



Weatherford

**MEASURED DEPTH
ARRAY INDUCTION
LOG**

WHITTING OIL AND GAS CORPORATION

WOLF 12L-0103

REDTAIL

U.S.A. / COLORADO

**SHL: 619' FWL & 2558' FNL
BHL: 825' FWL & 600' FNL**

PERMIT NUMBER

Other Services

MICRO IMAGER

**SPECTRAL GAMMA
DENSITY/NEUTRON**

Permanent Datum G.L., Elevation 4953 feet

Log Measured From KB

Drilling Measured From K.B. @ 17 FEET

Elevations:
KB 4970.00
DF 4970.00
GL 4953.00

Date 15-SEPT-2014

Run Number ONE

Service Order 6551-97985944

Depth Driller 13393.00 feet

Depth Logger 11781.00 feet

First Reading 11772.00 feet

Last Reading 6610.00 feet

Casing Driller 6629.00 feet

Casing Logger 6630.00 feet

Bit Size 6.000 inches

Hole Fluid Type WBM

Density / Viscosity 9.65 lb/USg

PH / Fluid Loss 5.60 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.97 @ 89.9 ohm-m

Rmf @ Measured Temp 0.75 @ 89.9 ohm-m

Rmc @ Measured Temp 1.16 @ 89.9 ohm-m

Source Rmf / Rmc CALC

Rm @ BHT 0.43 @206.0 ohm-m

Time Since Circulation 1 HOUR

Max Recorded Temp 211.00 deg F

Equipment / Base 18086 Casper

Recorded By C CULLEN

Witnessed By E GREIGER

WSL

BOREHOLE RECORD

Last Edited: 17-SEP-2014 03:03

Bit Size inches	Depth From feet	Depth To feet
6.000	6629.00	11780.00

CASING RECORD

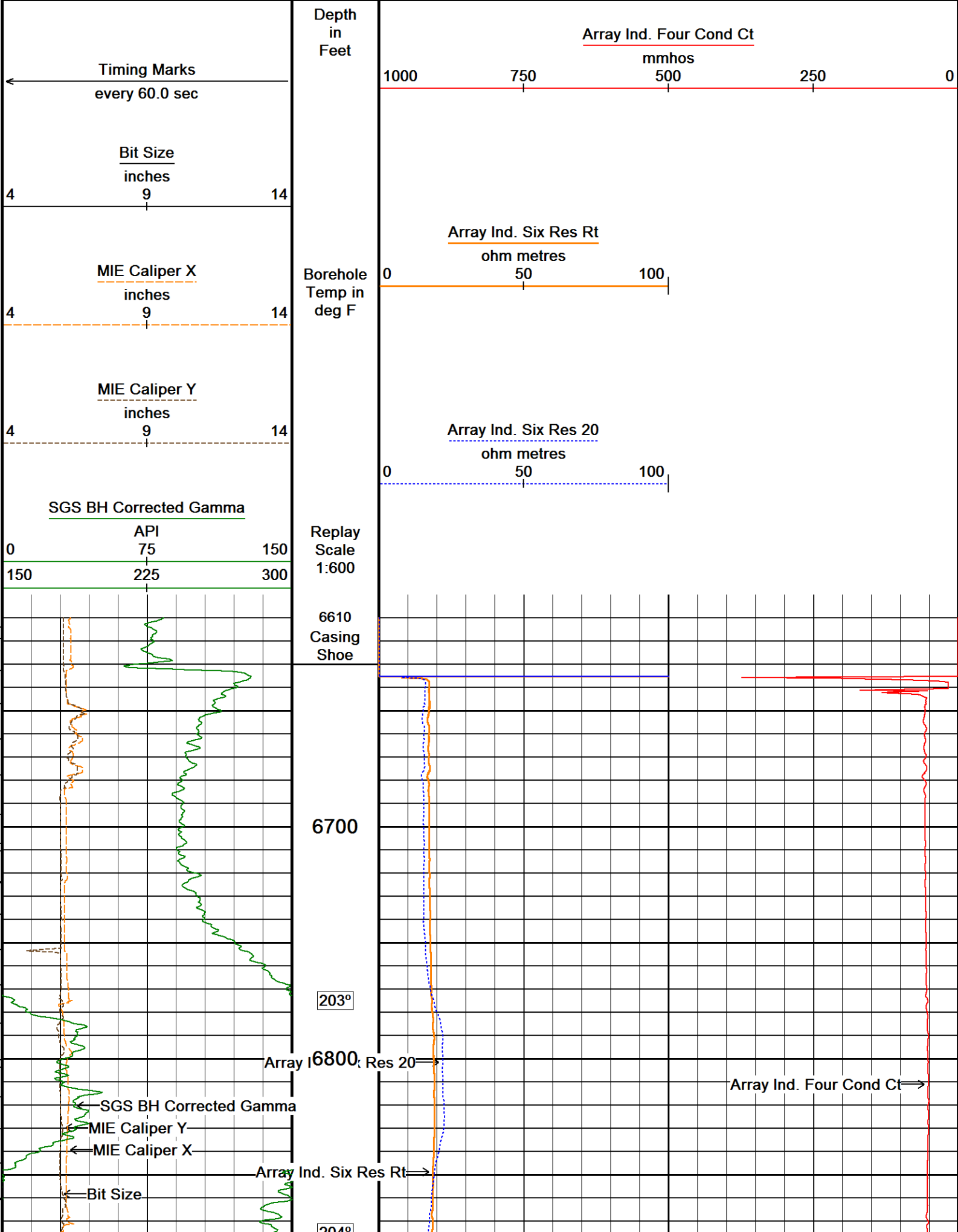
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	7.000	0.00	6629.00	29.00

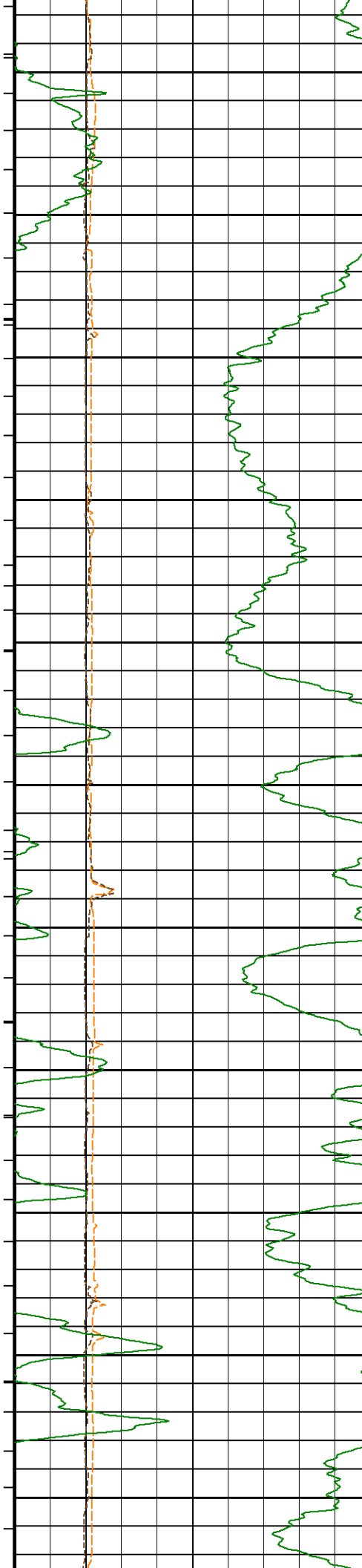
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will 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.

2 INCH MAIN LOG

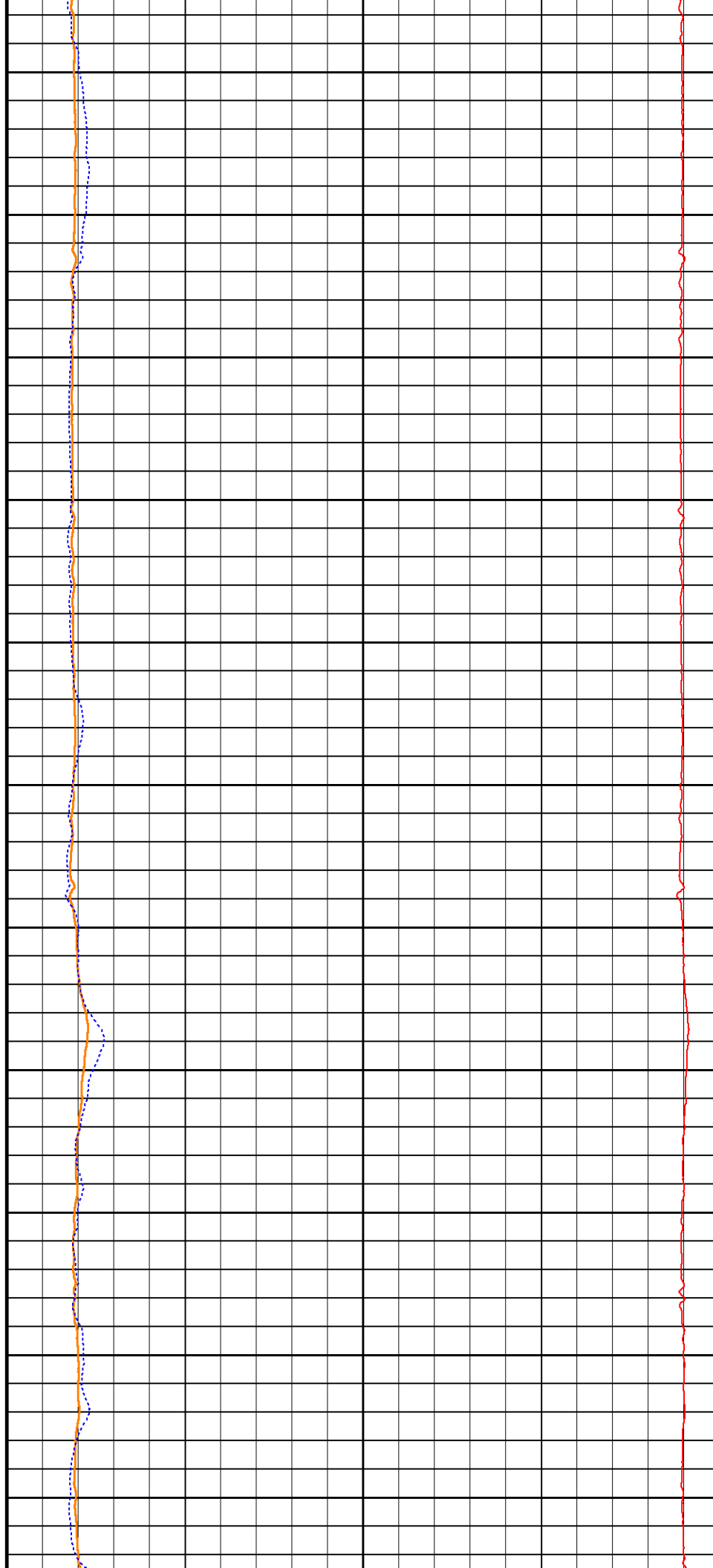
Depth Based Data - Maximum Sampling Increment 10.0cm

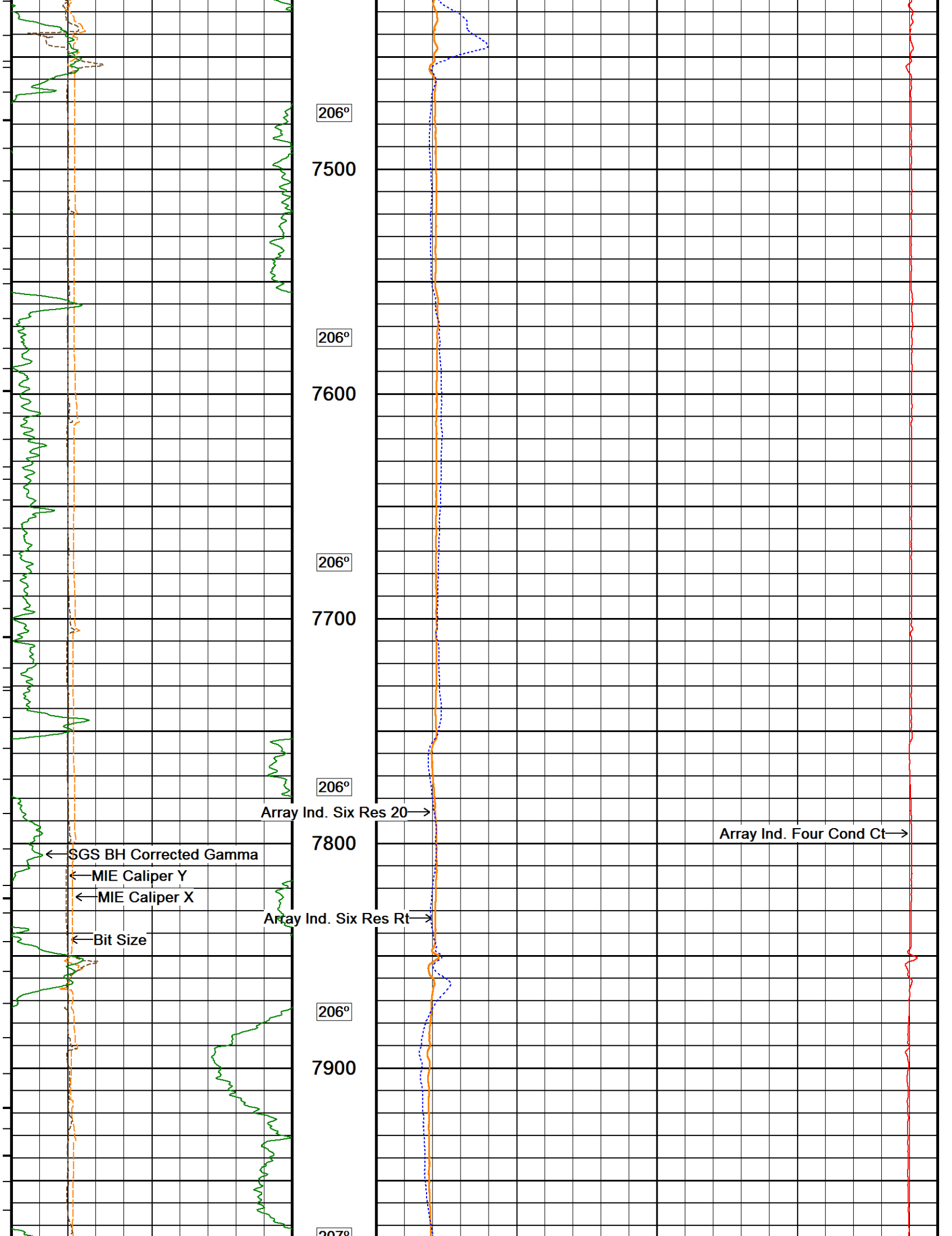
Plotted on 17-SEP-2014 03:12

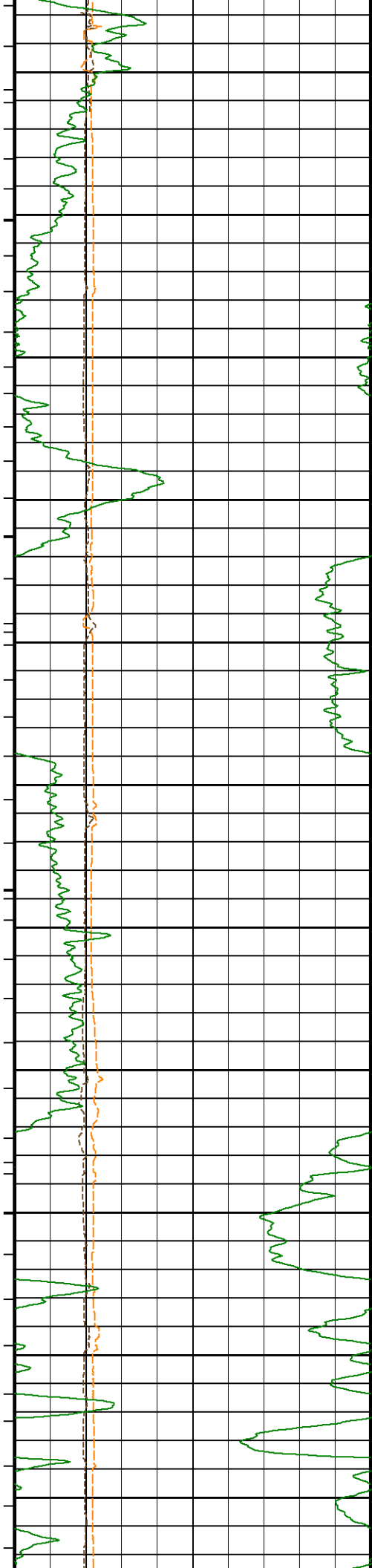




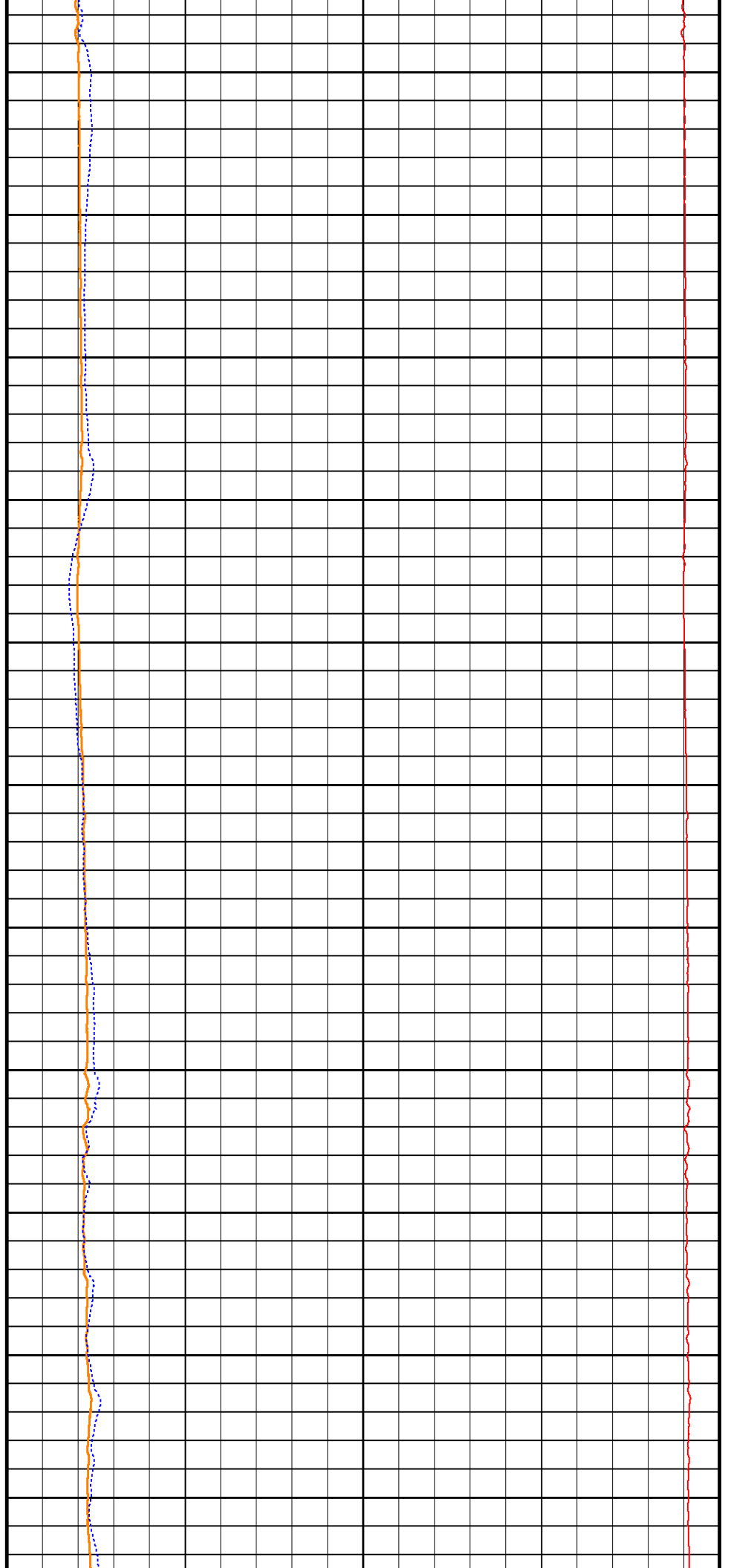
204
6900
204°
7000
205°
7100
205°
7200
205°
7300
205°
7400

