

**Weatherford****COMPACT PHOTO DENSITY
COMPENSATED NEUTRON**

COMPANY

O'BRIEN ENERGY RESOURCES CORP.

WELL

ARDREY #2-2

FIELD

ARDREY

PROVINCE/COUNTY

CLARK

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

1485' FNL & 2310' FEL

N2 NW SW NE

SEC

TWP

31S

24W

Other Services
MAI/MFE
MML

API Number

15-025-21559

MML

Permit Number

Permanent Datum G.L., Elevation 2541 feet

Log Measured From KB

Drilling Measured From K.B. @ 12 FEET

Date

12-APR-2013

Run Number

ONE

Service Order

3539884

Depth Driller

5750.00

feet

Depth Logger

5748.00

feet

First Reading

5728.00

feet

Last Reading

4000.00

feet

Casing Driller

730.00

feet

Casing Logger

728.00

inches

Bit Size

7.875

Hole Fluid Type

CHEMICAL

lb/USg

Density / Viscosity

9.25 lb/USg

45.00 CP

PH / Fluid Loss

9.00

9.00

Sample Source

FLOWLINE

Rm @ Measured Temp

0.34 @ 77.0

ohm-m

Rmf @ Measured Temp

0.27 @ 77.0

ohm-m

Rmc @ Measured Temp

0.41 @ 77.0

ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.23 @ 115.0

ohm-m

Time Since Circulation

4 HOURS

Max Recorded Temp

115.00

deg F

Equipment / Base

13057

LIB

Recorded By

W. STAMBAUGH

J. LAPOINT

Witnessed By

ROGER PEARSON

PETER DEBENHAM

JOB#

LB13-097

BOREHOLE RECORD

Last Edited: 12-APR-2013 16:11

Bit Size
inches

7.875

Depth From
feet

728.00

Depth To
feet

5748.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

5748.00

Shoe Depth
feet

728.00

Weight
pounds/ft

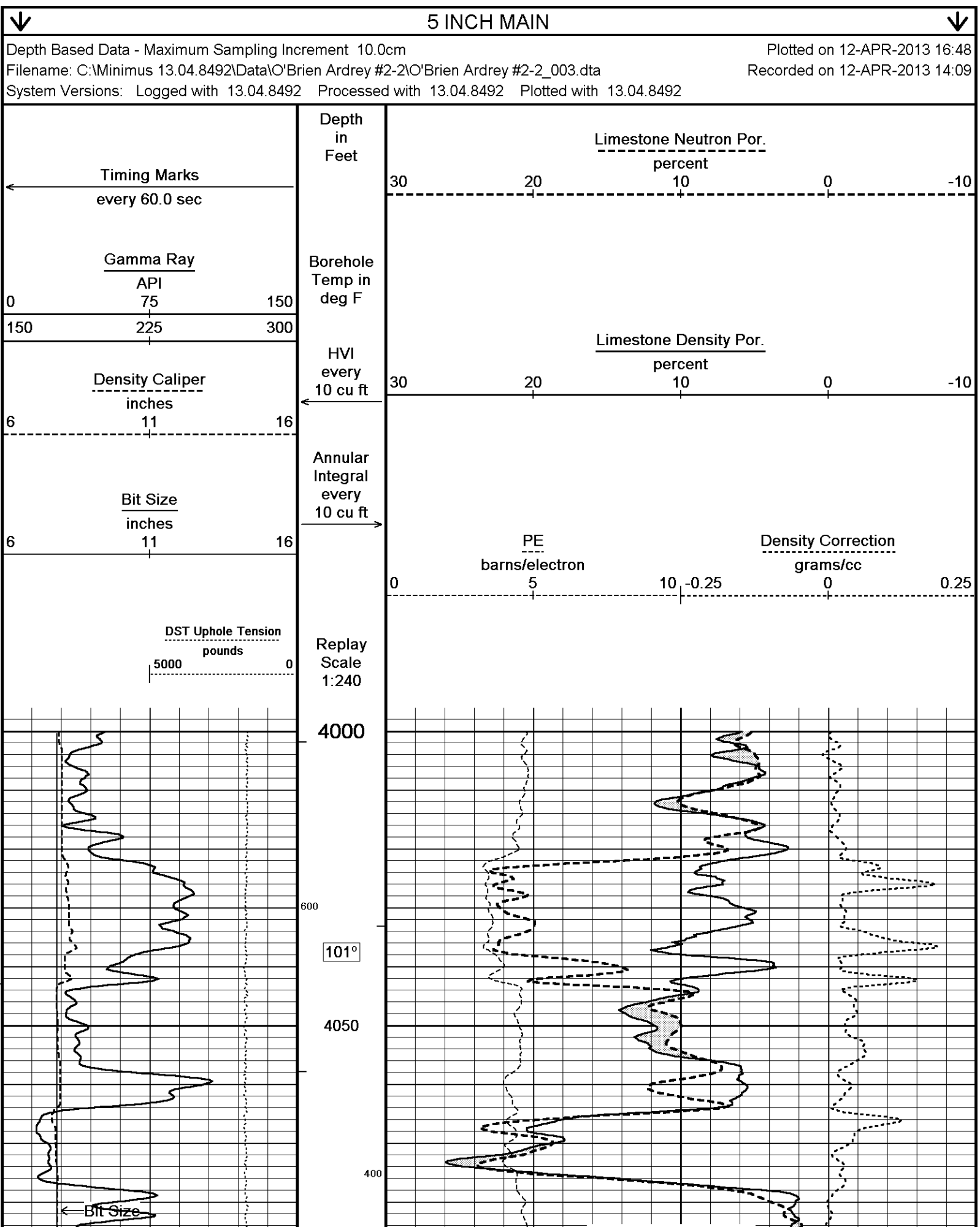
24.00

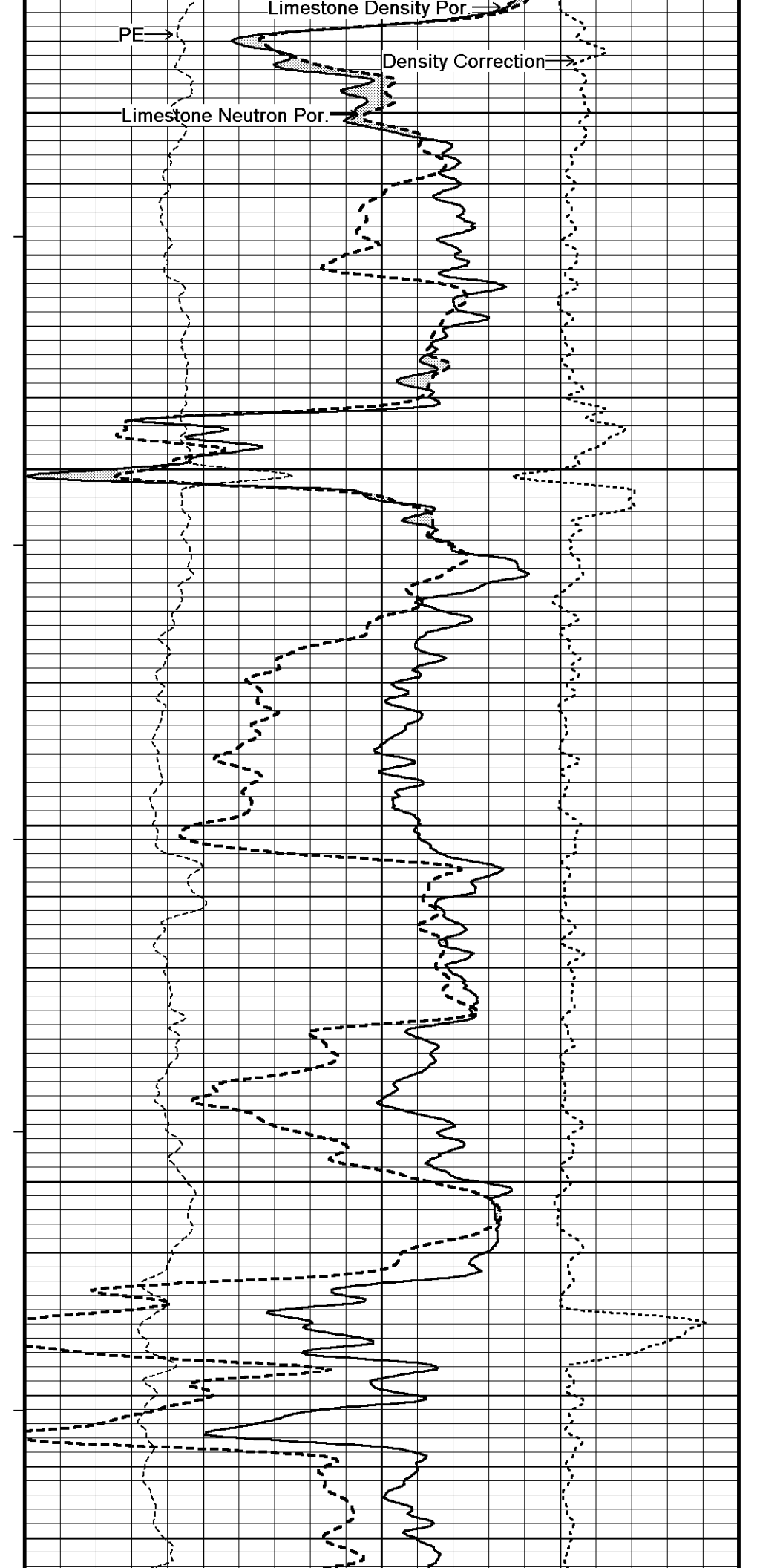
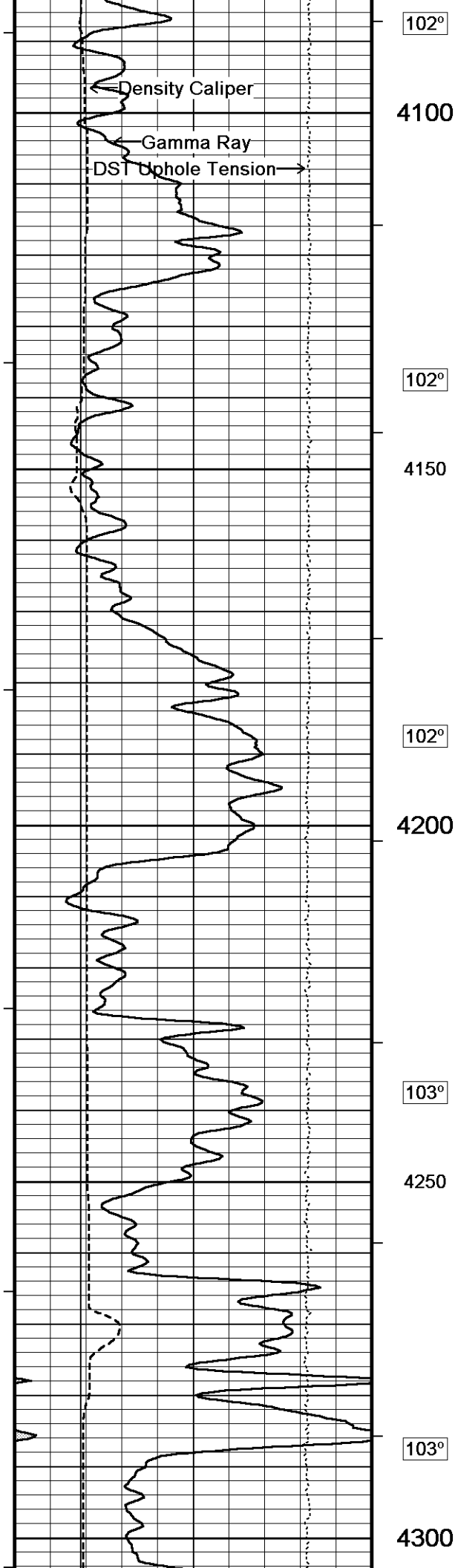
REMARKS

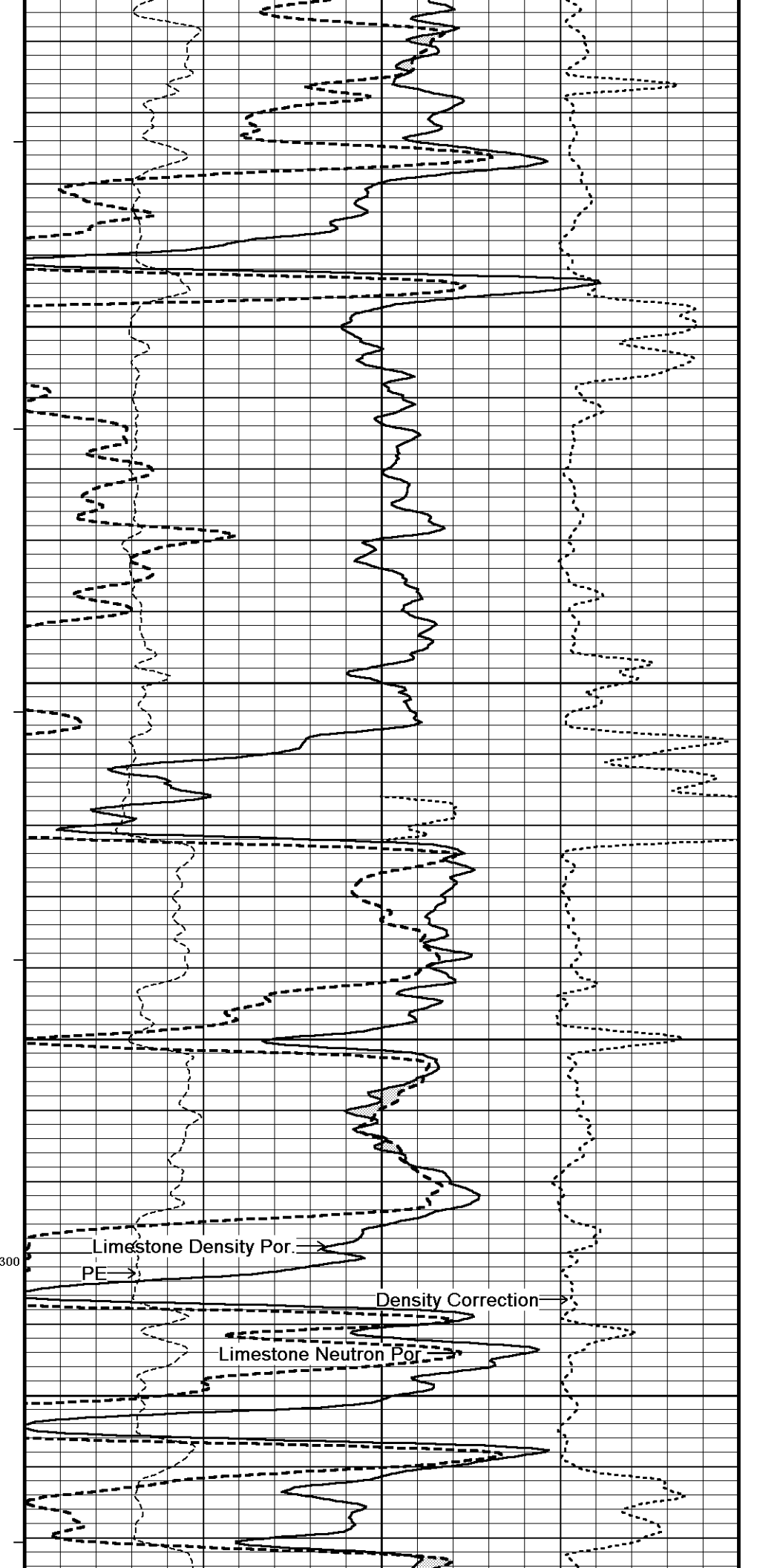
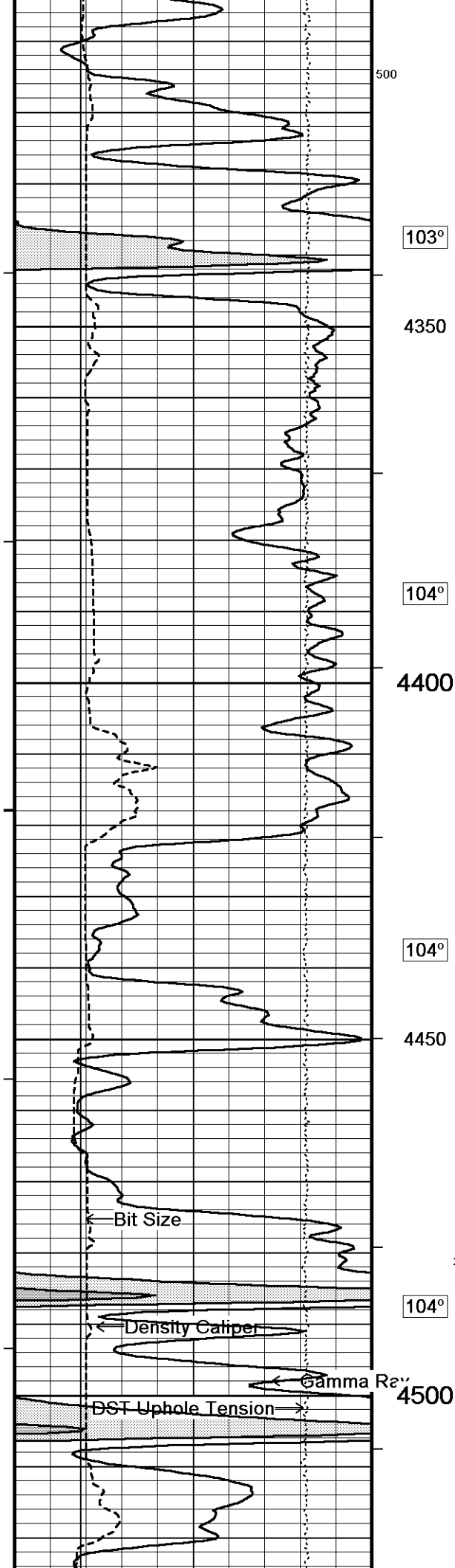
Tools Ran: MCG, MML, MDN, MPD, MFE, MAI ran in combination.
Hardware Used: MDN Dual bowspring used. MPD 8 inch profile plate used. MAI and MFE 0.5 Inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Tight pulls, washouts and borehole rugosity will affect data quality.
Total hole volume from TD to Surface Casing= 2500 cu. ft.
Annular volume with 4.5 inch production casing from TD to 4000 ft.= 418 cu. ft.
Service order: #3539884
Rig: Duke #6
Engineer: W. Stambaugh, J. LaPoint
Operator(s): R. Venegas

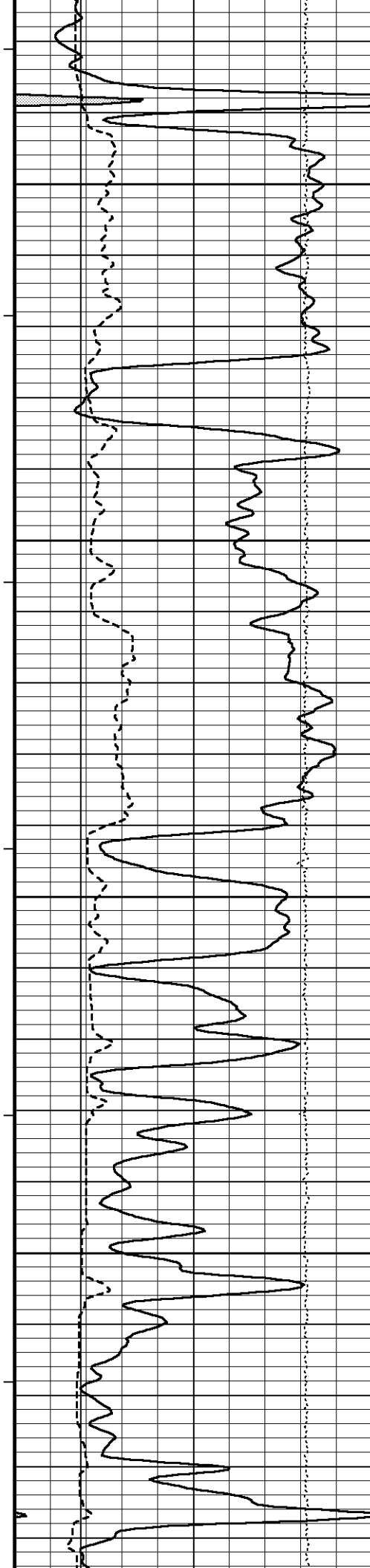
****Software issue changed fluid loss to match Ph fluid loss should be 11.6 ml/30min.****

