



Weatherford®

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

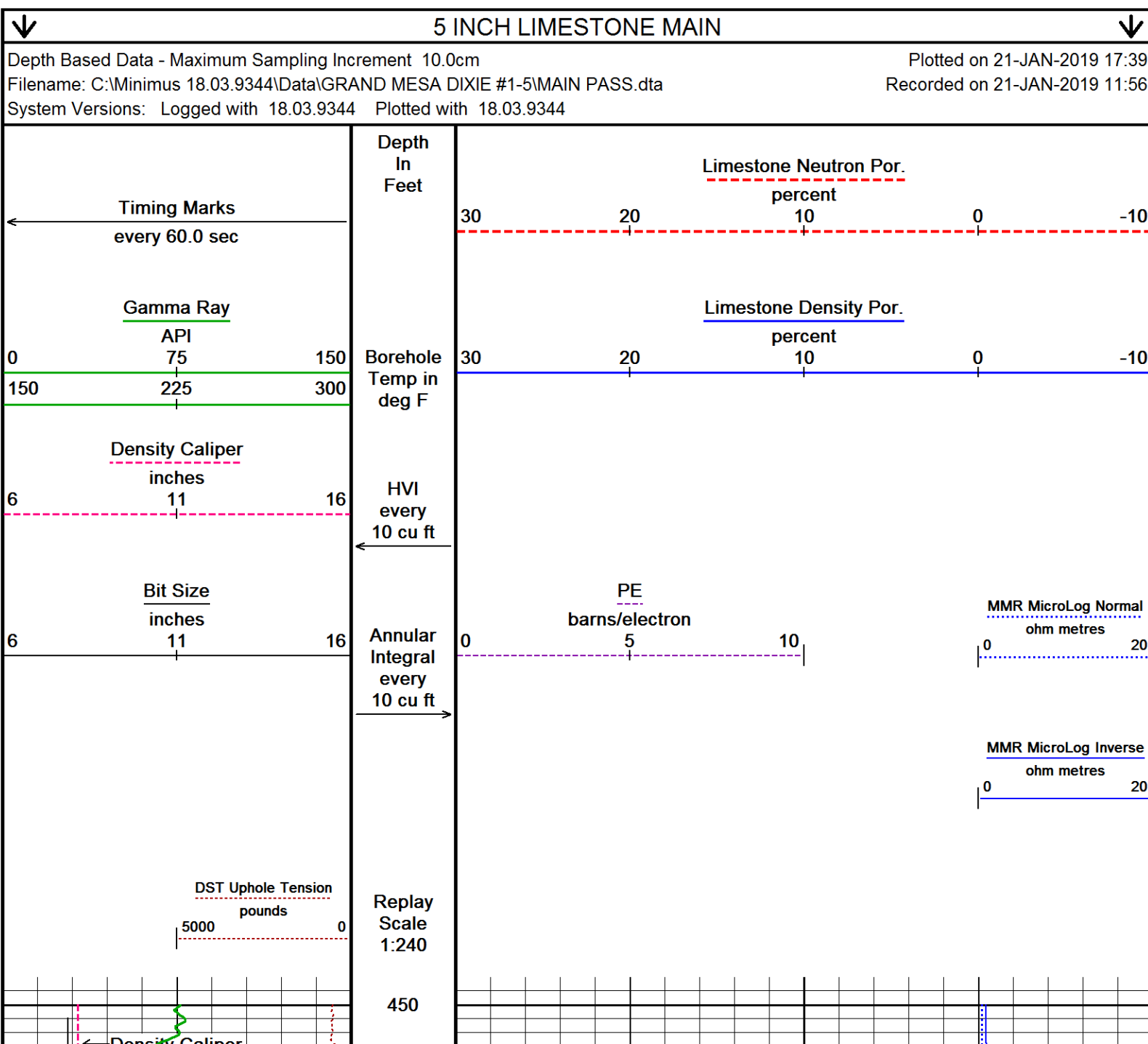
COMPANY	GRAND MESA OPERATING COMPANY			
WELL	DIXIE #1-5			
FIELD	WILDCAT			
PROVINCE/COUNTY	LINCOLN			
COUNTRY/STATE	U.S.A. / COLORADO			
LOCATION	1057' FSL & 1678' FEL			
SEC 5	TWP 11S	RGE 54W	Other Services	
Latitude	39.11408	MAI/MFE		MSS
Longitude	-103.46727			
API Number	05-073-06758			
Permanent Datum GL, Elevation 5077 feet				Elevations: feet
Log Measured From KB, 19.00 feet above Permanent Datum				KB 5096.00
Drilling Measured From KB				DF 5094.00
				GL 5077.00
Date	20-JAN-2019			
Run Number	ONE			
Service Order	17876-235225672			
Depth Driller	7635.00			
Depth Logger	7638.00			
First Reading	7604.00			
Last Reading	474.00			
Casing Driller	480.00			
Casing Logger	474.00			
Bit Size	7.875			
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.30 lb/USg			
PH / Fluid Loss	11.00			
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.60 @100.0			
Rmf @ Measured Temp	0.45 @100.0			
Rmc @ Measured Temp	0.72 @100.0			
Source Rmf / Rmc	CALC			
Rm @ BHT	0.36 @169.0			
Time Since Circulation	5 HOURS			
Max Recorded Temp	169.00			
Equipment / Base	13096			
Recorded By	BANDAR BINOSFUR			
Witnessed By	GARET DINKEL			

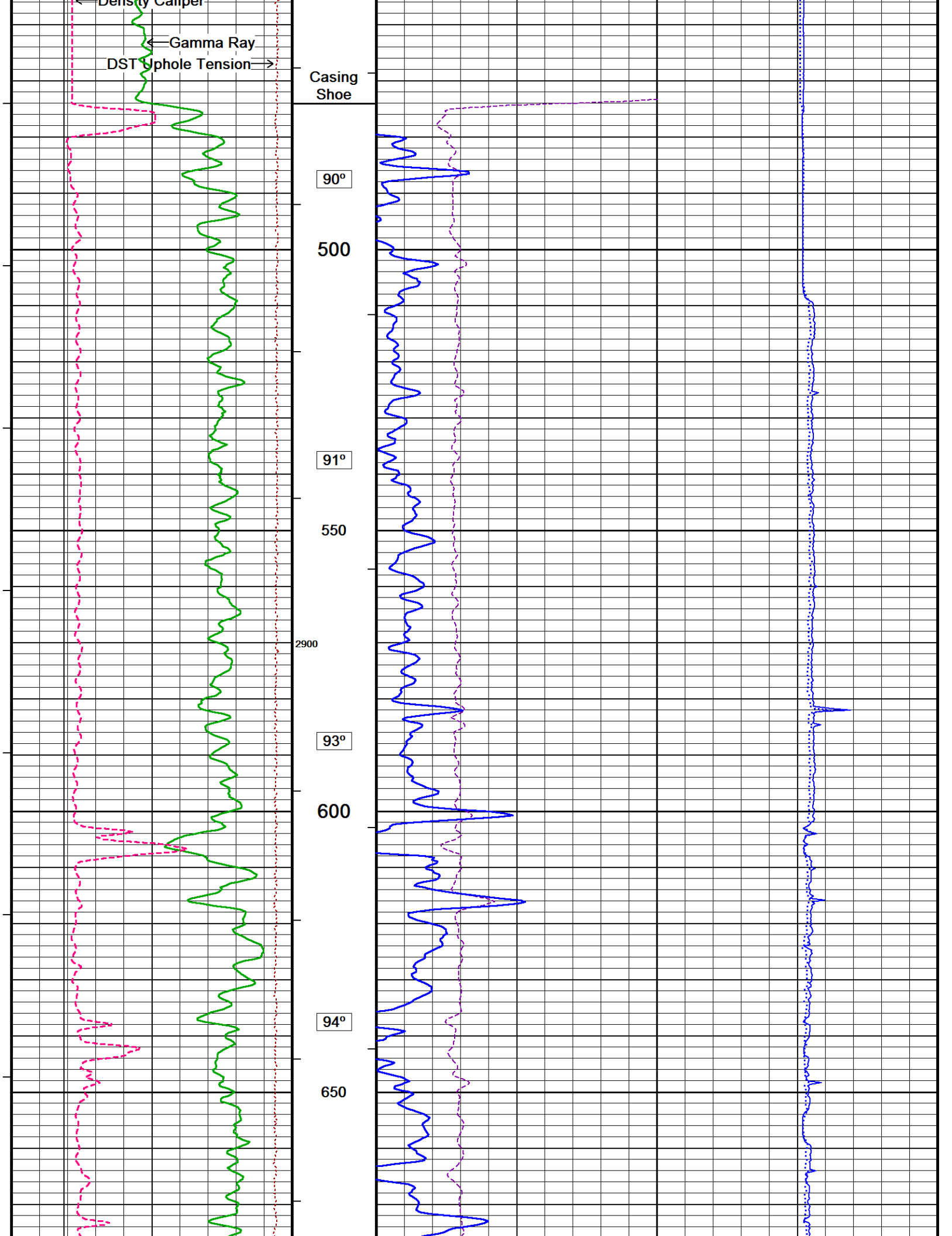
BOREHOLE RECORD					Last Edited: 21-JAN-2019 17:31
Bit Size inches		Depth From feet		Depth To feet	
7.875		480.00		7635.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	480.00	24.00	

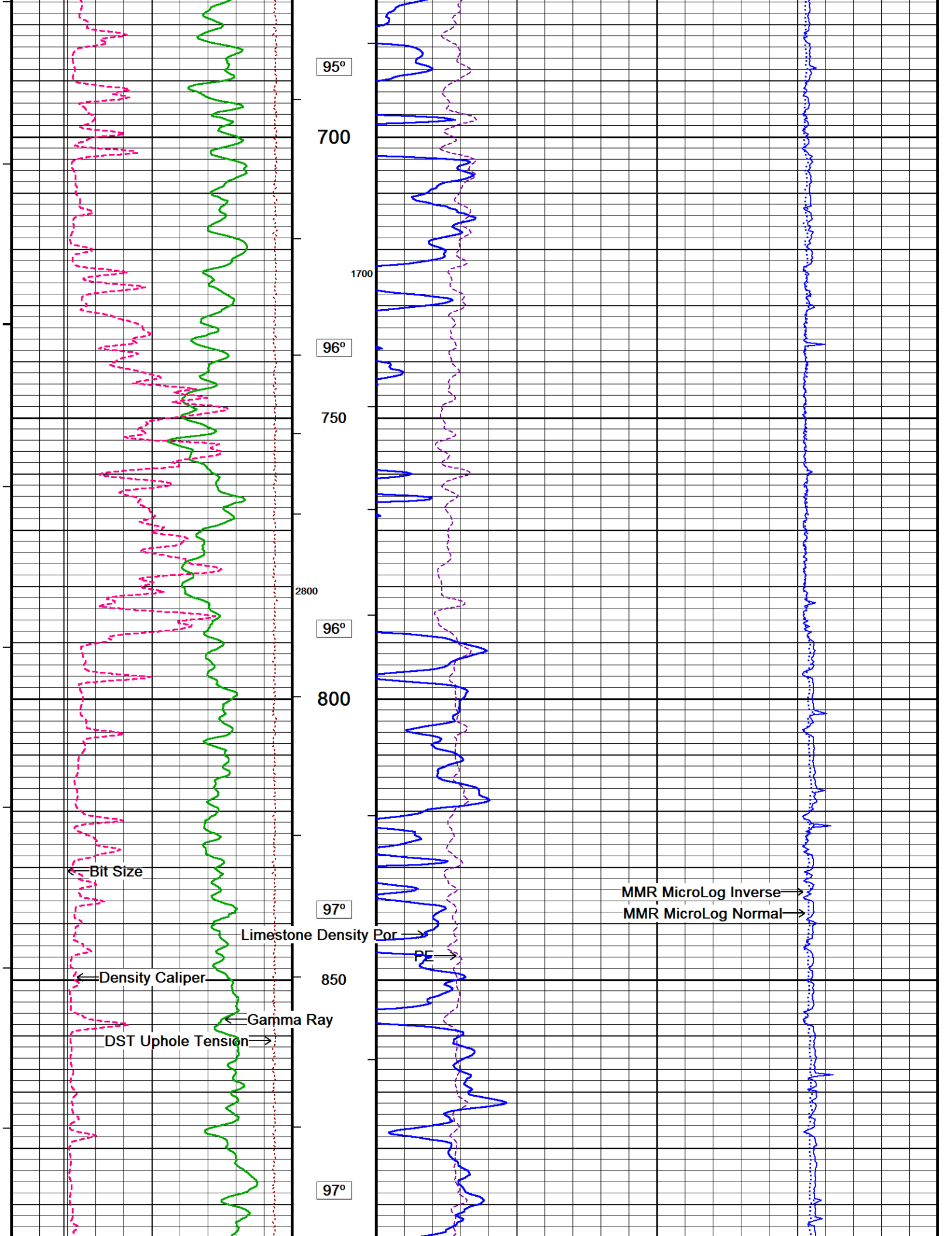
REMARKS
- SOFTWARE ISSUE: WLS 18.03.9344.
- RUN ONE: SHA, MCG, MML, MDN, MPD, SKJ, MFE, MSS, MAI RAN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 2940 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 1760 CU.FT.

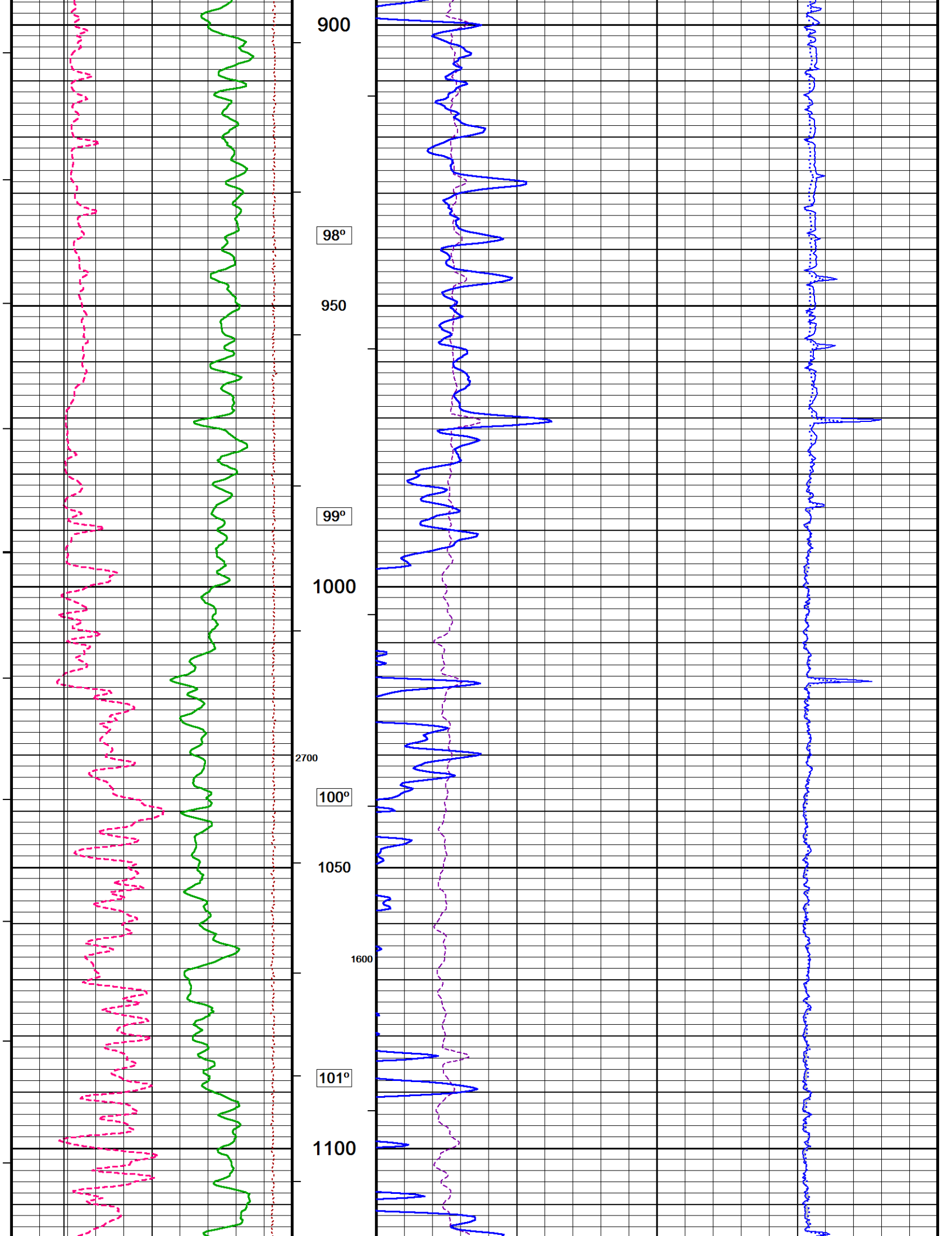
- OPERATORS: B. TOVAR, B. COPELAND.

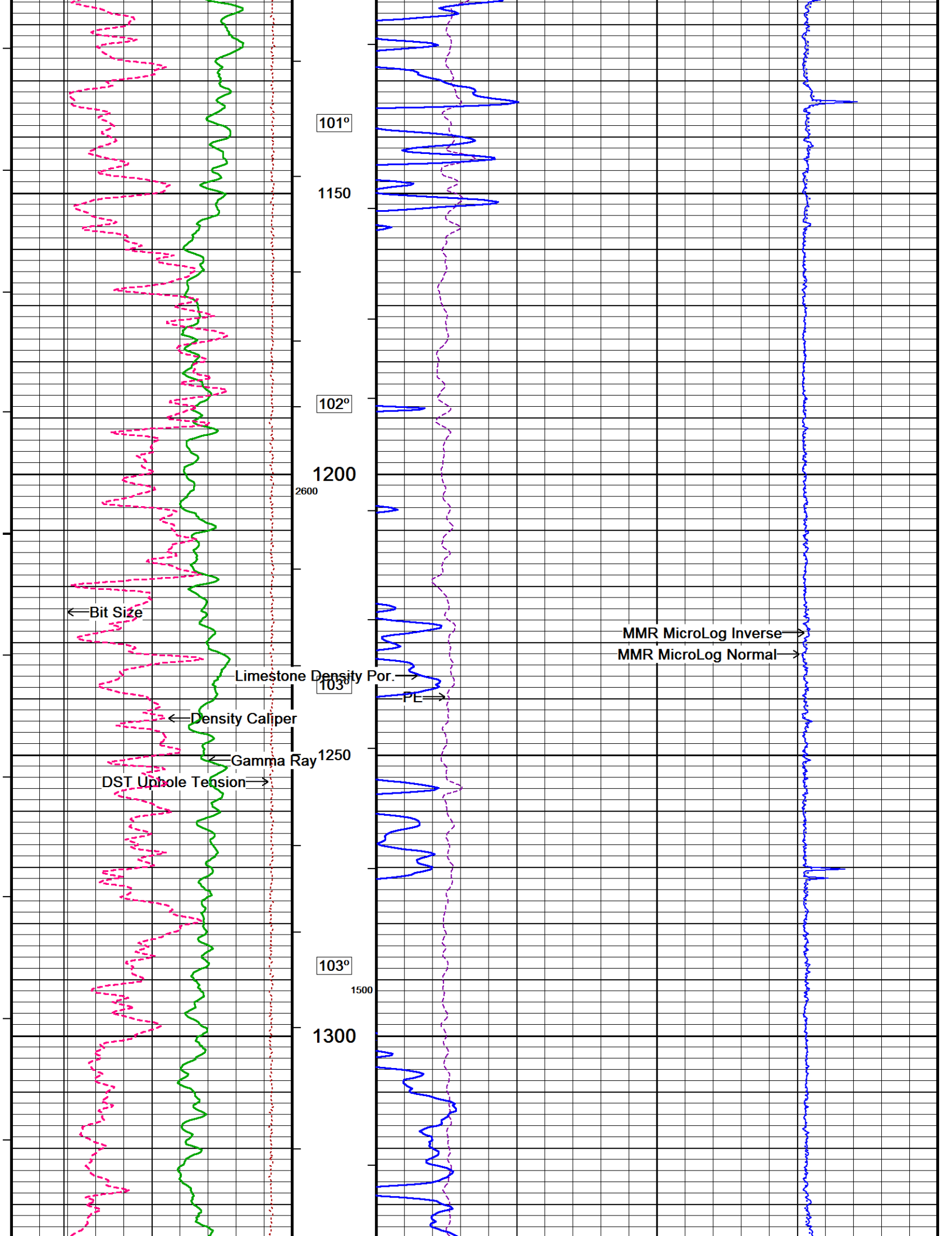
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will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

