



**Weatherford**

**MEASURED DEPTH  
COMPENSATED PHOTO DENSITY  
COMPENSATED DUAL NEUTRON**

COMPANY				WHITTING OIL AND GAS CORPORATION			
WELL				HORSETAIL 30F-1943			
FIELD				REDTAIL			
PROVINCE/COUNTY				WELD			
COUNTRY/STATE				U.S.A. / COLORADO			
LOCATION				SHL: 2324' FNL & 1920' FWL			
PERMIT NUMBER				AFE: 13-1914			
SEC 30	TWP 10N	RGE 57W	Other Services MICRO IMAGER				
API Number				05-123-38739			
Permanent Datum G.L., Elevation 4780 feet						Elevations: KB 4797.00 DF 4797.00 GL 4780.00	
Log Measured From KB							
Drilling Measured From K.B. @ 17 FEET							
Date	9-OCT-2014						
Run Number	ONE						
Service Order	2577-100067384						
Depth Driller	13702.00			feet			
Depth Logger	13702.00			feet			
First Reading	13614.00			feet			
Last Reading	5995.00			feet			
Casing Driller	5993.00			feet			
Casing Logger	5995.00			feet			
Bit Size	6.000			inches			
Hole Fluid Type	WBM						
Density / Viscosity	10.20 lb/USg		42.00	type in			
PH / Fluid Loss	9.00		3.80	ml/30Min			
Sample Source	FLOWLINE						
Rm @ Measured Temp	1.65 @ 63.7			ohm-m			
Rmf @ Measured Temp	1.32 @ 63.7			ohm-m			
Rmc @ Measured Temp	1.98 @ 63.7			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.51 @215.0			ohm-m			
Time Since Circulation	NO DELAY						
Max Recorded Temp	215.00			deg F			
Equipment / Base	18063			Casper			
Recorded By	M.RICHINS						
Witnessed By	M. ODEGARD			GEOLOGIST			
WSL	K.RENTON			WSL			

BOREHOLE RECORD				Last Edited: 09-OCT-2014 19:59
Bit Size inches		Depth From feet		Depth To feet
6.000		5993.00		13702.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	7.000	0.00	5993.00	29.00

REMARKS
LOGGED WITH WLS 14.01.3220
LOGGED USING MESSENGER SHUTTLE METHOD OF DEPLOYMENT
HARDWARE: MDN: MIS-A DOUBLE BOWSPRING USED ABOVE MDN MPD: 4INCH PROFILE PLATE USED, MIS-A SINGLE BOWSPRING USED BELOW MPD CMI: OVER BODY BASKET AND MIS-D BASKETS PLACED ABOVE AND BELOW FOR CENTRALIZATION SGS: RAN BELOW CMI. ECCENTRALIZED WITH SKJ.
2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST
LONGITUDE: -103.796464 LATITUDE: 40.810683
ANNULAR HOLE VOLUME FROM TD TO CASING AT 5995 FEET = 770 CUBIC FEET

ANNULAR HOLE VOLUME FROM TD TO CASING AT 5995 FEET = 170 CUBIC FEET.  
TOTAL HOLE VOLUME FROM TD TO CASING AT 5995 FEET = 1620 CUBIC FEET.

DRILL PIPE DEPTH DURING DEPLOYMENT: 13586.17 FEET  
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 13688.35 FEET

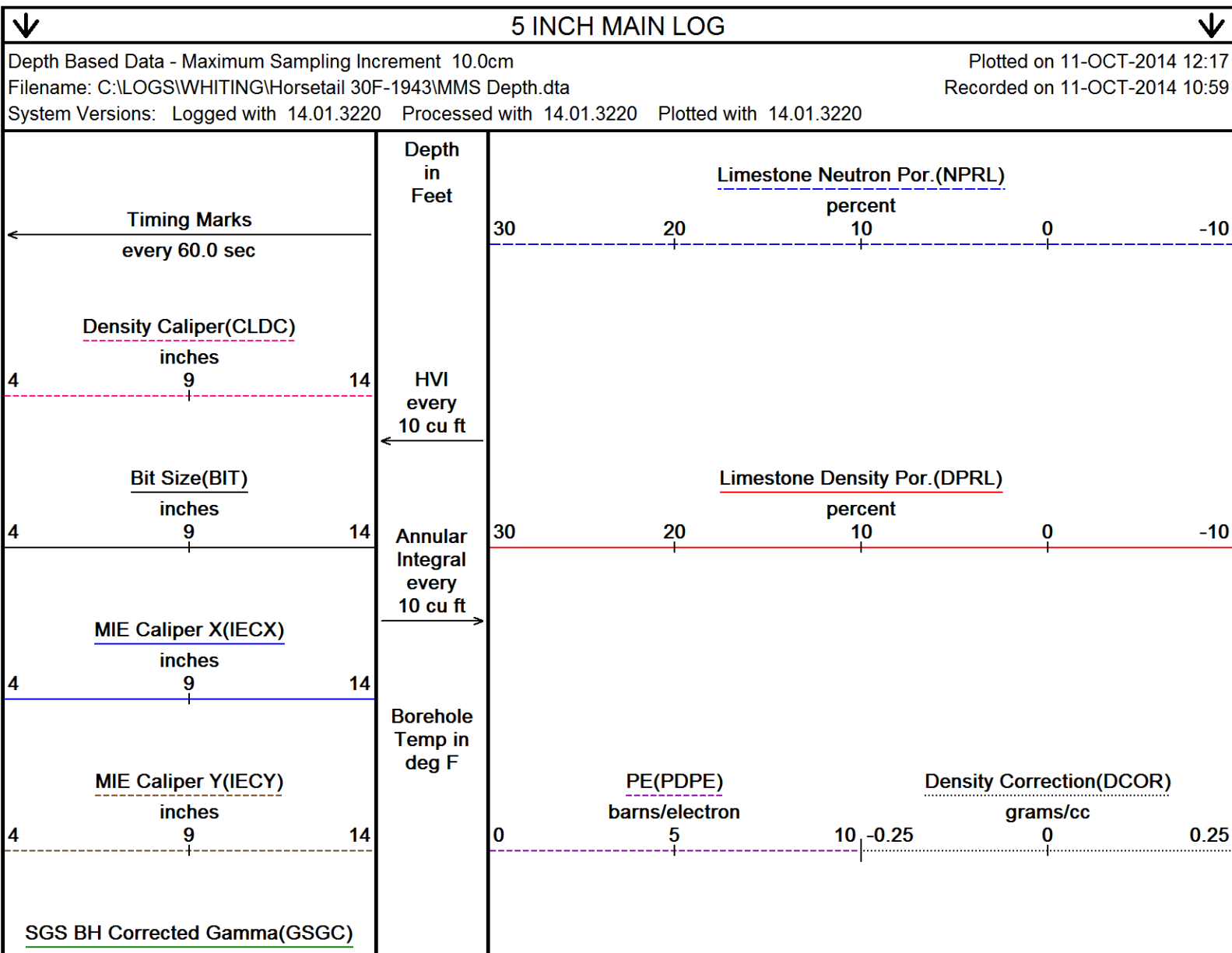
SLOWLY ROTATED LAST 26 STANDS DOWN AT 20-30 RPM TO REACH TD - EXCESSIVE STICK/SLIP LOW HOOKLOAD WHEN NOT ROTATING.

PIPE ROTATED AT 20 RPM FOR FIRST 10 STANDS DURING LOGGING RUN

OPERATORS: D.SMITH, C.WADLINGTON

RIG: XTREME 18

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.



0 75 150  
150 225 300

Replay  
Scale  
1:240

5984  
Casing  
Shoe

6000

1600

201°

6050

201°

6100

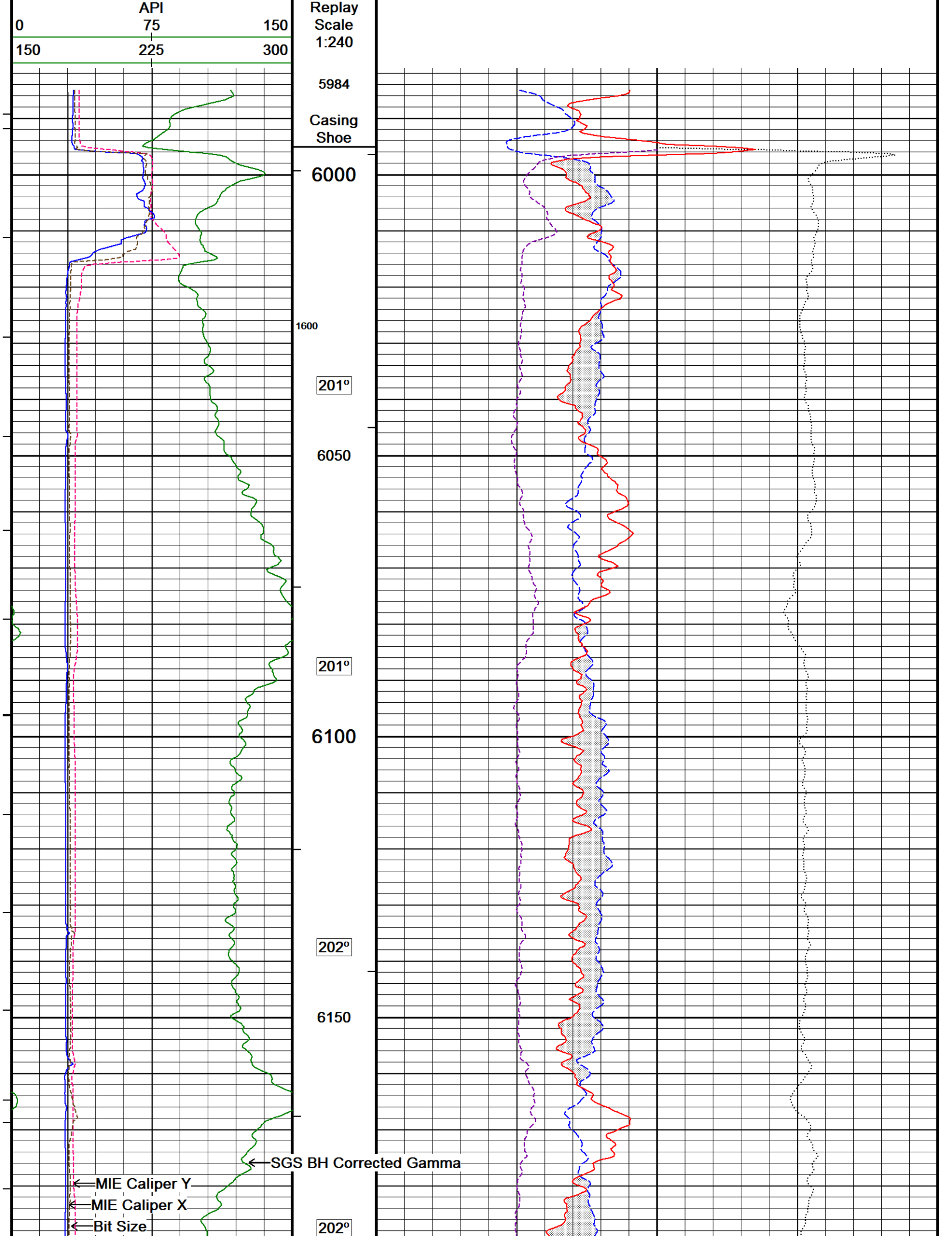
202°

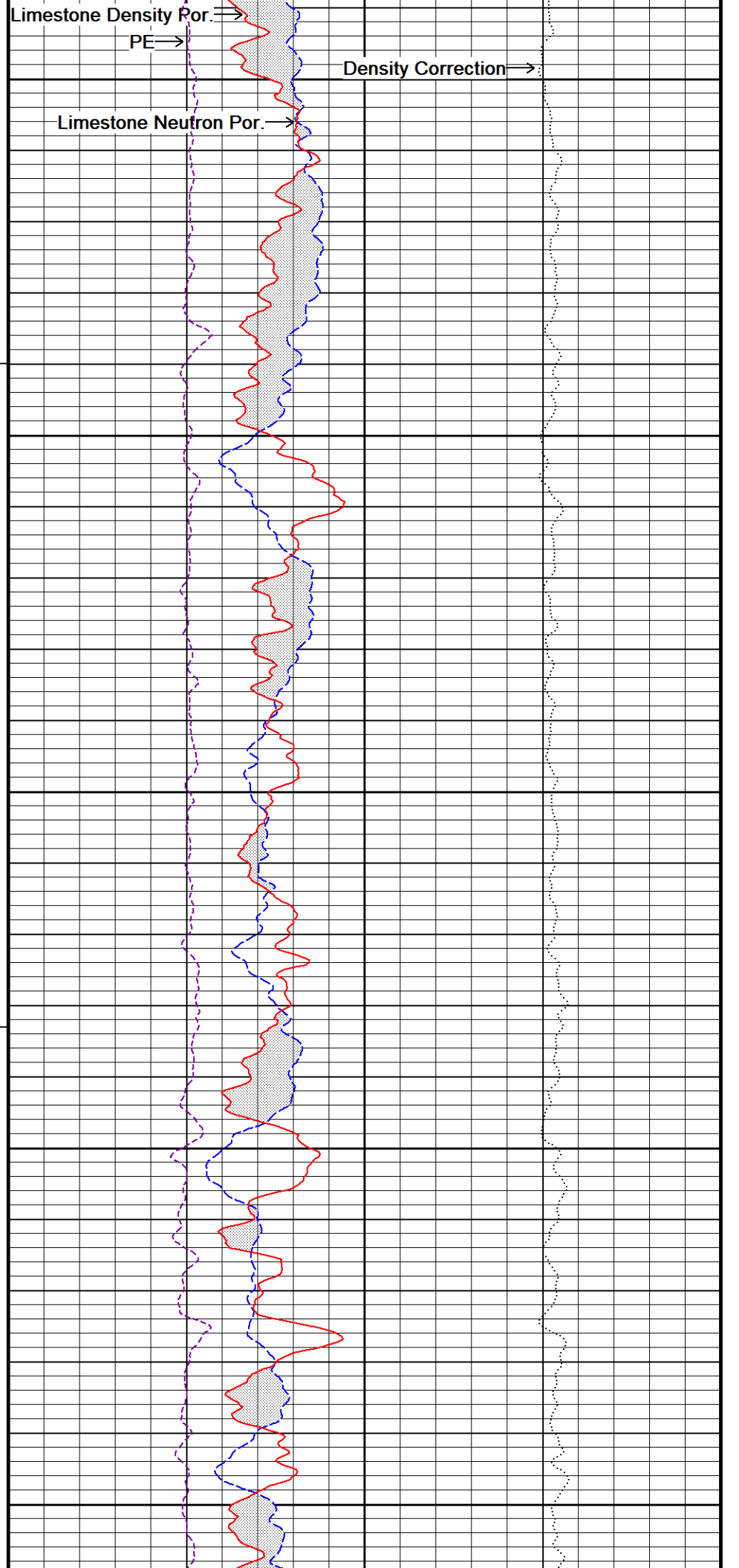
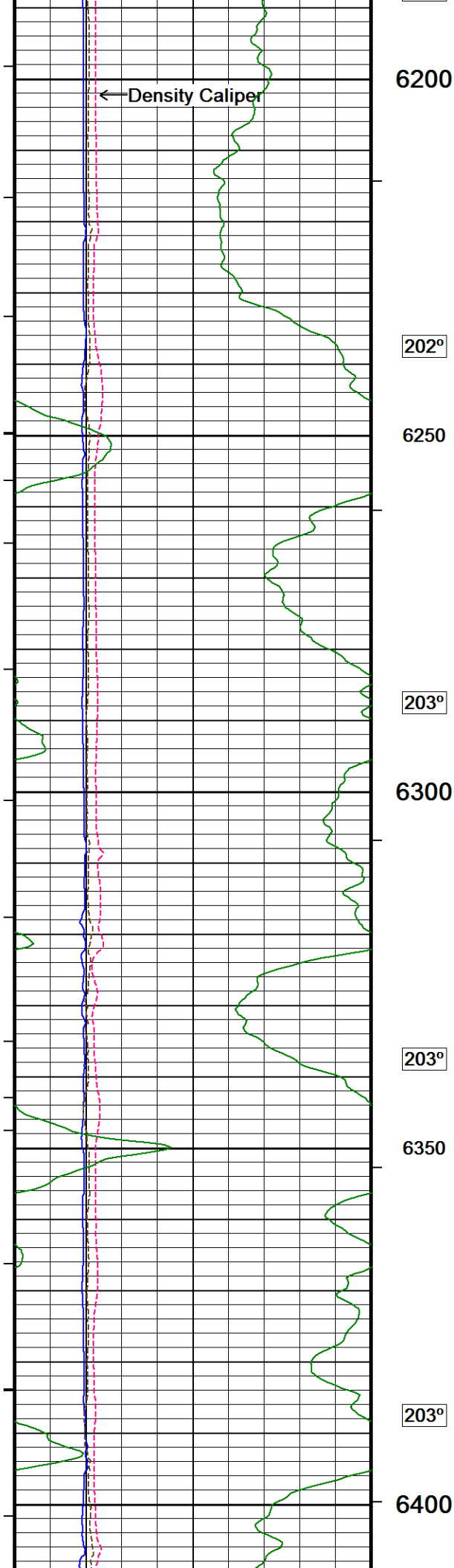
6150

← MIE Caliper Y  
← MIE Caliper X  
← Bit Size

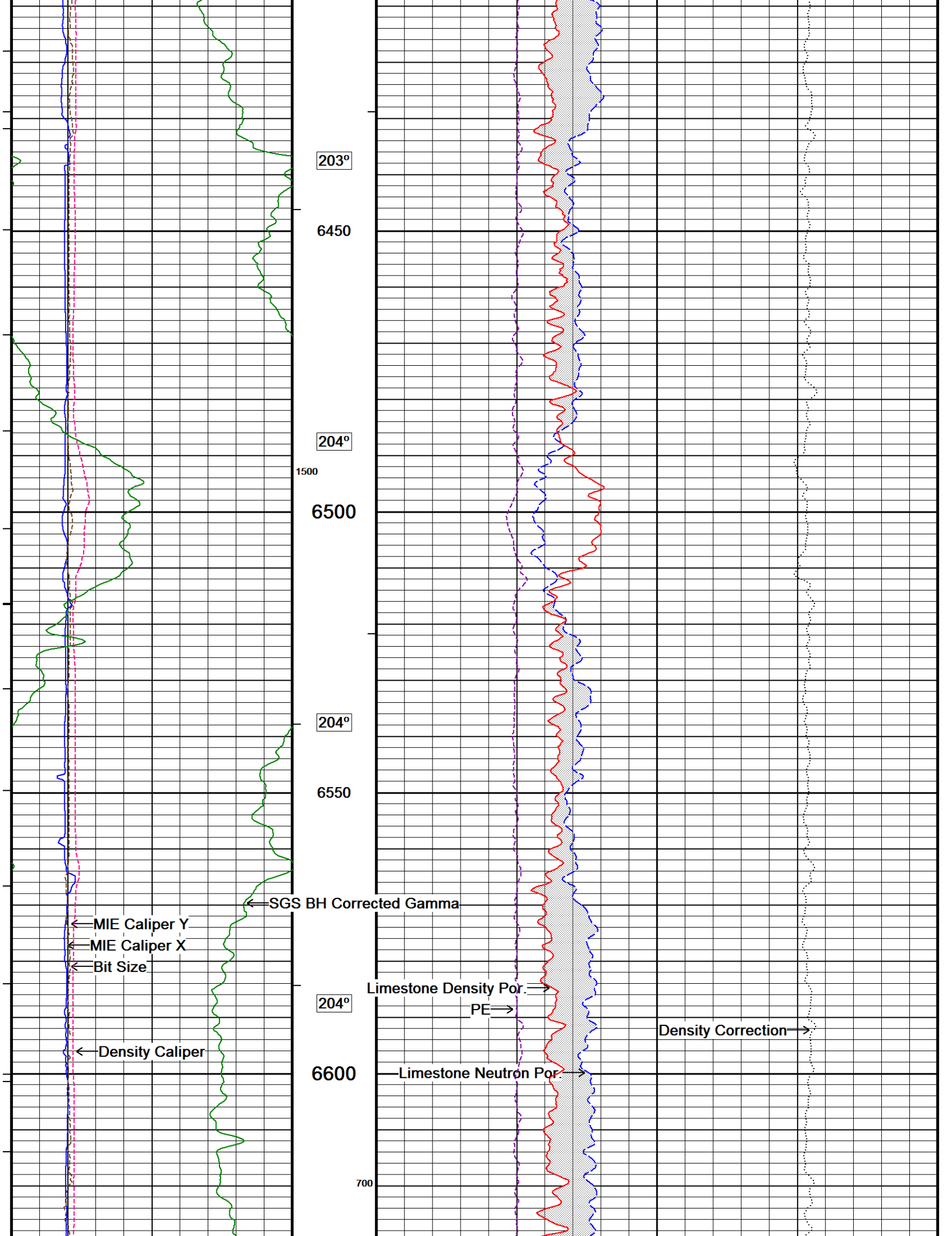
← SGS BH Corrected Gamma

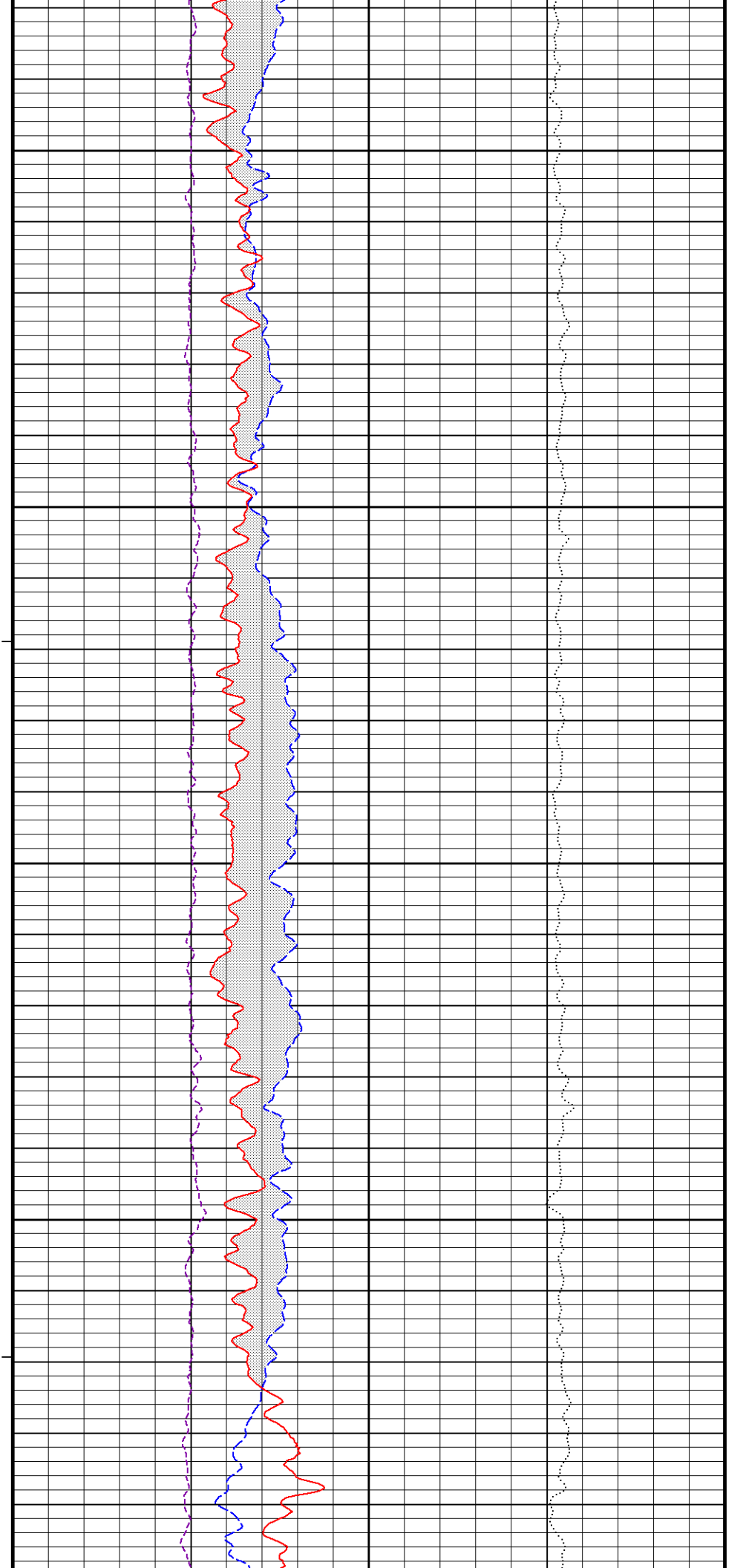
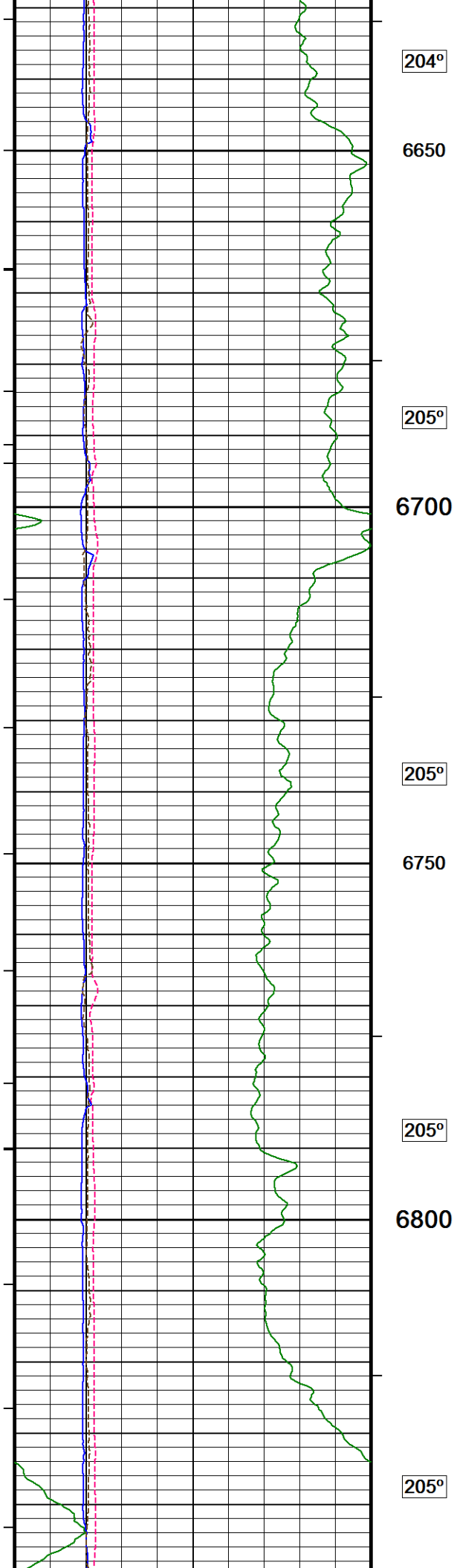
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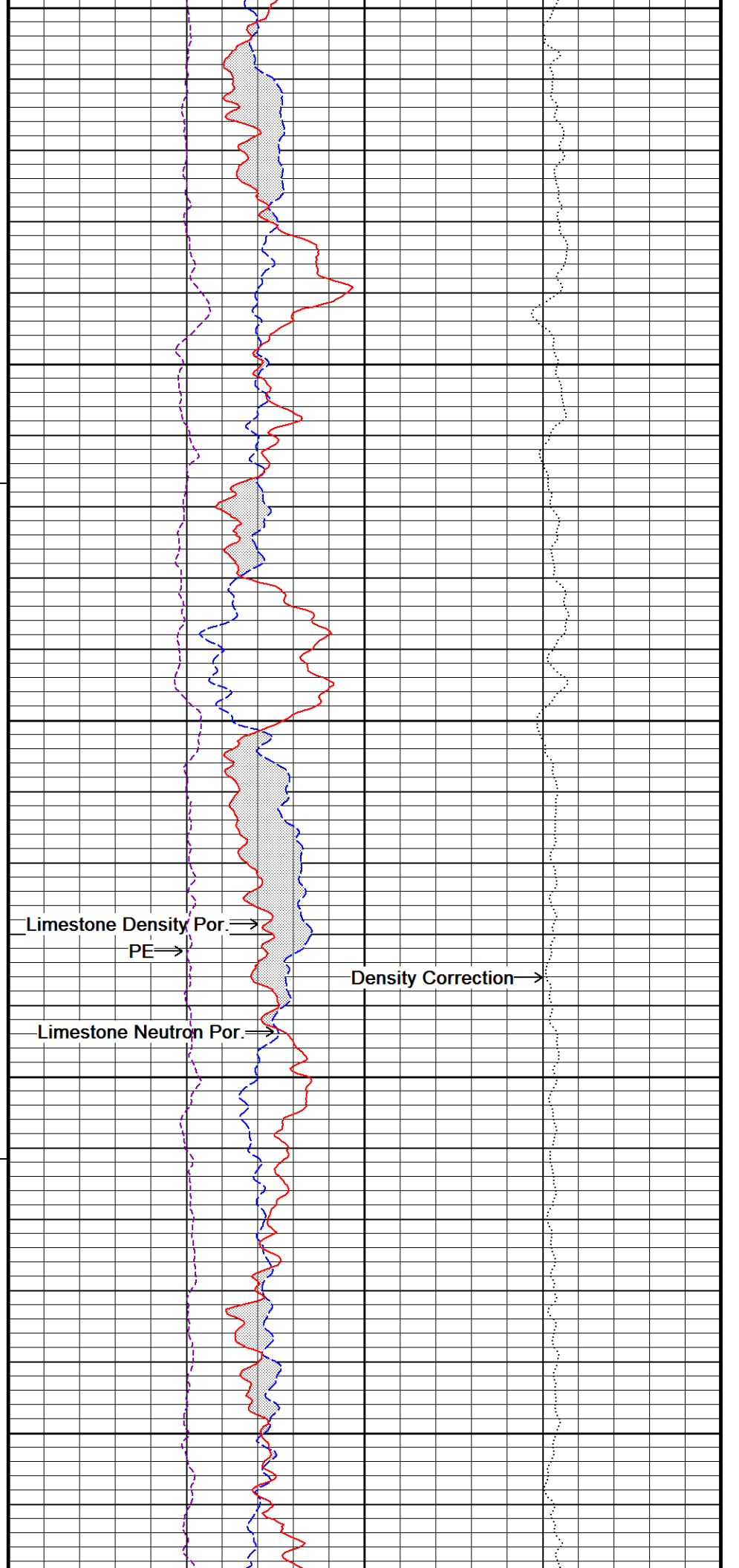
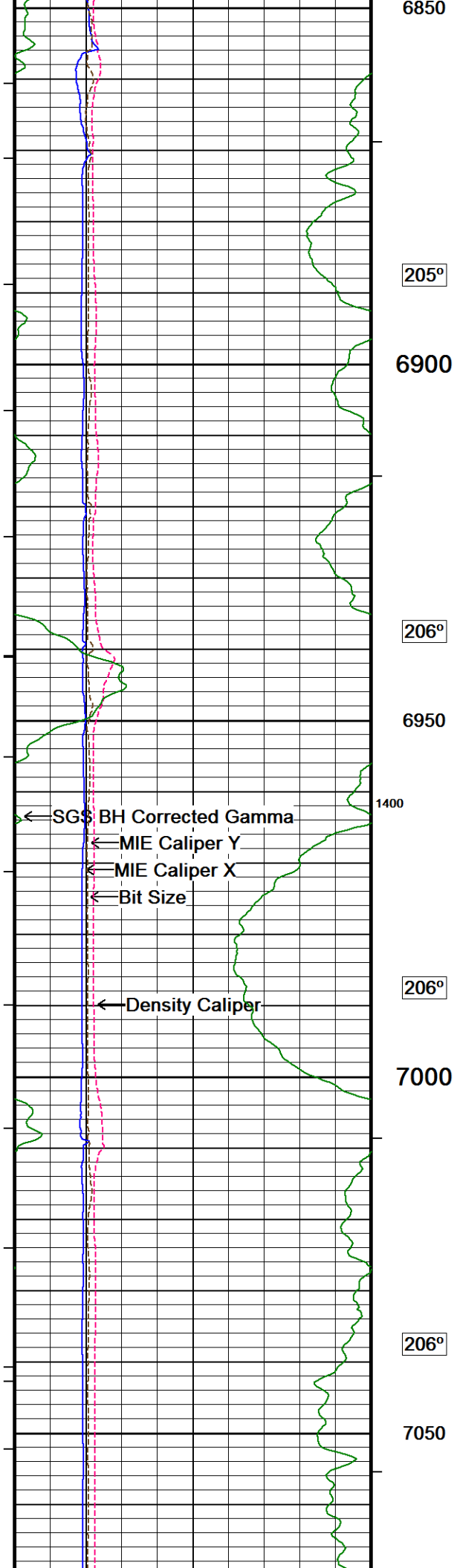


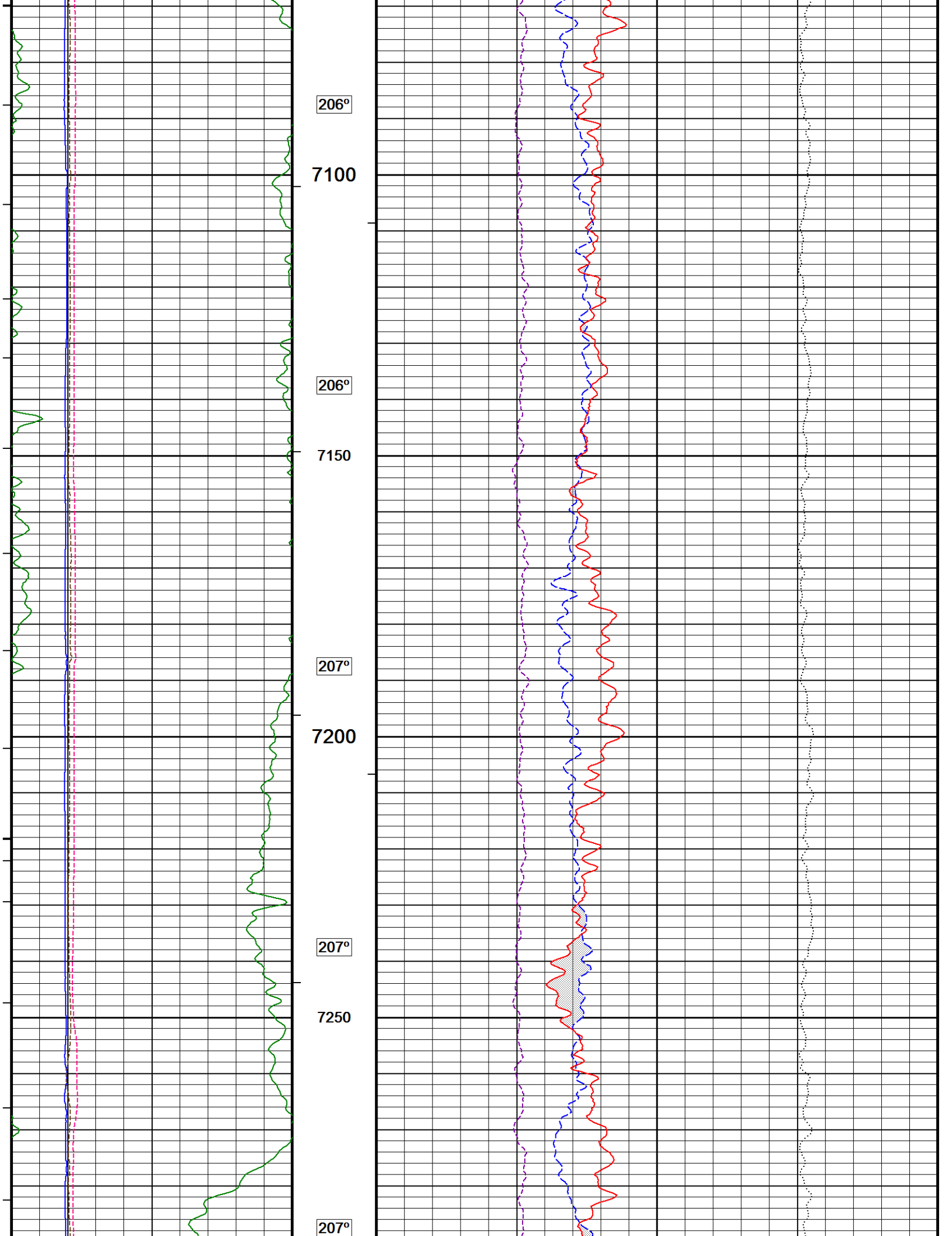


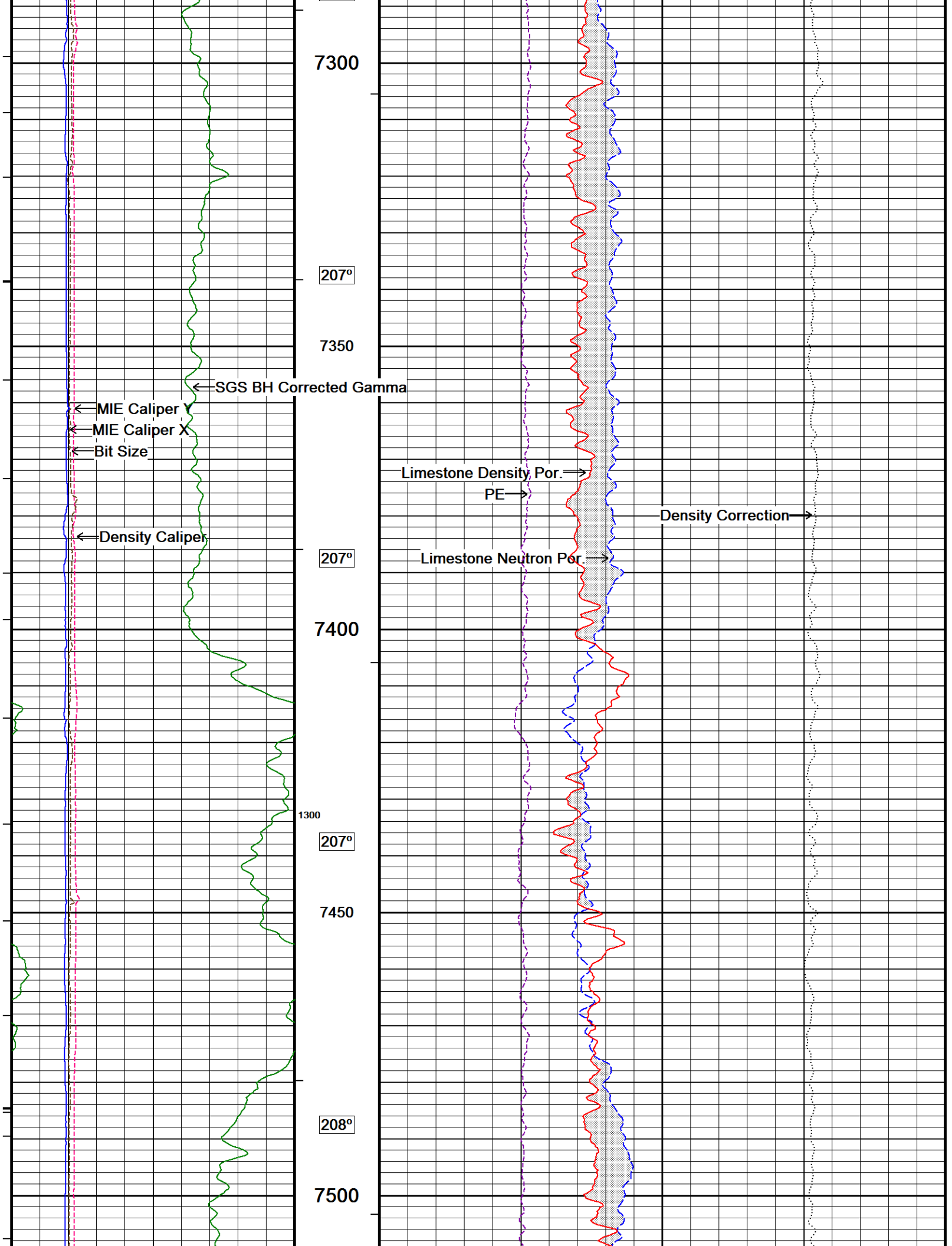


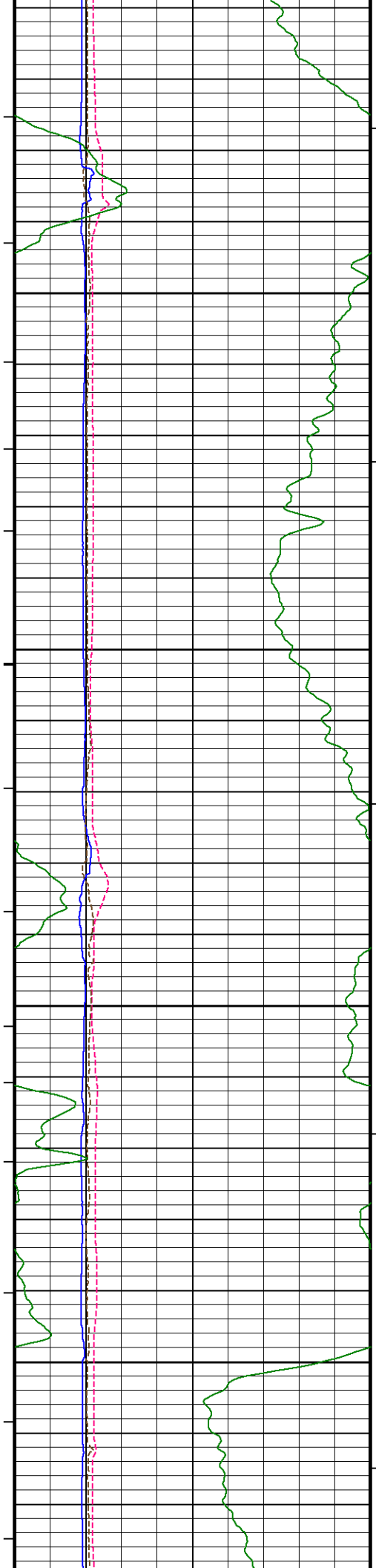












208°

7550

208°

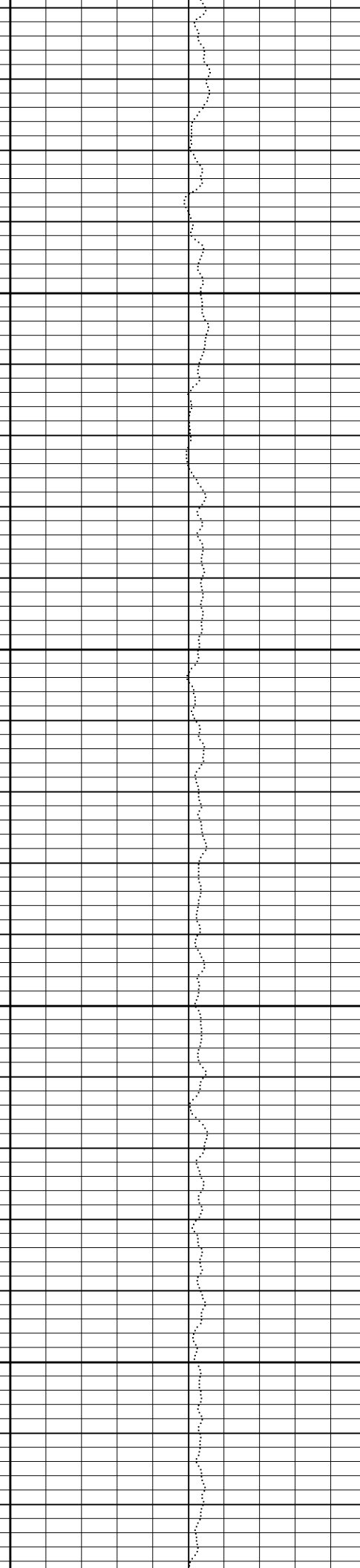
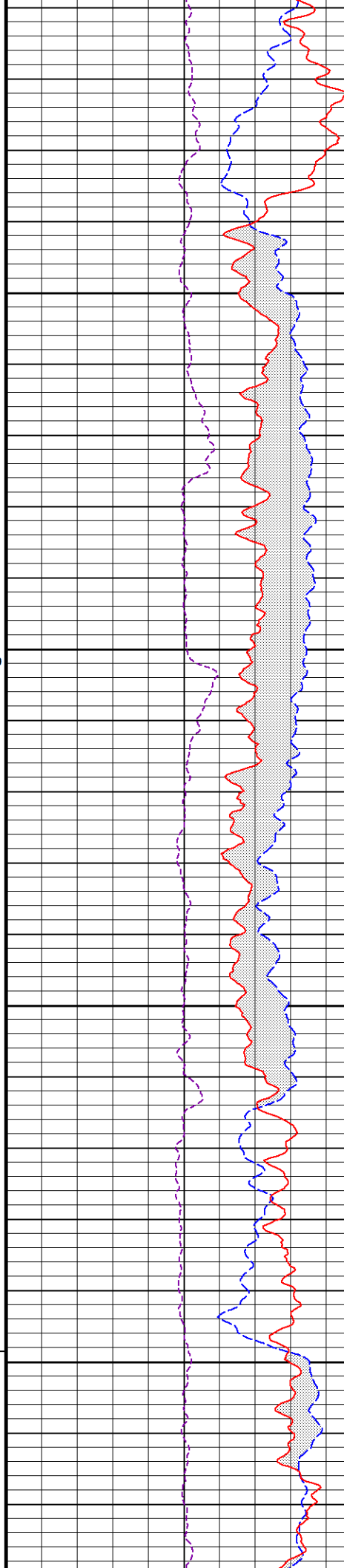
7600<sub>600</sub>

