 <b>Weatherford®</b>			<b>PHOTO DENSITY DUAL SPACED NEUTRON LOG</b>		
COMPANY WHITING OIL AND GAS CORP WELL RAZOR 11E-0202B FIELD REDTAIL PROVINCE/COUNTY WELD COUNTRY/STATE USA/COLORADO LOCATION SHL: 2321' FNL & 822' FWL (SWNW)					
SEC 11	TWP 10N	RGE 58W	Other Services		
Latitude		MICRO-IMAGER			
Longitude		SPECTRAL GAMMA RAY			
API Number		ARRAY INDUCTION			
Permanent Datum GL, Elevation 5002 feet					
Log Measured From KB			Elevations: KB 5019.00		
Drilling Measured From KB@17 feet			DF 5019.00		
			GL 5002.00		
Date	01-MAR-2014				
Run Number	ONE				
Service Order	6551-80824109				
Depth Driller	12996.00	feet			
Depth Logger	12996.00	feet			
First Reading	12928.00	feet			
Last Reading	6400.00	feet			
Casing Driller	6425.00	feet			
Casing Logger	6420.00	feet			
Bit Size	6.000	inches			
Hole Fluid Type	WBM				
Density / Viscosity	9.50 lb/USg	43.00 SEC/QT			
PH / Fluid Loss	9.00				
Sample Source FLOWLINE					
Rm @ Measured Temp	1.55 @ 60.5	ohm-m			
Rmf @ Measured Temp	1.24 @ 60.5	ohm-m			
Rmc @ Measured Temp	1.86 @ 60.5	ohm-m			
Source Rmf / Rmc	CALC/CALC				
Rm @ BHT	0.436 @225.0	ohm-m			
Time Since Circulation 8 HOURS					
Max Recorded Temp	225.00	deg F			
Equipment / Base	18063	CASPER			
Recorded By	C CULLEN	K SALLER			
Witnessed By	B MILLER				

BOREHOLE RECORD					Last Edited: 02-MAR-2014 06:01
Bit Size inches		Depth From feet		Depth To feet	
6.000		6425.00		12996.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
INTERMED	7.000	0.00	6425.00	29.00	

<b>REMARKS</b>	
SOFTWARE VERSION USED: 13.08.2113 TOOLS CONVEYED VIA CML WELL SHUTTLE.	
TRIPLE COMBO - IMAGER - SPECTRAL GAMMA RAY WAS LOGGED IN A SINGLE RUN USING A 200V MEMORY CONVEYANCE SYSTEM.	
HARDWARE USED: SEE TOOL DIAGRAM.	
LAT: 40.854189 LONG: -103.839389	

CUSTOMER'S SCALES USED AND INTERVALS LOGGED.

ALL DEPTHS RECORDED WITH WEATHERFORD DEPTHLOG 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: 1330CUBIC FEET

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 610 CUBIC FEET

BOREHOLE SIZE AND RUGOSITY WILL AFFECT DATA QUALITY.

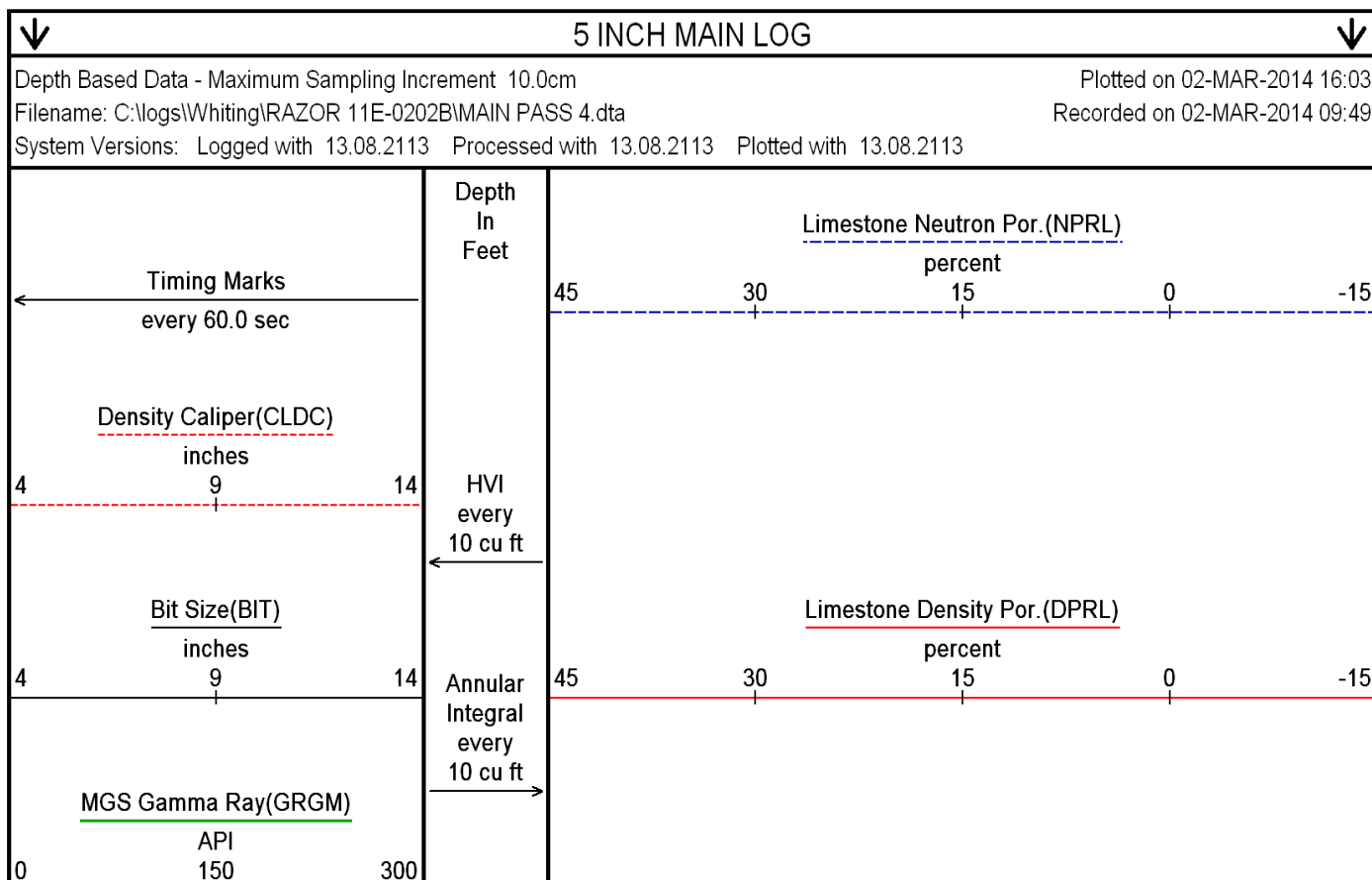
TIGHT PULLS WILL AFFECT DATA QUALITY.

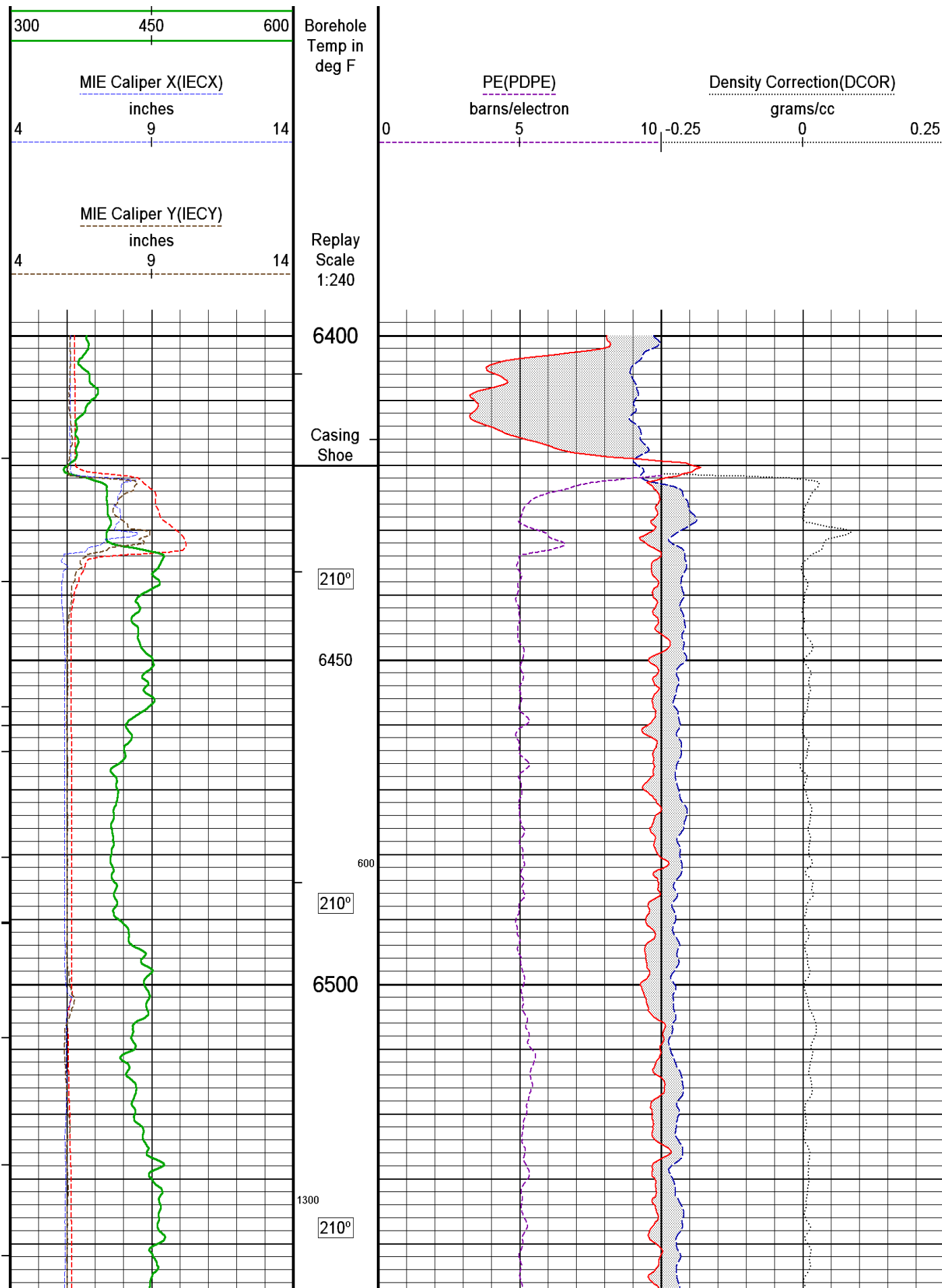
OPERATOR(S): J GERDES, D SMITH

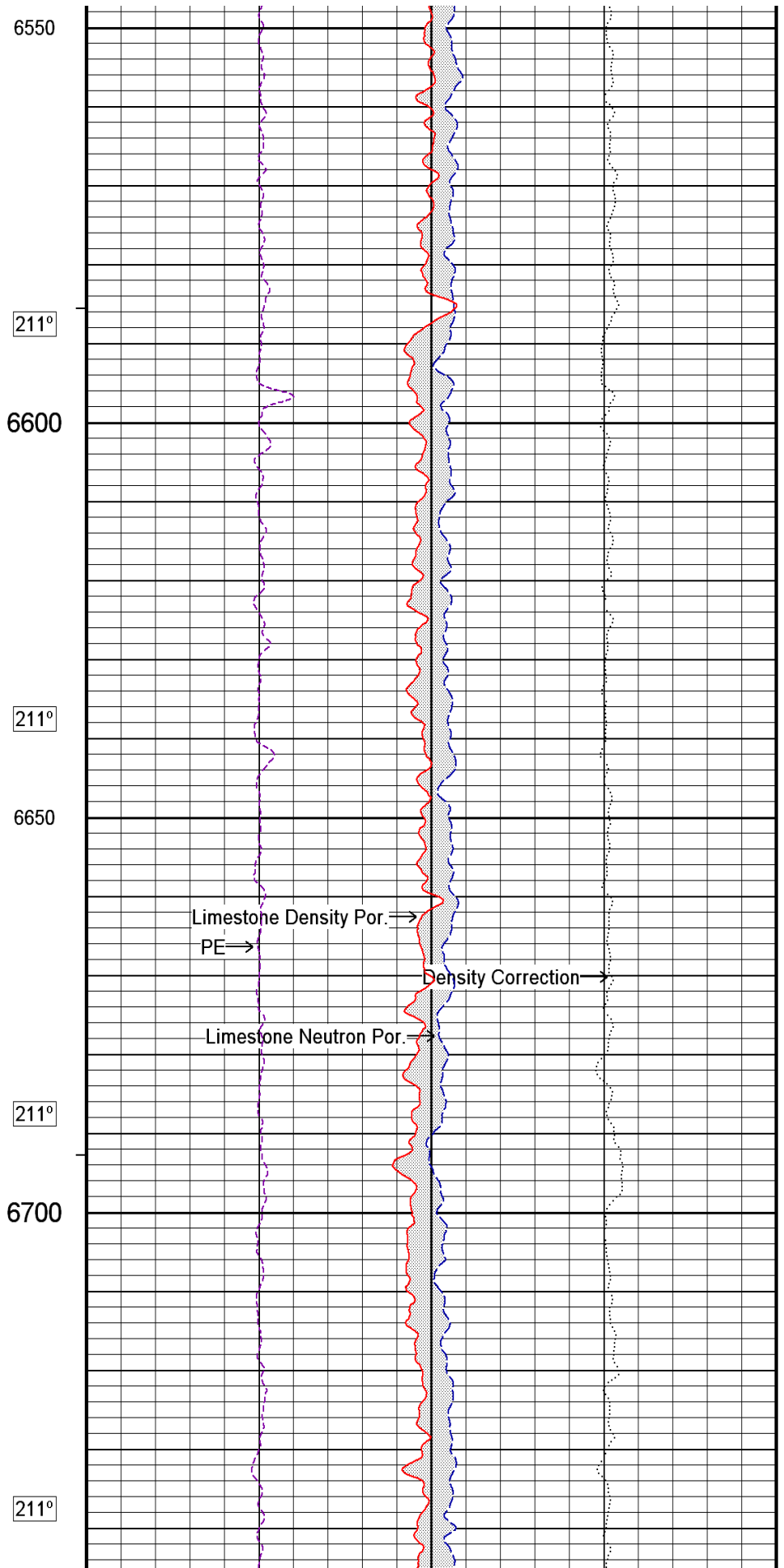
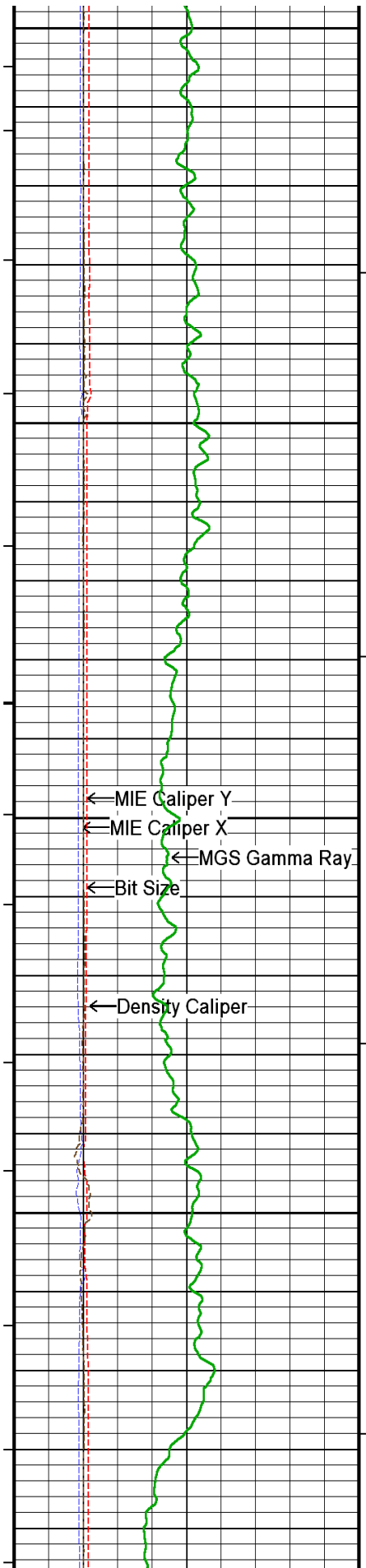
RIG: CADE 23

SERVICE ORDER #6551-80824109

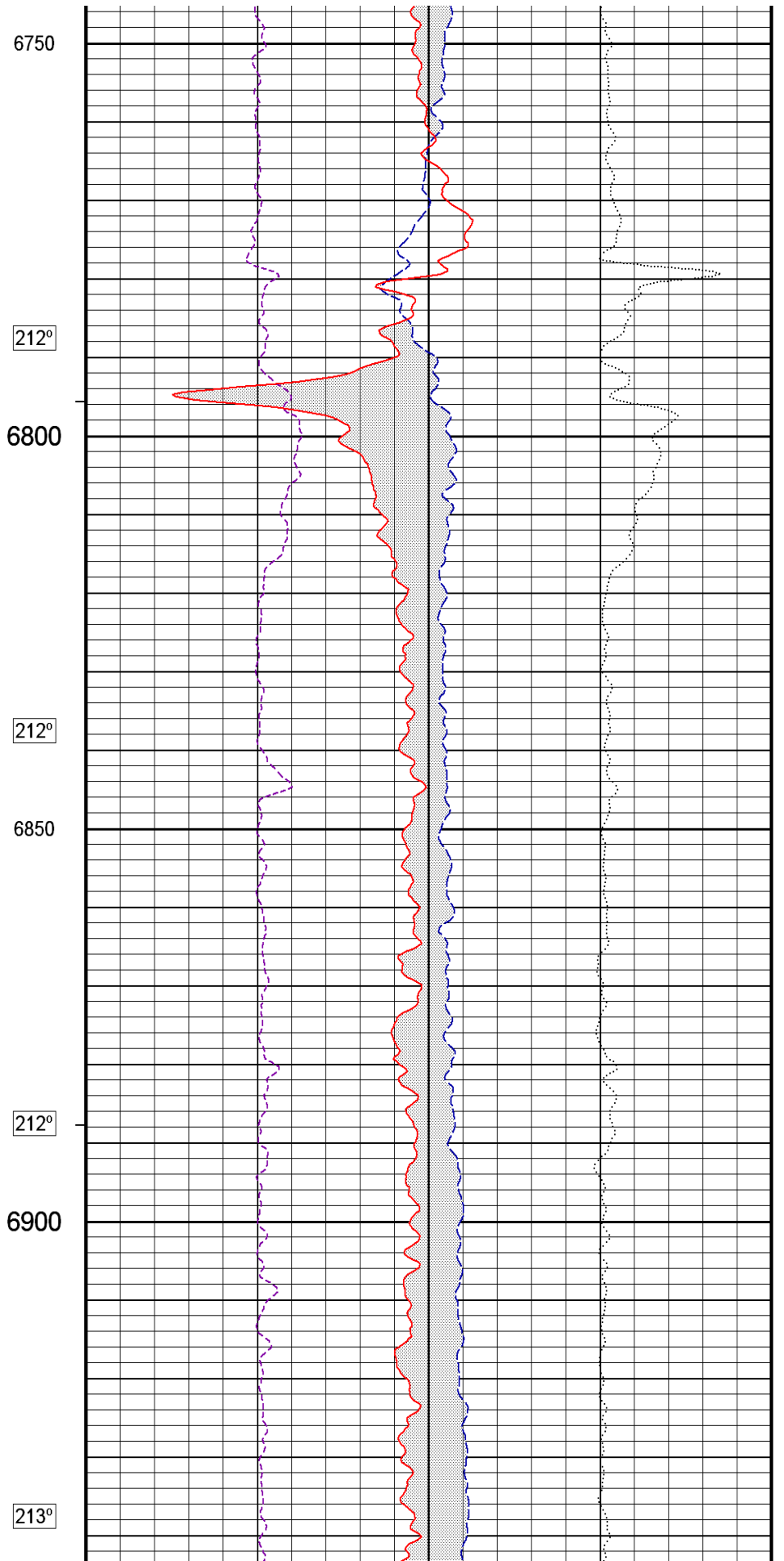
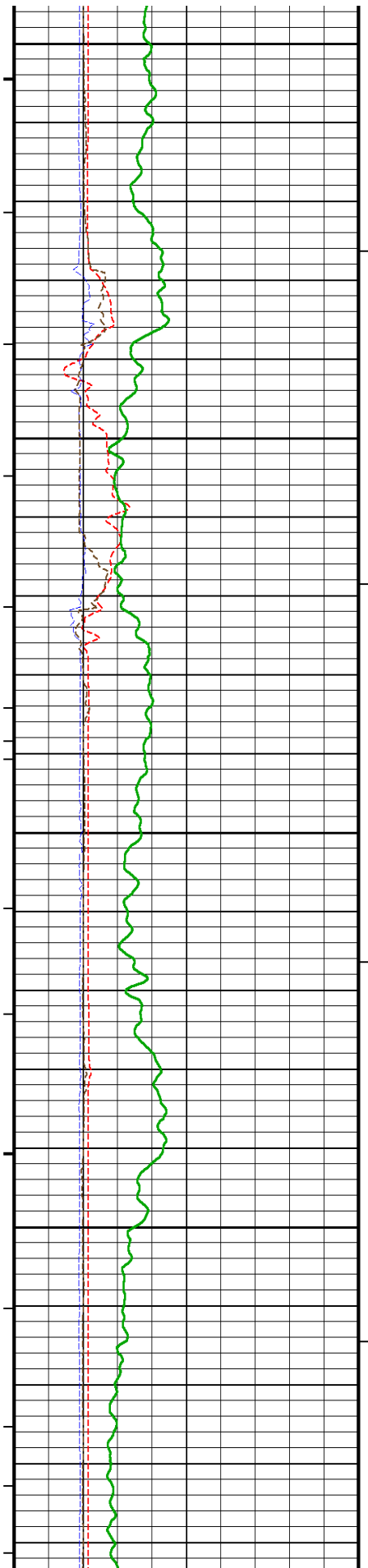
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

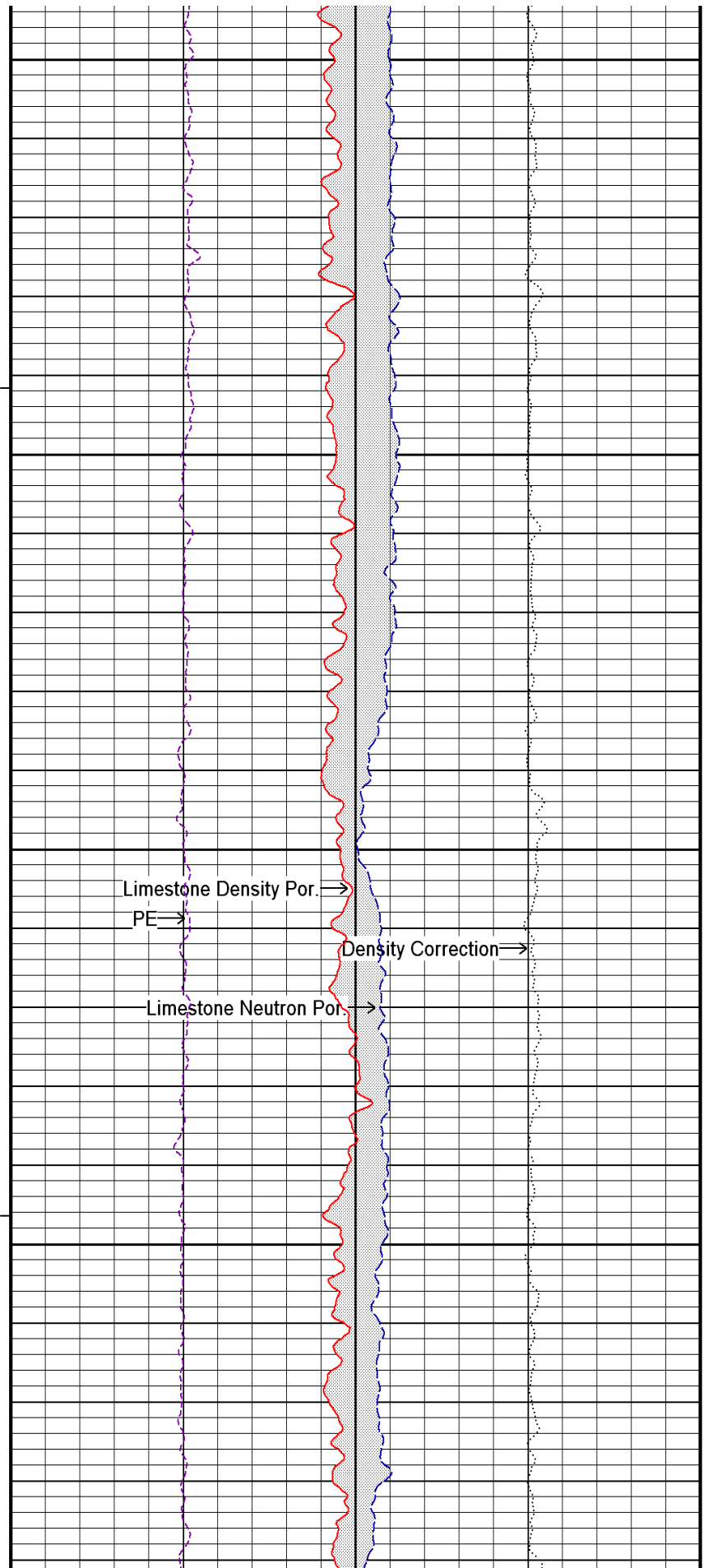
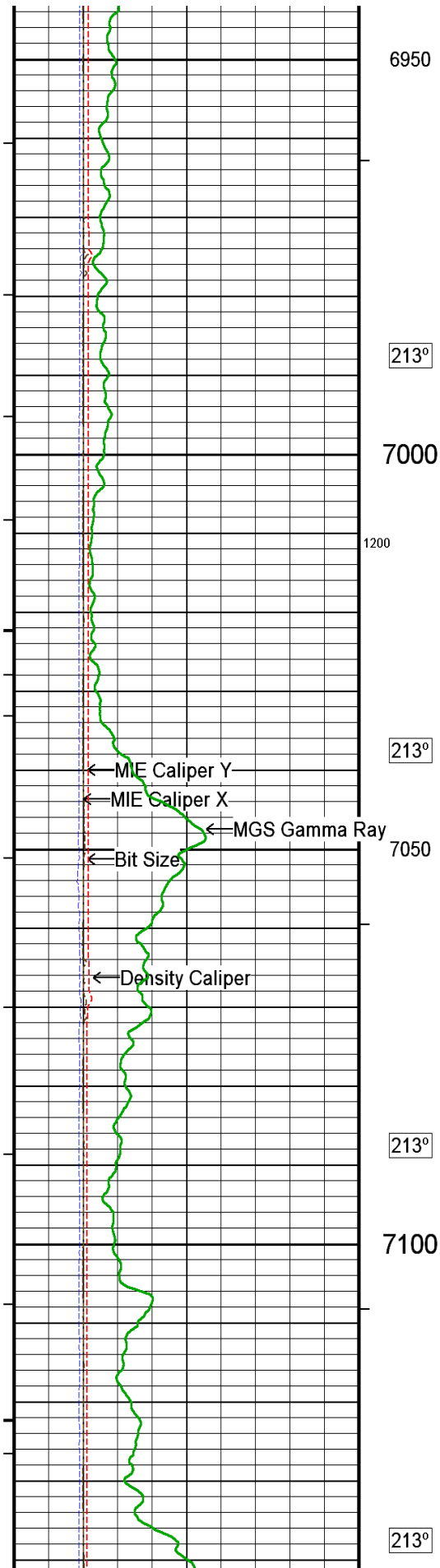


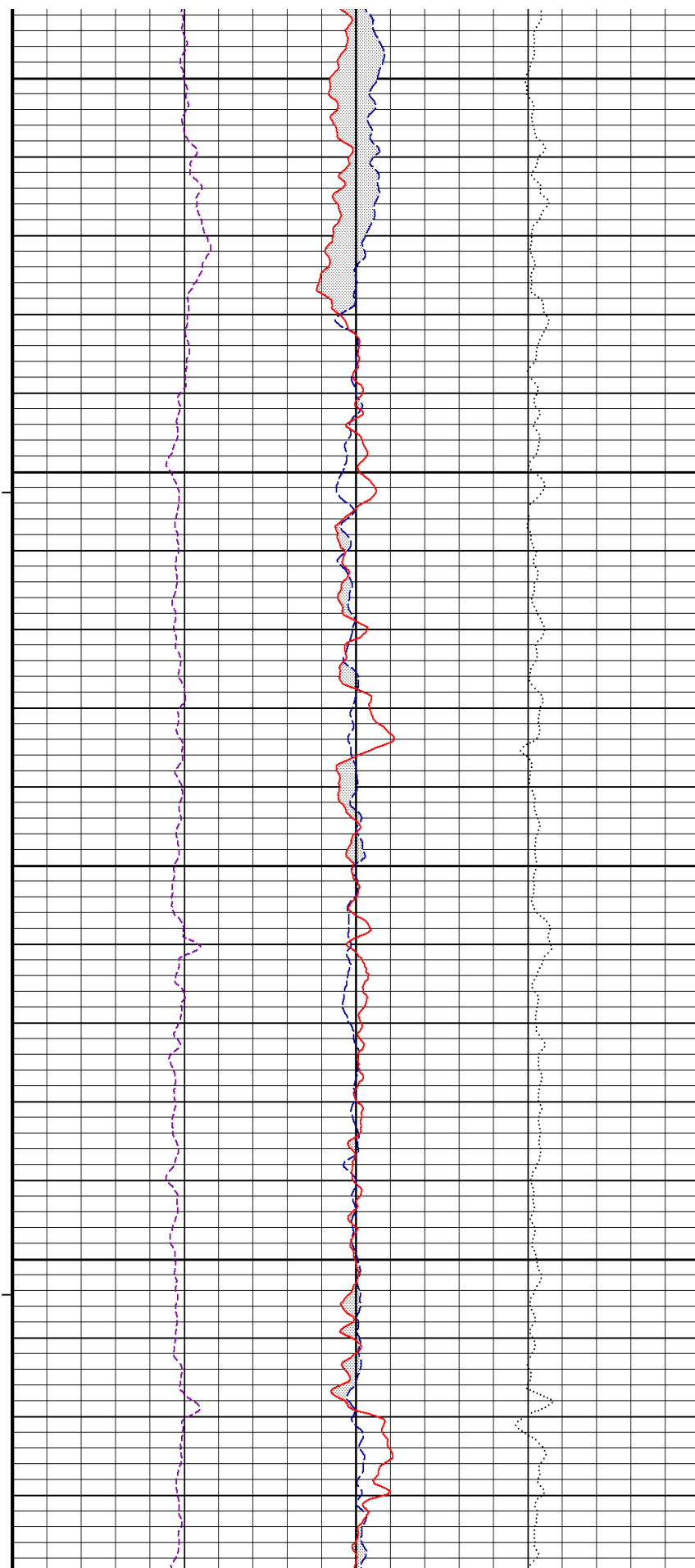
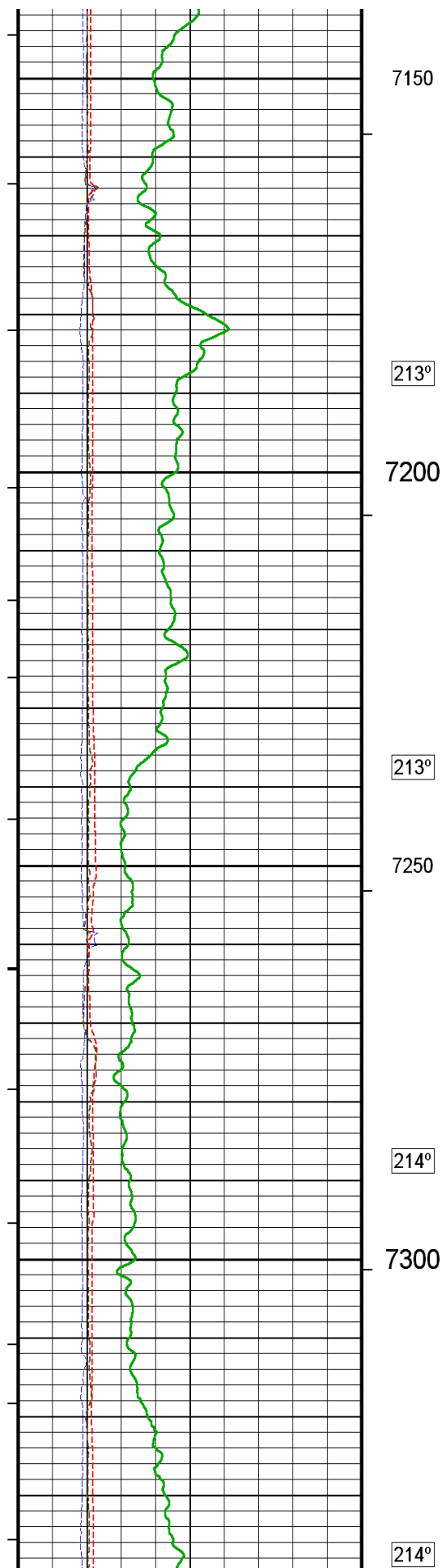


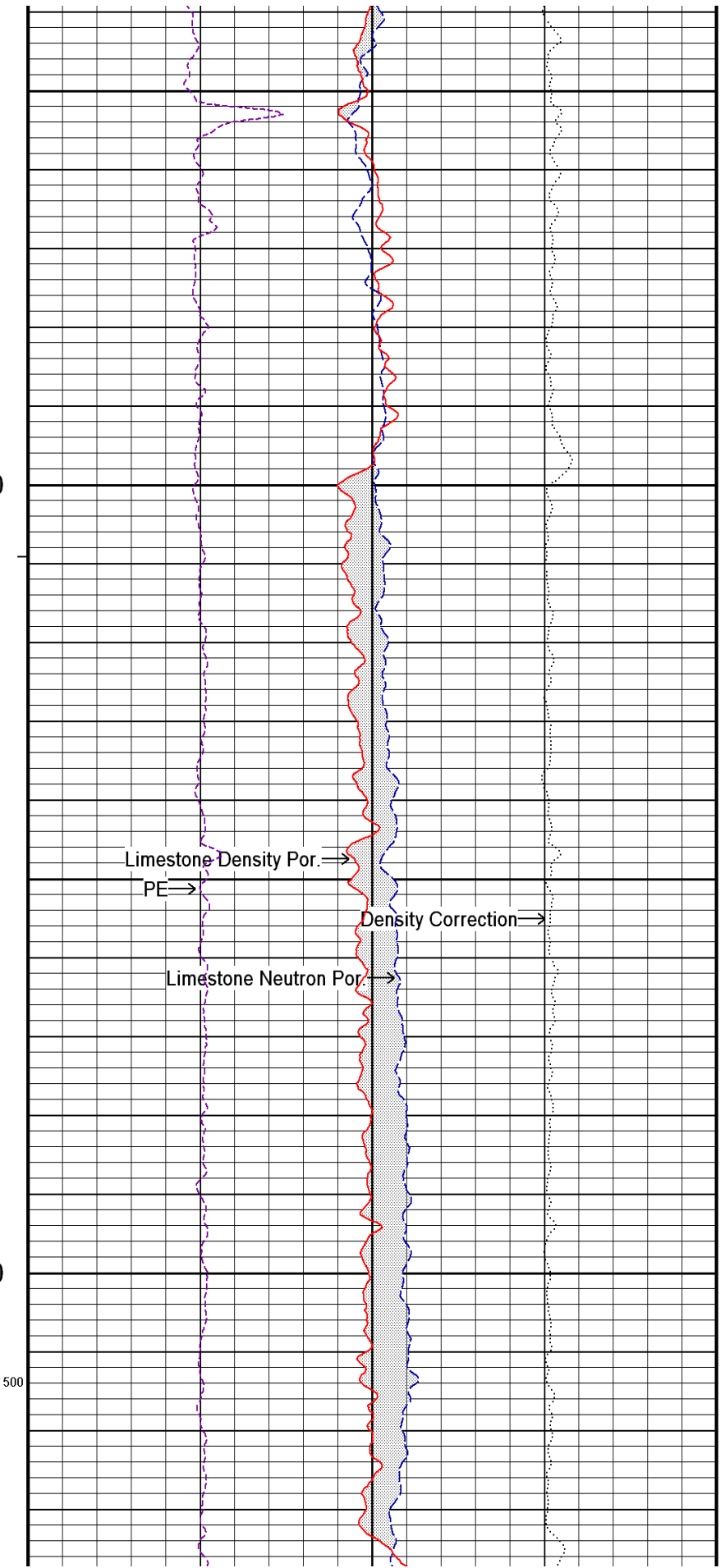
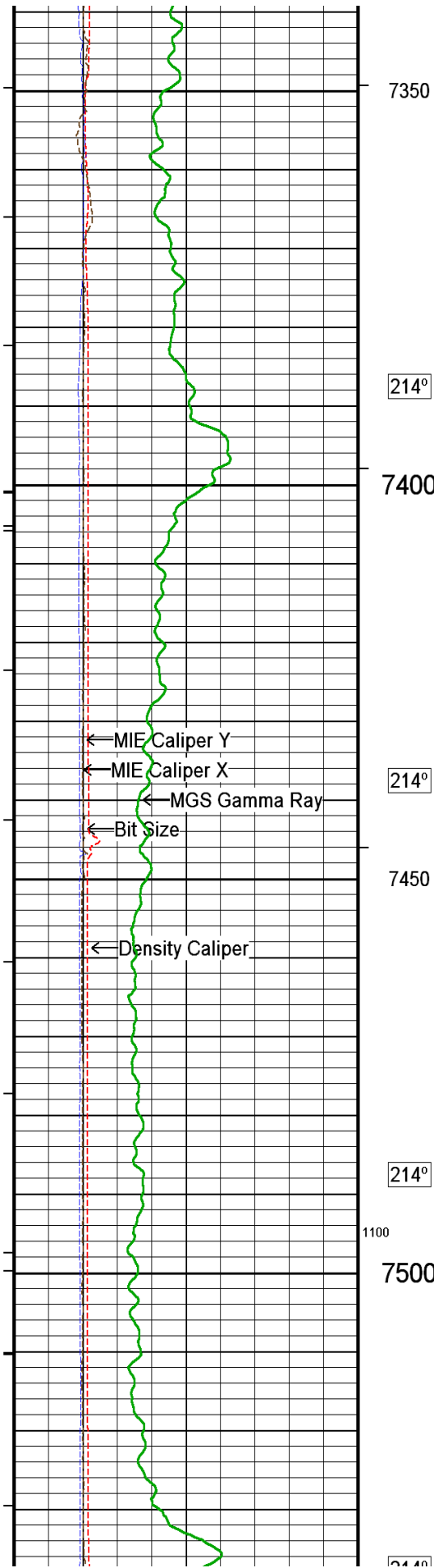