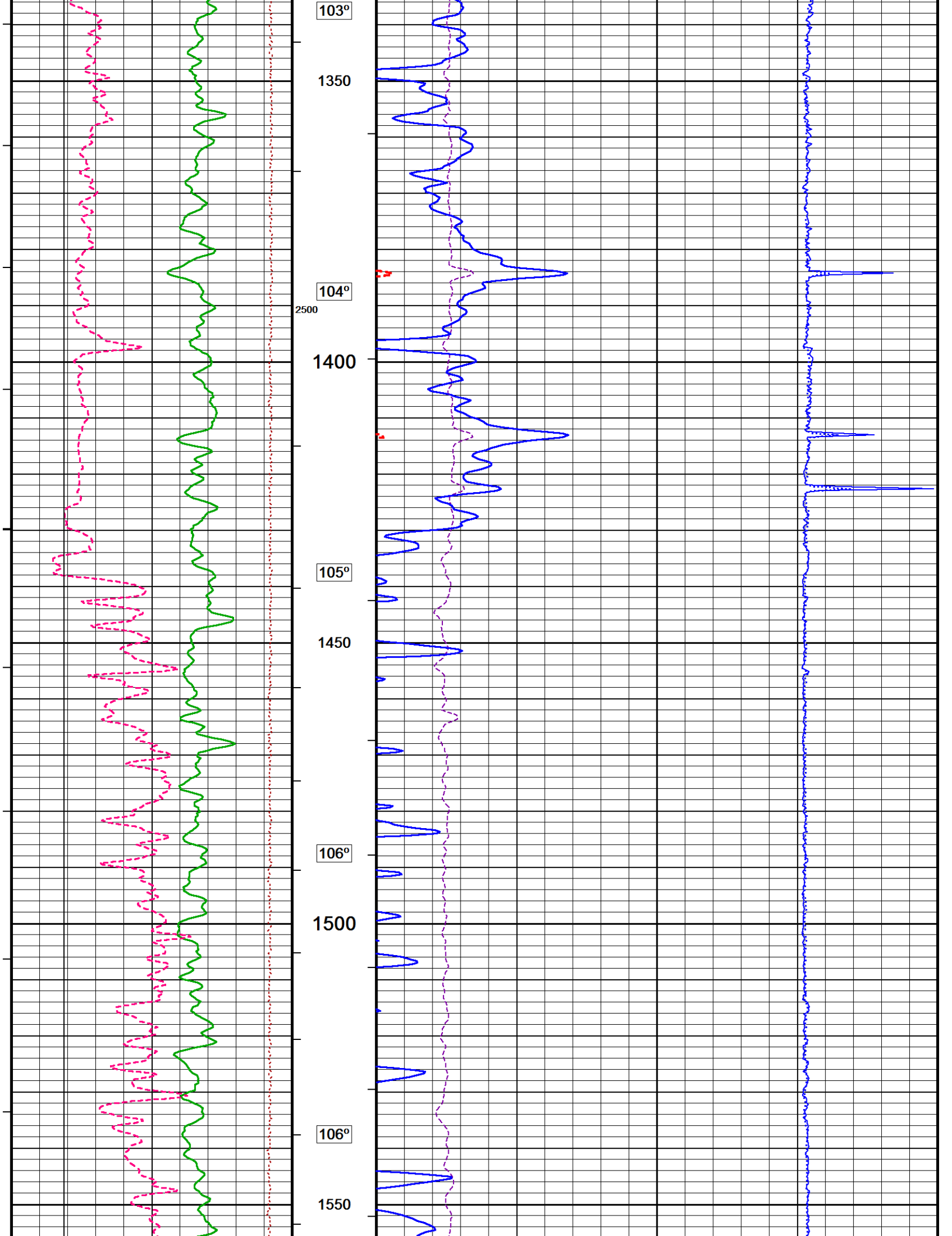


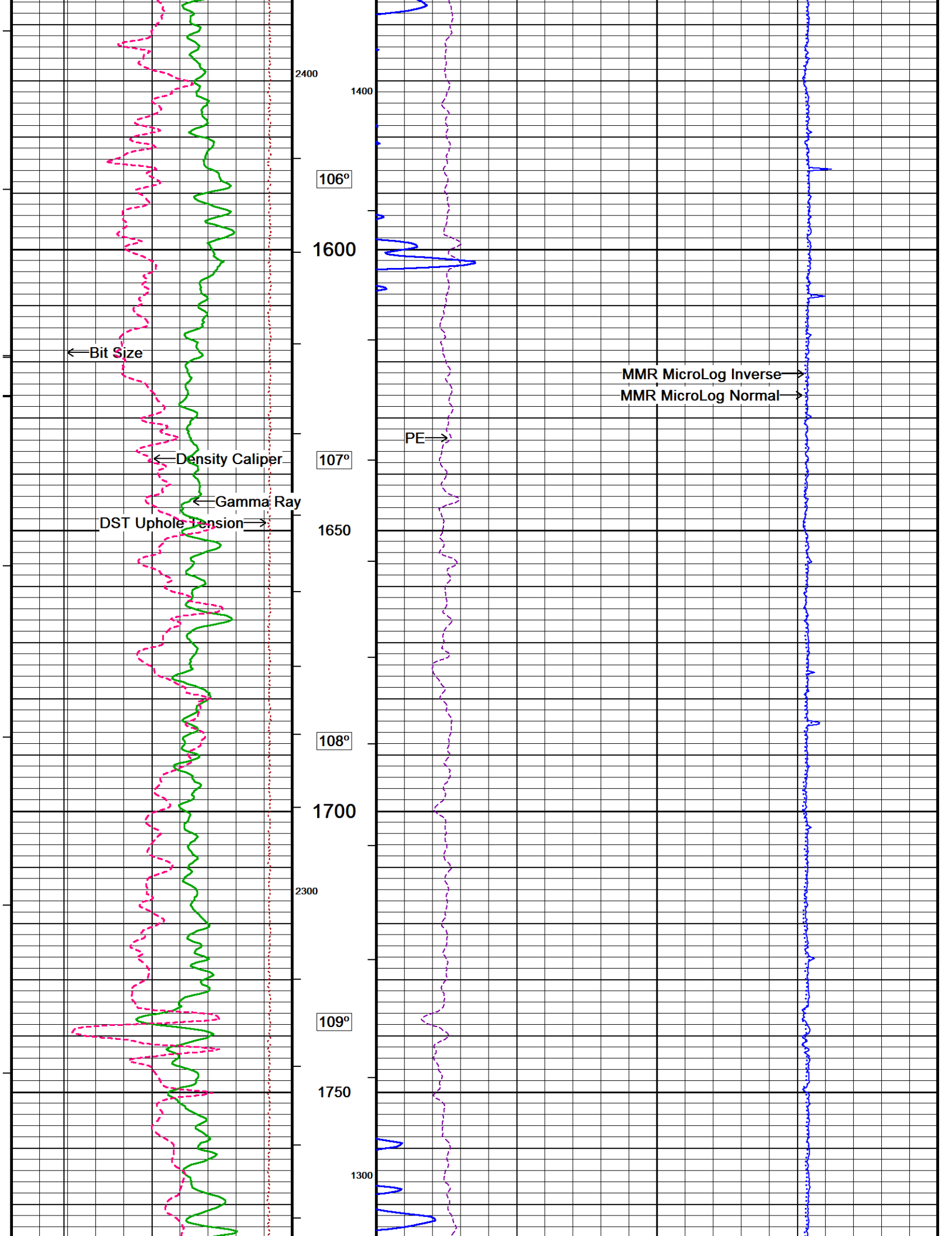


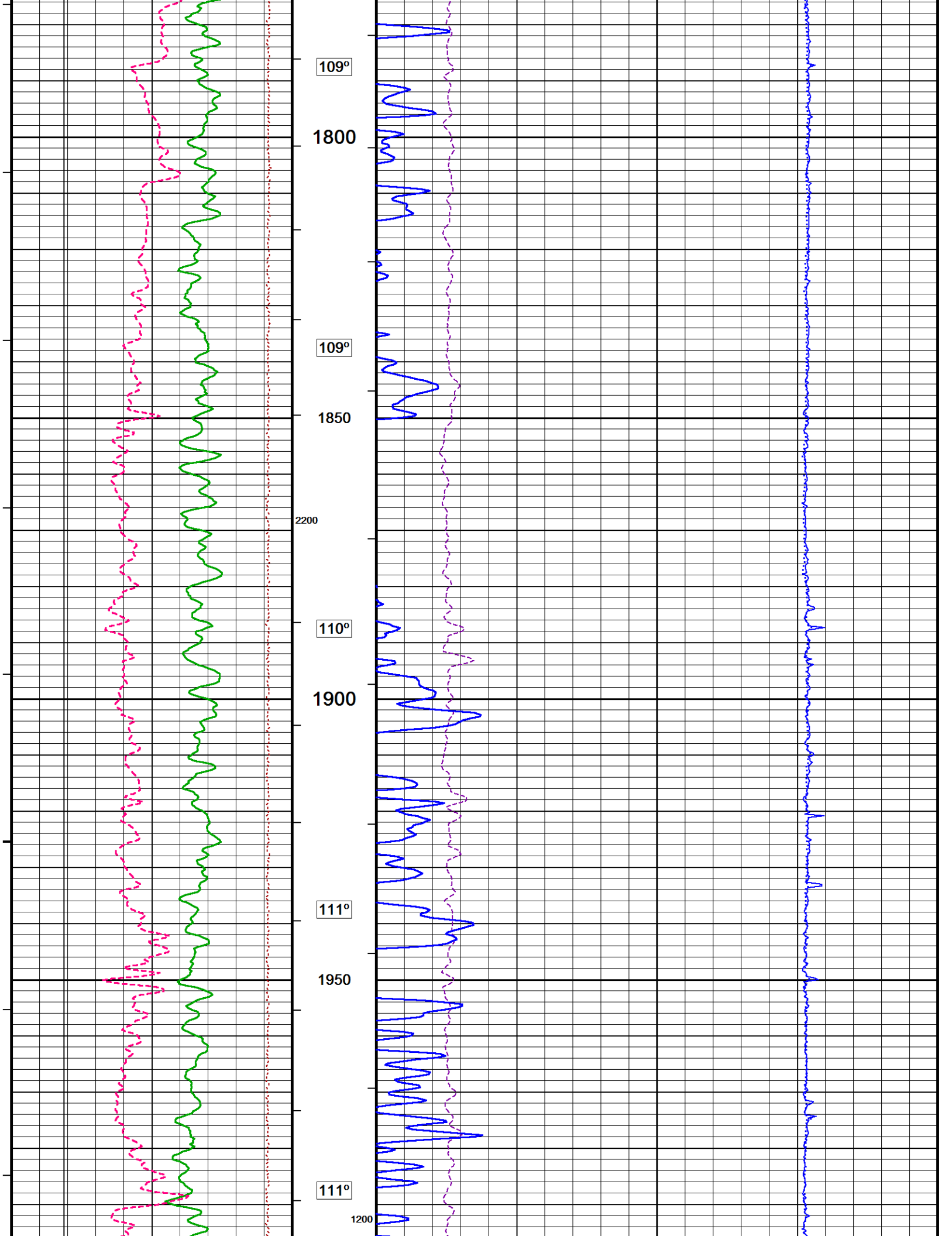


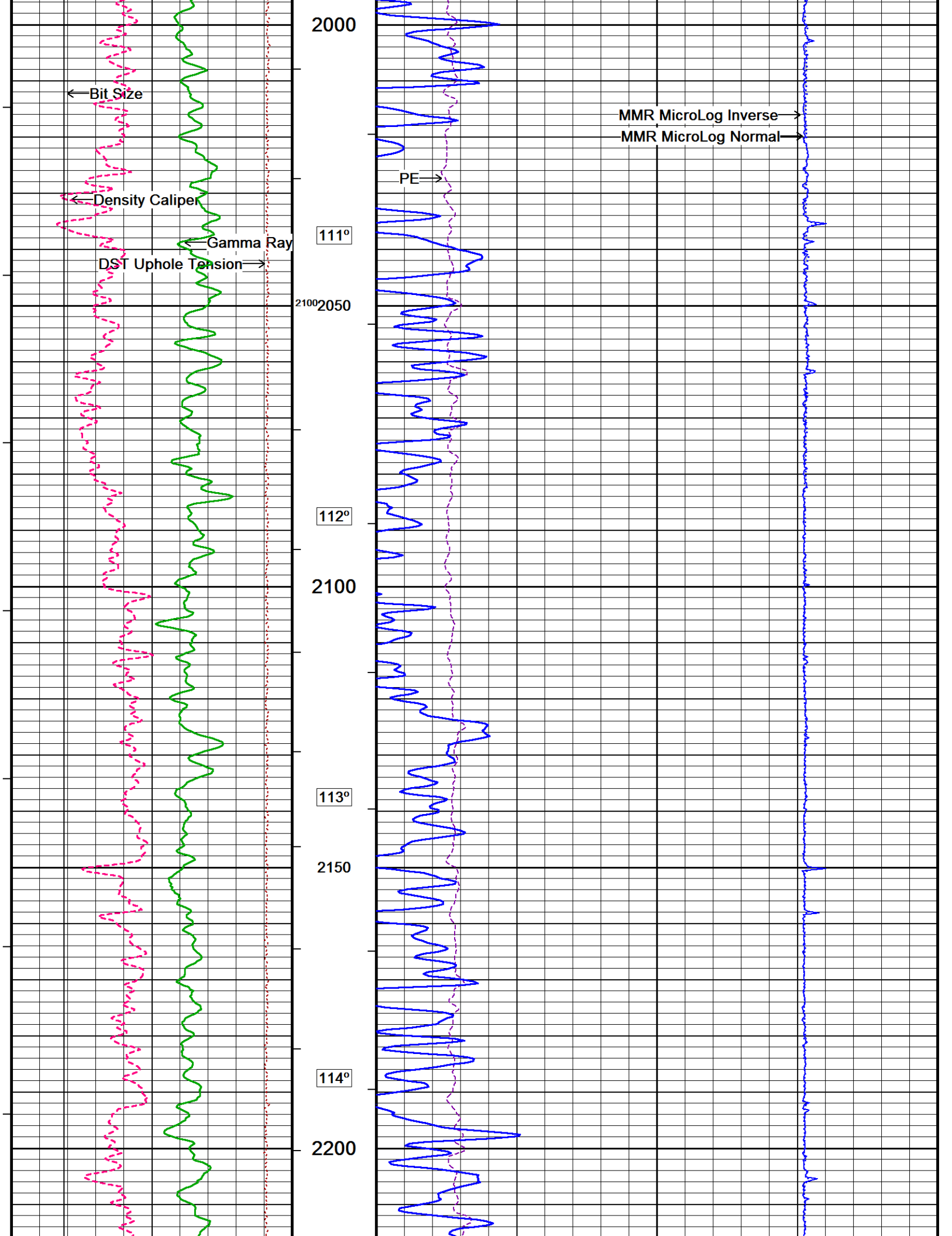


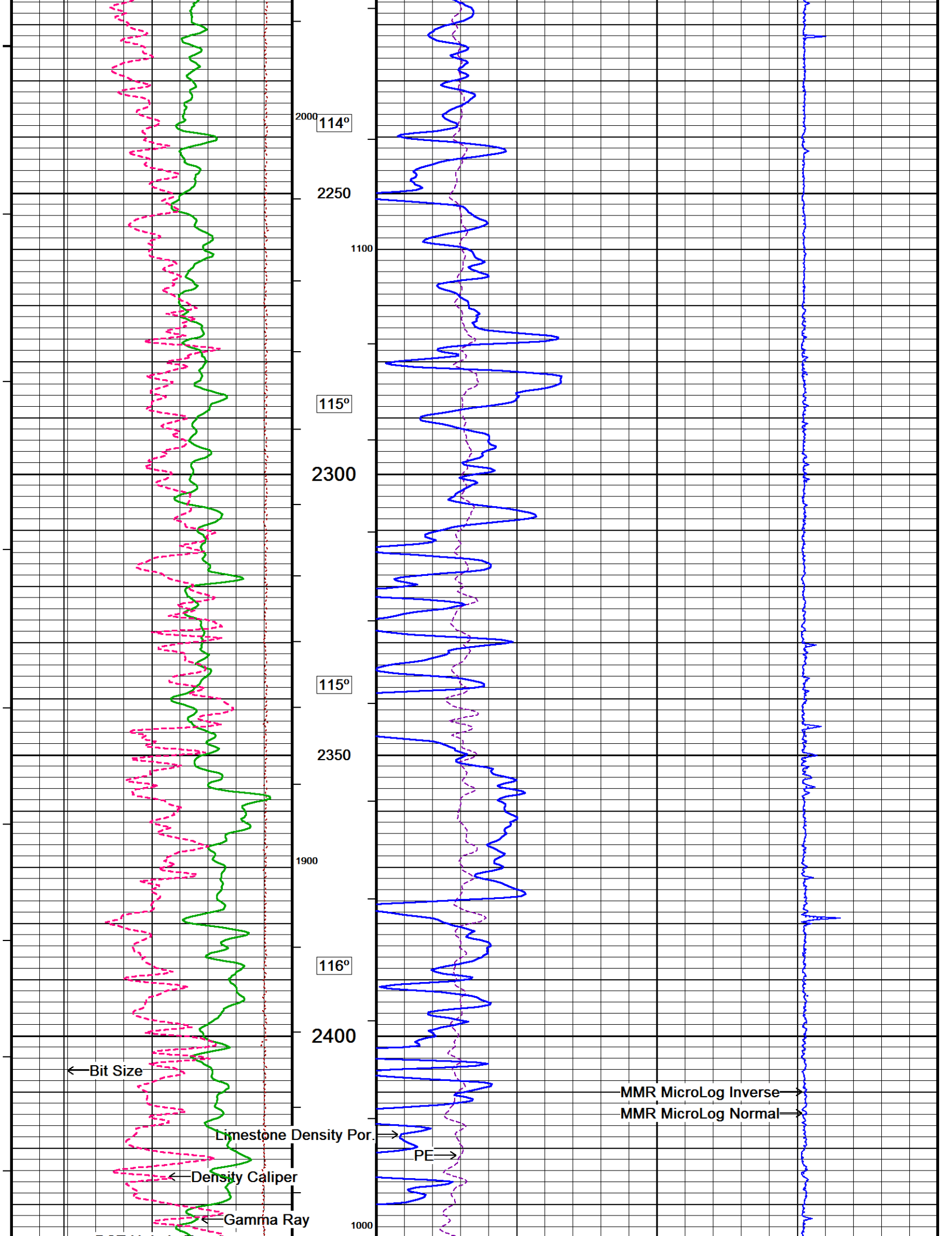


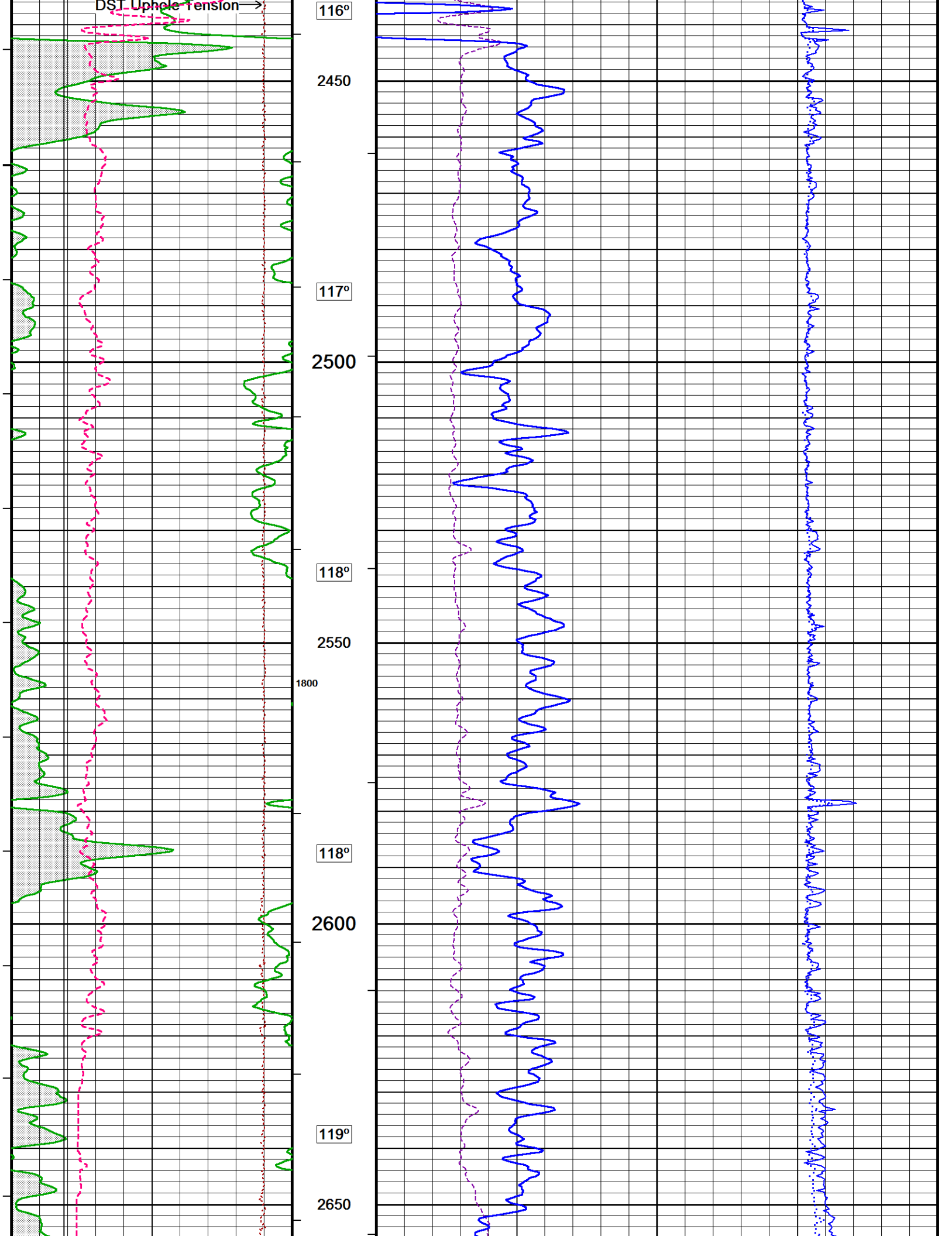


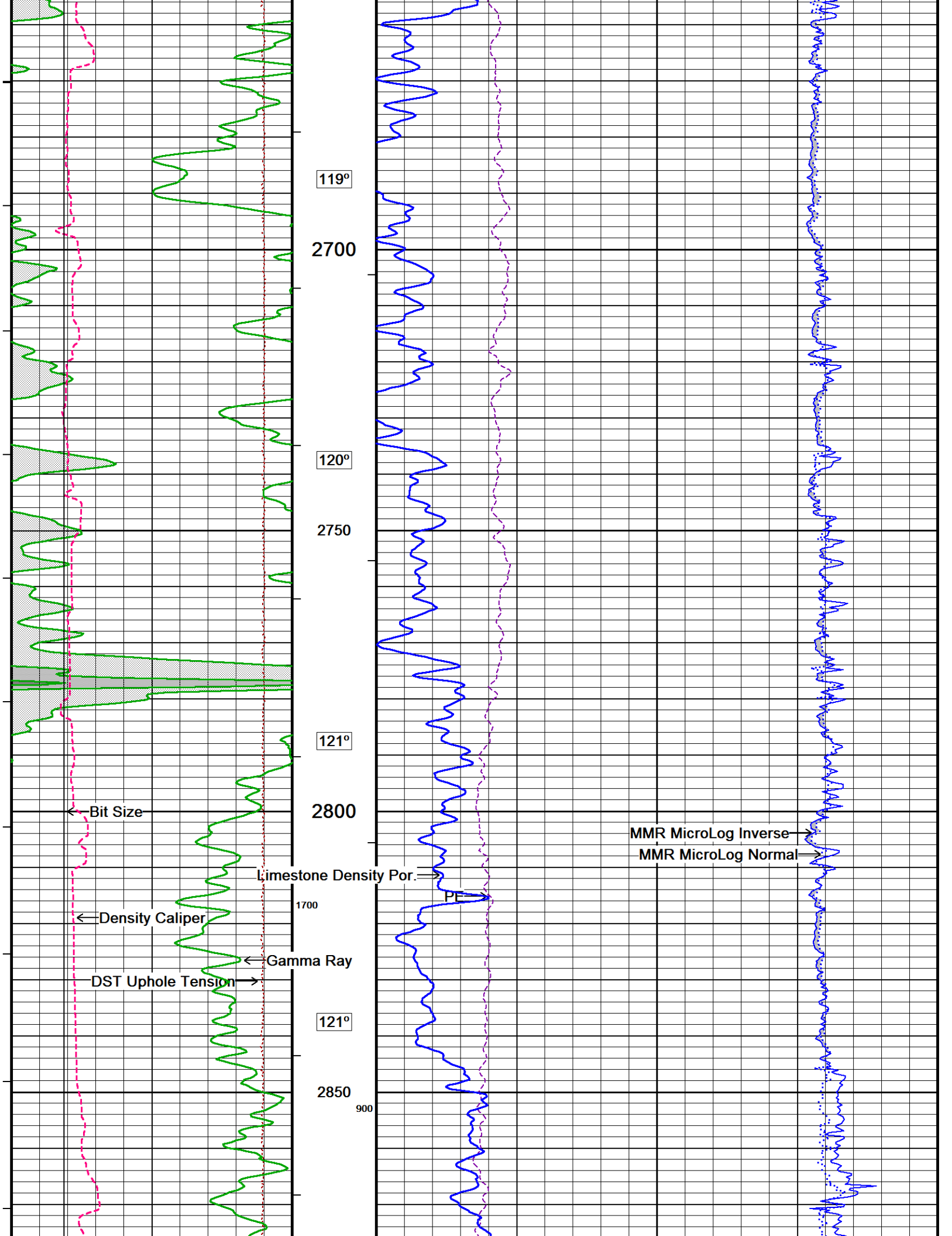


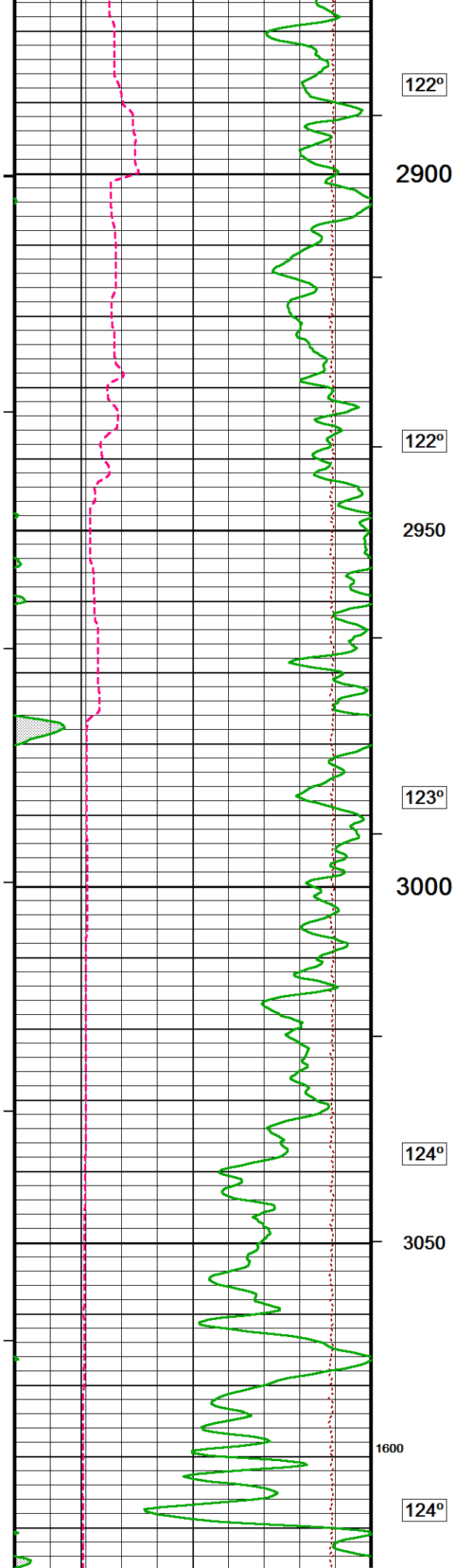












122°

2900

122°

2950

123°

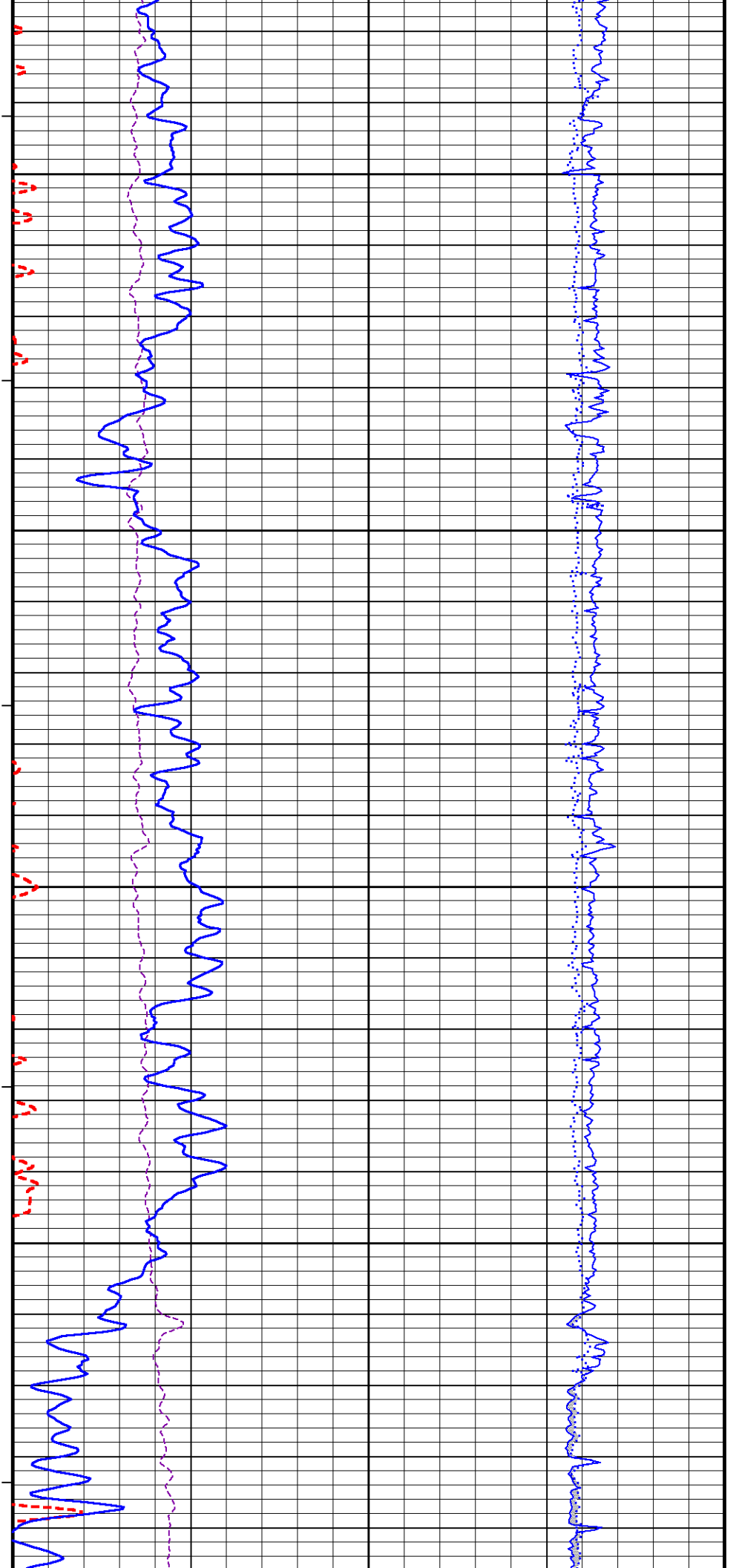
3000

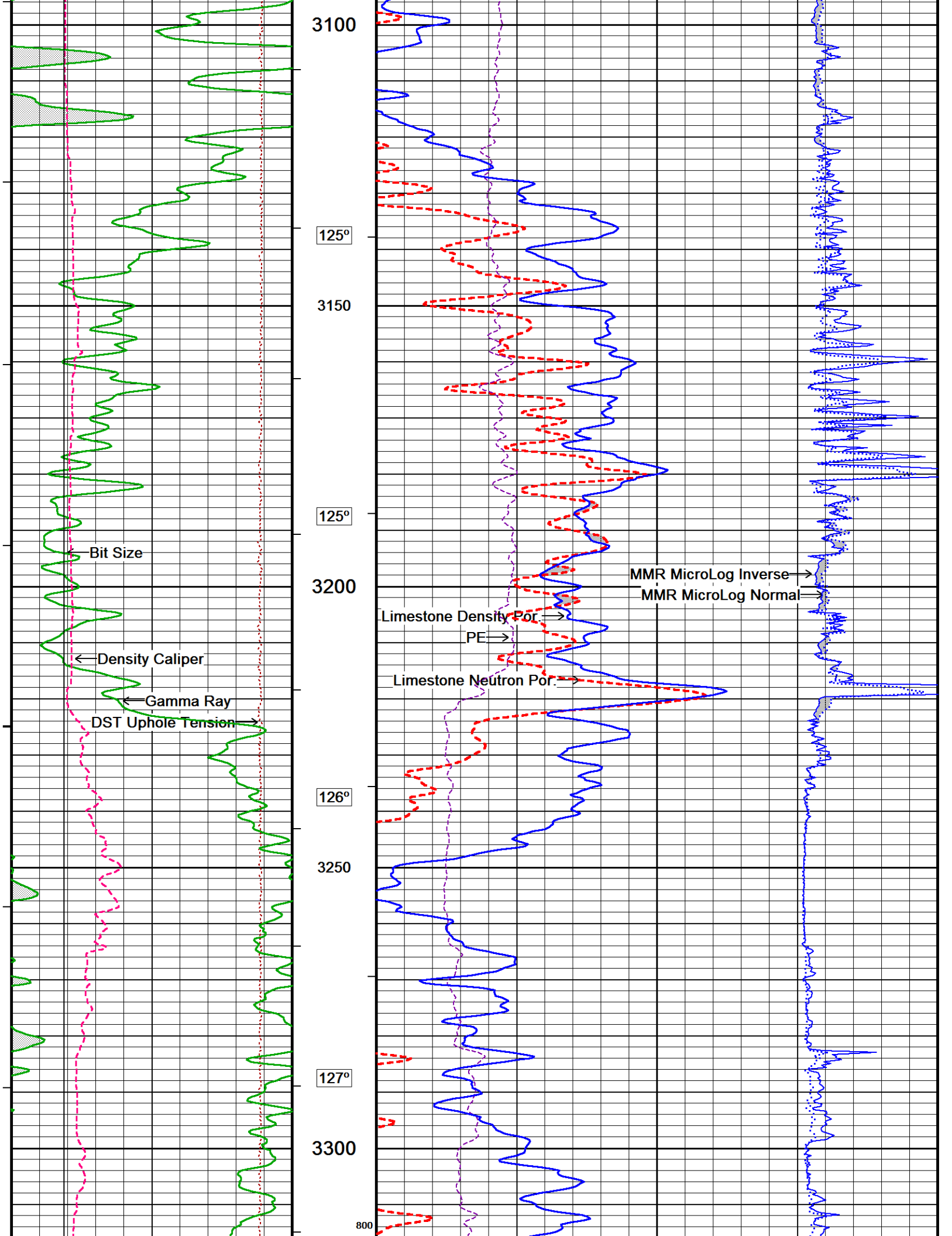
124°

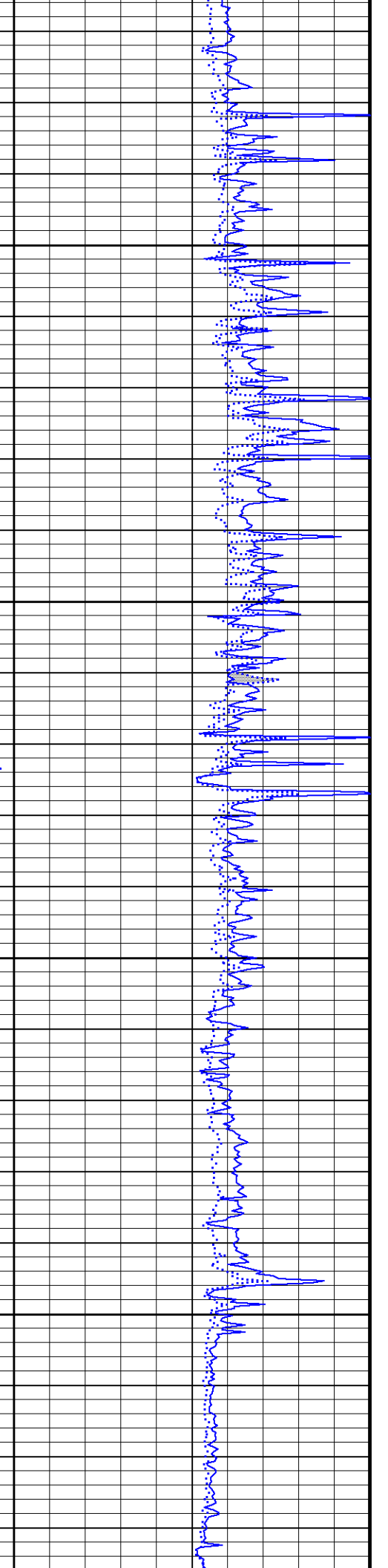
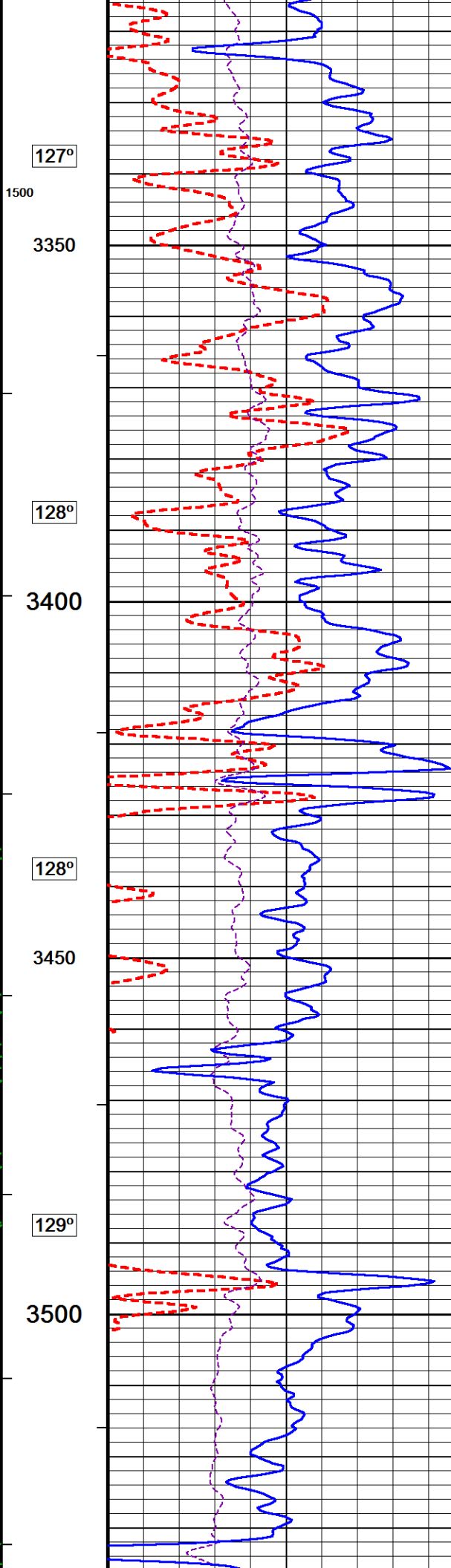
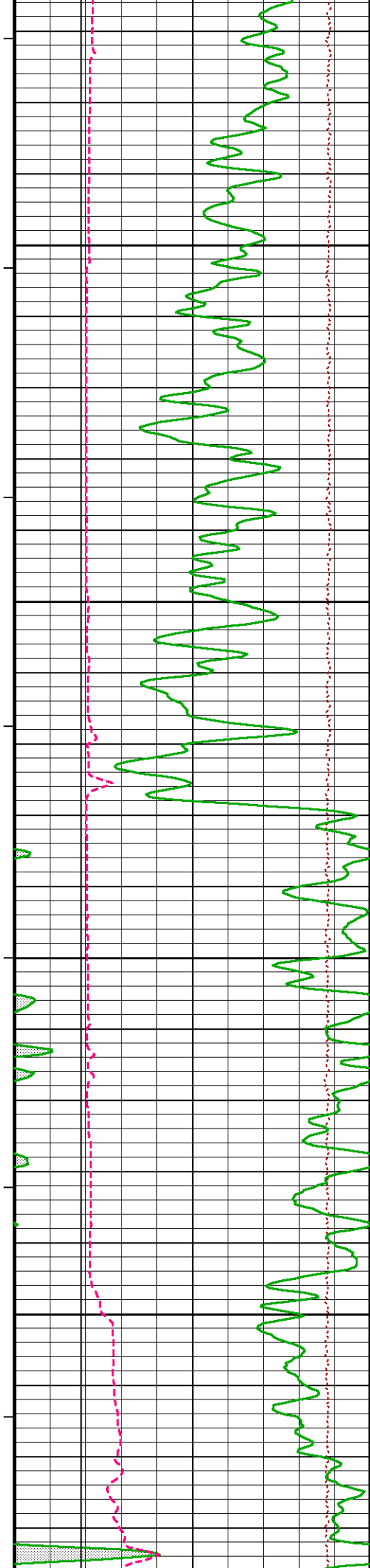
3050

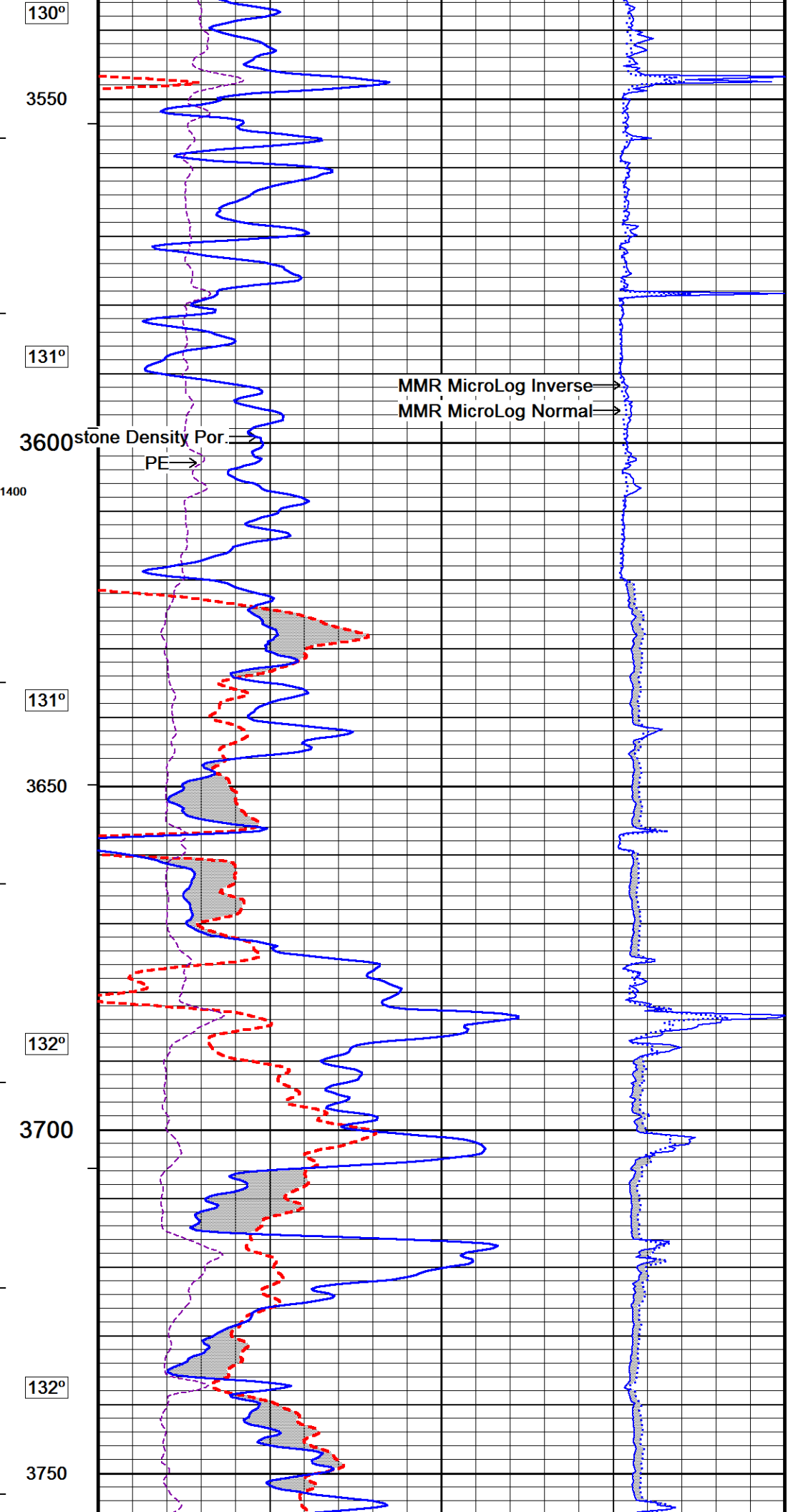
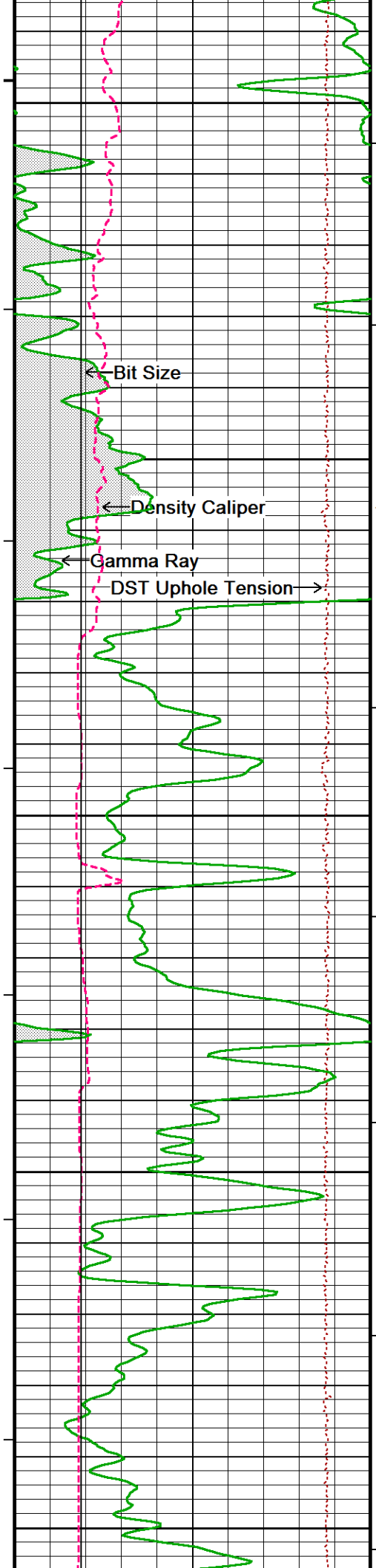
1600

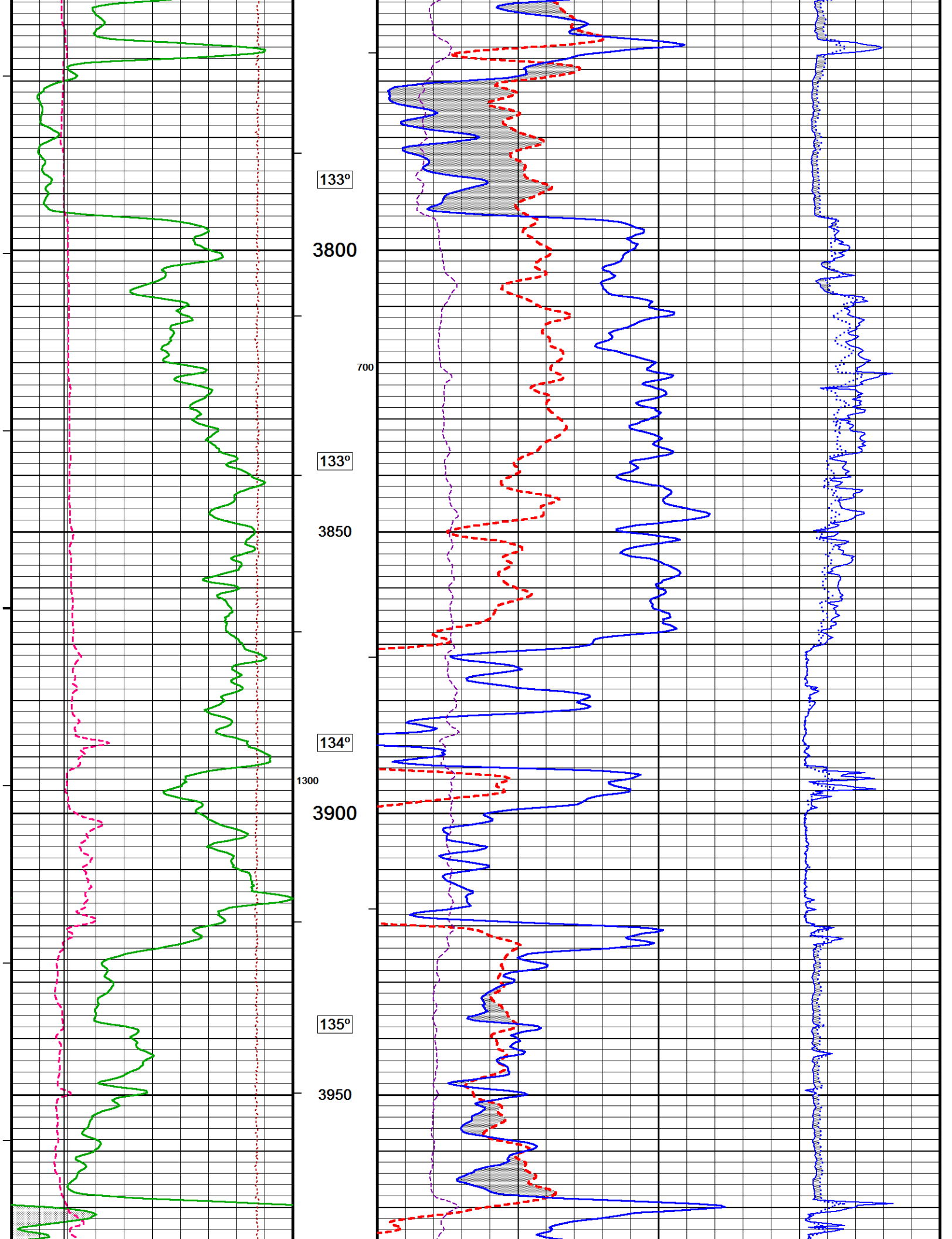
124°

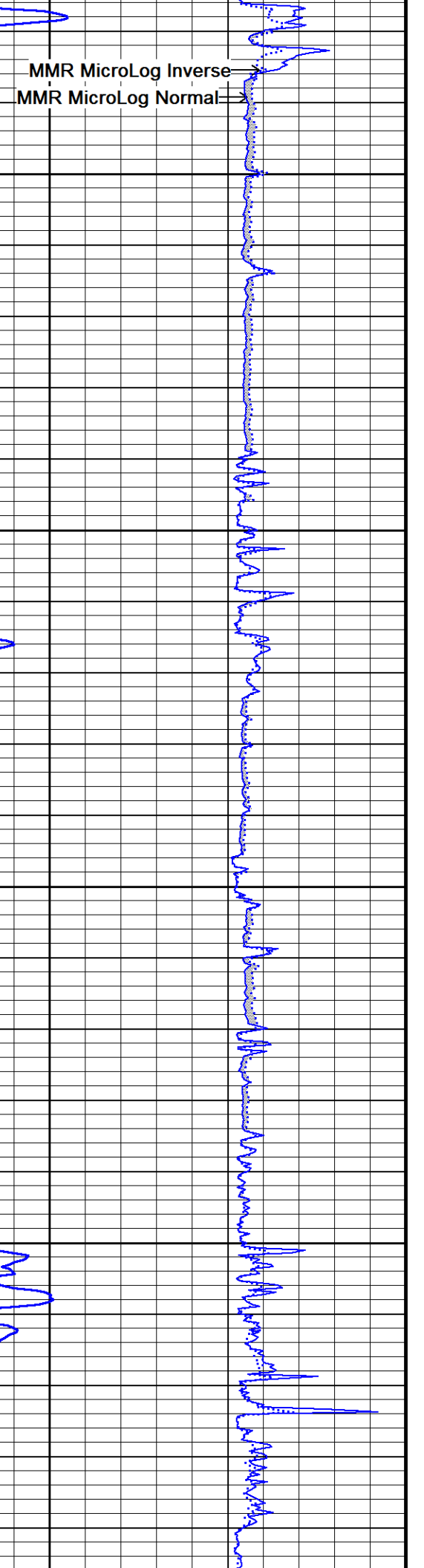
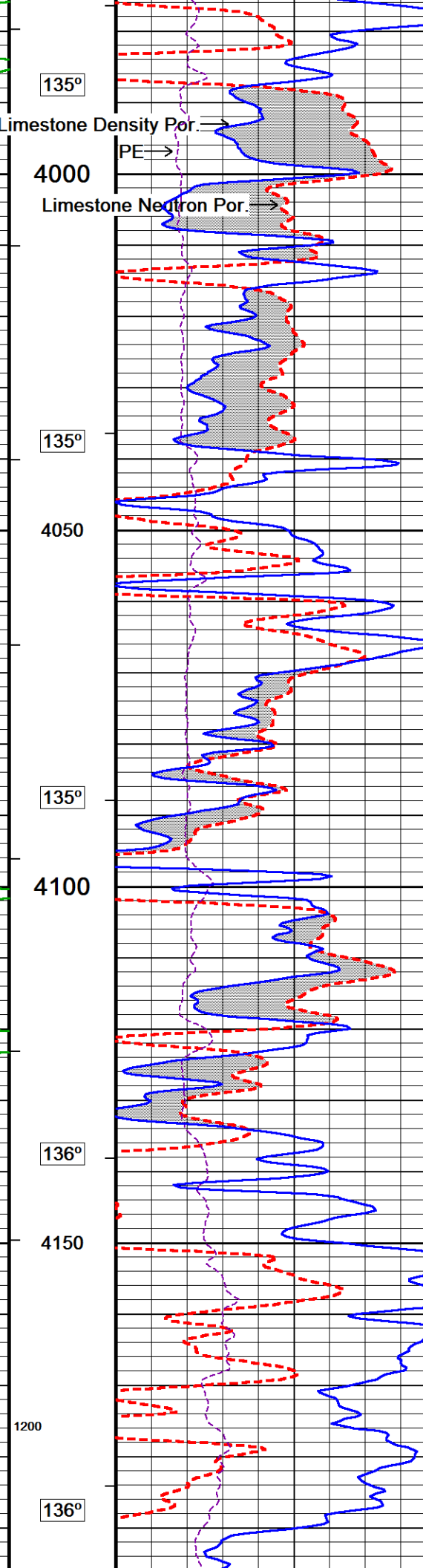
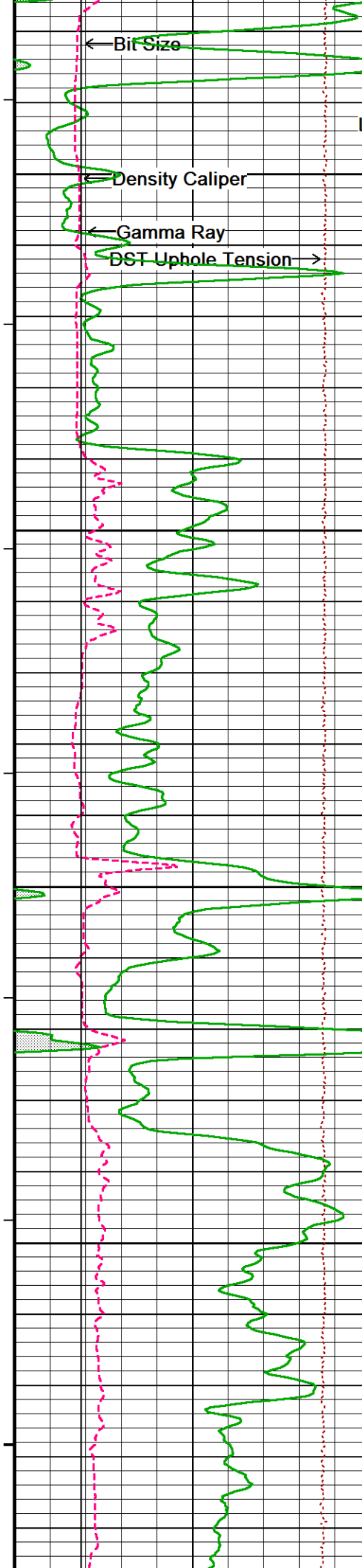


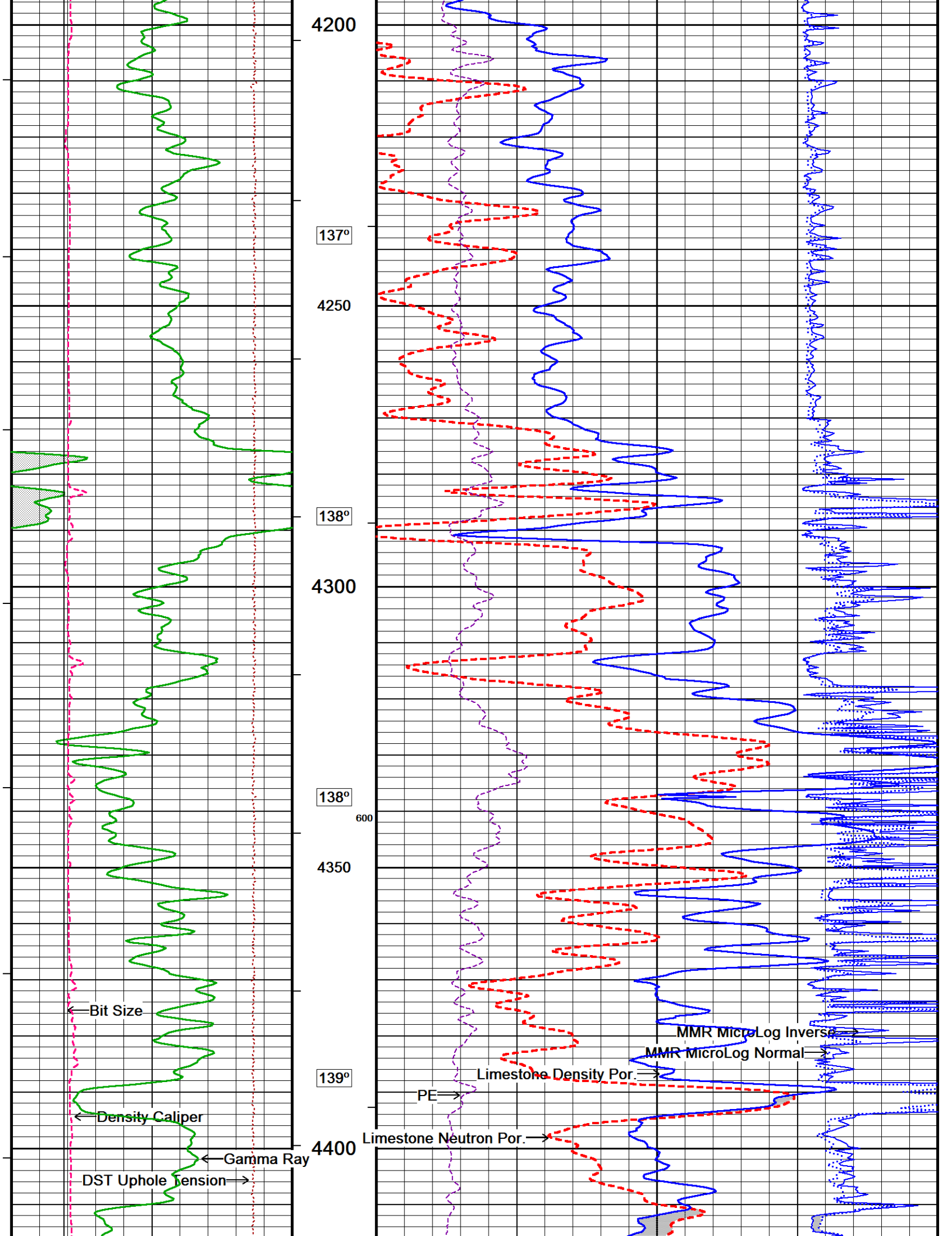


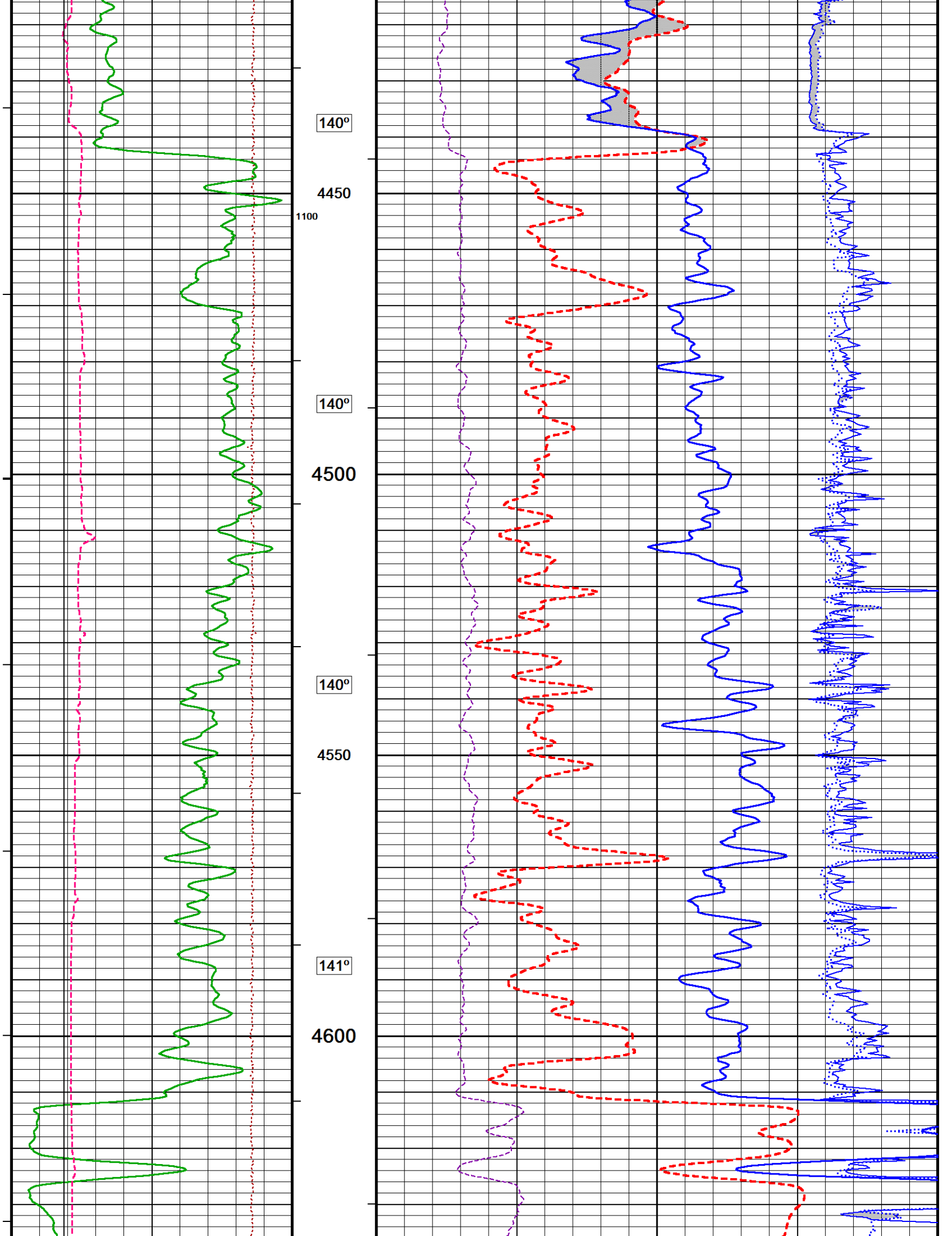


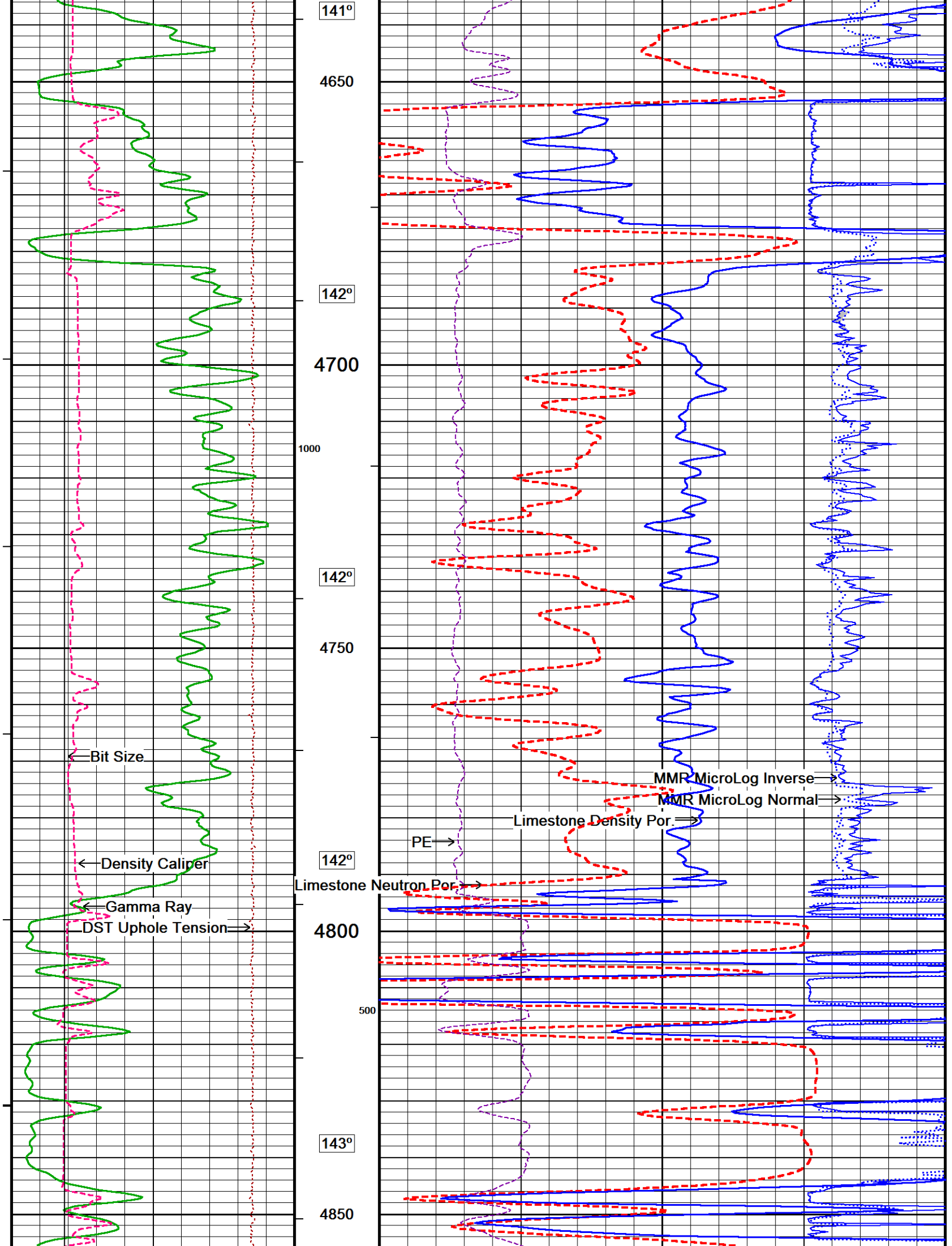


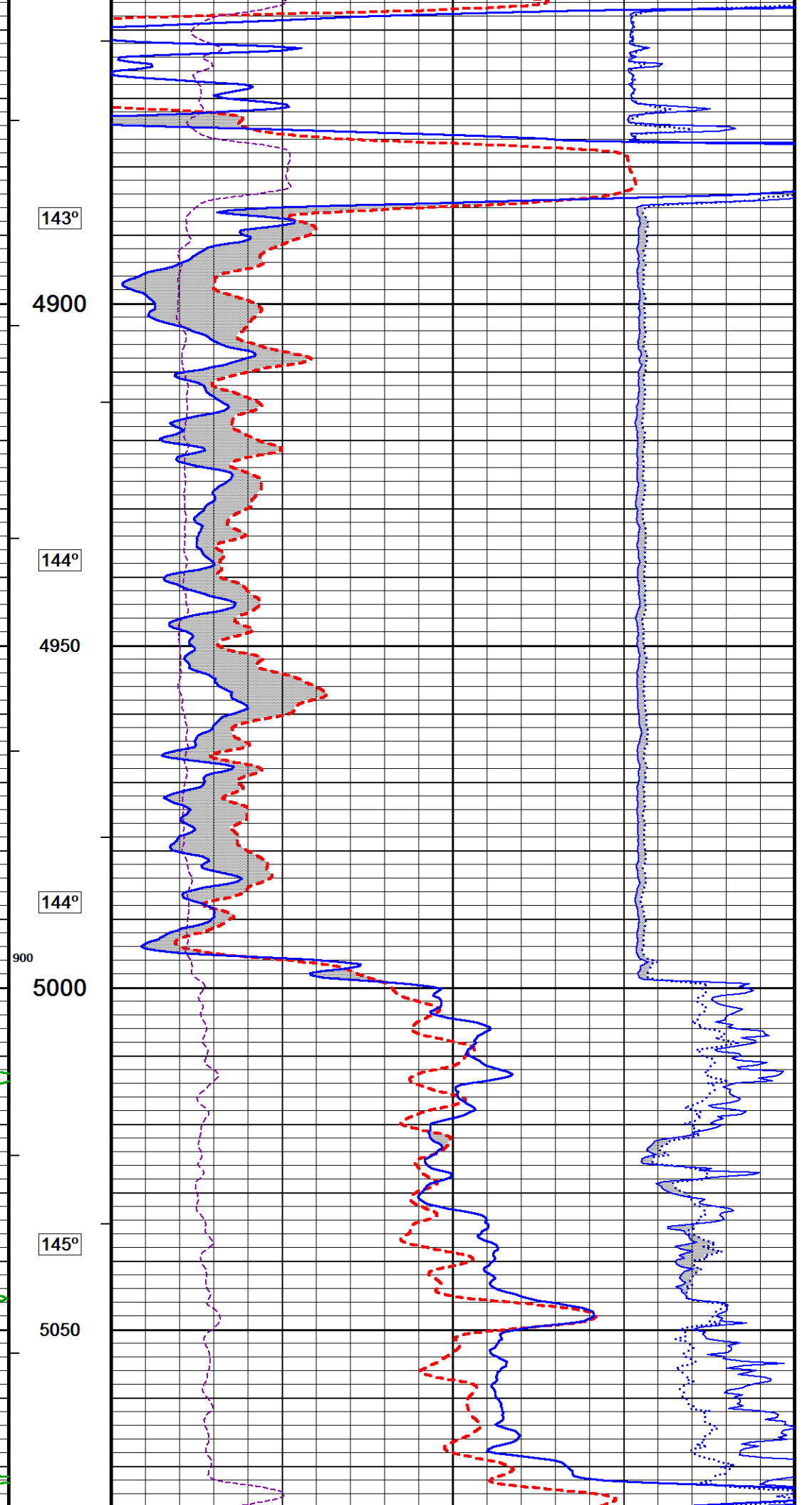
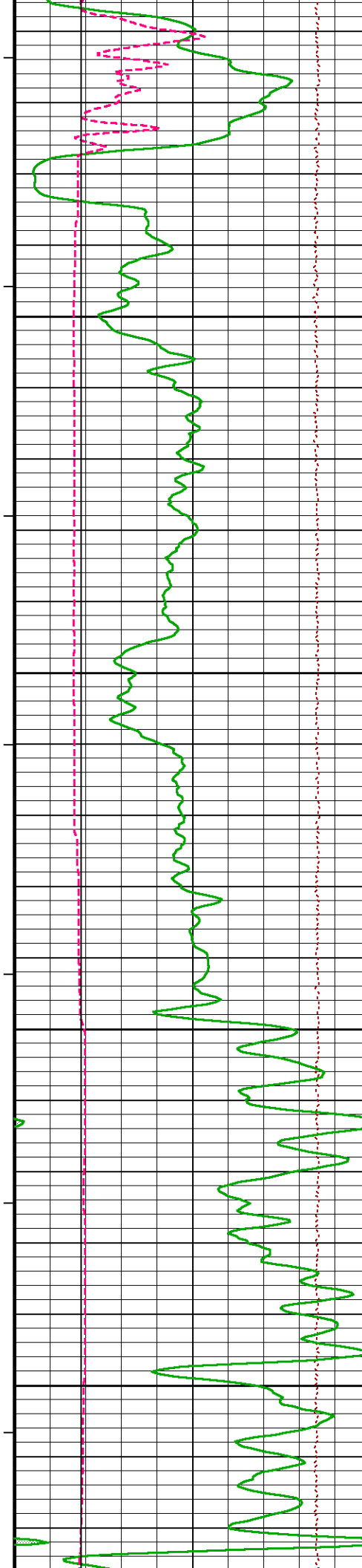


