

HALLIBURTON

MICROLOG

COMPANY										CULBREATH OIL & GAS COMPANY, INC.									
WELL										VOTH #1-4									
FIELD/BLOCK										UNNAMED									
COUNTY										LOGAN									
STATE										KANSAS									
Permanent Datum										GL									
Log measured from										KB									
Drilling measured from										KB									
Date										23-Apr-17									
Run No.										ONE									
Depth - Driller										4470.0 ft									
Depth - Logger										4771.0 ft									
Bottom - Logged Interval										4761.0 ft									
Top - Logged Interval										3700.0 ft									
Casing - Driller										8.625 in @ 279.0 ft									
Casing - Logger										279.0 ft									
Bit Size										7.880 in									
Type Fluid in Hole										Water Based Mud									
Density										9.3 ppg									
PH										10.00 pH									
Source of Sample										FLOWLINE									
Rm @ Meas. Temperature										0.92 ohmm @ 75.00 degF									
Rmf @ Meas. Temperature										0.78 ohmm @ 75.00 degF									
Rmc @ Meas. Temperature										1.06 ohmm @ 75.00 degF									
Source Rmf										CALC									
Rm @ BHT										0.62 ohmm @ 125.0 degF									
Time Since Circulation										03:24 hr									
Time on Bottom										23-Apr-17 07:54									
Max. Rec. Temperature										125.00 degF @ 4771.0 ft									
Equipment										11230668									
Recorded By										MICHAEL RICHTER									
Witnessed By										LARRY NICHOLSON									

Service Ticket No.: 903952459										API No.: 15-109-21498-00-00										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.		@				@				ONE		ACRT		NONE		CENT		N/A											
Rmc @ Meas. Temp.		@				@						I-11055059																	
Source Rmf		Rmc		CALC		CALC						S-11038385																	
Rm @ BHT		0.62 ohmm @ 125 degF				@																							
Rmf @ BHT		0.53 ohmm @ 125 degF				@																							
Rmc @ BHT		0.71 ohmm @ 125 degF				@																							
EQUIPMENT DATA																													
GAMMA				ACOUSTIC				DENSITY				NEUTRON																	
Run No.		ONE		Run No.		ONE		Run No.		ONE		Run No.		ONE															
Serial No.		11021139		Serial No.		10939049		Serial No.		10809130		Serial No.		11055304															
Model No.		GTET		Model No.		BSAT		Model No.		SDLT		Model No.		DSNT															
Diameter		3.625"		No. of Cent.		2		Diameter		4.6"		Diameter		3.625"															
Detector Model No.		GTET		Spacing		0.5"		Log Type		GAM-GAM		Log Type		NEU-NEU															
Type		SCINT						Source Type		Am241Be		Source Type		Cs-137															
Length		8"		LSA [Y/N]				Serial No.		5155GW		Serial No.		DSN-436															
Distance to Source		N/A		FWDA [Y/N]				Strength		1.5 Ci		Strength		15Ci															
LOGGING DATA																													
GENERAL				GAMMA		ACOUSTIC		DENSITY				NEUTRON																	
Run		Depth		Speed		Scale		Scale		Matrix		Scale		Matrix															
No.		From To		ft/min		L R		L R		L R		L R		L R															
ONE		TD		CSG		PEC		30		10		2.71 g/cc		30															

ONE	ID	CSG	REC	0	100	30	-10	47.0 us/in	30	-10	2.71 g/cc	30	-10	TIME					
DIRECTIONAL INFORMATION																			
Maximum Deviation					@					KOP					@				
CLIENT REPORTED VERTICAL HOLE																			
Remarks: GTET-IDT-DSNT-SDLT-BSAT-ACRT RUN IN COMBINATION																			
ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING																			
POROSITY & MICROLOG LOGGED TO 3700' AS PER CLIENT REQUEST																			
CHLORIDES REPORTED AT 3000 ppm																			
NO POST-CALS COMPLETED AS PER CLIENT REQUEST																			
RIG: SOUTHWIND DRILLING RIG 8																			
CREW: T. SUMNER, T. ROSS, T. COTHREN																			
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES -- EL RENO, OK -- 405.278.9685																			
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. HALLIBURTON																			



