



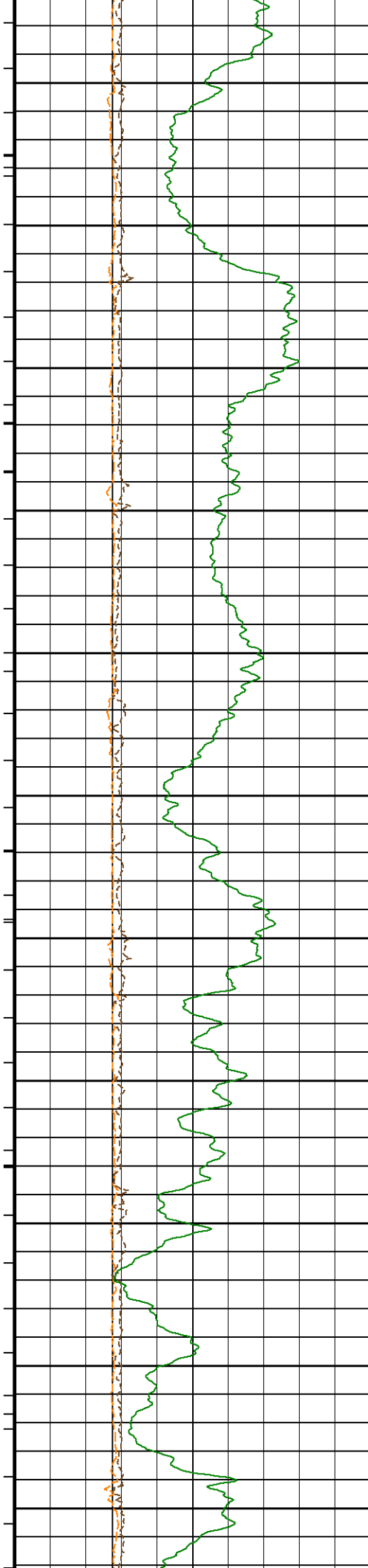
Weatherford

**MEASURED DEPTH
ARRAY INDUCTION
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		CROSS DIPOLE SONIC
API Number		05-123-38740	MICRO IMAGER		
Permanent Datum G.L., Elevation 4780 feet		SPECTRAL GAMMA			
Log Measured From KB		DENSITY/NEUTRON			
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	13754.00		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		GEOLOGIST		
WSL			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 4BBL/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



200°

6200

202°

6300

202°

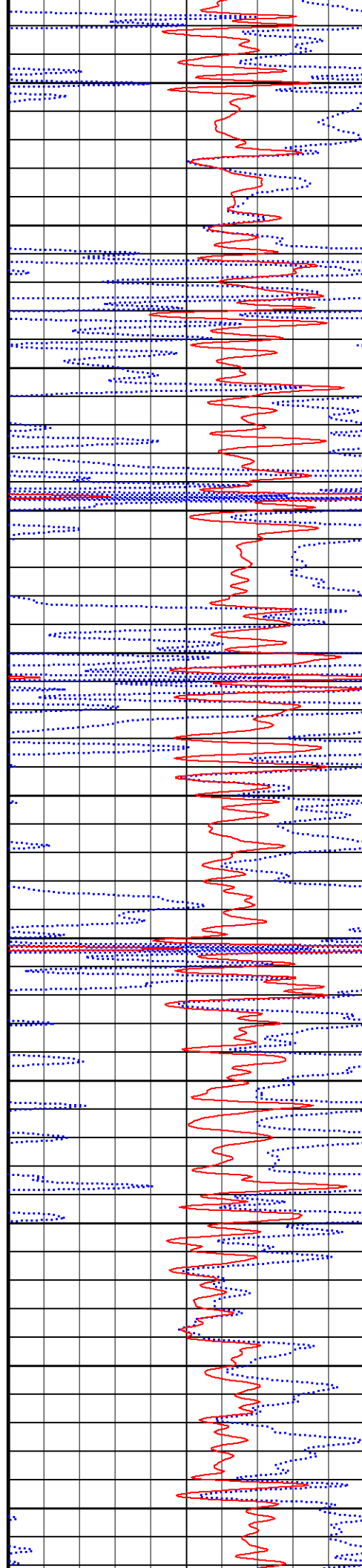
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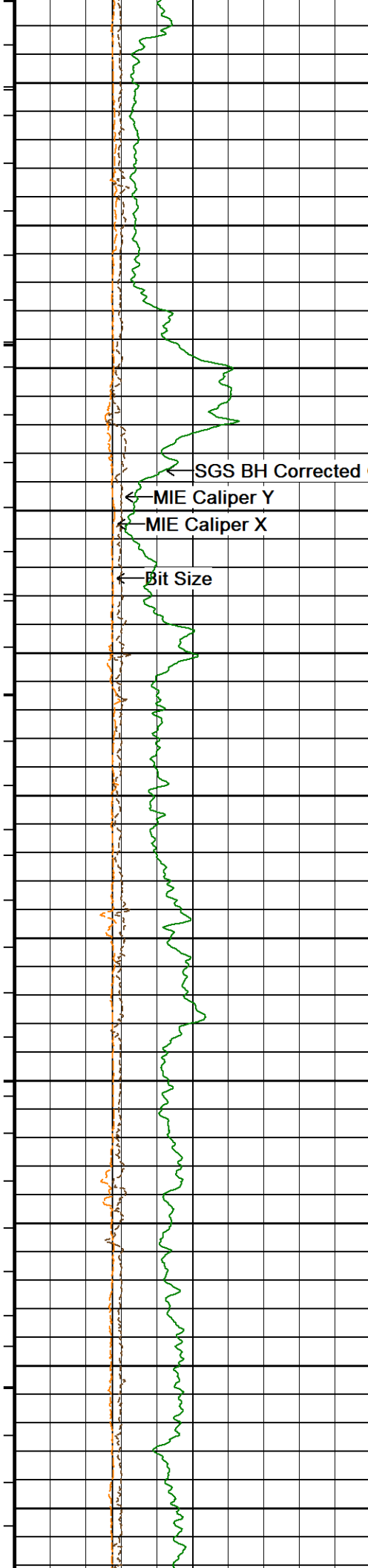
202°

6500

203°

6600





203°

6700

204°

6800

← SGS BH Corrected Gamma

← MIE Caliper Y

← MIE Caliper X

← Bit Size

204°

6900

204°

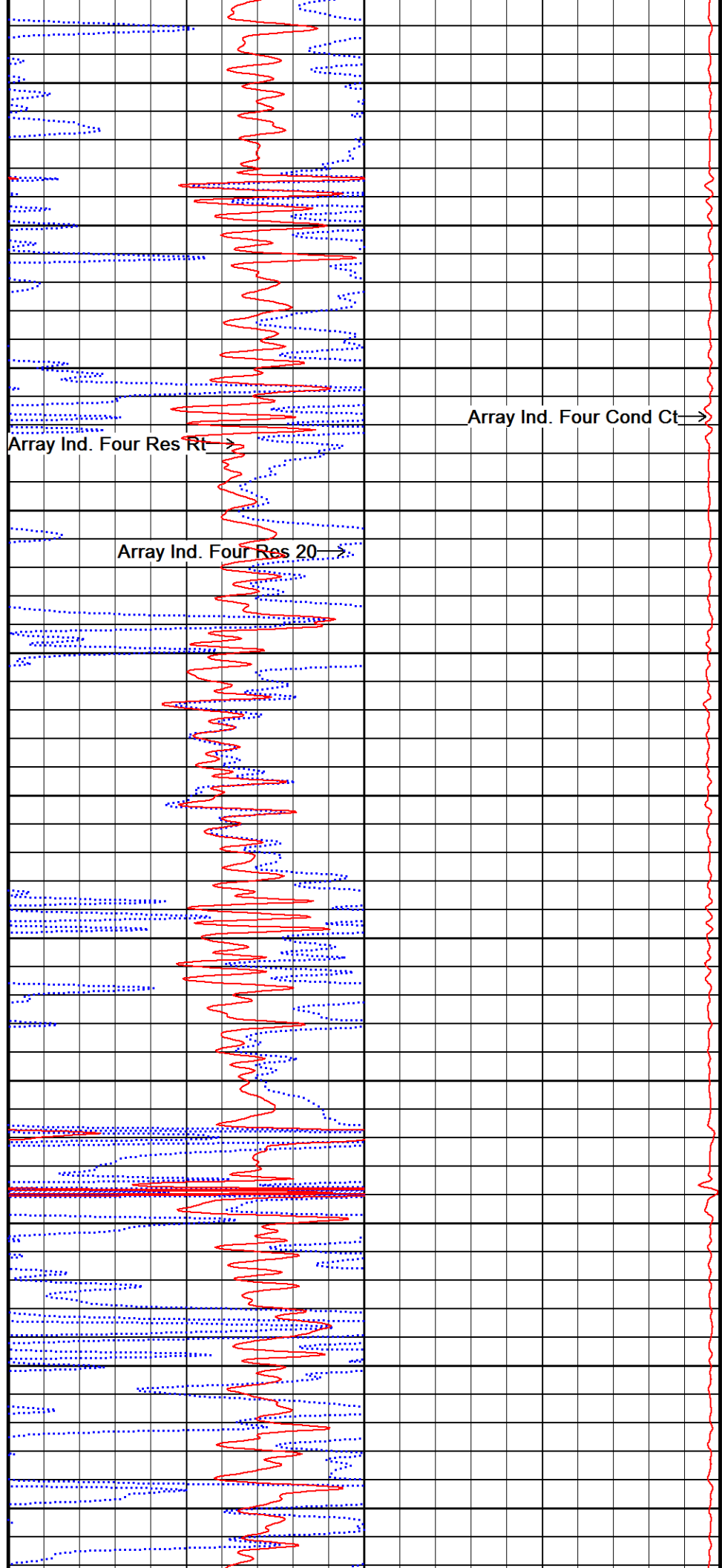
7000

205°

7100

205°

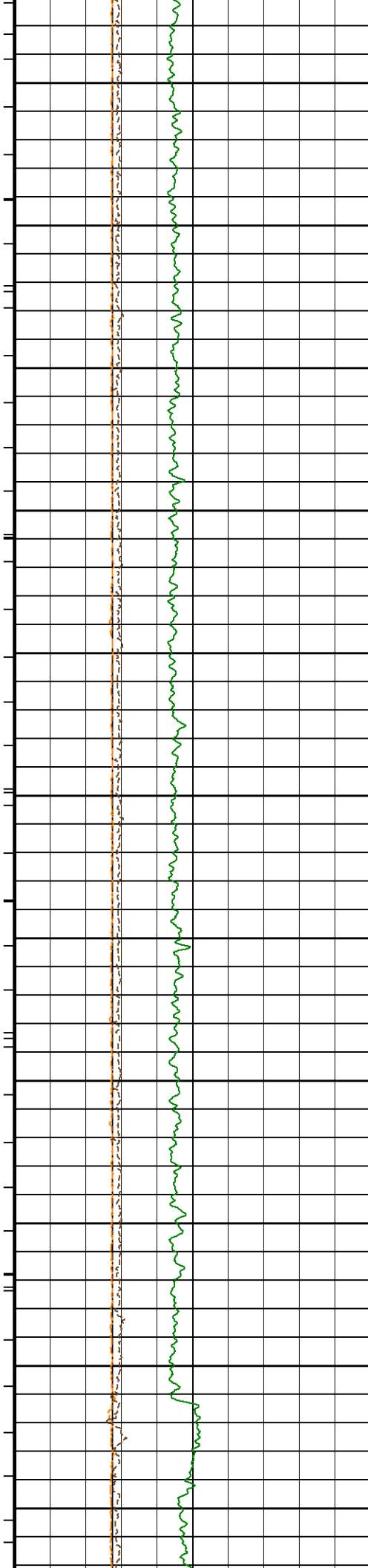
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Array Ind. Four Res Rt →

Array Ind. Four Cond Ct →

Array Ind. Four Res 20 →



205°

7300

206°

7400

206°

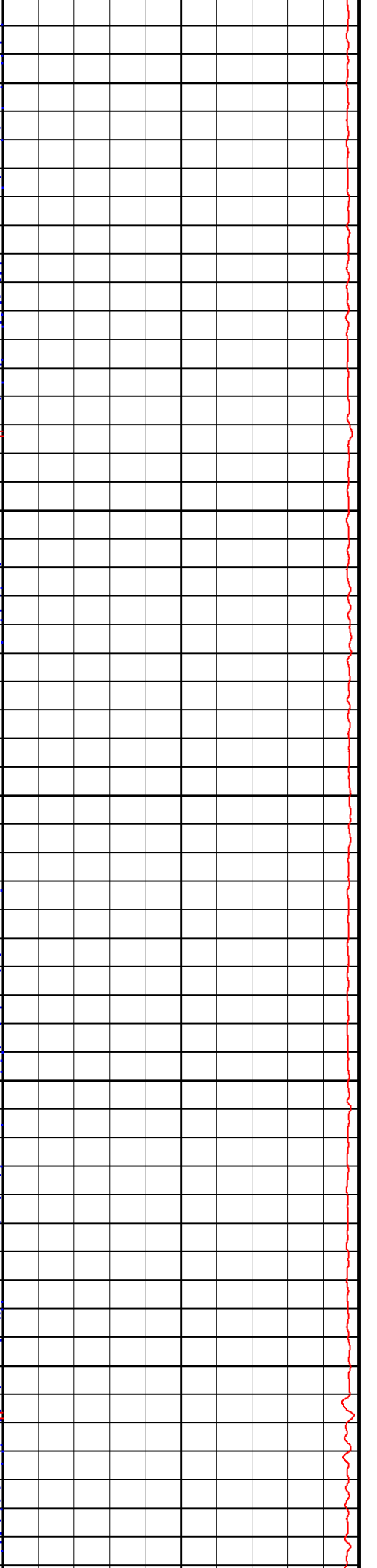
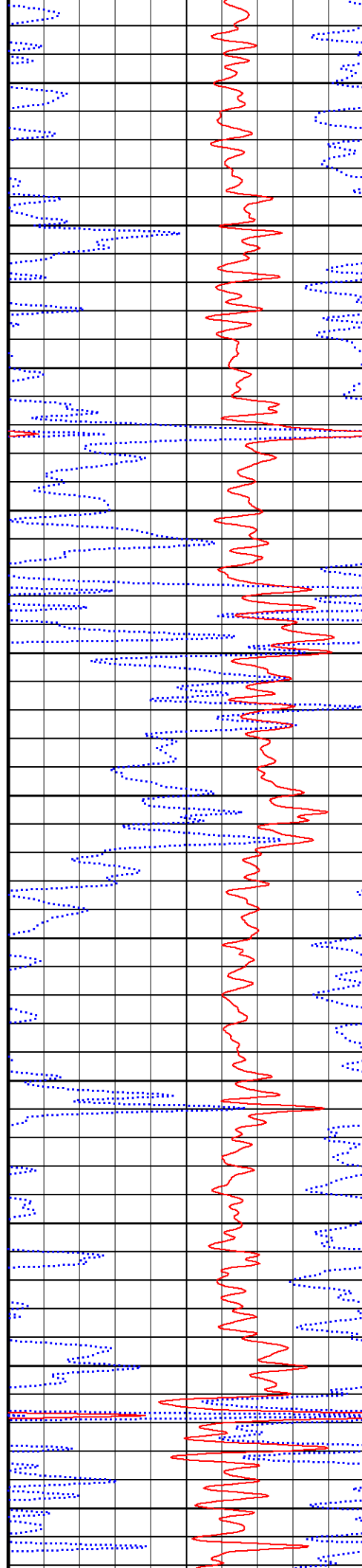
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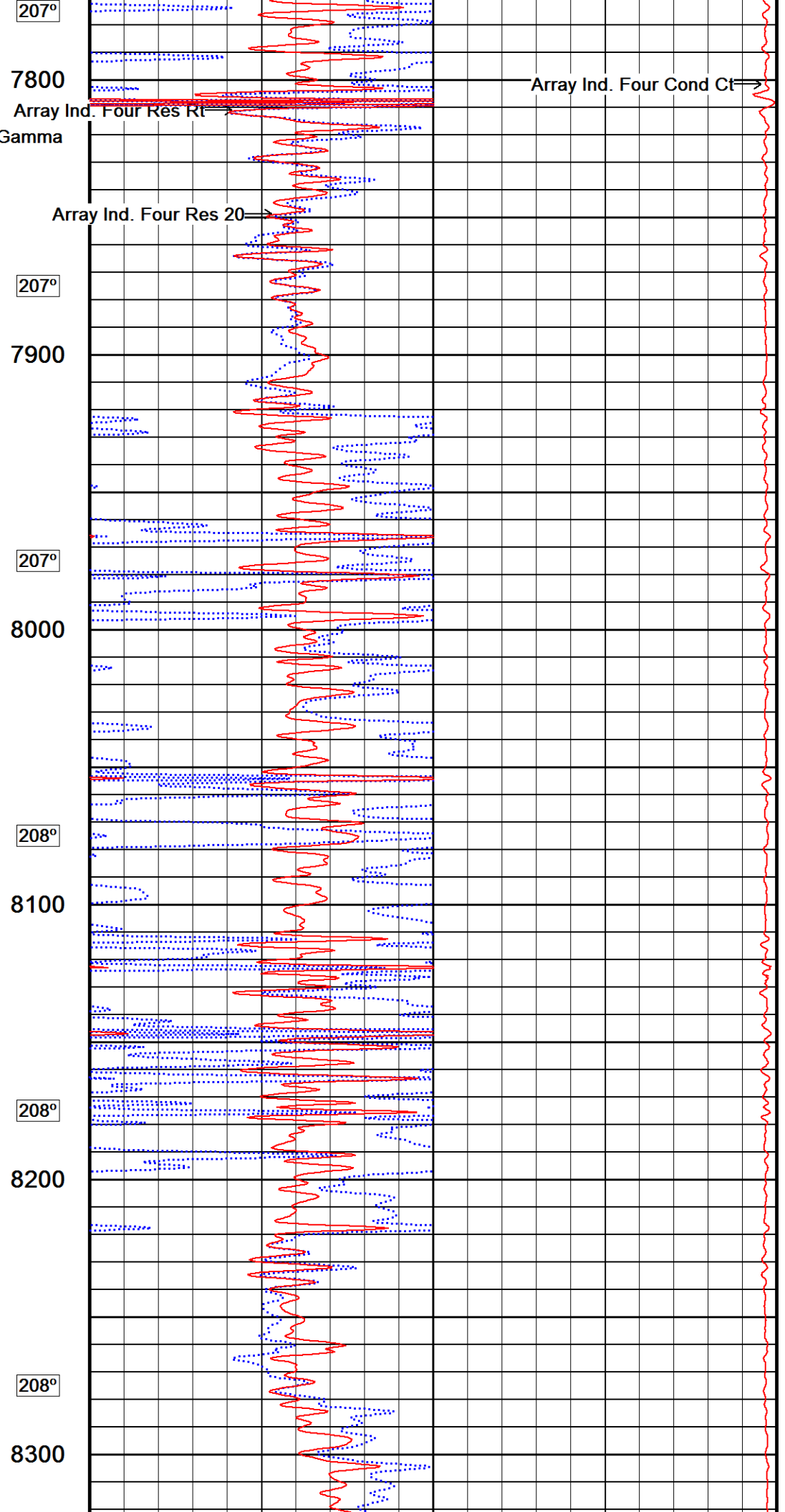
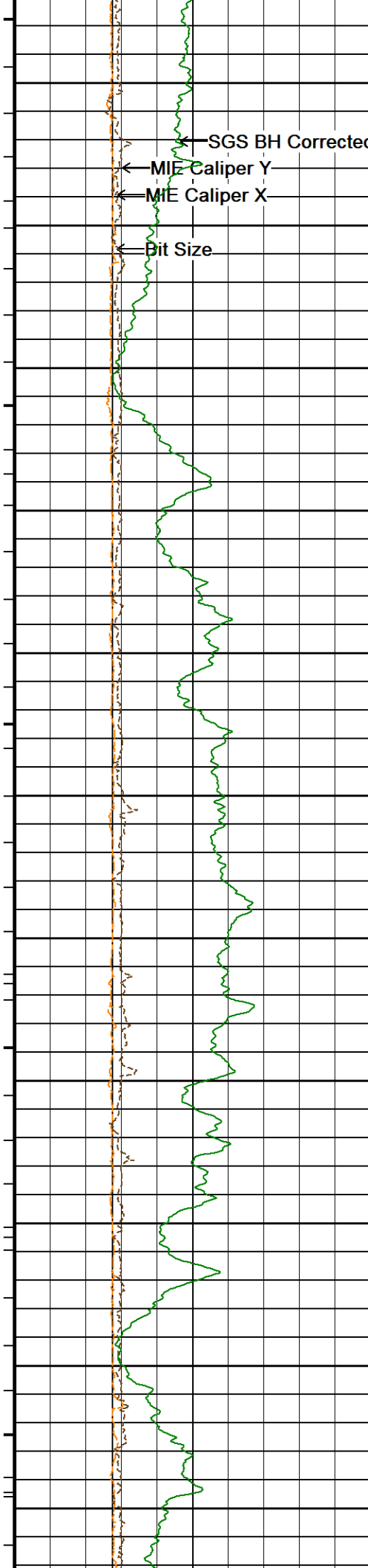
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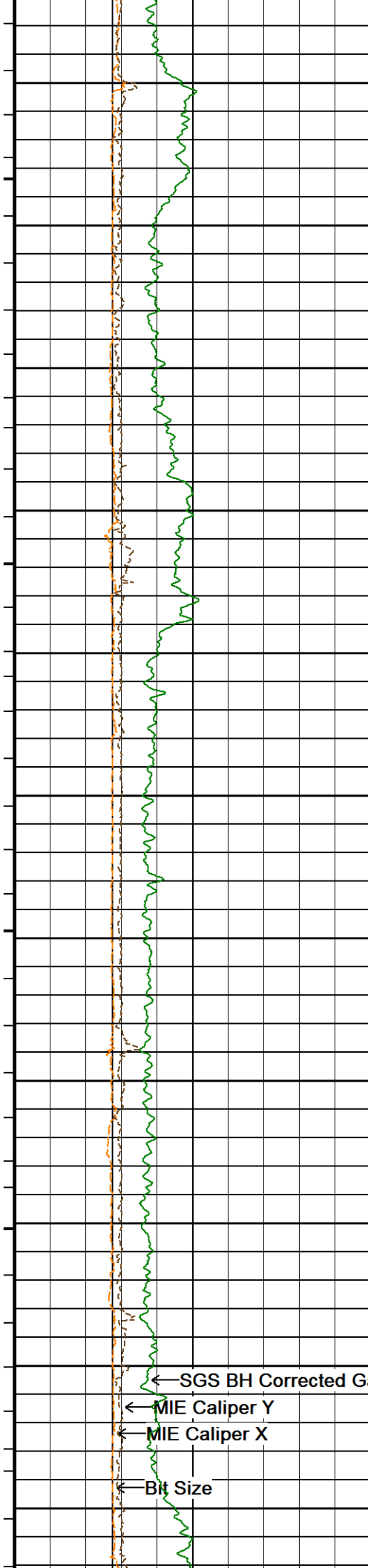
7600

206°

7700







208°

8400

209°

8500

209°

8600

209°

8700

210°

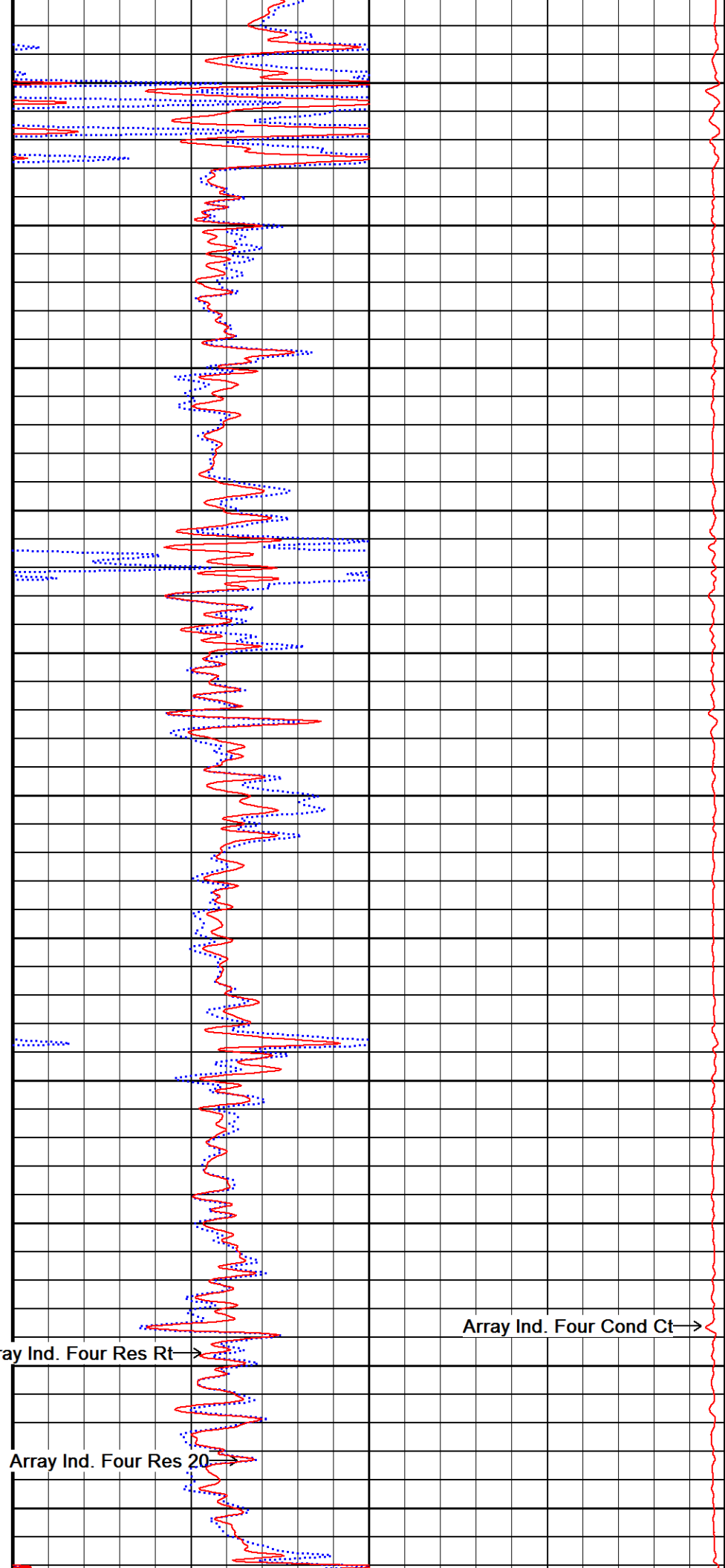
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← SGS BH Corrected Gamma

← MIE Caliper Y

← MIE Caliper X

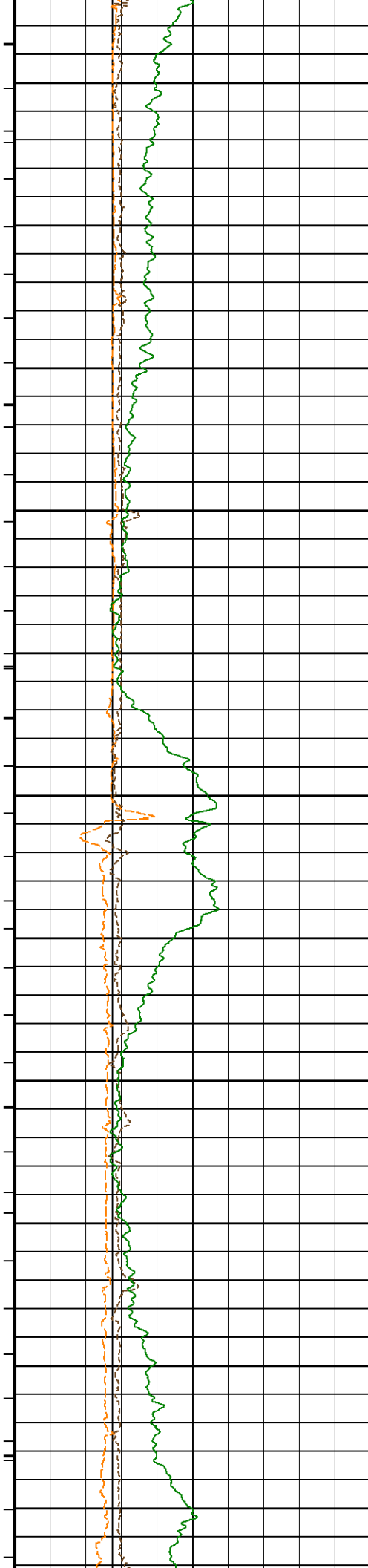
← Bit Size



Array Ind. Four Res Rt →

Array Ind. Four Cond Ct →

Array Ind. Four Res 20 →



210°

8900

210°

9000

210°

9100

210°

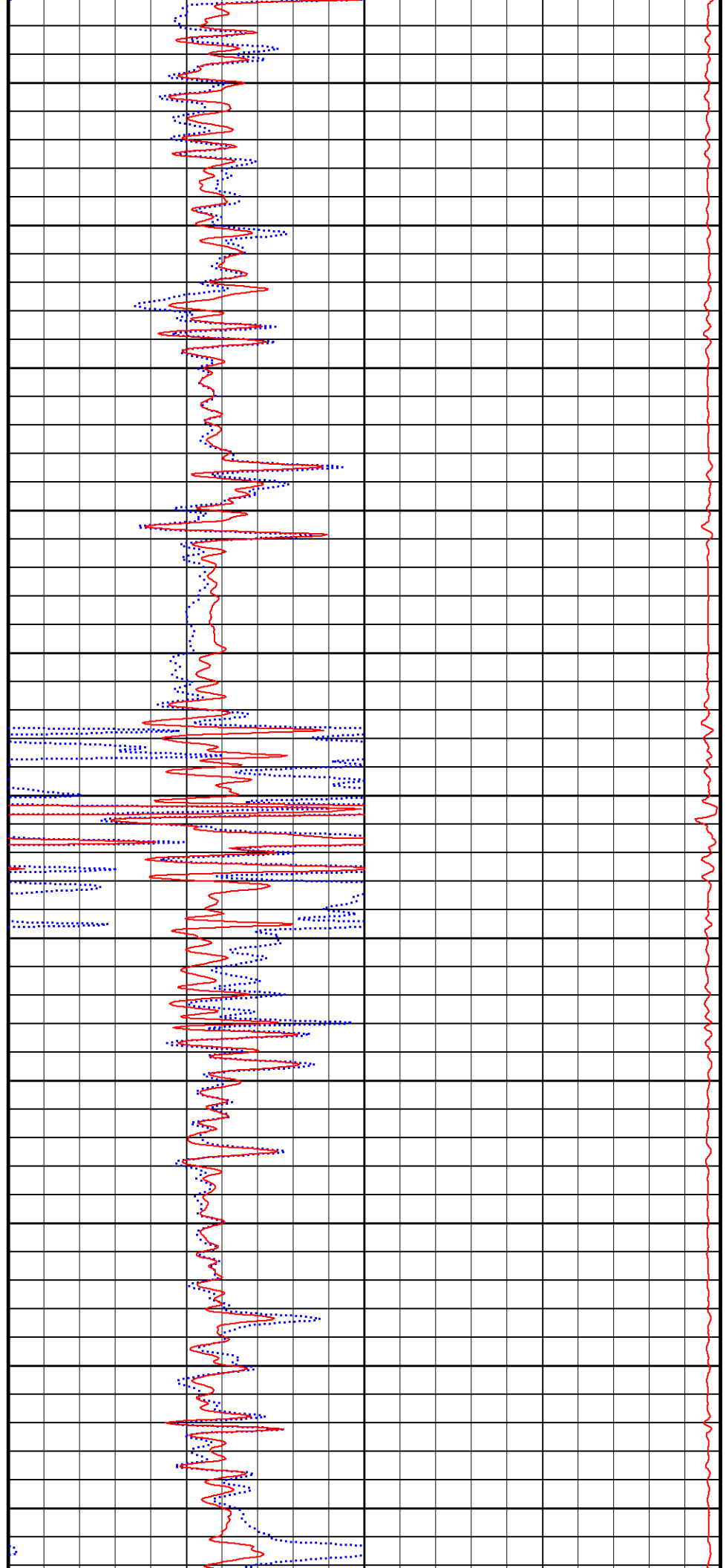
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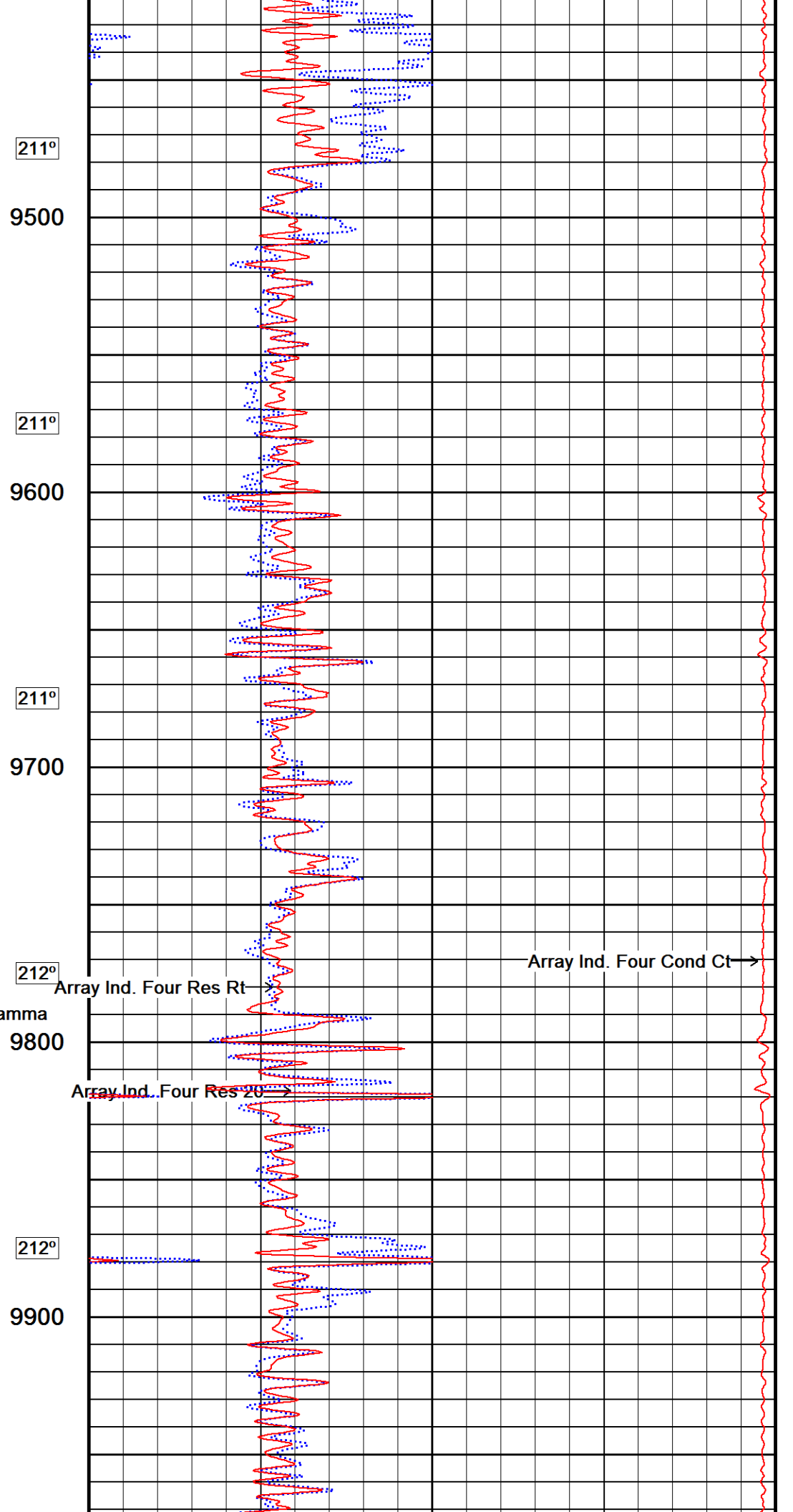
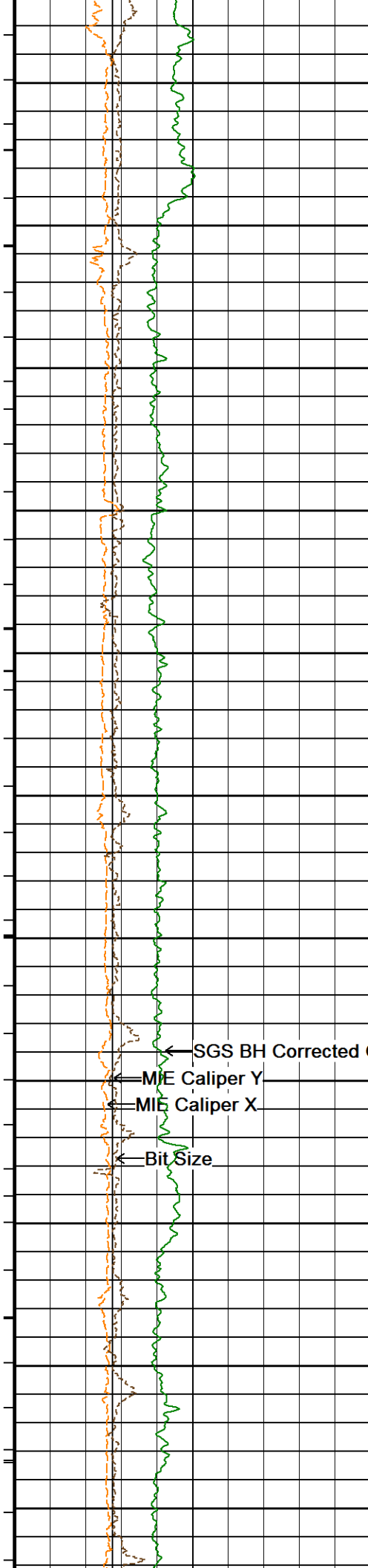
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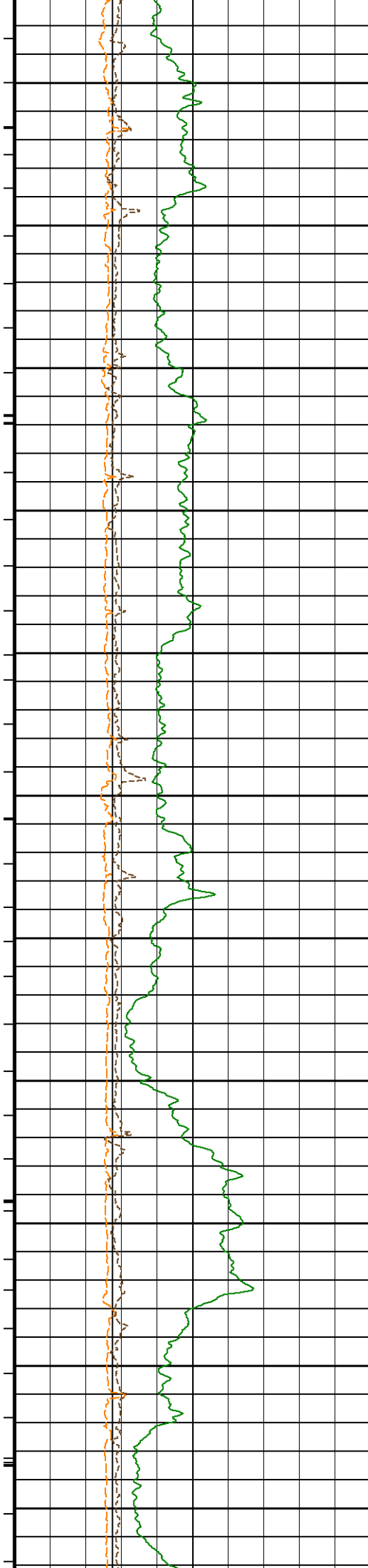
9300

