



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON**

COMPANY

BEREN CORPORATION

WELL

LOIS #10

FIELD

HARDTNER

PROVINCE/COUNTY

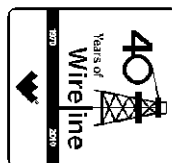
BARBER

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

2302' FNL & 990' FWL



SEC

TWP

RGE

Other Services
MAI/MFE

MML

API Number

15-007-23889

Permit Number

Permanent Datum GL, Elevation 1419 feet

Log Measured From KB

Drilling Measured From KB

Elevations:
KB 1432.00
DF 1429.00
GL 1419.00

Date 11-JUN-2012

Run Number ONE

Depth Driller 5100.00 feet

Depth Logger 5113.00 feet

First Reading 5094.00 feet

Last Reading 3600.00 feet

Casing Driller 300.00 feet

Casing Logger 293.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.20 lb/USg 58.00 CP

PH / Fluid Loss 9.50 8.80 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.32 @ 91.0 ohm-m

Rmf @ Measured Temp 0.26 @ 91.0 ohm-m

Rmc @ Measured Temp 0.38 @ 91.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.25 @ 117.0 ohm-m

Time Since Circulation 5 HOURS

Max Recorded Temp 117.00 deg F

Equipment Name COMPACT

Equipment / Base 13025 LIB

Recorded By ADAM SILL

Witnessed By EDWIN GRIEVES

S.O. # / JOB # 3534657

LB12-145

BOREHOLE RECORD

Last Edited: 11-JUN-2012 21:37

Bit Size inches	Depth From feet	Depth To feet
14.500	0.00	300.00
12.250	300.00	900.00
7.875	900.00	5100.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	13.375	0.00	300.00	48.00

REMARKS

- SOFTWARE ISSUE: WLS 11.03.4044.
- MCG, MML, MDN, MPD, MFE, MAI RAN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MAI.
 - 0.5 INCH STANDOFF USED ON MFE.
- 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: 572 CU.FT.

ANNULAR HOLE VOLUME WITH 5.5 INCH CASING: 325 CU. FT.

ANNULAR HOLE VOLUME WITH 5.5 INCH CASING: 525 CU. FT.

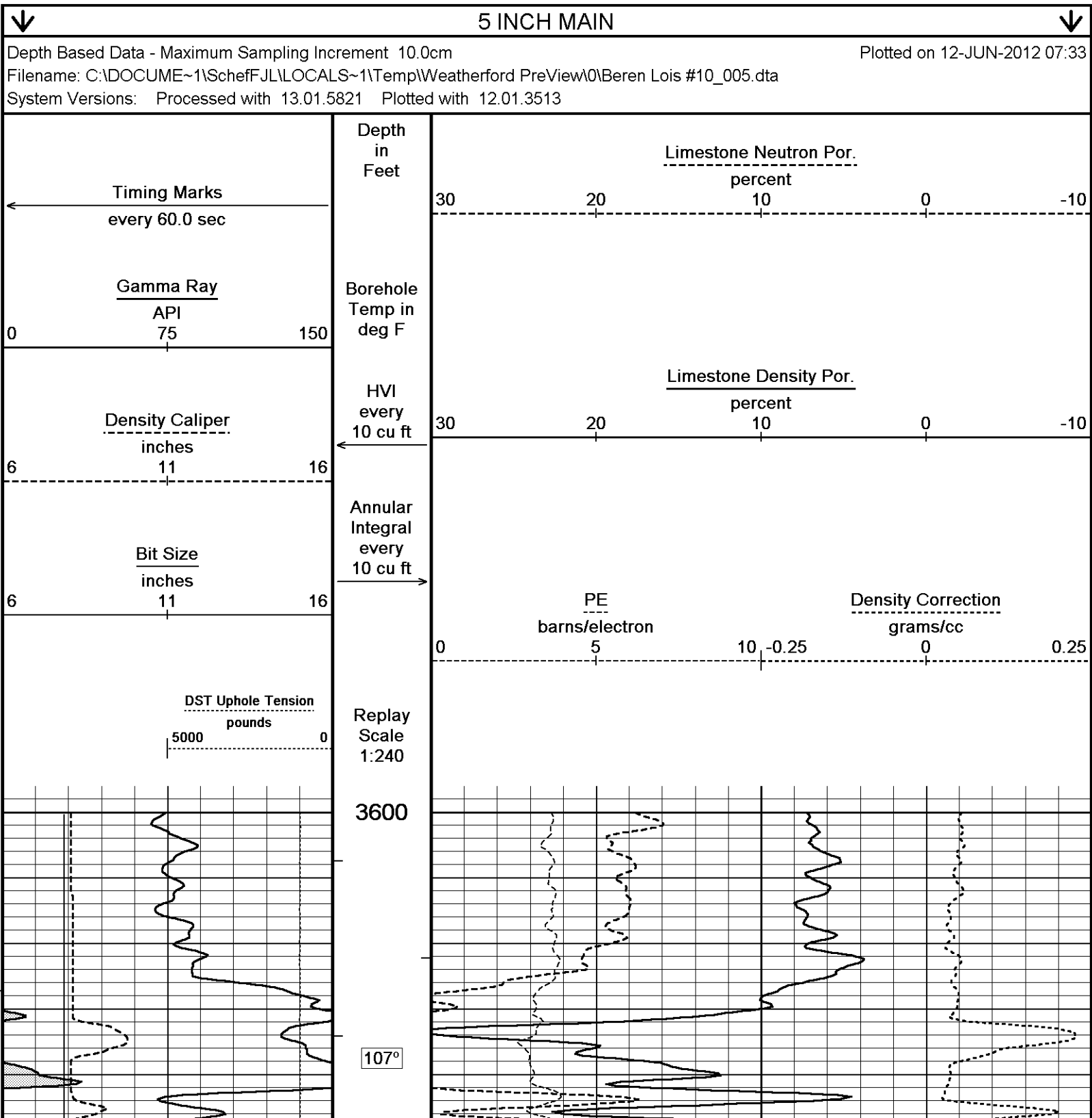
- SERVICE ORDER # 3534657.

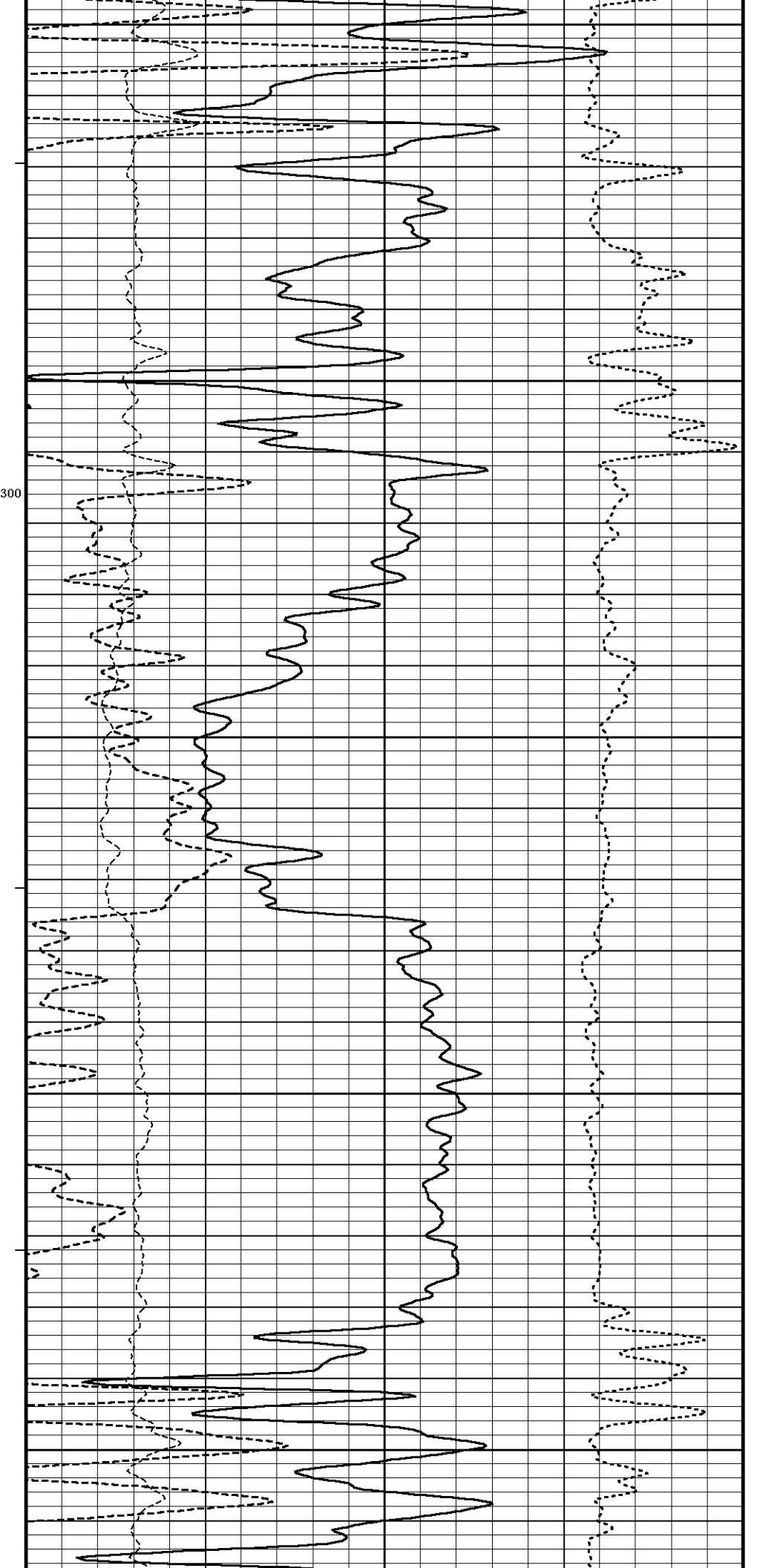
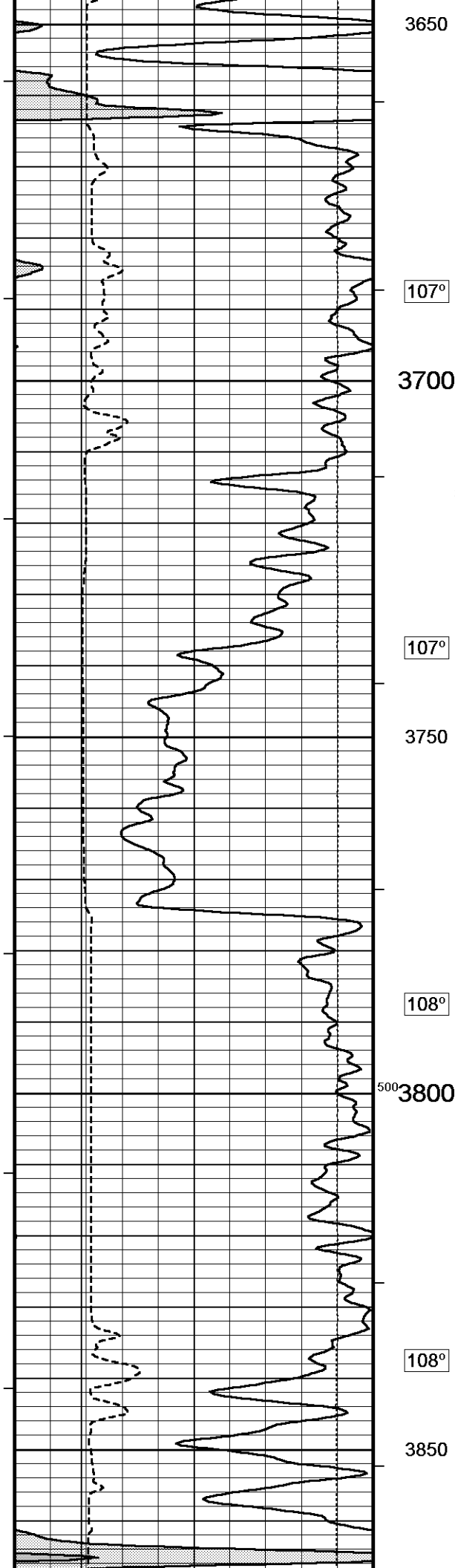
- RIG: BEREDCO #2.

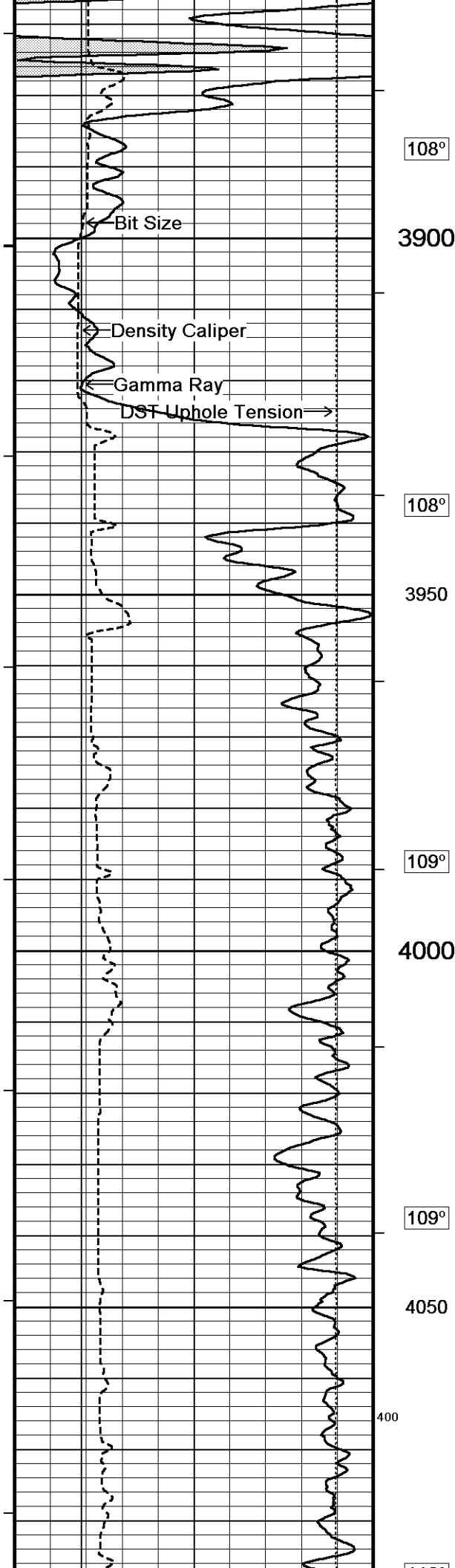
- ENGINEER: A. SILL.

- OPERATOR(S): B. REEVES.

