

HALLIBURTON

MICROLOG

HALLIBURTON				MICROLOG					
CMX, INC BLACK WIDOW OWWO 1-29 HARDING PRATT KANSAS				COMPANY CMX, INC WELL BLACK WIDOW OWWO 1-29 FIELD/BLOCK HARDING COUNTY PRATT STATE KANSAS					
COMPANY		WELL		FIELD/BLOCK		COUNTY		STATE	
Permanent Datum		Log measured from		Drilling measured from		Date			
GL		KB		KB		19-Oct-17			
Sect. 29		Twp. 29S		Rge. 11W					
API No. 15-151-20320-00		Location NW NW SW 2310' FSL & 330' FWL		Other Services: GTET DSNT SDLT BSAT ACRT					
Elev. 1861.0 ft		9.0 ft above perm. Datum		Elev.: K.B. D.F. G.L.		1870.0 ft 1870.0 ft 1861.0 ft			
Run No.		ONE							
Depth - Driller		4748.0 ft							
Depth - Logger		4738.0 ft							
Bottom - Logged Interval		4730.0 ft							
Top - Logged Interval		353.0 ft							
Casing - Driller		8.625 in		@				@	
Casing - Logger		353.0 ft							
Bit Size		7.875 in		@				@	
Type Fluid in Hole		Water Based Mud							
Density		8.5 ppg		66.00 s/qt					
PH		9.50 pH		1.5 cpm					
Source of Sample		FLOWLINE							
Rm @ Meas. Temperature		0.55 ohmm		@		75.00 degF		@	
Rmf @ Meas. Temperature		0.63 ohmm		@		75.00 degF		@	
Rmc @ Meas. Temperature		0.47 ohmm		@		75.00 degF		@	
Source Rmf		MEAS		MEAS					
Rm @ BHT		0.21 ohmm		@		120.0 degF		@	
Time Since Circulation		03:37 hr							
Time on Bottom		19-Oct-17 00:37							
Max. Rec. Temperature		120.00 degF		@		4736.0 ft		@	
Equipment		Location		12156883		EL RENO, OK			
Recorded By		MICHAEL RICHTER							
Witnessed By		LEAH KASTEN							

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Service Ticket No.: 904369081						API No.: 15-151-20320-00						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									S-11038385							
Rm @ BHT			@			@											
Rmf @ BHT			@			@											
Rmc @ BHT			@			@											
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.		10865881		Serial No.		11019641			
Model No.		GTET		Model No.		BSAT		Model No.		SDLT		Model No.		DSNT			
Diameter		3.625"		No. of Cent.		2		Diameter		6.0"		Diameter		3.625"			
Detector Model No.		GTET		Spacing		0.5"		Log Type		GAM-GAM		Log Type		NEU-NEU			
Type		SCINT						Source Type		Cs-137		Source Type		Am241Be			
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		15 Ci			
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				
ONE	TD	CSG	RED	0	150	30	-10	47.6 us/ft	30	-10	2.71 g/cc	30	-10	LIME			

DIRECTIONAL INFORMATION														
Maximum Deviation @								KOP @						
CLIENT REPORTED VERTICAL WELL														
Remarks: GTET-DSNT-SDLT RUN IN COMBINTION														
GTET-BSAT-ACRT RUN IN COMBINATION														
ANNULAR HOLE VOLUME CALCULATED FOR 5.5 INCH CASING														
DETAILED SECTION LOGGED UP TO 1.950 FT AS PER CLIENT REQUEST														
CHLORDES REPORTED AT 8500 PPM														
NO POST-CALS COMPLETED AS PER CLIENT REQUEST														
RIG: DUKE DRILLING RIG #4														
CREW: K. FITZPATRICK, R. BLANKENSHIP														
THANK YOU FOR CHOOSING HALLIBURTON ENERGY SERVICES -- EL RENO, OK -- 405.298.9685														
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														

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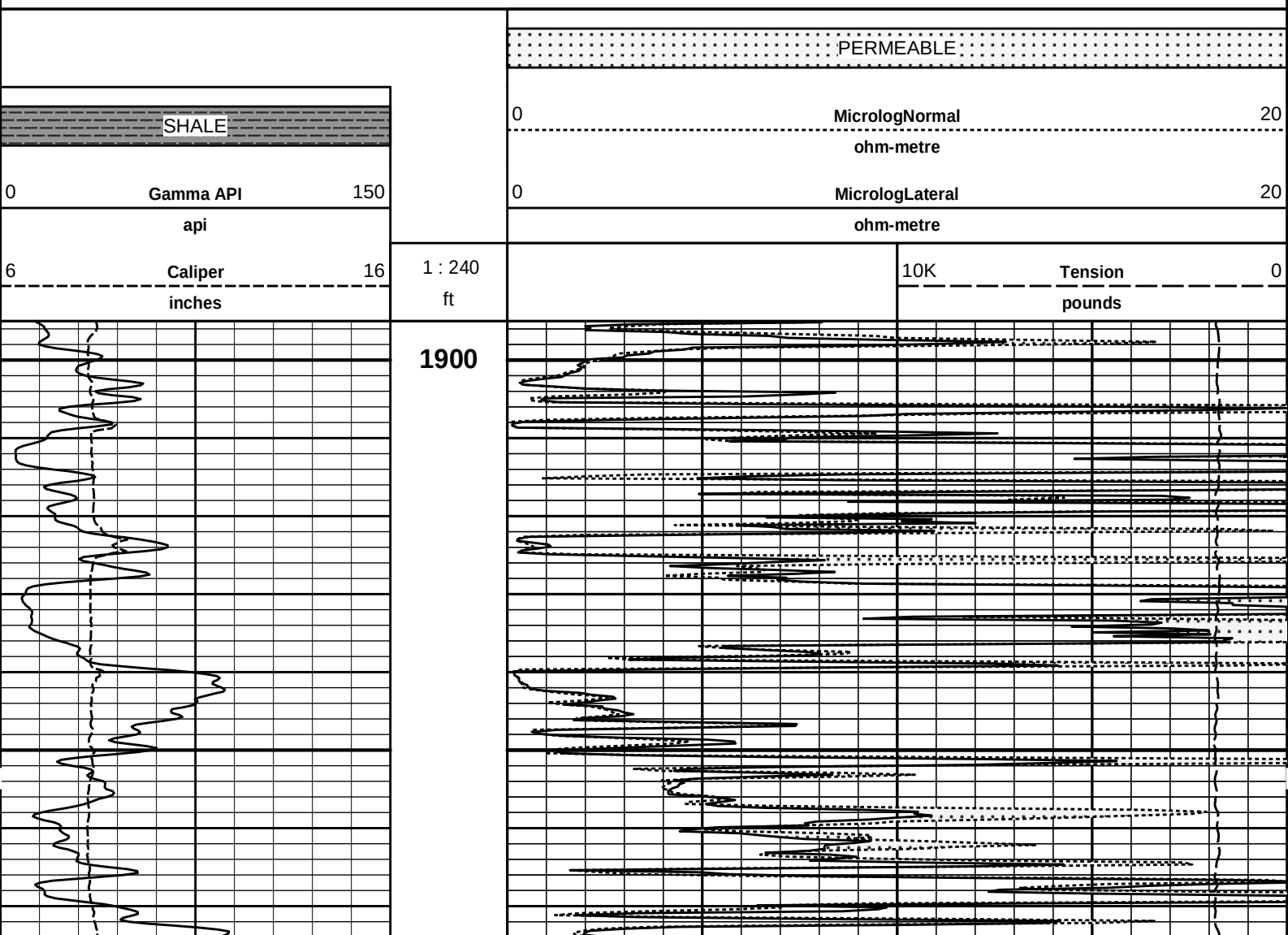
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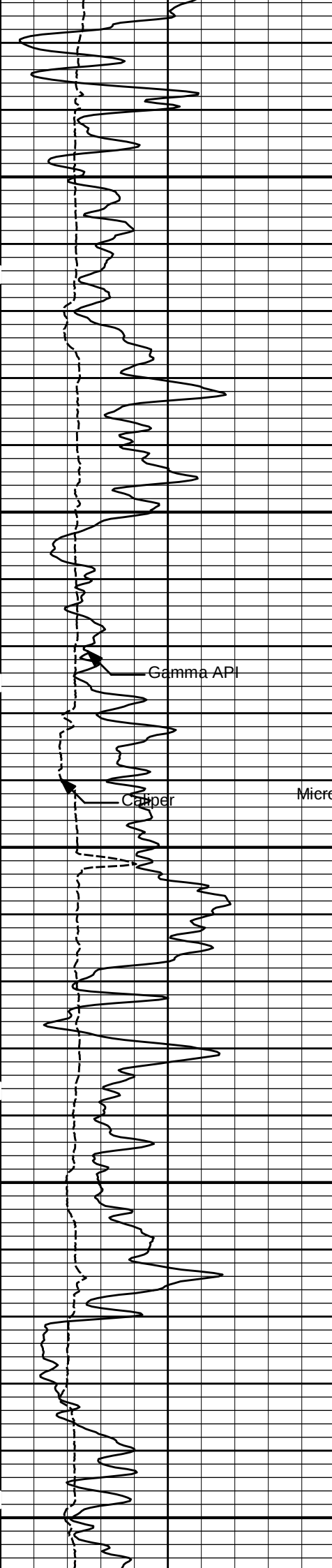
Plot Range: 1895 ft to 4735.08 ft

Data: CMX BLACK WIDOW\Well Based\RUN 3 MAIN\

Plot File: \\-LOCAL-ICMX BLACK WIDOW\0003 GTET-DSNT-SDLT\MICRO\Microlog IQ 5 main