208°

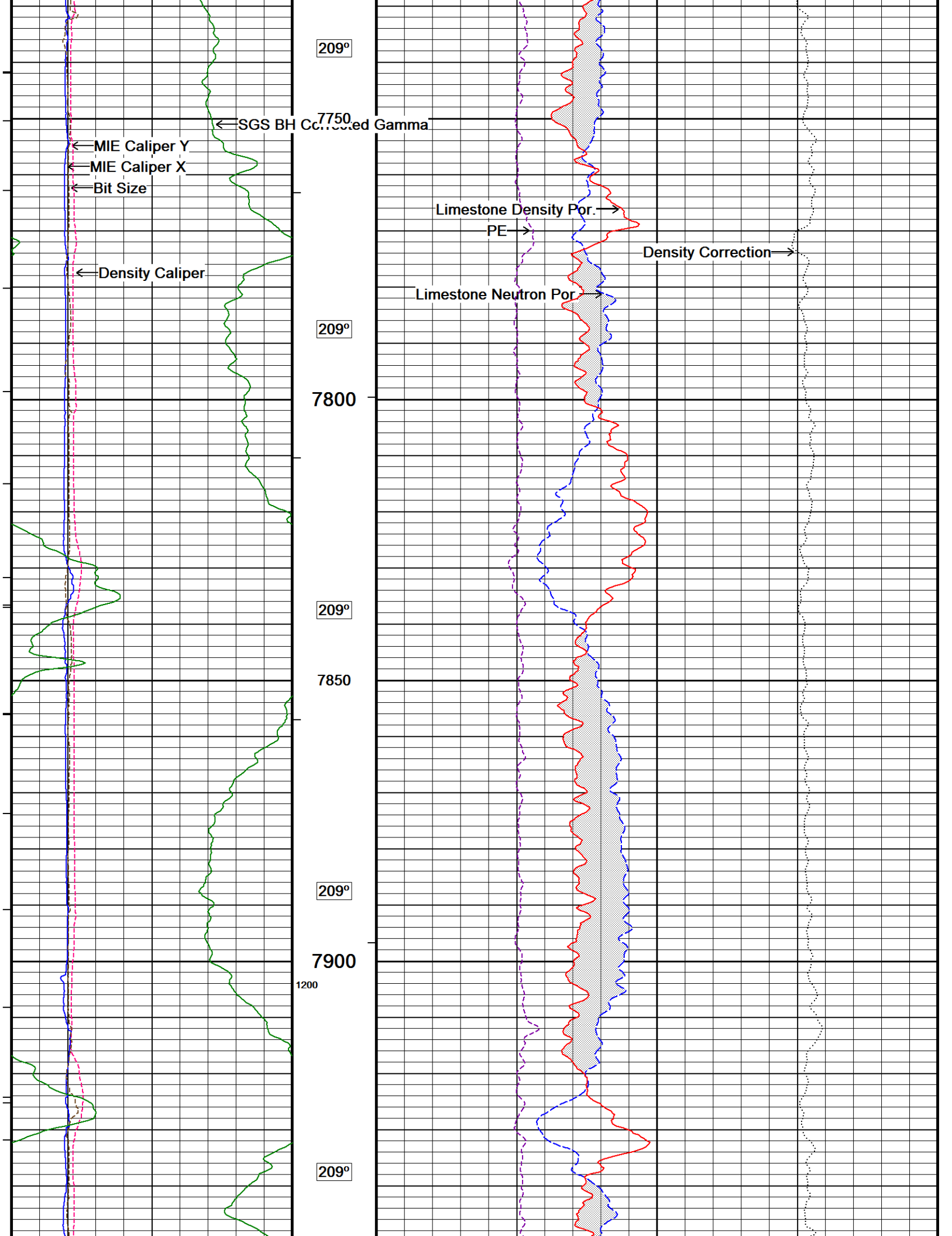
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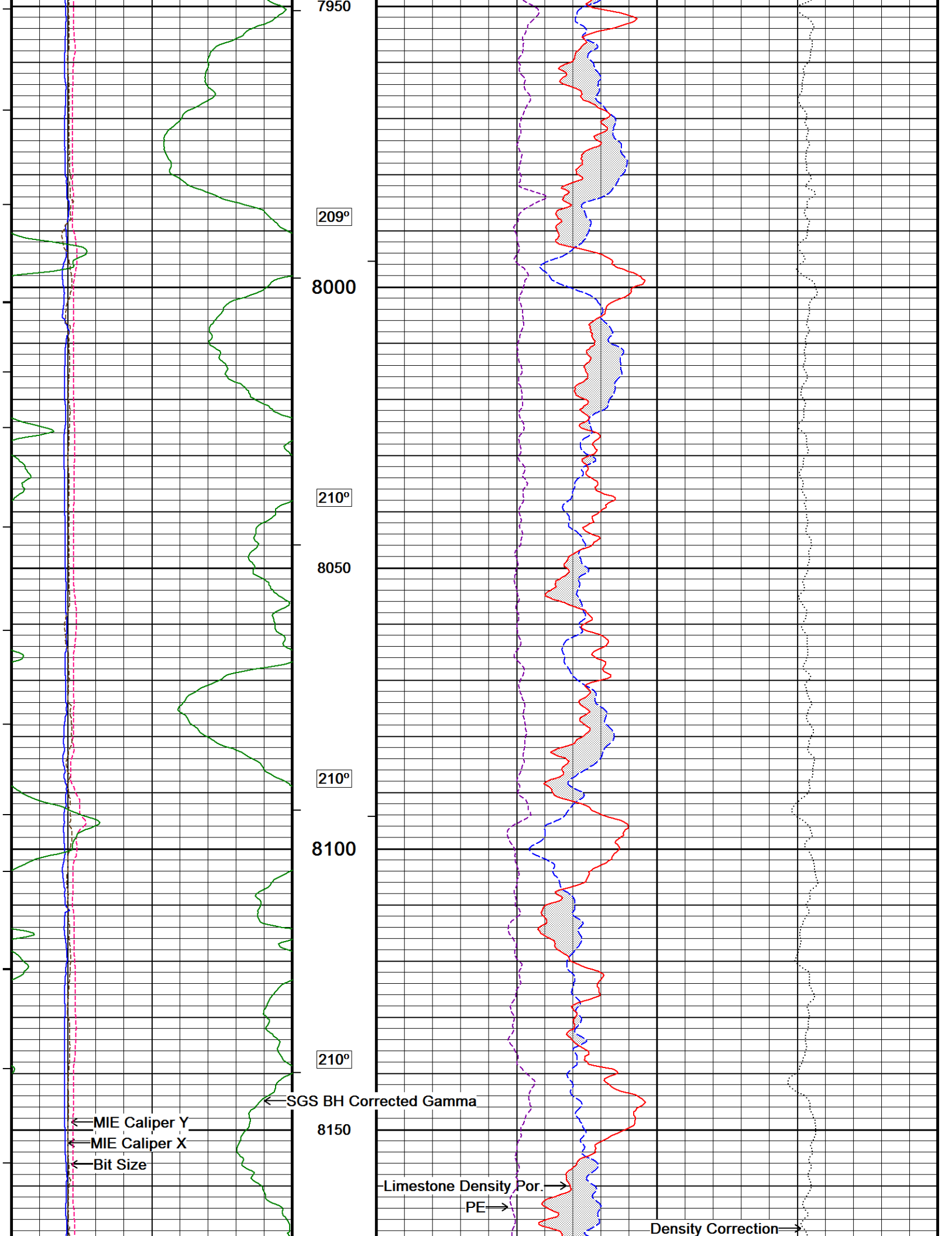
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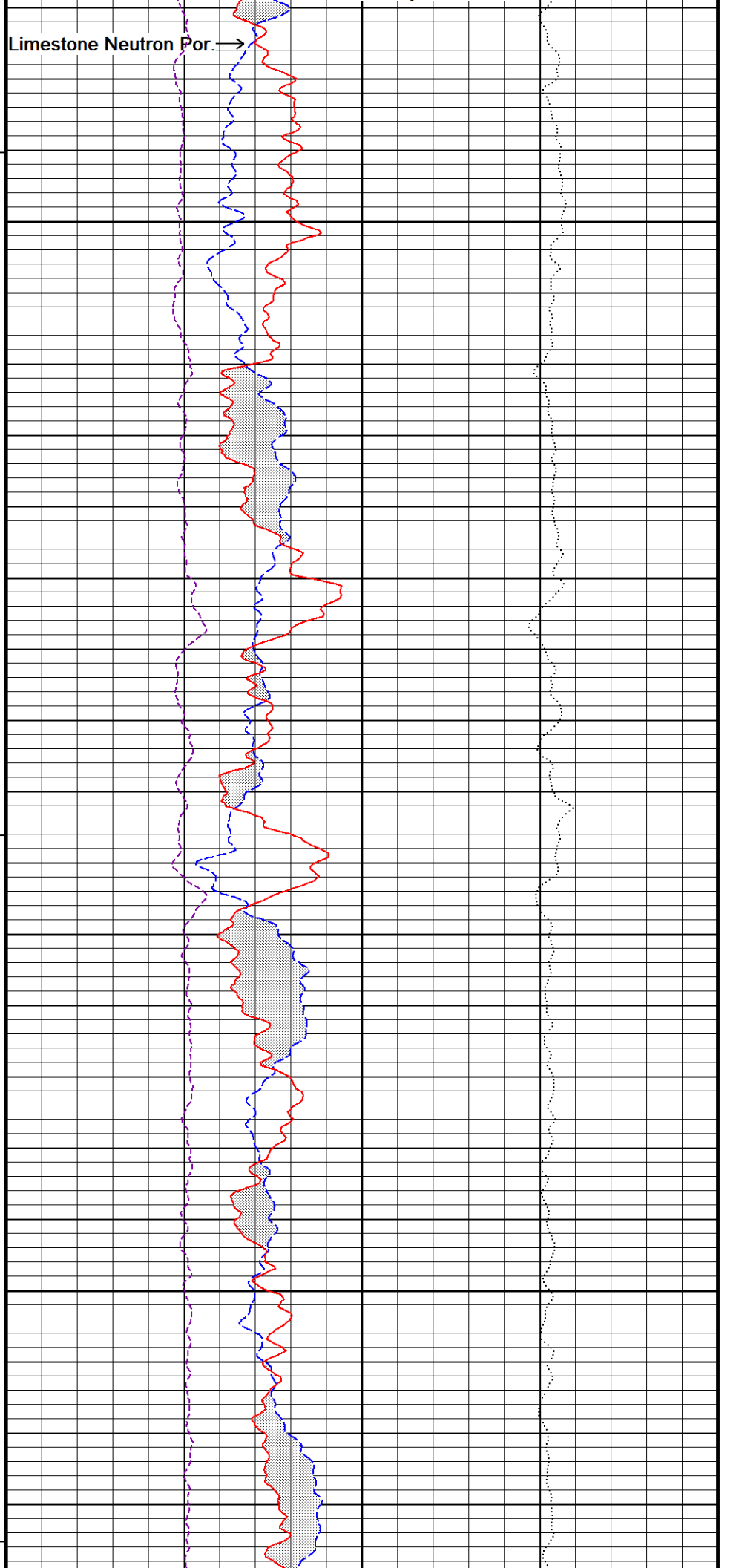
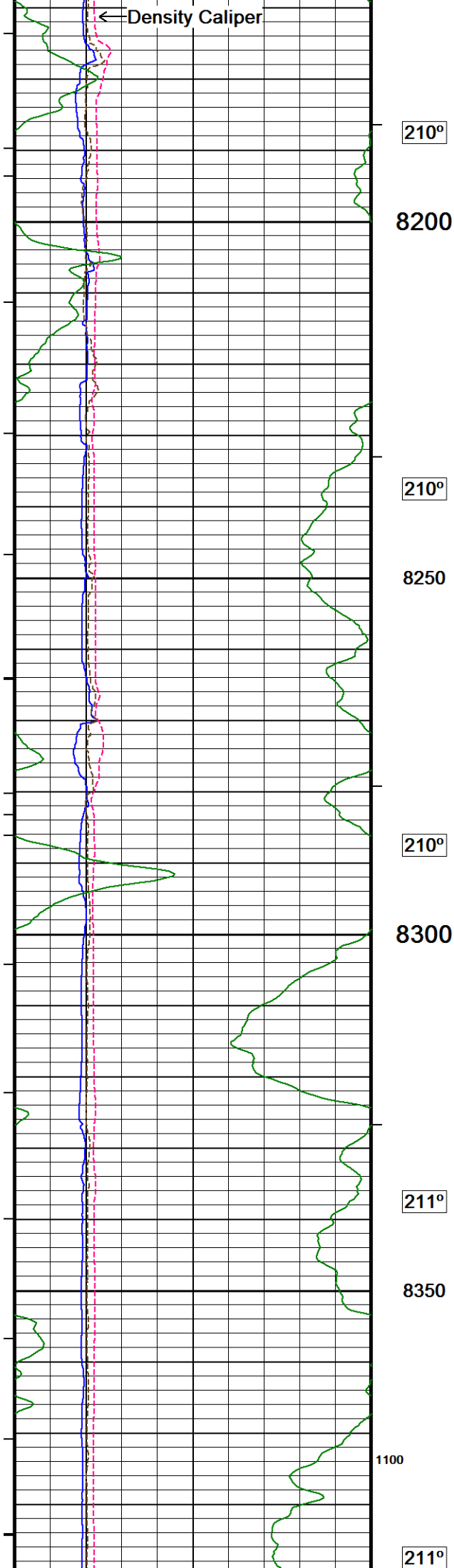
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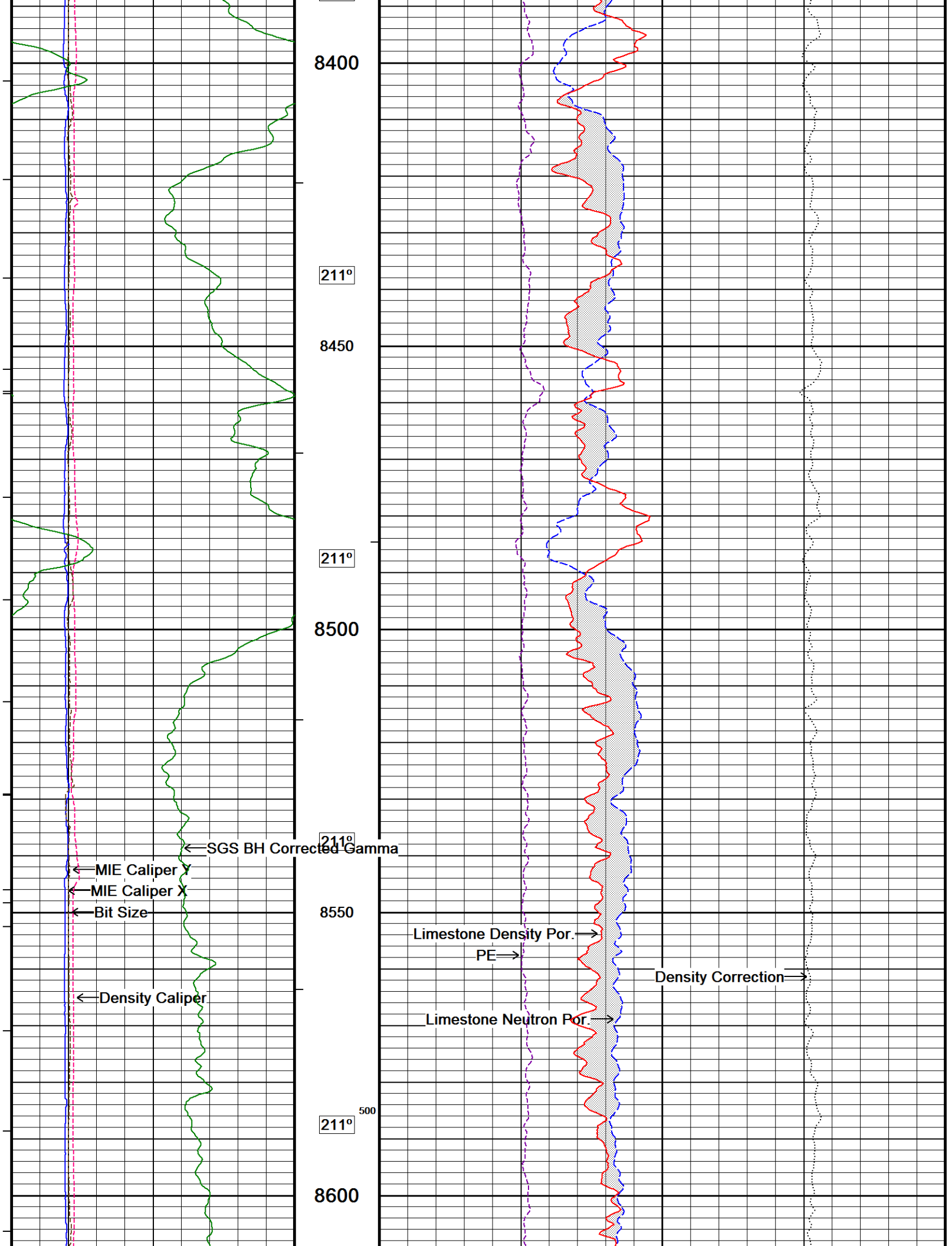


