						
Top - Logged Interval	521						
Casing - Driller	8.625 in	@ 521.0 ft				@	
Casing - Logger	521.0 ft						
Bit Size	7.875 in					@	
Type Fluid in Hole		Water Based Mud					
Density	9.0 ppq	65.00 sl/qt					
PH	10.00 pH	6.4 cp/m					
Source of Sample		MUD PIT					
Rm @ Meas. Temperature	0.28 ohmm	@ 82.00 degF				@	
Rmf @ Meas. Temperature	0.21 ohmm	@ 80.00 degF				@	
Rmc @ Meas. Temperature	0.34 ohmm	@ 80.00 degF				@	
Source Rmf	Rmc	MEAS					
Rm @ BHT	0.19 ohmm	@ 121.0 degF				@	
Time Since Circulation	16:00 hr						
Time on Bottom	22-Oct-17 20:44						
Max. Rec. Temperature	121.00 degF	@ 5425.0 ft				@	
Equipment	Location	12156883		EL RENO, OK			
Recorded By	WHITLOCK						
Witnessed By	CHRIS ALTHOFF			KEN LEBLANC			

Fold here

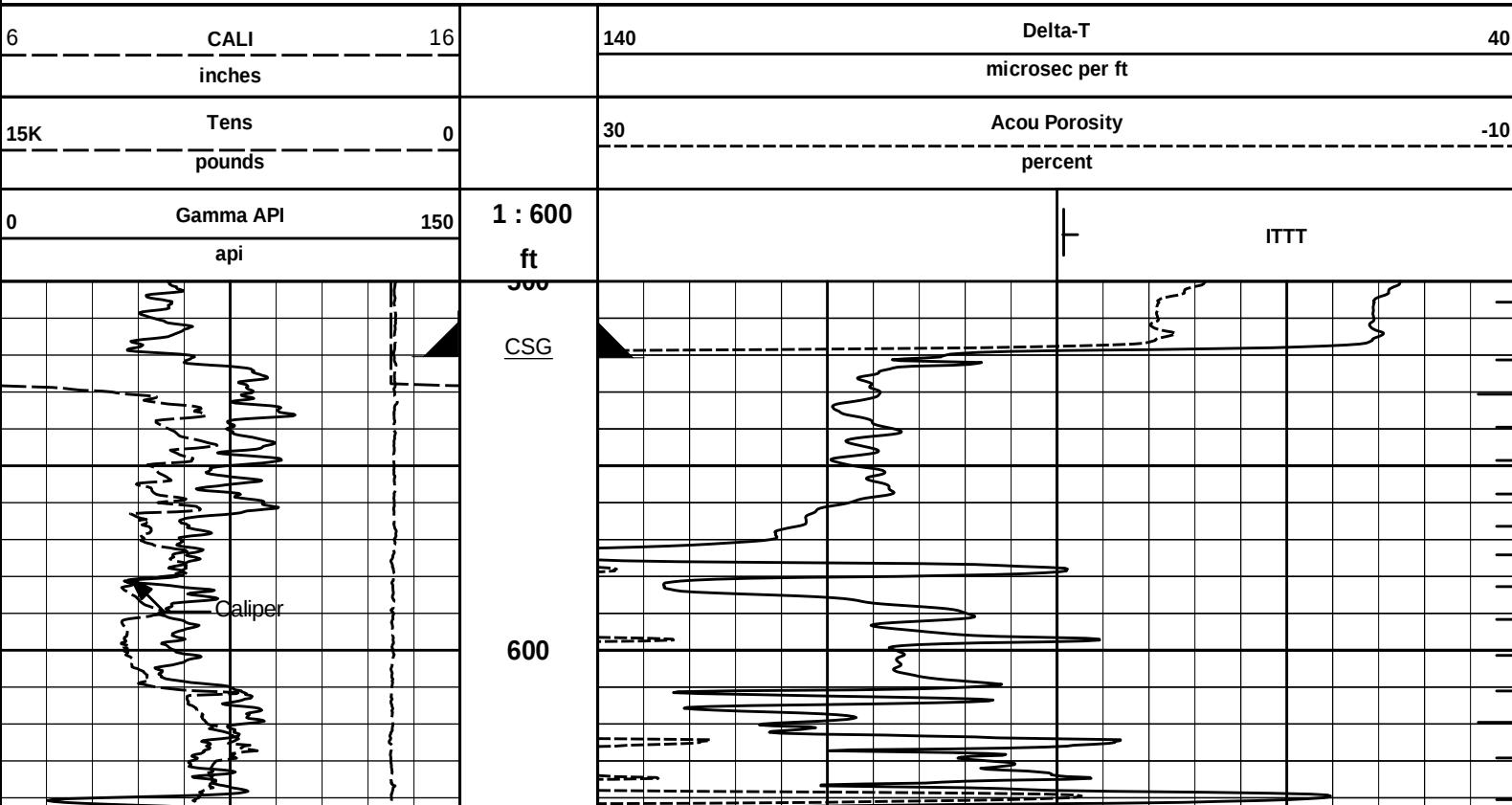
Service Ticket No.: 904384391						API No.: 15-057-20988-00-00						PGM Version: WL INSITE R5.0.5 (Build 8)							
CHANGE IN MUD TYPE OR ADDITIONAL SAMPLE										RESISTIVITY SCALE CHANGES									
Date		Sample No.								Type Log		Depth		Scale Up Hole		Scale Down Hole			
Depth-Driller																			
Type Fluid in Hole																			
Density		Viscosity																	
Ph		Fluid Loss																	
Source of Sample												RESISTIVITY EQUIPMENT DATA							
Rm @ Meas. Temp				@		@				Run No.		Tool Type & No.		Pad Type		Tool Pos.		Other	
Rmf @ Meas. Temp.				@		@													
Rmc @ Meas. Temp.				@		@													
Source Rmf		Rmc																	
Rm @ BHT				@		@													
Rmf @ BHT				@		@													
Rmc @ BHT				@		@													
EQUIPMENT DATA																			
GAMMA				ACOUSTIC				DENSITY				NEUTRON							
Run No.				Run No.				Run No.				Run No.							
Serial No.				Serial No.				Serial No.				Serial No.							
Model No.				Model No.				Model No.				Model No.							
Diameter				No. of Cent.				Diameter				Diameter							
Detector Model No.				Spacing				Log Type				Log Type							
Type								Source Type				Source Type							
Length				LSA [Y/N]				Serial No.				Serial No.							
Distance to Source				FWDA [Y/N]				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					

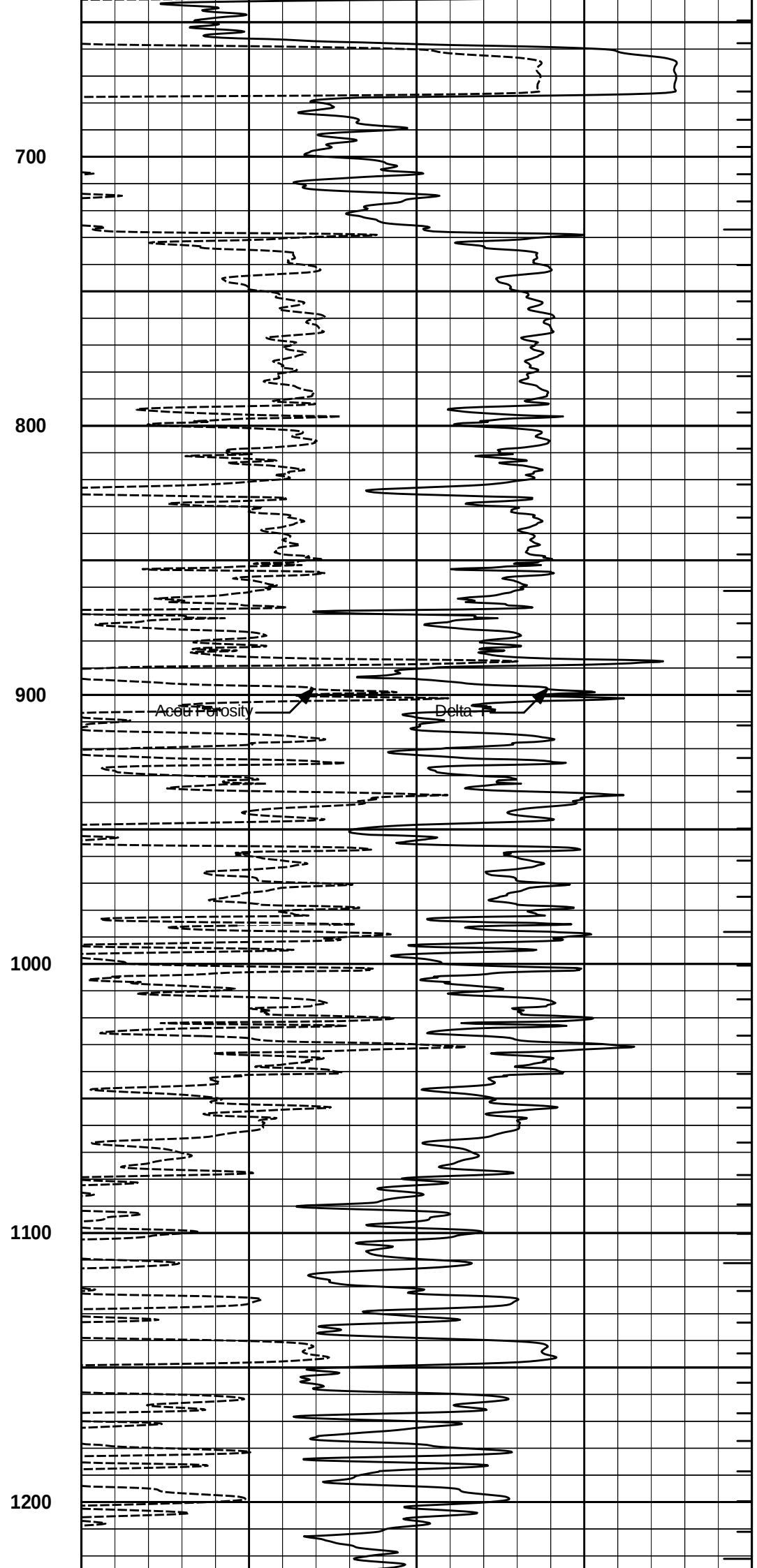
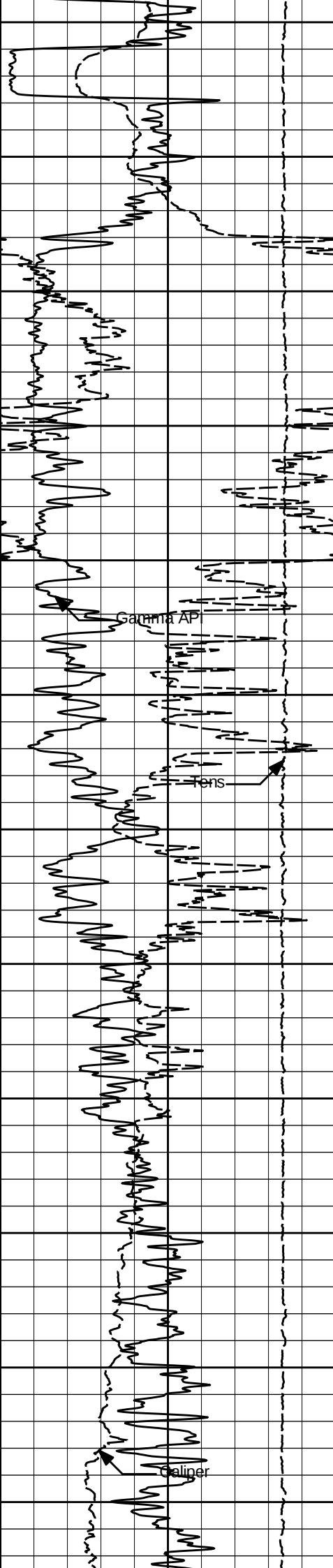
[illegible]**HALLIBURTON**

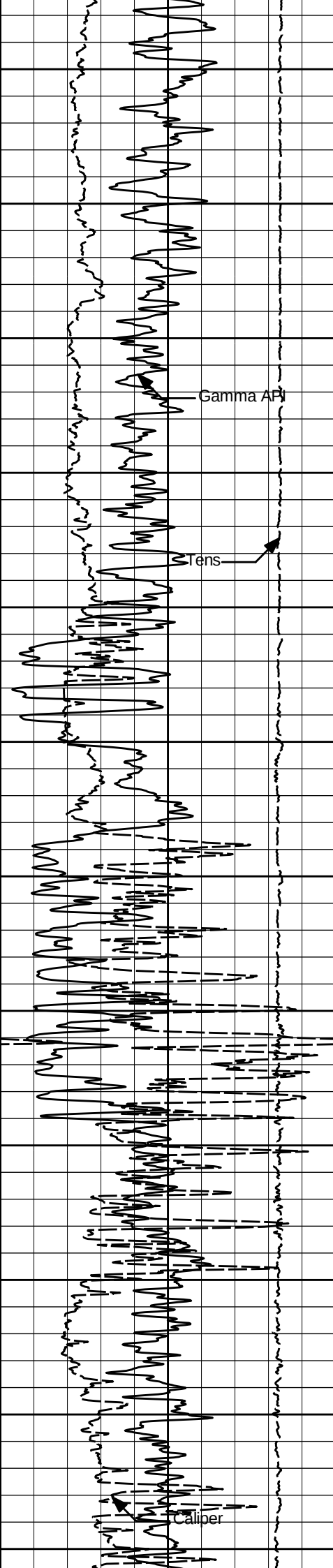
Plot Time: 22-Oct-17 23:39:37
Plot Range: 500 ft to 5428.5 ft
Data: JOLEN_SELLARD\Well Based\DAQ-0001-0031
Plot File: \\BSAT\BSAT_2in.ch

2 INCH MAIN LOG

2" MAIN LOG SECTION







1300

1400

1500

1600

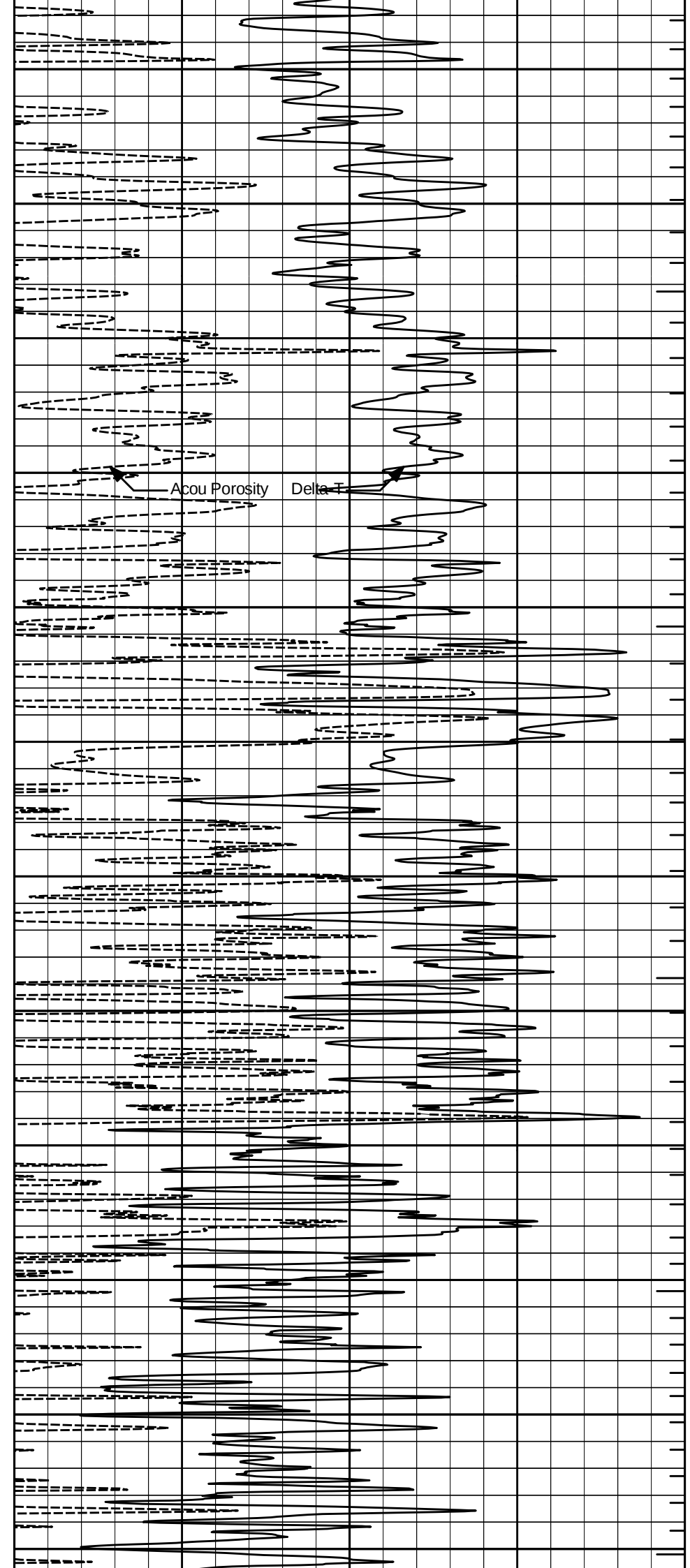
1700

1800

Gamma API

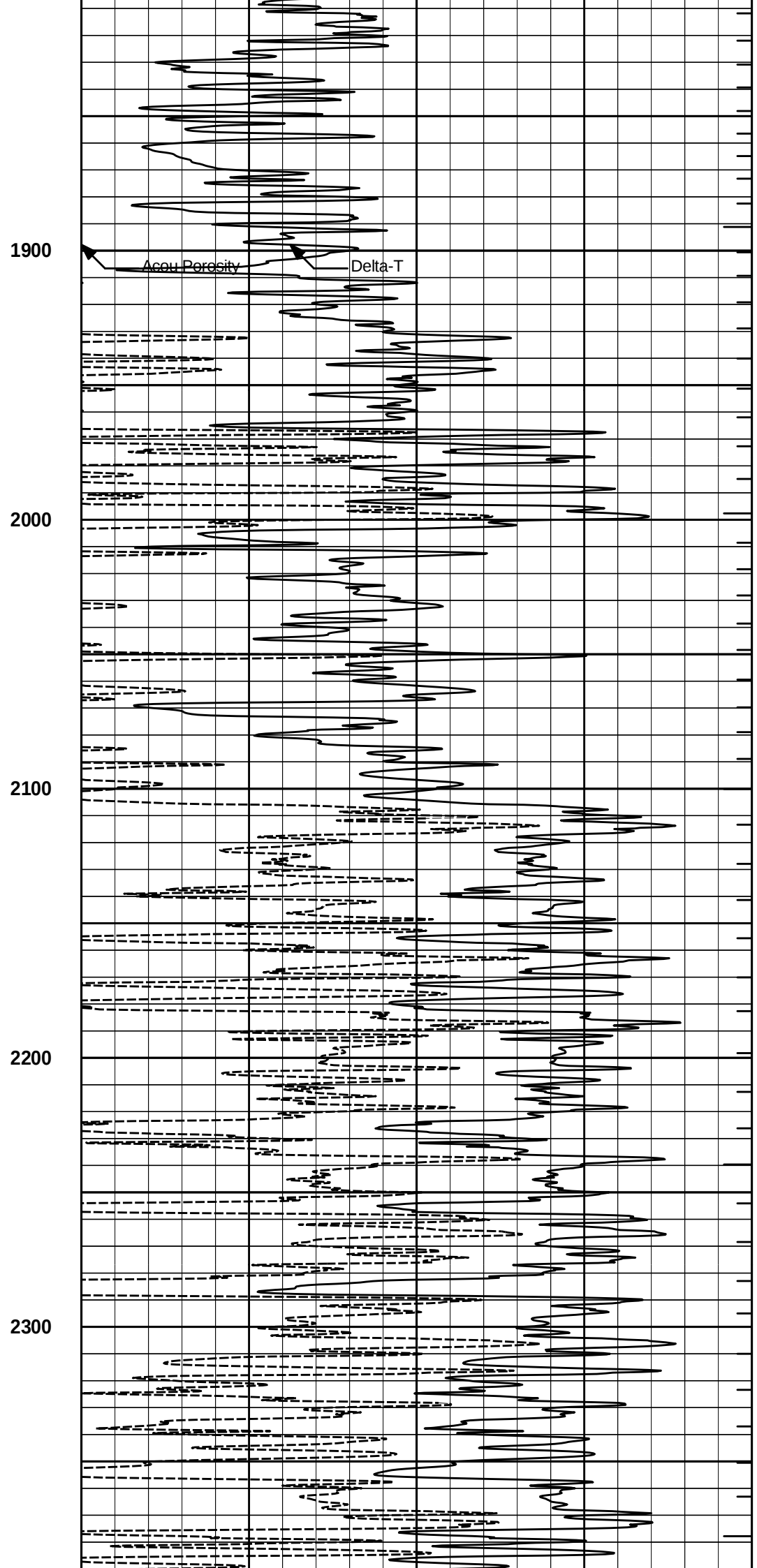
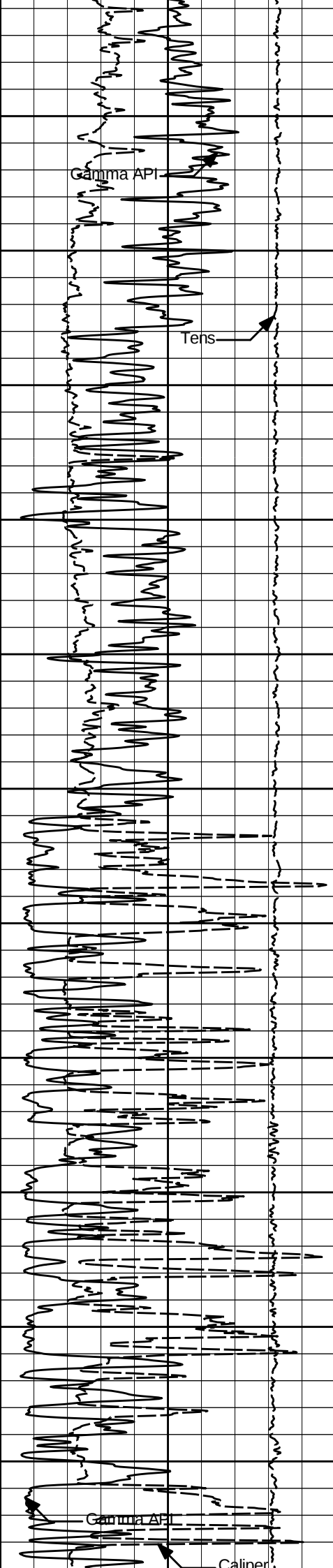
Tens

