HALLIBURTON

MICROLOG

MERIT ENERGY COMPANY | HMU 207W | REDWOOD | FINNEY | KANSAS

COMPANY MERIT ENERGY COMPANY

WELL HMU 207W

FIELD/BLOCK REDWOOD

COUNTY FINNEY STATE KANSAS

API No. 15-055-22474-00-00

Location

(SHL) SW SW SW NW
2361' FNL & 154' FWL

Sect. 30 Twp. 23S Rge. 34W

Other Services:

ACRT
SDL-DSN
MICLOG
BSAT

Permanent Datum	GL	Elev. 2984.0 ft	Elev.: K.B. 2996.0 ft
Log measured from	KB	, 12.0 ft above perm. Datum	D.F. 2994.0 ft
Drilling measured from	KB		G.L. 2984.0 ft

Date		19-Dec-17					
Run No.		1					
Depth - Driller		5000.0 ft					
Depth - Logger		5011.0 ft					
Bottom - Logged Interval		5001					
Top - Logged Interval		3300					
Casing - Driller		8.625 in	@ 1831.0 ft	@		@	
Casing - Logger		1831.0 ft					
Bit Size		7.875 in		@		@	
Type Fluid in Hole		Water Based Mud					
Density	Viscosity	9.10 g/cc	65.00 s/qt				
PH	Fluid Loss	11.50 pH	6.4 cptm				
Source of Sample		FLOWLINE					
Rm @ Meas. Temperature		0.93 ohmm	@ 78.00 degF	@		@	
Rmf @ Meas. Temperature		0.74 ohmm	@ 75.00 degF	@		@	
Rmc @ Meas. Temperature		1.14 ohmm	@ 75.00 degF	@		@	
Source Rmf	Rmc	MEAS	MEAS				
Rm @ BHT		0.60 ohmm	@ 125.0 degF	@		@	
Time Since Circulation		09:00 hr					
Time on Bottom		19-Dec-17 11:14					
Max. Rec. Temperature		125.00 degF	@ 5011.0 ft	@		@	
Equipment	Location	12156883	EL RENO				
Recorded By		WHITLOCK					
Witnessed By		MARTIN LANGE		AUSTIN GARDNER			

Fold here

Service Ticket No.: 904514721

API No.: 15-055-22474-00-00

PGM Version: WL INSITE R5.6.3 (Build 4)

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

	GAMMA	ACOUSTIC	DENSITY	NEUTRON
Run No.				
Serial No.				
Model No.				
Diameter				
Detector Model No.				
Type				
Length				
Distance to Source				

	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
Run No.																
Serial No.																
Model No.																
Diameter																
Log Type																
Source Type																
Serial No.																
Strength																

DIRECTIONAL INFORMATION

Maximum Deviation	@	KOP	@

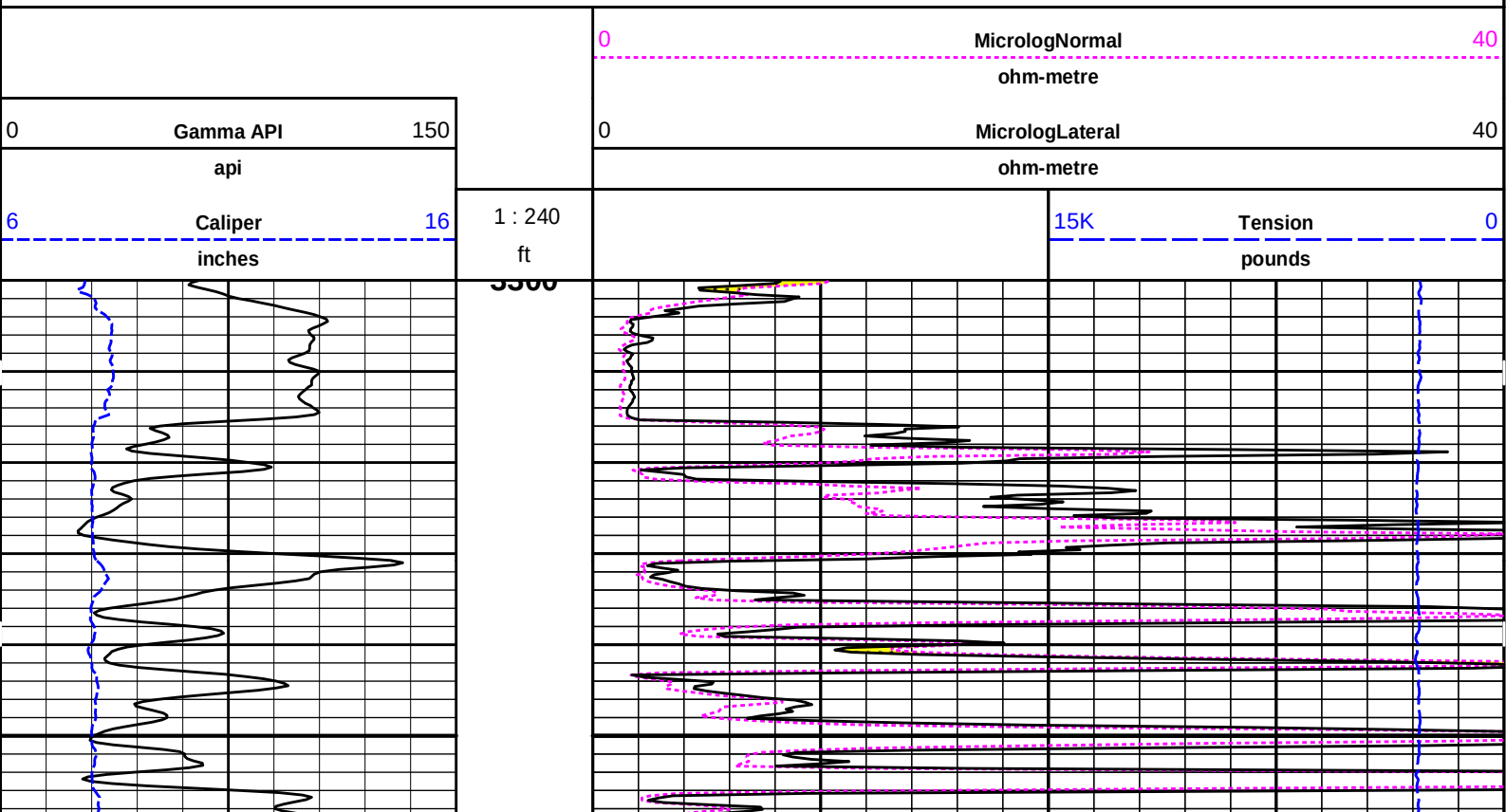
Remarks: 5 1/2" CASING USED FOR ANNULAR HOLE VOLUME

