

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

COMPANY

O'BRIEN ENERGY RESOURCES CORP.

WELL

CROOKED CREEK OFFSET # 4-8

FIELD

ANGELL SOUTH

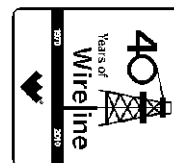
PROVINCE/COUNTY

MEADE

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

2271' FSL & 526' FEL**SW NE NE SE**

SEC TWP RGE Other Services

8 33S 29W

MAI/MFE

API Number 15-119-21309

MML

Permit Number

Permanent Datum G.L., Elevation 2644 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations:

feet

KB

2656.00

DF

2654.00

GL

2644.00

Date 16-FEB-2012

Run Number ONE

Depth Driller 6323.00 feet

Depth Logger 6323.00 feet

First Reading 6300.00 feet

Last Reading 4400.00 feet

Casing Driller 1501.00 feet

Casing Logger 1497.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.00 lb/USg 58.00 CP

PH / Fluid Loss 10.50 8.00 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 1.35 @ 65.0 ohm-m

Rmf @ Measured Temp 1.08 @ 65.0 ohm-m

Rmc @ Measured Temp 1.62 @ 65.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.76 @ 118.0 ohm-m

Time Since Circulation 6 HOURS

Max Recorded Temp 118.00 deg F

Equipment Name COMPACT

Equipment / Base 13096 LIB

Recorded By A. GIAMBALVO

Witnessed By ROGER PEARSON

S.O. / JOB # 3534704

PETER DEBENHAM

LB12-034

BOREHOLE RECORD

Last Edited: 16-FEB-2012 14:05

Bit Size
inches

7.875

Depth From
feet

1497.00

Depth To
feet

6323.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

12.00

Shoe Depth
feet

1497.00

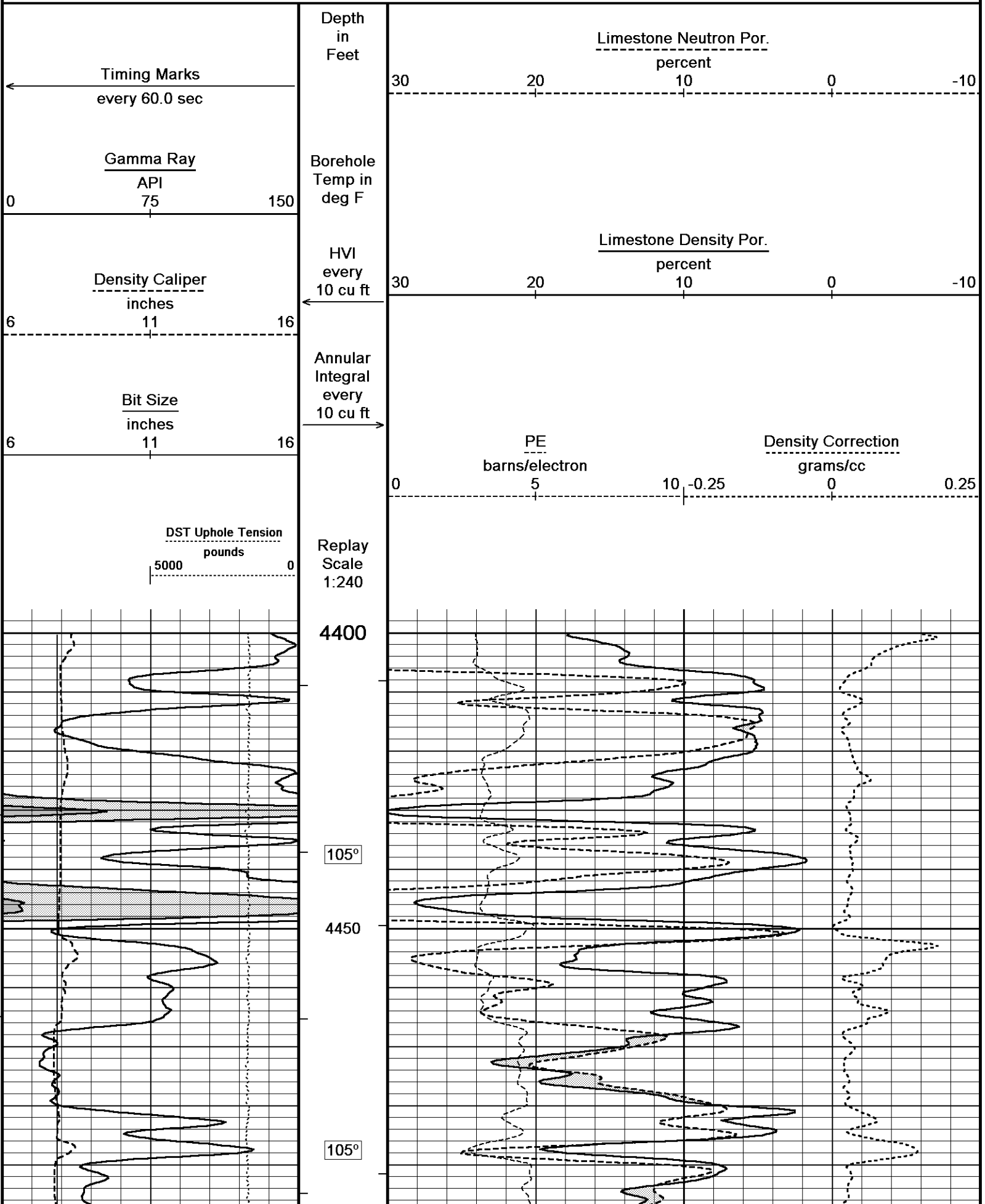
Weight
pounds/ft

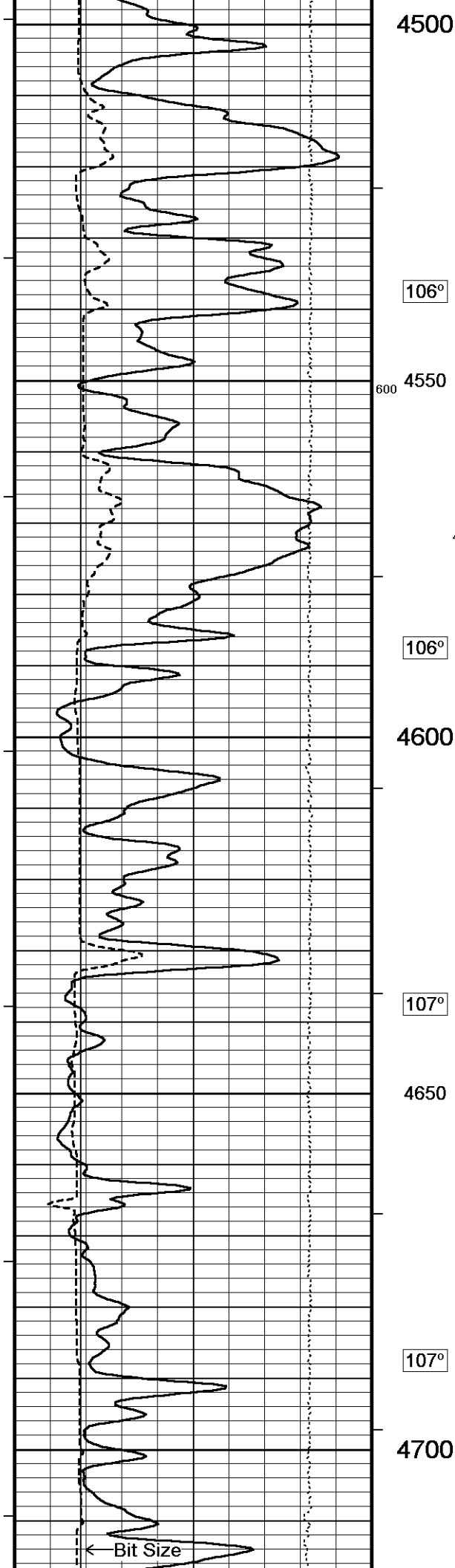
24.00

REMARKS

Tools Run: MAI, MPD, MCG, MDN, MFE, MML,
Hardware: MPD: 8 inch profile plate used. MAI and MFE: 0.5 inch standoffs used. MDN: Dual Eccentralizer used.
2.71 G/CC Limestone density matrix used to calculate porosity.
Borhole rugosity, tight pulls, and washouts will affect data quality.
All intervals logged and scaled per customer's request.
Annular volume with 4.5 inch production casing = 442 Cubic Feet
Service order #3534704
Rig: Duke #6
Engineer: A. Giambalvo
Operator(s): K. Rinehart

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.





4500

106°

600 4550

106°

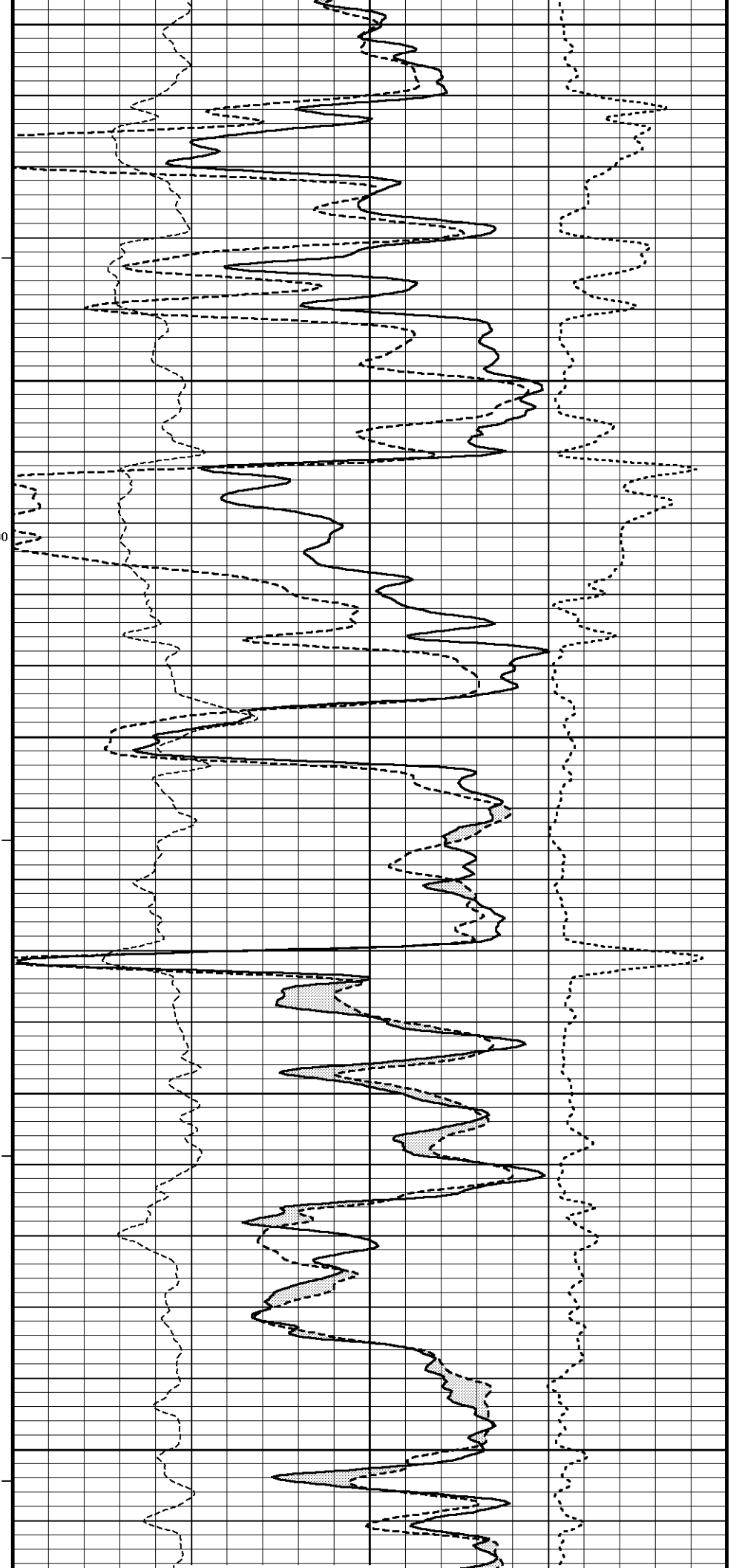
4600

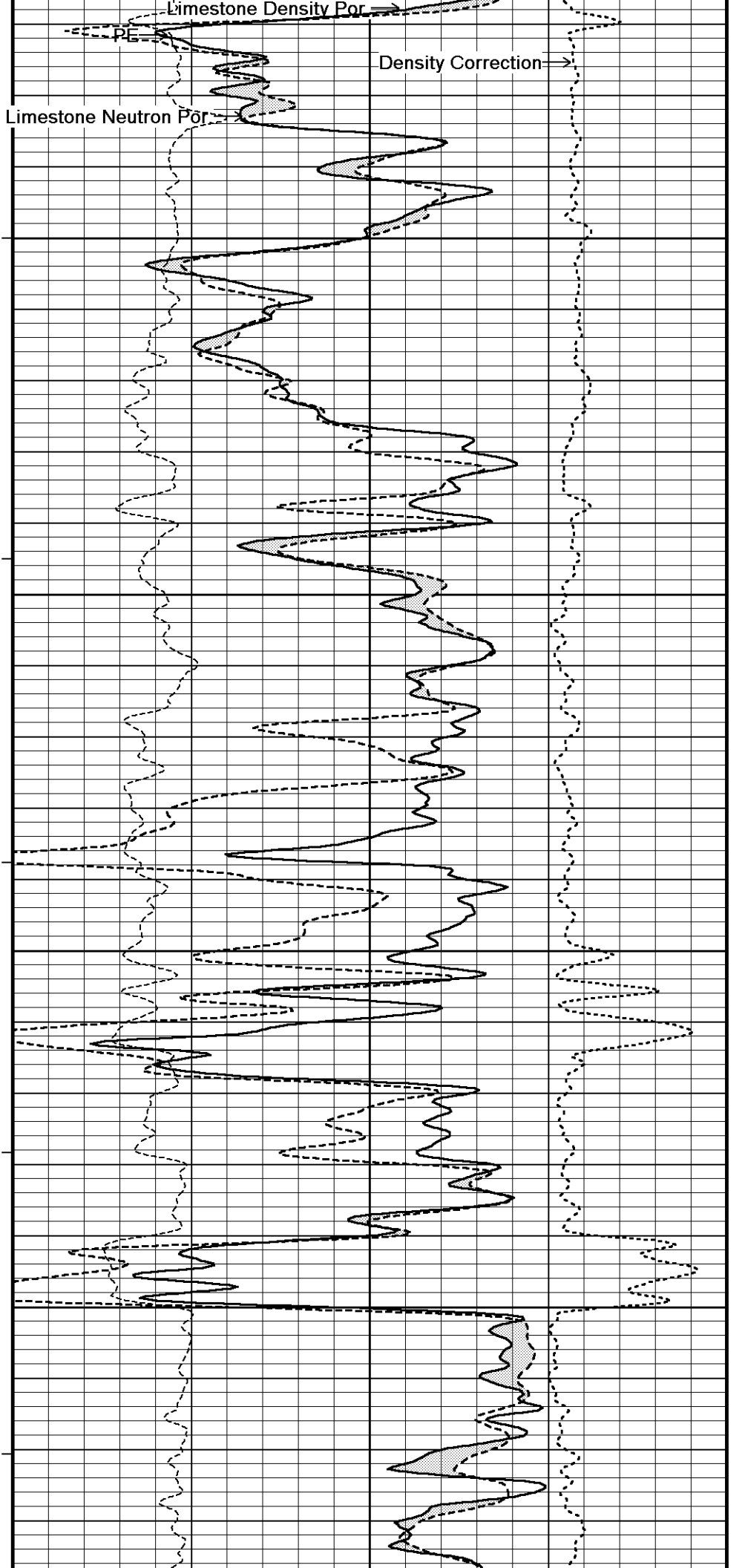
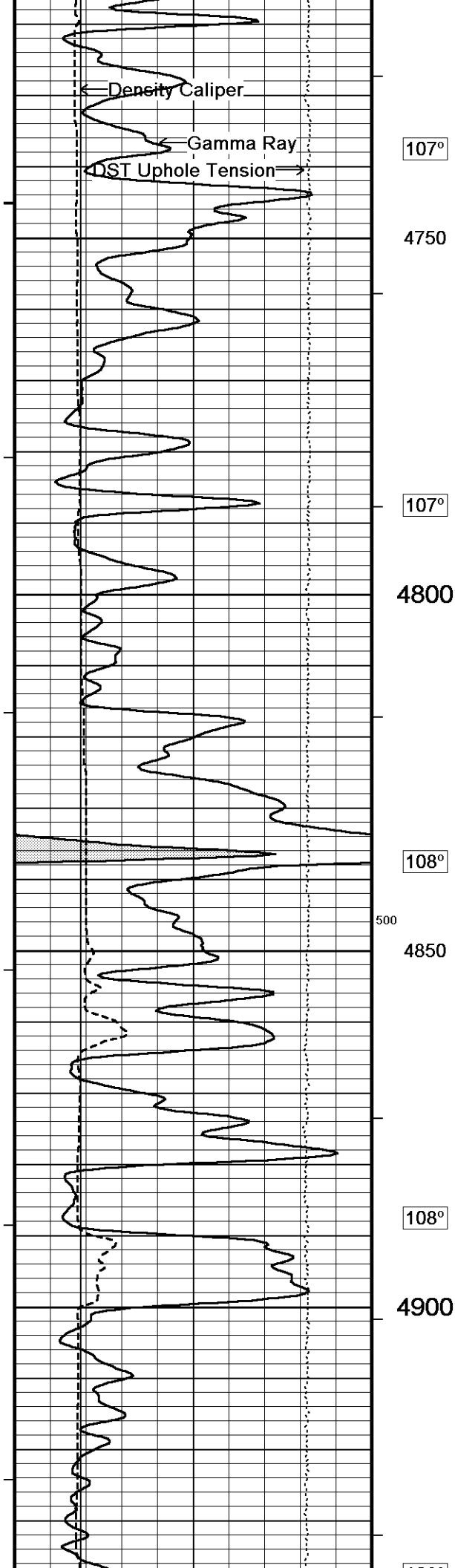
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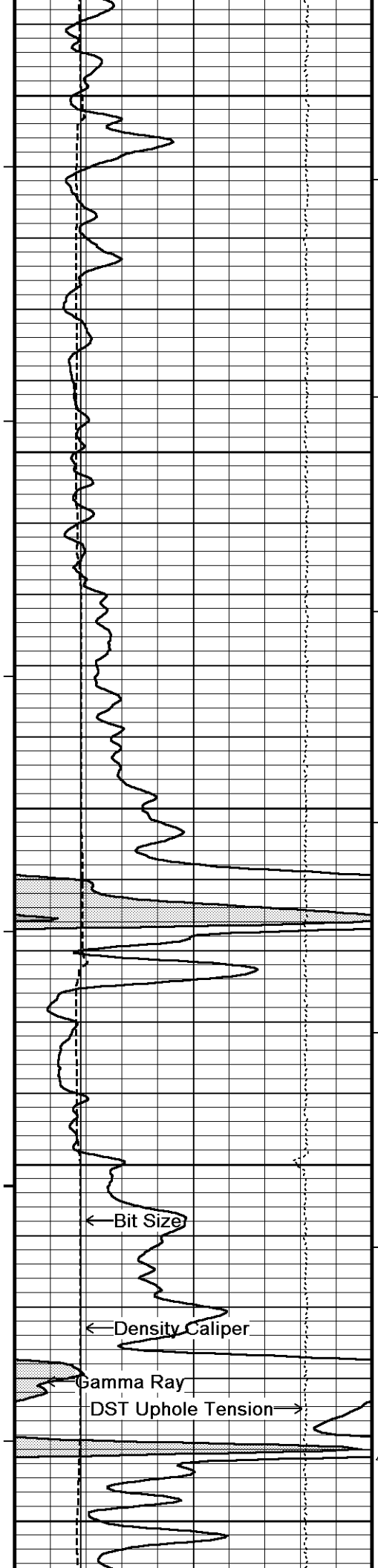
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107°

