



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRO -RESISTIVITY LOG**

COMPANY

SANDRIDGE ENERGY, INC.

WELL

SUNNIE 1-16 SWD

FIELD

WALDRON WEST

PROVINCE/COUNTY

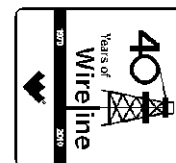
HARPER

COUNTRY/STATE

U.S.A/ KANSAS

LOCATION

1312' FSL & 205' FEL



SEC

TWP

RGE

Other Services
MAI/MFE
CMI

16

35N

6W

API Number

15-007-21779

Permit Number

Permanent Datum G.L., Elevation 1227 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations:
KB 1239.00
DF 1237.00
GL 1227.00

Date 02-JAN-2012

Run Number ONE

Depth Driller 5552.00 feet

Depth Logger 5547.00 feet

First Reading 5528.00 feet

Last Reading 3100.00 feet

Casing Driller 715.00 feet

Casing Logger 712.00 feet

Bit Size 8.750 inches

Hole Fluid Type WBM

Density / Viscosity 8.90 lb/USg 45.00 CP

PH / Fluid Loss 10.00 6.50 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.65 @ 65.0 ohm-m

Rmf @ Measured Temp 0.52 @ 65.0 ohm-m

Rmc @ Measured Temp 0.78 @ 65.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.31 @138.0 ohm-m

Time Since Circulation 8 HOURS

Max Recorded Temp 138.00 deg F

Equipment Name COMPACT

Equipment / Base 13226 OKC

Recorded By MIKE GARRISON

Witnessed By TAMMY ALCORN

3535020/DC11623

BOREHOLE RECORD

Last Edited: 02-JAN-2012 22:53

Bit Size
inches

8.750

Depth From
feet

716.00

Depth To
feet

5552.00

CASING RECORD

Type

Size
inches

9.625

Depth From
feet

0.00

Shoe Depth
feet

715.00

Weight
pounds/ft

24.00

REMARKS

TOOLS RAN: SHA 45, MCG 431, MML 02, MDN 10, MPD 03, MFE 65, MAI 102 RAN IN COMBINATION

HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED.

MDN: DUAL NEUTRON BOW SPRINGS USED.

MPD: 8 INCH PROFILE PLATE USED.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

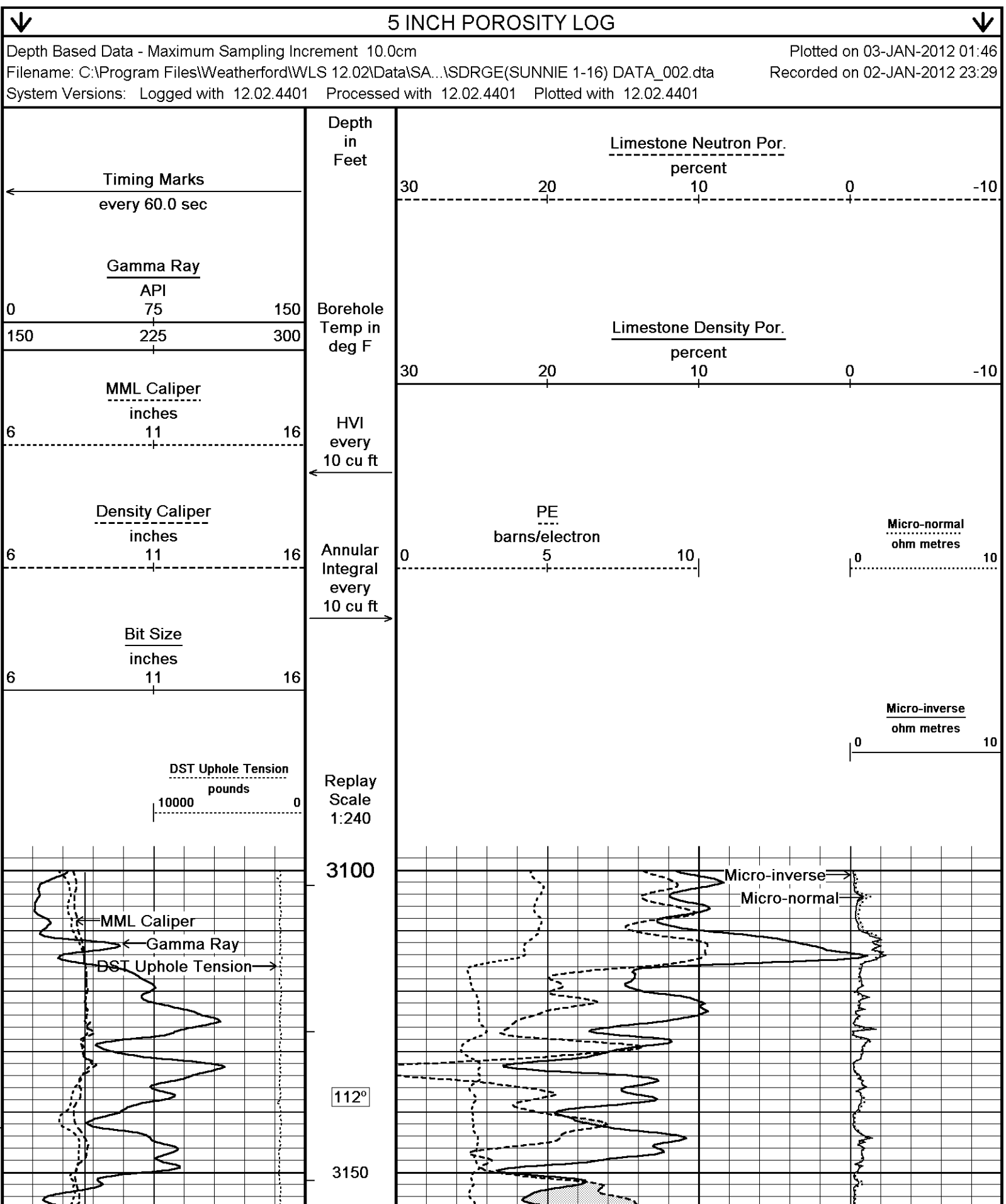
TOTAL HOLE VOLUME FROM TD TO 3100' = 1065CU.FT.
ANNULAR HOLE VOLUME WITH 7.0 INCH PRODUCTION CASING FROM TD TO 3100' = 410 CU.FT.