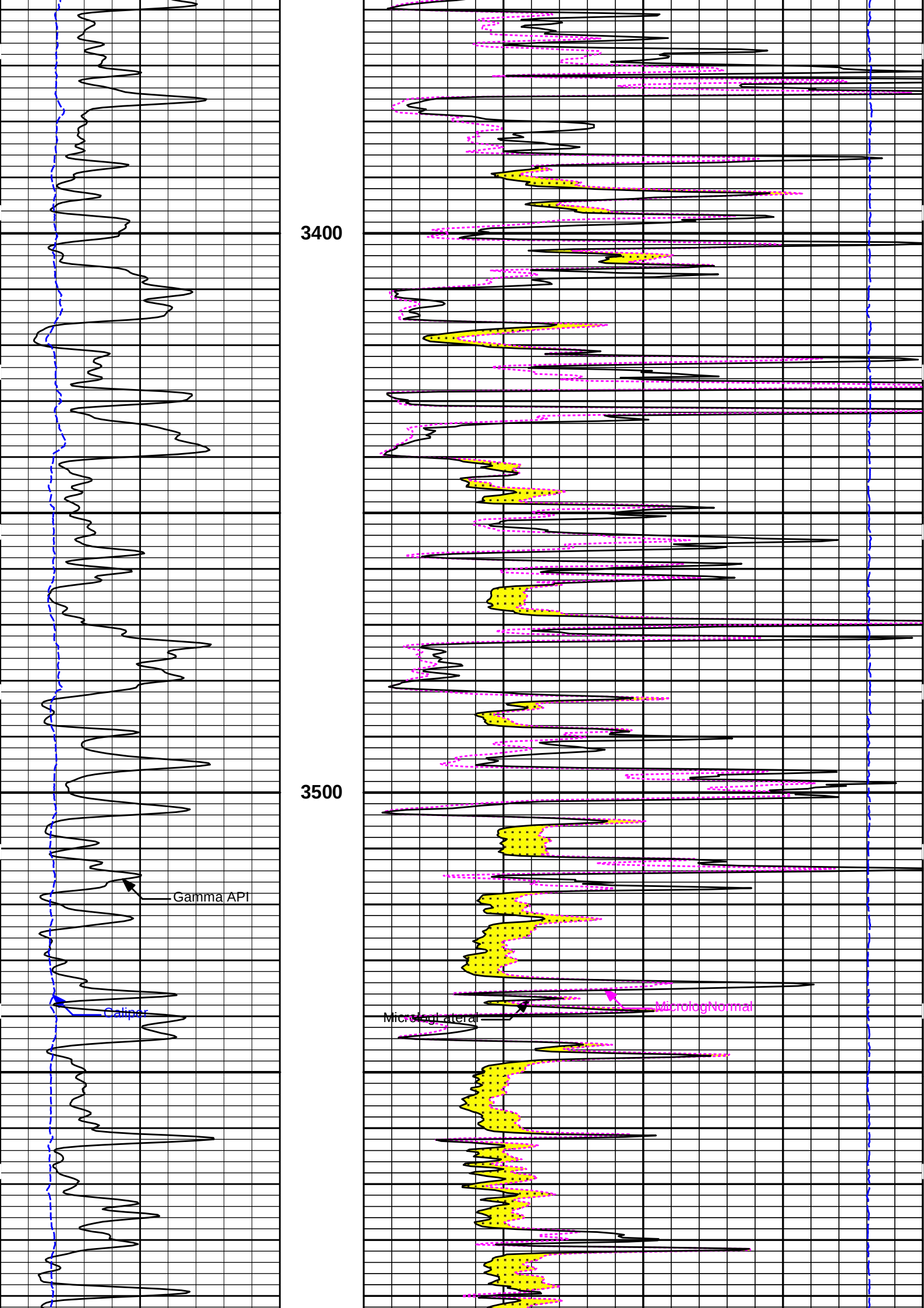
HALLIBURTON

Plot Time: 19-Dec-17 15:12:15
Plot Range: 3300 ft to 5014.75 ft
Data: MERIT_HUM_207W\Well Based\DAQ-0001-004
Plot File: \\-LOCAL-\MERIT_HUM_207W\0001 GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

5 INCH MAIN LOG

MAIN LOG 5" PER 100'