211°

9400







212°

10000

212°

10100

212°

10200

213°

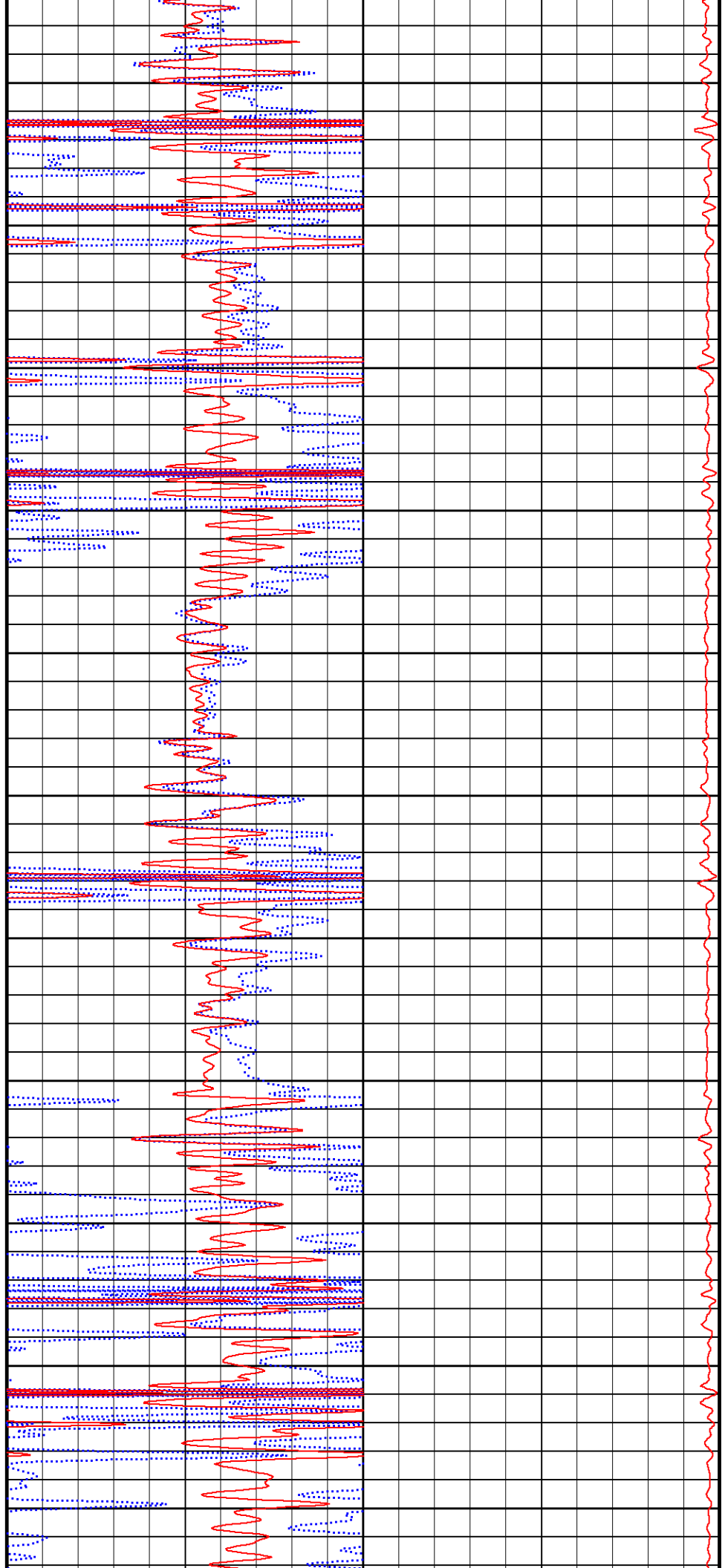
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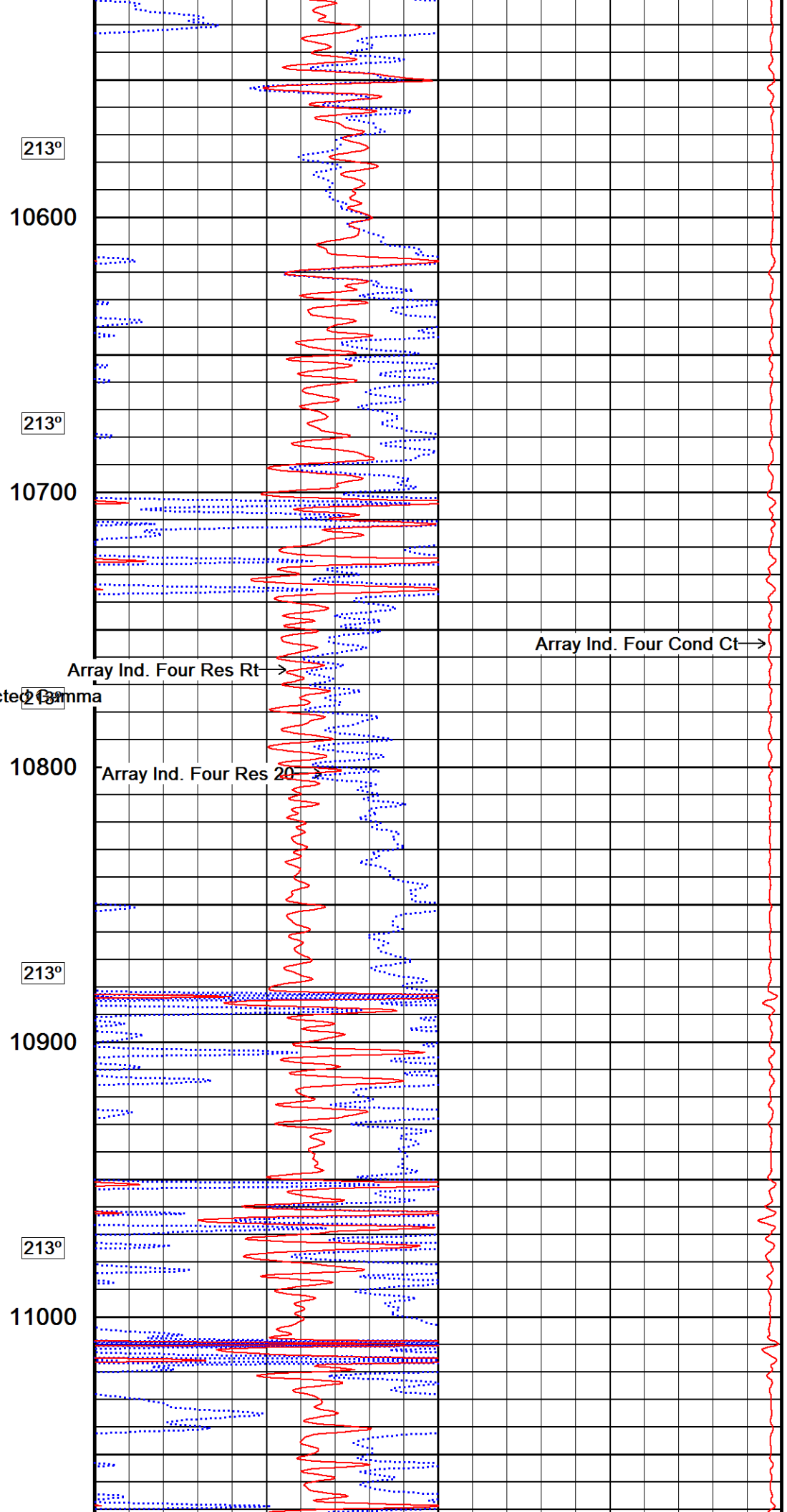
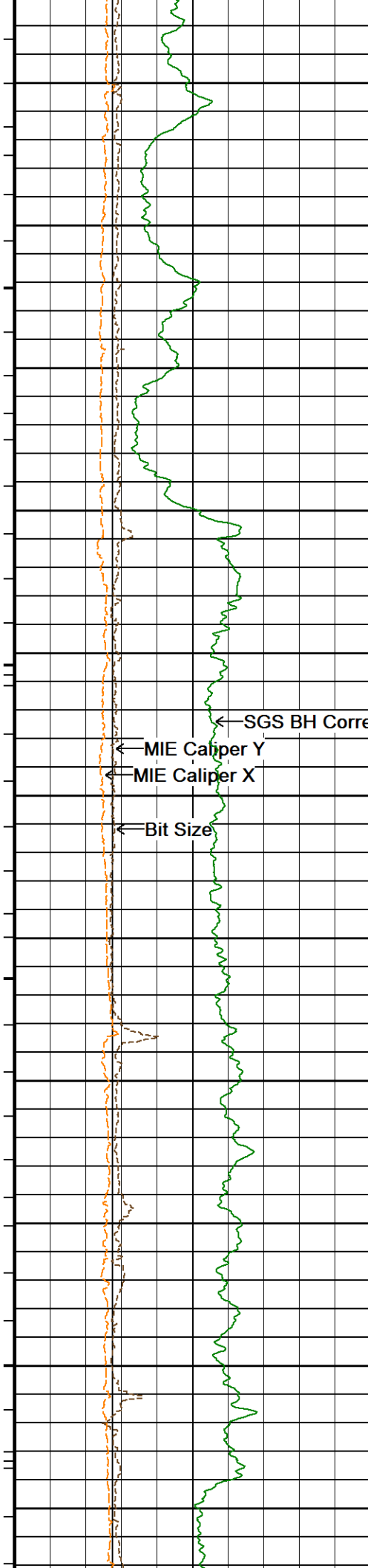
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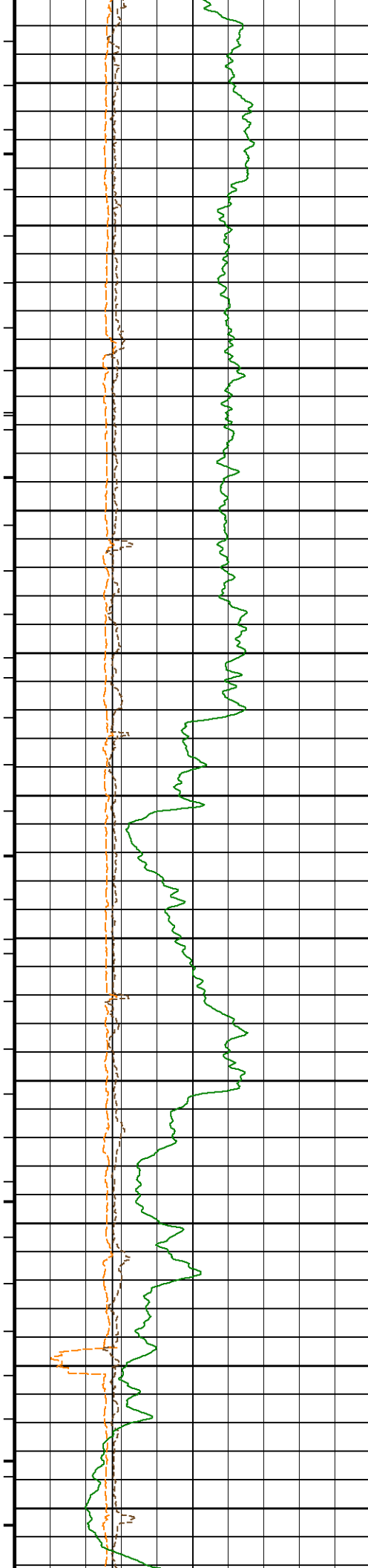
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213°

10500







214°

11100

214°

11200

214°

11300

214°

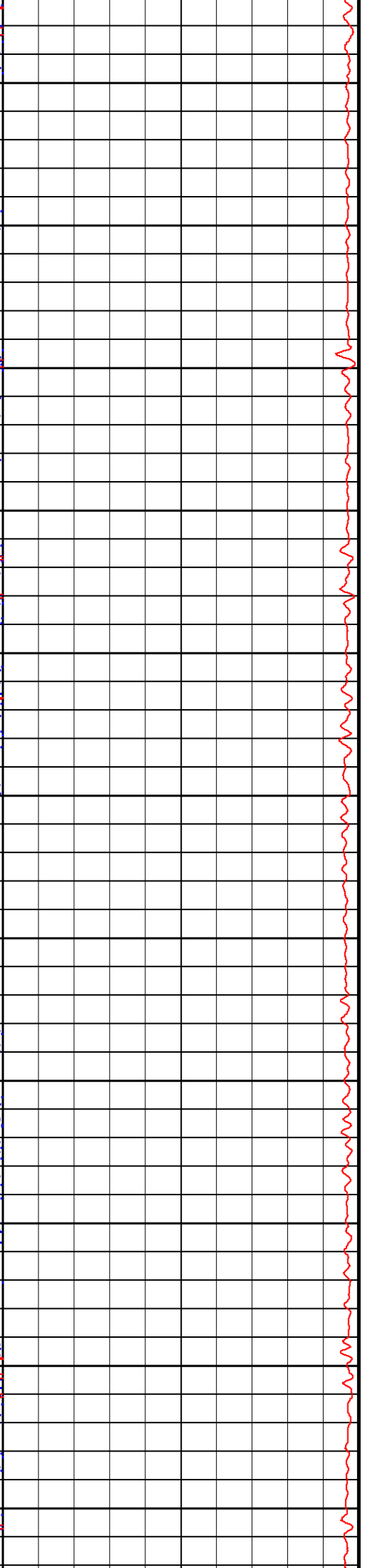
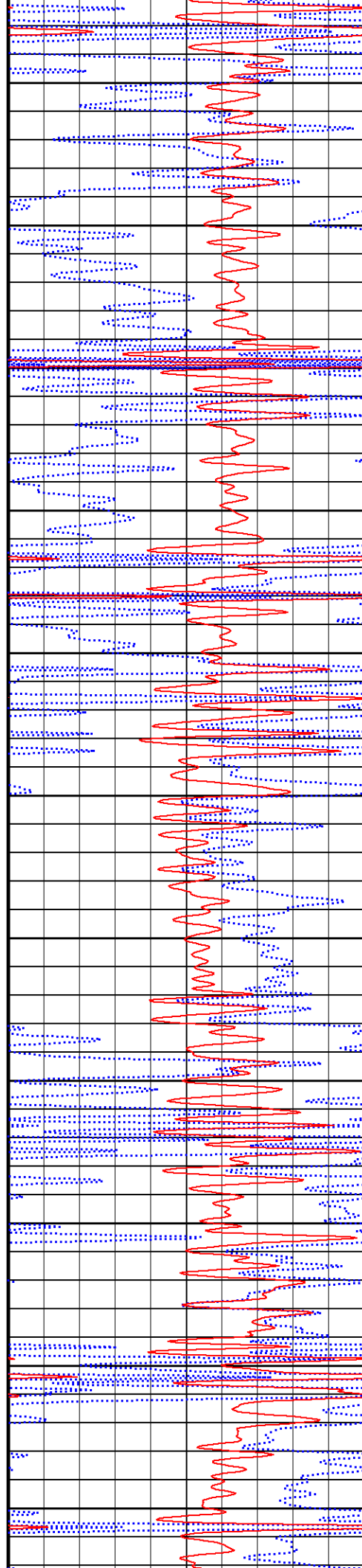
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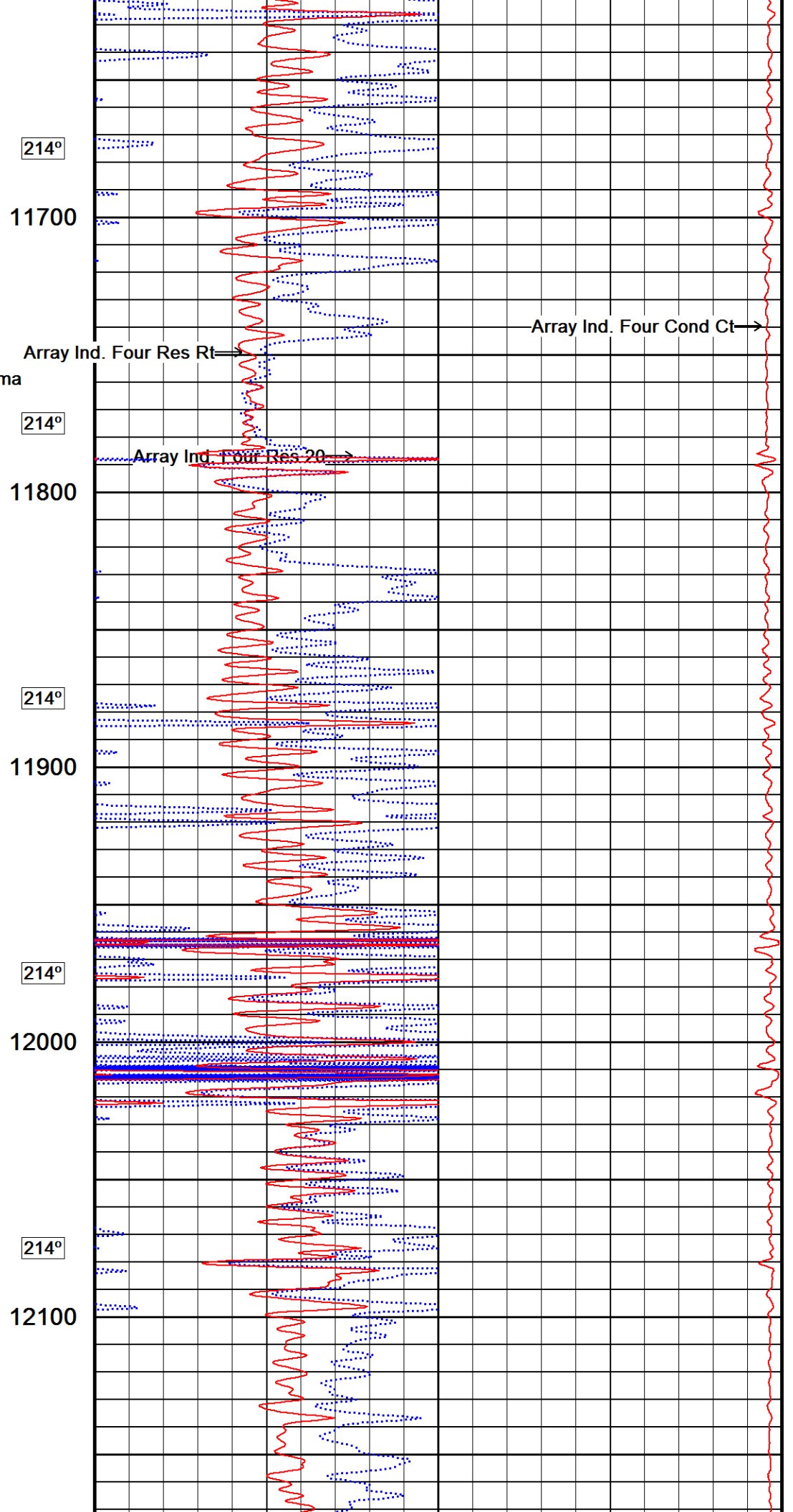
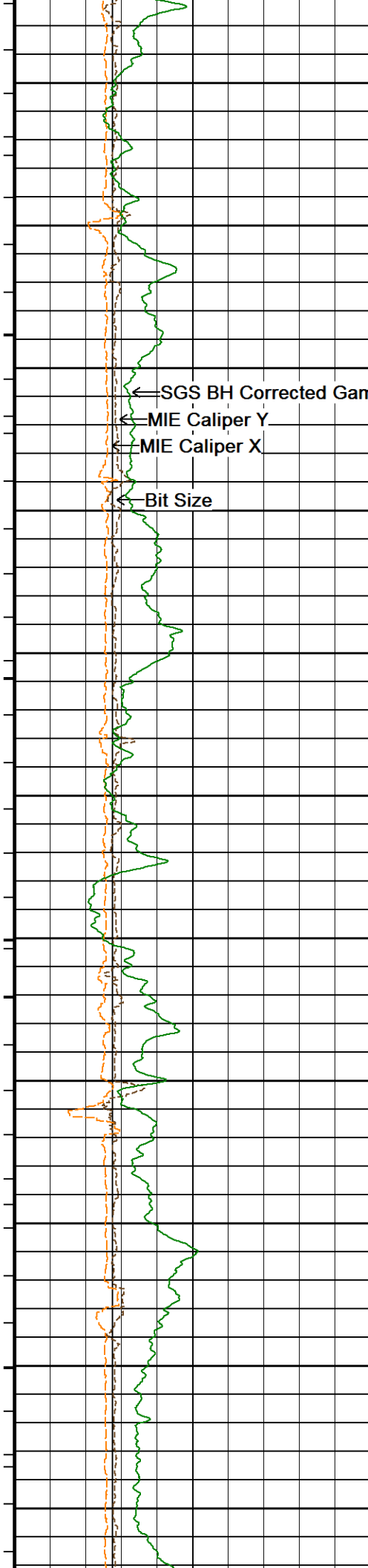
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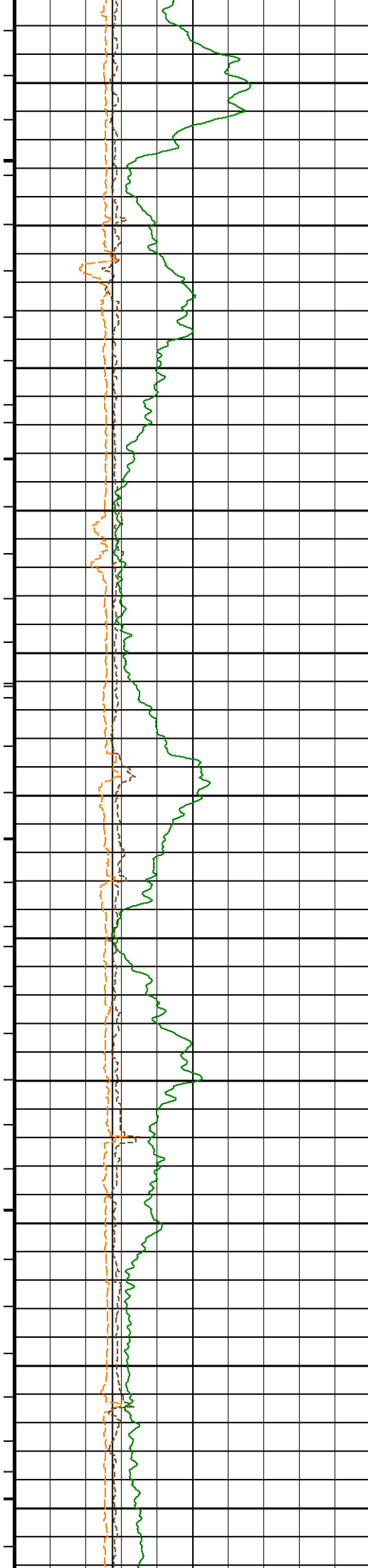
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214°