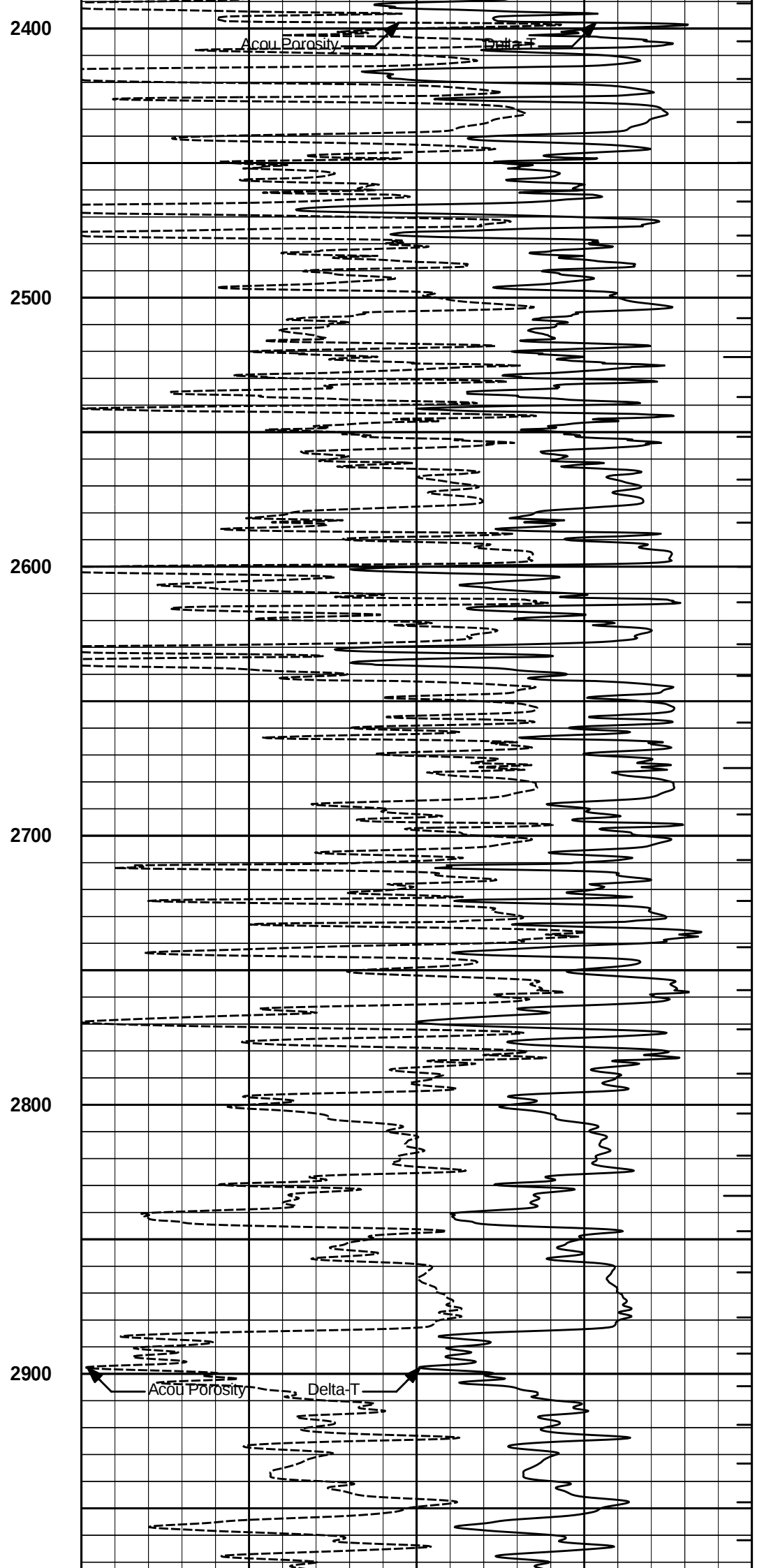
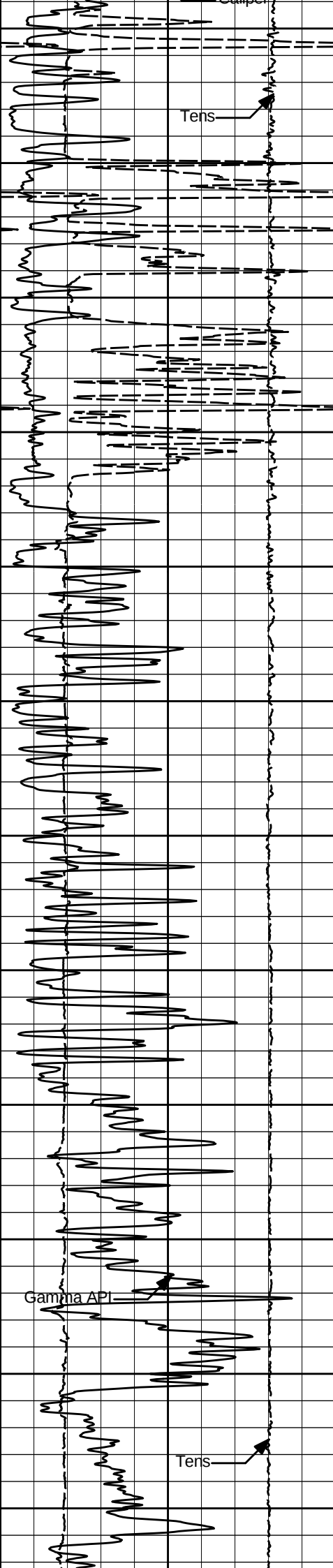
Caliper

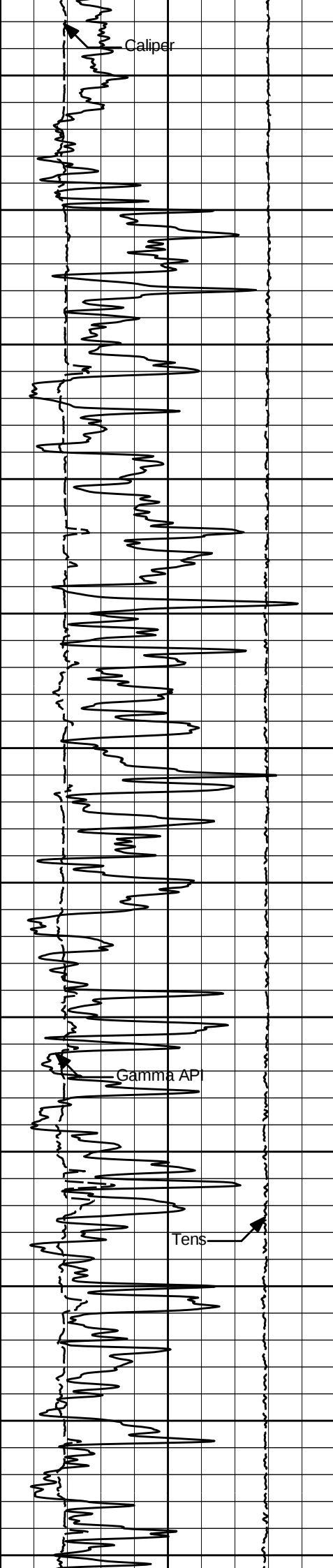


Acou Porosity

Delta T







3000

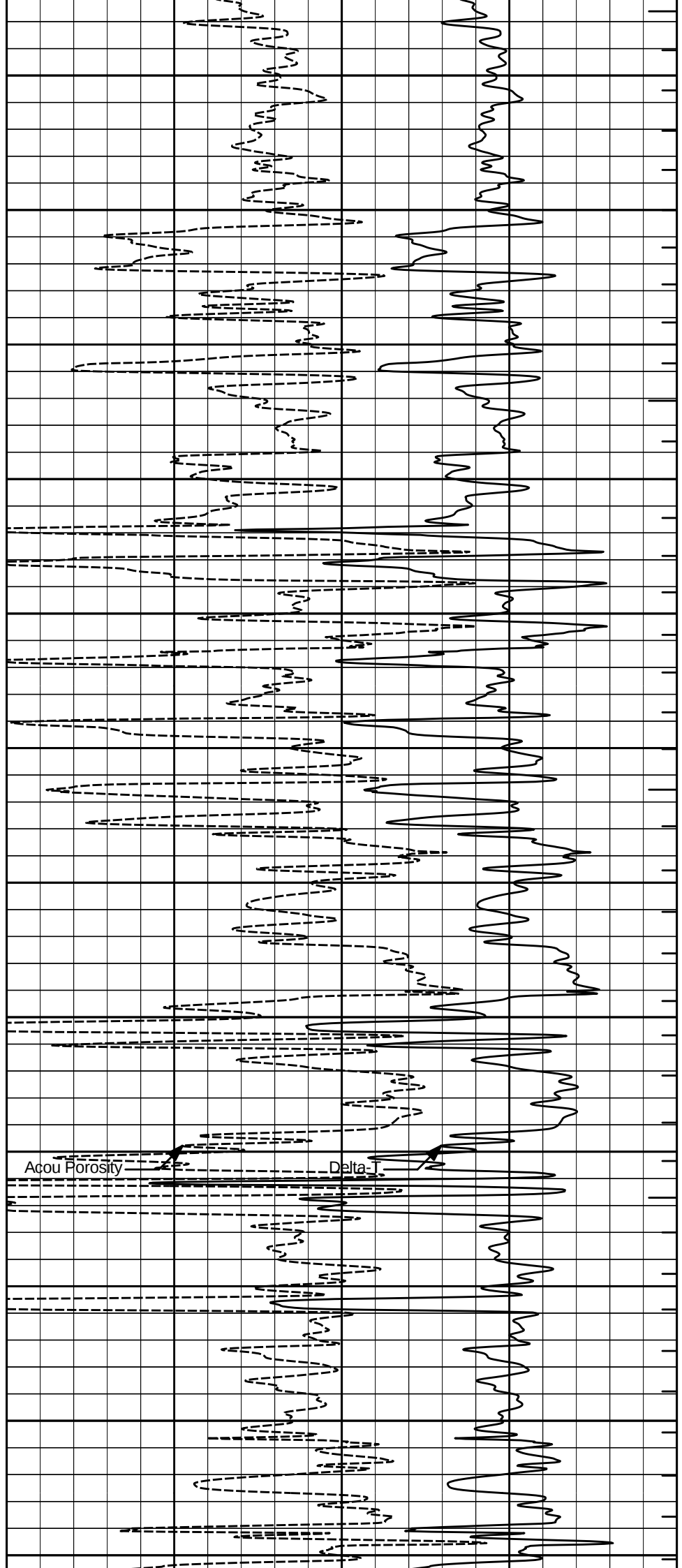
3100

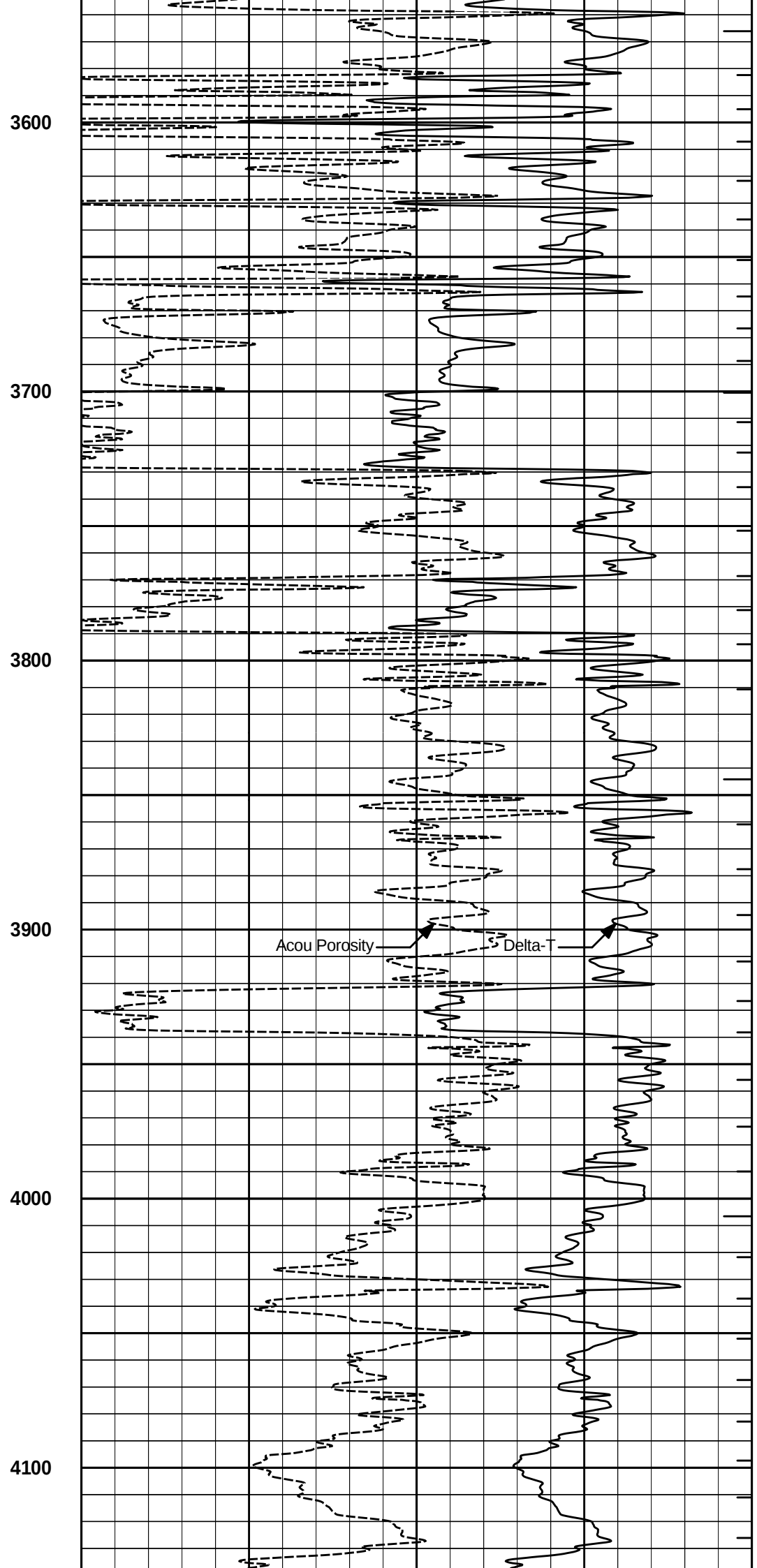
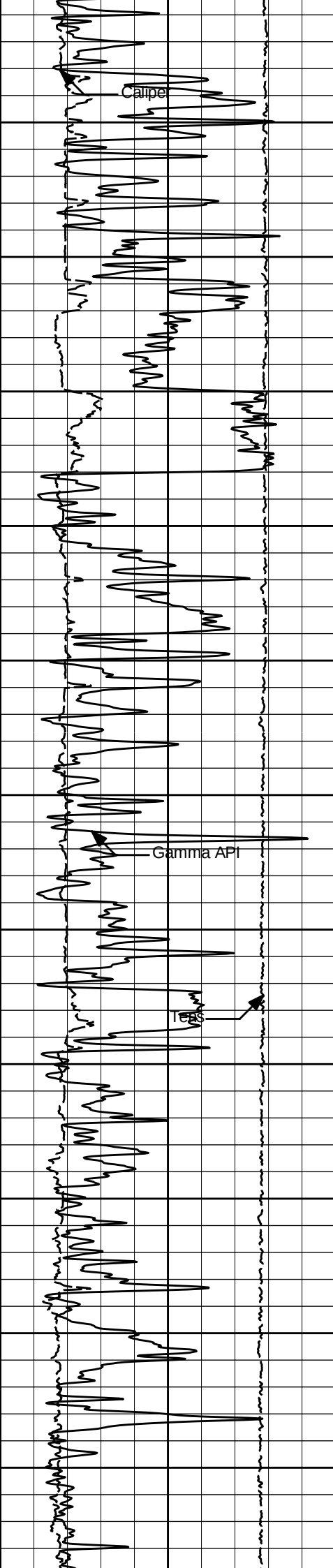
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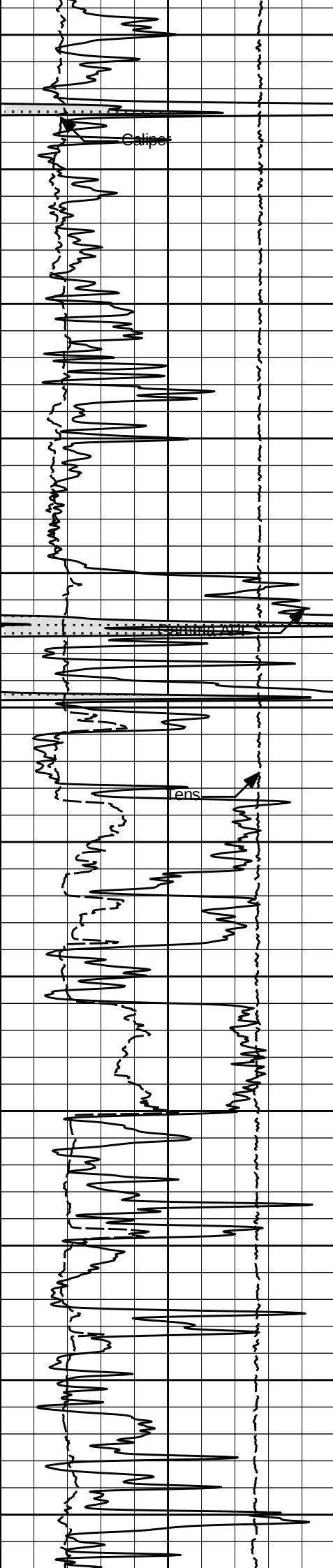
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3400