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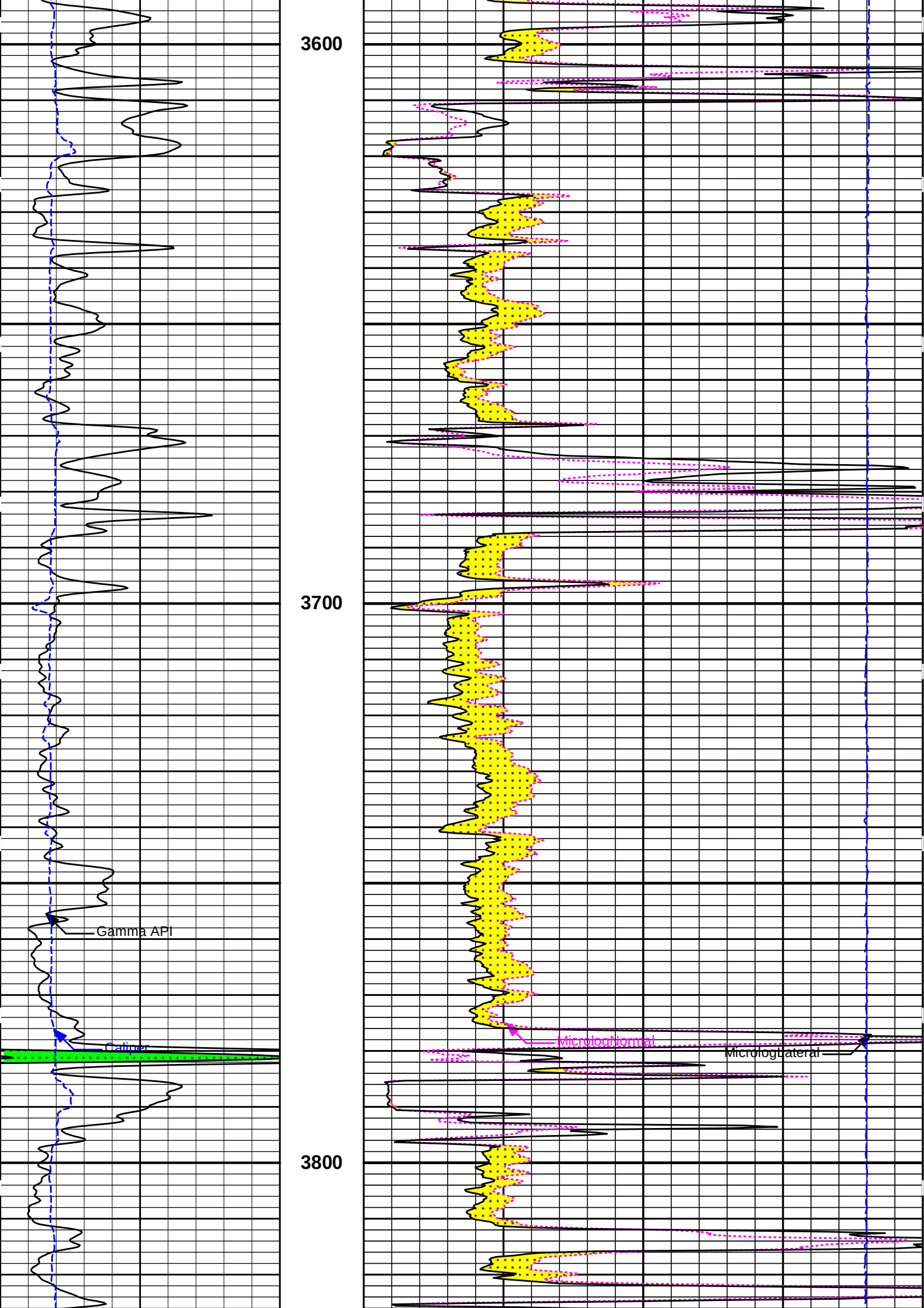
3500
Gamma API
Caliper
MicrologNormal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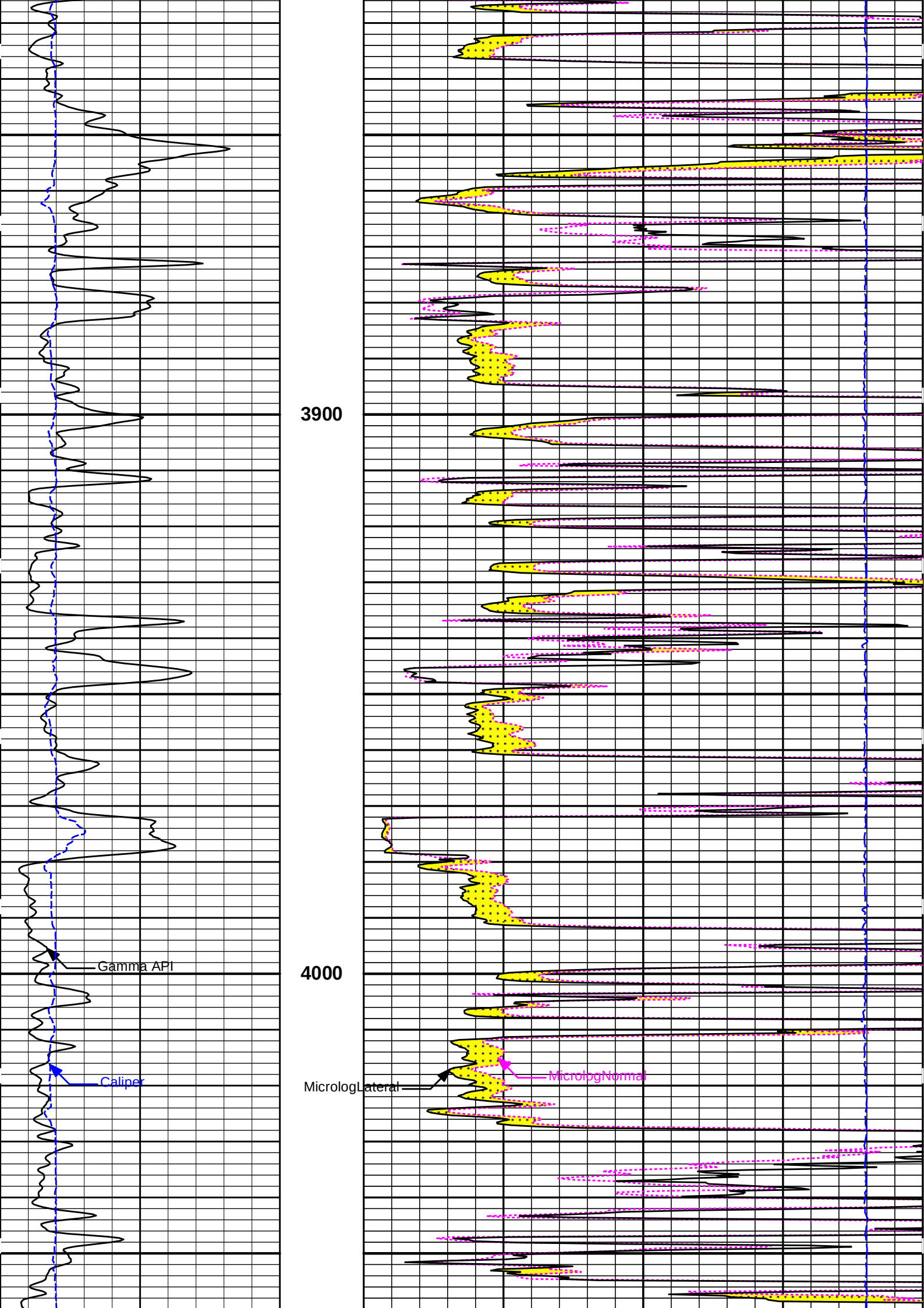
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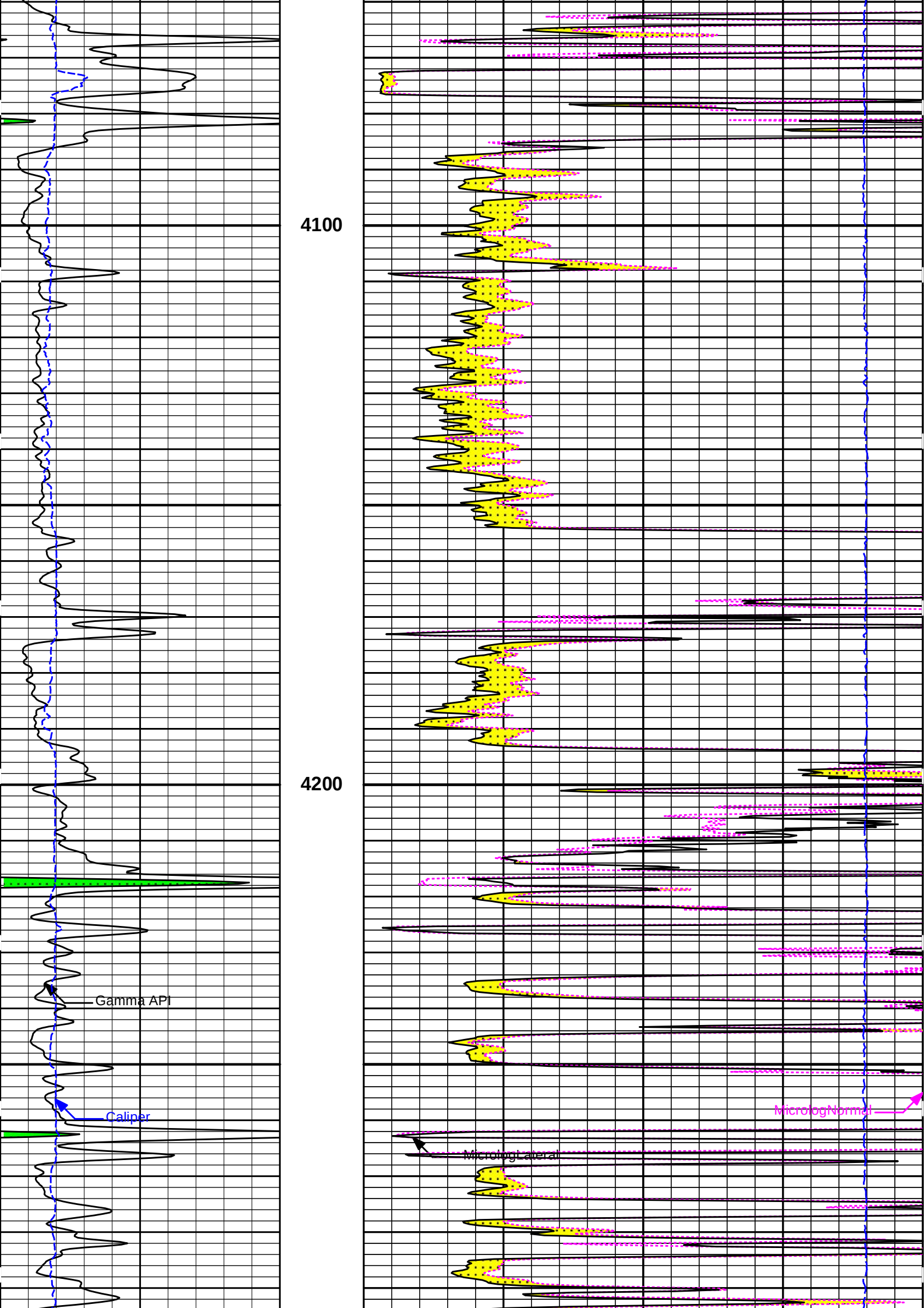