11600







214°

12200

213°

12300

213°

12400

213°

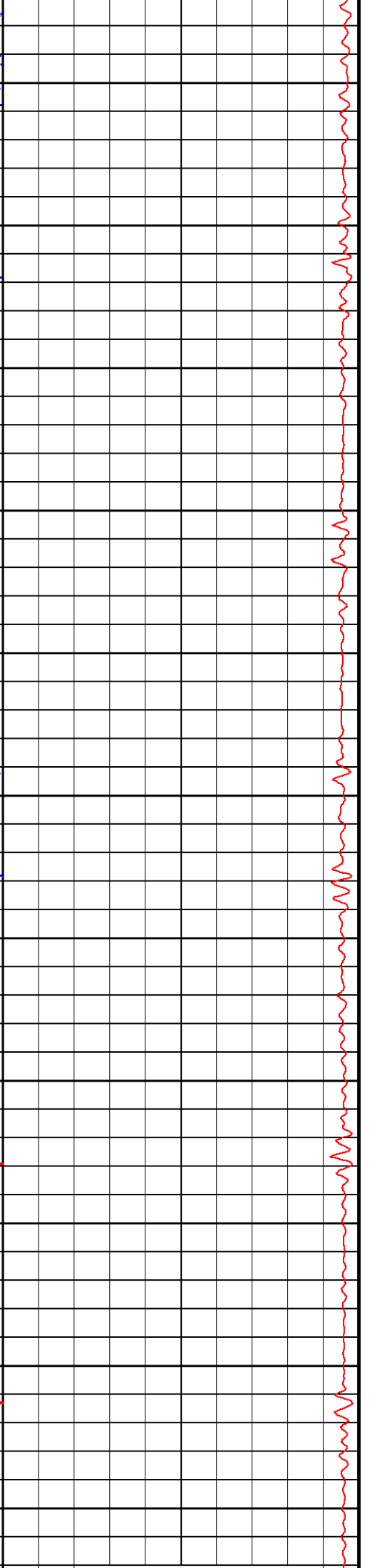
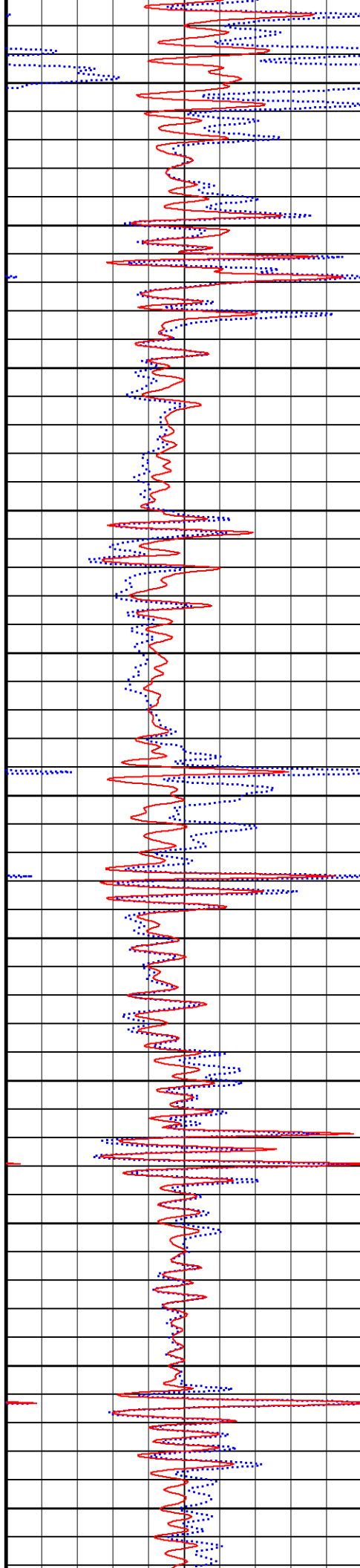
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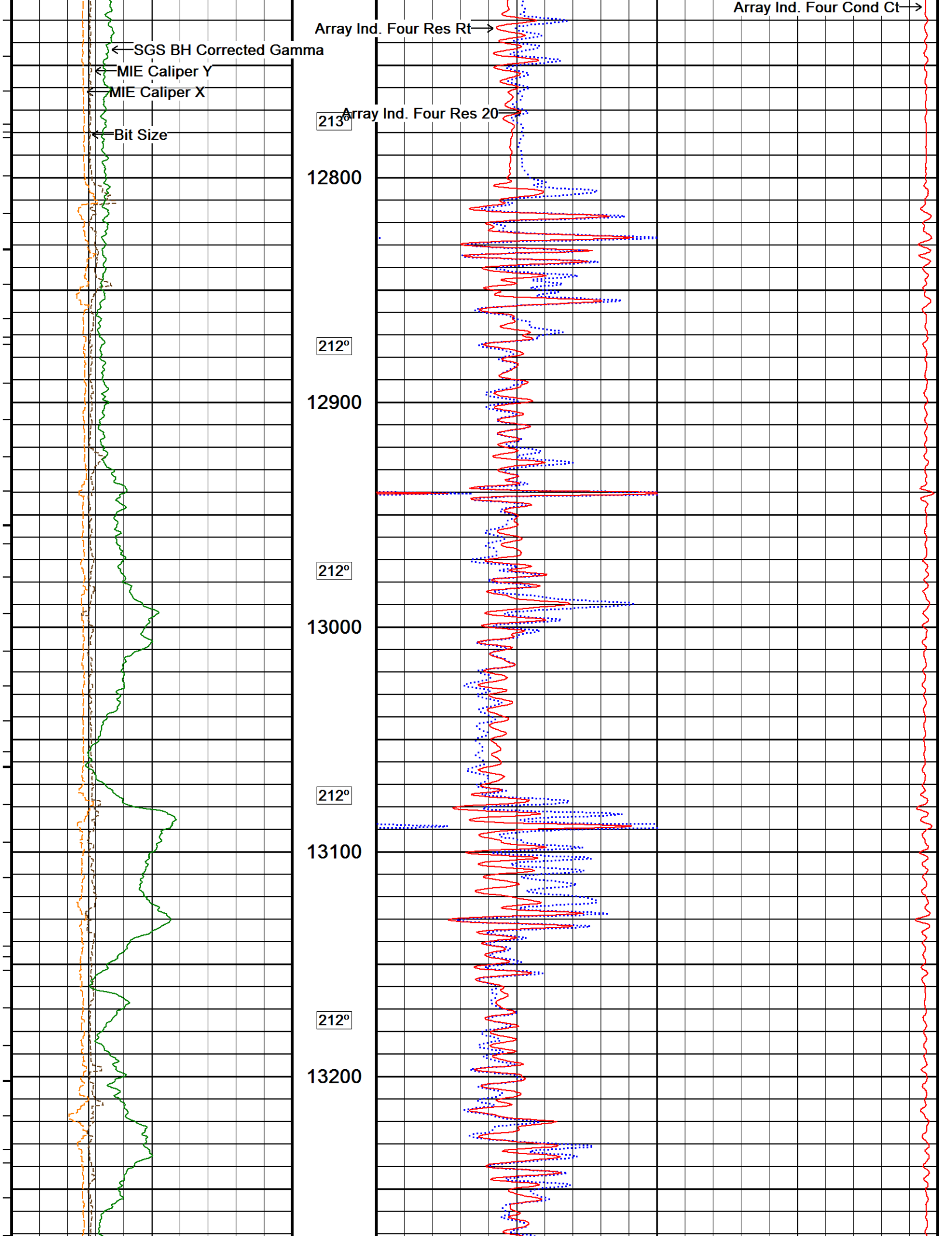
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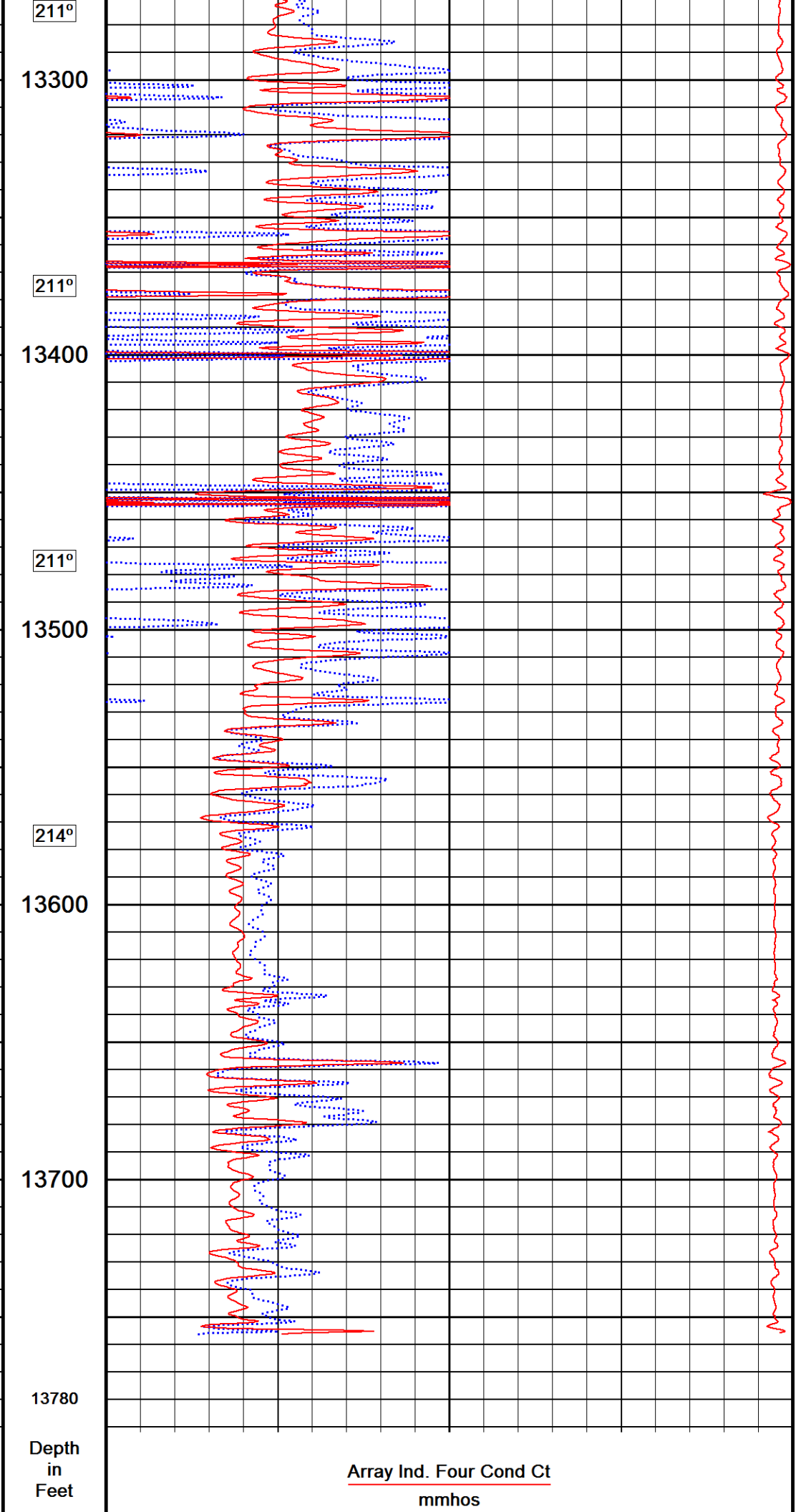
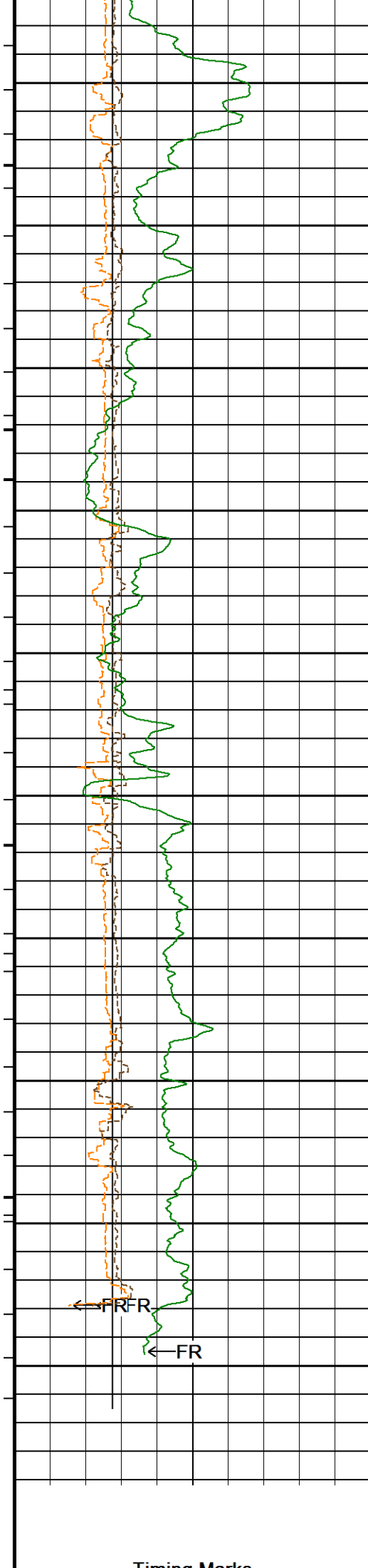
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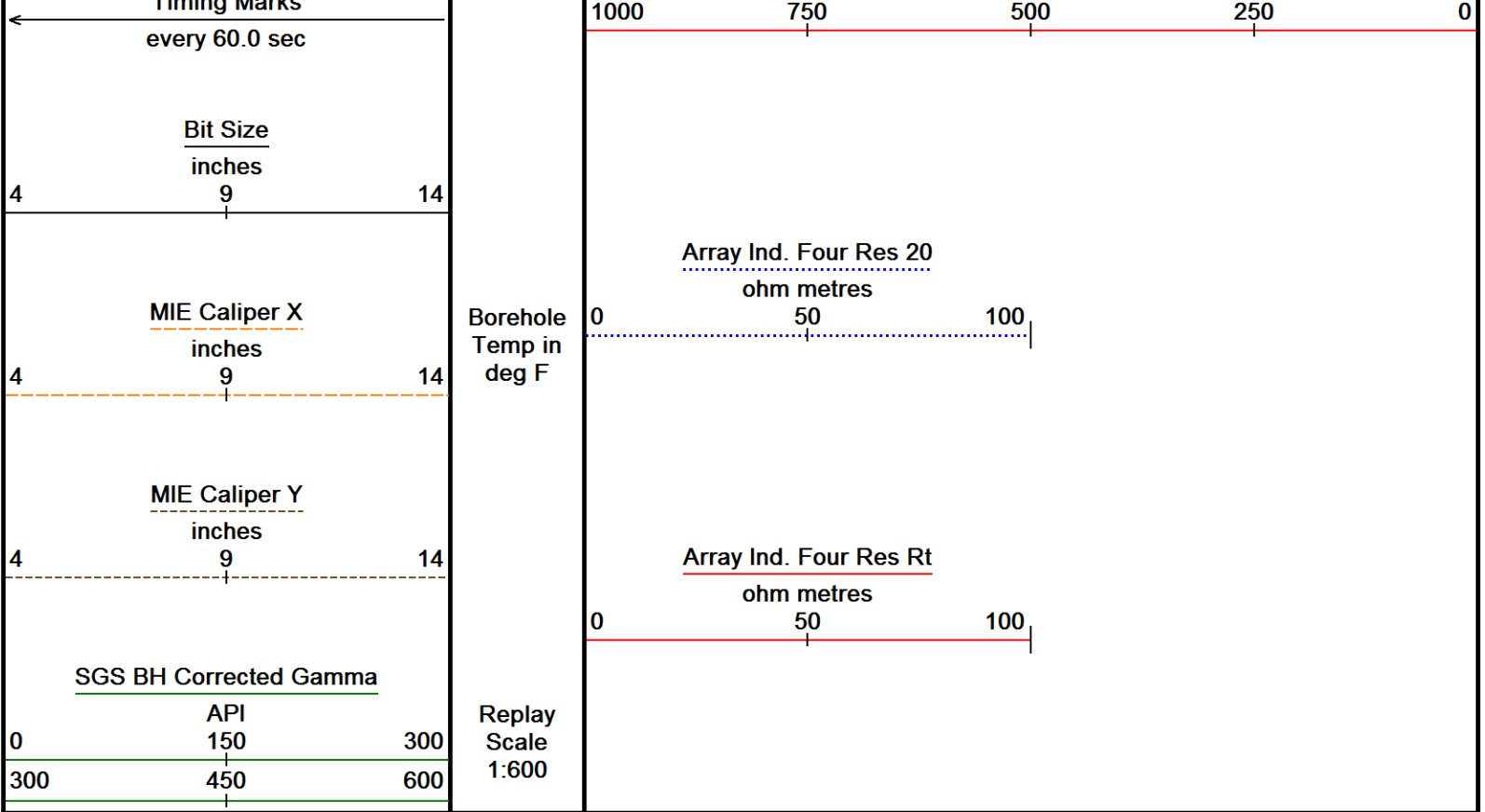
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12700



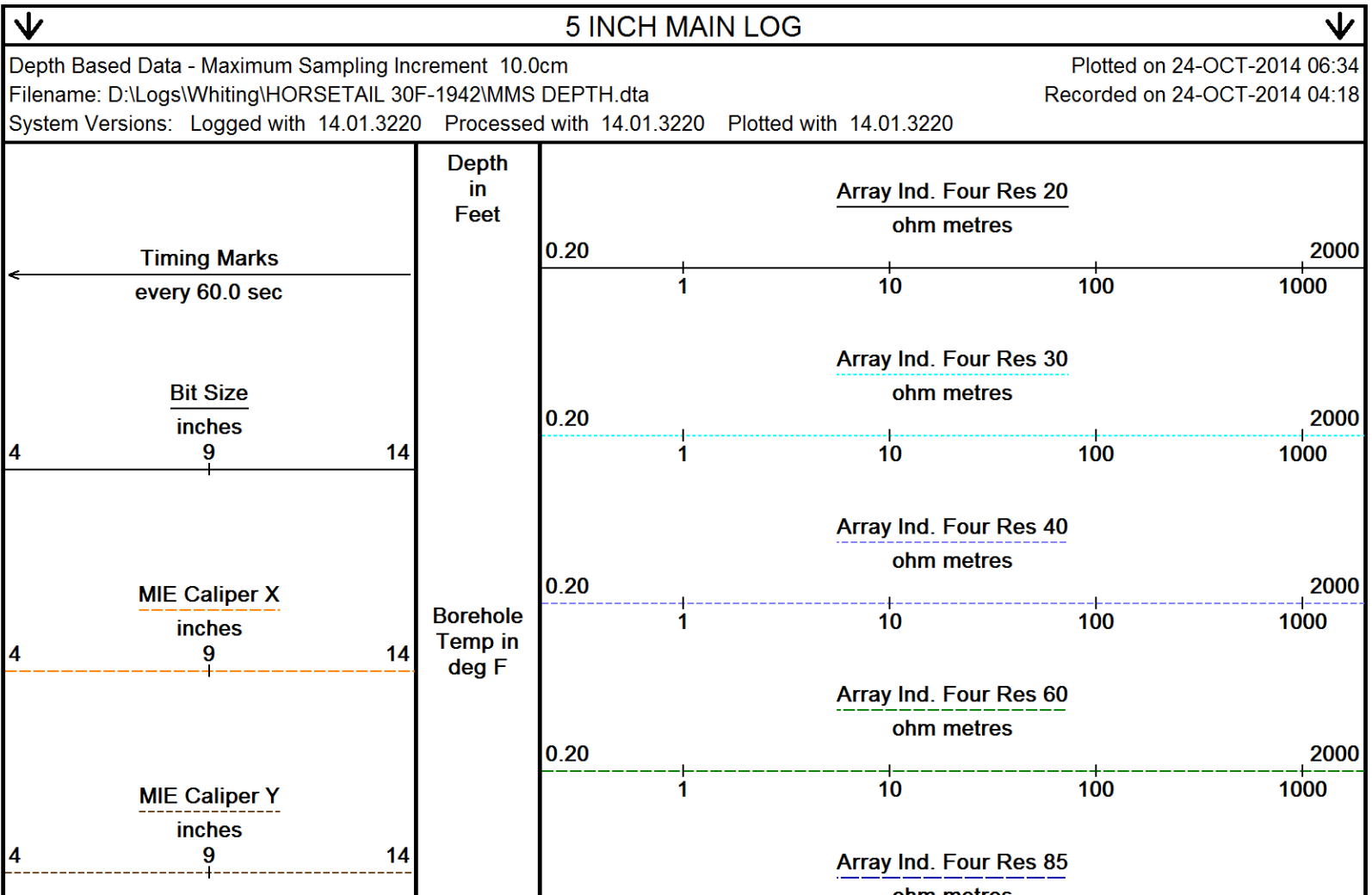


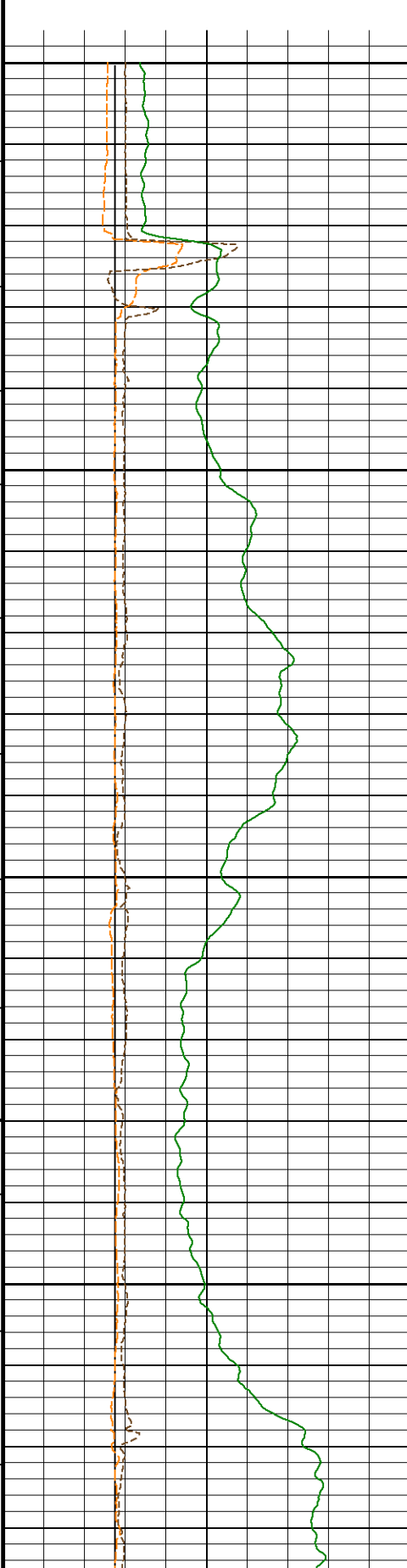
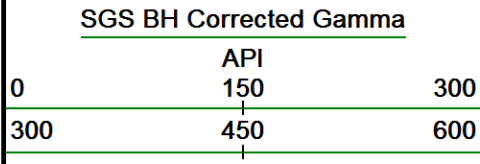




Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 24-OCT-2014 06:34
Filename: D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta	Recorded on 24-OCT-2014 04:18
System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220	

↑ 2 INCH MAIN LOG ↑





Replay
Scale
1:240

6050

Casing
Shoe

200°

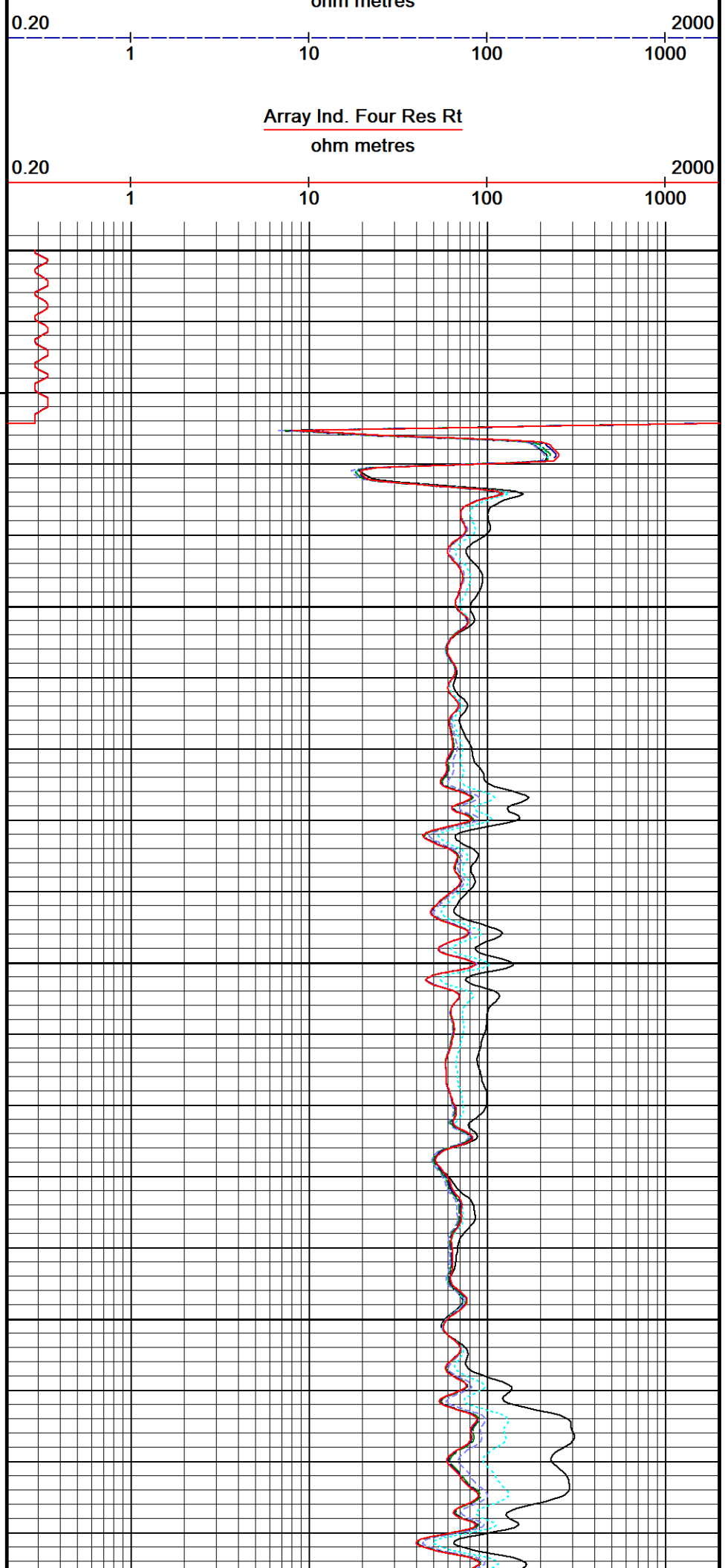
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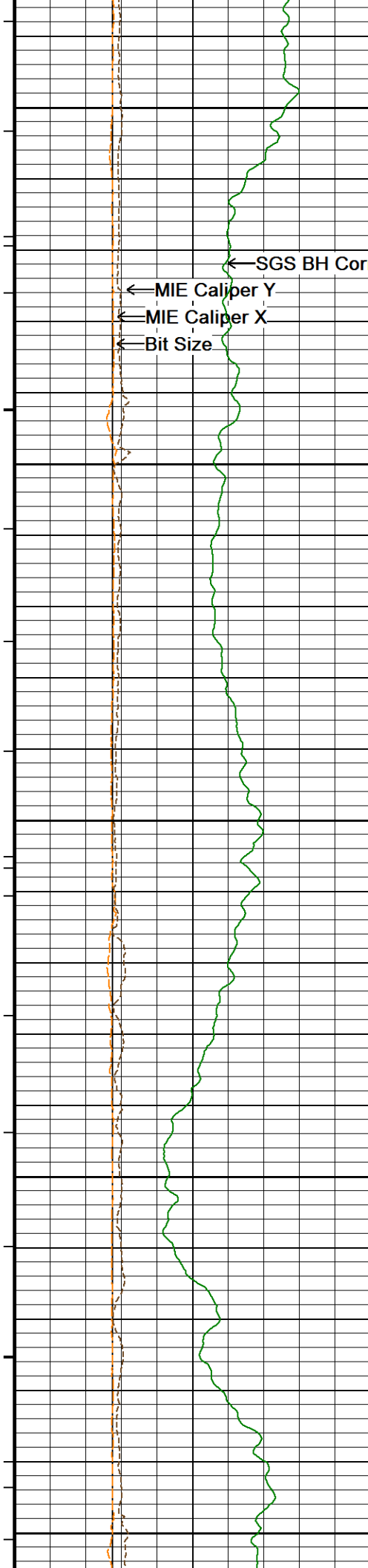
200°

6150

201°

6200





201°

6250

202°

6300

202°

6350

202°

6400

202°

6450

← SGS BH Corrected Gamma

← MIE Caliper Y

← MIE Caliper X

← Bit Size

Array Ind. Four Res Rt →

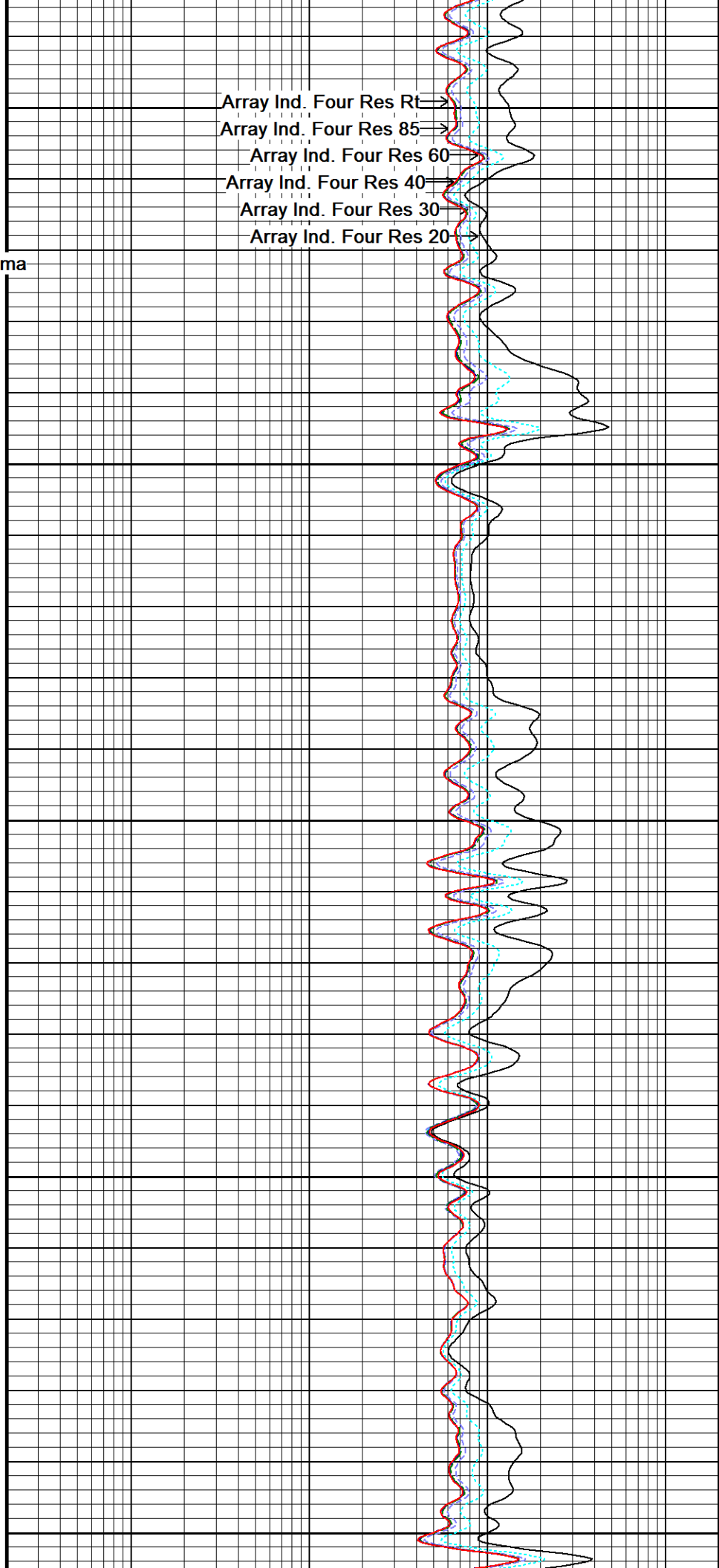
Array Ind. Four Res 85 →

Array Ind. Four Res 60 →

Array Ind. Four Res 40 →

Array Ind. Four Res 30 →

Array Ind. Four Res 20 →





202°

6500

203°

6550

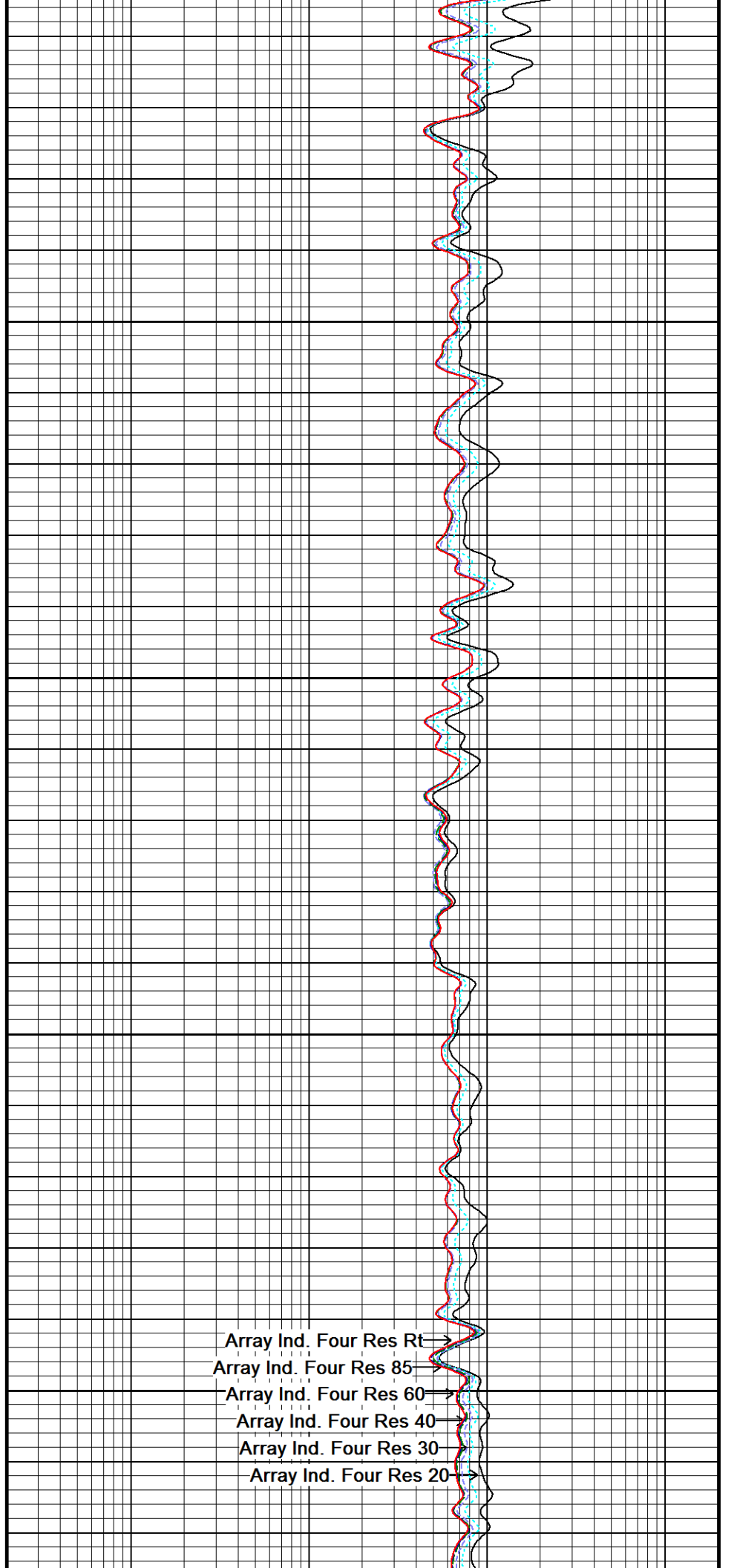
203°

6600

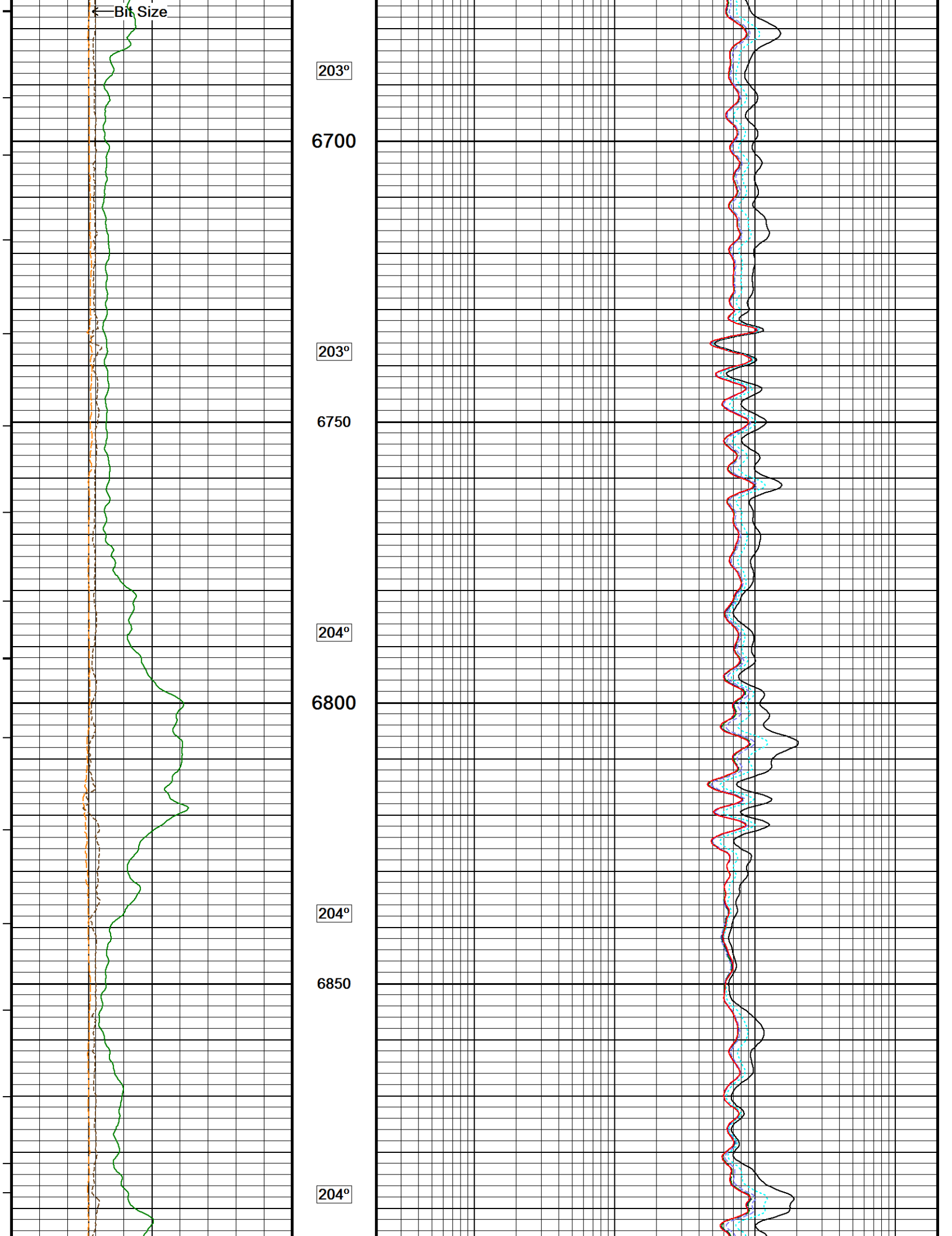
203°

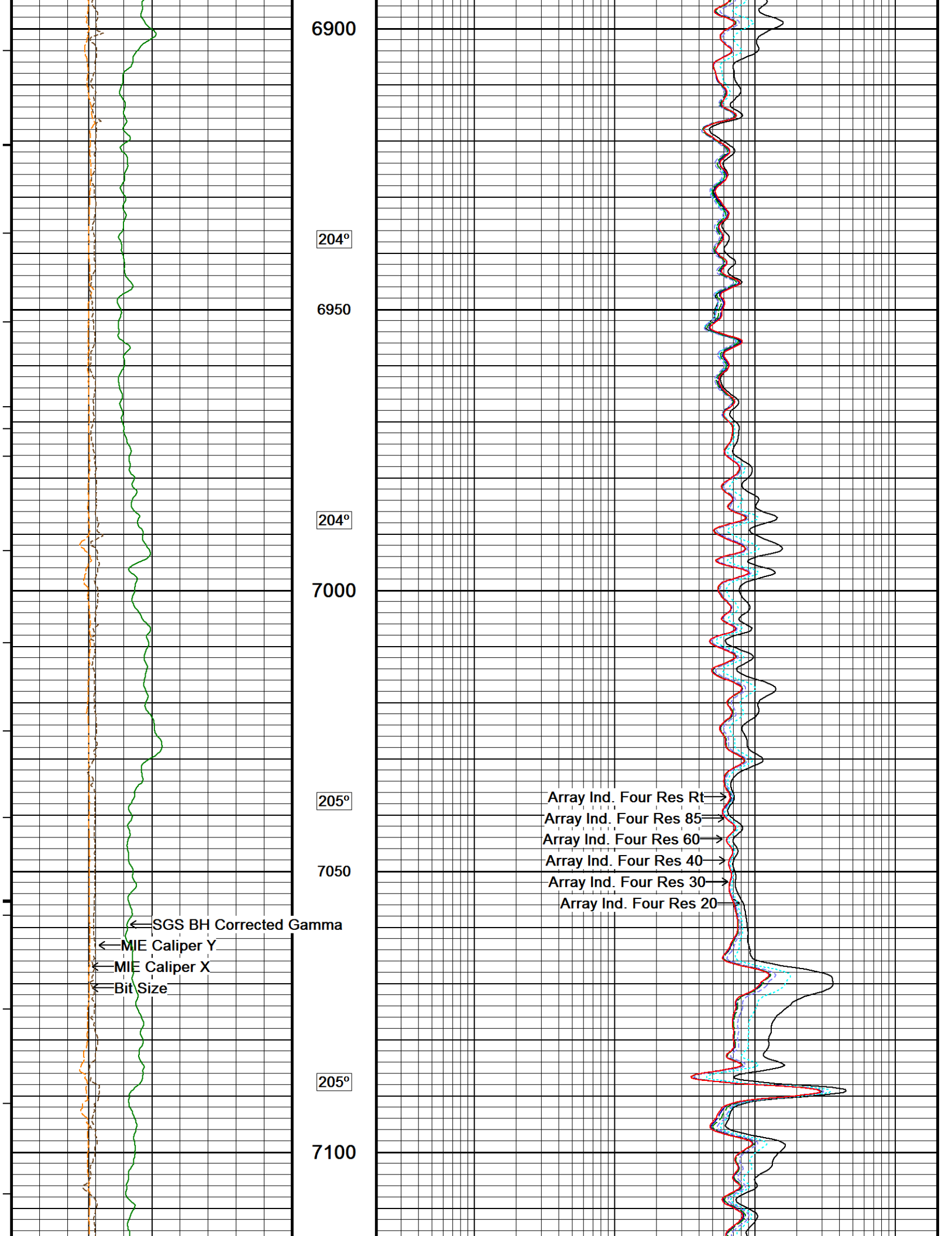
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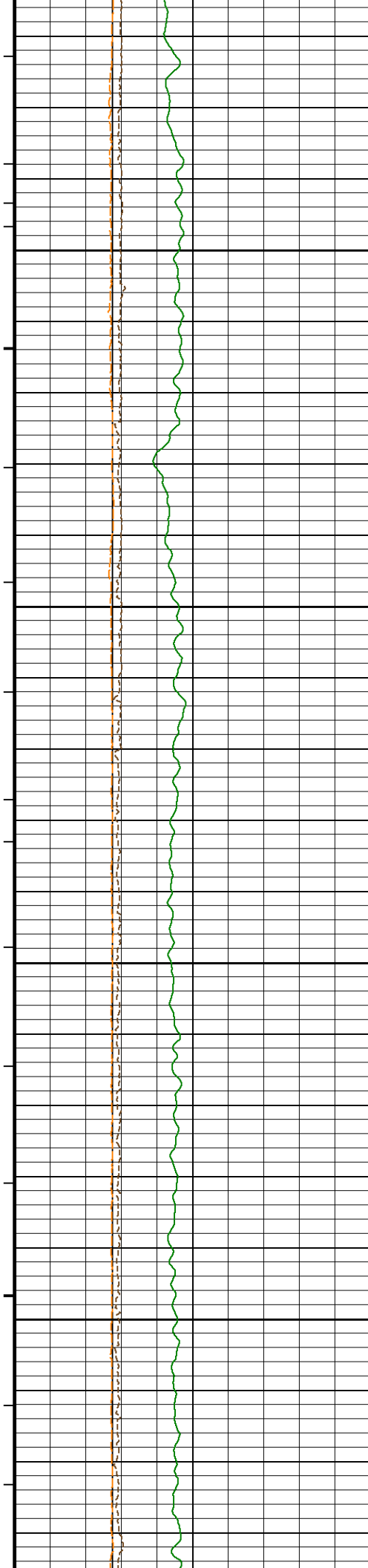
← SGS BH Corrected Gamma
← MIE Caliper Y
← MIE Caliper X