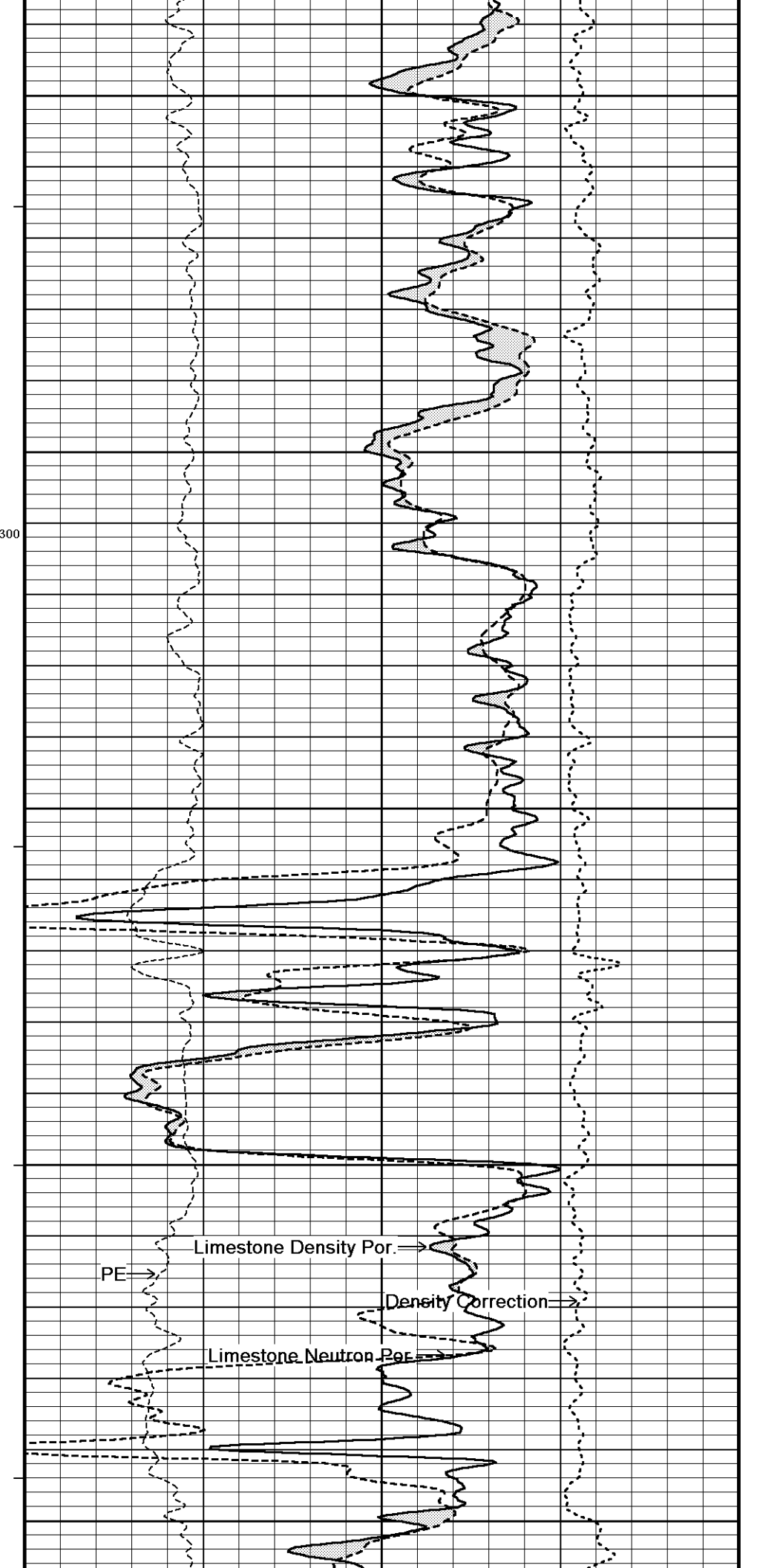
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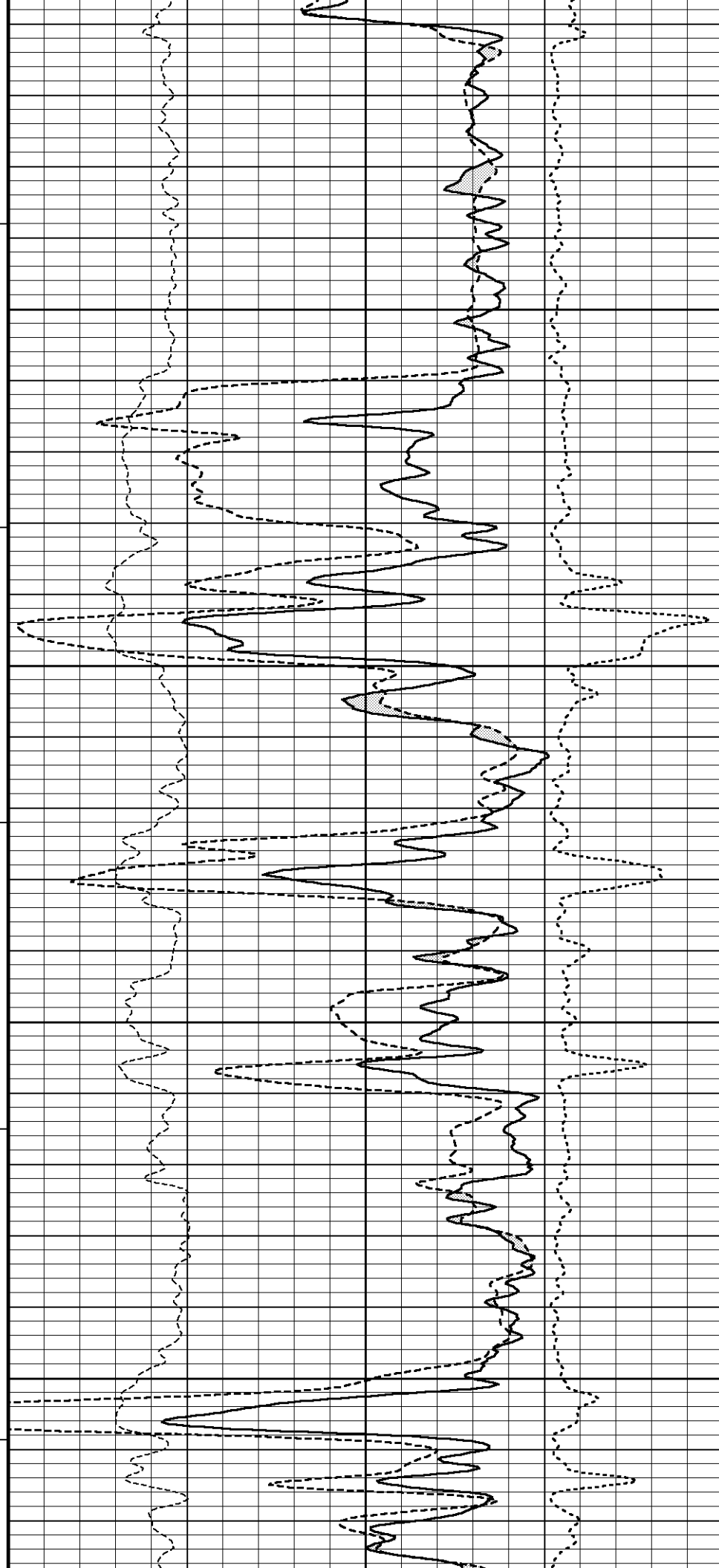
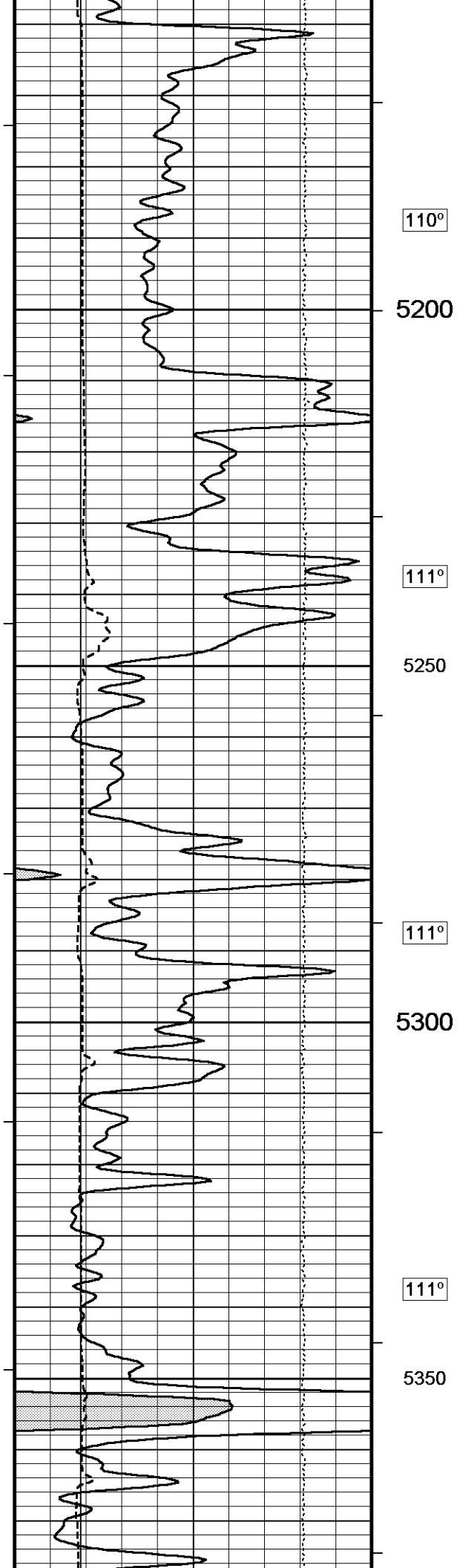


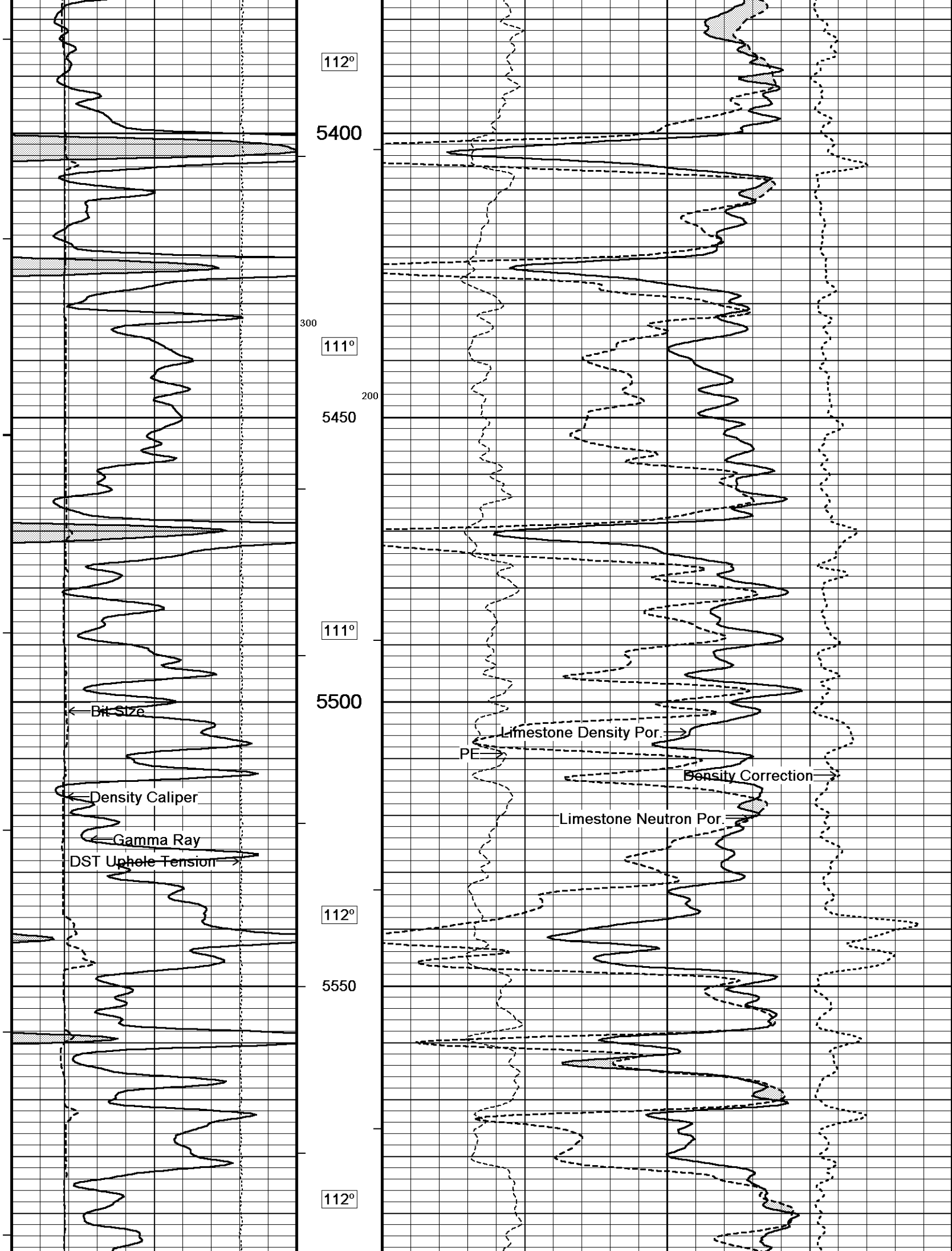


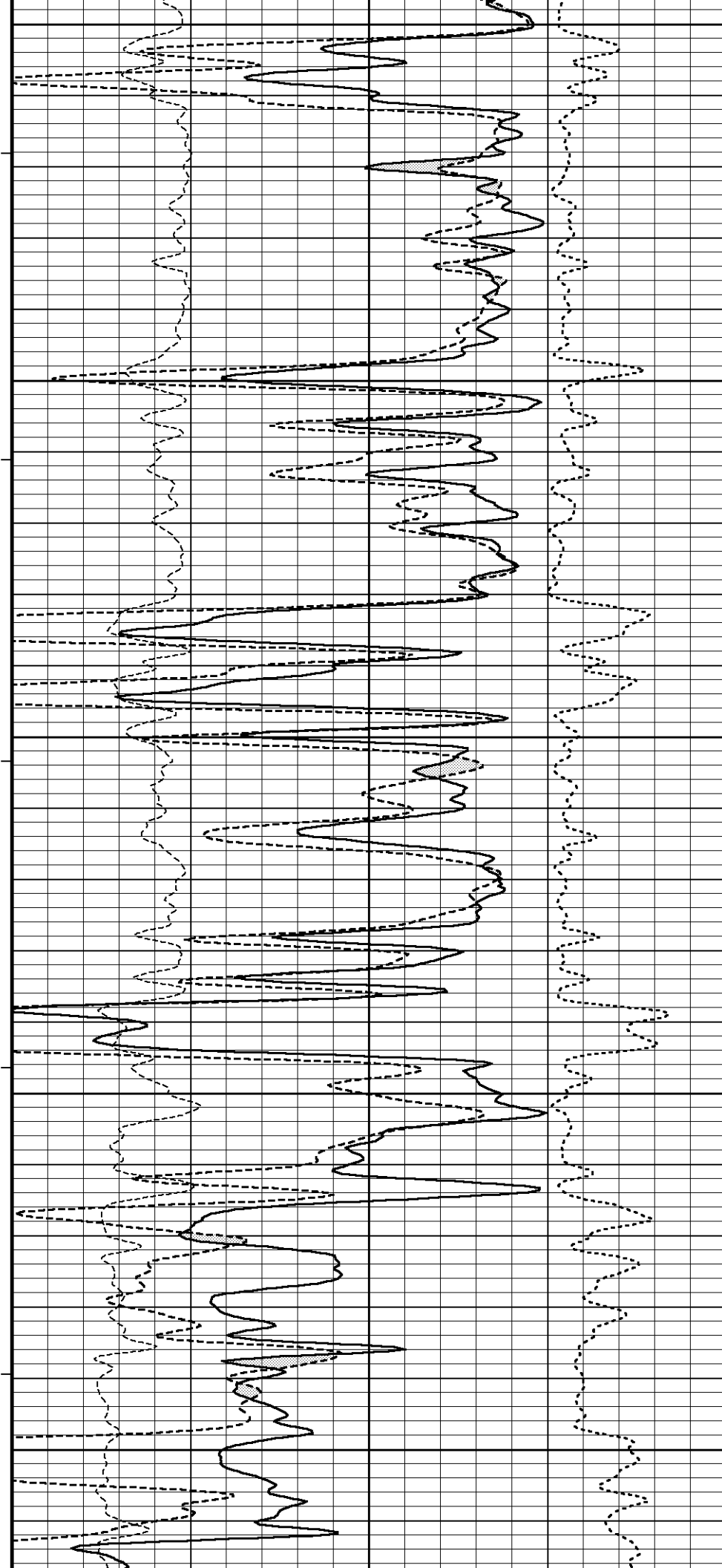
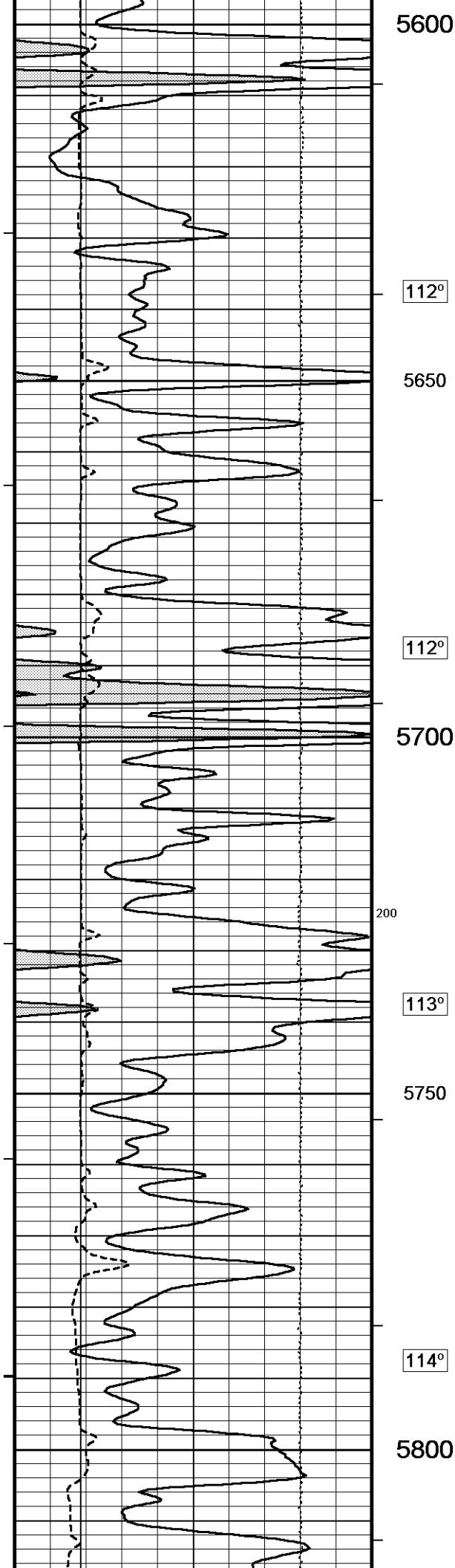


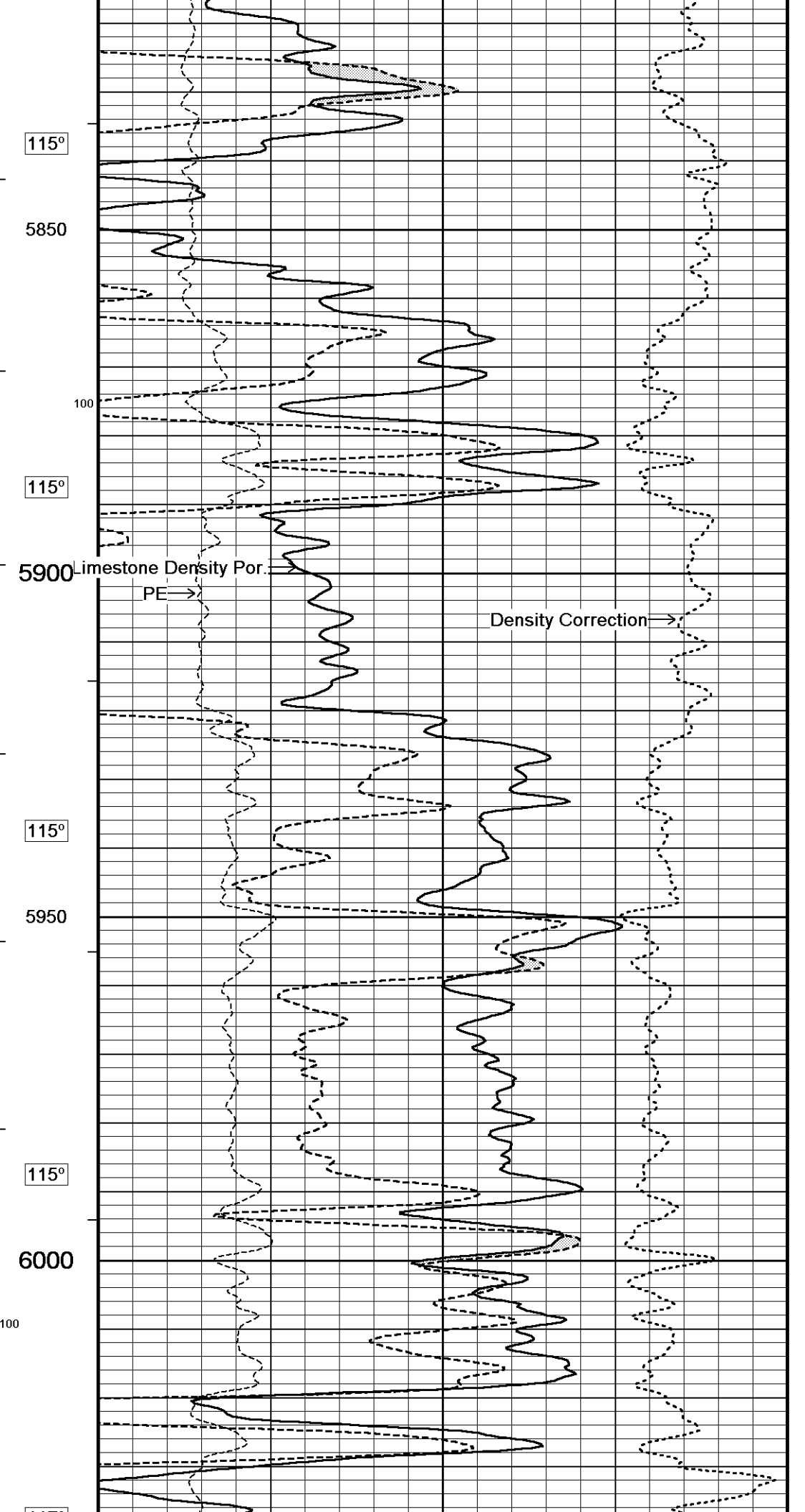
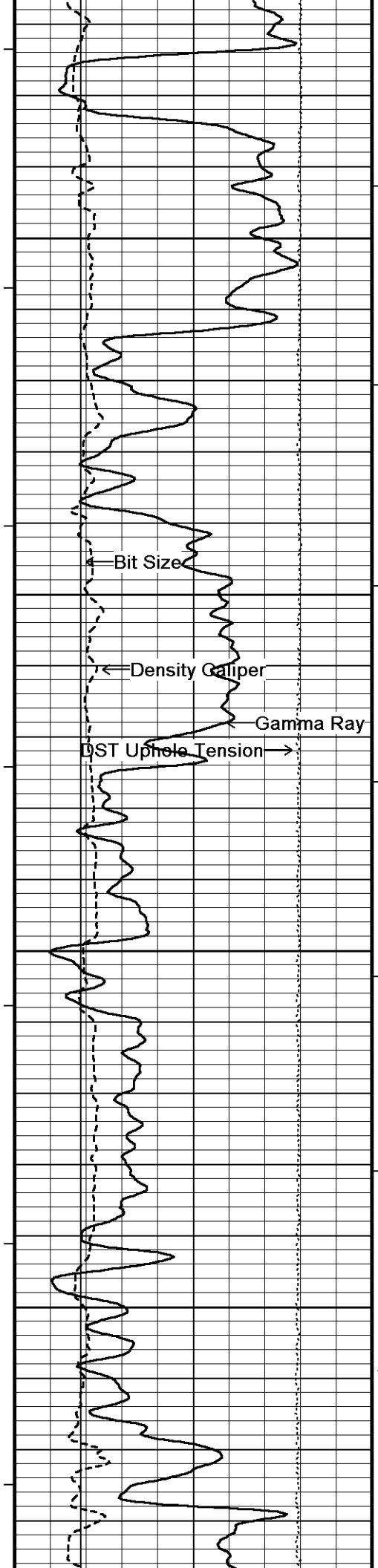
108°
4950
109°
5000
300
109°
5050
109°
5100
110°
5150
400

