



Weatherford[®]

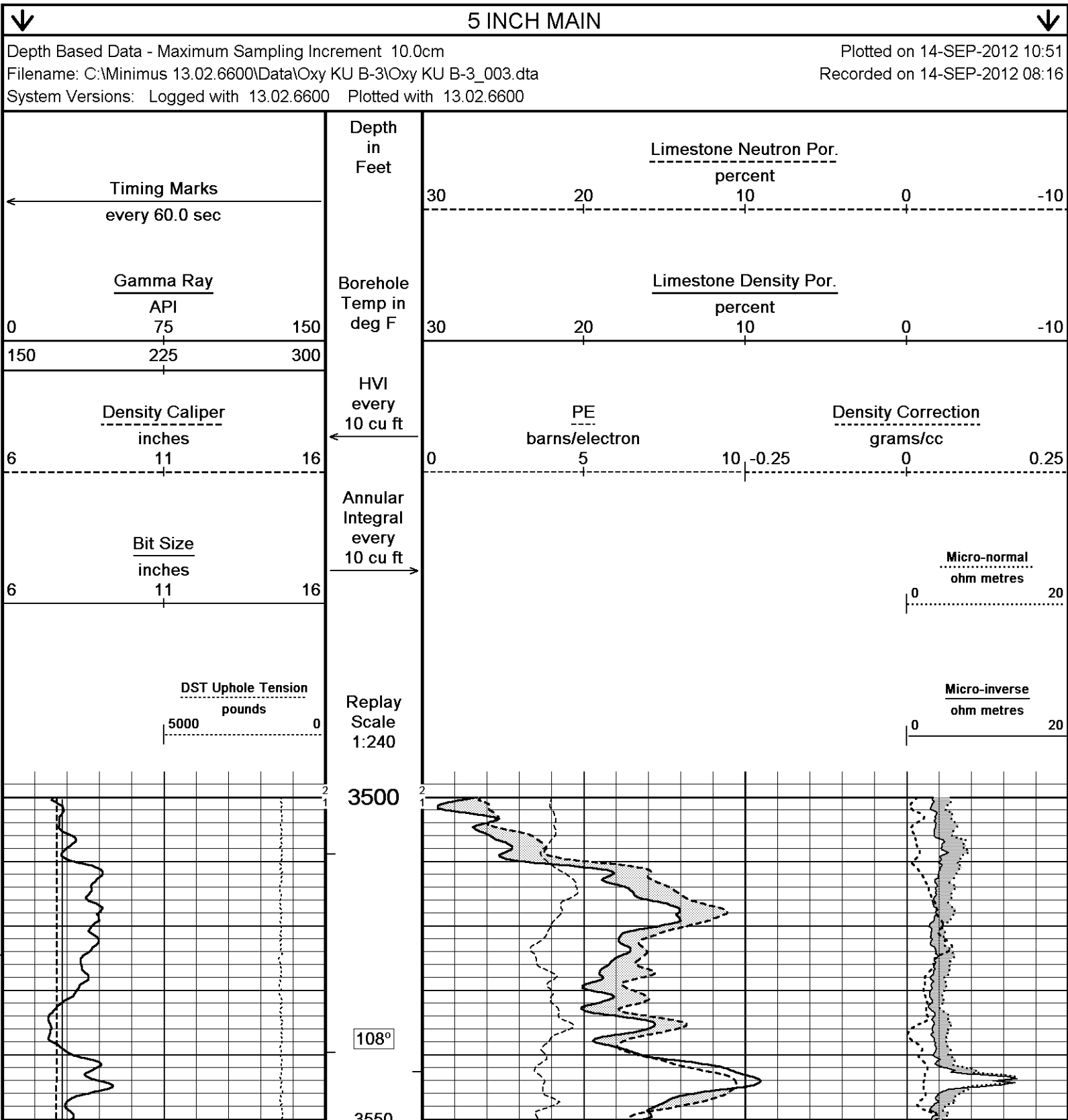
**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

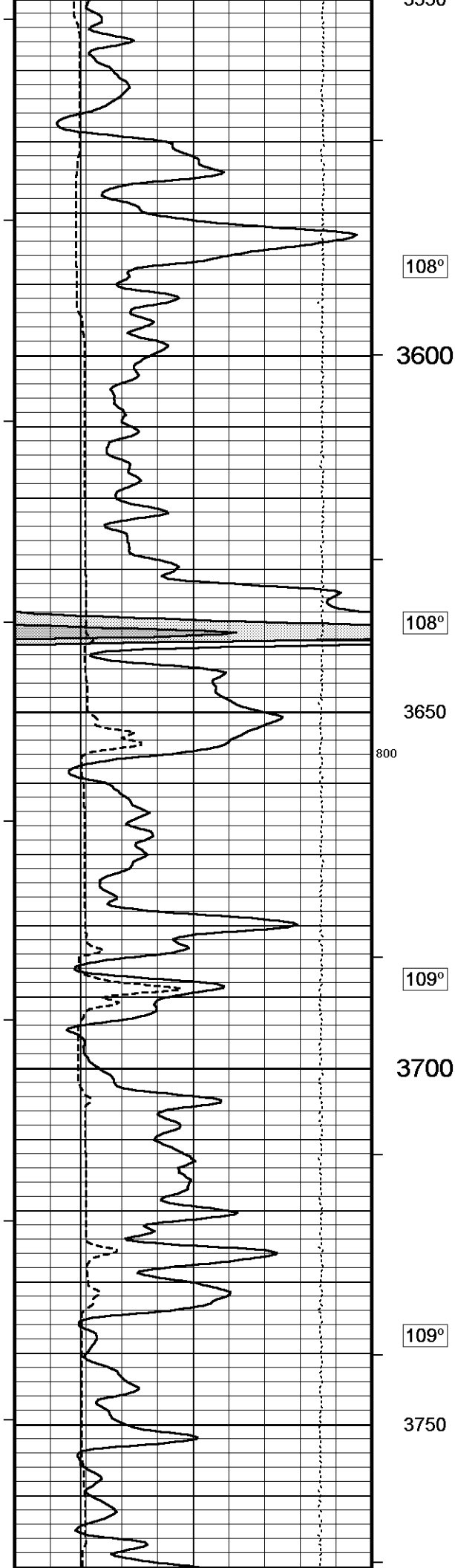
COMPANY				OXY USA, INC.			
WELL				KU B-3			
FIELD				ARROYO			
PROVINCE/COUNTY				STANTON			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				2060' FSL & 2020' FEL			
SEC	TWP	RGE	Other Services		MSS		
17	29S	41W	MAI/MFE				
API Number			15-187-21208				
Permit Number							
Permanent Datum GL, Elevation 3411 feet							
Log Measured From KB							
Drilling Measured From KB							
Date	13-SEP-2012						
Run Number	ONE						
Depth Driller	5850.00			feet			
Depth Logger	5854.00			feet			
First Reading	5822.00			feet			
Last Reading	3500.00			feet			
Casing Driller	1824.00			feet			
Casing Logger	1826.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.20 lb/USg		46.00 CP				
PH / Fluid Loss	11.30		12.00 ml/30Min				
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.81 @ 98.0			ohm-m			
Rmf @ Measured Temp	0.65 @ 98.0			ohm-m			
Rmc @ Measured Temp	0.97 @ 98.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.61 @132.0		ohm-m				
Time Since Circulation	6 HOURS						
Max Recorded Temp	132.00		deg F				
Equipment Name	COMPACT						
Equipment / Base	13057		LIB				
Recorded By	ADAM SILL						
Witnessed By	EARLY ZION						
S.O. # / JOB #	3538920			LB12-249			

BOREHOLE RECORD				Last Edited: 13-SEP-2012 00:01
Bit Size inches		Depth From feet		Depth To feet
7.875		1824.00		5850.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1824.00	24.00

REMARKS
- SOFTWARE ISSUE: WLS 13.02.6600.
- MCG, MML, MDN, MPD, 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: 1484 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 822 CU. FT.

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





108°

3600

108°

3650

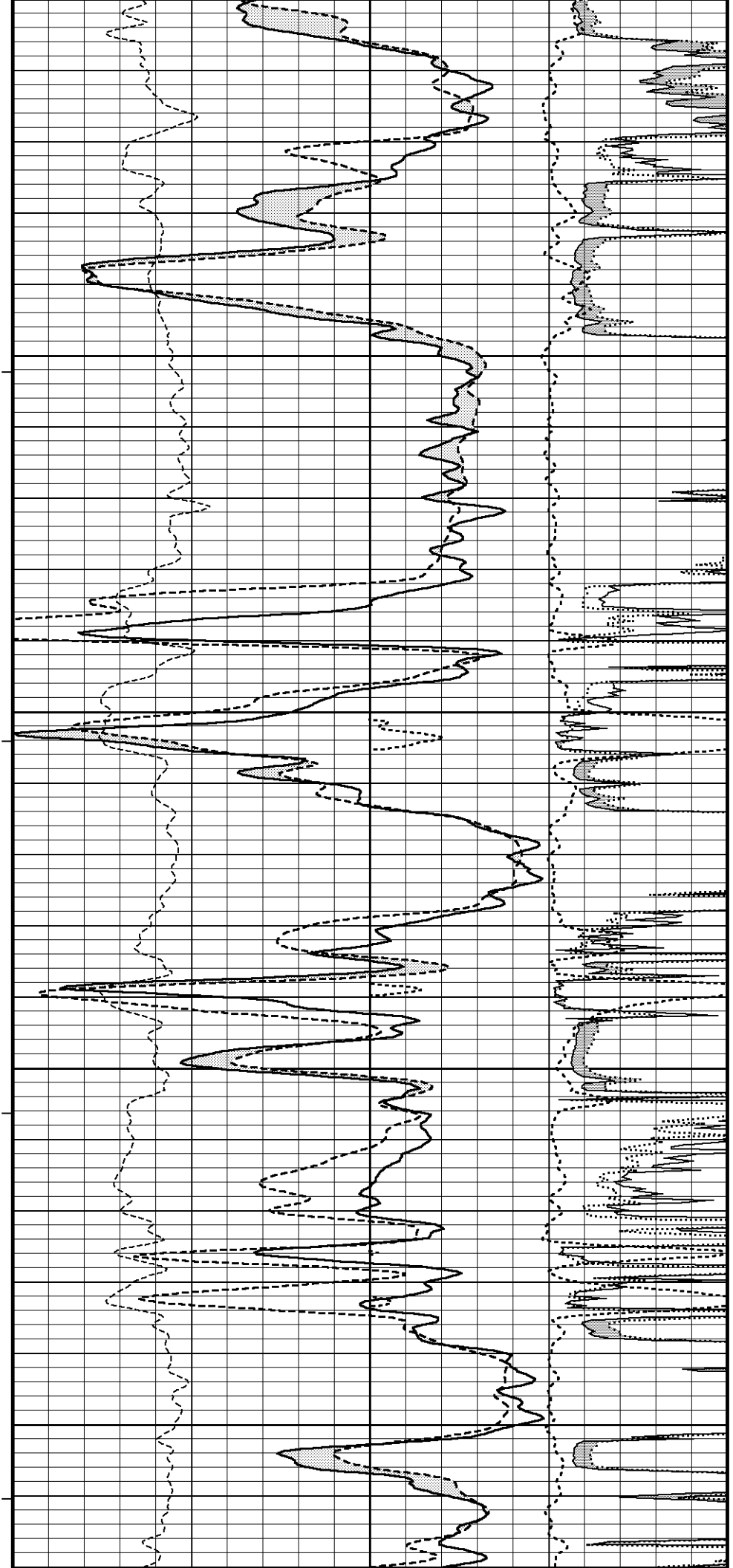
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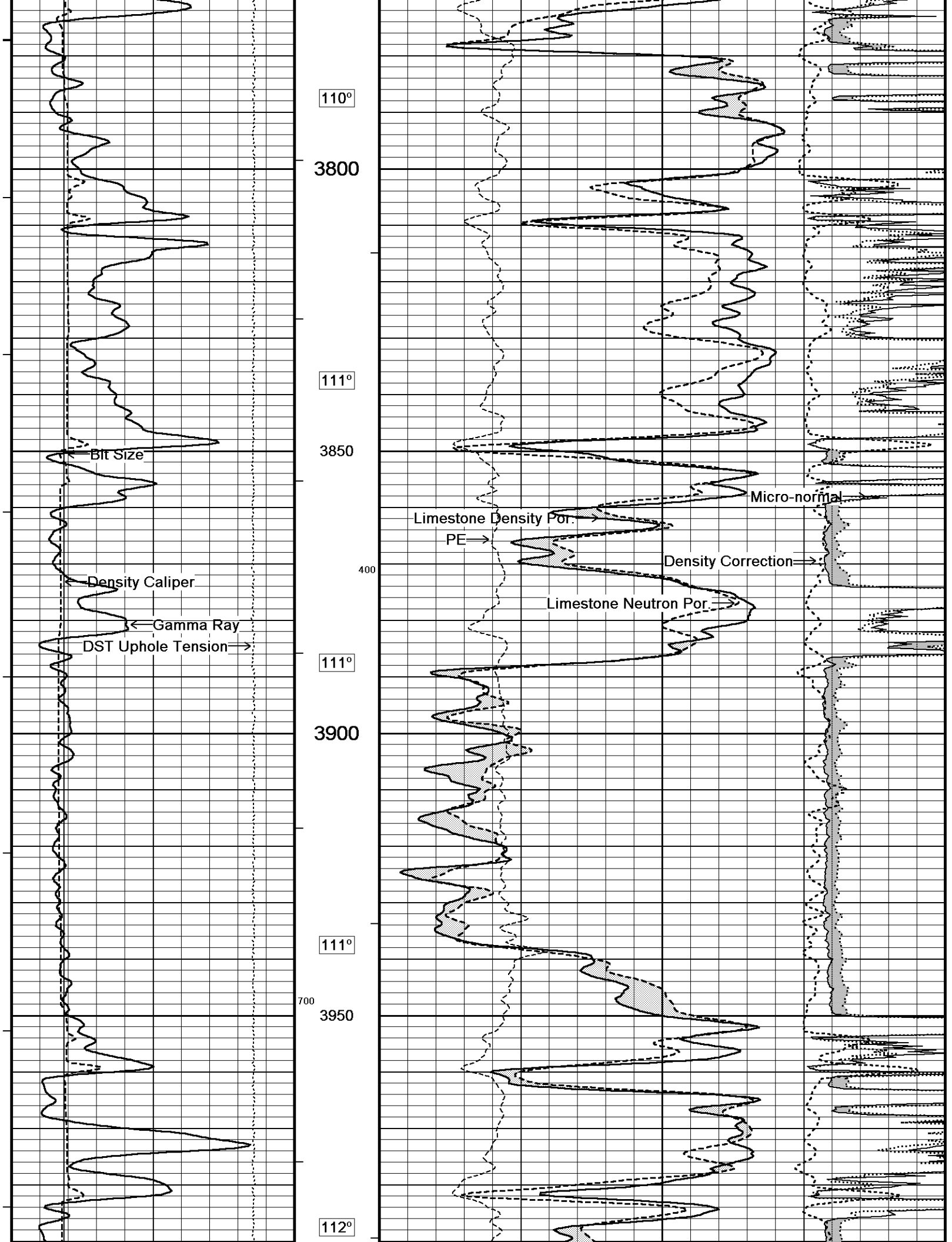
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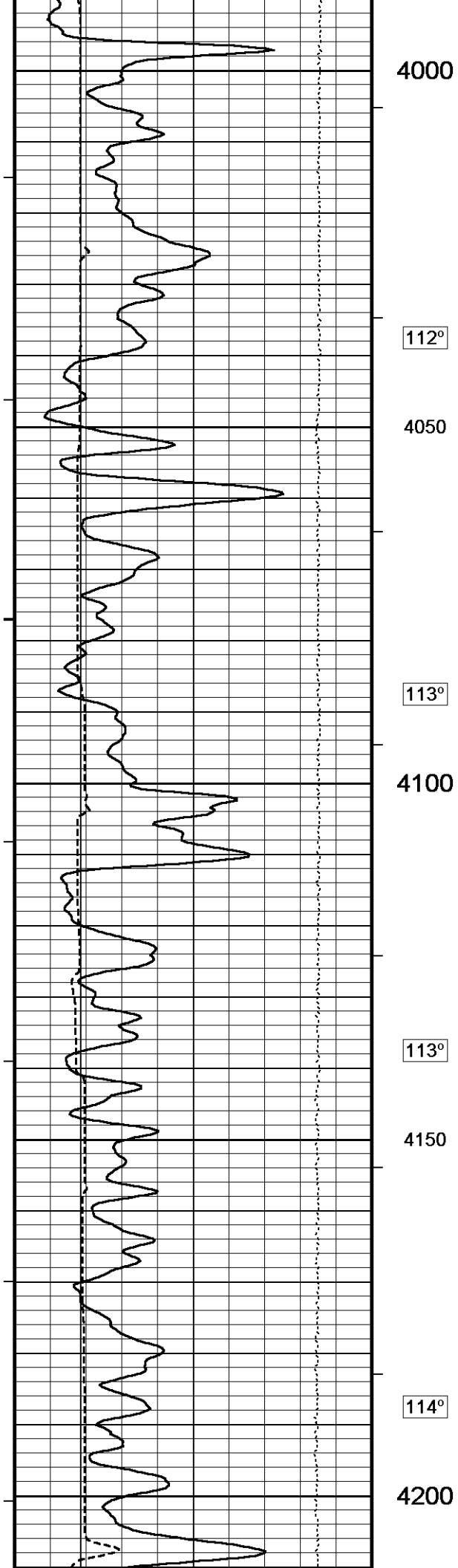
3700