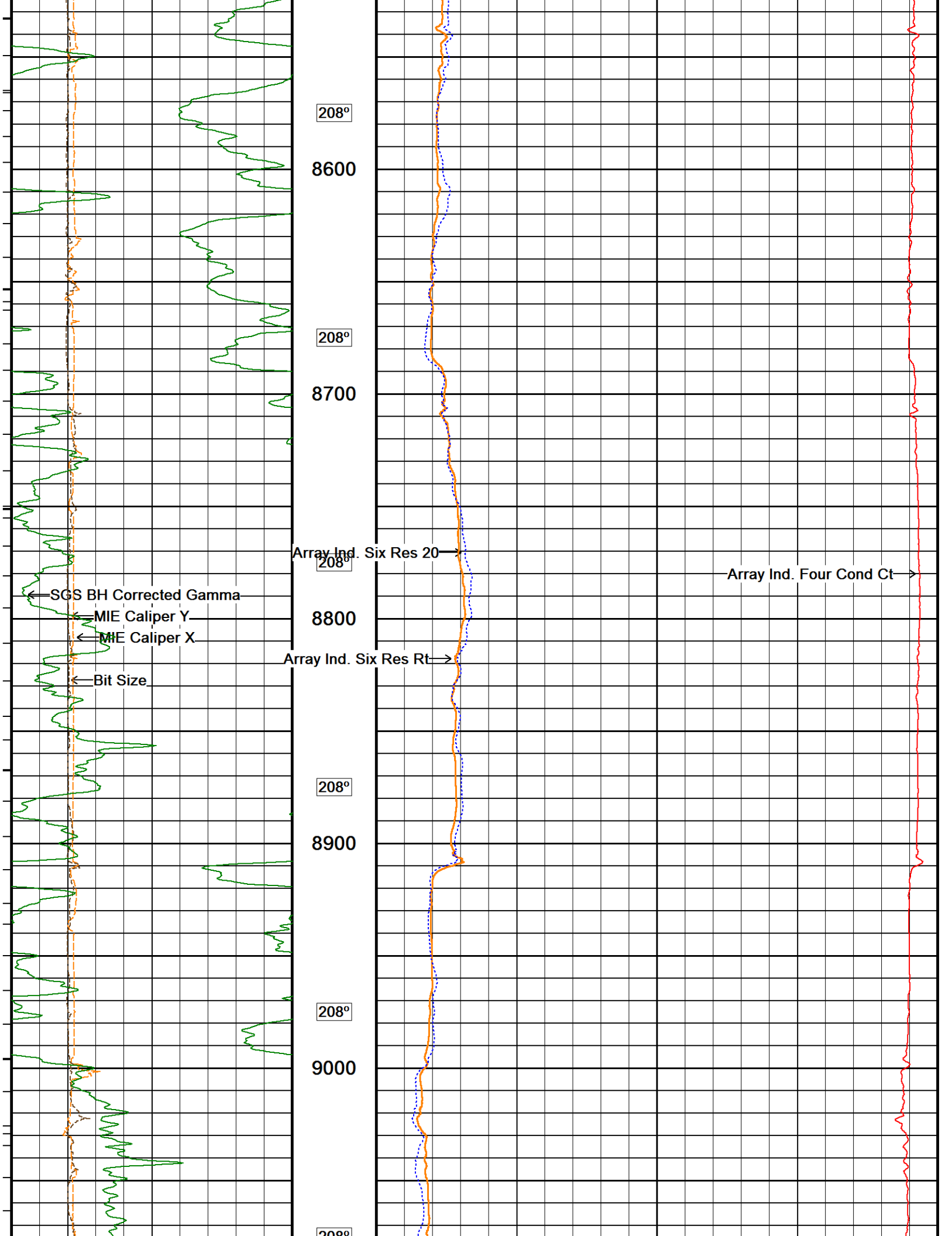






207
8000
207°
8100
207°
8200
207°
8300
207°
8400
207°
8500





208°

8600

208°

8700

208°

Array Ind. Six Res 20 →

Array Ind. Four Cond Ct →

8800

← SGS BH Corrected Gamma

← MIE Caliper Y

← MIE Caliper X

Array Ind. Six Res Rt →

← Bit Size

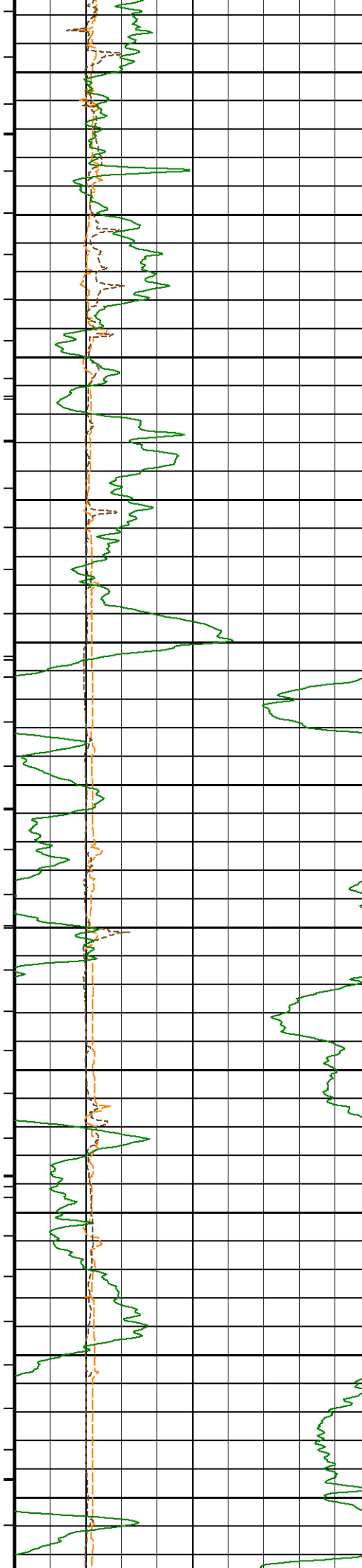
208°

8900

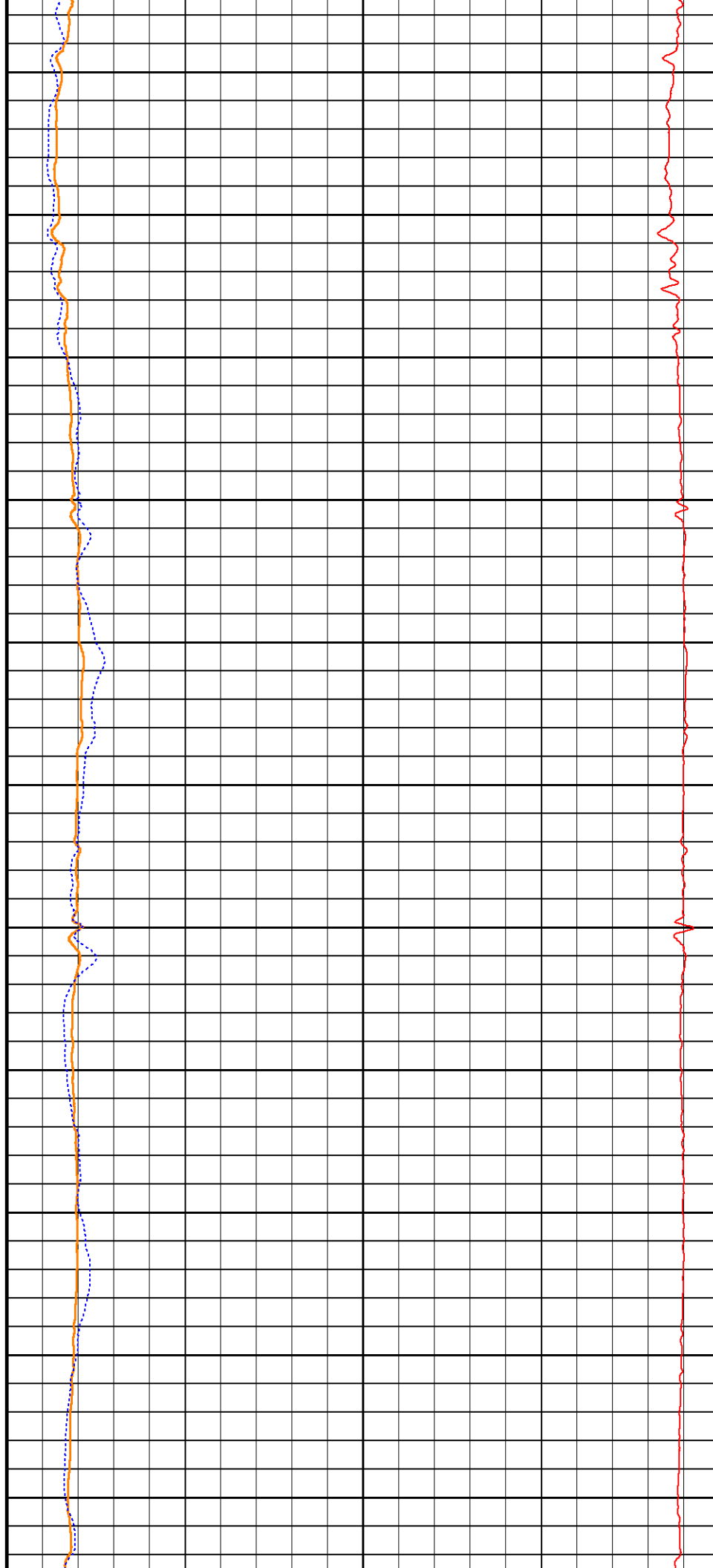
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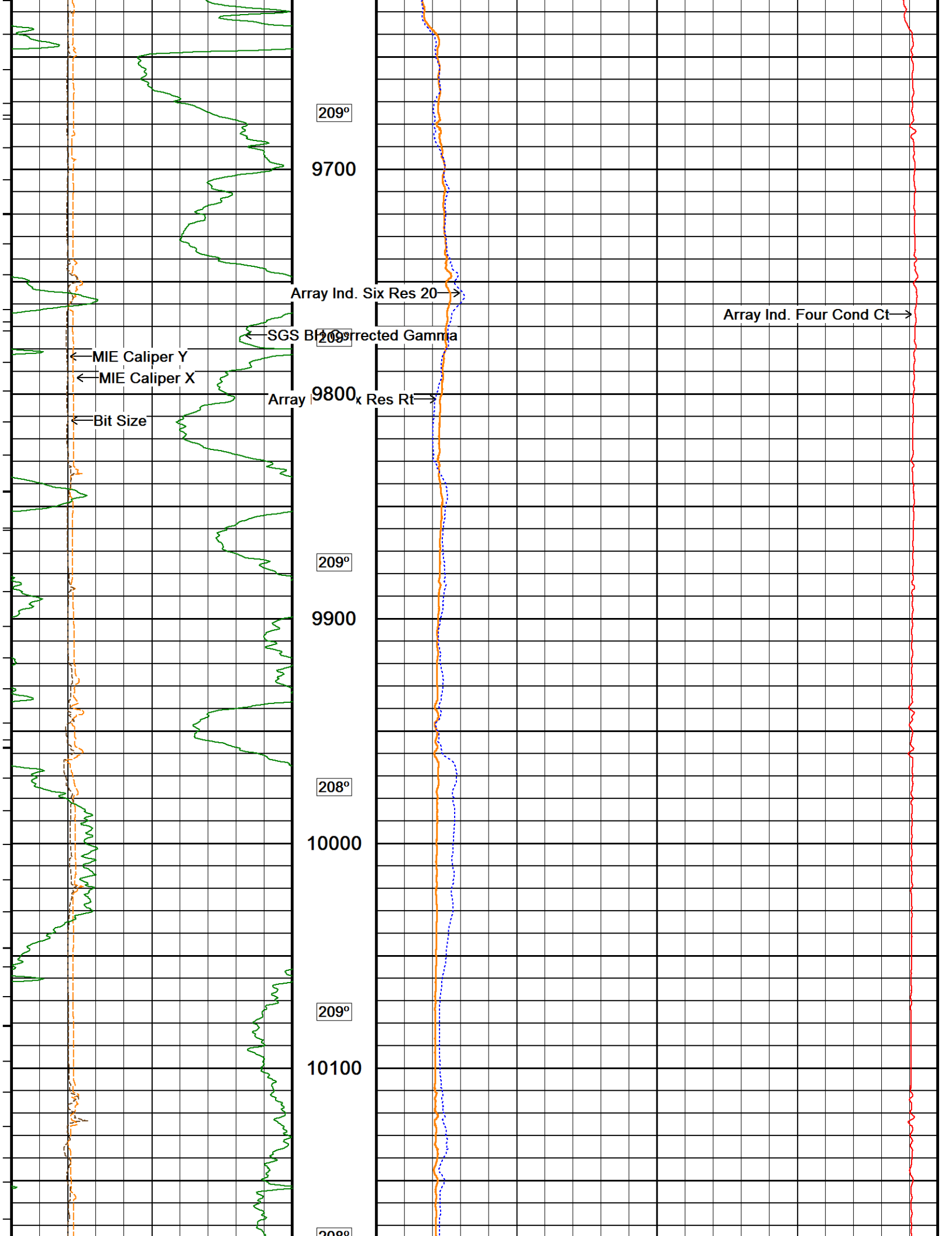
9000

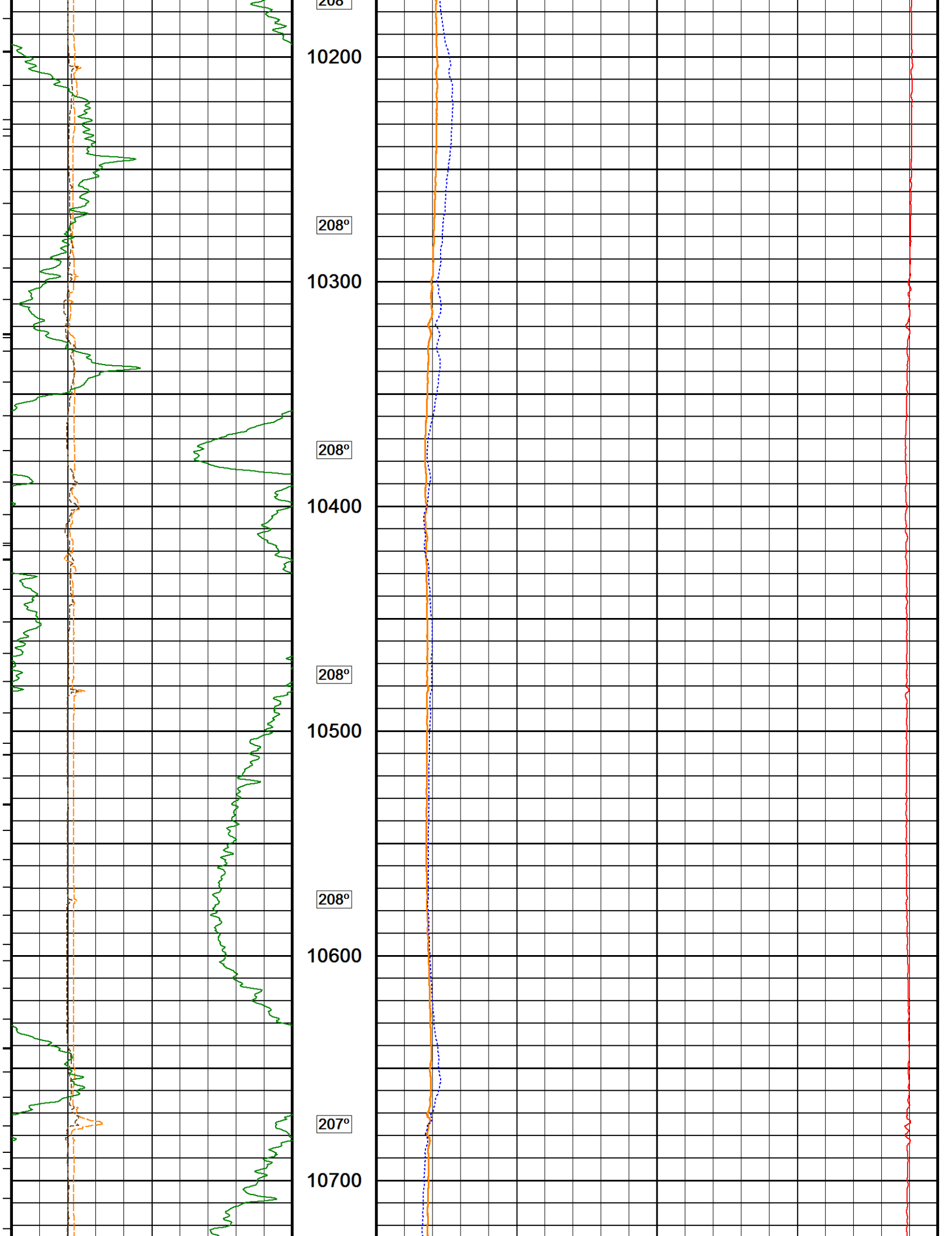
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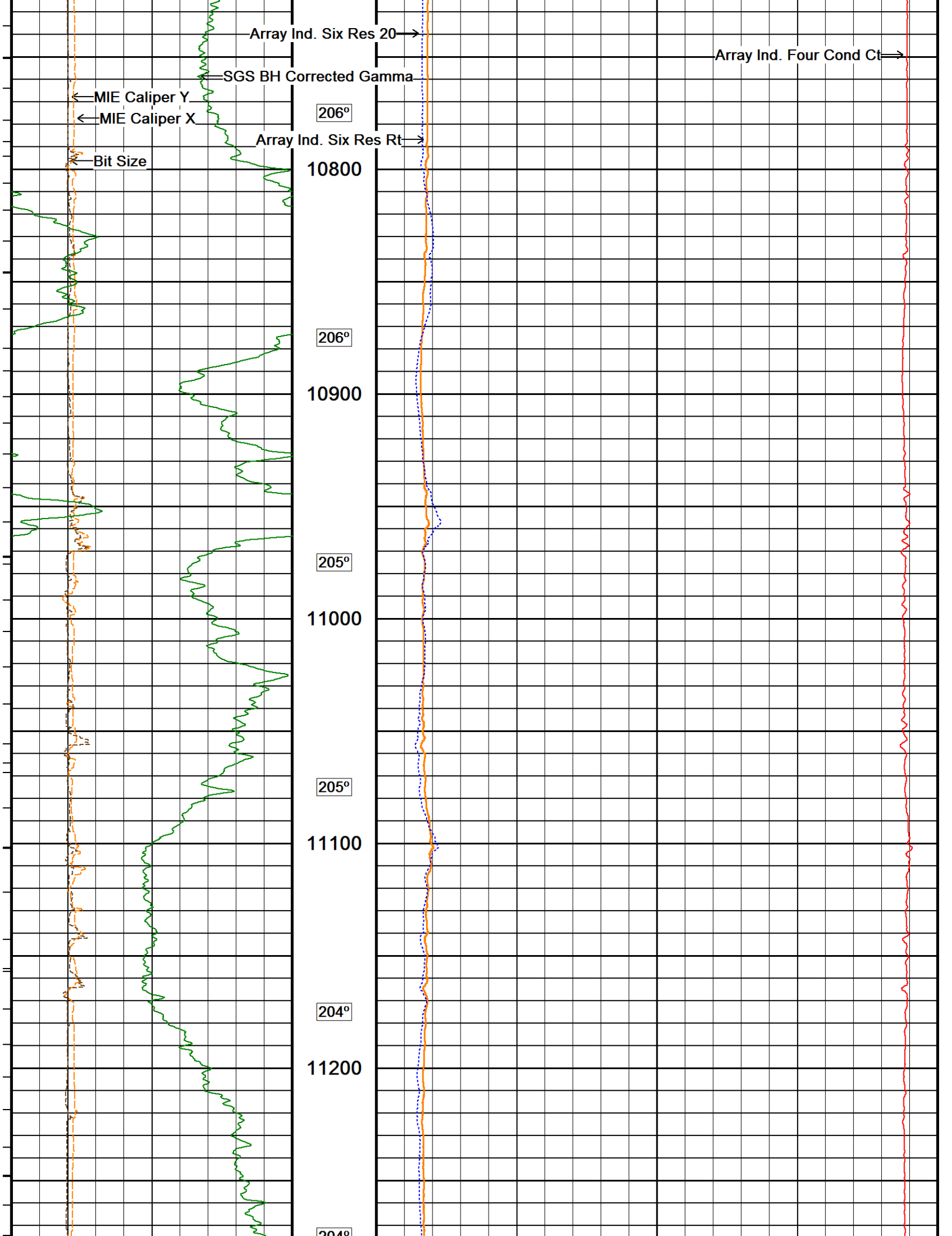


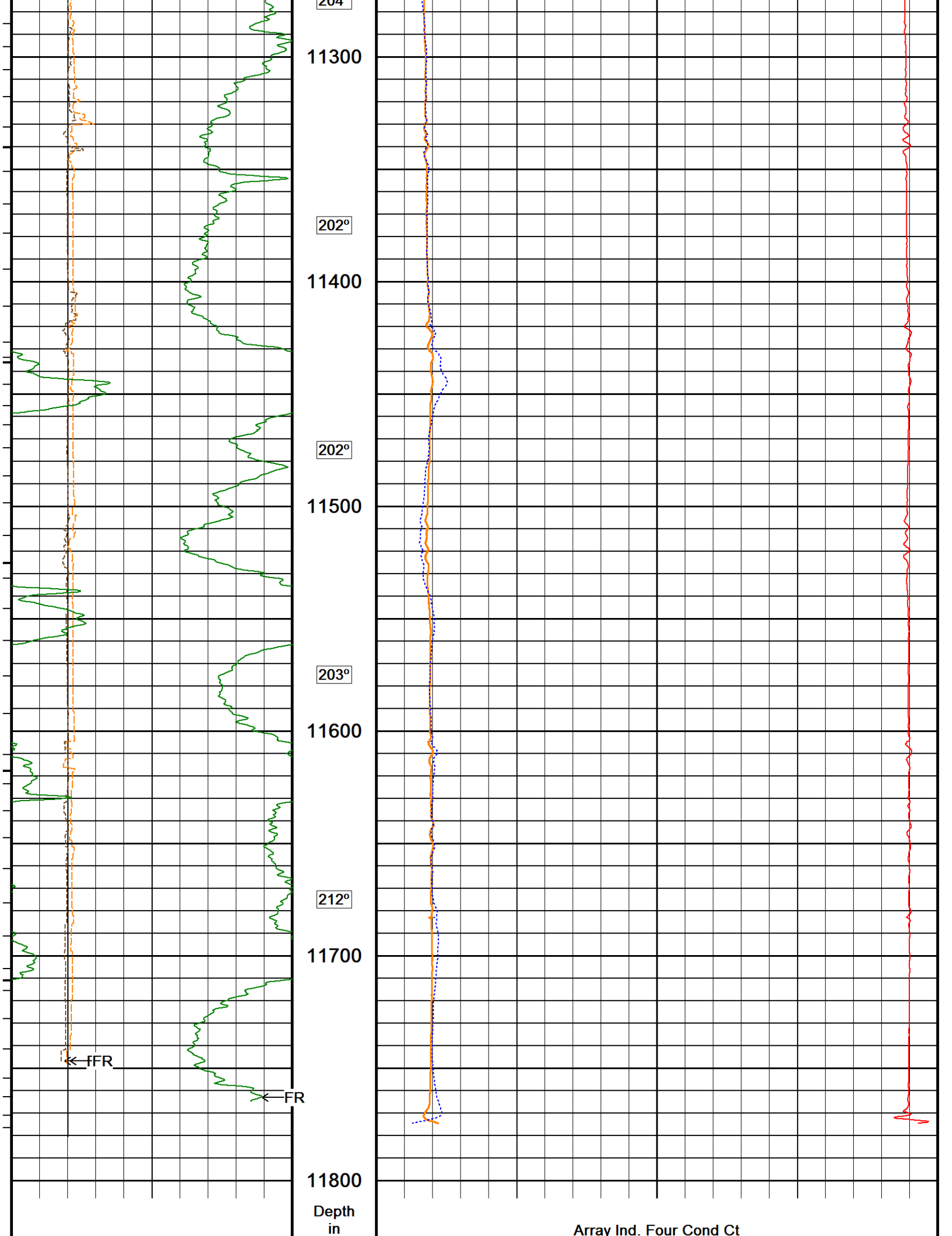
206
9100
208°
9200
208°
9300
209°
9400
209°
9500
209°
9600