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

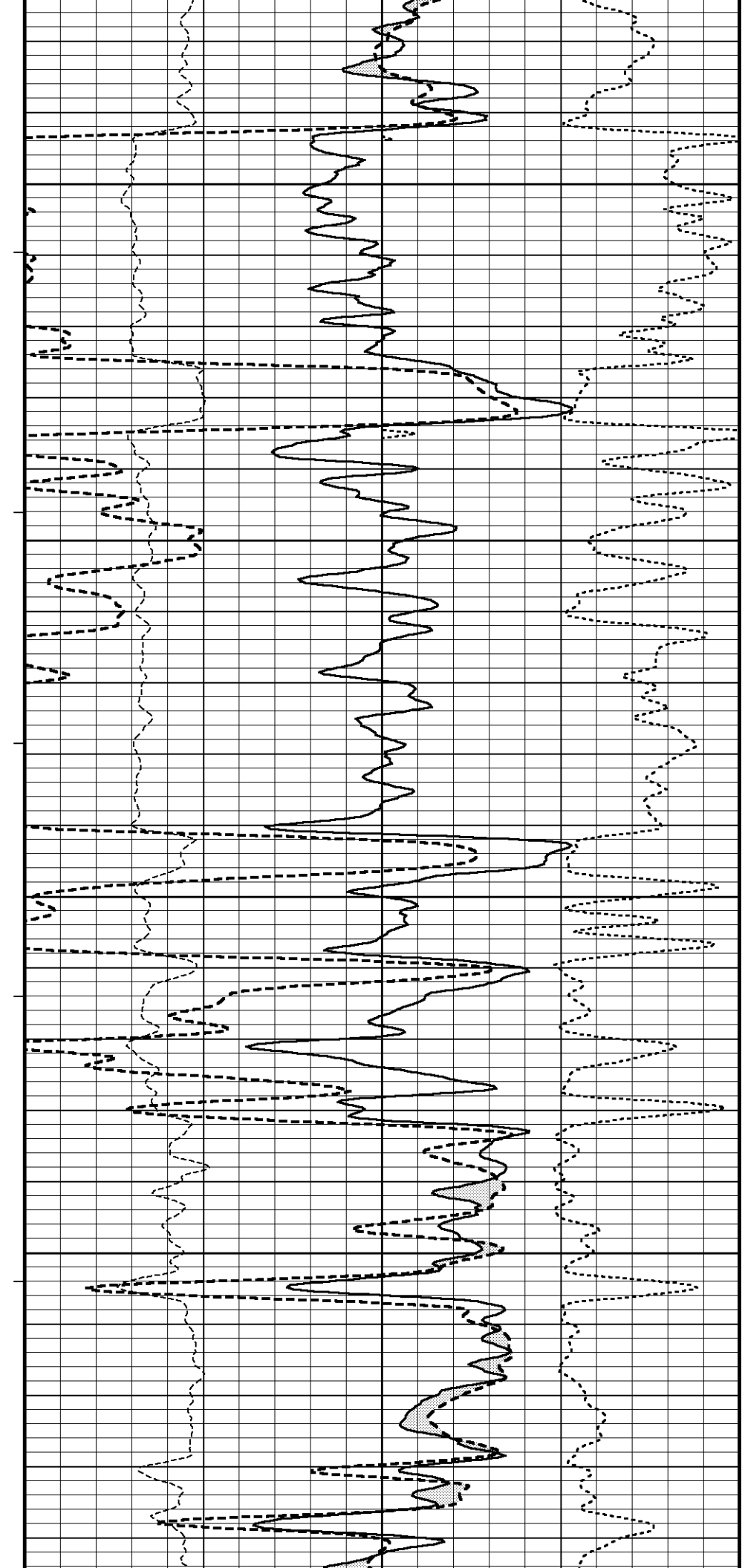


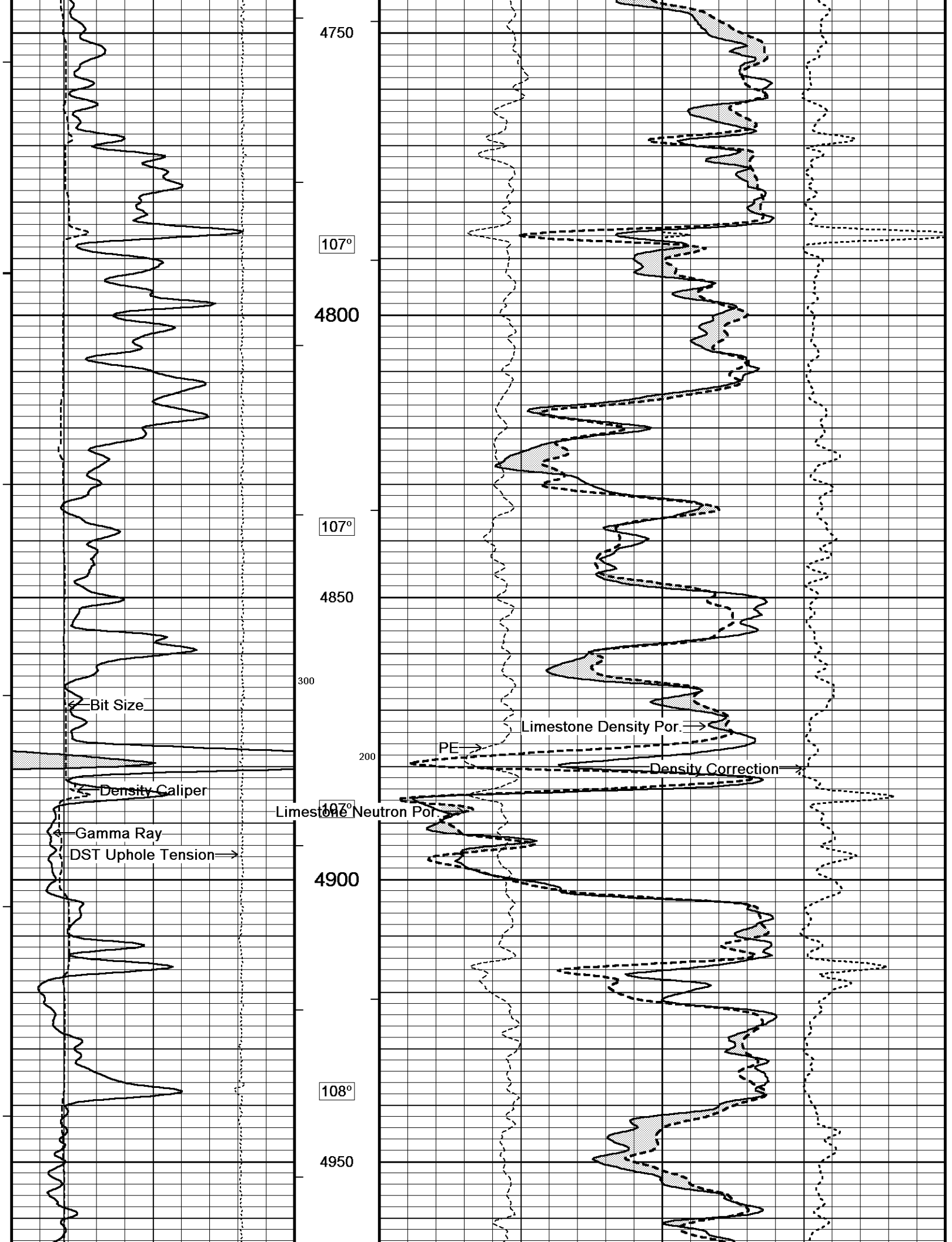


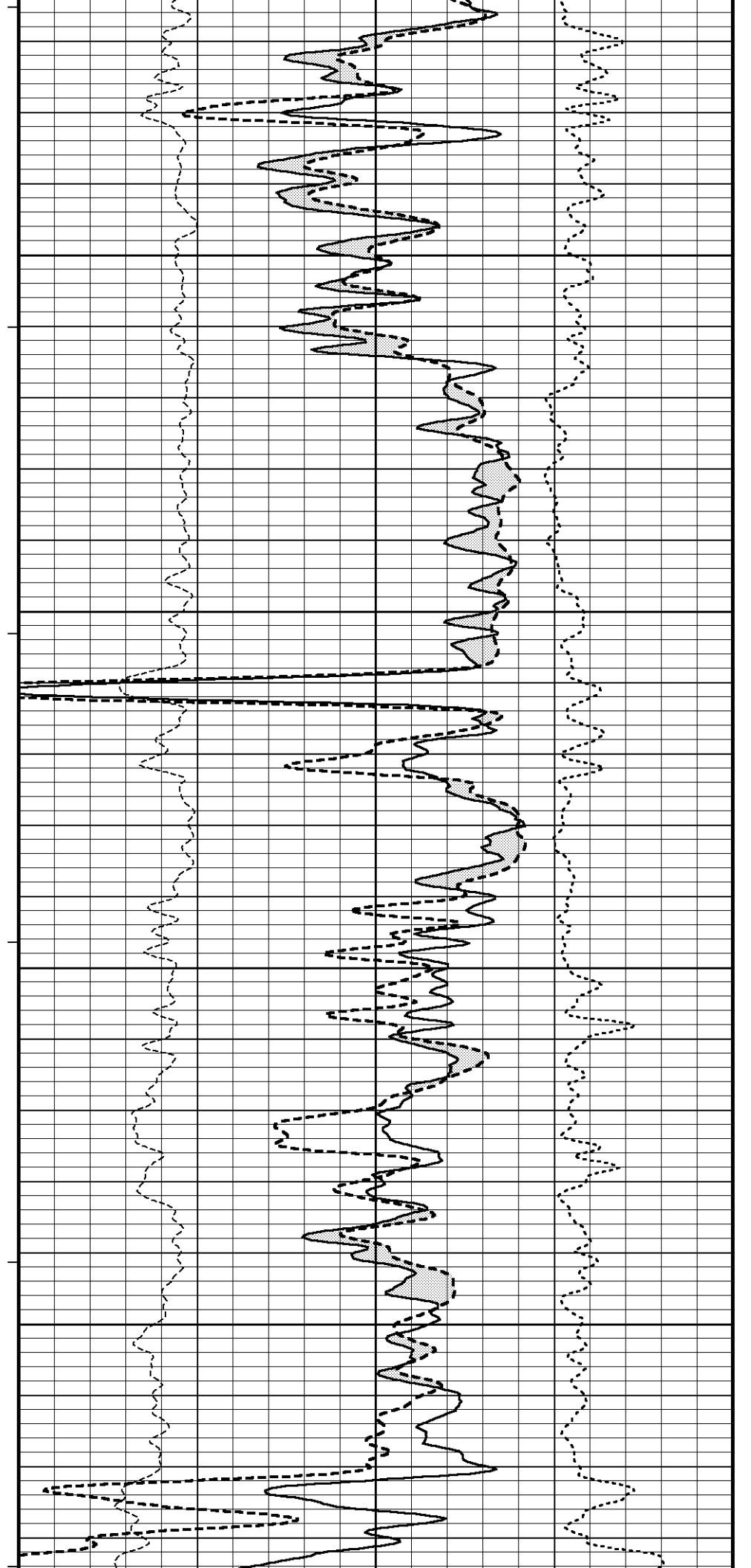
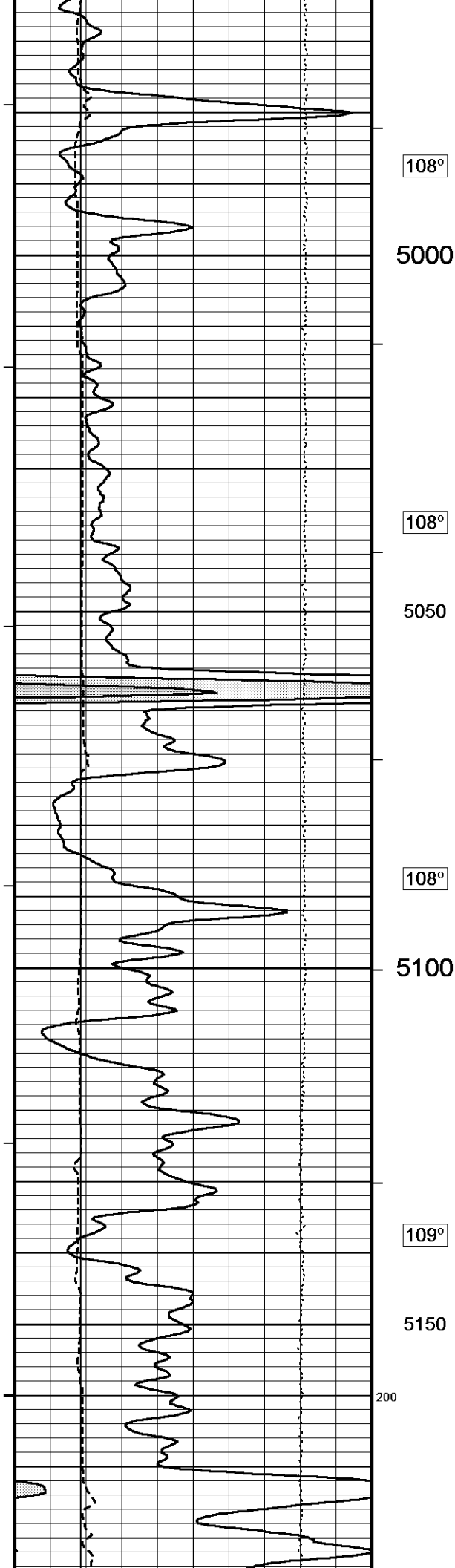


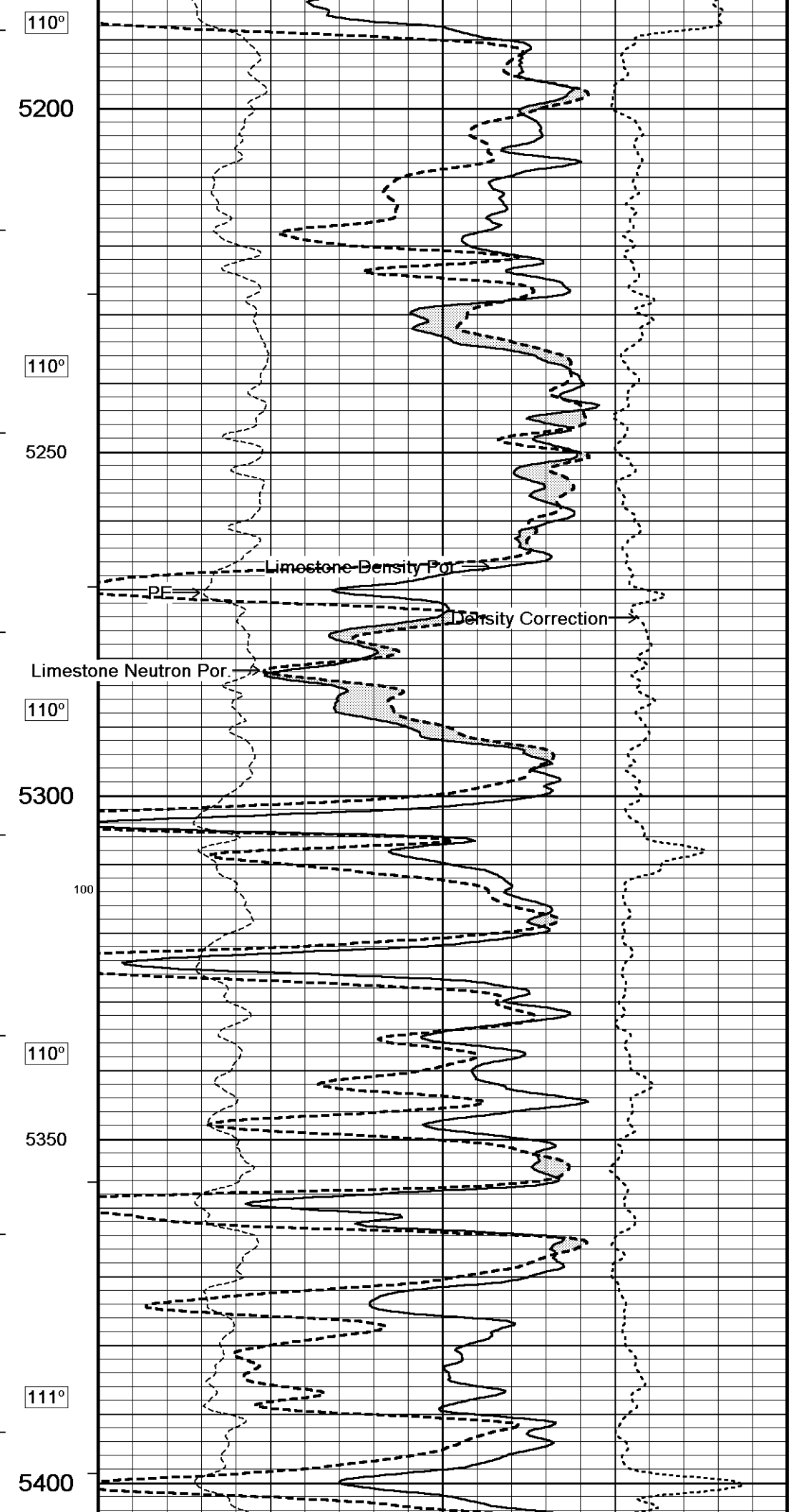
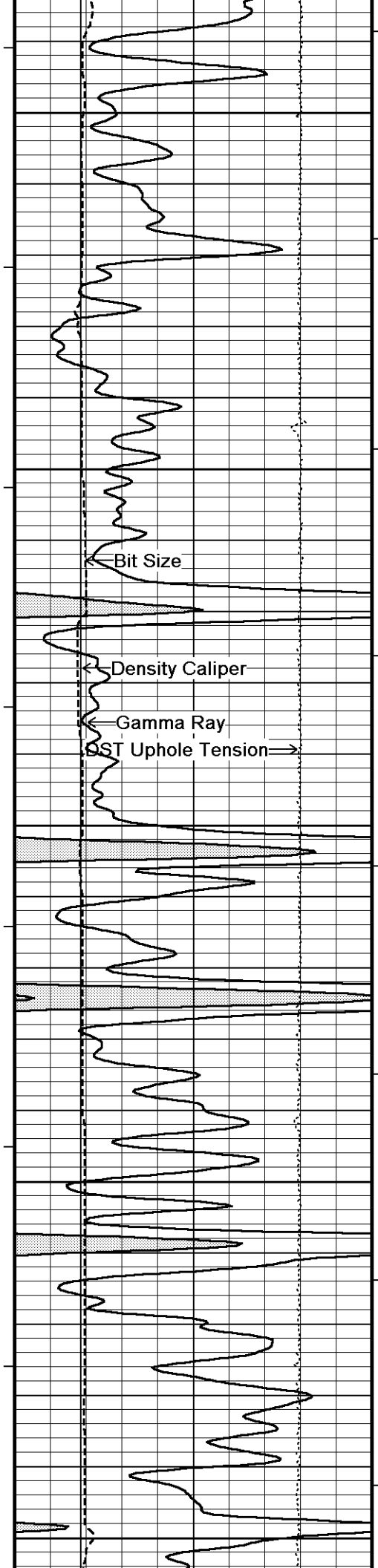


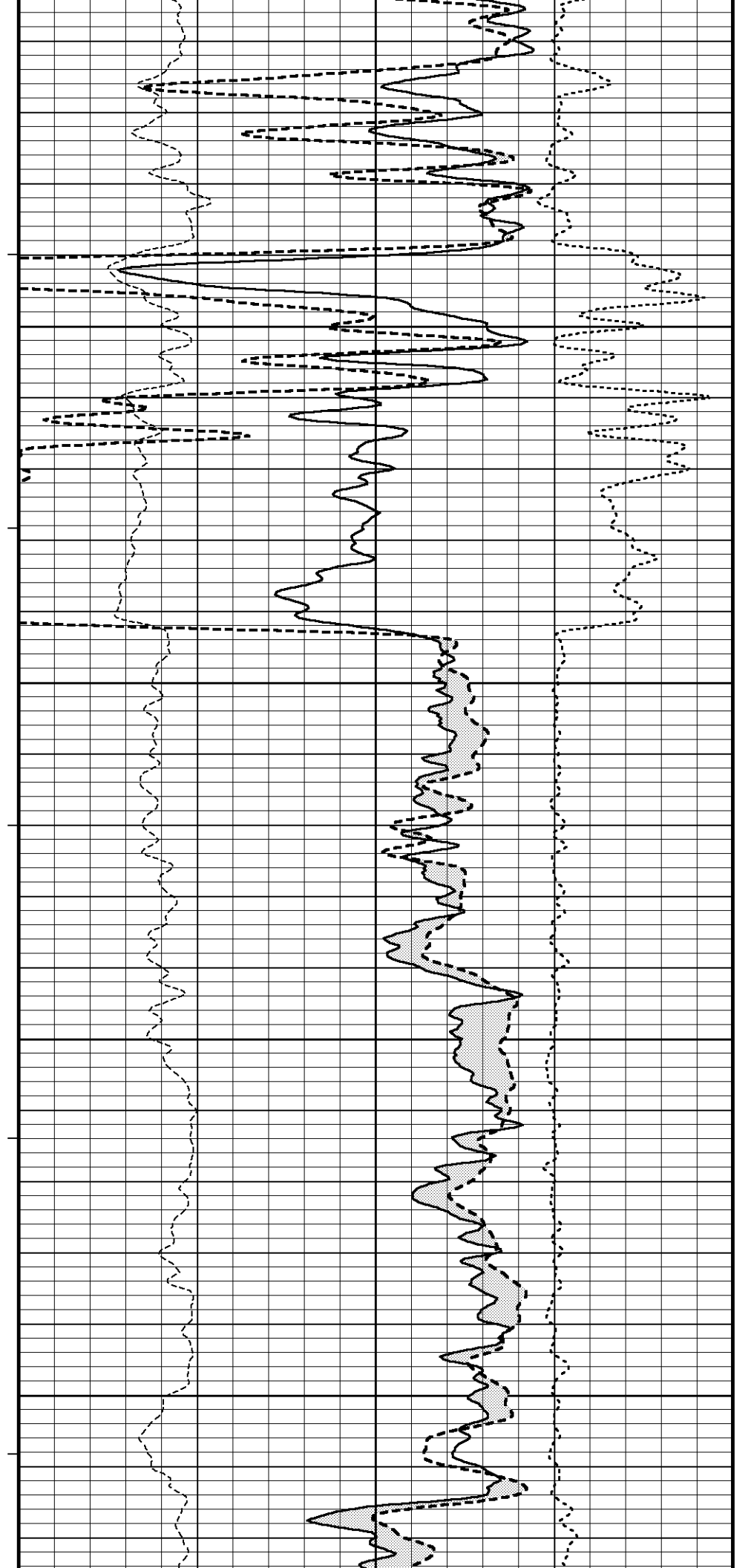
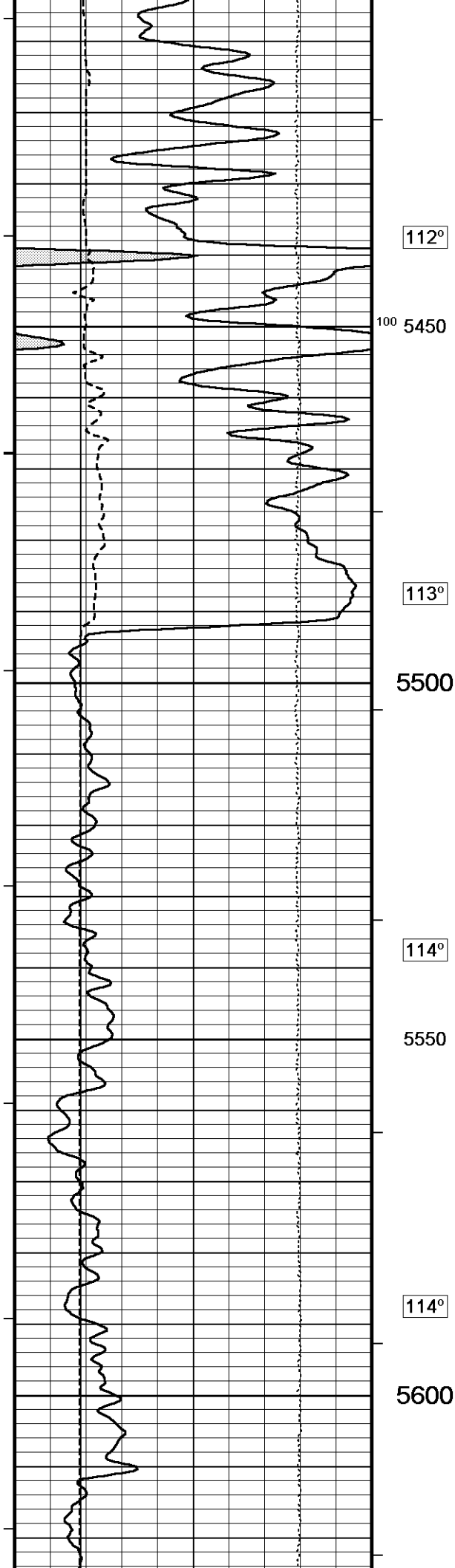
105°
4550
400 105°
4600
106°
4650
106°
4700
107°

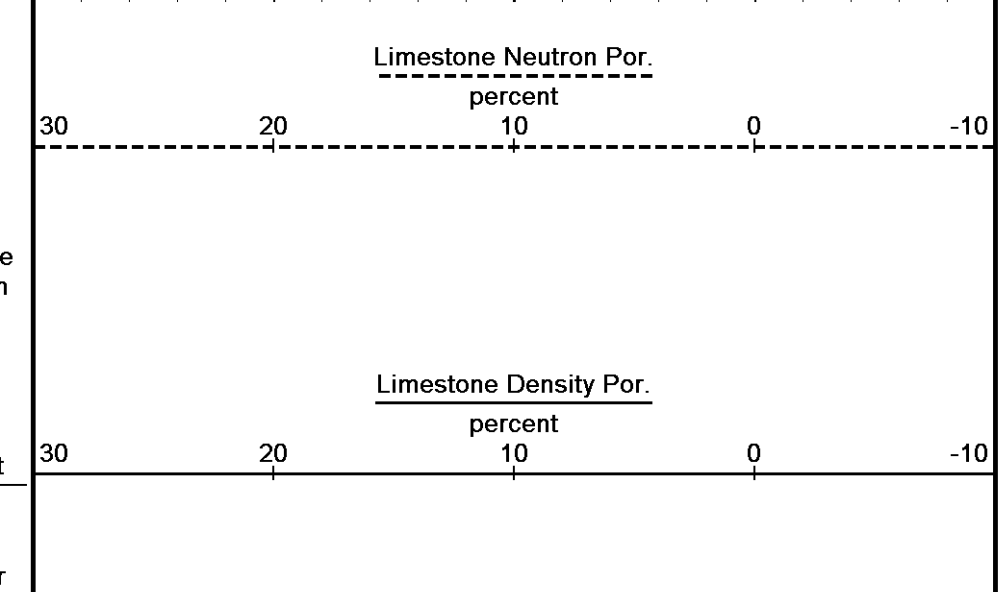
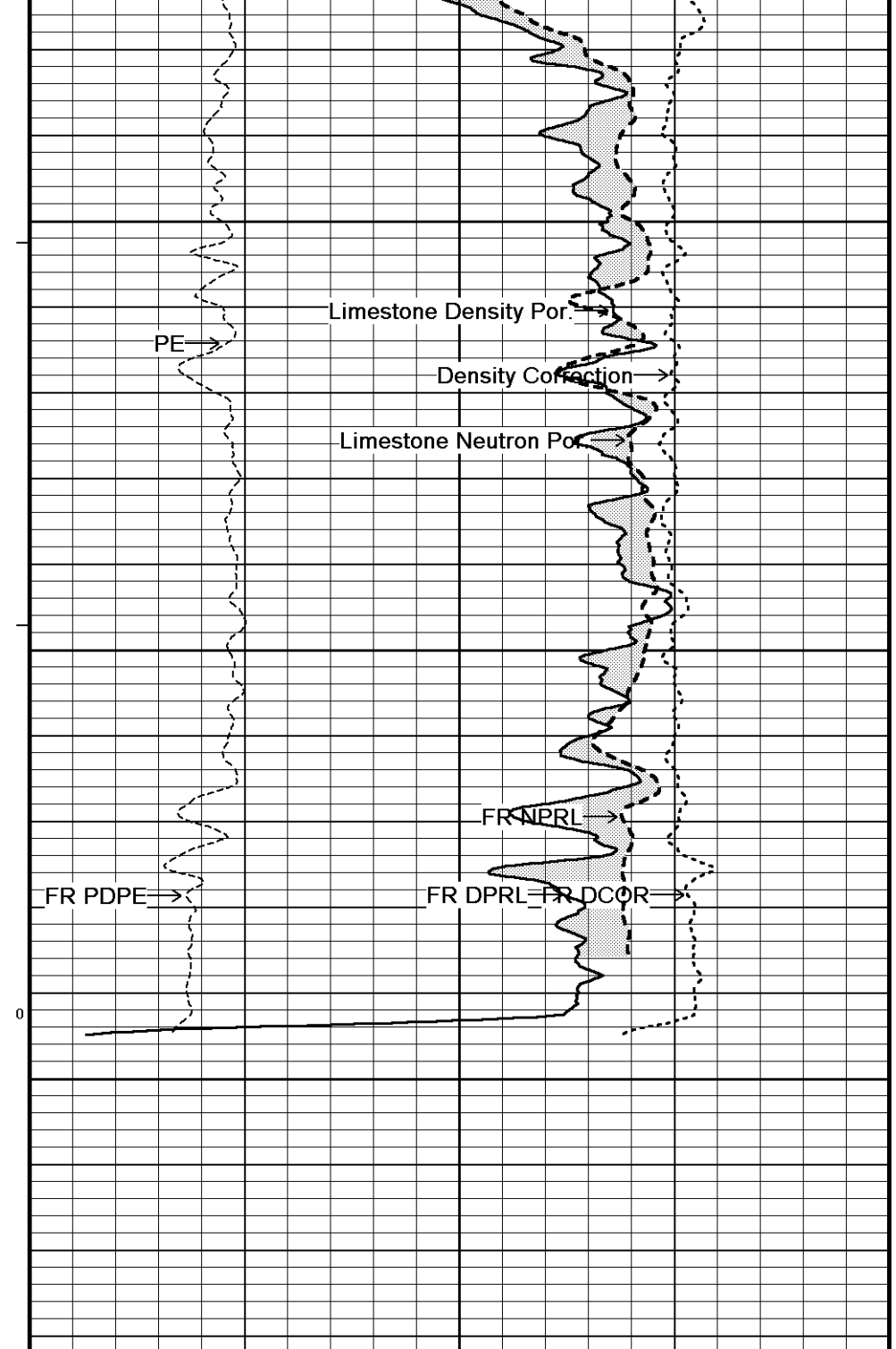
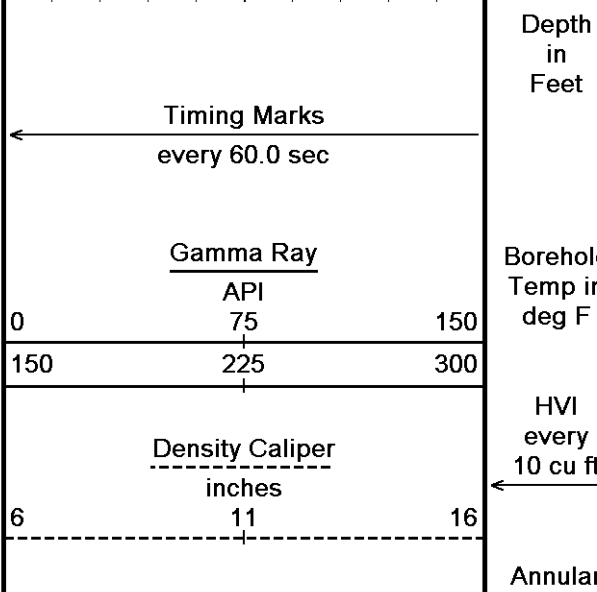
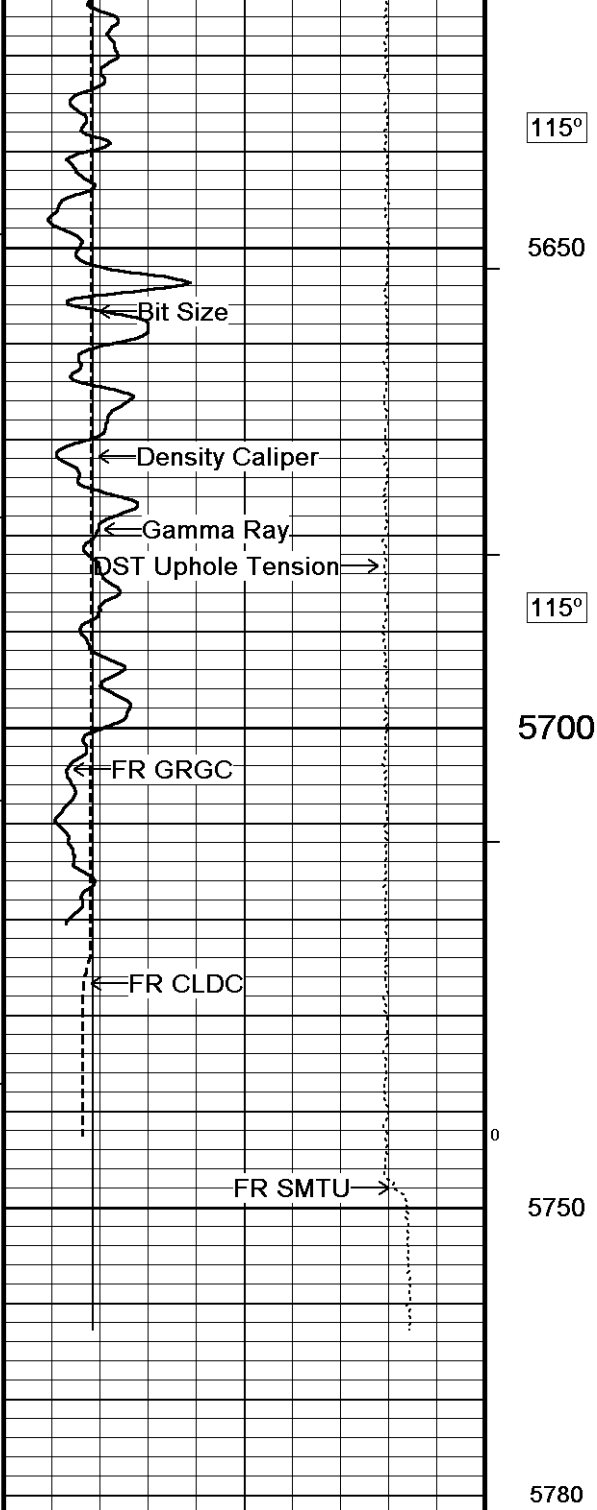


