

**Weatherford®****ARRAY INDUCTION
LOG**

COMPANY				WHITING OIL AND GAS CORPORATION			
WELL				RAZOR 27K-3405A			
FIELD				REDTAIL			
PROVINCE/COUNTY				WELD			
COUNTRY/STATE				U.S.A. / COLORADO			
LOCATION				SHL: 2322' FSL & 1914' FWL			
PERMIT NUMBER				BHL: 600' FSL & 1485' FWL (SEC. 34)			
SEC 27	TWP 10N	RGE 58W	Other Services				
			MDN/MPD				
			CMI				
API Number				05-123-37748			
Permanent Datum GL, Elevation 4750 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	16-AUG-2013			Elevations:			
Run Number	ONE			KB 4767.00			
Service Order	3535485			DF 4767.00			
Depth Driller	12414.00			feet 4750.00			
Depth Logger	12414.00						
First Reading	12383.00						
Last Reading	6007.00						
Casing Driller	6010.00						
Casing Logger	6007.00						
Bit Size	6.000			feet			
Hole Fluid Type	PCS/POLYMER			inches			
Density / Viscosity	9.25 g/cc			38.00 CP			
PH / Fluid Loss	8.50			7.60			
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.75 @ 93.0			ohm-m			
Rmf @ Measured Temp	0.60 @ 93.0			ohm-m			
Rmc @ Measured Temp	0.90 @ 93.0			ohm-m			
Source Rmf / Rmc	CALC			CALC			
Rm @ BHT	0.332 @216.0			ohm-m			
Time Since Circulation	0.5 HOUR						
Max Recorded Temp	216.00			deg F			
Equipment / Base	18063			CASPER			
Recorded By	D. KUNTZ						
Witnessed By	K. RENTON						

BOREHOLE RECORD				Last Edited: 17-AUG-2013 07:11
Bit Size inches		Depth From feet		Depth To feet
6.000		6007.00		12414.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	7.000	0.00	6007.00	29.00

REMARKS
SOFTWARE VERSION USED: 13.06.9804
TOOLS CONVEYED VIA CML WELL SHUTTLE.
TRIPLE COMBO - IMAGER WAS LOGGED IN A SINGLE RUN USING A 200V MEMORY CONVEYANCE SYSTEM.
HARDWARE USED: SEE TOOL DIAGRAM.
LAT: 40.808594 N
LONG: 103.853833 W

CUSTOMER'S SCALES USED AND INTERVALS LOGGED.

ALL DEPTHS RECORDED WITH WEATHERFORD ADVANTAGE DEPTH SYSTEM IN CONJUNCTION WITH PASON (RIGS) EDR SYSTEM.

ALL DEPTHS CORRECTED TO DRILLER'S STRAP DEPTH.

4.5 INCH PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUME.

ANNULAR HOLE VOLUME FROM TD TO SURFACE CASING: 1210 CUBIC FEET

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 505 CUBIC FEET

BOREHOLE SIZE AND RUGOSITY WILL AFFECT DATA QUALITY.

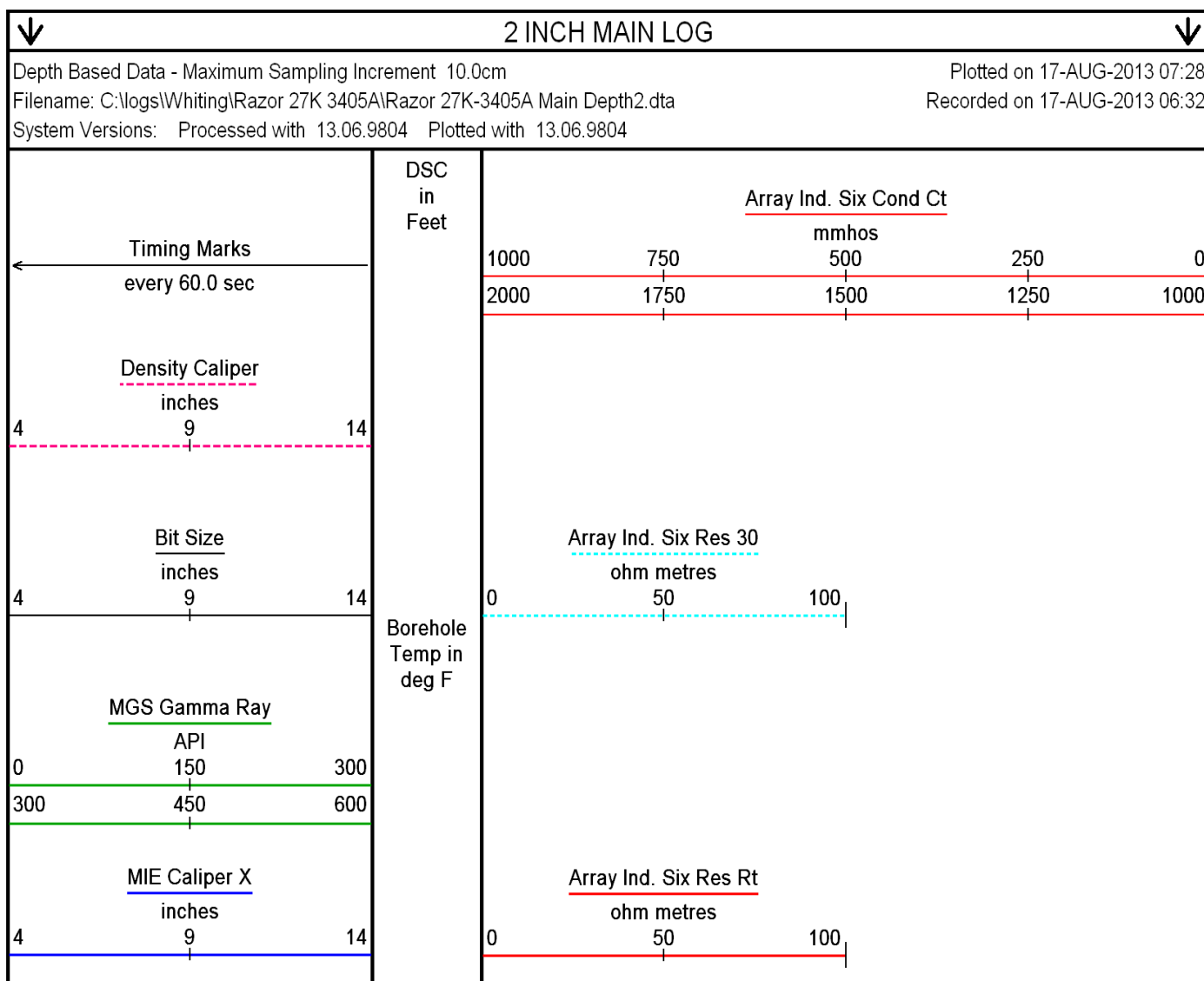
TIGHT PULLS WILL AFFECT DATA QUALITY.

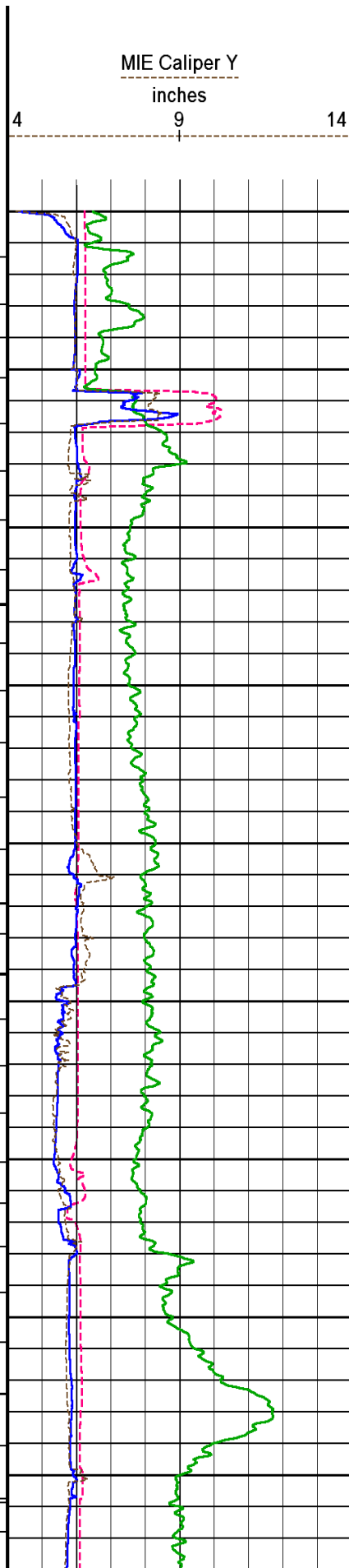
OPERATOR(S): S. LANDON, C. WILLIAMS

RIG: CADE 23

SERVICE ORDER #3535485

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.