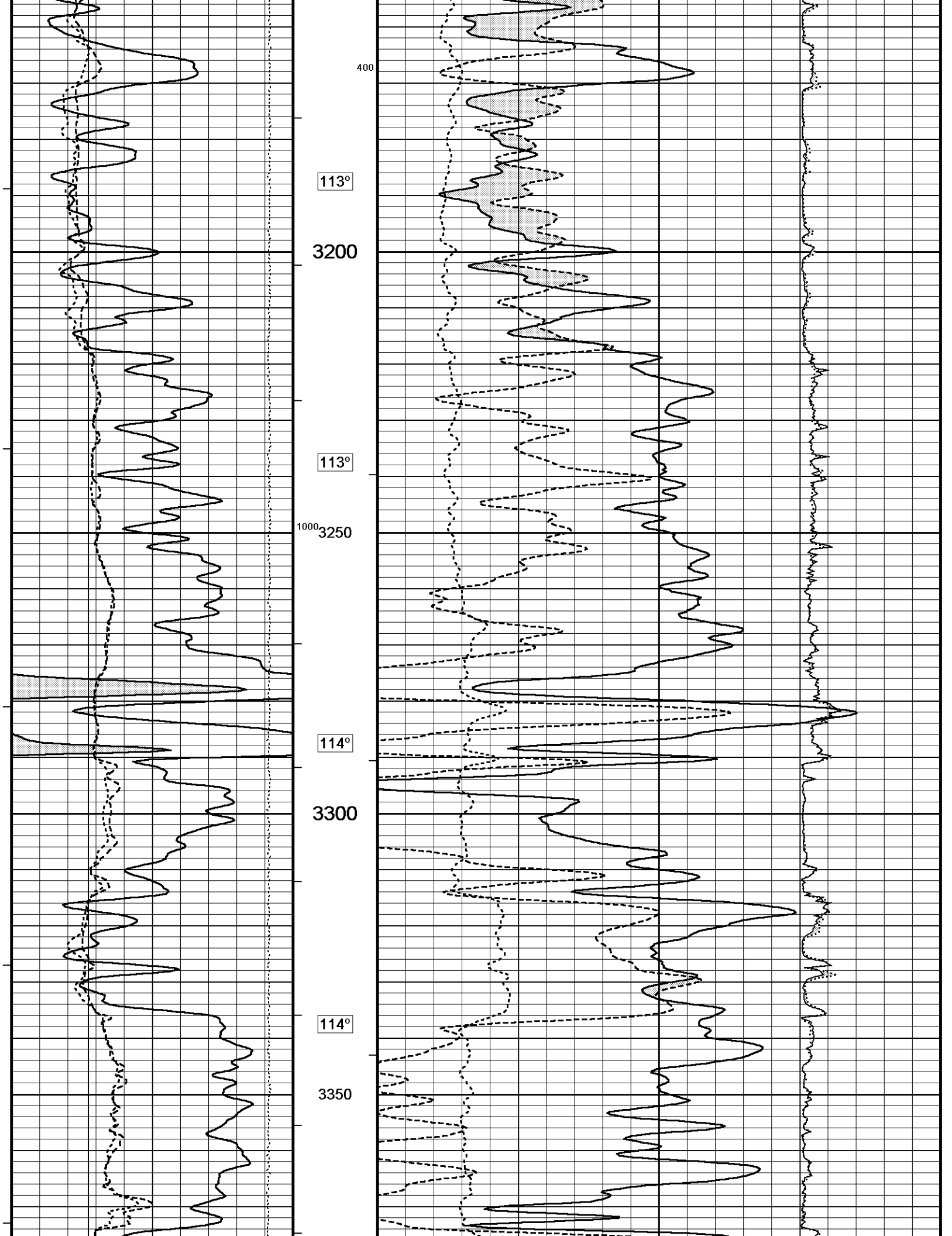
SERVICE ORDER: 3535020

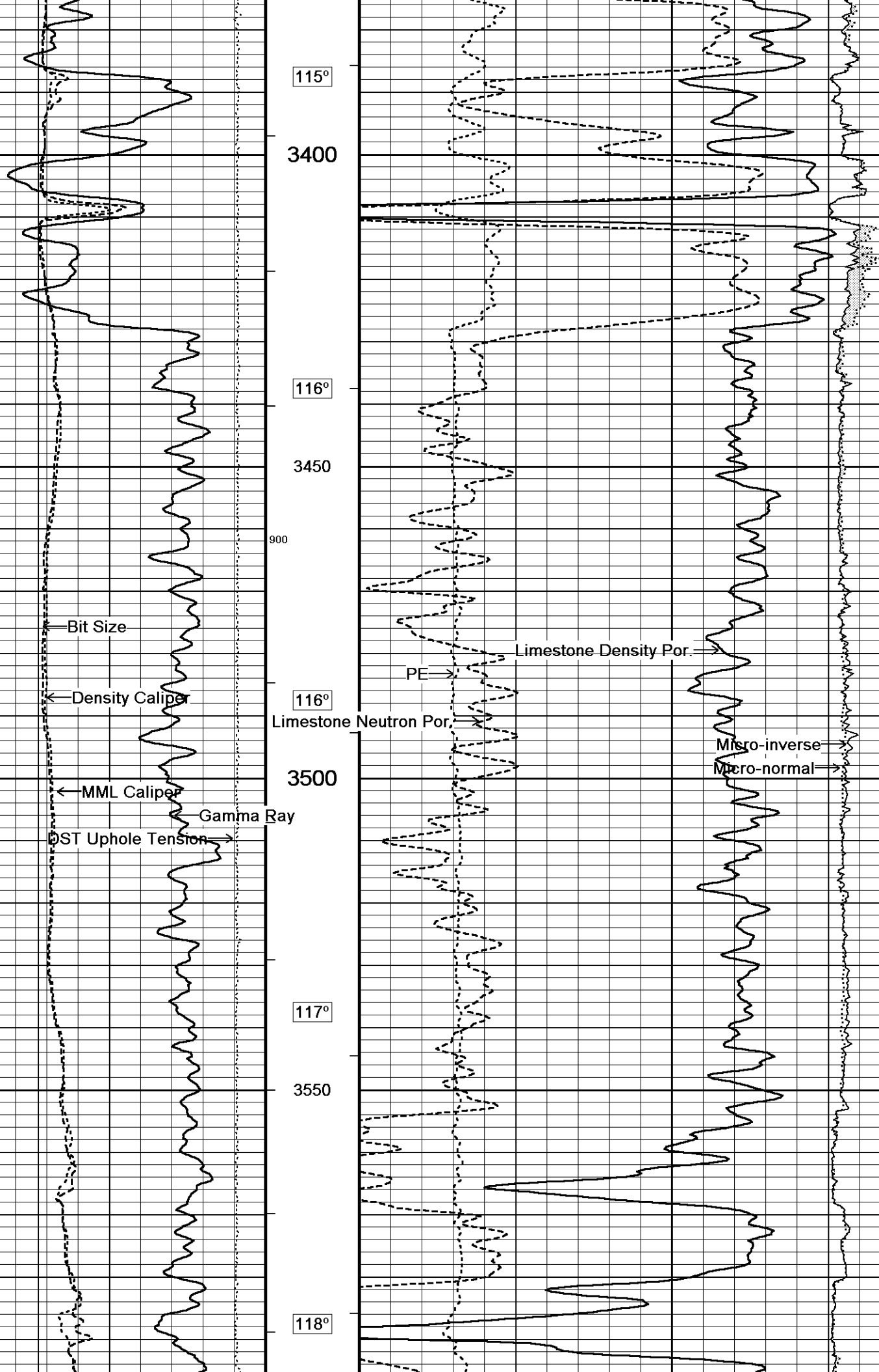
OPERATOR: JASON TURNER

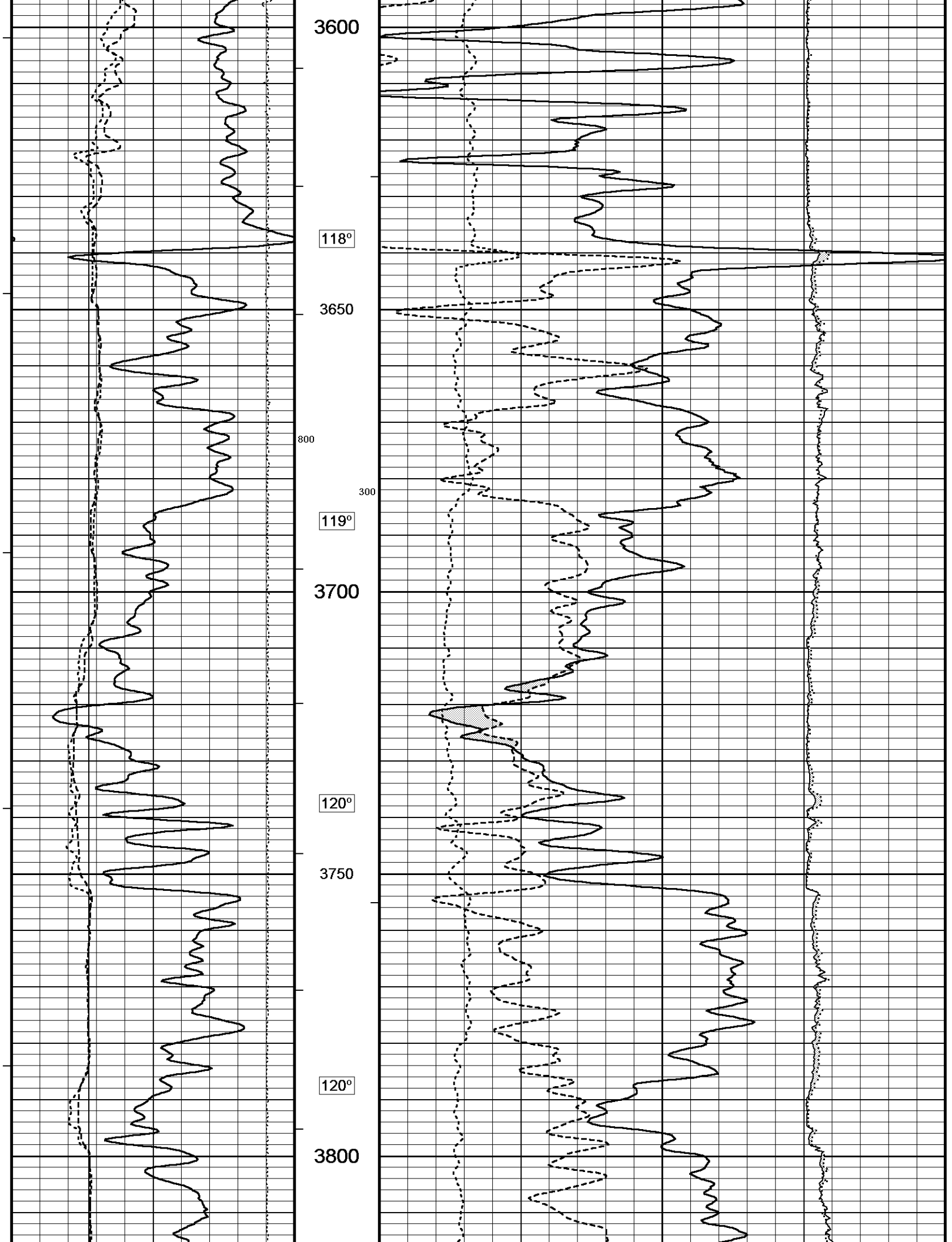
RIG: TOMCAT DRILLING#3

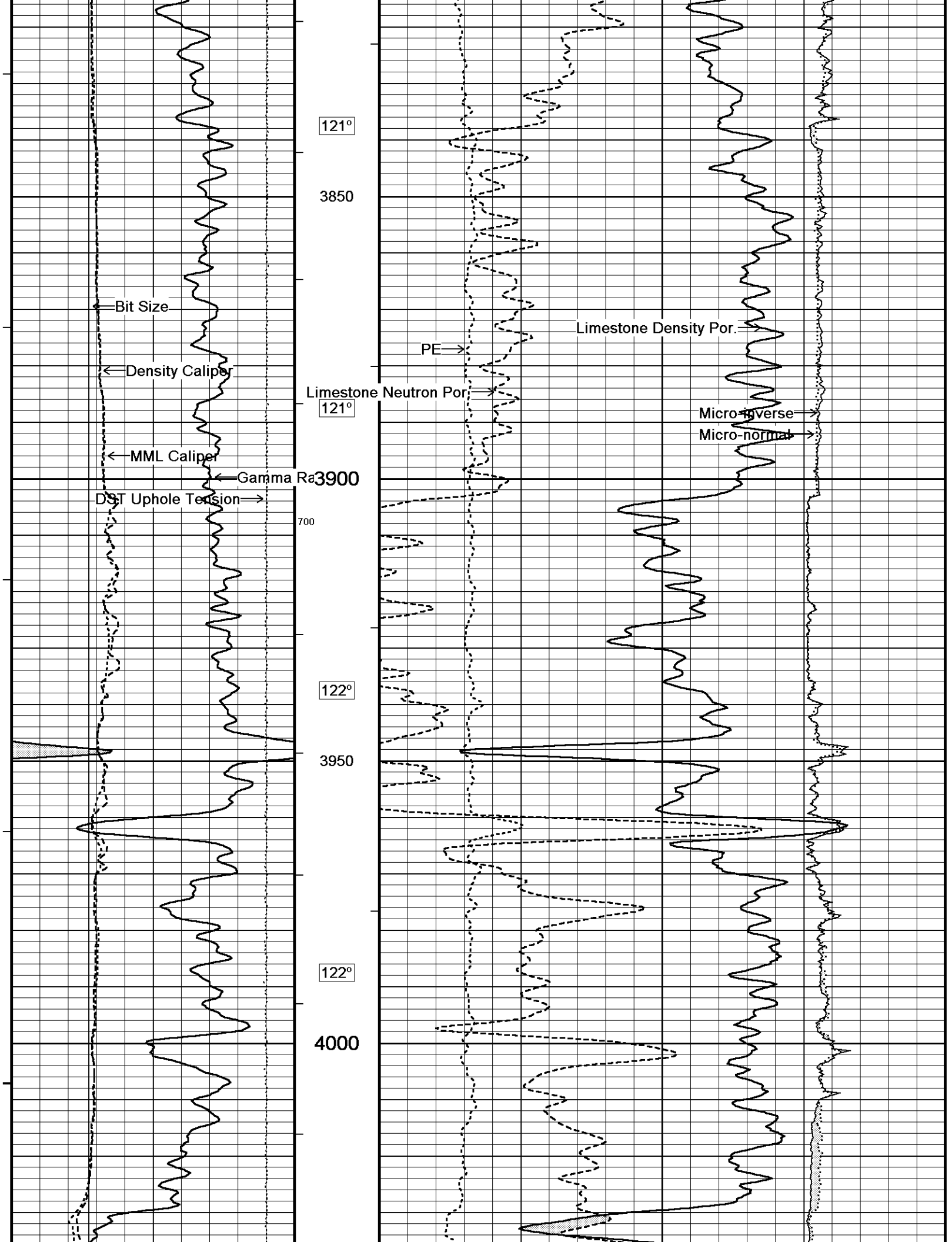
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.

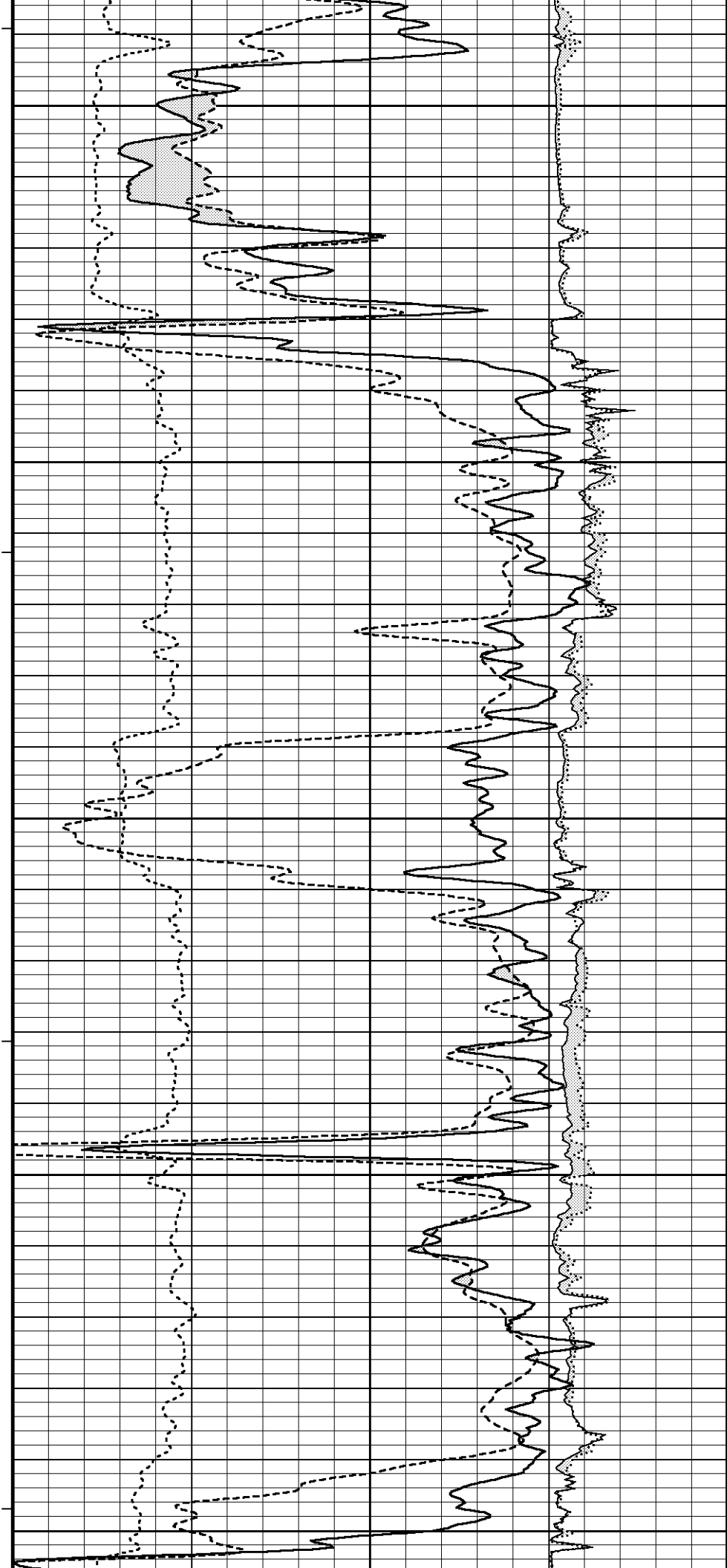
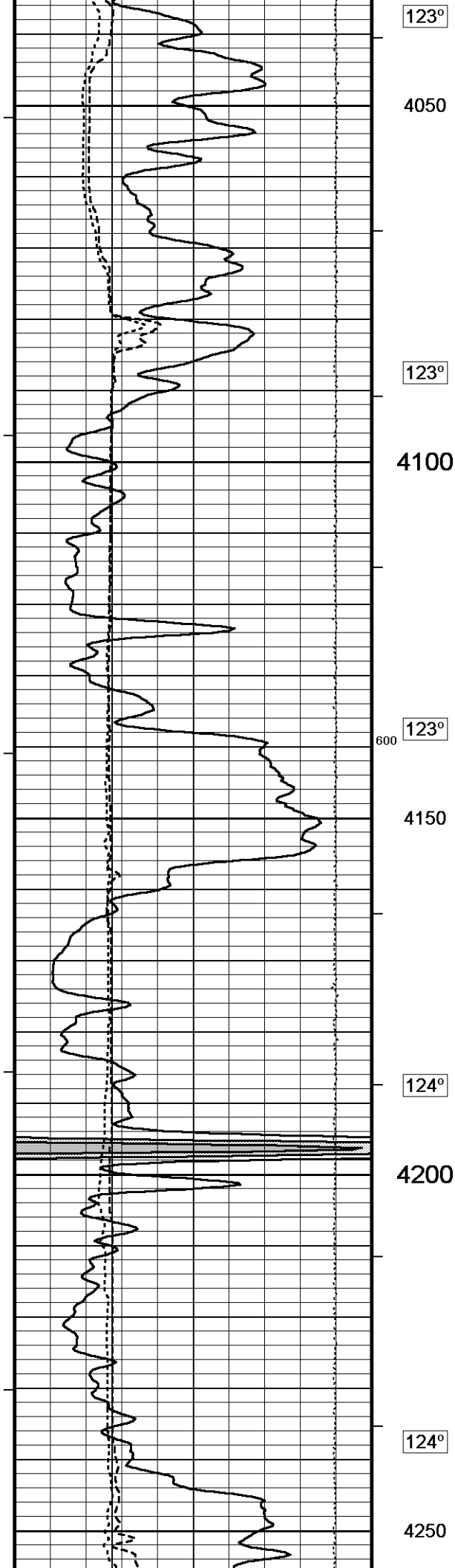