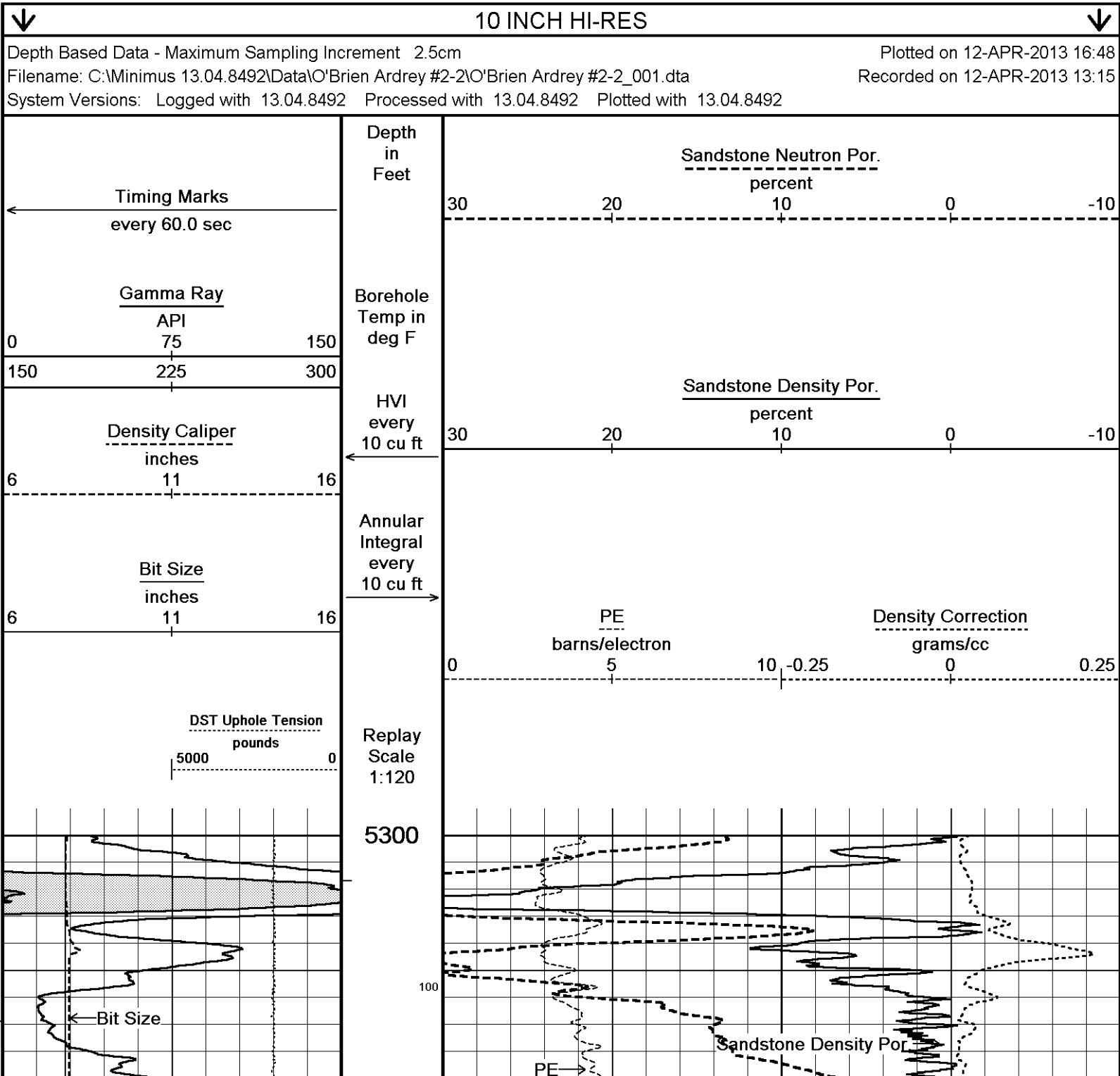
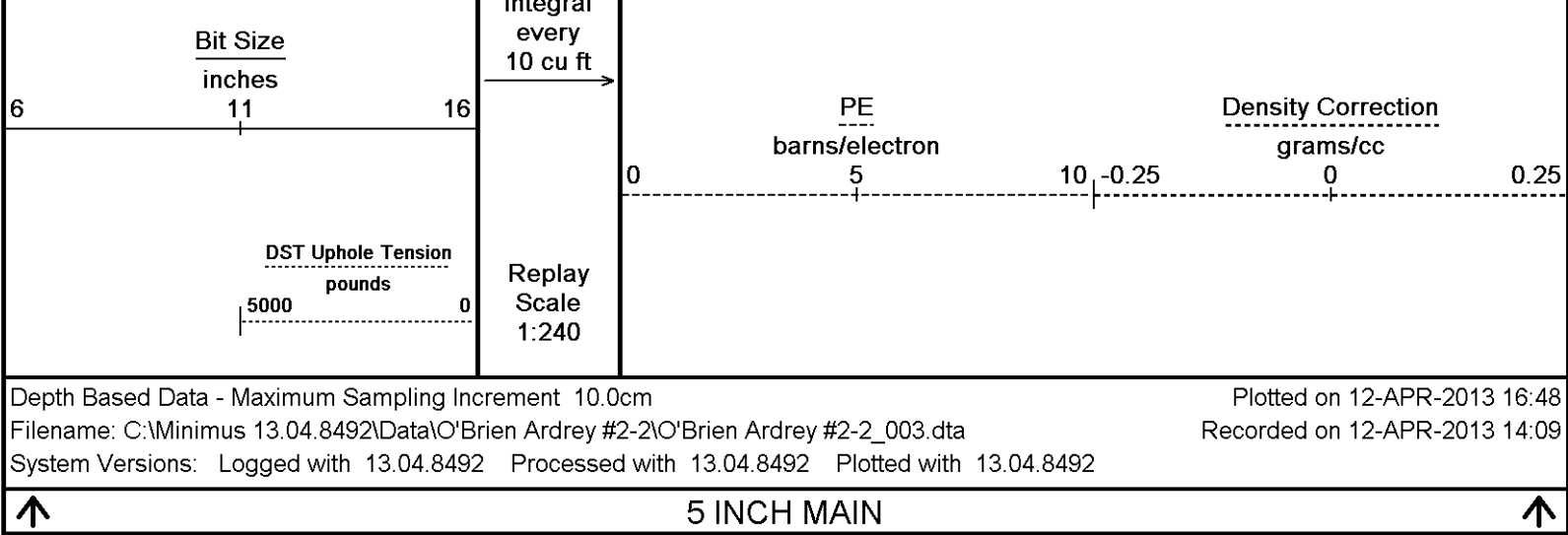


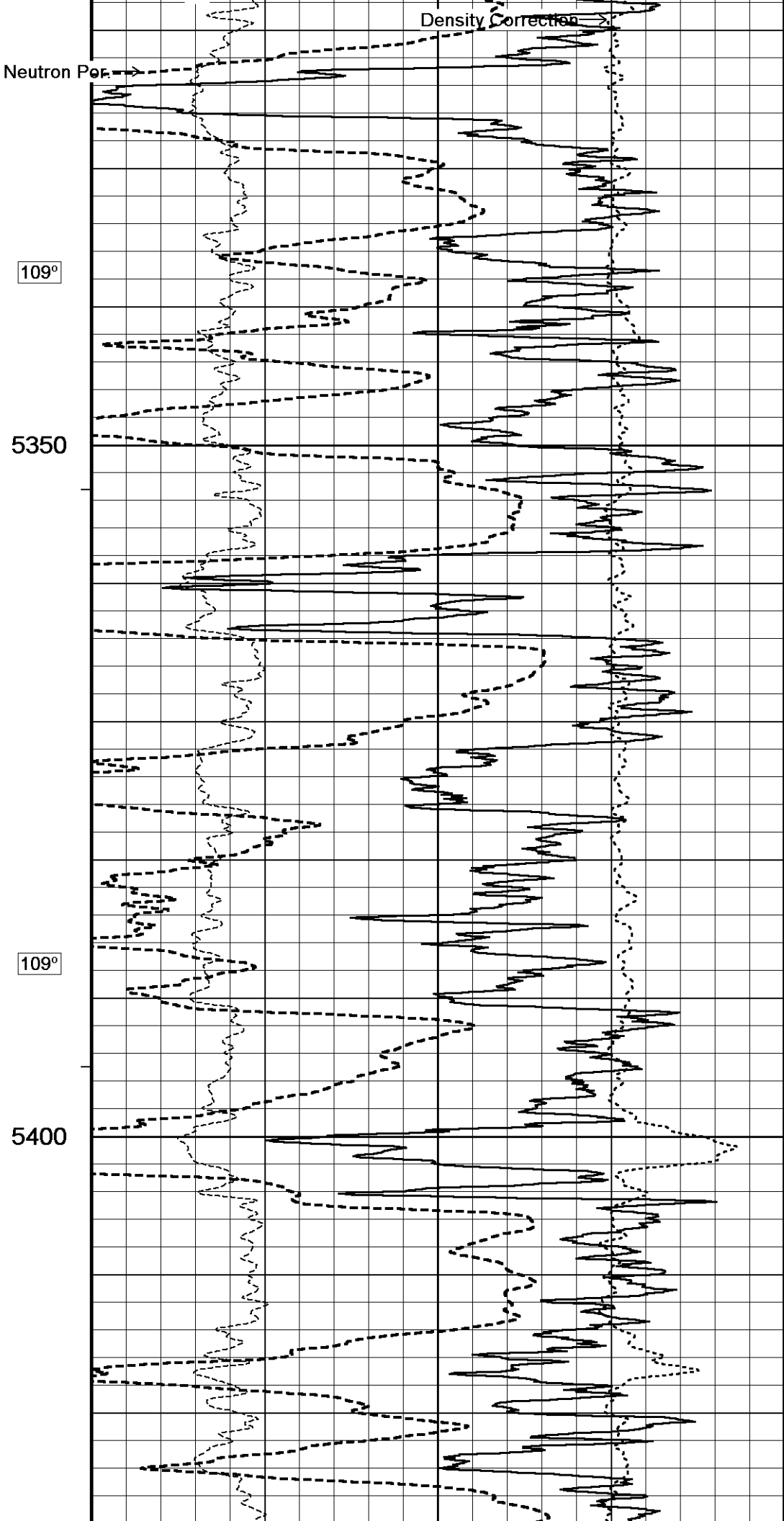
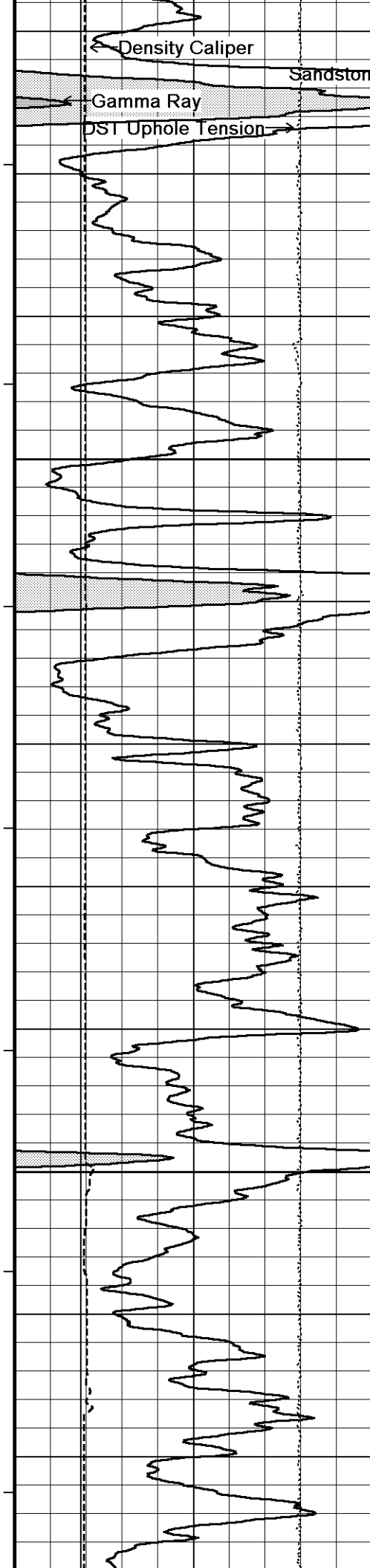


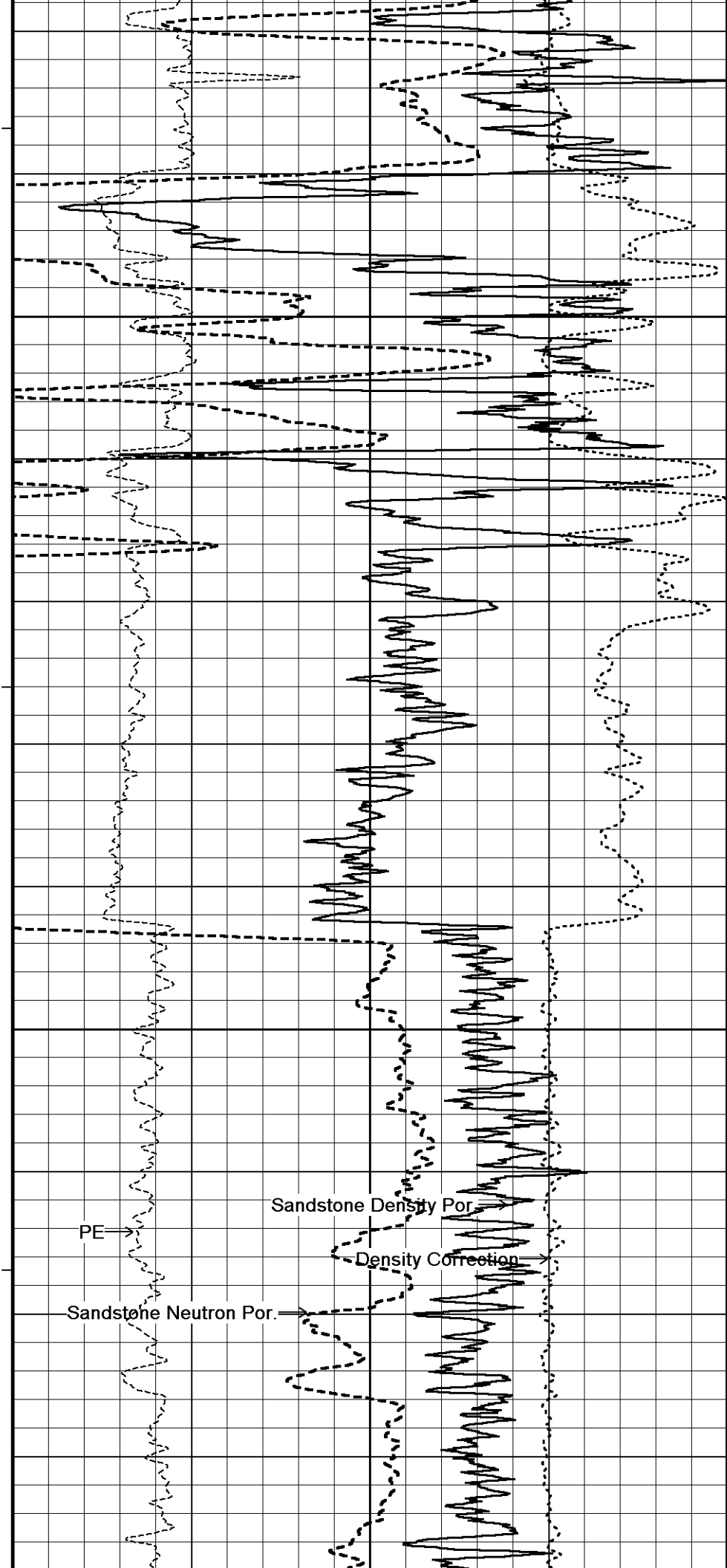
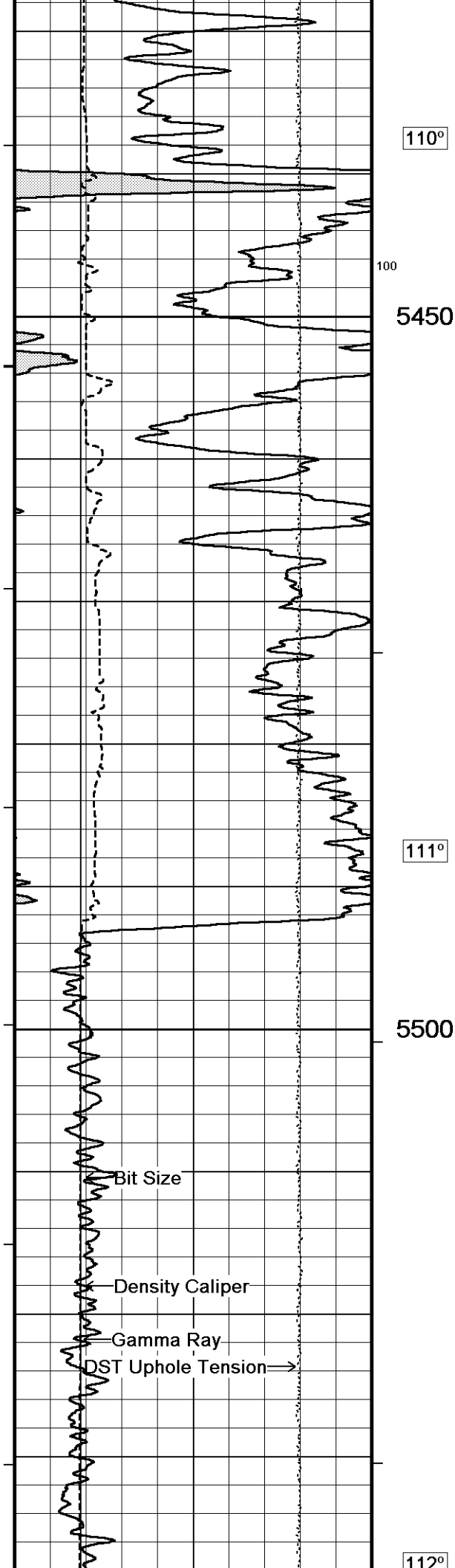


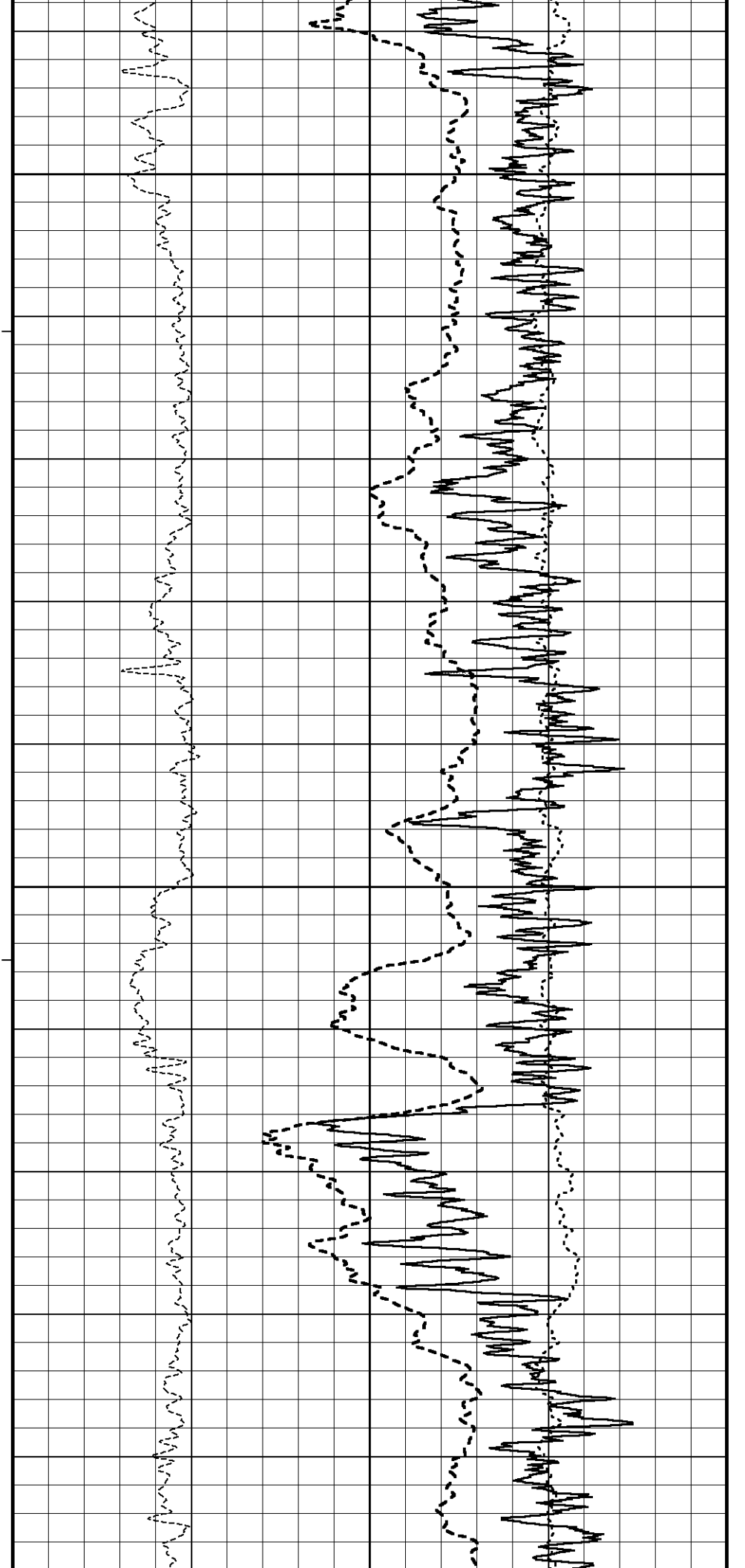
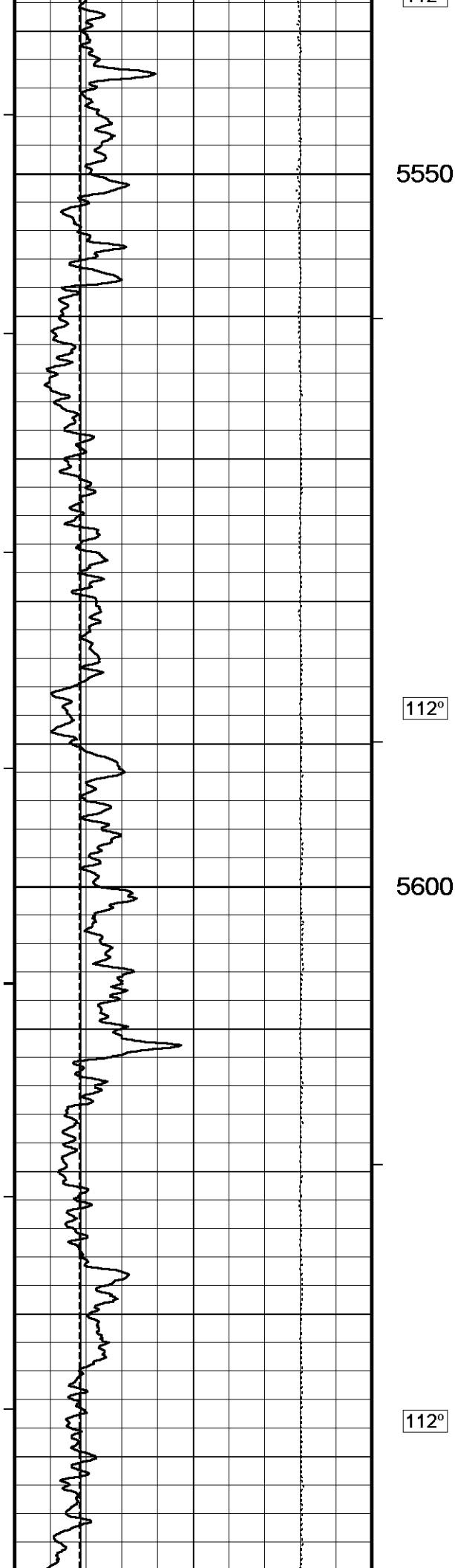