109°

3750







4000

112°

4050

113°

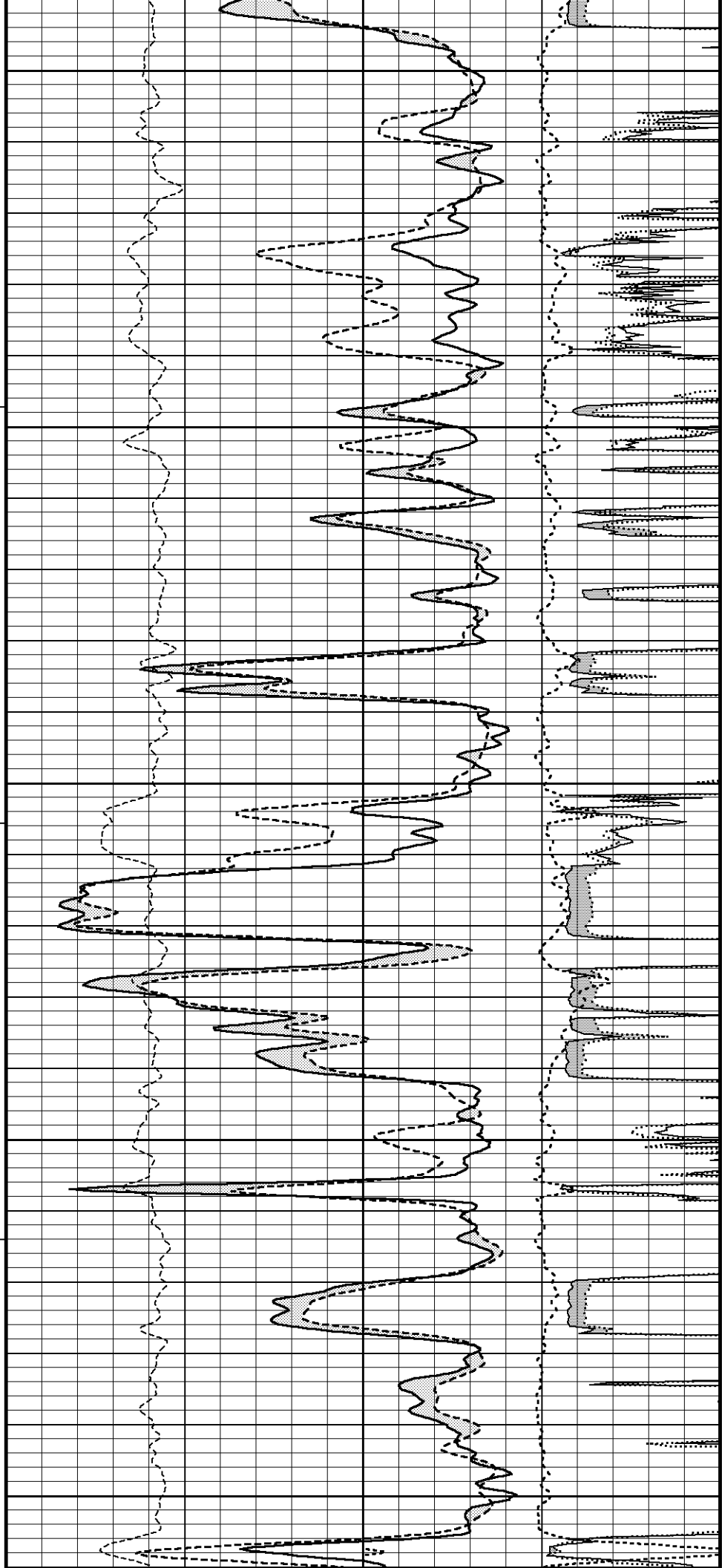
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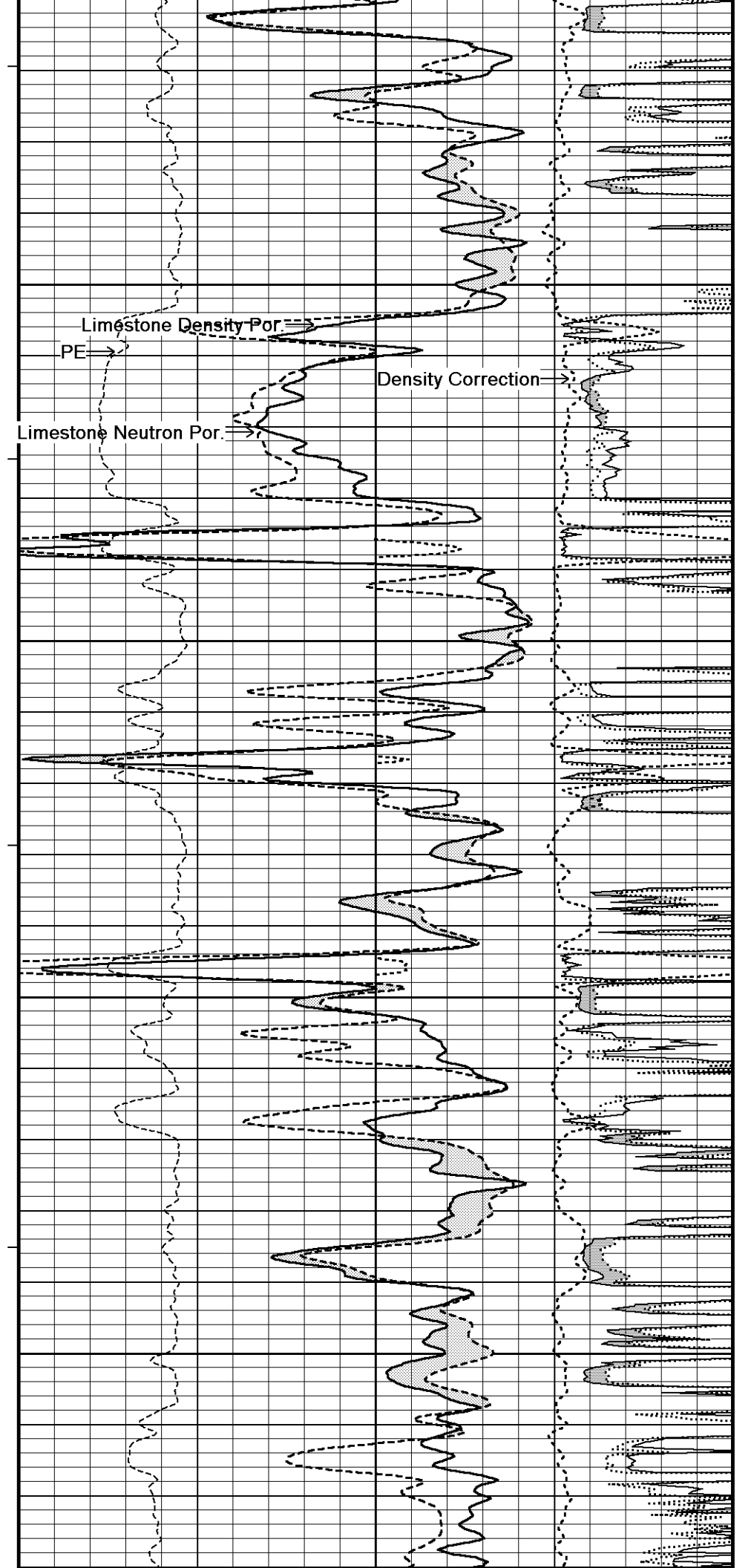
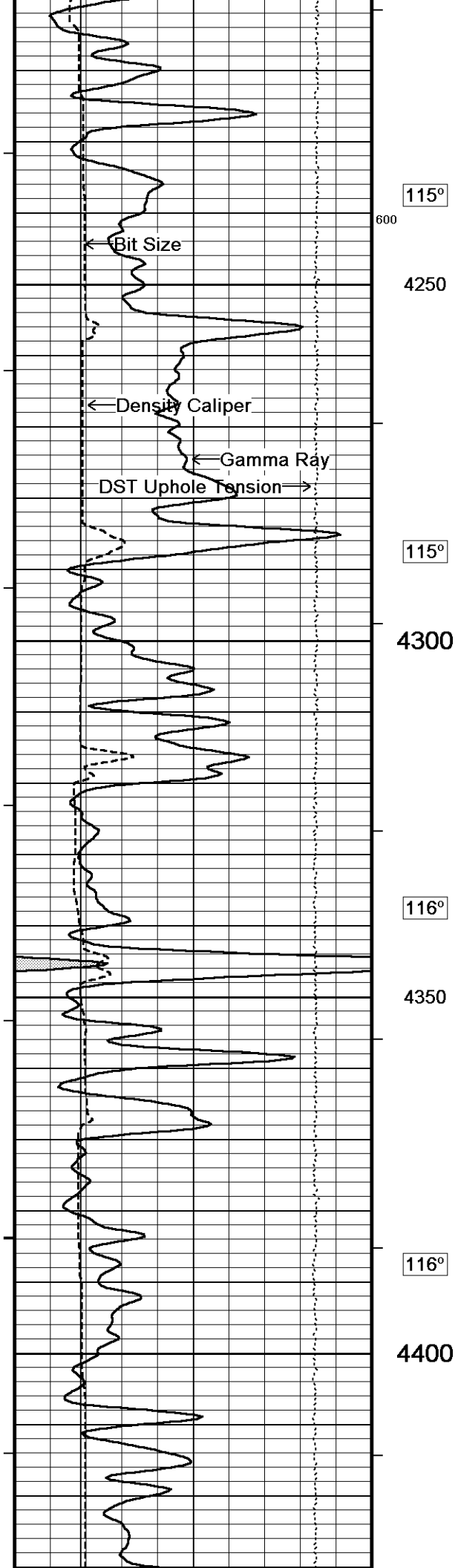
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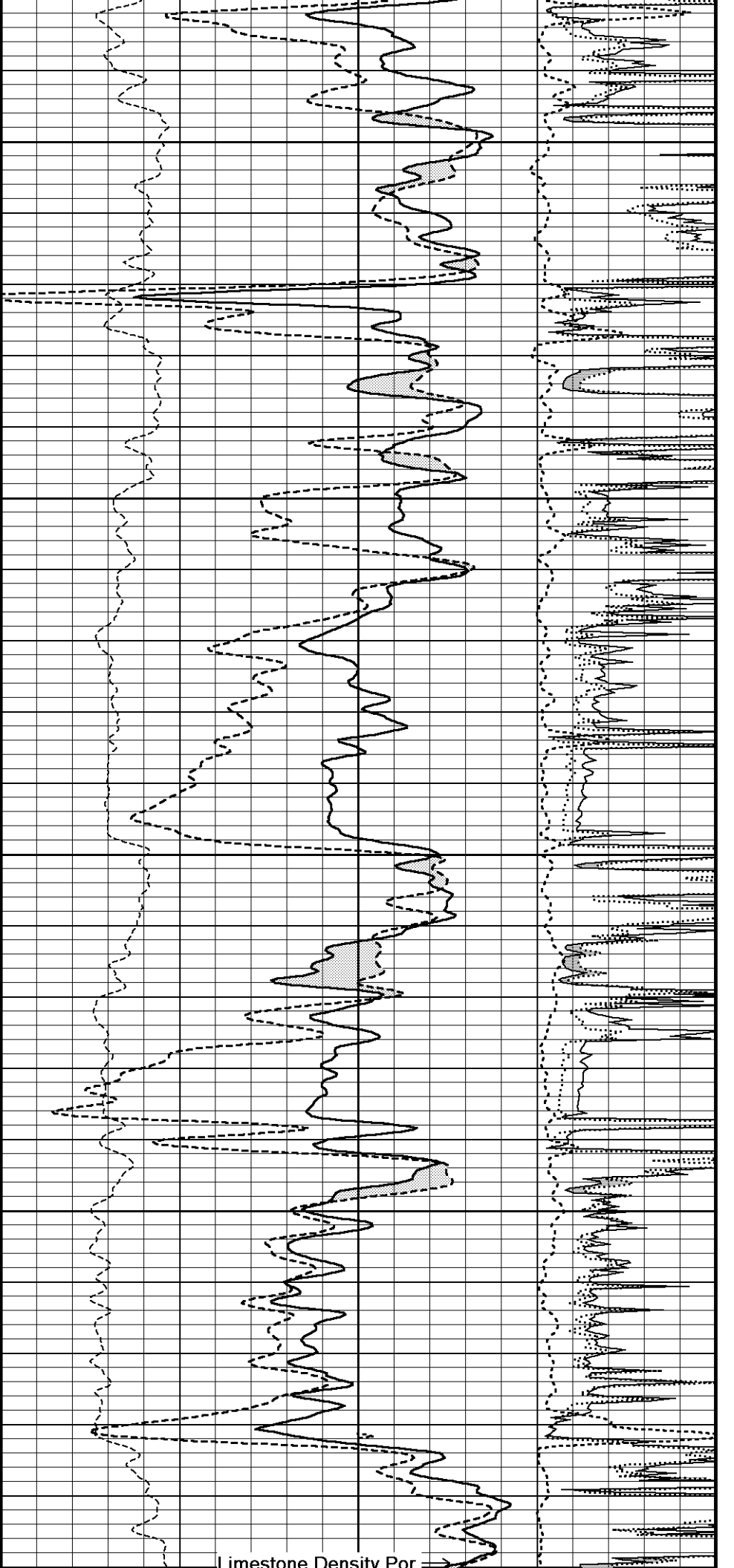
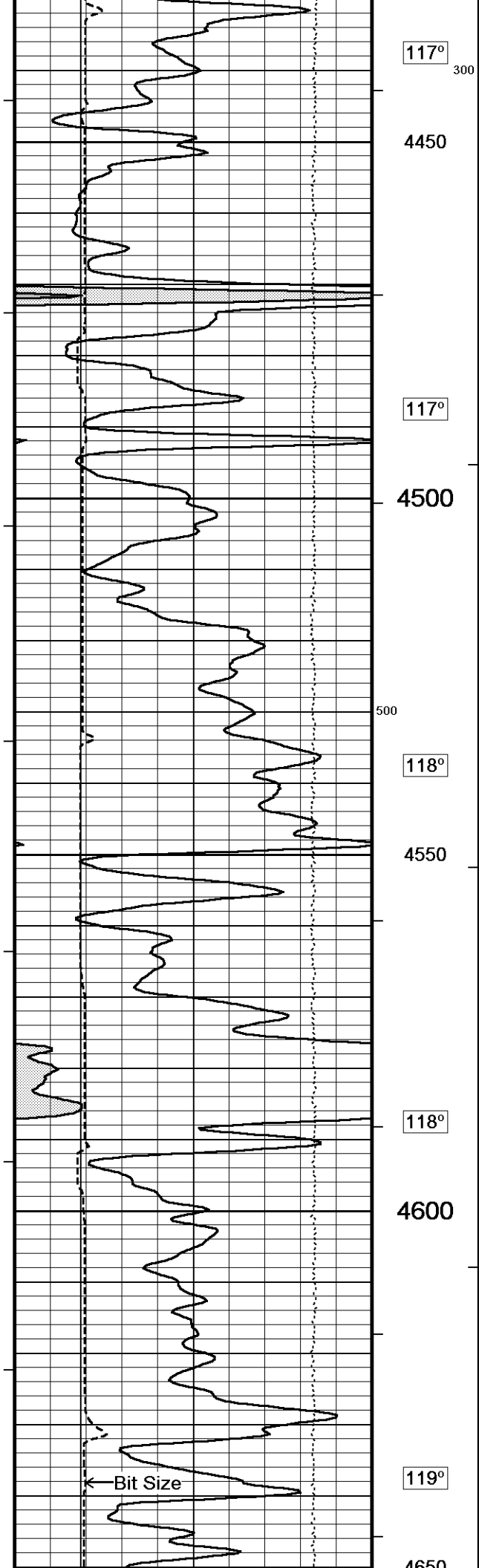
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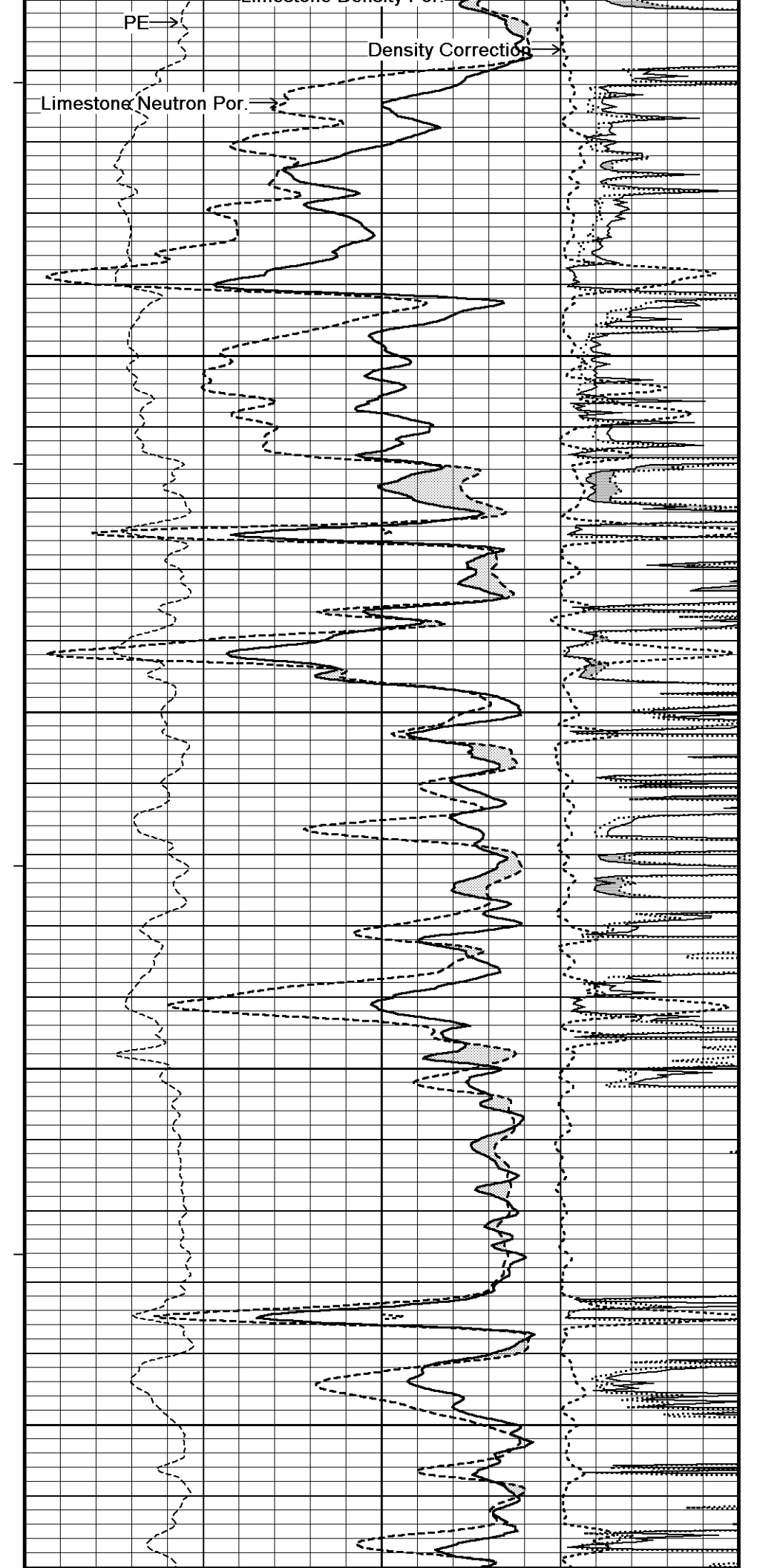
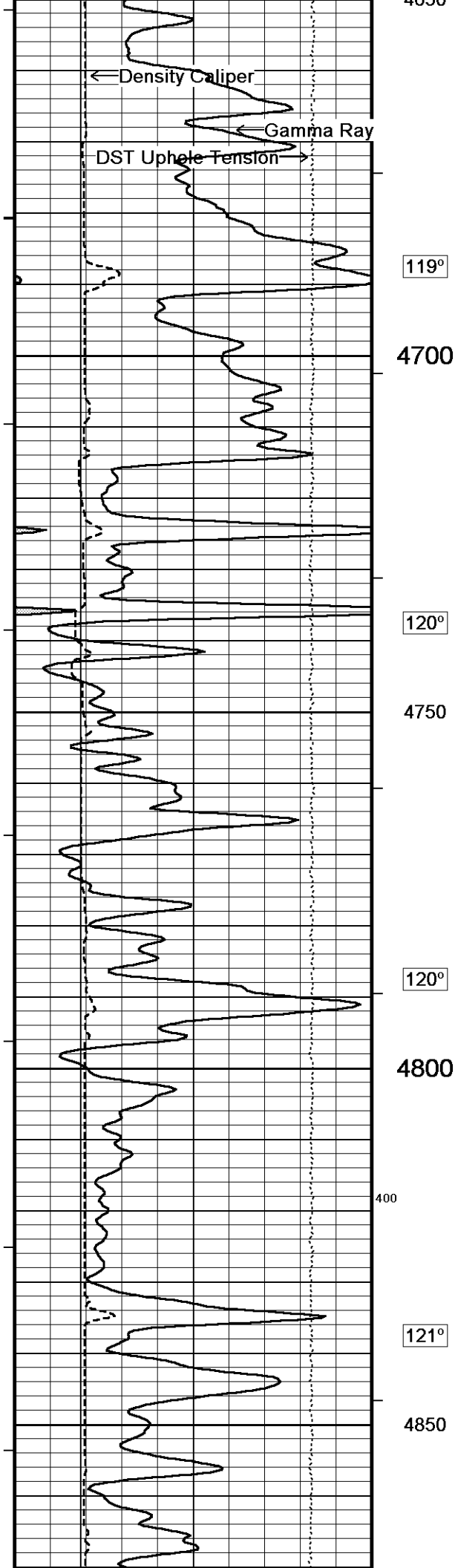
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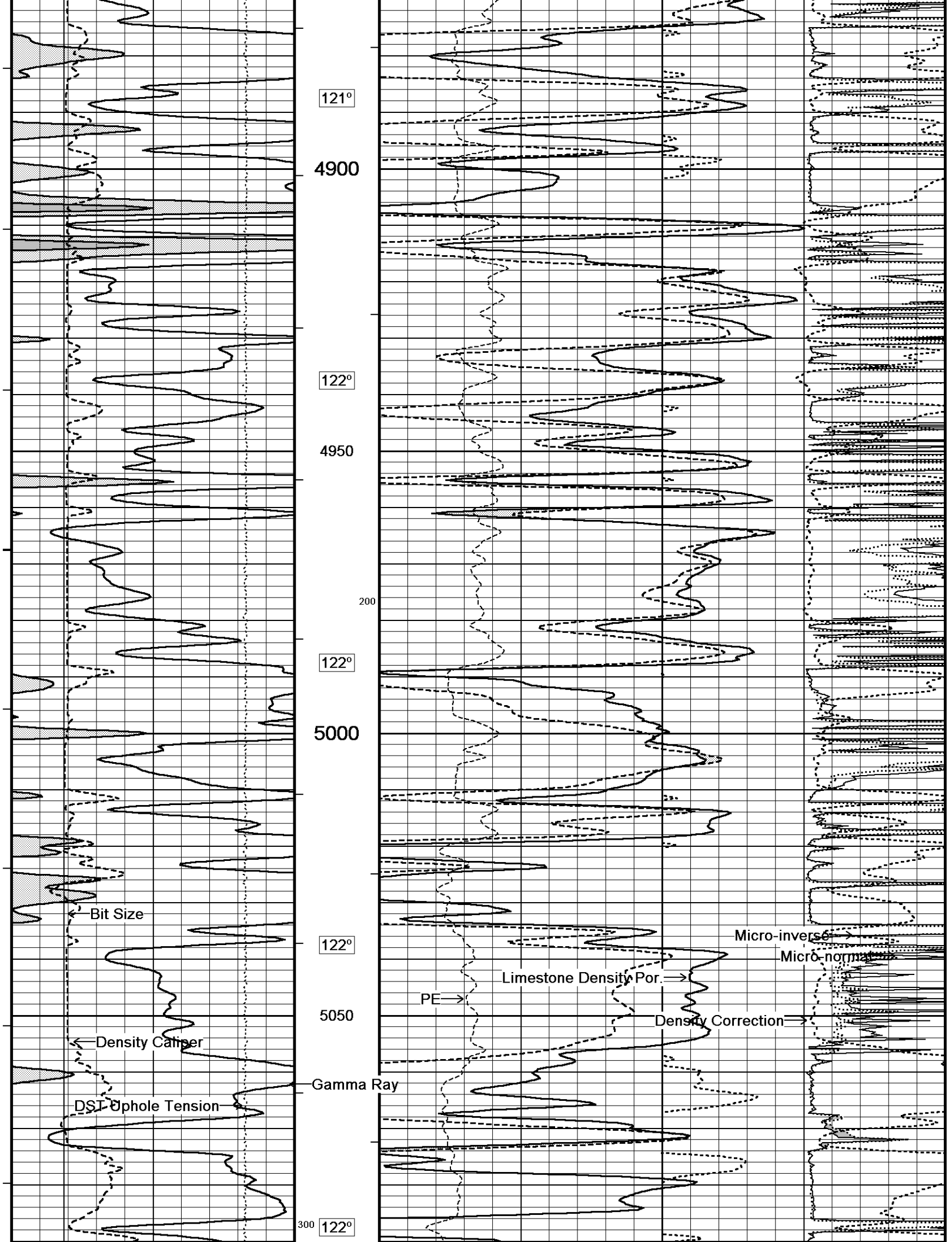
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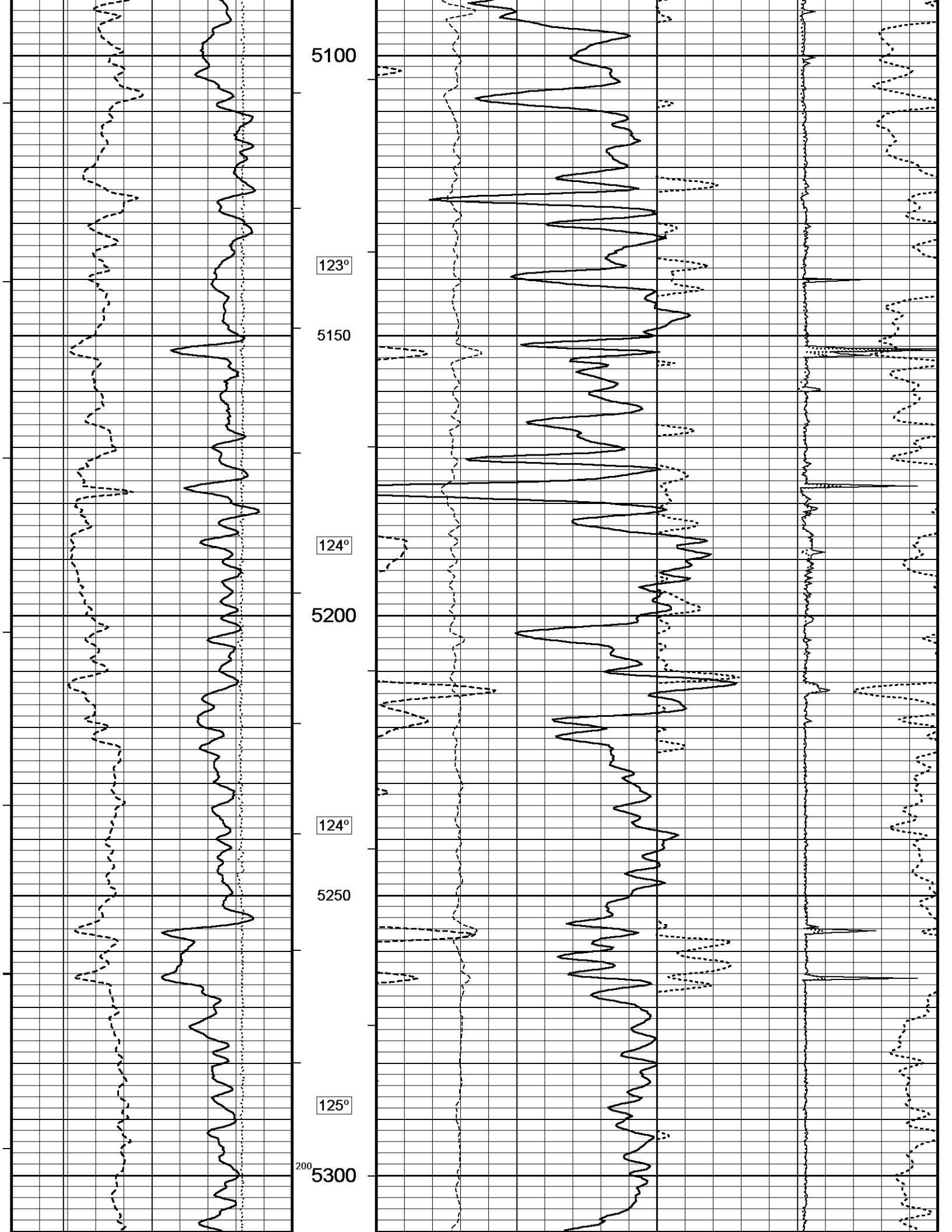