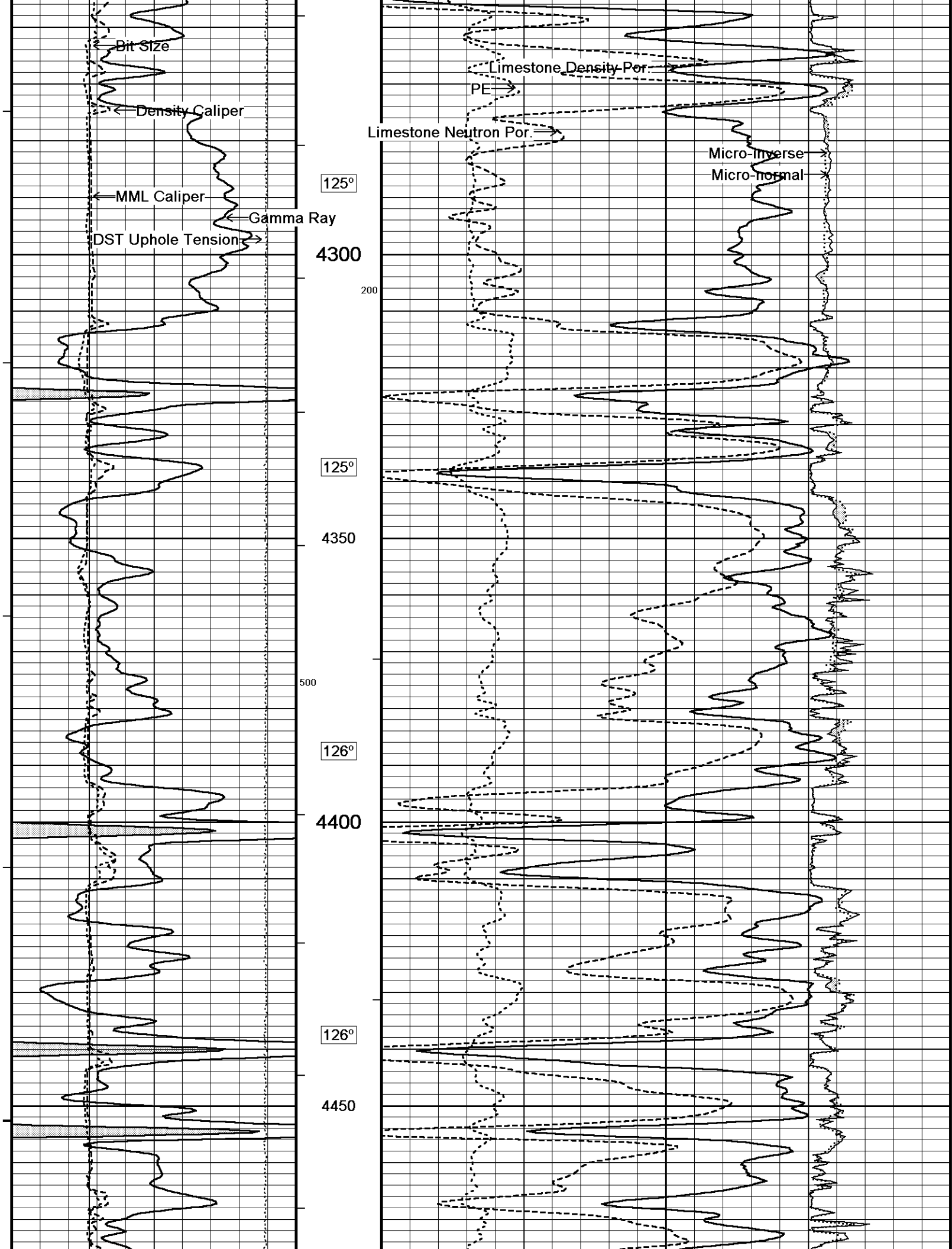


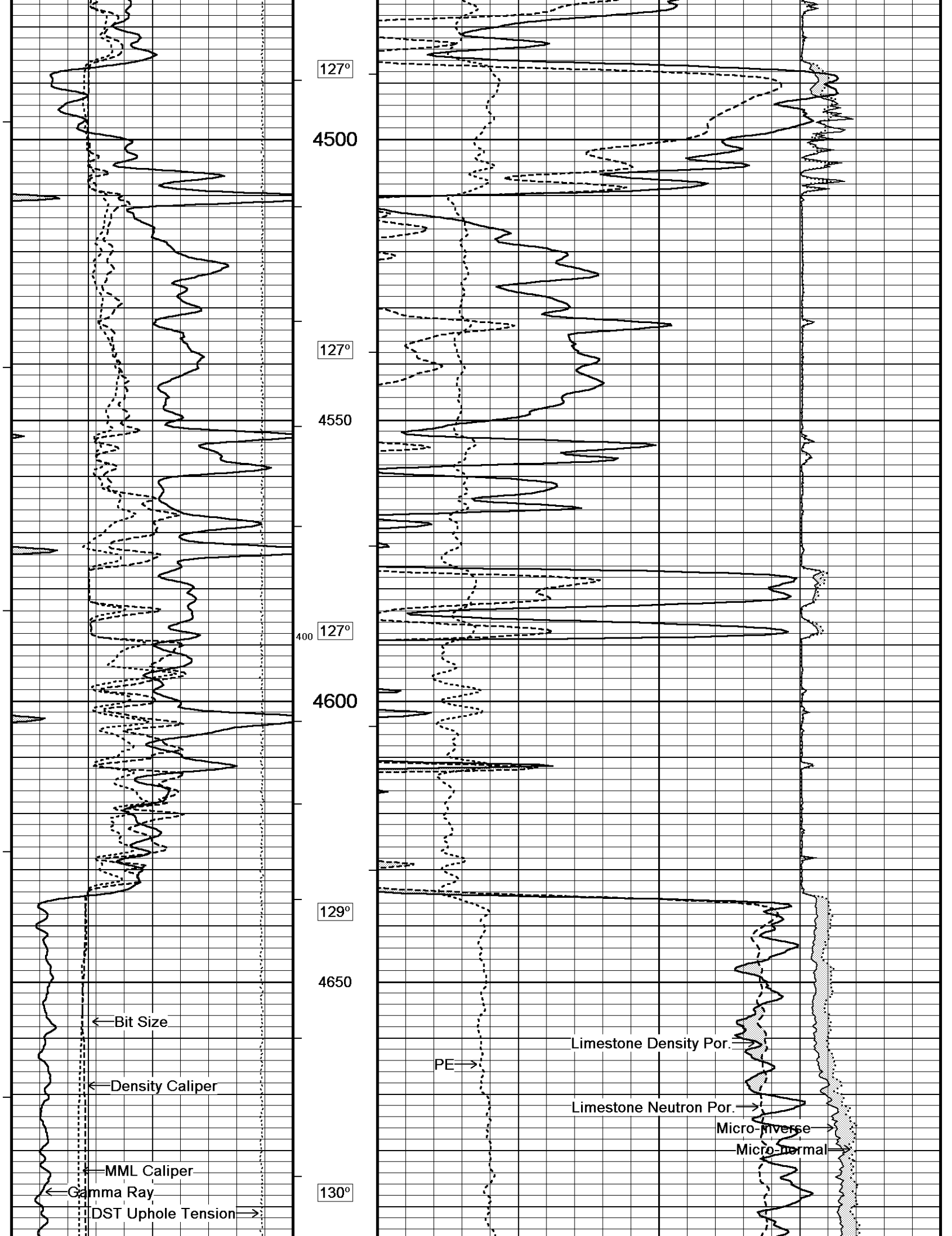


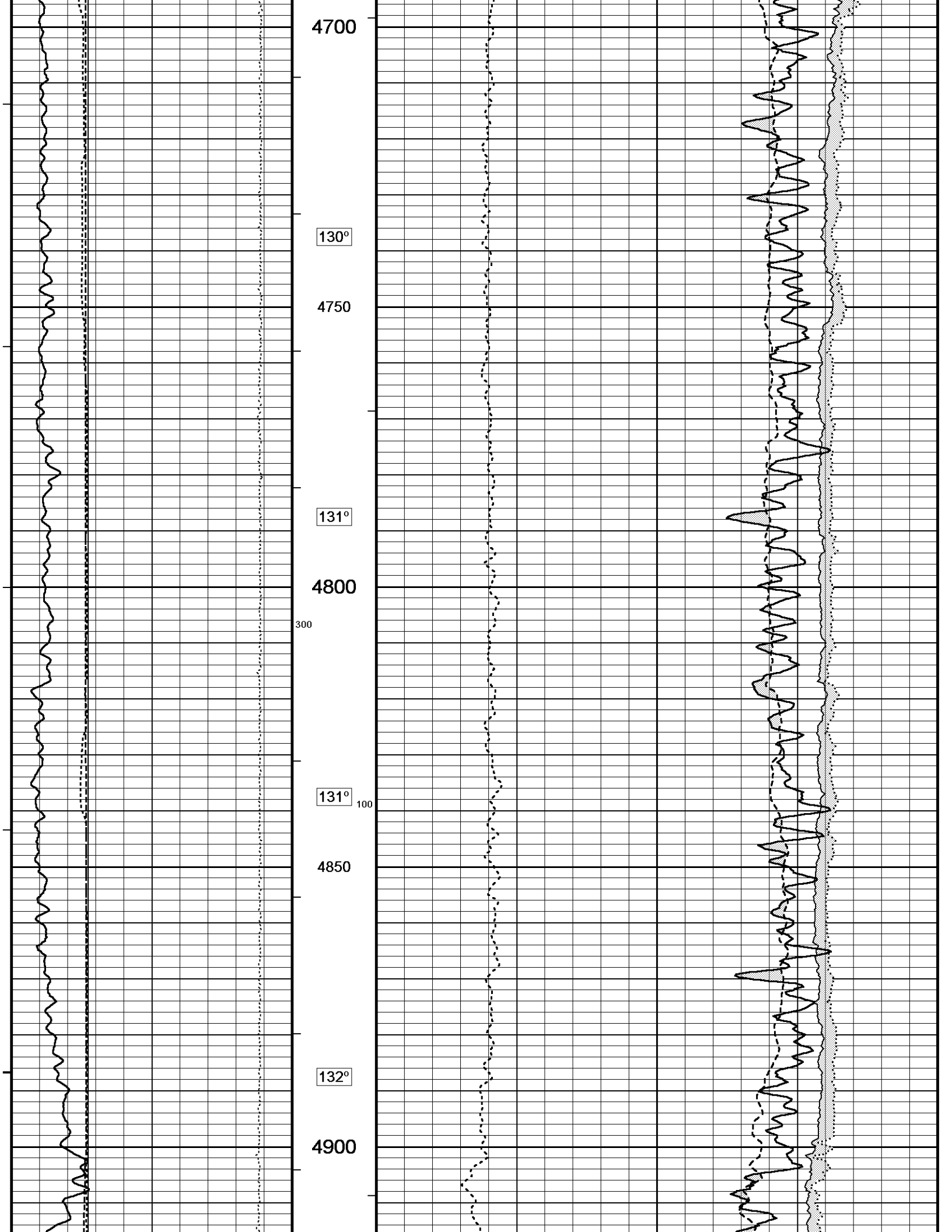


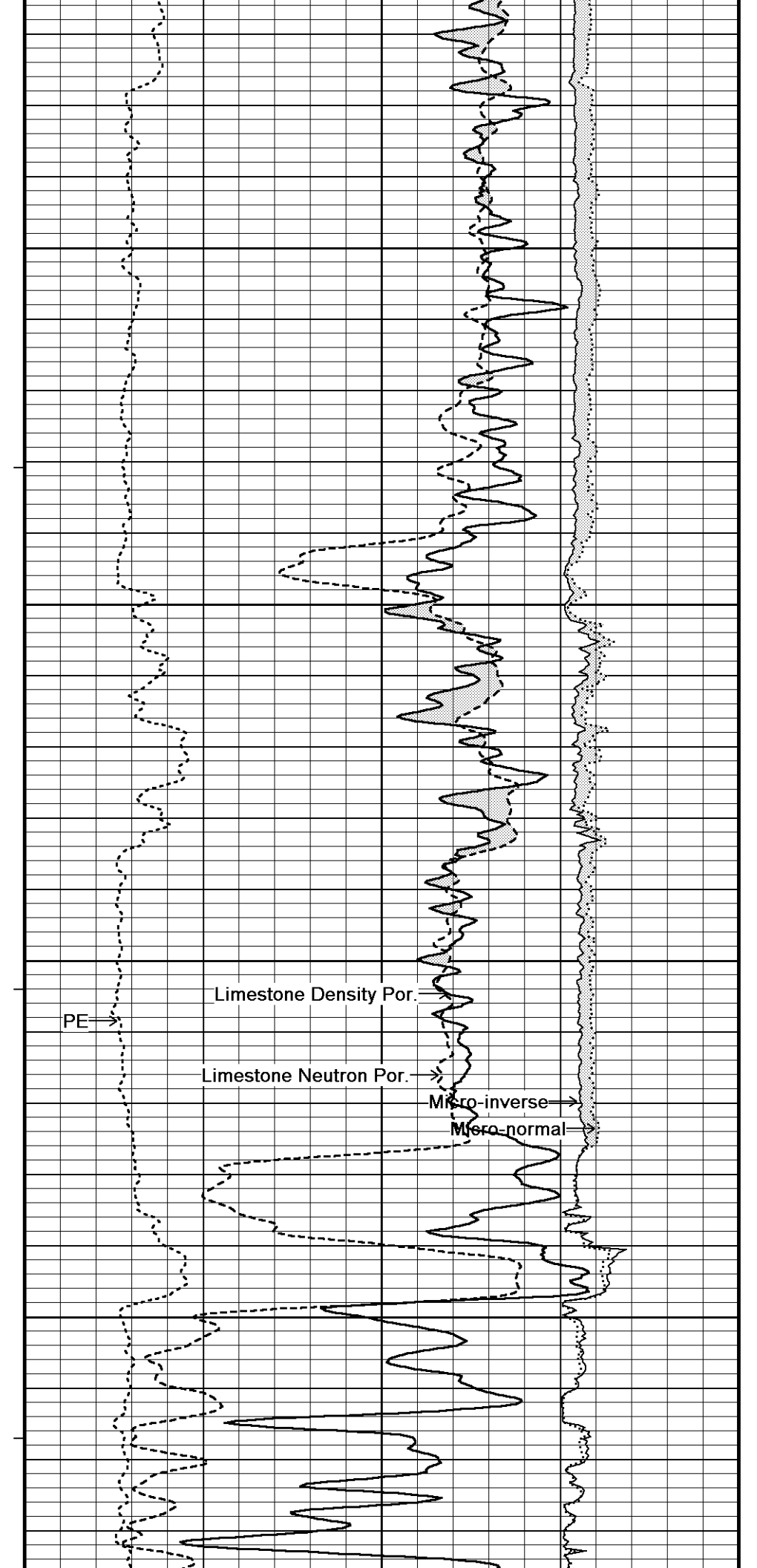
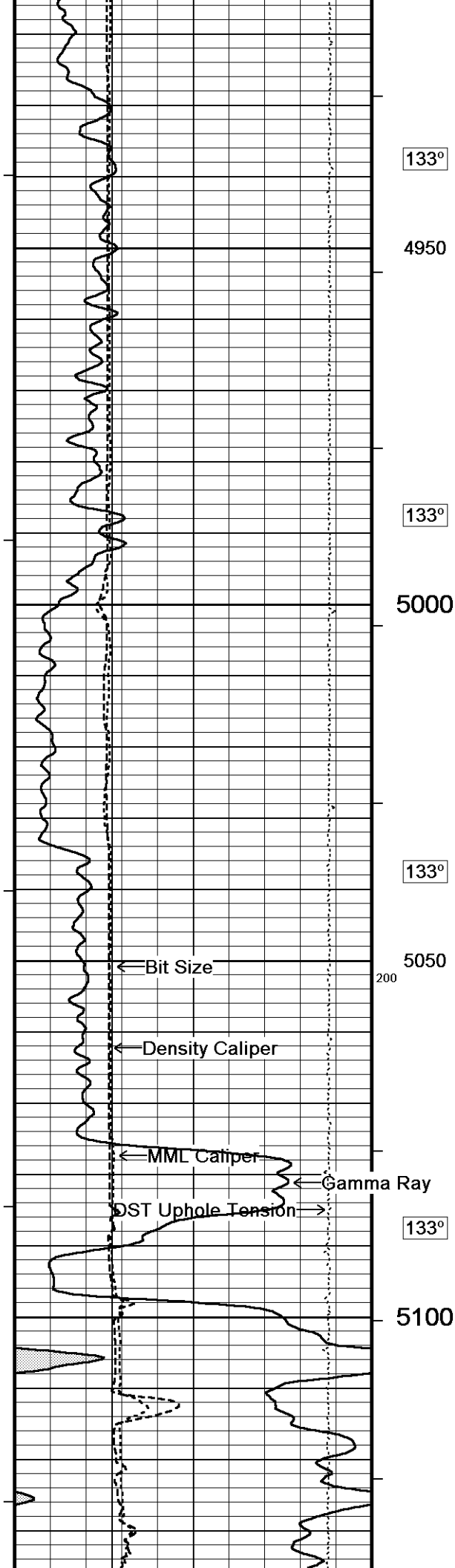