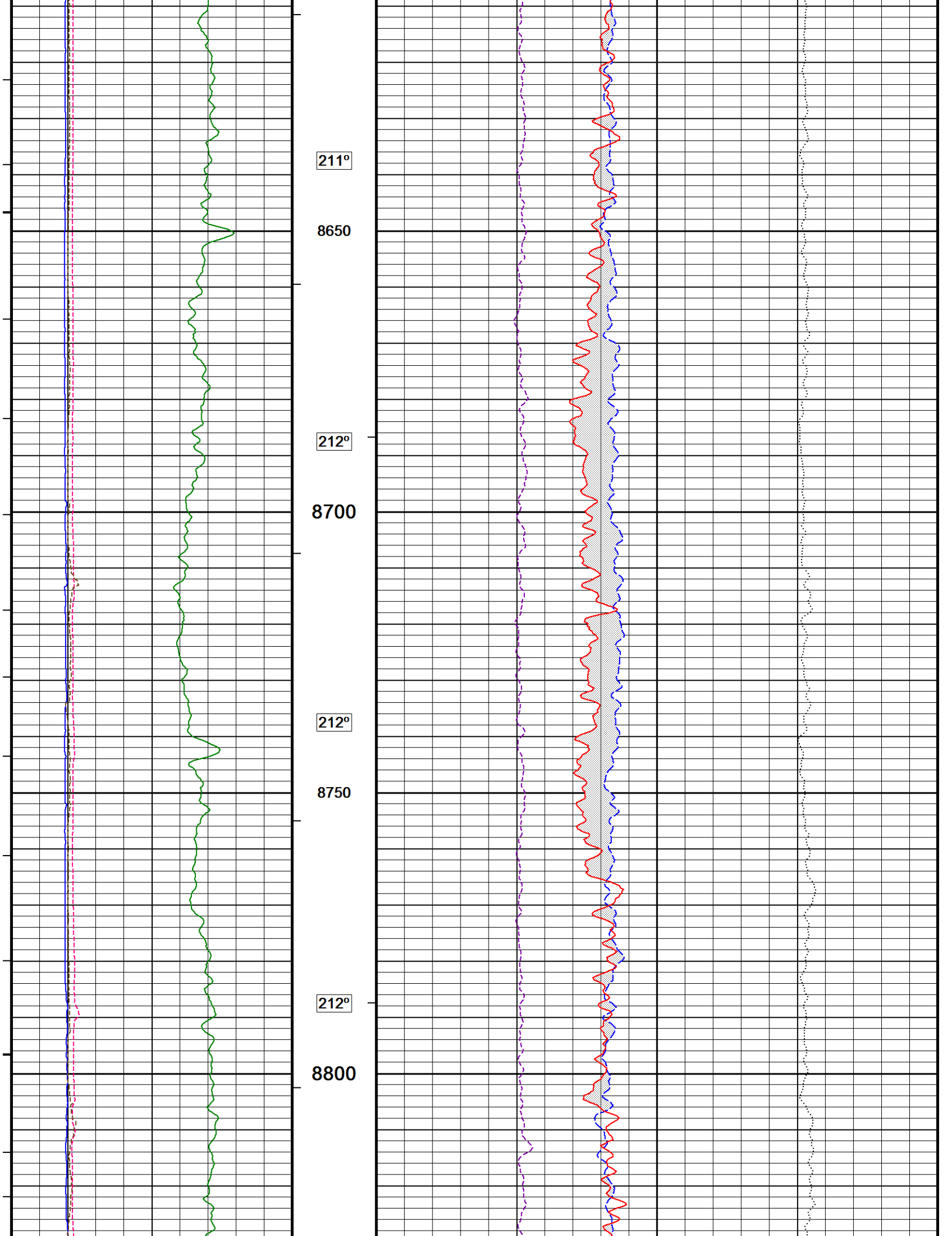


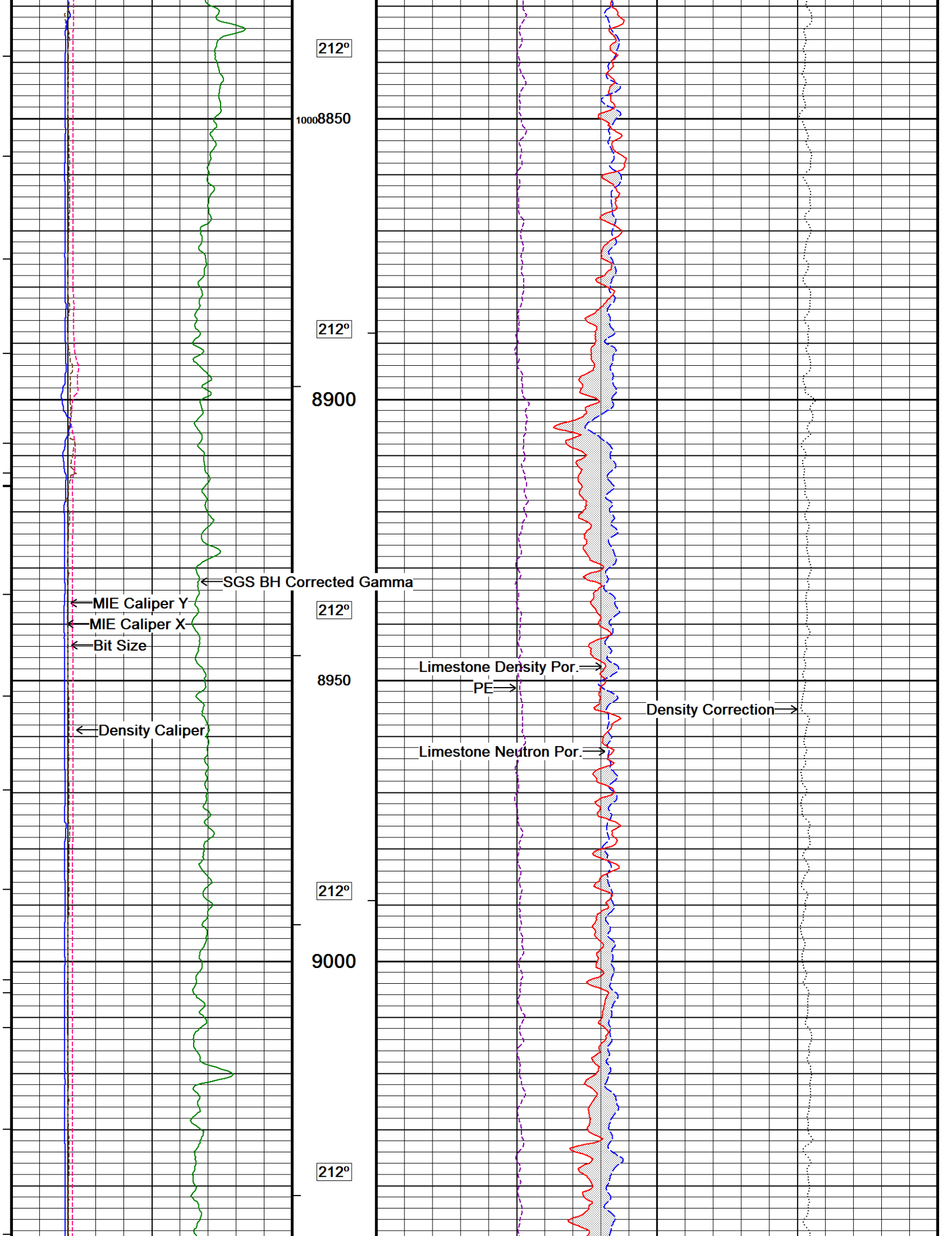




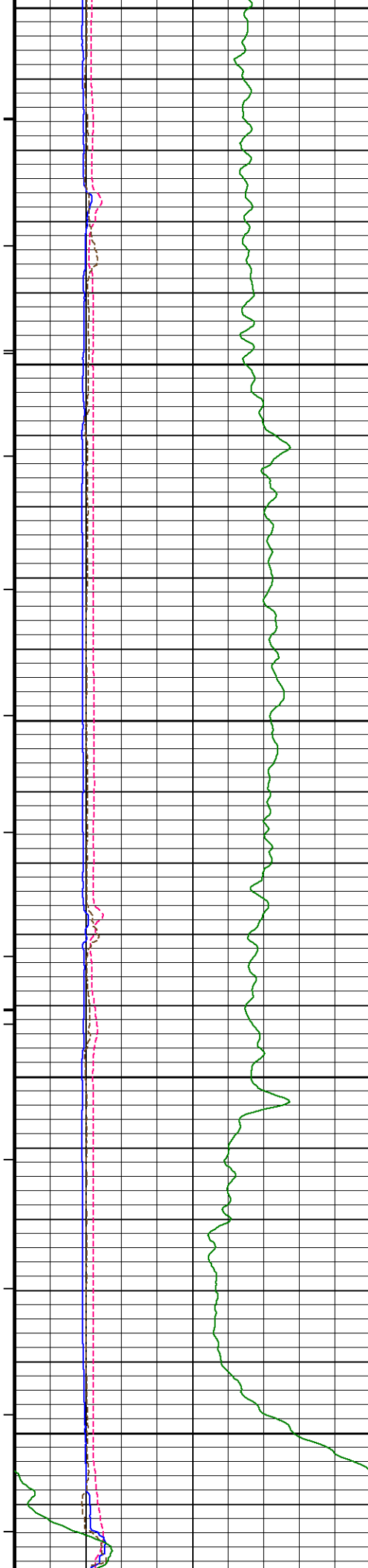




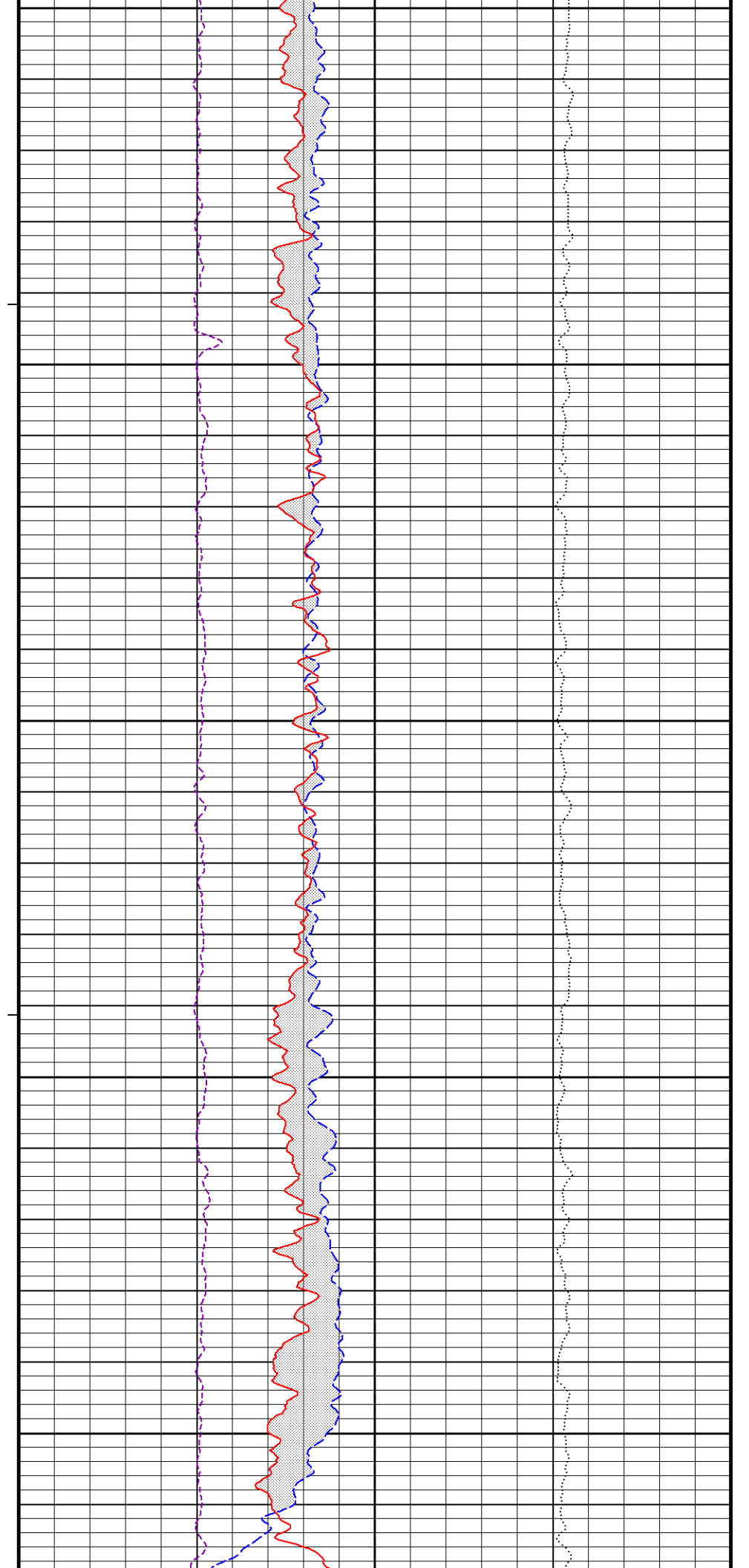


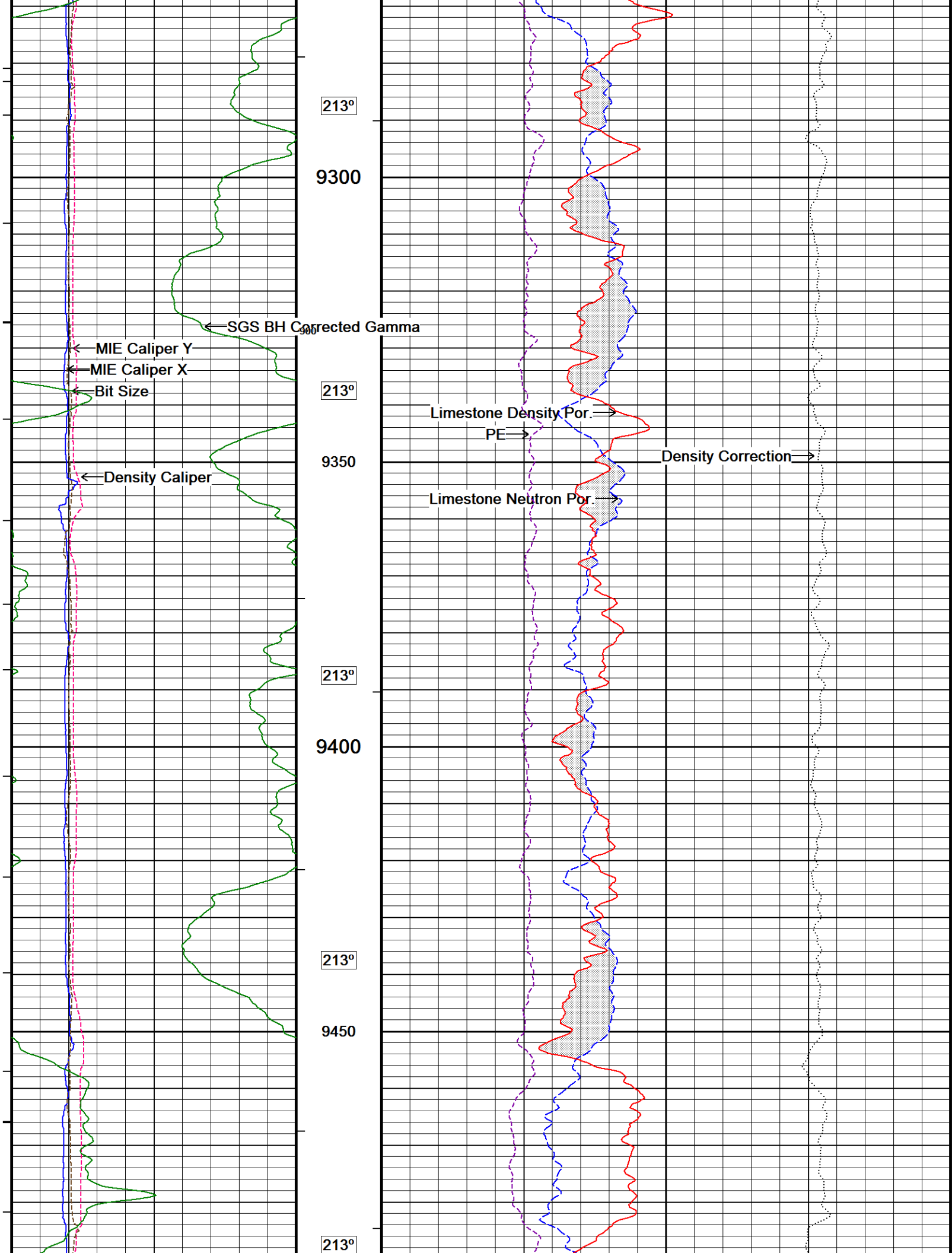


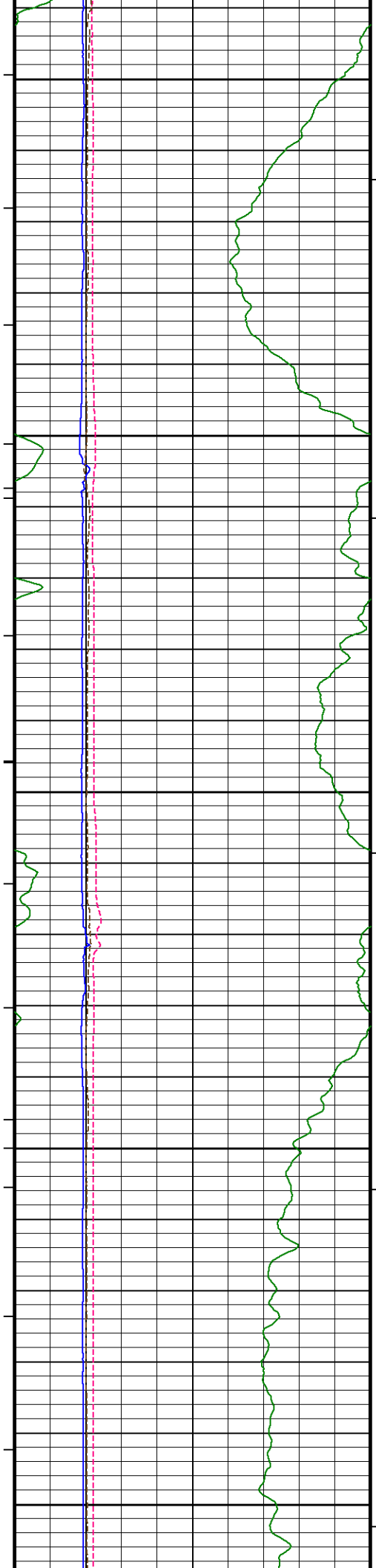




9050  
212°  
9100  
212°  
9150  
213°  
9200  
213°  
9250







9500

213°

9550

213°<sup>400</sup>

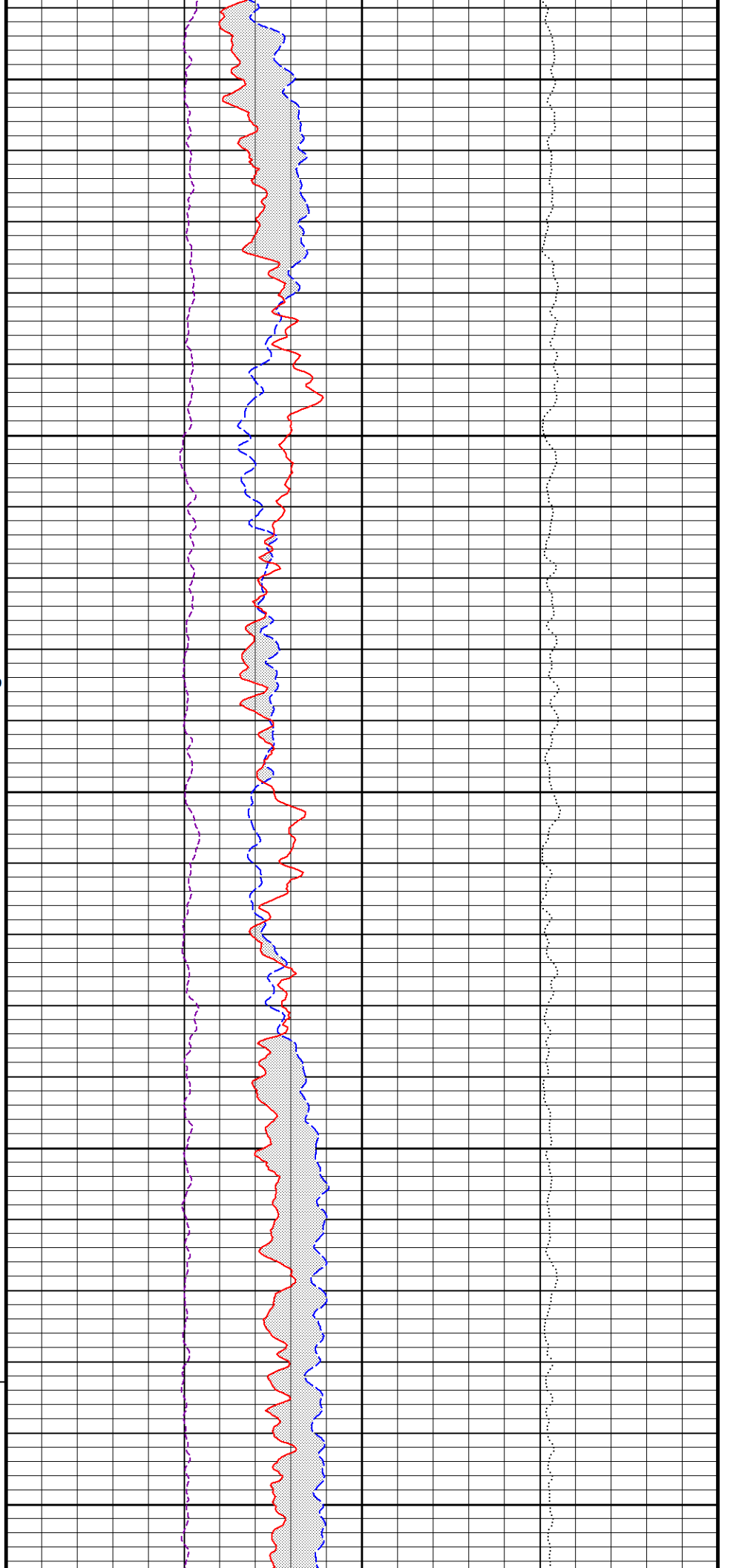
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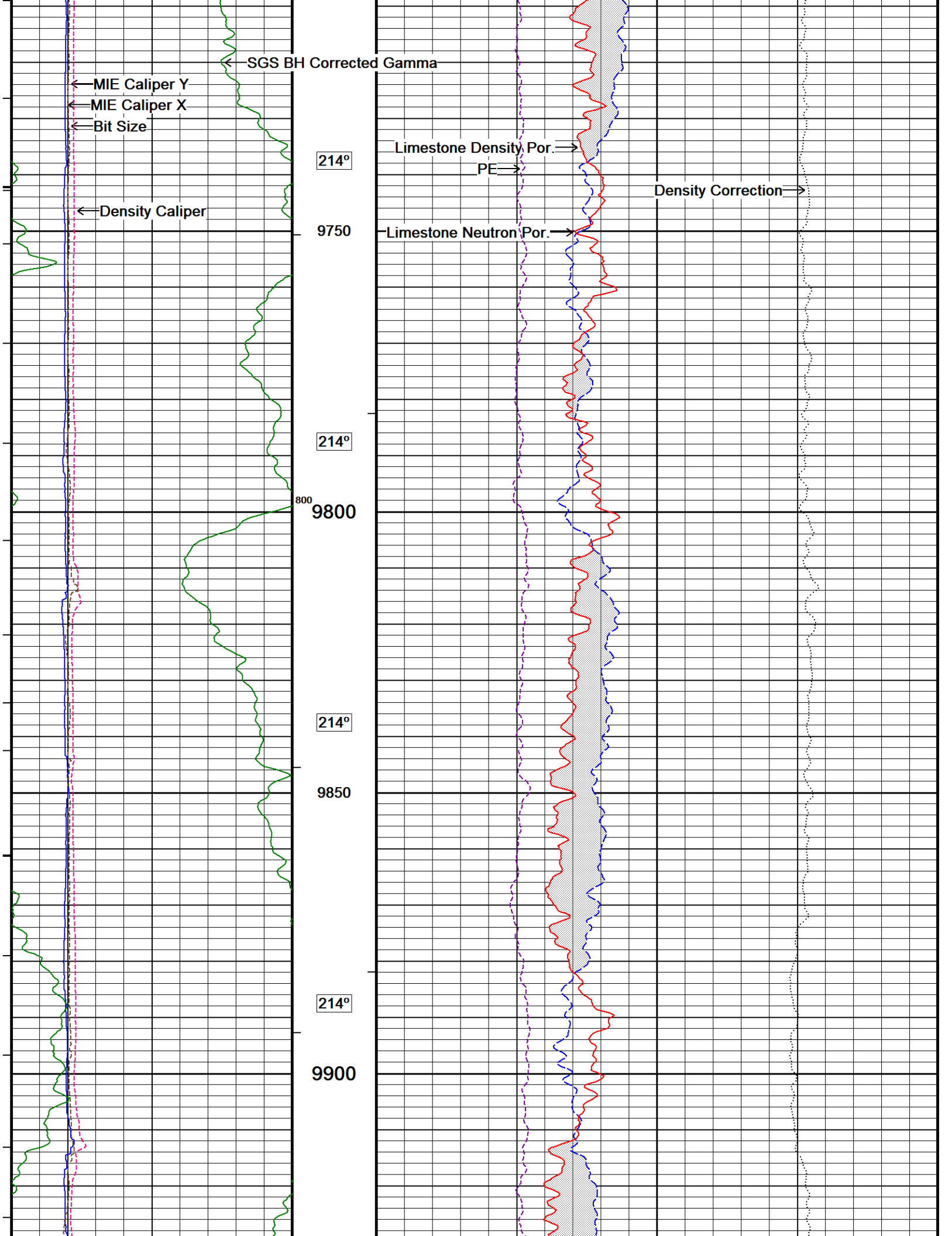
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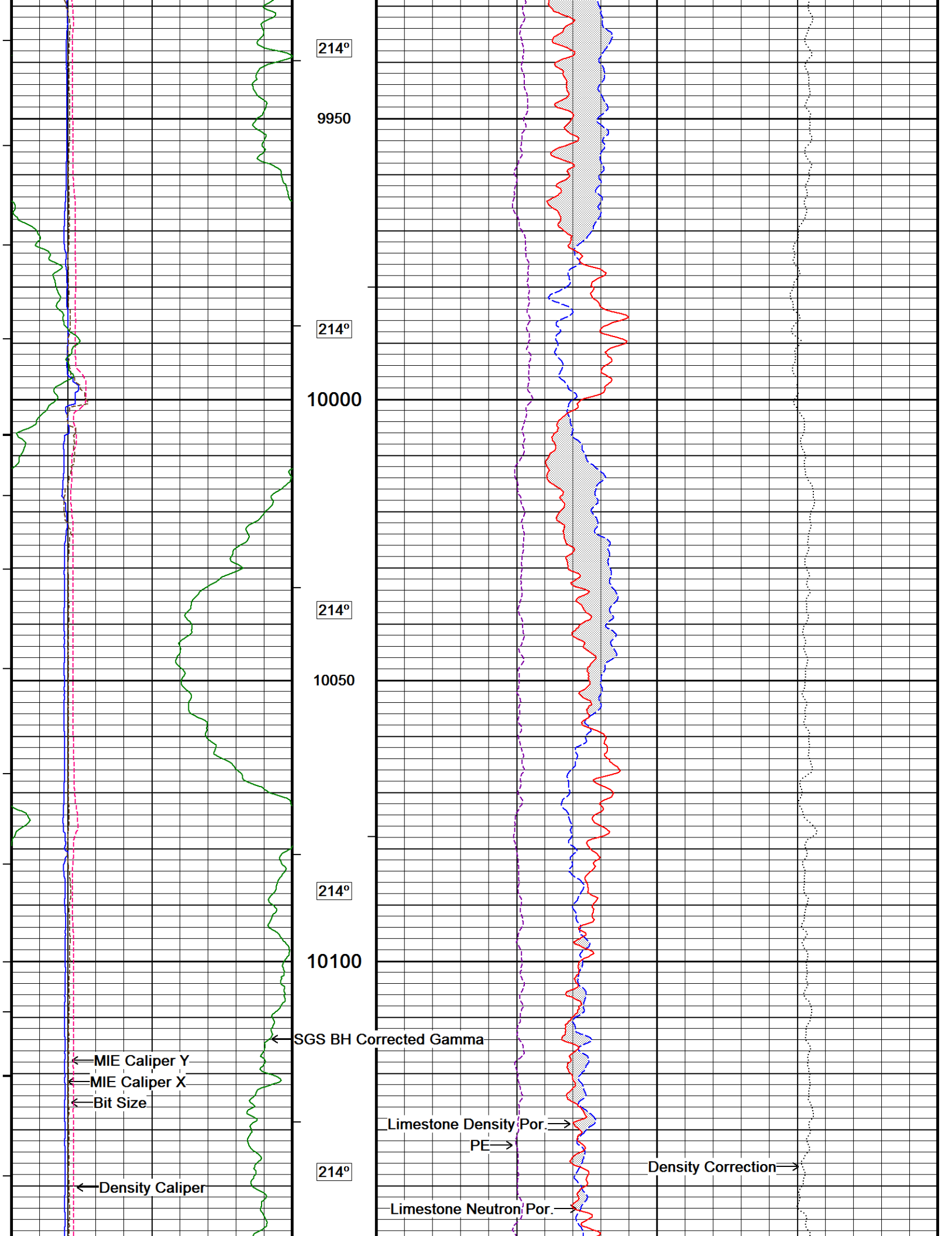
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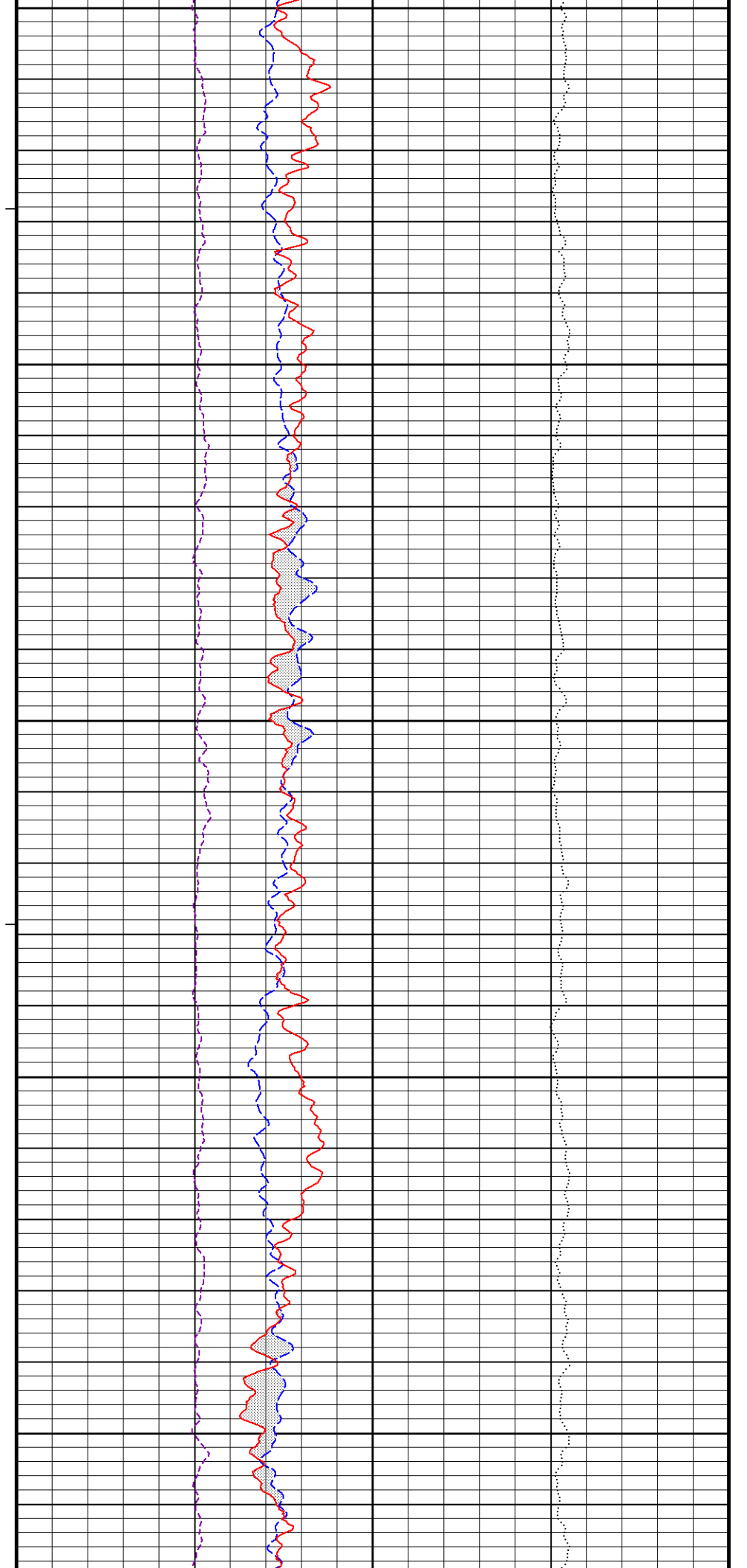
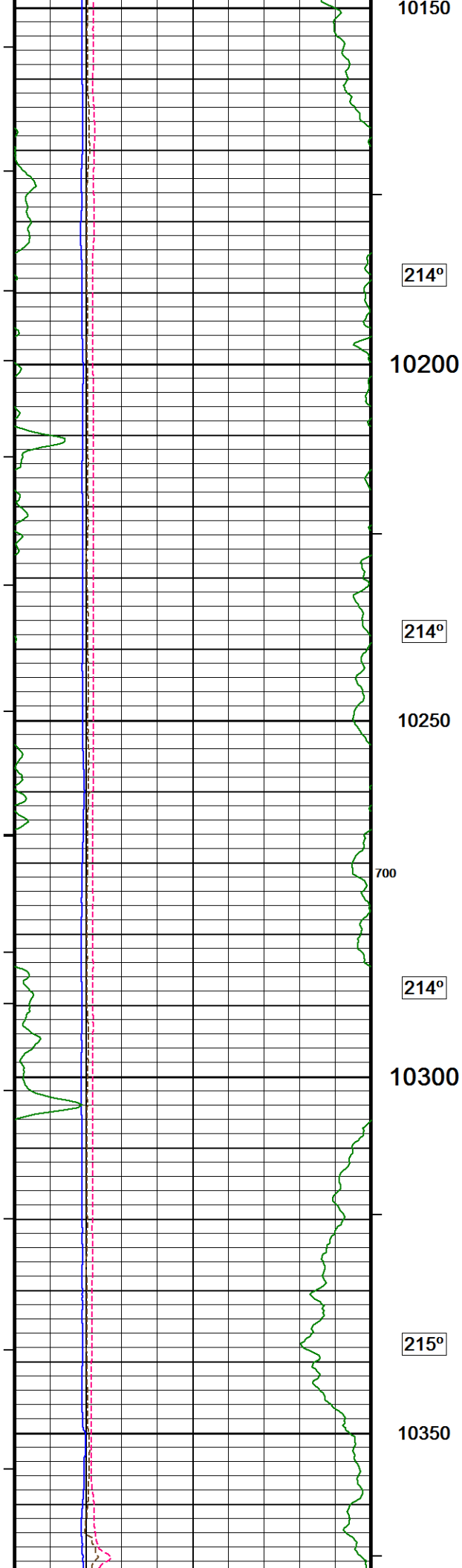
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9700

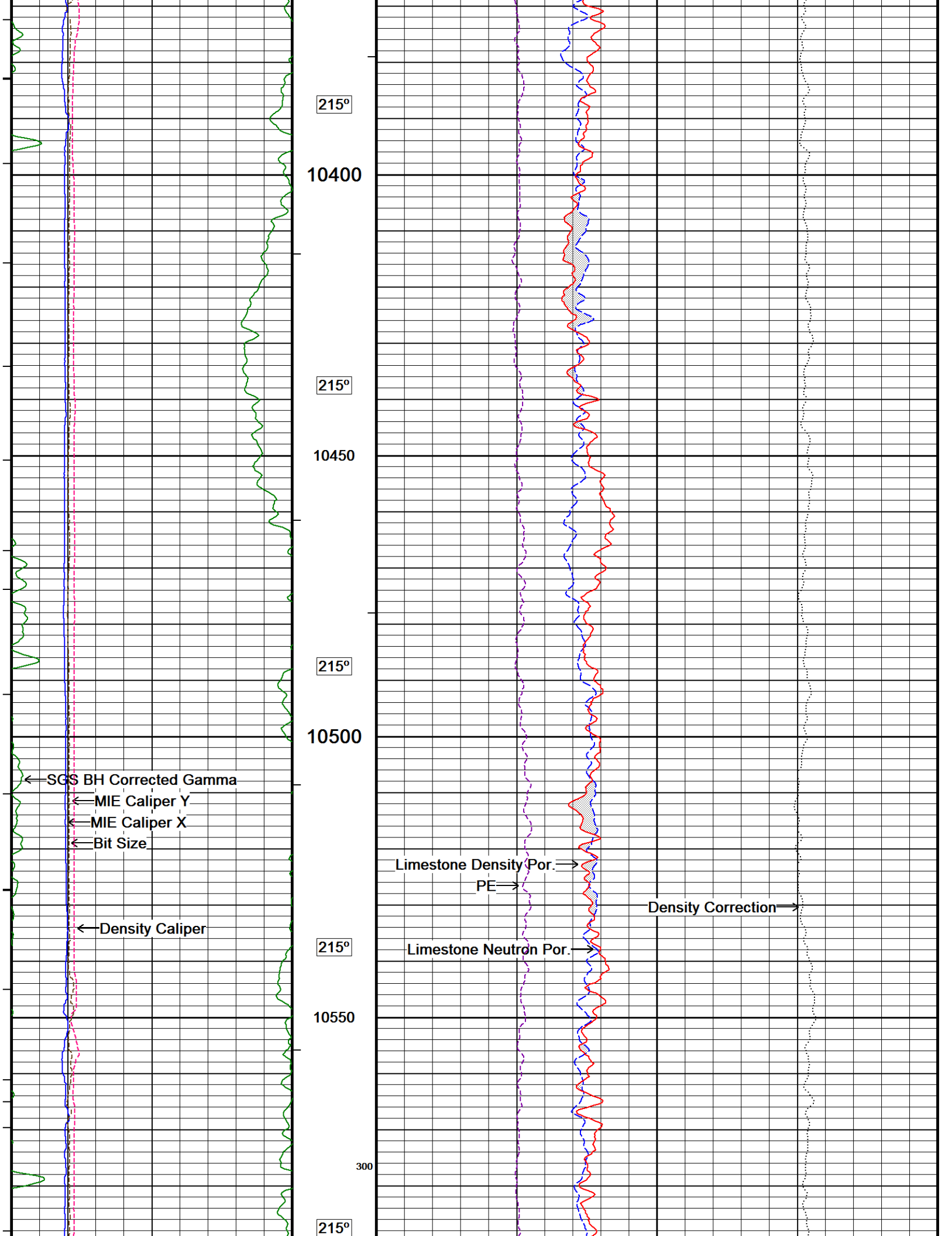


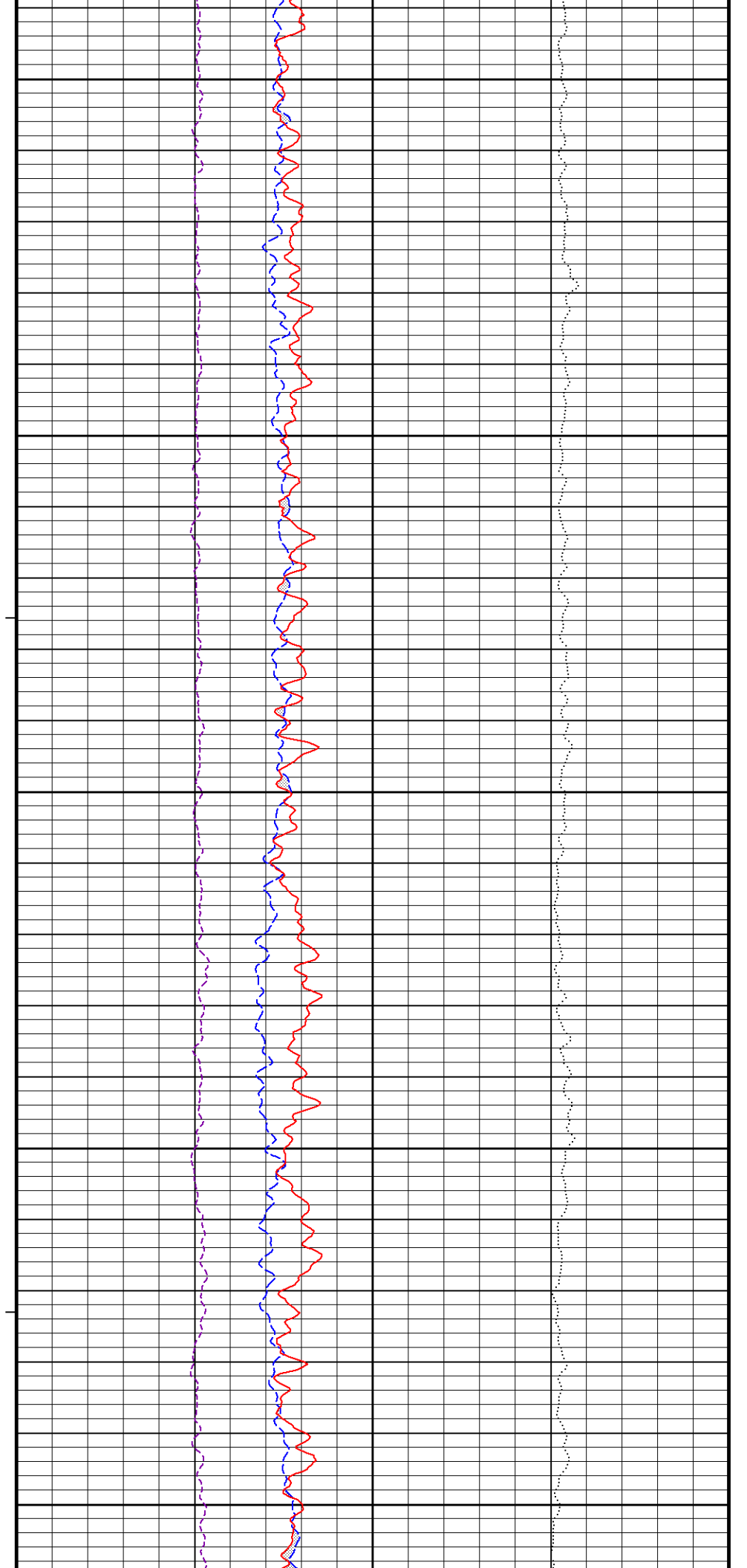
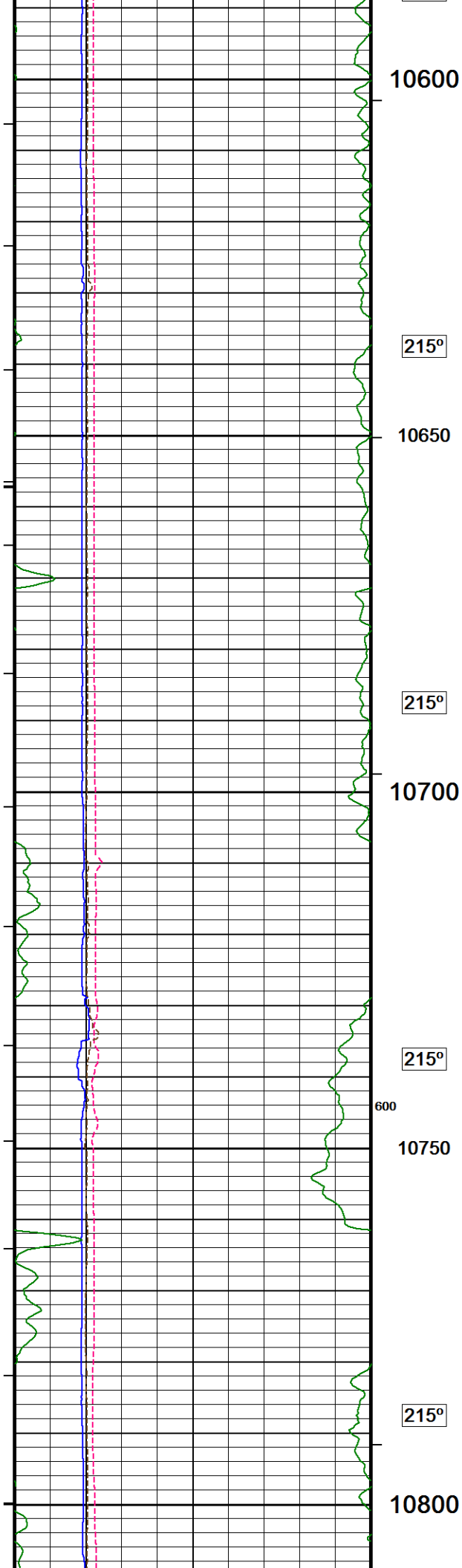


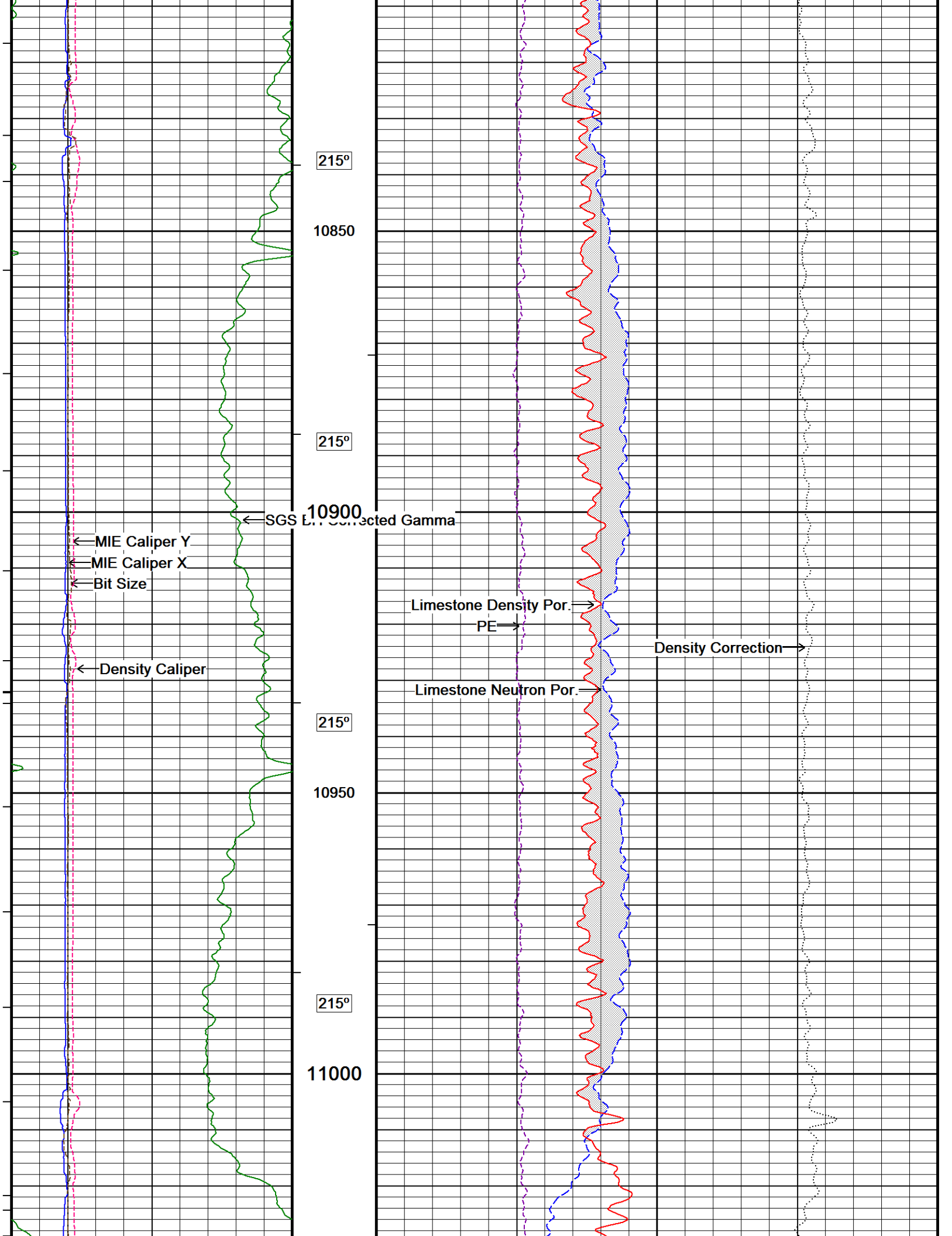


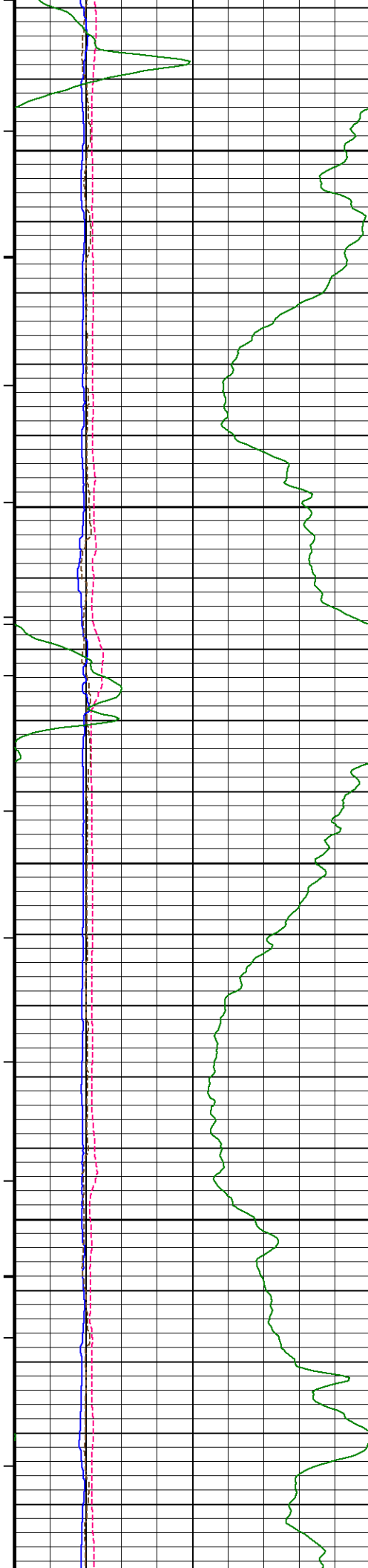




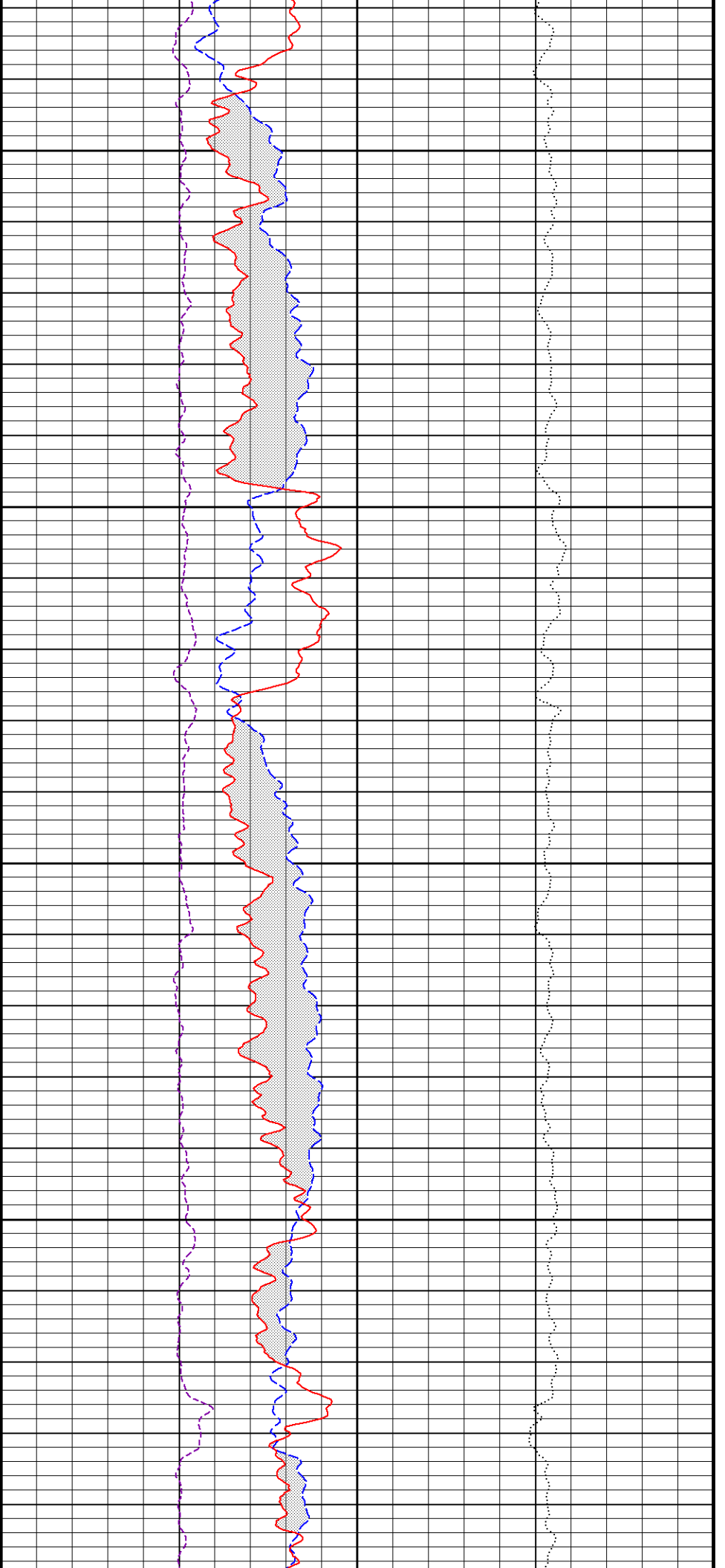


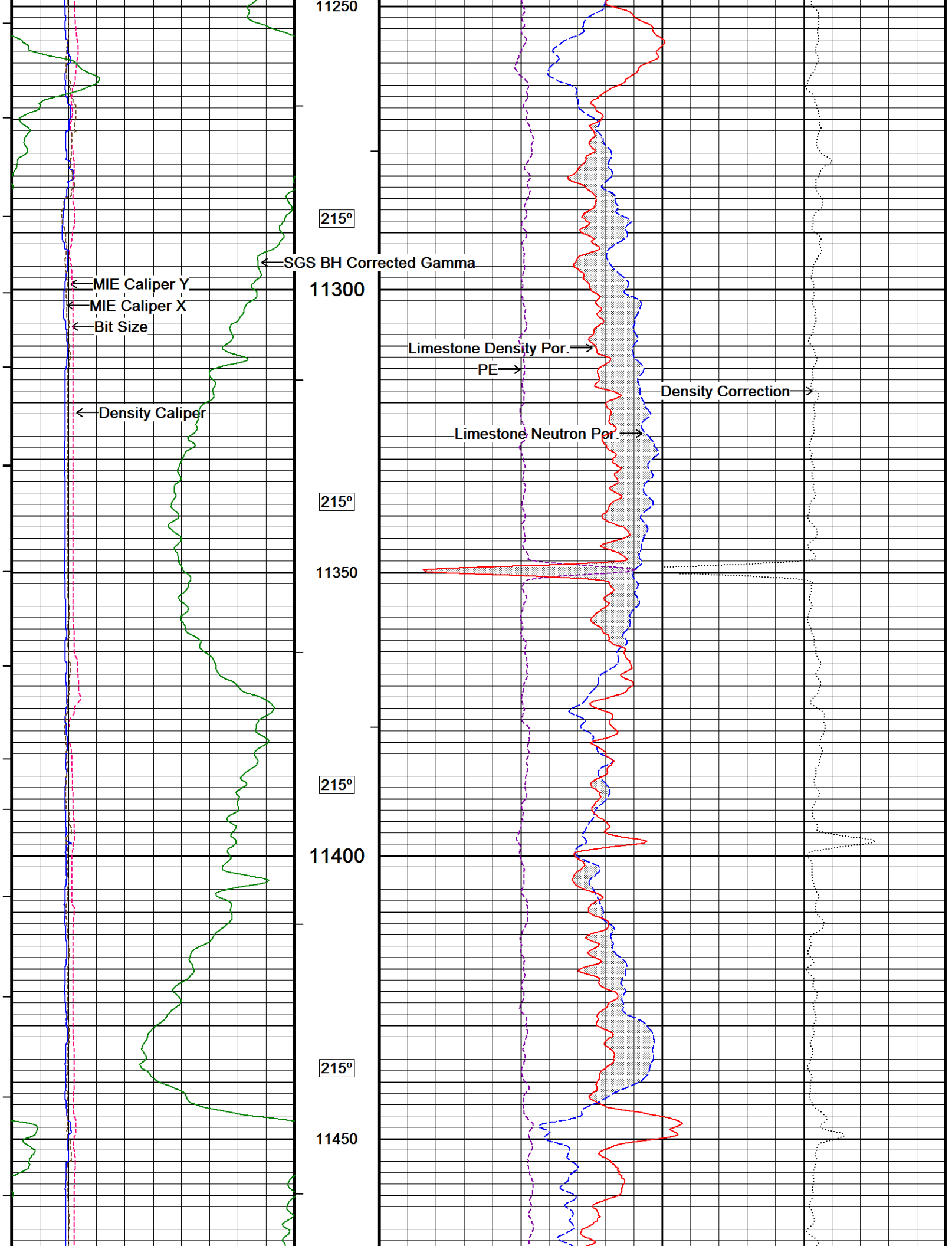


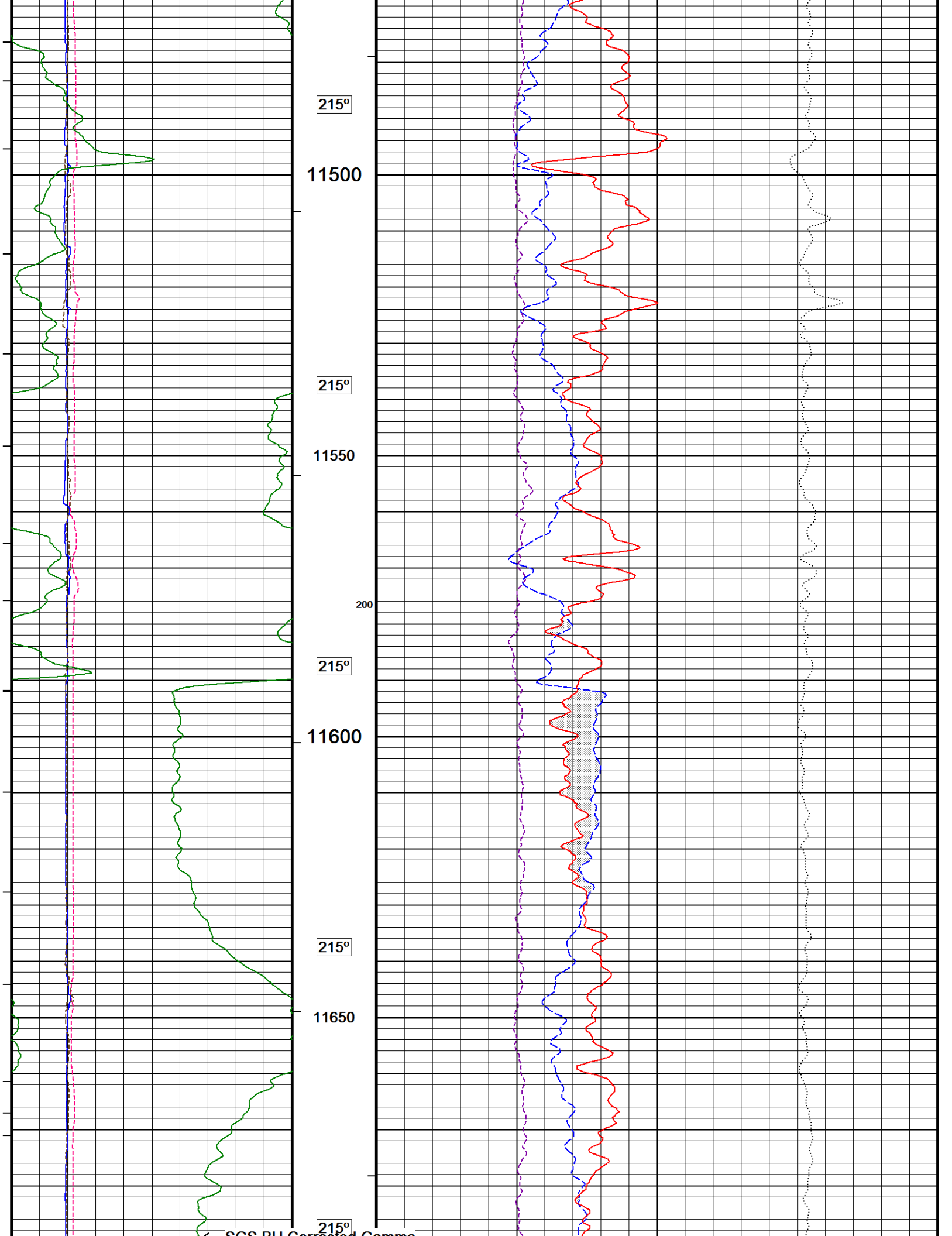




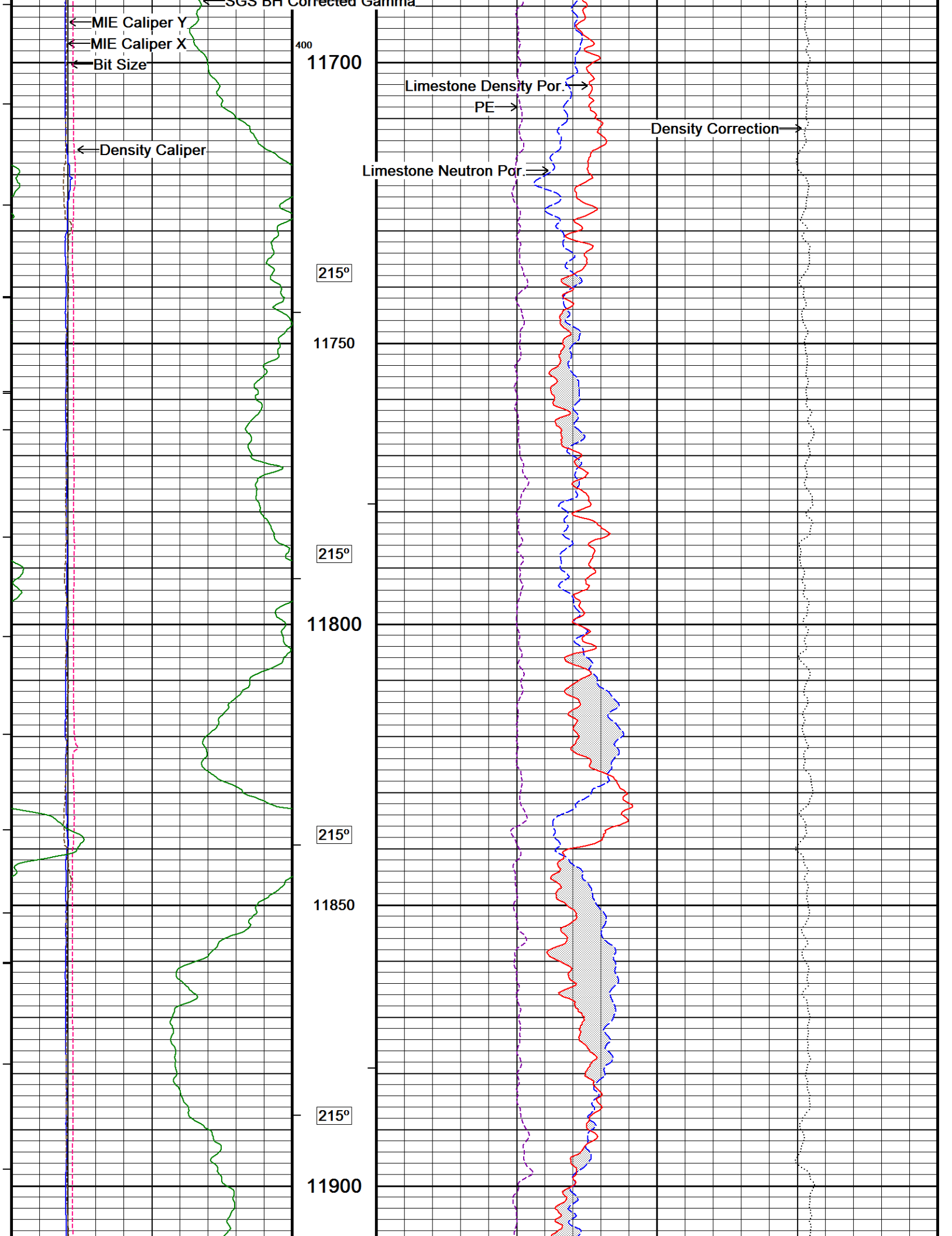
215°  
11050  
215°  
11100  
215°  
11150  
215°  
11200  
500  
215°

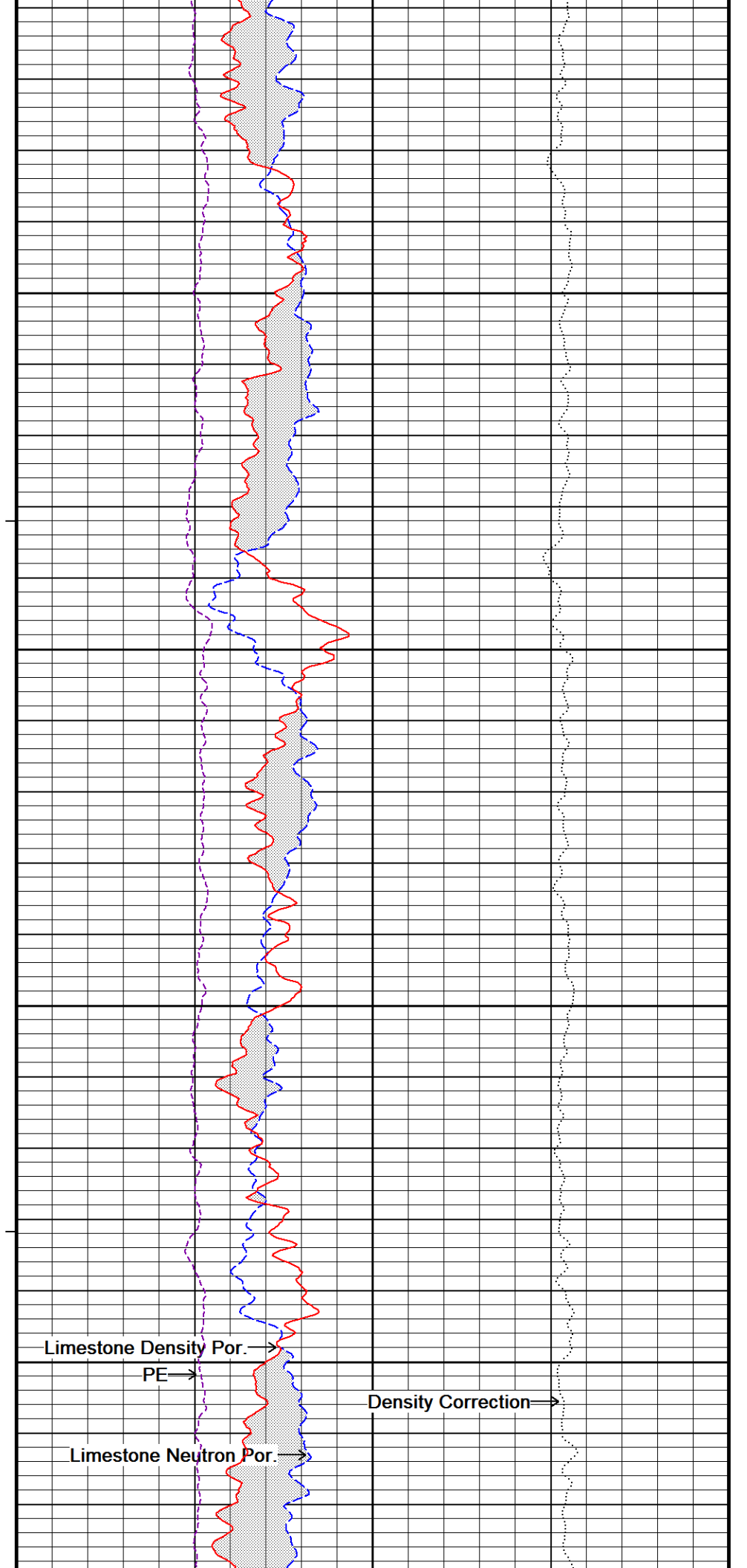
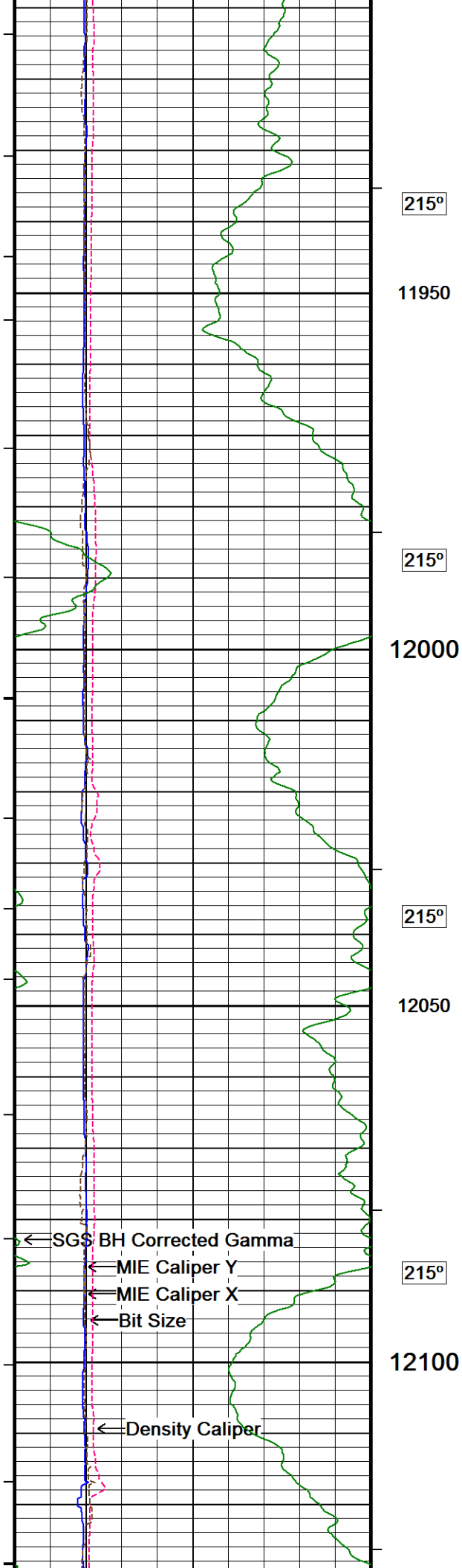