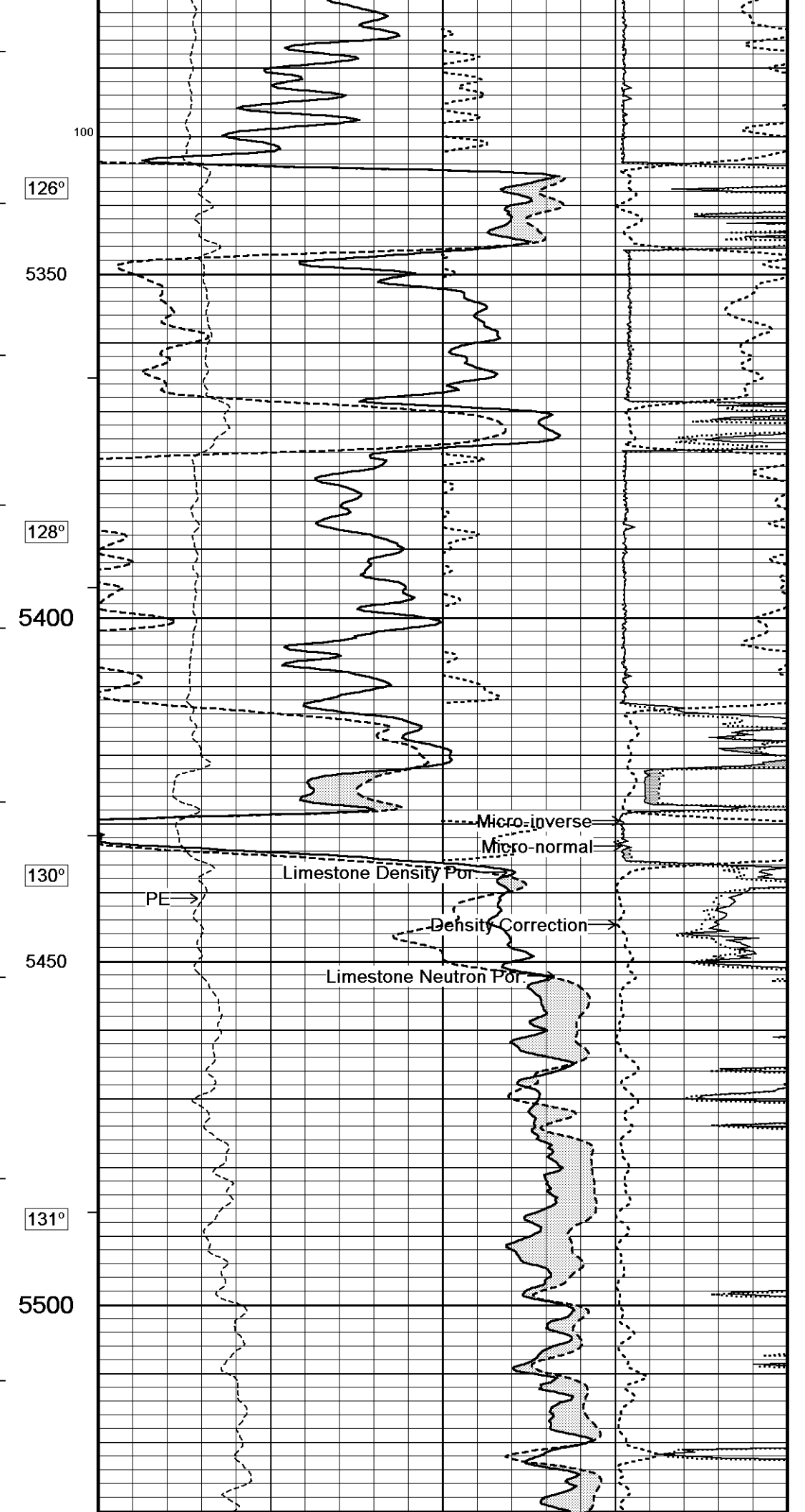
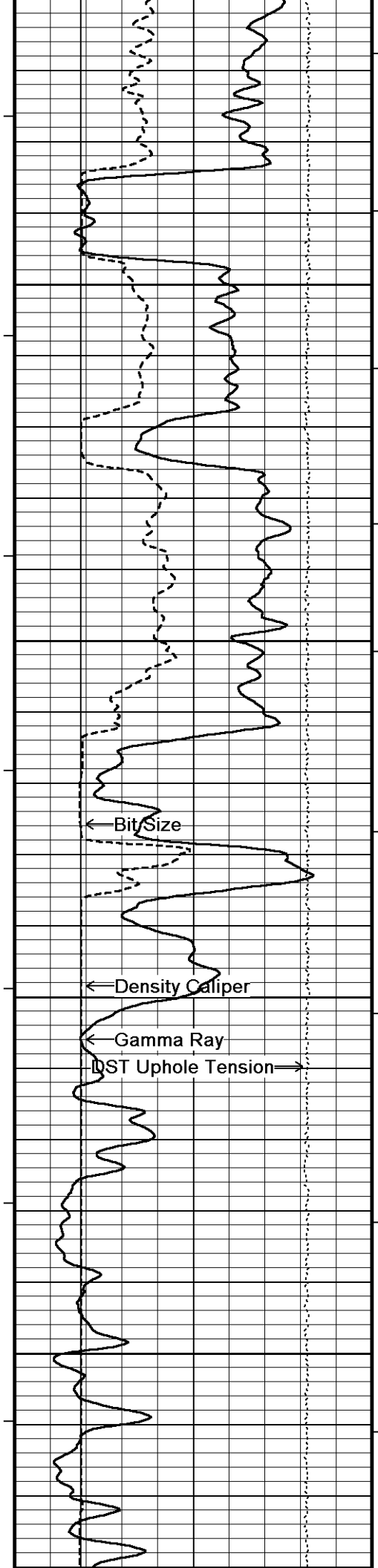


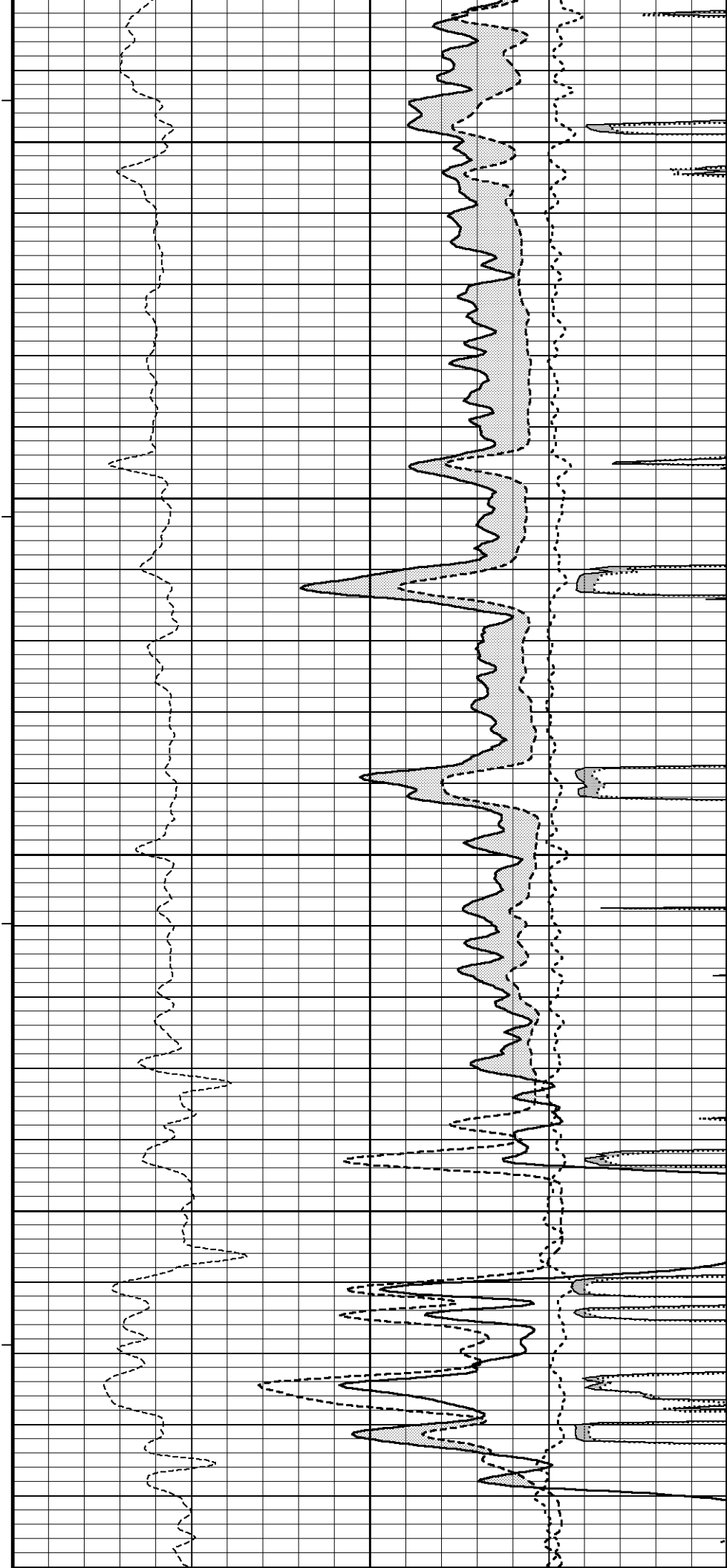
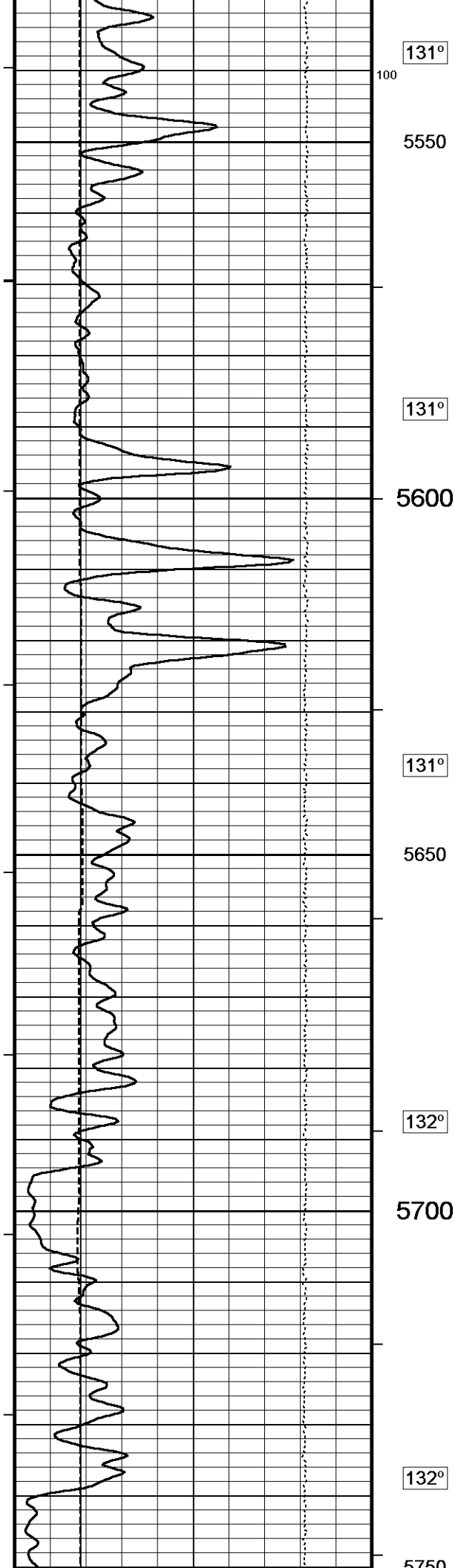


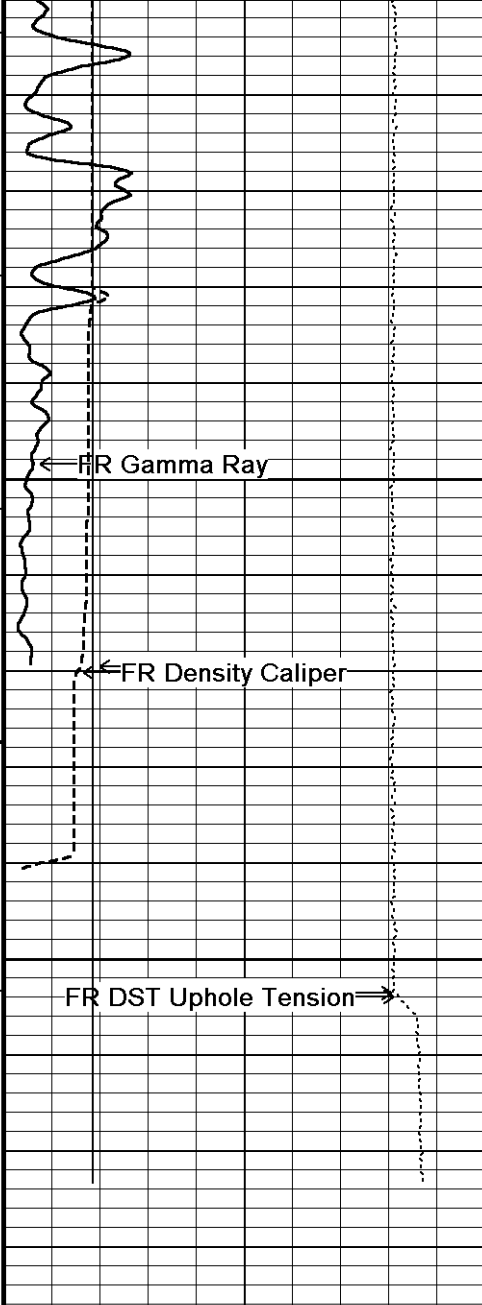




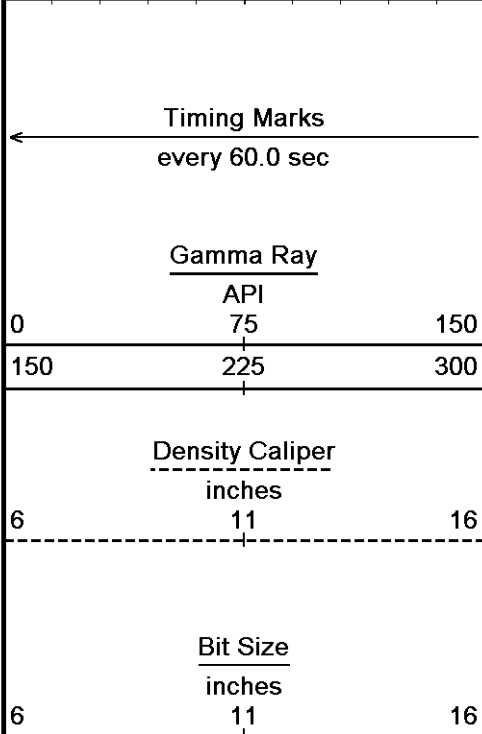




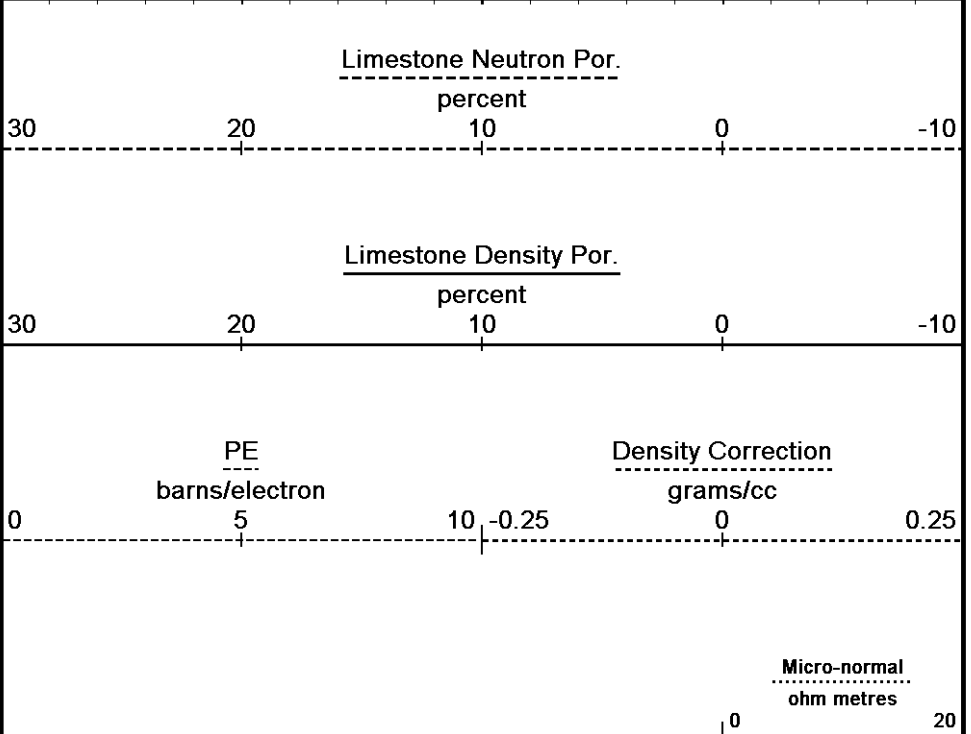
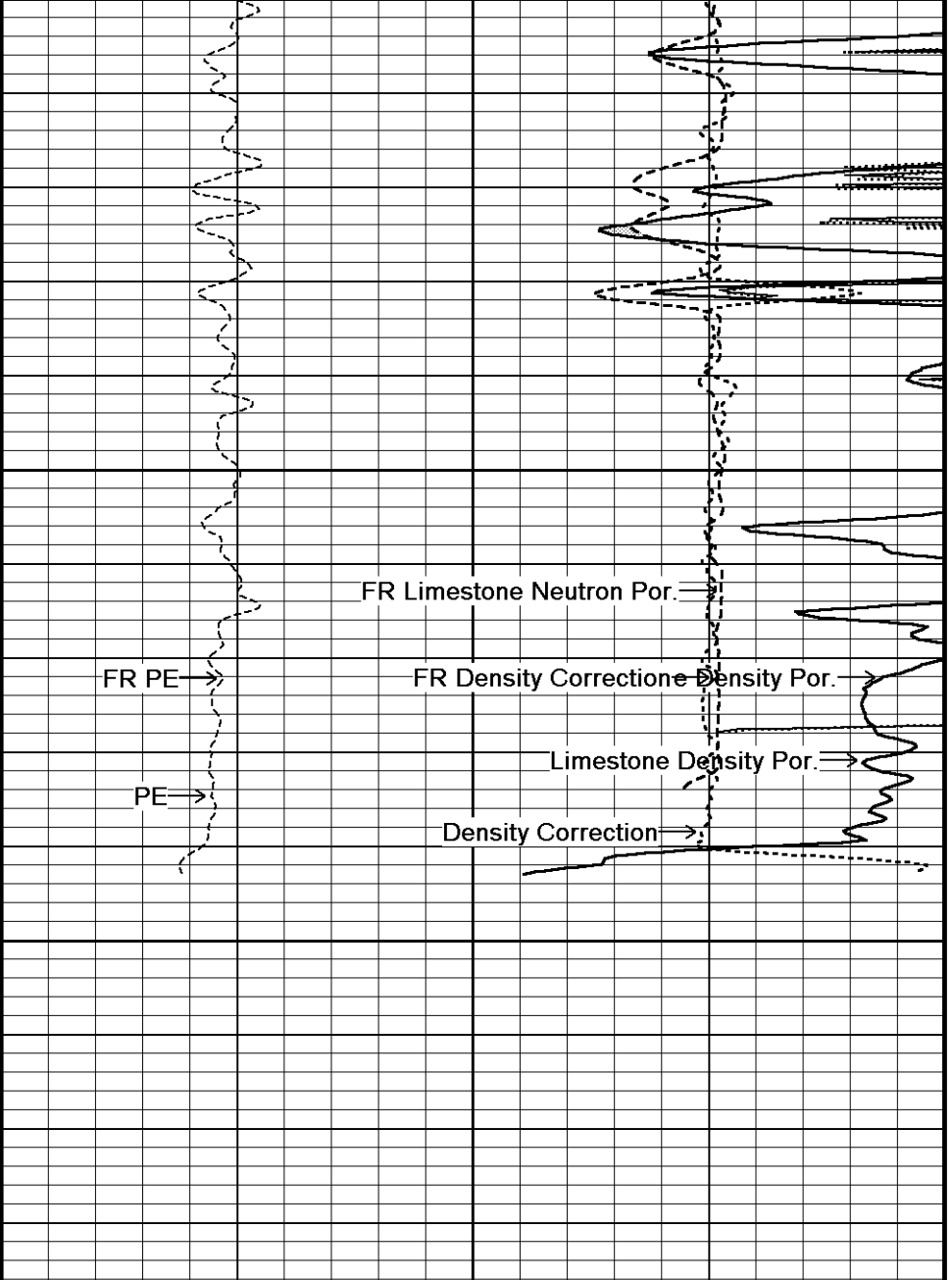


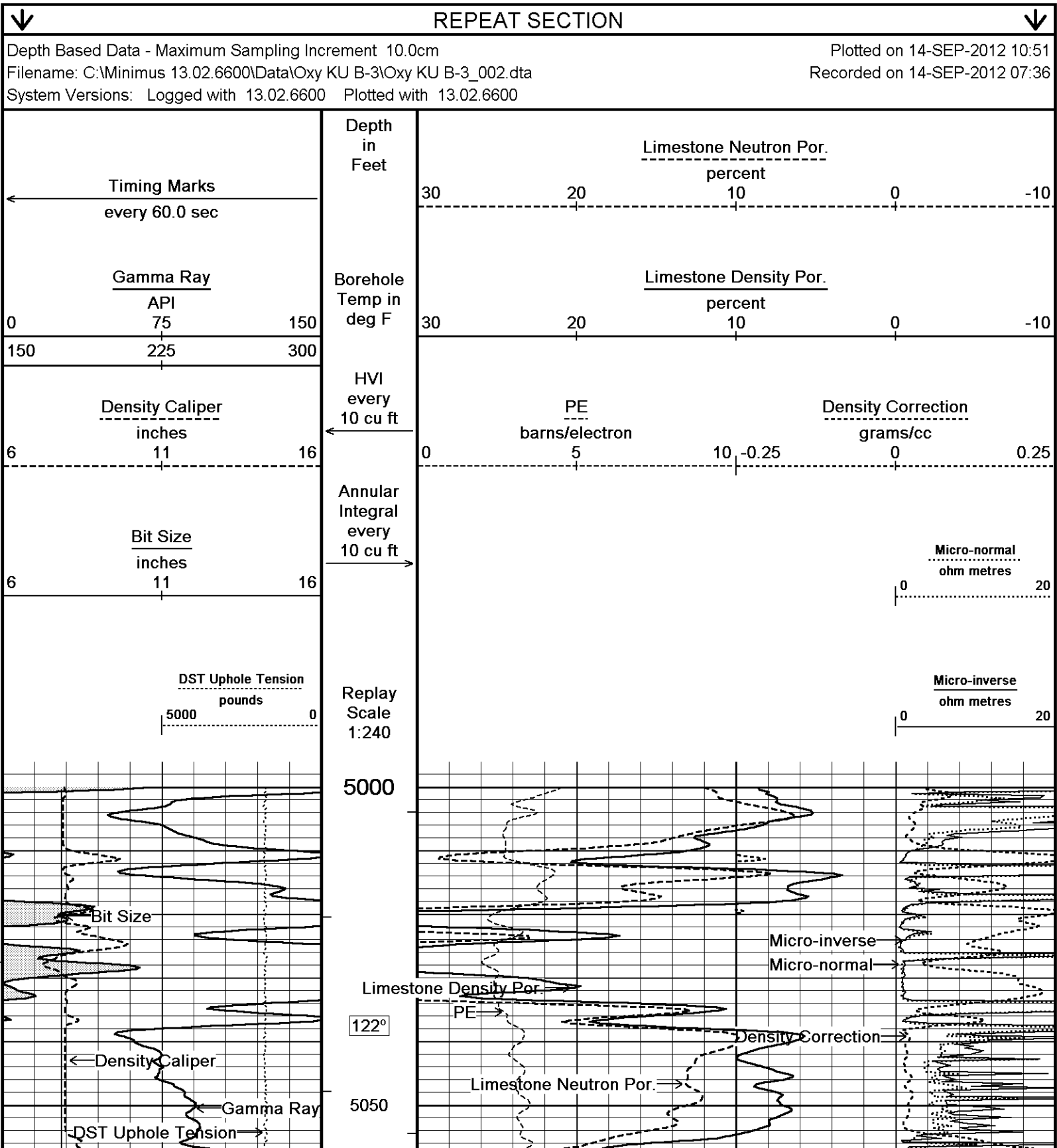
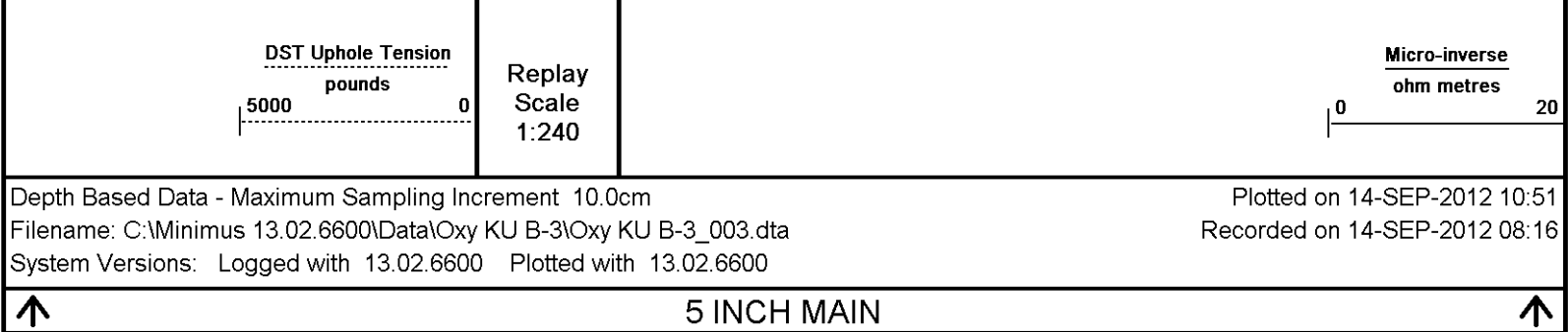