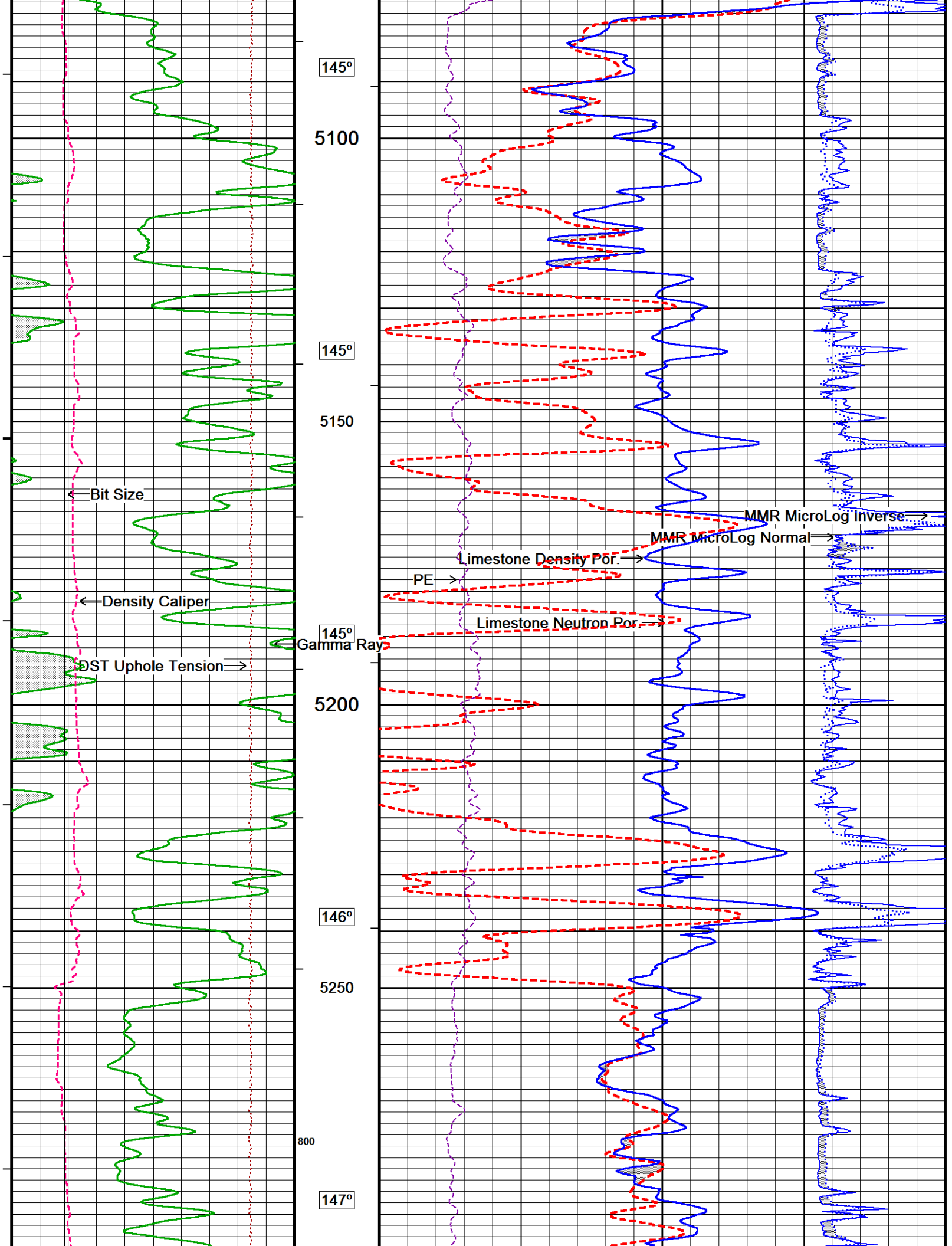


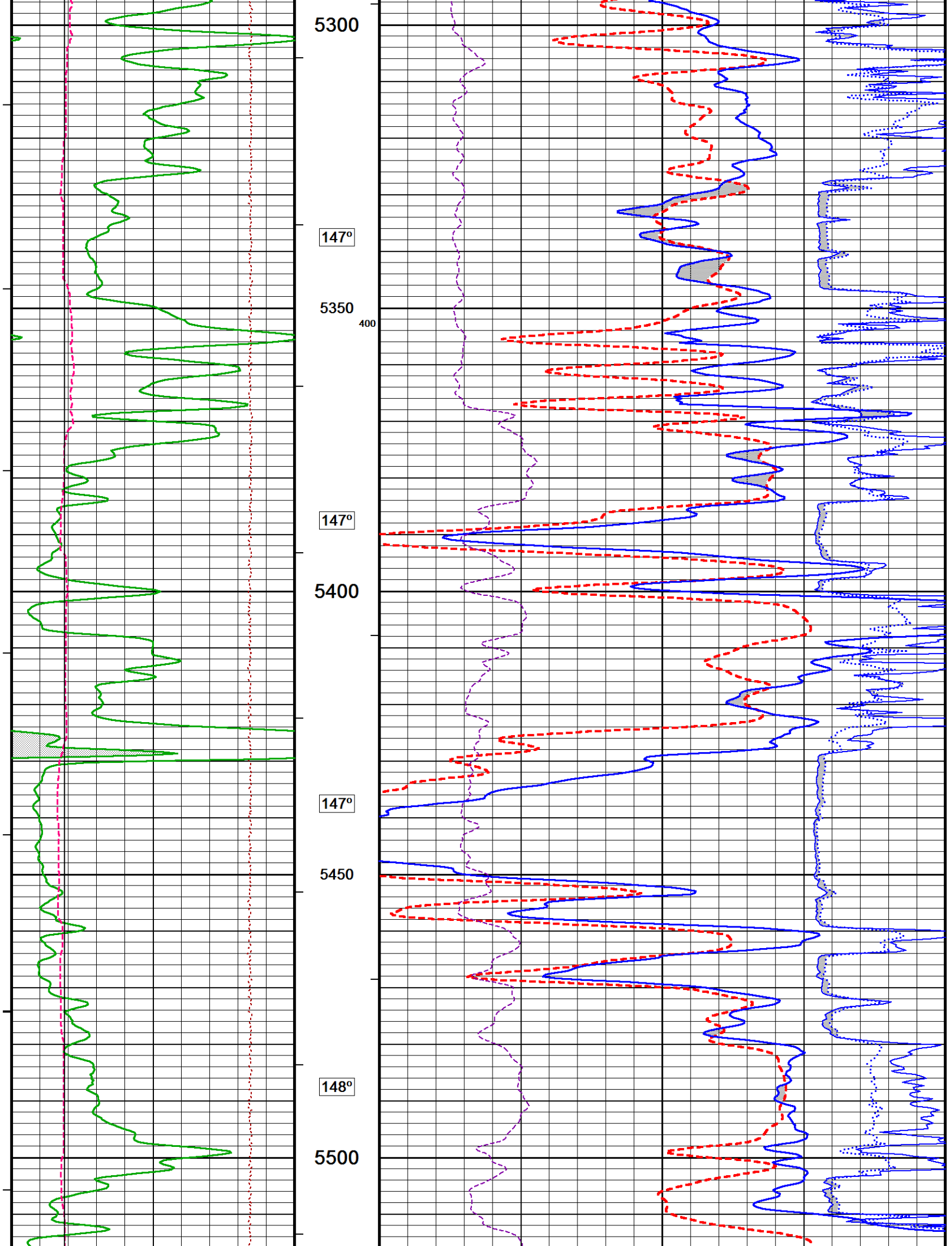


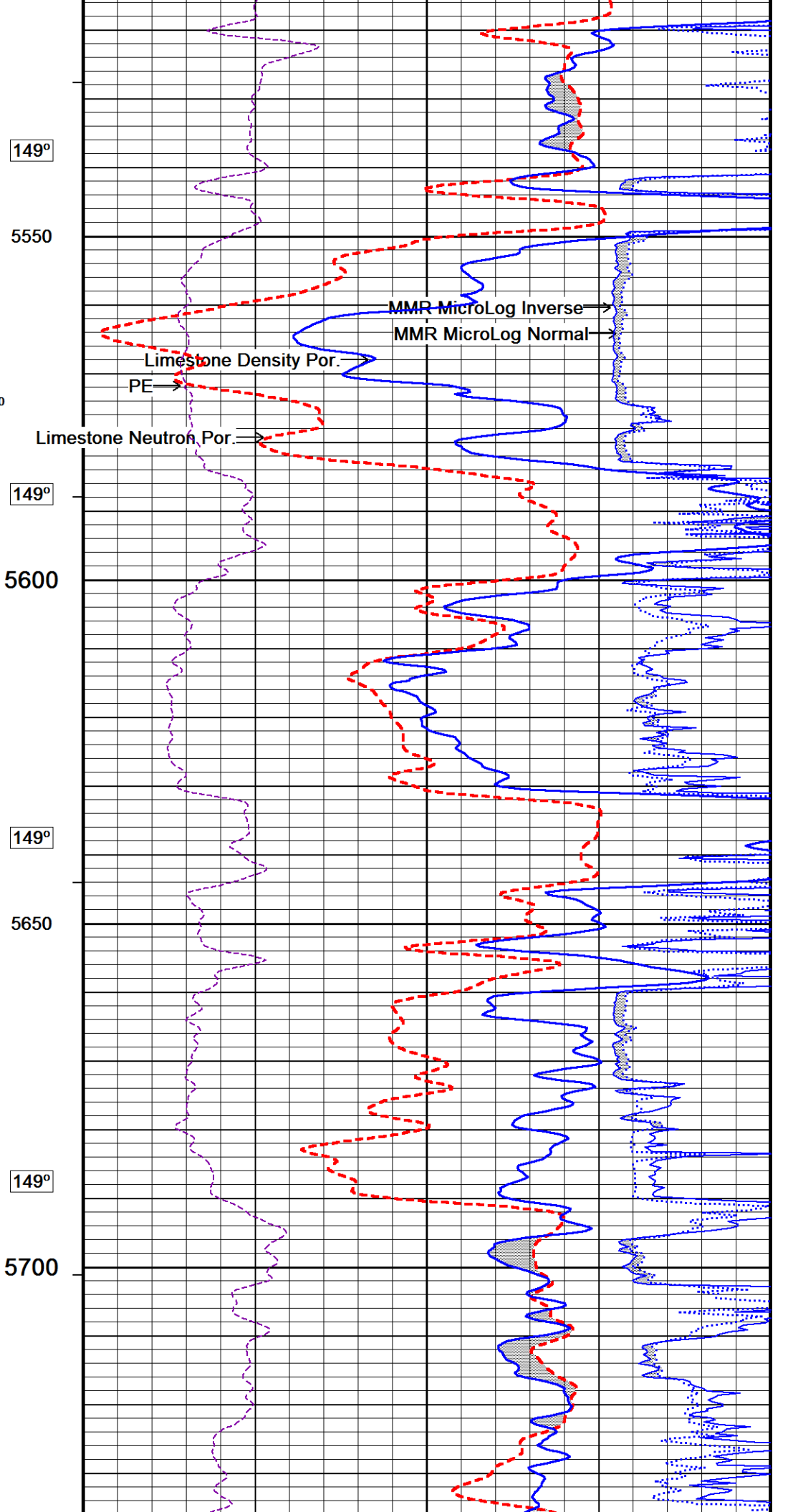
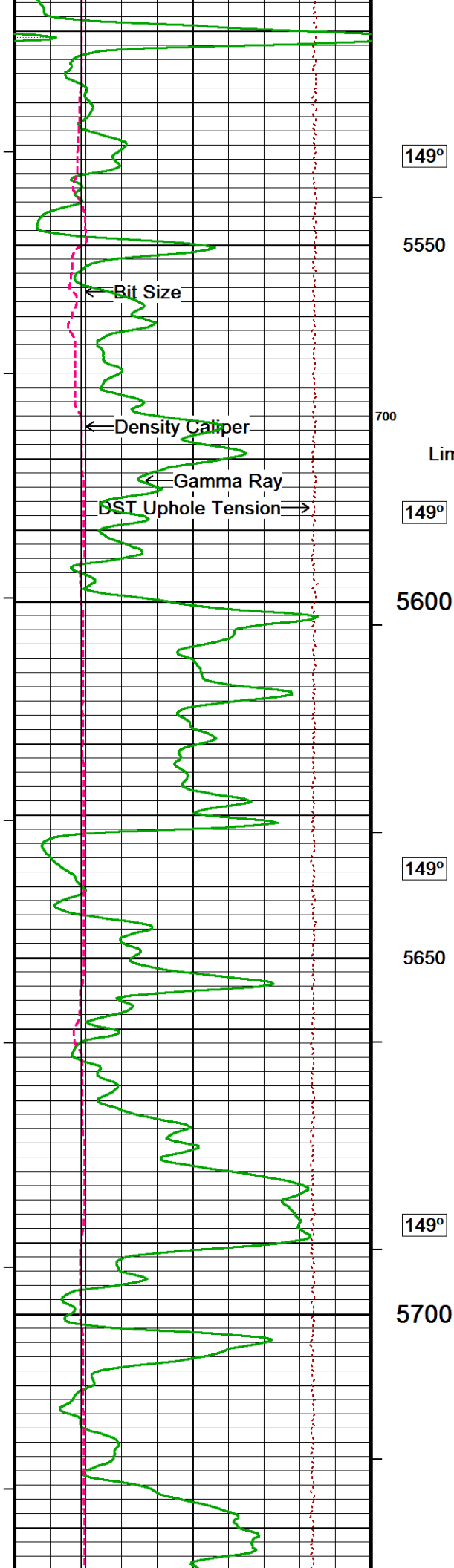


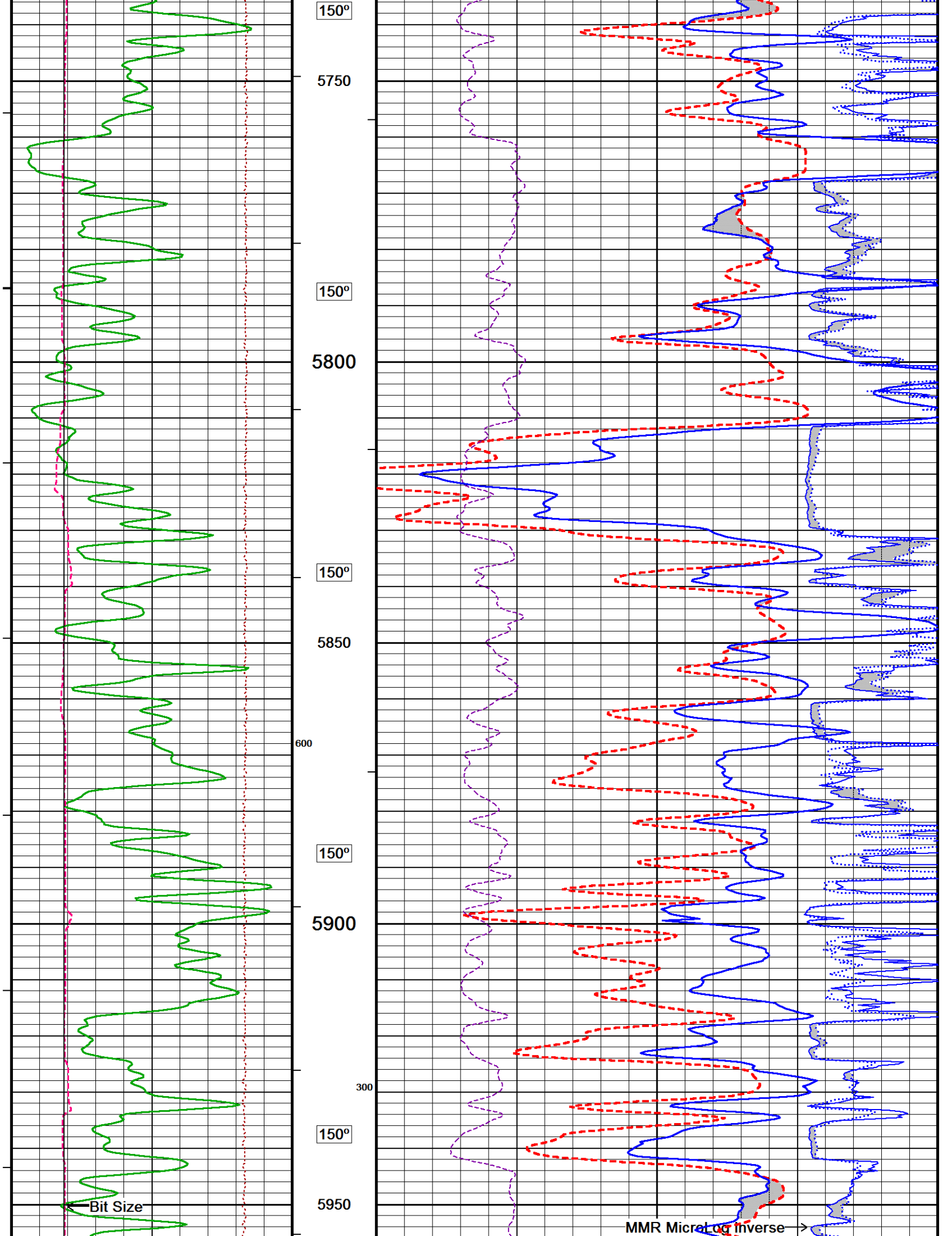


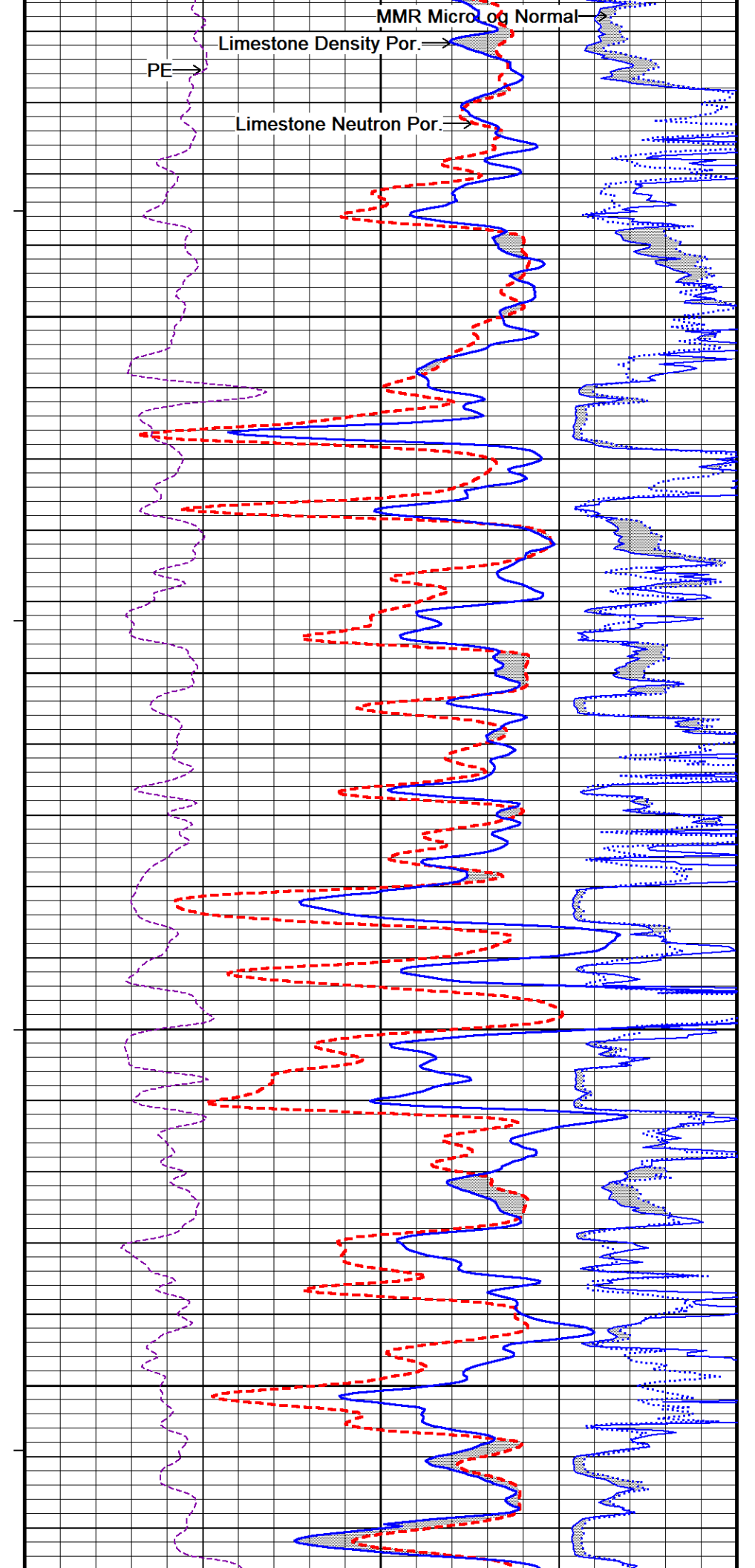
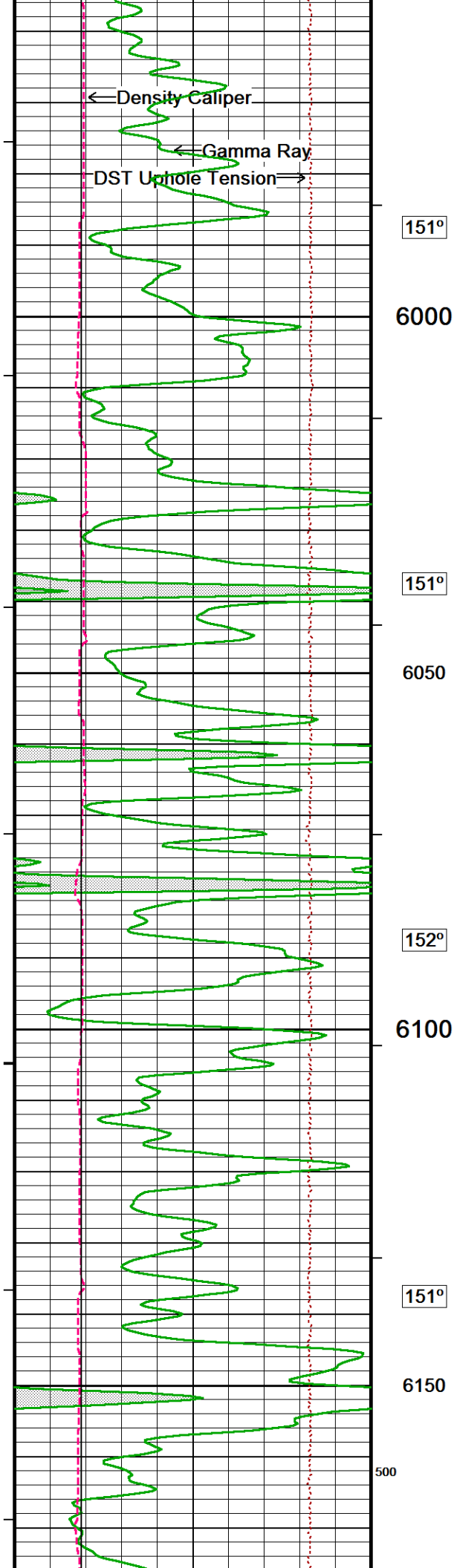


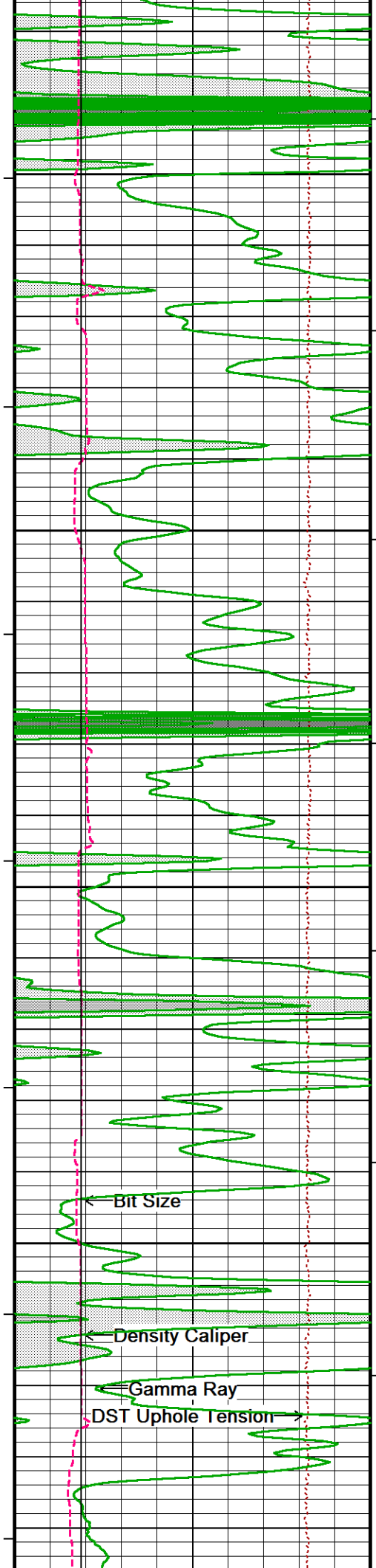












152°

6200

152°

6250

153°

6300

153°

6350

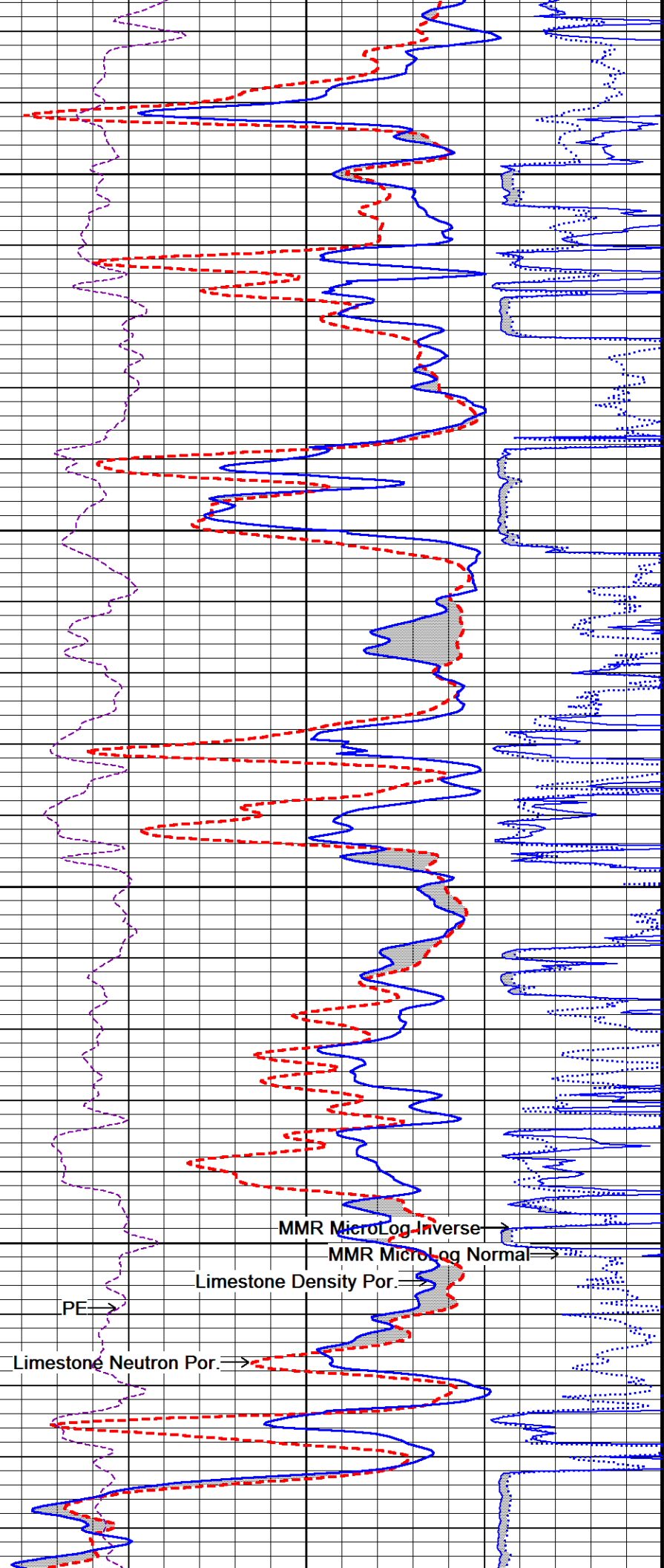
154°

Bit Size

Density Caliper

Gamma Ray

DST Uphole Tension



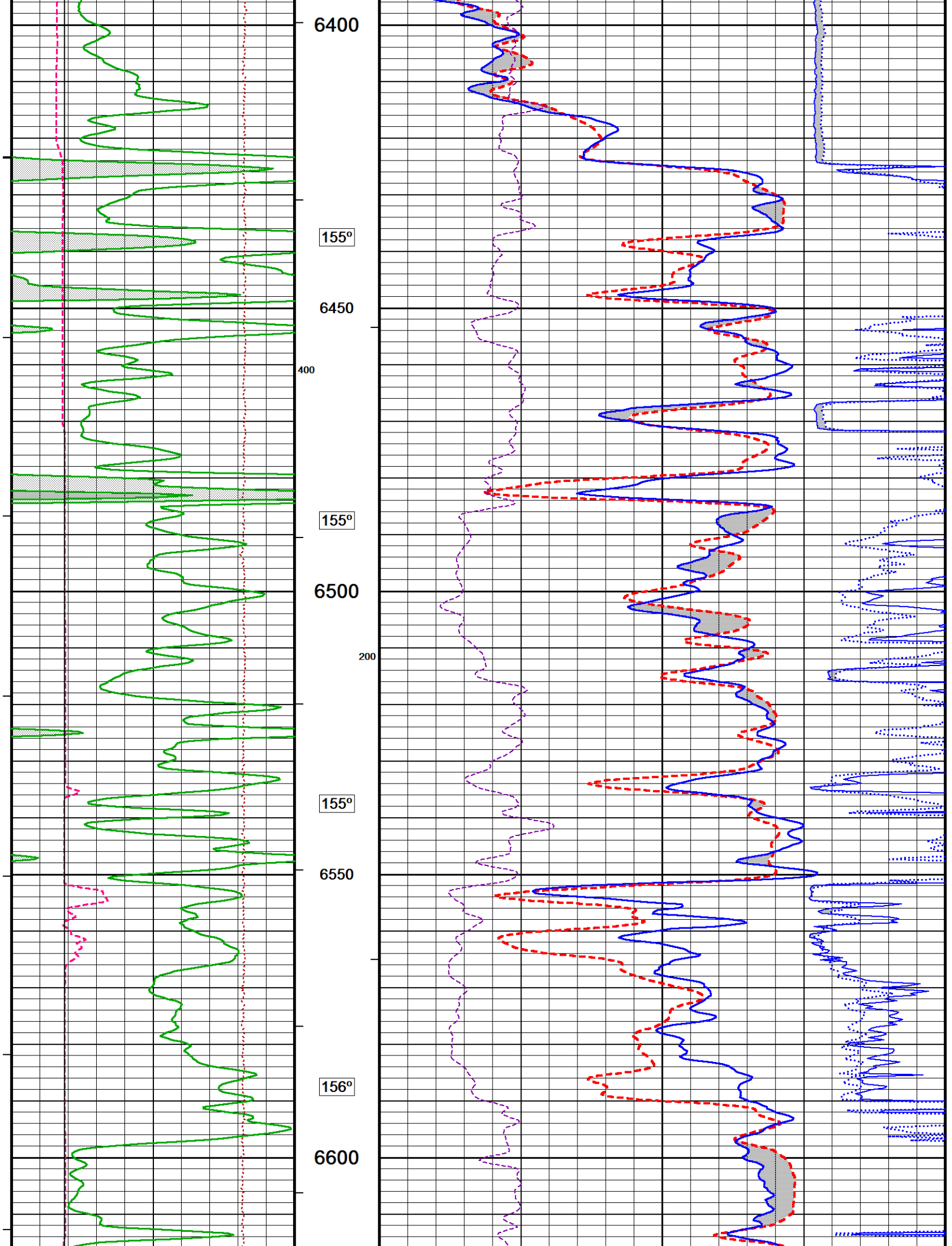
PE

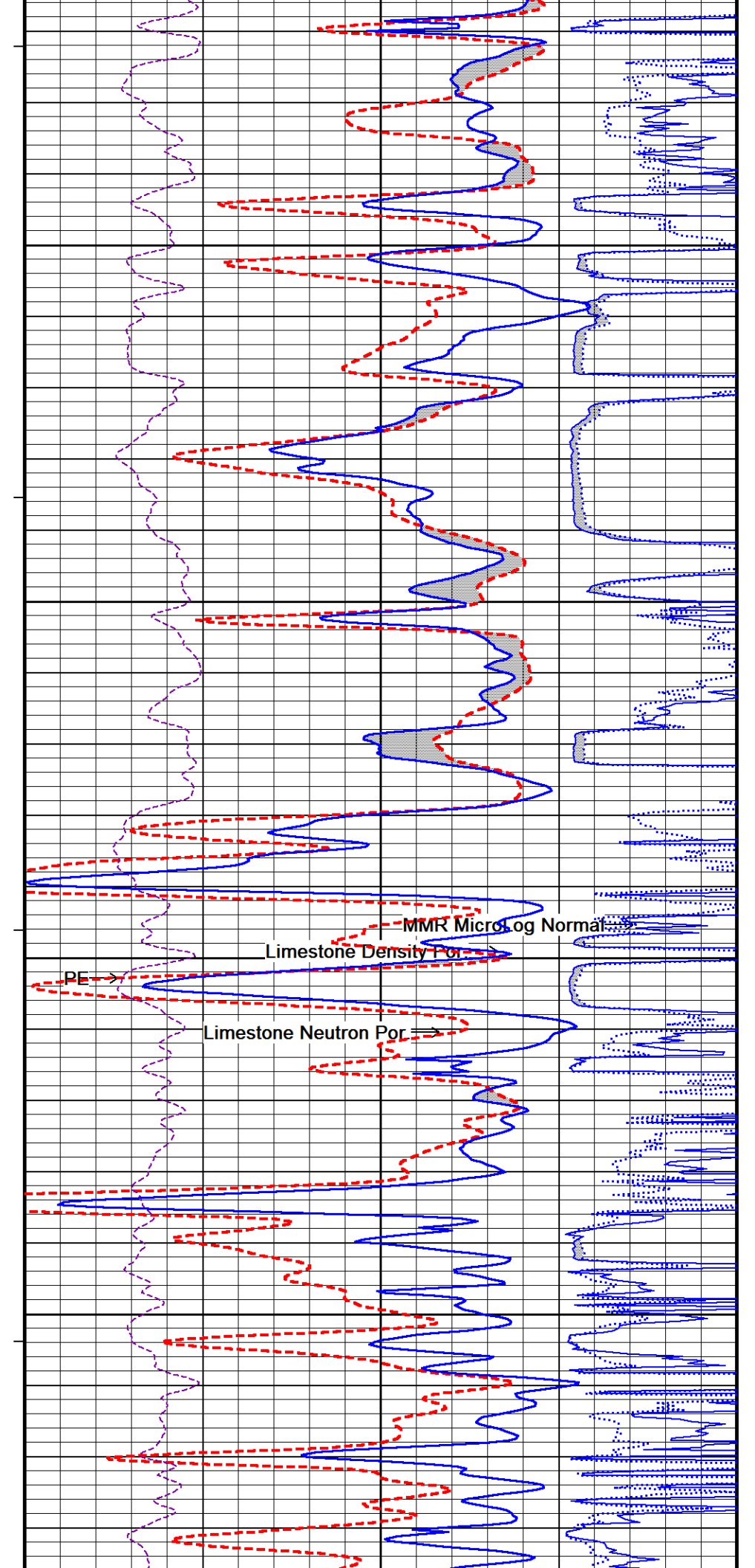
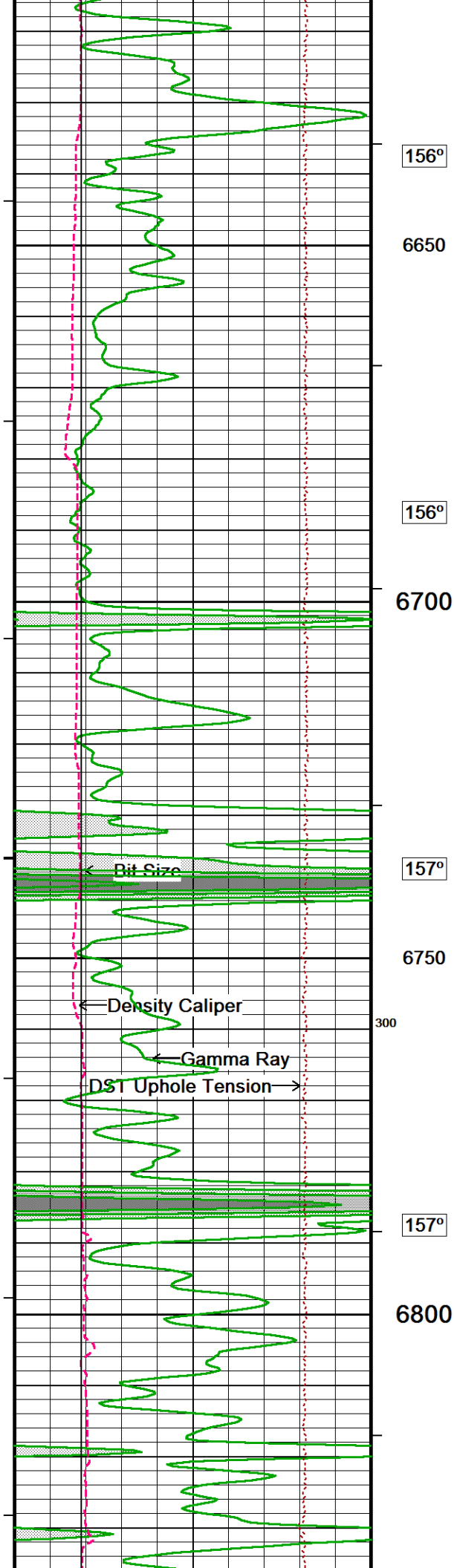
Limestone Neutron Por.

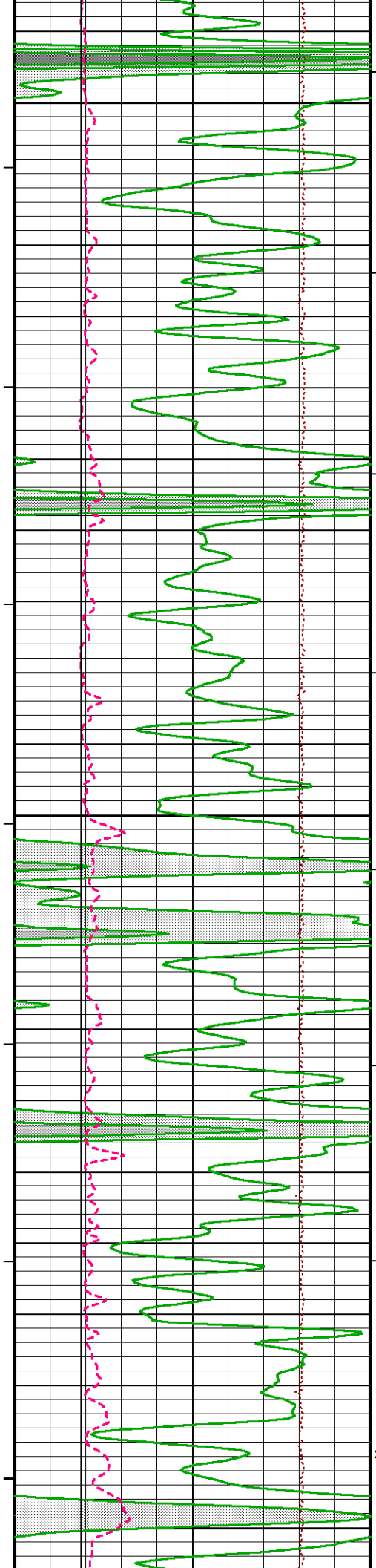
Limestone Density Por.

MMR MicroLog Inverse

MMR MicroLog Normal







157°

6850

157°

6900

158°

6950

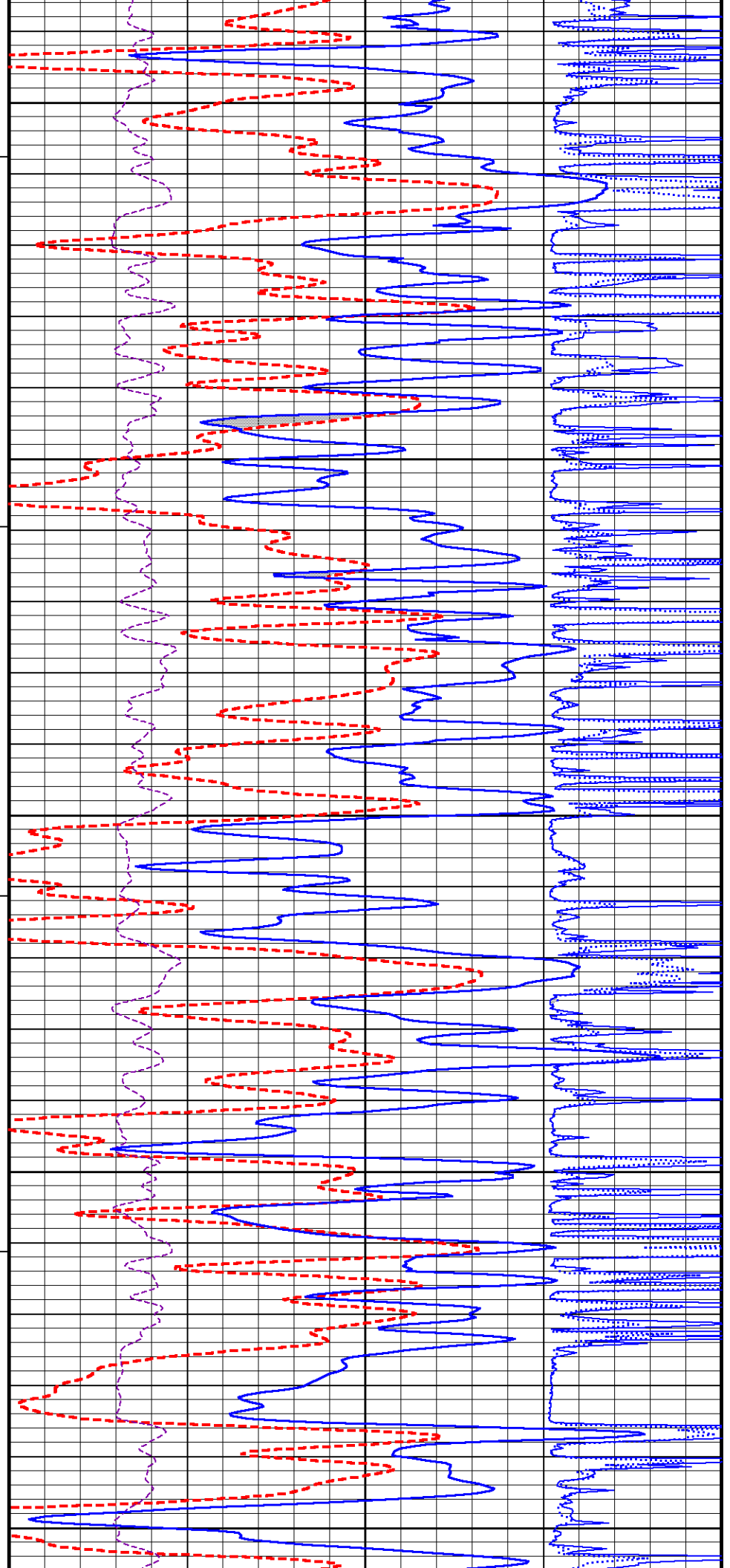
158°

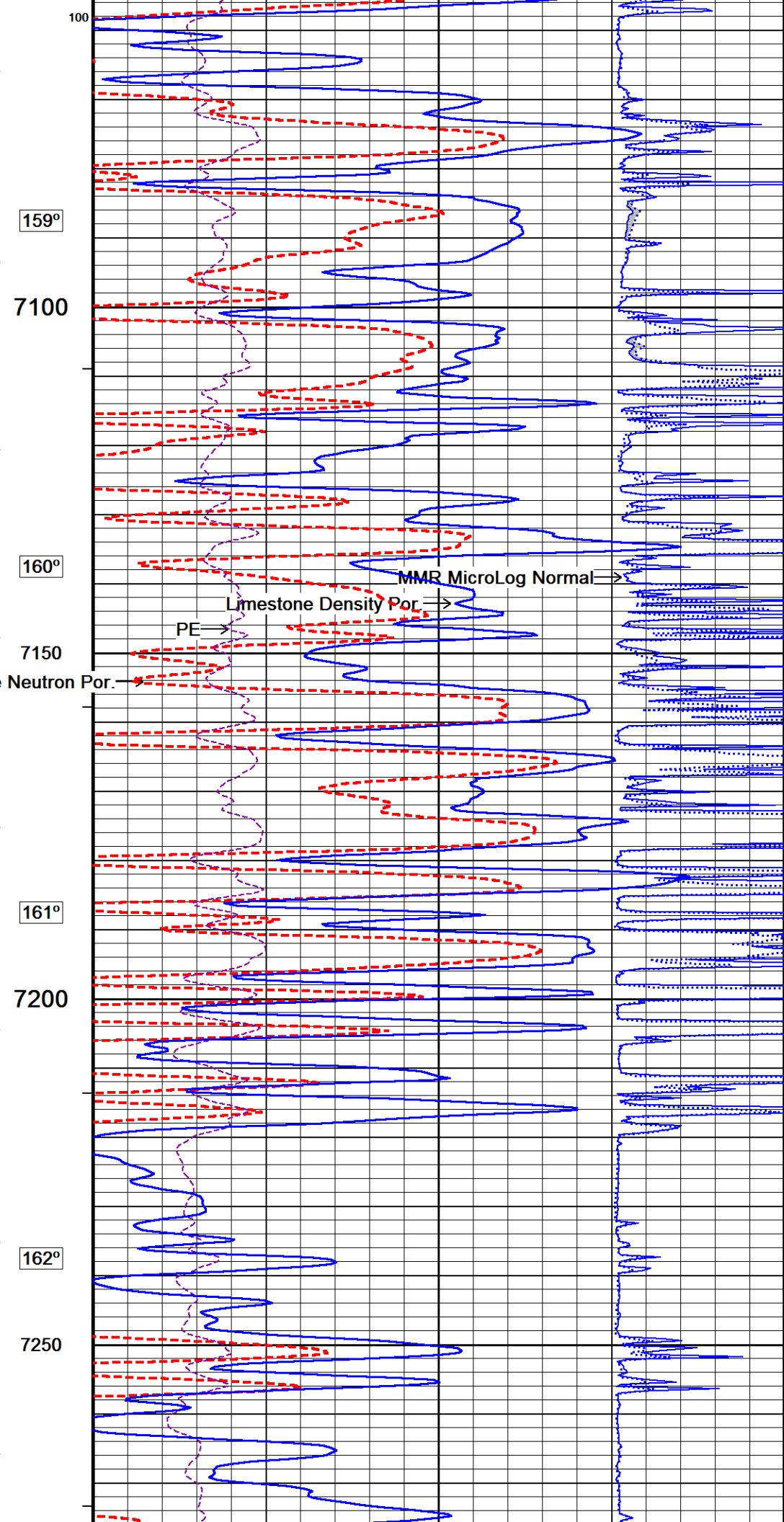
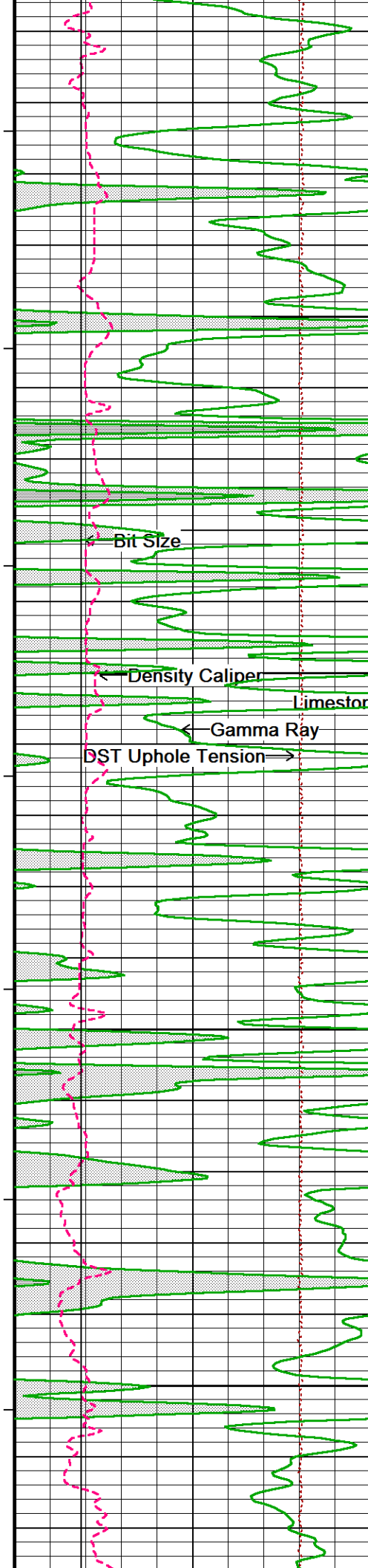
7000