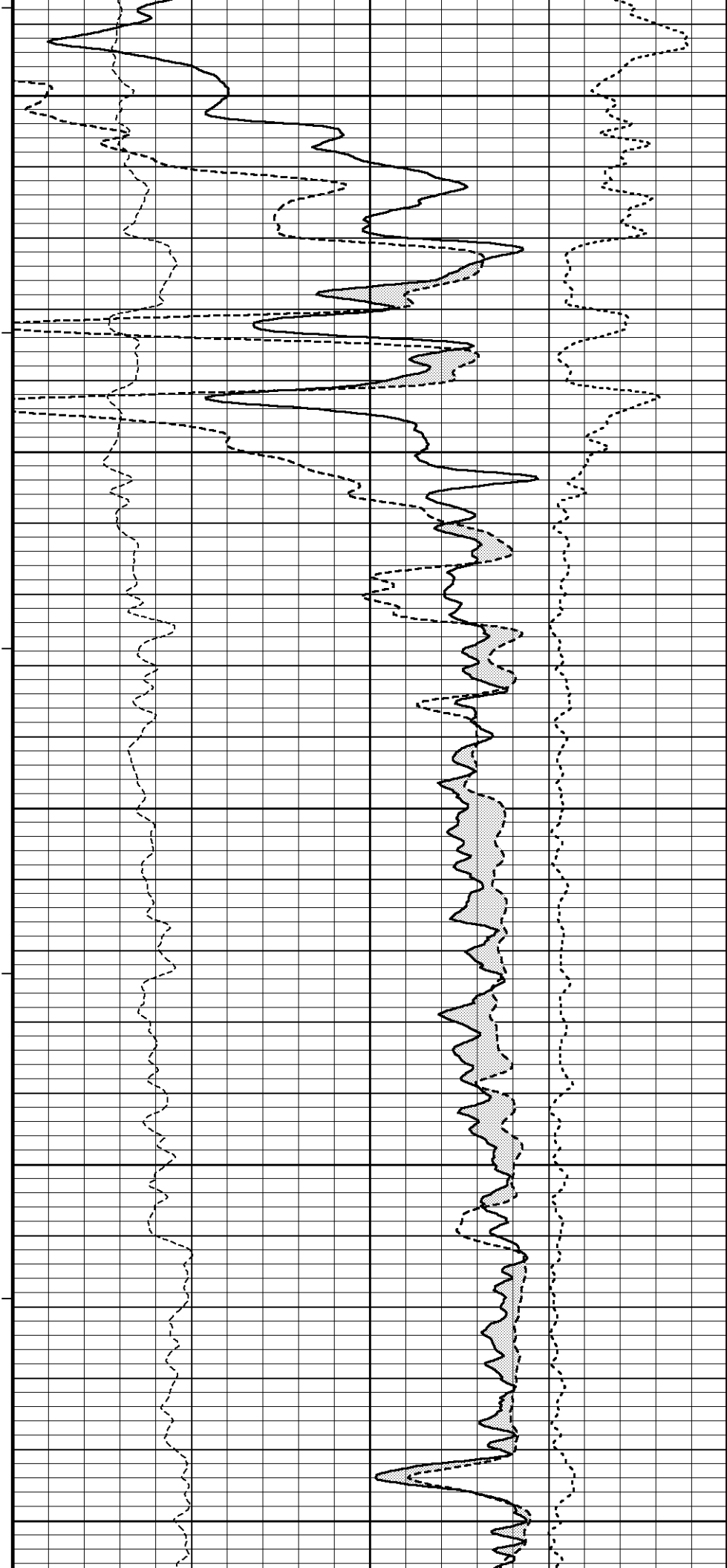
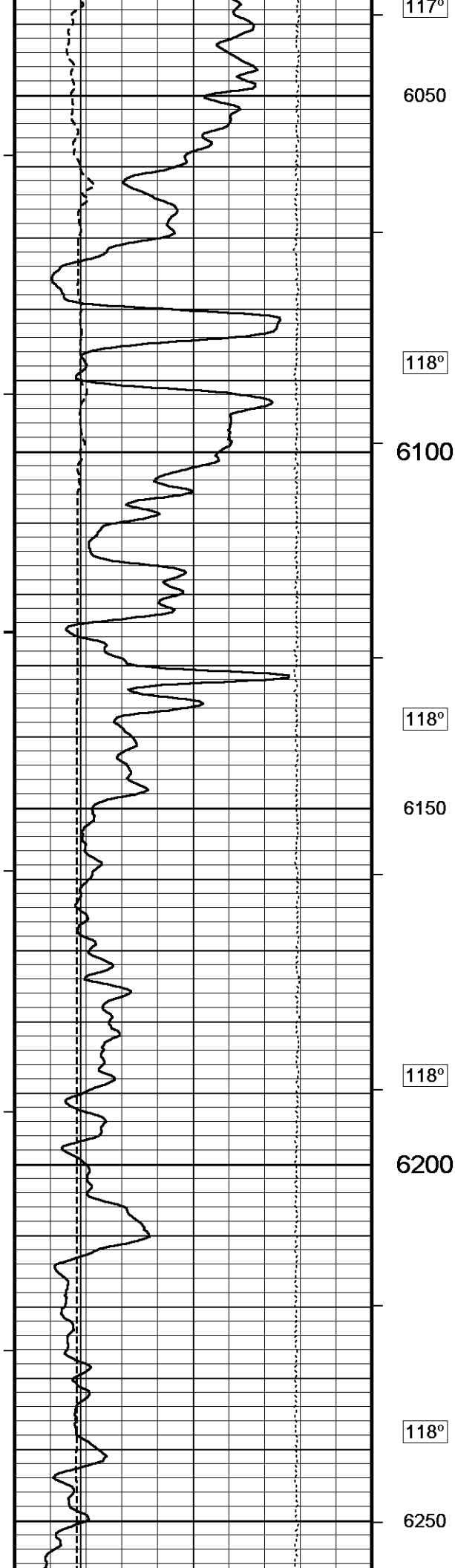