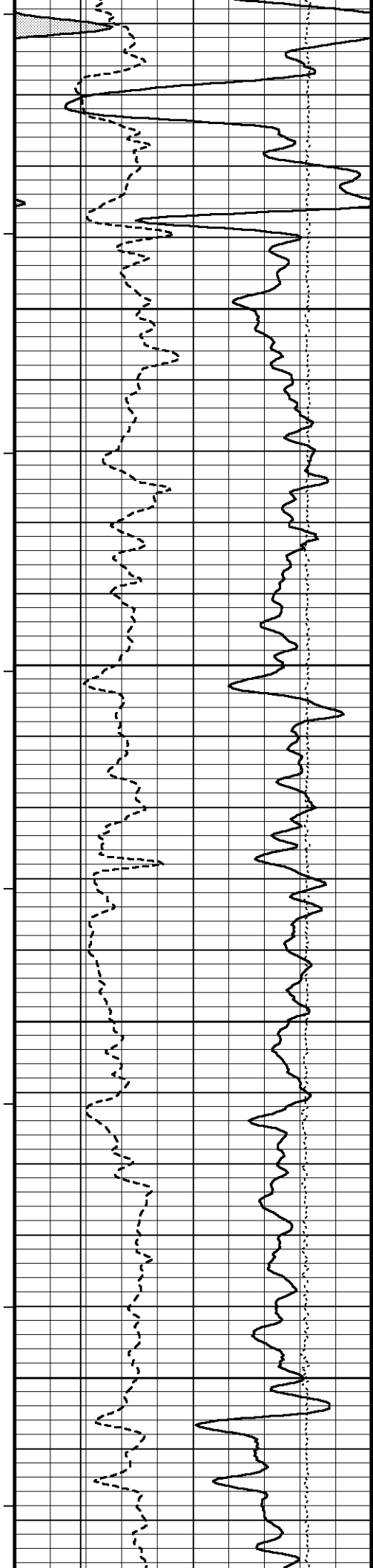
5750
132°
5800
5850
5884
Depth in Feet



Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft







300

122°

5100

122°

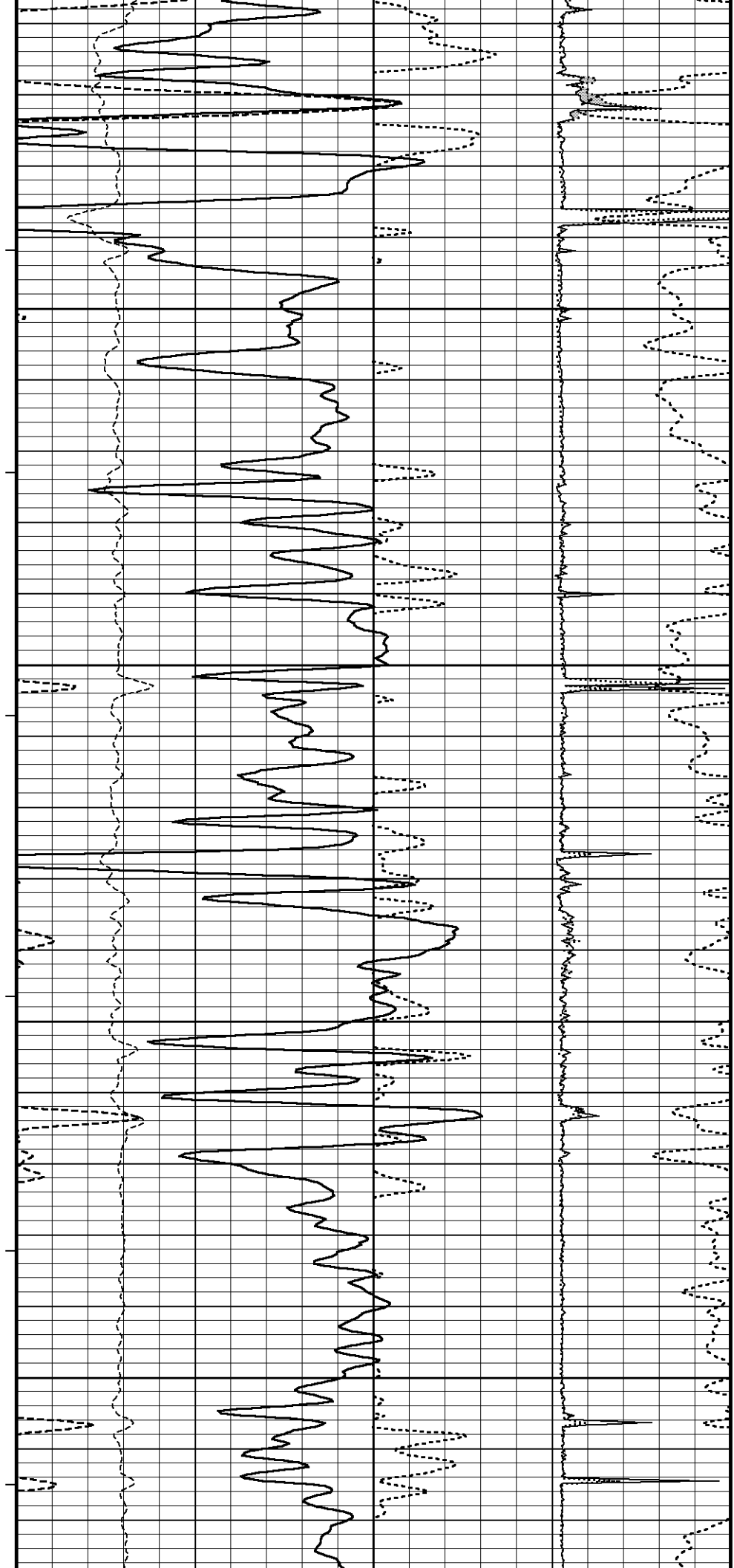
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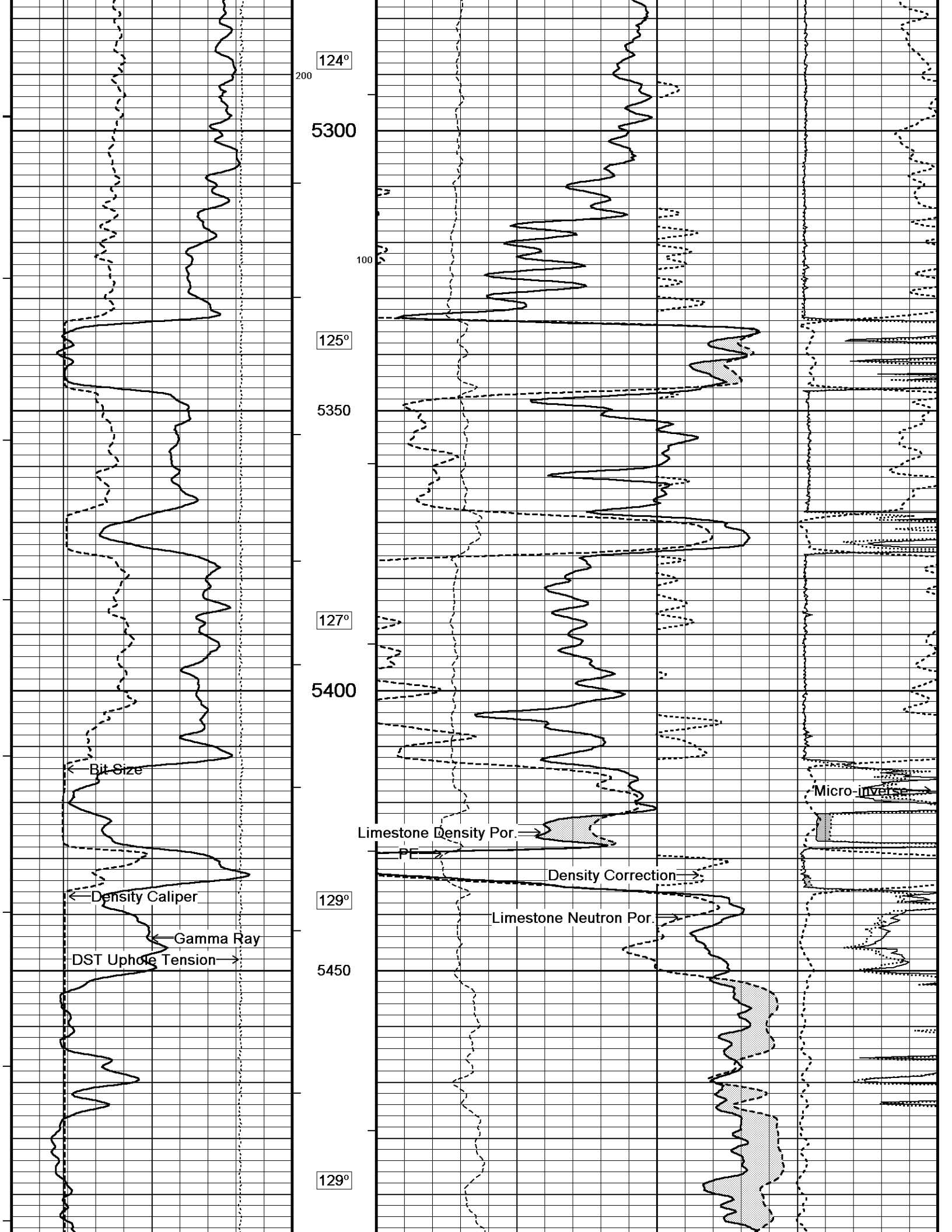
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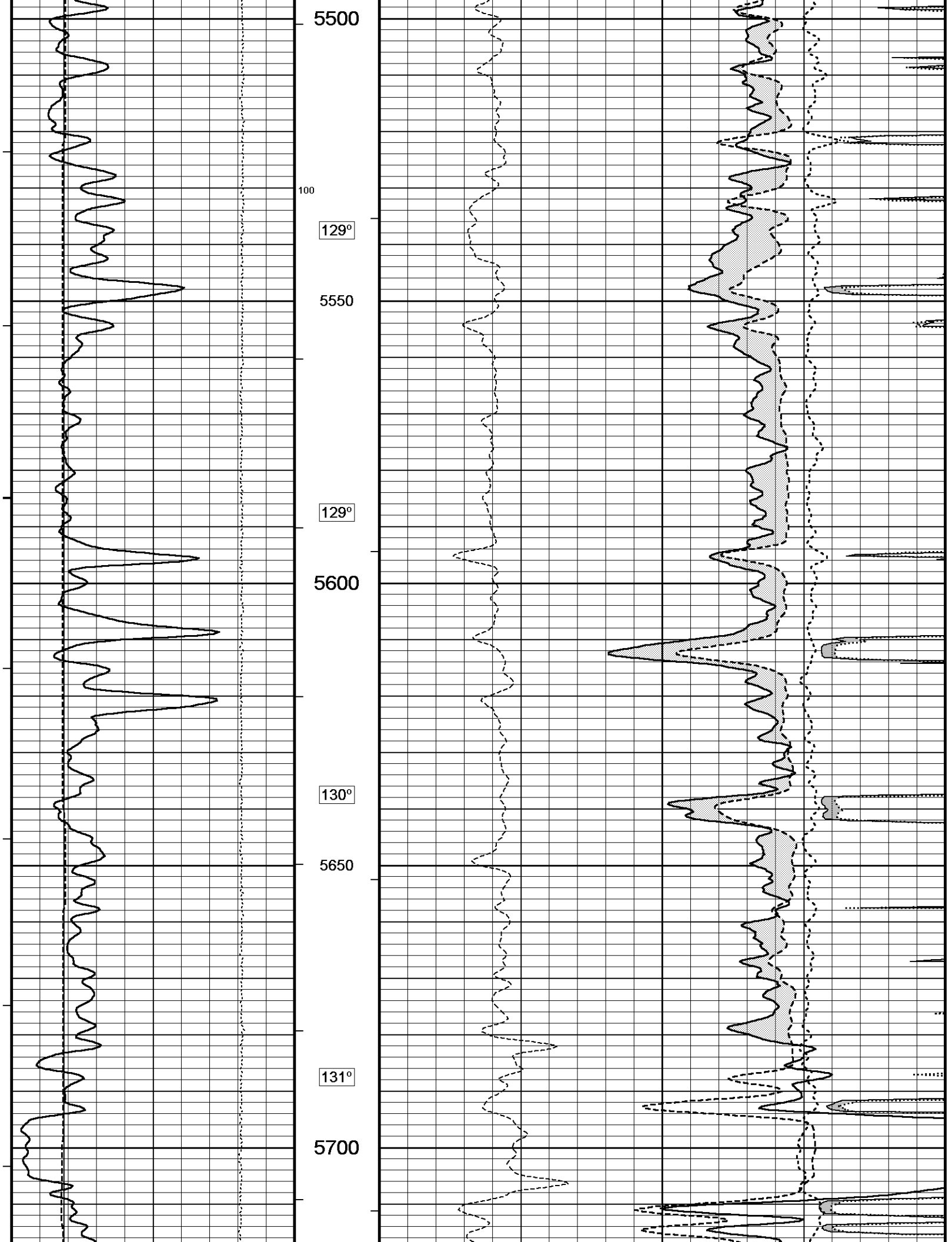
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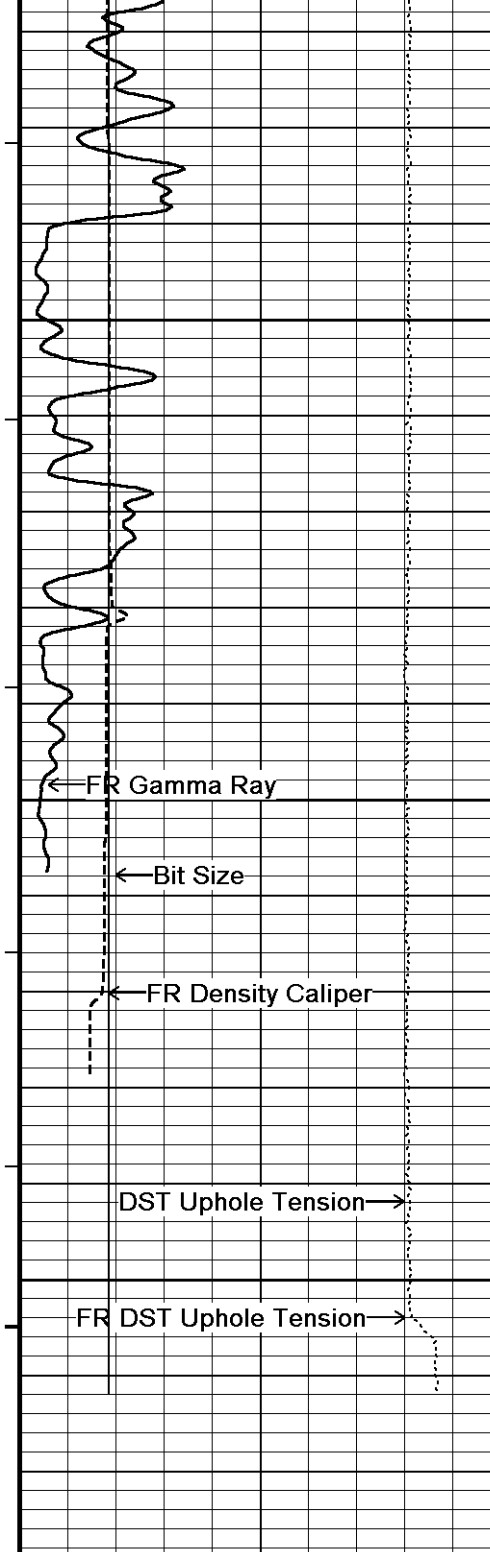
123°

5250









131°

5750

130°

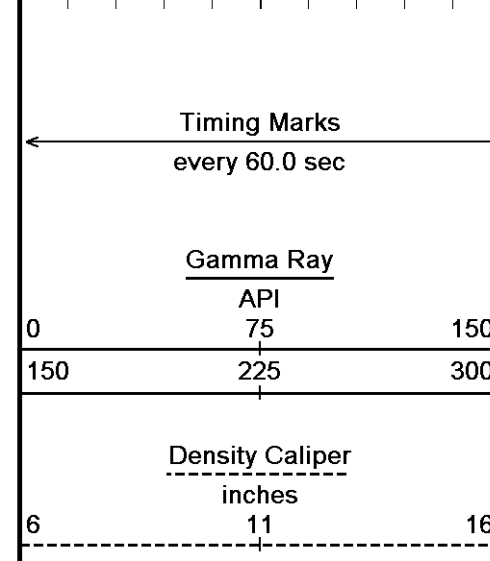
5800

0

5850

5876

Depth in Feet

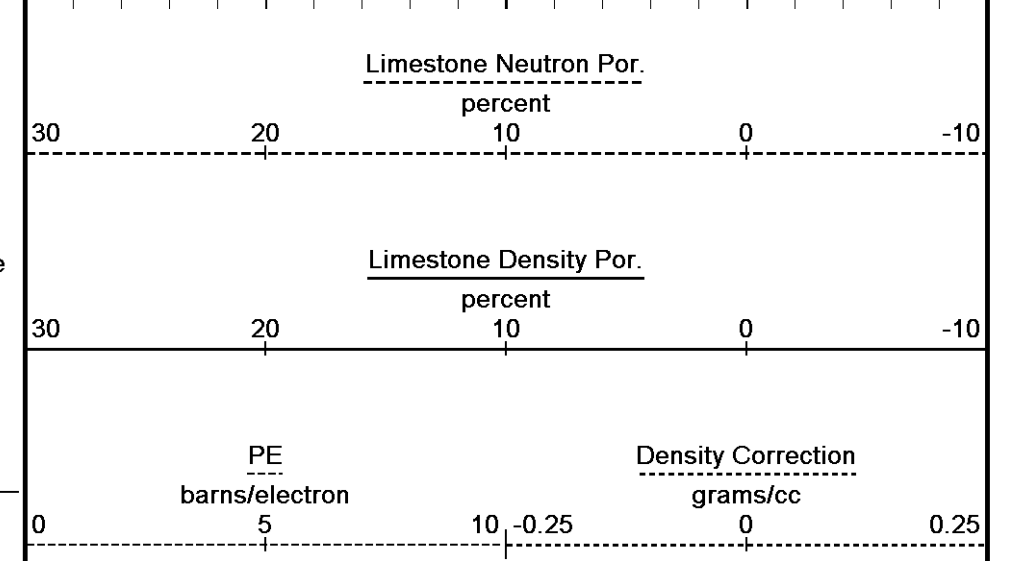
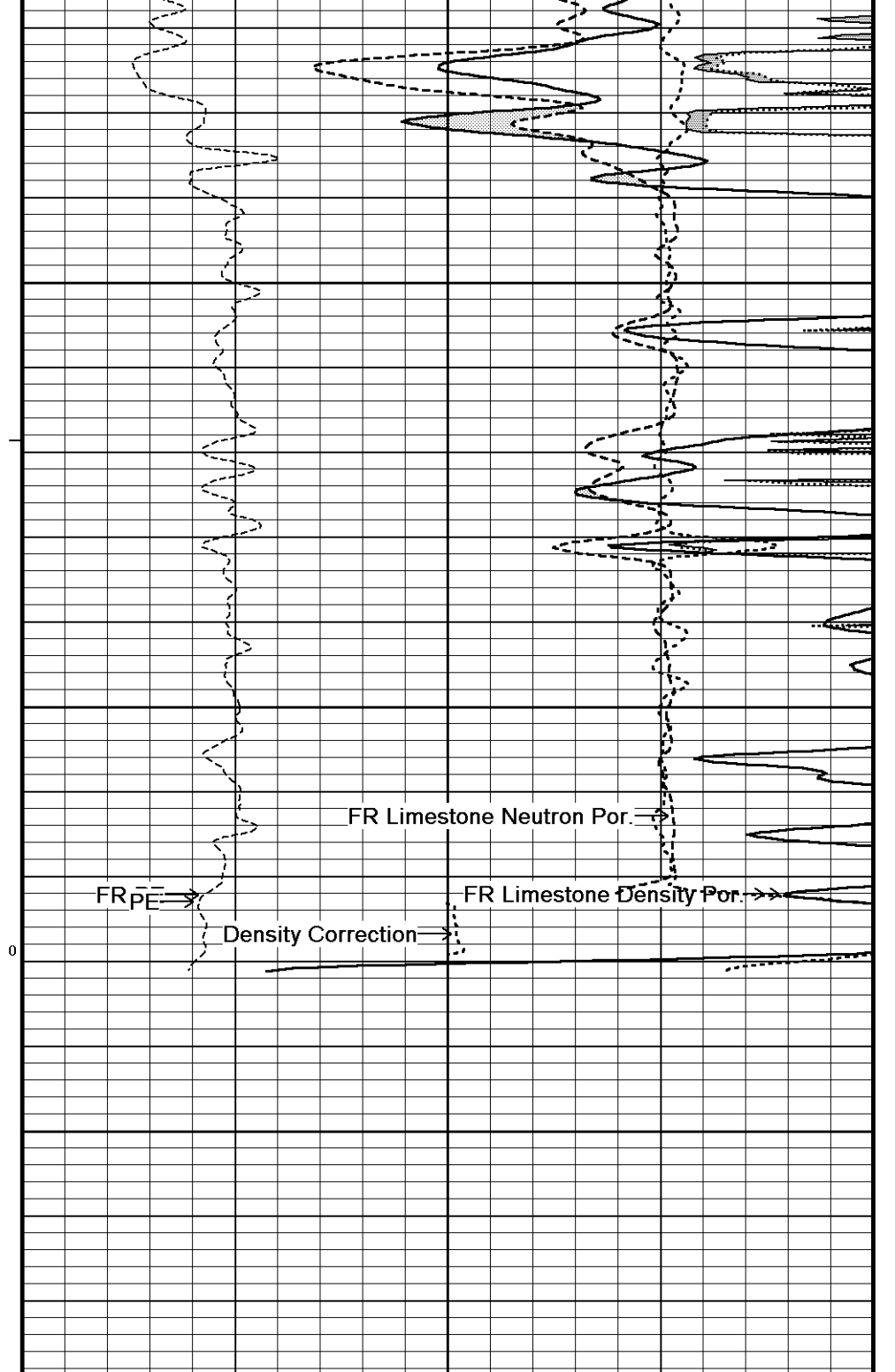


Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
6 11 16

HVI
every
10 cu ft

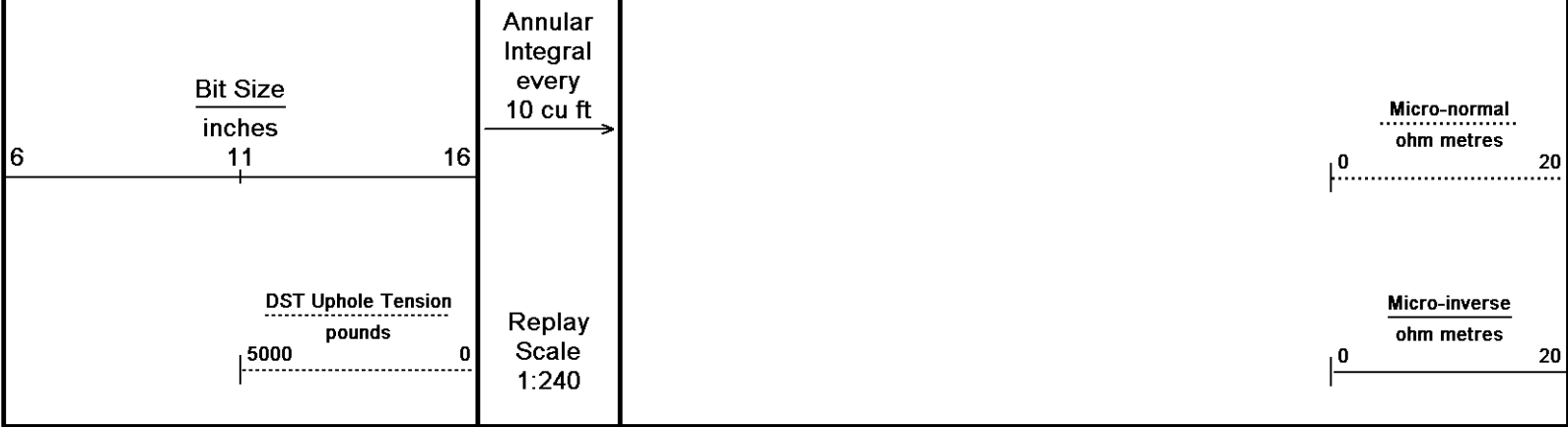


Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
0 -0.25 0 0.25



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 14-SEP-2012 10:51

Filename: C:\Minimus 13.02.6600\Data\Oxy KU B-3\Oxy KU B-3_002.dta

Recorded on 14-SEP-2012 07:36

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑

REPEAT SECTION

↑

↓

5 INCH MAIN

↓

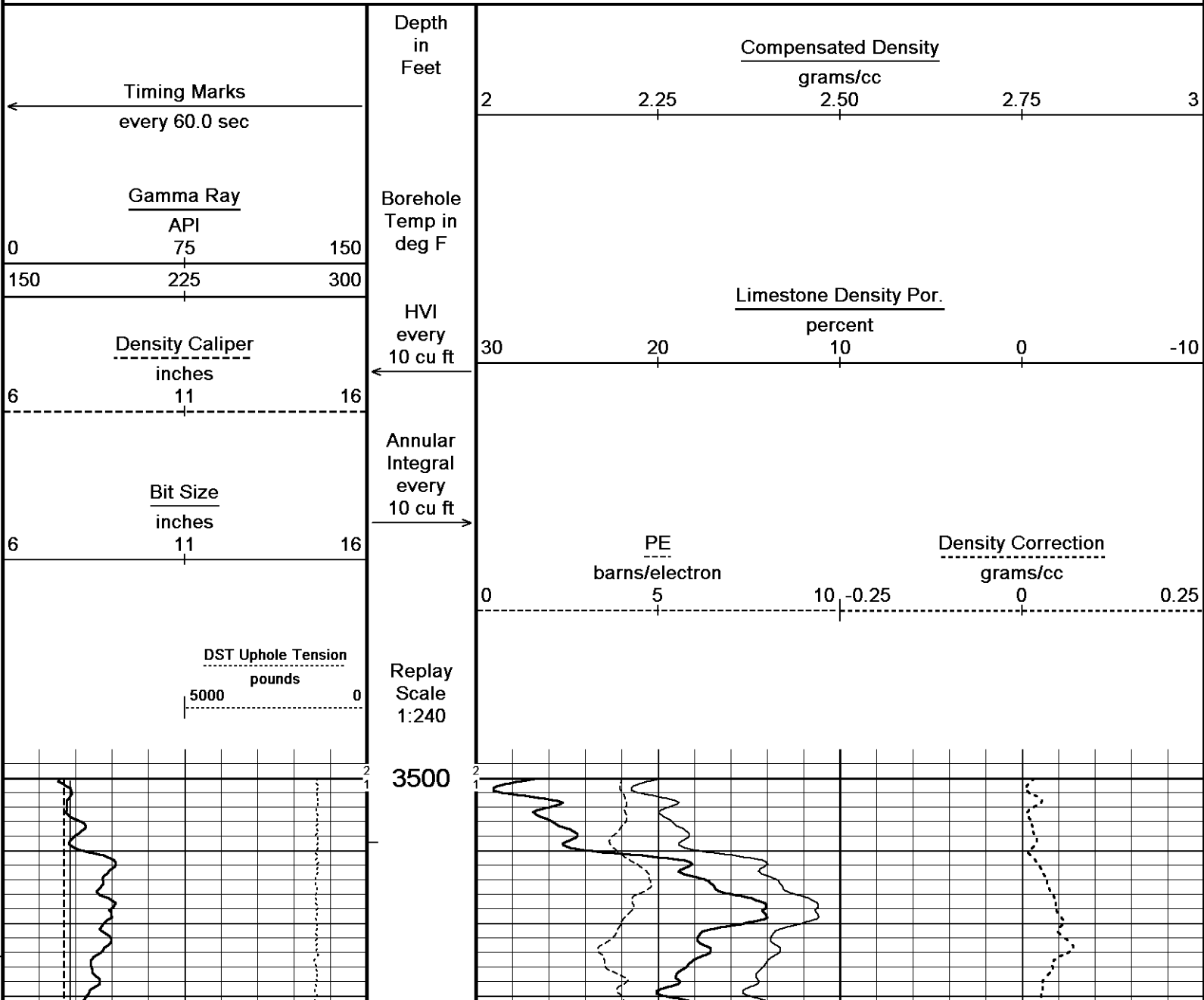
Depth Based Data - Maximum Sampling Increment 10.0cm