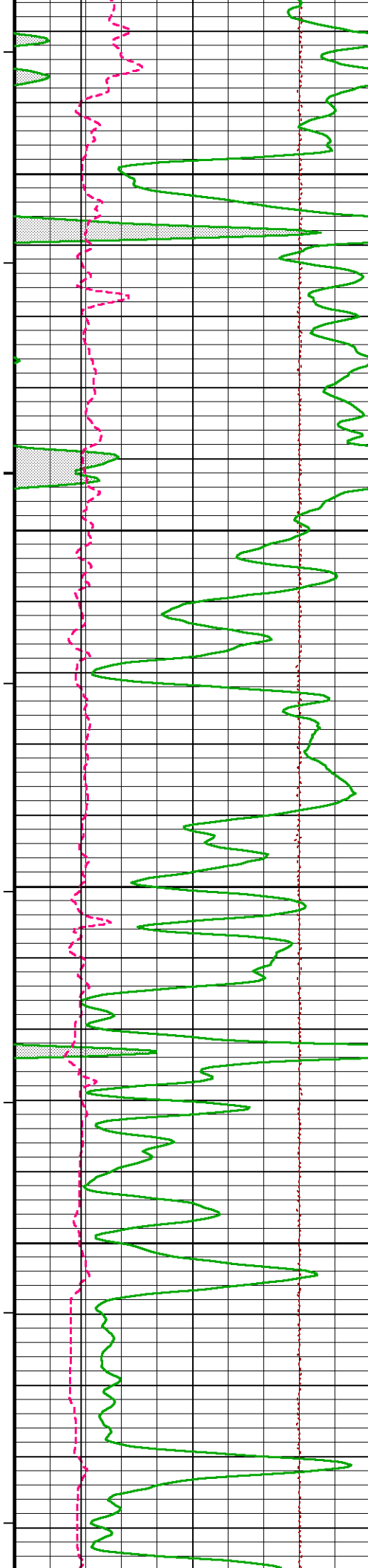
158°

200

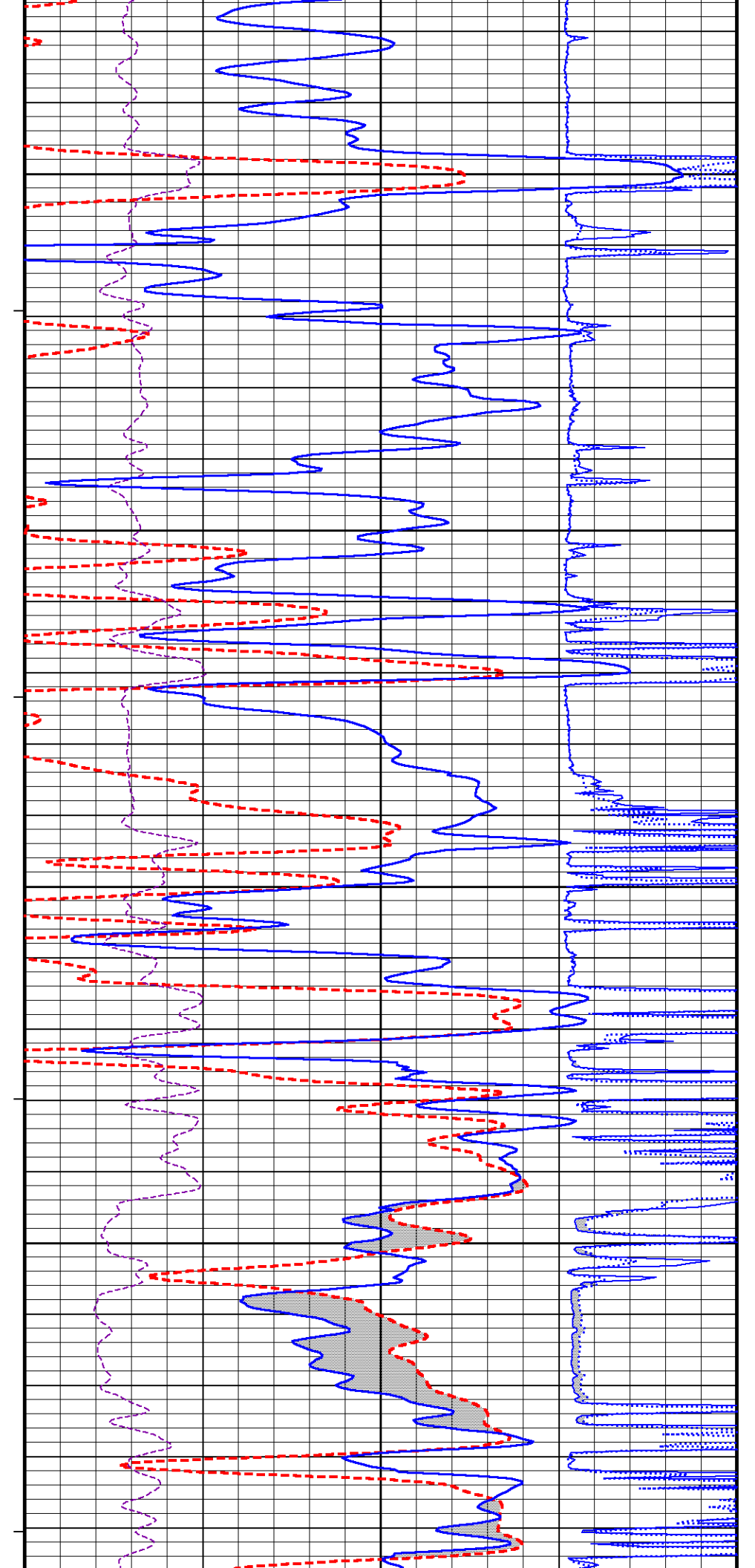
7050

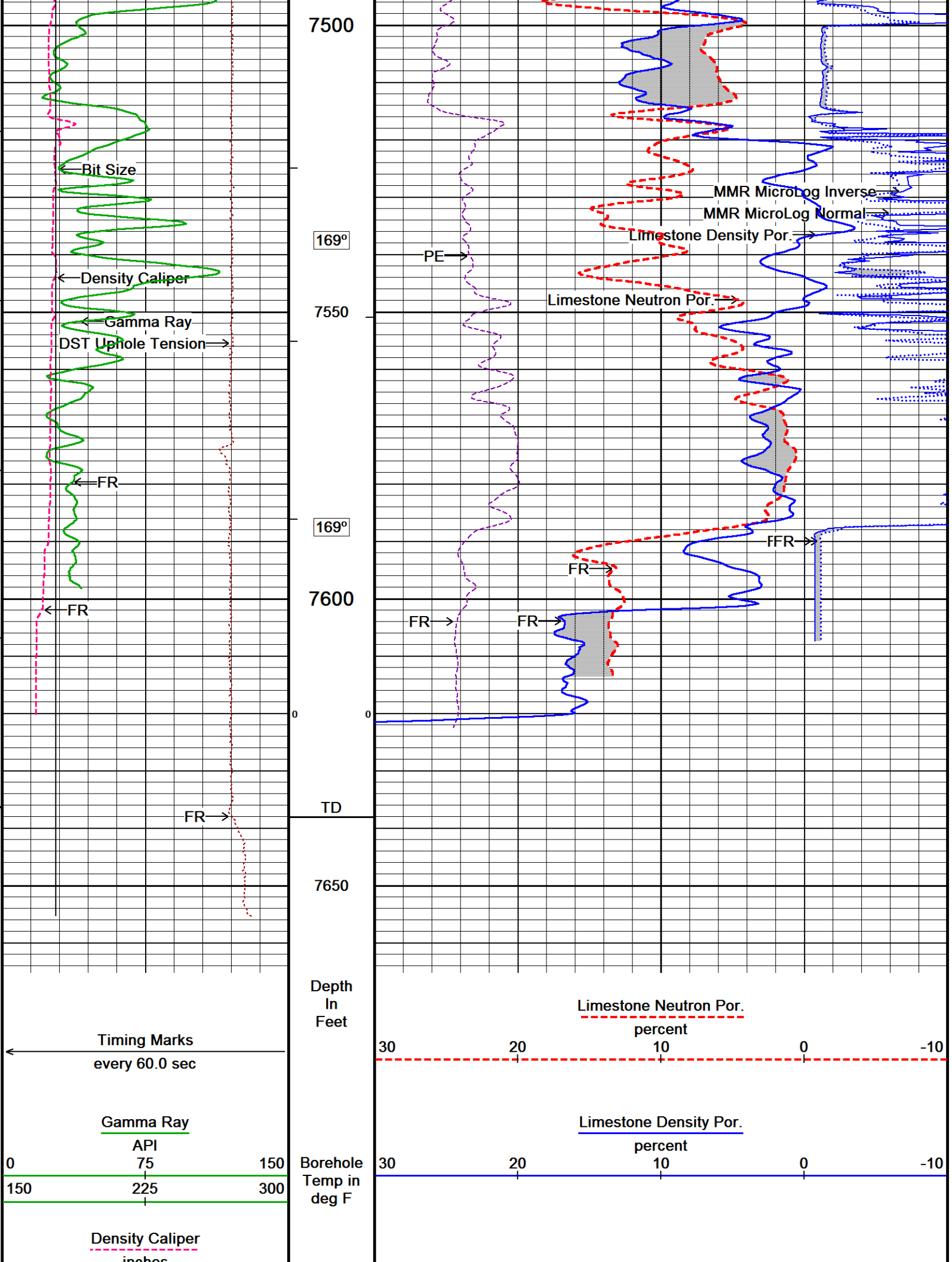


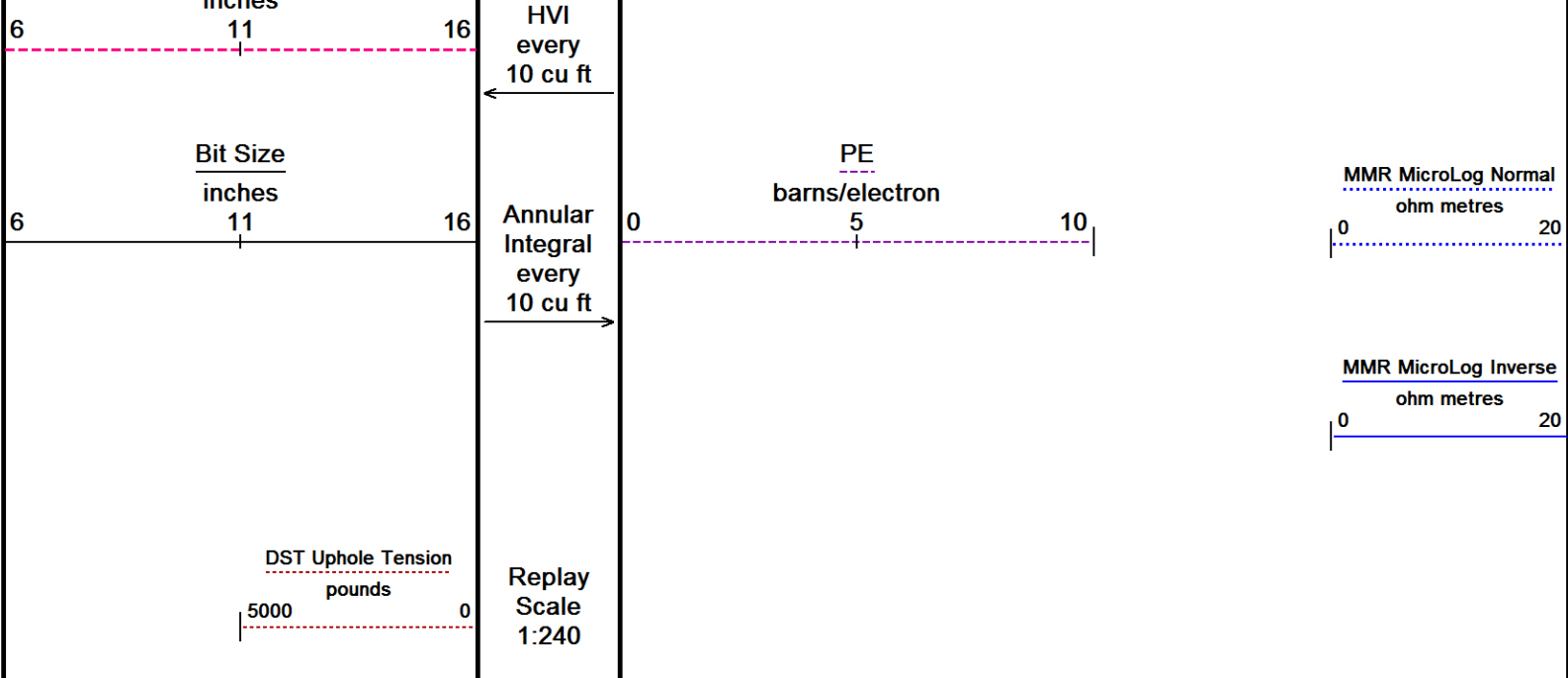




163°
7300
100
165°
7350
166°
7400
169°
7450
169°







Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 21-JAN-2019 17:40

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta

Recorded on 21-JAN-2019 11:56

System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

↑

5 INCH LIMESTONE MAIN

↑

↓

REPEAT SECTION

↓

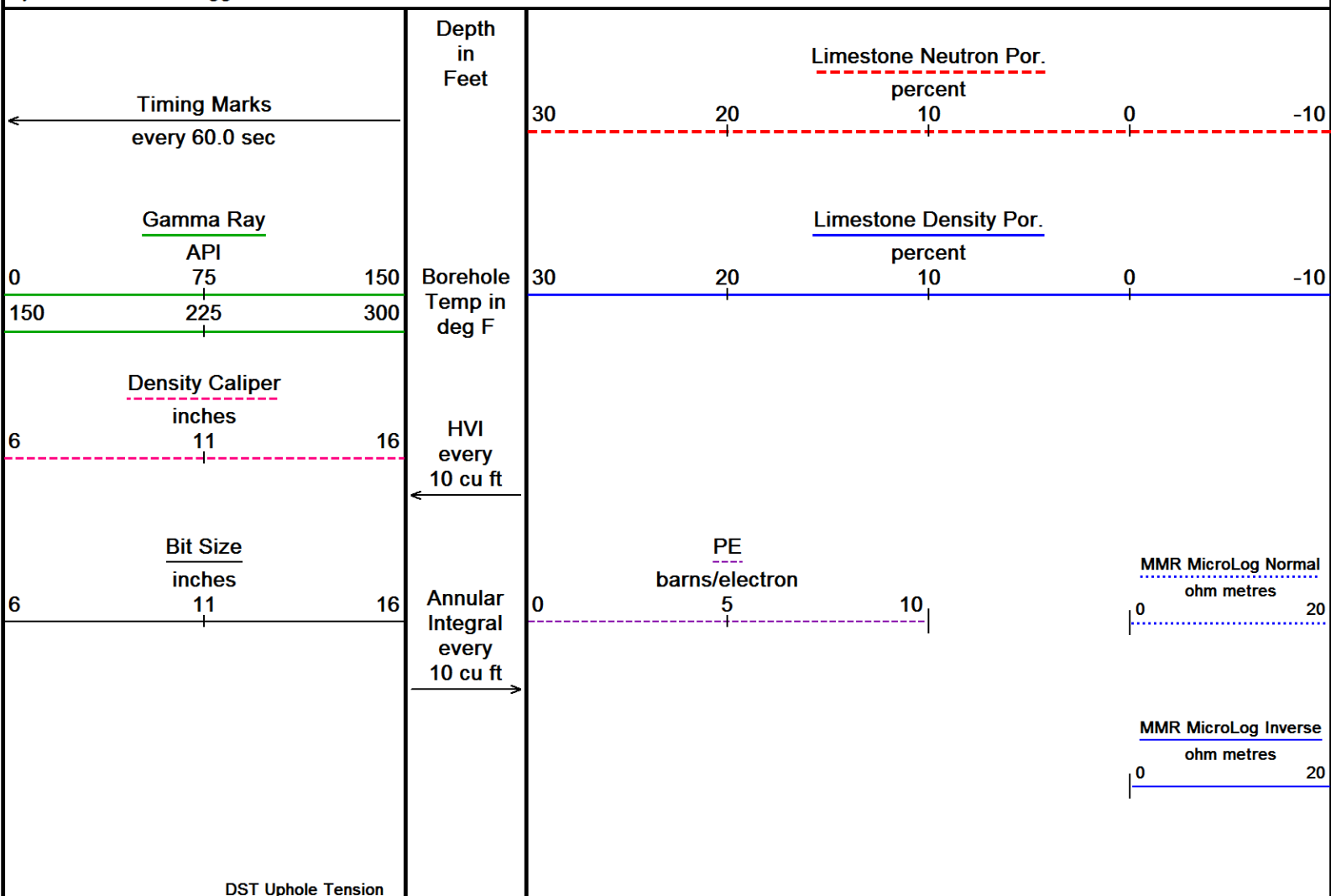
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 21-JAN-2019 17:40

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\REPEAT PASS.dta

Recorded on 21-JAN-2019 11:39

System Versions: Logged with 18.03.9344 Plotted with 18.03.9344



Replay
Scale
1:240

pounds

5000

0

7300

100

163°

7350

165°

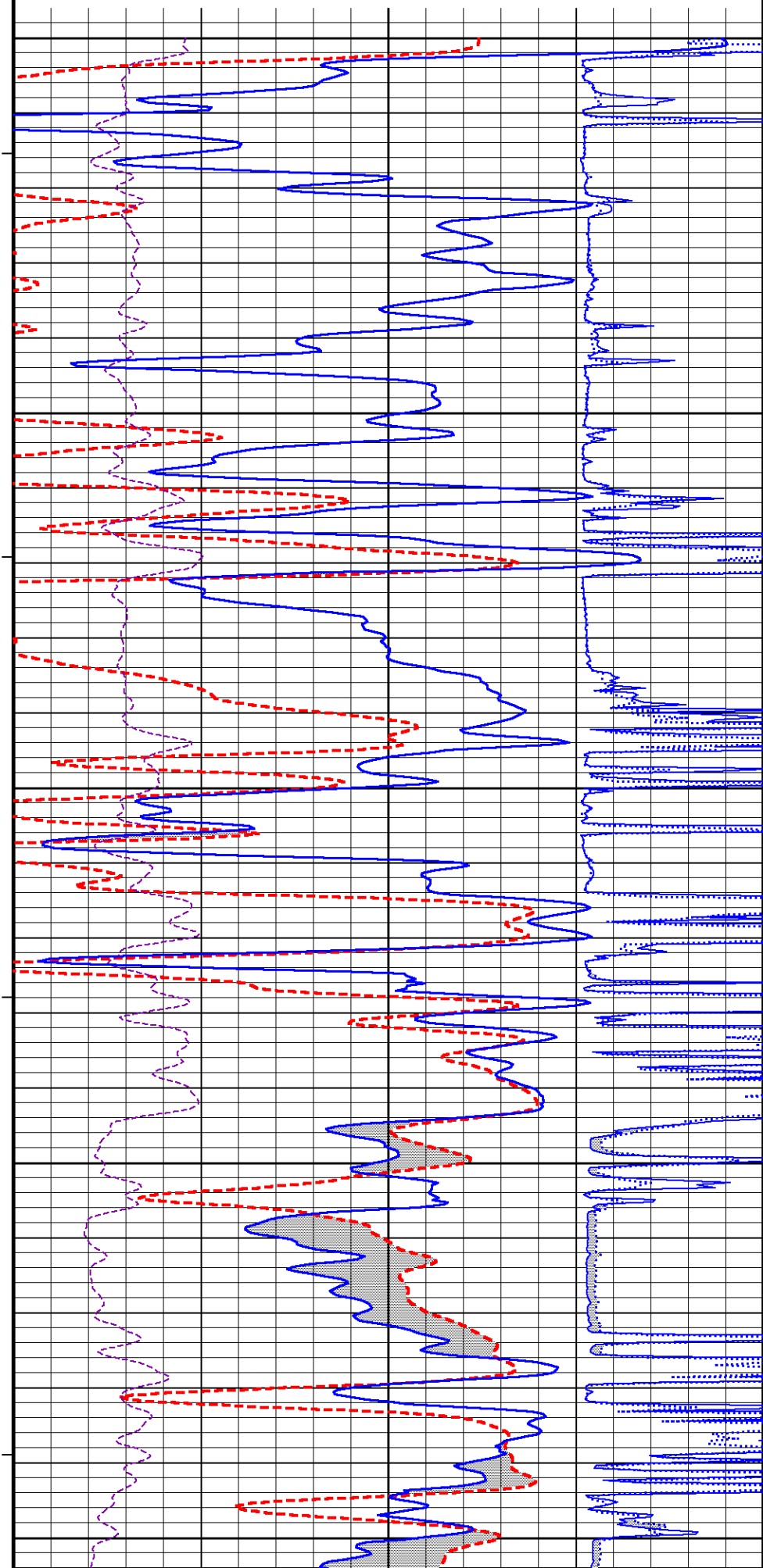
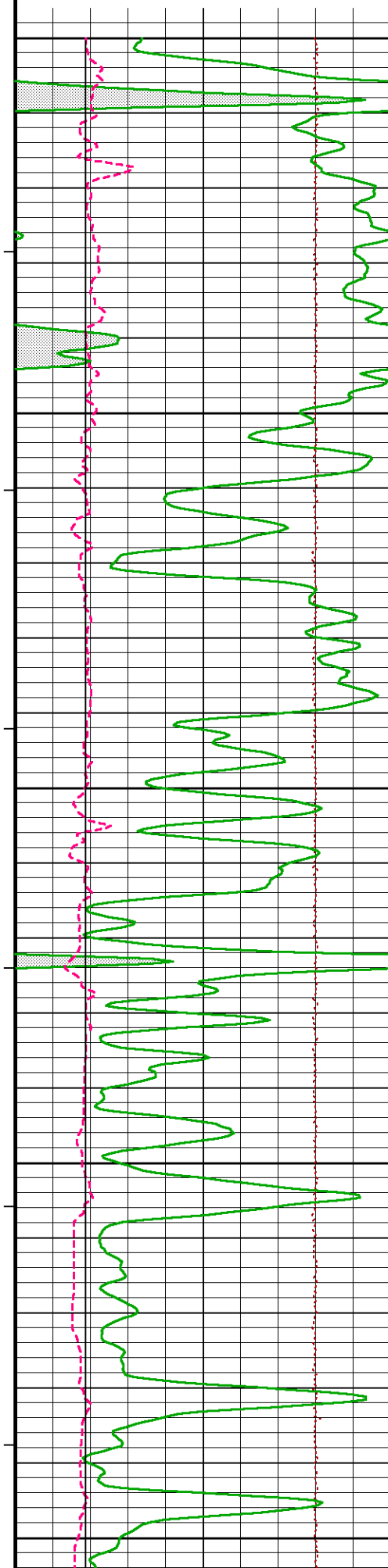
7400

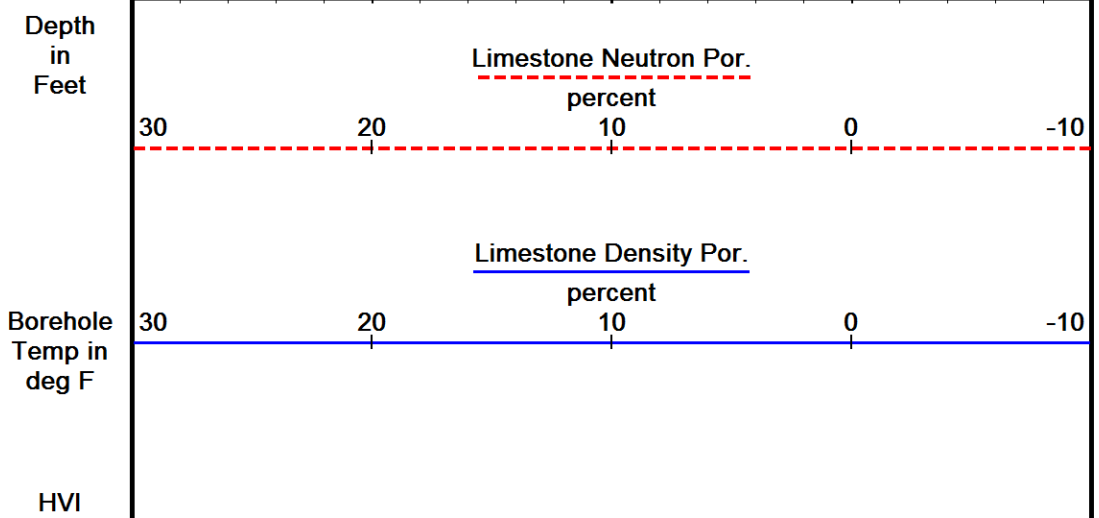
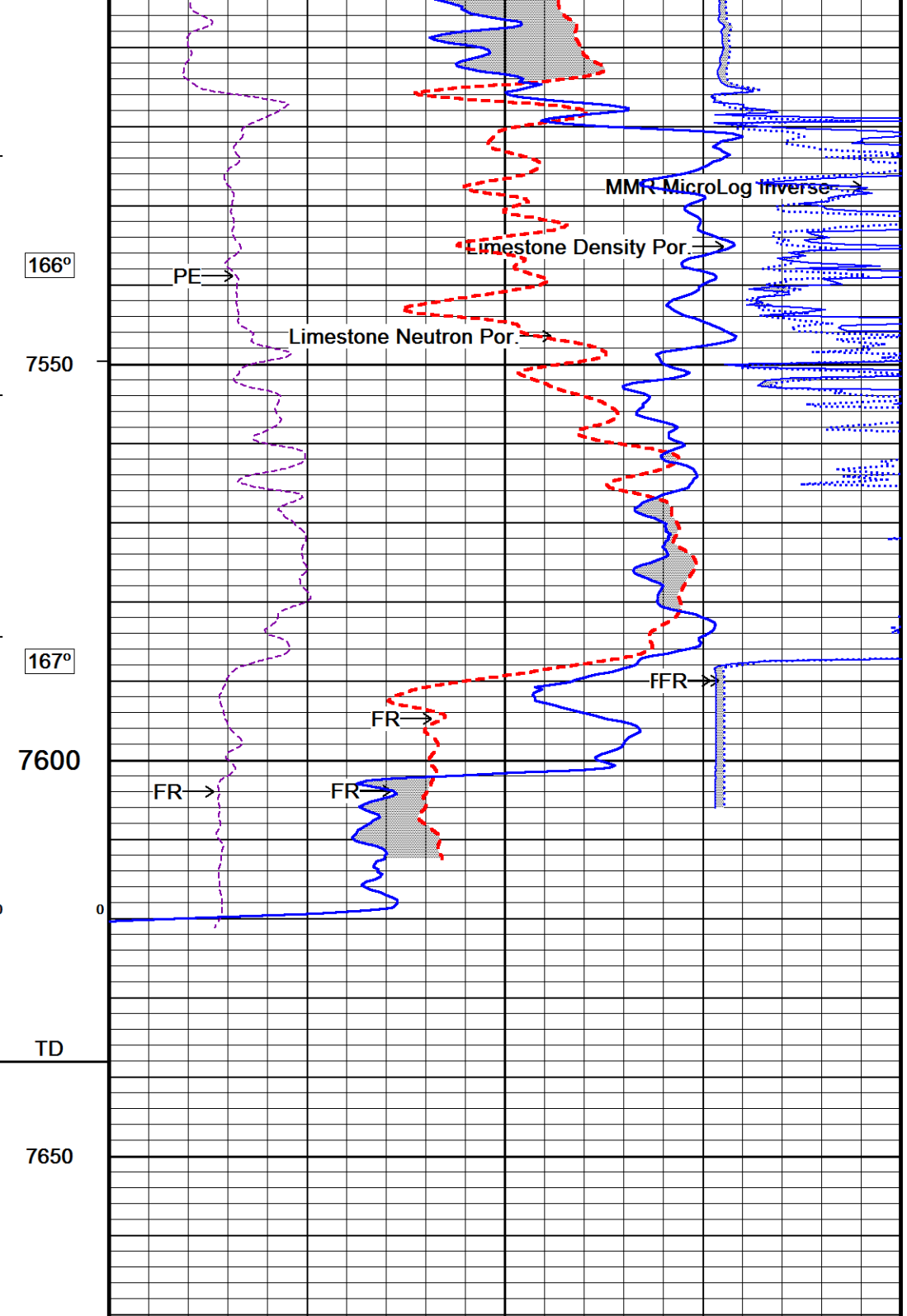
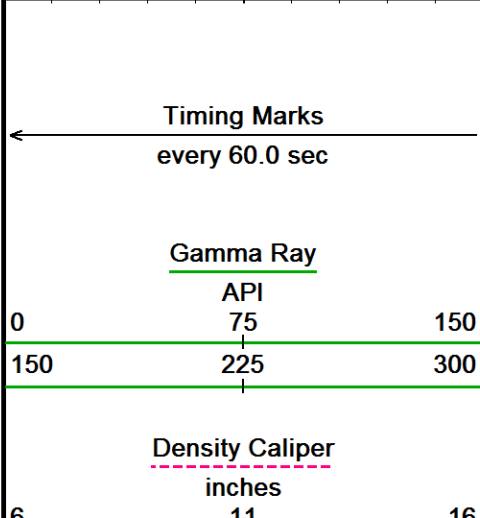
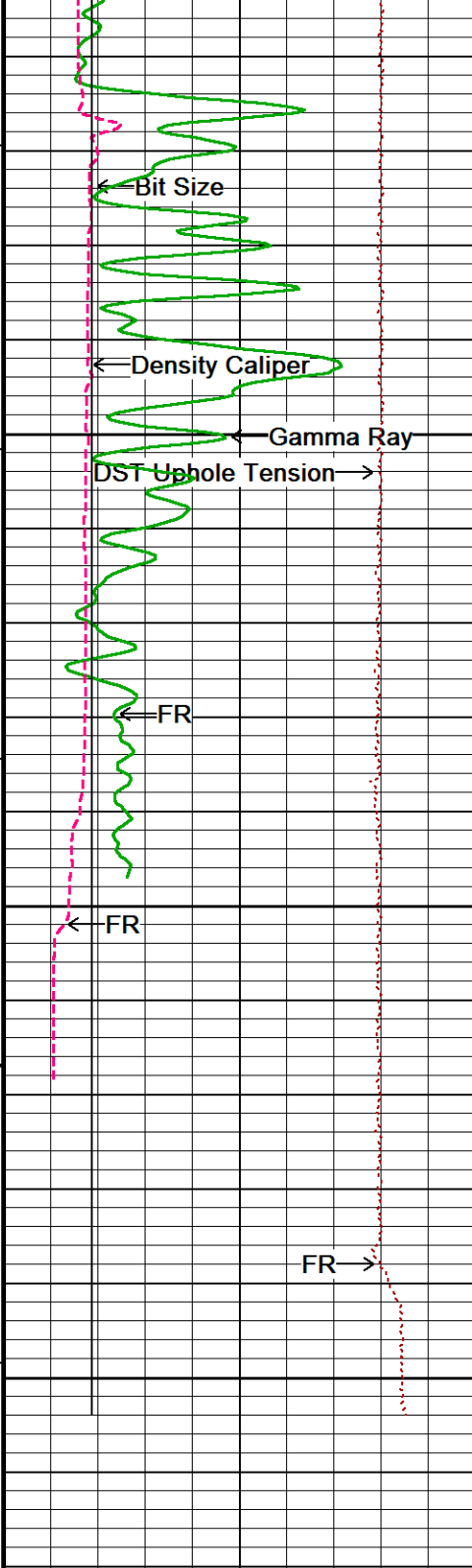
168°

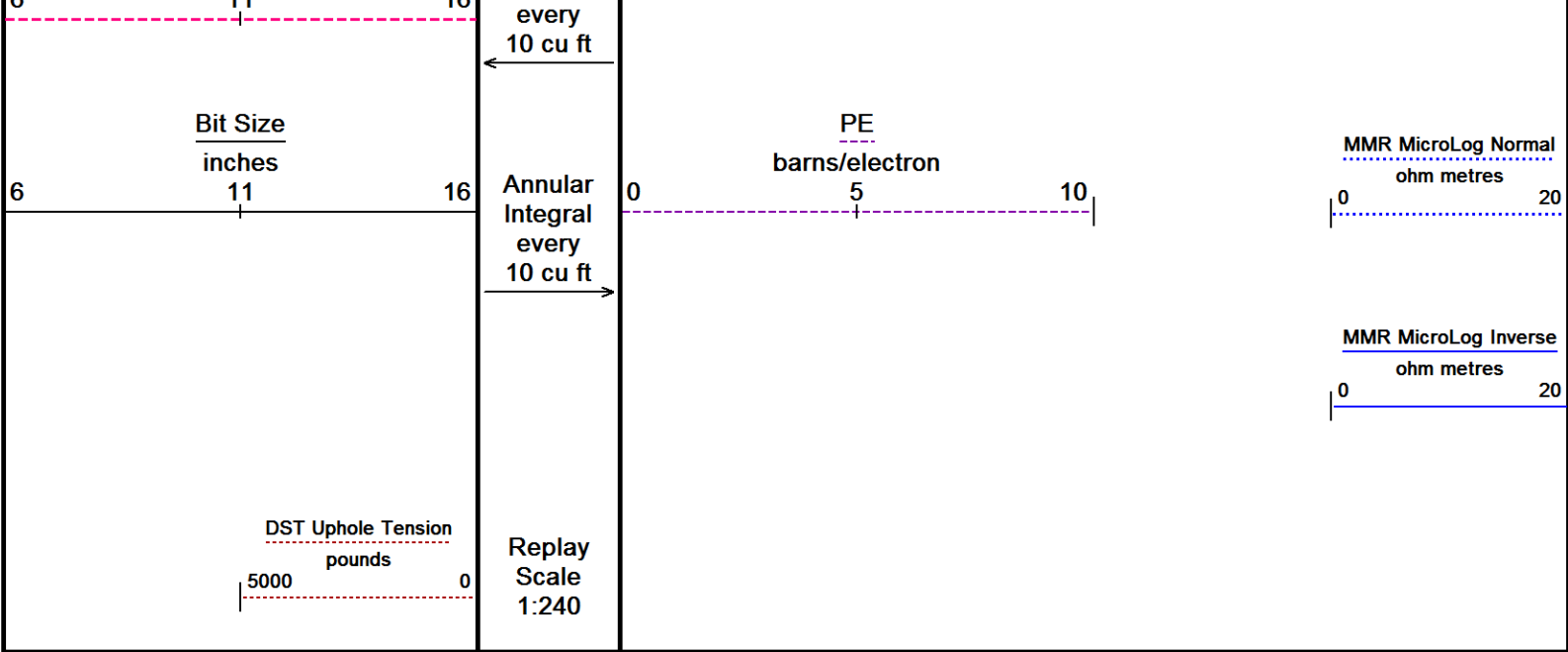
7450

167°

7500







Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 21-JAN-2019 17:40

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\REPEAT PASS.dtaRecorded on 21-JAN-2019 11:39

System Versions: Logged with 18.03.9344Plotted with 18.03.9344

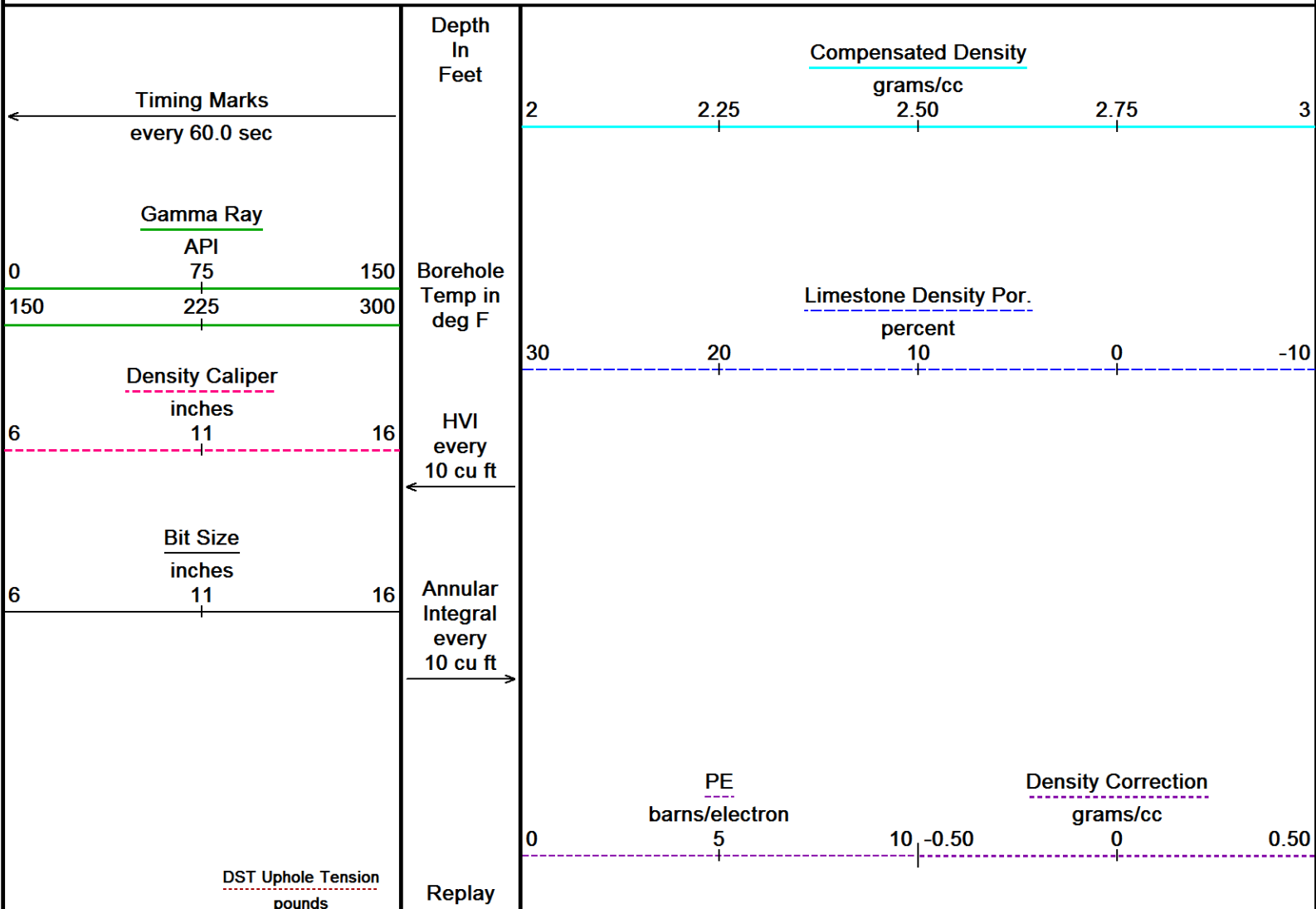
↑REPEAT SECTION↑

↓5 INCH BULK DENSITY MAIN↓

Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 21-JAN-2019 17:40

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dtaRecorded on 21-JAN-2019 11:56

System Versions: Logged with 18.03.9344Plotted with 18.03.9344



5000 0

Scale
1:240

450

Casing
Shoe

90°

500

91°

550

2900

93°

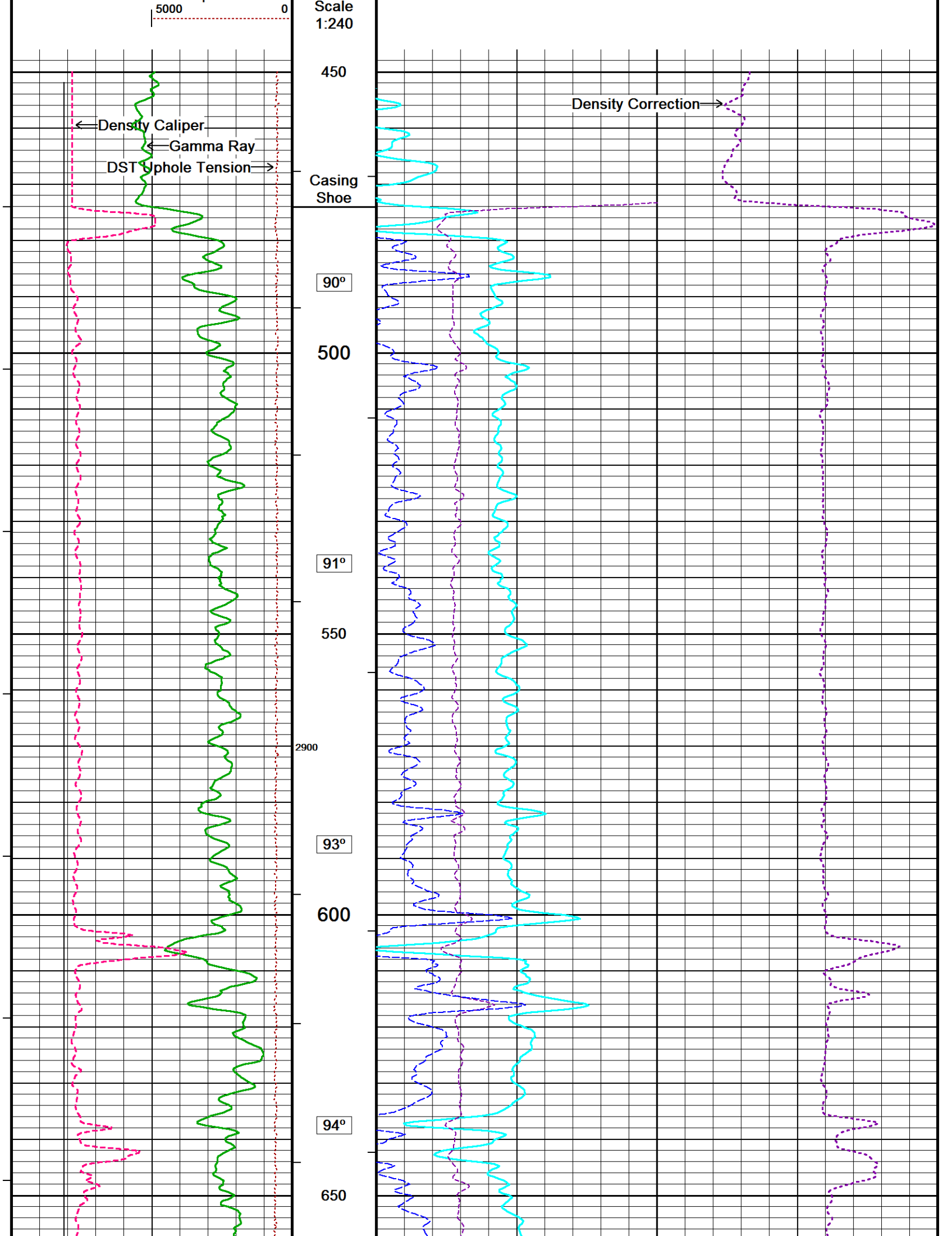
600

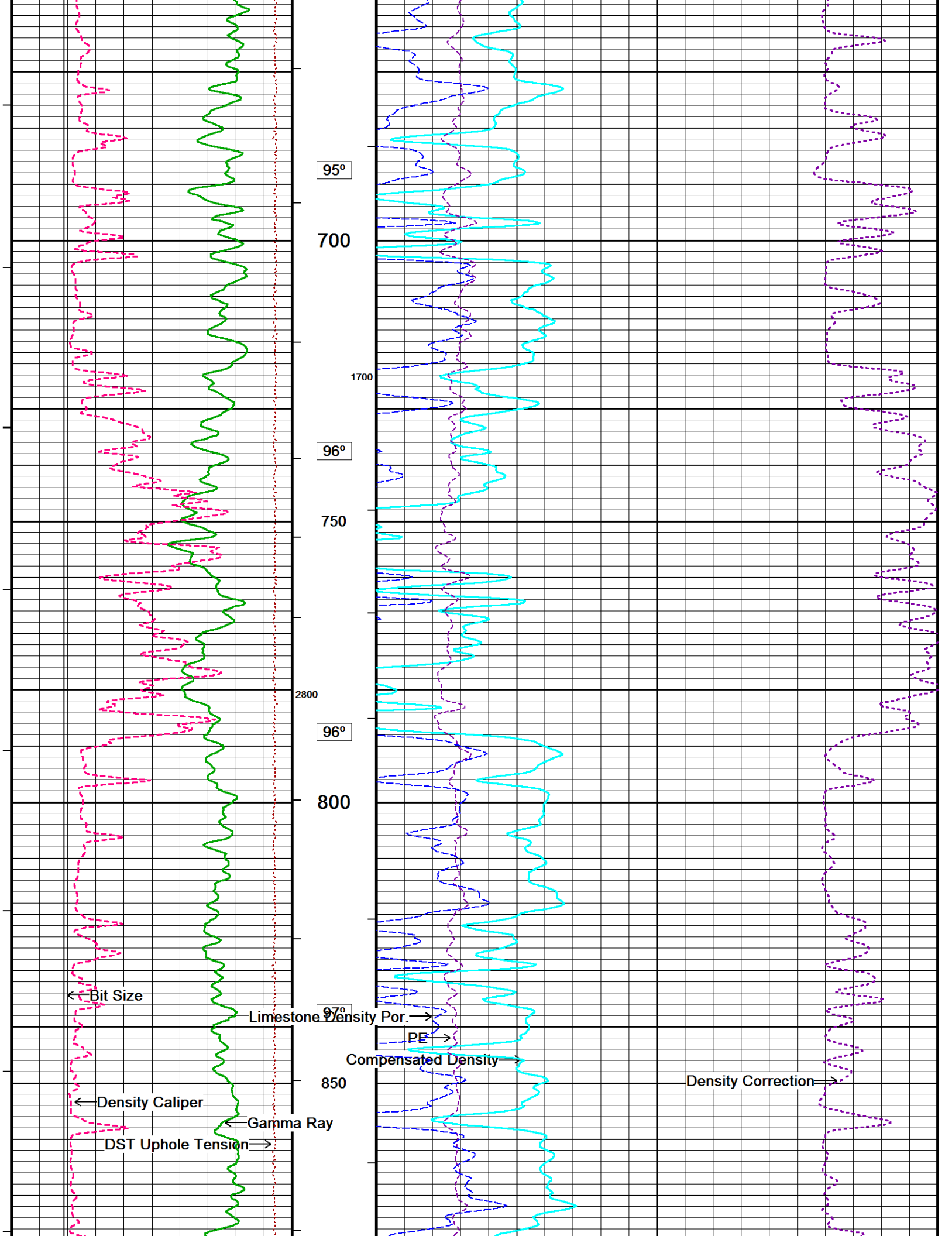
94°

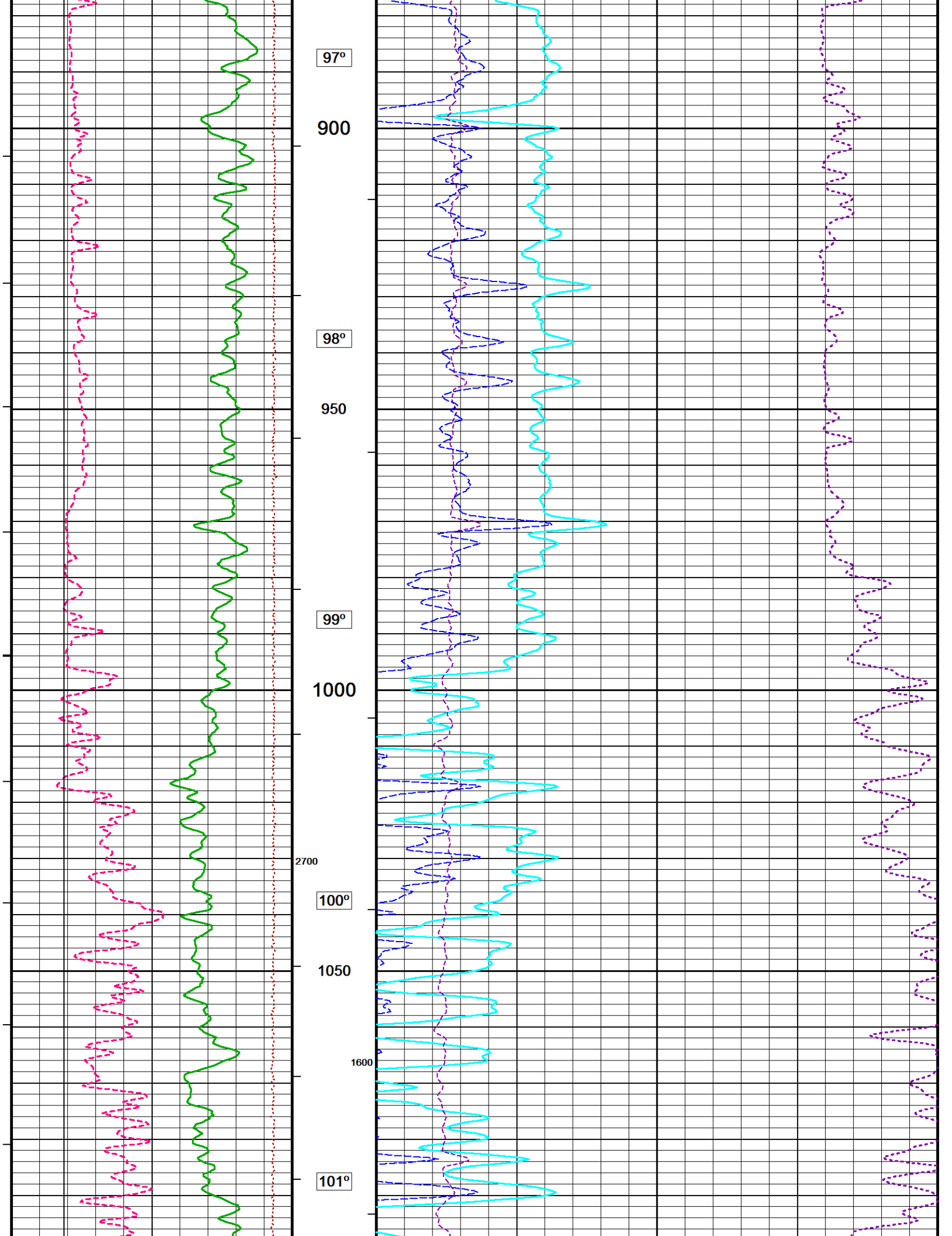
650

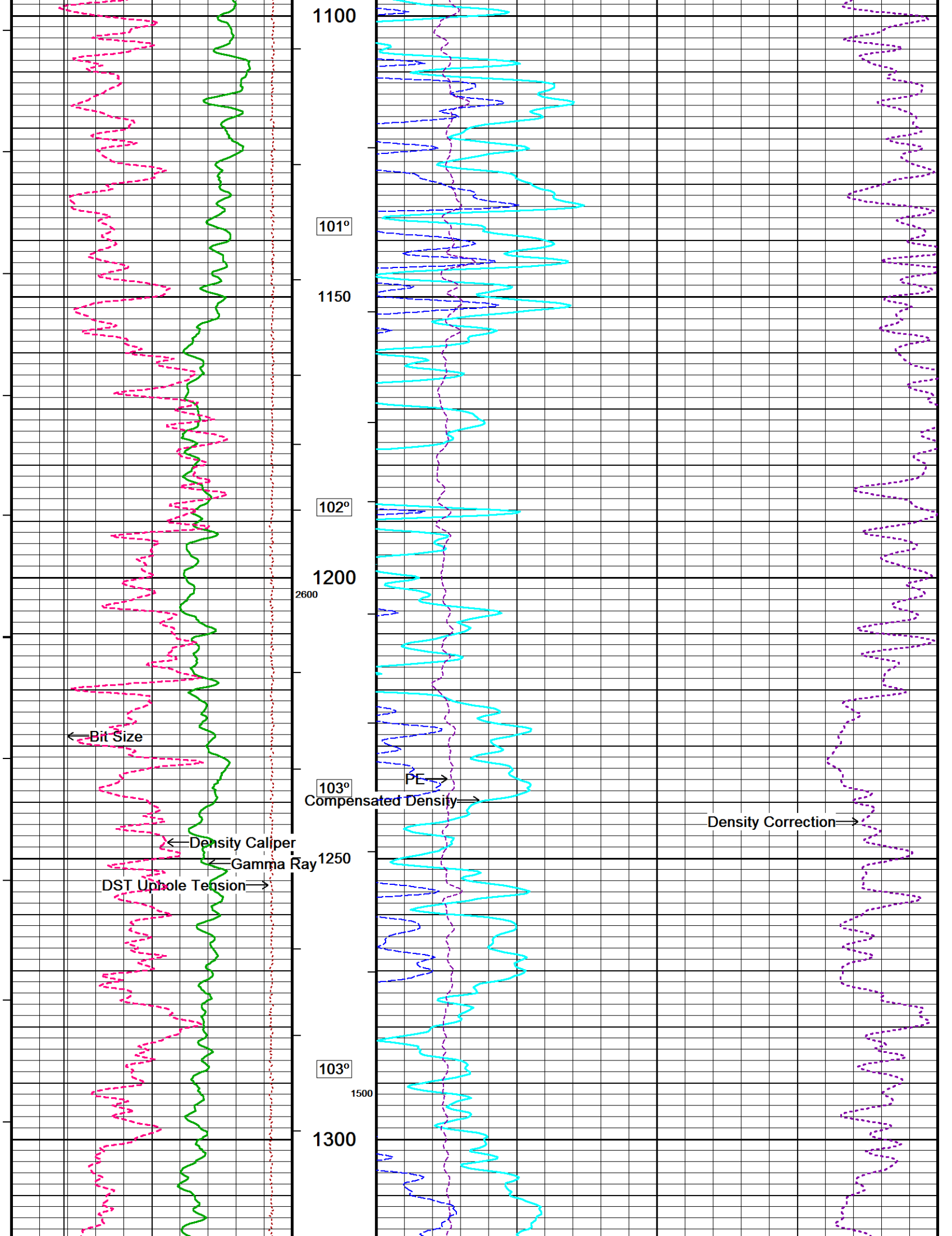
Density Caliper
Gamma Ray
DST Uphole Tension

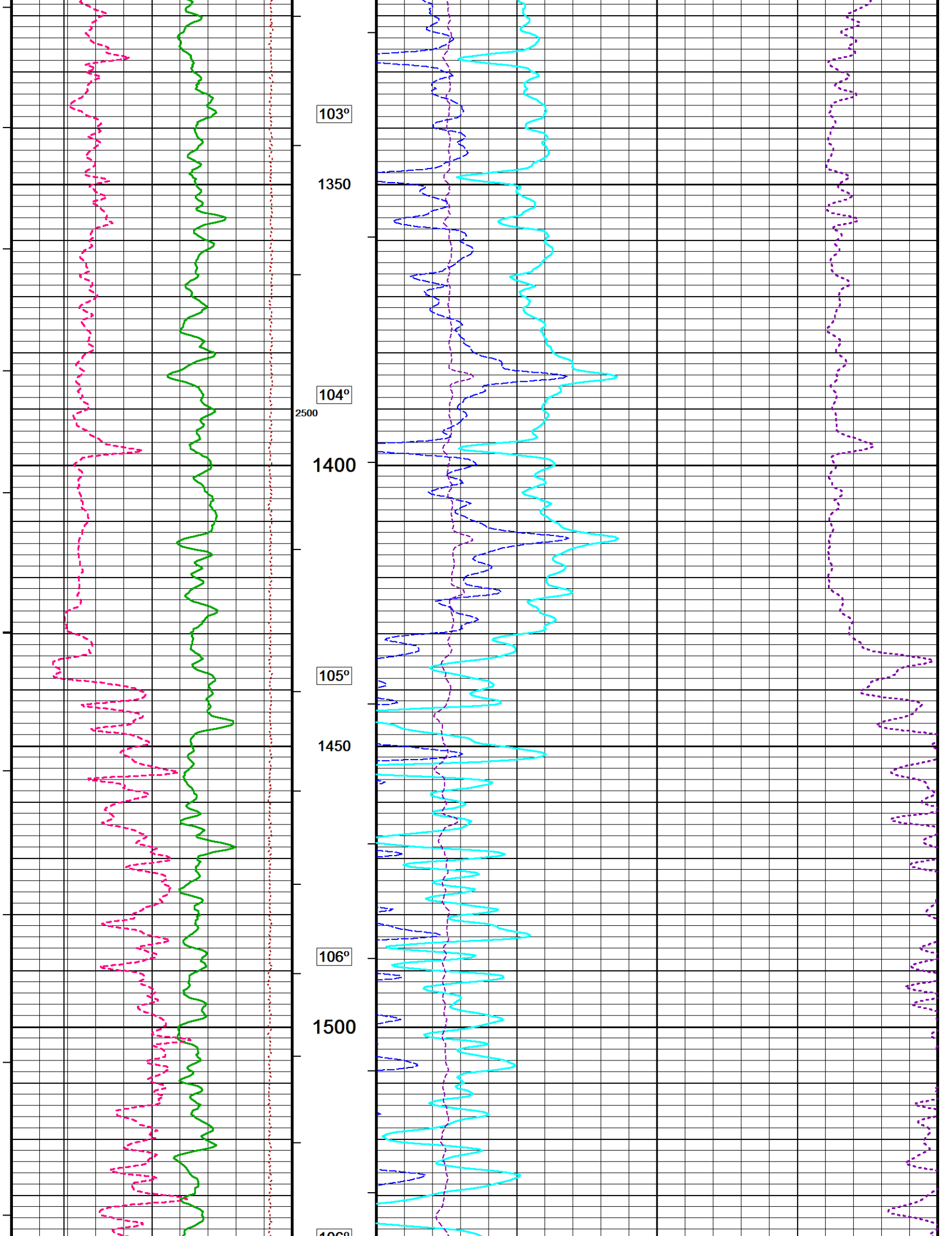
Density Correction

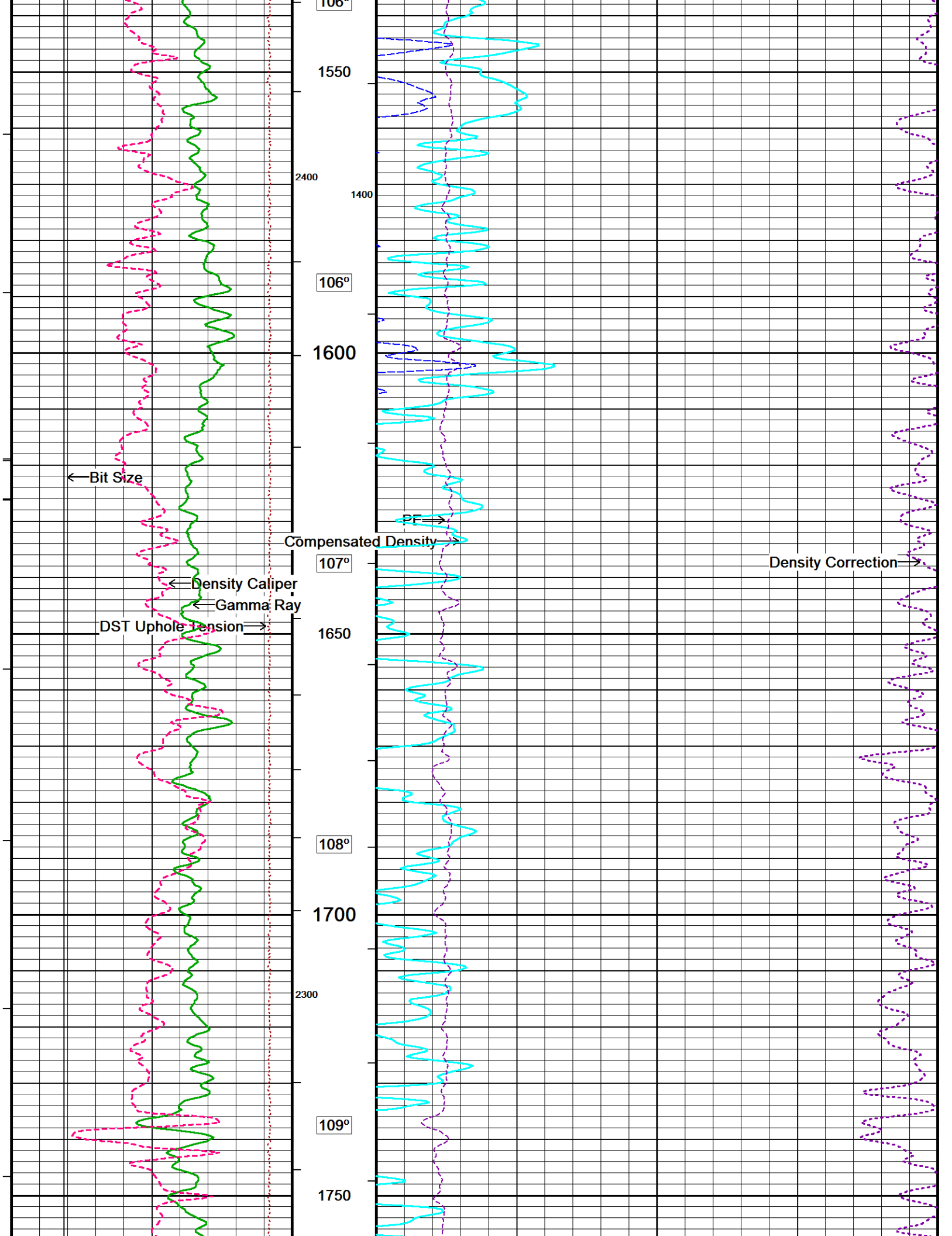


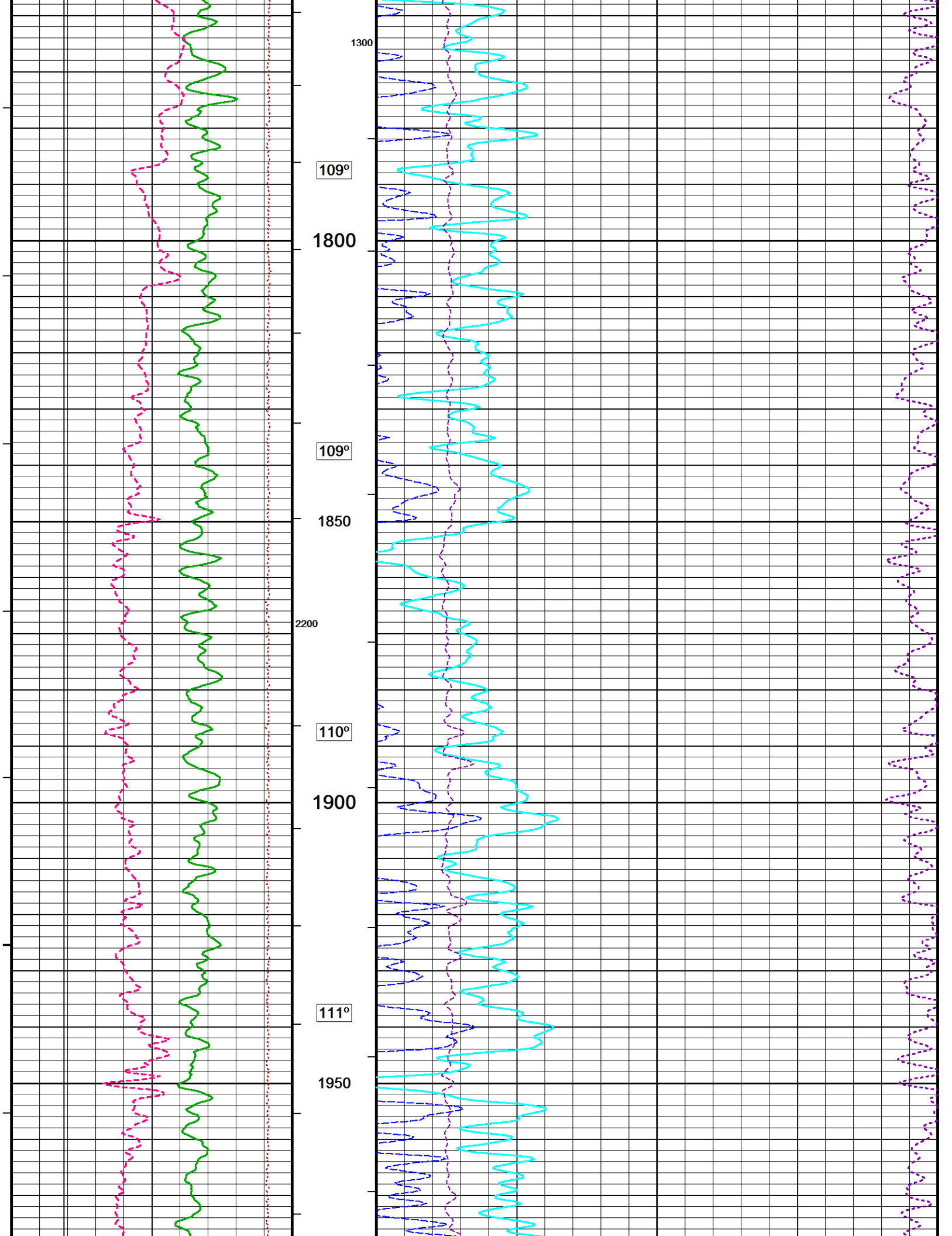


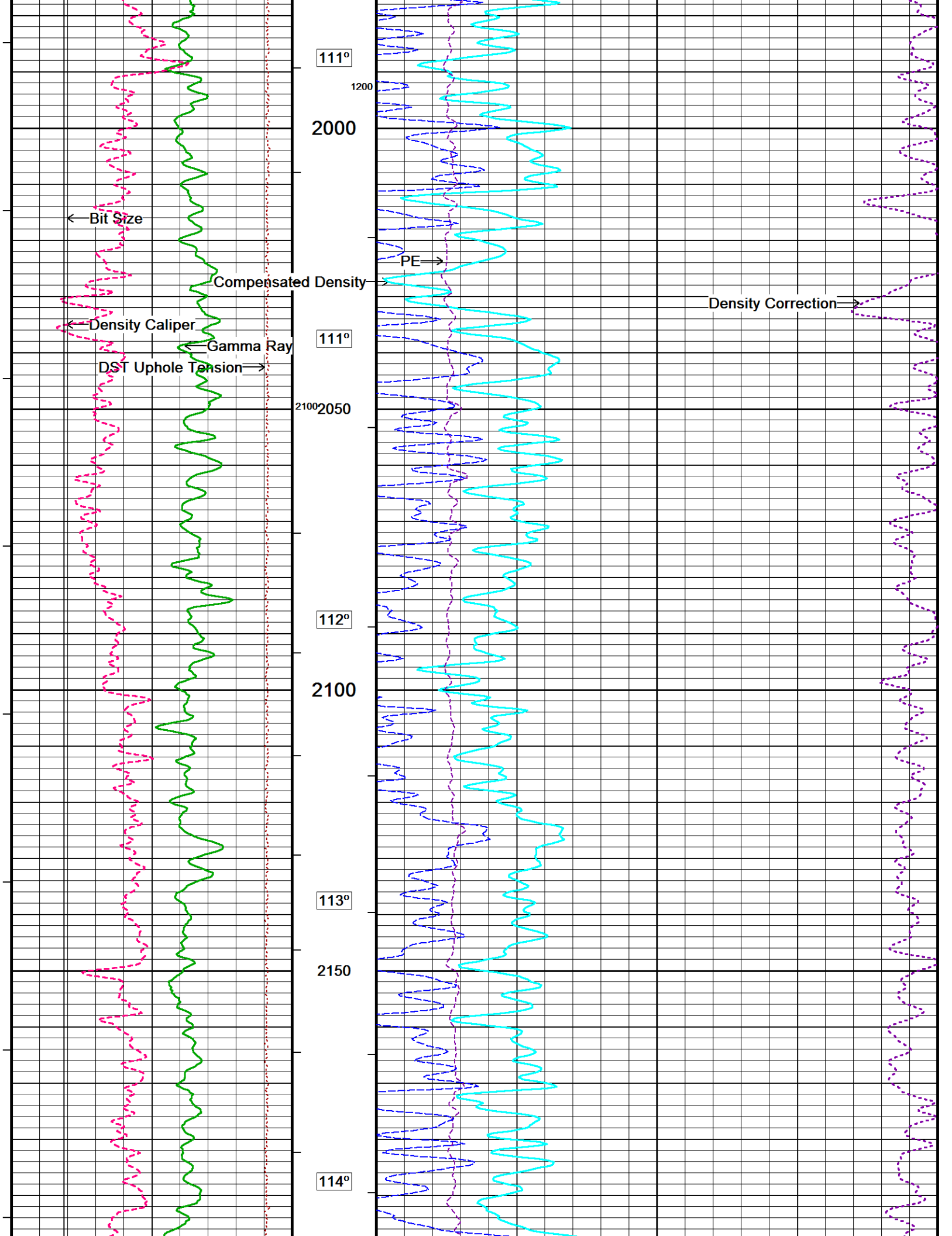


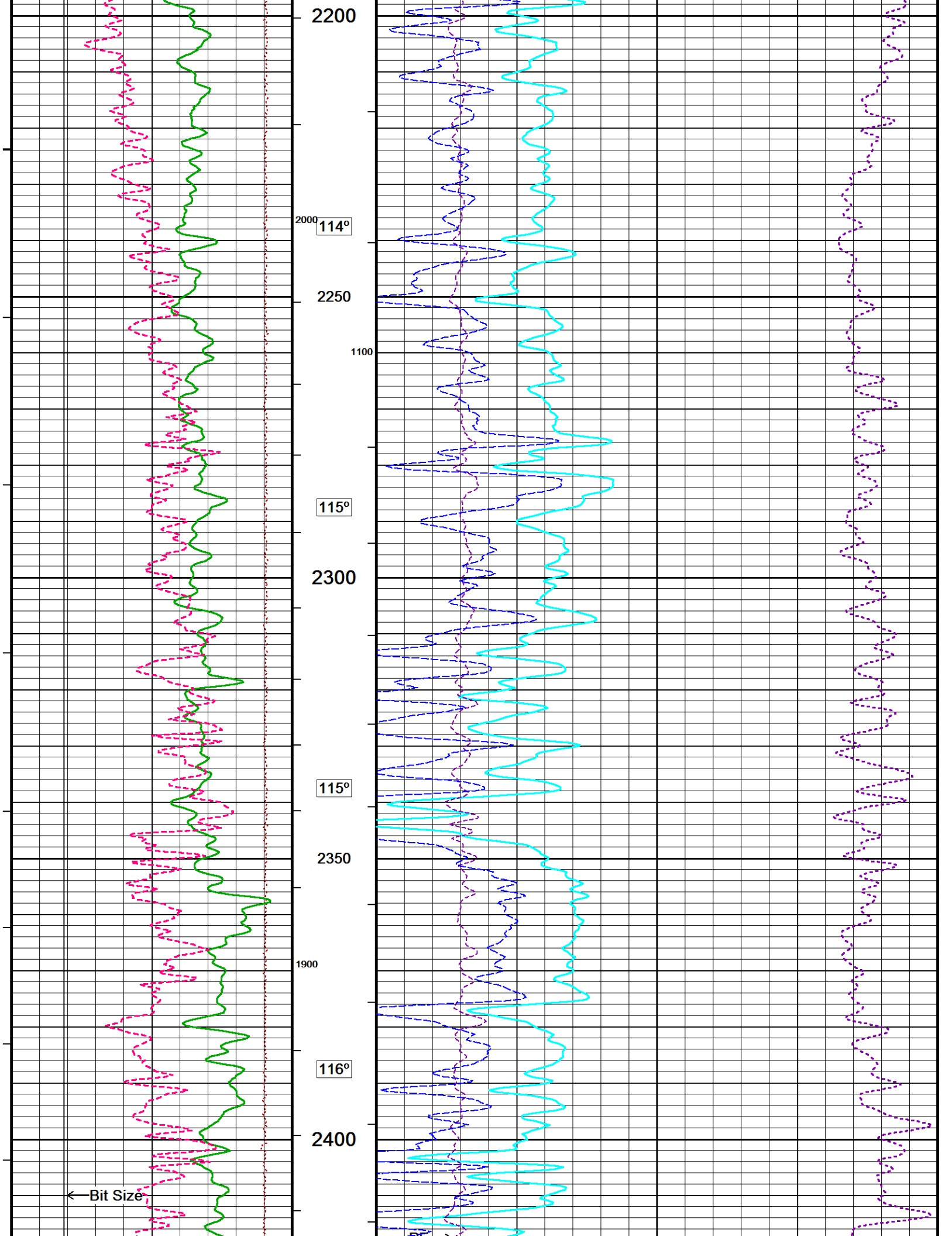


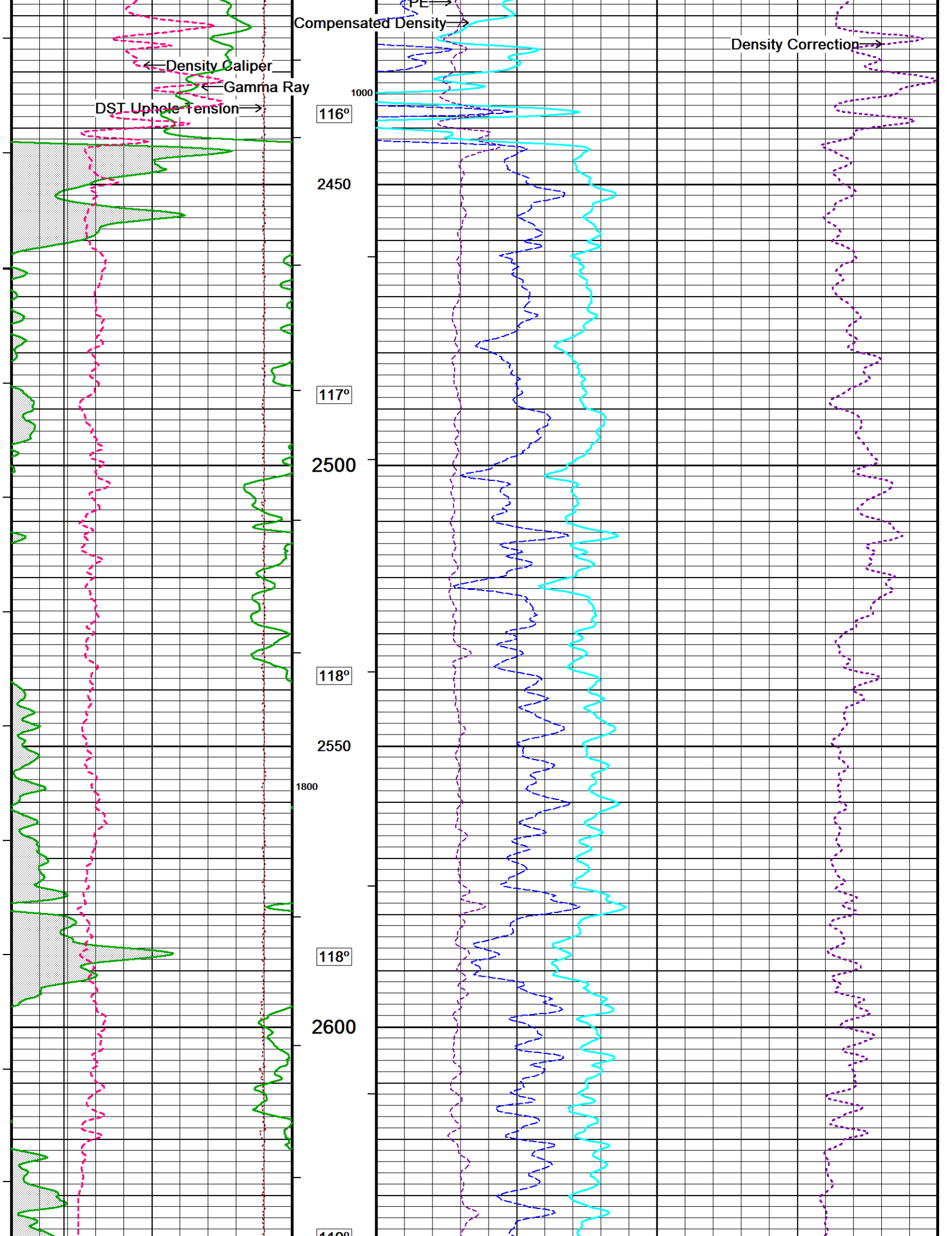


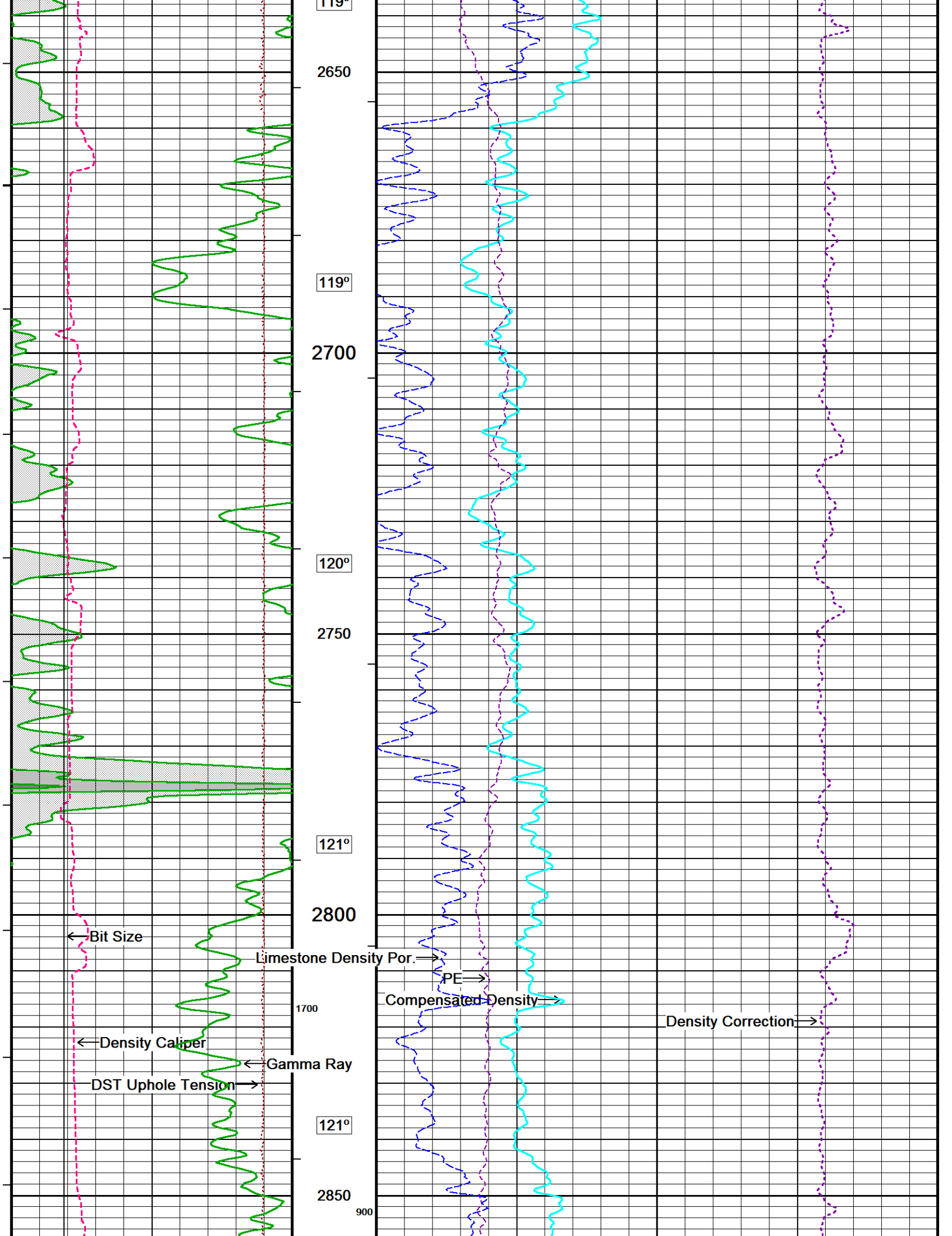


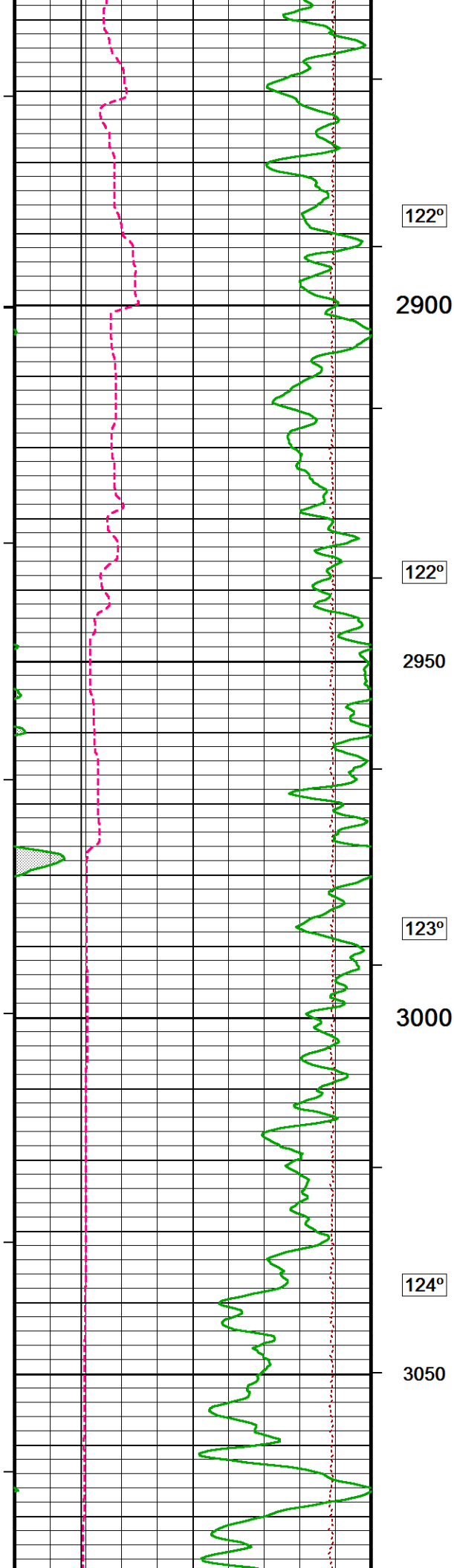












122°

2900

122°

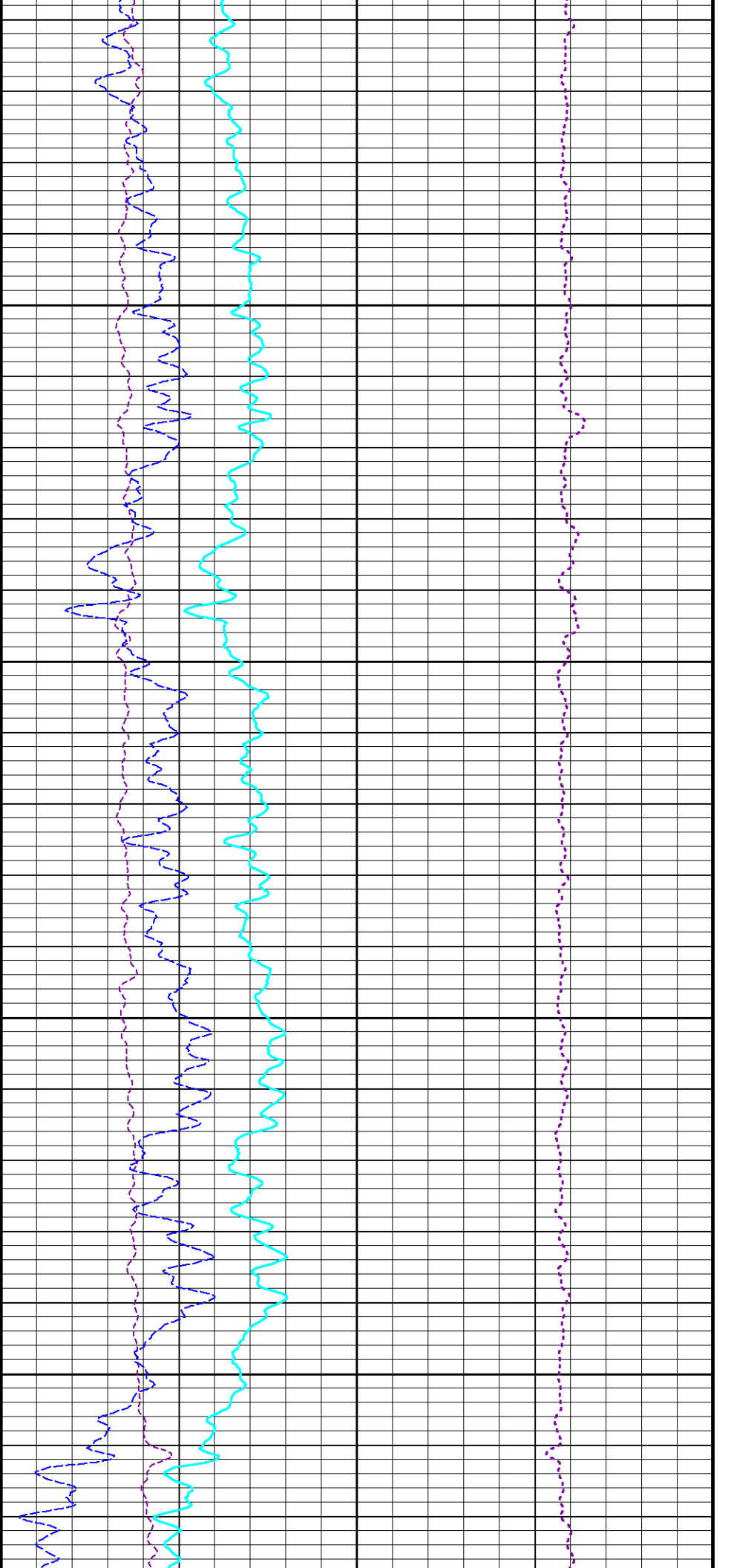
2950

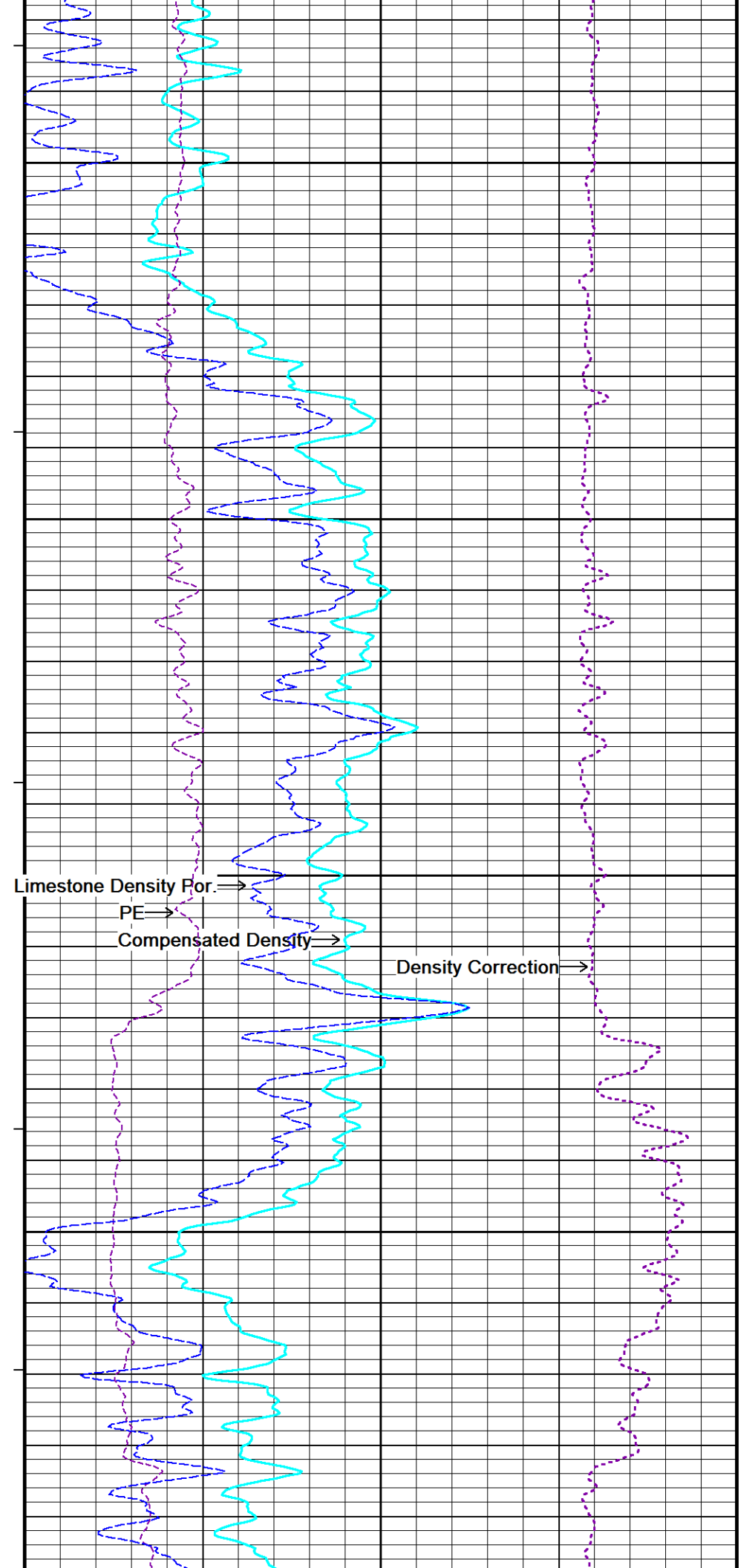
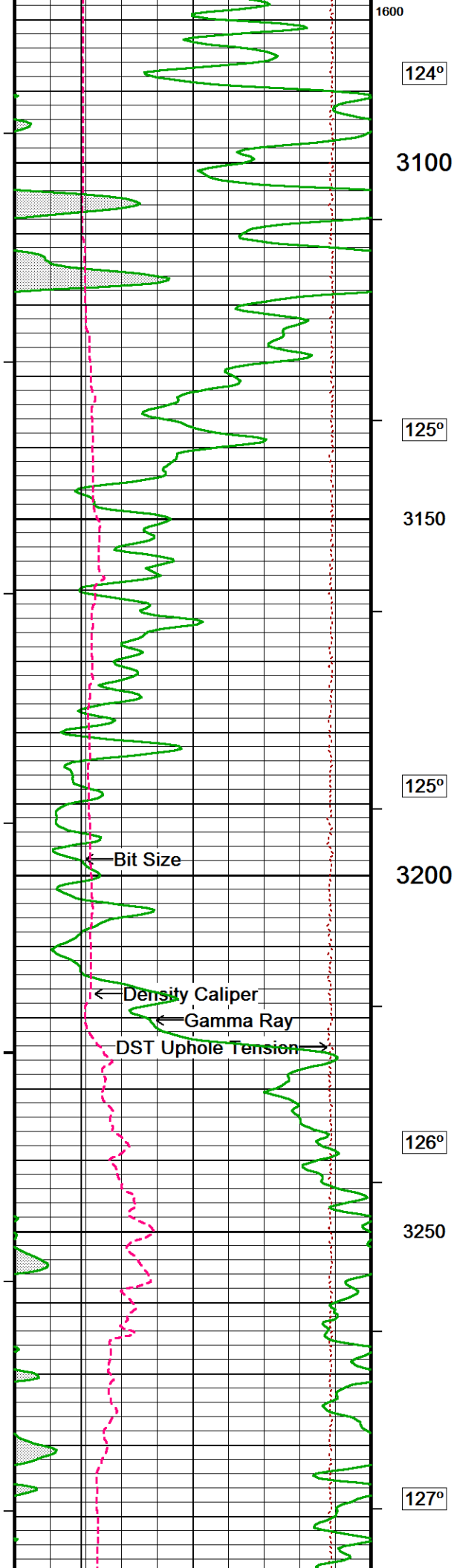
123°