5 INCH MAIN LOG





2000

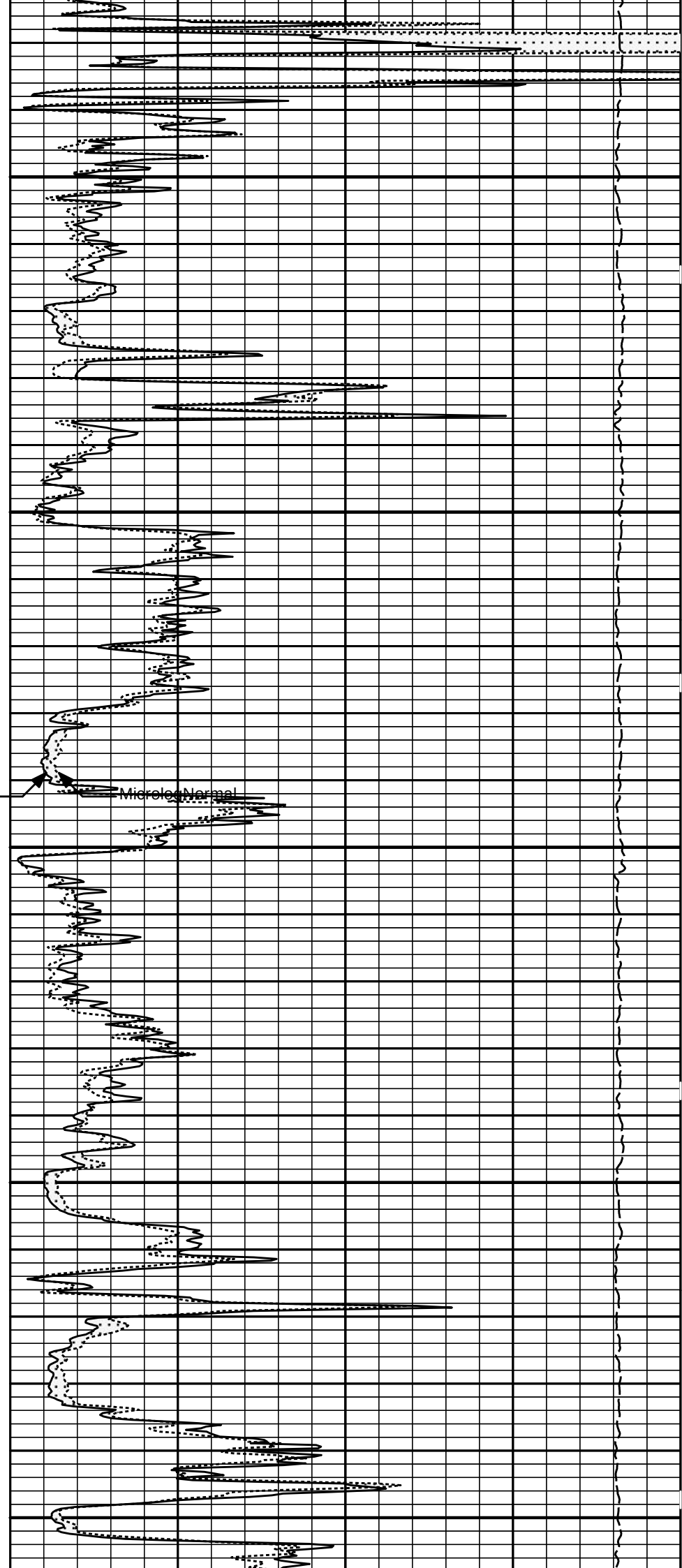
Gamma API

Casper

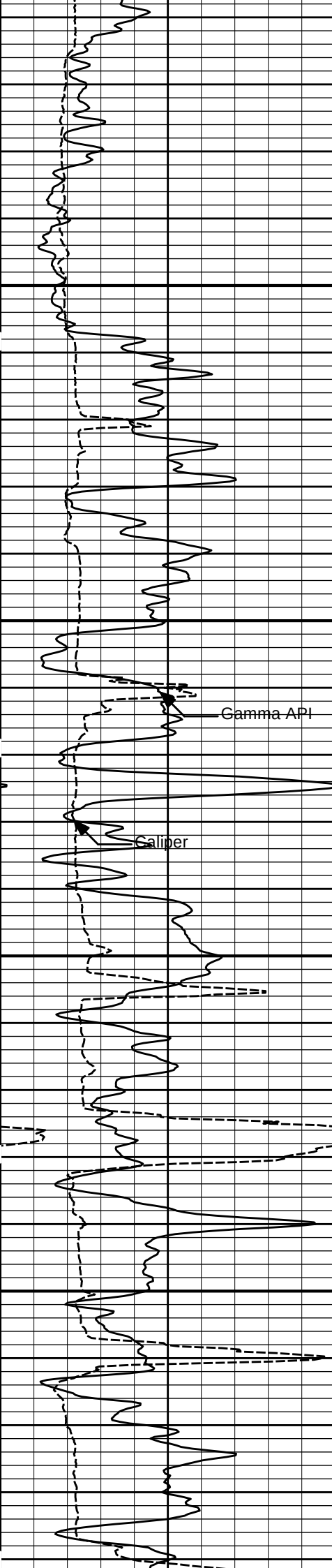
MicrologLateral

2100

2200

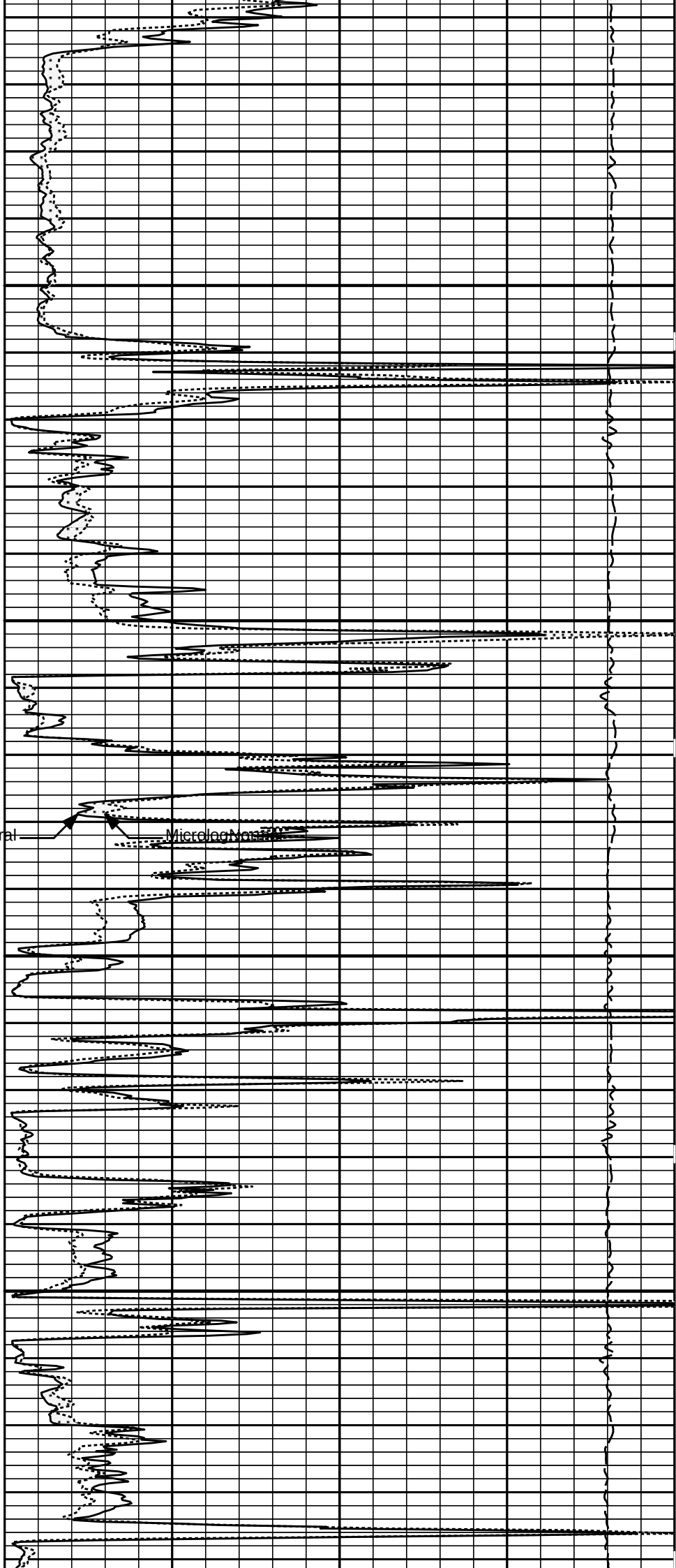


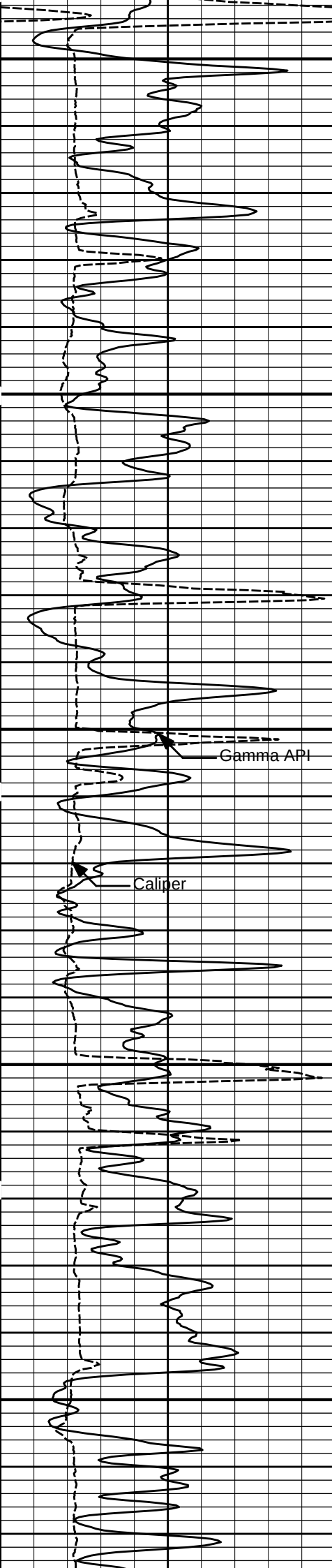
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2300

2400

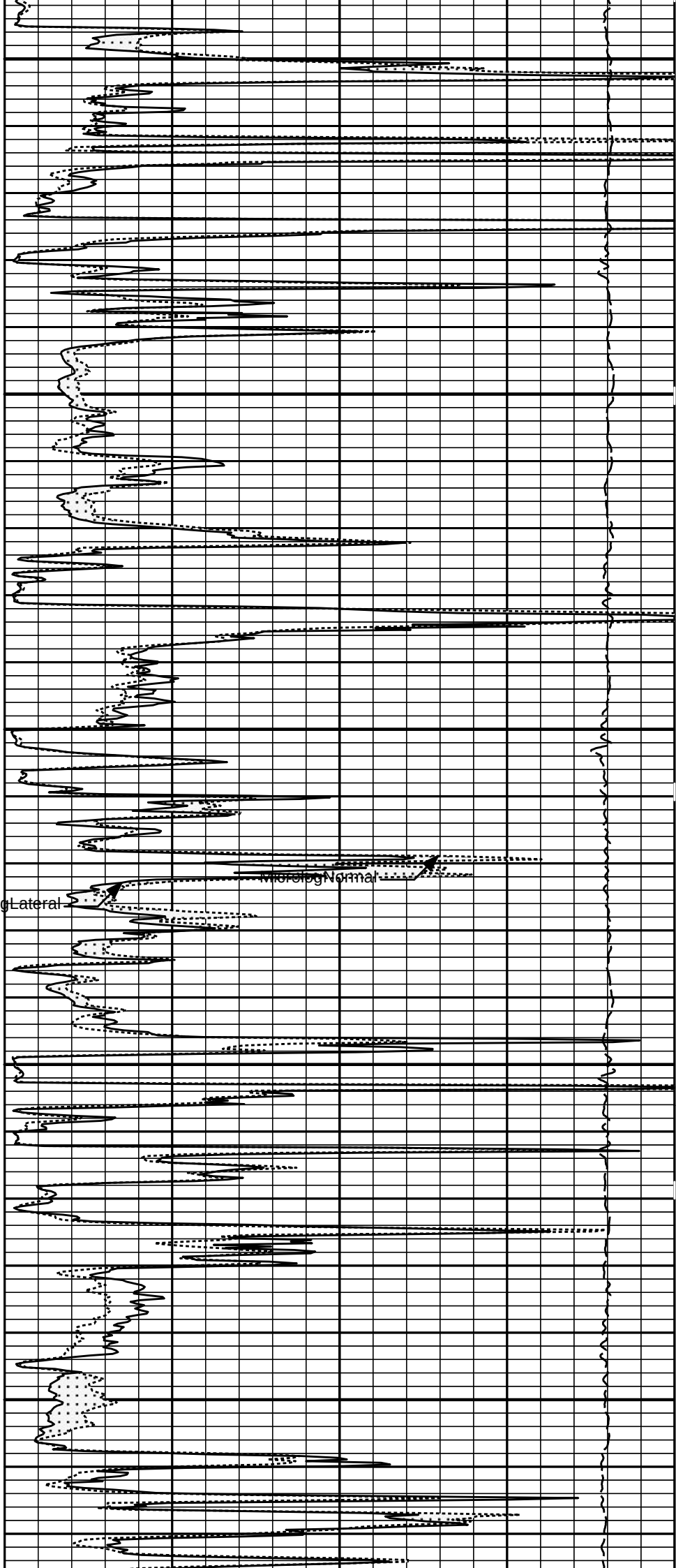


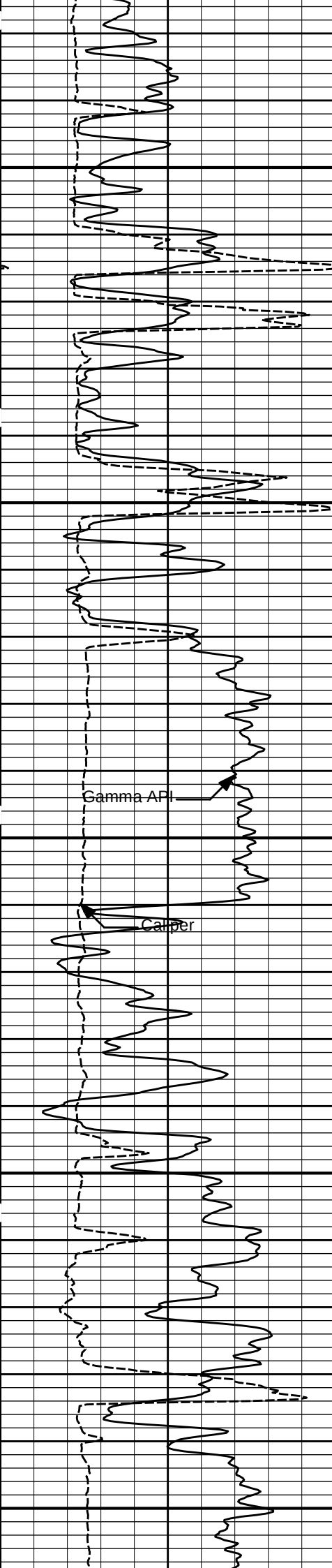


2500

Microlog Lateral

2600

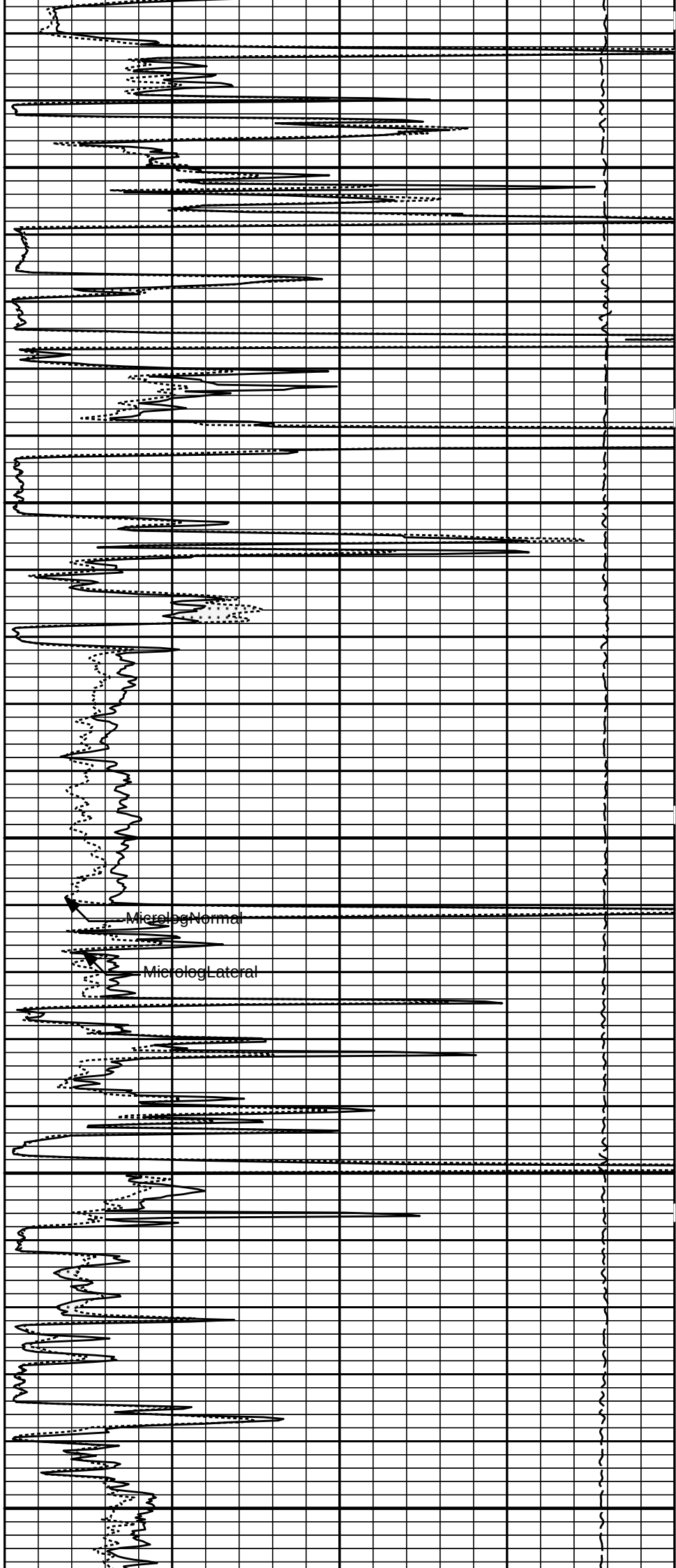


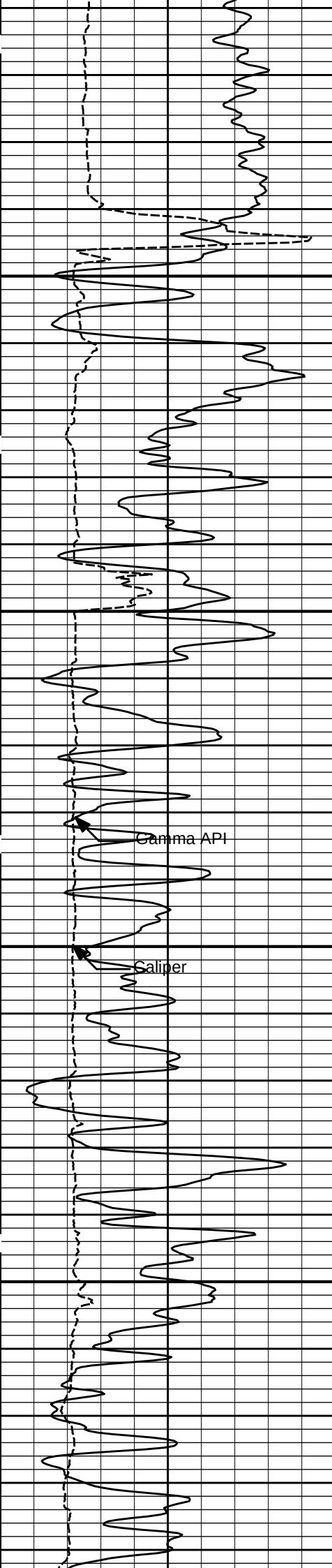