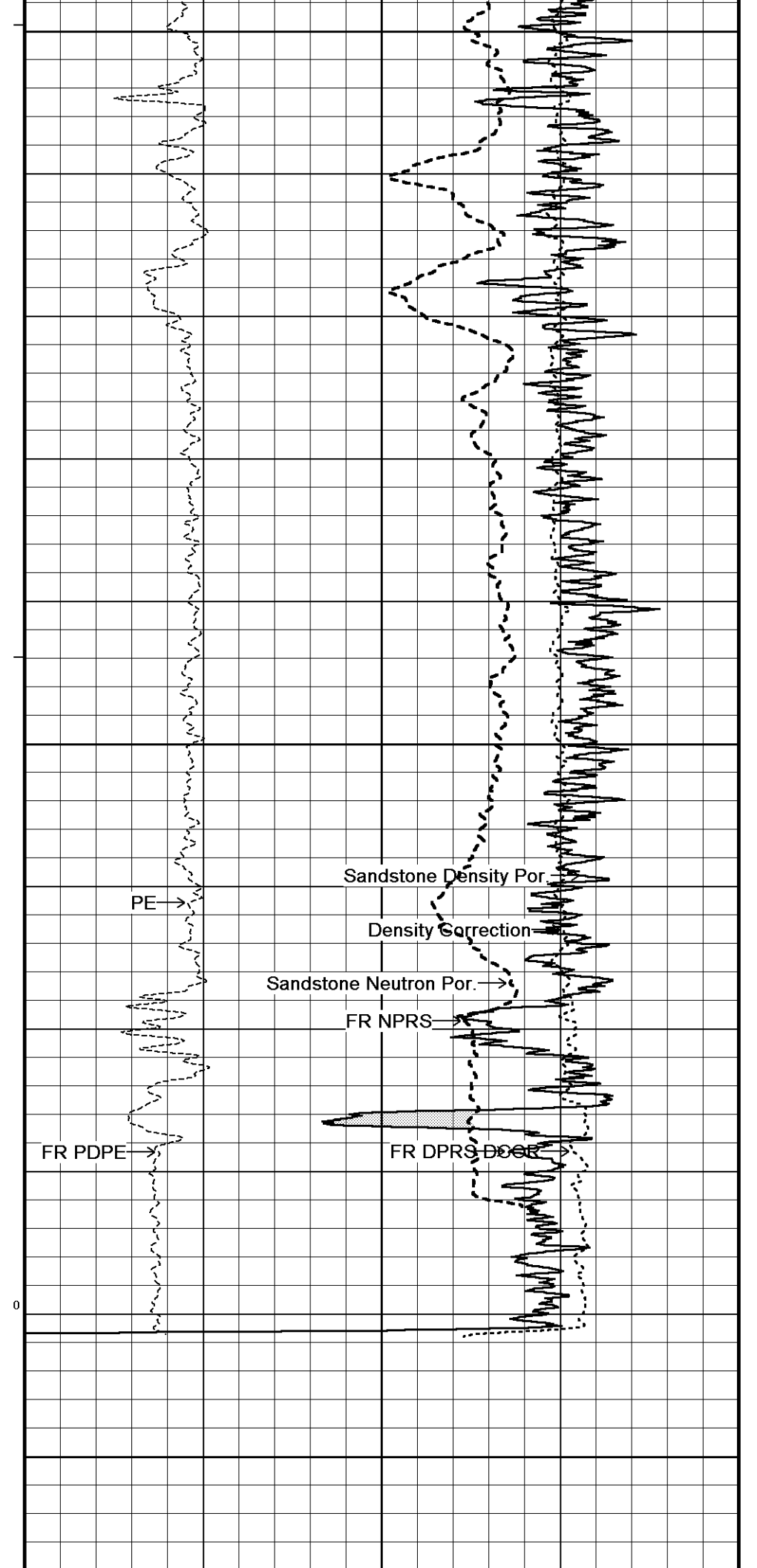
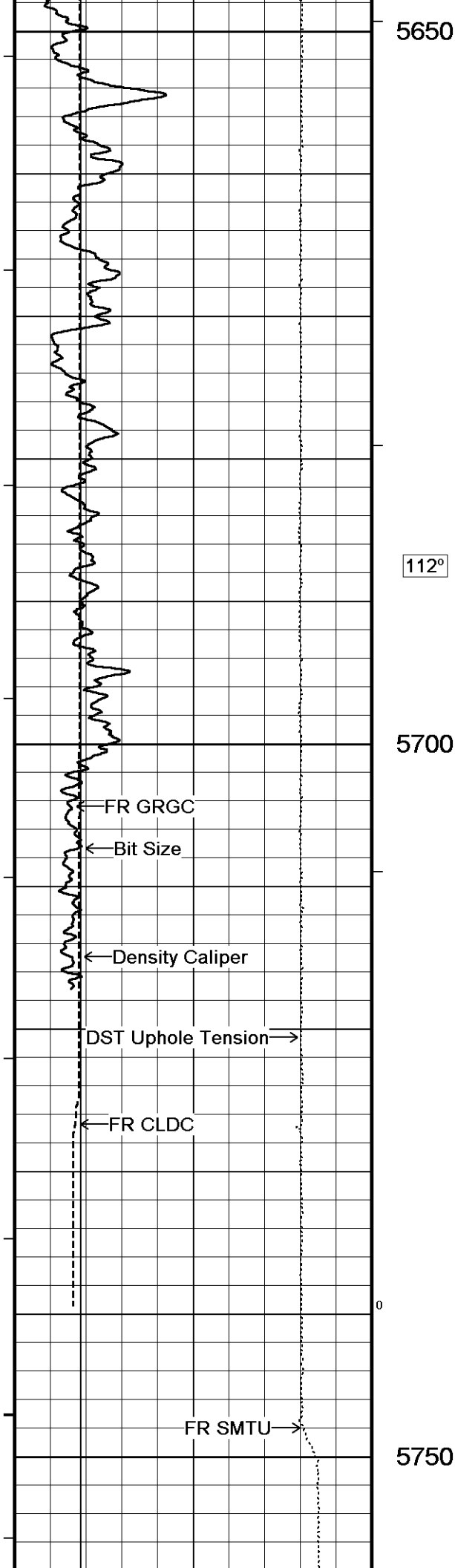


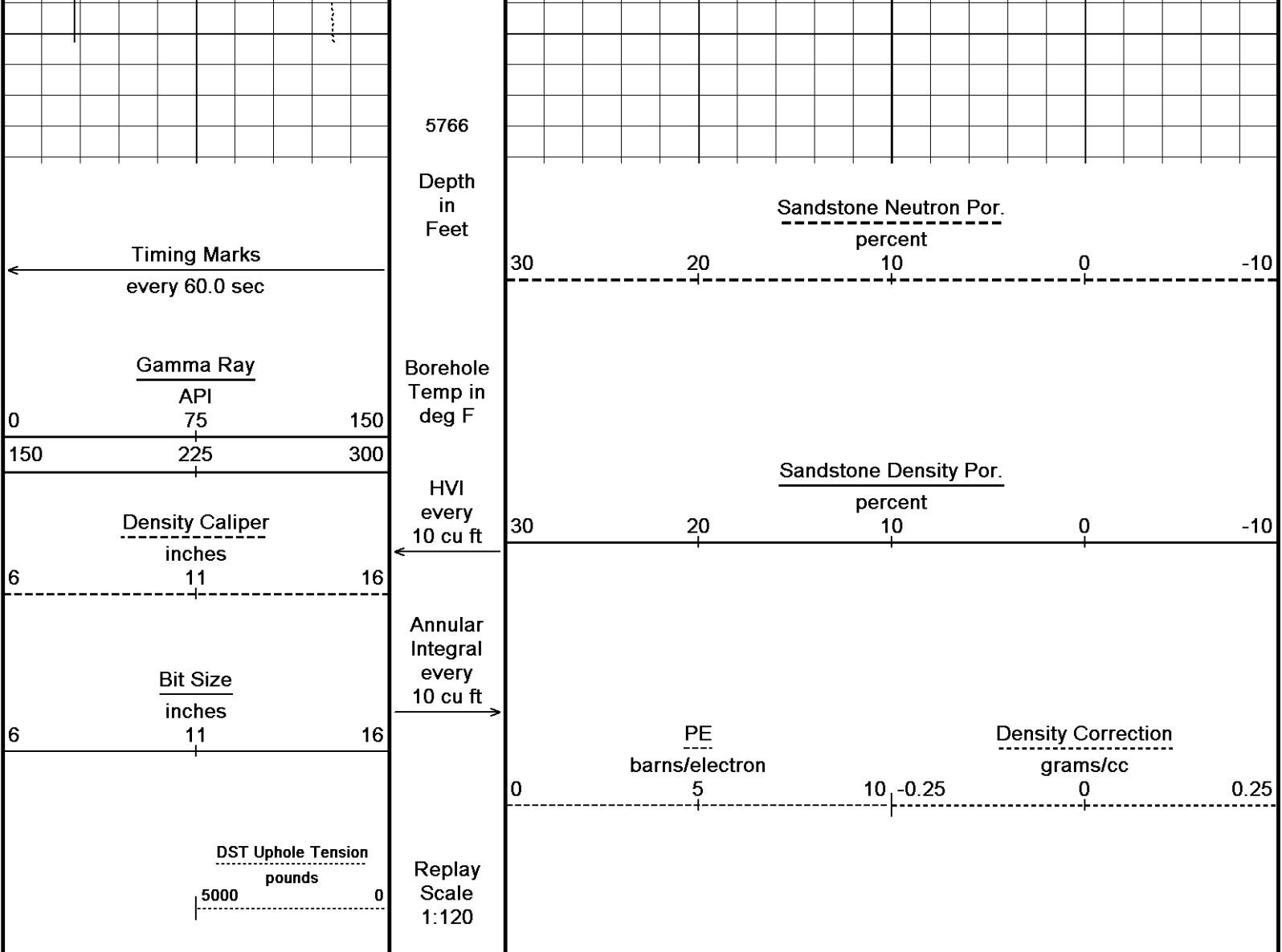








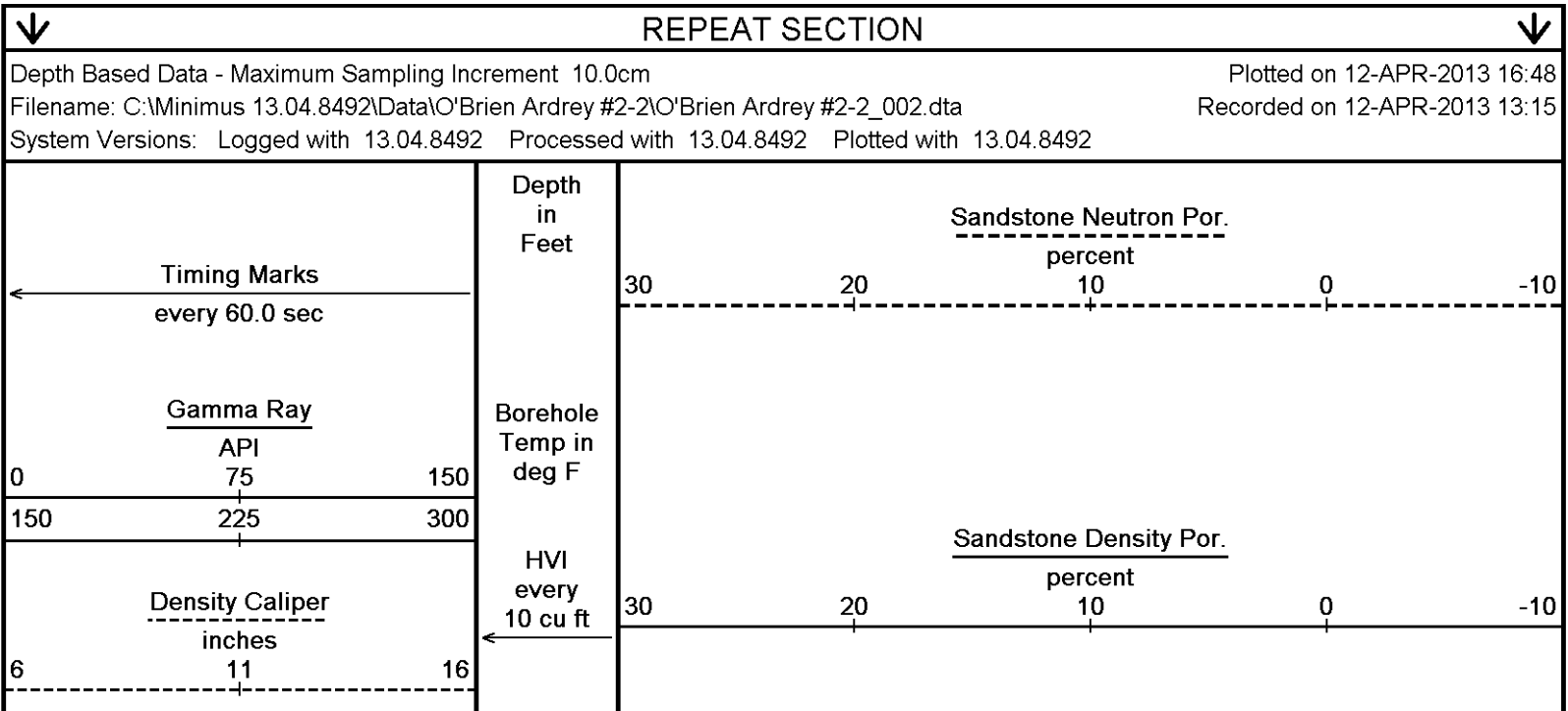


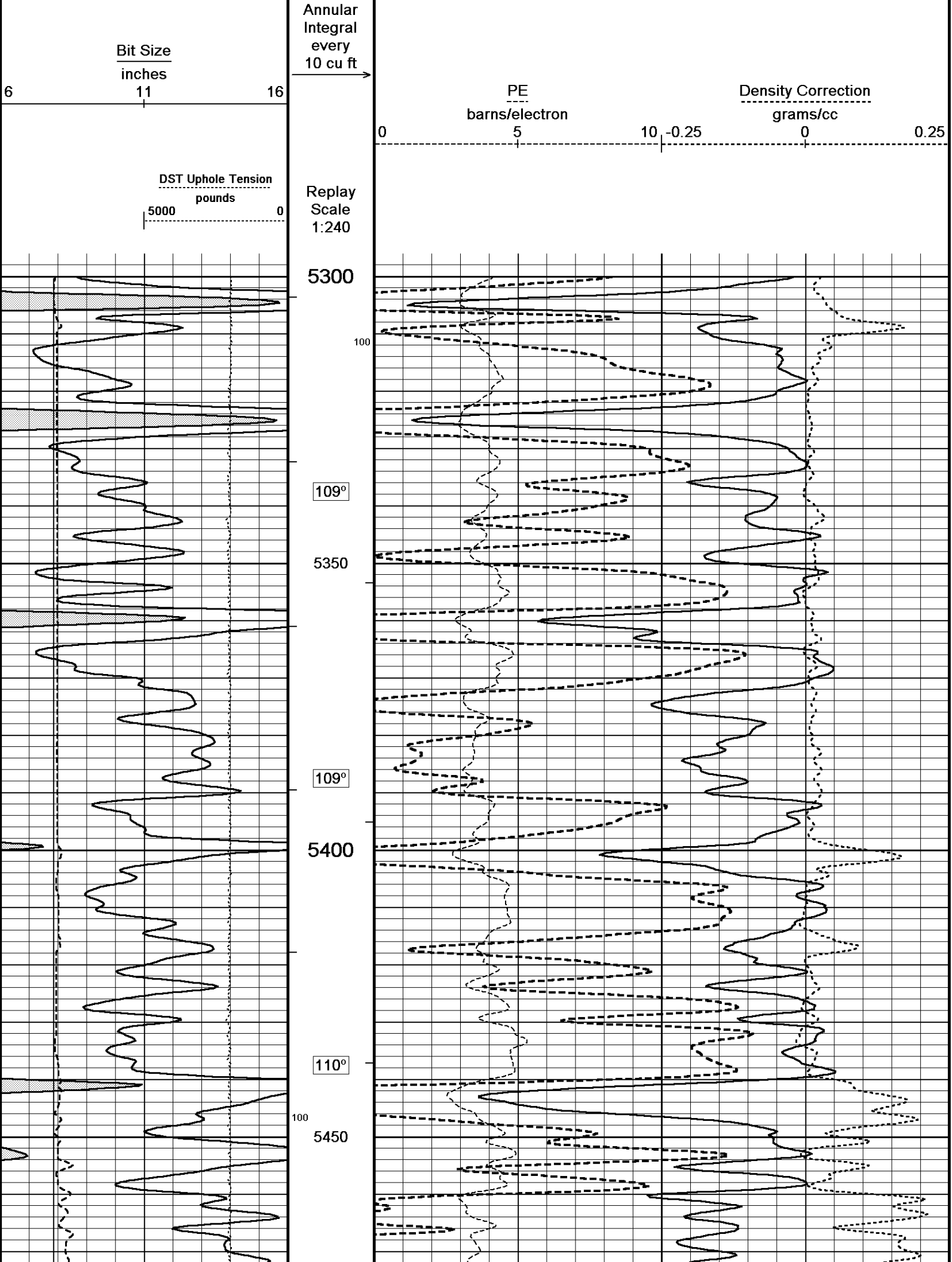


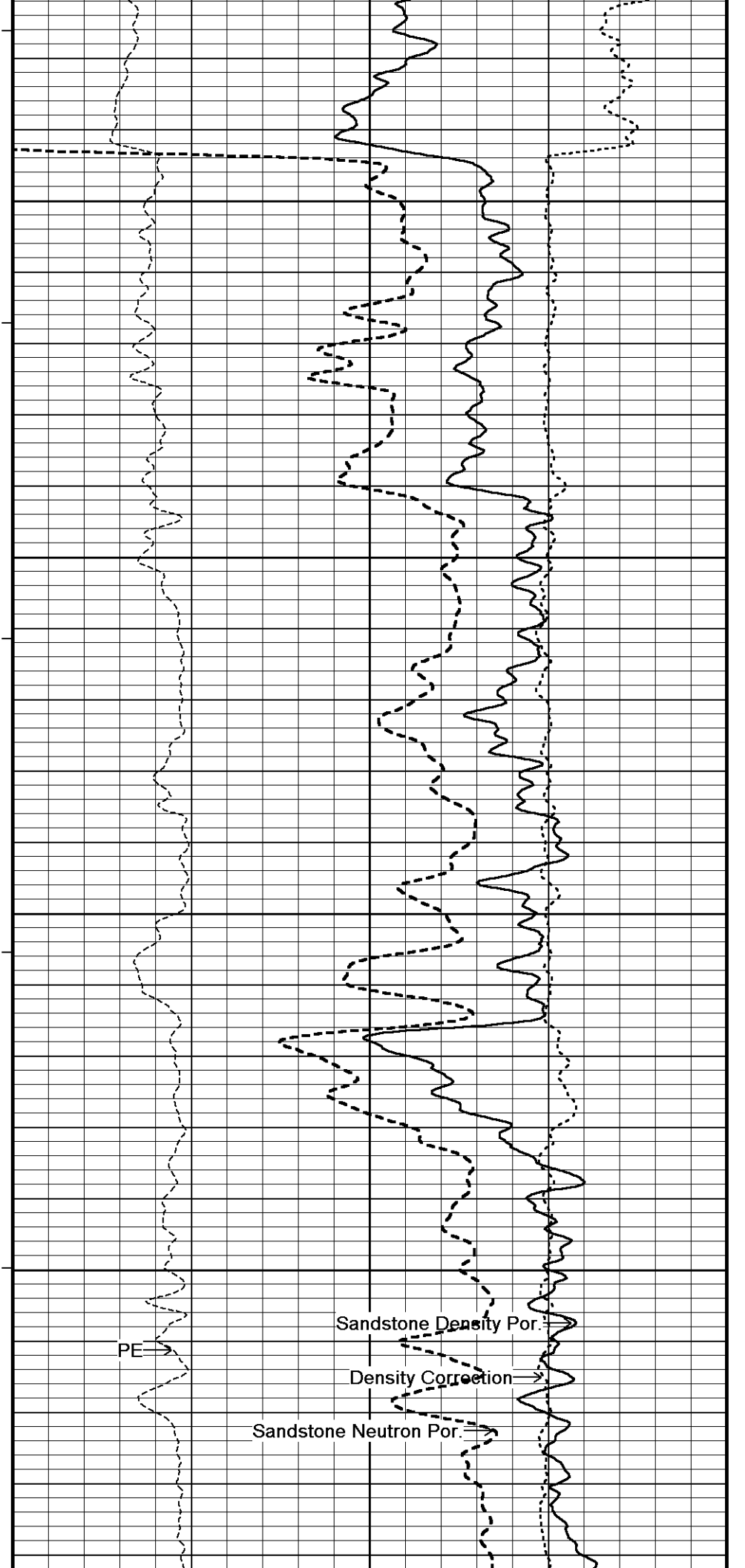
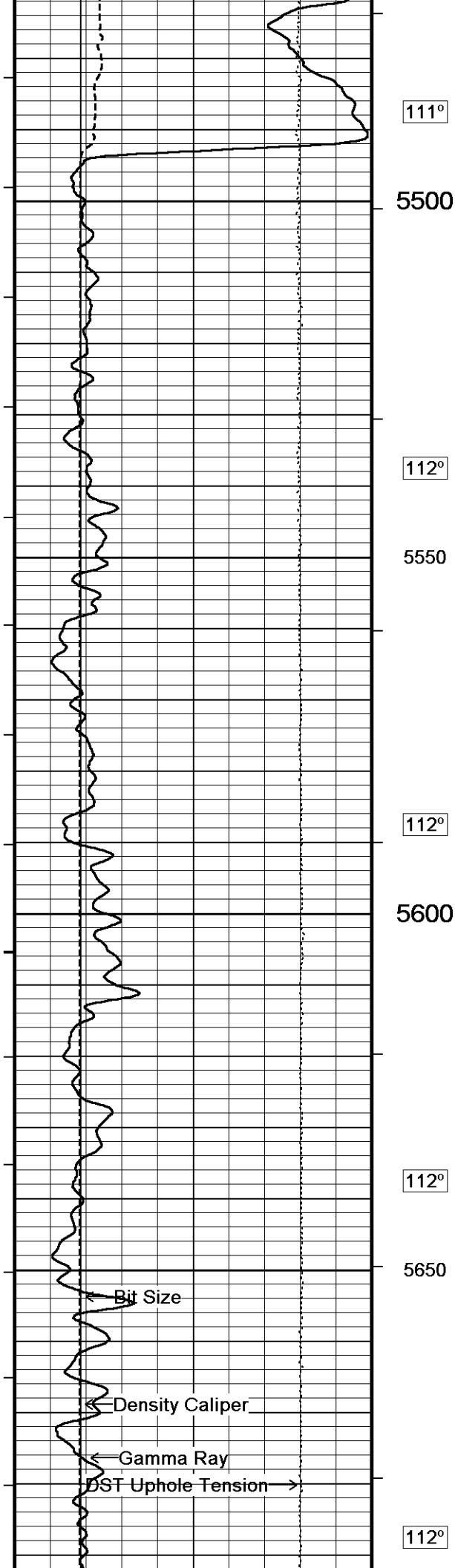
Depth Based Data - Maximum Sampling Increment 2.5cm
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_001.dta
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

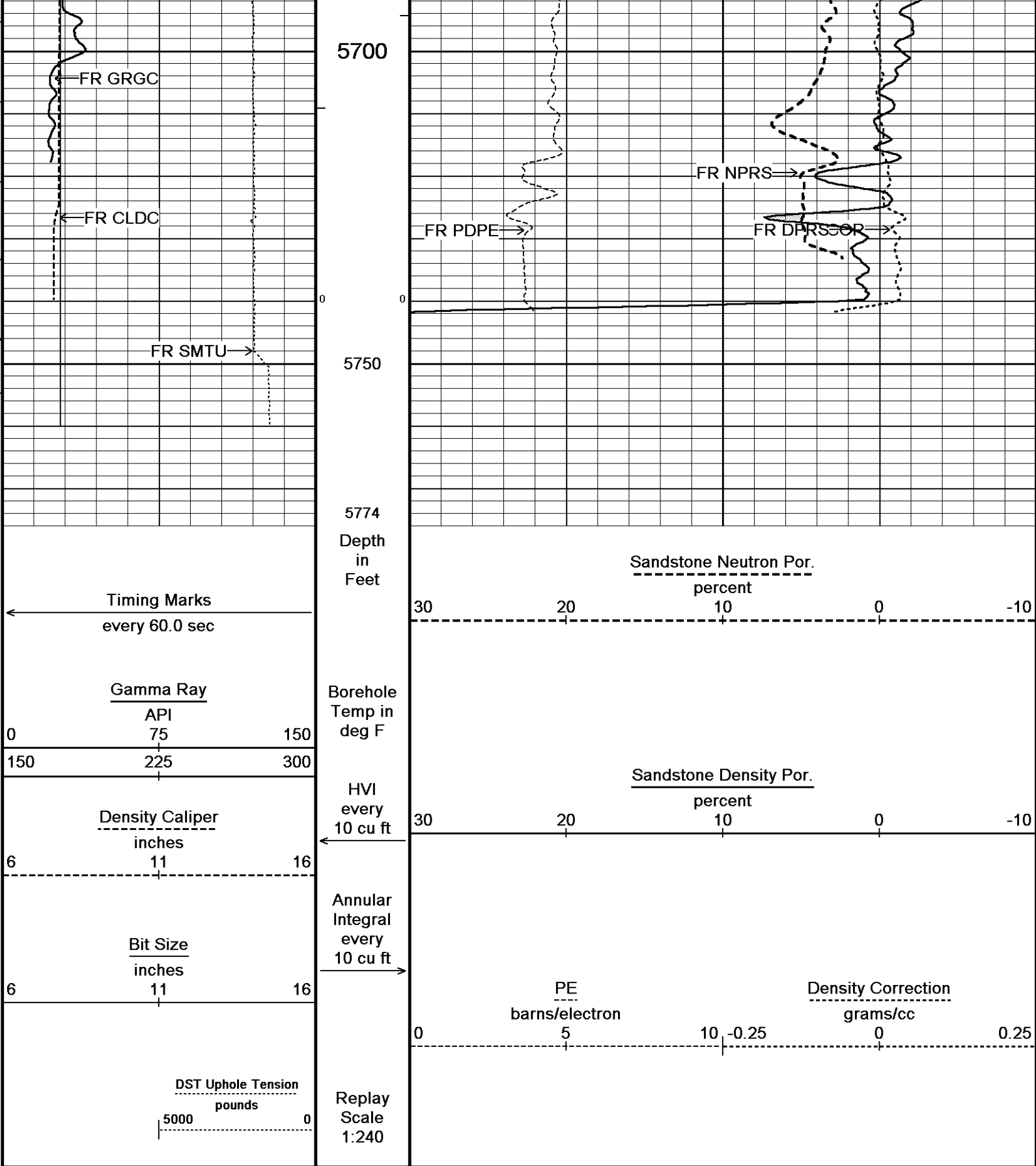
Plotted on 12-APR-2013 16:48
Recorded on 12-APR-2013 13:15