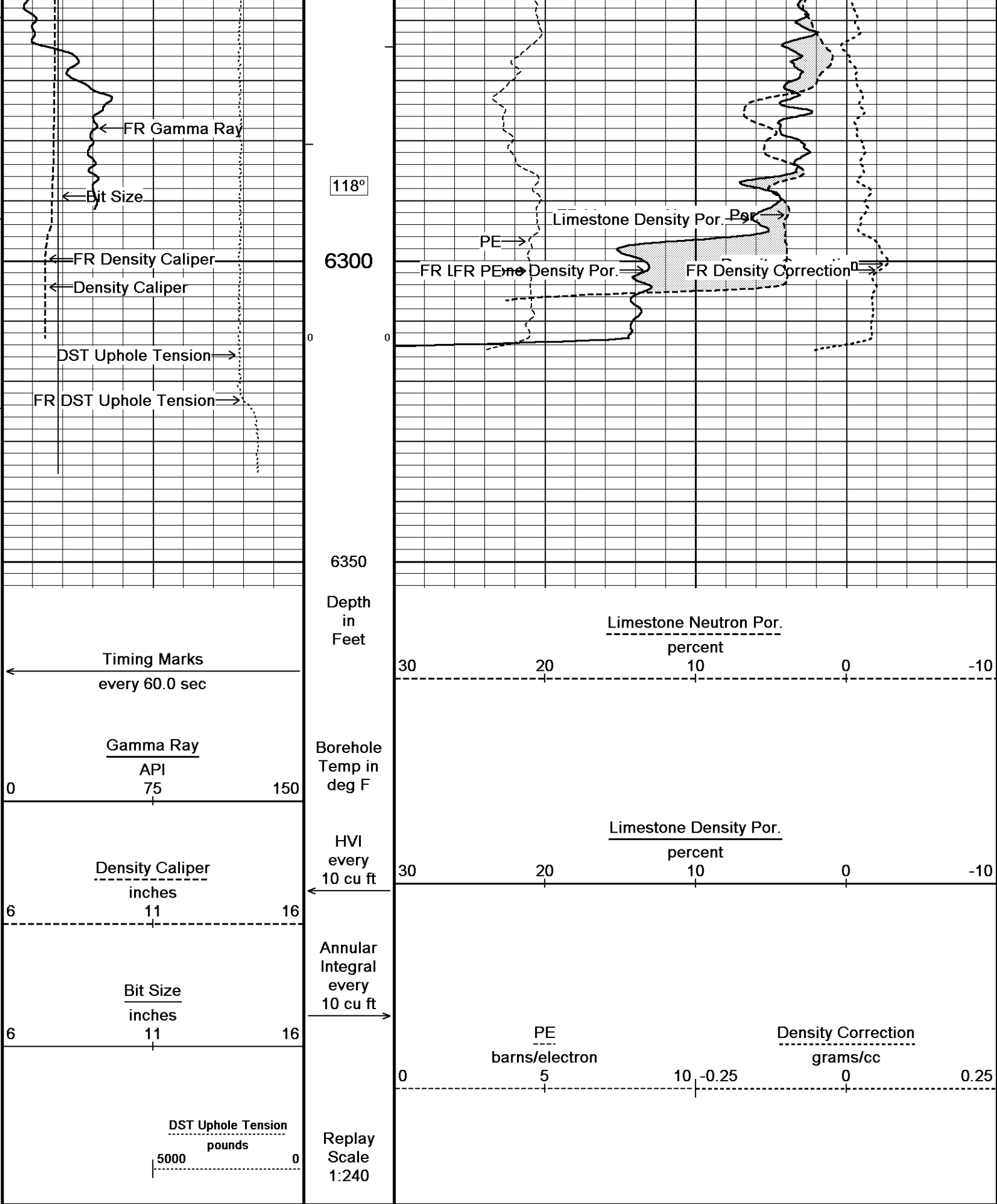


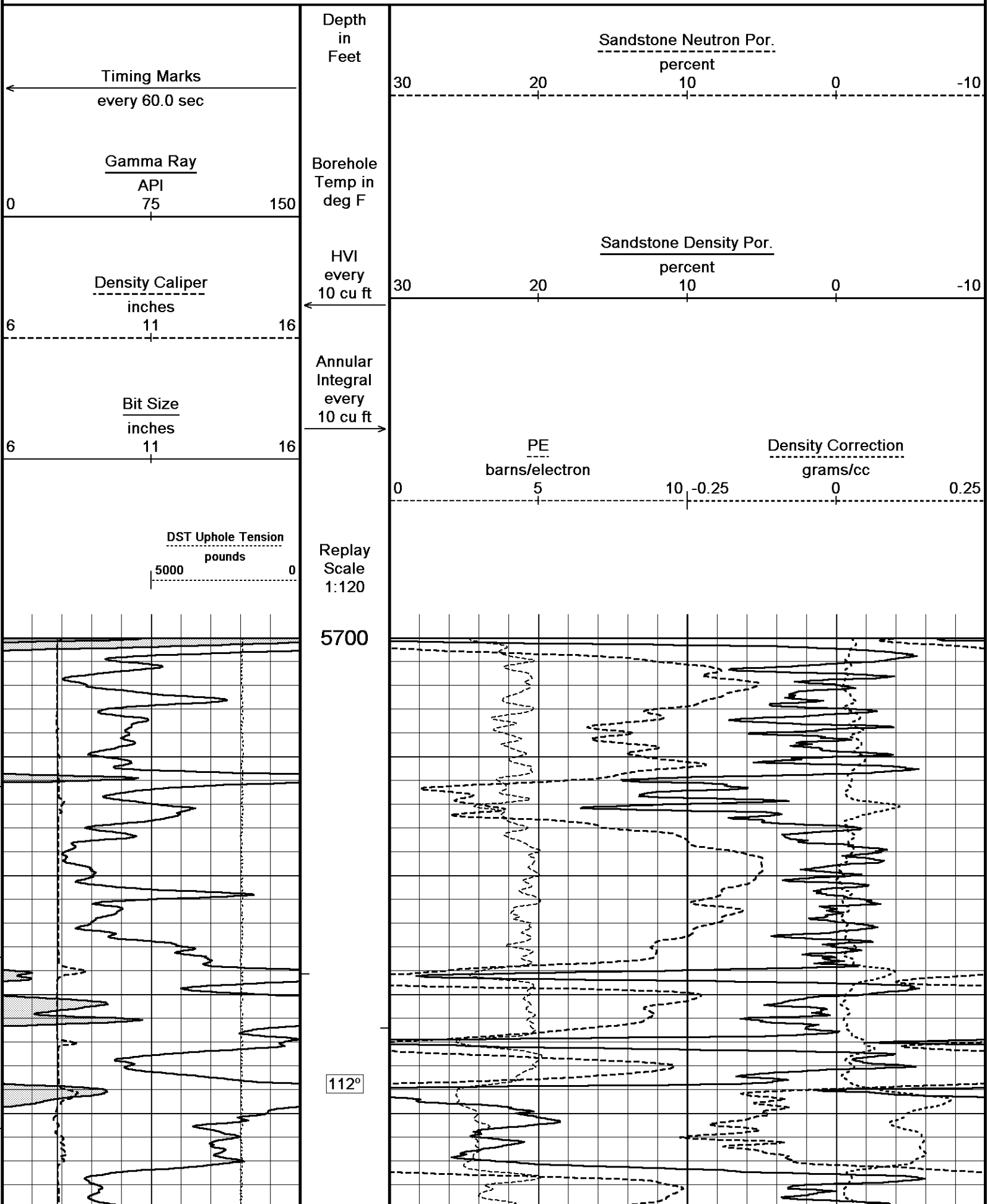












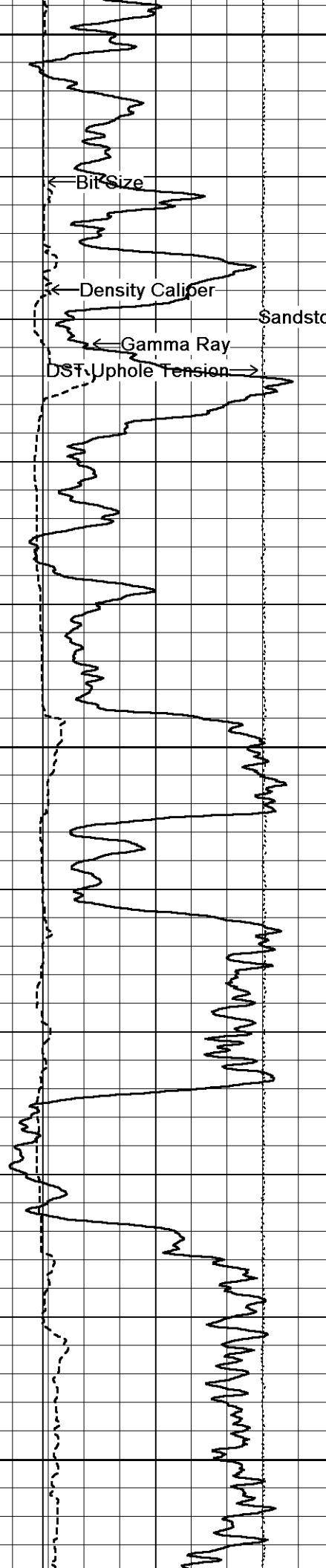
5750

112°

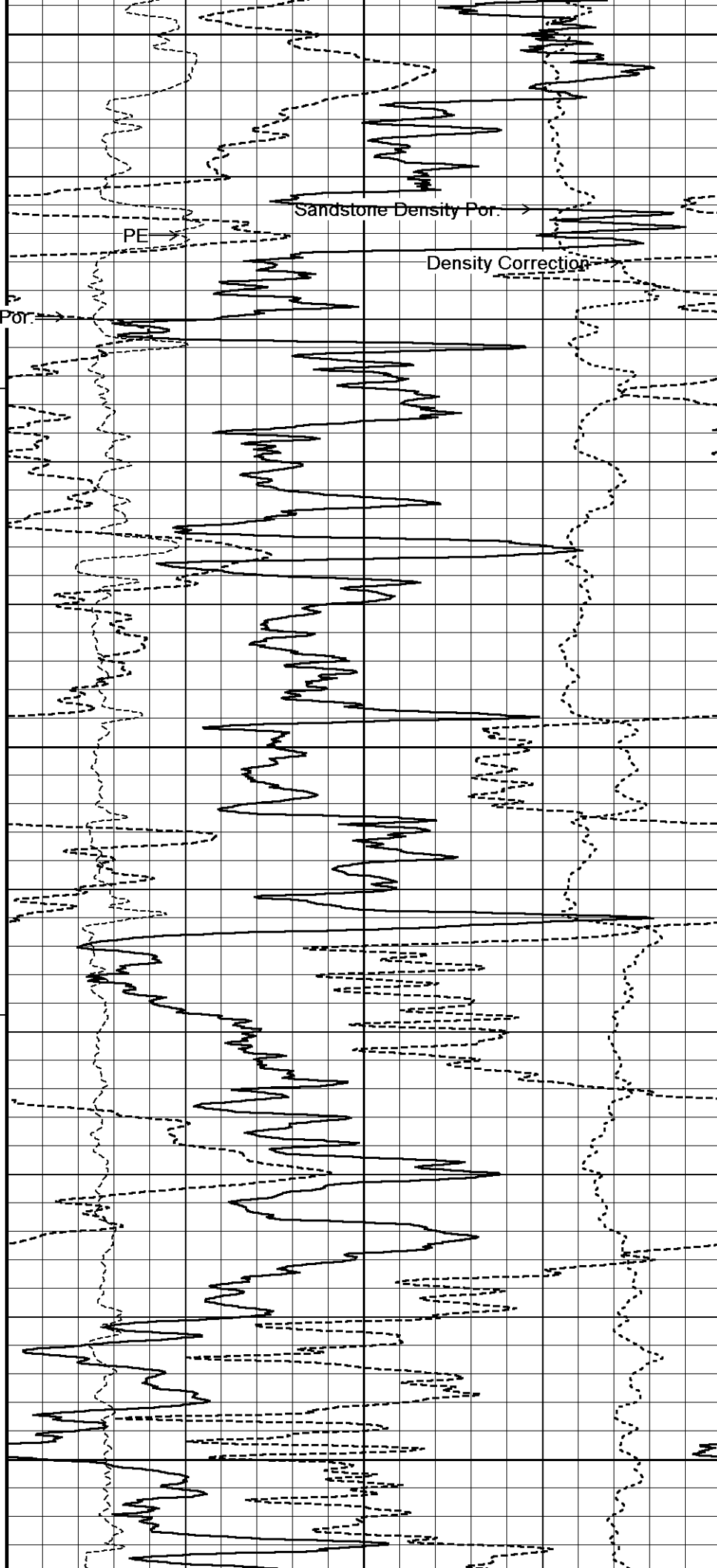
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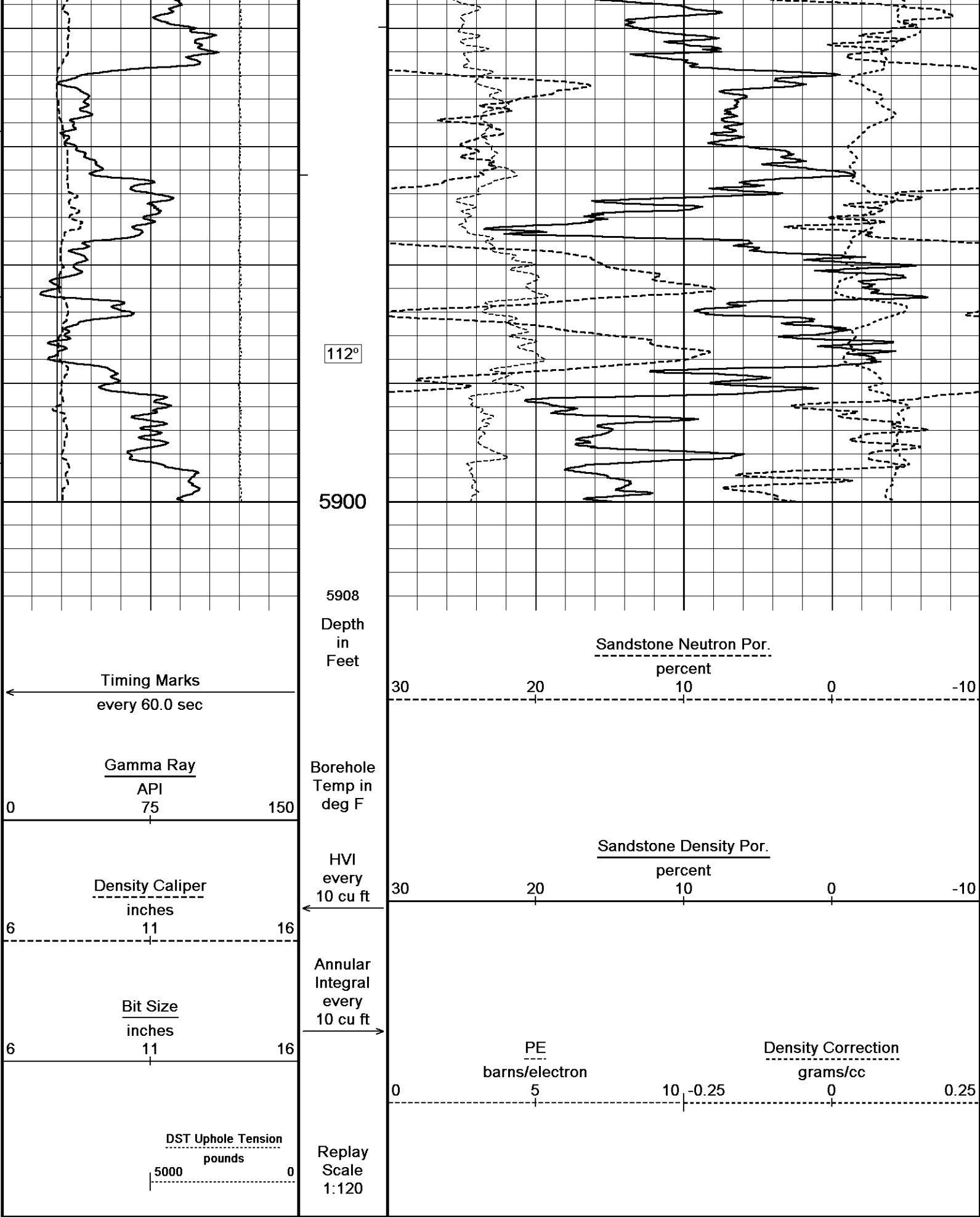
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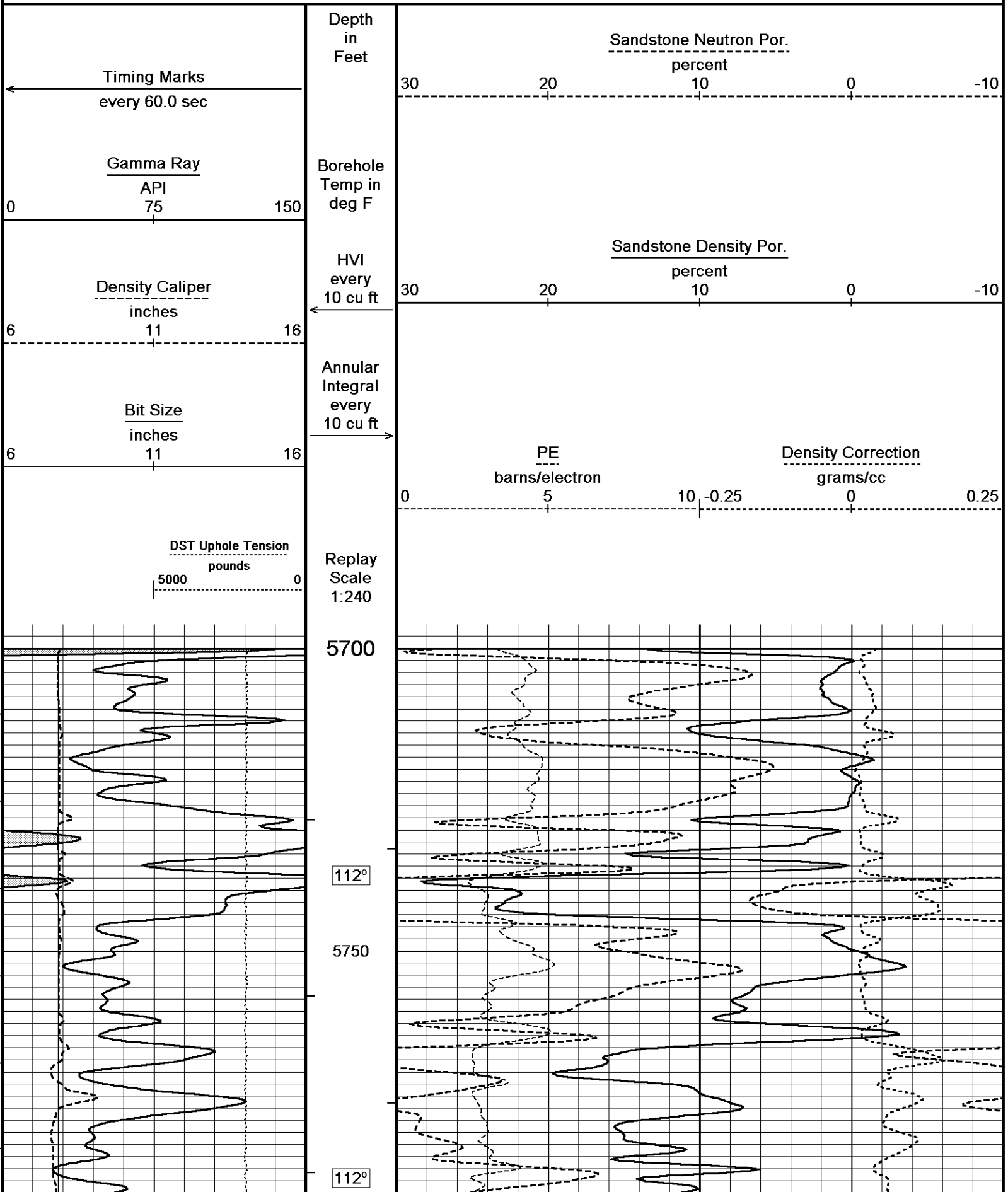
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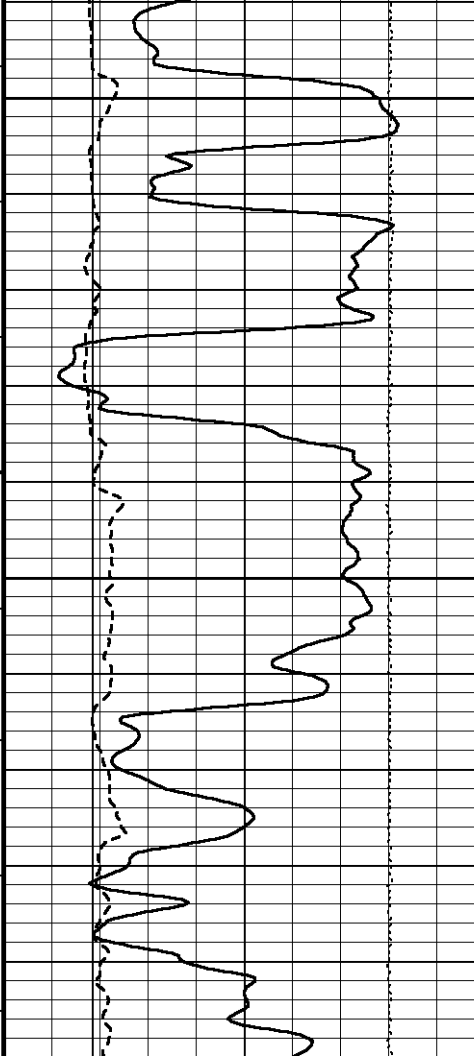


Sandstone Neutron Por.









5800

112°

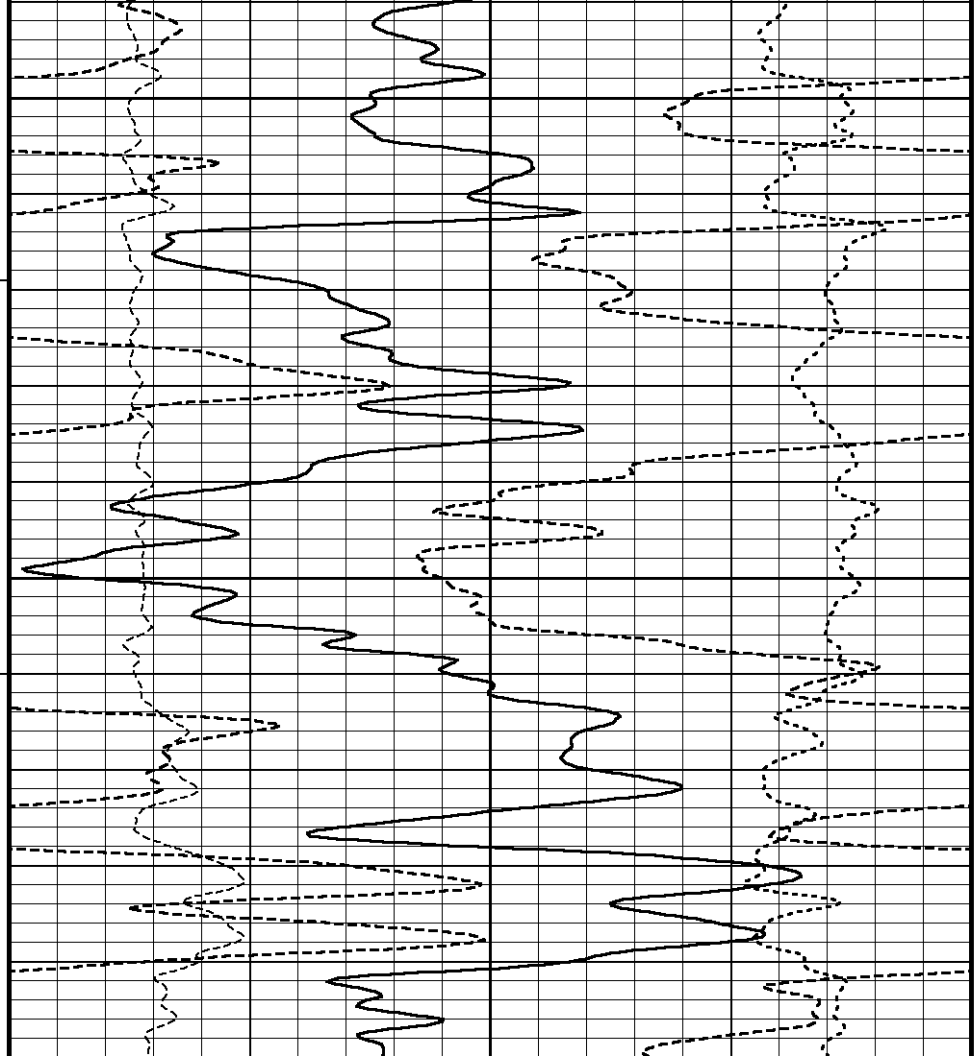
5850

111°

5900

5914

Depth
in
Feet



← Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft
→

Replay

Sandstone Neutron Por.
percent
30 20 10 0 -10

Sandstone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10 -0.25

Density Correction
grams/cc
0 0.25

5000 pounds 0

Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 16-FEB-2012 14:17

Filename: C:\Minimus 11_03_4044\Data\O'Brien Crooke...\O'Brien Crooked Creek Offset # 4-8_003.dta

Recorded on 16-FEB-2012 10:24

System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044



REPEAT SECTION



5 INCH MAIN



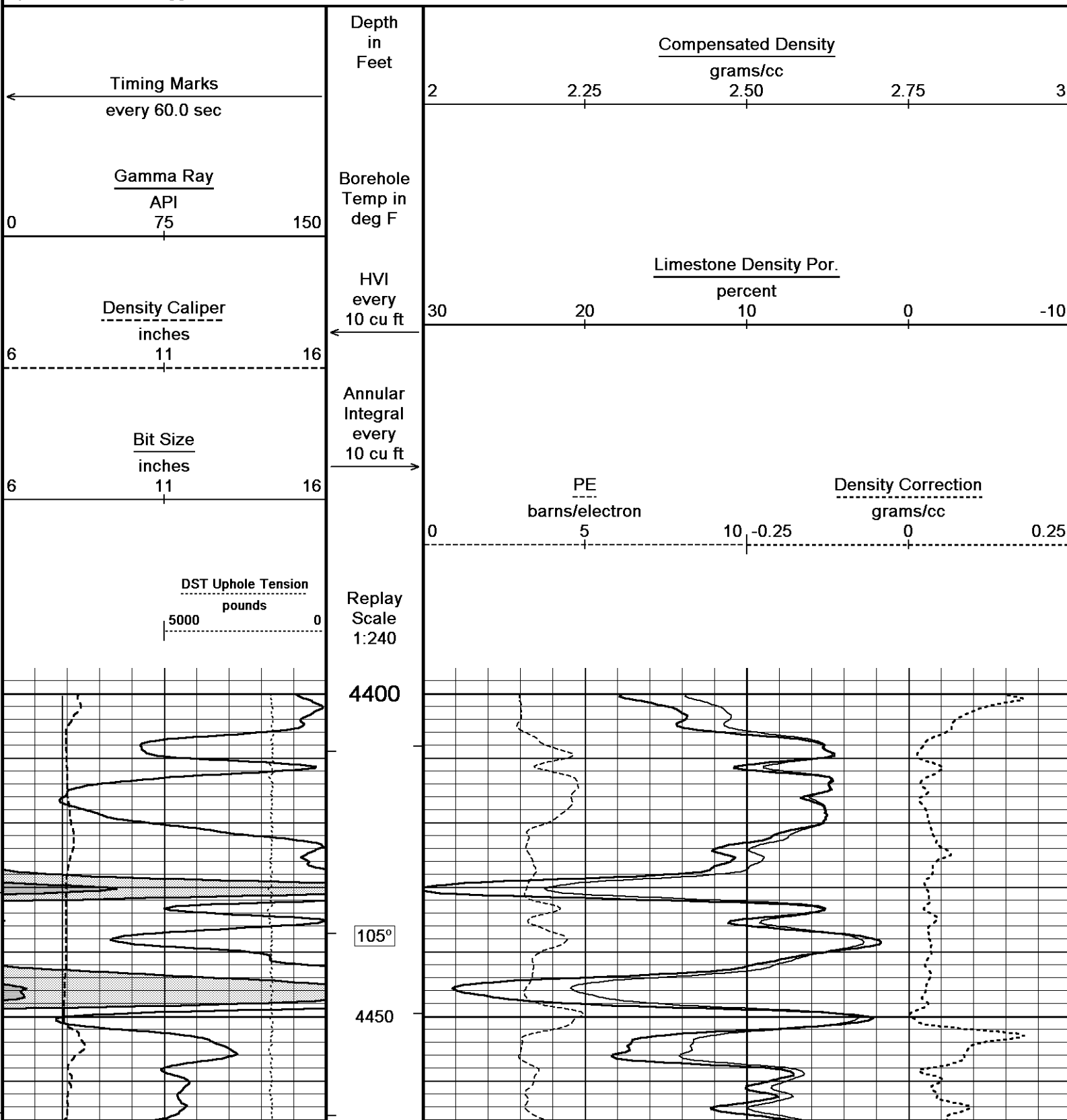
Depth Based Data - Maximum Sampling Increment 10.0cm

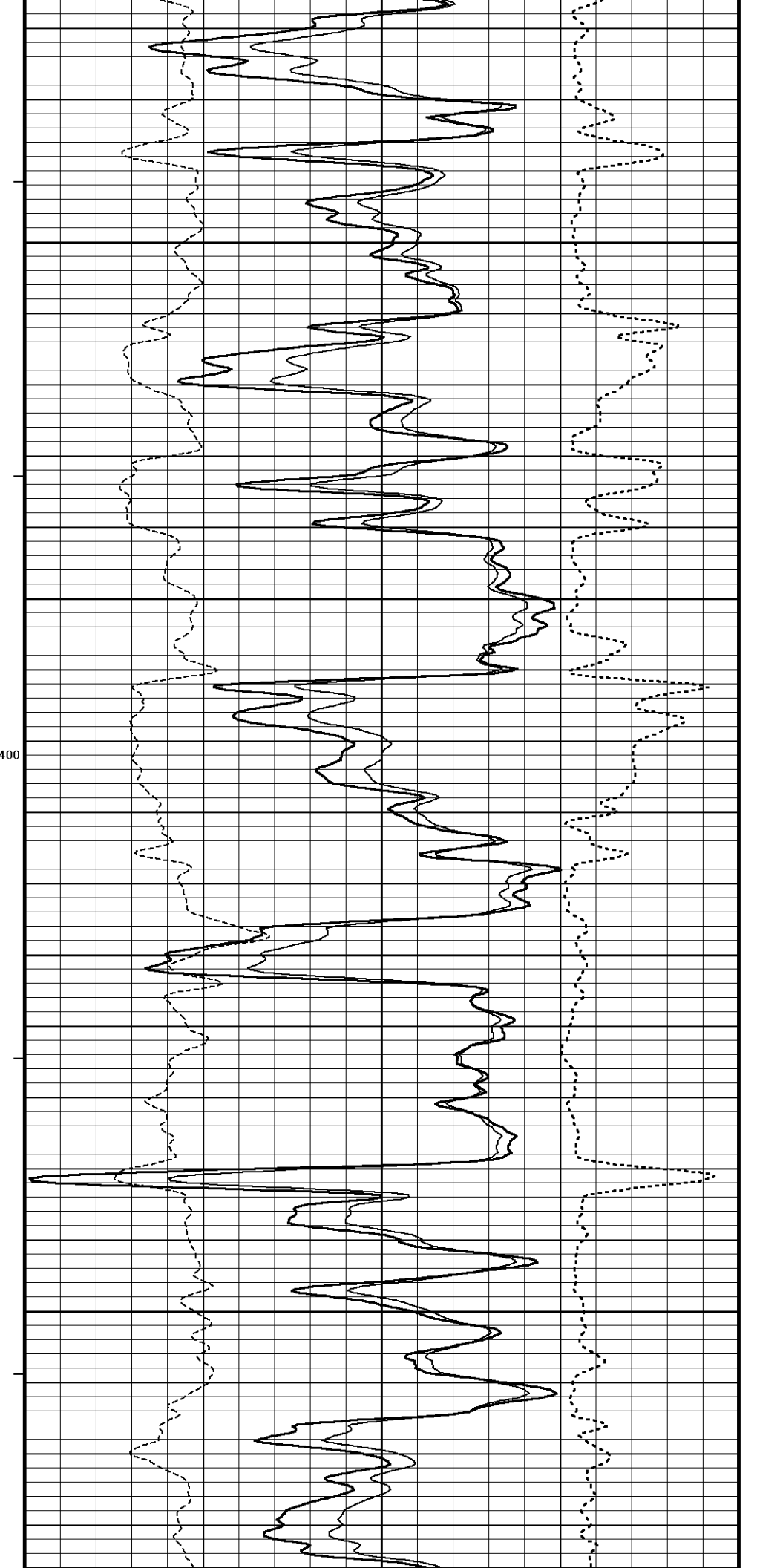
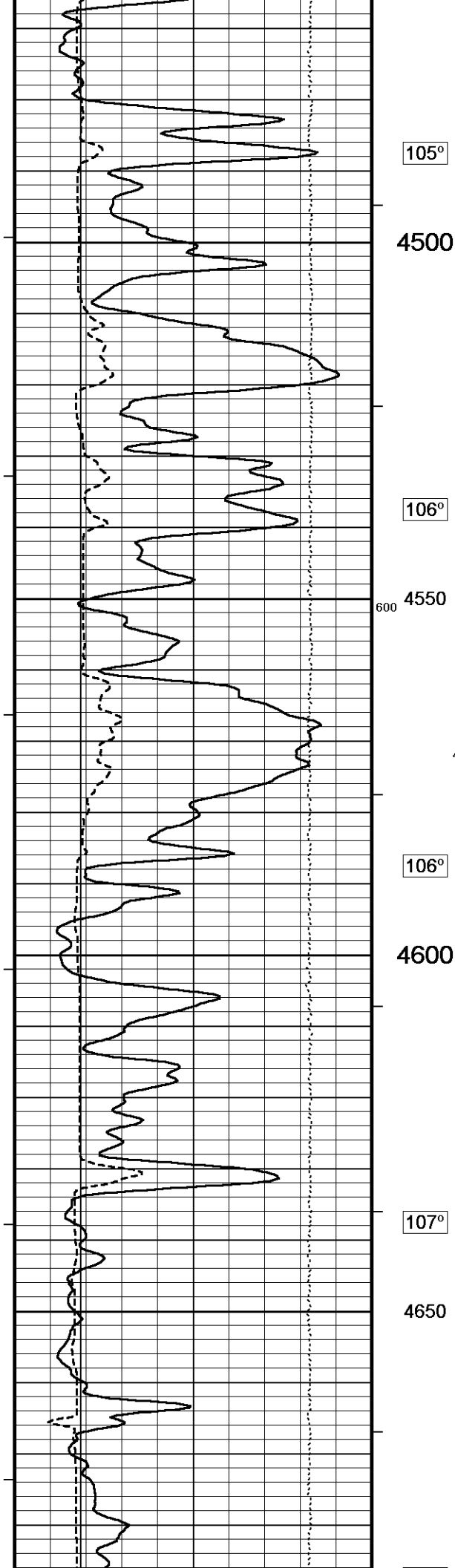
Plotted on 16-FEB-2012 14:17

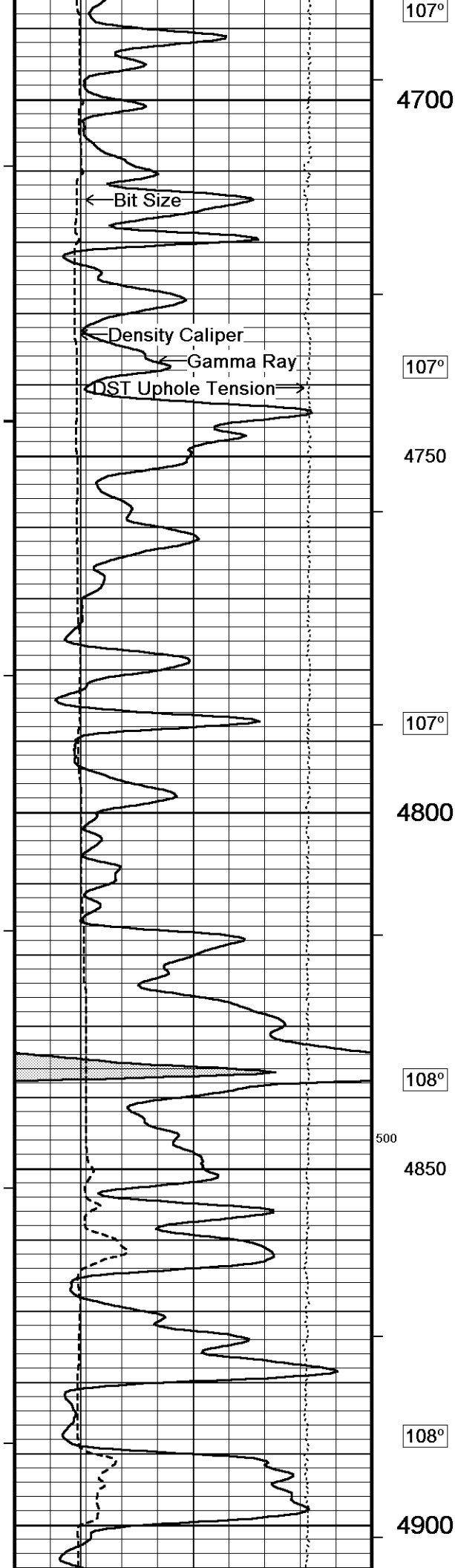
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Recorded on 16-FEB-2012 11:34

System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044







107°

4700

107°

4750

107°

4800

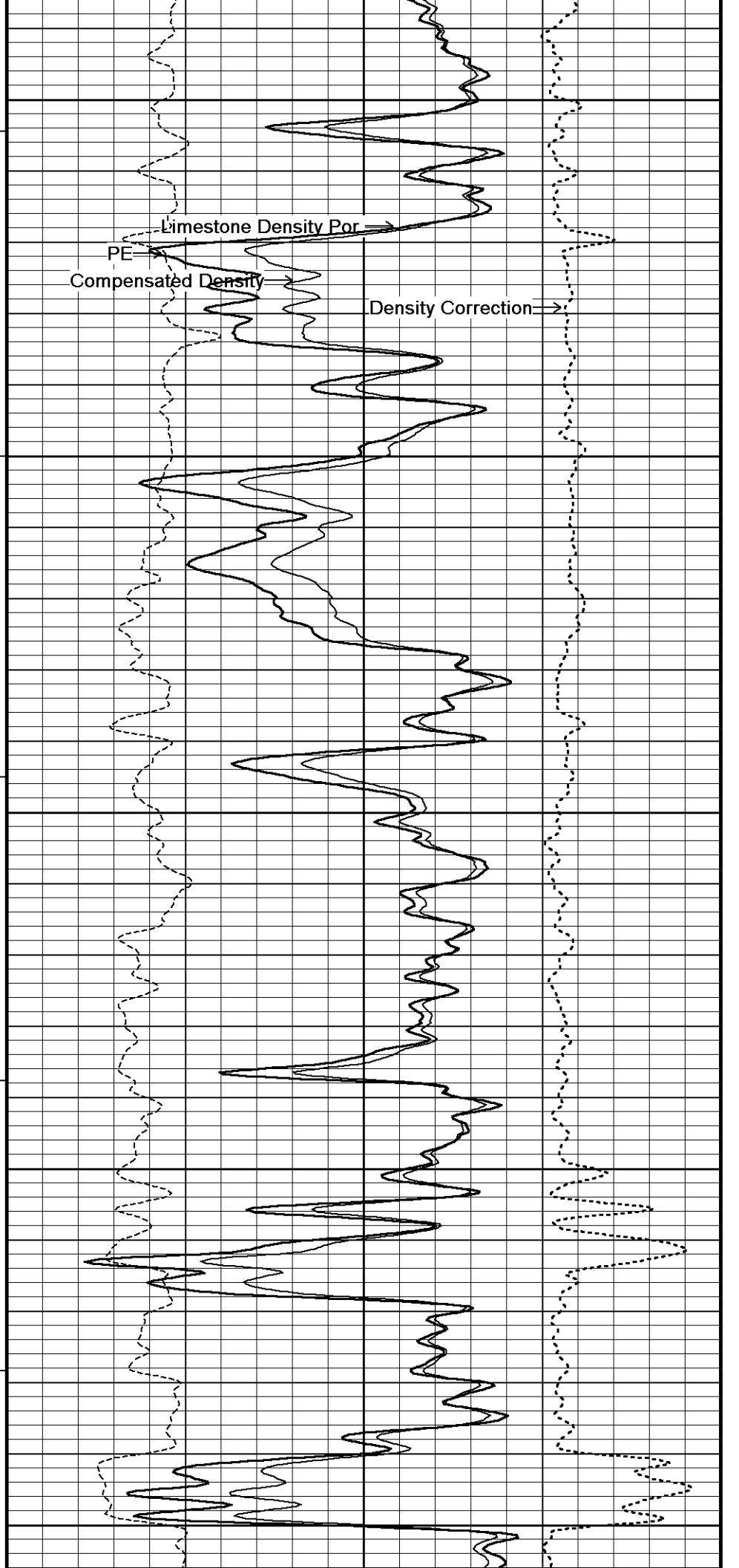
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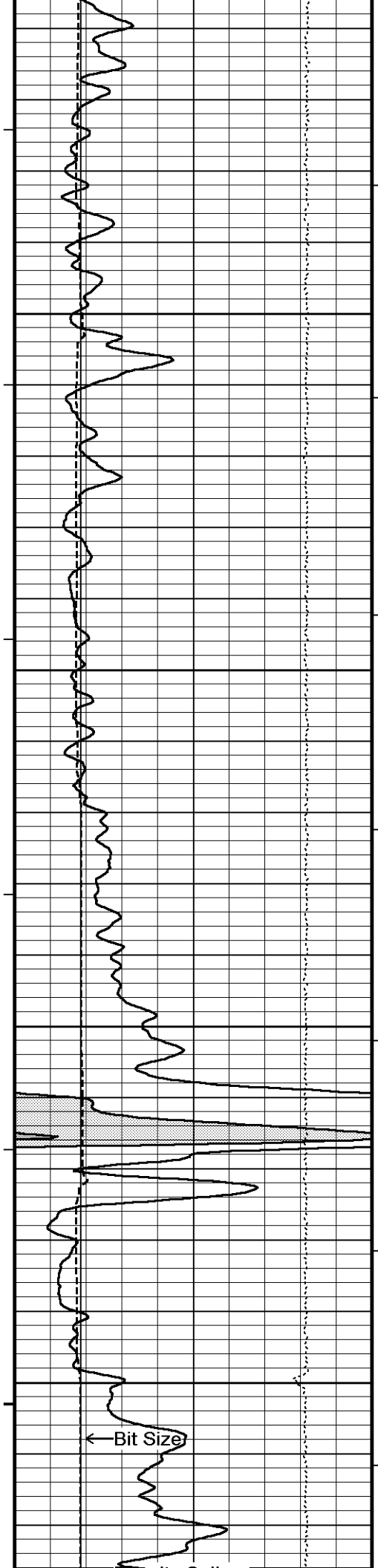
500

4850

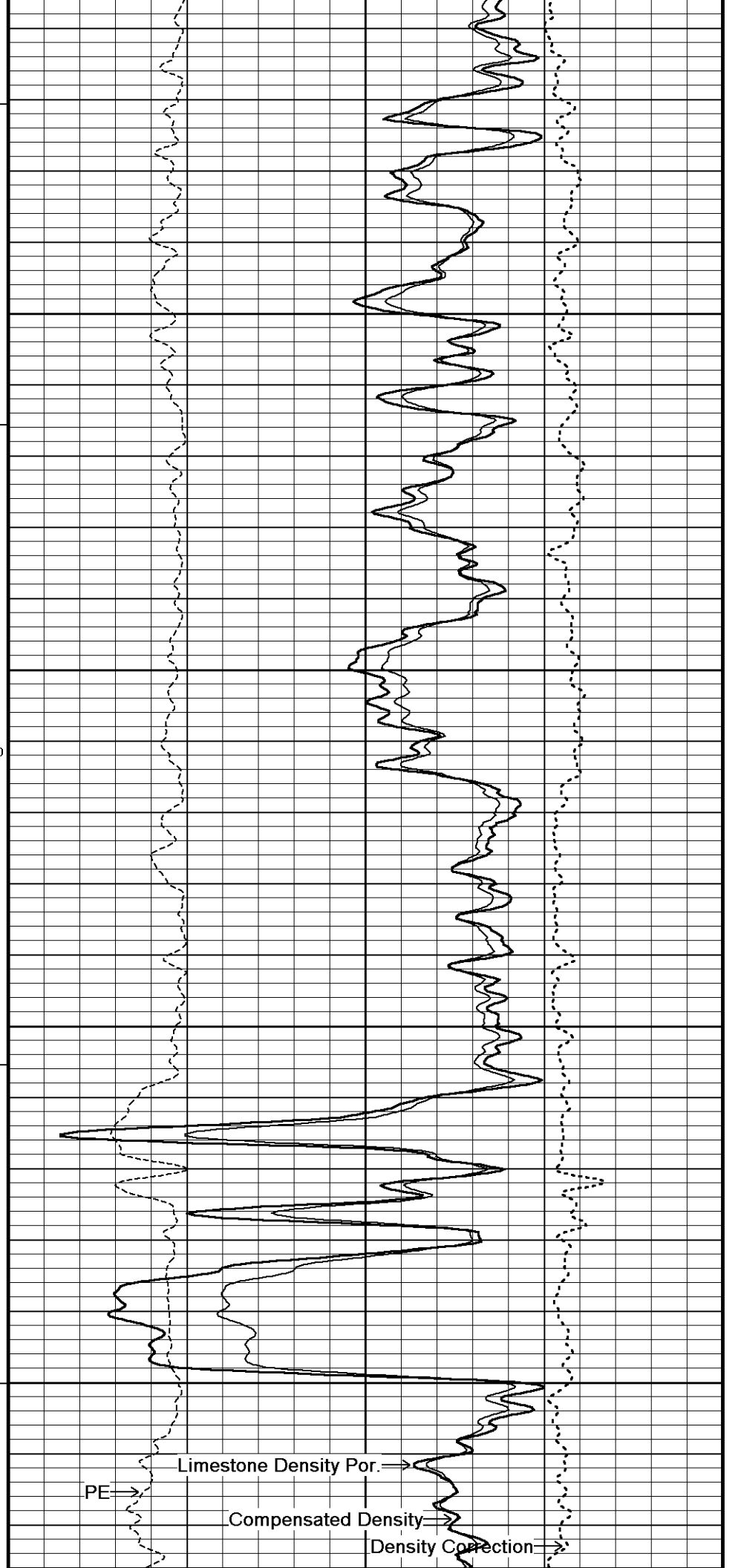
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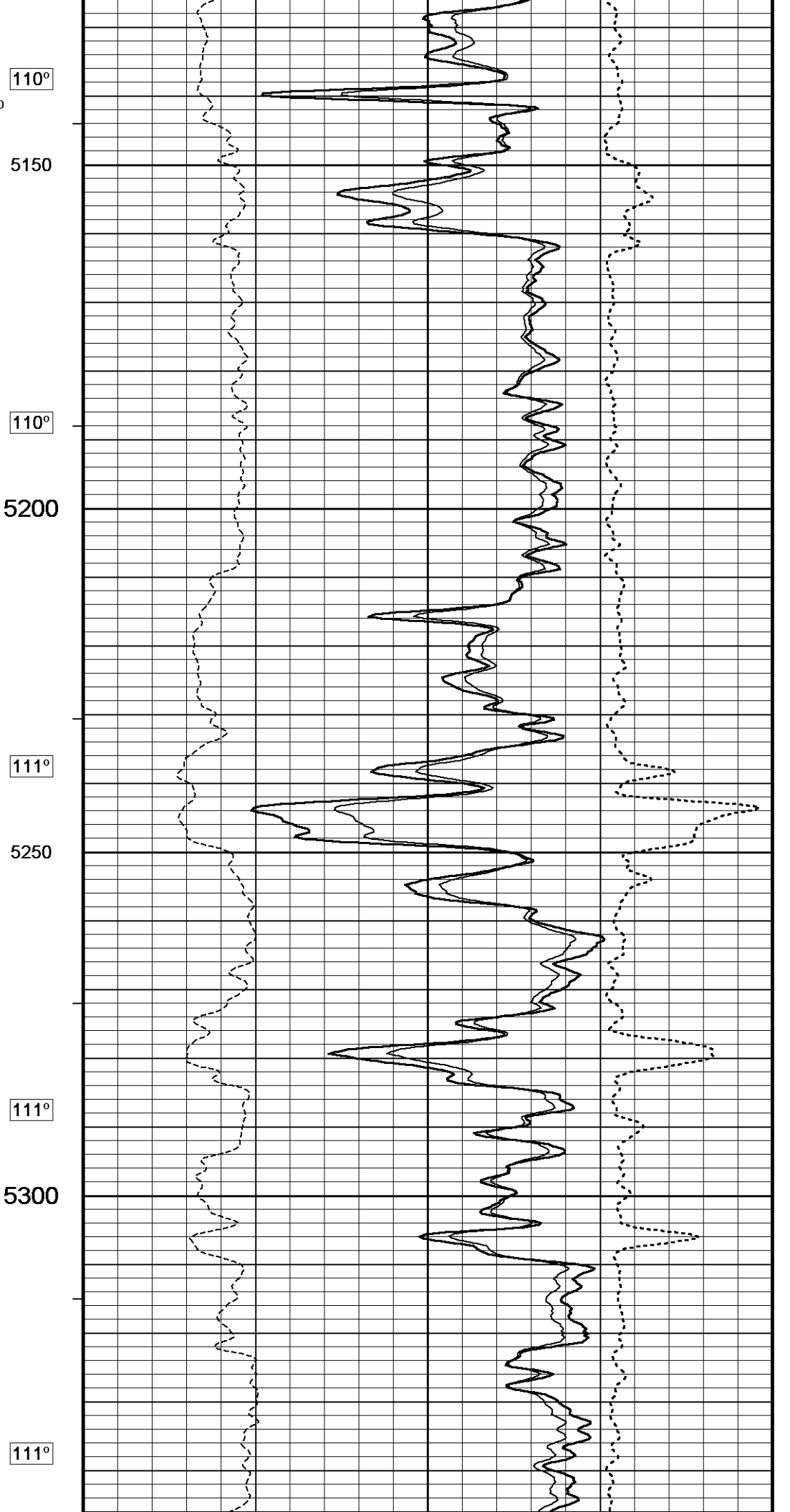
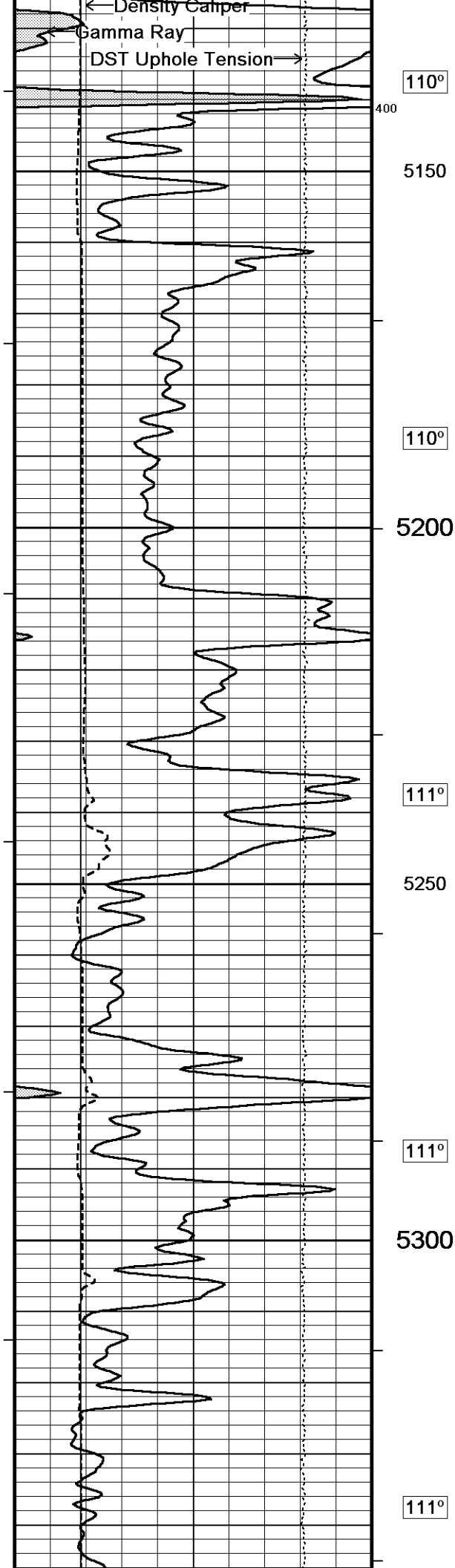
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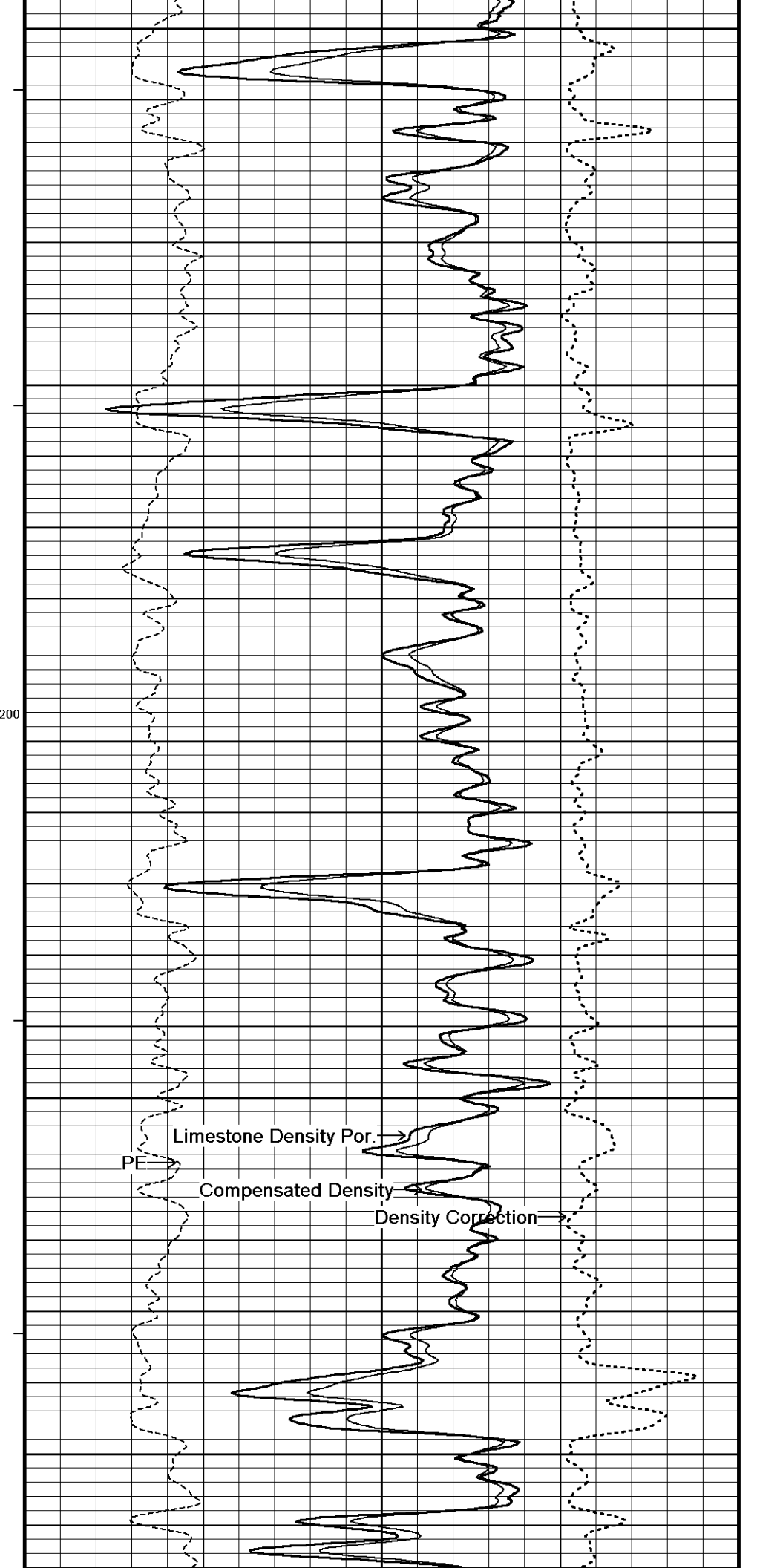
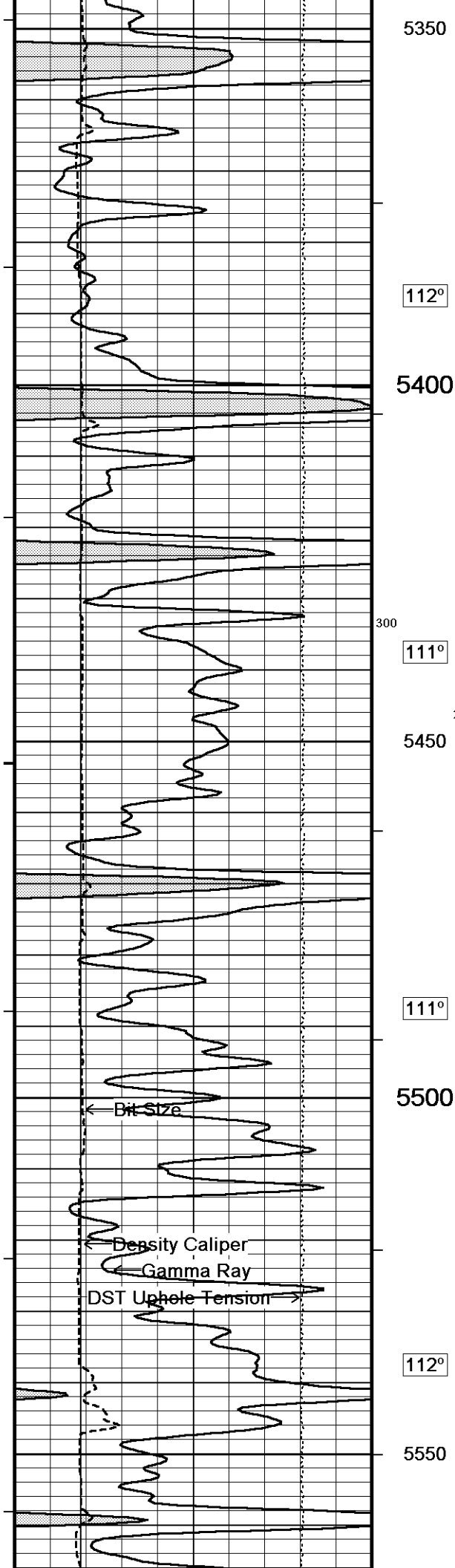


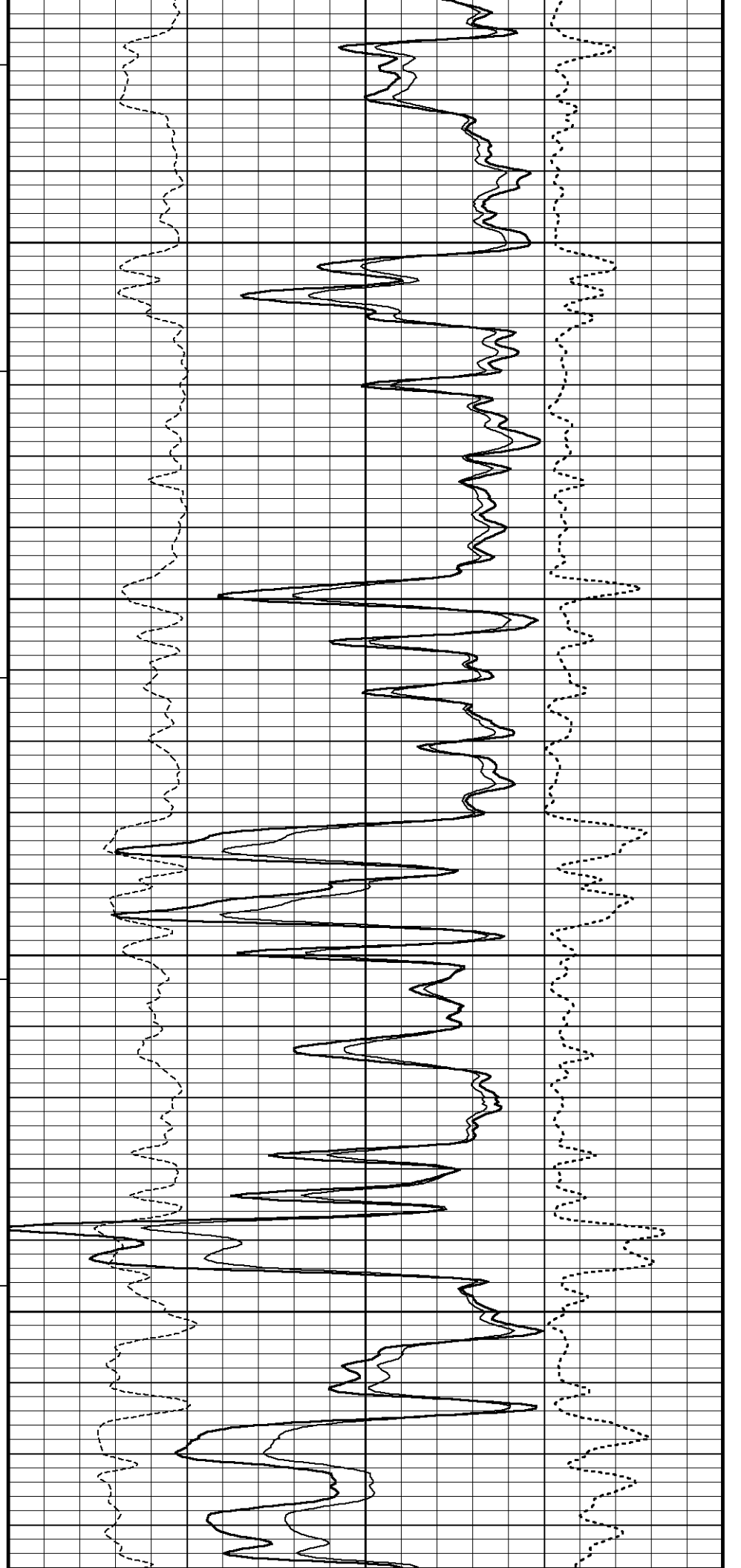
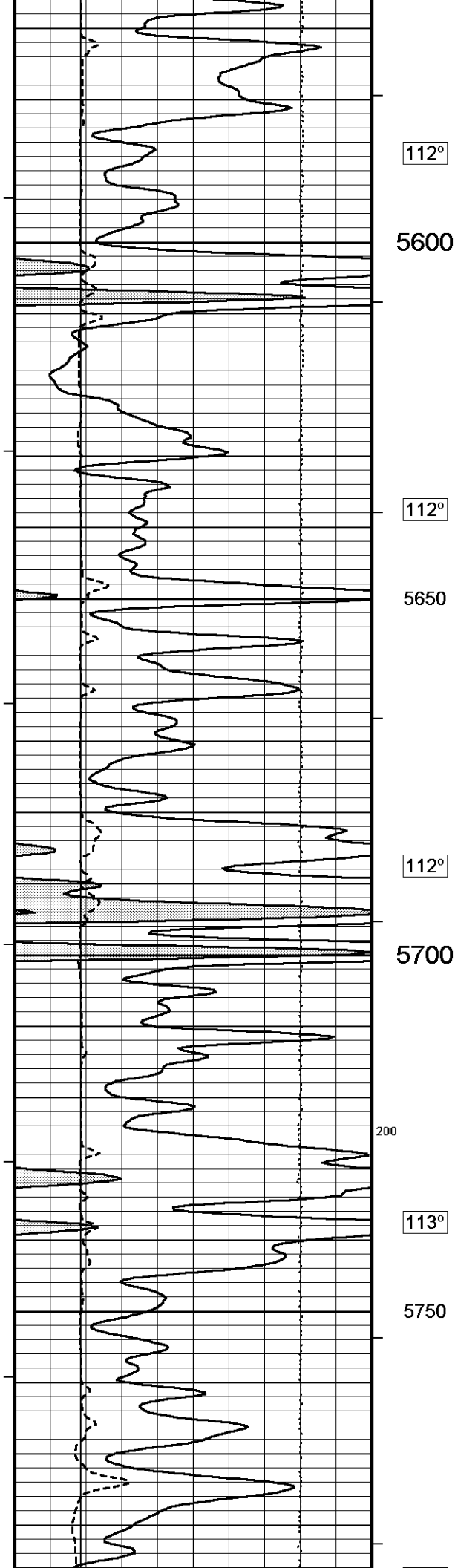


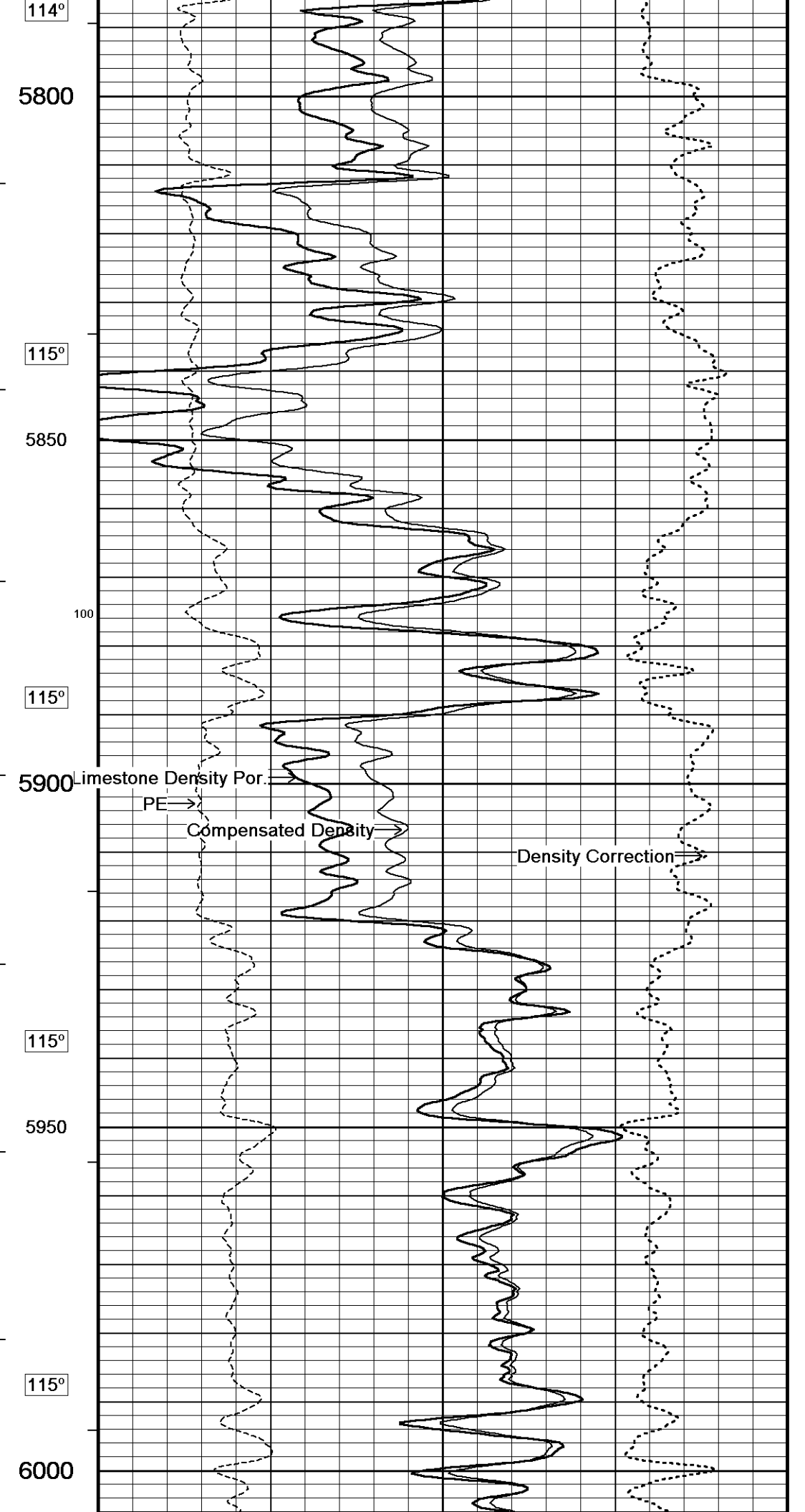
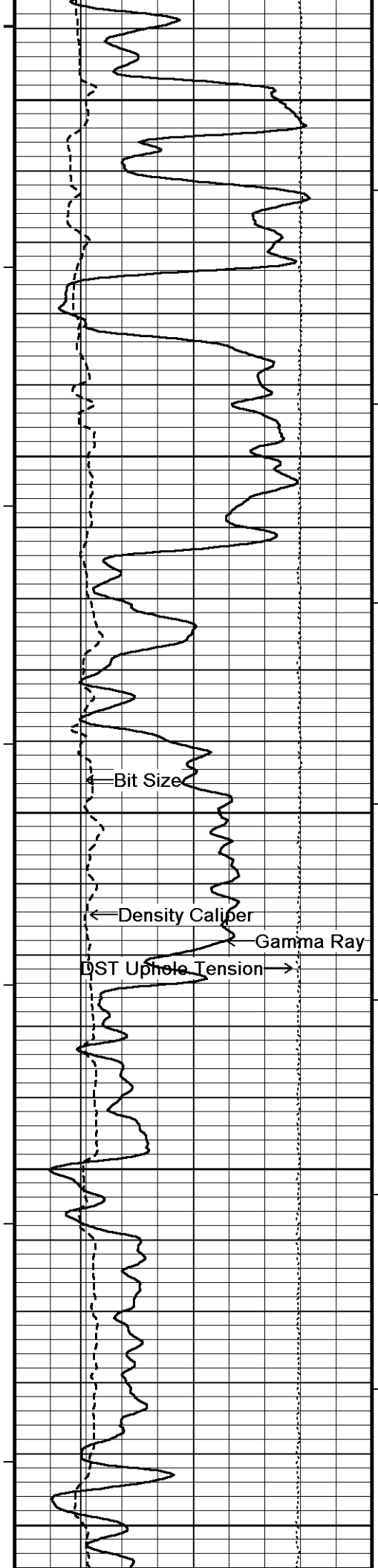
108°
4950
109°
5000
300
109°
5050
109°
5100

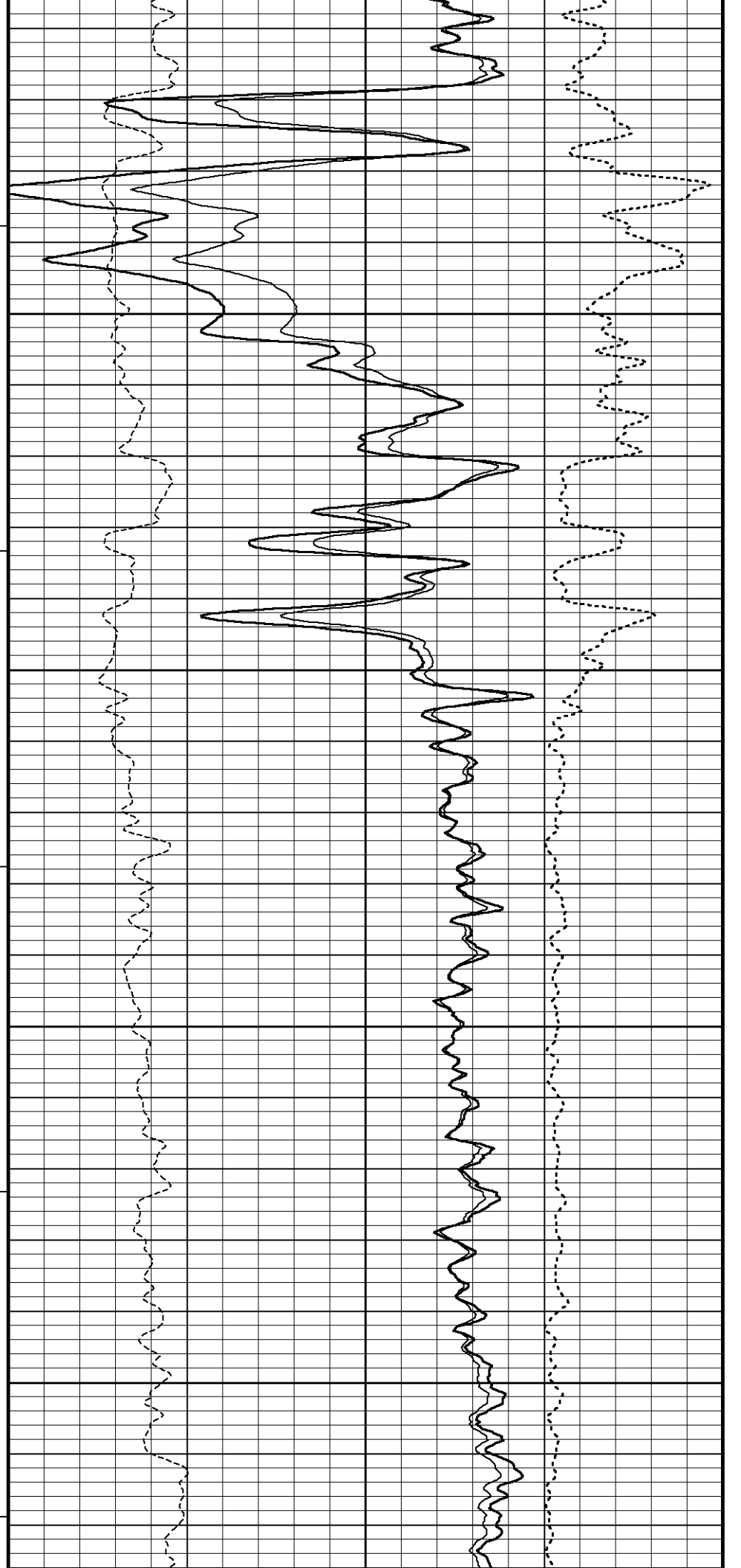
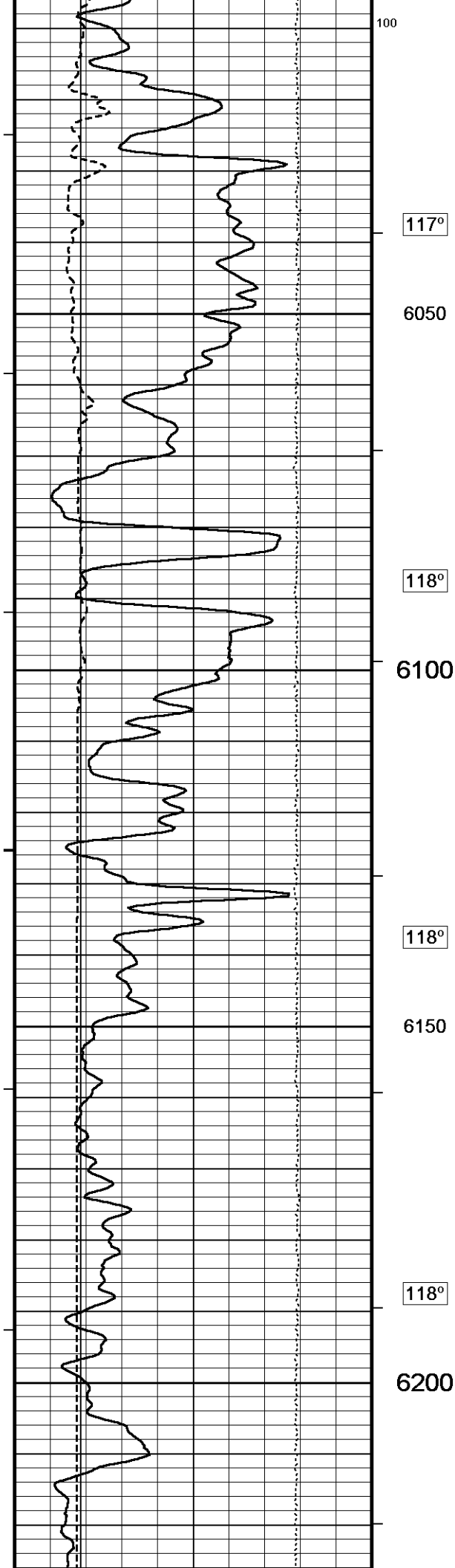


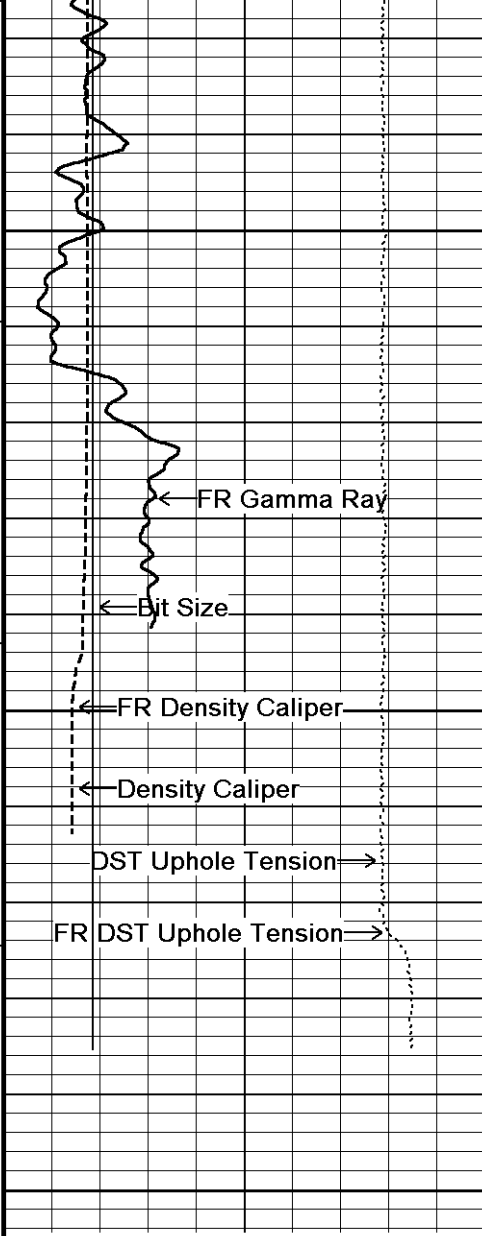












118°

6250

118°

6300

0

6350

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

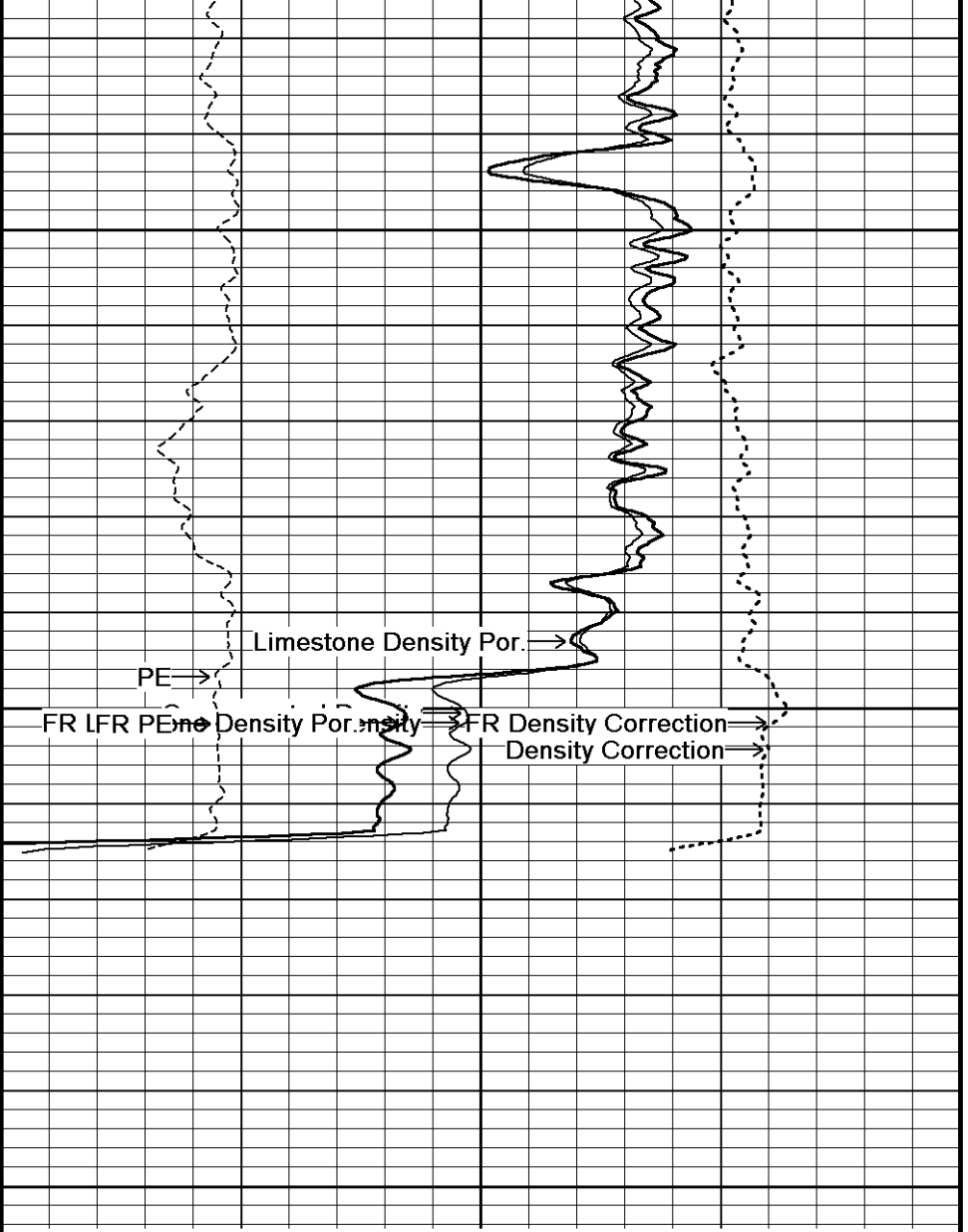
DST Uphole Tension

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay



Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

pounds

5000 0

Plotted on 16-FEB-2012 14:17

Recorded on 16-FEB-2012 11:34

System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

5 INCH MAIN

↑

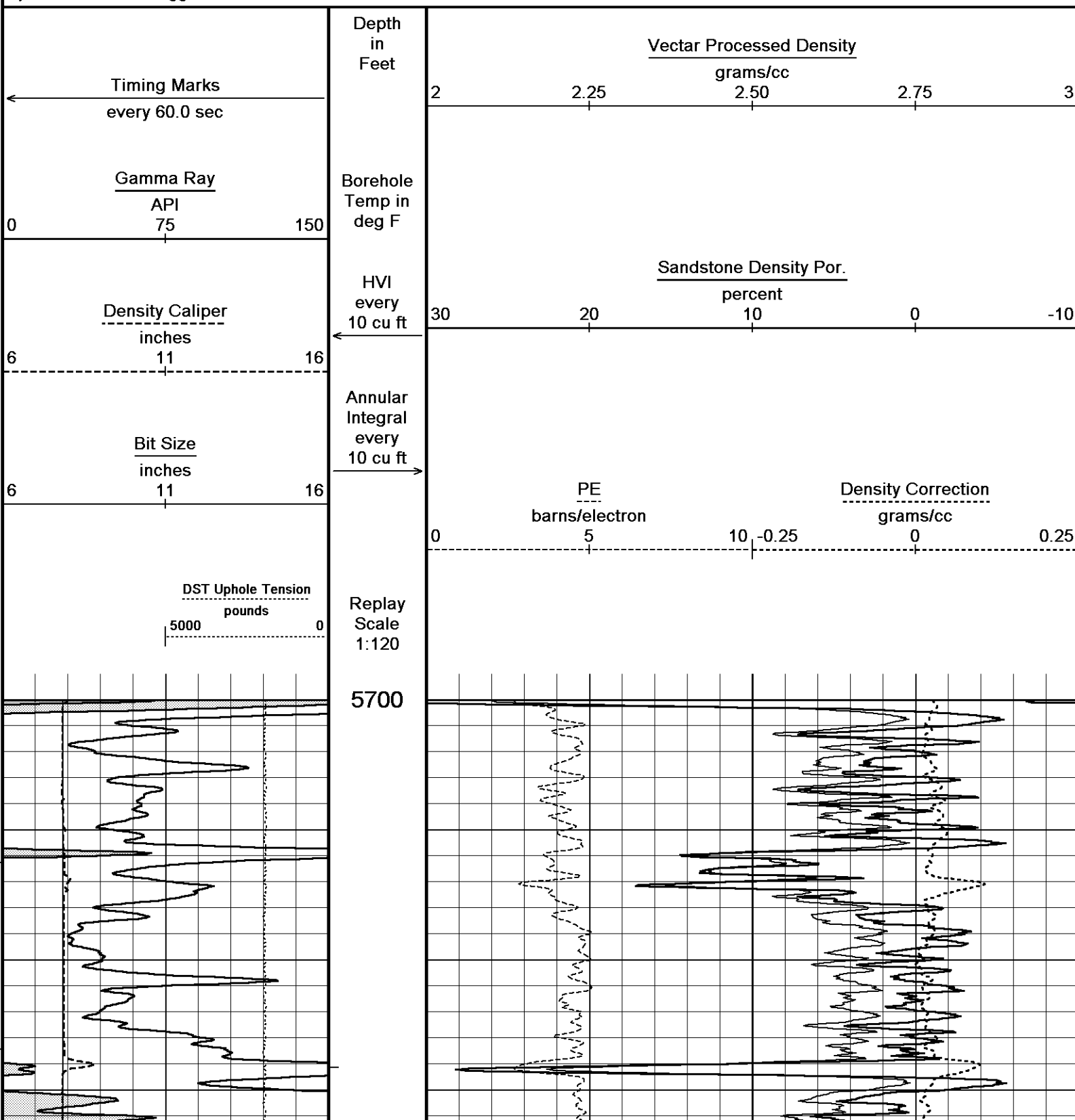
10 INCH HI-RES

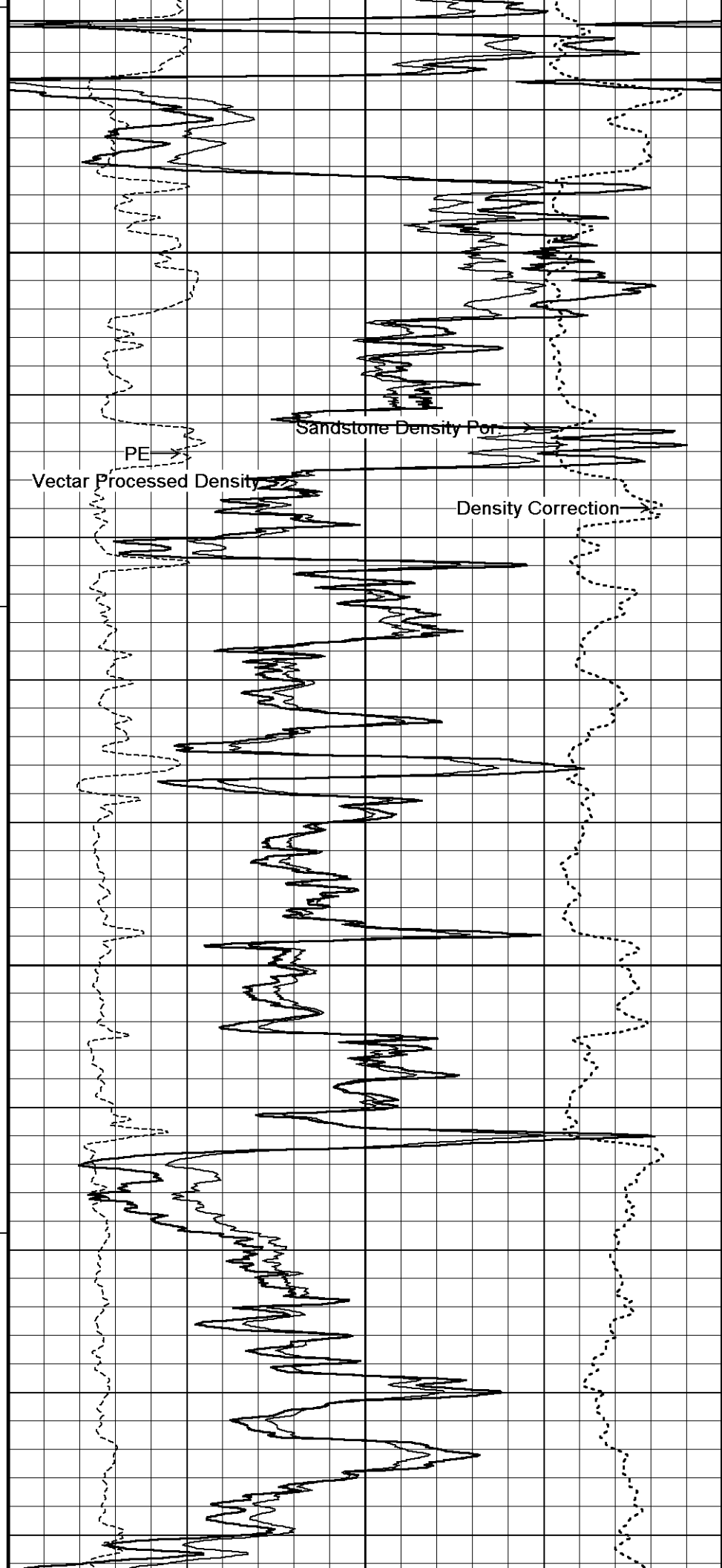
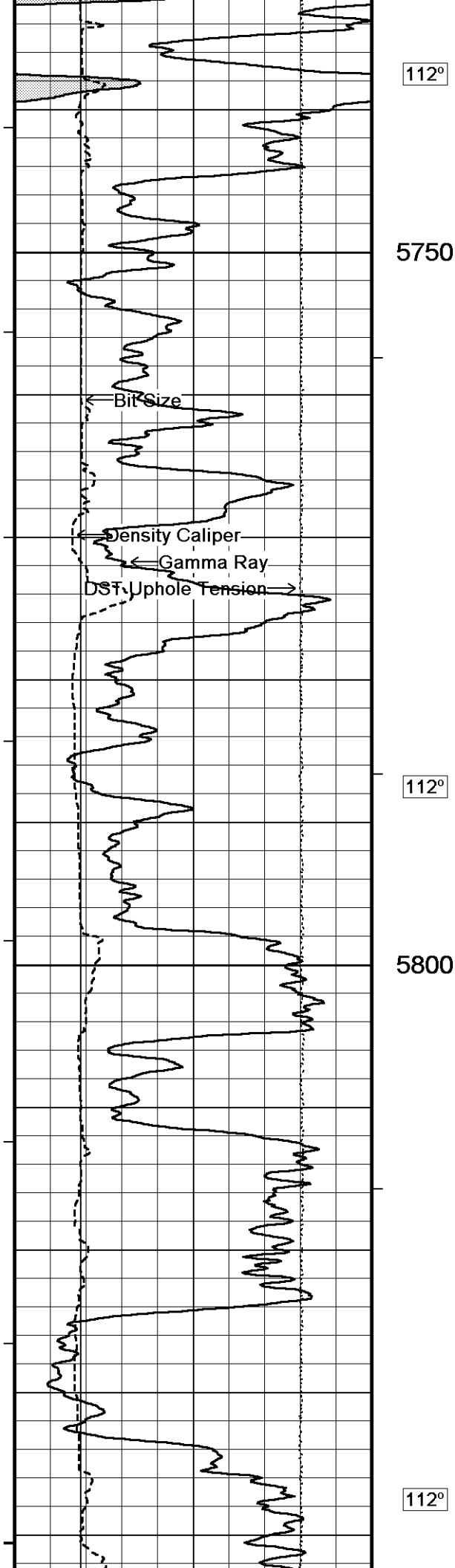
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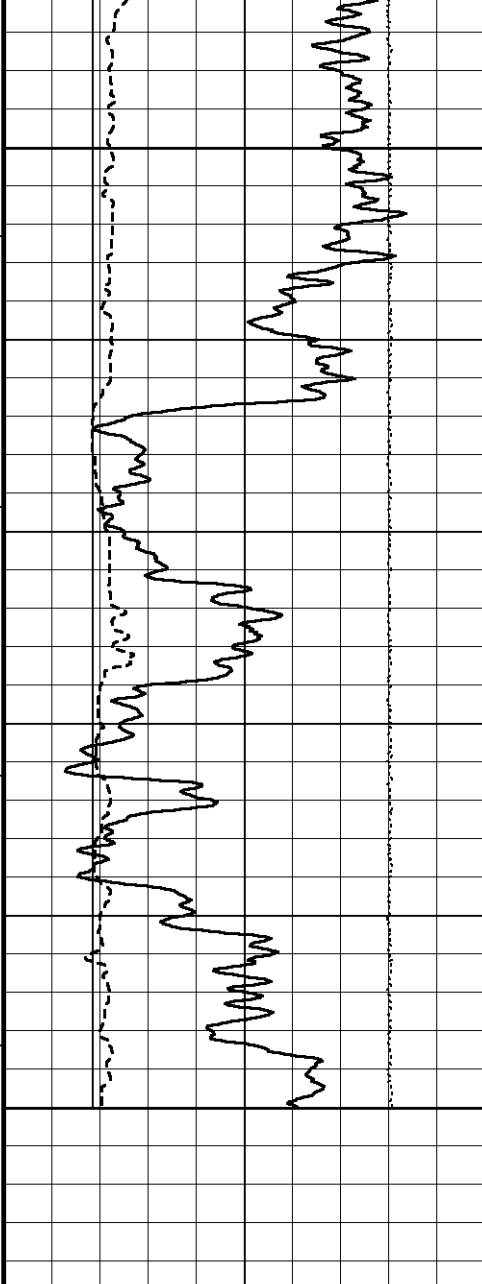
Plotted on 16-FEB-2012 14:17

Recorded on 16-FEB-2012 10:24

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044







Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

5850

112°

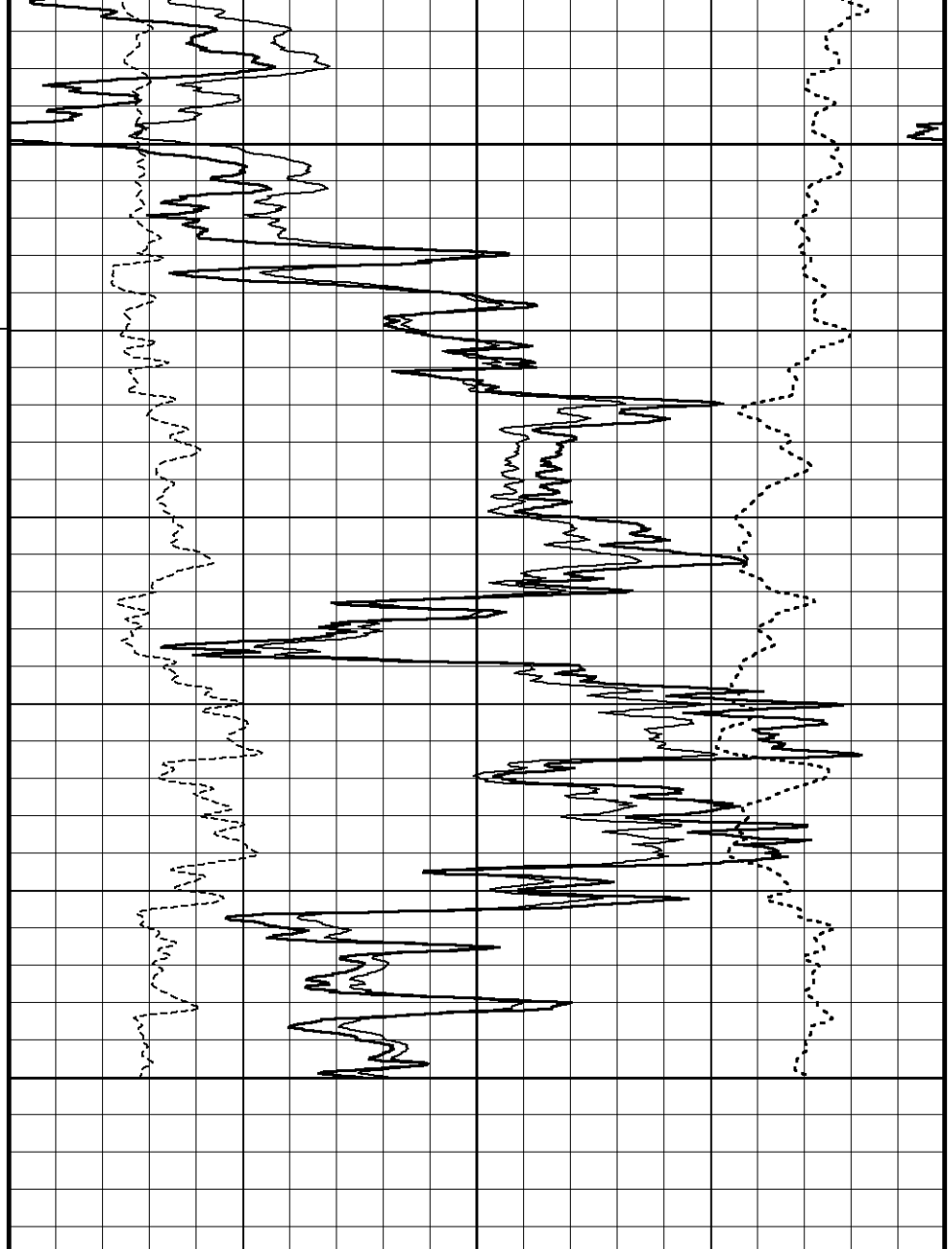
5900

5908
Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft



Vector Processed Density
grams/cc
2 2.25 2.50 2.75 3

Sandstone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Replay
Scale
1:120

Depth Based Data - Maximum Sampling Increment 2.5cm

Plotted on 16-FEB-2012 14:17

Filename: C:\Minimus 11_03_4044\Data\O'Brien Crooke...\O'Brien Crooked Creek Offset # 4-8_002.dta

Recorded on 16-FEB-2012 10:24

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044



10 INCH HI-RES



REPEAT SECTION



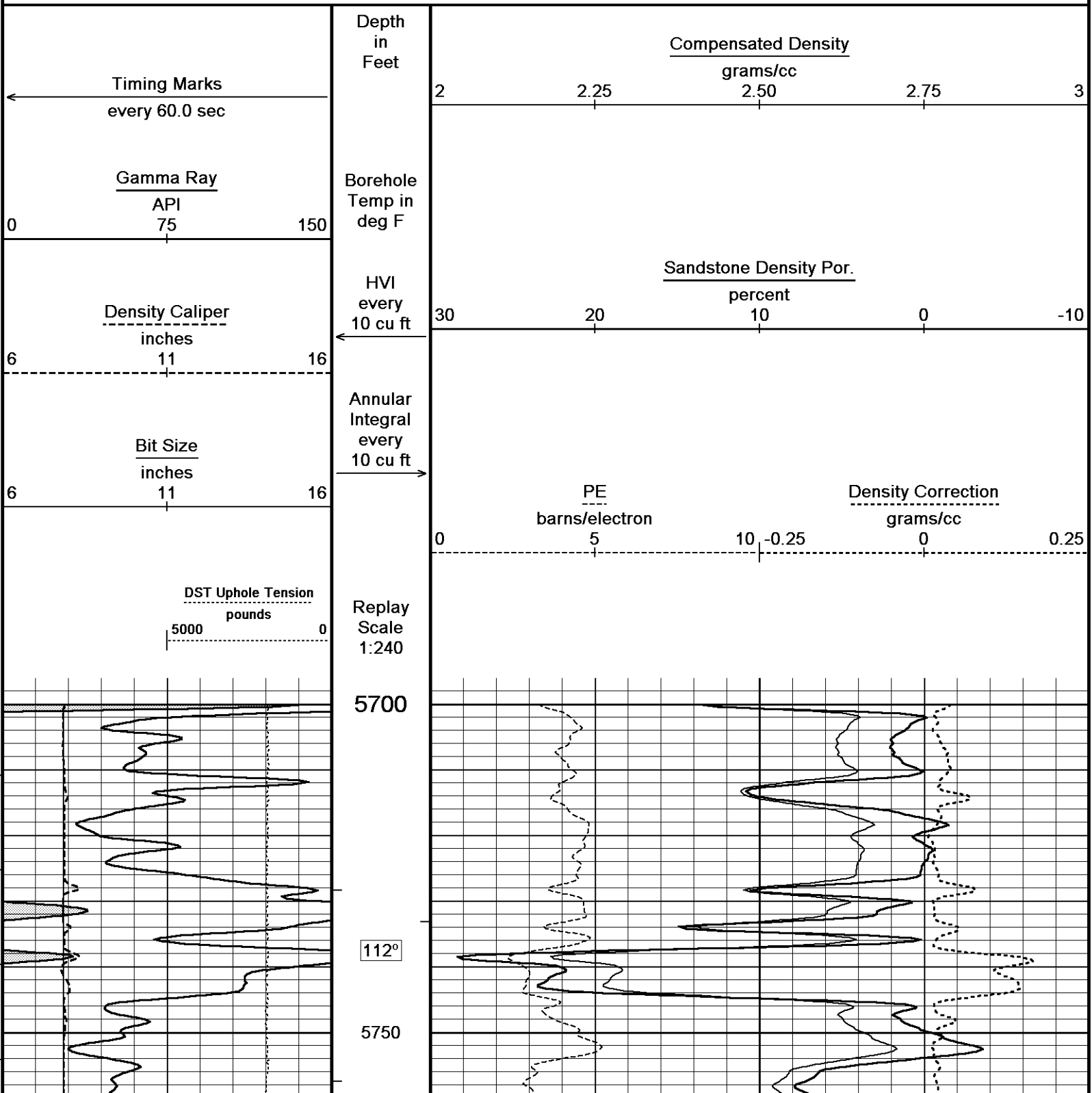
Depth Based Data - Maximum Sampling Increment 10.0cm