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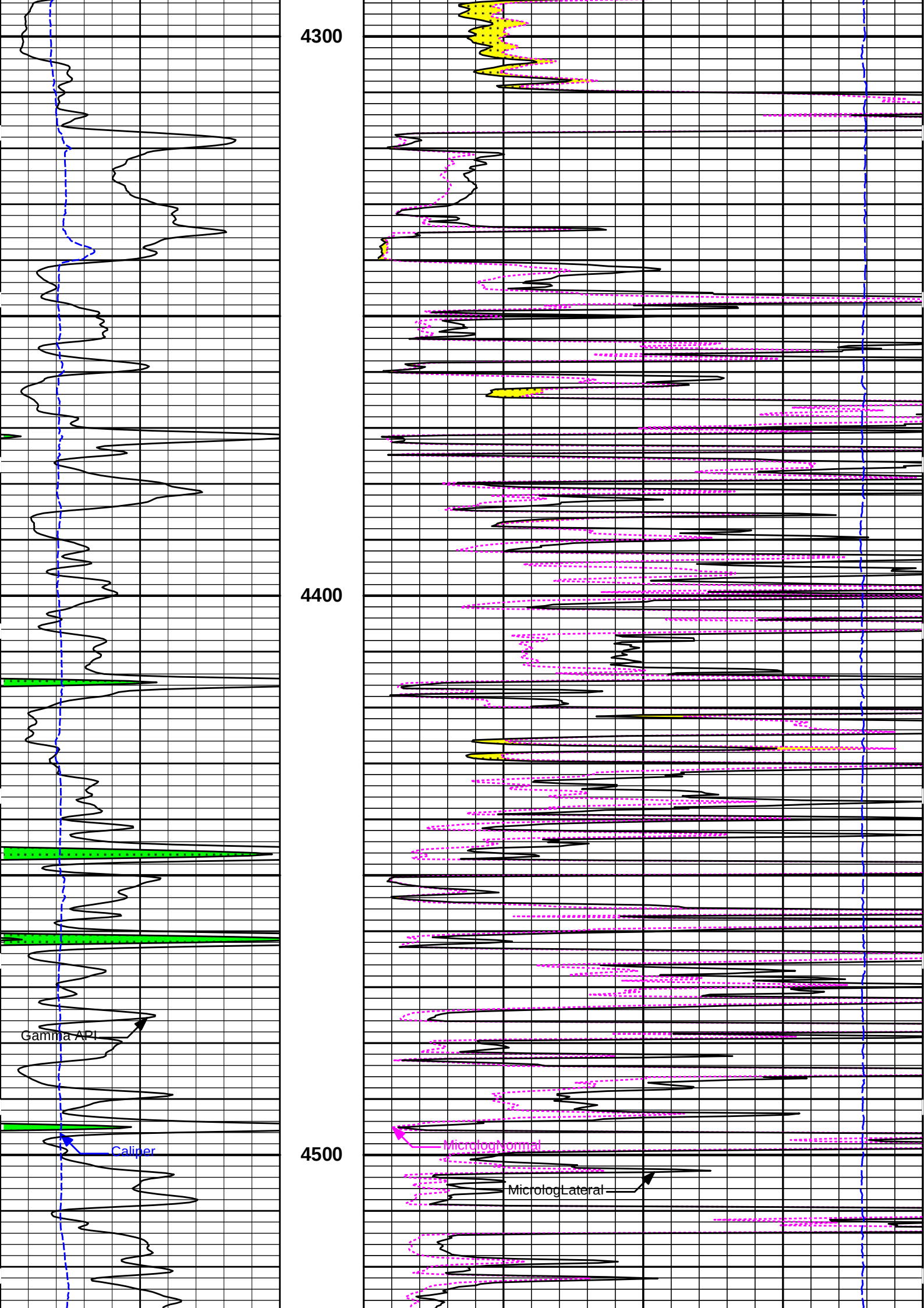
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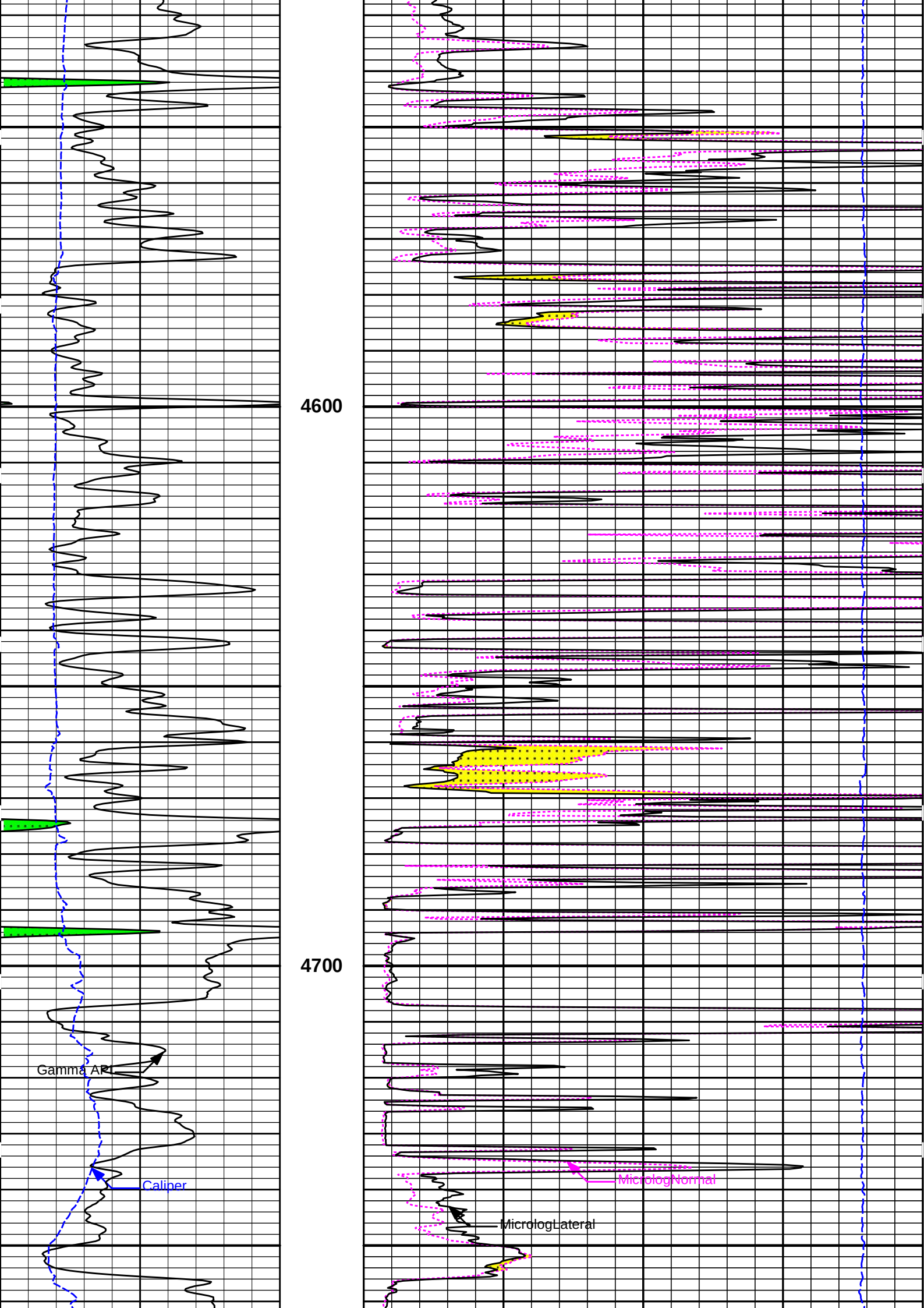
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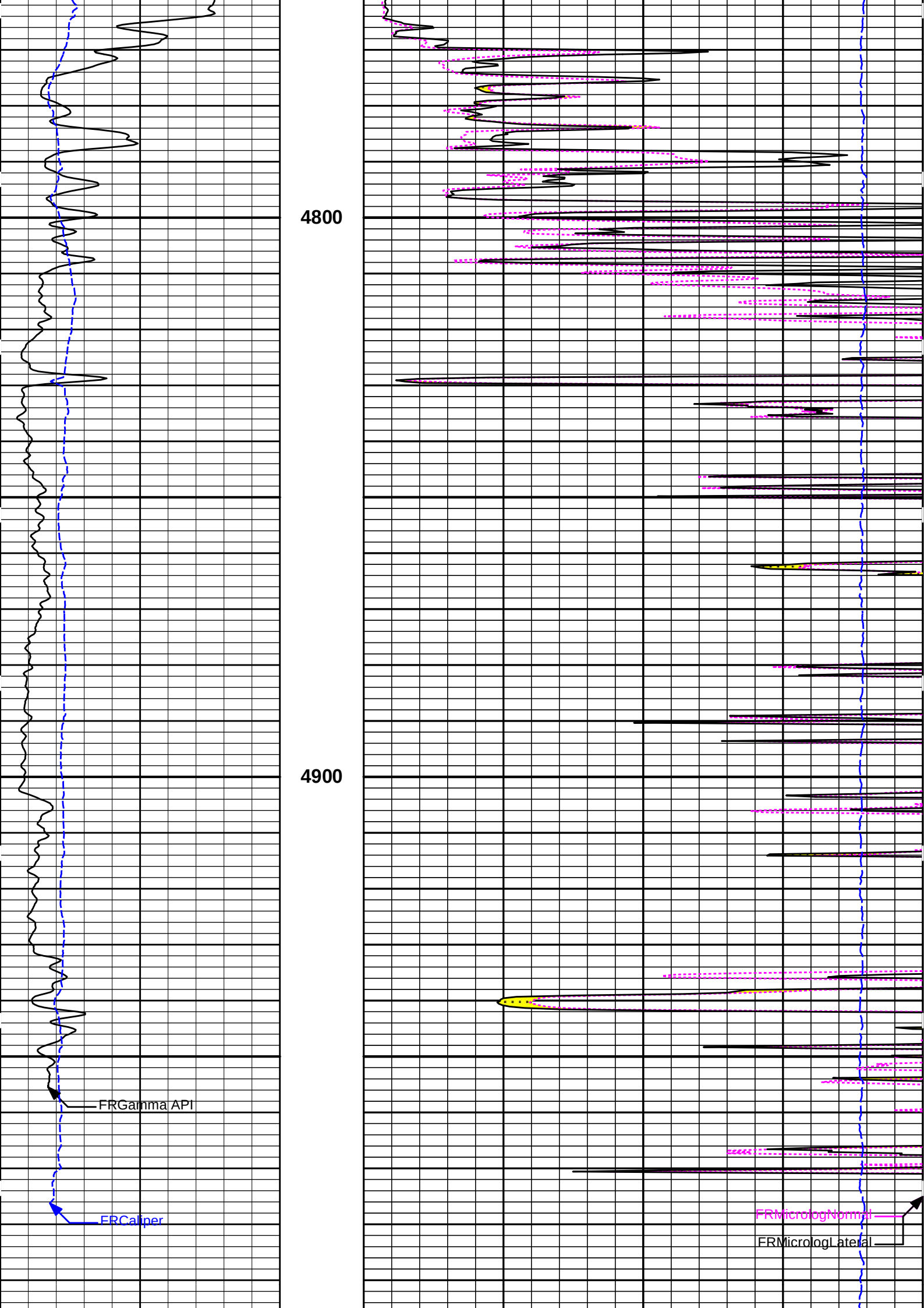
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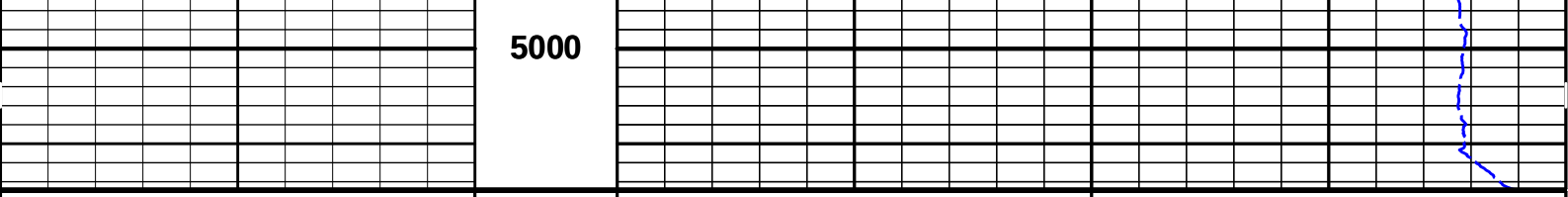