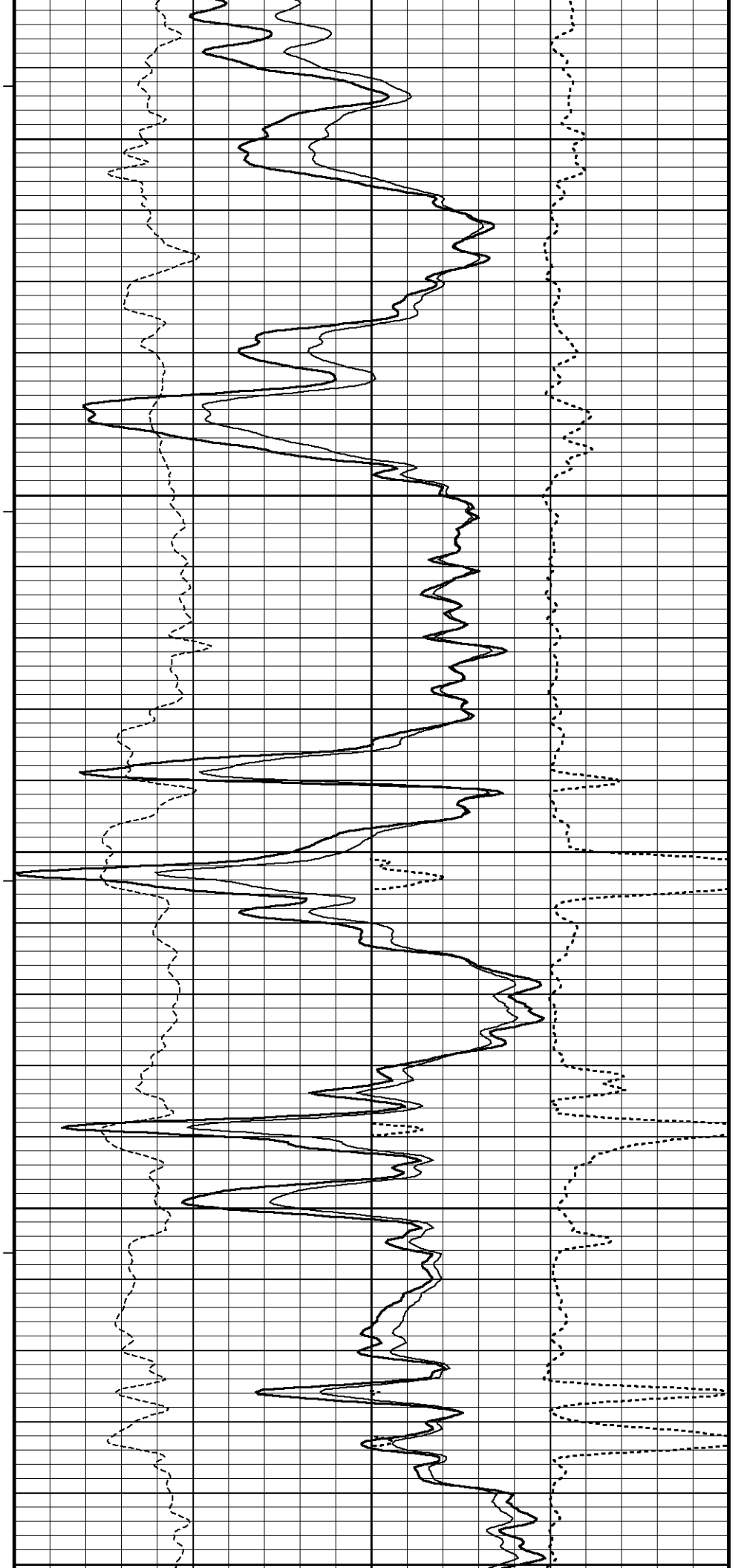
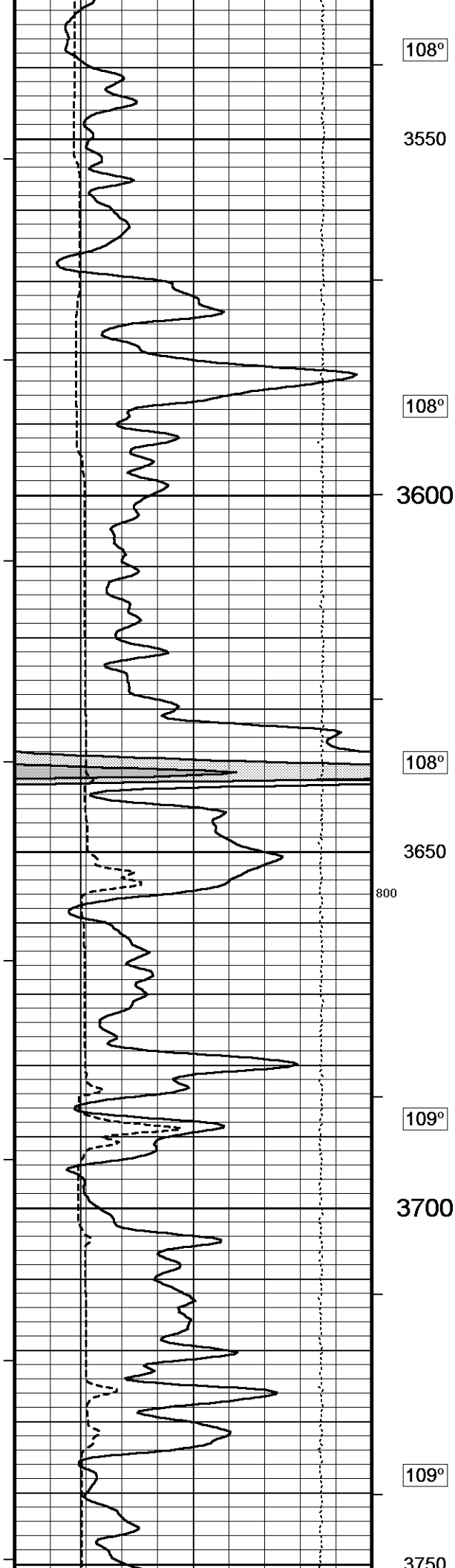
Plotted on 14-SEP-2012 10:51

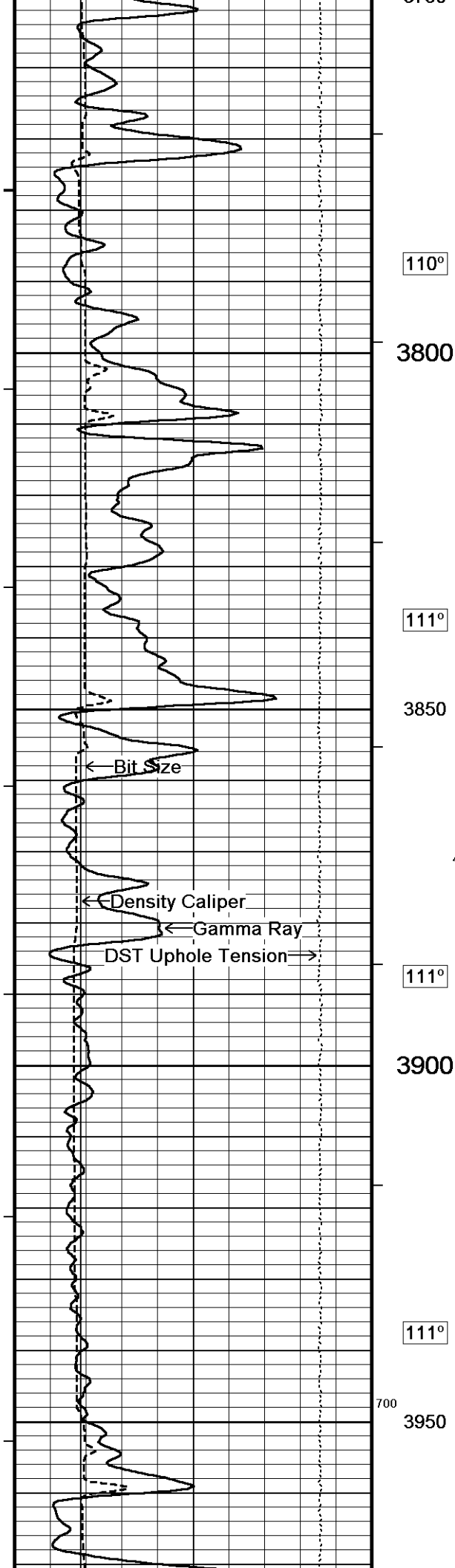
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Recorded on 14-SEP-2012 08:16

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600







110°

3800

111°

3850

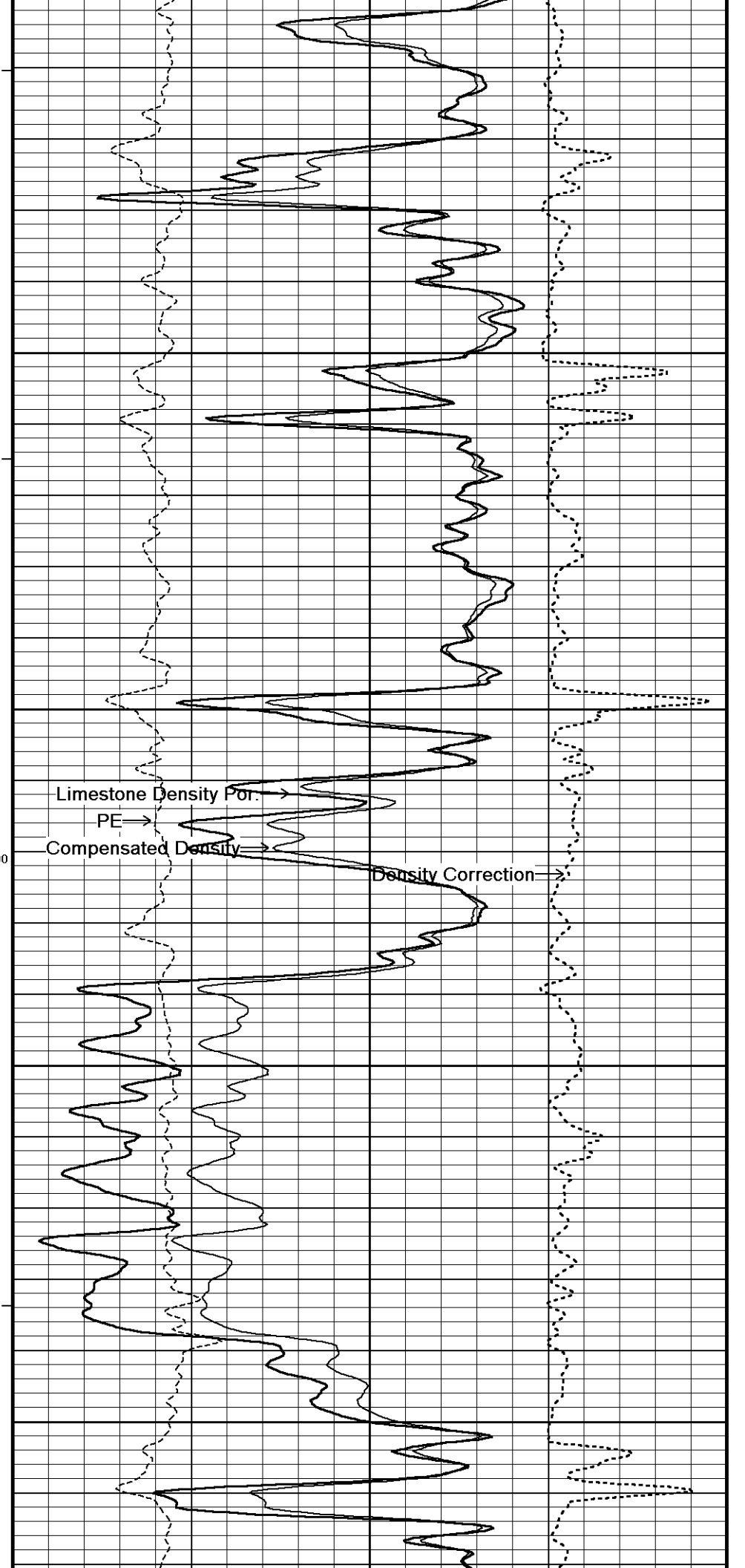
111°

3900

111°

3950

700

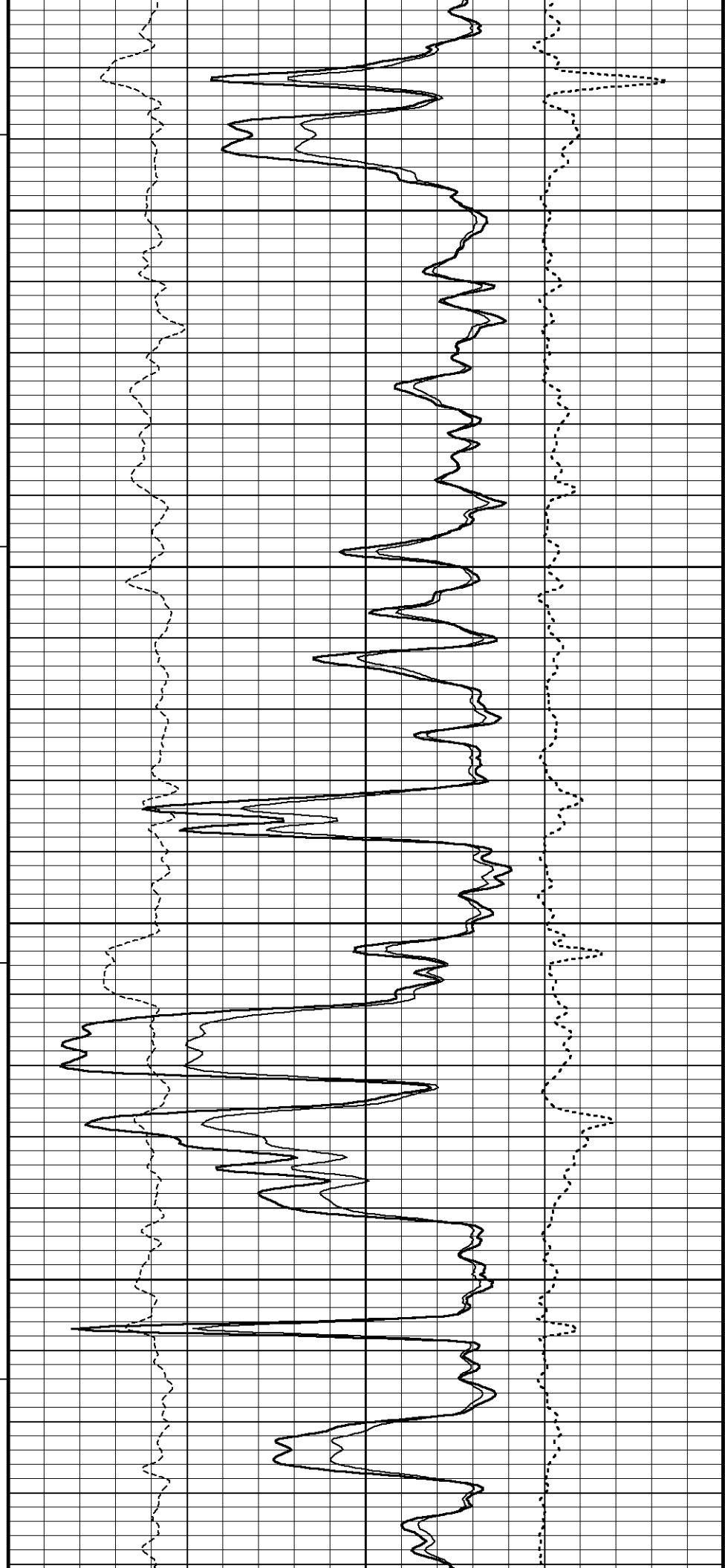
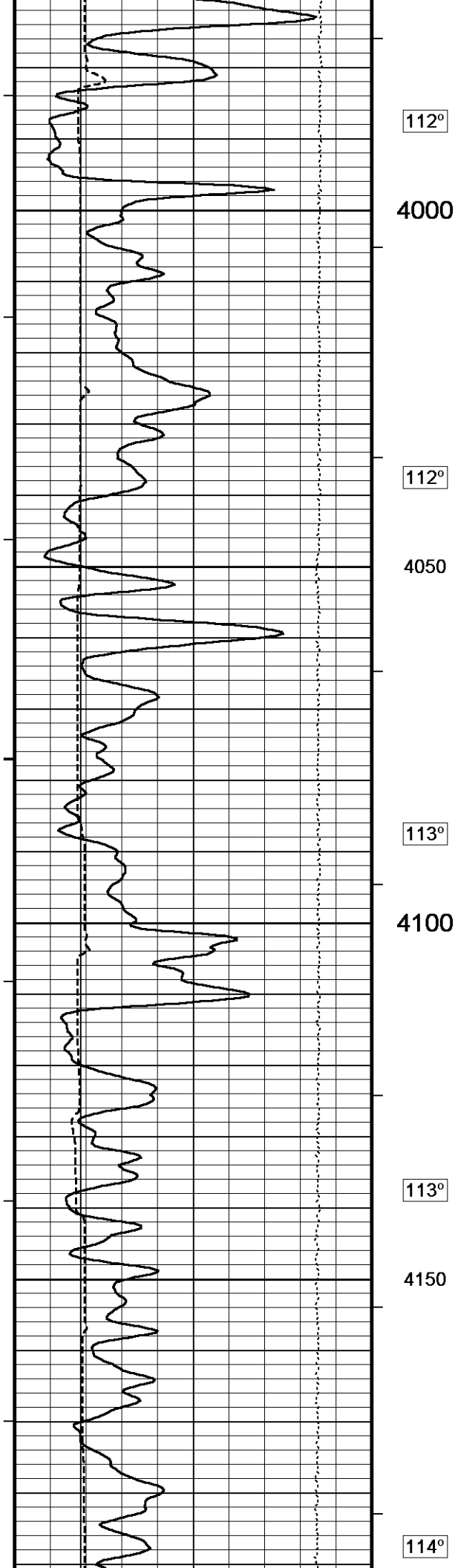


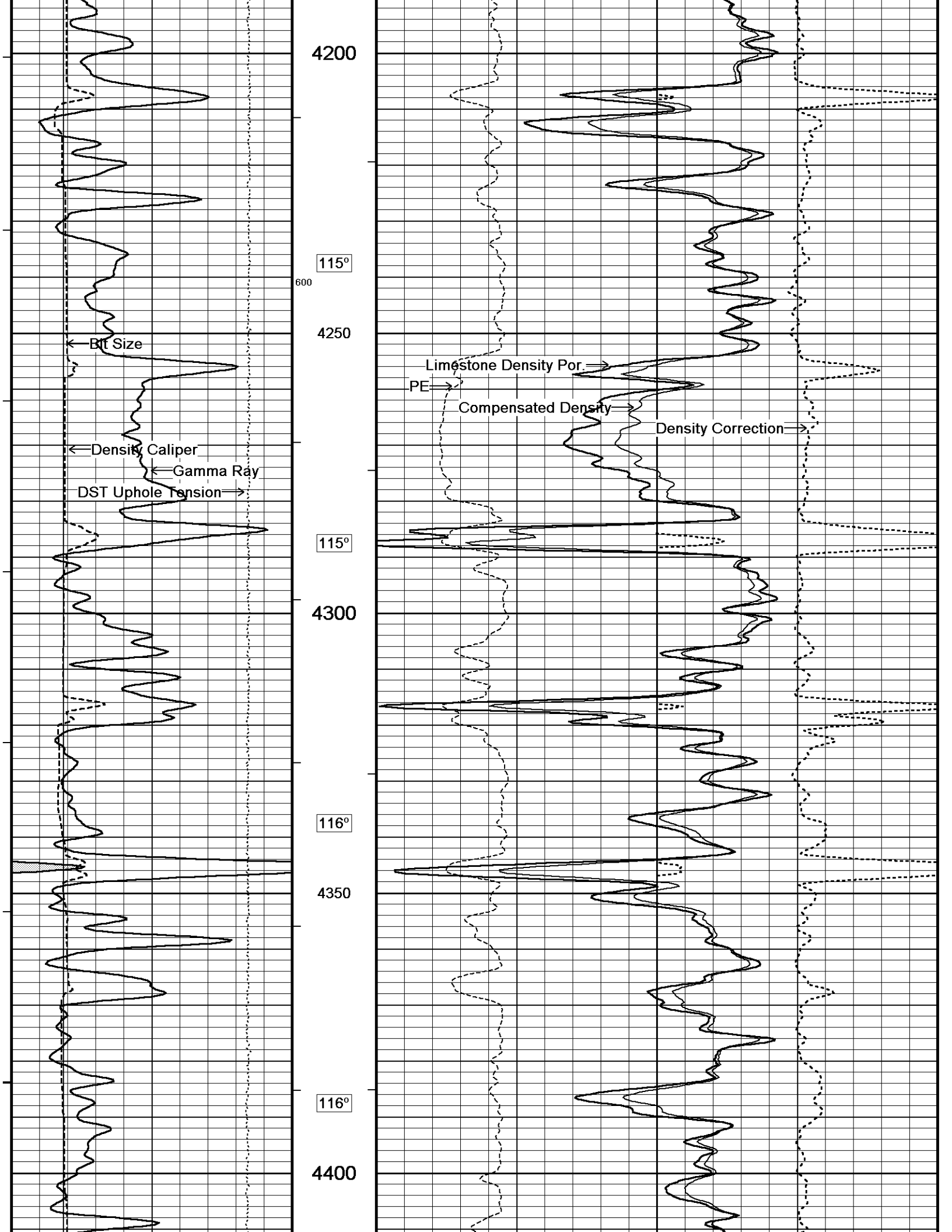
Limestone Density Por.