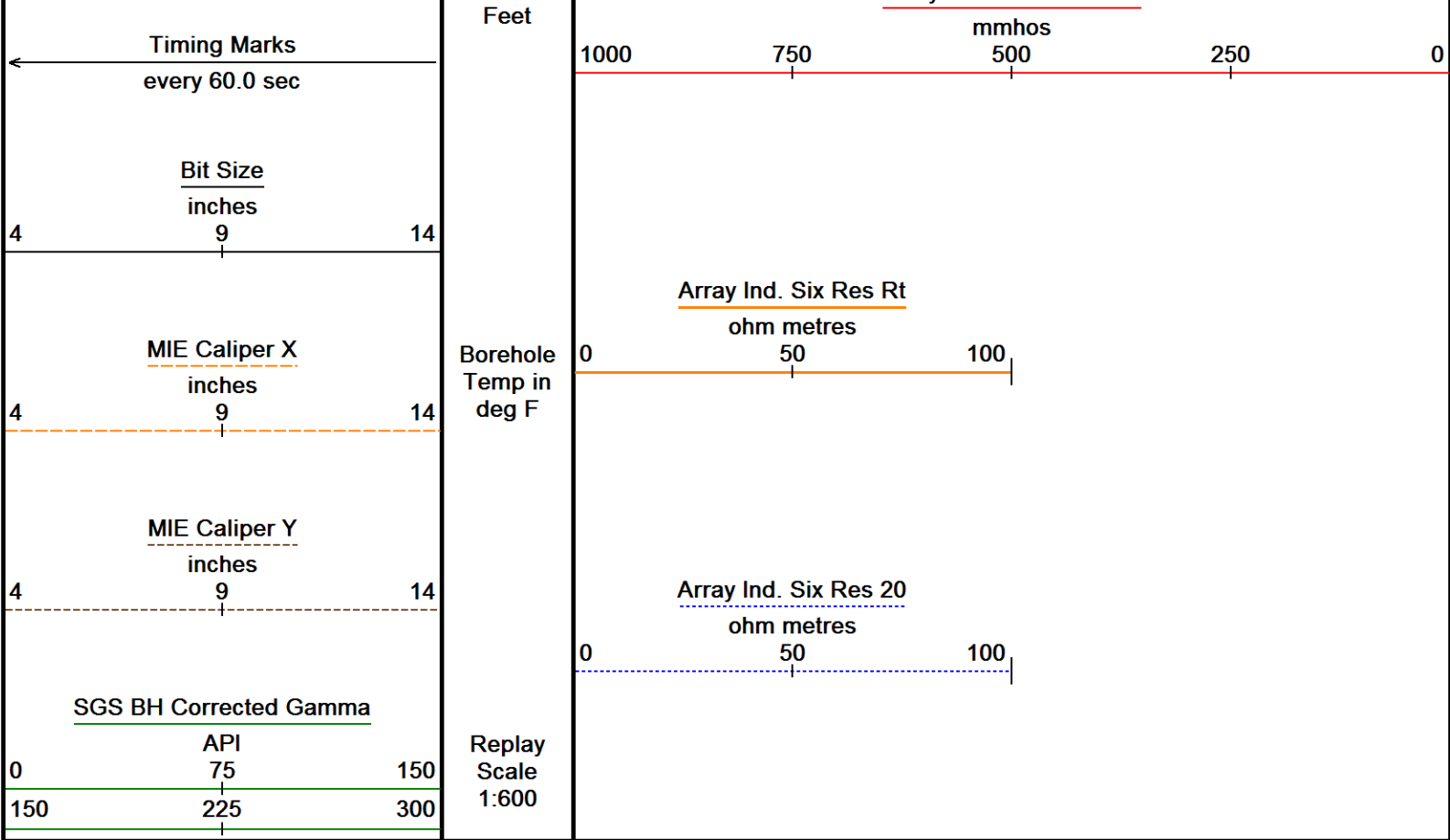










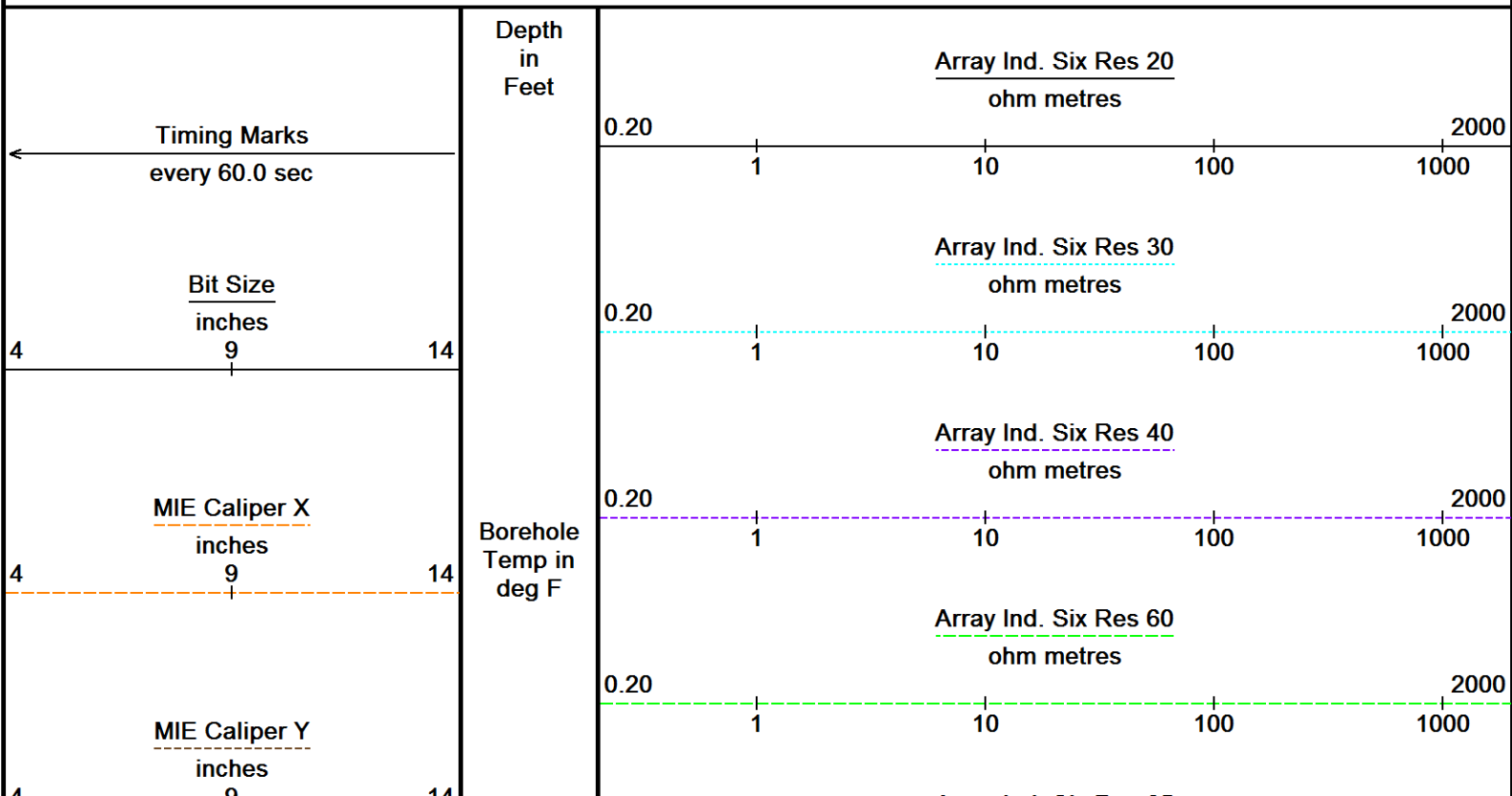


Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.dta
 System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220
 Plotted on 17-SEP-2014 03:12
 Recorded on 17-SEP-2014 01:04

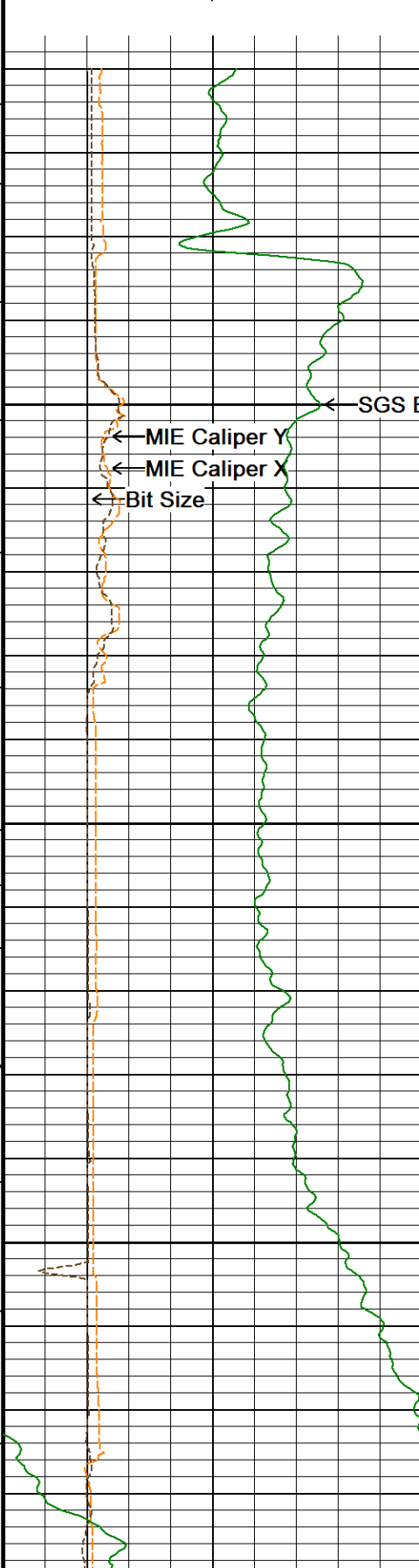
↑ **2 INCH MAIN LOG** ↑

↓ **5 INCH MAIN LOG** ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.dta
 System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220
 Plotted on 17-SEP-2014 03:12
 Recorded on 17-SEP-2014 01:04