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°

3900

108°

3950

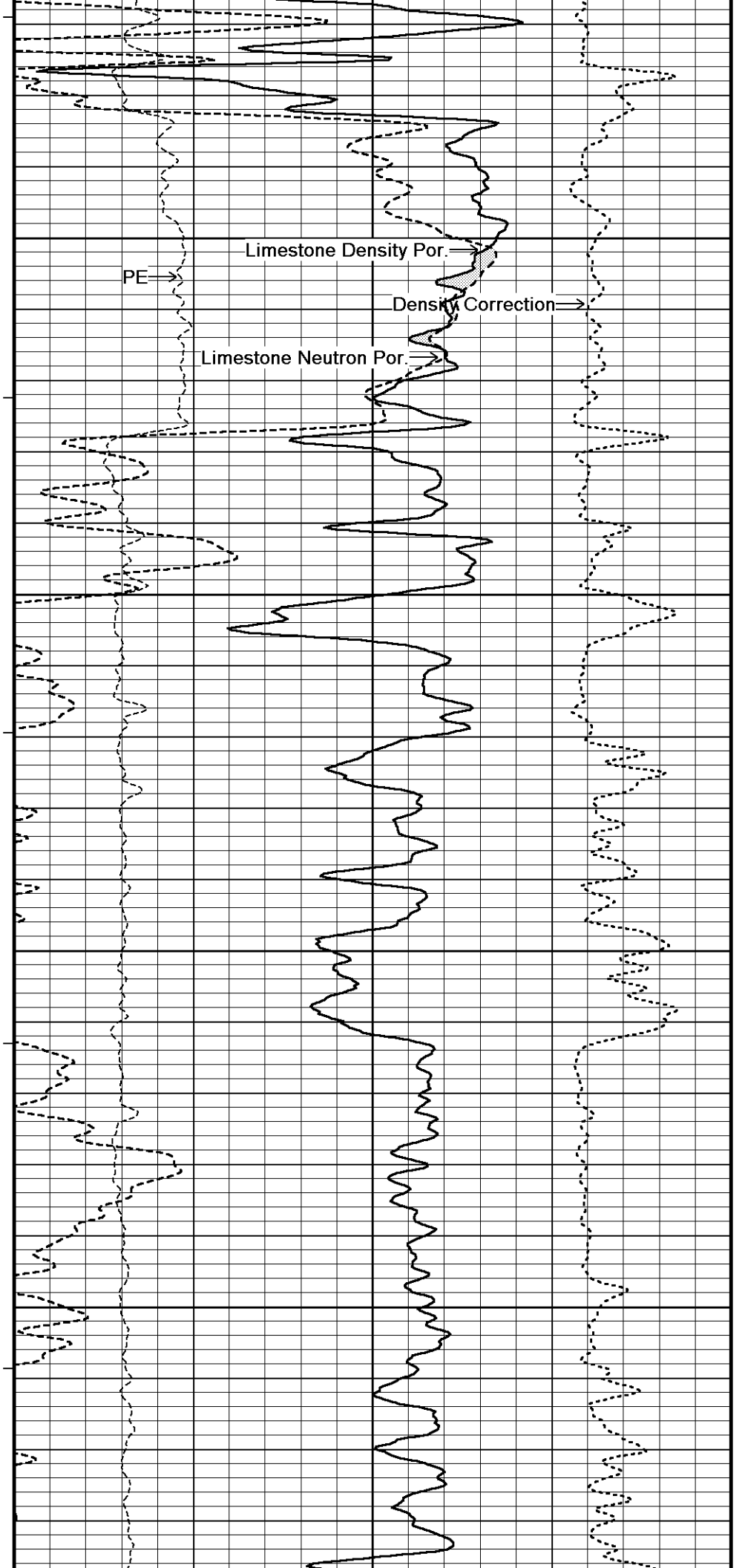
109°

4000

109°

4050

400

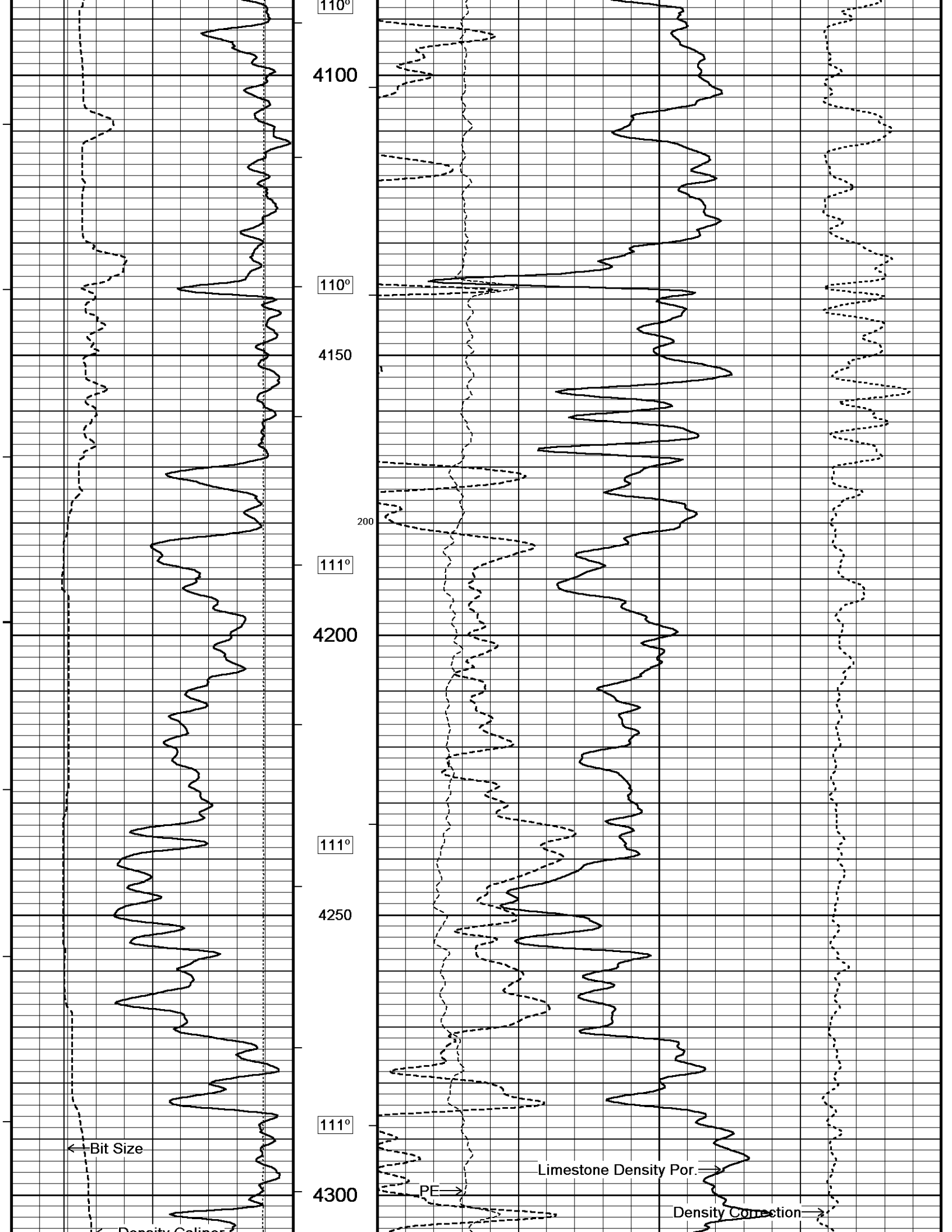


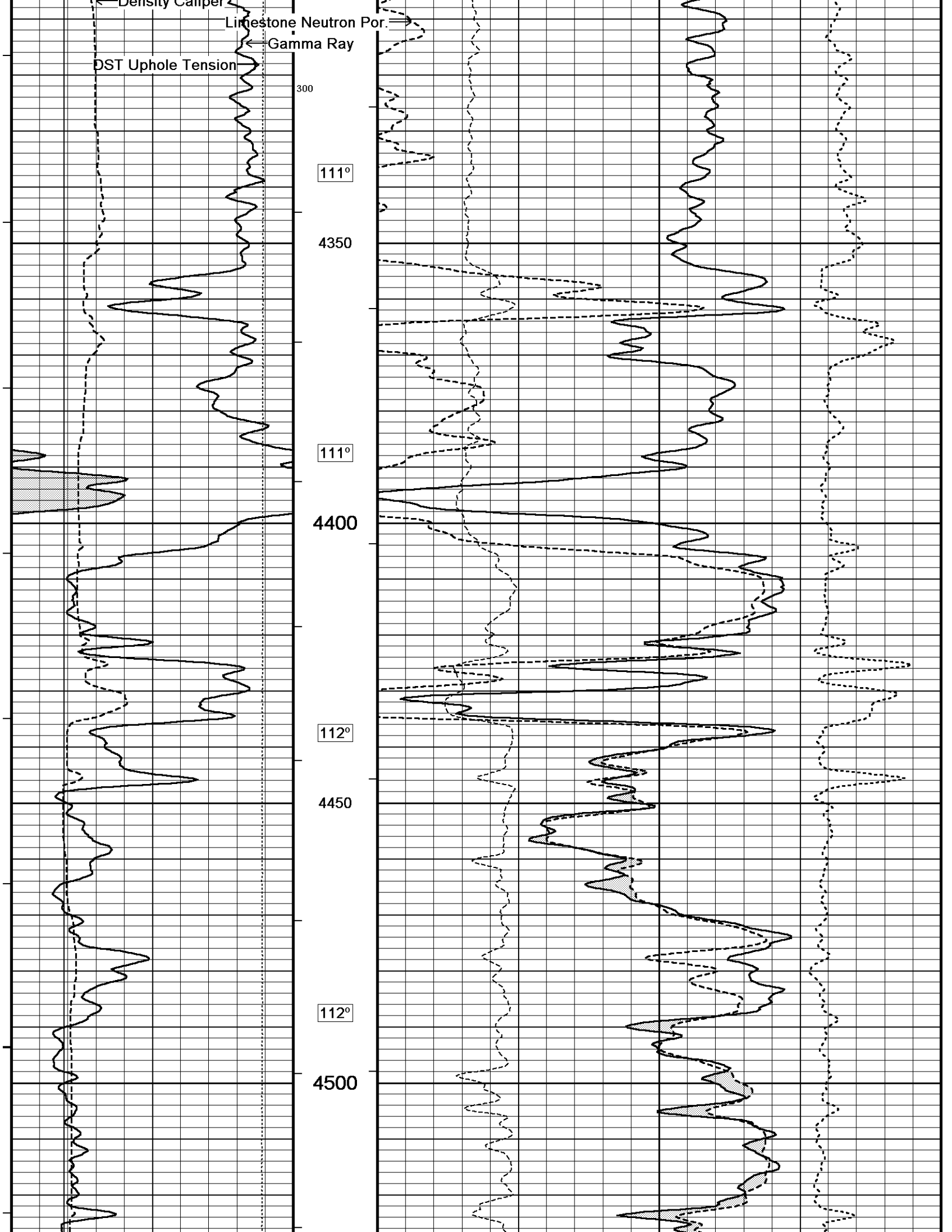
Limestone Density Por.

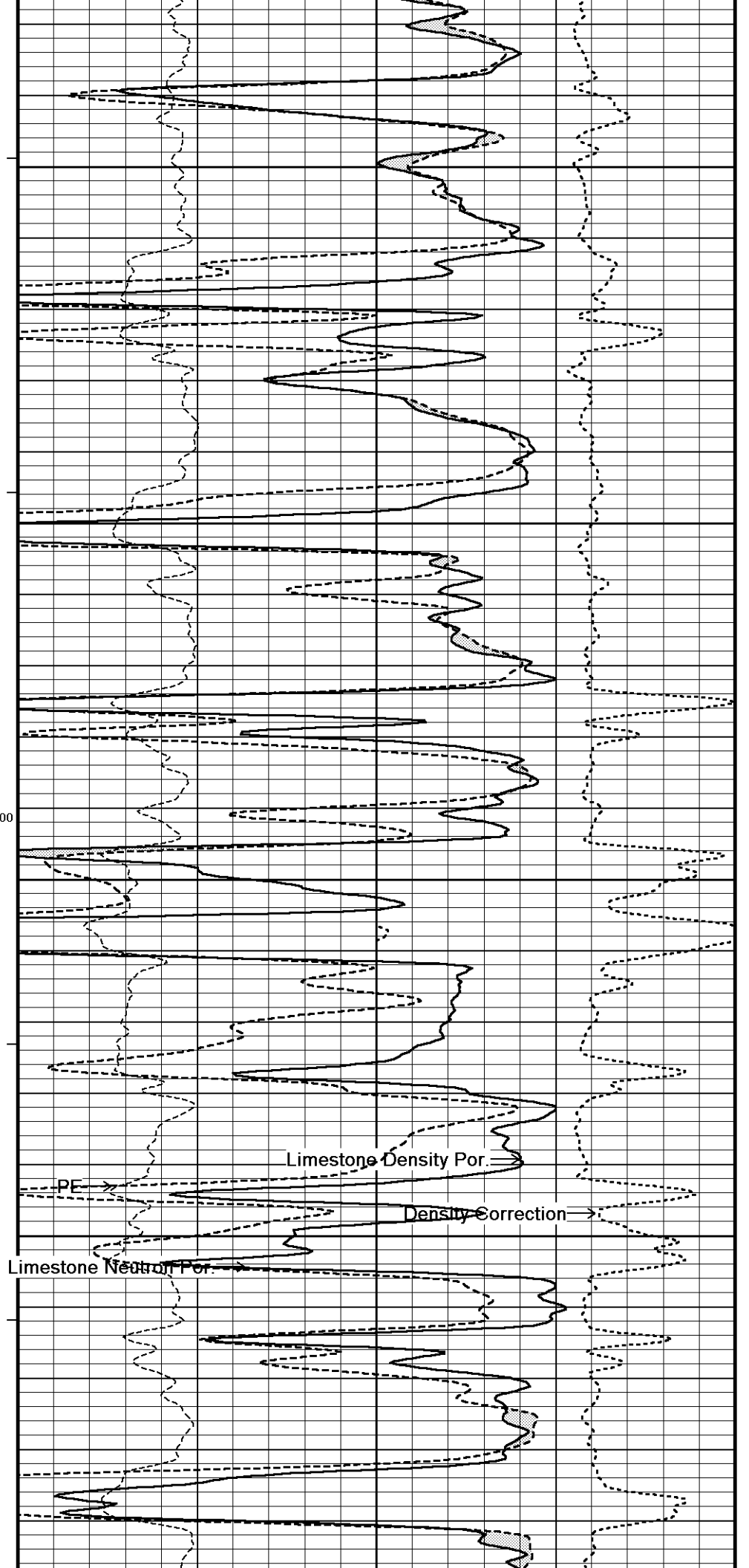
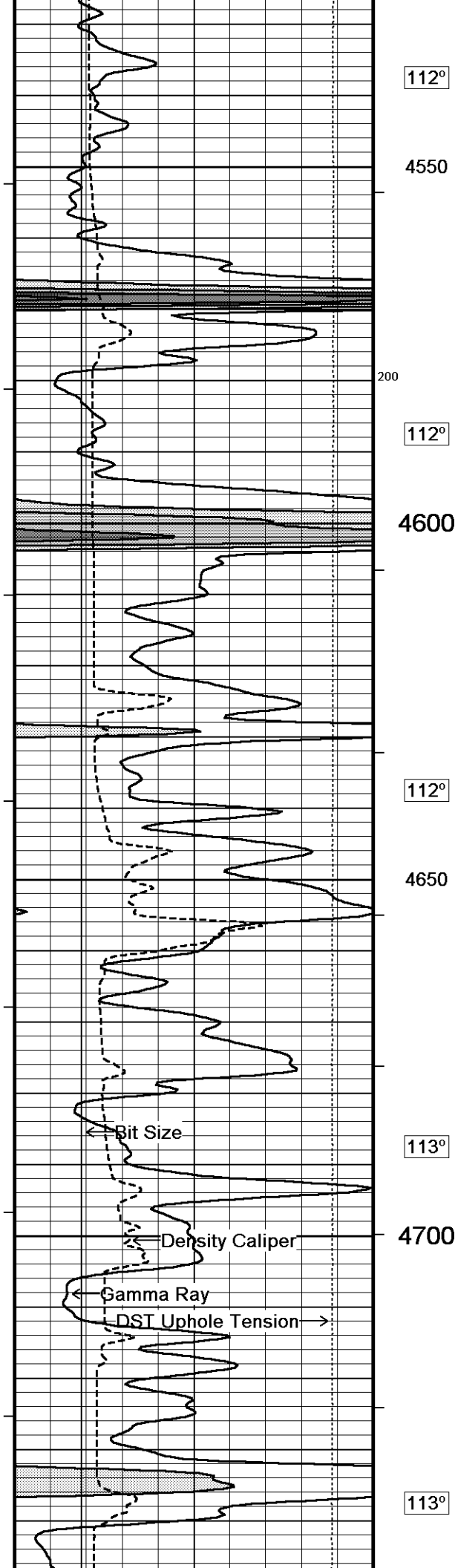
PE

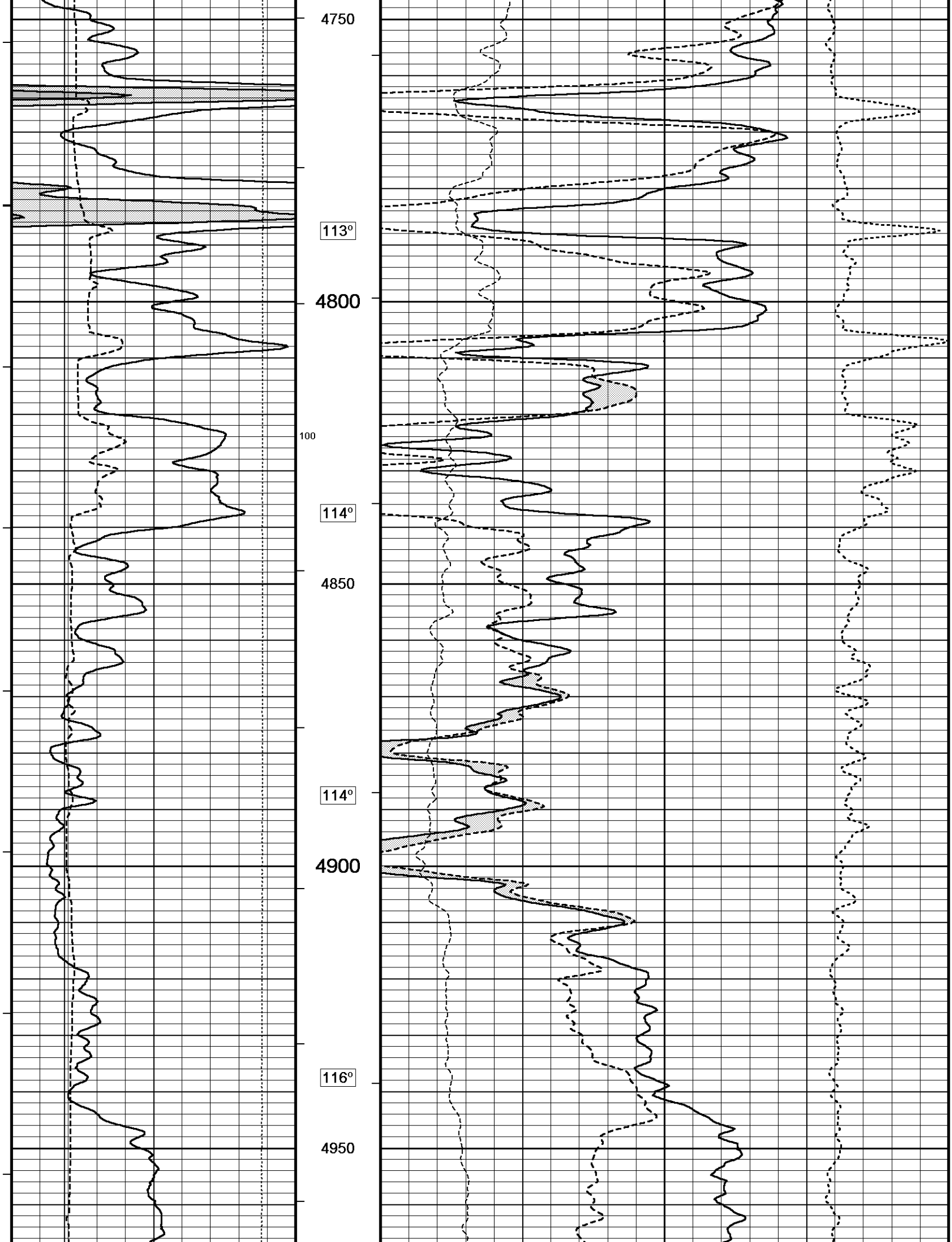
Density Correction

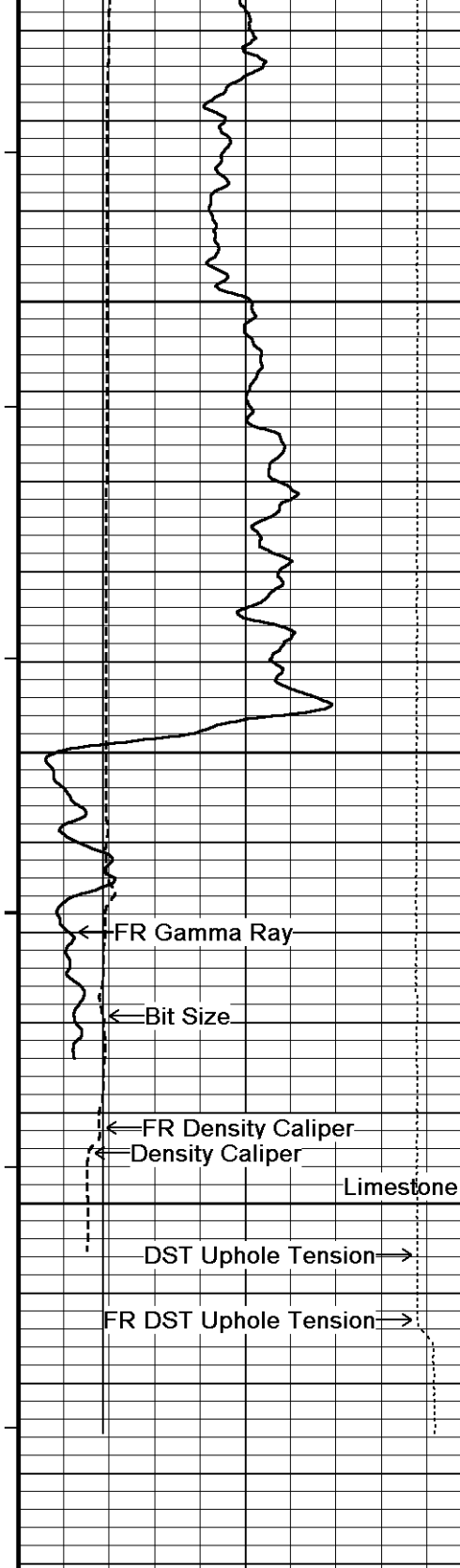
Limestone Neutron Por.











117°

5000

116°

5050

5100

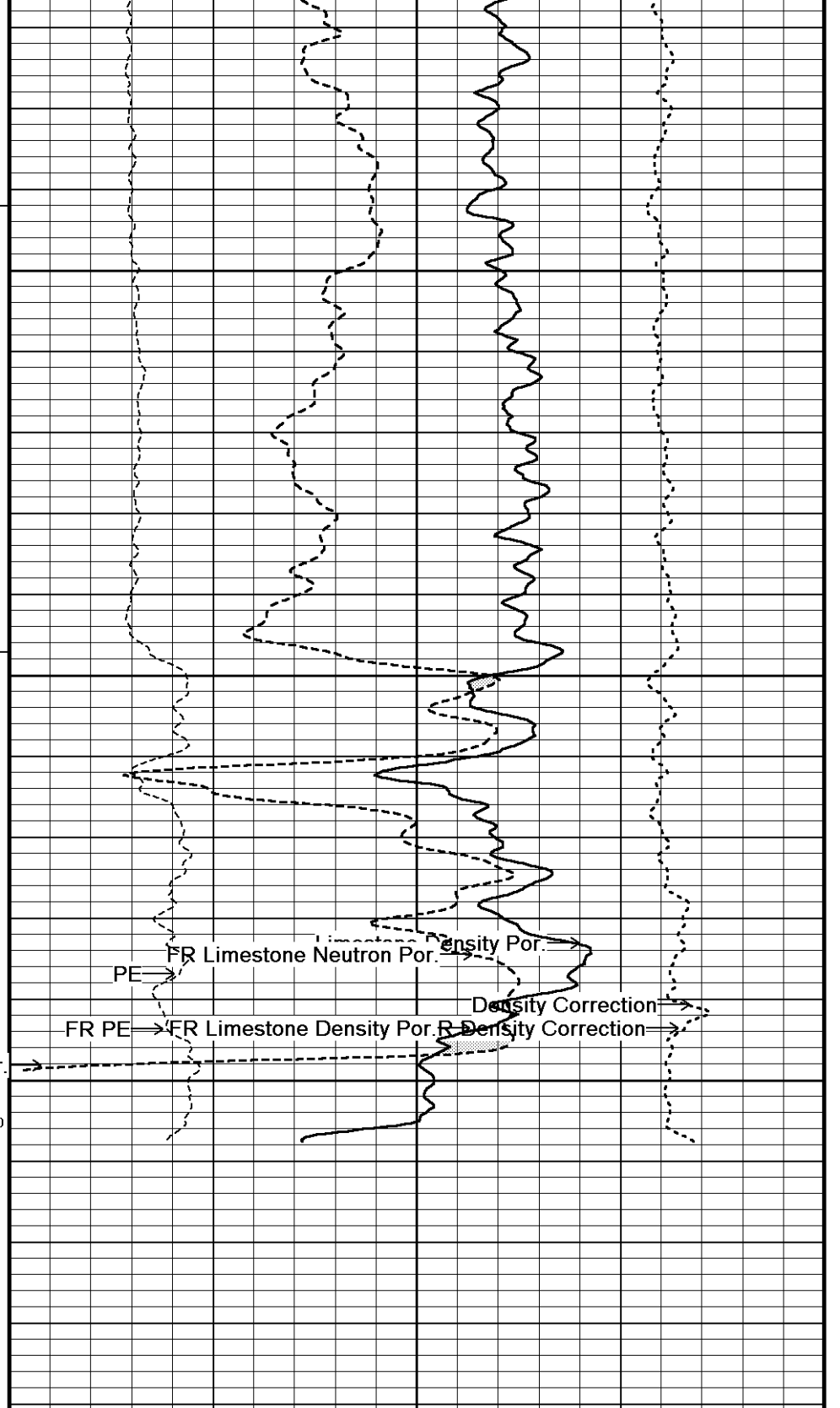
5140
Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Borehole
Temp in
deg F

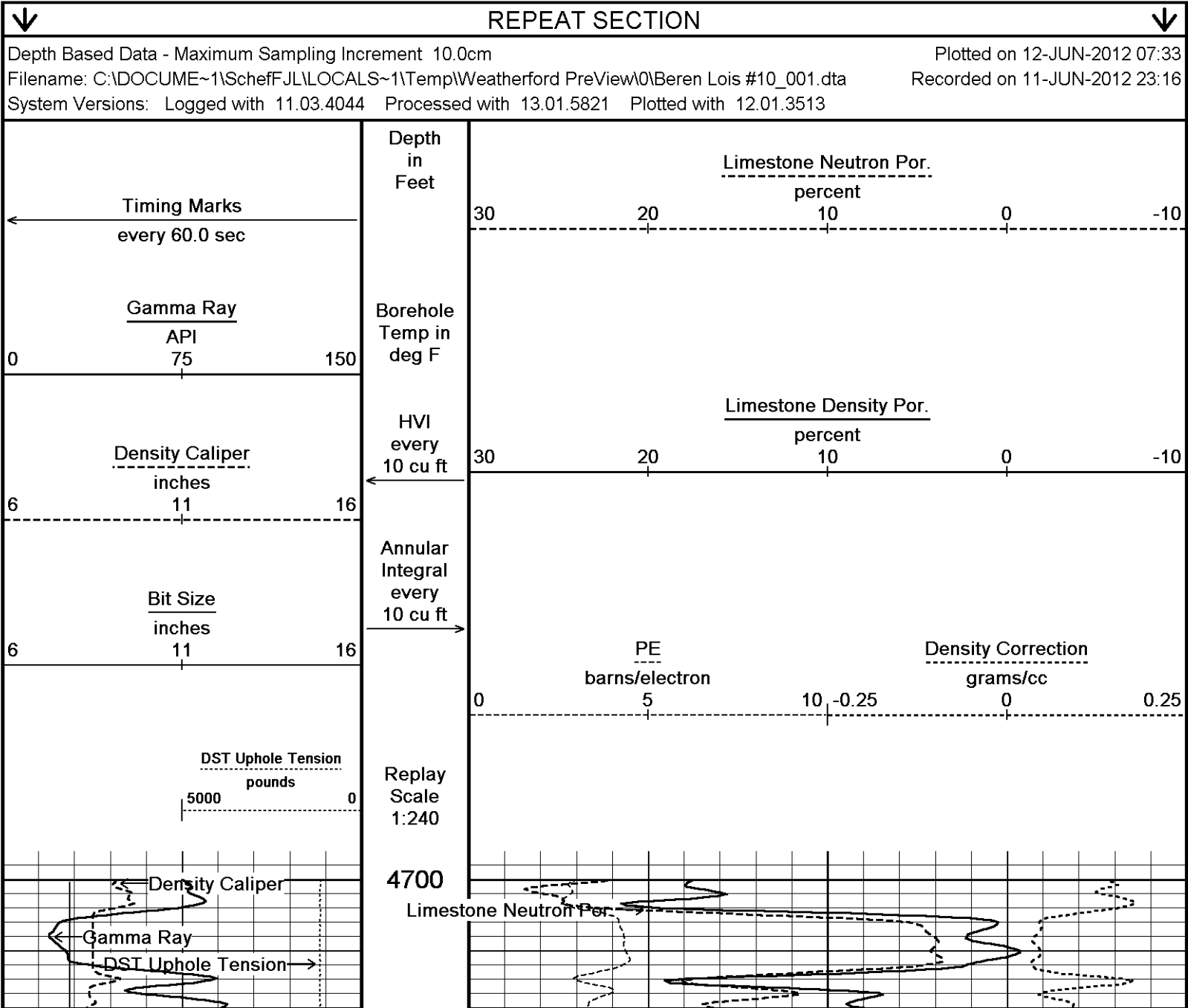
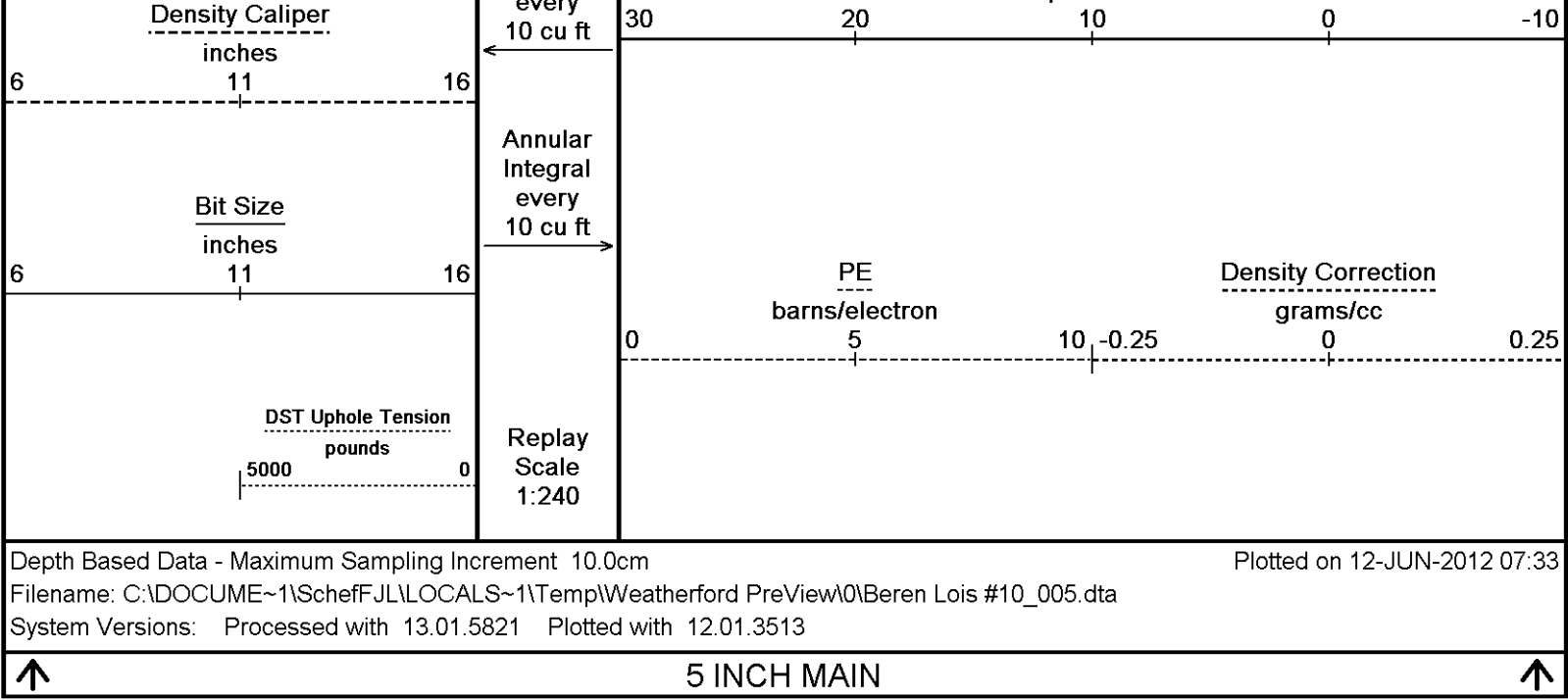
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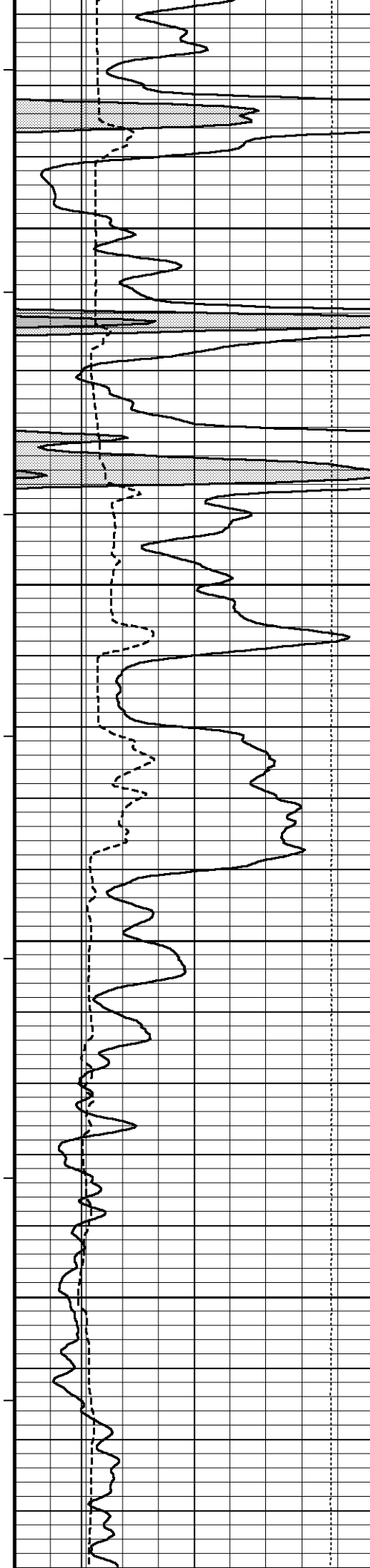