Plot Time: 23-Apr-17 12:59:28

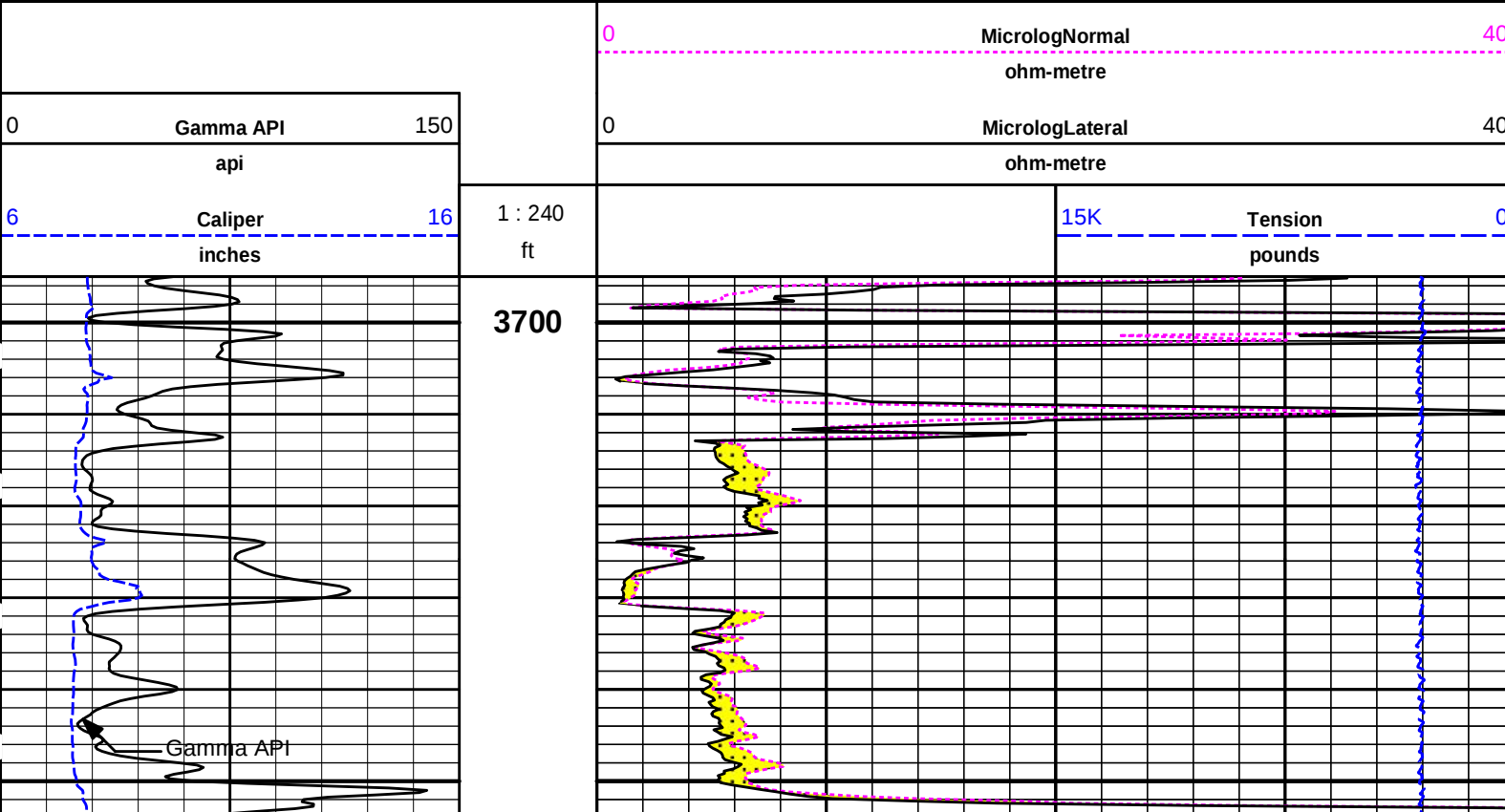
Plot Range: 3695 ft to 4774.33 ft

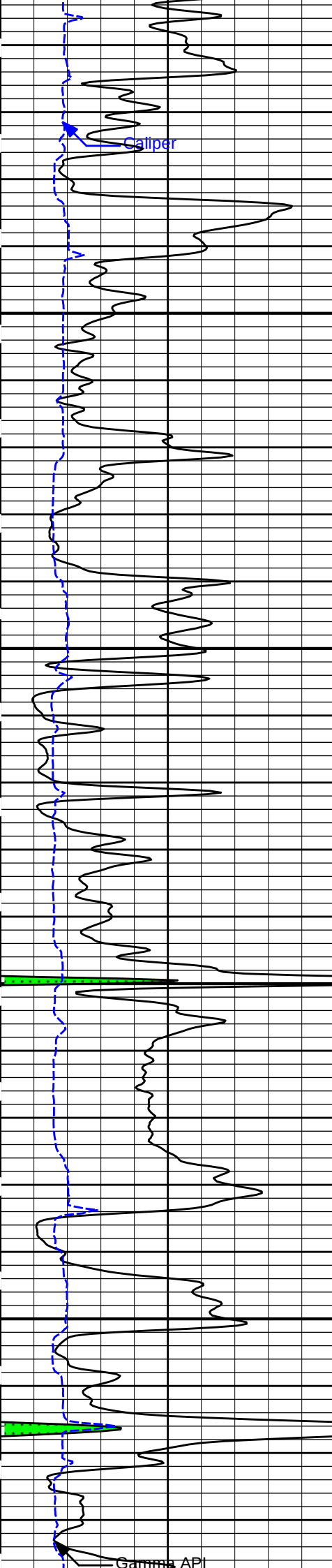
Data: CULBREATH-VOTH\Well Based\MAIN\

Plot File: \\LOCAL-1\CULBREATH-VOTH\0001 GTET-IDT-DSNT-SDLT-BSAT-ACRT\MICRO\Microlog_IQ_5_main

5 INCH MAIN LOG

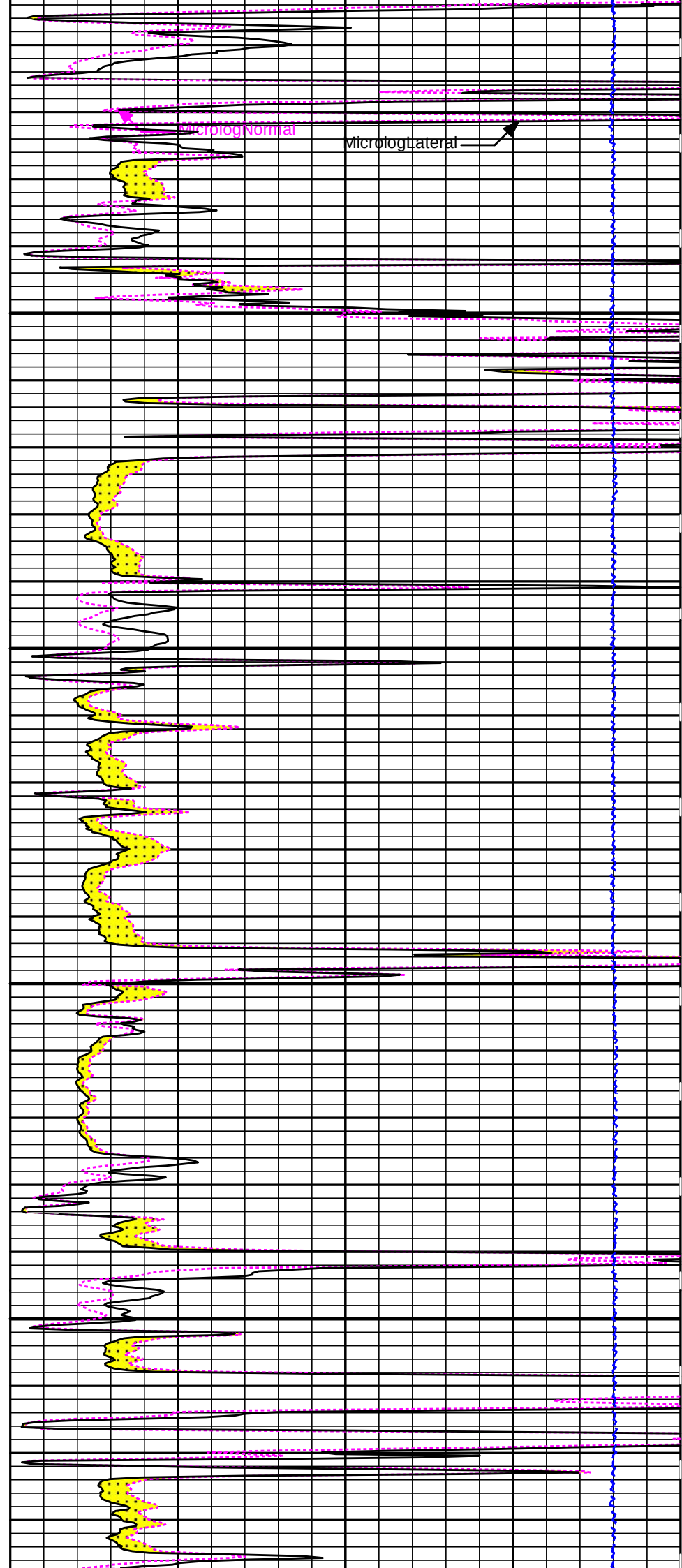
MAIN LOG 5" PER 100'





3800

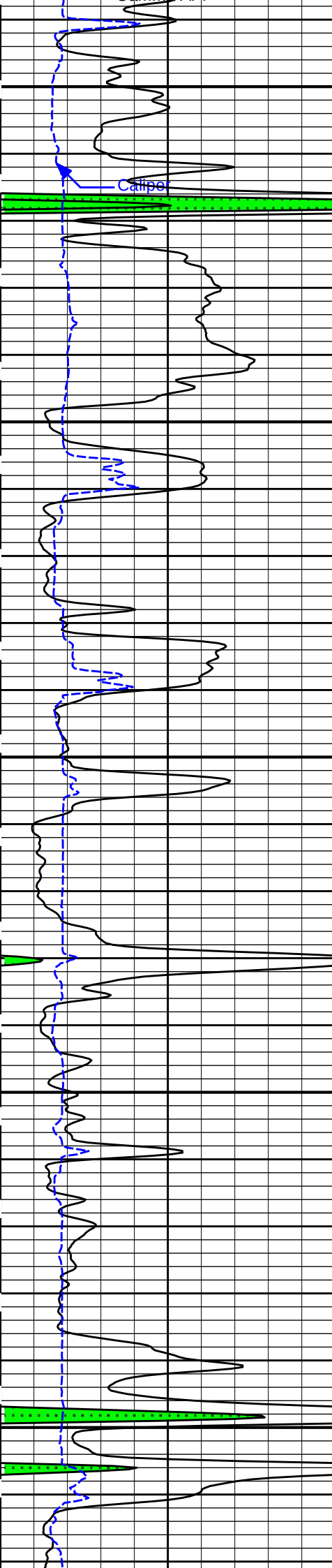
3900



micrologNormal

micrologLateral

Gamma API



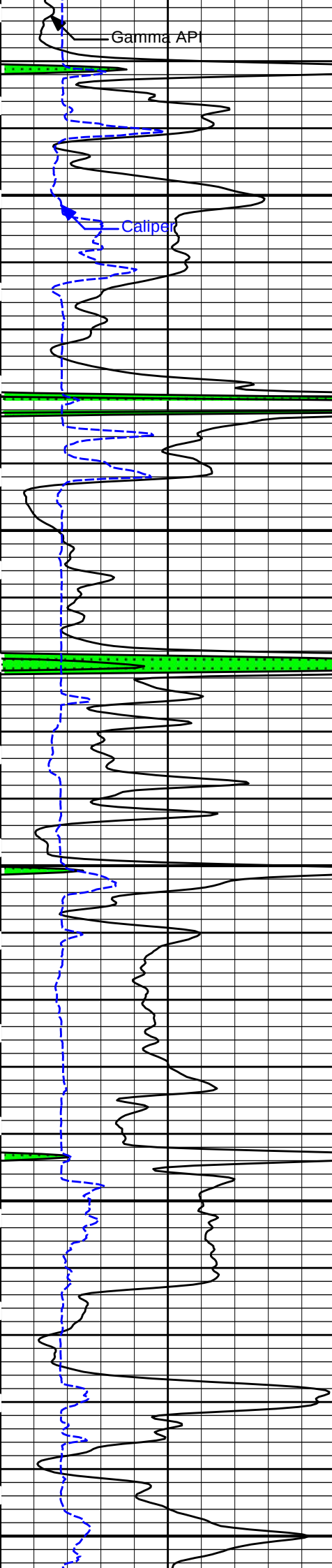
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MicrologLateral