SGS BH Corrected Gamma		
0	API	150
	75	
150	225	300



Replay
Scale
1:240

6608

Casing
Shoe

← SGS BH (6650) Corrected Gamma

← MIE Caliper Y
← MIE Caliper X
← Bit Size

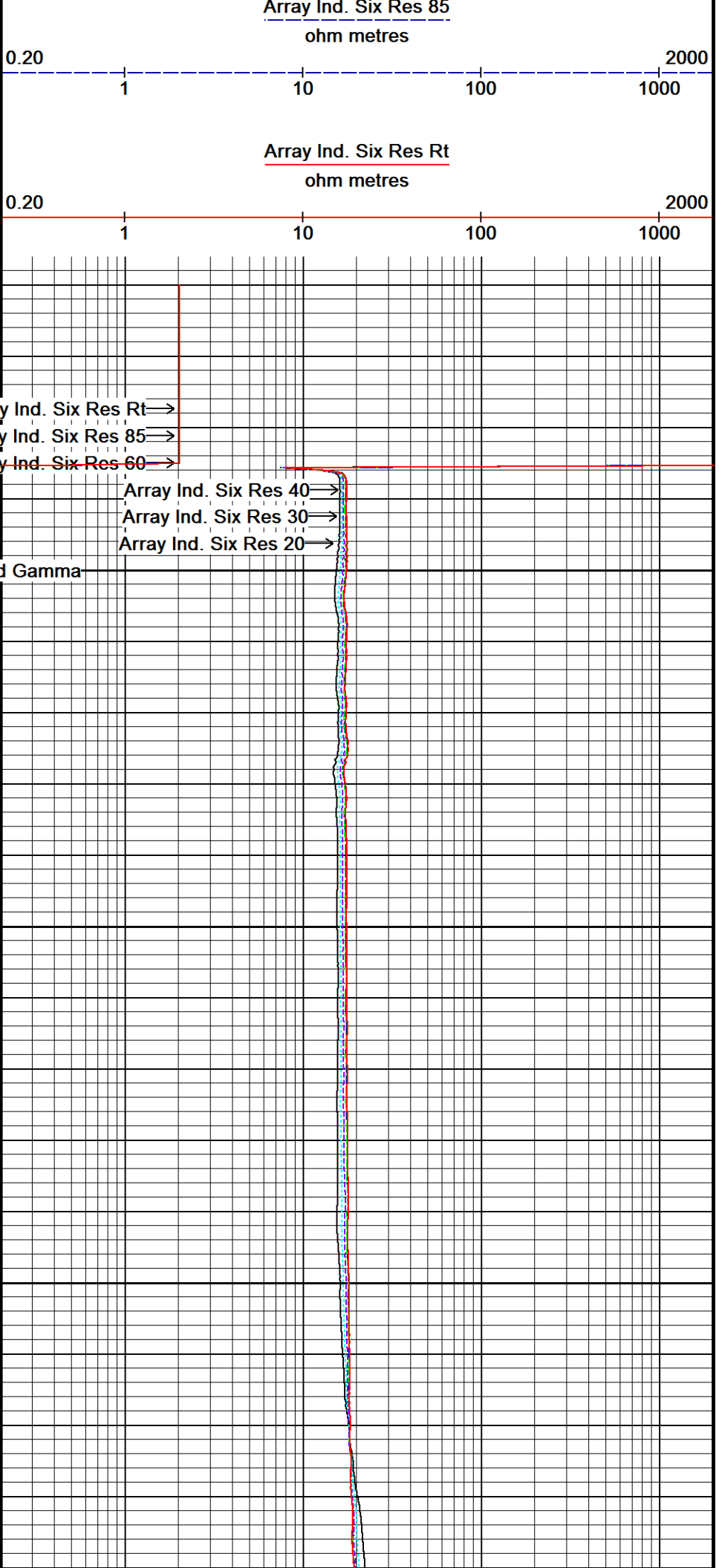
203°

6700

203°

6750

204°



Array Ind. Six Res 85
ohm metres

0.20

2000

1

10

100

1000

Array Ind. Six Res Rt
ohm metres

0.20

2000

1

10

100

1000

Array Ind. Six Res Rt →

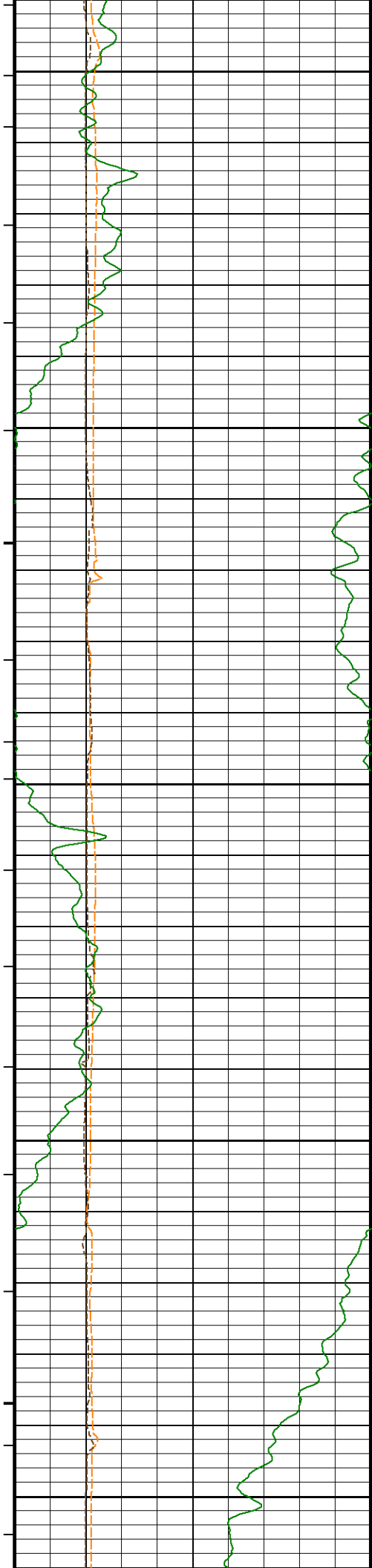
Array Ind. Six Res 85 →

Array Ind. Six Res 60 →

Array Ind. Six Res 40 →

Array Ind. Six Res 30 →

Array Ind. Six Res 20 →



6800

204°

6850

204°

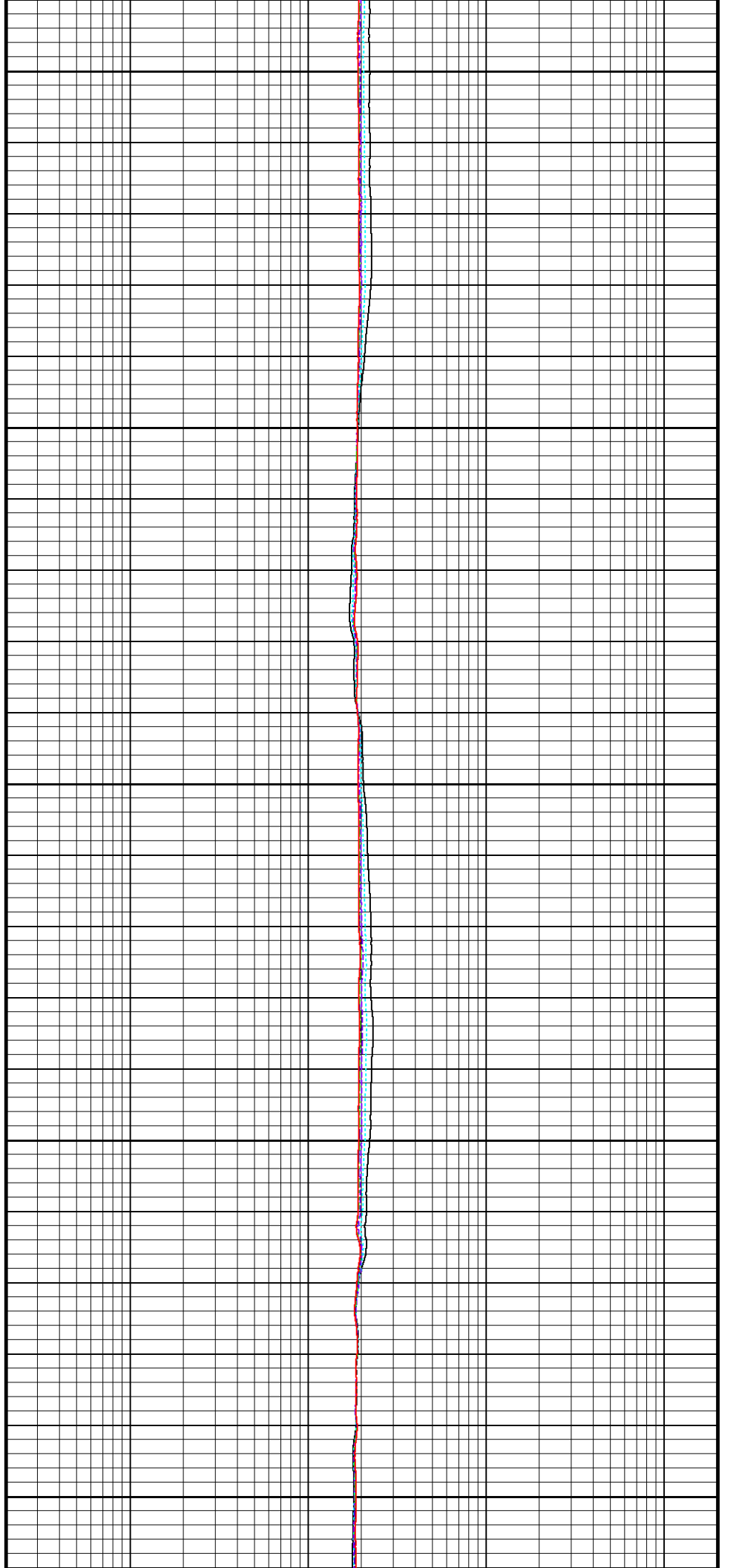
6900

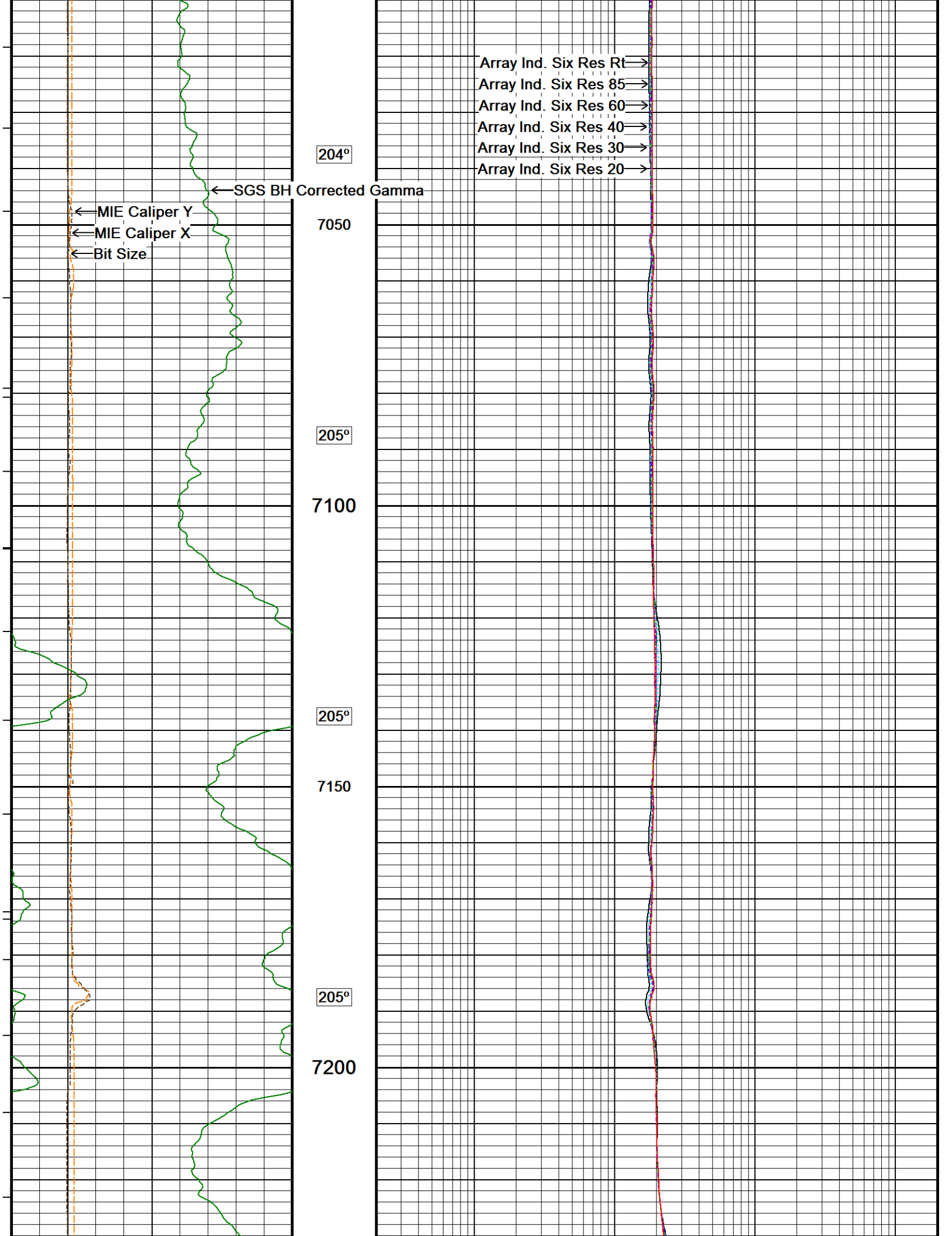
204°

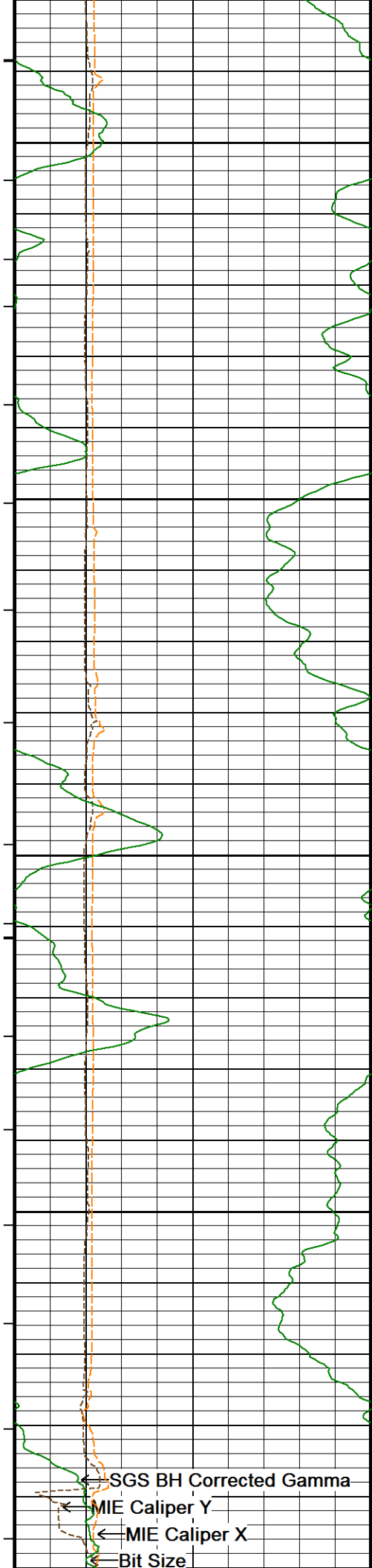
6950

204°

7000







205°

7250

205°

7300

205°

7350

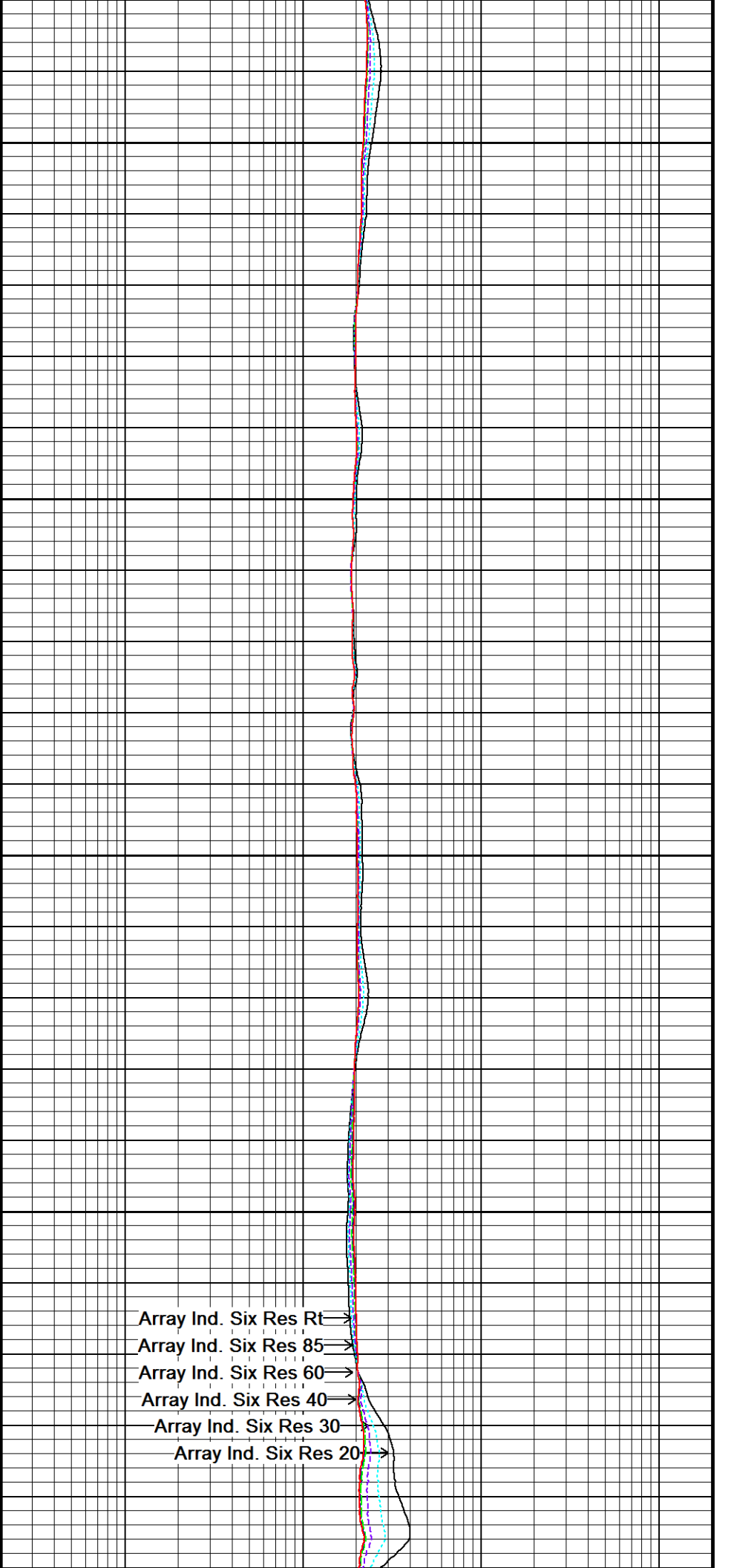
205°

7400

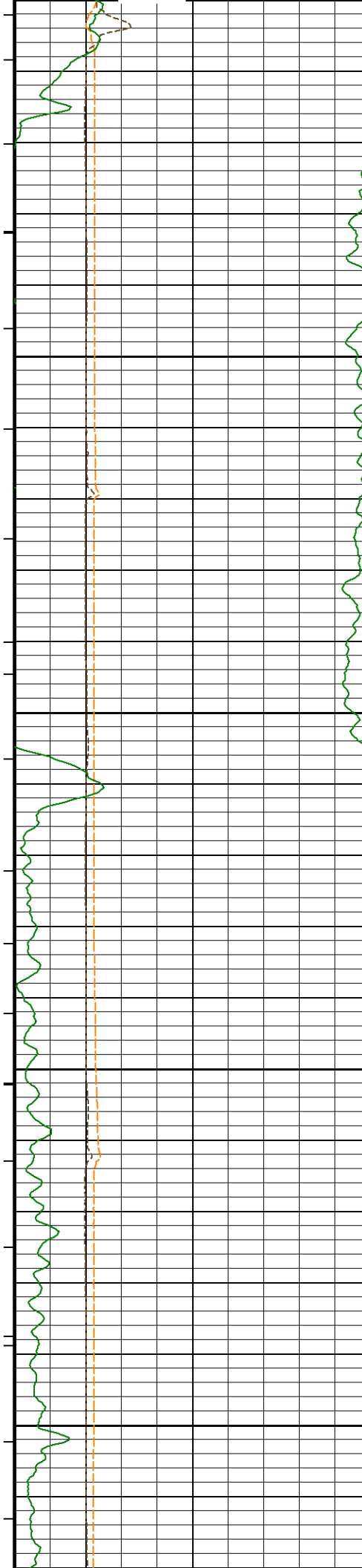
206°

7450

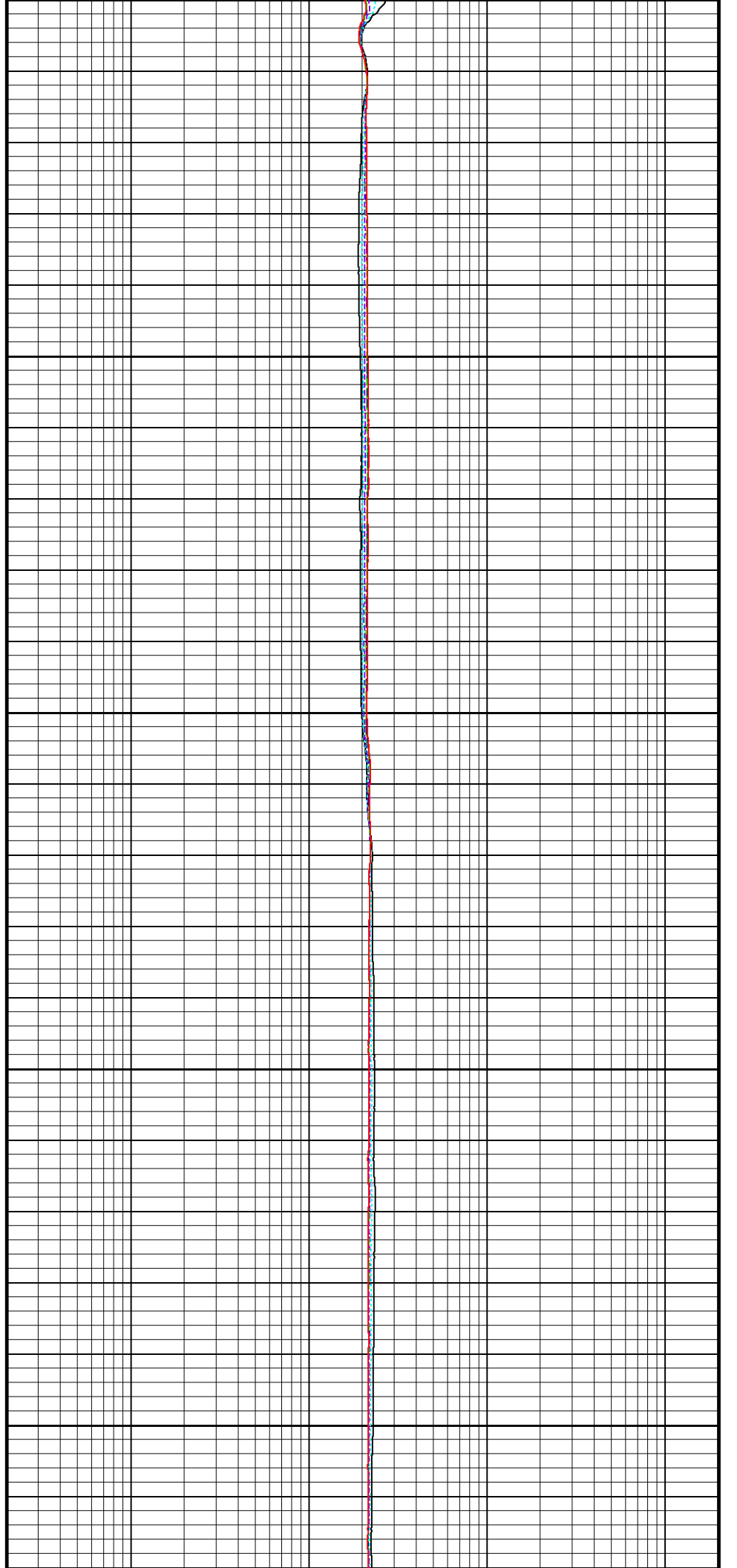
← SGS BH Corrected Gamma
← MIE Caliper Y
← MIE Caliper X
← Bit Size

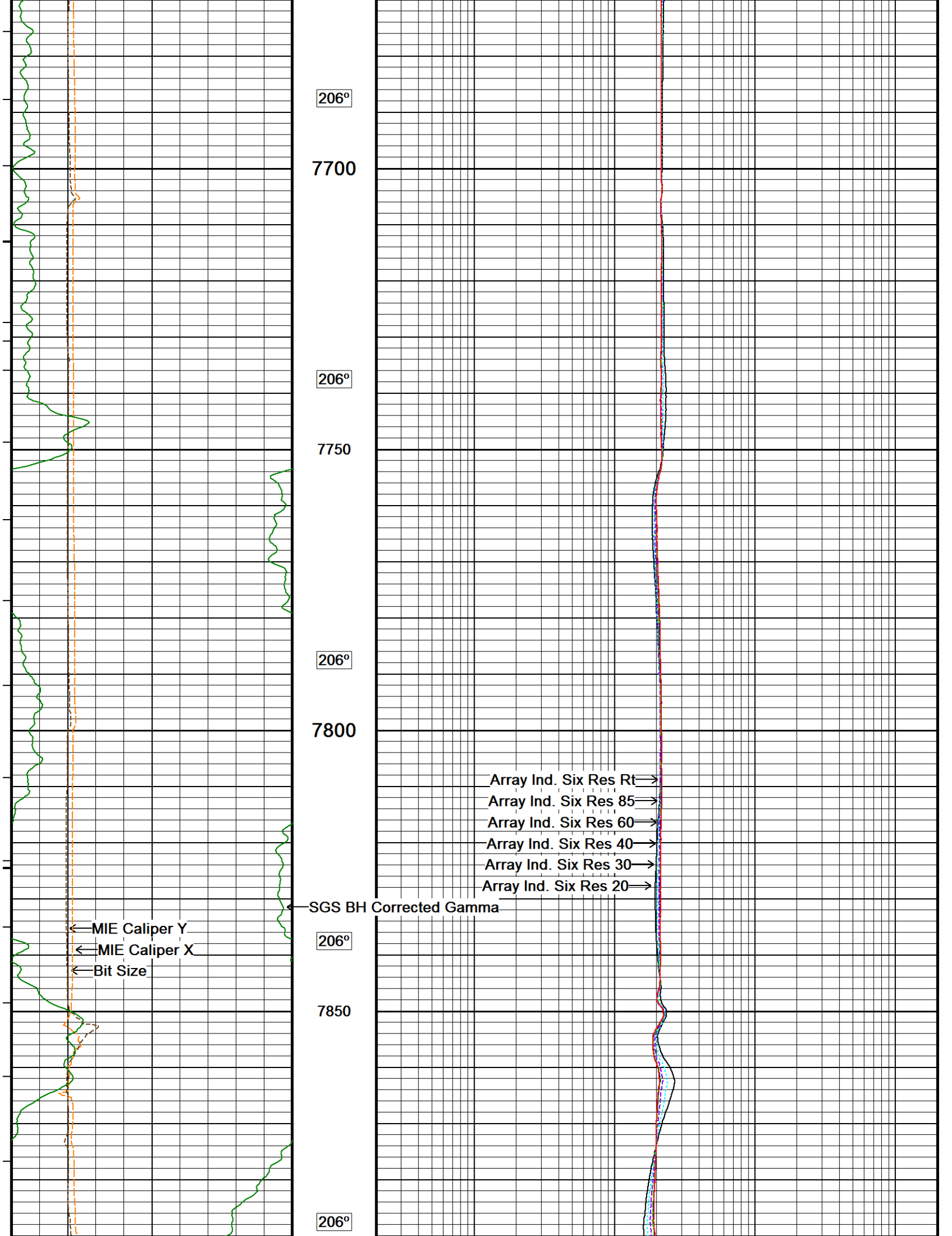


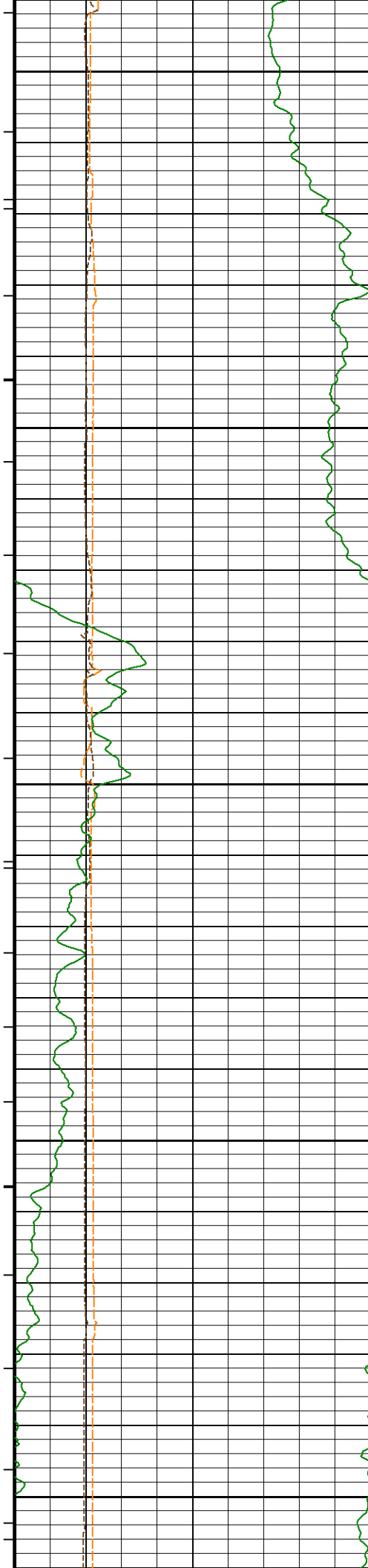
Array Ind. Six Res Rt →
Array Ind. Six Res 85 →
Array Ind. Six Res 60 →
Array Ind. Six Res 40 →
Array Ind. Six Res 30 →
Array Ind. Six Res 20 →



7450
206°
7500
206°
7550
206°
7600
206°
7650







7900

207°

7950

207°

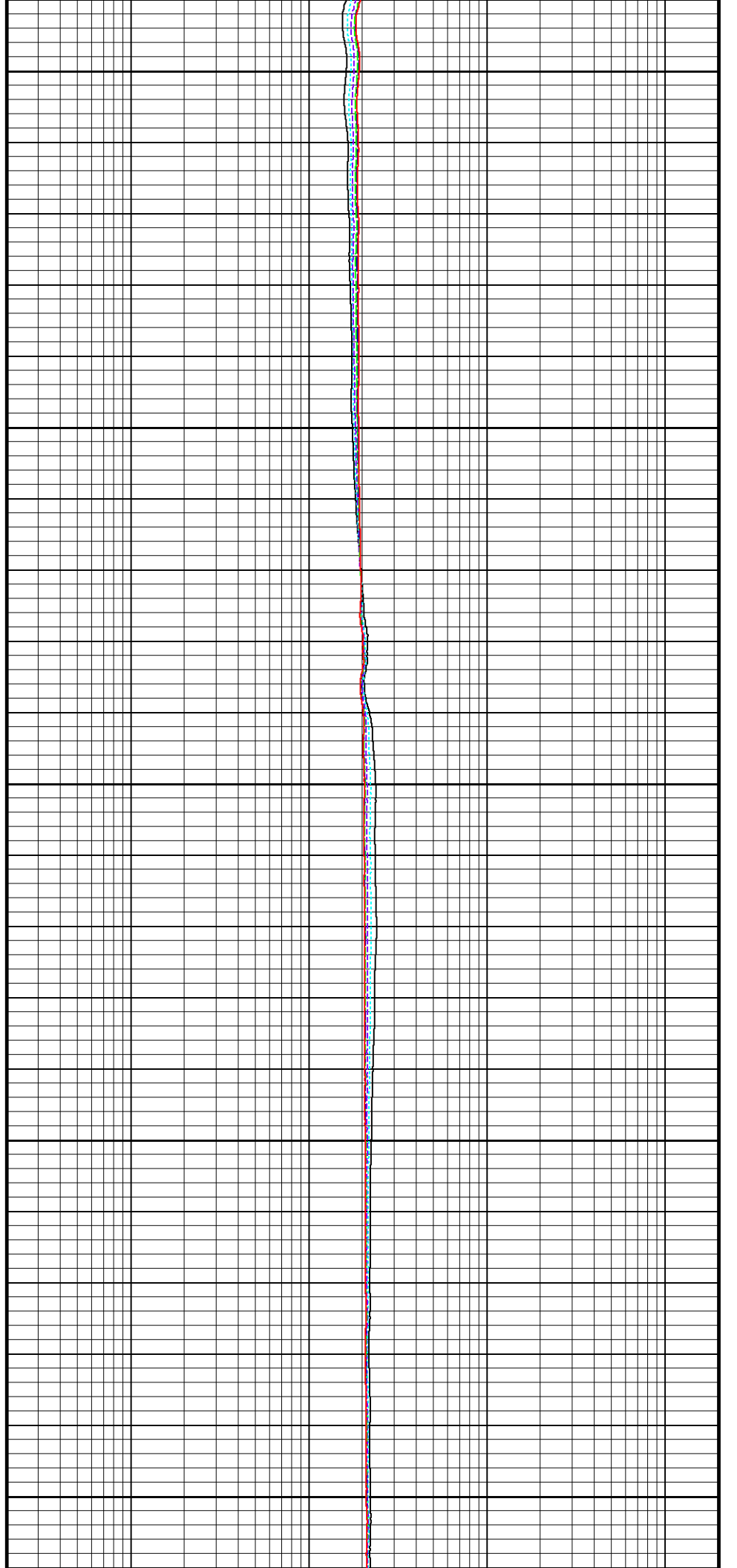
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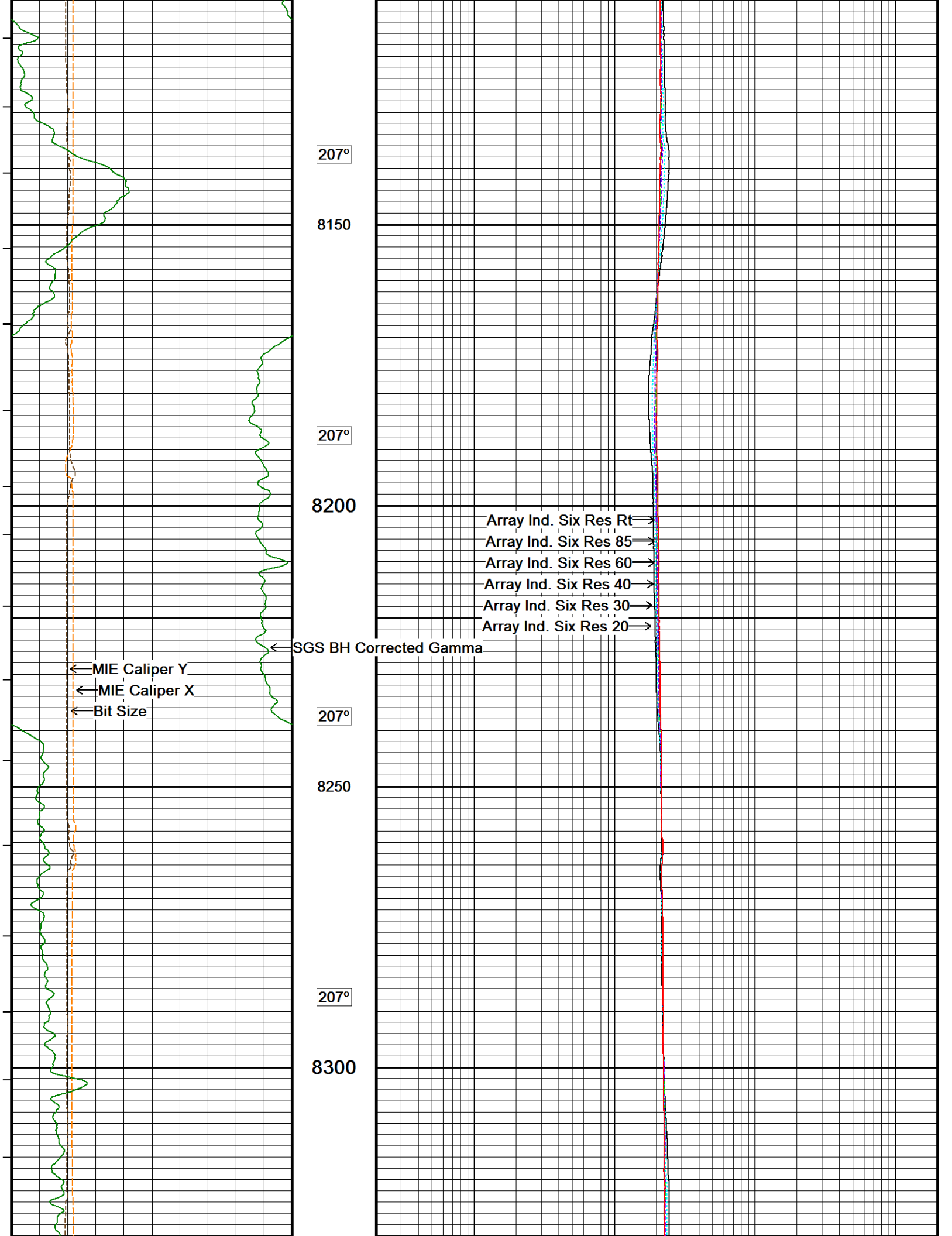
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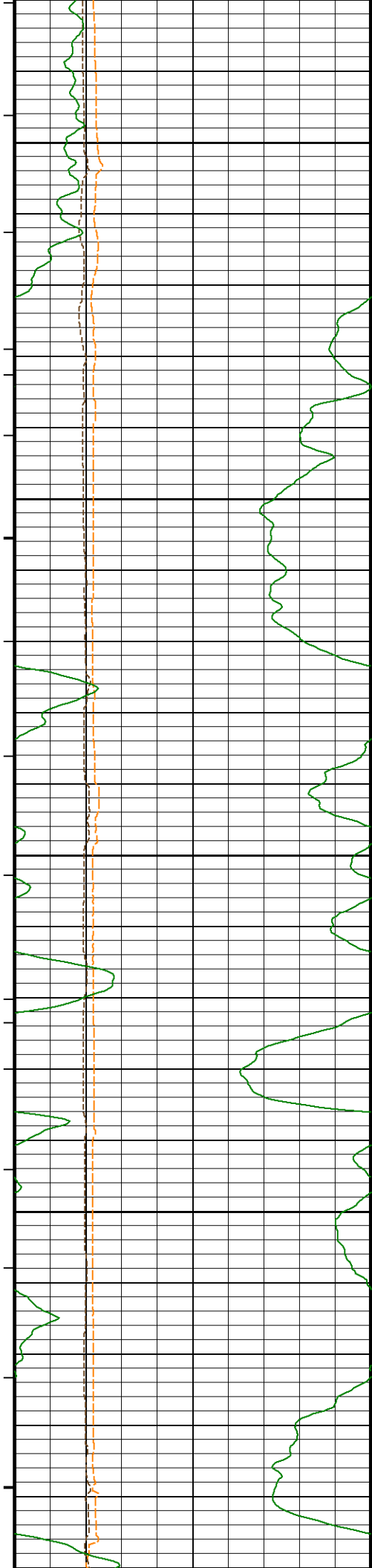
8050