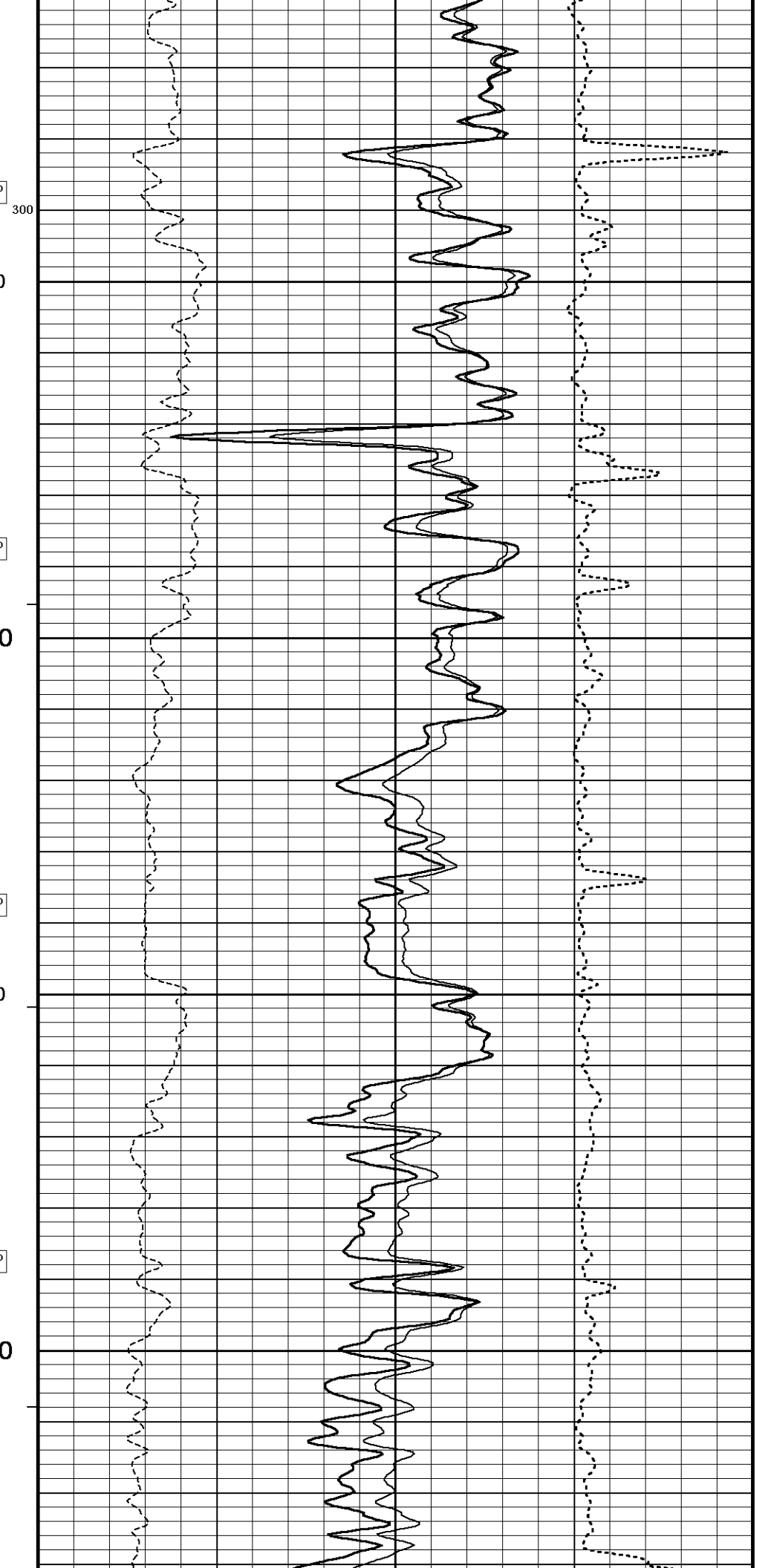
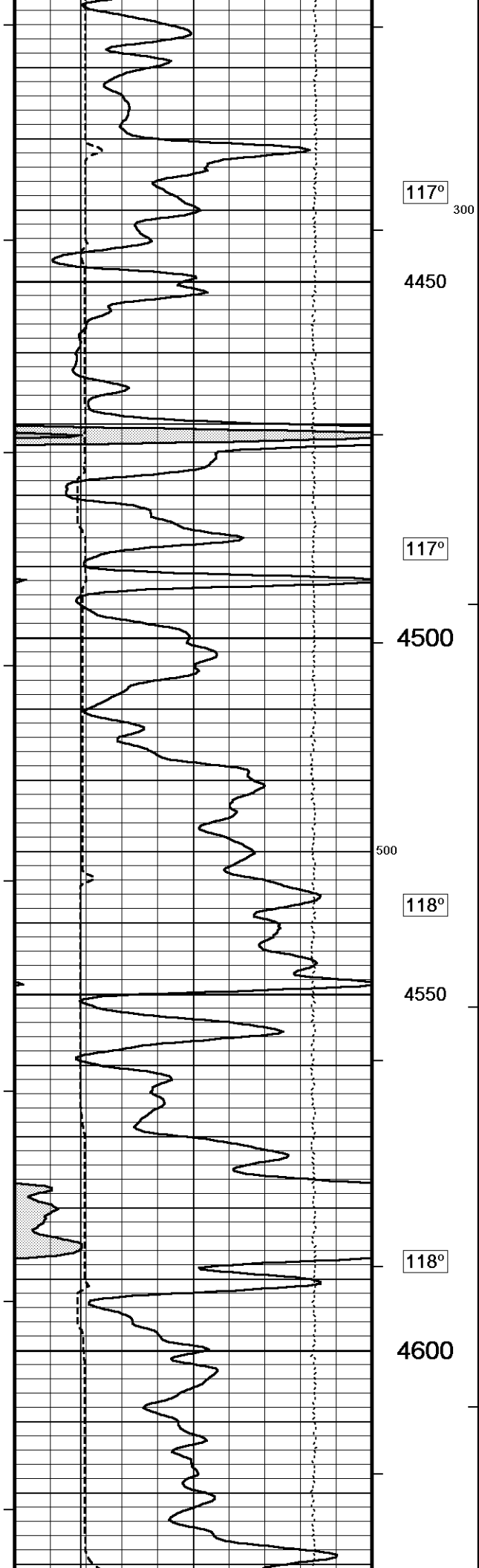
PE

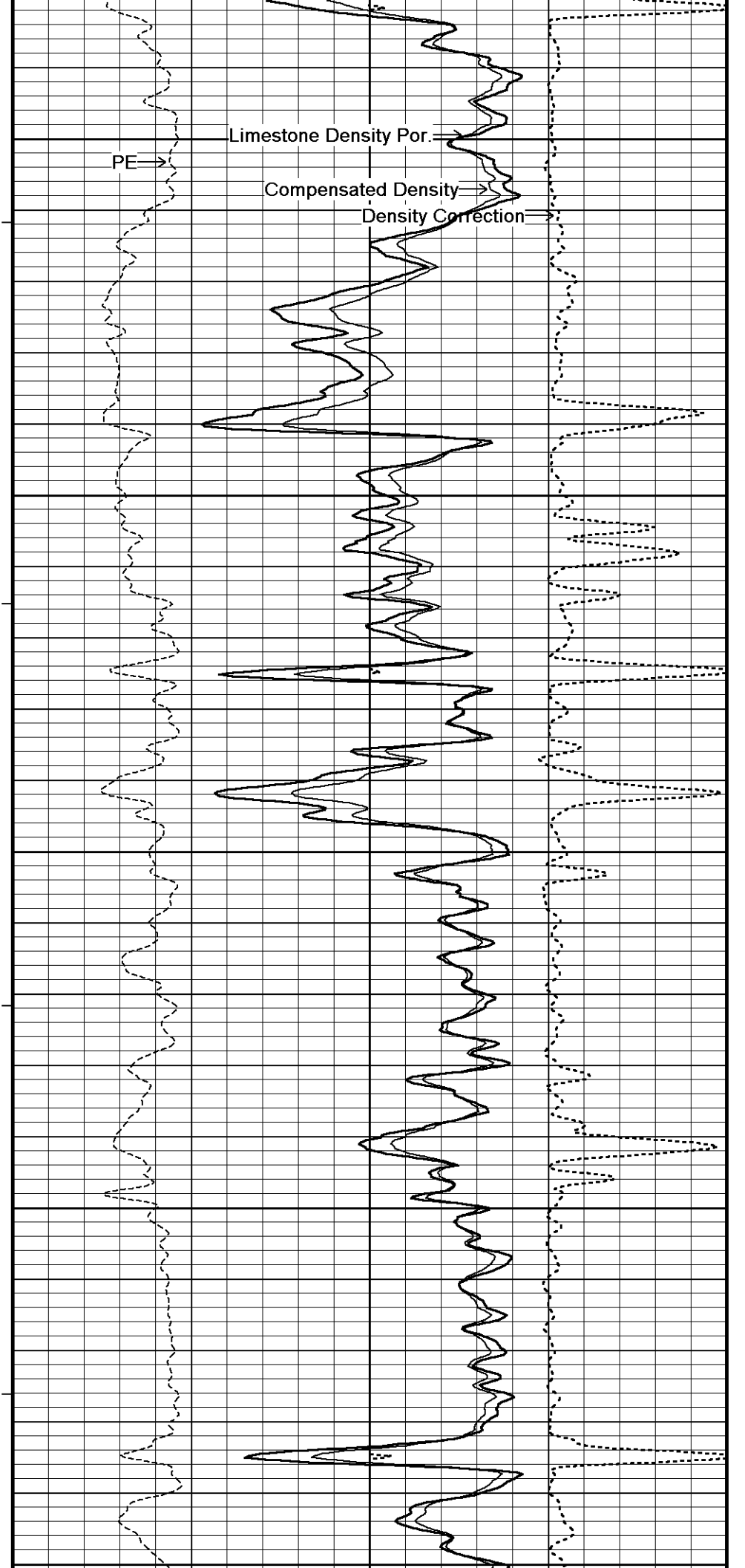
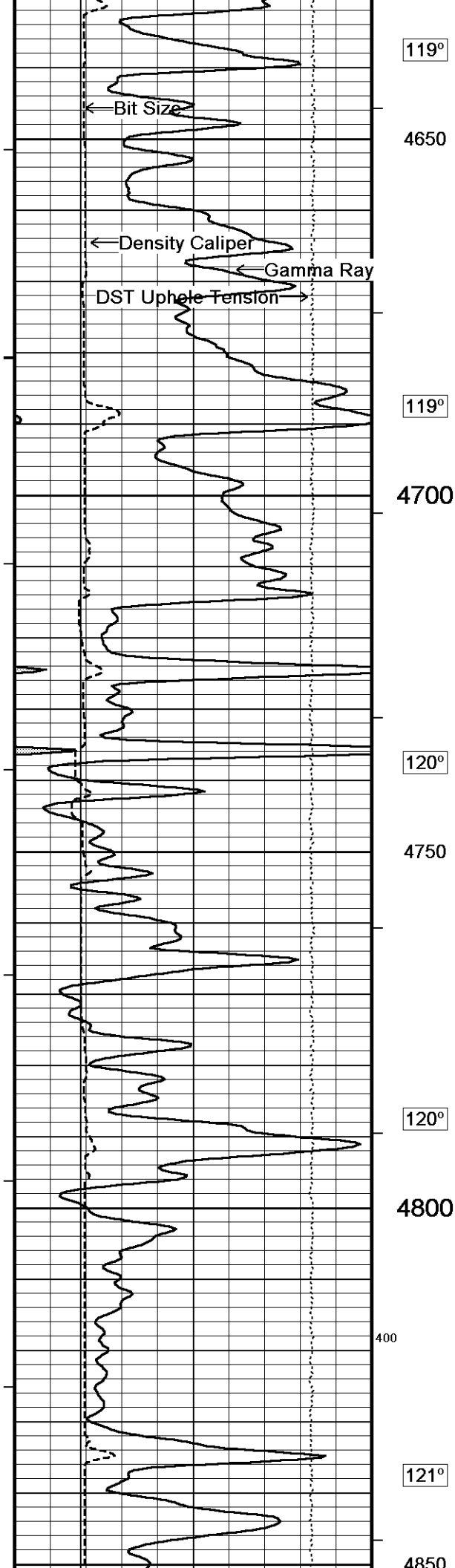
Compensated Density