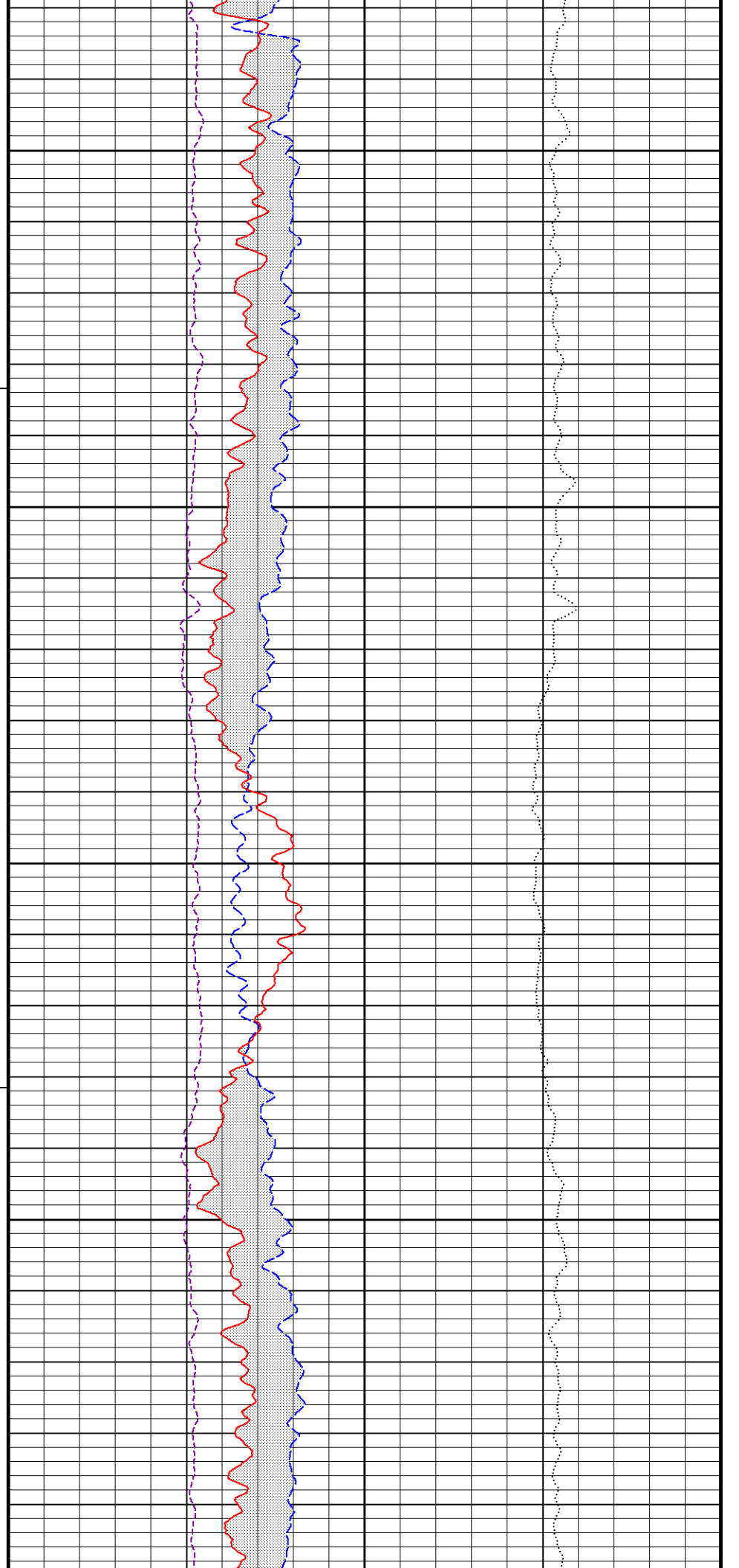
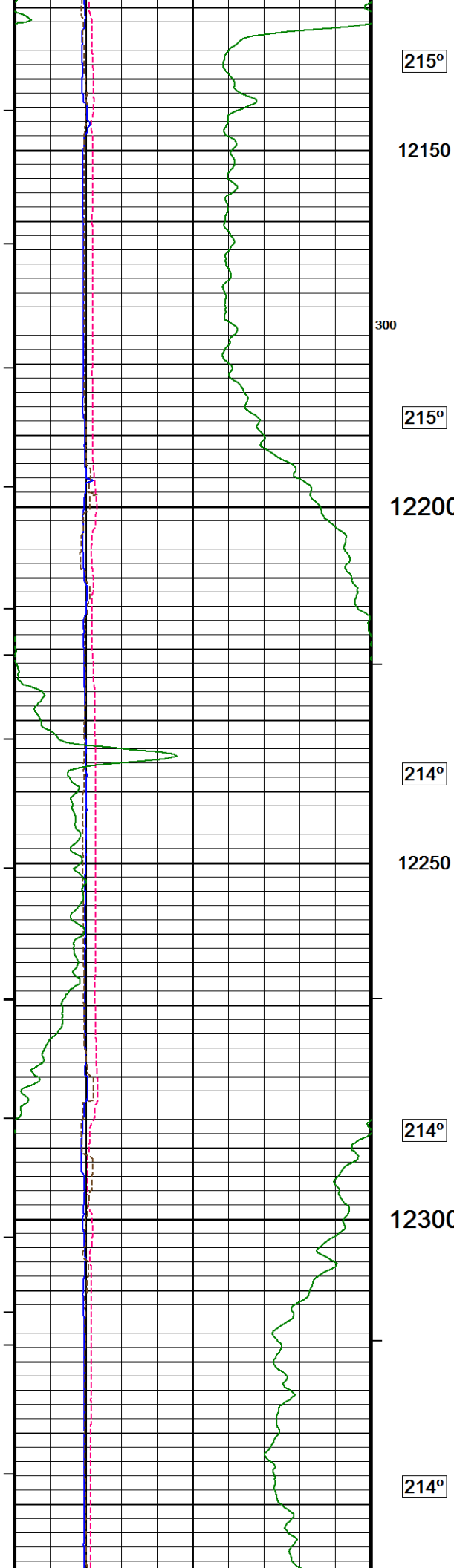


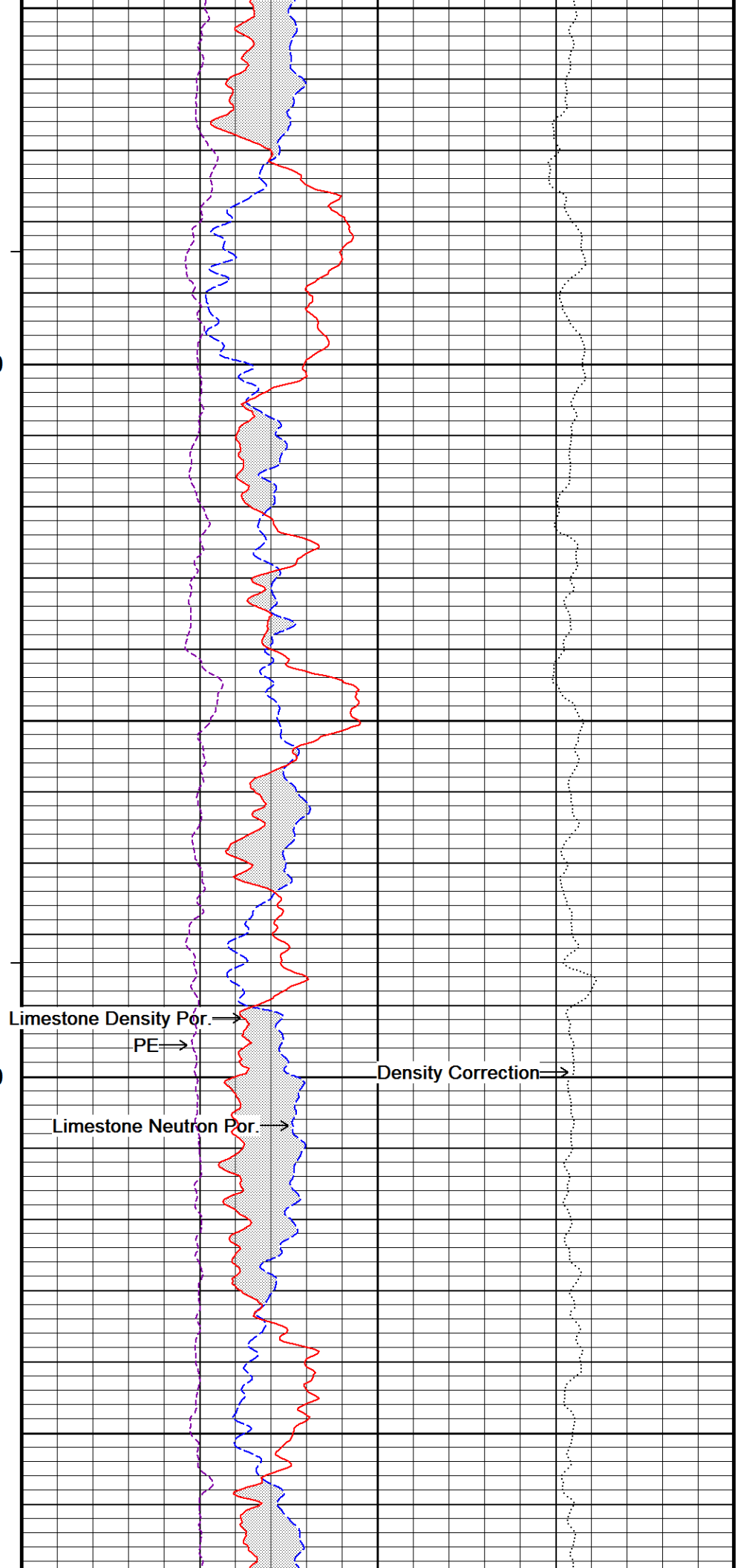
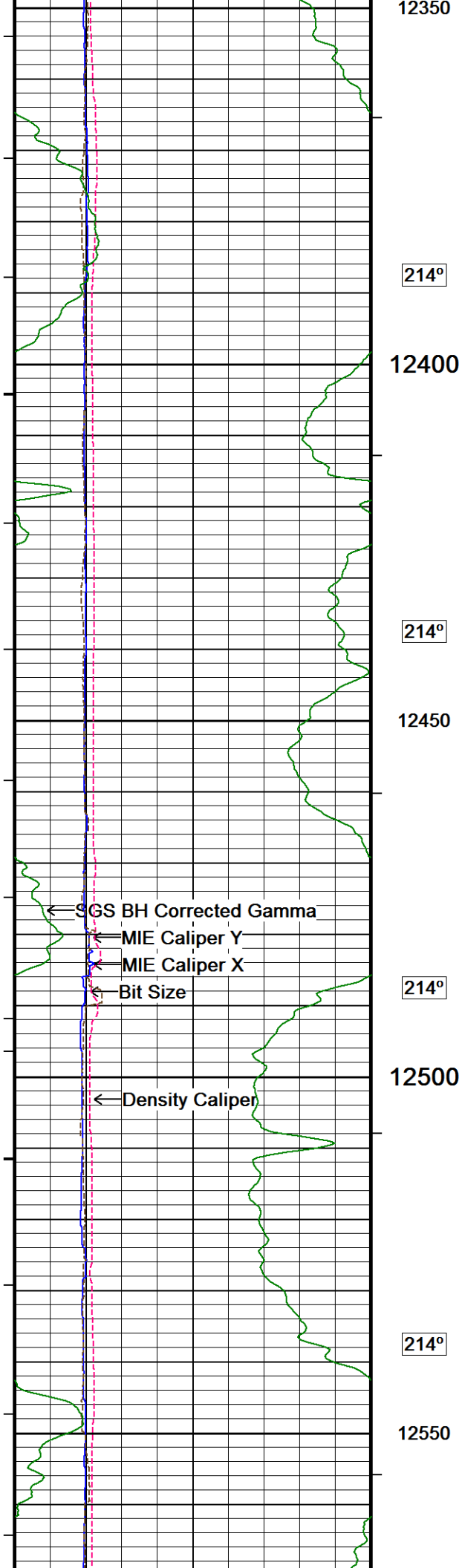


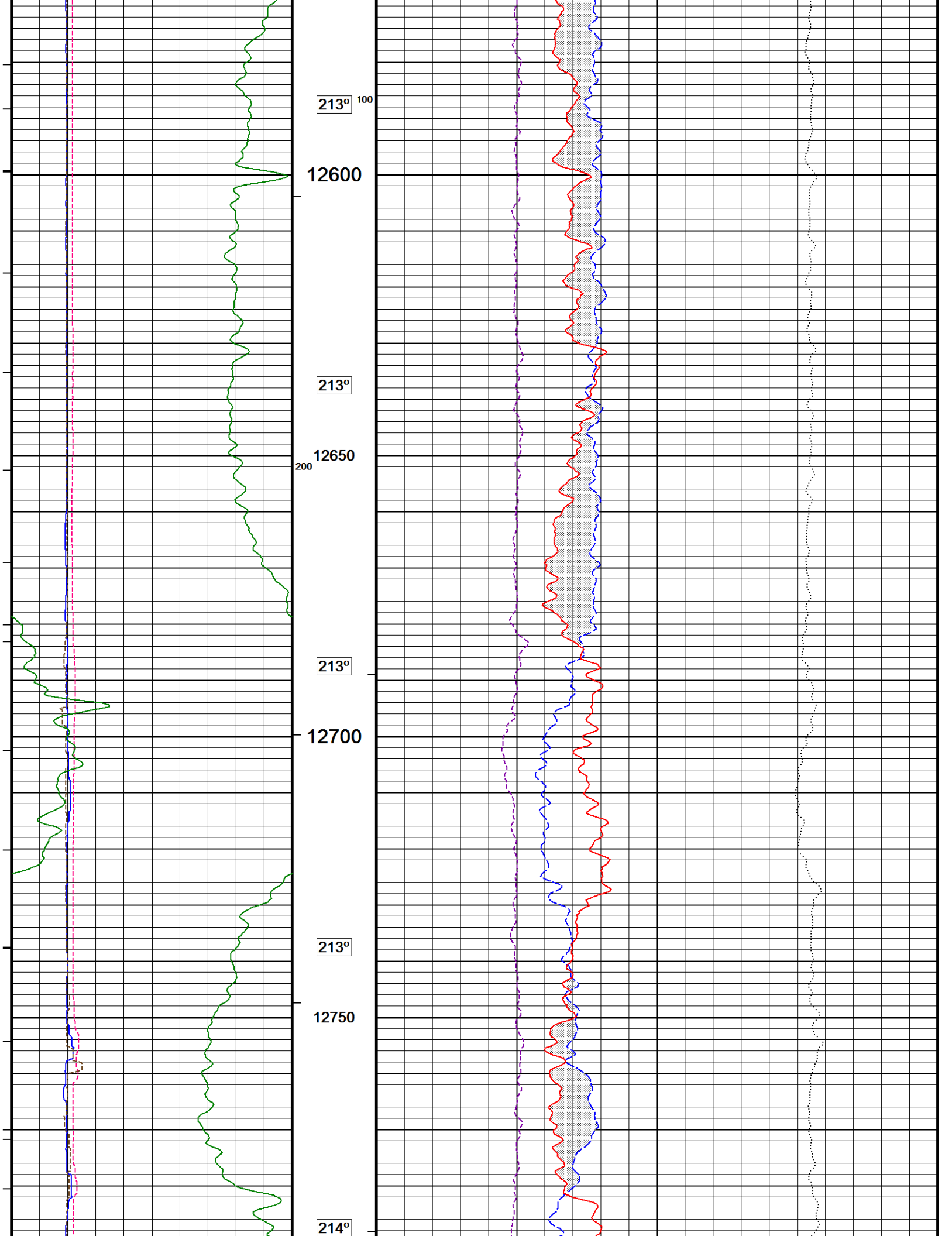


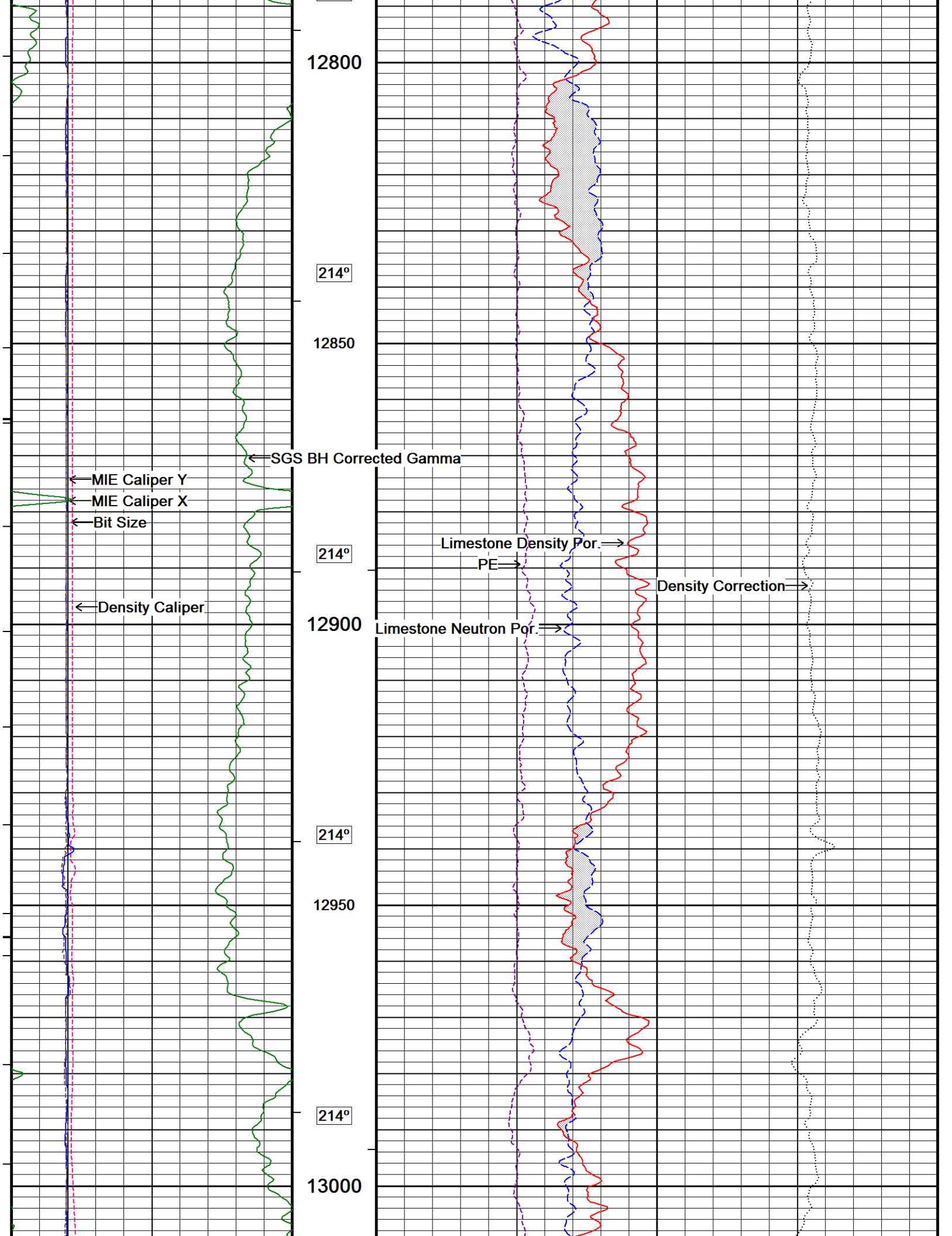


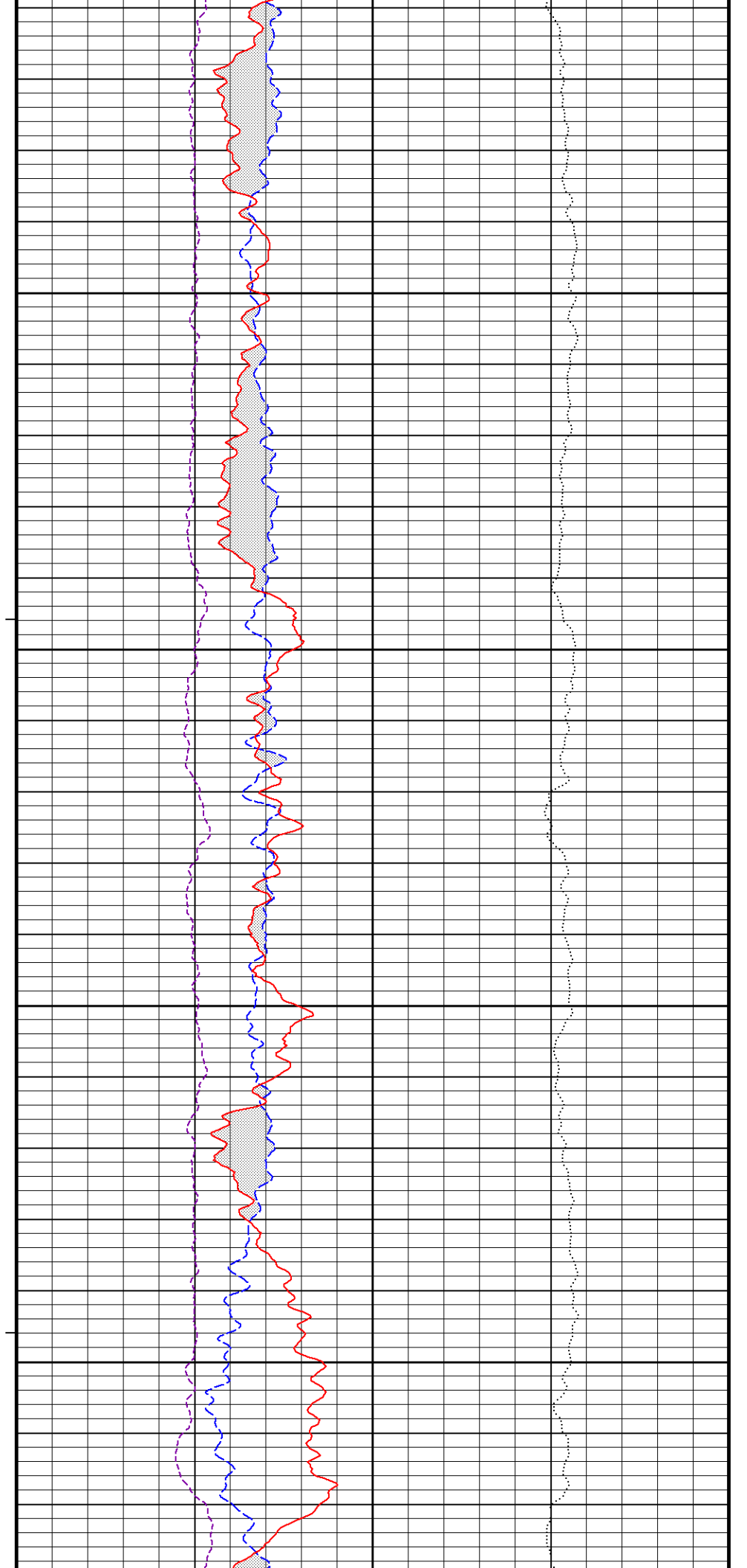
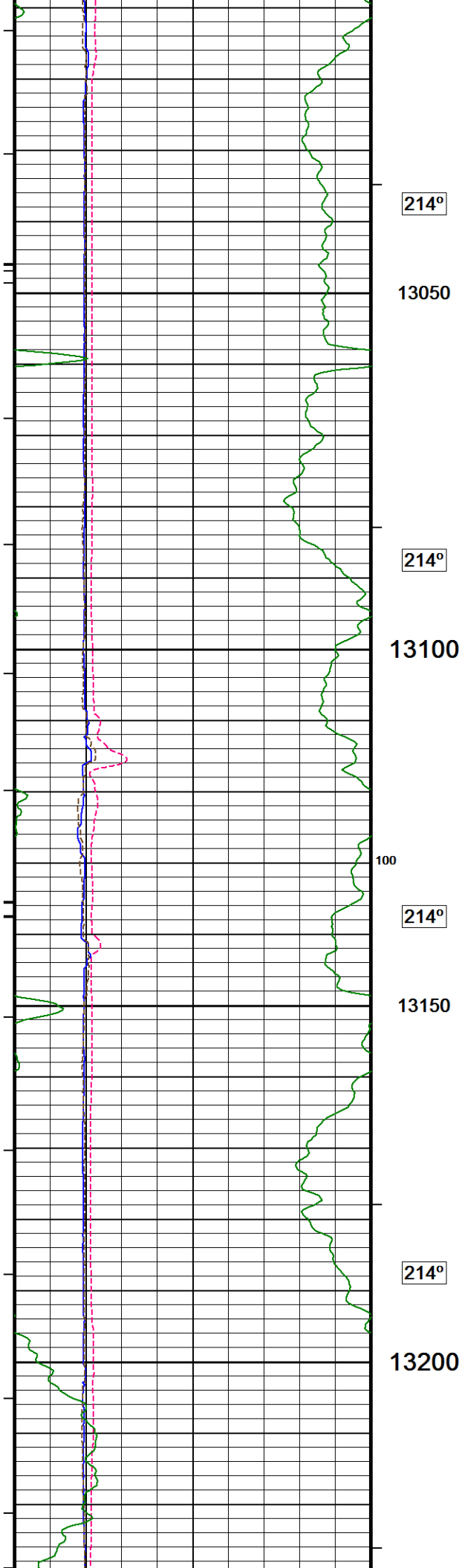


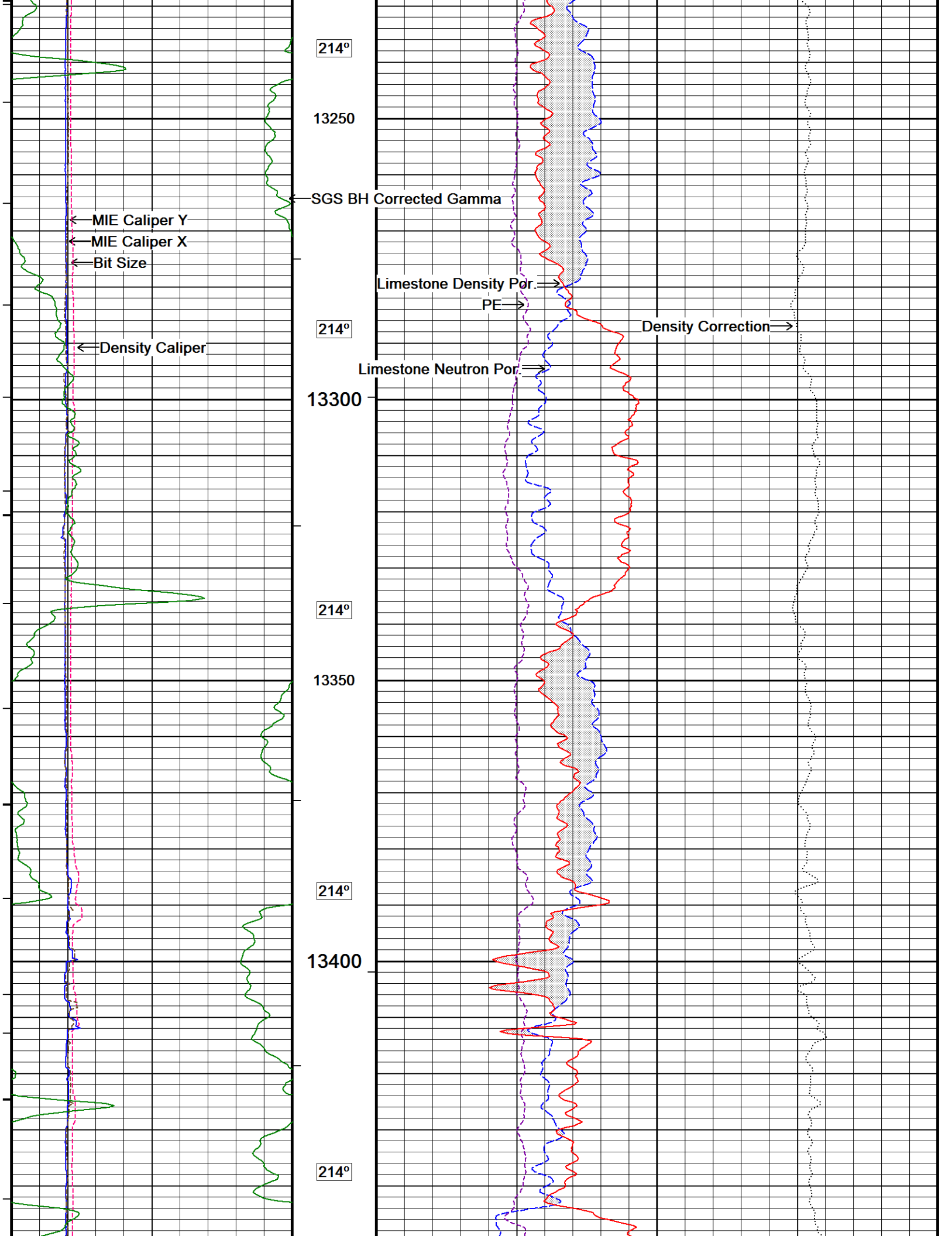




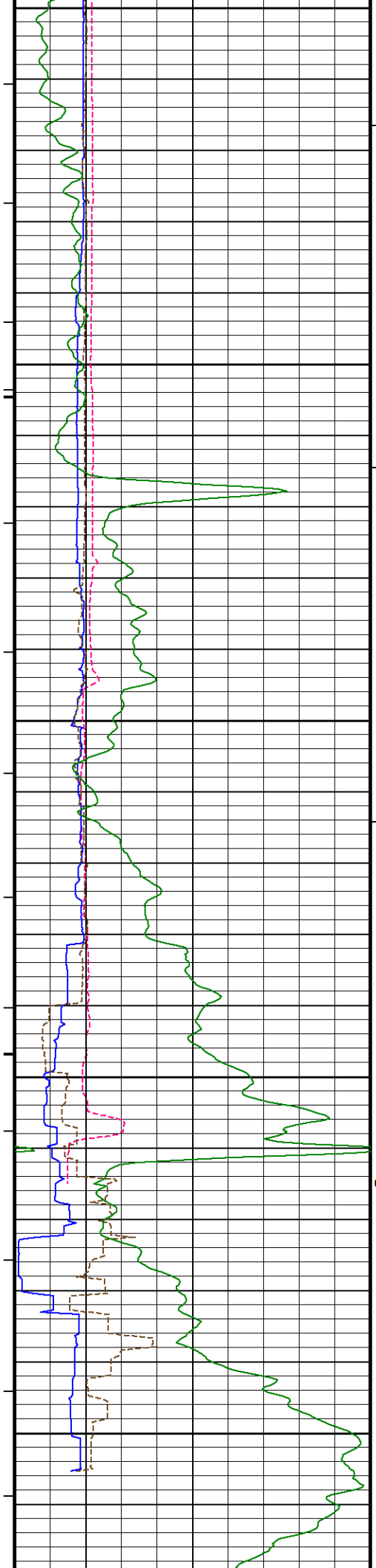




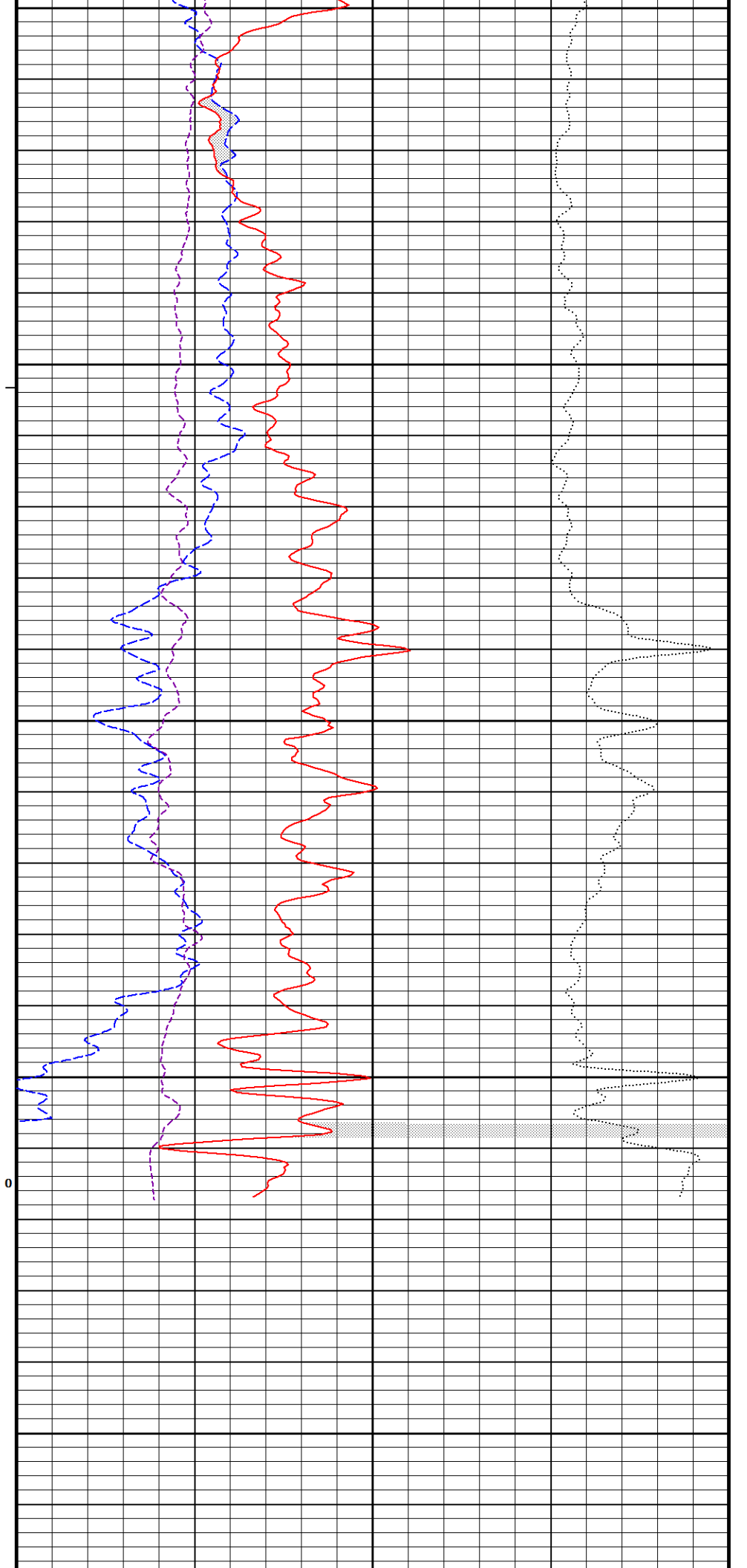


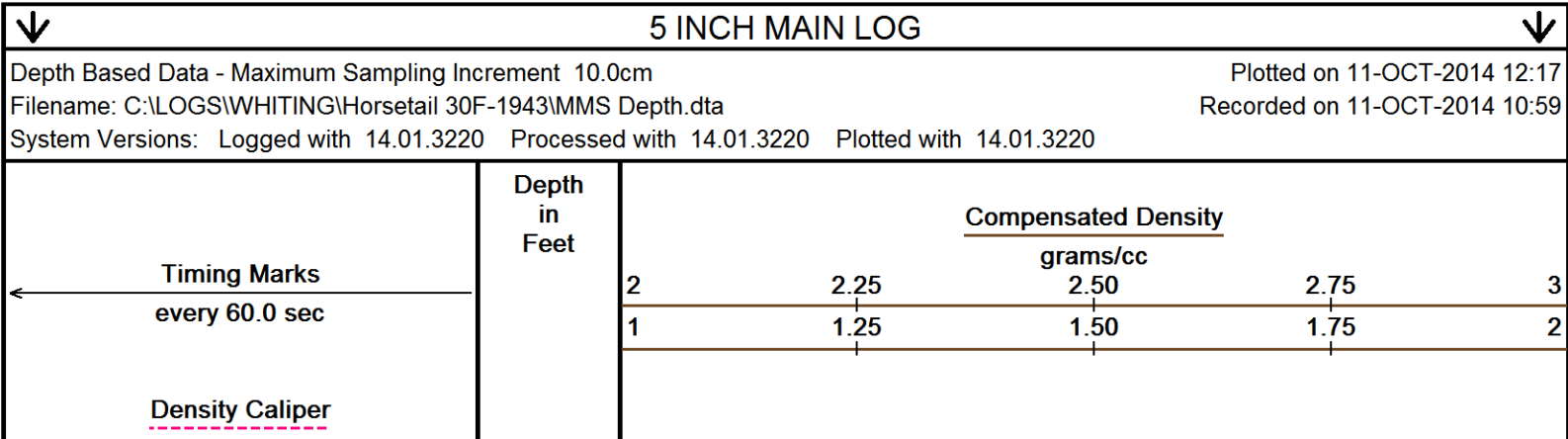
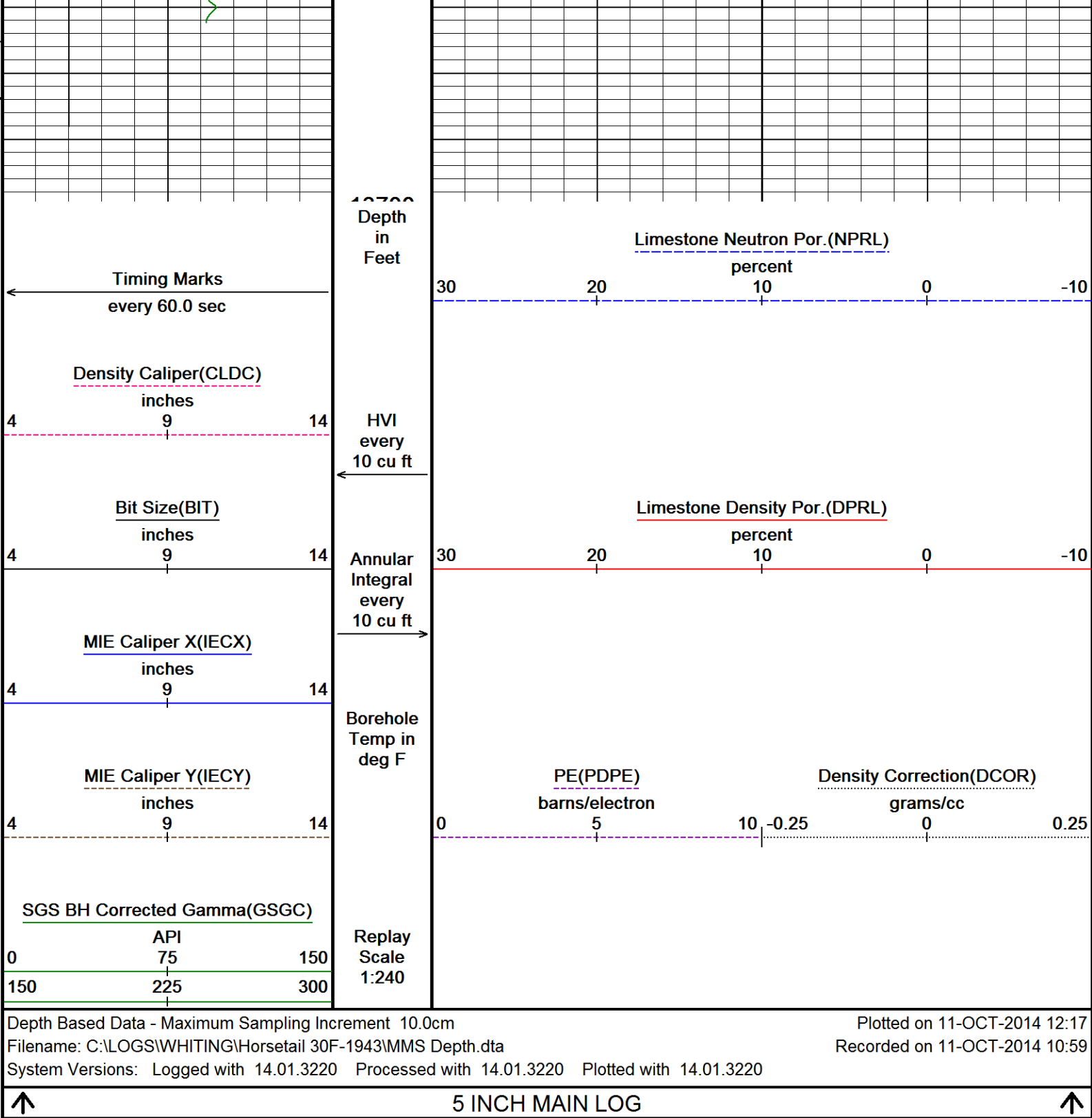