Replay
Scale
1:600

5950

6000

204°

6100

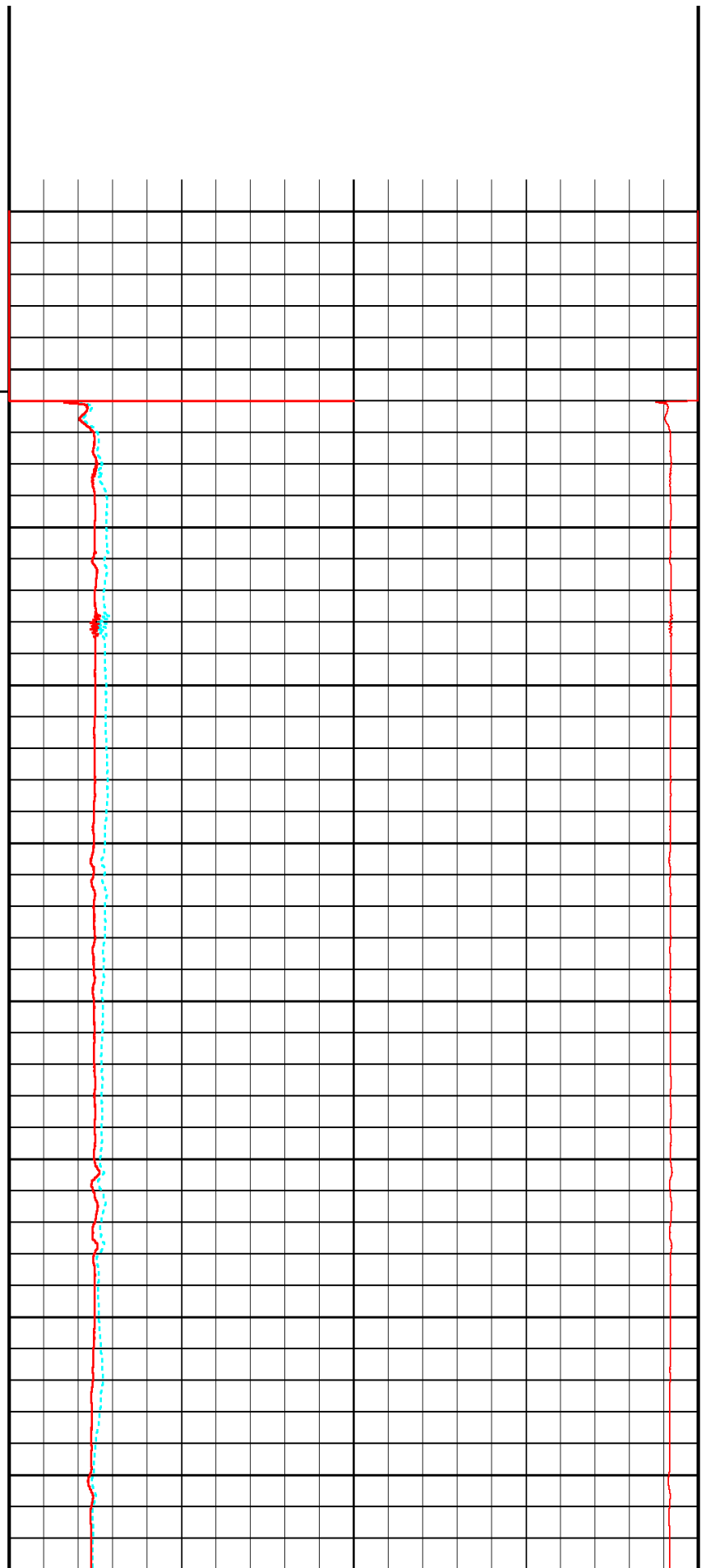
204°

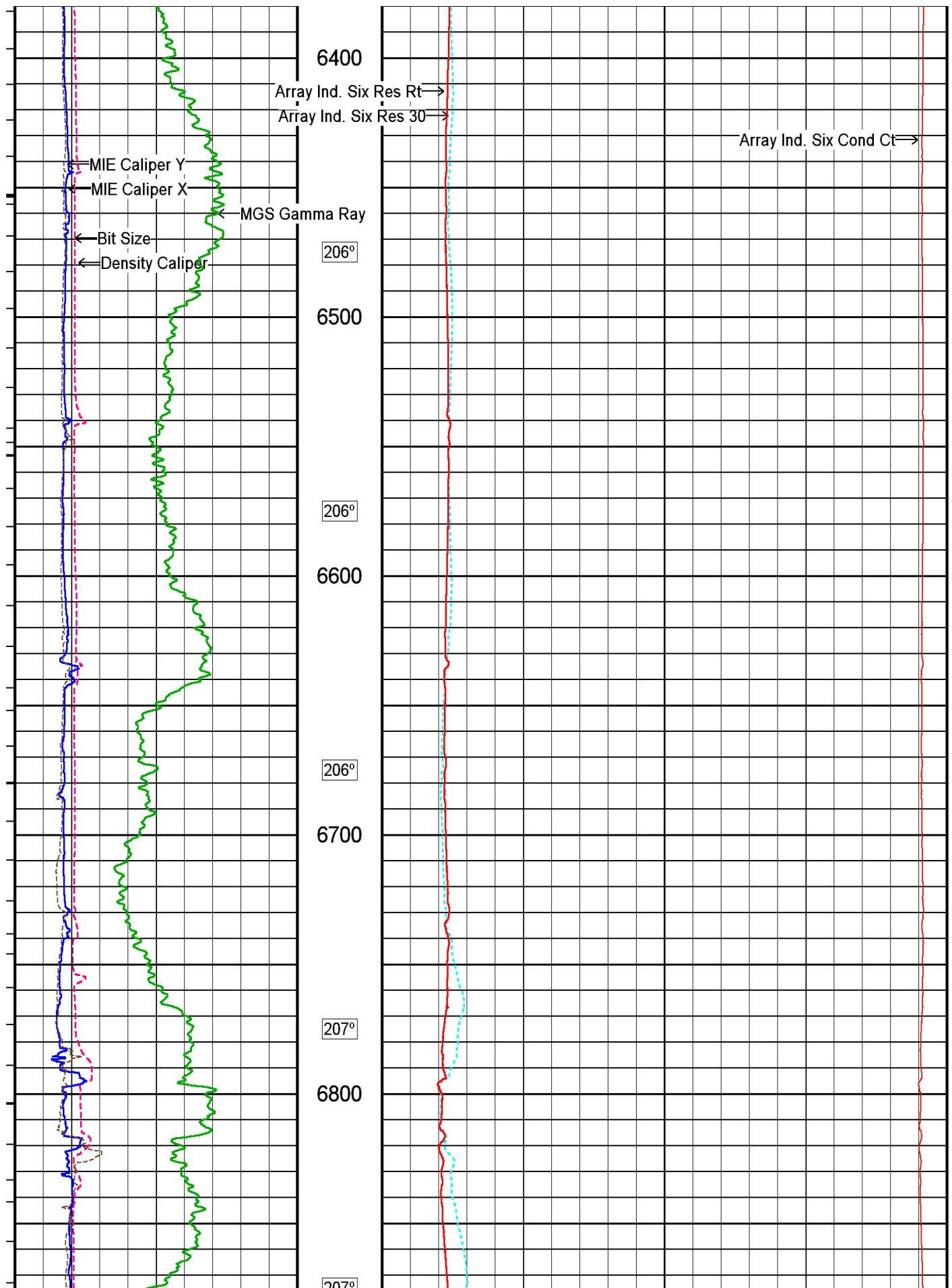
6200

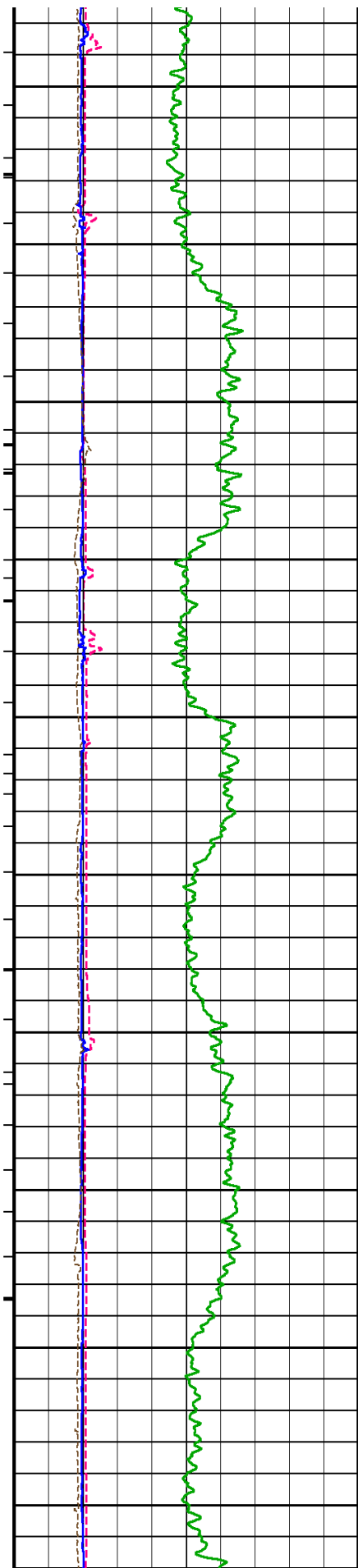
205°

6300

205°







207

6900

207°

7000

208°

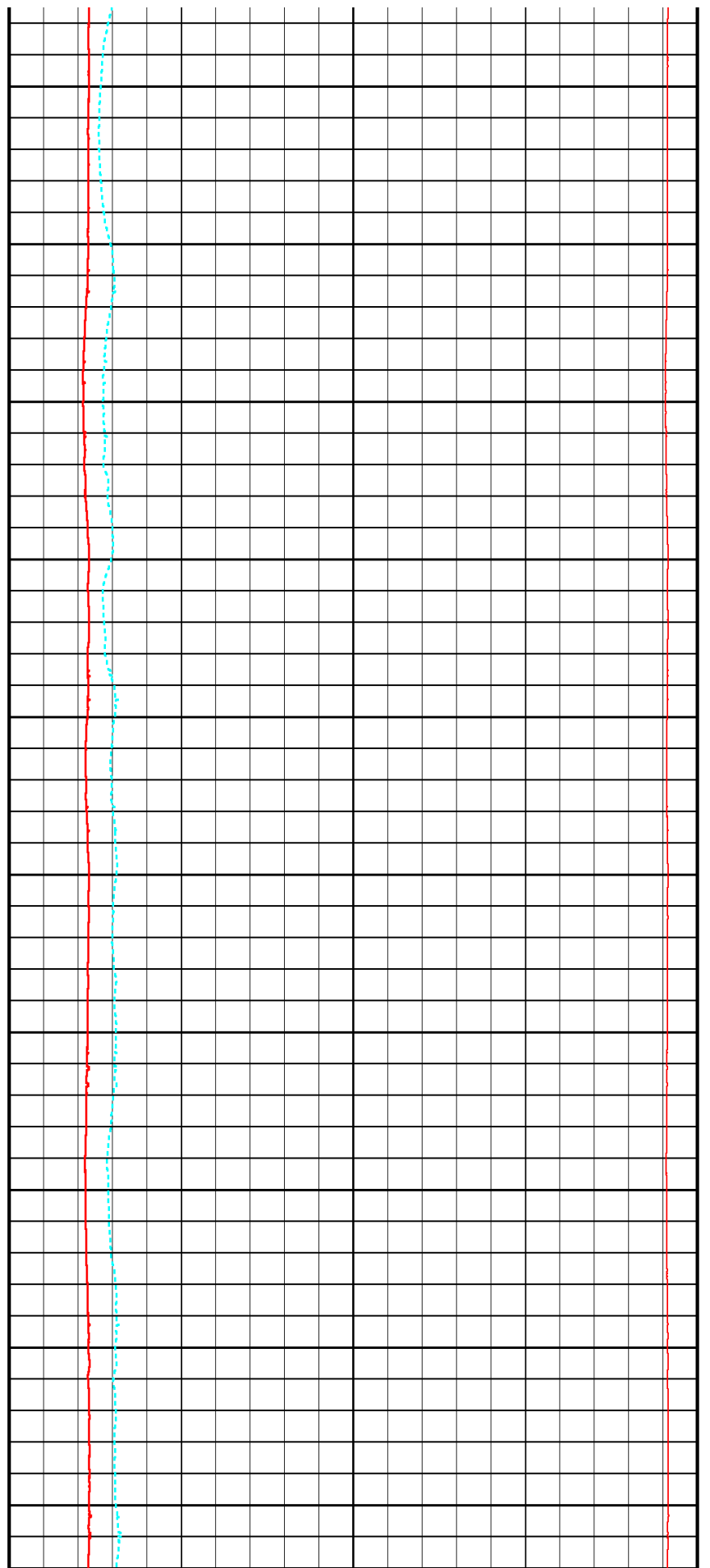
7100

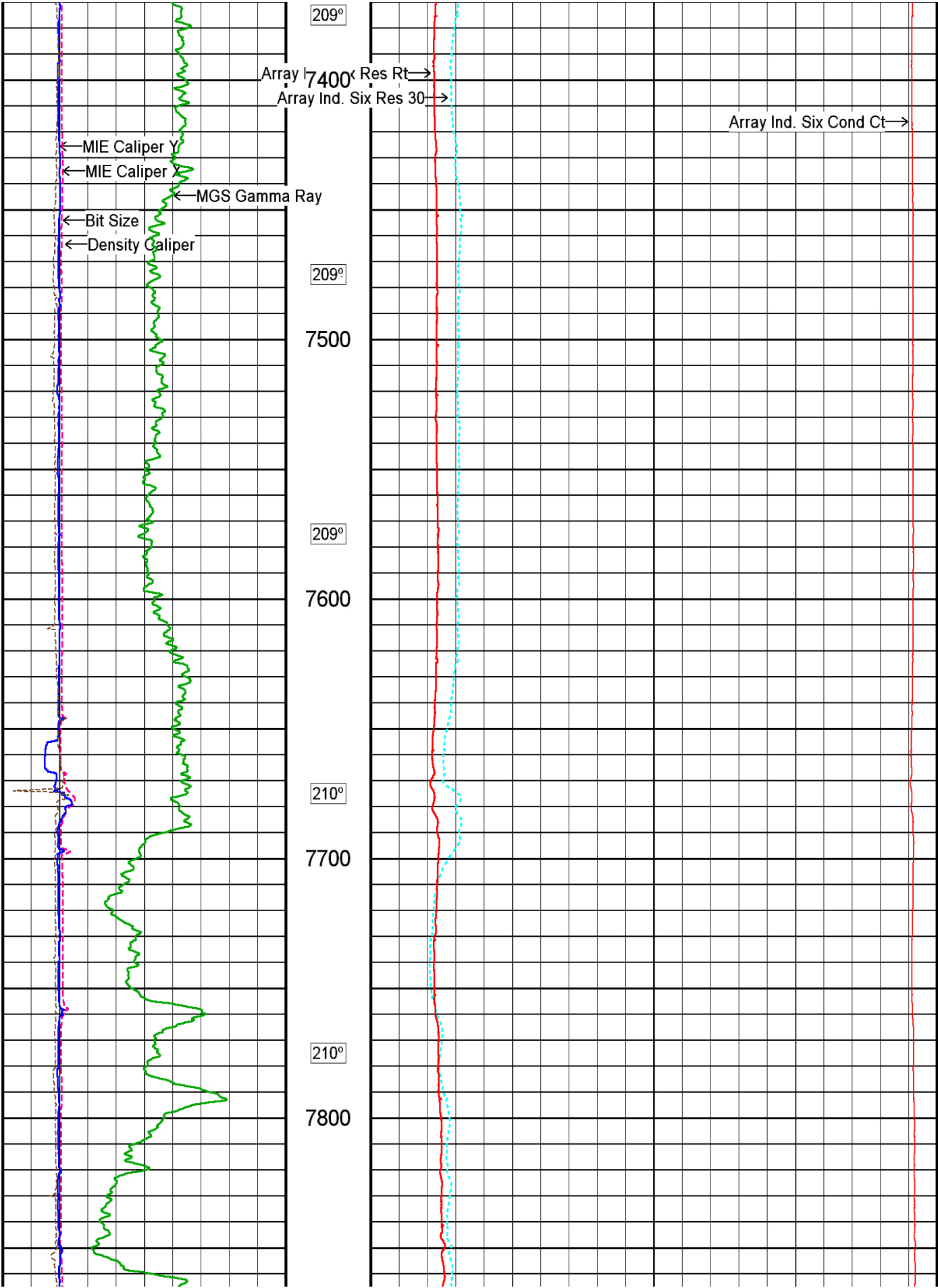
208°

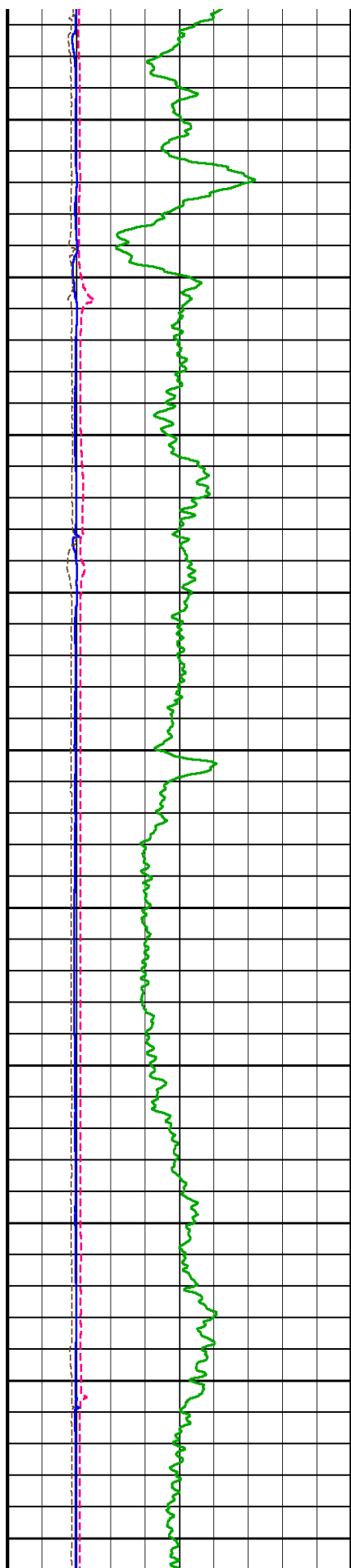
7200

209°

7300







211°

7900

211°

8000

211°

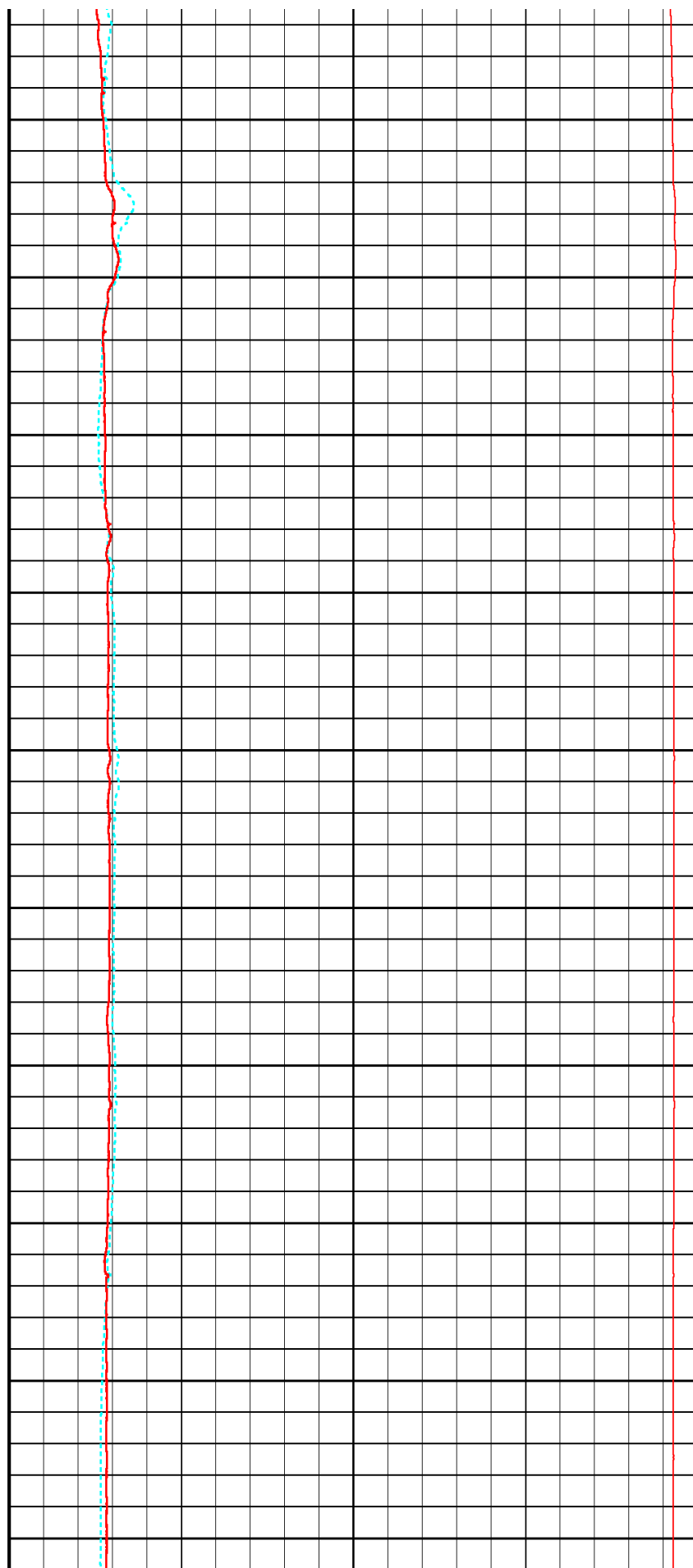
8100

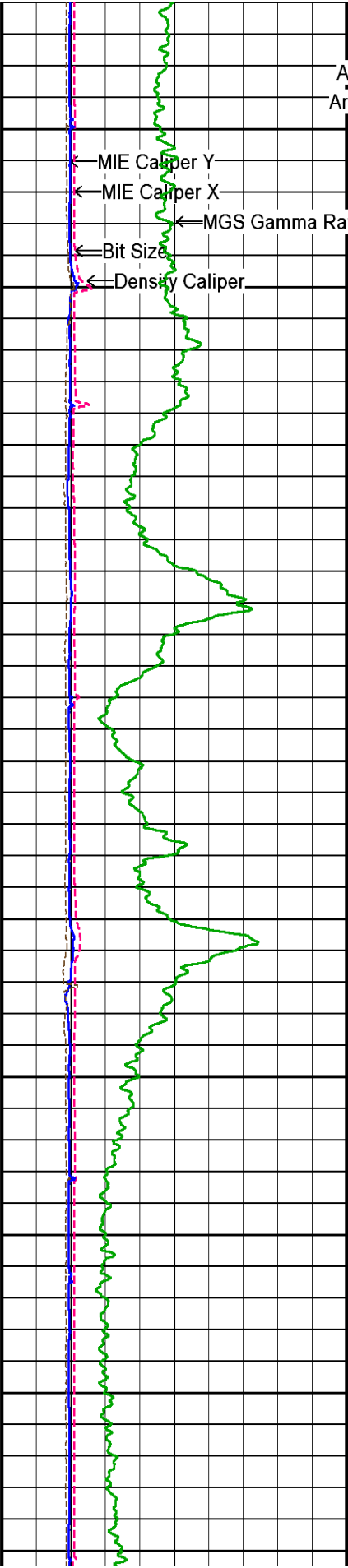
212°

8200

212°

8300





212°
Array Ind. Six Res Rt →
Array Ind. Six Res 30 →
8400

212°

8500

213°

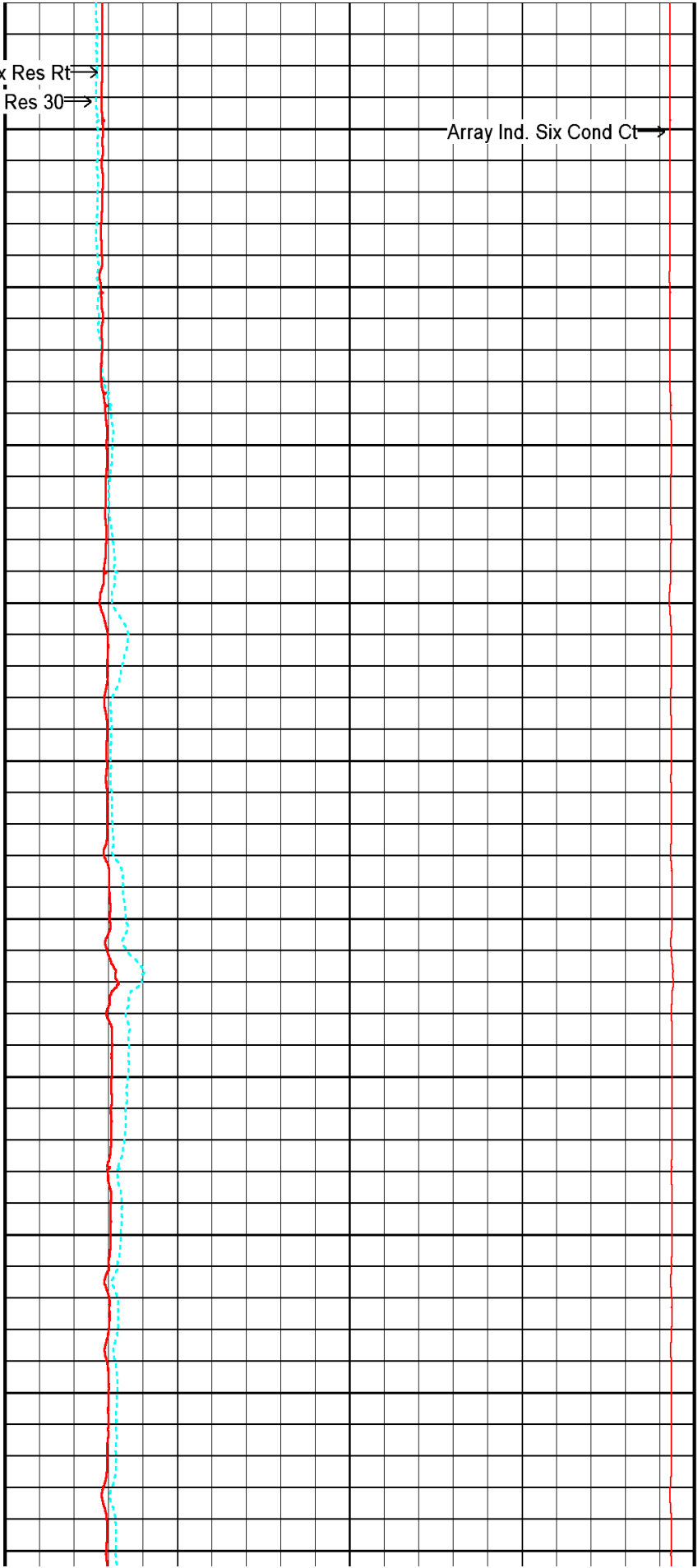
8600

213°

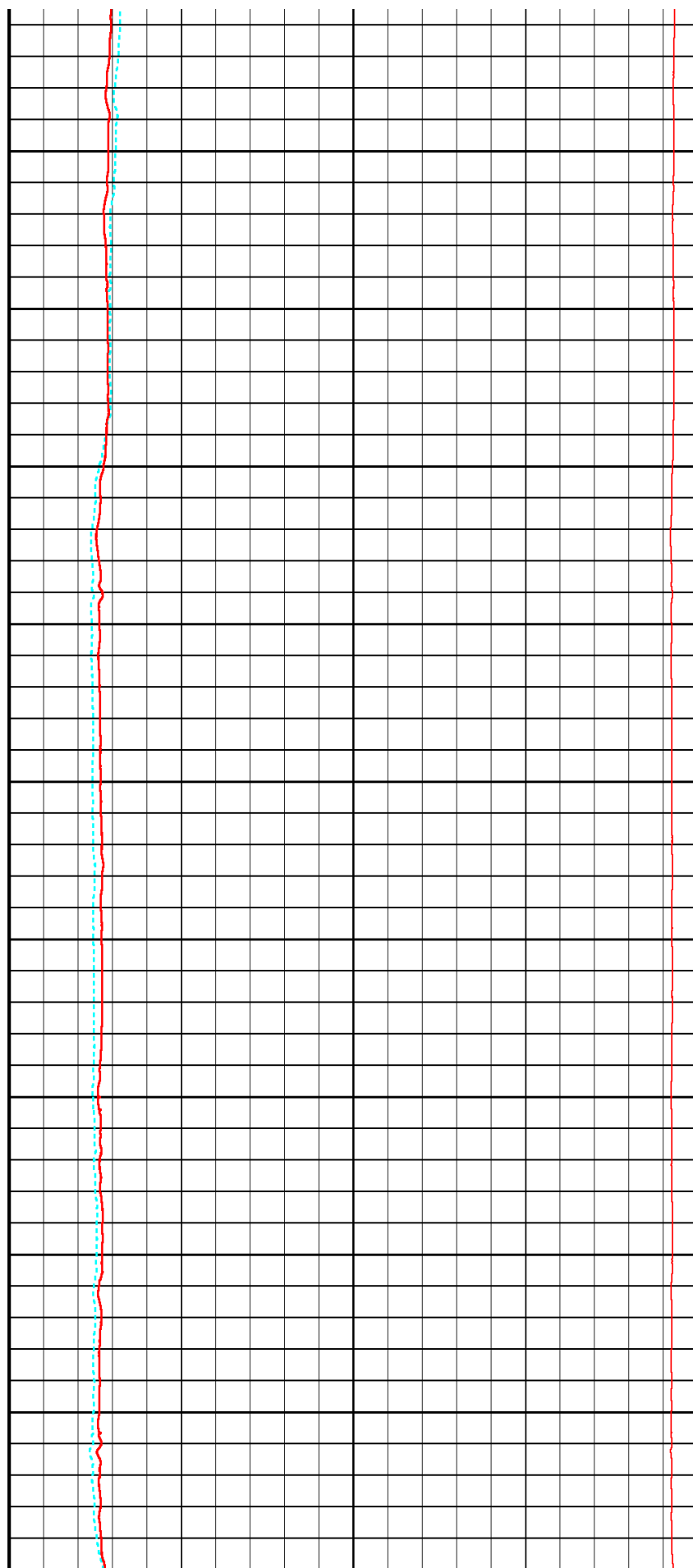
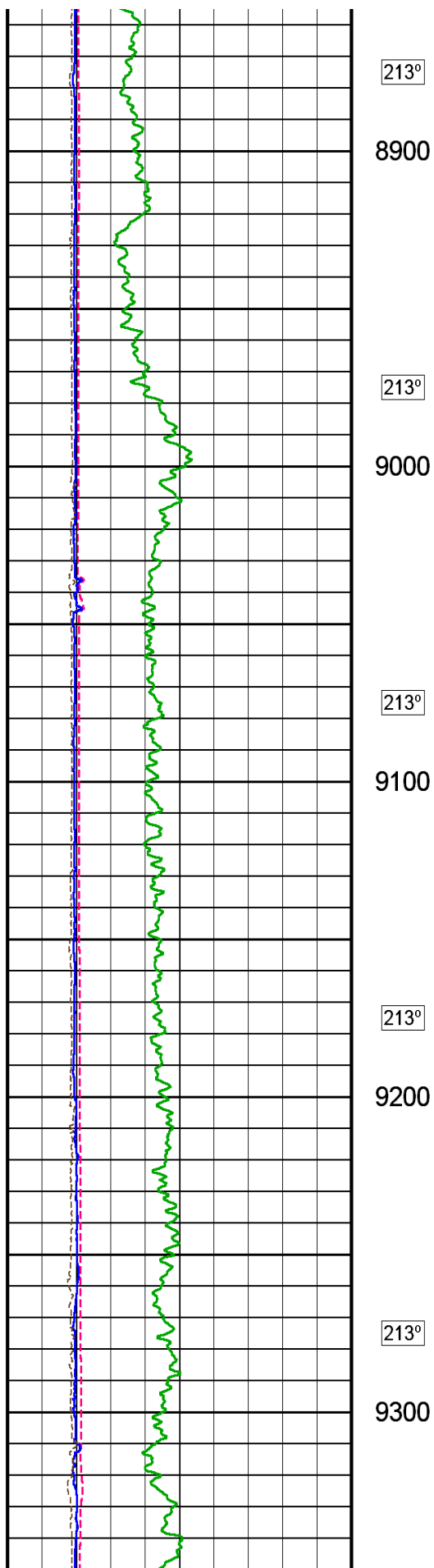
8700

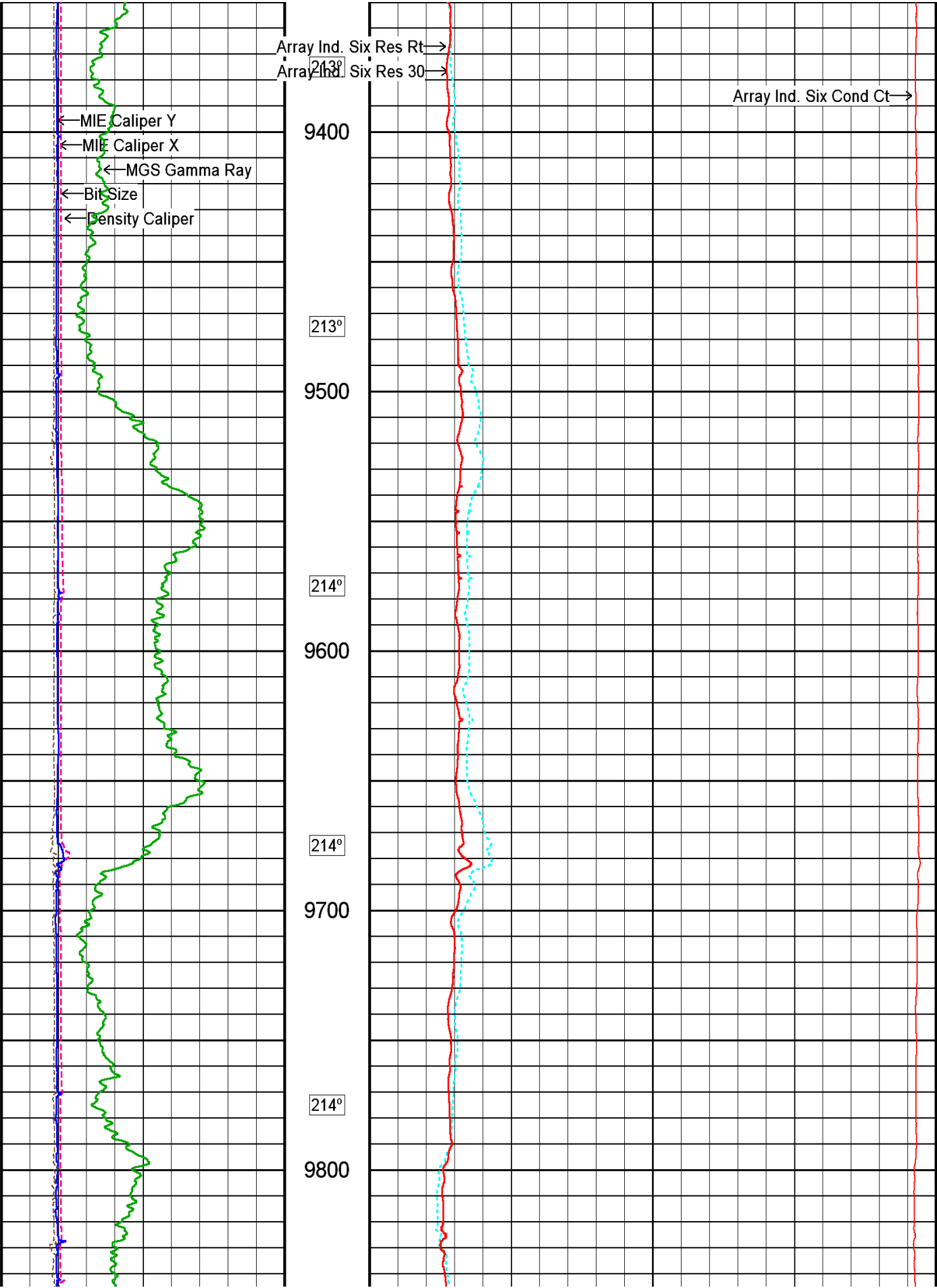
213°

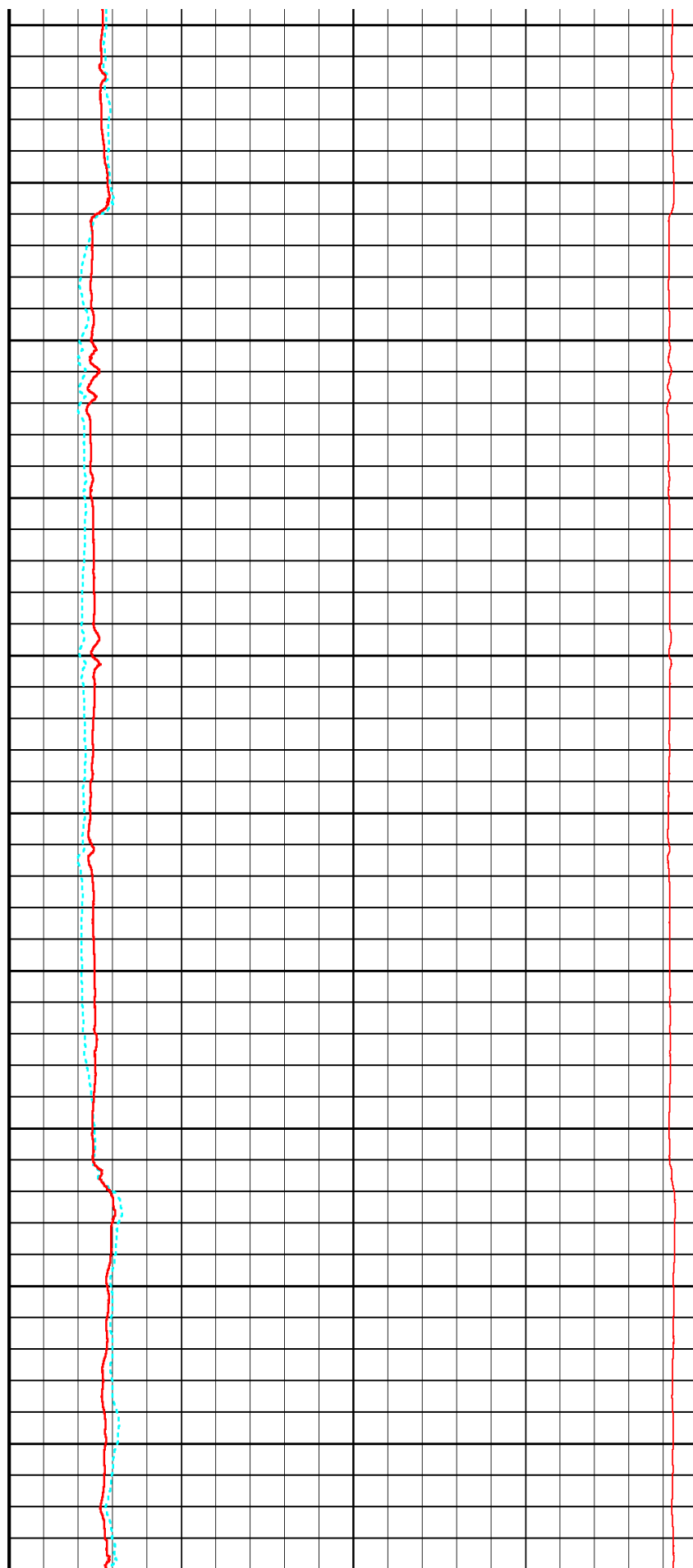
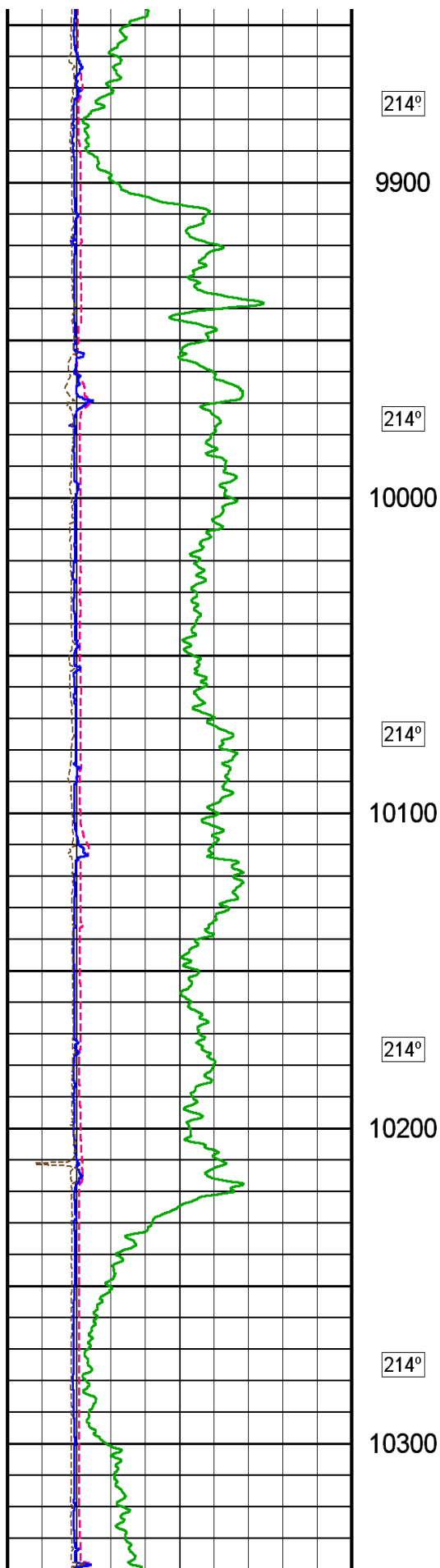
8800

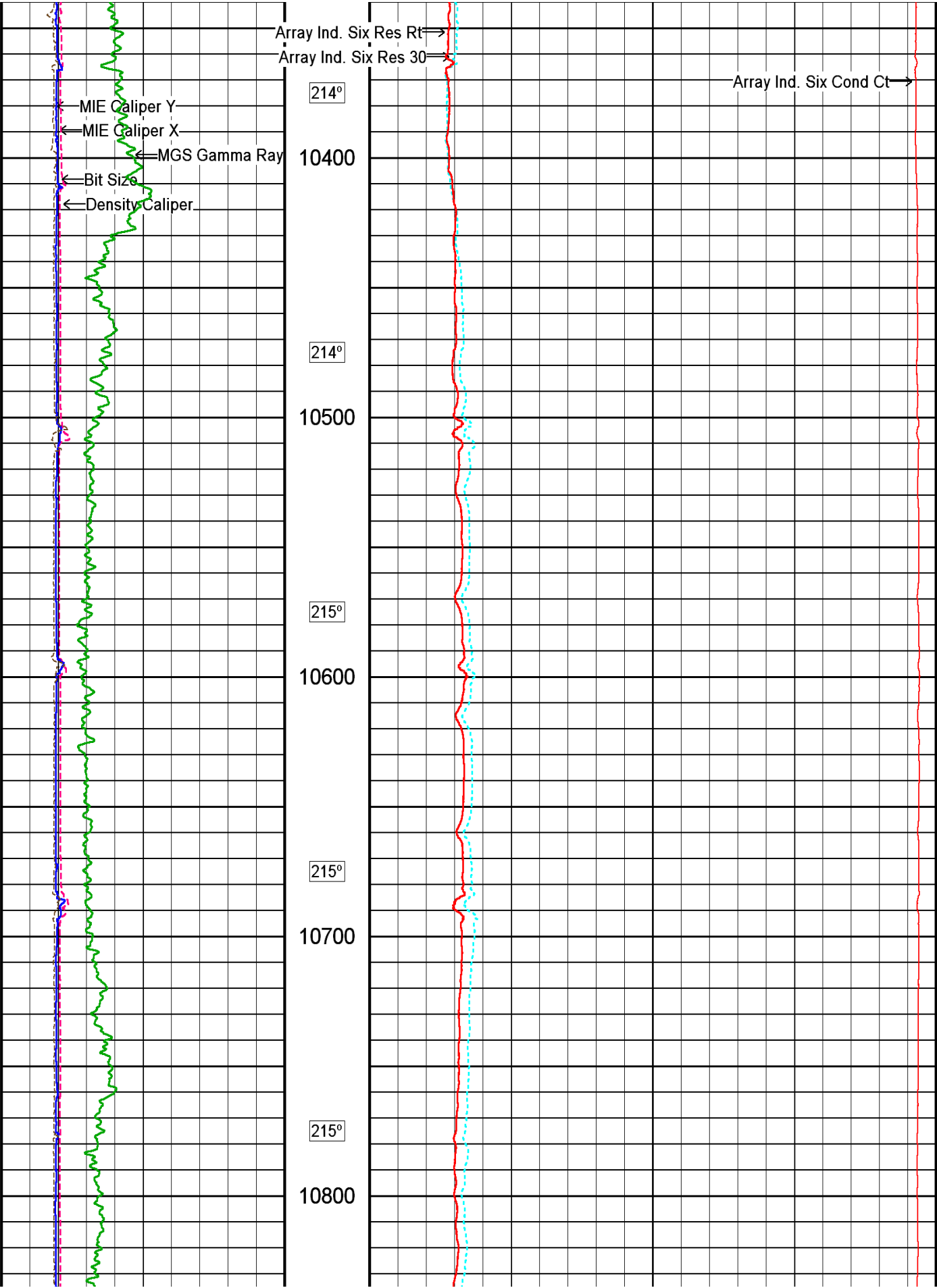


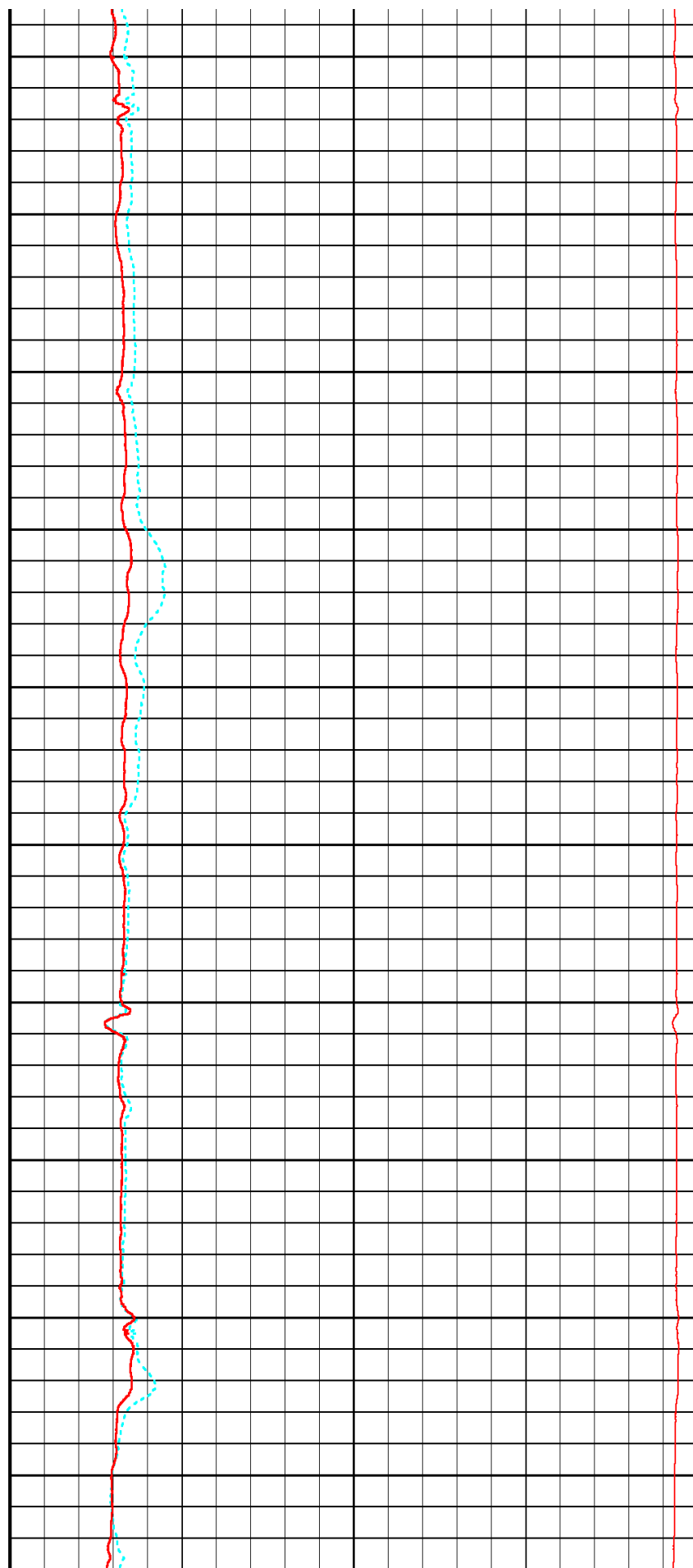
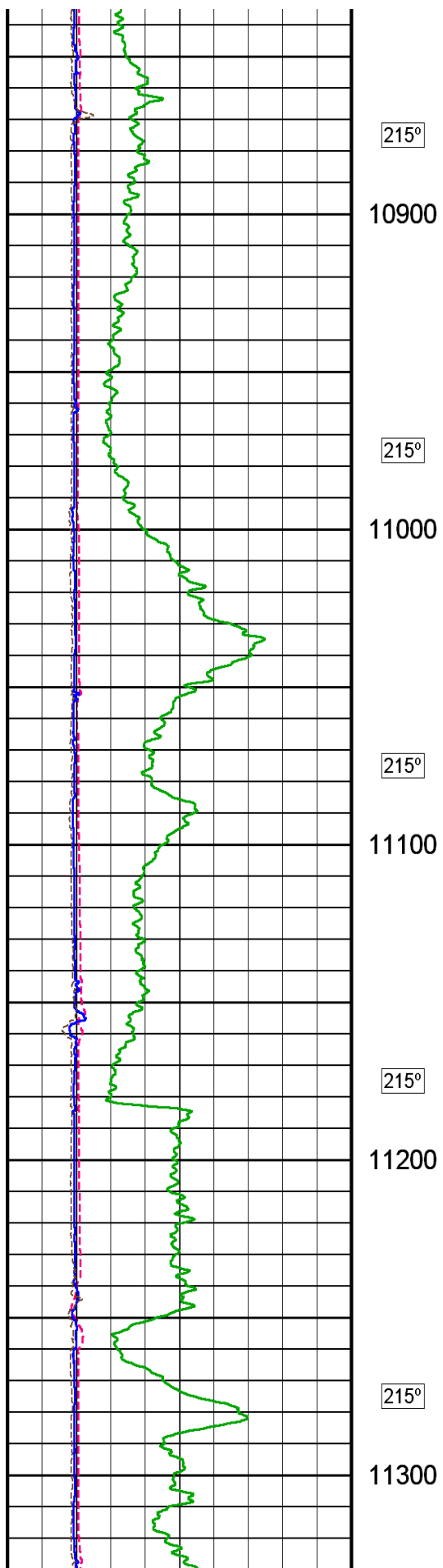
Array Ind. Six Cond Ct →

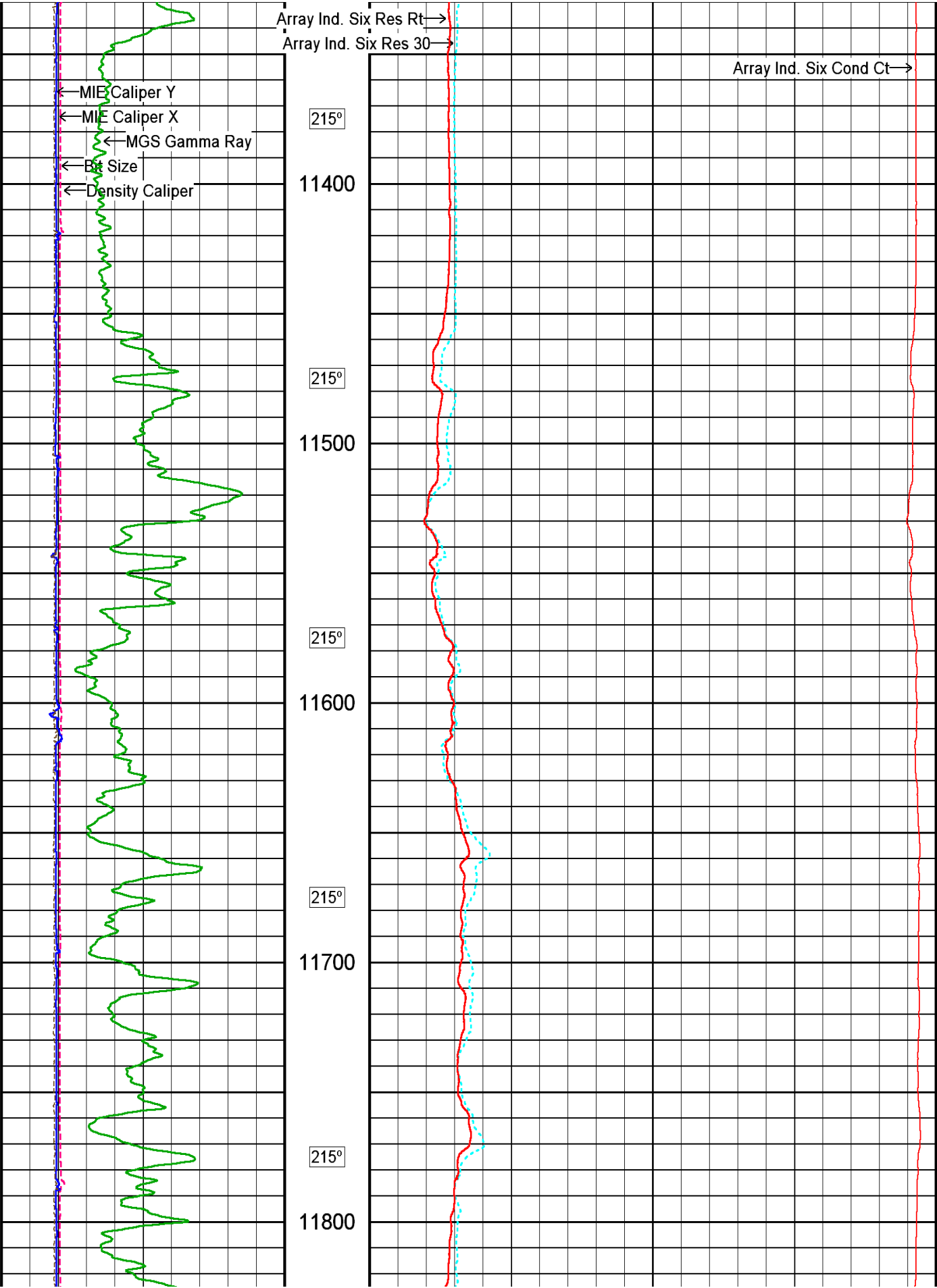


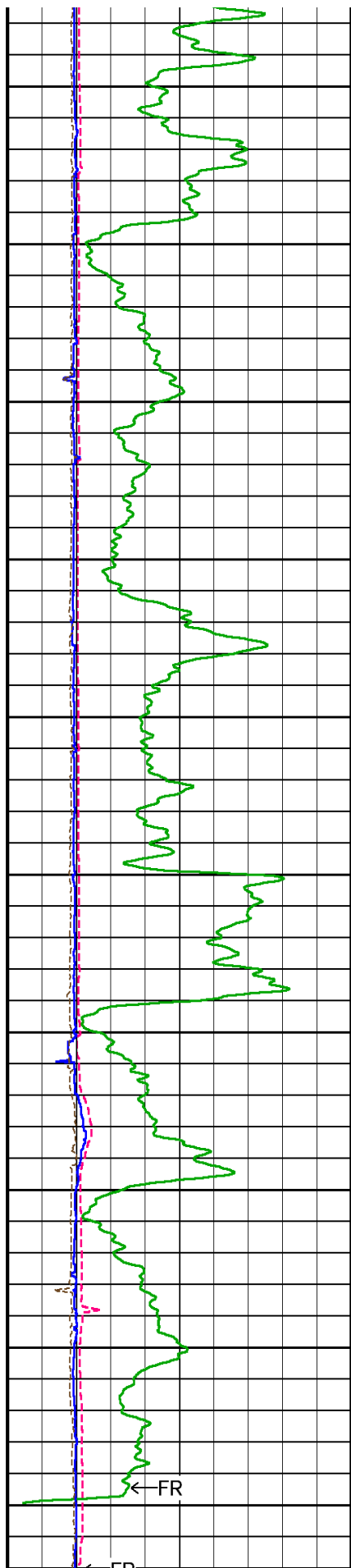












215°

11900

215°

12000

215°

12100

215°

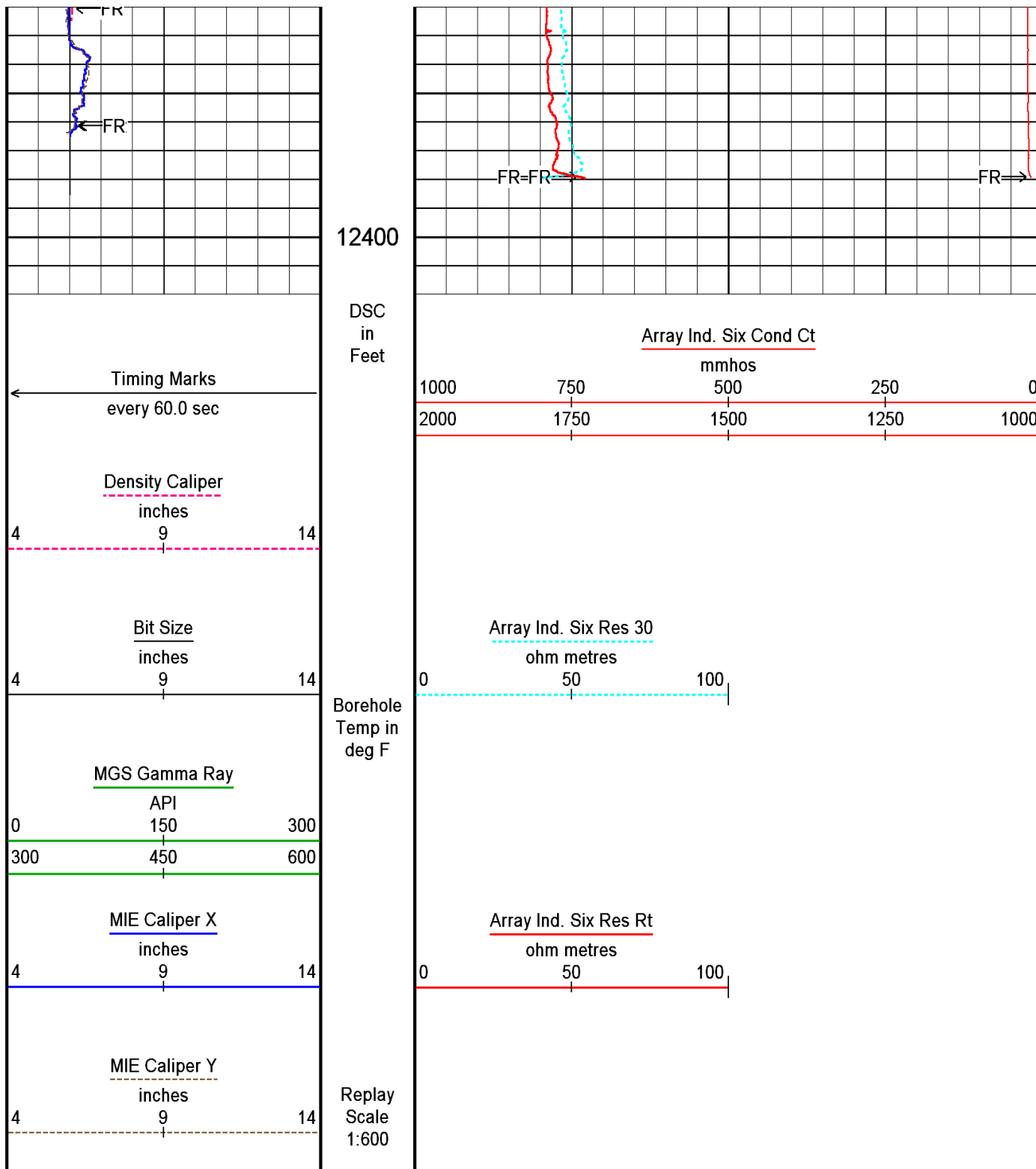
12200

216°

12300

← FR





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\logs\Whiting\Razor 27K 3405A\Razor 27K-3405A Main Depth2.dta
System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

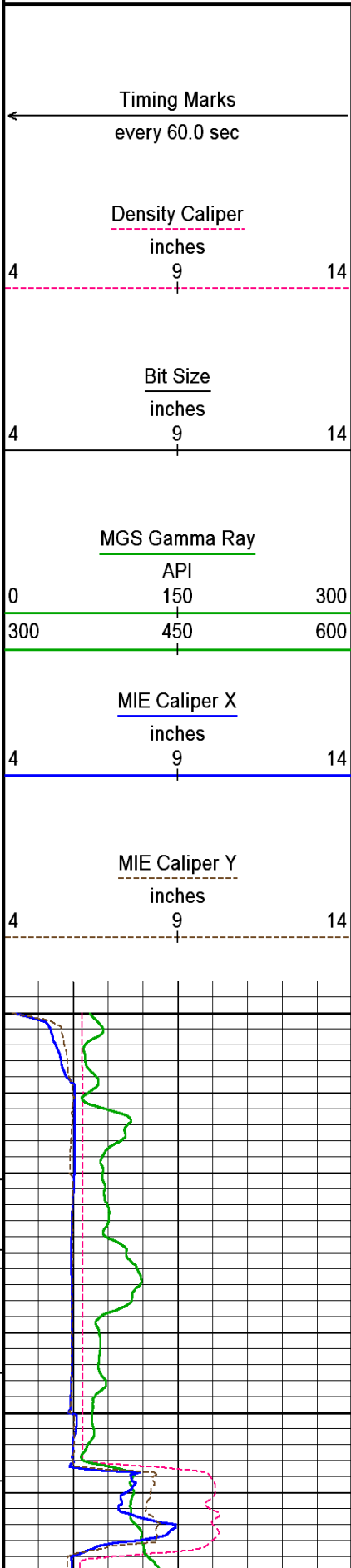
Plotted on 17-AUG-2013 07:28
Recorded on 17-AUG-2013 06:32

↑ 2 INCH MAIN LOG ↑

↓ 5 INCH MAIN LOG ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\logs\Whiting\Razor 27K 3405A\Razor 27K-3405A Main Depth2.dta
System Versions: Processed with 13.06.9804 Plotted with 13.06.9804

Plotted on 17-AUG-2013 07:28
Recorded on 17-AUG-2013 06:32



DSC
in
Feet

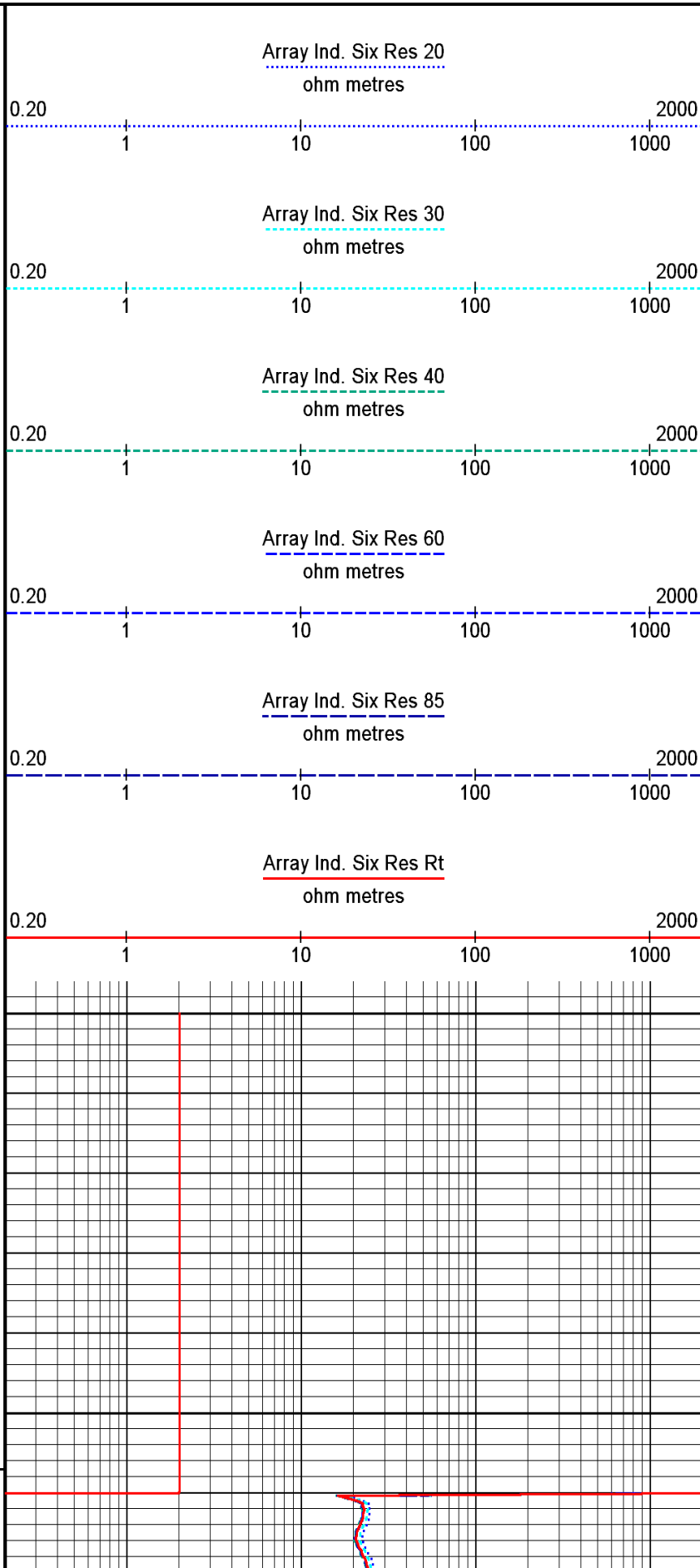
Borehole
Temp in
deg F

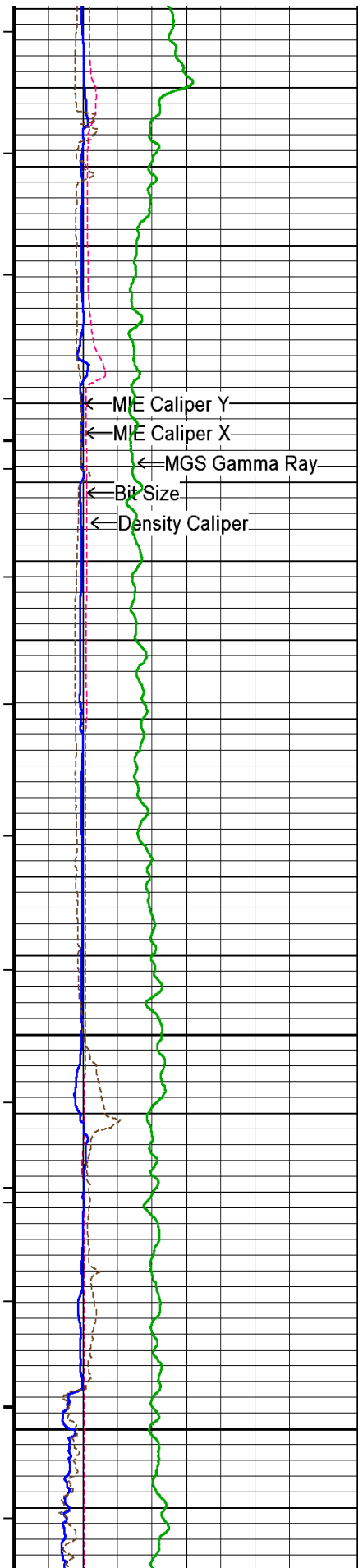
Replay
Scale
1:240

5950

203°

6000
Casing
Shoe





203°

6050

204°

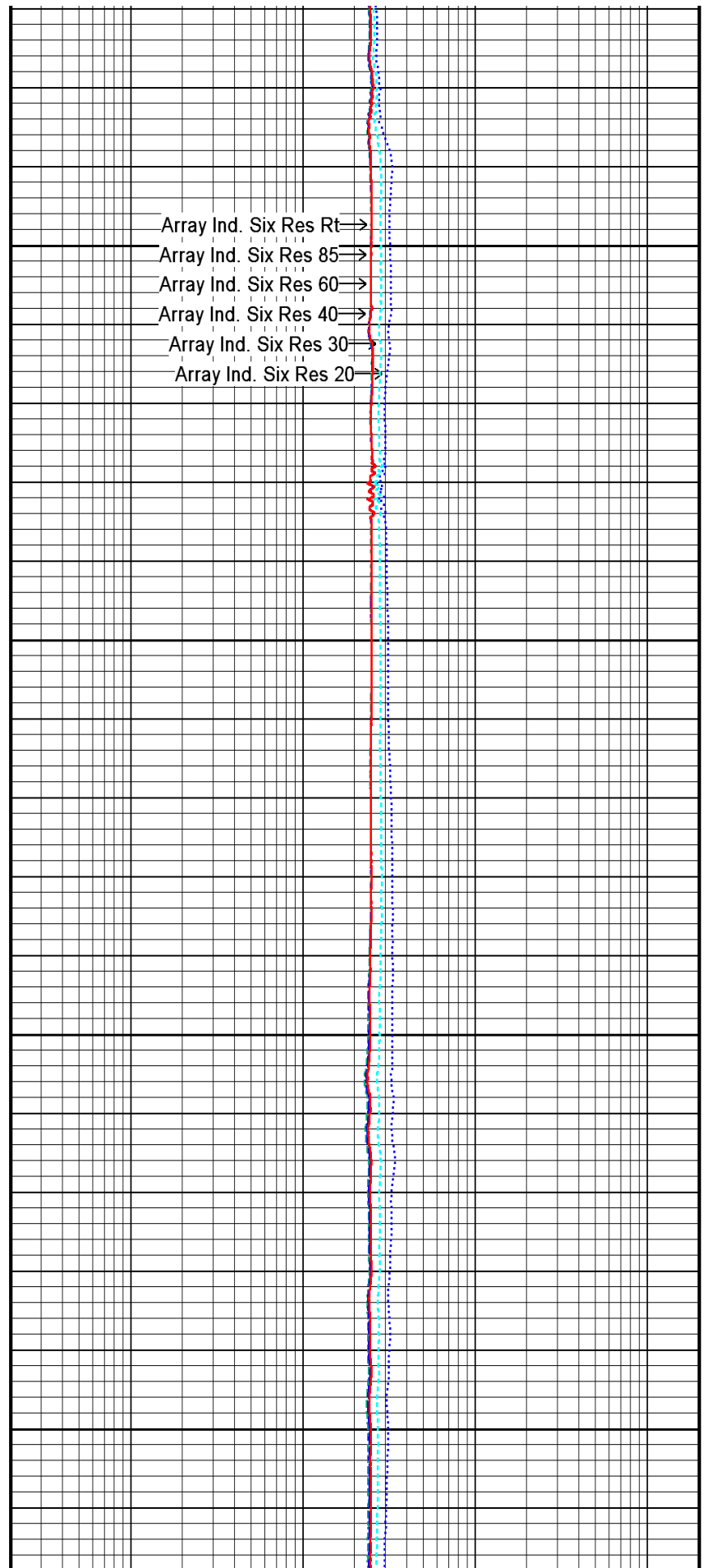
6100

204°

6150

204°

6200



Array Ind. Six Res Rt→

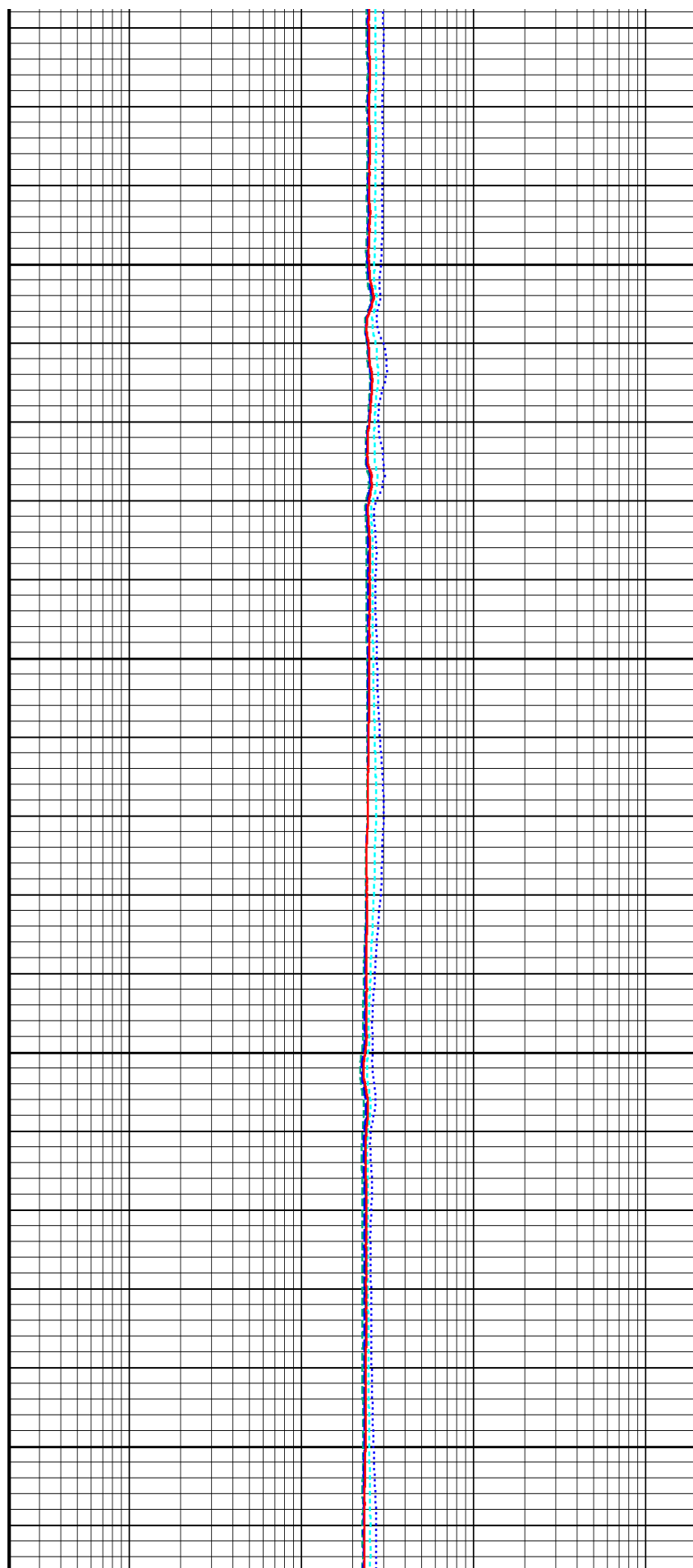
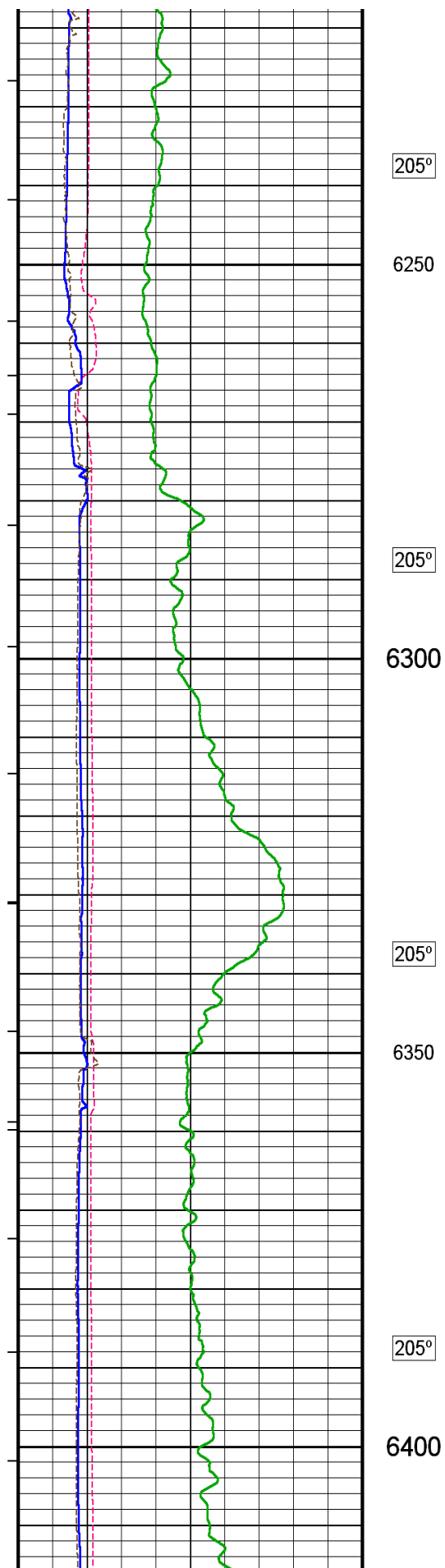
Array Ind. Six Res 85→

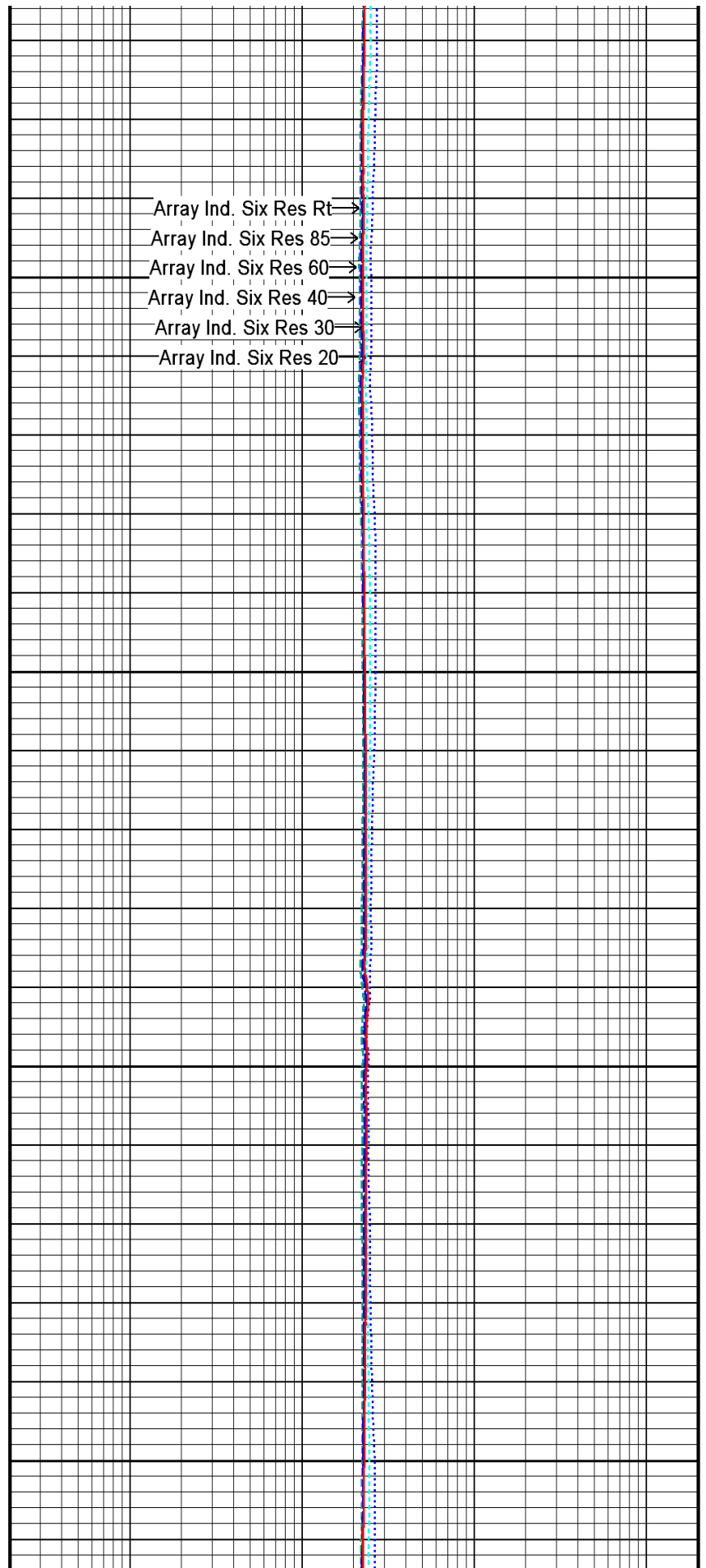
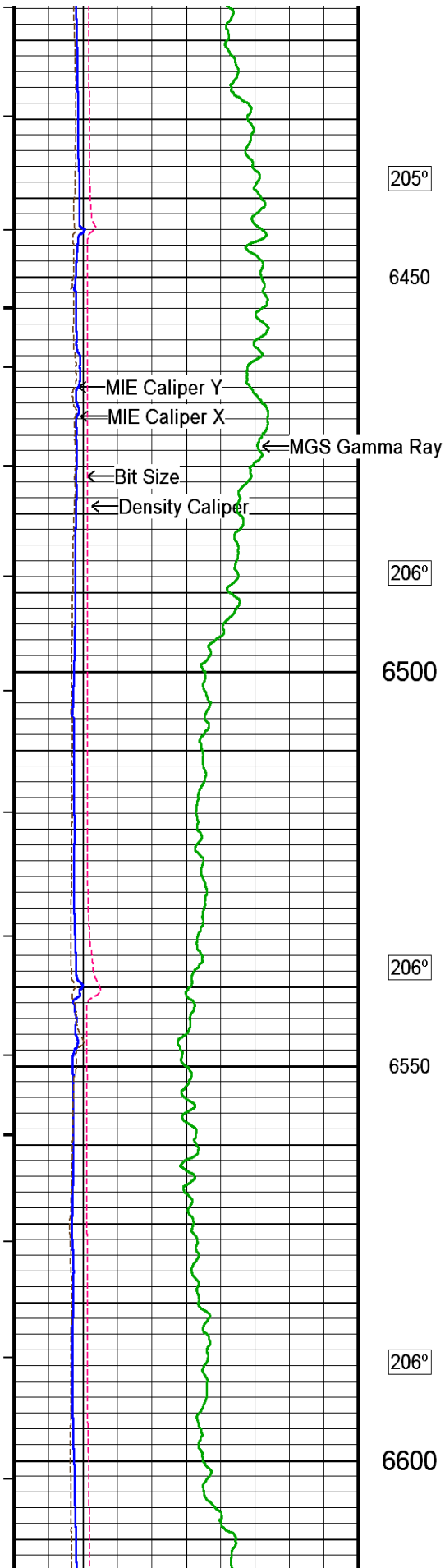
Array Ind. Six Res 60→

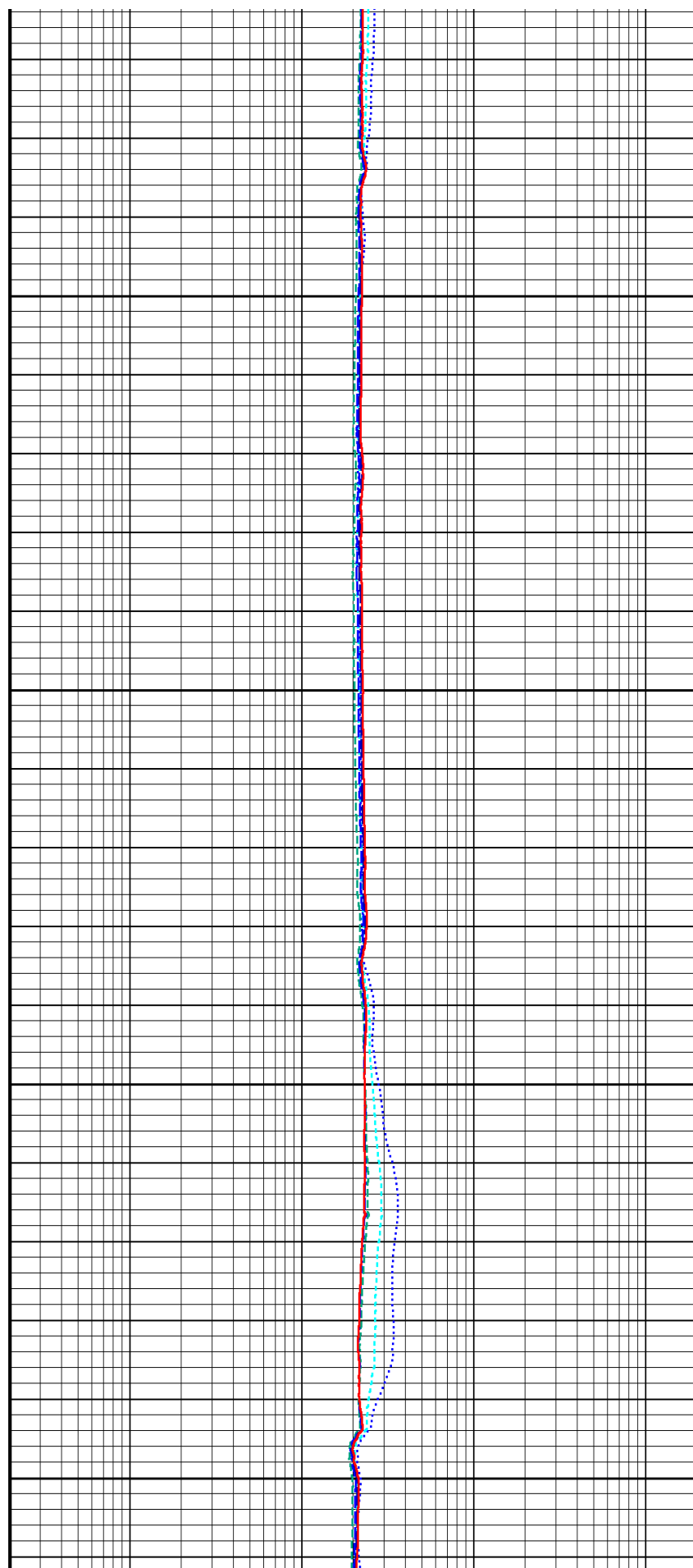
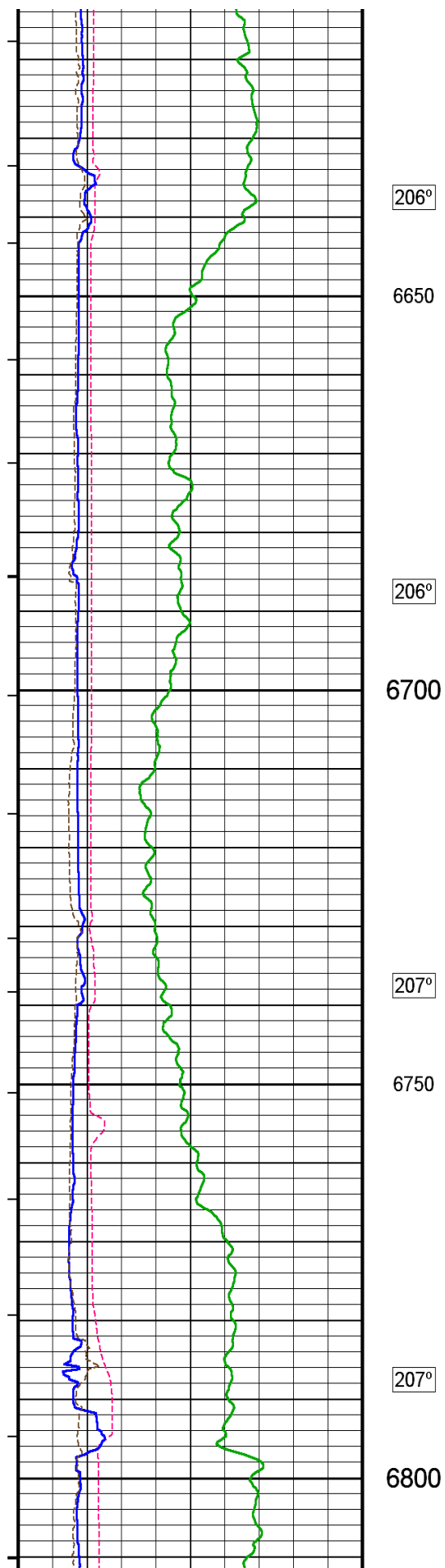
Array Ind. Six Res 40→

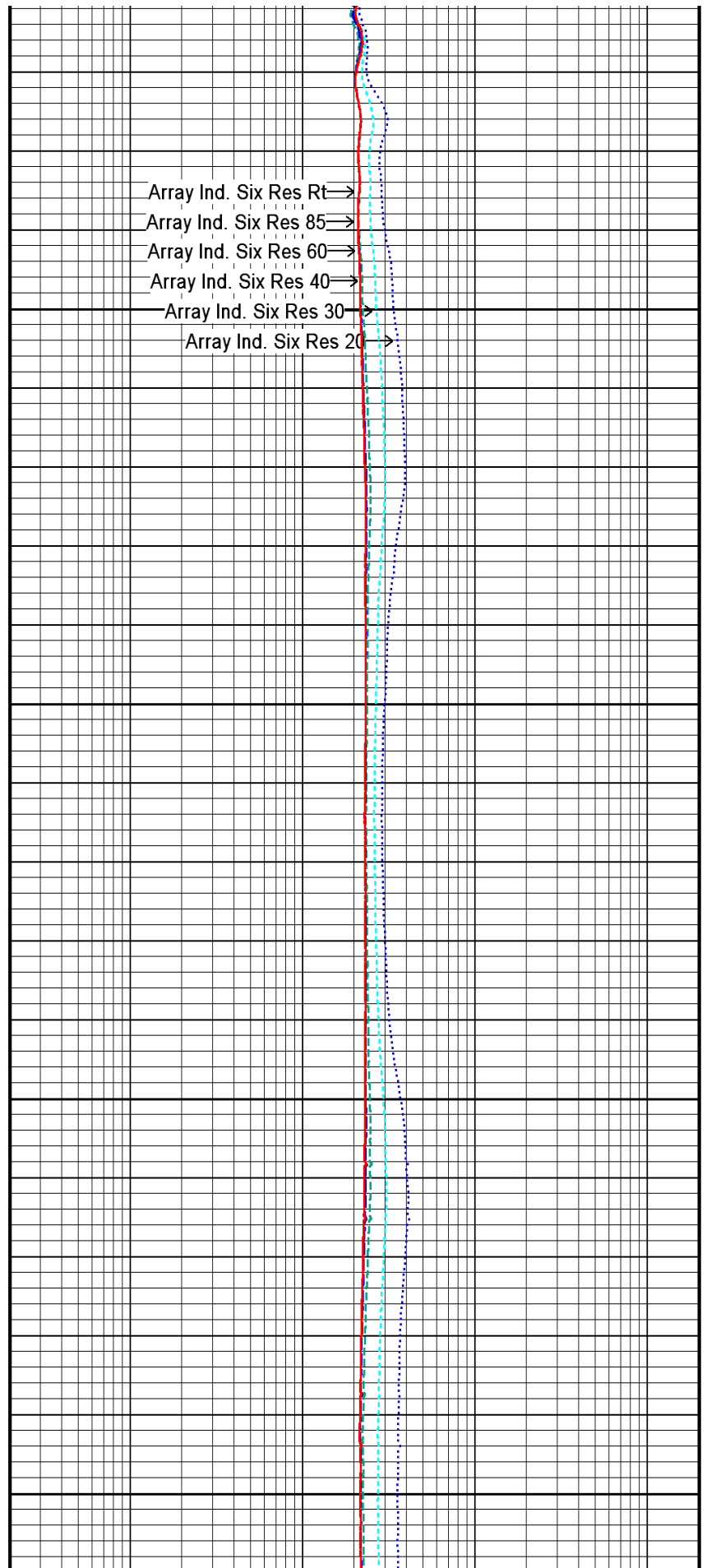
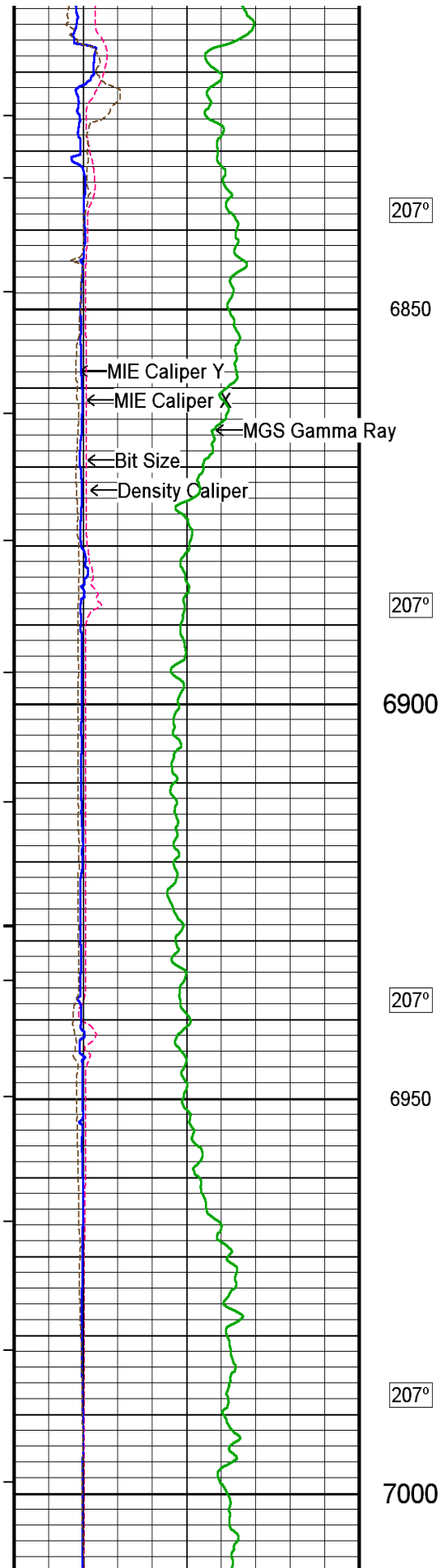
Array Ind. Six Res 30→

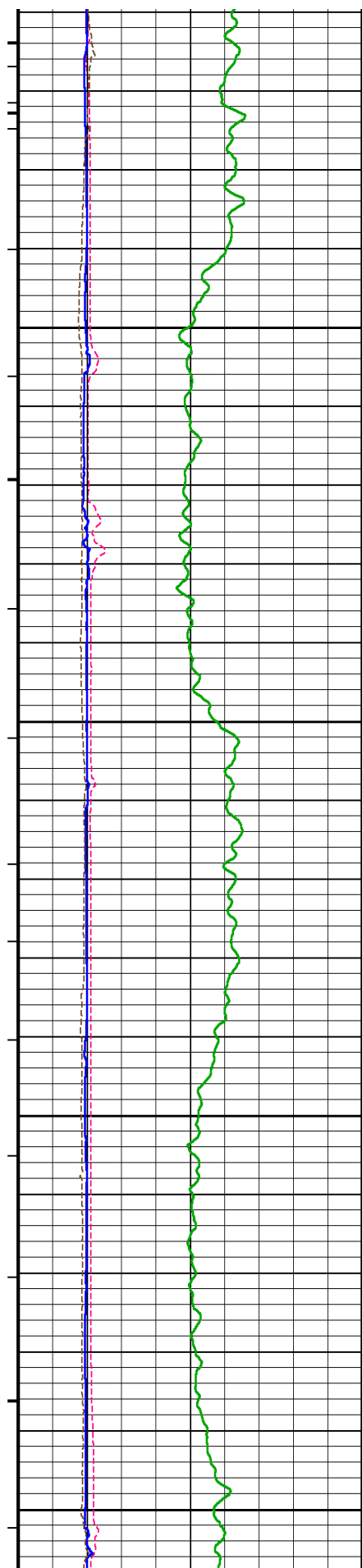
Array Ind. Six Res 20→











208°

7050

208°

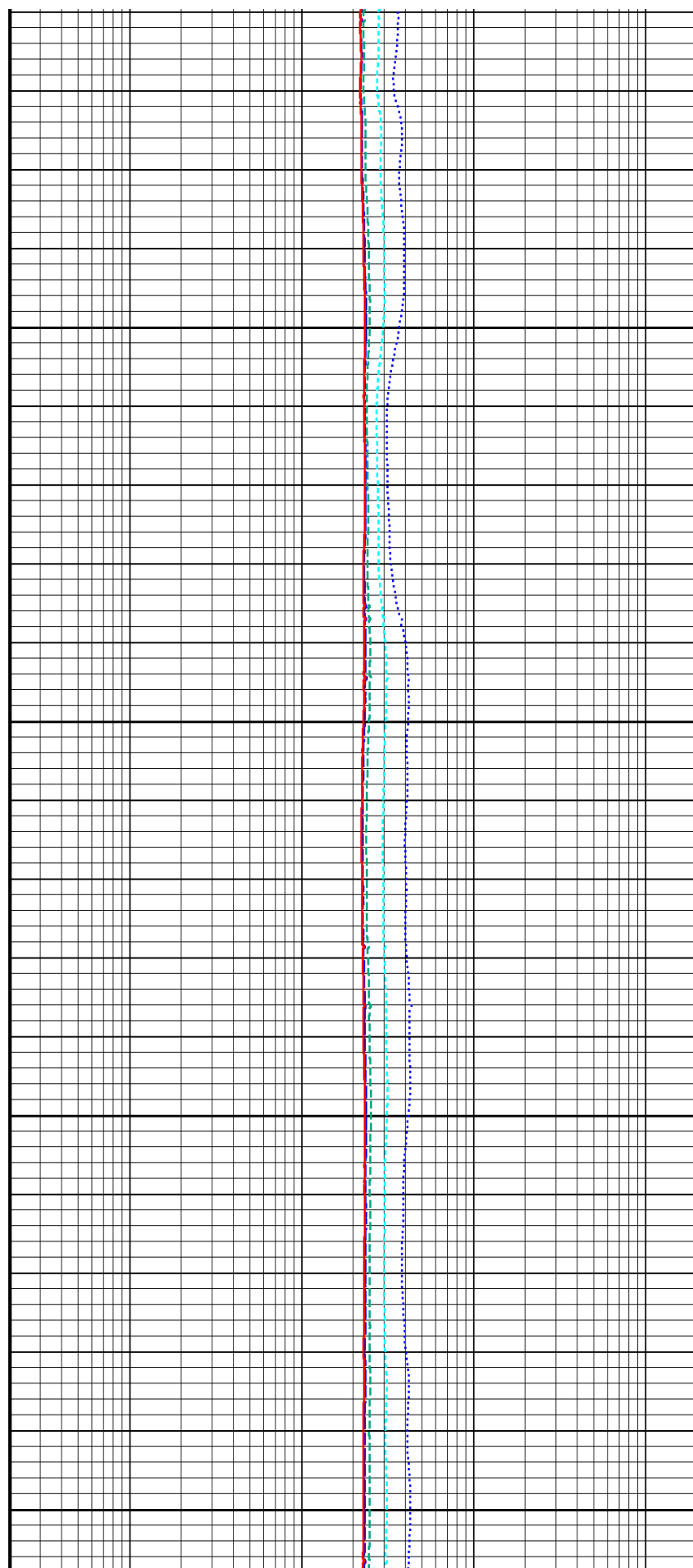
7100

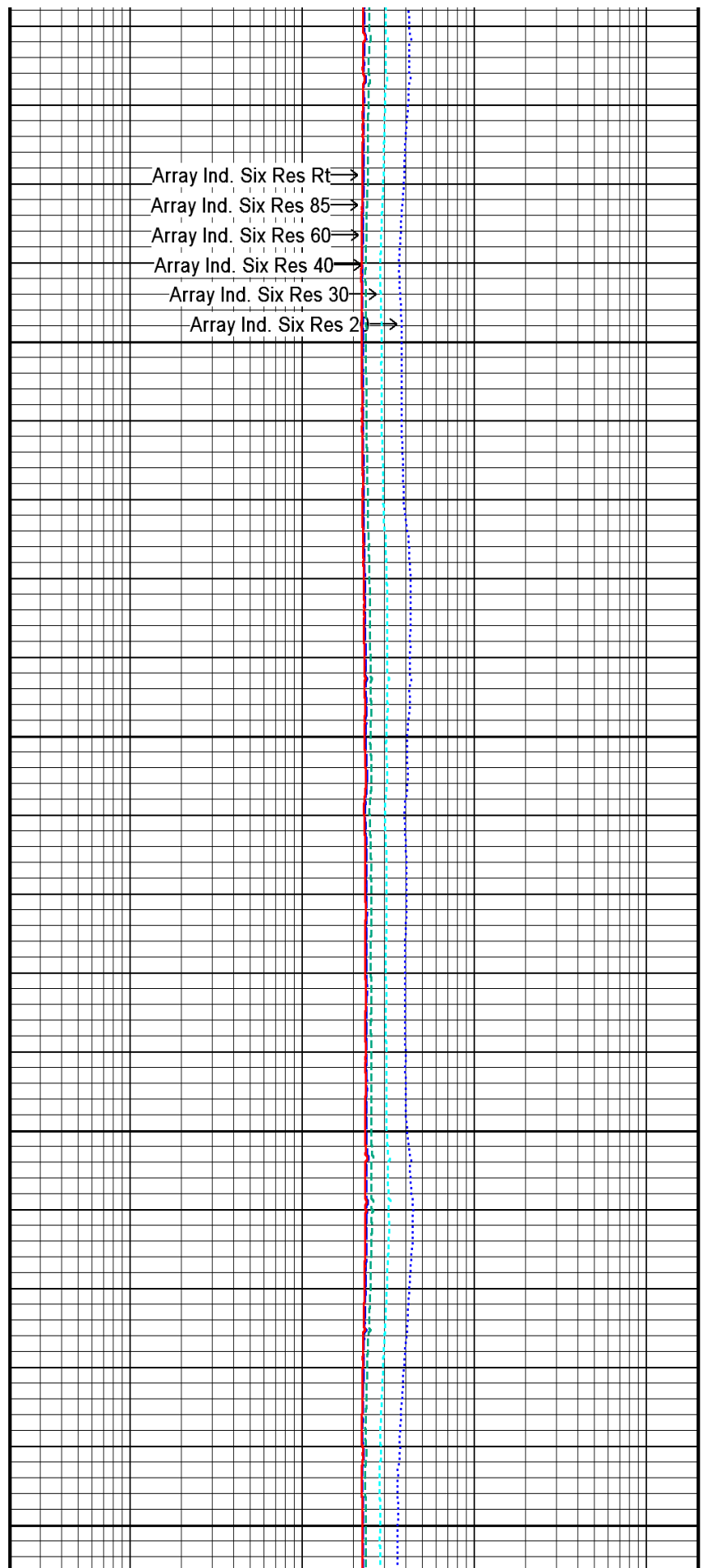
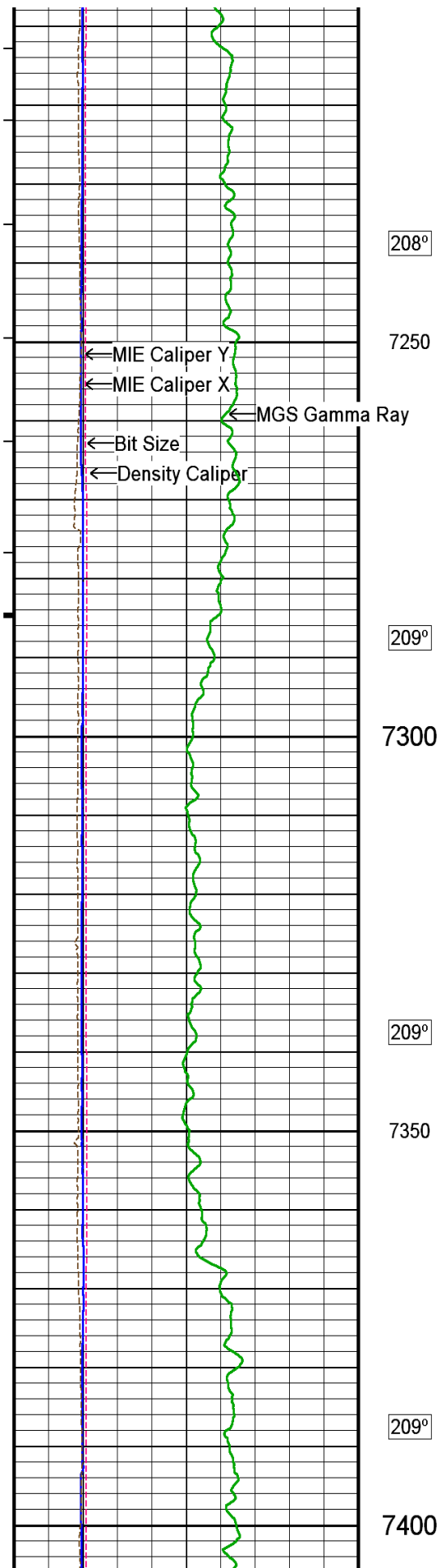
208°

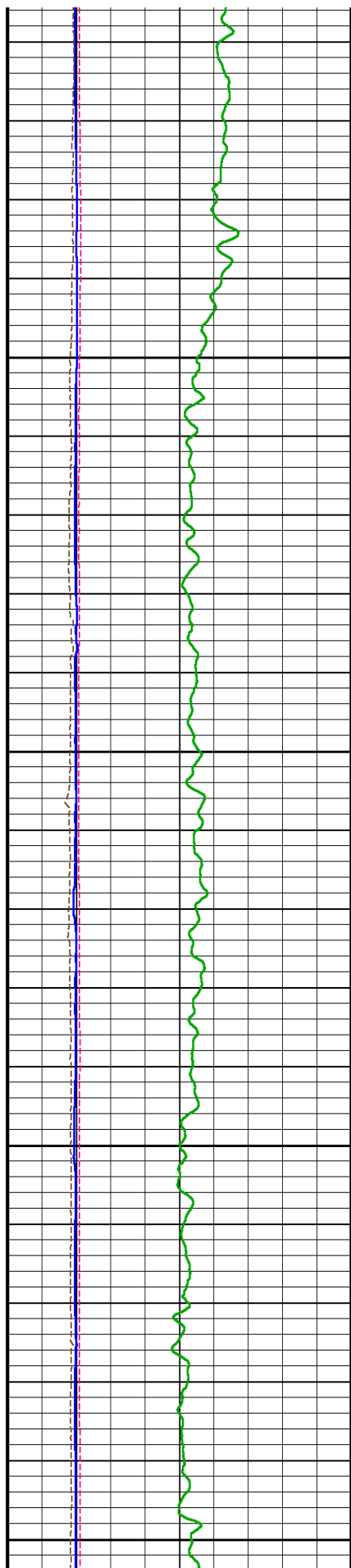
7150

208°

7200







209°

7450

209°

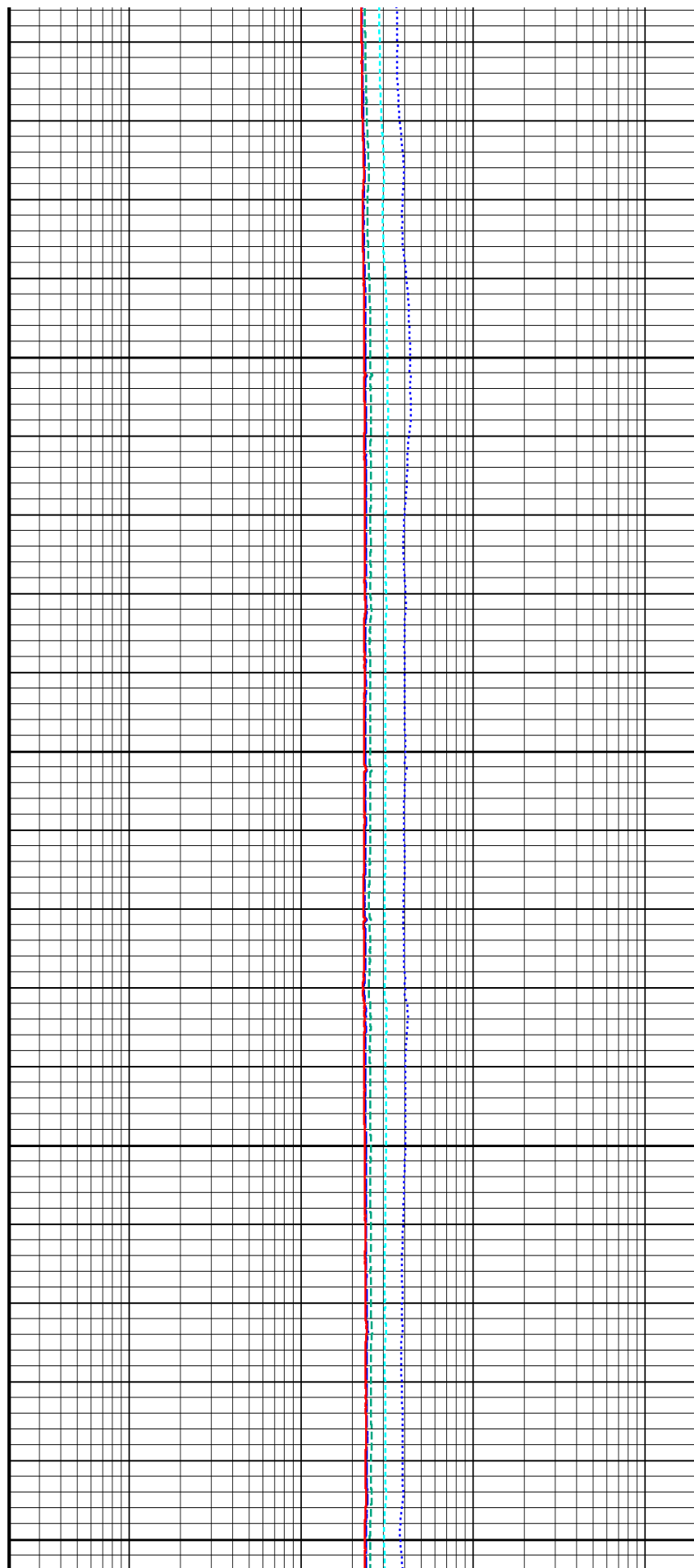
7500

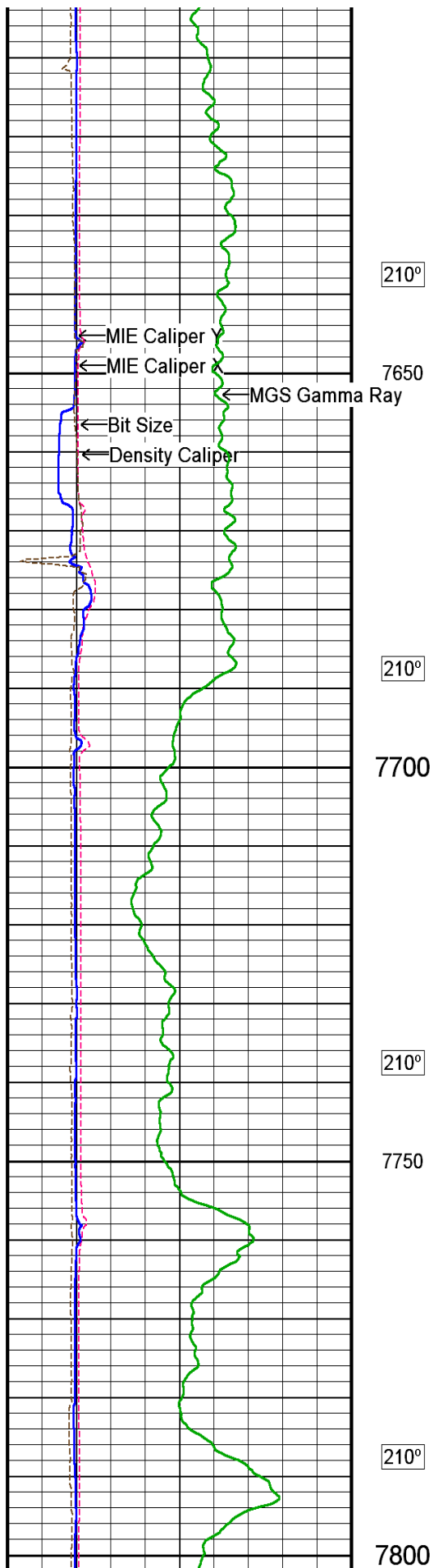
209°

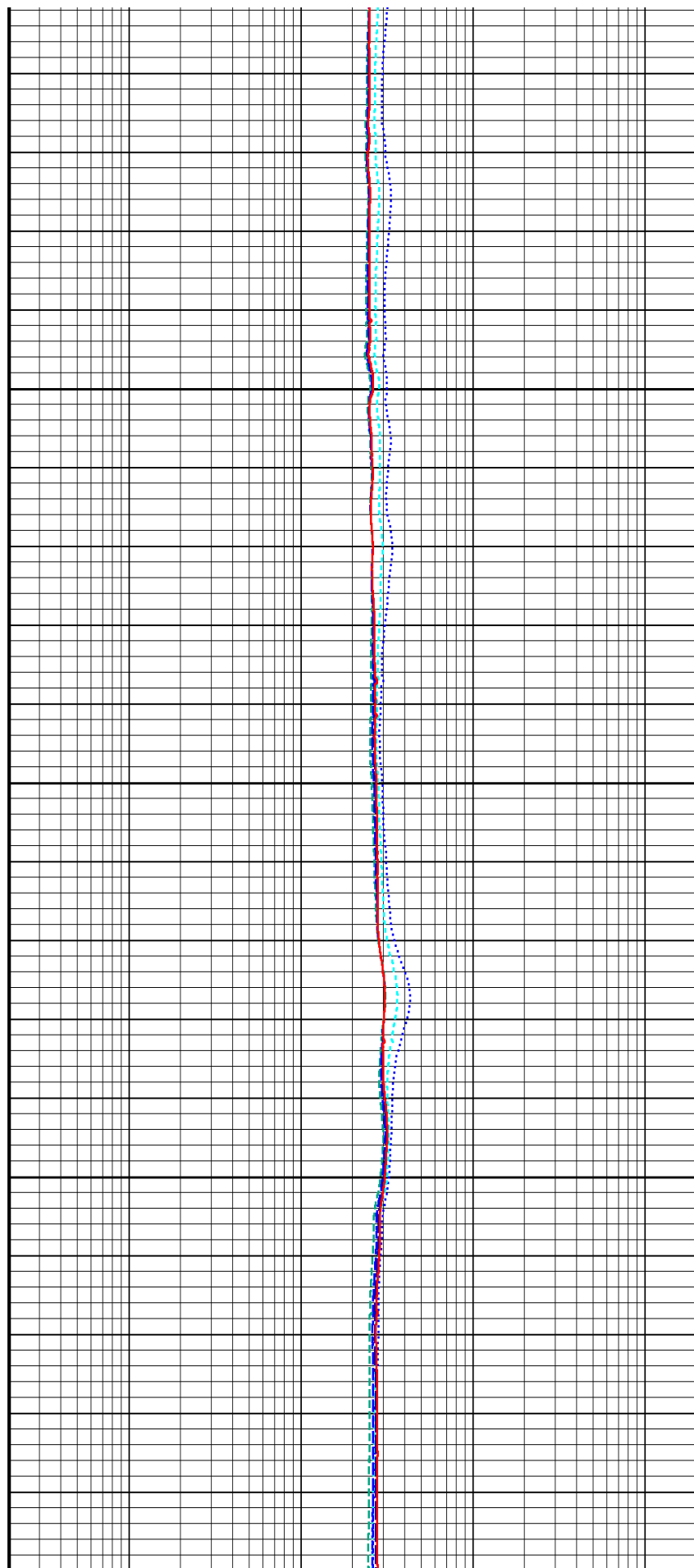
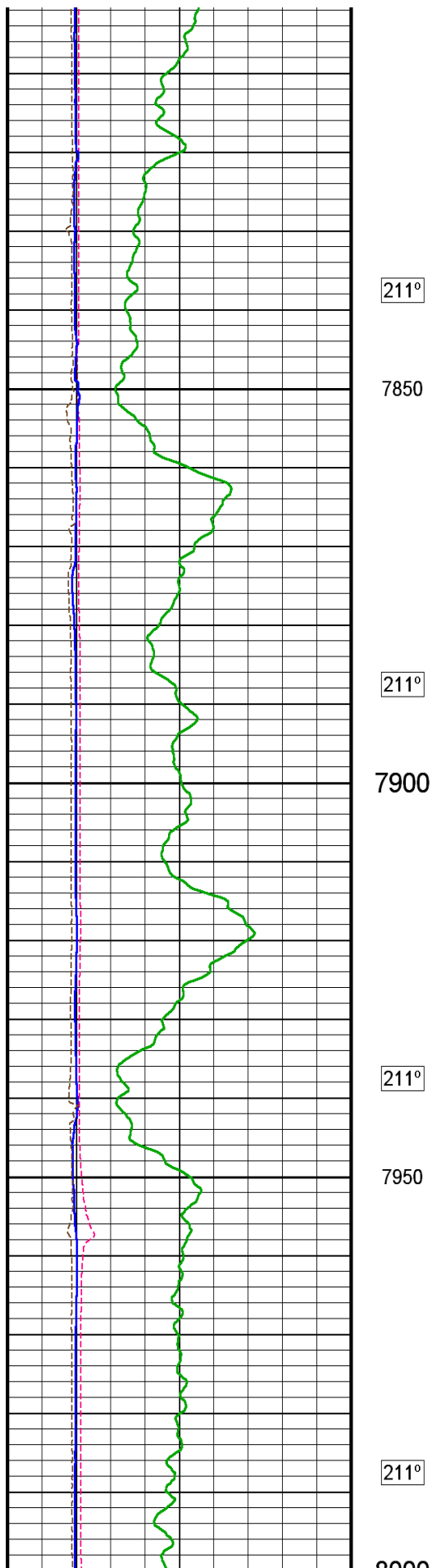
7550

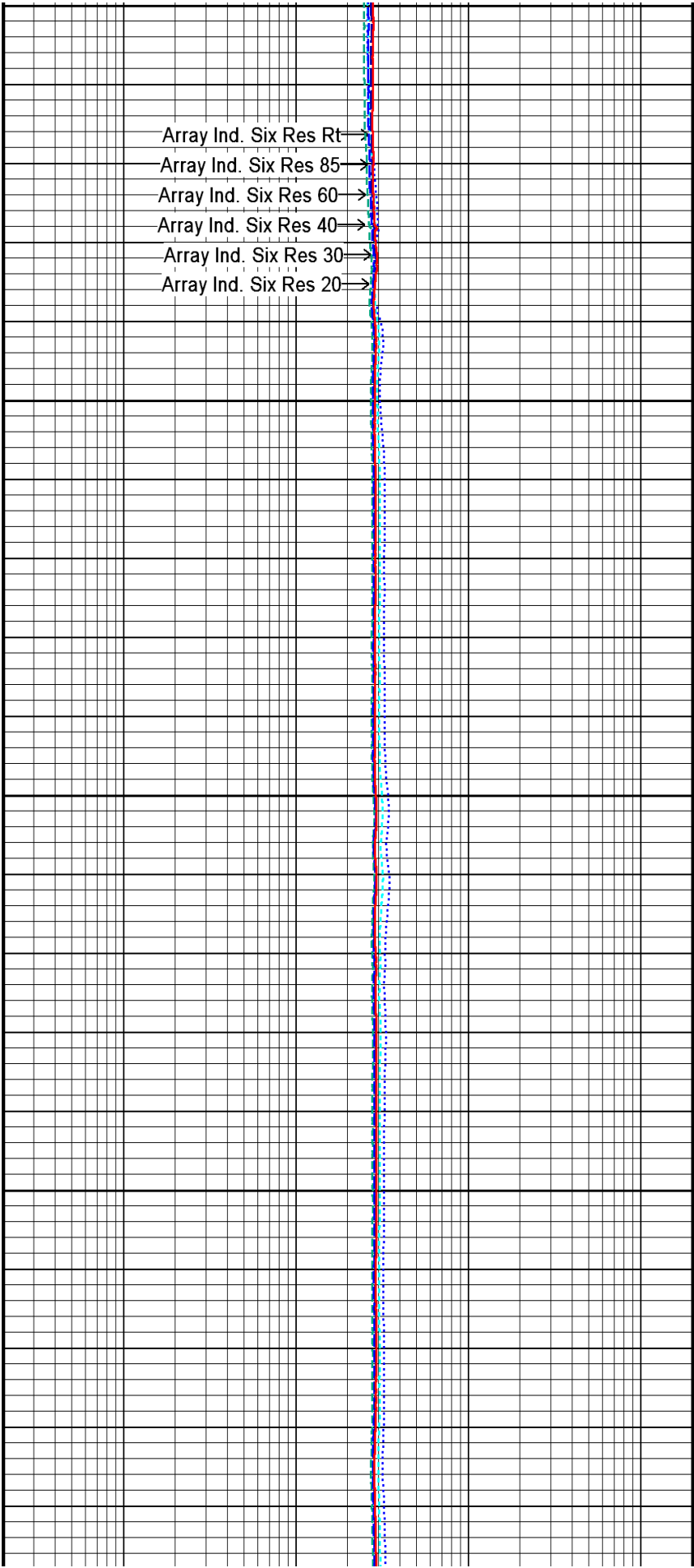
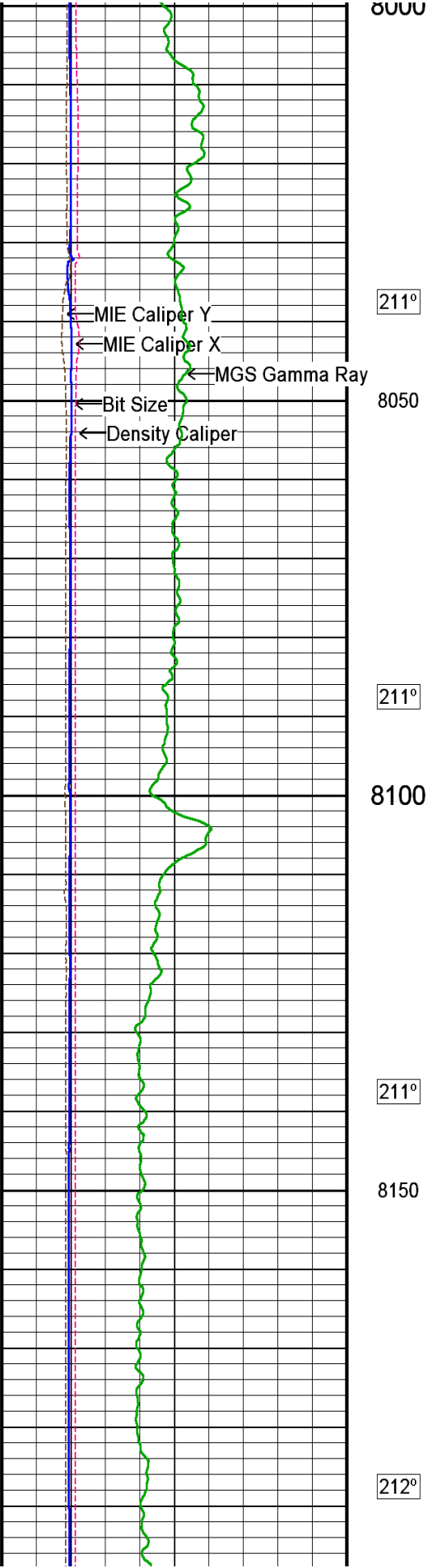
209°

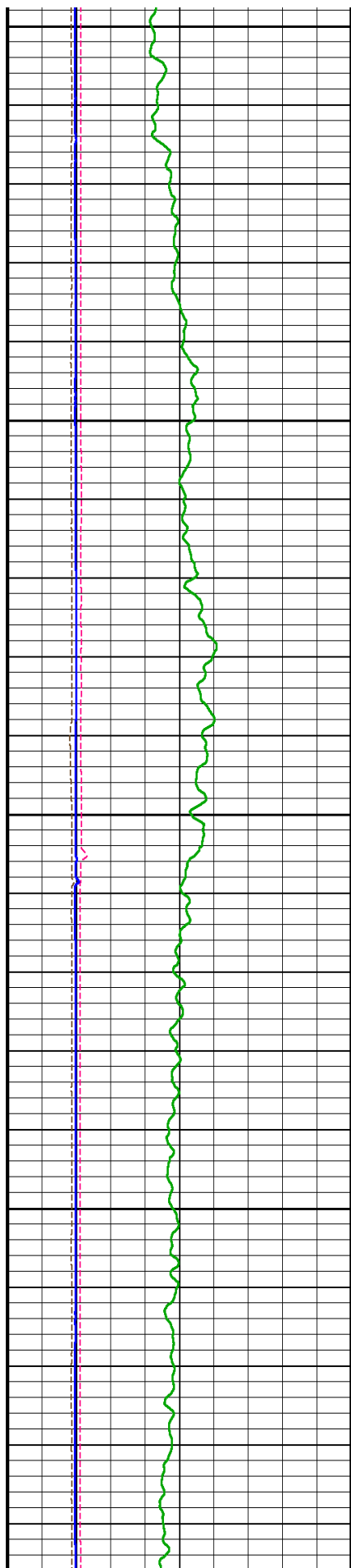
7600











8200

212°

8250

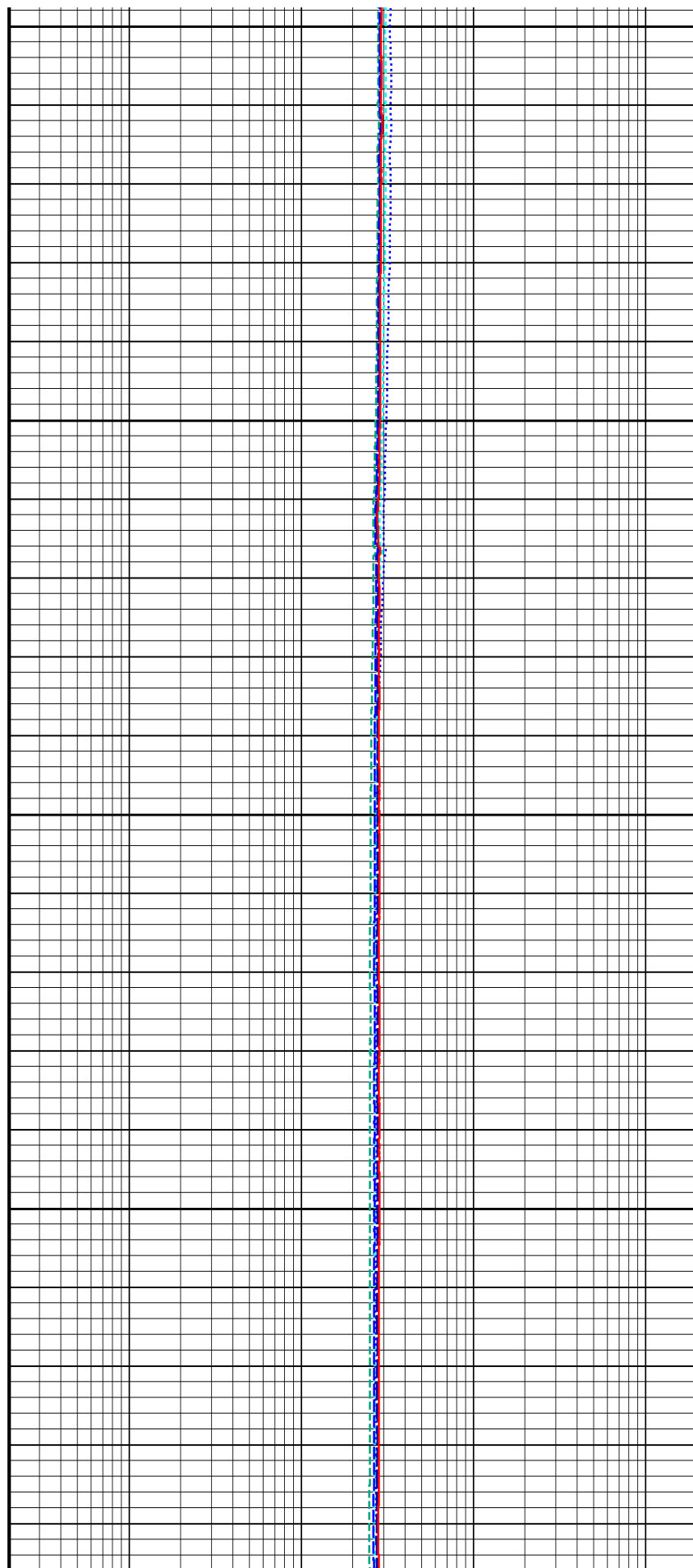
212°

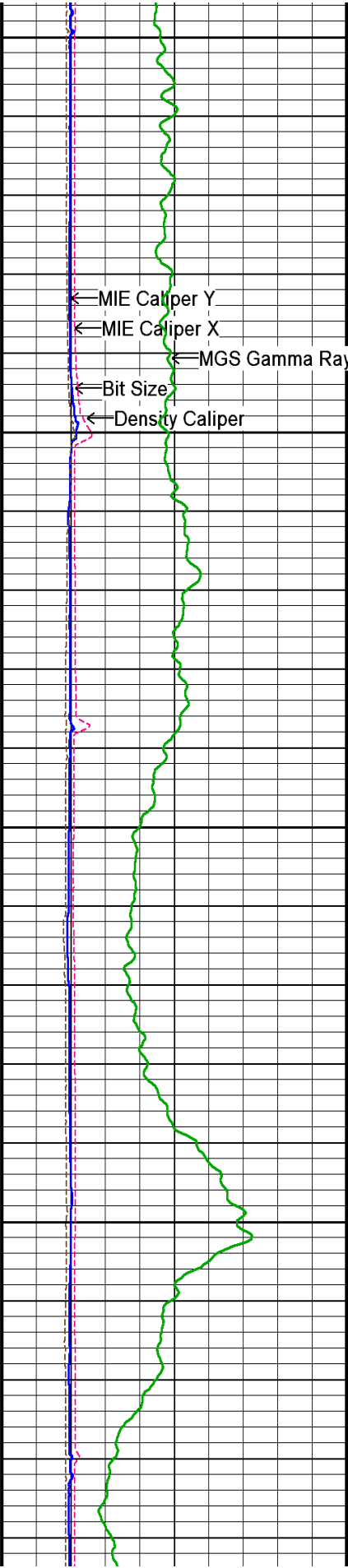
8300

212°

8350

212°





8400

212°

8450

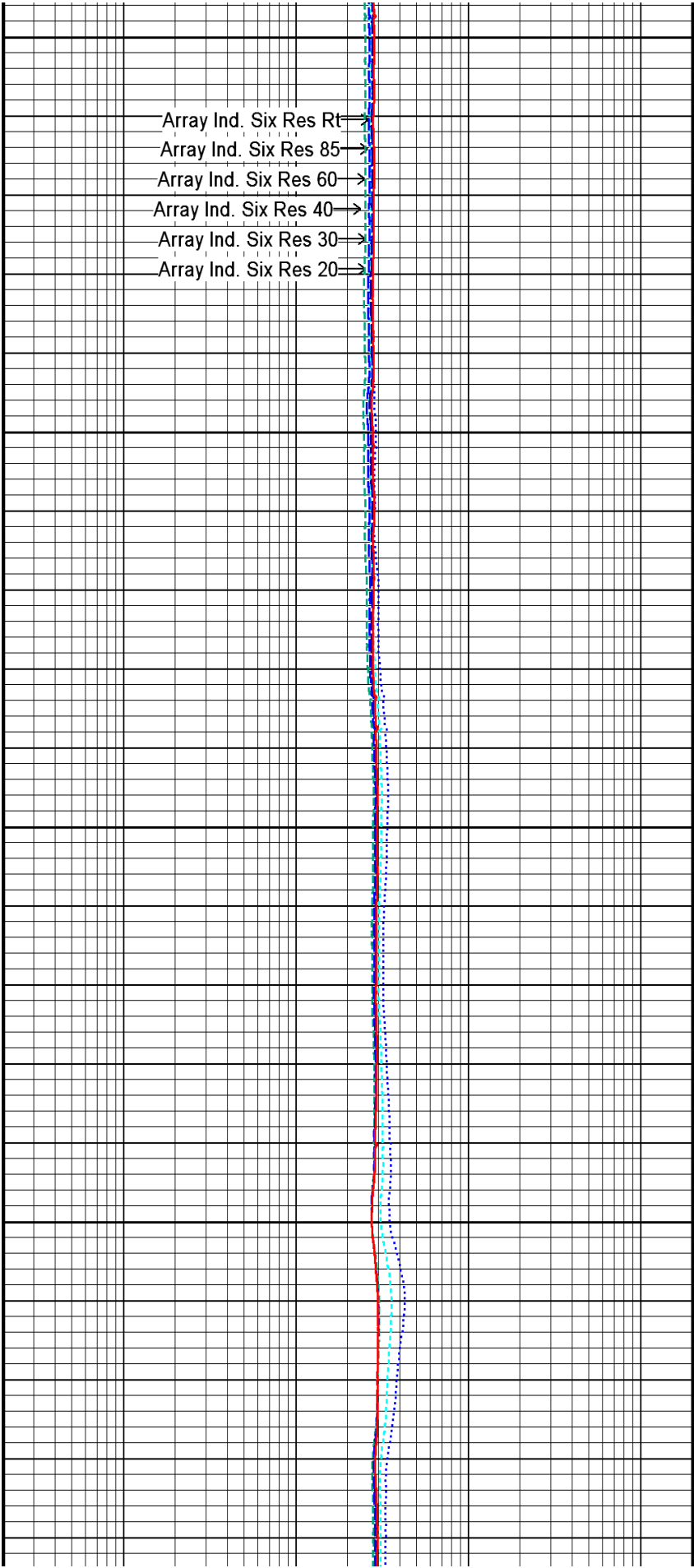
212°

8500

212°

8550

213°



Array Ind. Six Res Rt

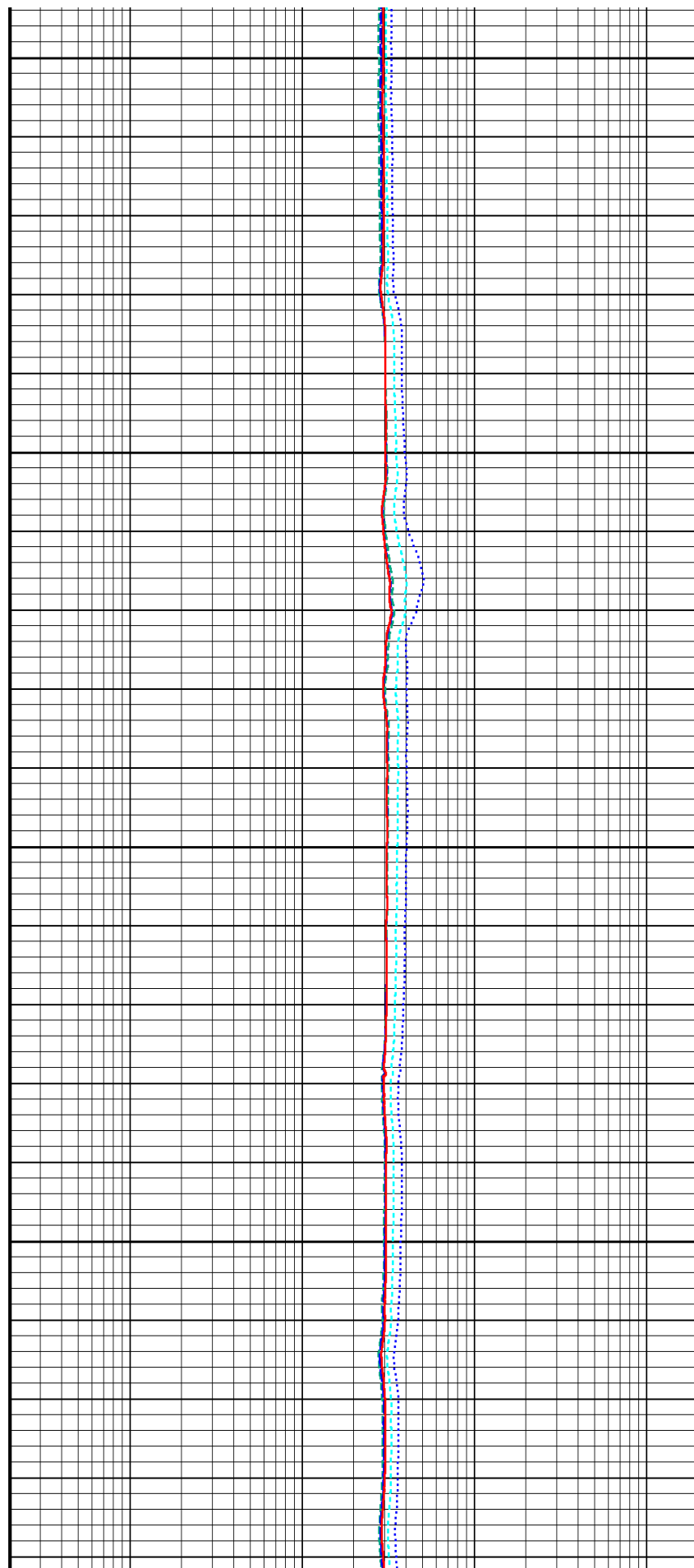
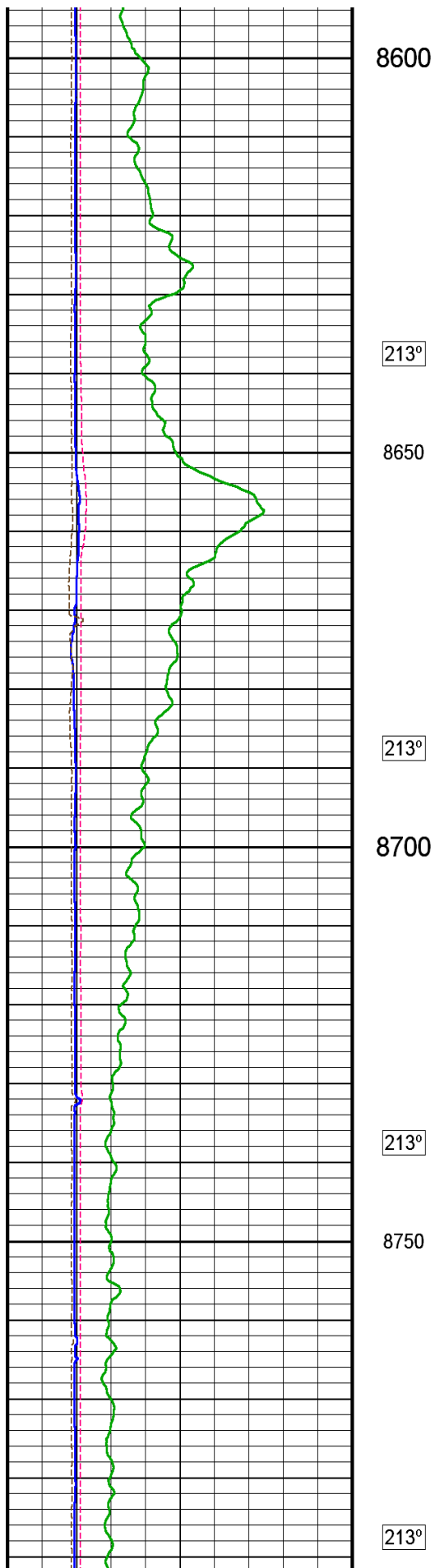
Array Ind. Six Res 85

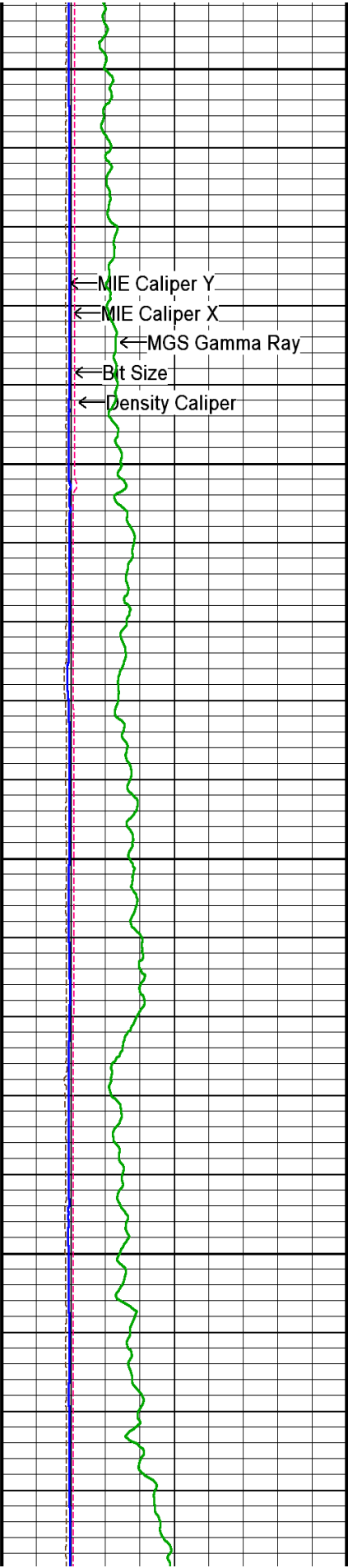
Array Ind. Six Res 60

Array Ind. Six Res 40

Array Ind. Six Res 30

Array Ind. Six Res 20





8800

213°

8850

213°

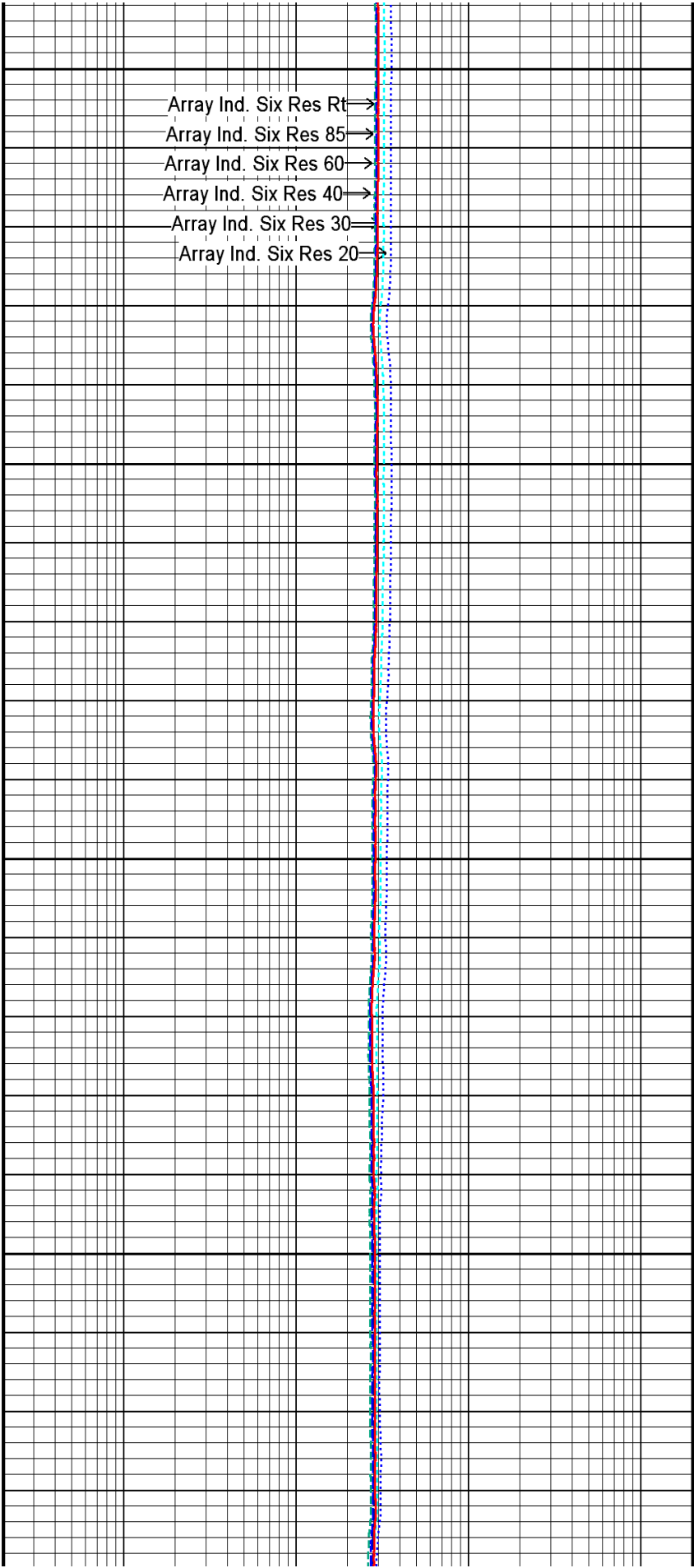
8900

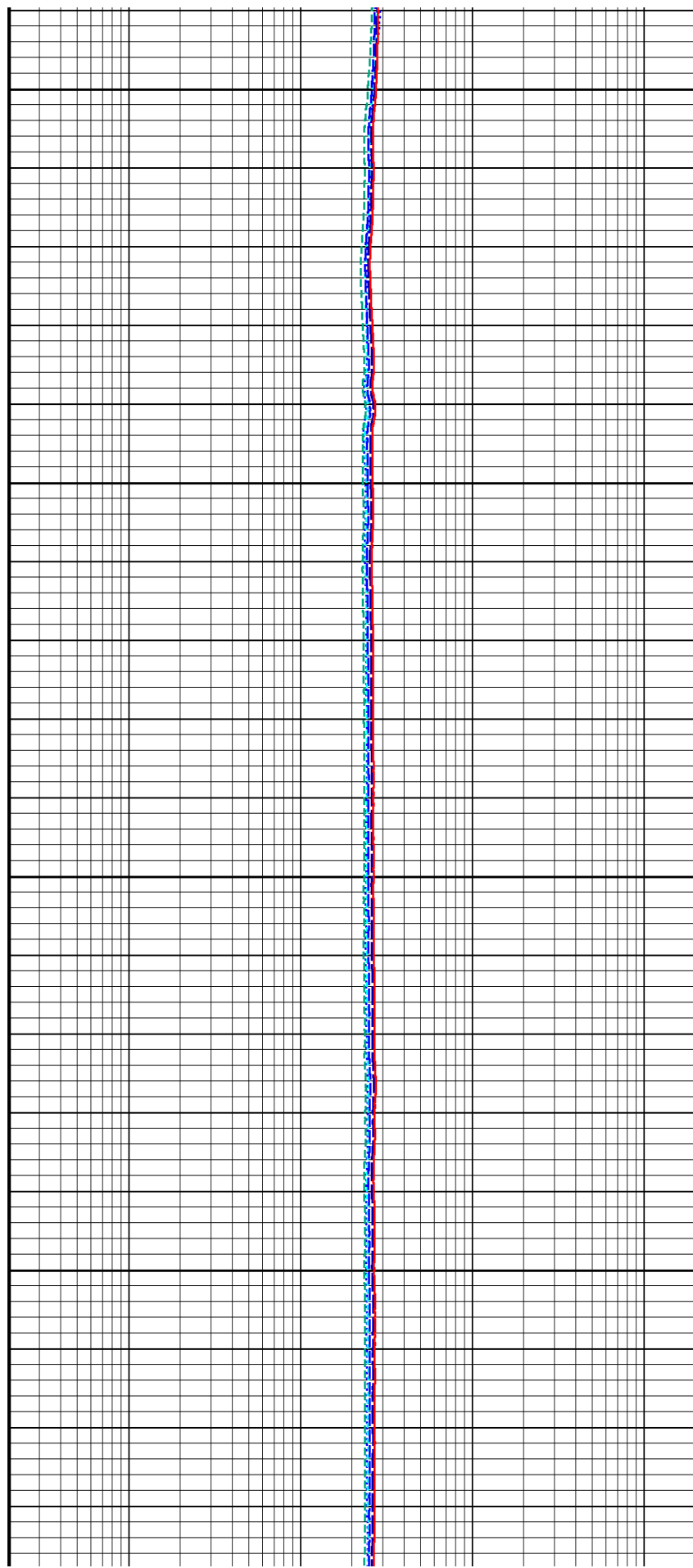
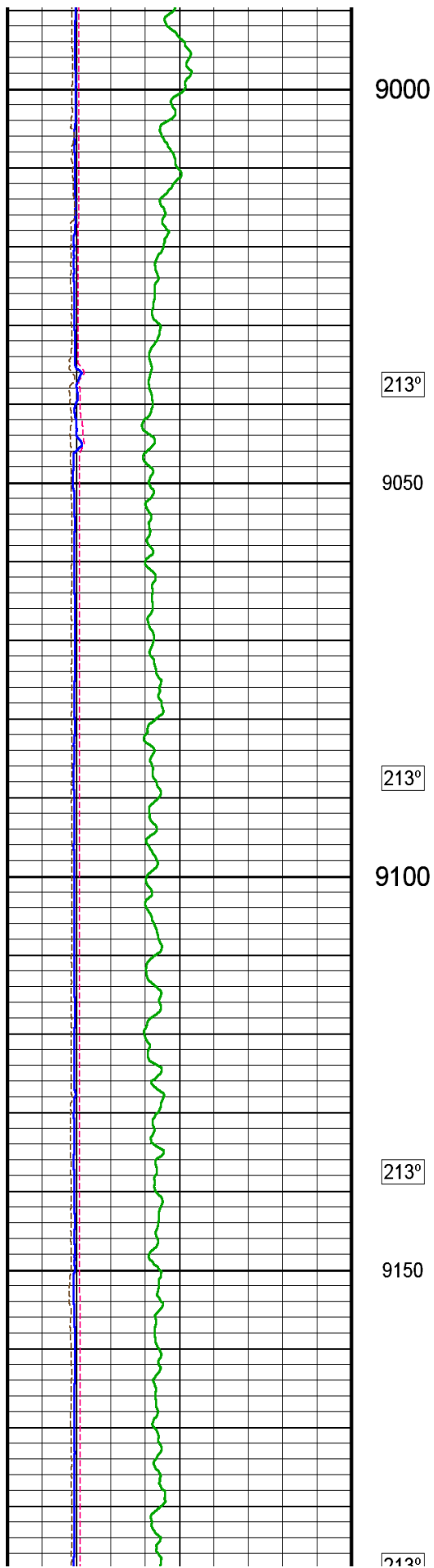
213°

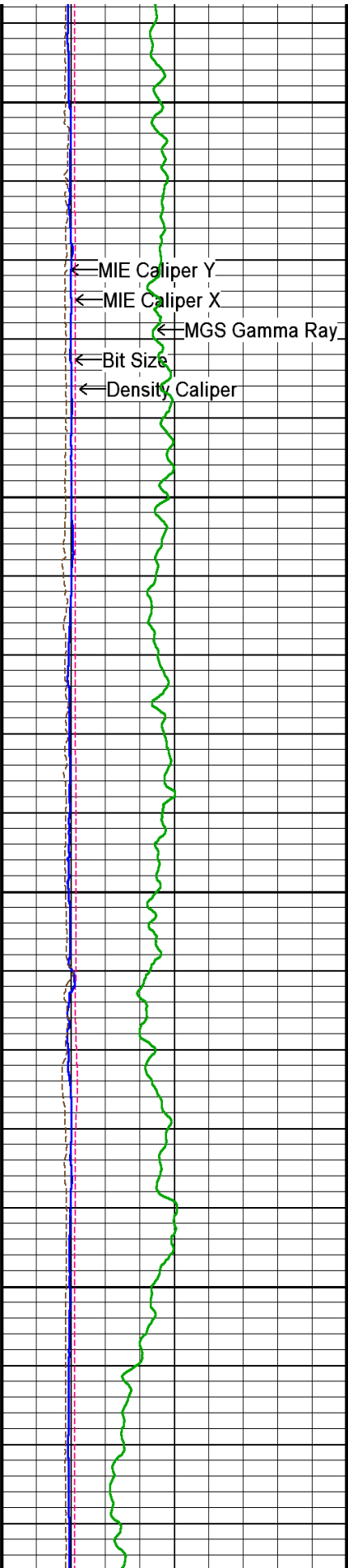
8950

213°

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







213°

9200

213°

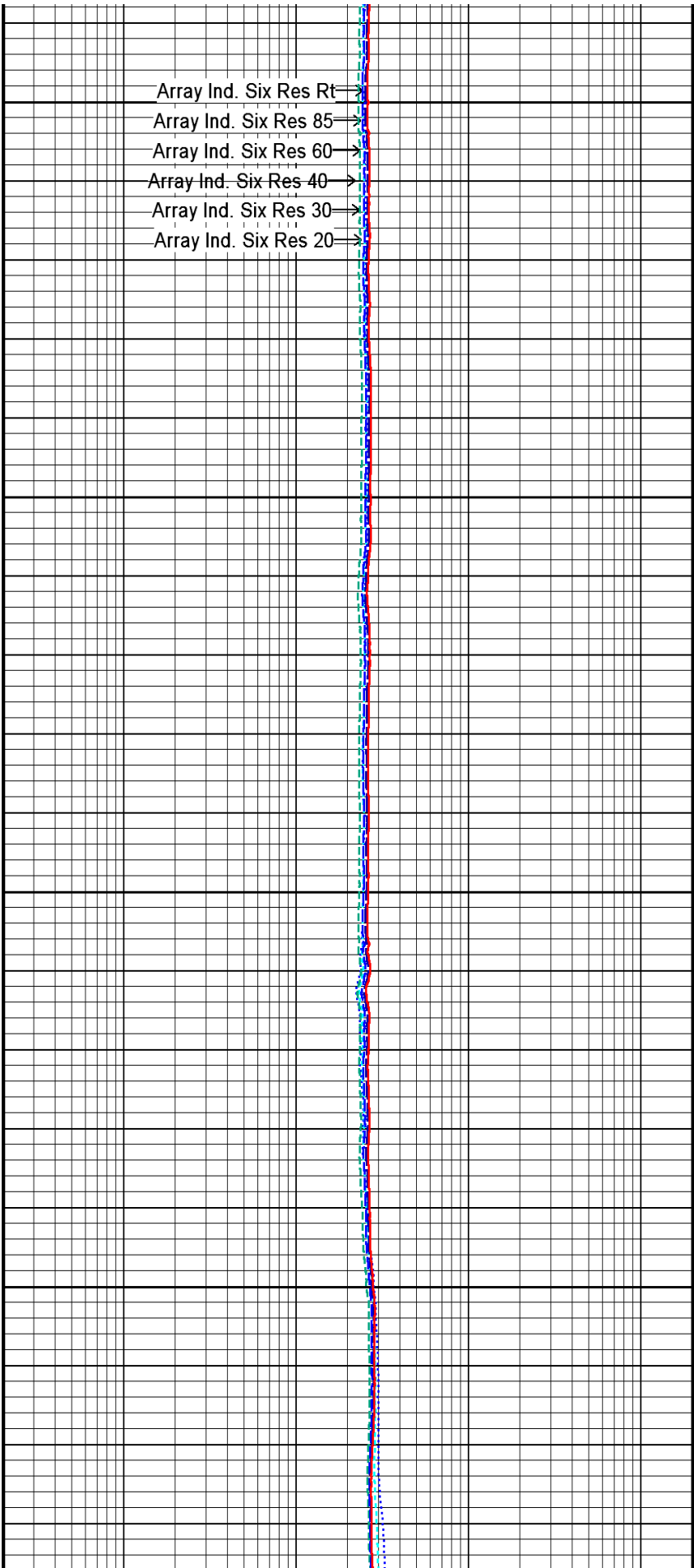
9250

213°

9300

213°

9350



Array Ind. Six Res Rt

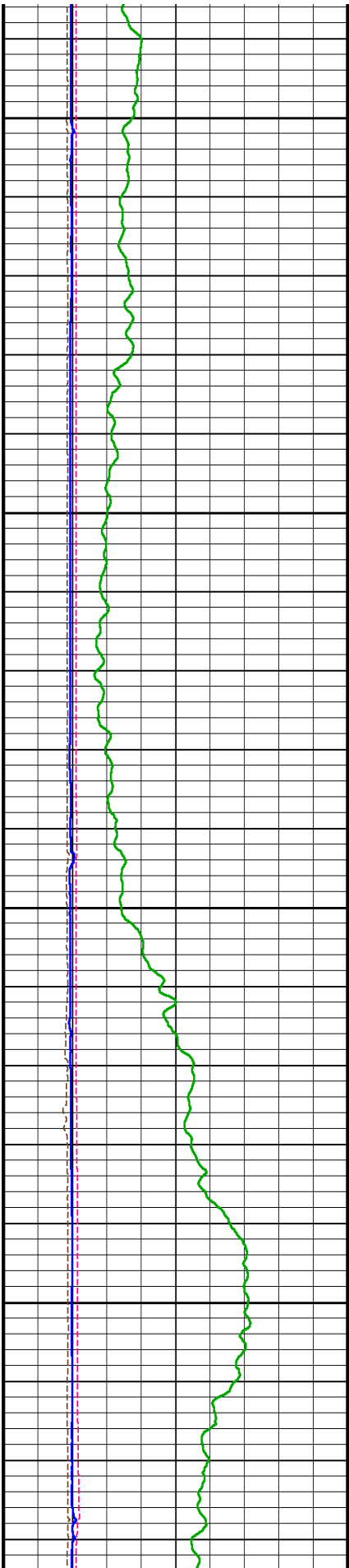
Array Ind. Six Res 85

Array Ind. Six Res 60

Array Ind. Six Res 40

Array Ind. Six Res 30

Array Ind. Six Res 20



213°

9400

213°

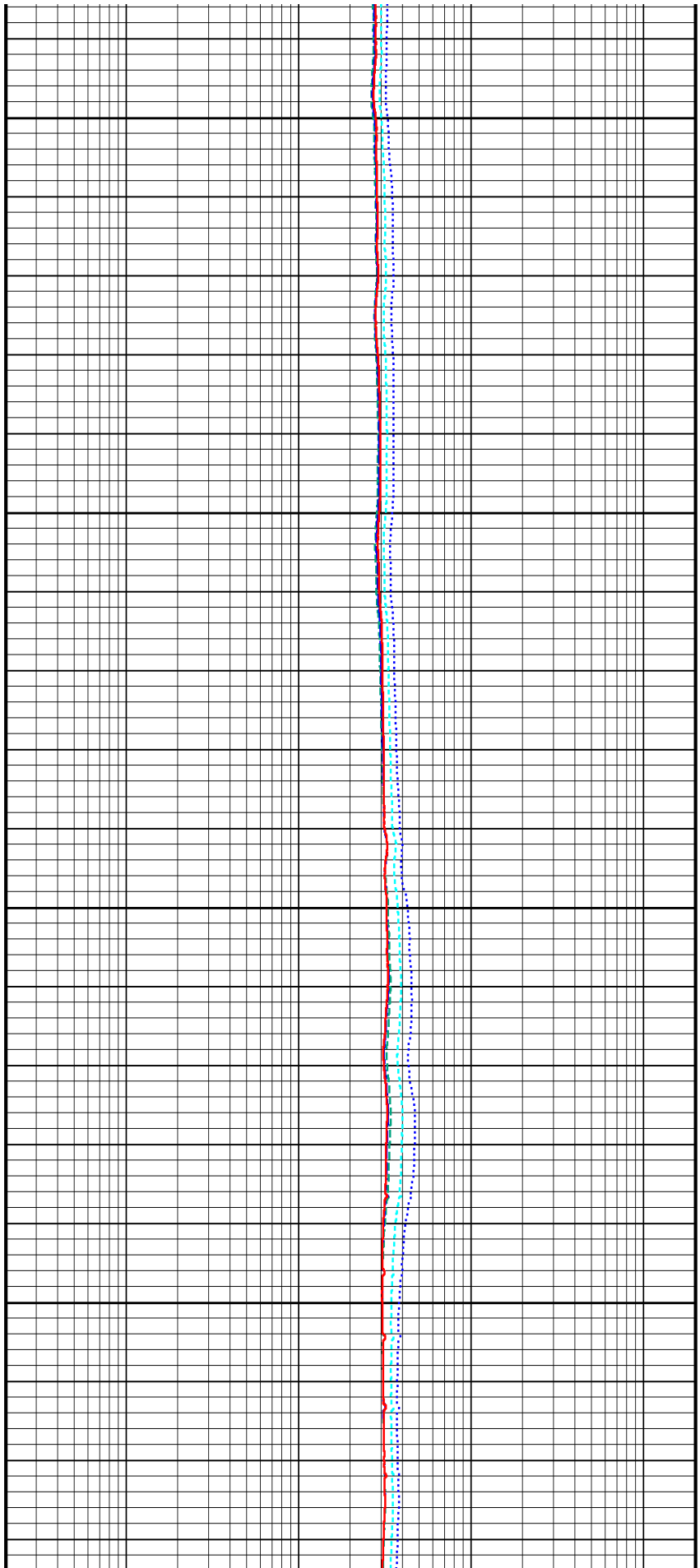
9450

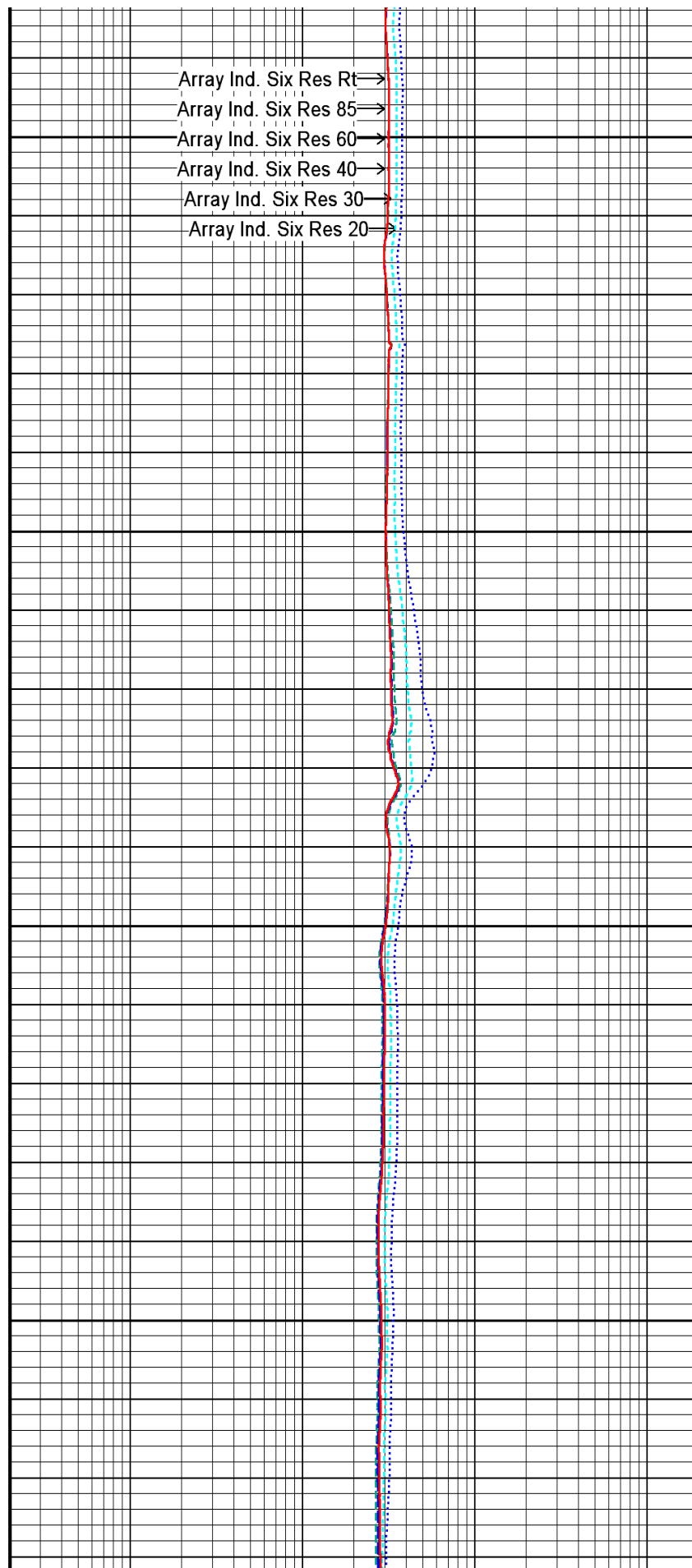
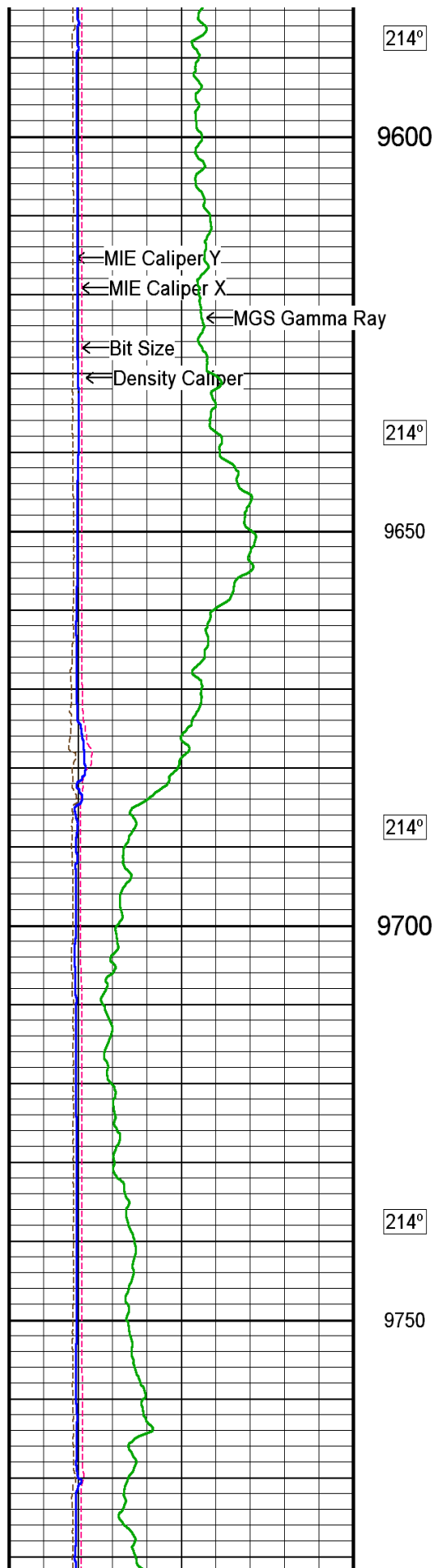
214°

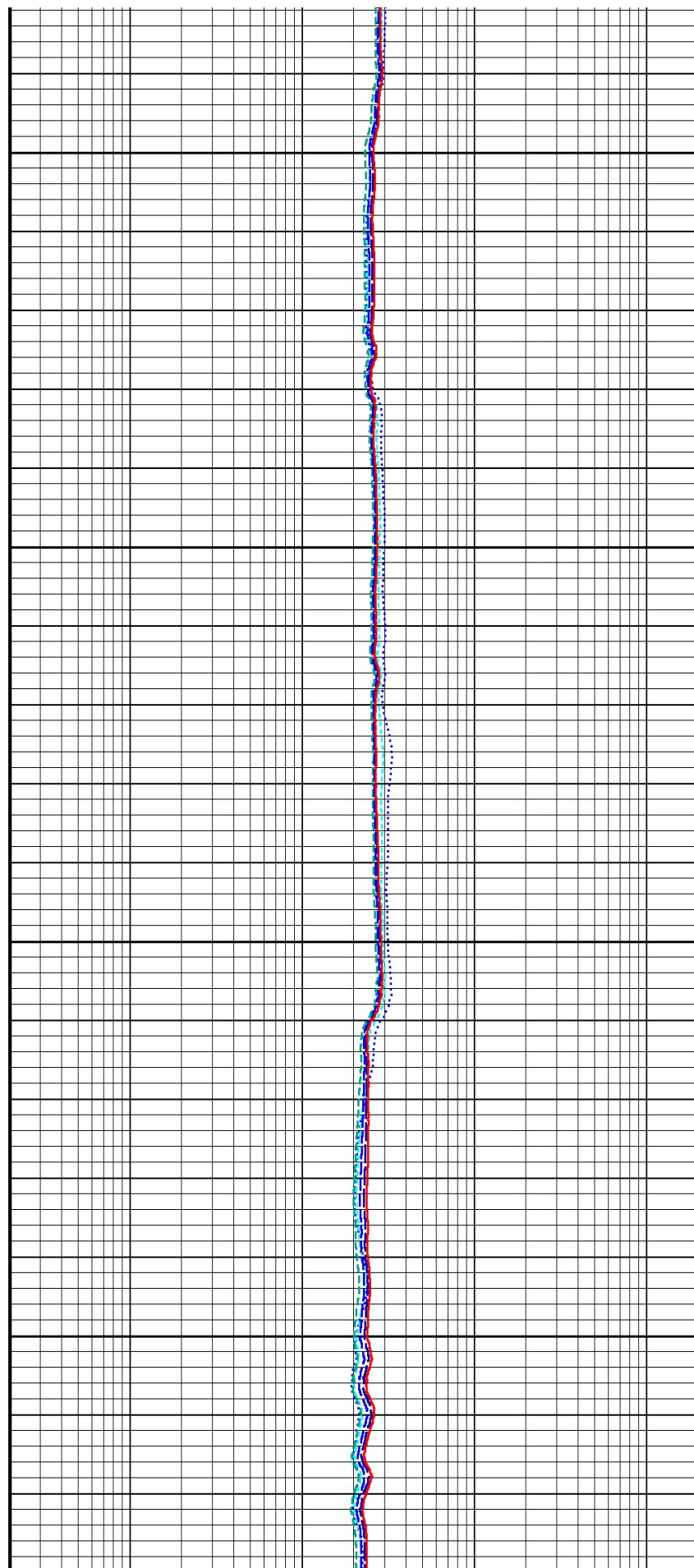
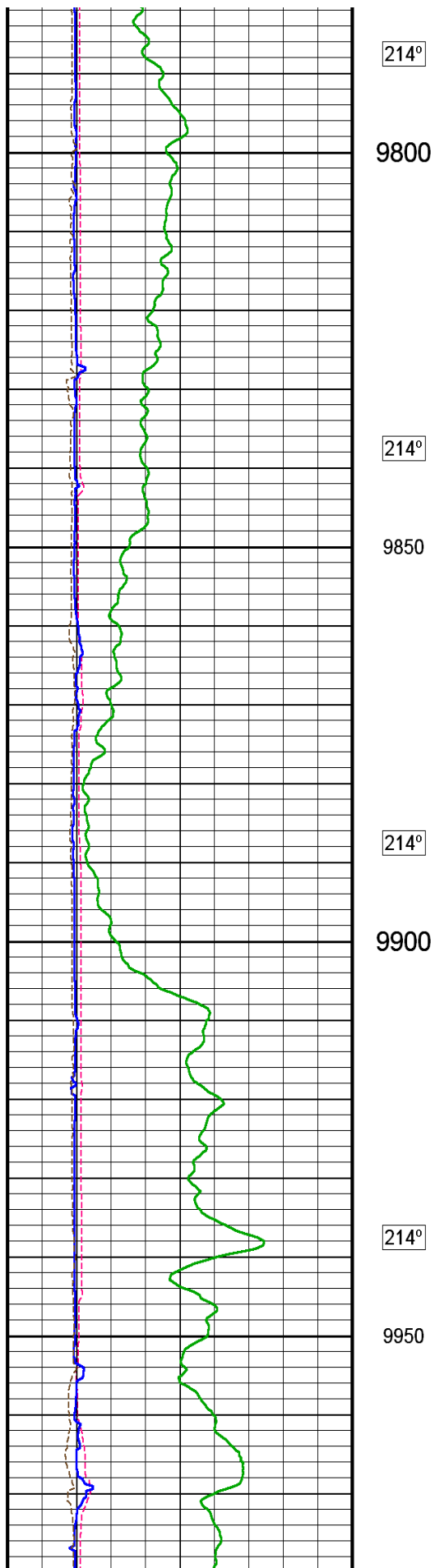
9500

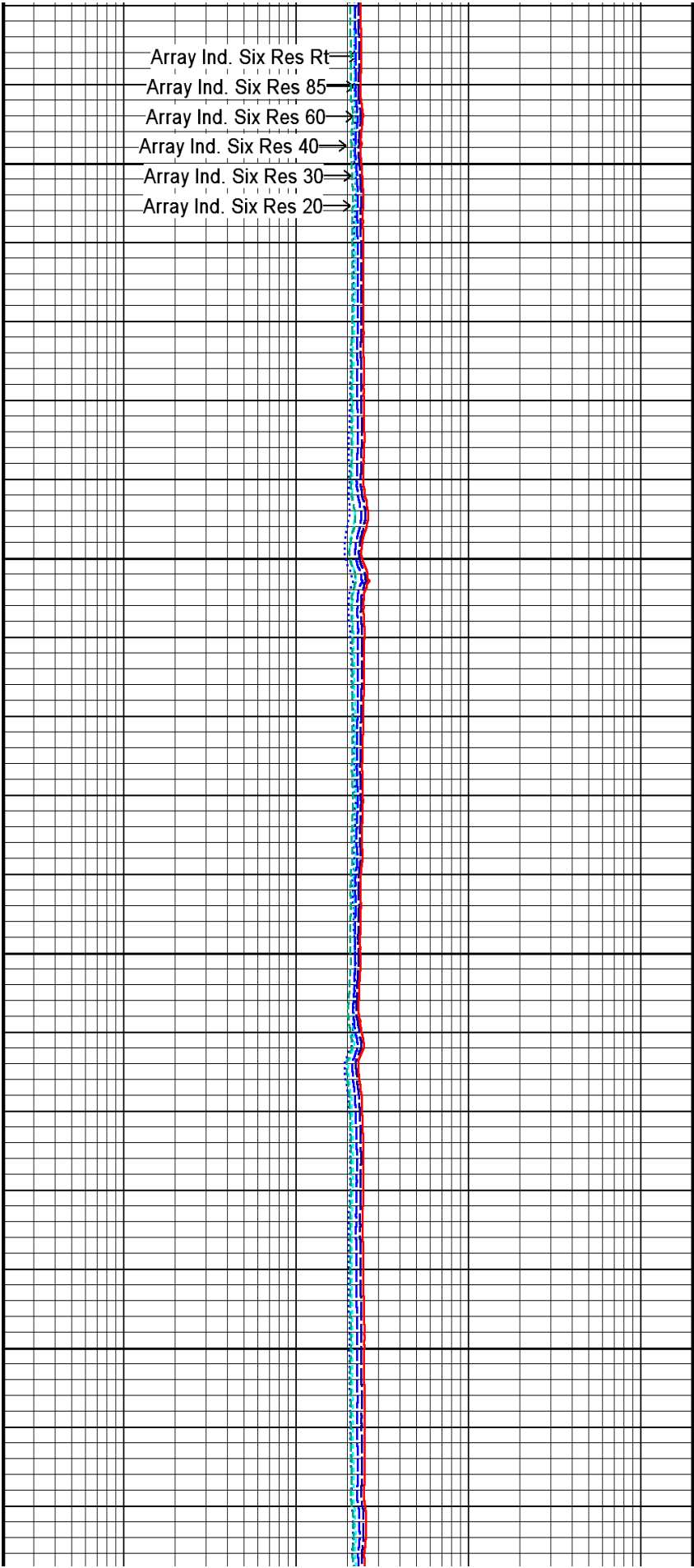
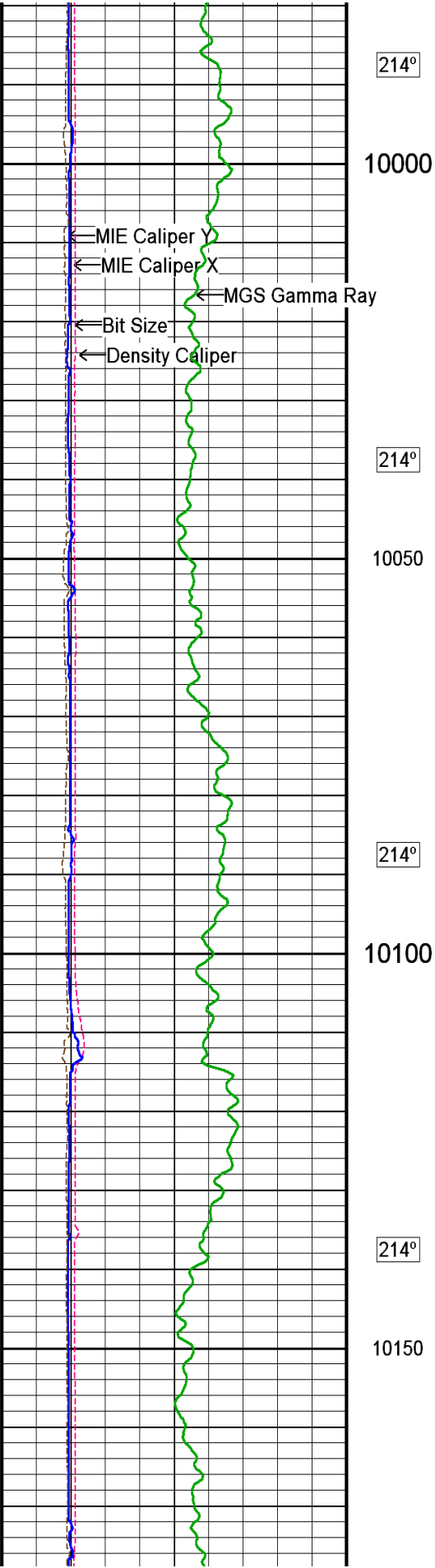
214°

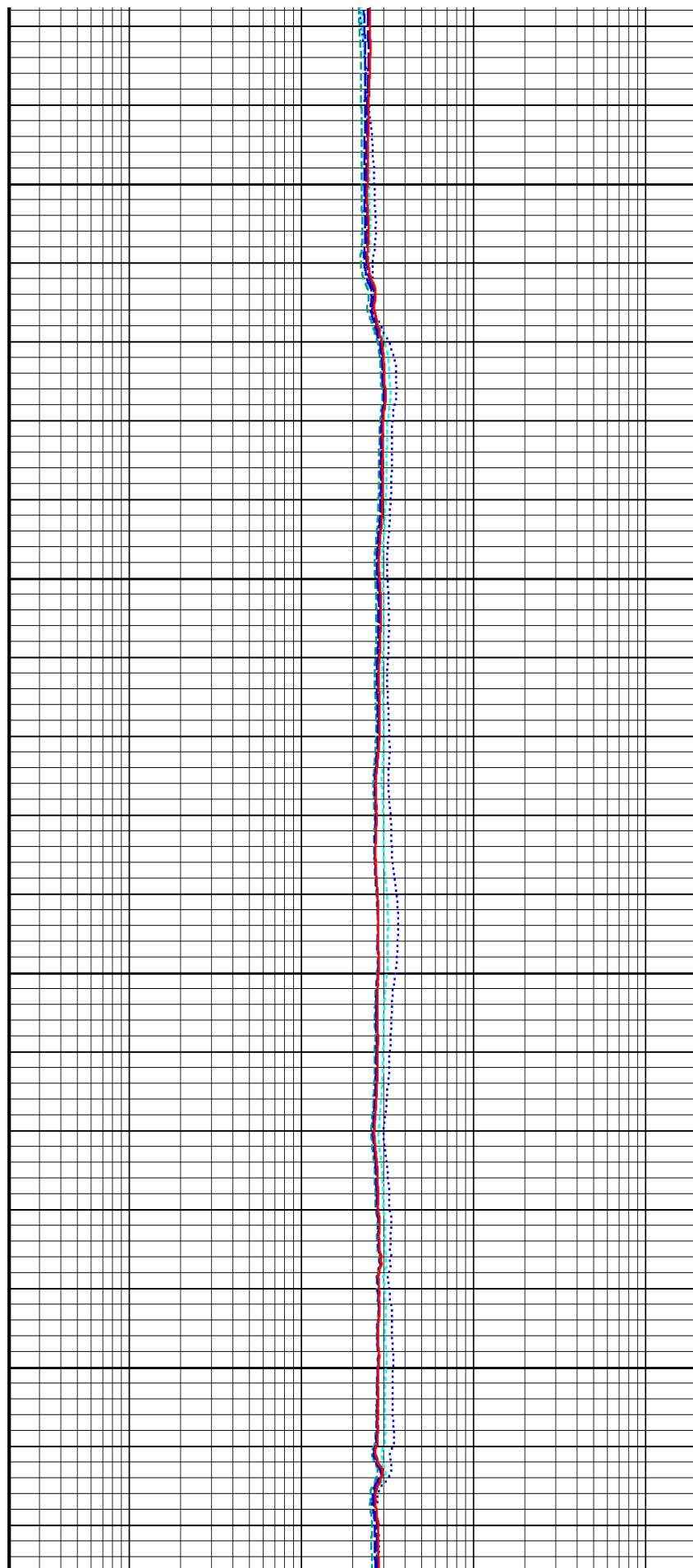
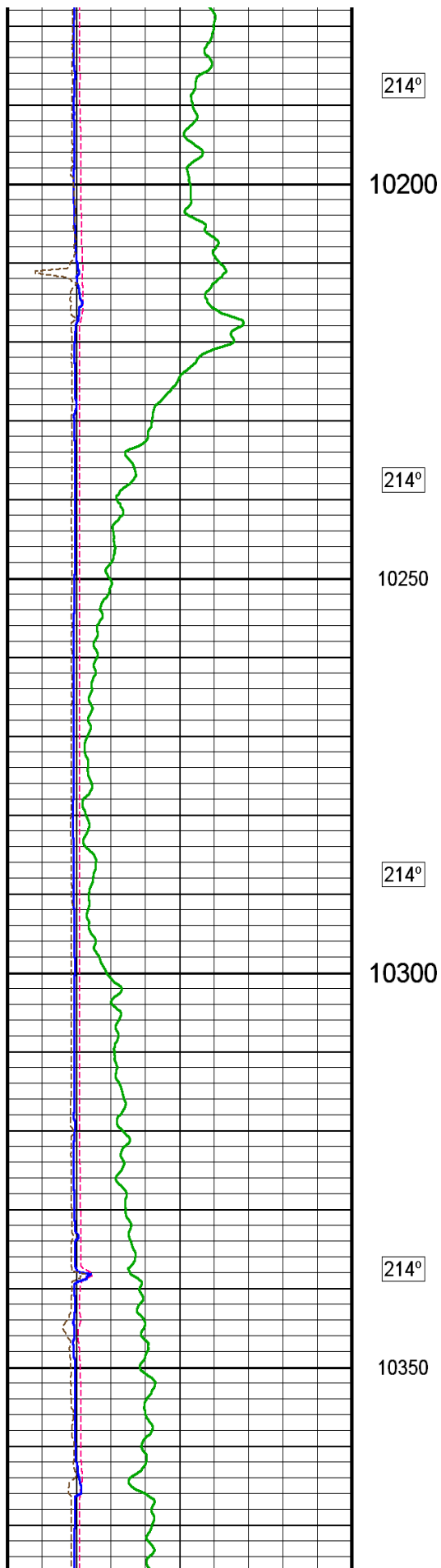
9550