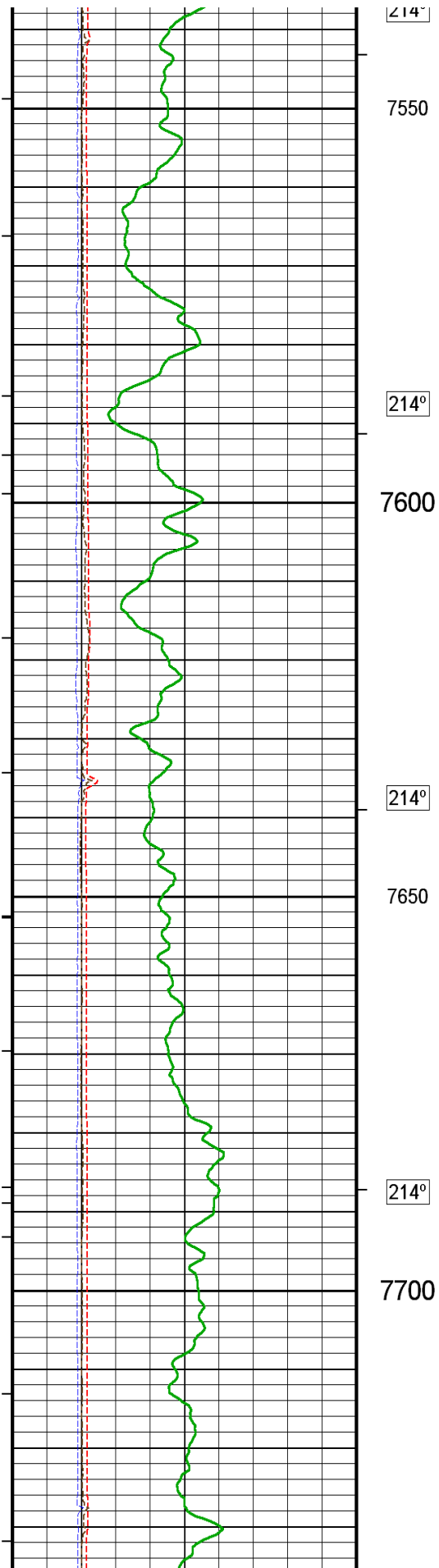












7550

214°

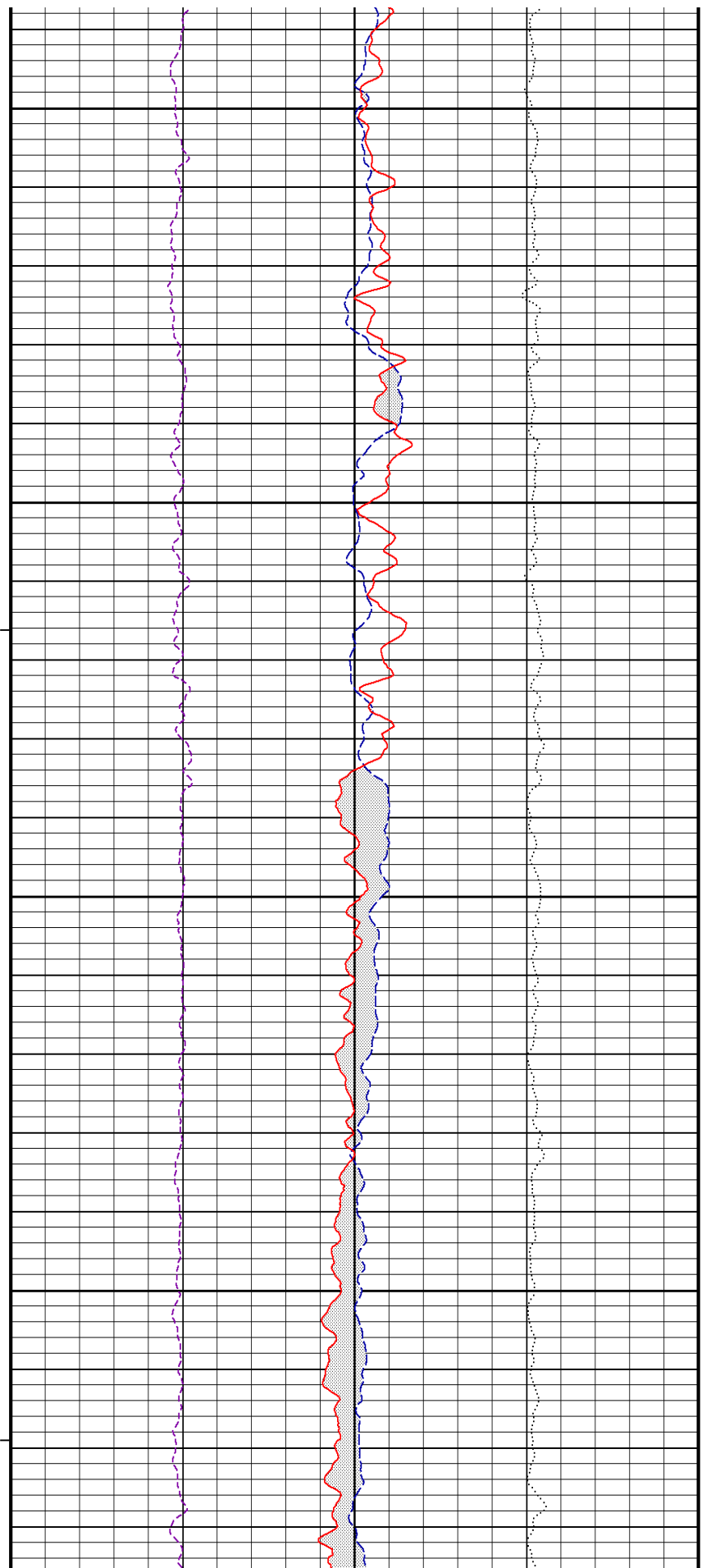
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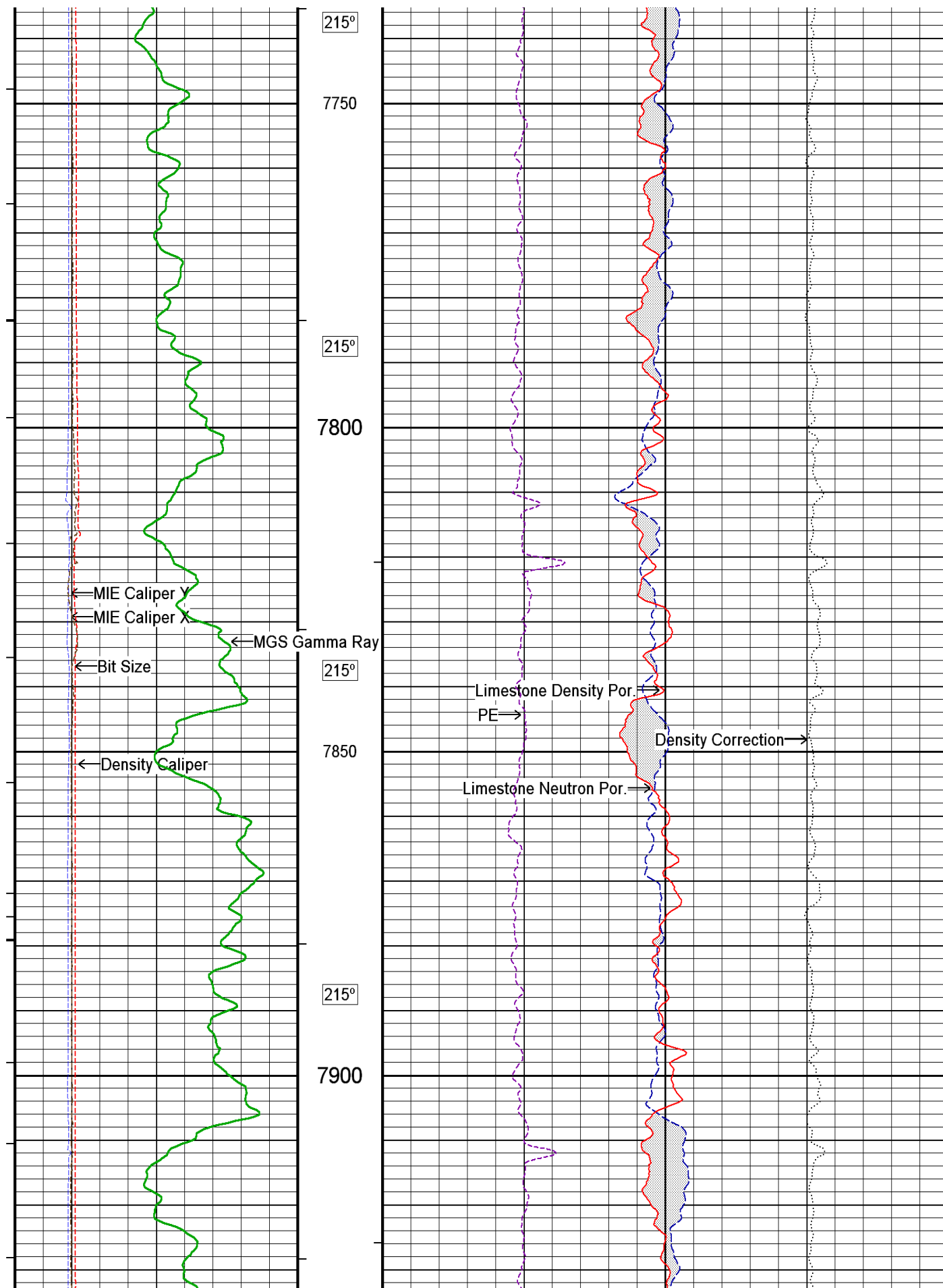
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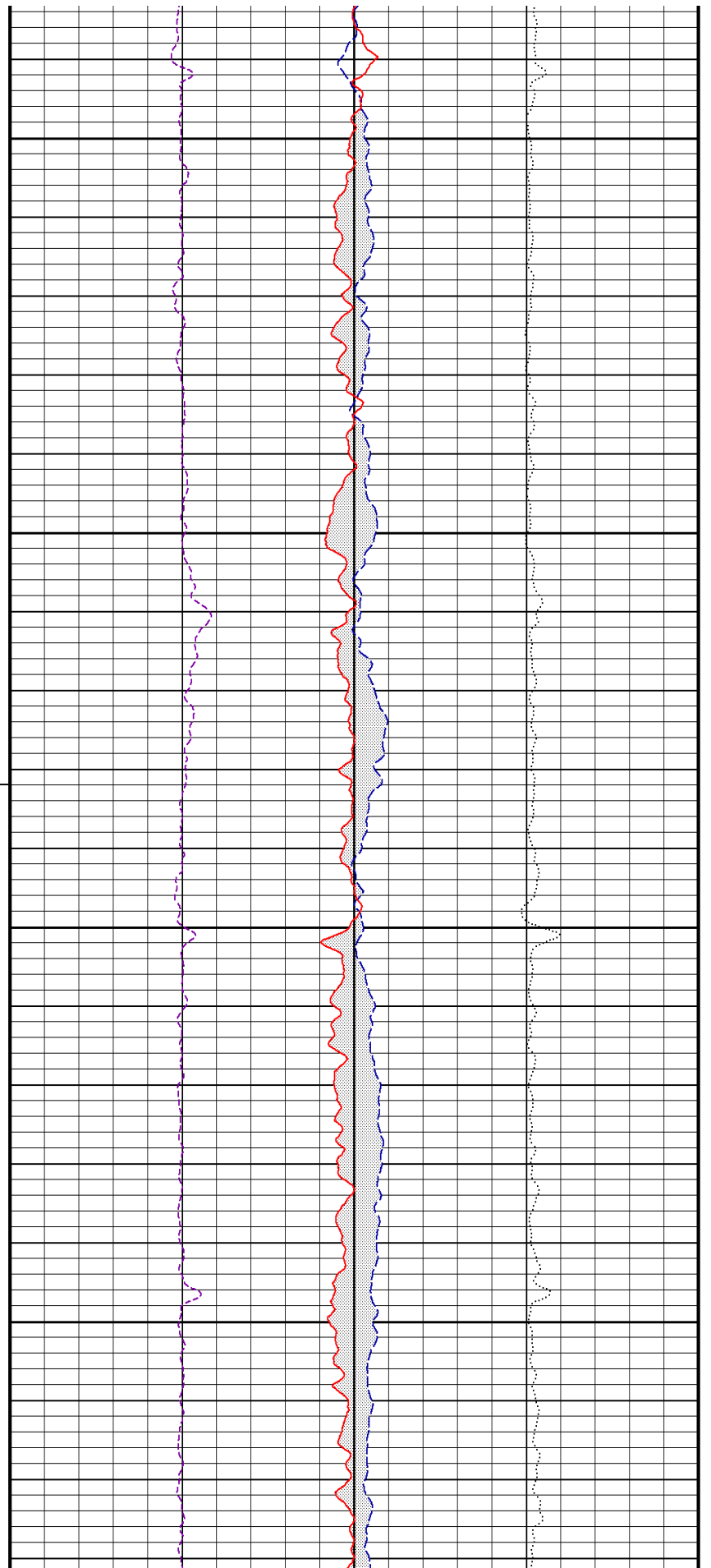
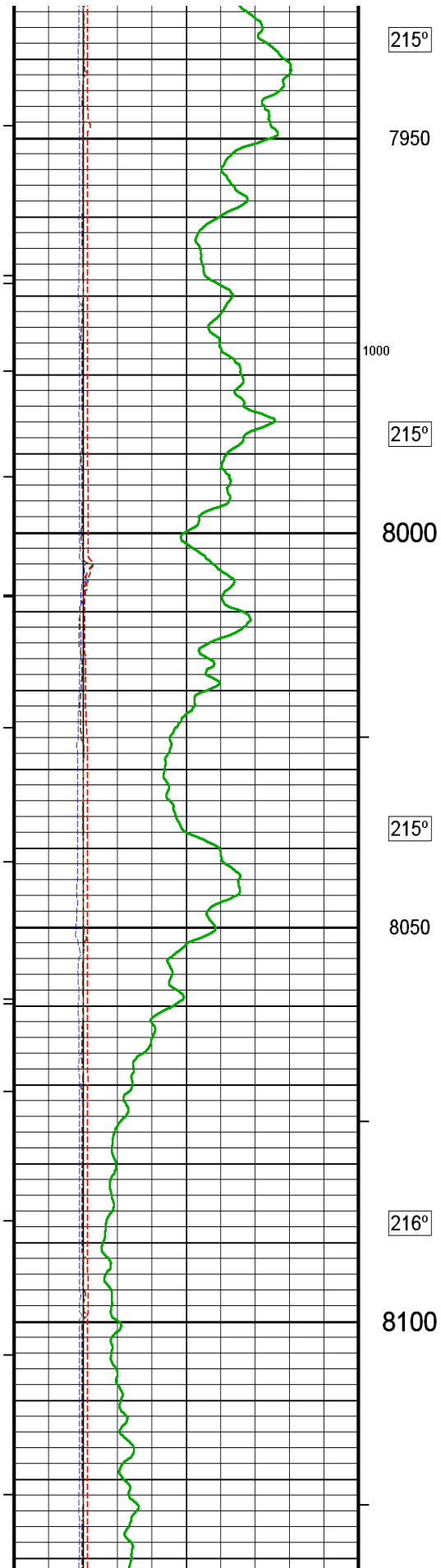
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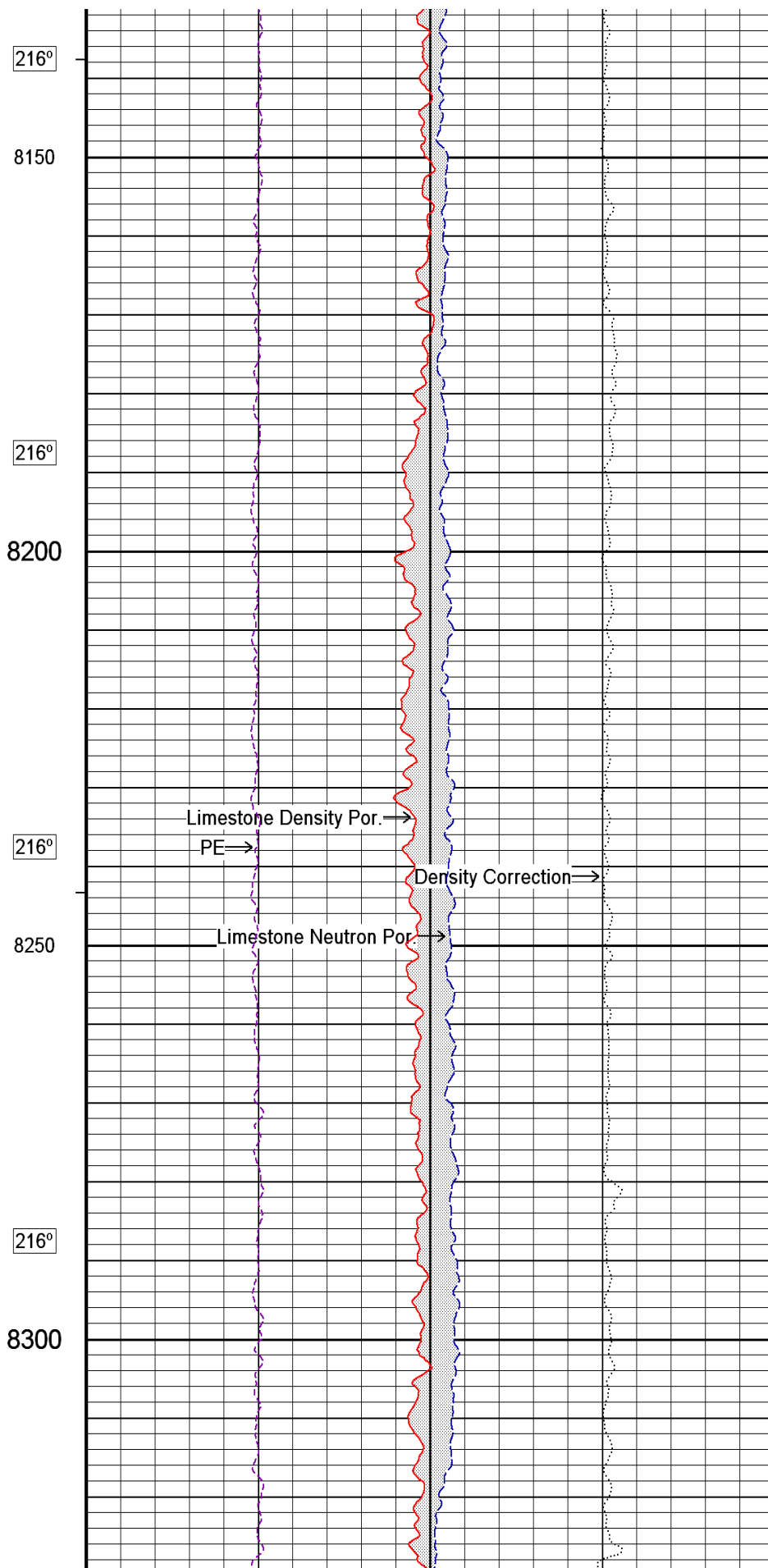
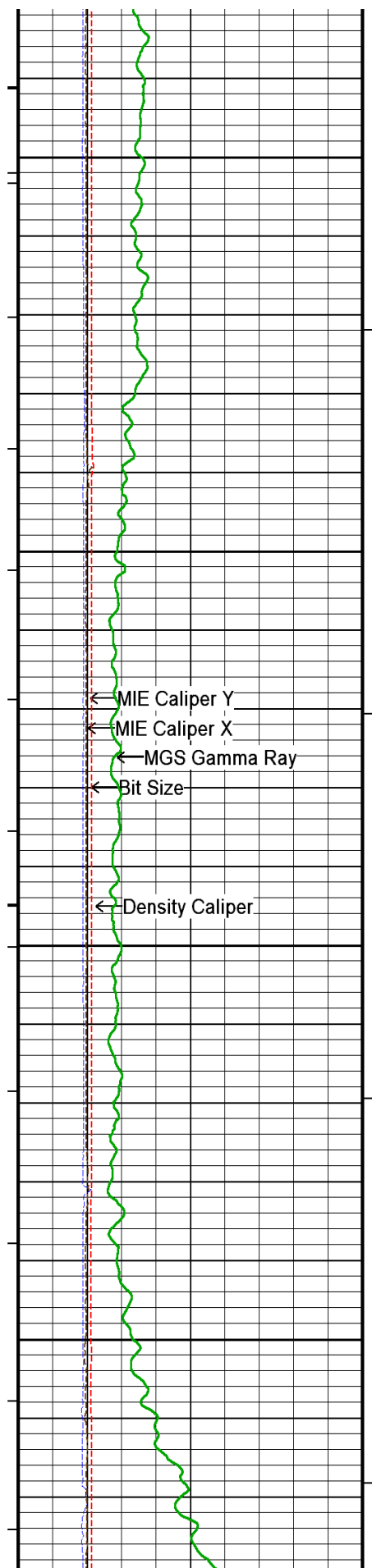
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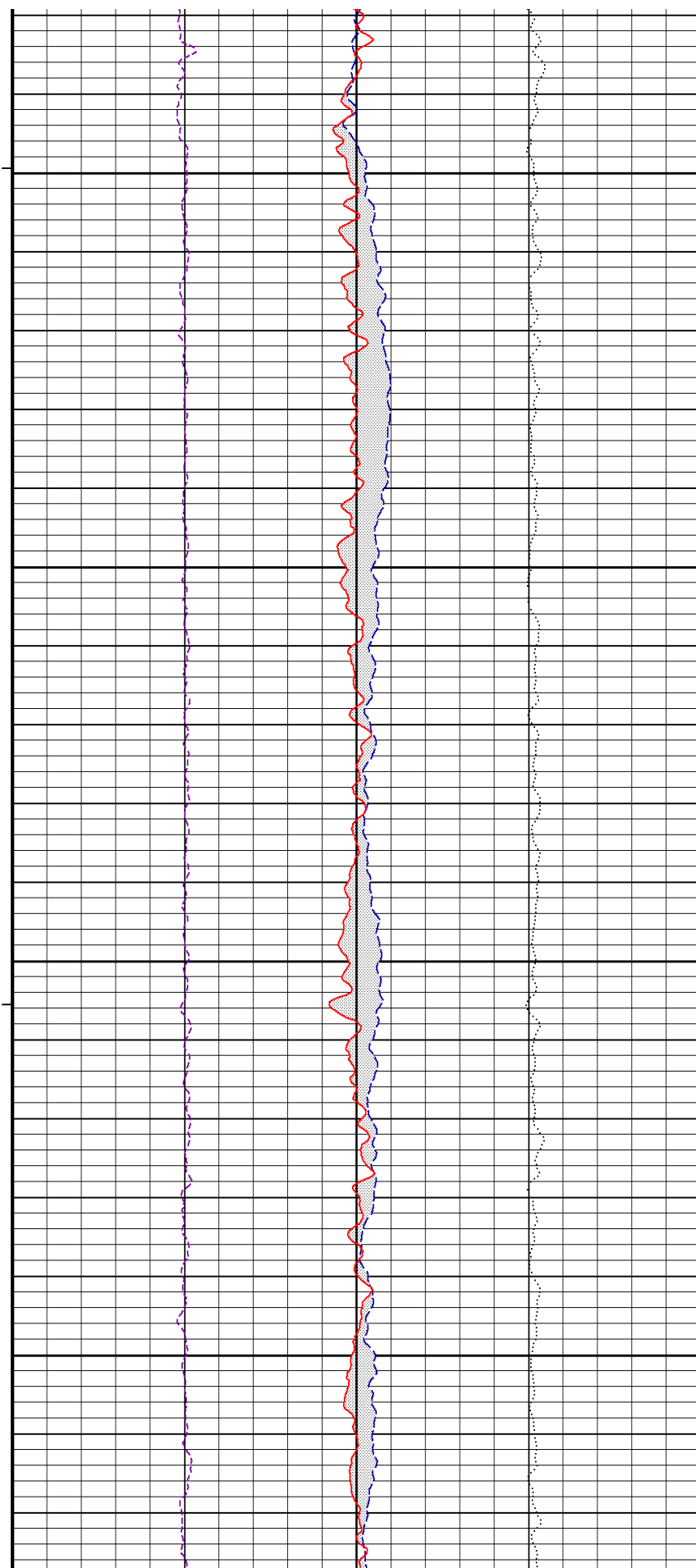
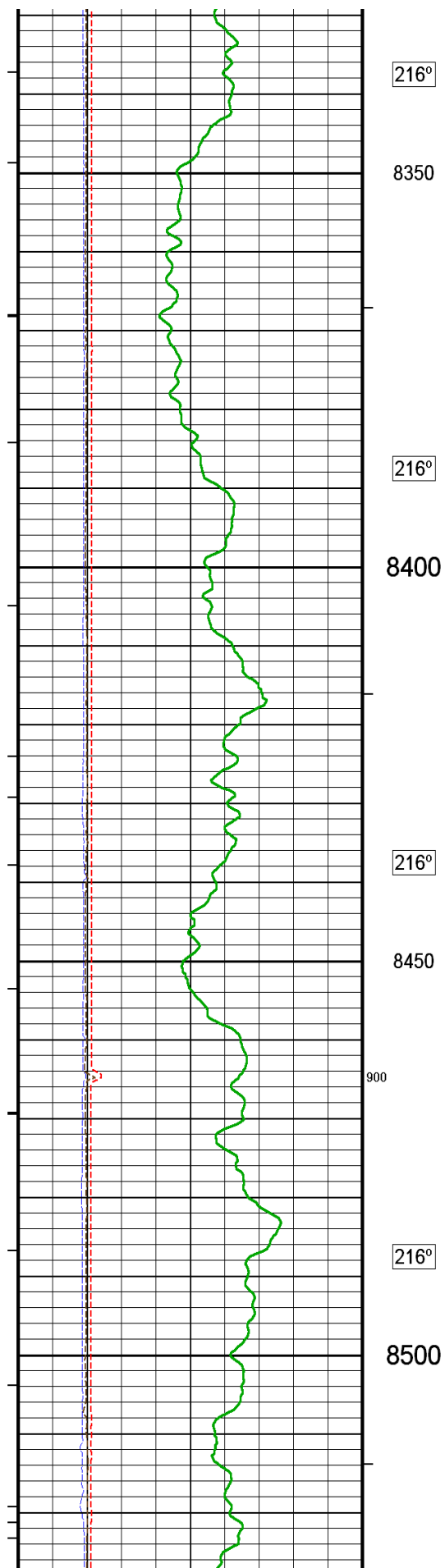


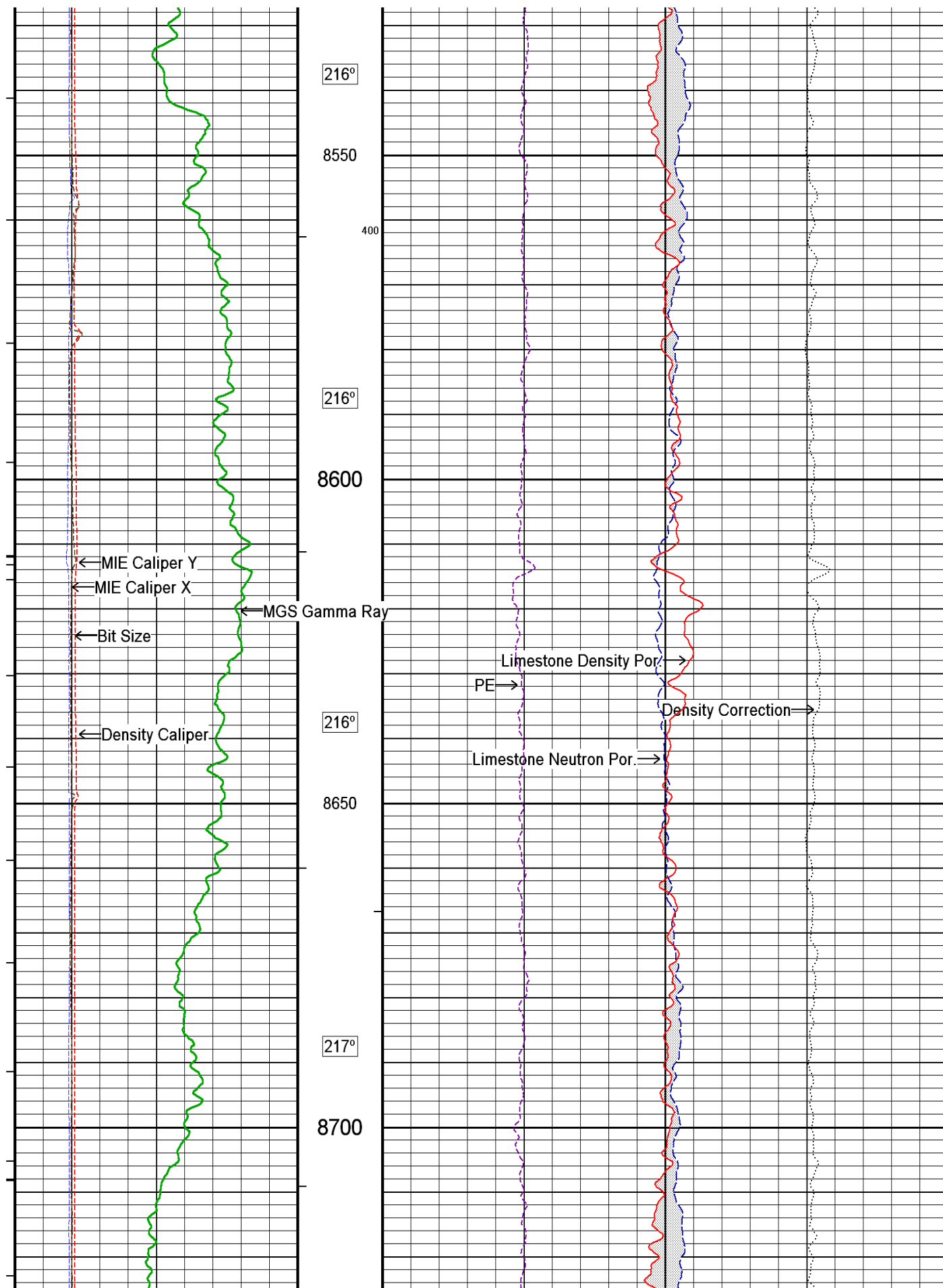


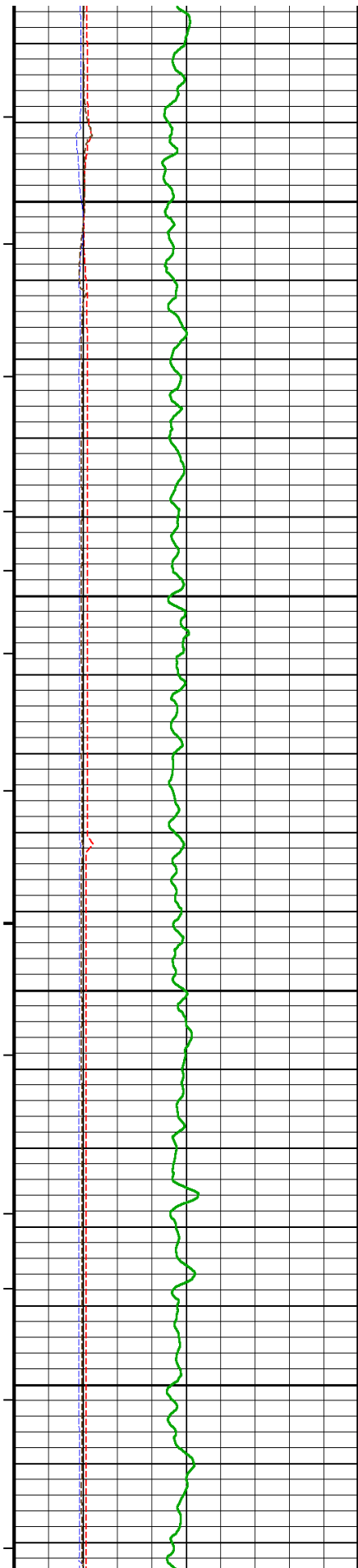












$217^\circ$

8750

$217^\circ$

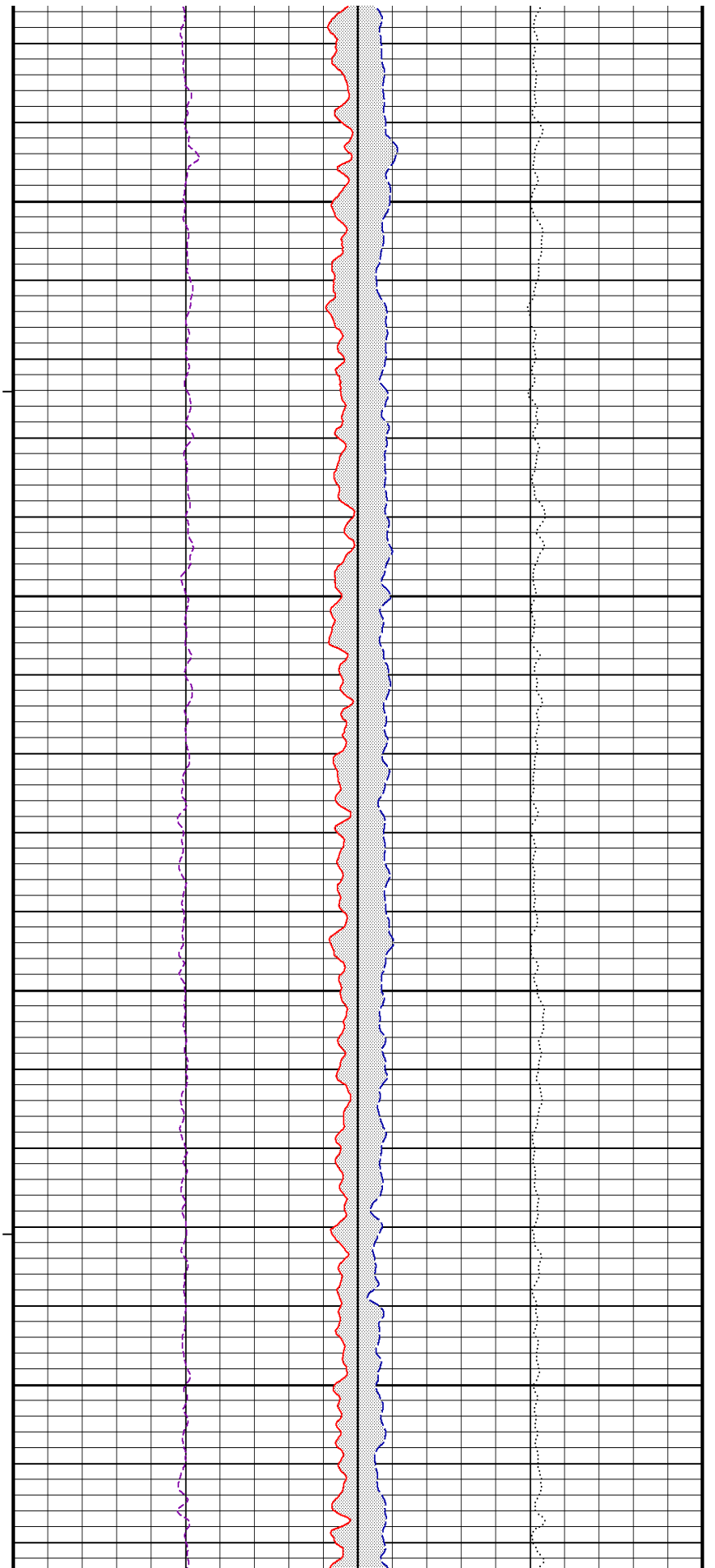
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$217^\circ$

8850

$217^\circ$

8900



$217^\circ$

8750

$217^\circ$

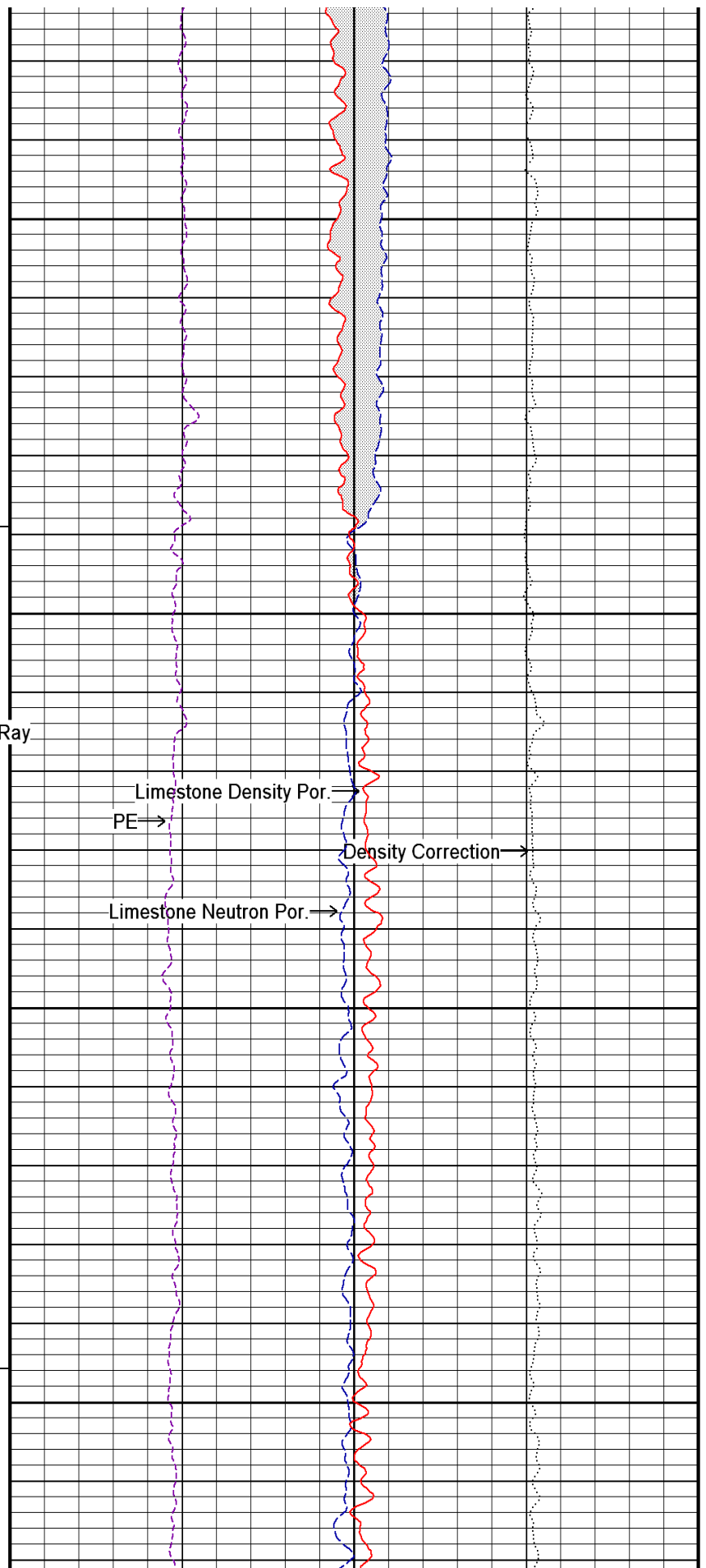
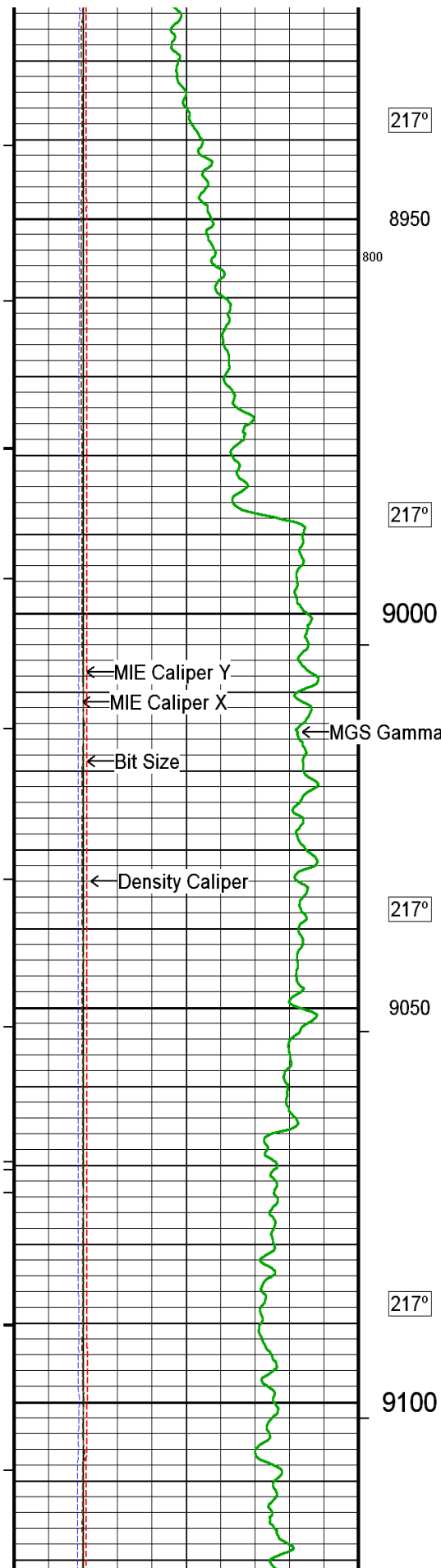
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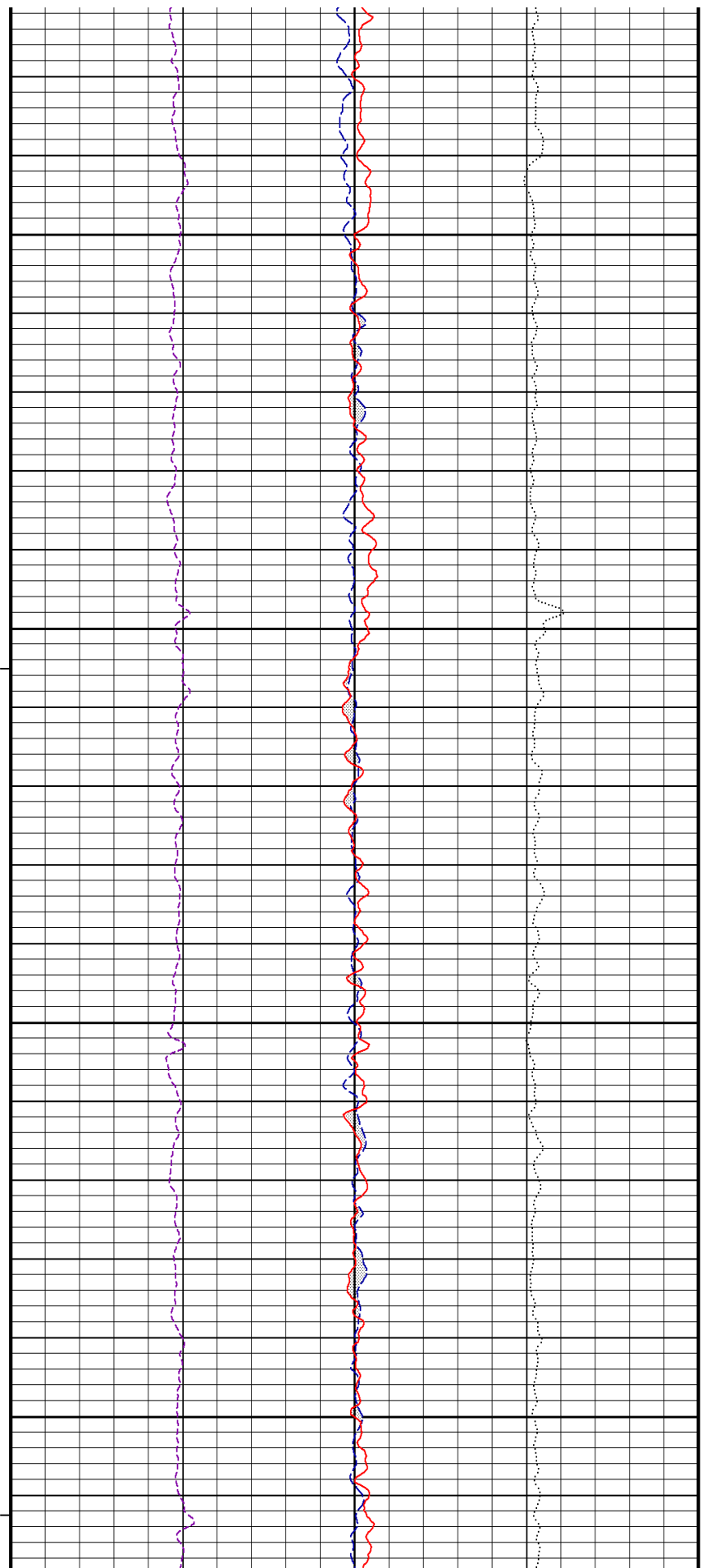
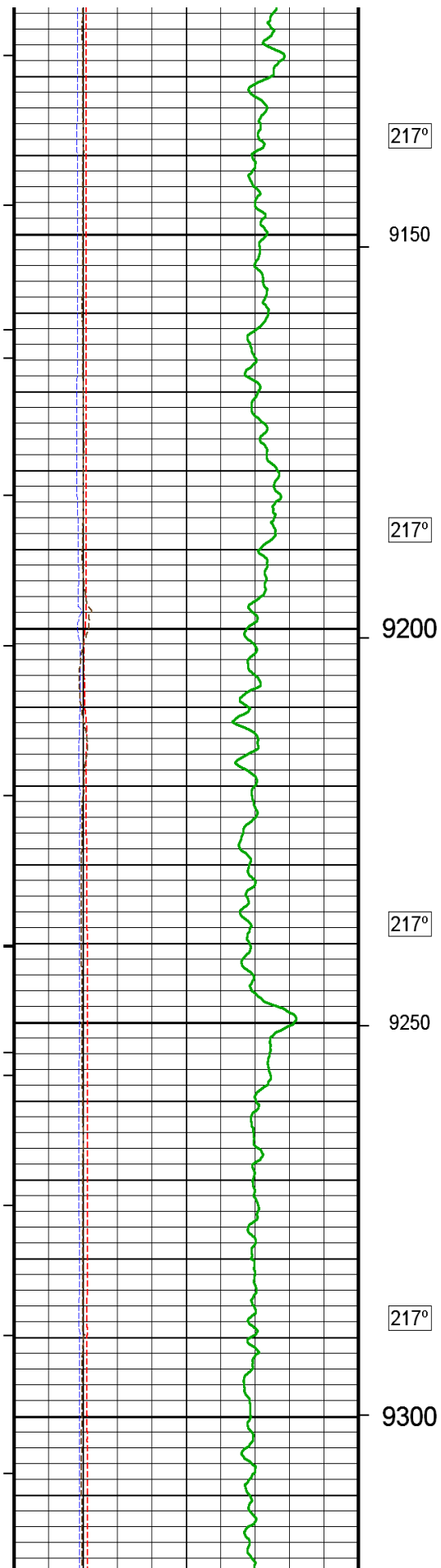
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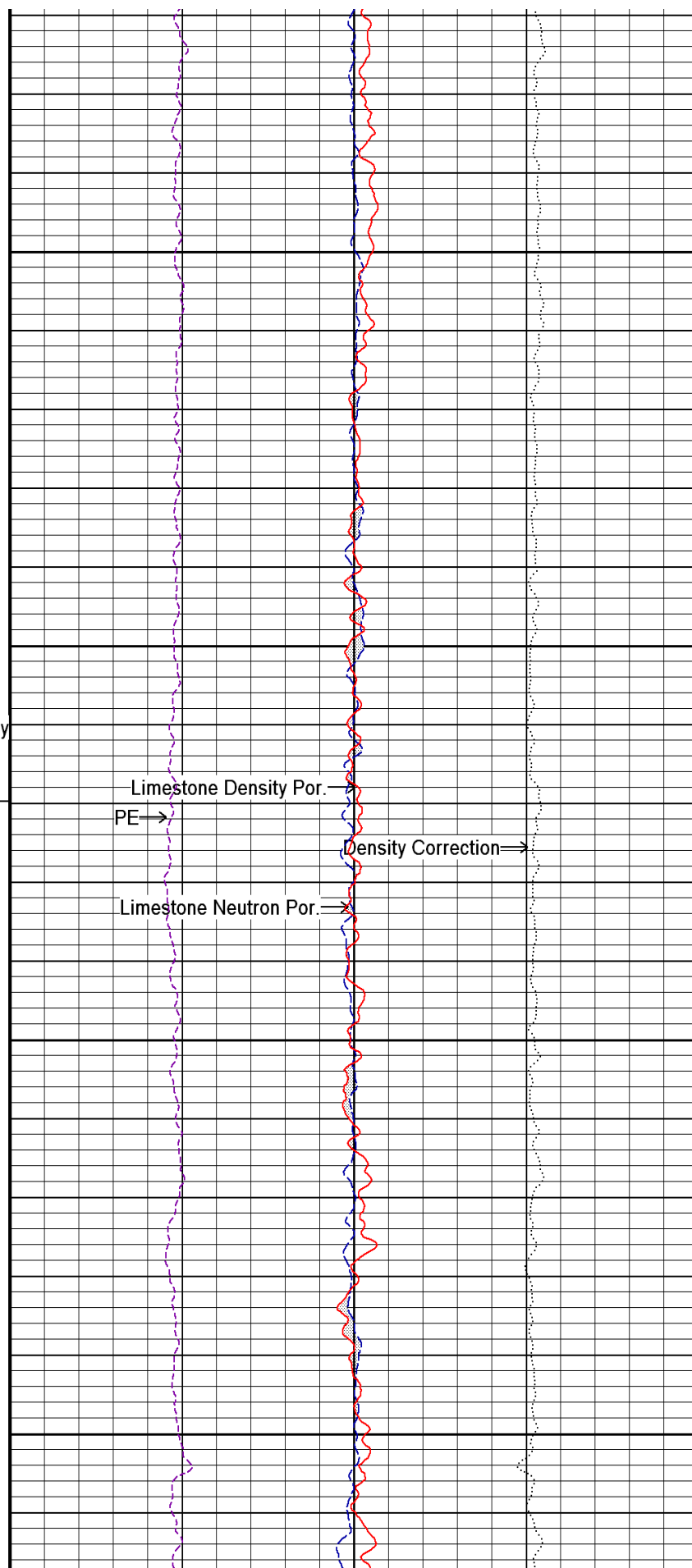
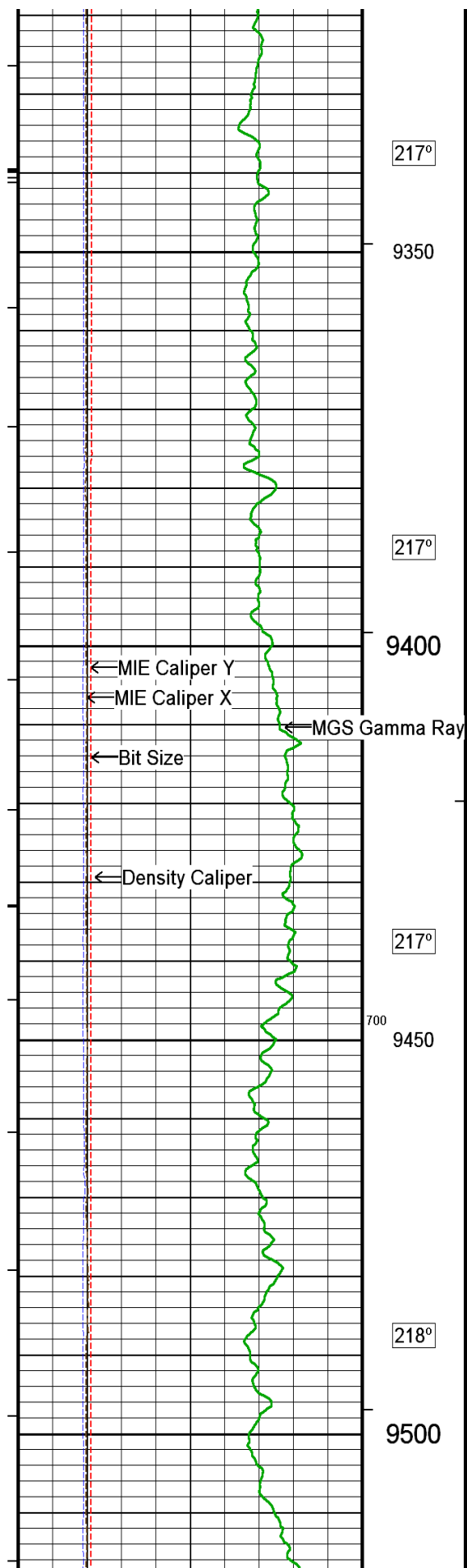
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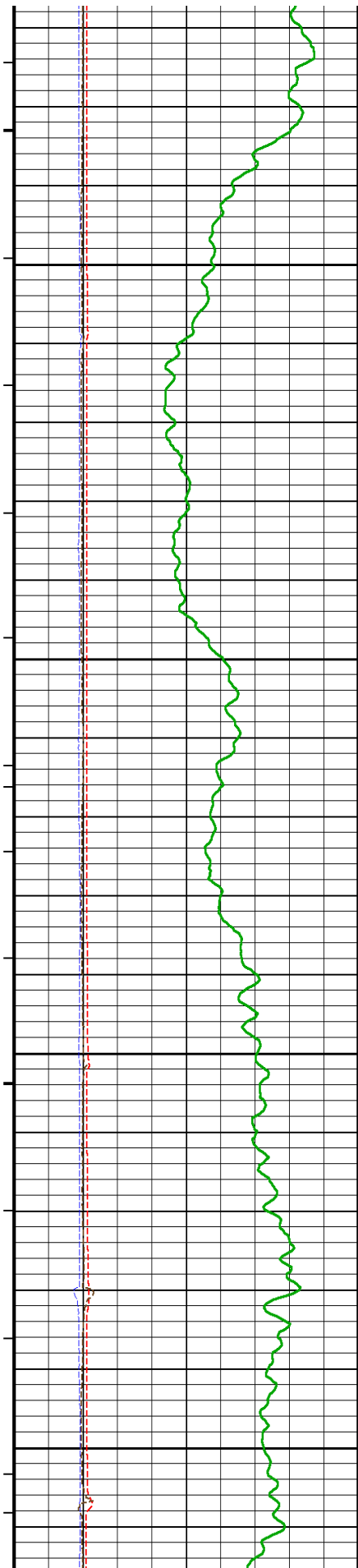
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8900