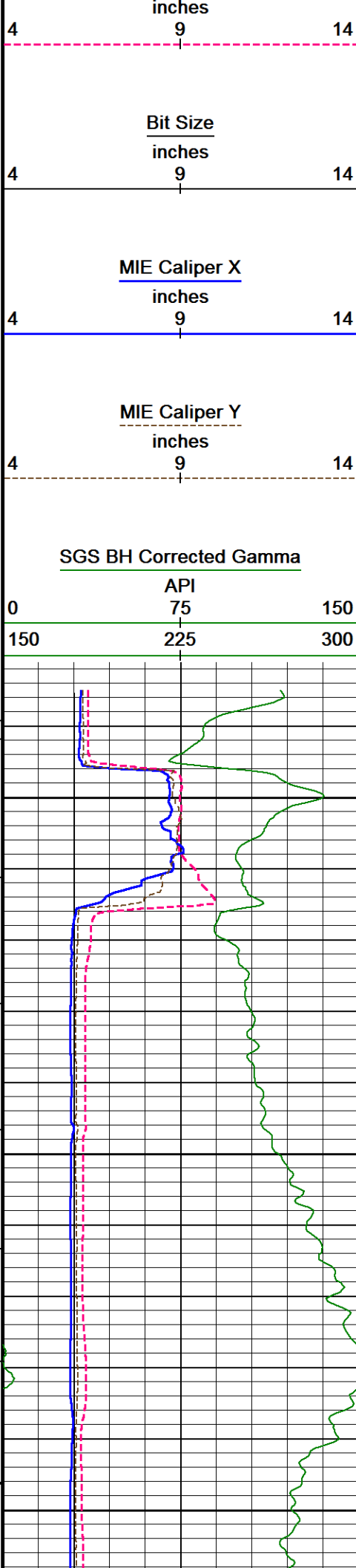




13450  
214°  
13500  
217°  
13550  
219°  
13600  
0  
13650







HVI  
every  
10 cu ft

Annular  
Integral  
every  
10 cu ft

Borehole  
Temp in  
deg F

Replay  
Scale  
1:240

5984

Casing  
Shoe

6000

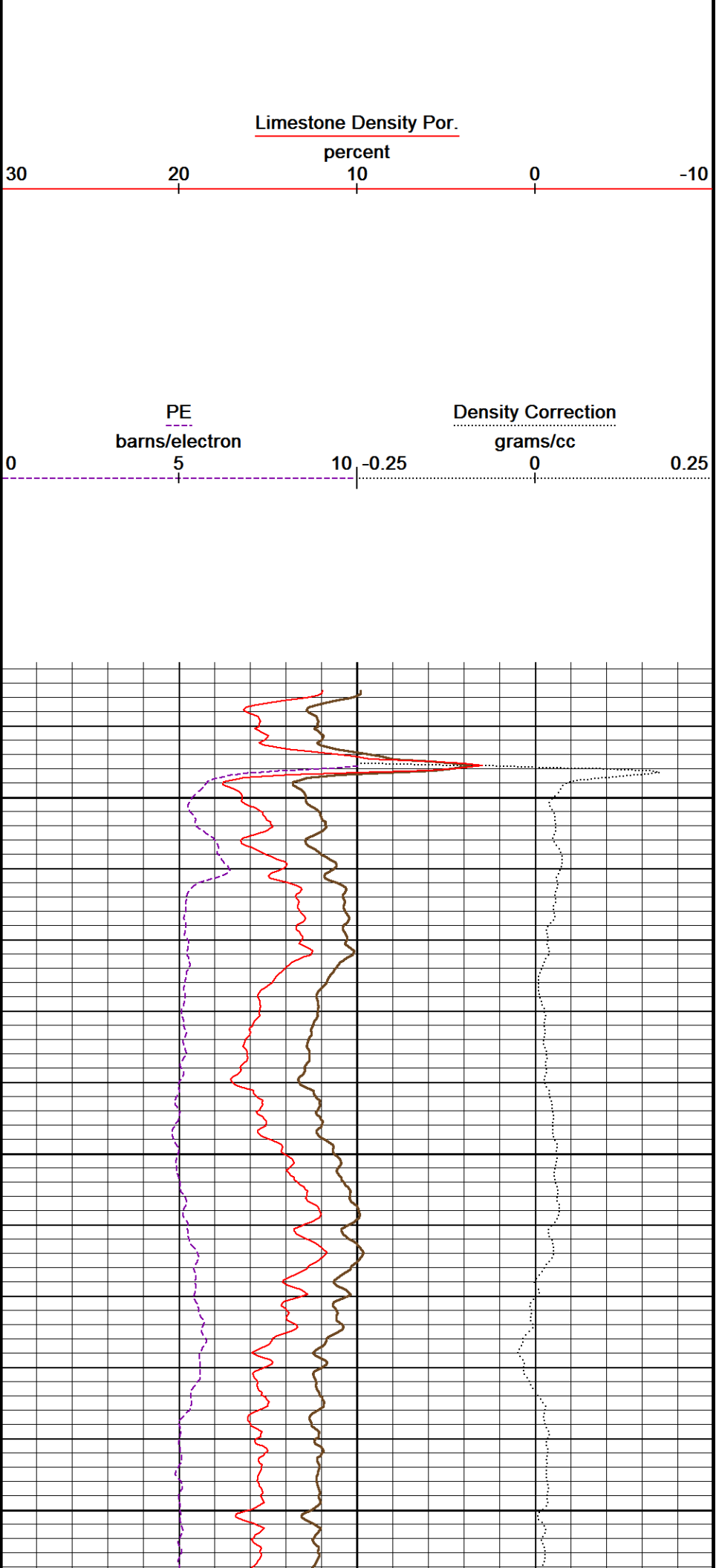
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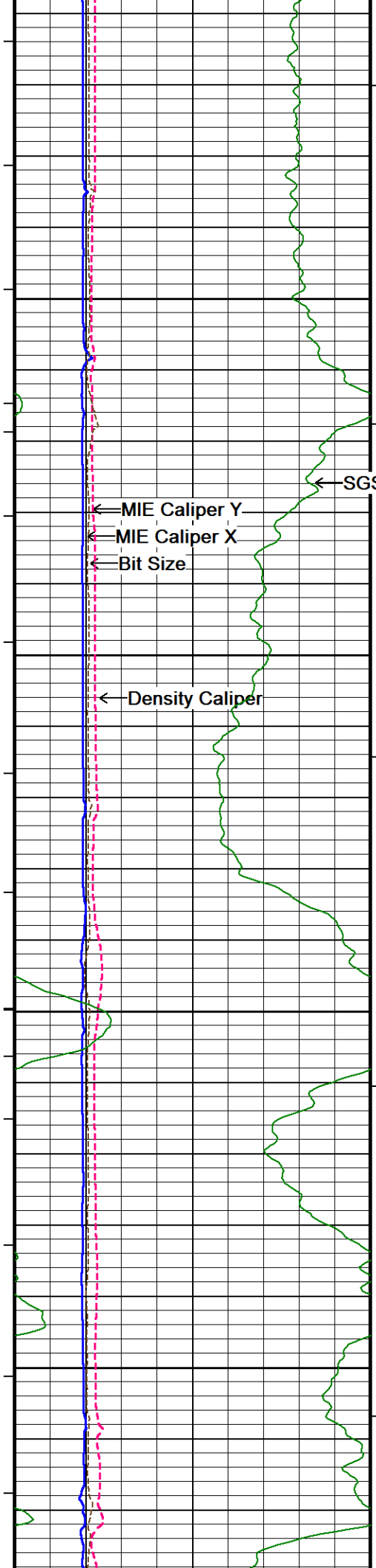
201°

6050

201°

6100





202°

6150

← SGS BH Corrected Gamma

202°

6200

← MIE Caliper Y  
← MIE Caliper X  
← Bit Size

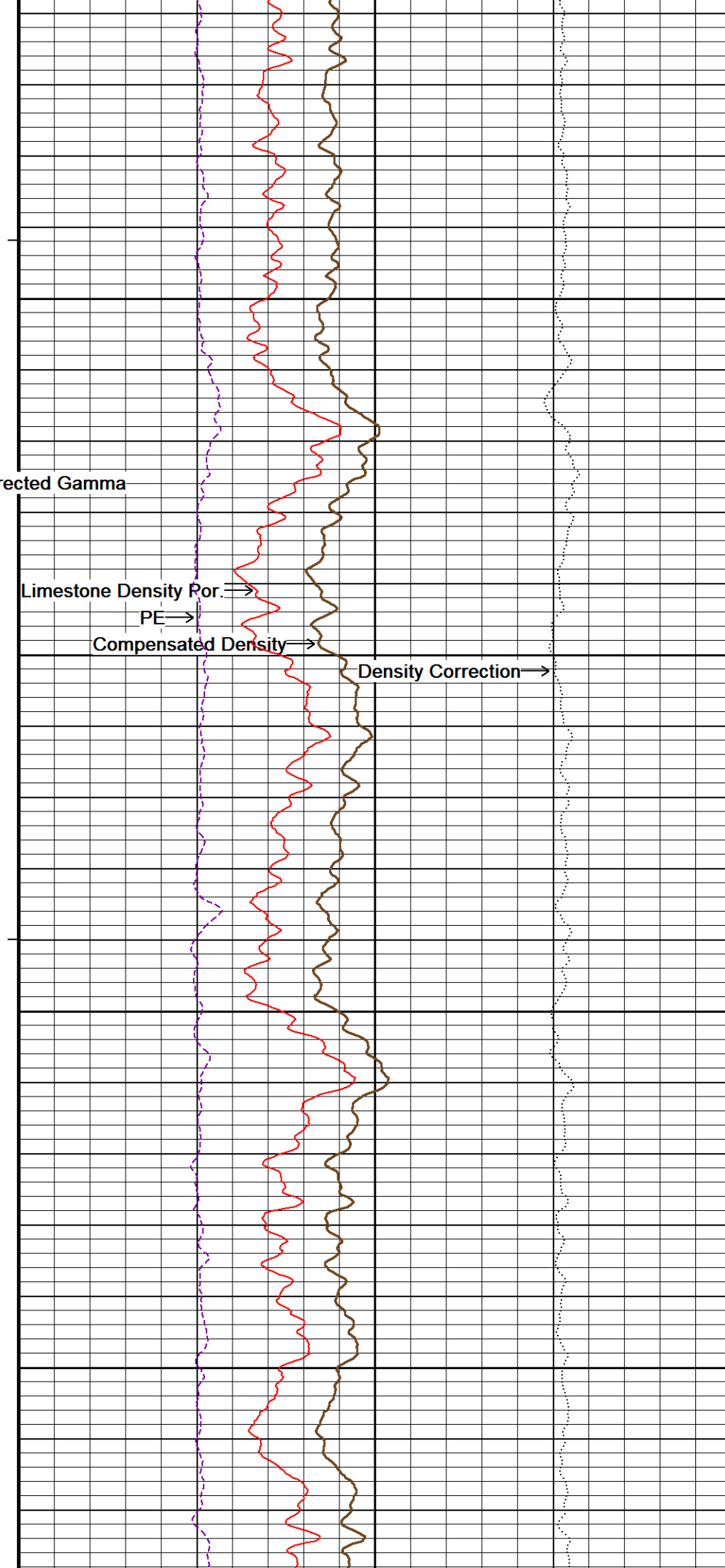
← Density Caliper

202°

6250

203°

6300

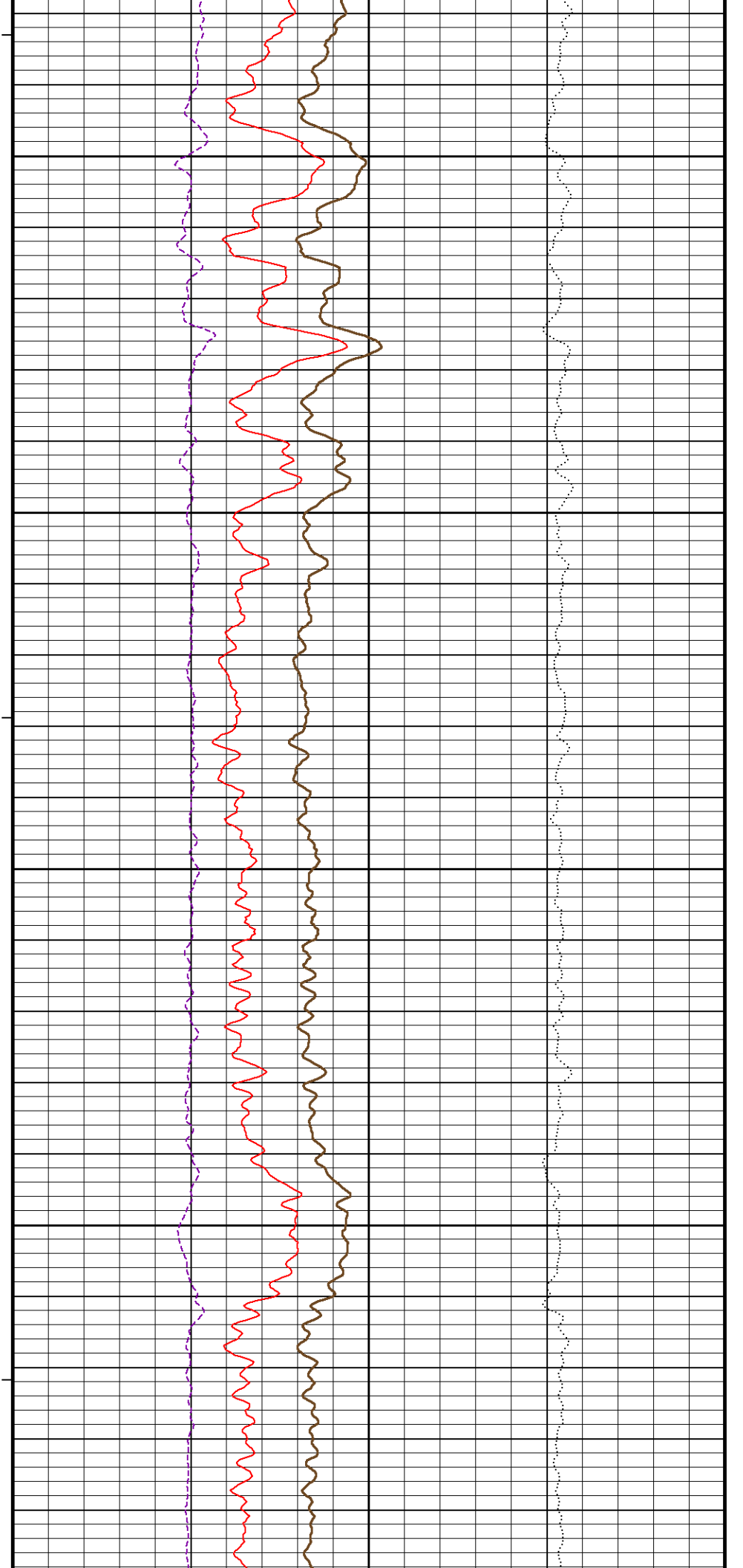
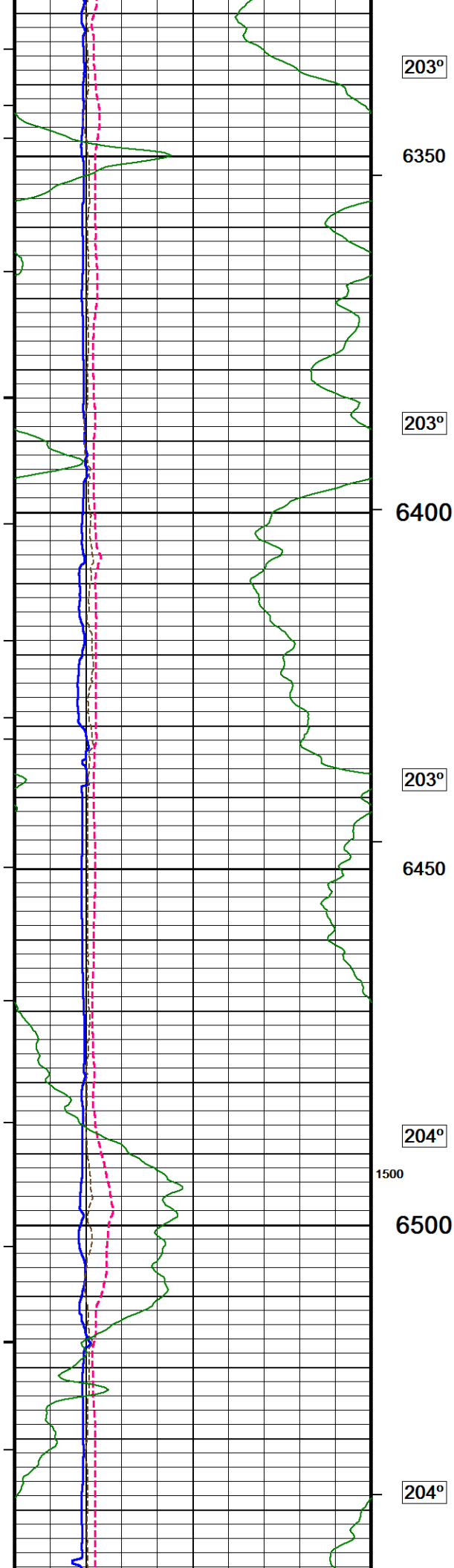


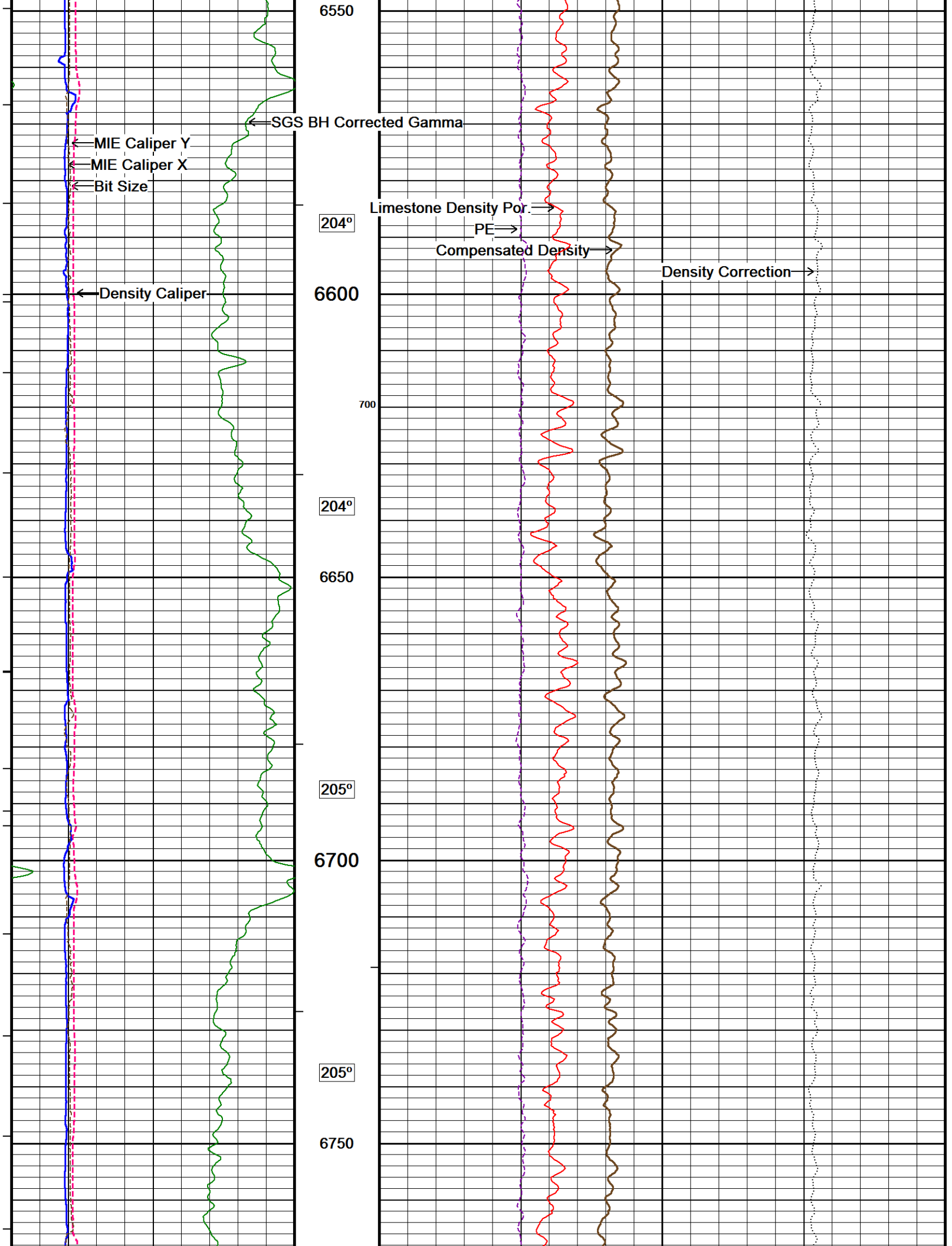
Limestone Density Por. ⇒

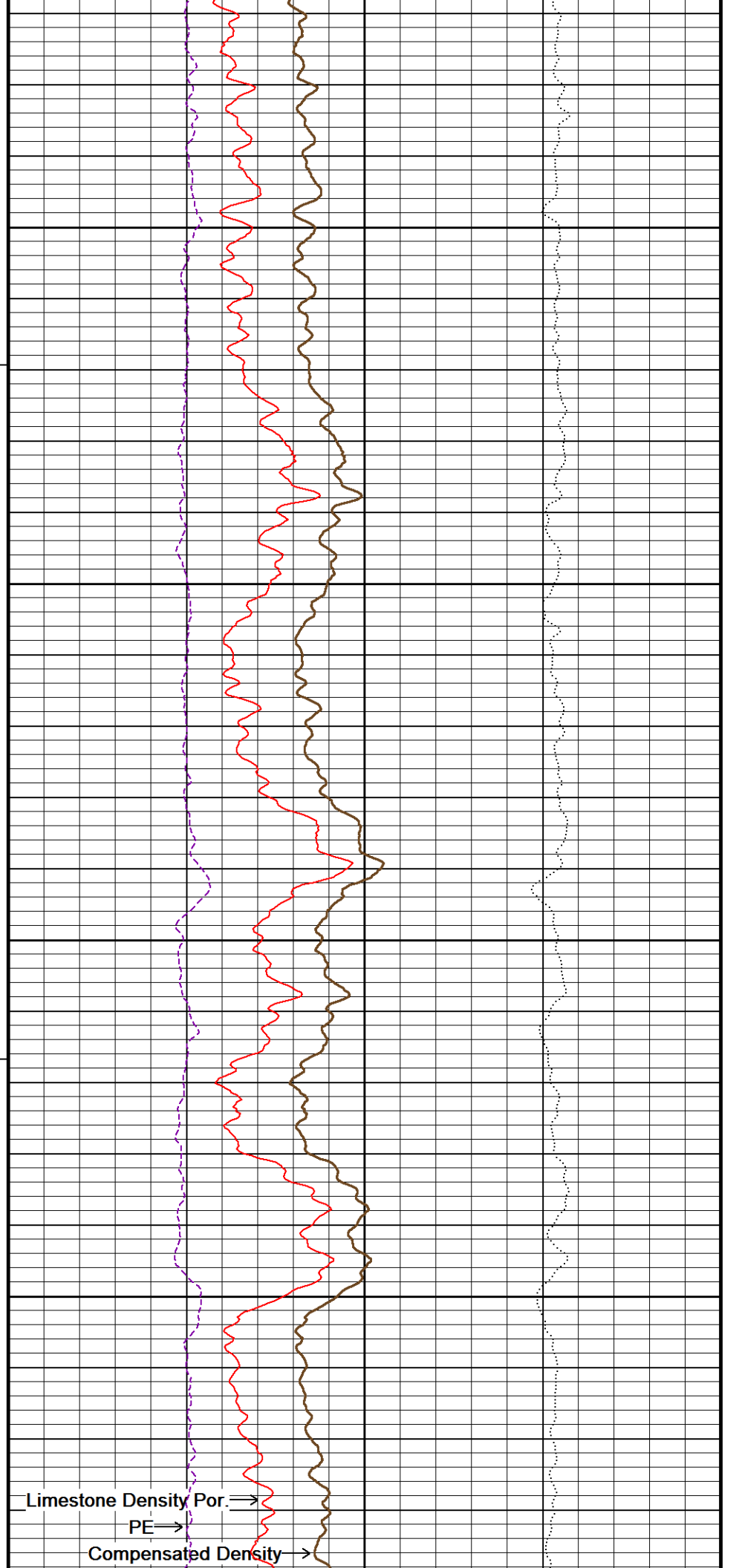
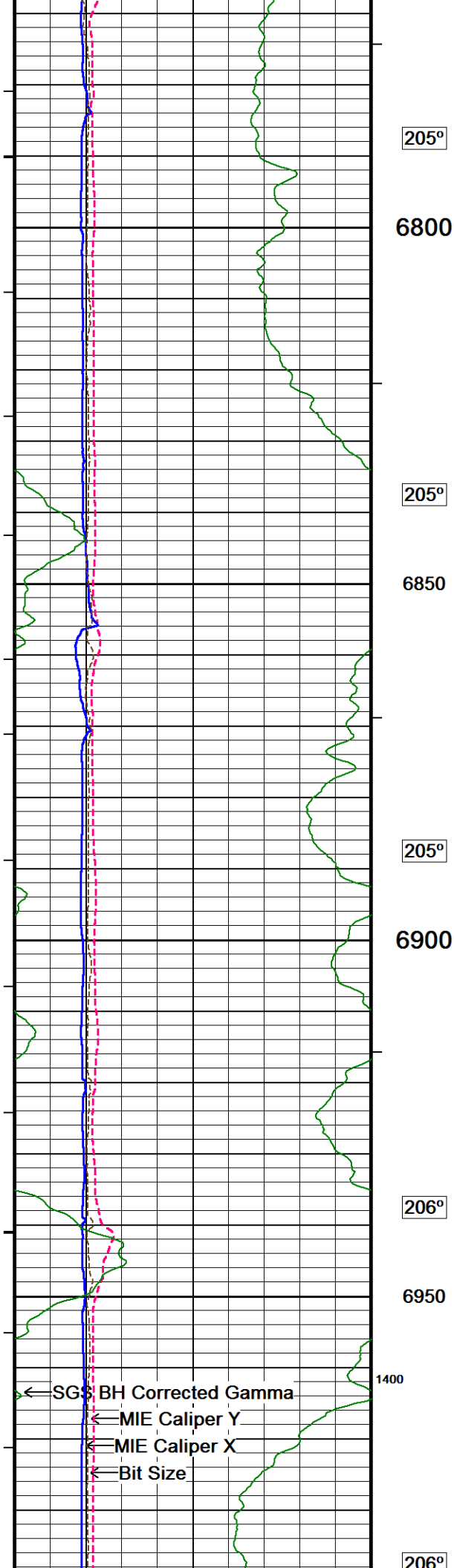
PE ⇒

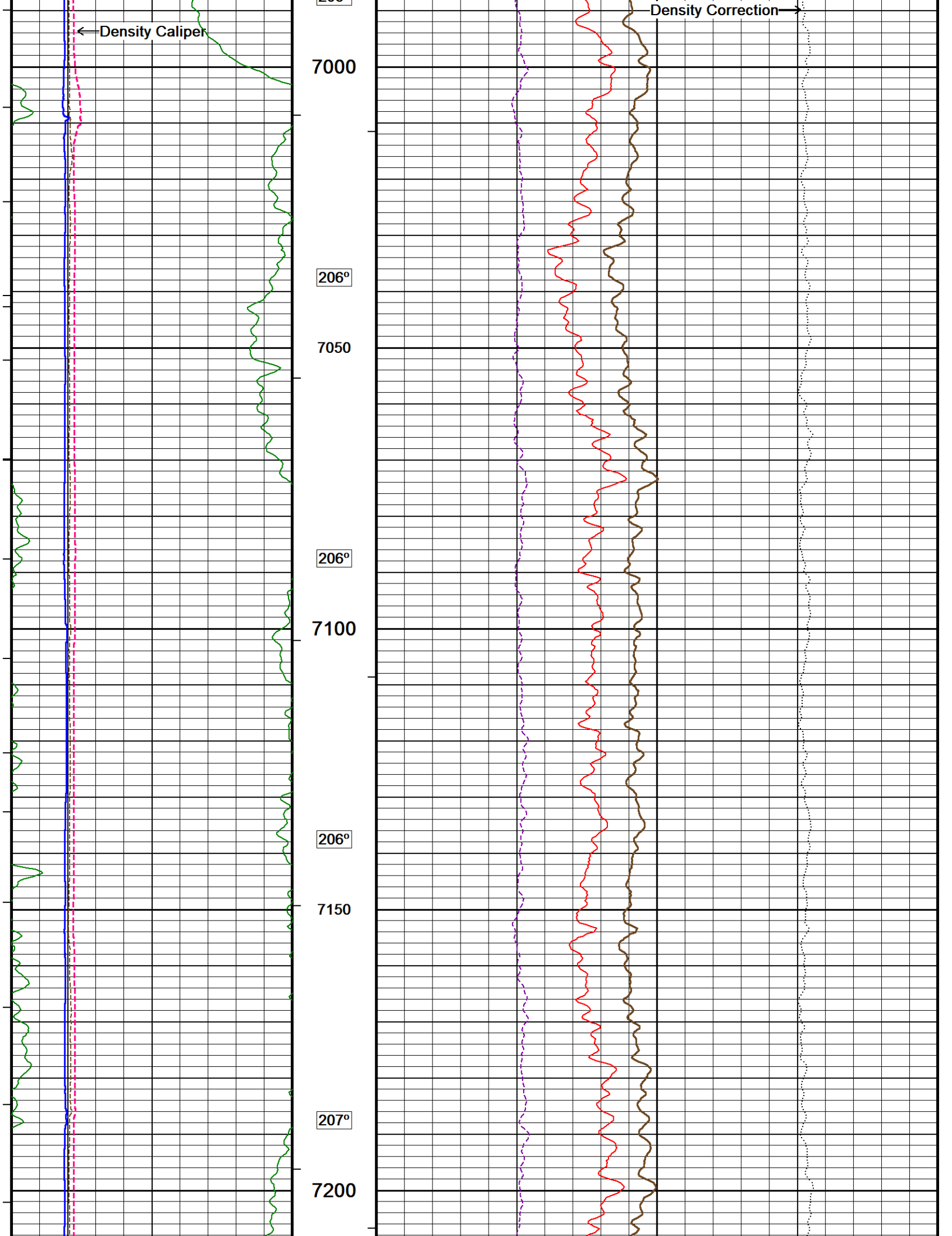
Compensated Density ⇒

Density Correction ⇒

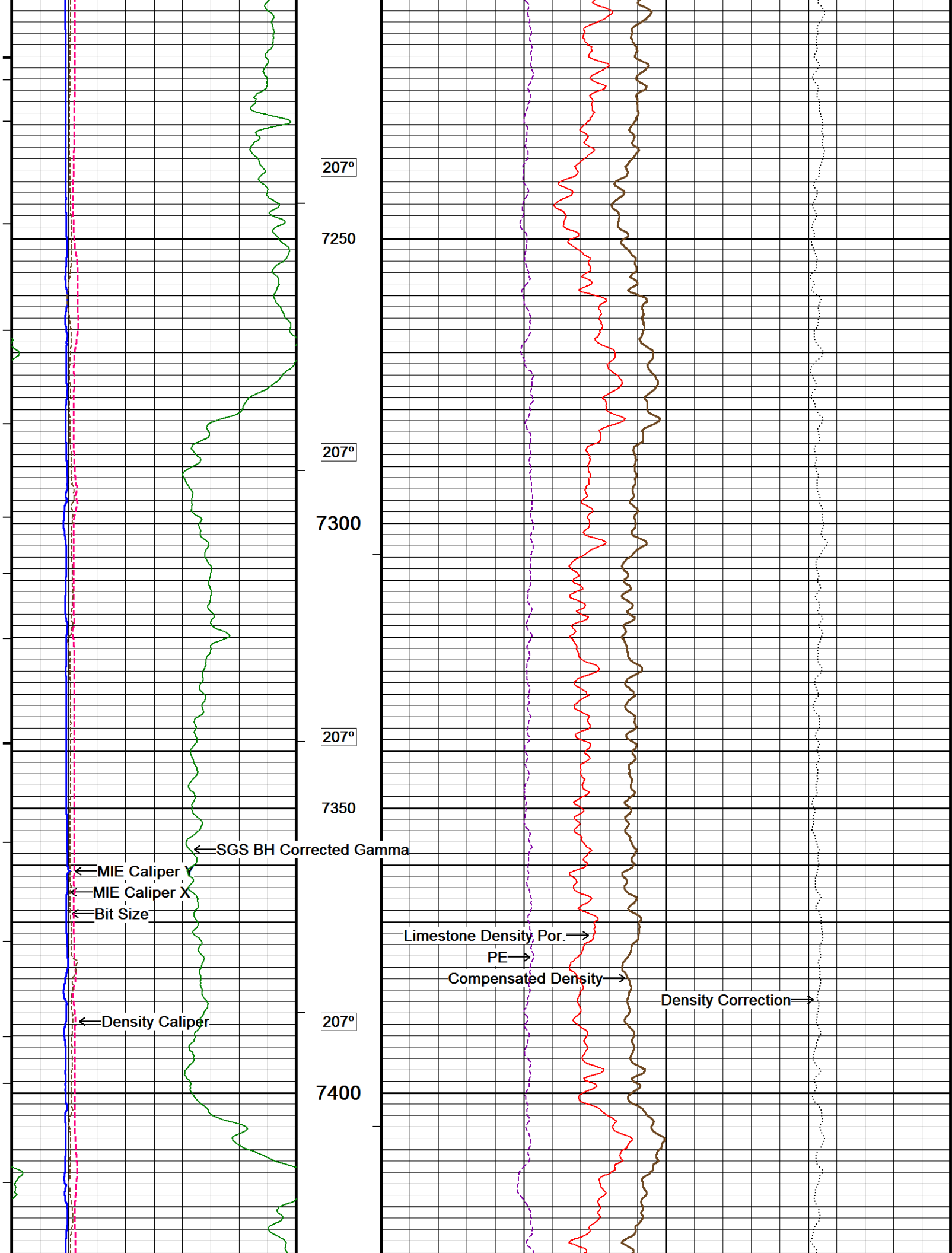


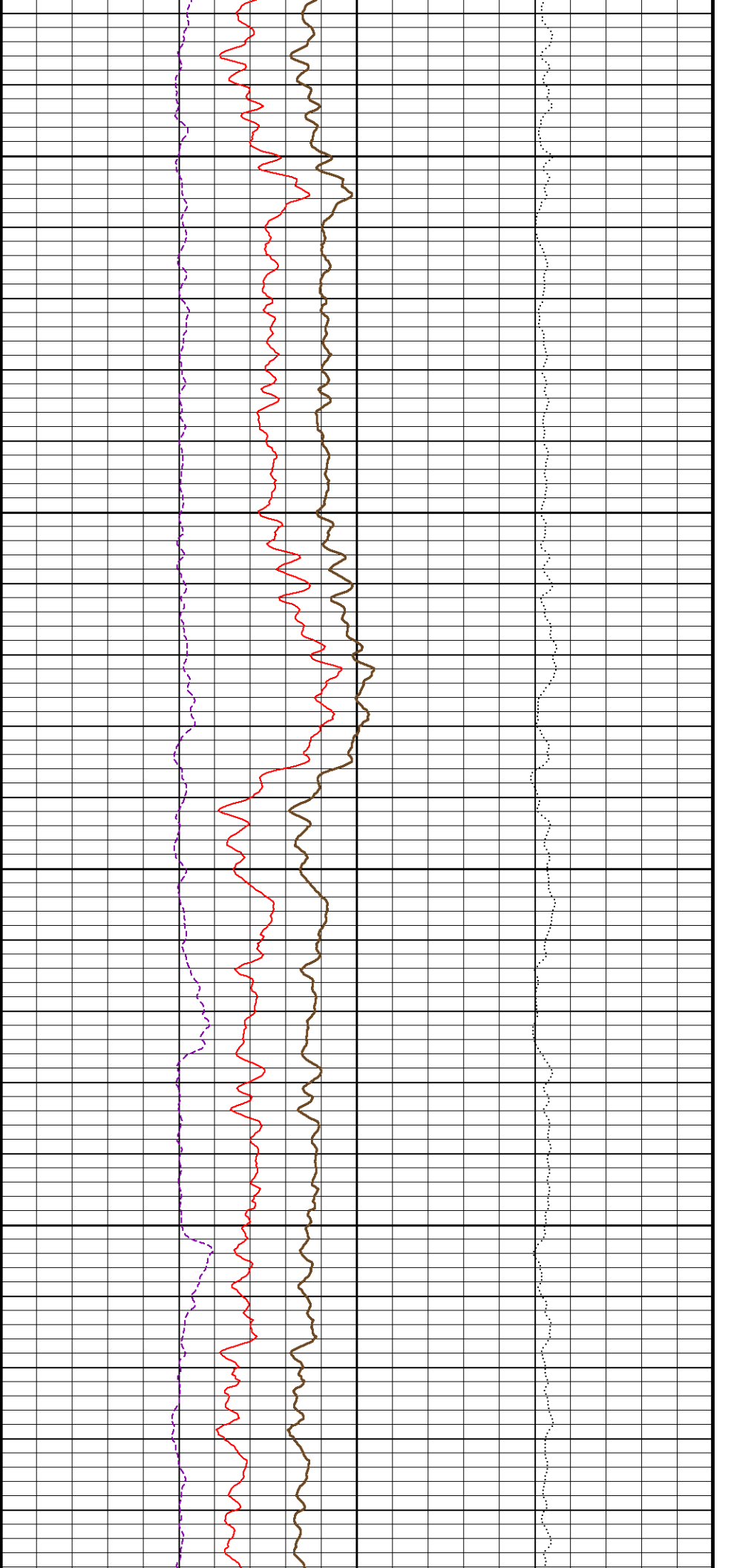
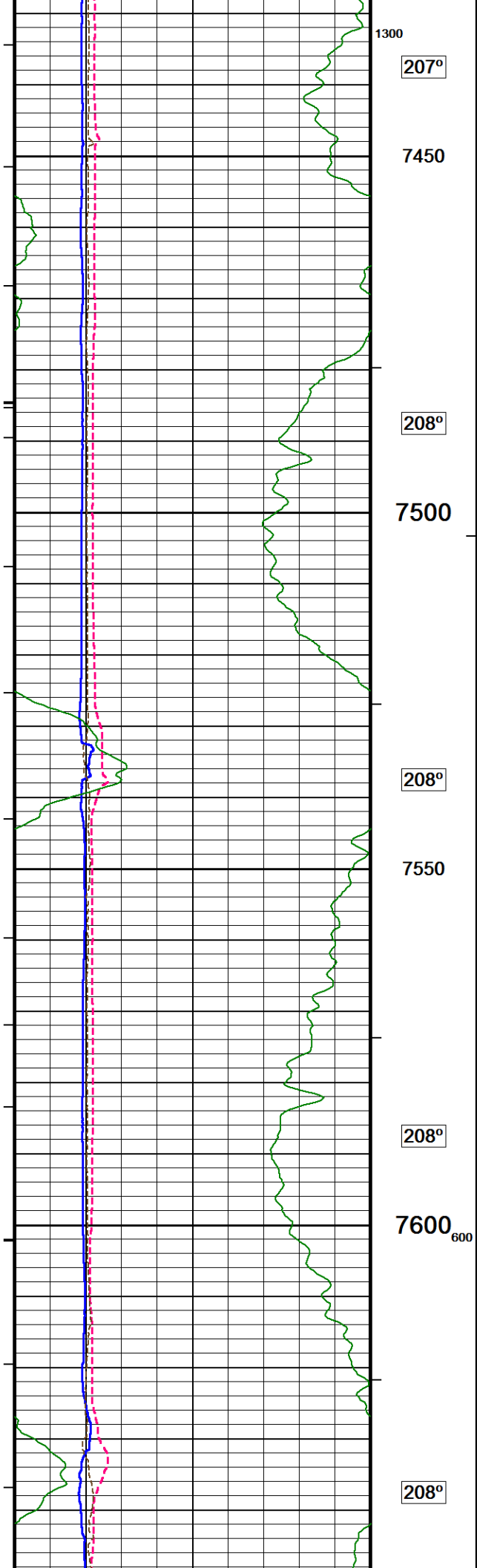


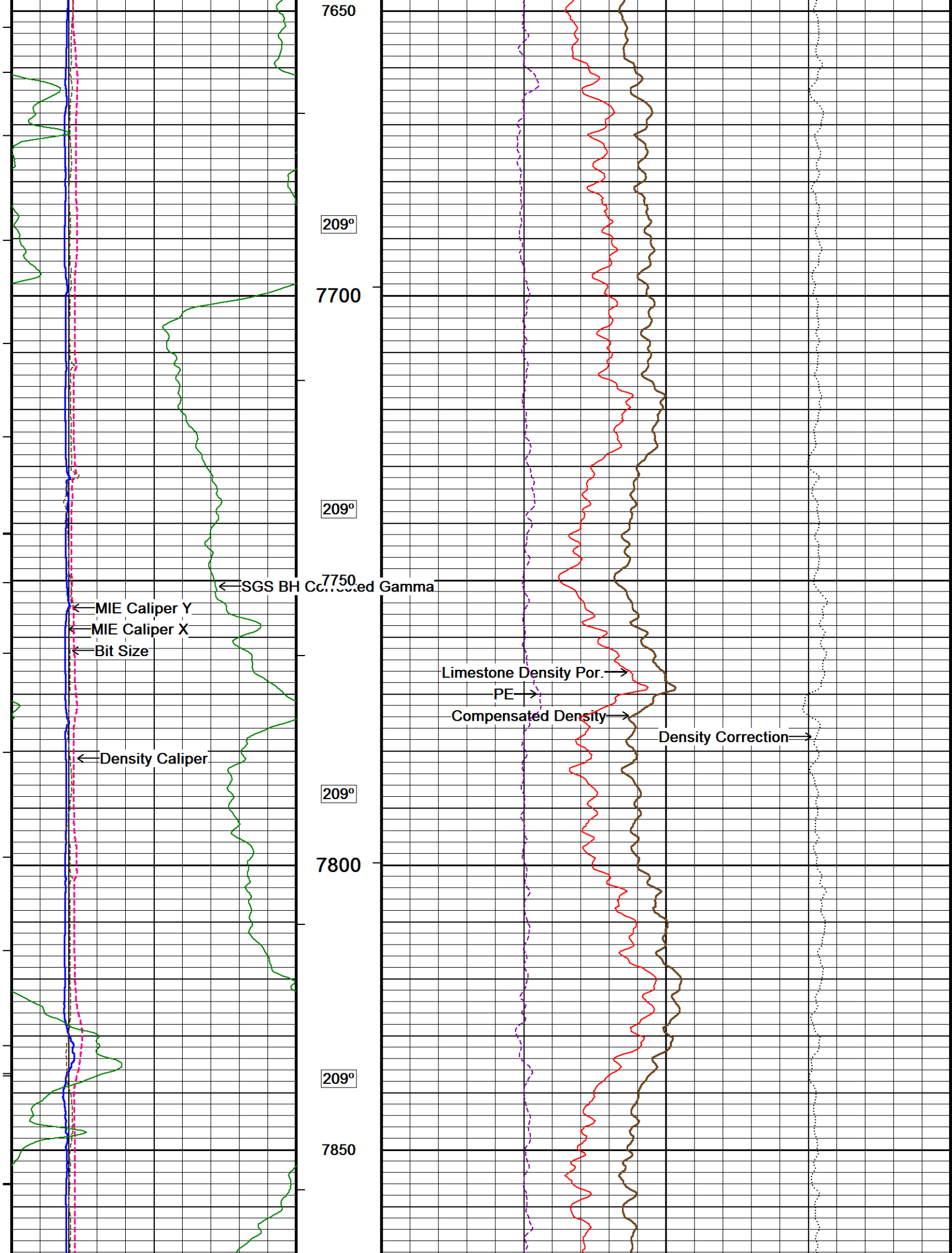


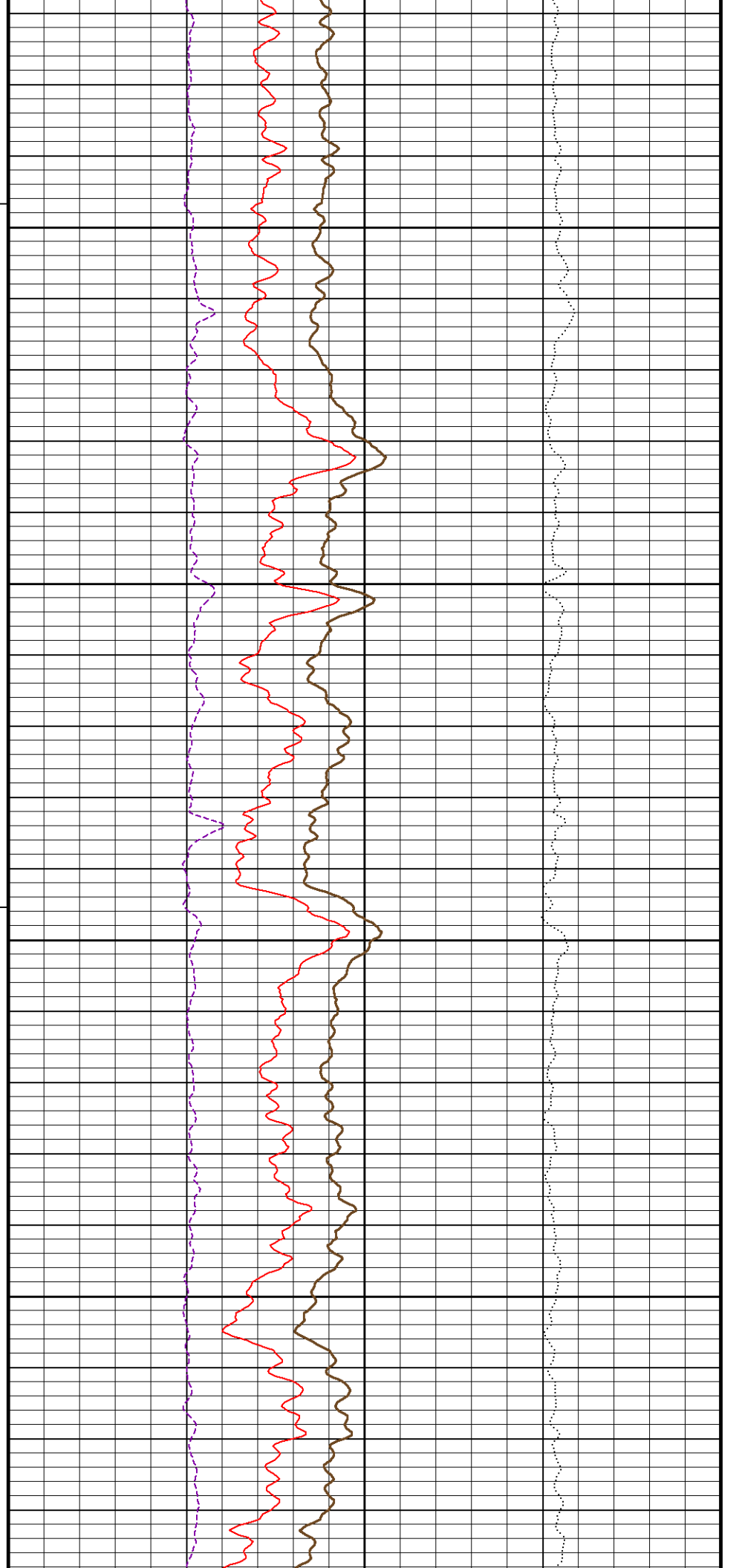
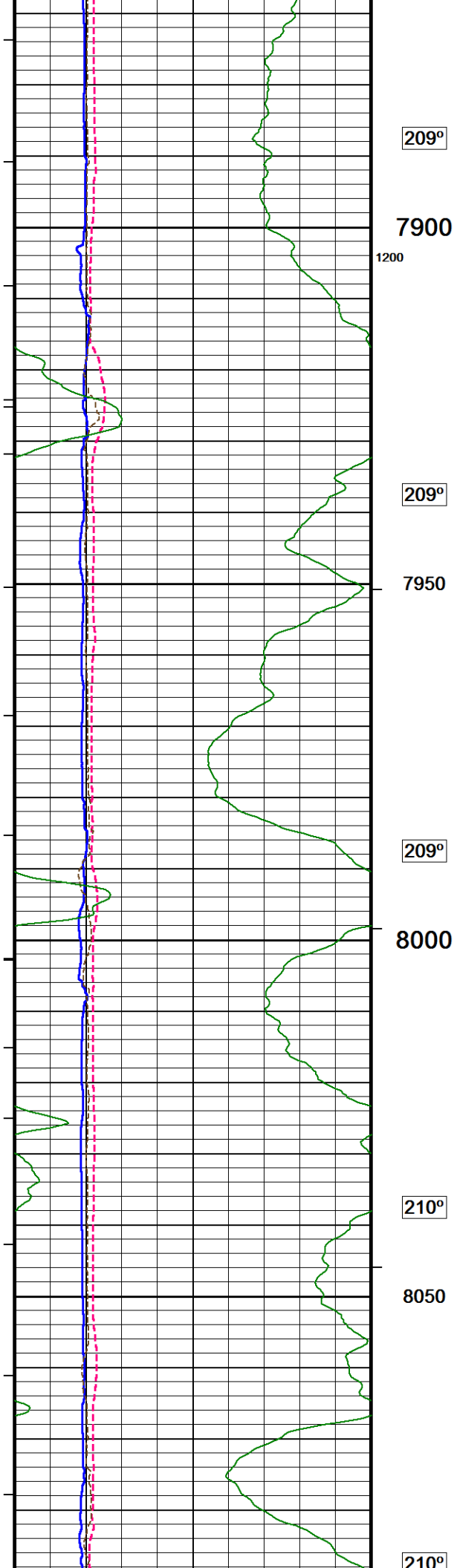