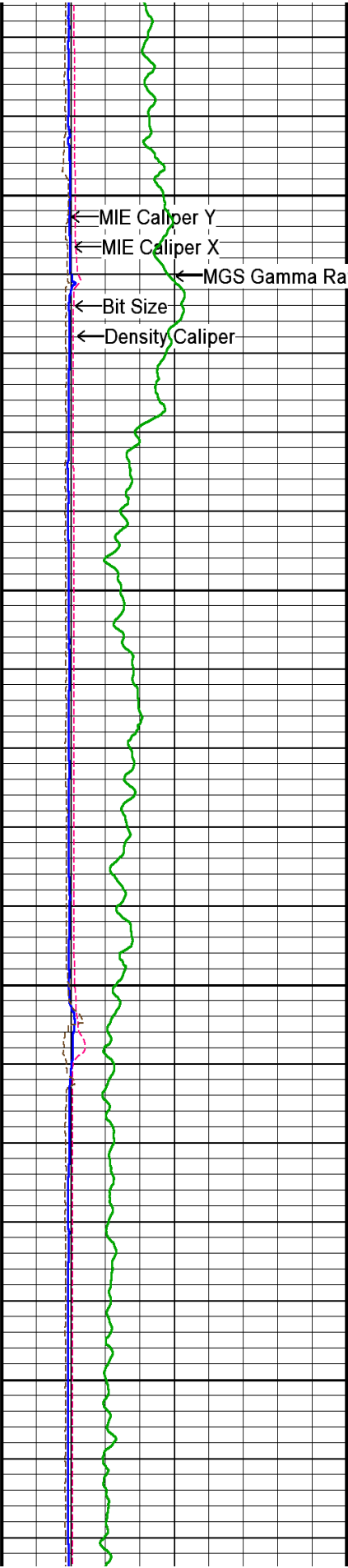












214°

10400

214°

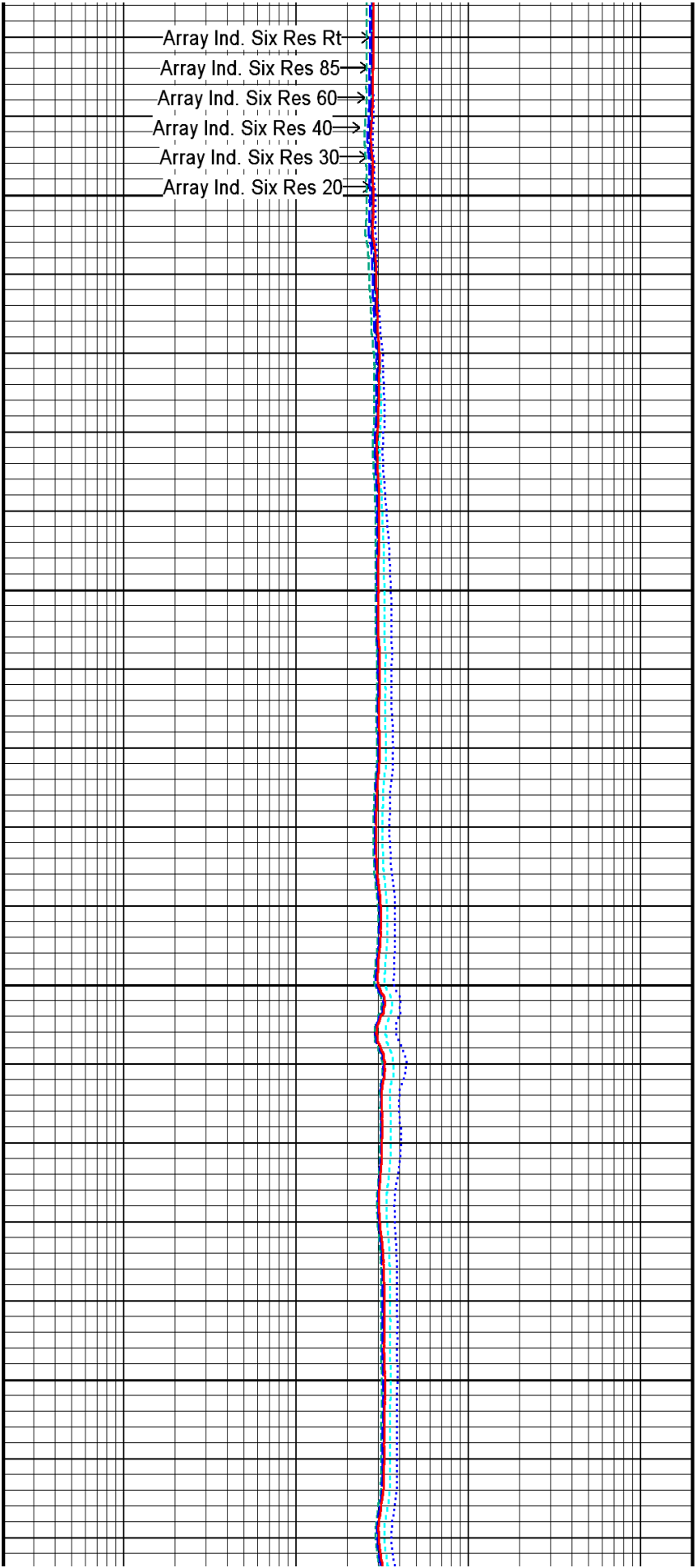
10450

215°

10500

215°

10550



Array Ind. Six Res Rt

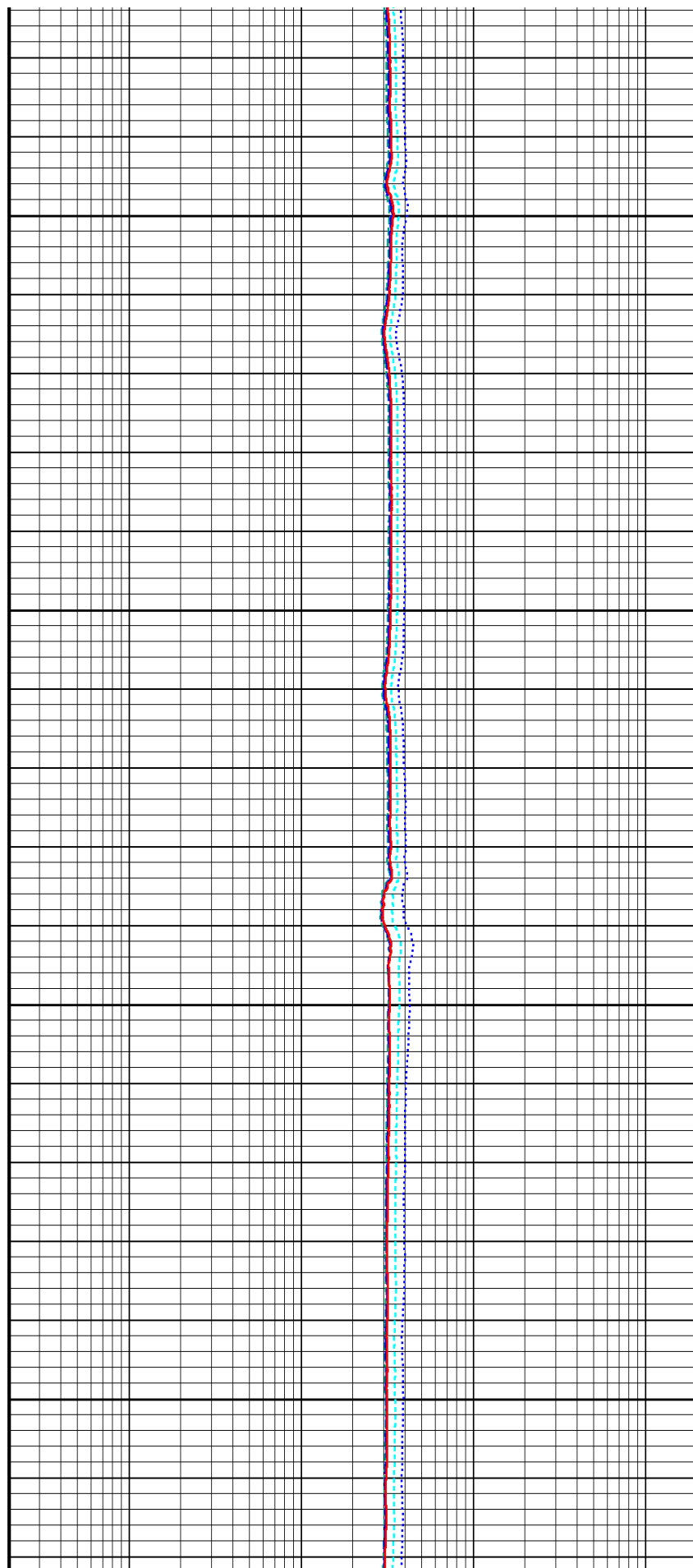
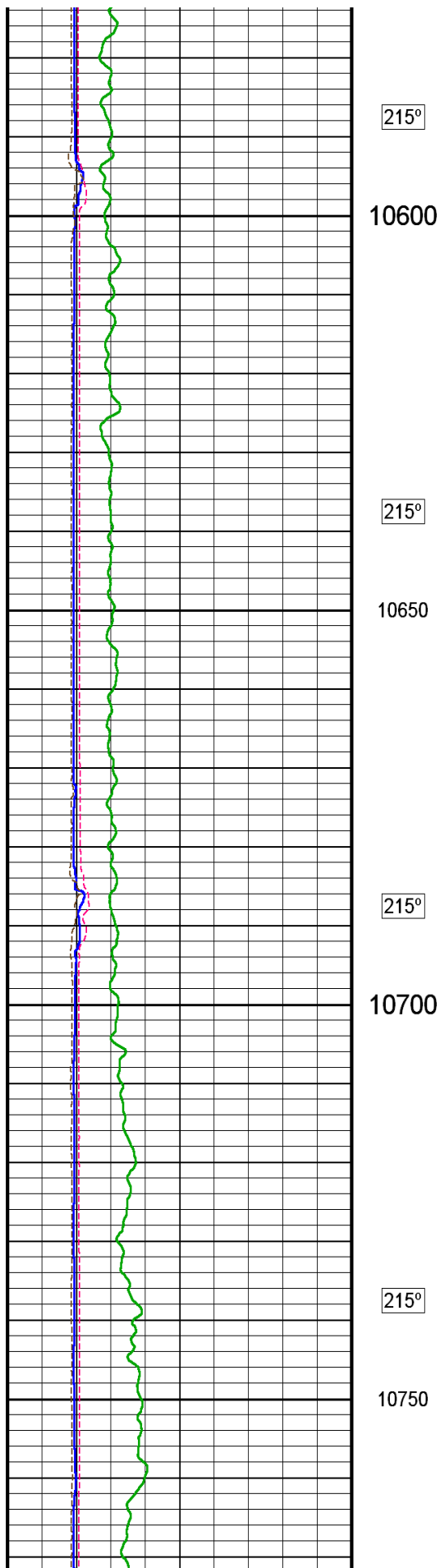
Array Ind. Six Res 85

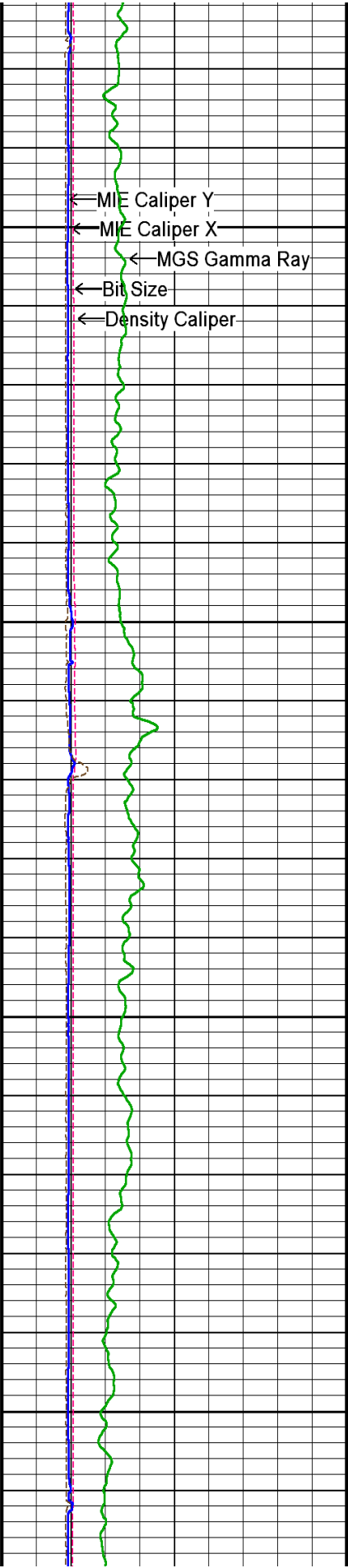
Array Ind. Six Res 60

Array Ind. Six Res 40

Array Ind. Six Res 30

Array Ind. Six Res 20





215°

10800

215°

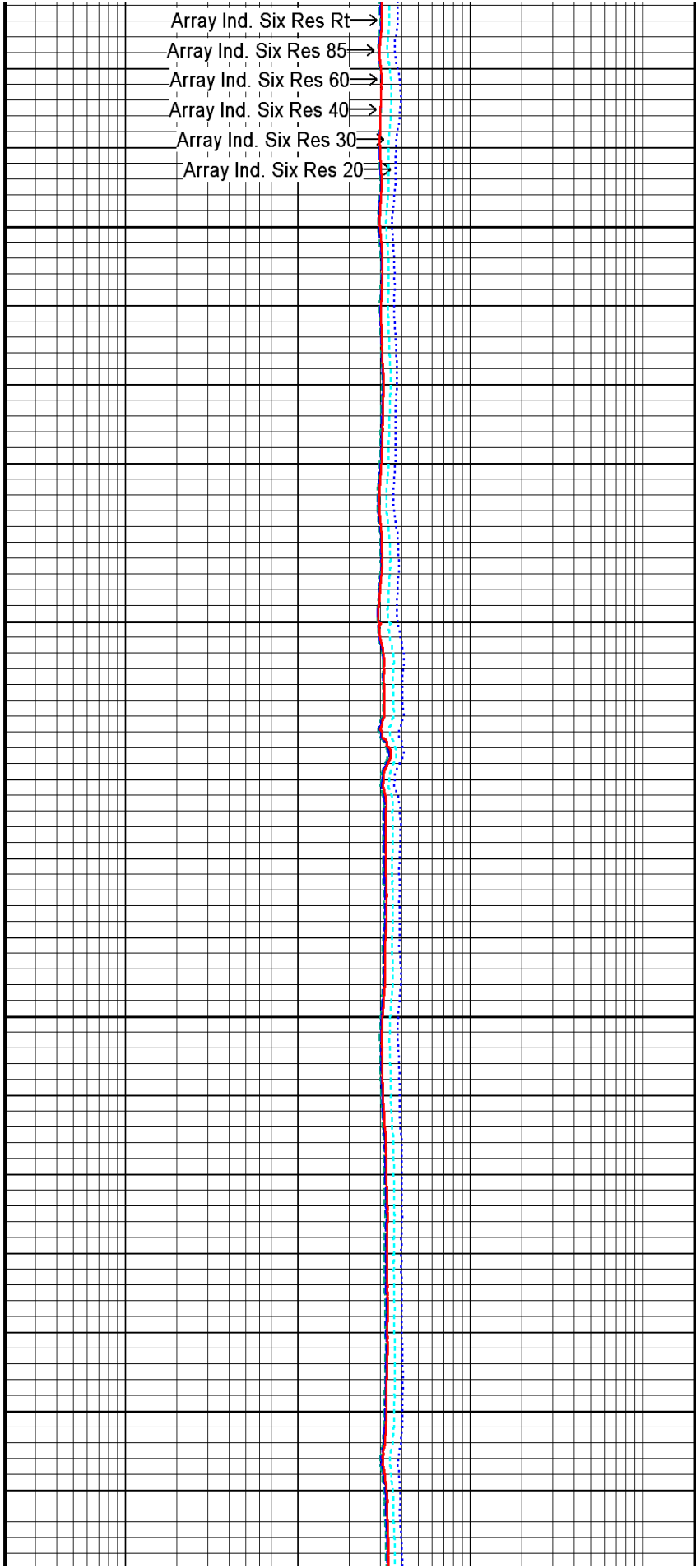
10850

215°

10900

215°

10950



Array Ind. Six Res Rt→

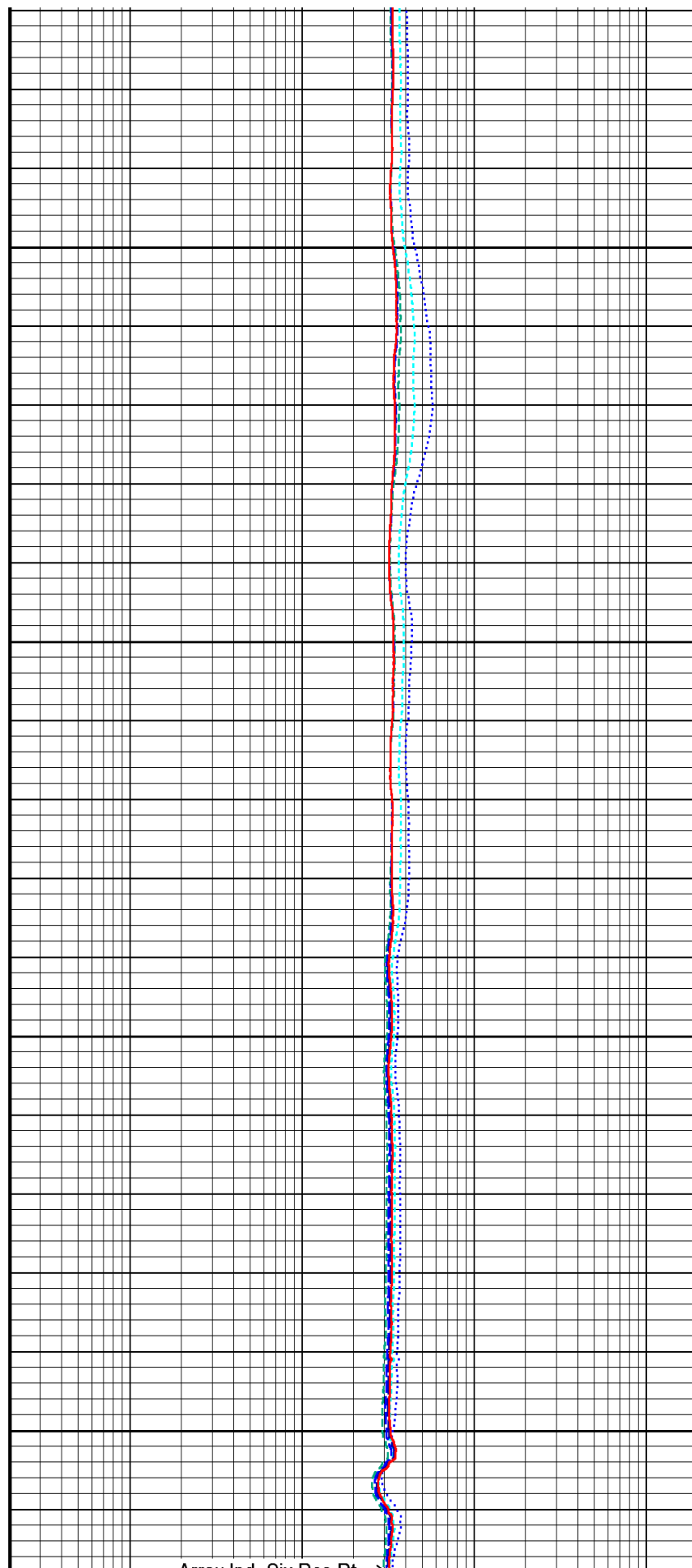
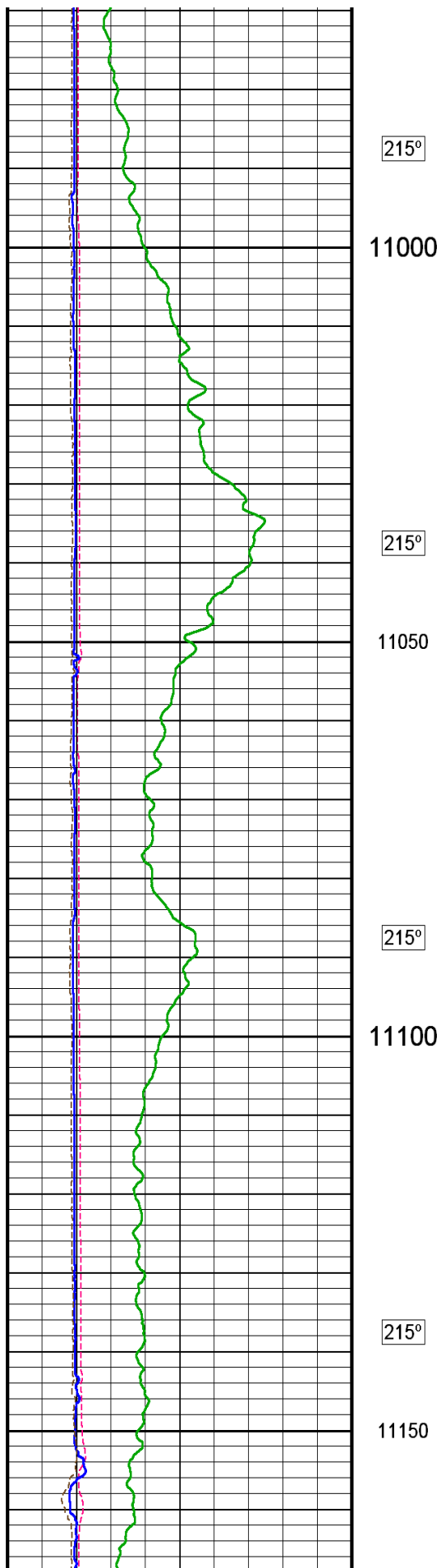
Array Ind. Six Res 85→

Array Ind. Six Res 60→

Array Ind. Six Res 40→

Array Ind. Six Res 30→

Array Ind. Six Res 20→





215°

11200

215°

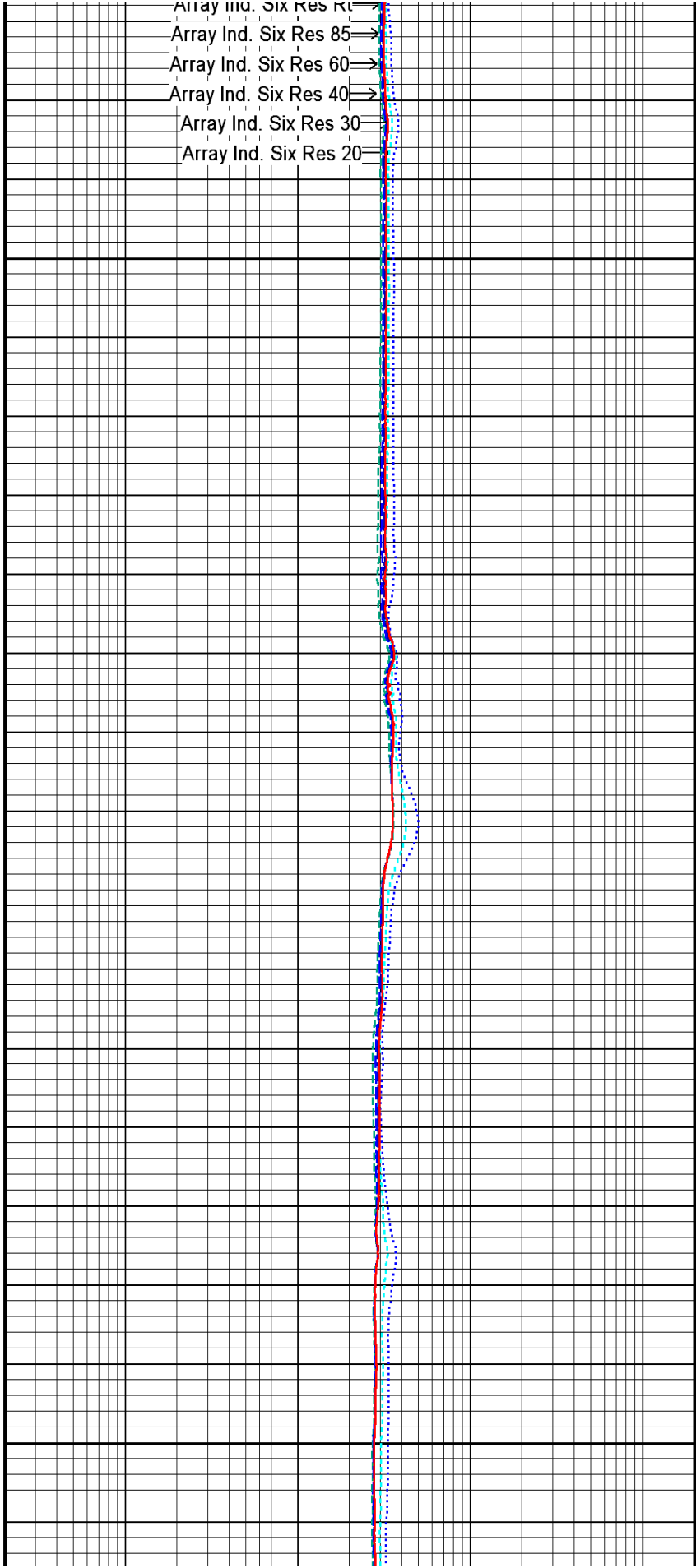
11250

215°

11300

215°

11350



Array Ind. Six Res 20

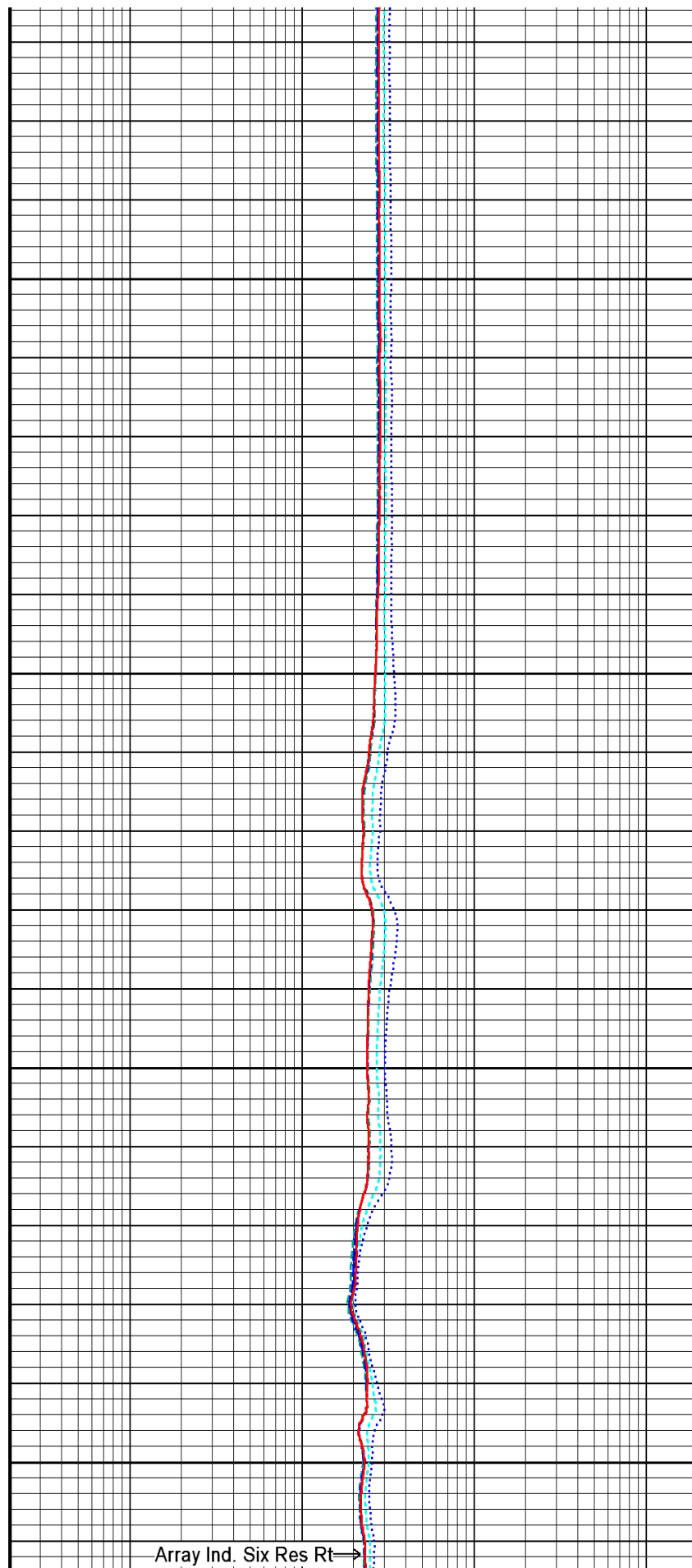
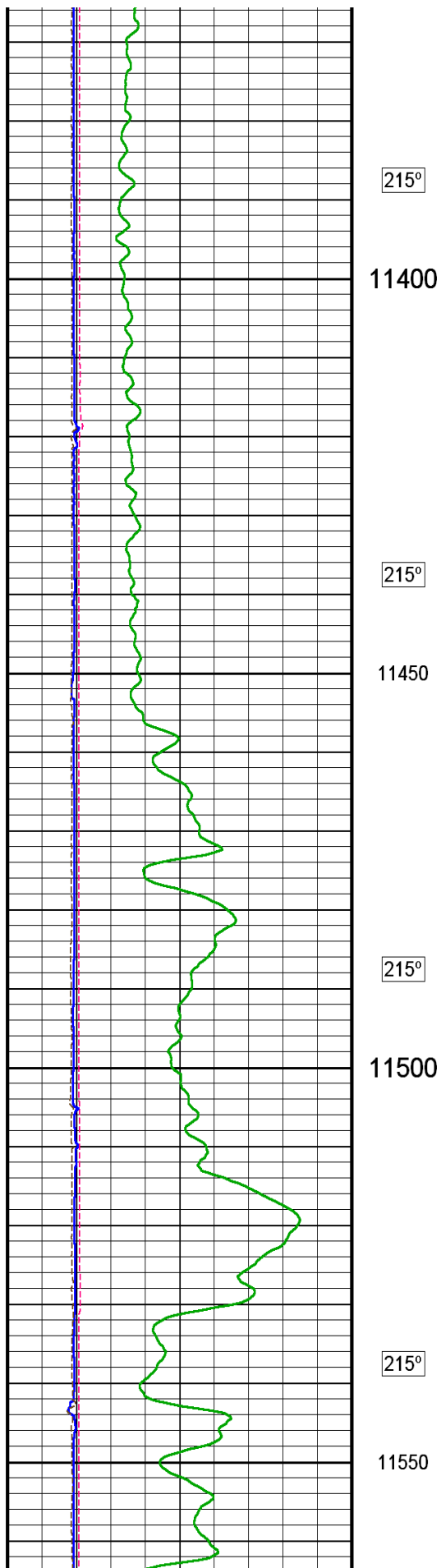
Array Ind. Six Res 30

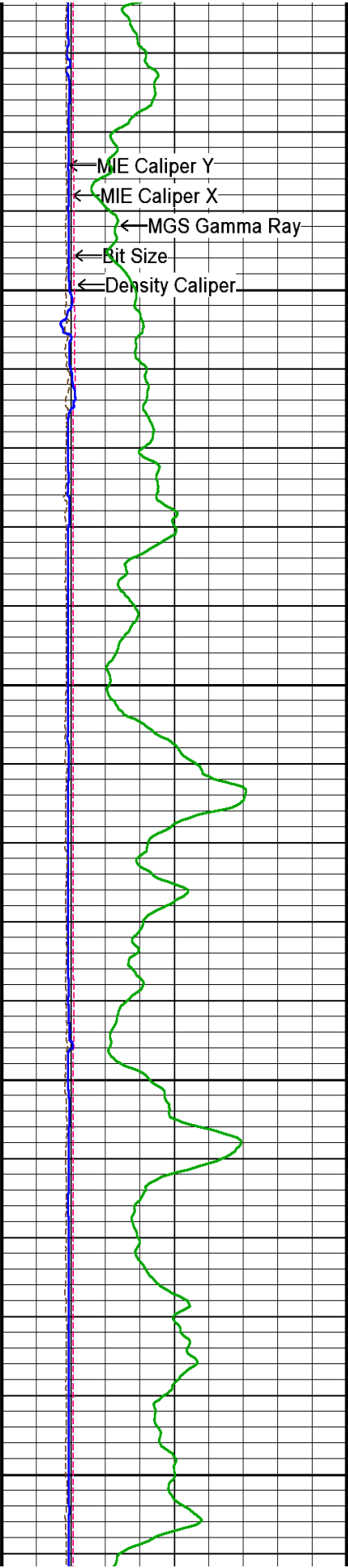
Array Ind. Six Res 40

Array Ind. Six Res 60

Array Ind. Six Res 85

Array Ind. Six Res 20





215°

11600

215°

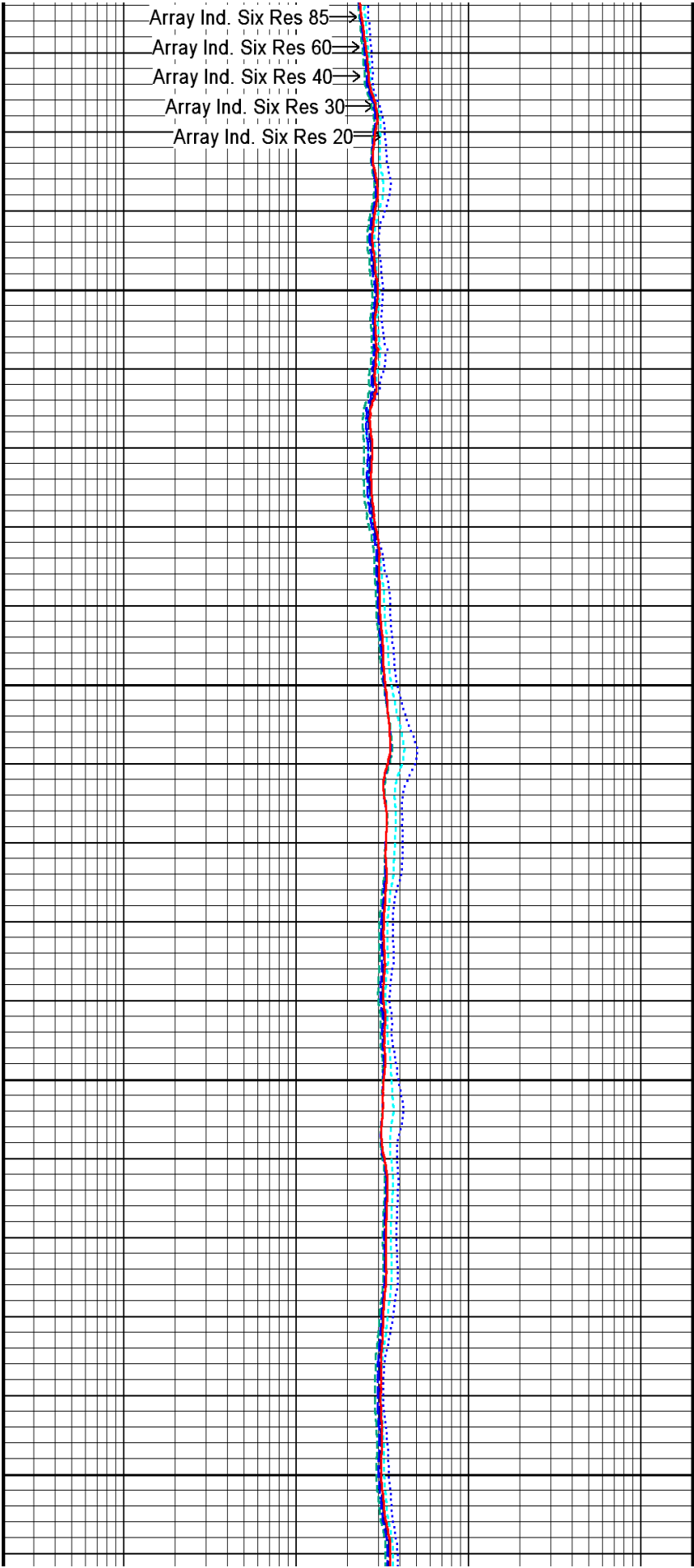
11650

215°

11700

215°

11750



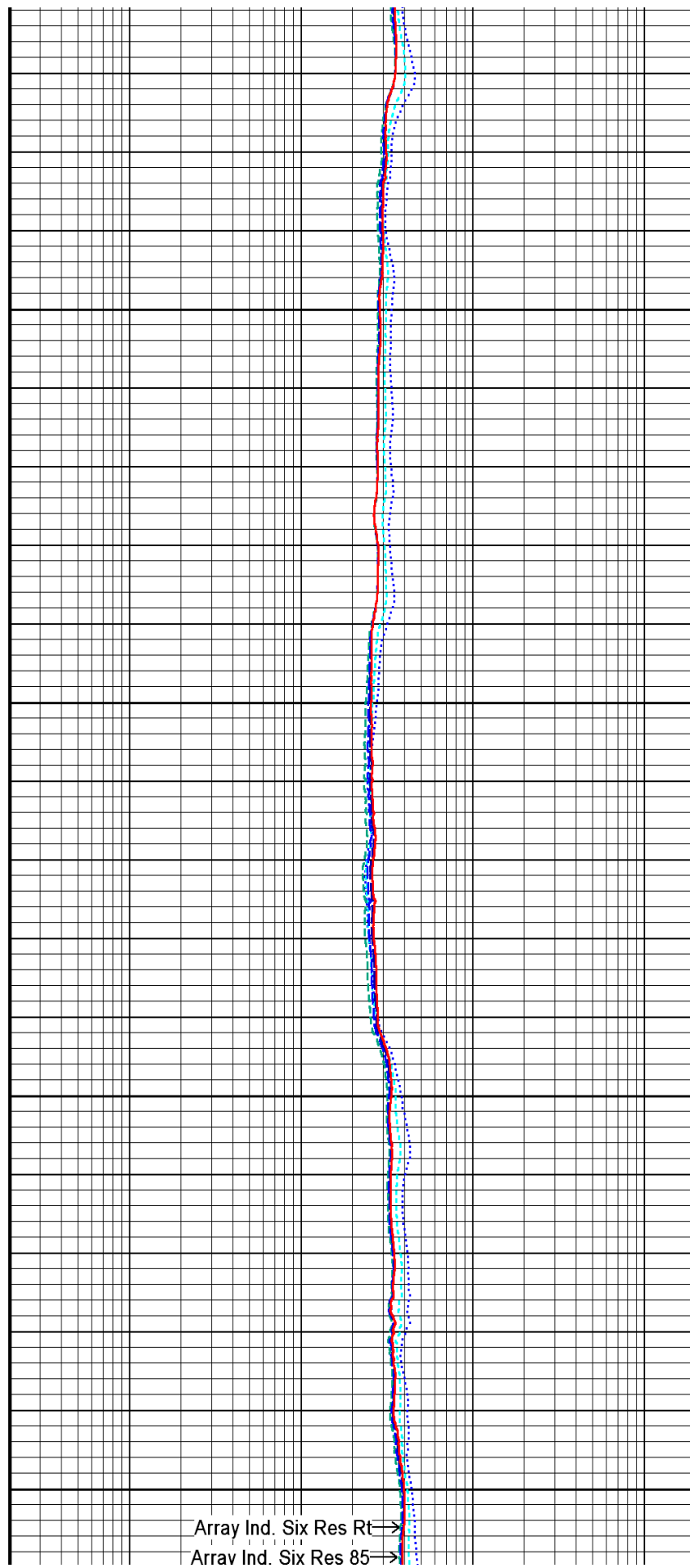
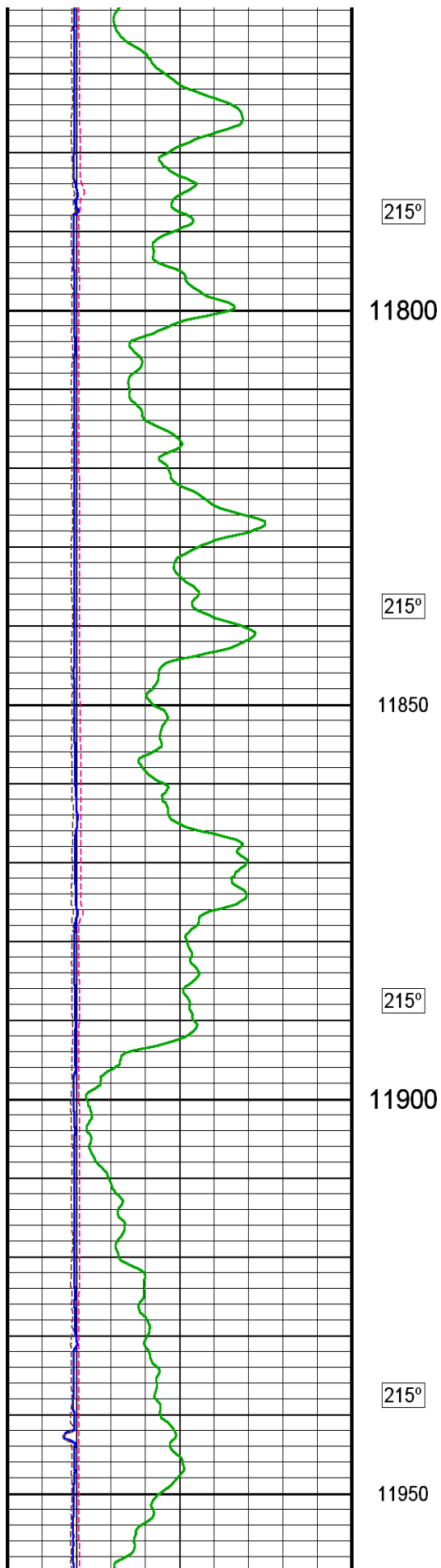
Array Ind. Six Res 85