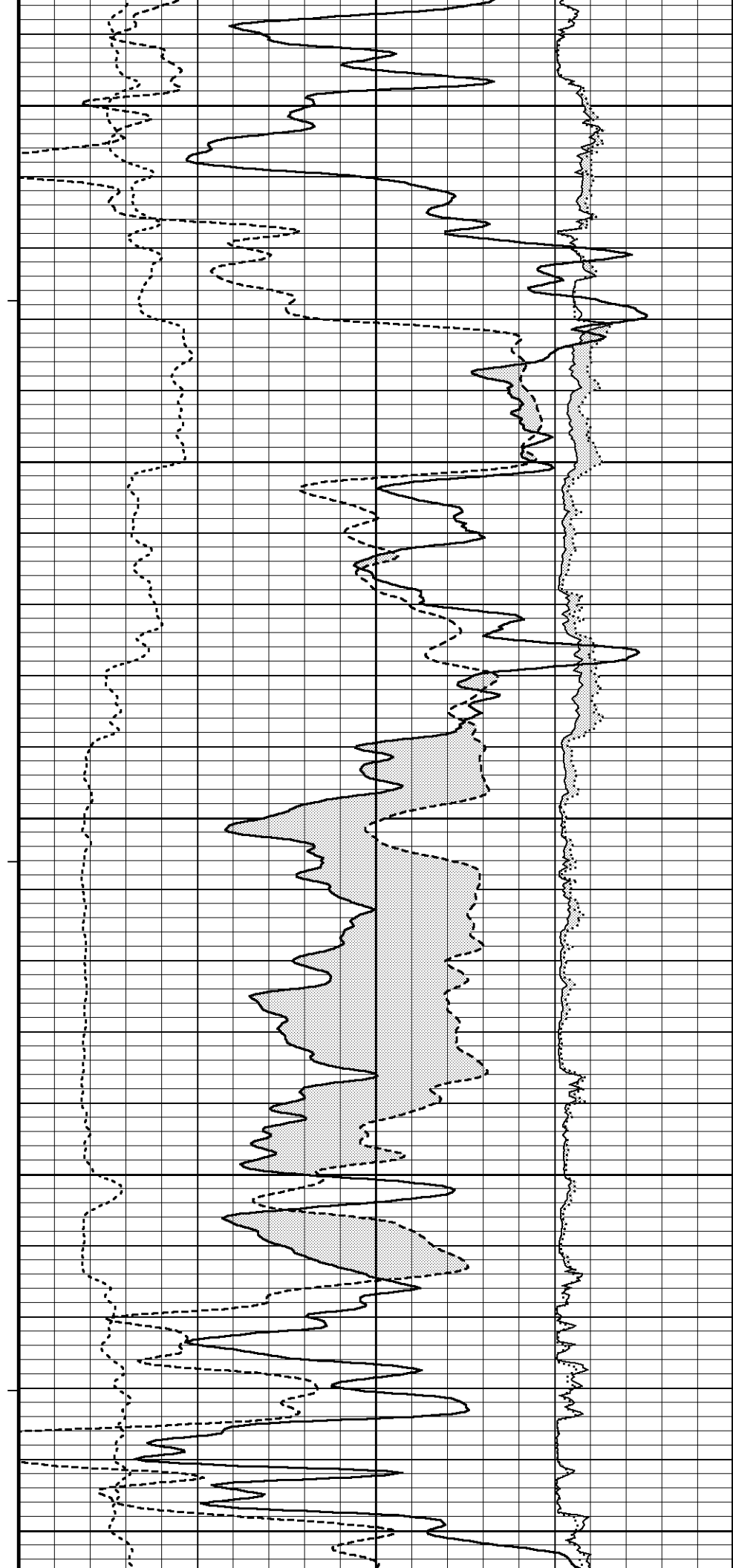
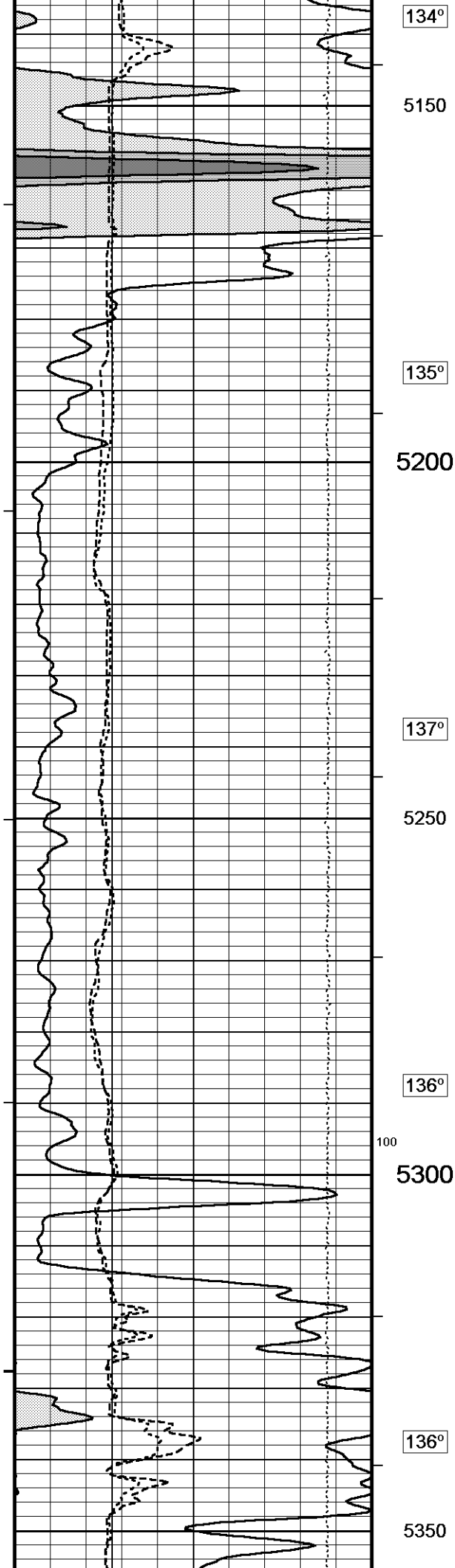


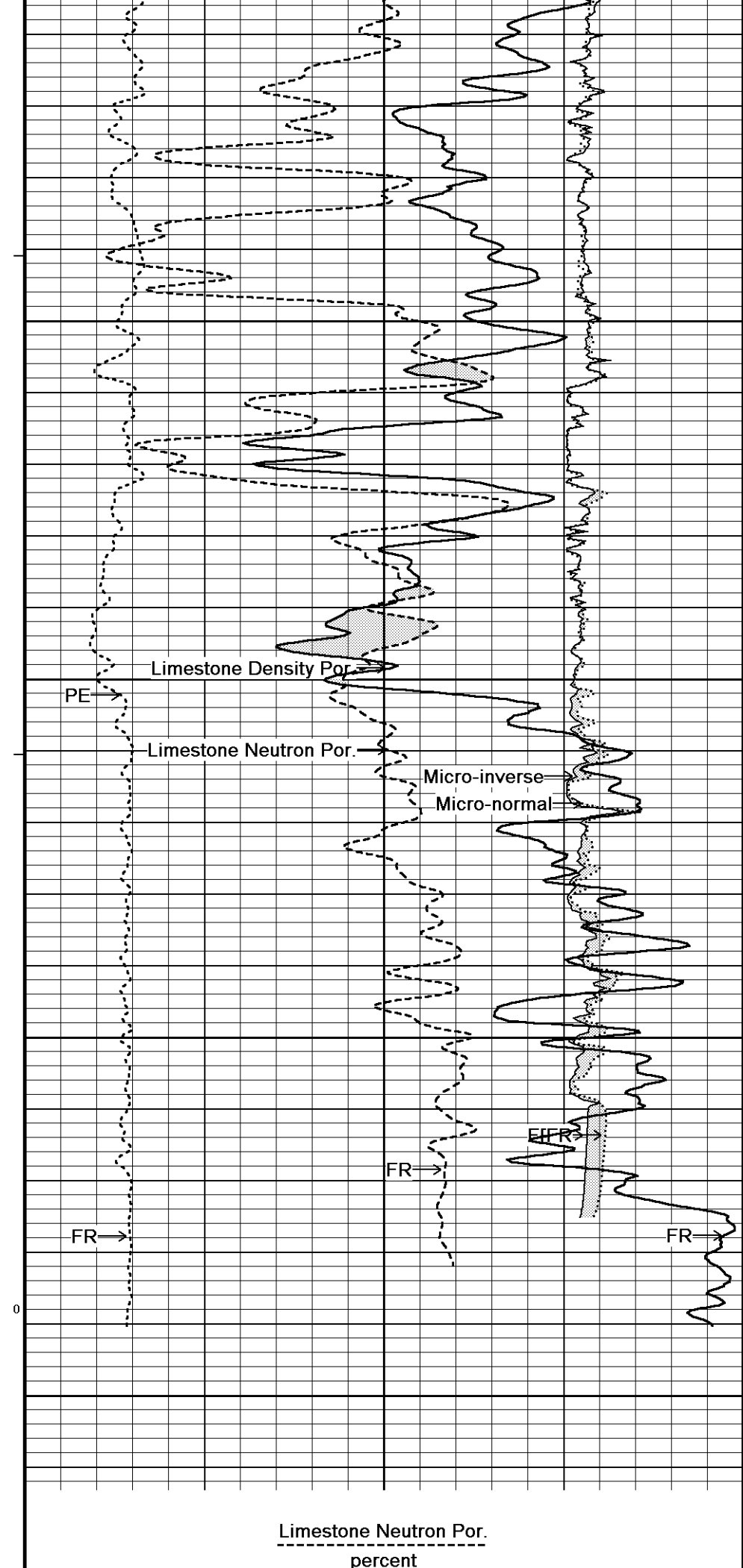
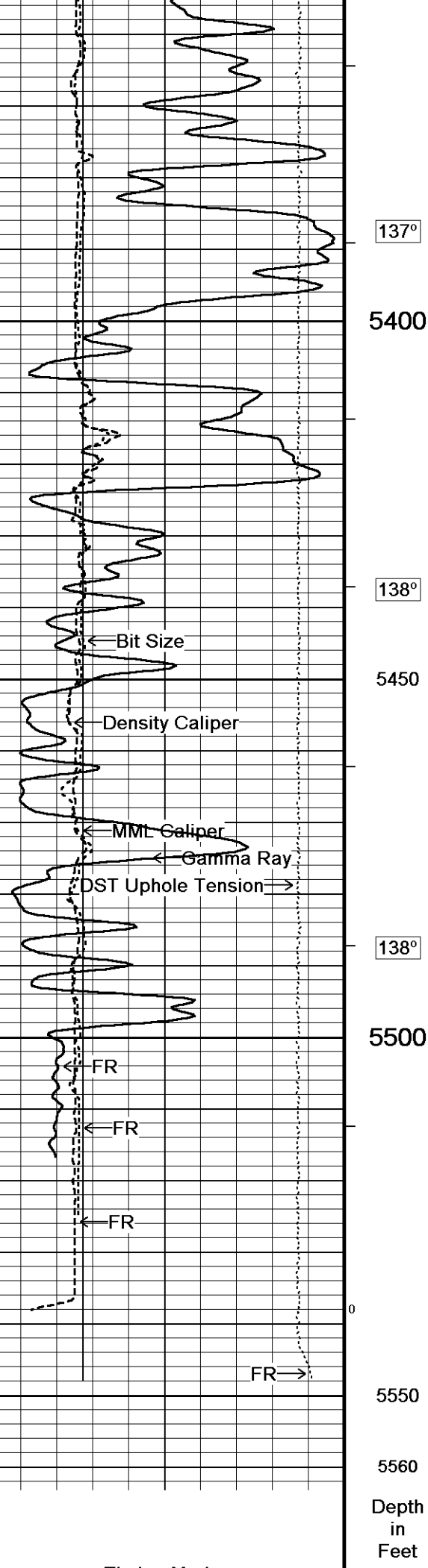