2700

2800

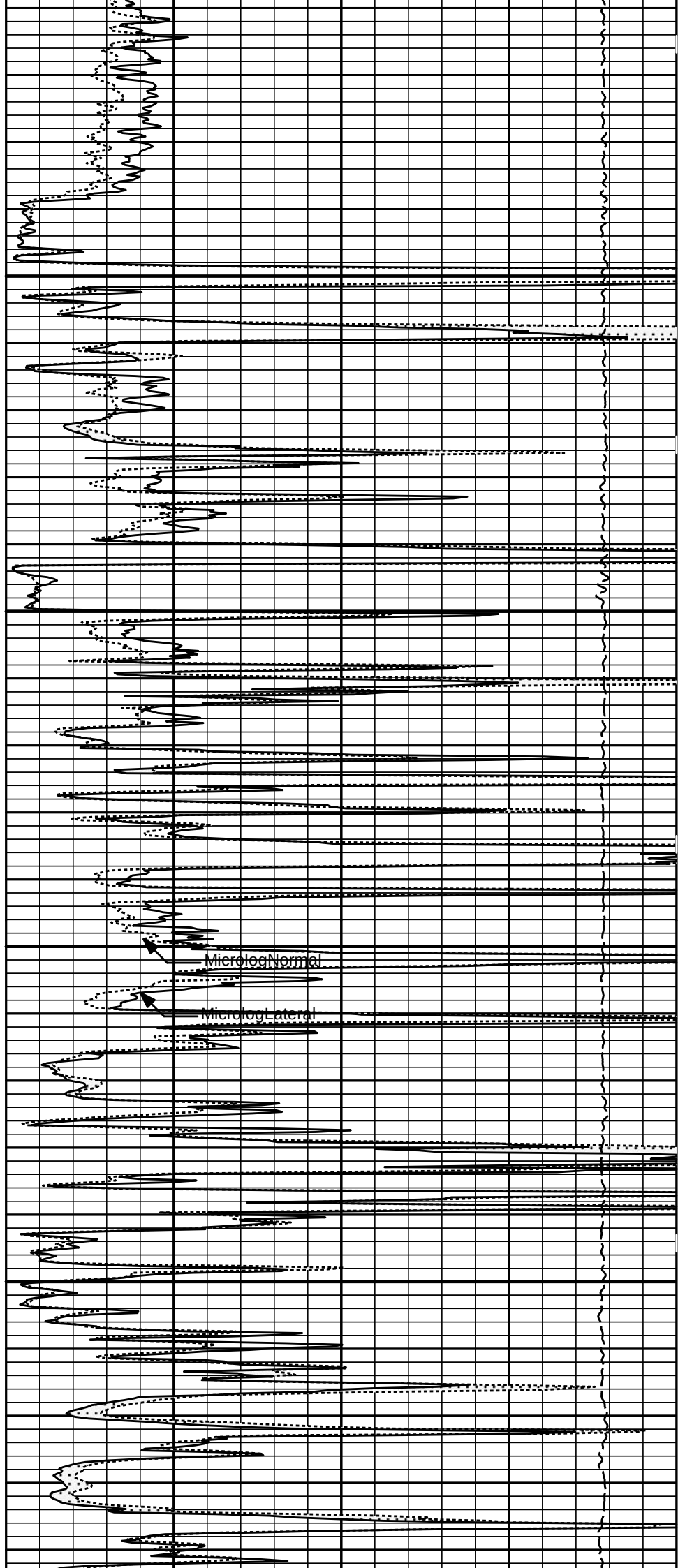
2900

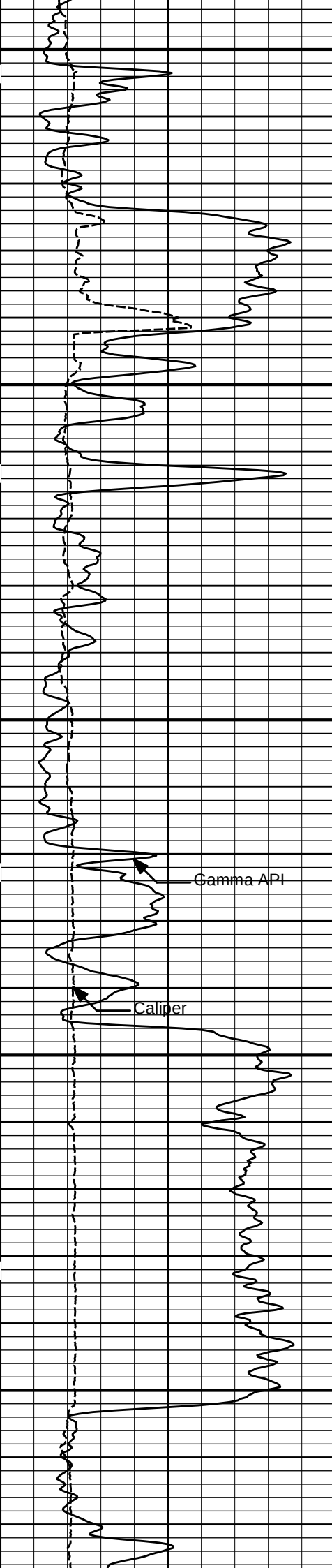




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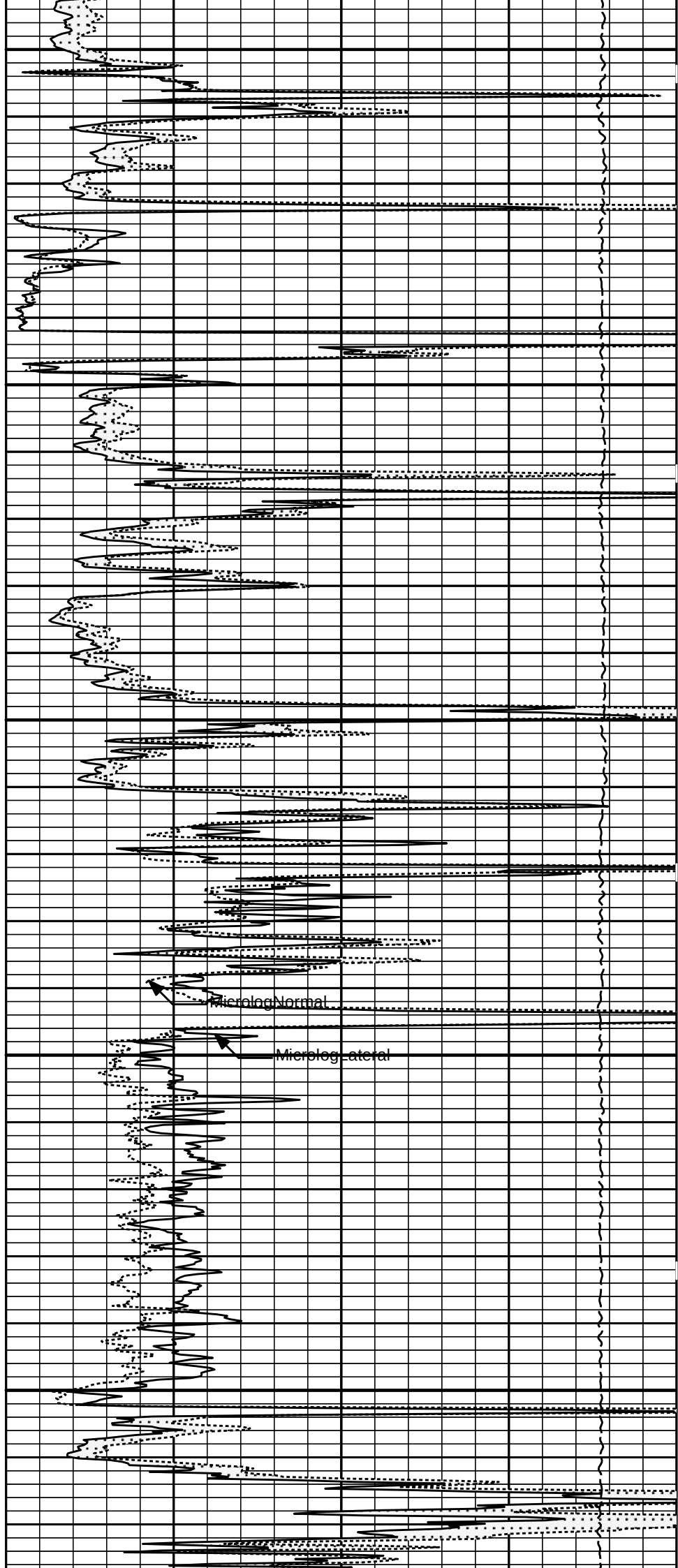
3100