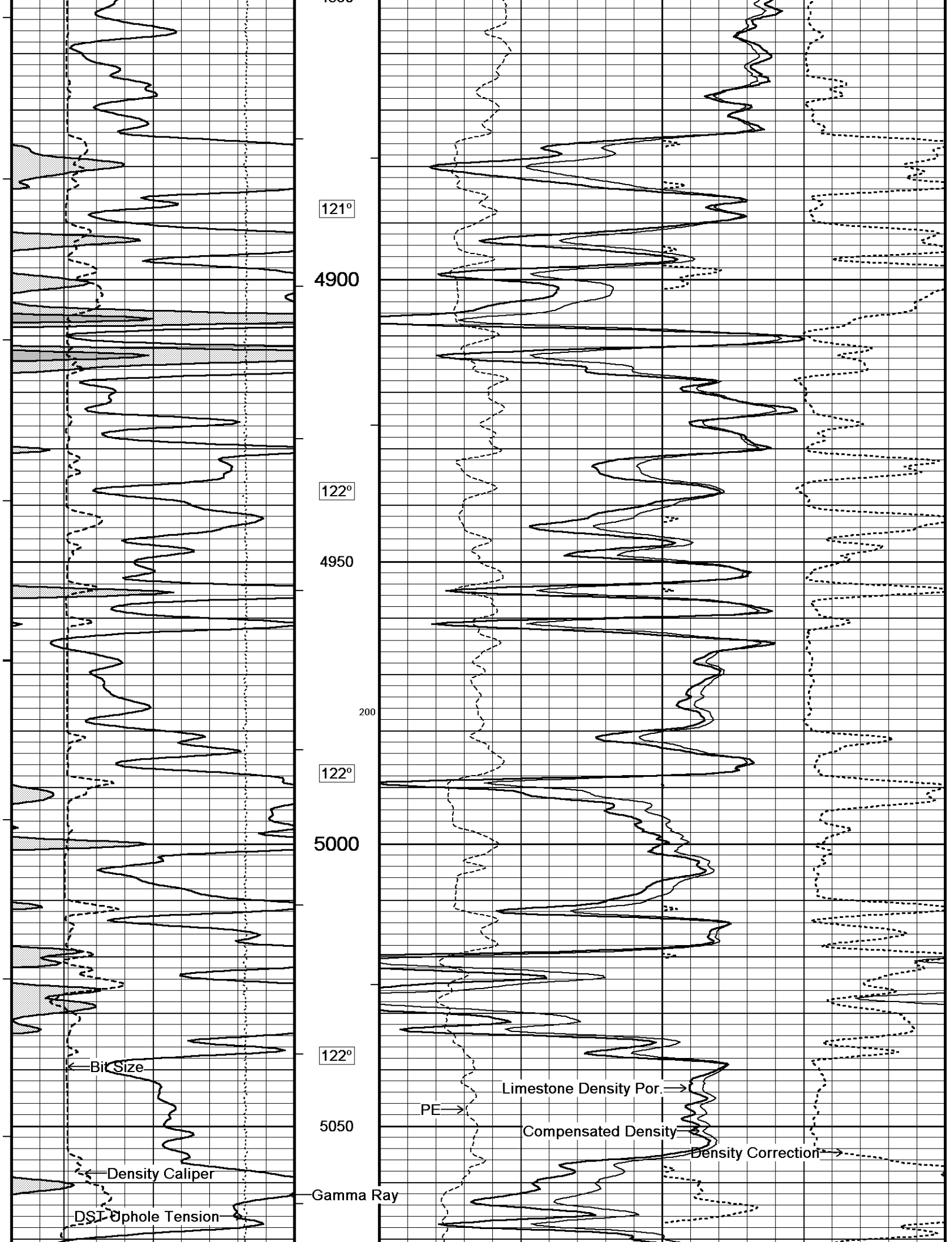
Density Correction

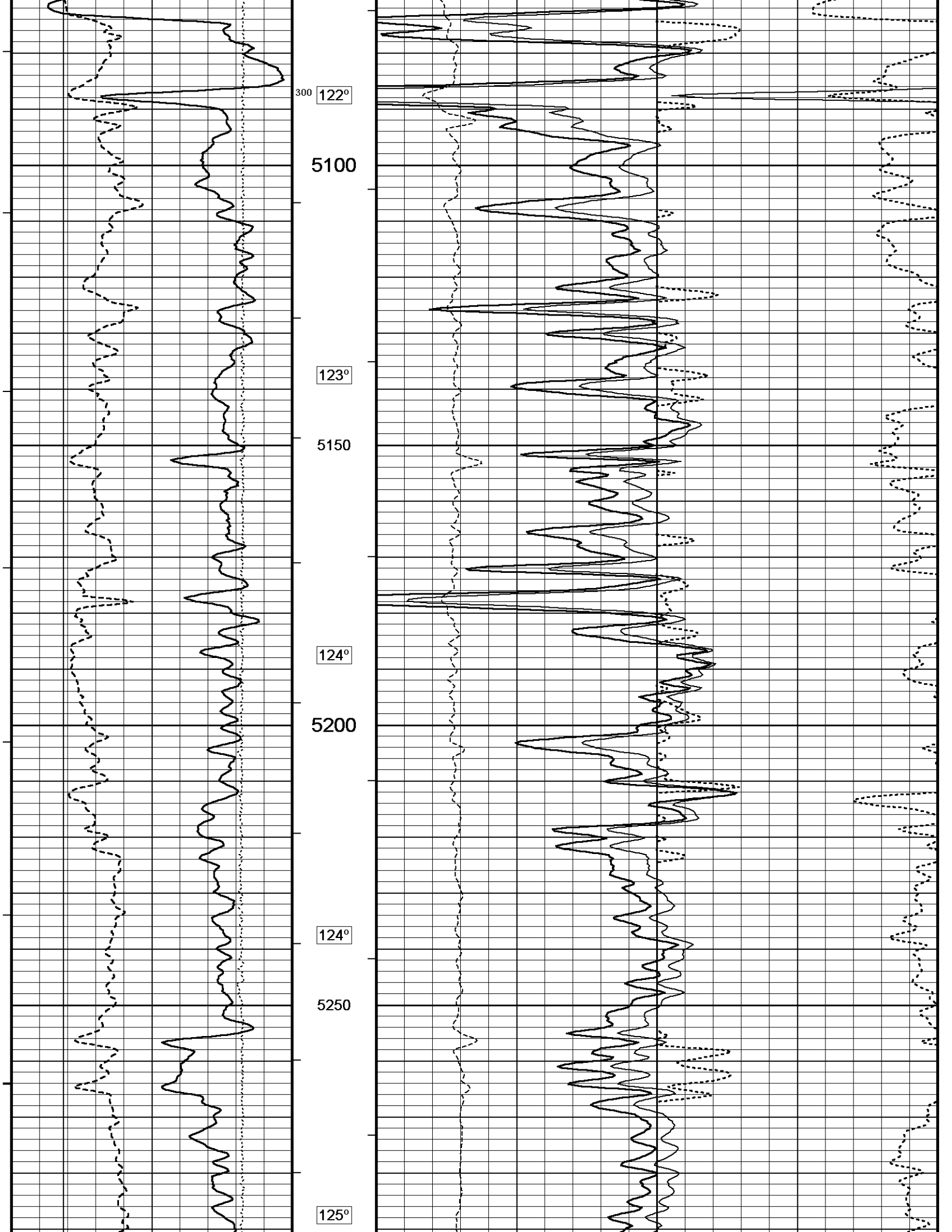


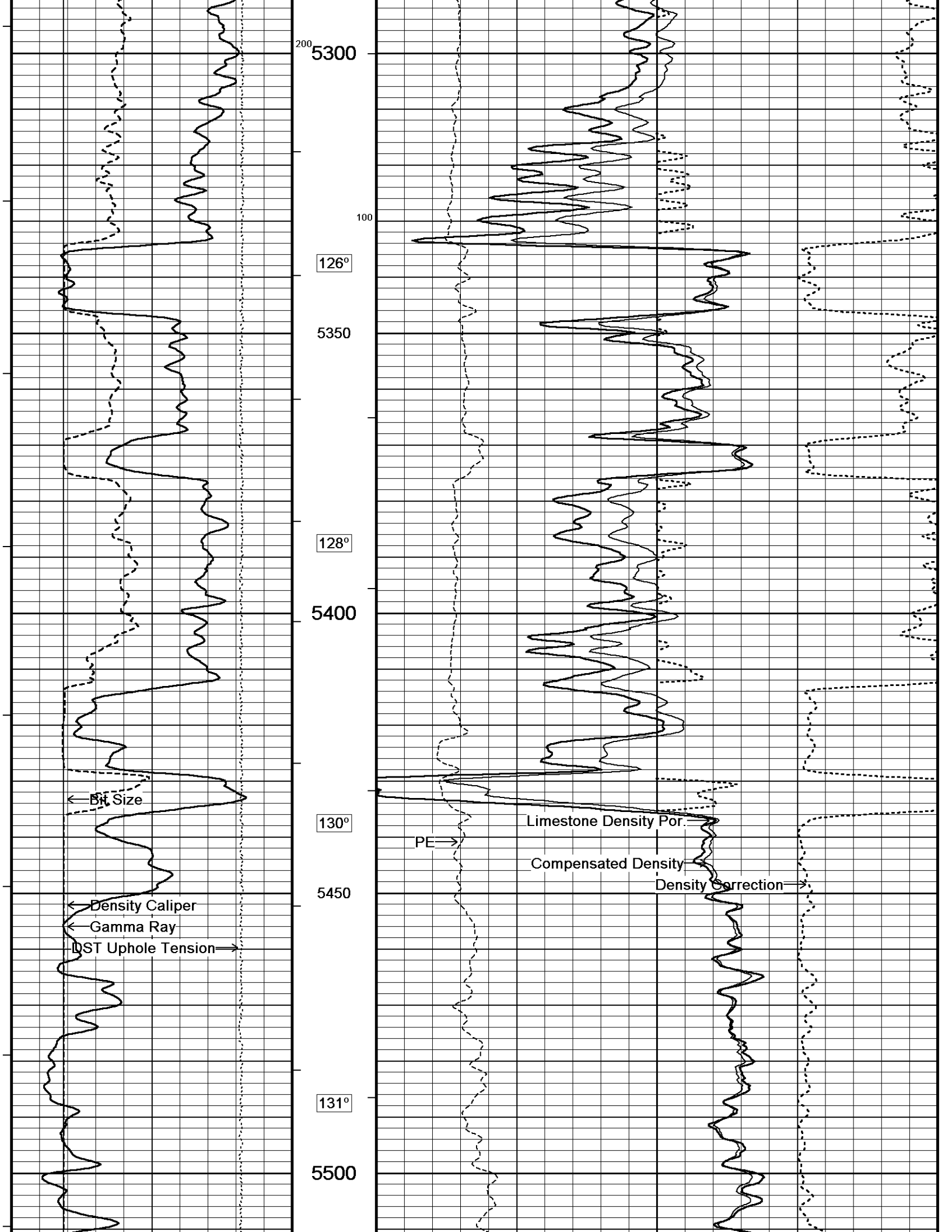


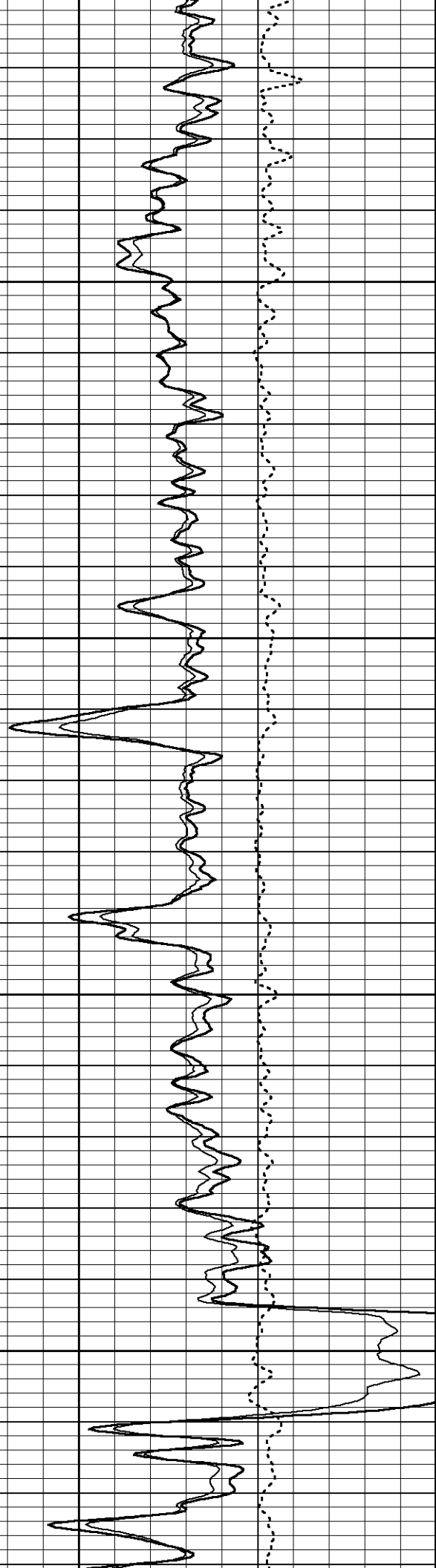
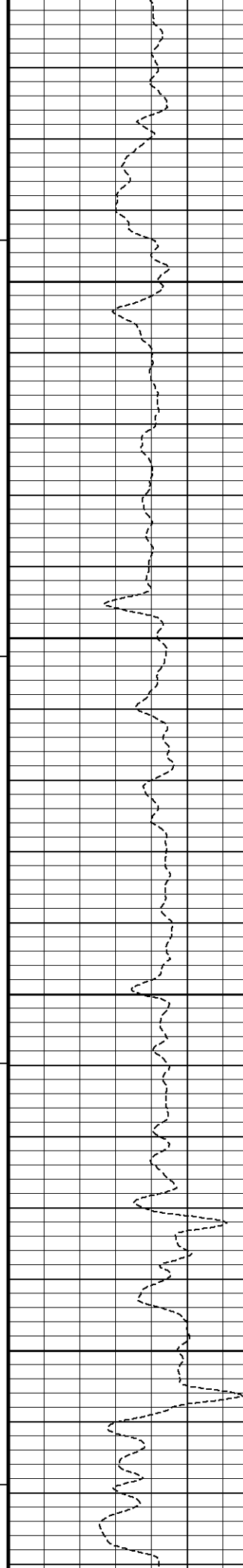
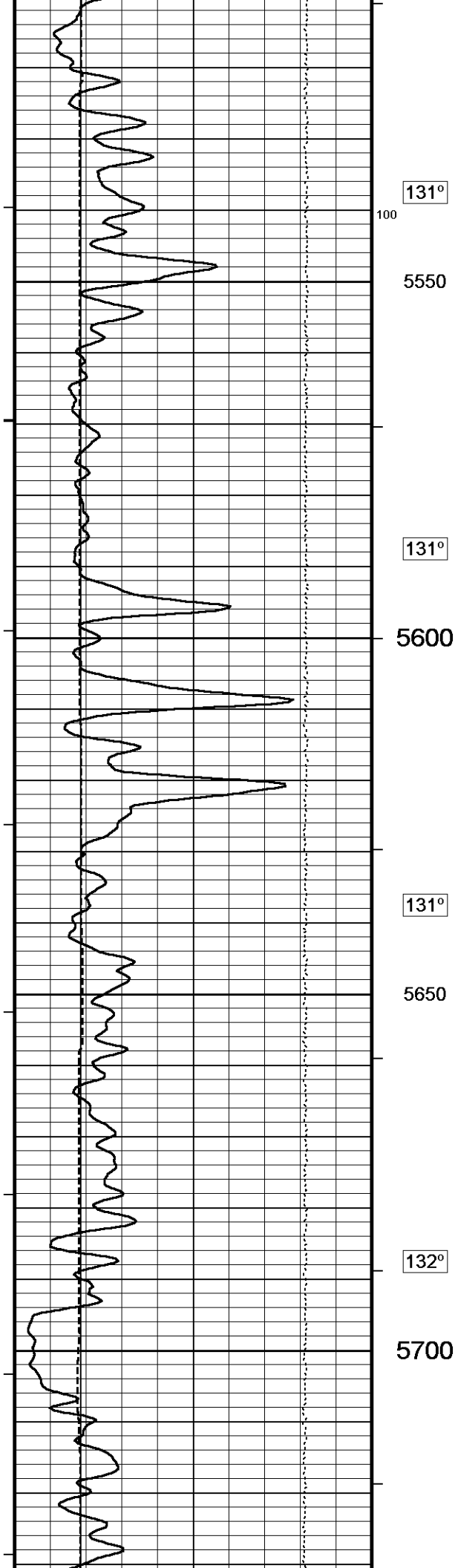


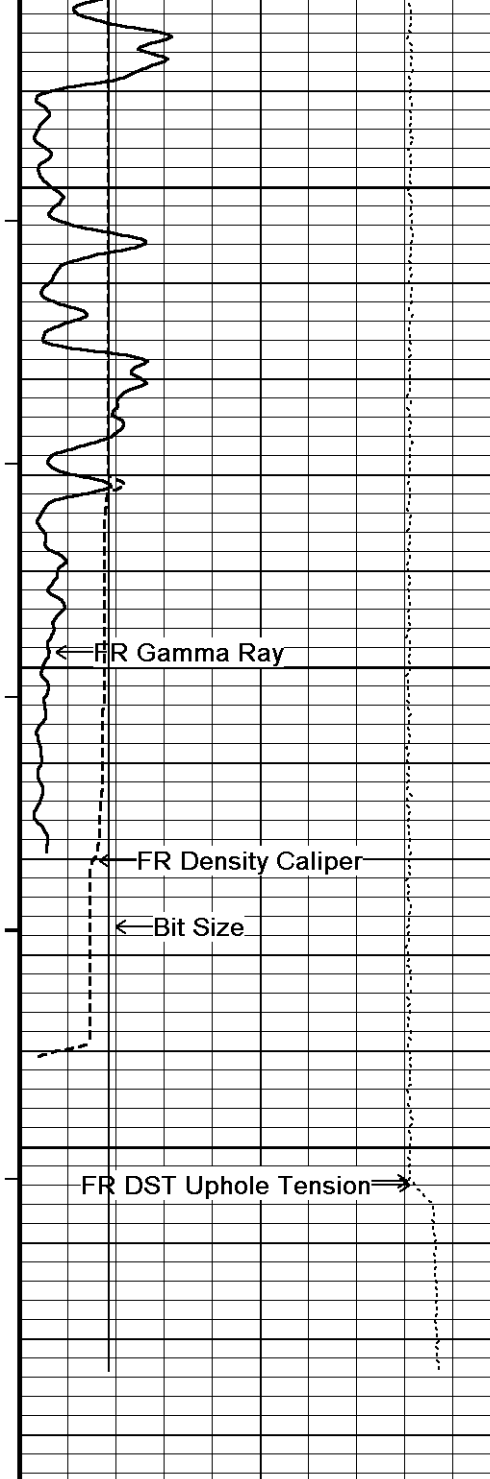












132°

5750

132°

5800

0

5850

5884

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray

0 75 150

150 225 300

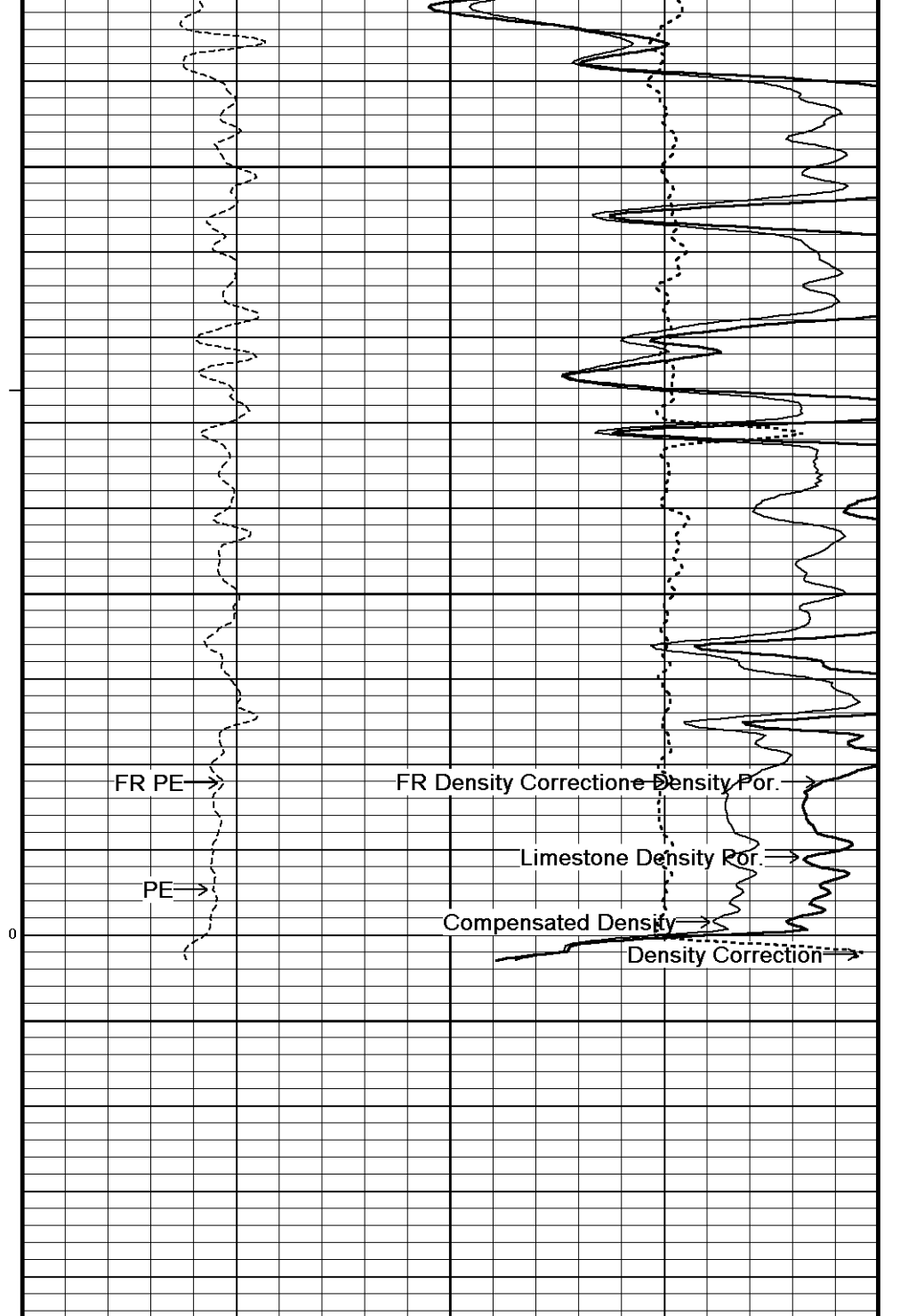
Borehole
Temp in
deg F

Density Caliper
inches

6 11 16

HVI
every
10 cu ft

Annular
Integral



Compensated Density

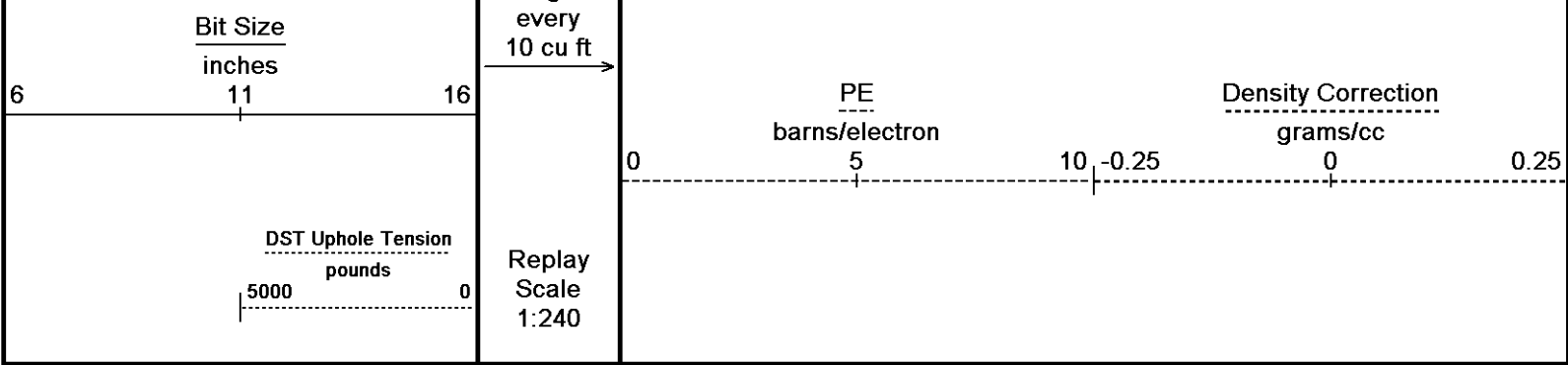
grams/cc

2 2.25 2.50 2.75 3

Limestone Density Por.

percent

30 20 10 0 -10



Depth Based Data - Maximum Sampling Increment 10.0cm

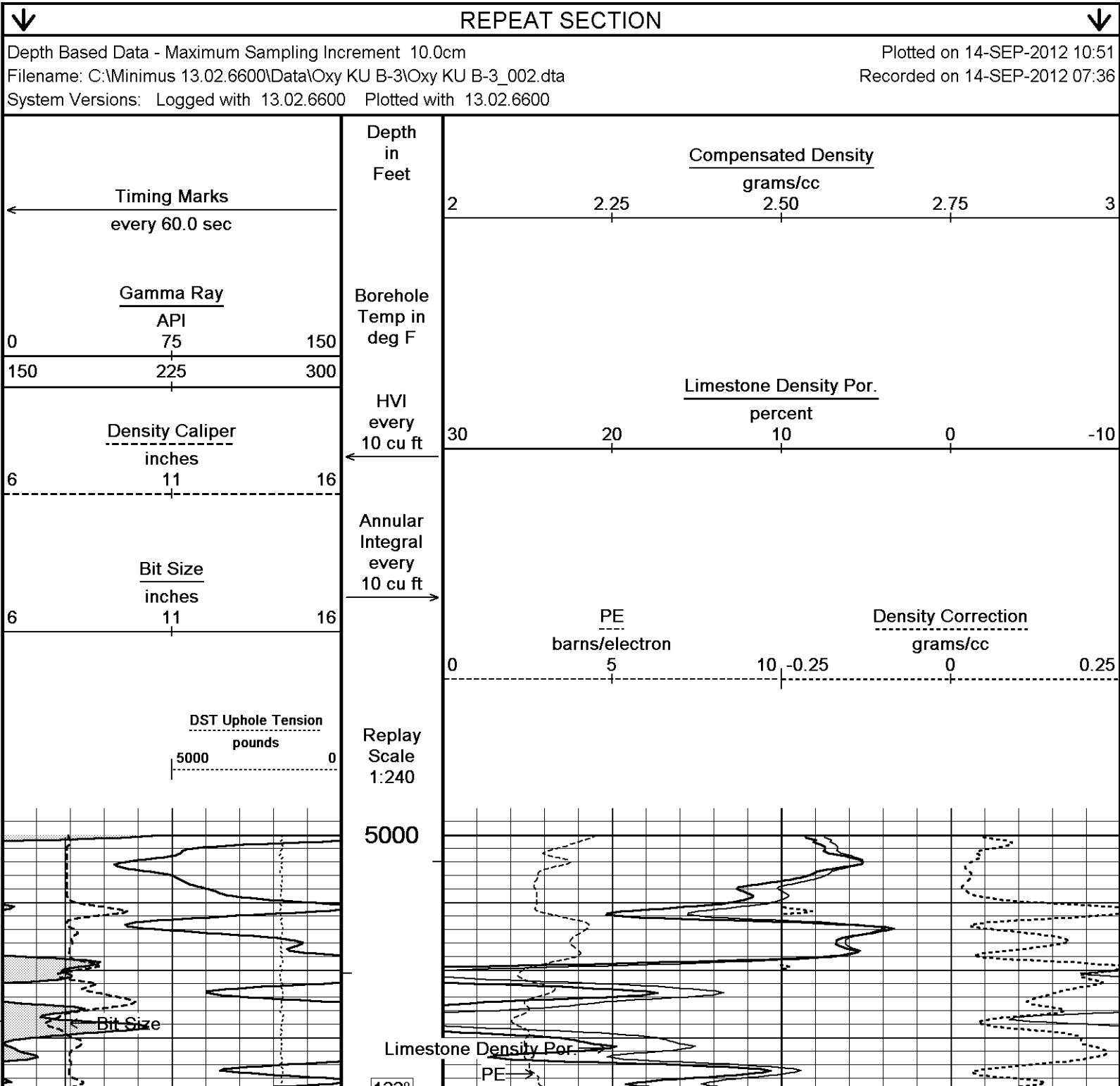
Plotted on 14-SEP-2012 10:51

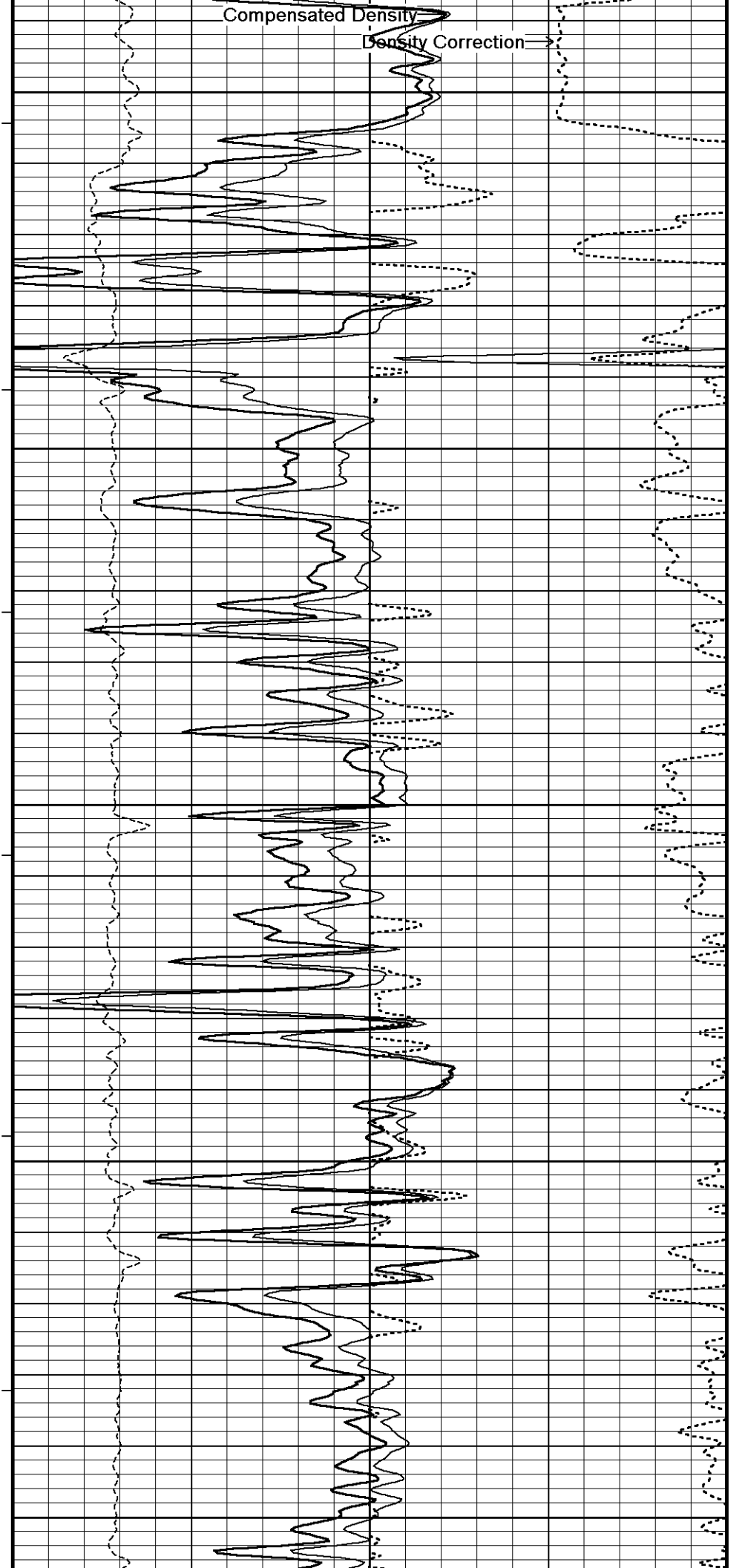
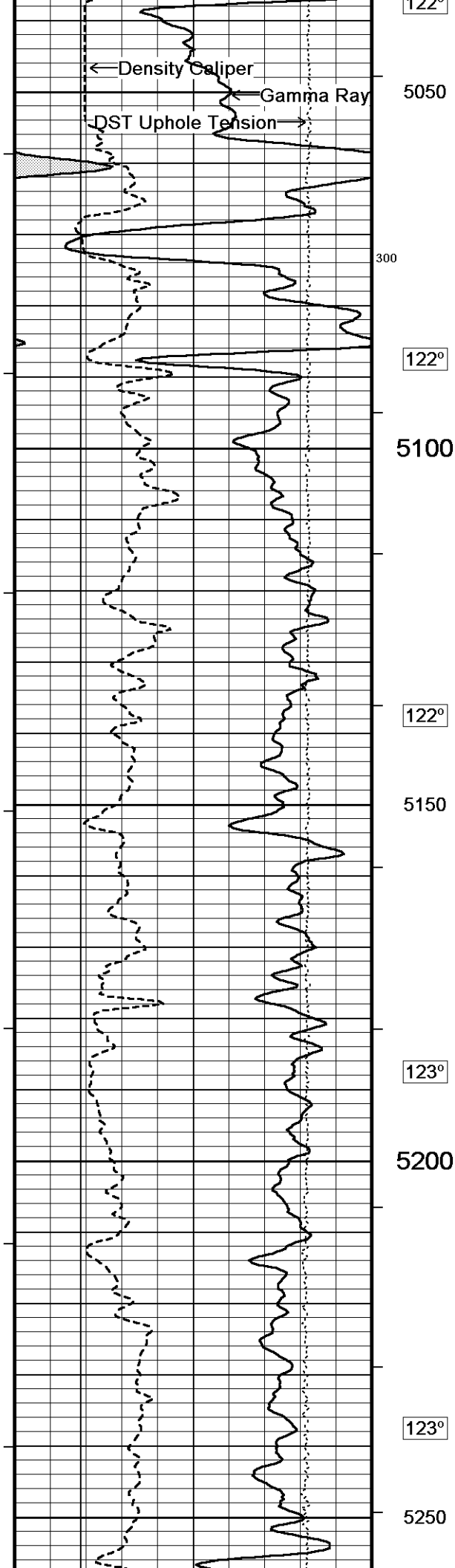
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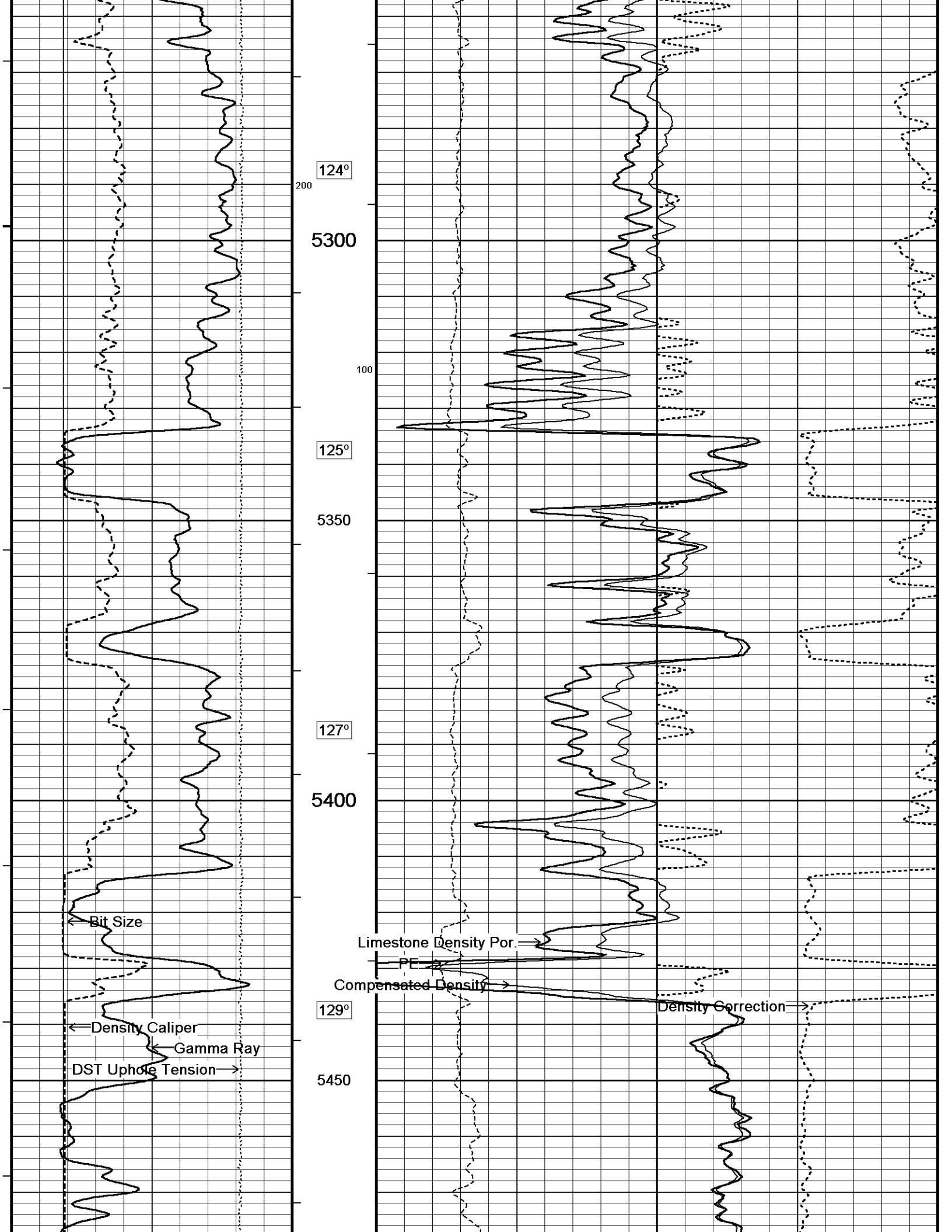
Recorded on 14-SEP-2012 08:16