↑ 10 INCH HI-RES ↑







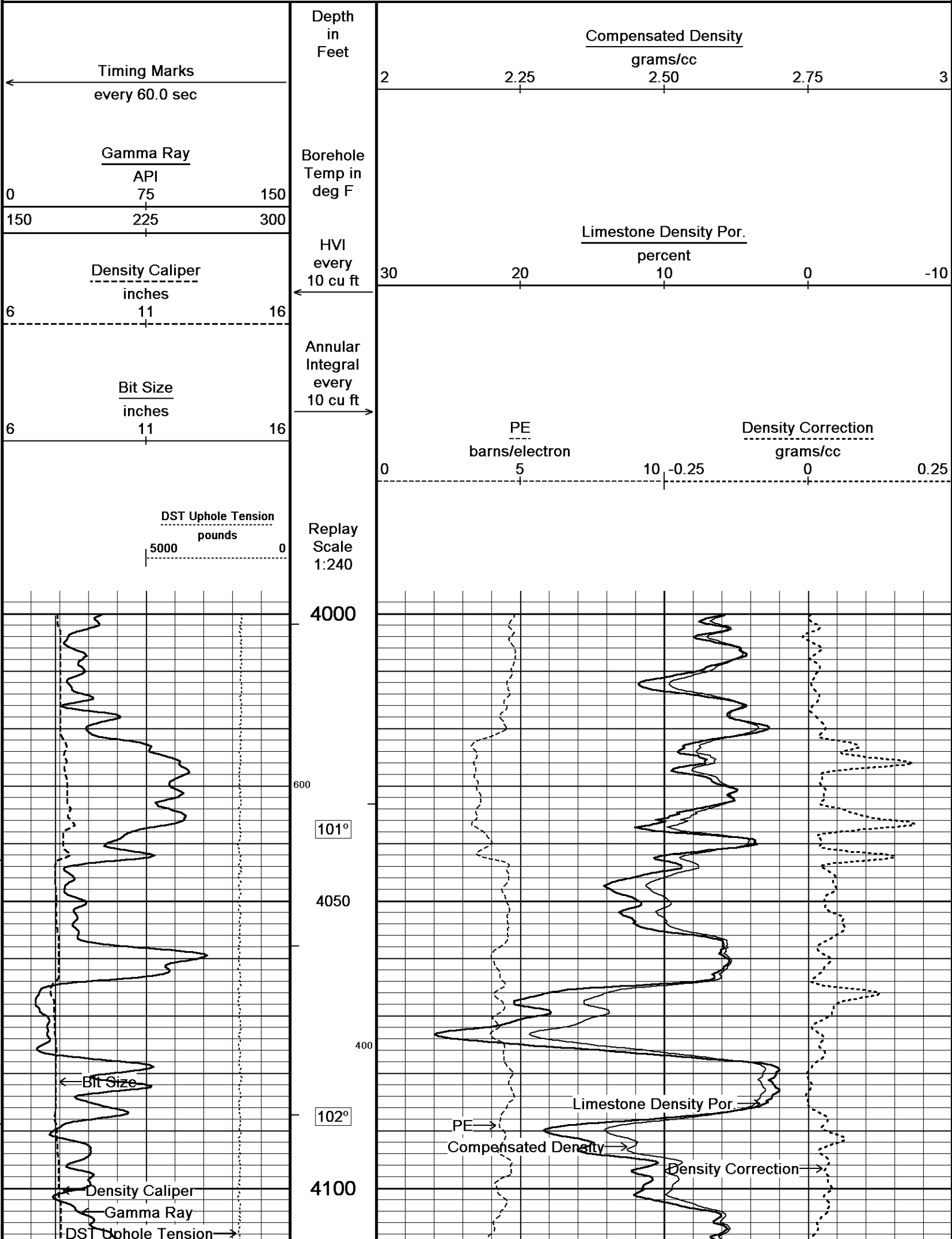


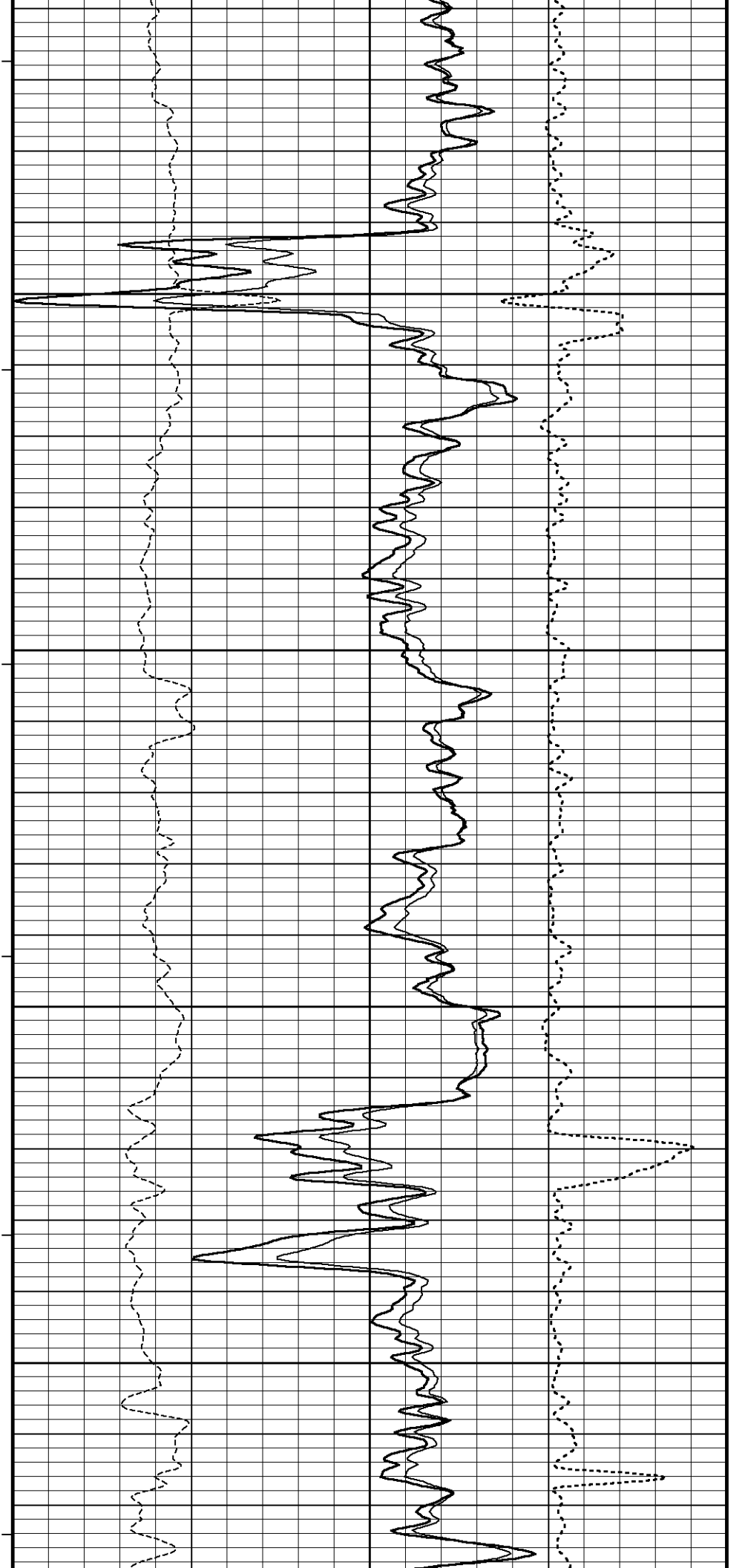
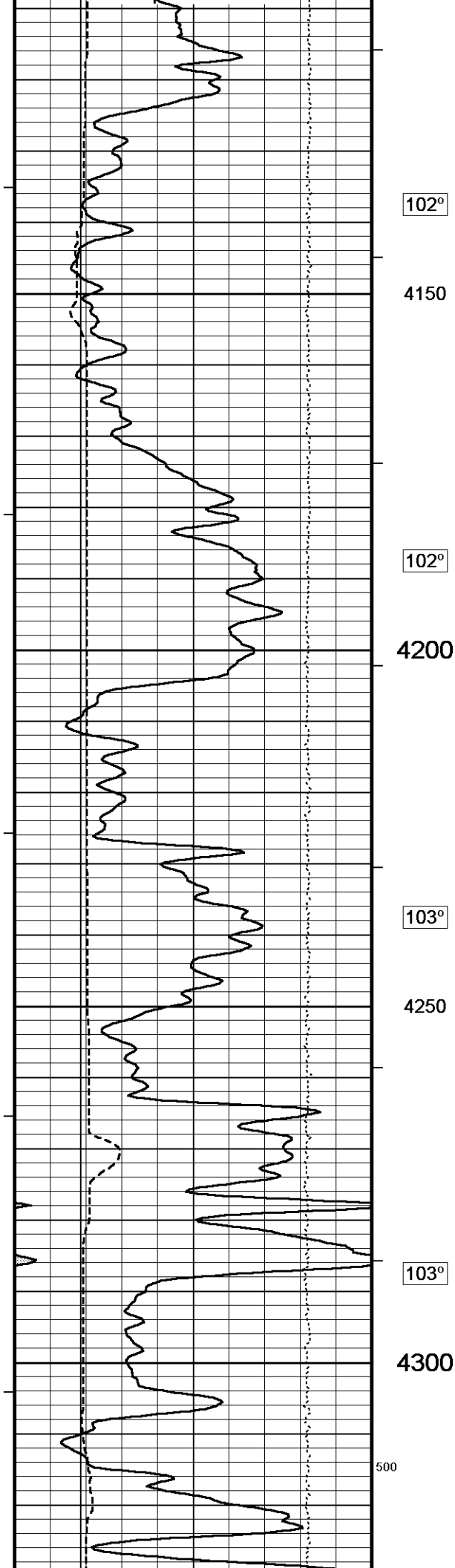
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-APR-2013 16:48
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_002.dta Recorded on 12-APR-2013 13:15
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

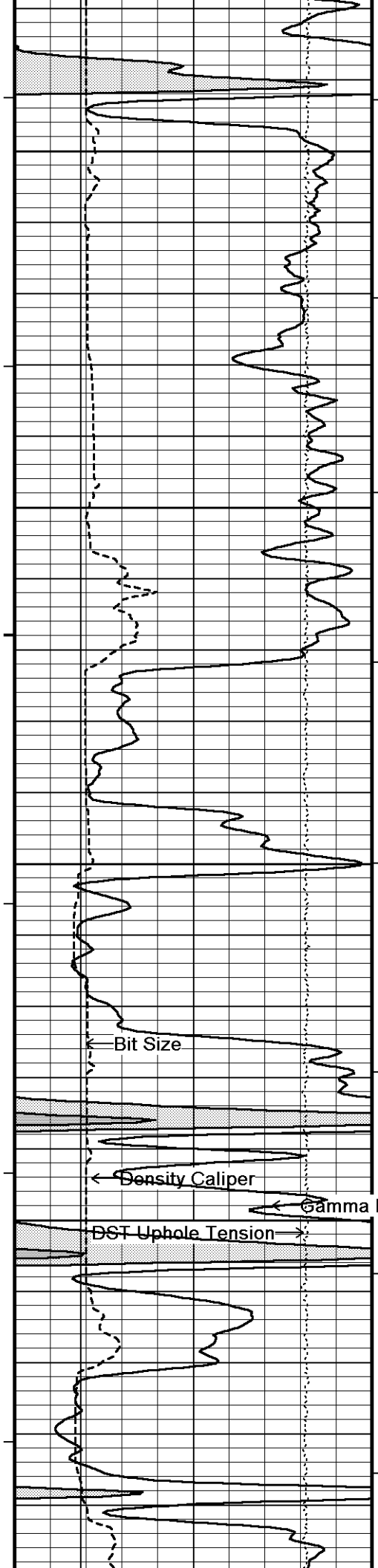
↑ REPEAT SECTION ↑

↓ 5 INCH MAIN ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-APR-2013 16:48
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta Recorded on 12-APR-2013 14:09







103°

4350

104°

4400

104°

4450

Bit Size

Density Caliper

Gamma Ray

DST Uphole Tension

104°

4500

105°

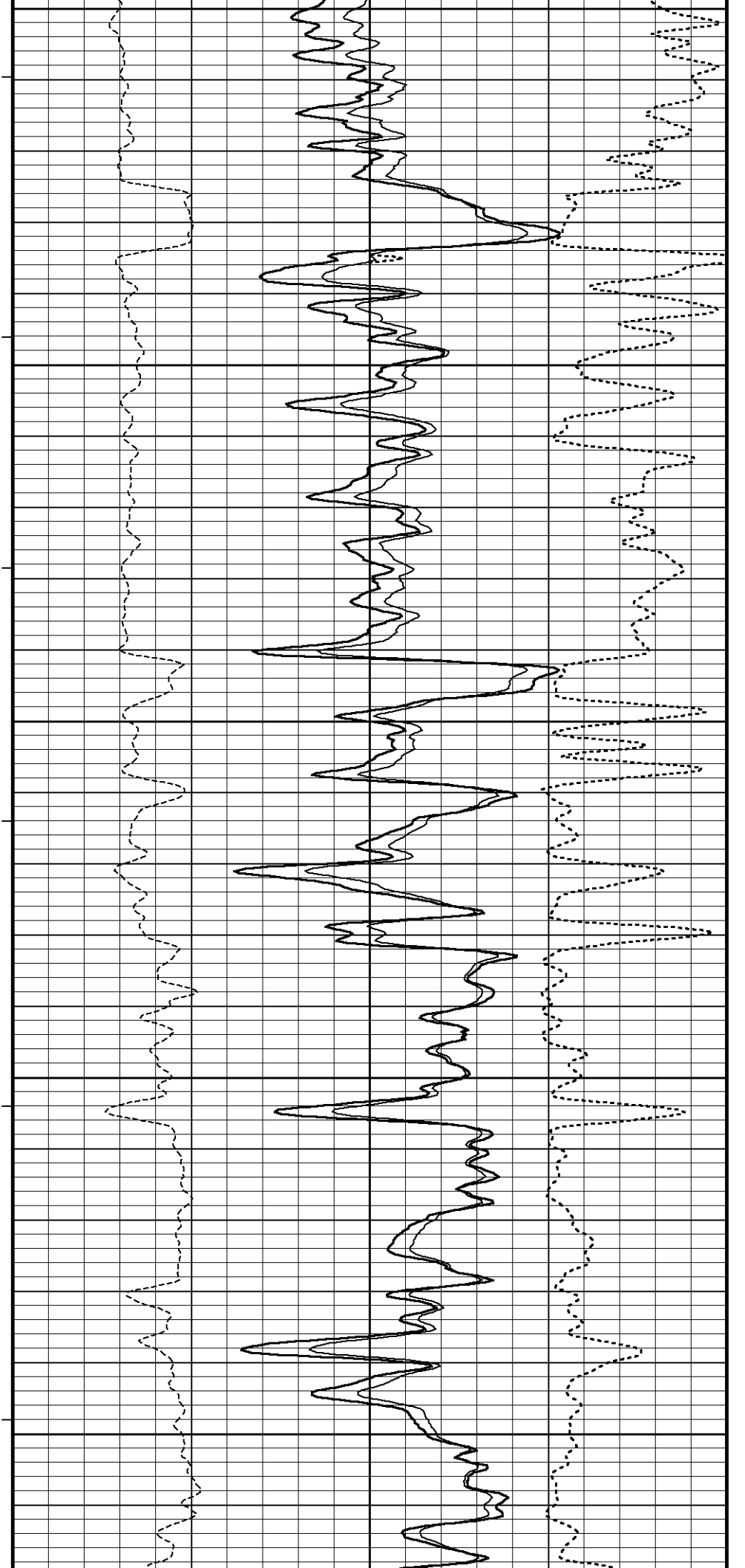
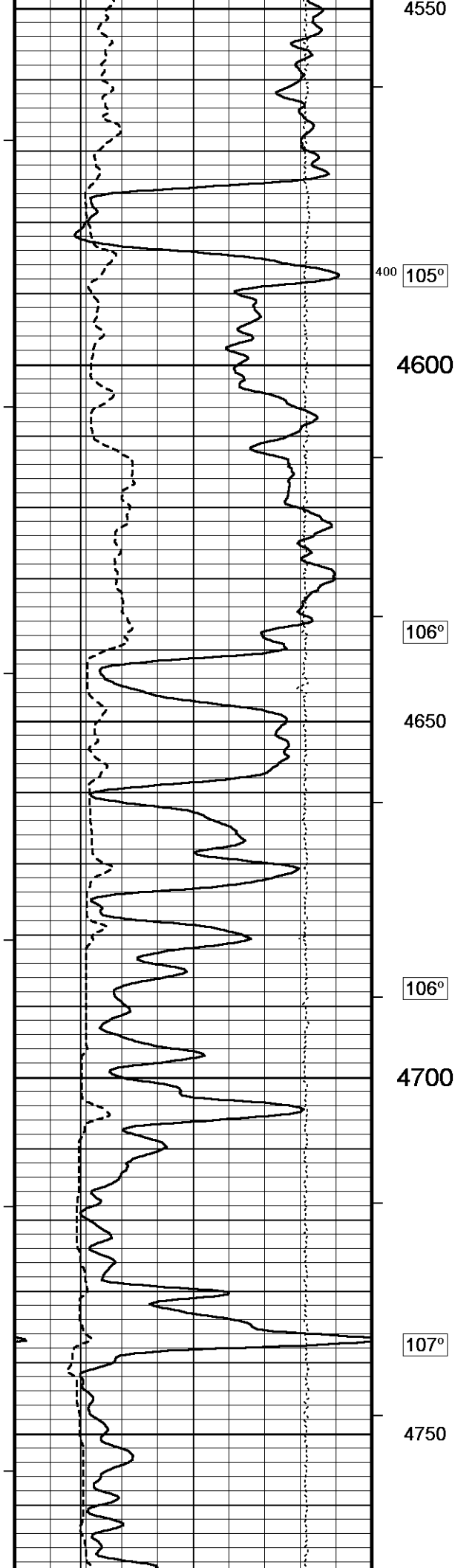
300

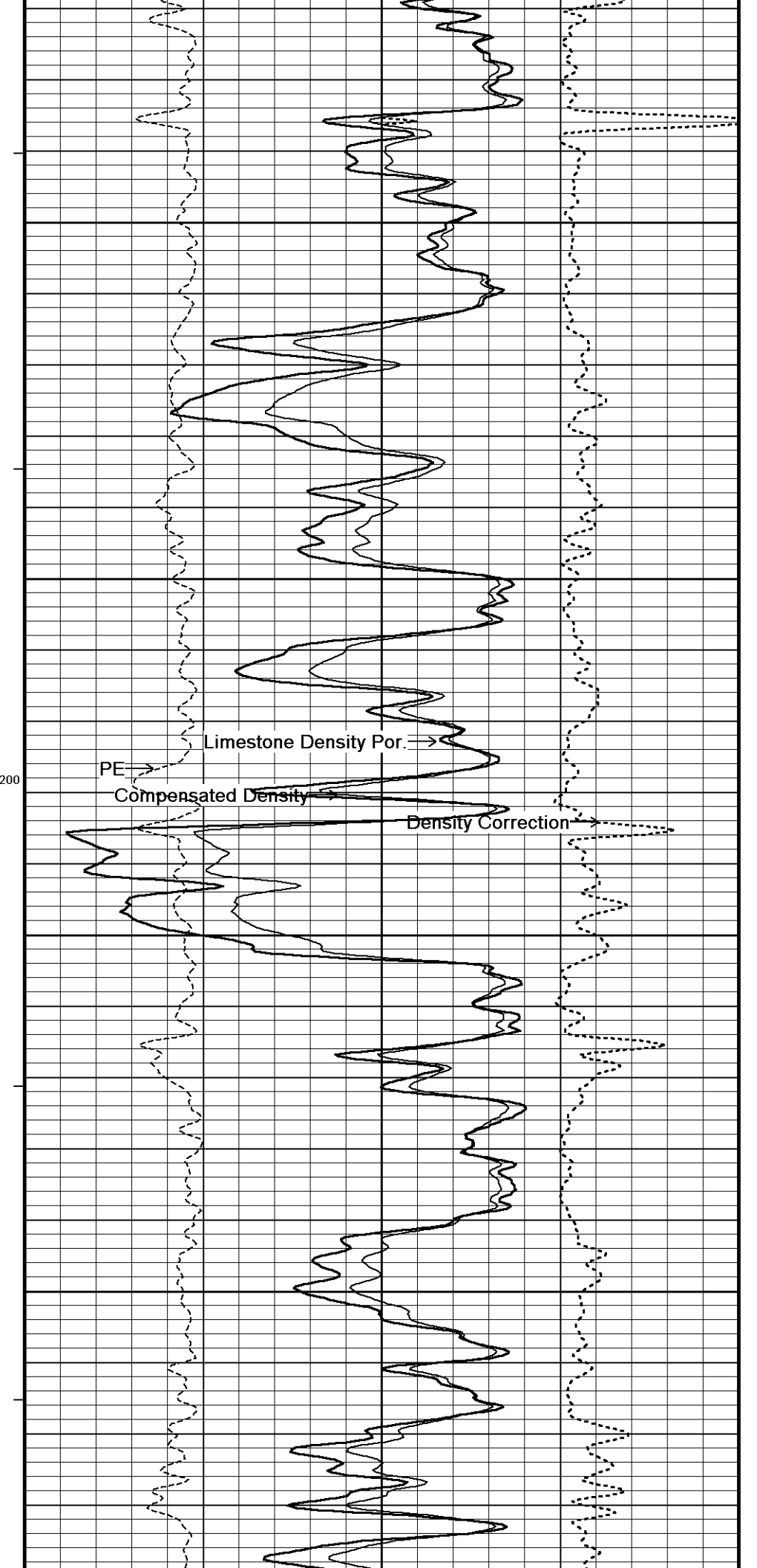
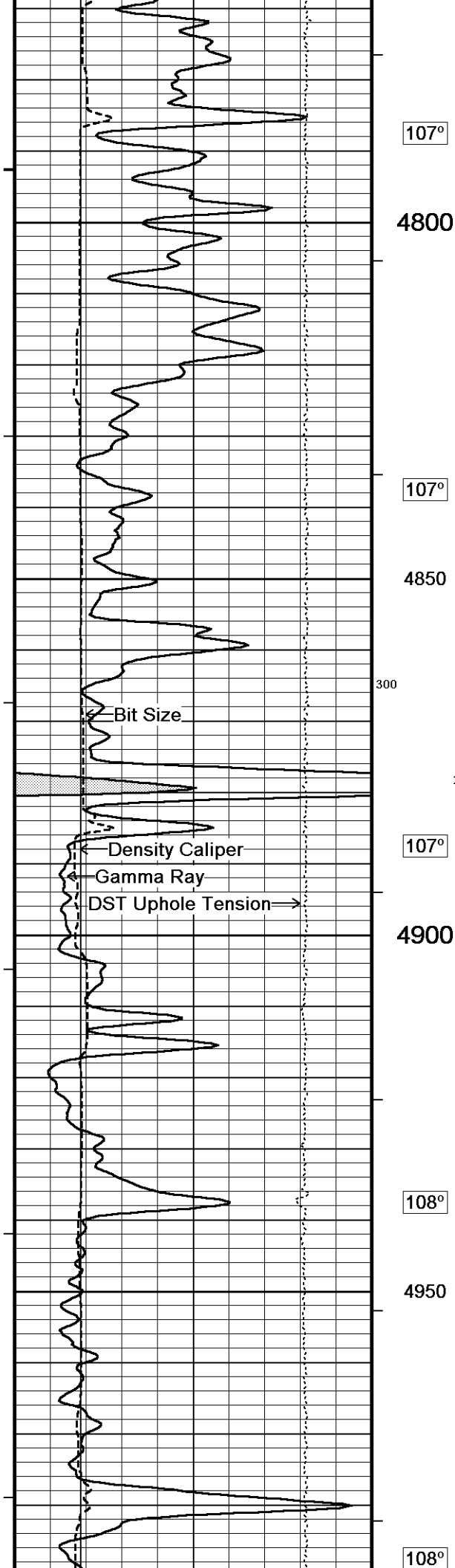
Limestone Density Por.