Array Ind. Four Res Rt
Array Ind. Four Res 85
Array Ind. Four Res 60
Array Ind. Four Res 40
Array Ind. Four Res 30
Array Ind. Four Res 20







205°

7150

205°

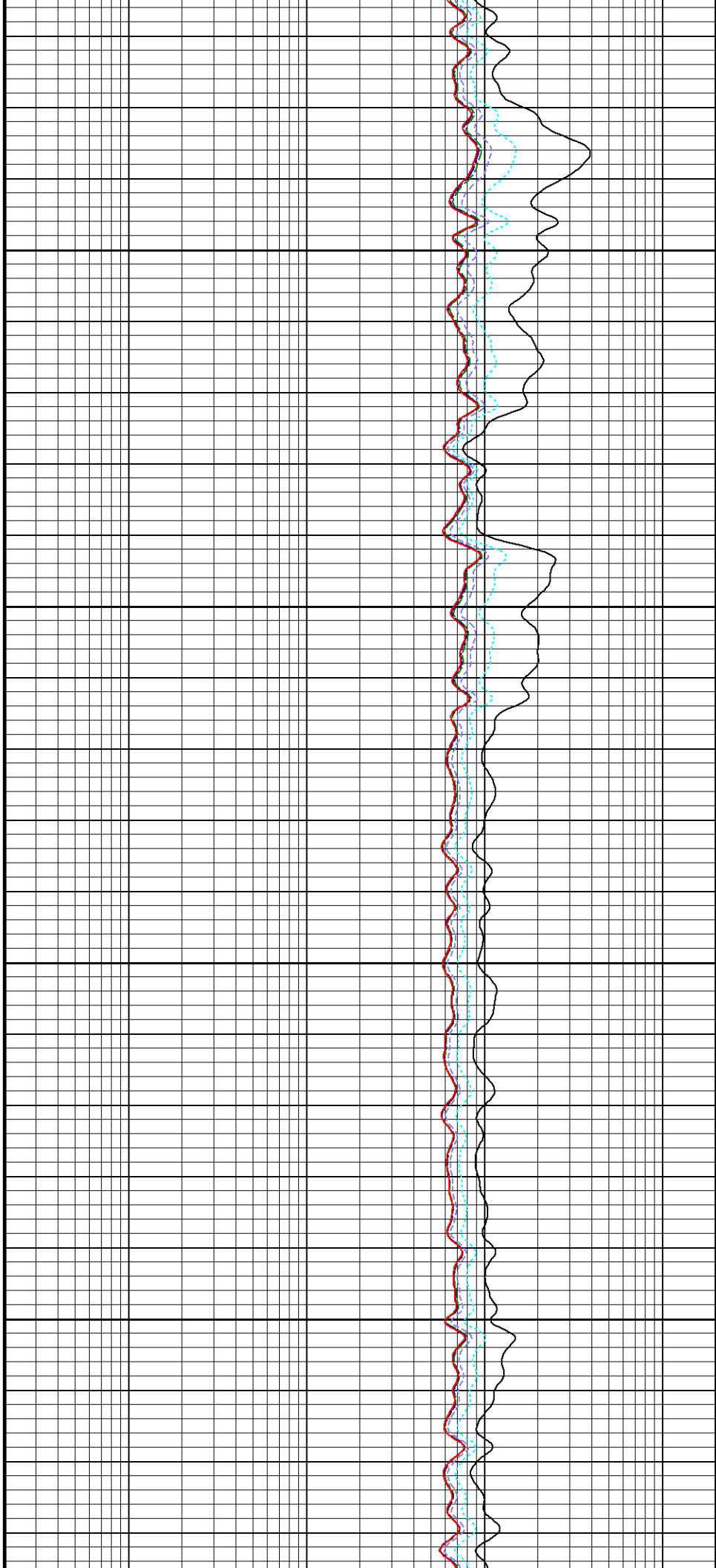
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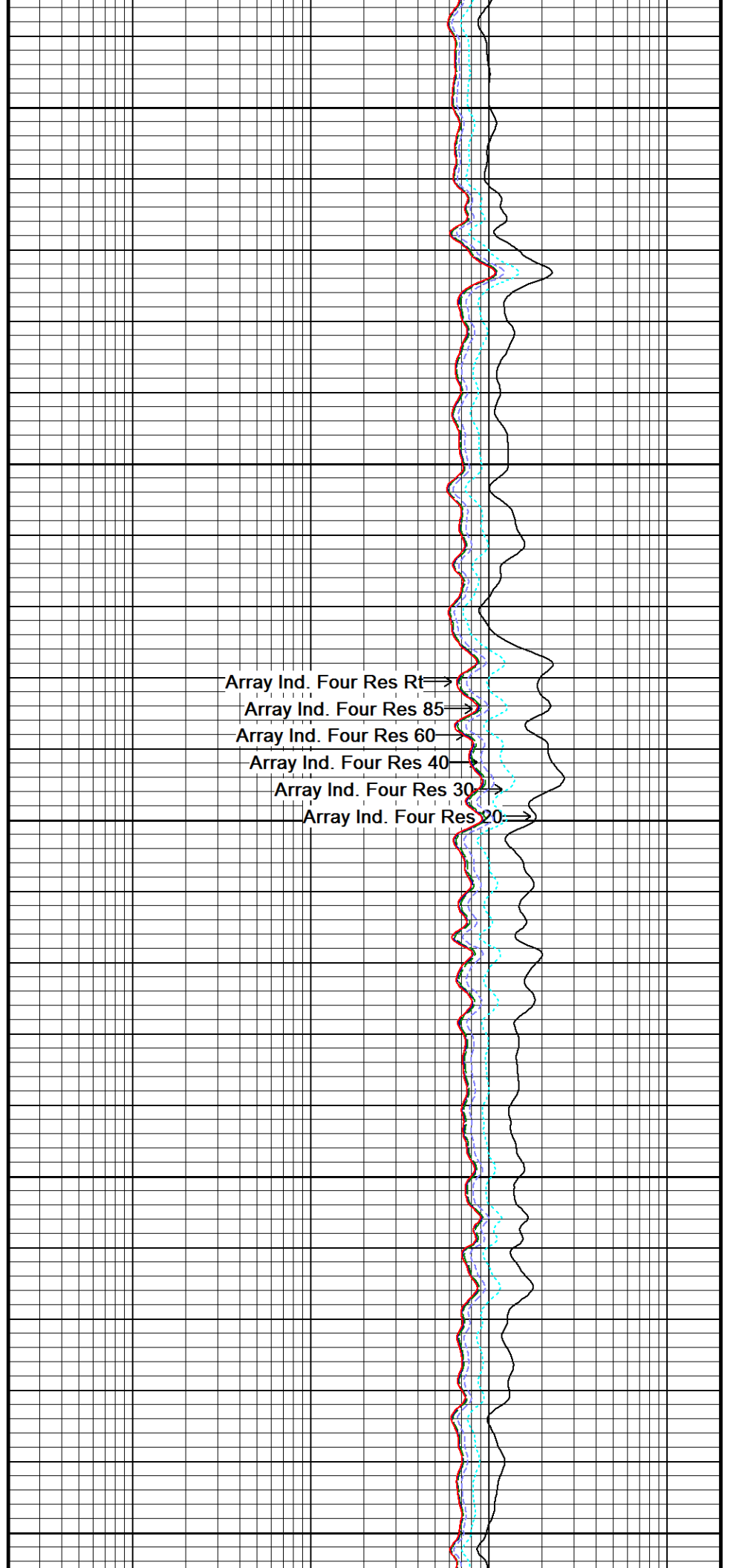
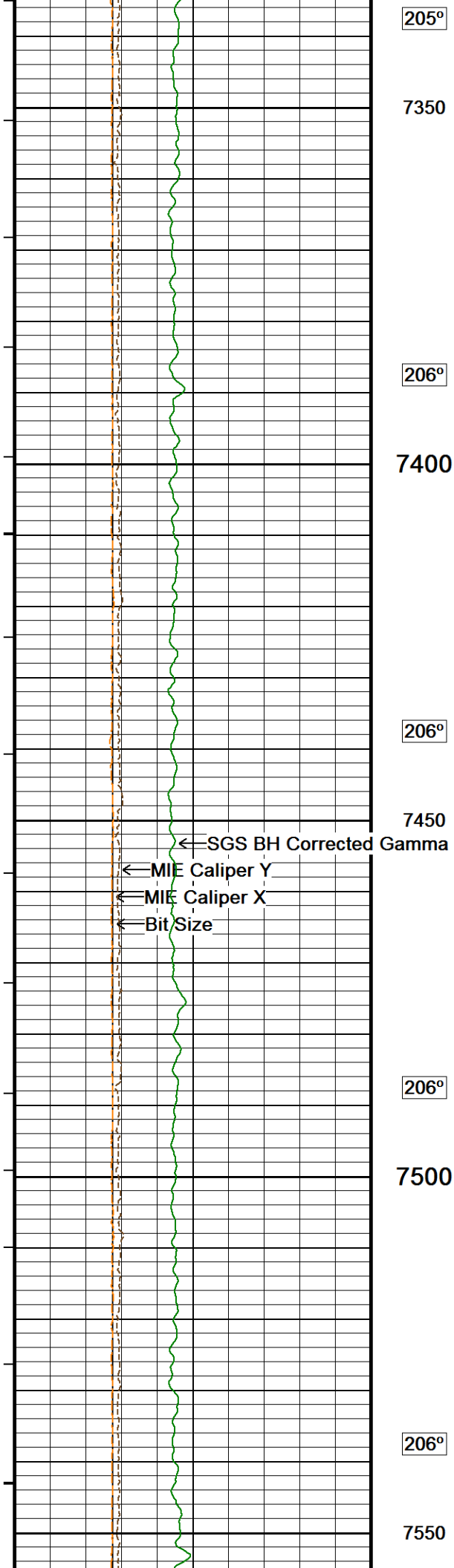
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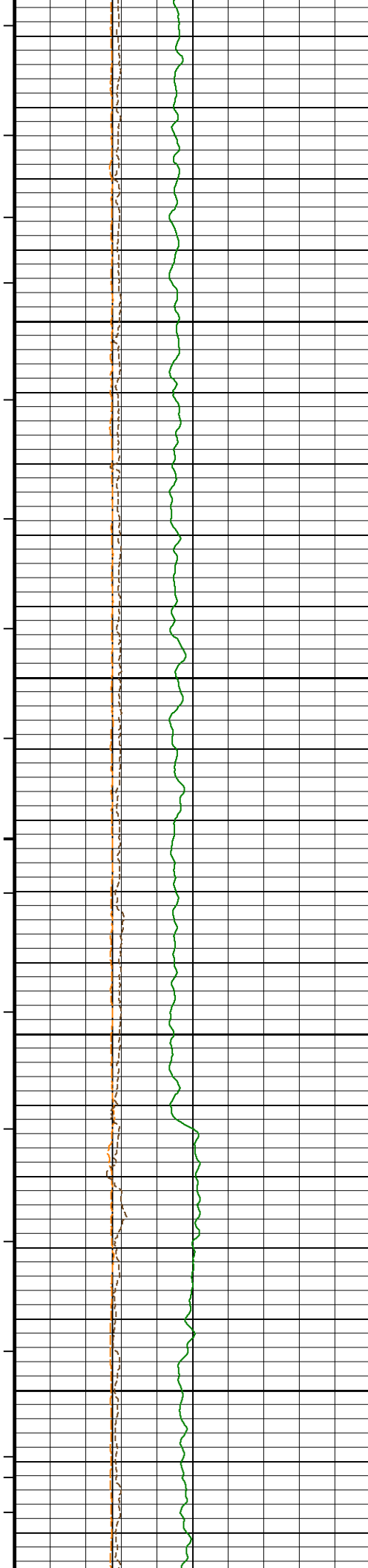
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205°

7300







206°

7600

206°

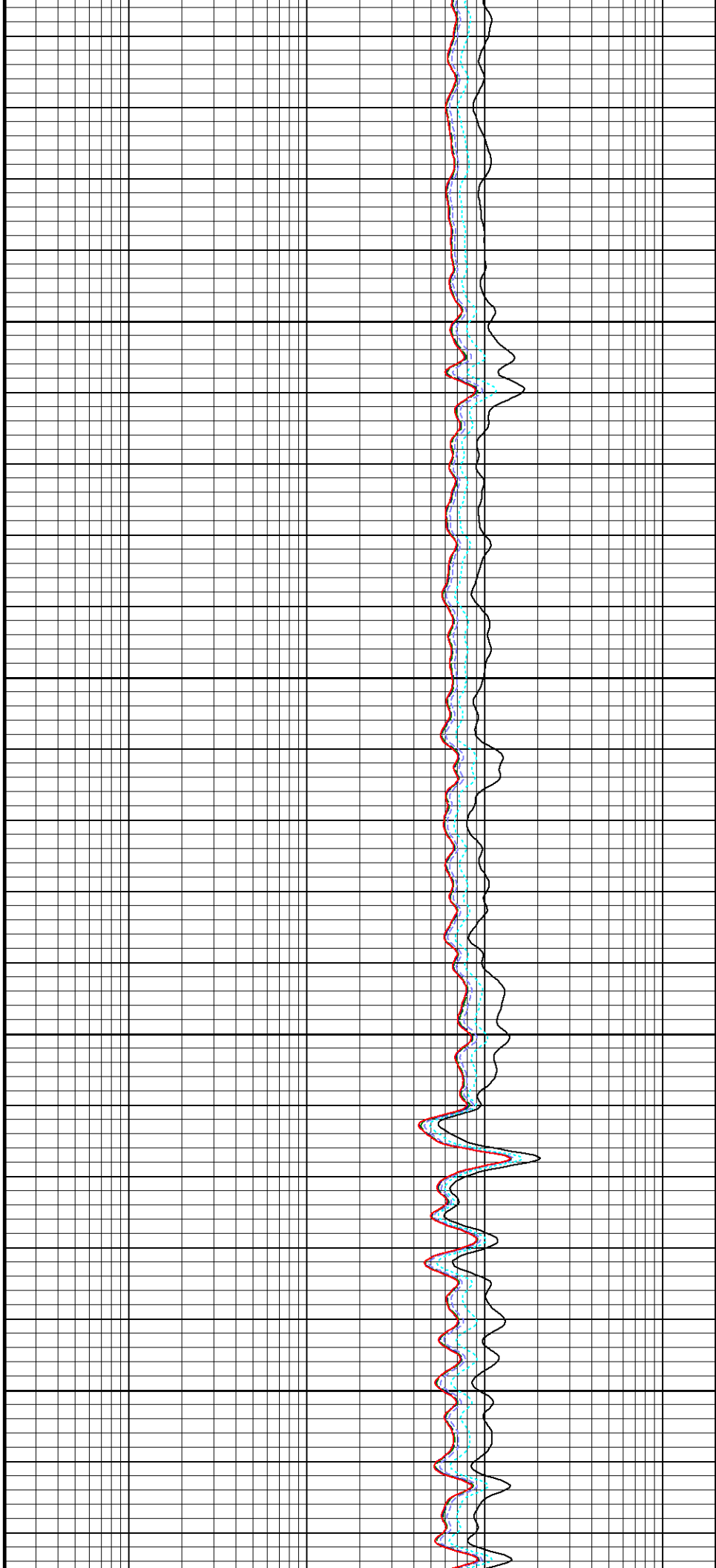
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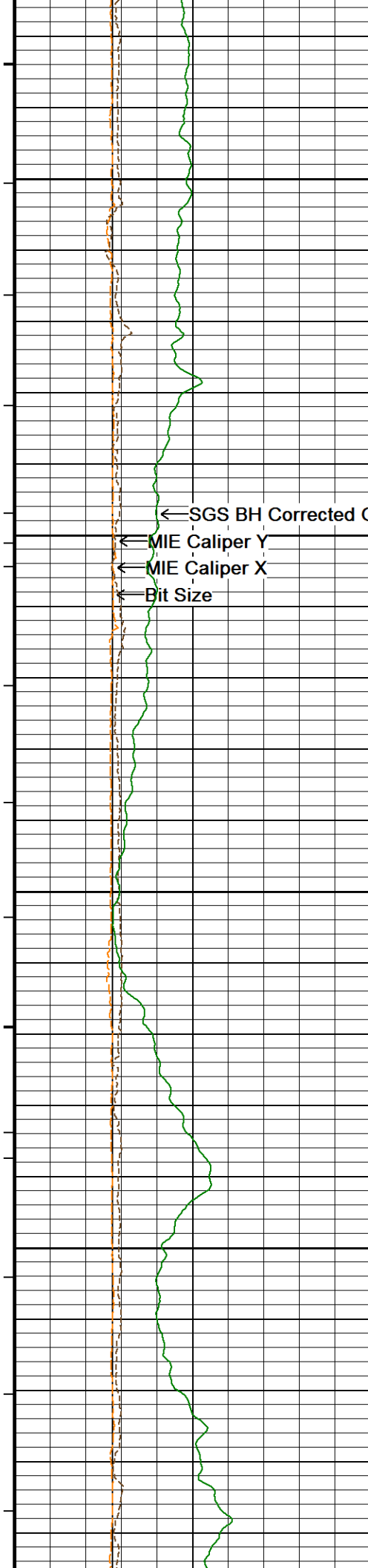
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7700

207°

7750





207°

7800

207°

7850

207°

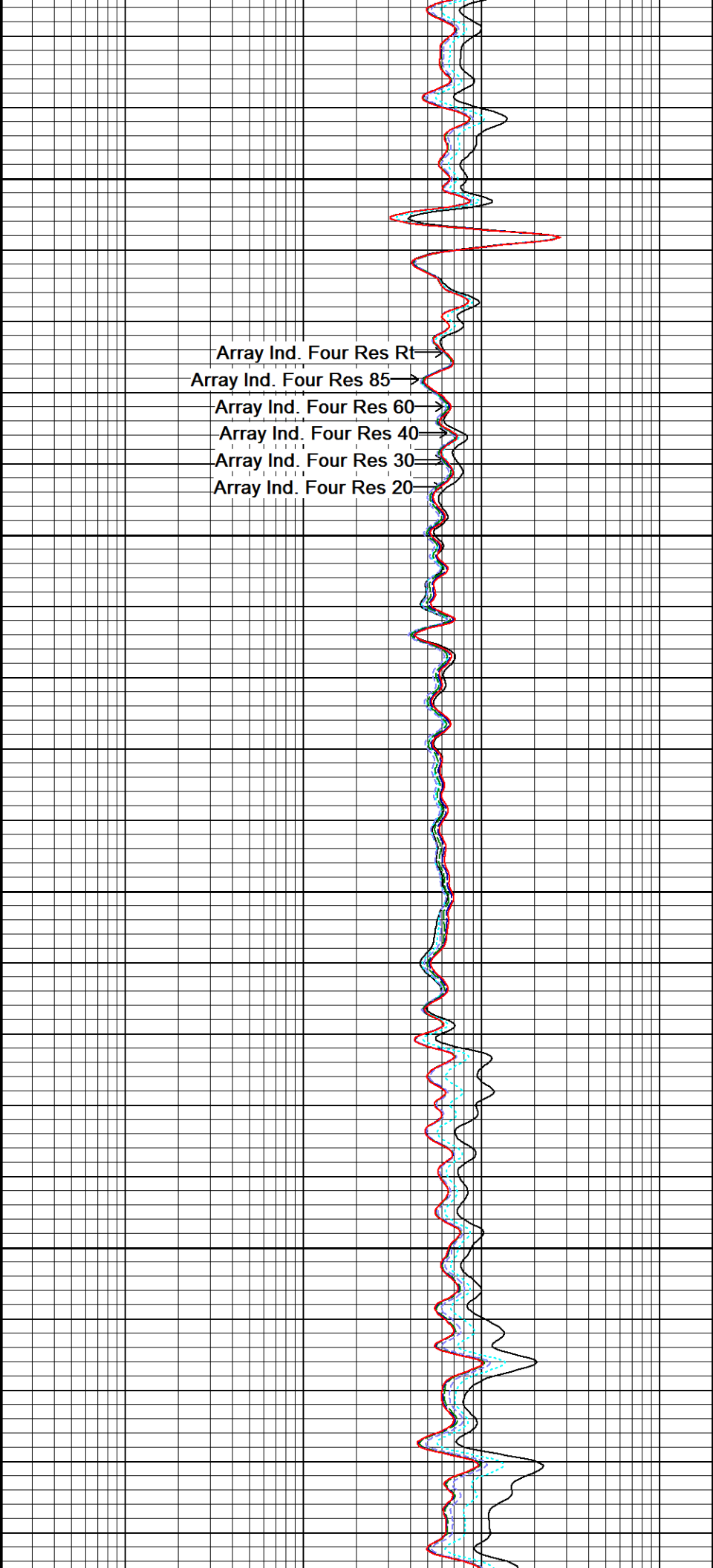
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207°

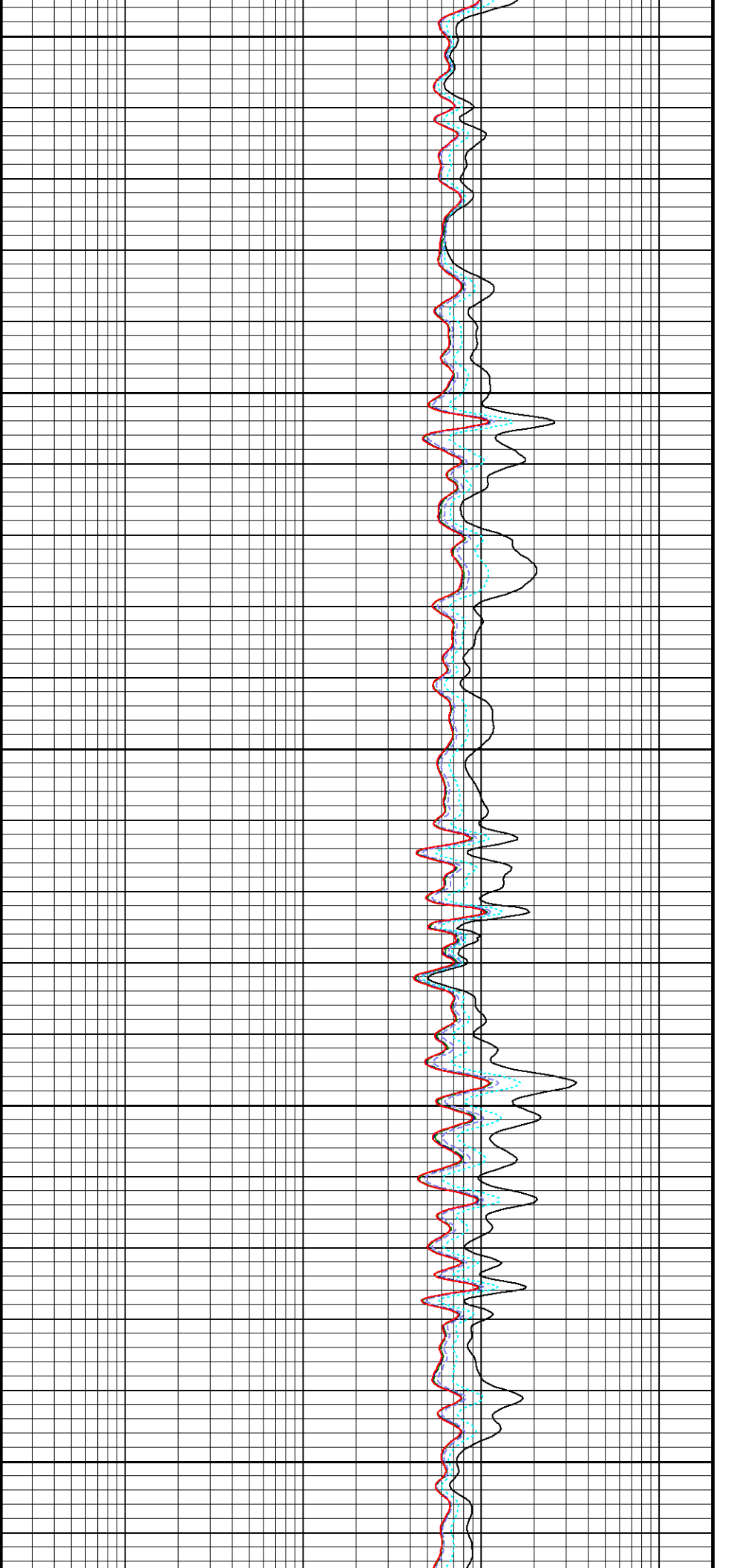
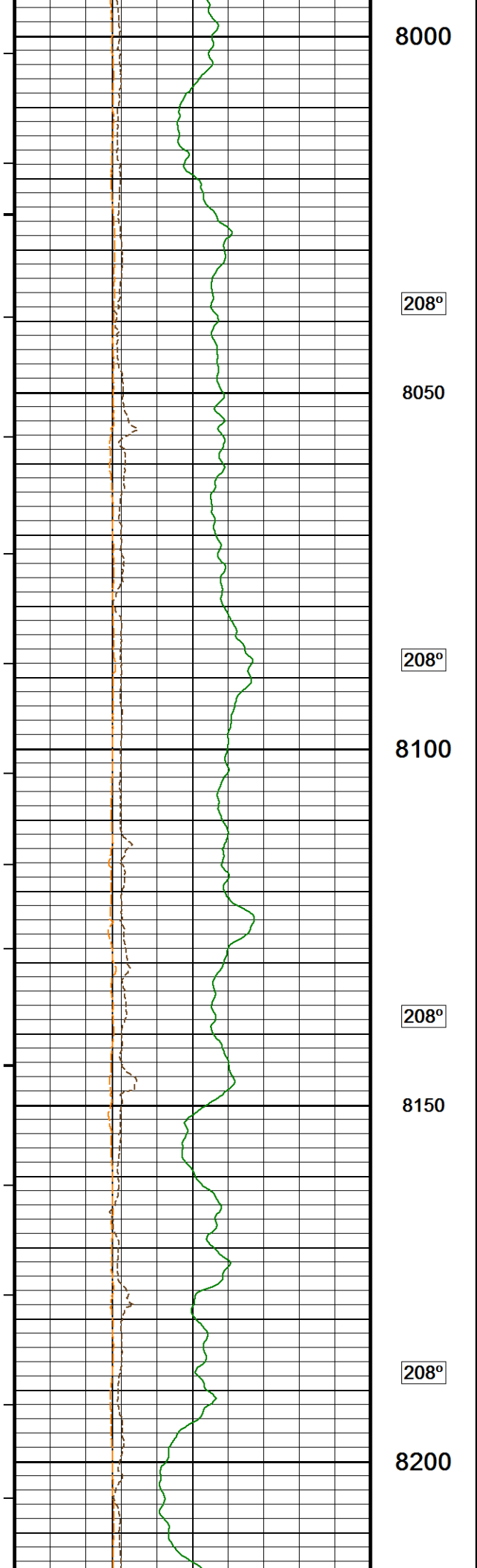
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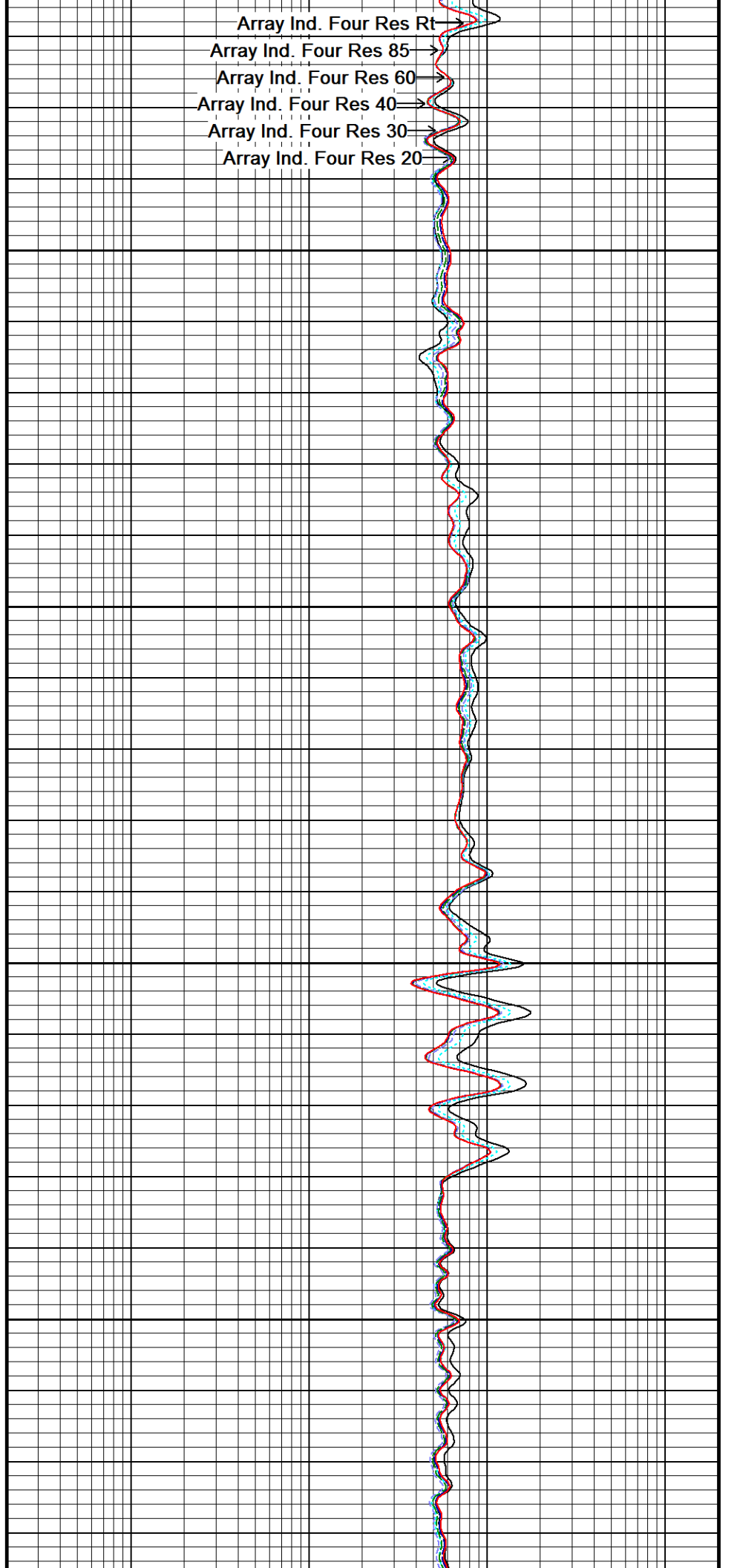
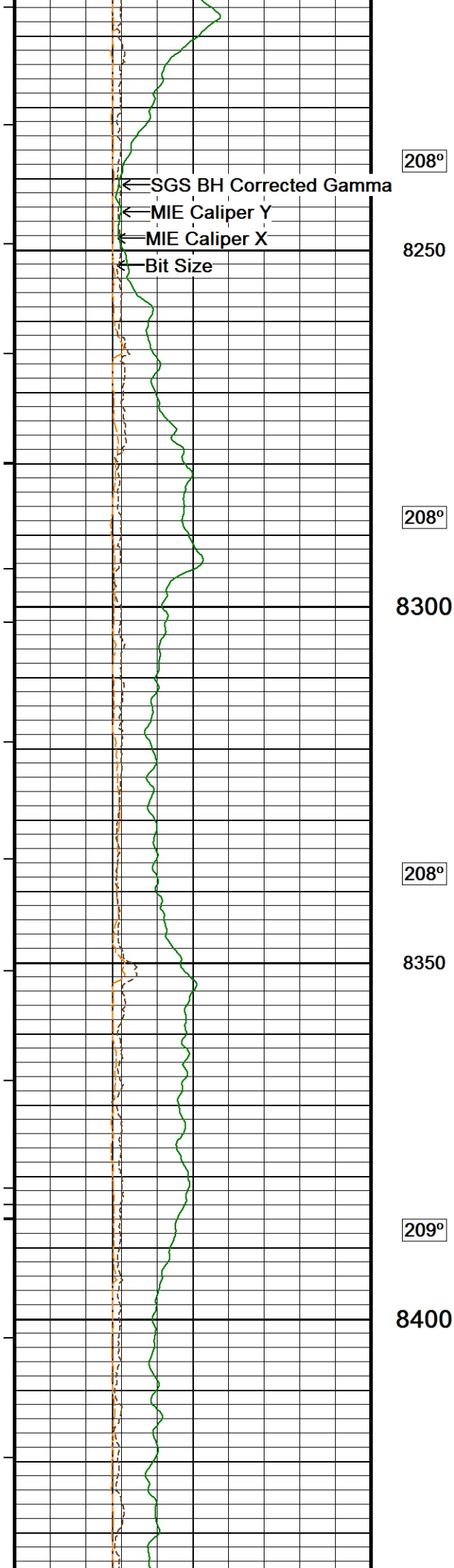
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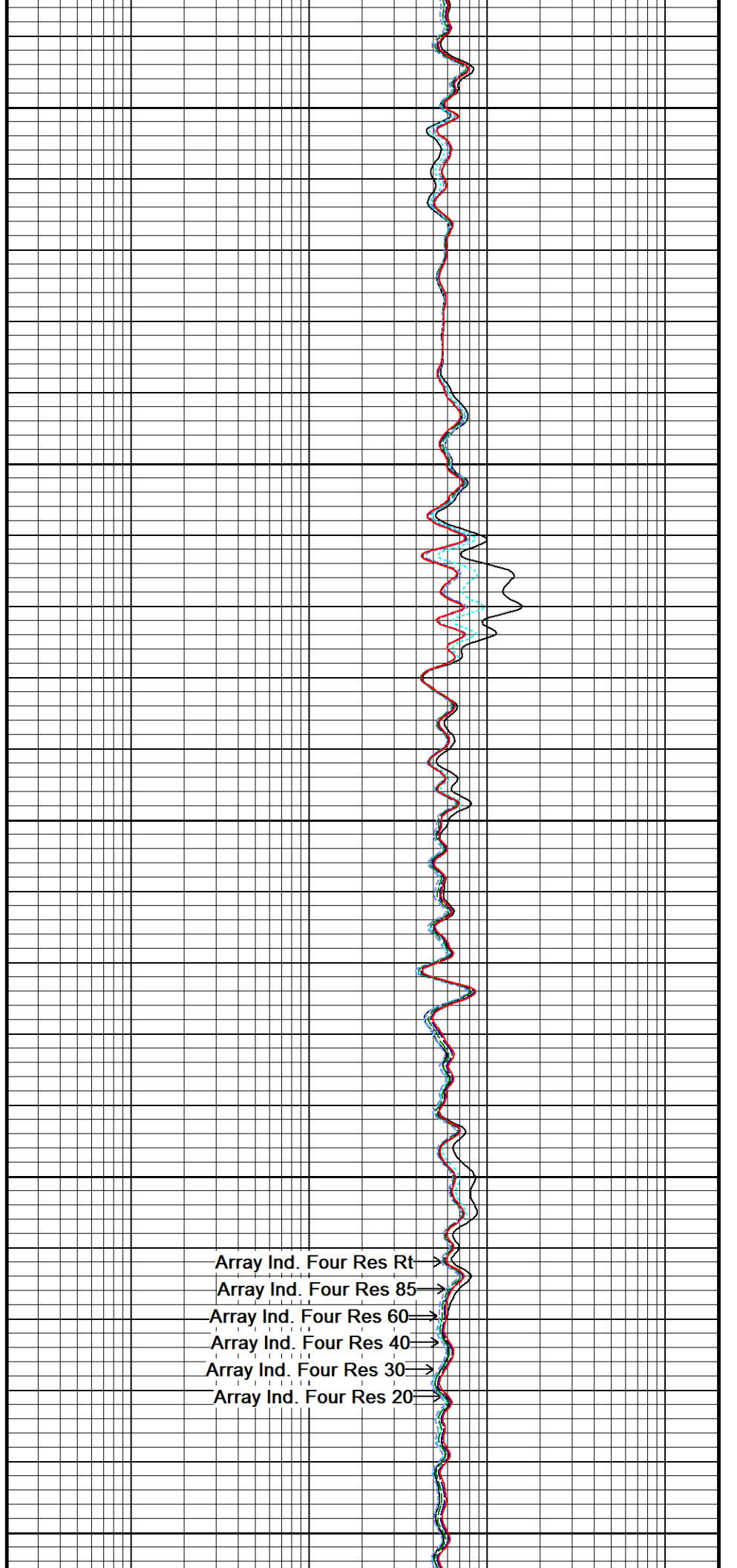
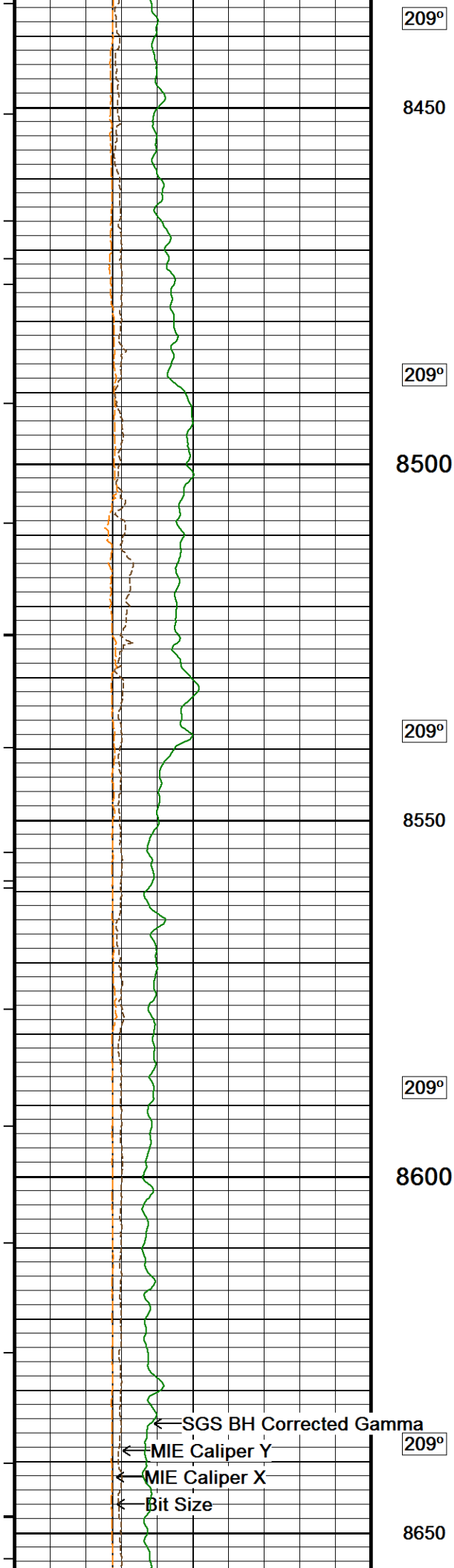
← SGS BH Corrected Gamma
← MIE Caliper Y
← MIE Caliper X
← Bit Size

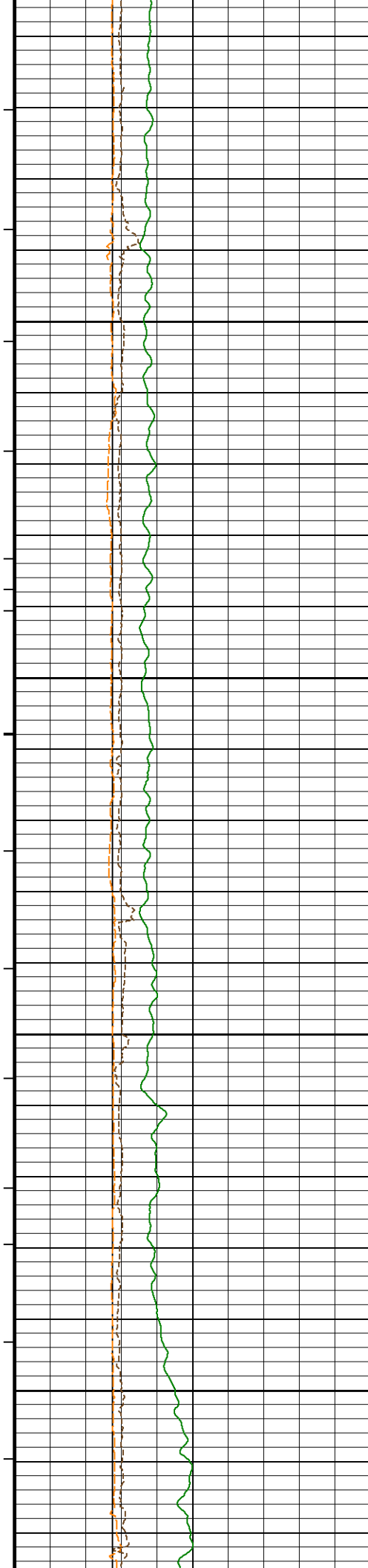


Array Ind. Four Res Rt
Array Ind. Four Res 85
Array Ind. Four Res 60
Array Ind. Four Res 40
Array Ind. Four Res 30
Array Ind. Four Res 20









209°

8700

209°

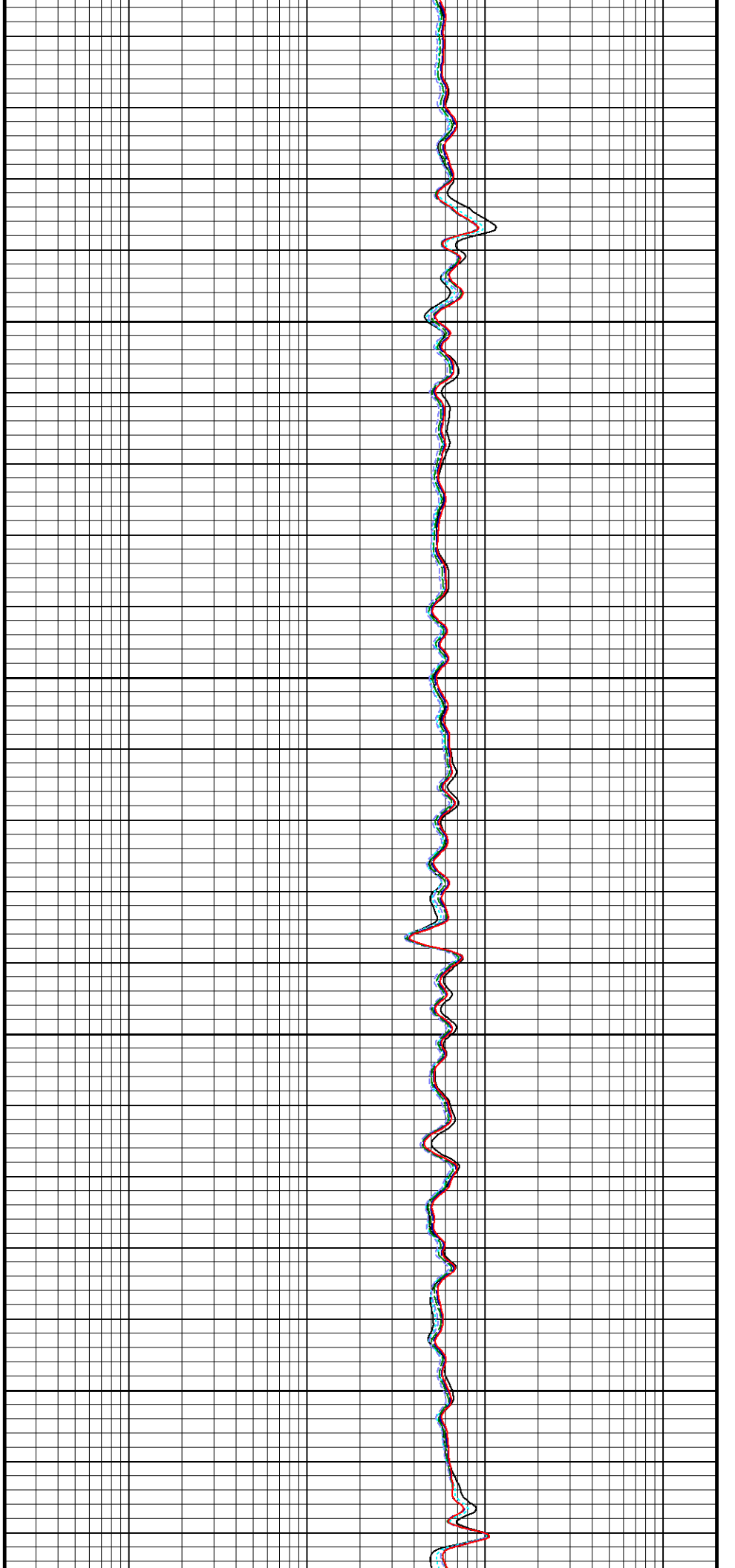
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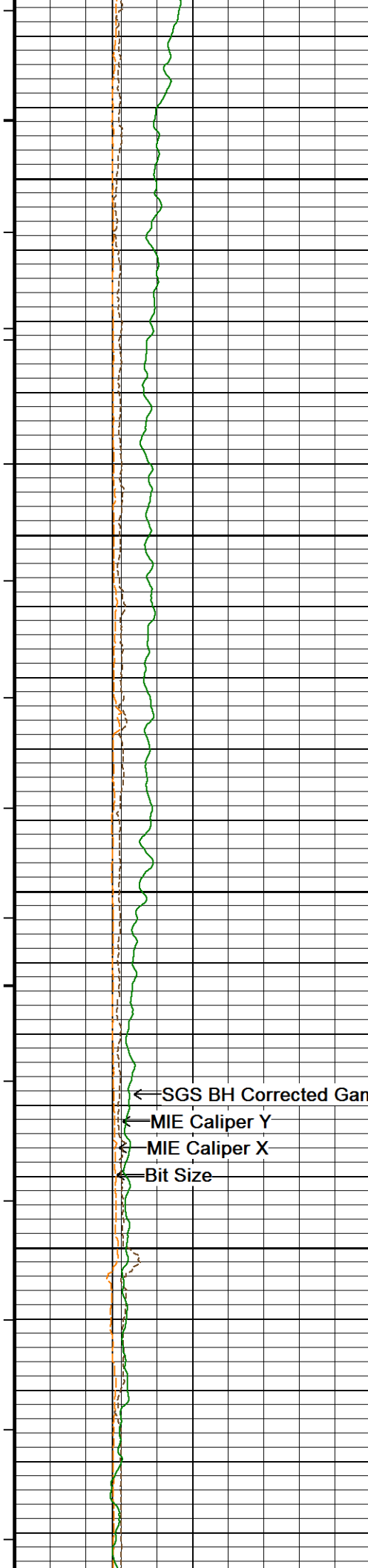
210°

8800

210°

8850





210°

8900

210°

8950

210°

9000

← SGS BH Corrected Gamma

← MIE Caliper Y

← MIE Caliper X

← Bit Size

210°

9050

210°

Array Ind. Four Res Rt →

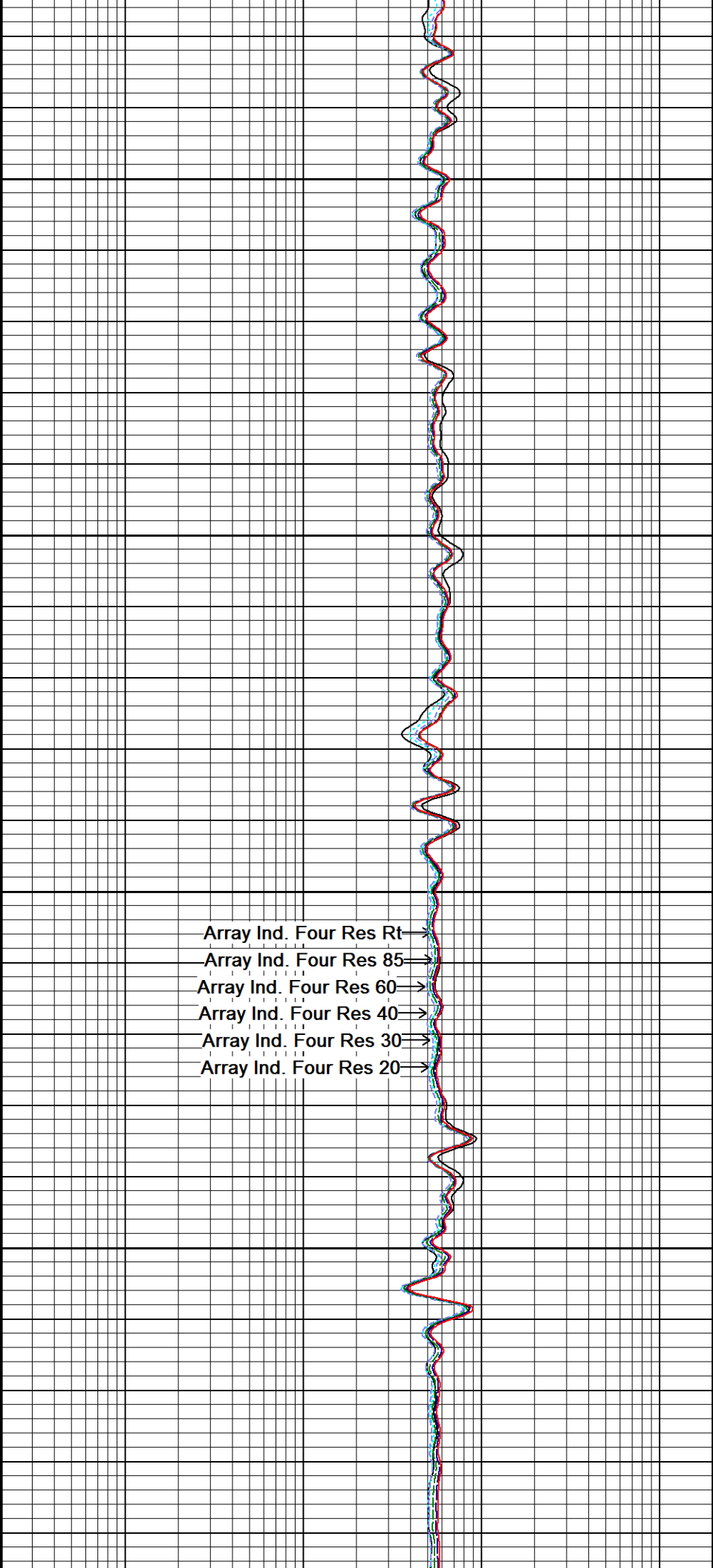
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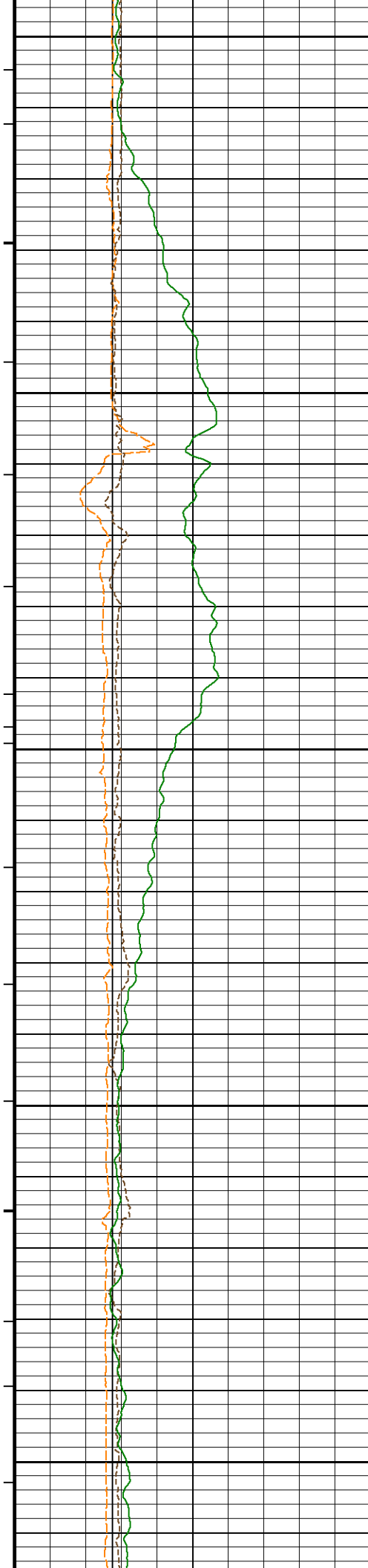
Array Ind. Four Res 60 →

Array Ind. Four Res 40 →

Array Ind. Four Res 30 →

Array Ind. Four Res 20 →





9100

210°

9150

210°

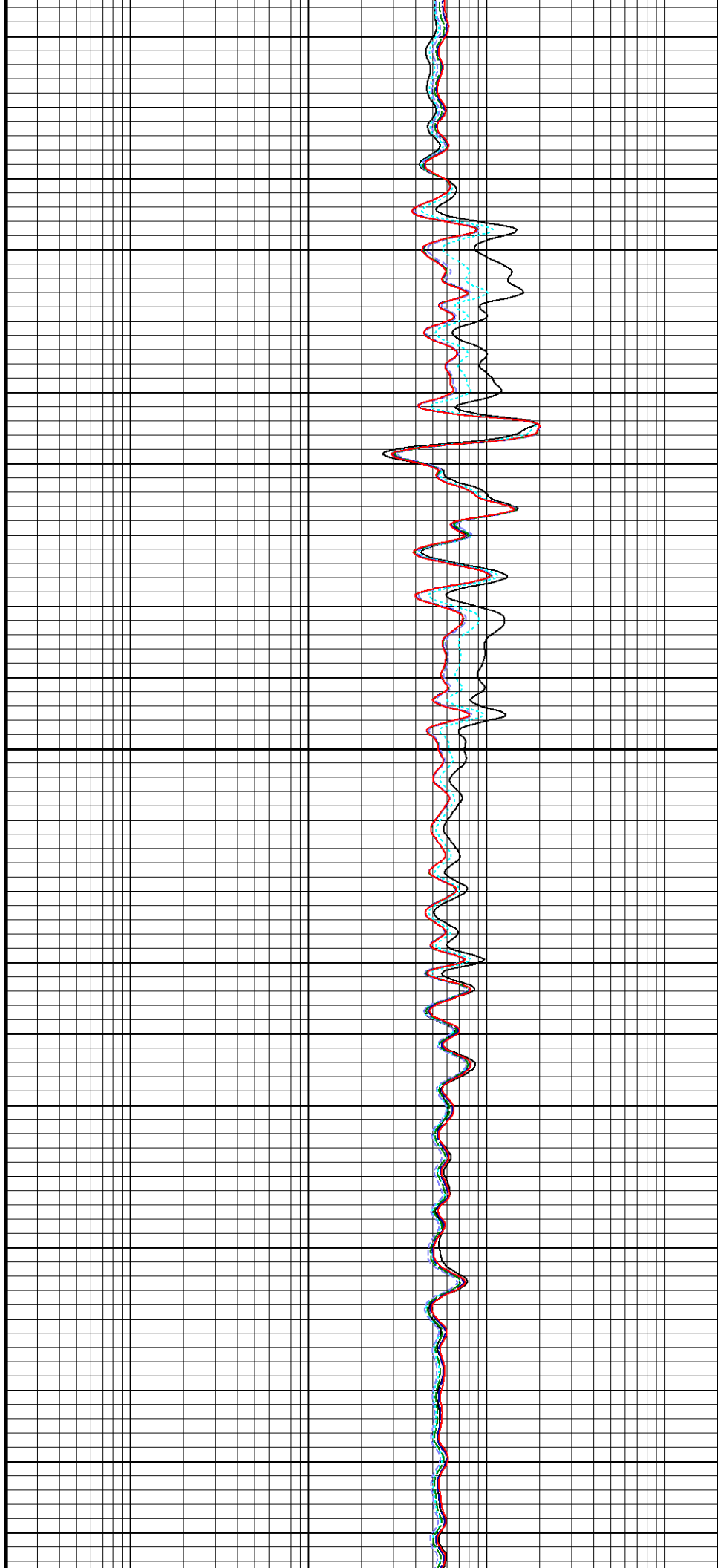
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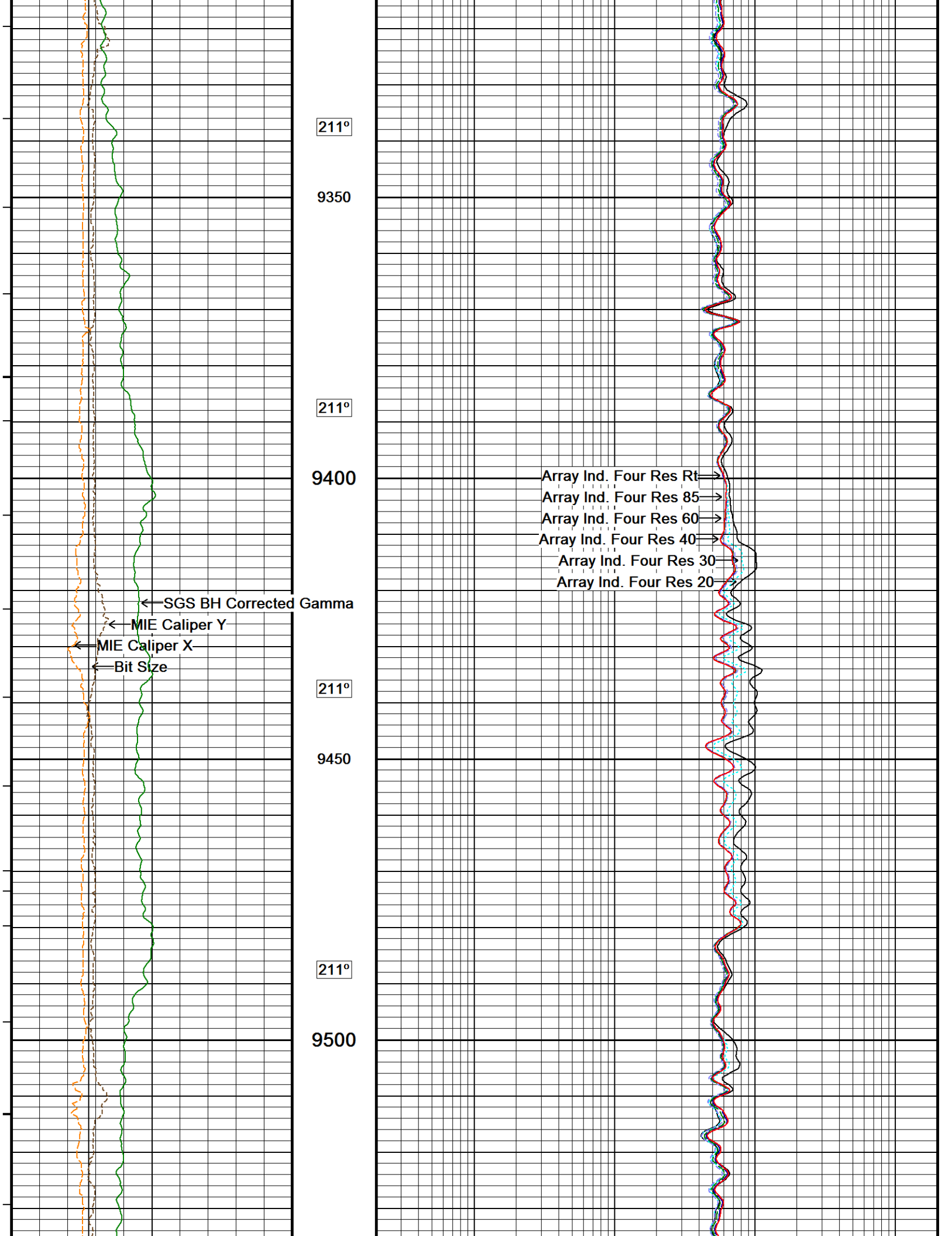
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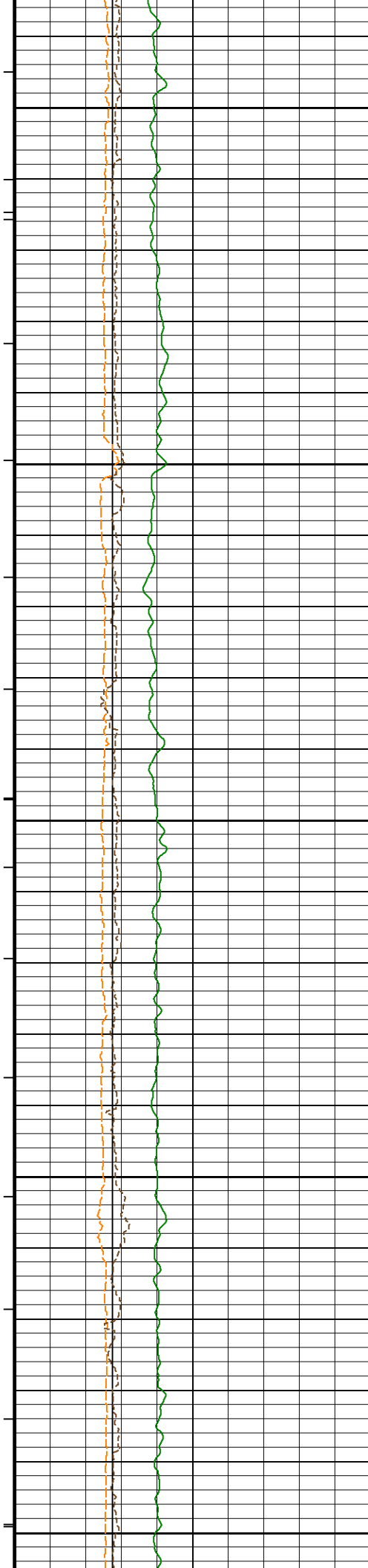
9250

211°

9300







211°

9550

211°

9600

211°

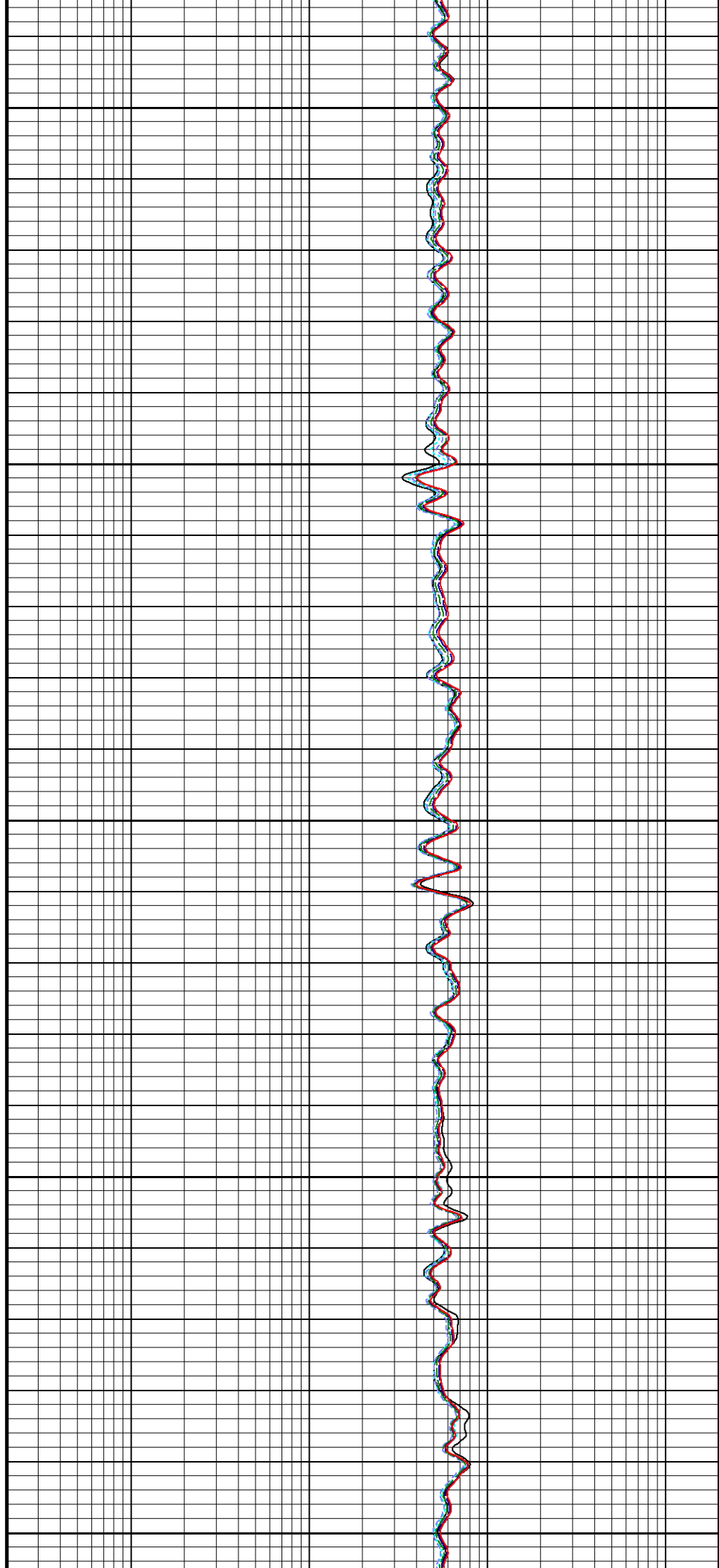
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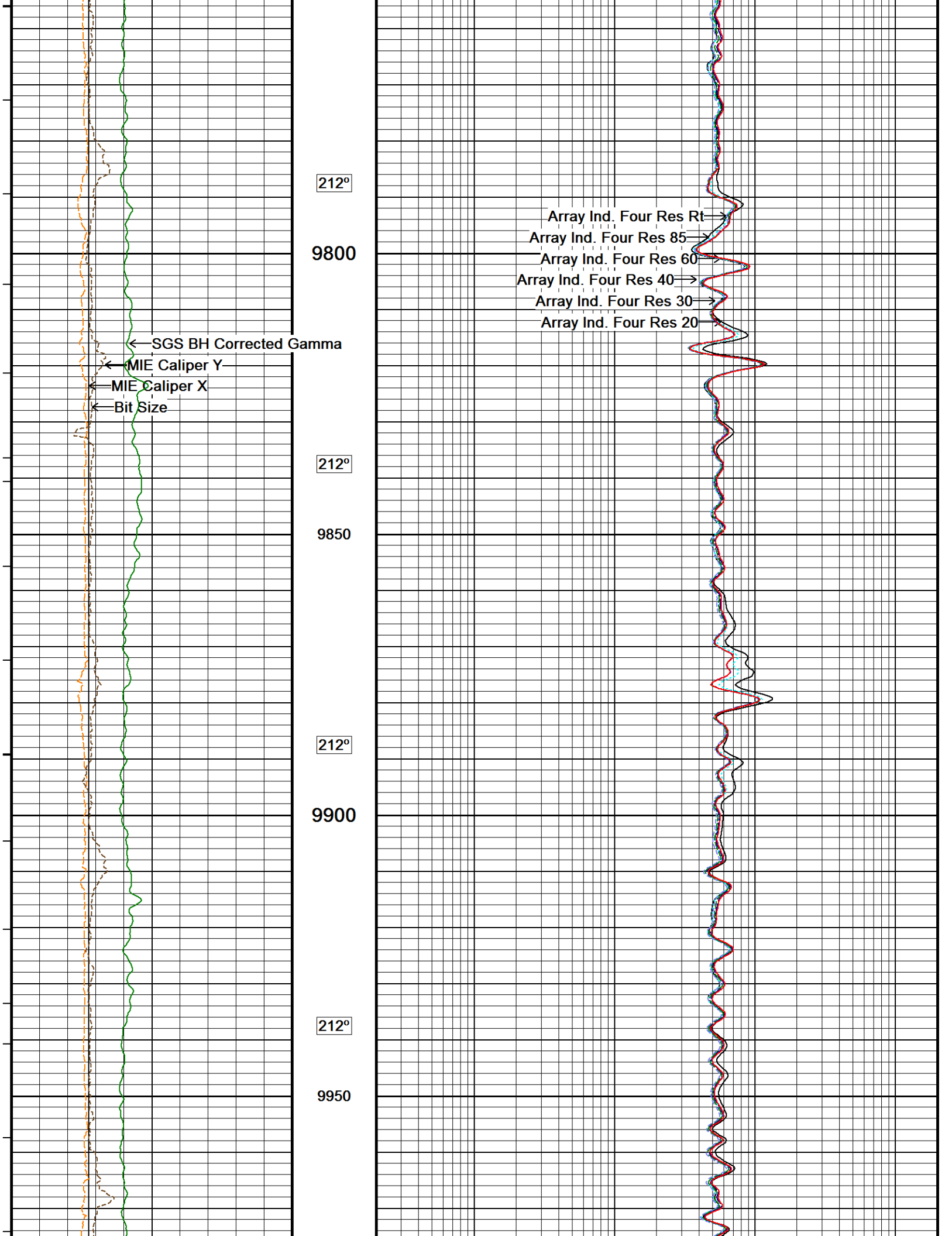
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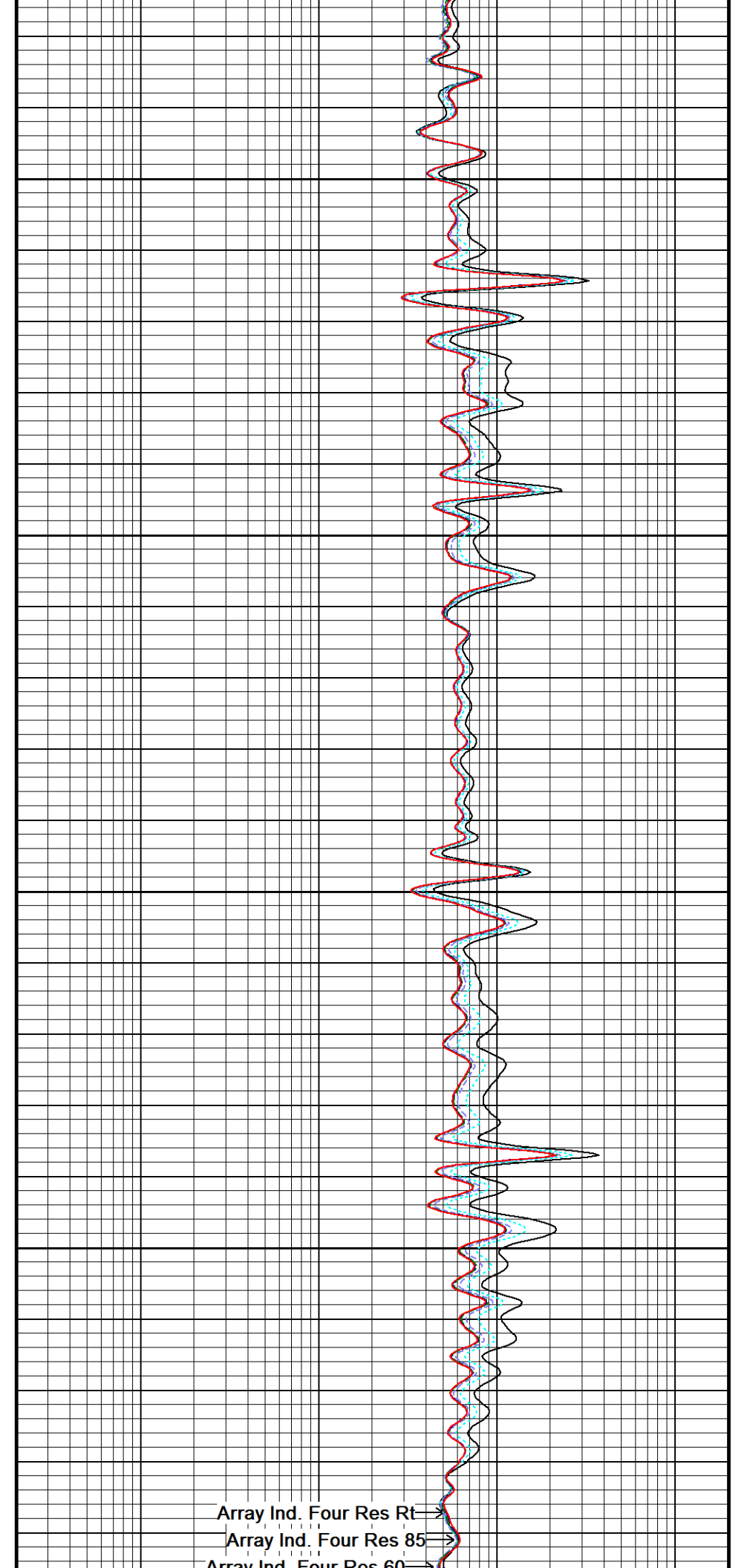
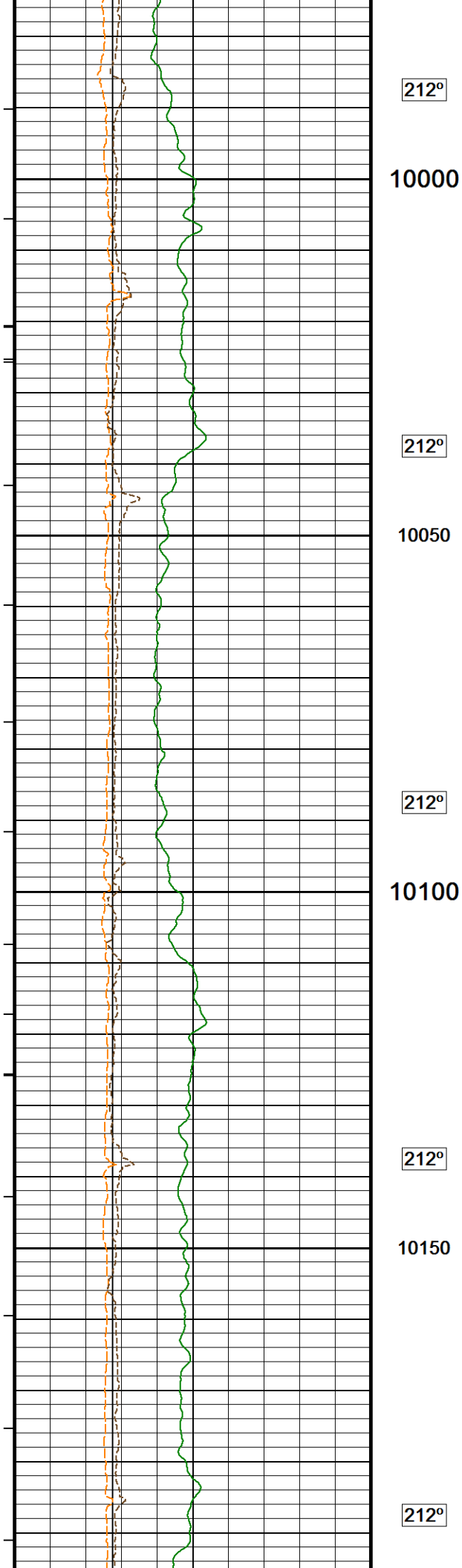
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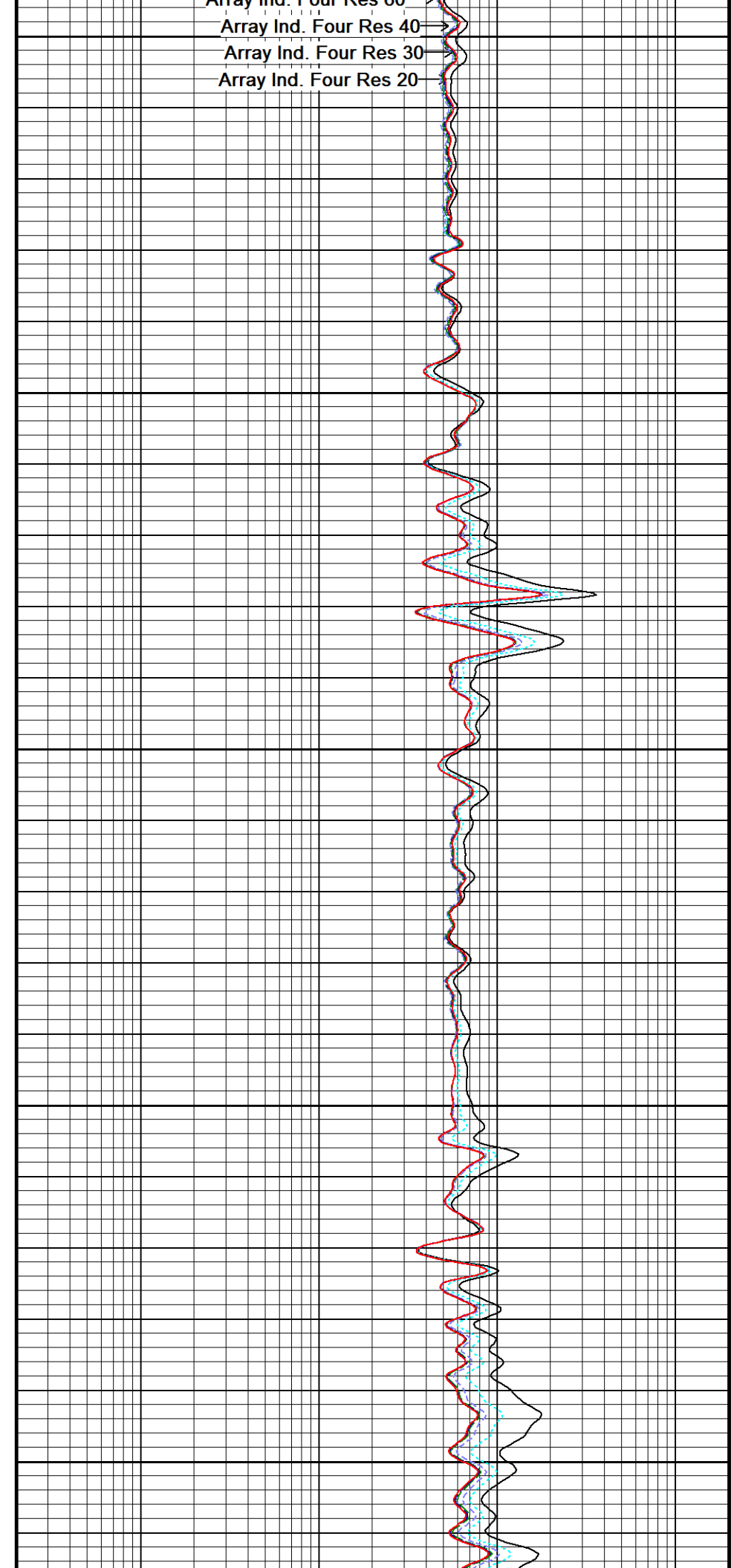
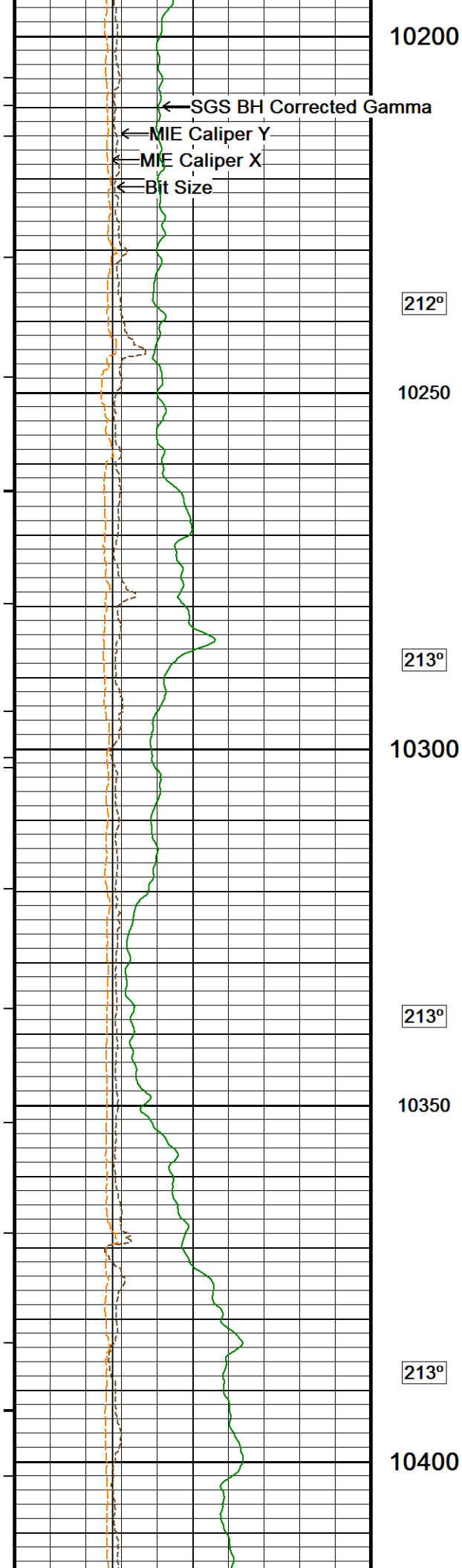
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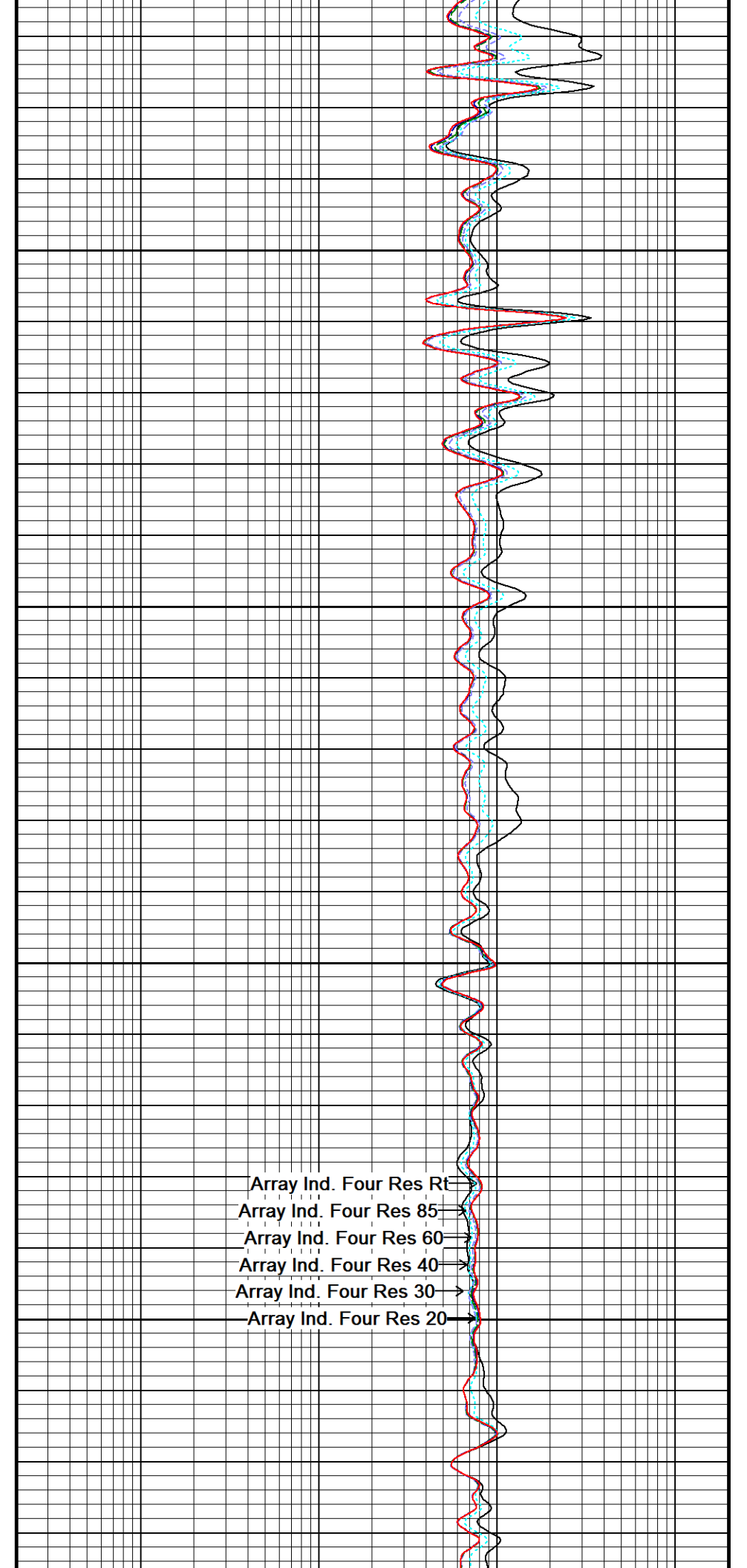
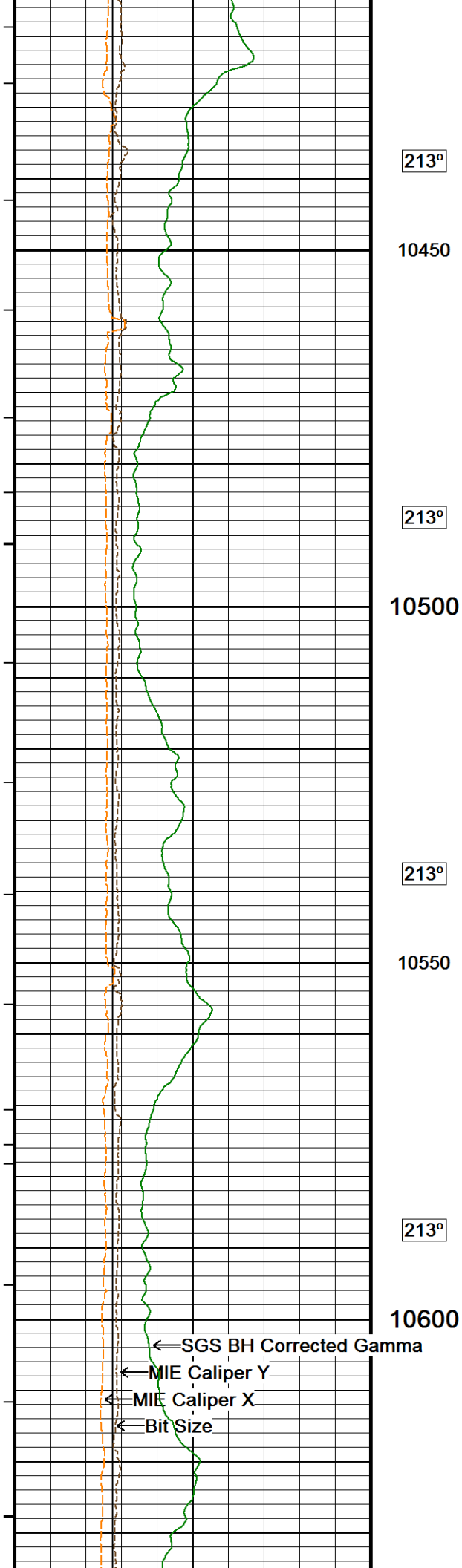
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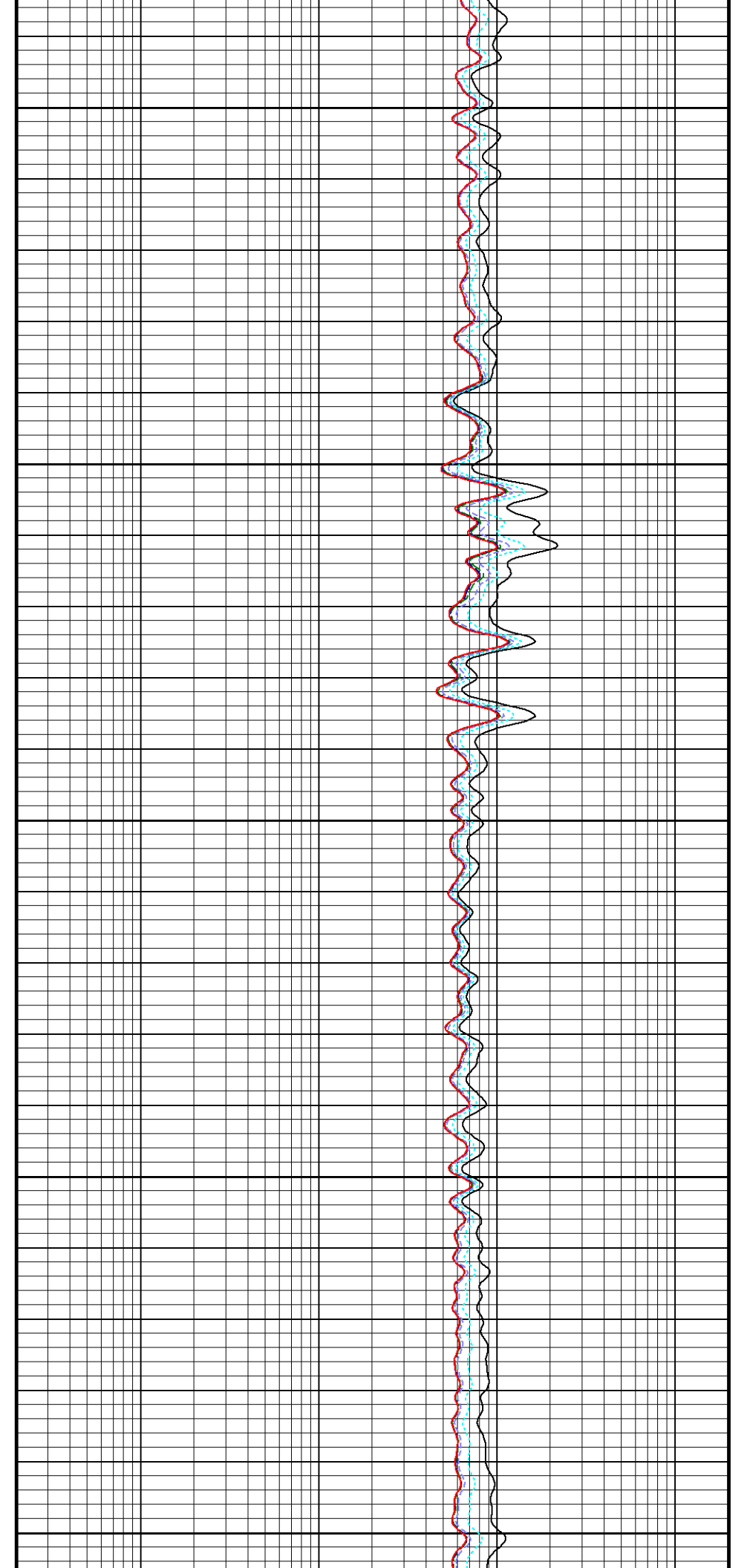
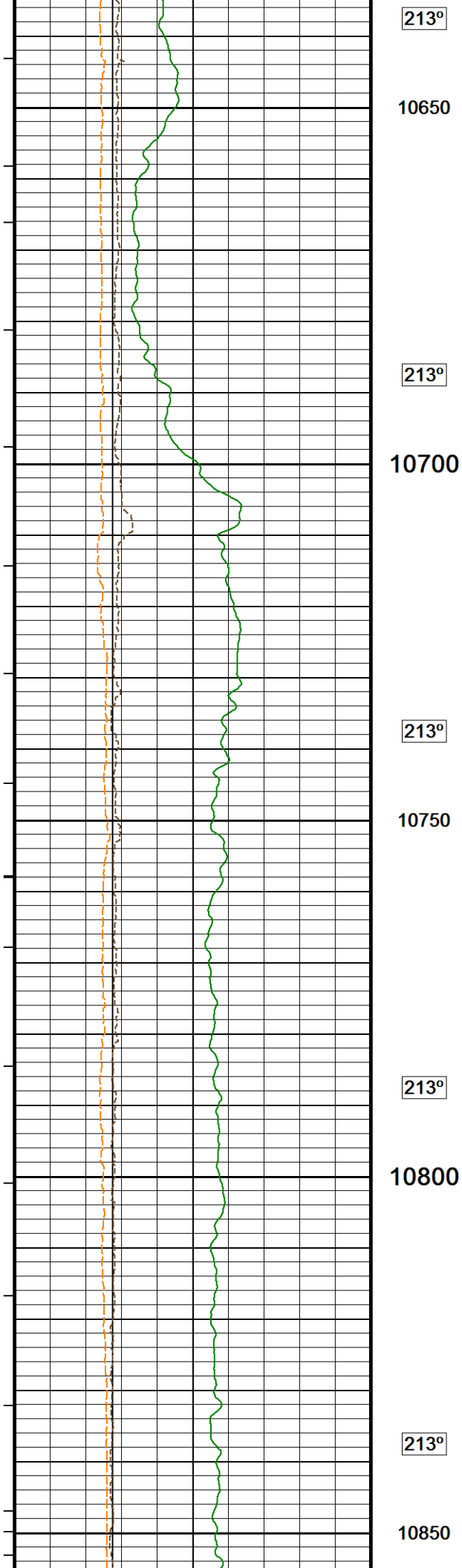