MicrologNormal

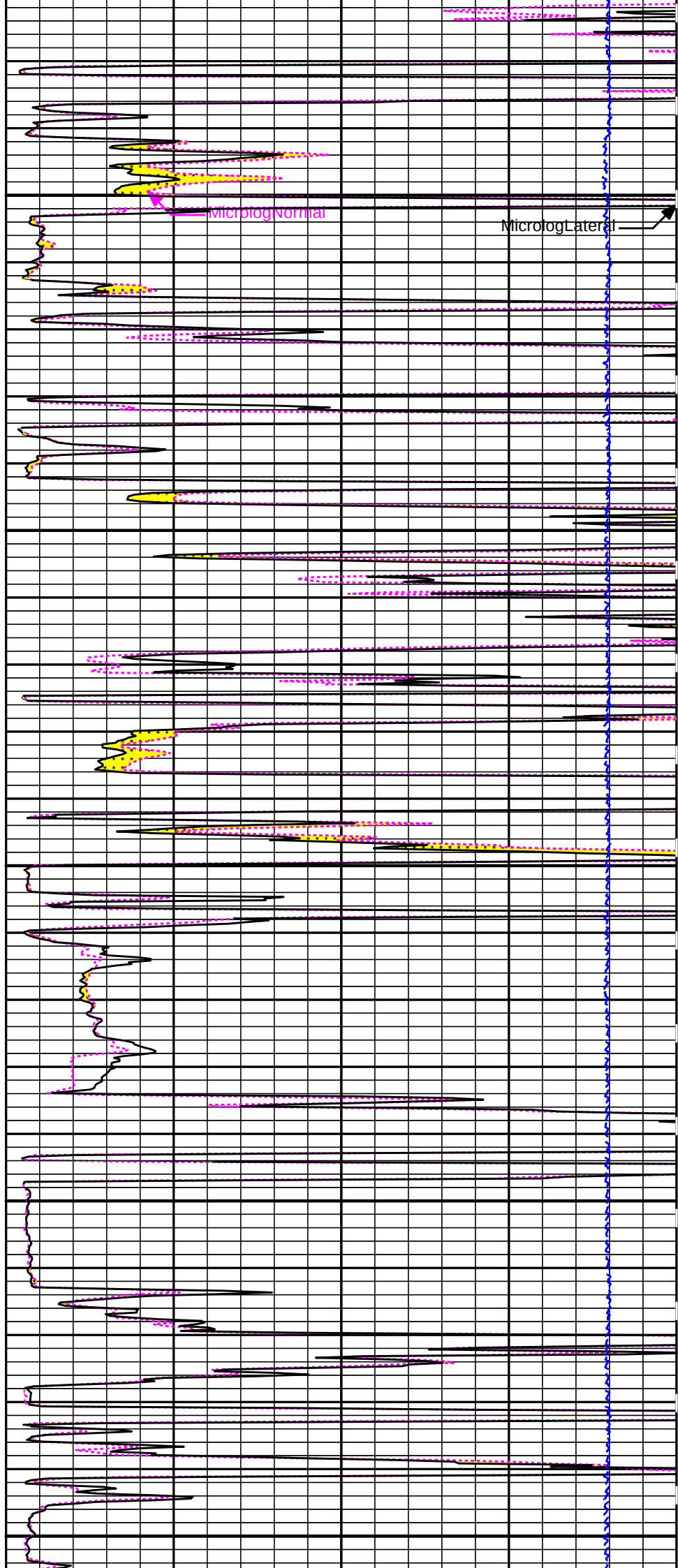
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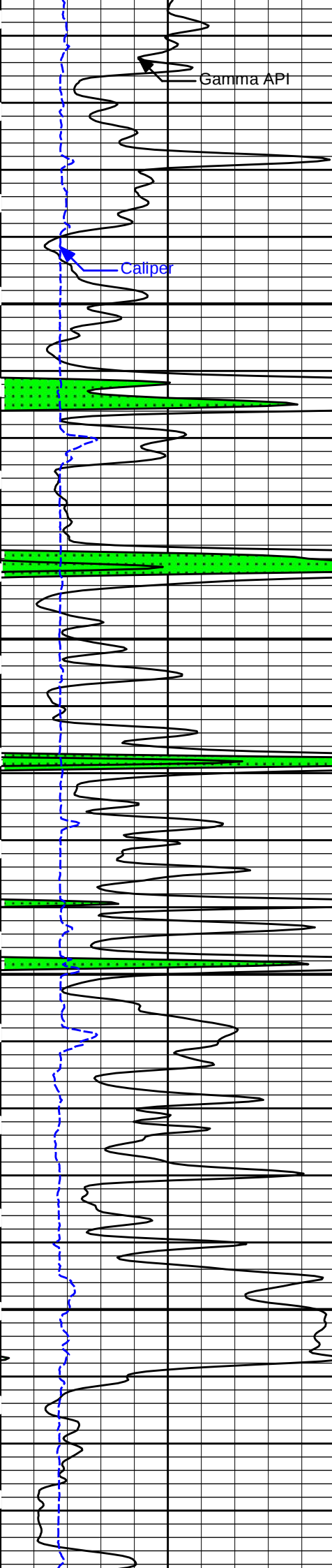
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4300

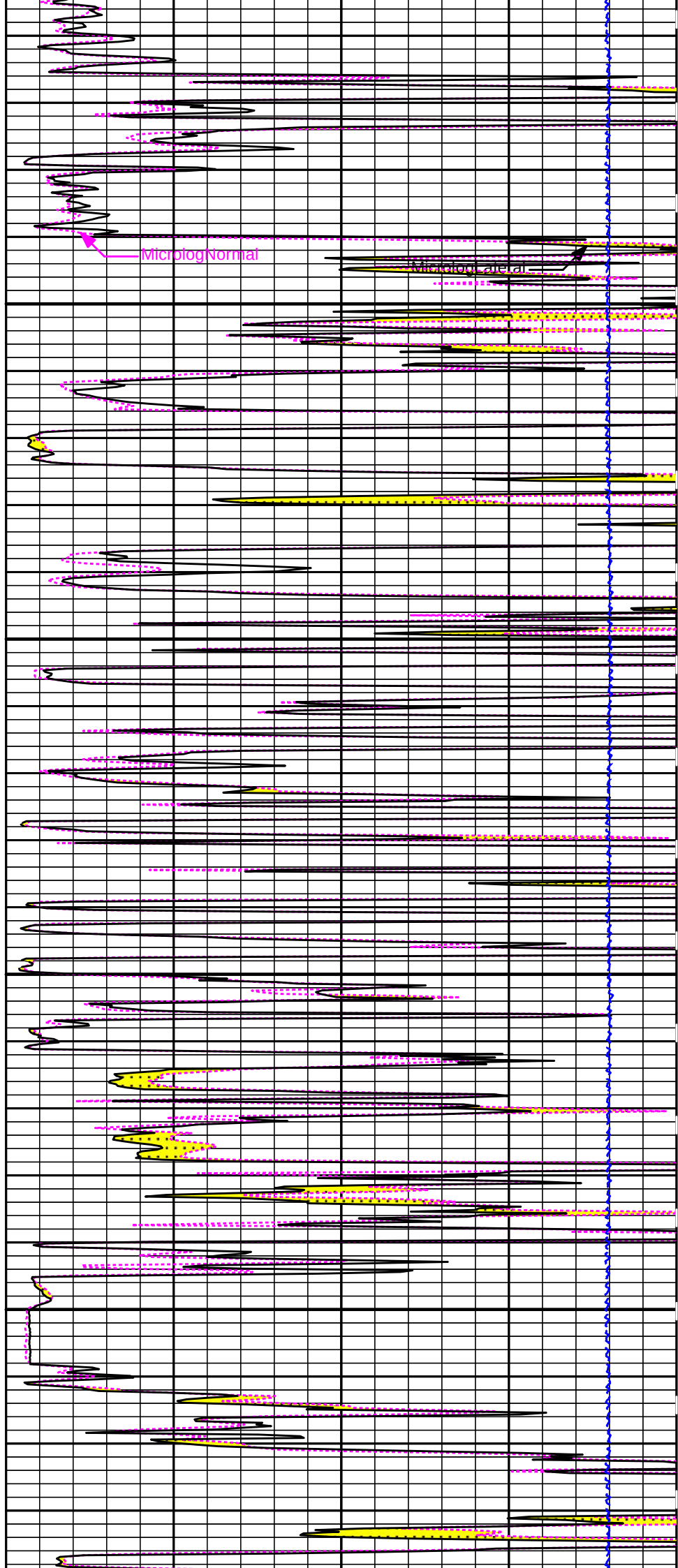
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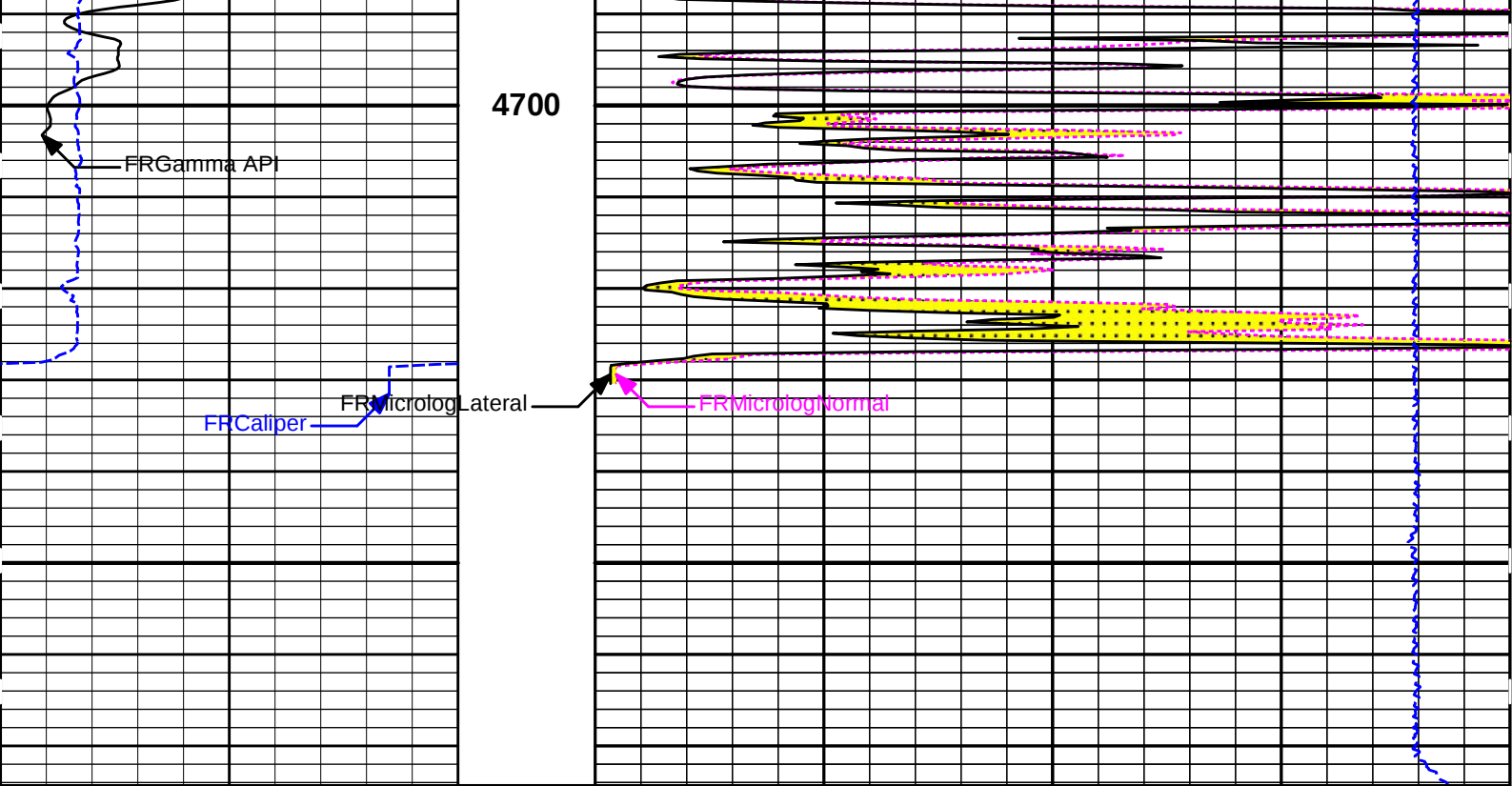




4500

4600





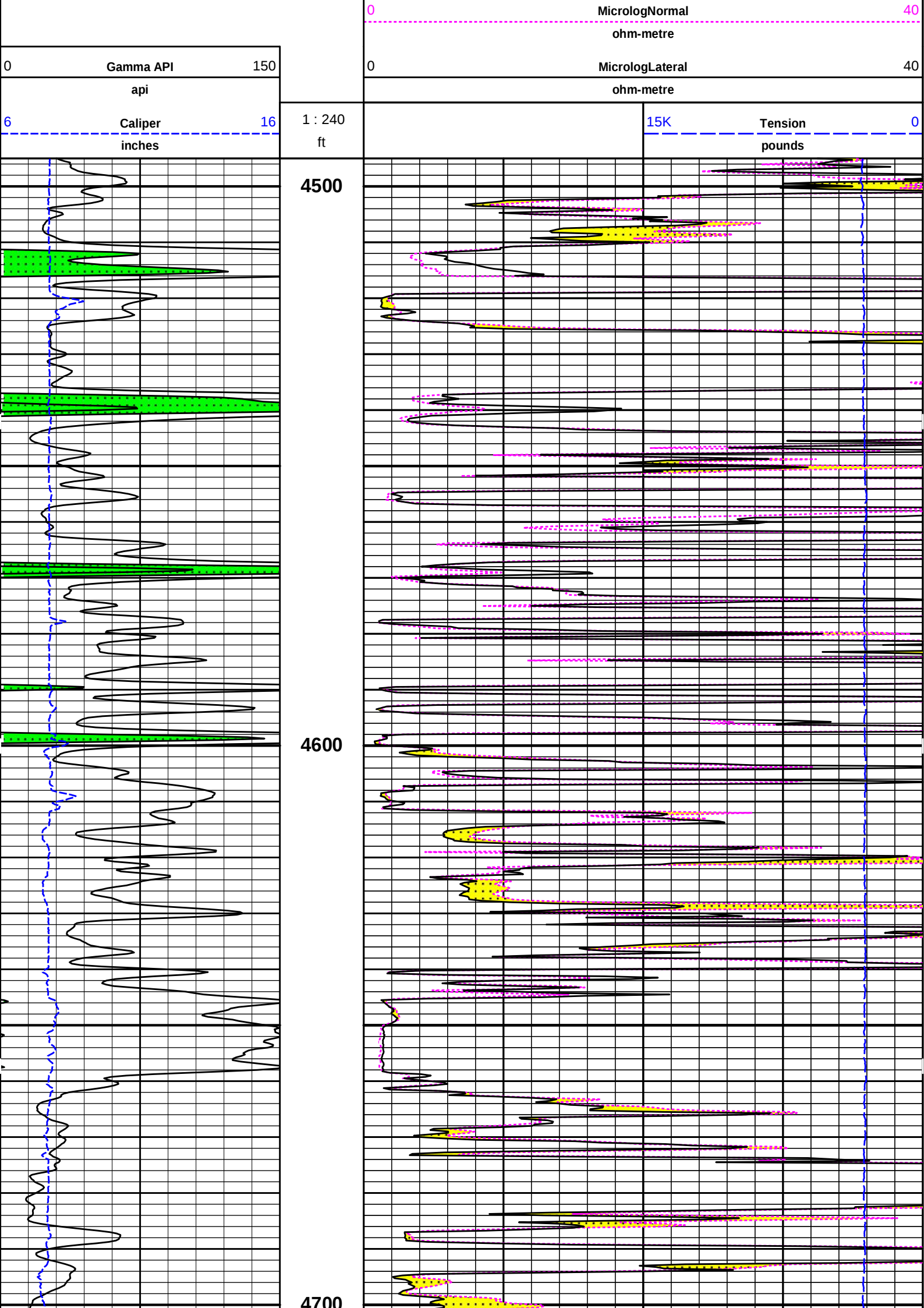
6	Caliper	16	1 : 240		15K	Tension	0
	inches		ft			pounds	
0	Gamma API	150		0	MicrologLateral		40
	api				ohm-metre		
				0	MicrologNormal		40
					ohm-metre		