HALLIBURTON

Plot Time: 19-Dec-17 15:12:18
Plot Range: 3300 ft to 5014.75 ft
Data: MERIT_HUM_207W\Well Based\DAQ-0001-004\
Plot File: \\-LOCAL-\MERIT_HUM_207W\0001 GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

5 INCH MAIN LOG

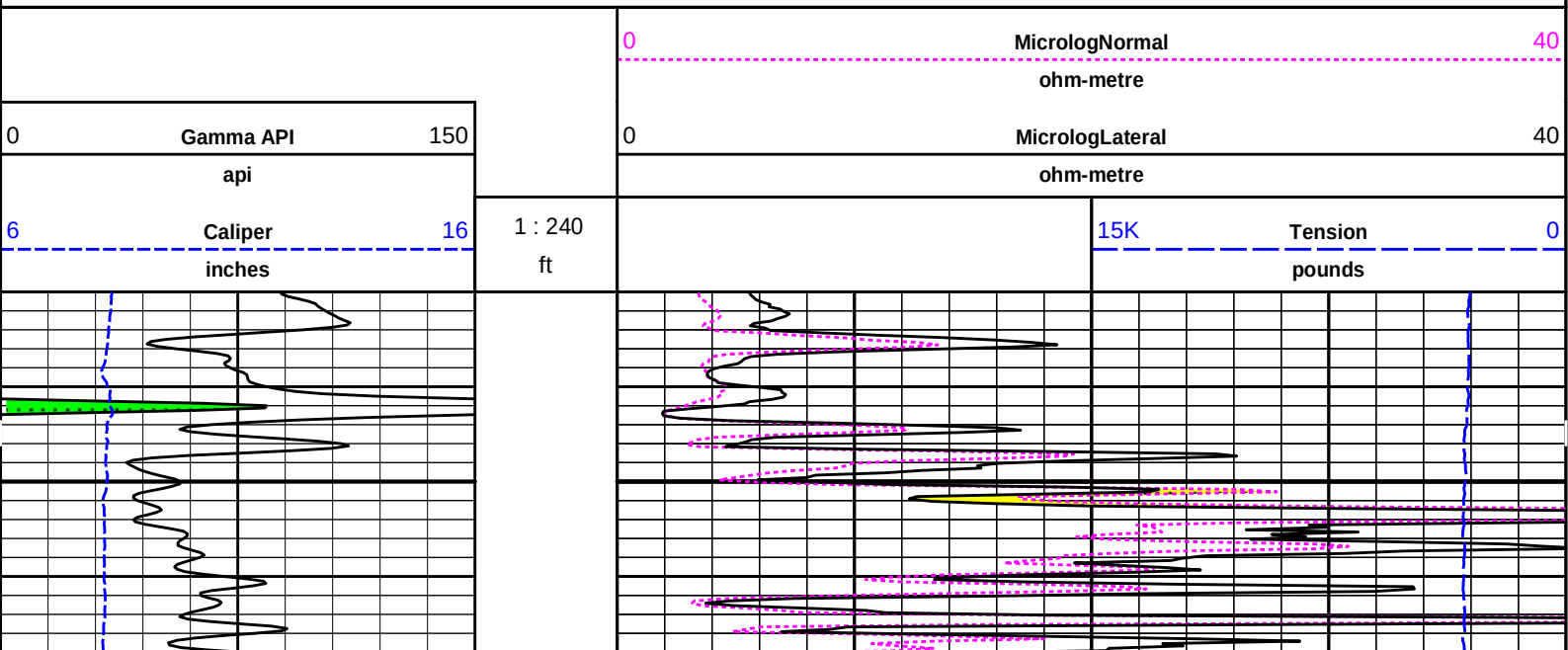
MAIN LOG 5" PER 100'

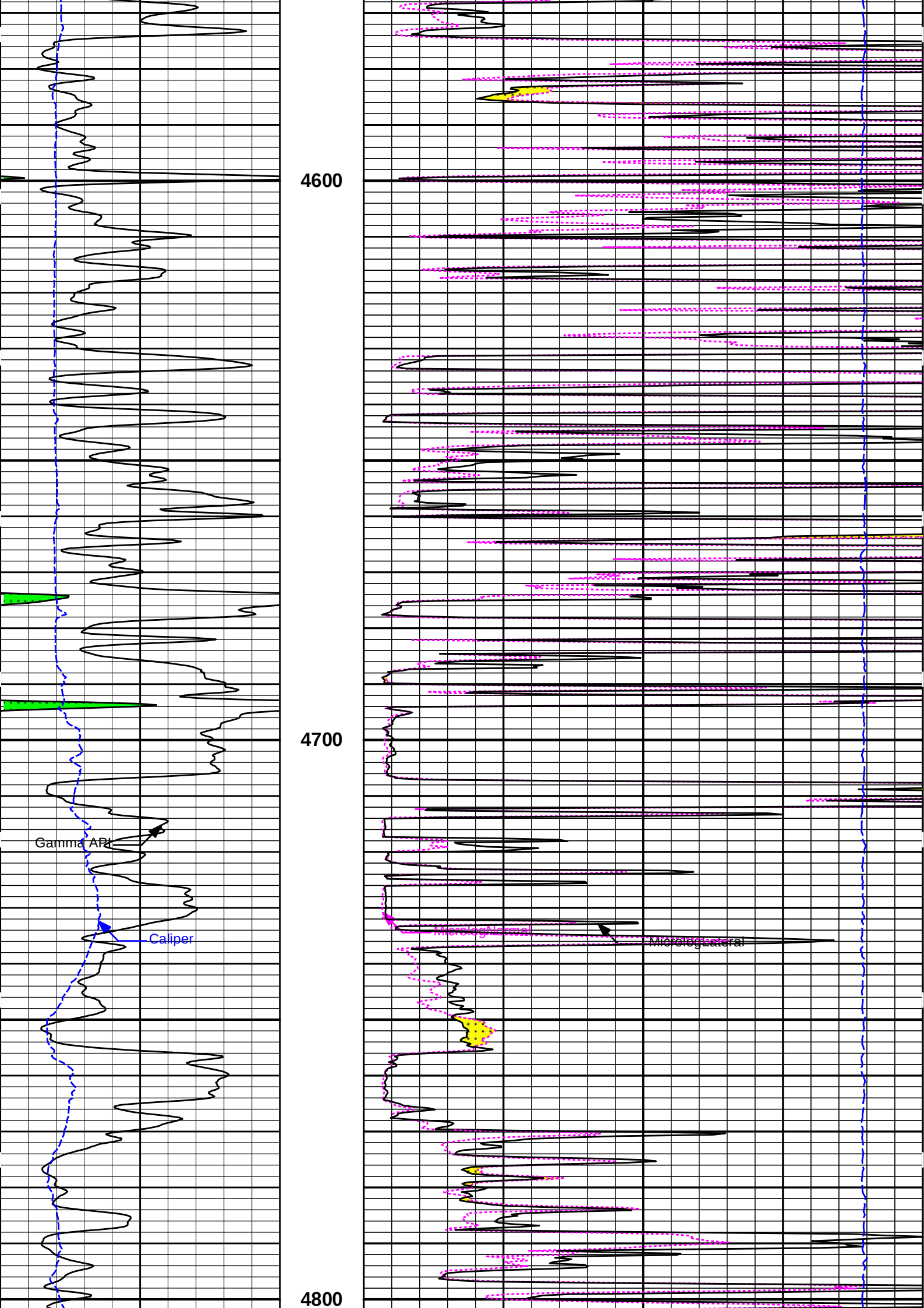
HALLIBURTON

Plot Time: 19-Dec-17 15:12:18
Plot Range: 4530 ft to 5014.5 ft
Data: MERIT_HUM_207W\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\MERIT_HUM_207W\0001 GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

REPEAT SECTION

REPEAT SECTION

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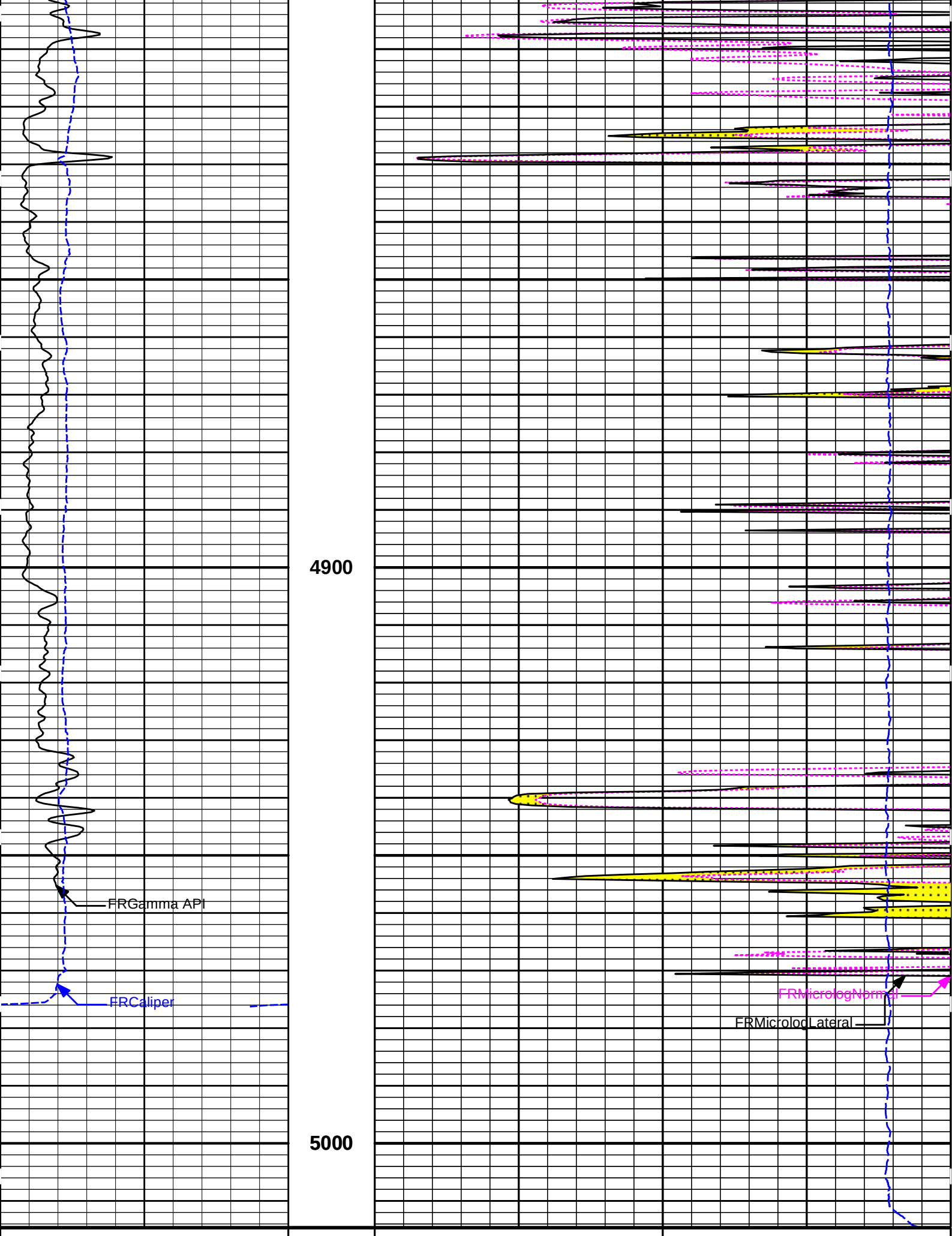
Gamma API
Caliper
MicrologLateral
MicrologLateral



6 Caliper 16	1 : 240	15K Tension 0
inches	ft	pounds
0 Gamma API 150		0 MicrologLateral 40
api		ohm-metre

0	MicrologNormal	40
	ohm-metre	

HALLIBURTON

Plot Time: 19-Dec-17 15:12:19
Plot Range: 4530 ft to 5014.5 ft
Data: MERIT_HUM_207W\Well Based\DAQ-0001-002\
Plot File: \\-LOCAL-\MERIT_HUM_207W\0001 GTET-DSNT-SDLT-BSAT-ACRT\ML\Microlog_IQ_5_main

REPEAT SECTION

REPEAT SECTION

HALLIBURTON

CALIBRATION REPORT

SURFACE TENSION SHOP CALIBRATION

Tool Name:	**Depth Panel - 12345678**	**Reference Calibration Date:**	**23-Apr-17 10:07:58**
Engineer:	**MICHAEL RICHTER**	**Calibration Date:**	**24-Jun-17 04:21:48**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**

SURFACE TENSION LOAD CELL

Measurement	Load Cell Value	Measurement	Calibrated	Units
Low	10703.64	164.45	0.00	lbs
High	17362.76	7331.05	7830.00	lbs

DOWNHOLE TENSION SHOP CALIBRATION

Tool Name:	**CH_HOS - CH_HOS_I**	**Reference Calibration Date:**	**13-Dec-17 11:53:03**
Engineer:	**JORGE ORLANDO PEREZ**	**Calibration Date:**	**17-Dec-17 16:43:38**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

DOWNHOLE LOAD CELL

Measurement	Tool Value	Measurement	Calibrated	Units
Low	-505.99	-27.96	0.00	lbs
High	5810.79	1723.35	1950.00	lbs

NATURAL GAMMA RAY TOOL SHOP CALIBRATION

Tool Name:	**GTET - 11021139**	**Reference Calibration Date:**	**19-Nov-17 10:38:47**
Engineer:	**WHITLOCK**	**Calibration Date:**	**11-Dec-17 12:34:48**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**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	29.6	29.0	api
Background + Calibrator	260.3	254.9	api
Calibrator	230.7	225.9	api

NATURAL GAMMA RAY TOOL FIELD CALIBRATION

Tool Name:	**GTET - 11021139**	**Reference Calibration Date:**	**11-Dec-17 12:34:48**
Engineer:	**WHITLOCK**	**Calibration Date:**	**16-Dec-17 15:34:42**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**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	29.0	22.2	api
Background + Calibrator	254.9	241.7	api
Calibrator	225.9	219.5	api

Shop	Field	Difference	Tolerance
225.9	219.5	6.4	+/- 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:** 16-Dec-17 15:22:58