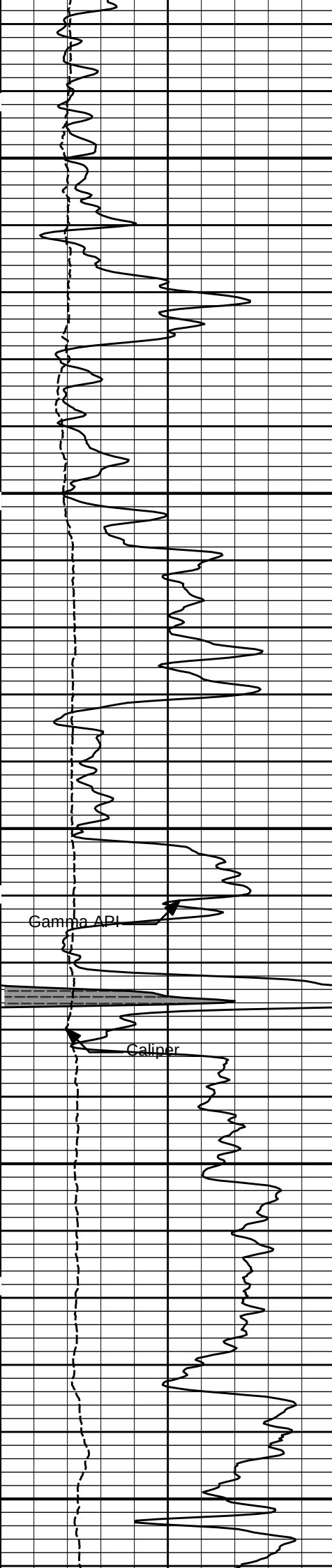




3200

3300

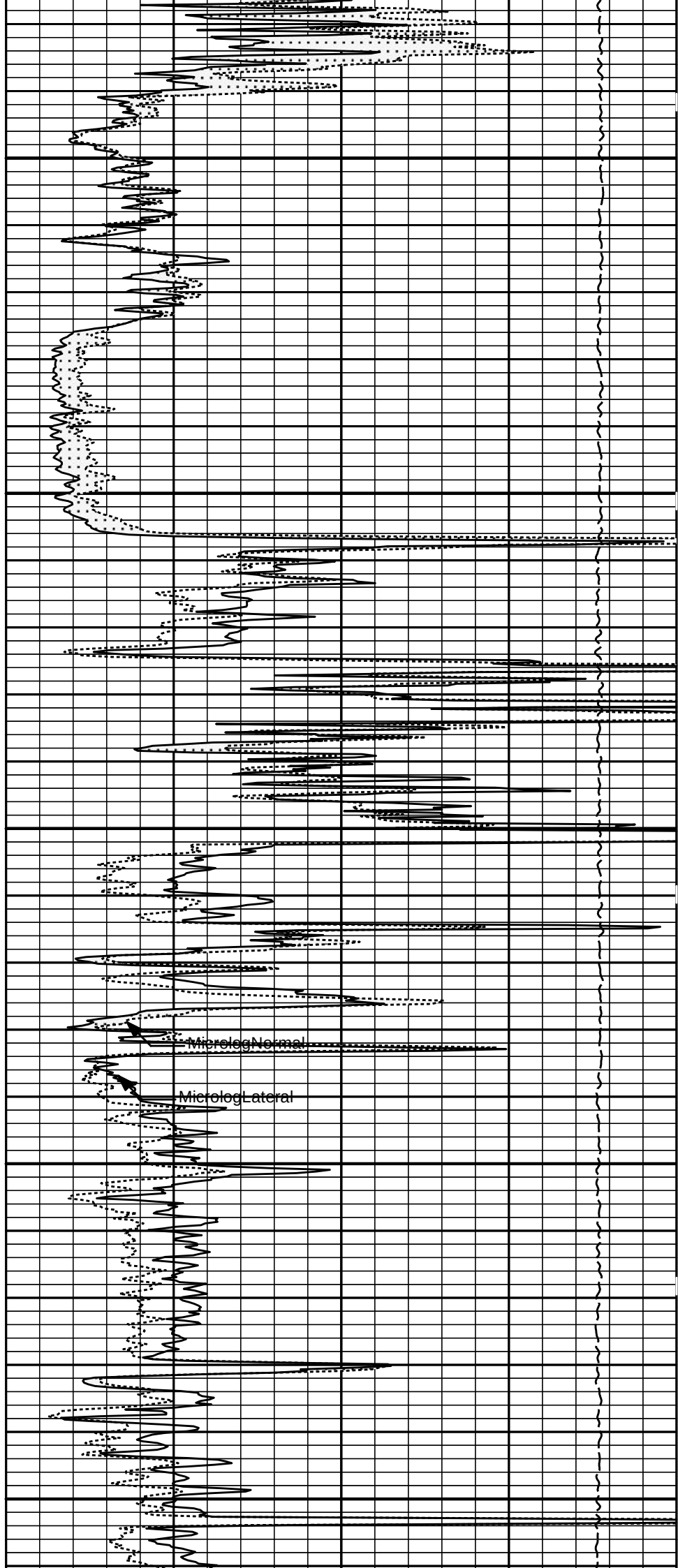


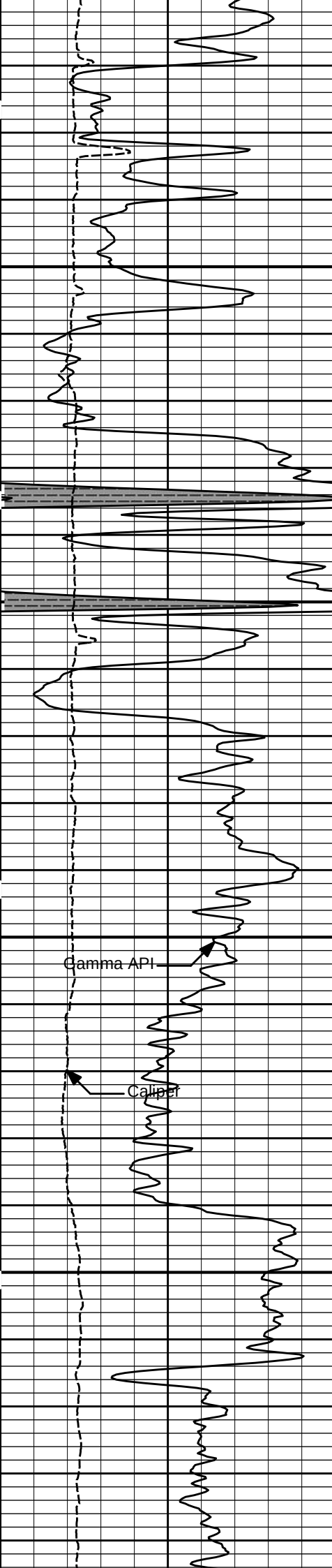


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3500

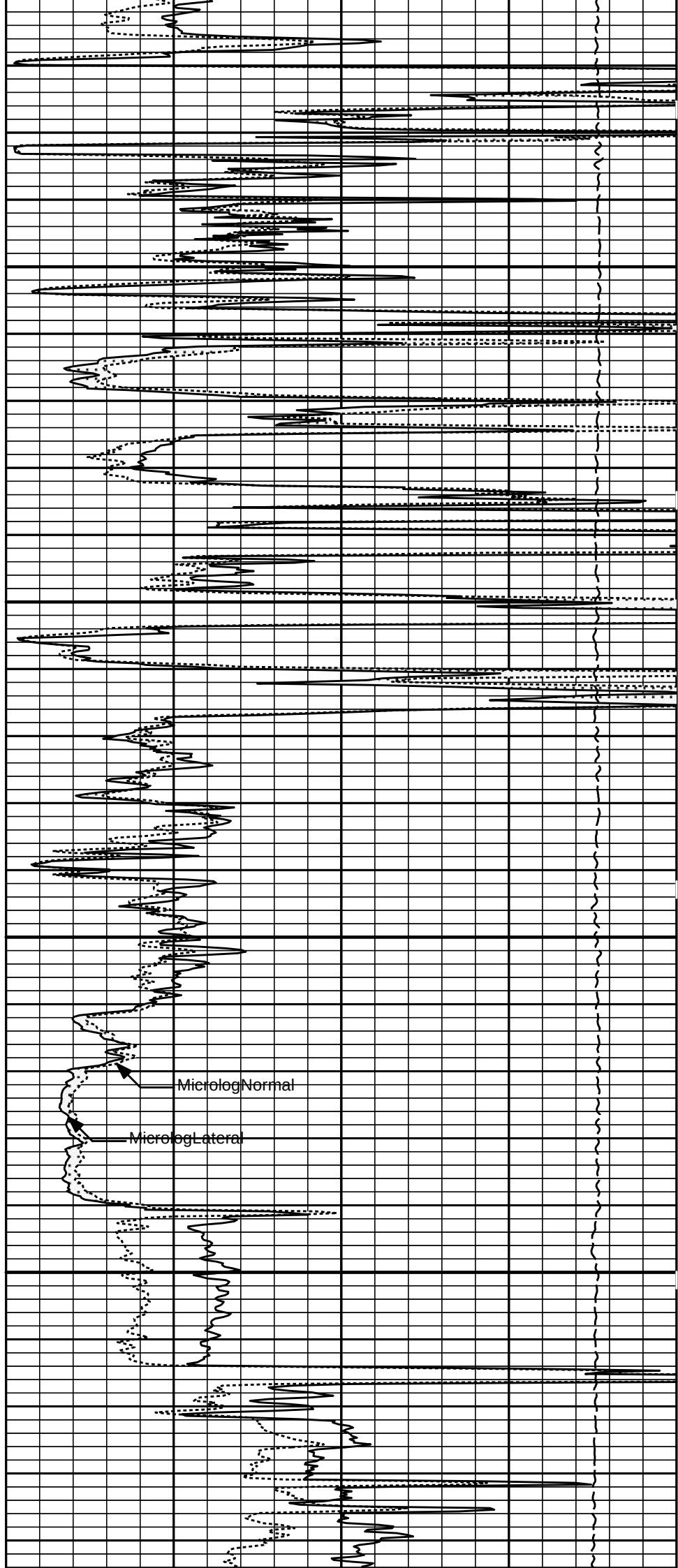
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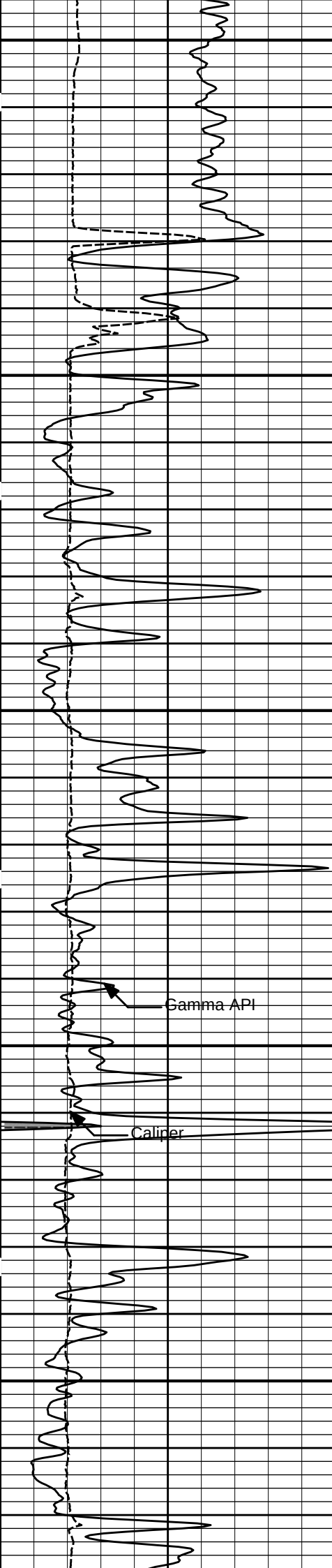




3700

3800



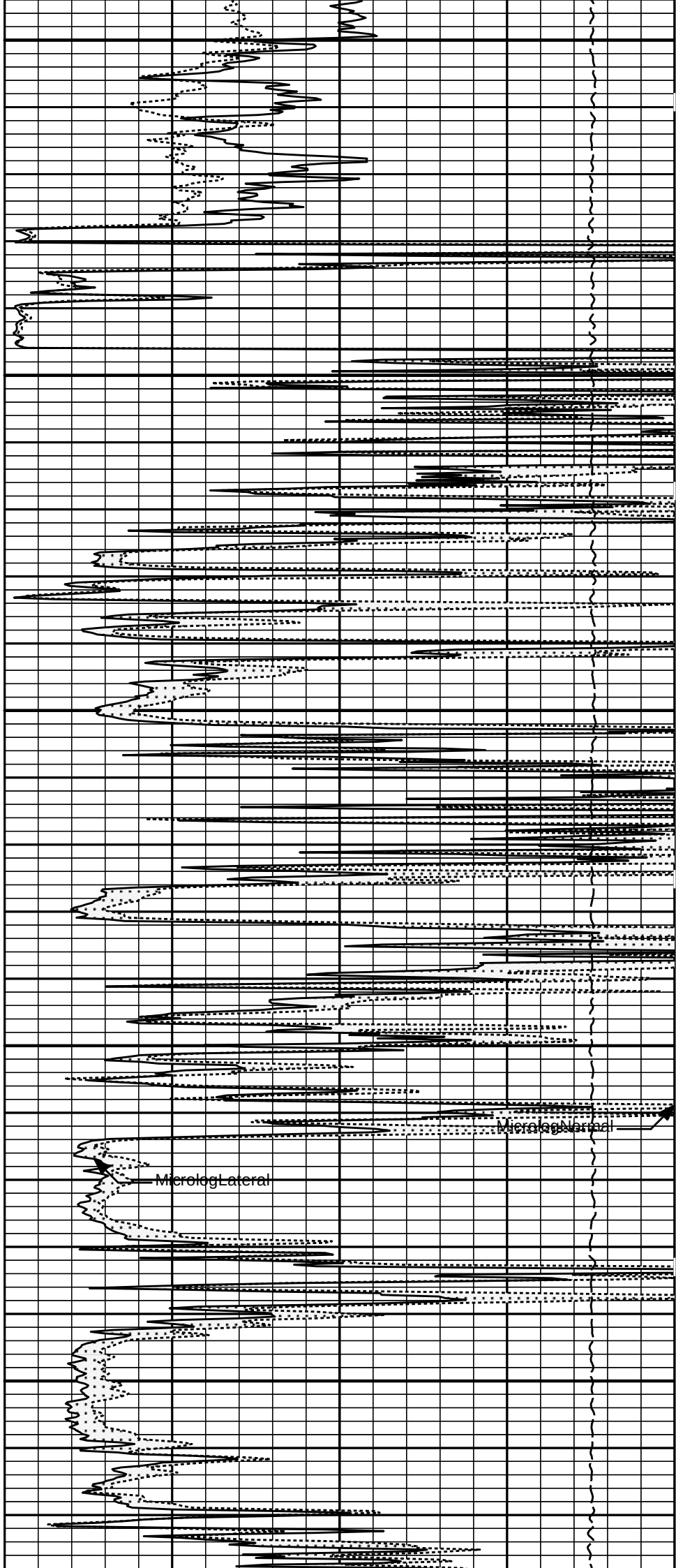


3900

4000

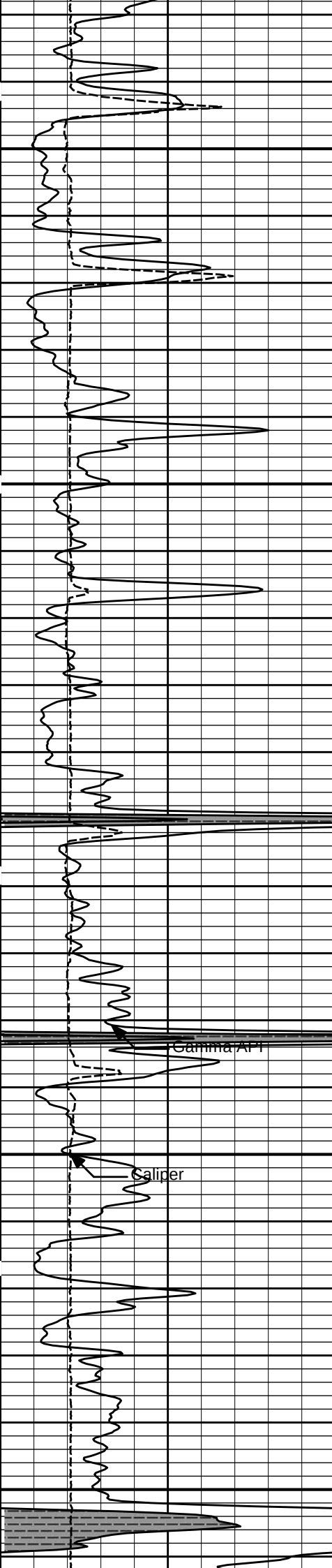
Gamma API

Caliper



Microlog Lateral

Microlog Normal



4100

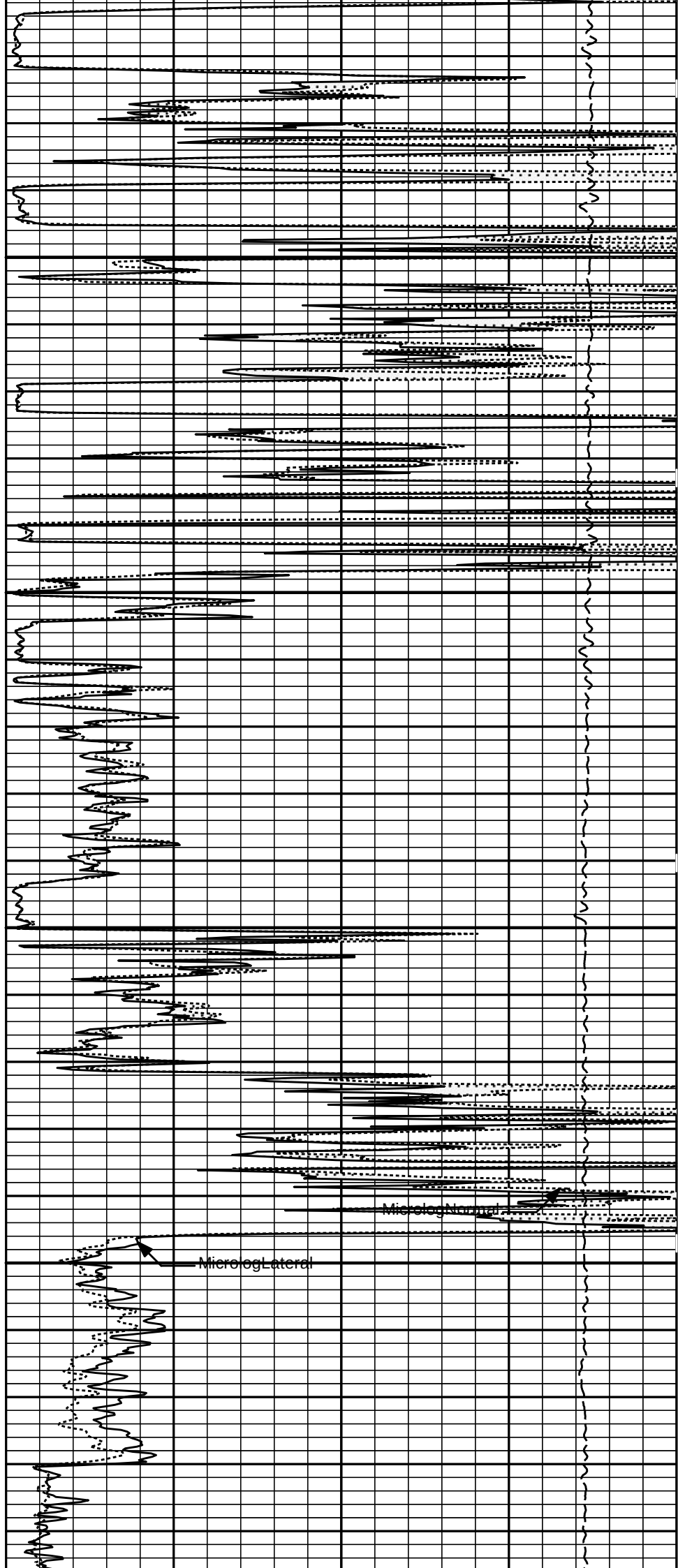
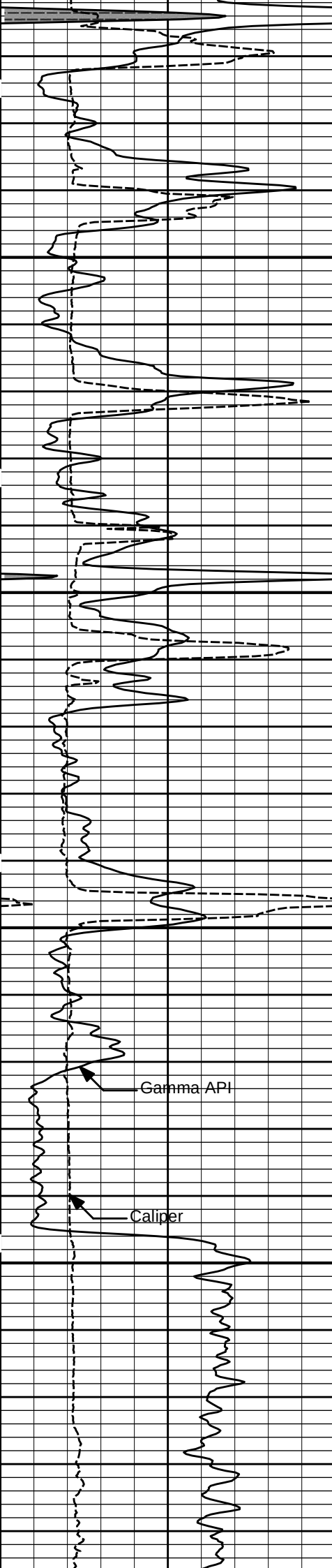
4200

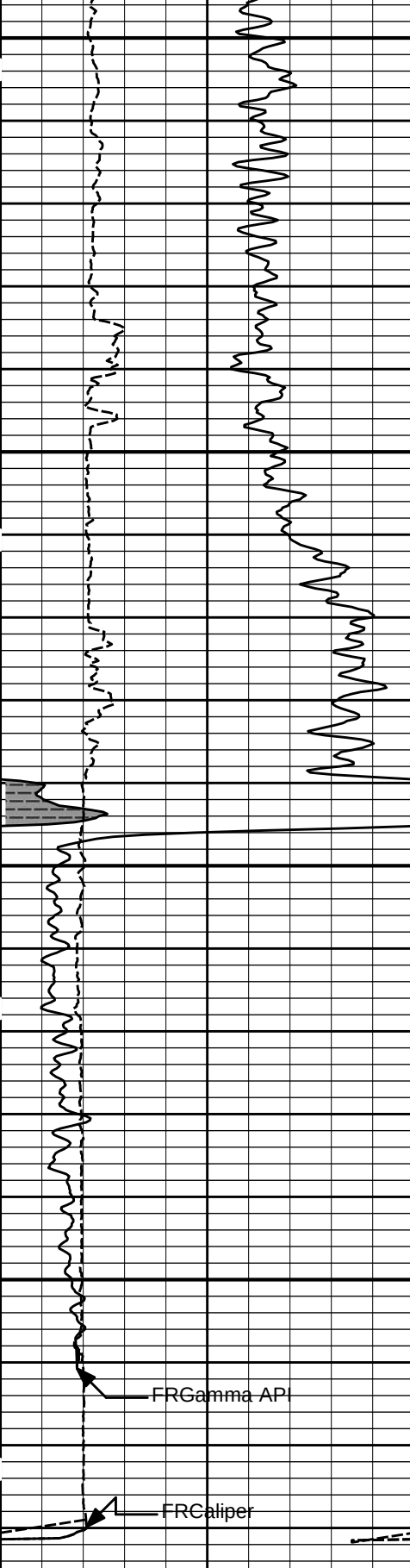
4300

Gamma Ray

Caliper

Microlog





4600

4700

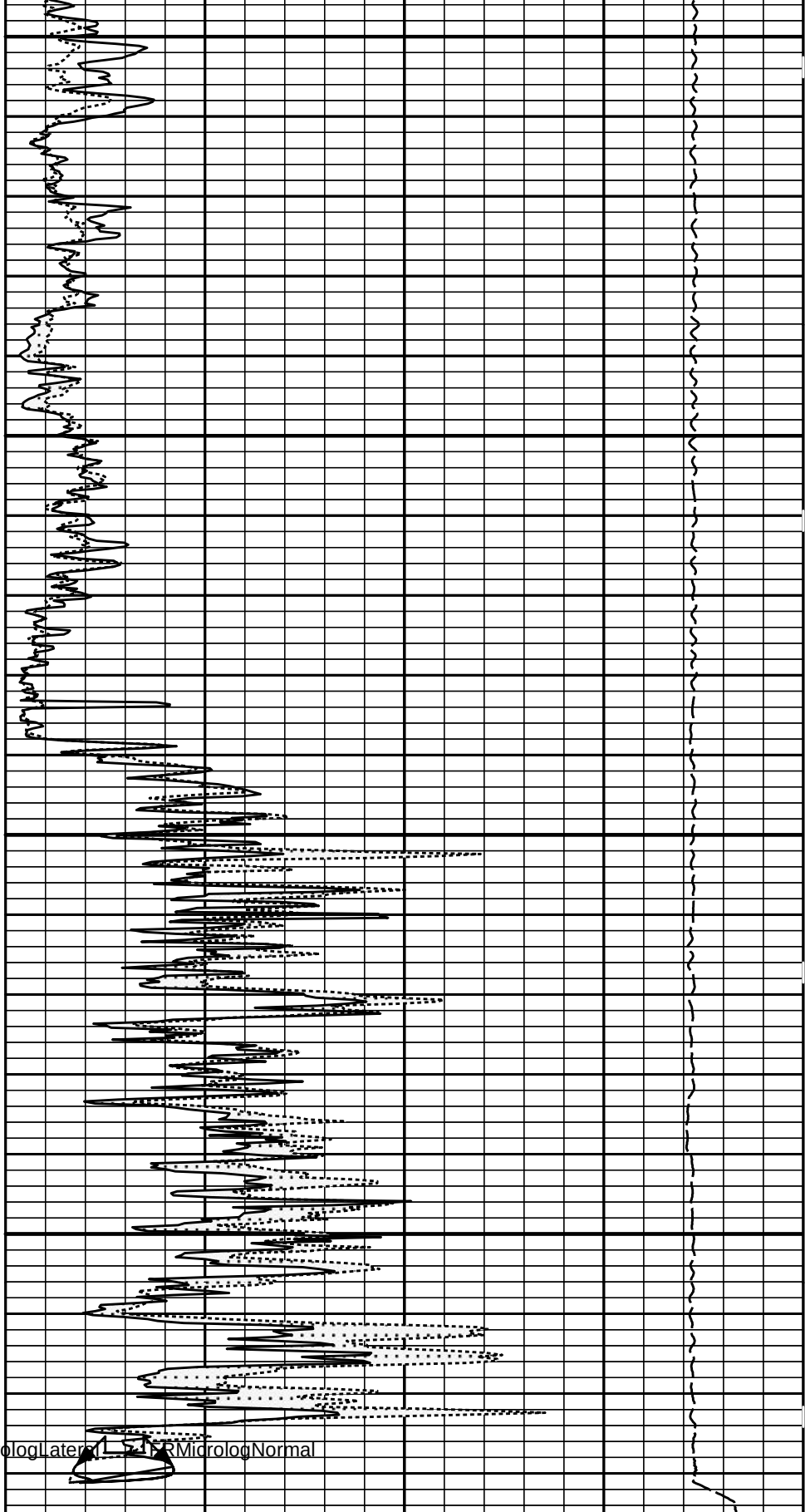
FRGamma API

FRCaliper

6	Caliper	16
inches		
0	Gamma API	150
api		
SHALE		

1 : 240
ft

FRMicrologLateral 1.5 ft FRCMicrologNormal



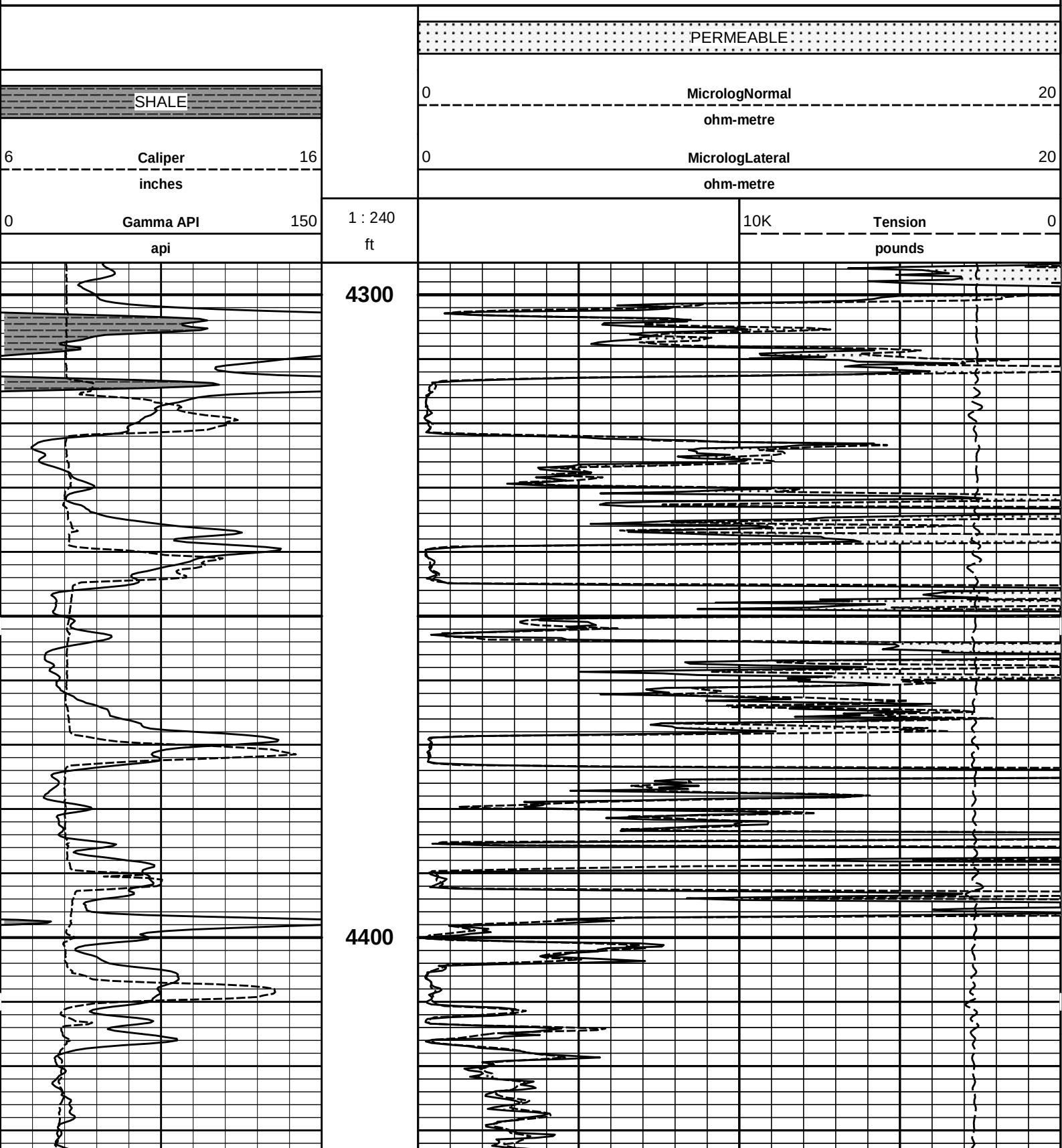
10K	Tension	0
pounds		
0	MicrologLateral	20
ohm-metre		
0	MicrologNormal	20
ohm-metre		
PERMEABLE		

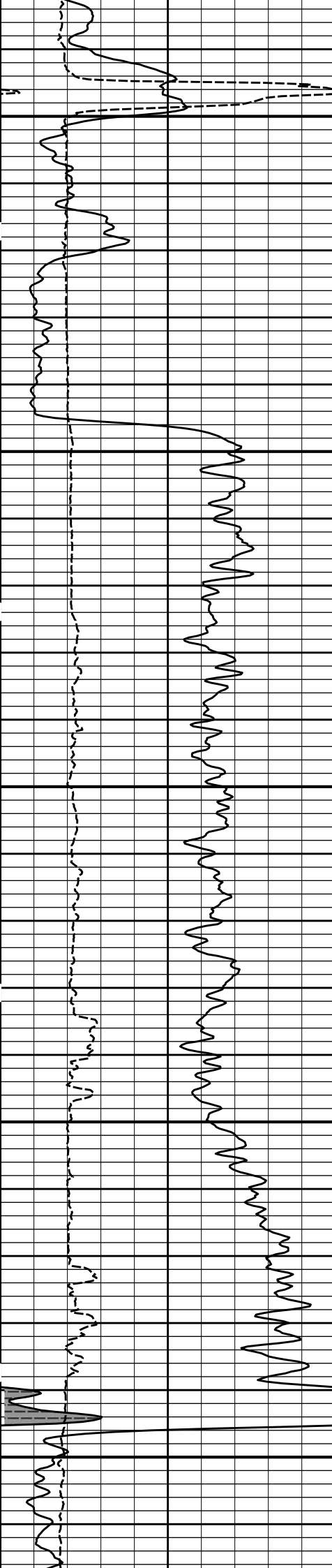
5 INCH MAIN LOG

HALLIBURTON

Plot Time: 19-Oct-17 09:18:32
Plot Range: 4295 ft to 4740 ft
Data: CMX_BLACK WIDOW\Well Based\RUN 3 REPEAT\
Plot File: \\-LOCAL-\\CMX_BLACK WIDOW\0003 GTET-DSNT-SDLT\MICRO\Microlog_IQ_5_rep

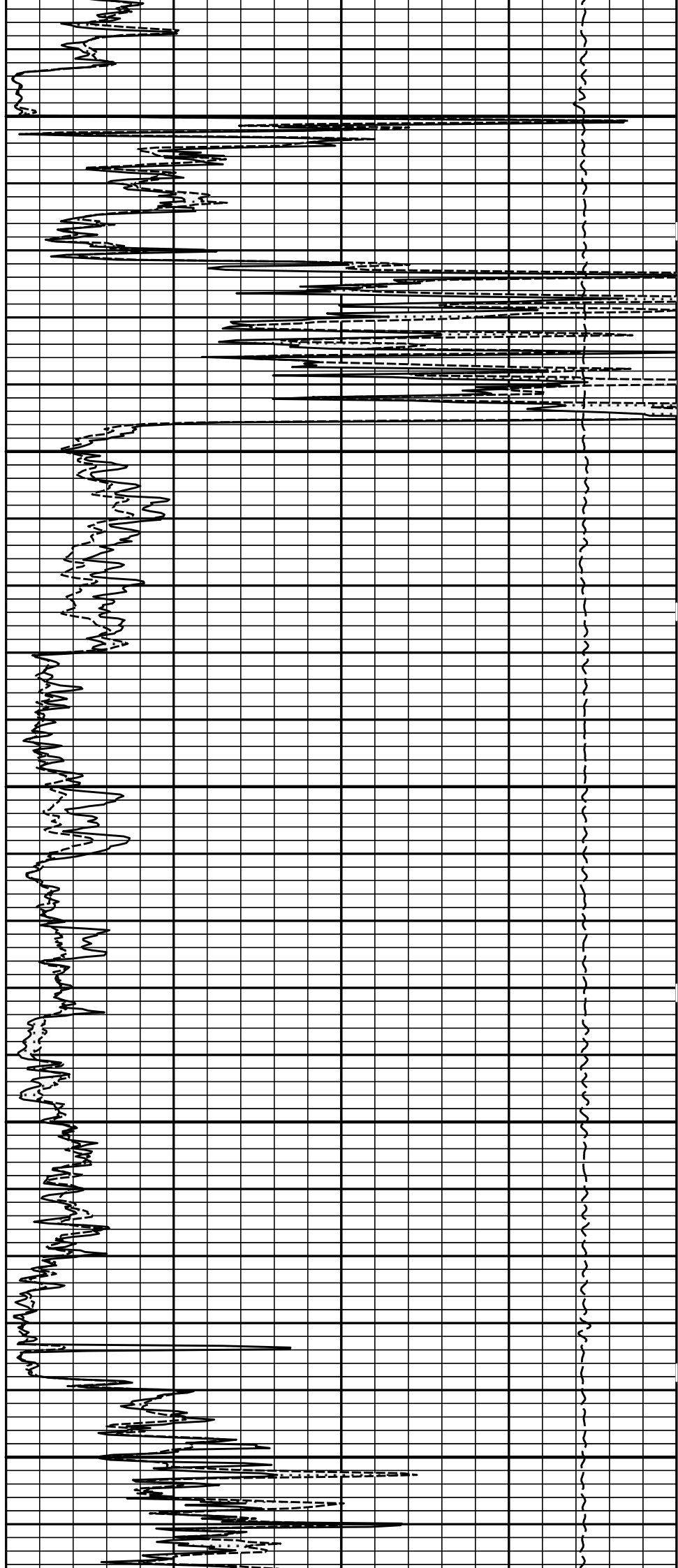
REPEAT SECTION

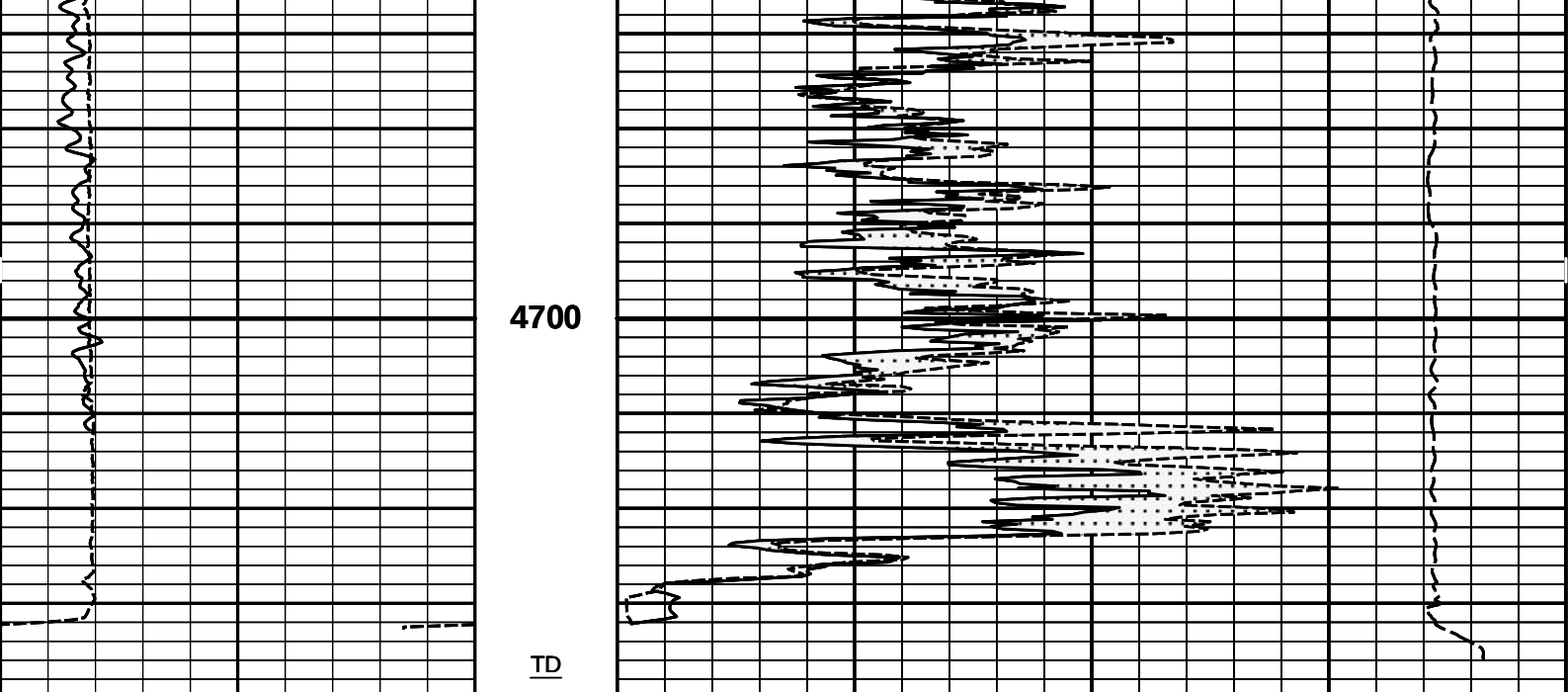




4500

4600





0	Gamma API	150	1 : 240		10K	Tension	0
	api		ft			pounds	
6	Caliper	16		0	MicrologLateral		20
	inches				ohm-metre		
	SHALE			0	MicrologNormal		20
					ohm-metre		
					PERMEABLE		

HALLIBURTON

Plot Time: 19-Oct-17 09:18:34
Plot Range: 4295 ft to 4740 ft
Data: CMX_BLACK WIDOW\Well Based\RUN 3 REPEAT\
Plot File: \\-LOCAL-\\CMX_BLACK WIDOW0003 GTET-DSNT-SDLT\MICRO\Microlog_IQ_5_rep

REPEAT SECTION

COMPANY	CMX, INC		
WELL	BLACK WIDOW OWWO 1-29		
FIELD	HARDING		
COUNTY	PRATT	STATE	KANSAS
HALLIBURTON		MICROLOG	