

MICROLOG

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Service Ticket No.: 905820789				API No.: 15-189-22860-00-00				PGM Version: WL INSITE R6.2.1 (Build 2)						
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.						
Serial No.				Serial No.				Serial No.						
Model No.				Model No.				Model No.						
Diameter				No. of Cent.				Diameter						
Detector Model No.				Spacing				Log Type						
Type								Source Type						
Length				LSA [Y/N]				Serial No.						
Distance to Source				FWDA [Y/N]				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	

DIRECTIONAL INFORMATION															
Maximum Deviation @								KOP @							
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME															
LIMESTONE MATRIX USED FOR ALL POROSITY CALCULATIONS															
HALLIBURTON DOES NOT GUARANTEE THE ACCURACY OF ANY INTERPRETATION OF THE LOG DATA, CONVERSION OF LOG DATA TO PHYSICAL ROCK PARAMETERS OR RECOMMENDATIONS WHICH MAY BE GIVEN BY HALLIBURTON PERSONNEL OR WHICH APPEAR ON THE LOG OR IN ANY OTHER FORM. ANY USER OF SUCH DATA, INTERPRETATIONS, CONVERSIONS, OR RECOMMENDATIONS AGREES THAT HALLIBURTON IS NOT RESPONSIBLE EXCEPT WHERE DUE TO GROSS NEGLIGENCE OR WILLFUL MISCONDUCT, FOR ANY LOSS, DAMAGES, OR EXPENSES RESULTING FROM THE USE THEREOF.															
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Plot Time: 31-Jul-19 19:55:20

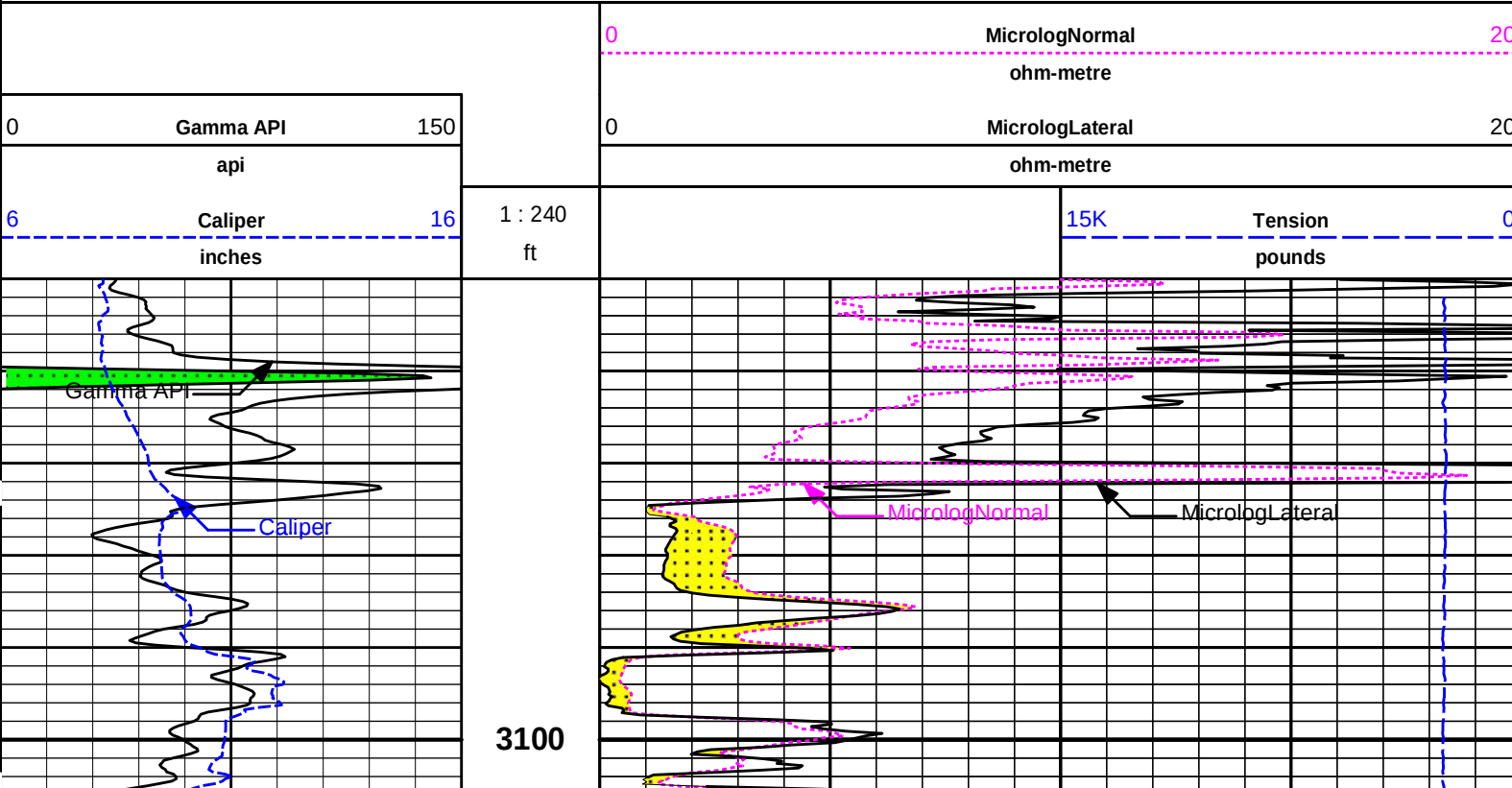
Plot Range: 3050 ft to 5758.5 ft

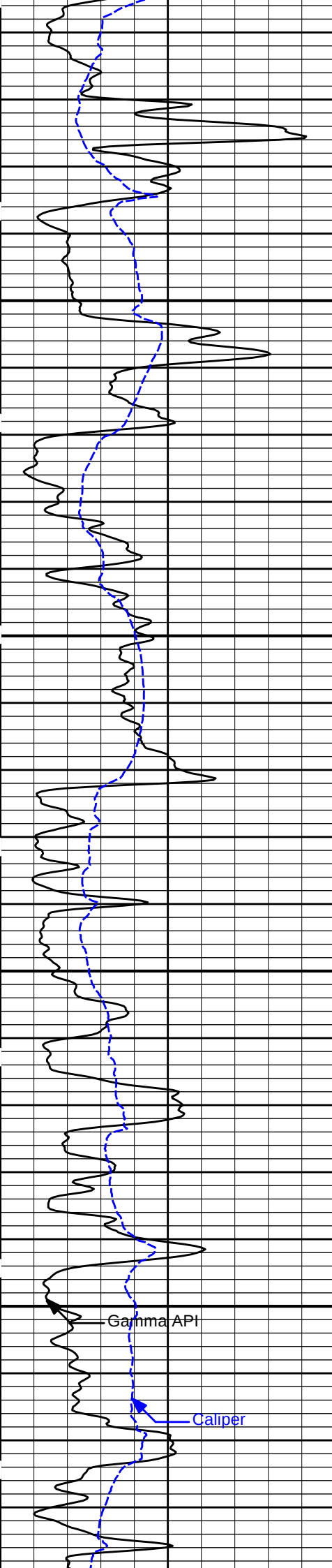
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Plot File: \\LOCAL\BEREXCO_BROWN\0001 GTET-DSN-SDL-BSAT-ACRT\LOG\Microlog_IQ_5_main

5 INCH MAIN LOG

MAIN LOG 5" PER 100'





3200

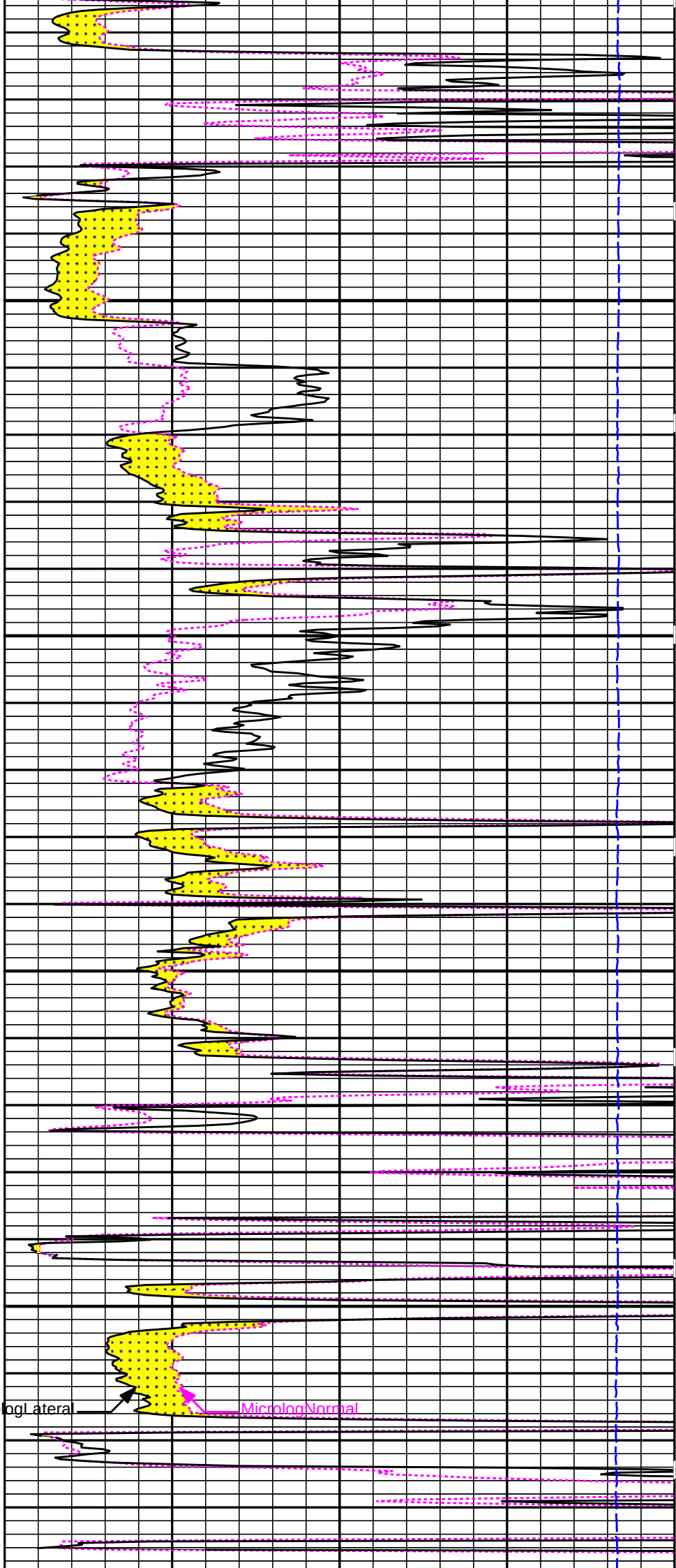
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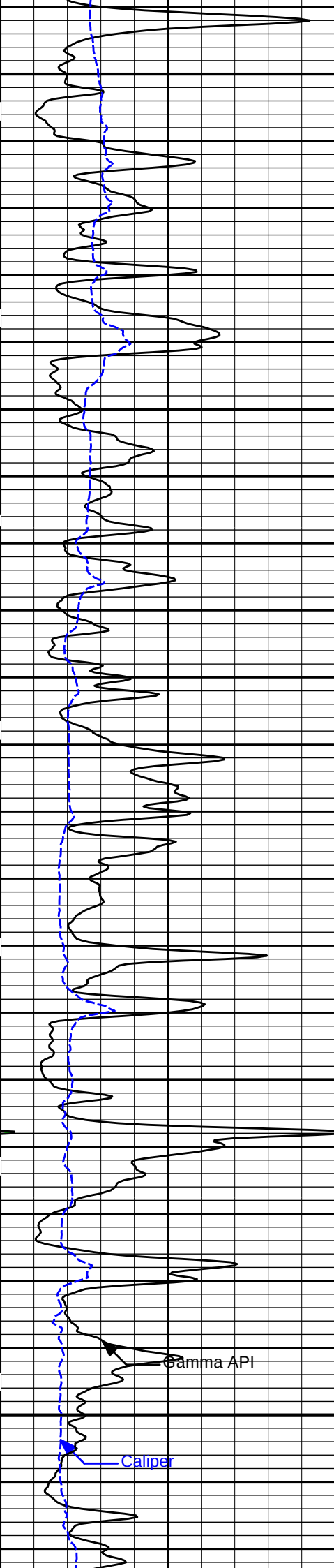
Gamma API

Caliper

Microlog Lateral

Microlog Normal



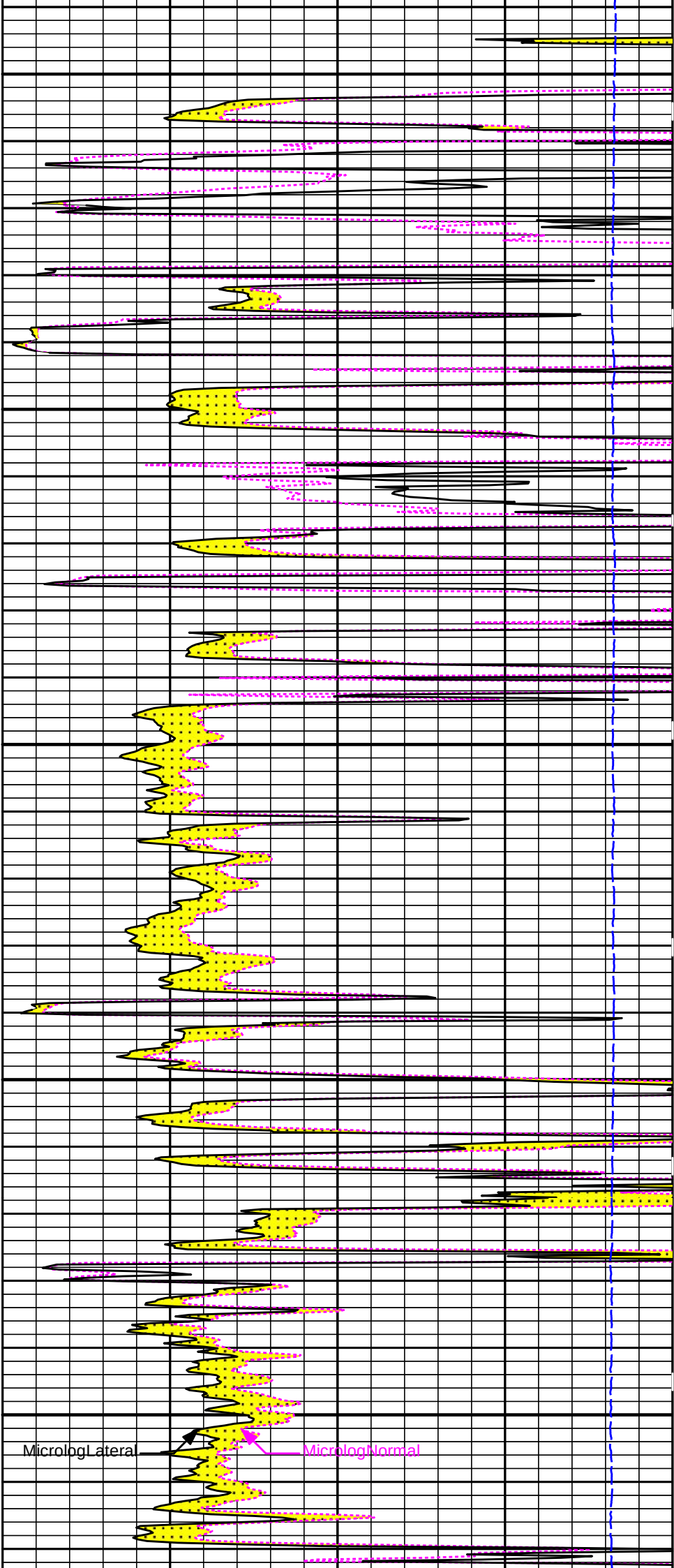


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3500

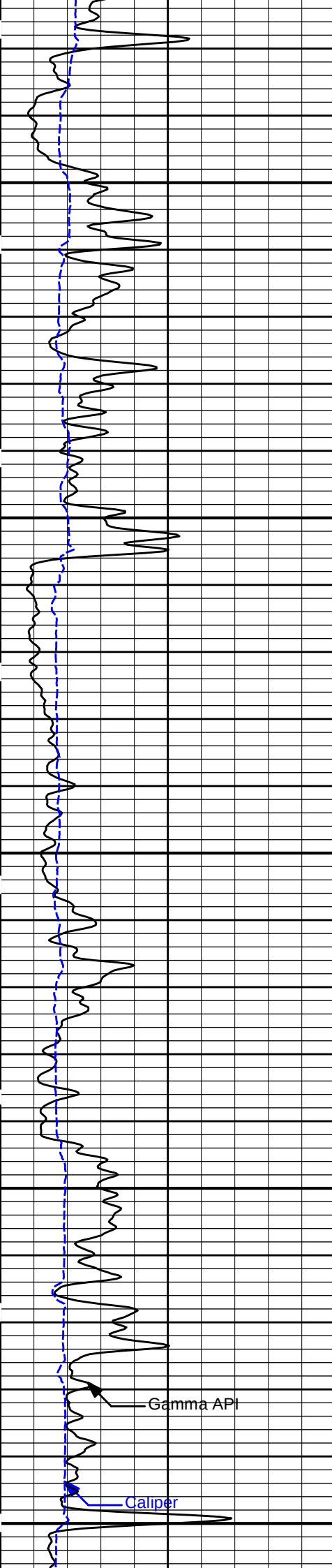
Gamma API

Caliper



Microlog Lateral

Microlog Normal



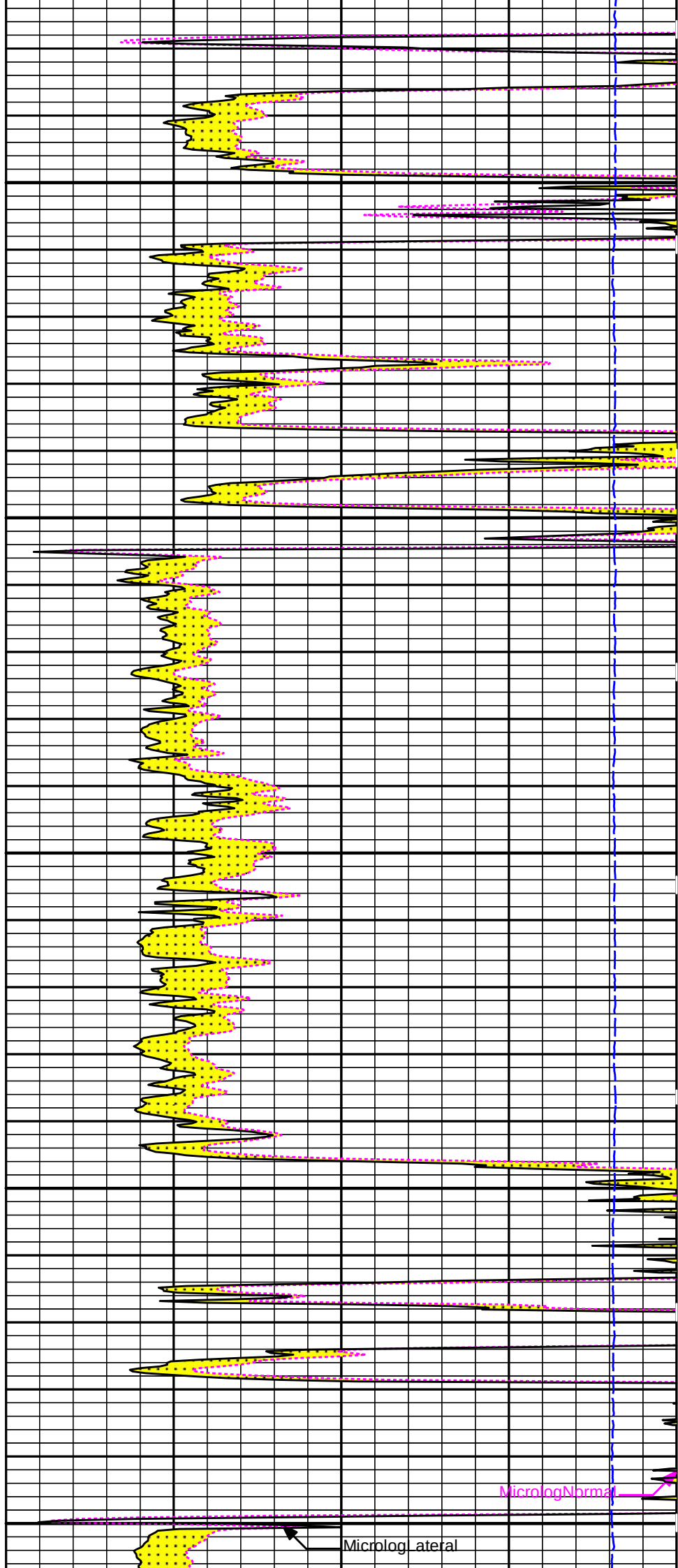
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3700

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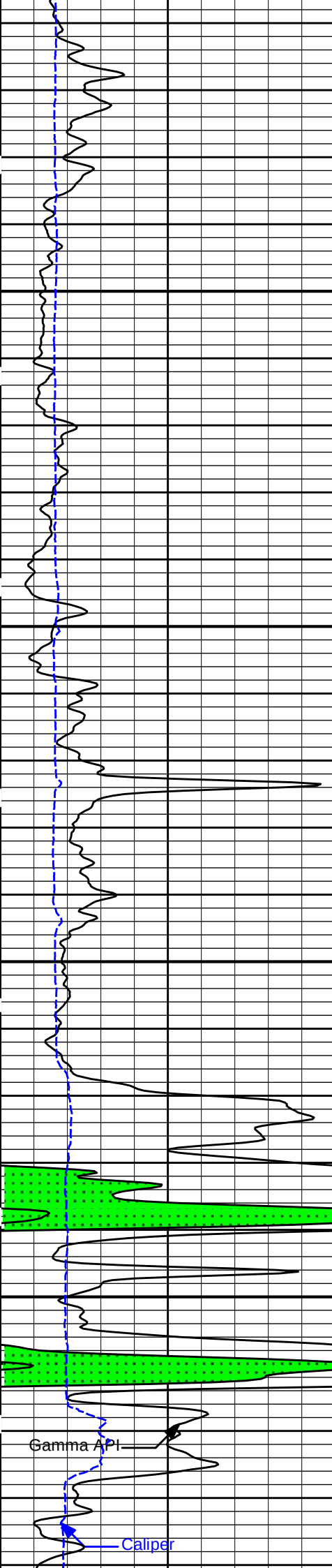
Gamma API