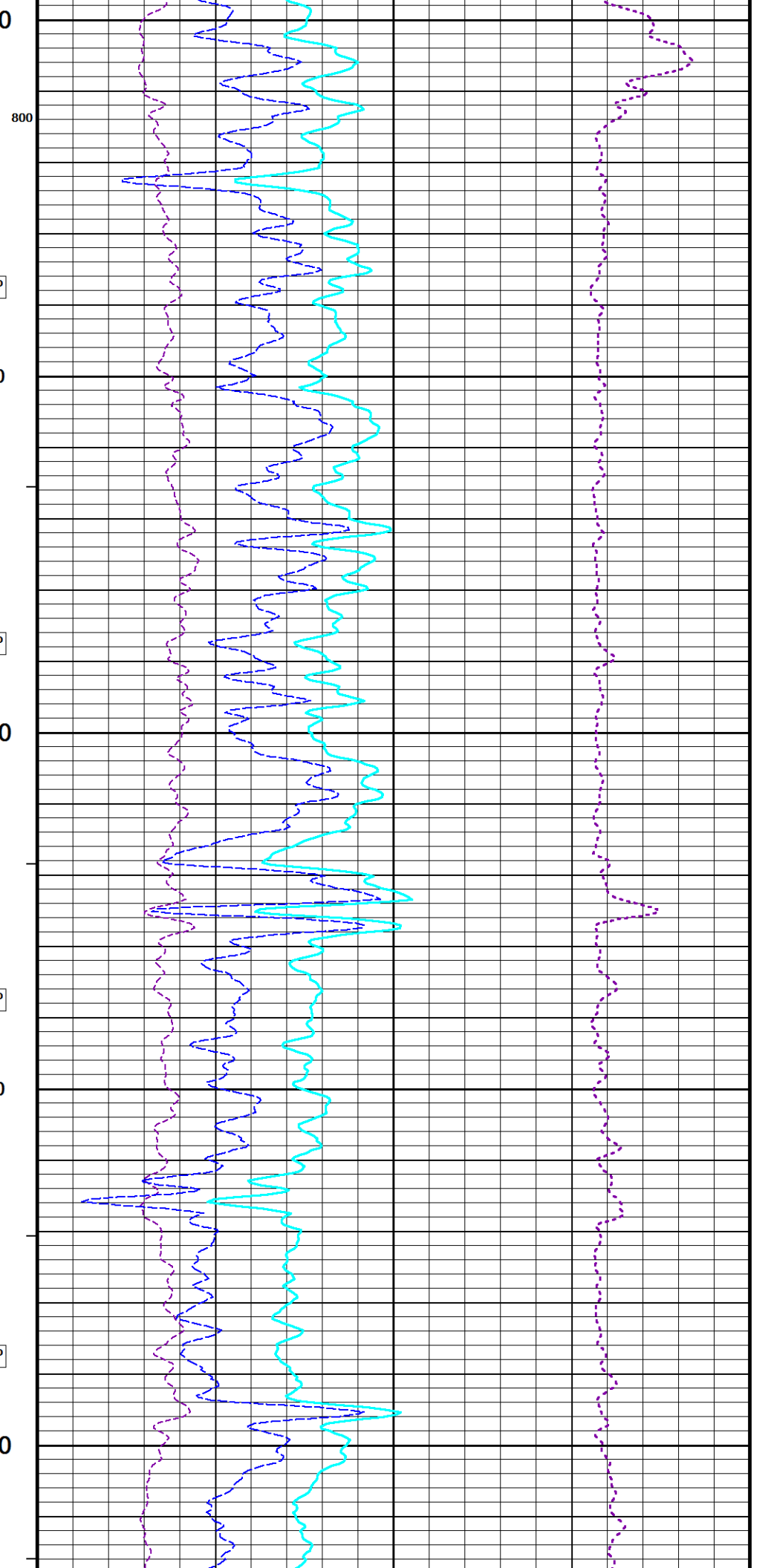
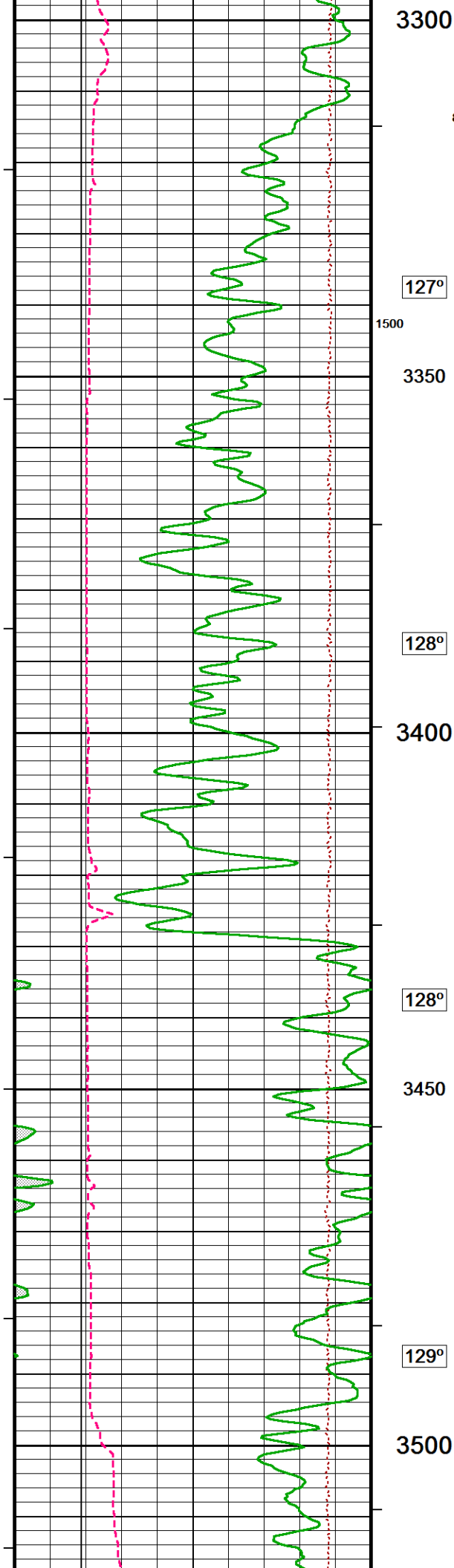
3000

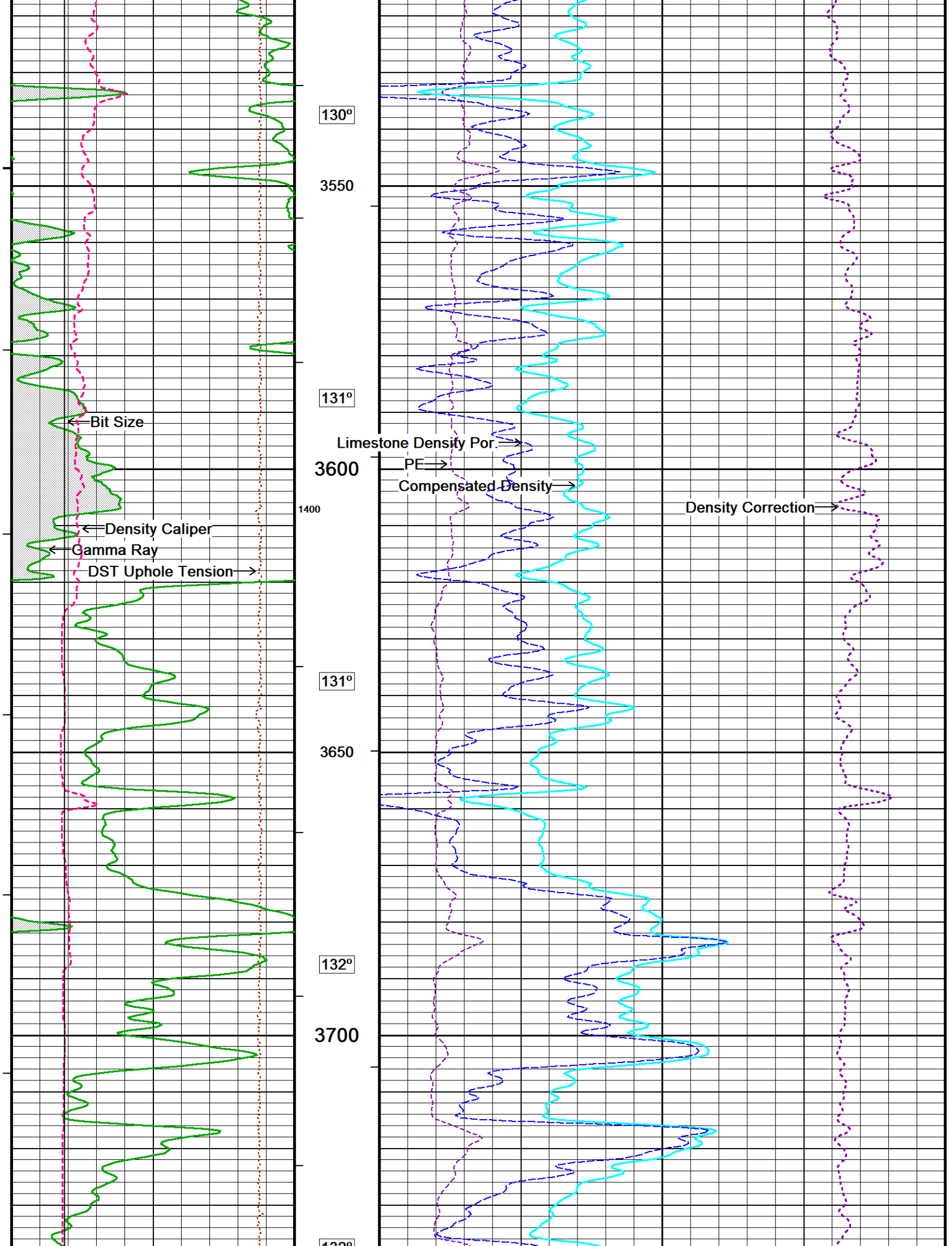
124°

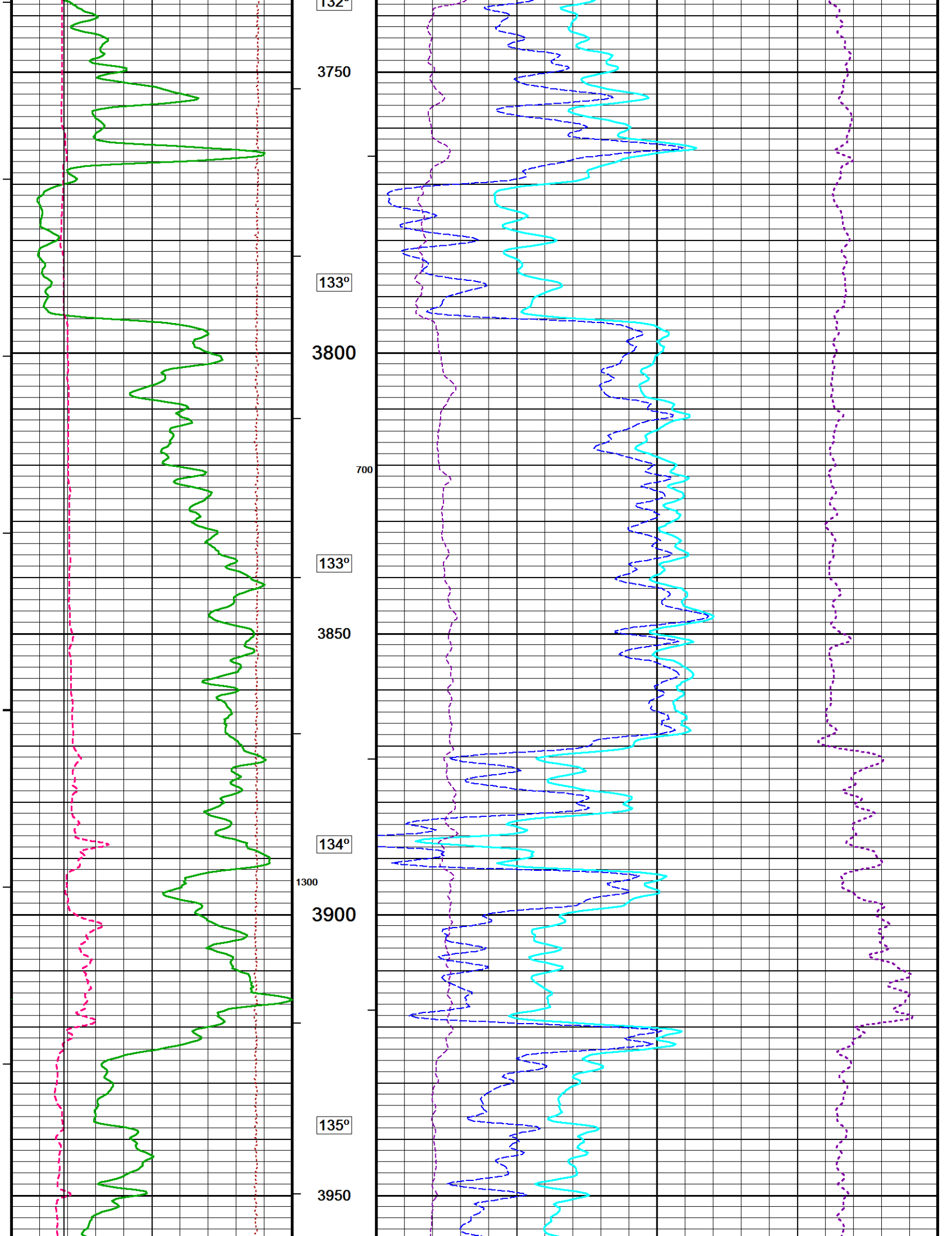
3050

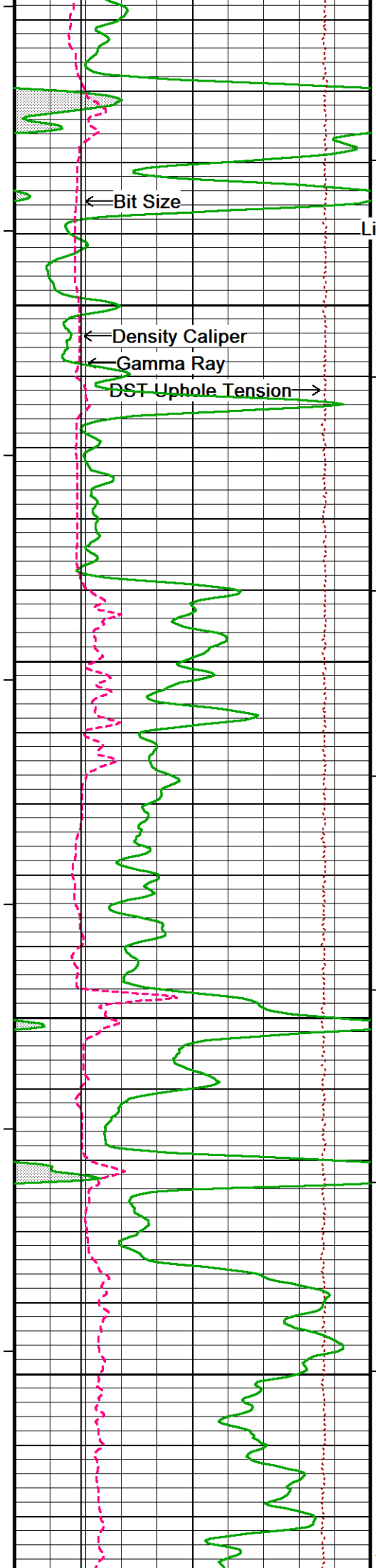












135°
Limestone

4000

135°

4050

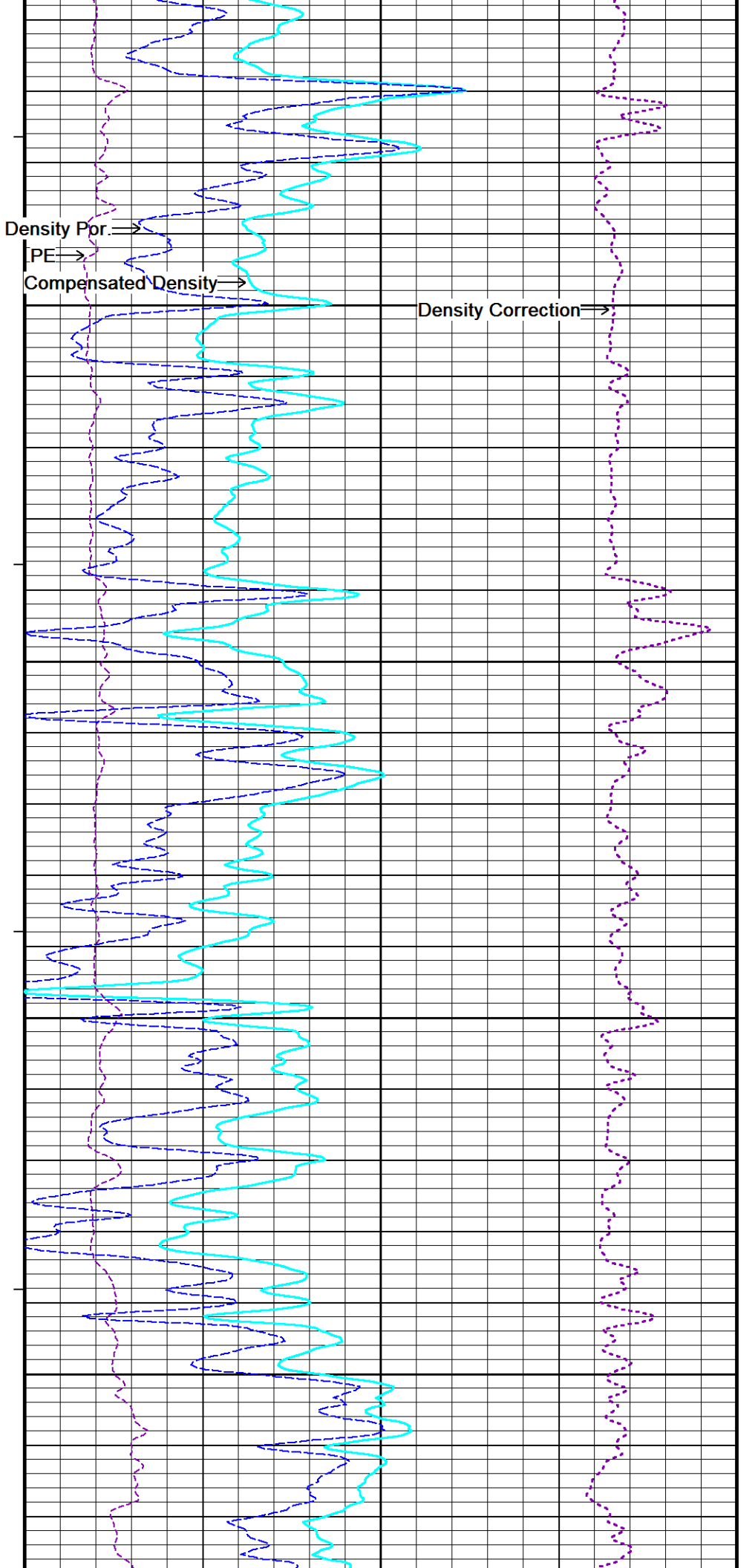
135°

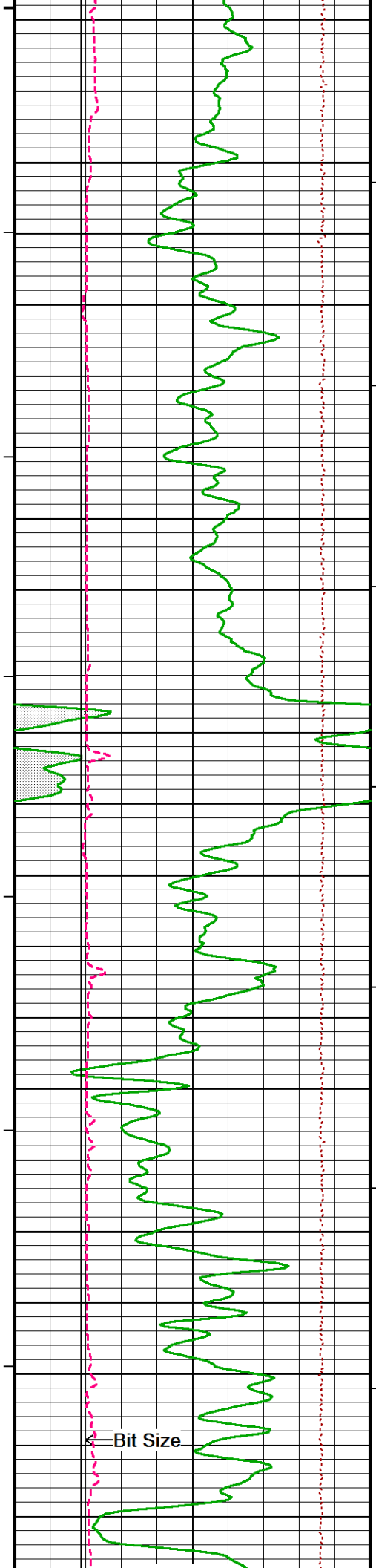
4100

136°

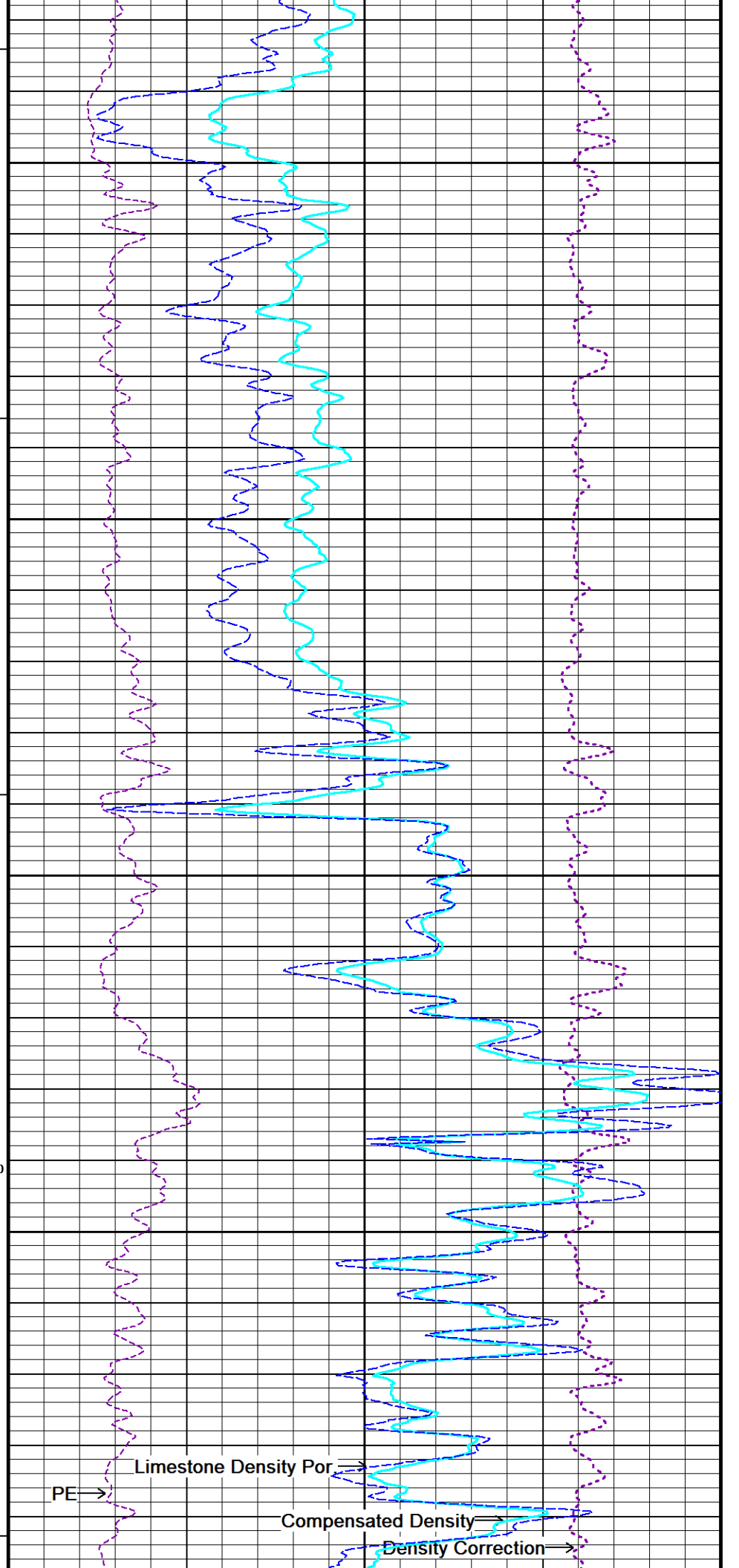
4150

1200

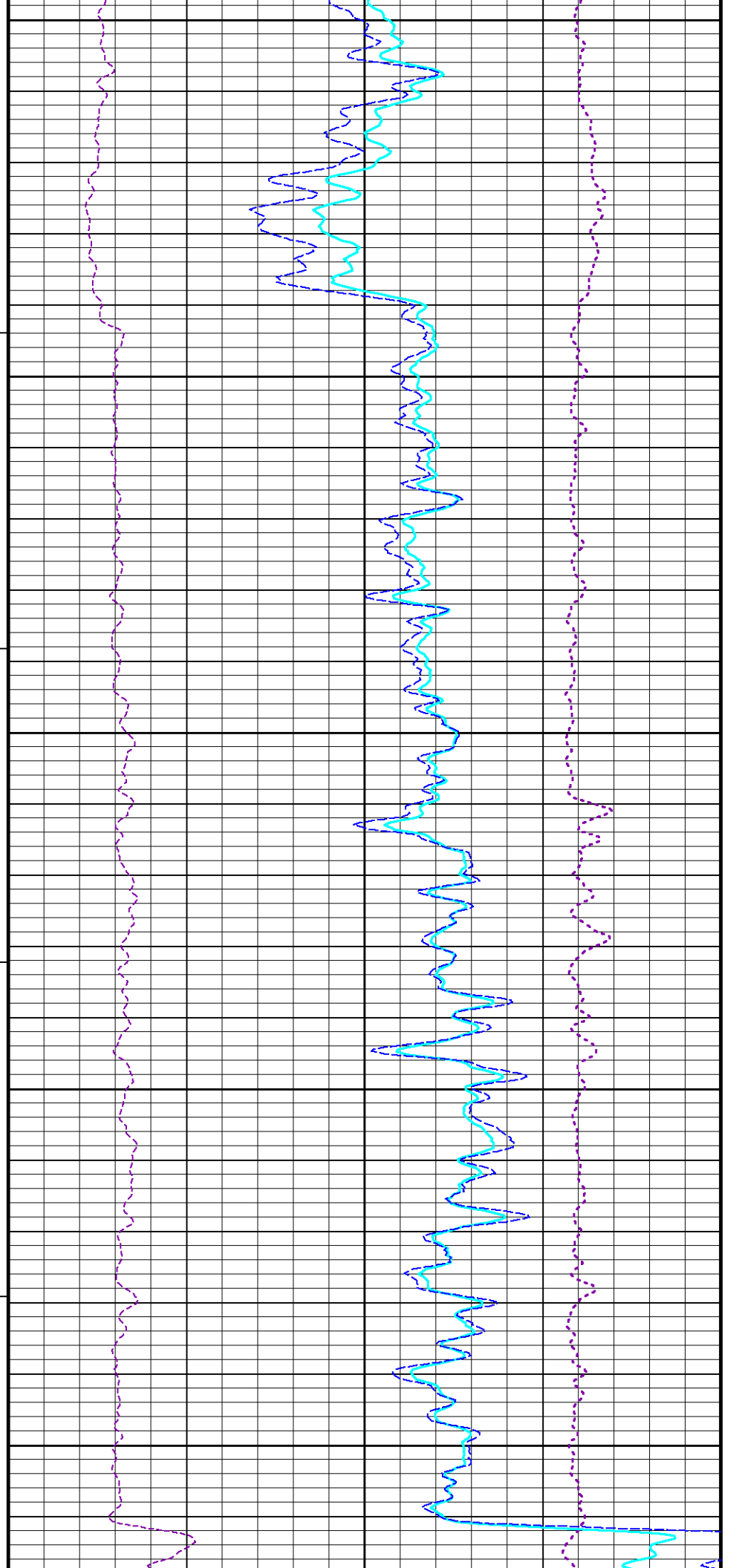
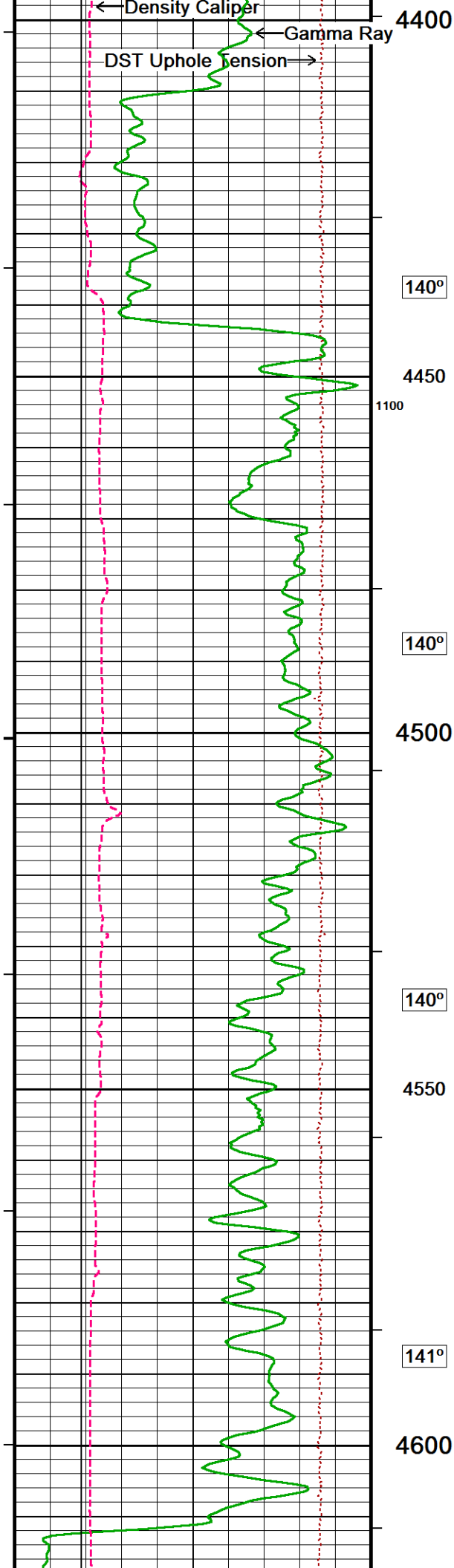


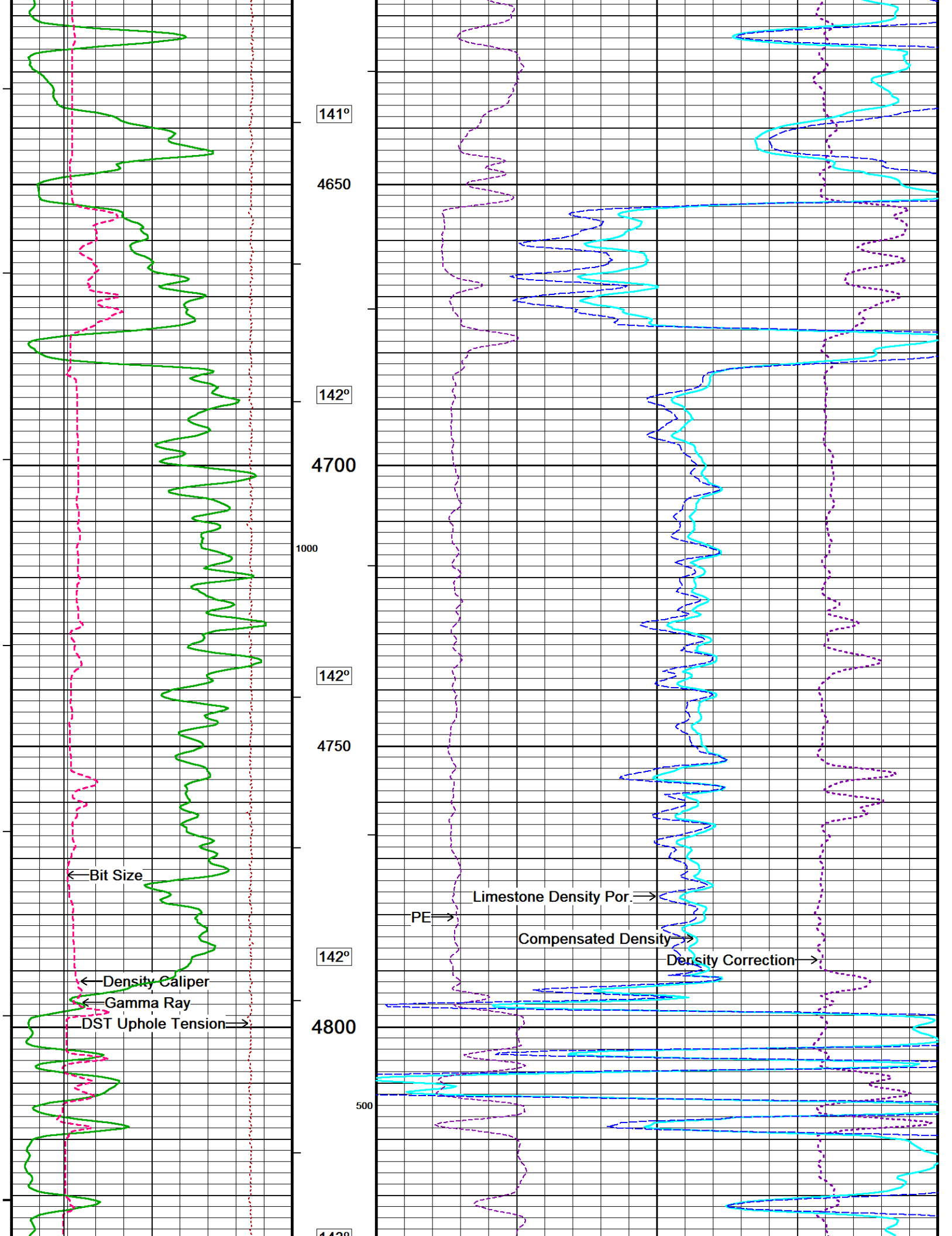


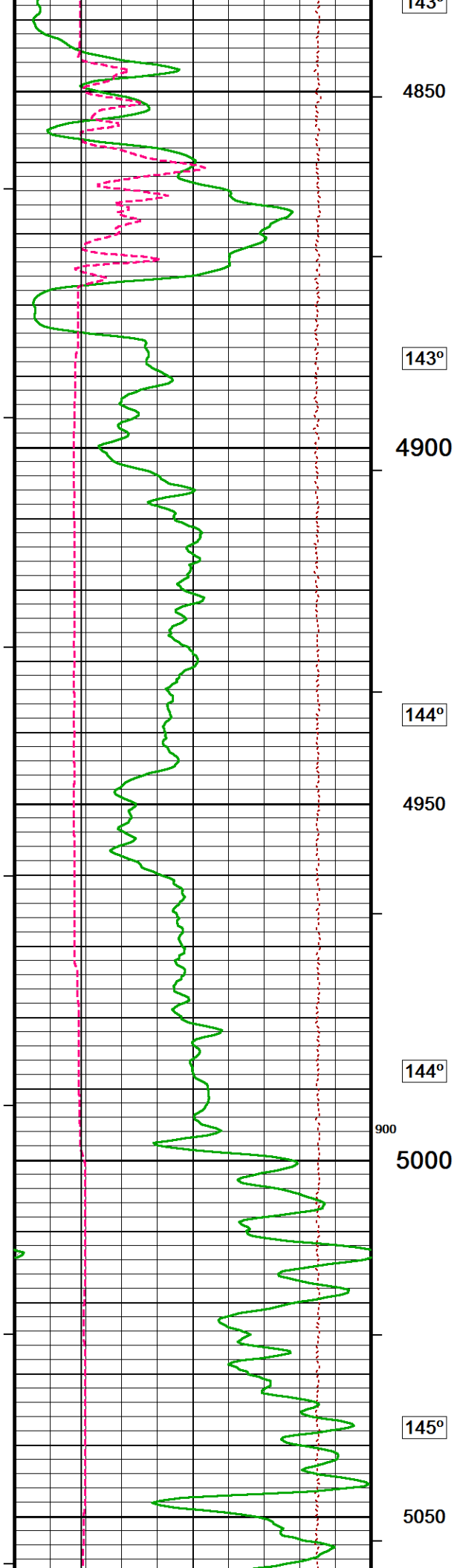
136°
4200
137°
4250
138°
4300
138°
4350
139°



PE →
Limestone Density Por →
Compensated Density →
Density Correction →







145°

4850

143°

4900

144°

4950

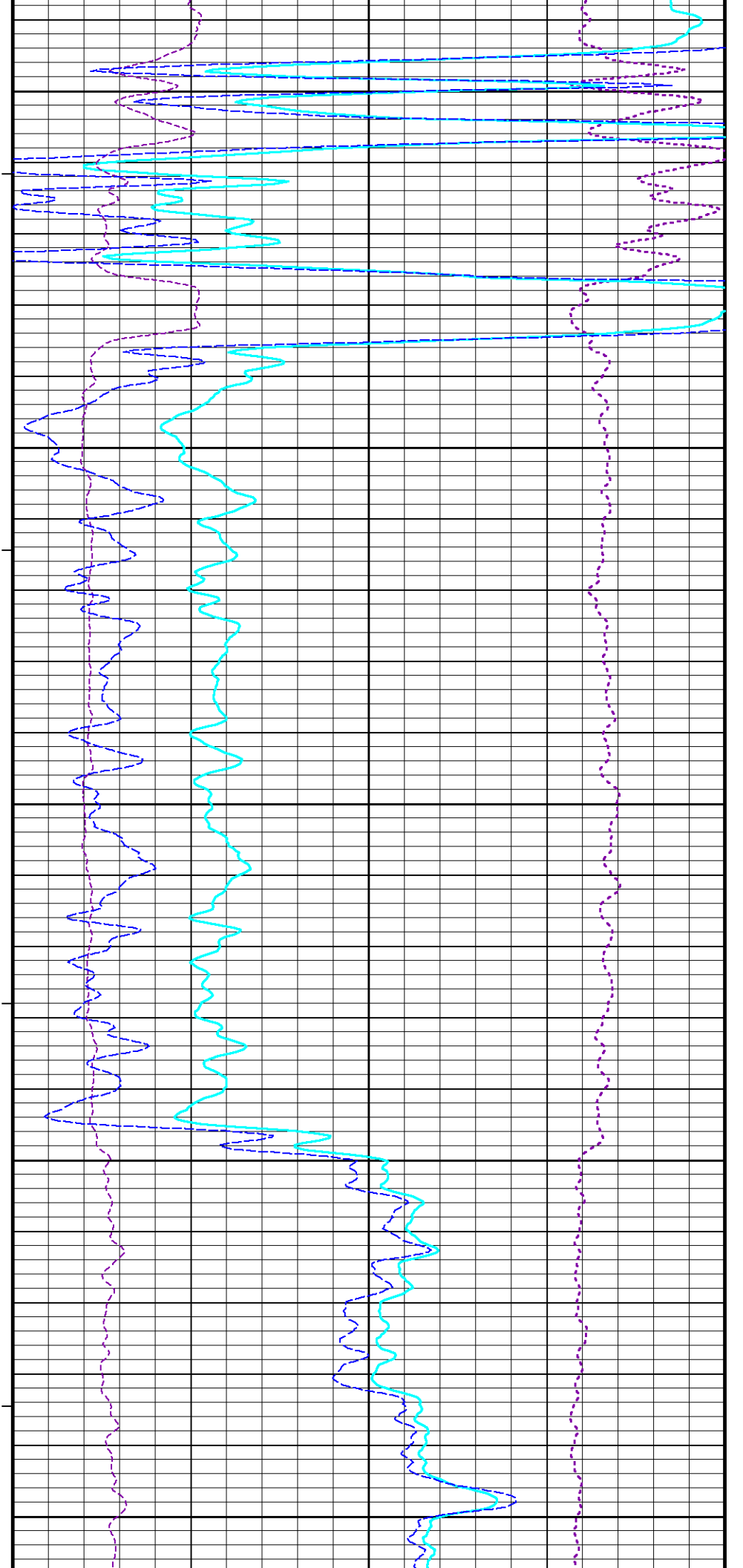
144°

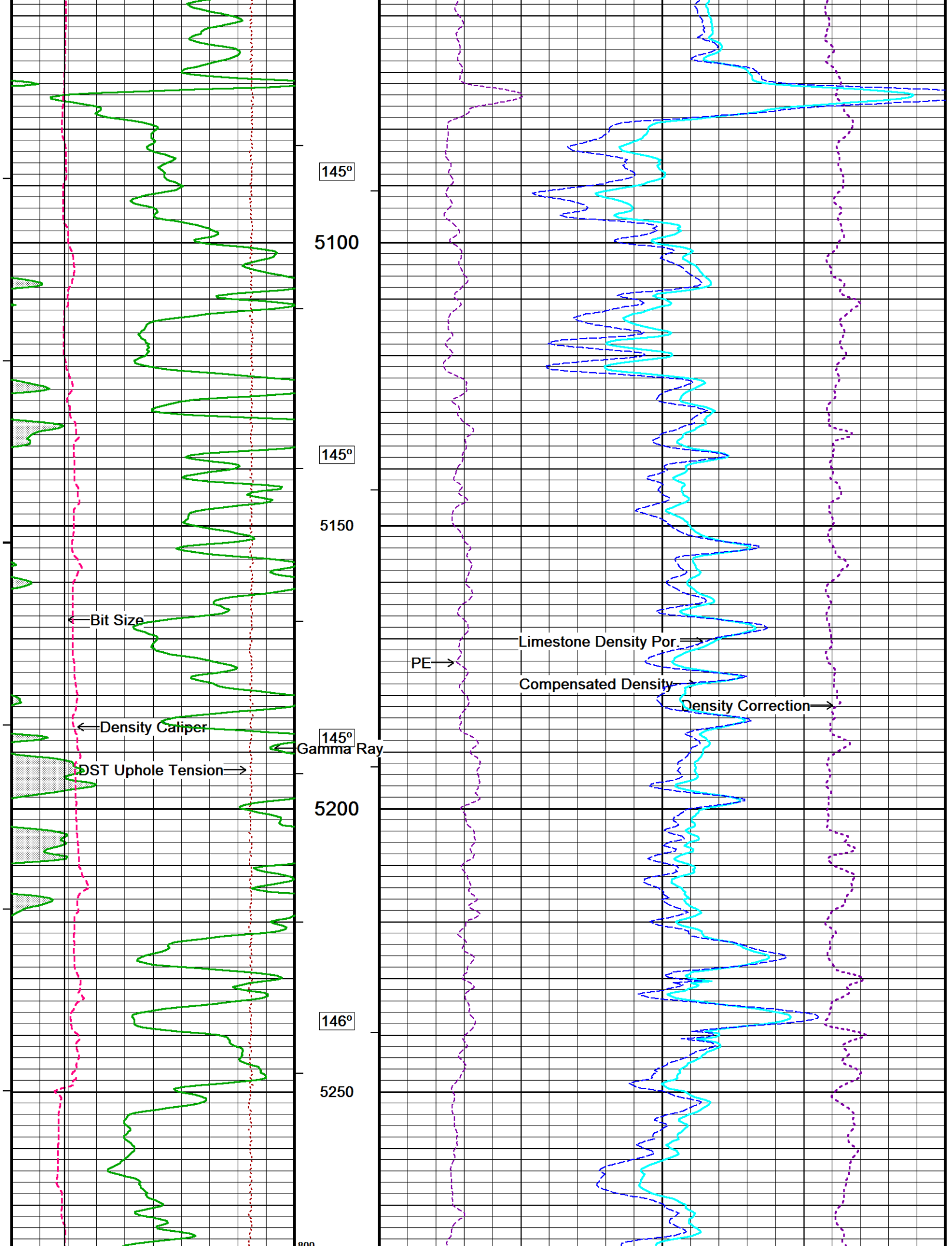
900

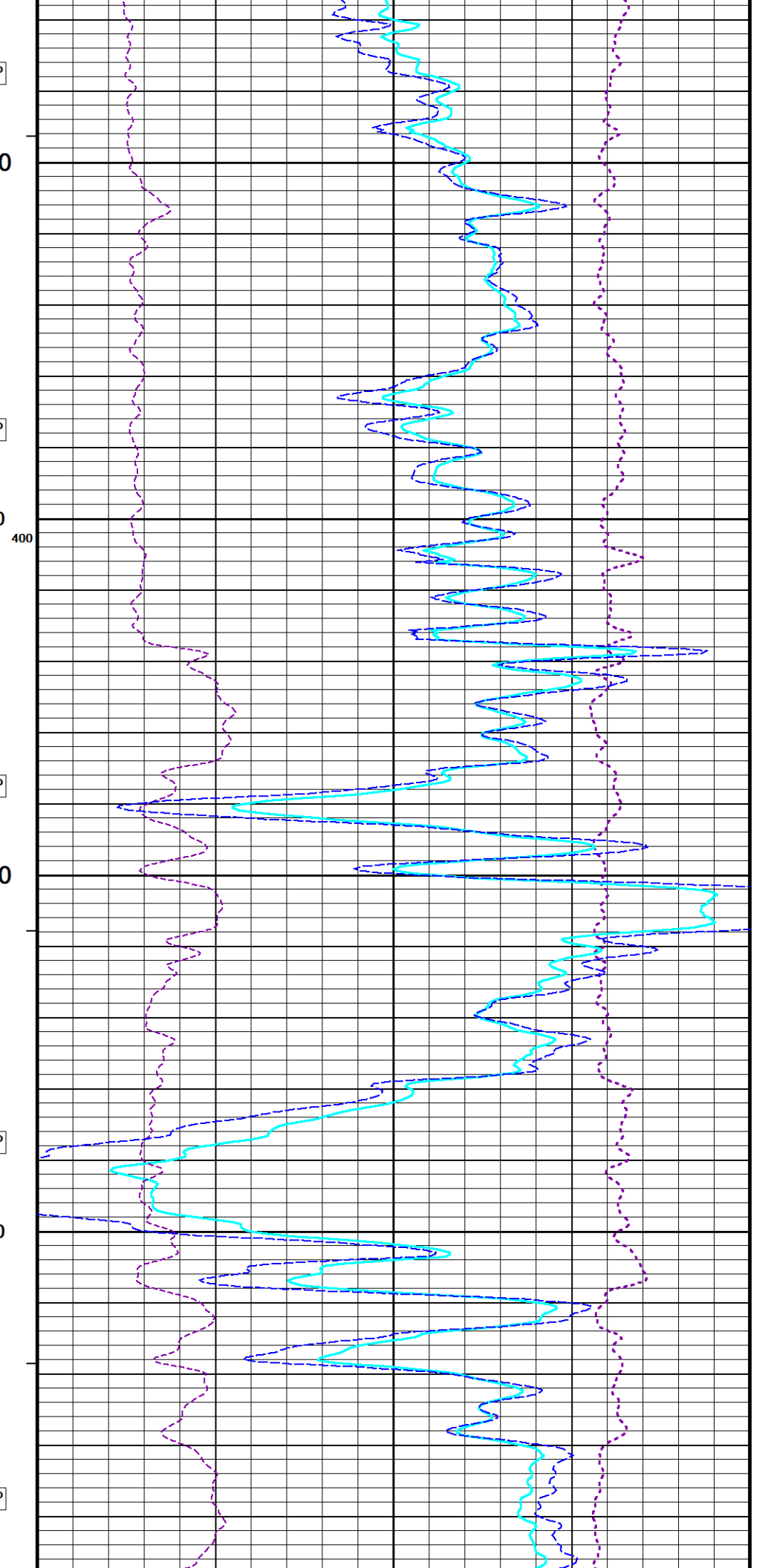
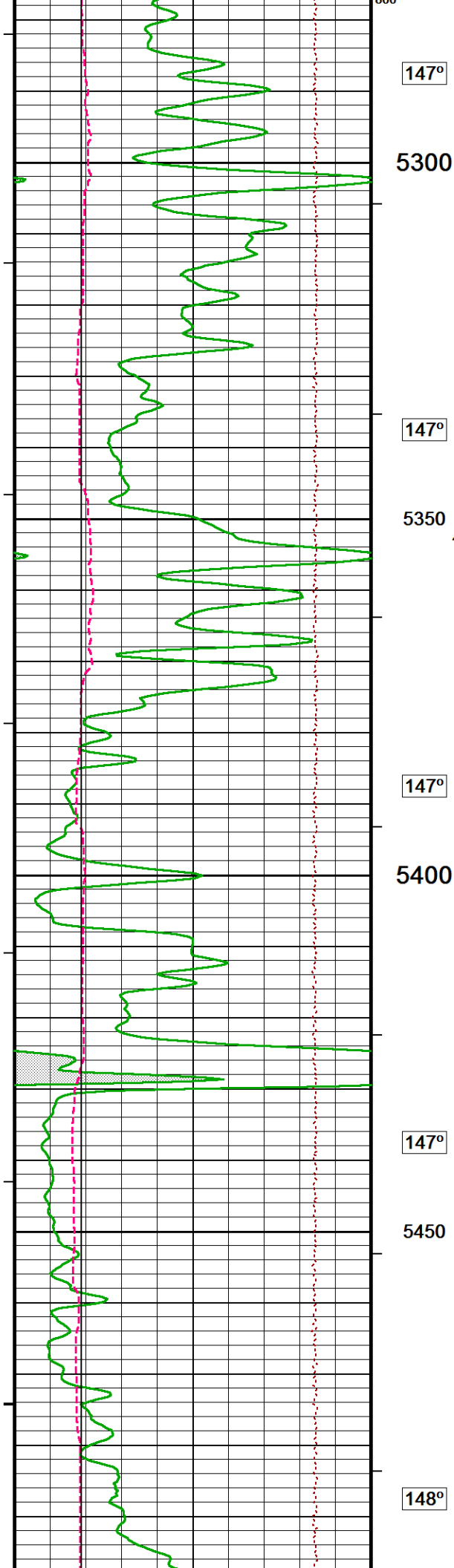
5000