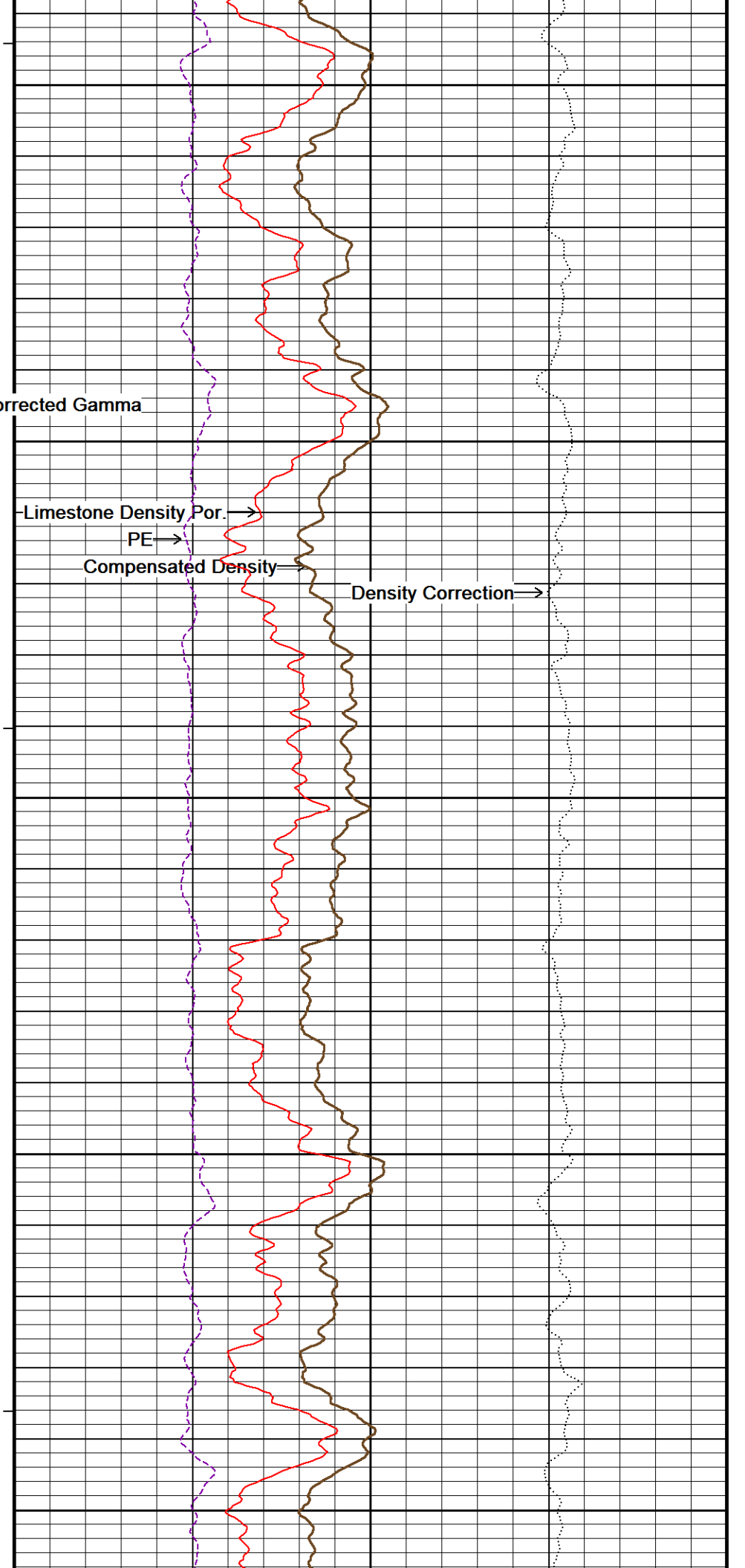
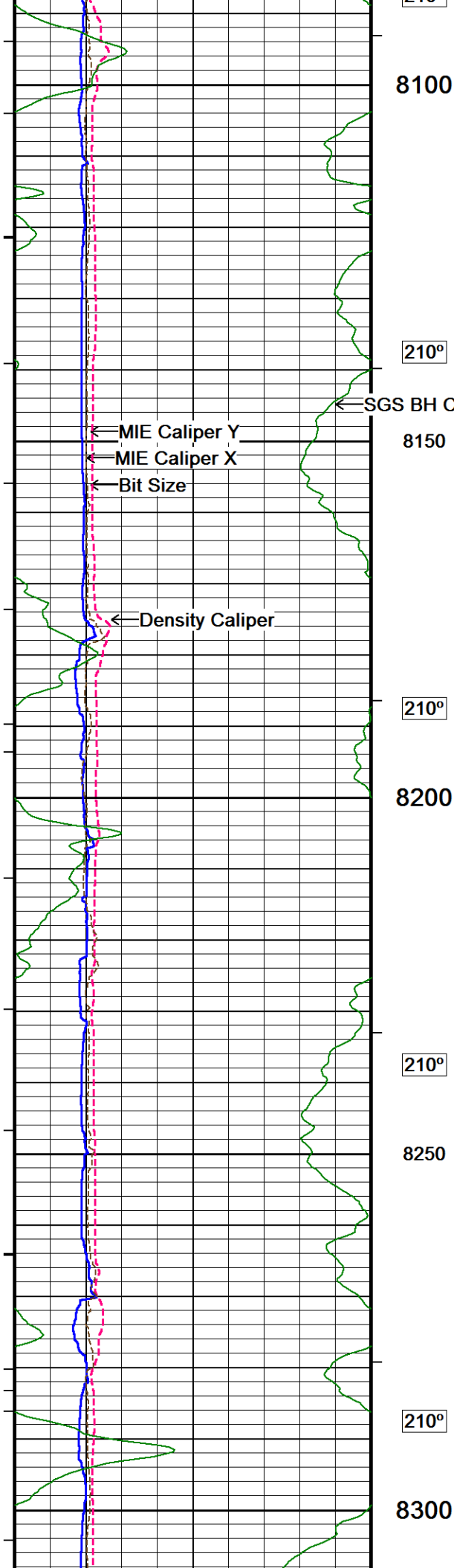


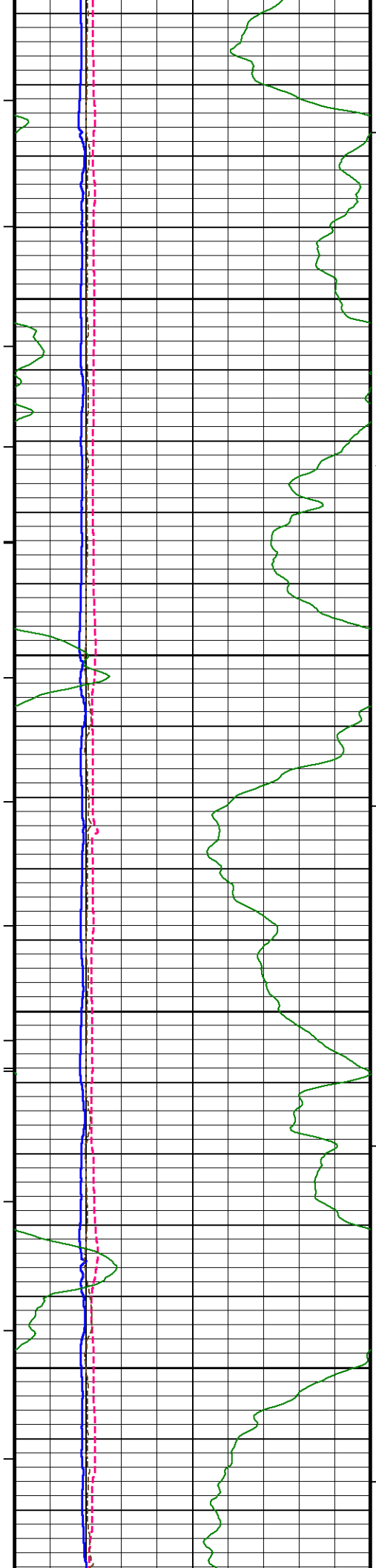












211°

8350

1100

211°

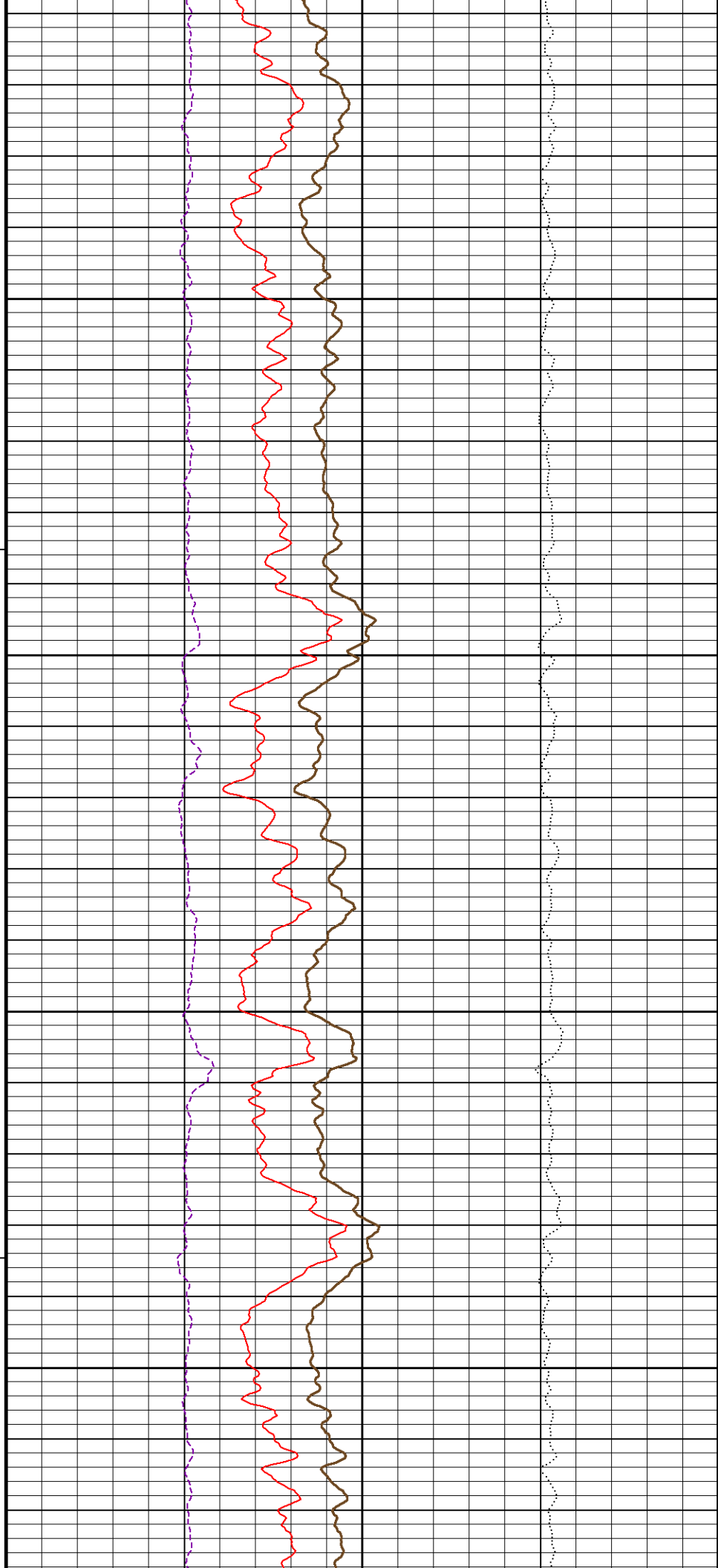
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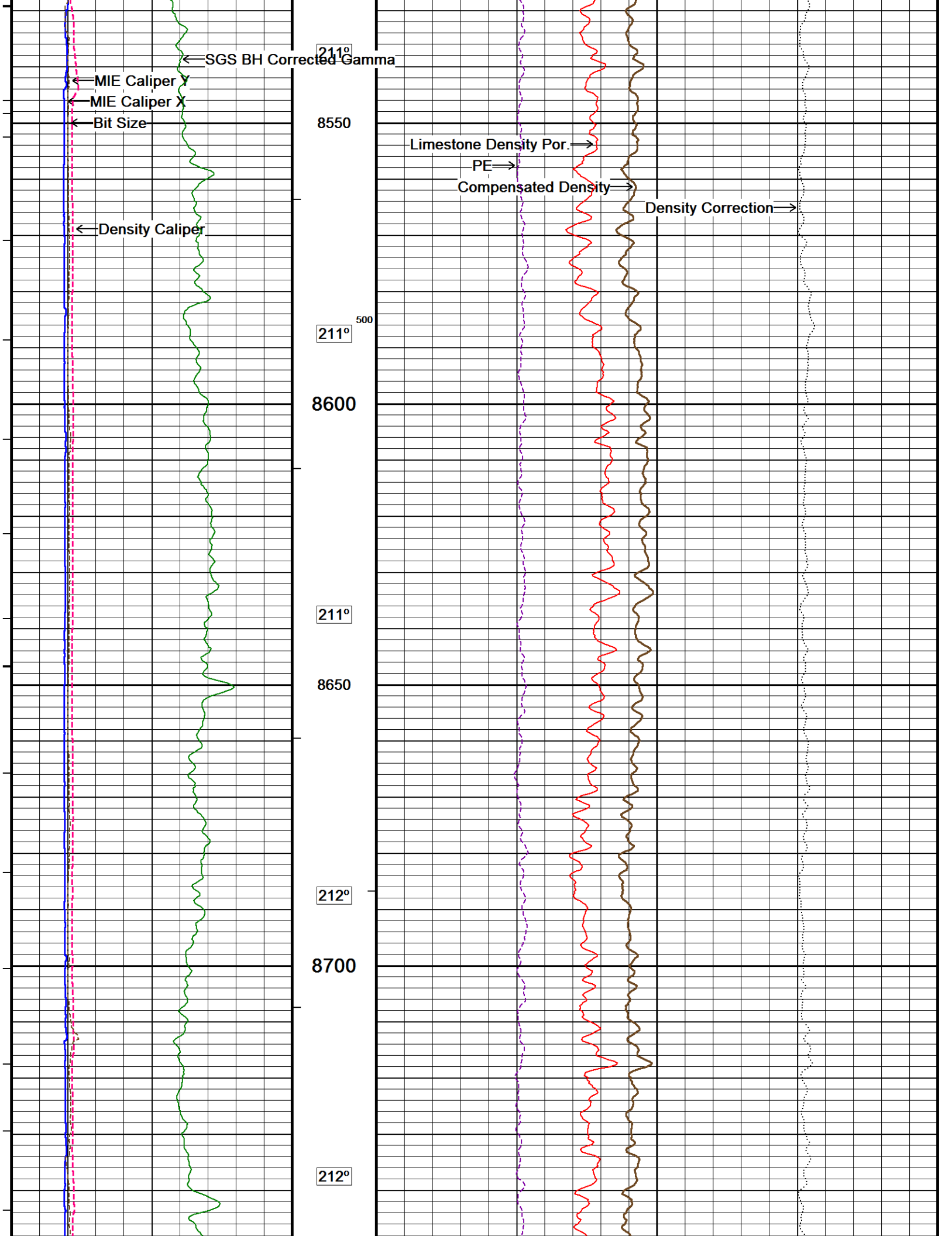
211°

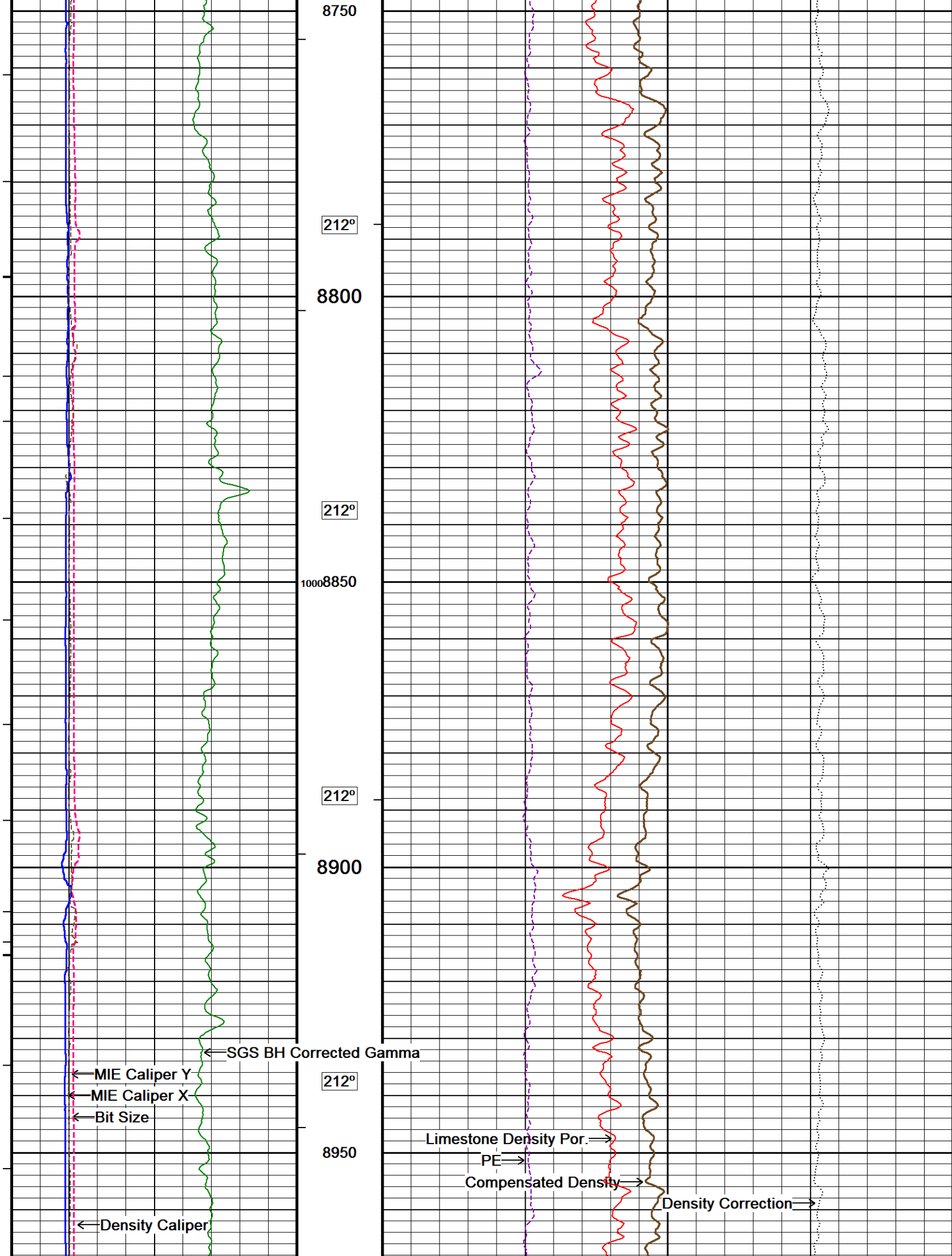
8450

211°

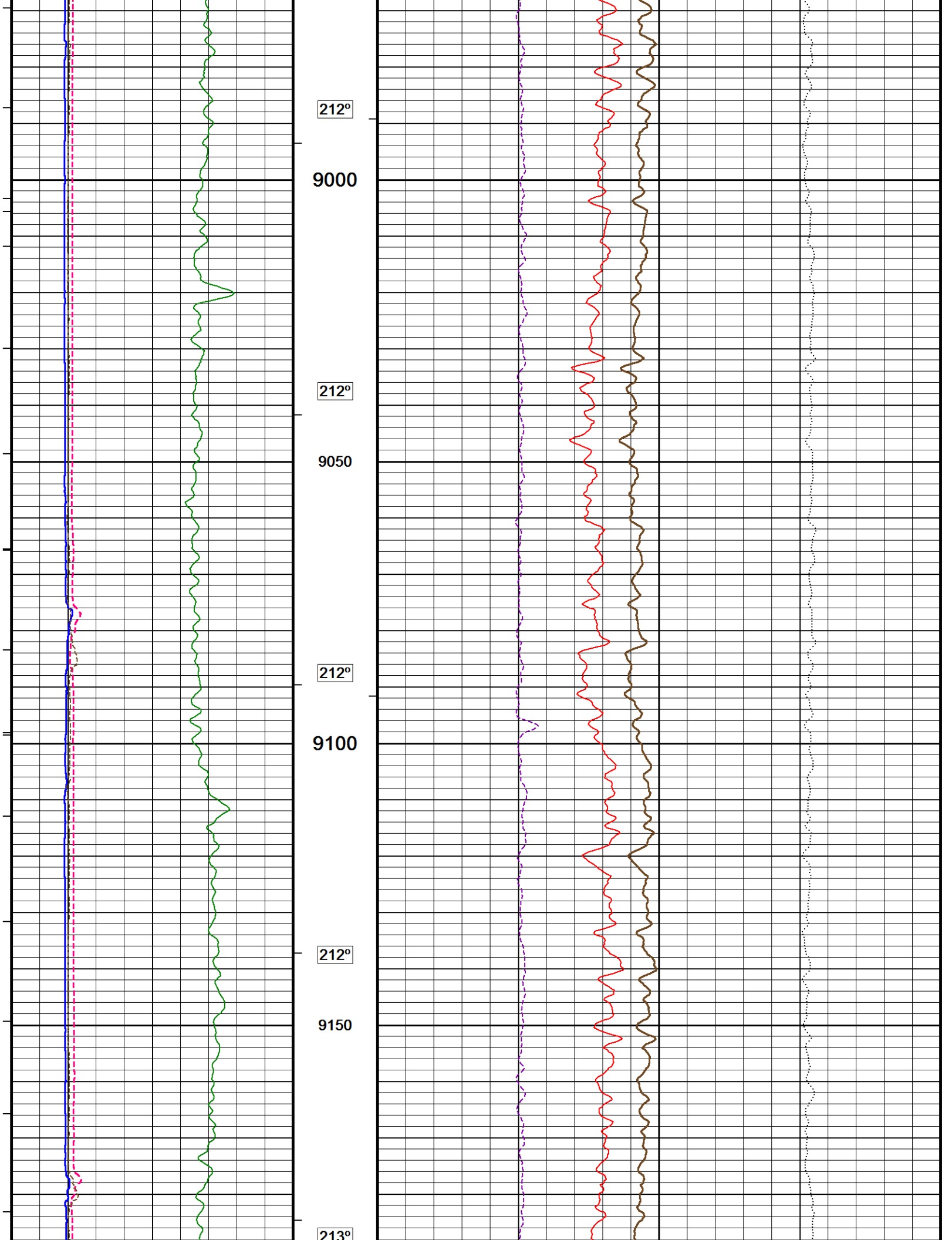
8500

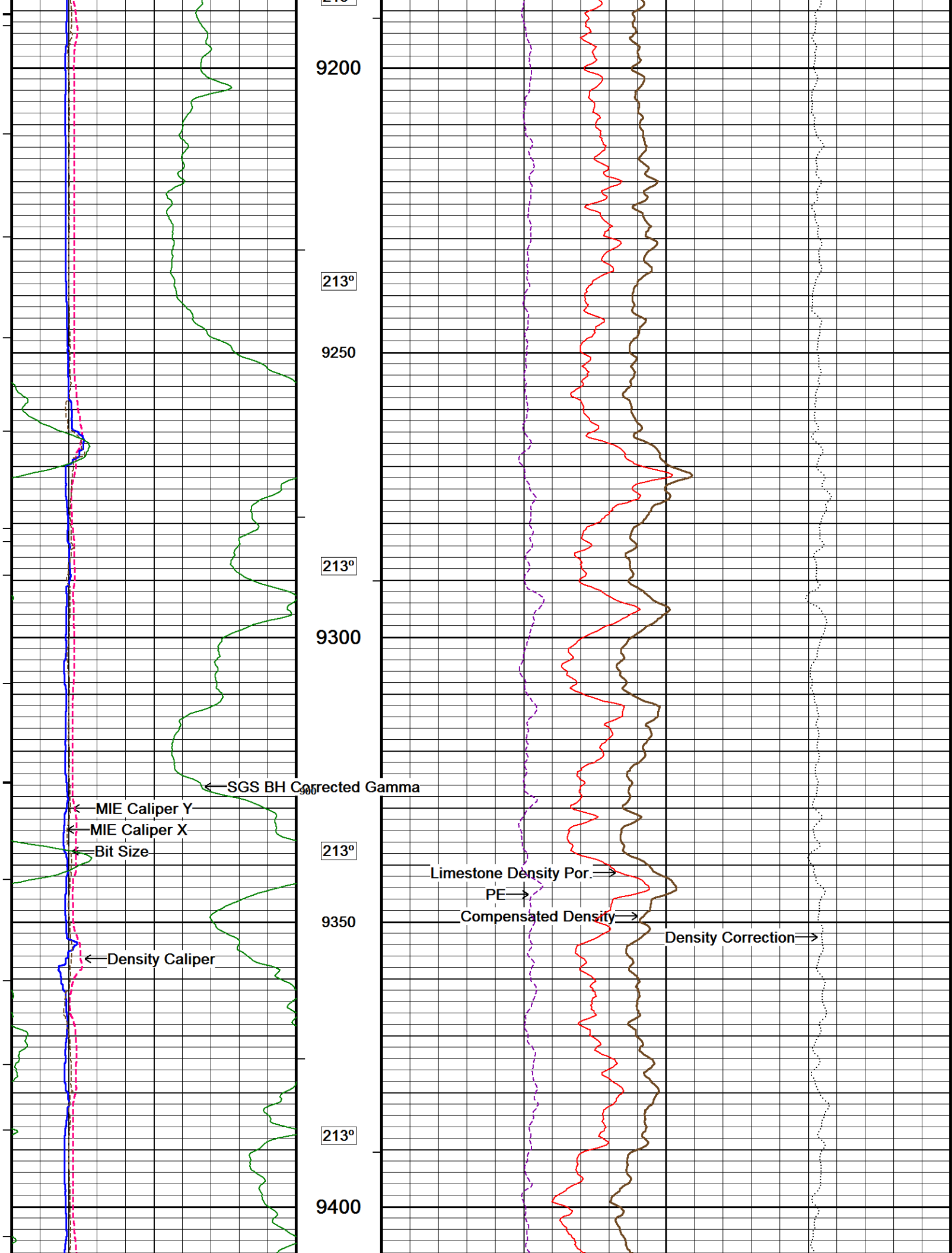














213°

9450

213°

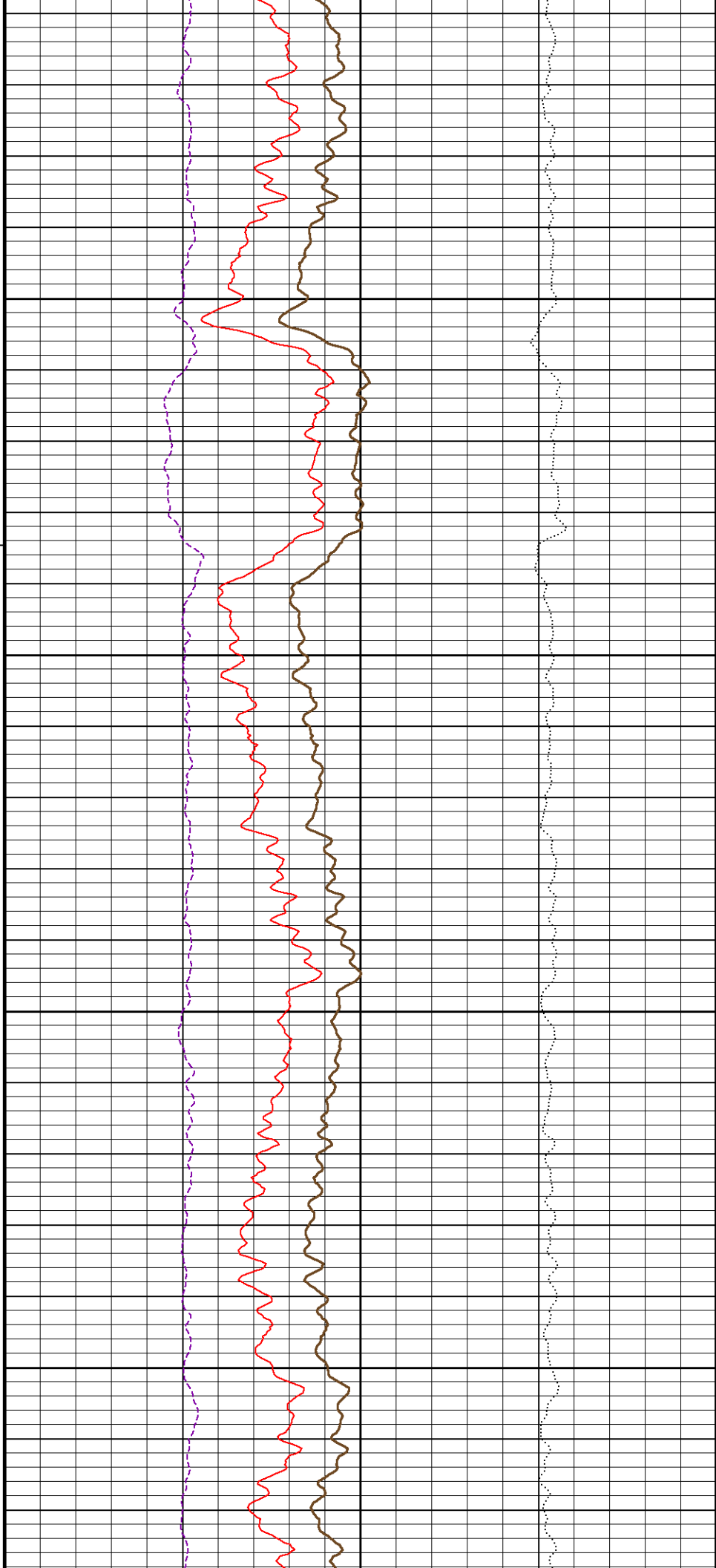
9500

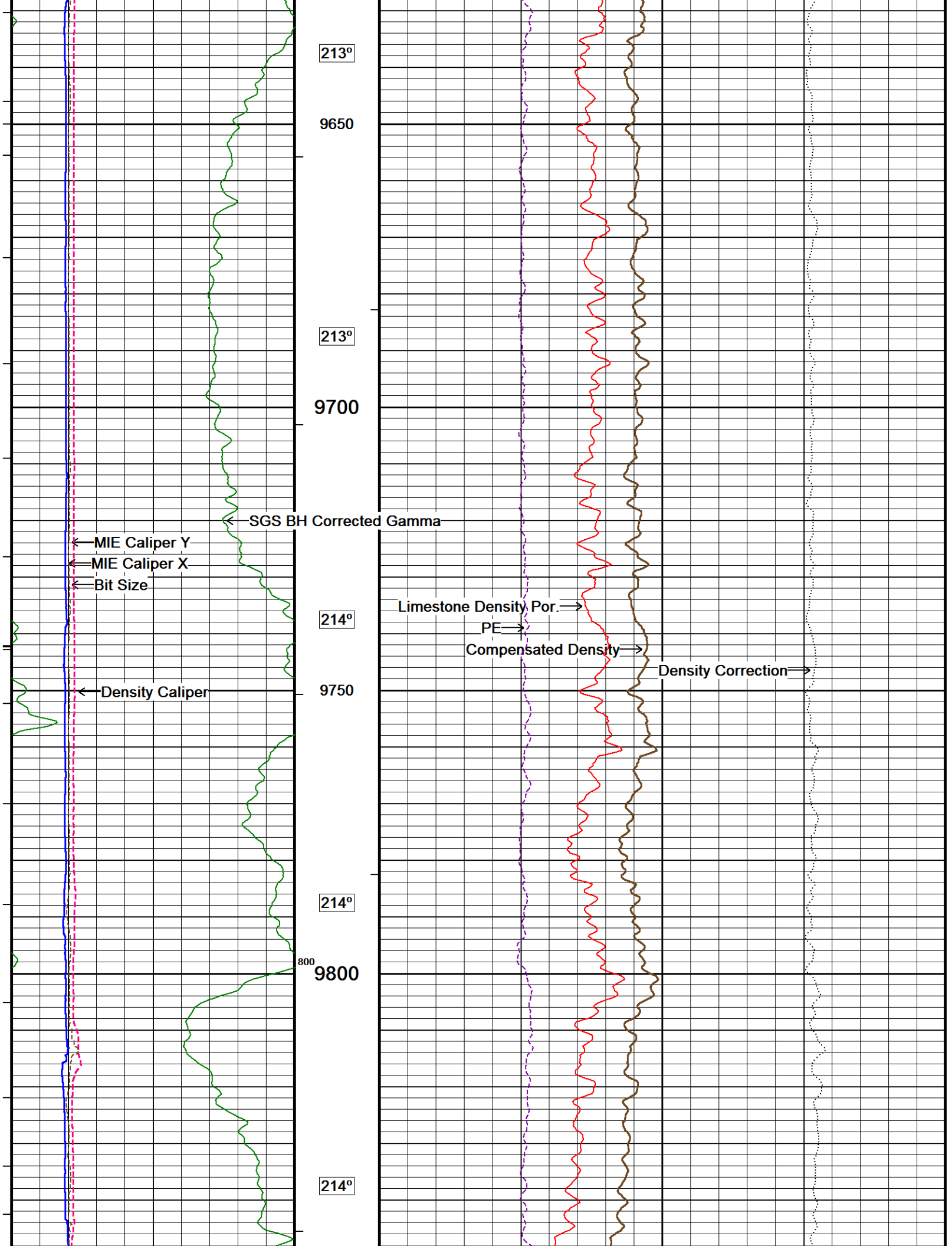
213°

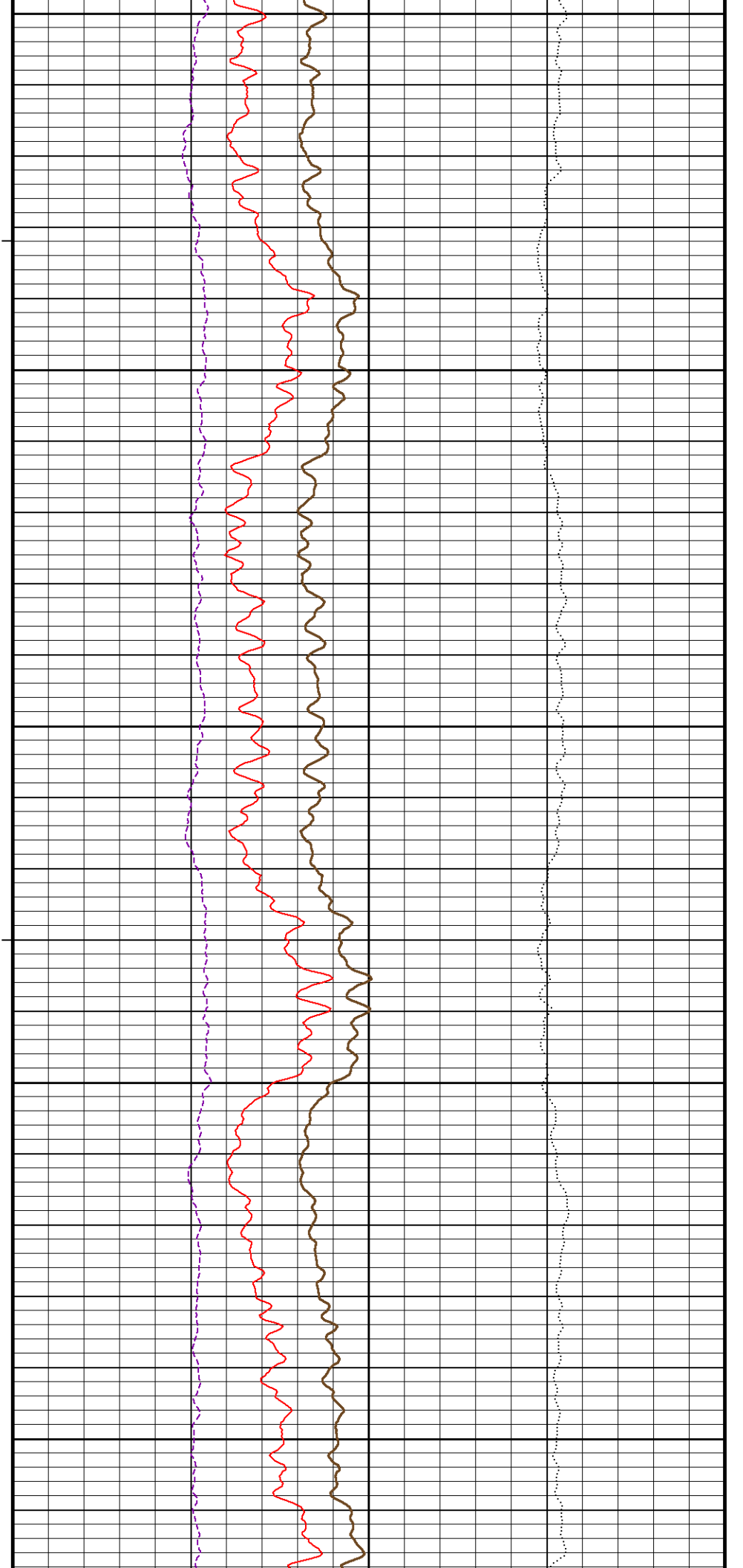
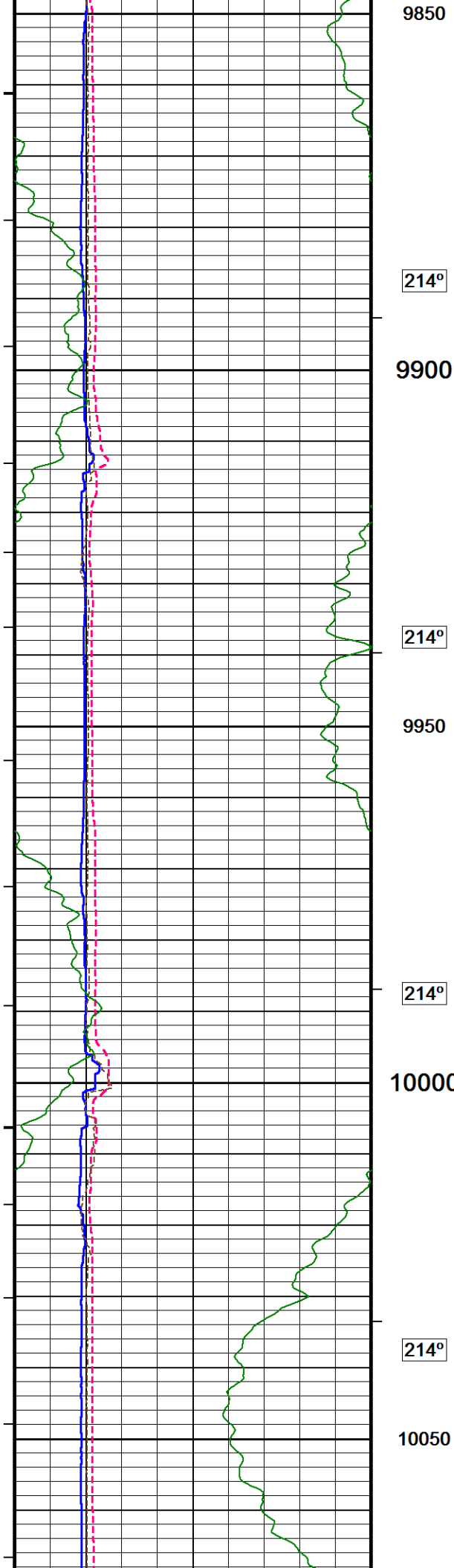
9550