3500







4200

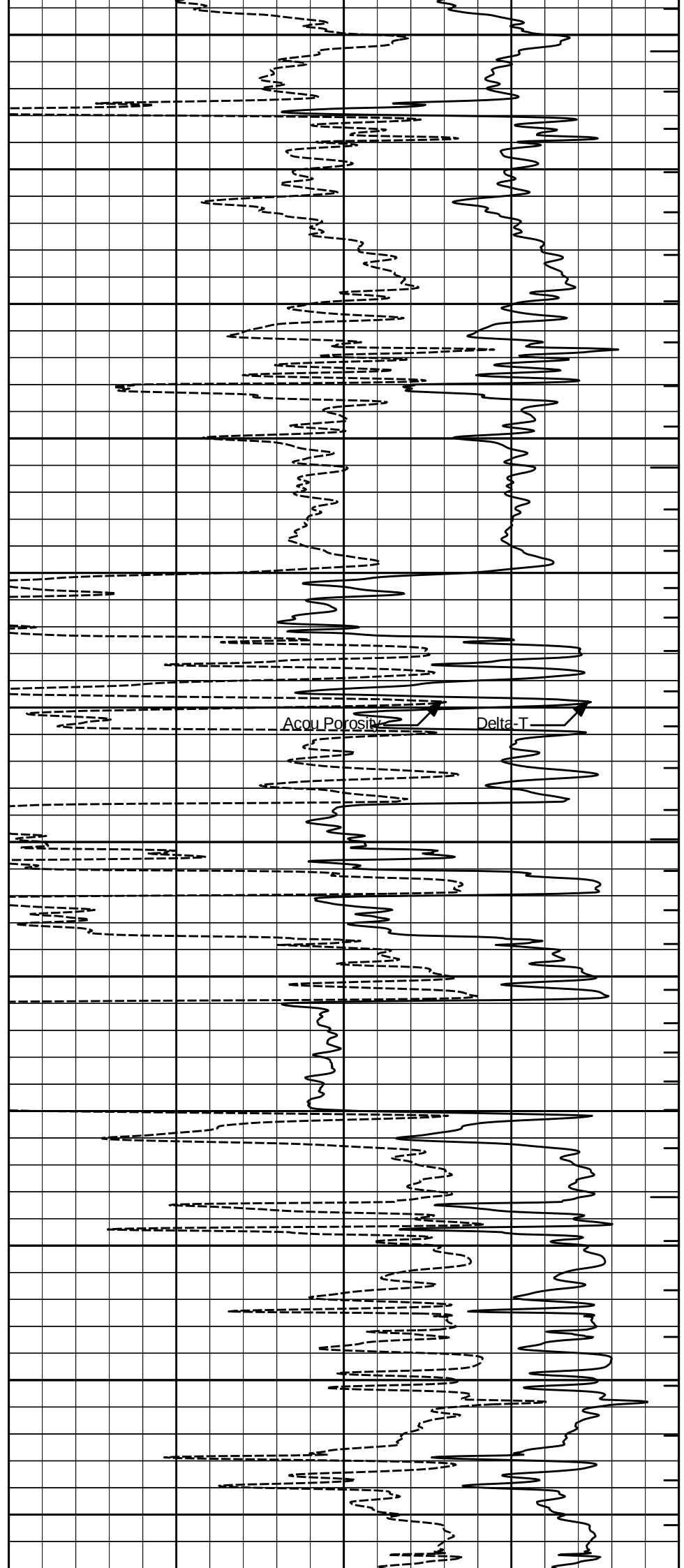
4300

4400

4500

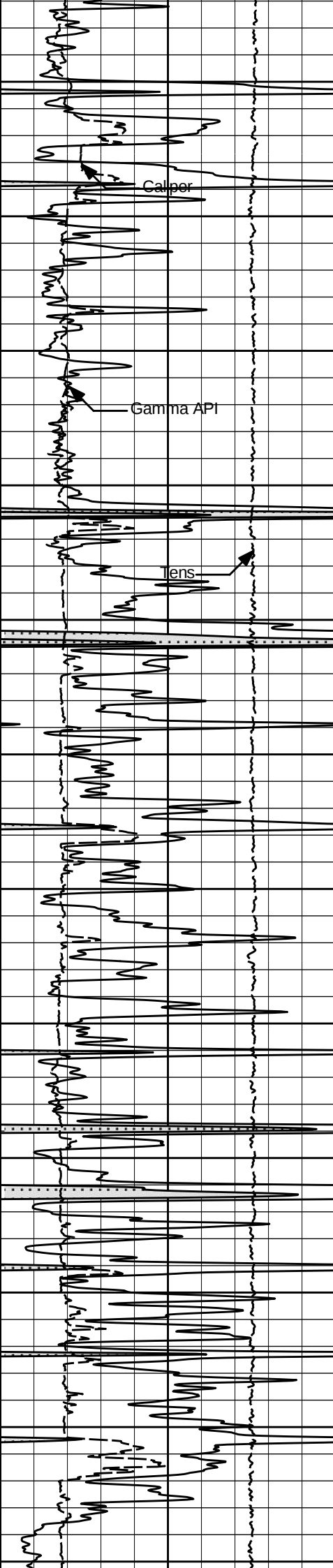
4600

4700



Acou Porosity

Delta-T



4800

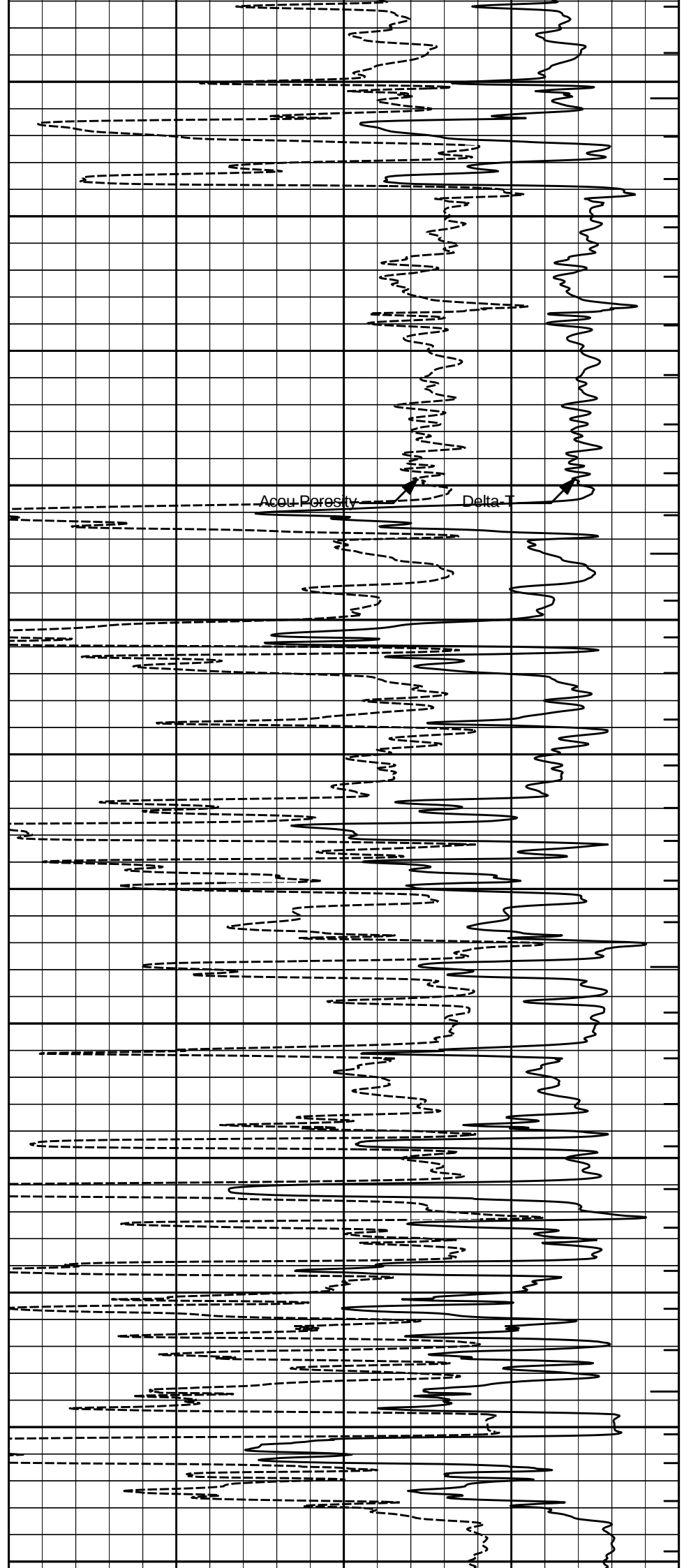
4900

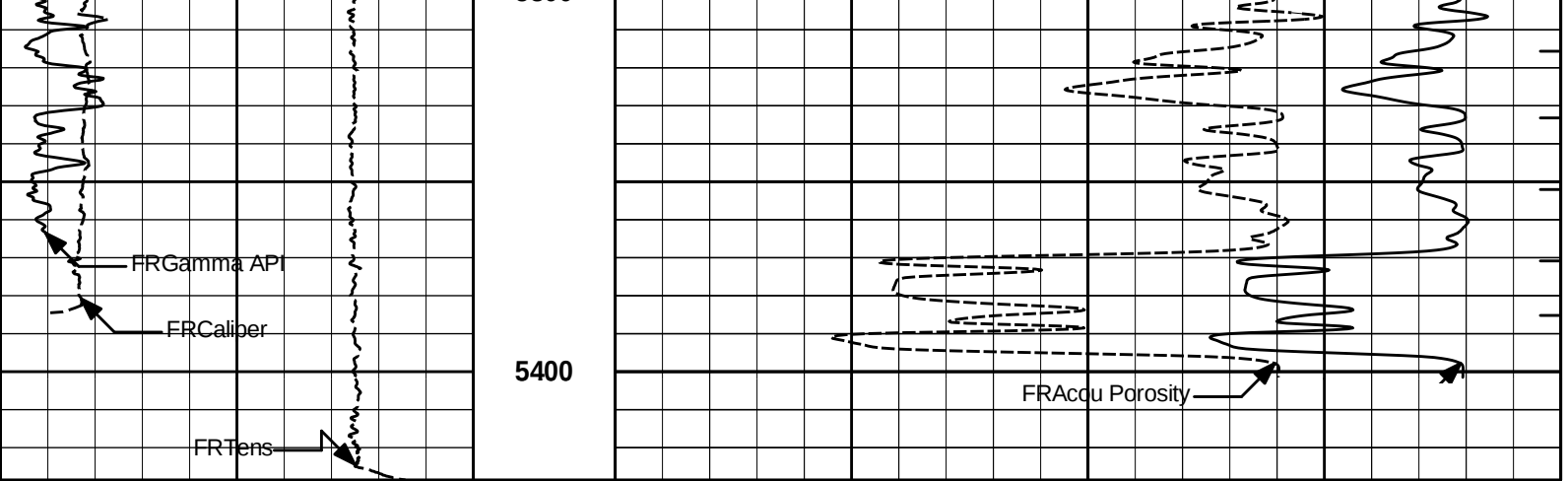
5000

5100

5200

5300





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

HALLIBURTON

Plot Time: 22-Oct-17 23:39:41
Plot Range: 500 ft to 5428.5 ft
Data: JOLEN_SELLARD\Well Based\DAQ-0001-003\
Plot File: \\BSAT\BSAT_2inch

2 INCH MAIN LOG

2" MAIN LOG SECTION

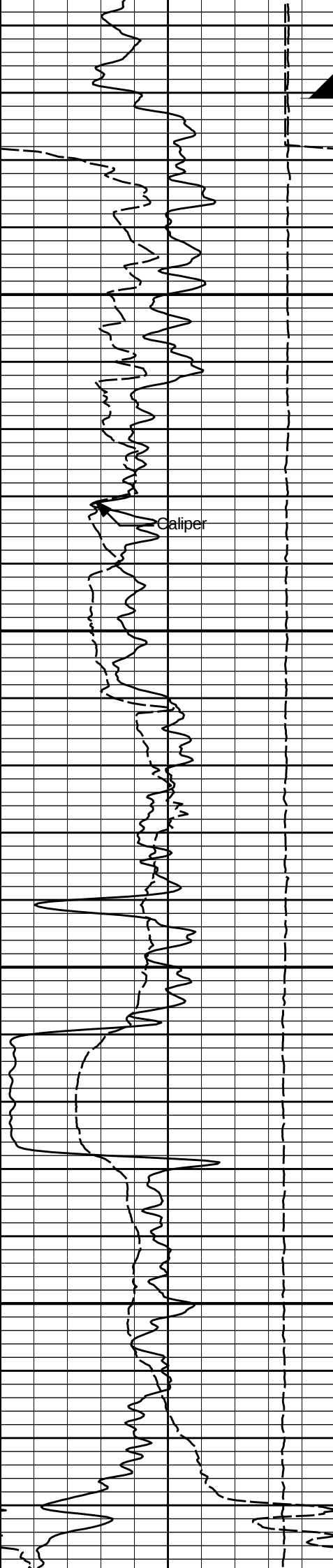
HALLIBURTON

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Plot File: \\BSAT\BSAT_5inch

5 INCH MAIN LOG

MAIN LOG SECTION

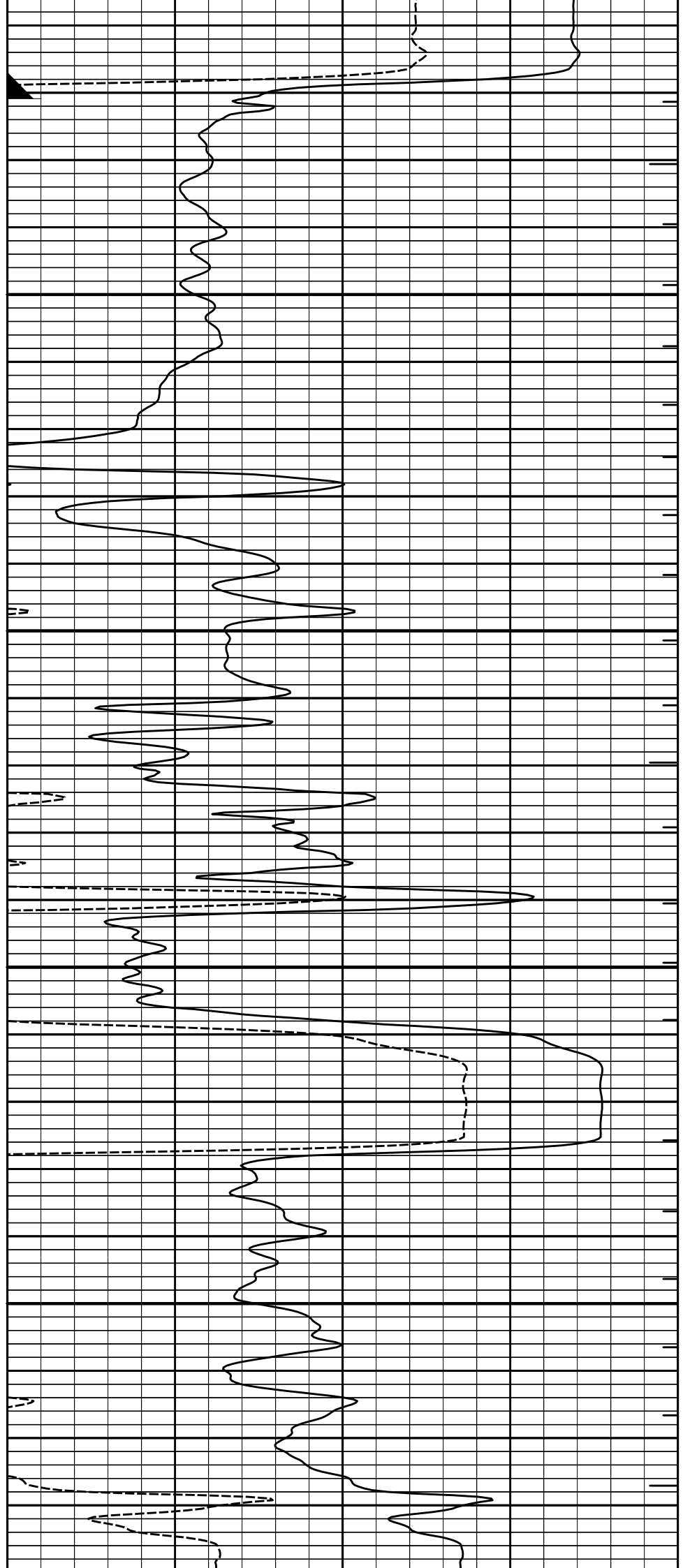
6		CALI	16	1 : 240 ft	30		Acou Porosity	-10
		inches					percent	
15K		Tens	0		140		Delta-T	40
		pounds					microsec per ft	
0		Gamma API	150				ITTT	
		api						

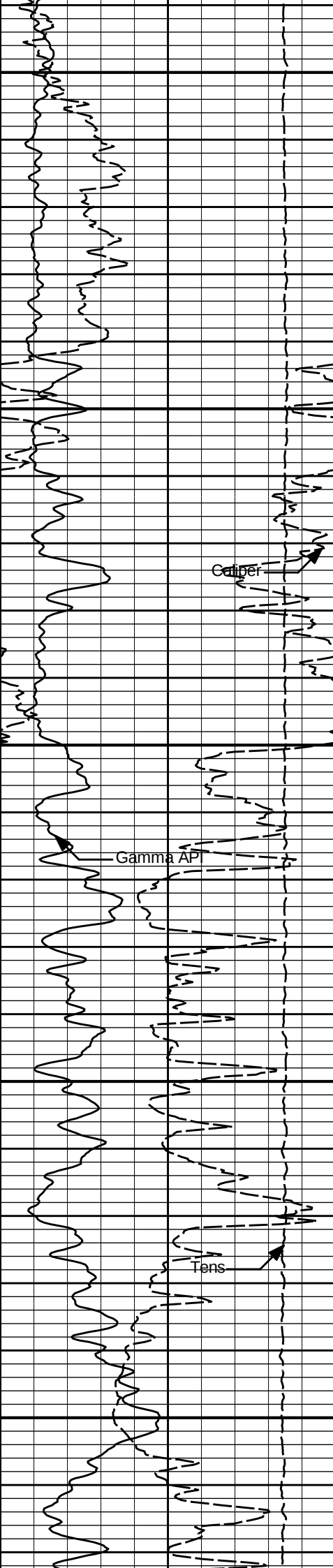


CSG

600

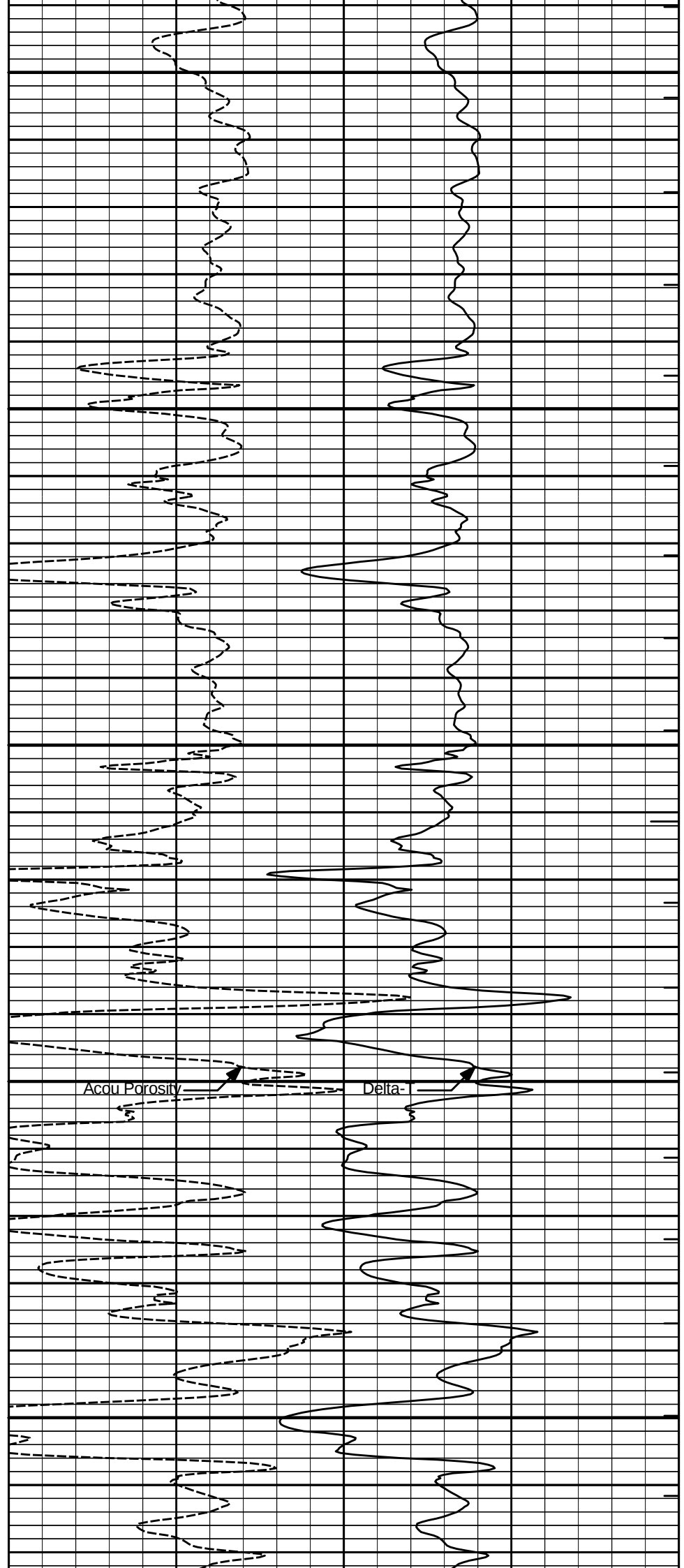
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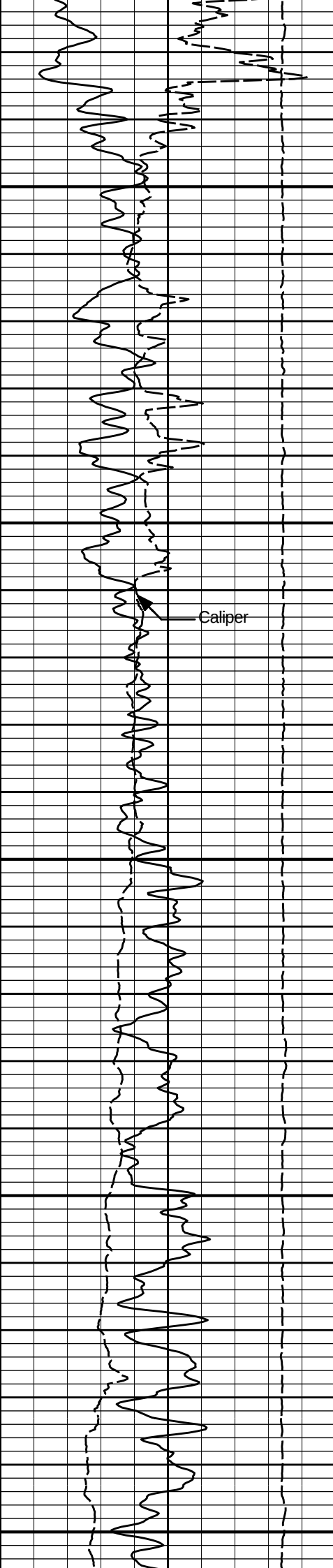