Software Version: WL INSITE R5.6.3 (Build 4) **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	0.0877	0.0066	+/- 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:**	**01-Jan-70 00:00:00**
Engineer:	**WHITLOCK**	**Calibration Date:**	**24-Nov-17 12:28:28**
Software Version:	**WL INSITE R5.0.5 (Build 8)**	**Calibration Version:**	**1**
Host Tool Name:	**DSNT - 11660709**		

CALIBRATION COEFFICIENTS

Measurement	Previous Value	New Value	Control Limit On New Value
Pad Offset	-4006.36	-4006.36	-7000.00 - -1000.00
Pad Gain	0.0003890	0.0003890	0.0002000 - 0.0006000
Arm Offset	-2182.86	-2182.86	-5000.00 - 3000.00
Arm Gain	0.0004129	0.0004129	0.000300 - 0.000700
Arm Power	0.000002297	0.000002297	-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 - 11014296**	**Reference Calibration Date:**	**24-Nov-17 12:28:28**
Engineer:	**WHITLOCK**	**Calibration Date:**	**16-Dec-17 16:11:25**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**Calibration Version:**	**1**

MEASURED CALIPER VALUES

Measurement	Shop	Field	Change	Control Limit On New Value
Pad Extension	3.75	3.79	0.04	+/- 0.10
Ring Diameter	8.25	8.25	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:**	**12-Sep-17 13:58:19**
Engineer:	**WHITLOCK**	**Calibration Date:**	**15-Dec-17 10:45:06**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**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	1.0500	1.05	0.95	1.0229	1.05	0.95	1.0048	1.05
A2 (50")	0.95	1.0500	1.05	0.95	1.0261	1.05	0.95	1.0131	1.05
A3 (29")	0.95	1.0472	1.05	0.95	1.0179	1.05	0.95	1.0025	1.05
A4 (17")	0.95	1.0401	1.05	0.95	1.0093	1.05	0.95	0.9956	1.05
A5 (10")	N/A	N/A	N/A	0.95	1.0012	1.05	0.95	0.9839	1.05
A6 (6")	N/A	N/A	N/A	0.95	0.9883	1.05	0.95	0.9739	1.05

SONDE OFFSET

Subarray	R12KHz	R36KHz	R72KHz
	(mmho/m)	(mmho/m)	(mmho/m)
A1 (80")	1.490	-4.736	-6.418
A2 (50")	-0.183	-4.133	-5.504
A3 (29")	-12.250	-3.671	-3.367
A4 (17")	-109.670	-32.737	-24.656
A5 (10")	N/A	-82.133	-35.124
A6 (6")	N/A	347.353	195.364

TRANSMITTER CURRENT GAIN

Signal	Lower	R	Upper
12K	0.6	0.86	1.3
36K	1.0	1.34	2.0
72K	1.0	1.61	2.0

R-MUD VERIFICATION

Signal	Lower (ohm-m)	Measured (ohm-m)	Upper (ohm-m)
Mud Cell	0.95	1.00	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 - 11038385**	**Reference Calibration Date:**	**12-Sep-17 14:00:57**
Engineer:	**WHITLOCK**	**Calibration Date:**	**15-Dec-17 10:50:30**
Software Version:	**WL INSITE R5.6.3 (Build 4)**	**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	-0.005	> -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	-0.024	> -0.500	Pass
A5 (10")	-0.011	> -0.500	Pass	-0.018	> -0.500	Pass	-0.034	> -0.500	Pass
A6 (6")	0.016	< 0.500	Pass	0.078	< 0.500	Pass	0.183	< 0.500	Pass

GAIN TOLERANCE

R12KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-220721488.000	-223155904.000	2434416.000	11157795.200	Pass
A2 (50")	-218488224.000	-220713888.000	2225664.000	11035694.400	Pass
A3 (29")	-214911568.000	-216614880.000	1703312.000	10830744.000	Pass
A4 (17")	-211434368.000	-214578320.000	3143952.000	10728916.000	Pass
A5 (10")	-211949376.000	-214986432.000	3037056.000	10749321.600	Pass
A6 (6")	-213895760.000	-214394544.000	498784.000	10719727.200	Pass

R36KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	59105928.000	60628184.000	1522256.000	3031409.200	Pass
A2 (50")	60252356.000	62049960.000	1797604.000	3102498.000	Pass
A3 (29")	52147940.000	53214172.000	1066232.000	2660708.600	Pass
A4 (17")	48569380.000	50561756.000	1992376.000	2528087.800	Pass
A5 (10")	50672468.000	52600244.000	1927776.000	2630012.200	Pass
A6 (6")	49458680.000	50656572.000	1197892.000	2532828.600	Pass

R72KHz

	Measured (mmho/m)	Last Month (mmho/m)	Difference (mmho/m)	Tolerance (mmho/m)	Pass/Fail
A1 (80")	-92108696.000	-92698504.000	589808.000	4634925.200	Pass
A2 (50")	-89118672.000	-89662344.000	543672.000	4483117.200	Pass
A3 (29")	-88812376.000	-89109216.000	296840.000	4455460.800	Pass
A4 (17")	-83501792.000	-84842648.000	1340856.000	4242132.400	Pass
A5 (10")	-82094160.000	-83337800.000	1243640.000	4166890.000	Pass
A6 (6")	-84269728.000	-84561904.000	292176.000	4228095.200	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		
	Measured	Calibrated	Measured	Calibrated	Units
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:** 16-Dec-17 19:11:09

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Measurement	Micro Log Normal		Micro Log Lateral		
	Shop	Field	Shop	Field	Units
Tool Zero	-0.14	-0.10	0.01	0.00	ohmm
Internal Reference	19.94	19.89	20.01	19.96	ohmm

Summary				
Signal	Shop	Field	Difference	Tolerence
Microlog Normal	19.94	19.89	0.05	+/- 0.80
Microlog Lateral	20.01	19.96	0.05	+/- 0.80

SPECTRAL DENSITY SHOP CALIBRATION

Tool Name: SDLT Pad - 10865881 **Reference Calibration Date:** 16-Dec-17 18:39:59

Engineer: WHITLOCK **Calibration Date:** 16-Dec-17 19:00:32

Software Version: WL INSITE R5.6.3 (Build 4) **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 Density: 1.687g/cc Pe: 2.594

DENSITY CALIBRATION SUMMARY			
Measurement	Previous Value	New Value	Control Limit
Near Bar Gain	1.0190	1.0130	0.90 - 1.10
Near Dens Gain	1.0005	0.9951	0.90 - 1.10
Near Peak Gain	1.0223	1.0145	0.90 - 1.10
Near Lith Gain	1.0517	1.0503	0.90 - 1.10
Far Bar Gain	1.0054	1.0046	0.90 - 1.10
Far Dens Gain	0.9942	0.9923	0.90 - 1.10
Far Peak Gain	0.9912	0.9917	0.90 - 1.10
Far Lith Gain	0.9770	0.9734	0.90 - 1.10
Near Bar Offset	0.1872	0.2425	NONE
Near Dens Offset	0.3382	0.3842	NONE
Near Peak Offset	0.1850	0.2490	NONE
Near Lith Offset	-0.0438	-0.0306	NONE
Far Bar Offset	0.1527	0.1576	NONE
Far Dens Offset	0.2431	0.2592	NONE
Far Peak Offset	0.2590	0.2565	NONE
Far Lith Offset	0.3383	0.3725	NONE
Near Bar Background	930.24	932.15	700 - 1450
Near Dens Background	311.45	312.35	230 - 480
Near Peak Background	133.79	134.32	100 - 210
Near Lith Background	164.51	164.96	125 - 260
Far Bar Background	601.19	603.41	450 - 900

Far Dens Background	235.51	235.02	175 - 345
Far Peak Background	91.58	93.10	70 - 140
Far Lith Background	95.48	97.57	75 - 145

CALIBRATION BLOCK SUMMARY

Measurement	Current Reading (Previous Coef)	Calibrated (New Coef)	Change	Control Limit On Change
MAGNESIUM				
Density (g/cc)	1.687	1.687	0.000	+/- 0.015
Pe	2.557	2.553	-0.004	+/- 0.150
ALUMINUM				
Density (g/cc)	2.579	2.581	0.002	+/- 0.01500
Pe	3.126	3.125	-0.001	+/- 0.150

TOOL SUMMARY

Measurement	Near Detector		Far Detector	
	Value	Control Limits	Value	Control Limits
QUALITY				
Background	0.0001	+/- 0.0110	-0.0014	+/- 0.0140
Magnesium Block	-0.0009	+/- 0.0110	0.0002	+/- 0.0140
Aluminum Block	-0.0006	+/- 0.0110	-0.0004	+/- 0.0140
Resolution	9.58	6.00 - 11.50	8.95	6.00 - 11.50
Internal Verifier(B+D+P+L)	1544	1200 - 2700	1029	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 - 10865881 **Reference Calibration Date:** 16-Dec-17 19:00:32

Engineer: WHITLOCK **Calibration Date:** 16-Dec-17 19:14:23

Software Version: WL INSITE R5.6.3 (Build 4) **Calibration Version:** 1

Pad Temperature: 71.7 degF

DENSITY FIELD CALIBRATION SUMMARY

Measurement	Shop	Field	Change	Control Limit +/-
Near (B+D+P+L) cps	1543.777	1548.009	4.232	15.818
Far (B+D+P+L) cps	1029.100	1023.255	-5.845	17.098
Near Resolution	9.58	9.71	0.130	0.50
Far Resolution	8.95	8.90	-0.050	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-12345678						

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	1950.00	----------	----------	0.00	----------	lbs
GTET-11021139						
Gamma Ray Calibrator	225.9	219.5	----------	6.4	+/- 9.00	api
DSNT-11660709						
Snow-Block Porosity	0.0811	0.0877	----------	-0.0066	+/- 0.0150	decp
SDLT-11014296						
Pad Extension	3.75	3.79	----------	-0.04	+/-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-11014296						
MicroLog Normal	19.94	19.89	----------	0.05	+/-0.80	ohmm
MicroLog Lateral	20.01	19.96	----------	0.05	+/-0.80	ohmm
SDLT Pad-10865881						
Near(B+D+P+L)	1543.777	1548.009	----------	-4.232	+/-15.818	cps
Far(B+D+P+L)	1029.100	1023.255	----------	5.845	+/-17.098	cps

Data: MERIT_HUM_207W\0001 GTET-DSNT-SDLT-BSAT-ACRT\IDLE **Date: 19-Dec-17 10:31:46**

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	9.200	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	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	5000.00	ft
	SHARED	BHT	Bottom Hole Temperature	125.0	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 / 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	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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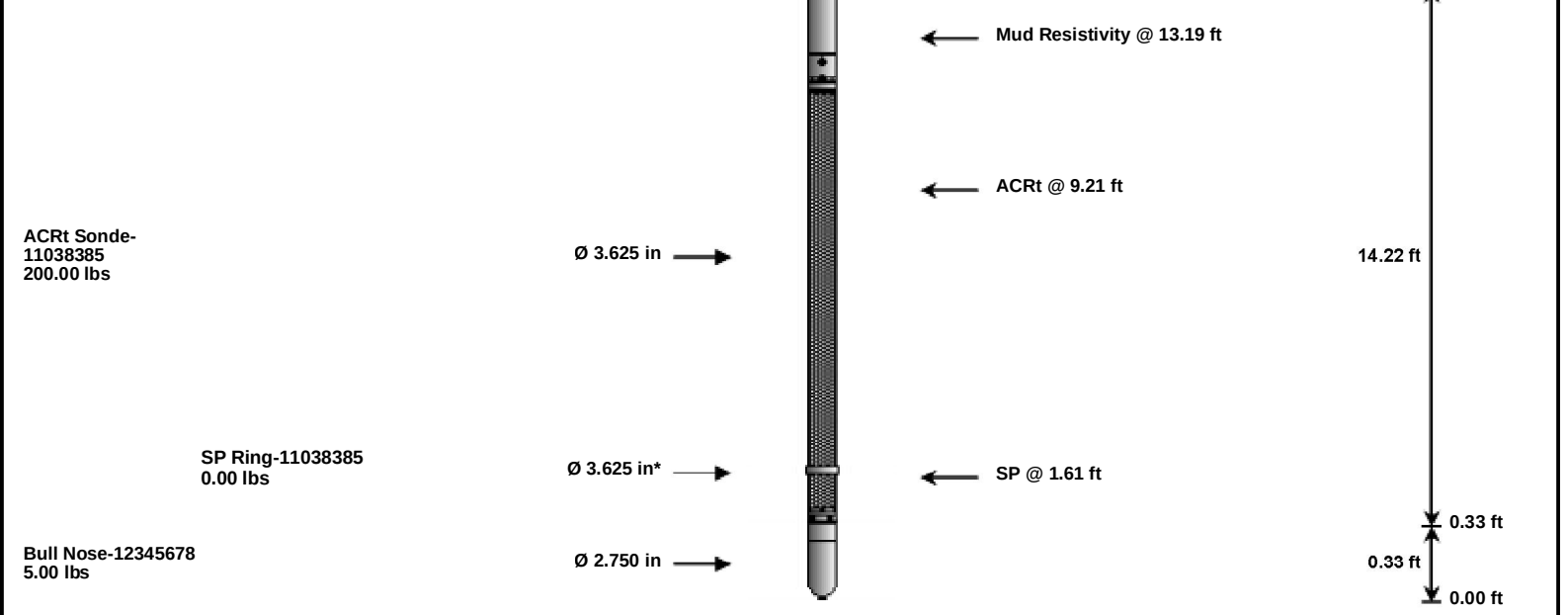
TOOL STRING DIAGRAM REPORT

Description	Overbody Description	O.D.	Diagram	Sensors @ Delays	Length	Accumulated Length
						68.36 ft
CH_HOS_I 37.50 lbs	Weak Point 7000 lbs- CH_HOS_I 0.01 lbs	Ø 2.750 in Ø 0.010 in*		Temperature @ 67.33 ft	3.03 ft	
XOHD-12345678 20.00 lbs		Ø 2.750 in Ø 3.625 in		Z-Accelerometer @ 63.93 ft	0.95 ft	65.33 ft 64.38 ft
GTET-11021139 165.00 lbs		Ø 3.625 in		GammaRay @ 58.32 ft	8.52 ft	55.86 ft
DSNT-11660709 174.00 lbs	DSN Decentralizer- 11660709 6.60 lbs	Ø 5.000 in* Ø 3.625 in		DSN Far @ 48.92 ft DSN Near @ 48.17 ft	9.69 ft	46.17 ft
SDLT-11014296 360.00 lbs	SDLT Pad-10865881 65.00 lbs Microlog Pad-11014296 8.00 lbs RAM-Cs137-00005155 1.00 lbs	Ø 4.500 in Ø 4.500 in* Ø 4.750 in* Ø 0.800 in*		Microlog @ 38.36 ft SDL Caliper @ 38.17 ft SDL @ 38.16 ft	10.81 ft	35.36 ft
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		Ø 3.625 in			5.03 ft	14.55 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	3.03		65.33	300.00
WP7K	Weak Point 7000 lbs	CH_HOS_I	0.01	0.01	*	66.13	300.00
XOHD	Hostile to Dits Cross Over	12345678	20.00	0.95		64.38	300.00
GTET	Gamma Telemetry Tool	11021139	165.00	8.52		55.86	60.00
DSNT	Dual Spaced Neutron	11660709	174.00	9.69		46.17	60.00
DCNT	DSN Decentralizer	11660709	6.60	5.13	*	49.50	300.00
SDLT	Spectral Density Tool	11014296	360.00	10.81		35.36	60.00
SDLP	Density Insite Pad	10865881	65.00	2.55	*	37.57	60.00
Cs137	Logging Source, SDLT-I, 1.78 Ci - Cs137	00005155	1.00	0.80	*	37.80	300.00
MICP	Microlog Pad	11014296	8.00	1.00	*	37.86	60.00
BSAT	Borehole Sonic Array Tool	10939049	300.00	15.77		19.58	60.00
ACRt	Array Compensated True Resistivity Instrument Section	11055059	50.00	5.03		14.55	120.00
ACRt	Array Compensated True Resistivity Sonde Section	11038385	200.00	14.22		0.33	120.00
SP	SP Ring	11038385	0.00	0.25	*	1.61	300.00
BLNS	Bull Nose	12345678	5.00	0.33		0.00	300.00
Total			**1,392.11**	**68.36**			

* Not included in Total Length and Length Accumulation.

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