217°

9550

218°

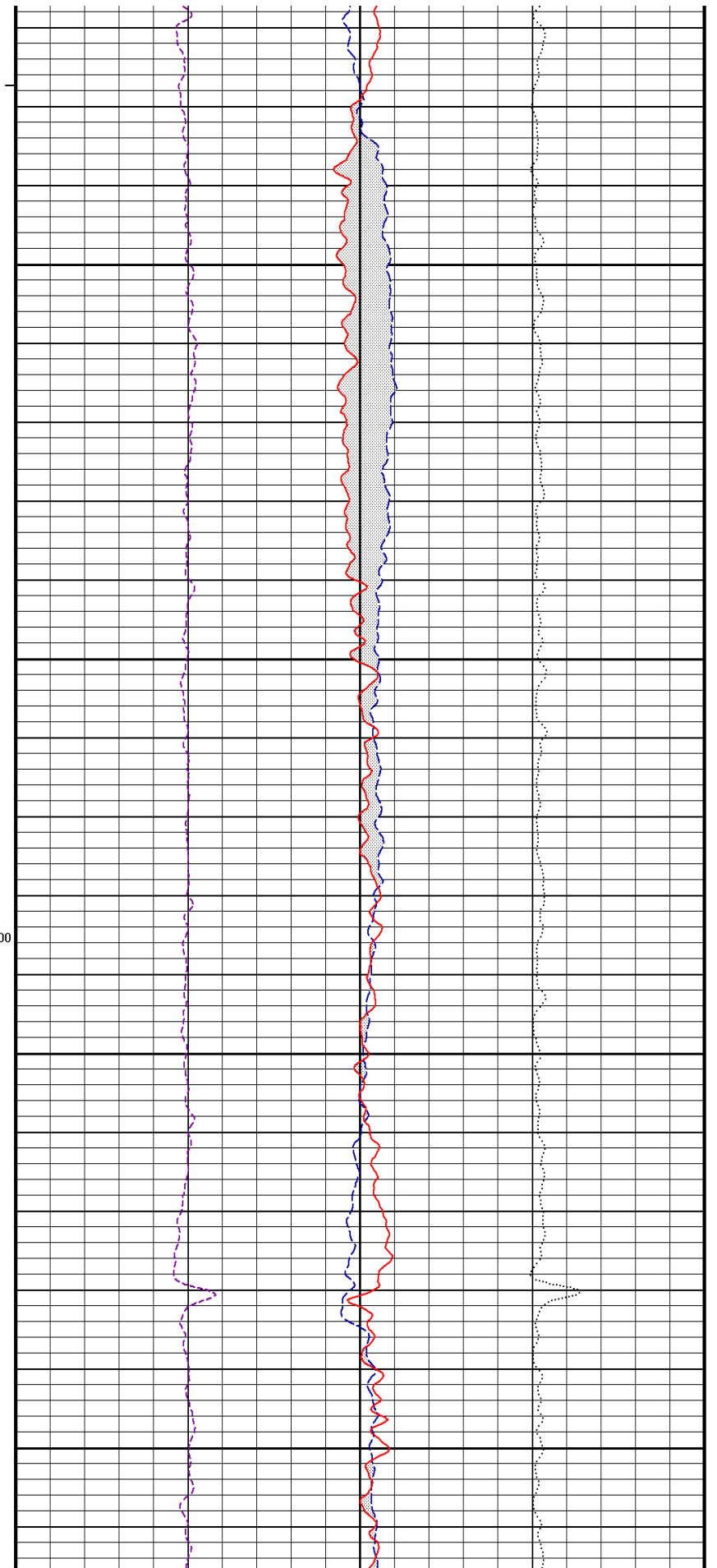
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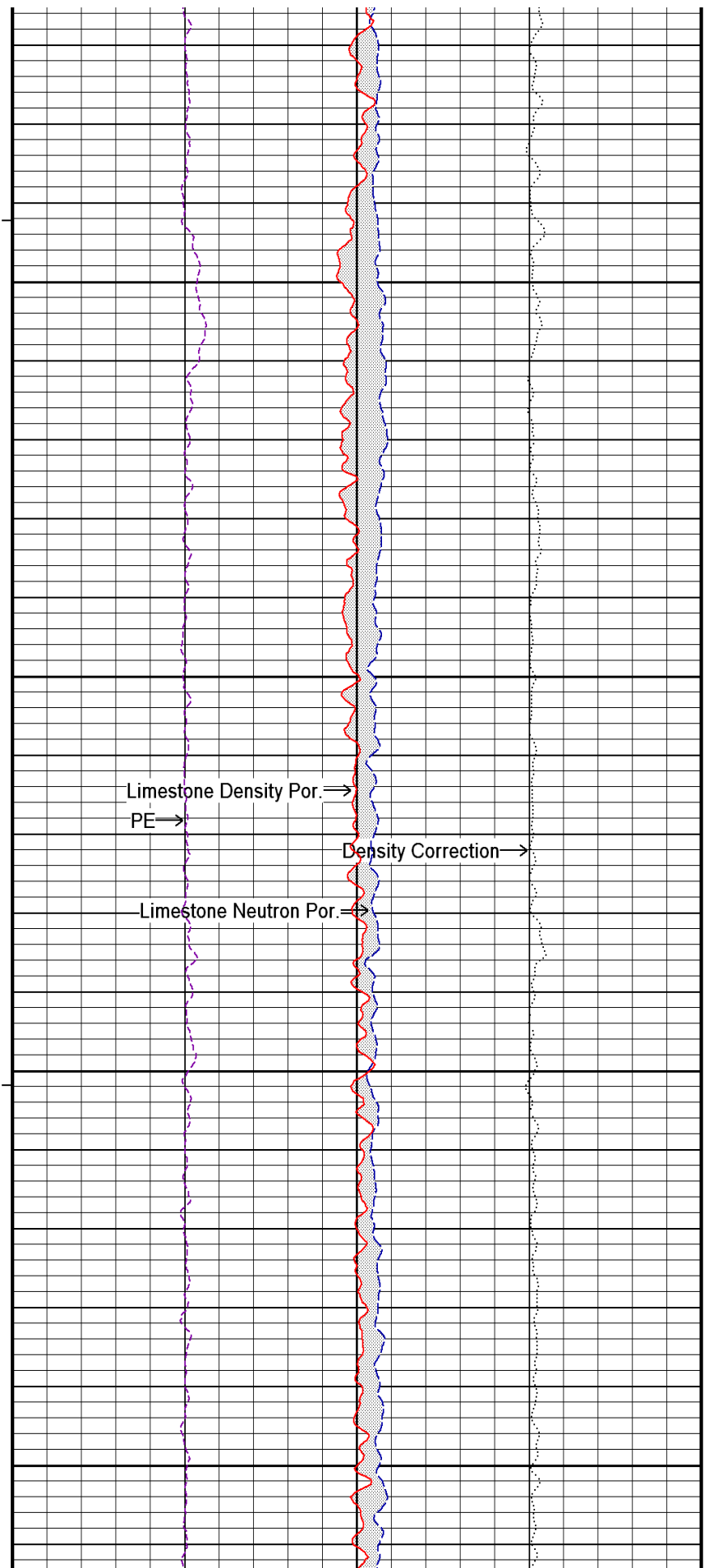
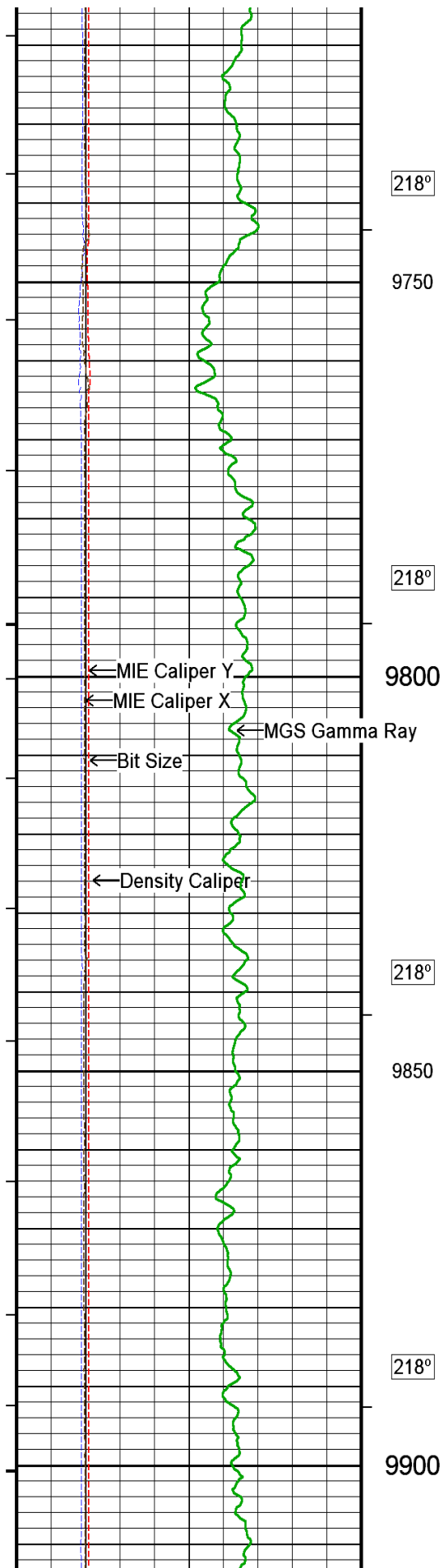
218°<sup>300</sup>

9650

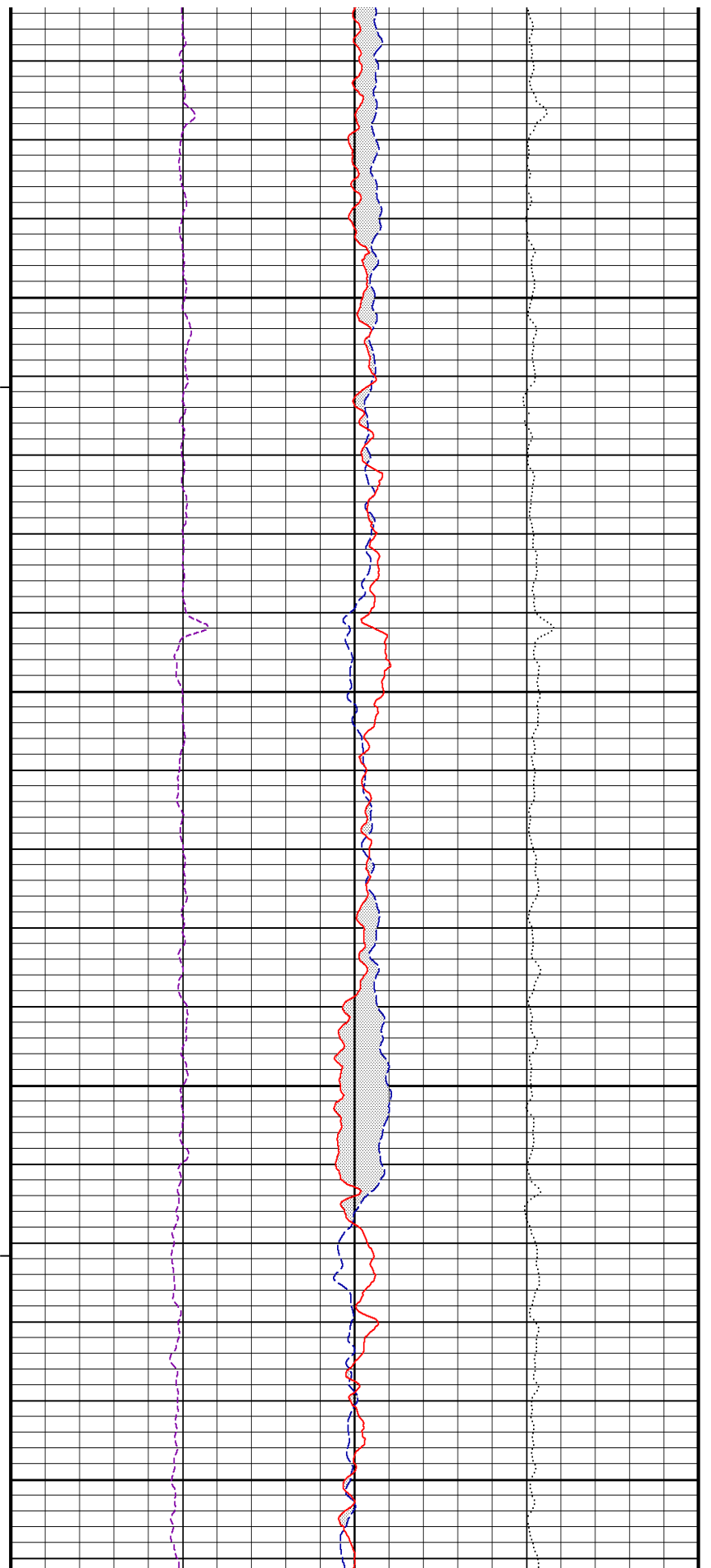
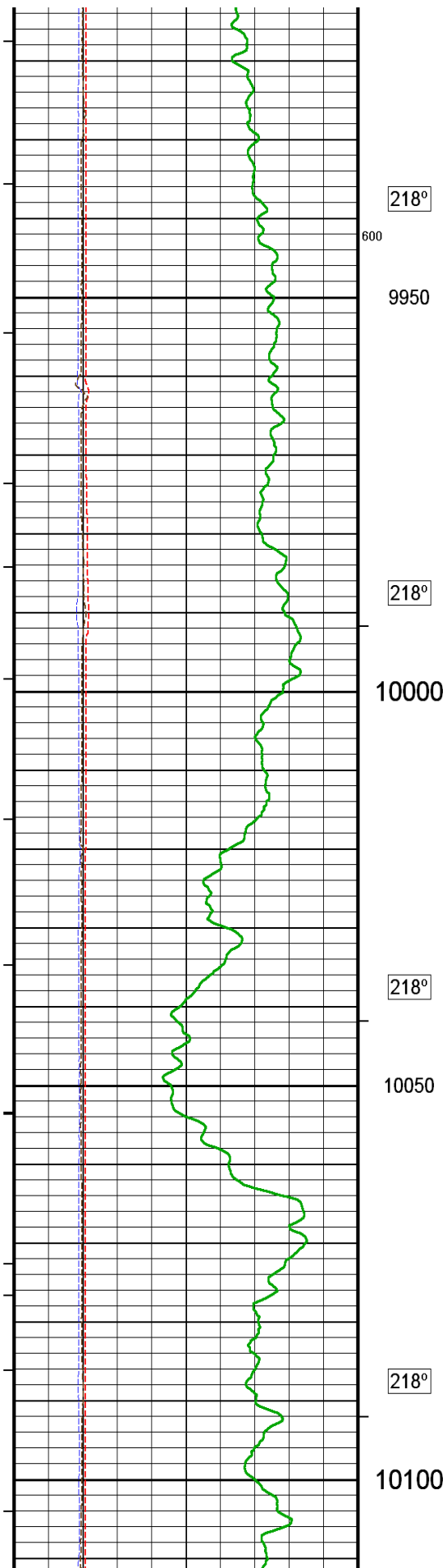
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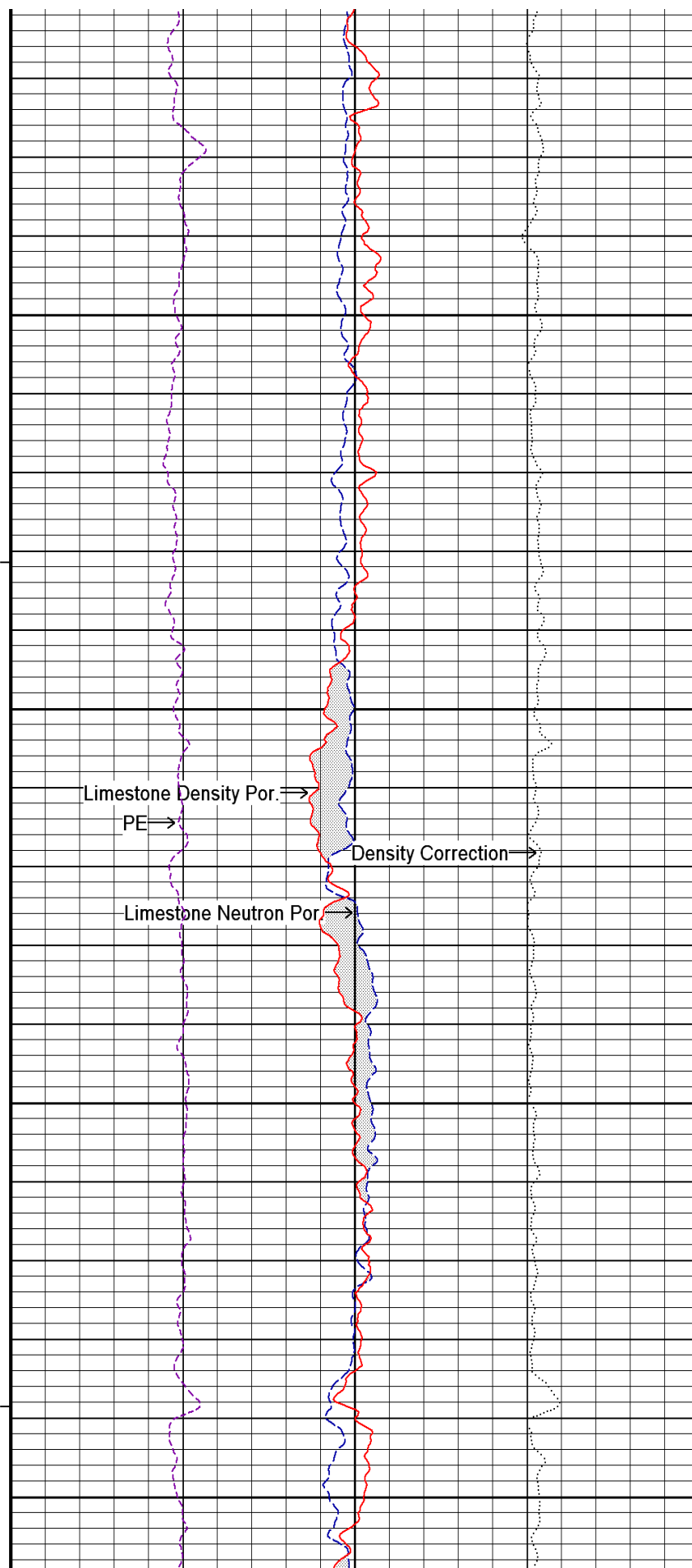
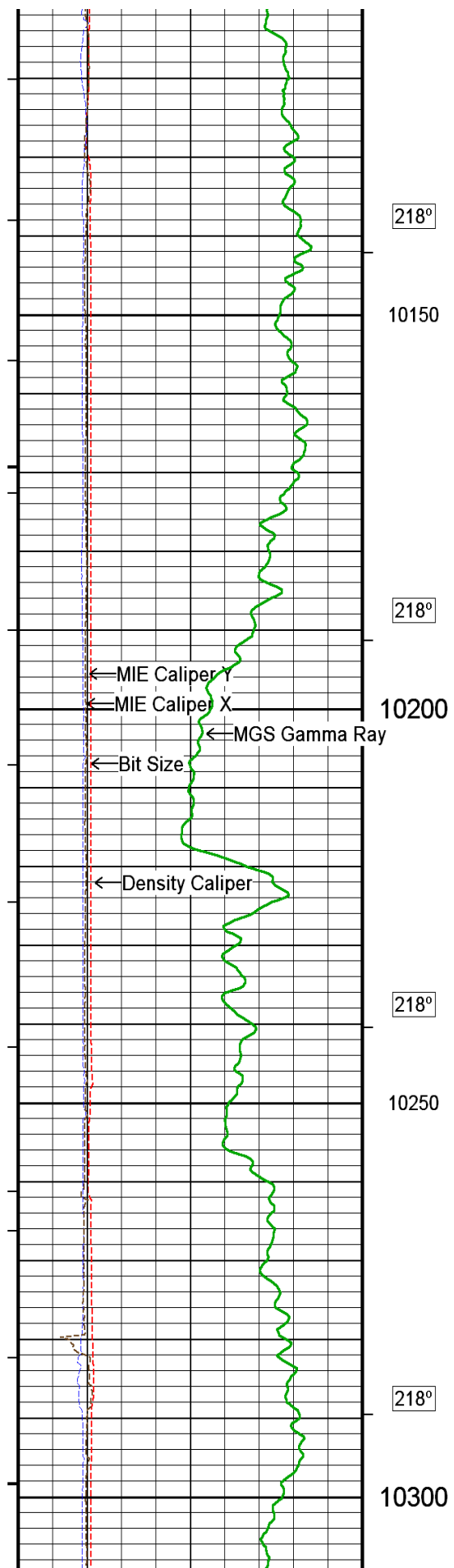
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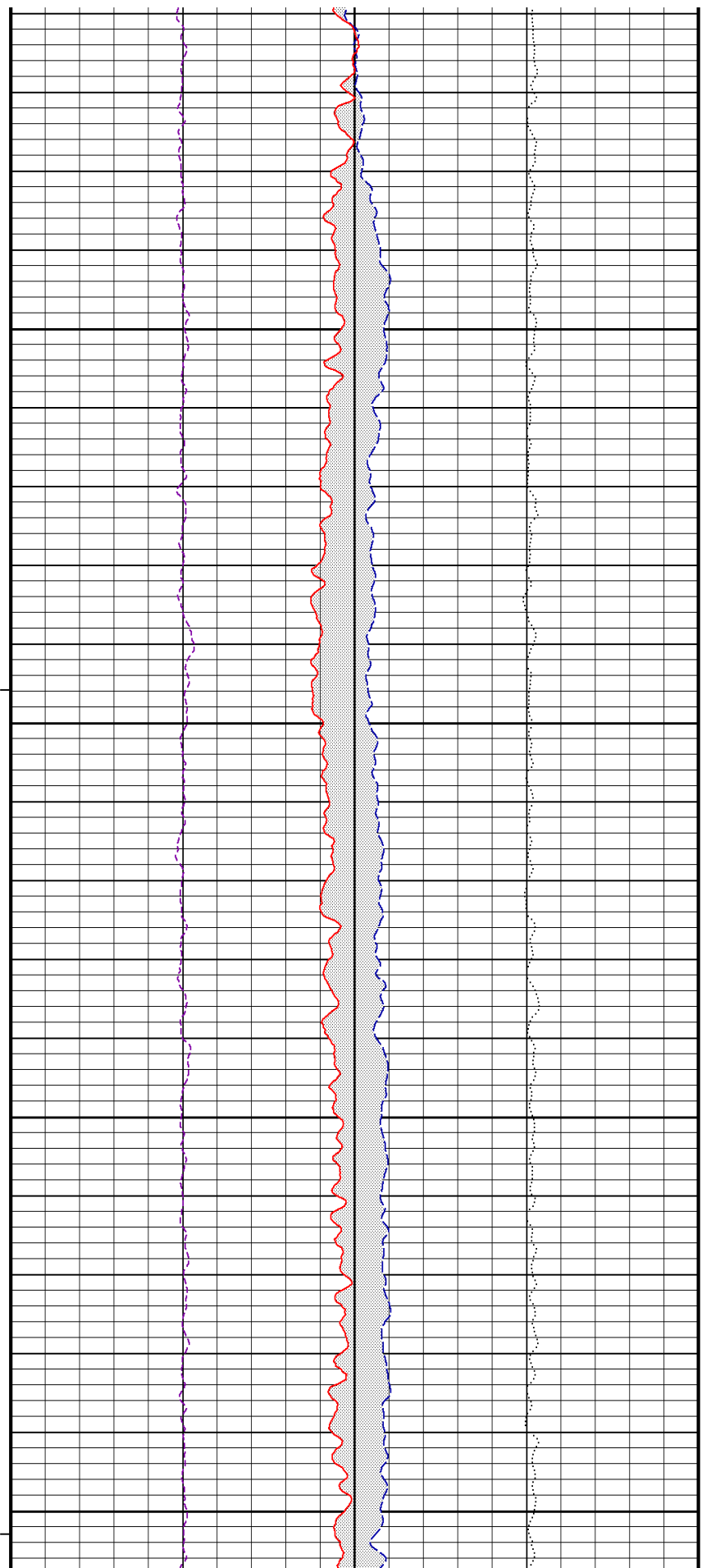
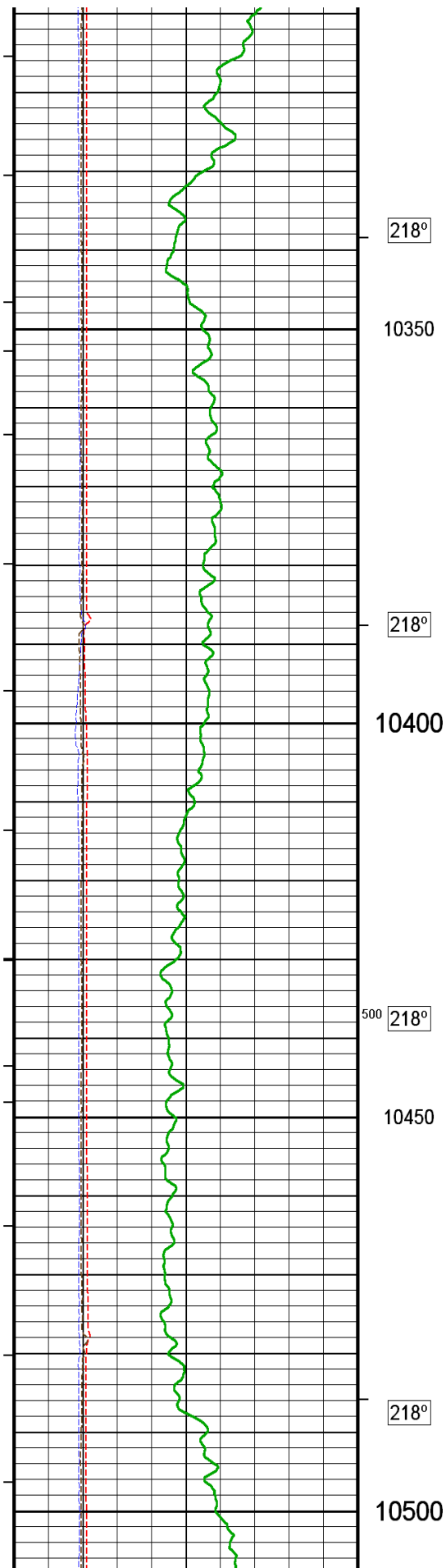


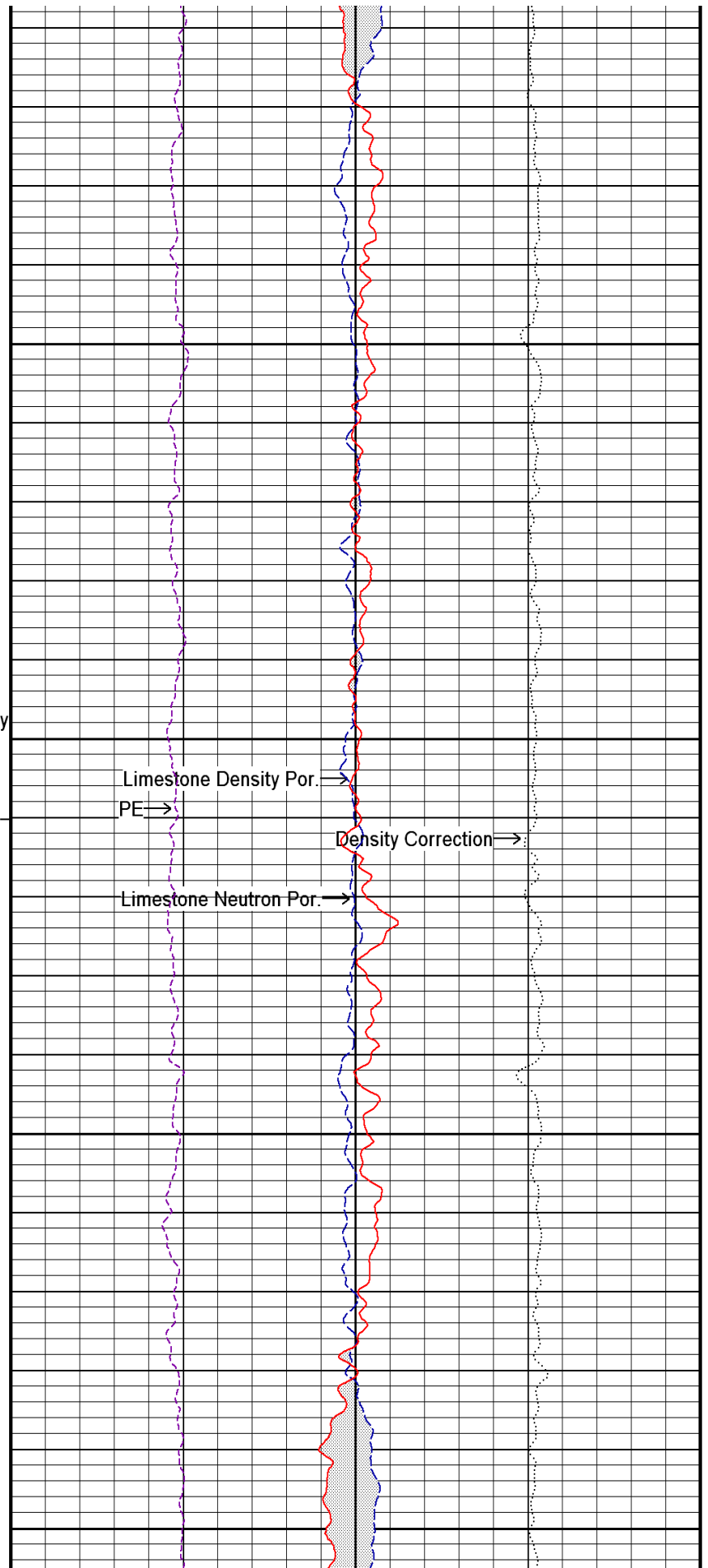
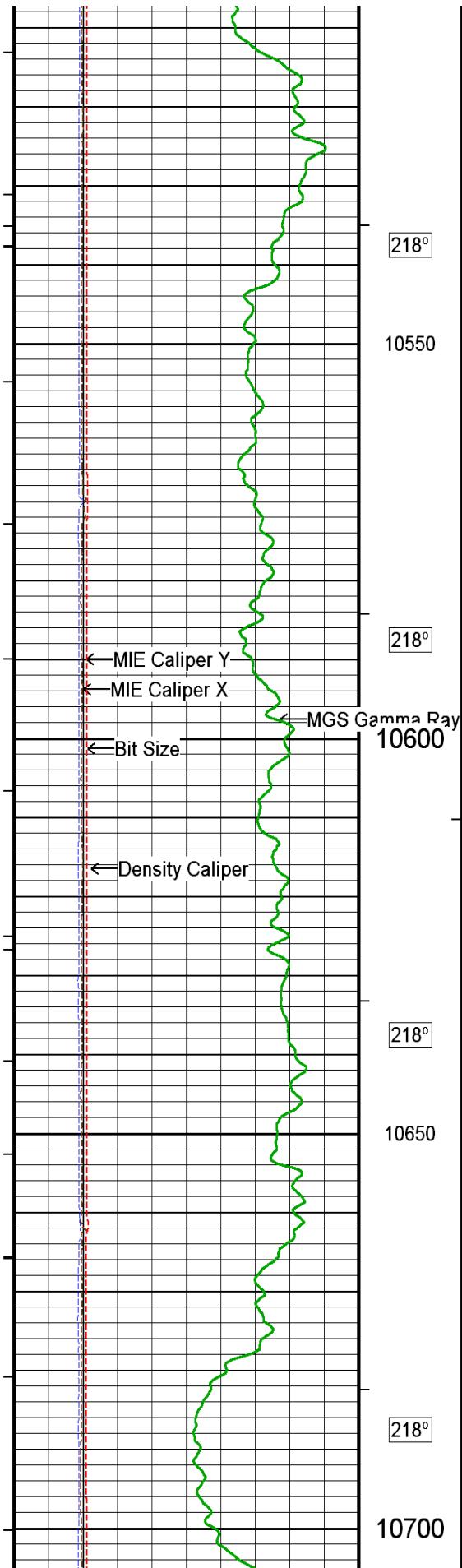


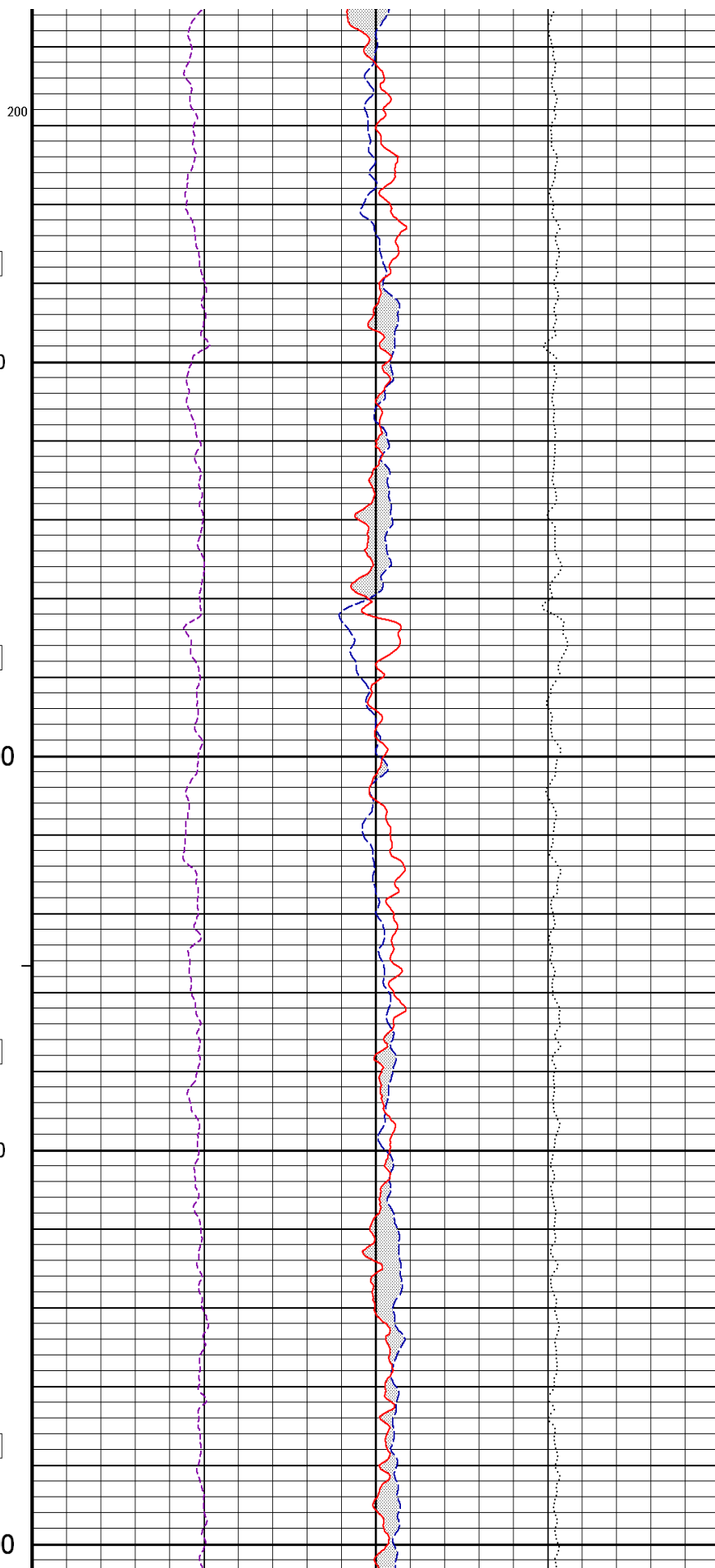
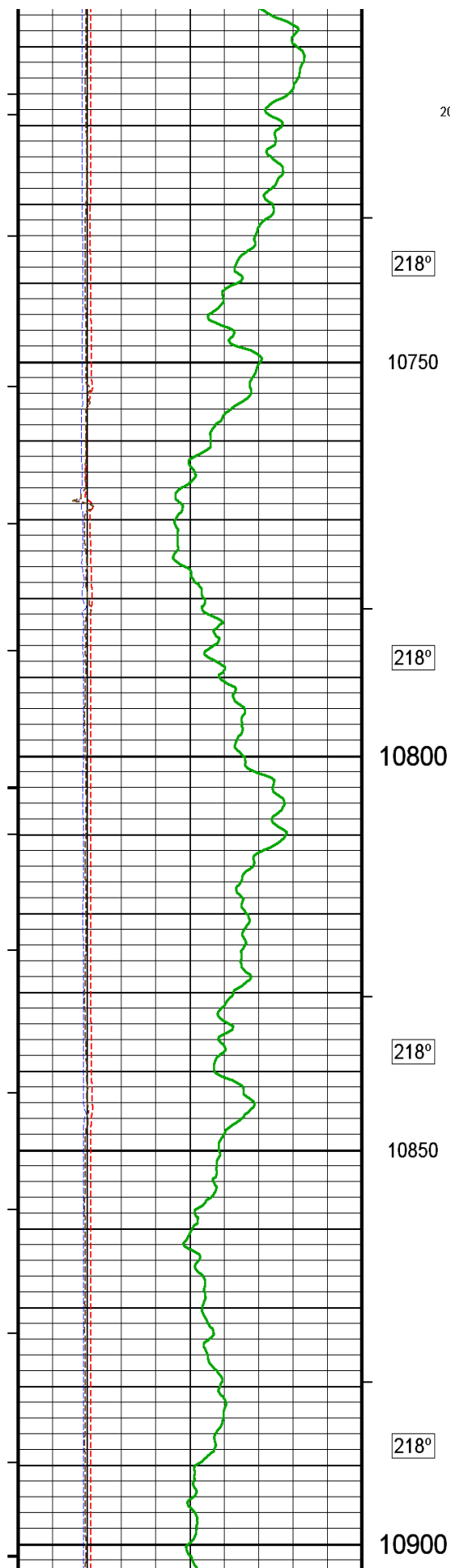


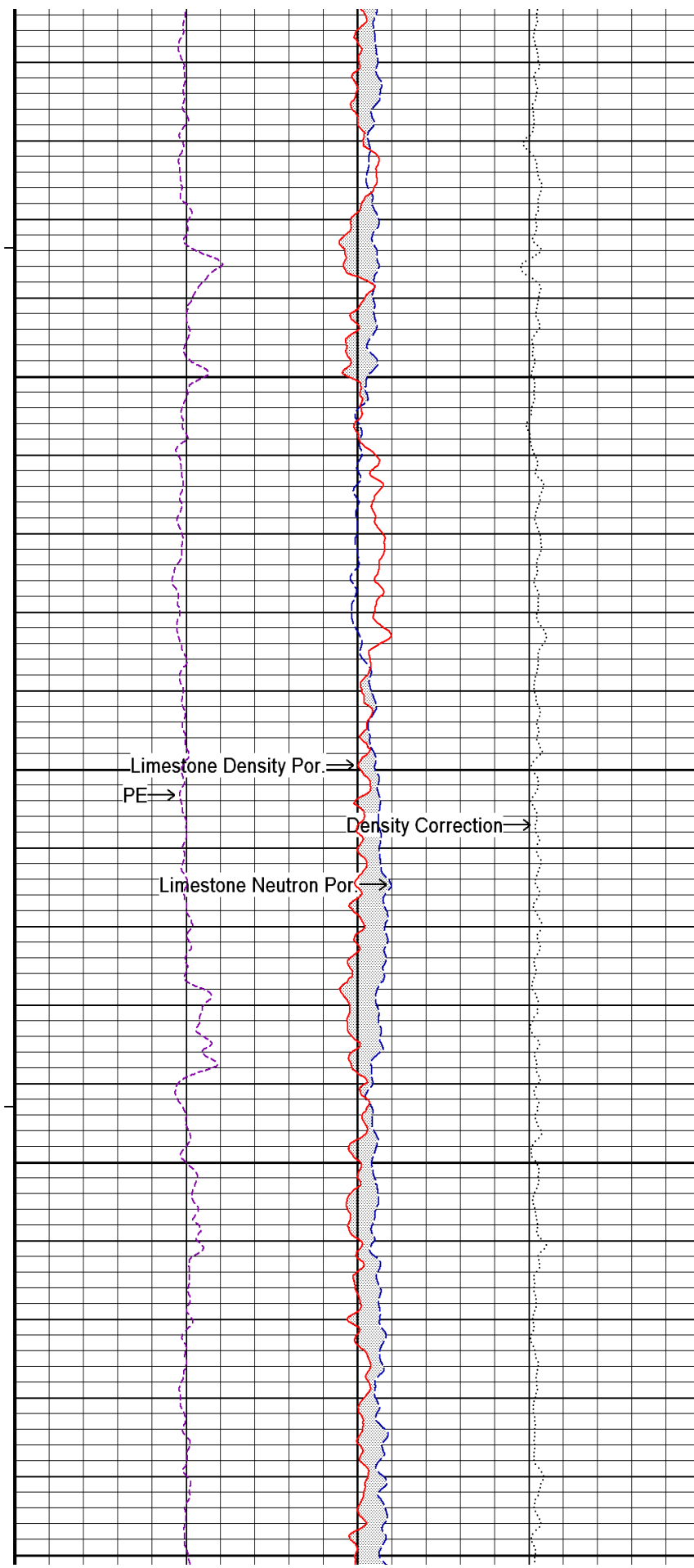
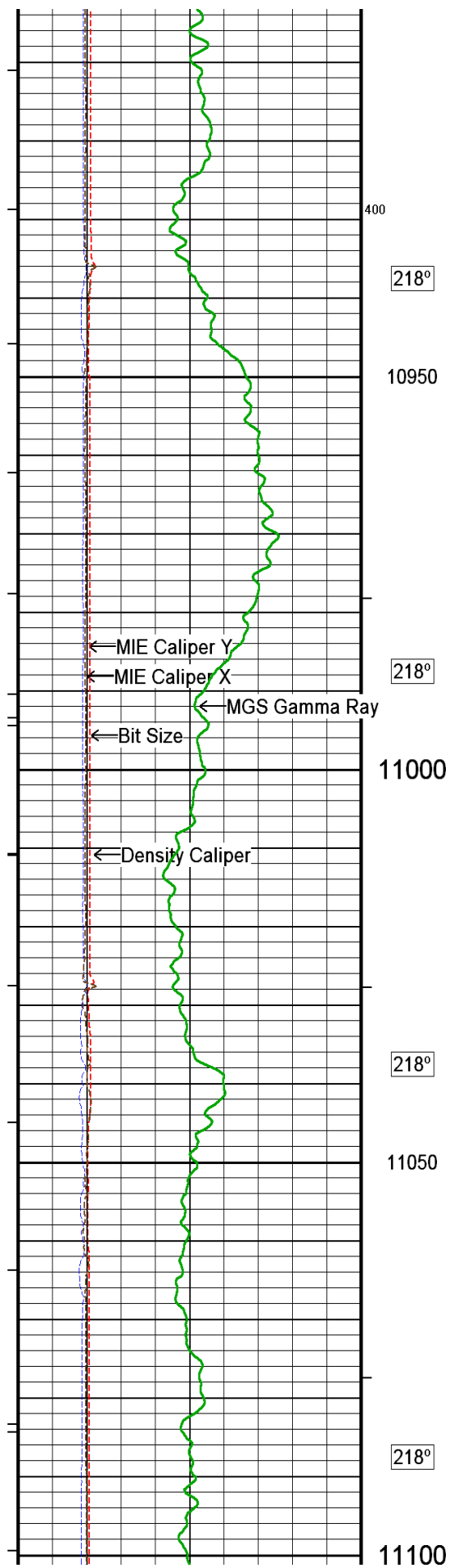