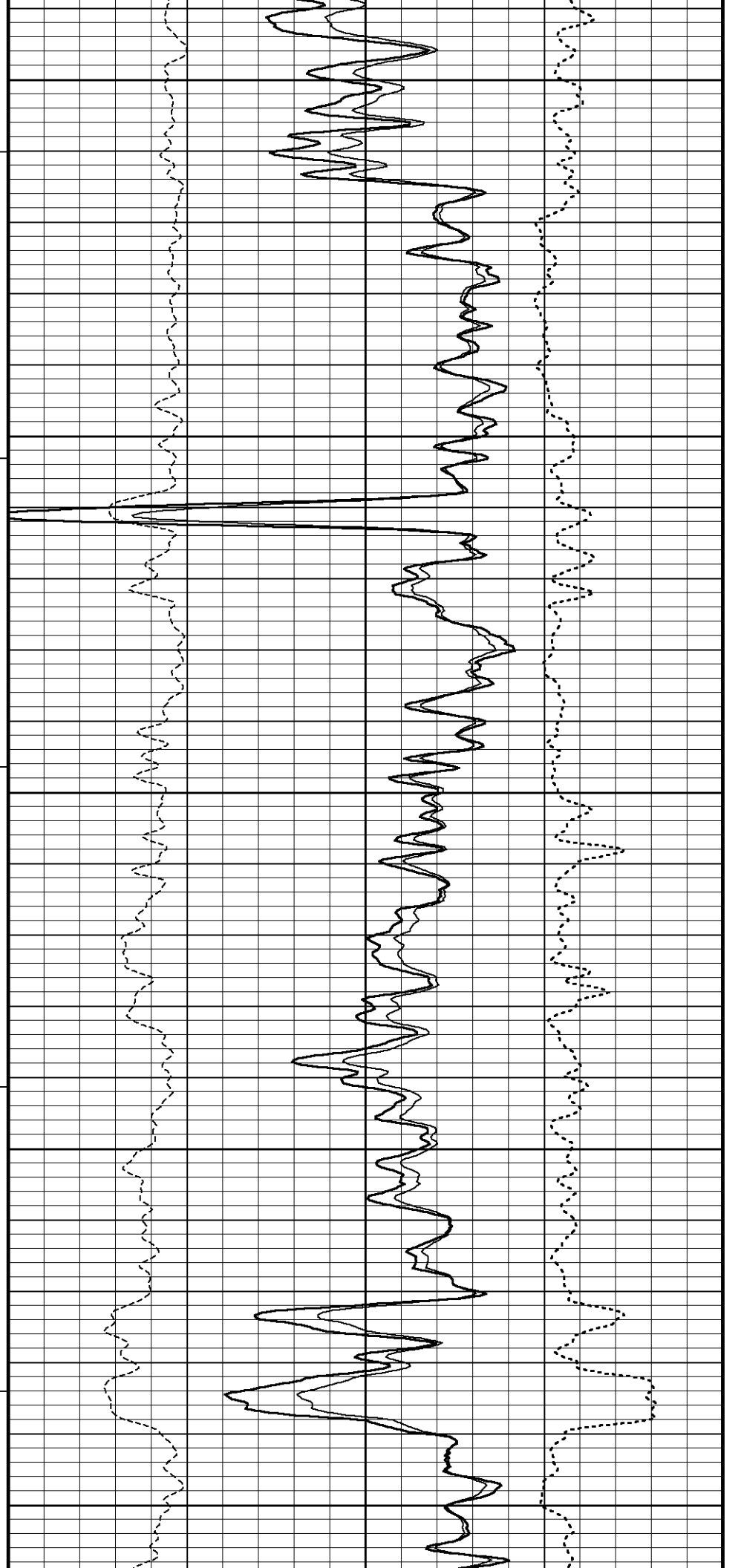
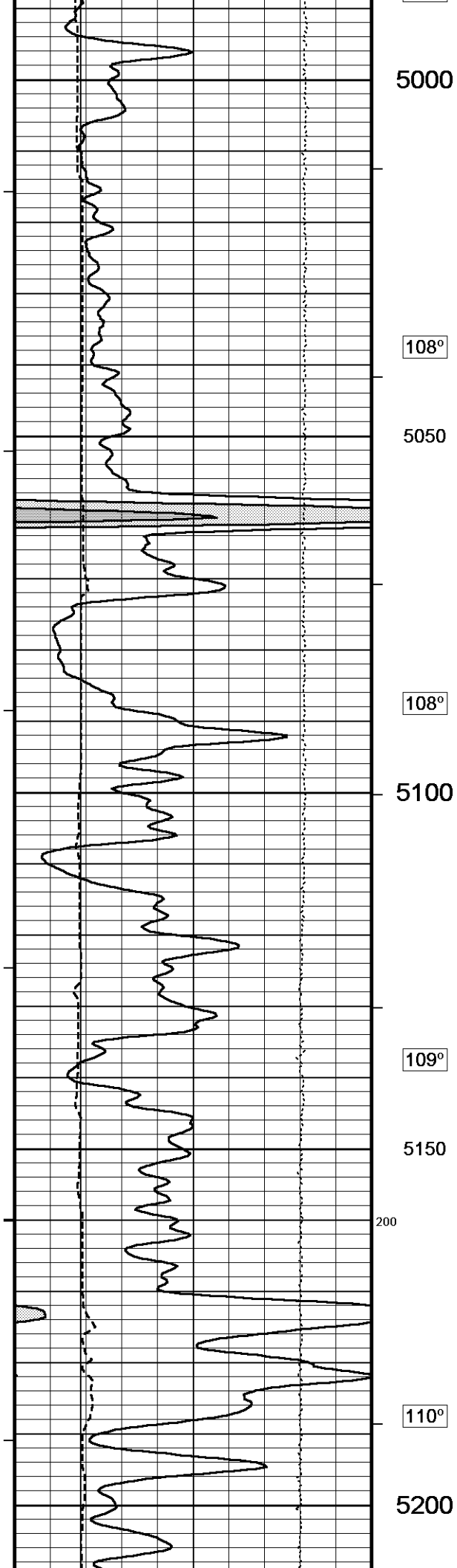
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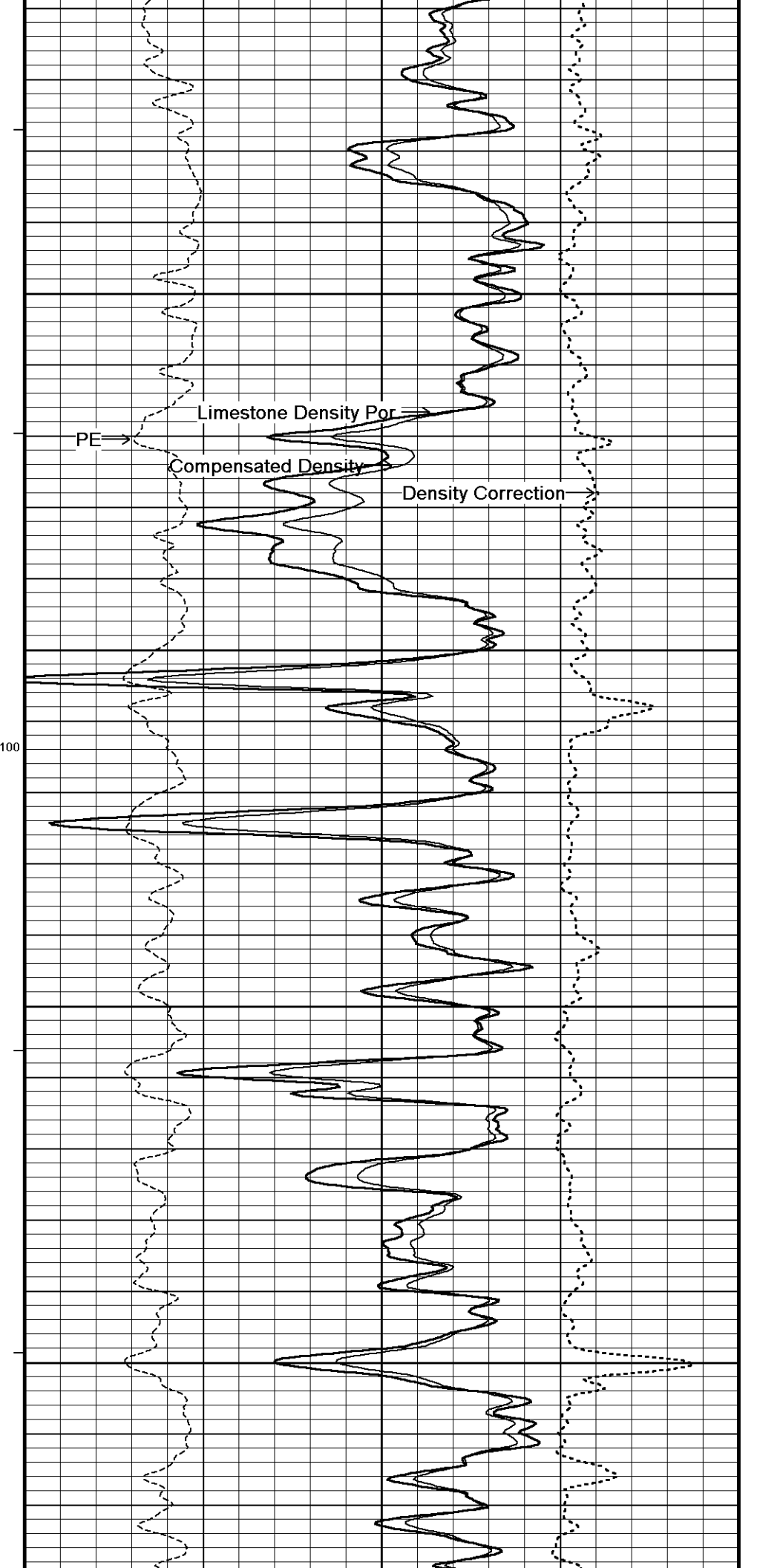
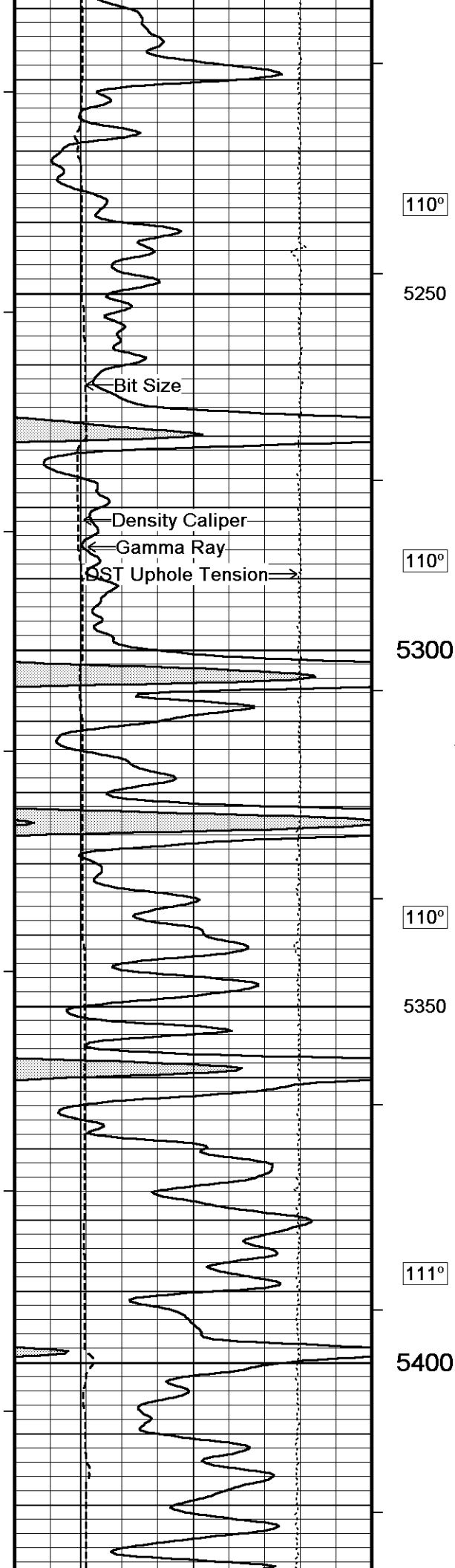
Compensated Density

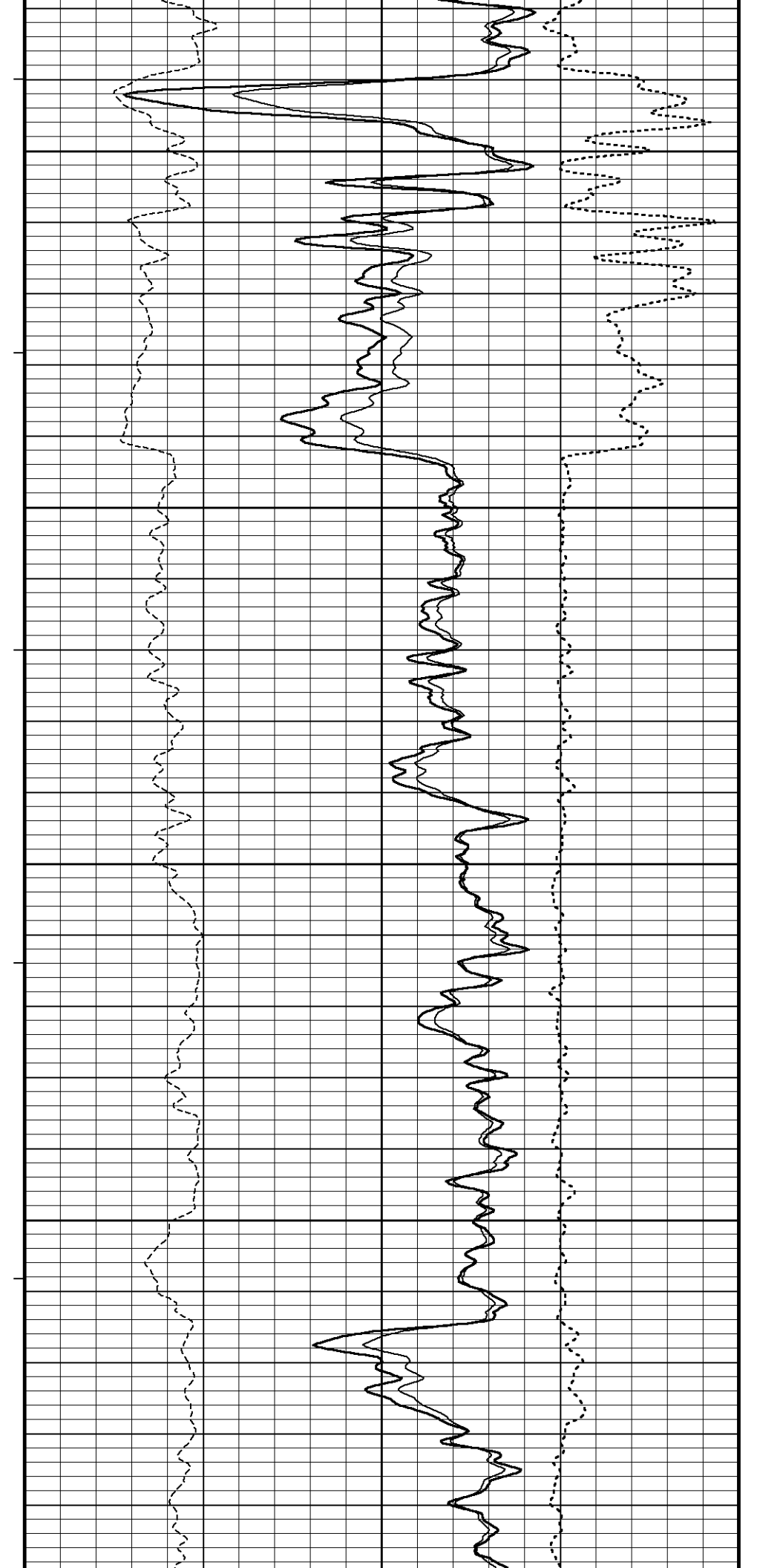
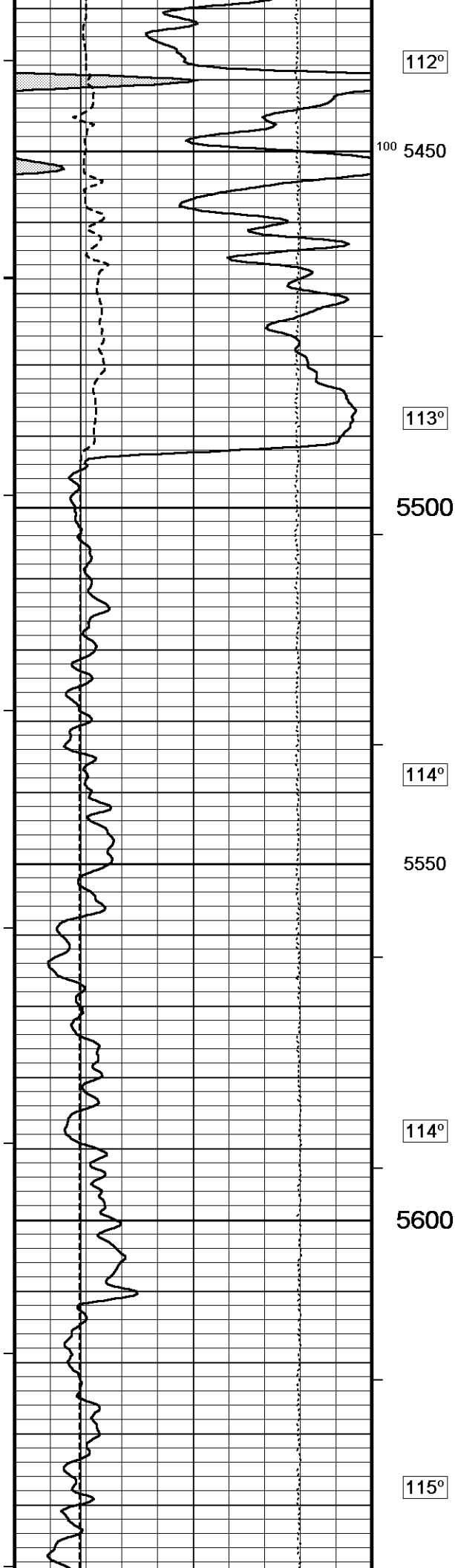
Density Correction

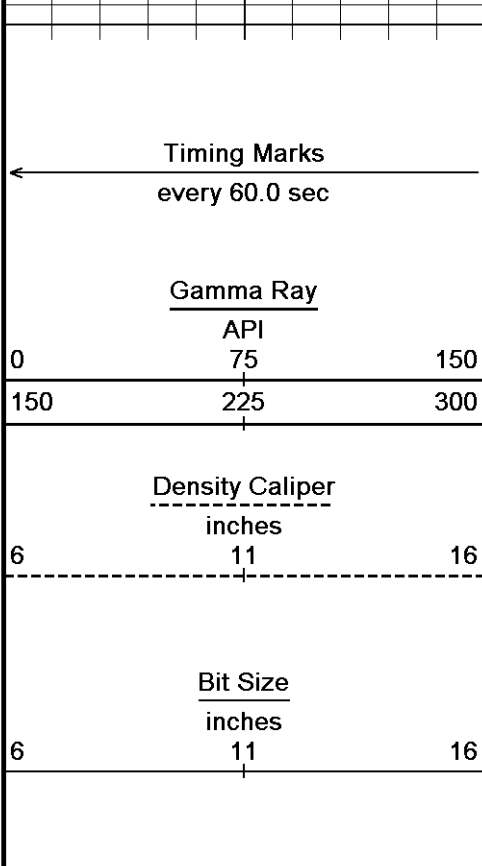
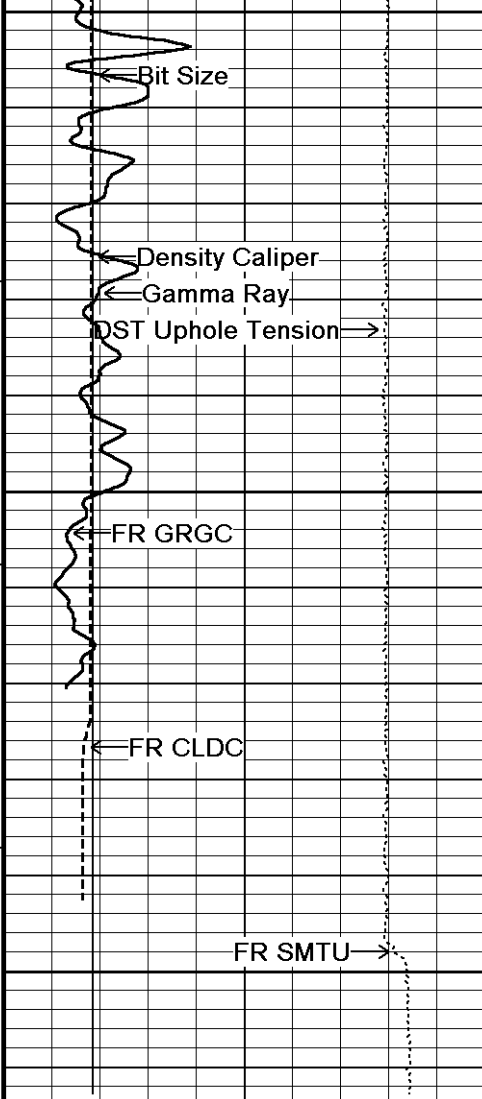












5650

115°

5700

0

5750

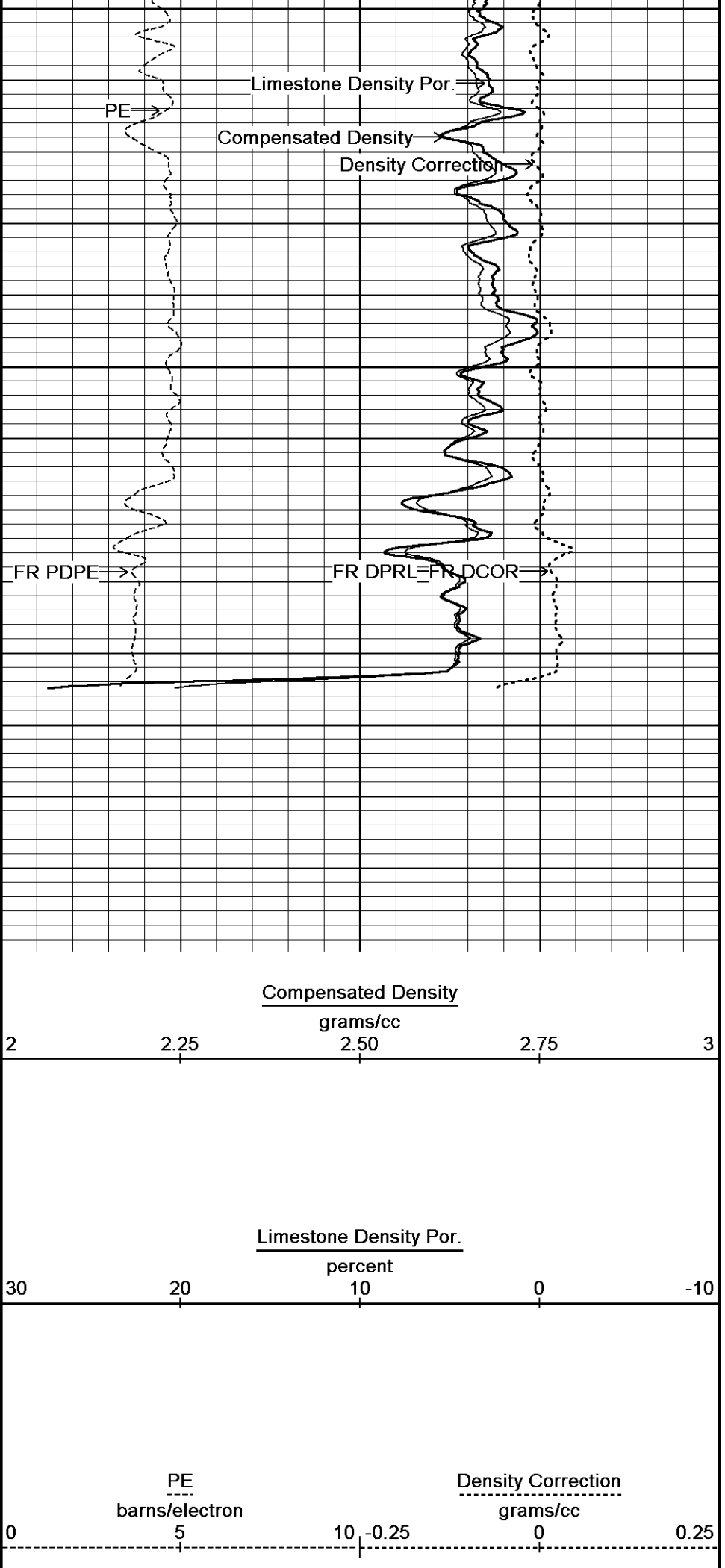
5780

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

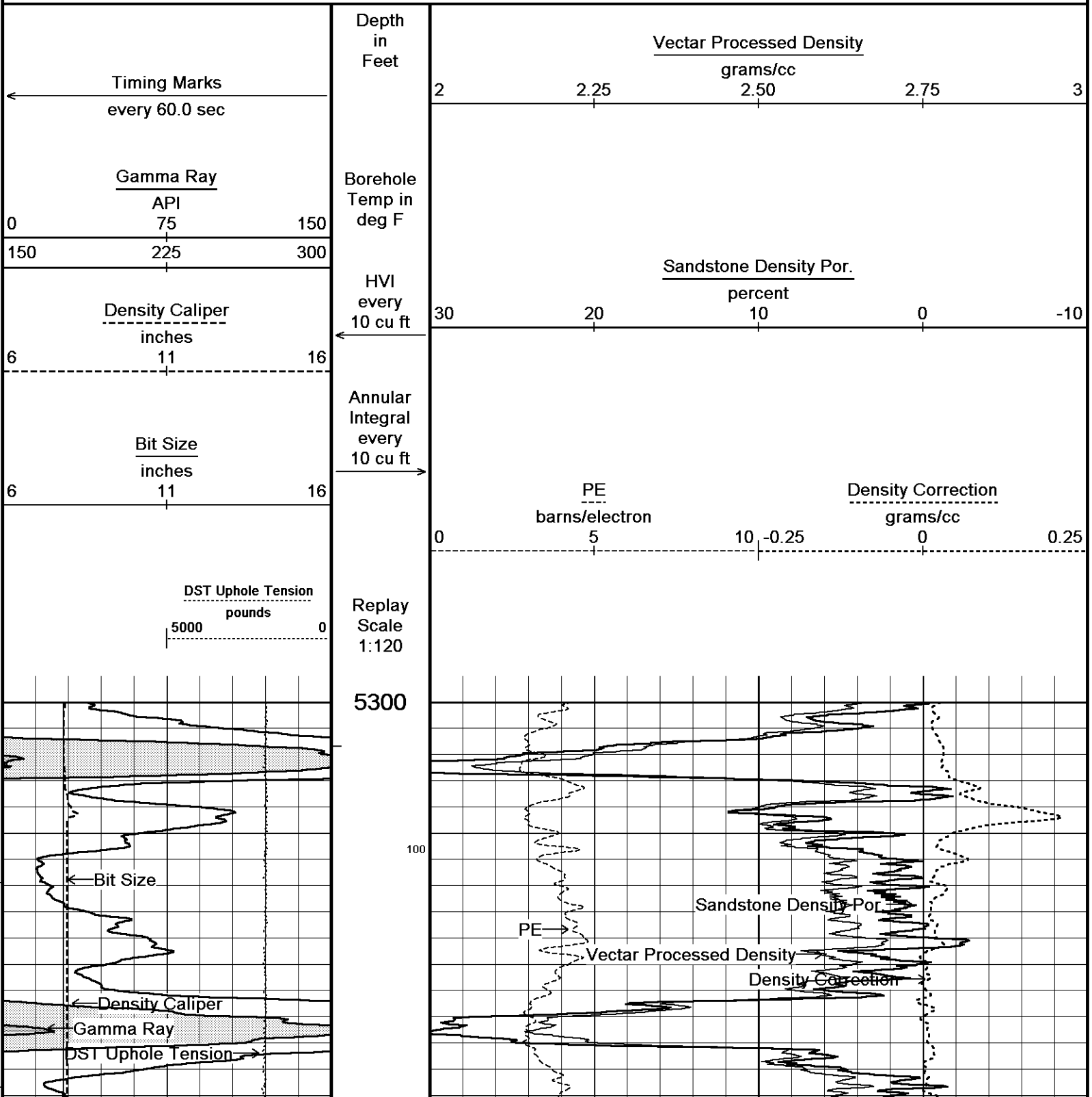
Annular
Integral
every
10 cu ft

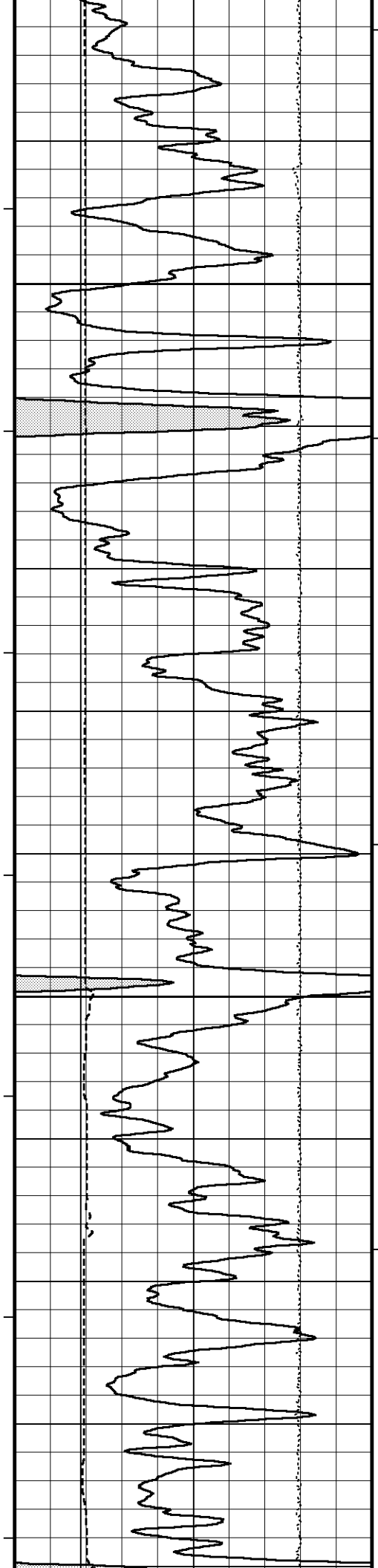


Replay
Scale
1:240

↑ 5 INCH MAIN ↑

Depth Based Data - Maximum Sampling Increment 2.5cm
 Plotted on 12-APR-2013 16:48
 Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_001.dta
 Recorded on 12-APR-2013 13:15
 System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492