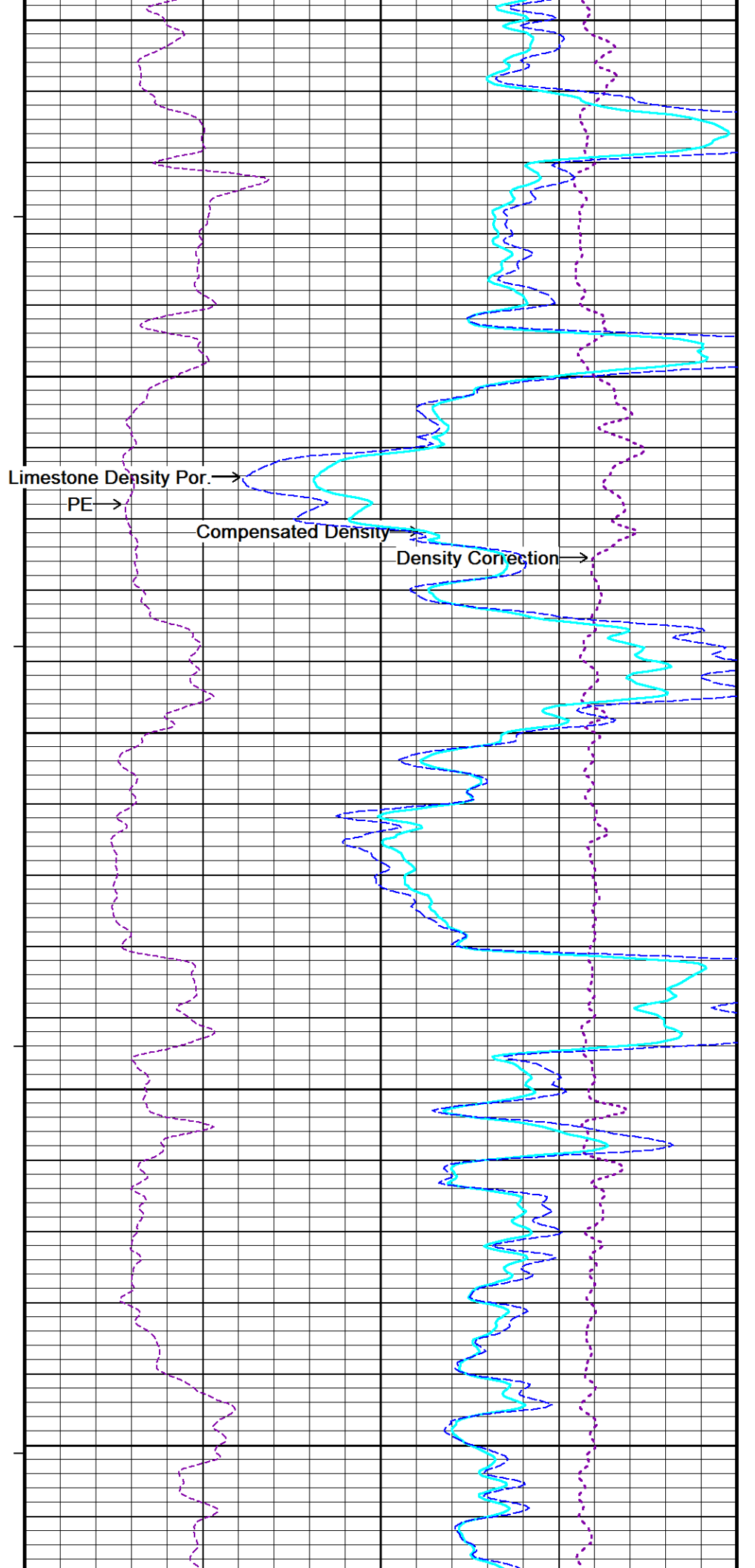
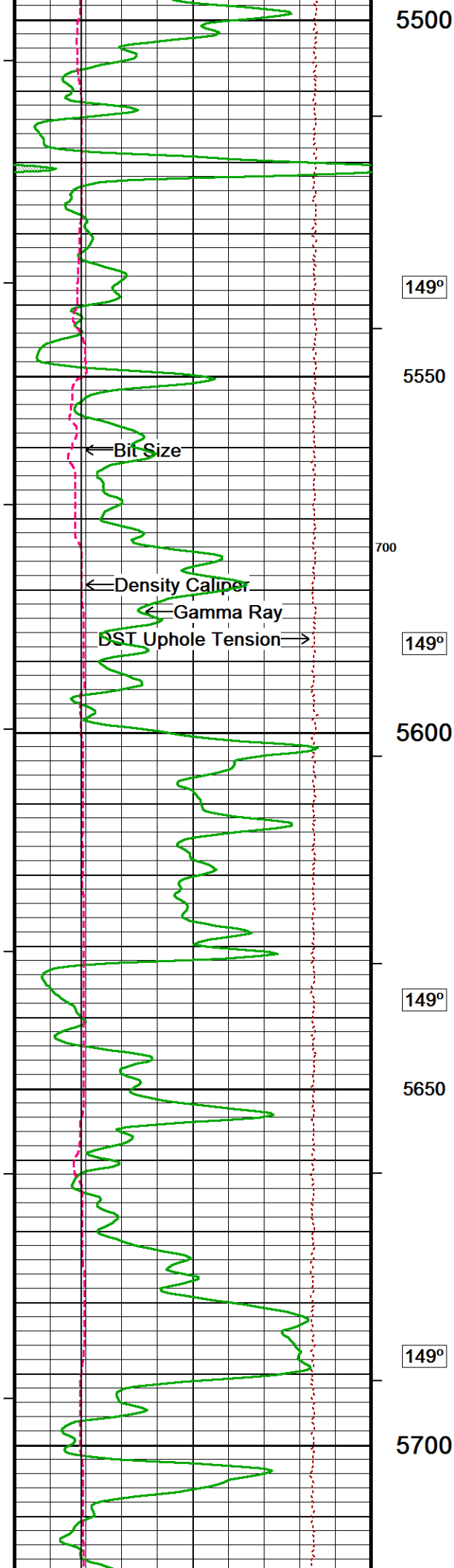
145°

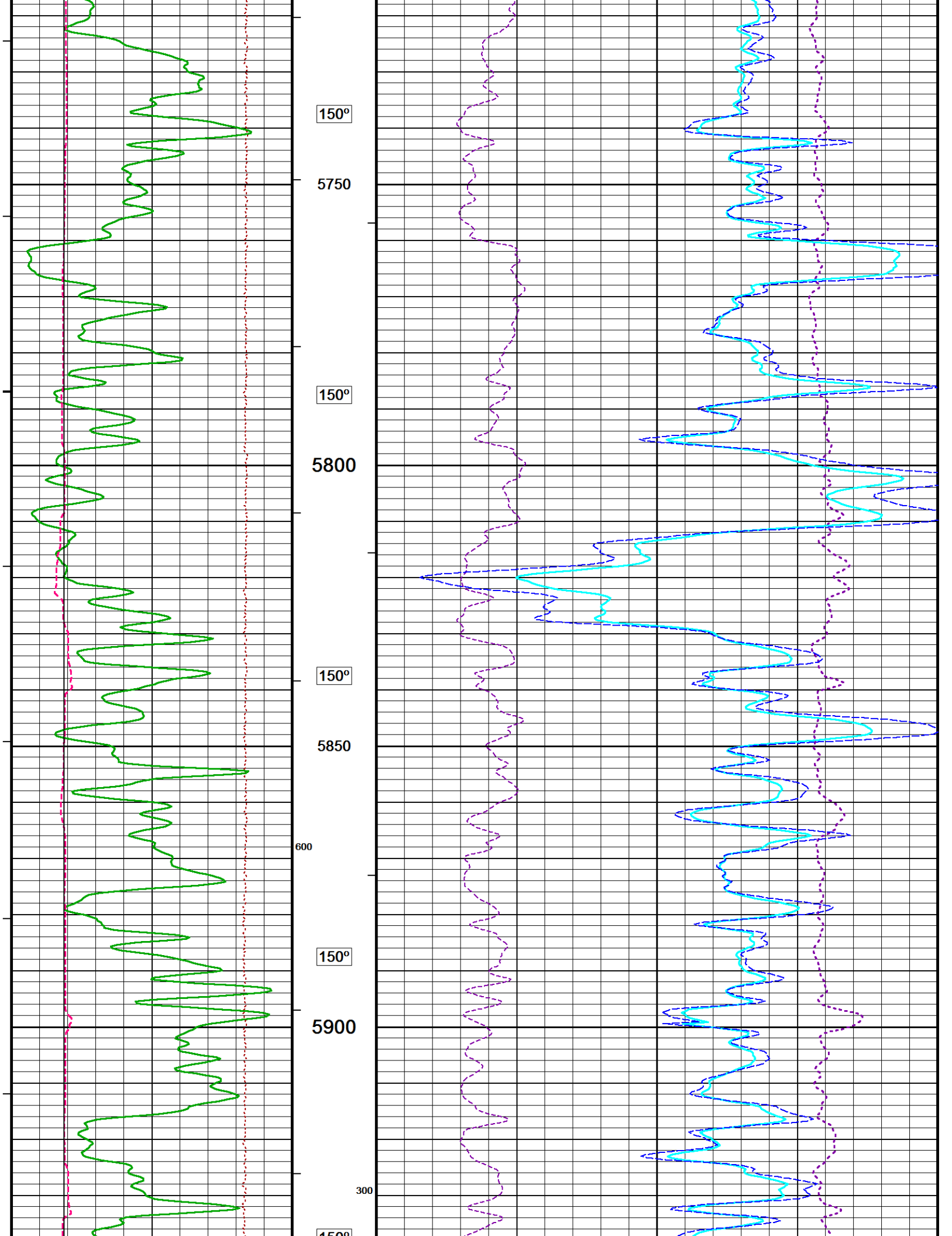
5050

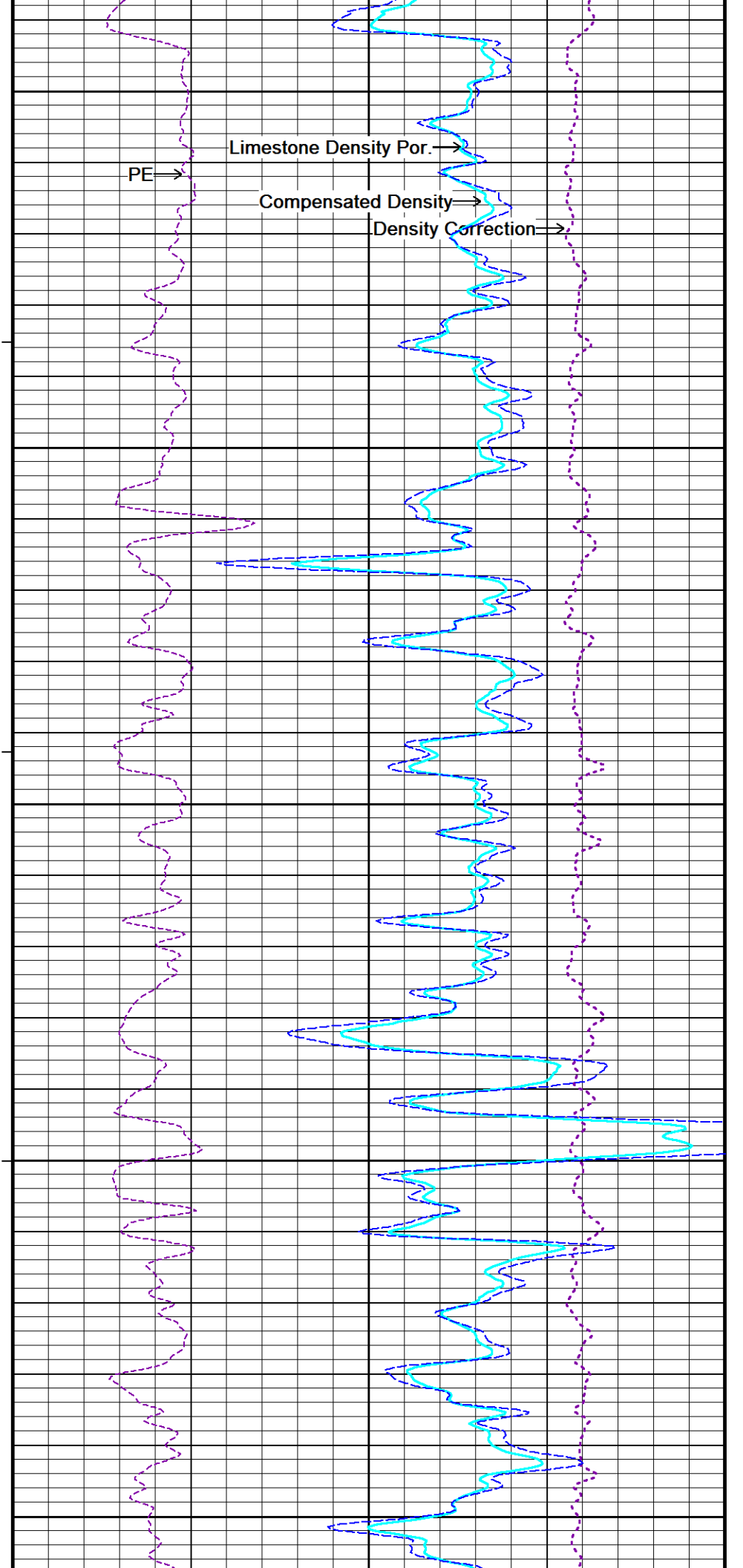
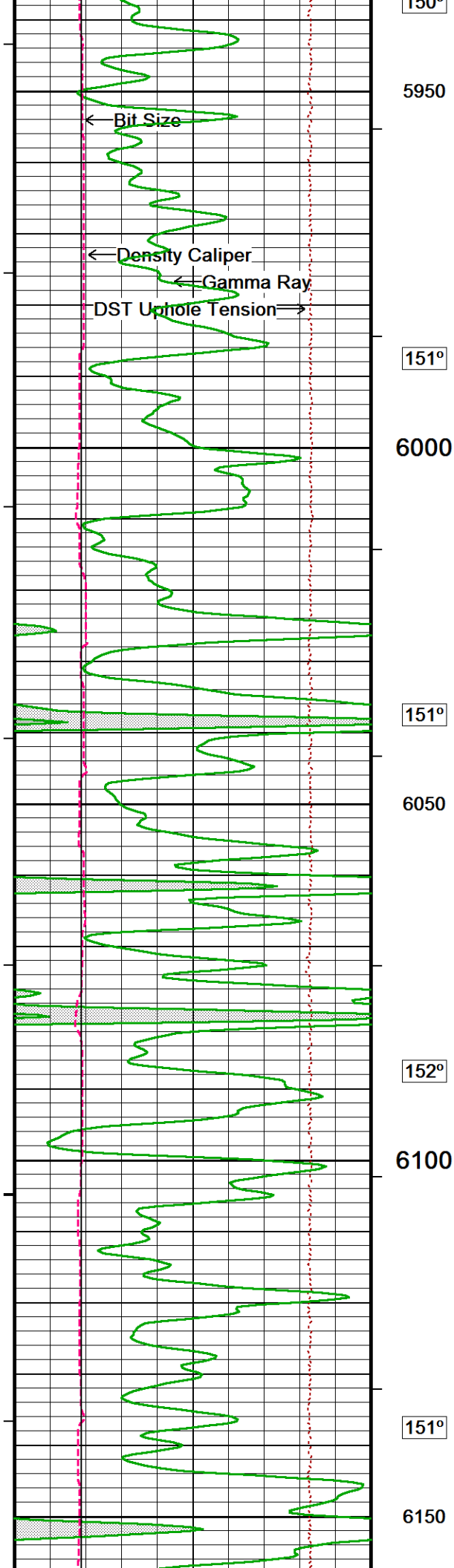


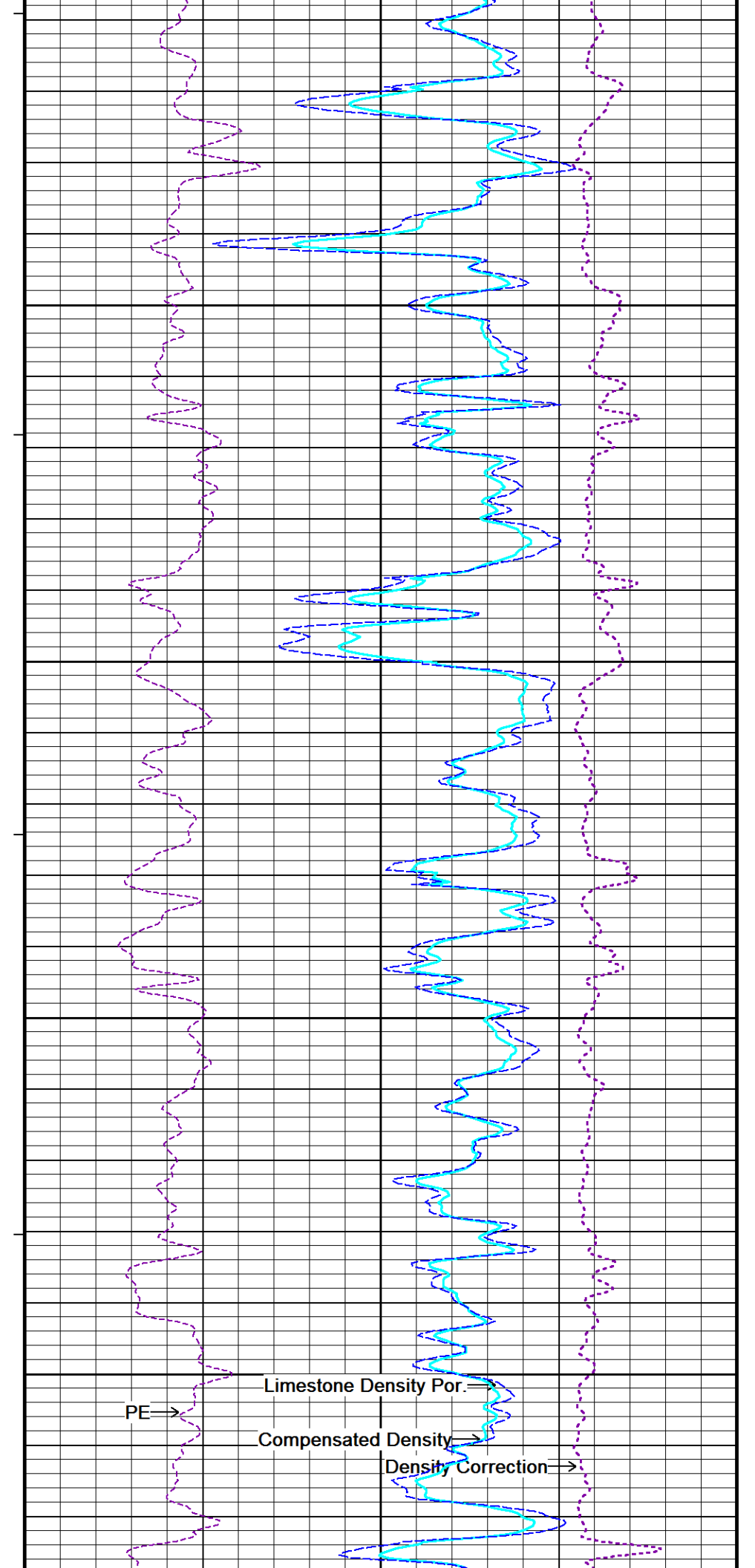
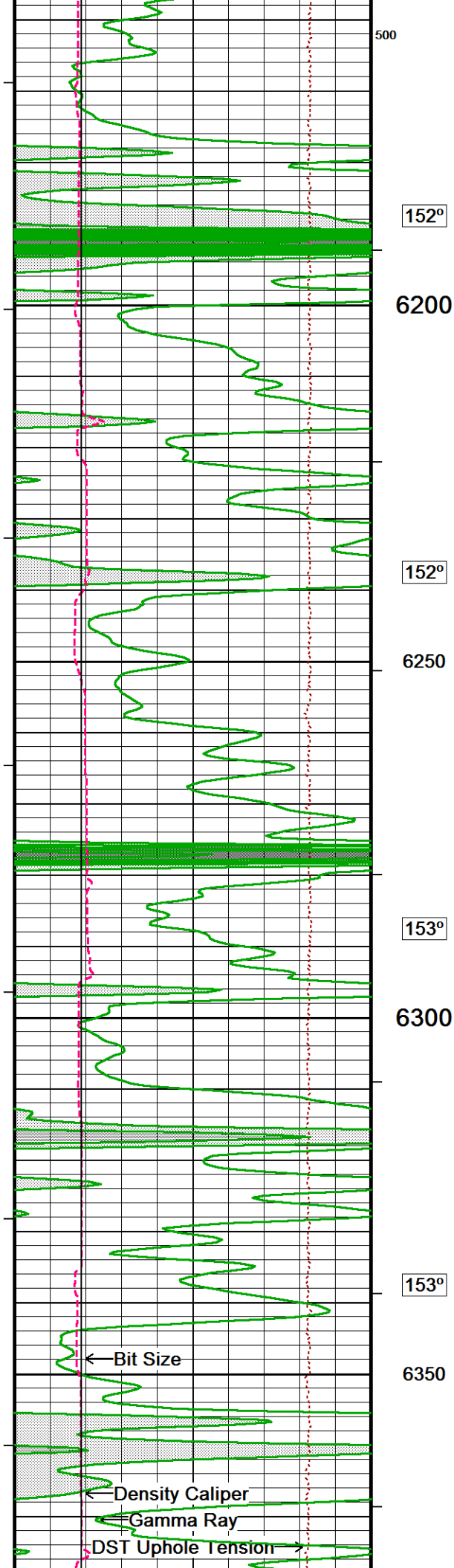


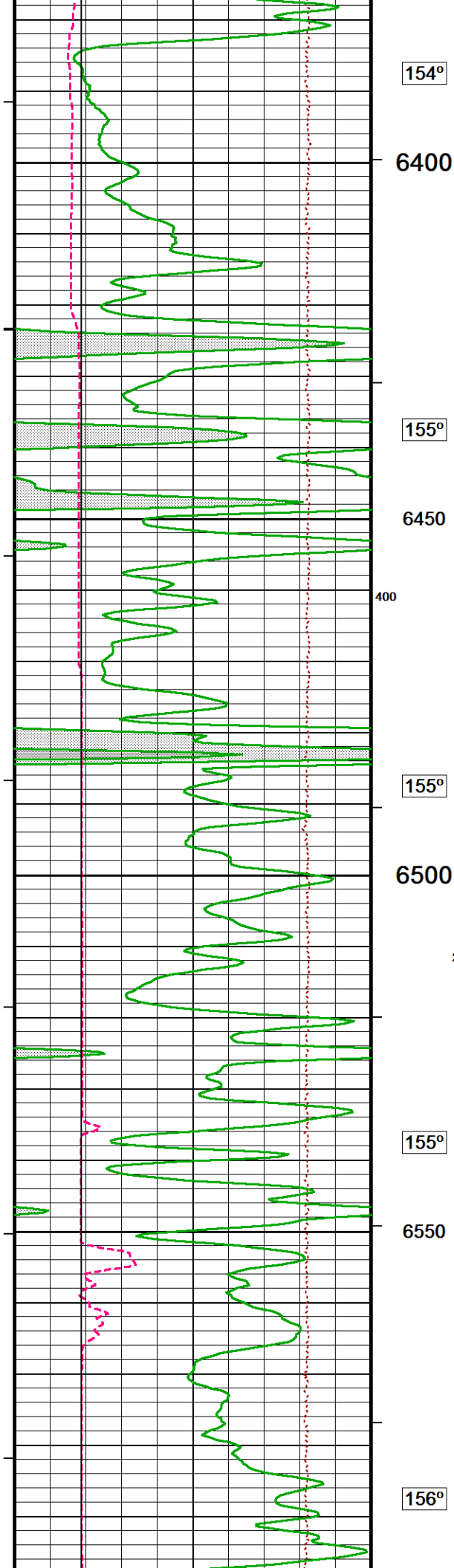












154°

6400

155°

6450

400

155°

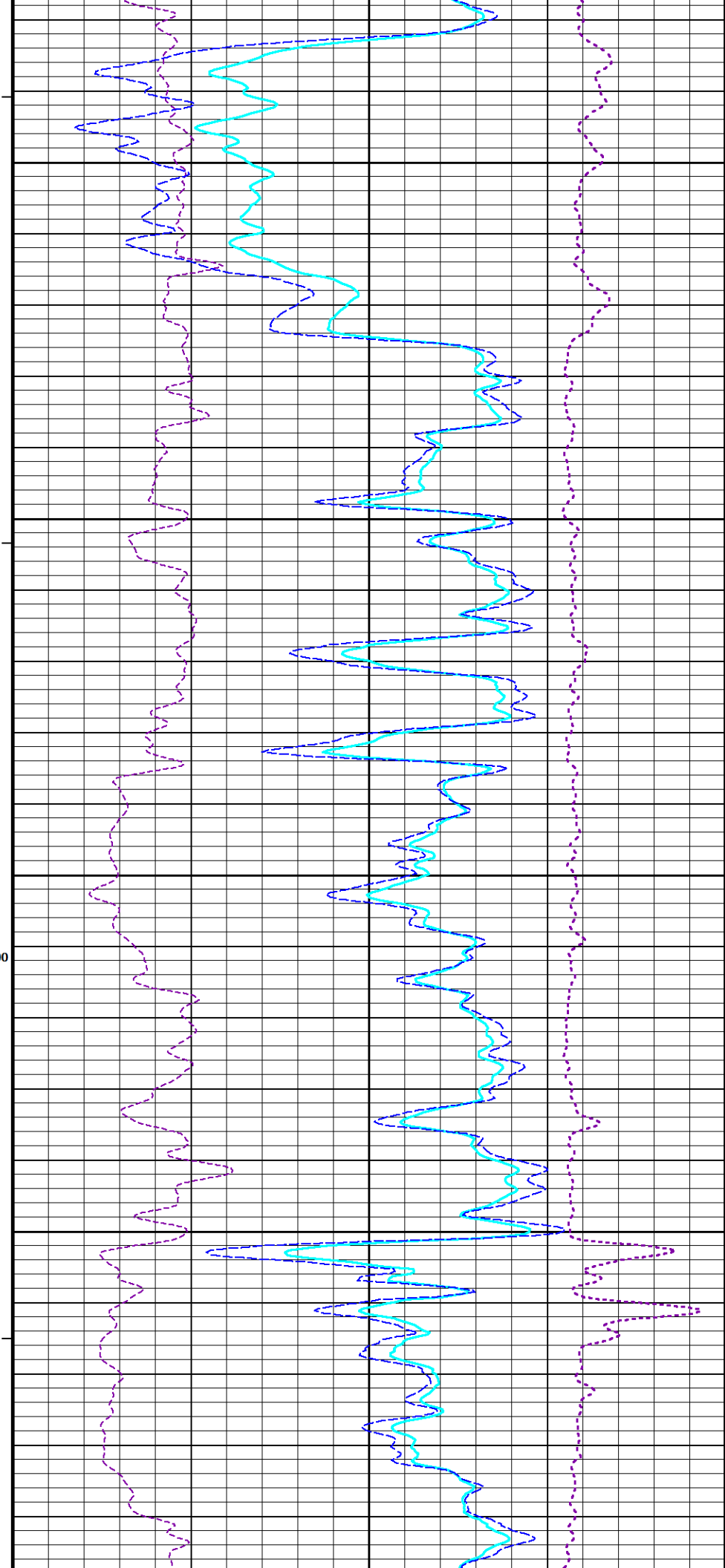
6500

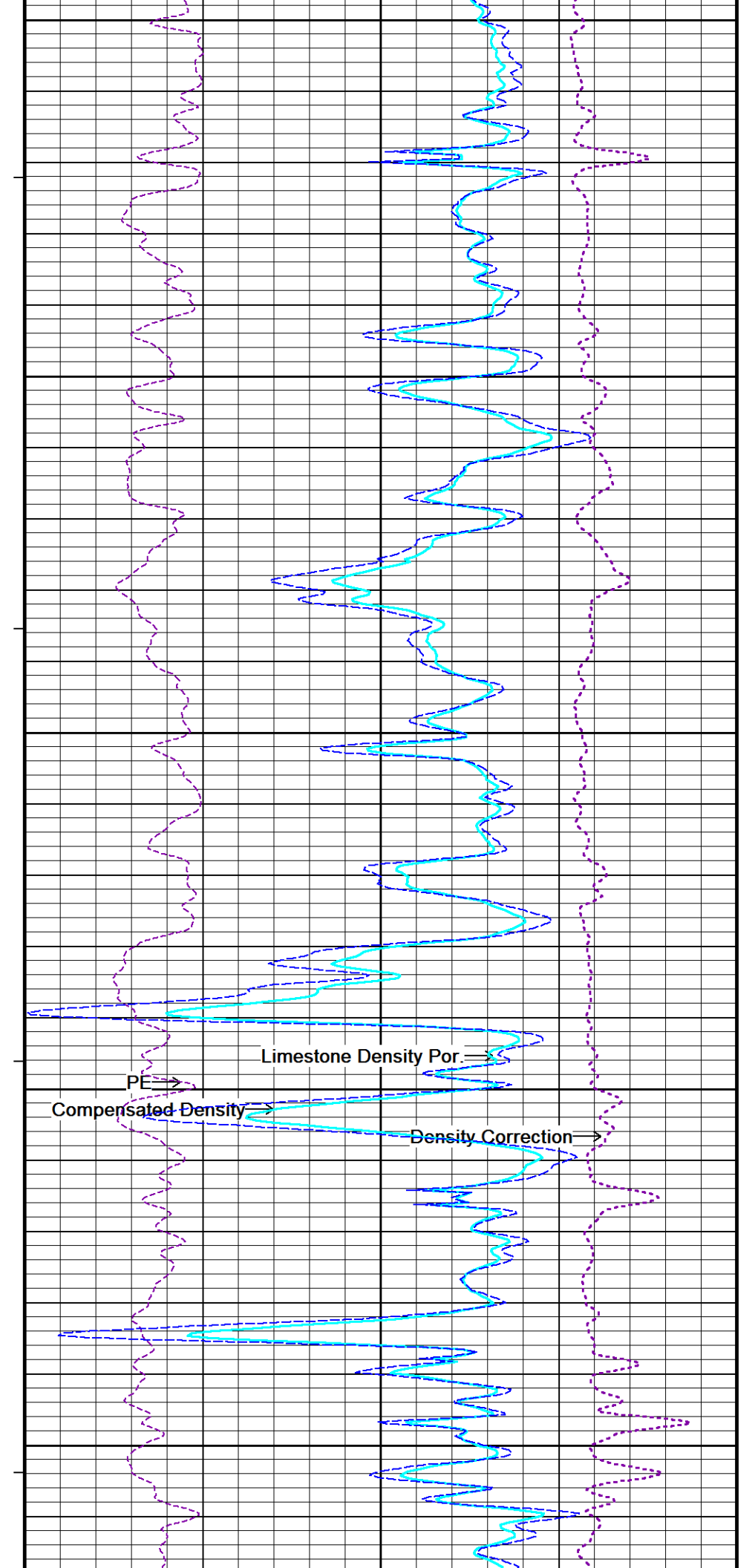
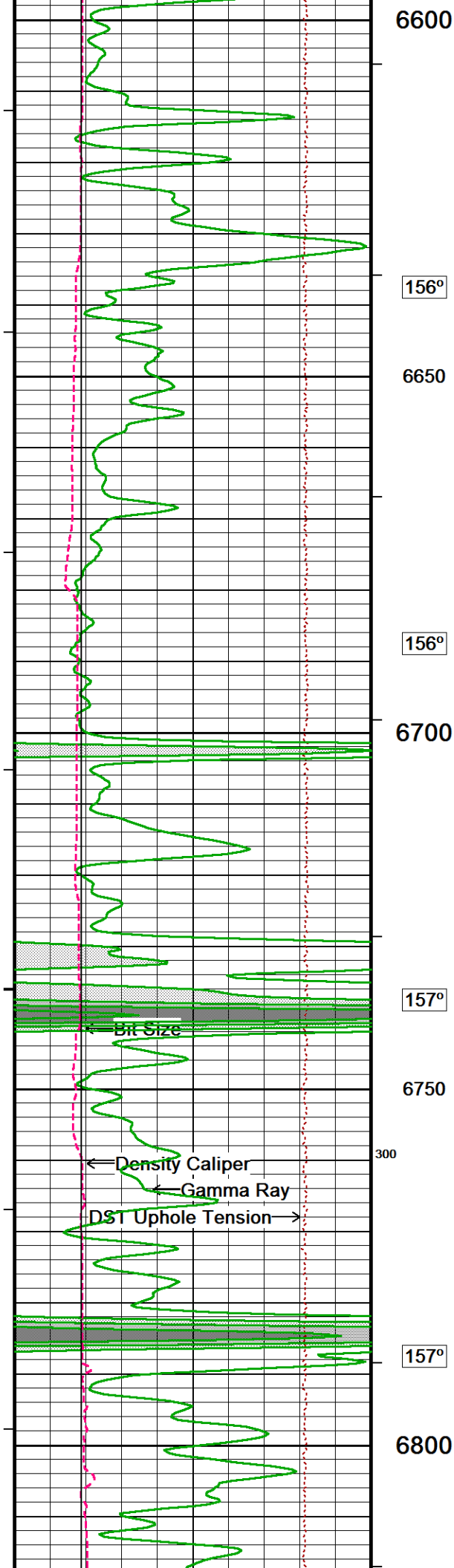
200

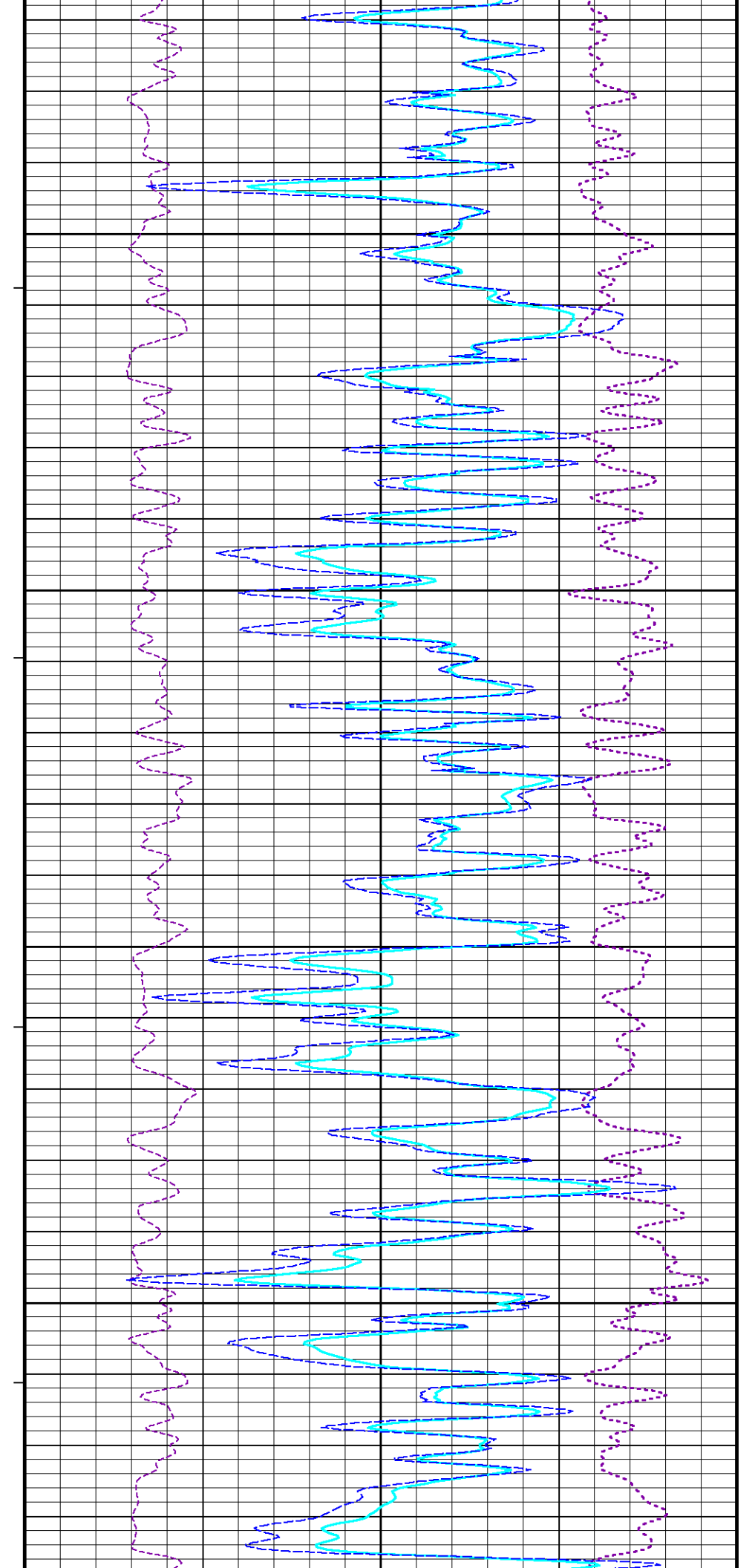
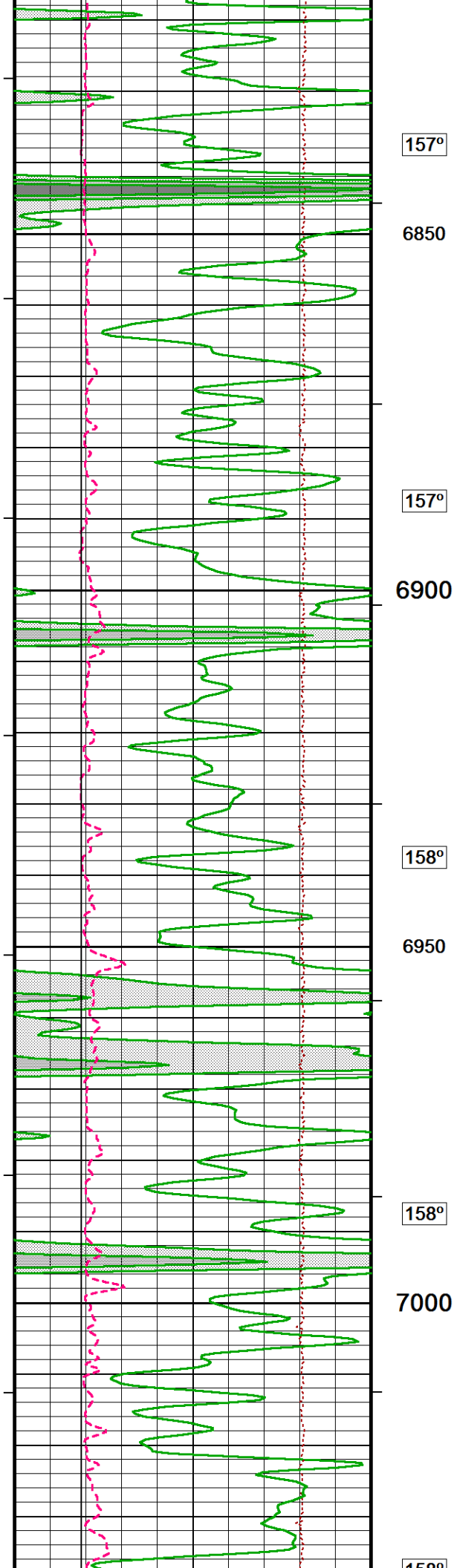
155°