800

900

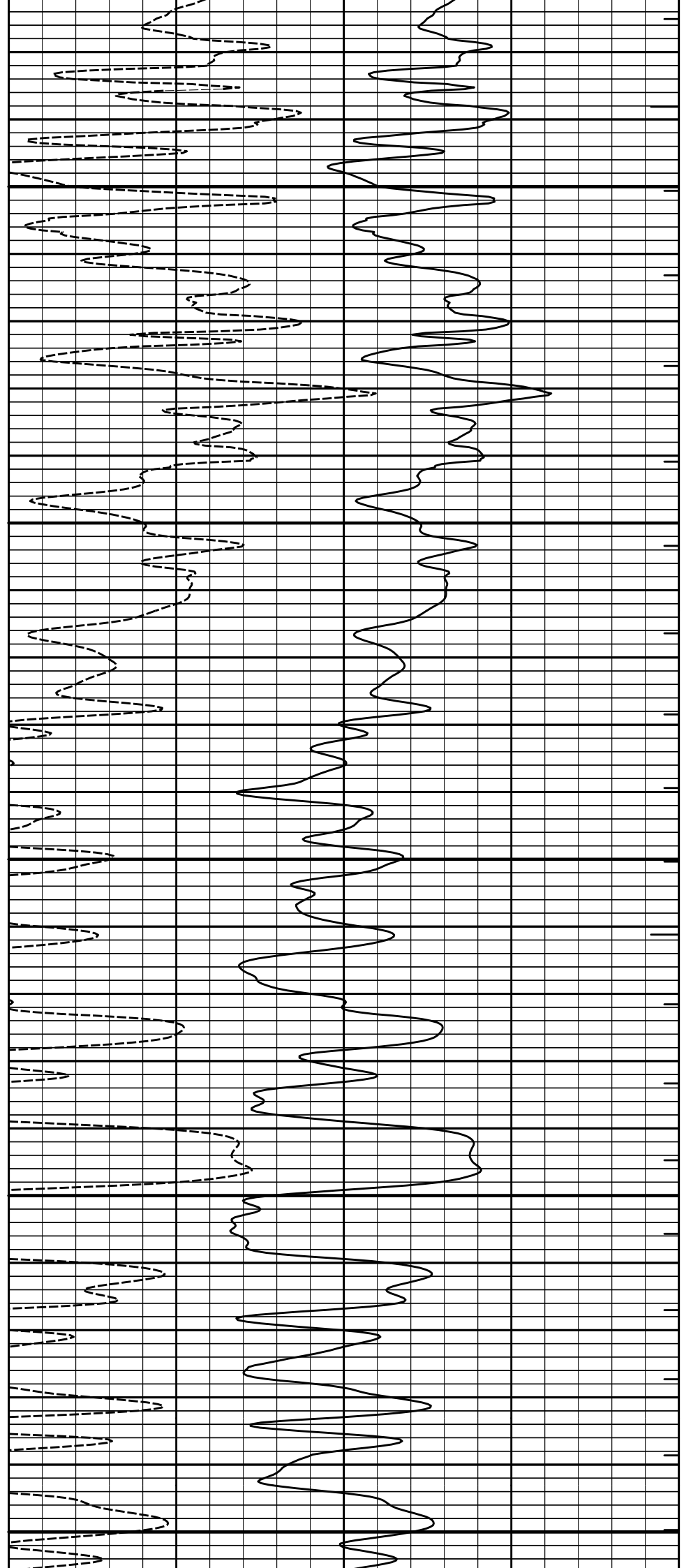


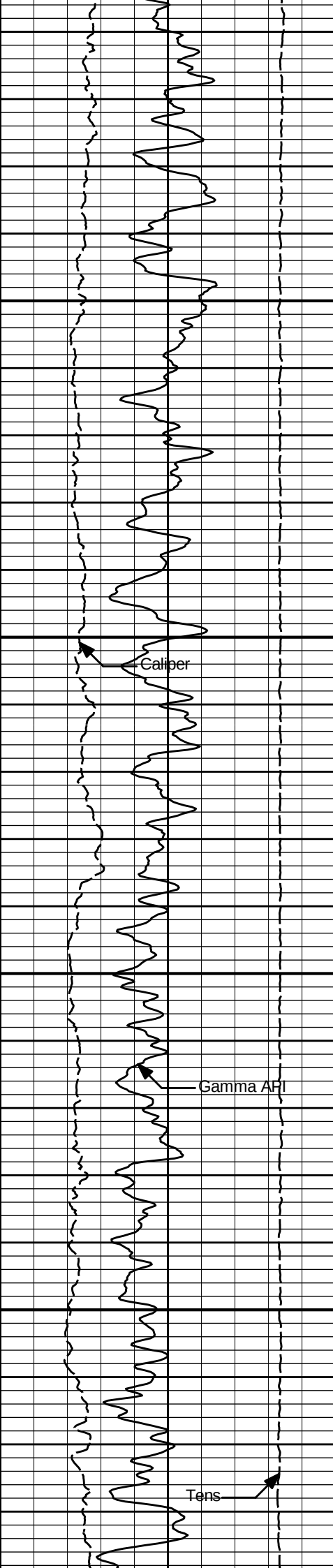


1000

1100

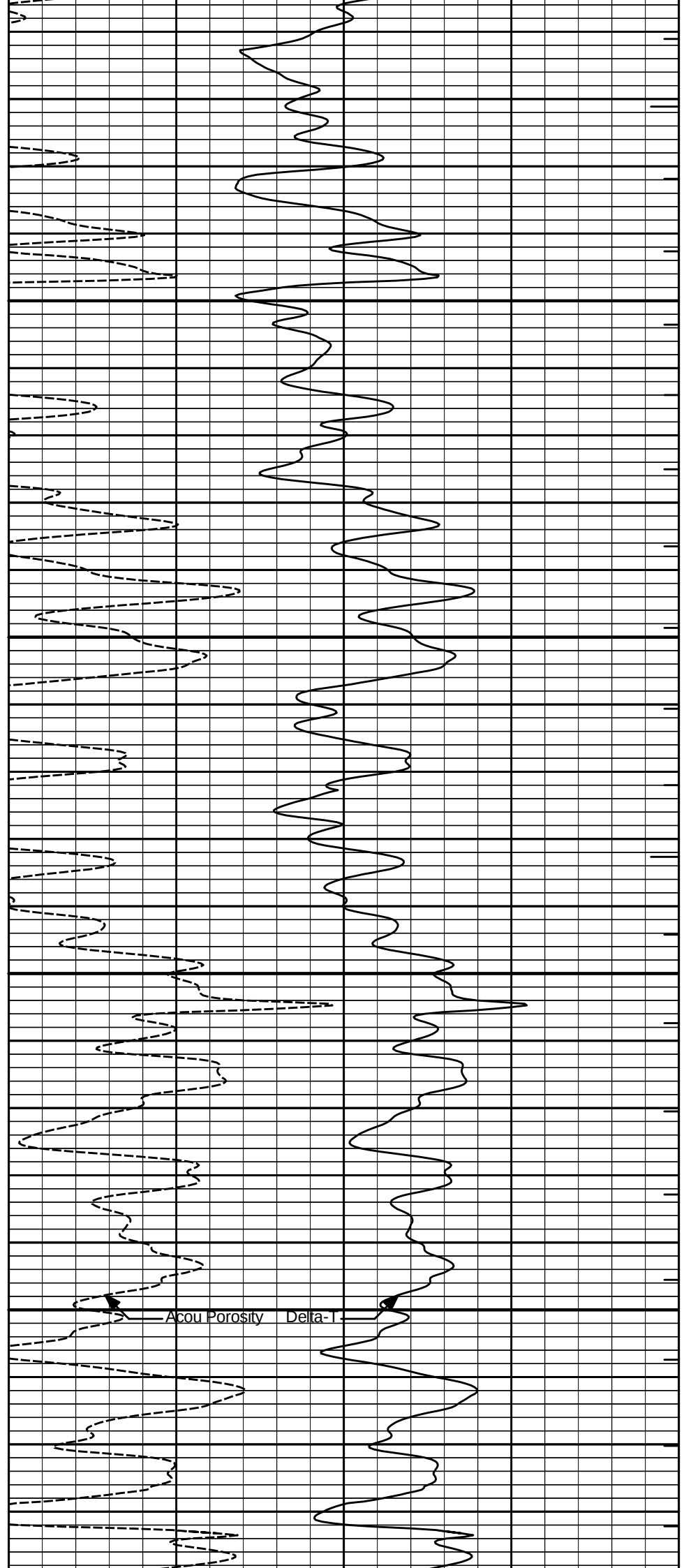
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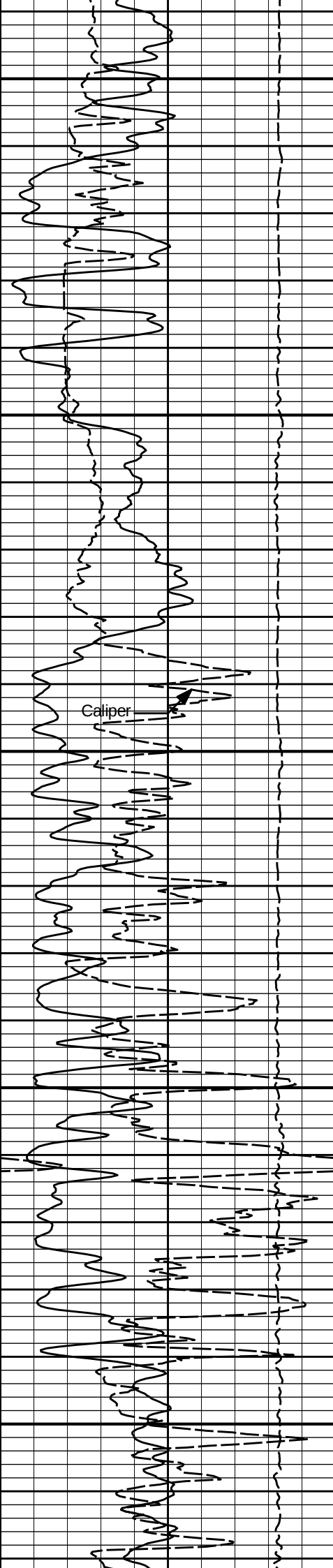




1300

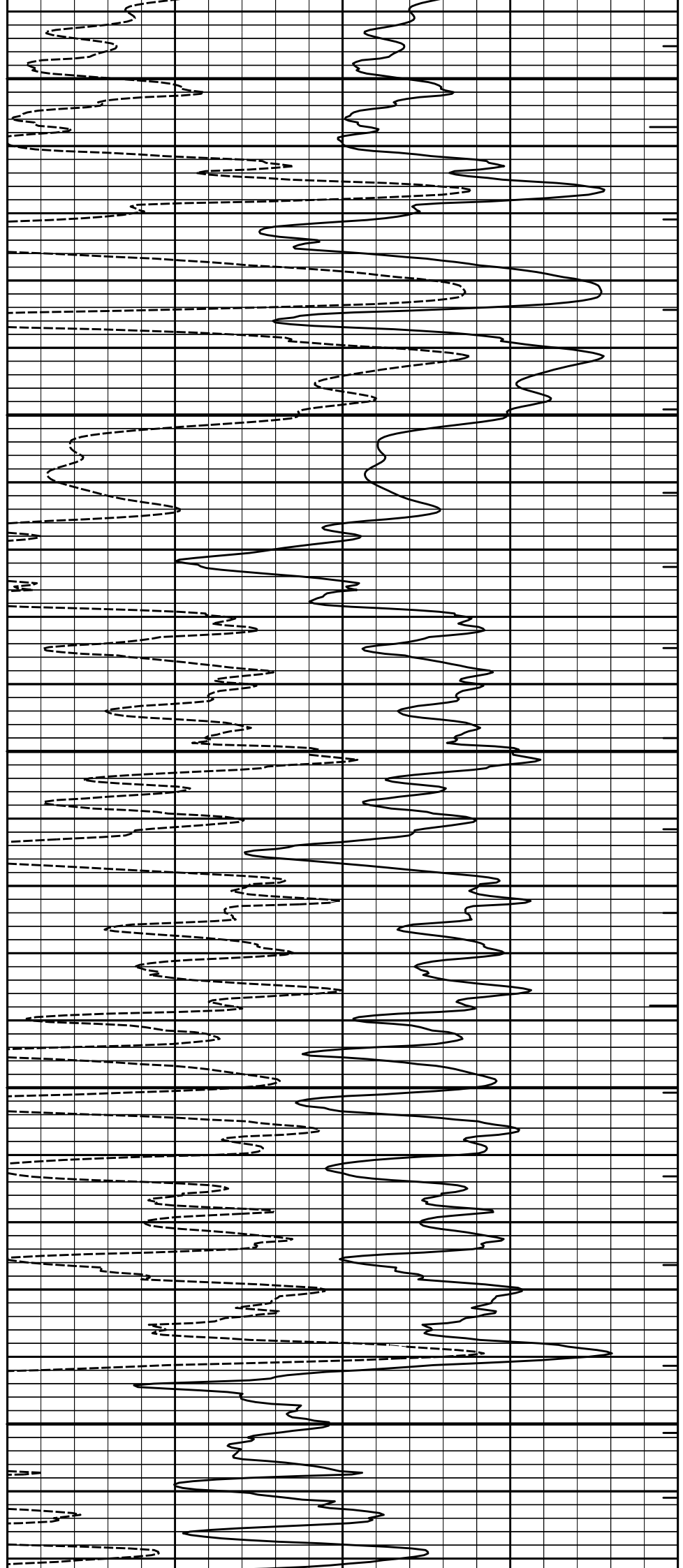
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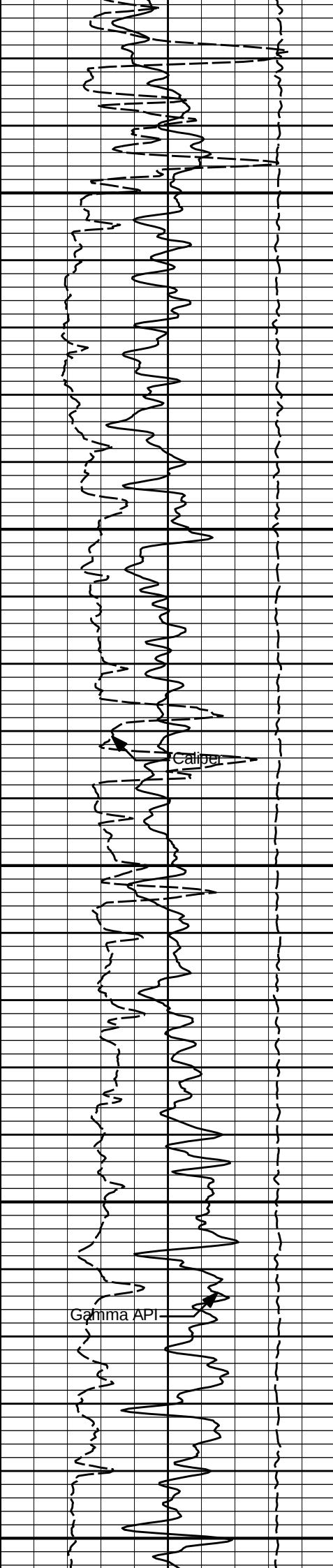




1500

1600

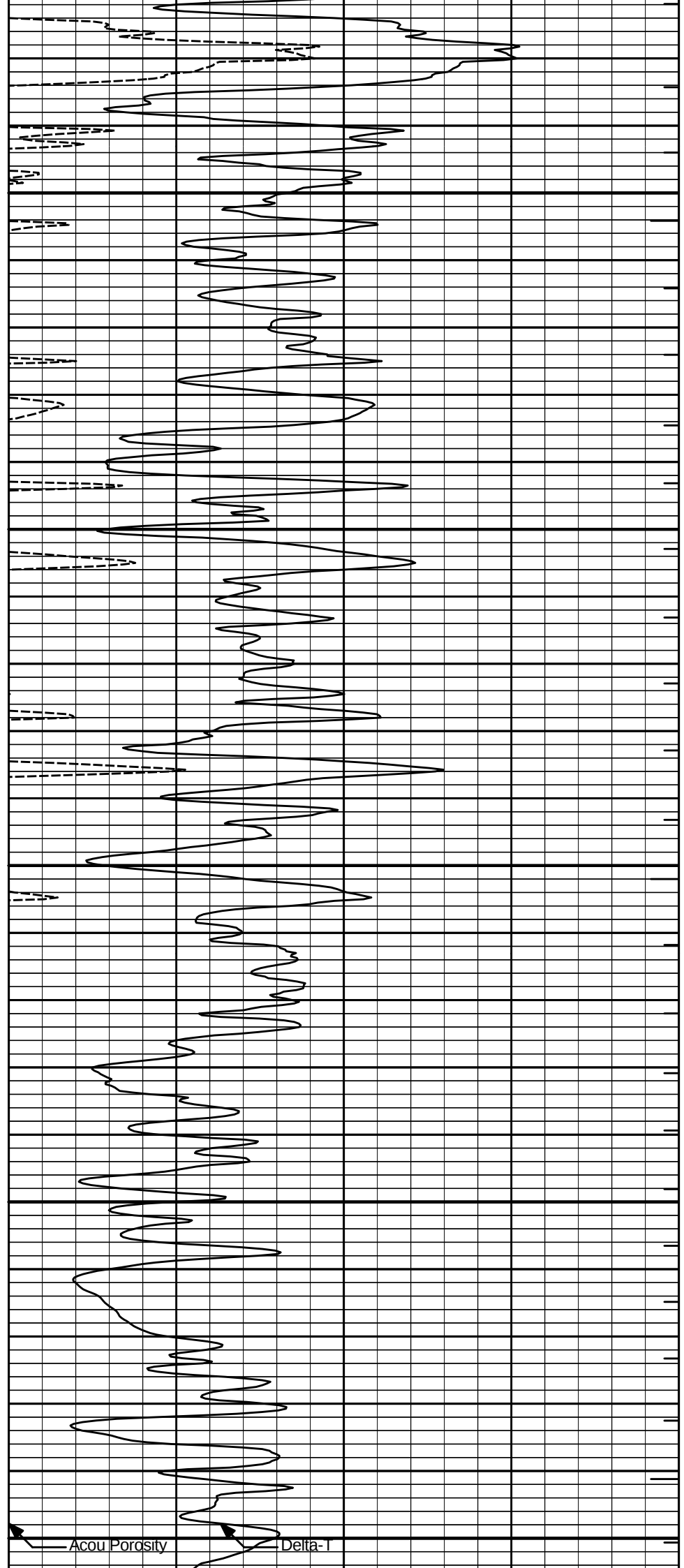




1700

1800

1900



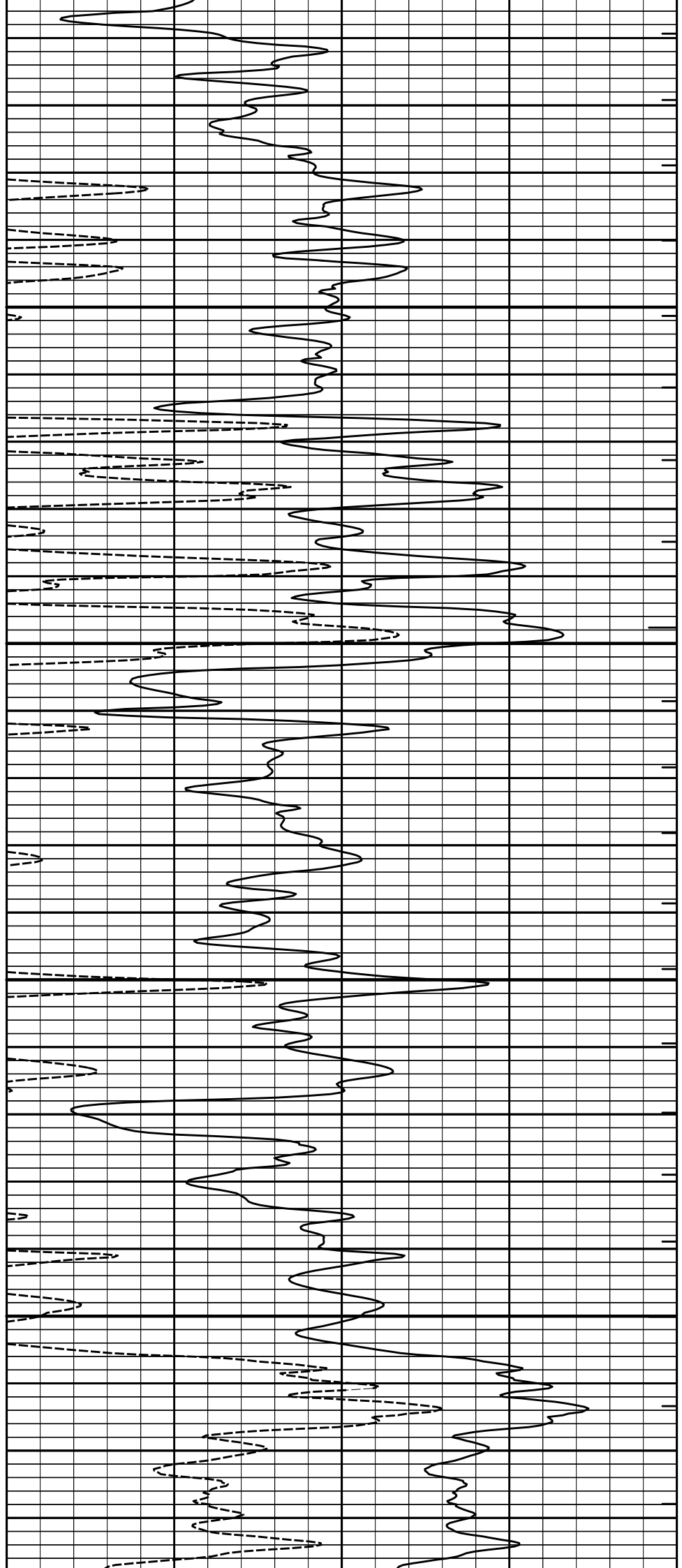
Acoustic Porosity

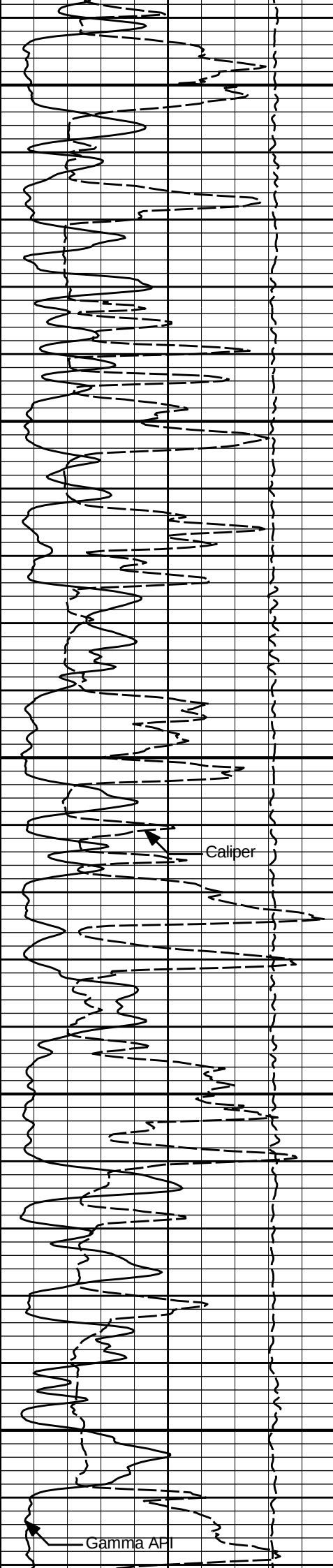
Delta-T



2000

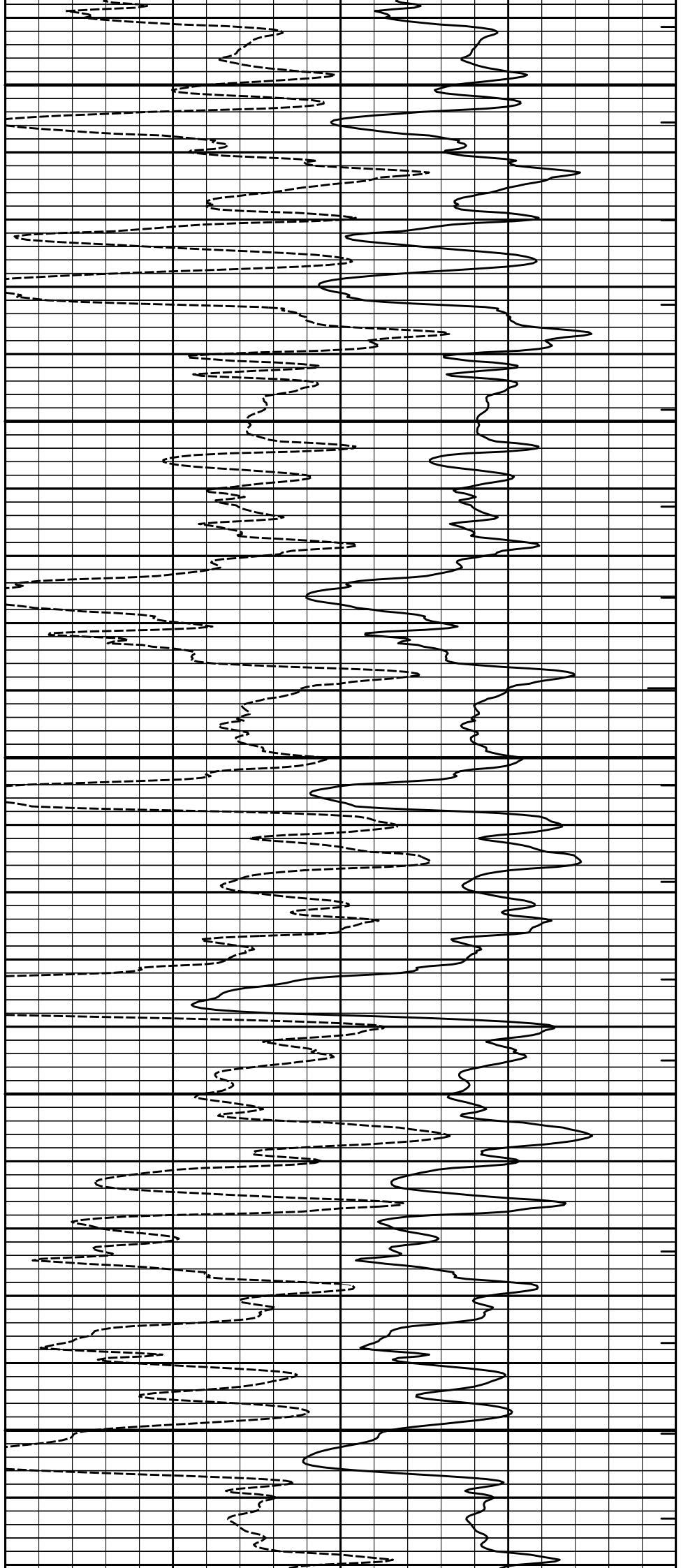
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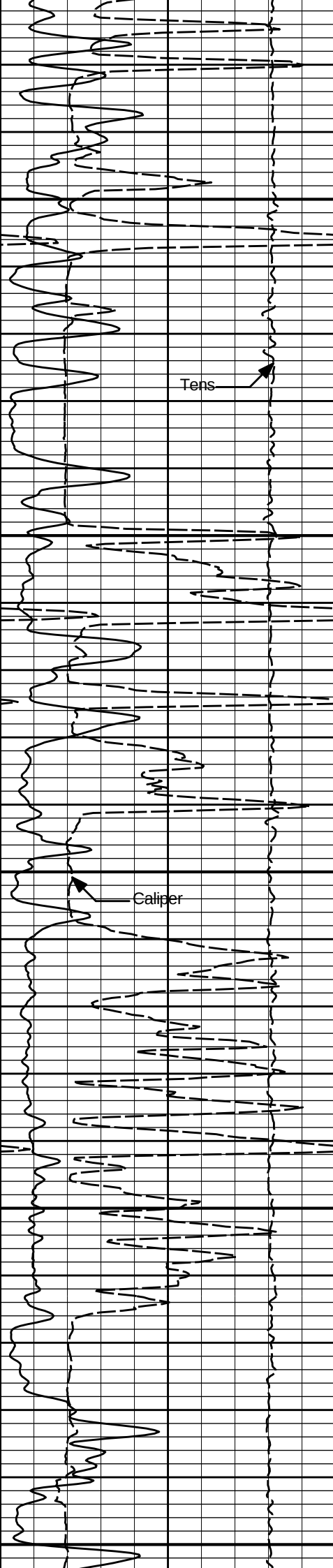