Limestone Neutron Por.
percent

30 20 10 0 -10

Limestone Density Por.
percent





111°

4750

111°

4800

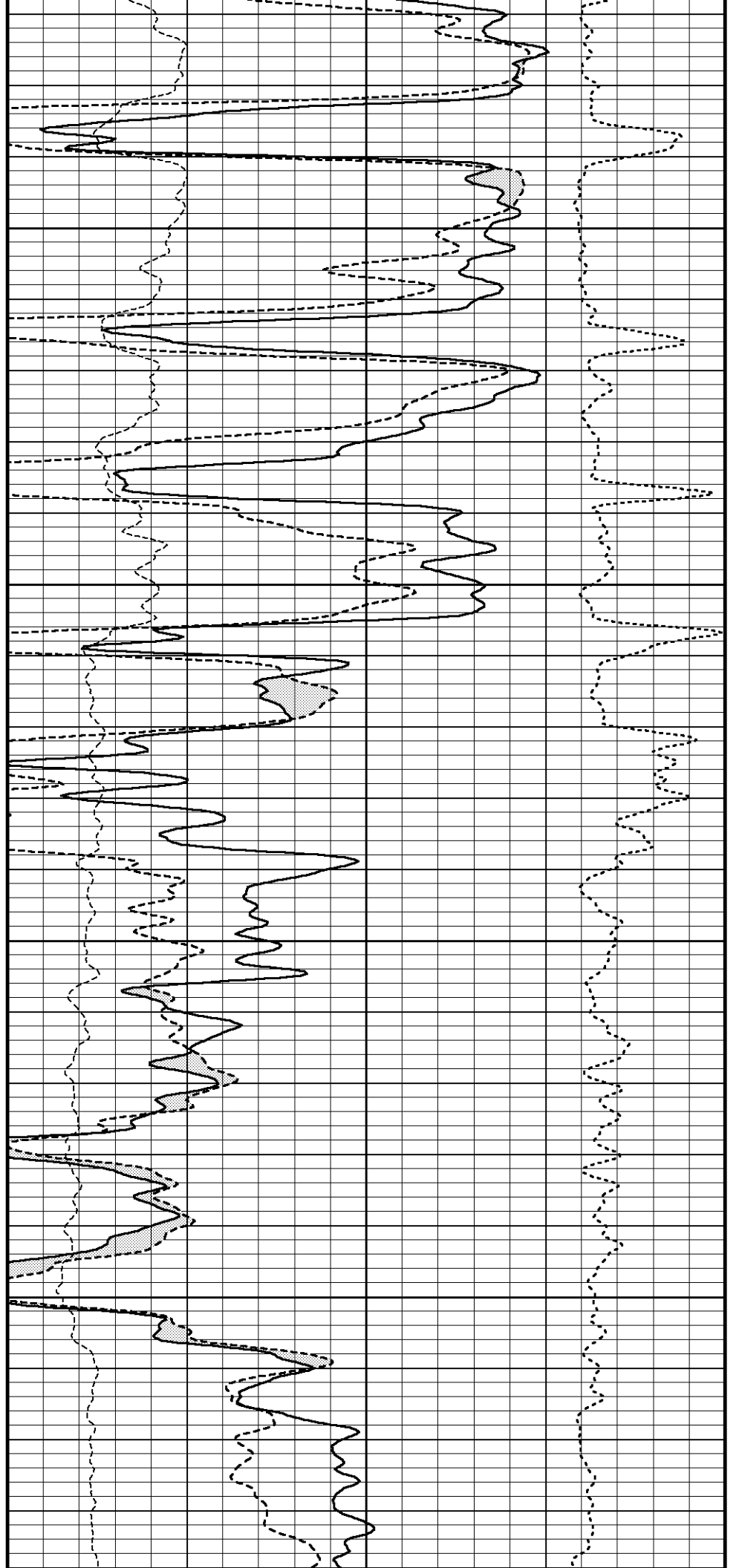
112°

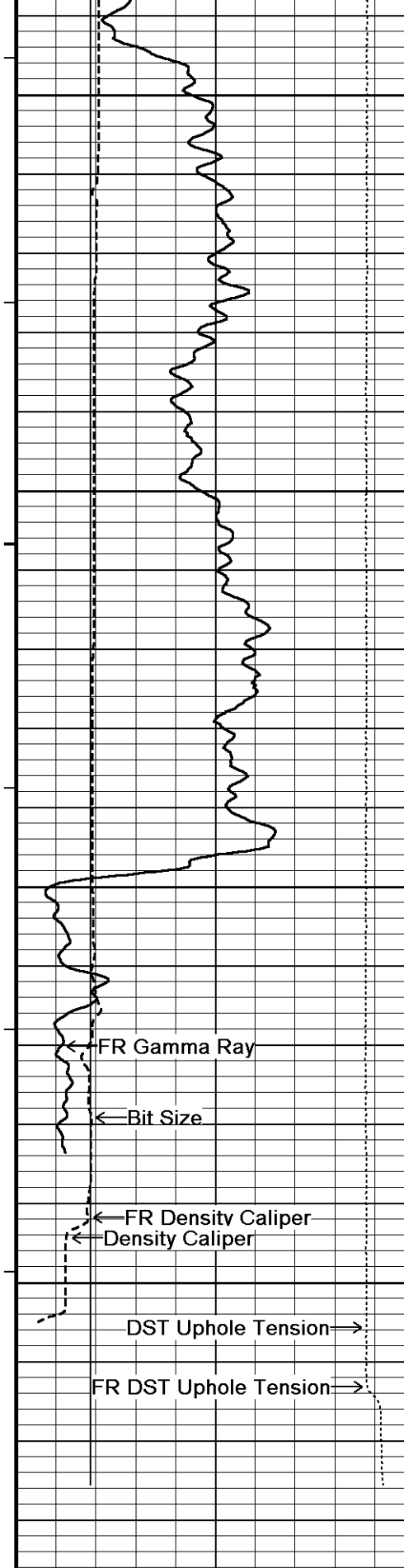
4850

113°

4900

114°





4950

115°

5000

116°

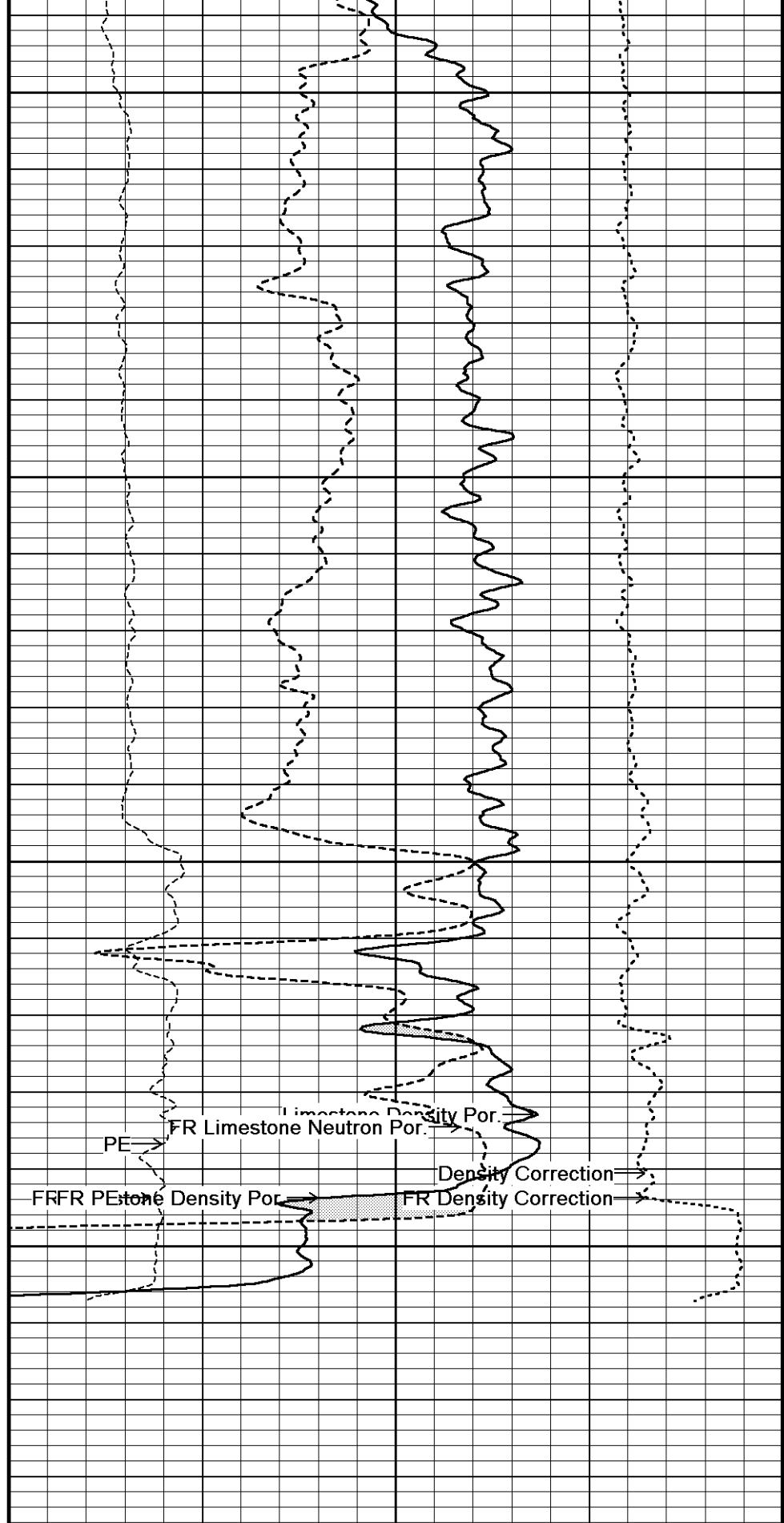
5050

5100

5136

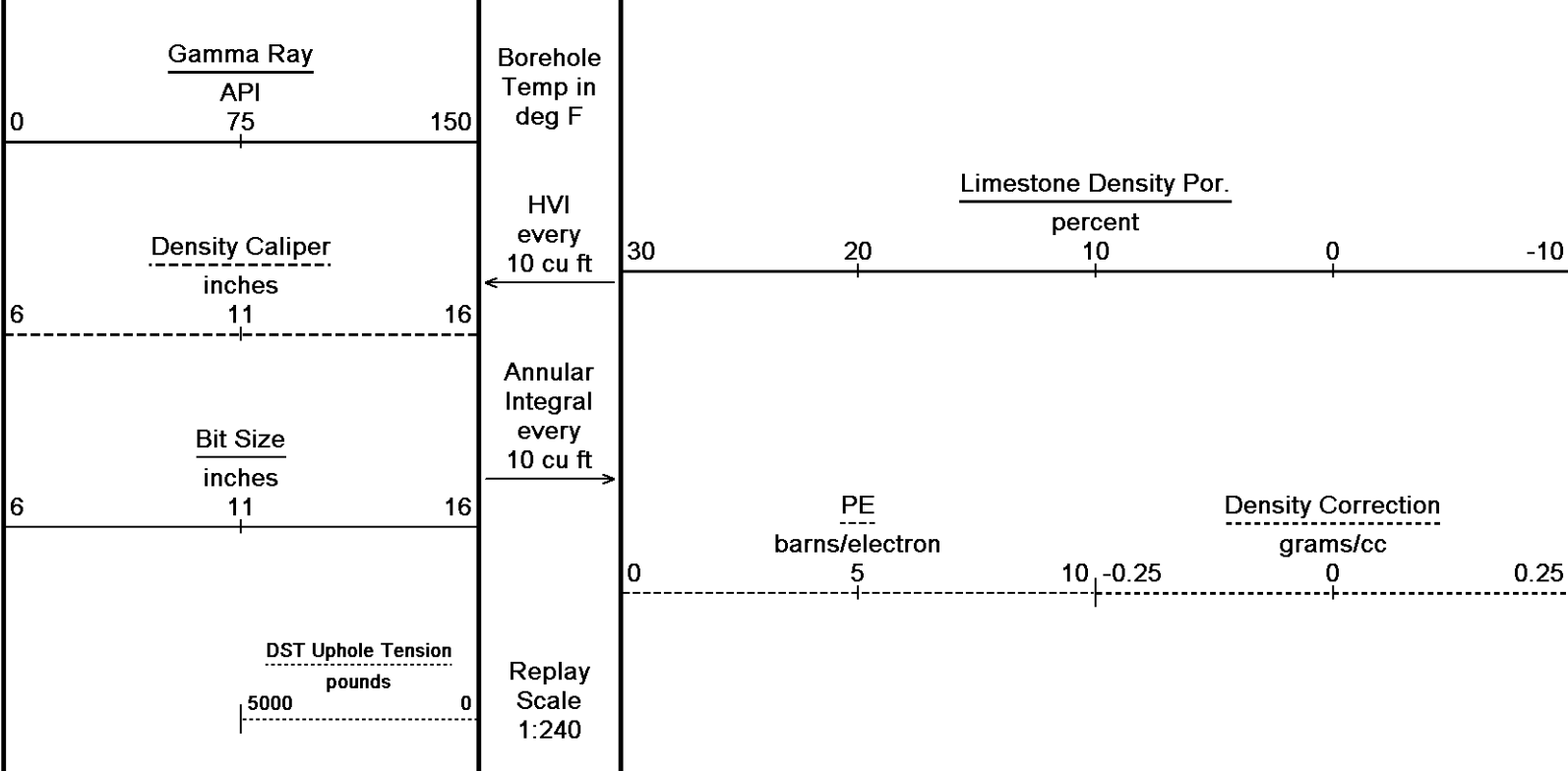
Depth
in
Feet

Timing Marks
every 60.0 sec



Limestone Neutron Por.
percent

30 20 10 0 -10

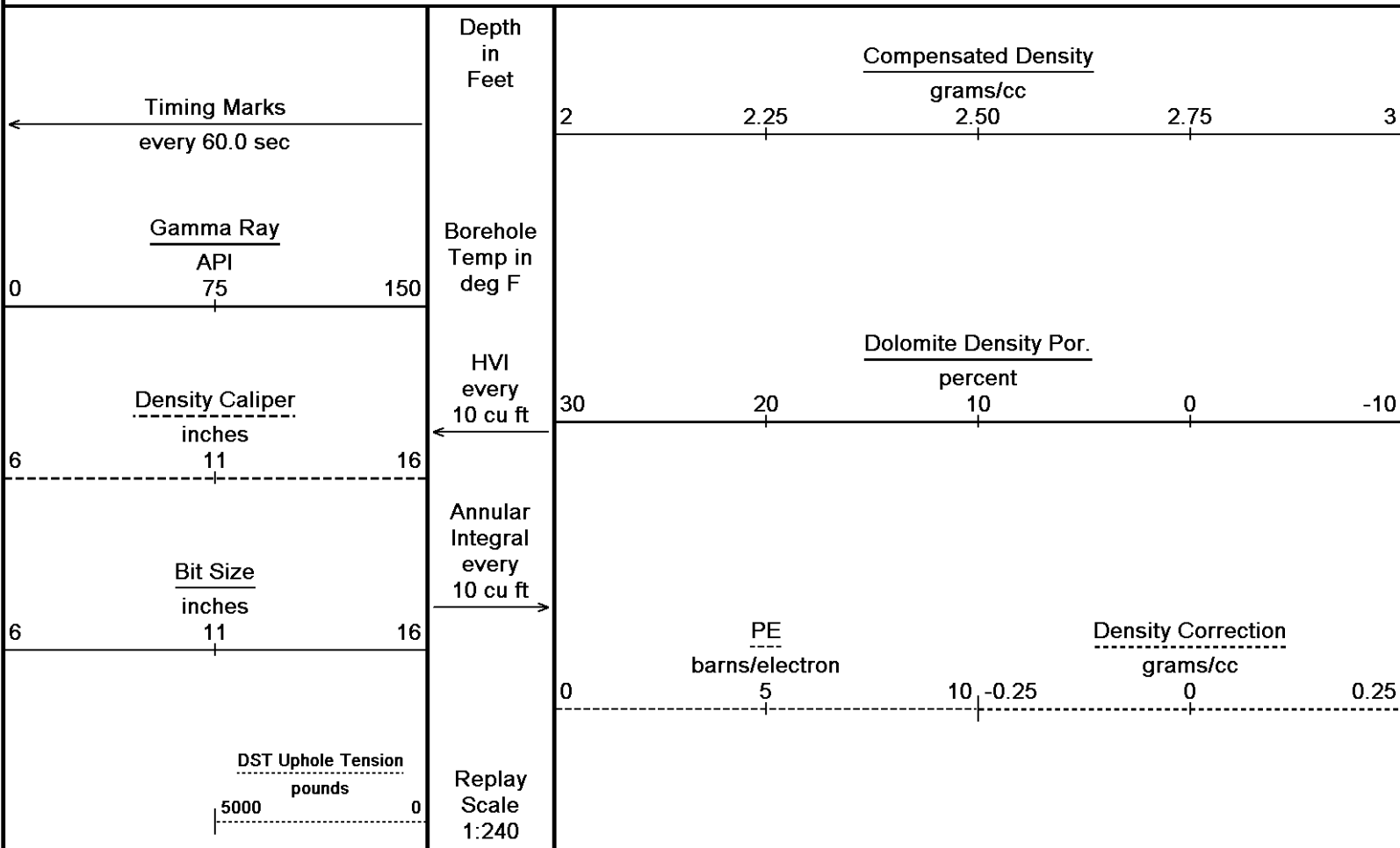


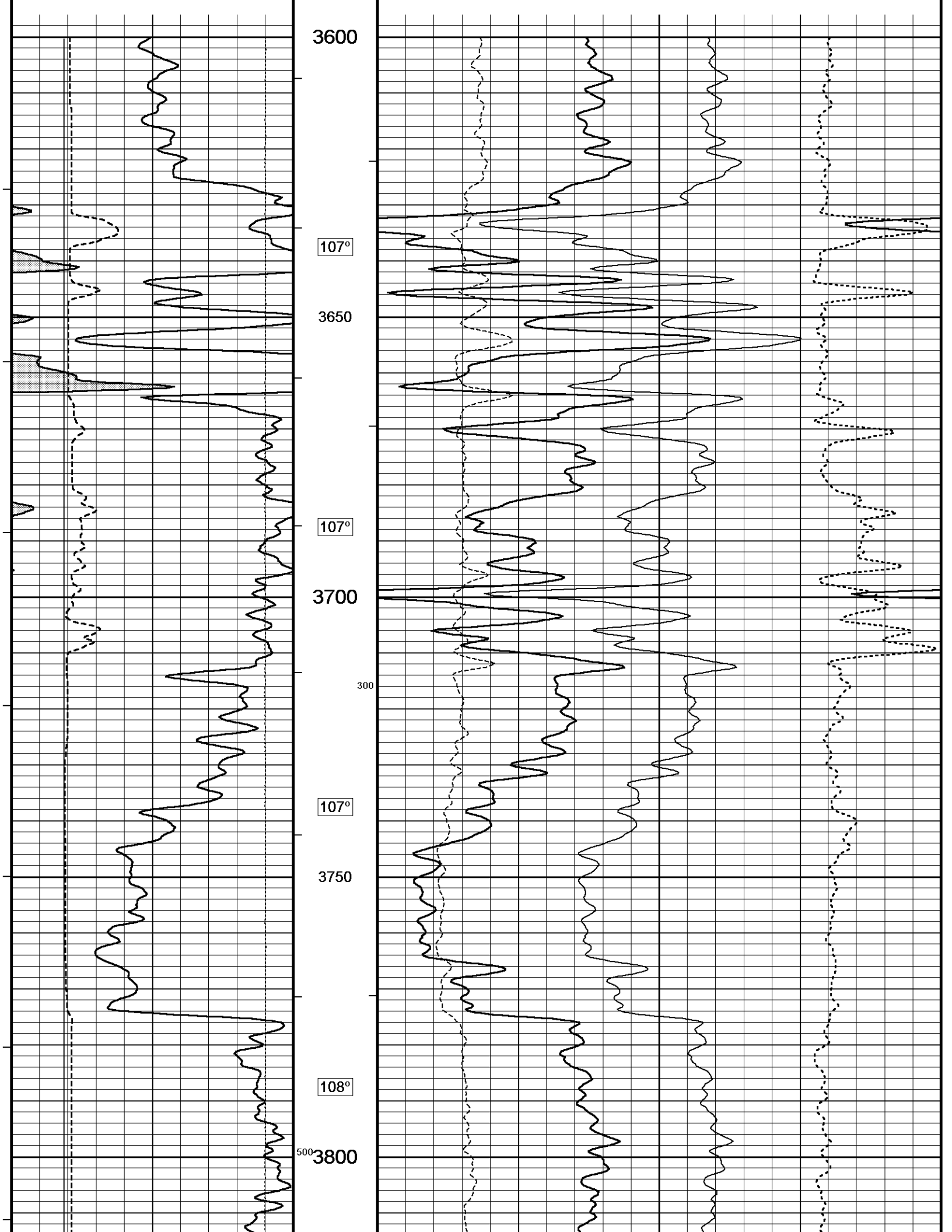
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-JUN-2012 07:33
 Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_001.dta Recorded on 11-JUN-2012 23:16
 System Versions: Logged with 11.03.4044 Processed with 13.01.5821 Plotted with 12.01.3513

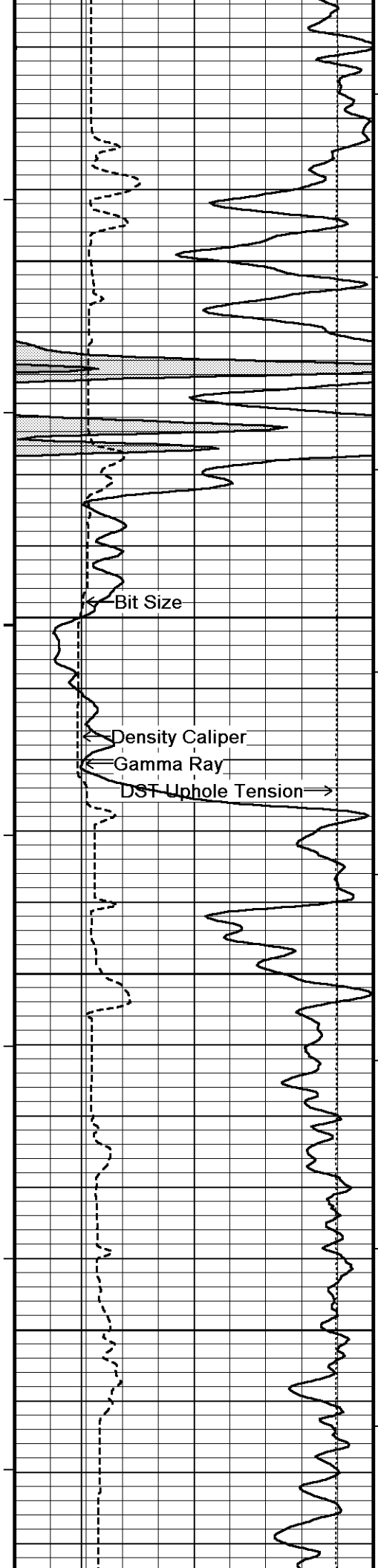
↑ REPEAT SECTION ↑

↓ 5 INCH MAIN ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-JUN-2012 07:33
 Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_005.dta
 System Versions: Processed with 13.01.5821 Plotted with 12.01.3513







108°

3850

108°

3900

Bit Size

Density Caliper

Gamma Ray

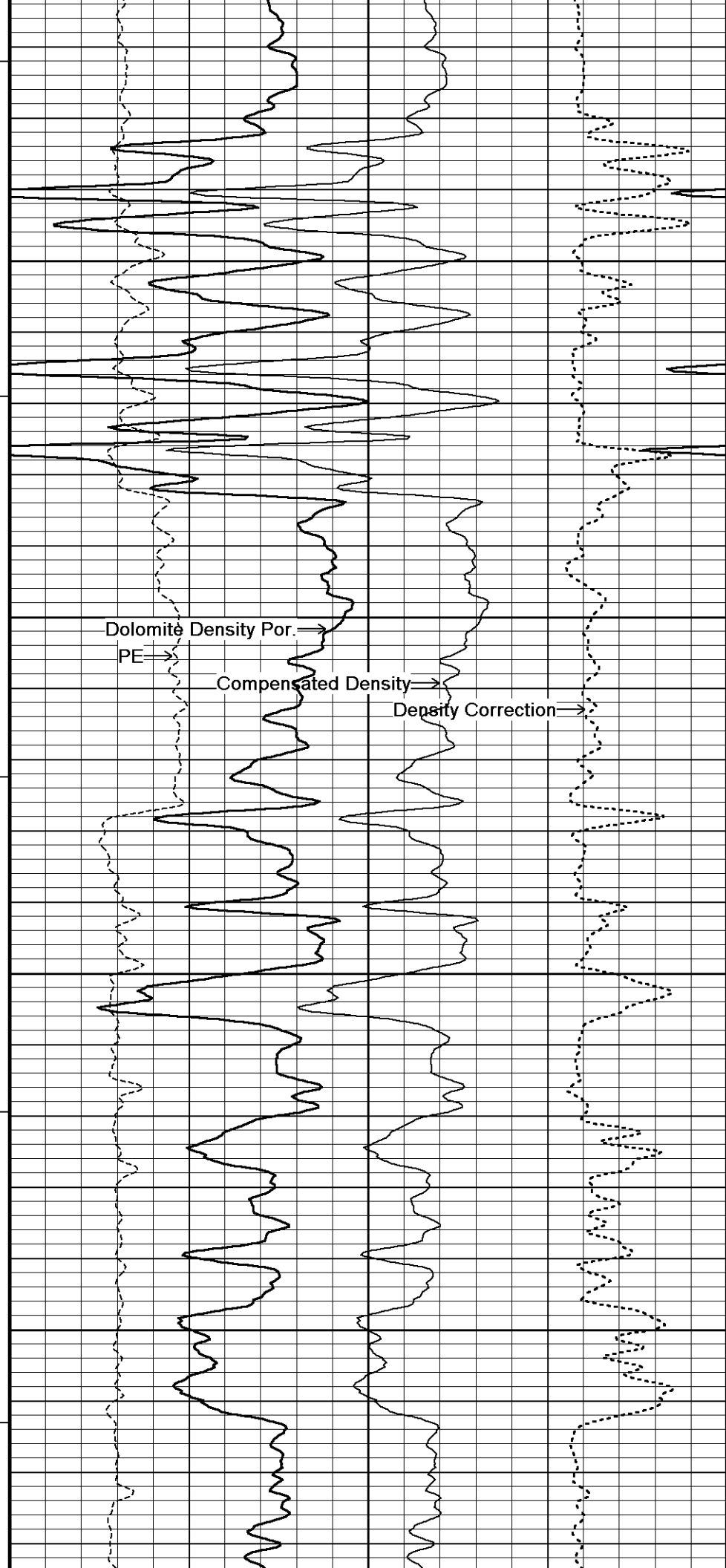
DST Uphole Tension

108°

3950

109°

4000

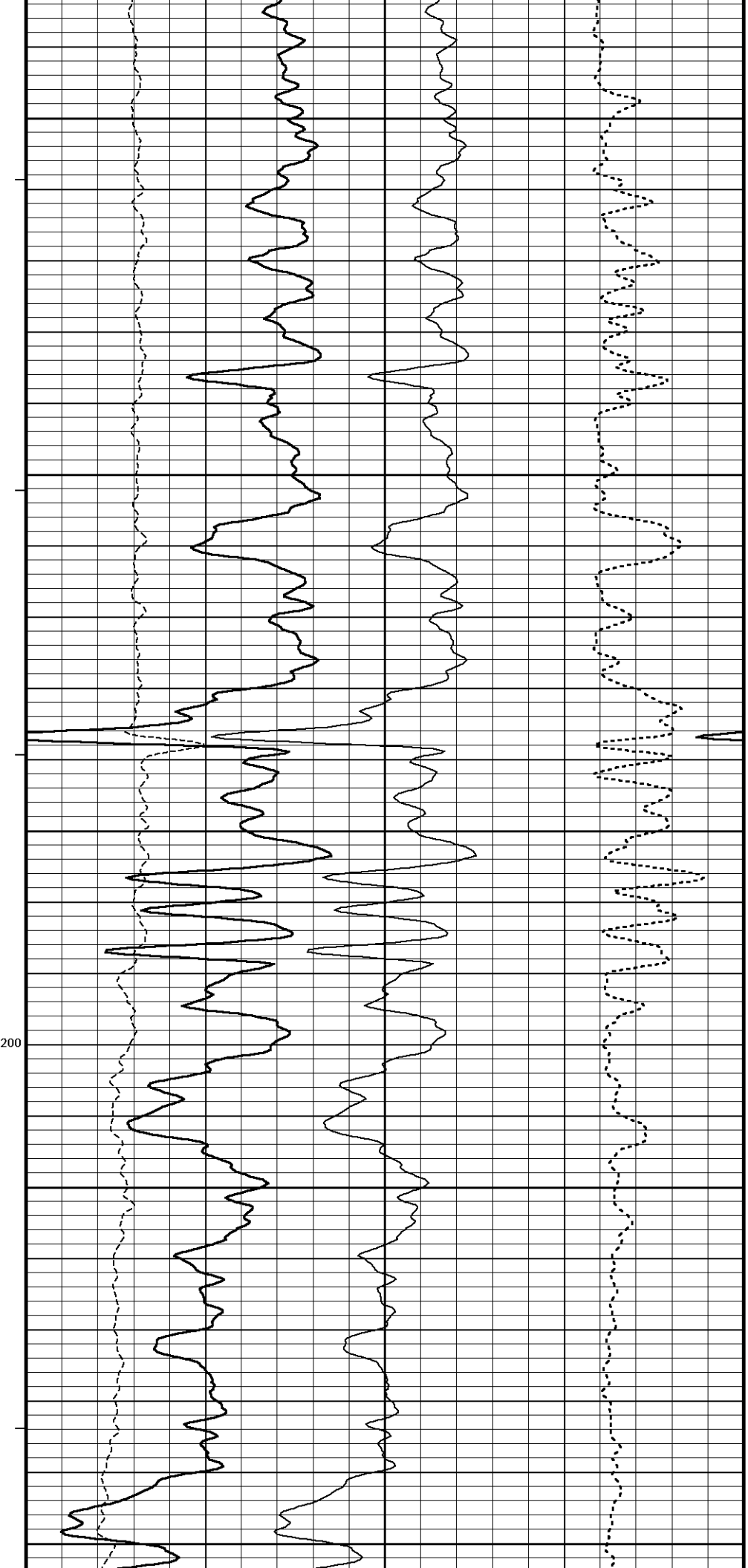
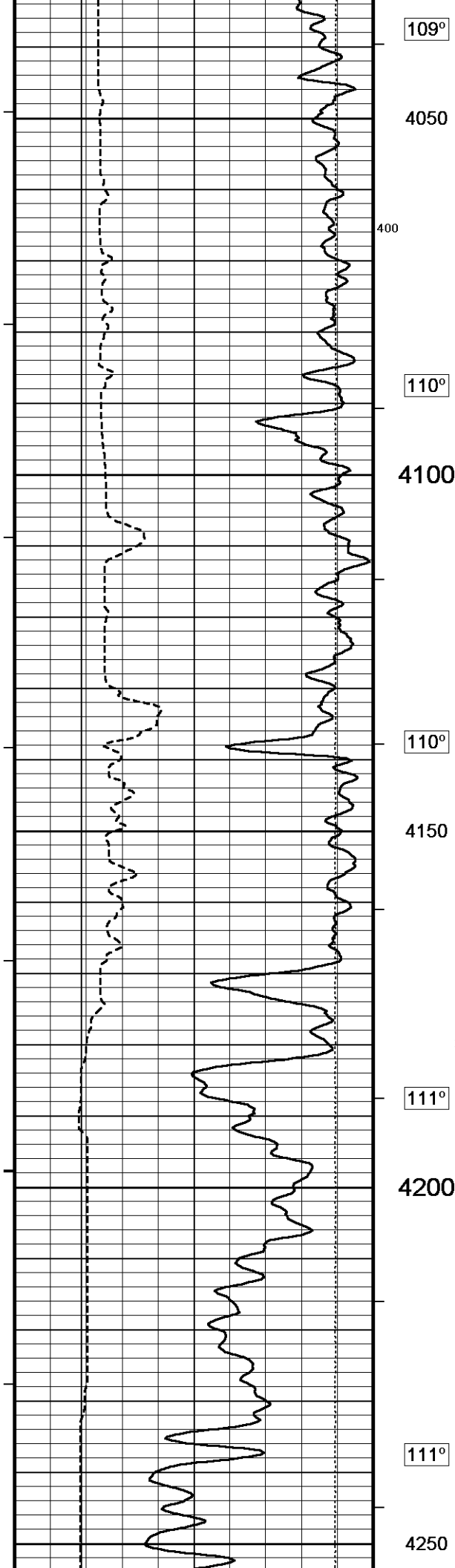


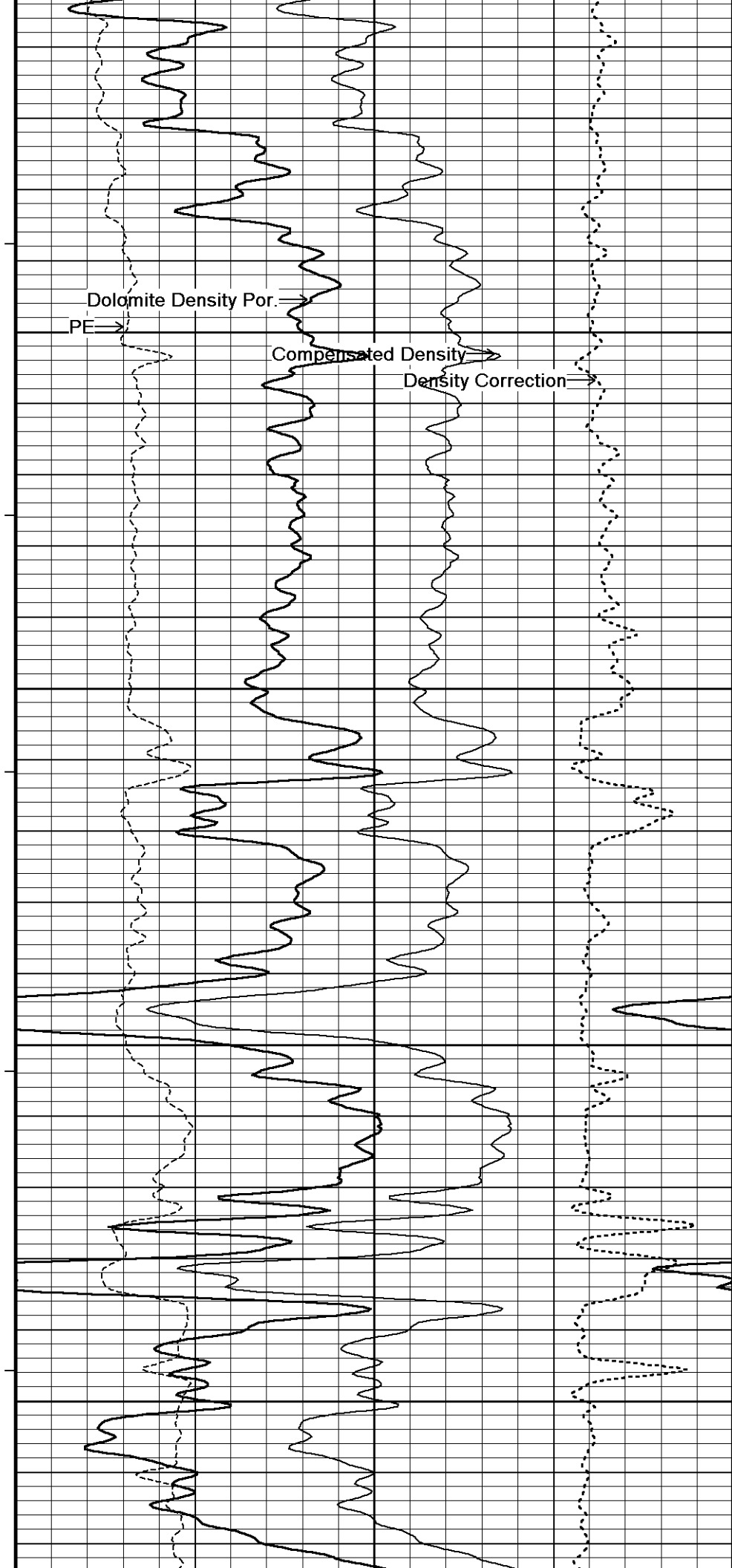
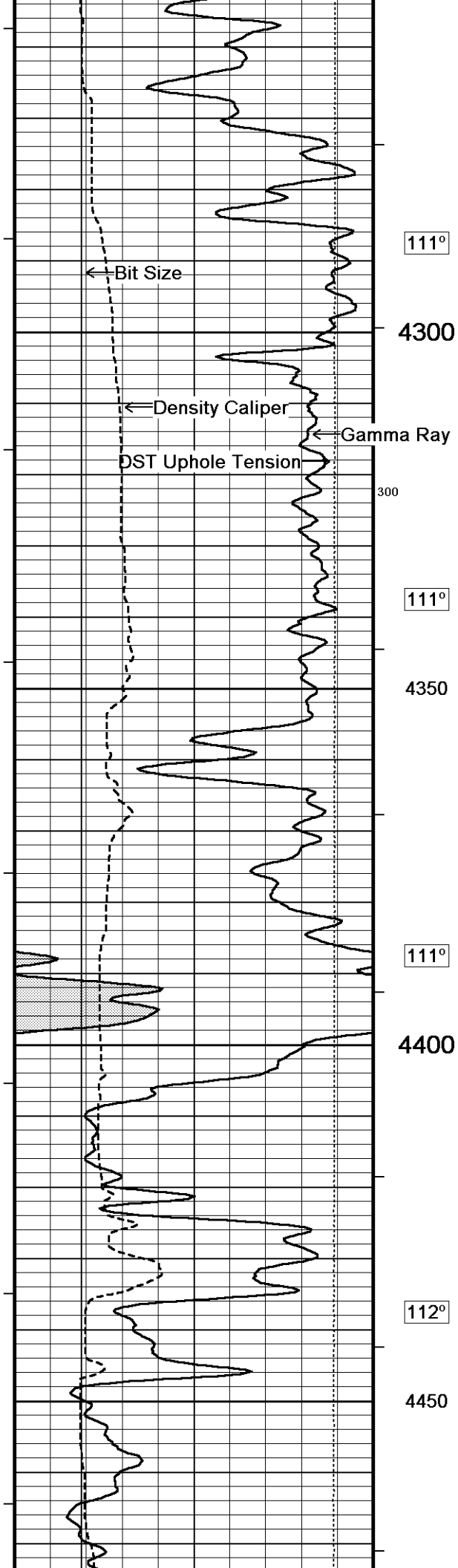
Dolomite Density Por.

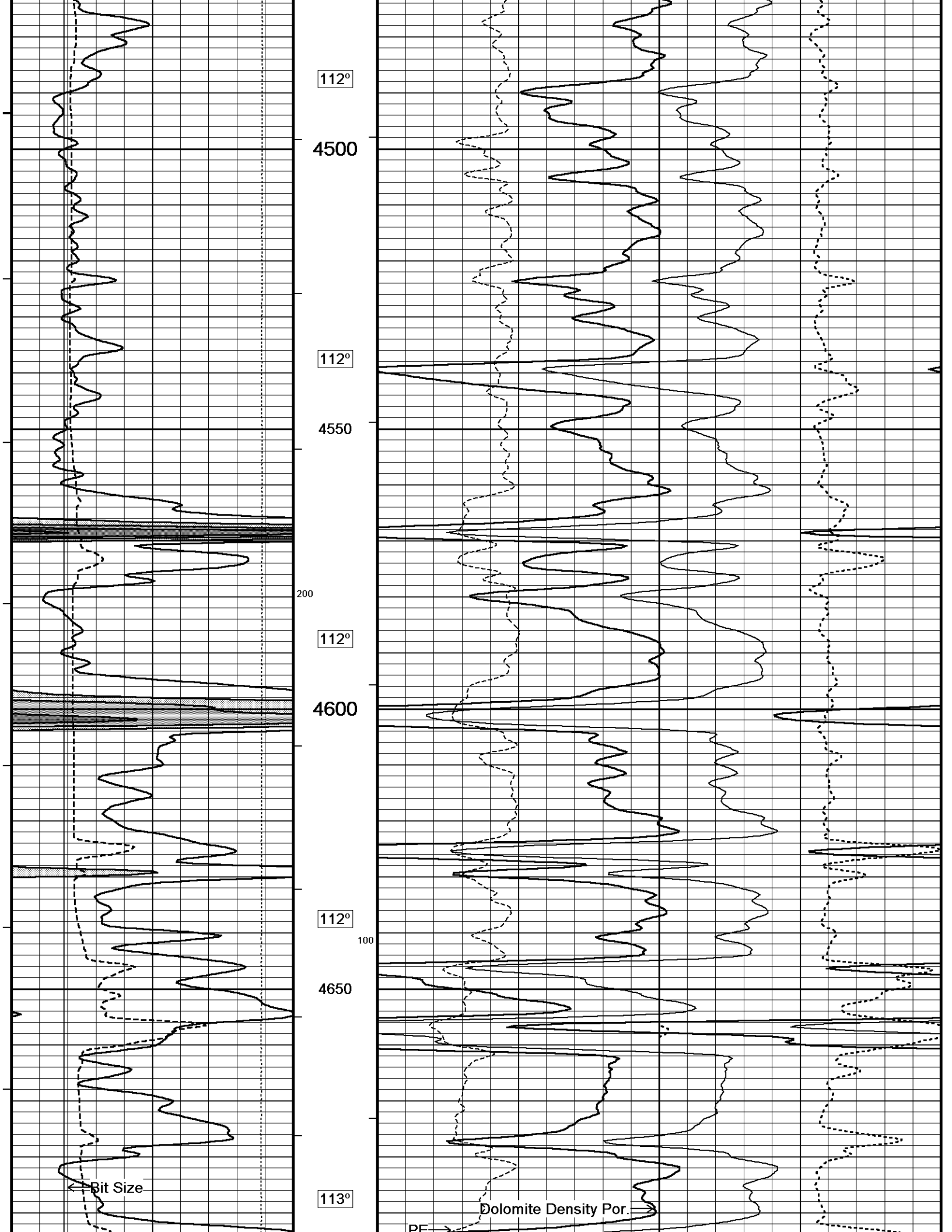
PE

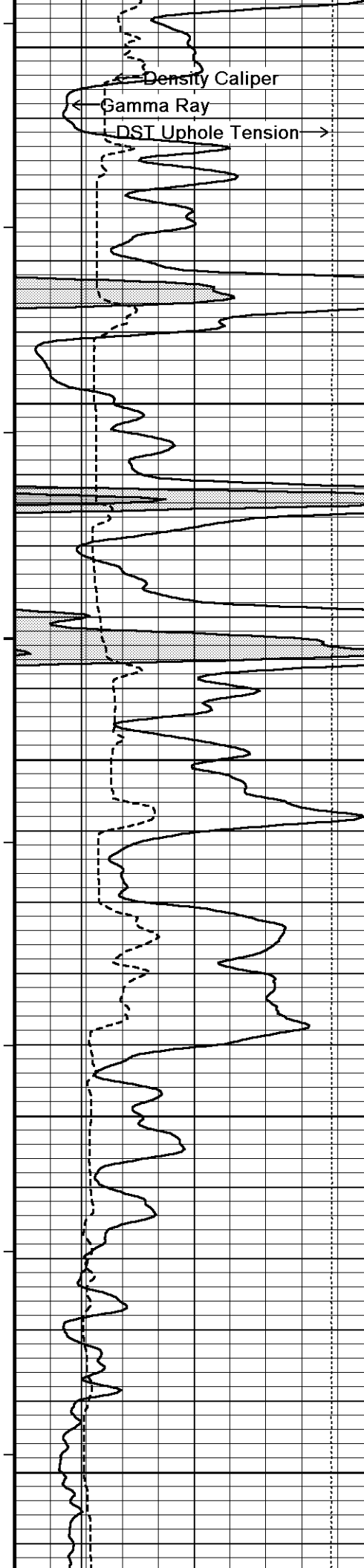
Compensated Density

Density Correction









4700

113°

4750

113°

4800

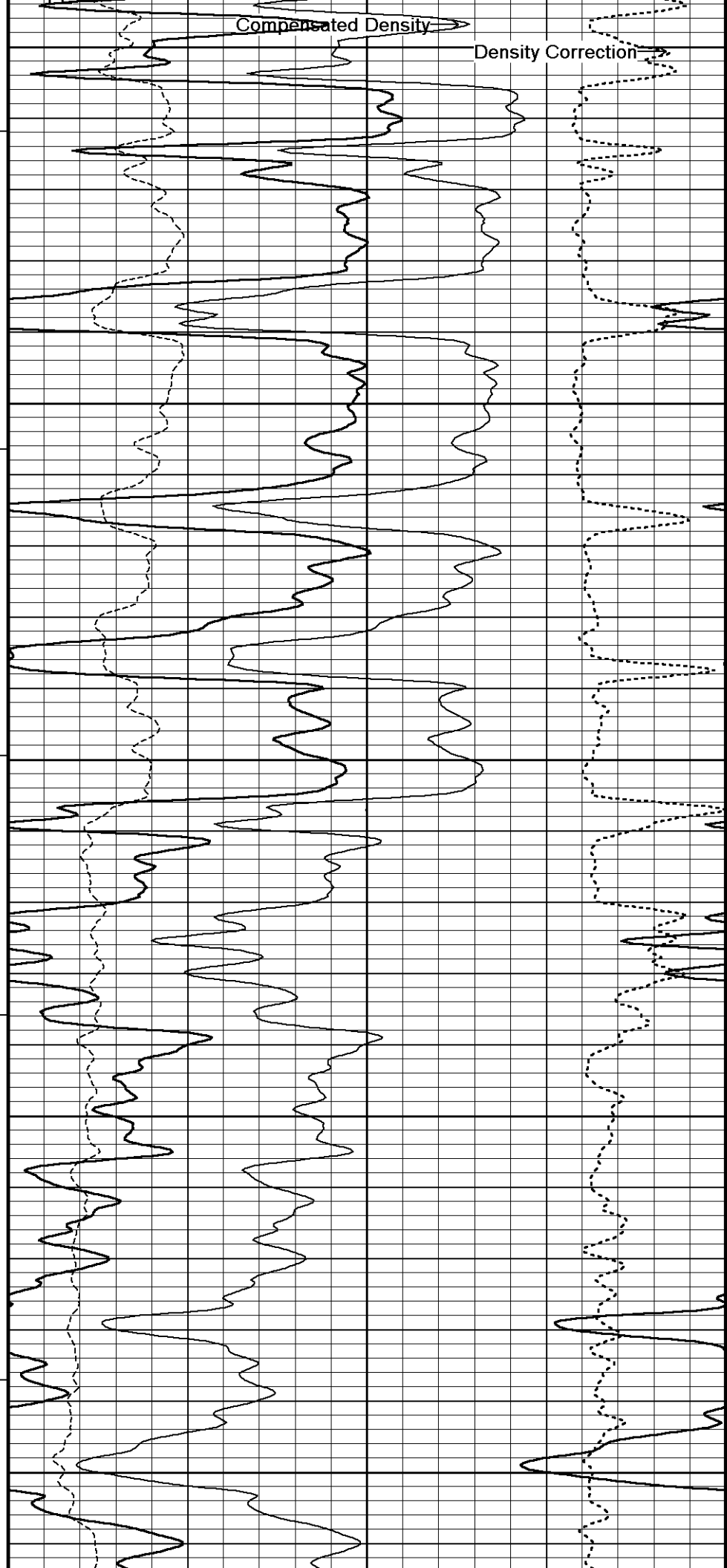
100

114°

4850

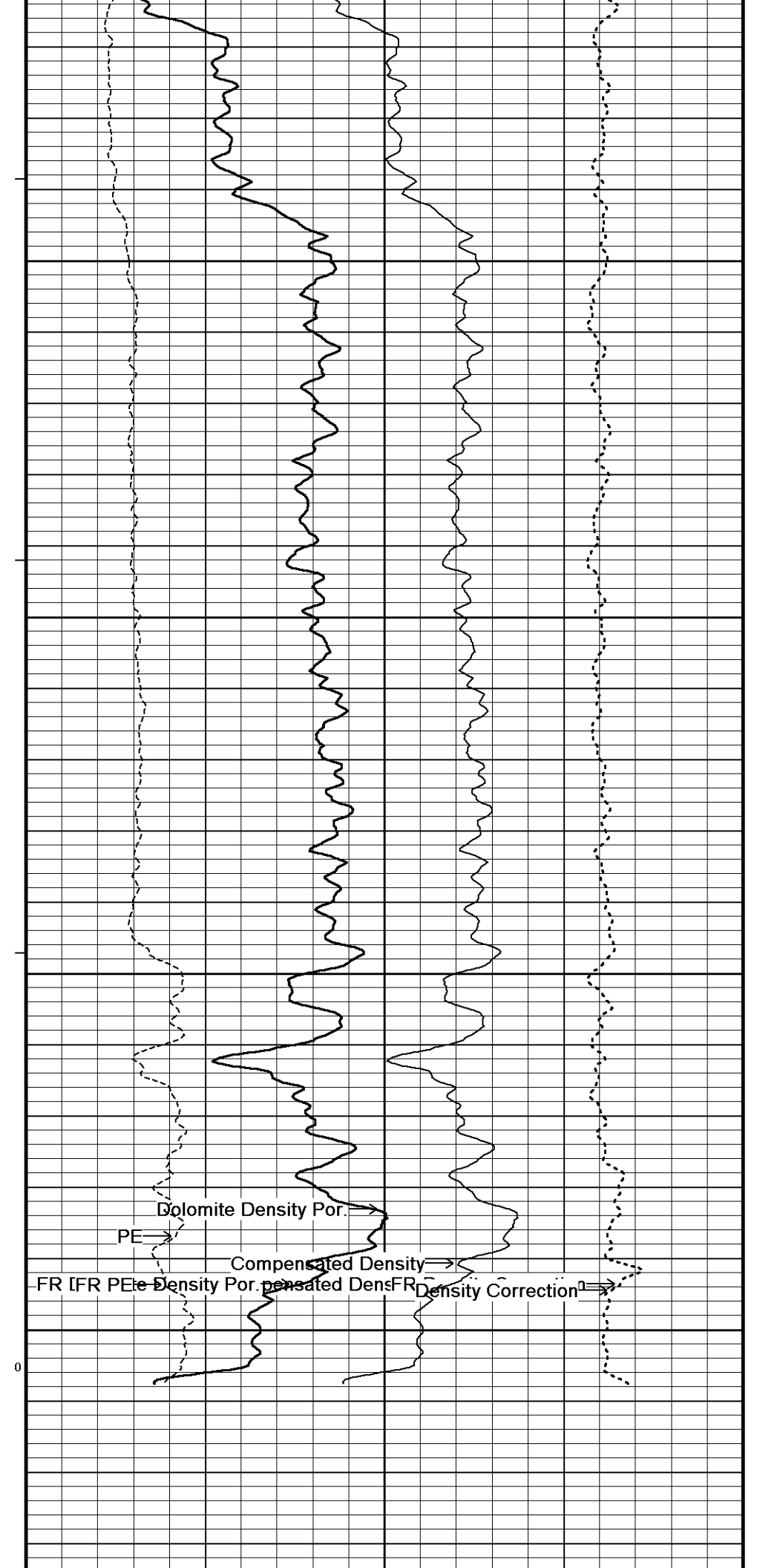
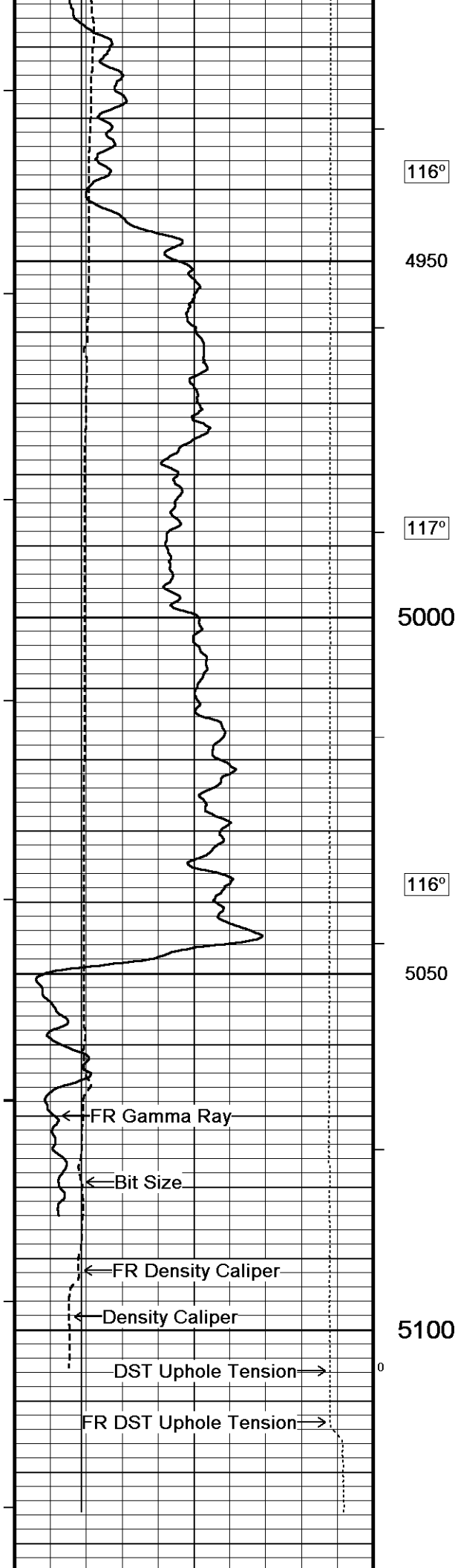
114°

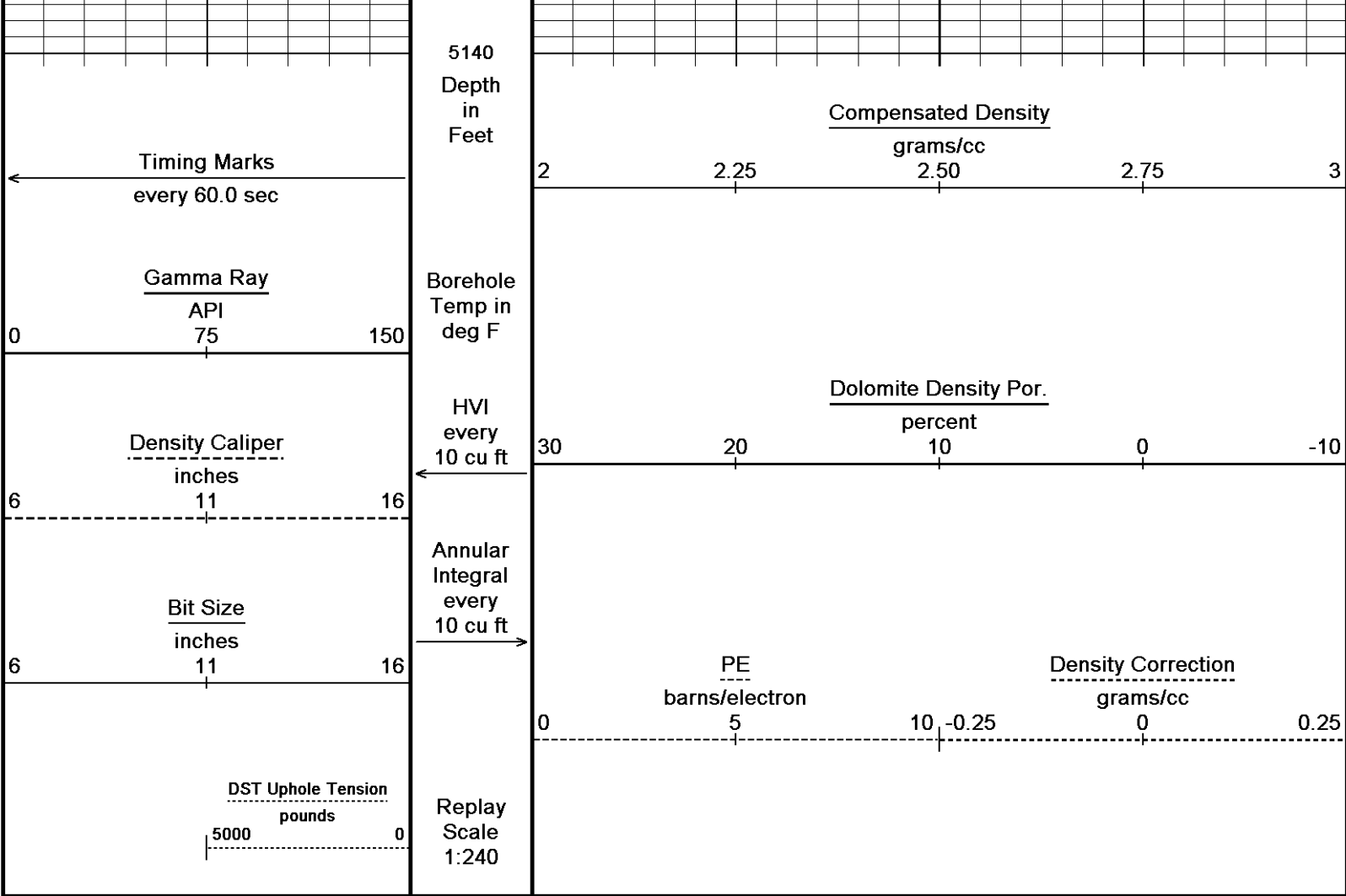
4900



Compensated Density

Density Correction





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-JUN-2012 07:33

Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_005.dta

System Versions: Processed with 13.01.5821 Plotted with 12.01.3513

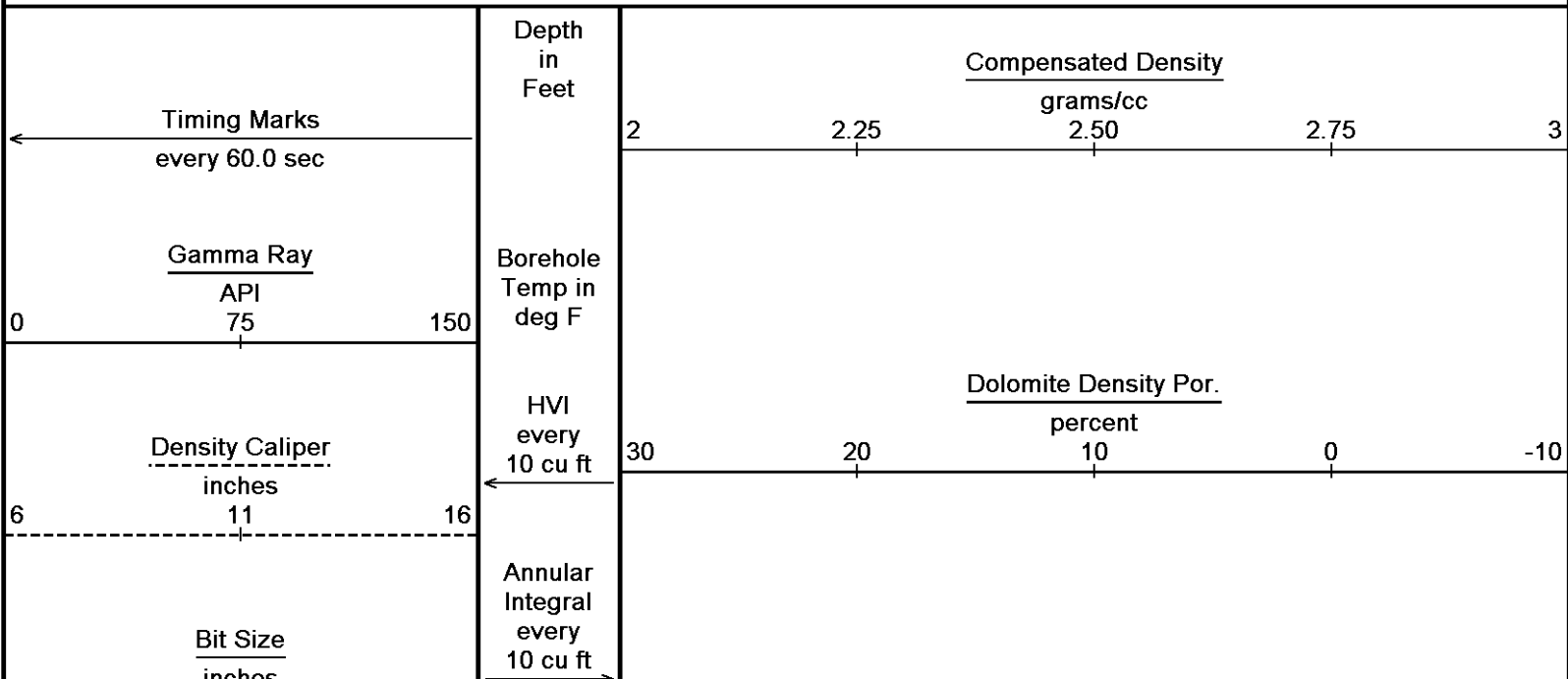
5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-JUN-2012 07:33

Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_001.dta Recorded on 11-JUN-2012 23:16

System Versions: Logged with 11.03.4044 Processed with 13.01.5821 Plotted with 12.01.3513



6 11 16 inches

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

4700

111°

4750

111°

4800

112°

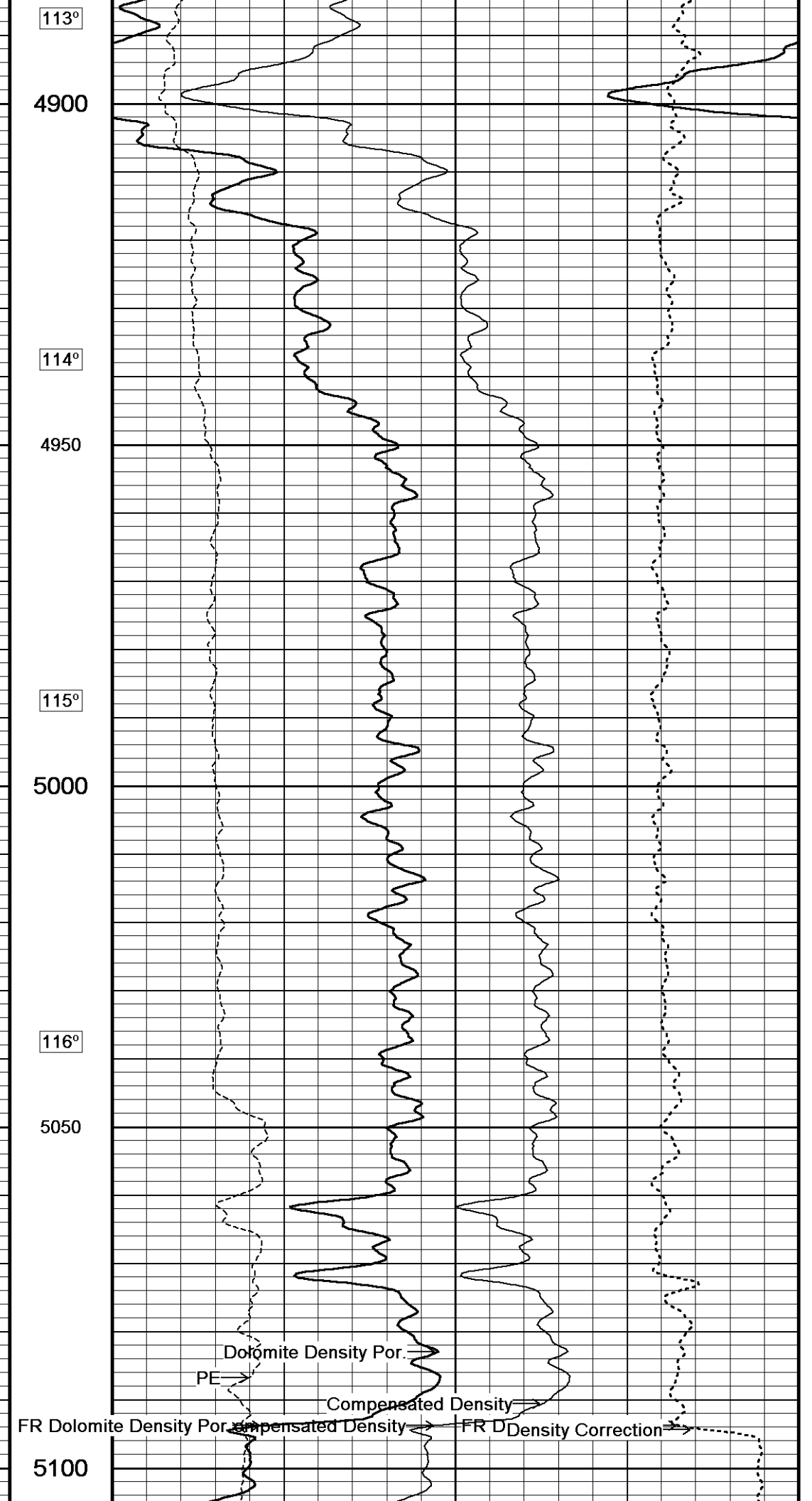
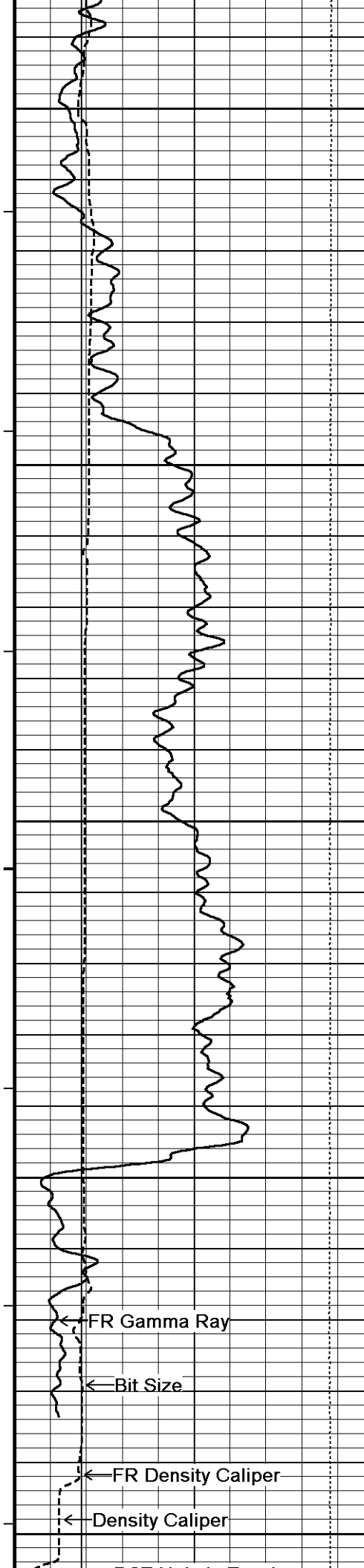
4850

PE
barns/electron

Density Correction
grams/cc

0 5 10 -0.25 0 0.25

Density Correction



113°

4900

114°

4950

115°

5000

116°

5050

5100

FR Gamma Ray

Bit Size

FR Density Caliper

Density Caliper

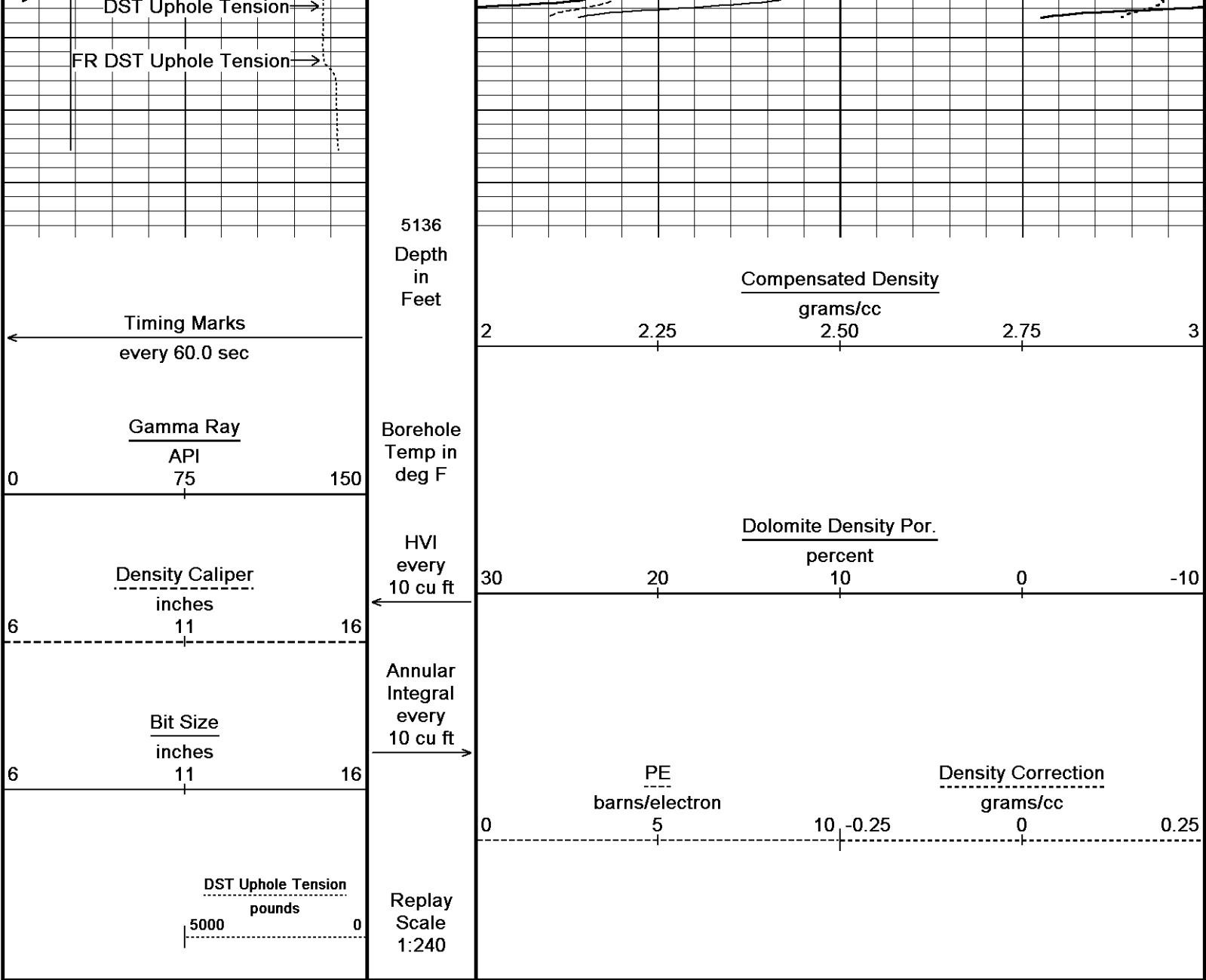
Dolomite Density Por.

PE

Compensated Density

FR Dolomite Density Por. Compensated Density

FR Density Correction



Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_001.dta
System Versions: Logged with 11.03.4044 Processed with 13.01.5821 Plotted with 12.01.3513

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_004.dta

General Constants All 000 Last Edited on 11-JUN-2012 23:43

General Parameters		
Mud Resistivity	0.320	ohm-metres
Mud Resistivity Temperature	91.000	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	None	
HVOL Caliper 2	N/A	
Annular Volume Diameter	5.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Limestone Density Por	

Porosity used		Limestone Density 1.0		Resistivity used	Array Ind. One Res Rt
RWA Constant A					0.610
RWA Constant M					2.150
Down-hole Tension Calibration All 000					
				Field Calibration on 30-JUN-2010 01:00	
Reading No		Measured		Calibrated (lbs)	
1		14112.01		10.00	
2		15164.79		427.00	
Down-hole Tension Calibration SMS 0					
				Field Calibration on 29-MAR-2012 12:07	
Reading No		Measured		Calibrated (lbs)	
1		-2133.10		0.00	
2		-2135.89		100.00	
Gamma Calibration MCG-C 208					
				Field Calibration on 11-JUN-2012 10:21	
		Measured		Calibrated (API)	
Background		74		53	
Calibrator (Gross)		1091		778	
Calibrator (Net)		1016		725	
Gamma Constants MCG-C 208					
				Last Edited on 11-JUN-2012 17:07	
Gamma Calibrator Number		gcr38			
Mud Density		1.10		gm/cc	
Caliper Source for Processing		Density Caliper			
Tool Position		Eccentred			
Concentration of KCl		0.00		kppm	
SP Calibration MCG-C 208					
				Field Calibration on 24-FEB-2012 11:08	
		Measured		Calibrated (mV)	
Reference 1		98.6		100.0	
Reference 2		-101.8		-100.0	
High Resolution Temperature Calibration MCG-C 208					
				Field Calibration on 17-MAY-2012 11:07	
		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 16					
				Base Calibration on 23-MAY-2012 09:49	
				Field Calibration on 11-JUN-2012 10:13	
Base Calibration					
Reading No		Measured		Calibrator Size (in)	
1		14648		5.98	
2		17884		7.97	
3		21168		9.86	
4		25204		11.92	
5		0		0.00	
6		N/A		N/A	
Field Calibration					
		Measured Caliper (in)		Actual Caliper (in)	
		5.99		5.98	
Micro Normal and Micro Inverse Calibration MML-A 16					
				Base Calibration on 23-MAY-2012 09:57	
				Field Check on 11-JUN-2012 10:15	
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		15.6	78.3	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	

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 66

Base Calibration on 17-MAY-2012 13:54

Field Check on 11-JUN-2012 10:26

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3162	99	3714	110
	31.795		33.764	

Field Calibrator at Base

	Calibrated (cps)
Ratio	1615 2304
	0.701

Field Check

	Calibrated (cps)
Ratio	1621 2311
	0.701

Neutron Constants MDN-A.B 66

Last Edited on 11-JUN-2012 17:08

Neutron Source Id	P58125B
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	None
Formation Pressure	N/A kpsi
Temperature Source	MCG External Temperature
Temperature	N/A 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-C.A 353

Base Calibration on 17-MAY-2012 09:40

Field Check on 11-JUN-2012 10:04

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.5	126.8

Base Check	281.0
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Field Check	281.0
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FE Constants MFE-C.A 353

Last Edited on 11-JUN-2012 17:08

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	0.0 inches

Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011 09:58

Field Check on 11-JUN-2012 10:02

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		17.3	474.2	9.3	966.2
2		6.3	388.4	7.6	821.4
3		3.3	259.4	5.2	566.0
4		1.9	133.0	2.6	279.2

4	1.0	155.0	2.0	275.2
Array Temperature	76.8	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	13.1	3839.5
2	0.0	0.0	29.6	3477.3
3	0.0	0.0	29.1	3053.2
4	0.0	0.0	19.7	2081.7
Deep	0.0	0.0	18.5	2048.9
Medium	0.0	0.0	42.2	3991.6
Shallow	0.0	0.0	43.1	5054.9
Array Temperature	0.0		73.4	Deg F

Induction Constants MAI-A.A 167

Last Edited on 11-JUN-2012 17:08

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		0.00	inches
Number of Fins on Stand-off		6.0000	
Stand-off Fin Angle		60.00	degrees
Stand-off Fin Width		0.0000	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			
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 167

Field Calibration on 17-MAY-2012 11:07

	Measured	Calibrated(Deg F)
Lower	1.00	33.80
Upper	11.00	51.80

High Resolution Temperature Constants MAI-A.A 167

Last Edited on

Pre-filter Length	11
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Caliper Calibration MPD-B 31

Base Calibration on 17-MAY-2012 11:46

Field Calibration on 11-JUN-2012 10:06

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	17422	3.99
2	26064	5.98
3	34746	7.97

4	42992	9.86
5	52432	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.95	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 17-MAY-2012 12:08
Field Check on 11-JUN-2012 10:11

Density Calibration

Base Calibration

	Near	Far	Near	Far
Reference 1	57479	28439	59556	30836
Reference 2	22883	2144	24941	2541

Field Check at Base

693.0	857.8
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Field Check

694.1	856.7
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PE Calibration

Base Calibration

	WS	WH	Ratio	Calibrated Ratio
Background	127	608		
Reference 1	22685	57323	0.398	0.371
Reference 2	6674	22783	0.295	0.272

Field Check at Base

127.1	608.2
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Field Check

125.9	608.6
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Density Constants MPD-B 31

Last Edited on 11-JUN-2012 17:07

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	1.10 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

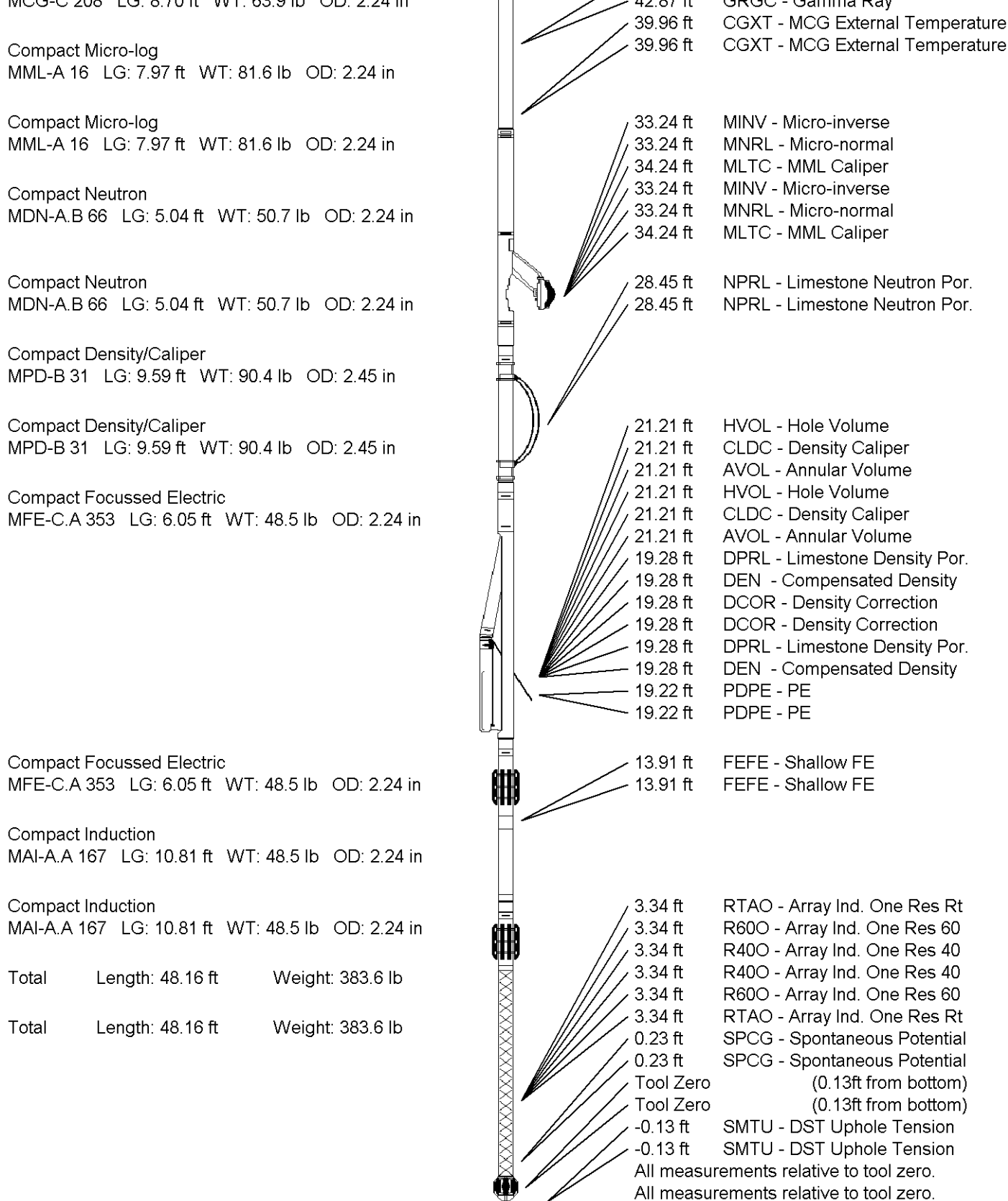
DOWNHOLE EQUIPMENT

C:\DOCUME~1\SchefJL\LOCALS~1\Temp\Weatherford PreView\0\Beren Lois #10_004.dta

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

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

42.87 ft GRGC - Gamma Ray
42.87 ft GRGC - Gamma Ray



COMPANY BEREN CORPORATION
WELL LOIS #10
FIELD HARDTNER
PROVINCE/COUNTY BARBER
COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	1432.00	feet	First Reading	5094.00	feet
Elevation Drill Floor	1429.00	feet	Depth Driller	5100.00	feet
Elevation Ground Level	1419.00	feet	Depth Logger	5113.00	feet

Elevation Ground Level 1419.00 feet

Depth Logger 5119.00 feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON