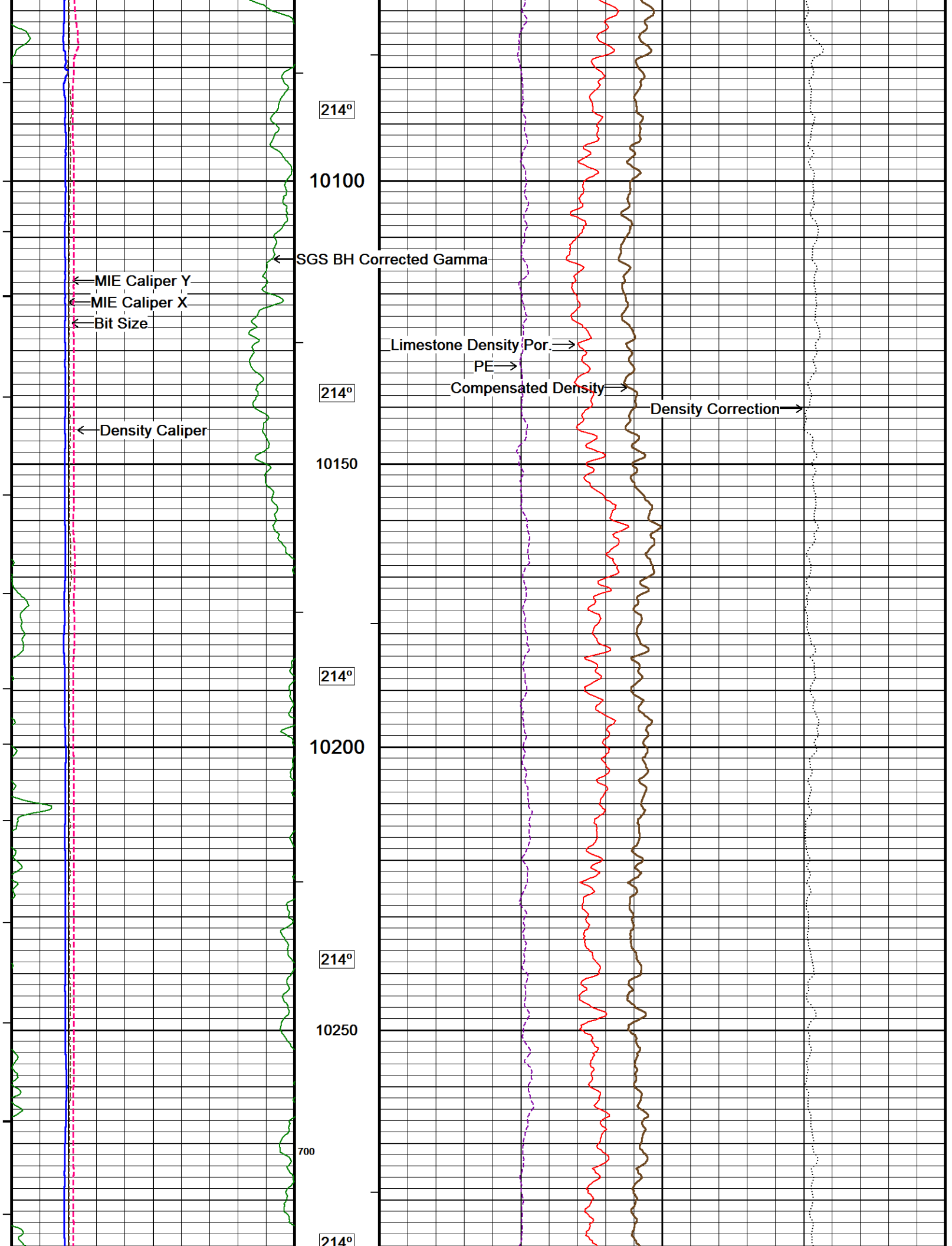
213°  
400

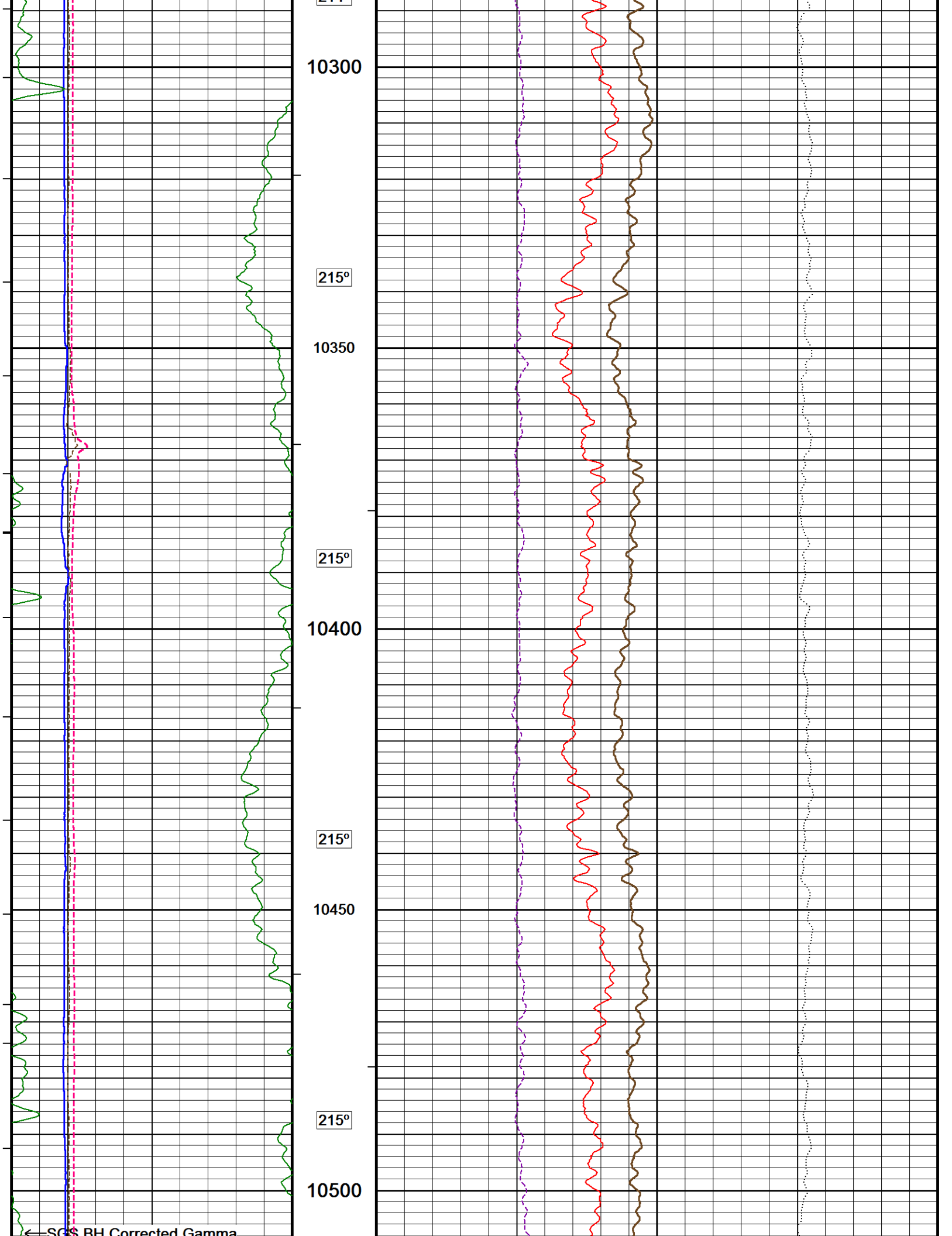
9600

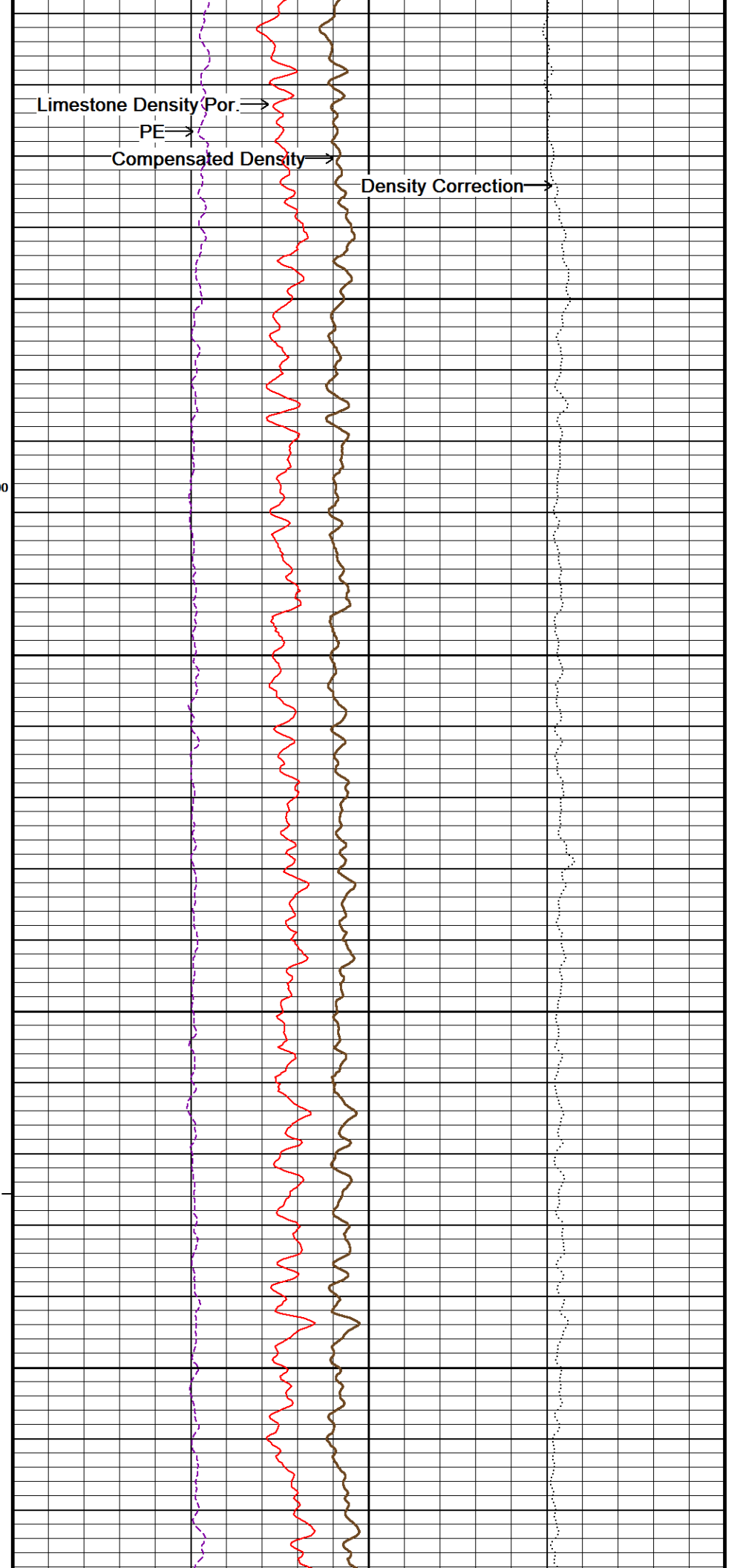
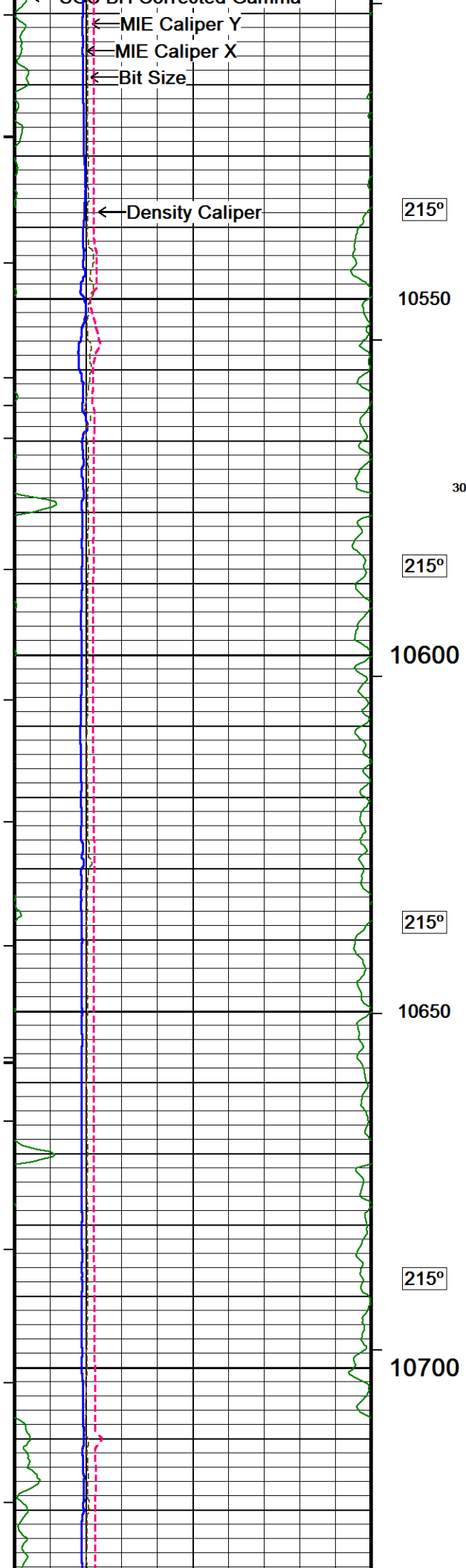




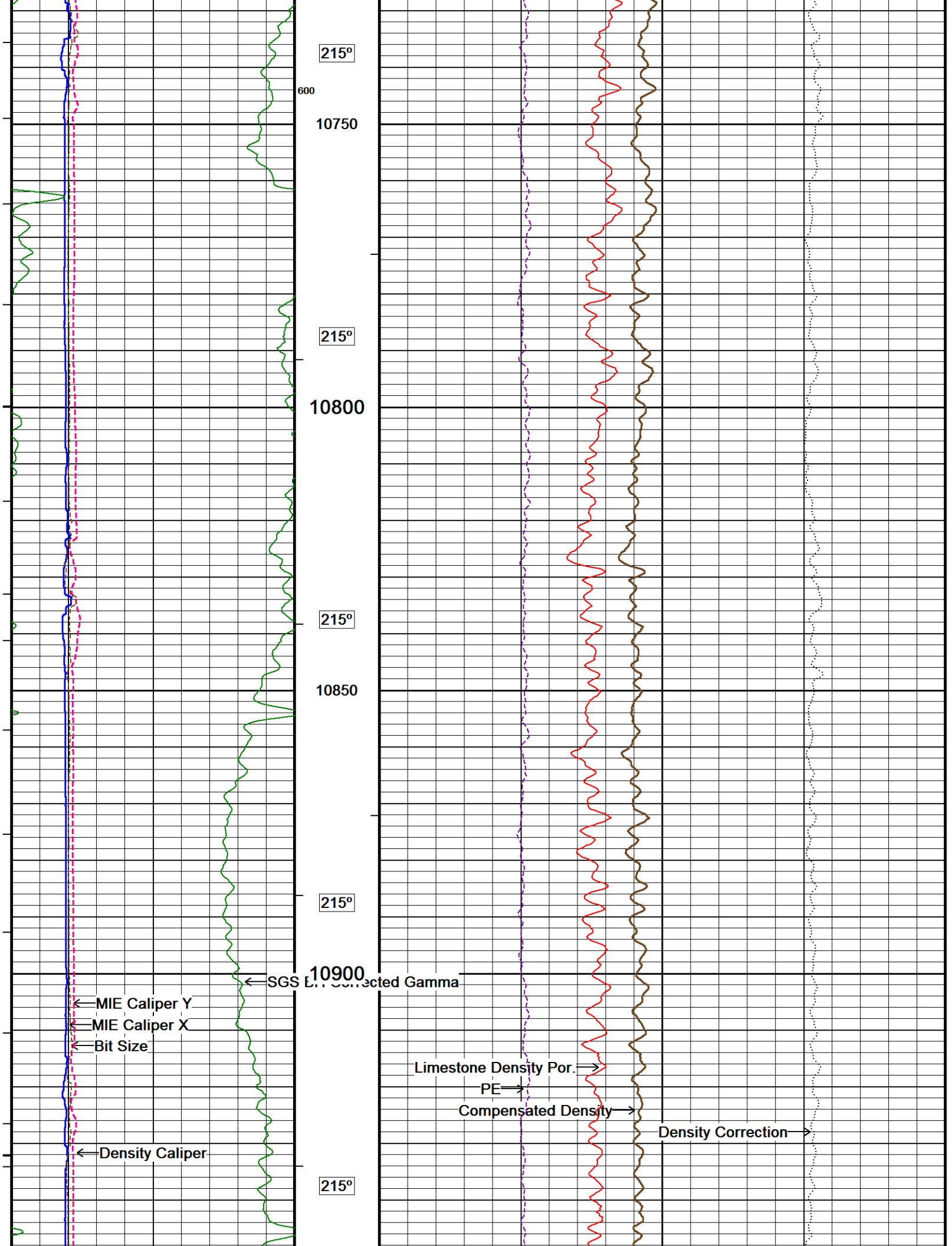


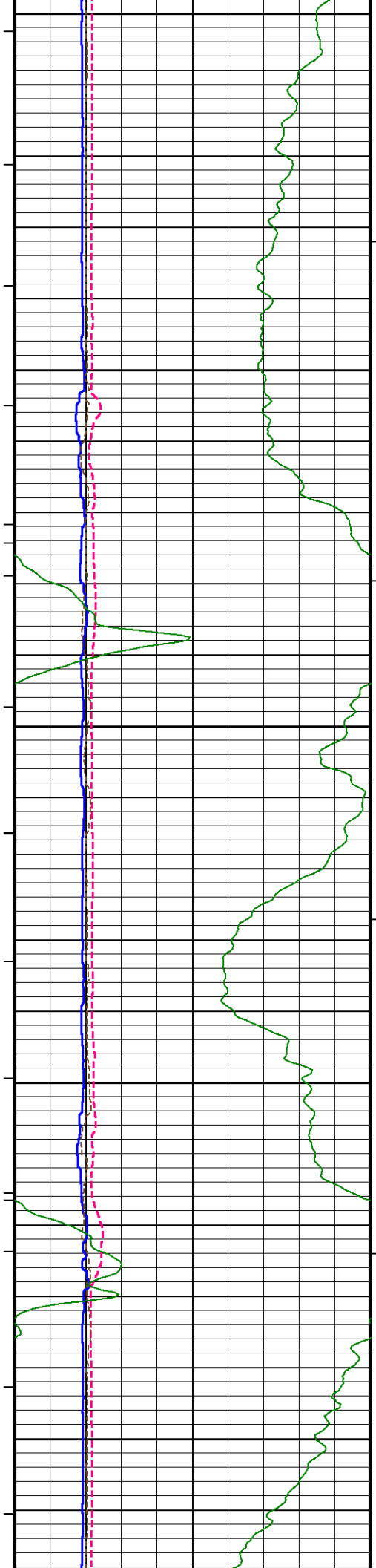




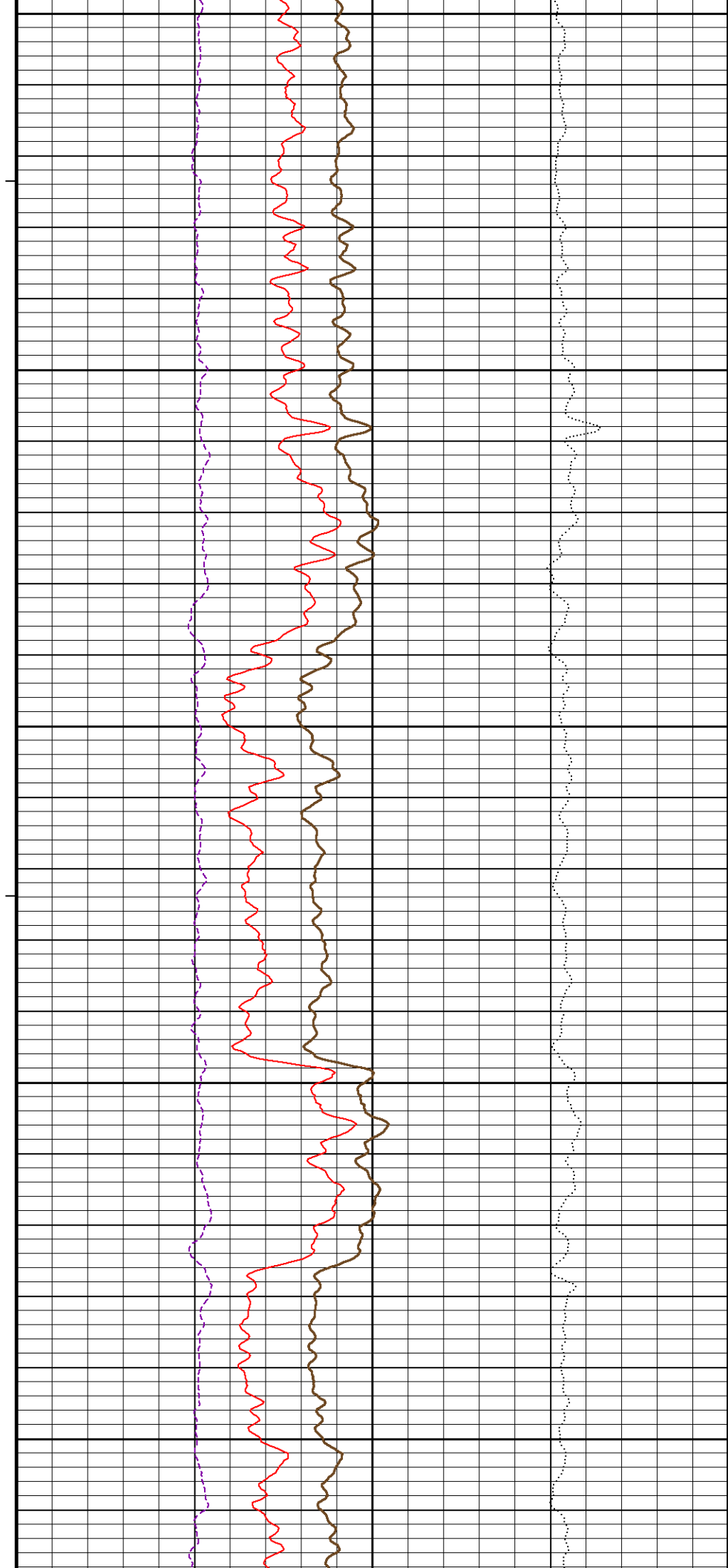


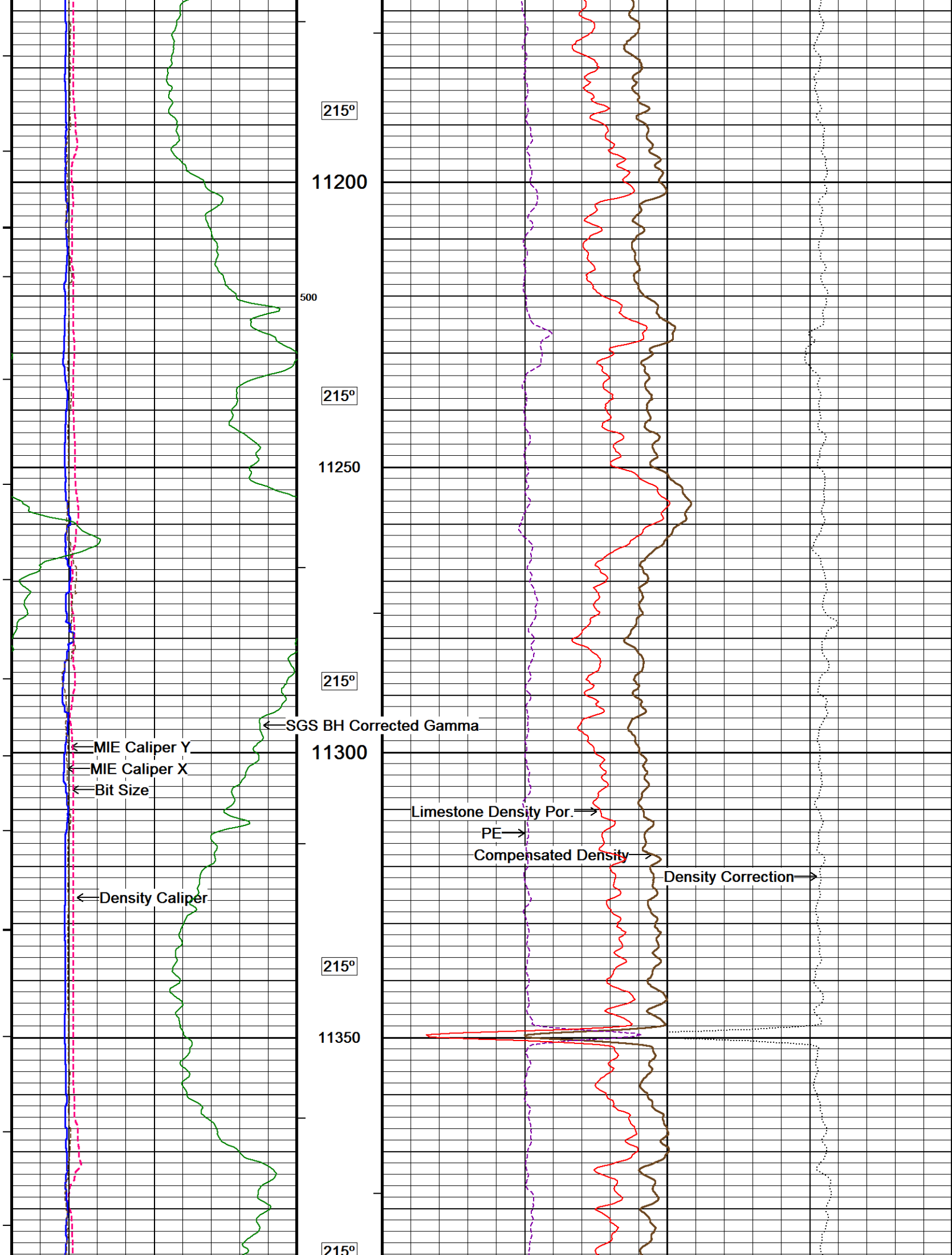


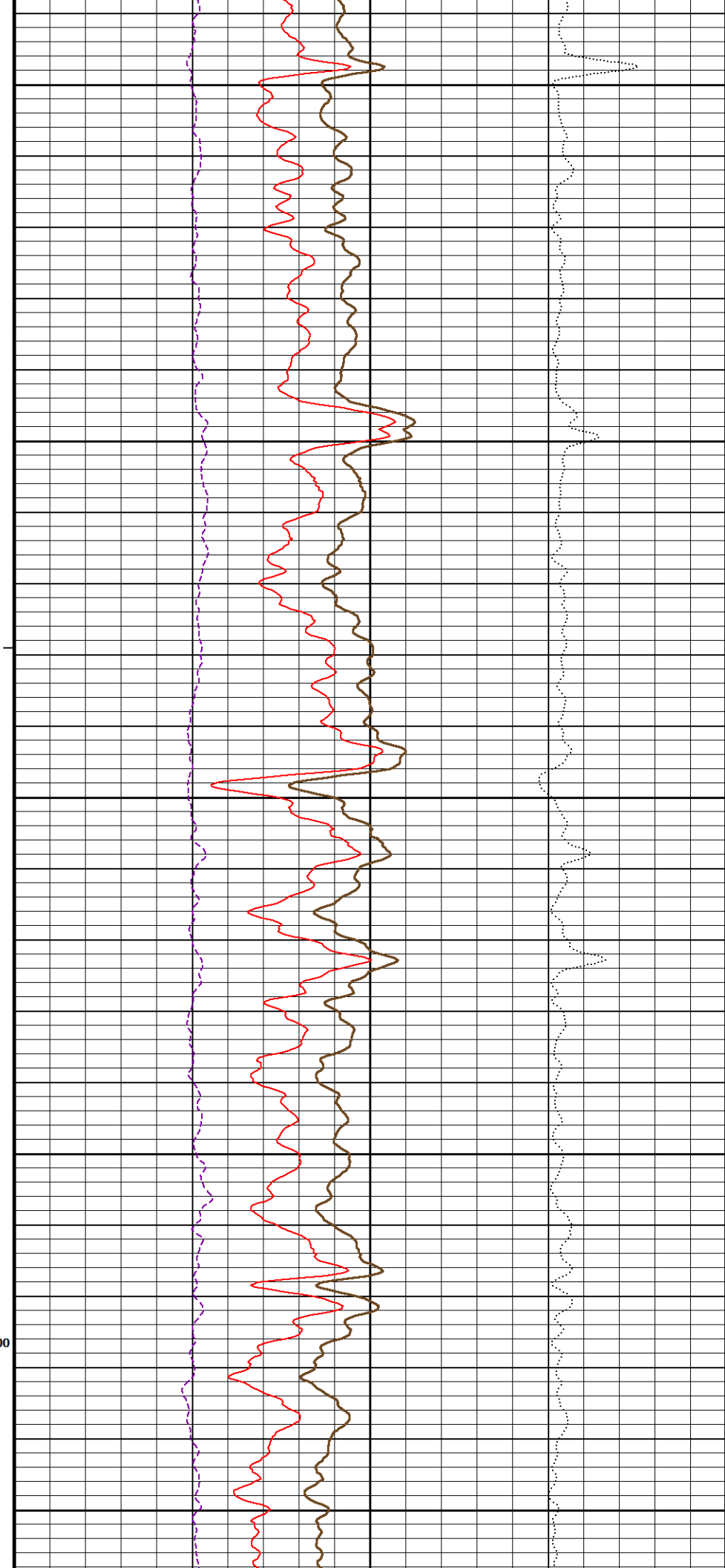
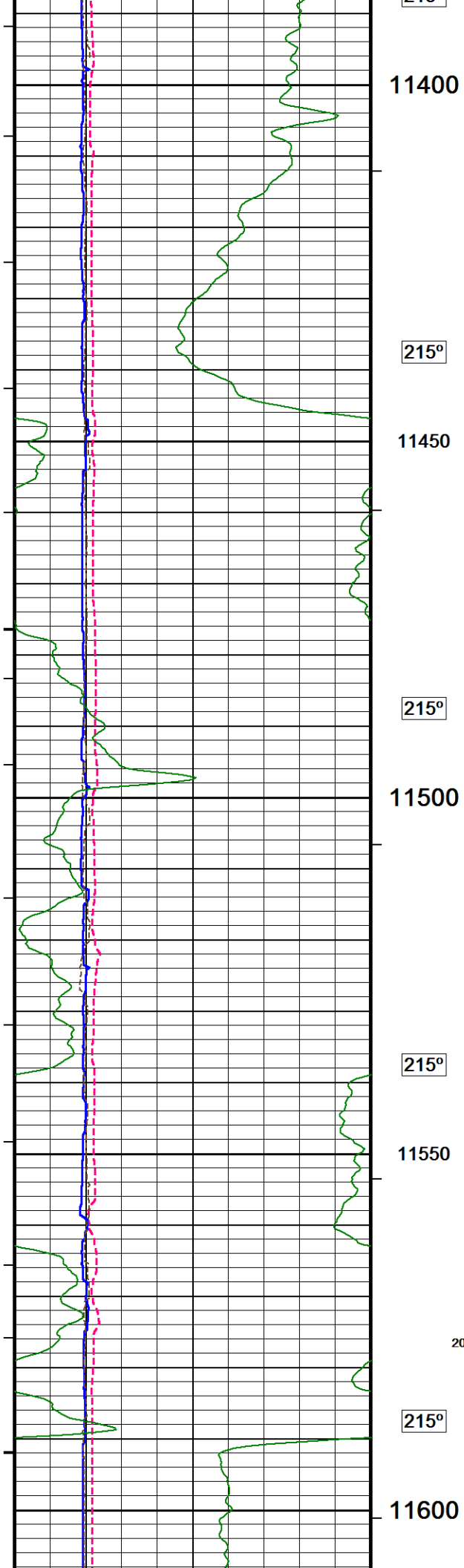


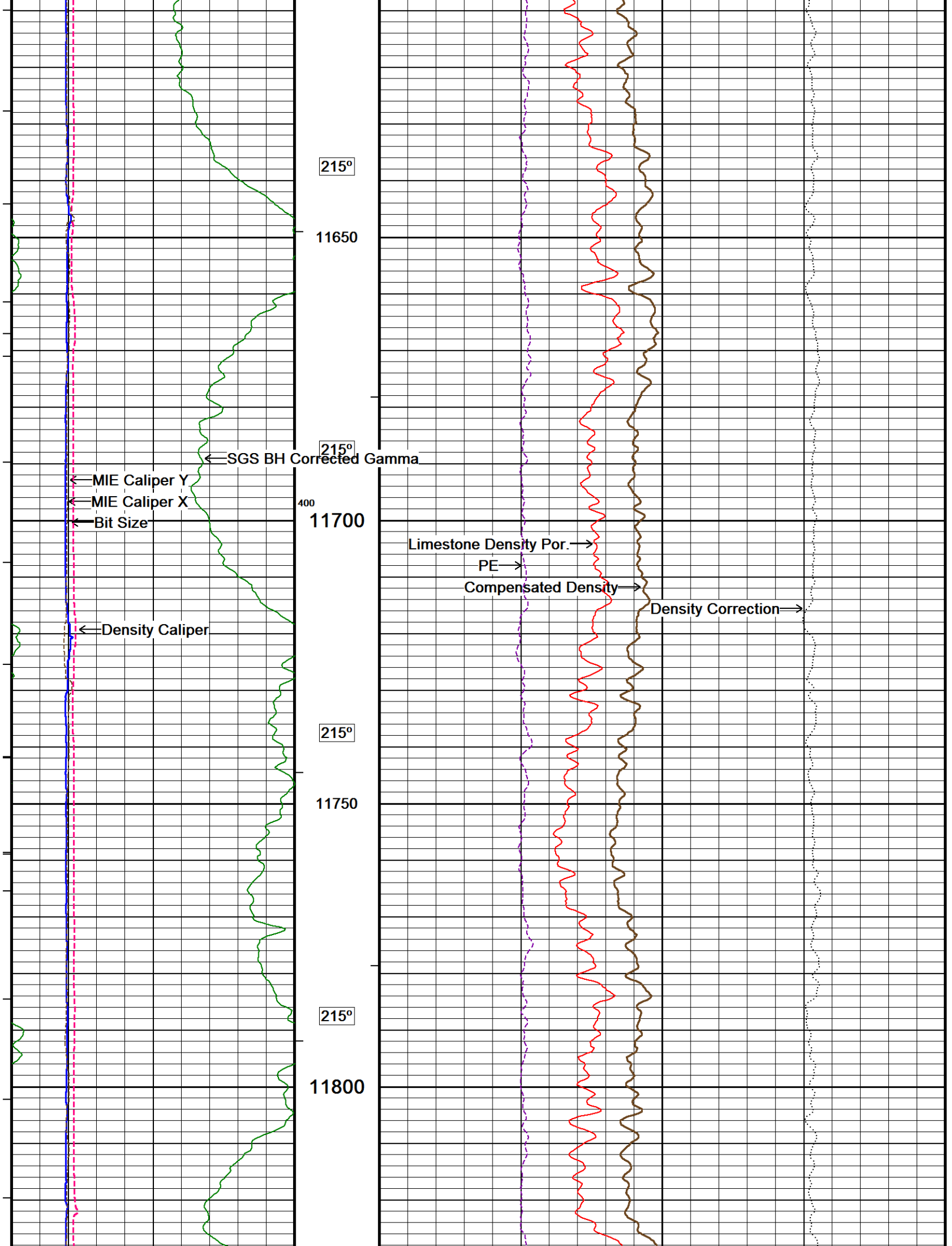


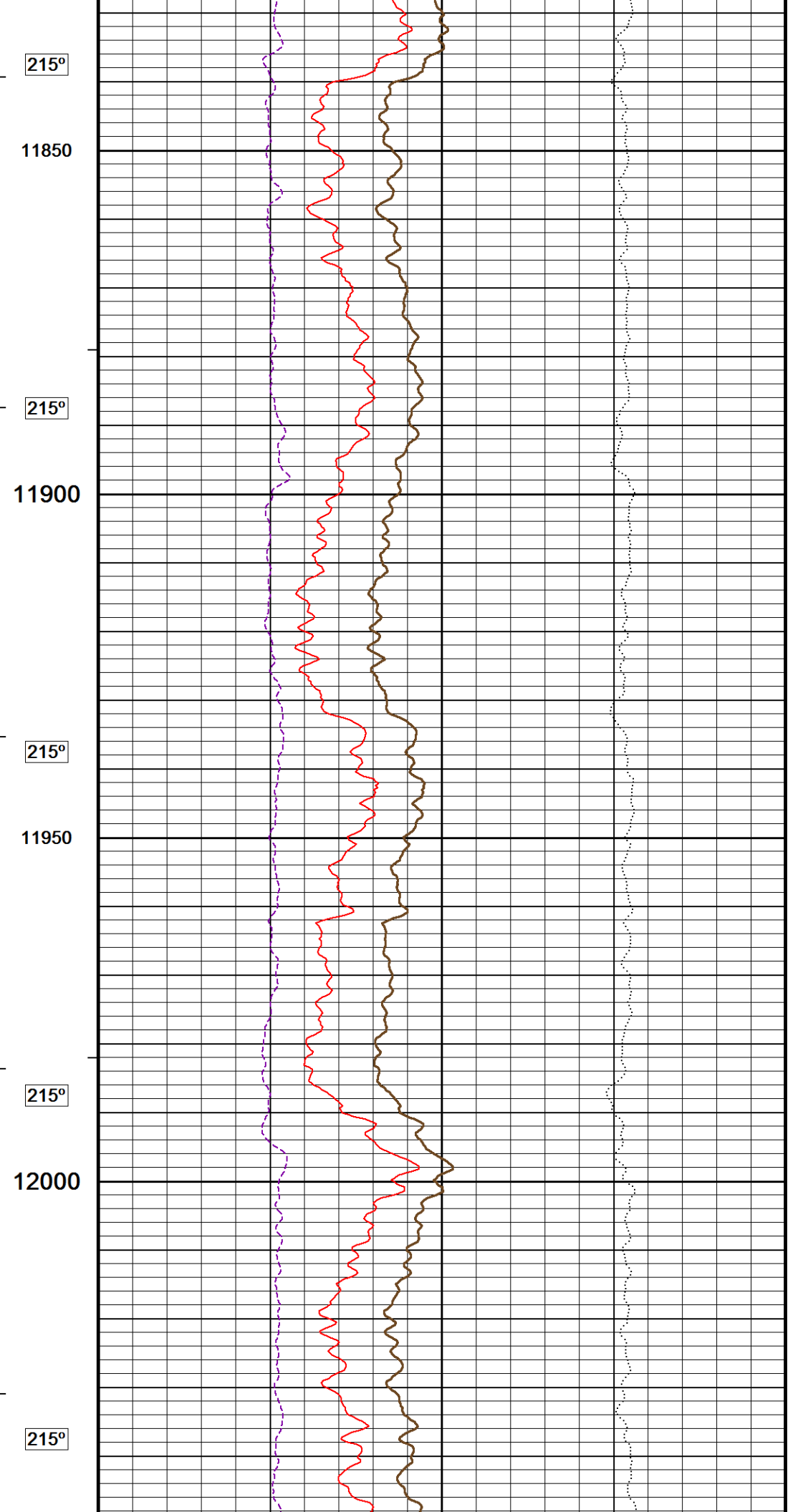
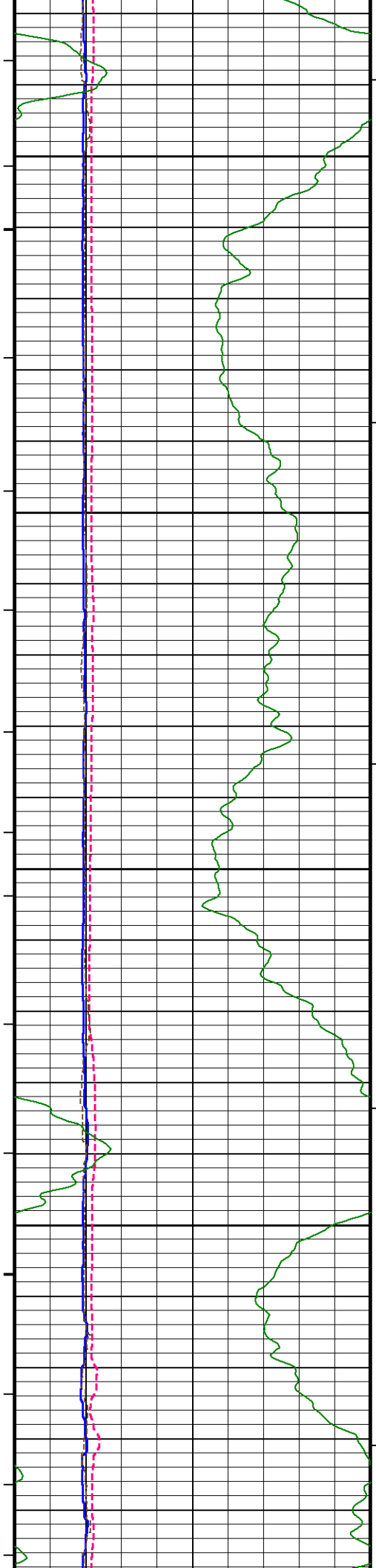
10950  
215°  
11000  
215°  
11050  
215°  
11100  
215°  
11150

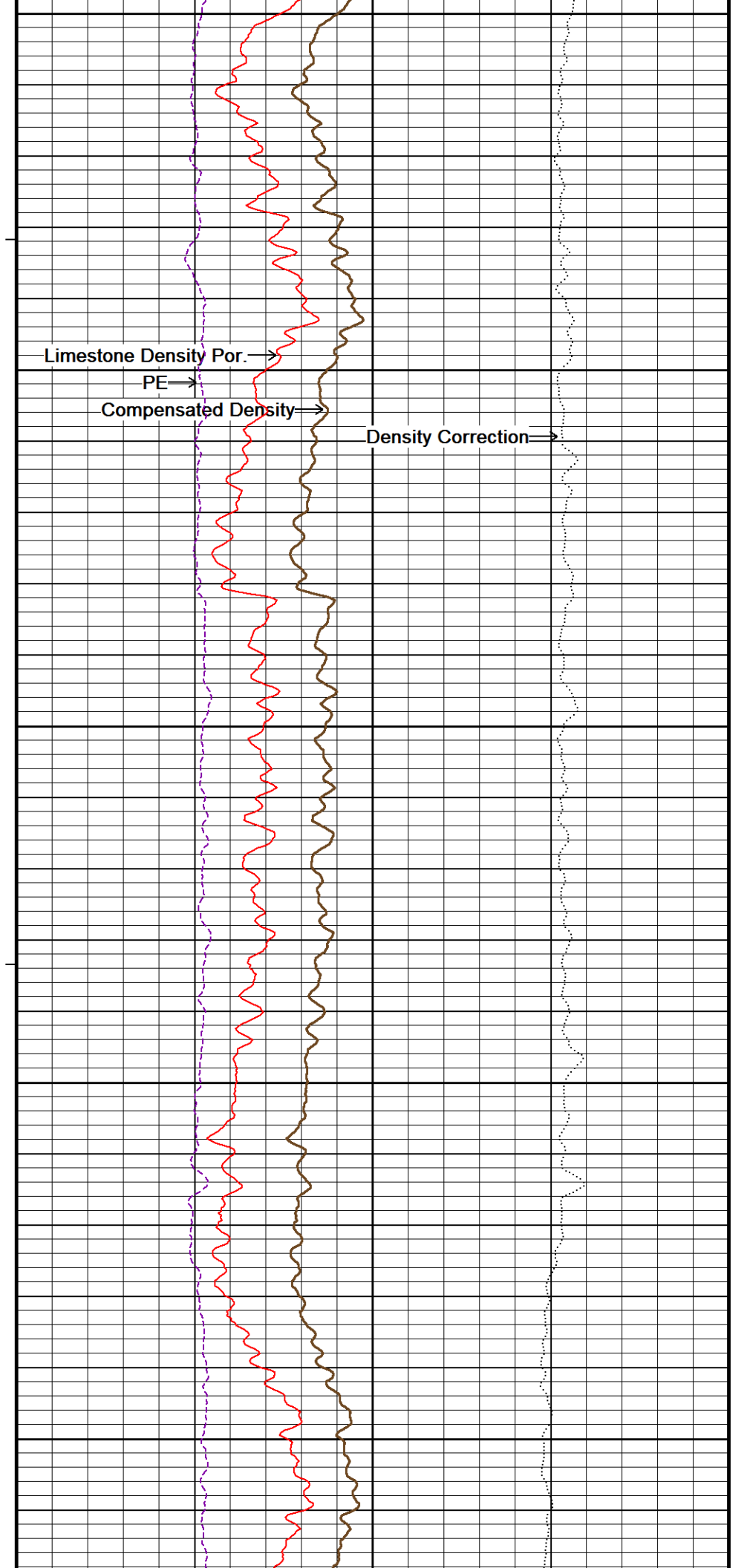
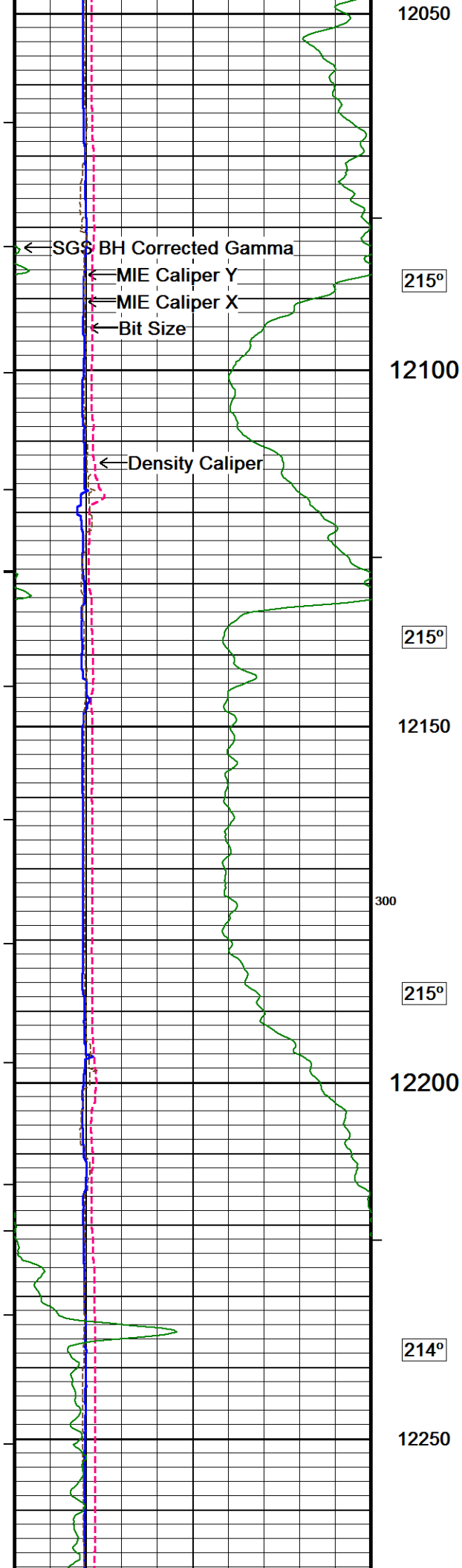