2200

2300

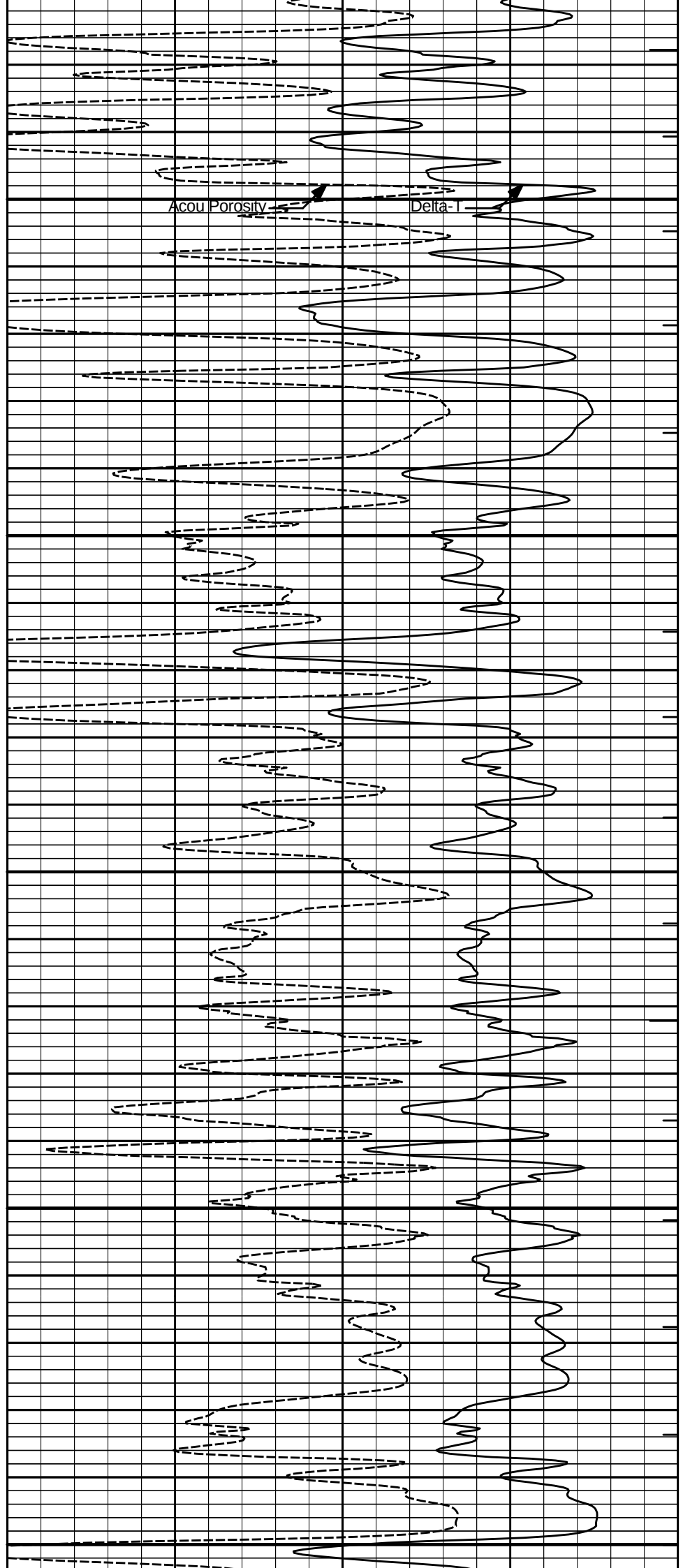


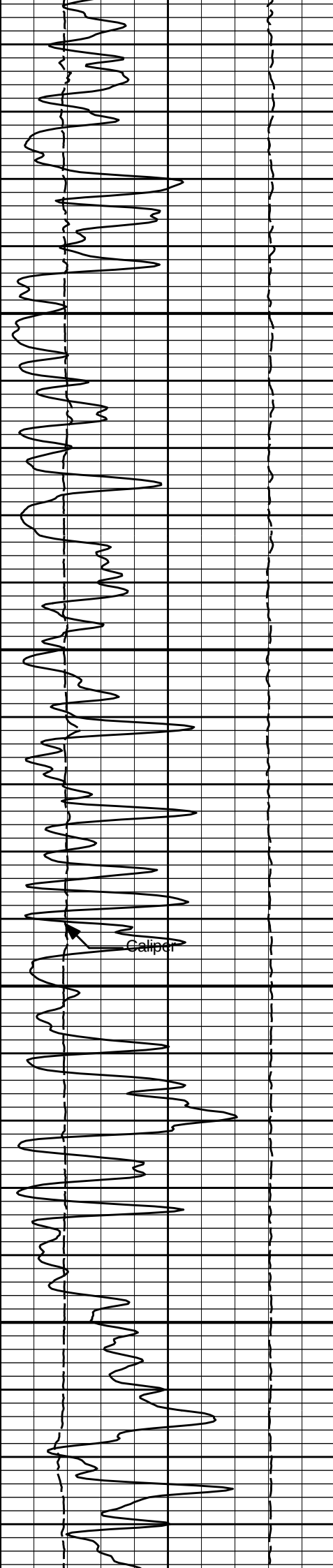


2400

2500

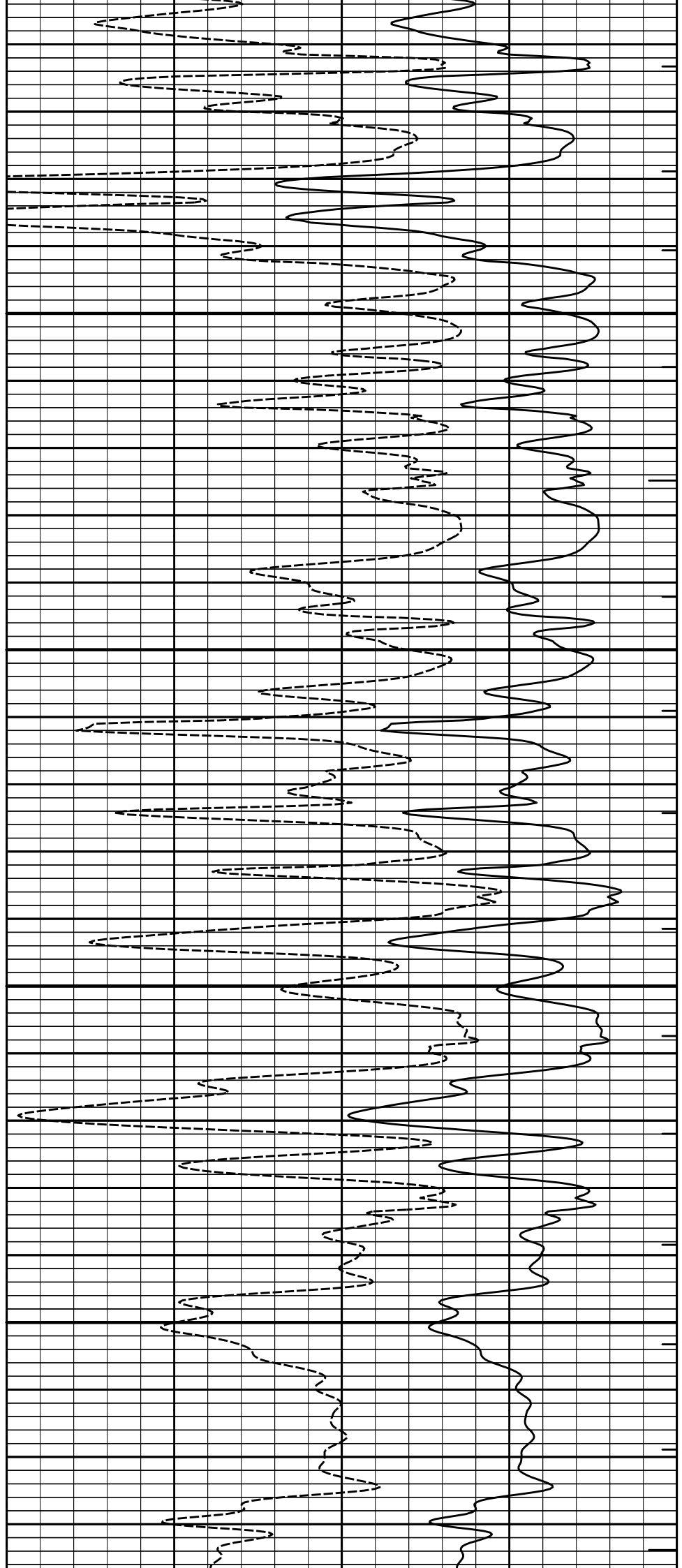
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2700

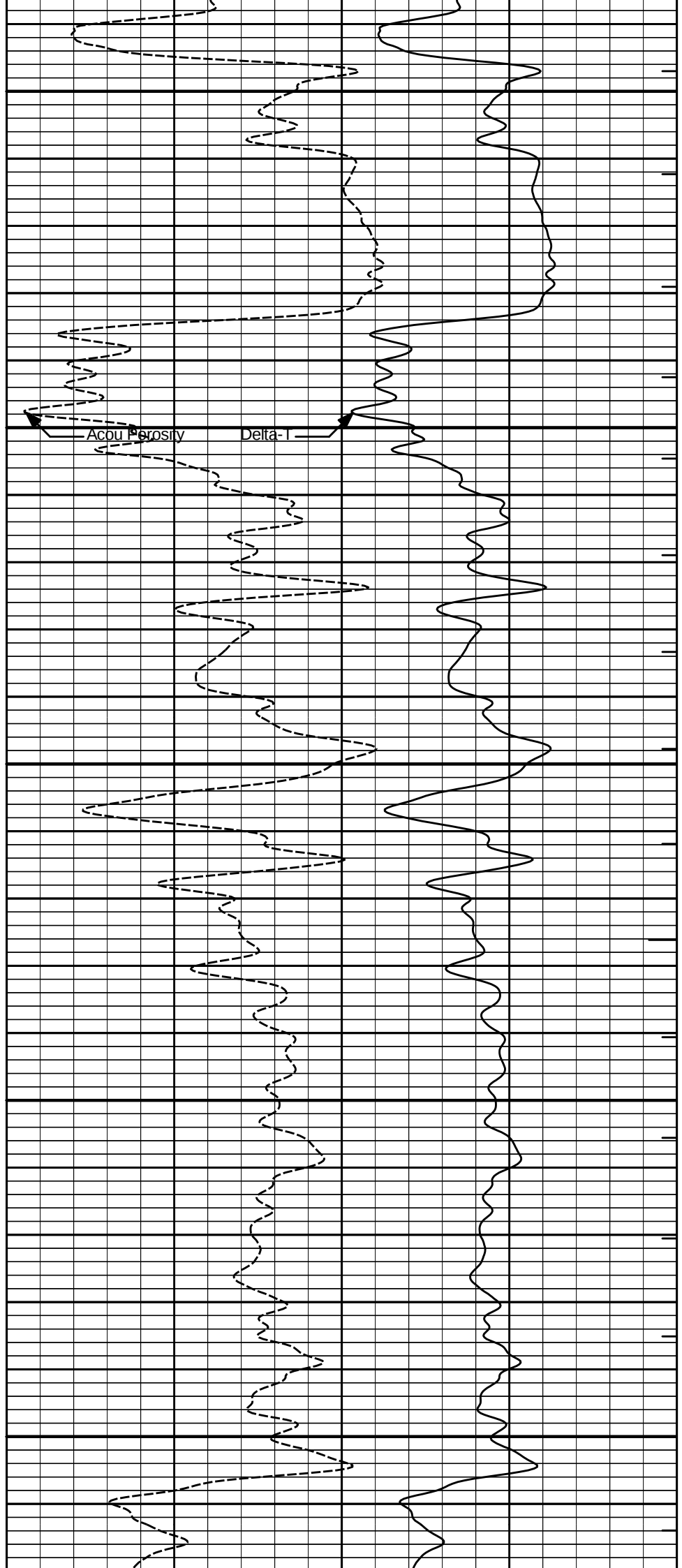
2800

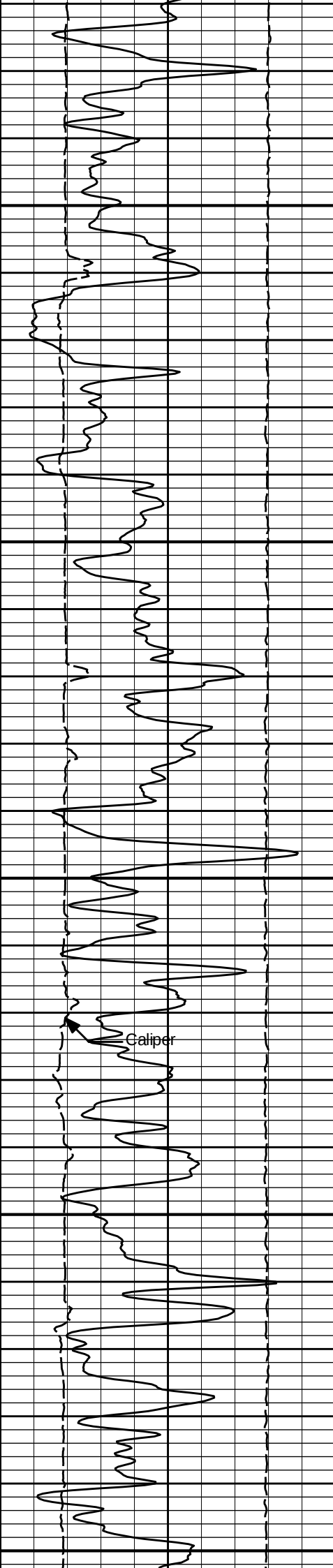




2900

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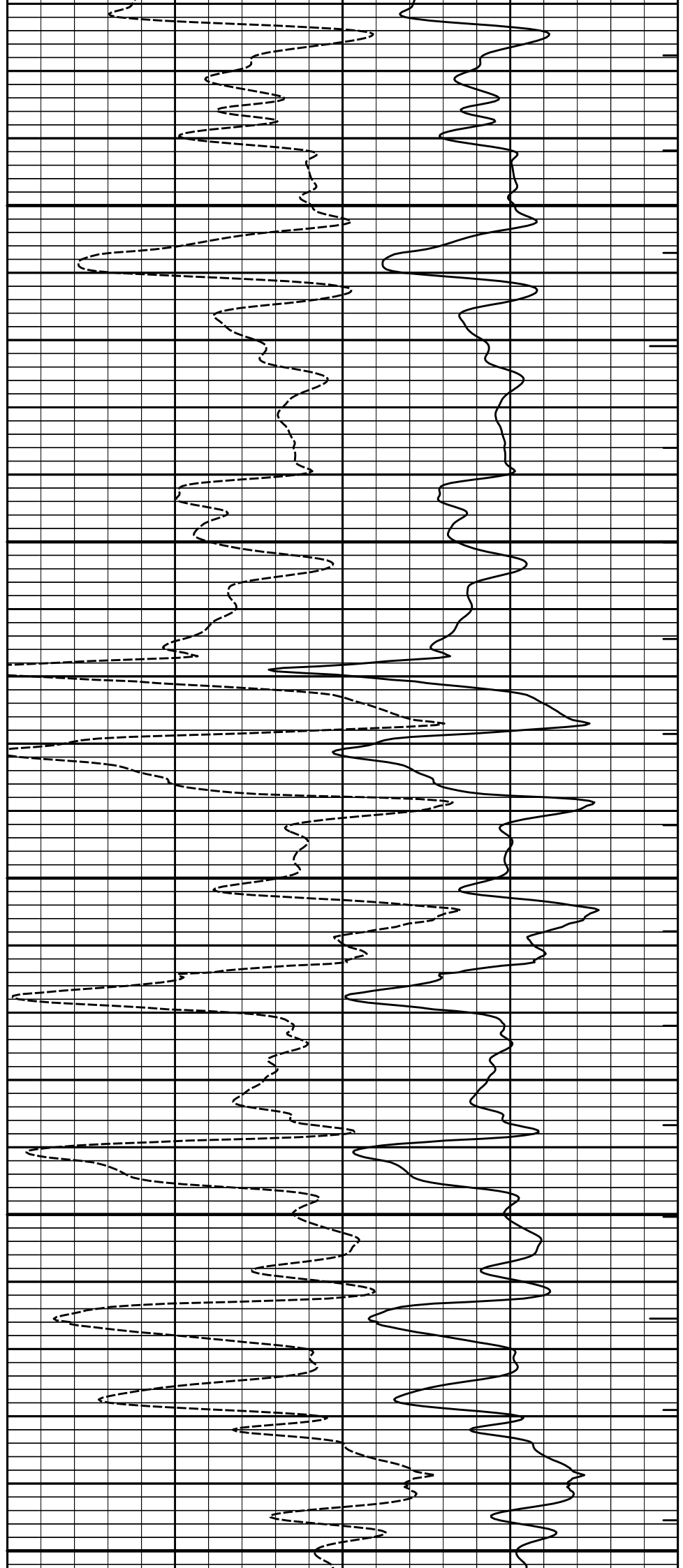


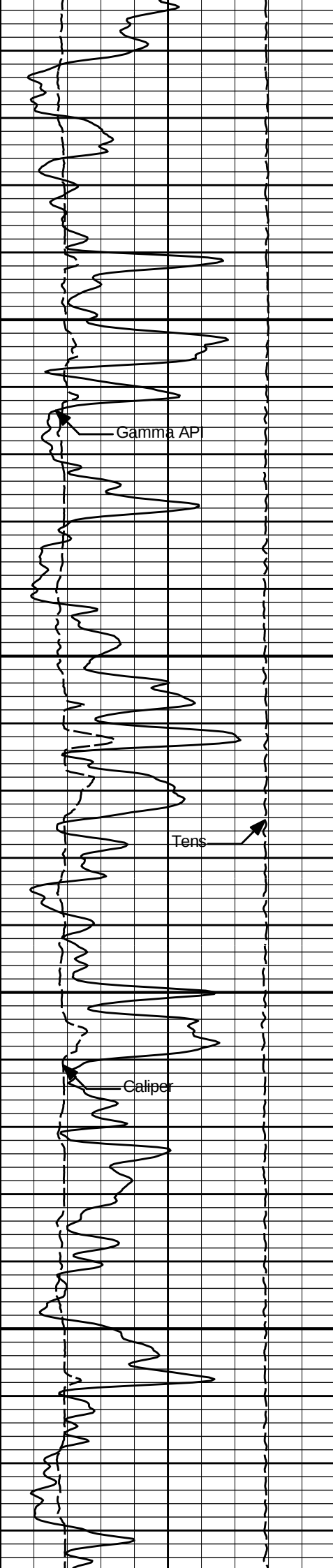


3100

3200

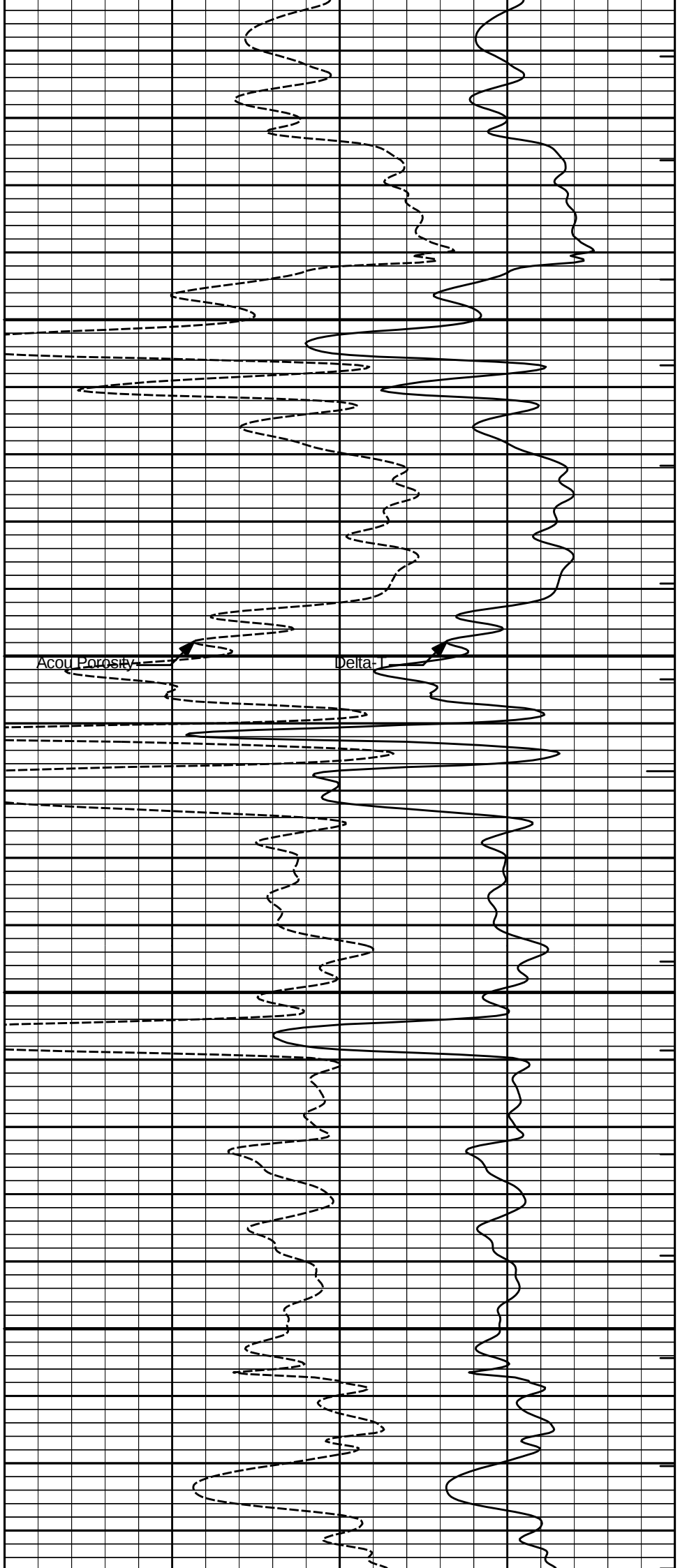
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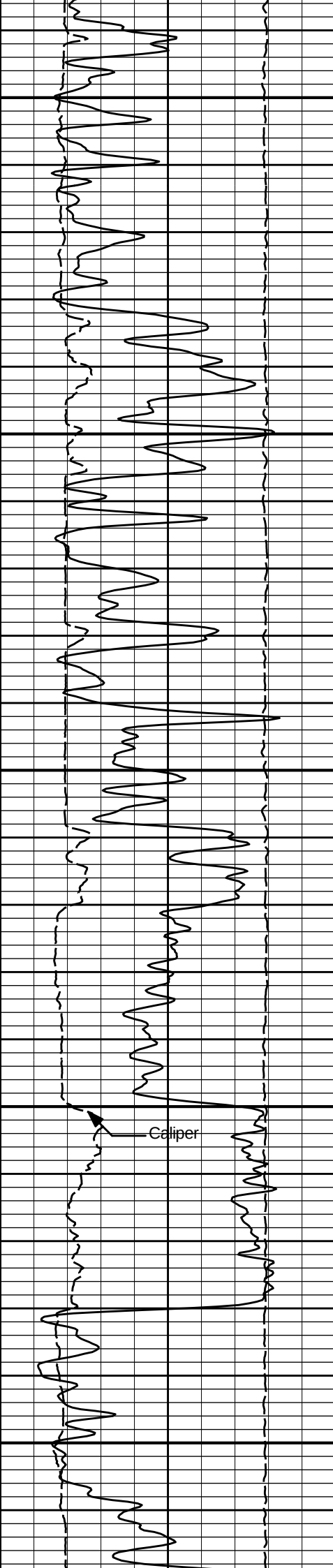




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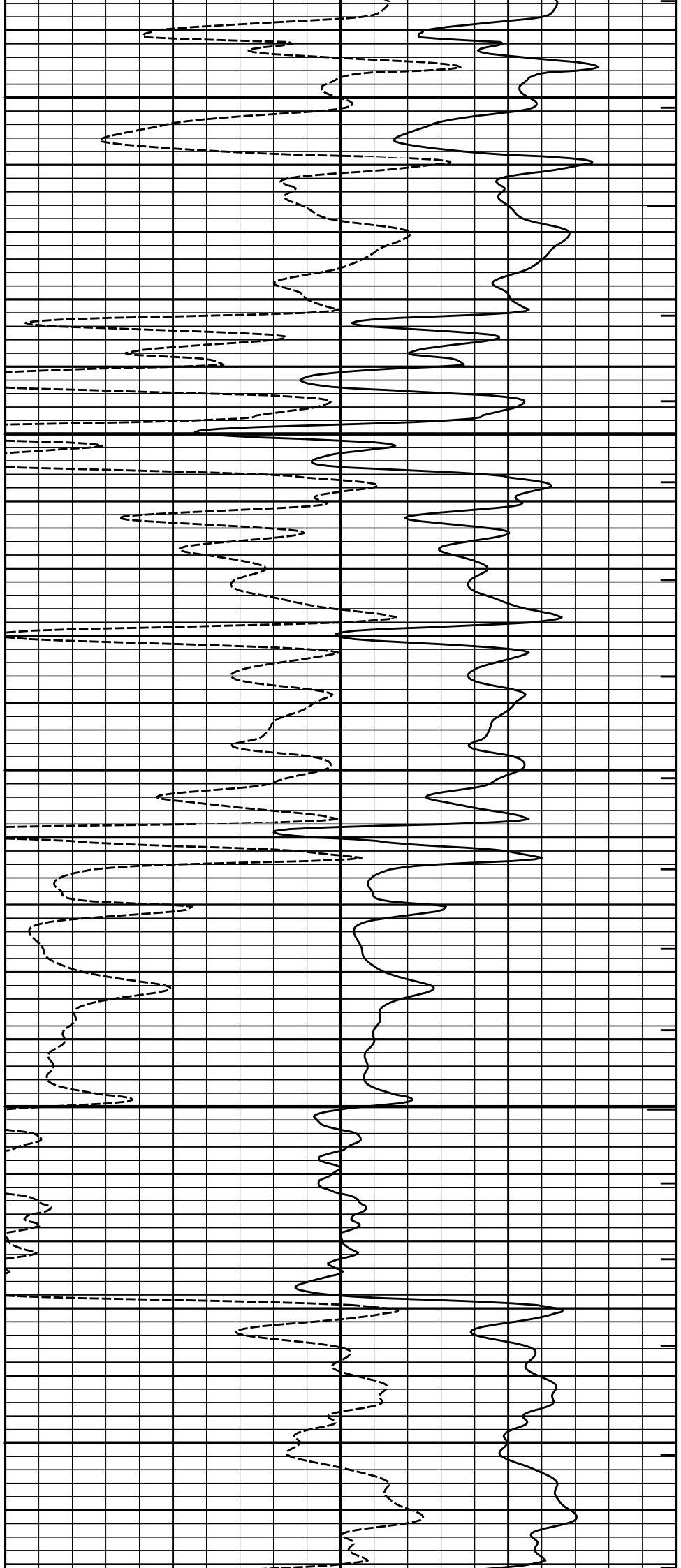
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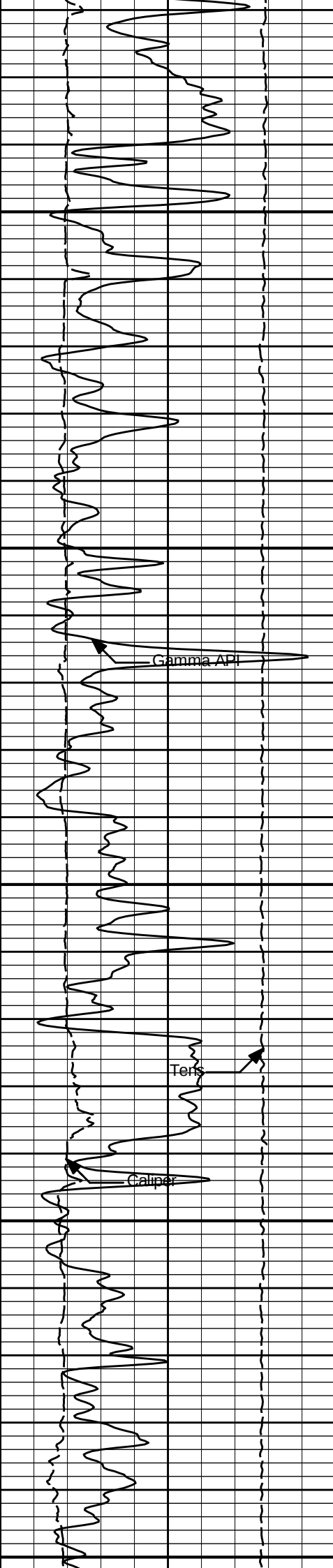




3600

3700

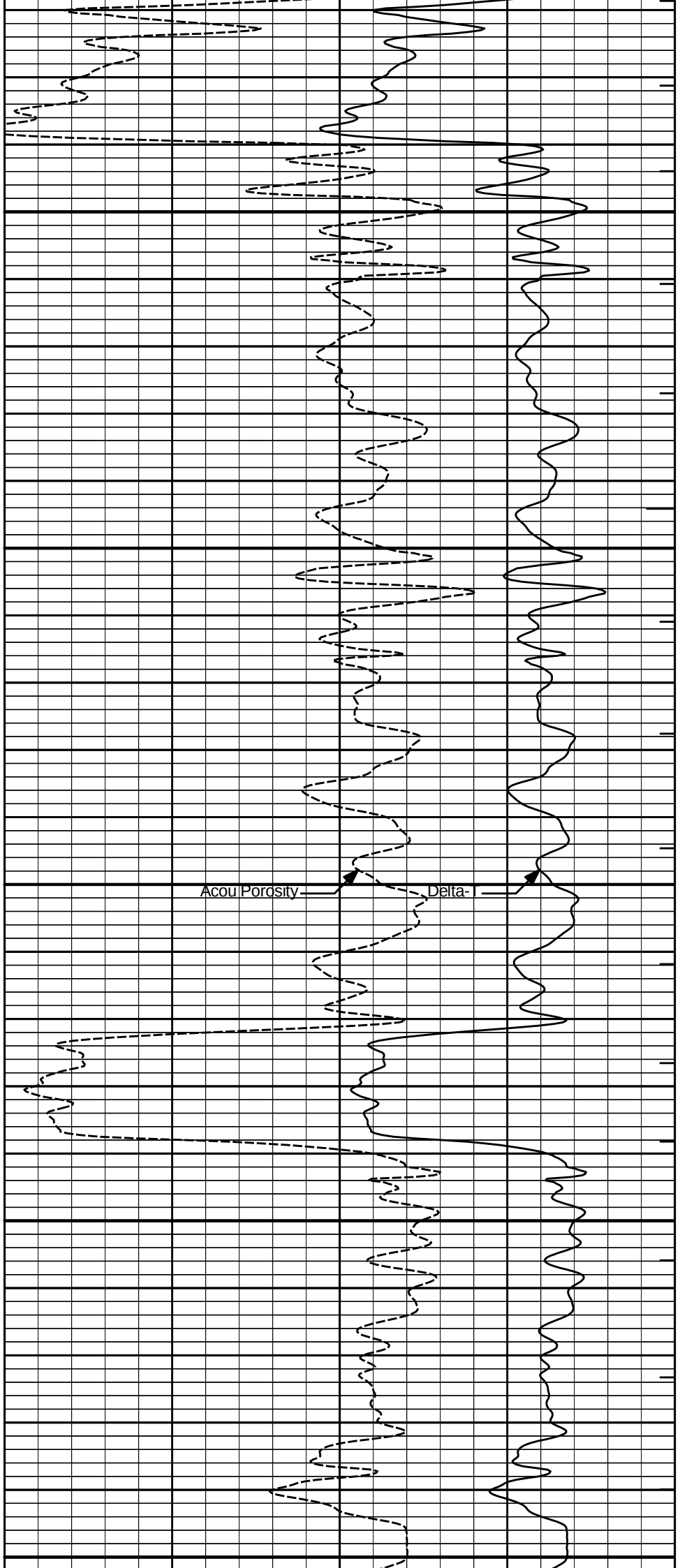




3800

3900

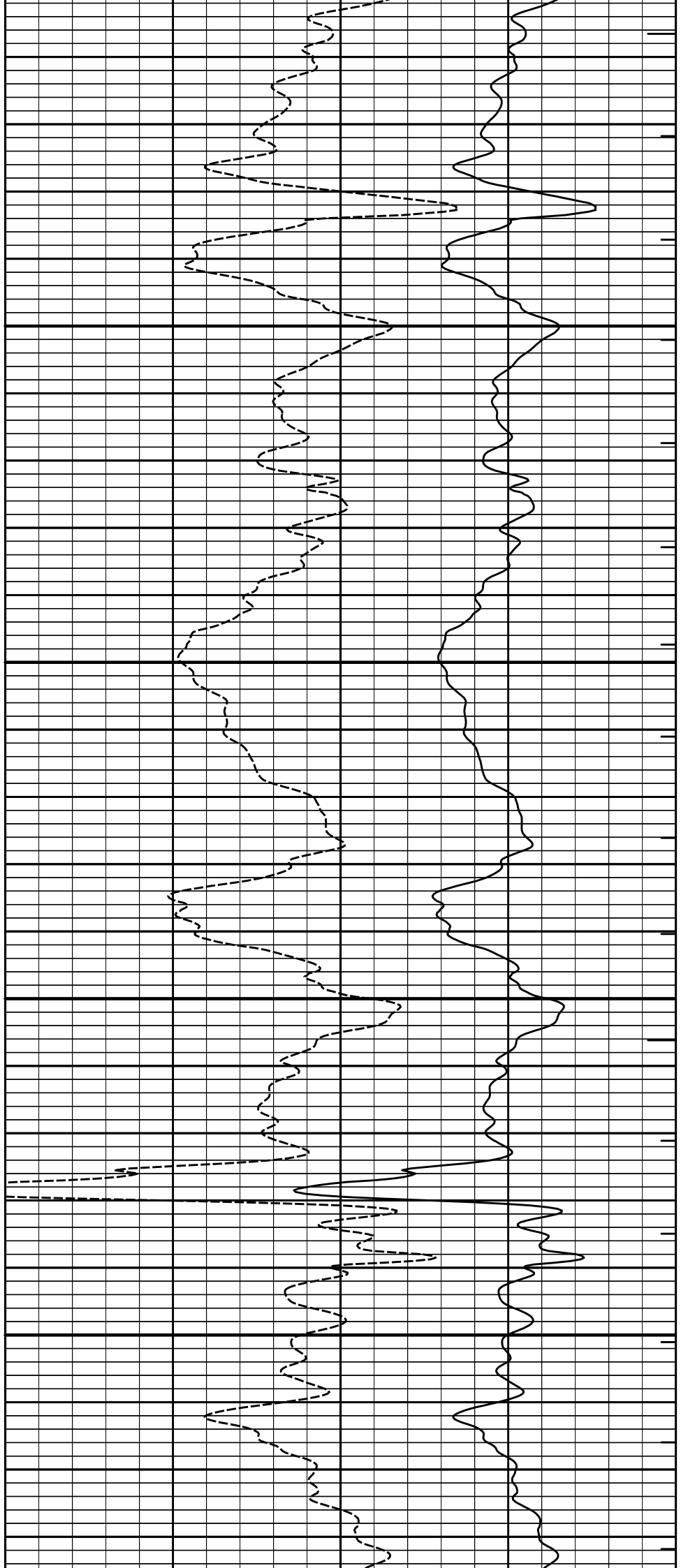
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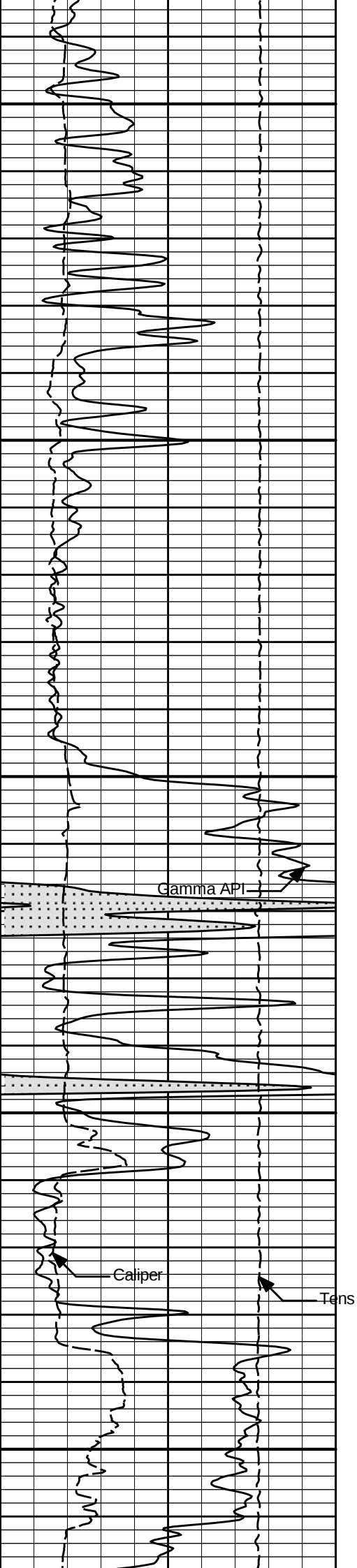




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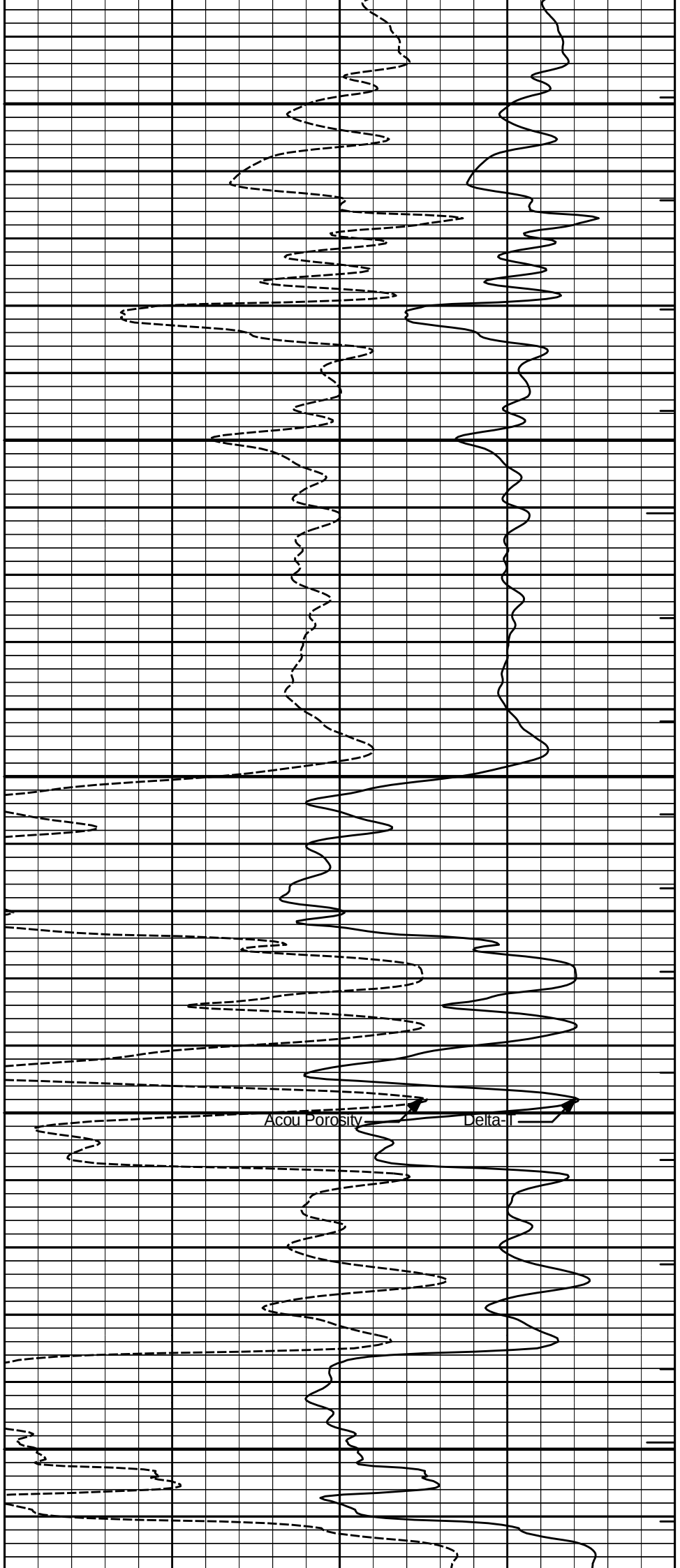
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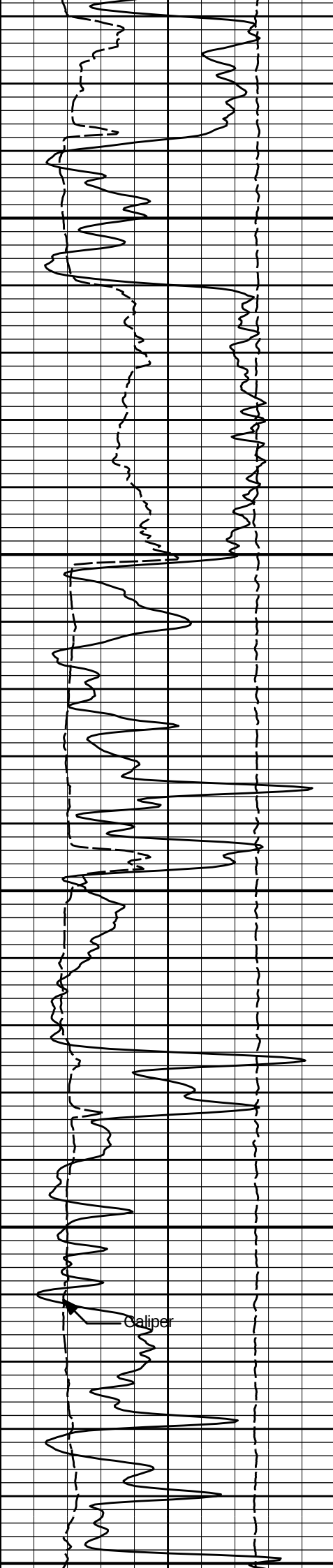
4300

4400



Acou Porosity

Delta-I

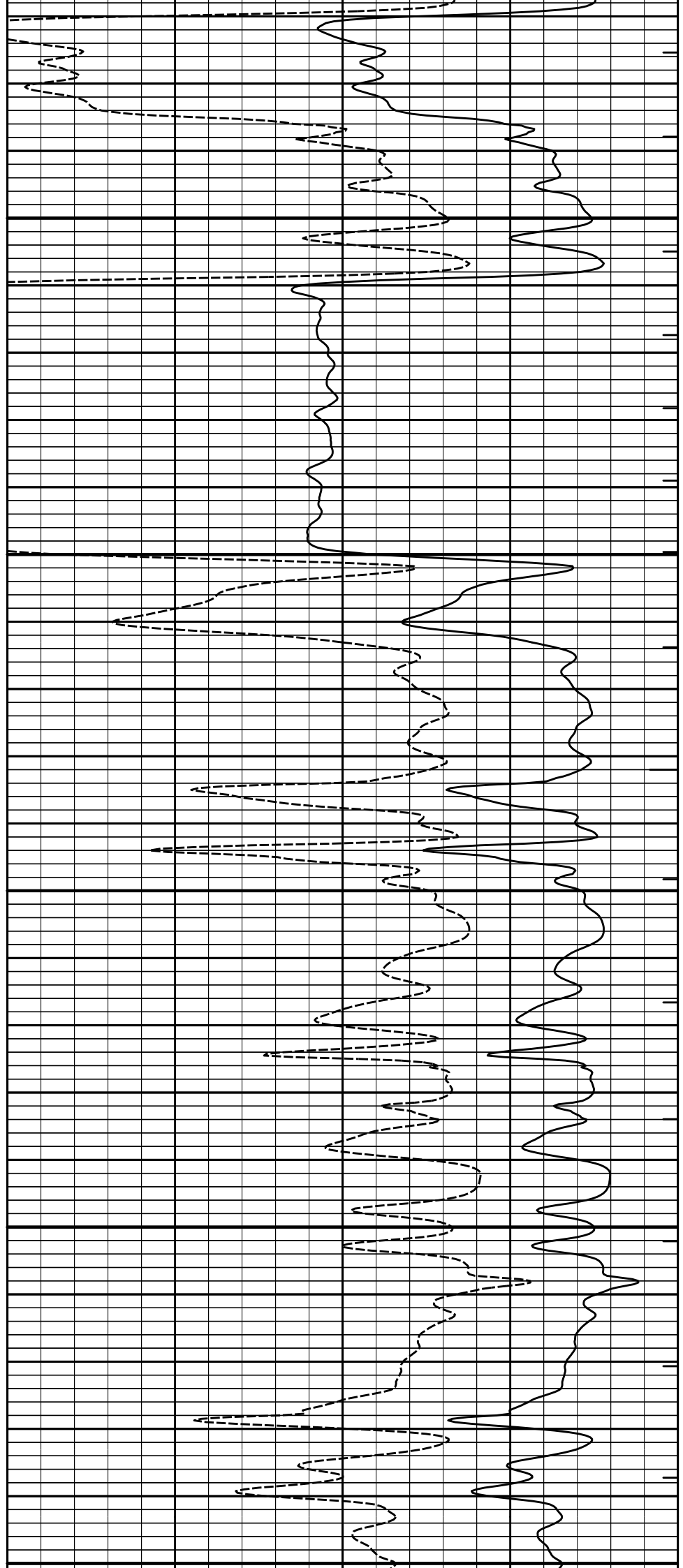


4500

4600

Caliper

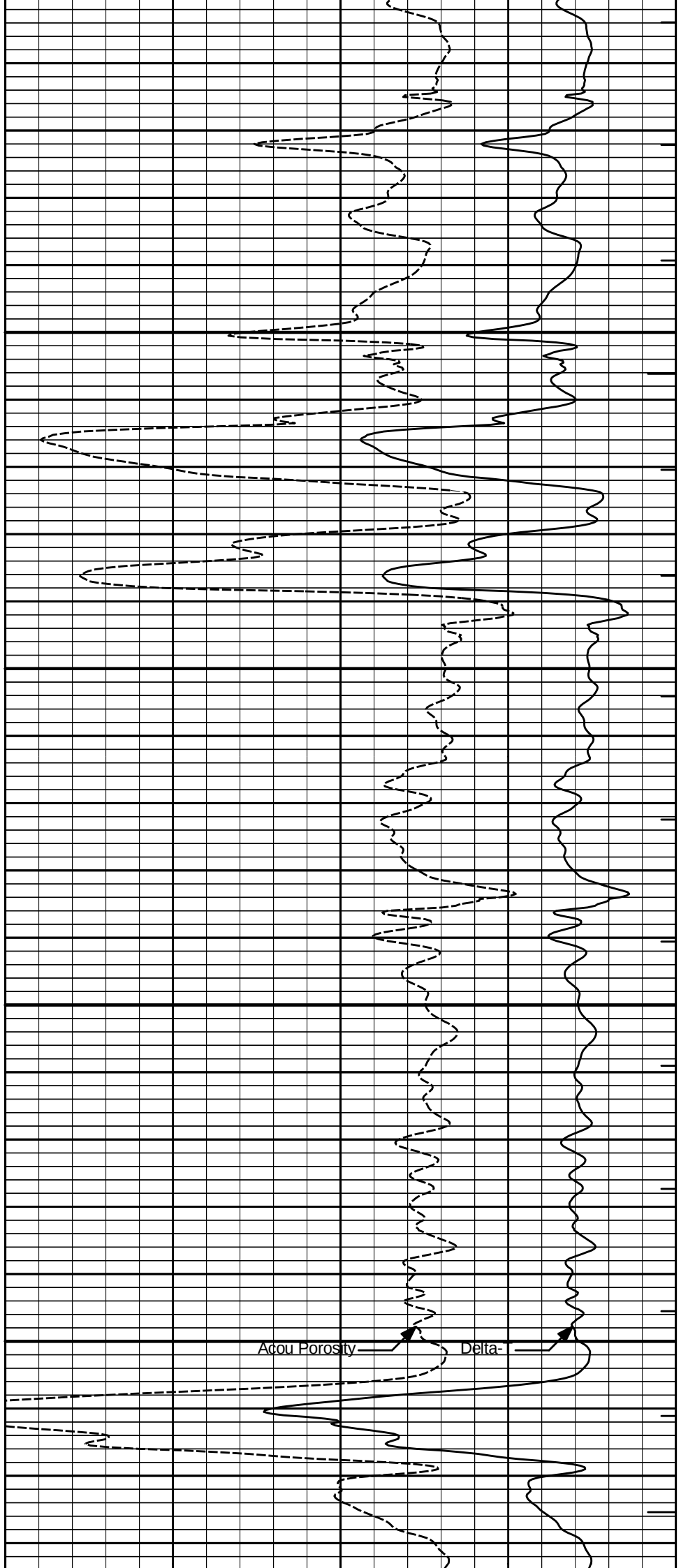
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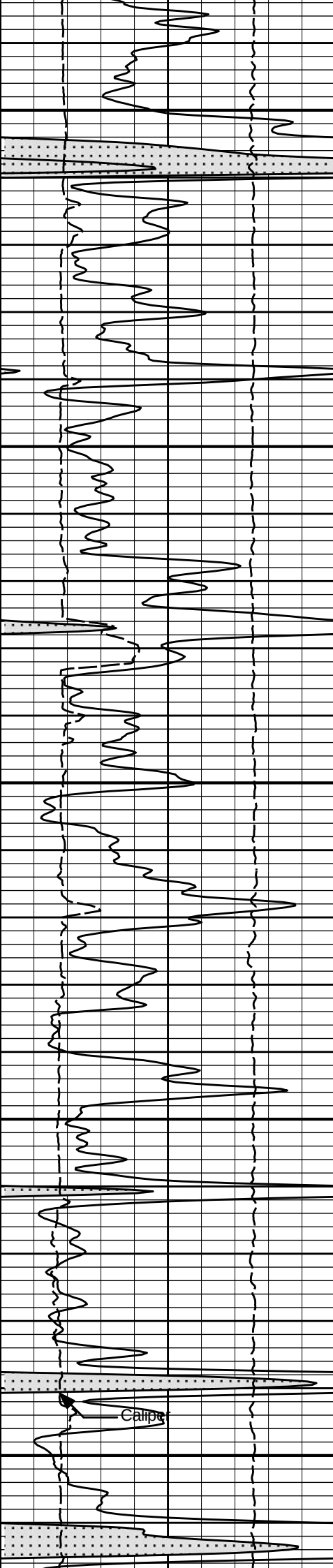
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4900



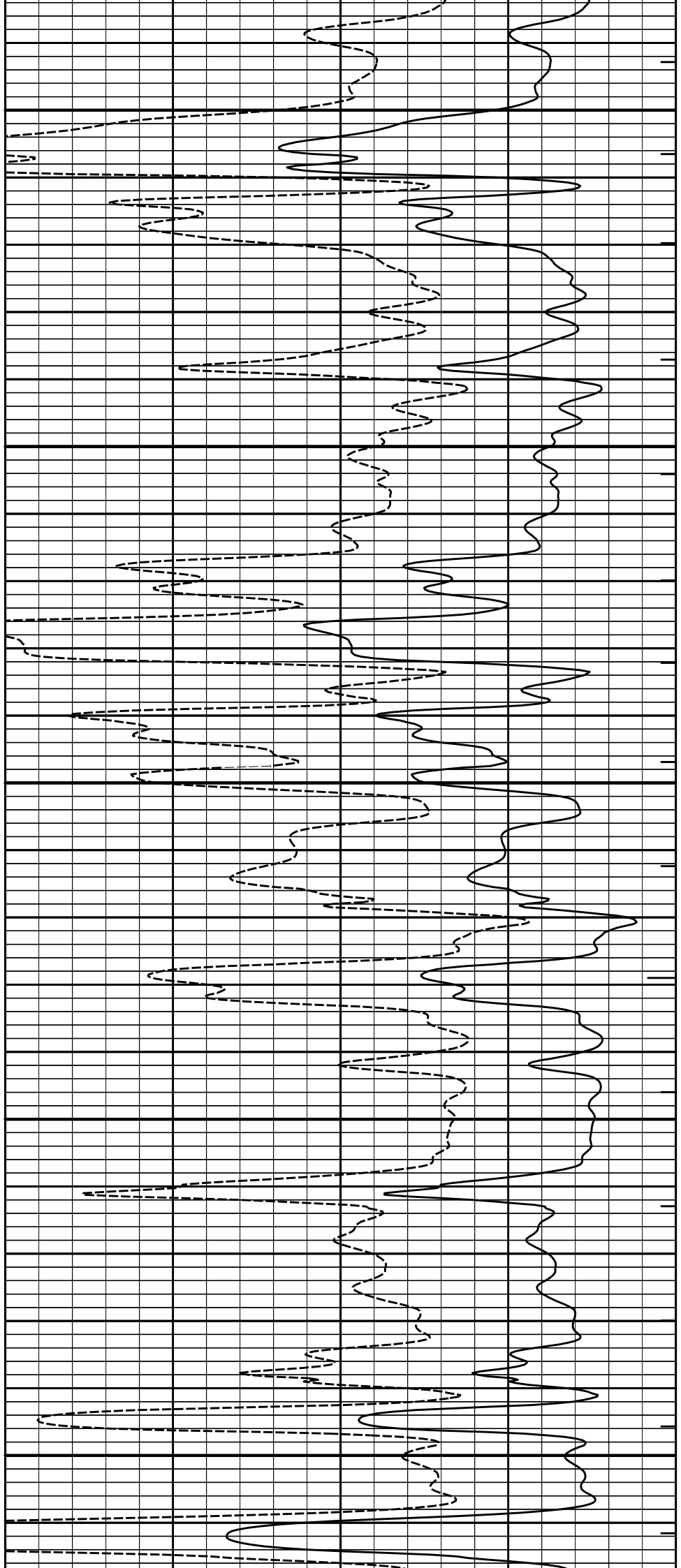
Acou Porosity

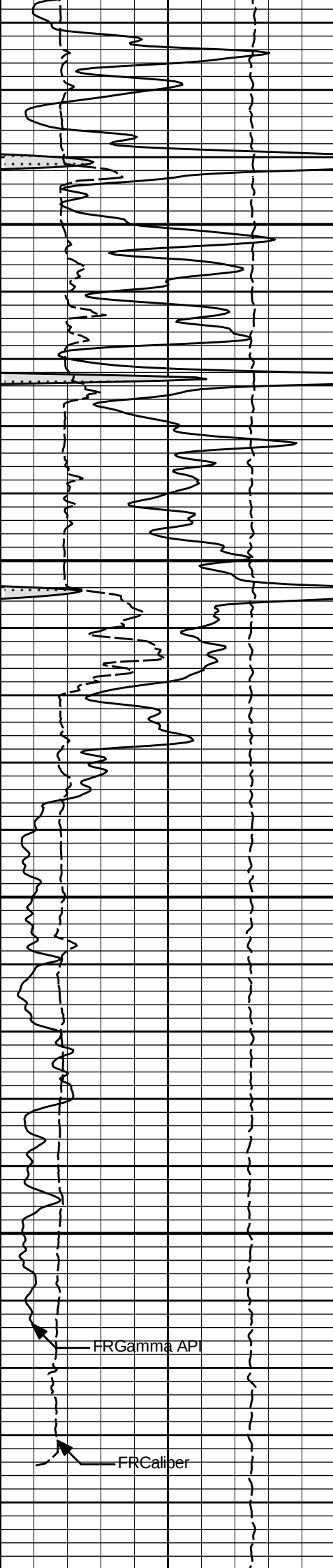
Delta



5000

5100

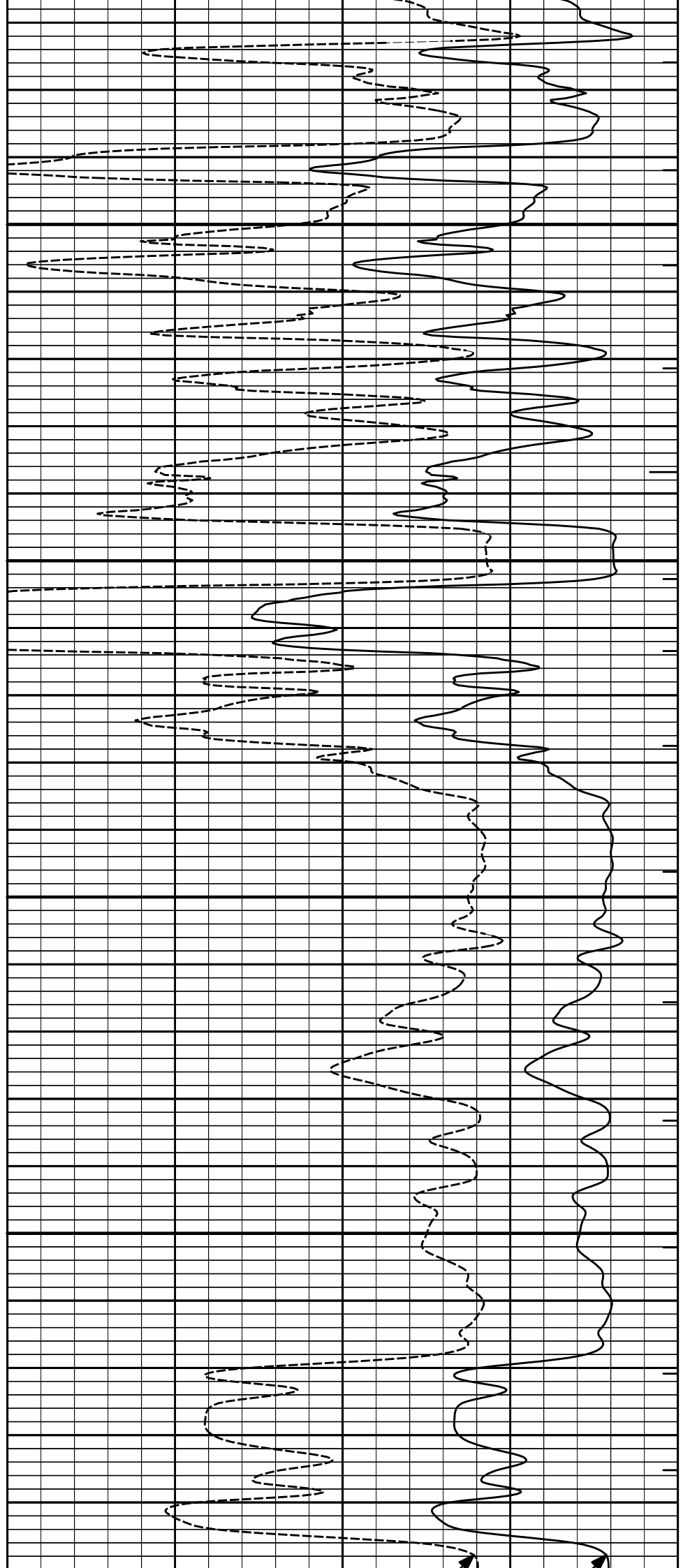


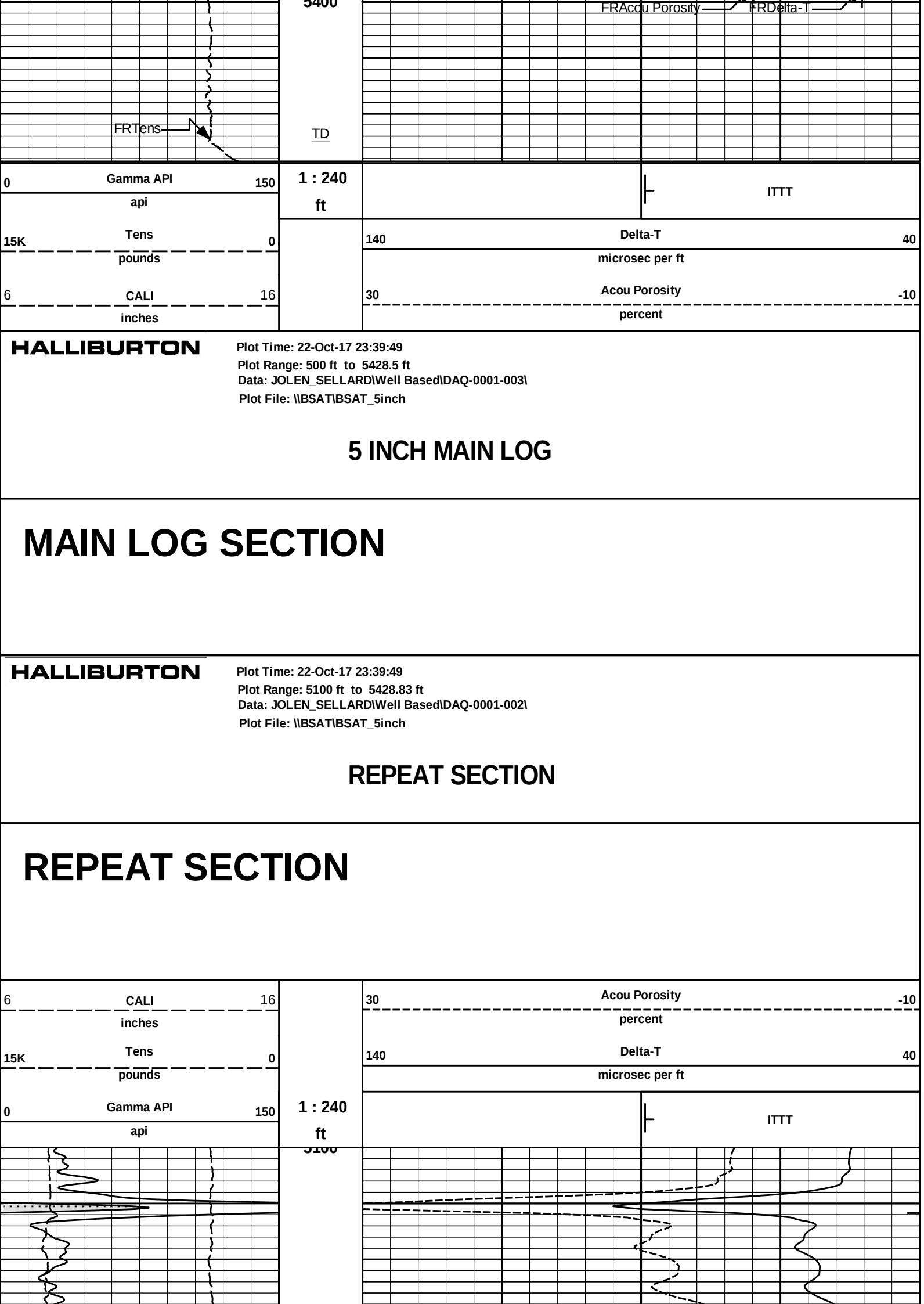


5200

5300

5400

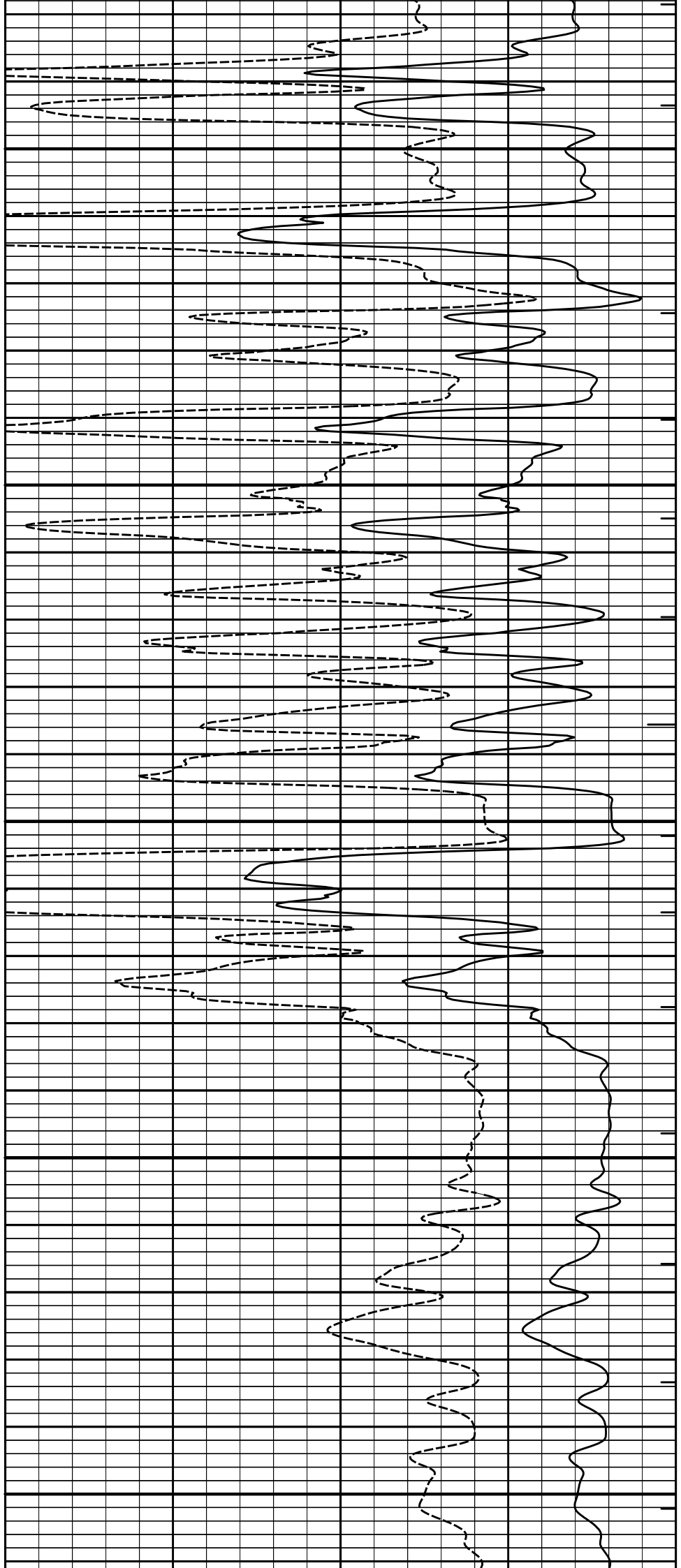


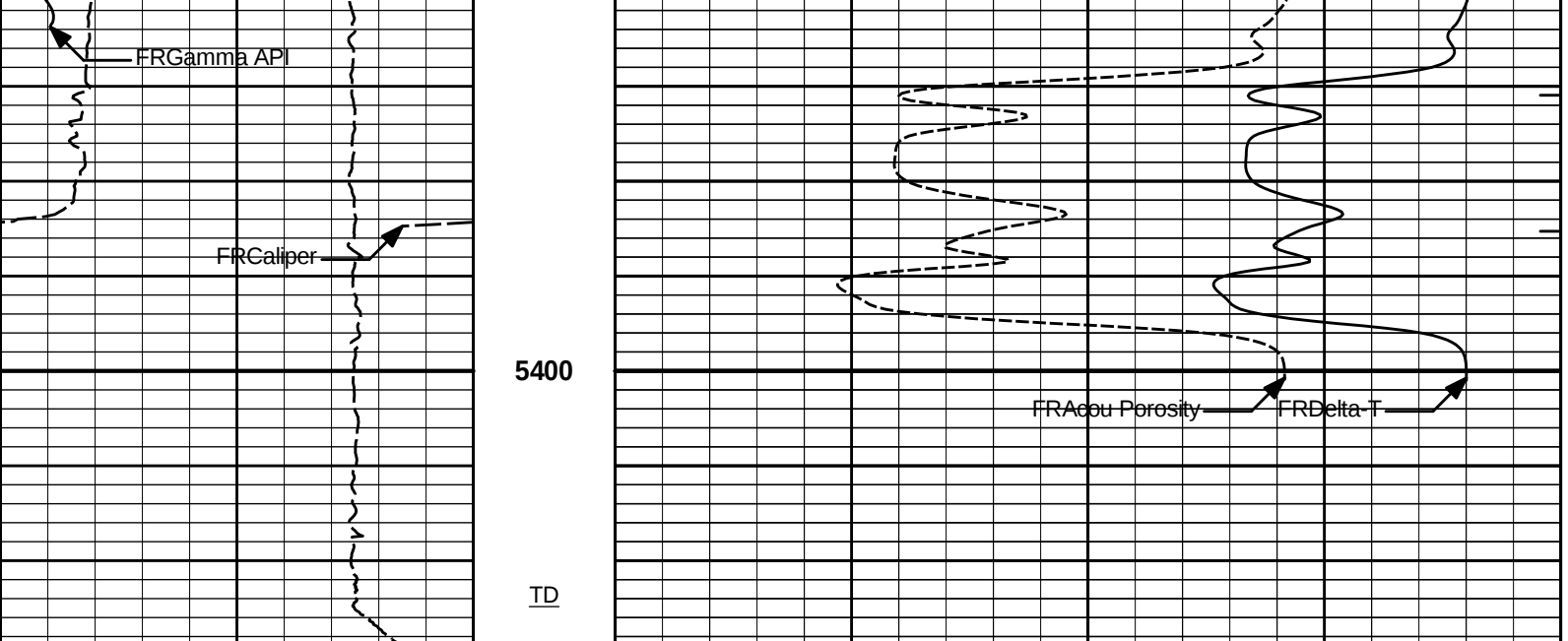




5200

5300





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

HALLIBURTON

Plot Time: 22-Oct-17 23:39:51
Plot Range: 5100 ft to 5428.83 ft
Data: JOLEN_SELLARD\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 - PROT01	Reference Calibration Date:	18-Oct-17 01:21:15
Engineer:	MICHAEL RICHTER	Calibration Date:	19-Oct-17 01:16:32
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10840.82	-5.49	0.00	lbs
High	17350.41	7821.21	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	CH_HOS - CH_HOS_I	Reference Calibration Date:	18-Oct-17 01:28:42
Engineer:	MICHAEL RICHTER	Calibration Date:	19-Oct-17 01:20:41
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1

DOWNHOLE LOAD CELL					
	Measurement	Tool Value	Measurement	Calibrated	Units
	Low	-547.18	16.15	0.00	lbs
	High	2593.77	989.87	1030.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION					
Tool Name:	GTET - 11021139	Reference Calibration Date:	23-Sep-17 12:22:06		
Engineer:	WHITLOCK	Calibration Date:	06-Oct-17 11:06:34		
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1		
Calibrator Source S/N: TB79					
Calibrator API Reference:222.00 api					
Equivalent Calibrator API Reference:225.9 api					
	Measurement	Measured	Calibrated	Units	
	Background	25.7	25.8	api	
	Background + Calibrator	250.7	251.7	api	
	Calibrator	225.0	225.9	api	

NATURAL GAMMA RAY TOOL FIELD CALIBRATION					
Tool Name:	GTET - 11021139	Reference Calibration Date:	06-Oct-17 11:06:34		
Engineer:	WHITLOCK	Calibration Date:	22-Oct-17 09:49:57		
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1		
Calibrator Source S/N: TB79					
Calibrator API Reference:222.00 api					
Equivalent Calibrator API Reference:225.9 api					
	Field Verification	Shop	Field	Units	
	Background	25.8	20.3	api	
	Background + Calibrator	251.7	243.0	api	
	Calibrator	225.9	222.7	api	
	Shop	Field	Difference	Tolerance	
	225.9	222.7	3.2	+/- 9.00	

DUAL SPACED NEUTRON SHOP CALIBRATION					
Tool Name:	DSNT - 11660709	Reference Calibration Date:	14-Jul-17 14:37:56		
Engineer:	MICHAEL RICHTER	Calibration Date:	21-Oct-17 10:02:19		
Software Version:	WL INSITE R5.4.5 (Build 2)	Calibration Version:	1		
Logging Source S/N: DSN-424					
Tank Serial Number: EL RENO					
Reference value assigned to Tank: 56.100					
Snow Block S/N: 668					
Calibration Tank Water Temperature: 79 degF					
Min. Tool Housing Outside Diameter: 3.625 in					
CALIBRATION CONSTANTS					
	Measurement	Prev. Value	New Value	Control Limit On New Value	
	Gain:	1.01791	1.01437	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):	0.2369	0.2358	0.0011	+/- 0.0020
	Calibrated Ratio:	10.5966	10.5597	0.037	+/- 0.050
VERIFIER					

Measurement	Value	Control Limit
Snow-Block Porosity (decp):	0.0811	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 - 11660709	Reference Calibration Date:	21-Oct-17 10:02:19
Engineer:	WHITLOCK	Calibration Date:	22-Oct-17 10:01:09
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1

Logging Source S/N: DSN-424				
Snow Block S/N: 668				
NEUTRON FIELD-CHECK SUMMARY				
	Shop	Field	Difference	Control Limit On Change
Snow-Block Porosity (decp):	0.0811	0.0760	-0.0050	+/- 0.0150
PASS/FAIL SUMMARY				
Block Change Check:				Passed
Snow Block Stat Check:				Passed
Temperature Check:				Passed

DENSITY CALIPER SHOP CALIBRATION			
Tool Name:	SDLT - 11014296	Reference Calibration Date:	21-Oct-17 17:29:11
Engineer:	MICHAEL RICHTER	Calibration Date:	21-Oct-17 17:35:11
Software Version:	WL INSITE R5.4.5 (Build 2)	Calibration Version:	1
Host Tool Name:	DSNT - 11660709		

CALIBRATION COEFFICIENTS				
Measurement	Previous Value	New Value	Control Limit On New Value	
Pad Offset	-4037.57	-3976.32	-7000.00 - -1000.00	
Pad Gain	0.0003850	0.0003840	0.0002000 - 0.0006000	
Arm Offset	-3741.15	-3704.04	-5000.00 - 3000.00	
Arm Gain	0.0005006	0.0004953	0.000300 - 0.000700	
Arm Power	-0.000004136	-0.000003872	-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)	1.98	2.00	0.02	+/- 0.20
Medium Ring (in)	3.74	3.75	0.01	+/- 0.20
RING DIAMETER:				
Small Ring (in)	6.48	6.50	0.02	+/- 0.20
Medium Ring (in)	8.24	8.25	0.01	+/- 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			
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SDLT CALIPER FIELD CALIBRATION

SDLT CALIPER FIELD CALIBRATION				
Tool Name:	SDLT - 11014296	Reference Calibration Date:	21-Oct-17 17:35:11	
Engineer:	MICHAEL RICHTER	Calibration Date:	21-Oct-17 17:37:01	
Software Version:	WL INSITE R5.4.5 (Build 2)	Calibration Version:	1	
MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.74	-0.01	+/- 0.10
Ring Diameter	8.25	8.24	-0.01	+/- 0.15
PASS/FAIL SUMMARY				
Pad Extension Check:			Passed	
Diameter Check:			Passed	

BSAT FIELD CASING CHECK

BSAT FIELD CASING CHECK			
Tool Name:	BSAT - 10939049	Calibration Date:	30-Mar-17 10:01:32
Engineer:	HARRIS		
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1

Pre-Log Check	Check Depth	Shop	Field	Difference	Tolerance	Units
Delta-T Compensated	147.01	57.00	56.56	0.4400	1.00	uspf

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION

ARRAY COMPENSATED TRUE RESISTIVITY SHOP CALIBRATION			
Tool Name:	ACRt Sonde - 11038385	Reference Calibration Date:	12-Sep-17 13:48:00
Engineer:	JORGE ORLANDO PEREZ	Calibration Date:	12-Sep-17 13:58:19
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 11055059		

TYPICAL GAIN RANGE

Subarray	TYPICAL GAIN RANGE								
	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0395	1.05	0.95	1.0229	1.05	0.95	1.0146	1.05
A2 (50")	0.95	1.0409	1.05	0.95	1.0225	1.05	0.95	1.0165	1.05
A3 (29")	0.95	1.0384	1.05	0.95	1.0194	1.05	0.95	1.0115	1.05
A4 (17")	0.95	1.0343	1.05	0.95	1.0133	1.05	0.95	1.0069	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0083	1.05	0.95	0.9989	1.05
A6 (6")	N/A	N/A	N/A	0.95	1.0000	1.05	0.95	0.9929	1.05

SONDE OFFSET

Subarray	SONDE OFFSET		
	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	0.702	-4.637	-5.501
A2 (50")	-0.771	-4.034	-5.172
A3 (29")	-13.230	-3.699	-3.350
A4 (17")	-110.240	-33.969	-26.356
A5 (10")	N/A	-83.665	-41.621
A6 (6")	N/A	333.771	173.557

TRANSMITTER CURRENT GAIN

TRANSMITTER CURRENT GAIN				R-MUD VERIFICATION			
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.90	1.3	Mud Cell	0.95	1.00	1.05
36K	1.0	1.36	2.0				
72K	1.0	1.62	2.0				

PASS/FAIL SUMMARY

GAIN RANGE CHK						PASS			
SONDE OFFSET CHK						PASS			
TOOL OK TO LOG									
QUALITY CHECK SHOP CALIBRATION									
Tool Name:		ACRt Sonde - 11038385				Reference Calibration Date:		12-Sep-17 13:59:44	
Engineer:		JORGE ORLANDO PEREZ				Calibration Date:		12-Sep-17 14:00:57	
Software Version:		WL INSITE R5.0.5 (Build 8)				Calibration Version:		1	
Host Tool Name:		ACRt Instrument - 11055059							
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")	-0.003	> -0.500	Pass	-0.008	> -0.500	Pass	-0.027	> -0.500	Pass
A5 (10")	-0.012	> -0.500	Pass	-0.020	> -0.500	Pass	-0.043	> -0.500	Pass
A6 (6")	0.015	< 0.500	Pass	0.074	< 0.500	Pass	0.160	< 0.500	Pass
GAIN TOLERANCE									
	R12KHz								
	Measured (mmho/m)	Last Month (mmho/m)		Difference (mmho/m)		Tolerance (mmho/m)		Pass/Fail	
A1 (80")	-223155904.000	-223150640.000		5264.000		11157532.000		Pass	
A2 (50")	-220713888.000	-220710416.000		3472.000		11035520.800		Pass	
A3 (29")	-216614880.000	-216612000.000		2880.000		10830600.000		Pass	
A4 (17")	-214578320.000	-214578224.000		96.000		10728911.200		Pass	
A5 (10")	-214986432.000	-214982096.000		4336.000		10749104.800		Pass	
A6 (6")	-214394544.000	-214391936.000		2608.000		10719596.800		Pass	
	R36KHz								
	Measured (mmho/m)	Last Month (mmho/m)		Difference (mmho/m)		Tolerance (mmho/m)		Pass/Fail	
A1 (80")	60628184.000	60610992.000		17192.000		3030549.600		Pass	
A2 (50")	62049960.000	62033248.000		16712.000		3101662.400		Pass	
A3 (29")	53214172.000	53197224.000		16948.000		2659861.200		Pass	
A4 (17")	50561756.000	50544860.000		16896.000		2527243.000		Pass	
A5 (10")	52600244.000	52584856.000		15388.000		2629242.800		Pass	
A6 (6")	50656572.000	50641704.000		14868.000		2532085.200		Pass	
	R72KHz								
	Measured (mmho/m)	Last Month (mmho/m)		Difference (mmho/m)		Tolerance (mmho/m)		Pass/Fail	
A1 (80")	-92698504.000	-92694664.000		3840.000		4634733.200		Pass	
A2 (50")	-89662344.000	-89657152.000		5192.000		4482857.600		Pass	

A3 (29")	-89109216.000	-89105528.000	3688.000	4455276.400	Pass
A4 (17")	-84842648.000	-84836840.000	5808.000	4241842.000	Pass
A5 (10")	-83337800.000	-83332480.000	5320.000	4166624.000	Pass
A6 (6")	-84561904.000	-84554136.000	7768.000	4227706.800	Pass
PASS/FAIL SUMMARY					
Std Deviation Verification			Pass		
Average Verification			Pass		
Gain Tolerance Verification			Pass		

MICRO LOG SHOP CALIBRATION			
Tool Name:	Microlog Pad - 11014296	Reference Calibration Date:	21-Oct-17 17:40:50
Engineer:	MICHAEL RICHTER	Calibration Date:	21-Oct-17 17:42:32
Software Version:	WL INSITE R5.4.5 (Build 2)	Calibration Version:	1
Host Tool Name:	DSNT - 11660709		

CALIBRATION COEFFICIENT SUMMARY					
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Measured	Calibrated	Measured	Calibrated	
Tool Zero	-0.11	-0.14	0.01	0.01	ohmm
Calibration Point #1	0.02	0.00	-0.01	0.00	ohmm
Calibration Point #2	20.00	20.00	19.99	20.00	ohmm
Internal Reference	19.95	19.94	20.00	20.01	ohmm
Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
Tool Zero	-10.63		4.50		V
Calibration Point #1	24.92		-0.13		V
Calibration Point #2	5262.56		6875.93		V
Internal Reference	5247.65		6879.76		V

MICRO LOG FIELD CHECK					
Tool Name:	Microlog Pad - 11014296		Reference Calibration Date:	21-Oct-17 17:42:32	
Engineer:	WHITLOCK		Calibration Date:	22-Oct-17 09:45:41	
Software Version:	WL INSITE R5.0.5 (Build 8)		Calibration Version:	1	
Measurement	Micro Log Normal		Micro Log Lateral		Units
	Shop	Field	Shop	Field	
Tool Zero	-0.14	-0.09	0.01	0.00	ohmm
Internal Reference	19.94	19.90	20.01	19.97	ohmm
Summary					
Signal	Shop	Field	Difference		Tolerance
Microlog Normal	19.94	19.90	0.04		+/- 0.80
Microlog Lateral	20.01	19.97	0.04		+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION			
Tool Name:	SDLT Pad - 10809130	Reference Calibration Date:	25-May-17 12:11:12
Engineer:	MICHAEL RICHTER	Calibration Date:	03-Aug-17 02:19:19
Software Version:	WL INSITE R5.0.5 (Build 8)	Calibration Version:	1
Logging Source S/N: 5155GW			
Aluminum Block S/N: EL RENO		Density: 2.581g/cc	Pe: 3.170
Magnesium Block S/N: EL RENO MG		Density: 1.687g/cc	Pe: 2.594
DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit

Near Bar Gain	1.0466	0.9648	0.90 - 1.10
Near Dens Gain	1.0202	0.9664	0.90 - 1.10
Near Peak Gain	1.0587	0.9808	0.90 - 1.10
Near Lith Gain	1.0474	0.9899	0.90 - 1.10
Far Bar Gain	1.0144	1.0063	0.90 - 1.10
Far Dens Gain	1.0018	0.9910	0.90 - 1.10
Far Peak Gain	0.9968	0.9885	0.90 - 1.10
Far Lith Gain	0.9703	0.9595	0.90 - 1.10
Near Bar Offset	-0.1512	0.5881	NONE
Near Dens Offset	0.0840	0.5517	NONE
Near Peak Offset	-0.2272	0.4091	NONE
Near Lith Offset	-0.1986	0.2702	NONE
Far Bar Offset	0.0686	0.1331	NONE
Far Dens Offset	0.1508	0.2380	NONE
Far Peak Offset	0.1449	0.2044	NONE
Far Lith Offset	0.2786	0.3450	NONE
Near Bar Background	815.93	813.79	700 - 1450
Near Dens Background	269.20	265.74	230 - 480
Near Peak Background	115.80	115.36	100 - 210
Near Lith Background	146.10	144.32	125 - 260
Far Bar Background	479.68	477.53	450 - 900
Far Dens Background	184.50	185.37	175 - 345
Far Peak Background	72.51	72.20	70 - 140
Far Lith Background	76.60	75.50	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	2.521	2.561	0.040	+/- 0.150
ALUMINUM				
Density (g/cc)	2.574	2.580	0.006	+/- 0.01500
Pe	3.085	3.134	0.049	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0002	+/- 0.0110	-0.0029	+/- 0.0140
Magnesium Block	-0.0013	+/- 0.0110	-0.0010	+/- 0.0140
Aluminum Block	-0.0009	+/- 0.0110	-0.0014	+/- 0.0140
Resolution	8.91	6.00 - 11.50	9.49	6.00 - 11.50
Internal Verifier(B+D+P+L)	1339	1200 - 2700	811	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

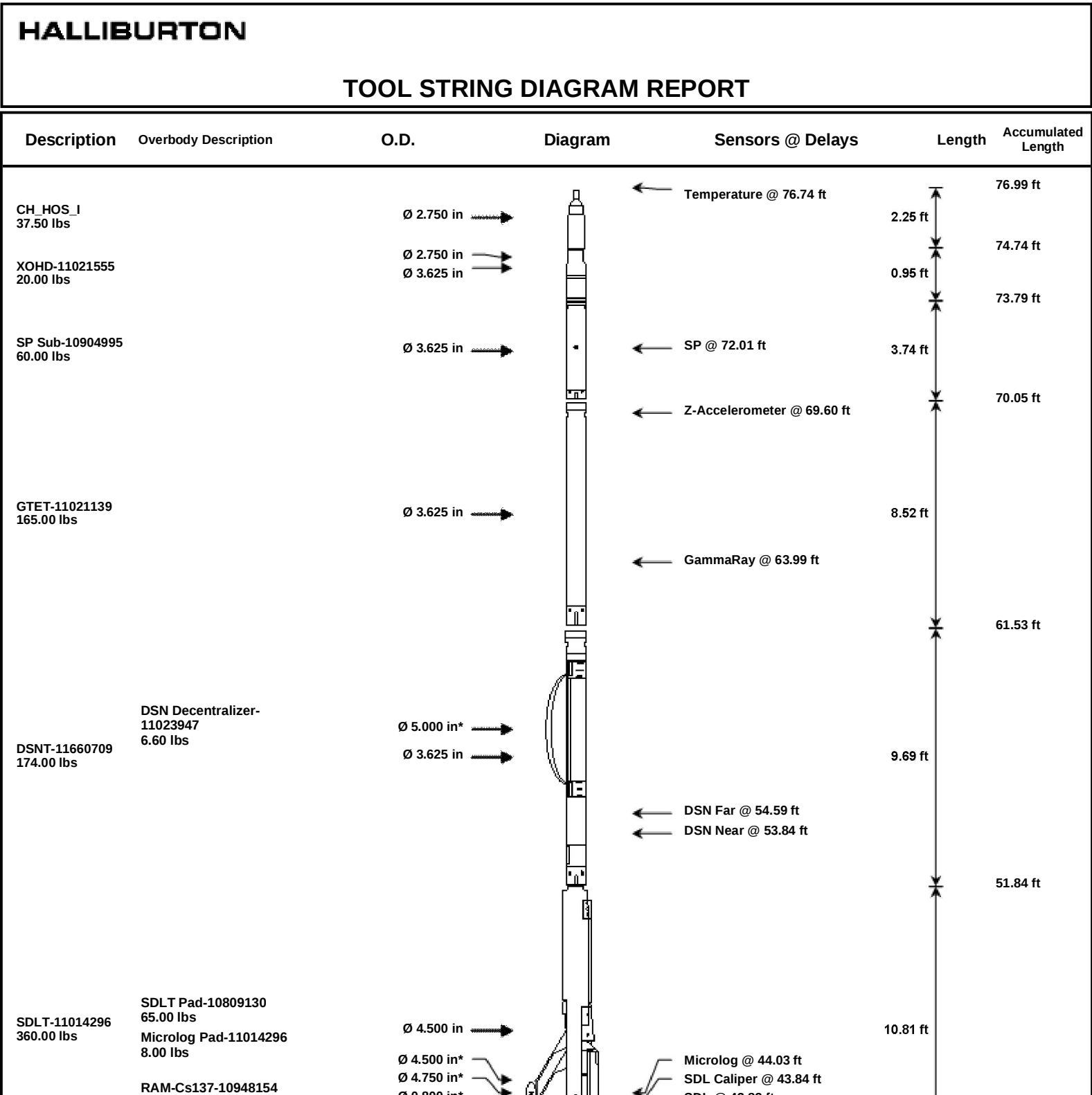
SPECTRAL DENSITY FIELD CHECK				
Tool Name:	SDLT Pad - 10809130		Reference Calibration Date:	03-Aug-17 02:19:19
Engineer:	WHITLOCK		Calibration Date:	22-Oct-17 09:49:00
Software Version:	WL INSITE R5.0.5 (Build 8)		Calibration Version:	1
Pad Temperature: 77.6 degF				
DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1339.219	1329.945	-9.274	14.801
Far (B+D+P+L) cps	810.608	810.409	-0.199	15.737
Near Resolution	8.91	8.83	-0.080	0.50
Far Resolution	9.49	9.23	-0.260	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
Depth Panel-PROT01						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
CH_HOS-CH_HOS_I						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	1030.00	-----	-----	0.00	-----	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	222.7	-----	3.2	+/- 9.00	api
DSNT-11660709						
Snow-Block Porosity	0.0811	0.0760	-----	0.0051	+/- 0.0150	decp
SDLT-11014296						
Pad Extension	3.75	3.74	-----	0.01	+/-0.10	in
Ring Diameter	8.25	8.24	-----	0.01	+/-0.15	in
ACRt Sonde-11038385						
Mud Cell	1.00	-----	-----	0	-----	ohm-m
Microlog Pad-11014296						
MicroLog Normal	19.94	19.90	-----	0.04	+/-0.80	ohmm
MicroLog Lateral	20.01	19.97	-----	0.04	+/-0.80	ohmm
SDLT Pad-10809130						
Near(B+D+P+L)	1339.219	1329.945	-----	9.274	+/-14.801	cps
Far(B+D+P+L)	810.608	810.409	-----	0.199	+/-15.737	cps
Data: JOLEN_SELLARD\0001 GTET-DSN-SDL-FLX-BSAT-ACRTIDLE					Date: 22-Oct-17 20:04:53	

HALLIBURTON						
PARAMETERS REPORT						
Depth (ft)	Tool Name	Mnemonic	Description	Value	Units	
TOP						
	SHARED	BS	Bit Size	7.875	in	
	SHARED	UBS	Use Bit Size instead of Caliper for all applications.	No		
	SHARED	MDBS	Mud Base	Water		
	SHARED	MDWT	Borehole Fluid Weight	9.000	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	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	CSTR	Compressive Strength	1000.00	psia
SHARED	ST	Surface Temperature	75.0	degF
SHARED	TD	Total Well Depth	5430.00	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	CBM Temperature Master Tool	GTET	
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	
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	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 Up	
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				
Data: JOLEN_SELLARD\0001 GTET-DSN-SDL-FLX-BSAT-ACRT\IDLE			Date: 22-Oct-17 20:05:51	



1.00 lbs

Ø 0.800 in*

SDL @ 43.83 ft

41.03 ft

IQ Flex-10973274
140.00 lbs

Ø 3.625 in →

5.67 ft

35.36 ft

Centralizer 25-00000002
8.00 lbs

Ø 3.750 in* →

BSAT-10939049
300.00 lbs

Ø 3.625 in →

Receiver Array @ 26.84 ft
Sonic Receivers @ 26.84 ft

15.77 ft

19.58 ft

ACRt Instrument-
11055059
50.00 lbs

Centralizer 25-00000001
8.00 lbs

Ø 3.625 in →
Ø 3.750 in* →

5.03 ft

14.55 ft

Mud Resistivity @ 13.19 ft

ACRt @ 9.21 ft

ACRt Sonde-
11038385
200.00 lbs

Ø 3.625 in →

14.22 ft

0.33 ft

Bull Nose-12345678
5.00 lbs

Ø 2.750 in →

0.33 ft

0.00 ft

Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)
CH_HOS	Hostile Cable Head with Load Cell	CH_HOS_I	37.50	2.25	74.74	300.00
XOHD	Hostile to Dits Cross Over	11021555	20.00	0.95	73.79	300.00
SP	SP Sub	10904995	60.00	3.74	70.05	300.00
GTET	Gamma Telemetry Tool	11021139	165.00	8.52	61.53	60.00
DSNT	Dual Spaced Neutron	11660709	174.00	9.69	51.84	60.00
DCNT	DSN Decentralizer	11023947	6.60	5.13 *	55.17	300.00
SDLT	Spectral Density Tool	11014296	360.00	10.81	41.03	60.00
SDLP	Density Insite Pad	10809130	65.00	2.55 *	43.24	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	10948154	1.00	0.80 *	43.47	300.00
MICP	Microlog Pad	11014296	8.00	1.00 *	43.53	60.00
IQF	IQ Flex tool	10973274	140.00	5.67	35.36	300.00
BSAT	Borehole Sonic Array Tool	10939049	300.00	15.77	19.58	60.00

OBCEN	Centralizer - 25 in. Overbody	00000002	8.00	2.08	*	32.44	300.00
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03		14.55	120.00
OBCEN	Centralizer - 25 in. Overbody	00000001	8.00	2.08	*	15.70	300.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22		0.33	120.00
BLNS	Bull Nose	12345678	5.00	0.33		0.00	300.00
Total			1,608.10	76.99			
					* Not included in Total Length and Length Accumulation.		
Data: JOLEN_SELLARD\0001 GTET-DSN-SDL-FLX-BSAT-ACRT\IDLE					Date: 22-Oct-17 20:08:20		