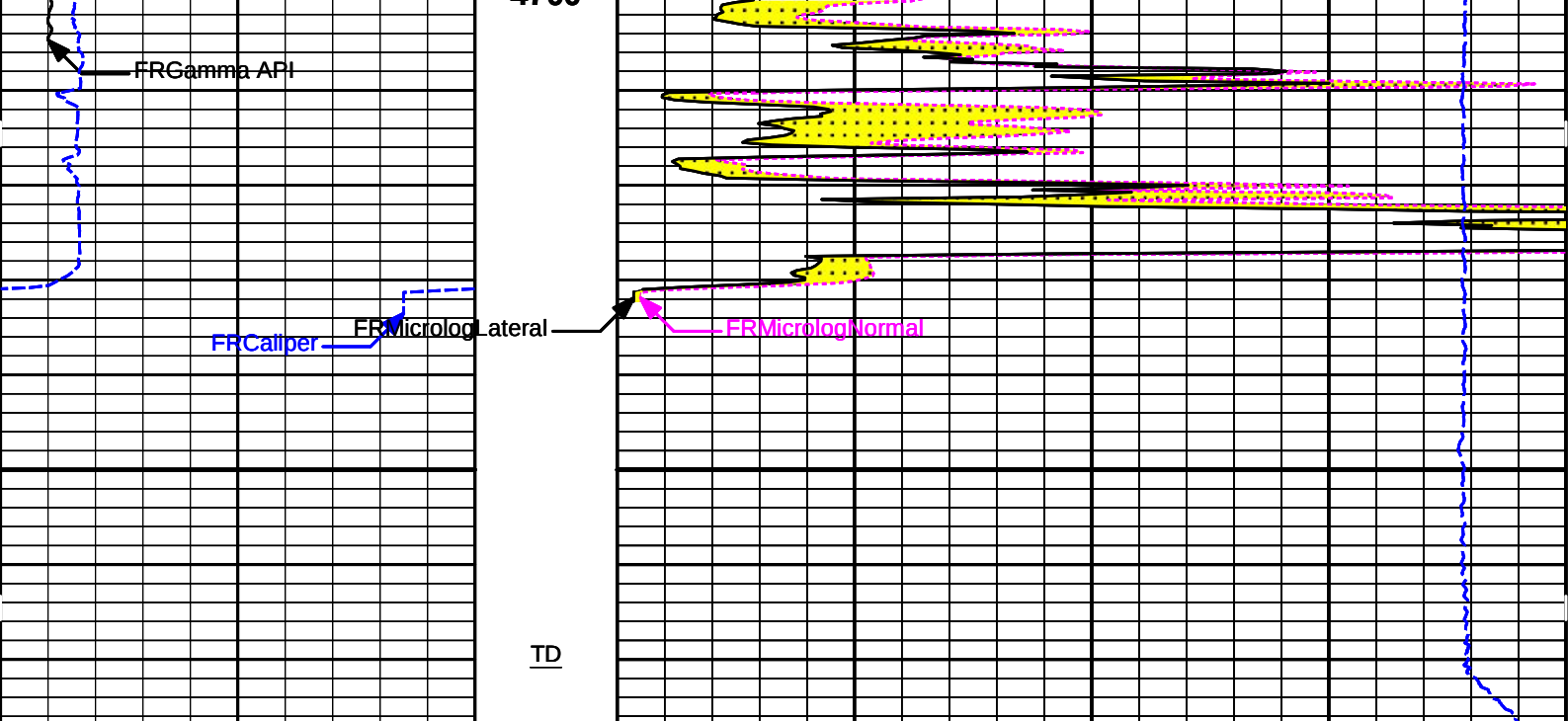
HALLIBURTON	Plot Time: 23-Apr-17 12:59:30 Plot Range: 3695 ft to 4774.33 ft Data: CULBREATH-VOTH\Well Based\MAIN\ Plot File: \\-LOCAL-ICULBREATH-VOTH\0001 GTET-IDT-DSNT-SDLT-BSAT-ACRt\MICRO\Microlog_IQ_5_main
5 INCH MAIN LOG	

MAIN LOG 5" PER 100'	
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HALLIBURTON	Plot Time: 23-Apr-17 12:59:30 Plot Range: 4495 ft to 4776.92 ft Data: CULBREATH-VOTH\Well Based\REPEAT\ Plot File: \\-LOCAL-ICULBREATH-VOTH\0001 GTET-IDT-DSNT-SDLT-BSAT-ACRt\MICRO\Microlog_IQ_5_main
5 INCH REPEAT LOG	

REPEAT LOG 5" PER 100'	
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6	Caliper inches	16	1 : 240 ft		15K	Tension pounds	0
0	Gamma API	150		0	MicrologLateral		40
	api				ohm-metre		
				0	MicrologNormal		40
					ohm-metre		

HALLIBURTON

Plot Time: 23-Apr-17 12:59:31
Plot Range: 4495 ft to 4776.92 ft
Data: CULBREATH-VOTH\Well Based\REPEAT\
Plot File: \\LOCAL-ICULBREATH-VOTH\0001 GTET-IDT-DSNT-SDLT-BSAT-ACRt\MICRO\Microlog_IQ_5_main

5 INCH REPEAT LOG

REPEAT LOG 5" PER 100'

COMPANY	CULBREATH OIL & GAS COMPANY, INC.		
WELL	VOTH #1-4		
FIELD	UNNAMED		
COUNTY	LOGAN	STATE	KANSAS
HALLIBURTON		MICROLOG	