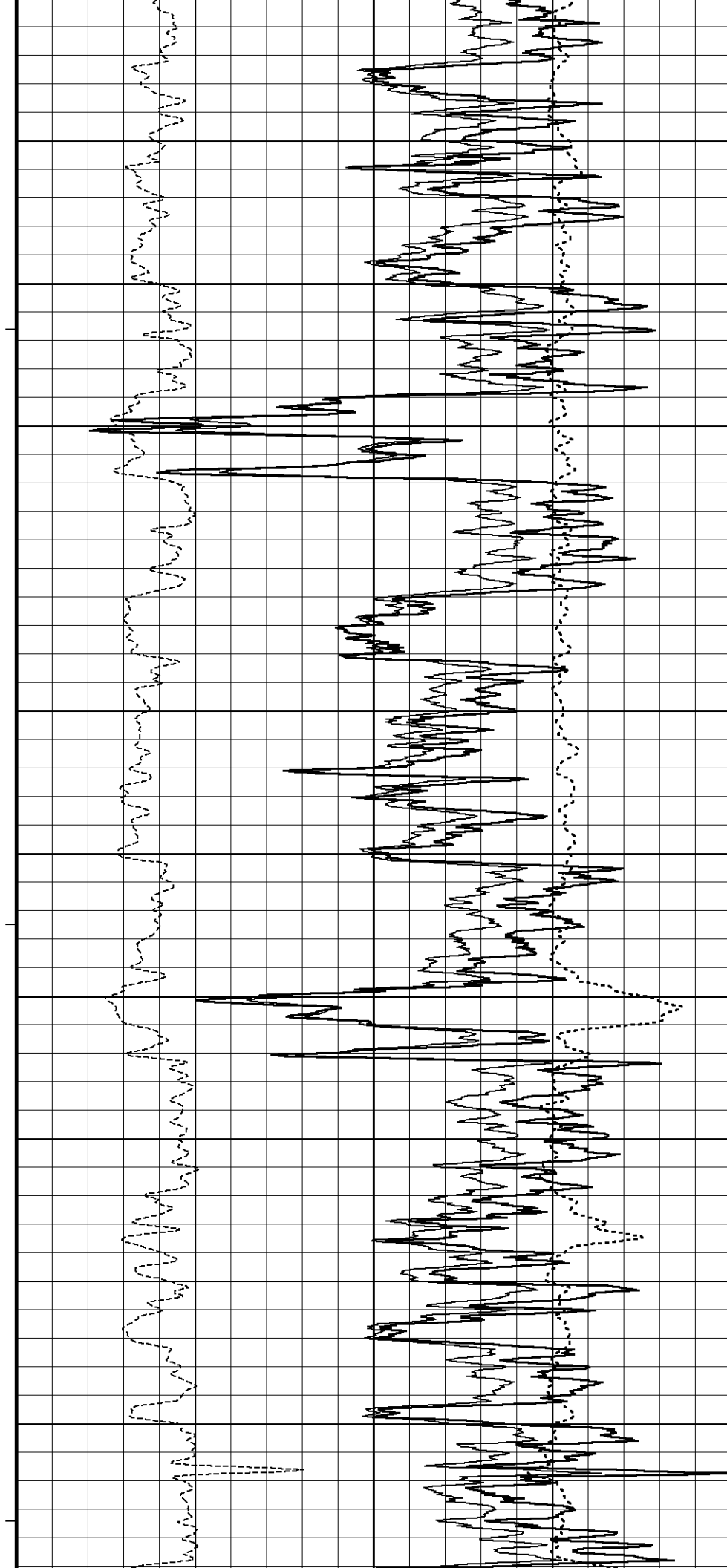
109°

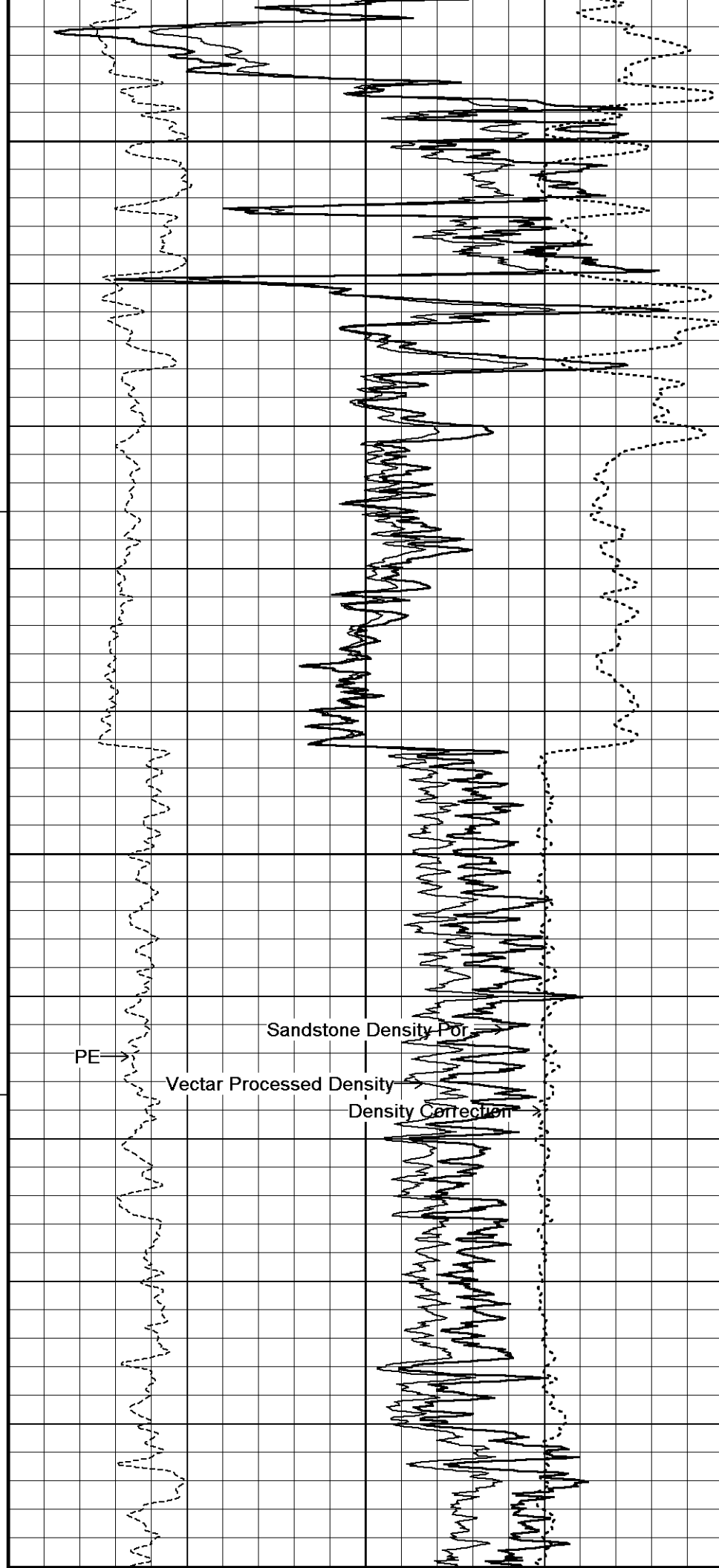
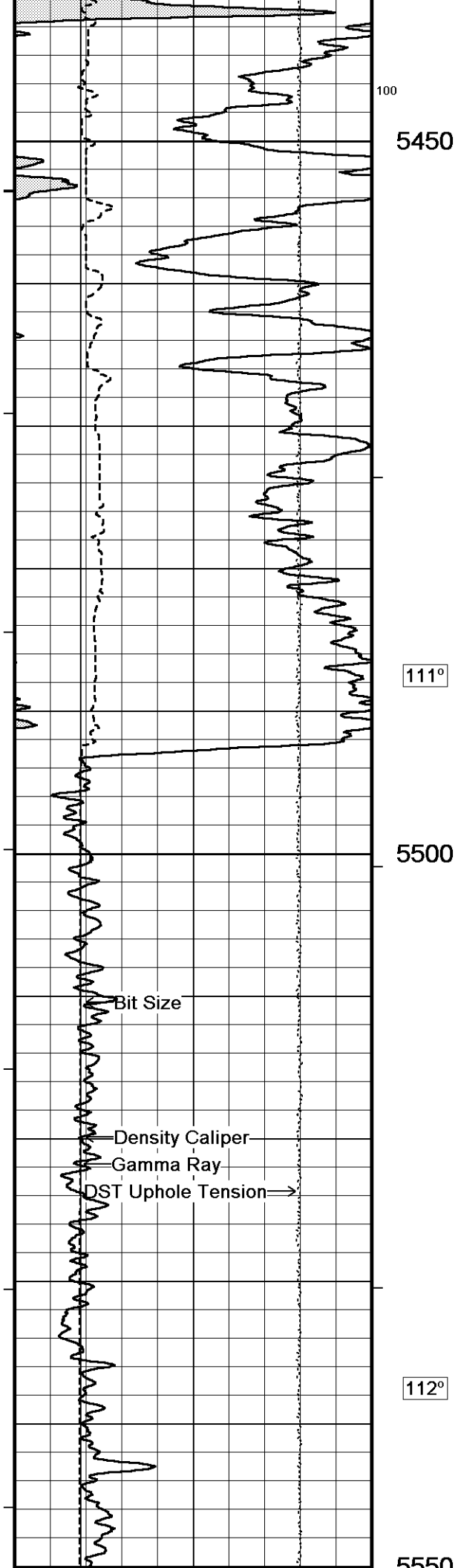
5350

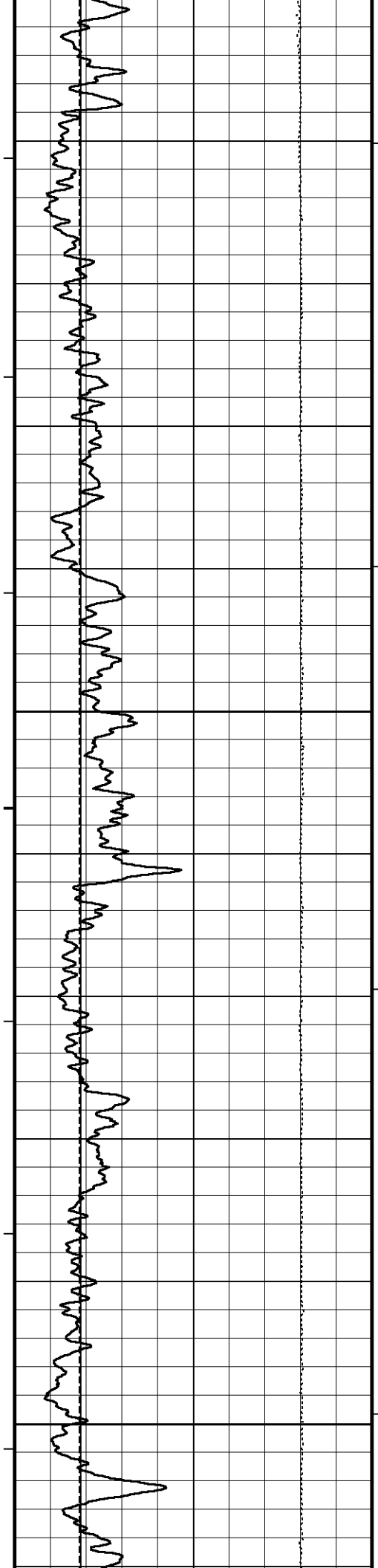
109°

5400

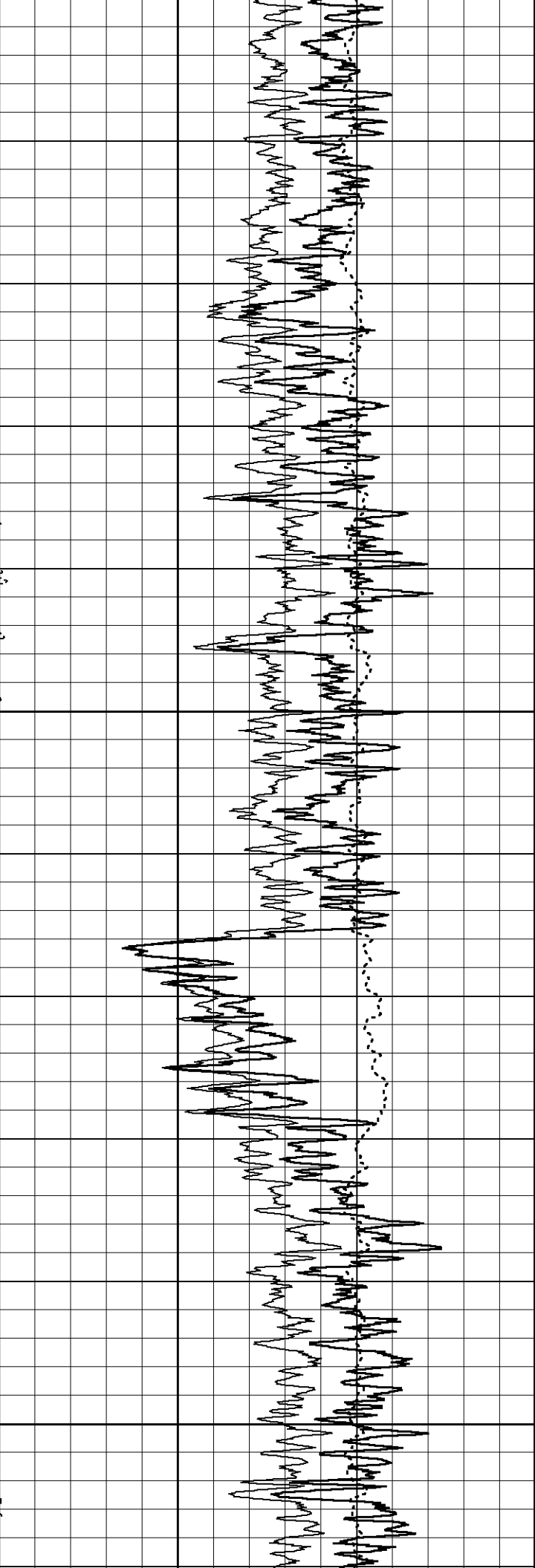
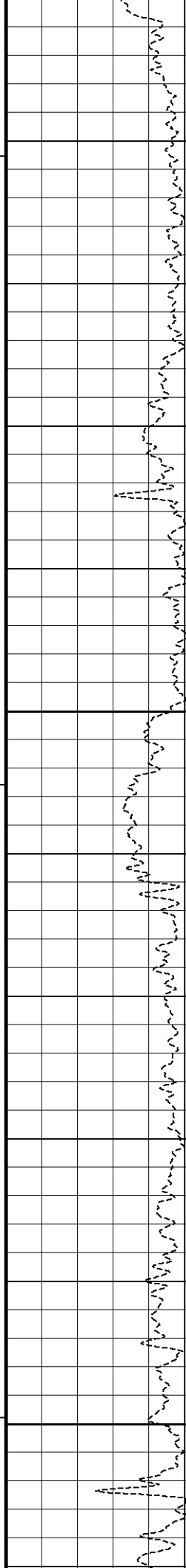
110°

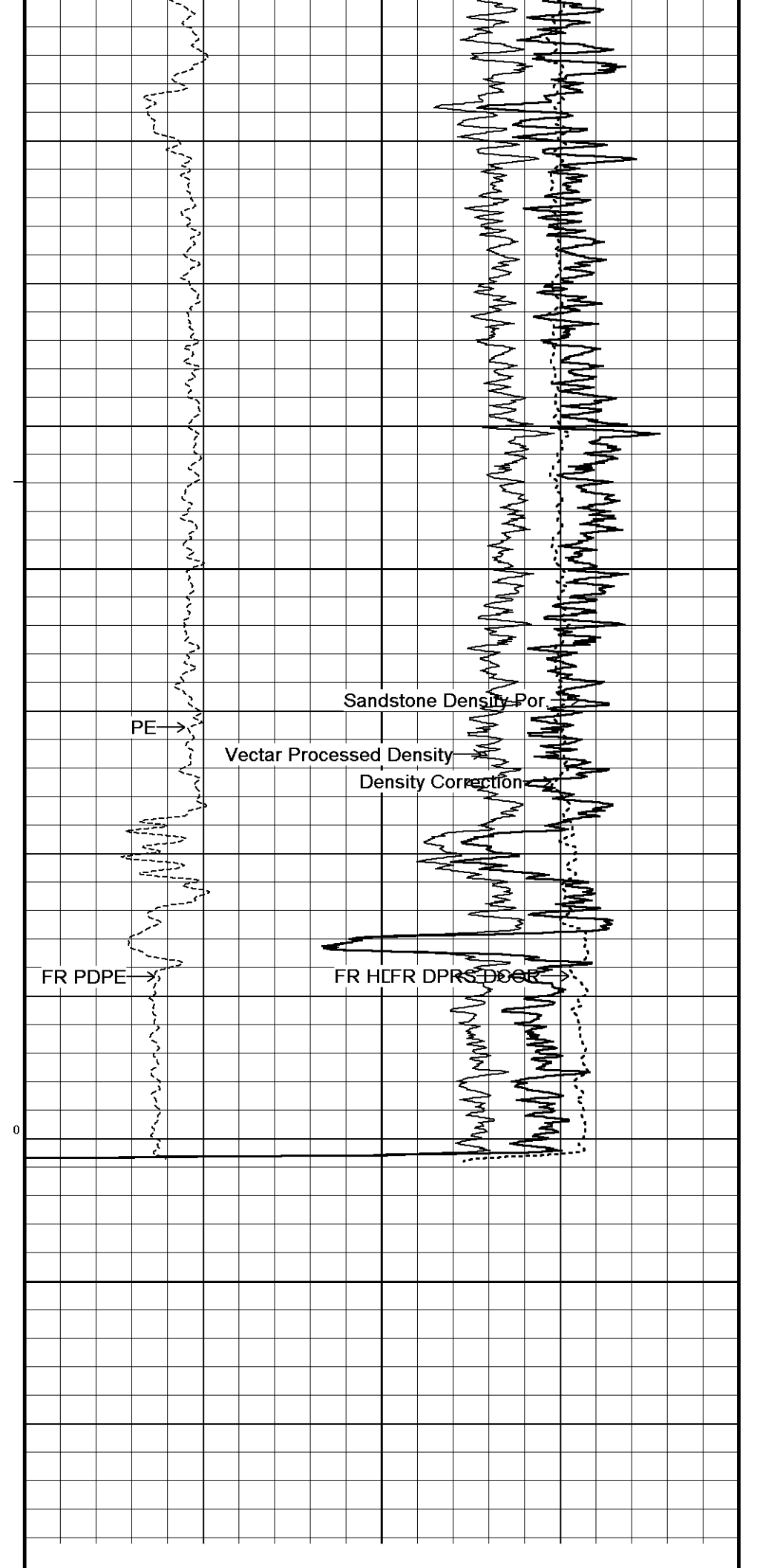
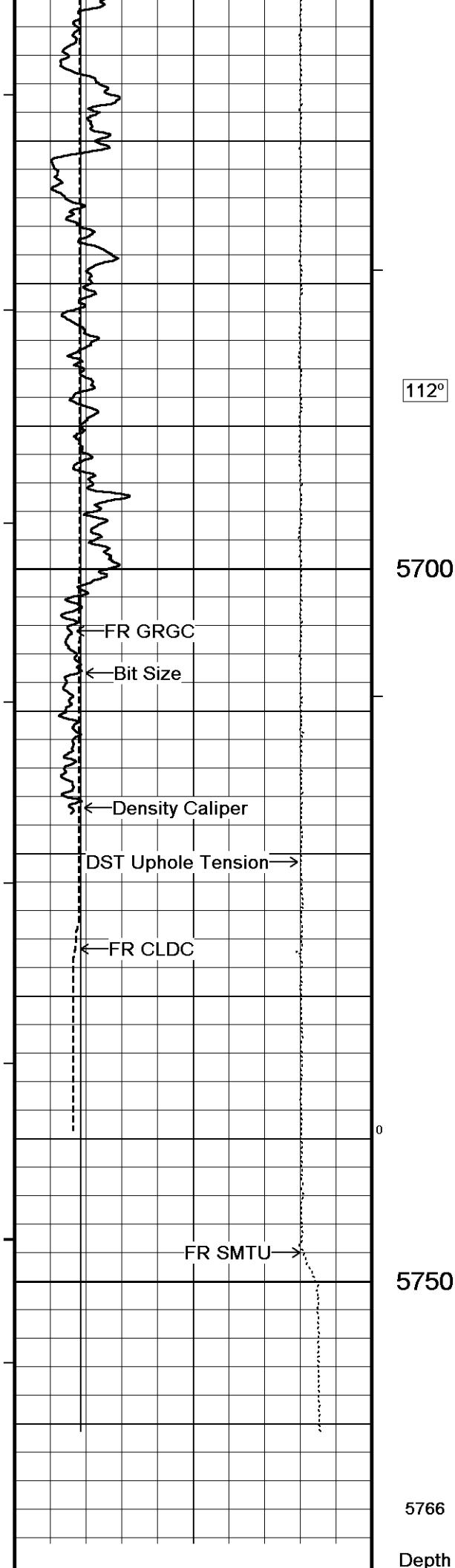