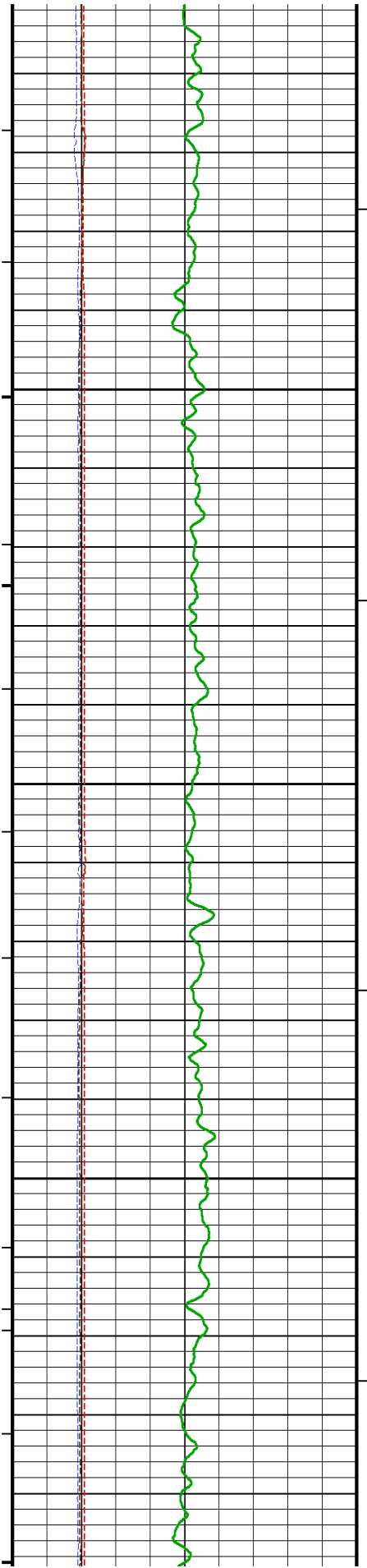












218°

11150

218°

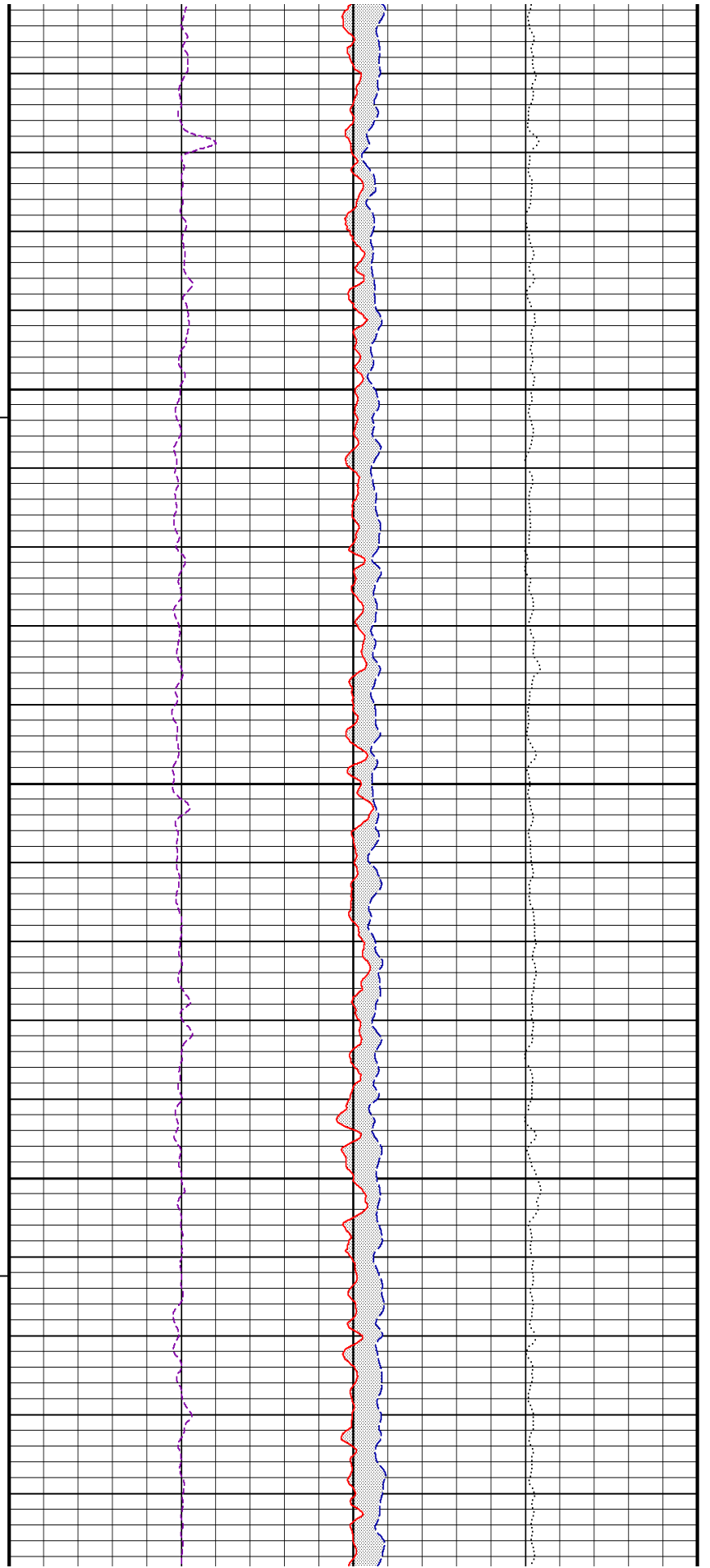
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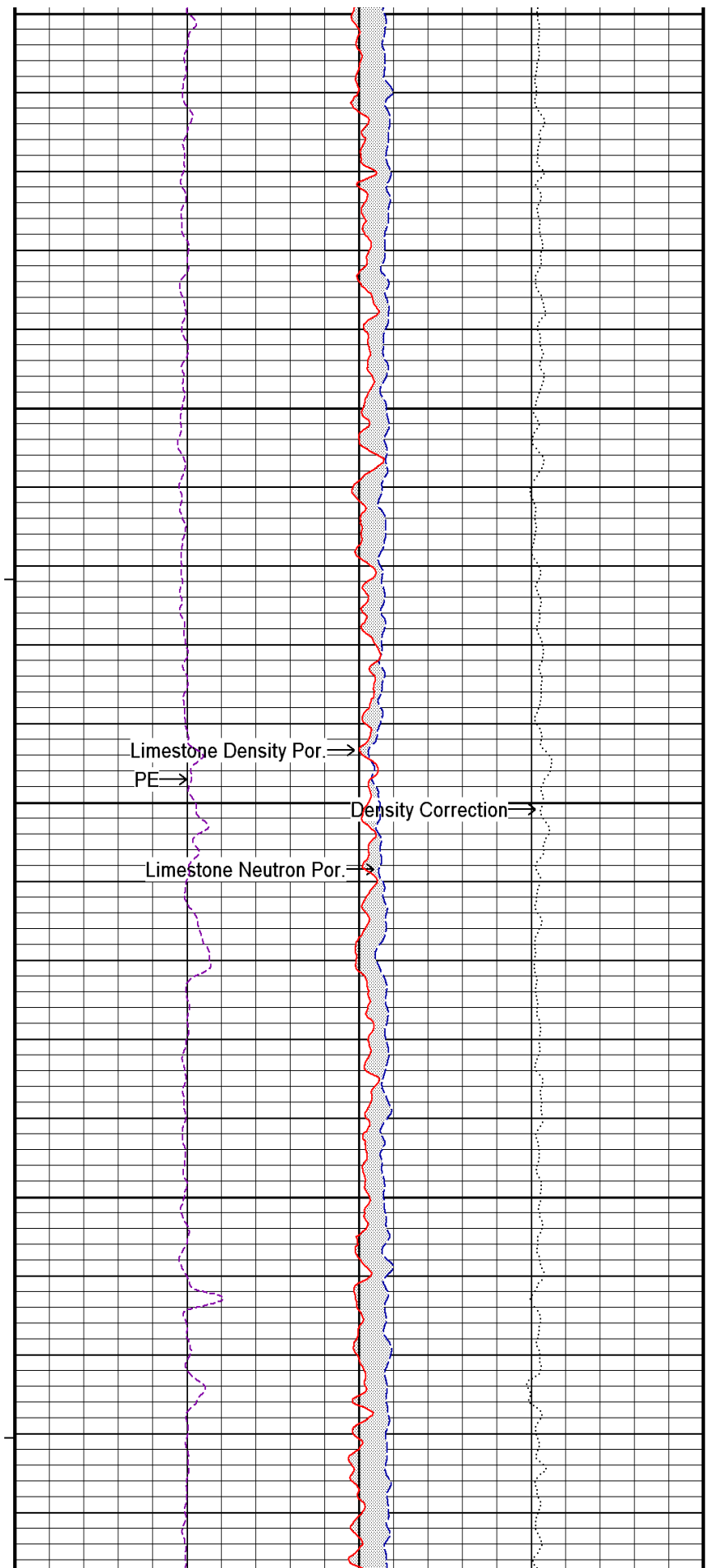
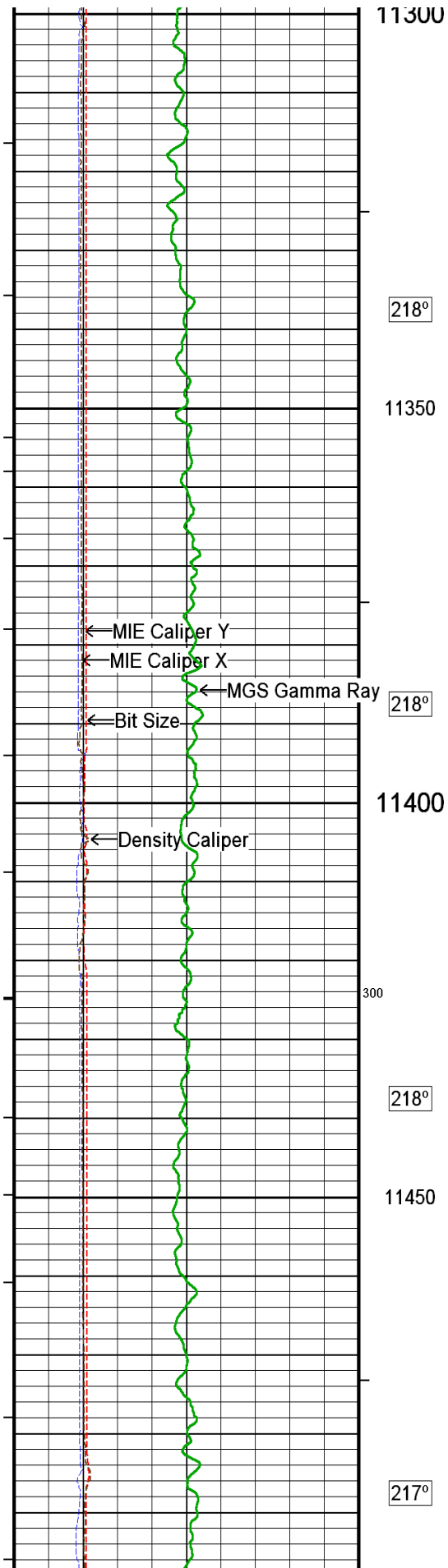
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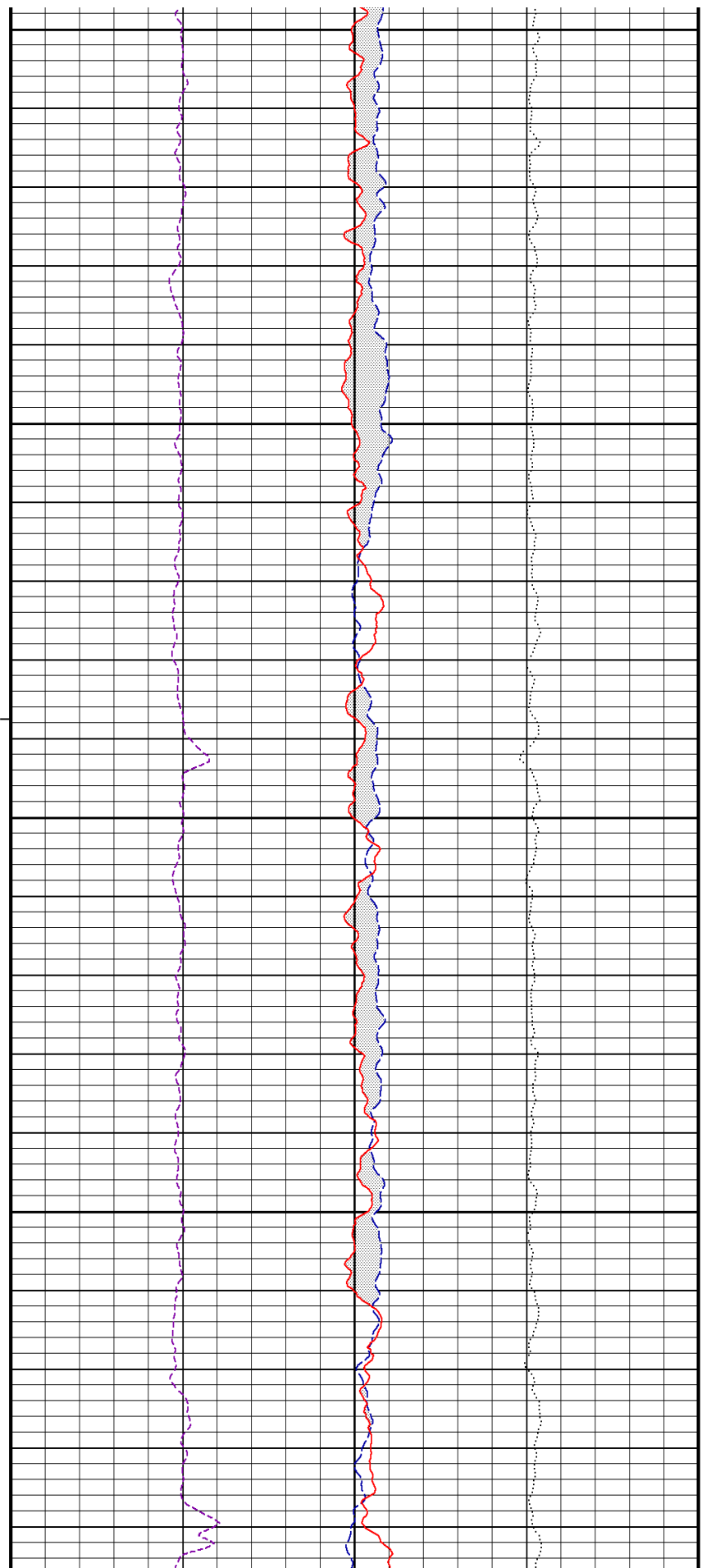
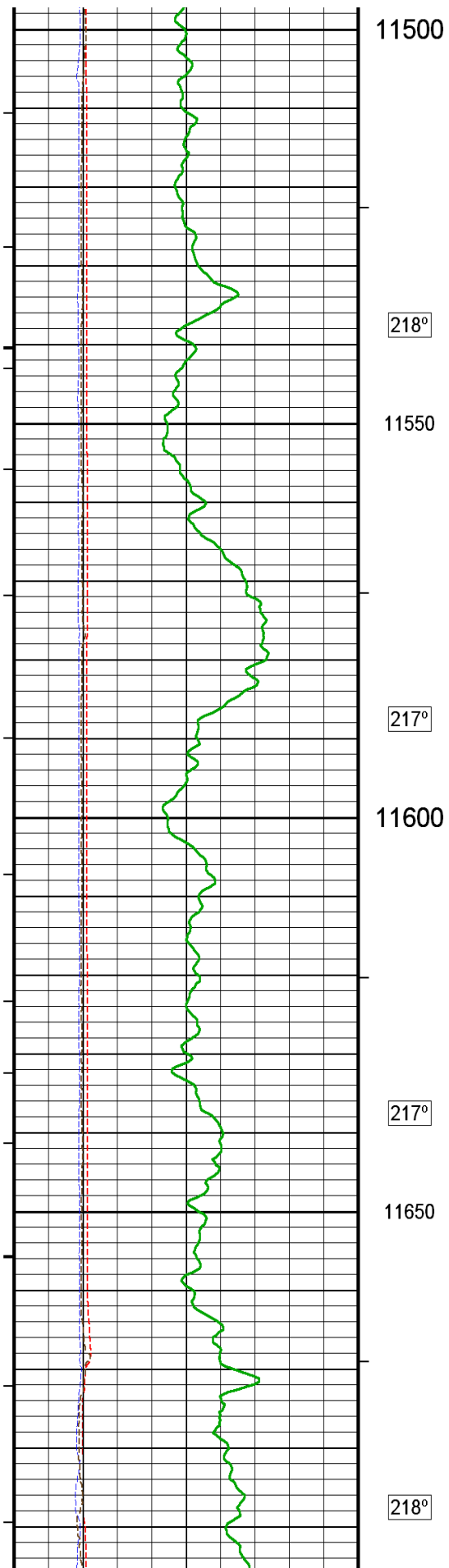
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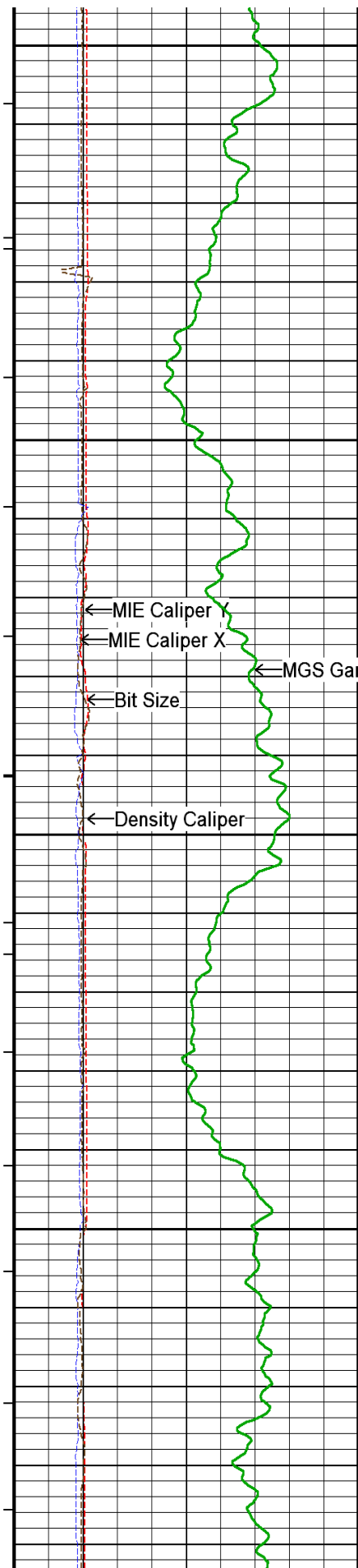
11300











11700

217°

11750

← MIE Caliper Y

← MIE Caliper X

← MGS Gamma Ray

← Bit Size

217°

← Density Caliper

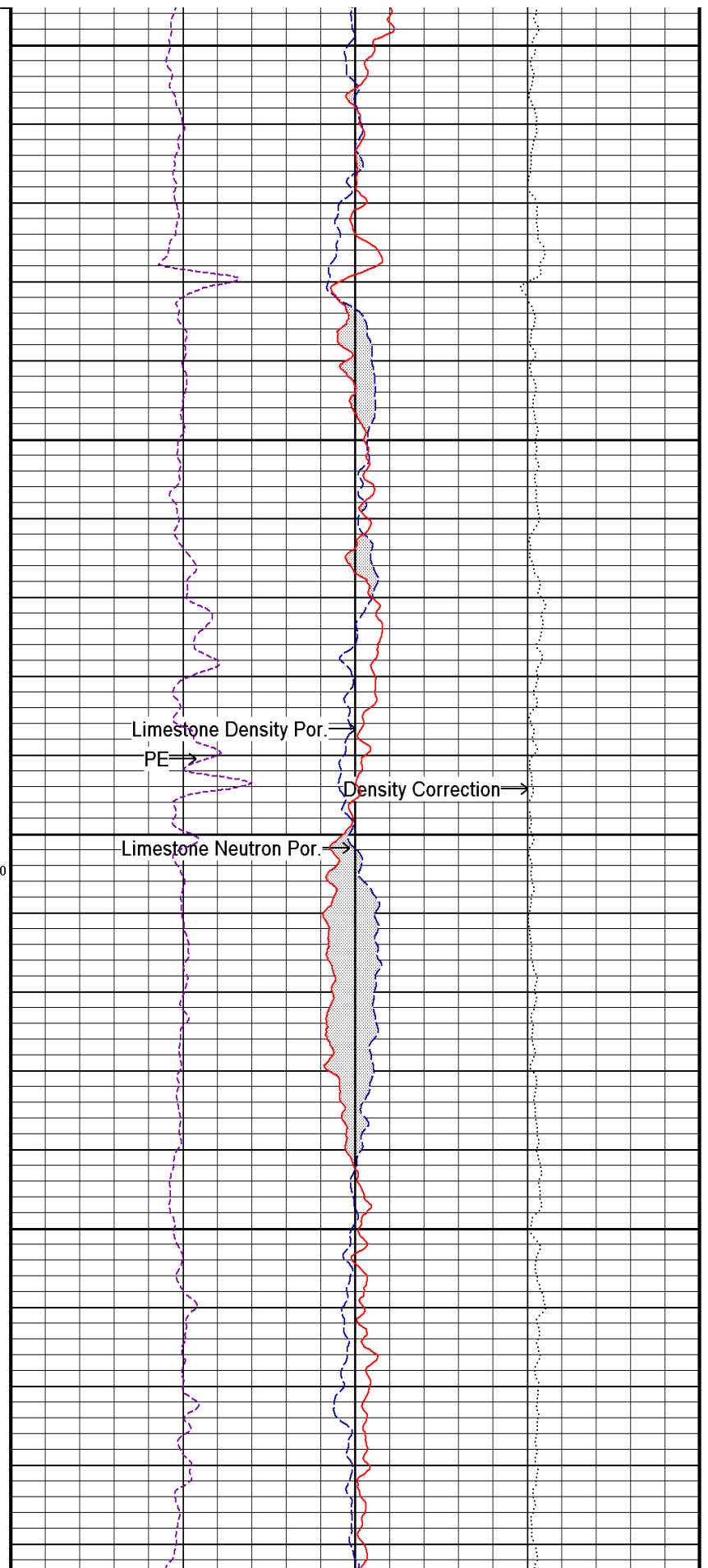
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100

217°

11850

217°

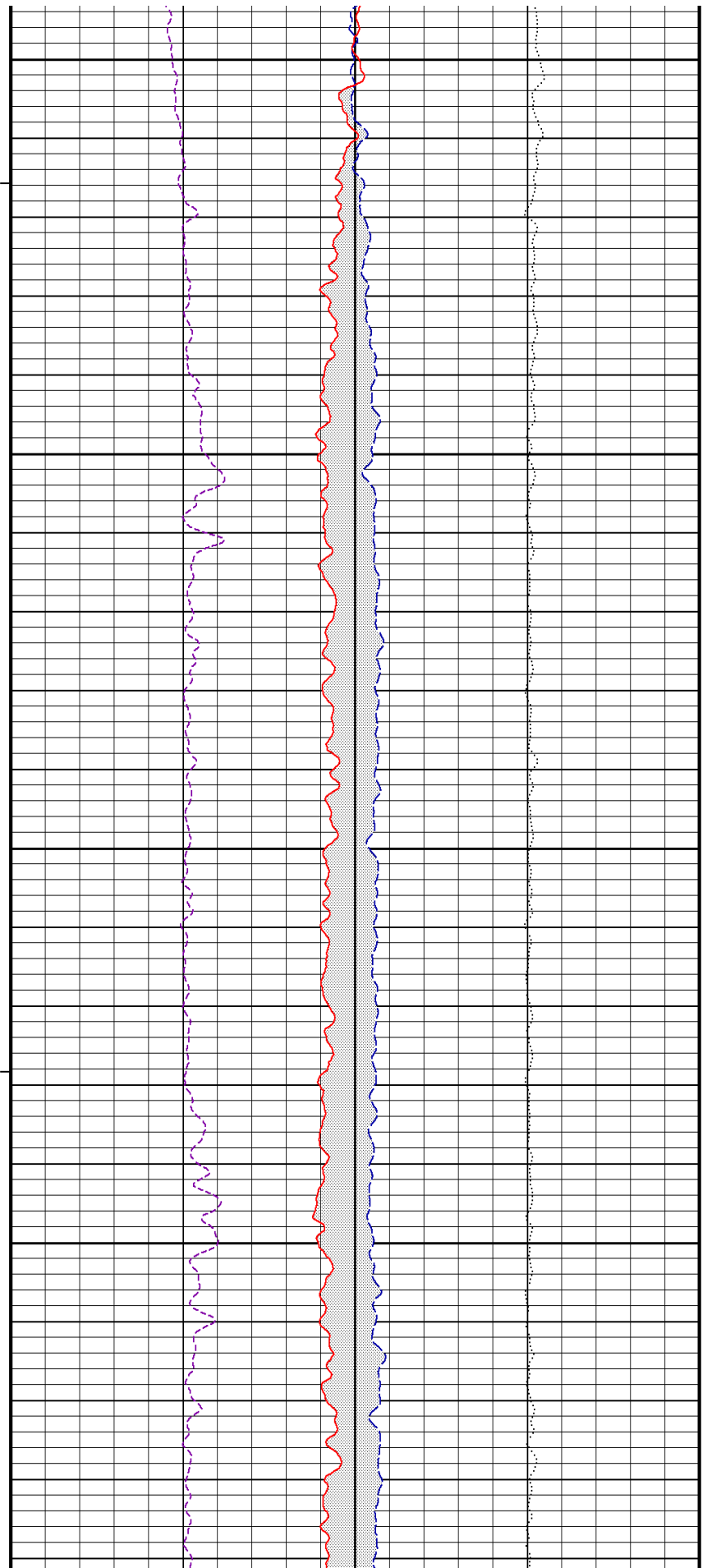
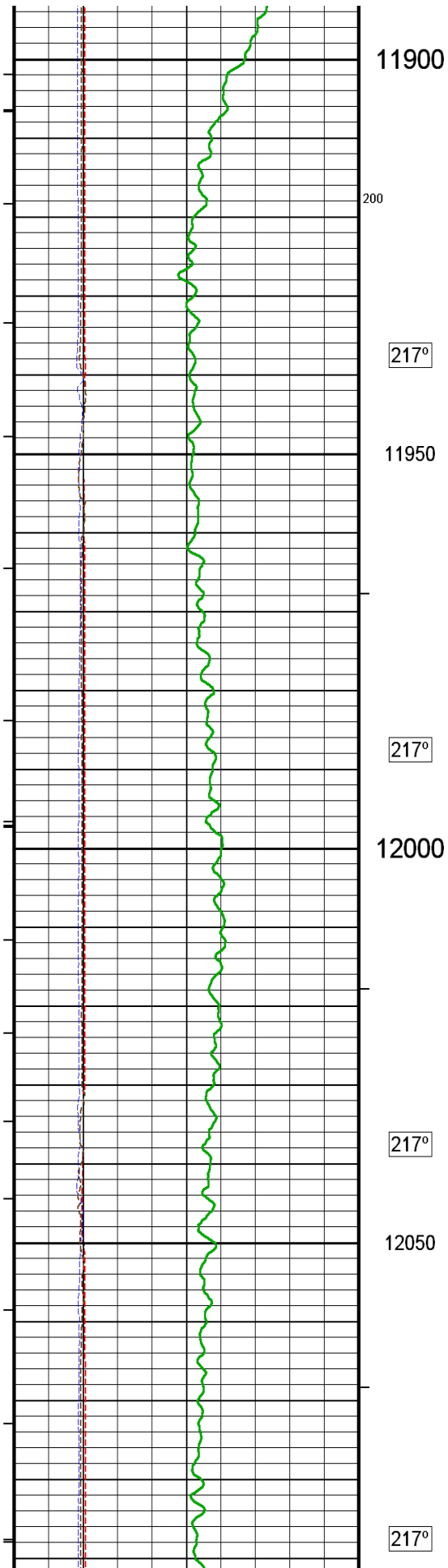


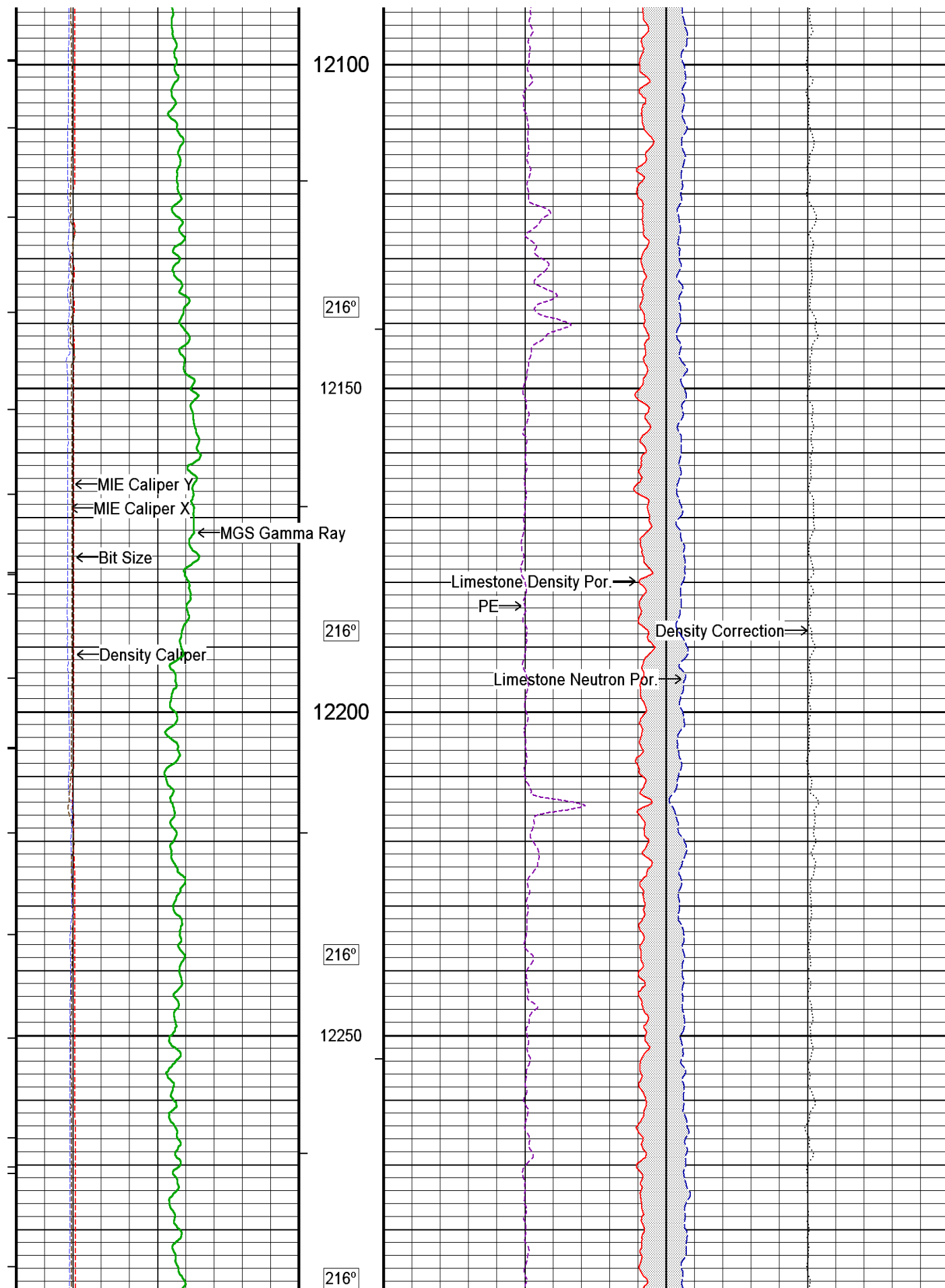
Limestone Density Por.

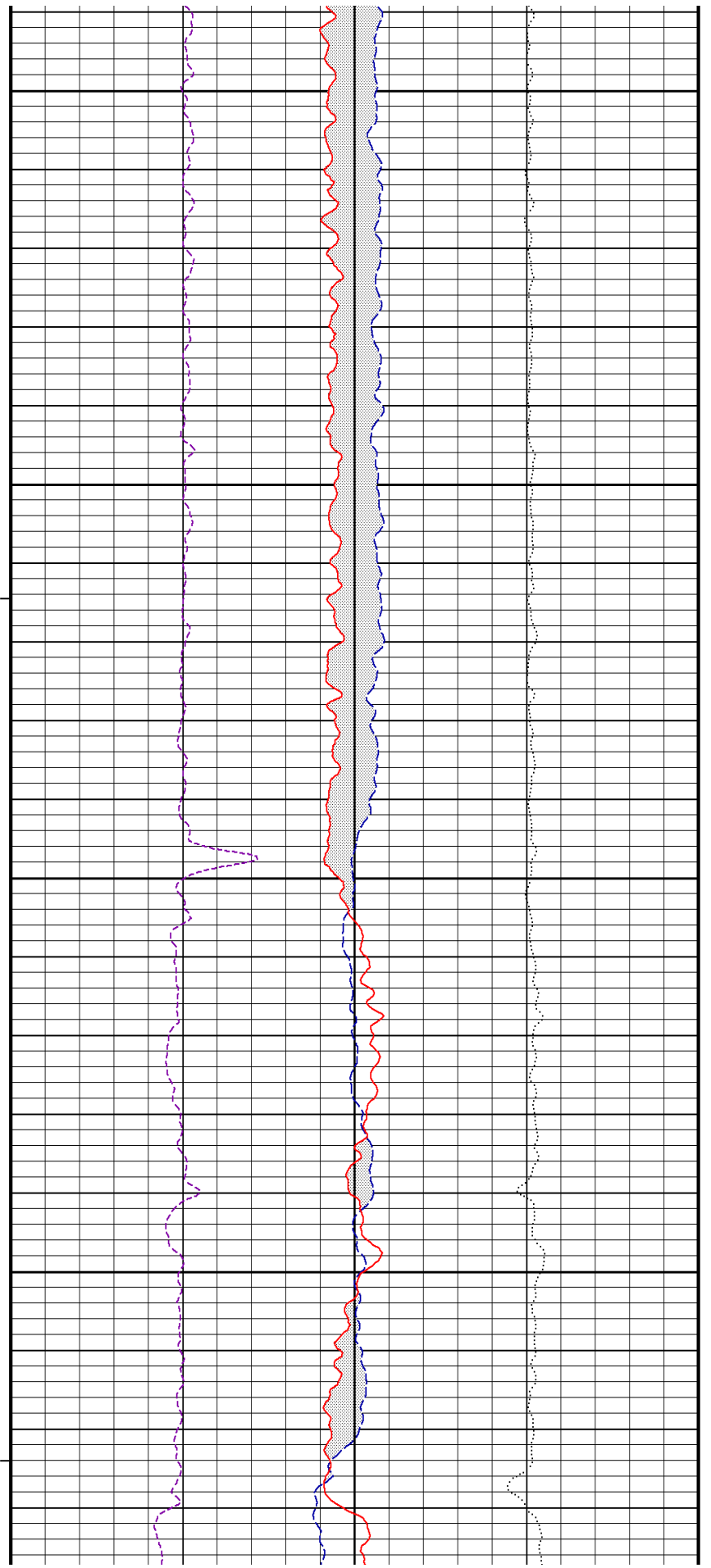
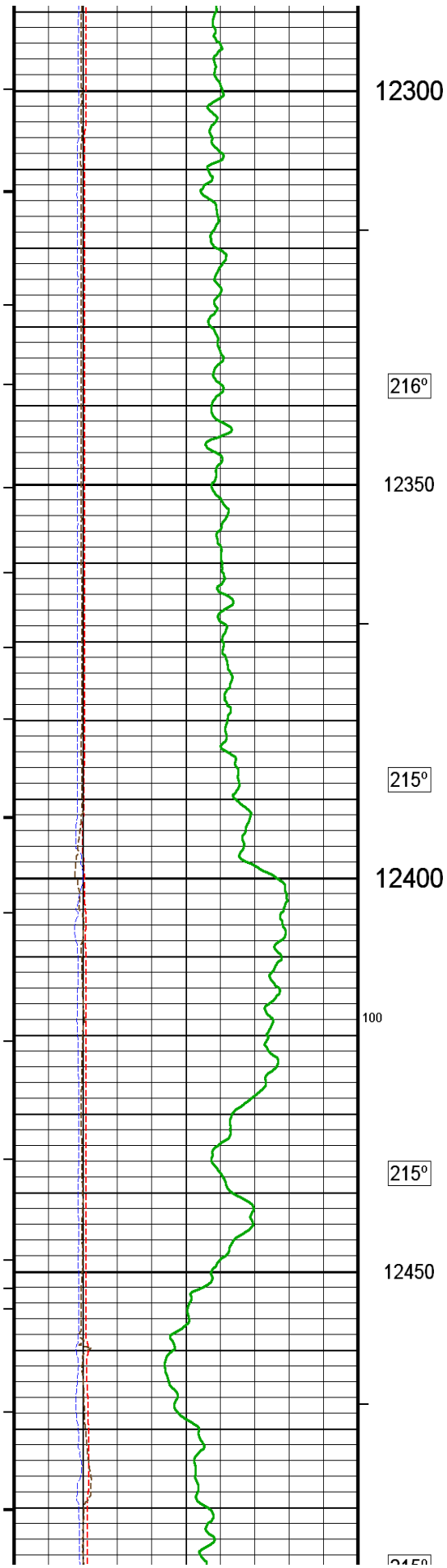
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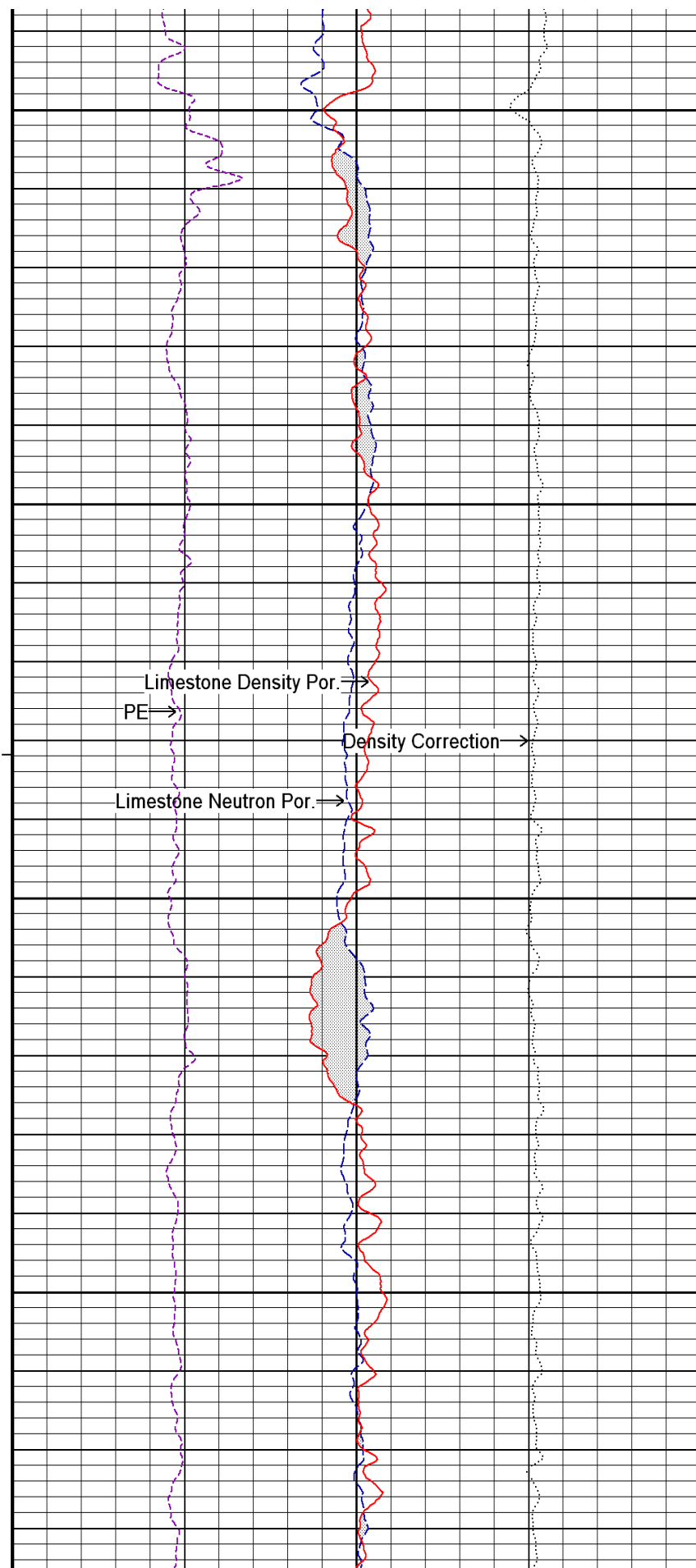
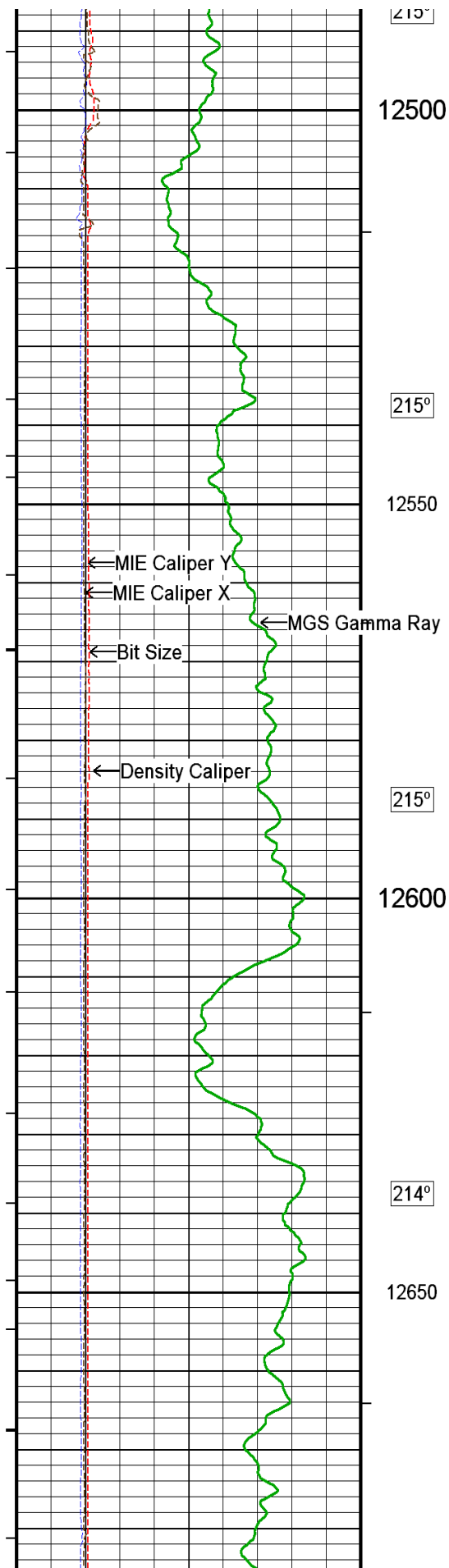
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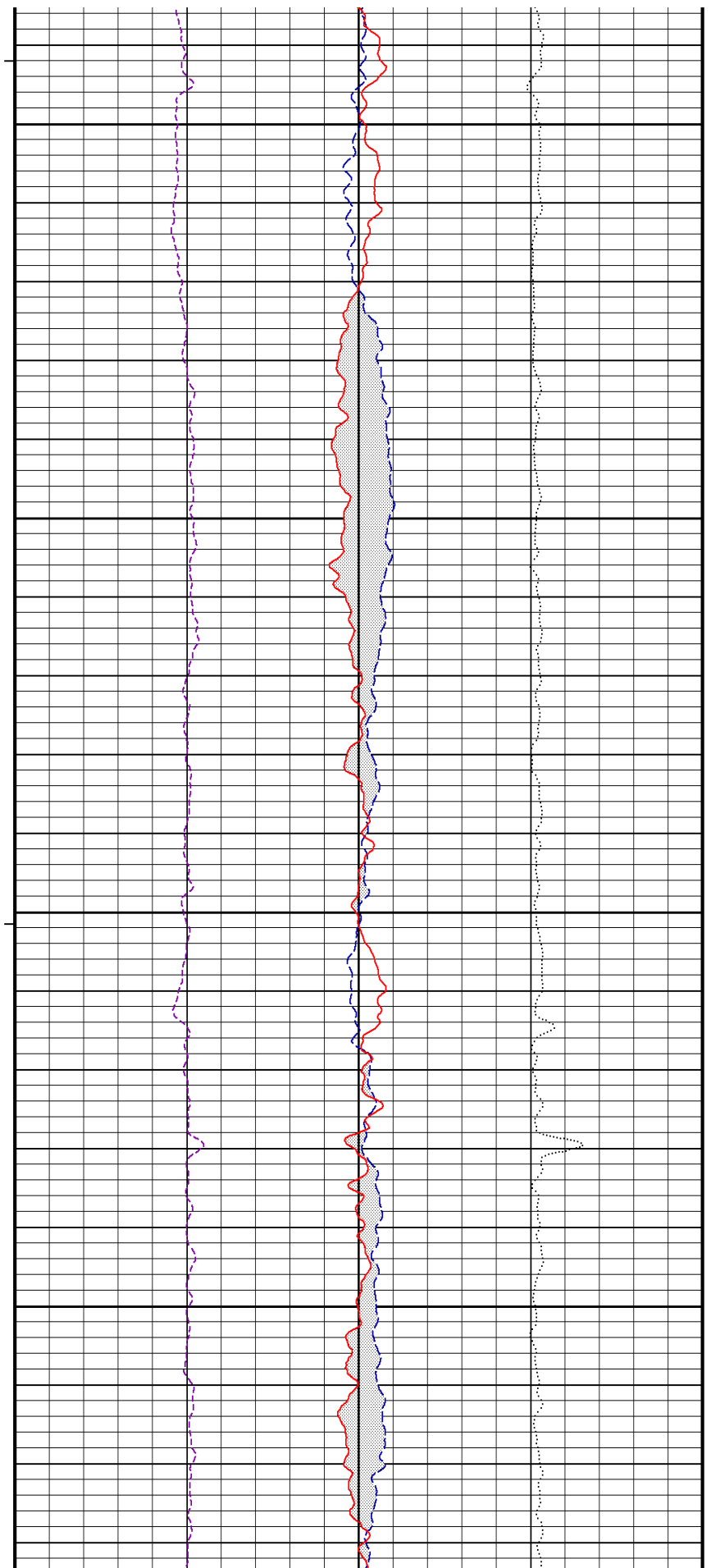
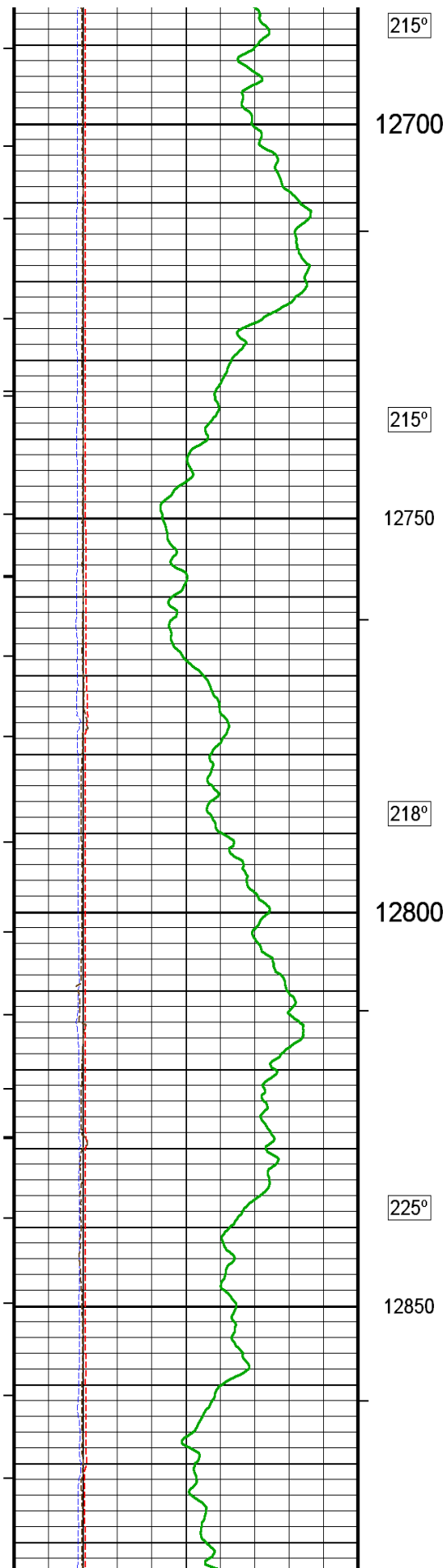
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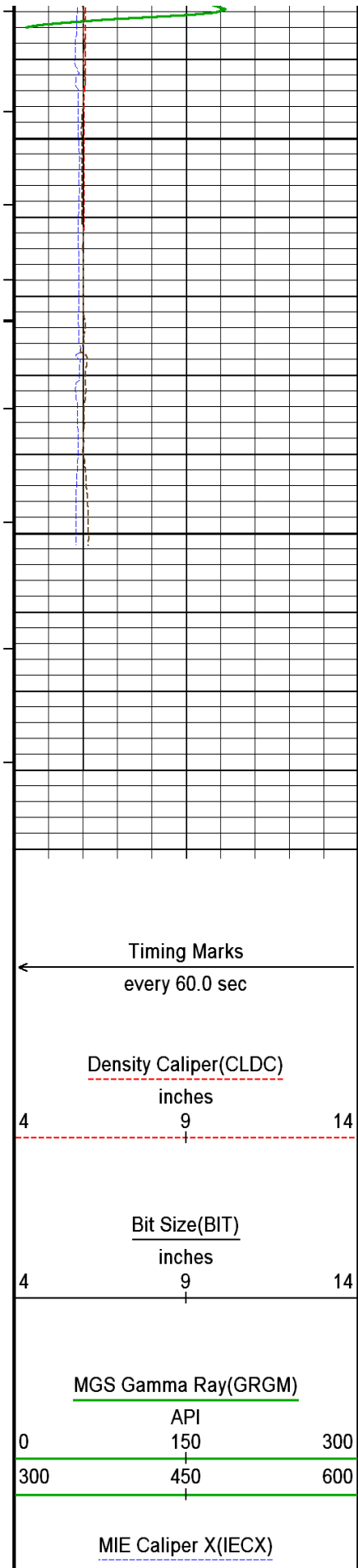




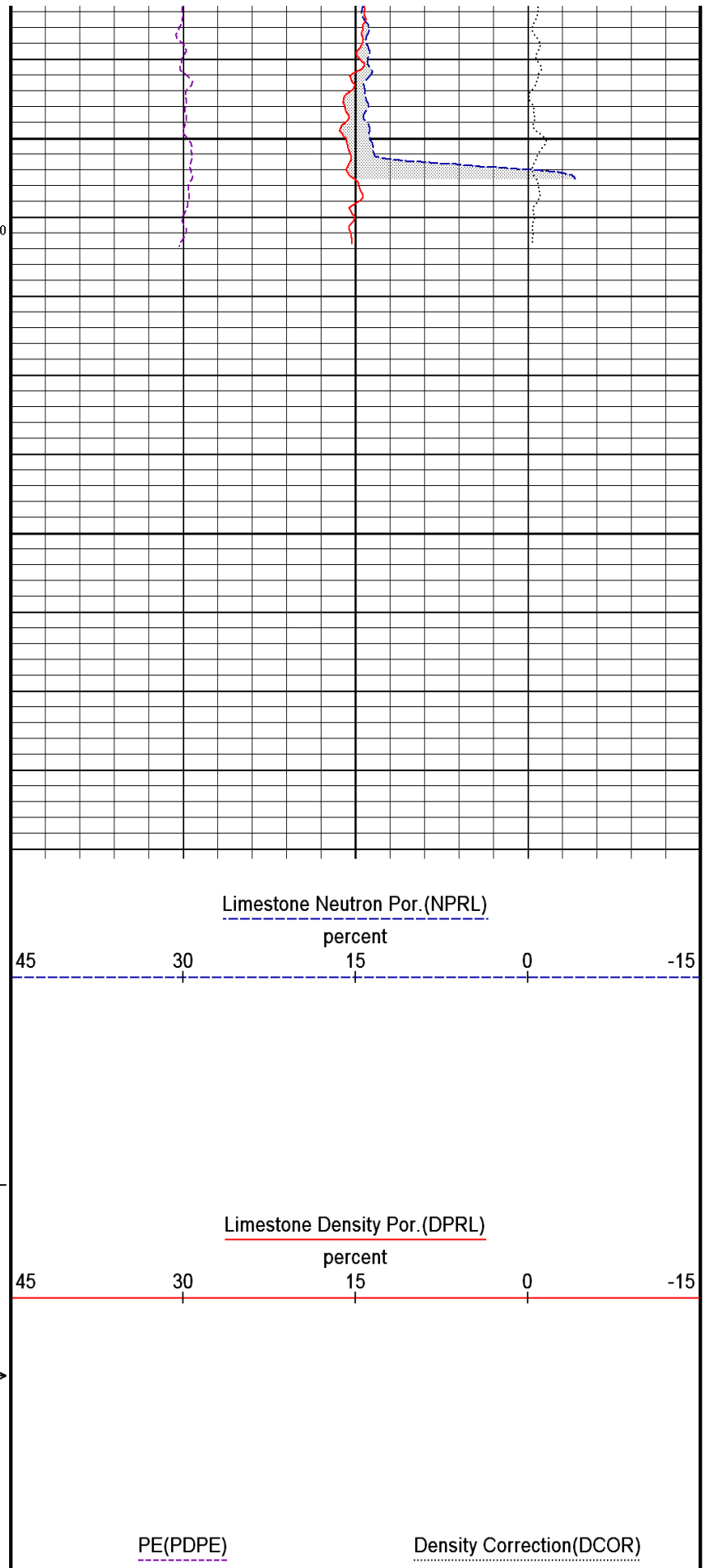






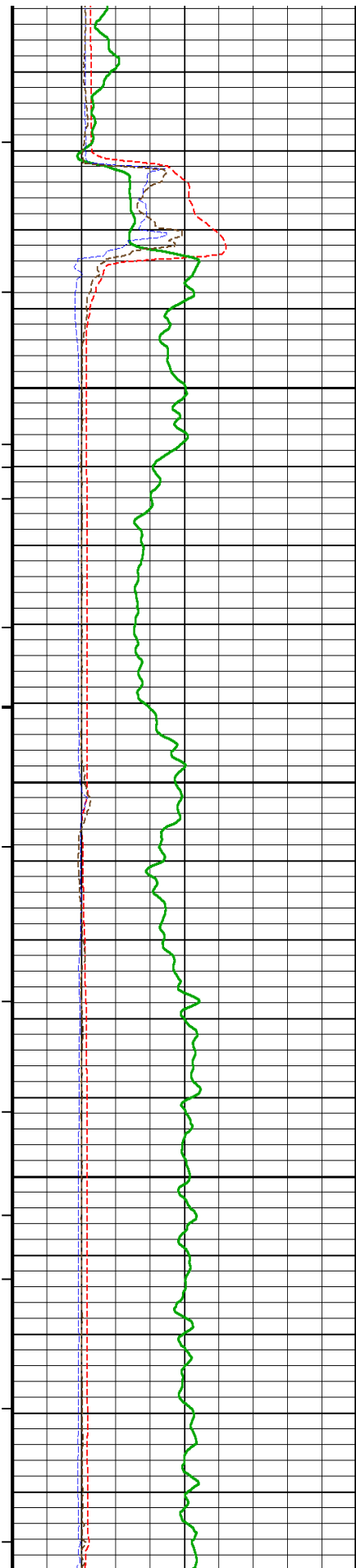


12900  
0  
12950  
12988  
Depth In Feet  
HVI every 10 cu ft  
Annular Integral every 10 cu ft  
Borehole Temp in deg F









Casing  
Shoe

210°

6450

600

210°

6500

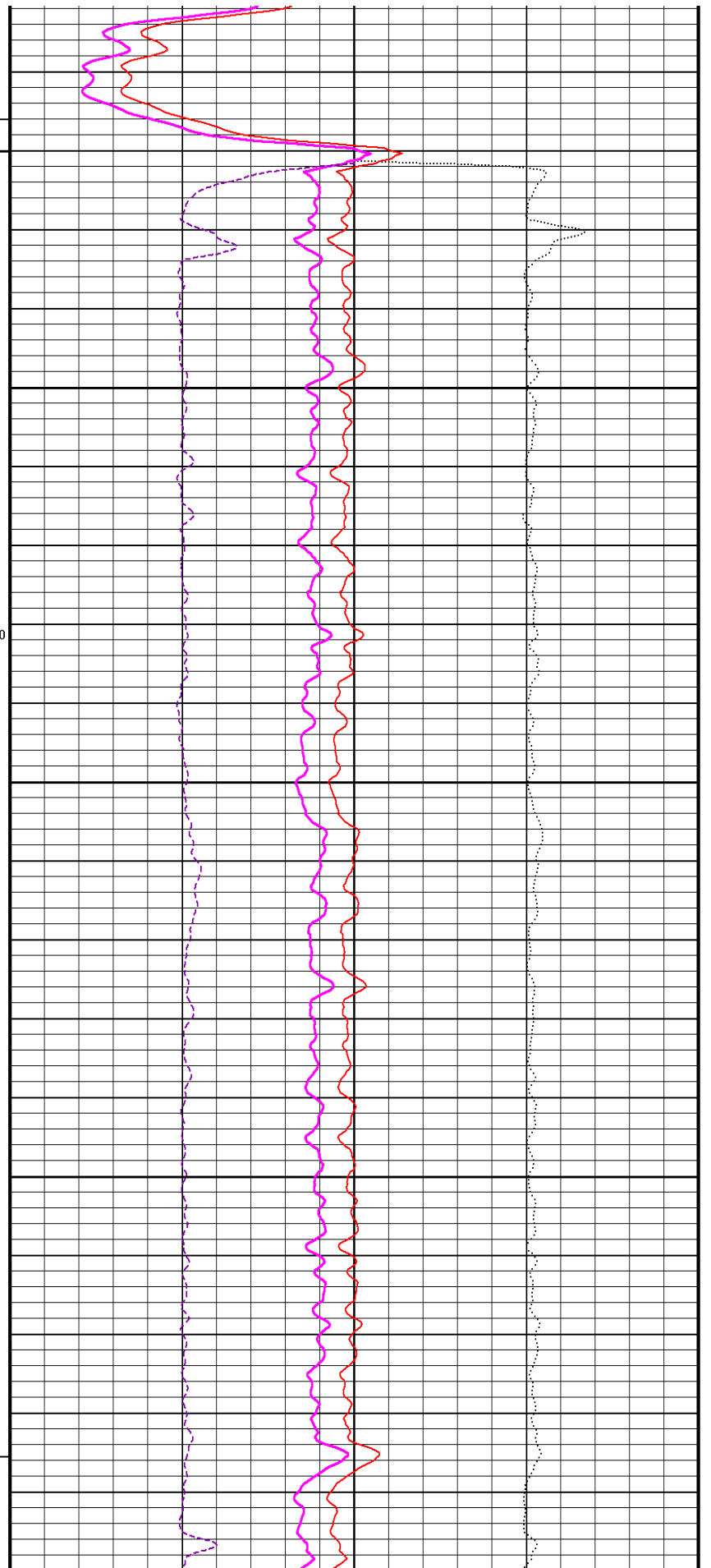
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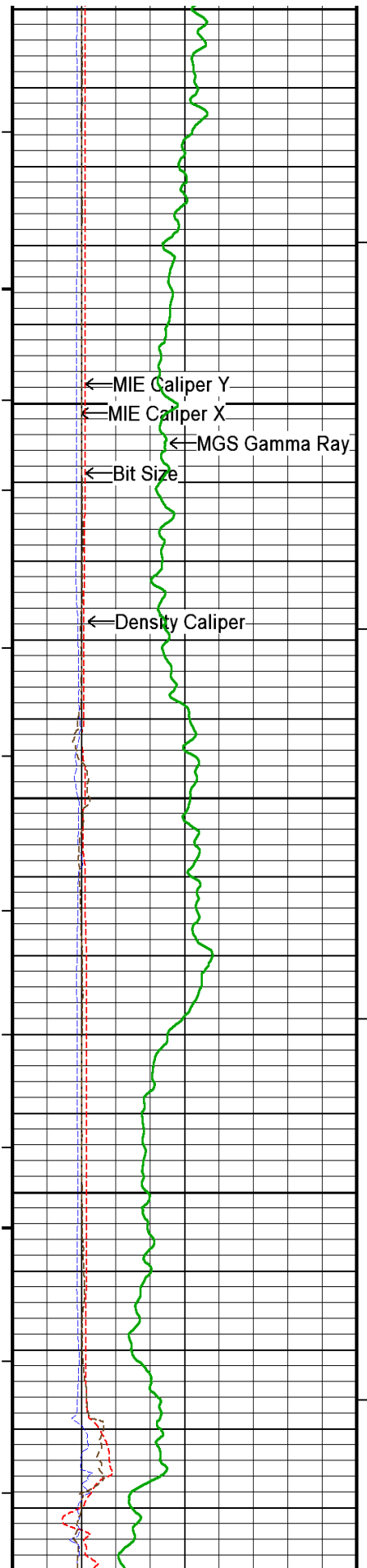
210°

6550

211°

6600





6600

211°

6650

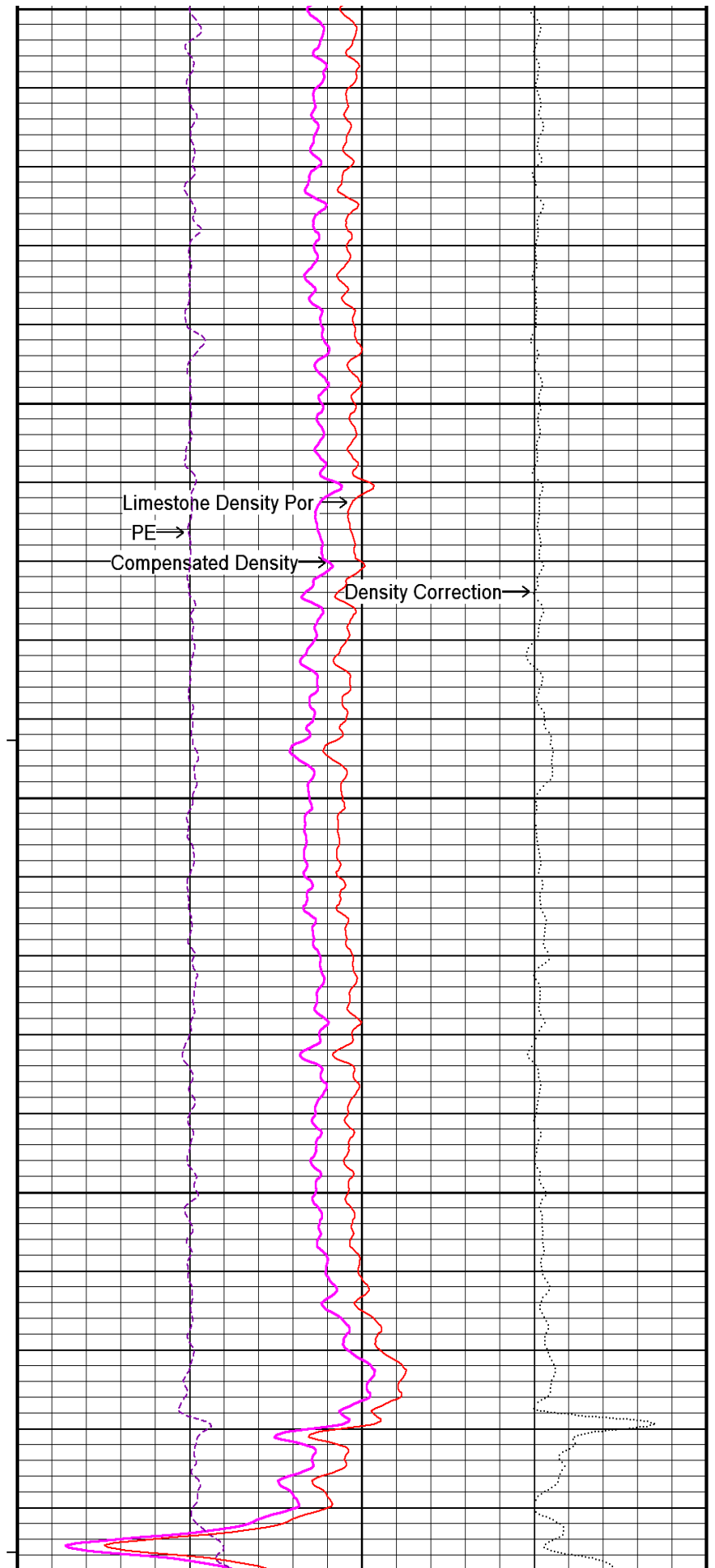
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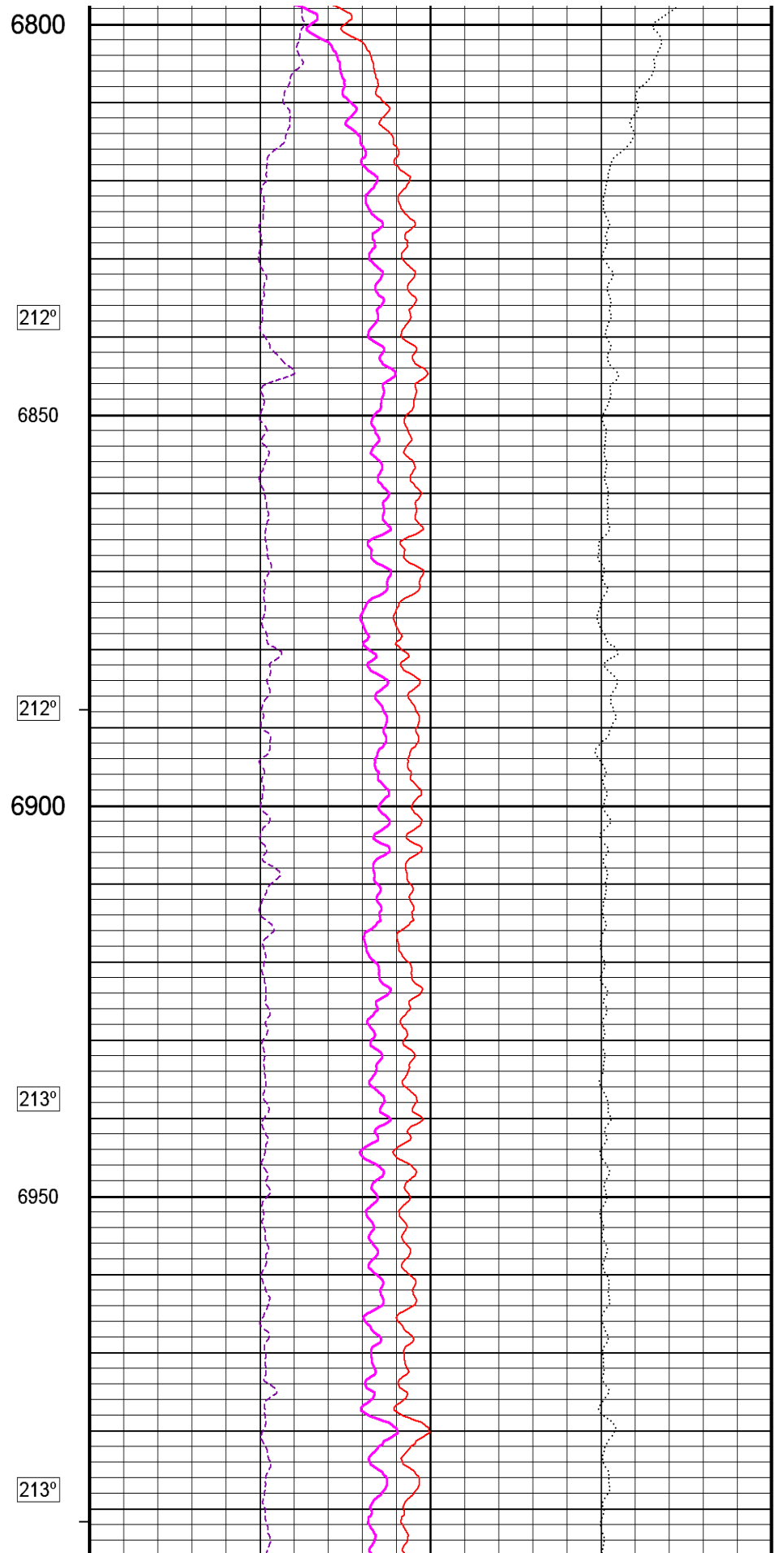
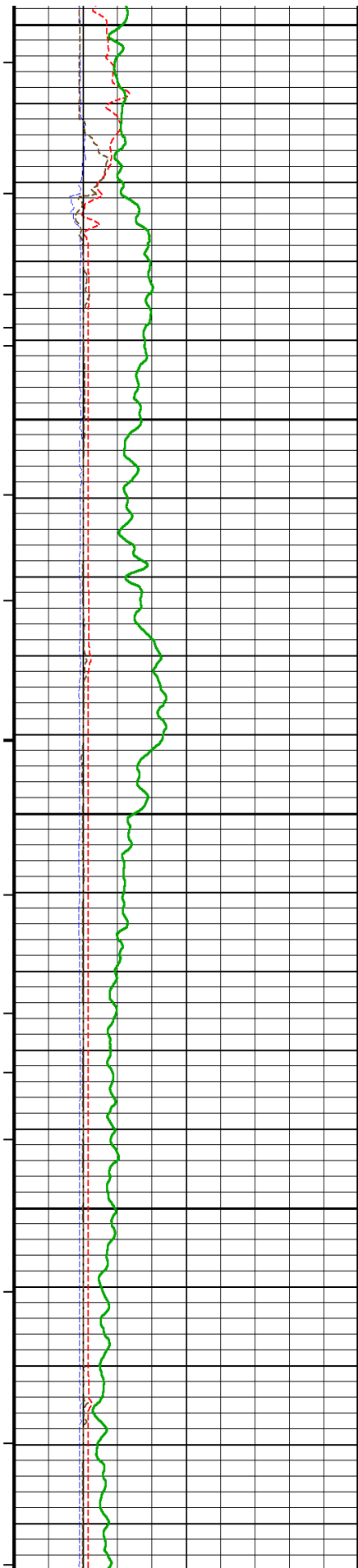
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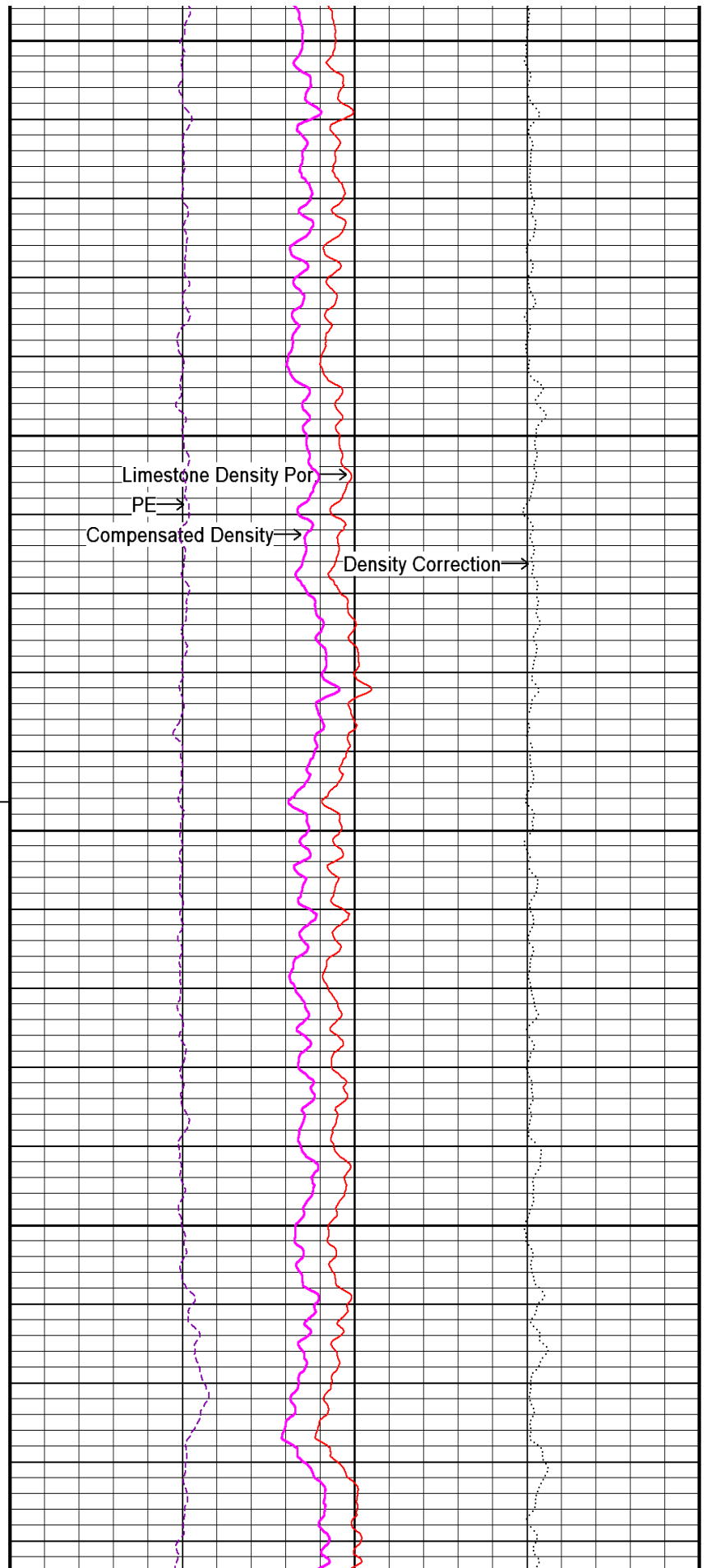
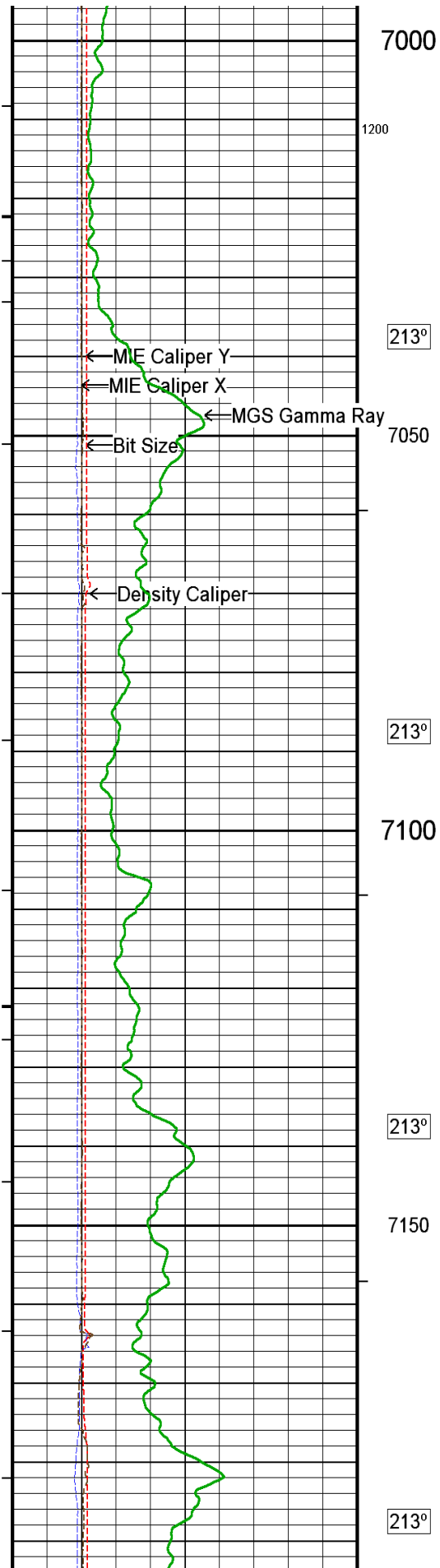
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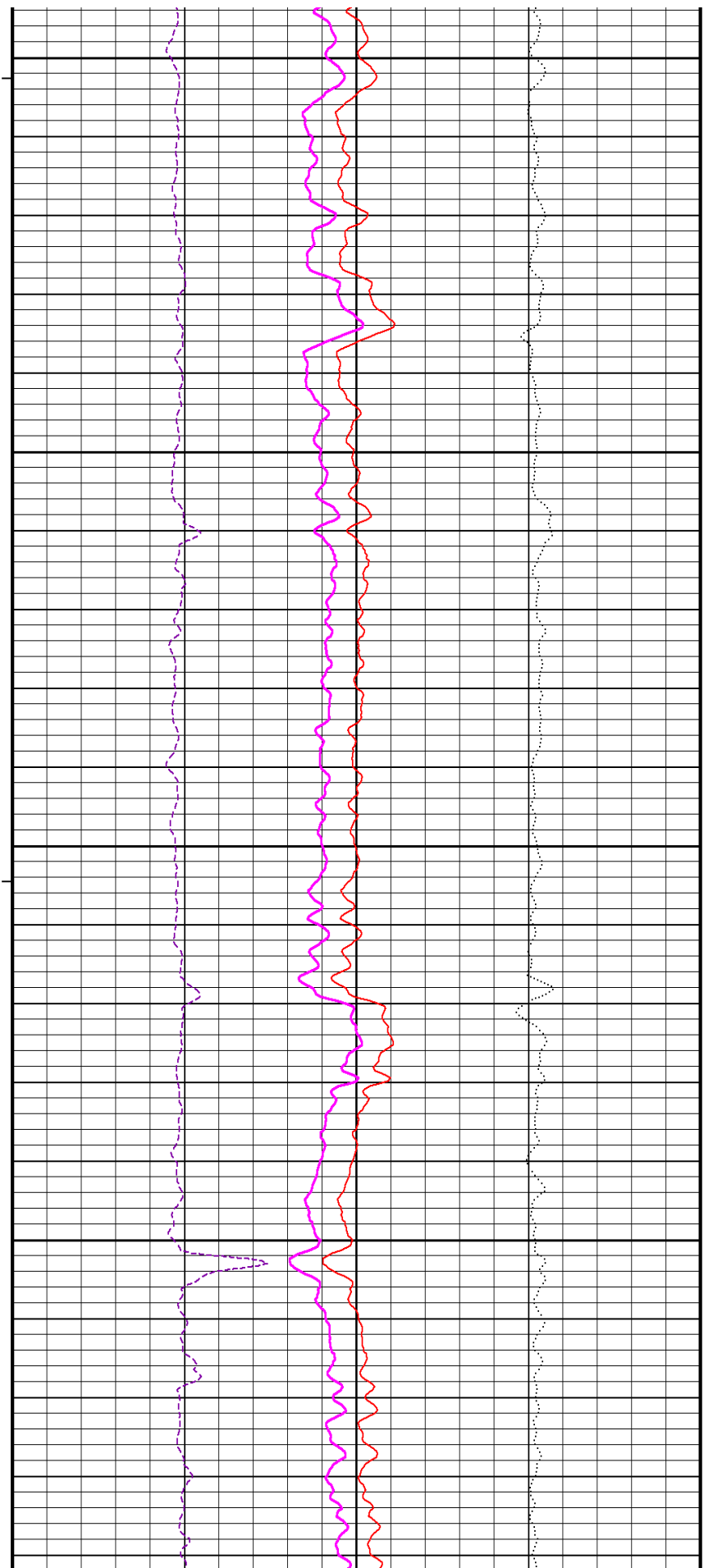
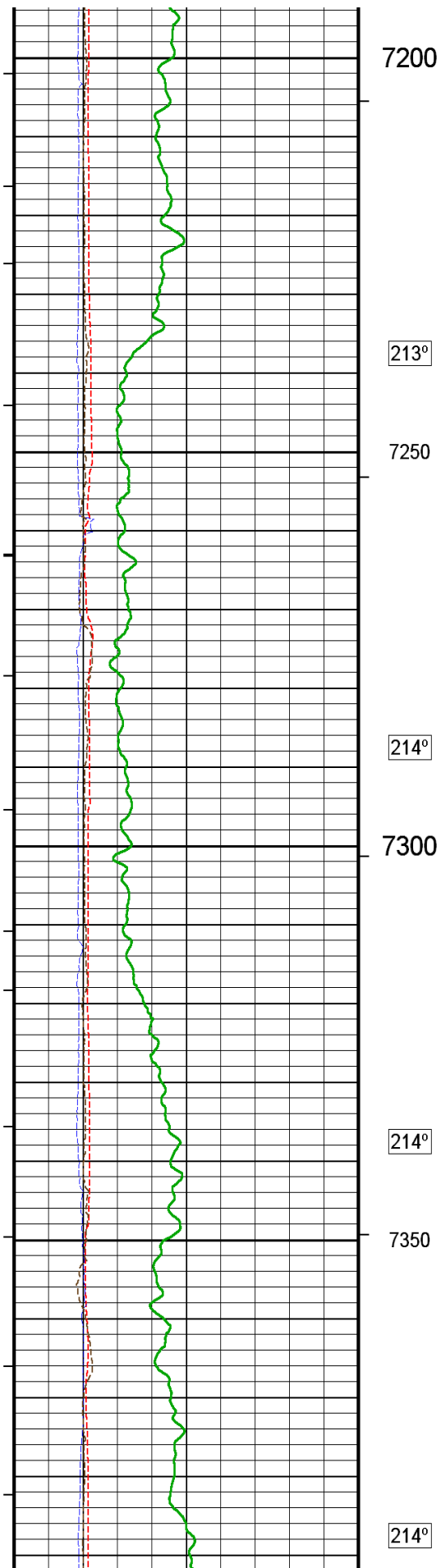
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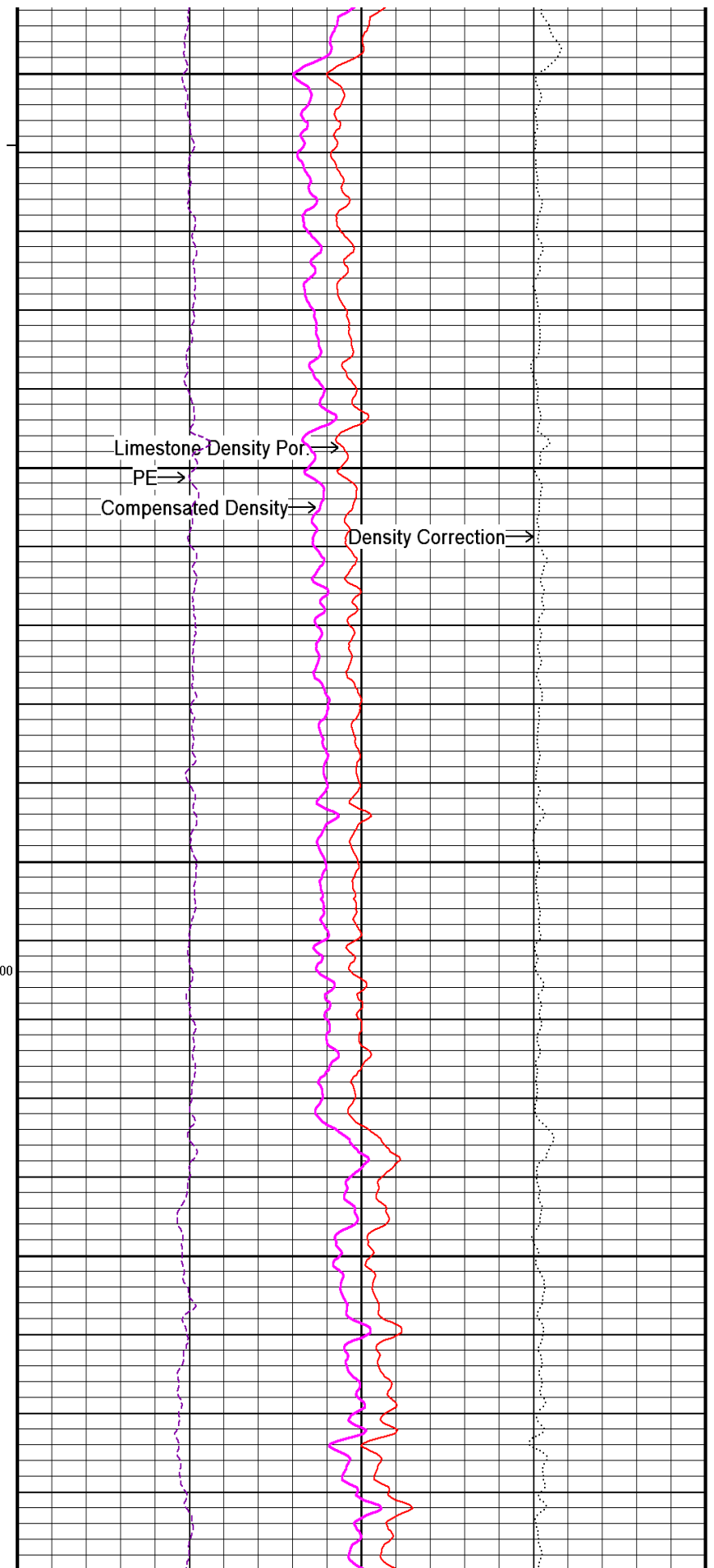
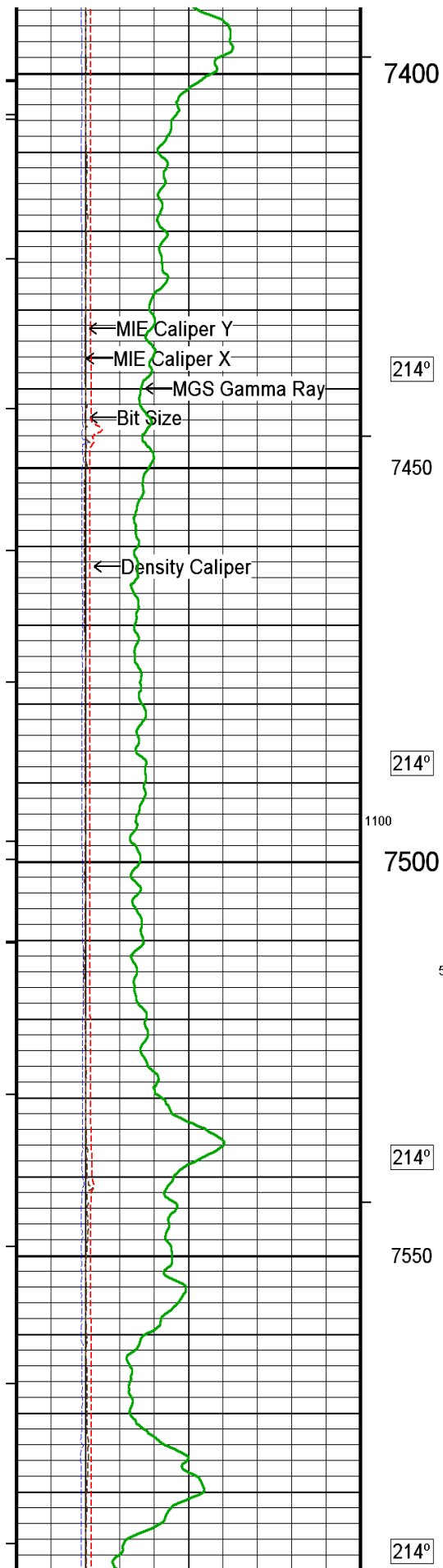
212°

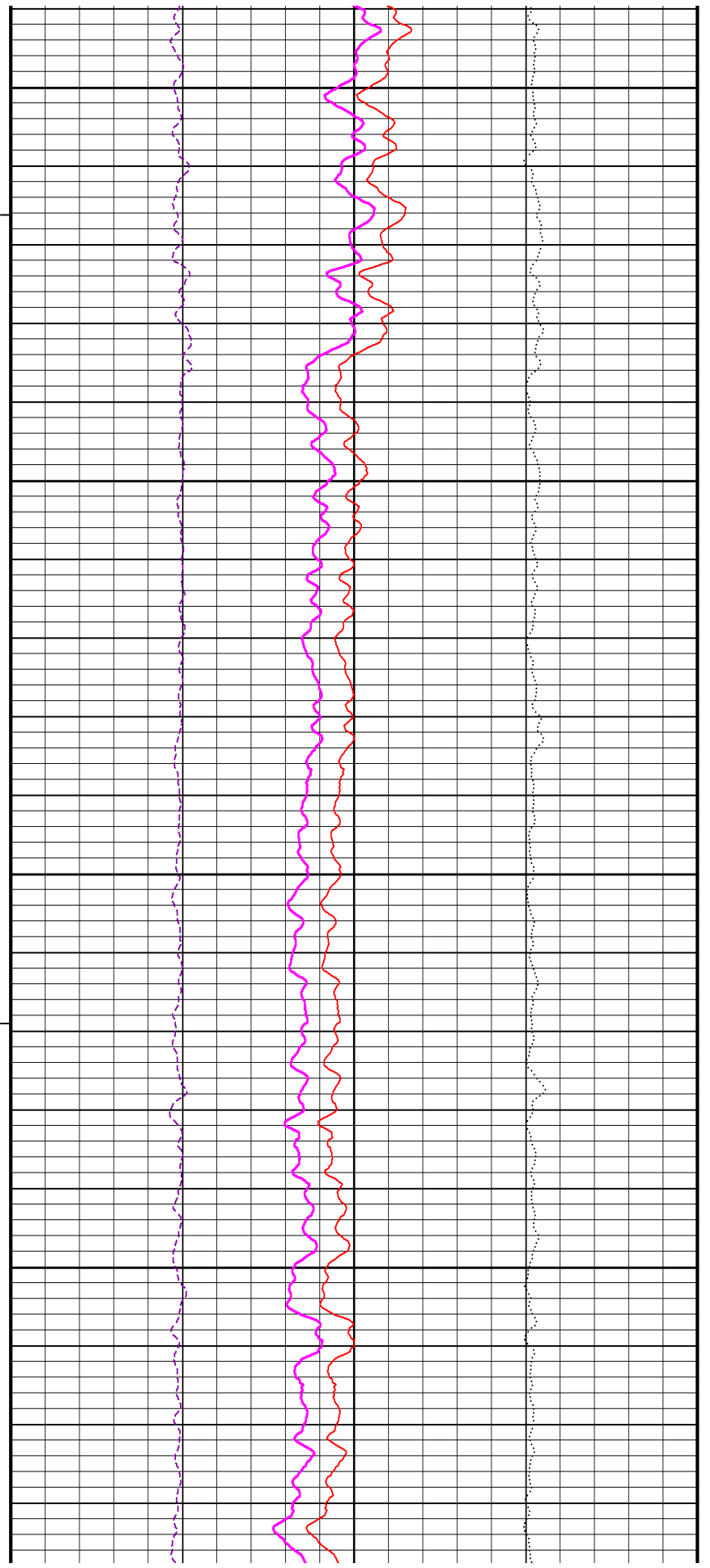
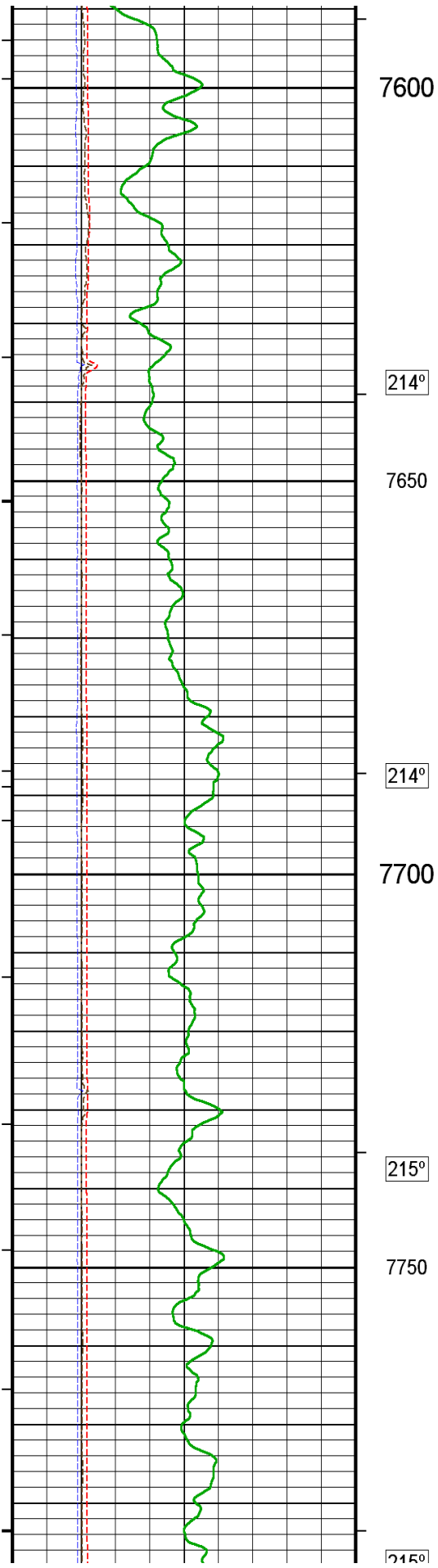




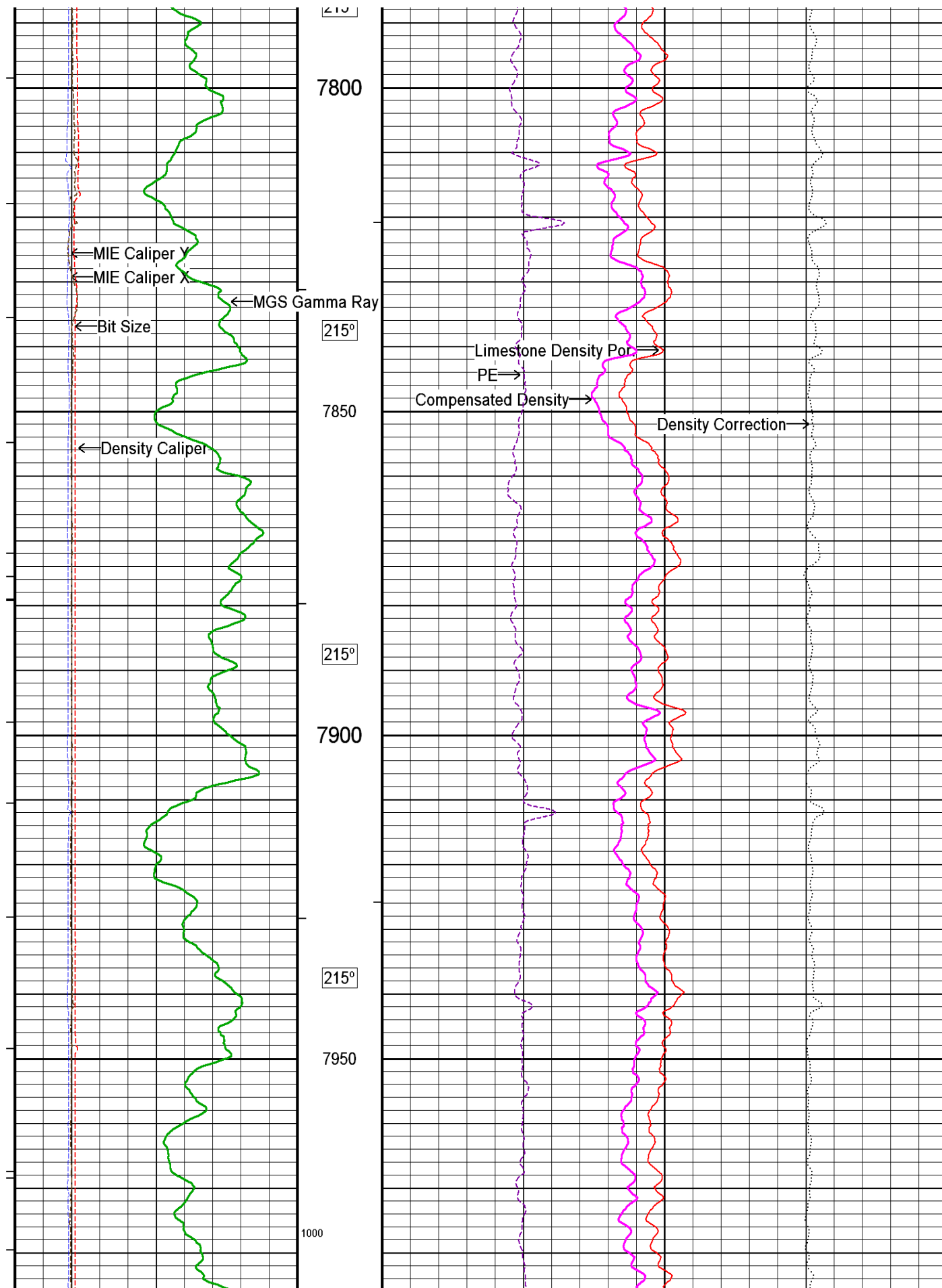


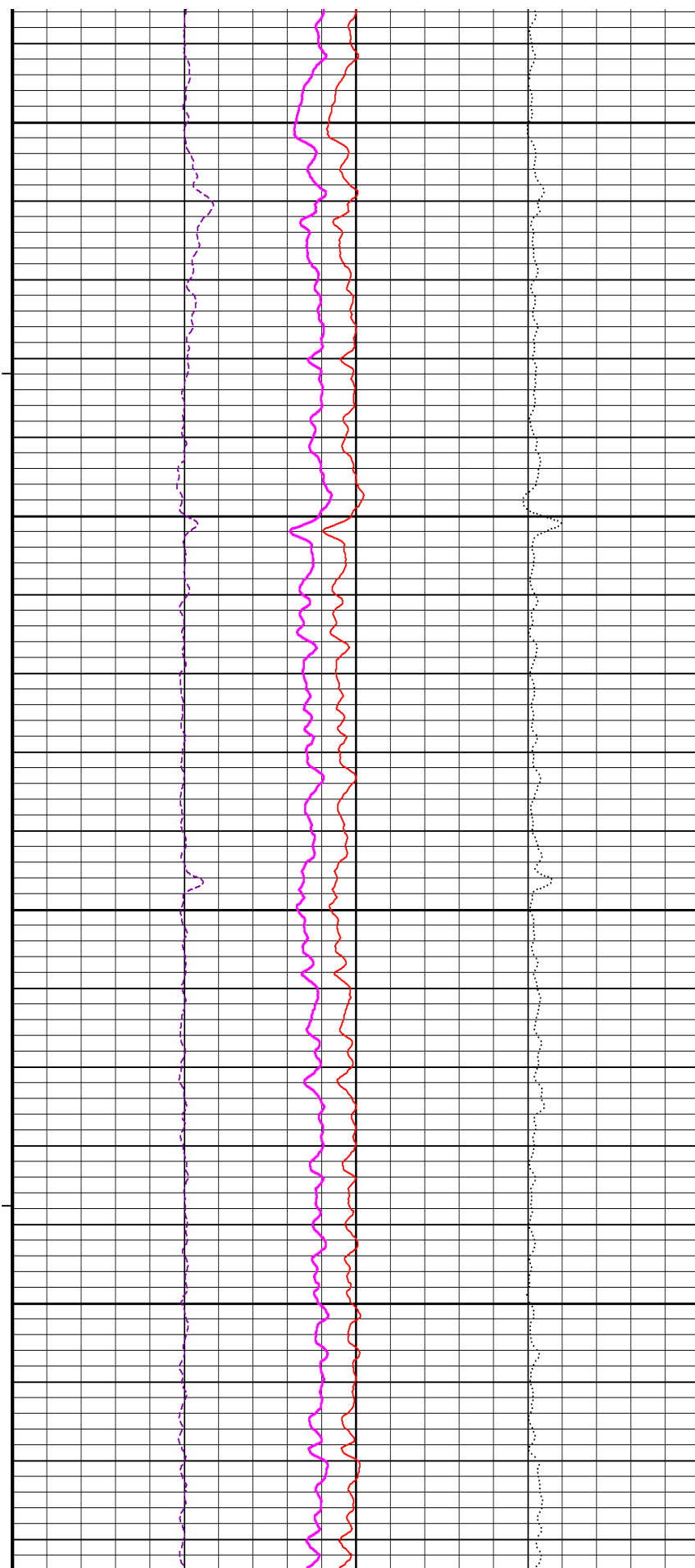
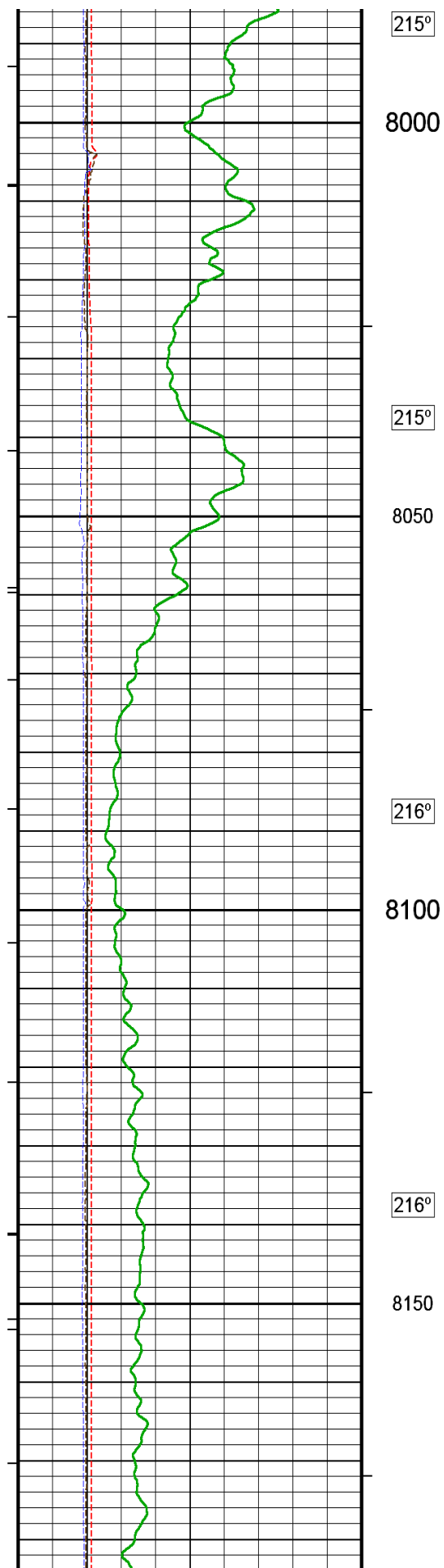