207°

8100







207°

8350

207°

8400

208°

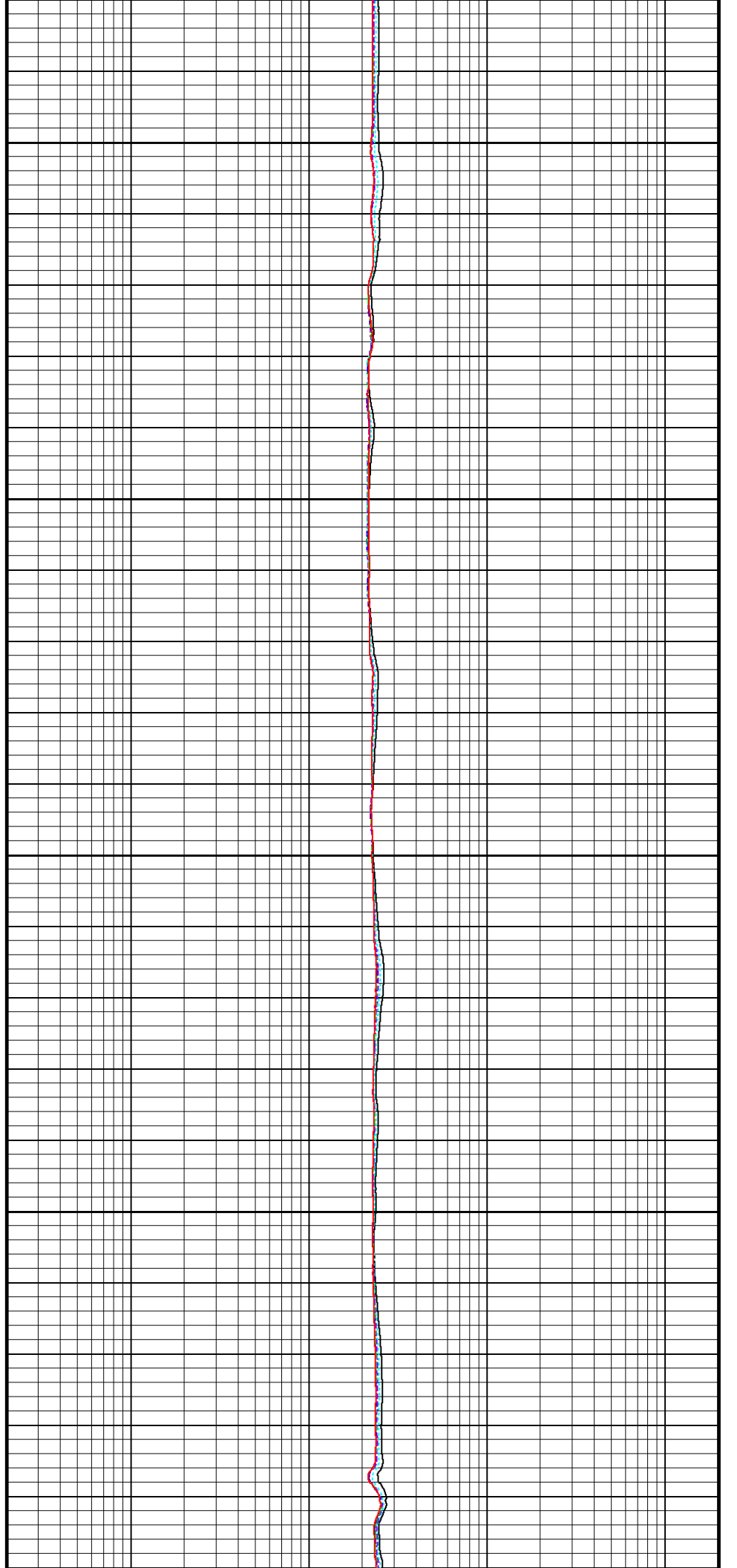
8450

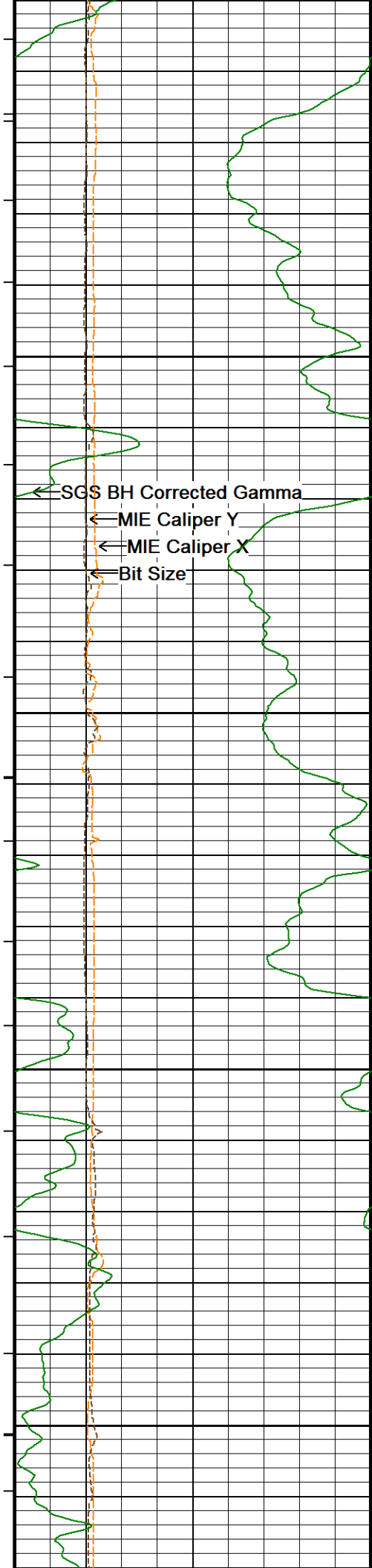
207°

8500

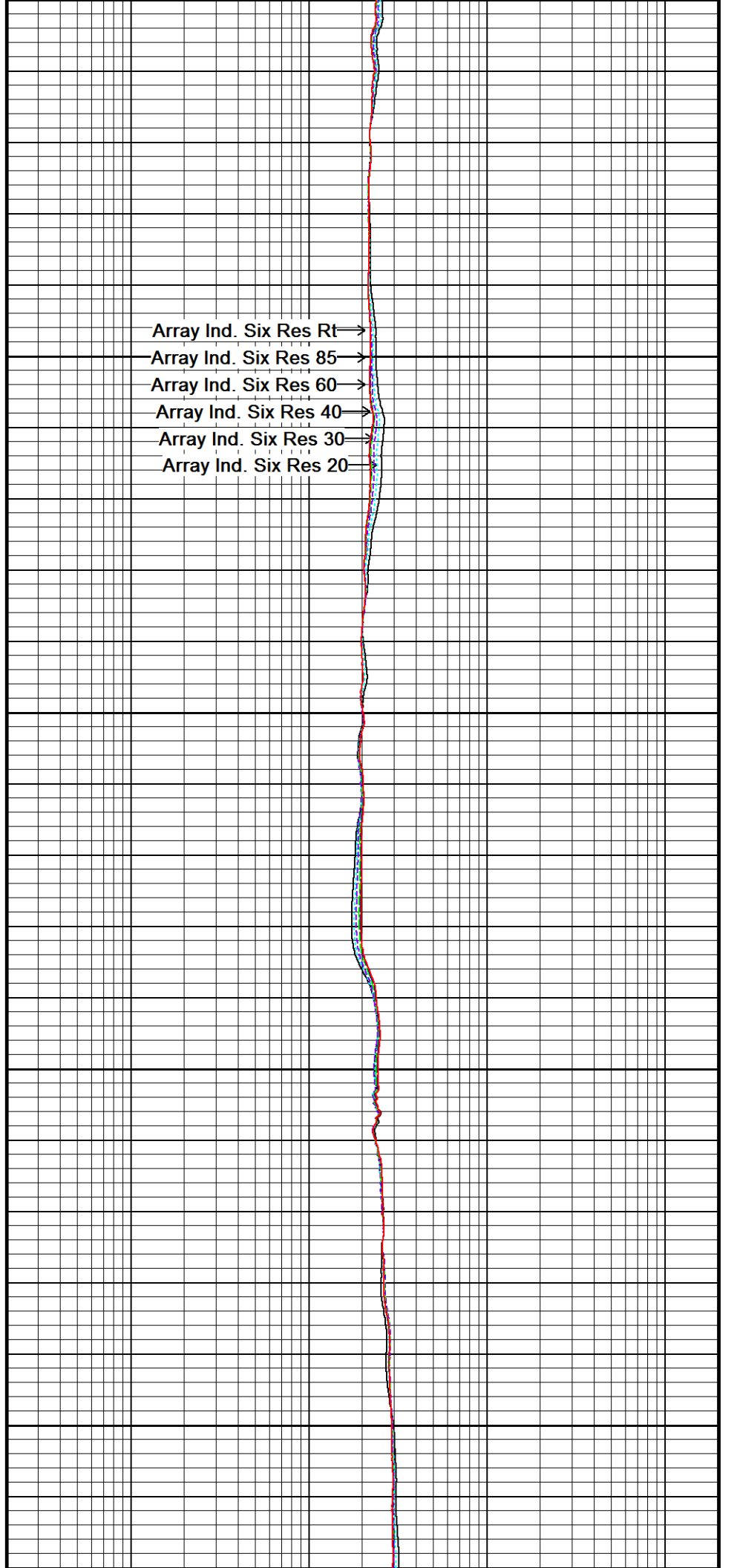
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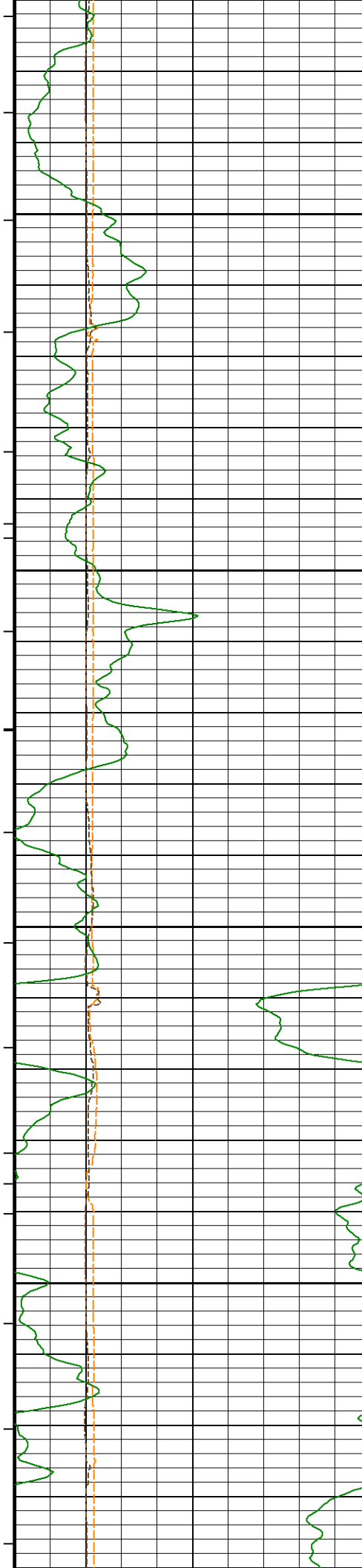
8550





8550
208°
8600
208°
8650
208°
8700
208°
8750





208°

8800

208°

8850

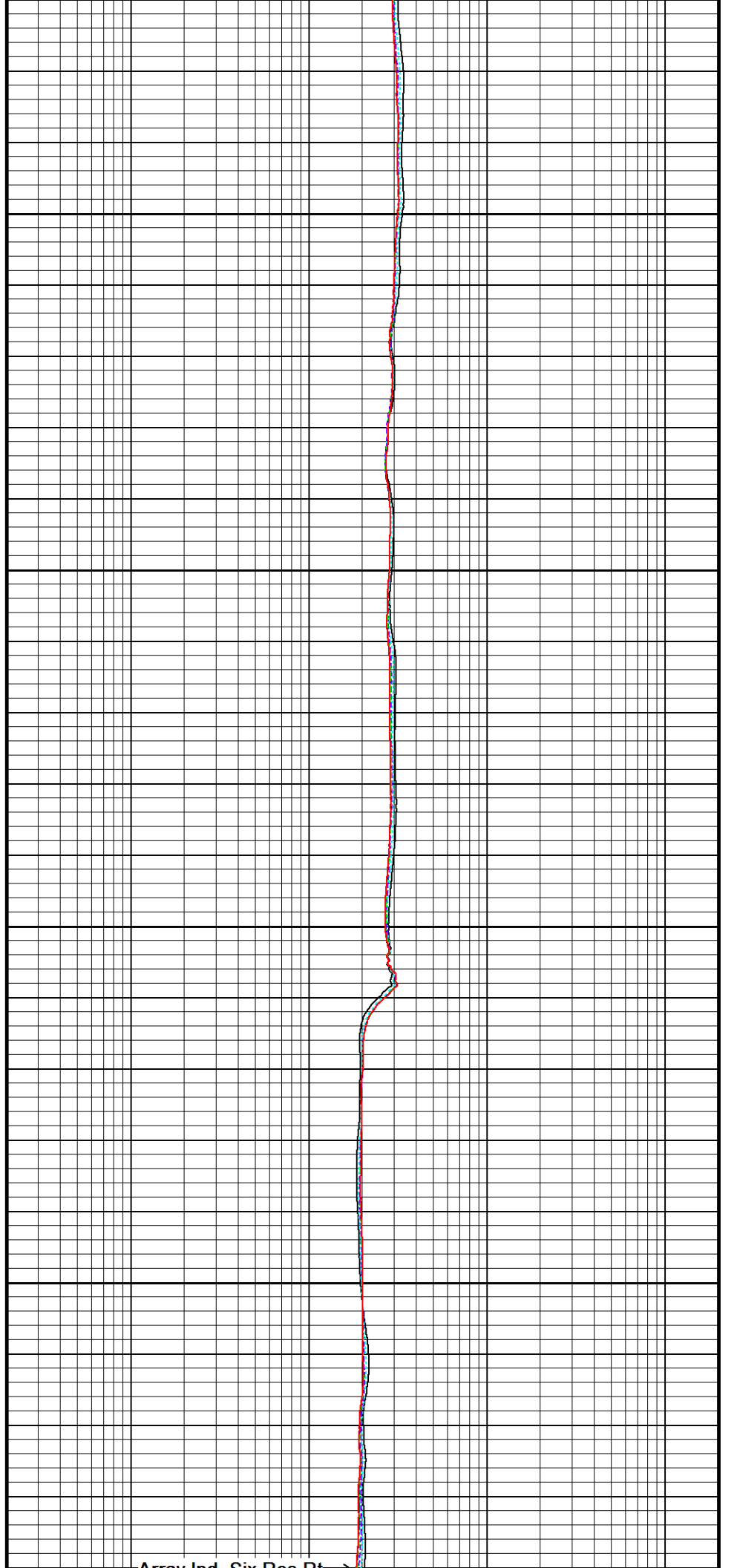
208°

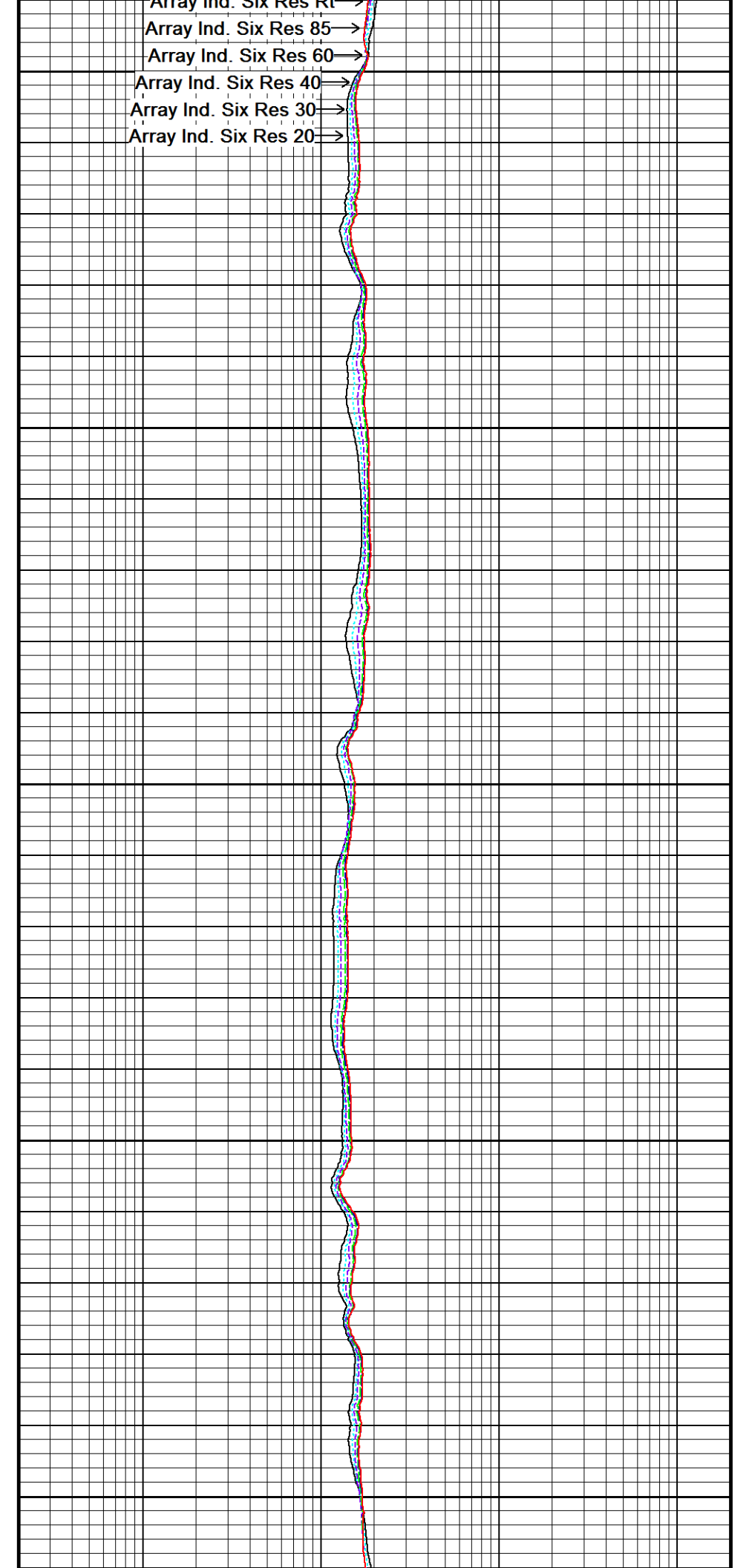
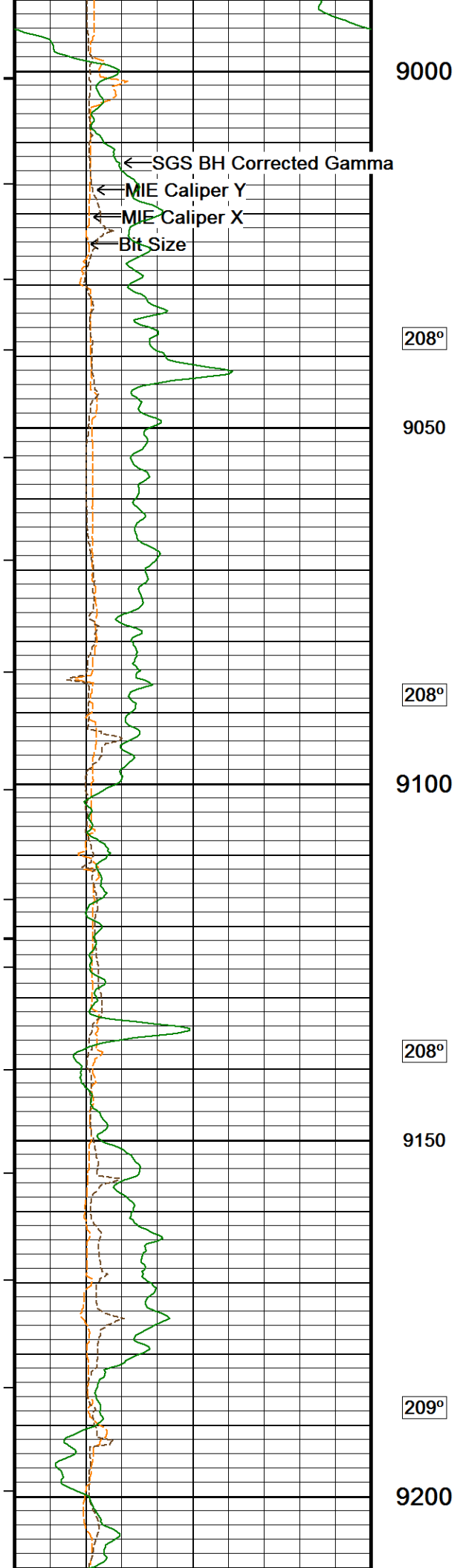
8900

208°

8950

208°







209°

9250

209°

9300

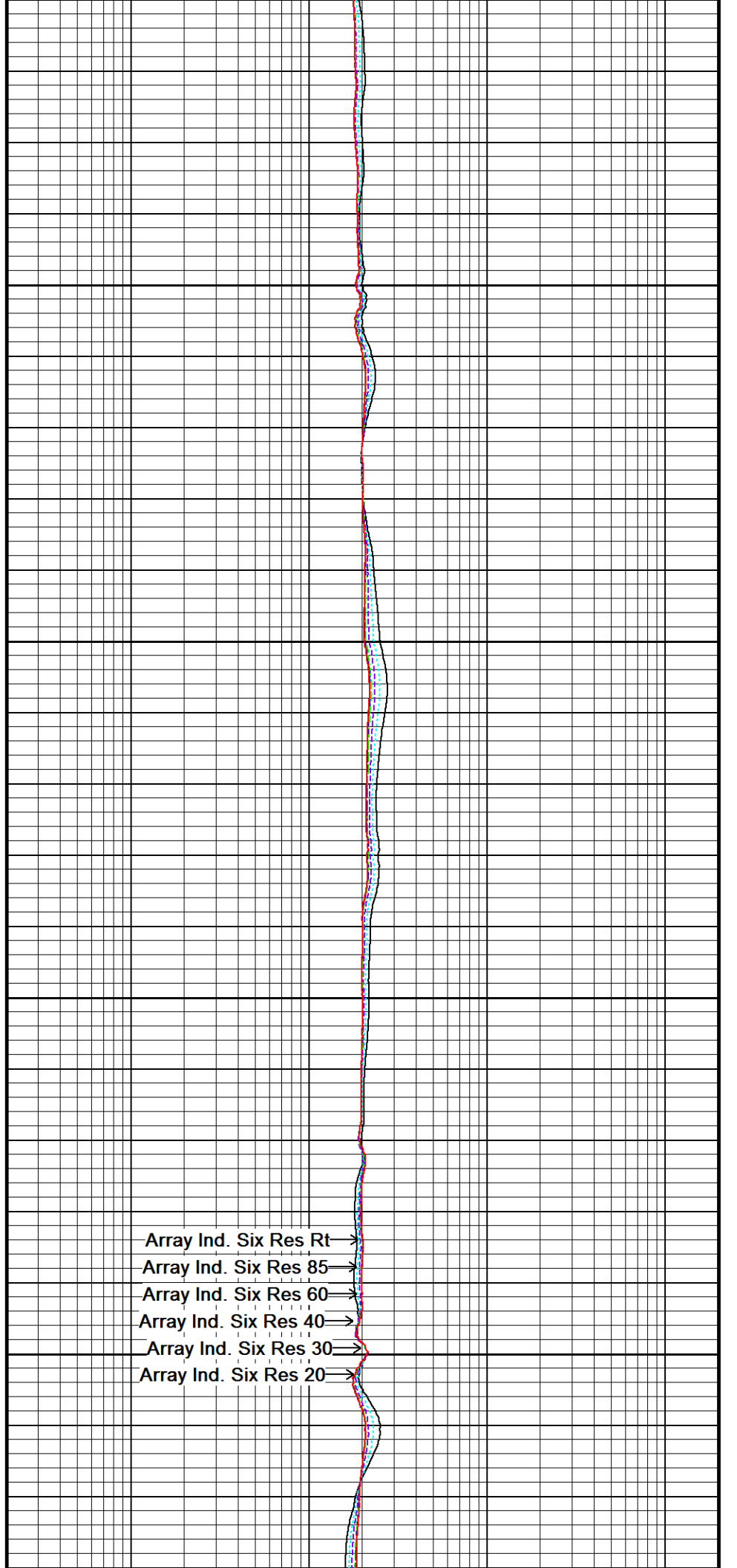
208°

9350

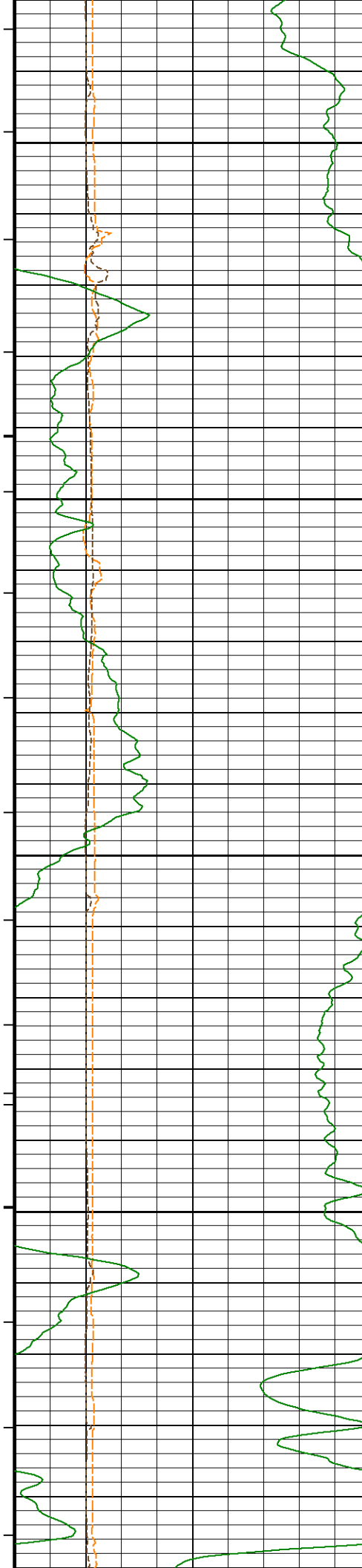
209°

9400

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



Array Ind. Six Res Rt →
Array Ind. Six Res 85 →
Array Ind. Six Res 60 →
Array Ind. Six Res 40 →
Array Ind. Six Res 30 →
Array Ind. Six Res 20 →



209°

9450

209°

9500

209°

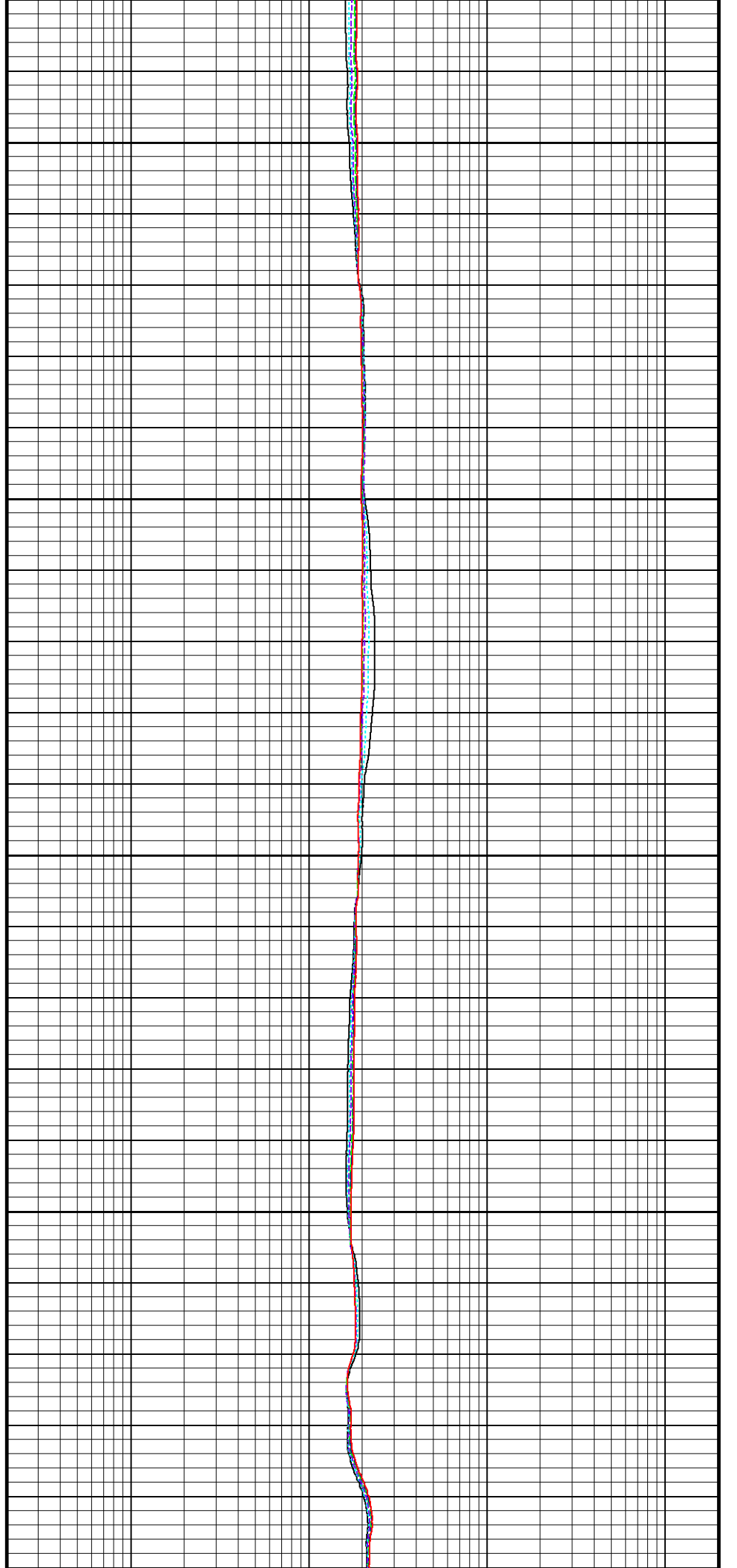
9550

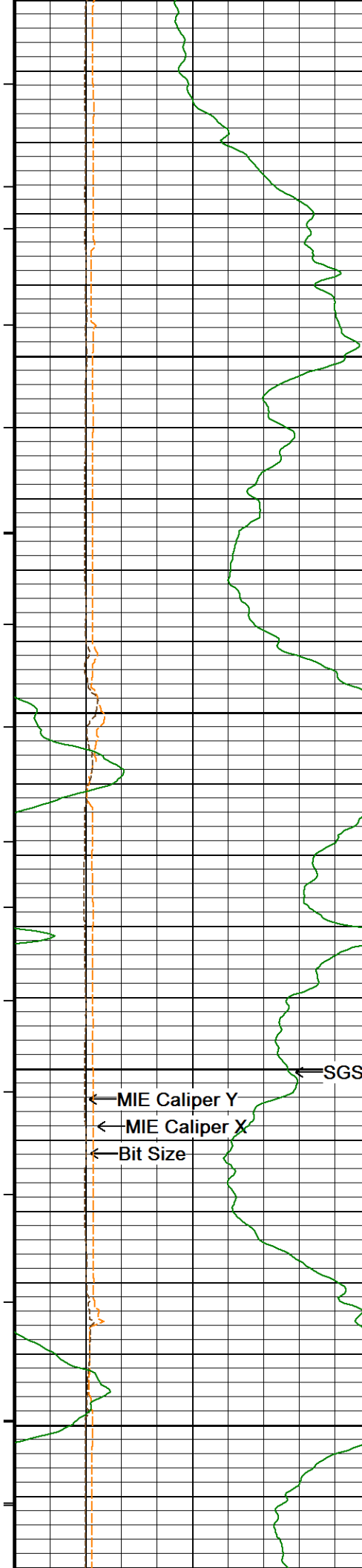
209°

9600

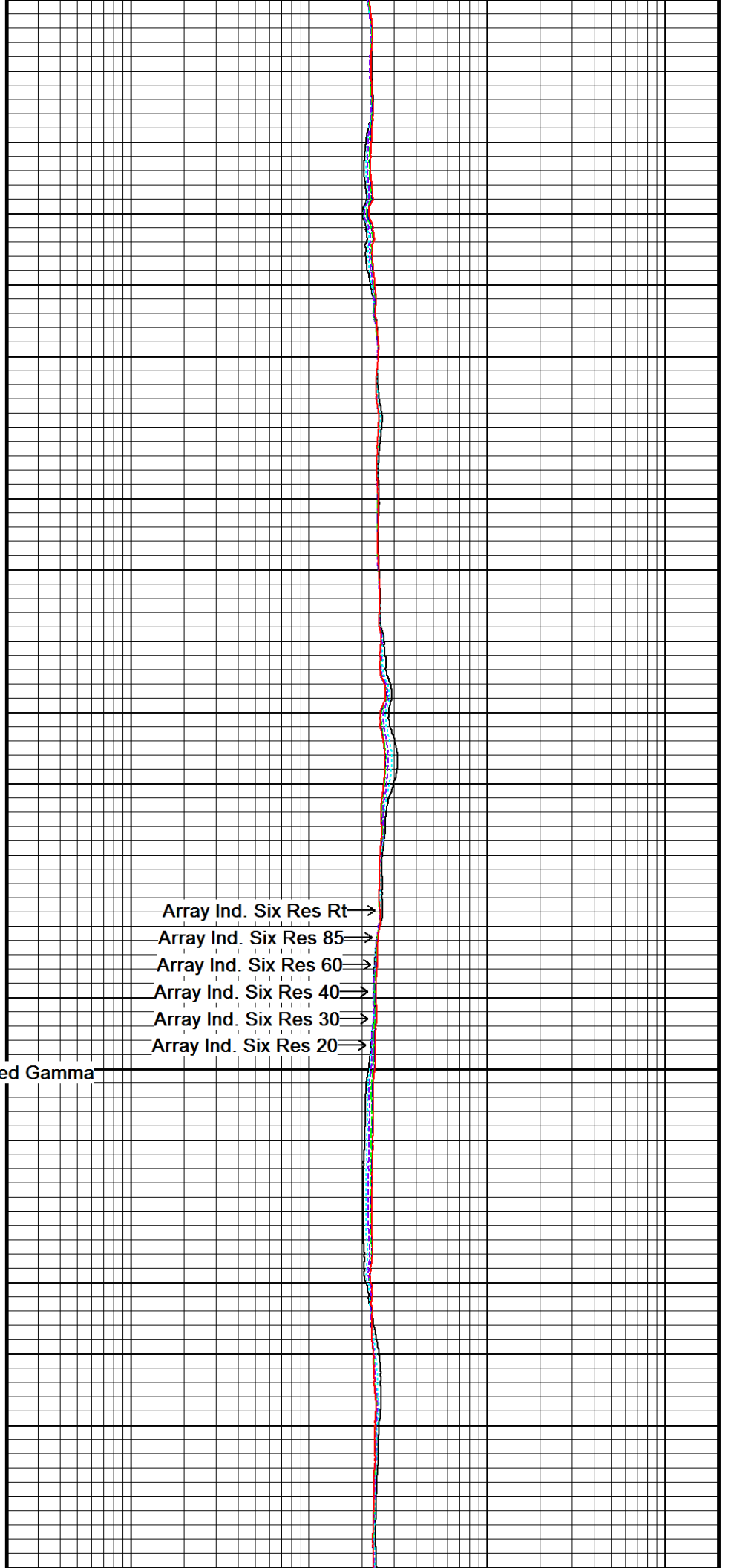
209°

9650





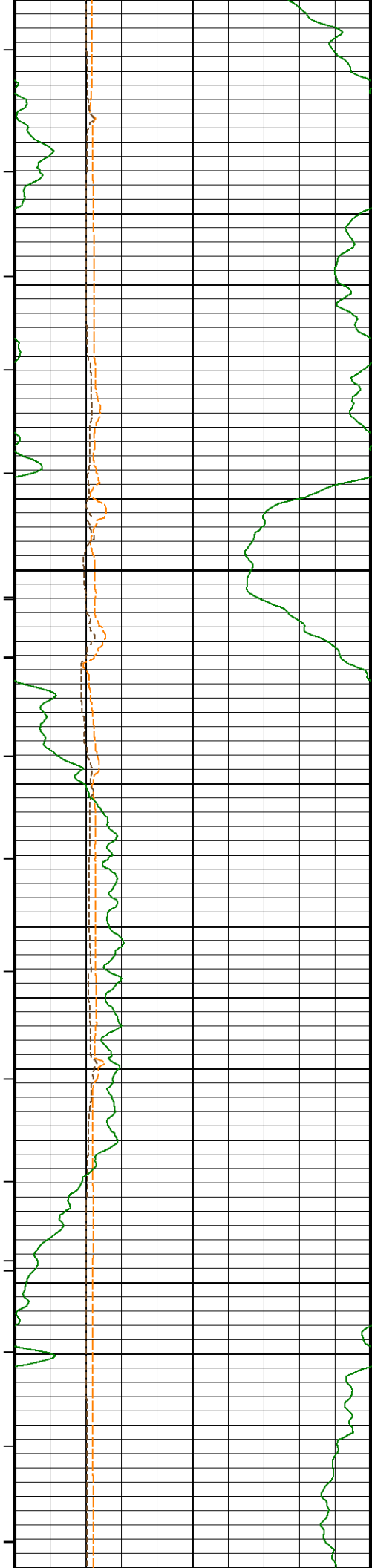
9650
209°
9700
209°
9750
209°
9800
209°
9850



Array Ind. Six Res Rt →
Array Ind. Six Res 85 →
Array Ind. Six Res 60 →
Array Ind. Six Res 40 →
Array Ind. Six Res 30 →
Array Ind. Six Res 20 →

← SGS BH 9800 cted Gamma

← MIE Caliper Y
← MIE Caliper X
← Bit Size



209°

9900

209°

9950

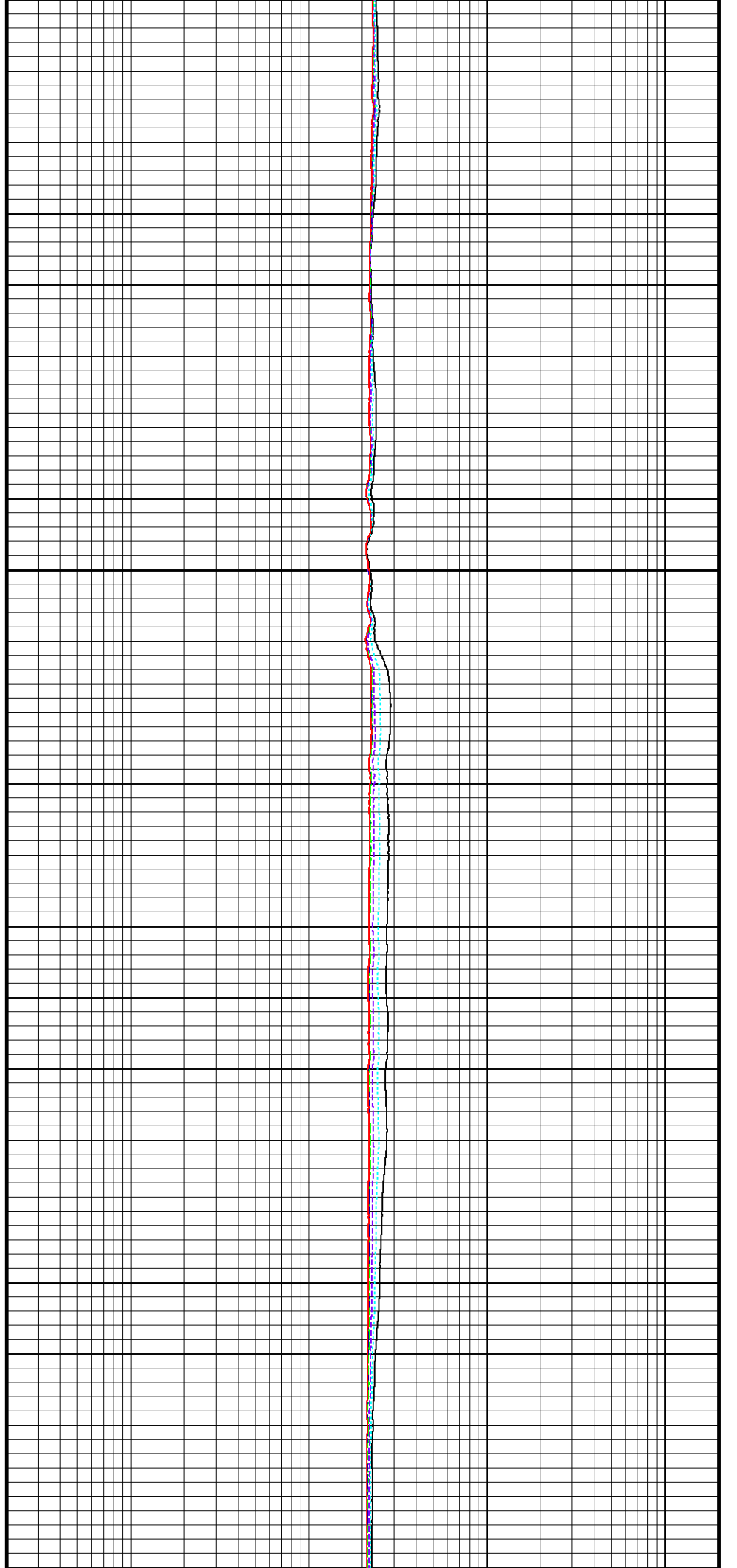
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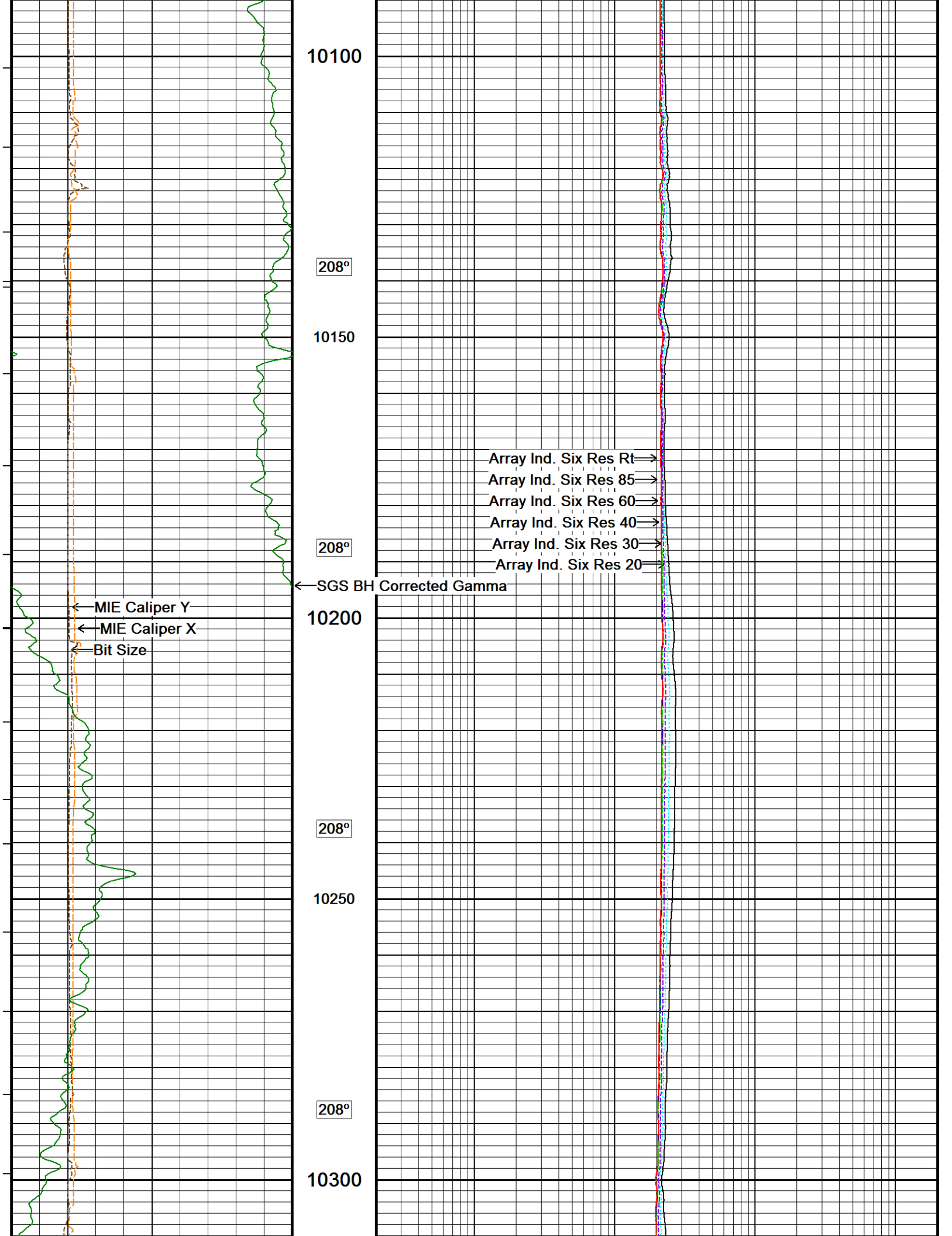
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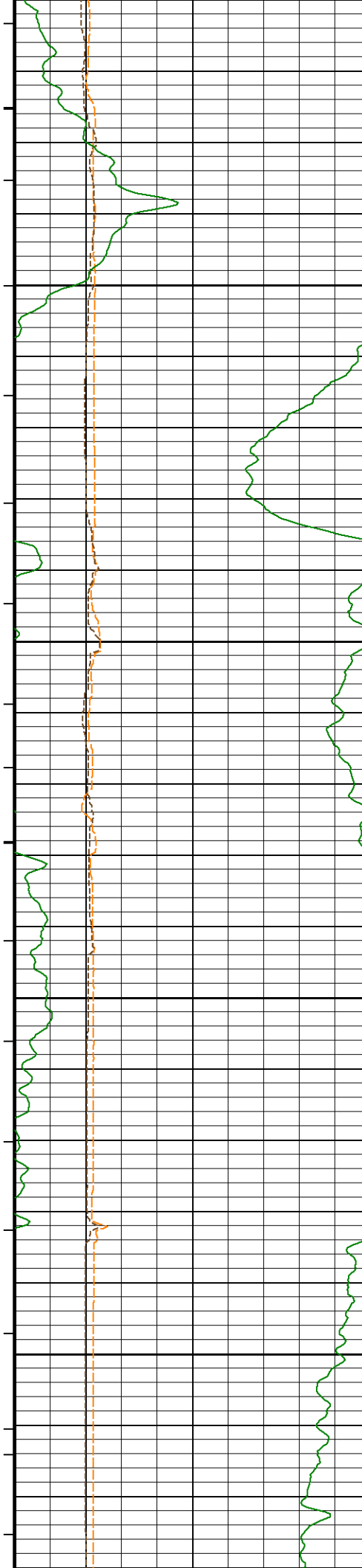
208°