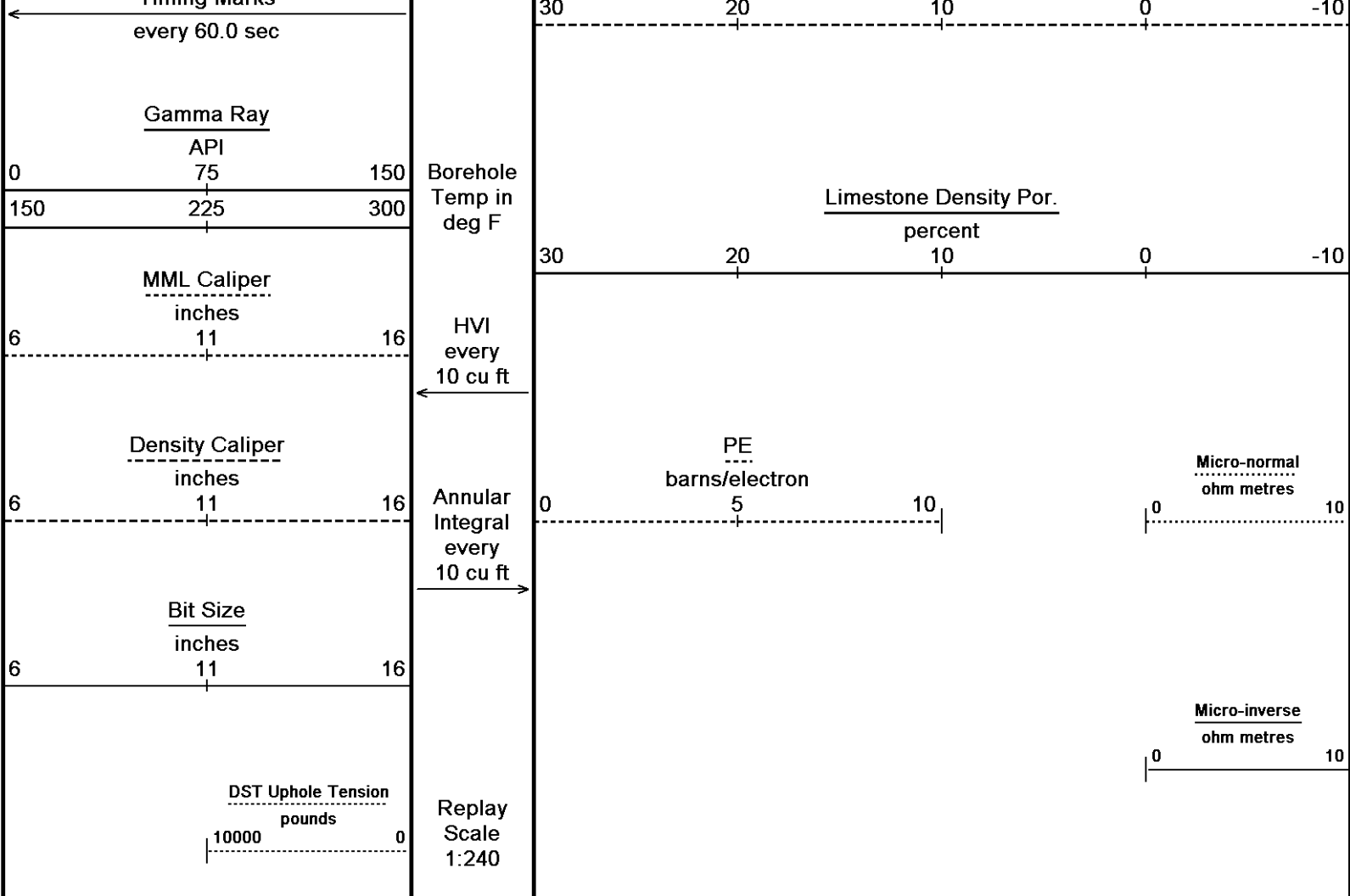












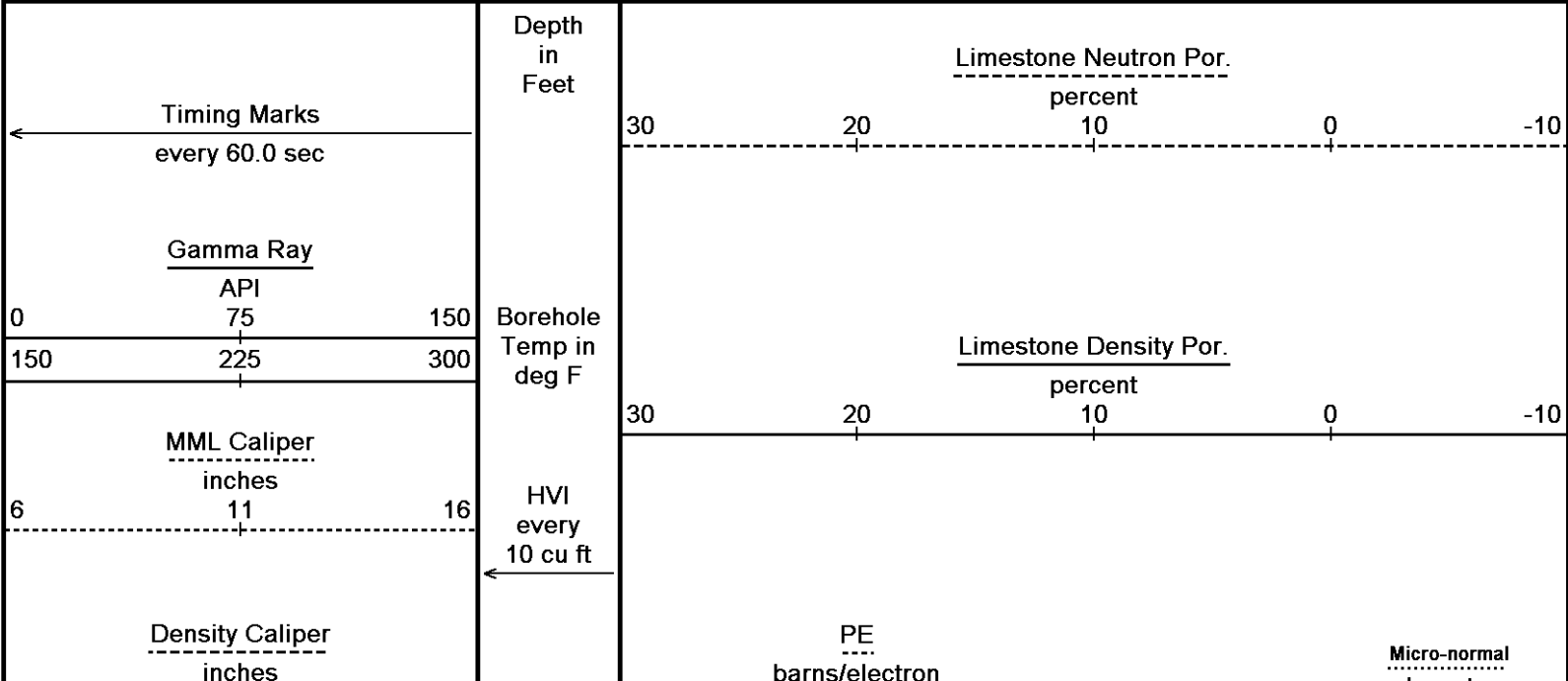
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 03-JAN-2012 01:46
Filename: C:\Program Files\Weatherford\WLS 12.02\Data\SA...\SDRGE(SUNNIE 1-16) DATA_002.dta	Recorded on 02-JAN-2012 23:29
System Versions: Logged with 12.02.4401 Processed with 12.02.4401 Plotted with 12.02.4401	

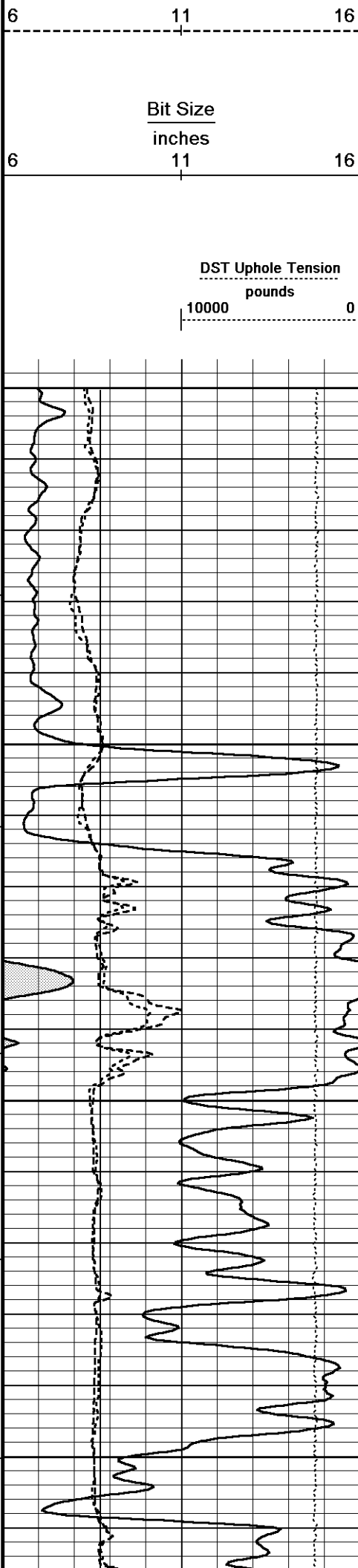
↑

5 INCH POROSITY LOG

↑

↓	REPEAT SECTION	↓
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 03-JAN-2012 01:46	
Filename: C:\Program Files\Weatherford\WLS 12.02\Data\SA...\SDRGE(SUNNIE 1-16) DATA_001.dta	Recorded on 02-JAN-2012 23:14	
System Versions: Logged with 12.02.4401 Plotted with 12.02.4401		





Annular
Integral
every
10 cu ft

Replay
Scale
1:240

5250

135°

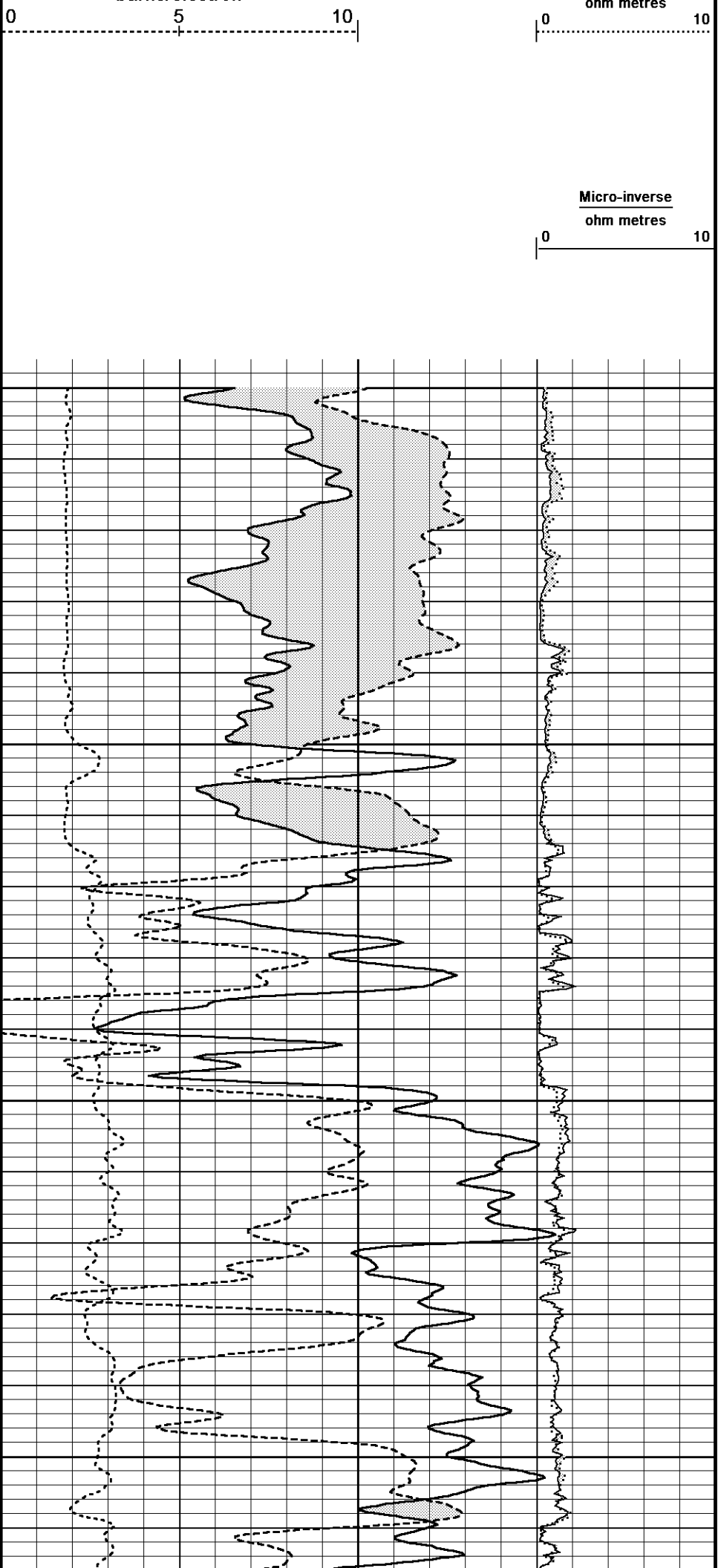
5300

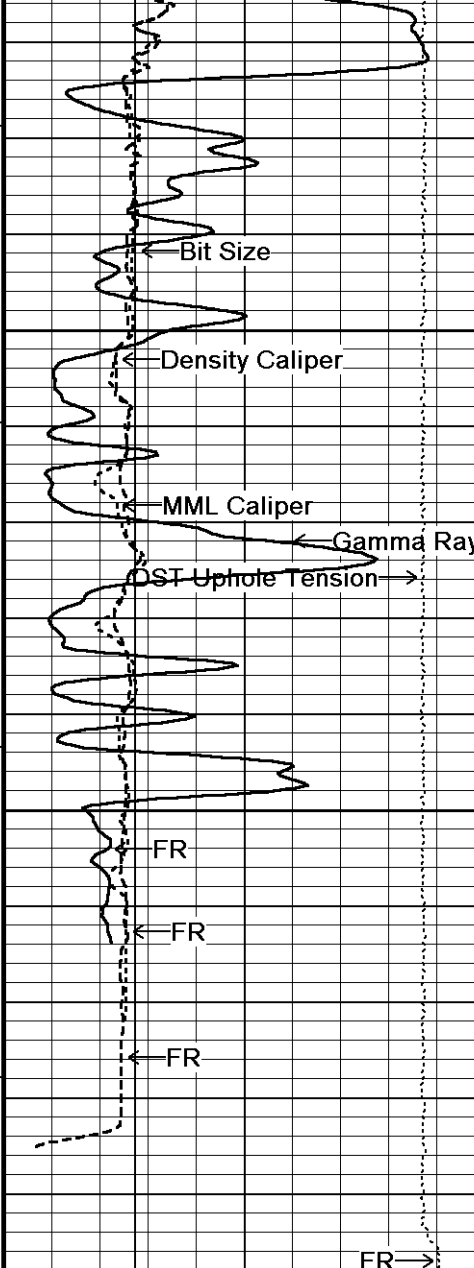
135°

5350

136°

5400





136°

5450

135°

5500

5550

5560

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

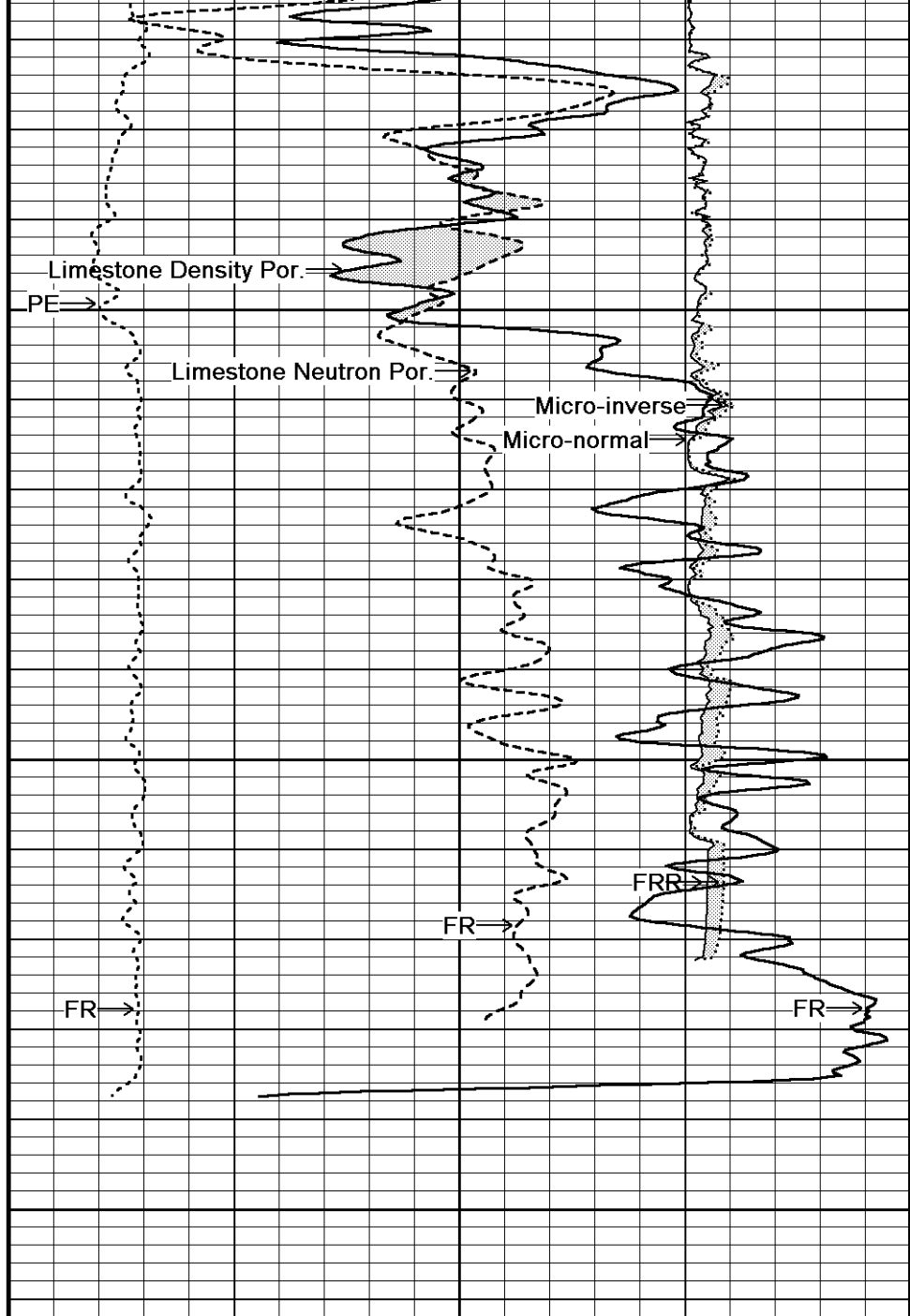
MML Caliper
inches
6 11 16

Density Caliper
inches

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular

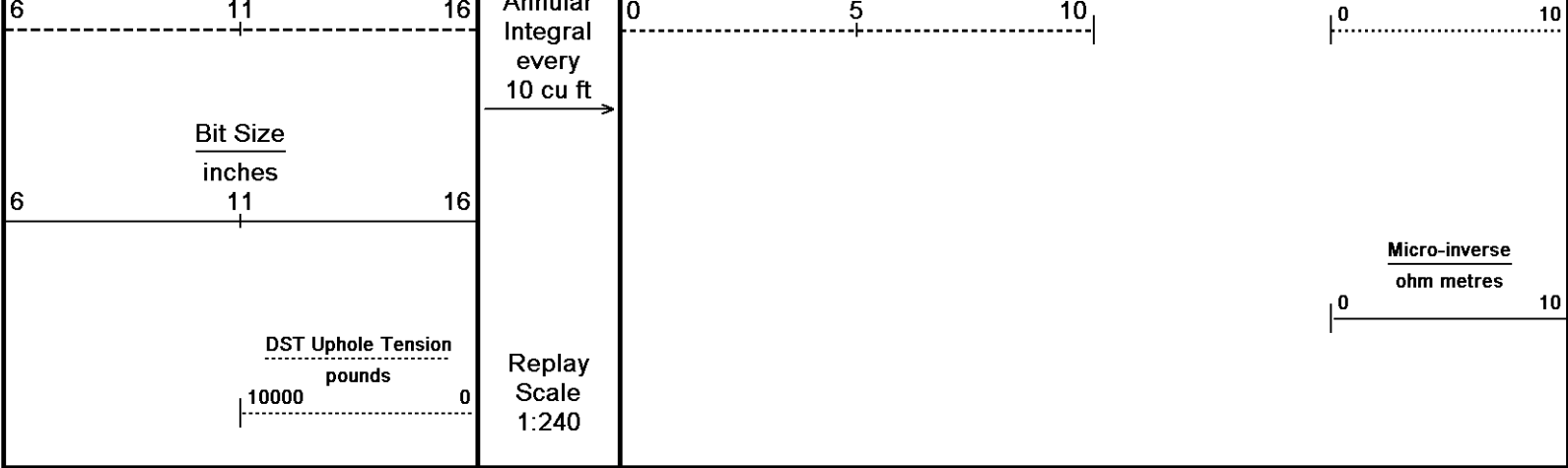


Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron

Micro-normal
ohm metres



Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 03-JAN-2012 01:46

Filename: C:\Program Files\Weatherford\WLS 12.02\Data\SA...\SDRGE(SUNNIE 1-16) DATA_001.dtaRecorded on 02-JAN-2012 23:14

System Versions: Logged with 12.02.4401Plotted with 12.02.4401

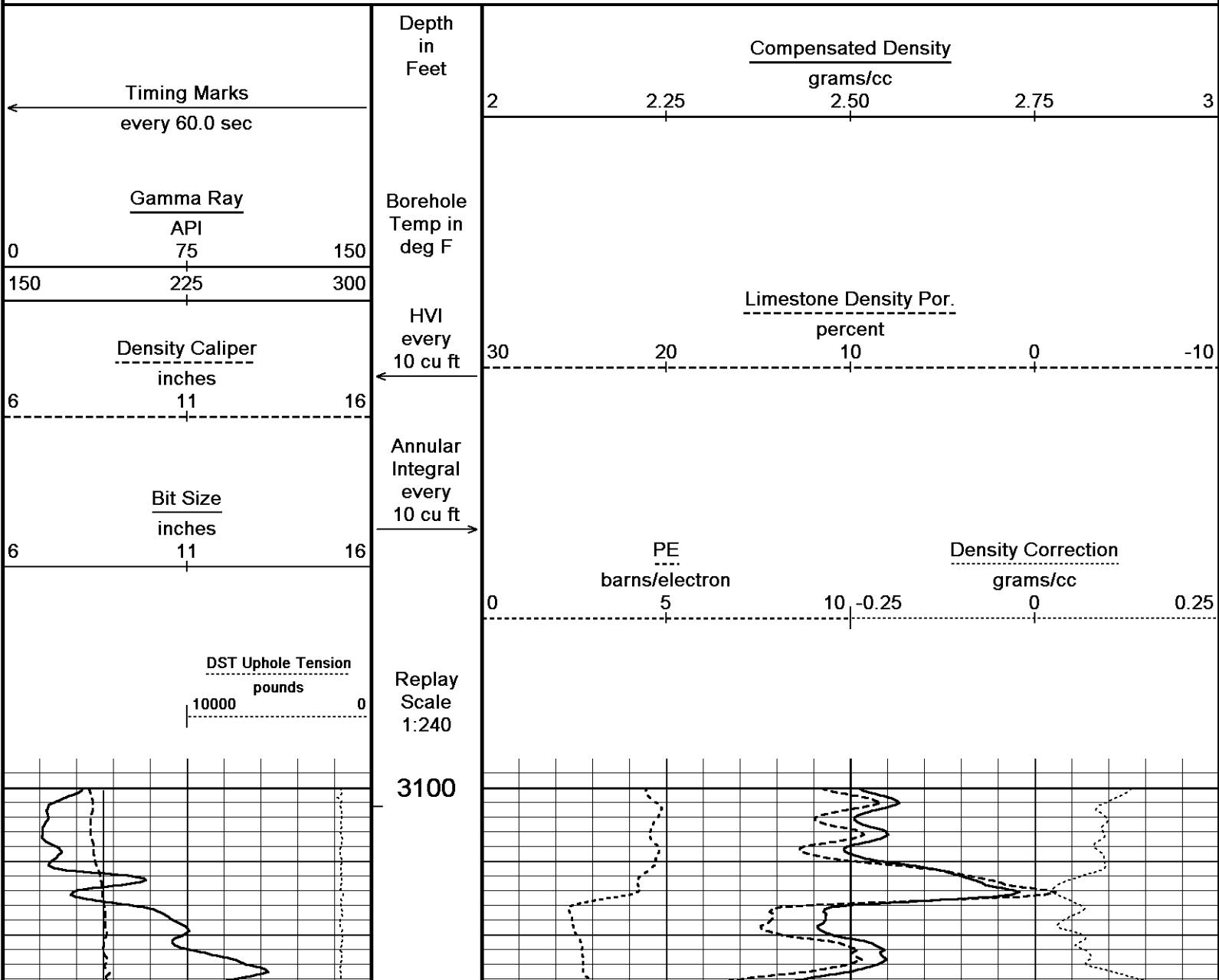
↑REPEAT SECTION↑

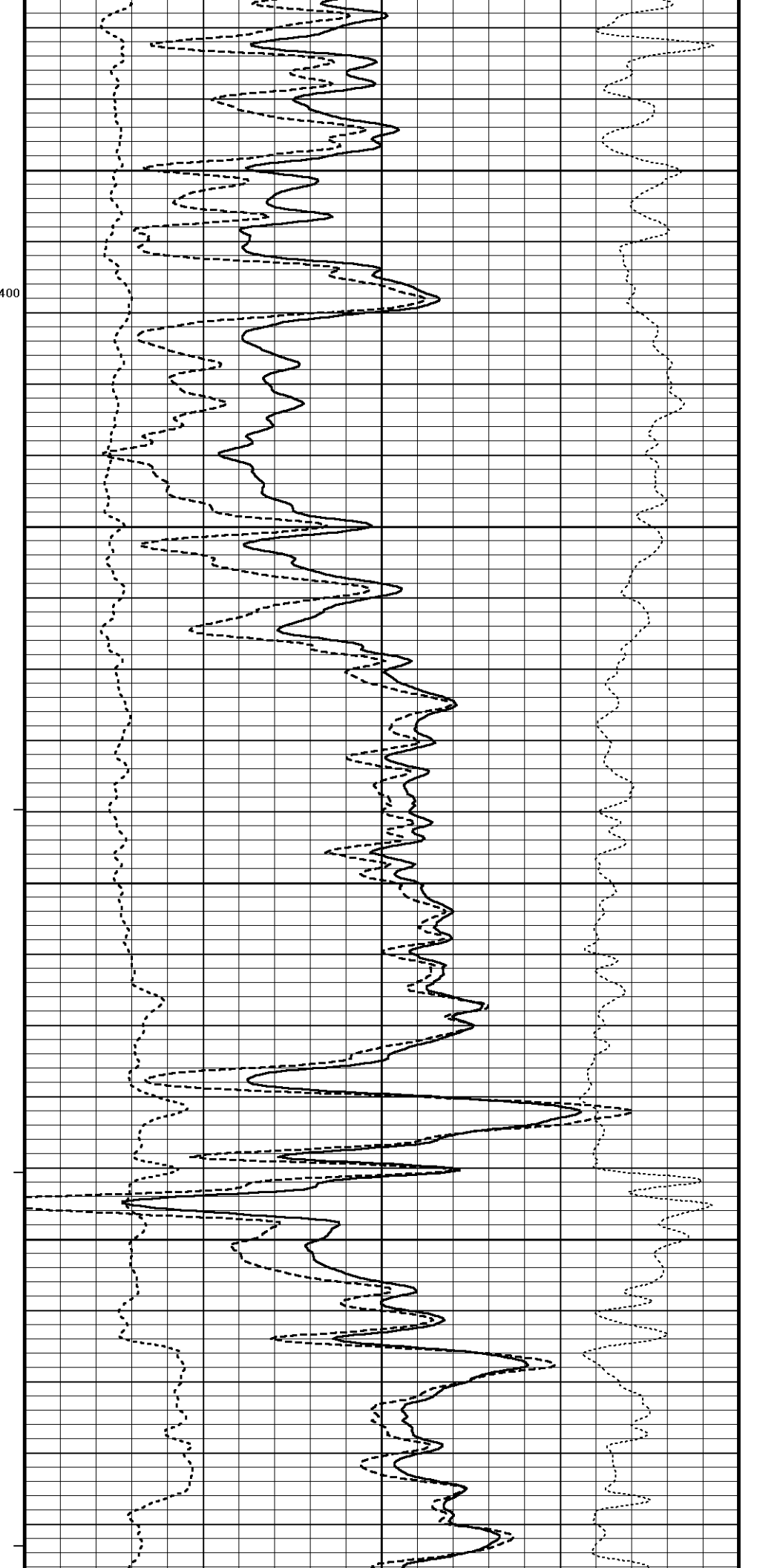
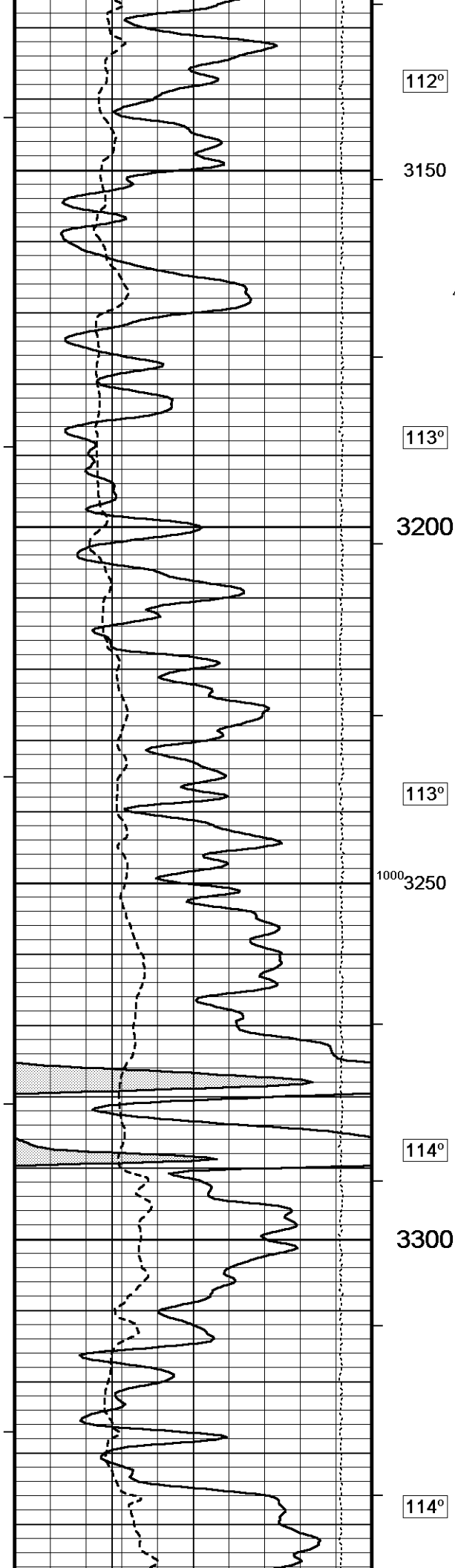
↓5 INCH BULK DENSITY↓

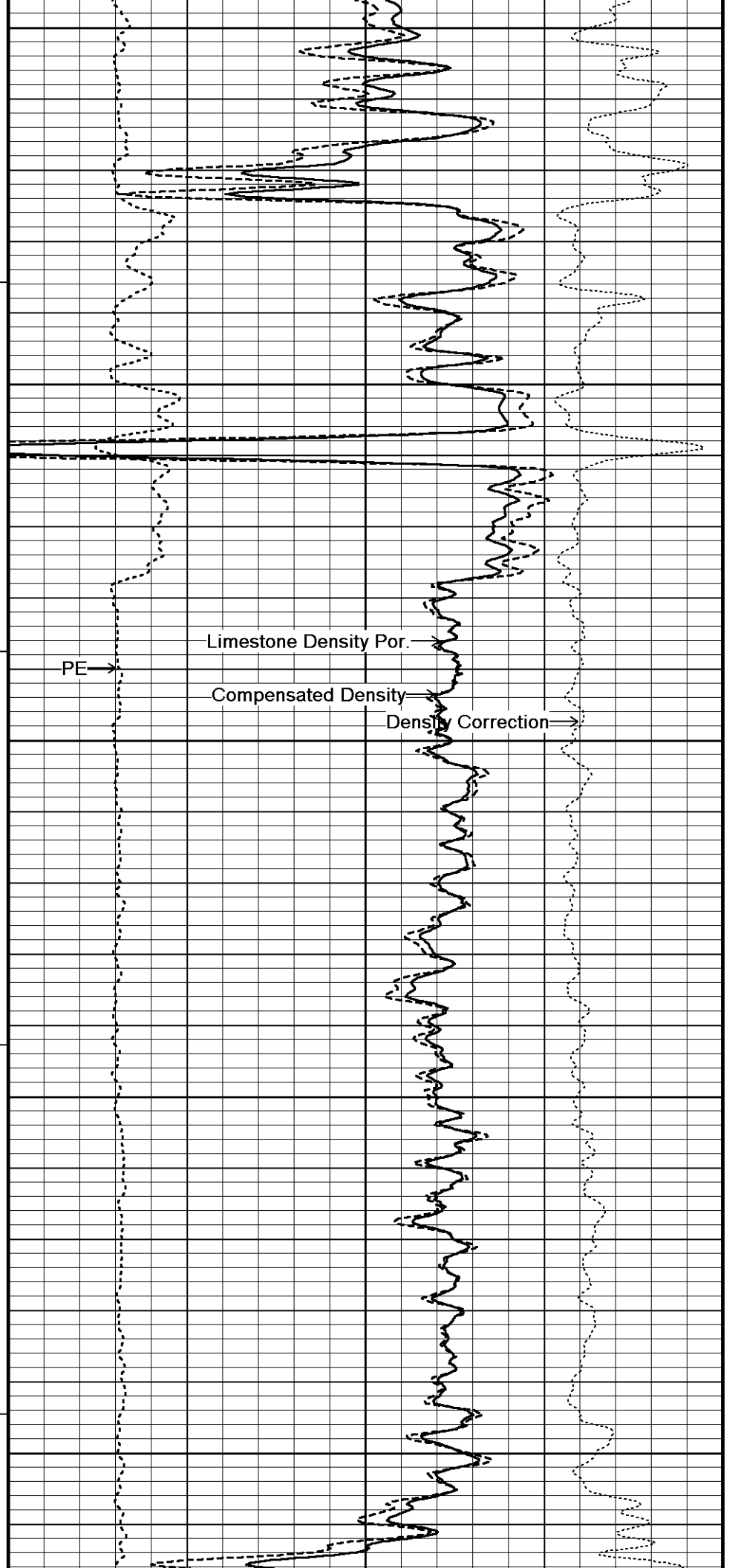
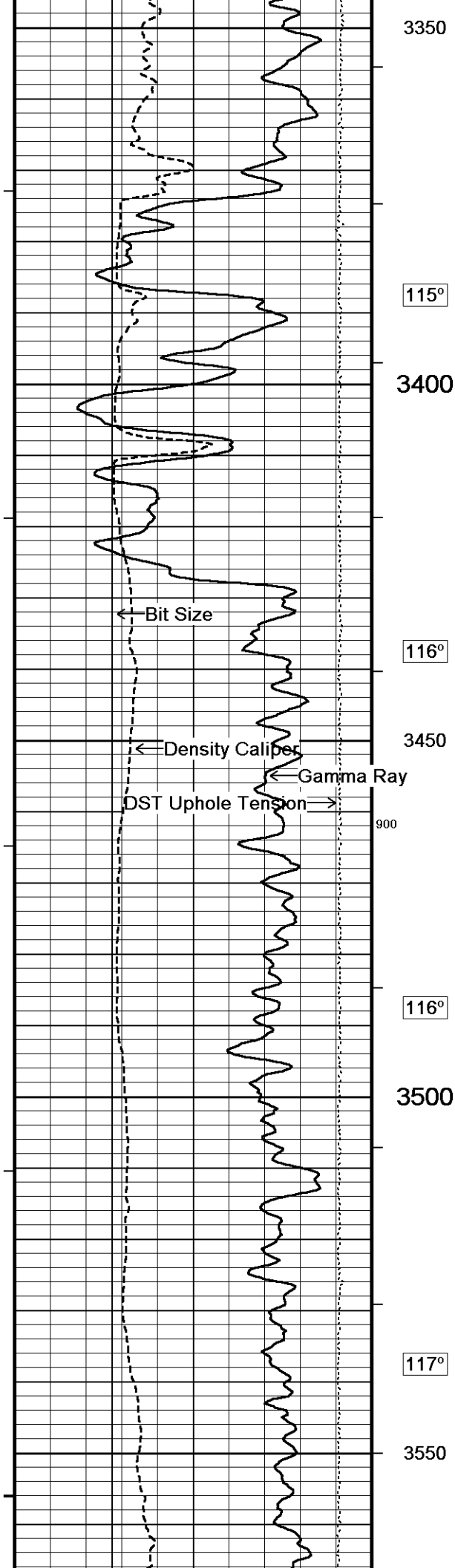
Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 03-JAN-2012 01:46