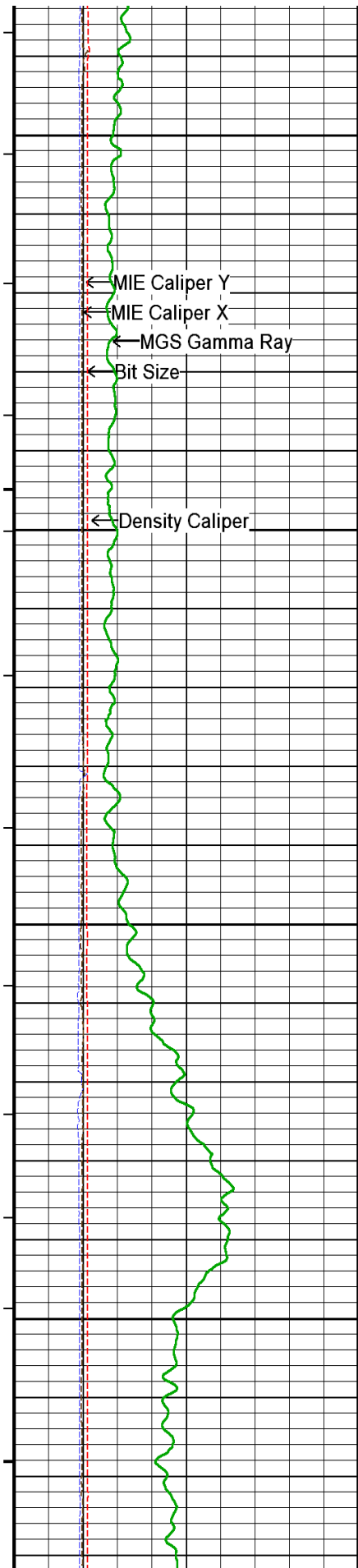












216°

8200

216°

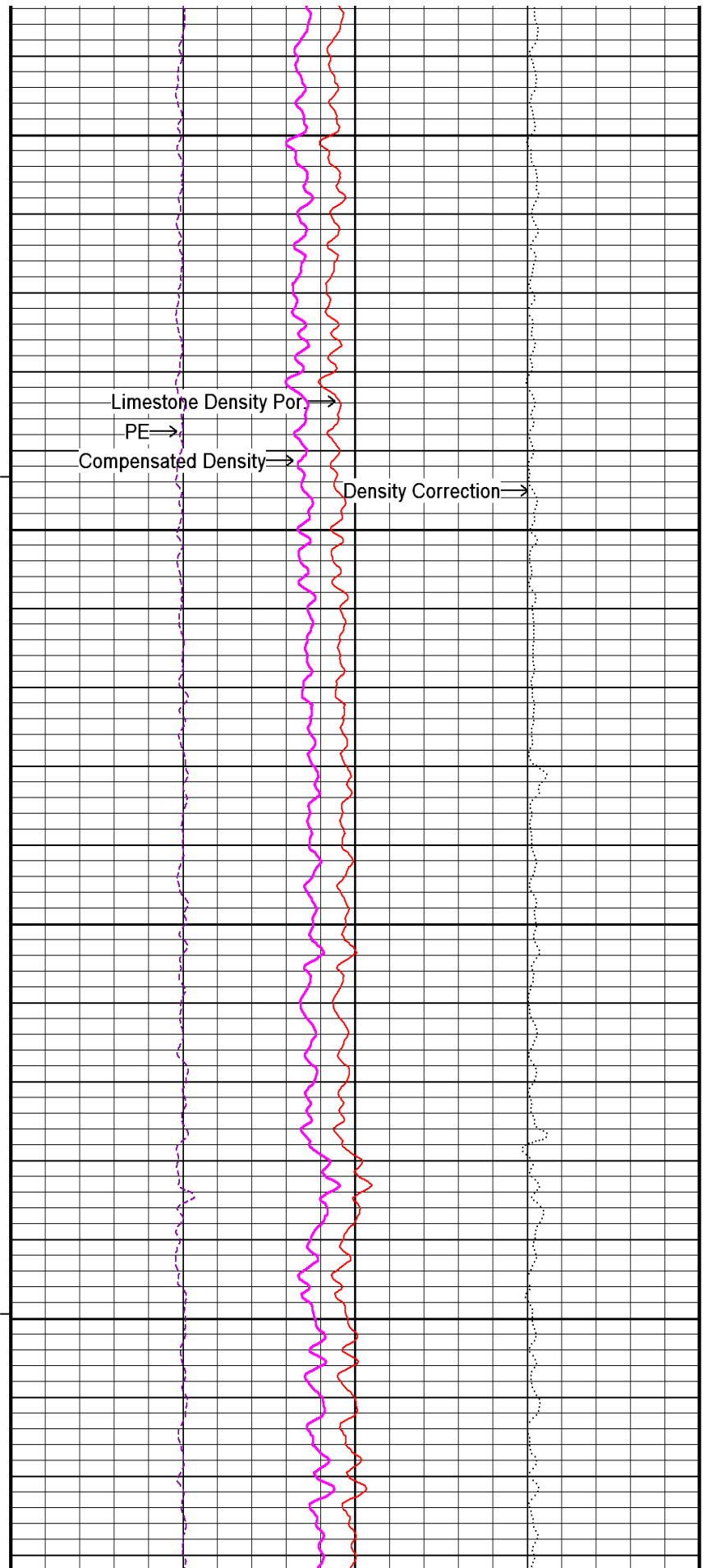
8250

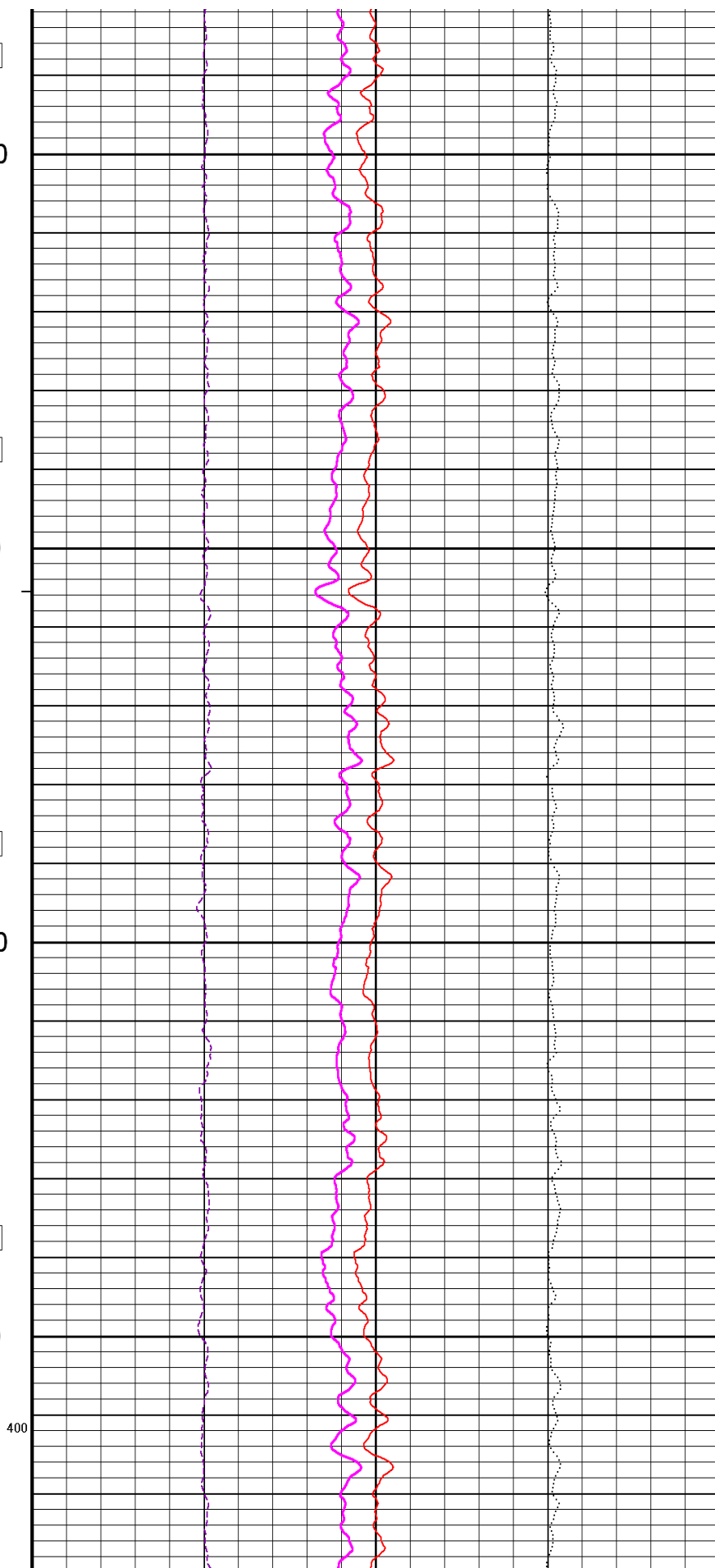
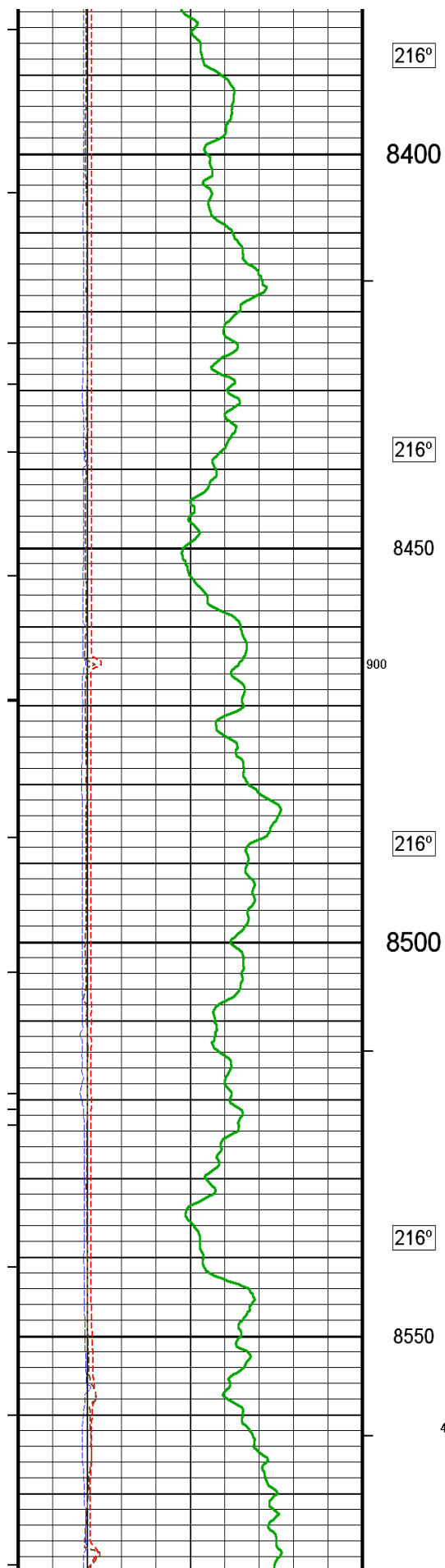
216°

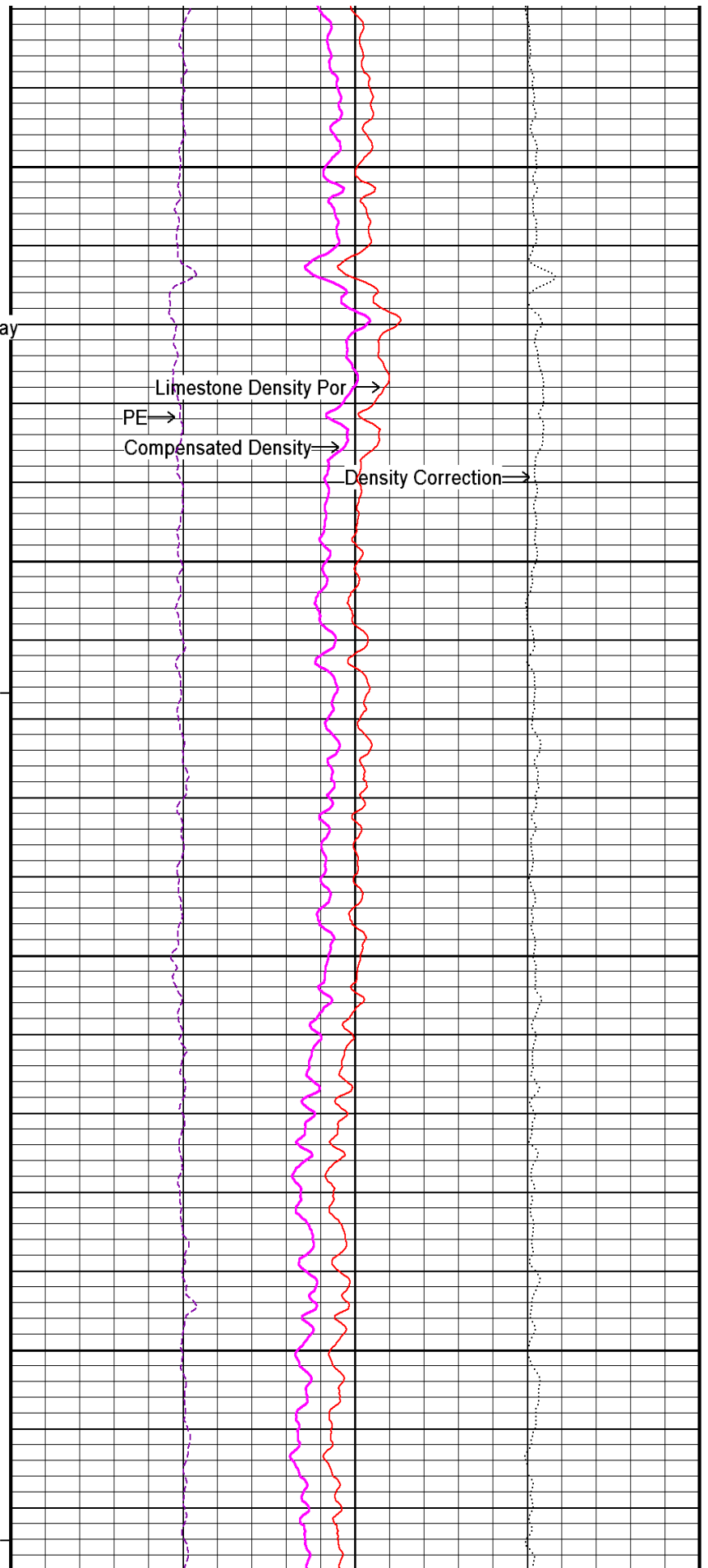
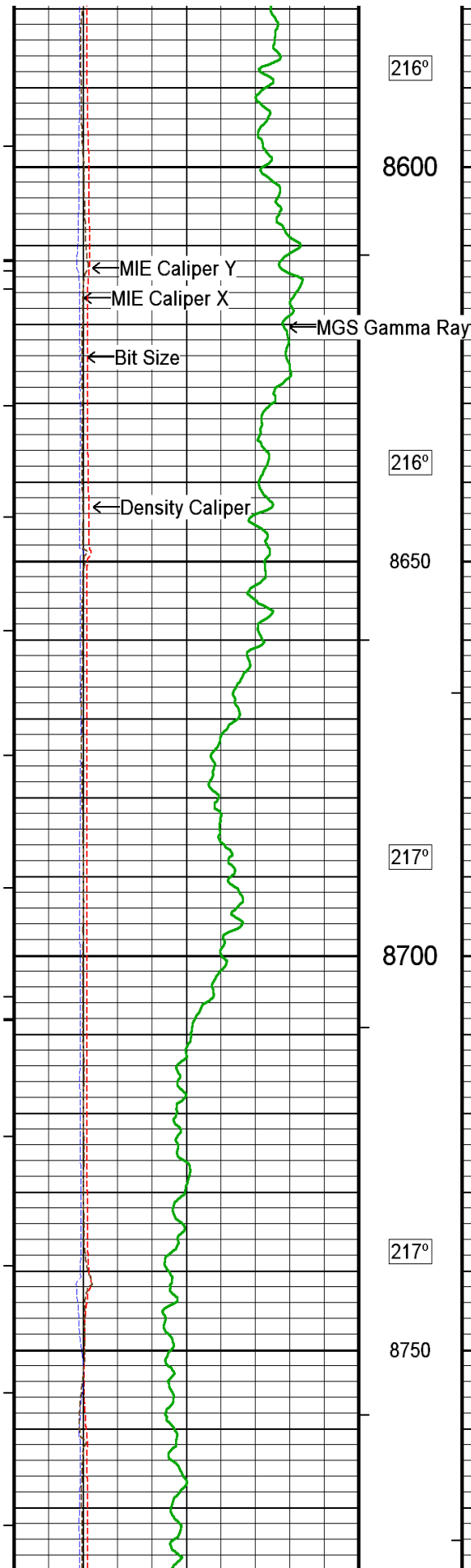
8300

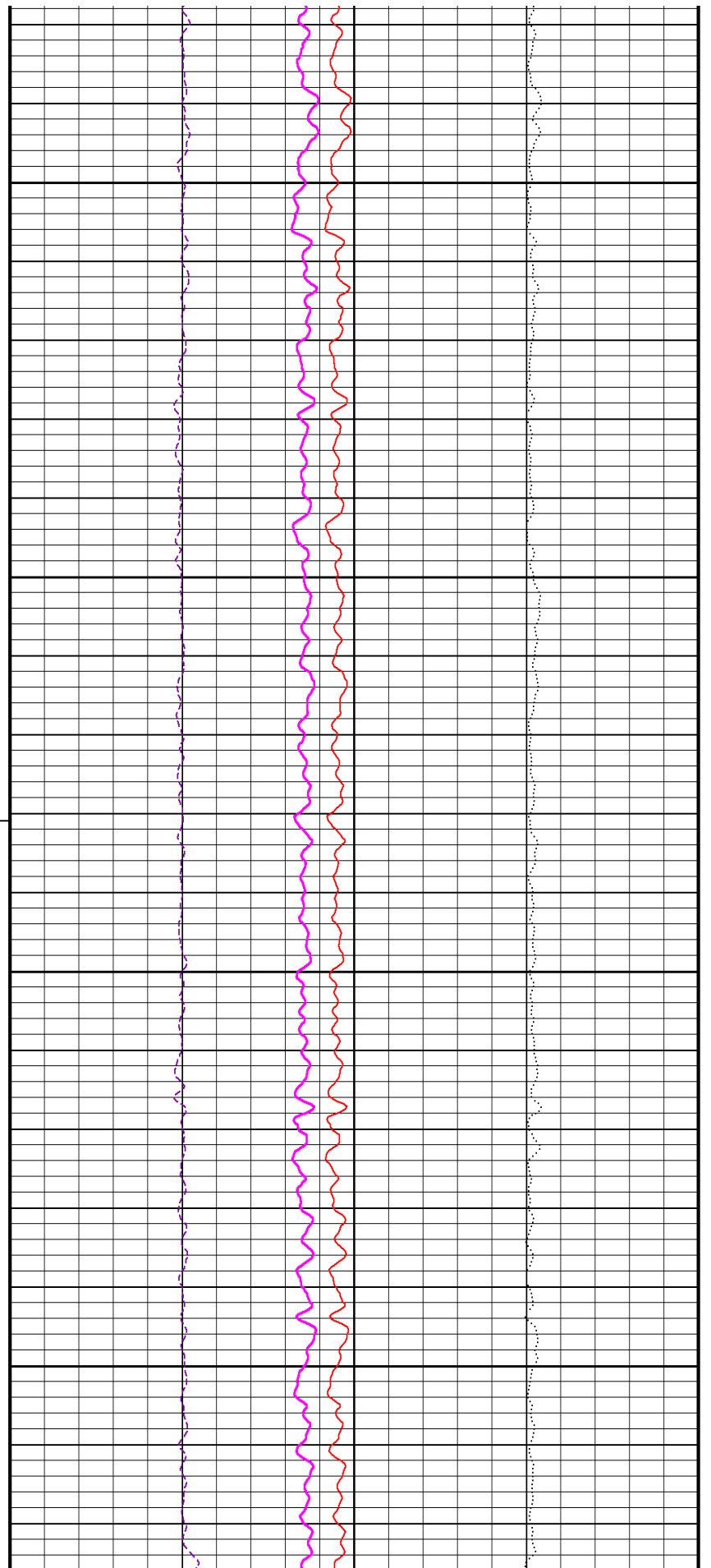
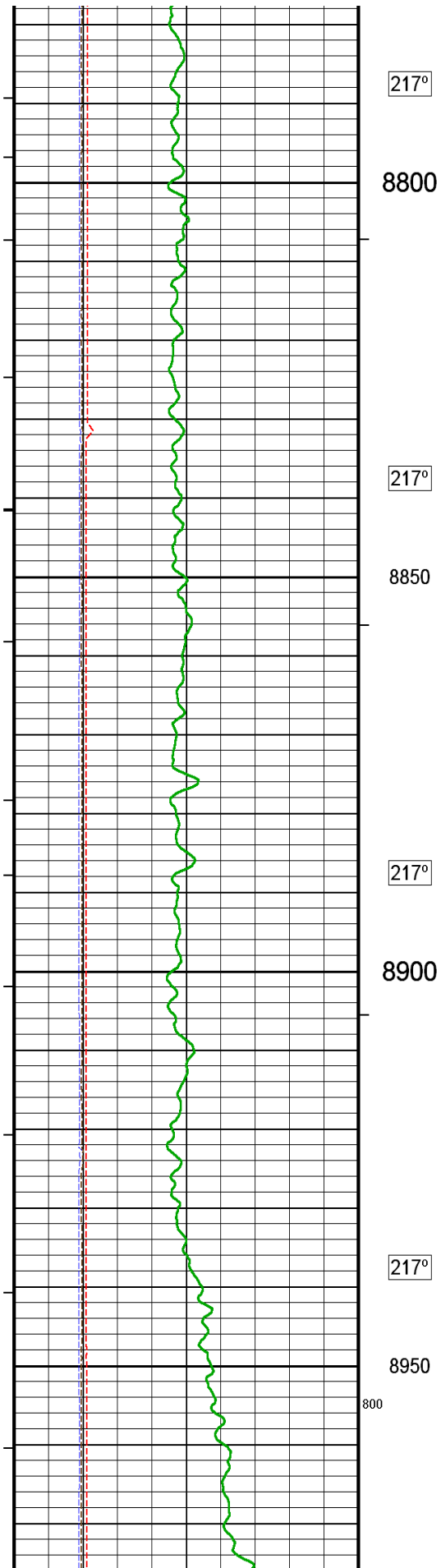
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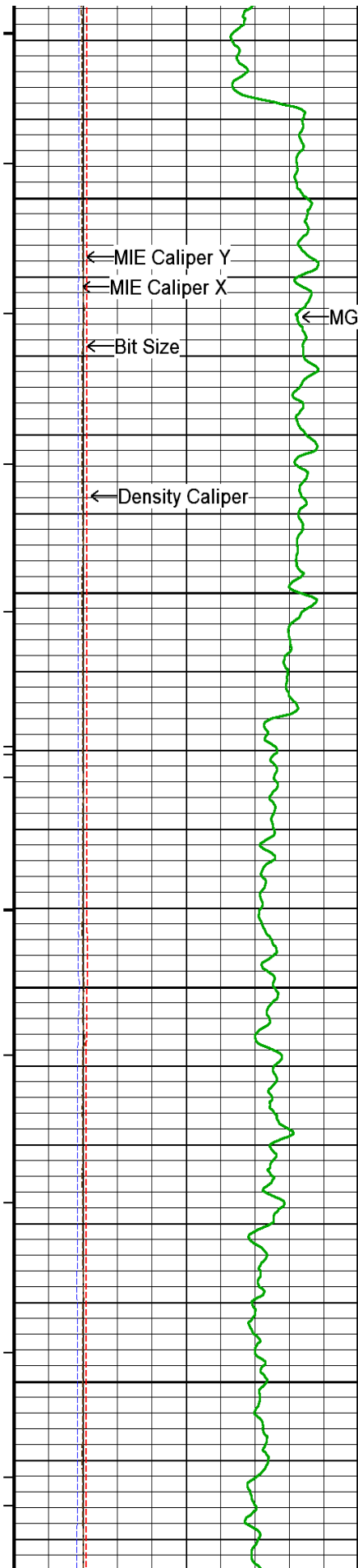
8350











217°

9000

217°

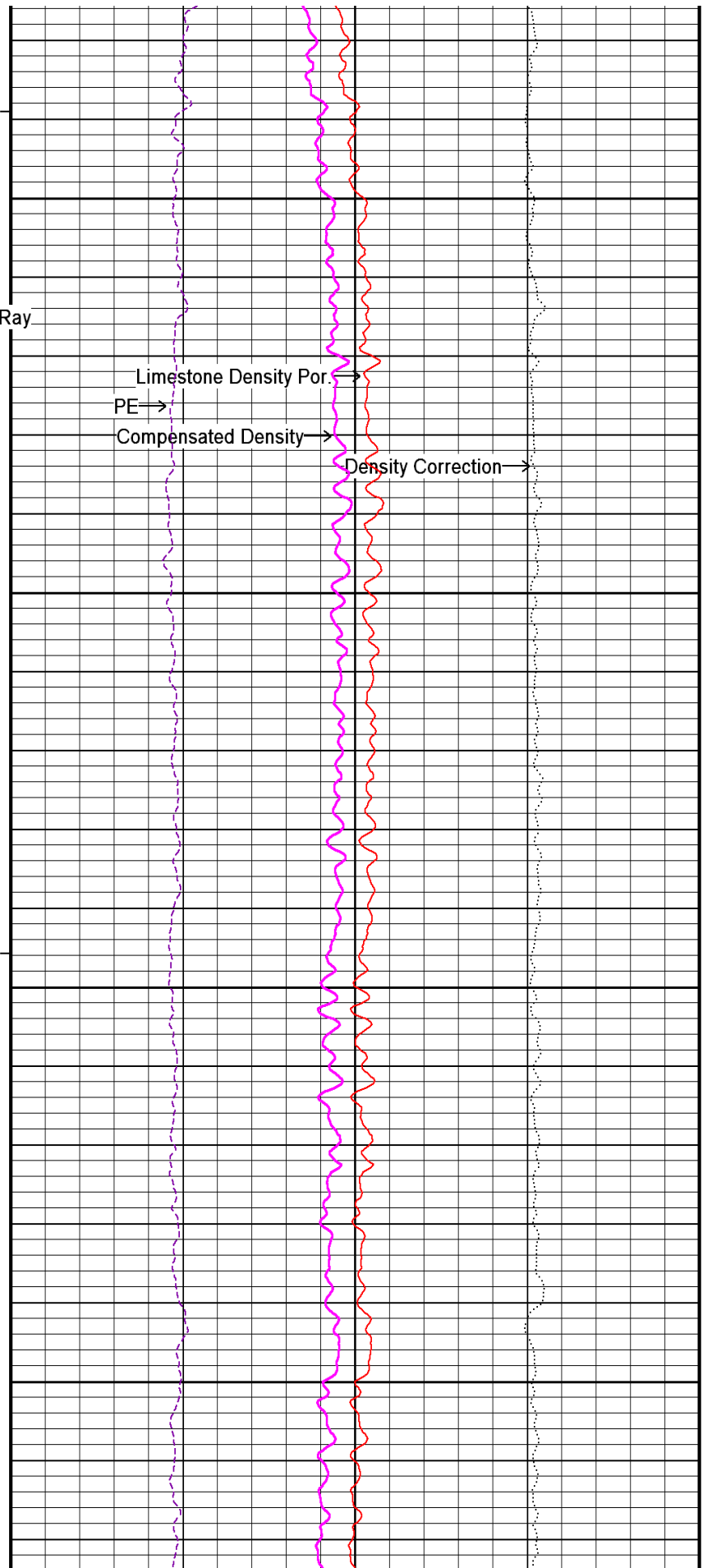
9050

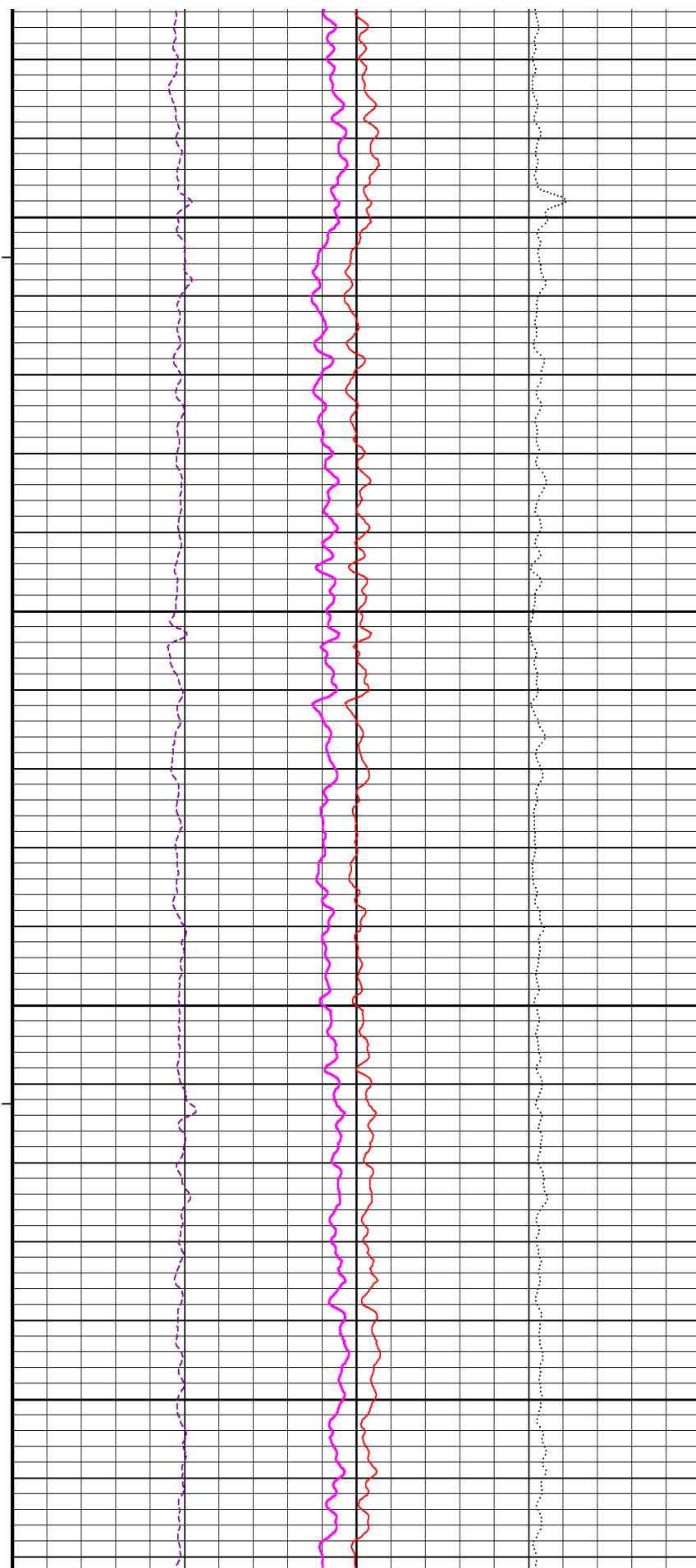
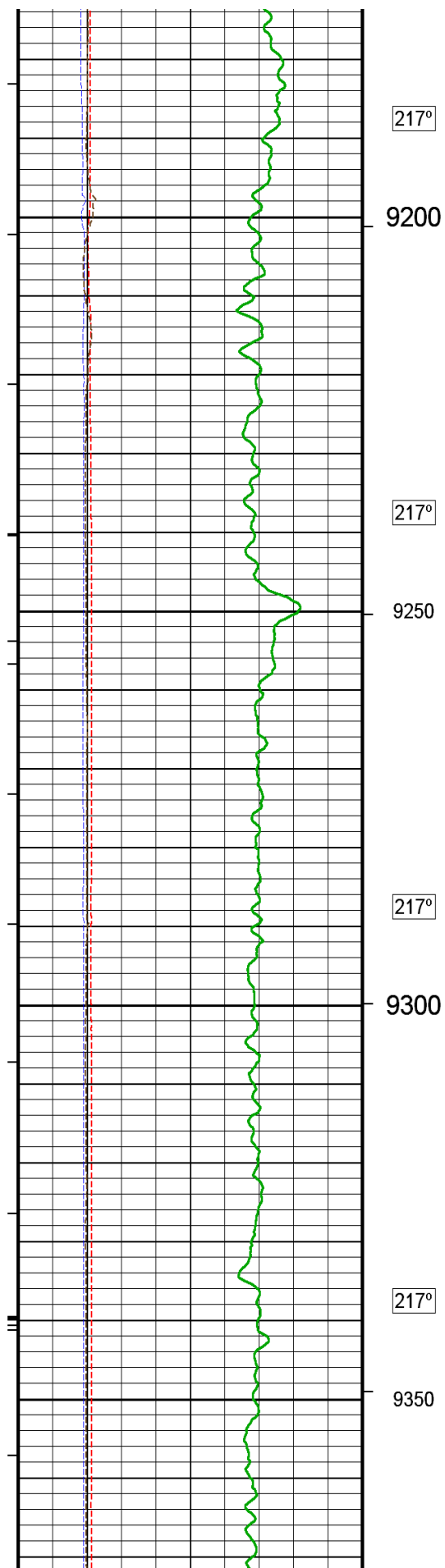
217°

9100

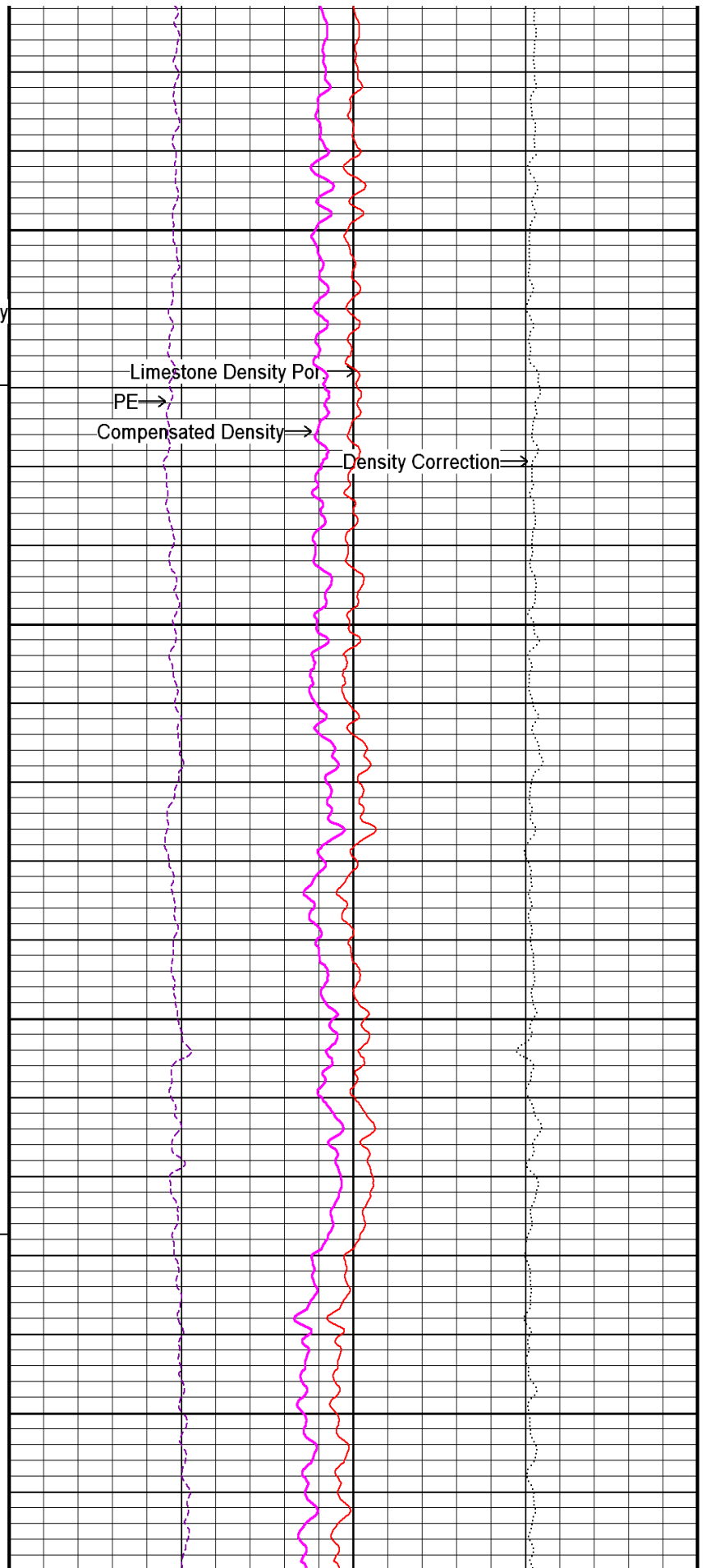
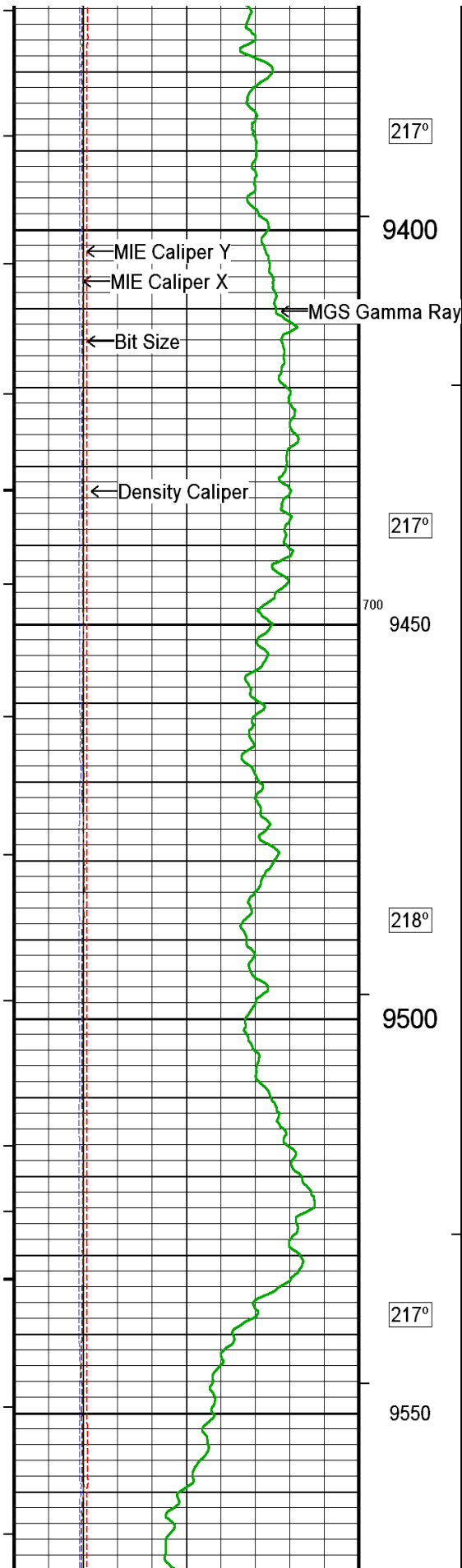
217°

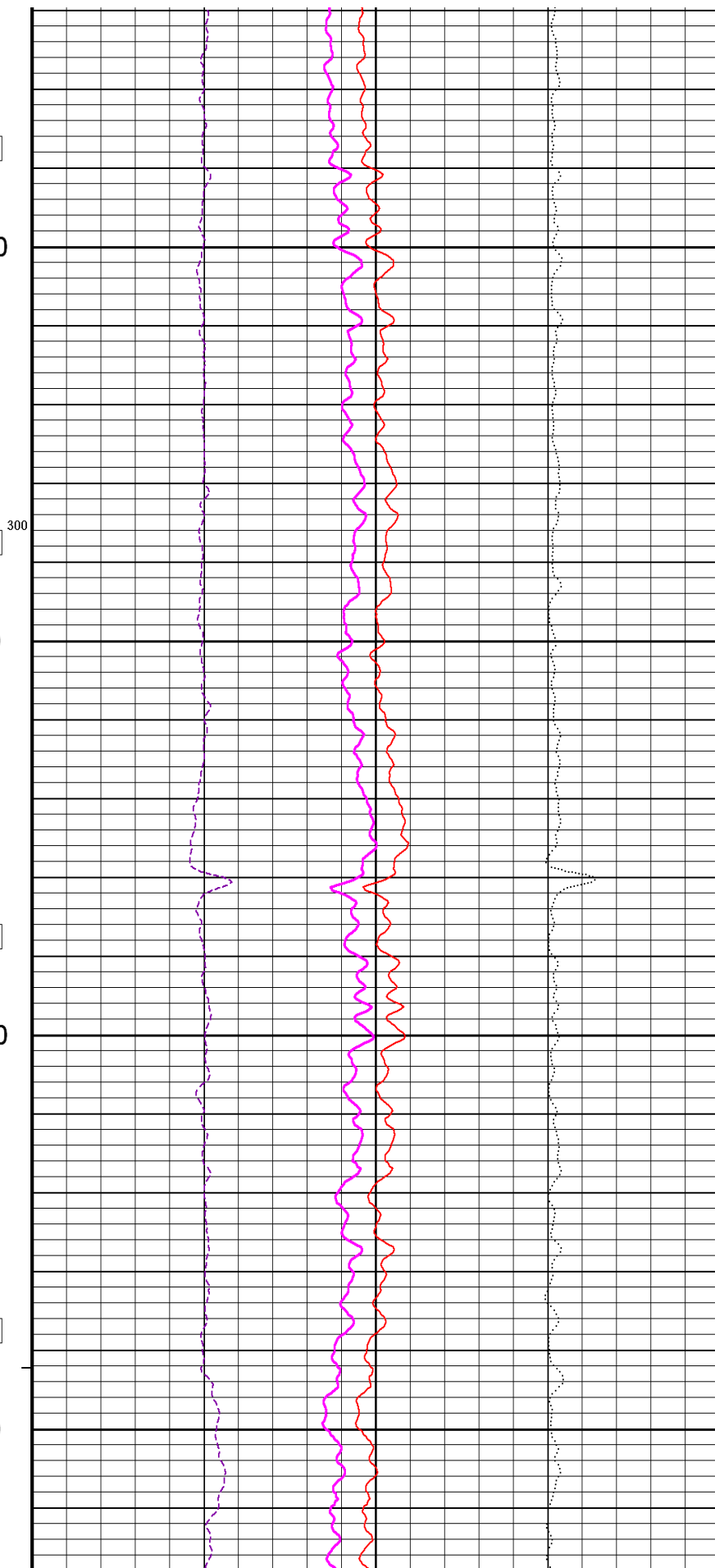
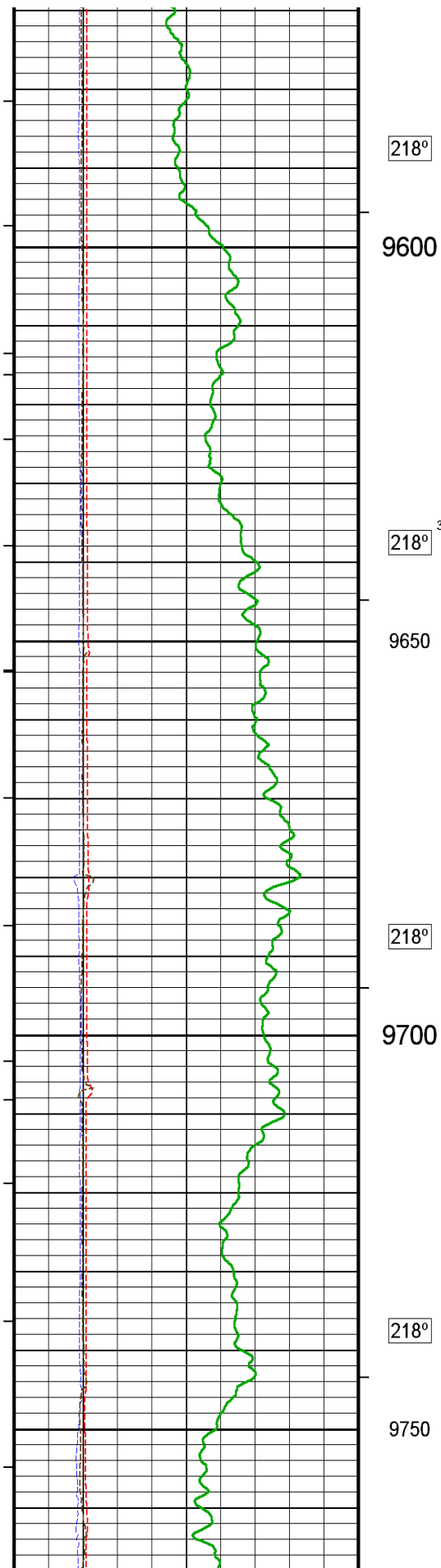
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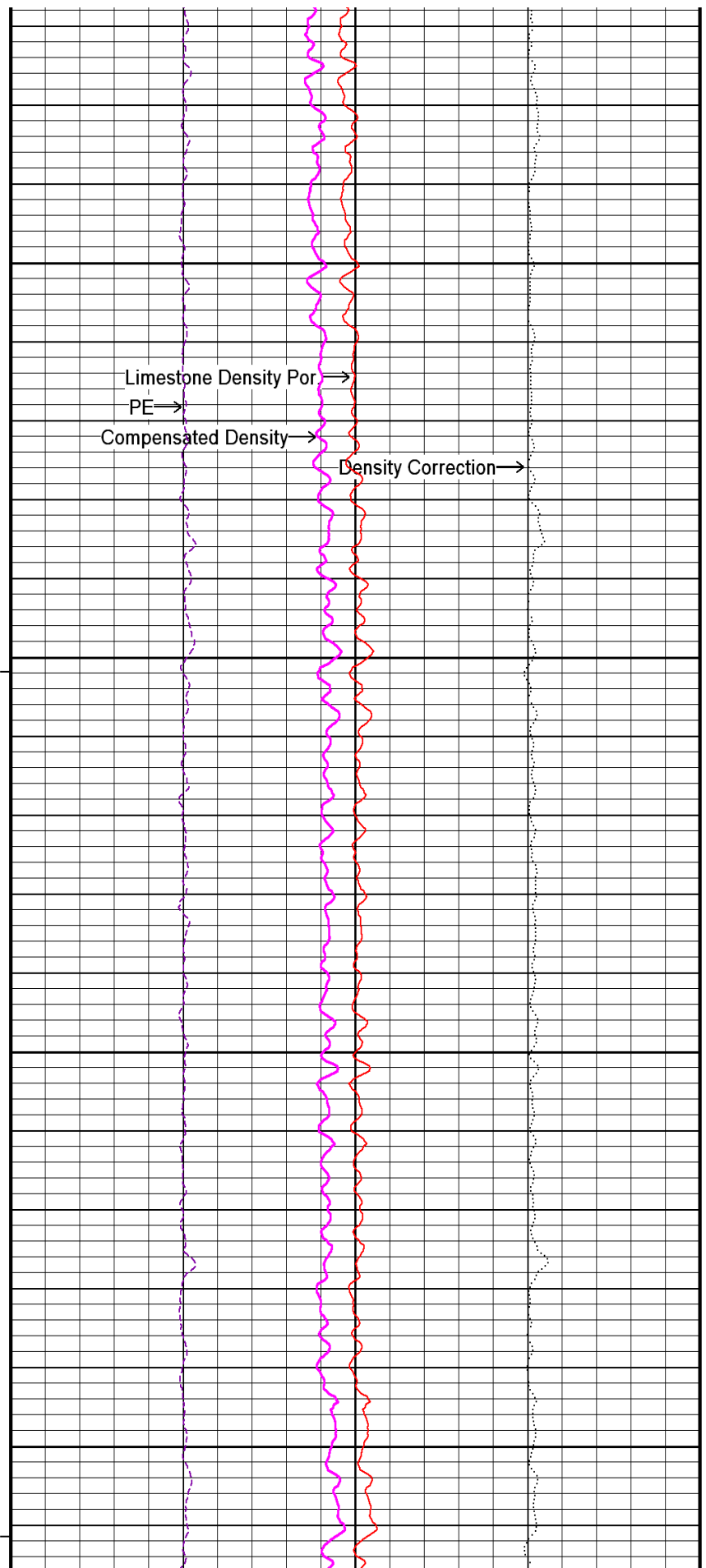
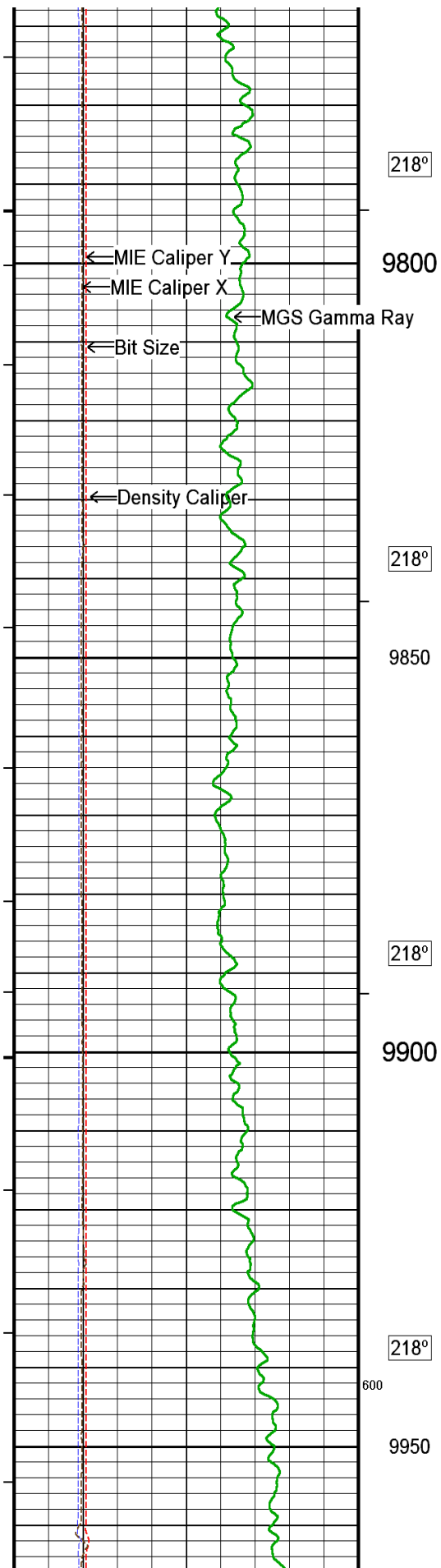


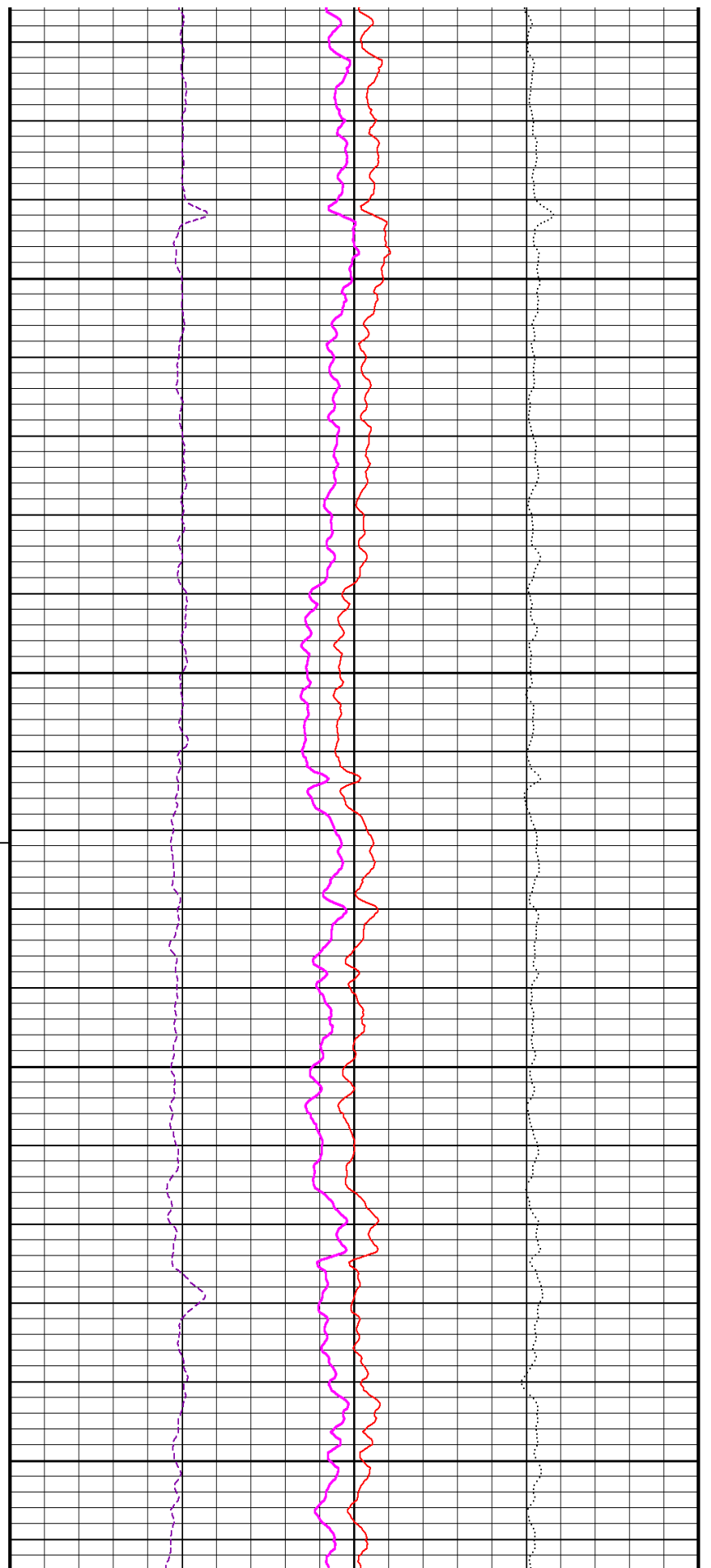
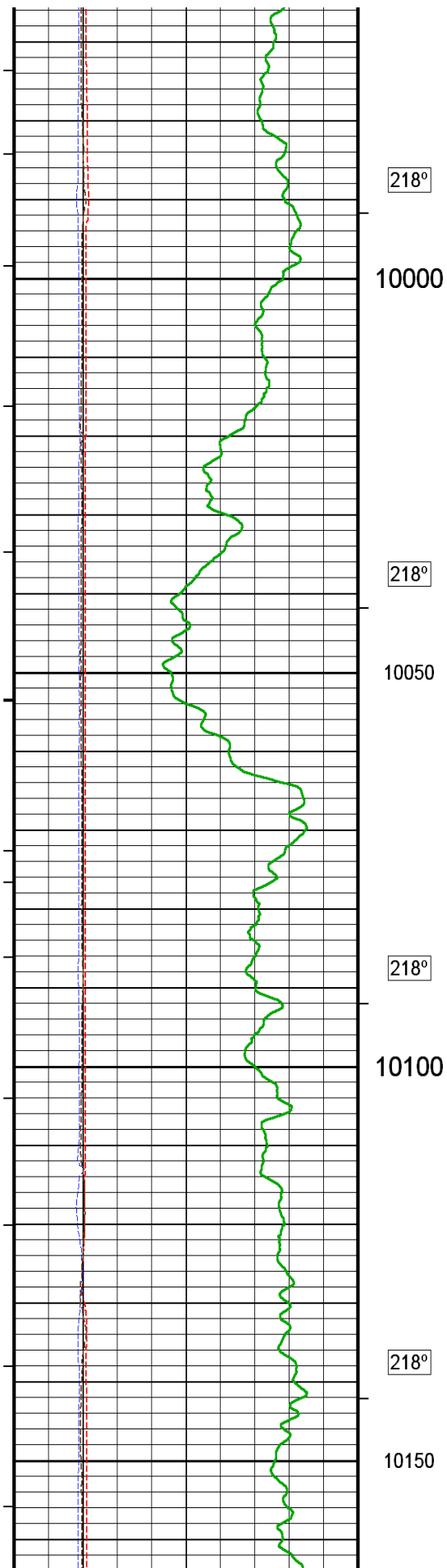