10050

209°







208°

10350

208°

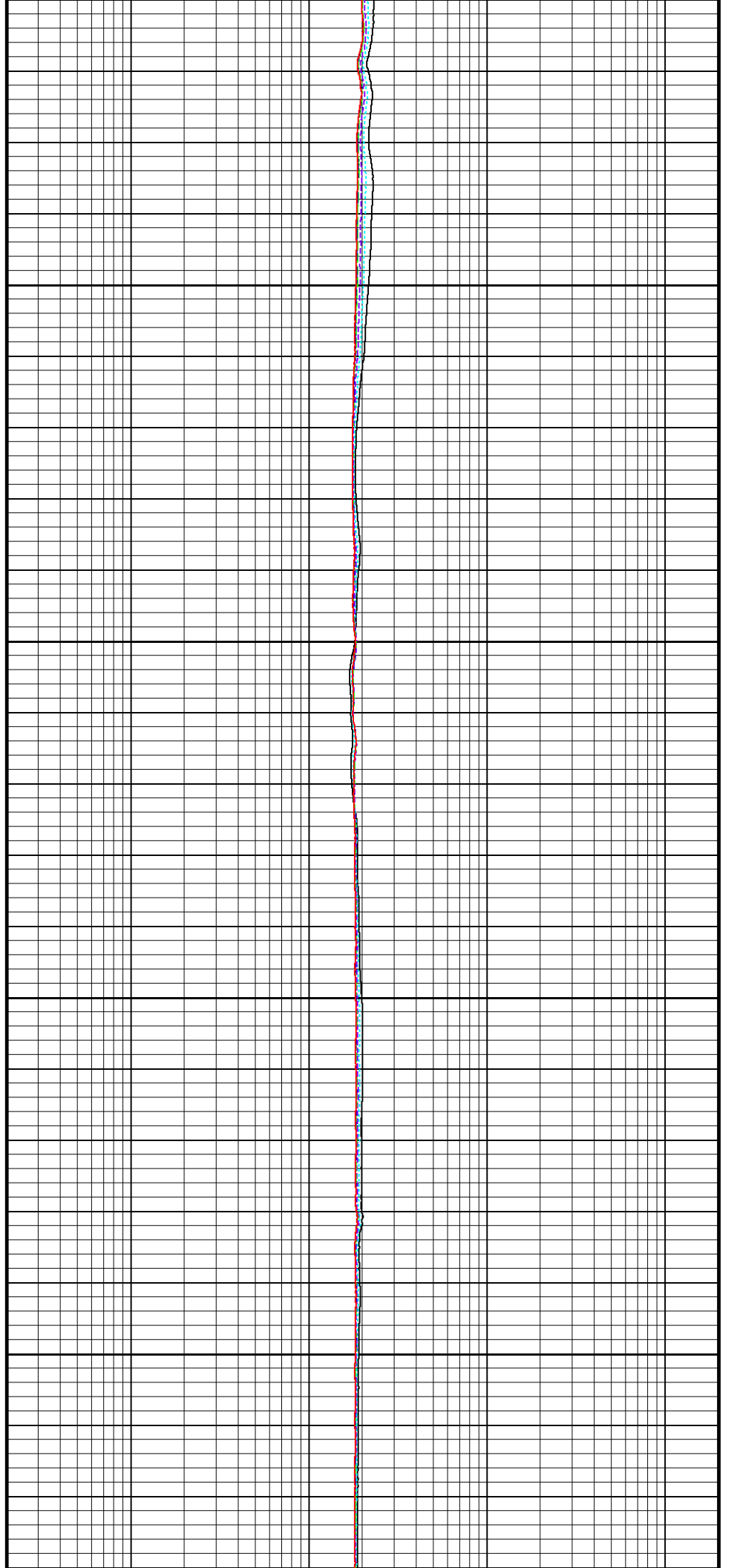
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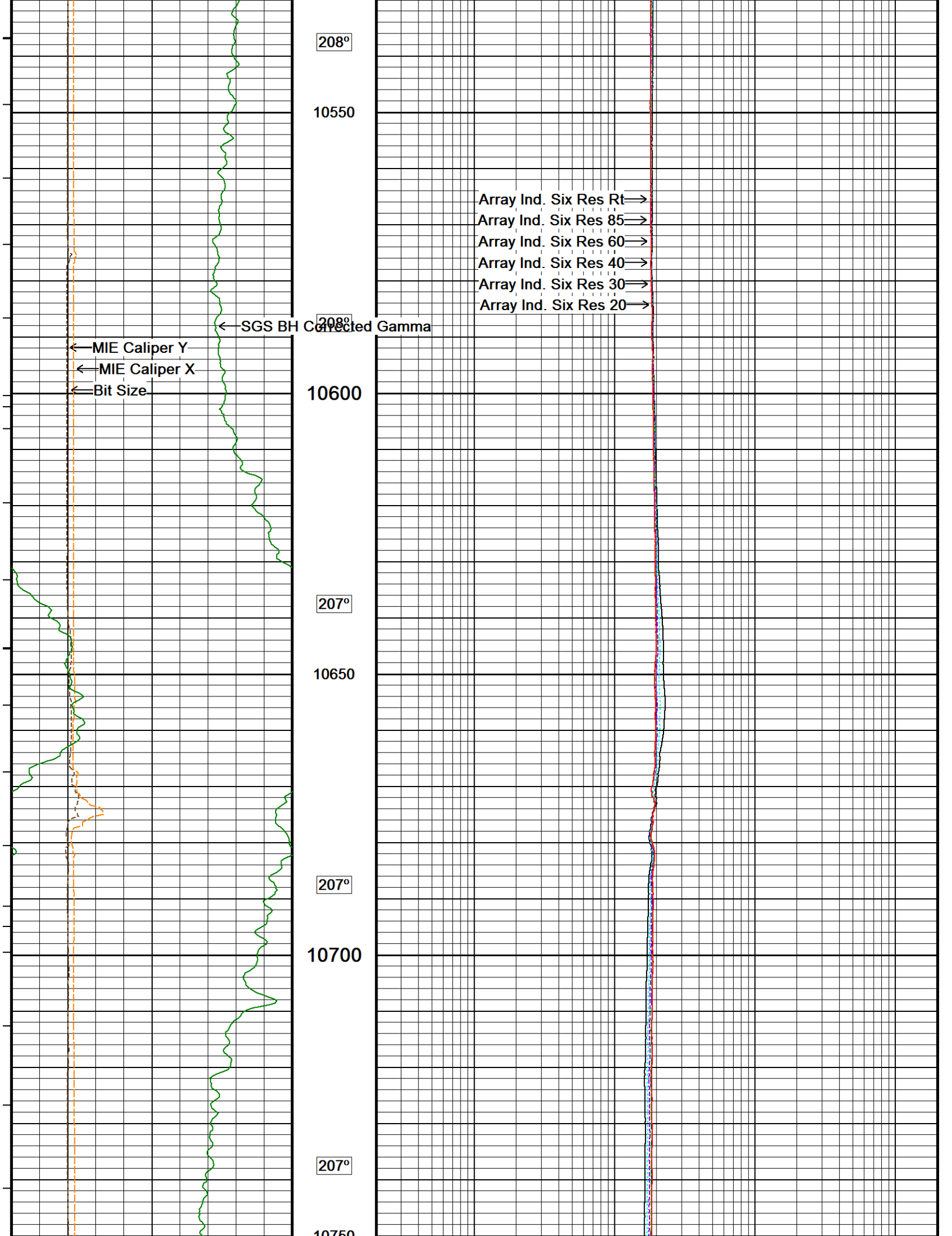
208°

10450

208°

10500





208°

10550

Array Ind. Six Res Rt →
Array Ind. Six Res 85 →
Array Ind. Six Res 60 →
Array Ind. Six Res 40 →
Array Ind. Six Res 30 →
Array Ind. Six Res 20 →

← MIE Caliper Y
← MIE Caliper X
← Bit Size

← SGS BH Corrected Gamma

208°

10600

207°

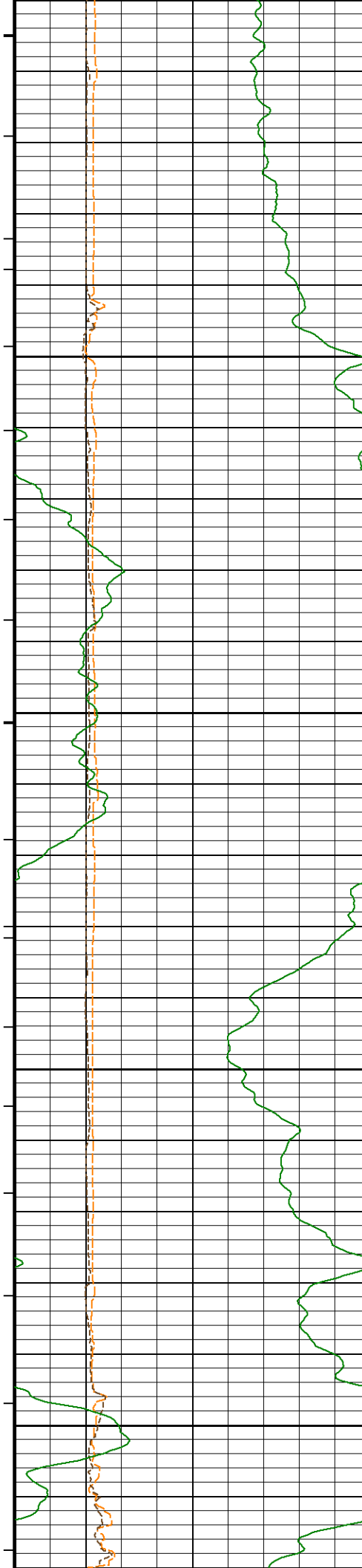
10650

207°

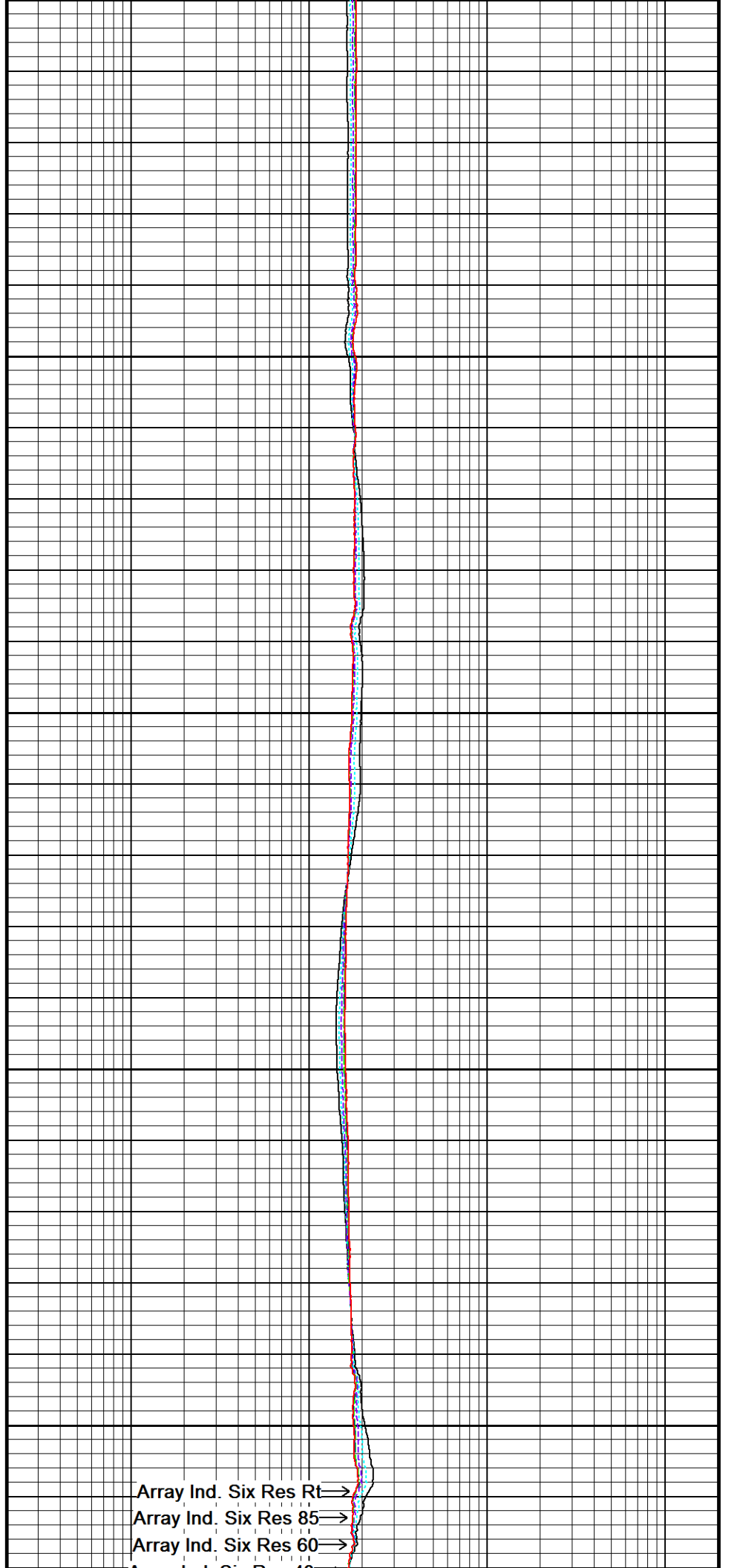
10700

207°

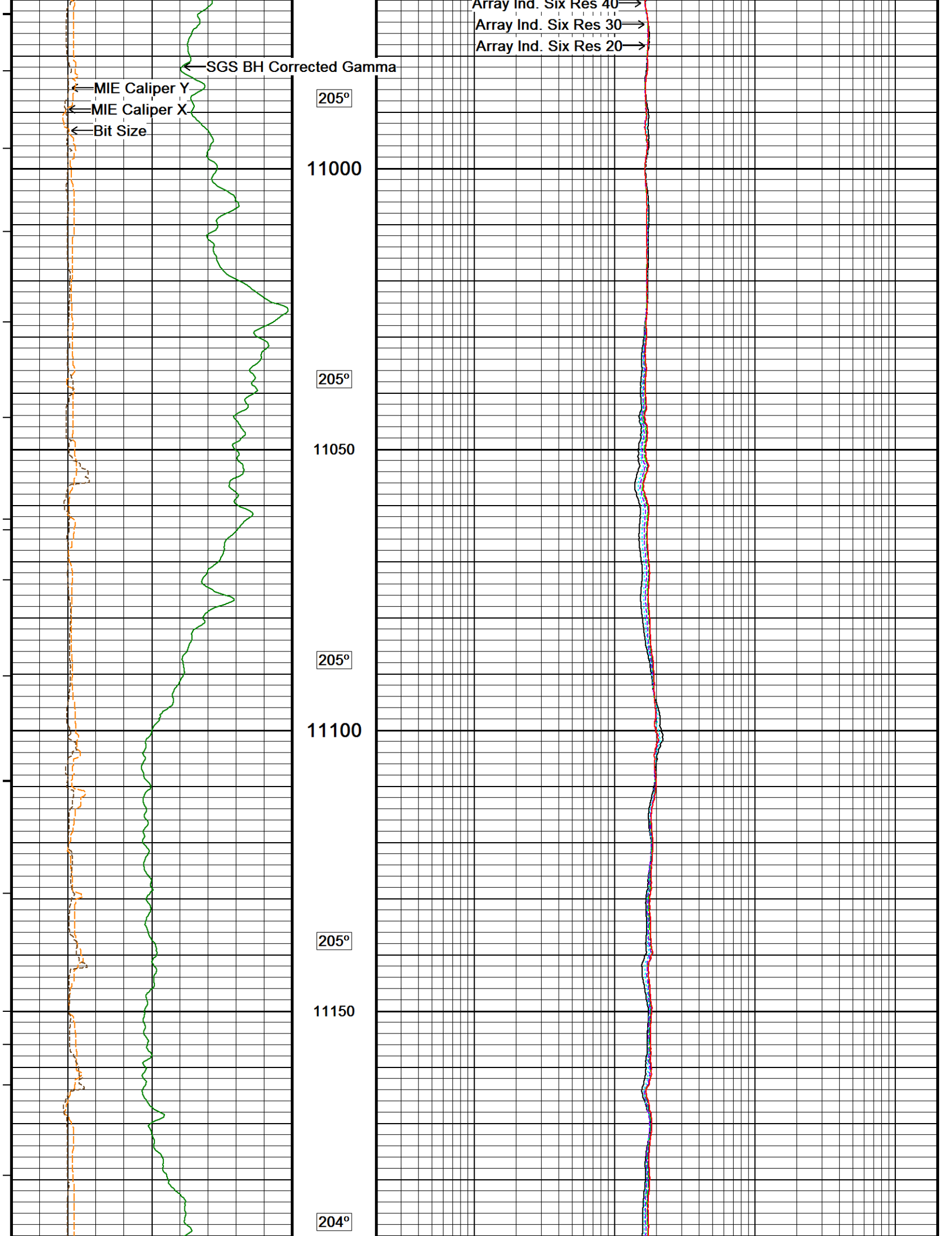
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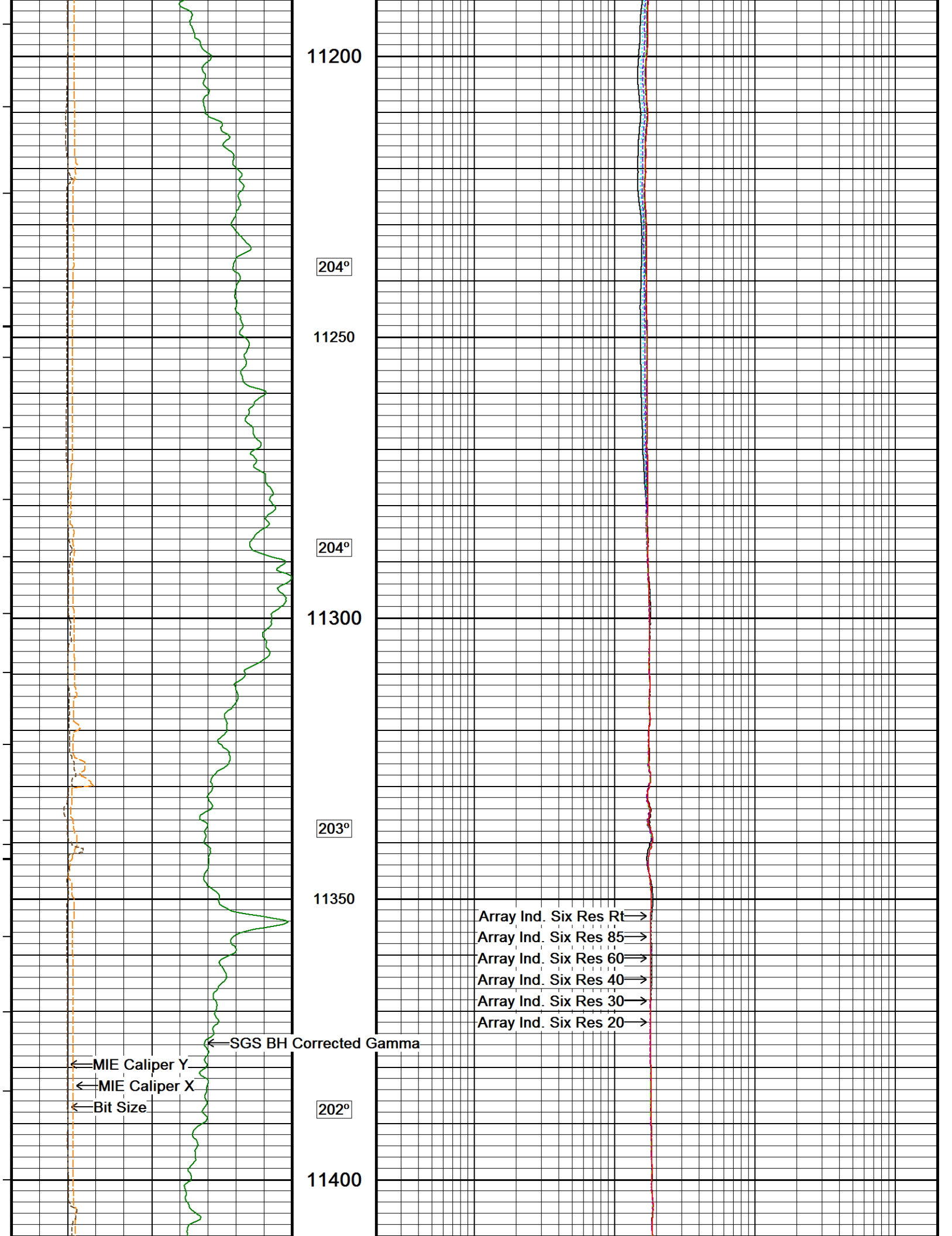


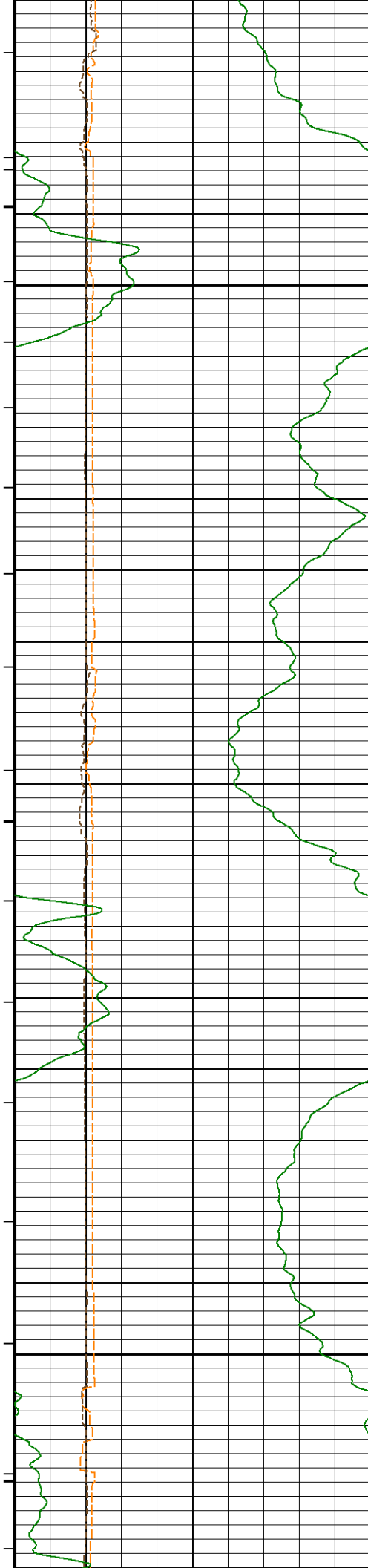
10750
206°
10800
206°
10850
206°
10900
206°
10950



Array Ind. Six Res Rt →
Array Ind. Six Res 85 →
Array Ind. Six Res 60 →







202°

11450

202°

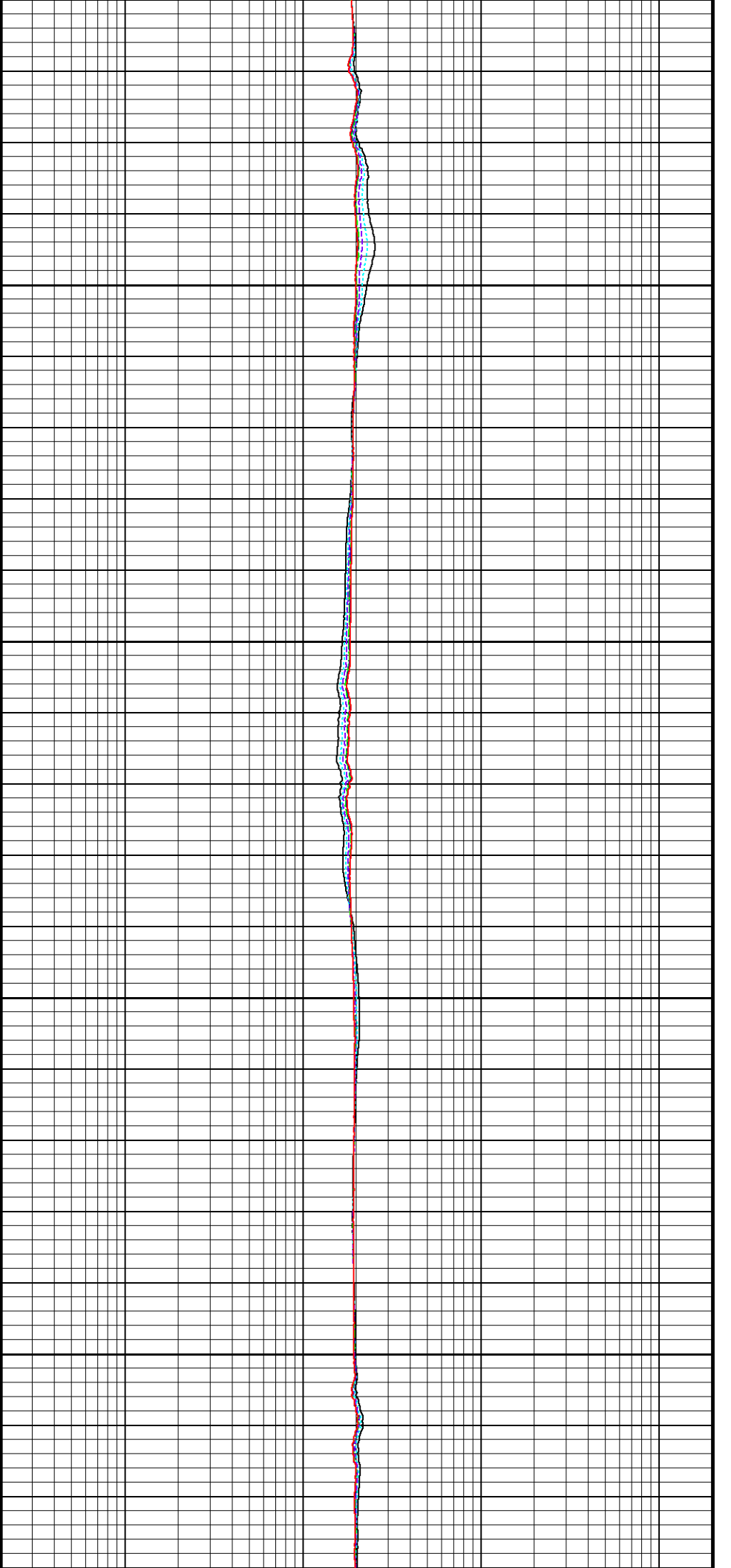
11500

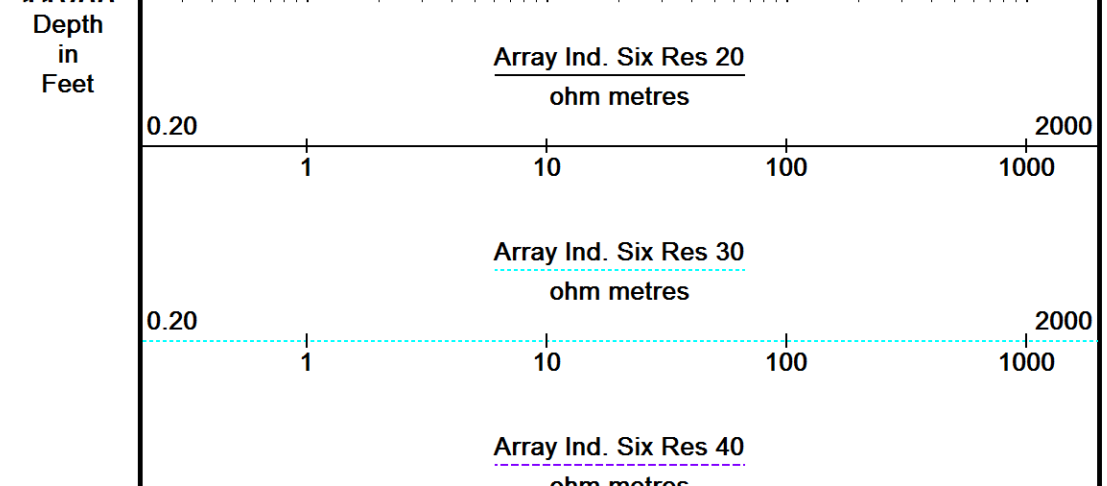
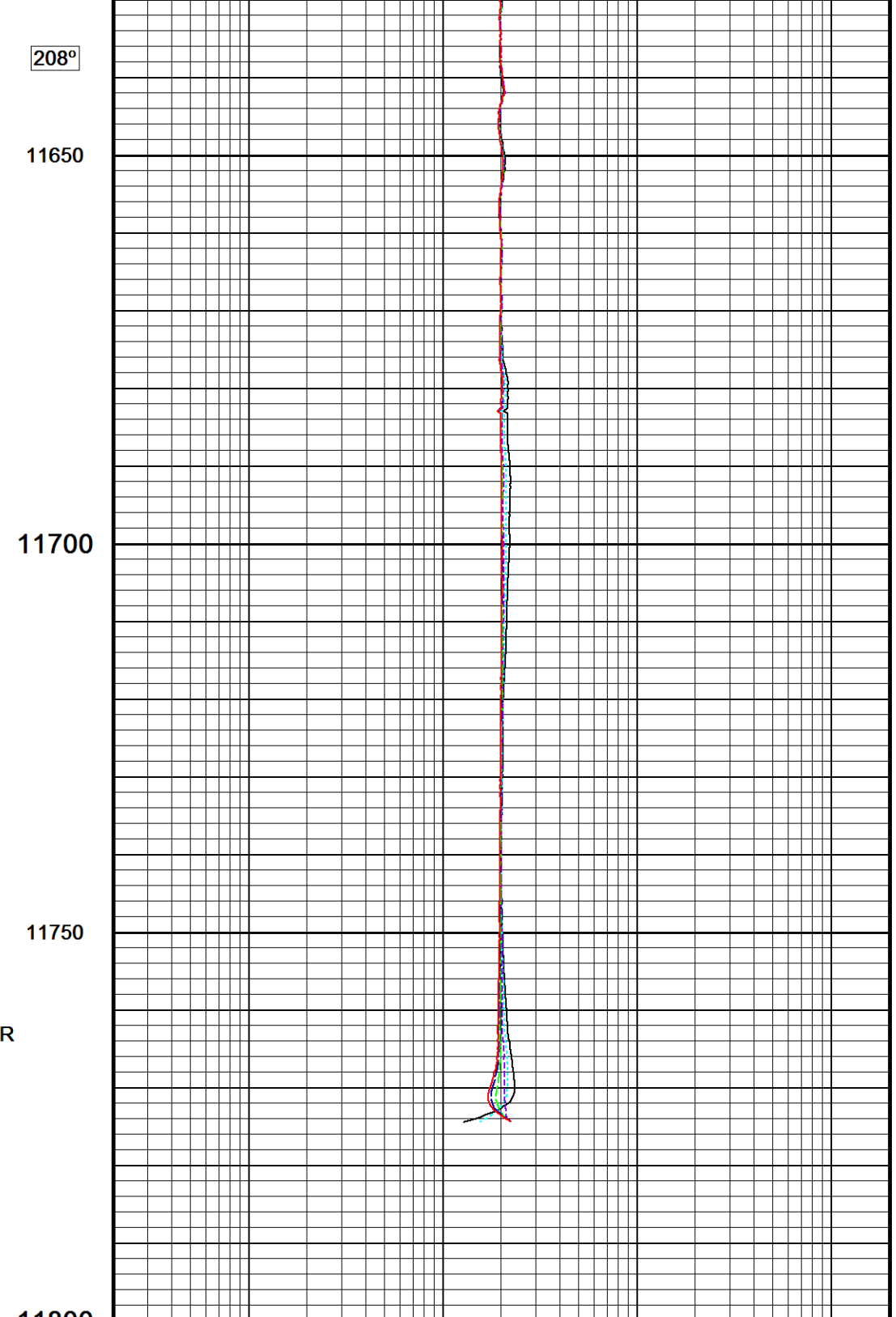
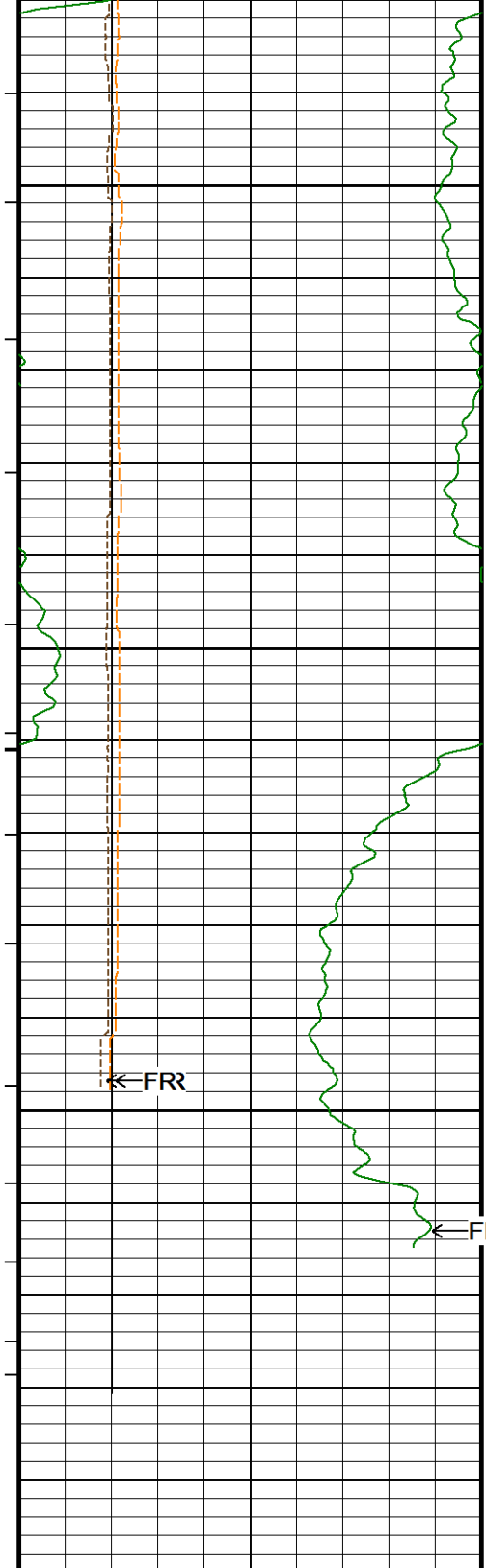
202°

11550

203°

11600



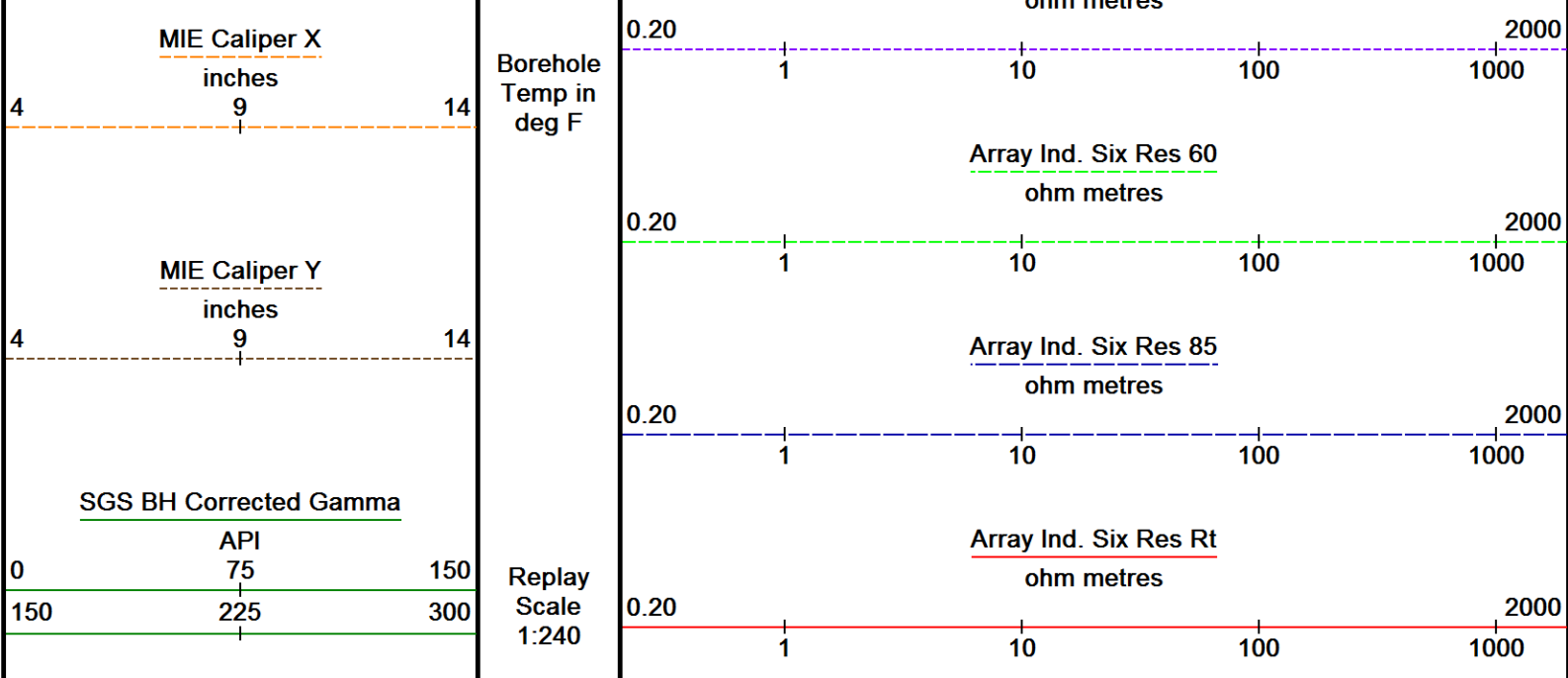


Timing Marks
every 60.0 sec

←

Bit Size
inches

4 9 14



Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.dta
 System Versions: Logged with 14.01.3220 Processed with 14.01.3220 Plotted with 14.01.3220
 Plotted on 17-SEP-2014 03:12
 Recorded on 17-SEP-2014 01:04

5 INCH MAIN LOG

BEFORE SURVEY CALIBRATION
 D:\Logs\Whiting\WOLF 12L-0103\MMS DEPTH2.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 16-SEP-2014,22:59

General Parameters		
Mud Resistivity	0.970	ohm-metres
Mud Resistivity Temperature	89.900	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	4.500	inches
Caliper for Differential Caliper	Density Caliper	
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 248 Last Edited on

Atmospheric Pressure	14.70	psi
Serial Number	0	

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
	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	
Pressure psia									
0.0	0.000	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	0.000
4000.0	0.000	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	0.000
8000.0	0.000	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		0.000

Gamma Calibration MGS-D.A 219 Field Calibration on 15-SEP-2014 17:05

	Measured	Calibrated (API)
Background	135	92
Calibrator (Gross)	1024	701
Calibrator (Net)	889	609

Gamma Constants MGS-D.A 219 Last Edited on 16-SEP-2014,23:00

Gamma Calibrator Number	GRCC 224	
Mud Density	1.16	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

SP Calibration MGS-D.A 219 Field Calibration on 24-JUL-2014,18:59

	Measured	Calibrated (mV)
Reference 1	-100.0	-100.0
Reference 2	100.0	100.0

High Resolution Temperature Calibration MGS-D.A 219 Field Calibration on 24-JUL-2014,18:59

	Measured	Calibrated(Deg F)
Lower	20.00	20.00
Upper	200.00	200.00

High Resolution Temperature Constants MGS-D.A 219 Last Edited on 24-JUL-2014,18:59

Pre-filter Length	11
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Neutron Calibration MDN-B.J 372 Base Calibration on 28-AUG-2014 09:05
Field Check on 15-SEP-2014 16:28

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	2928	89	3714	110
	32.979		33.764	
Field Calibrator at Base			2324	3439
Ratio			0.676	
Field Check			2424	3535
Ratio			0.686	

Neutron Constants MDN-B.J 372 Last Edited on 15-SEP-2014,16:25

Neutron Source Id	P31115B	
Neutron Jig Number	NJ5299	
Air Hole Processing	Modified Ratio	
Caliper Source for Processing	Density Caliper	
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.A 173

Field Check on 28-JUL-2014 13:58

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.A 173

Last Edited on 24-AUG-2014,16:32

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	N/A	mAmp	
Image Processing	Enabled		

Navigation Constants MIE-A.A 173

Last Edited on 10-SEP-2014,09:35

Magnetic Declination	0.00	degrees	East
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Magnetometer Parameters MIE-A.A 173

Date Of Last Magnetometer Calibration	17-JUL-2014,16:28		
Slope	X Magnetometer	Y Magnetometer	Z Magnetometer
Offset	-1.000000	-1.011067	-0.996373
	0.009674	-0.014518	0.002543

Magnetometer Constants MIE-A.A 173

Last Edited on

Magnetometer Calibrator Number	000
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Accelerometer Parameters MIE-A.A 173

Date Of Last Accelerometer Calibration	15-JUL-2014,13:24		
Slope	X Accelerometer	Y Accelerometer	Z Accelerometer
Offset	-1.113967	-1.108777	-1.100961
	0.007433	0.003599	0.006425

Accelerometer Constants MIE-A.A 173

Last Edited on 15-SEP-2014,16:43

Accelerometer Calibrator Number	000
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Accelerometer Temperature Characterisation

X Accelerometer				
Serial Number	648			
Calibration Date	19-Aug-2008			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	-9.57706e-006	9.83611e-009	1.13245e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.83616e-004	1.98700e-007	1.44742e-009
Y Accelerometer				
Serial Number	652			
Calibration Date	19-Aug-2008			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	3.42793e-006	-1.11656e-008	-4.36730e-011

	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.75161e-004	2.12516e-007	8.53262e-010
Z Accelerometer				
Serial Number	588			
Calibration Date	06-May-2008			
	B0	B1	B2	B3
Bias(g)	0.00000e+000	2.55228e-005	-4.28668e-009	8.28710e-011
	SF0	SF1	SF2	SF3
Scale Factor(mA/g)	3.00000e+000	2.82774e-004	2.50728e-007	1.25354e-009

Caliper Calibration MIE-A.A 173					Base Calibration on 15-SEP-2014 16:49	
					Field Calibration on 15-SEP-2014 16:51	
Base Calibration						
Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)			
1	25596	27177	5.96			
2	35531	37467	7.98			
3	42540	46891	9.86			
4	49316	57779	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	25350	25662	25136	25847	5.96	
2	34138	34121	33803	34657	7.98	
3	43605	40646	40186	44503	9.86	
4	55526	47326	47020	56371	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)			
	5.98	5.97	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)	
	2.95	3.01	3.03	2.96	5.96	

Caliper Constants MIE-A.A 173			Last Edited on	
Caliper Difference for BRKT	0.120	inches		

Induction Calibration MAI-B.J 434					Base Calibration on 24-JAN-2012,20:11	
					Field Check on 15-SEP-2014 16:41	
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			19.6	4103.6		
2			34.6	3790.9		
3			30.1	3169.0		
4			20.7	2138.8		
Deep			16.9	1969.4		
Medium			44.0	4225.0		
Shallow			54.3	5753.5		
Array Temperature			84.7	Deg F		

Induction Constants MAI-B.J 434			Last Edited on 15-SEP-2014,16:39	
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
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Photo Density Calibration MPD-C.J 378

Base Calibration on 28-AUG-2014 14:26
Field Check on 15-SEP-2014 16:34

Density Calibration					
Base Calibration		Measured		Calibrated (sdu)	
		Near	Far	Near	Far
Background		1151	1225		
Reference 1		56652	25552	59443	30683
Reference 2		22274	2349	25113	2508

Field Check at Base		1151.5	1225.5
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Field Check		1147.4	1227.9
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PE Calibration				
Base Calibration		Measured		Calibrated
		WS	WH	Ratio
Background		211	1032	
Reference 1		24495	56459	0.438
Reference 2		6523	22145	0.299

Field Check at Base		211.2	1031.7
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Field Check		212.4	1030.2
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Density Constants MPD-C.J 378

Last Edited on 16-SEP-2014,23:00

Density Source Id	P44264B
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Density Source ID	7-12018	
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	1.16	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	
0.00	0.00	

Caliper Calibration MPD-C.J 378

Base Calibration on 28-AUG-2014 13:41
Field Calibration on 15-SEP-2014 16:38

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13040	4.00
2	21312	5.96
3	29748	7.98
4	37680	9.86
5	46993	11.88
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.89	5.96

Spectral Gamma Calibration SGS-E.J 167

Base Calibration on 07-AUG-2014 16:23
Field Calibration on 21-AUG-2014 11:11

Base Calibration					
Potassium Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	244.6	128.0	29.0	1.8	3.8
Calibrator (Net)	131.7	90.0	24.8	0.3	0.7
Concentrations	K % 5.9		U ppm 0.0	Th ppm 0.0	

Uranium Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	549.0	191.7	17.1	10.6	5.4
Calibrator (Net)	436.1	153.7	13.0	9.1	2.3
Concentrations	K % 0.0		U ppm 16.6	Th ppm 0.0	

Thorium Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.9	38.0	4.1	1.5	3.1
Calibrator (Gross)	419.6	151.1	12.1	6.7	16.9
Calibrator (Net)	306.7	113.1	8.0	5.2	13.8
Concentrations	K % 0.0		U ppm 0.0	Th ppm 44.7	

Mixture Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	112.9	38.0	4.1	1.5	3.1

Calibrator (Gross)	896.6	362.0	47.7	14.1	19.8
Calibrator (Net)	783.7	324.0	43.6	12.6	16.7

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	157	33
Calibrator (Gross)	1360	283
Calibrator (Net)	1203	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	105.6	35.9	3.8	1.4	2.2
Calibrator (Gross)	893.6	373.4	49.4	15.4	21.0
Calibrator (Net)	788.0	337.4	45.6	13.9	18.8

Spectral Gamma Constants SGS-E.J 167

Last Edited on 16-SEP-2014,23:01

Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.16	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\WOLF 12L-0103\MMS DEPTH2.dta

Shuttle Running Tool 3.5" (SRT A)
SRT-A 6 LG: 6.47 ft WT: 37.5 lb OD: 2.520 in

MLK-A 3 LG: 4.48 ft WT: 30.9 lb OD: 2.240 in

Compact Linker MMR
MLK-A 1 LG: 14.23 ft WT: 30.9 lb OD: 2.240 in

Compact Linker 200V EXT
MLK-A 2 LG: 8.52 ft WT: 30.9 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

MBS-F.A 200v Compact Battery Sub
MBS-F.A 119 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Memory Sub F.A
MMS-F.A 248 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.
MTI-C.A 145 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in

Compact Short Gamma
MGS-D.A 219 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in

Compact Collar Locator
MCL-C.A 128 LG: 3.17 ft WT: 26.5 lb OD: 2.244 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 597 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in



99.98 ft GRGM - MGS Gamma Ray
98.00 ft GSXT - MGS External Temperature

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 731 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact Neutron
 MDN-B.J 372 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
 MPD-C.J 378 LG: 9.59 ft WT: 90.4 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

SHA-J.B Compact Swivel Head Adaptor
 SHA-J.B 678 LG: 2.30 ft WT: 22.0 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

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

SKJ-E.B Compact Knuckle Joint
 SKJ-E.B 612 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-D.A Compact Inline Bowspring sub
 MIS-D.A 293 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

Compact MMI Memory Section
 MIM-A.A 207 LG: 4.65 ft WT: 26.5 lb OD: 2.244 in

Compact MMI Electrode Section
 MIE-A.A 173 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

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

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

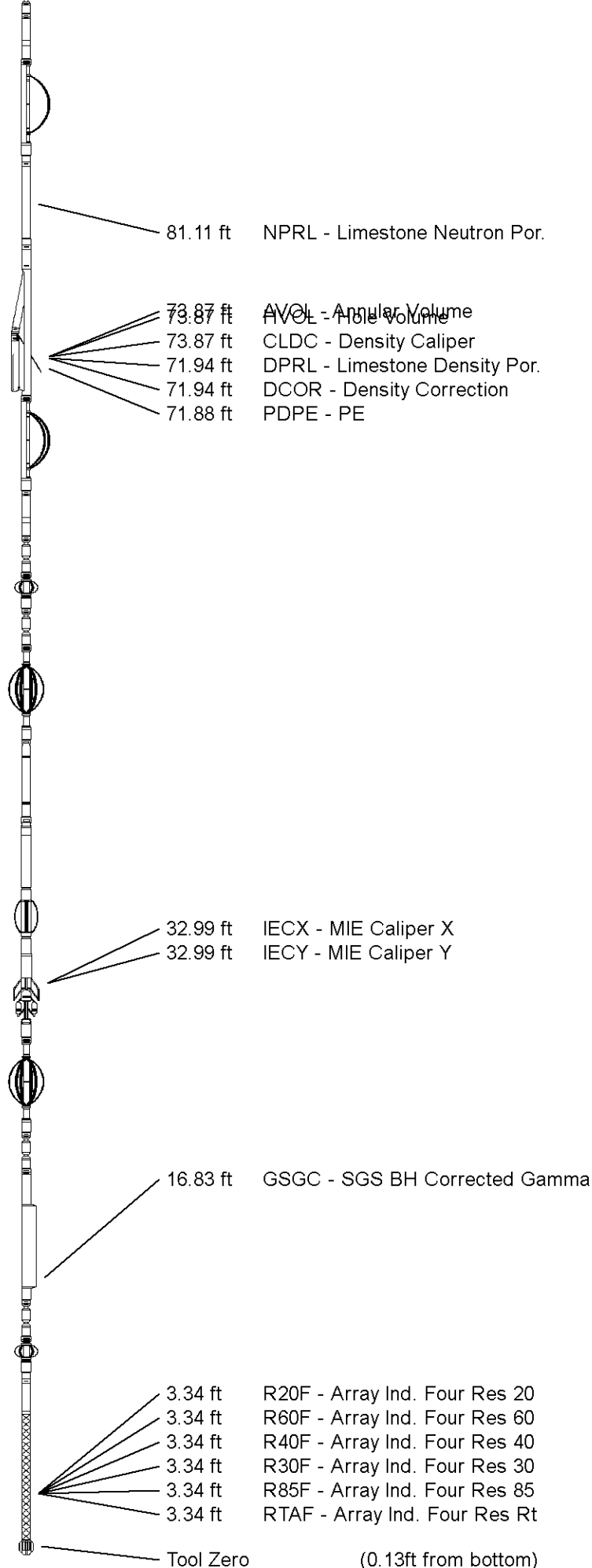
Spectral Gamma Ray Sub
 SGS-E.J 167 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

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

MIS-E.B Compact Inline Standoff sub
 MIS-E.B 787 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: 2.244 in

Total Length: 160.57 ft Weight: 1128.8 lb



WELL WOLF 12L-0103
FIELD REDTAIL
PROVINCE/COUNTY WELD
COUNTRY/STATE U.S.A. / COLORADO

Elevation Kelly Bushing	4970.00	feet	First Reading	11772.00	feet
Elevation Drill Floor	4970.00	feet	Depth Driller	13393.00	feet
Elevation Ground Level	4953.00	feet	Depth Logger	11781.00	feet



MEASURED DEPTH
ARRAY INDUCTION
LOG

Weatherford[®]