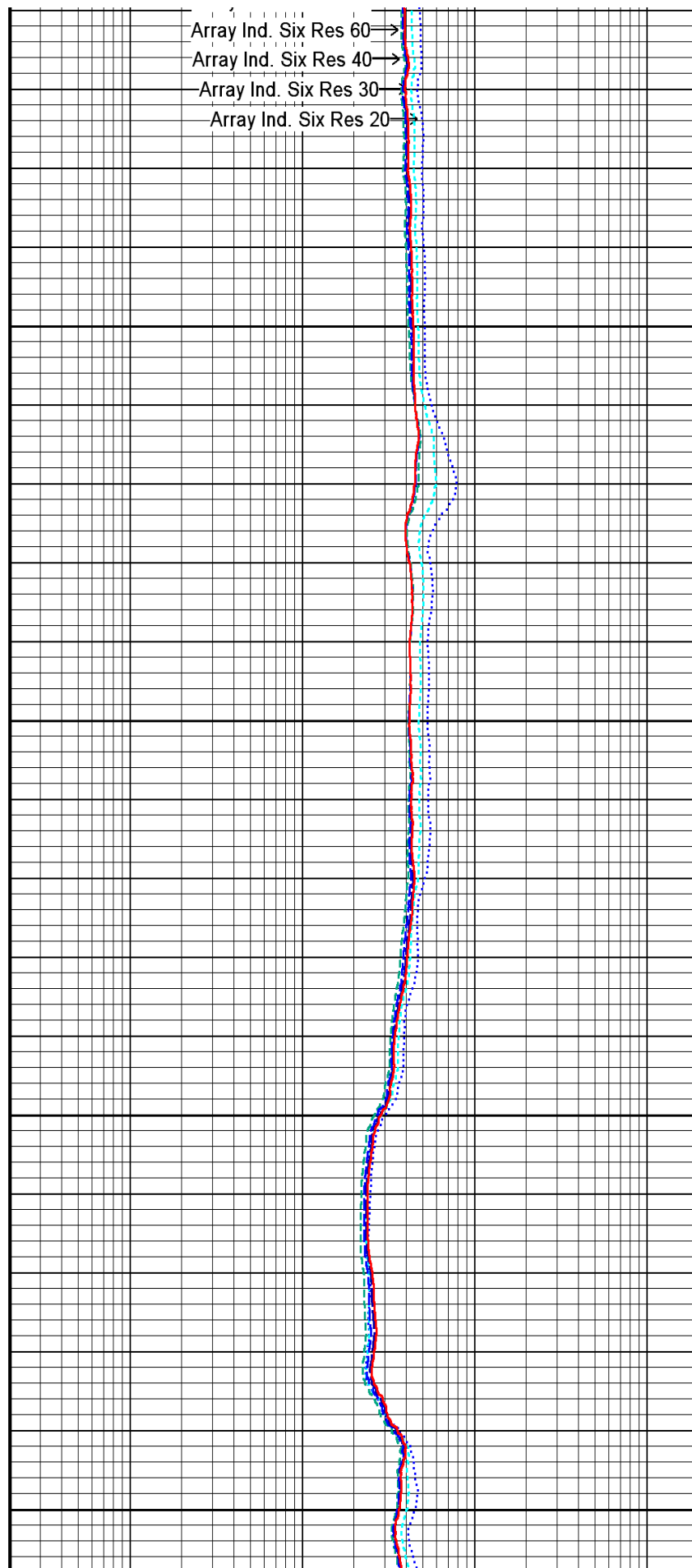
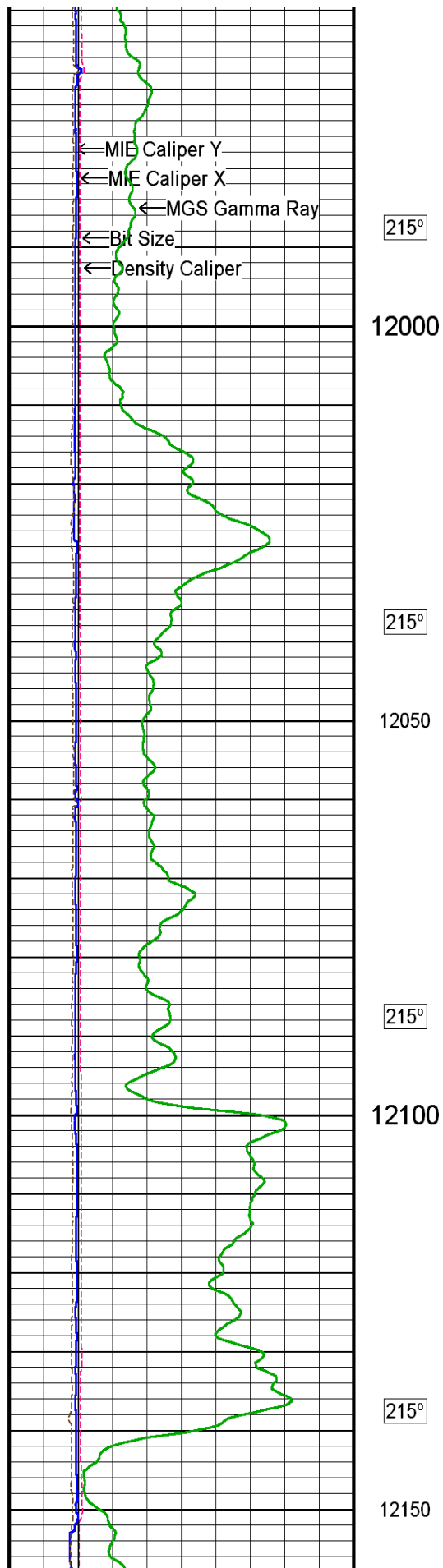
Array Ind. Six Res 60

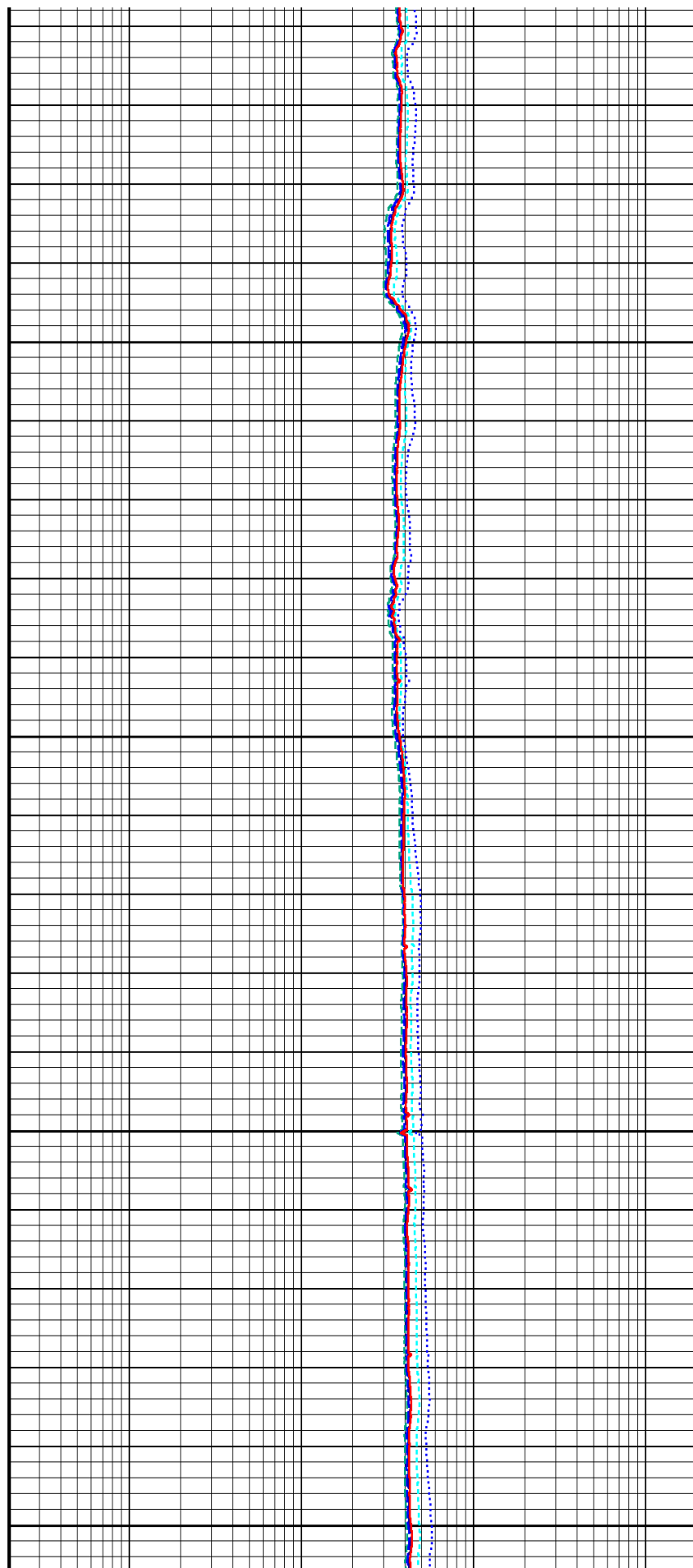
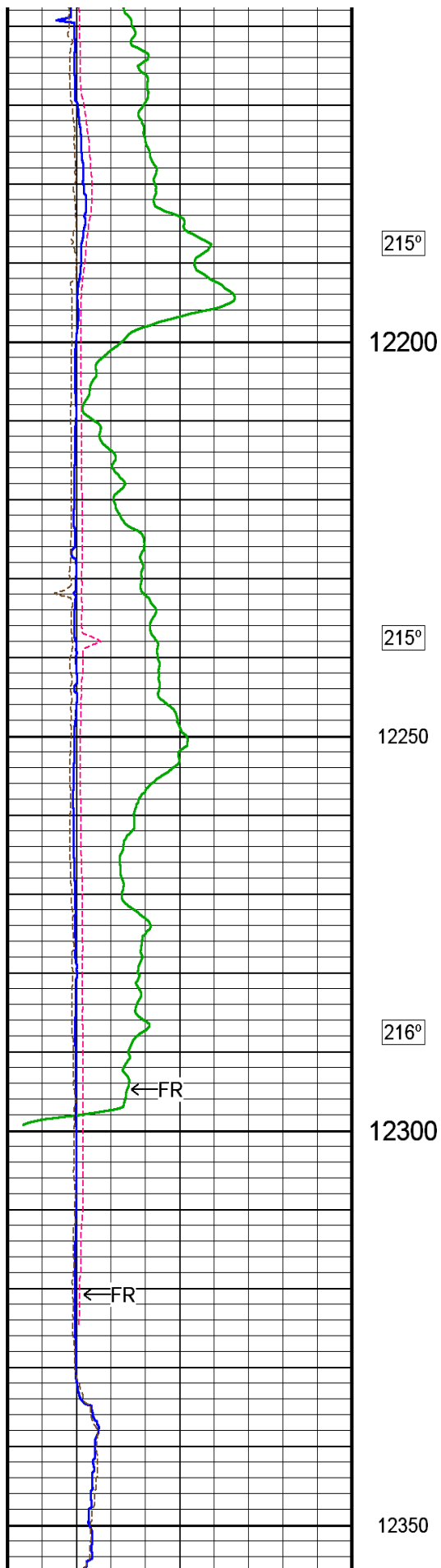
Array Ind. Six Res 40

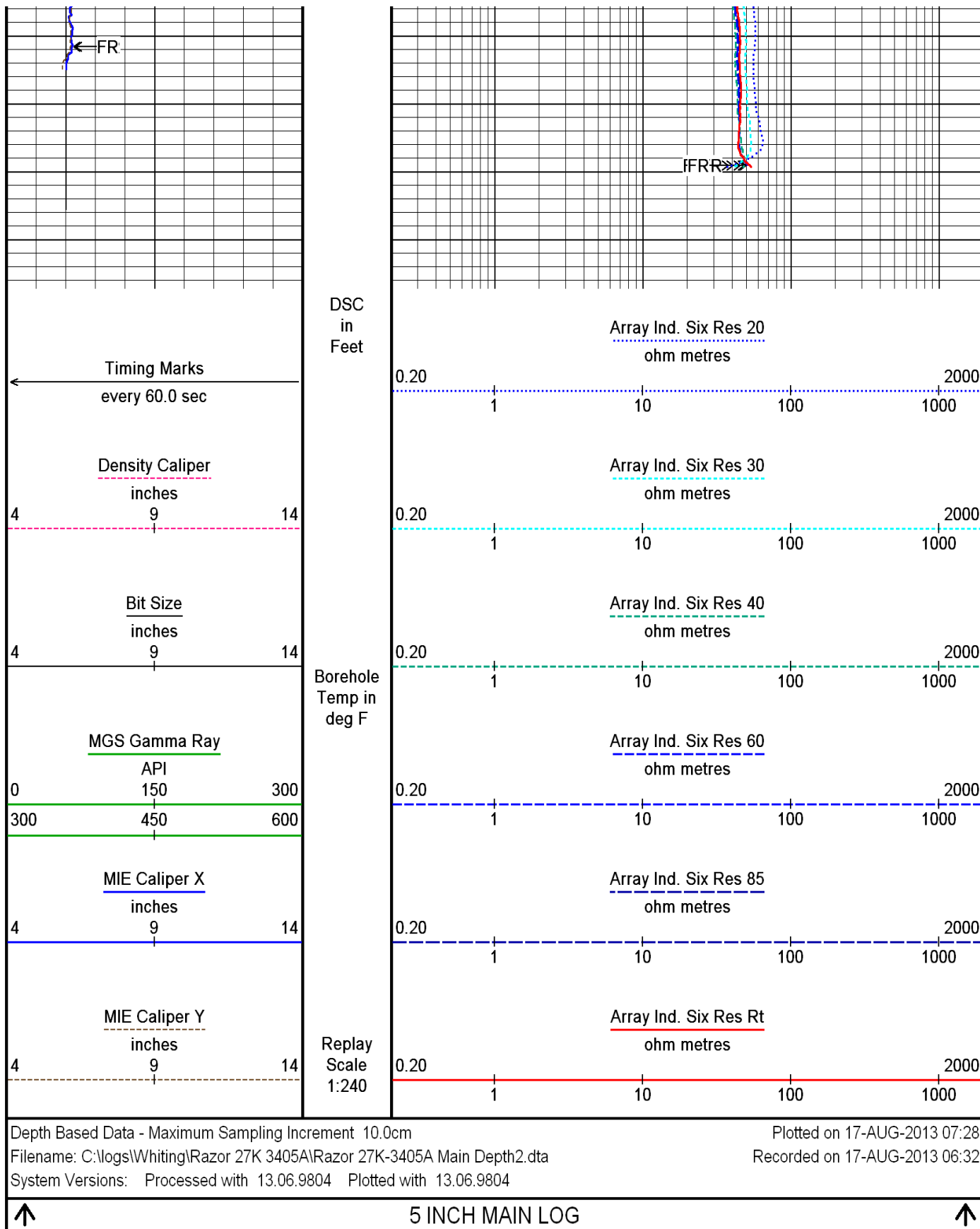
Array Ind. Six Res 30

Array Ind. Six Res 20









BEFORE SURVEY CALIBRATION

C:\logs\Whiting\Razor 27K 3405A\Razor 27K-3405A Main Depth2.dta

General Constants All 000

Last Edited on 17-AUG-2013,00:00

General Parameters

Mud Resistivity	0.750	ohm-metres
Mud Resistivity Temperature	93.000	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 Caliper X	
HVOL Caliper 2	MIE Caliper Y	
Annular Volume Diameter	4.500	inches
Caliper for Differential Caliper	MIE Caliper X	

Rwa Parameters

Porosity used	Base Density Porosity
Resistivity used	Array Ind. Six Res Rt
RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Strain Gauge Constants MMS-E.B 159

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	

Gamma Calibration MGS-C.J 149

Field Calibration on 14-AUG-2013 23:08

	Measured	Calibrated (API)
Background	149	102
Calibrator (Gross)	933	636
Calibrator (Net)	784	534

Gamma Constants MGS-C.J 149

Last Edited on 14-AUG-2013,23:00

Gamma Calibrator Number	225
Mud Density	1.00 gm/cc
Caliper Source for Processing	MIE Caliper X
Tool Position	Eccentred
Concentration of KCl	kppm
K Mud Type	Chloride
K Mud Concentration	0.00 %

SP Calibration MGS-C.J 149

Field Calibration on 10-AUG-2013,07:40

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

High Resolution Temperature Calibration MGS-C.J 149

Field Calibration on 14-AUG-2013,23:28

	Measured	Calibrated(Deg F)
	0.00	0.00

Lower	0.00	0.00
Upper	50.00	50.00
High Resolution Temperature Constants MGS-C.J 149		Last Edited on 14-AUG-2013,23:28
Pre-filter Length	11	
Neutron Calibration MDN-B.A 275		Base Calibration on 31-JUL-2013 13:09 Field Check on 14-AUG-2013 23:00
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	2978 92	3714 110
Ratio	32.467	33.764
Field Calibrator at Base		
		Calibrated (cps)
		0 0
Ratio		
Field Check		
		Calibrated (cps)
		2303 3359
Ratio		0.686
Neutron Constants MDN-B.A 275		Last Edited on 15-AUG-2013,15:12
Neutron Source Id	P31131B	
Neutron Jig Number	NJ6630	
Epithermal Neutron	No	
Caliper Source for Processing	MIE Caliper X	
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	Constant Value	
Temperature	68.00	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	
Accelerometer Parameters MIE-B.A 255		
Date Of Last Accelerometer Calibration	16-JUL-2013,10:47	
	X Accelerometer	Y Accelerometer Z Accelerometer
Slope	-1.117631	-1.107005 -1.098683
Offset	0.005285	0.006260 0.003490
Accelerometer Constants MIE-B.A 255		Last Edited on 14-AUG-2013,22:38
Accelerometer Calibrator Number	000	
Accelerometer Temperature Characterisation		
X Accelerometer		
Serial Number	1148	
Calibration Date	16-May-2012	
	B0	B1 B2 B3
Bias(g)	0.00000e+000	2.17085e-005 -2.87584e-008 1.62293e-010
	SF0	SF1 SF2 SF3
Scale Factor(mA/g)	3.00000e+000	2.53317e-004 3.78425e-007 8.53160e-010
Y Accelerometer		
Serial Number	1144	

Serial Number 1140					
Calibration Date	16-May-2012				
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	2.40573e-006	-2.17464e-009	1.45528e-010	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.77672e-004	3.45576e-007	7.42833e-010	
Z Accelerometer					
Serial Number	1140				
Calibration Date	10-May-2012				
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	2.15582e-005	8.13147e-009	-4.05766e-011	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.87061e-004	2.74042e-007	7.28323e-010	
Magnetometer Parameters MIE-B.A 255					
Date Of Last Magnetometer Calibration		30-JUL-2013,10:04			
	X Magnetometer	Y Magnetometer	Z Magnetometer		
Slope	-1.000000	-0.978468	-0.975364		
Offset	-0.004142	-0.019785	-0.006512		
Magnetometer Constants MIE-B.A 255				Last Edited on	
Magnetometer Calibrator Number		000			
Caliper Calibration MIE-B.A 255			Base Calibration on 08-AUG-2013 14:10		
			Field Calibration on 14-AUG-2013 23:12		
Base Calibration					
Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)		
1	24869	24853	5.97		
2	35489	35455	7.96		
3	45268	45244	9.86		
4	56957	56885	11.92		
5	0	0	0.00		
Reading No	Pad 2 Meas.	Pad 4 Meas.	Pad 6 Meas.	Pad 8 Meas.	Calibrator Size (in)
1	25438	25740	25898	25100	5.97
2	34051	34560	35186	34388	7.96
3	42363	43132	43551	42569	9.86
4	52343	52859	53183	52689	11.92
5	0	0	0	0	0.00
Field Calibration					
	Measured	Measured	Actual		
	Pads 1-5 Caliper(in)	Pads 3-7 Caliper(in)	Caliper(in)		
	6.11	6.17	5.97		
	Measured	Measured	Measured	Measured	Actual
	Pad 2 Caliper(in)	Pad 4 Caliper(in)	Pad 6 Caliper(in)	Pad 8 Caliper(in)	Caliper(in)
	3.11	3.01	2.89	2.98	5.97
Caliper Constants MIE-B.A 255				Last Edited on 08-AUG-2013,14:03	
Caliper Difference for BRKT		0.120	inches		
Navigation Constants MIE-B.A 255				Last Edited on 15-AUG-2013,17:41	
Magnetic Declination		8.10	degrees	East	
Imager Pad Check MIE-B.A 255				Field Check on	
Pad 1	Pad Not Tested	Pad 5	Pad Not Tested		
Pad 2	Pad Not Tested	Pad 6	Pad Not Tested		
Pad 3	Pad Not Tested	Pad 7	Pad Not Tested		
Pad 4	Pad Not Tested	Pad 8	Pad Not Tested		

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	

Induction Calibration MAI-B.J 376

Base Calibration on 06-JUN-2013,08:44

Field Check on 14-AUG-2013 22:37

Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	16.4	461.5	9.3	966.2	
2	5.9	377.0	7.6	821.4	
3	3.1	255.4	5.2	566.0	
4	1.7	130.3	2.6	279.2	
Array Temperature		73.8	Deg F		
Channel		Base Check (mmho/m)		Field Check (mmho/m)	
		Low	High	Low	High
1		15.3	3946.5	14.2	3941.2
2		31.2	3583.5	30.9	3581.2
3		30.0	3102.4	29.9	3101.1
4		20.5	2123.9	20.5	2123.4
Deep		19.0	2052.2	18.9	2051.7
Medium		43.3	4061.5	43.2	4060.0
Shallow		45.7	5259.1	45.2	5255.2
Array Temperature		77.9		61.2	Deg F

Induction Constants MAI-B.J 376

Last Edited on 17-AUG-2013,06:53


Induction Model	RtAP-WBM		
Caliper for Borehole Corr.	MIE Caliper X		
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 376				
		Field Calibration on 14-AUG-2013,22:37		
	Measured	Calibrated(Deg F)		
Lower	0.00	0.00		
Upper	50.00	50.00		
High Resolution Temperature Constants MAI-B.J 376				
		Last Edited on 14-AUG-2013,22:37		
Pre-filter Length	11			
Photo Density Calibration MPD-C.J 378				
		Base Calibration on 01-AUG-2013 13:40		
		Field Check on 14-AUG-2013 22:48		
Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
	Near	Far	Near	Far
Reference 1	53633	25231	59443	30683
Reference 2	21446	2371	25113	2508
Field Check at Base				
	1175.6	1257.3		
Field Check				
	1178.3	1263.0		
PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	215	1051		
Reference 1	21890	53445	0.414	0.372
Reference 2	5949	21312	0.283	0.268
Field Check at Base				
	214.7	1051.3		
Field Check				
	214.8	1051.9		
Density Constants MPD-C.J 378			Last Edited on 15-AUG-2013,15:12	
Density Source Id	P21136B			
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	1.11	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		
CBCT	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		Base Calibration on 01-AUG-2013 13:53
		Field Calibration on 14-AUG-2013 22:44
Reading No	Measured	Calibrator Size (in)
1	14864	4.01
2	22944	5.97
3	31088	7.96
4	39104	9.86
5	48528	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	3.98	4.01

DOWNHOLE EQUIPMENT		
C:\logs\Whiting\Razor 27K 3405A\Razor 27K-3405A Main Depth2.dta		
Shuttle Running Tool 3.5"		
SRT-A.A 59 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in		
MMR Tube		
MLK-A 3 LG: 4.47 ft WT: 30.9 lb OD: 2.24 in		
200v Std Tube		
MLK-A 1 LG: 8.52 ft WT: 30.9 lb OD: 2.24 in		
400v Ext Tube		
MLK-A 2 LG: 14.23 ft WT: 30.9 lb OD: 2.24 in		
SKJ-E.B Compact Knuckle Joint		
SKJ-E.B 611 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in		
MBS-G.A 200v Compact Battery Sub		
MBS-G.A 123 LG: 17.06 ft WT: 123.5 lb OD: 2.24 in		
Compact Memory Sub E.B		
MMS-E.B 159 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in		
Compact Tool Isolator sub.		
MTI-B.A 53 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in		

Compact Short Gamma
MGS-C.J 149 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator
MCL-B.J 53 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 66 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 587 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 811 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron
MDN-B.A 275 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-C.J 378 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 654 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.B Compact Swivel Head Adaptor
SHA-J.B 597 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 610 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 693 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

SKJ-E.A Compact Knuckle Joint
SKJ-E.A 410 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 700 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

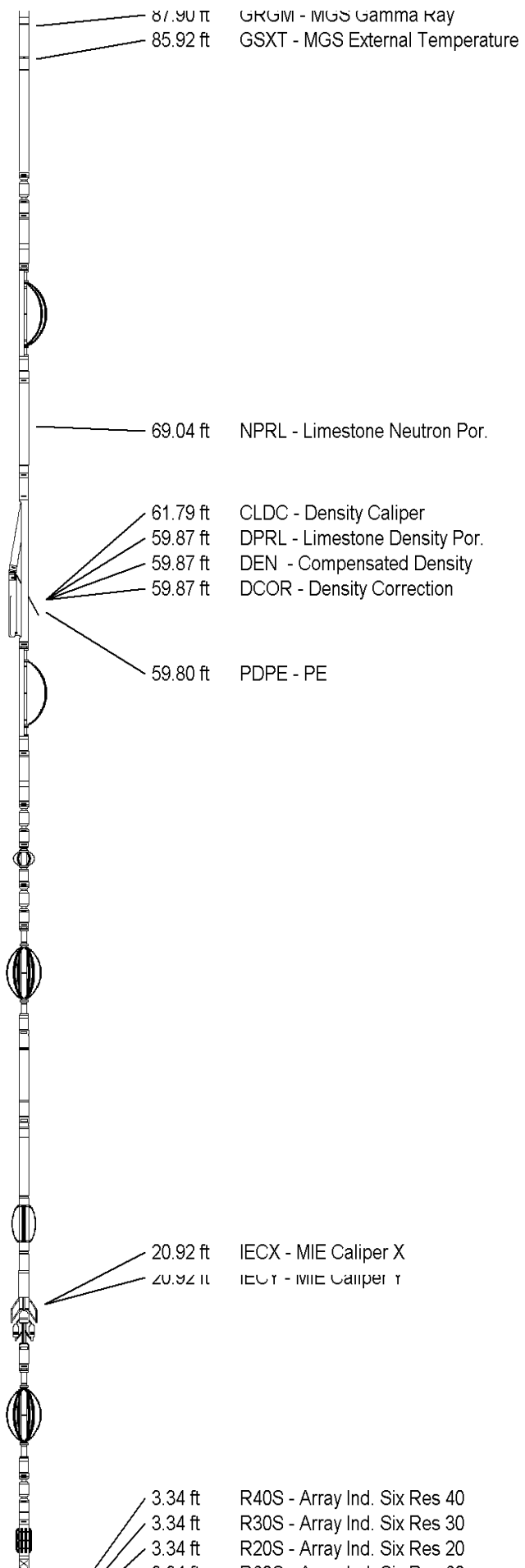
Compact MMI Memory Section
MIM-B.A 255 LG: 4.65 ft WT: 26.5 lb OD: 2.24 in

Compact MMI Electrode Section
MIE-B.A 255 LG: 13.96 ft WT: 99.2 lb OD: 4.09 in

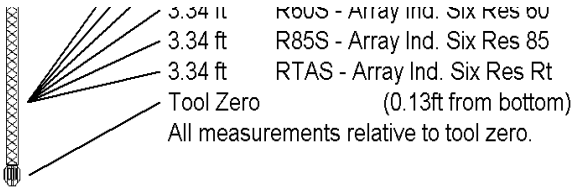
MIS-D.A Compact Inline Bowspring sub
MIS-D.A 440 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 614 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Induction
MAI-B.J 376 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in



Total Length: 148.63 ft Weight: 983.3 lb



COMPANY	WHITING OIL AND GAS CORPORATION
WELL	RAZOR 27K-3405A
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4767.00	feet	First Reading	12383.00	feet
Elevation Drill Floor	4767.00	feet	Depth Driller	12414.00	feet
Elevation Ground Level	4750.00	feet	Depth Logger	12414.00	feet



Weatherford®

ARRAY INDUCTION
LOG