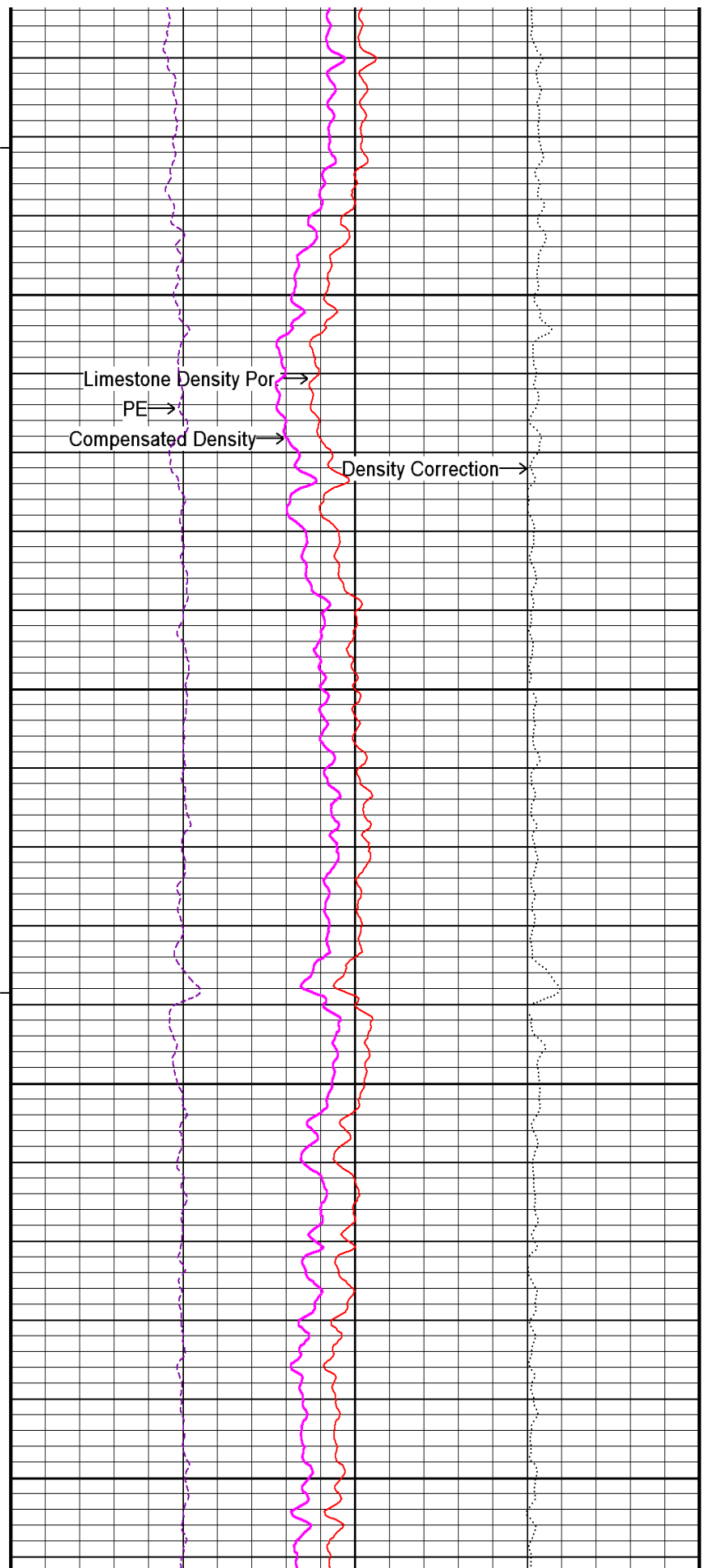
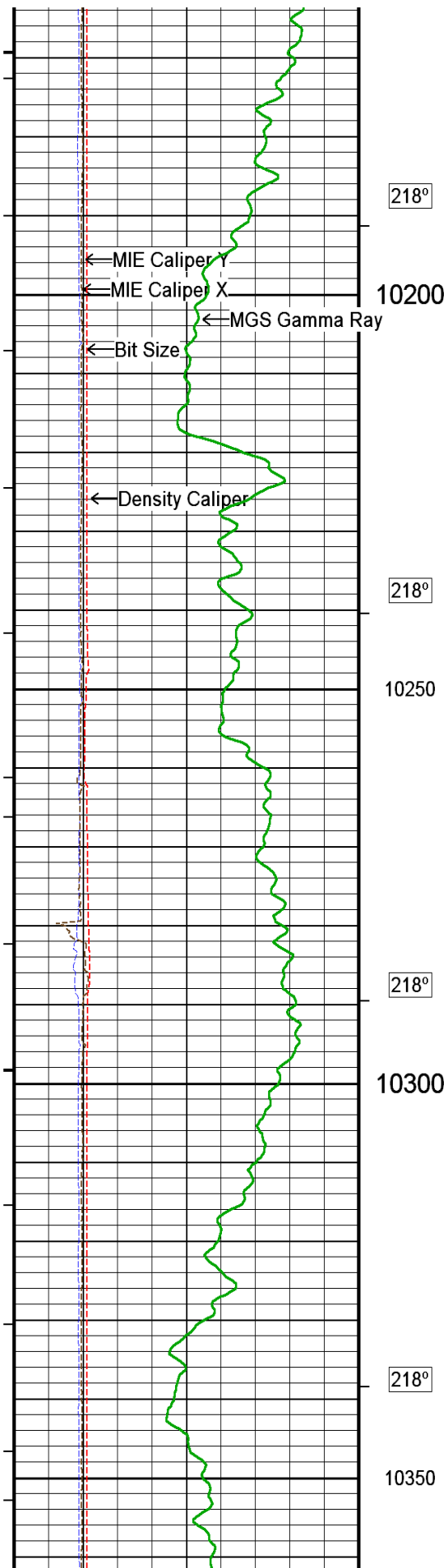


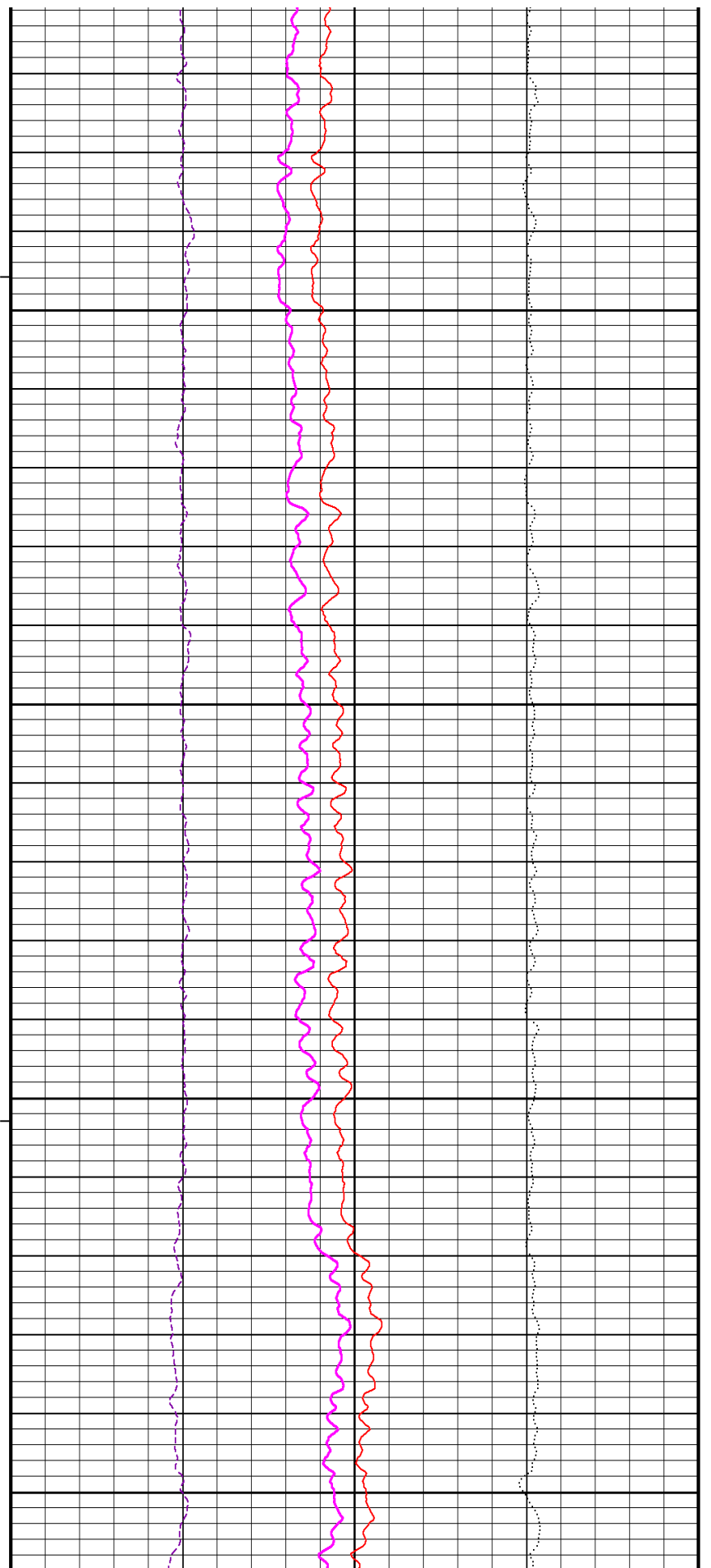
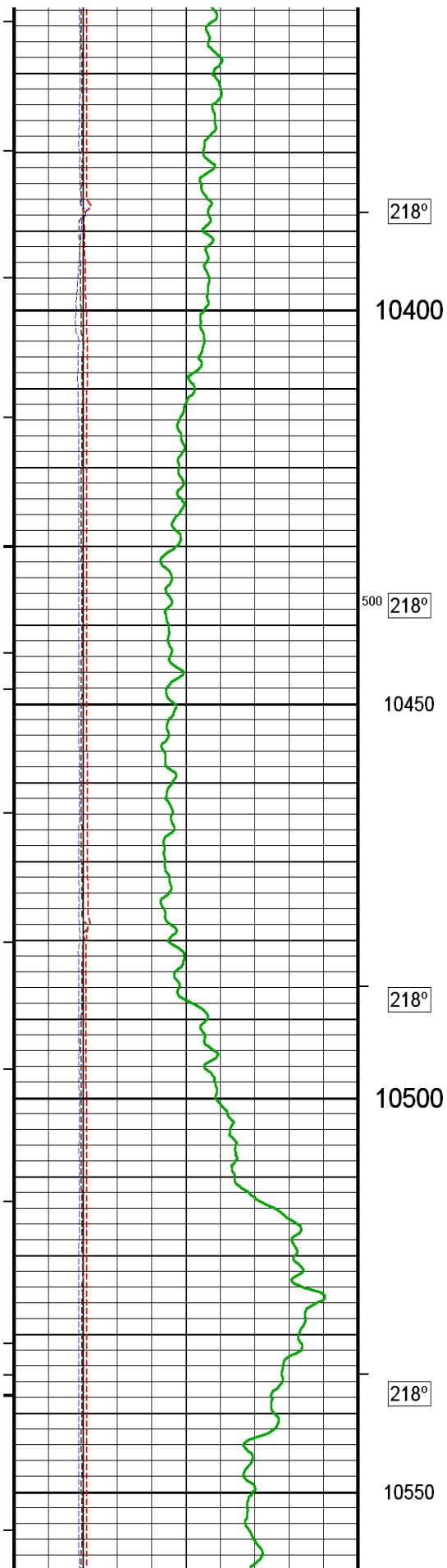


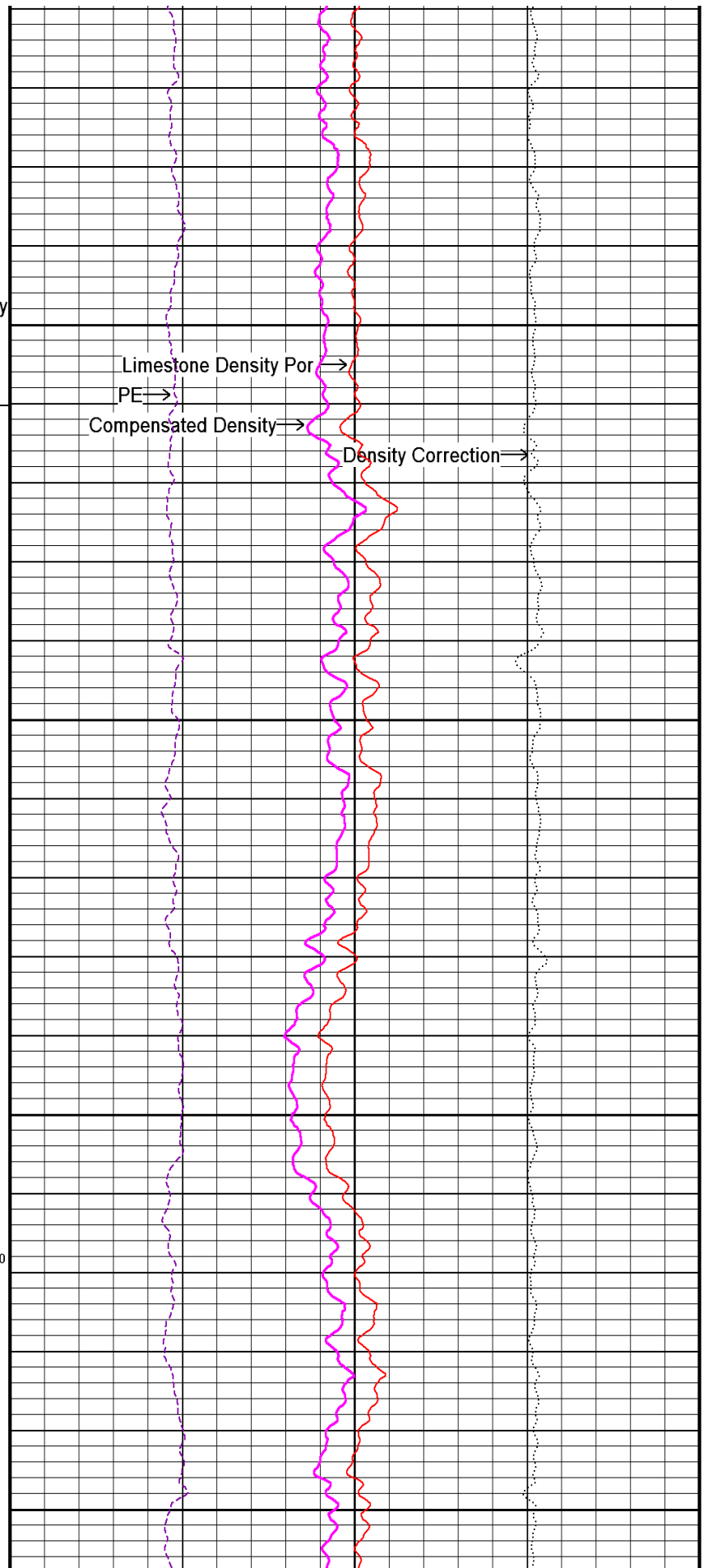
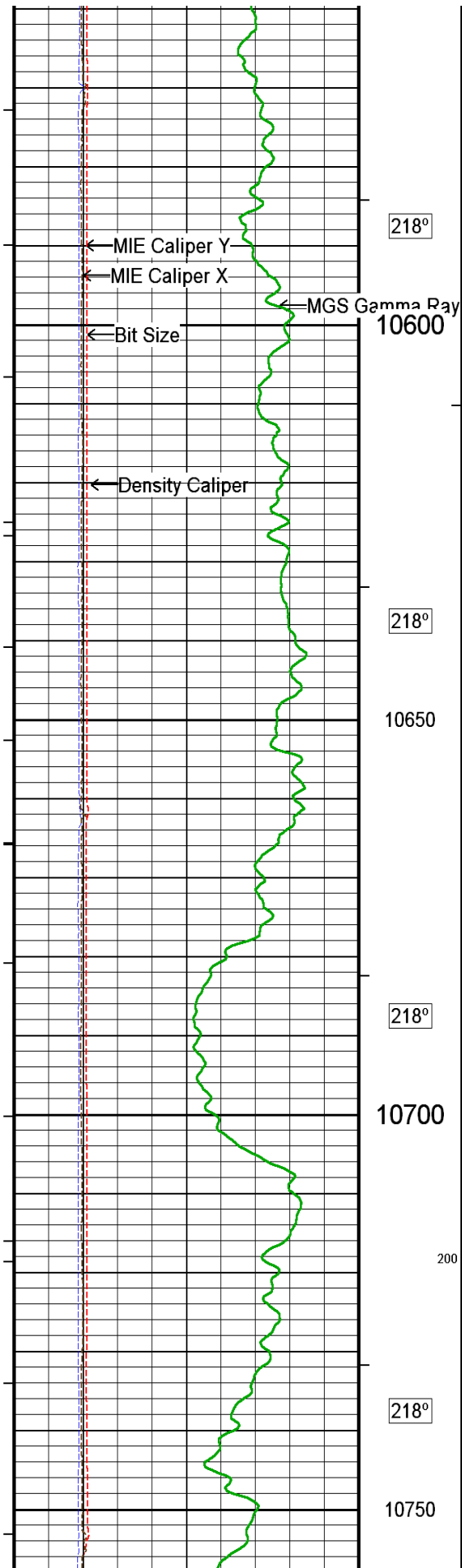


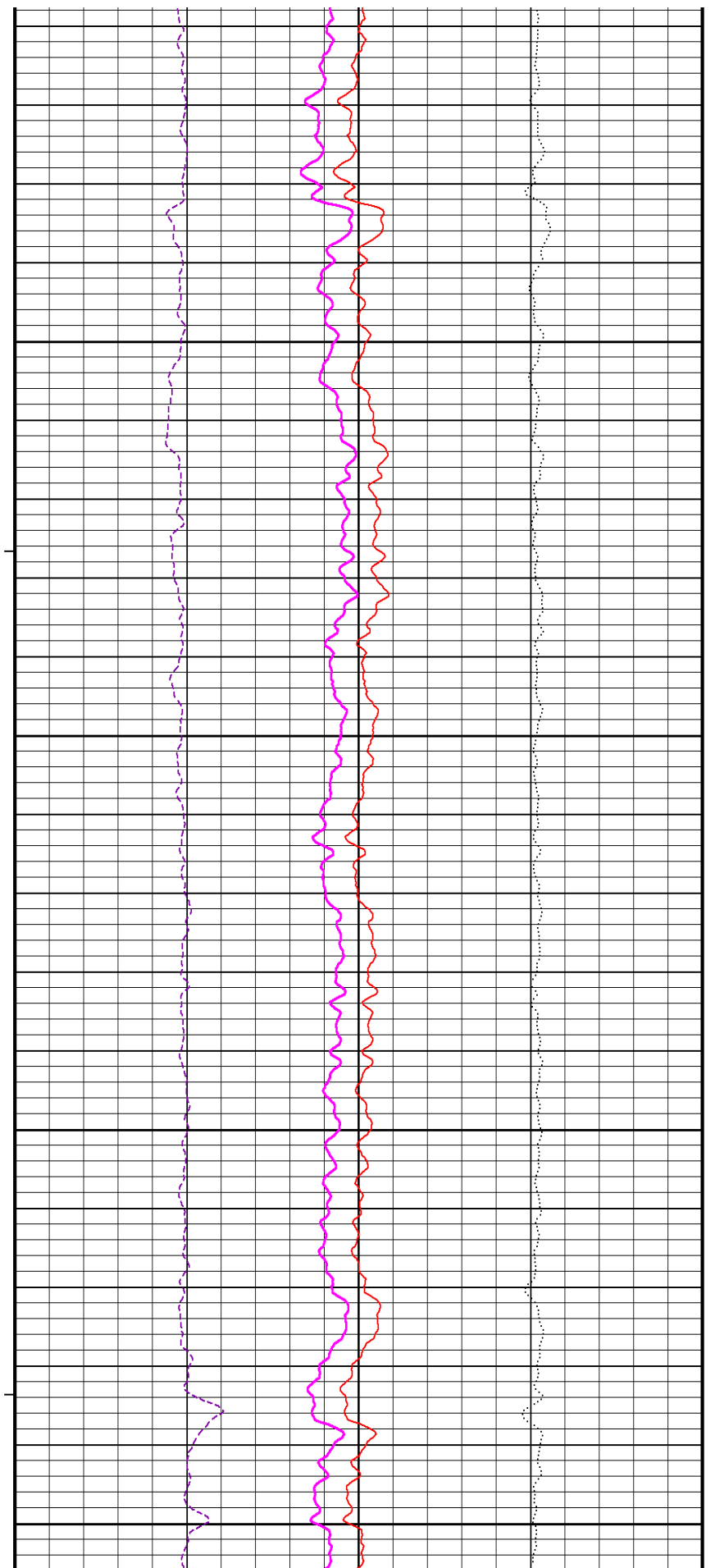
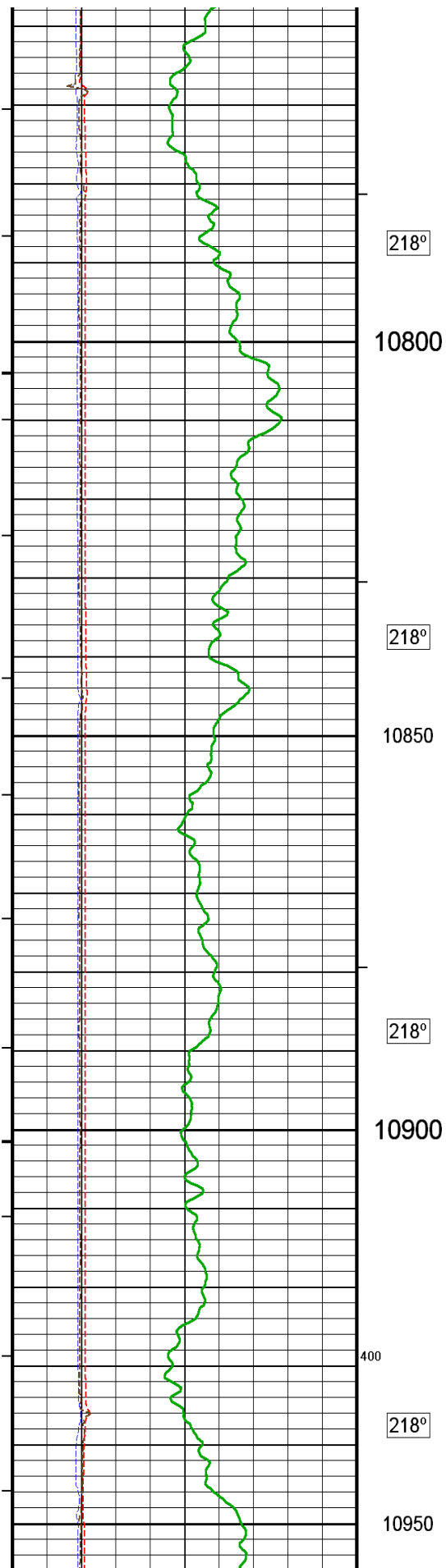




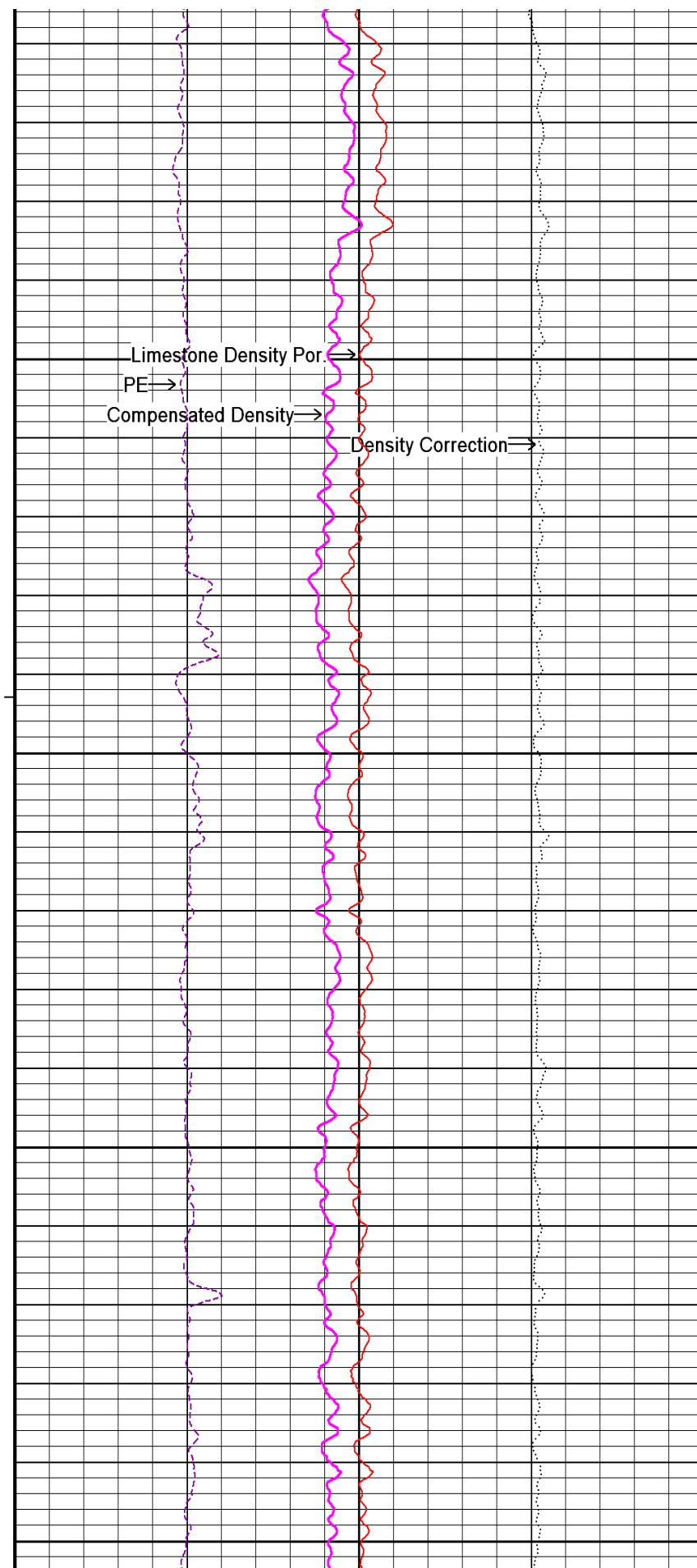
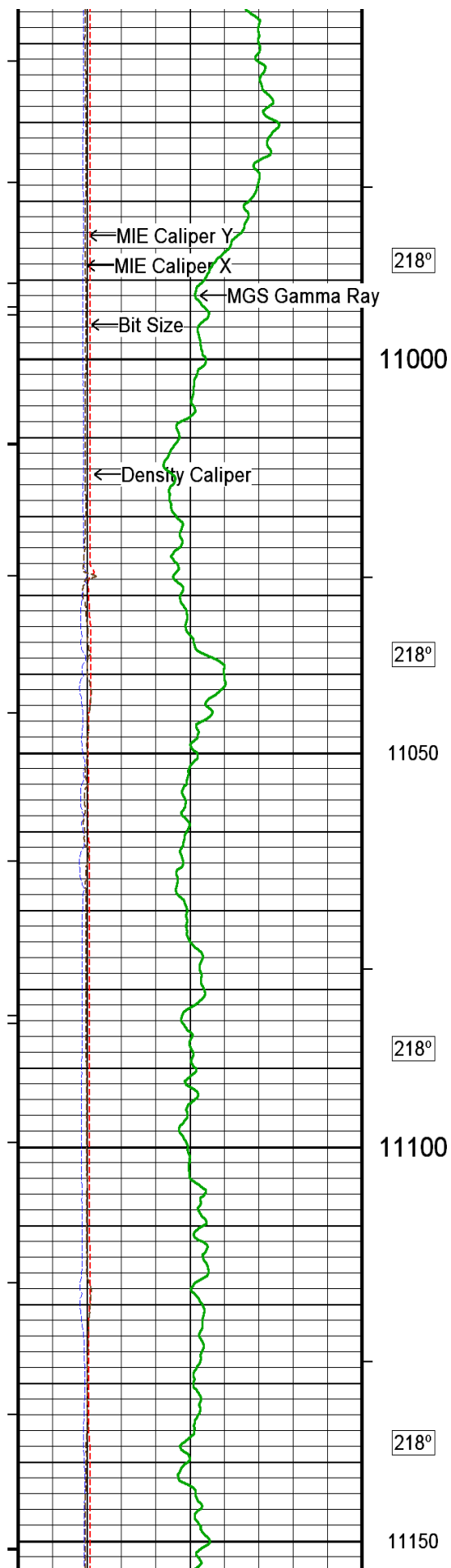


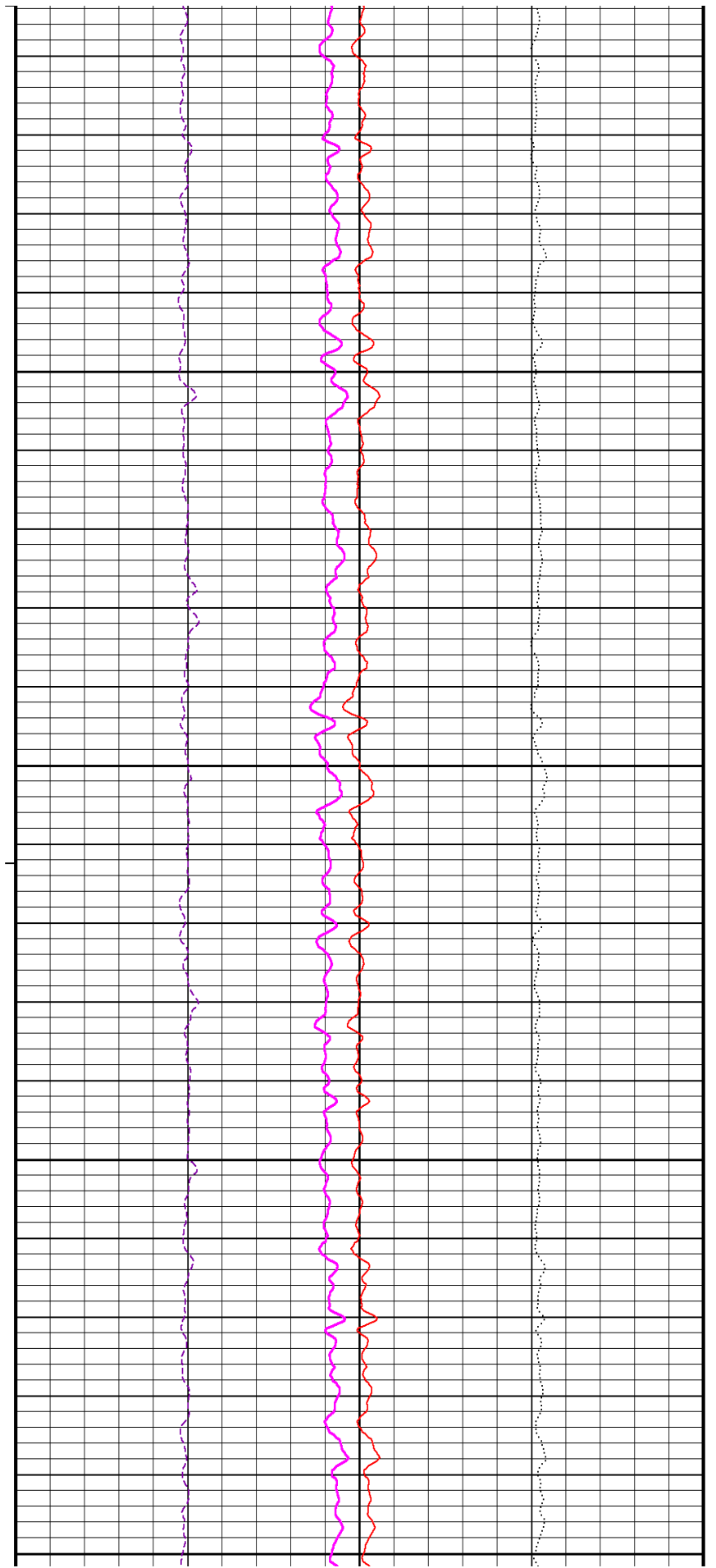
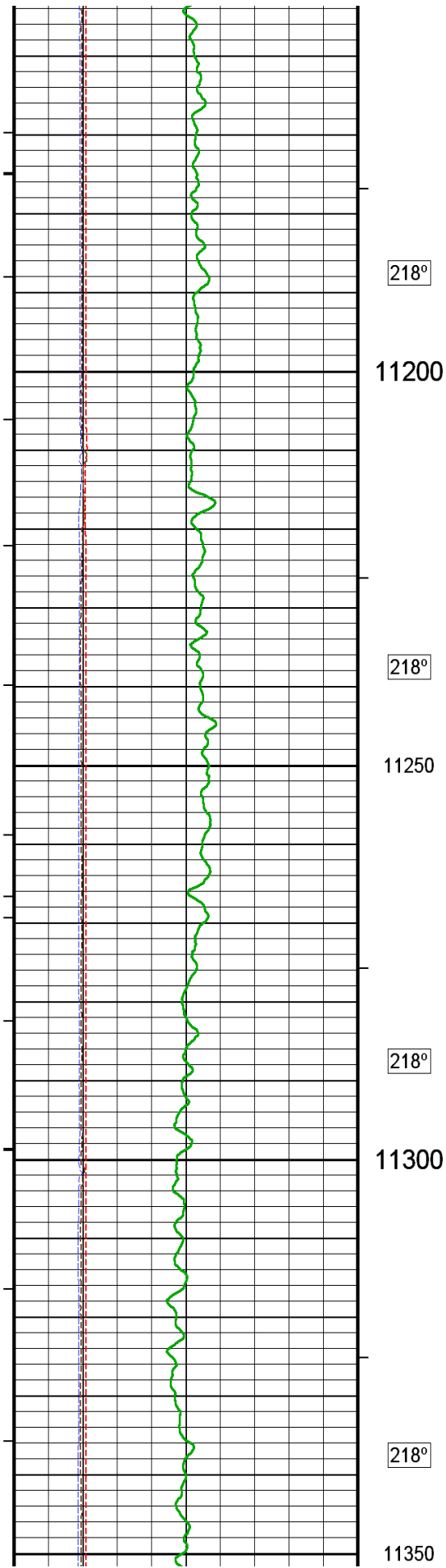


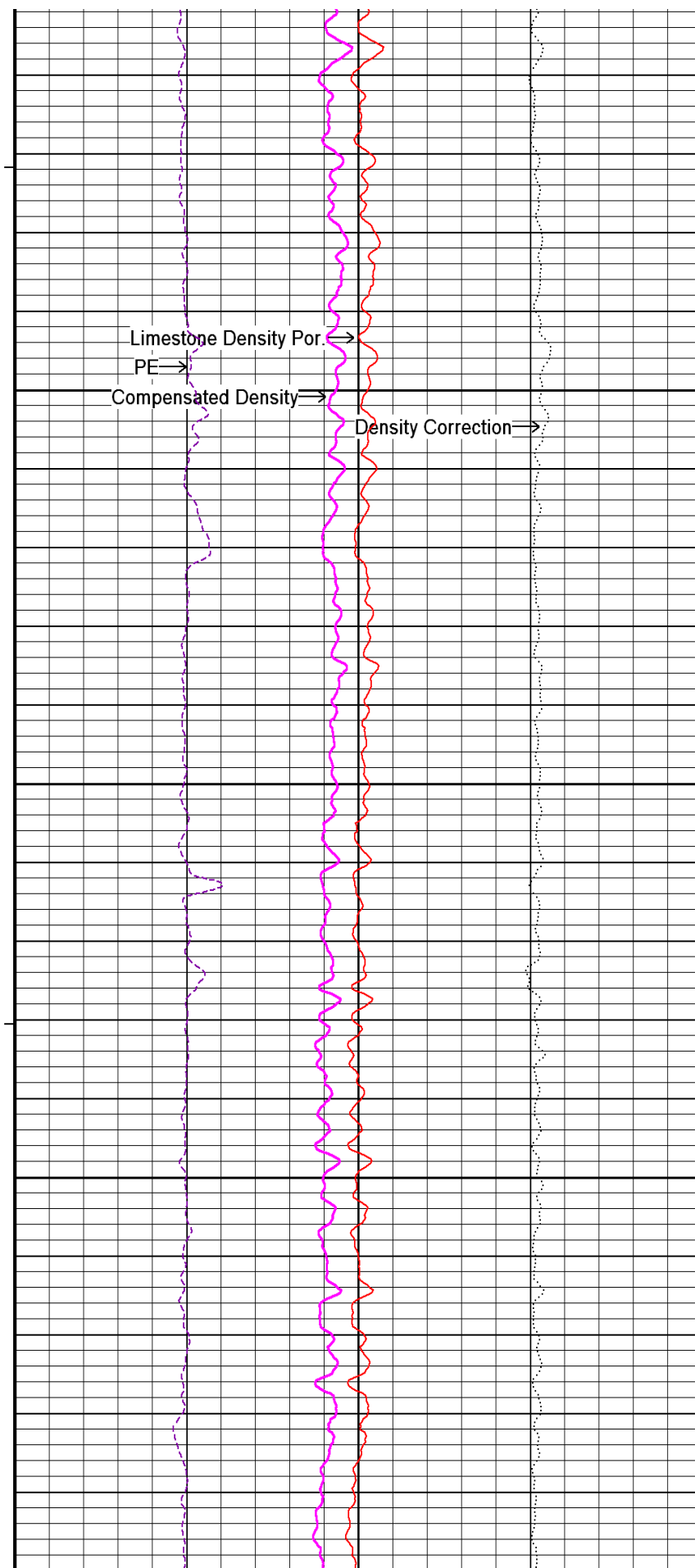
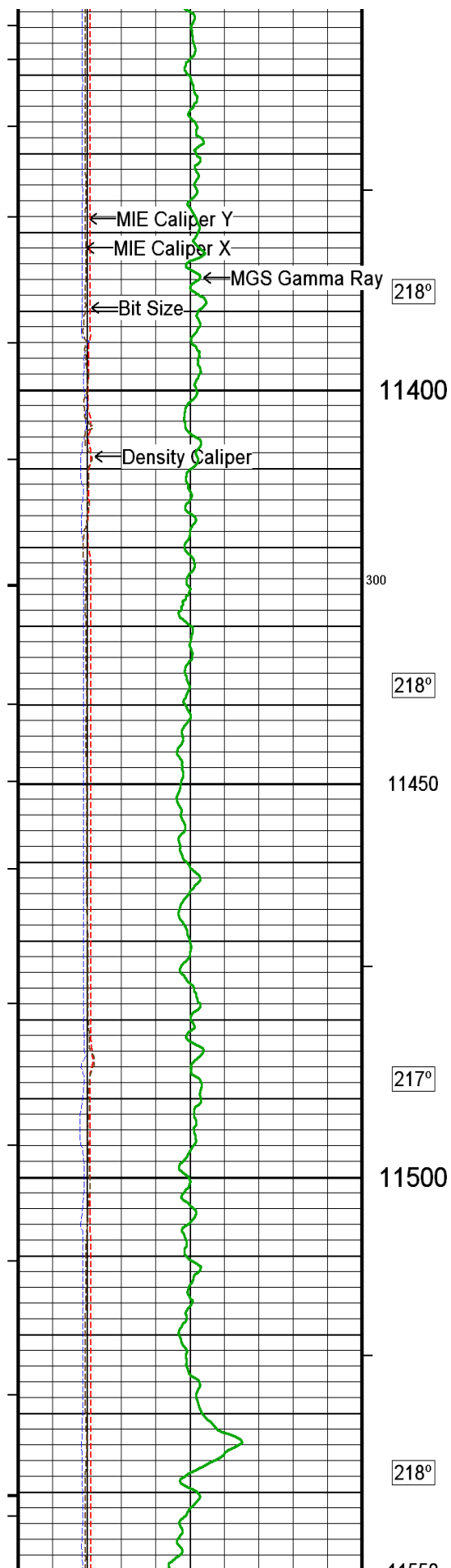