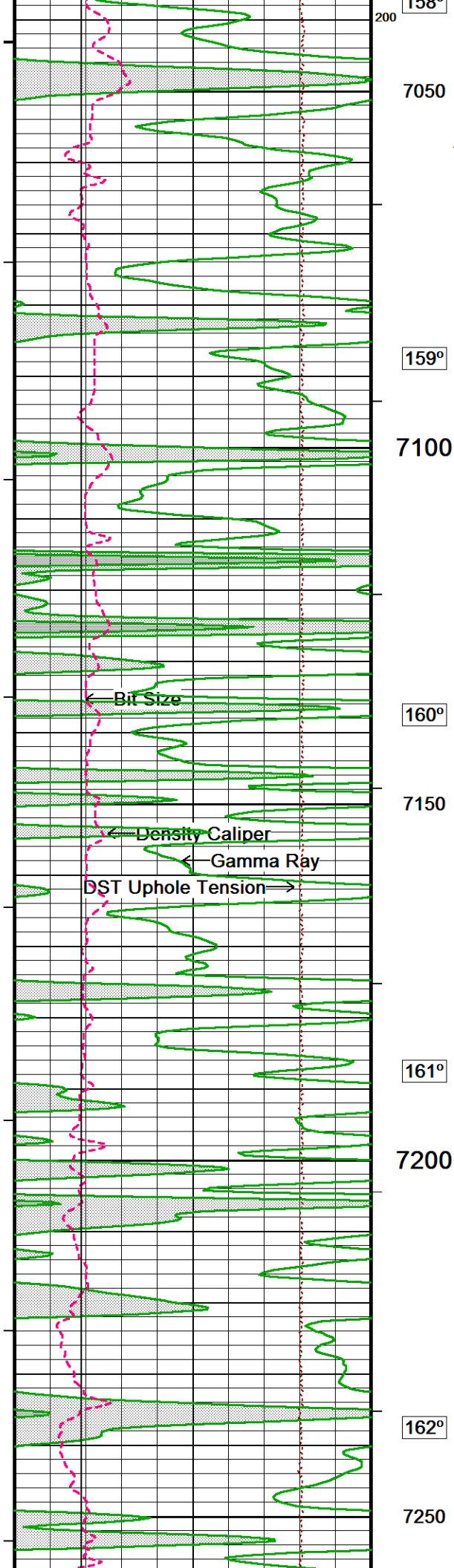
6550

156°

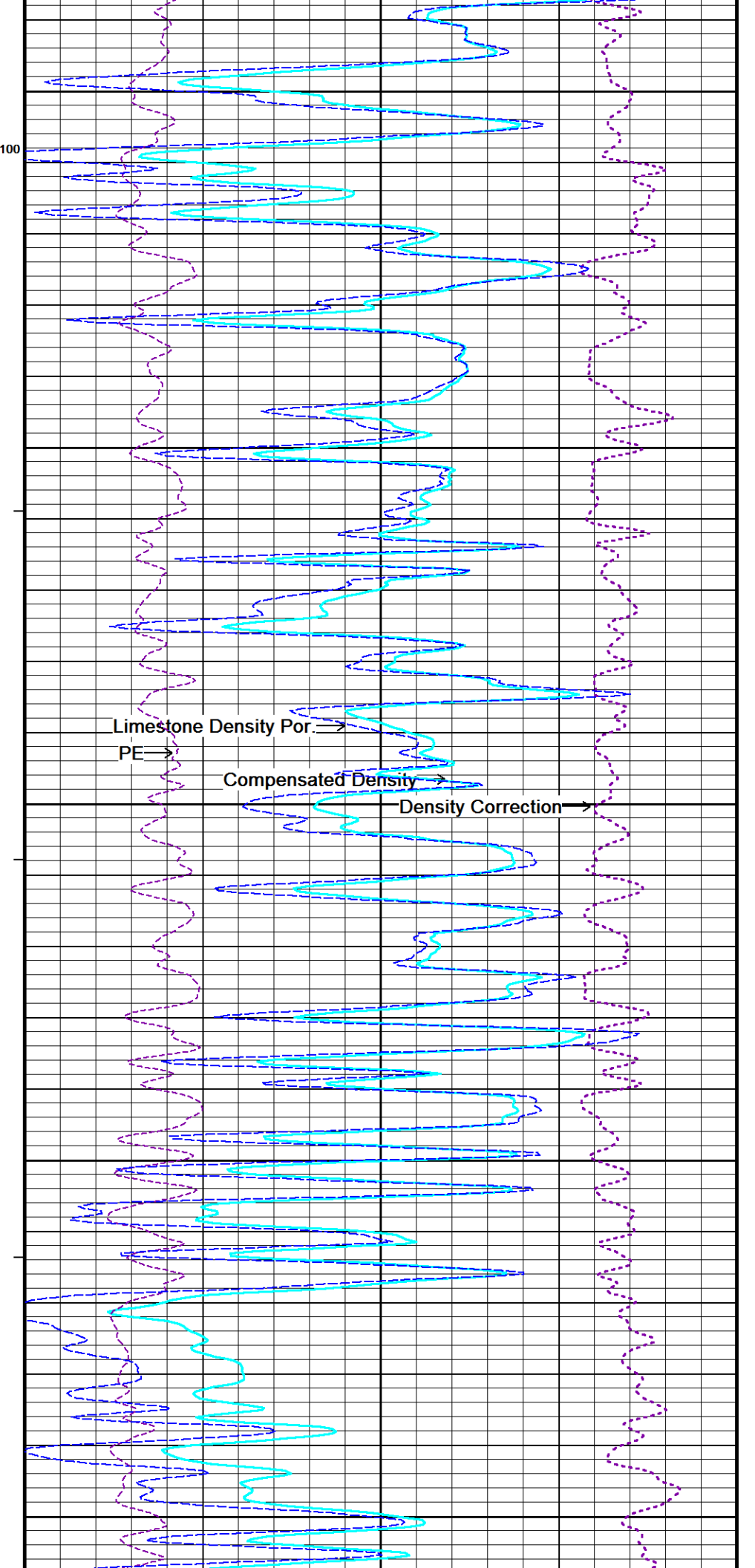




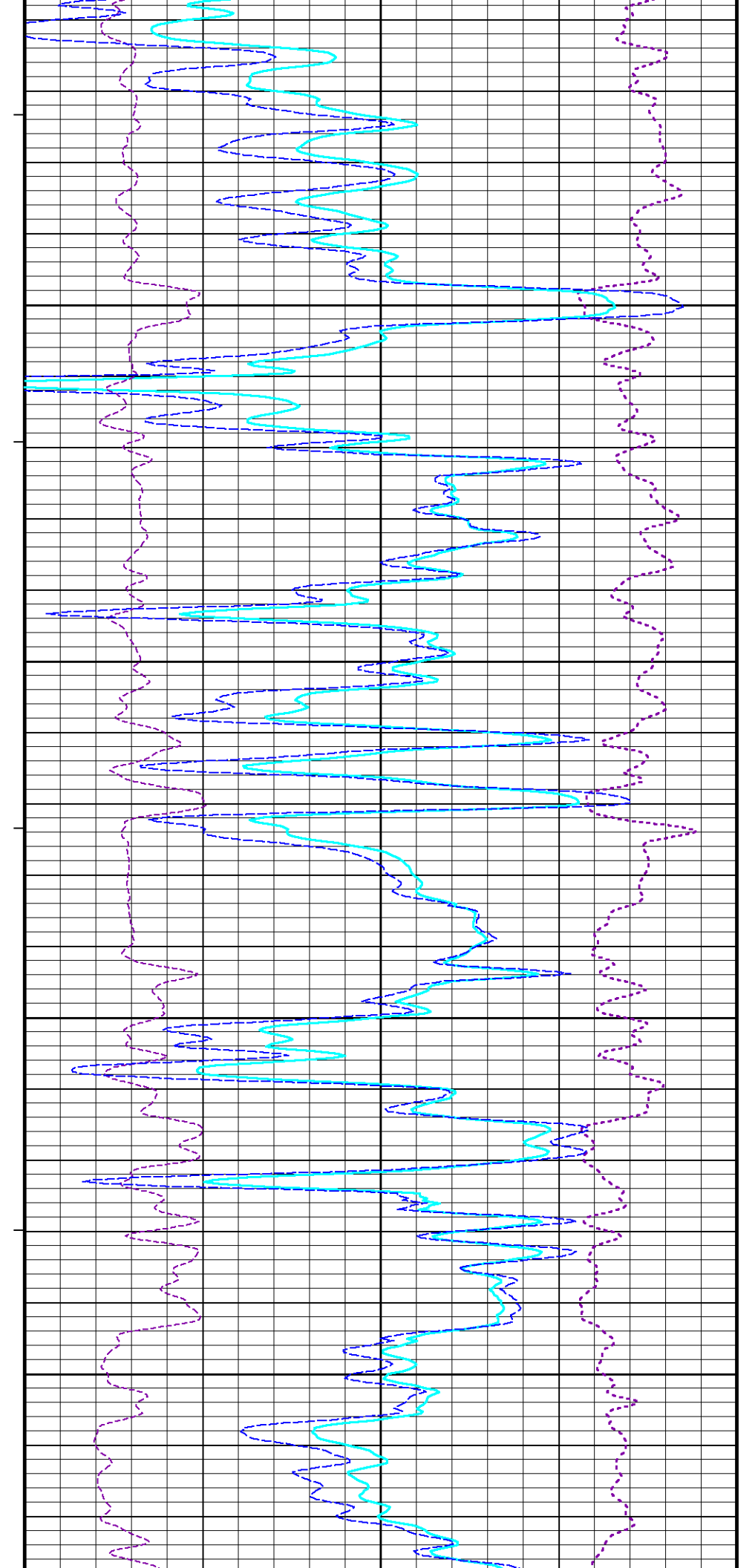
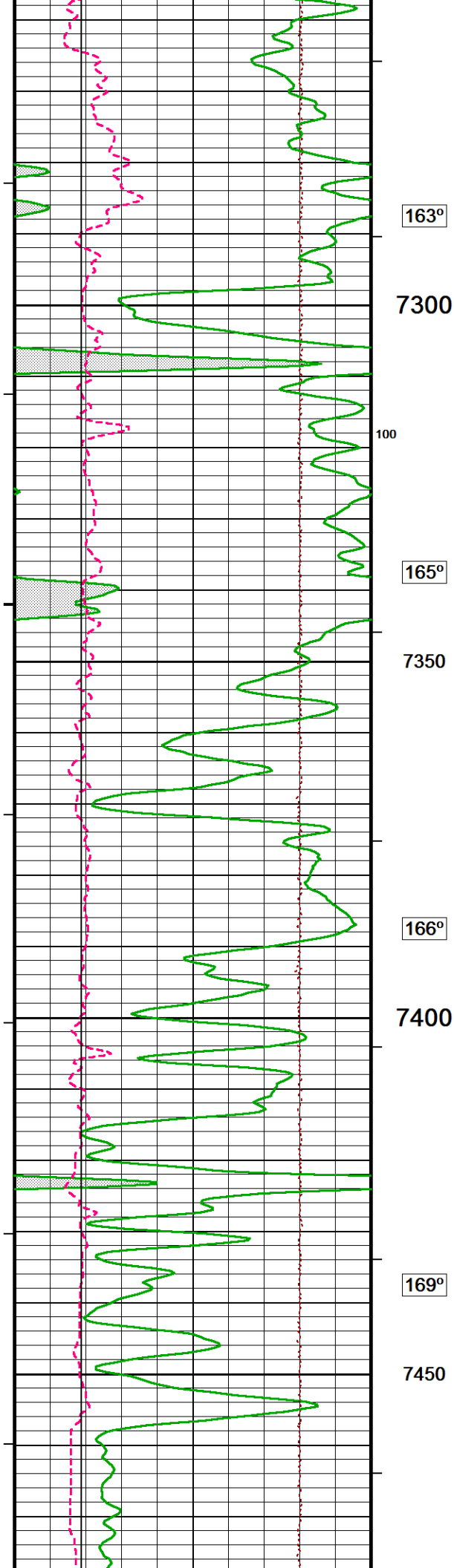


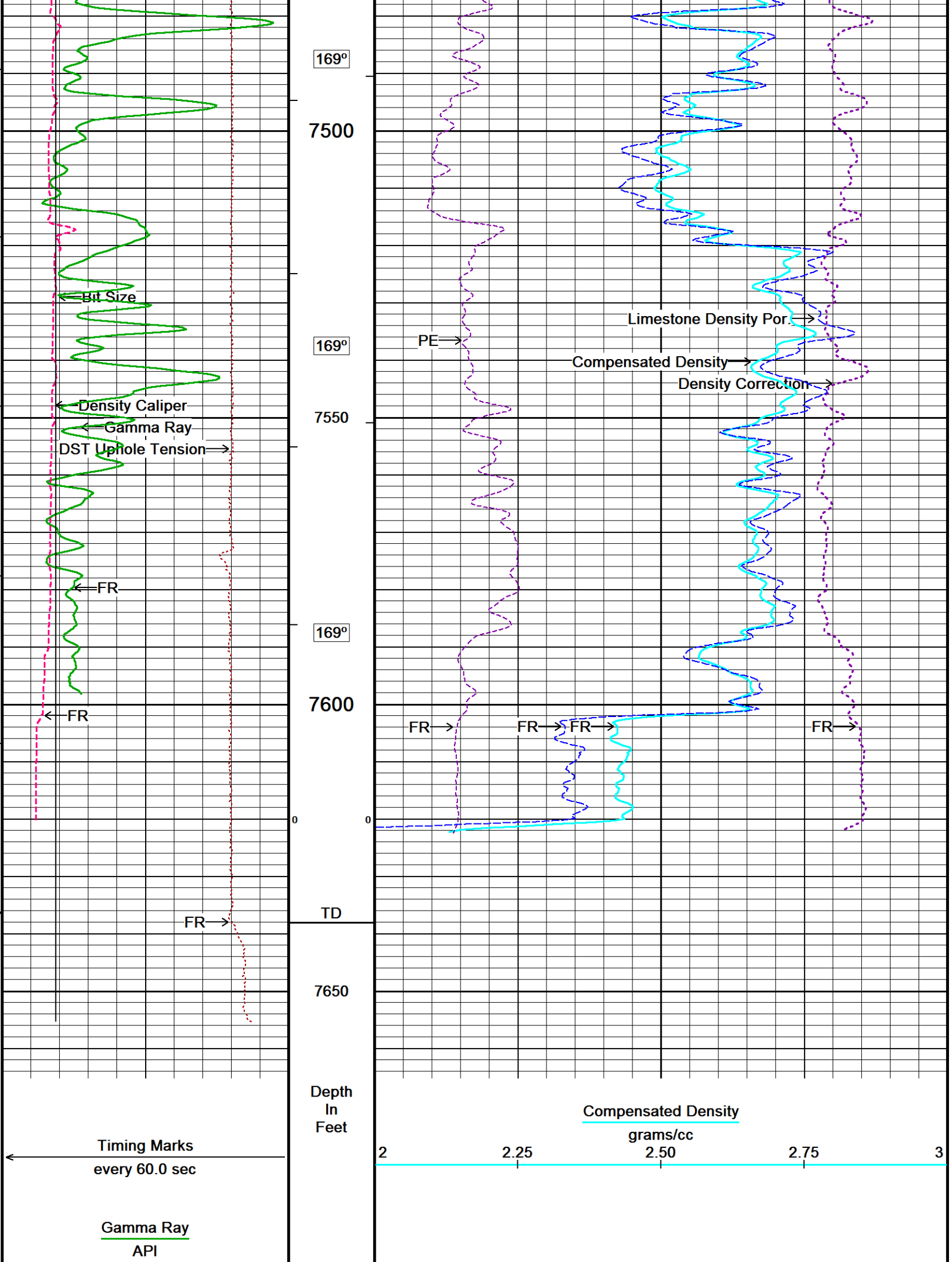


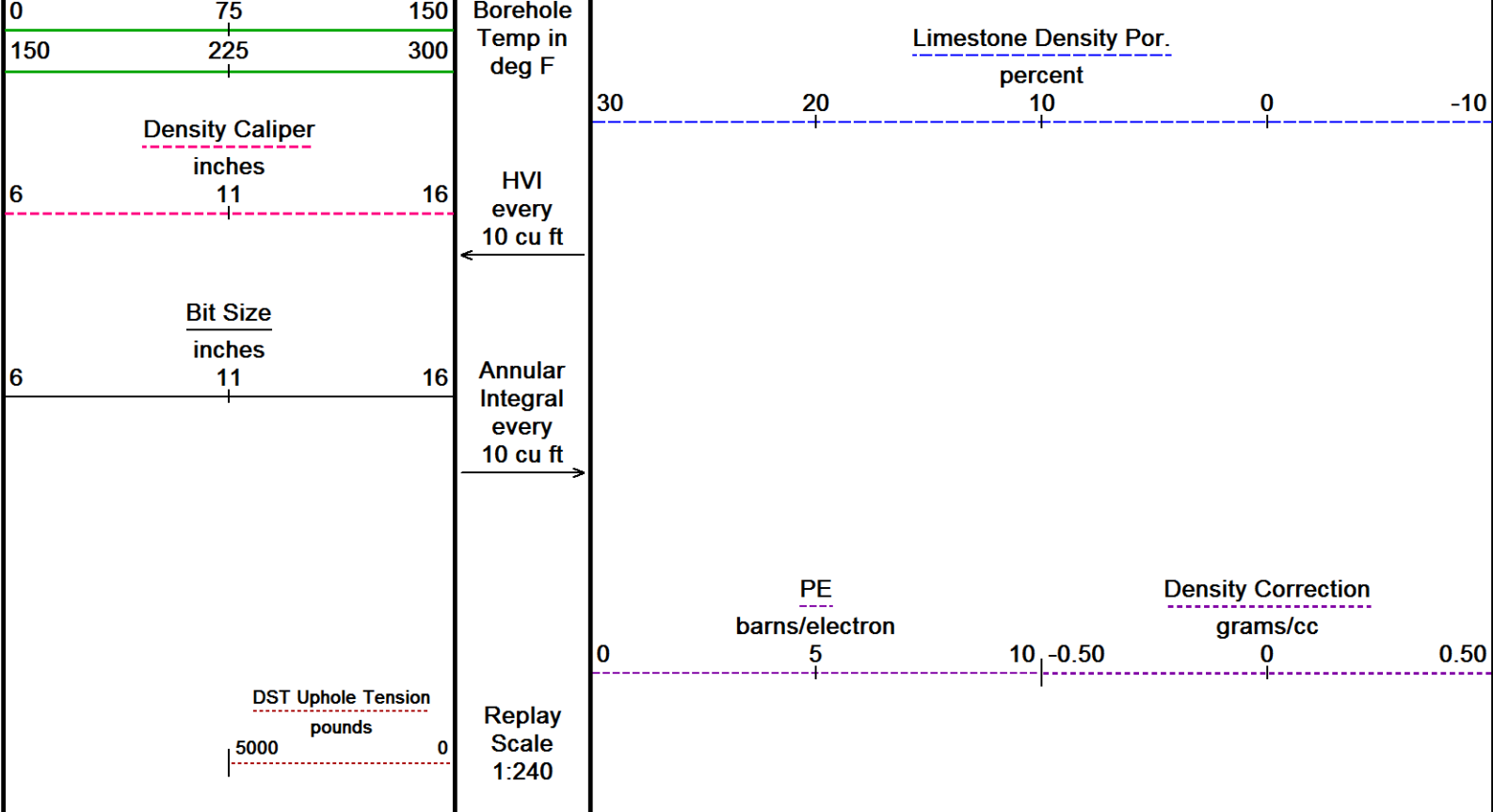
200
7050
100
158°
7100
159°
7150
160°
7200
161°
7250
162°



Limestone Density Por. →
PE →
Compensated Density →
Density Correction →







Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 21-JAN-2019 17:40

Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta

Recorded on 21-JAN-2019 11:56

System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

↑

5 INCH BULK DENSITY MAIN

↑

↓

REPEAT SECTION

↓

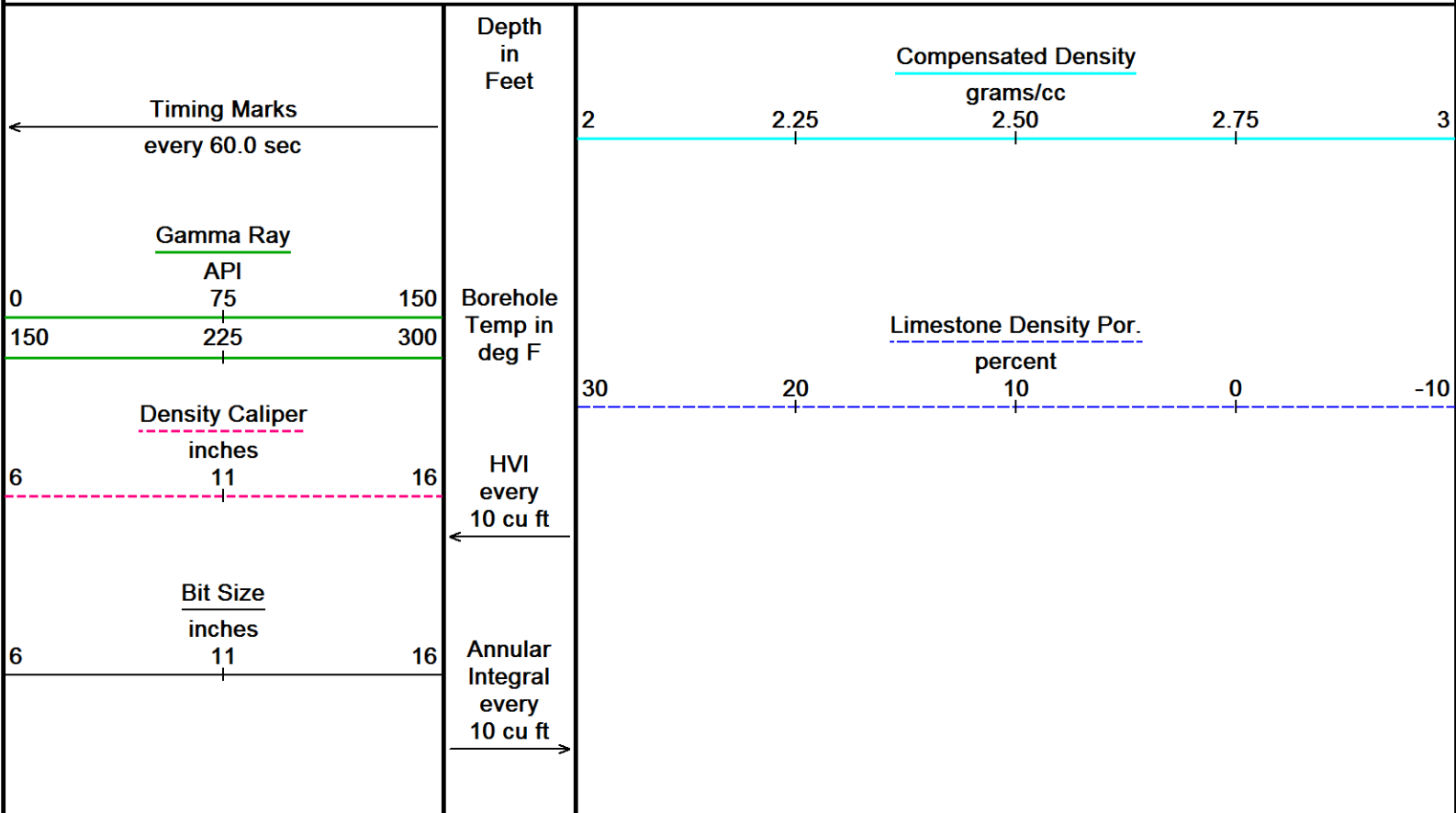
Depth Based Data - Maximum Sampling Increment 10.0cm

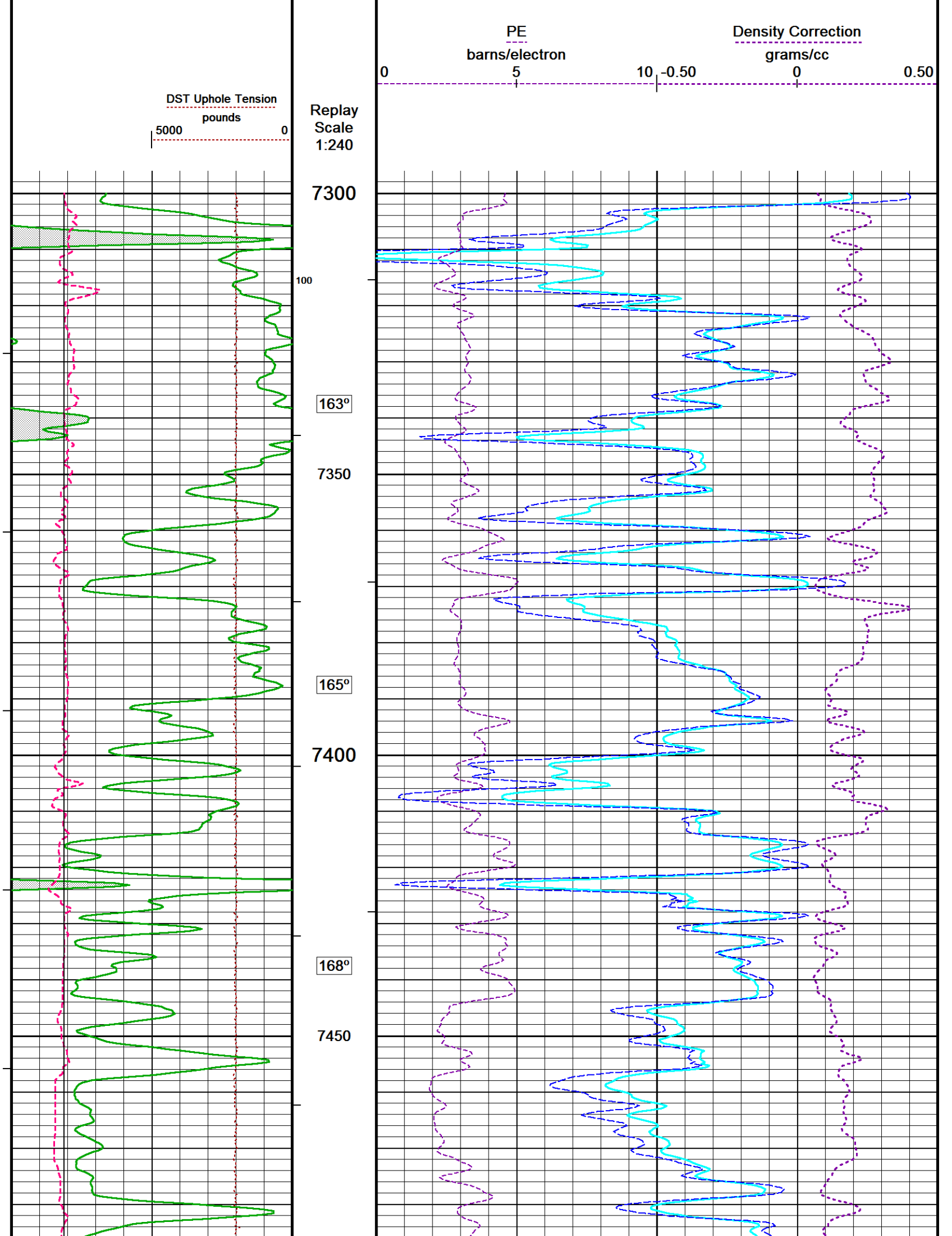
Plotted on 21-JAN-2019 17:40

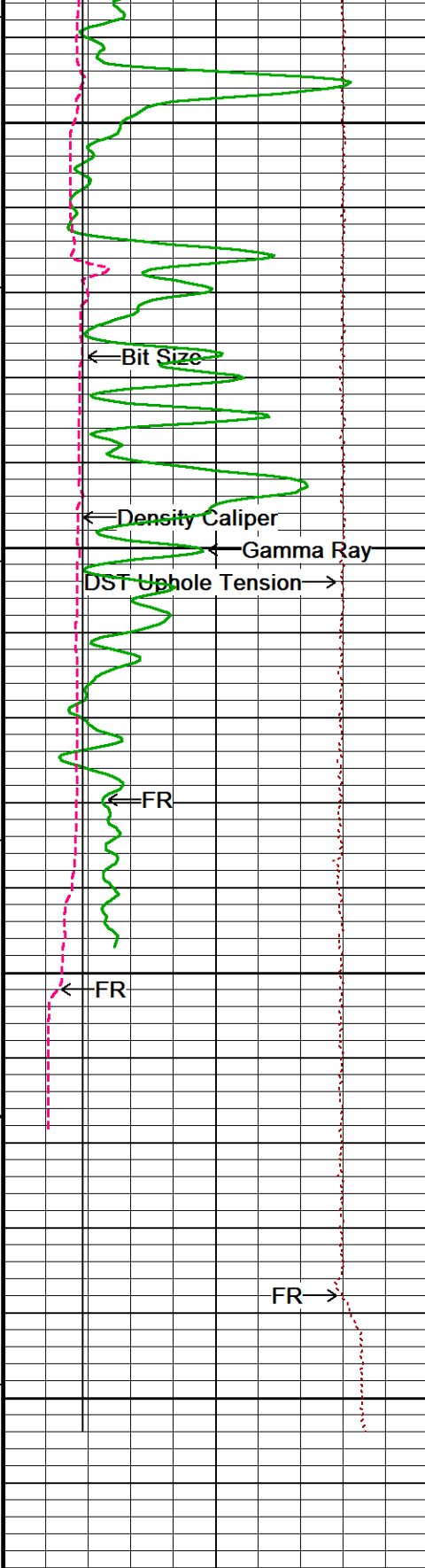
Filename: C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\REPEAT PASS.dta

Recorded on 21-JAN-2019 11:39

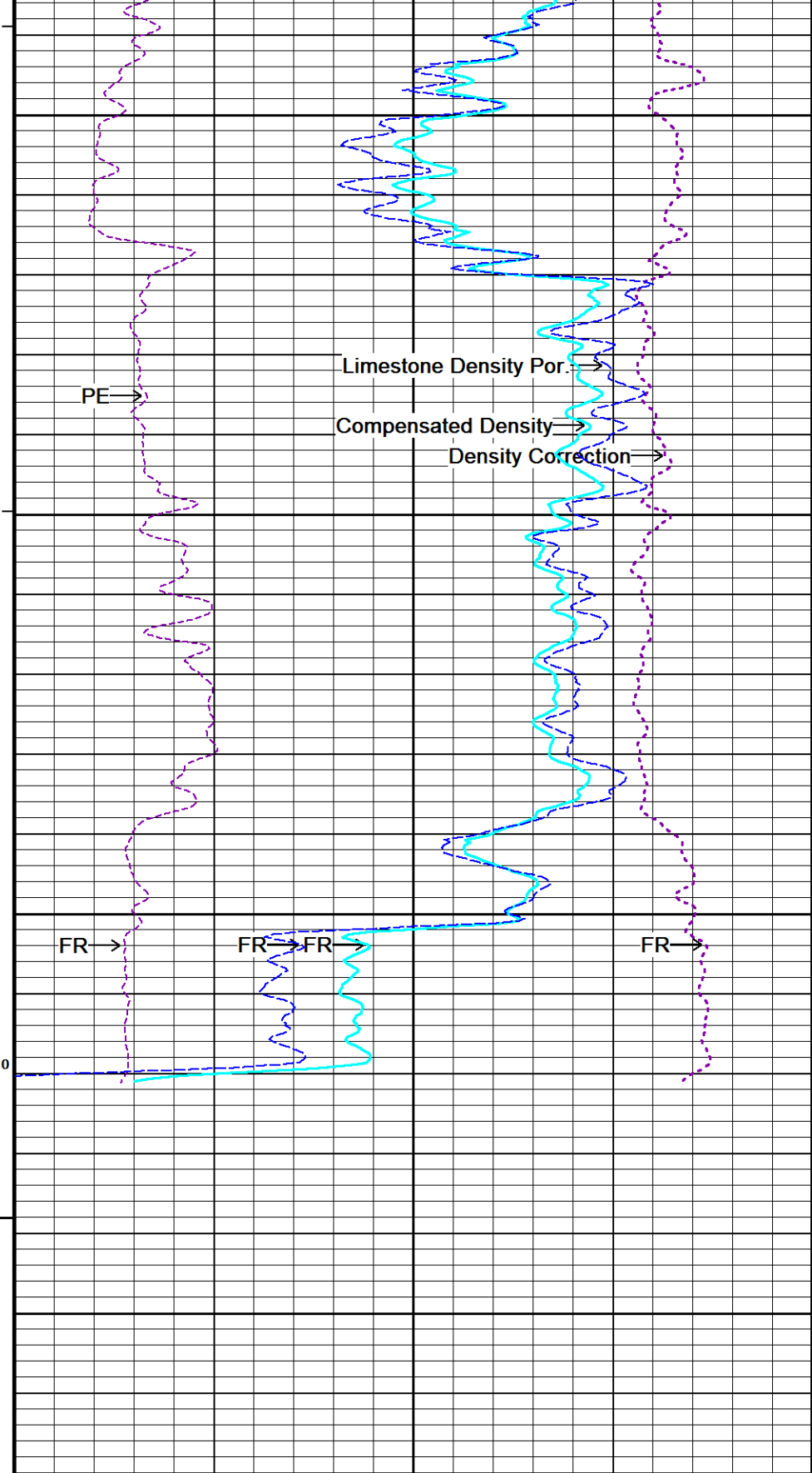
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344







167°
7500
166°
7550
167°
7600
0
TD
7650
Depth in Feet

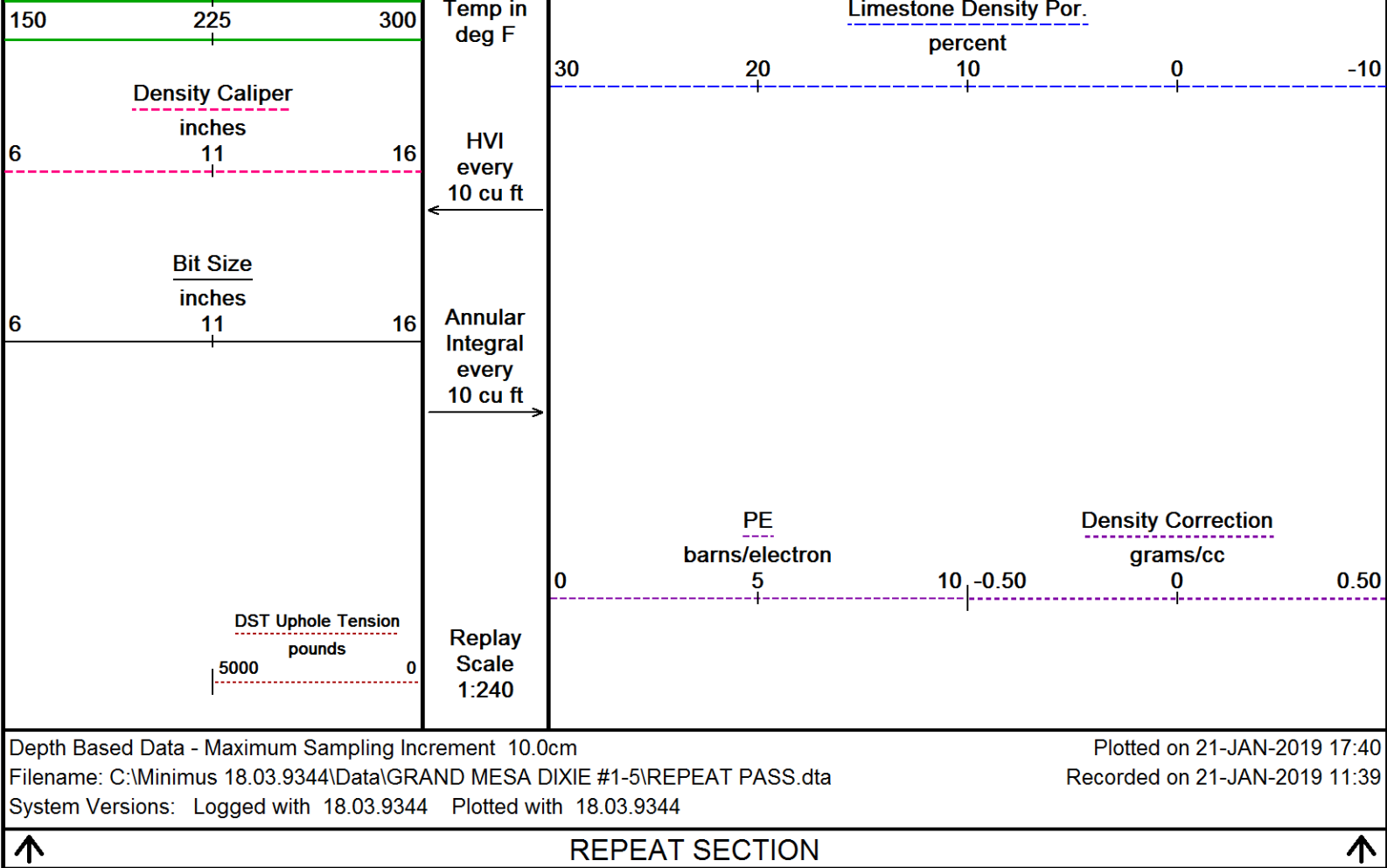


Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Borehole

Compensated Density
grams/cc
2 2.25 2.50 2.75 3



BEFORE SURVEY CALIBRATION				C:\Minimus 18.03.9344\Data\GRAND MESA DIXIE #1-5\MAIN PASS.dta
General Constants All 000			Last Edited on 21-JAN-2019,11:02	
General Parameters				
Mud Resistivity	0.600	ohm-metres		
Mud Resistivity Temperature	100.000	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	5.500	inches		
Caliper for Differential Caliper	Density Caliper			
Rwa Parameters				
Porosity used	Crossplot Porosity			
Resistivity used	Array Ind. Two Res Rt			
RWA Constant A	0.620			
RWA Constant M	2.150			
SW/APOR Tool Source	0.000			
Down-hole Tension Calibration SMS 0			Field Calibration on 21-JAN-2019 10:51	
Reading No	Measured	Calibrated (lbs)		
1	15761.00	0.00		
2	17196.25	527.00		
SP Calibration MCG-D.K 443			Field Calibration on 10-DEC-2018 15:37	
	Measured	Calibrated (mV)		
Reference 1	100.8	99.9		
Reference 2	-98.4	-99.9		

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 12-OCT-2018,05:20

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	212.00	212.00

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 12-OCT-2018,05:20

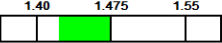
Pre-filter Length 11

Gamma Calibration MCG-D.K 443

Field Calibration on 18-JAN-2019 15:28

	Measured	Calibrated (API)
Background	192	135
Calibrator (Gross)	841	591
Calibrator (Net)	648	456

Gamma Calibration Tolerances MCG-D.K 443

Ratio 1.422  Counts/API

Gamma Constants MCG-D.K 443

Last Edited on 20-JAN-2019,21:10

Gamma Calibrator Number MCGGRCC141
 GRC-M Calibrator Jig in Use? NO
 Inactive Background Jig in Use? NO
 Mud Density 1.11 gm/cc
 Caliper Source for Processing Density Caliper
 Tool Position Eccentred
 Potassium Equivalence Chloride
 K Mud Concentration 0.00 %

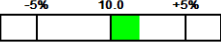
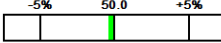
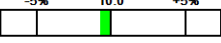
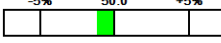
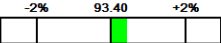
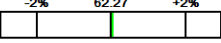
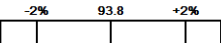
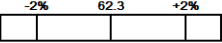
Micro Normal and Micro Inverse Calibration MMR-B.A 91

Base Calibration on 18-JAN-2019 12:24

Field Check on 18-JAN-2019 14:09

	Resistor 1 (ohm)	Resistor 2 (ohm)
Base Calibration	10.0	50.0
	Measured	Calibrated (ohm-m)
Micro Normal	10.2 49.8	5.1 25.6
Micro Inverse	9.9 49.4	3.4 16.9
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.8	93.8
Micro Inverse	62.3	62.3

Micro Normal & Micro Inverse Calibration Tolerance MMR-B.A 91

Micro Normal Res. 1	10.2		ohm	Micro Normal Res. 2	49.8		ohm
Micro Inverse Res. 1	9.9		ohm	Micro Inverse Res. 2	49.4		ohm
Micro Normal Base Check	93.8		ohm-m				
Micro Inverse Base Check	62.3		ohm-m				
Micro Normal Field Check	93.8		ohm-m				
Micro Inverse Field Check	62.3		ohm-m				

Micro Normal and Micro Inverse Constants MMR-B.A 91

Last Edited on 13-APR-2018,05:04

Pad Type 8-12 in Soft Rubber Inflatable 006-9011-159
 Micro Normal K Factor 0.5110
 Micro Inverse K Factor 0.3380
 Standoff Offset 0.0000 inches

Caliper Calibration MMR-B.A 91

Base Calibration on 18-JAN-2019 14:14

Field Calibration on 18-JAN-2019 14:17

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14078	5.98
2	17477	7.97
3	20615	9.86

4	24868	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.96	7.97

Caliper Calibration Tolerances MMR-B.A 91

Short Arm Field Cal.	7.96	<div> <div>7.77</div> <div>7.97</div> <div>8.17</div> </div>	in
----------------------	------	--	----

Micro-Resistivity Caliper Constants MMR-B.A 91

Sonde Configuration	Resistivity Mode
---------------------	------------------

Micro Laterolog Calibration MMR-B.A 91

Base Calibration on 31-DEC-1999 00:00
Field Check on 31-DEC-1999 00:00

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	0.0
Base Calibration		
	Measured	Calibrated (ohm-m)
	Ref 1 Ref 2	Ref 1 Ref 2
	0.0 0.0	0.0 0.0
	Base Check (ohm-m)	Field Check (ohm-m)
	0.0	0.0

Micro Laterolog Constants MMR-B.A 91

Pad Type	6 in Solid Nylon B23059	
Standoff Offset	0.0000	inches
Micro Laterolog K Factor	0.0128	
Micro Laterolog Rm K Factor	N/A	
Mudcake Thickness Correction Constants		
Mud Cake Source	Constant Value	
Mud Cake Thickness	0.4000	inches
Mud Cake Thickness Caliper		
Mud Cake Resistivity	0.1500	ohm-m
Mud Cake Resistivity Temp.	20.00	Degrees C
Mud Cake Resistivity Source	Constant Value	
Temp. for Rmc Corr.	MCG External Temperature	

Neutron Calibration MDN-B.A 292

Base Calibration on 07-JAN-2019,13:23
Field Check on 18-JAN-2019 15:36

Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	2910 91	3714 110
Ratio	31.871	33.764
Field Calibrator at Base		Calibrated (cps)
		2207 3209
Ratio		0.688
Field Check		Calibrated (cps)
		2196 3210
Ratio		0.684

Neutron Calibration Tolerances MDN-B.A 292

Ratio	31.871	<div> <div>-5%</div> <div>33</div> <div>+5%</div> </div>
Base Check	0.688	<div> <div>0.65</div> <div>0.7</div> <div>0.75</div> </div>
Field Check	0.684	<div> <div>0.668</div> <div>0.688</div> <div>0.708</div> </div>

Neutron Constants MDN-B.A 292

Last Edited on 20-JAN-2019,21:11

Neutron Source Id	P0204NN
Neutron Log Number	N15726

Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352

Base Calibration on 19-JAN-2019 15:43
Field Check on 19-JAN-2019 15:50

	Resistor 1 (ohm)	Resistor 2 (ohm)
	0.0	1000.0
Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	962.9	126.8
Base Check		281.6
Field Check		281.6

FE Calibration Tolerances MFE-B.J 352

Reference 2	962.9	<div><div></div><div></div><div></div><div></div><div></div></div>	ohm
Base Check	281.6	<div><div></div><div></div><div></div><div></div><div></div></div>	ohm-m
Field Check	281.6	<div><div></div><div></div><div></div><div></div><div></div></div>	ohm-m

FE Constants MFE-B.J 352

Last Edited on 20-JAN-2019,21:12

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Sonic Constants MSS-C.K 319

Last Edited on 08-JUL-2018,09:57

Maximum Boundary Contrast	70.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

Measured Calibrated

Offset 0.0000
Free Pipe 0.0000

Peak Amplitude Source

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing		N/A		
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)	
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	0.00	0.00	0.00	

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
Waveform Discriminator Filter	Not Applied	
Semblance Window Width	150.00	micro-sec
Semblance Processing Enabled	Yes	
Tracking Boxes Enabled In Processing	Yes	

Induction Calibration MAI-B.J 390

Factory Loop Calibration 07-JAN-2019 10:28
Field Check on 19-JAN-2019 15:38

Factory Loop Calibration

High Conductivity Reference Resistor	3.3	ohm
Low Conductivity Reference Resistor	333.3	ohm

Array	Measured Signal (unitless)		Reference Conductivity (mmho/m)			Calibration	
	Low	High	Low	High		Gain	Offset
1 (near)	16.8	458.6	9.3	966.2		2.166	-27.2
2	6.3	377.7	7.6	821.4		2.191	-6.2
3	3.8	258.6	5.2	566.0		2.200	-3.0
4 (far)	1.9	132.3	2.6	279.2		2.121	-1.4
Array Temperature	77.9	Deg F					

Tool Checks

Array	Factory Reference (mmho/m)		Before Survey (mmho/m)		
	Low	High	Low	High	
1 (near)	13.2	3960.1	13.0	3959.2	
2	29.9	3563.5	29.8	3563.3	
3	27.9	3061.4	27.8	3061.3	
4 (far)	19.7	2087.8	19.7	2088.0	
Array Temperature	64.9		58.9	Deg F	

Induction Check Tolerances MAI-B.J 390

Low Array 1	13.0	<div><div>11.7</div><div>13.2</div><div>14.7</div></div>	mmho/m	High Array 1	3959.2	<div><div>-0.5%</div><div>3960.1</div><div>+0.5%</div></div>	mmho/m
Low Array 2	29.8	<div><div>28.4</div><div>29.9</div><div>31.4</div></div>	mmho/m	High Array 2	3563.3	<div><div>-0.5%</div><div>3563.5</div><div>+0.5%</div></div>	mmho/m
Low Array 3	27.8	<div><div>26.4</div><div>27.9</div><div>29.4</div></div>	mmho/m	High Array 3	3061.3	<div><div>-0.5%</div><div>3061.4</div><div>+0.5%</div></div>	mmho/m
Low Array 4	19.7	<div><div>18.2</div><div>19.7</div><div>21.2</div></div>	mmho/m	High Array 4	2088.0	<div><div>-0.5%</div><div>2087.8</div><div>+0.5%</div></div>	mmho/m

Induction Constants MAI-B.J 390

Last Edited on 20-JAN-2019,21:12

Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	
Borehole Correction Method	Default	

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

Symmetrised Receiver Gains	
Receiver 1	1.00
Receiver 2	1.00
Receiver 3	1.00
Receiver 4	1.00

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 390			Field Calibration on 15-MAY-2018,12:48
	Measured	Calibrated(Deg F)	
Lower	10.00	10.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MAI-B.J 390		Last Edited on 06-MAR-2018,13:01
Pre-filter Length	11	

Caliper Calibration MPD-C.A 216			Base Calibration on 18-JAN-2019 17:06
			Field Calibration on 18-JAN-2019 17:08
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	16199	3.99	
2	24624	5.98	
3	33344	7.97	
4	41632	9.86	
5	50912	11.92	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	7.93	7.97	

Caliper Calibration Tolerances MPD-C.A 216

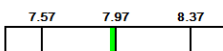
Long Arm Field Cal. 7.93  in

Photo Density Calibration MPD-C.A 216

Base Calibration on 18-JAN-2019 16:36

Field Check on 18-JAN-2019 16:51

Density Calibration
Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	993	1180		
Reference 1	46604	22300	59556	30836
Reference 2	18380	2158	24941	2541

Field Check at Base

993.3 1179.8

Field Check

994.1 1177.2

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	179	890		
Reference 1	19088	46448	0.415	0.371
Reference 2	5249	18271	0.292	0.272

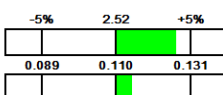
Field Check at Base

179.3 890.5

Field Check

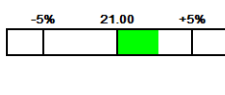
183.2 889.7

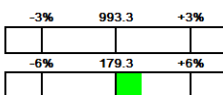
Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio 2.62 

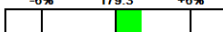
PE Calibration

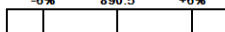
0.115

Far Density Ratio 21.59 

Near Den. Field Check 994.1 

Far Den. Field Check 1177.2 

PE WS Field Check 183.2 

PE WH Field Check 889.7 

Density Constants MPD-C.A 216

Last Edited on 20-JAN-2019,21:12

Density Source Id	P50557B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.11	gm/cc
Mud Density Type		
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	
Precision Enhanced Density Processing	Applied	
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	

Cablehead, 11 pin
CBH-CB 264 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Swivel Head Adaptor
SHA-J.B 595 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-B.A 91 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.A 292 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.913 in

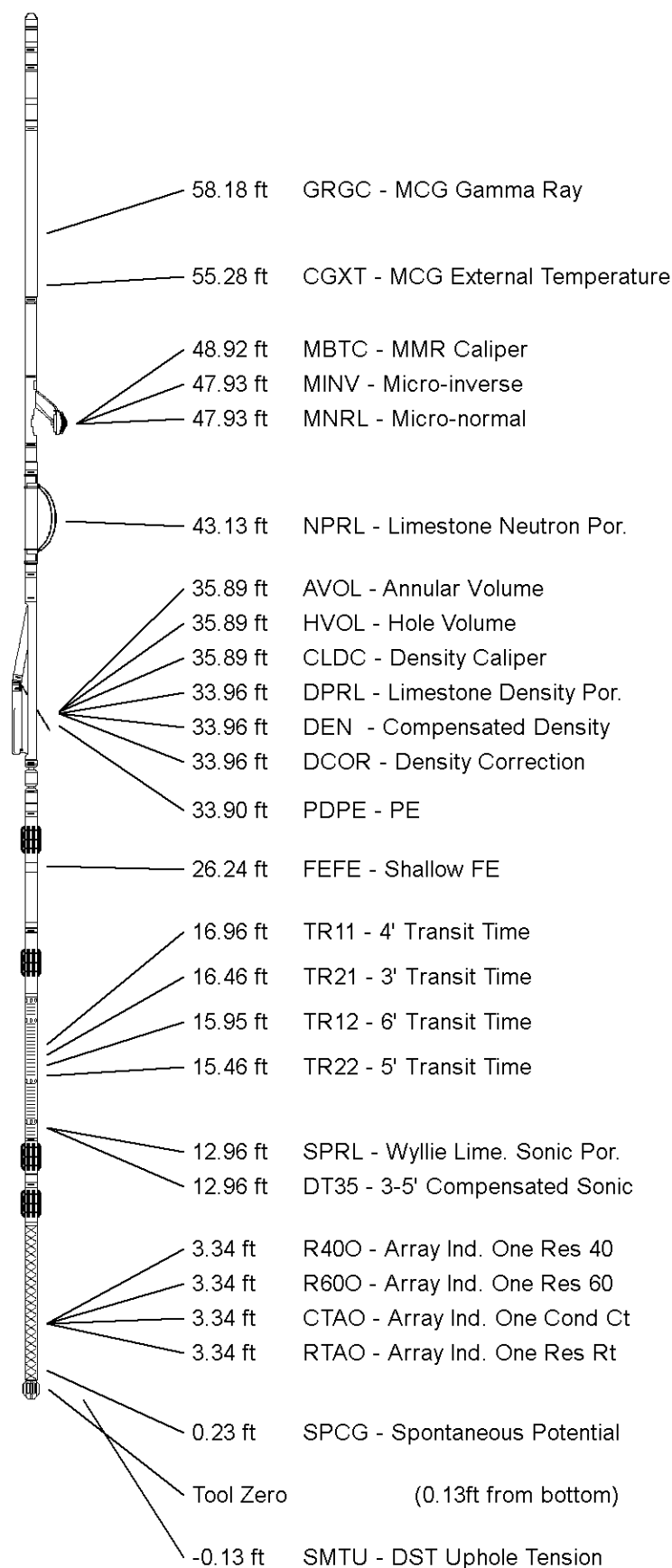
Compact Knuckle Joint
SKJ-E.B 733 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-C.K 319 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-B.J 390 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 68.16 ft Weight: 526.9 lb



All measurements relative to tool zero.

COMPANY

GRAND MESA OPERATING COMPANY

WELL


DIXIE #1-5

FIELD

WILDCAT

PROVINCE/COUNTY

LINCOLN

PROVINCE/COUNTY			LINCOLN		
COUNTRY/STATE			U.S.A. / COLORADO		
Elevation Kelly Bushing	5096	feet	First Reading	7604.00	feet
Elevation Drill Floor	5094	feet	Depth Driller	7635.00	feet
Elevation Ground Level	5077	feet	Depth Logger	7638.00	feet
<div><div><div>COMPACT PHOTO DENSITY</div><div>COMPENSATED NEUTRON</div><div>MICRORESISTIVITY LOG</div></div><div><div>Weatherford[®]</div></div></div>					