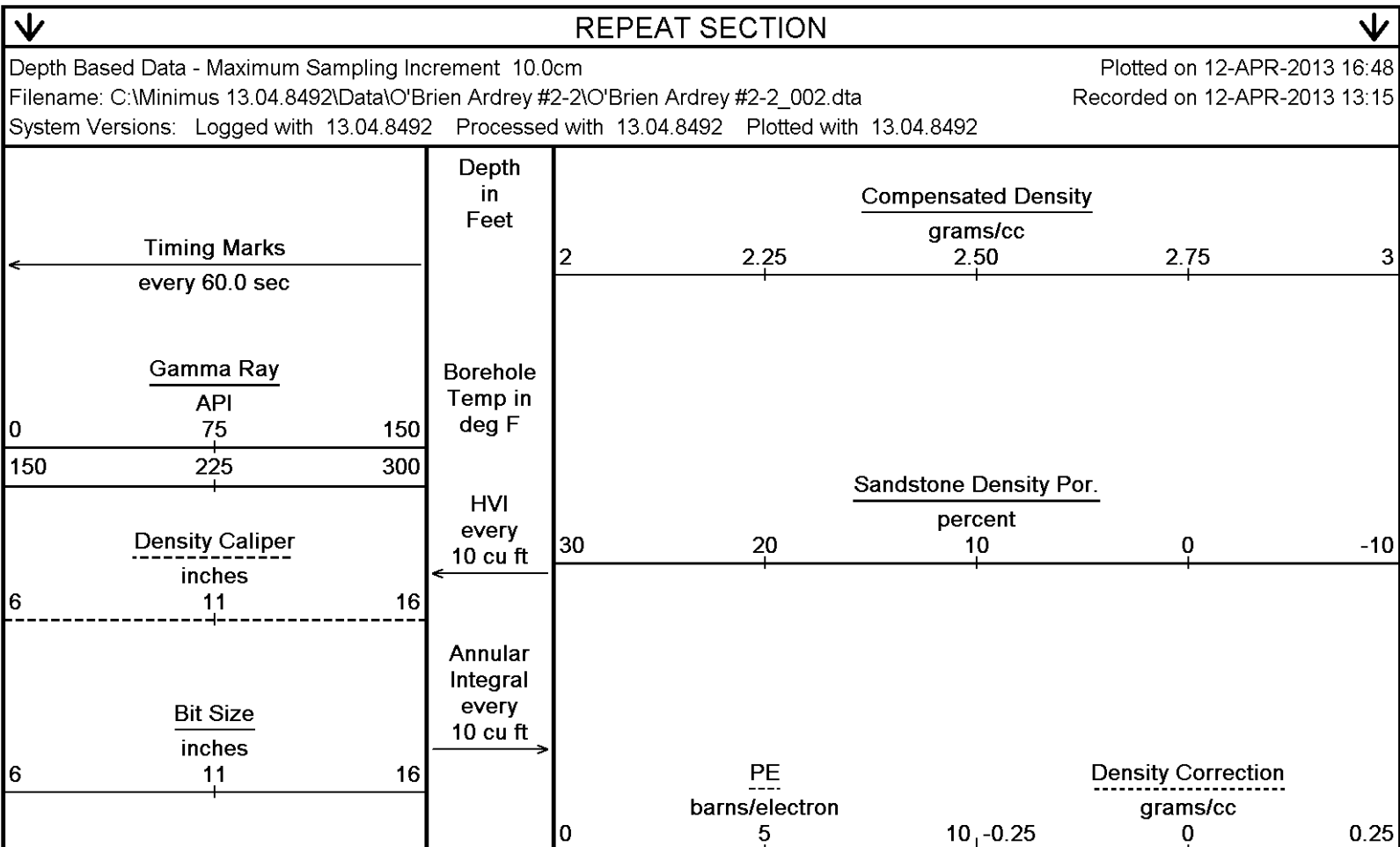
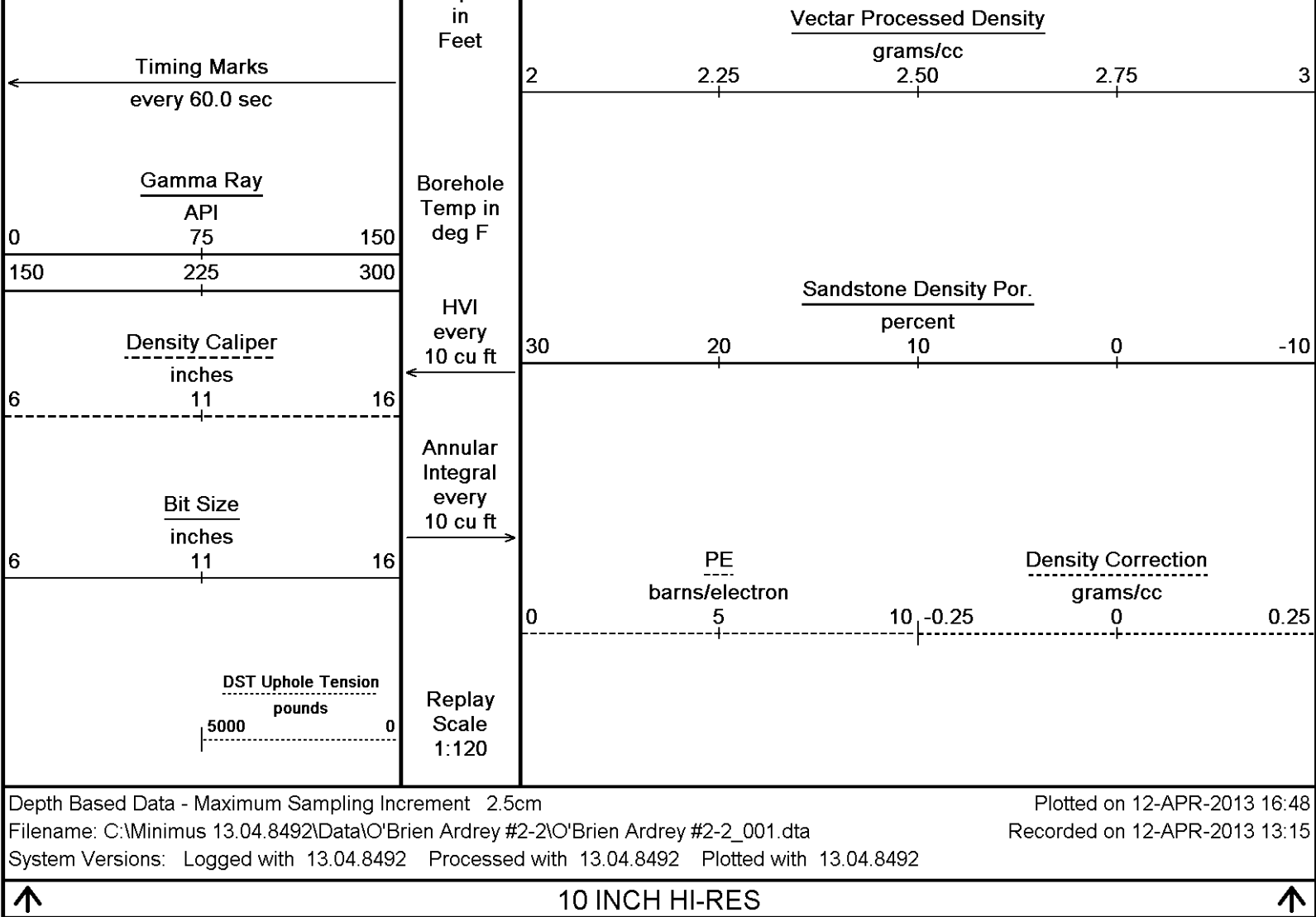




5550
112°
5600
112°
5650







DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

5300

100

109°

5350

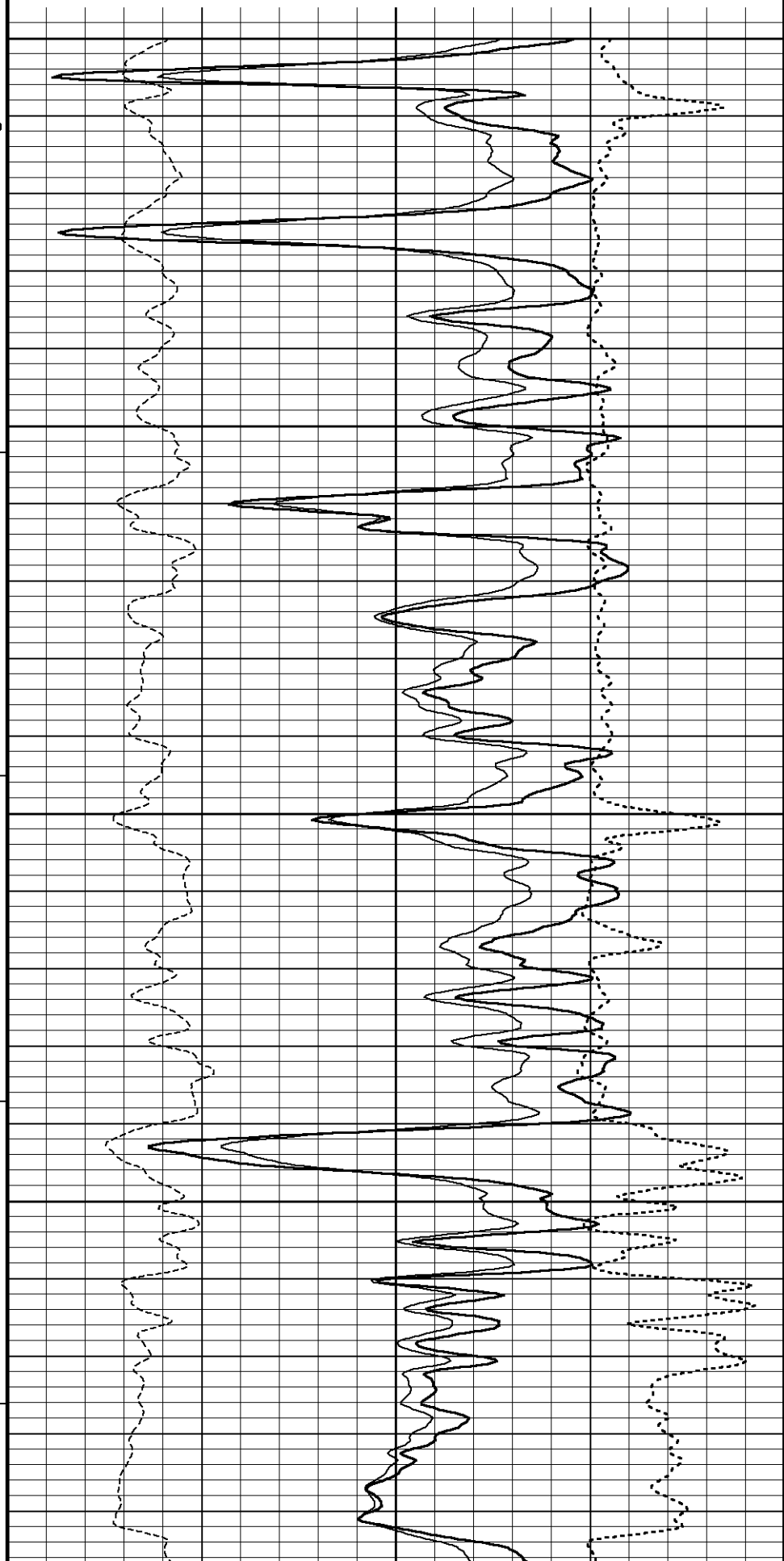
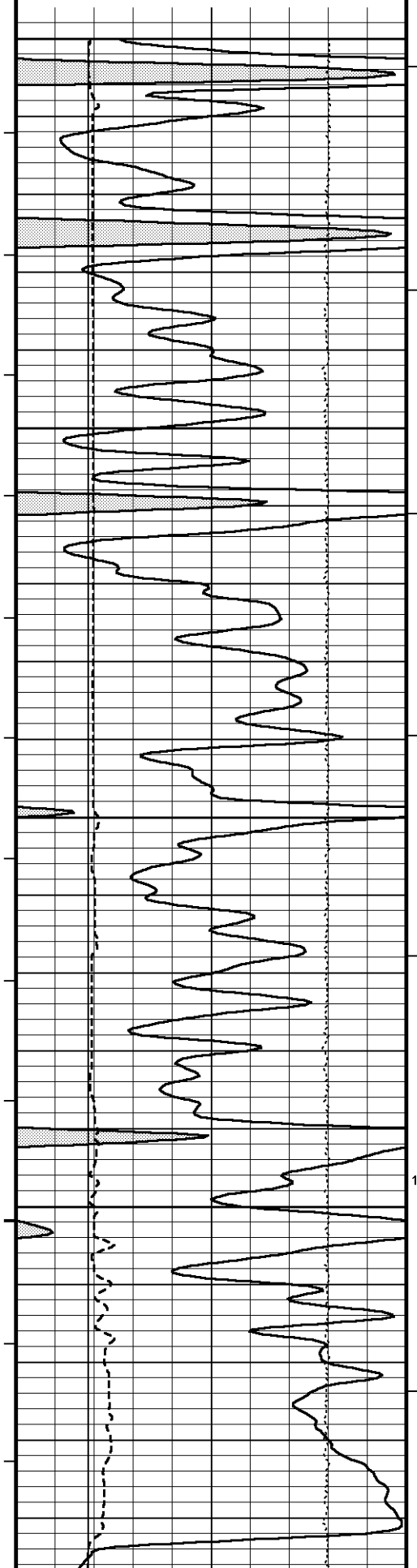
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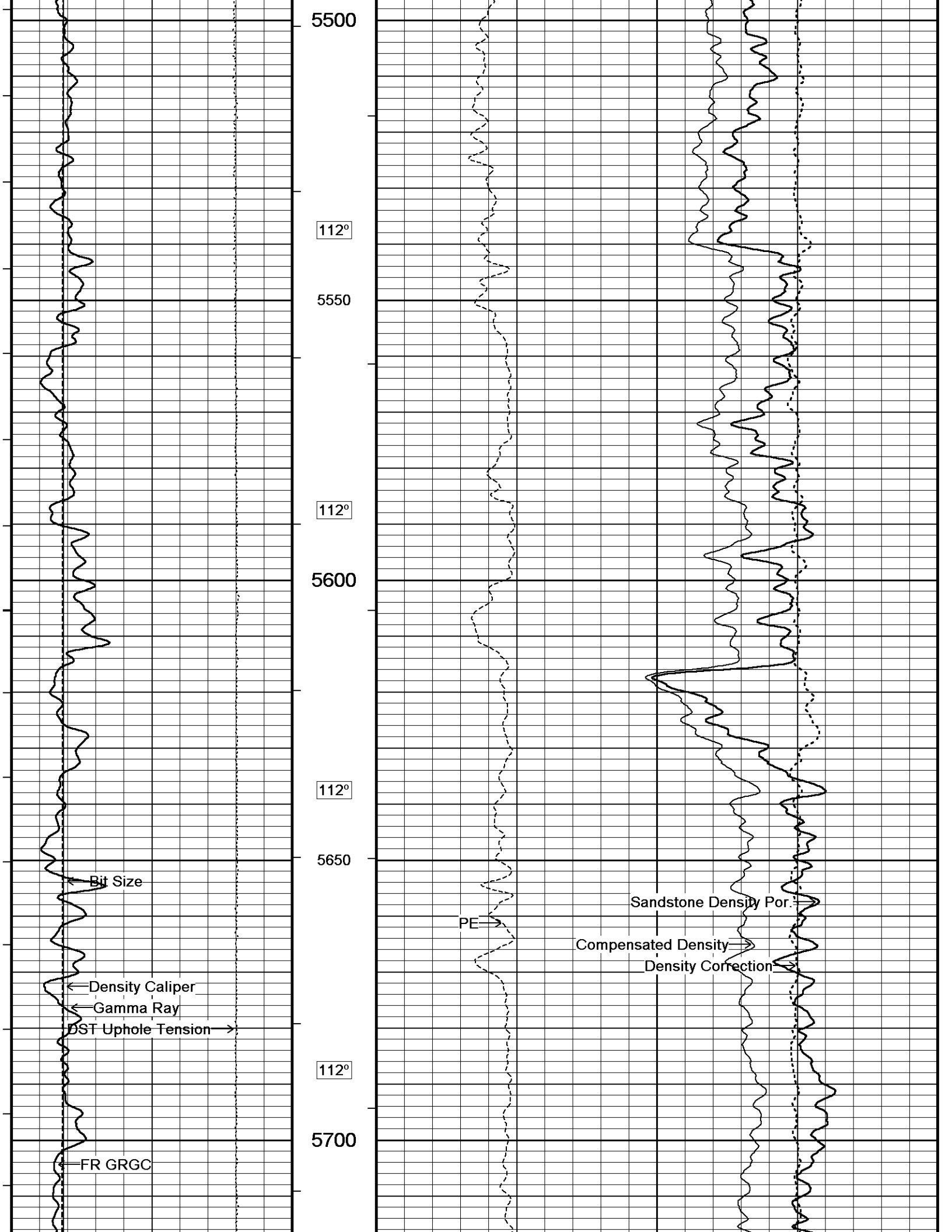
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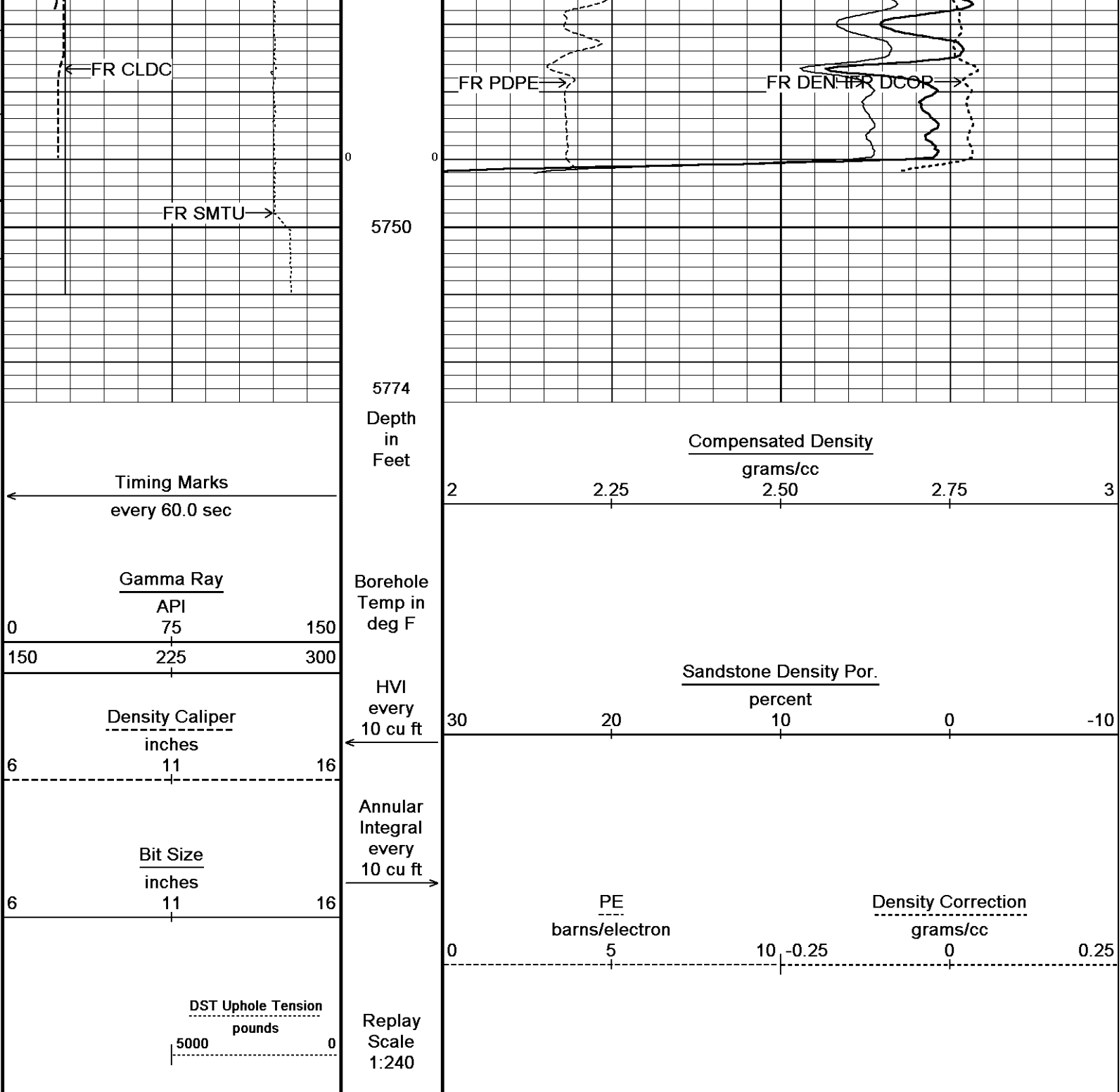
110°

5450

111°







Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_002.dta
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492
Plotted on 12-APR-2013 16:48
Recorded on 12-APR-2013 13:15

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION		
C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta		
General Constants All 000		Last Edited on 12-APR-2013,12:53
General Parameters		
Mud Resistivity	0.340	ohm-metres
Mud Resistivity Temperature	77.000	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	4.500	inches	
Caliper for Differential Caliper	Density Caliper		
Rwa Parameters			
Porosity used	Base Density Porosity		
Resistivity used	Array Ind. Six Res Rt		
RWA Constant A	1.000		
RWA Constant M	2.000		
Down-hole Tension Calibration SMS 0			
			Field Calibration on 12-APR-2013 12:12
Reading No	Measured	Calibrated (lbs)	
1	15097.65	0.00	
2	15369.34	383.60	
Gamma Calibration MCG-B 34			
			Field Calibration on 10-APR-2013 10:25
	Measured	Calibrated (API)	
Background	60	40	
Calibrator (Gross)	1154	765	
Calibrator (Net)	1095	725	
Gamma Constants MCG-B 34			
			Last Edited on 12-APR-2013,11:37
Gamma Calibrator Number	GR38		
Mud Density	1.12	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
SP Calibration MCG-B 34			
			Field Calibration on 29-MAR-2013,12:58
	Measured	Calibrated (mV)	
Reference 1	101.0	100.0	
Reference 2	-99.0	-100.0	
High Resolution Temperature Calibration MCG-B 34			
			Field Calibration on 29-MAR-2013,12:58
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	
High Resolution Temperature Constants MCG-B 34			
			Last Edited on 29-MAR-2013,12:58
Pre-filter Length	11		
Micro Laterolog Calibration MMR-A 11			
			Base Calibration on 31-DEC-1999 00:00 Field Check on 31-DEC-1999 00:00
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-A 11			
			Last Edited on
Pad Type	6 in Solid Nylon B23059		
Micro Laterolog K Factor	0.0128		
Standoff Offset	0.0000	inches	
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. Source Rmc Correc.	MCG External Temperature		

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 08-MAR-2013 17:36

Field Check on 10-APR-2013 10:27

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.4	60.0	5.0	25.0
Micro Inverse	15.5	77.5	5.0	25.0
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
	Micro Normal		76.3	
	Micro Inverse		58.7	

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 05-NOV-2012,13:54

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	0.0000	inches	

Caliper Calibration MMR-A 11

Base Calibration on 08-APR-2013 09:09

Field Calibration on 10-APR-2013 10:30

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13932	5.98
2	17063	7.97
3	20236	9.86
4	24170	11.92
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.93	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 13-MAR-2013 16:17

Field Check on 10-APR-2013 10:41

Base Calibration		Measured		Calibrated (cps)	
		Near	Far	Near	Far
		2980	92	3714	110
Ratio		32.499		33.764	
Field Calibrator at Base				Calibrated (cps)	
				1736	2464
Ratio				0.705	
Field Check				Calibrated (cps)	
				1736	2470
Ratio				0.680	

Neutron Constants MDN-A.B 65

Last Edited on 12-APR-2013,11:36

Neutron Source Id	PN-521	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Bit Size	
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	None	
Temperature	N/A	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	

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8
Base Check		281.2
Field Check		281.3

FE Constants MFE-B.J 352

Last Edited on 12-APR-2013,11:35

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

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 13-DEC-2012,10:54

	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 10-APR-2013,10:31

Pre-filter Length	11
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Induction Calibration MAI-A.A 45

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

Field Check on 10-APR-2013 10:52

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
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.4	3850.4
2			31.7	3628.8
3			28.7	3049.3
4			18.3	2079.1
Deep			16.1	1911.4
Medium			42.5	4060.4
Shallow			49.5	5481.9

Array Temperature	60.4	Deg F
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Induction Constants MAI-A.A 45

Last Edited on 12-APR-2013,11:35

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

DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

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

Caliper Calibration MPD-B 31

Base Calibration on 28-MAR-2013 13:43

Field Calibration on 08-APR-2013 08:48

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16832	3.99
2	24690	5.98
3	33328	7.97
4	41600	9.86
5	50976	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.00	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 13-MAR-2013 15:17

Field Check on 10-APR-2013 10:49

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46119	23502	59556	30836
Reference 2	19149	1933	24941	2541

Field Check at Base

681.1	838.4
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Field Check

679.5	834.9
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PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	125	604		
Reference 1	19219	46004	0.421	0.371
Reference 2	5674	19062	0.301	0.272

Field Check at Base

125.1	603.7
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Field Check

124.6	603.1
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Density Constants MPD-B 31

Last Edited on 12-APR-2013,11:36

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

PE Correction to Density	Not Applied	
Mud Density	1.12	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

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\O'Brien Ardrey #2-2\O'Brien Ardrey #2-2_003.dta

Compact Comms Gamma
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

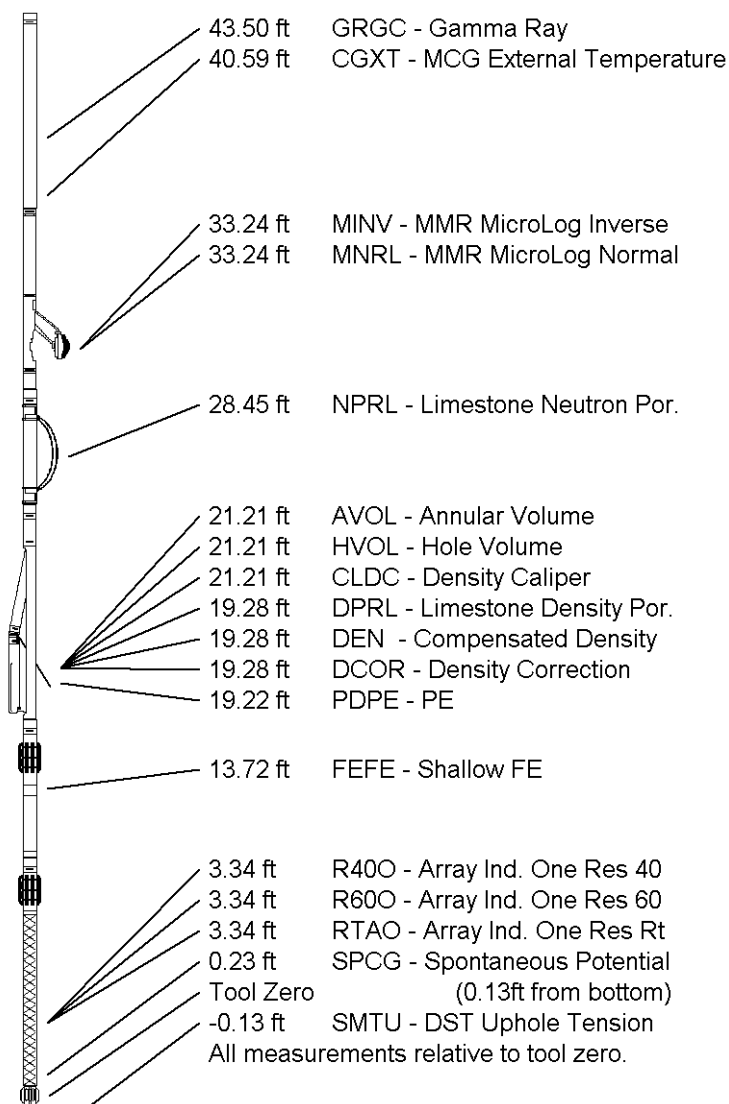
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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

Total Length: 48.78 ft Weight: 383.6 lb



COMPANY

O'BRIEN ENERY RESOUCES CORP.

WELL

ARDREY #2-2

FIELD

ARDREY

PROVINCE/COUNTY

CLARK

COUNTRY/STATE

U.S.A. / KANSAS

COUNTRY/STATE			U.S.A. / KANSAS		
Elevation Kelly Bushing	2553.00	feet	First Reading	5728.00	feet
Elevation Drill Floor	2551.00	feet	Depth Driller	5750.00	feet
Elevation Ground Level	2541.00	feet	Depth Logger	5748.00	feet



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COMPENSATED NEUTRON