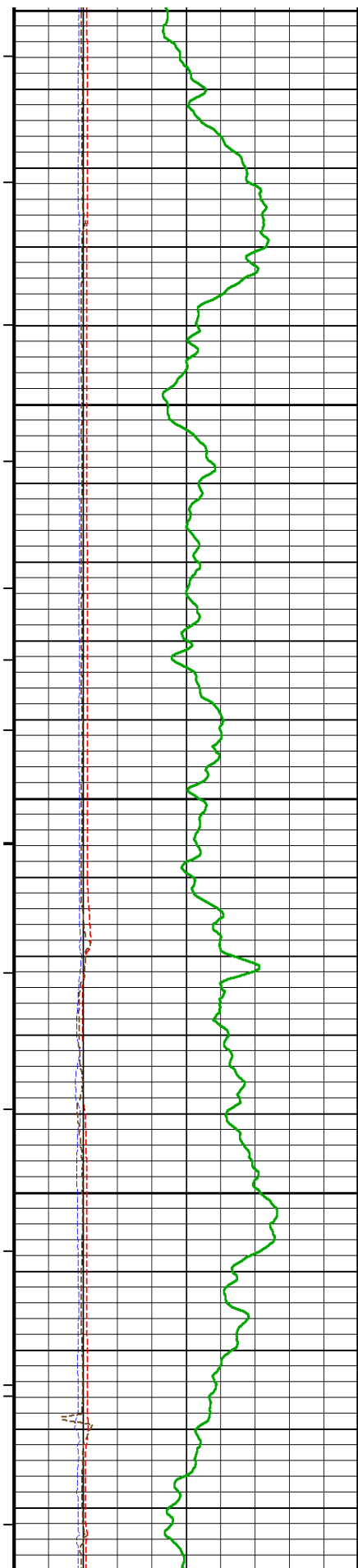












11550

217°

11600

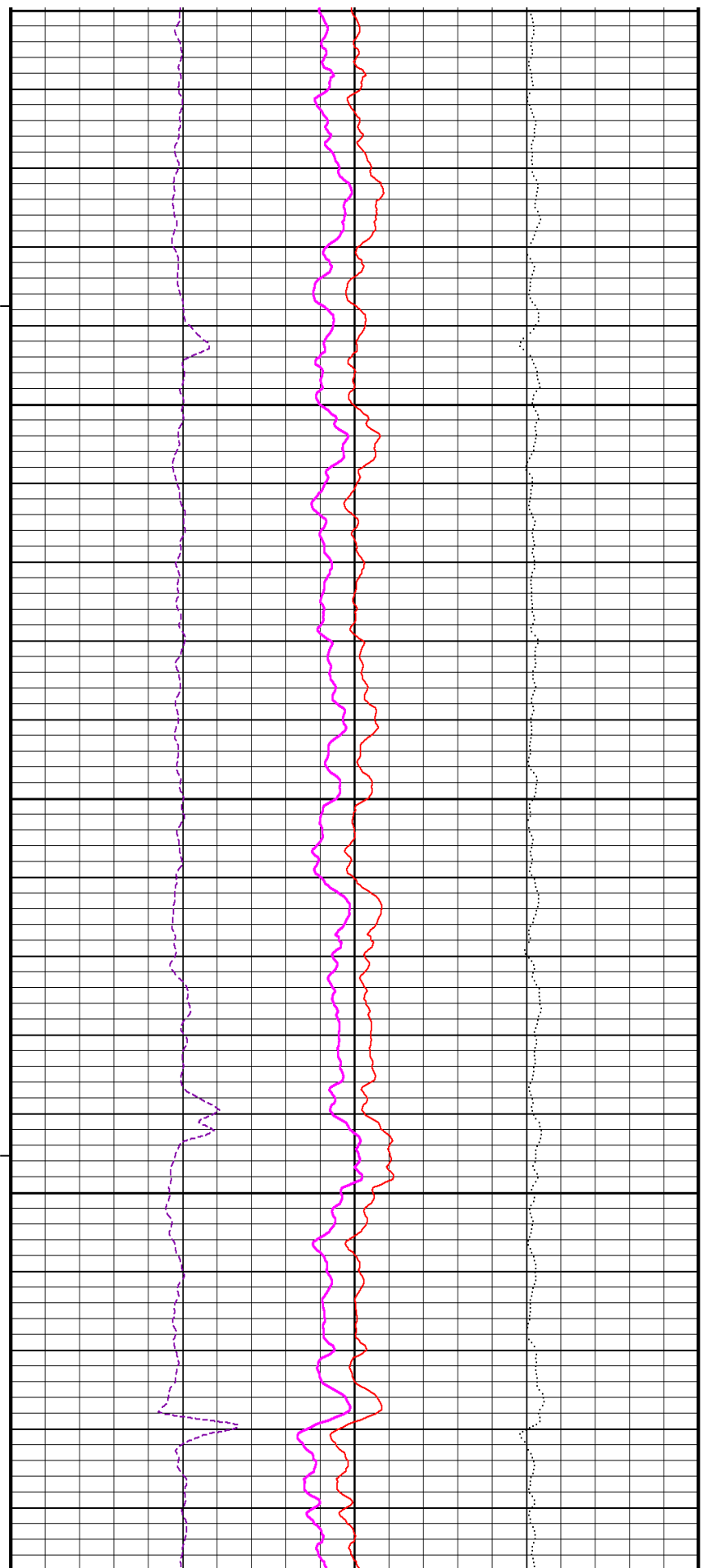
217°

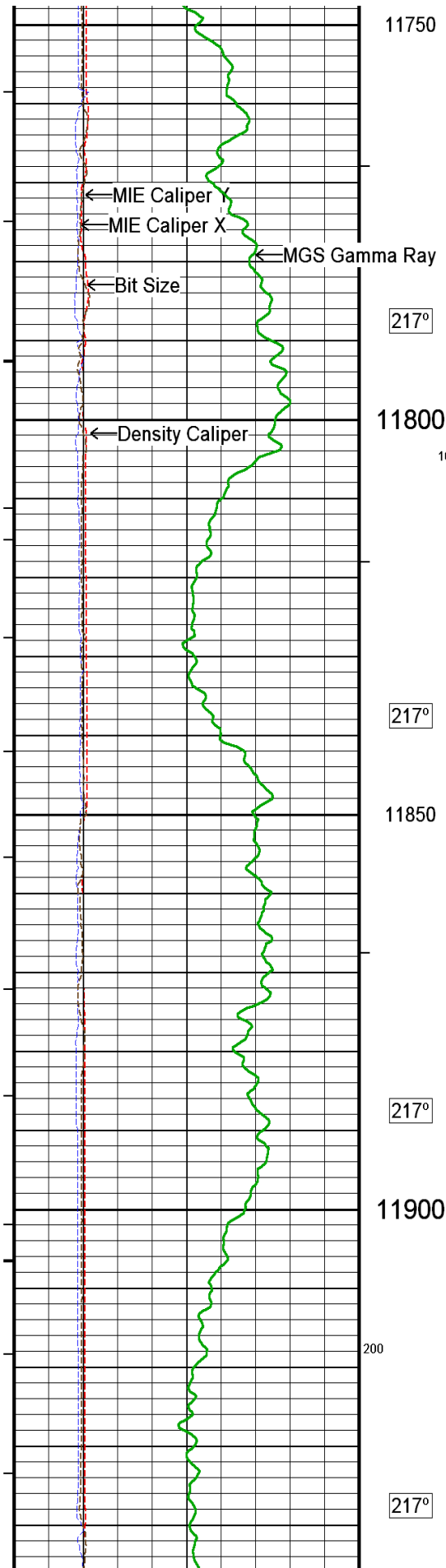
11650

218°

11700

217°





217°

11800

217°

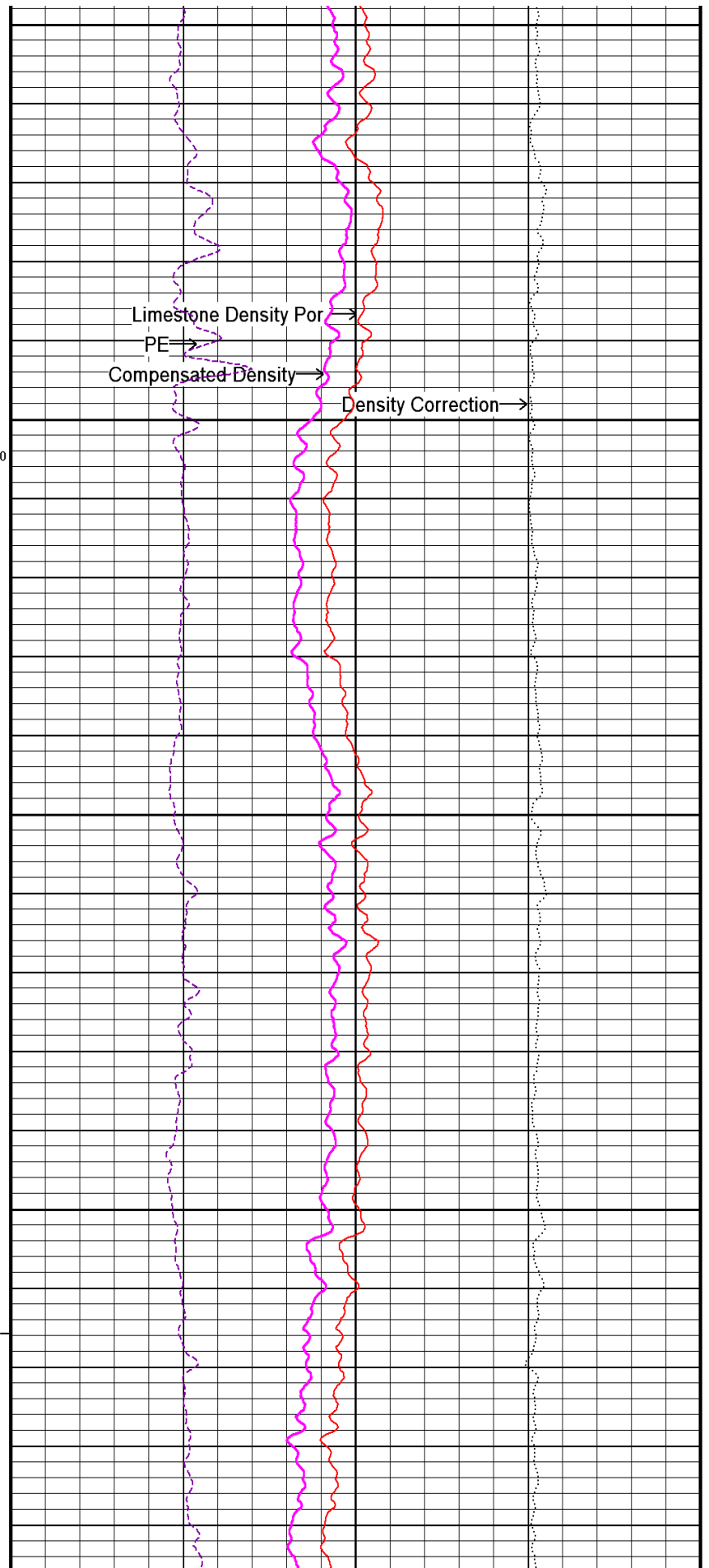
11850

217°

11900

200

217°

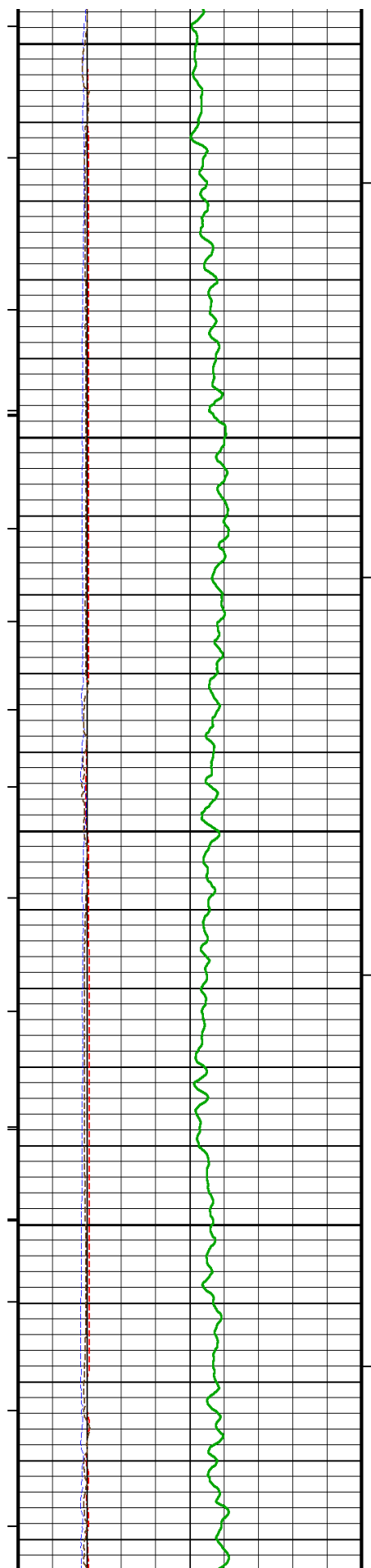


Limestone Density Por

PE

Compensated Density

Density Correction



11950

217°

12000

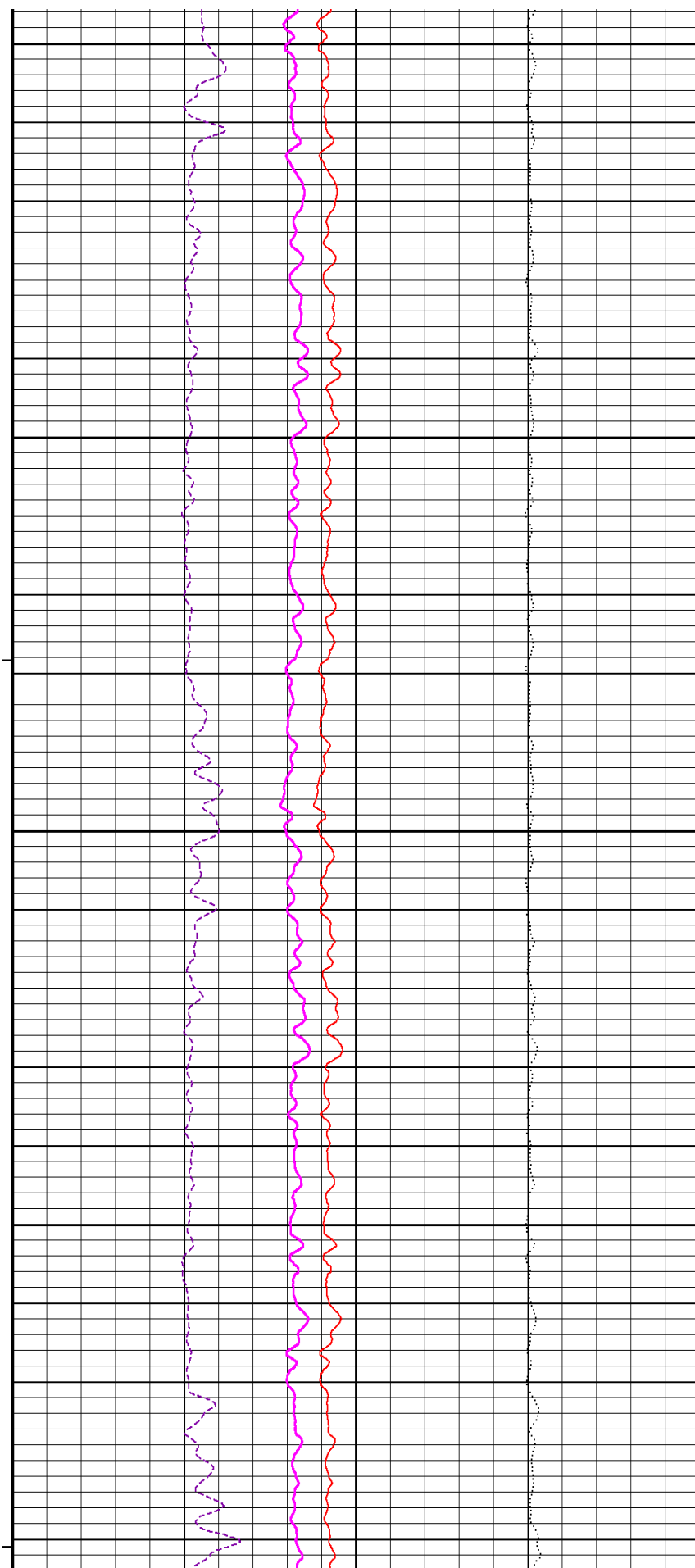
217°

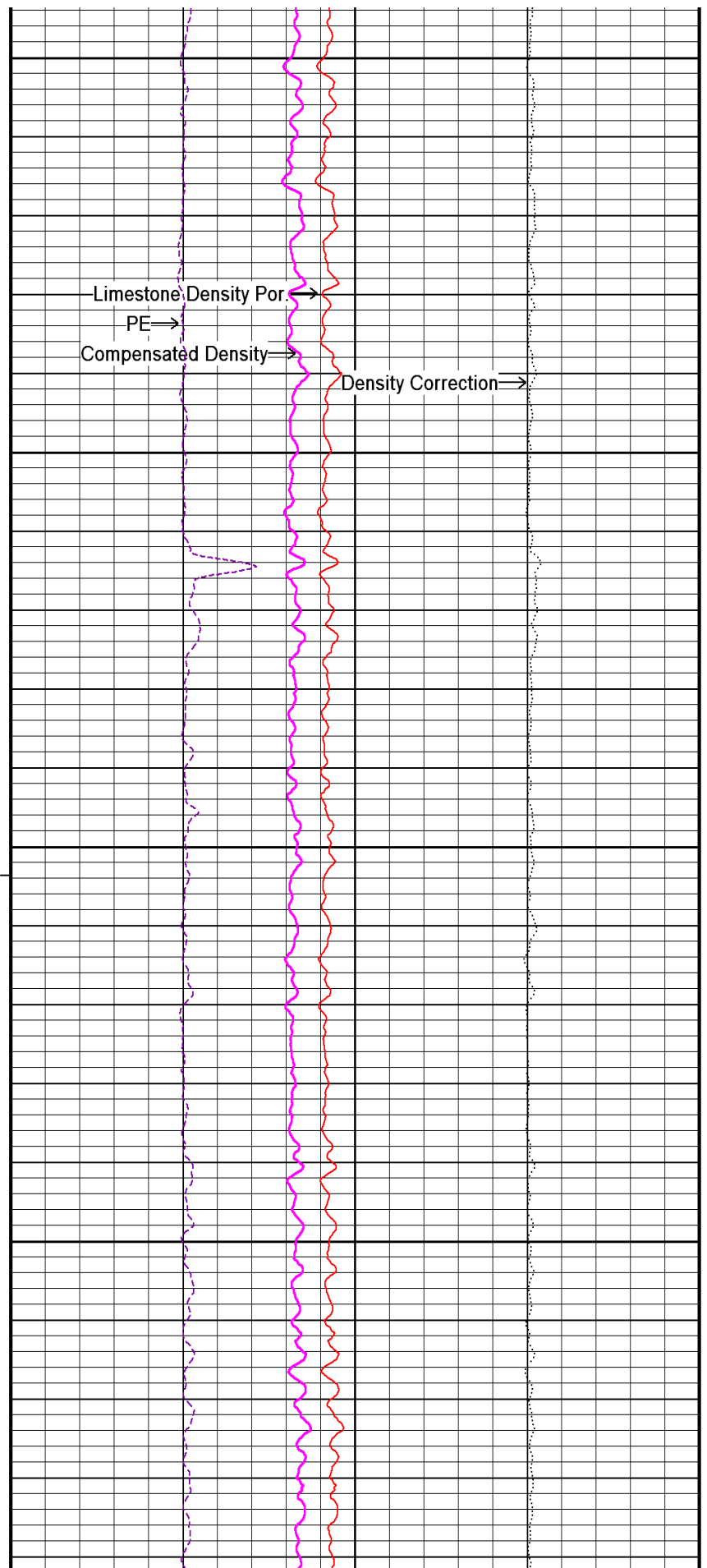
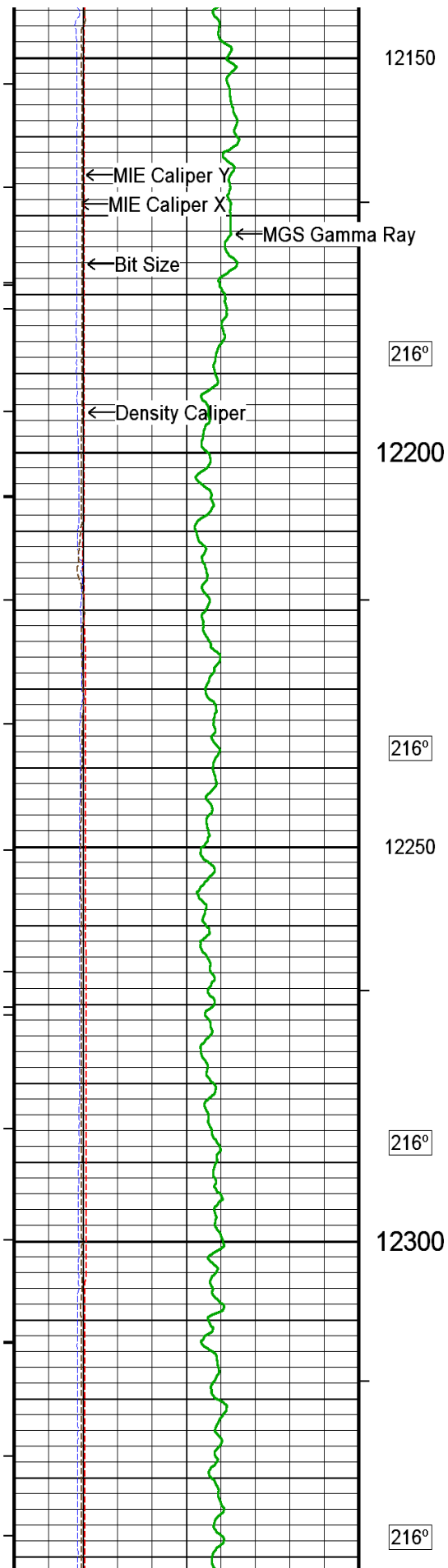
12050

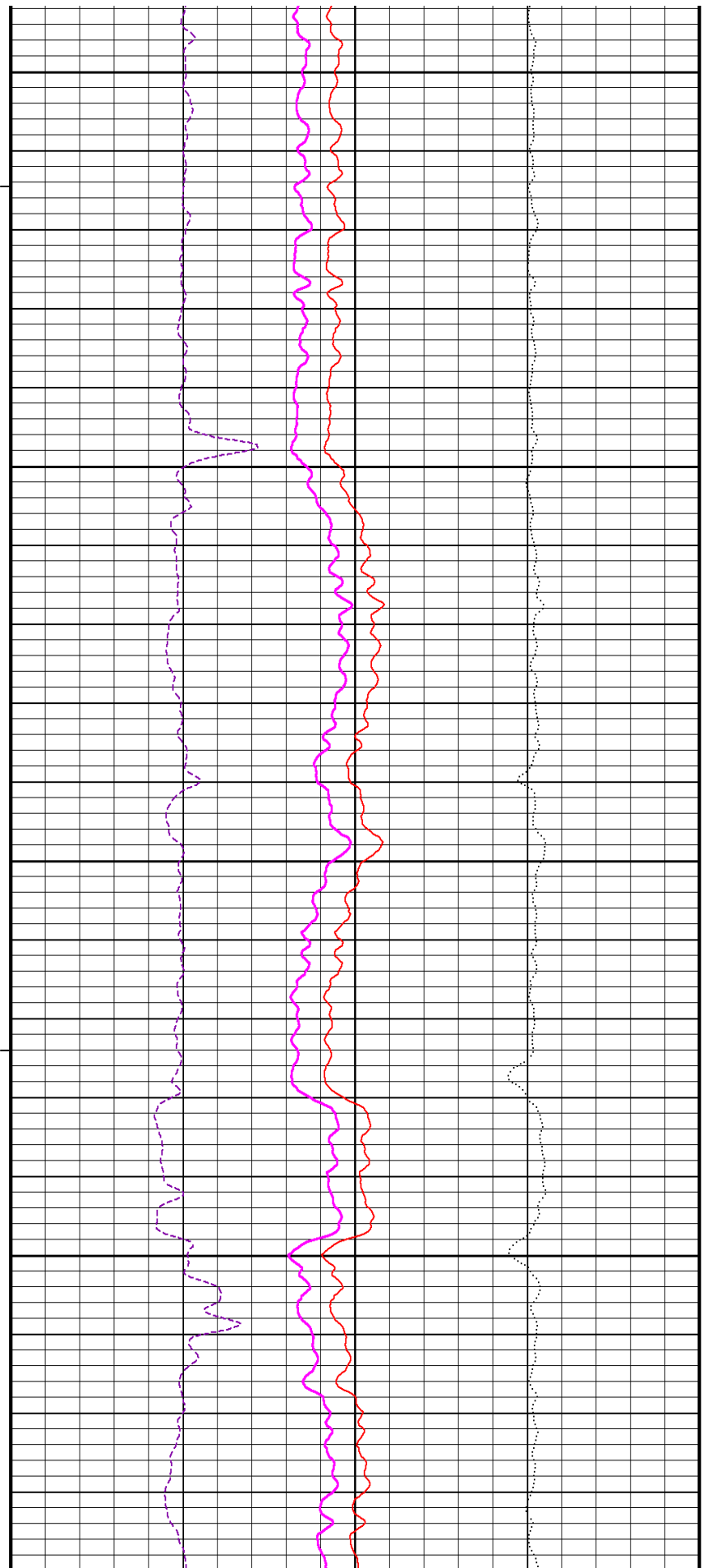
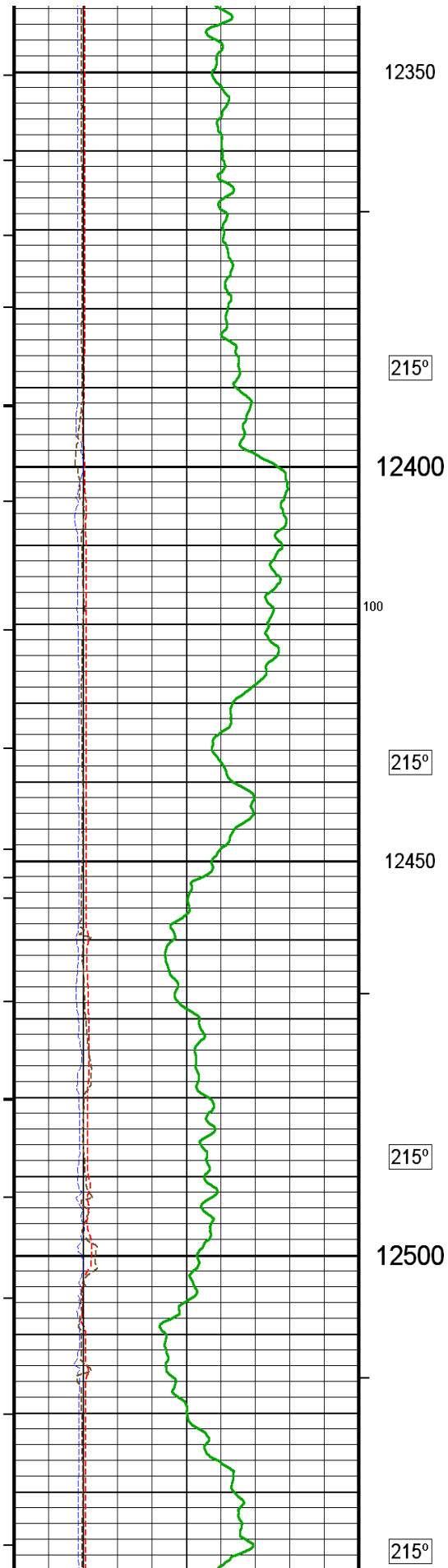
217°

12100

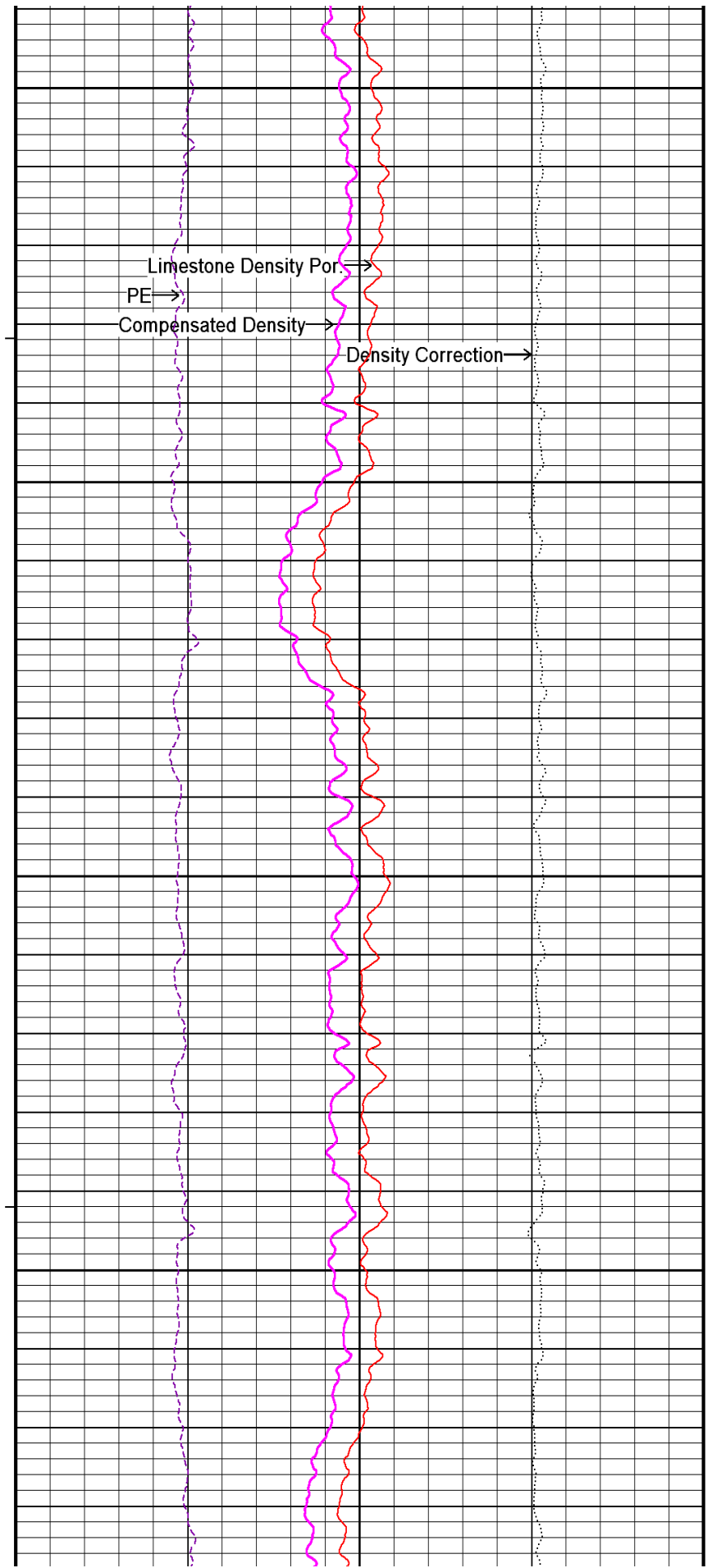
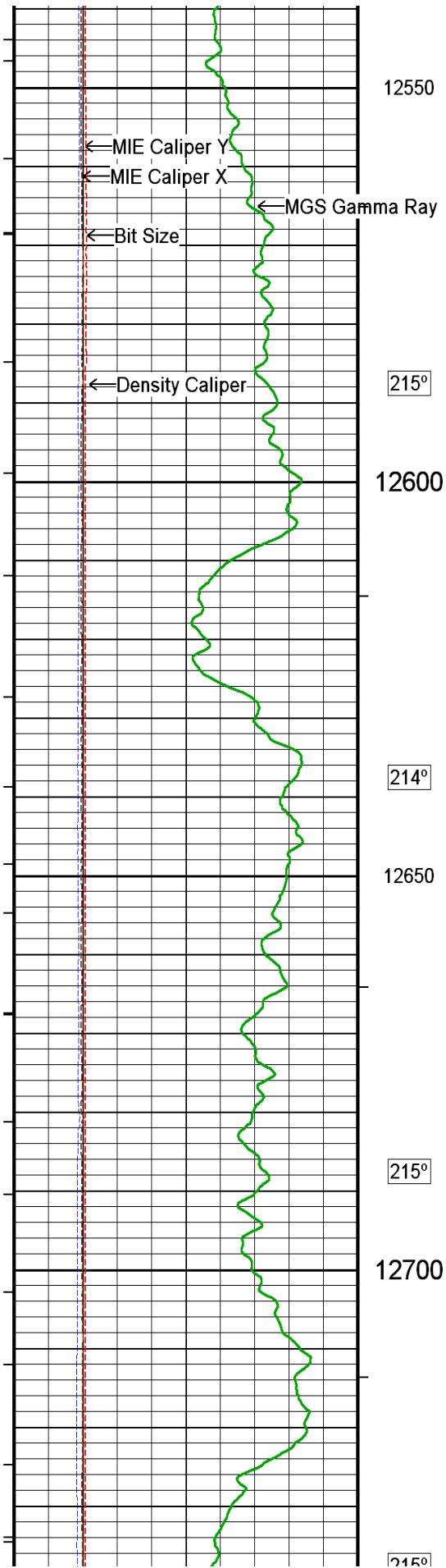
216°

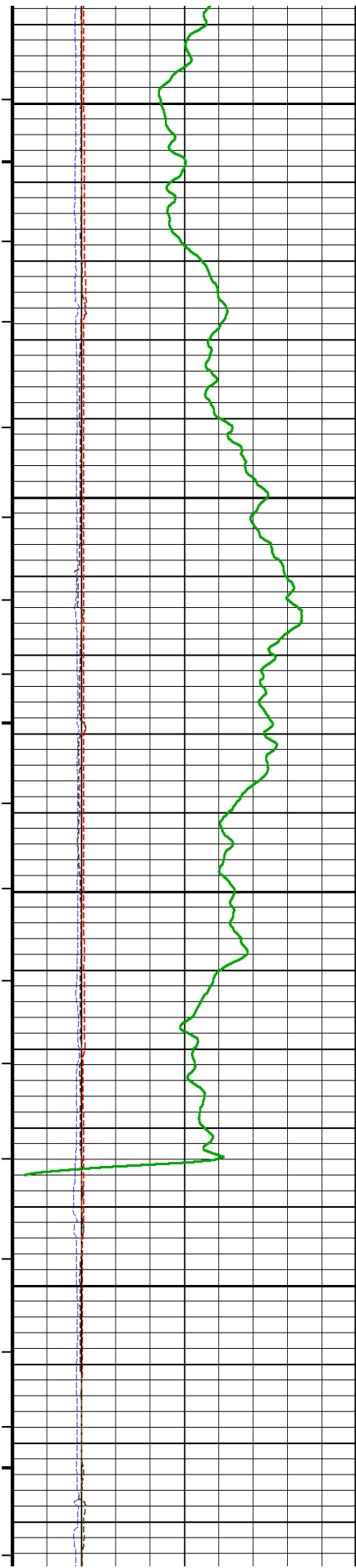












215

12750

218°

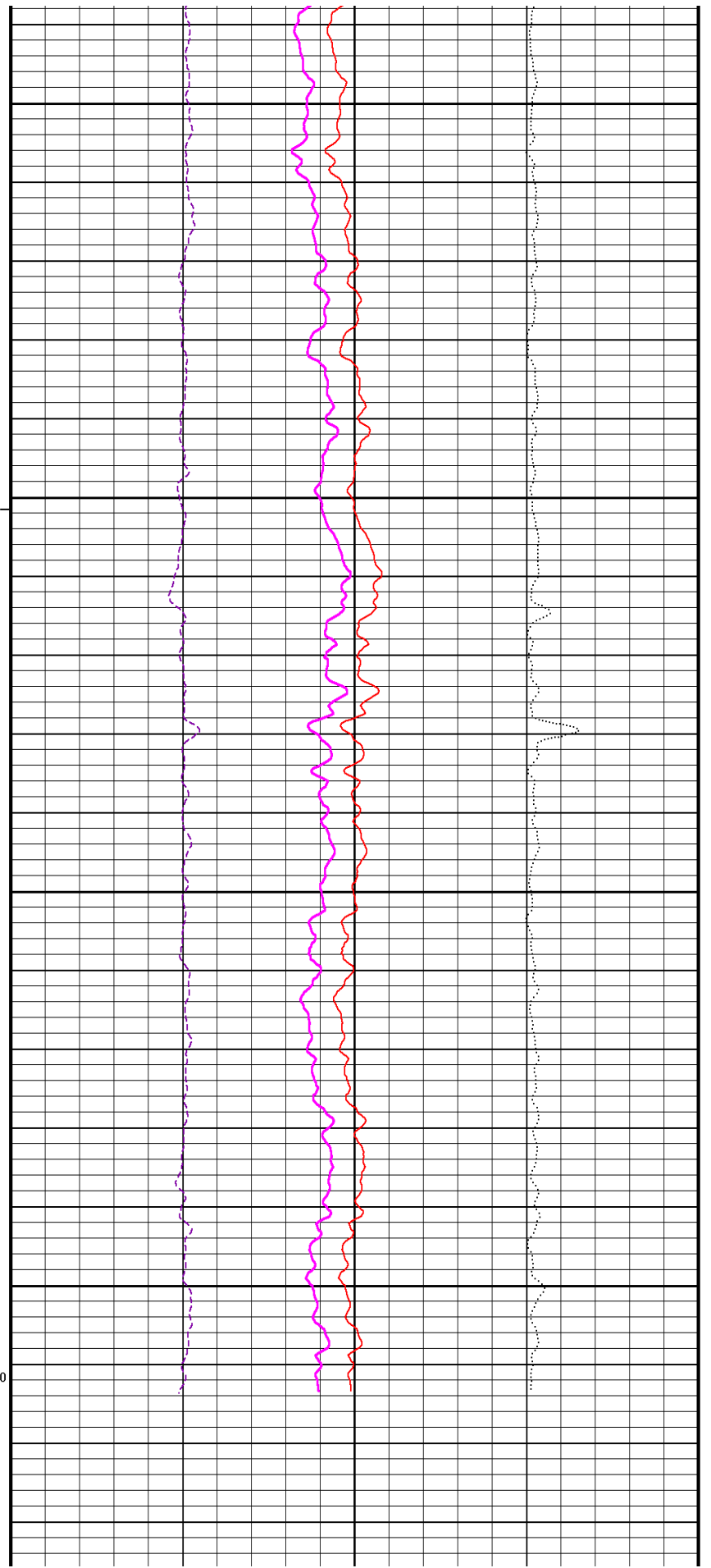
12800

225°

12850

12900

0



215

12750

218°

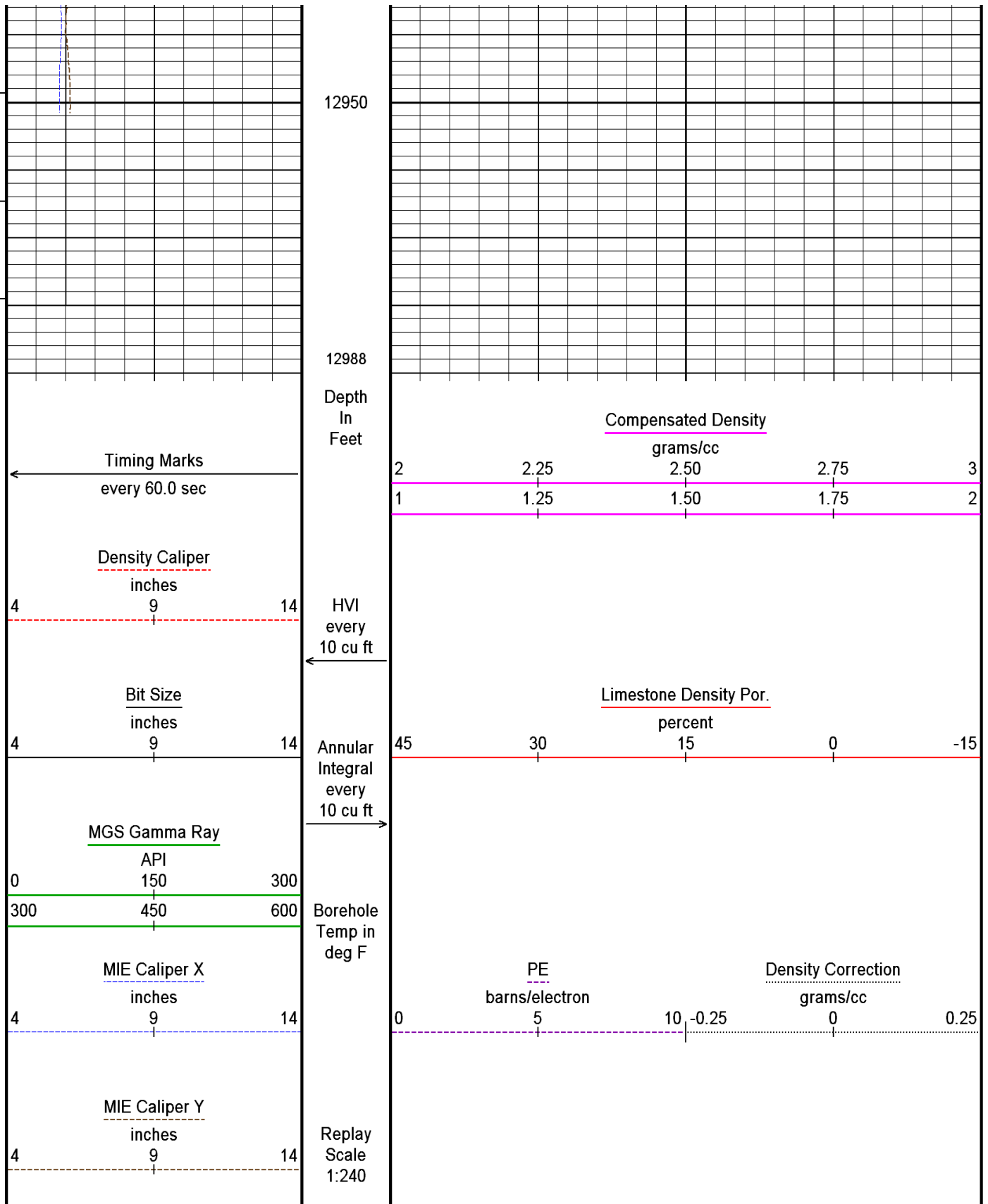
12800

225°

12850

12900

0



Depth Based Data - Maximum Sampling Increment 10.0cm

Filename: C:\logs\Whiting\RAZOR 11E-0202B\MAIN PASS 4.dta

System Versions: Logged with 13.08.2113 Processed with 13.08.2113 Plotted with 13.08.2113

Plotted on 02-MAR-2014 16:04

Recorded on 02-MAR-2014 09:49



5 INCH MAIN LOG



# BEFORE SURVEY CALIBRATION

C:\logs\Whiting\RAZOR 11E-0202B\MAIN PASS 4.dta

## General Constants All 000

Last Edited on 02-MAR-2014,14:20

### General Parameters

Mud Resistivity	1.550	ohm-metres
Mud Resistivity Temperature	60.500	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

## Strain Gauge Constants MMS-F.A 248

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.
0.0	0.000	0.000	0.000	0.000	0.000
2000.0	0.000	0.000	0.000	0.000	0.000
4000.0	0.000	0.000	0.000	0.000	0.000
6000.0	0.000	0.000	0.000	0.000	0.000
8000.0	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 220

Field Calibration on 28-FEB-2014 18:14

	Measured	Calibrated (API)
Background	122	86
Calibrator (Gross)	876	620
Calibrator (Net)	755	534

## Gamma Constants MGS-D.A 220

Last Edited on 02-MAR-2014,05:57

Gamma Calibrator Number	GRCC225	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

## High Resolution Temperature Constants MGS-D.A 220

Last Edited on

Pre-filter Length	11
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## Neutron Calibration MDN-B.J 430

Base Calibration on 23-FEB-2014 14:54

## Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2895	87	3714	110
Ratio	33.086		33.764	

## Field Calibrator at Base

	Calibrated (cps)	
	2347	3511
Ratio	0.668	

## Field Check

	Calibrated (cps)	
	2354	3525
Ratio	0.668	

## Neutron Constants MDN-B.J 430

Last Edited on 02-MAR-2014,05:58

Neutron Source Id	P31131B		
Neutron Jig Number	NJ6630		
Epithermal Neutron			
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	Constant Value		
Formation Pressure	0.00	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		

## Magnetometer Parameters MIE-A.J 241

Date Of Last Magnetometer Calibration	10-FEB-2014,13:55		
	X Magnetometer	Y Magnetometer	Z Magnetometer
Slope	-1.000000	-0.998919	-0.993681
Offset	-0.005406	-0.018443	-0.000425

## Magnetometer Constants MIE-A.J 241

Last Edited on

Magnetometer Calibrator Number	000
--------------------------------	-----

## Accelerometer Parameters MIE-A.J 241

Date Of Last Accelerometer Calibration	5-FEB-2014,12:22		
	X Accelerometer	Y Accelerometer	Z Accelerometer
Slope	-1.111493	-1.110645	-1.094119
Offset	-0.003998	0.009385	-0.004954

## Accelerometer Constants MIE-A.J 241

Last Edited on 25-FEB-2014,10:14

Accelerometer Calibrator Number	000
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## 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

### Imager Pad Check MIE-A.J 241

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

### Compact Micro Imager Constants MIE-A.J 241

Last Edited on 25-FEB-2014,10:14

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

### Caliper Calibration MIE-A.J 241

Base Calibration on 25-FEB-2014 10:20

Field Calibration on 25-FEB-2014 10:22

#### Base Calibration

Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)
1	26070	29343	5.97
2	36275	39676	7.96
3	46245	49623	9.86
4	58242	61303	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	25543	25154	24646	25780	5.97
2	34553	33729	33057	34113	7.96
3	42990	42045	41215	42349	9.86
4	53114	51787	51257	52364	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)
7.97	7.99	7.96
Measured	Measured	Measured
Pad 2 Caliper(in)	Pad 4 Caliper(in)	Pad 6 Caliper(in)
3.97	3.97	3.99
Measured	Measured	Actual
Pad 8 Caliper(in)	Caliper(in)	Caliper(in)
4.00		7.96

Caliper Constants MIE-A.J 241				Last Edited on 25-FEB-2014,10:14	
Caliper Difference for BRKT		0.120	inches		
Navigation Constants MIE-A.J 241				Last Edited on	
Magnetic Declination		0.00	degrees	East	
Induction Calibration MAI-B.J 376				Base Calibration on 29-JAN-2014,13:18 Field Check on 28-FEB-2014 17:33	
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	13.1	3940.5	12.0	3938.4	
2	30.6	3580.3	30.3	3579.0	
3	29.7	3099.9	29.5	3098.7	
4	20.4	2122.6	20.3	2121.6	
Deep	18.7	2050.6	18.6	2049.5	
Medium	43.1	4058.3	43.0	4057.2	
Shallow	44.8	5254.3	44.4	5252.7	
Array Temperature		44.1		29.5	Deg F
Induction Constants MAI-B.J 376				Last Edited on 02-MAR-2014,06:01	
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 376			Field Calibration on 01-FEB-2014,12:48
	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 01-FEB-2014,12:48
Pre-filter Length	11		

Caliper Calibration MPD-C.A 280			Base Calibration on 23-FEB-2014 15:15	Field Calibration on 28-FEB-2014 17:30
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	16617	4.01		
2	24813	5.97		
3	33200	7.96		
4	41377	9.86		
5	50608	11.92		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	5.89	5.97		

Photo Density Calibration MPD-C.A 280			Base Calibration on 23-FEB-2014 16:44	Field Check on 28-FEB-2014 17:28
Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
		Near	Far	
Background	1330	1358		
Reference 1	55743	27432	59443	30683
Reference 2	22692	2559	25113	2508
Field Check at Base				
	1330.5	1357.5		
Field Check				
	1337.9	1365.3		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	242	1189		
Reference 1	22204	55526	0.404	0.372
Reference 2	6159	22539	0.277	0.268
Field Check at Base				
	241.8	1189.3		
Field Check				
	241.3	1196.2		

Density Constants MPD-C.A 280			Last Edited on 28-FEB-2014,17:03
Density Source Id	P21136B		
Nylon Calibrator Number	652		
Aluminium Calibrator Number	659		



Aluminum Calibrator Number	000	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.00	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

# Spectral Gamma Calibration SGS-E.J 135

Base Calibration on 13-FEB-2014 13:52

Field Calibration on 13-FEB-2014 13:30

## Base Calibration

### Potassium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	135.5	48.4	5.5	2.1	2.8
Calibrator (Gross)	269.1	137.7	32.3	3.4	3.2
Calibrator (Net)	133.6	89.3	26.8	1.4	0.4

	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	135.5	48.4	5.5	2.1	2.8
Calibrator (Gross)	583.7	209.5	19.2	12.7	6.3
Calibrator (Net)	448.2	161.1	13.7	10.6	3.5

	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	135.5	48.4	5.5	2.1	2.8
Calibrator (Gross)	448.6	167.7	13.9	7.6	18.0
Calibrator (Net)	313.1	119.3	8.4	5.5	15.2

	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	135.5	48.4	5.5	2.1	2.8
Calibrator (Gross)	923.7	381.5	50.0	16.4	20.7
Calibrator (Net)	788.2	333.1	44.4	14.3	18.0

## Field Calibration

### Gamma Ray

	Measured	Calibrated (API)
Background	202	40
Calibrator (Gross)	1400	280
Calibrator (Net)	1198	240

Mixture Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	135.5	48.4	5.5	2.1	2.8
Calibrator (Gross)	923.7	381.5	50.0	16.4	20.7
Calibrator (Net)	788.2	333.1	44.4	14.3	18.0

Spectral Gamma Constants SGS-E.J 135			Last Edited on 02-MAR-2014,06:00		
Background Calibrator Number	440				
Mixture Calibrator Number	450				
Potassium Calibrator Number	500				
Uranium Calibrator Number	506				
Thorium Calibrator Number	503				
Mud Density	1.13	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			C:\logs\Whiting\RAZOR 11E-0202B\MAIN PASS 4.dta		
Shuttle Running Tool 3.5" (SRT A)					
SRT-A 8 LG: 6.47 ft WT: 37.5 lb OD: 2.520 in					
SKJ-D.A Compact Knuckle Joint					
SKJ-D.A 106 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 Linker					
MLK-A 1 LG: 8.52 ft WT: 30.9 lb OD: 2.205 in					
Compact Linker					
MLK-A 2 LG: 14.23 ft WT: 30.9 lb OD: 2.205 in					
SKJ-D.A Compact Knuckle Joint					
SKJ-D.A 217 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in					
MBS-F.A 200v Compact Battery Sub					
MBS-F.A 120 LG: 17.06 ft WT: 123.5 lb OD: 2.205 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-B.A 64 LG: 1.54 ft WT: 13.2 lb OD: 2.244 in					
Compact Short Gamma					
MGS-D.A 220 LG: 3.41 ft WT: 24.3 lb OD: 2.244 in			95.68 ft	GRGM - MGS Gamma Ray	
			93.69 ft	GSXT - MGS External Temperature	
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 610 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

SHA-J.B Compact Swivel Head Adaptor

SHA-J.B 682 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 811 LG: 5.70 ft WT: 33.1 lb OD: 2.205 in

Compact Neutron

MDN-B.J 430 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-C.A 280 LG: 9.59 ft WT: 90.4 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 654 LG: 5.70 ft WT: 33.1 lb OD: 2.205 in

SHA-J.A Compact Swivel Head Adaptor

SHA-J.A 316 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 410 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

MIS-E.B Compact Inline Standoff sub

MIS-E.B 662 LG: 2.14 ft WT: 15.4 lb OD: 2.244 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.B Compact Inline Bowspring sub

MIS-D.B 709 LG: 5.70 ft WT: 33.1 lb OD: 2.205 in

Compact MMI Memory Section

MIM-A.J 244 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 700 LG: 5.70 ft WT: 33.1 lb OD: 2.205 in

SKJ-E.B Compact Knuckle Joint

SKJ-E.B 537 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

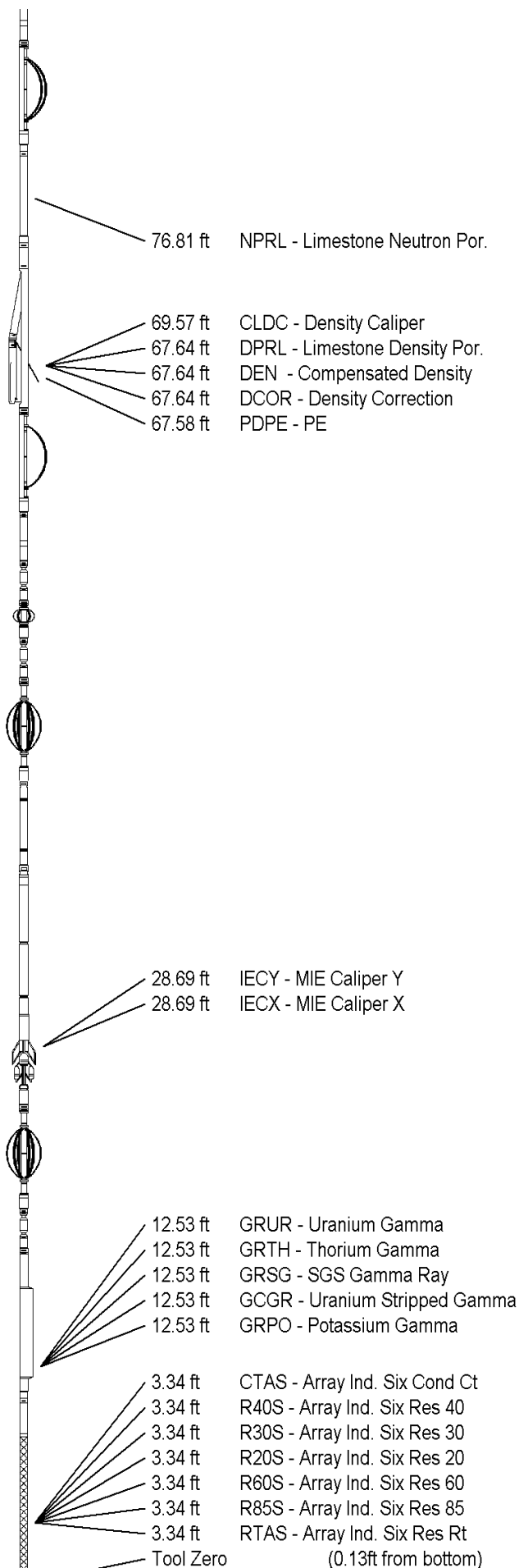
Spectral Gamma Ray Sub

SGS-E.J 135 LG: 7.78 ft WT: 105.8 lb OD: 3.543 in

Compact Induction

MAI-B.J 376 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 156.08 ft Weight: 1097.9 lb





All measurements relative to tool zero.

COMPANY	WHITING OIL AND GAS CORP
WELL	RAZOR 11E-0202B
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	USA/COLORADO

Elevation Kelly Bushing	5019.00	feet	First Reading	12928.00	feet
Elevation Drill Floor	5019.00	feet	Depth Driller	12996.00	feet
Elevation Ground Level	5002.00	feet	Depth Logger	12996.00	feet



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