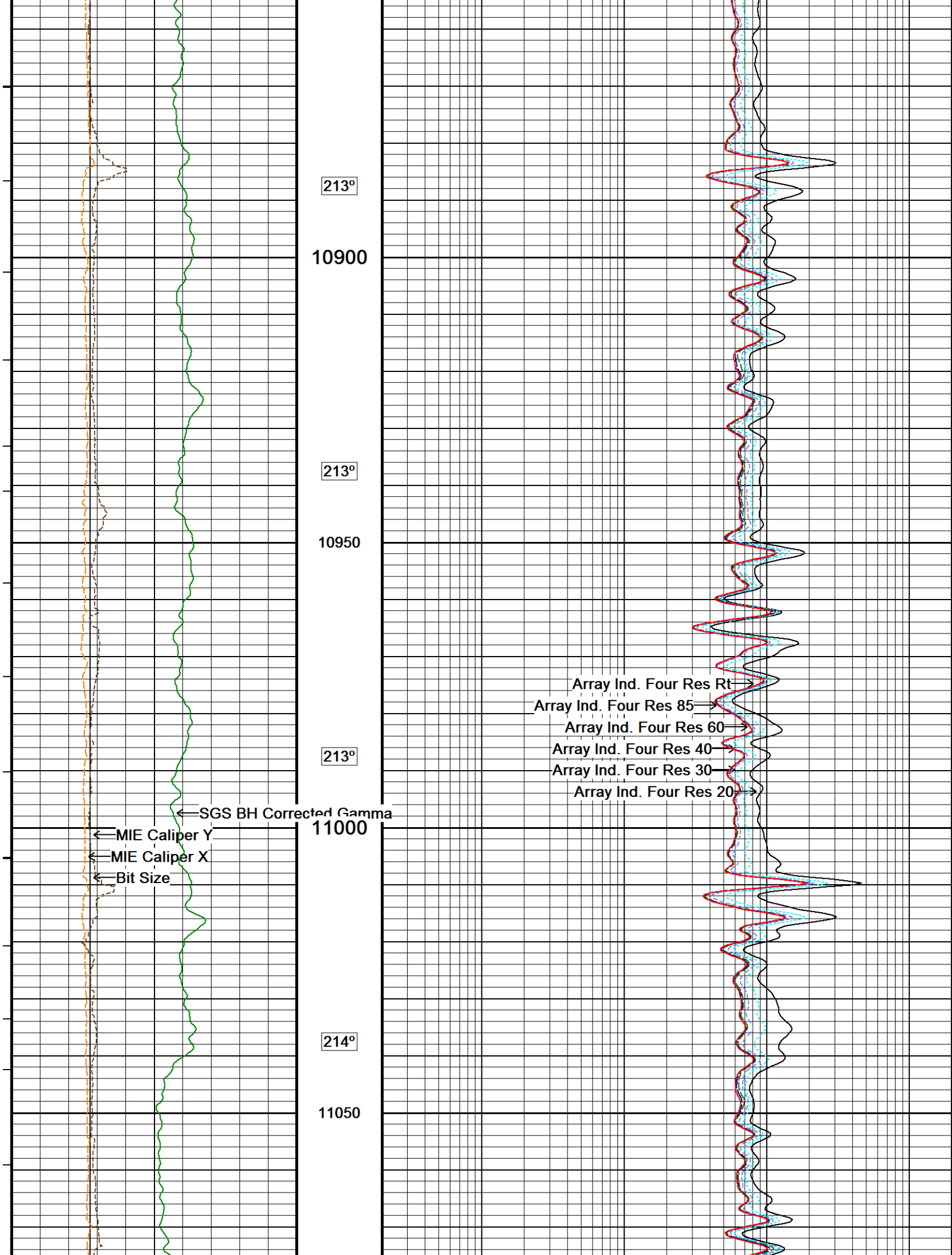


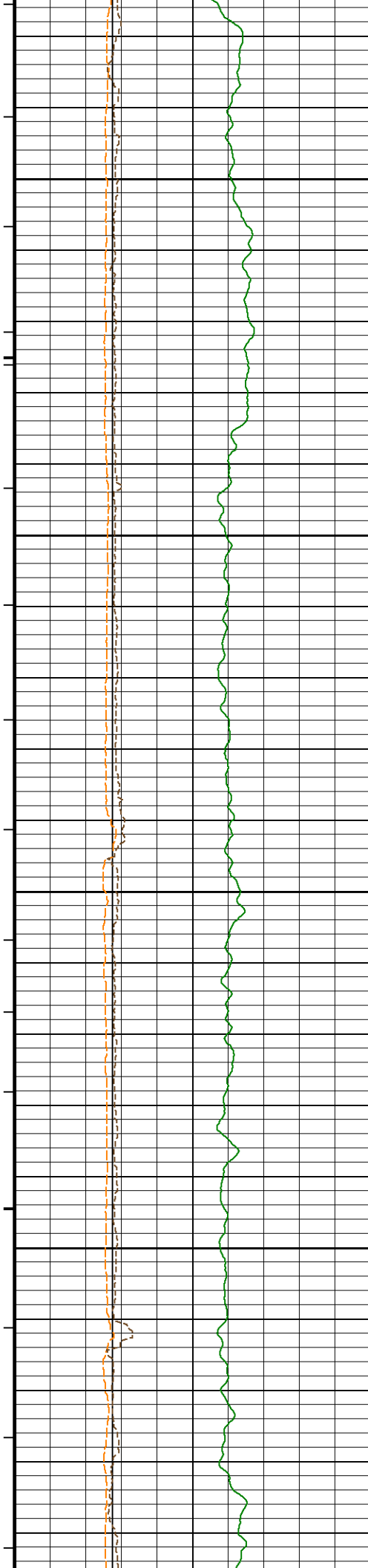












214°

11100

214°

11150

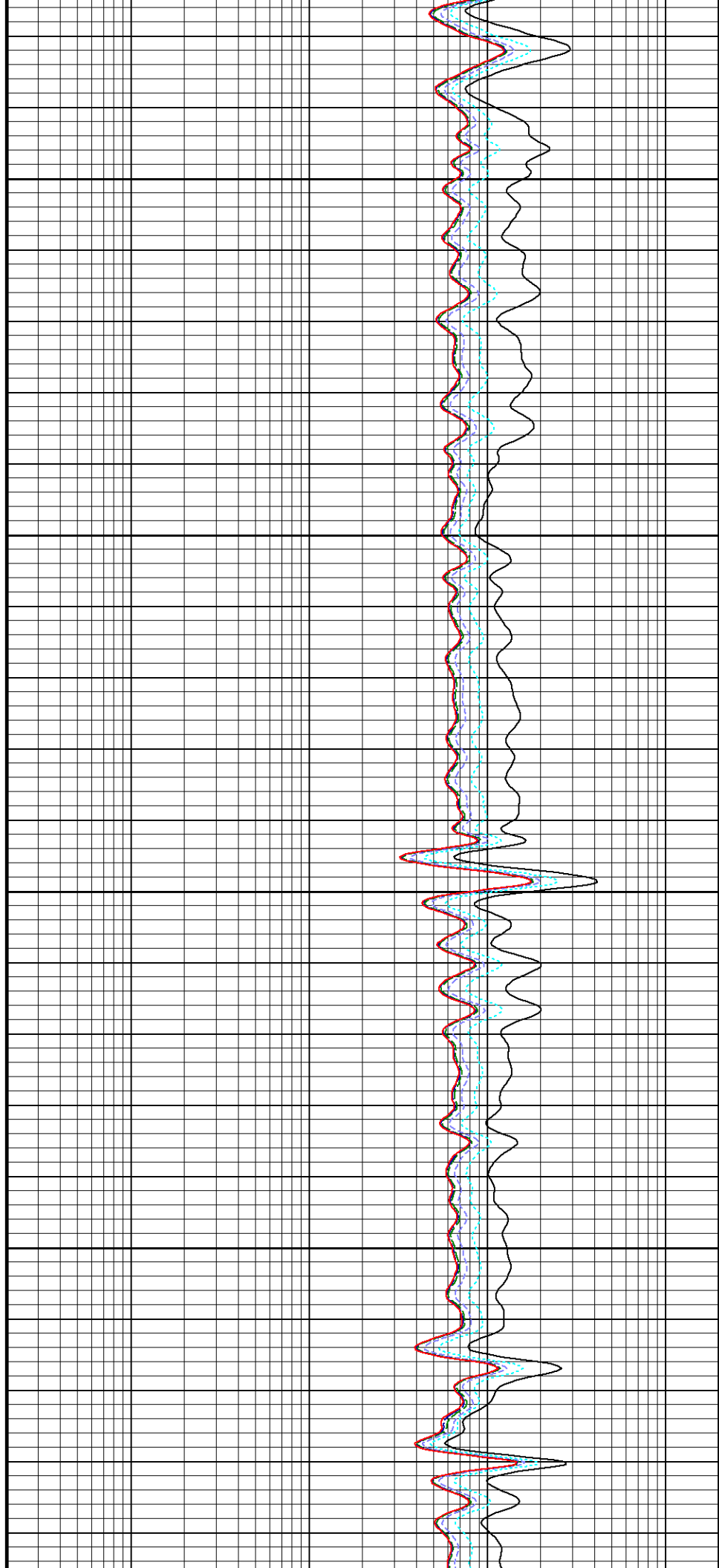
214°

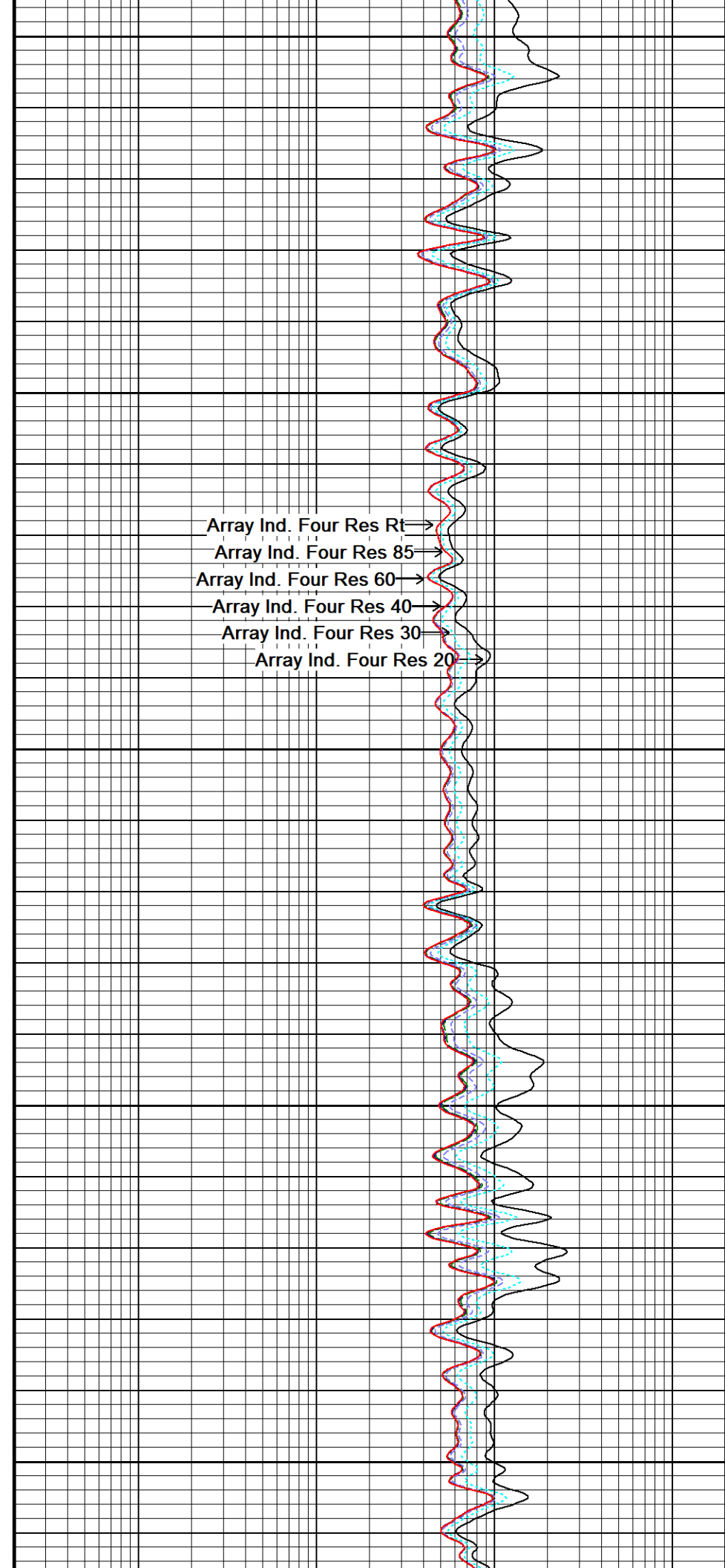
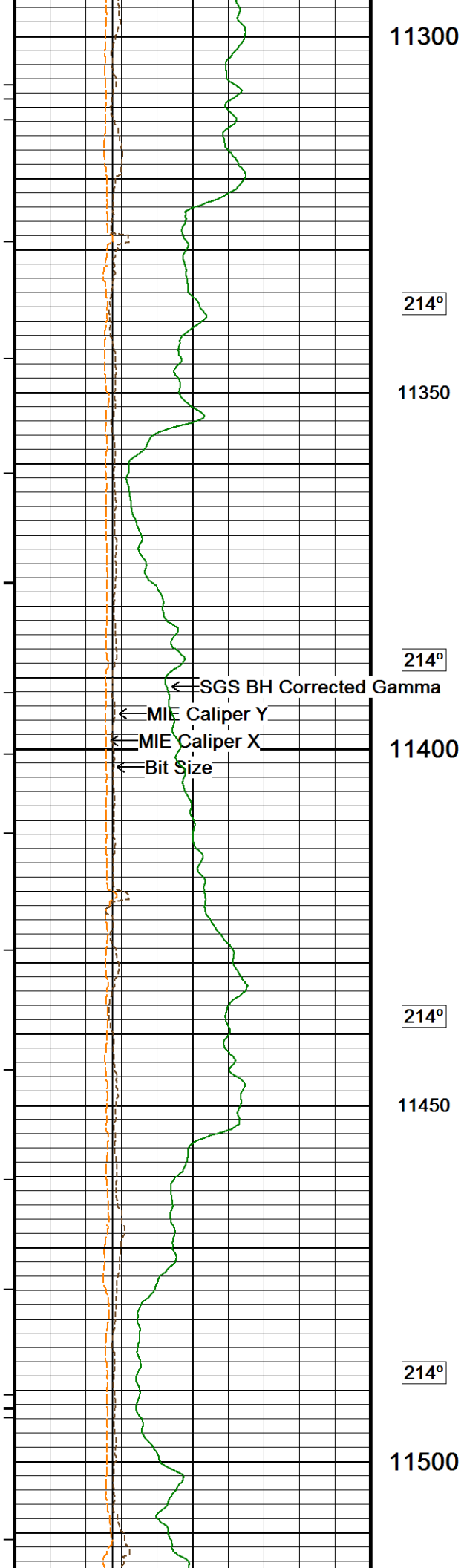
11200

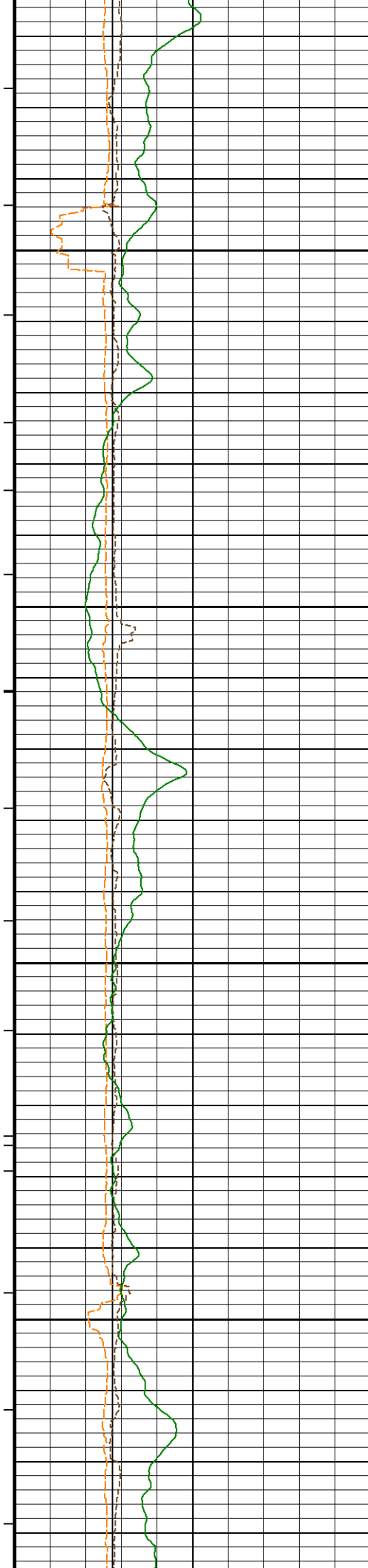
214°

11250

214°







214°

11550

214°

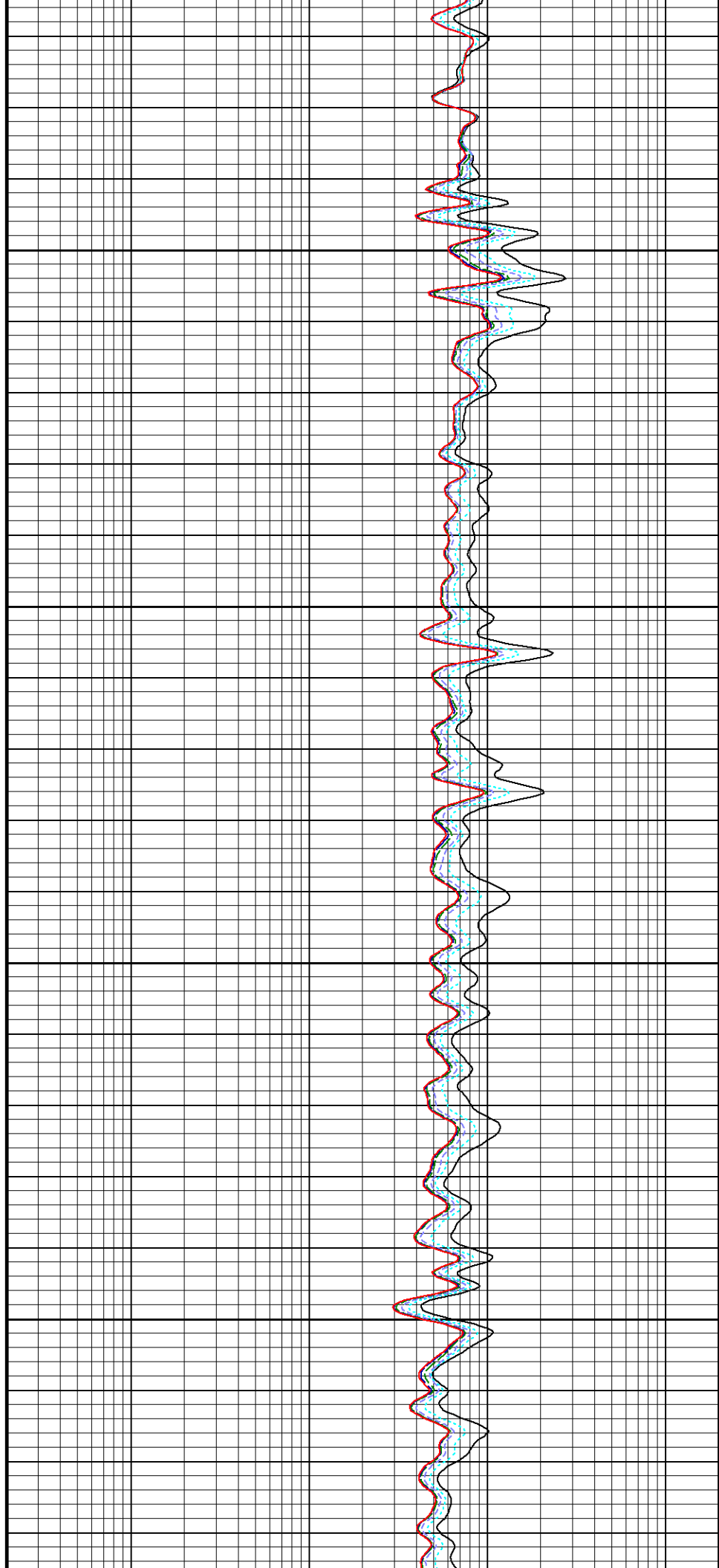
11600

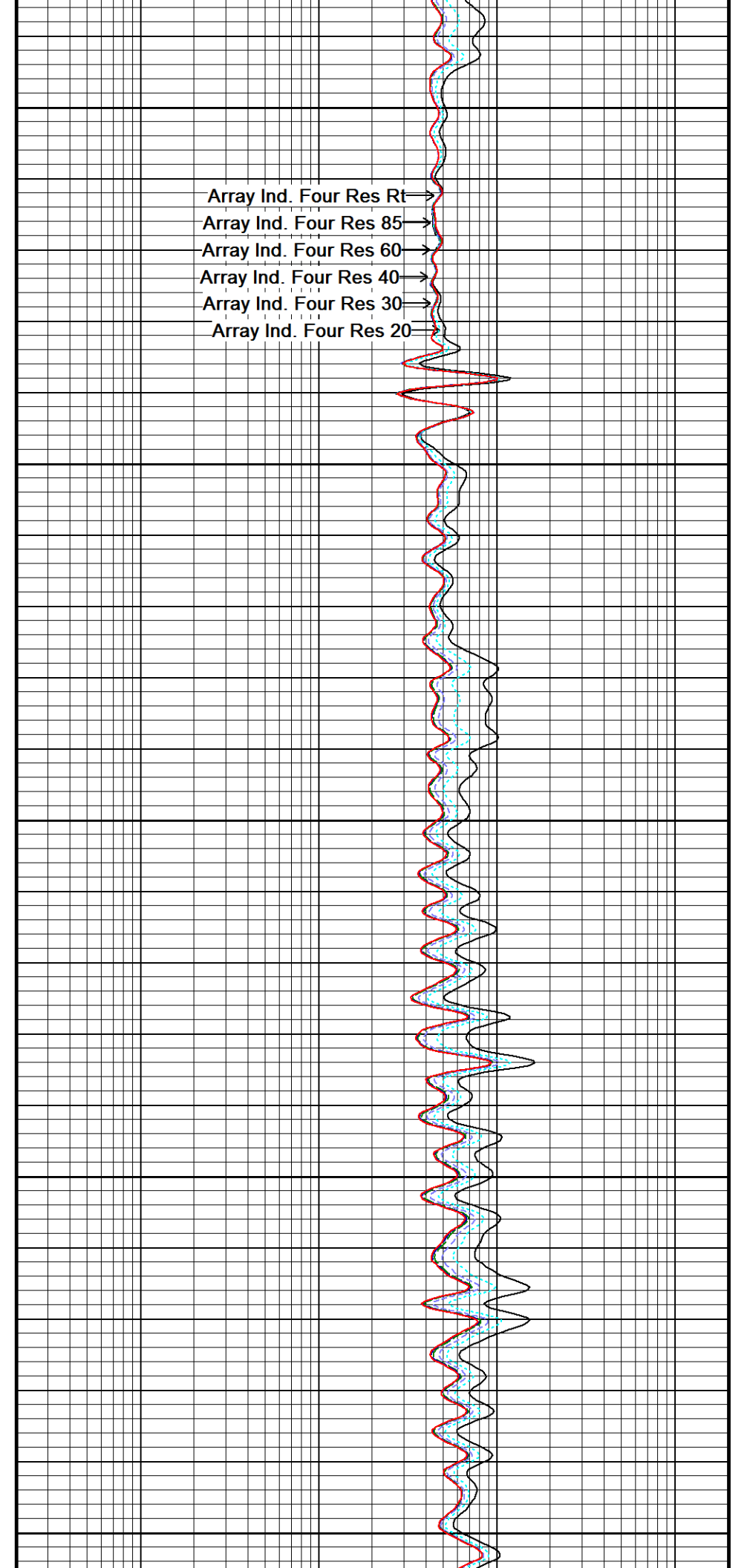
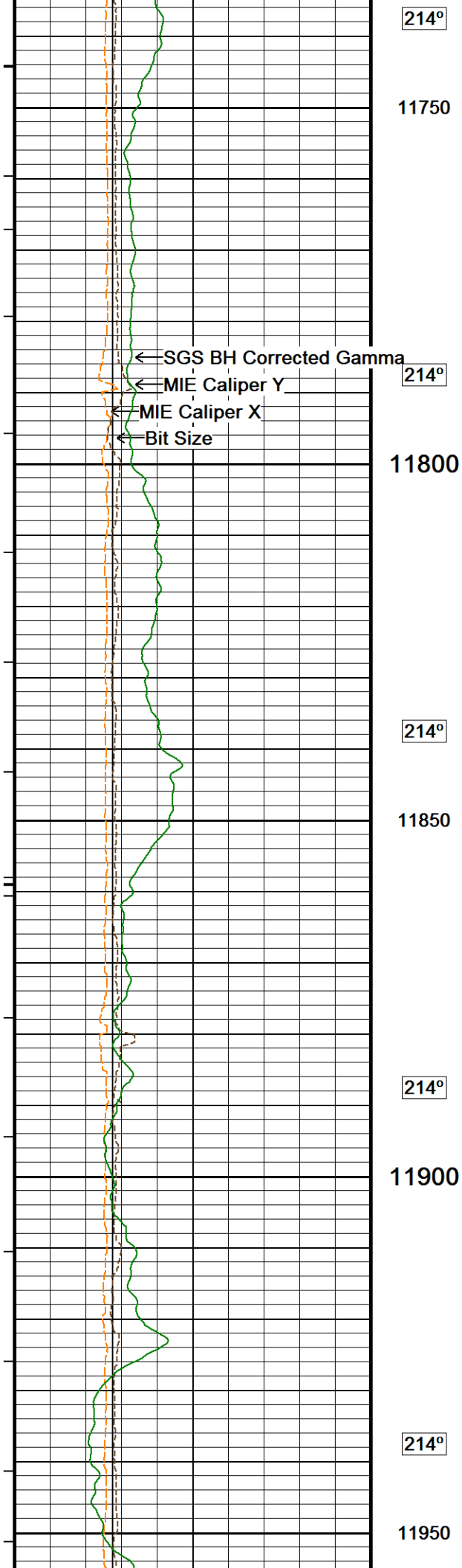
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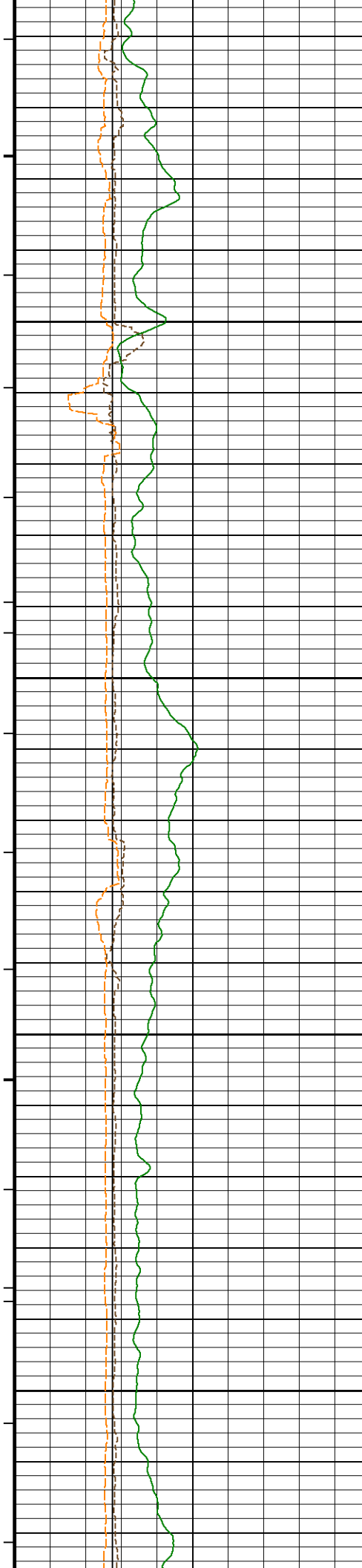
11650

214°

11700





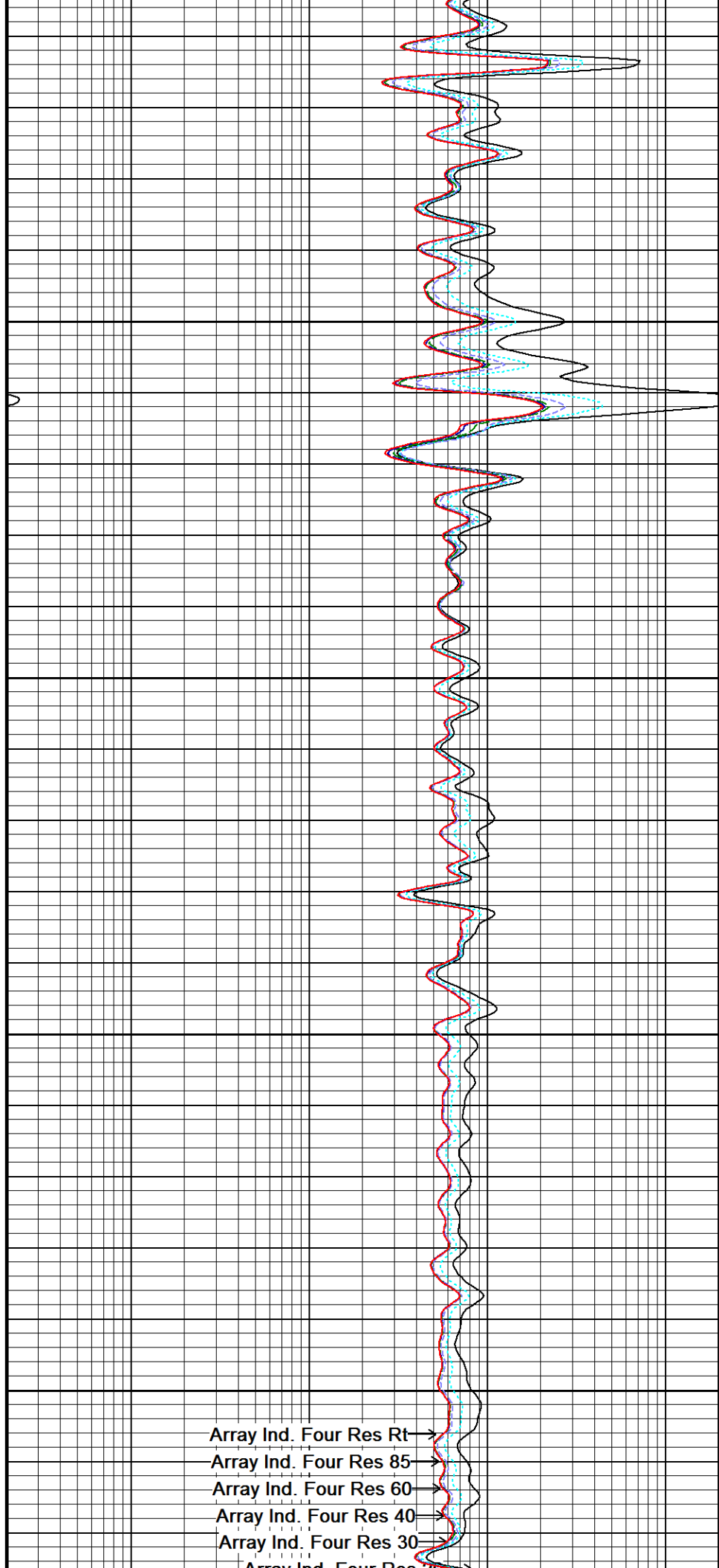


214°
12000

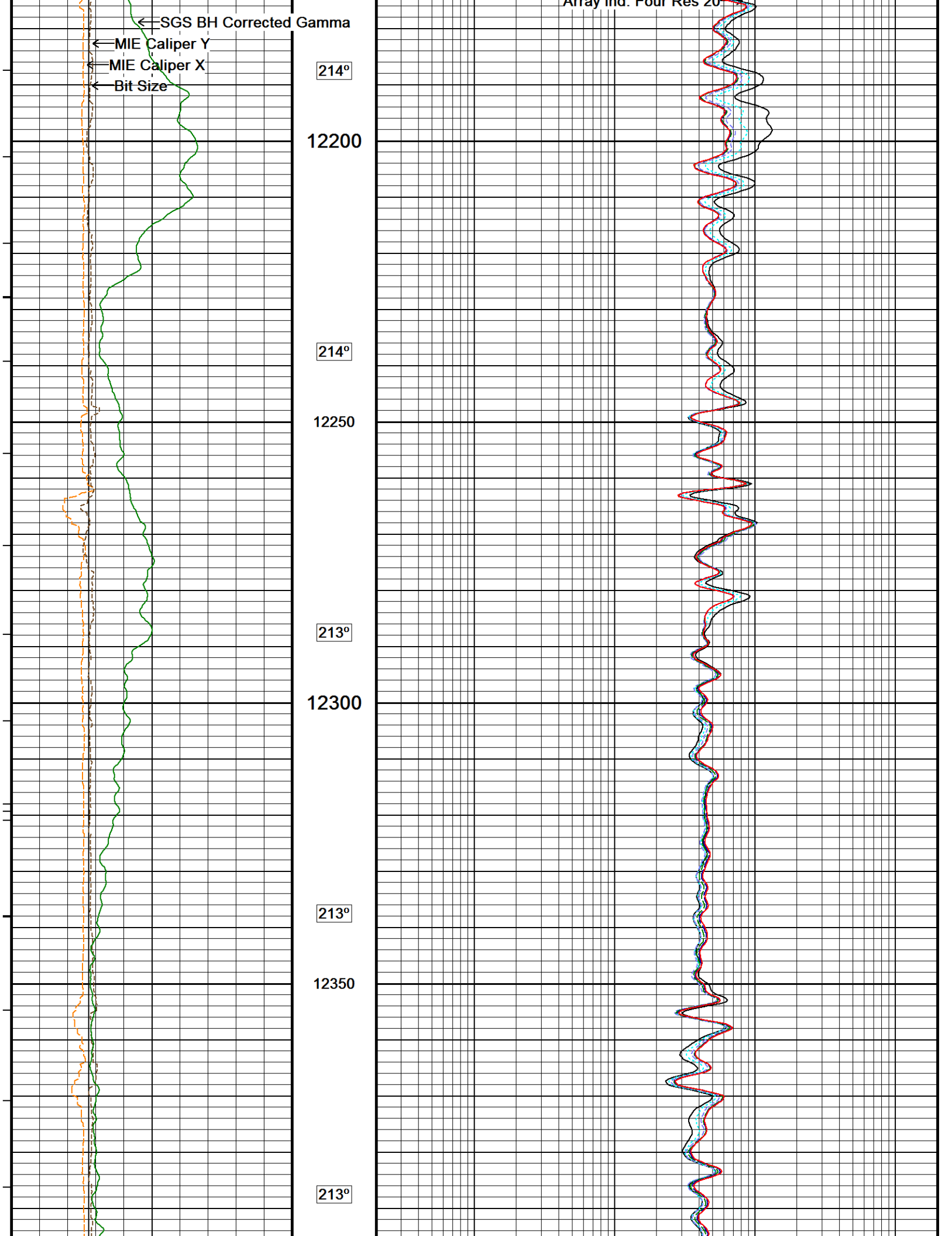
214°
12050

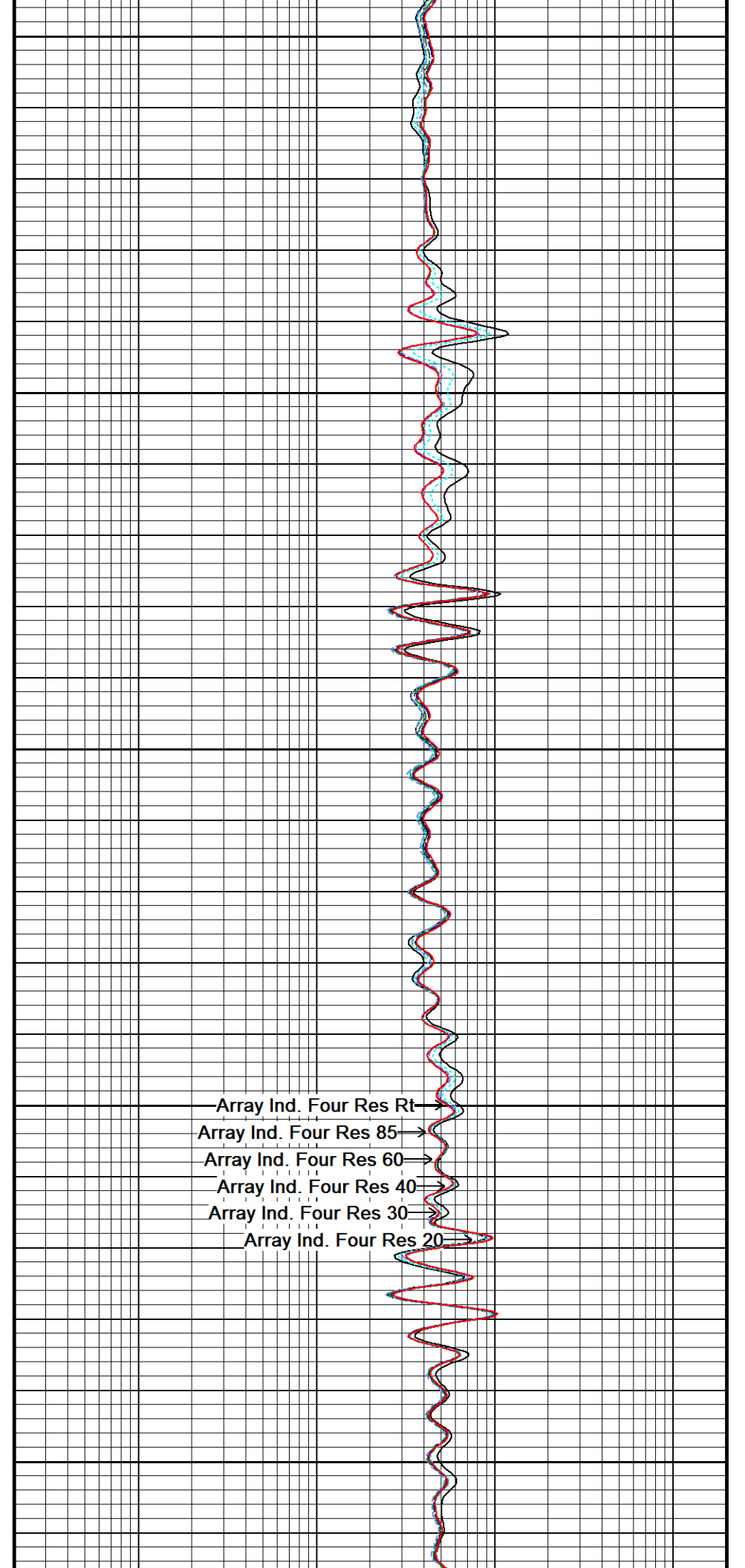
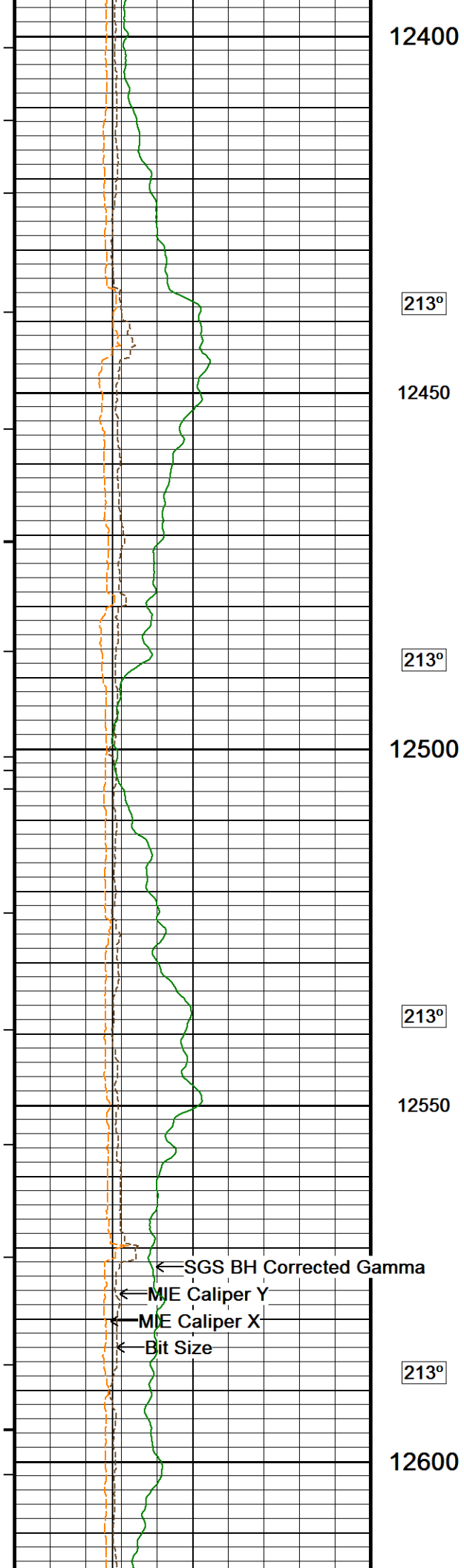
214°
12100

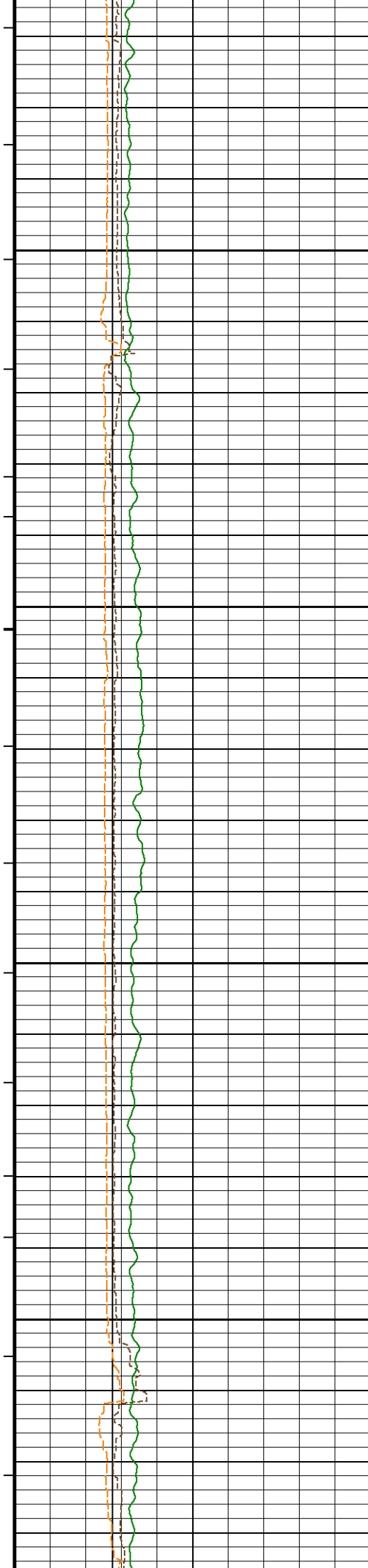
214°
12150



Array Ind. Four Res Rt
Array Ind. Four Res 85
Array Ind. Four Res 60
Array Ind. Four Res 40
Array Ind. Four Res 30
Array Ind. Four Res 15







213°

12650

213°

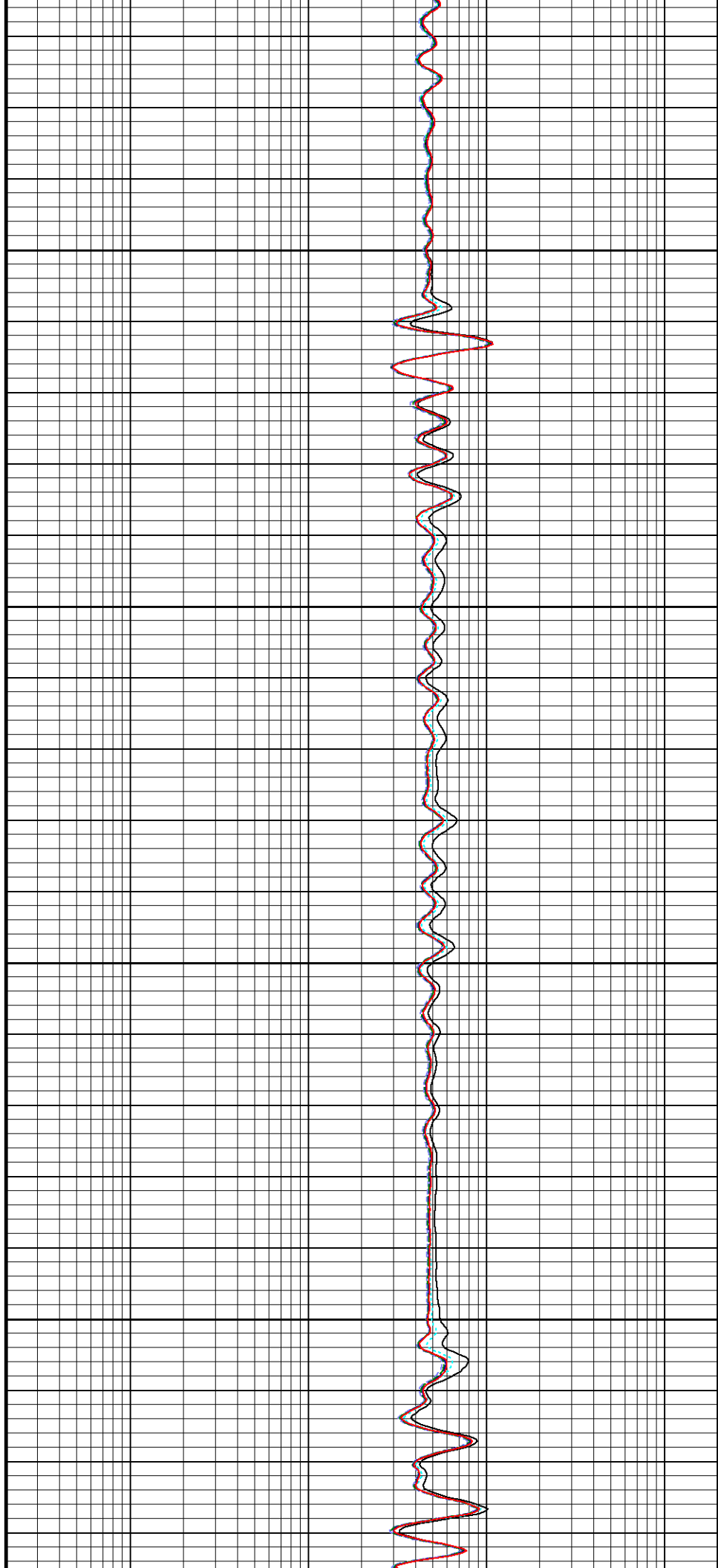
12700

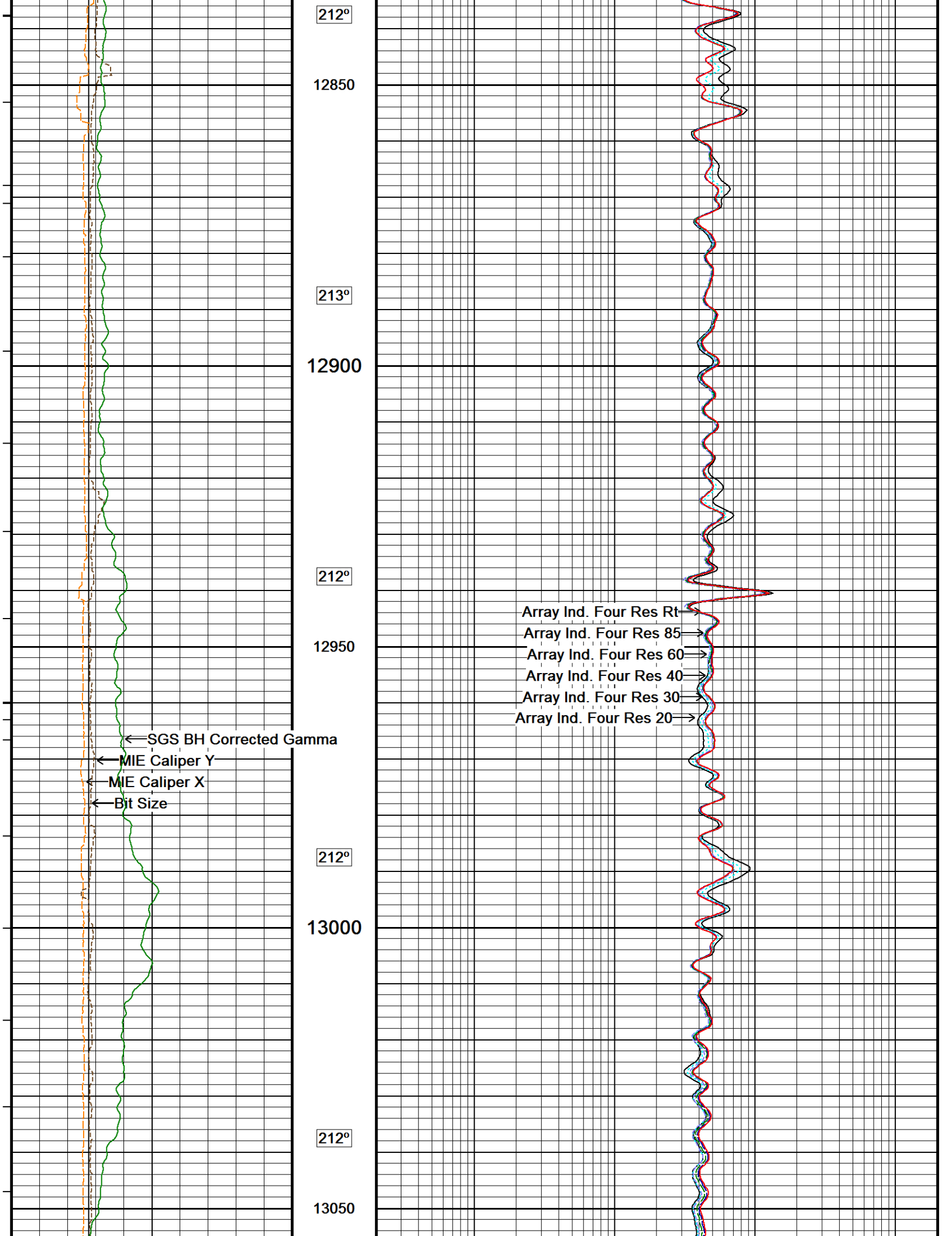
213°

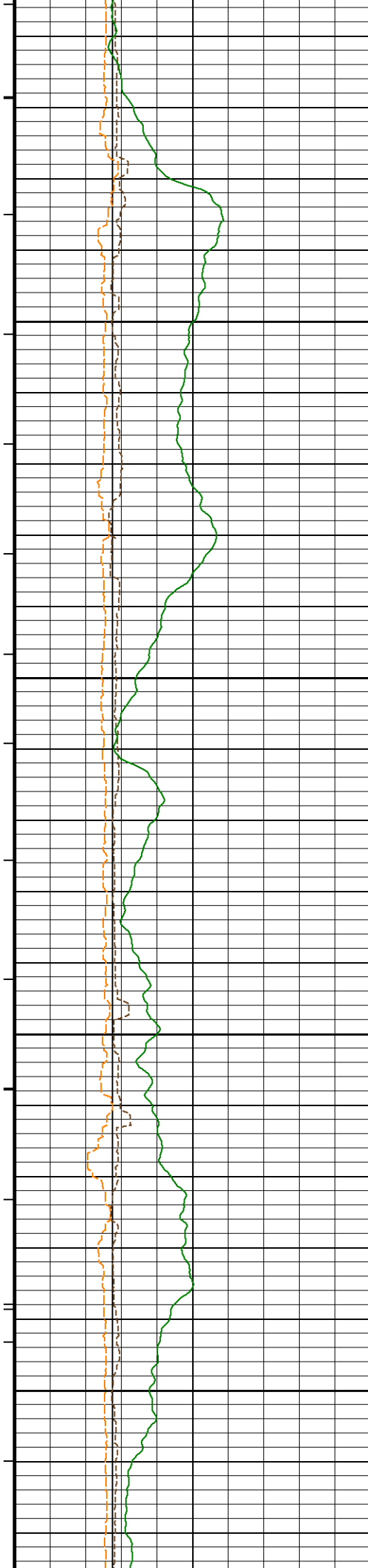
12750

213°

12800







211°

13100

212°

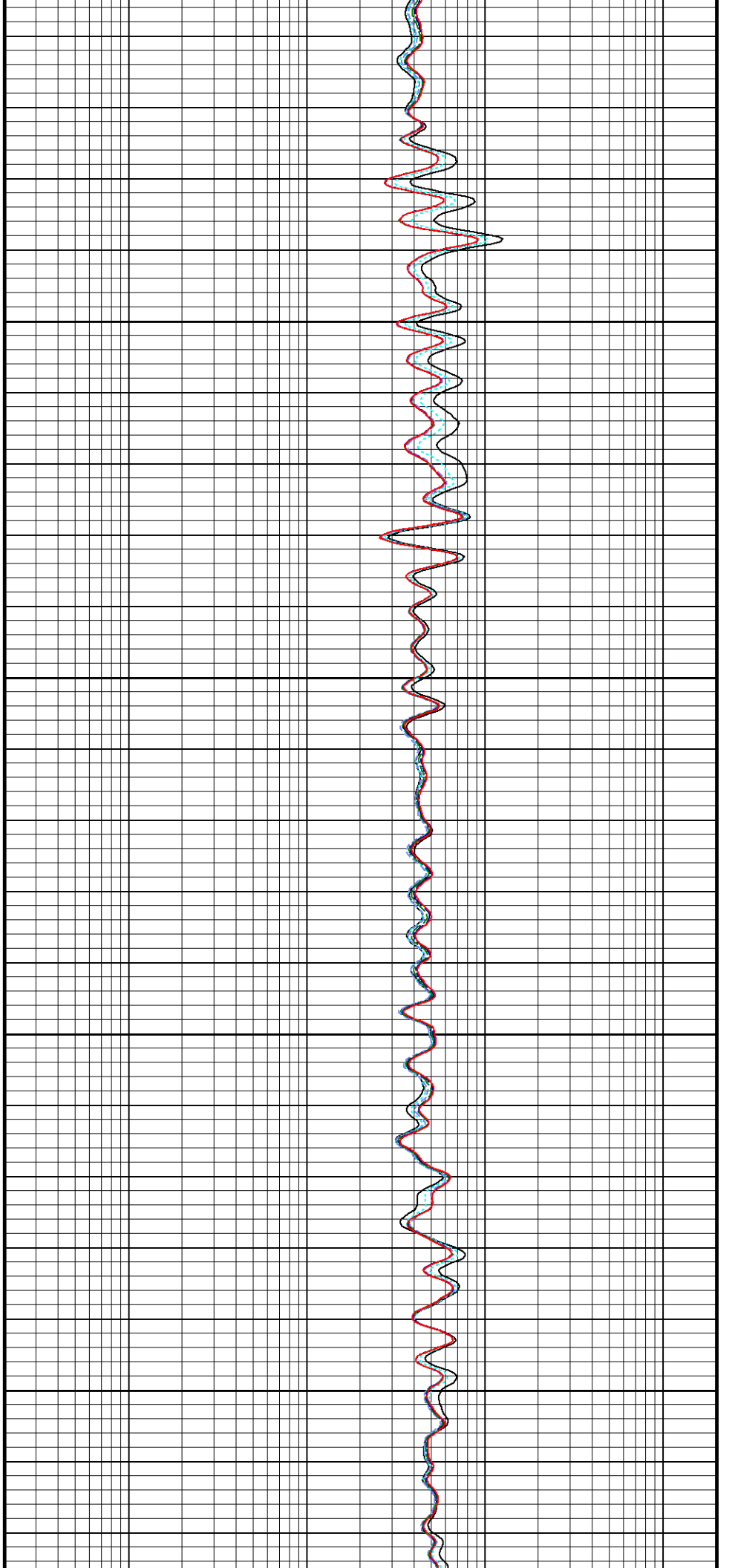
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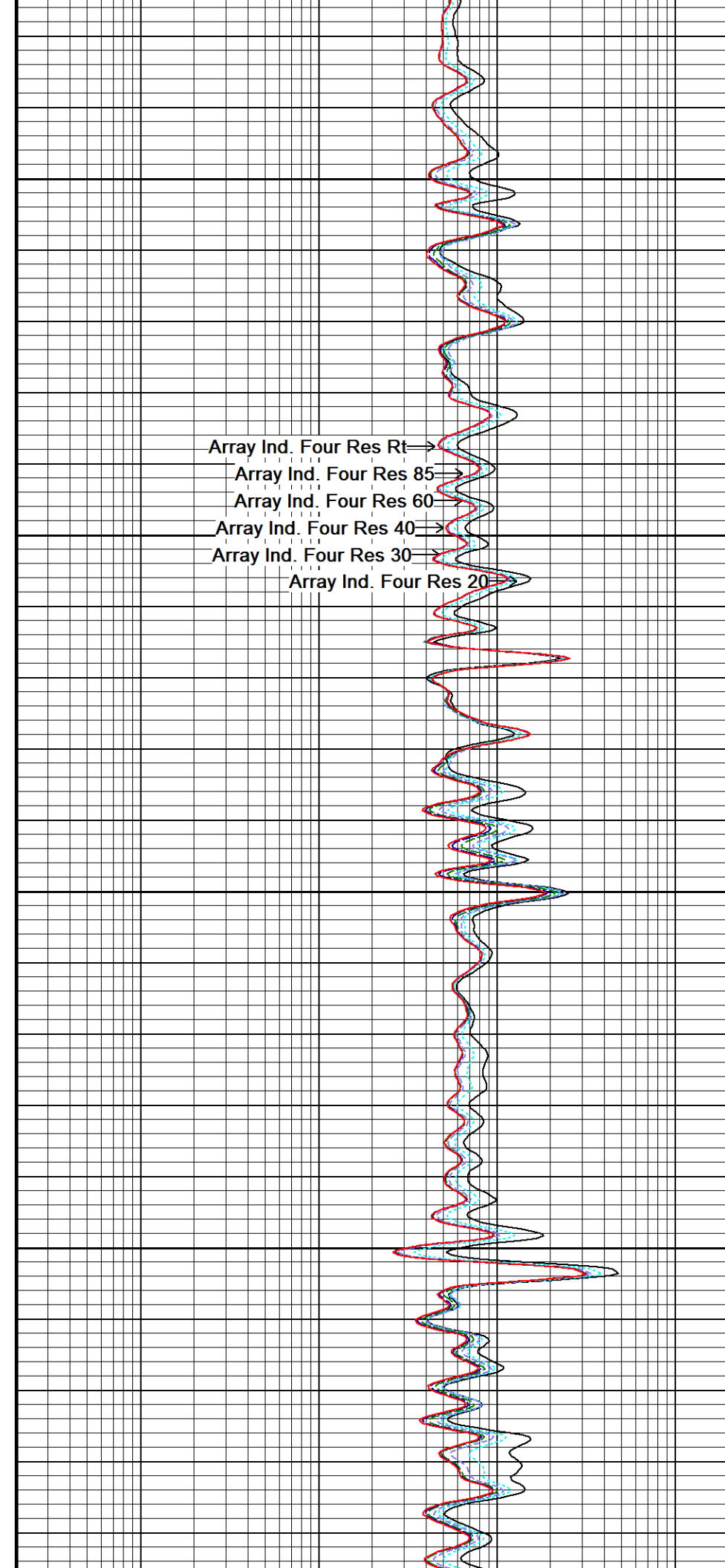
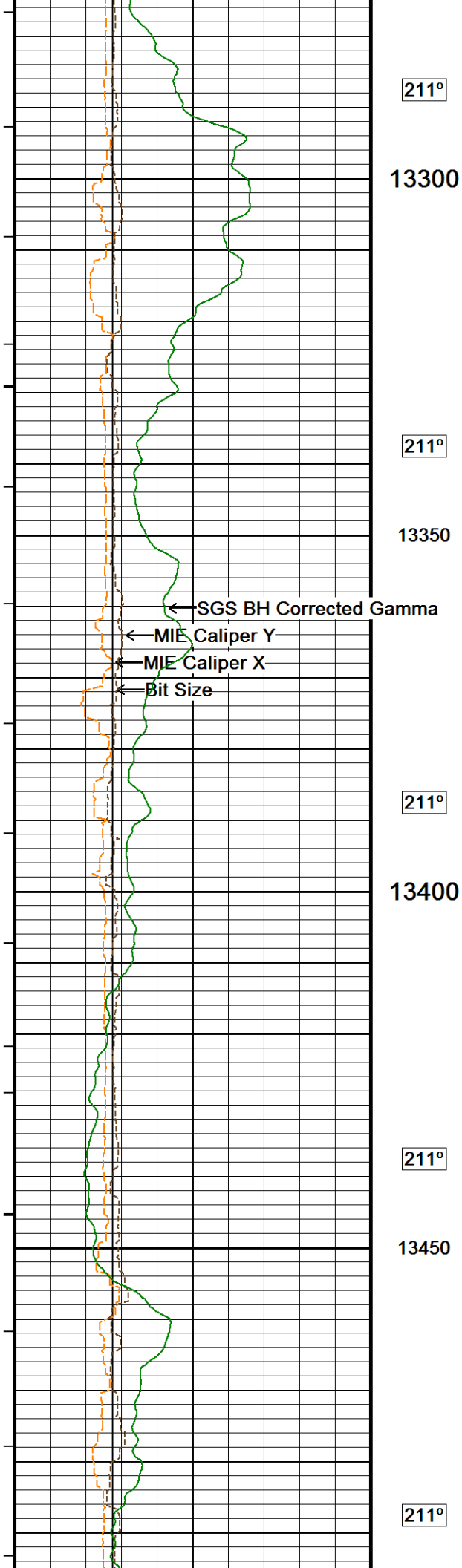
212°

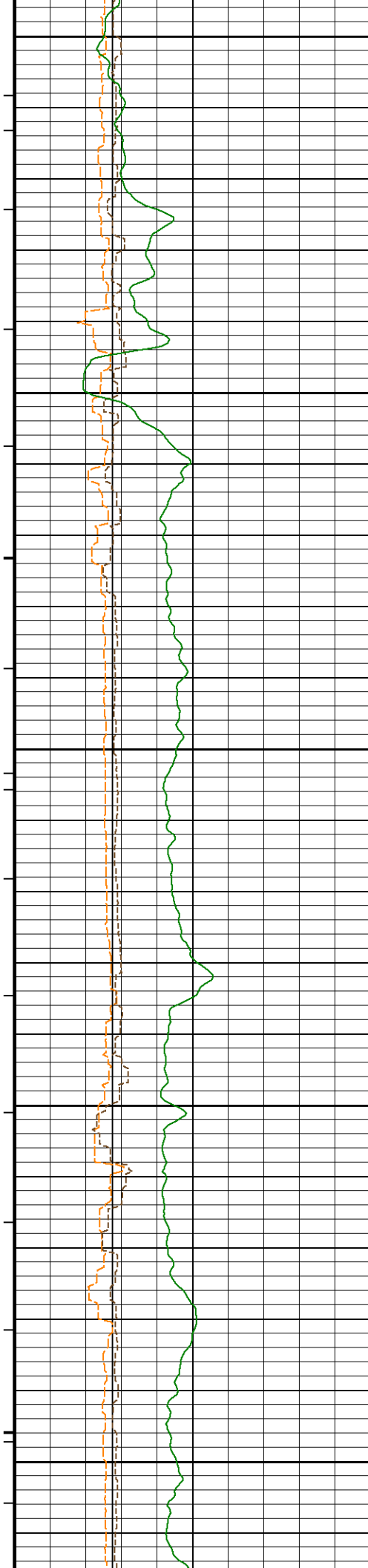
13200

211°

13250







13500

212°

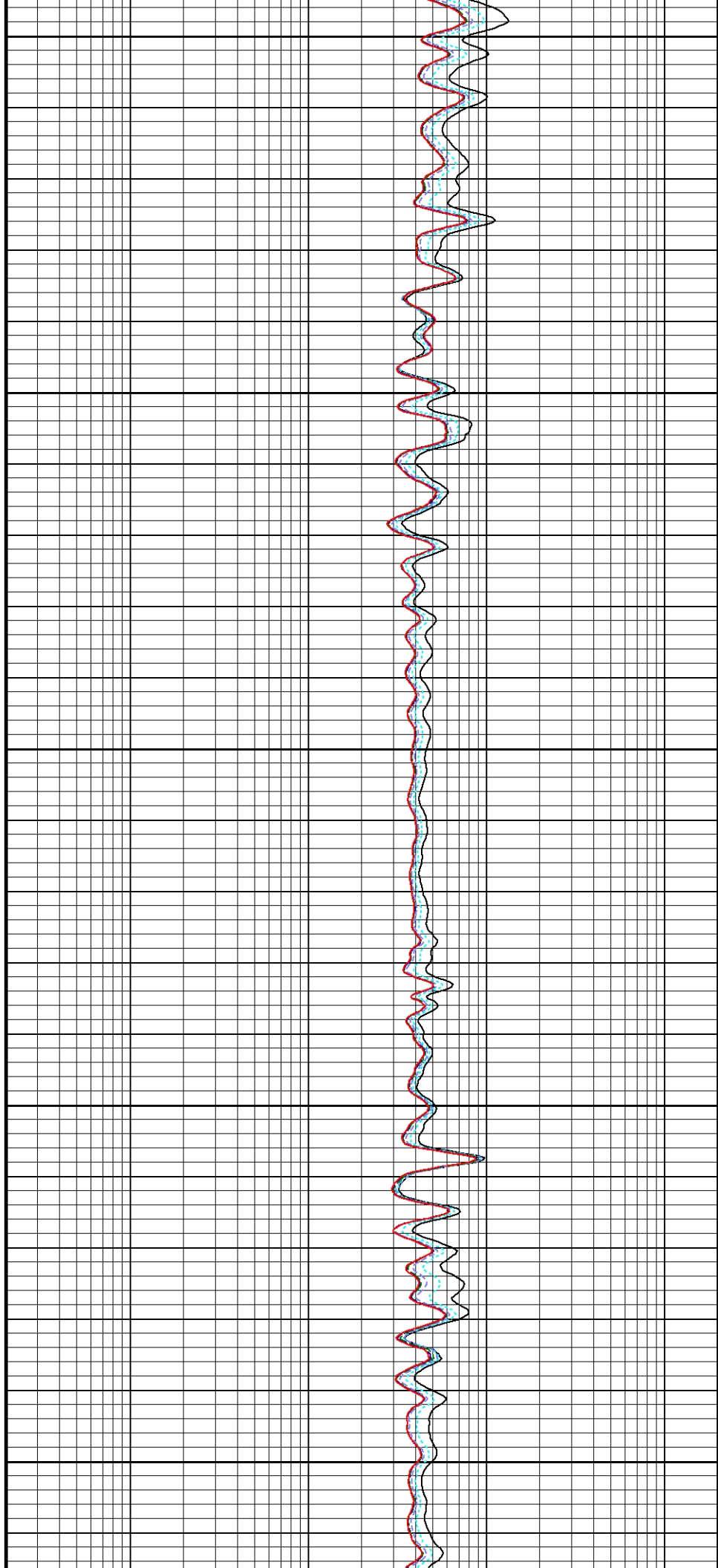
13550

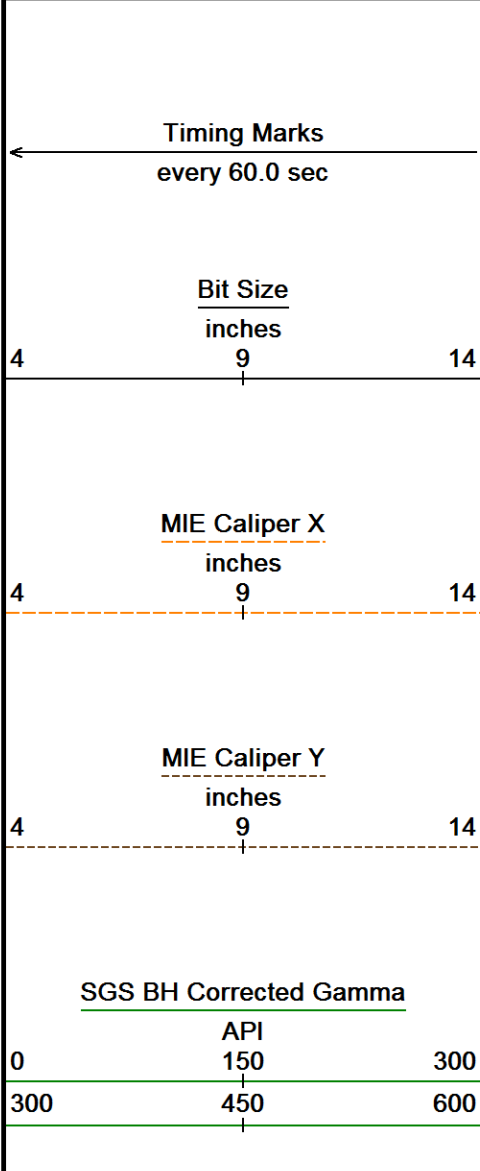
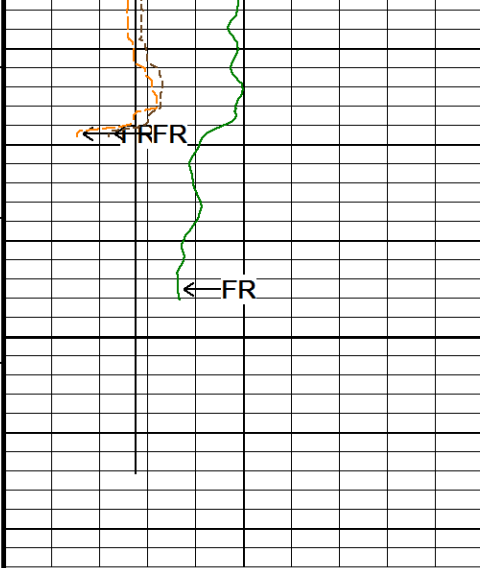
215°

13600

13650

13700



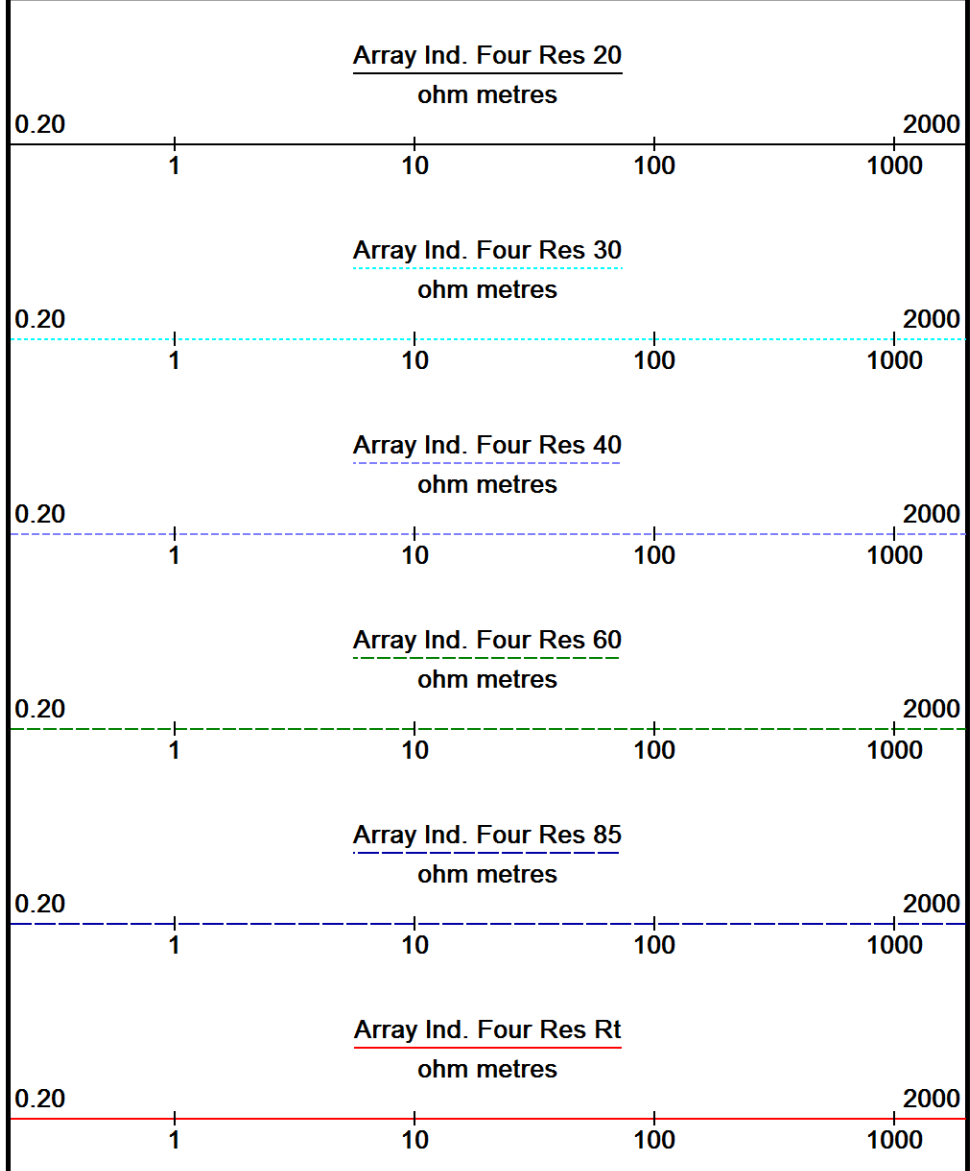
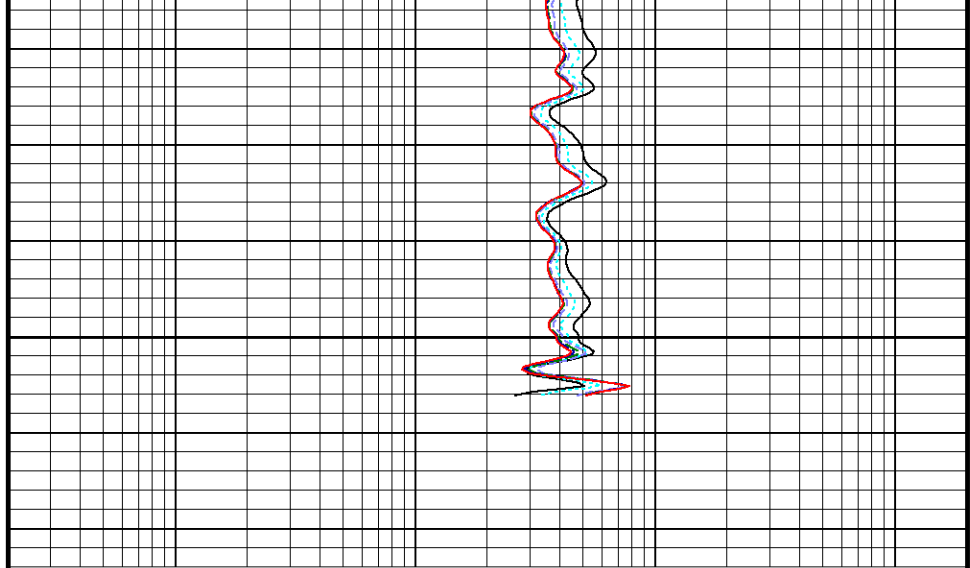


13750

Depth
in
Feet

Borehole
Temp in
deg F

Replay
Scale
1:240



Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: D:\Logs\Whiting\HORSETAIL 30F-1942\MMS DEPTH.dta
System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220
Plotted on 24-OCT-2014 06:34
Recorded on 24-OCT-2014 04:18

5 INCH MAIN LOG

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.
0.0	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
4000.0	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
8000.0	0.000 0.000	0.000 0.000	0.000 0.000
10000.0	0.000 0.000	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

Magnetic Declination MIE-A.J 241

Magnetometer Parameters MIE-A.J 241

Date Of Last Magnetometer Calibration	9-AUG-2014,14:48		
Slope	X Magnetometer	Y Magnetometer	Z Magnetometer
Offset	-1.000000	-1.010059	-0.993063
	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 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

Channel	Measured		Calibrated (mmho/m)	
	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

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

	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

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 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	13754.00	feet
Elevation Drill Floor	4797.00	feet	Depth Driller	13777.00	feet
Elevation Ground Level	4780.00	feet	Depth Logger	13777.00	feet



Weatherford®

MEASURED DEPTH
ARRAY INDUCTION
LOG