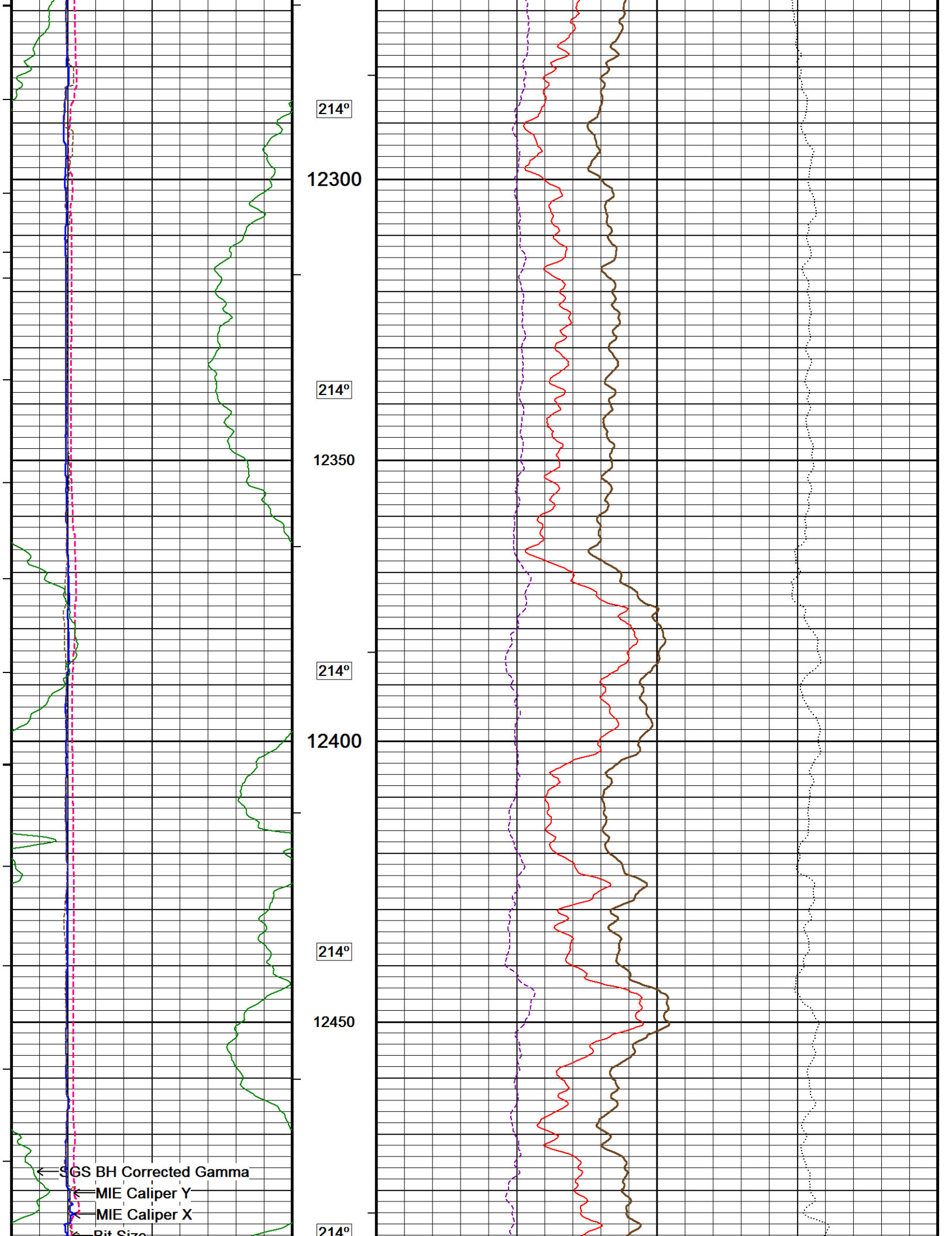




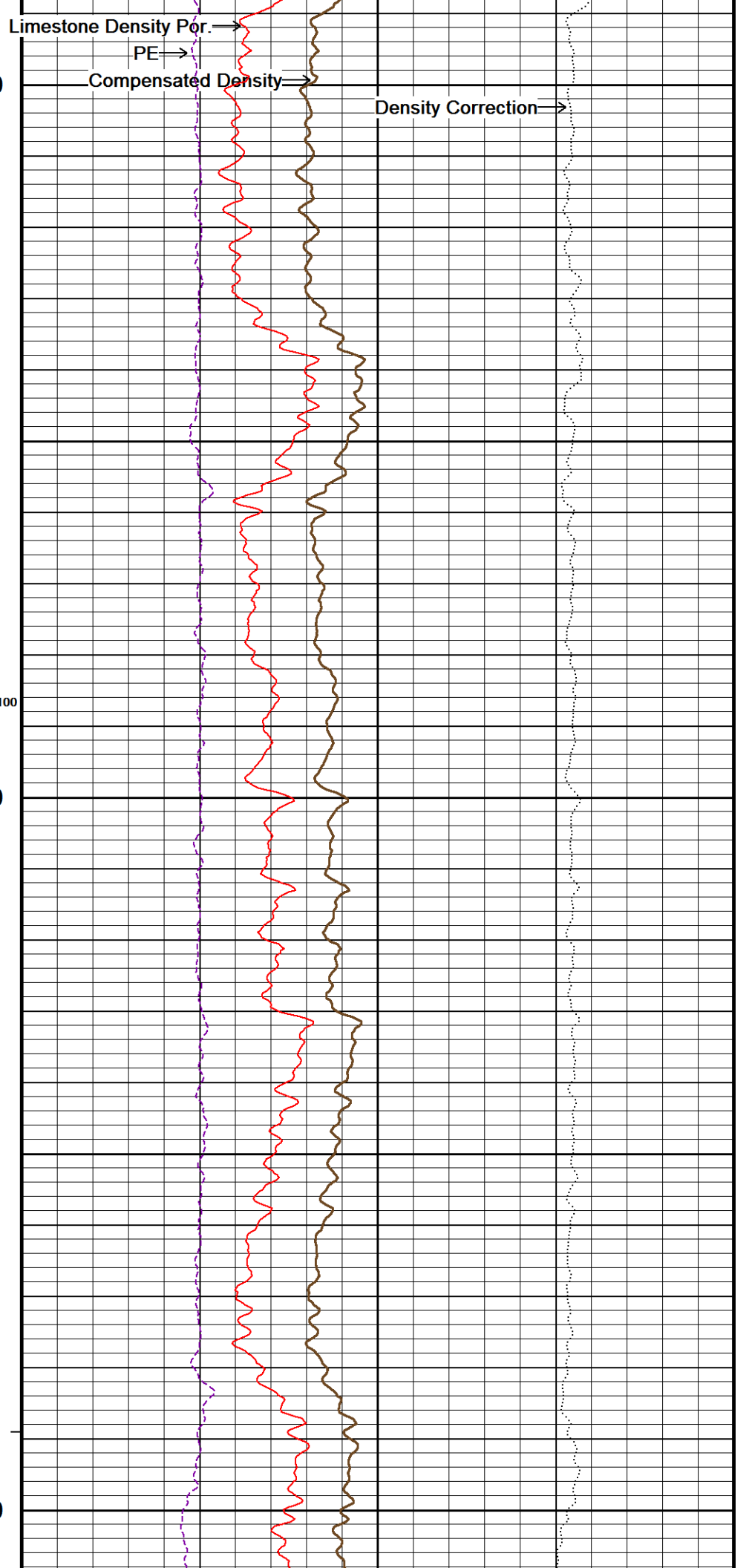
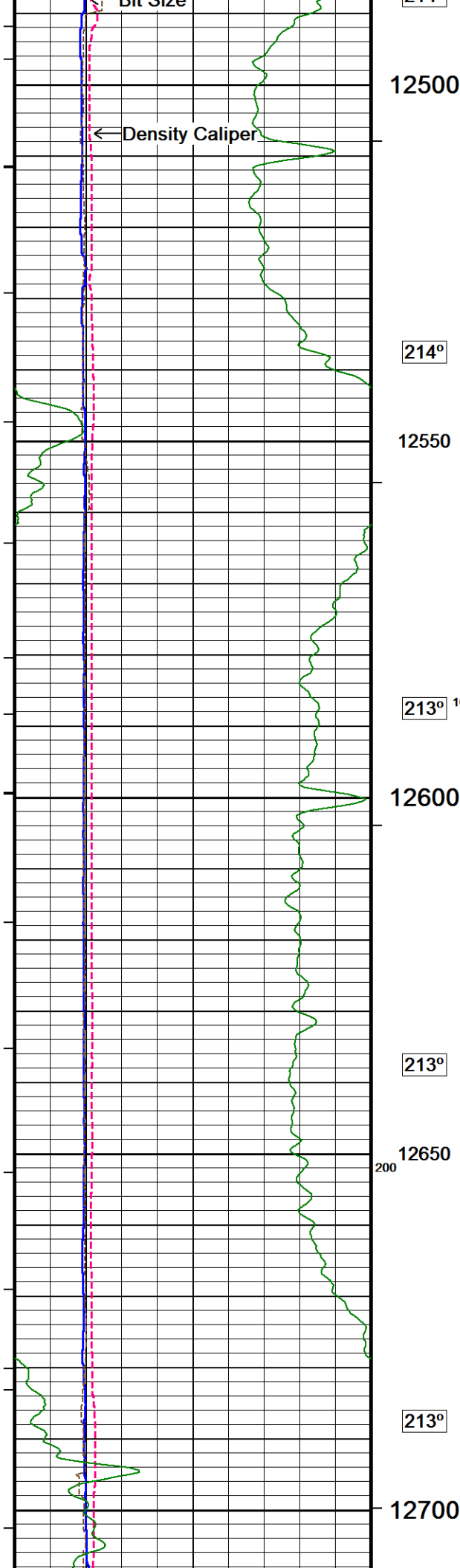


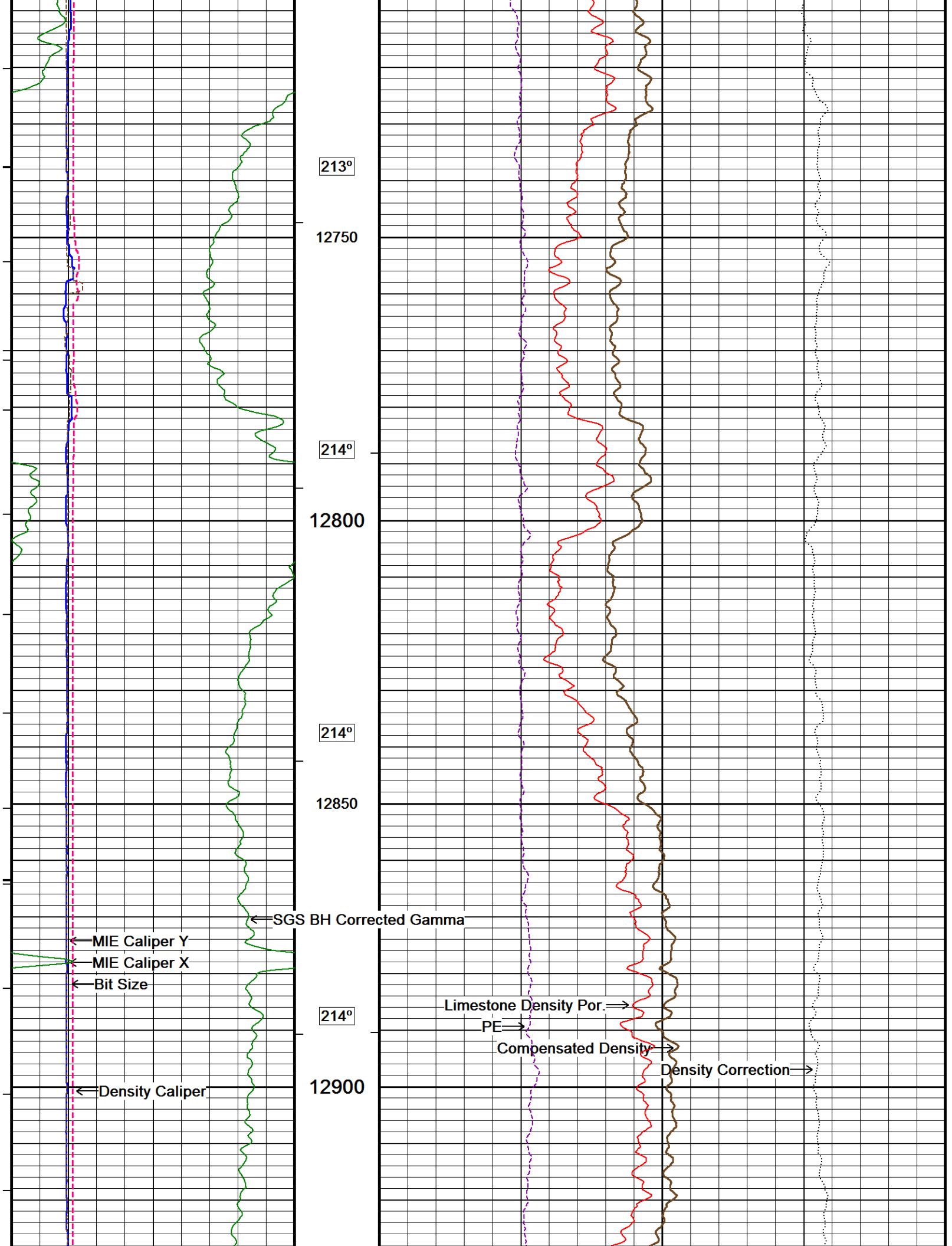


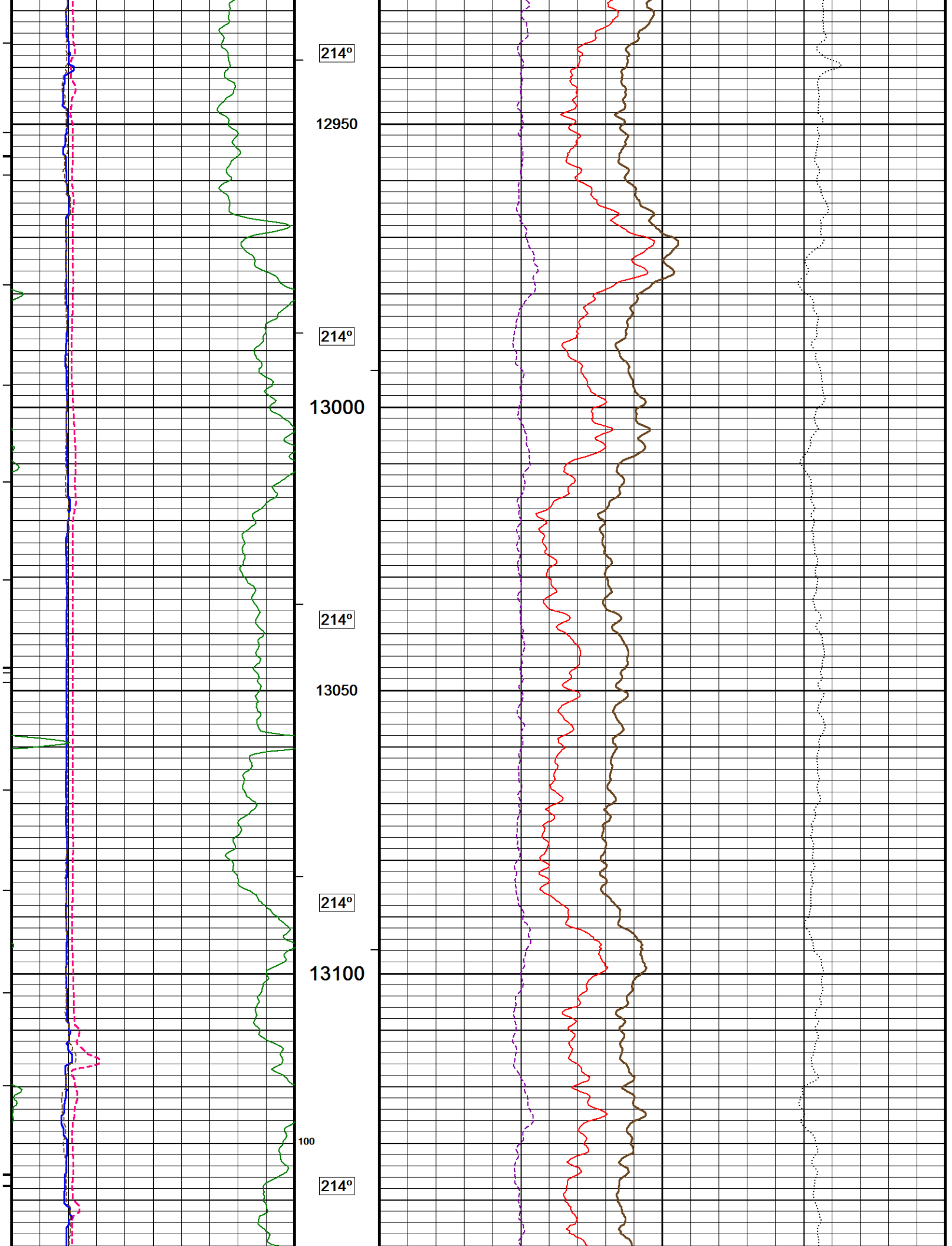


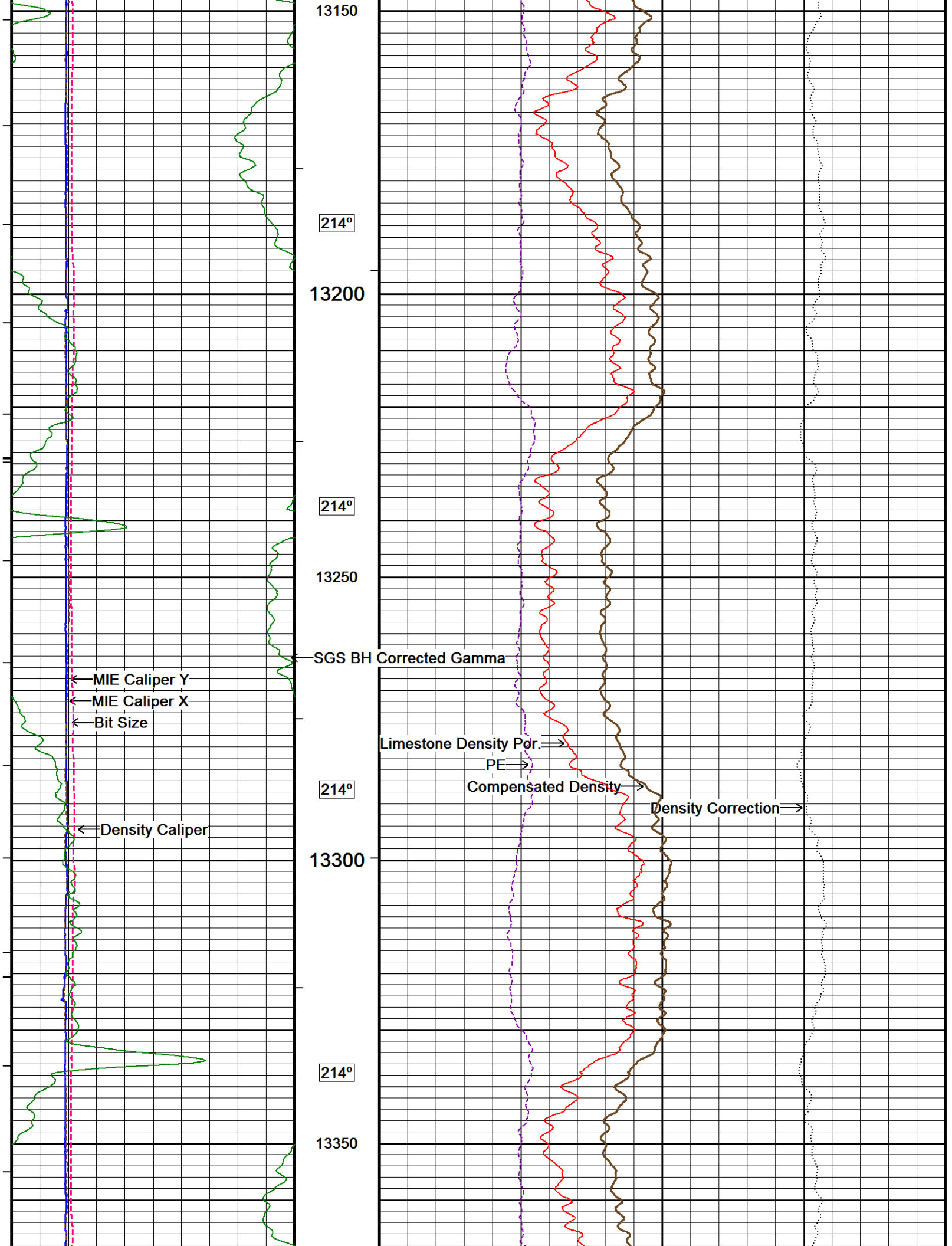


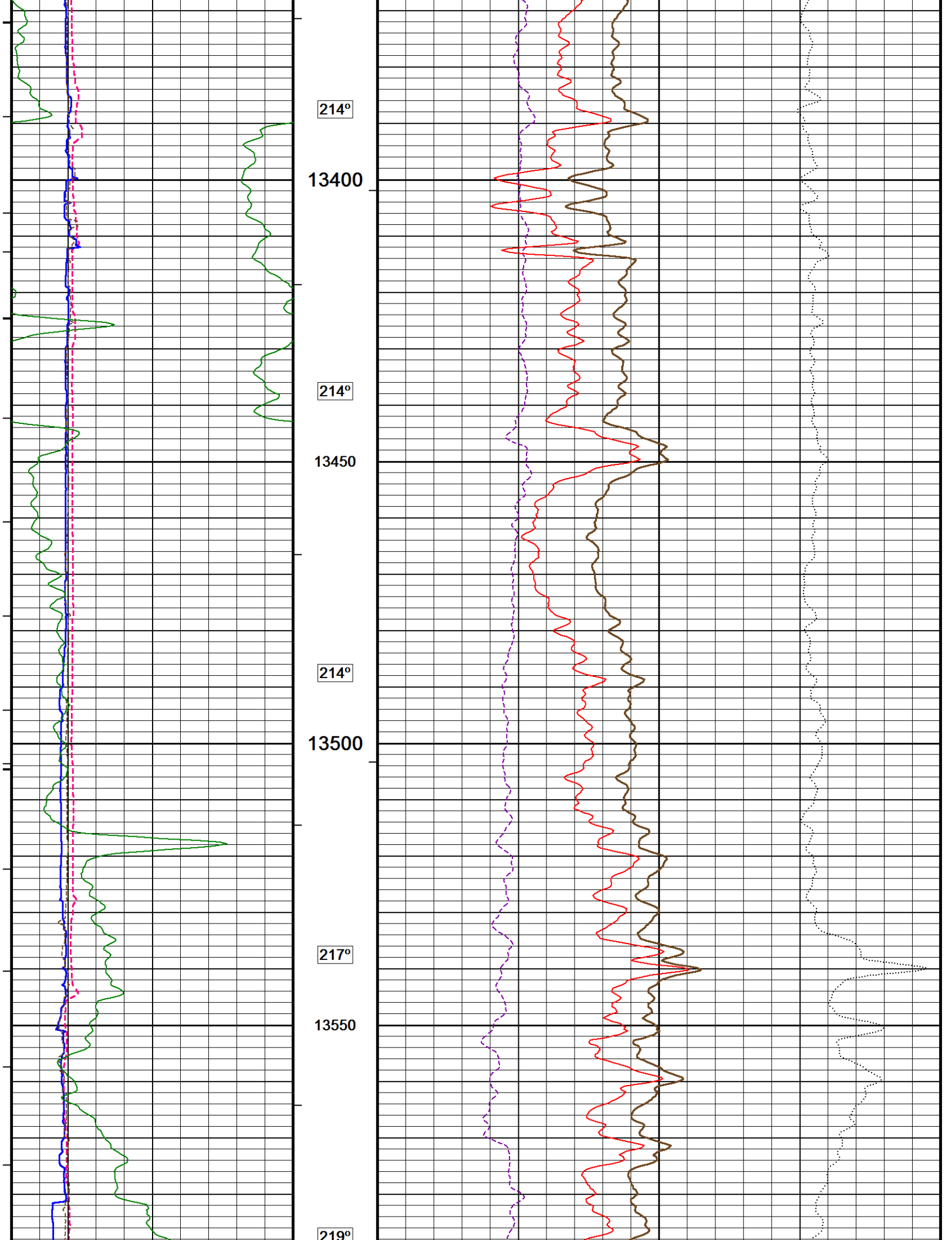


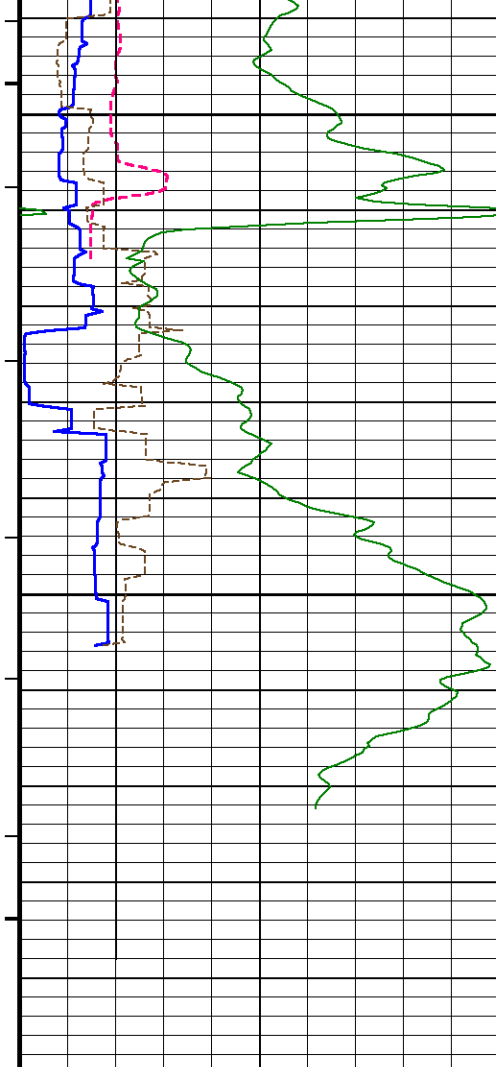










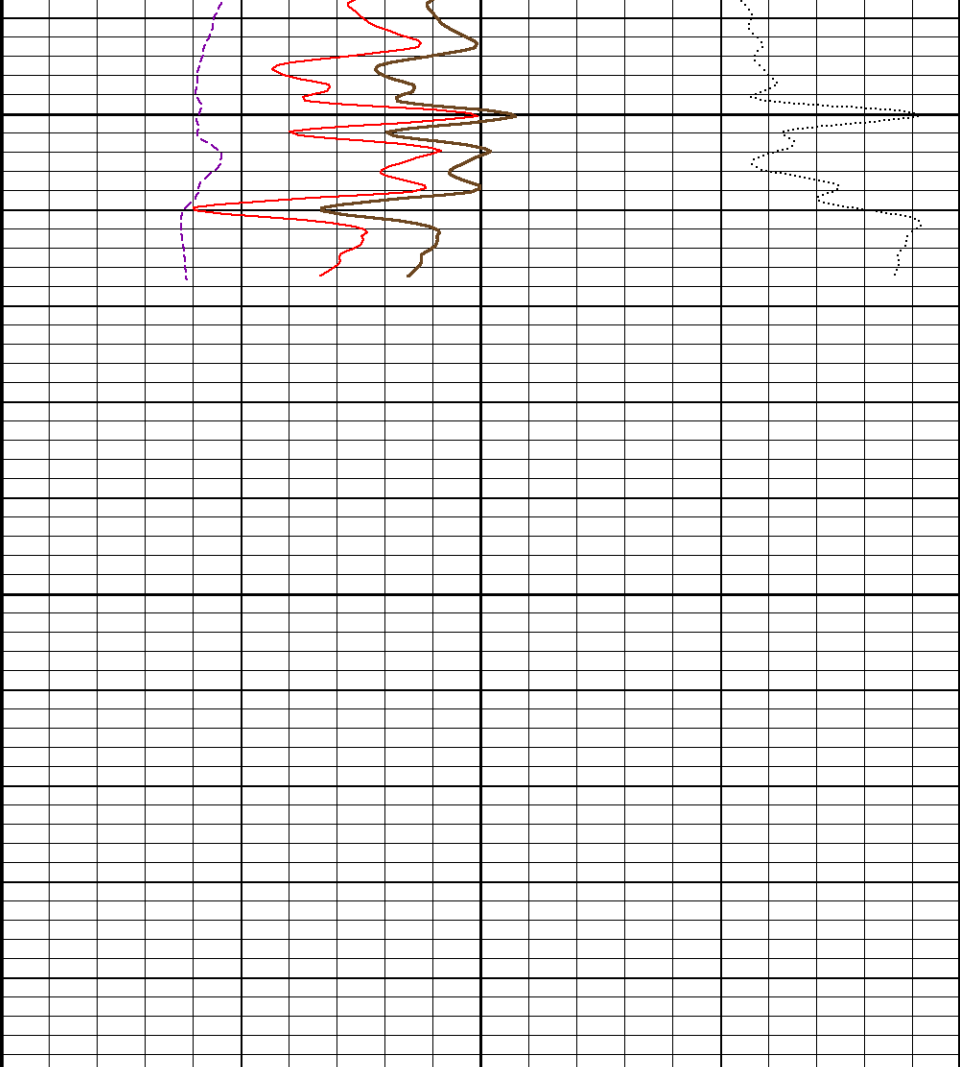


13600

13650

13696

Depth in Feet



← Timing Marks  
every 60.0 sec

Density Caliper  
inches

4 9 14

Bit Size  
inches

4 9 14

MIE Caliper X  
inches

4 9 14

MIE Caliper Y  
inches

4 9 14

SGS BH Corrected Gamma

HVI  
every  
10 cu ft

Annular  
Integral  
every  
10 cu ft

Borehole  
Temp in  
deg F

Compensated Density

grams/cc

2 2.25 2.50 2.75 3

1 1.25 1.50 1.75 2

Limestone Density Por.

percent

30 20 10 0 -10

PE

barns/electron

Density Correction

grams/cc

0 5 10 -0.25 0 0.25

<div style="display: flex; justify-content: space-between;"> <div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">0</div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">150</div> </div> <div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">API 75</div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">225</div> </div> <div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">150</div> <div style="border-bottom: 1px solid green; padding-bottom: 2px;">300</div> </div> </div>	Replay Scale 1:240	
Depth Based Data - Maximum Sampling Increment 10.0cm <div style="float: right;">Plotted on 11-OCT-2014 12:17</div>		
Filename: C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta <div style="float: right;">Recorded on 11-OCT-2014 10:59</div>		
System Versions: Logged with 14.01.3220    Processed with 14.01.3220    Plotted with 14.01.3220		
↑	5 INCH MAIN LOG	↑

BEFORE SURVEY CALIBRATION

C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta

General Constants All 000

Last Edited on 11-OCT-2014,09:40

General Parameters

Mud Resistivity

1.650

ohm-metres

Mud Resistivity Temperature

63.700

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

N/A

Resistivity used

N/A

RWA Constant A

N/A

RWA Constant M

N/A

SW/APOR Tool Source

0.000

Strain Gauge Constants MMS-F.A 246

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-D.A 220

Field Calibration on 09-OCT-2014 19:30

	Measured	Calibrated (API)
Background	176	125
Calibrator (Gross)	1026	727
Calibrator (Net)	849	602

Gamma Constants MGS-D.A 220

Last Edited on 09-OCT-2014,19:14

Gamma Calibrator Number

GRC-224

Mud Density

1.22

gm/cc

Caliper Source for Processing

Density Caliper

Tool Position

Eccentred

Concentration of KCl

kppm

K Mud Type

Chloride

K Mud Concentration

0.29

%

SP Calibration MGS-D.A 220

Reference 1		Measured	Calibrated (mV)	Field Calibration on 09-OCT-2014,21:40	
Reference 2		100.0	101.0		
		-100.0	-101.0		
High Resolution Temperature Calibration MGS-D.A 220				Field Calibration on 09-OCT-2014,21:40	
		Measured	Calibrated(Deg F)		
Lower		20.00	21.00		
Upper		200.00	201.00		
High Resolution Temperature Constants MGS-D.A 220				Last Edited on 10-OCT-2014,22:06	
Pre-filter Length		11			
Neutron Calibration MDN-B.J 372				Base Calibration on 01-OCT-2014 13:06 Field Check on 09-OCT-2014 19:13	
Base Calibration					
		Measured	Calibrated (cps)		
		Near Far	Near Far		
		2881 87	3714 110		
Ratio		33.018	33.764		
Field Calibrator at Base					
		Calibrated (cps)			
		2377 3500			
Ratio		0.679			
Field Check					
		Calibrated (cps)			
		2390 3561			
Ratio		0.671			
Neutron Constants MDN-B.J 372				Last Edited on 10-OCT-2014,22:07	
Neutron Source Id		P44385B			
Neutron Jig Number		NJ5236			
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		Constant Value			
Formation Fluid Salinity		0.00	kppm		
Barite Mud Correction		Not Applied			
Caliper Calibration MIE-A.J 244				Base Calibration on 25-JUL-2014 11:44 Field Calibration on 02-OCT-2014 16:29	
Base Calibration					
Reading No	Pads 1-5 Meas.	Pads 3-7 Meas.	Calibrator Size (in)		
1	26004	25378	5.97		
2	36167	35519	7.96		
3	46431	45371	9.86		
4	57324	56752	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	26012	25269	23347	25203	5.97
2	34599	33642	31769	34020	7.96
3	42691	41621	39973	42619	9.86
4	52950	51129	49036	52308	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)	
		5.84	5.85	5.97	



Measured Pad 2 Caliper(in) 2.81		Measured Pad 4 Caliper(in) 2.98	Measured Pad 6 Caliper(in) 3.15	Measured Pad 8 Caliper(in) 3.00	Actual Caliper(in) 5.97
Caliper Constants MIE-A.J 244					Last Edited on 25-JUL-2014,11:39
Caliper Difference for BRKT		0.120	inches		
Accelerometer Parameters MIE-A.J 244					
Date Of Last Accelerometer Calibration		13-FEB-2013,14:31			
	X Accelerometer	Y Accelerometer	Z Accelerometer		
Slope	-1.103572	-1.107641	-1.103778		
Offset	-0.006989	0.006286	-0.003996		
Accelerometer Constants MIE-A.J 244					Last Edited on 02-OCT-2014,16:25
Accelerometer Calibrator Number		000			
Accelerometer Temperature Characterisation					
X Accelerometer					
Serial Number		1016			
Calibration Date		12-Apr-2011			
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	1.93698e-005	-7.60293e-010	6.54727e-011	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.59257e-004	6.13375e-007	-3.90888e-010	
Y Accelerometer					
Serial Number		973			
Calibration Date		19-Jan-2011			
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	1.95276e-005	-1.88058e-008	2.74122e-010	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.75268e-004	3.53140e-007	7.52116e-010	
Z Accelerometer					
Serial Number		1032			
Calibration Date		18-Apr-2011			
	B0	B1	B2	B3	
Bias(g)	0.00000e+000	-1.14960e-005	3.94288e-009	8.97135e-011	
	SF0	SF1	SF2	SF3	
Scale Factor(mA/g)	3.00000e+000	2.88058e-004	2.44833e-007	8.38007e-010	
Magnetometer Parameters MIE-A.J 244					
Date Of Last Magnetometer Calibration		22-AUG-2013,09:56			
	X Magnetometer	Y Magnetometer	Z Magnetometer		
Slope	-1.000000	-1.011965	-0.991340		
Offset	0.010303	-0.015788	0.008269		
Magnetometer Constants MIE-A.J 244					Last Edited on
Magnetometer Calibrator Number		000			
Navigation Constants MIE-A.J 244					
Magnetic Declination		7.92	degrees	East	
Imager Pad Check MIE-A.J 244					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 244					Last Edited on 25-JUL-2014,11:39
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.A 289				Base Calibration on 09-OCT-2014,22:26	
				Field Check on 09-OCT-2014 22:28	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	16.7	472.3	9.3	966.2	
2	5.8	381.9	7.6	821.4	
3	3.2	261.2	5.2	566.0	
4	1.9	138.0	2.6	279.2	
Array Temperature		76.1	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	13.0	3835.7	
2	0.0	0.0	30.8	3521.5	
3	0.0	0.0	28.8	3021.0	
4	0.0	0.0	19.0	1997.2	
Deep	0.0	0.0	16.6	1912.9	
Medium	0.0	0.0	43.1	4040.1	
Shallow	0.0	0.0	47.3	5283.2	
Array Temperature		0.0	53.9	Deg F	

Induction Constants MAI-B.A 289				Last Edited on 09-OCT-2014,22:41	
Induction Model		RtAP-WBM			
Caliper for Borehole Corr.		Density Caliper			
Hole Size for Borehole Correction		N/A		inches	
Tool Centred		No			
Stand-off Type		Pineapple			
Stand-off		0.49		inches	
Number of Fins on Stand-off		5.0000			
Stand-off Fin Angle		72.00		degrees	
Stand-off Fin Width		1.3878		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 Pxo	0.00				

Source for RX0			0.00	
High Resolution Temperature Calibration MAI-B.A 289			Field Calibration on 19-NOV-2008,15:30	
	Measured	Calibrated(Deg C)		
Lower	10.00	10.00		
Upper	100.00	100.00		
High Resolution Temperature Constants MAI-B.A 289			Last Edited on	
Pre-filter Length	11			
Photo Density Calibration MPD-C.J 378			Base Calibration on 01-OCT-2014 11:53 Field Check on 09-OCT-2014 19:05	
Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Background	1145	1223		
Reference 1	56123	24901	59443	30683
Reference 2	22147	2322	25113	2508
Field Check at Base				
	1145.2	1222.9		
Field Check				
	1146.8	1224.5		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	209	1030		
Reference 1	24056	55936	0.434	0.372
Reference 2	6396	22017	0.295	0.268
Field Check at Base				
	209.3	1029.7		
Field Check				
	210.6	1030.1		
Density Constants MPD-C.J 378			Last Edited on 10-OCT-2014,22:07	
Density Source Id		P44264B		
Nylon Calibrator Number		652		
Aluminium Calibrator Number		659		
Density Shoe Profile		4 inch		
Caliper Source for Processing		Density Caliper		
PE Correction to Density		Not Applied		
Mud Density		1.22	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 01-OCT-2014 12:42 Field Calibration on 09-OCT-2014 18:46	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	12771	4.01		
2	21027	5.97		
3	29312	7.96		

4	37448	9.86
5	46707	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.93	7.96

Spectral Gamma Calibration	SGS-E.J 128	Base Calibration on 25-SEP-2014 17:21
		Field Calibration on 03-OCT-2014 16:24

Base Calibration

Potassium Calibrator

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

Concentrations	K %	U ppm	Th ppm
	5.9	0.0	0.0

Uranium Calibrator

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

Concentrations	K %	U ppm	Th ppm
	0.0	16.6	0.0

Thorium Calibrator

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

Concentrations	K %	U ppm	Th ppm
	0.0	0.0	44.7

Mixture Calibrator

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

Field Calibration

Gamma Ray

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

Mixture Calibrator

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

Spectral Gamma Constants	SGS-E.J 128	Last Edited on 09-OCT-2014,19:31
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Background Calibrator Number	440	
Mixture Calibrator Number	450	
Potassium Calibrator Number	500	
Uranium Calibrator Number	506	
Thorium Calibrator Number	503	
Mud Density	1.22	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.29	%

# DOWNHOLE EQUIPMENT

C:\LOGS\WHITING\Horsetail 30F-1943\MMS Depth.dta

Shuttle Running Tool 3.5"  
SRT-A.A 59 LG: 6.62 ft WT: 37.5 lb OD: 2.520 in

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

Compact Linker 200 STD  
MLK-A 1 LG: 8.52 ft WT: 30.9 lb OD: 2.240 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 397 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

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

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

MBS-F.A 200v Compact Battery Sub  
MBS-F.A 123 LG: 17.06 ft WT: 123.5 lb OD: 2.240 in

Compact Memory Sub F.A  
MMS-F.A 246 LG: 5.20 ft WT: 37.5 lb OD: 2.244 in

Compact Tool Isolator sub.  
MTI-C.A 146 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

Compact Collar Locator  
MCL-C.A 129 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.A Compact Swivel Head Adaptor  
SHA-J.A 314 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

MIS-D.B Compact Inline Bowspring sub  
MIS-D.B 695 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 734 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

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

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

MIS-E.A Compact Inline Standoff sub



98.00 ft GSXT - MGS External Temperature

81.11 ft NPRL - Limestone Neutron Por.

73.87 ft AVOL - Annular Volume

73.87 ft HVOL - Hole Volume

73.87 ft CLDC - Density Caliper

71.94 ft DPRL - Limestone Density Por.

71.94 ft DCOR - Density Correction

71.88 ft PDPE - PE

MIS-E.A 363 LG: 2.14 ft WT: 15.4 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-D.B Compact Inline Bowspring sub

MIS-D.B 698 LG: 5.70 ft WT: 33.1 lb OD: 2.240 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 244 LG: 13.96 ft WT: 99.2 lb OD: 4.094 in

MIS-D.B Compact Inline Bowspring sub

MIS-D.B 810 LG: 5.70 ft WT: 33.1 lb OD: 2.240 in

SKJ-E.A Compact Knuckle Joint

SKJ-E.A 203 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Spectral Gamma Ray Sub

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

SKJ-E.B Compact Knuckle Joint

SKJ-E.B 611 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

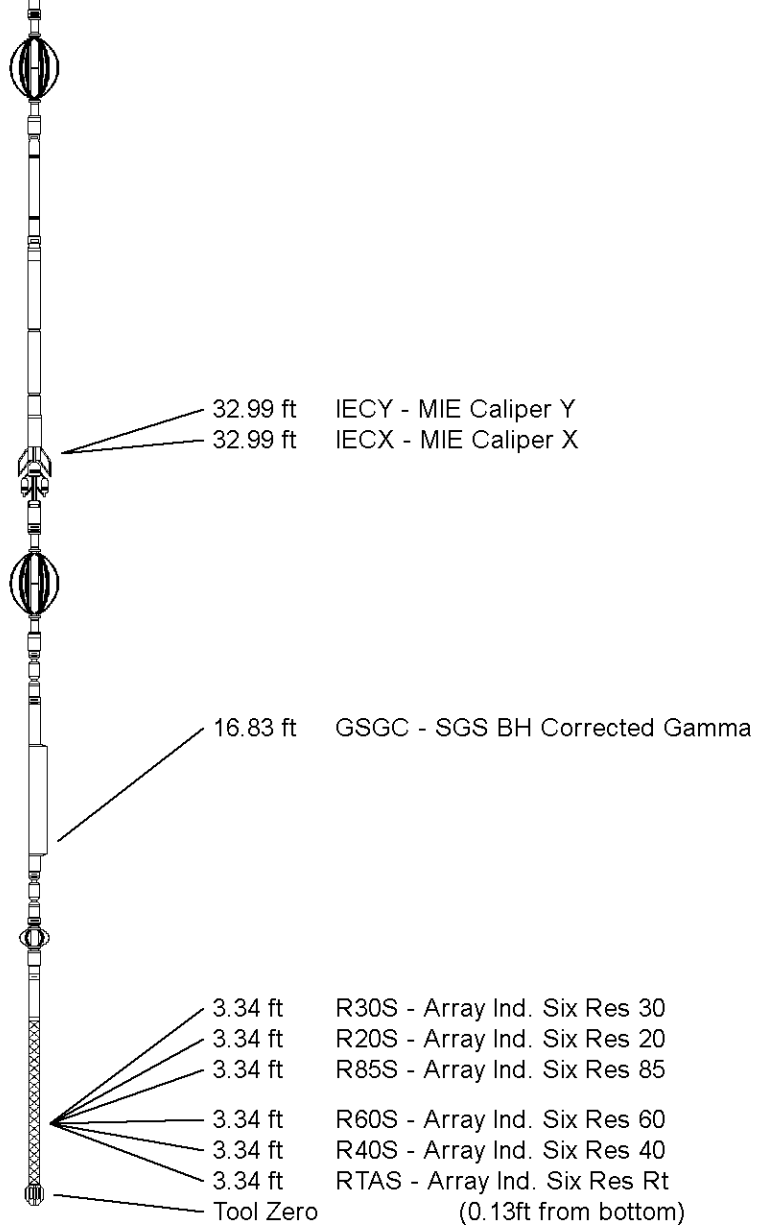
MIS-E.B Compact Inline Standoff sub

MIS-E.B 695 LG: 2.14 ft WT: 15.4 lb OD: 2.244 in

Compact Induction

MAI-B.A 289 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 160.68 ft Weight: 1135.4 lb



COMPANY	WHITING OIL AND GAS CORPORATION
WELL	HORSETAIL 30F-1943
FIELD	REDTAIL
PROVINCE/COUNTY	WELD
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	4797.00	feet	First Reading	13614.00	feet
Elevation Drill Floor	4797.00	feet	Depth Driller	13702.00	feet
Elevation Ground Level	4780.00	feet	Depth Logger	13702.00	feet



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MEASURED DEPTH  
COMPENSATED PHOTO DENSITY  
COMPENSATED DUAL NEUTRON

