

MICRO RESISTIVITY LOG

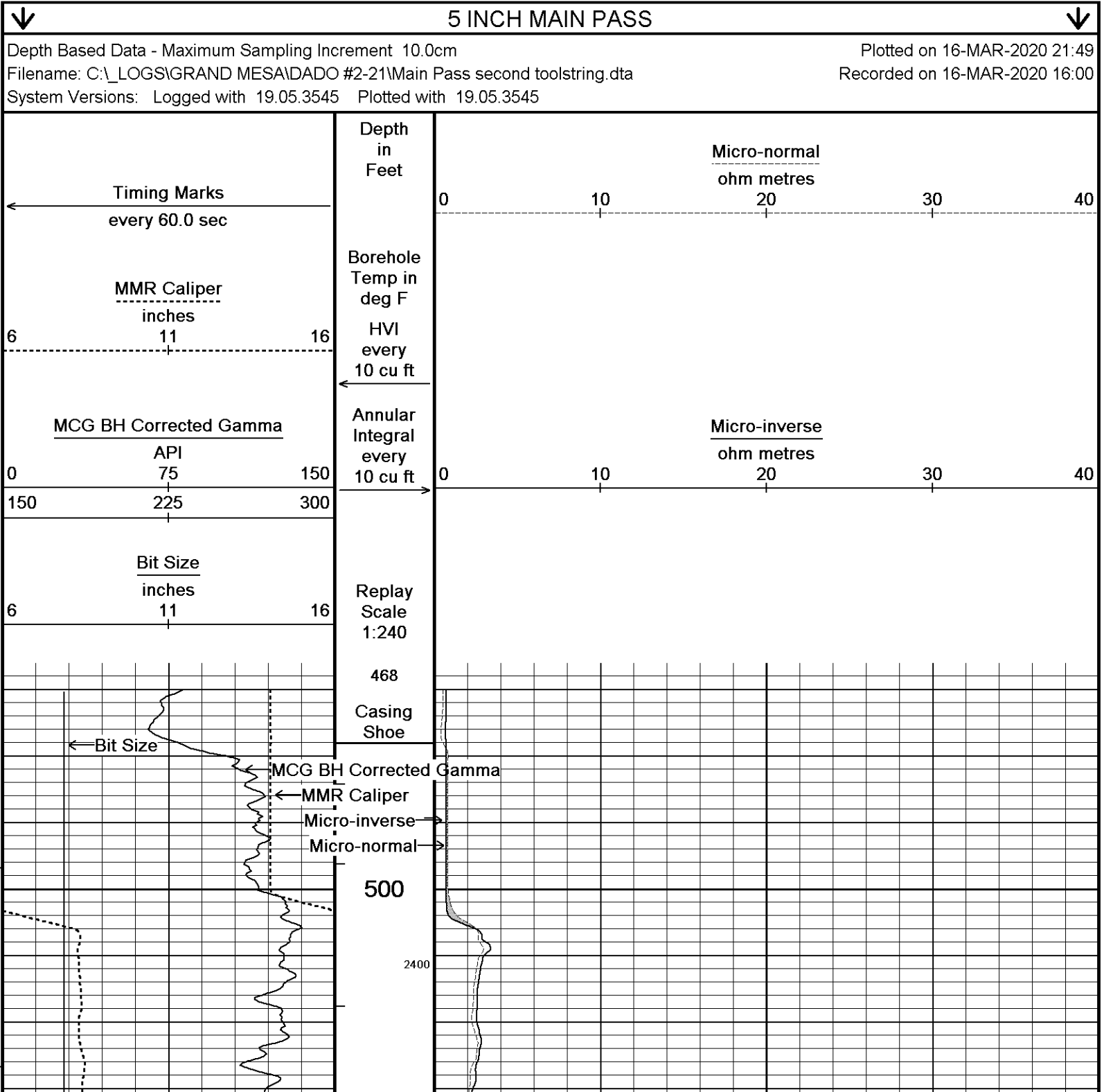
MICRO RESISTIVITY LOG									
COMPANY			GRAND MESA OPERATING COMPANY						
WELL			DADO 2-21						
FIELD			GUTRU						
COUNTY			LINCOLN						
STATE			COLORADO						
LOCATION			950' FNL & 1387' FWL SEC. 21 TWP 7S-55W						
SEC 21	TWP 7S	RGE 55W	Other Services			PHOTO DENSITY			
Latitude	39.42989		ARRAY INDUCTION			NEUTRON			
Longitude	-103.550292		COMPENSATED SONIC						
API Number	05-073-06770								
Permanent Datum GL, Elevation 5462 feet									
Log Measured From KB, 19.00 feet above Permanent Datum									
Drilling Measured From KB									
Date	16-MAR-2020								
Run Number	ONE								
Service Order	T8-201503								
Depth Driller	8559.00		feet						
Depth Logger	8554.00		feet						
First Reading	8498.00		feet						
Last Reading	478.00		feet						
Casing Driller	484.00		feet						
Casing Logger	478.00		feet						
Bit Size	7.875		inches						
Hole Fluid Type	WBM								
Density / Viscosity	9.20		lb/USg		75.00		sec/qt		
PH / Fluid Loss	10.00				5.60		ml/30Min		
Sample Source	FLOWLINE								
Rm @ Measured Temp	0.67 @101.0		ohm-m						
Rmf @ Measured Temp	0.50 @101.0		ohm-m						
Rmc @ Measured Temp	0.83 @101.0		ohm-m						
Source Rmf / Rmc	CALC		CALC						
Rm @ BHT	0.33 @209.0		ohm-m						
Time Since Circulation	5 HOURS								
Max Recorded Temp	209.00		deg F						
Equipment / Base	11008		MIDLAN						
Recorded By	HECTOR GARCIA		MARIO JOHNSON						
Witnessed By	GARET DINKEL								
Rig	WW DRILLING								

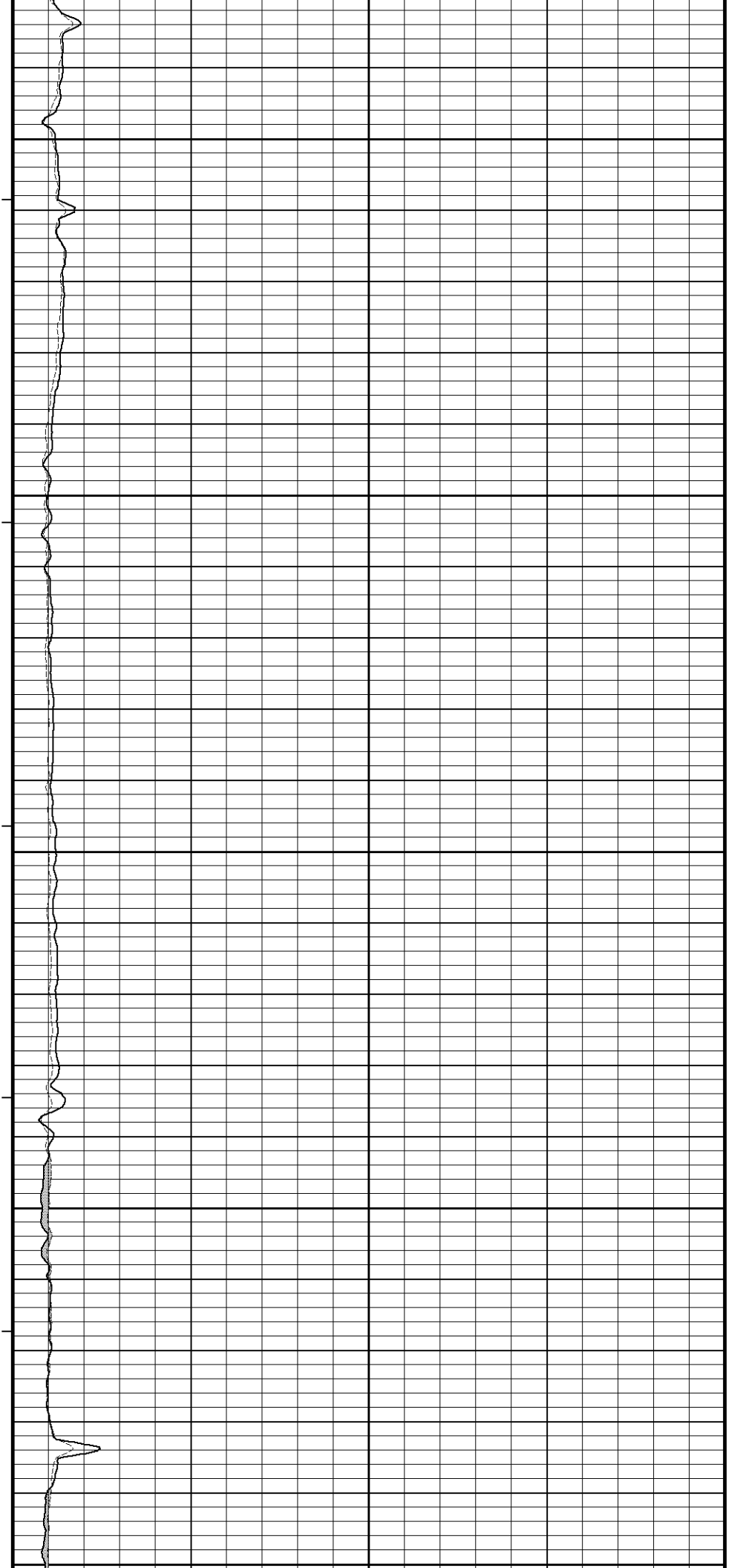
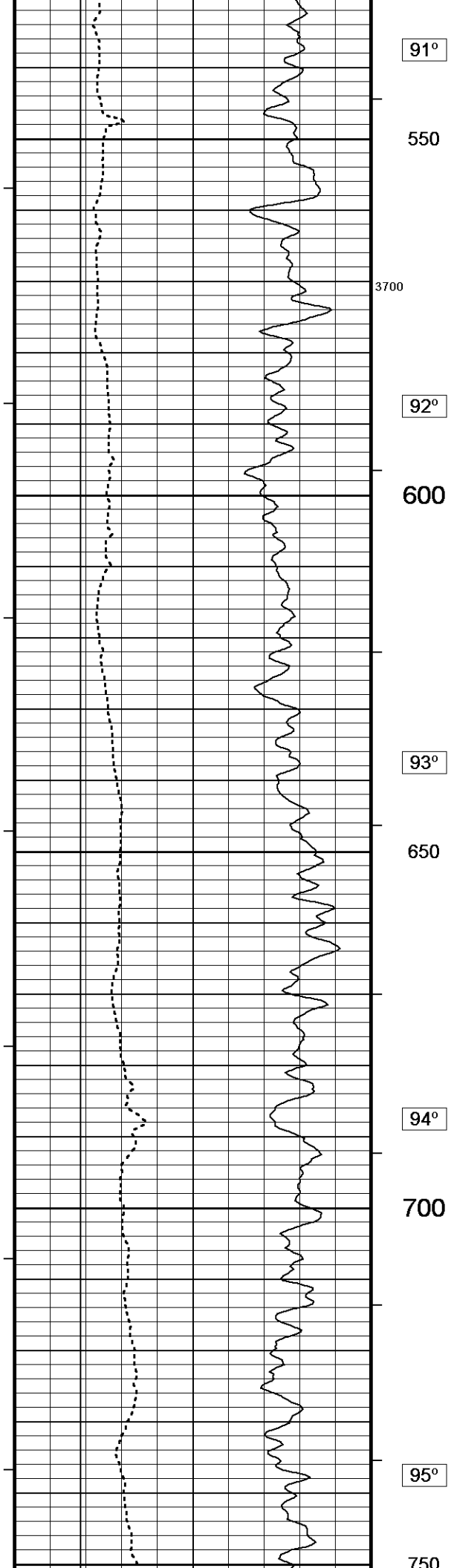
BOREHOLE RECORD					Last Edited: 16-MAR-2020 21:15
Bit Size inches		Depth From feet		Depth To feet	
7.875		478.00		8554.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
CASING	8.625	0.00	478.00	24.00	

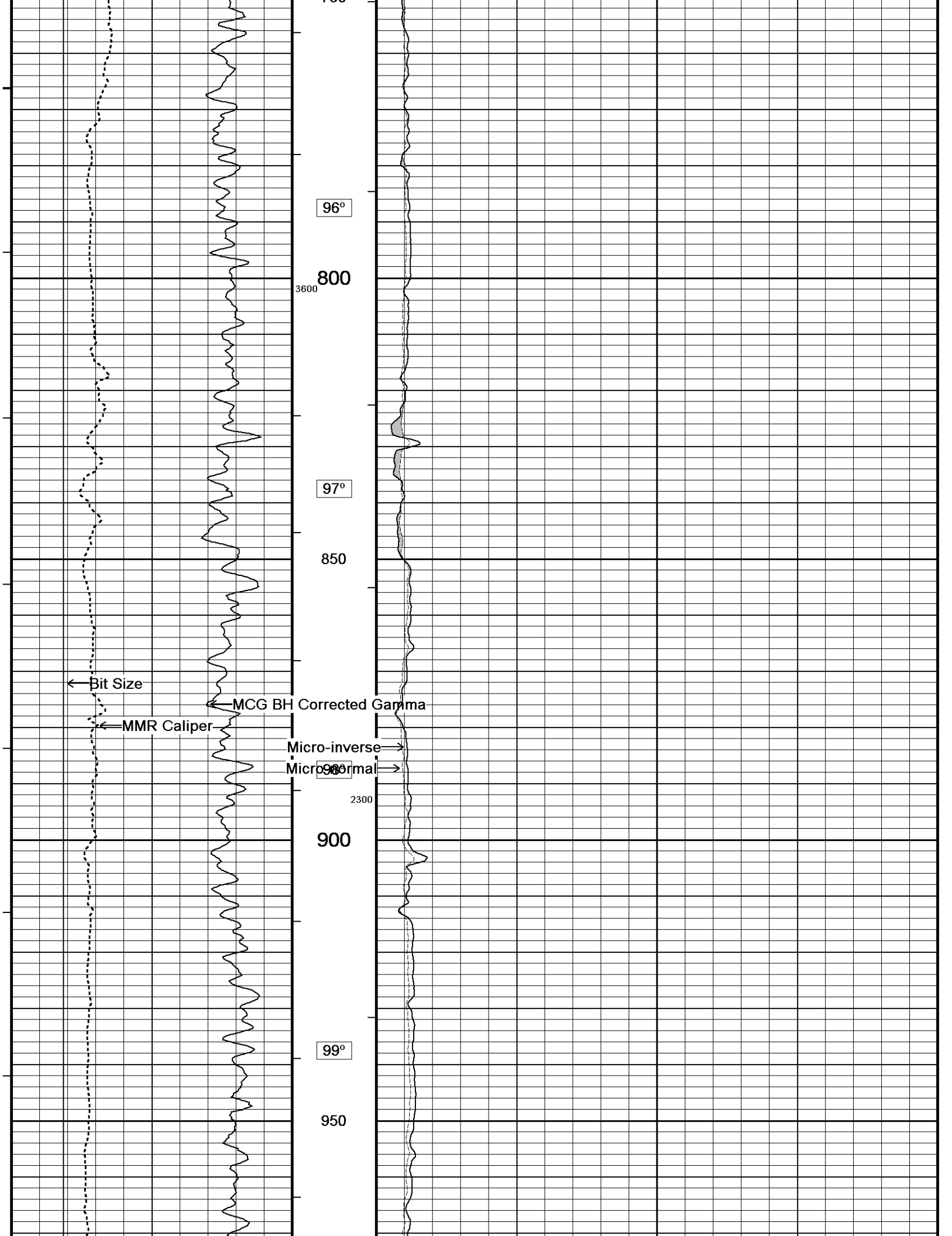
REMARKS	
PRIMARY SERVICES ACQUIRED:	MCG: GAMMA RAY MDN: DUAL NEUTRON MPD: PHOTO DENSITY MAI: ARRAY INDUCTION MFE: FOCUSED ELECTRIC MML: MICROLOG MSS: COMPENSATED SONIC CMI: COMPACT IMAGER
HARDWARE USED:	MPD: 8 inch PROFILE PLATE MDN: DOUBLE BOWSPRING. MIM: OVERBODY CENTRALISER
2.71 G/CC DENSITY MATRIX WAS USED TO CALCULATE POROSITY.	
ANNULAR HOLE VOLUME CALCULATED FOR FUTURE CASING SIZE OF 5.5 inches.	

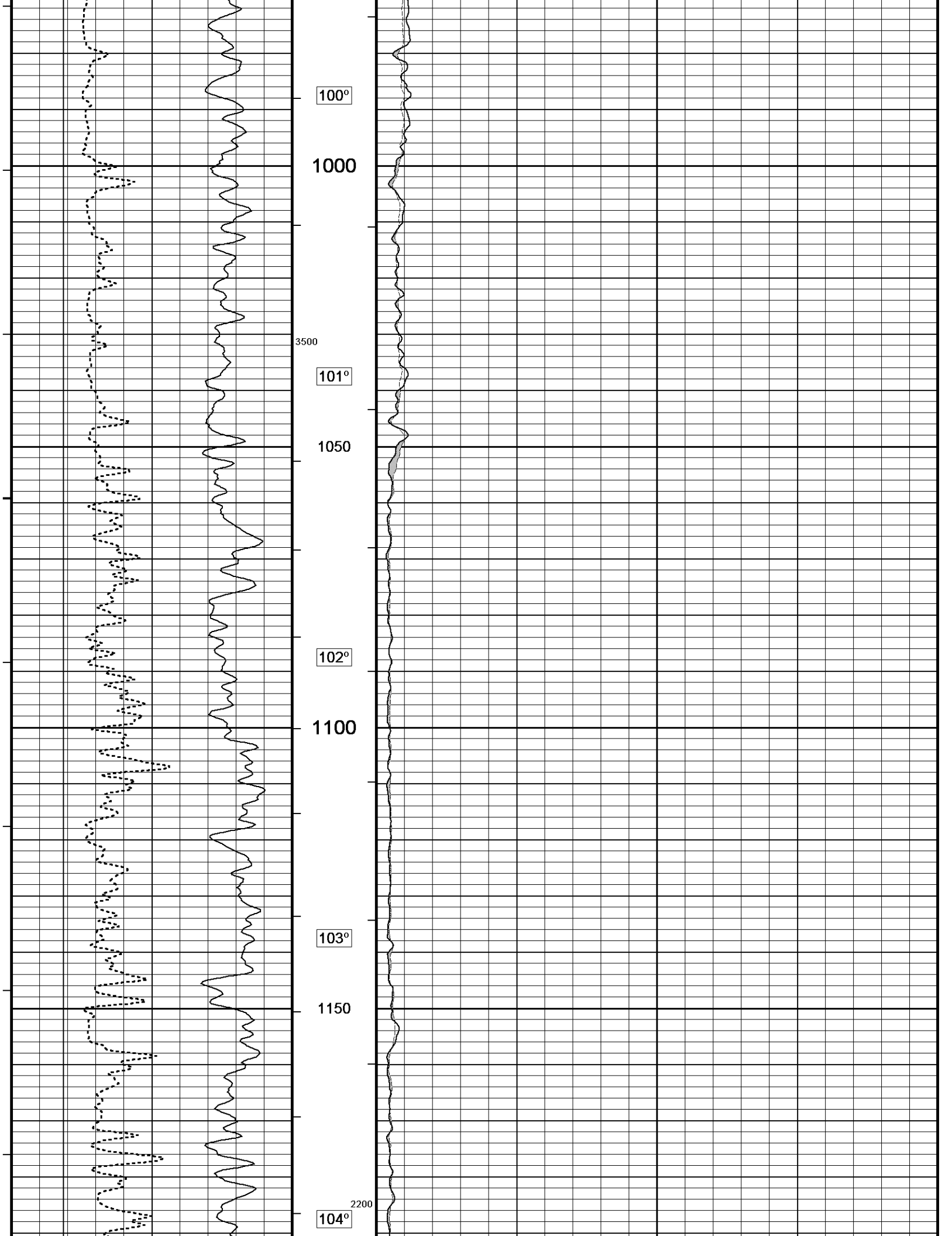
ANNULAR AND HOLE VOLUMES CALCULATED FROM DENSITY CALIPER MEASUREMENTS.

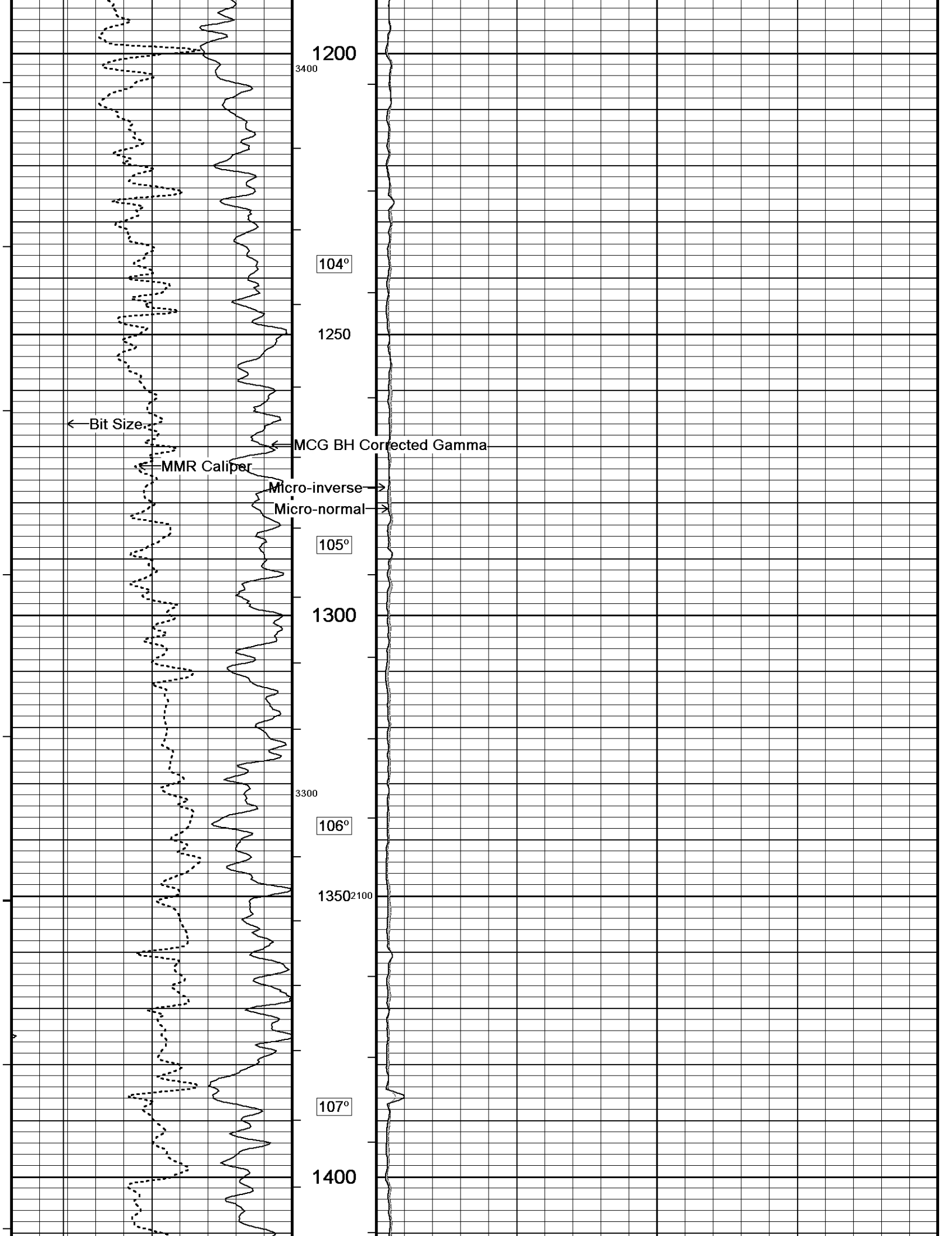
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

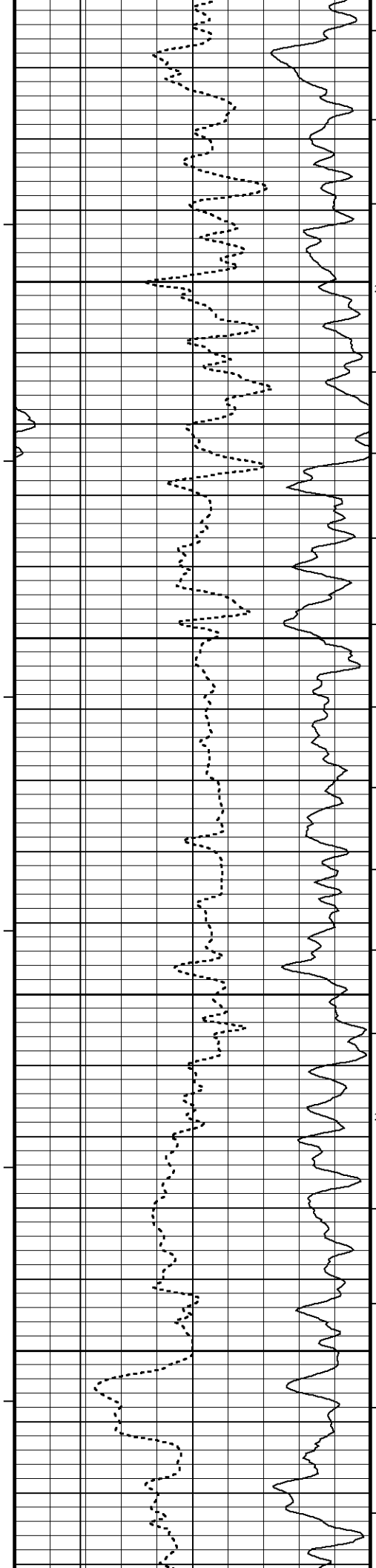












107°

3200 1450

108°

1500 2000

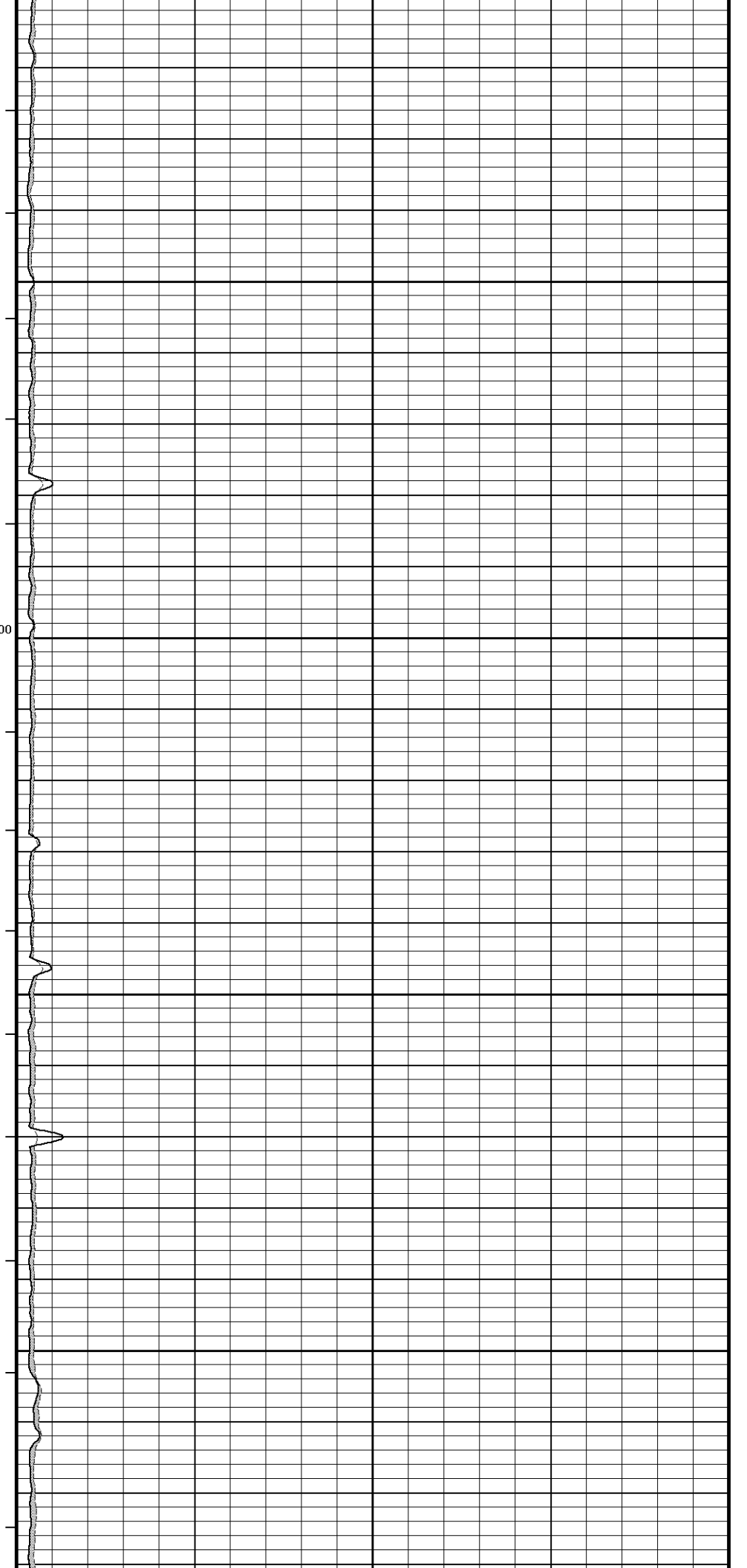
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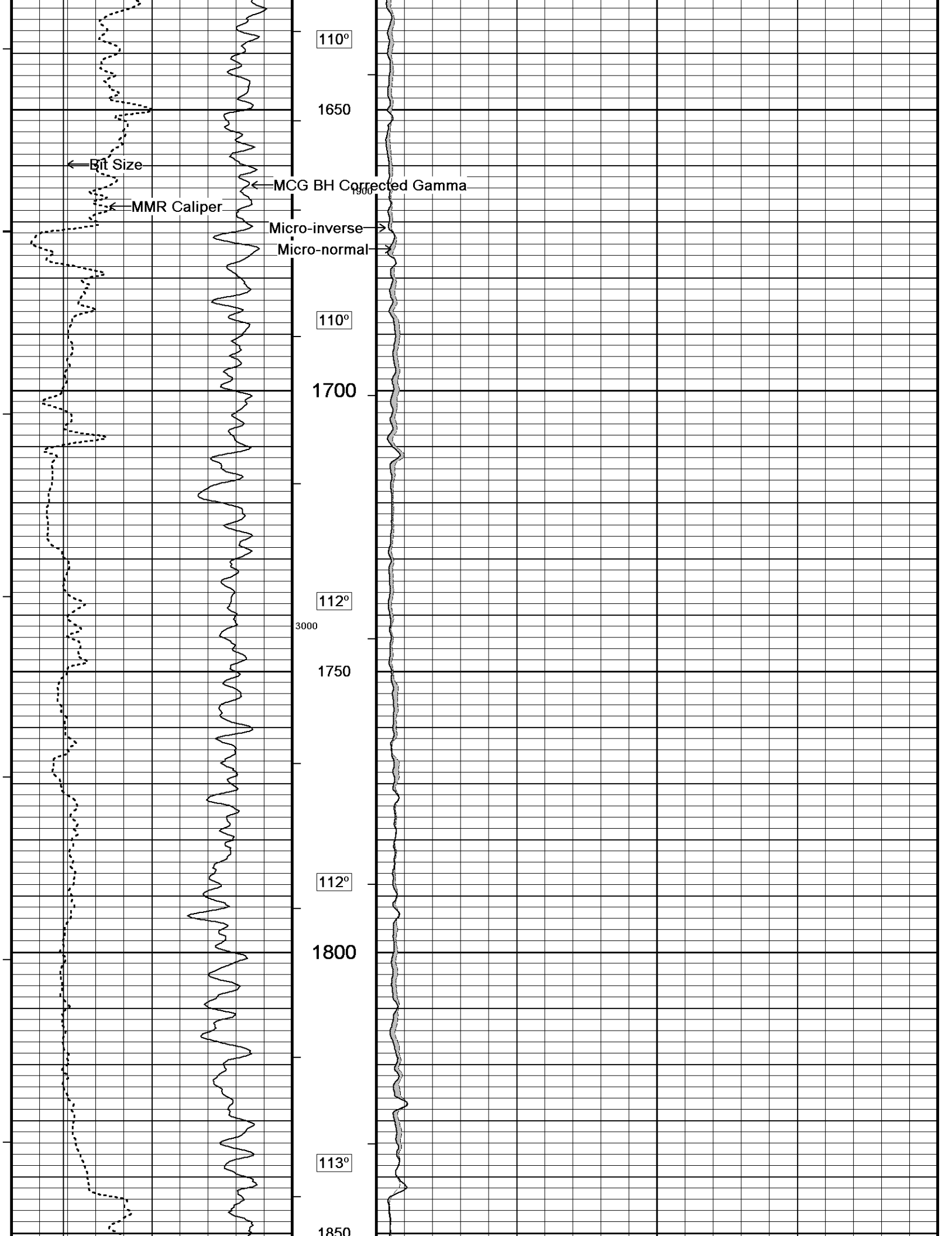
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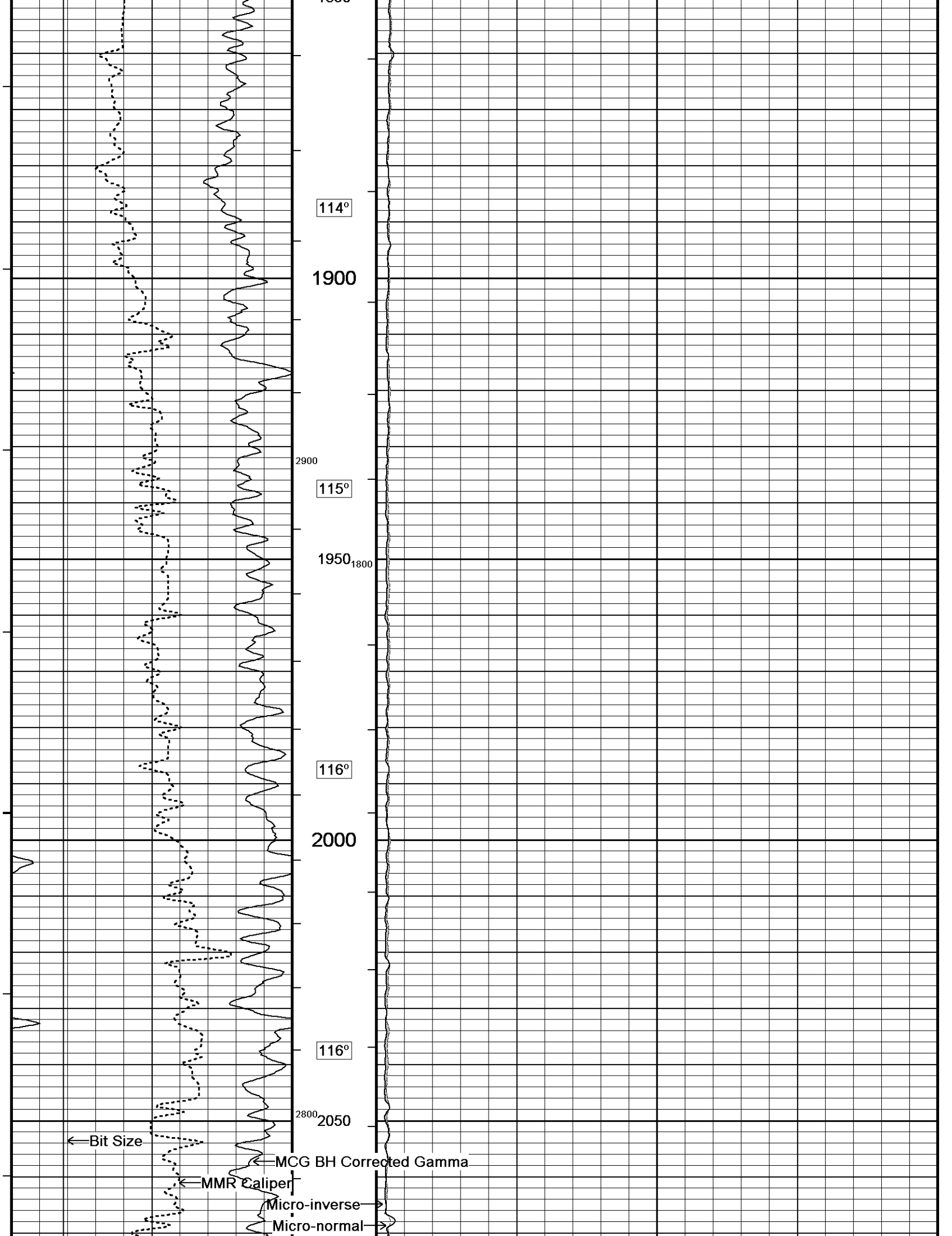
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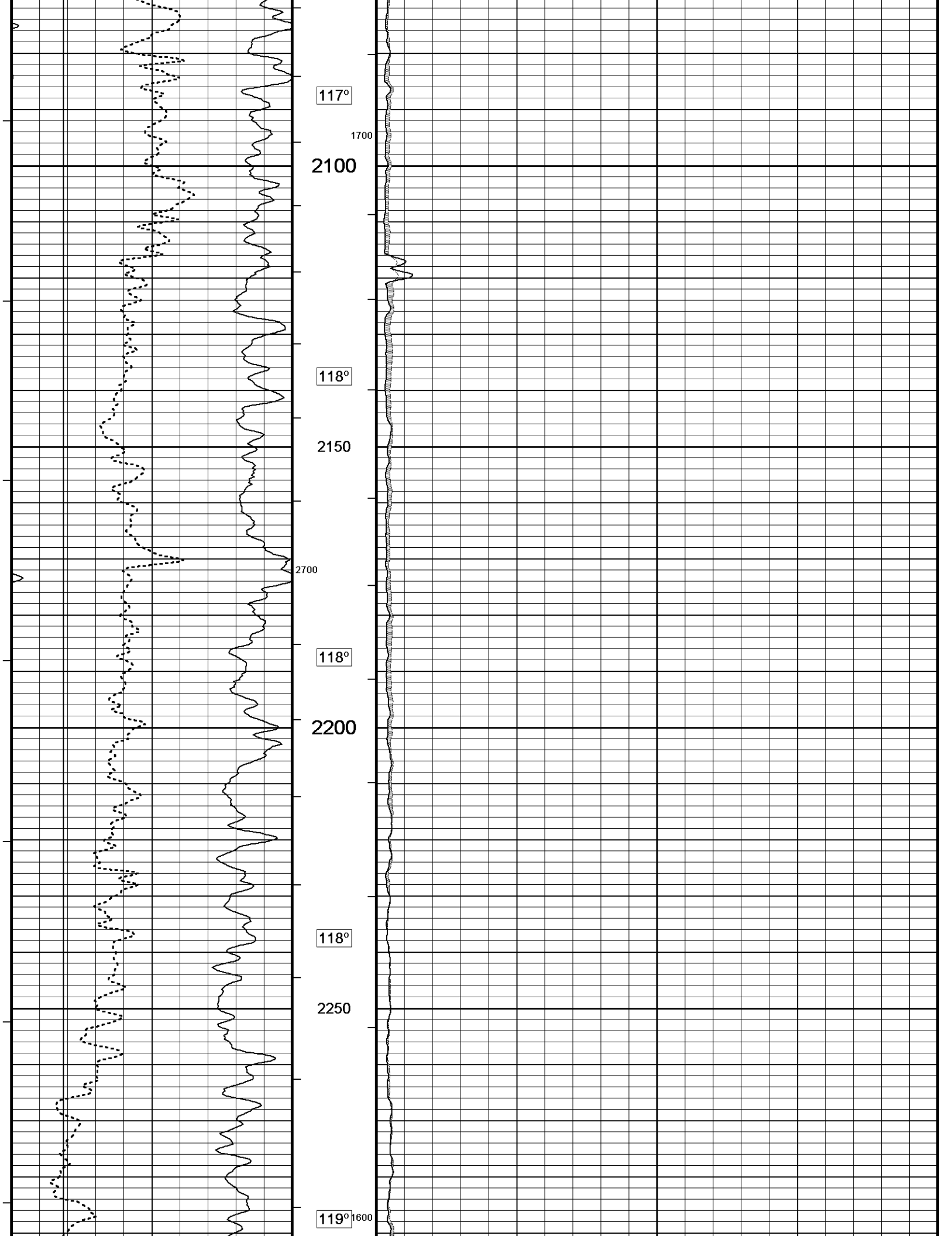
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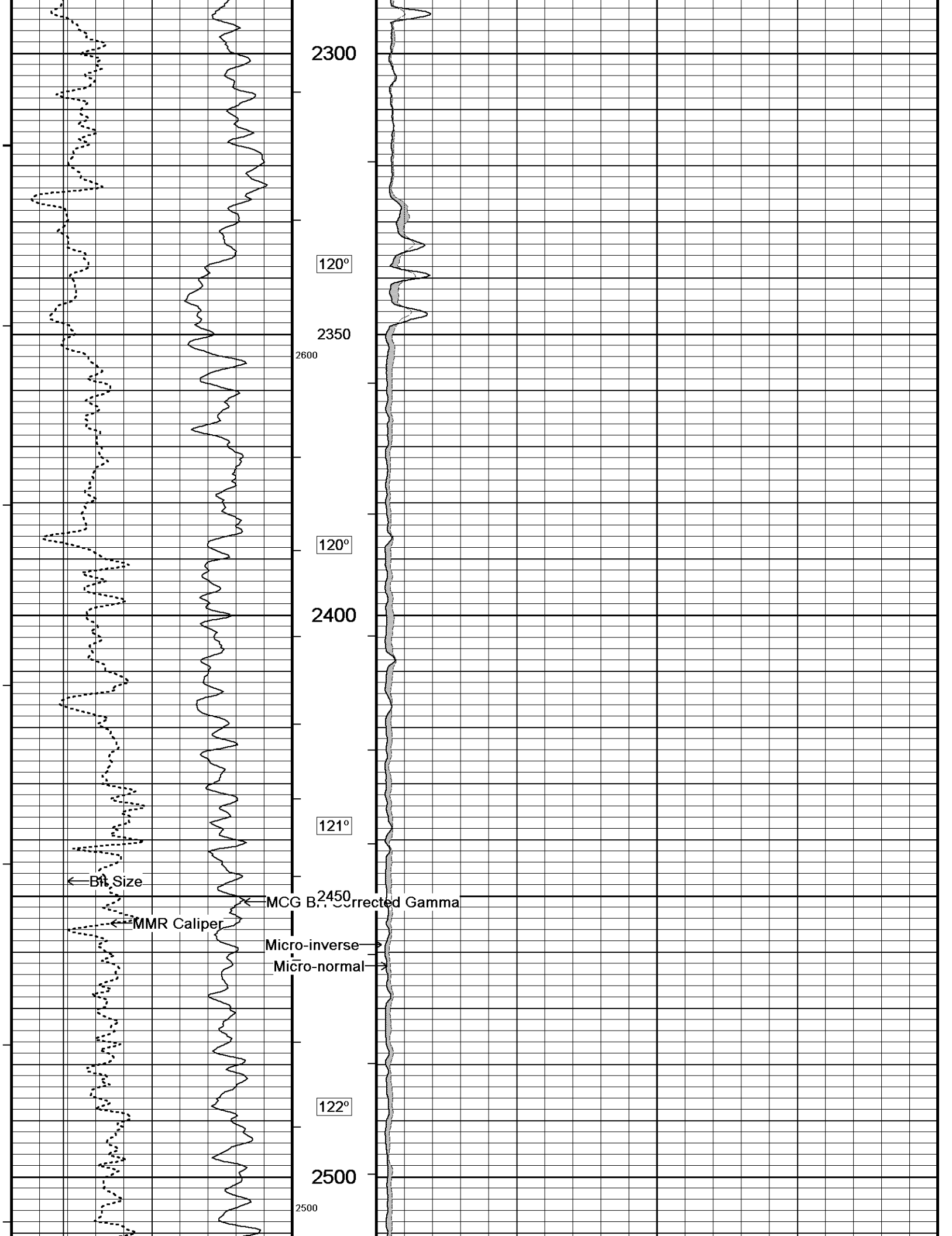
1600

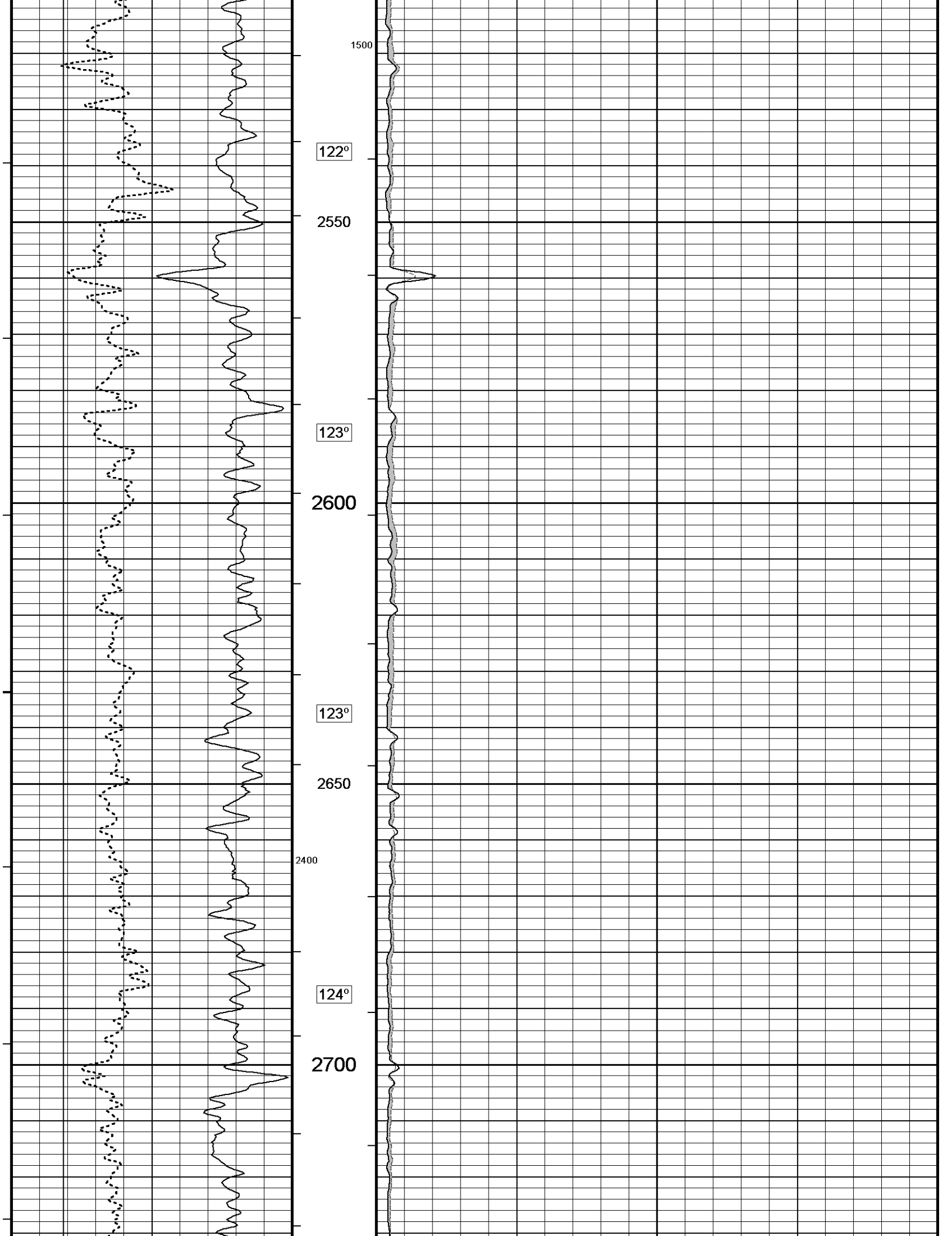


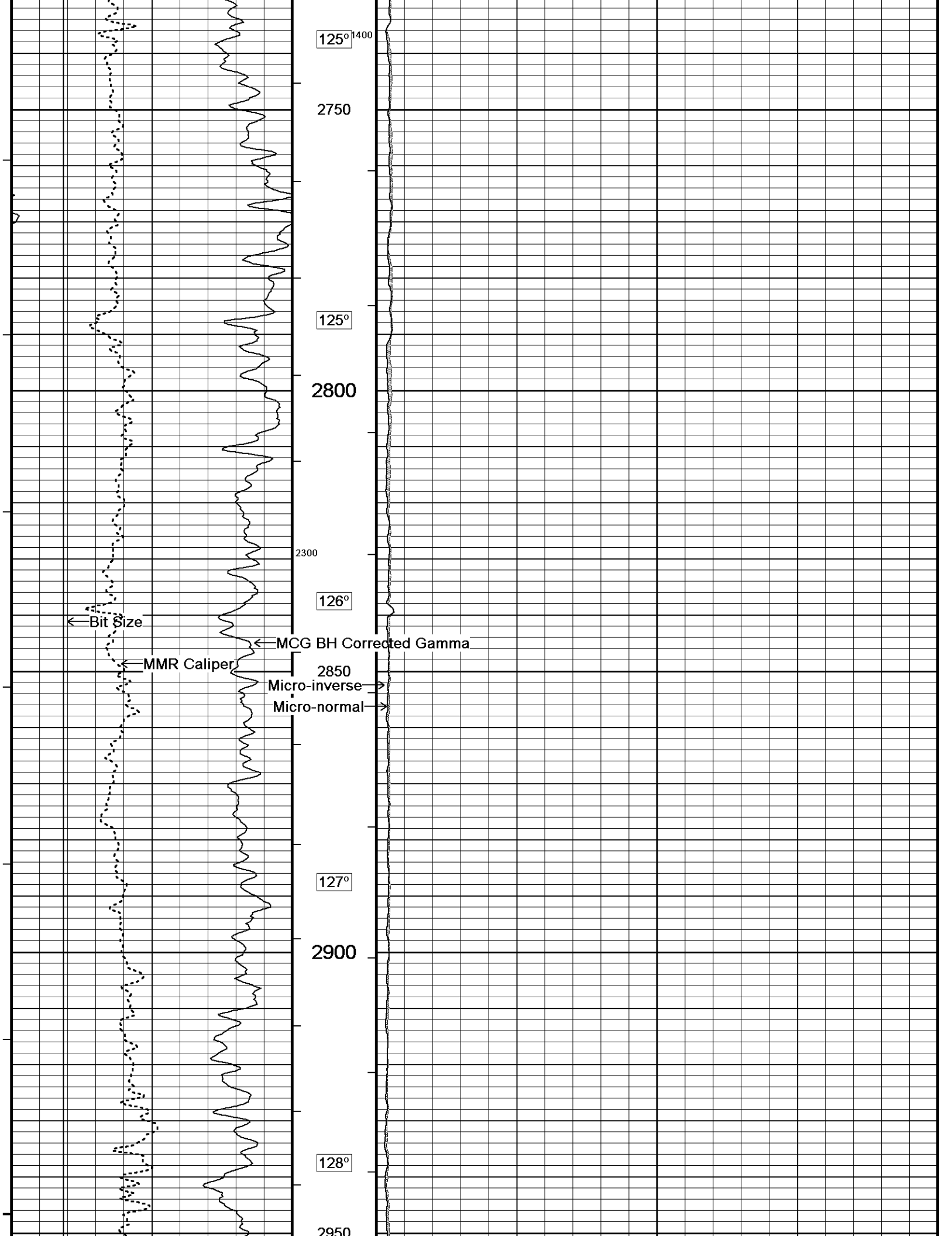


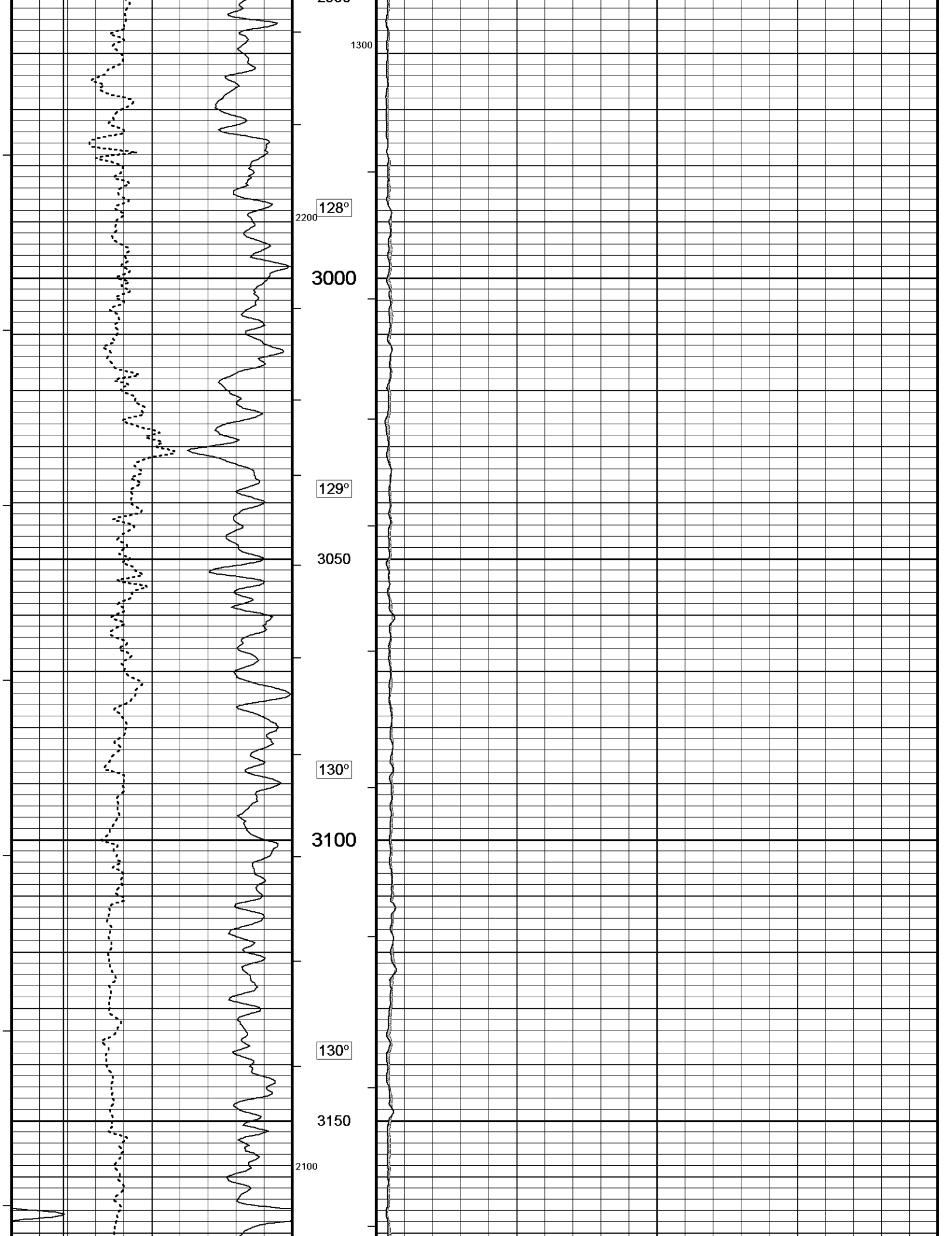


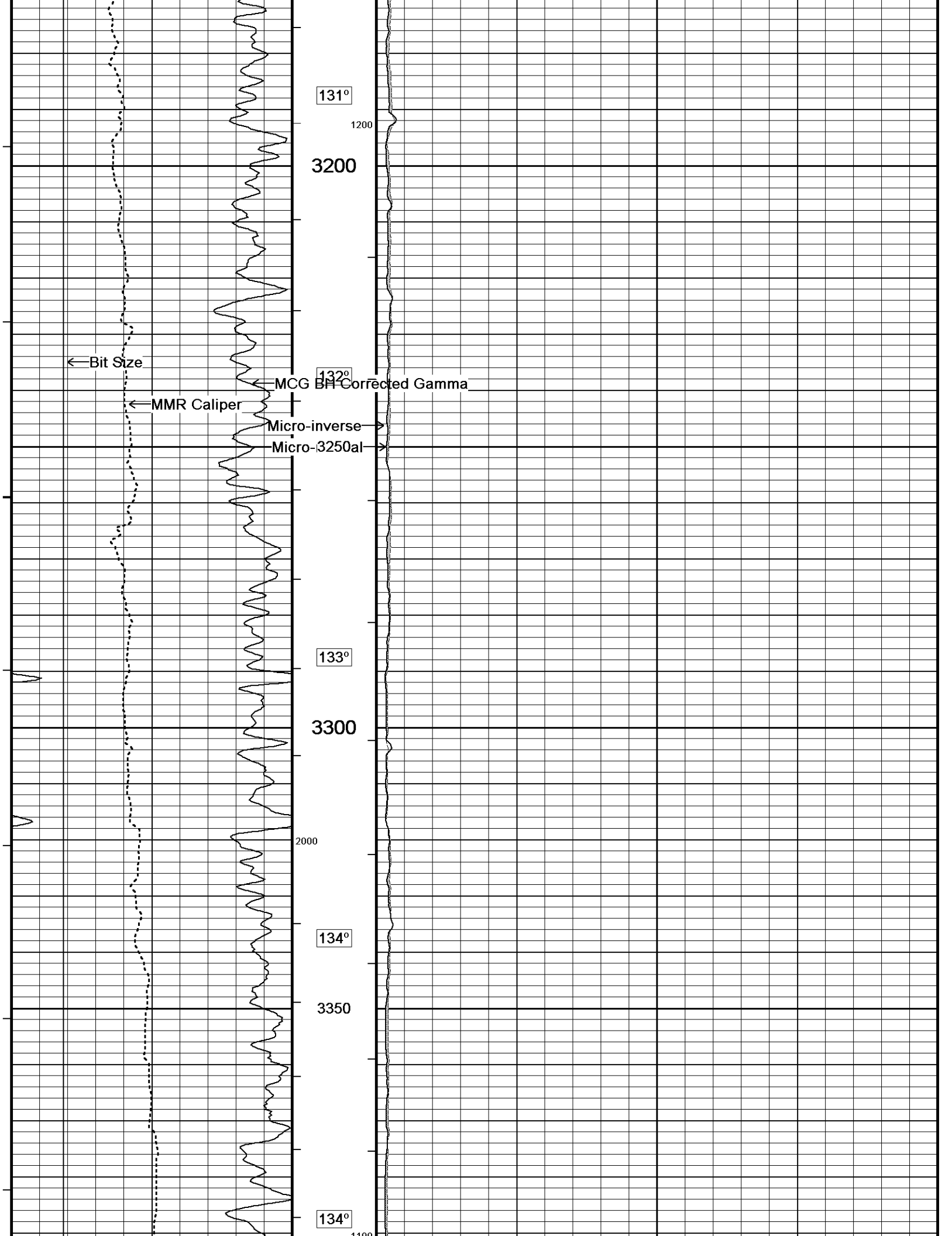


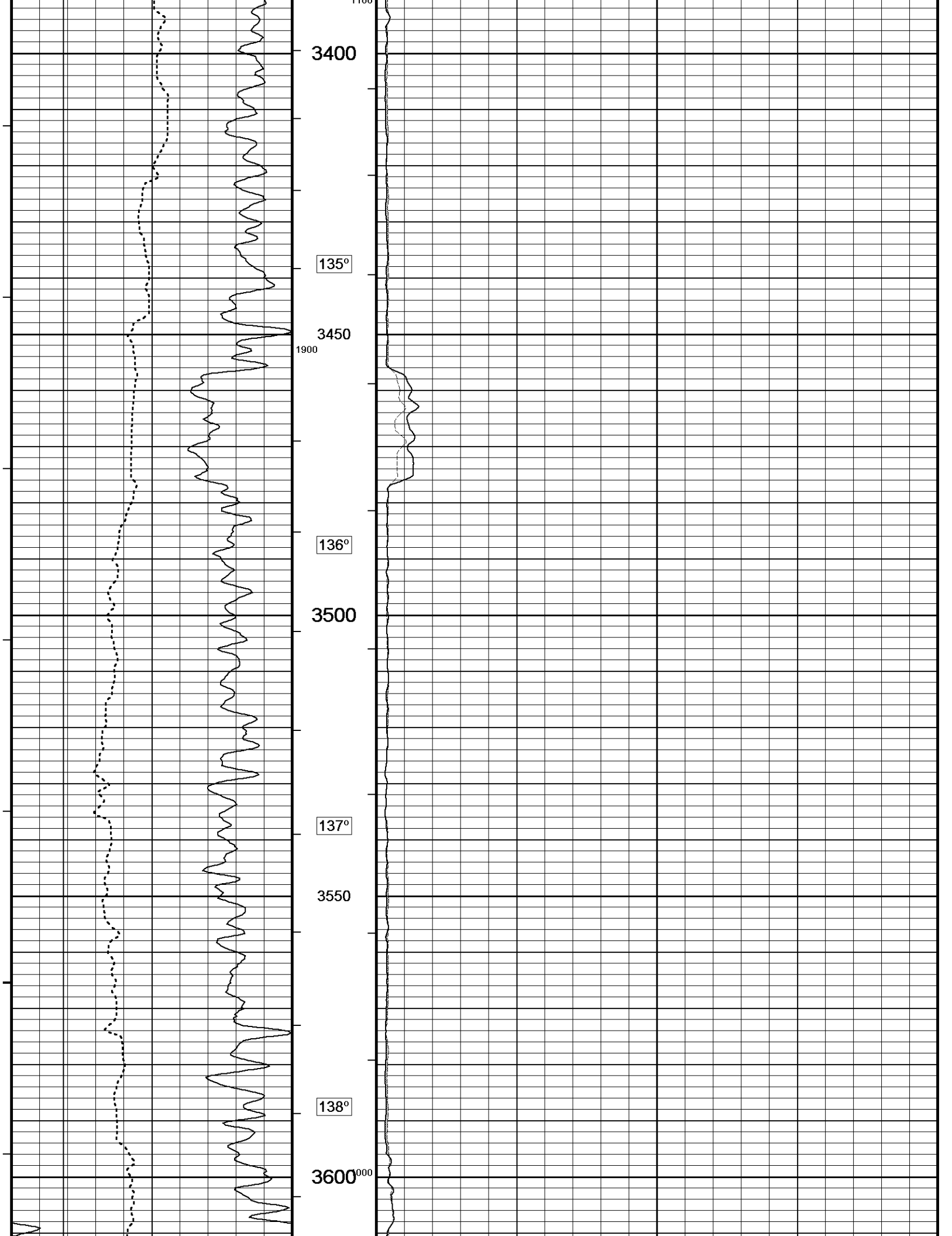


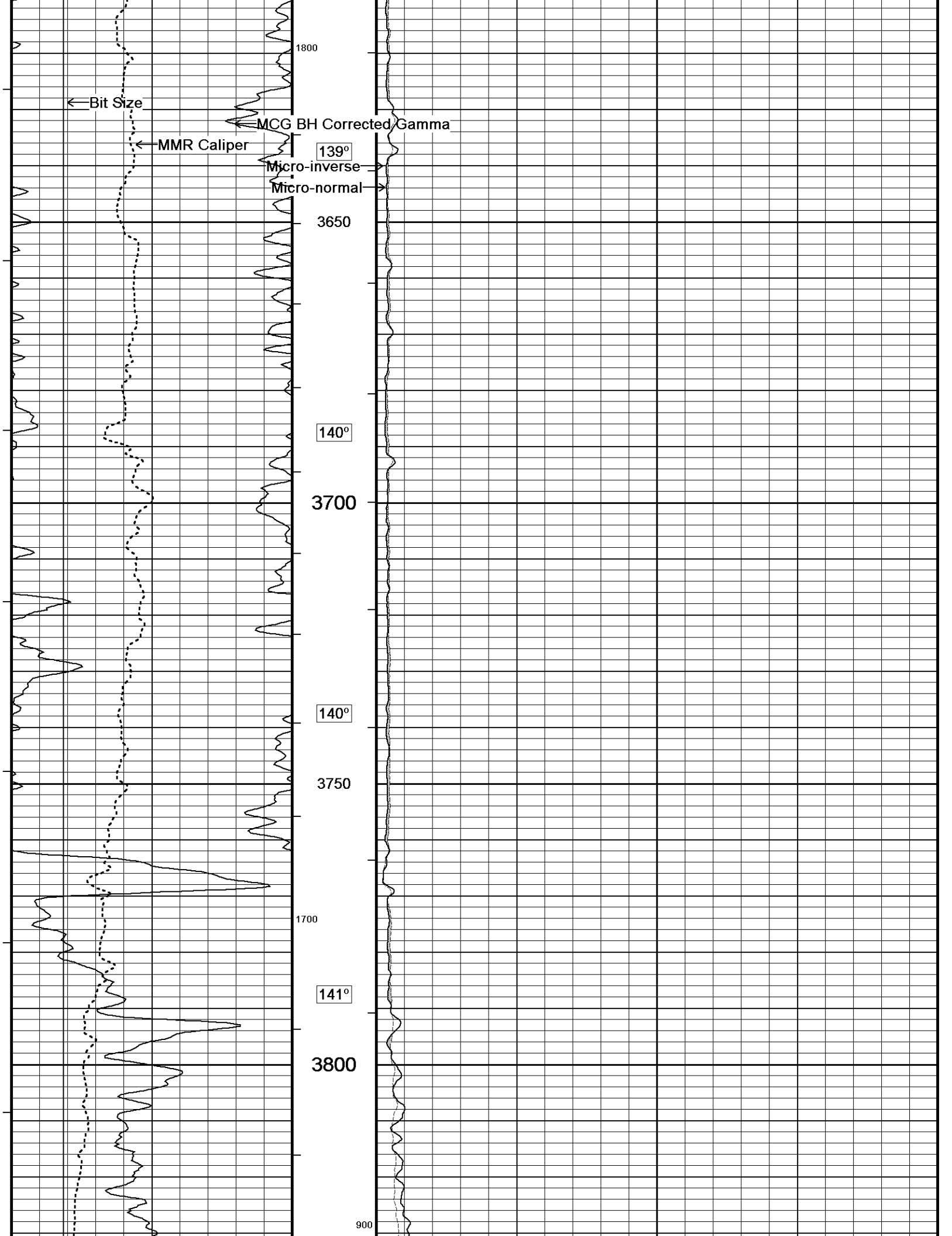


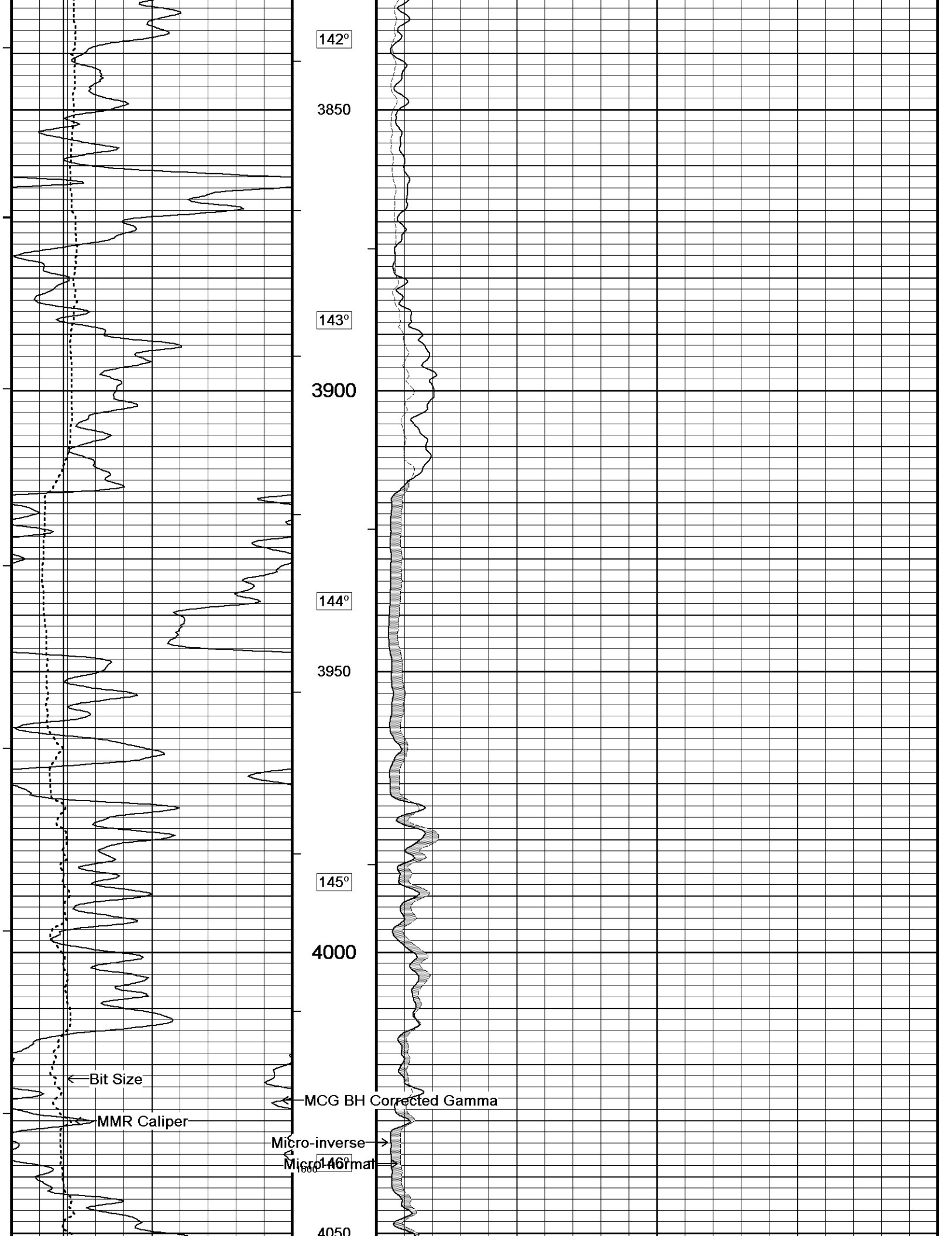


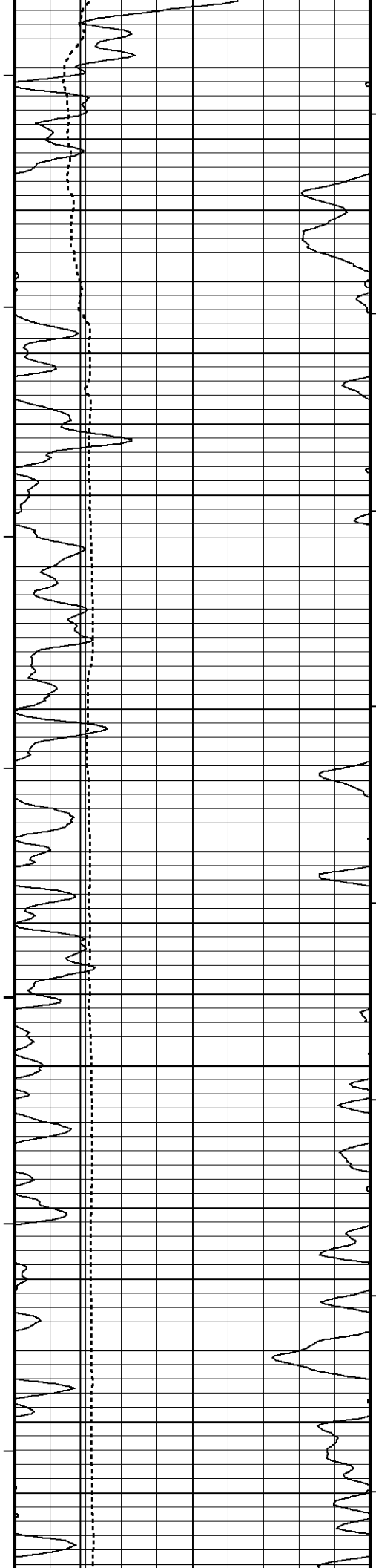












146°

4100

147°

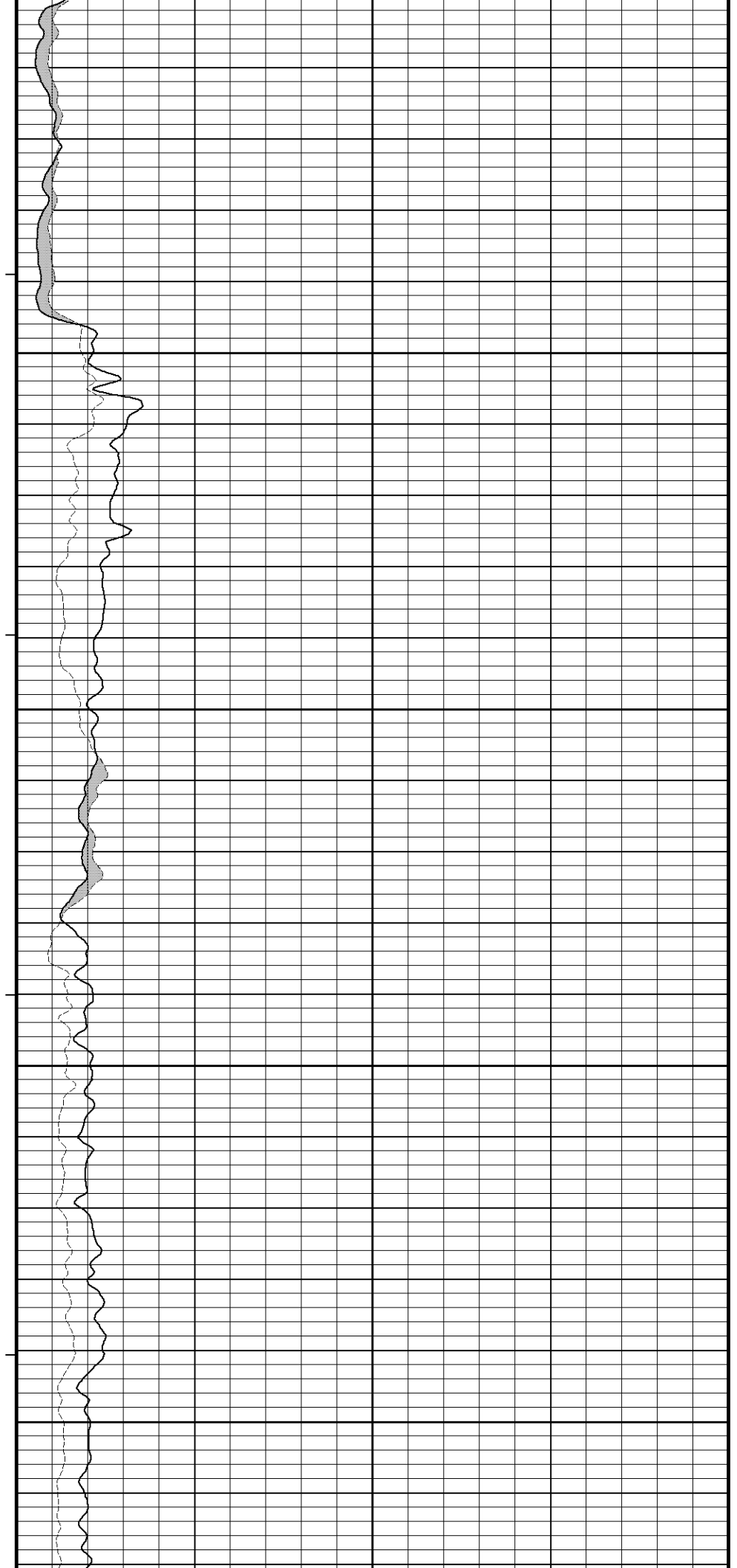
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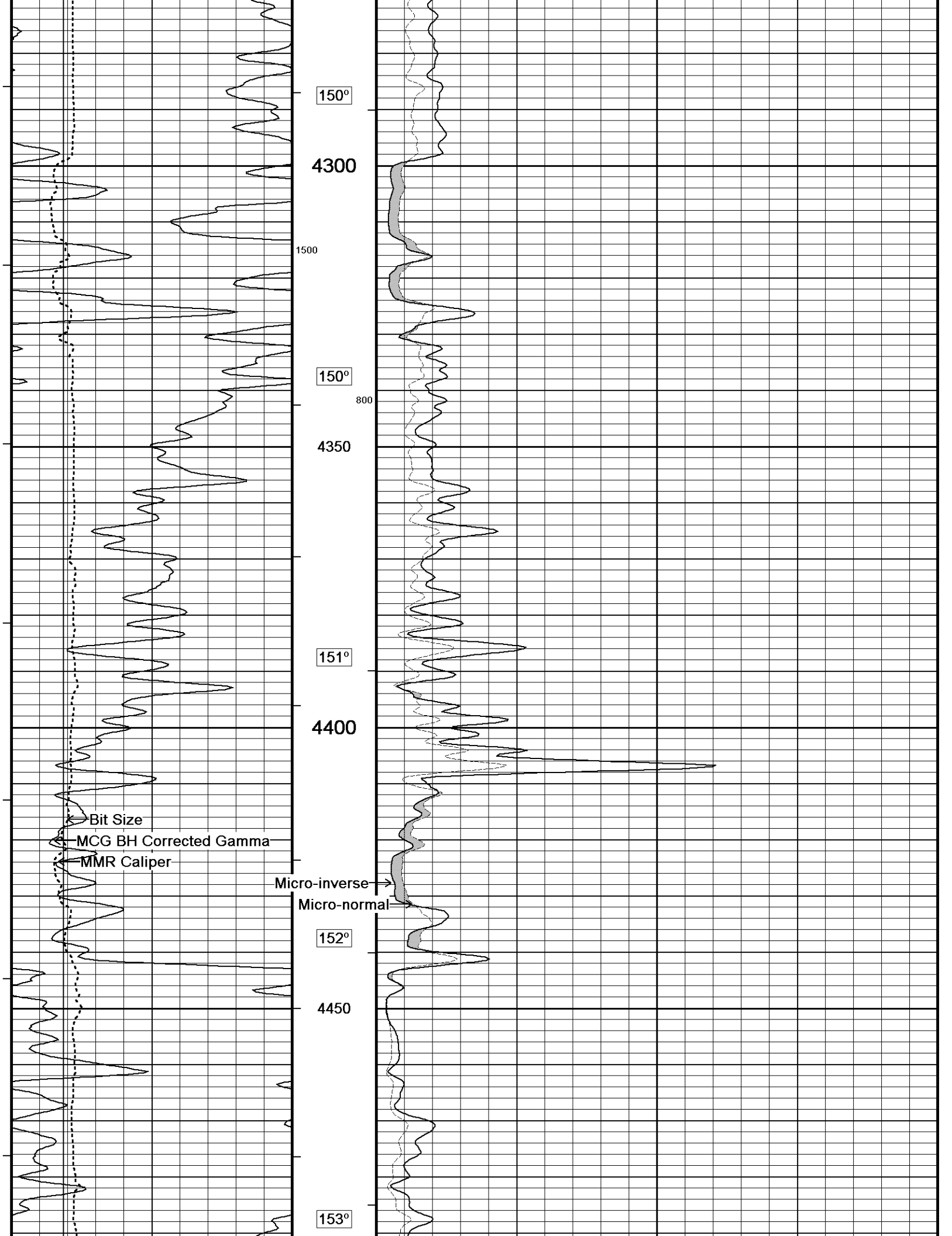
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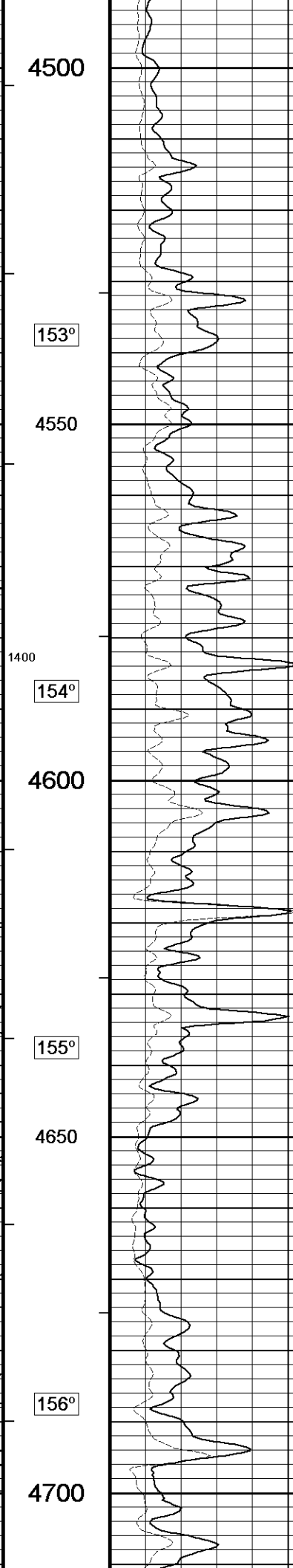
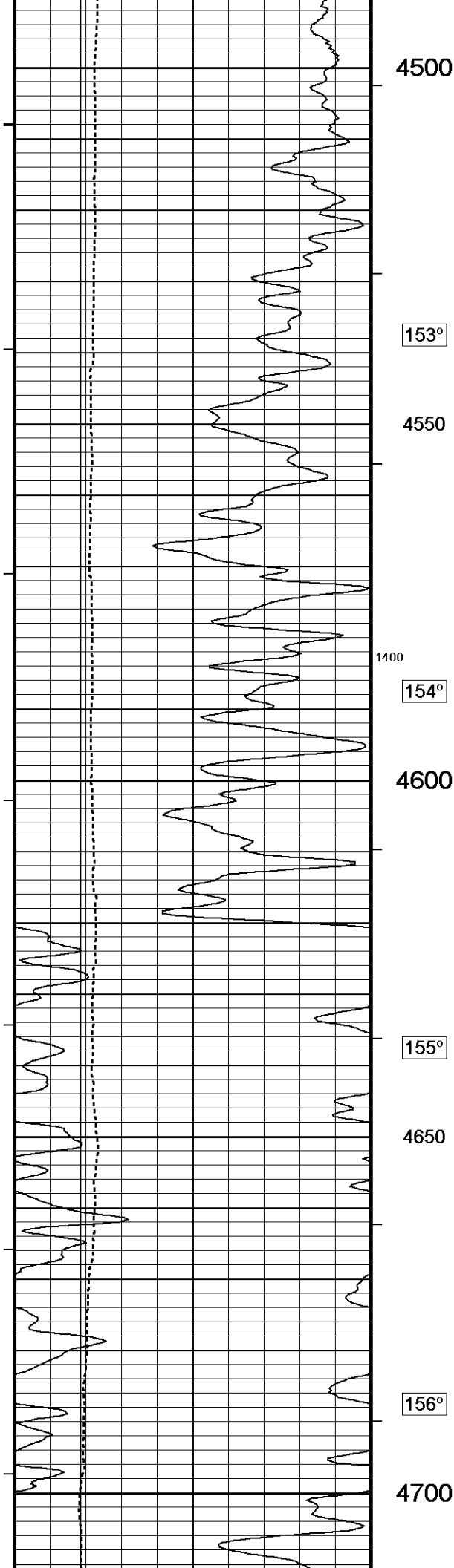
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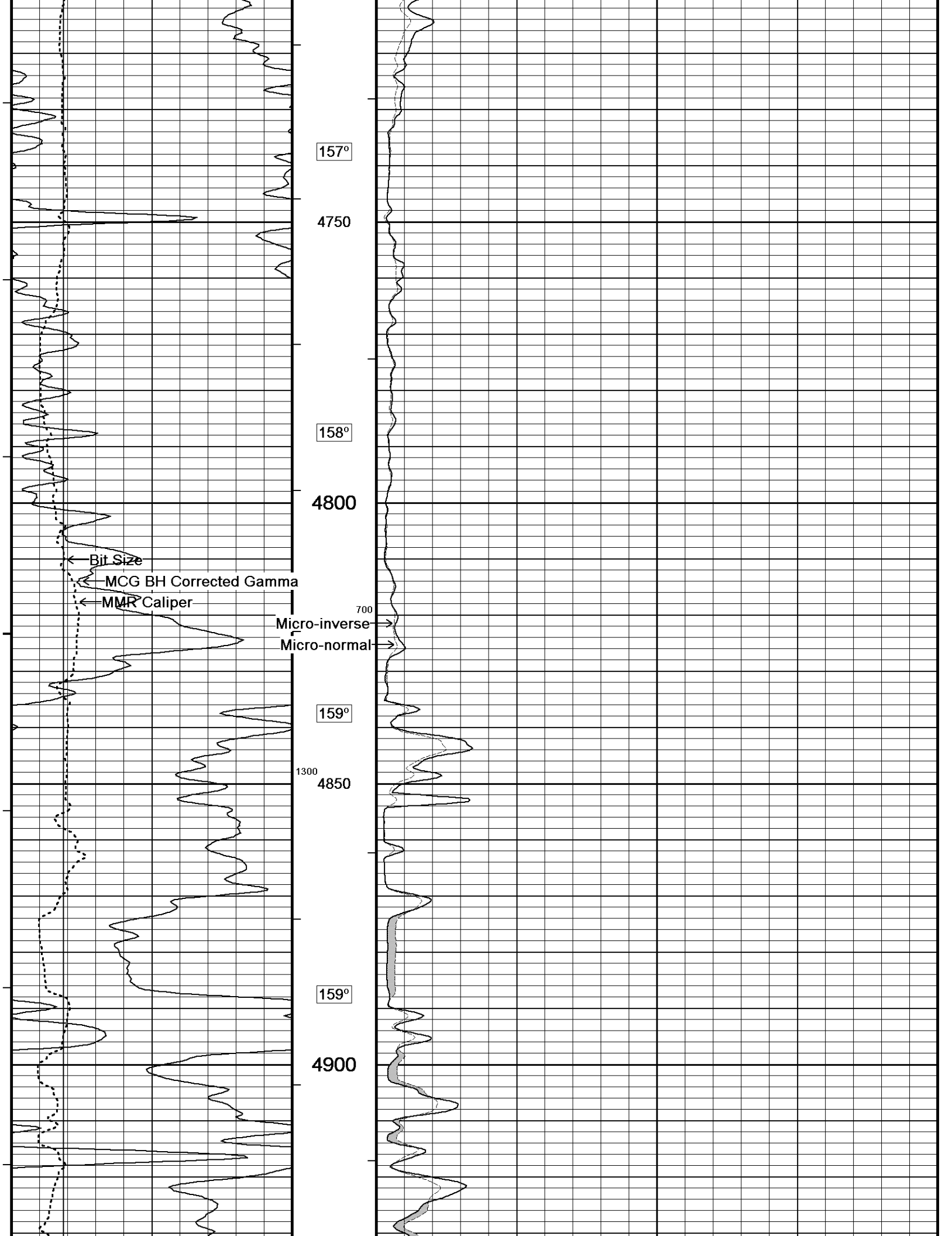
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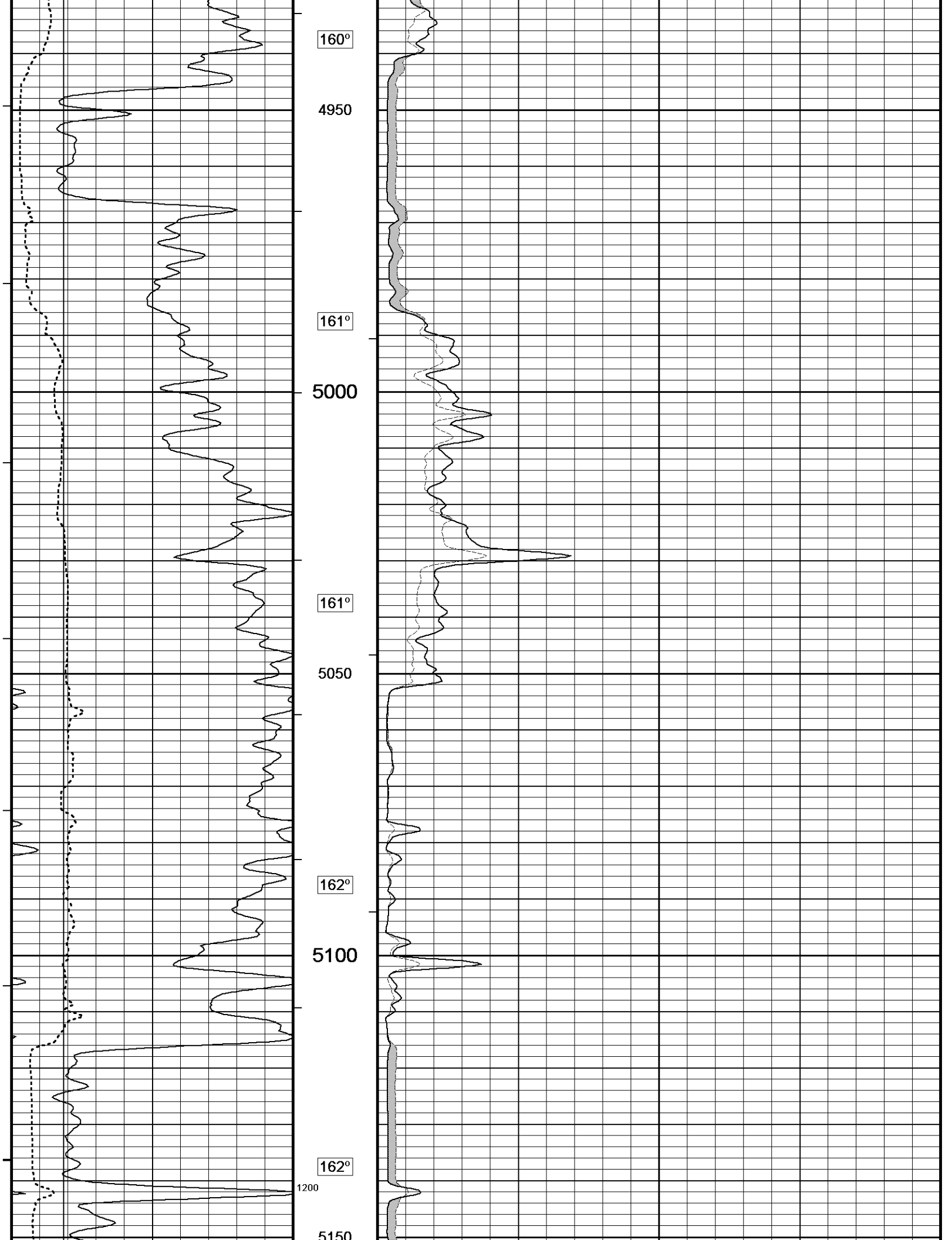
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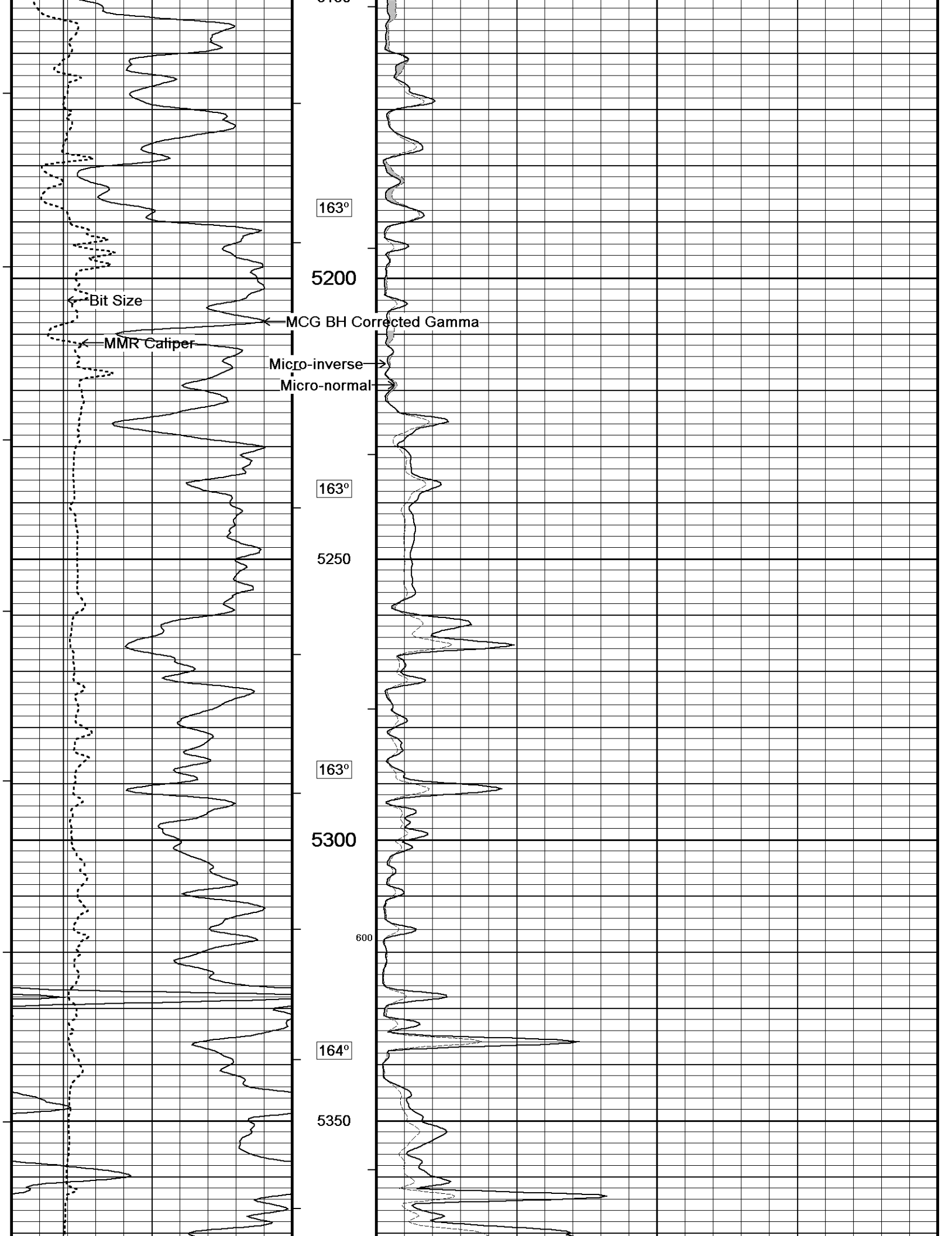


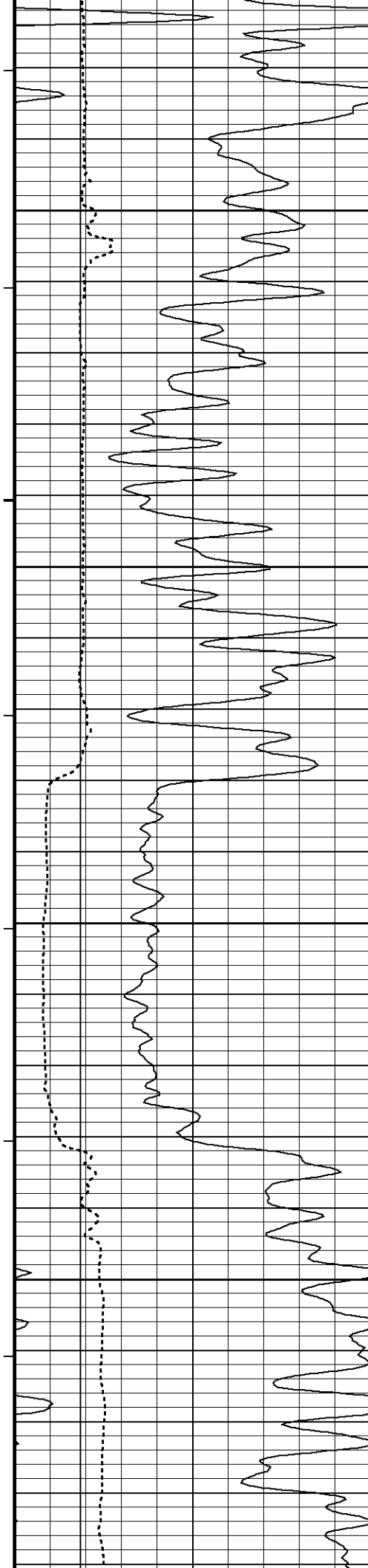












166°

1100

5400

166°

5450

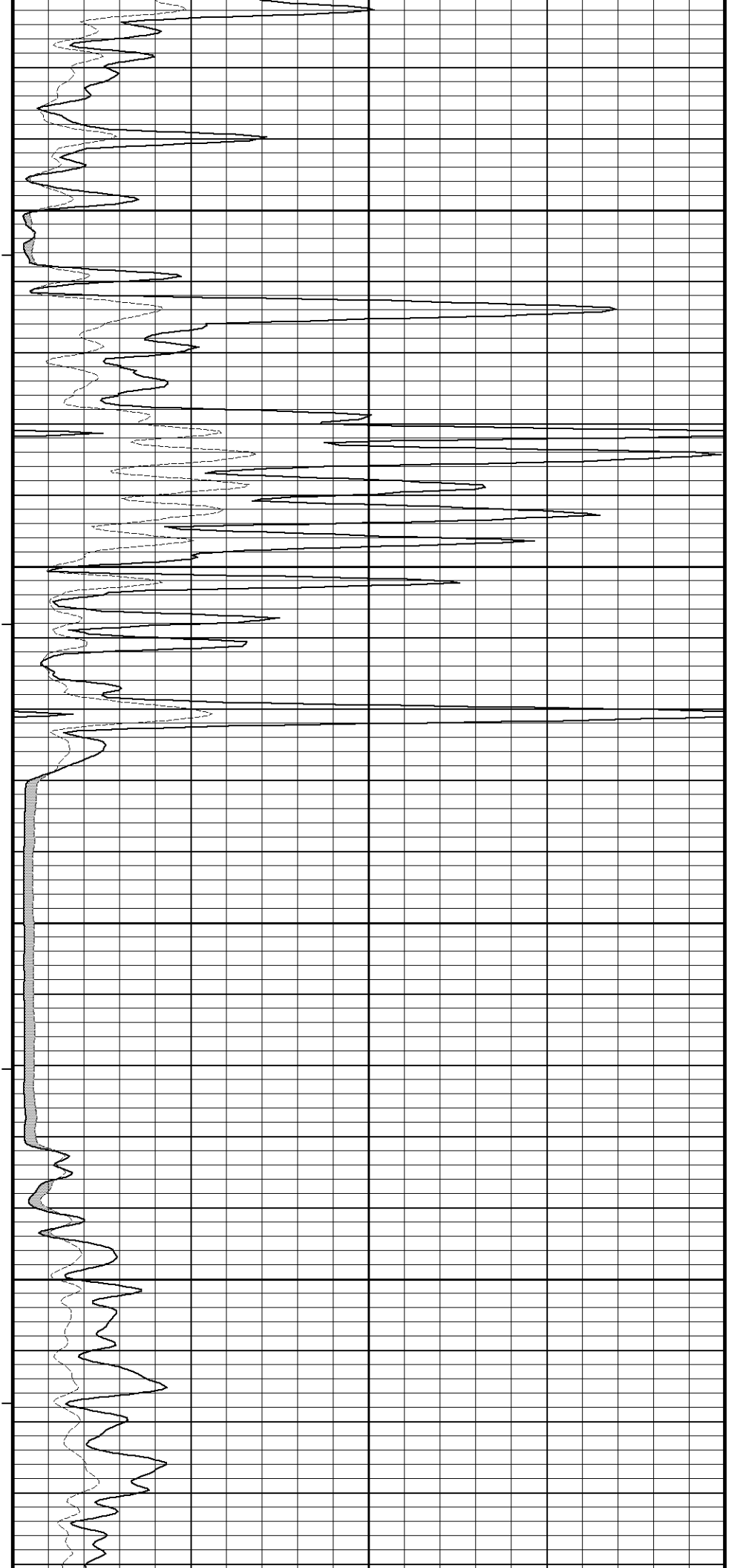
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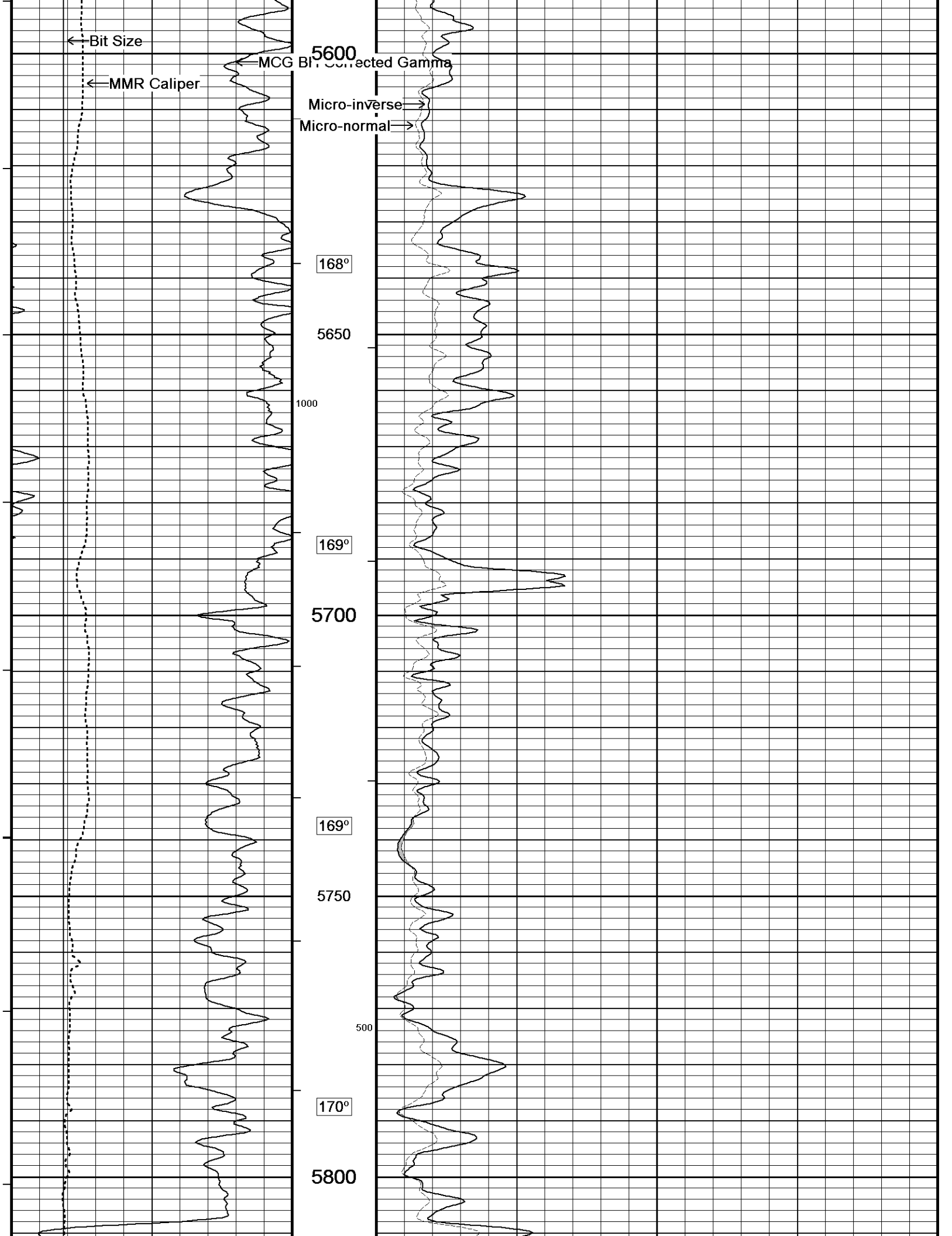
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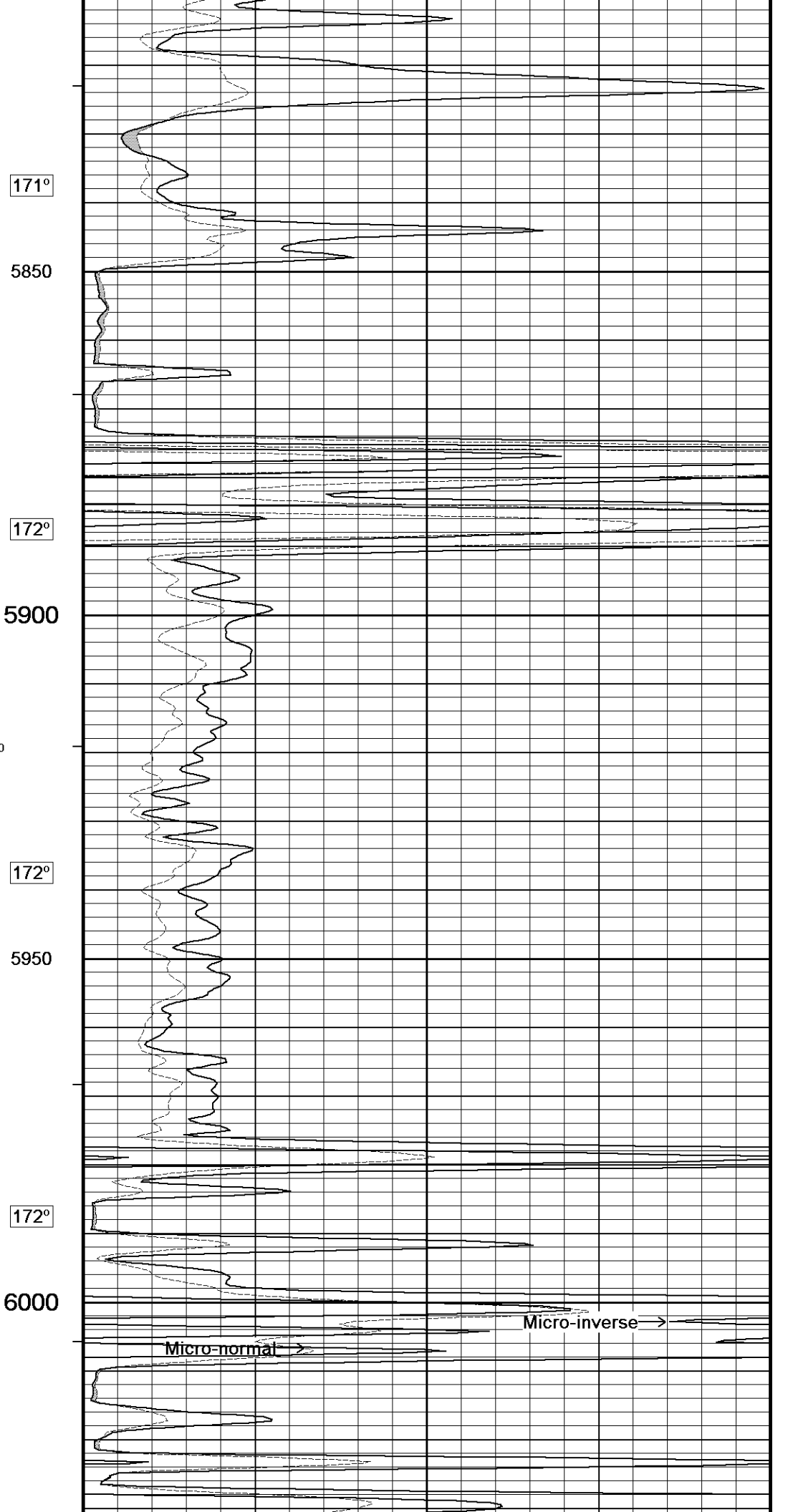
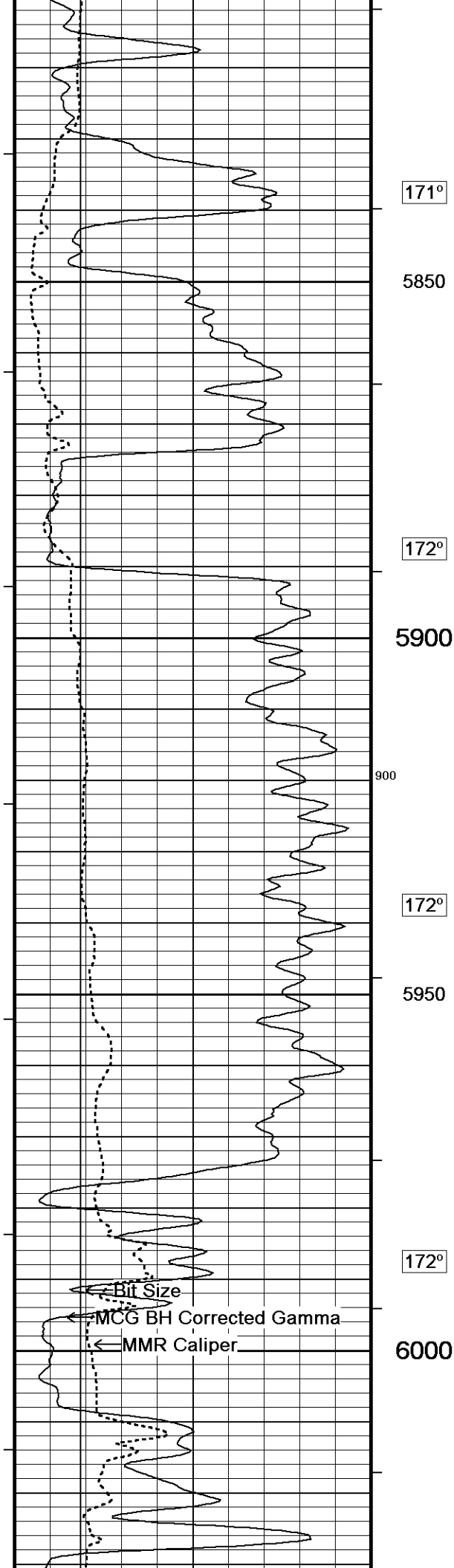
167°

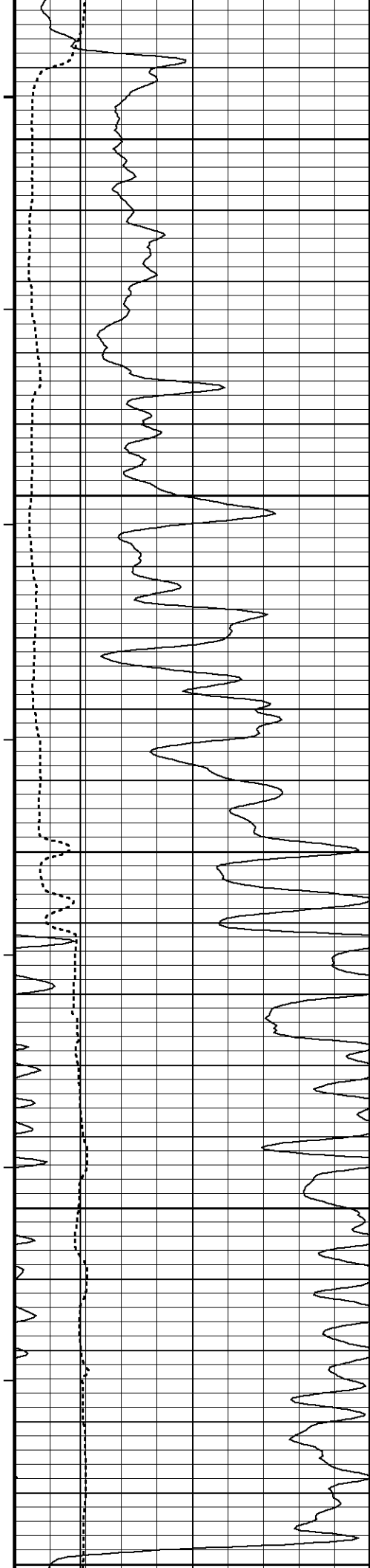
5550

168°

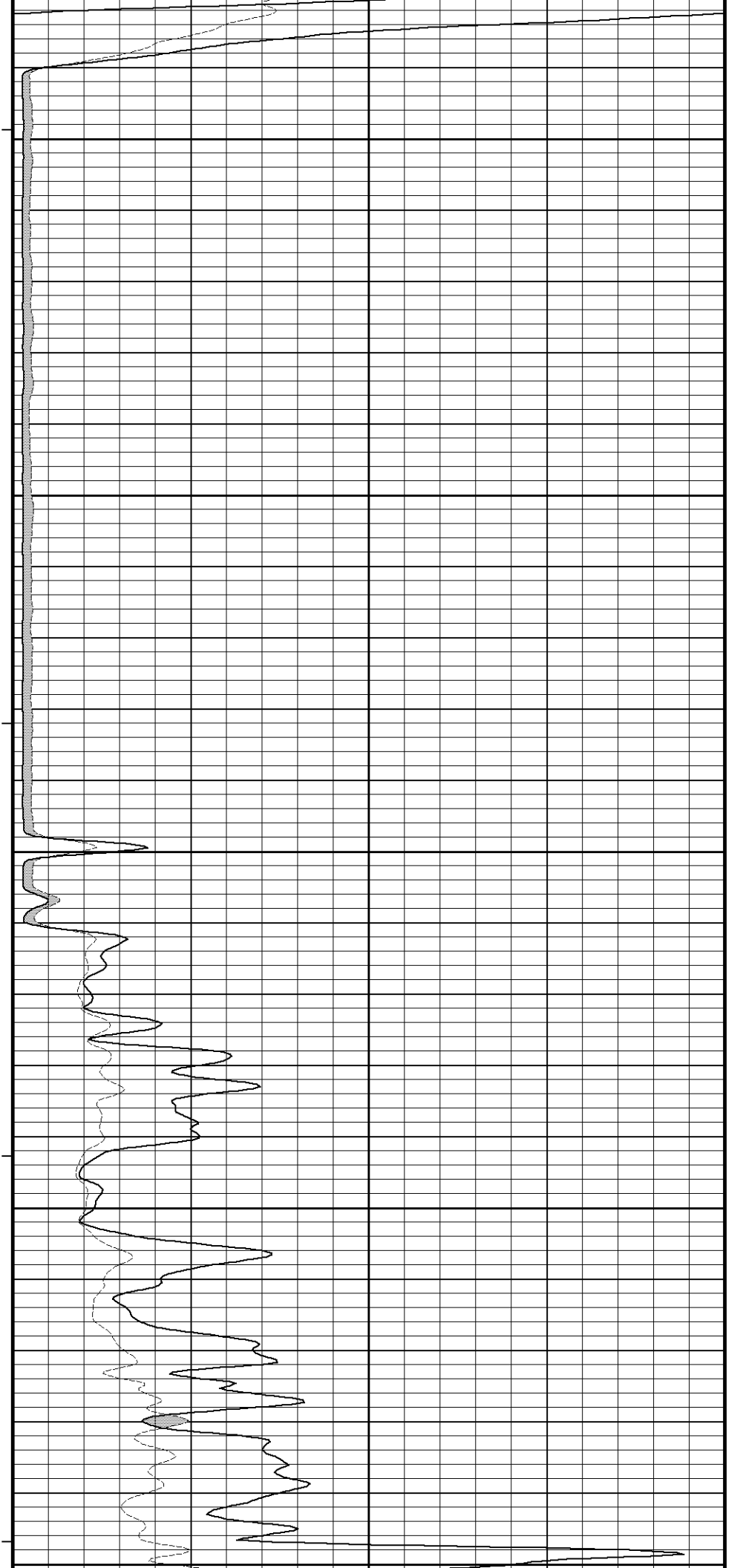


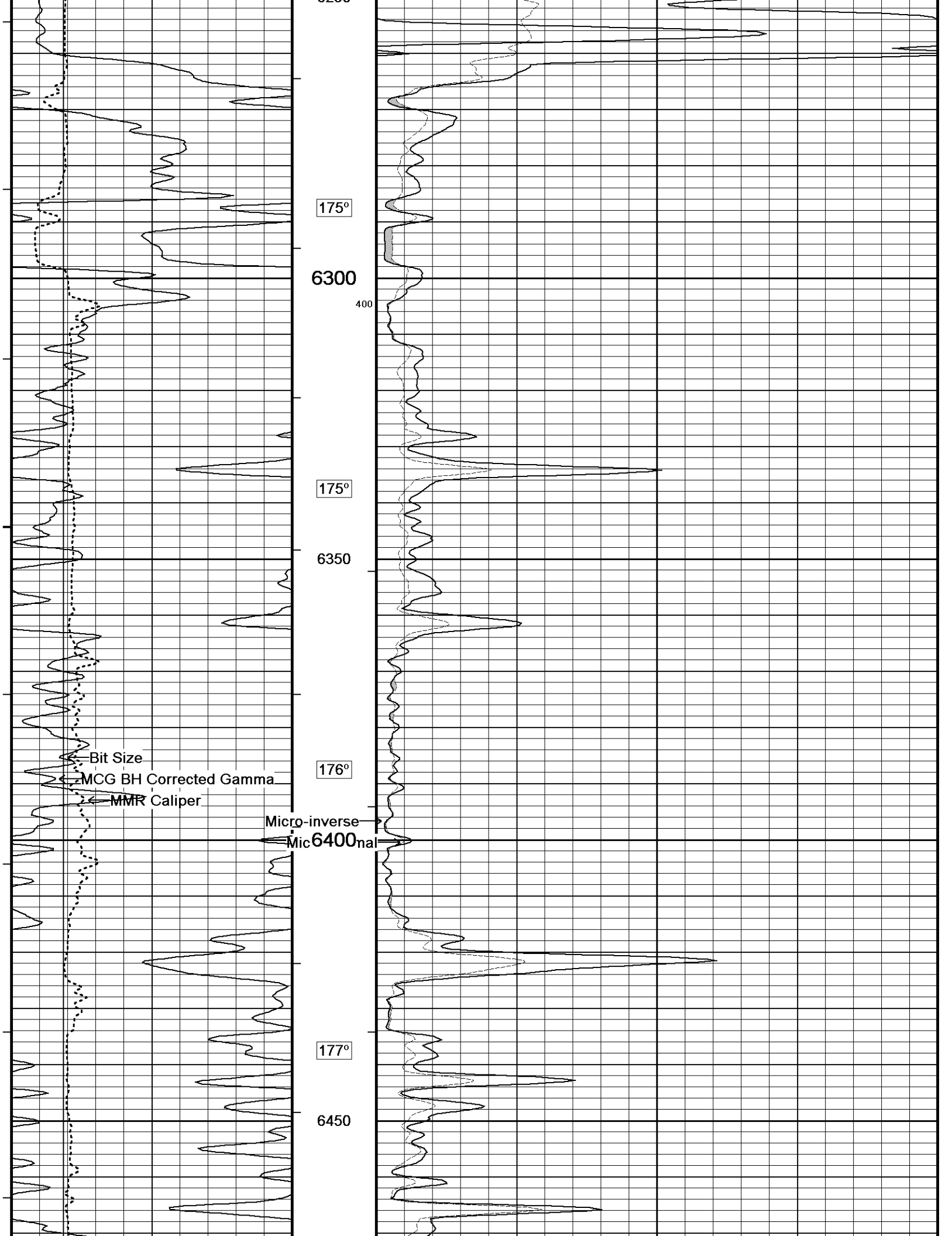


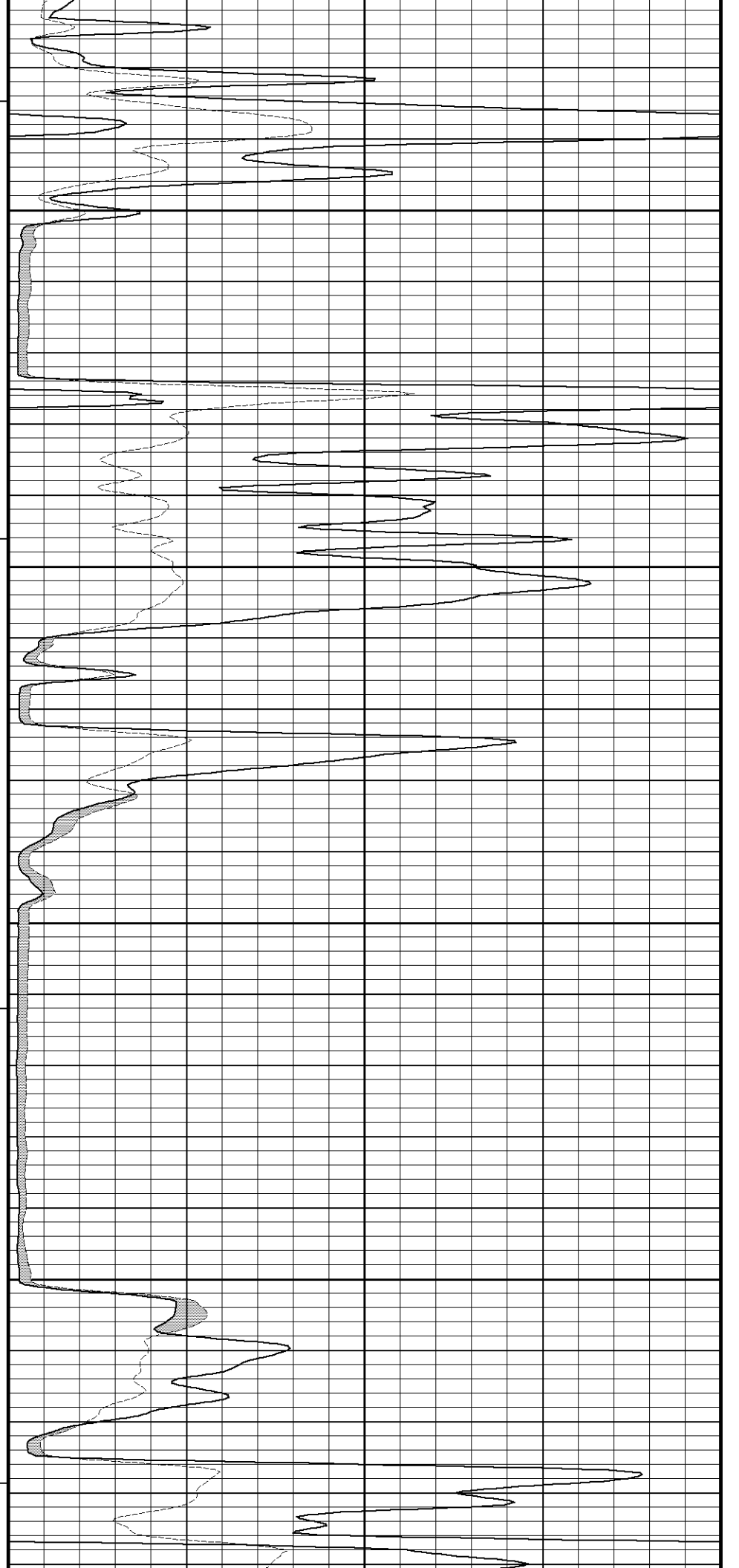
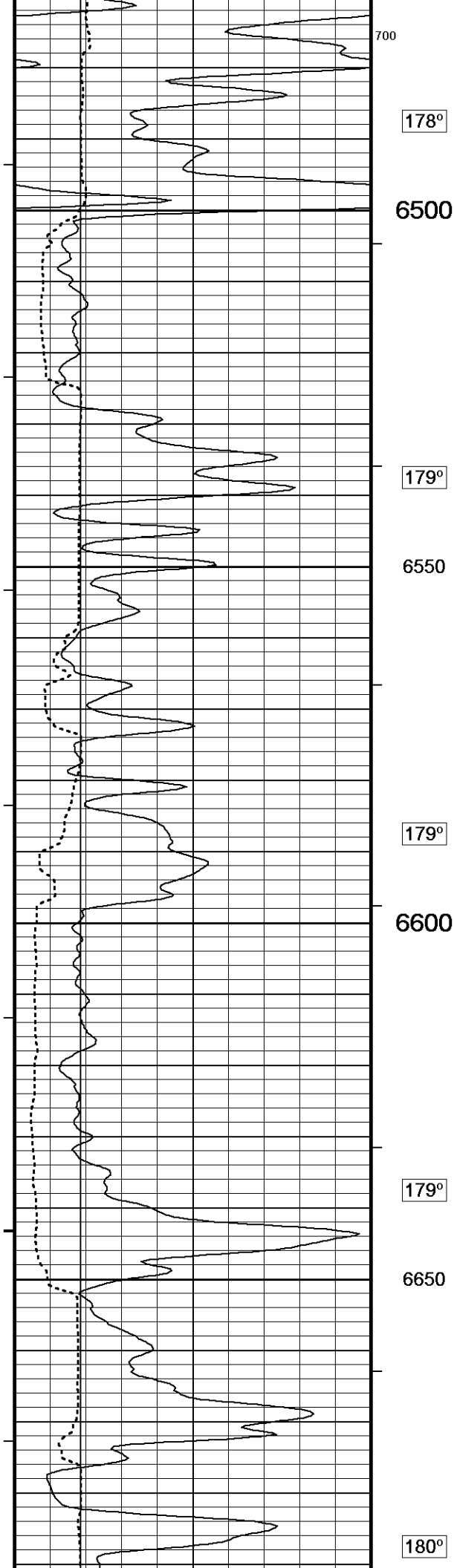


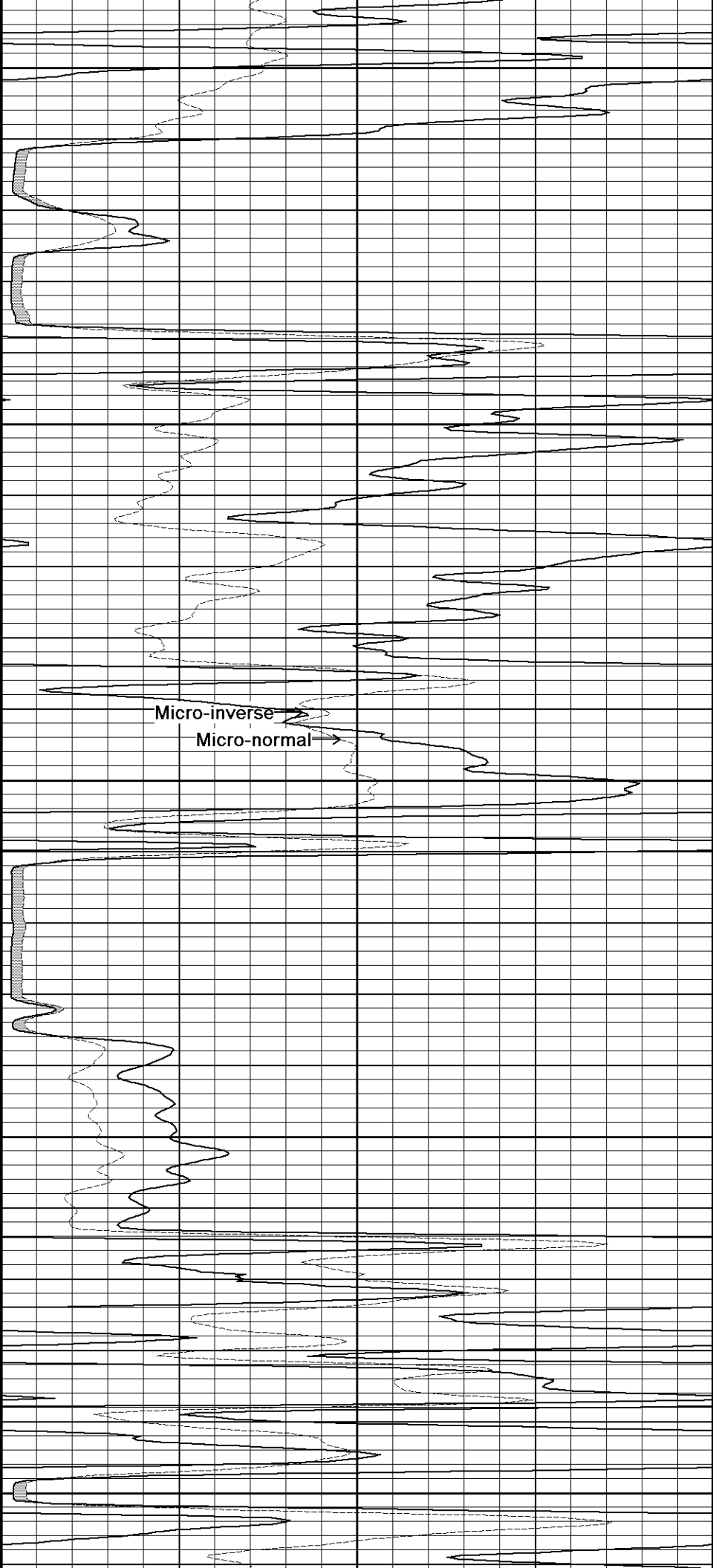
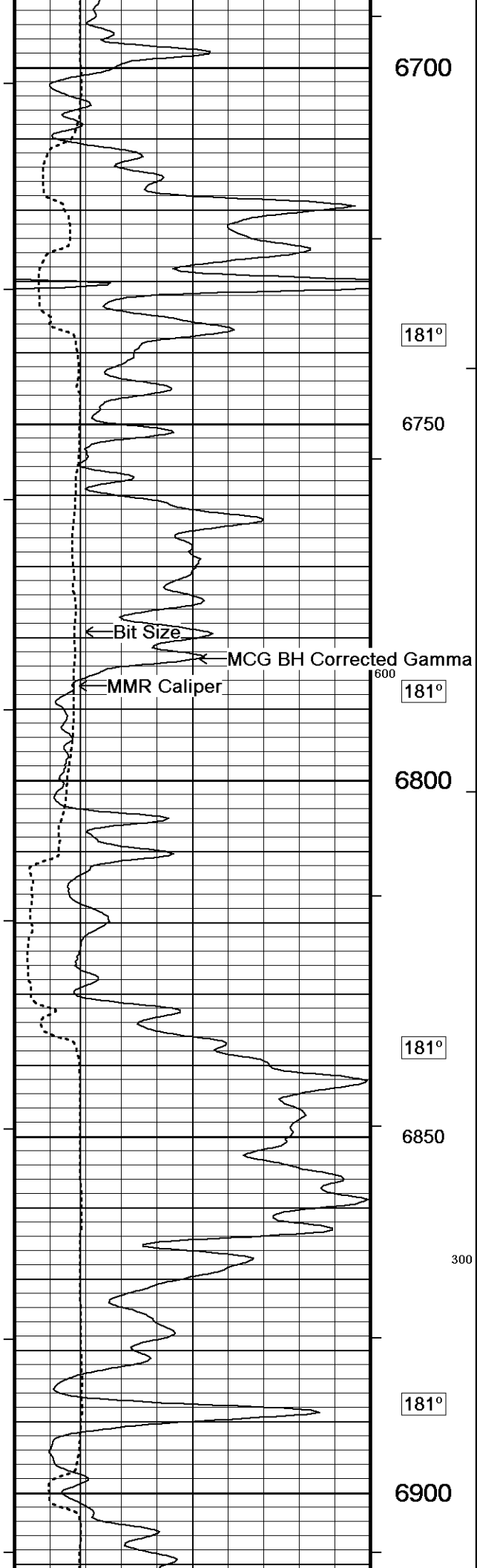


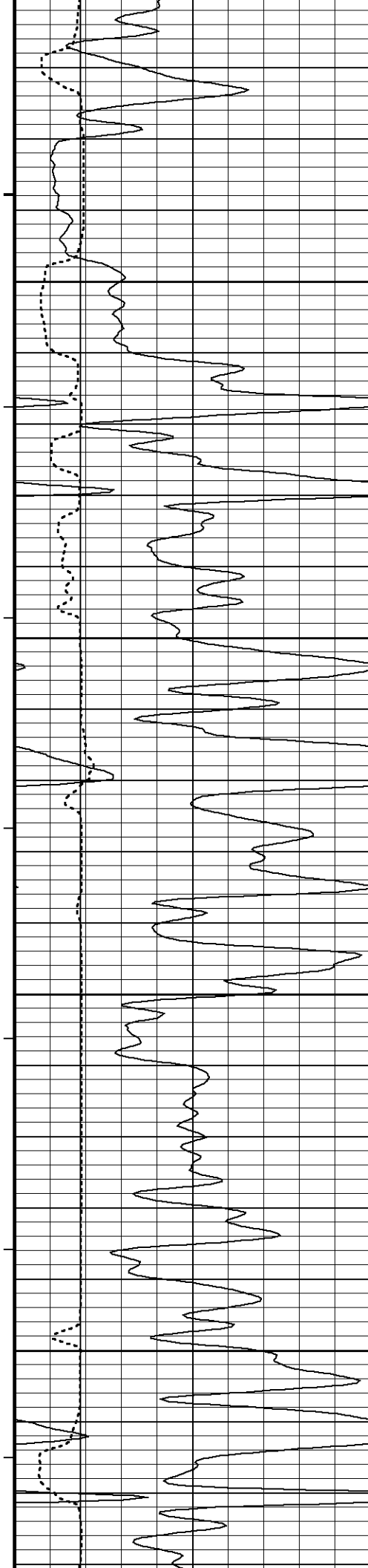
173°
6050
173°
6100
174°
6150
174°
6200
800
175°
6250











182°

6950

182°

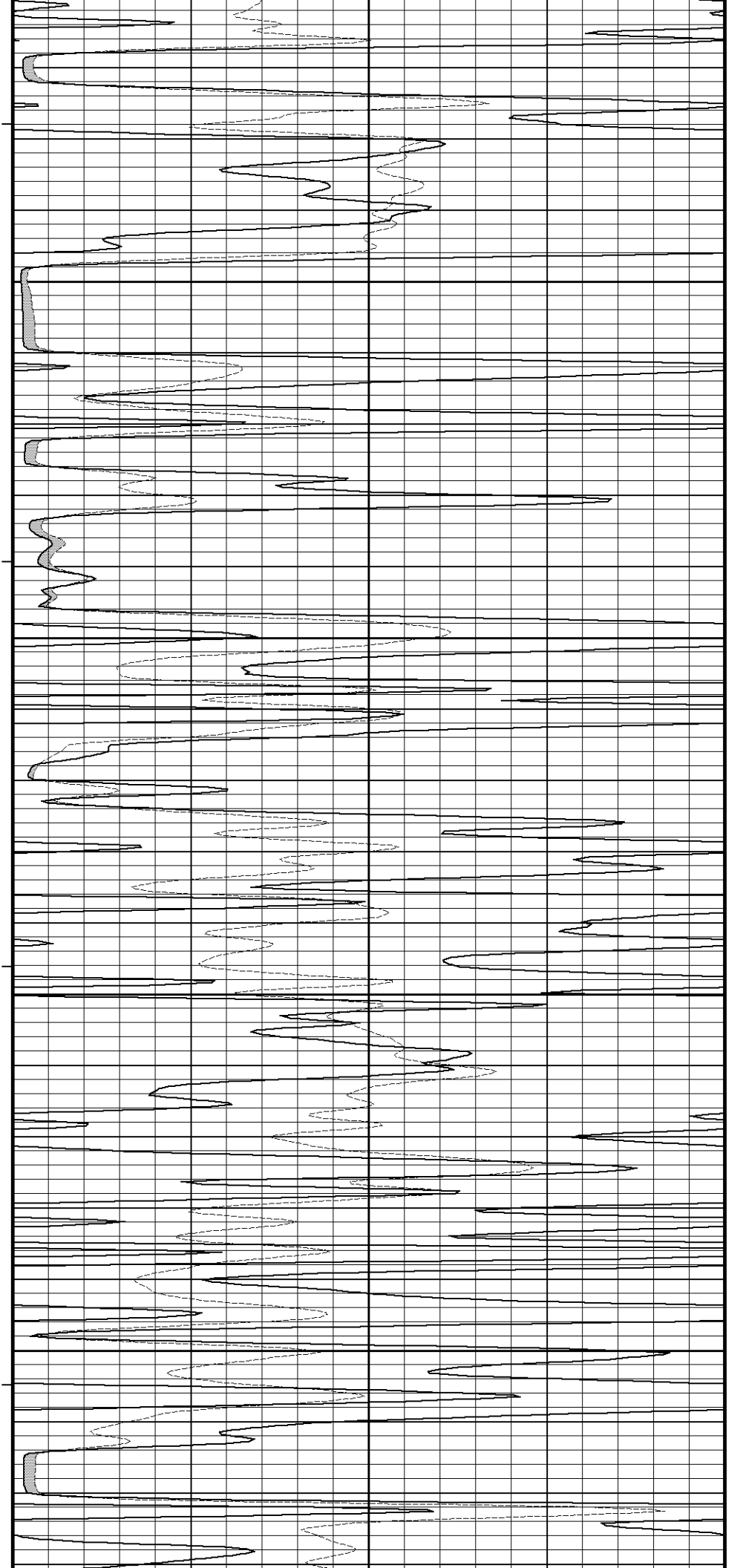
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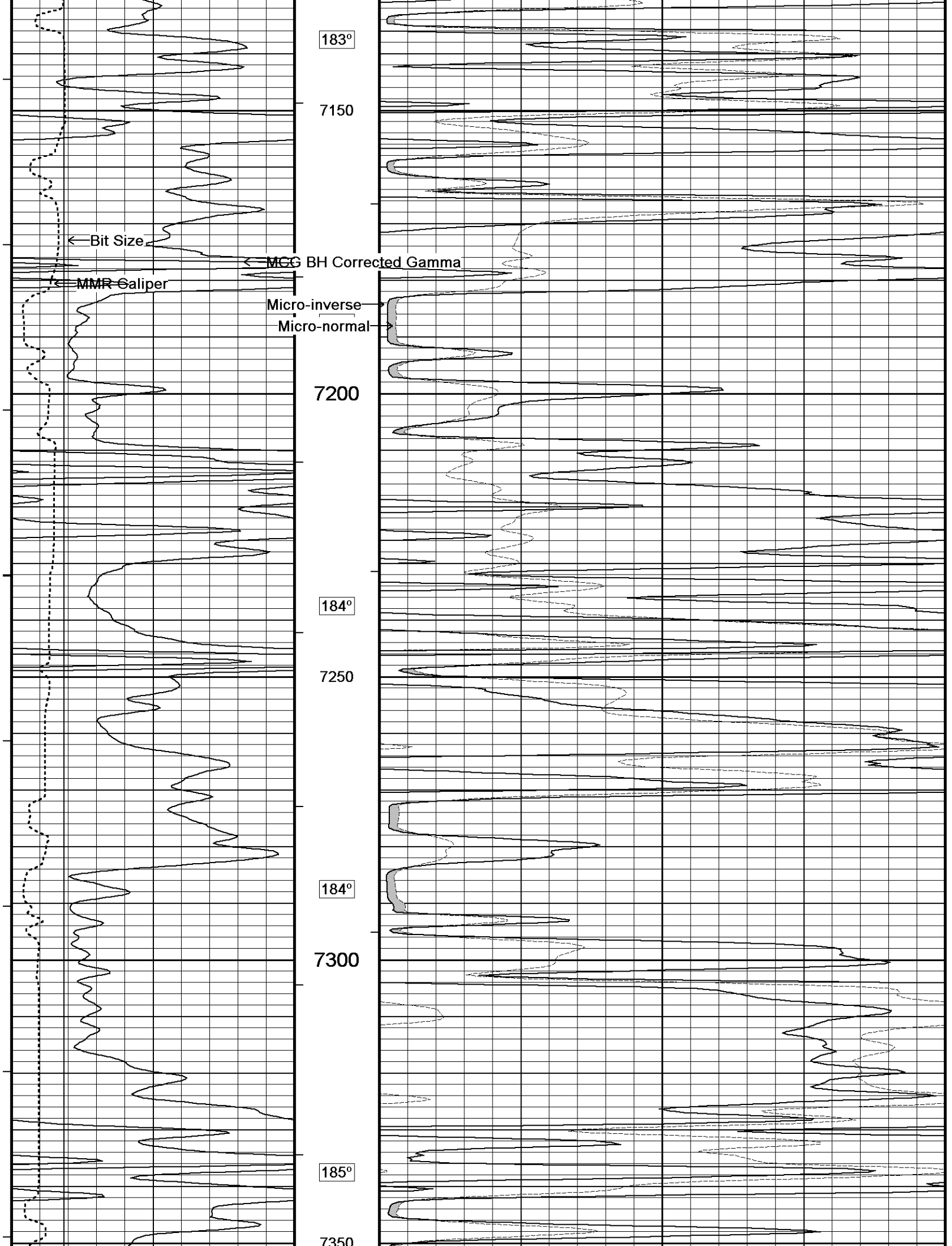
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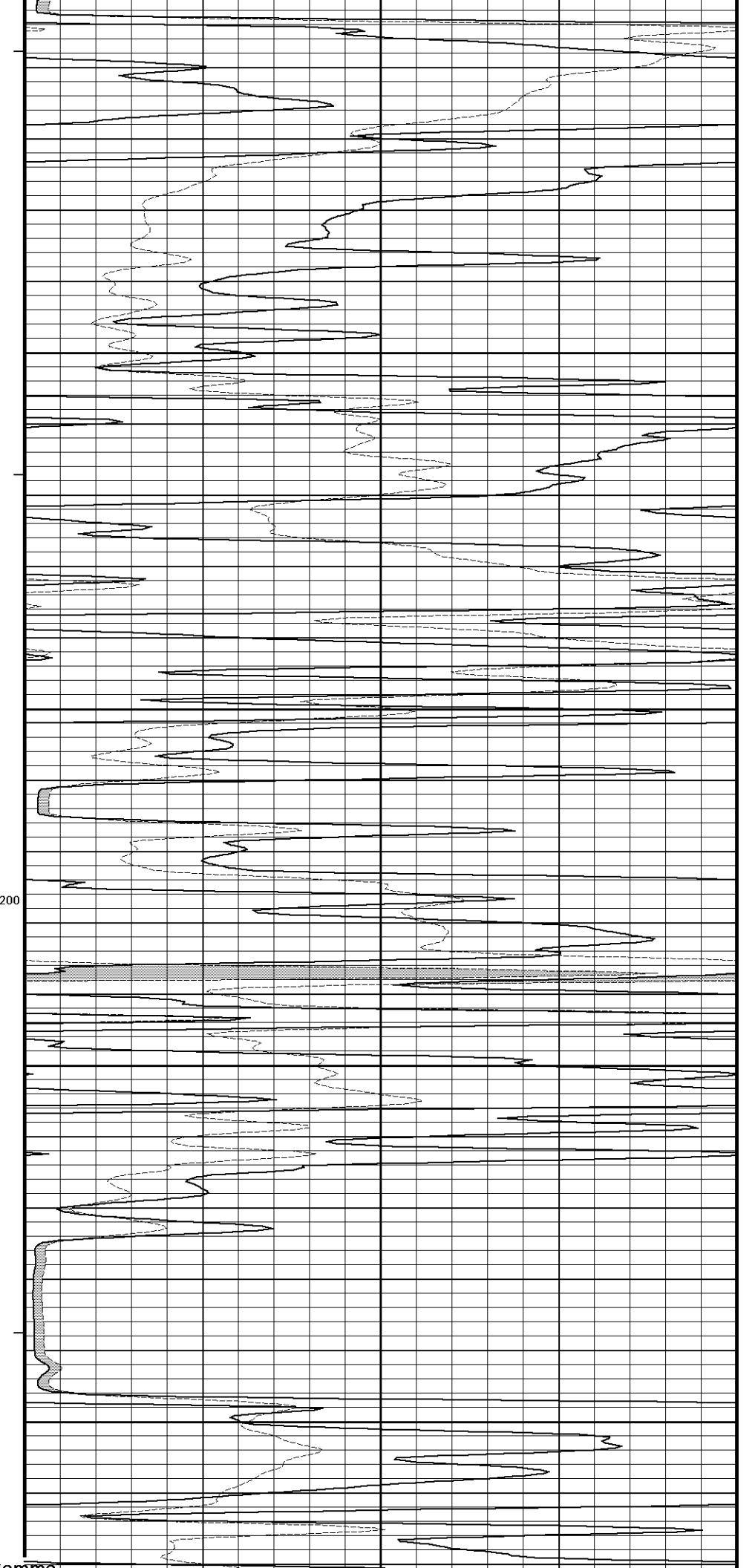
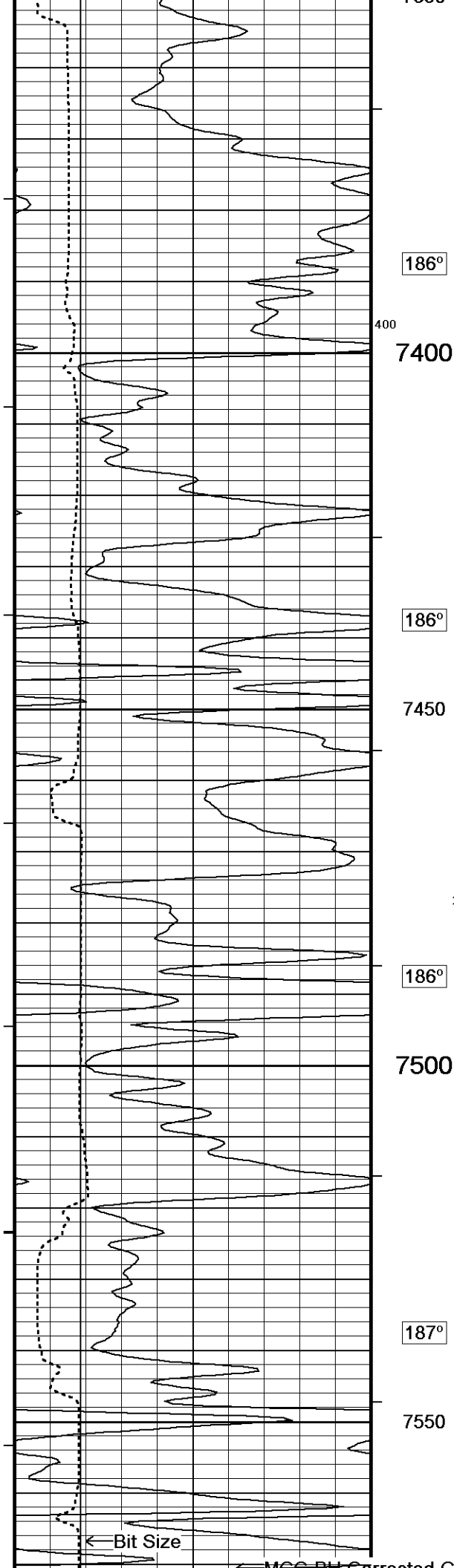
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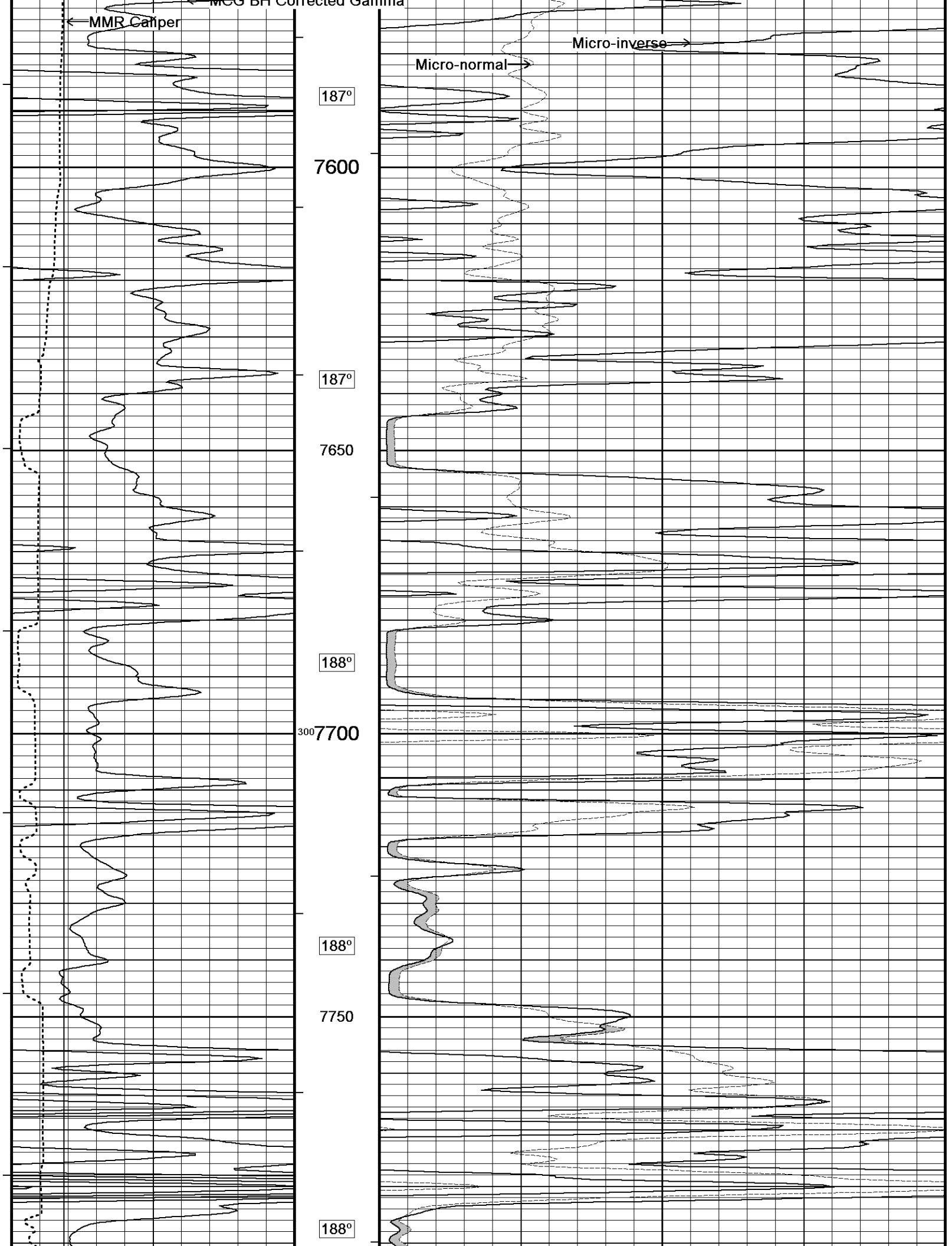
500 182°

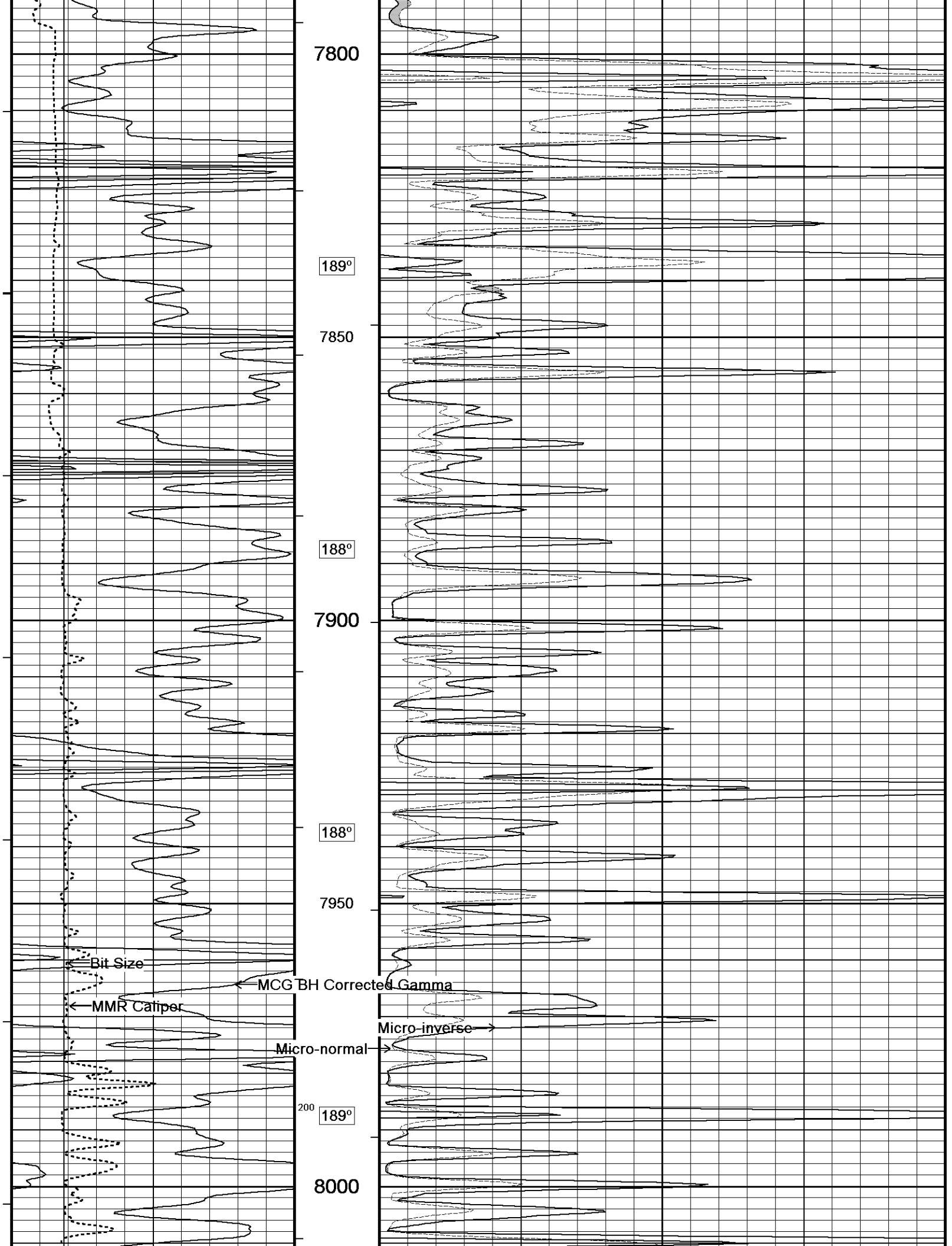
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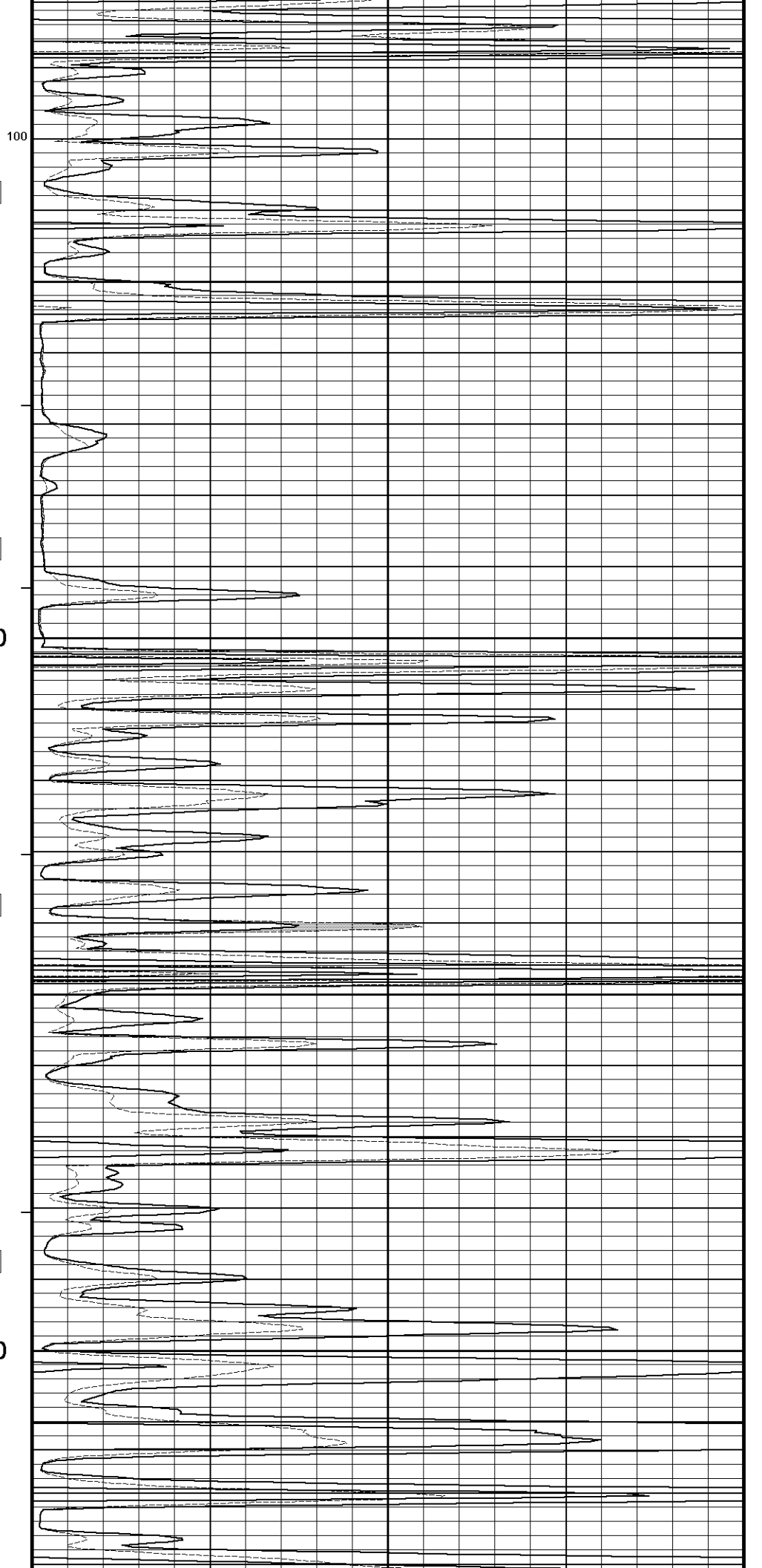
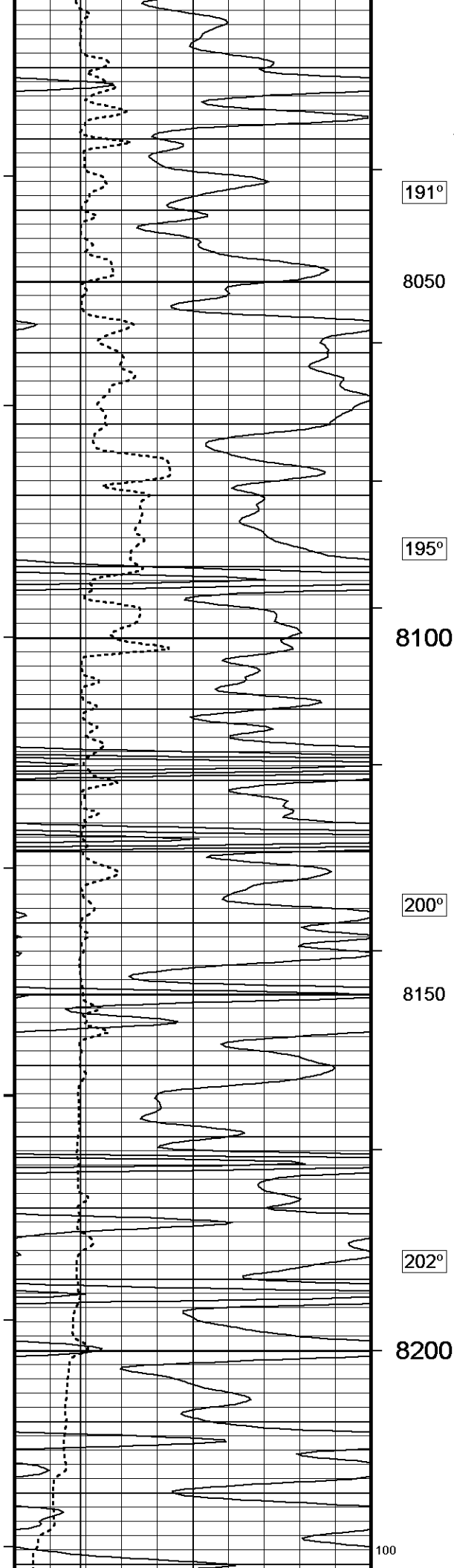


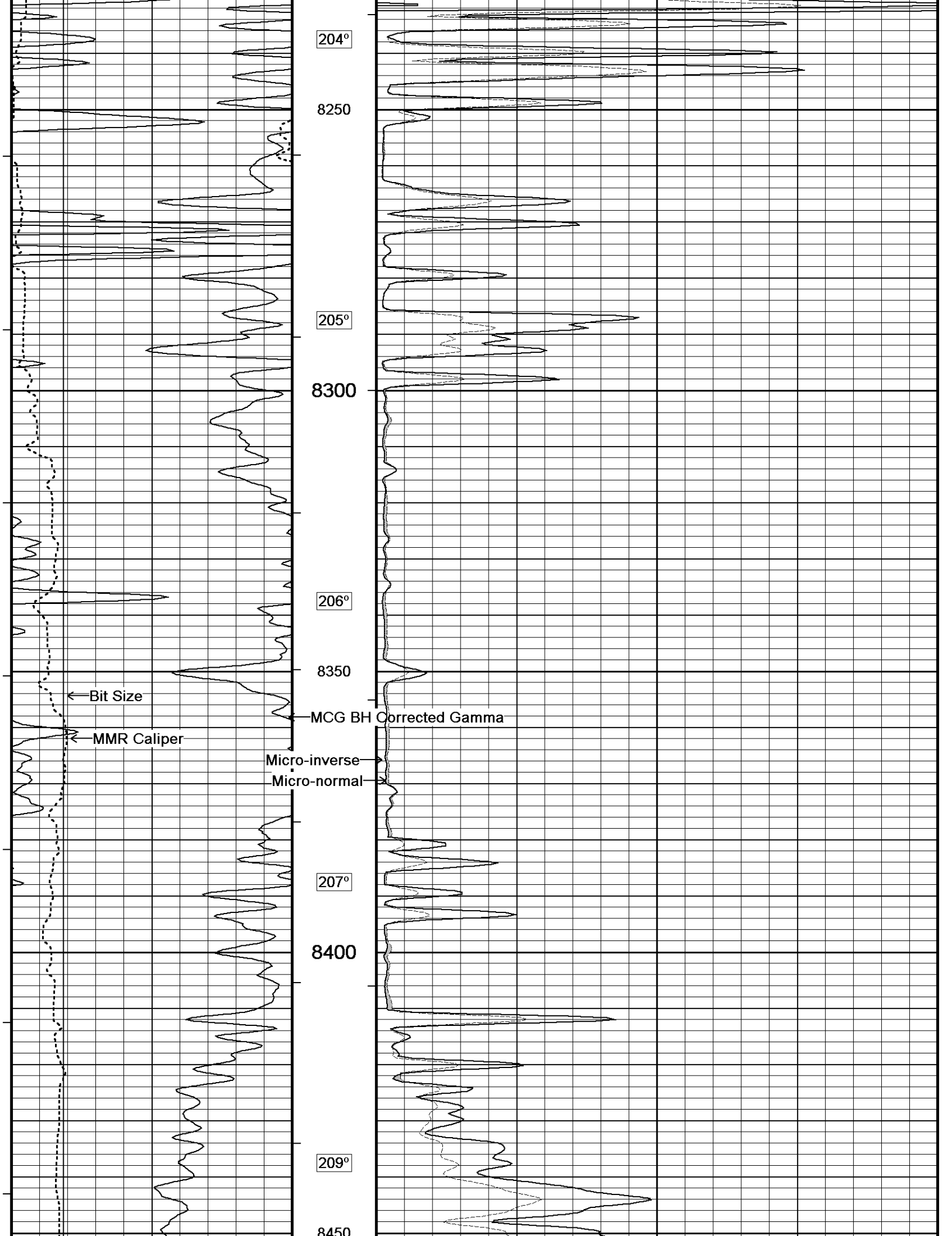


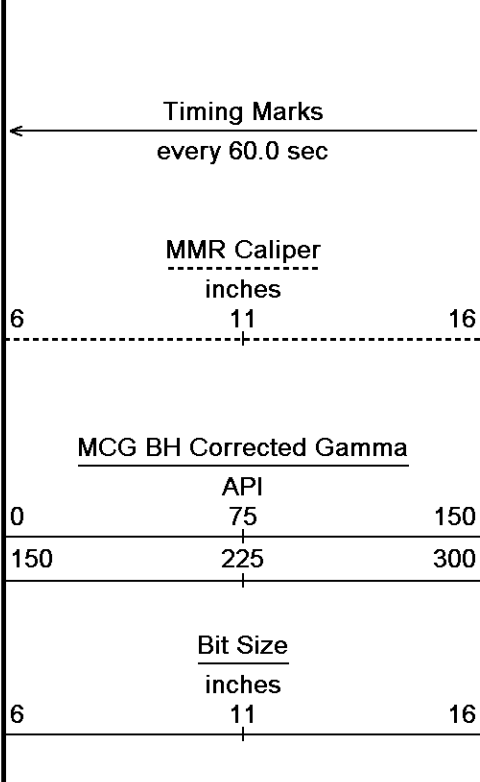
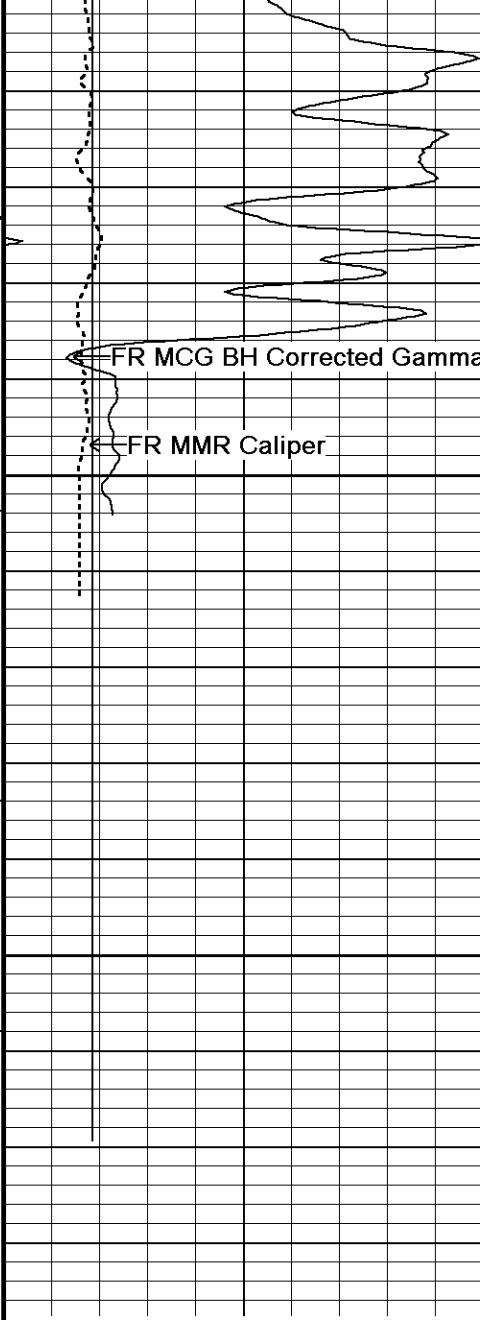












208°

8500

8550 TD

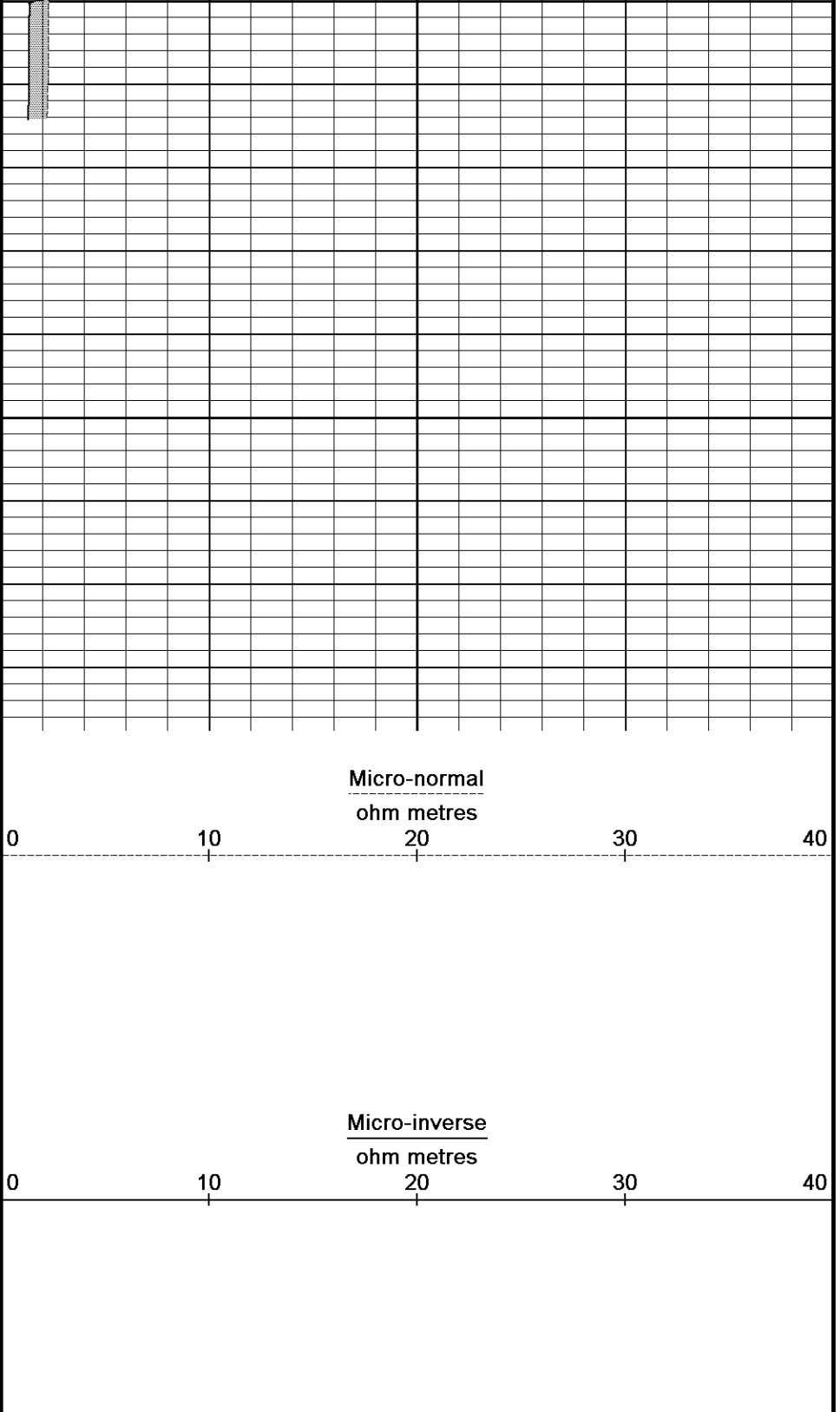
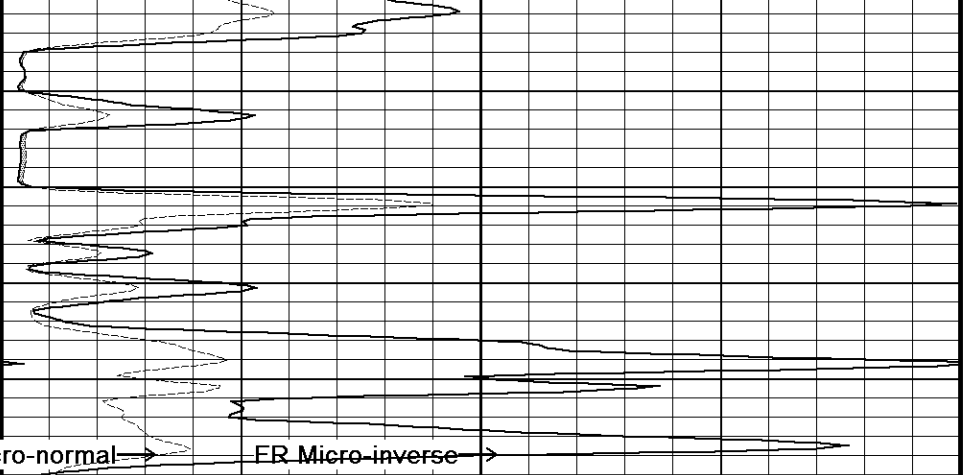
Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240



↑

5 INCH MAIN PASS

↑

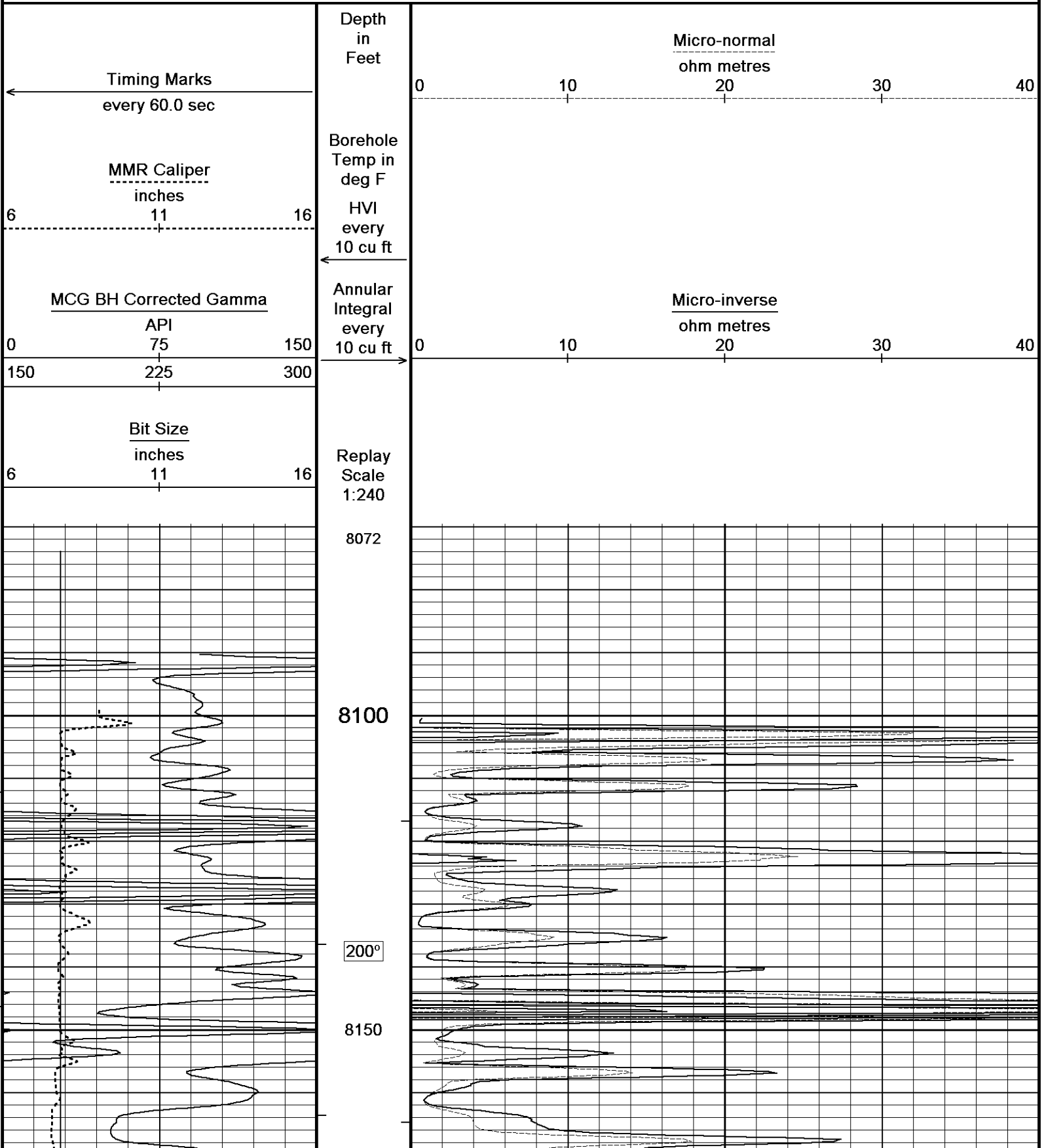
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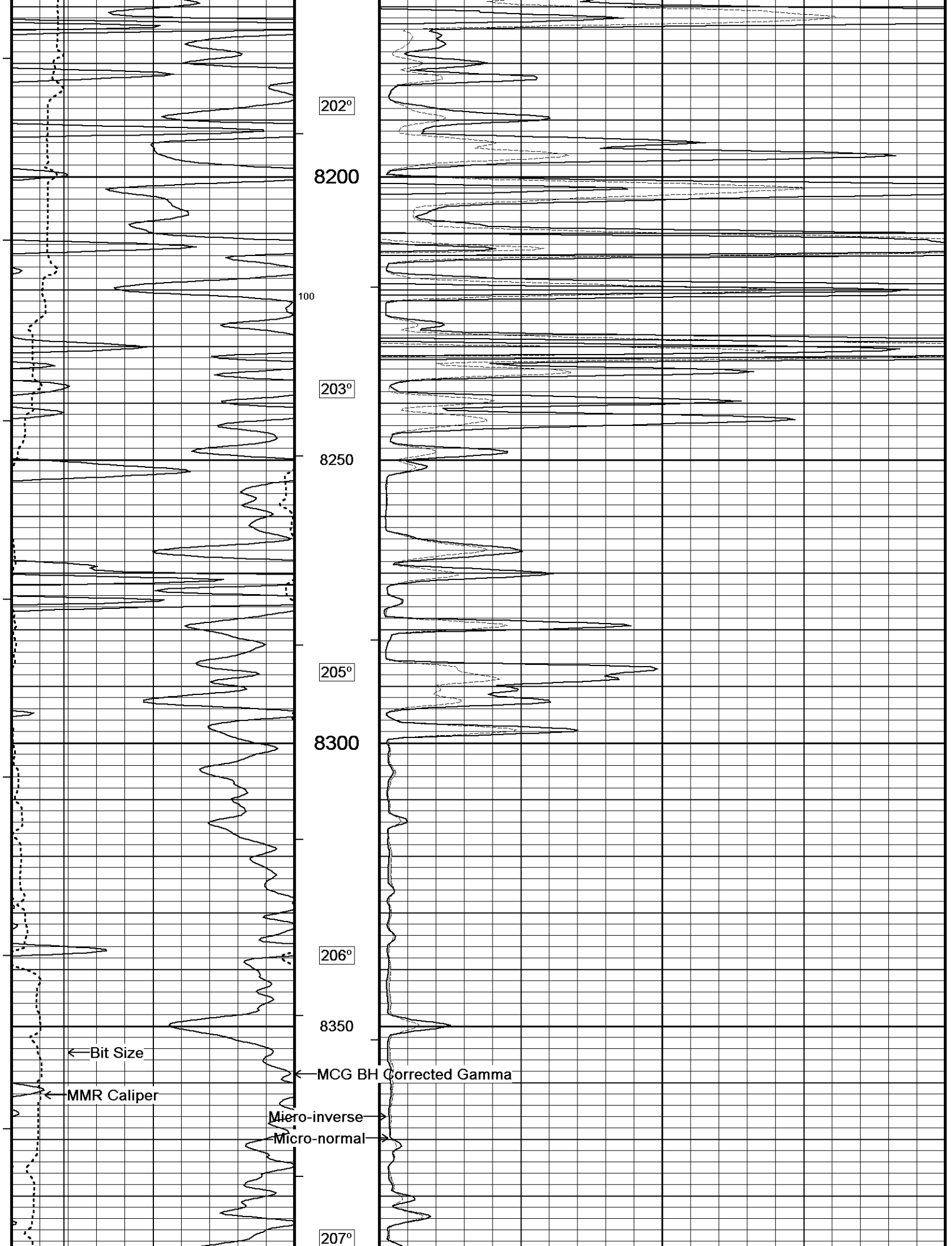
5 INCH REPEAT PASS

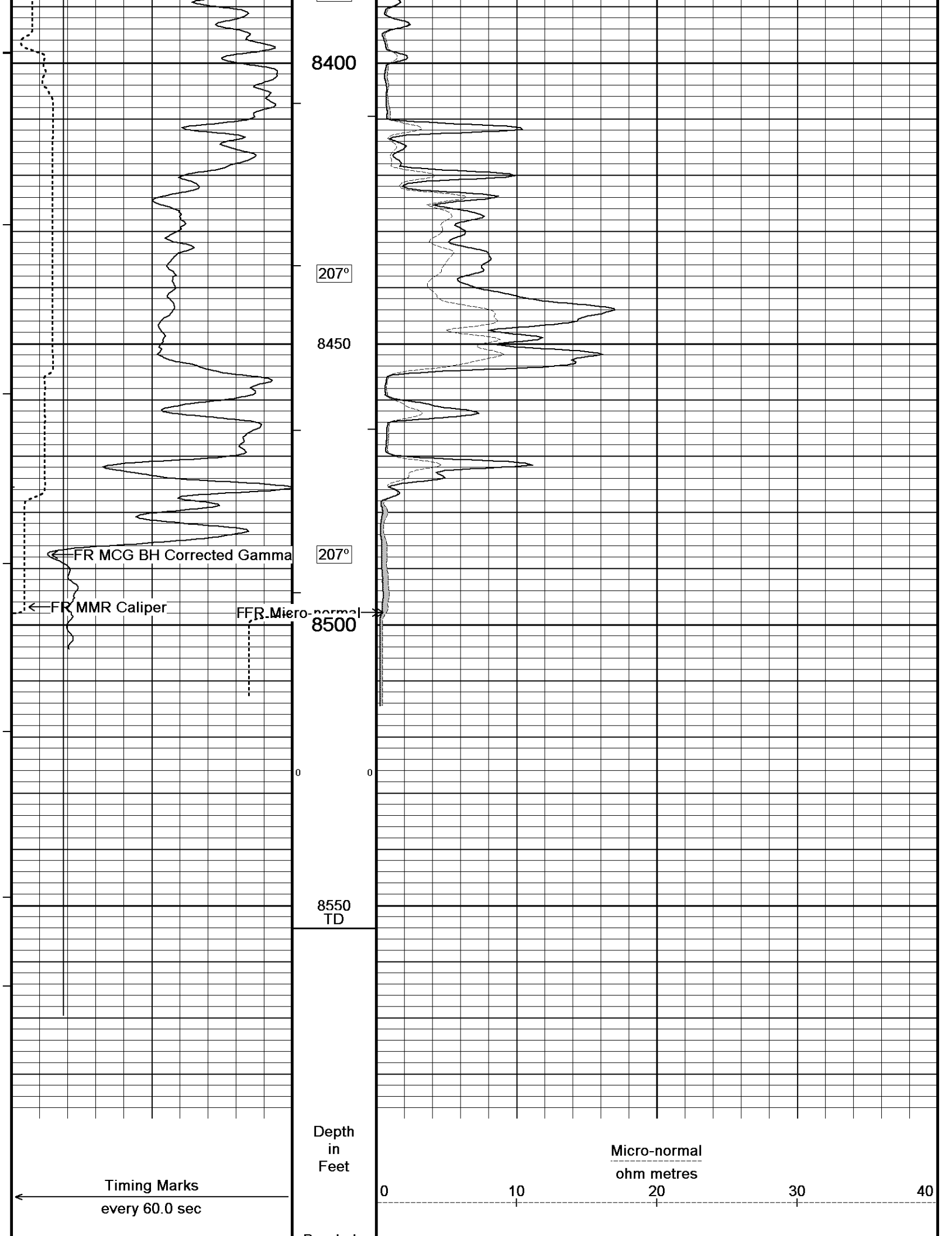
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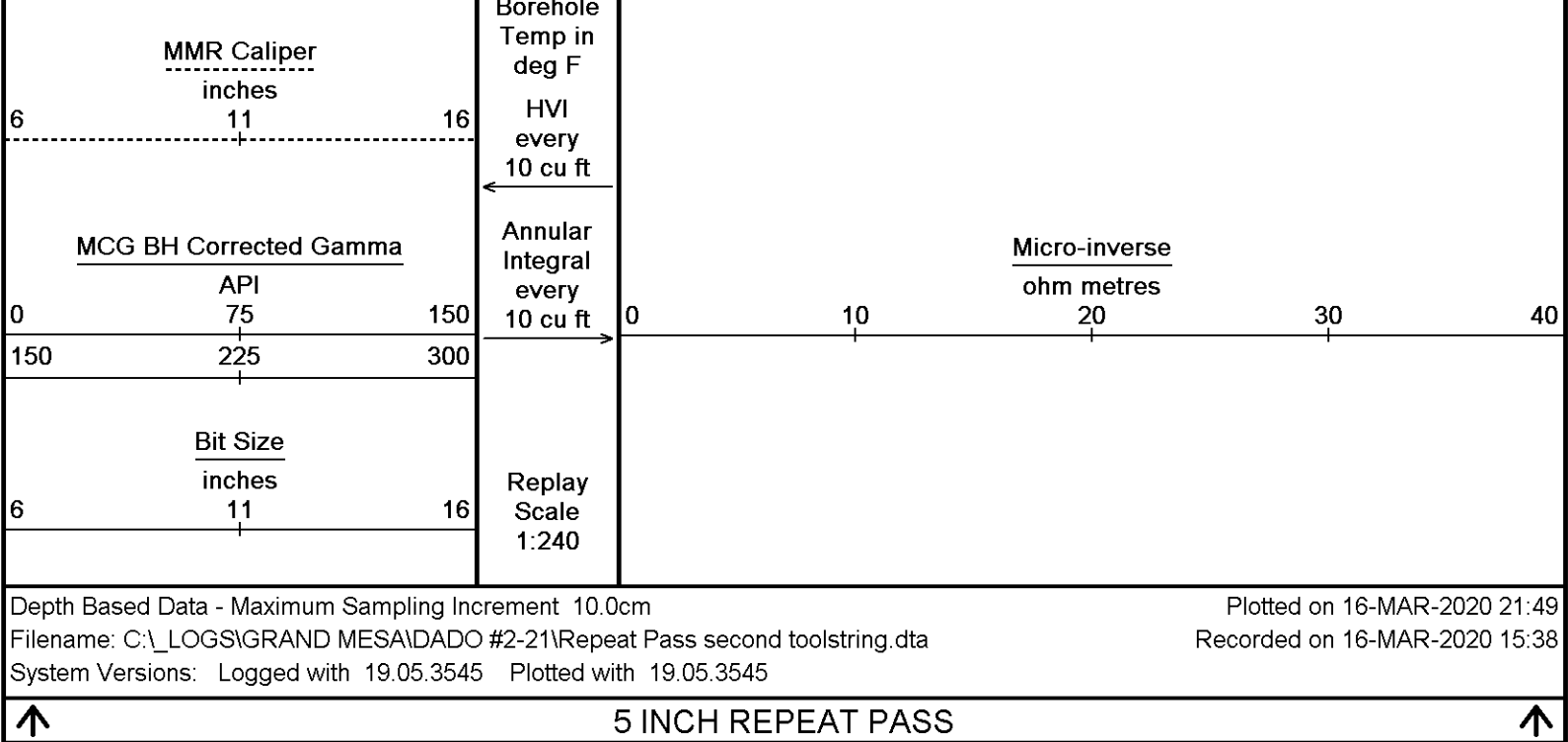
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\LOGS\GRAND MESA\DADO #2-21\Repeat Pass second toolstring.dta
System Versions: Logged with 19.05.3545 Plotted with 19.05.3545

Plotted on 16-MAR-2020 21:49
Recorded on 16-MAR-2020 15:38









BEFORE SURVEY CALIBRATION

C:_LOGS\GRAND MESA\DADO #2-21\Main Pass second toolstring.dta

General Constants All 000			Last Edited on 16-MAR-2020,10:04	
General Parameters				
Mud Resistivity	0.670	ohm-metres		
Mud Resistivity Temperature	101.000	degrees F		
Water Level	0.000	feet		
Borehole Fluid Processing	Wet Hole			
Hole/Annular Volume and Differential Caliper Parameters				
HVOL Method	Single Caliper			
HVOL Caliper 1	Density Caliper			
HVOL Caliper 2	N/A			
Annular Volume Diameter	5.500	inches		
Caliper for Differential Caliper	Density Caliper			
Rwa Parameters				
Porosity used	Base Density Porosity			
Resistivity used	Array Ind. One Res Rt			
RWA Constant A	0.620			
RWA Constant M	2.150			
SW/APOR Tool Source	0.000			

Gamma Calibration MCG-E.A 533		Field Calibration on 16-JAN-2020 11:29	
	Measured	Calibrated (API)	
Background	43	28	
Calibrator (Gross)	864	561	
Calibrator (Net)	821	533	

Gamma Calibration Tolerances MCG-E.A 533	
Ratio	1.541  Counts/API

Gamma Constants MCG-E.A 533			Last Edited on 16-MAR-2020,10:05		
Gamma Calibrator Number	MCGGRCC118				
GRC-M Calibrator Jig in Use?	NO				
Inactive Background Jig in Use?	NO				
Mud Density	1.10	gm/cc			
Caliper Source for Processing	Density Caliper				
Tool Position	Eccentred				

Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Constants MCG-E.A 533

Pre-filter Length 11

Caliper Calibration MMR-B.J 193

Base Calibration on 24-FEB-2020 18:07
Field Calibration on 24-FEB-2020 18:08

Base Calibration	Reading No	Measured	Calibrator Size (in)
	1	13695	5.96
	2	16976	7.98
	3	20384	9.94
	4	24116	11.88
	5	0	0.00
	6	N/A	N/A
Field Calibration	Measured Caliper (in)	Actual Caliper (in)	
	8.00	7.98	

Caliper Calibration Tolerances MMR-B.J 193

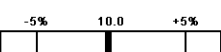

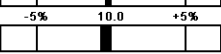
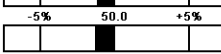
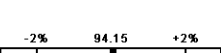
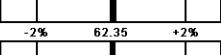
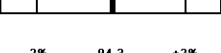
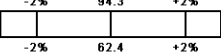
Short Arm Field Cal. 8.00  in

Micro Normal and Micro Inverse Calibration MMR-B.J 193

Base Calibration on 24-FEB-2020 18:02
Field Check on 24-FEB-2020 18:04

	Resistor 1 (ohm)	Resistor 2 (ohm)	
	10.0	50.0	
Base Calibration	Measured	Calibrated (ohm-m)	
Micro Normal	10.0 49.4	5.1100 25.5500	
Micro Inverse	9.9 49.3	3.3800 16.9000	
Channel	Base Check (ohm-m)	Field Check (ohm-m)	
Micro Normal	94.3	94.3	
Micro Inverse	62.4	62.4	

Micro Normal & Micro Inverse Calibration Tolerance MMR-B.J 193

Micro Normal Res. 1	10.0		ohm	Micro Normal Res. 2	49.4		ohm
Micro Inverse Res. 1	9.9		ohm	Micro Inverse Res. 2	49.3		ohm
Micro Normal Base Check	94.3		ohm-m				
Micro Inverse Base Check	62.4		ohm-m				
Micro Normal Field Check	94.3		ohm-m				
Micro Inverse Field Check	62.4		ohm-m				

Micro Normal and Micro Inverse Constants MMR-B.J 193

Last Edited on 24-FEB-2020,17:55

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159
Micro Normal K Factor	0.5110
Micro Inverse K Factor	0.3380
Standoff Offset	0.0000 inches

Caliper Calibration MPD-D.A 476

Base Calibration on 25-FEB-2020 09:20
Field Calibration on 25-FEB-2020 09:21

Base Calibration	Reading No	Measured	Calibrator Size (in)
	1	18271	4.01
	2	28013	5.96
	3	38362	7.98
	4	48530	9.94
	5	58944	11.88
	6	N/A	N/A
Field Calibration	Measured Caliper (in)	Actual Caliper (in)	

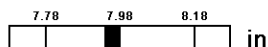
7.94

7.98

Caliper Calibration Tolerances MPD-D.A 476

Short Arm Field Cal.

7.94



DOWNHOLE EQUIPMENT

C:\LOGS\GRAND MESA\DADO #2-21\Main Pass second toolstring.dta

Cablehead, 11 pin

CBH-CA 172 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

11C-11B Compact Tool Adaptor

MTA-K.A 341 LG: 1.53 ft WT: 13.2 lb OD: 2.240 in

Compact Swivel Head Adaptor

SHA-J.B 656 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma

MCG-E.A 533 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity

MMR-B.J 193 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron

MDN-C.A 480 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-D.A 476 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Vee Arm Caliper

MVC-A.A 146 LG: 8.06 ft WT: 61.7 lb OD: 2.244 in

Compact Knuckle Joint

SKJ-E.B 659 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Focussed Electric

MFE-C.A 399 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

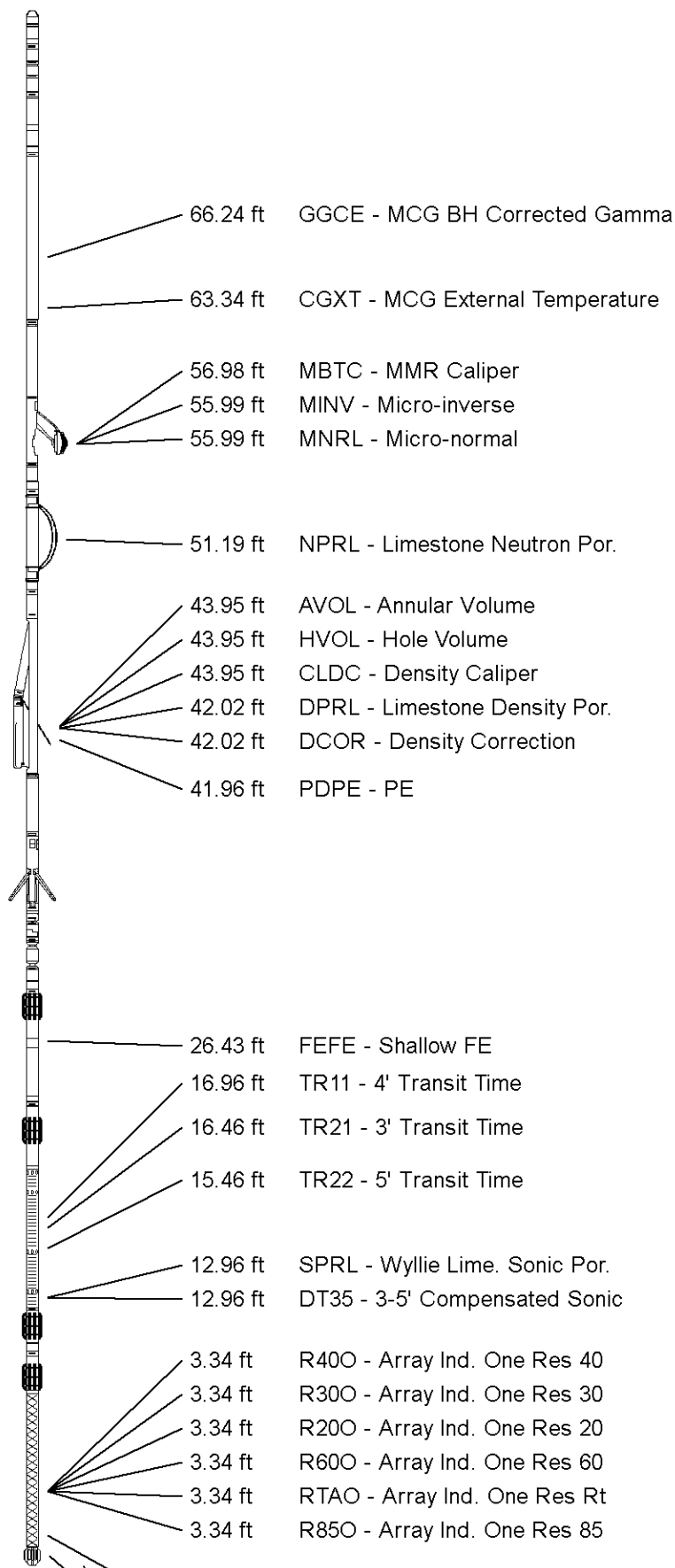
Compact Sonic

MSS-D.A 398 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction

MAI-B.J 432 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 77.75 ft Weight: 601.9 lb



0.23 ft SPCG - Spontaneous Potential

Tool Zero (0.13ft from bottom)

-0.13 ft SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	GRAND MESA OPERATING COMPANY
WELL	DADO 2-21
FIELD	GUTRU
PROVINCE/COUNTY	LINCOLN
COUNTRY/STATE	COLORADO

Elevation Kelly Bushing	5481	feet	First Reading	8498.00	feet
Elevation Drill Floor	5480	feet	Depth Driller	8559.00	feet
Elevation Ground Level	5462	feet	Depth Logger	8554.00	feet

MICRO RESISTIVITY LOG