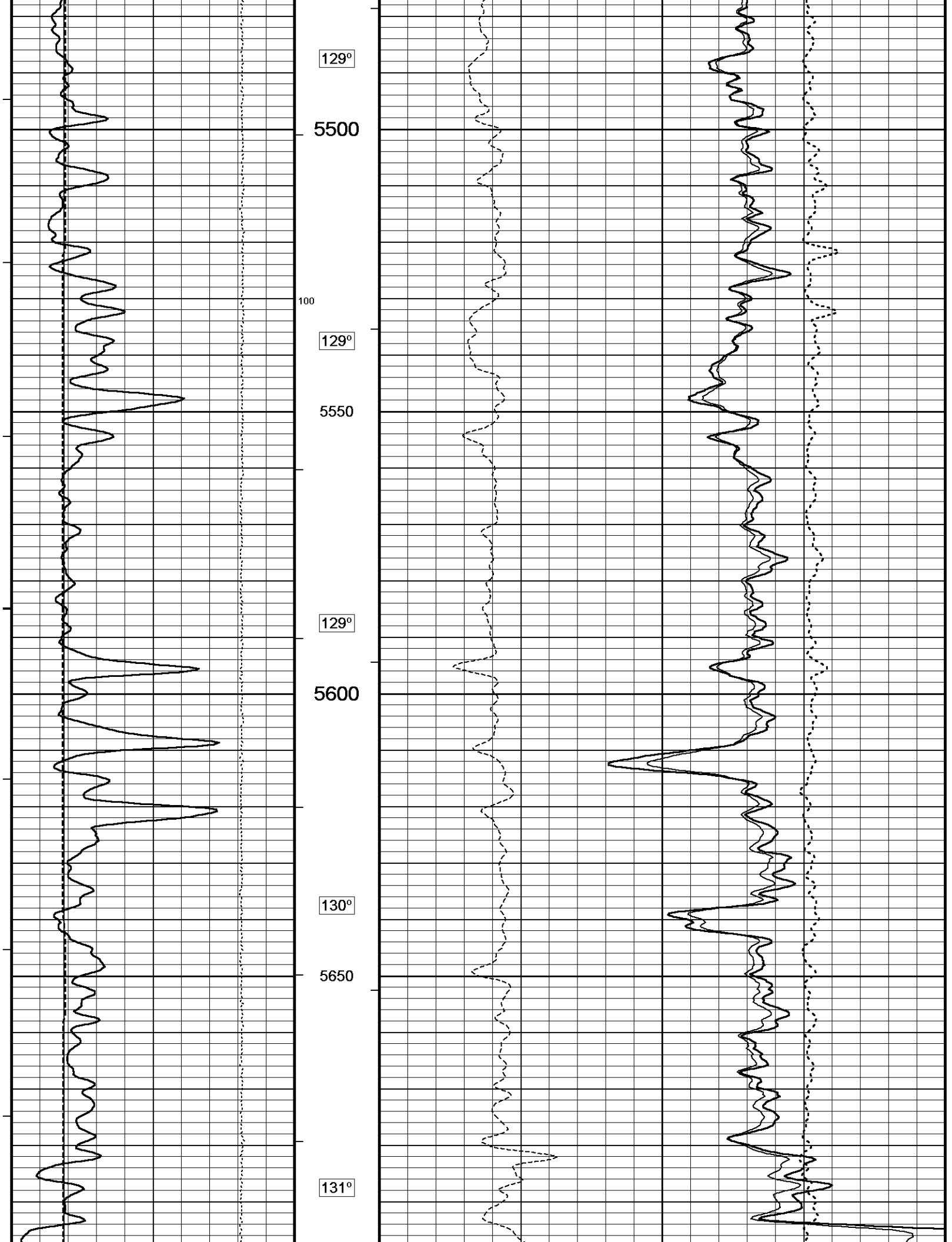
System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

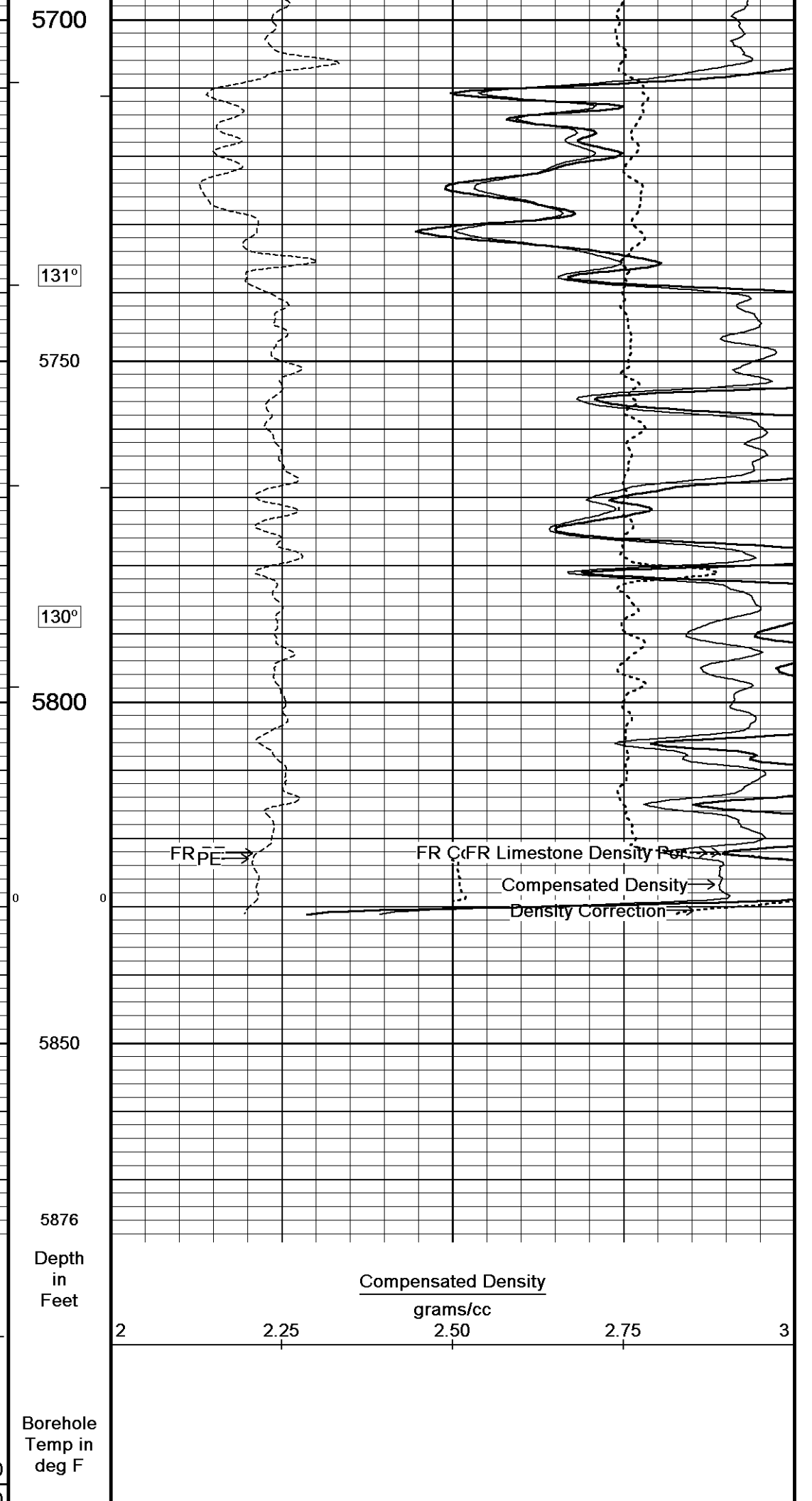
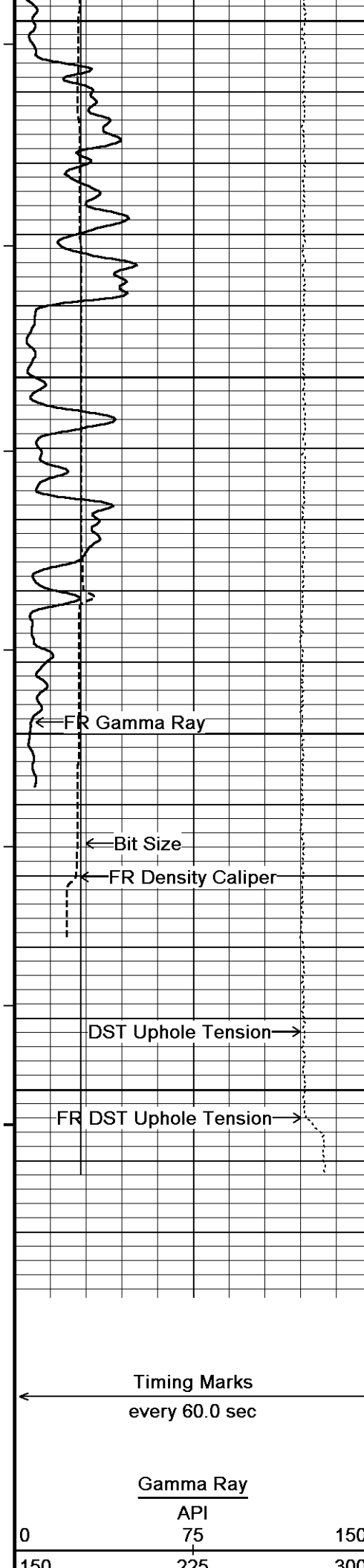
↑5 INCH MAIN↑

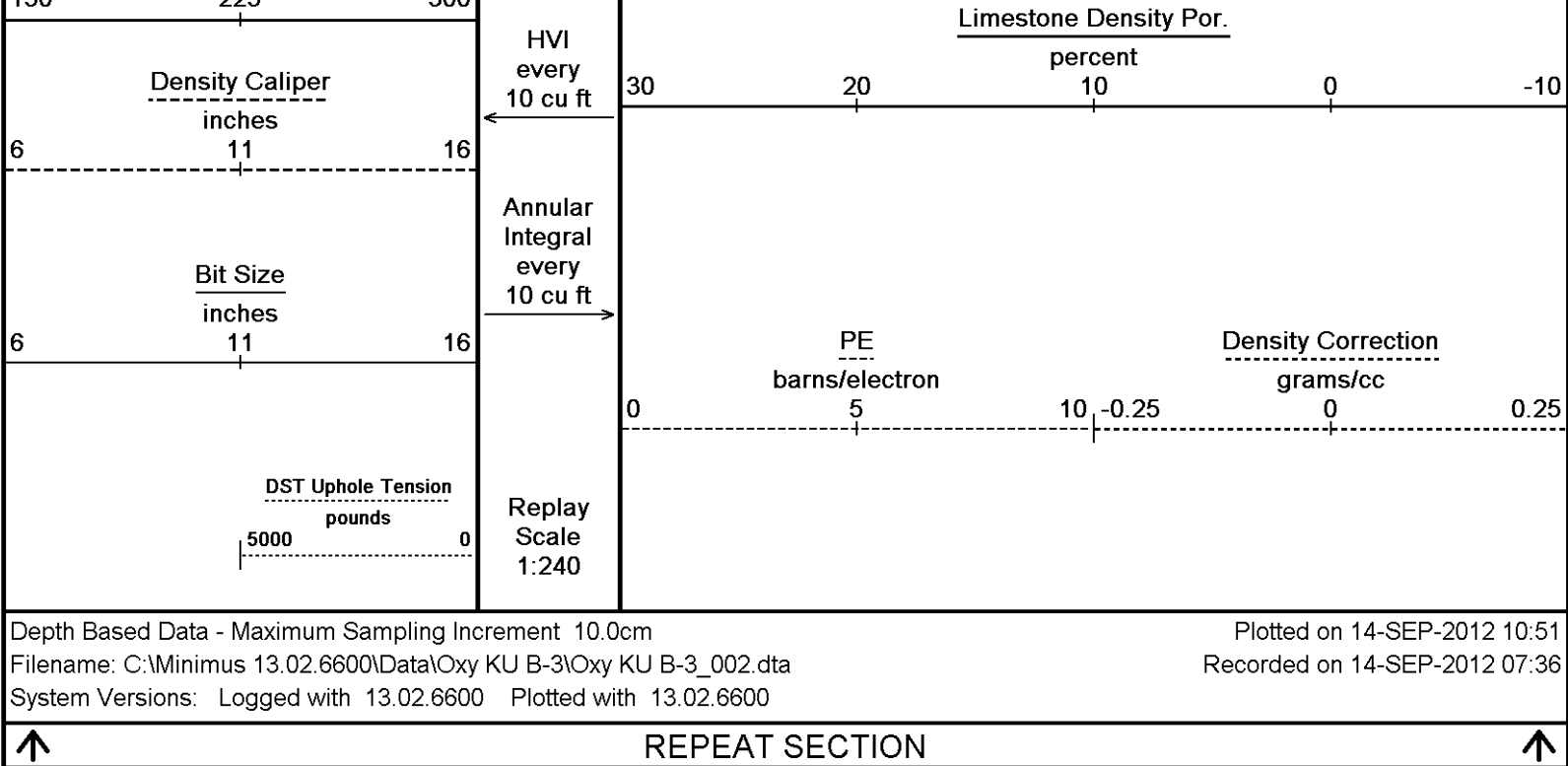












BEFORE SURVEY CALIBRATION			
C:\Minimus 13.02.6600\Data\Oxy KU B-3\Oxy KU B-3_003.dta			
General Constants All 000			Last Edited on 13-SEP-2012,00:04
General Parameters			
Mud Resistivity	0.810	ohm-metres	
Mud Resistivity Temperature	98.000	degrees F	
Water Level	0.000	feet	
Density/Neutron Processing	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	Base Density Porosity		
Resistivity used	Array Ind. One Res Rt		
RWA Constant A	0.610		
RWA Constant M	2.150		
Down-hole Tension Calibration SMS 0			Field Calibration on 02-SEP-2012 08:42
Reading No	Measured	Calibrated (lbs)	
1	15850.66	0.00	
2	16330.28	400.00	
Gamma Calibration MCG-C 208			Field Calibration on 11-SEP-2012 09:09
	Measured	Calibrated (API)	
Background	73	52	
Calibrator (Gross)	1090	777	
Calibrator (Net)	1017	725	
Gamma Constants MCG-C 208			Last Edited on 13-SEP-2012,00:04
Gamma Calibrator Number	GR38		
Mud Density	1.10	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	knpm	

SP Calibration MCG-C 208			Field Calibration on 03-AUG-2012 22:37	
	Measured	Calibrated (mV)		
Reference 1	100.2	101.0		
Reference 2	-101.3	-101.0		
High Resolution Temperature Calibration MCG-C 208			Field Calibration on 03-AUG-2012,16:18	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		
High Resolution Temperature Constants MCG-C 208			Last Edited on	
Pre-filter Length	11			
Caliper Calibration MML-A 4			Base Calibration on 27-AUG-2012 09:13 Field Calibration on 11-SEP-2012 08:52	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	15511	5.98		
2	18793	7.97		
3	22115	9.86		
4	26057	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	6.12	5.98		
Micro Normal and Micro Inverse Calibration MML-A 4			Base Calibration on 27-AUG-2012 09:21 Field Check on 11-SEP-2012 08:54	
Base Calibration				
		Measured	Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	5.0	25.0
Micro Inverse	15.7	78.5	5.0	25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	62.9		62.9	
Micro Inverse	48.2		48.2	
Micro Normal and Micro Inverse Constants MML-A 4			Last Edited on 13-SEP-2012,00:04	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159			
Micro Normal K Factor	1.0000			
Micro Inverse K Factor	1.0000			
Standoff Offset	N/A inches			
Neutron Calibration MDN-A.B 65			Base Calibration on 28-AUG-2012 10:35 Field Check on 11-SEP-2012 09:13	
Base Calibration				
		Measured	Calibrated (cps)	
	Near	Far	Near	Far
	3134	97	3714	110
Ratio	32.240		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1654	2401
Ratio			0.689	
Field Check			Calibrated (cps)	
			1639	2369
Ratio			0.692	
Neutron Constants MDN-A.B 65			Last Edited on 13-SEP-2012,00:04	
Neutron Source Id	PN-521			
Neutron Jig Number	5824NE			
Epithermal Neutron	No			
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	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352		Base Calibration on 27-AUG-2012 14:50 Field Check on 11-SEP-2012 09:04	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	963.9	126.8	
Base Check		281.2	
Field Check		281.4	

FE Constants MFE-B.J 352		Last Edited on 13-SEP-2012,00:03	
Running Mode	No Sleeve		
MFE K Factor	0.1268		
Caliper Source for FE correction	Density Caliper		
Caliper Value for FE correction	N/A		inches
Rm Source for FE correction	Temperature Corr		
Temp. for Rm Corr.	MCG External Temperature		
Stand-off	0.5		inches

Sonic Constants MSS-C.K 330			Last Edited on 13-SEP-2012,00:03		
Maximum Boundary Contrast	100.00	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 Sonic				
Correction for Sonde Skew	Applied				
Cycle Stretch Algorithm	Applied				
MN3FT	N/A	micro-sec			
MX3FT	N/A	micro-sec			
Hunt-Raymer Constant	83.13	micro-sec/ft			
Sonde Mode	Compensated				
Hole Type	Open Hole				
Sonde Parameters					
	Measured	Calibrated			
Offset	N/A	0.0000			
Free Pipe	N/A	N/A			
Peak Amplitude Source	N/A				
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)	N/A		
N/A	N/A	N/A			
N/A	N/A	N/A	N/A		
N/A	N/A	N/A	N/A		

N/A
N/A
N/AN/A
N/A
N/AN/A
N/A
N/AN/A
N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22

Field Check on 11-SEP-2012 09:03

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		14.4	472.6	9.3	966.2
2		5.7	374.0	7.6	821.4
3		3.4	261.2	5.2	566.0
4		2.5	133.9	2.6	279.2

Array Temperature 78.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	19.7	3853.2
2	0.0	0.0	32.2	3630.7
3	0.0	0.0	29.0	3050.6
4	0.0	0.0	18.5	2079.8
Deep	0.0	0.0	16.3	1911.9
Medium	0.0	0.0	42.9	4062.2
Shallow	0.0	0.0	50.3	5485.2

Array Temperature 0.0 75.0 Deg F

Induction Constants MAI-A.A 45

Last Edited on 13-SEP-2012,00:03

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG 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

Calibration Site Corrections		
Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 26-JUL-2012,09:09

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on

Pre-filter Length	11
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Caliper Calibration MPD-B 31

Base Calibration on 28-AUG-2012 11:03
Field Calibration on 11-SEP-2012 08:56

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18576	3.99
2	27056	5.98
3	35613	7.97
4	44032	9.86
5	53360	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.01	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 28-AUG-2012 11:22
Field Check on 11-SEP-2012 09:01

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46103	23728	59556	30836
Reference 2	19270	1960	24941	2541

Field Check at Base

688.3	844.7
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Field Check

689.6	853.1
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PE Calibration

Base Calibration	WS	Measured		Calibrated
		WH	Ratio	Ratio
Background	127	604		
Reference 1	18457	45978	0.404	0.371
Reference 2	5504	19174	0.290	0.272

Field Check at Base

127.0	604.2
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Field Check

129.2	603.4
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Density Constants MPD-B 31

Last Edited on 13-SEP-2012,00:04

Density Source Id	254
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	1.10	gm/cc
Mud Density Z/A Multiplier	1.13	
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 (m)
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

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Oxy KU B-3\Oxy KU B-3_003.dta

Compact Comms Gamma
MCG-C 208 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

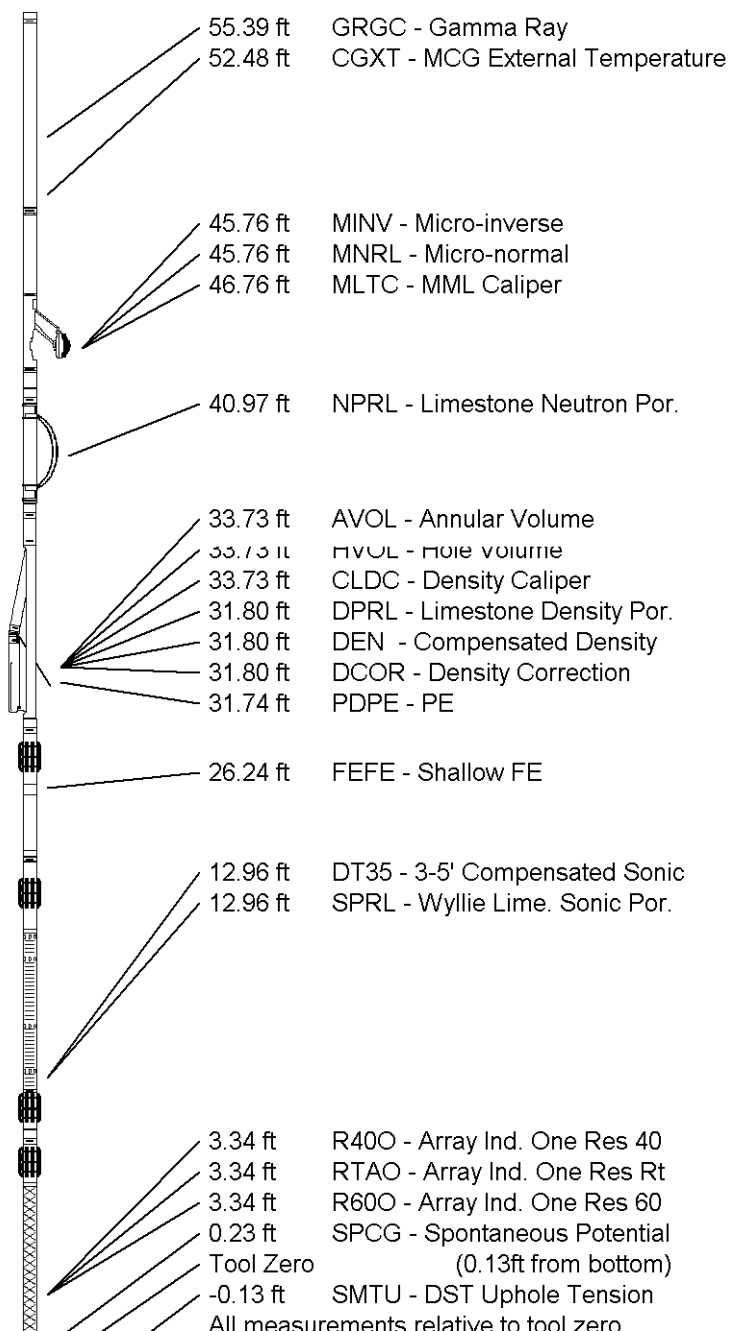
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

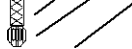
Compact Focused Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 60.68 ft Weight: 456.4 lb





7. All measurements relative to 1007.250 ft.

COMPANY	OXY USA, INC.
WELL	KU B-3
FIELD	ARROYO
PROVINCE/COUNTY	STANTON
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3425.00	feet	First Reading	5822.00	feet
Elevation Drill Floor	3423.00	feet	Depth Driller	5850.00	feet
Elevation Ground Level	3411.00	feet	Depth Logger	5854.00	feet


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COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG