



Weatherford®

**MEASURED DEPTH
X-Y CALIPER
HOLE VOLUME LOG**

COMPANY			WHITTING OIL AND GAS CORPORATION		
WELL			HORSETAIL 30F-1942		
FIELD			REDTAIL		
PROVINCE/COUNTY			WELD		
COUNTRY/STATE			U.S.A. / COLORADO		
LOCATION			SHL: 2323 FNL & 1890 FWL		
PERMIT NUMBER			BHL: 100 FNL & 1485 FWL		
SEC 30	TWP 10N	RGE 57W	Other Services		SPECTRAL GAMMA CROSS DIPOLE SONIC
			ARRAY INDUCTION		
			MICRO IMAGER		
			NEUTRON/DENSITY		
API Number			05-123-38740		
Permanent Datum G.L., Elevation 4780 feet					
Log Measured From KB					
Drilling Measured From K.B. @ 17 FEET					
Date	22-OCT-2014				
Run Number	ONE				
Service Order	6551-101136206				
Depth Driller	13777.00		feet		
Depth Logger	13777.00		feet		
First Reading	13726.00		feet		
Last Reading	6050.00		feet		
Casing Driller	6064.00		feet		
Casing Logger	6070.00		feet		
Bit Size	6.750		inches		
Hole Fluid Type	WBM				
Density / Viscosity	9.50	lb/USg	44.00	type in	
PH / Fluid Loss	8.90		4.80	ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.05 @ 69.2		ohm-m		
Rmf @ Measured Temp	0.84 @ 69.2		ohm-m		
Rmc @ Measured Temp	1.26 @ 69.2		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.36 @211.0		ohm-m		
Time Since Circulation	1 HOUR				
Max Recorded Temp	212.00		deg F		
Equipment / Base	18086		Casper		
Recorded By	C CULLEN				
Witnessed By	M ODEBERG				
WSL	GEOLOGIST				
	WSL				

BOREHOLE RECORD				Last Edited: 22-OCT-2014 15:42	
Bit Size inches		Depth From feet		Depth To feet	
6.750		6064.00		13777.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	7.000	0.00	6064.00	29.00	

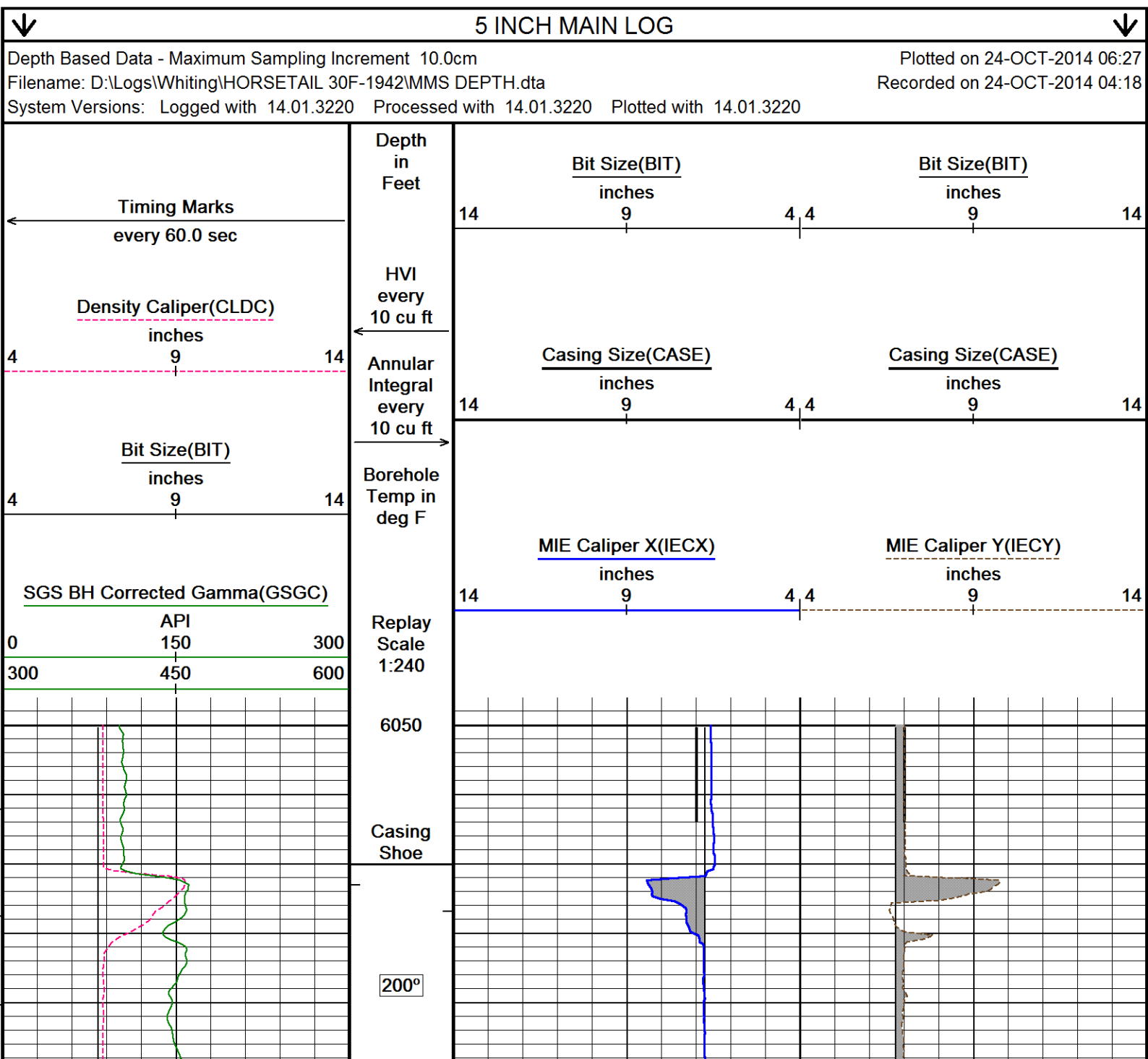
REMARKS
LOGGED WITH WLS 14.01.3220
LOGGED USING MESSENGER SHUTTLE METHOD OF DEPLOYMENT
HARDWARE: MDN: MIS-A SINGLE BOWSPRING USED ABOVE MDN MPD: 4INCH PROFILE PLATE USED, MIS-A SINGLE BOWSPRING USED BELOW MPD MSD: STANDOFFS ON THE RECEIVER AND TRANSMITTER CMI: OVER BODY BASKET AND MIS-D BASKETS PLACED ABOVE AND BELOW FOR CENTRALIZATION SGS: RAN BELOW CMI. ECCENTRALIZED WITH SKJ.
2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
LAST 3 STANDS WERE PUMPED ON AT 4BBLs/MIN AND ROTATED AT 25 RPM TO REACH TD.
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
ANNULAR HOLE VOLUME FROM TD TO 7"-29# CASING AT 6070 FEET = 1070 CUBIC FEET

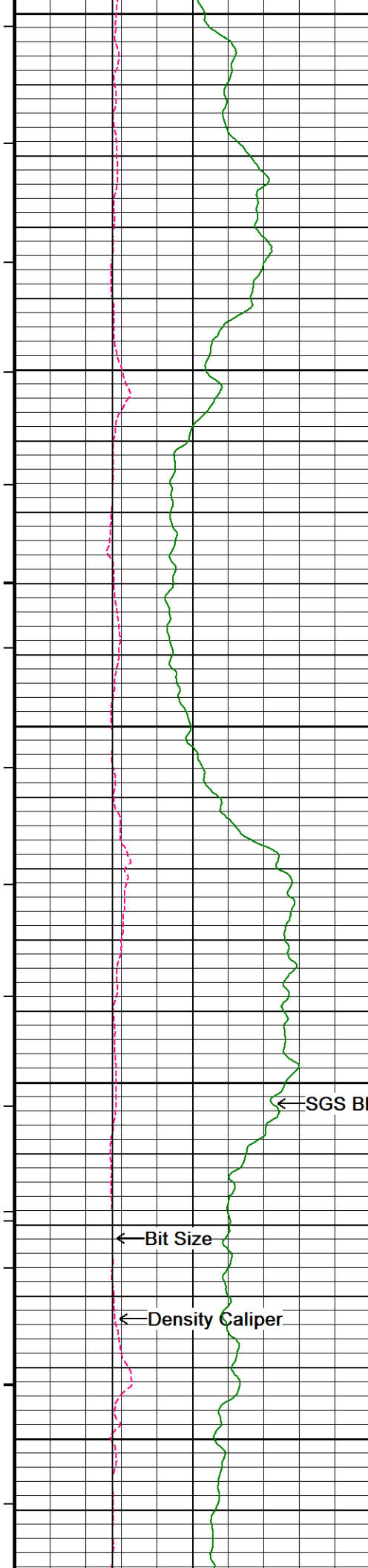
ANNULAR HOLE VOLUME FROM TD TO 7"-29# CASING AT 6070 FEET = 1920 CUBIC FEET.

OPERATORS: S.LANDON, J. GERDES

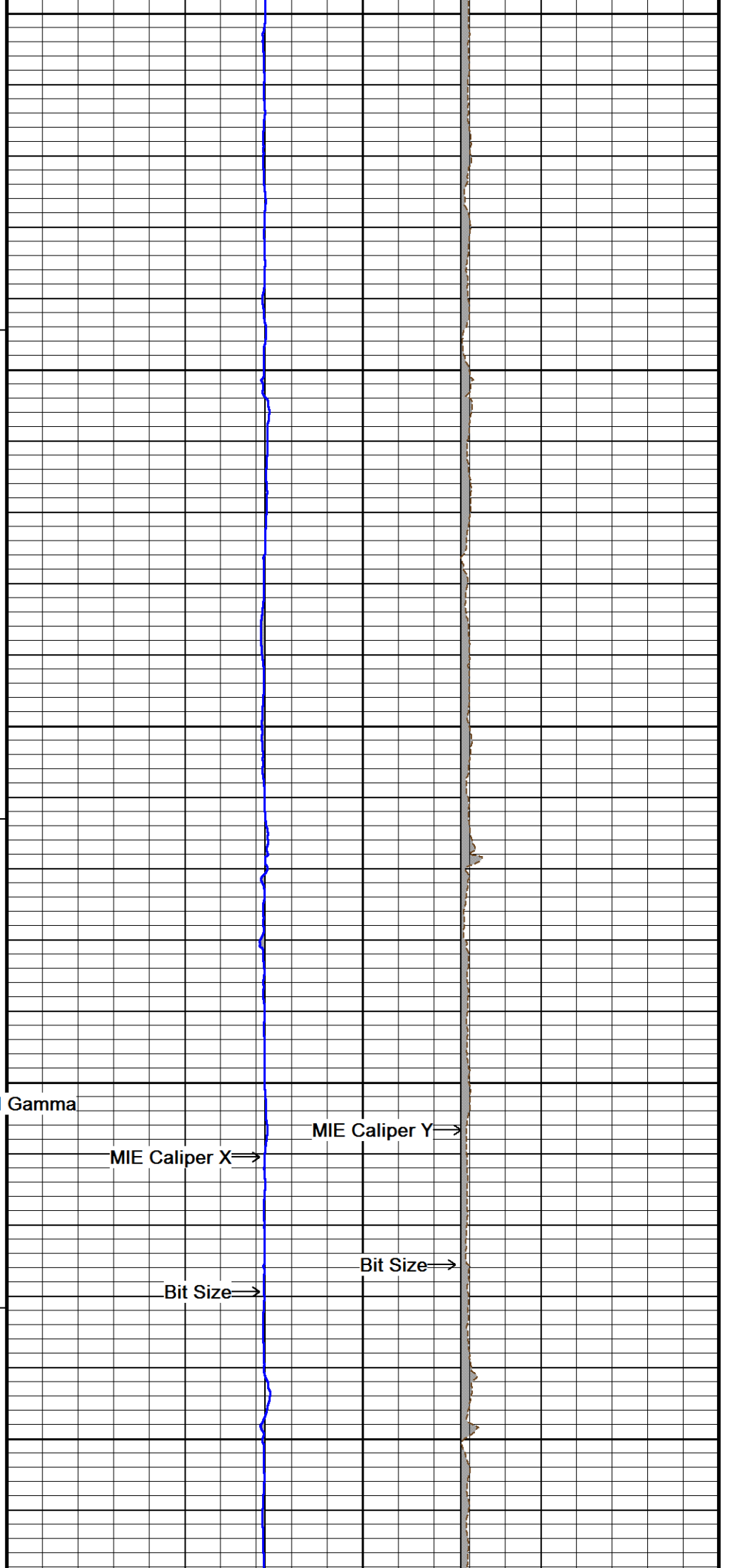
RIG: XTREME 18

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.

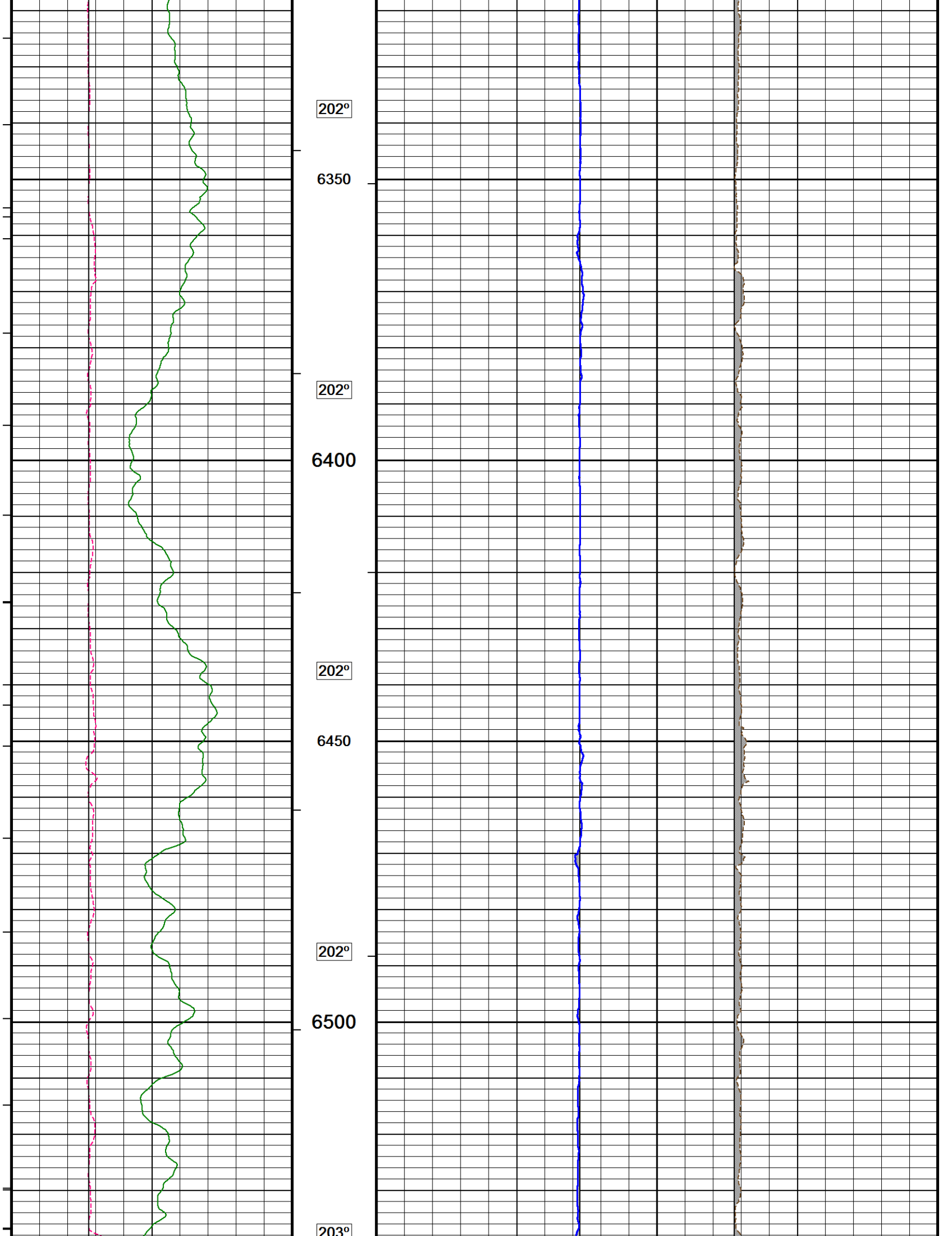


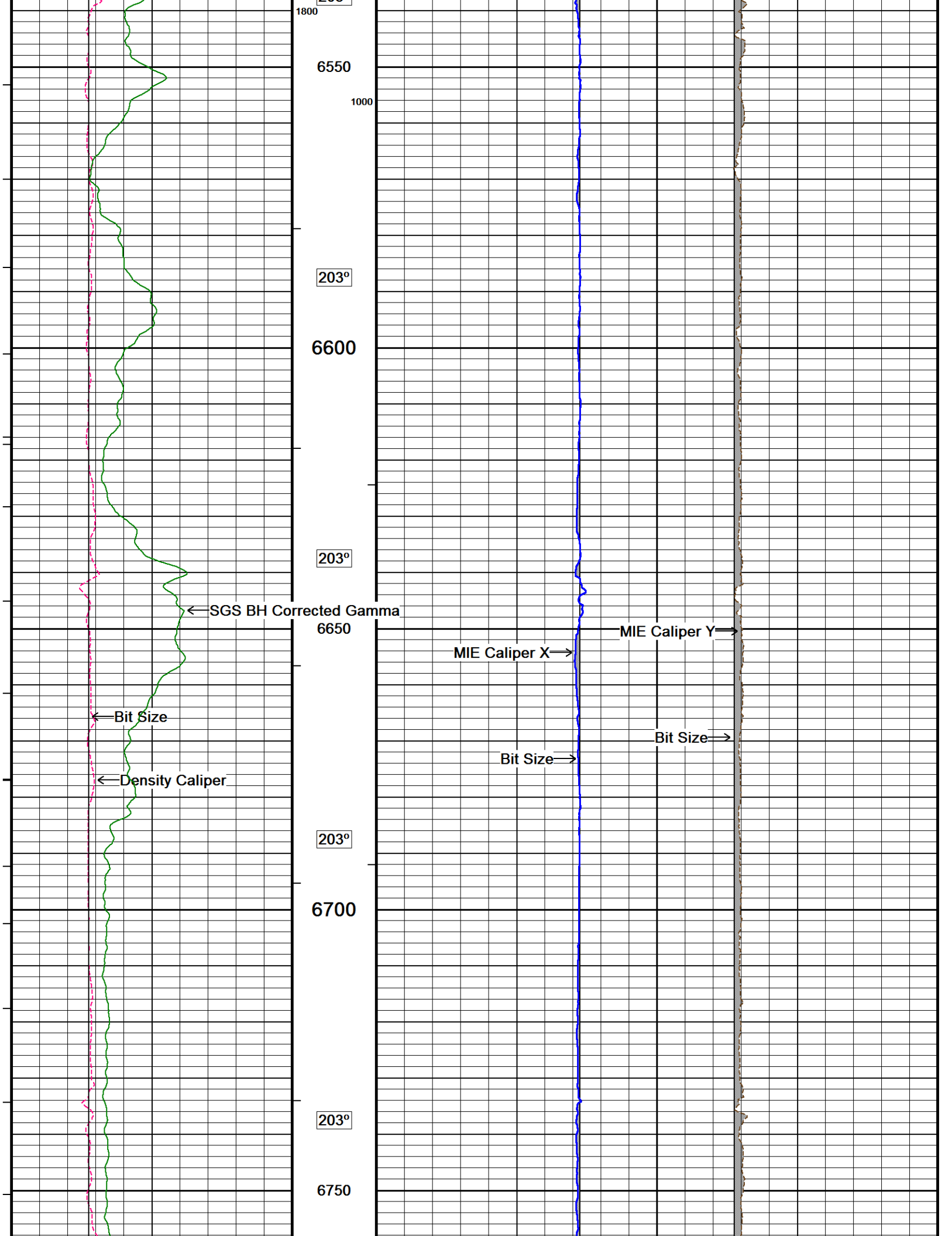


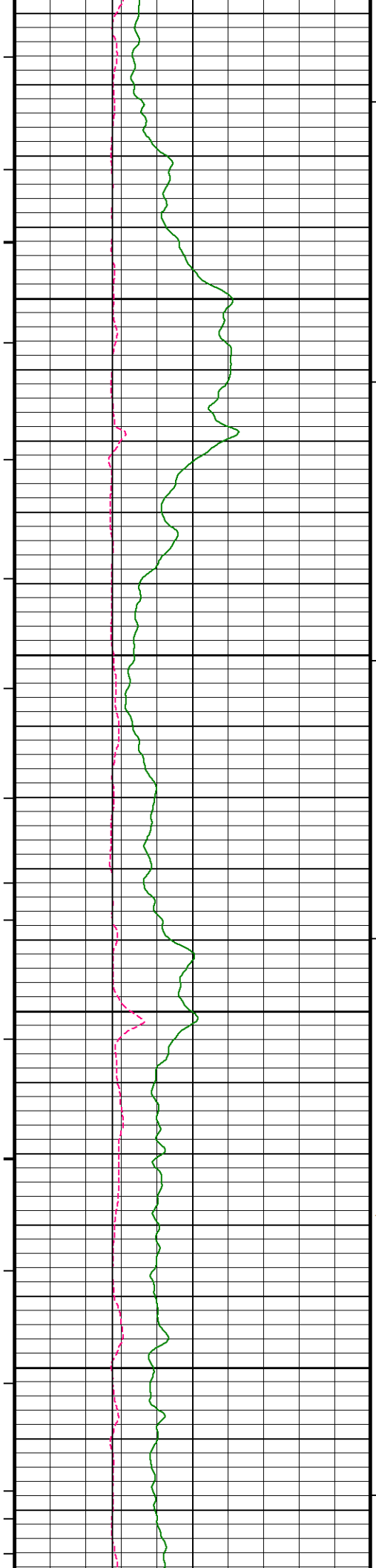
6100
200°
1900 6150
201°
6200
201°
6250
← SGS BH Corrected Gamma
← Bit Size
← Density Caliper
202°
6300



MIE Caliper X
MIE Caliper Y
Bit Size







204°

6800

204°

6850

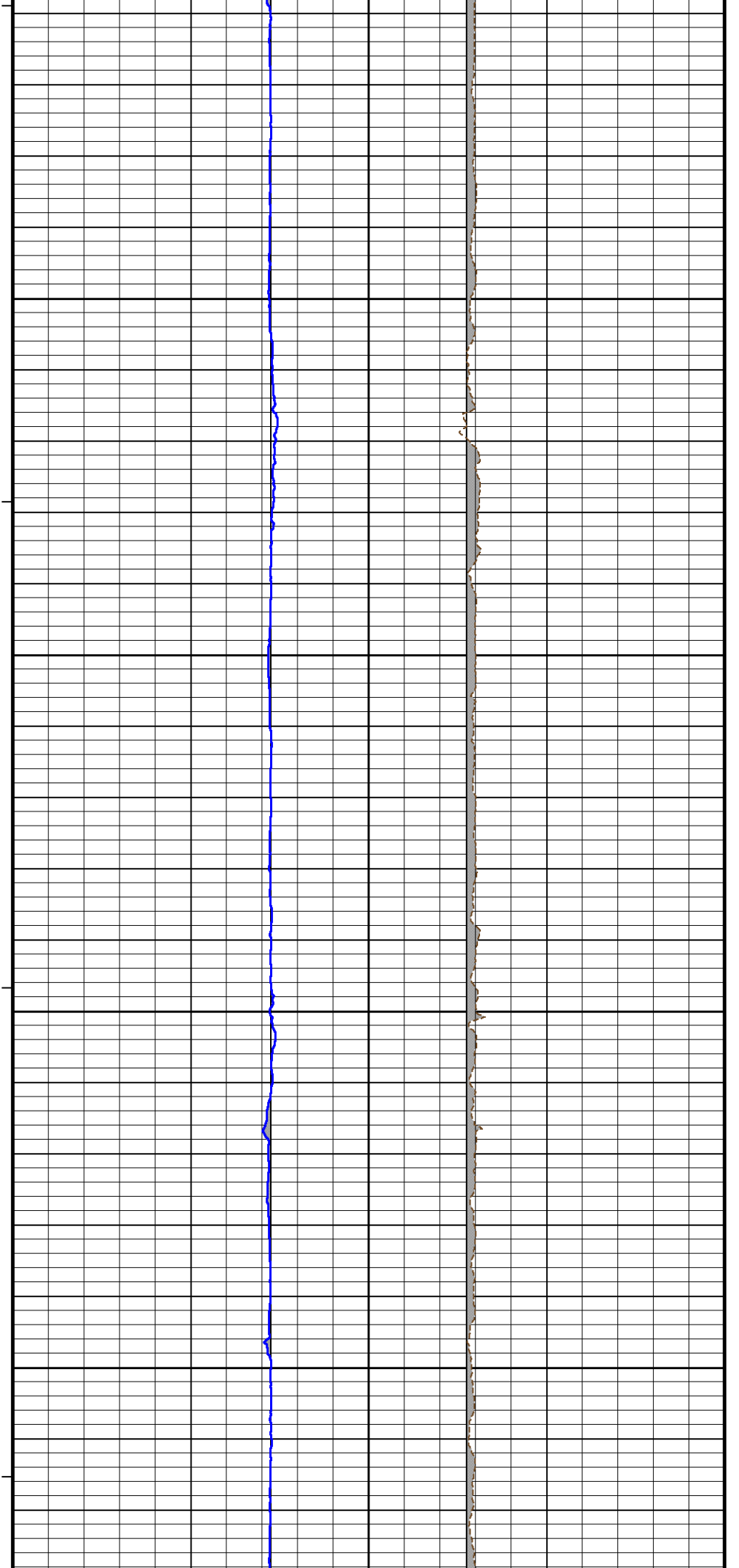
204°

6900

1700

204°

6950



204°

6800

204°

6850

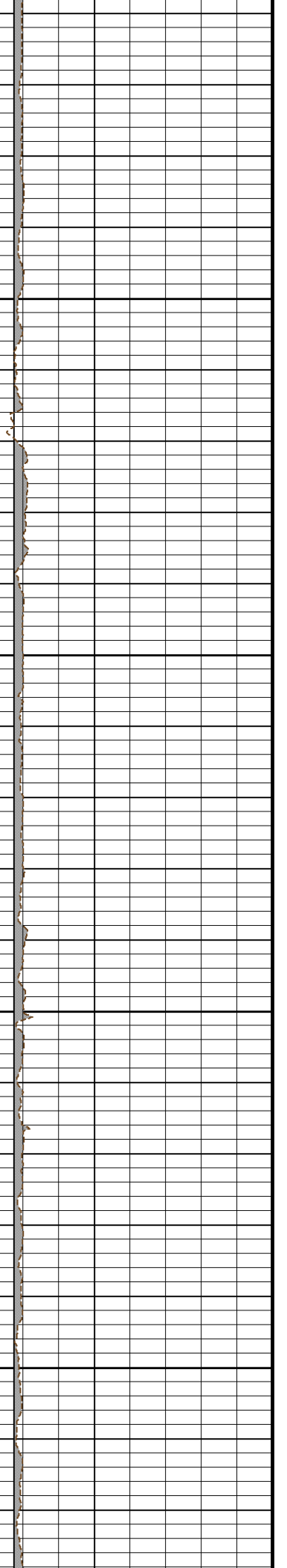
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6900

1700

204°

6950



204°

6800

204°

6850

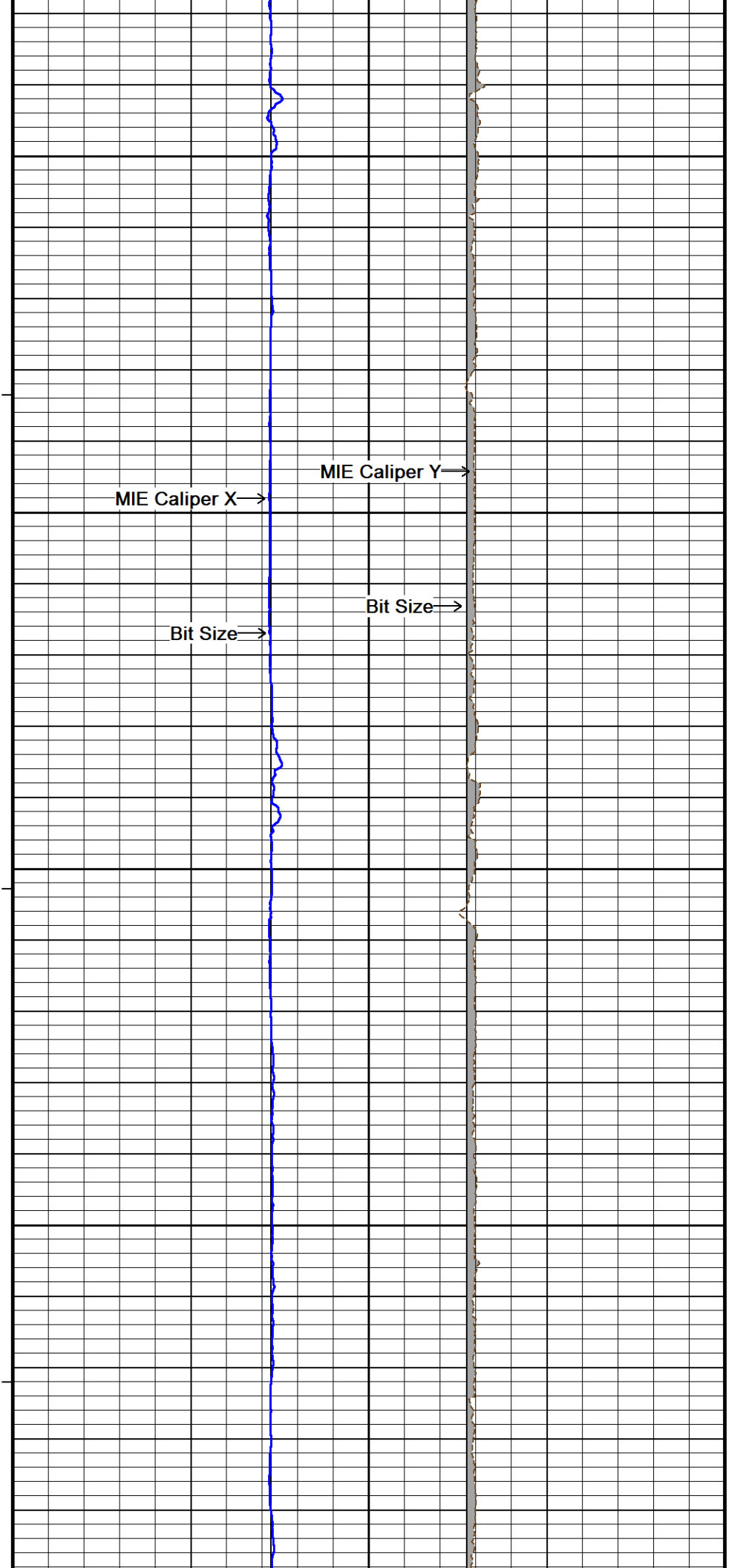
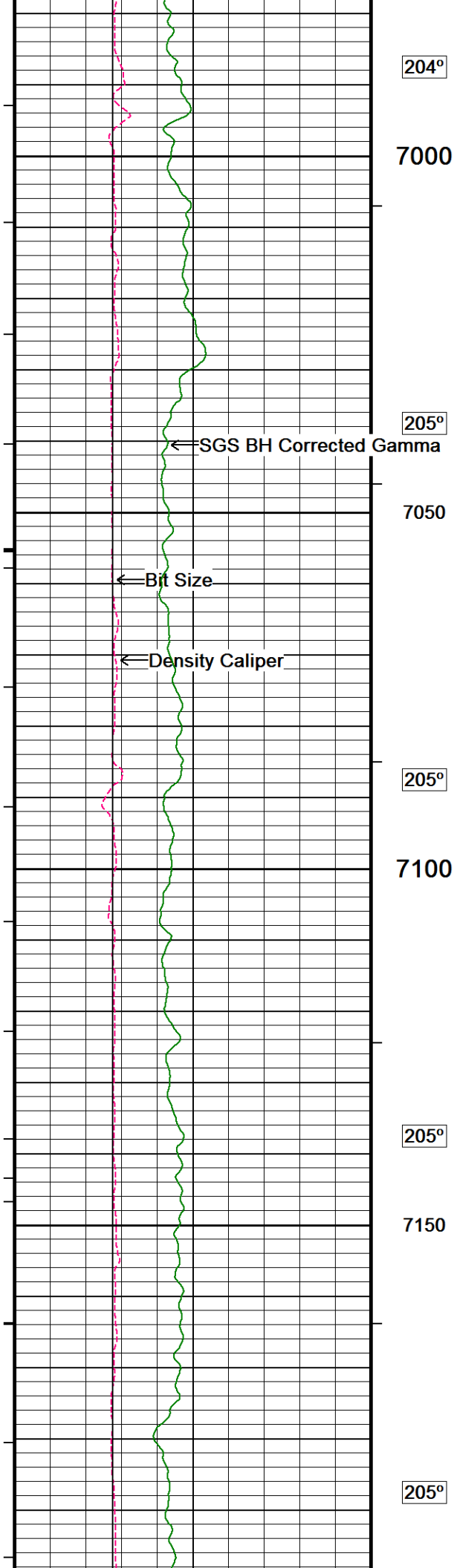
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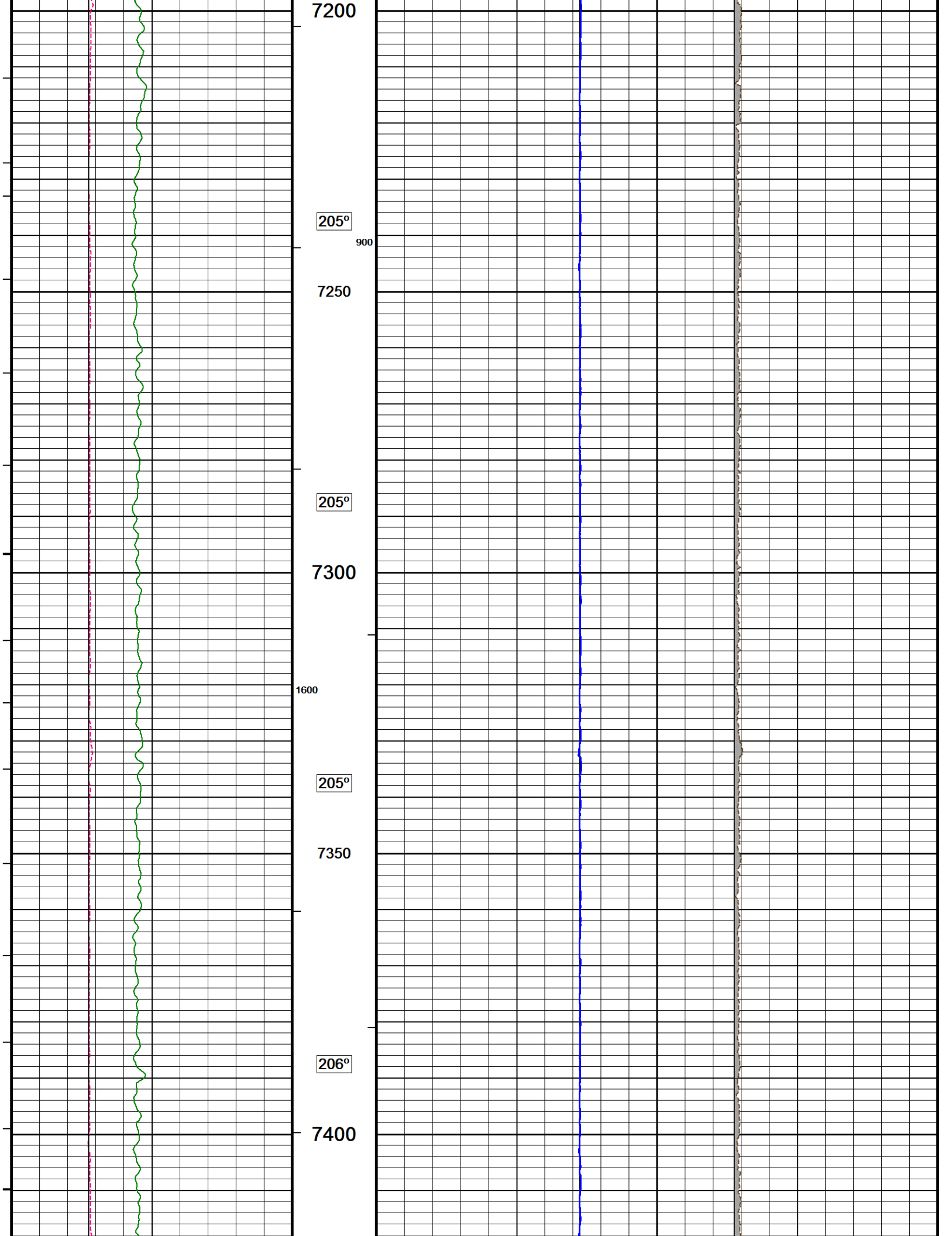
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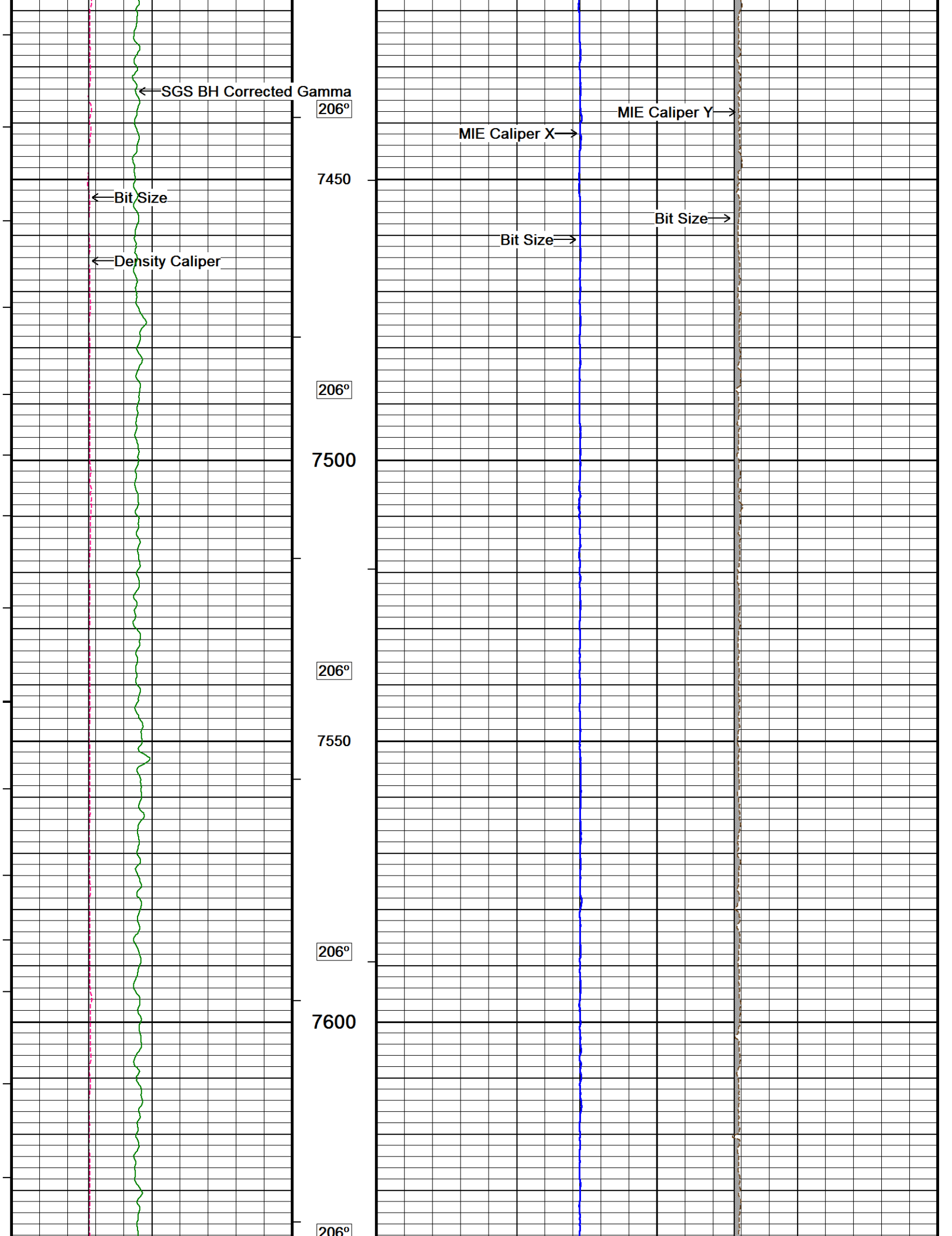
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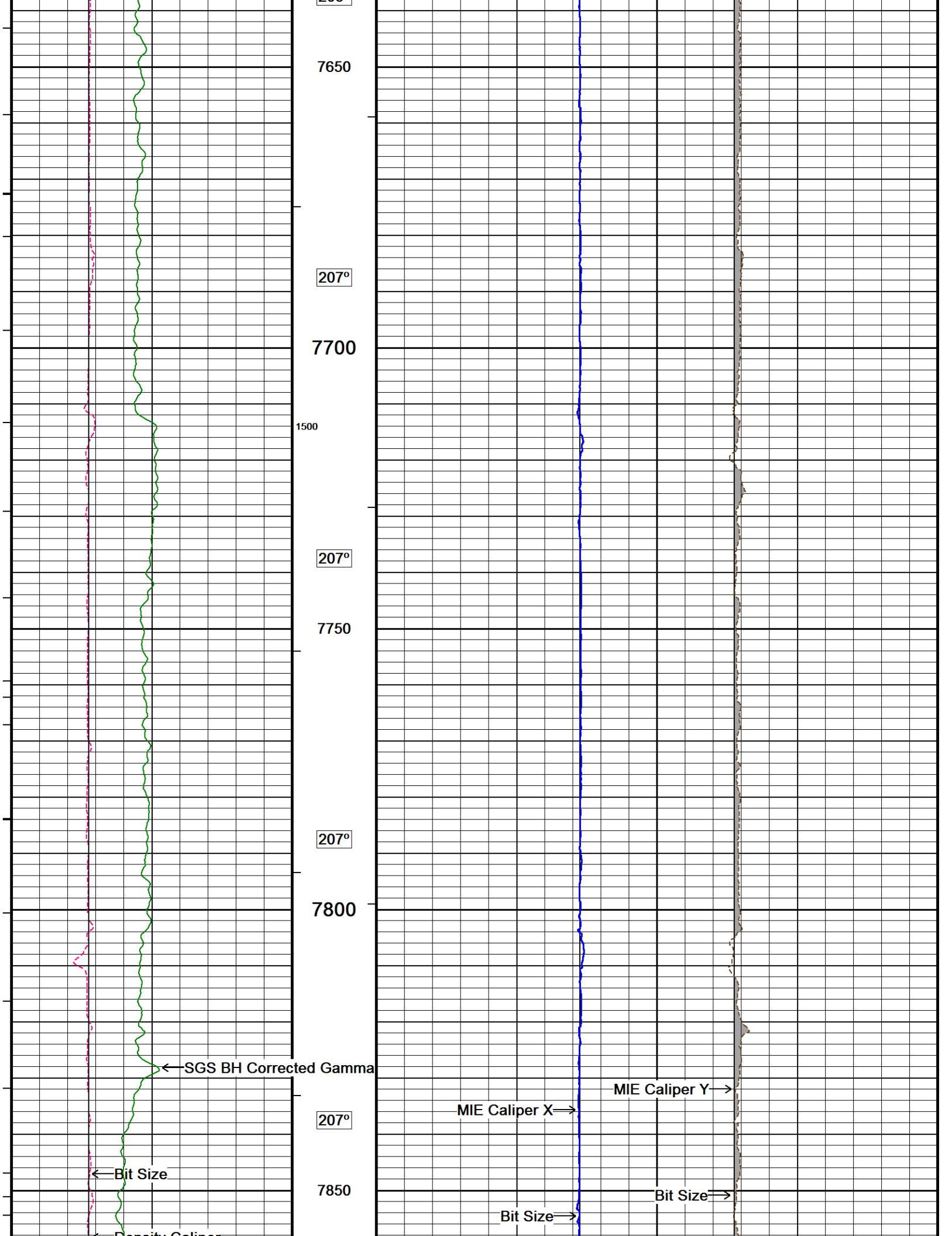
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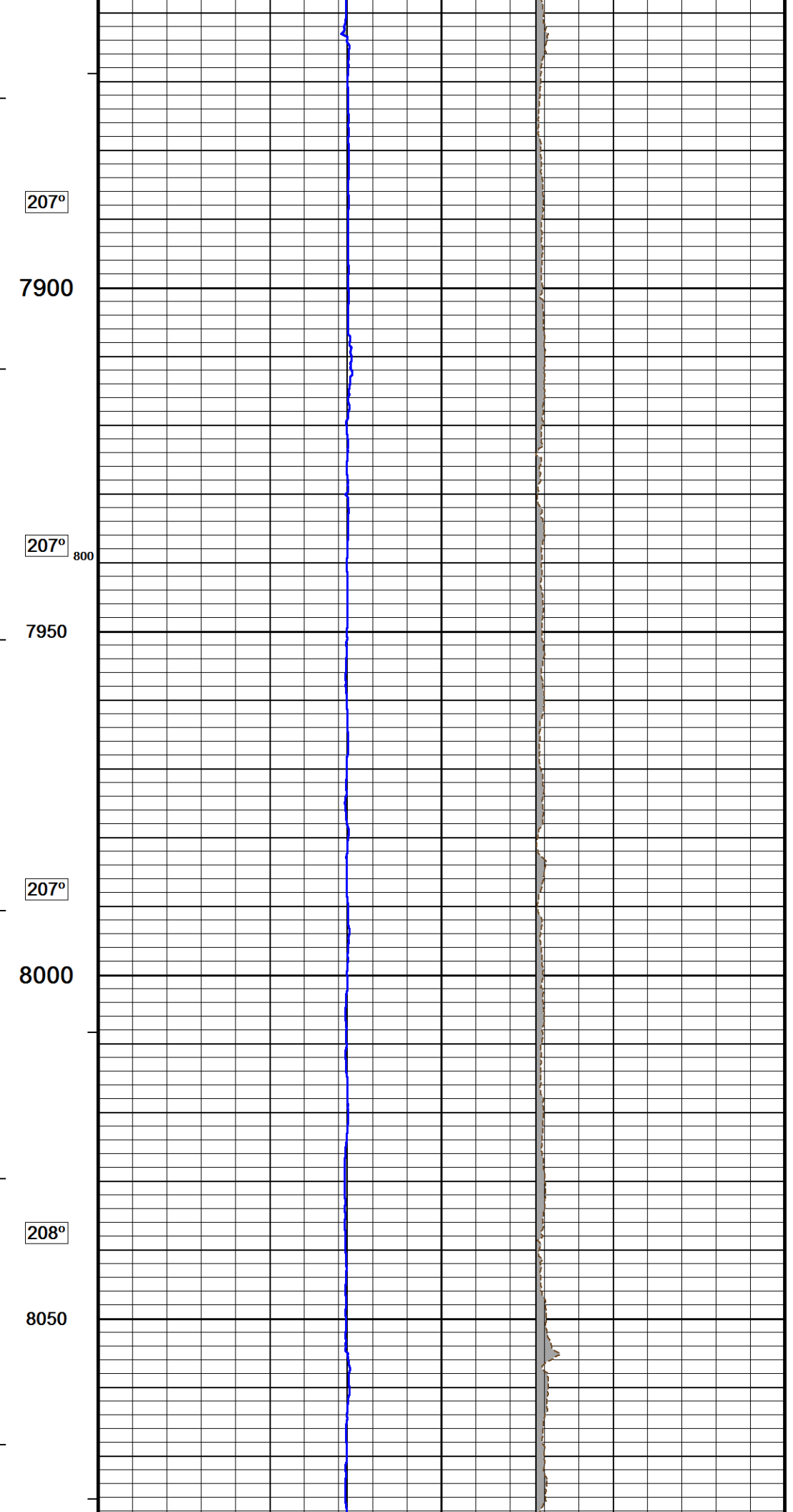
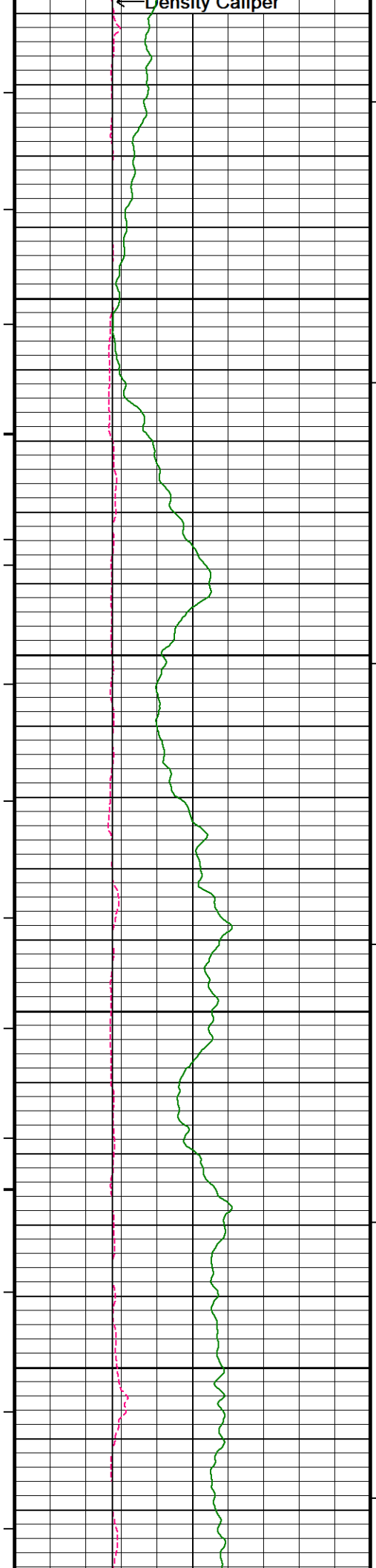
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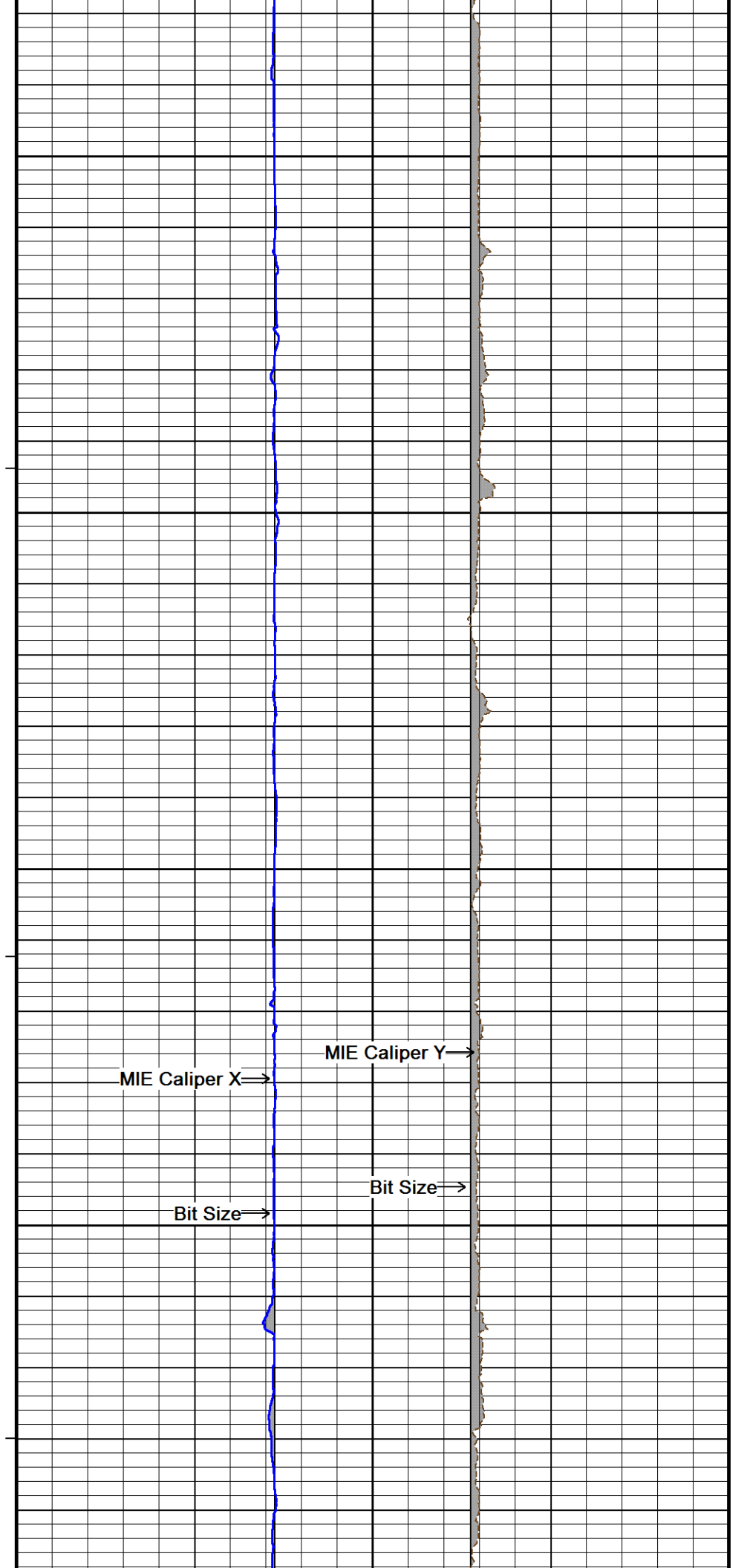
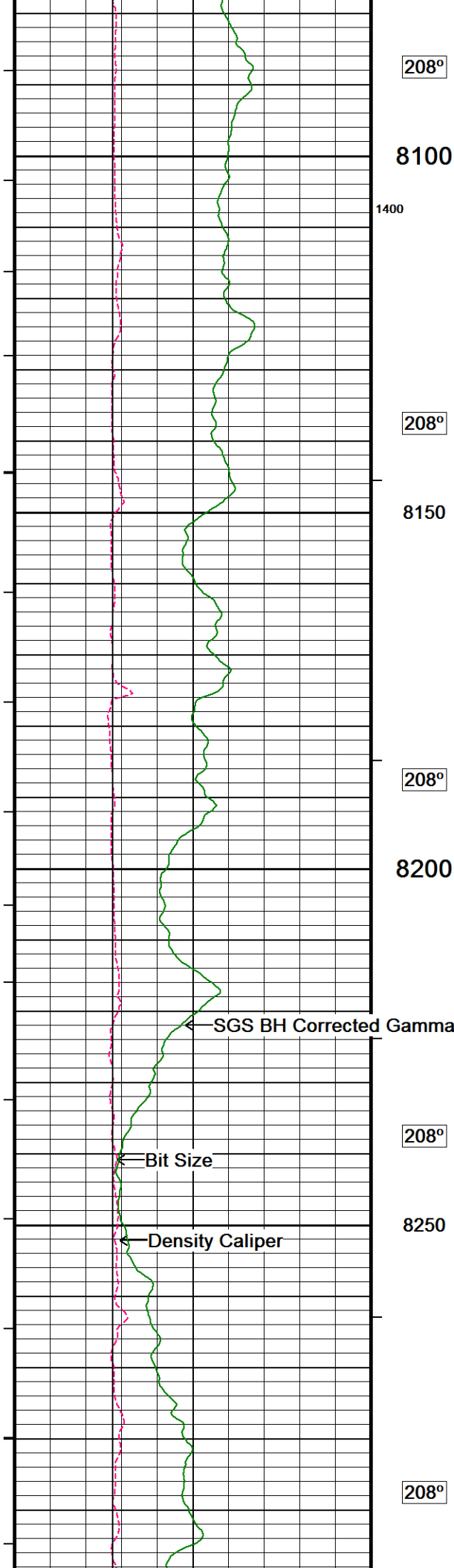


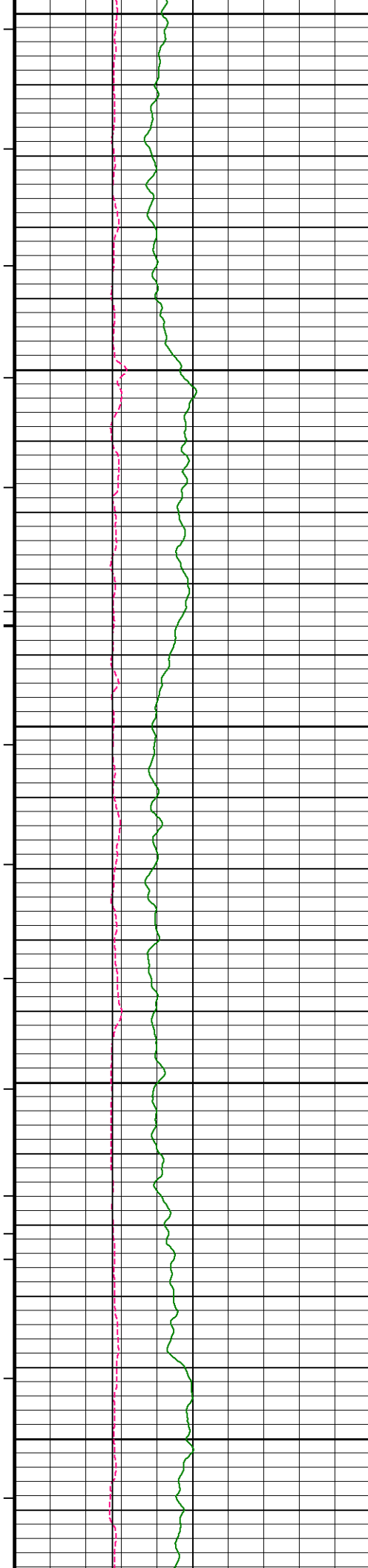




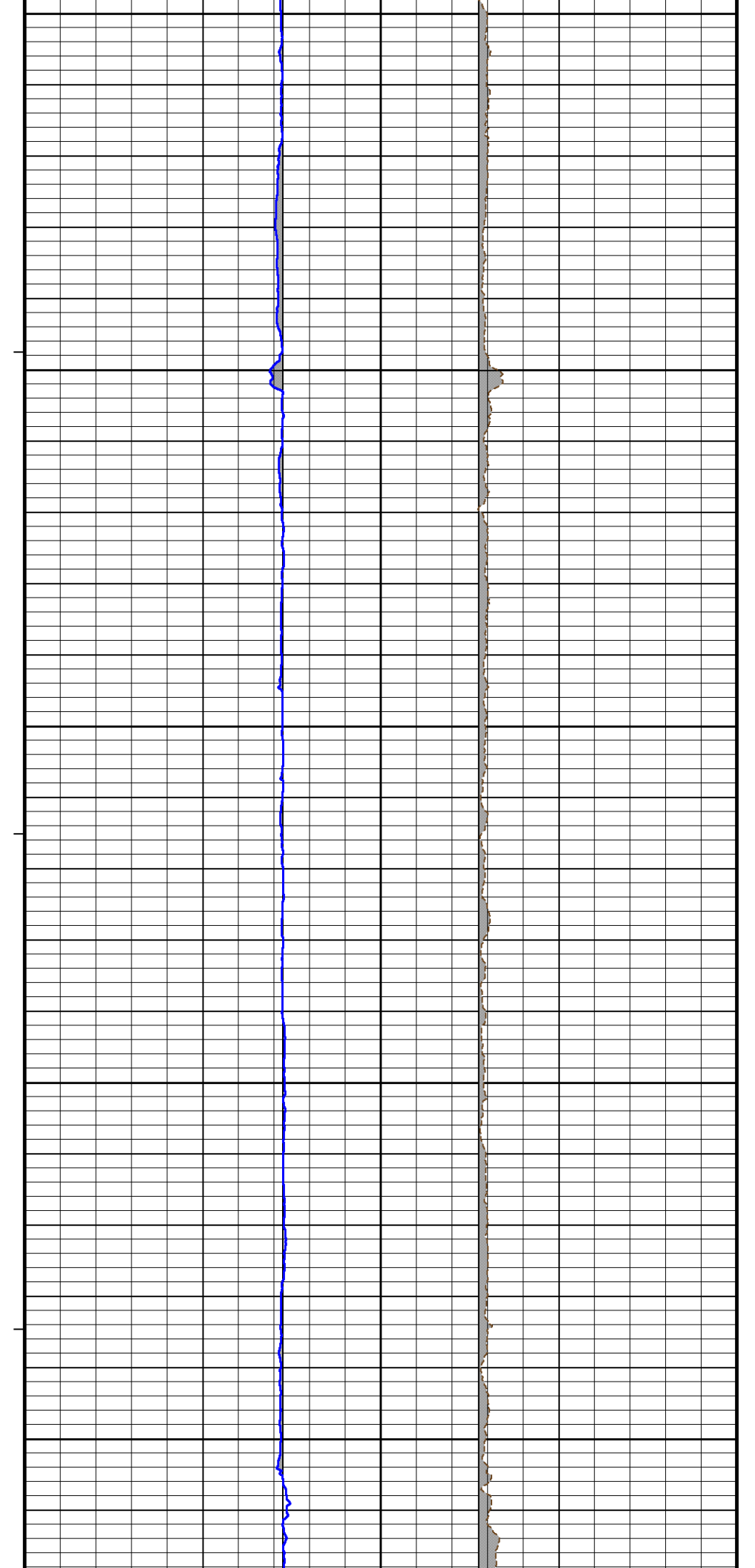


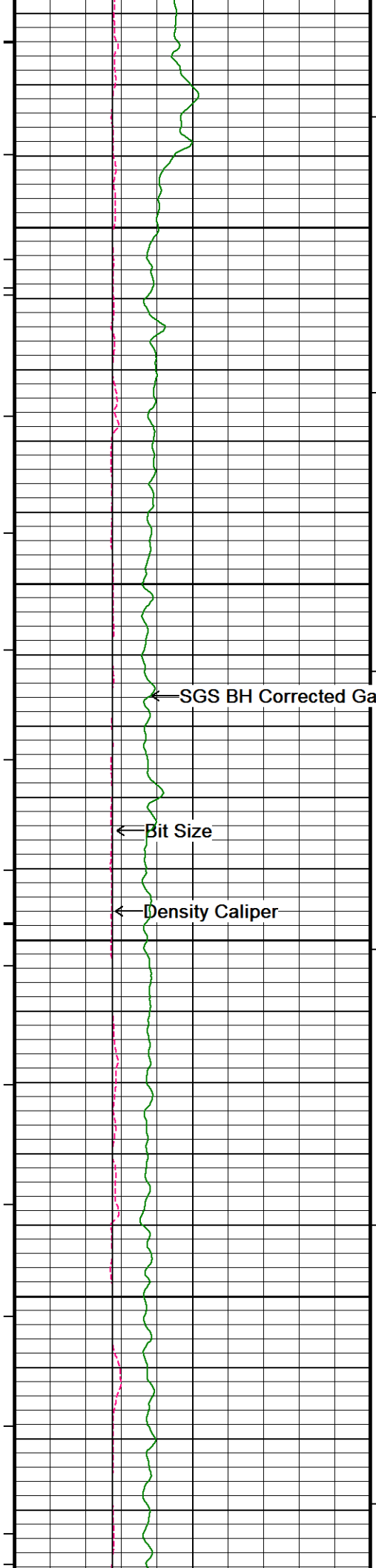






8300
208°
8350
209°
8400
209°
8450
209°
1300
8500





209°

8550

209°

8600

700

209°

8650

209°

8700

209°

← SGS BH Corrected Gamma

← Bit Size

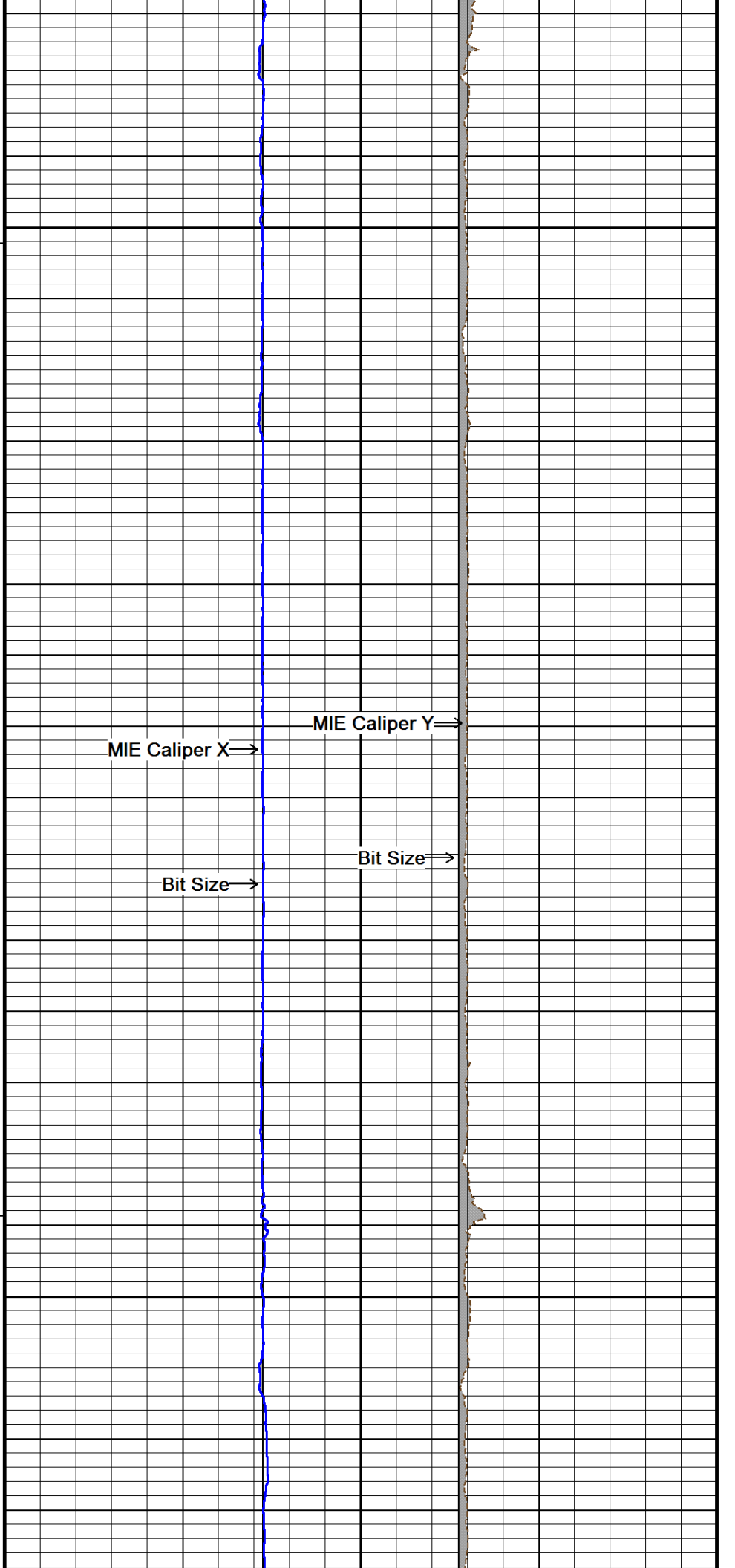
← Density Caliper

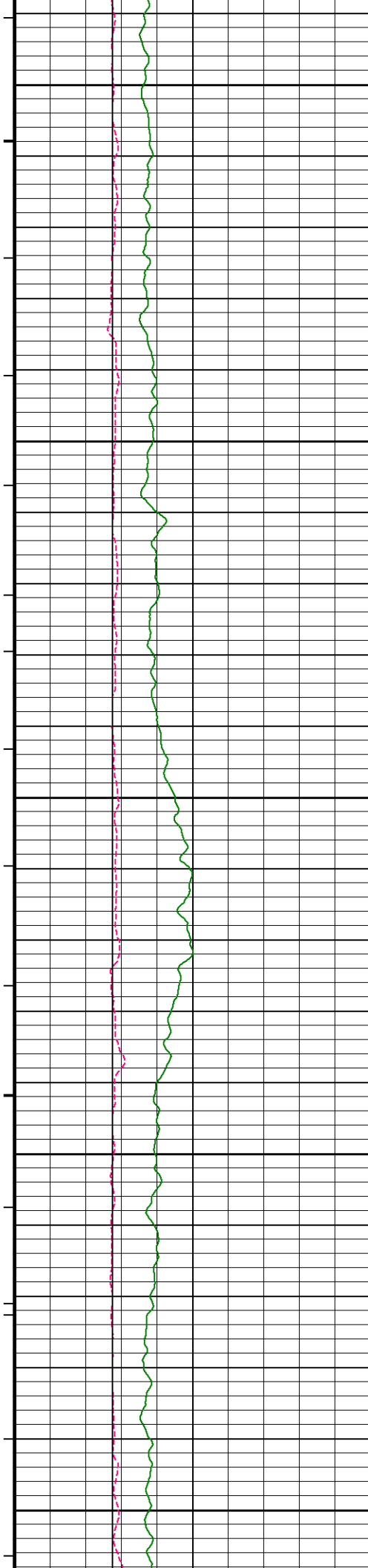
MIE Caliper X →

Bit Size →

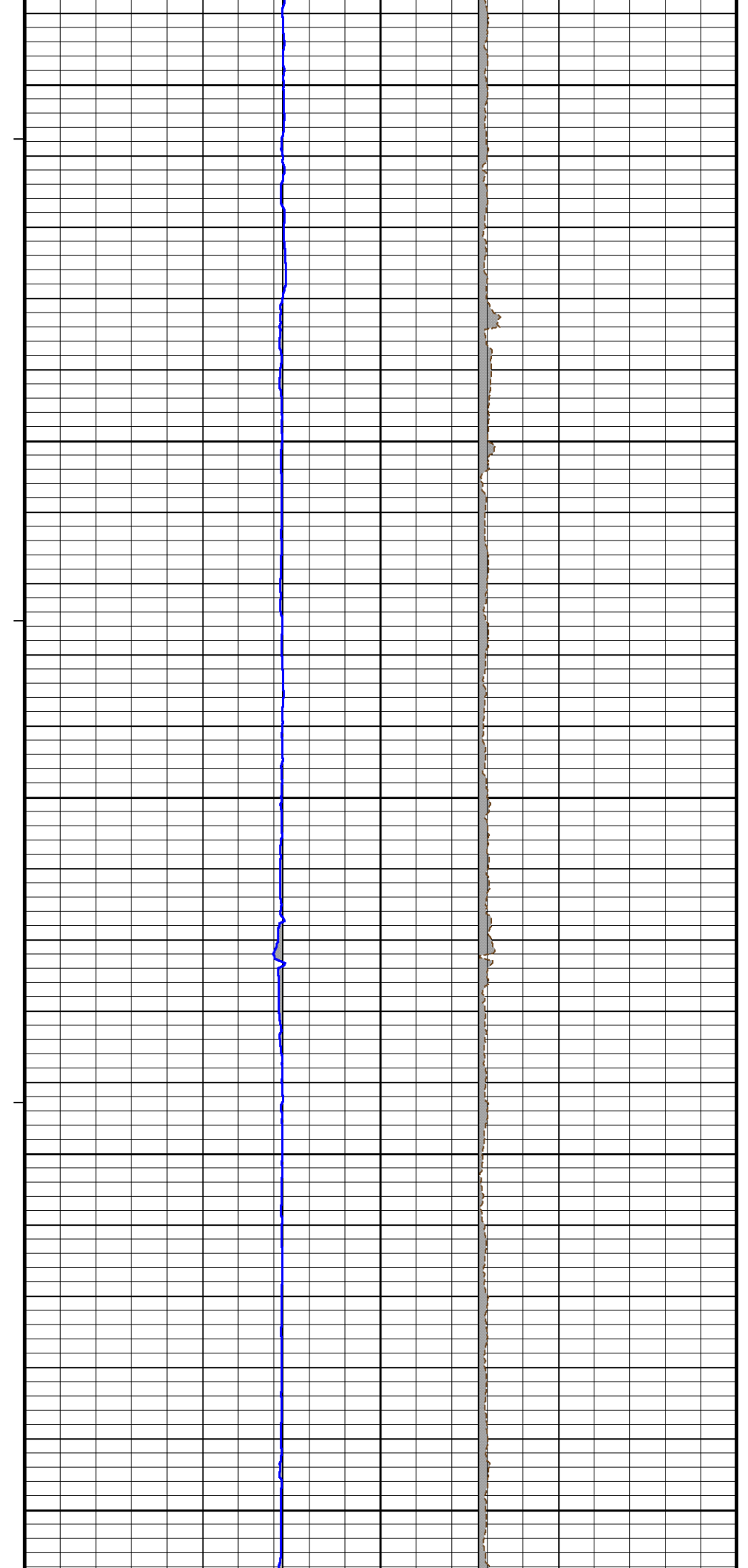
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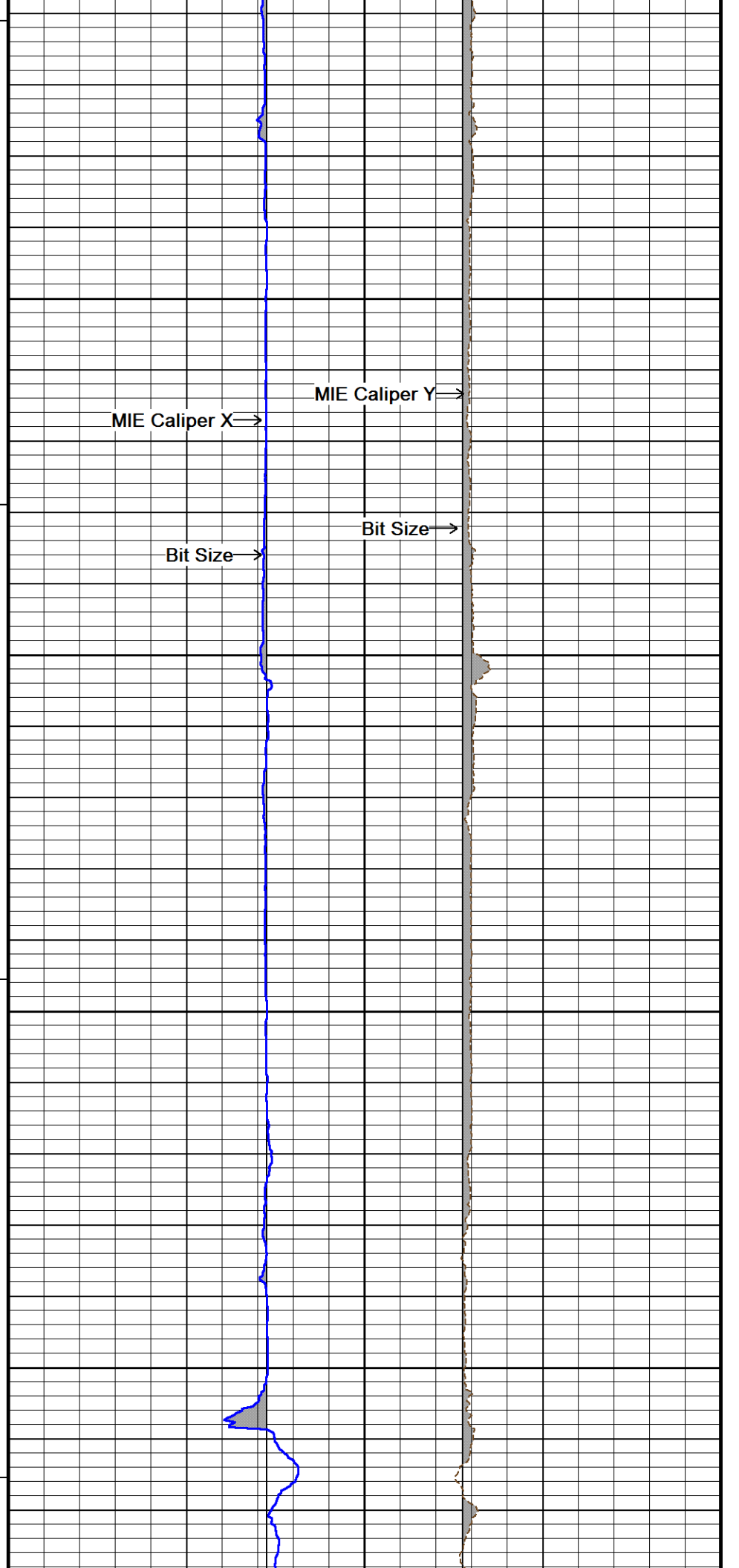
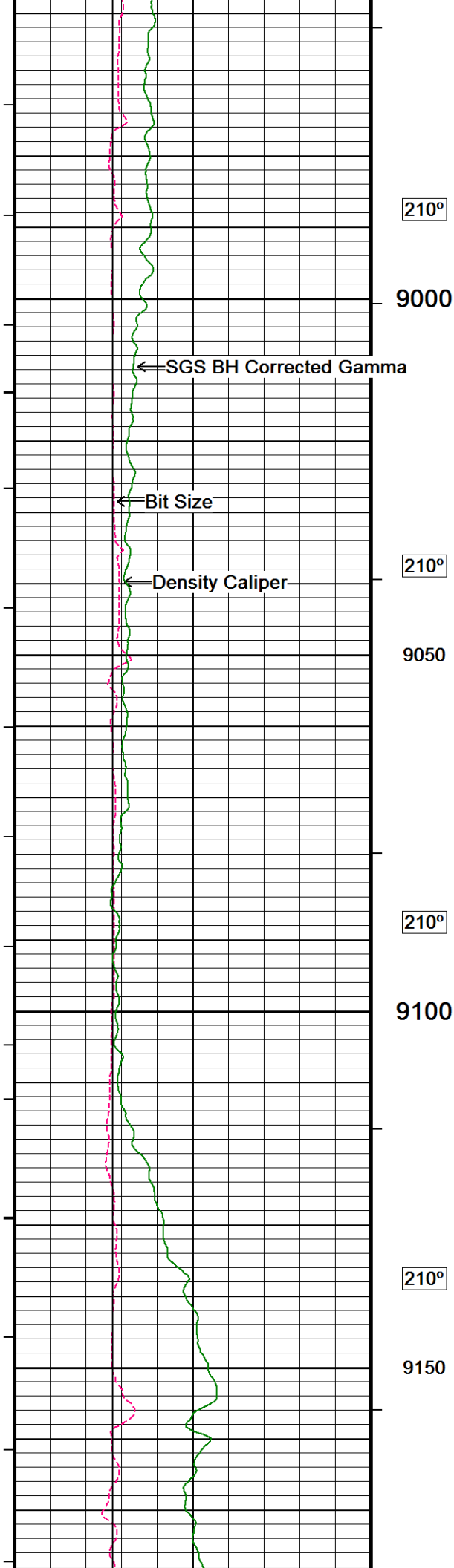
Bit Size →

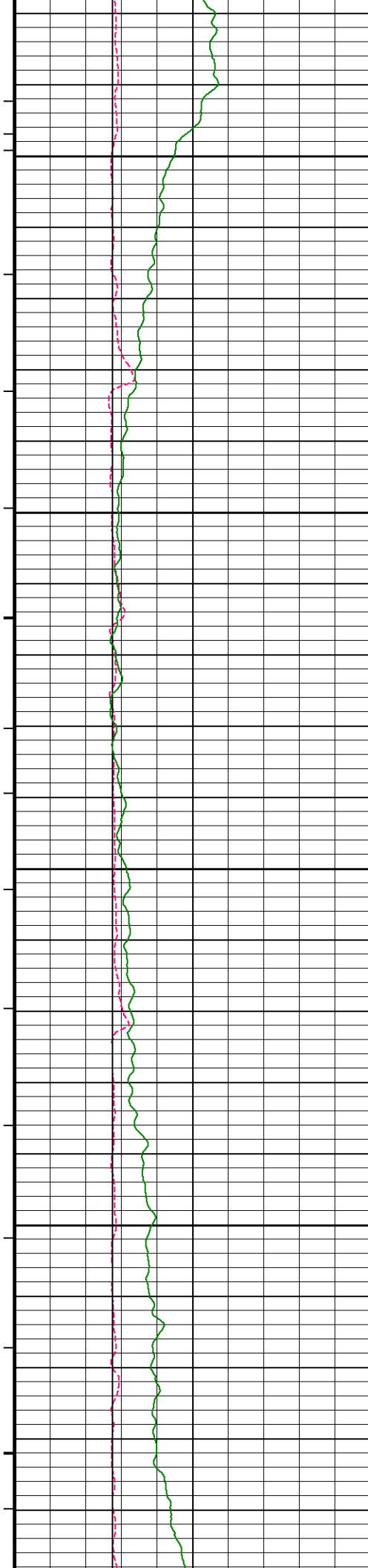




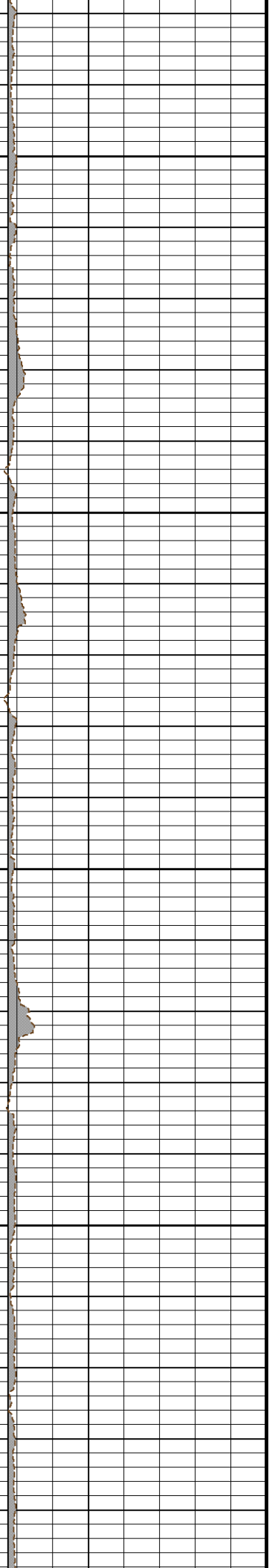
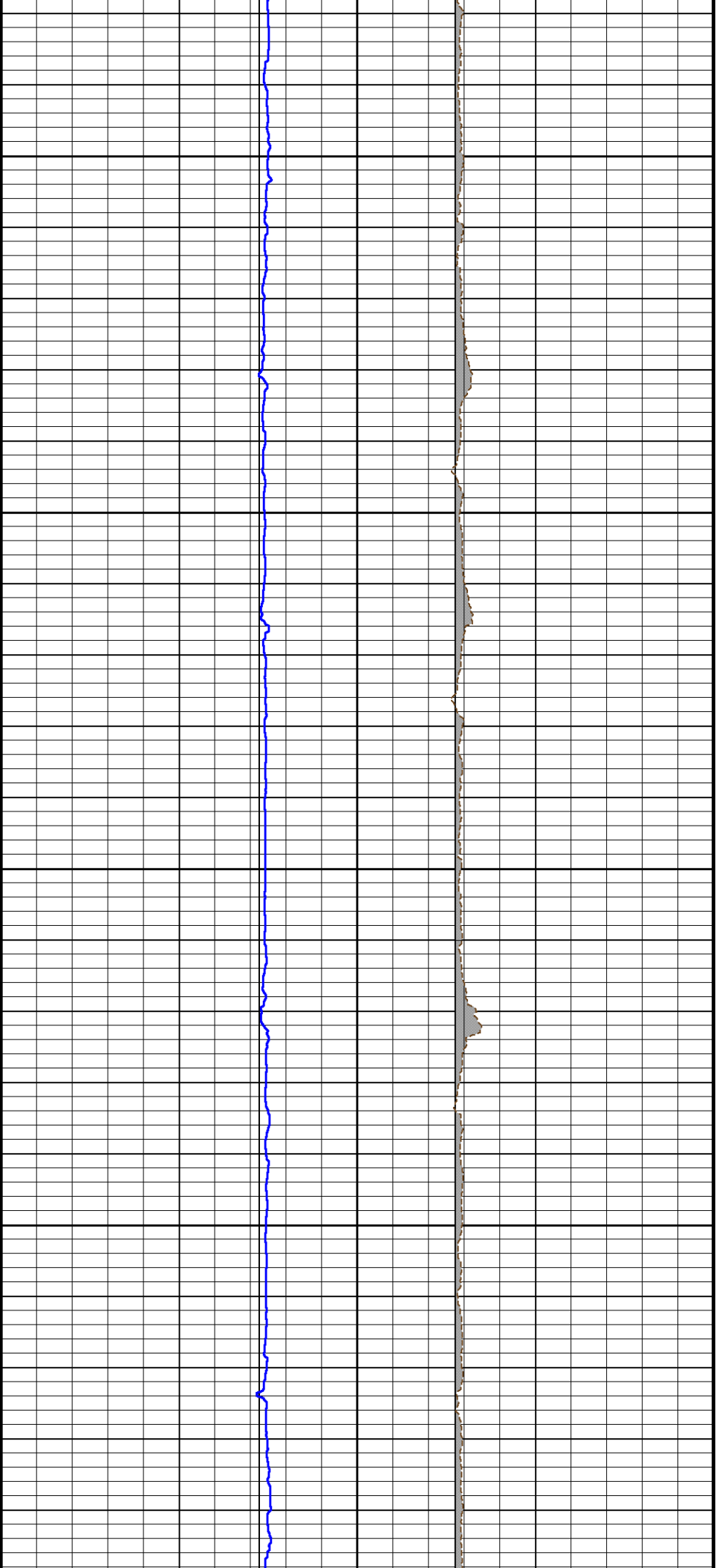
200
8750
210°
8800
210°
8850
1200
210°
8900
210°
8950

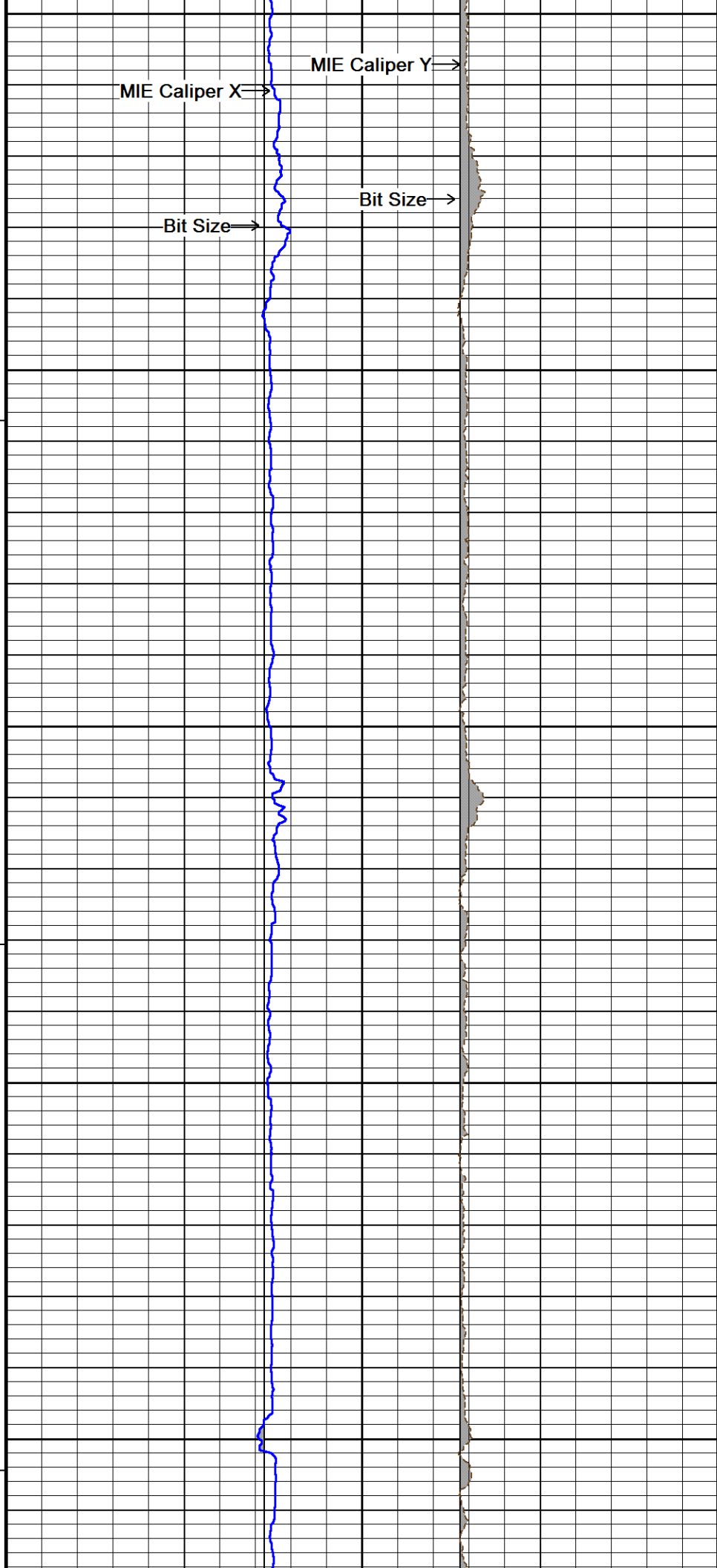
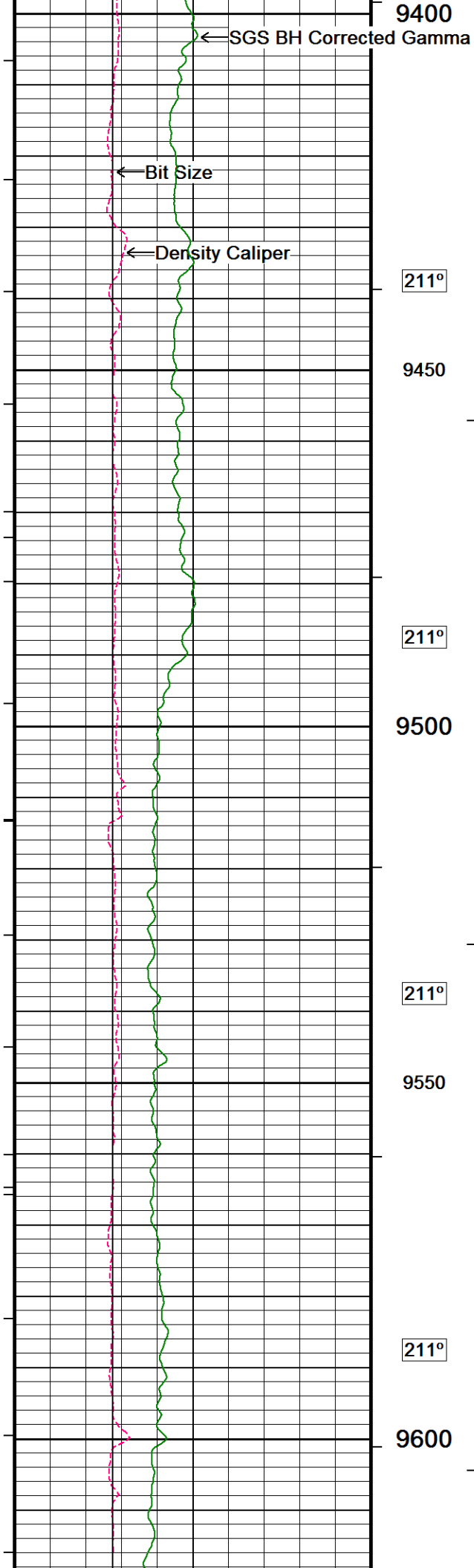


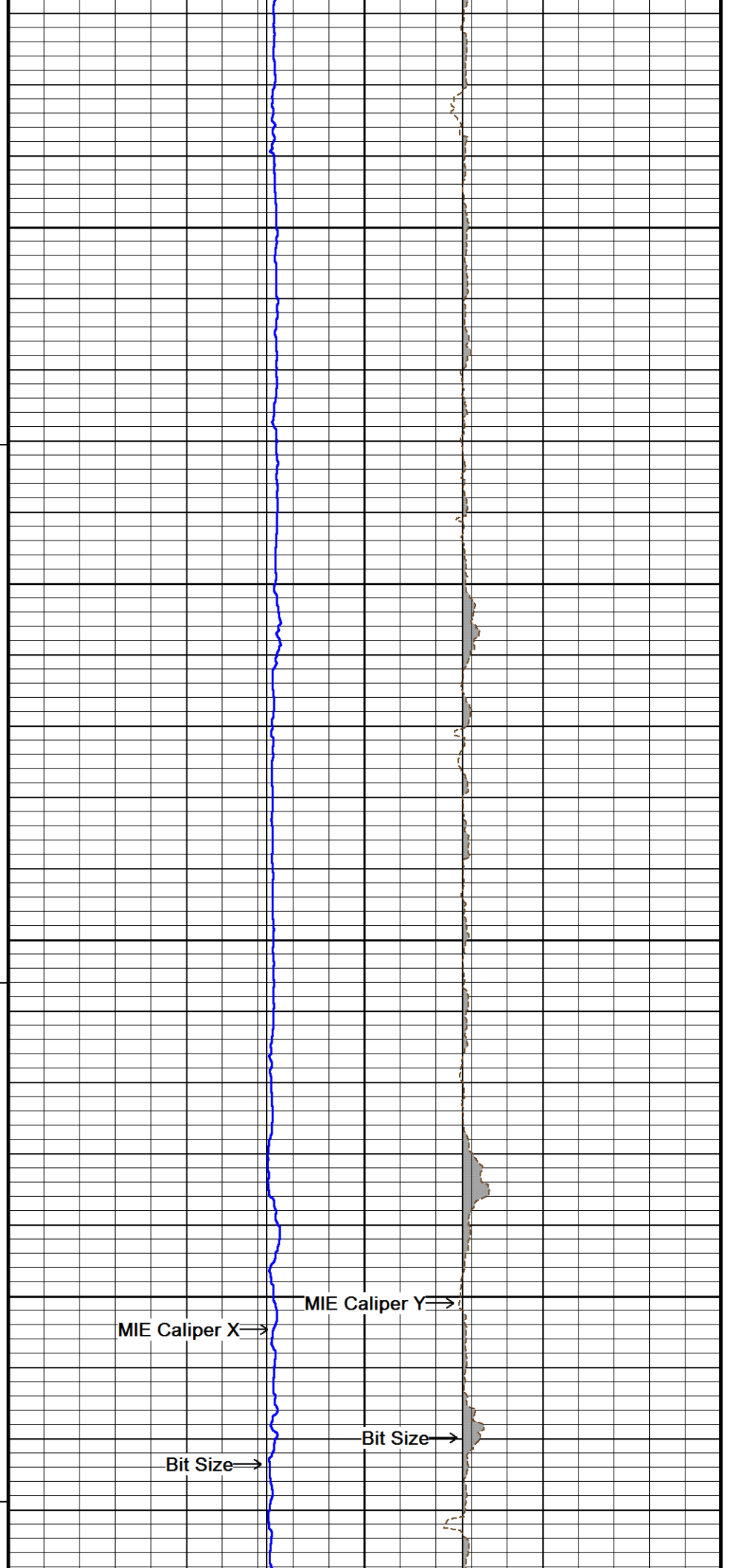
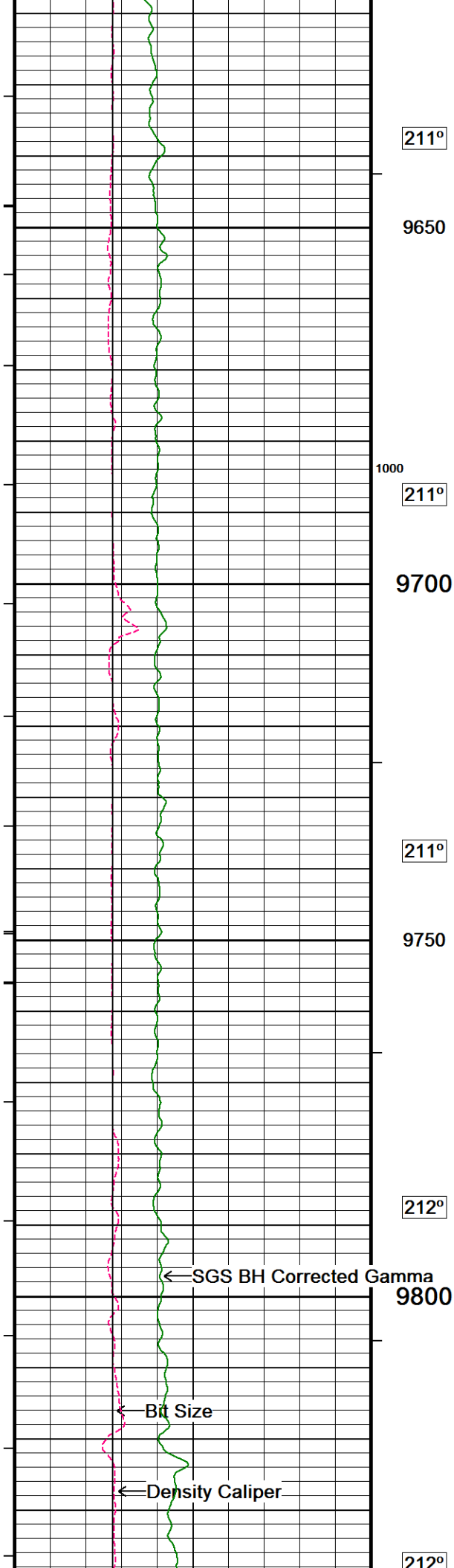


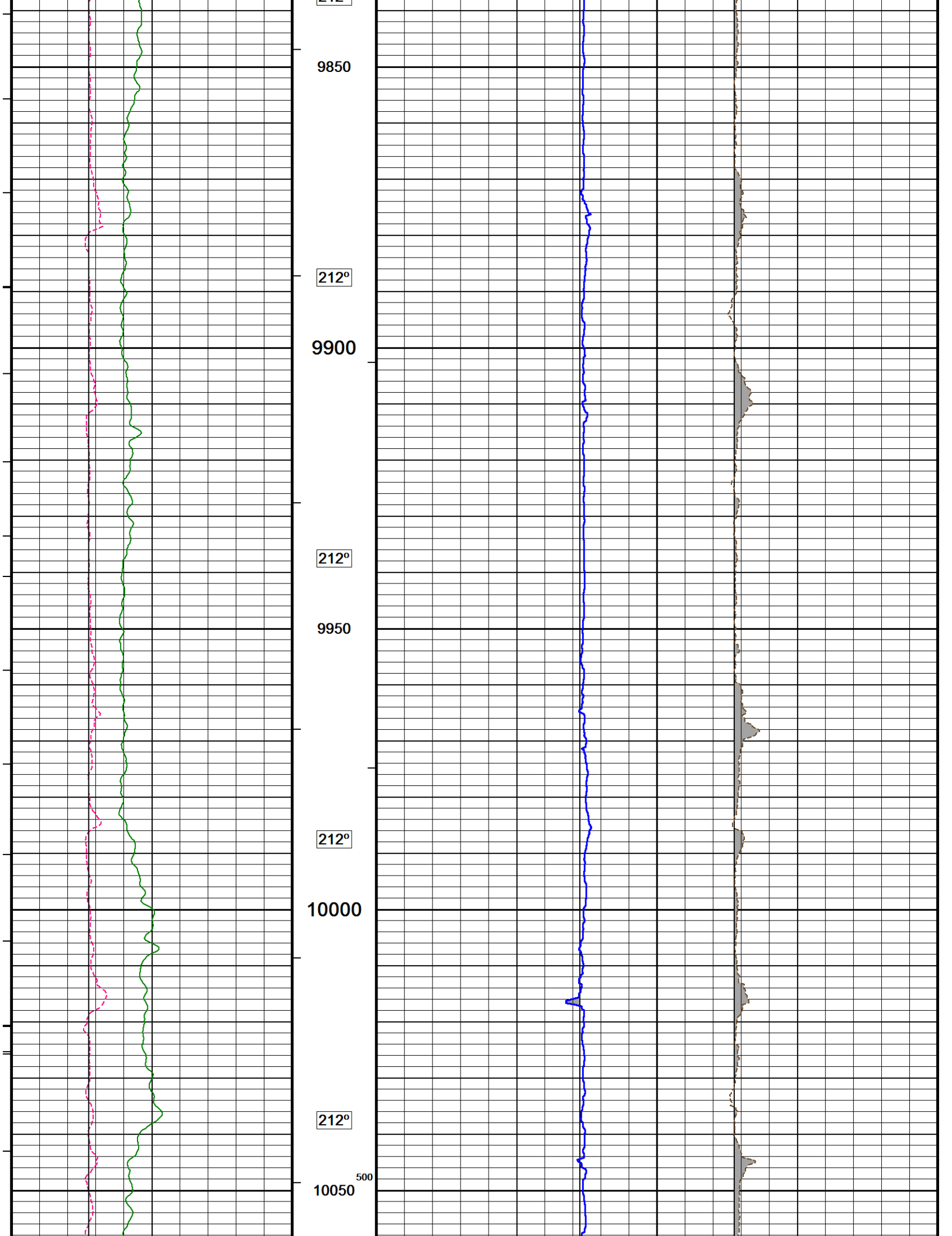


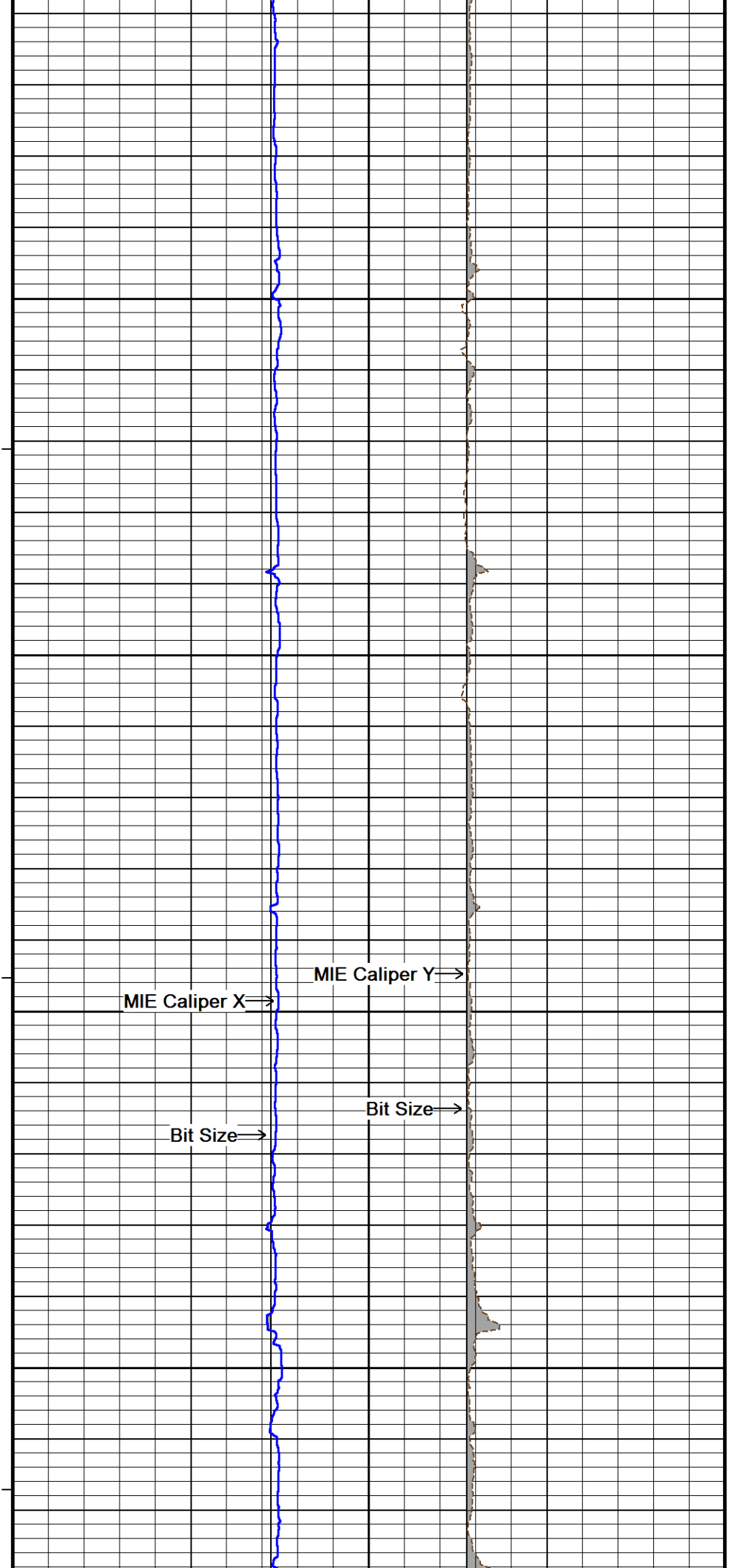
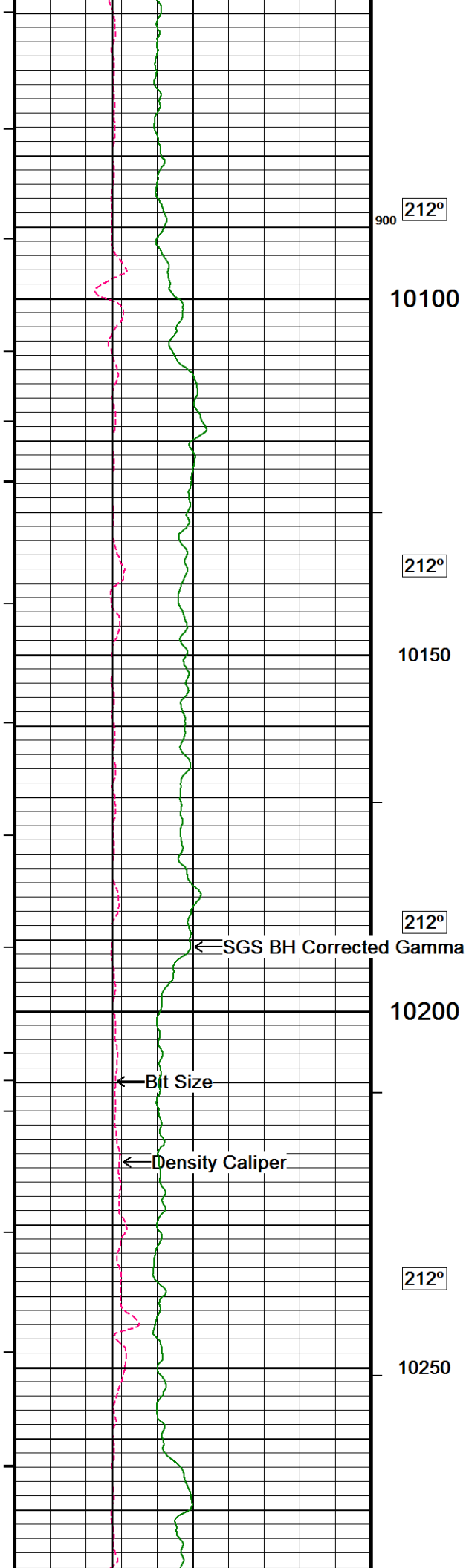
210°
9200
210°
9250
1100
211°
9300
600
211°
9350
211°

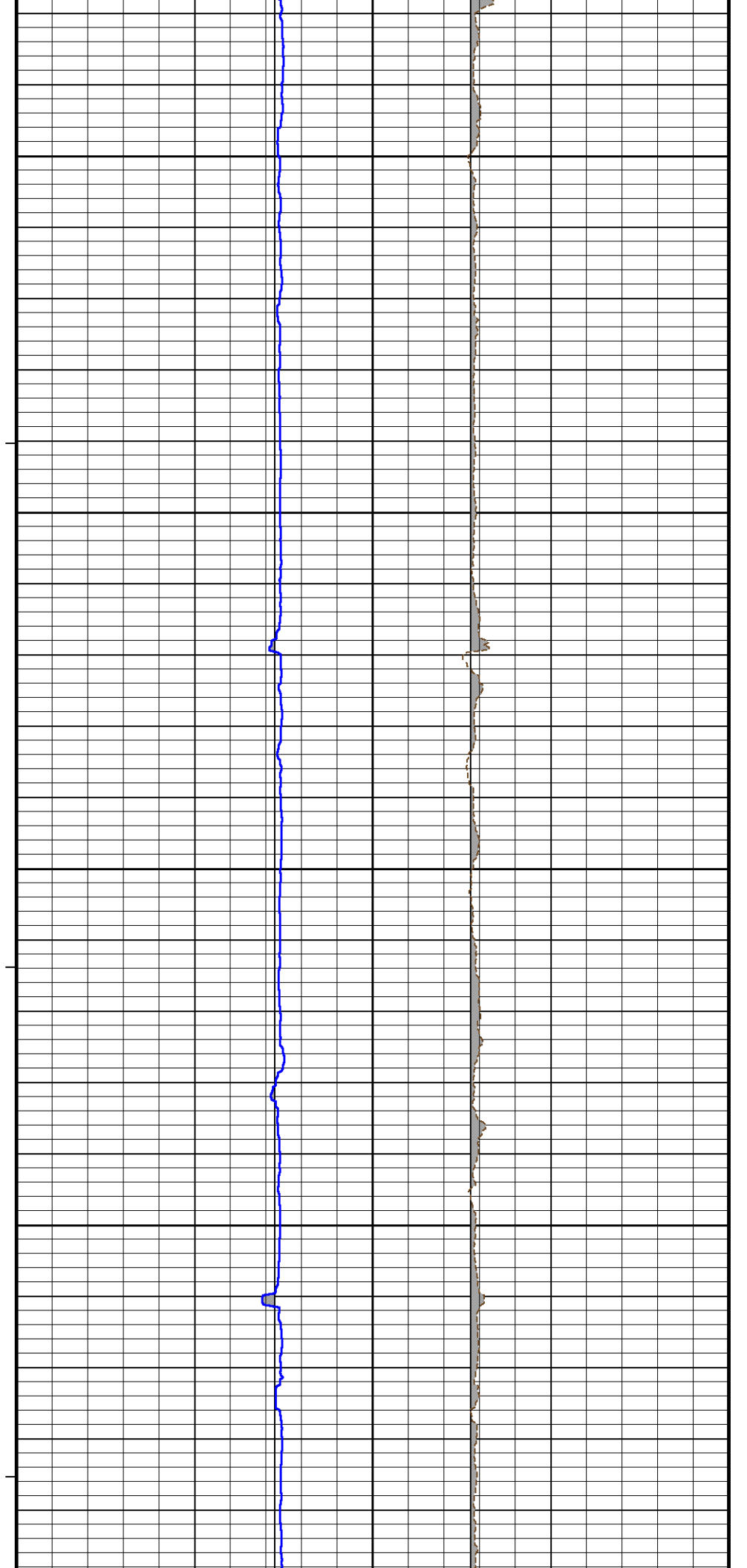
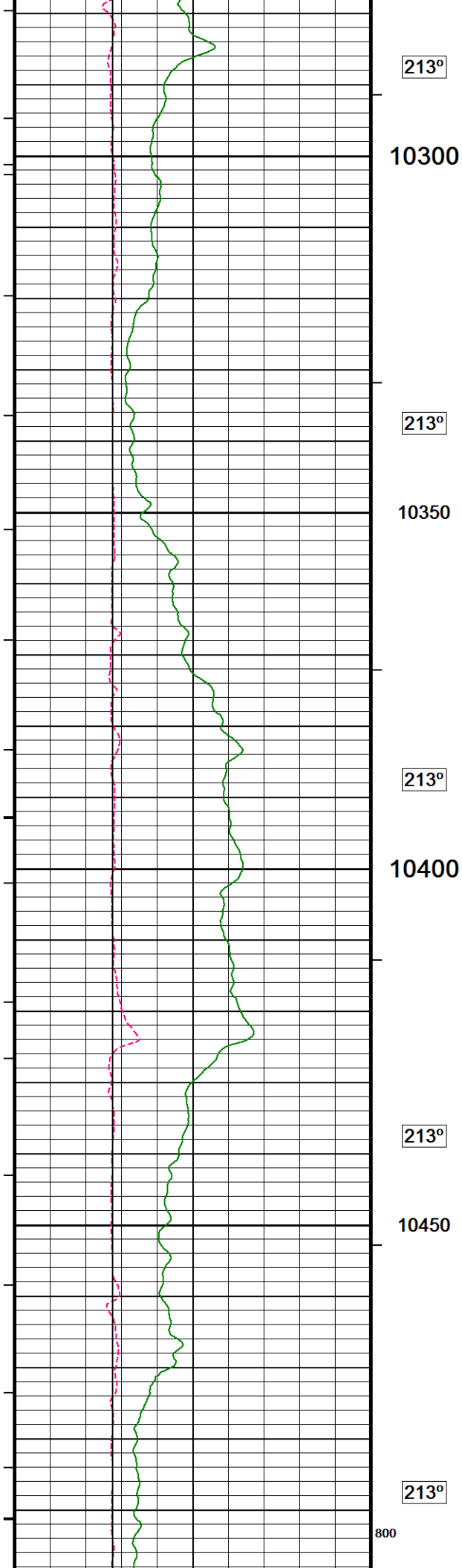


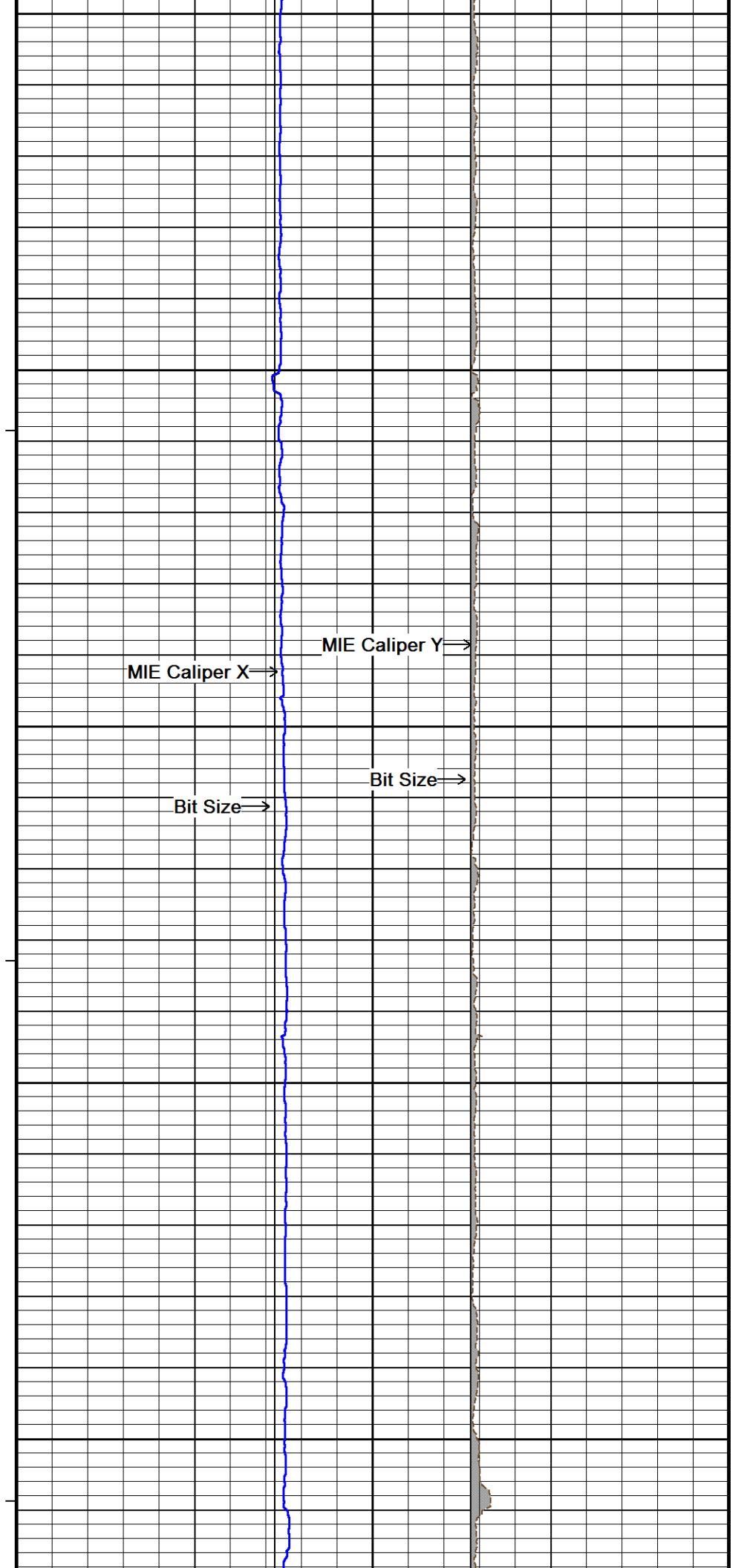
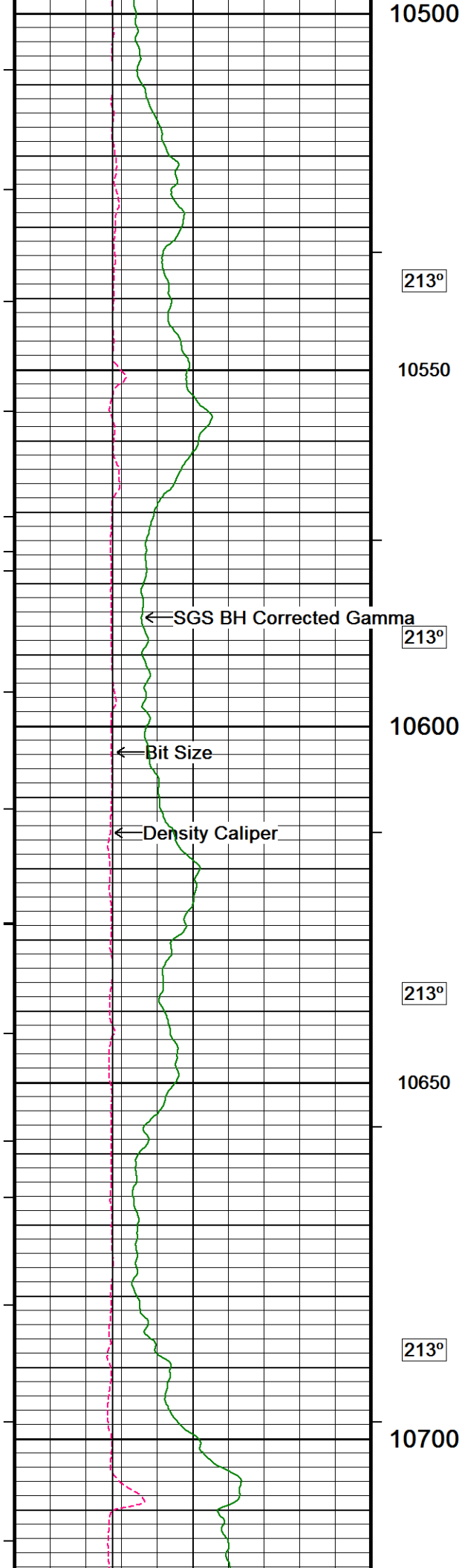


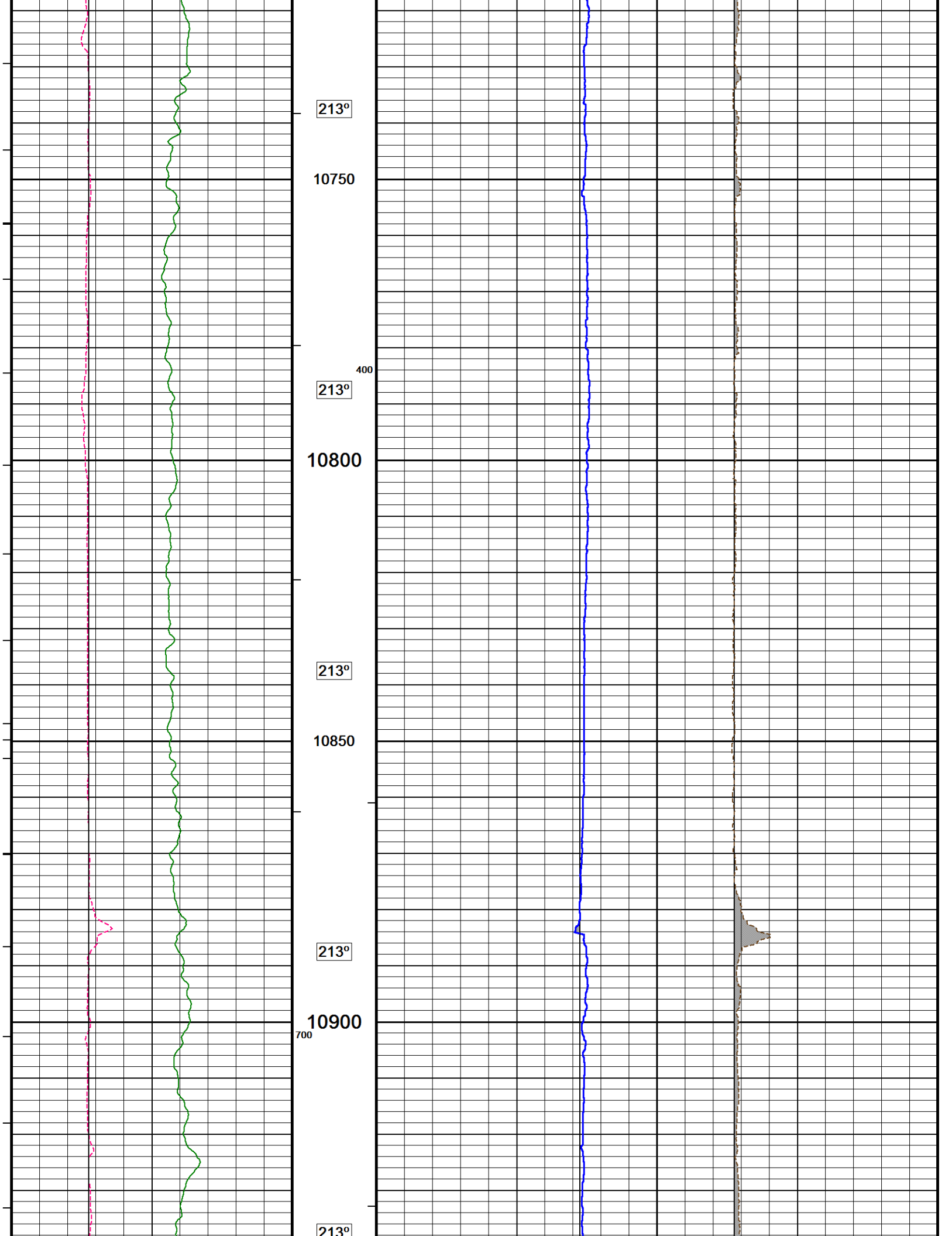


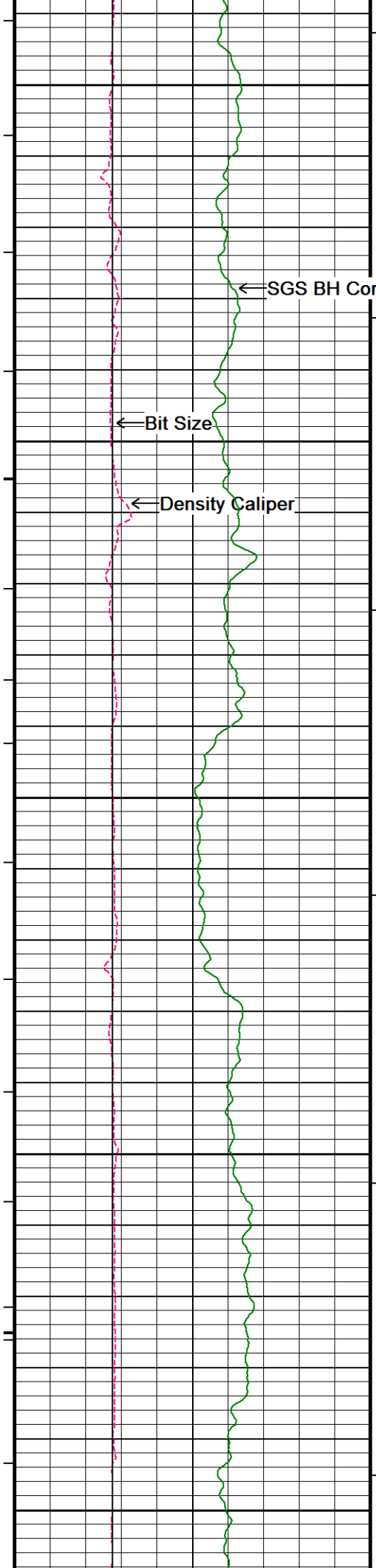




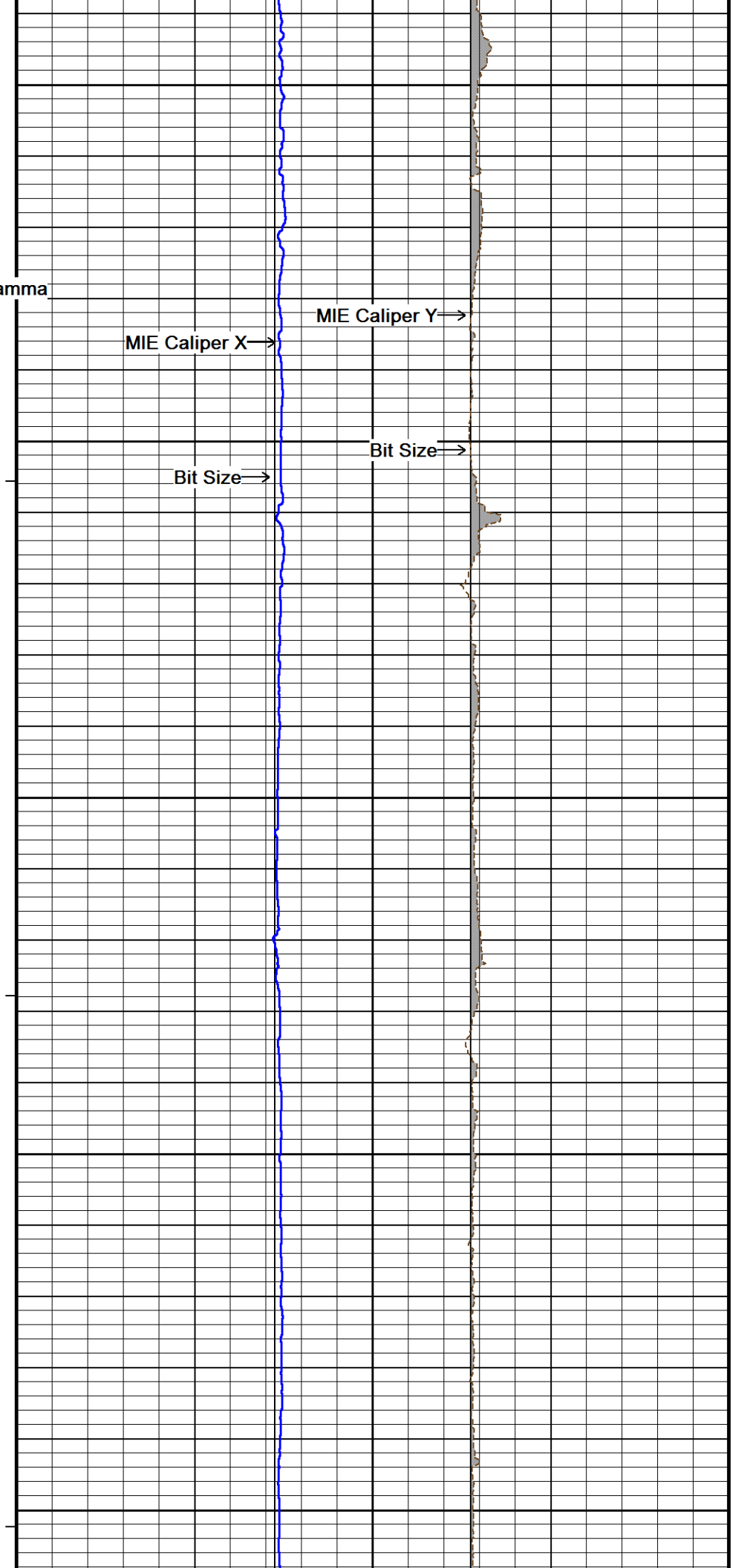


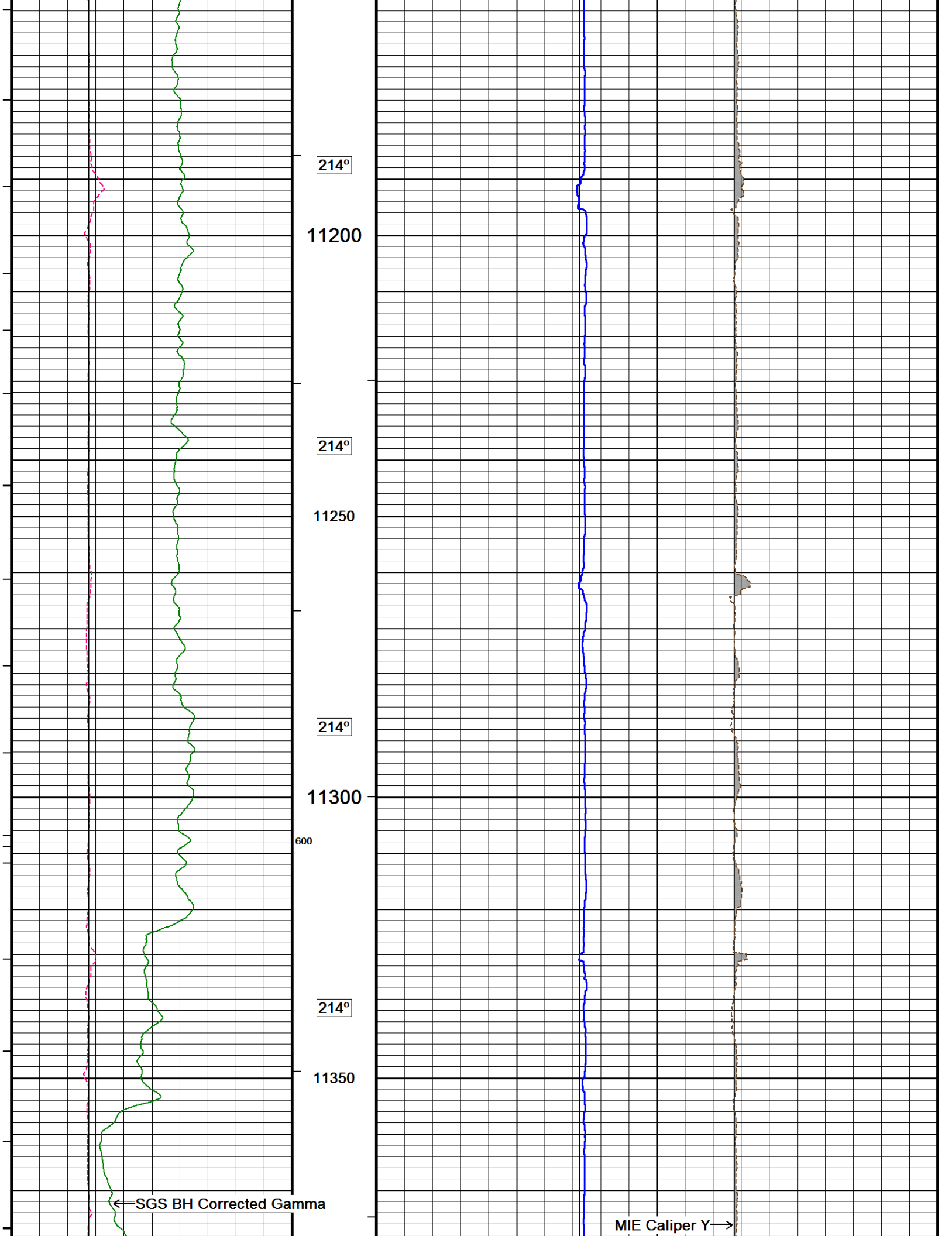


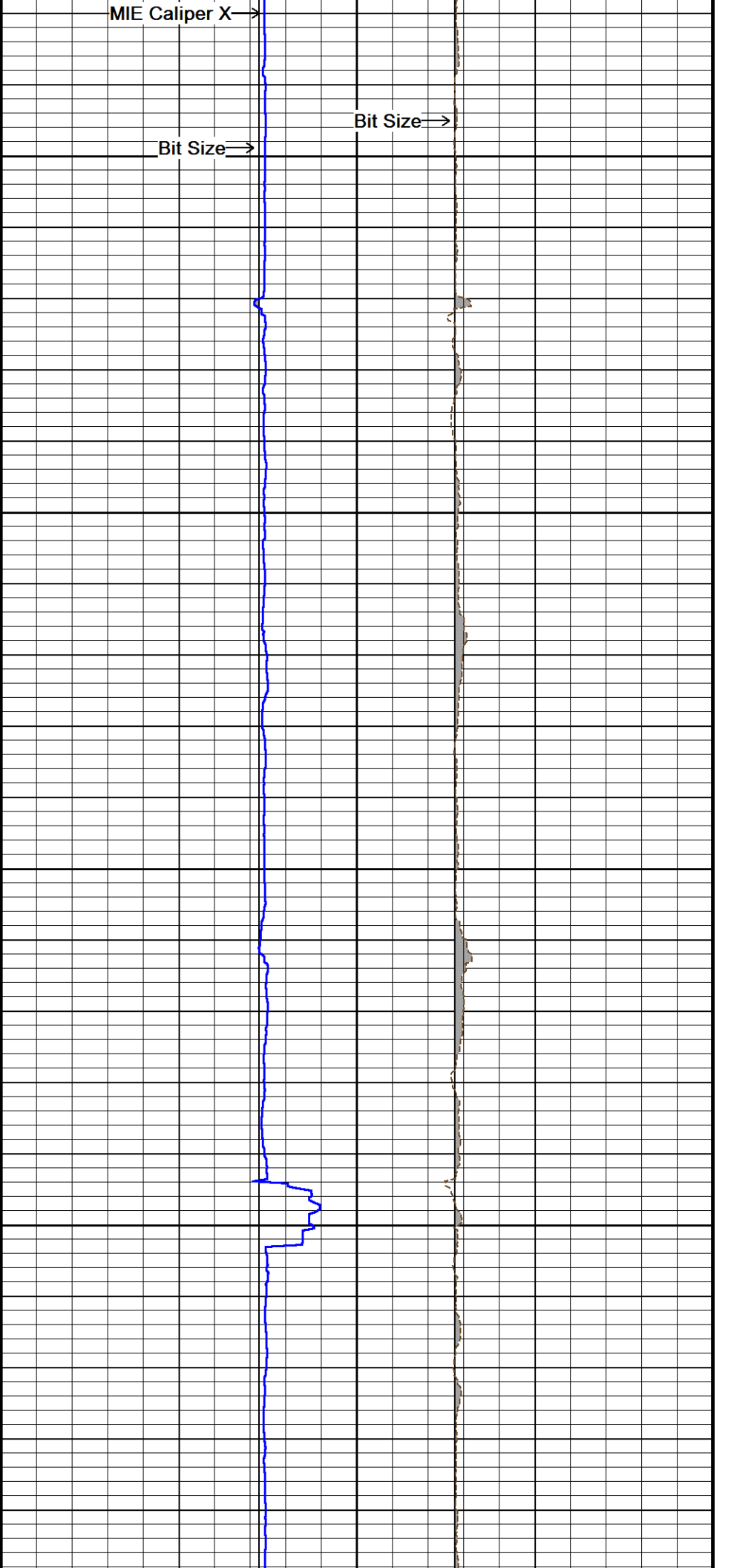
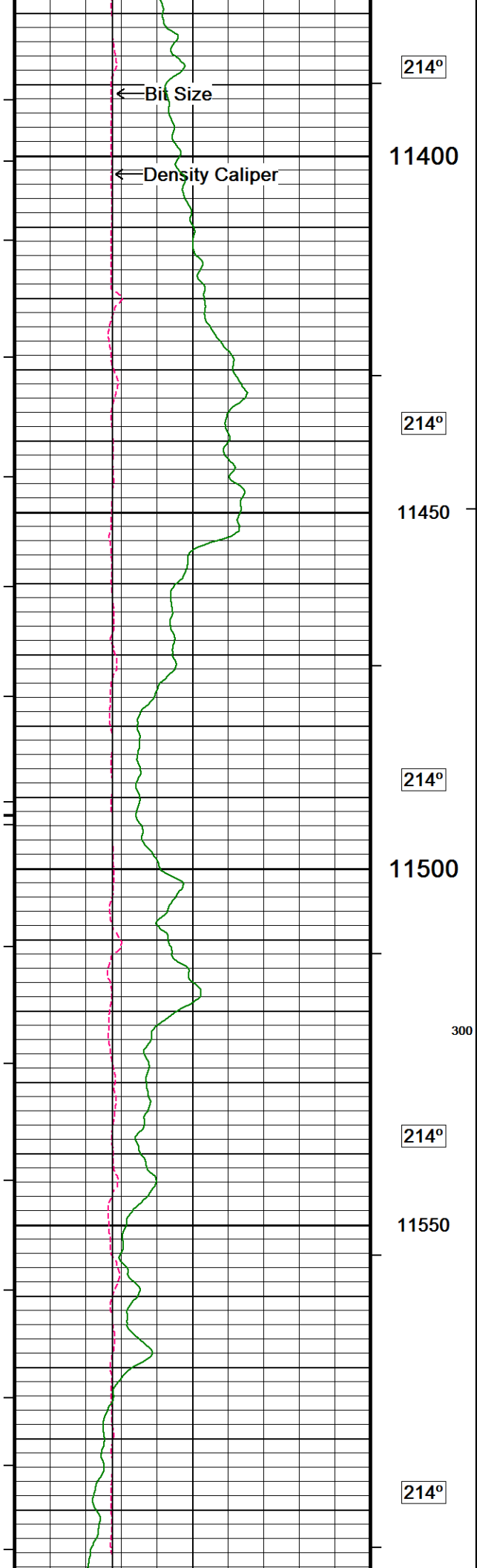


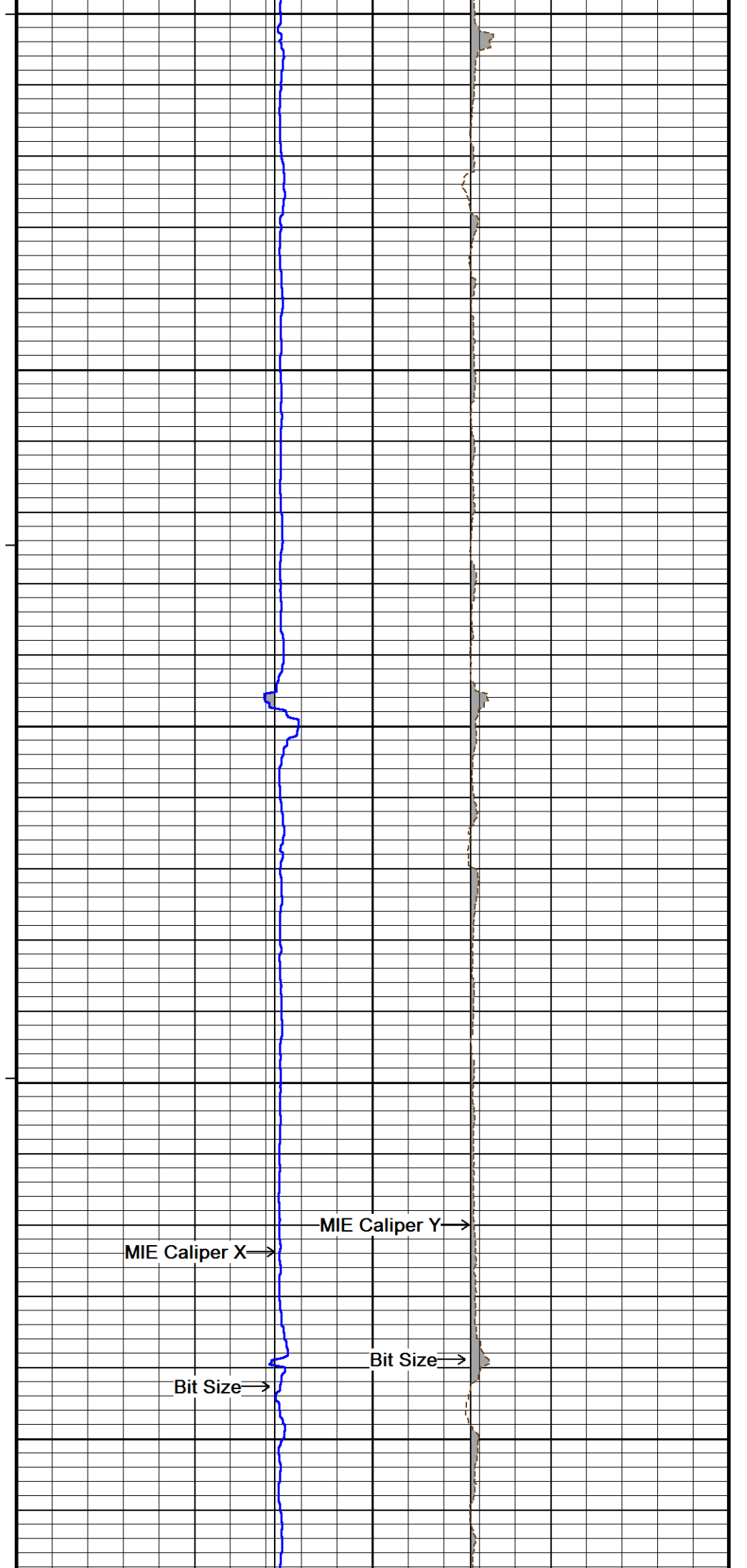
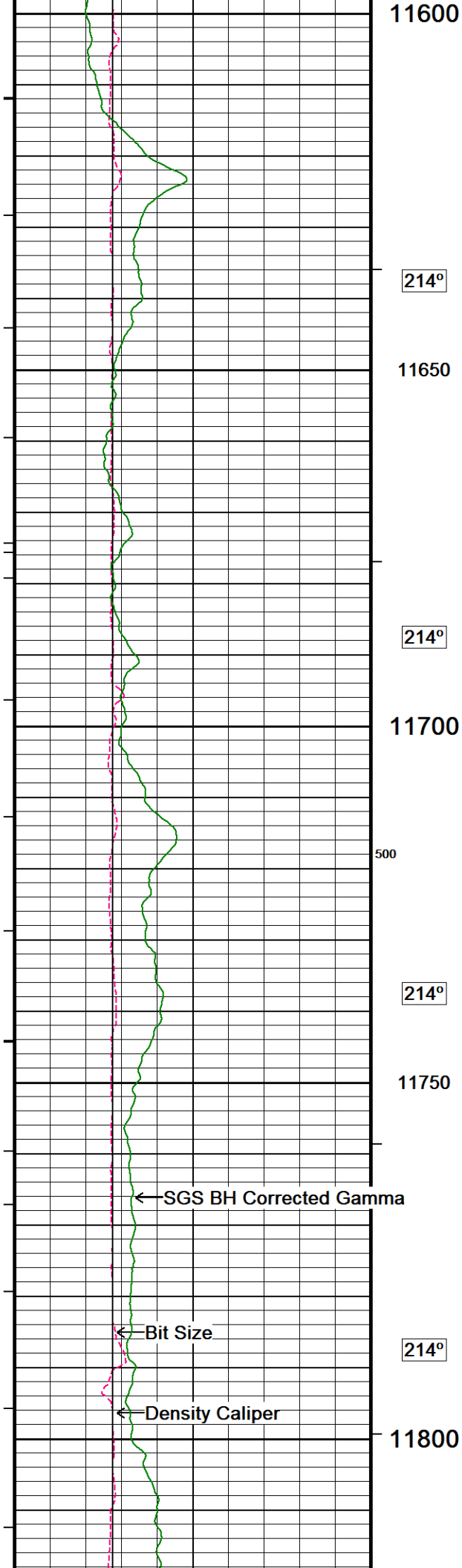


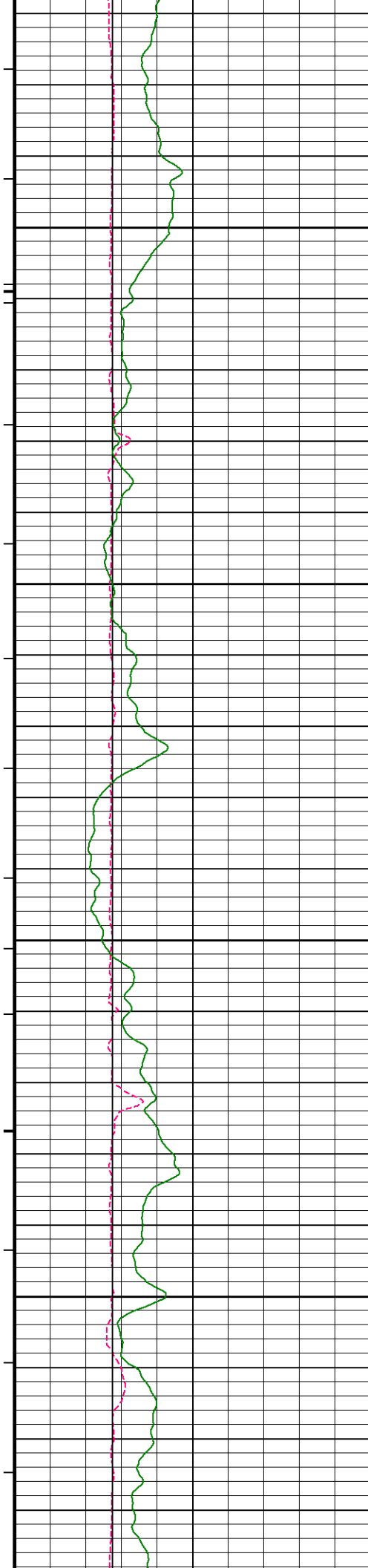
213°
214°
214°
214°











214°

11850

214°

11900

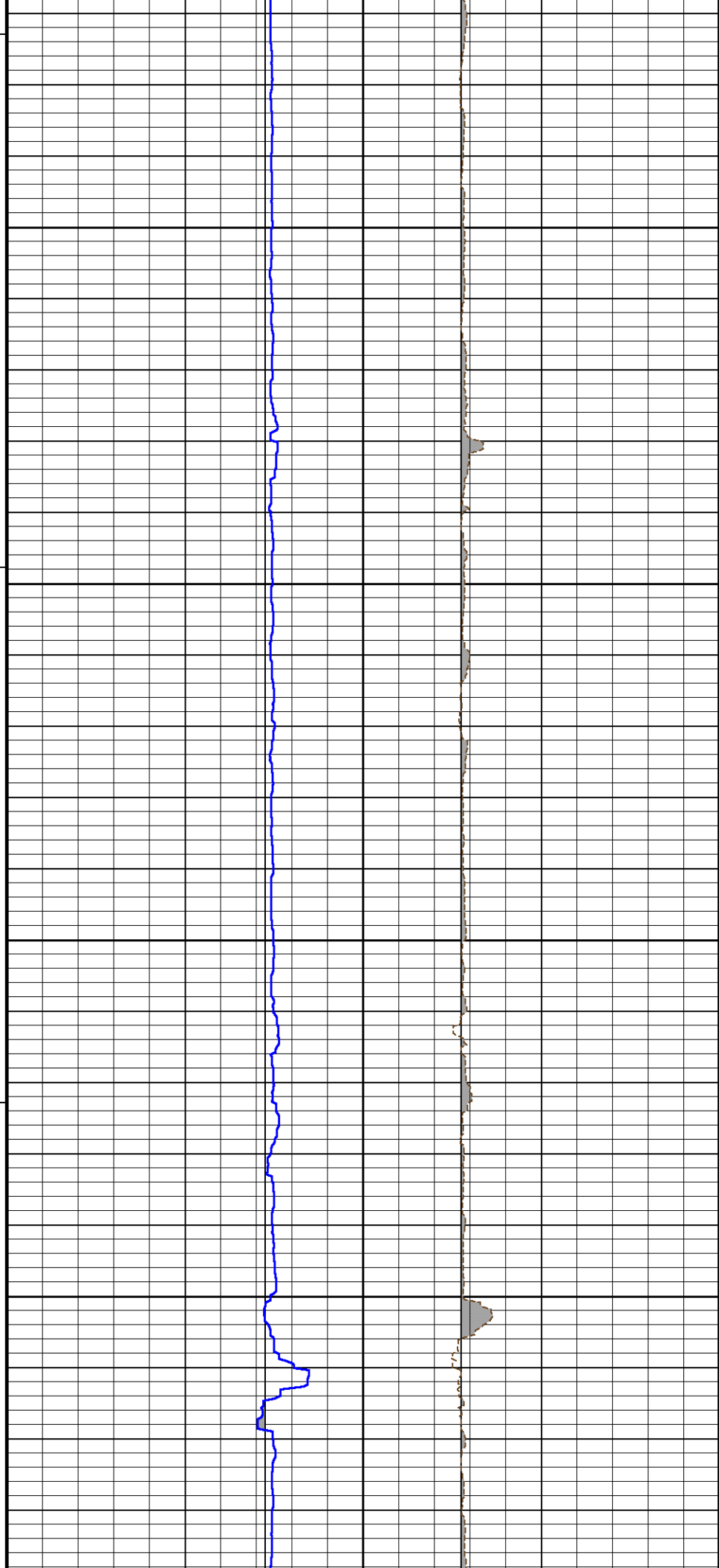
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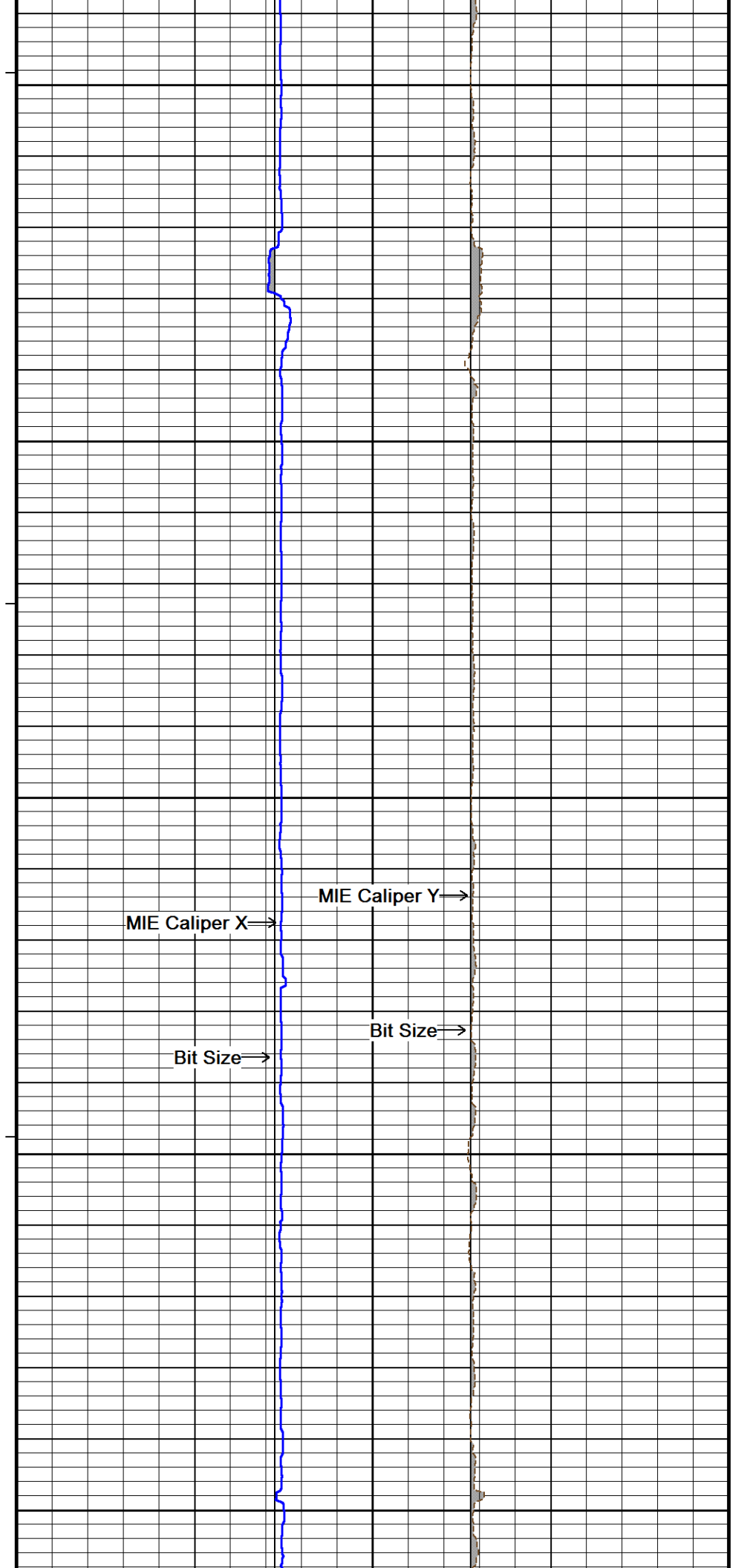
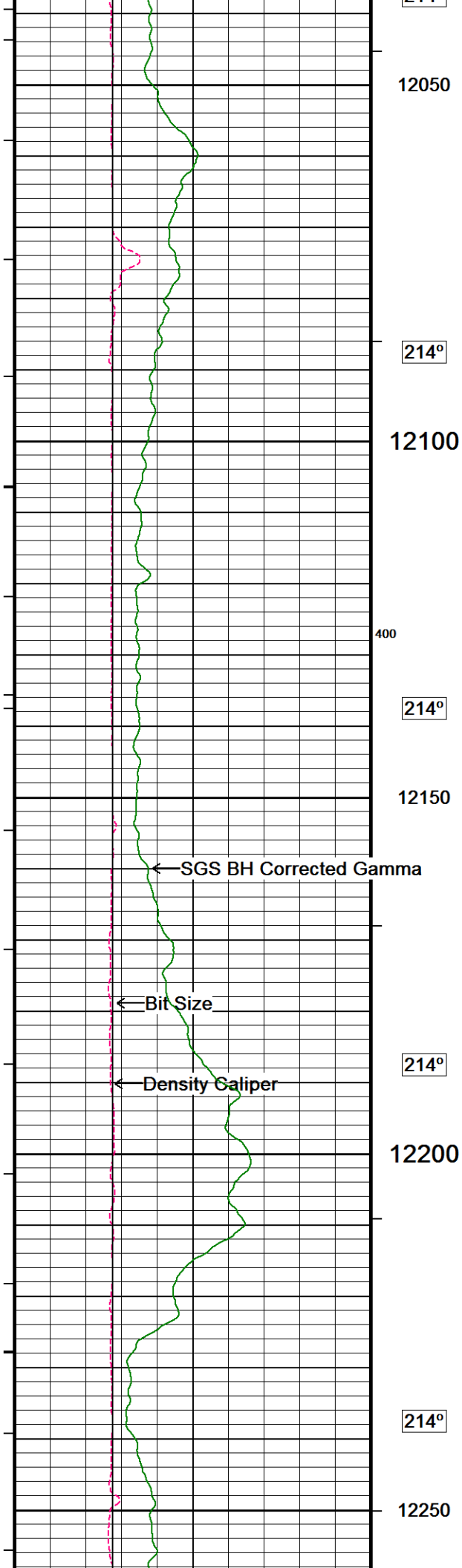
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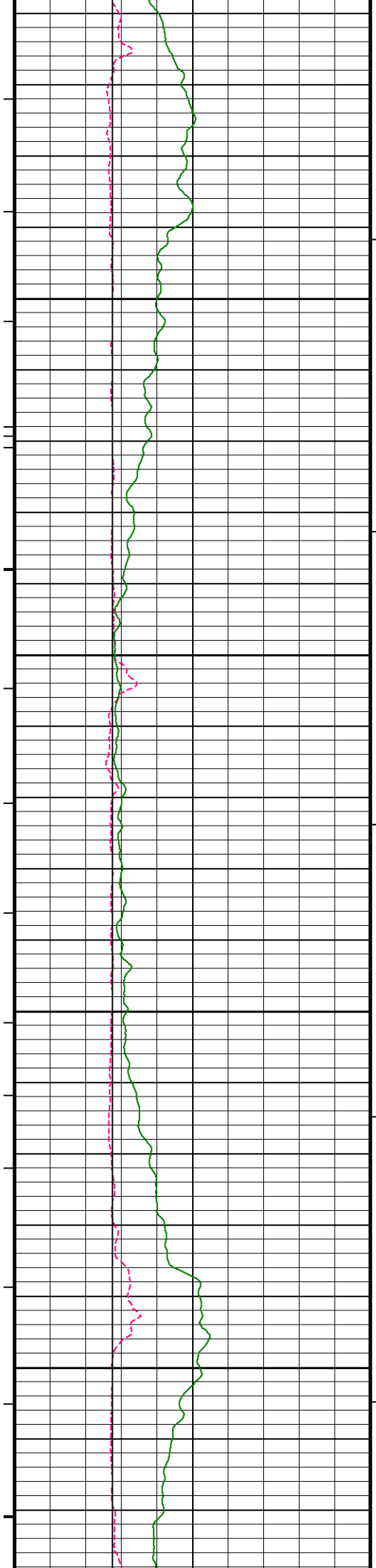
214°

12000

214°







200

213°

12300

213°

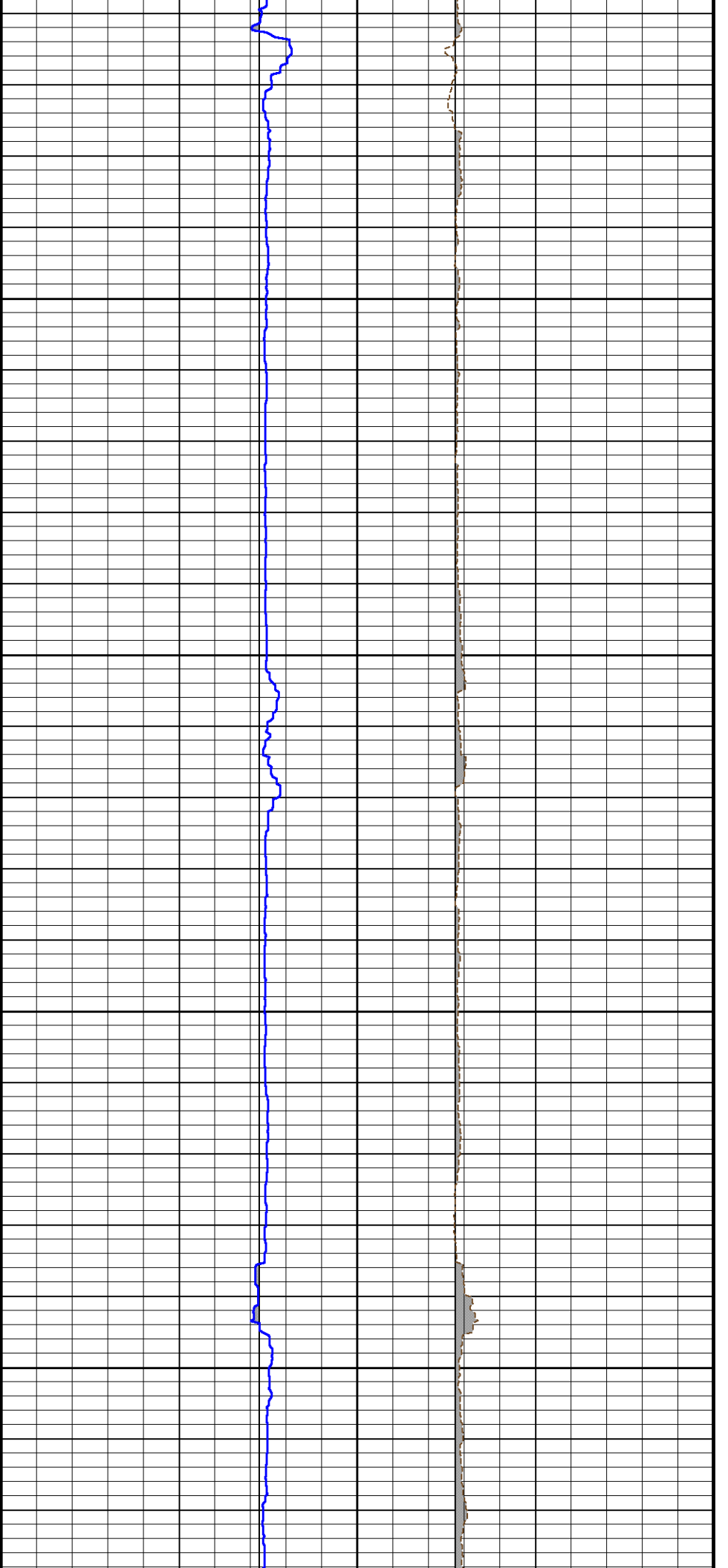
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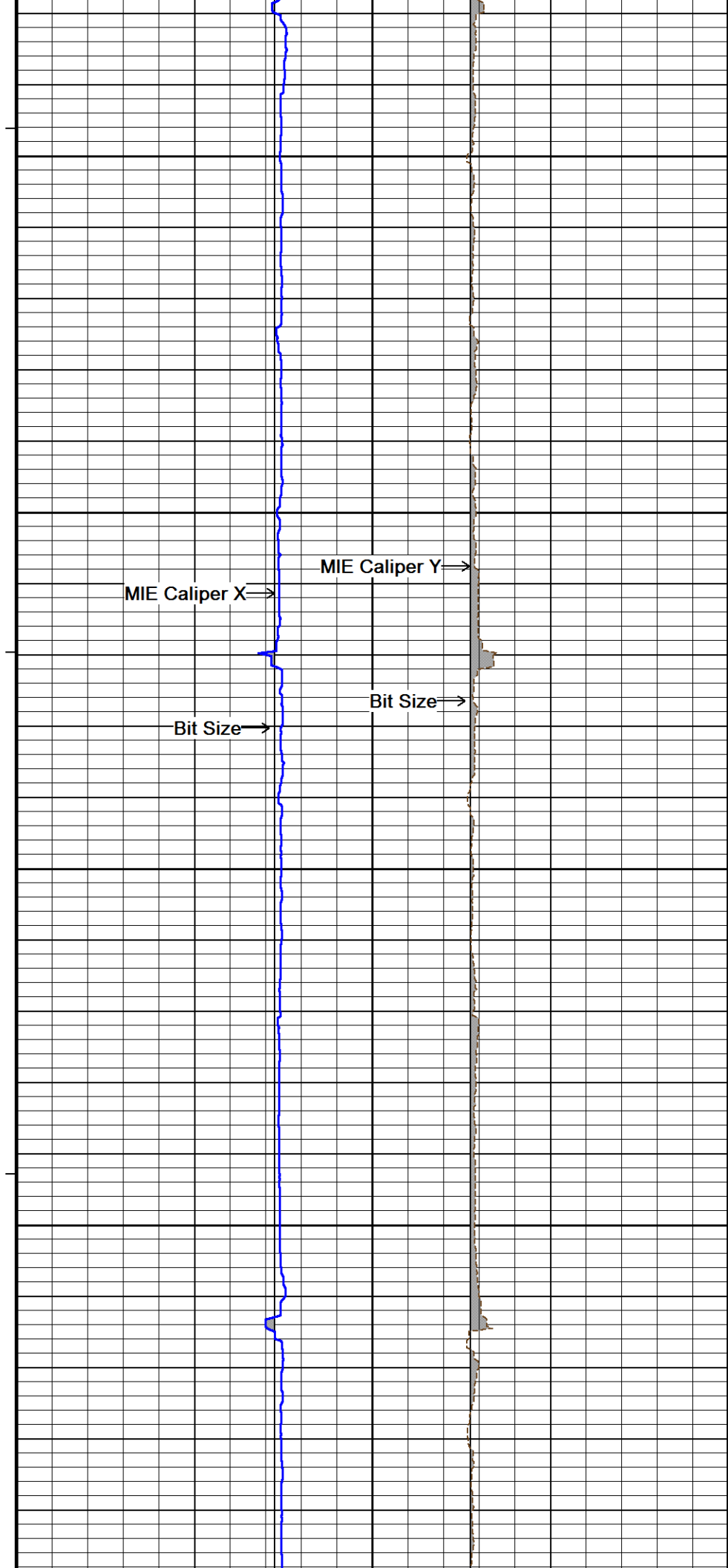
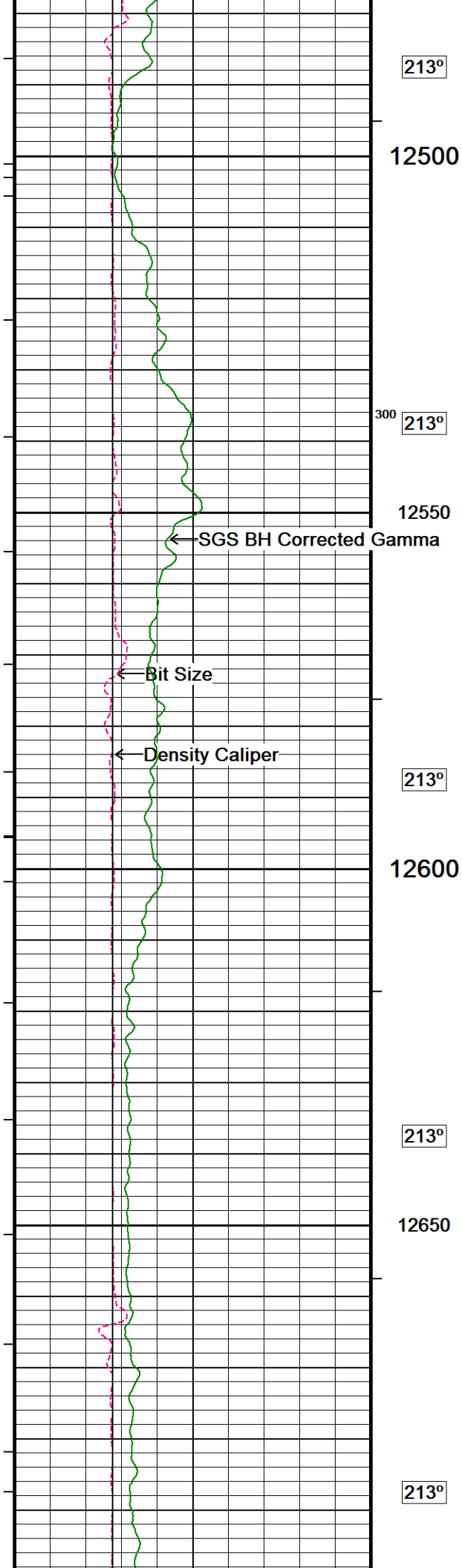
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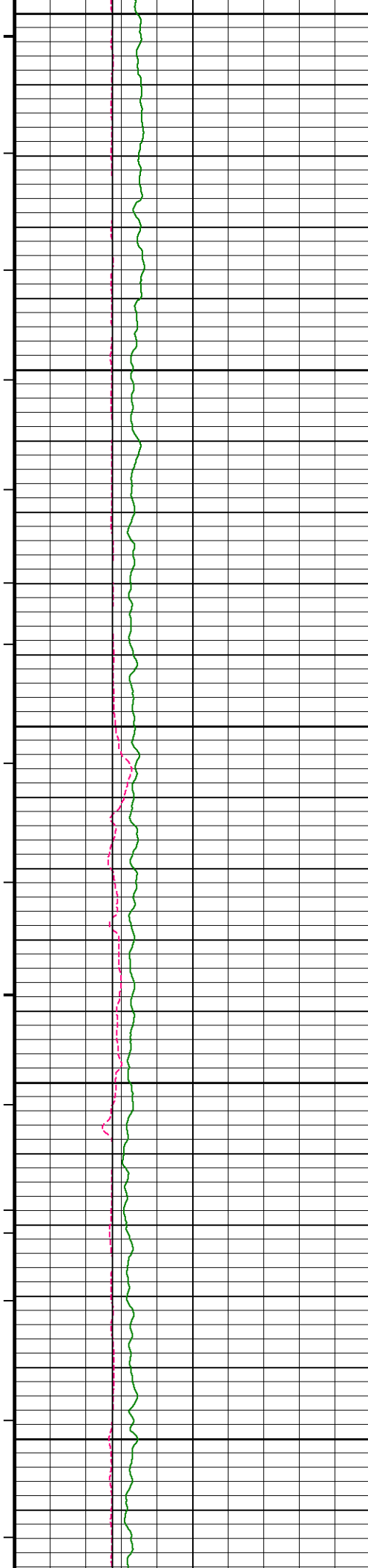
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213°

12450







12700

213°

12750

213°

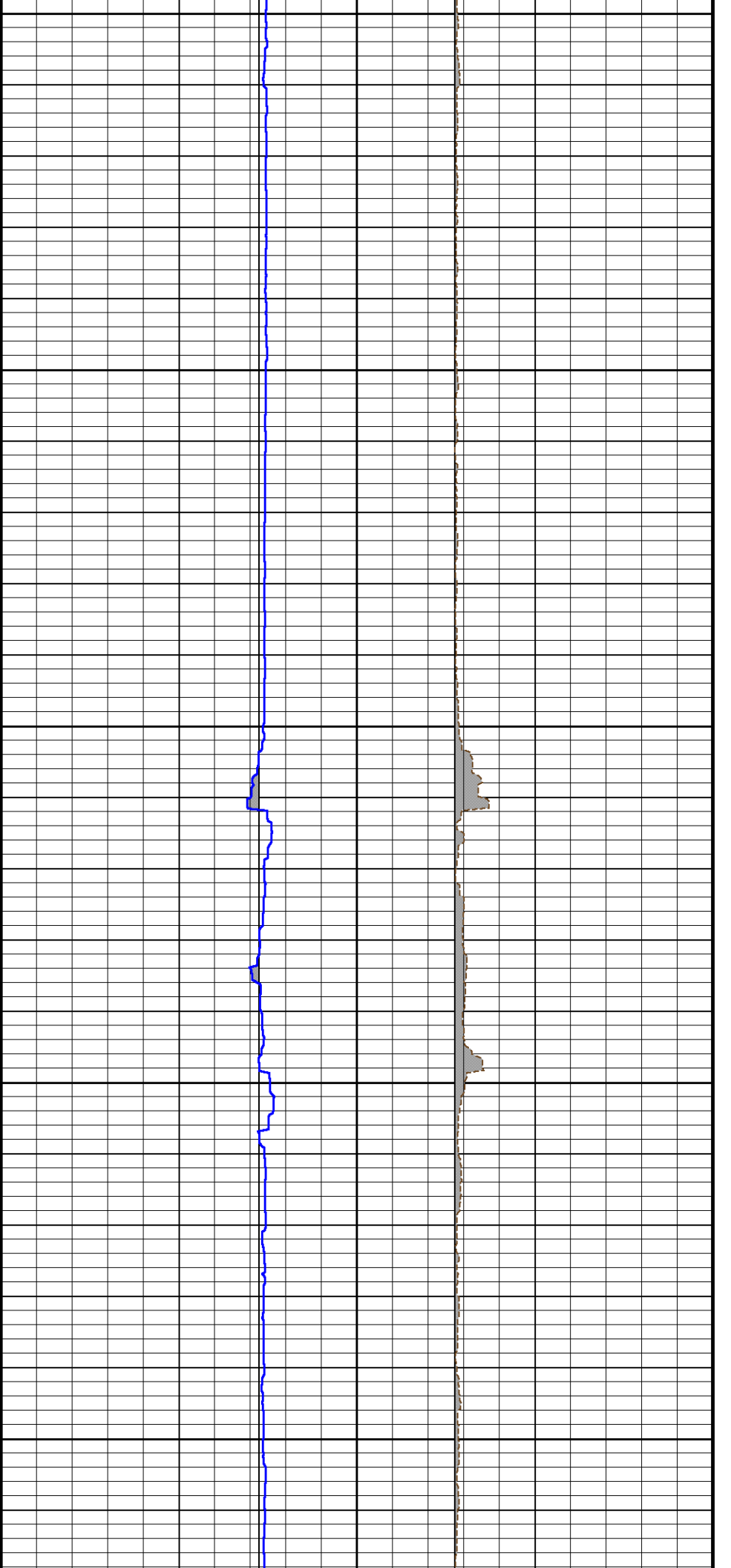
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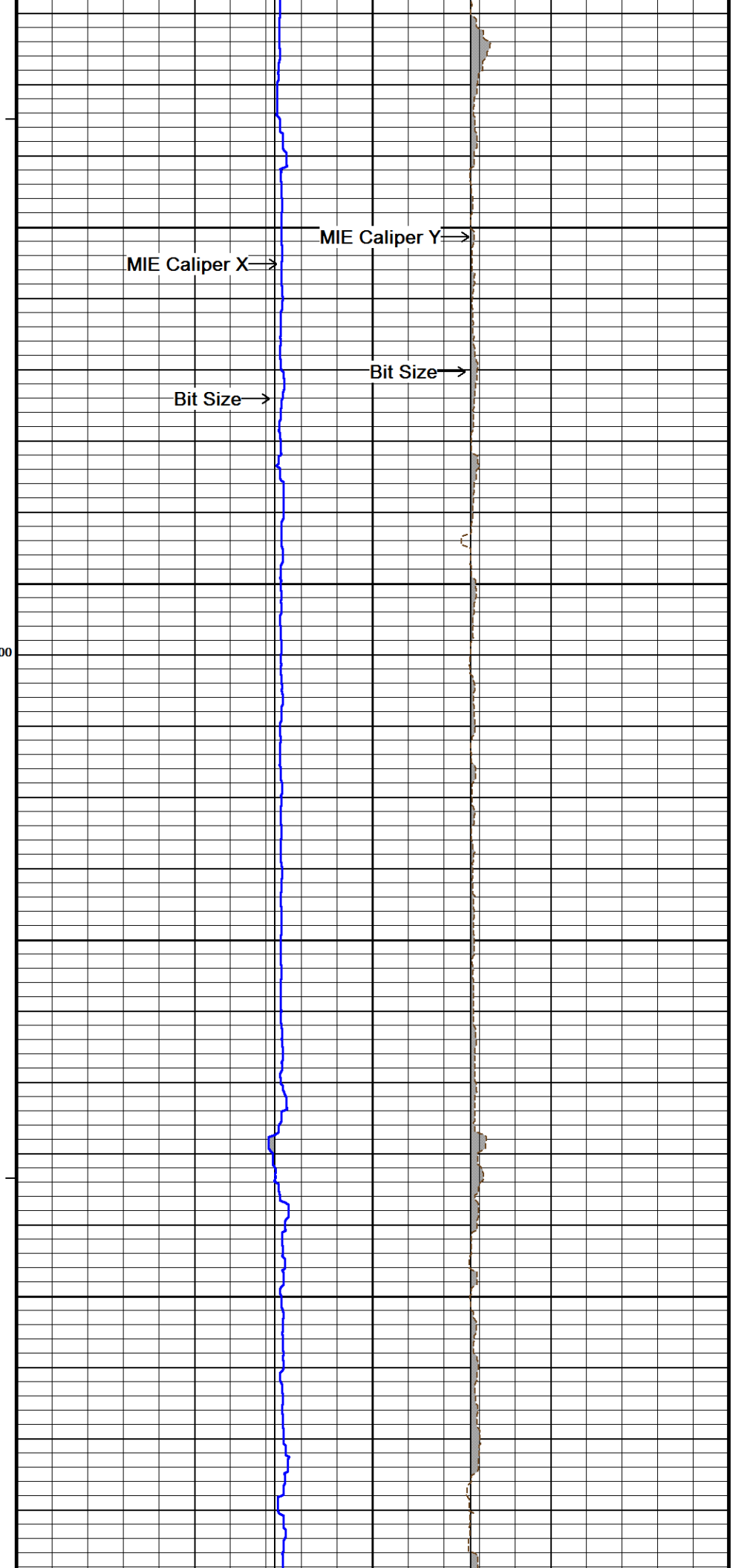
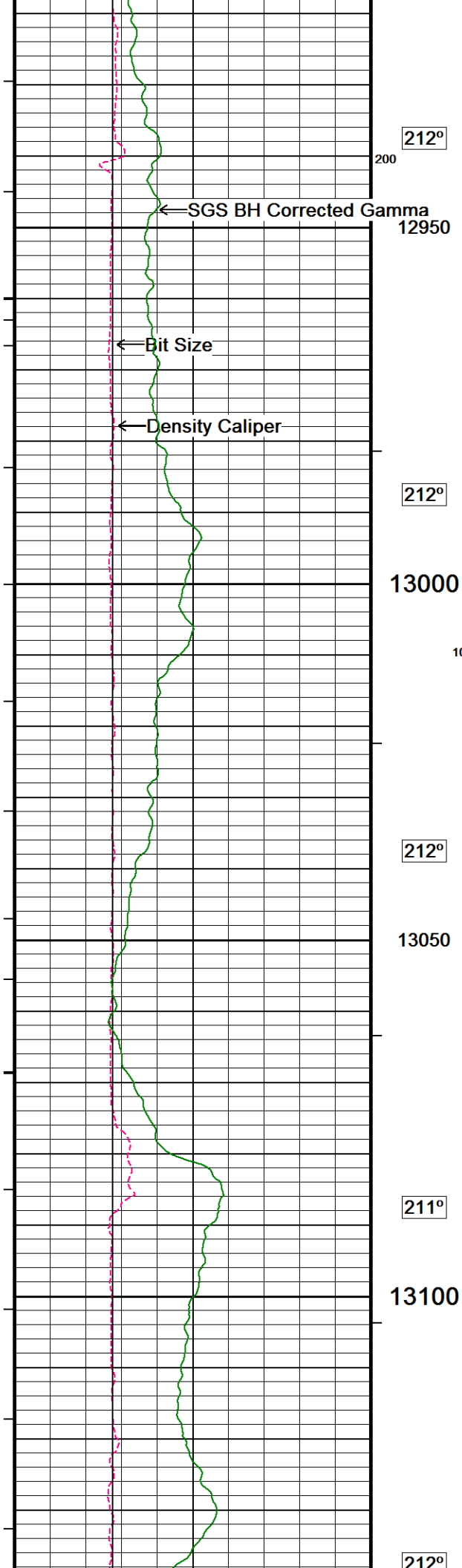
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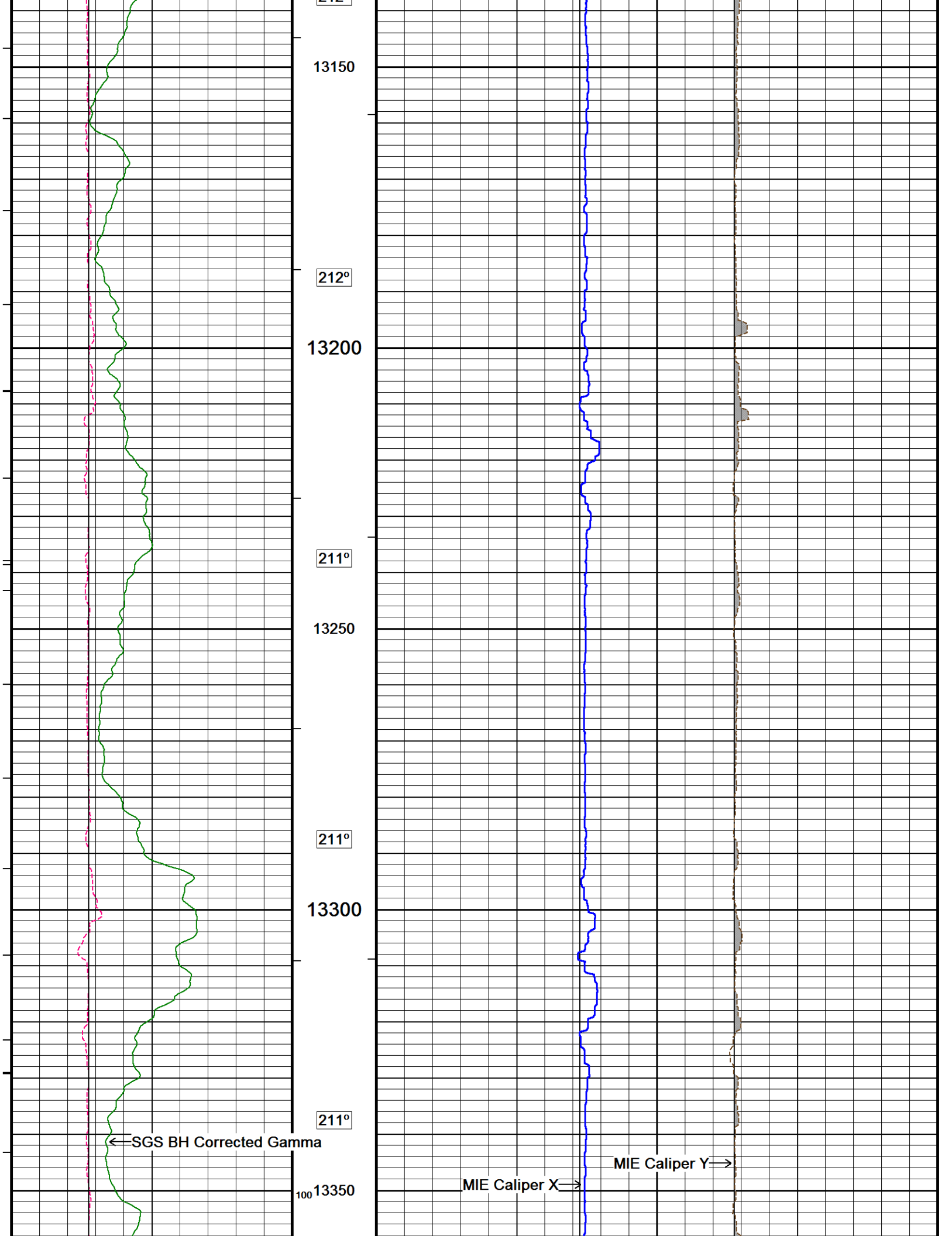
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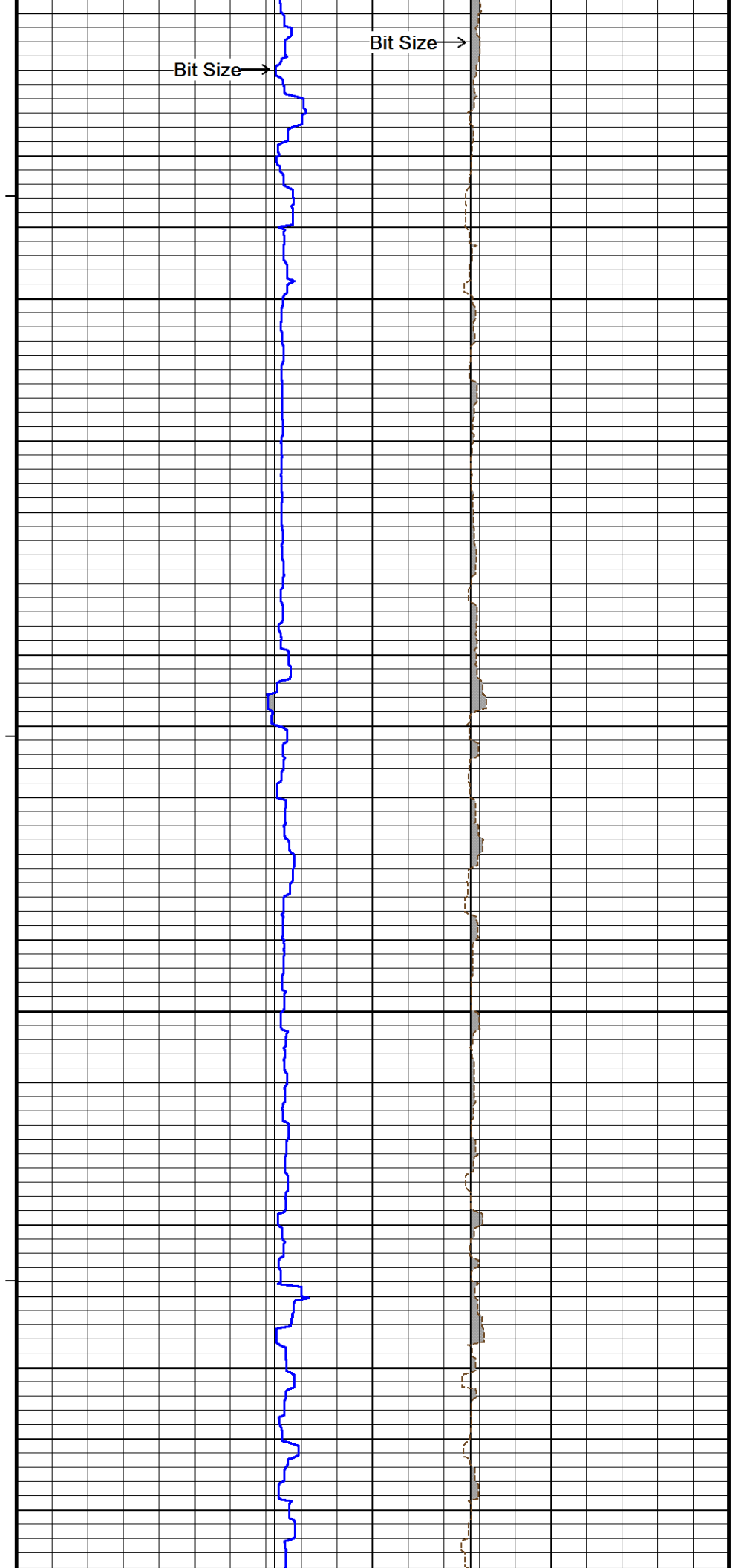
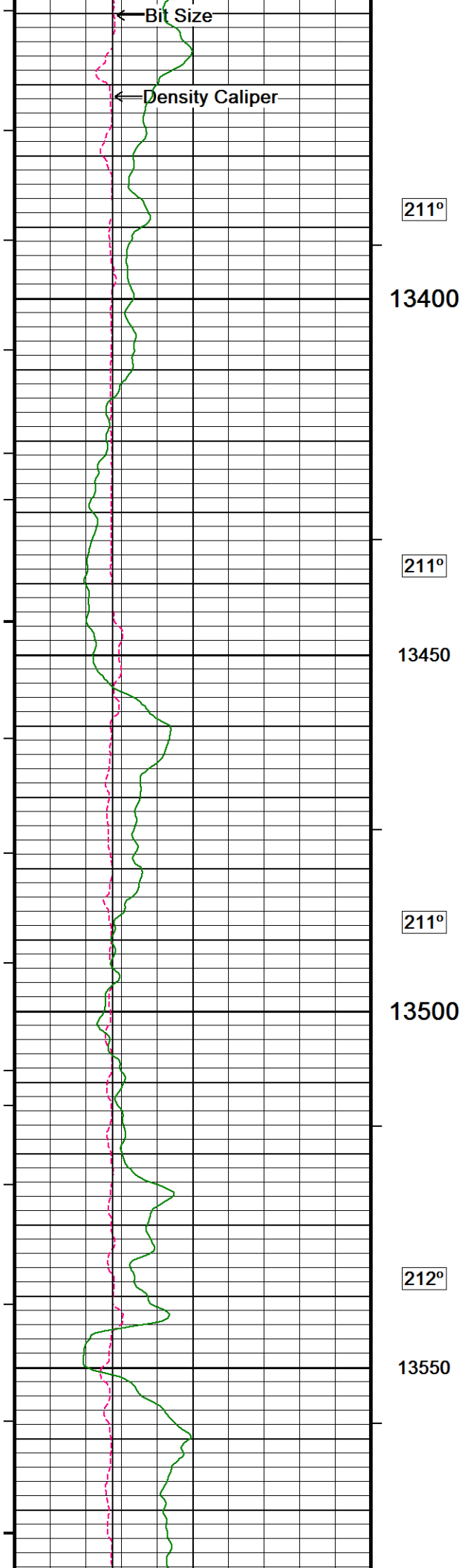
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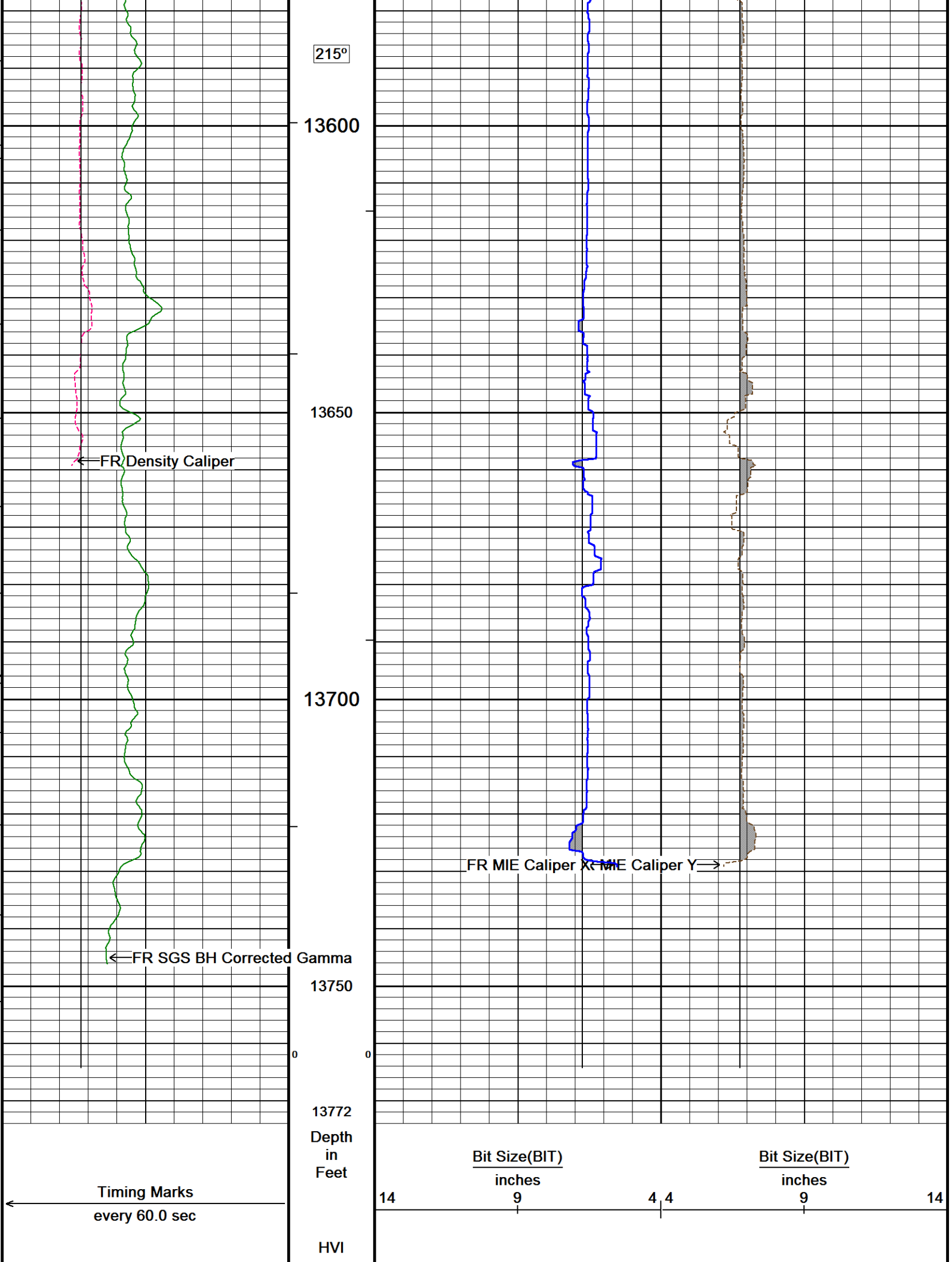
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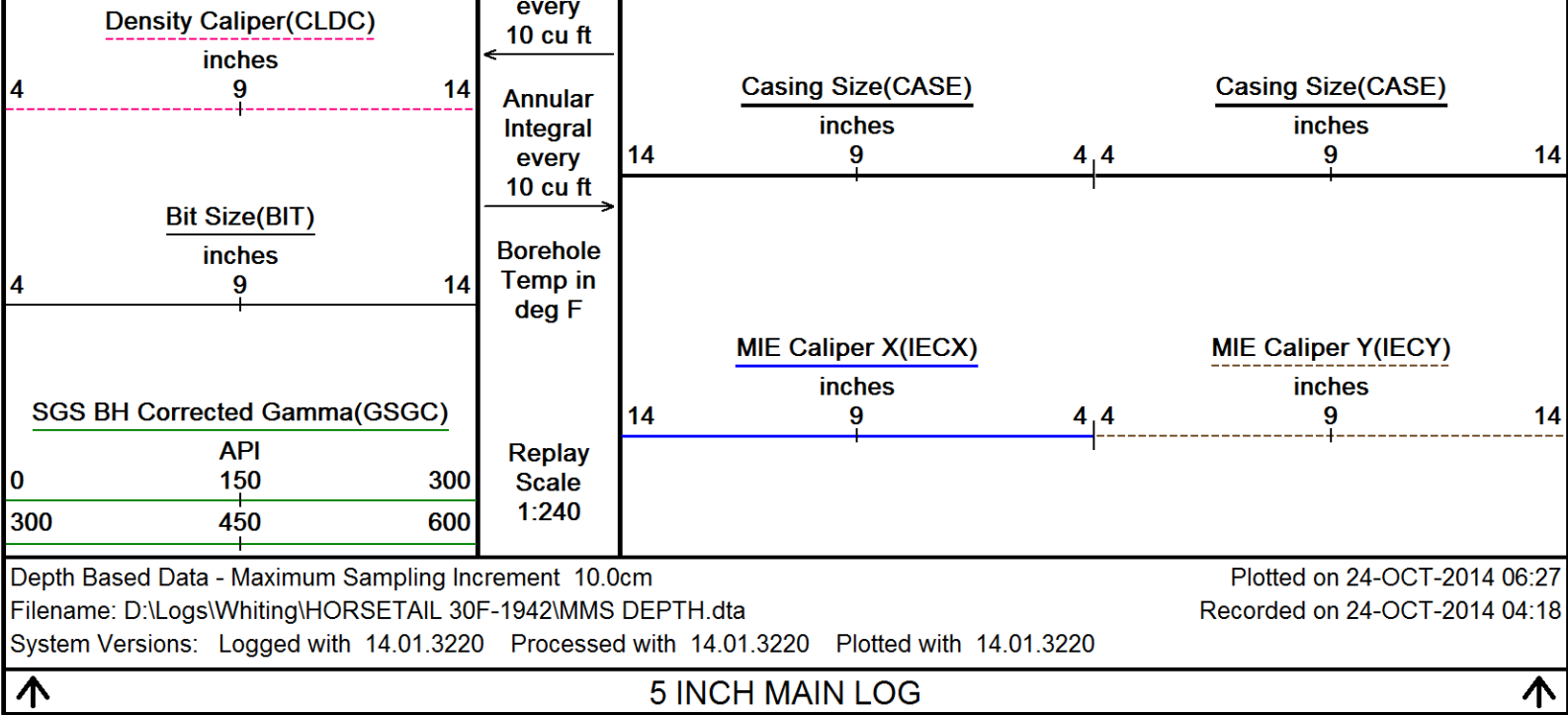












BEFORE SURVEY CALIBRATION			
D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta			
Down-hole Tension Calibration All 000			Field Calibration on 24-OCT-2010 03:34
Reading No	Measured		
1	15659.85	0.00	
2	15734.68	370.00	
General Constants All 000			Last Edited on 24-OCT-2014,01:03
General Parameters			
Mud Resistivity	1.050	ohm-metres	
Mud Resistivity Temperature	69.200	degrees F	
Water Level	0.000	feet	
Borehole Fluid Processing	Wet Hole		
Hole/Annular Volume and Differential Caliper Parameters			
HVOL Method	XY Caliper		
HVOL Caliper 1	MIE Diam. X Armswing		
HVOL Caliper 2	MIE Diam. Y Armswing		
Annular Volume Diameter	4.500	inches	
Caliper for Differential Caliper	MIE Diam. X Armswing		
Rwa Parameters			
Porosity used	Base Density Porosity		
Resistivity used	Array Ind. Four Res Rt		
RWA Constant A	0.610		
RWA Constant M	2.150		
SW/APOR Tool Source	0.000		
Down-hole Tension Calibration SMS 0			Field Calibration on 03-MAR-2014 17:38
Reading No	Measured	Calibrated (lbs)	
1	15344.12	0.00	
2	16163.79	590.00	
Strain Gauge Constants MMS-F.A 261			Last Edited on
Atmospheric Pressure	14.70	psi	
Serial Number	0		
Calibration Date	000000000000		
Base Check Date			
Dead Weight Serial Number	0		
Dead Weight Gravitational Correction	1.0		

Temperature	75.0		150.0		250.0		350.0		degrees F
Pressure psia	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	
0.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
2000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
4000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
6000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
8000.0	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	
10000.0	0.000		0.000		0.000		0.000		

High Resolution Temperature Calibration MGS-C.J 140					Field Calibration on 28-JUN-2014,09:06			
		Measured		Calibrated(Deg F)				
Lower		35.00		35.00				
Upper		200.00		200.00				

High Resolution Temperature Constants MGS-C.J 140					Last Edited on 28-JUN-2014,09:06			
Pre-filter Length			11					

SP Calibration MGS-C.J 140					Field Calibration on 28-JUN-2014,09:06			
		Measured		Calibrated (mV)				
Reference 1		-102.0		-100.0				
Reference 2		101.0		100.0				

Gamma Calibration MGS-C.J 140					Field Calibration on 22-OCT-2014,13:16			
		Measured		Calibrated (API)				
Background		150		105				
Calibrator (Gross)		1009		707				
Calibrator (Net)		859		602				

Gamma Constants MGS-C.J 140					Last Edited on 22-OCT-2014,23:47			
Gamma Calibrator Number		GRC-224						
Mud Density		1.14		gm/cc				
Caliper Source for Processing		Density Caliper						
Tool Position		Eccentred						
Concentration of KCl				kppm				
K Mud Type		Chloride						
K Mud Concentration		0.00		%				

Neutron Calibration MDN-C.A 464					Base Calibration on 01-OCT-2014 13:45 Field Check on 22-OCT-2014 13:31			
Base Calibration								
		Measured		Calibrated (cps)				
	Near	Far		Near	Far			
	2883	89		3714	110			
Ratio		32.553			33.764			
Field Calibrator at Base								
				Calibrated (cps)				
				2385	3521			
Ratio					0.677			
Field Check								
				Calibrated (cps)				
				2366	3532			
Ratio					0.670			

Neutron Constants MDN-C.A 464					Last Edited on 24-OCT-2014,01:04			
Neutron Source Id		p44385b						
Neutron Jig Number		nj5236						
Air Hole Processing		Modified Ratio						
Caliper Source for Processing		MIE Diam. X Armswing						
Stand-off		0.00		inches				
Mud Density		1.00		gm/cc				
Limestone Sigma		7.10		cu				
Sandstone Sigma		7.00		cu				
Dolomite Sigma		4.70		cu				
Formation Pressure Source		None						
Formation Pressure		N/A		kpsi				
Temperature Source		None						
Temperature		N/A		degrees F				

Mud Salinity	0.00	kppm		
Salinity Correction	Not Applied			
Formation Fluid Salinity Source	None			
Formation Fluid Salinity	N/A	kppm		
Barite Mud Correction	Not Applied			
Imager Pad Check MIE-A.J 241				
Field Check on 02-SEP-2014 15:40				
Pad 1	20/20 Buttons Verified	Pad 5 20/20 Buttons Verified		
Pad 2	24/24 Buttons Verified	Pad 6 24/24 Buttons Verified		
Pad 3	20/20 Buttons Verified	Pad 7 20/20 Buttons Verified		
Pad 4	24/24 Buttons Verified	Pad 8 24/24 Buttons Verified		
Compact Micro Imager Constants MIE-A.J 241				
Last Edited on 02-SEP-2014,15:32				
Sonde Configuration	Imager Mode			
Arm-Pad Kit	Normal Pads (12.25 in)			
Arm-Pad Kit Serial Number				
Centre Pad 1 Rotational Offset	0.00	degrees		
Image/Borehole Ovality Reference	Azimuth of Pad 1			
Non Active Buttons	Omit			
Search Angle	0.00	degrees		
Correlation Interval	3.28	feet		
Correlation Step	1.64	feet		
Current Offset	0.0000	mAmp		
Squasher Start	0.0500	mAmp		
Image Processing	Enabled			
Navigation Constants MIE-A.J 241				
Last Edited on 14-OCT-2014,17:29				
Magnetic Declination	7.88	degrees East		
Magnetometer Parameters MIE-A.J 241				
Date Of Last Magnetometer Calibration	9-AUG-2014,14:48			
	X Magnetometer	Y Magnetometer	Z Magnetometer	
Slope	-1.000000	-1.010059	-0.993063	
Offset	0.000064	-0.018611	0.005101	
Magnetometer Constants MIE-A.J 241				
Last Edited on				
Magnetometer Calibrator Number	000			
Accelerometer Parameters MIE-A.J 241				
Date Of Last Accelerometer Calibration	8-APR-2012,12:35			
	X Accelerometer	Y Accelerometer	Z Accelerometer	
Slope	-1.108980	-1.107773	-1.091611	
Offset	-0.003545	0.008582	-0.004936	
Accelerometer Constants MIE-A.J 241				
Last Edited on 22-OCT-2014,13:50				
Accelerometer Calibrator Number	000			
Accelerometer Temperature Characterisation				
X Accelerometer				
Serial Number	922			
Calibration Date	14-Nov-2010			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	1.98626e-005	-2.34772e-009	1.61466e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.59314e-004	4.64734e-007	5.67183e-010
Y Accelerometer				
Serial Number	970			
Calibration Date	19-Jan-2011			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-4.23329e-006	-2.08894e-008	1.84400e-010
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.61643e-004	3.45088e-007	8.15526e-010
Z Accelerometer				
Serial Number	1076			

Calibration Date	05-May-2011			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-5.18602e-006	1.72429e-008	7.30746e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.93462e-004	2.41183e-007	1.26400e-009

Caliper Calibration MIE-A.J 241					Base Calibration on 22-OCT-2014 13:55
					Field Calibration on 22-OCT-2014 13:57
Base Calibration					
Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)		
1	25523	29599	5.96		
2	36062	39139	7.98		
3	45921	48894	9.86		
4	57037	59465	11.88		
5	0	0	0.00		
Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	25007	25103	24823	25651	5.96
2	33585	33227	33711	34459	7.98
3	41846	41100	42023	42949	9.86
4	51489	49717	51759	53653	11.88
5	0	0	0	0	0.00
Field Calibration					
	Measured	Measured	Actual		
	Pads 1-5 Caliper(in)	Pads 3-7 Caliper(in)	Caliper(in)		
	6.02	5.85	5.96		
	Measured	Measured	Measured	Measured	Actual
	Pad 2 Caliper(in)	Pad 4 Caliper(in)	Pad 6 Caliper(in)	Pad 8 Caliper(in)	Caliper(in)
	2.99	2.96	3.00	3.01	5.96

Caliper Constants MIE-A.J 241					Last Edited on 24-SEP-2014,15:26
Caliper Difference for BRKT		0.120	inches		

Induction Calibration MAI-B.J 434					Base Calibration on 24-JAN-2012,20:11
					Field Check on 22-OCT-2014 13:23
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	14.7	442.4	9.3	966.2	
2	5.0	355.7	7.6	821.4	
3	3.2	250.0	5.2	566.0	
4	1.6	129.2	2.6	279.2	
Array Temperature		23.6	Deg F		
Channel		Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High	
1	0.0	0.0	19.5	4104.2	
2	0.0	0.0	34.7	3791.4	
3	0.0	0.0	30.2	3169.6	
4	0.0	0.0	20.7	2139.0	
Deep			16.9	1969.7	
Medium			44.1	4226.0	
Shallow			54.4	5754.3	
Array Temperature		0.0	81.7	Deg F	

Induction Constants MAI-B.J 434			Last Edited on 24-OCT-2014,01:06		
Induction Model		RtAP-WBM			
Caliper for Borehole Corr.		Density Caliper			
Hole Size for Borehole Correction		N/A		inches	
Tool Centred		No			
Stand-off Type		Fins			
Stand-off		0.50		inches	
Number of Fins on Stand-off		6.0000			
Stand-off Fin Angle		60.00		degrees	
Stand-off Fin Width		0.5000		inches	
Borehole Corr. Rm Source		Temperature Corr			
Temp. for Rm Corr.		MGS External Temperature			

Squasher Start		0.0020	mhos/metre
Squasher Offset		N/A	mhos/metre
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000
Calibration Site Corrections			
Channel 1		0.00	mmhos/metre
Channel 2		0.00	mmhos/metre
Channel 3		0.00	mmhos/metre
Channel 4		0.00	mmhos/metre
Apparent Porosity and Water Saturation Constants			
Archie Constant (A)		1.00	
Cementation Exponent (M)		2.00	
Saturation Exponent (N)		2.00	
Saturation of Water for Apor		100.00	percent
Resistivity of Water for Apor and Sw		0.05	ohm-m
Resistivity of Mud Filtrate for Sw		0.00	ohm-m
Source for Rt		0.00	
Source for Rxo		0.00	
High Resolution Temperature Calibration MAI-B.J 434			
			Field Calibration on 24-JAN-2012,20:11
	Measured	Calibrated(Deg C)	
Lower	10.00	10.00	
Upper	100.00	100.00	
High Resolution Temperature Constants MAI-B.J 434			
			Last Edited on
Pre-filter Length		11	
Caliper Calibration MPD-C.A 218			
			Base Calibration on 22-OCT-2014 13:45
			Field Calibration on 22-OCT-2014 13:47
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14657	4.00	
2	22831	5.96	
3	31351	7.98	
4	39468	9.86	
5	48772	11.88	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	5.94	5.96	
Photo Density Calibration MPD-C.A 218			
			Base Calibration on 01-OCT-2014 11:18
			Field Check on 22-OCT-2014 13:36
Density Calibration			
Base Calibration			
	Measured	Calibrated (sdu)	
	Near	Far	Near Far
Background	734	786	
Reference 1	54446	24915	59443 30683
Reference 2	21359	1881	25113 2508
Field Check at Base			
	734.5	785.7	
Field Check			
	736.9	790.1	
PE Calibration			
Base Calibration			
	Measured	Calibrated	
	WS	WH	Ratio
Background	133	655	
Reference 1	22242	54310	0.412
			0.372

Reference 2	5996	21274	0.284	0.268
Field Check at Base	133.1	655.2		
Field Check	133.7	659.7		

Density Constants MPD-C.A 218

Last Edited on 22-OCT-2014,23:41

Density Source Id	P44264B
Nylon Calibrator Number	652
Aluminium Calibrator Number	659
Density Shoe Profile	4 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied
Mud Density	1.14 gm/cc
Mud Density Z/A Multiplier	1.11
Mud Filtrate Density	1.00 gm/cc
Dry Hole Mud Filtrate Density	1.00 gm/cc
DNCT	0.00 gm/cc
CRCT	0.00 gm/cc
Density Z/A Correction	Hybrid
Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Dipole Constants and Gains MRD-A.A 142

Logging Mode	Standard
Semblance Parameters	
Window Start	1.00 milliseconds
Window Width	15 milliseconds
Discriminator Levels	
M1C Discriminator	0.1 mV
M2C Discriminator	0.1 mV
M3C Discriminator	0.1 mV
M4C Discriminator	0.1 mV
Monopole Receiver Gains	
MR1A 1.00 MR1B 1.00 MR1C 1.00 MR1D 1.00	
MR2A 1.00 MR2B 1.00 MR2C 1.00 MR2D 1.00	
MR3A 1.00 MR3B 1.00 MR3C 1.00 MR3D 1.00	
MR4A 1.00 MR4B 1.00 MR4C 1.00 MR4D 1.00	
MR5A 1.00 MR5B 1.00 MR5C 1.00 MR5D 1.00	
MR6A 1.00 MR6B 1.00 MR6C 1.00 MR6D 1.00	
MR7A 1.00 MR7B 1.00 MR7C 1.00 MR7D 1.00	
MR8A 1.00 MR8B 1.00 MR8C 1.00 MR8D 1.00	

Spectral Gamma Calibration SGS-E.J 128

Base Calibration on 25-SEP-2014 17:21
Field Calibration on 13-OCT-2014,17:33

Base Calibration	
Potassium Calibrator	
	Gate 1 Gate 2 Gate 3 Gate 4 Gate 5
Background	106.5 36.9 3.8 1.4 2.3
Calibrator (Gross)	234.7 121.4 29.0 1.5 2.4
Calibrator (Net)	128.2 84.5 25.2 0.1 0.1

	K %	U ppm	Th ppm
Concentrations	5.9	0.0	0.0

Uranium Calibrator

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	561.8	196.8	17.3	11.1	5.9
Calibrator (Net)	455.4	159.9	13.5	9.7	3.6

	K %	U ppm	Th ppm
Concentrations	0.0	16.6	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	424.1	156.4	12.6	6.6	17.3
Calibrator (Net)	317.6	119.5	8.8	5.2	14.9

	K %	U ppm	Th ppm
Concentrations	0.0	0.0	44.7

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	106.5	36.9	3.8	1.4	2.3
Calibrator (Gross)	906.0	369.5	48.4	14.6	19.8
Calibrator (Net)	799.6	332.5	44.6	13.2	17.5

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	157	31
Calibrator (Gross)	1356	271
Calibrator (Net)	1199	240

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	105.4	35.9	3.8	1.4	2.2
Calibrator (Gross)	900.9	365.2	48.3	14.3	19.5
Calibrator (Net)	795.4	329.3	44.5	12.9	17.3

Spectral Gamma Constants SGS-E.J 128

Last Edited on 22-OCT-2014,23:47

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.14	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

DOWNHOLE EQUIPMENT

D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta

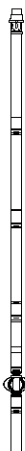
Shuttle Running Tool 3.5"
SRT-A.A 35 LG: 6.62 ft WT: 37.5 lb OD: 2.520 in

400V EXT
MLK-A 1 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

400V EXT
MLK-A 2 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 589 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-E.A Compact Inline Standoff sub
MIS-E.A 182 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in



MIS-E.A 183 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in
400V EXT
MLK-A 300 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 614 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

400V EXT
MLK-A 400 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

MBS-G.A 200v Compact Battery Sub
MBS-G.A 126 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Battery Power Supply
MBP-A.A 103 LG: 4.85 ft WT: 39.7 lb OD: 2.244 in

Compact Memory Sub F.A
MMS-F.A 261 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.
MTI-B.A 66 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma
MGS-C.J 140 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator
MCL-B.J 67 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 244 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

SHA-H Compact Swivel Head Adaptor
SHA-H 142 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 723 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact Neutron
MDN-C.A 464 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 218 LG: 9.59 ft WT: 90.4 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 731 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 512 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

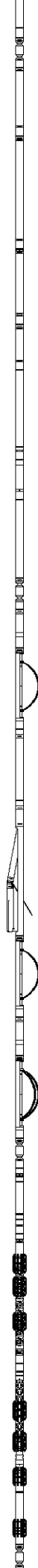
MIS-D.B Compact Inline Bowspring sub
MIS-D.B 702 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 697 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Dipole Memory
MDM-A.A 142 LG: 4.48 ft WT: 39.7 lb OD: 2.240 in

Compact Dipole Receiver
MRD-A.A 142 LG: 8.89 ft WT: 88.2 lb OD: 2.244 in

Compact Dipole Transmitter
MTD-A.A 142 LG: 12.63 ft WT: 110.2 lb OD: 2.240 in



SKJ-E.B Compact Knuckle Joint
SKJ-E.B 603 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-D.A Compact Inline Bowspring sub
MIS-D.A 437 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact MMI Memory Section
MIM-A.J 241 LG: 4.65 ft WT: 26.5 lb OD: 2.244 in

Compact MMI Electrode Section
MIE-A.J 241 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 654 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 246 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Spectral Gamma Ray Sub
SGS-E.J 128 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 245 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 693 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction
MAI-B.J 434 LG: 10.81 ft WT: 48.5 lb OD: 2.240 in

Total Length: 229.23 ft Weight: 1492.5 lb



Tool Zero

(0.13ft from bottom)

COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 30F-1942
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4797.00	feet	First Reading	13726.00	feet
Elevation Drill Floor	4797.00	feet	Depth Driller	13777.00	feet
Elevation Ground Level	4780.00	feet	Depth Logger	13777.00	feet



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MEASURED DEPTH
X-Y CALIPER
HOLE VOLUME LOG