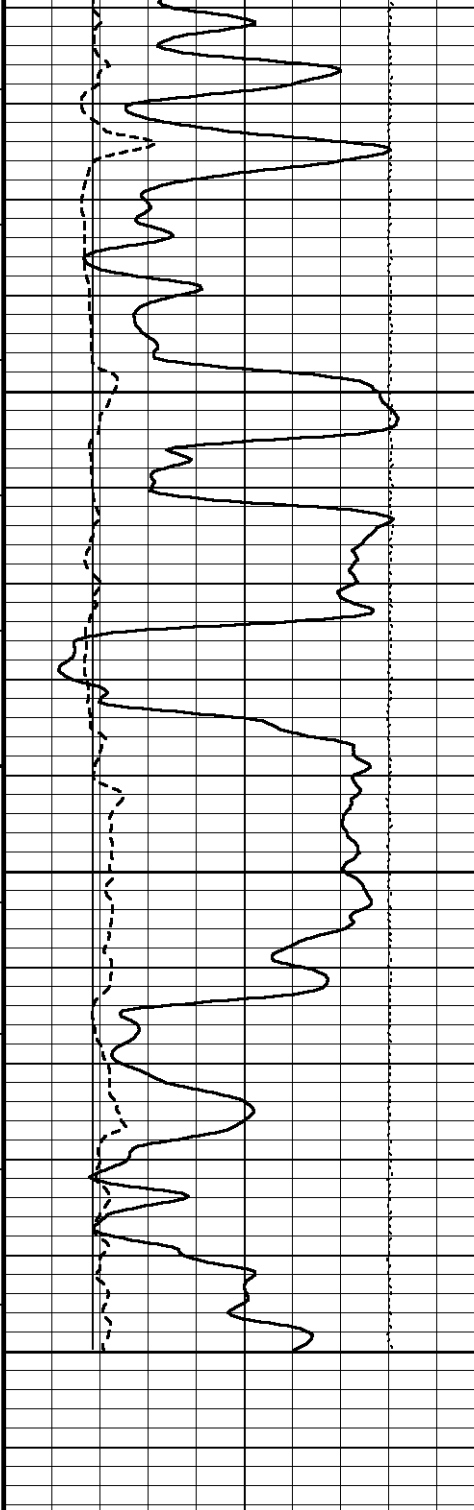
Plotted on 16-FEB-2012 14:17

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Recorded on 16-FEB-2012 10:24

System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044





Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

112°

5800

112°

5850

111°

5900

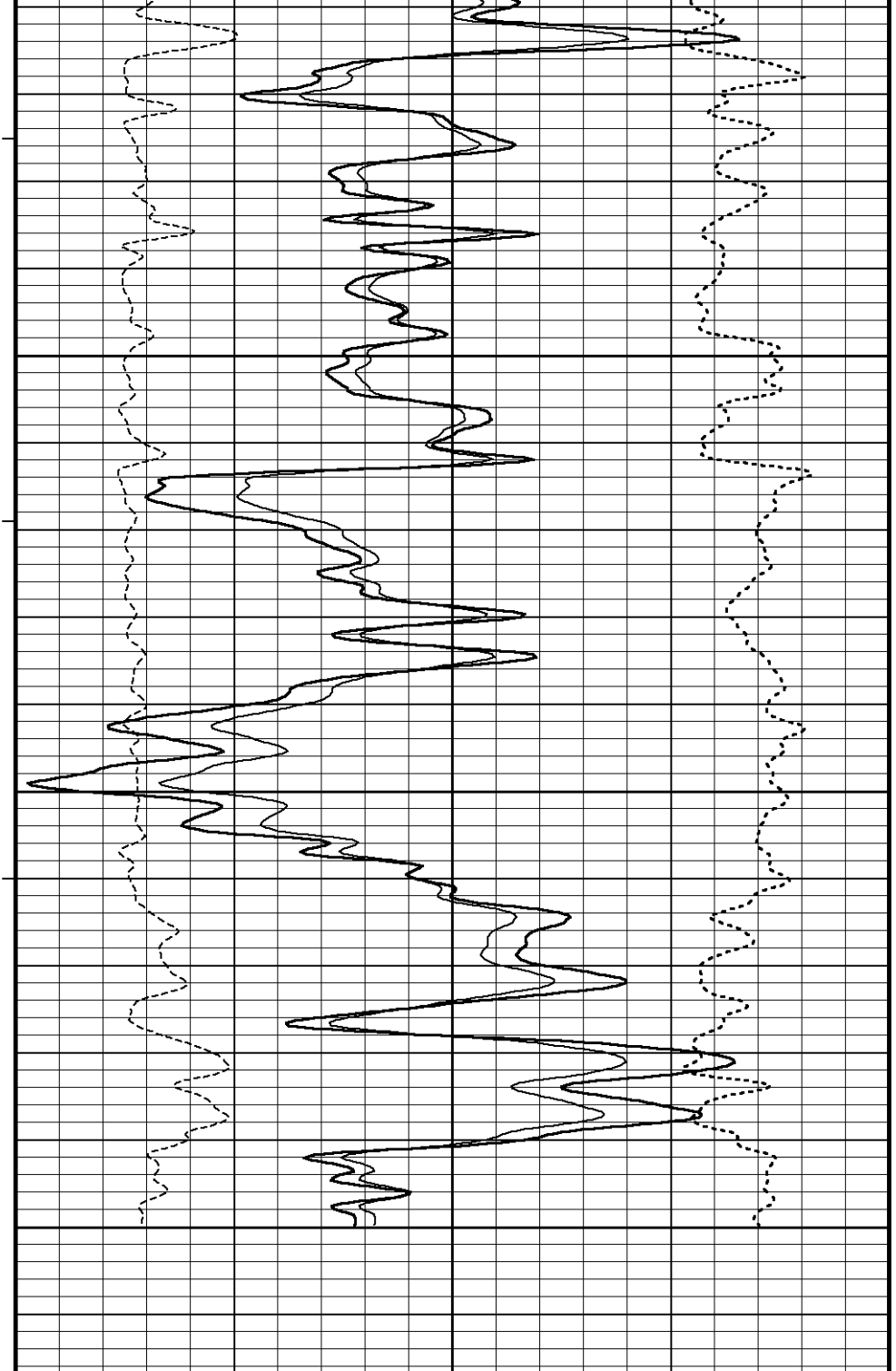
5914

Depth
in
Feet

Borehole
Temp in
deg F

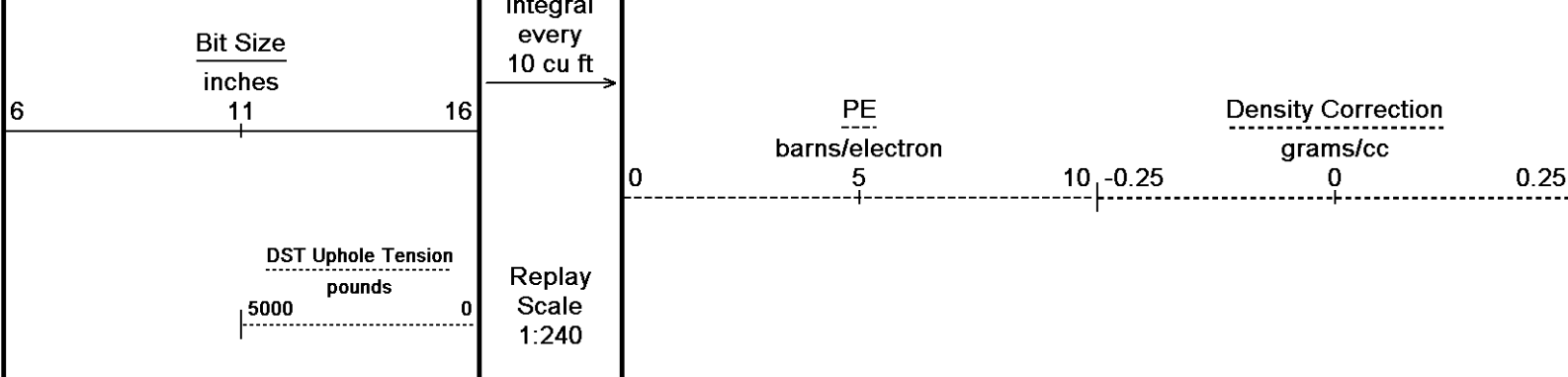
HVI
every
10 cu ft

Annular



Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Sandstone Density Por.
percent
30 20 10 0 -10



Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-FEB-2012 14:17
 Filename: C:\Minimus 11_03_4044\Data\O'Brien Crooked Creek Offset # 4-8_003.dta
 Recorded on 16-FEB-2012 10:24
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 11_03_4044\Data\O'Brien Crooked Creek Offset # 4-8\O'Brien Crooked Creek Offset # 4-8_004.dta

General Constants All 000			Last Edited on 16-FEB-2012,08:30
General Parameters			
Mud Resistivity	1.350	ohm-metres	
Mud Resistivity Temperature	65.000	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	4.500	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 23-OCT-2011 03:19
Reading No	Measured	Calibrated (lbs)	
1	12734.06	0.00	
2	13523.27	454.00	

Gamma Calibration MCG-D.K 443			Field Calibration on 15-FEB-2012 09:28
	Measured	Calibrated (API)	
Background	80	53	
Calibrator (Gross)	765	509	
Calibrator (Net)	685	456	

Gamma Constants MCG-D.K 443			Last Edited on 16-FEB-2012,08:31
Gamma Calibrator Number	grc141		
Mud Density	1.08	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	

SP Calibration MCG-D.K 443			Field Calibration on 01-FEB-2012 10:26
	Measured	Calibrated (mV)	
Reference 1	100.9	100.0	
Reference 2	-98.4	-100.0	

High Resolution Temperature Calibration MCG-D.K 443

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-D.K 443

Last Edited on

Pre-filter Length 11

Caliper Calibration MML-A 9

Base Calibration on 06-FEB-2012 09:52

Field Calibration on 15-FEB-2012 09:41

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15071	5.98
2	18450	7.97
3	21808	9.86
4	25812	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

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

Micro Normal and Micro Inverse Calibration MML-A 9

Base Calibration on 06-FEB-2012 09:39

Field Check on 15-FEB-2012 09:40

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.1	59.8	2.6	12.8
Micro Inverse	15.6	78.1	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.4	32.4
Micro Inverse	16.4	16.4

Micro Normal and Micro Inverse Constants MML-A 9

Last Edited on 09-FEB-2012,13:46

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	N/A	inches	

Neutron Calibration MDN-A.B 39

Base Calibration on 04-JAN-2012 14:55

Field Check on 15-FEB-2012 09:24

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2756	86	3714	110
Ratio	32.152		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2384	3432
Ratio	0.695	

Field Check

	Calibrated (cps)	
	2372	3438
Ratio	0.690	

Neutron Constants MDN-A.B 39

Last Edited on 16-FEB-2012,08:31

Neutron Source Id	N-1095		
Neutron Jig Number	NECD117		
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	None		
Formation Pressure	N/A	kpsi	
Temperature Source	Constant Value		

Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 67		Base Calibration on 06-FEB-2012 10:02 Field Check on 15-FEB-2012 09:36	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	959.8	126.8	
Base Check		280.8	
Field Check		280.9	

FE Constants MFE-A.A 67		Last Edited on 16-FEB-2012,08:32	
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	

Induction Calibration MAI-A.A 188				Base Calibration on 04-JAN-2012,13:31	
				Field Check on 15-FEB-2012 09:38	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	16.9	470.2	9.3	966.2	
2	6.4	377.1	7.6	821.4	
3	3.9	257.8	5.2	566.0	
4	1.7	135.1	2.6	279.2	
Array Temperature		66.3	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	13.6	3865.9	
2	0.0	0.0	29.9	3582.9	
3	0.0	0.0	27.9	3077.3	
4	0.0	0.0	19.7	2046.0	
Deep	0.0	0.0	17.2	1954.4	
Medium	0.0	0.0	40.2	4112.7	
Shallow	0.0	0.0	44.6	5366.5	
Array Temperature		0.0	68.9		Deg F

Induction Constants MAI-A.A 188		Last Edited on 16-FEB-2012,08:32			
Induction Model		RtAP-WBM			
Caliper for Borehole Corr.		Density Caliper			
Hole Size for Borehole Correction		N/A			
Tool Centred		No			
Stand-off Type		Fins			
Stand-off		0.50			
Number of Fins on Stand-off		8.0000			
Stand-off Fin Angle		45.00			
Stand-off Fin Width		0.5000			
Borehole Corr. Rm Source		Temperature Corr			
Temp. for Rm Corr.		MCG External Temperature			
Squasher Start		0.0020			
Squasher Offset		N/A			
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		
DRM1	0.0000	DRC1	0.0000		
DRM2	0.0000	DRC2	0.0000		
MRM1	0.0000	MRC1	0.0000		
MRM2	0.0000	MRC2	0.0000		

SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000
Calibration Site Corrections			
Channel 1		0.00	mmhos/metre
Channel 2		0.00	mmhos/metre
Channel 3		0.00	mmhos/metre
Channel 4		0.00	mmhos/metre
Apparent Porosity and Water Saturation Constants			
Archie Constant (A)		1.00	
Cementation Exponent (M)		2.00	
Saturation Exponent (N)		2.00	
Saturation of Water for Apor		100.00	percent
Resistivity of Water for Apor and Sw		0.05	ohm-m
Resistivity of Mud Filtrate for Sw		0.00	ohm-m
Source for Rt		0.00	
Source for Rxo		0.00	

High Resolution Temperature Calibration MAI-A.A 188			Field Calibration on 12-AUG-2011,21:41
	Measured	Calibrated(Deg F)	
Lower	32.00	32.00	
Upper	68.00	68.00	

High Resolution Temperature Constants MAI-A.A 188		Last Edited on 21-JUN-2011,19:05
Pre-filter Length	11	

Caliper Calibration MPD-B 65			Base Calibration on 06-FEB-2012 15:42
			Field Calibration on 15-FEB-2012 09:35
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14246	3.99	
2	22911	5.98	
3	31473	7.97	
4	39776	9.86	
5	48992	11.92	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	5.95	5.98	

Photo Density Calibration MPD-B 65					Base Calibration on 06-FEB-2012 16:03	
					Field Check on 15-FEB-2012 09:33	
Density Calibration						
Base Calibration		Measured		Calibrated (sdu)		
		Near	Far	Near	Far	
	Reference 1	58421	27705	59556	30836	
	Reference 2	23654	2410	24941	2541	
Field Check at Base						
		1233.9	1179.6			
Field Check						
		1227.5	1177.2			
PE Calibration						
Base Calibration		Measured		Calibrated		
	WS	WH	Ratio	Ratio		
	Background	226	1097			
	Reference 1	21385	58213	0.370	0.371	
	Reference 2	6241	23505	0.268	0.272	
Field Check at Base						
		225.7	1097.3			
Field Check						
		223.2	1088.1			

Density Constants MPD-B 65	Last Edited on 16-FEB-2012,08:32
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Density Source Id	P57072B	
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	1.08	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

DOWNHOLE EQUIPMENT

C:\Minimus 11_03_4044\Data\O'Brien Crooked Creek Offset # 4-8\O'Brien Crooked Creek Offset # 4-8_004.dta

MCB-A 11B Tension Cablehead
MCB-A 162 LG: 2.18 ft WT: 19.8 lb OD: 2.24 in

MCB-A 11B Tension Cablehead
MCB-A 162 LG: 2.18 ft WT: 19.8 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor
SHA-F 88 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor
SHA-F 88 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 9 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

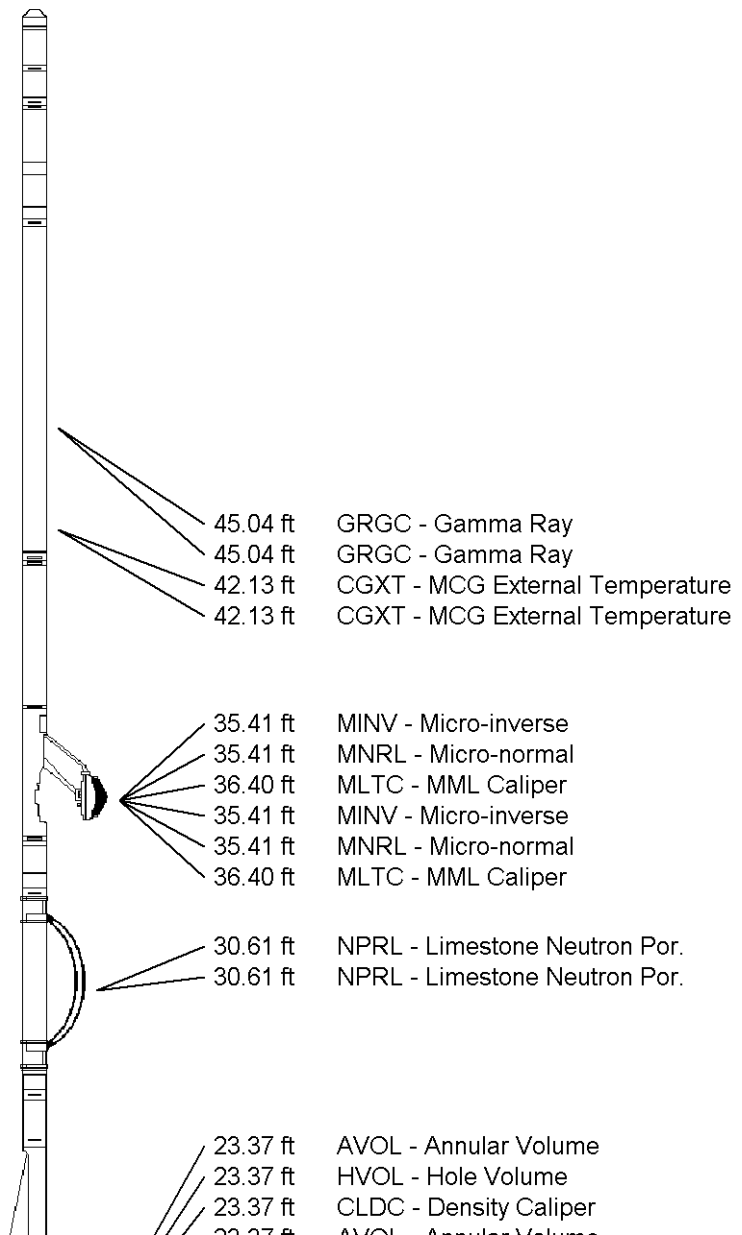
Compact Micro-log
MML-A 9 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Neutron
MDN-A.B 39 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper
MPD-B 65 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in



SKJ-D.A Compact Knuckle Joint
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 91 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 67 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

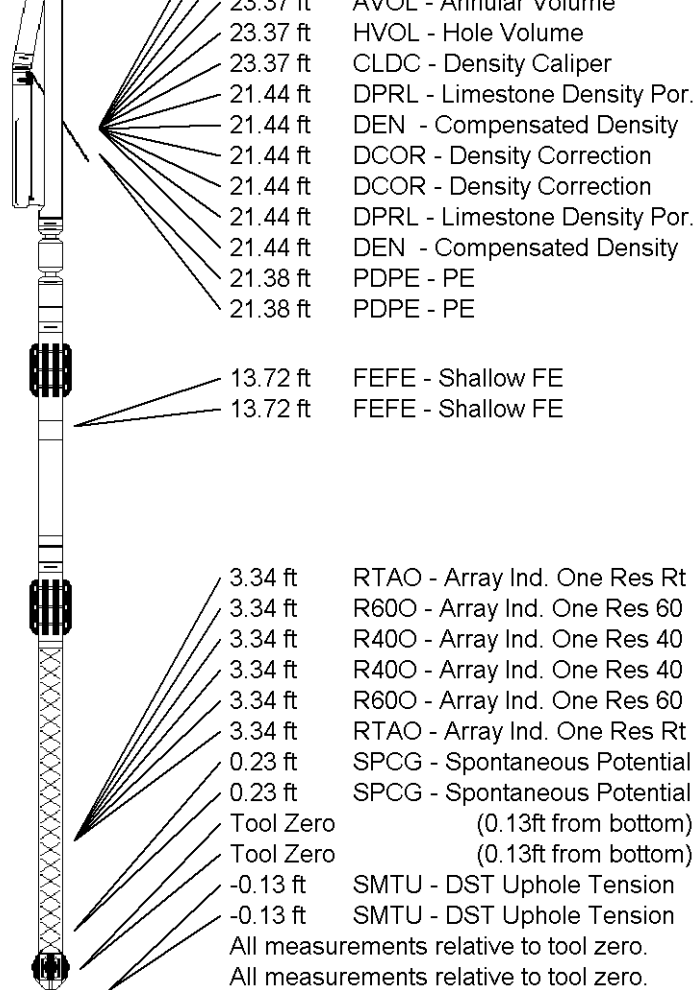
Compact Focussed Electric
MFE-A.A 67 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 188 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 188 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 55.24 ft Weight: 454.2 lb

Total Length: 55.24 ft Weight: 454.2 lb



COMPANY	O'BRIEN ENERGY RESOURCES CORP.
WELL	CROOKED CREEK OFFSET # 4-8
FIELD	ANGELL SOUTH
PROVINCE/COUNTY	MEADE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2656.00	feet	First Reading	6300.00	feet
Elevation Drill Floor	2654.00	feet	Depth Driller	6323.00	feet
Elevation Ground Level	2644.00	feet	Depth Logger	6323.00	feet



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COMPENSATED NEUTRON