Caliper



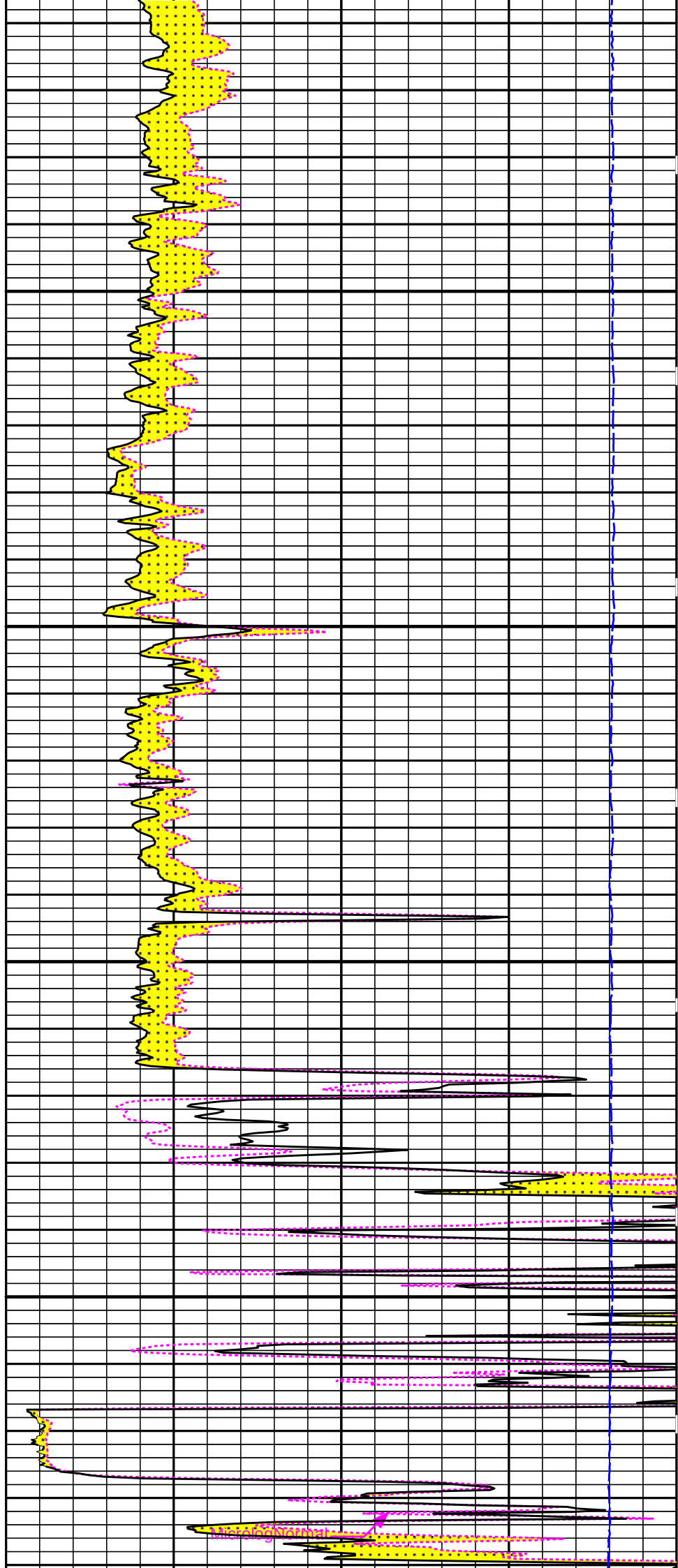
MicrologNormal

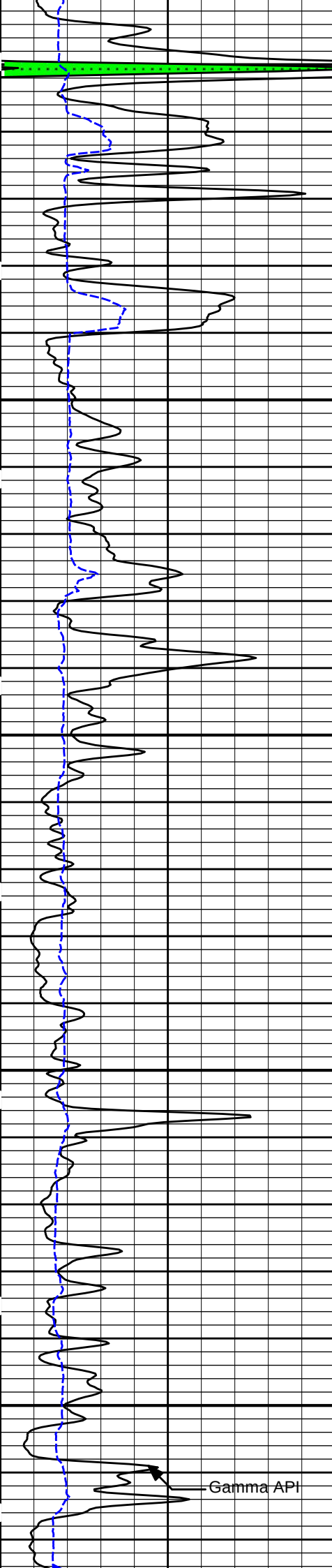
MicrologLateral



3900

4000



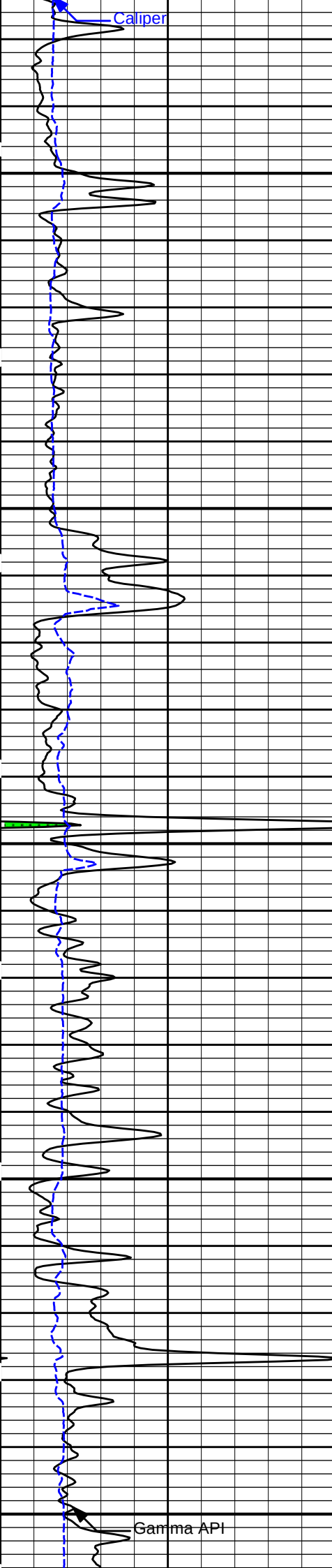


4100

4200

Gamma API

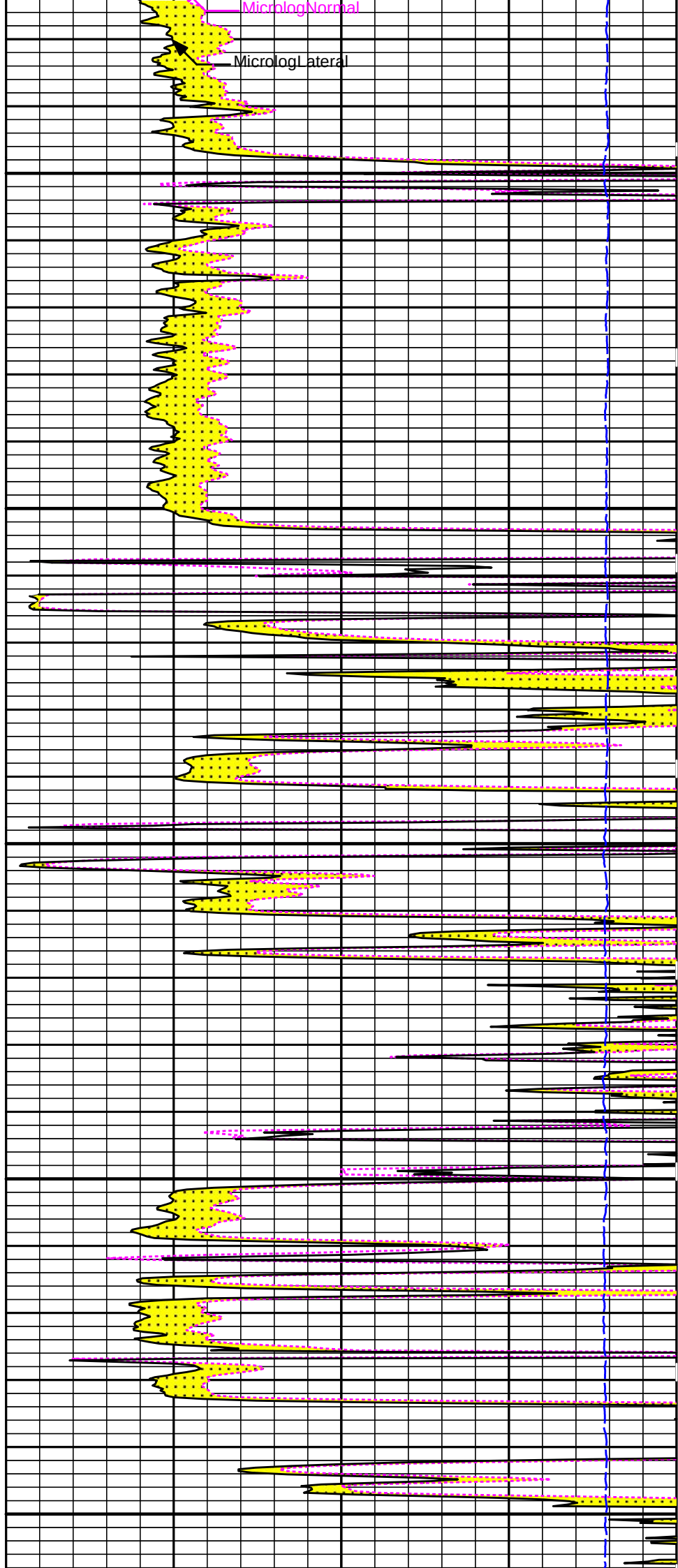
Microlog Lateral

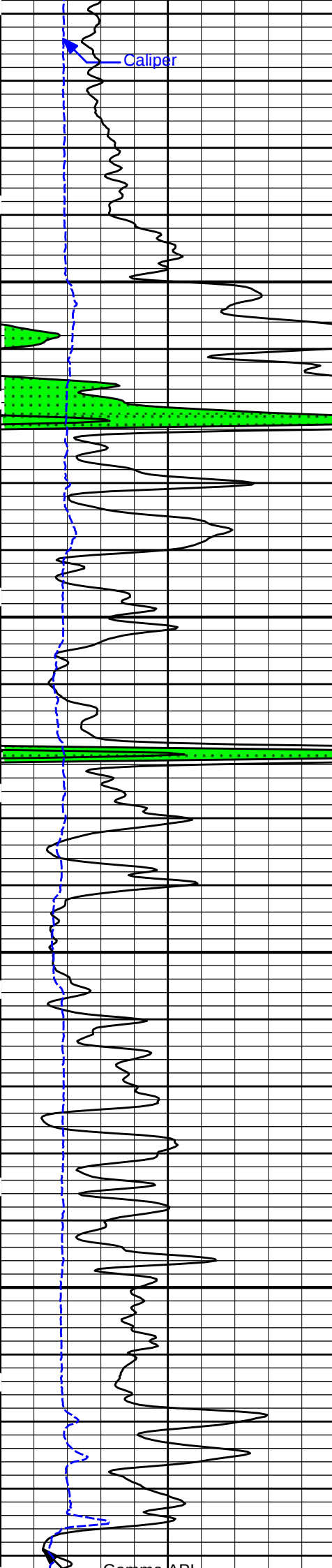


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4400

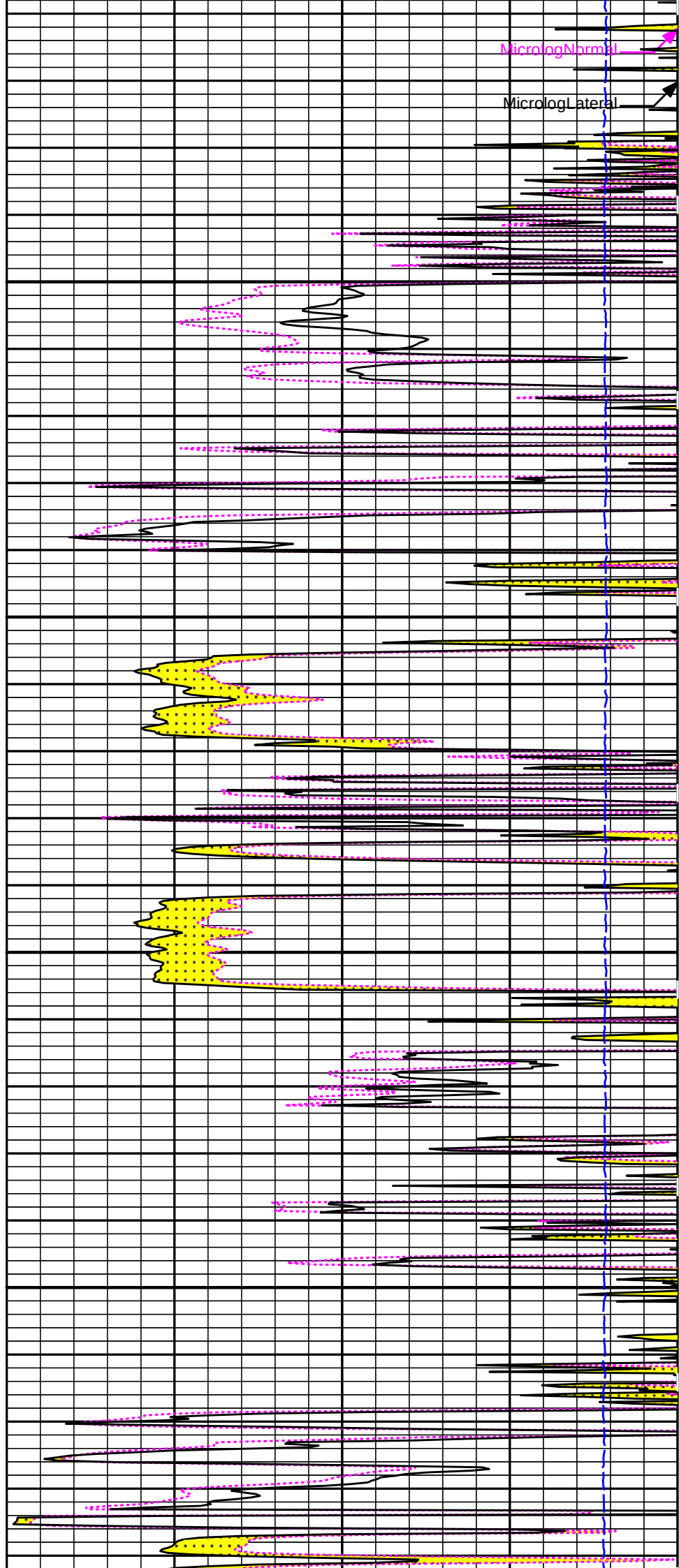
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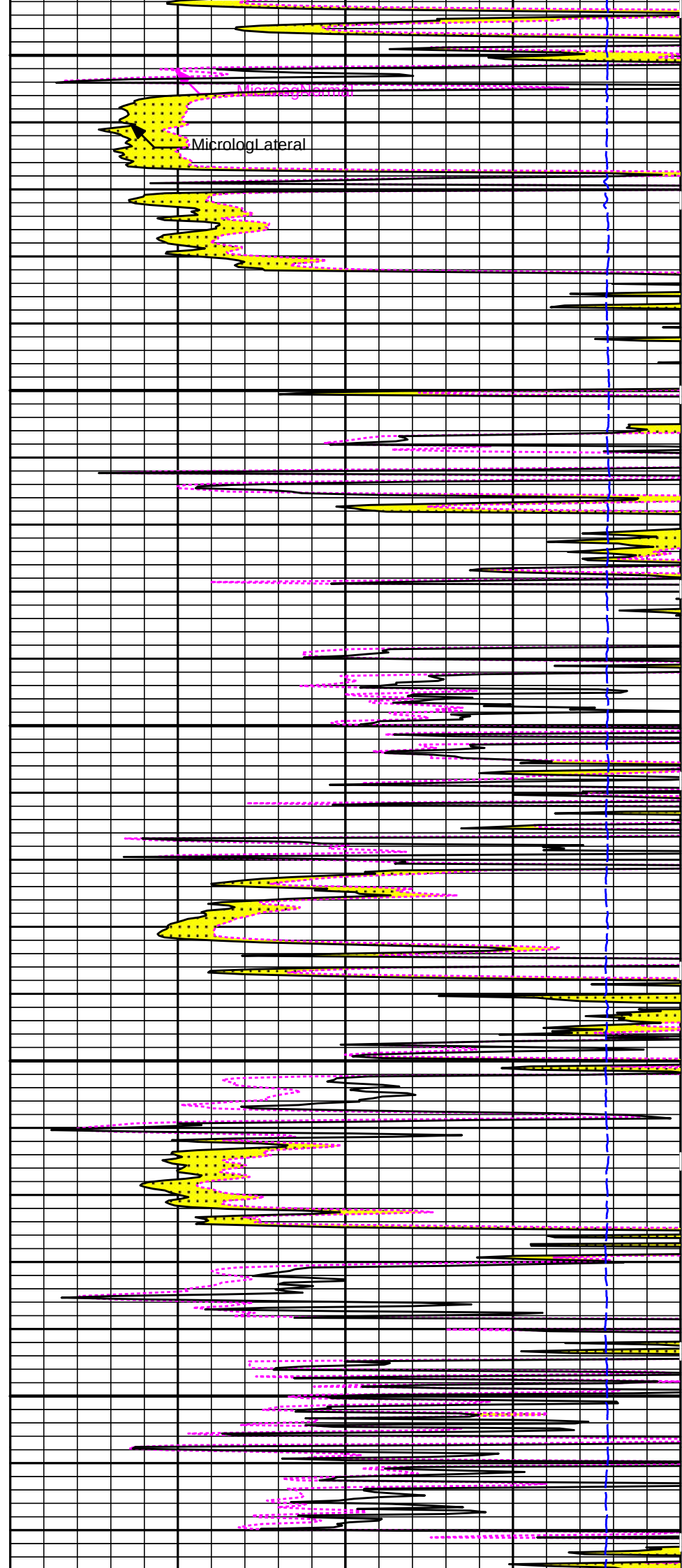
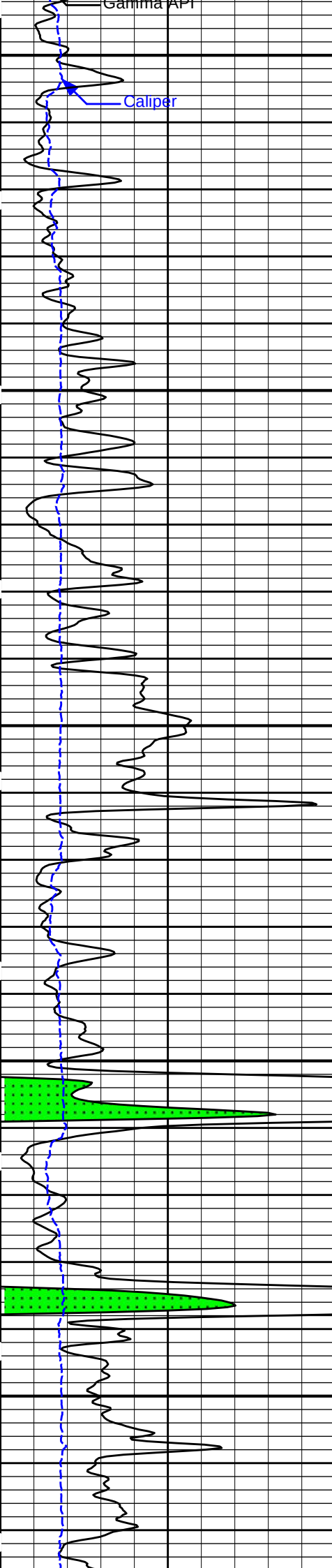


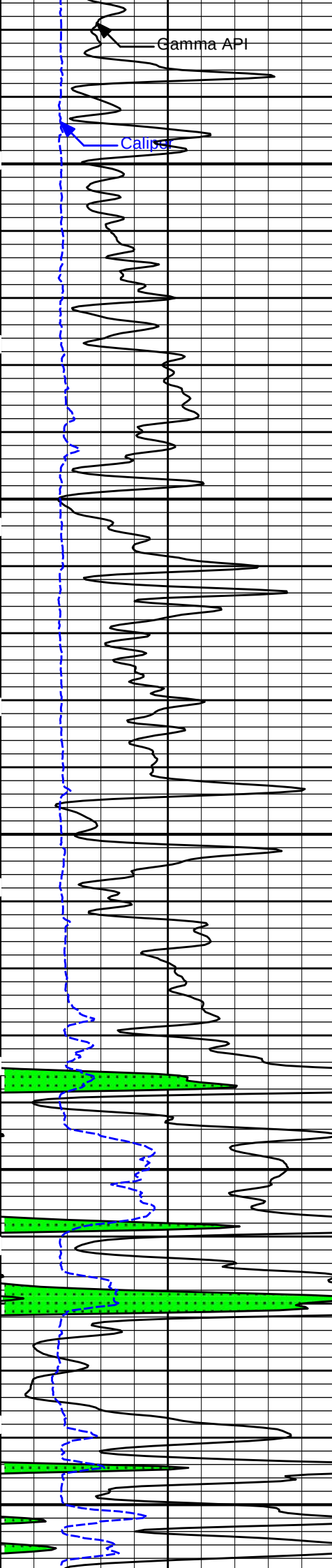


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4700



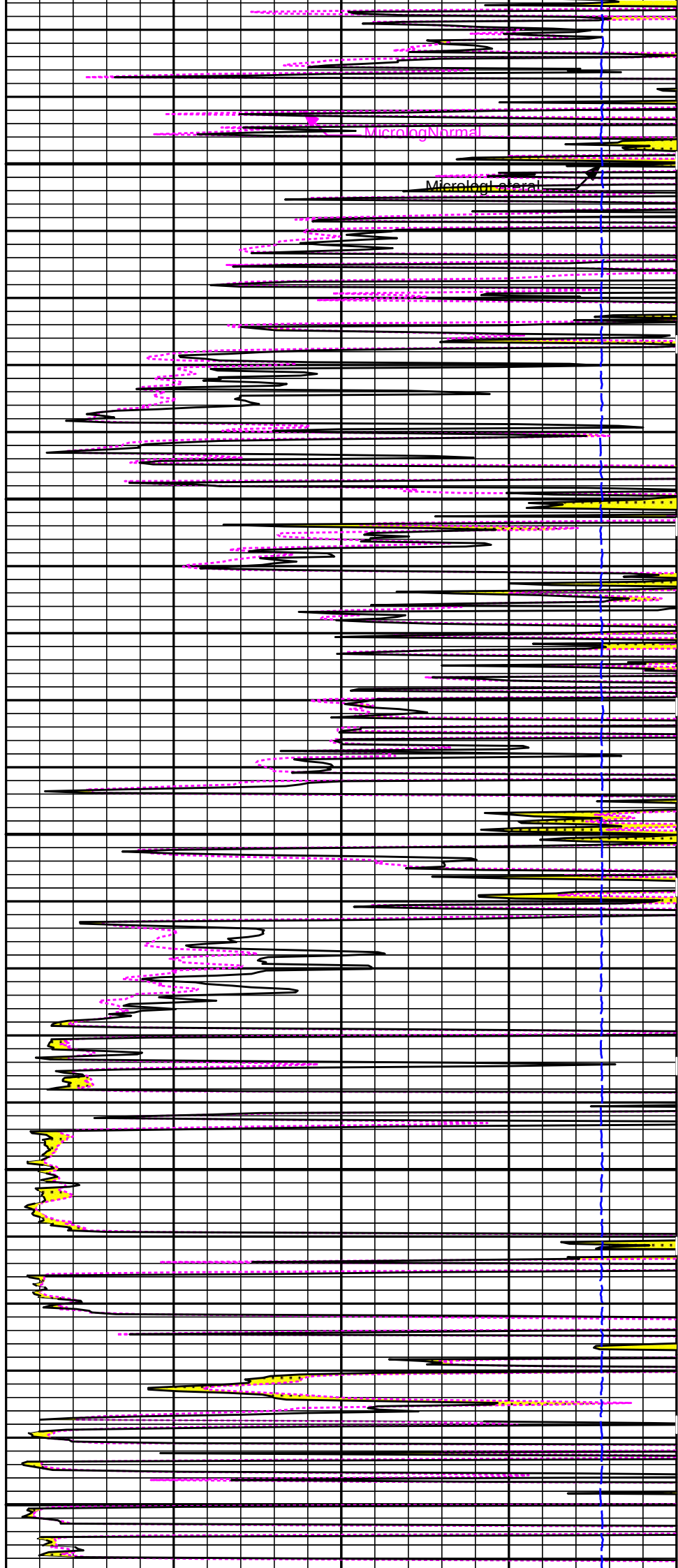


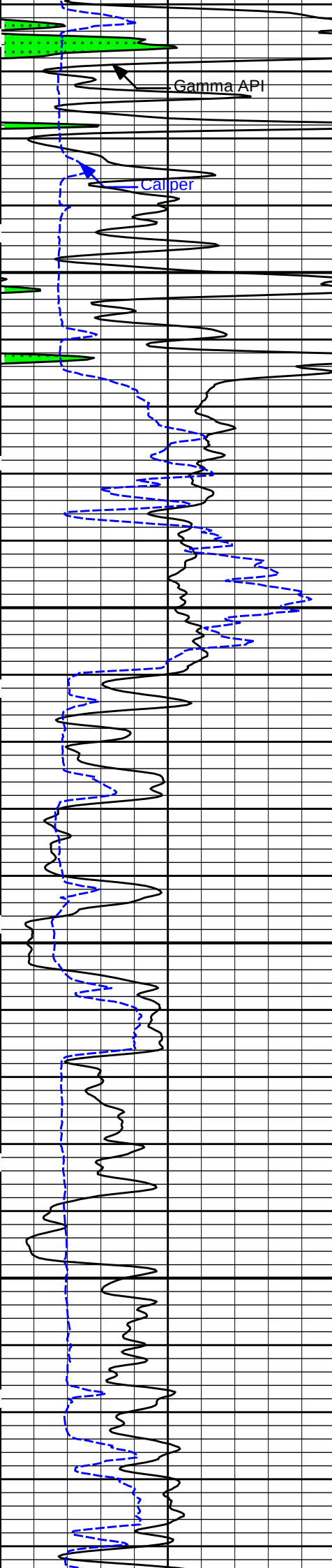


5000

5100

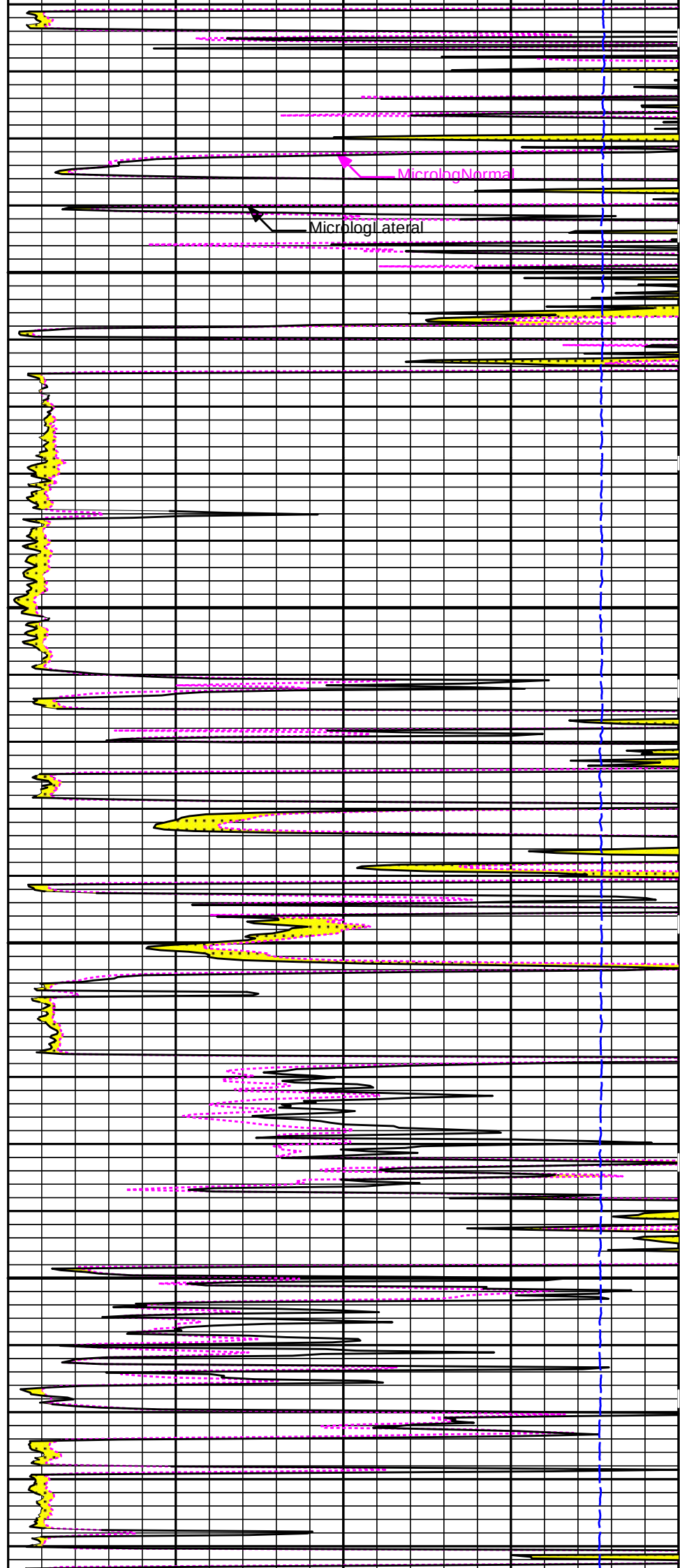
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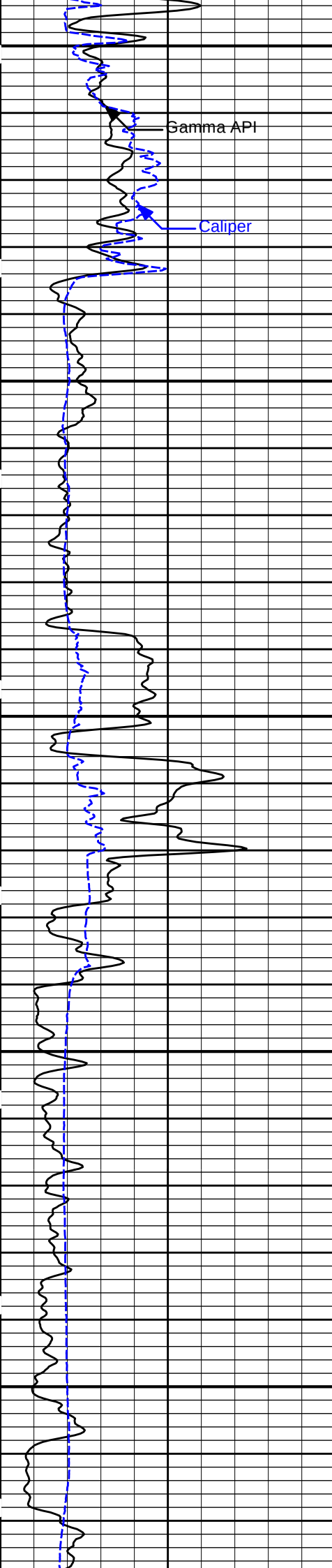




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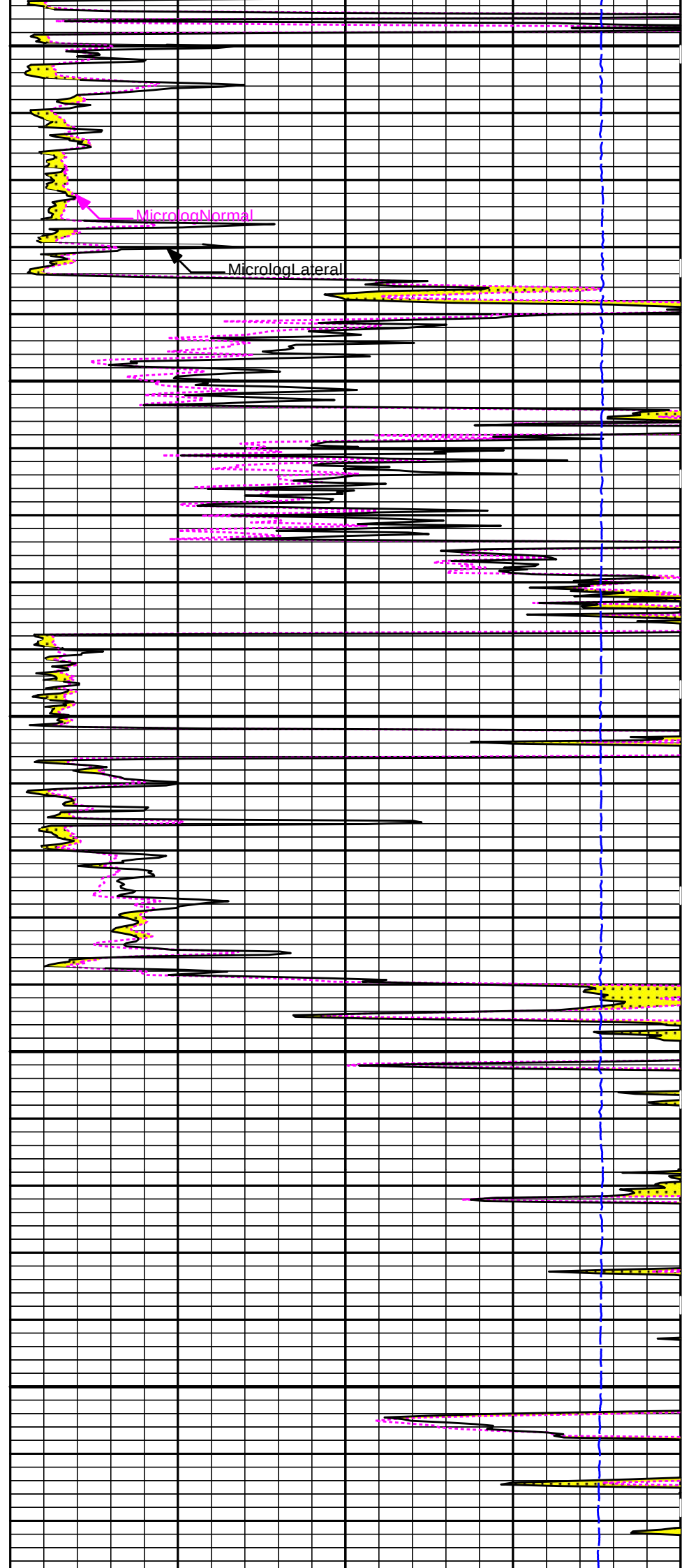
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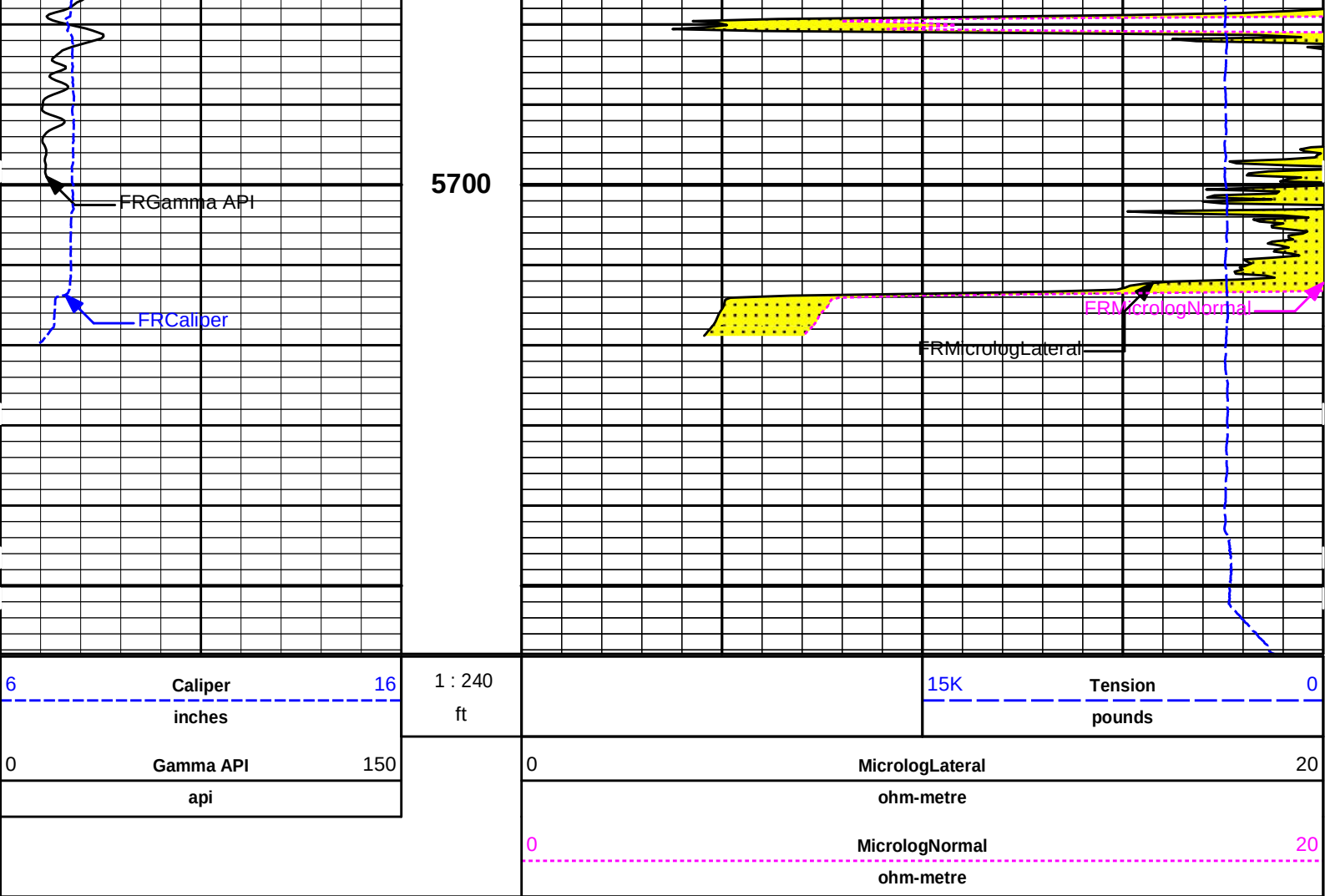




5500

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Plot Time: 31-Jul-19 19:55:23
Plot Range: 3050 ft to 5758.5 ft
Data: BEREXCO_BROWN\Well Based\DAQ-0001-003.01\
Plot File: \\-LOCAL-\\BEREXCO_BROWN\0001 GTET-DSN-SDL-BSAT-ACRTIMLOG\Microlog_IQ_5_main

5 INCH MAIN LOG

MAIN LOG 5" PER 100'

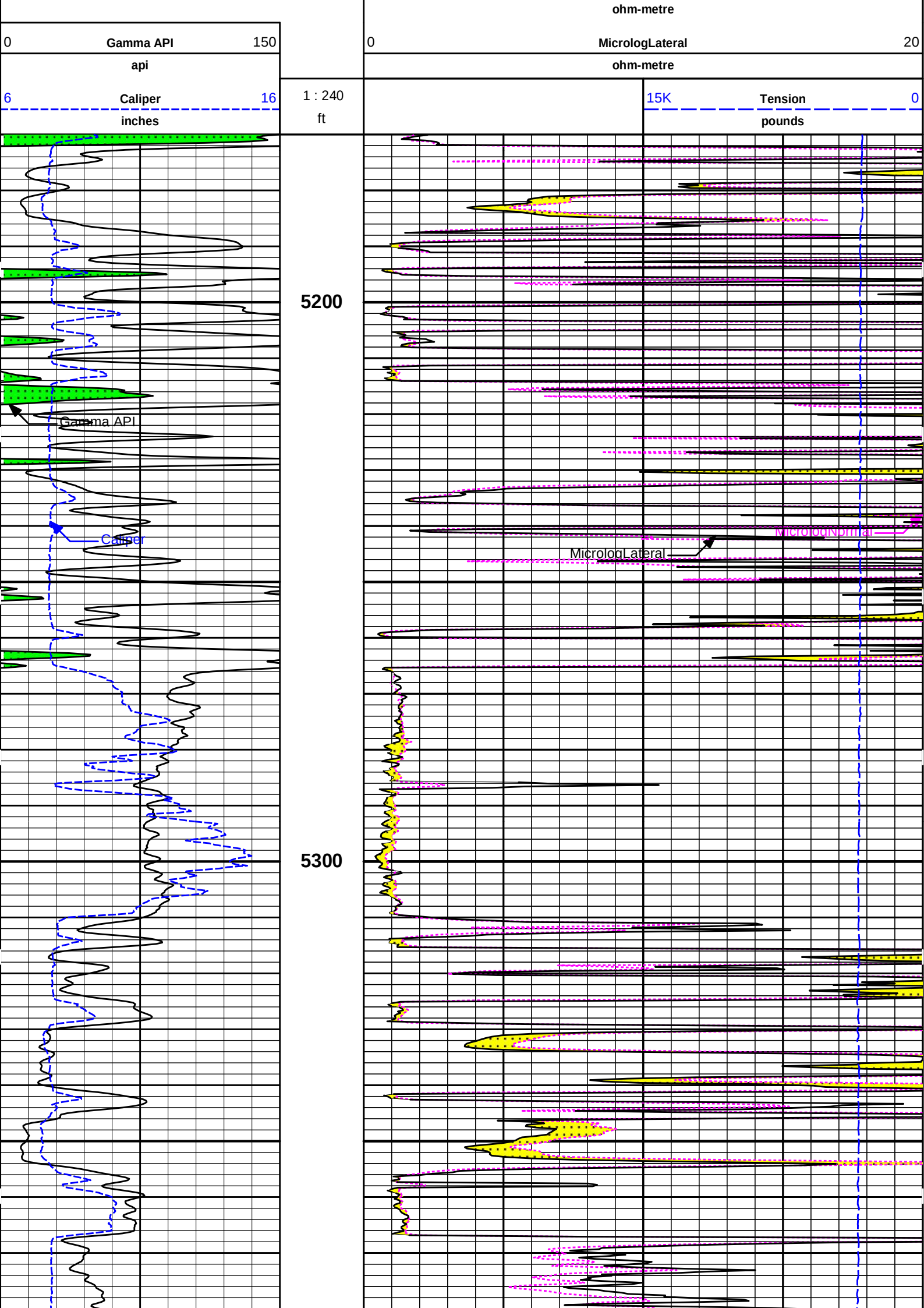
HALLIBURTON

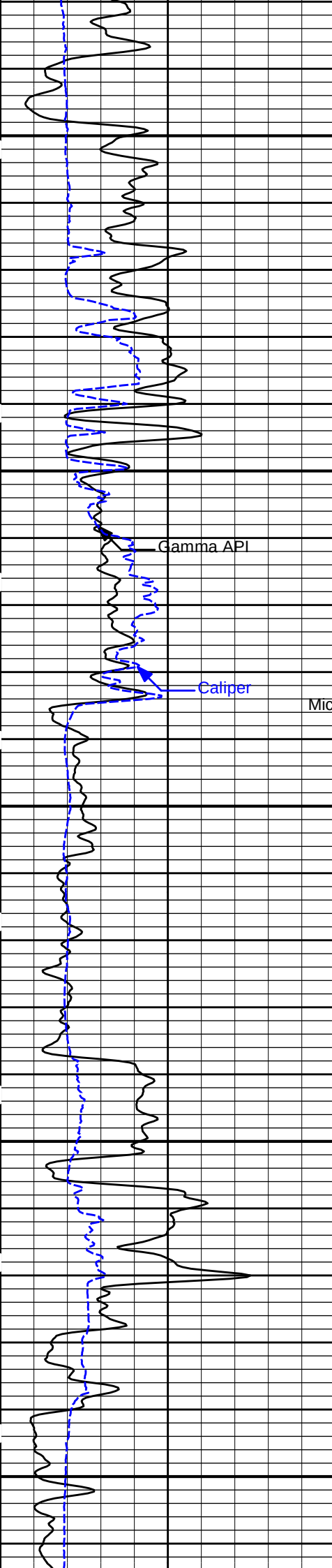
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Plot File: \\-LOCAL-\\BEREXCO_BROWN\0001 GTET-DSN-SDL-BSAT-ACRTIMLOG\Microlog_IQ_5_main

REPEAT SECTION

REPEAT SECTION





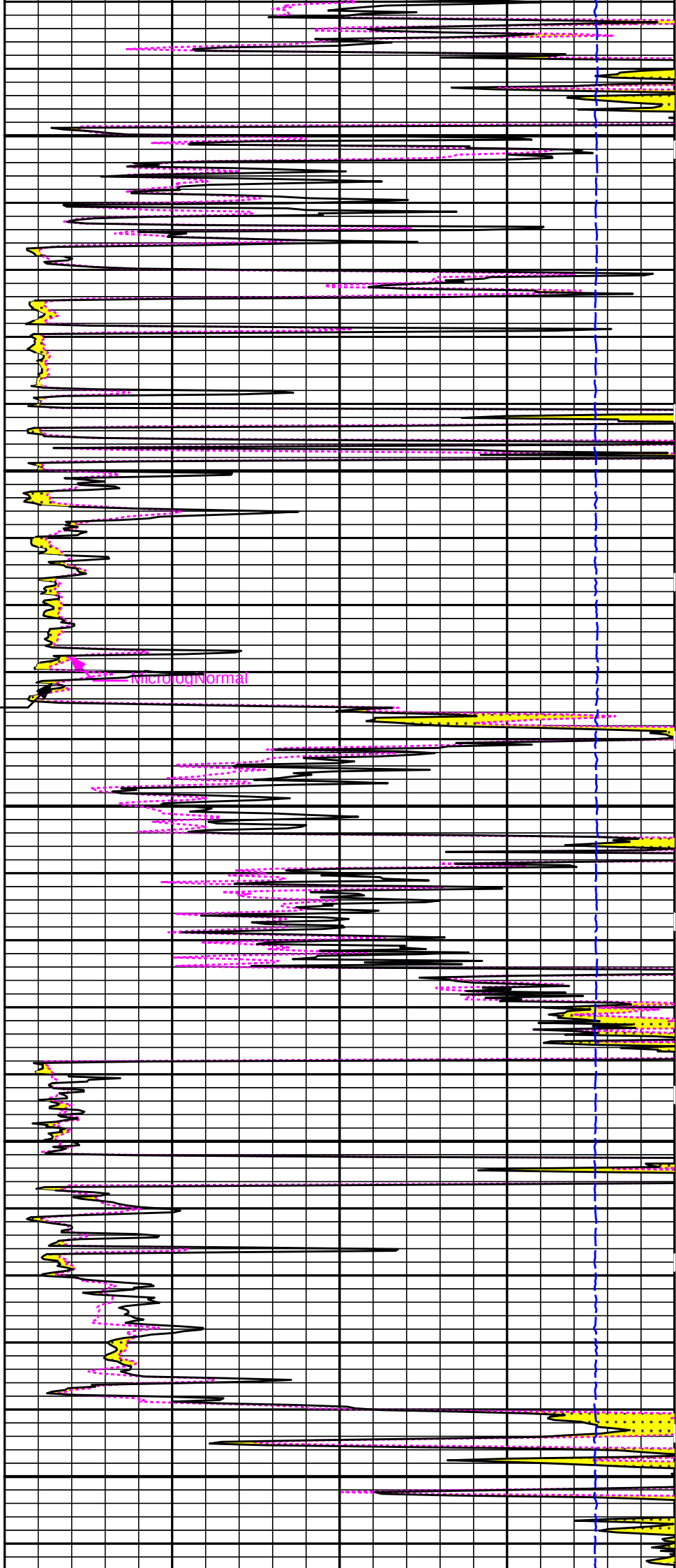


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MicrologLateral



CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name: Depth Panel - 00000032Reference Calibration Date: 26-Jul-19 17:26:31

Engineer: WOLTEMATHCalibration Date: 28-Jul-19 00:13:55

Software Version: WL INSITE R6.2.1 (Build 2)Calibration Version: 1

SURFACE TENSION LOAD CELL				
Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	9998.08	-62.17	0.00	lbs
High	17295.07	7822.09	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name: RWCH - 11830866Reference Calibration Date: 26-Jul-19 17:29:49

Engineer: WOLTEMATHCalibration Date: 28-Jul-19 00:18:29

Software Version: WL INSITE R6.2.1 (Build 2)Calibration Version: 1

DOWNHOLE LOAD CELL				
Measurement	Tool Value	Measurement	Calibrated	Units
Low	-689.04	3.64	0.00	lbs
High	4138.10	564.09	1319.10	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name: GTET - 11021139Reference Calibration Date: 14-May-19 09:57:38

Engineer: WHITLOCKCalibration Date: 29-Jun-19 15:22:45

Software Version: WL INSITE R6.2.1 (Build 2)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	21.7	21.5	api
Background + Calibrator	249.2	247.4	api
Calibrator	227.5	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name: GTET - 11021139Reference Calibration Date: 29-Jun-19 15:22:45

Engineer: WHITLOCKCalibration Date: 29-Jul-19 12:19:35

Software Version: WL INSITE R6.2.1 (Build 2)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	21.5	24.5	api
Background + Calibrator	247.4	248.9	api
Calibrator	225.9	224.5	api

Shop	Field	Difference	Tolerance
225.9	224.5	1.4	+/- 9.00

DUAL SPACED NEUTRON SHOP CALIBRATION

Tool Name: DSNT - 11660709Reference Calibration Date: 14-Feb-19 11:05:14

Engineer: WHITLOCKCalibration Date: 14-May-19 11:28:42

Software Version: WL INSITE R6.2.1 (Build 2)Calibration Version: 1

Tank Serial Number: EL RENO HWT
Reference value assigned to Tank: 56.100
Snow Block S/N: 12156883
Calibration Tank Water Temperature: 74 degF
Min. Tool Housing Outside Diameter: 3.625 in

CALIBRATION CONSTANTS			
Measurement	Prev. Value	New Value	Control Limit On New Value

Gain:	1.01152	1.00941	0.900 - 1.100
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WATER TANK SUMMARY (Horizontal Water Tank)				
Measurement	Current Reading (Previous Coef.)	Calibrated (New Coef.)	Change	Control Limit On Change
Porosity (decp):	0.2364	0.2358	0.0007	+/- 0.0020
Calibrated Ratio:	10.5816	10.5596	0.022	+/- 0.050

VERIFIER		
Measurement	Value	Control Limit

Snow-Block Porosity (decp):	0.0724	0.02000 - 0.09000
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PASS/FAIL SUMMARY	
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Background Check:	Passed
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Gain-Range Check:	Passed
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Snow-Block Check:	Passed
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DUAL SPACED NEUTRON FIELD CALIBRATION

Tool Name:	DSNT - 11660709	Reference Calibration Date:	14-May-19 11:28:42
Engineer:	WHITLOCK	Calibration Date:	16-Jul-19 11:07:48
Software Version:	WL INSITE R6.2.1 (Build 2)	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):	0.0724	0.0631	-0.0093	+/- 0.0150
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PASS/FAIL SUMMARY	
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Block Change Check:	Passed
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Snow Block Stat Check:	Passed
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Temperature Check:	Passed
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DENSITY CALIPER SHOP CALIBRATION

Tool Name:	SDLT - 12153526	Reference Calibration Date:	01-Jan-70 00:00:00
Engineer:	WOLTEMATH	Calibration Date:	08-Jul-19 10:59:56
Software Version:	WL INSITE R6.2.1 (Build 2)	Calibration Version:	1
Host Tool Name:	DSNT - 11660709		

CALIBRATION COEFFICIENTS			
Measurement	Previous Value	New Value	Control Limit On New Value

Pad Offset	-3224.77	-3224.77	-7000.00 - -1000.00
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Pad Gain	0.0003783	0.0003783	0.0002000 - 0.0006000
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Arm Offset	-2193.01	-2193.01	-5000.00 - 3000.00
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Arm Gain	0.0005237	0.0005237	0.000300 - 0.000700
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Arm Power	-0.000005118	-0.000005118	-0.000010000 - 0.000010000
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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 - 12153526	Reference Calibration Date:	08-Jul-19 10:59:56
Engineer:	WOLTEMATH	Calibration Date:	08-Jul-19 11:01:50
Software Version:	WL INSITE R6.2.1 (Build 2)	Calibration Version:	1

MEASURED CALIPER VALUES				
Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.76	0.01	+/- 0.10
Ring Diameter	8.25	8.25	0.00	+/- 0.15

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

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			
Tool Name:	ACRt Sonde - 11038385	Reference Calibration Date:	30-May-19 10:30:10
Engineer:	WHITLOCK	Calibration Date:	30-May-19 16:04:26
Software Version:	WL INSITE R6.2.1 (Build 2)	Calibration Version:	1
Host Tool Name:	ACRt Instrument - 11055059		

TYPICAL GAIN RANGE									
Subarray	R12KHz			R36KHz			R72KHz		
	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper	Lower	(mmho/m)	Upper
A1 (80")	0.95	1.0436	1.05	0.95	1.0233	1.05	0.95	1.0105	1.05
A2 (50")	0.95	1.0425	1.05	0.95	1.0248	1.05	0.95	1.0169	1.05
A3 (29")	0.95	1.0370	1.05	0.95	1.0178	1.05	0.95	1.0085	1.05
A4 (17")	0.95	1.0325	1.05	0.95	1.0108	1.05	0.95	1.0026	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0032	1.05	0.95	0.9929	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9937	1.05	0.95	0.9859	1.05

SONDE OFFSET

Subarray	R12KHz		R36KHz		R72KHz		
(mmho/m)			(mmho/m)		(mmho/m)		
A1 (80")	1.105		-4.185		-6.175		
A2 (50")	-2.031		-4.364		-5.644		
A3 (29")	-15.630		-4.663		-3.991		
A4 (17")	-113.327		-34.718		-27.228		
A5 (10")	N/A		-86.739		-42.245		
A6 (6")	N/A		334.526		172.566		
TRANSMITTER CURRENT GAIN				R-MUD VERIFICATION			
Signal	Lower	R	Upper	Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
12K	0.6	0.93	1.3	Mud Cell	0.95	1.00	1.05
36K	1.0	1.39	2.0				
72K	1.0	1.66	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:	27-Mar-19 10:28:27
Engineer:	WHITLOCK	Calibration Date:	30-May-19 10:32:26
Software Version:	WL INSITE R6.2.1 (Build 2)	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	-0.007	> -0.500	Pass
A2 (50")	0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.006	> -0.500	Pass
A3 (29")	-0.000	< 0.500	Pass	-0.001	> -0.500	Pass	-0.004	> -0.500	Pass
A4 (17")	-0.003	> -0.500	Pass	-0.008	> -0.500	Pass	-0.028	> -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")	-222464160.000	-219334160.000	3130000.000	10966708.000	Pass				
A2 (50")	-222464160.000	-219334160.000	3130000.000	10966708.000	Pass				

A2 (50")	-218296048.000	-217147632.000	1148416.000	10857381.600	Pass
A3 (29")	-215615984.000	-213416928.000	2199056.000	10670846.400	Pass
A4 (17")	-212439408.000	-210205136.000	2234272.000	10510256.800	Pass
A5 (10")	-213281584.000	-210744480.000	2537104.000	10537224.000	Pass
A6 (6")	-213757744.000	-212744384.000	1013360.000	10637219.200	Pass
R36KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	58226652.000	59308716.000	1082064.000	2965435.800	Pass
A2 (50")	59078976.000	60516680.000	1437704.000	3025834.000	Pass
A3 (29")	50762576.000	52467084.000	1704508.000	2623354.200	Pass
A4 (17")	47774380.000	48963324.000	1188944.000	2448166.200	Pass
A5 (10")	49758800.000	51107628.000	1348828.000	2555381.400	Pass
A6 (6")	48666176.000	49936832.000	1270656.000	2496841.600	Pass
R72KHz					
	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92092456.000	-91475104.000	617352.000	4573755.200	Pass
A2 (50")	-88448376.000	-88531624.000	83248.000	4426581.200	Pass
A3 (29")	-88454672.000	-88284496.000	170176.000	4414224.800	Pass
A4 (17")	-83513648.000	-83029816.000	483832.000	4151490.800	Pass
A5 (10")	-82220840.000	-81717560.000	503280.000	4085878.000	Pass
A6 (6")	-83857920.000	-83900568.000	42648.000	4195028.400	Pass
PASS/FAIL SUMMARY Std Deviation Verification Pass Average Verification Pass Gain Tolerance Verification Pass					

MICRO LOG SHOP CALIBRATION					
Tool Name:	Microlog Pad - 12153526			Reference Calibration Date:	11-May-19 13:30:58
Engineer:	WHITLOCK			Calibration Date:	29-Jul-19 12:21:32
Software Version:	WL INSITE R6.2.1 (Build 2)			Calibration Version:	1
Host Tool Name:	DSNT - 11660709				

	CALIBRATION COEFFICIENT SUMMARY					
	Measurement	Micro Log Normal		Micro Log Lateral		
		Measured	Calibrated	Measured	Calibrated	Units
	Tool Zero	-0.08	-0.15	-0.01	-0.01	ohmm
	Calibration Point #1	0.06	0.00	0.00	0.00	ohmm
	Calibration Point #2	20.11	20.00	20.07	20.00	ohmm
	Internal Reference	19.97	19.87	20.05	19.98	ohmm
	Measurement	Micro Log Normal Tool Value		Micro Log Lateral Tool Value		Units
	Tool Zero	-0.04		0.22		V
	Calibration Point #1	38.83		2.19		V
	Calibration Point #2	5332.43		6966.93		V
	Internal Reference	5297.41		6959.23		V

MICRO LOG FIELD CHECK					
Tool Name:	Microlog Pad - 12153526			Reference Calibration Date:	29-Jul-19 12:21:32
Engineer:	WHITLOCK			Calibration Date:	29-Jul-19 12:22:18
Software Version:	WL INSITE R6.2.1 (Build 2)			Calibration Version:	1

	Measurement	Micro Log Normal		Micro Log Lateral	
		Shop	Field	Shop	Field
		Units			
	Tool Zero	-0.15	-0.15	-0.01	-0.01
		ohmm			

Internal Reference		19.87	19.88	19.98	19.99	ohmm
Summary						
Signal	Shop	Field	Difference	Tolerance		
Microlog Normal	19.87	19.88	-0.01	+/- 0.80		
Microlog Lateral	19.98	19.99	-0.01	+/- 0.80		

SPECTRAL DENSITY SHOP CALIBRATION						
Tool Name:	SDLT Pad - 11284007			Reference Calibration Date:	14-May-19 10:35:42	
Engineer:	WHITLOCK			Calibration Date:	14-May-19 11:01:04	
Software Version:	WL INSITE R6.2.1 (Build 2)			Calibration Version:	1	

Logging Source S/N: 5475GW

Aluminum Block S/N: EL RENO AL BLK

Magnesium Block S/N: EL RENO MG BLK

Density: 2.581g/cc

Density: 1.687g/cc

Pe: 3.170

Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0672	1.0696	0.90 - 1.10
Near Dens Gain	1.0399	1.0253	0.90 - 1.10
Near Peak Gain	1.0698	1.0607	0.90 - 1.10
Near Lith Gain	1.0707	1.0600	0.90 - 1.10
Far Bar Gain	1.0119	1.0132	0.90 - 1.10
Far Dens Gain	1.0014	1.0004	0.90 - 1.10
Far Peak Gain	0.9998	0.9988	0.90 - 1.10
Far Lith Gain	0.9842	0.9832	0.90 - 1.10
Near Bar Offset	-0.4646	-0.4868	NONE
Near Dens Offset	-0.1638	-0.0376	NONE
Near Peak Offset	-0.4118	-0.3374	NONE
Near Lith Offset	-0.4691	-0.3841	NONE
Far Bar Offset	-0.0627	-0.0742	NONE
Far Dens Offset	0.0569	0.0650	NONE
Far Peak Offset	0.0511	0.0583	NONE
Far Lith Offset	0.1514	0.1583	NONE
Near Bar Background	993.88	993.91	700 - 1450
Near Dens Background	329.23	327.28	230 - 480
Near Peak Background	147.25	146.97	100 - 210
Near Lith Background	178.05	176.81	125 - 260
Far Bar Background	582.67	585.21	450 - 900
Far Dens Background	227.13	227.13	175 - 345
Far Peak Background	91.02	90.90	70 - 140
Far Lith Background	94.76	94.27	75 - 145

CALIBRATION BLOCK SUMMARY				
Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.688	1.687	-0.001	+/- 0.015
Pe	2.523	2.556	0.033	+/- 0.150
ALUMINUM				
Density (g/cc)	2.580	2.581	0.001	+/- 0.01500
Pe	3.116	3.129	0.013	+/- 0.150

TOOL SUMMARY				
Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits

QUALITY				
Background	0.0004	+/- 0.0110	-0.0020	+/- 0.0140
Magnesium Block	0.0005	+/- 0.0110	0.0007	+/- 0.0140
Aluminum Block	0.0003	+/- 0.0110	0.0001	+/- 0.0140
Resolution	8.86	6.00 - 11.50	9.16	6.00 - 11.50
Internal Verifier(B+D+P+L)	1645	1200 - 2700	998	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 - 11284007	Reference Calibration Date:	14-May-19 11:01:04
Engineer:	WHITLOCK	Calibration Date:	29-Jul-19 12:19:53
Software Version:	WL INSITE R6.2.1 (Build 2)	Calibration Version:	1

Pad Temperature: 89.3 degF

DENSITY FIELD CALIBRATION SUMMARY				
Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1644.977	1647.359	2.382	16.295
Far (B+D+P+L) cps	997.505	992.725	-4.780	16.911
Near Resolution	8.86	8.85	-0.010	0.50
Far Resolution	9.16	9.12	-0.040	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-00000032						
Tension Zero	0.00	-----	-----	0.00	-----	lbs
Tension Cal	7830.00	-----	-----	0.00	-----	lbs
RWCH-11830866						
DH Tension Zero	0.00	-----	-----	0.00	-----	lbs
DH Tension Cal	1319.10	-----	-----	0.00	-----	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	224.5	-----	1.4	+/- 9.00	api
DSNT-11660709						
Snow-Block Porosity	0.0724	0.0631	-----	0.0093	+/- 0.0150	decp
SDLT-12153526						
Pad Extension	3.75	3.76	-----	-0.01	+/-0.10	in
Ring Diameter	8.25	8.25	-----	0.00	+/-0.15	in
ACRt Sonde-11038385						
Mud Cell	1.00	-----	-----	0	-----	ohm-m
Microlog Pad-12153526						
MicroLog Normal	19.87	19.88	-----	-0.01	+/-0.80	ohmm
MicroLog Lateral	19.98	19.99	-----	-0.01	+/-0.80	ohmm

Near(B+D+P+L)	1644.977	1647.359	-----	-2.382	+/-16.295	cps
Far(B+D+P+L)	997.505	992.725	-----	4.780	+/-16.911	cps

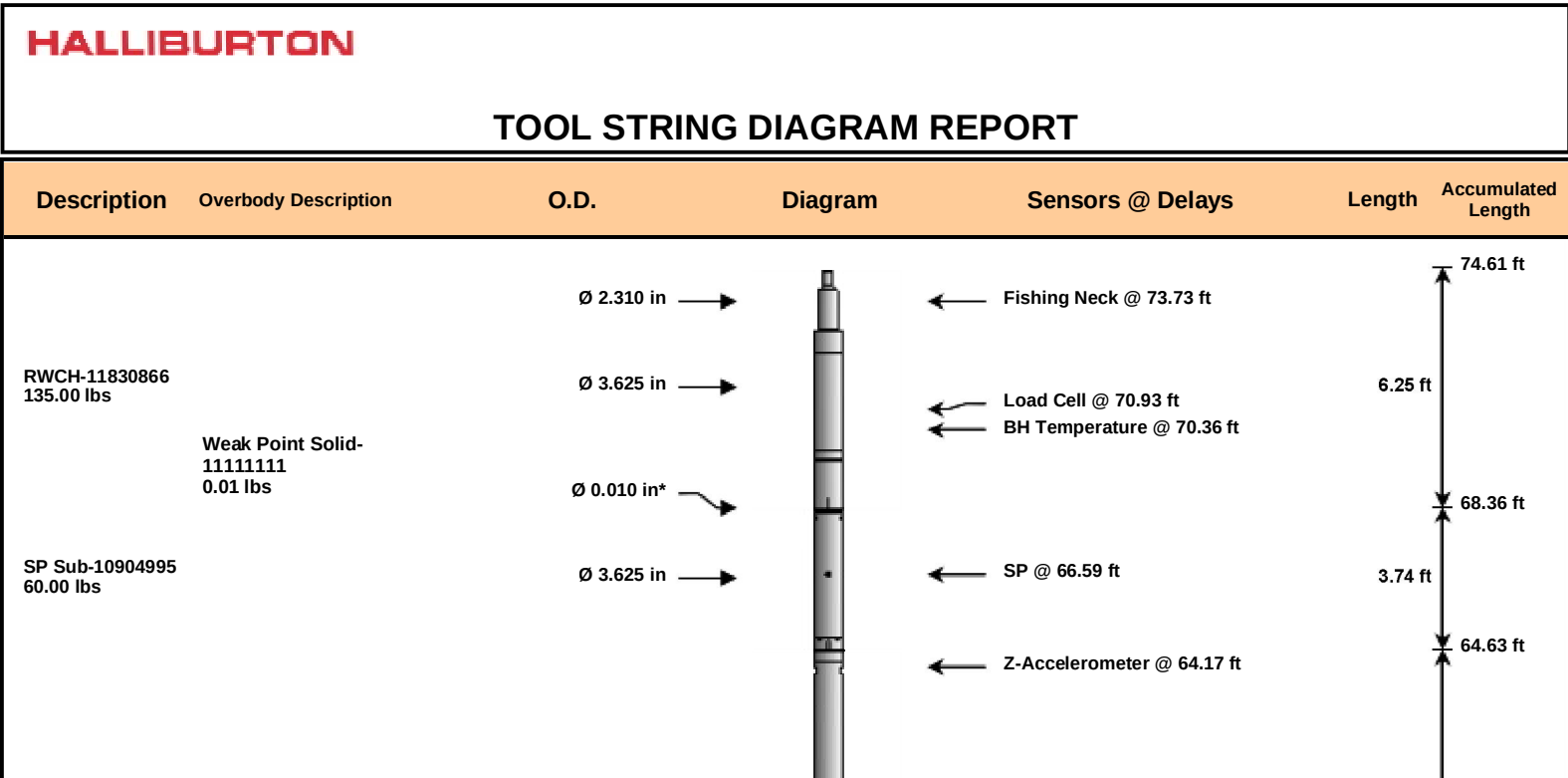
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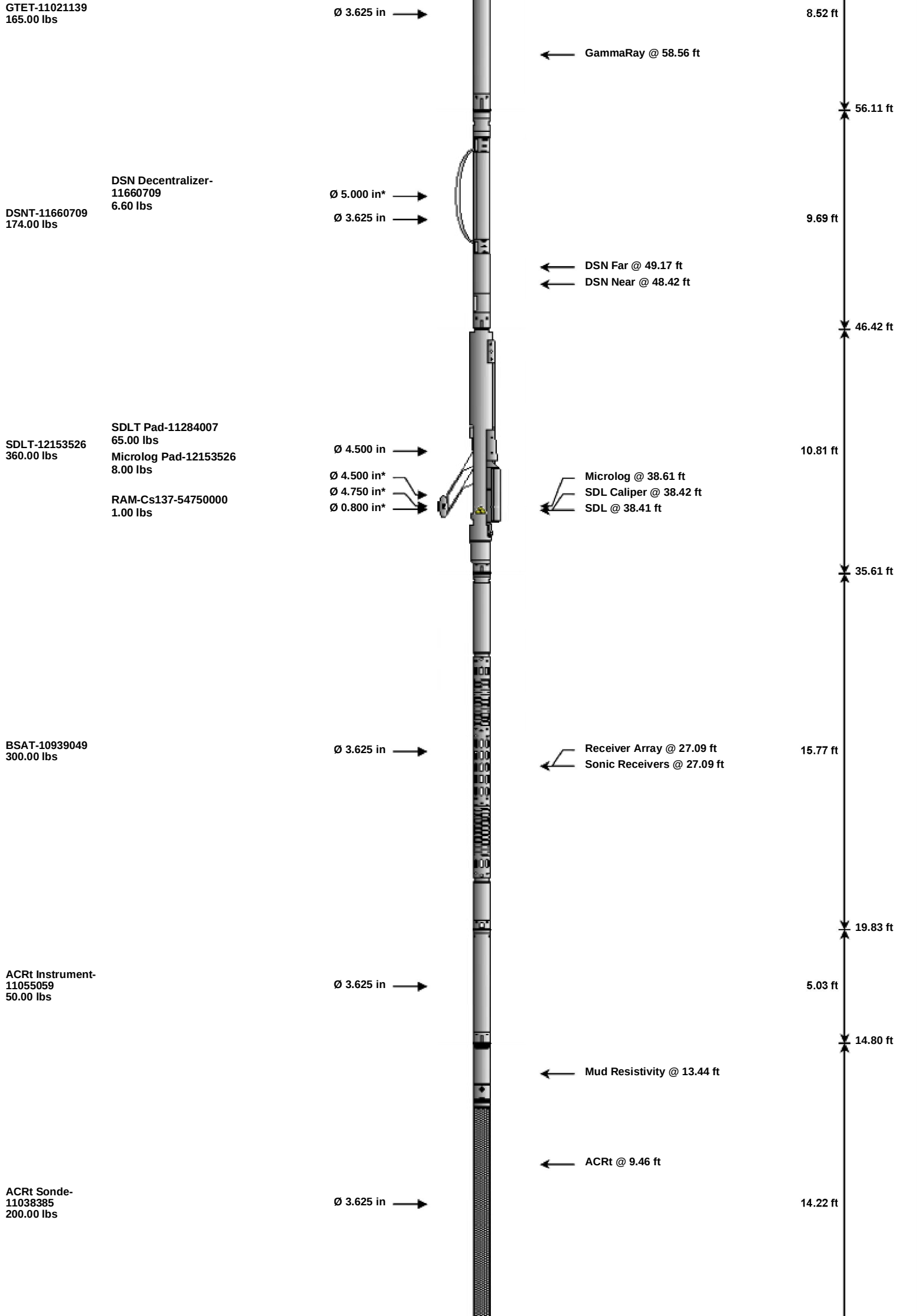
HALLIBURTON

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	9.300	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	5750.00	ft
	SHARED	BHT	Bottom Hole Temperature	142.0	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	MSAL	Water-base mud filtrate salinity	0.00	ppm
	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	DSNO	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	

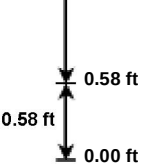
DSNT	SHCO	View More Correction Options	No	
DSNT	UTVD	Use TVD for Gradient Corrections?	No	
DSNT	LHWT	Logging Horizontal Water Tank?	No	
DSNT	UCLA	Classic Neutron Parameter utilized?	No	
DSNT	BHSM	Borehole Size Source Tool	SDLT	
SDLT	CLOK	Process Caliper Outputs?	Yes	
Microlog Pad	MLOK	Process MicroLog 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	





Cabbage Head-
11111111
10.00 lbs

Ø 3.625 in
Ø 6.000 in



Mnemonic	Tool Name	Serial Number	Weight (lbs)	Length (ft)	Accumulated Length (ft)	Max.Log. Speed (fpm)	
RWCH	Releasable Wireline Cable Head	11830866	135.00	6.25	68.36	300.00	
WPSS	Weak Point Solid	11111111	0.01	0.01	*	68.36	300.00
SP	SP Sub	10904995	60.00	3.74	64.63	300.00	
GTET	Gamma Telemetry Tool	11021139	165.00	8.52	56.11	60.00	
DSNT	Dual Spaced Neutron	11660709	174.00	9.69	46.42	60.00	
DCNT	DSN Decentralizer	11660709	6.60	5.13	*	49.75	300.00
SDLT	Spectral Density Tool	12153526	360.00	10.81	35.61	60.00	
SDLP	Density Insite Pad	11284007	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	12153526	8.00	1.00	*	38.11	60.00
BSAT	Borehole Sonic Array Tool	10939049	300.00	15.77	19.83	60.00	
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03	14.80	120.00	
ACRt	Array Compensated True Resistivity Sonde Section	11038385	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.							
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