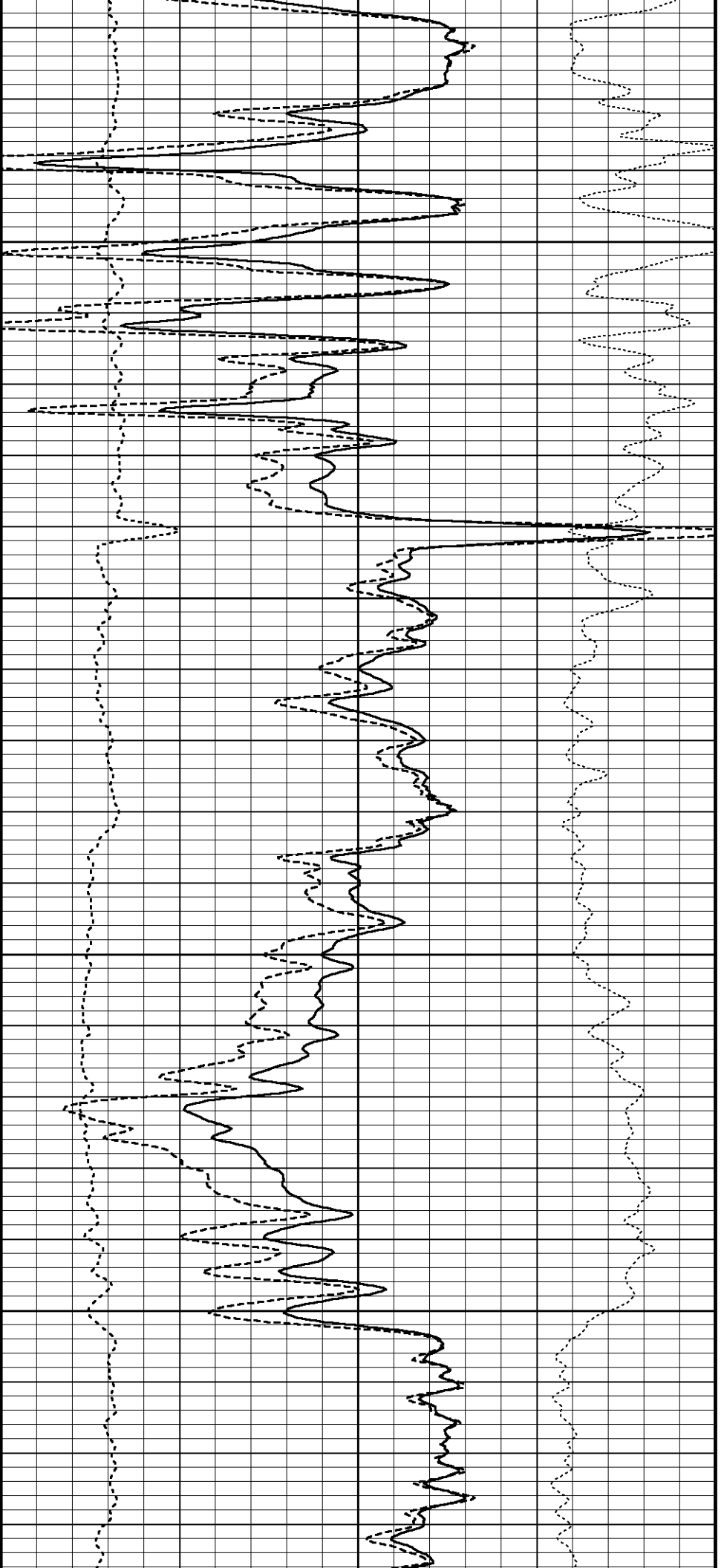
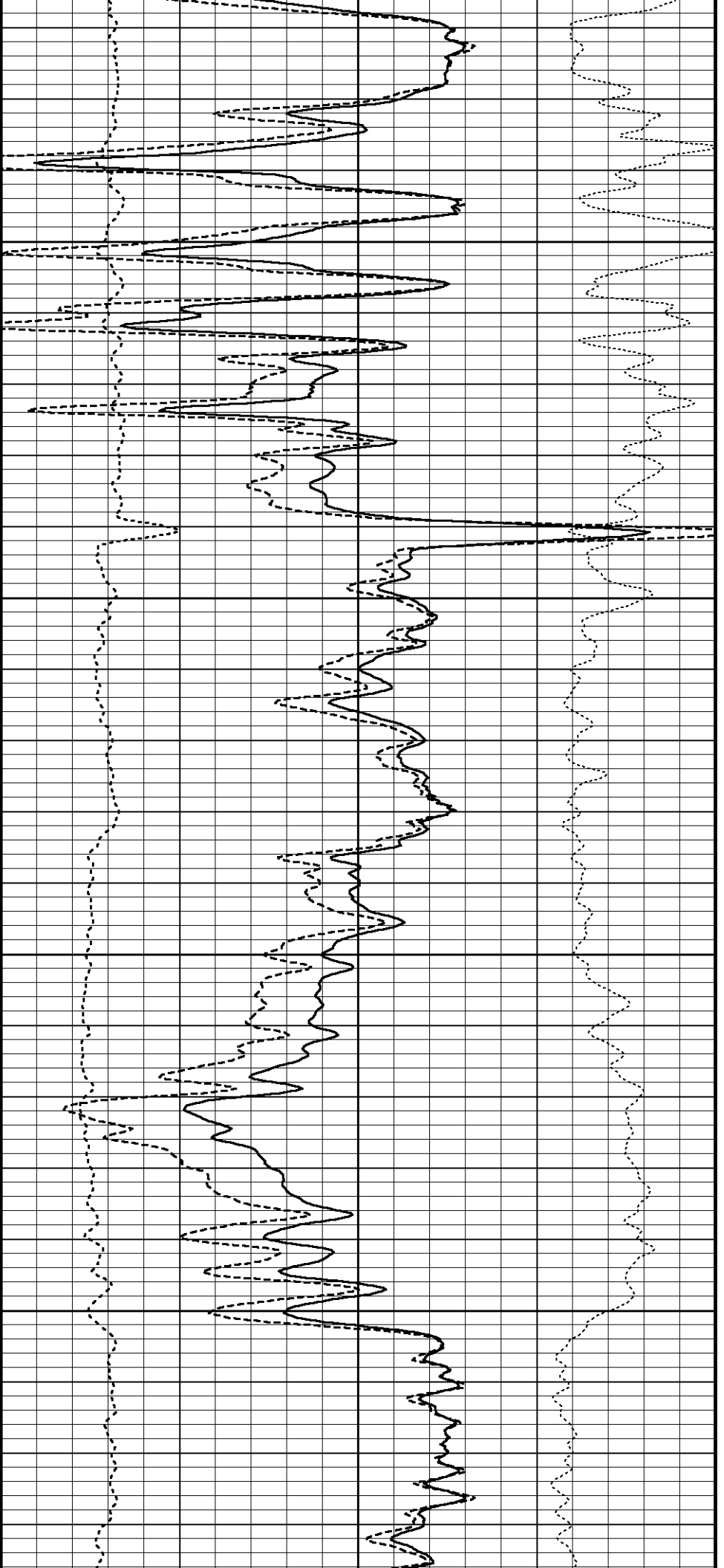
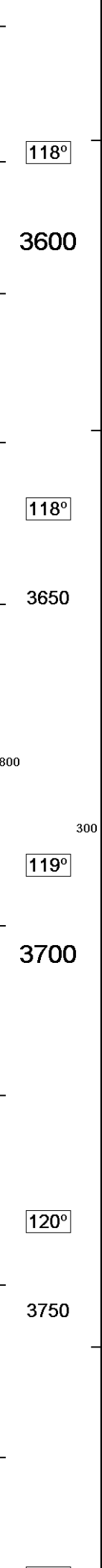
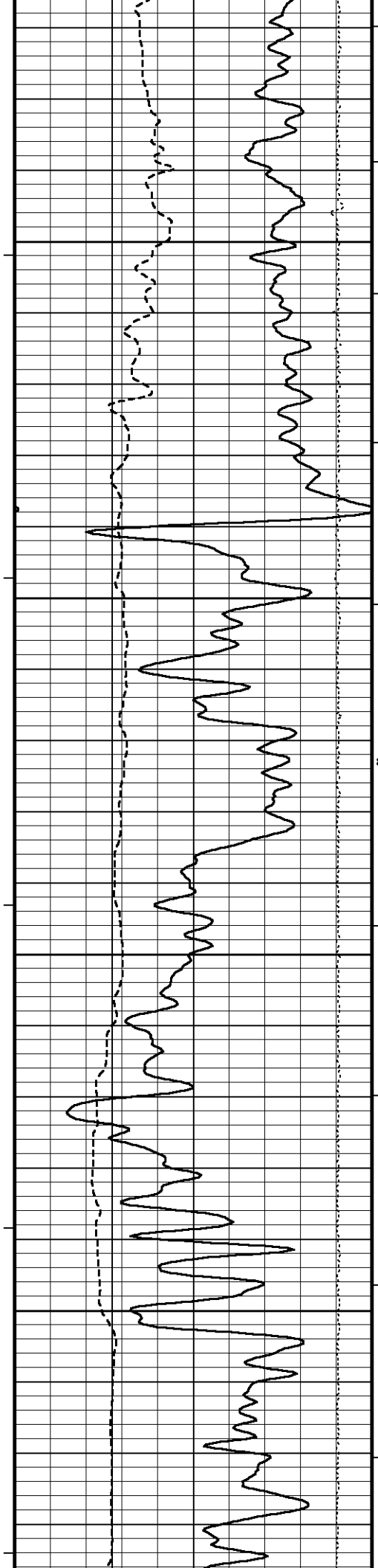
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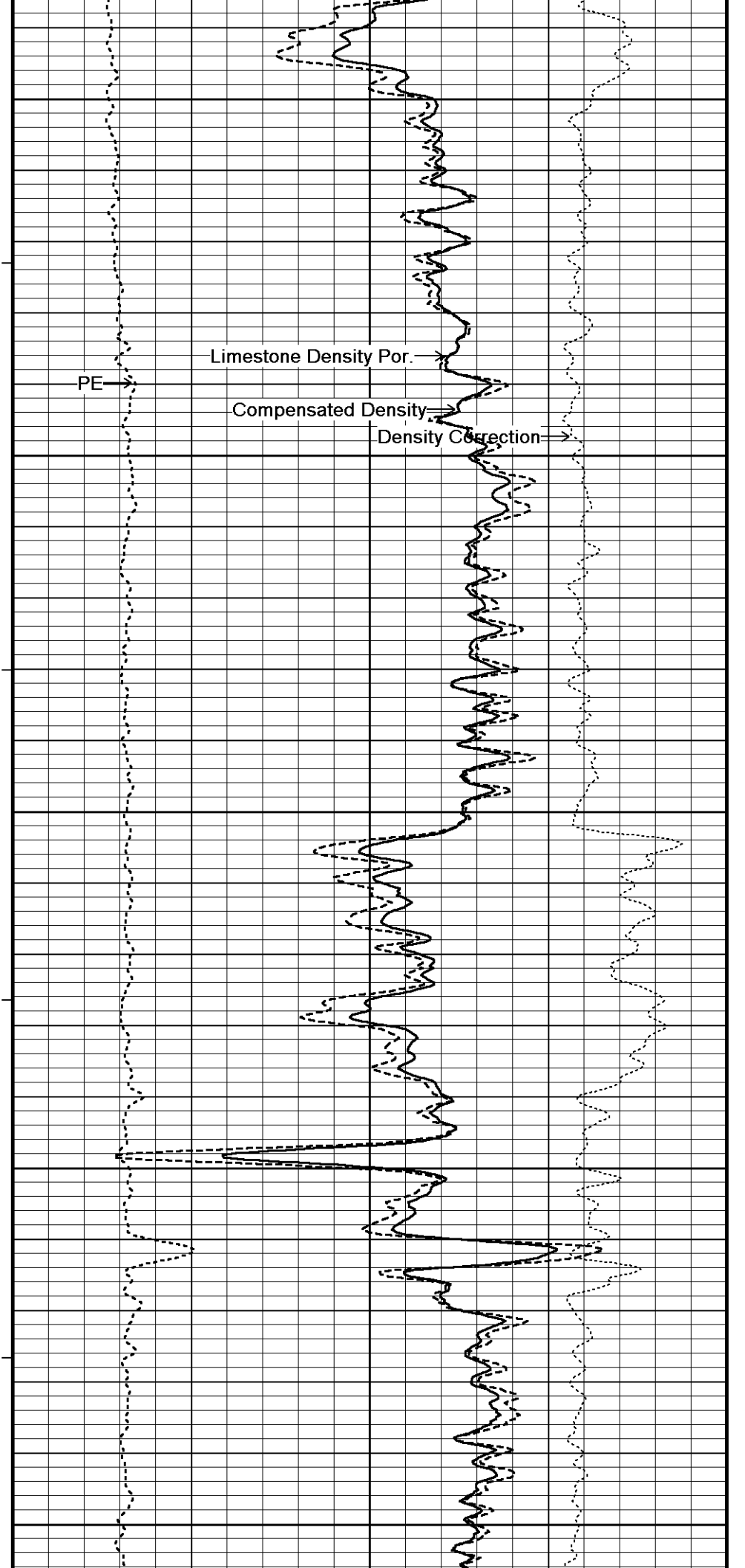
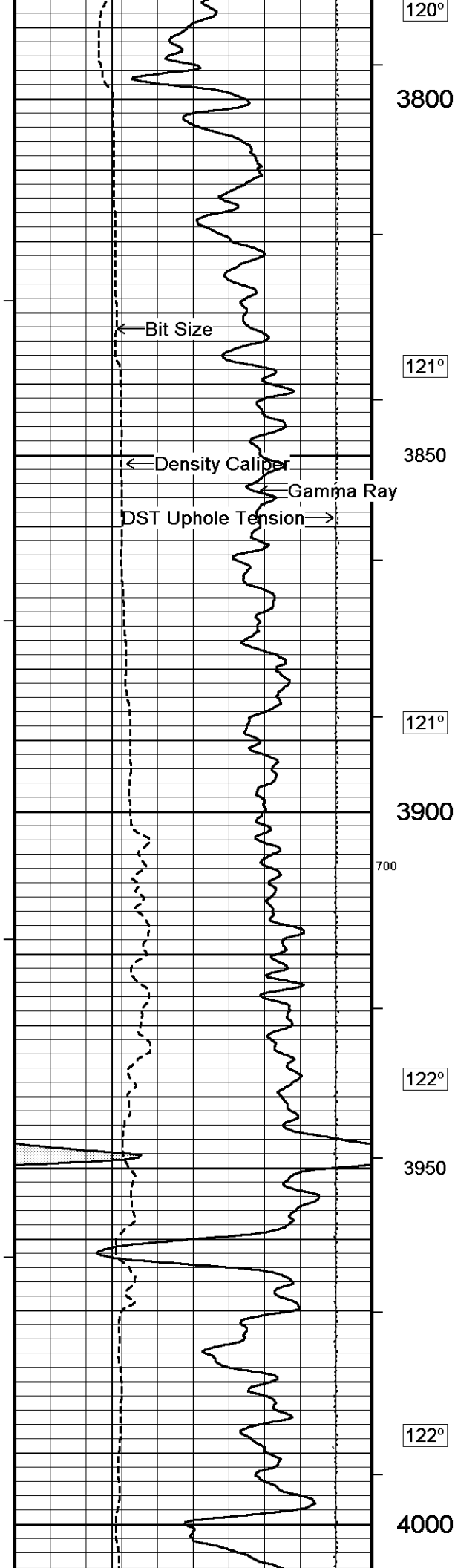
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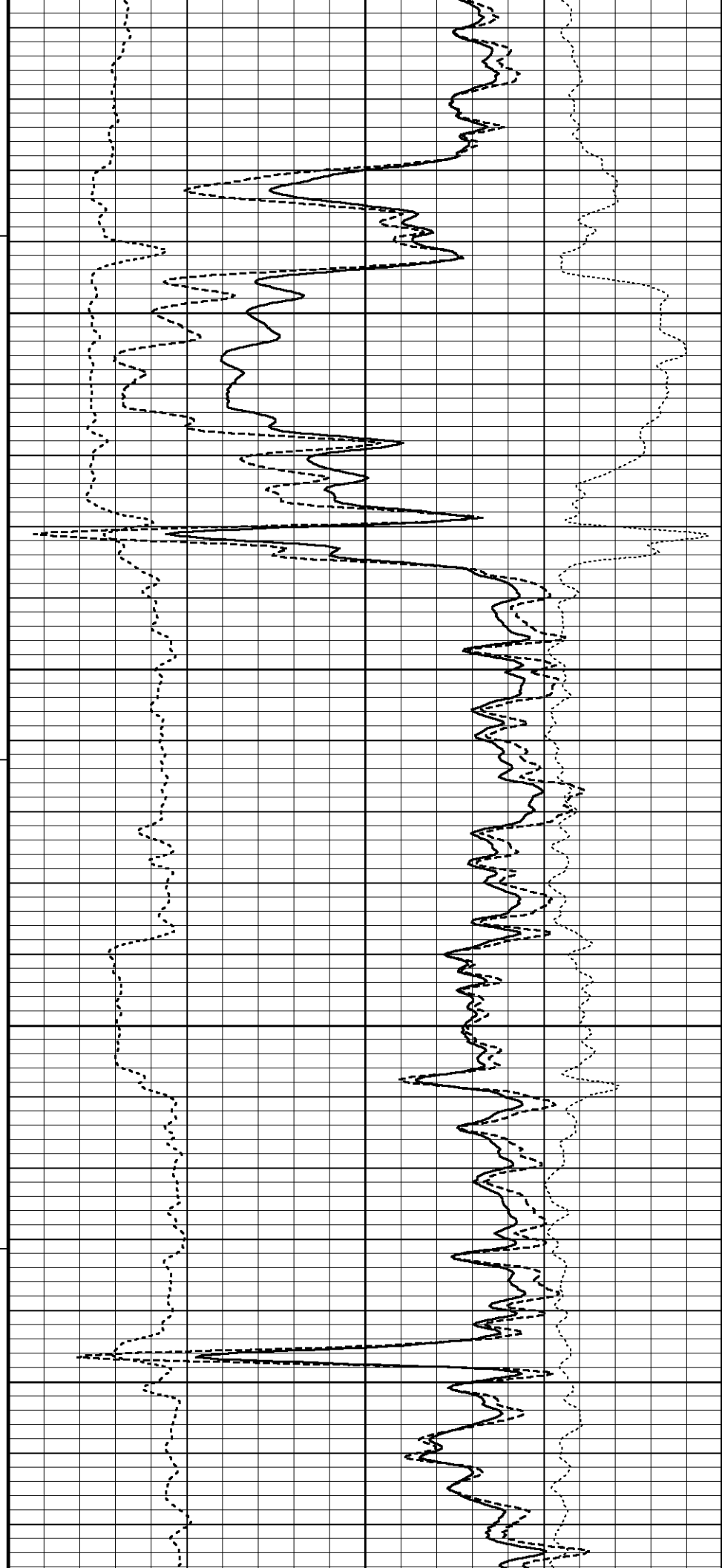
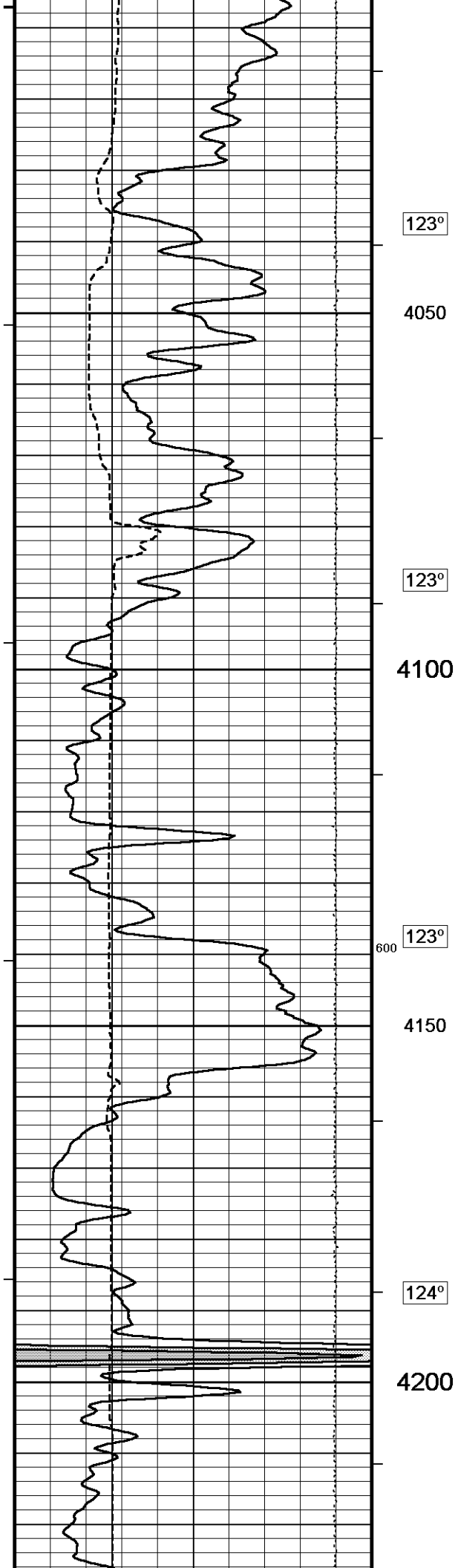


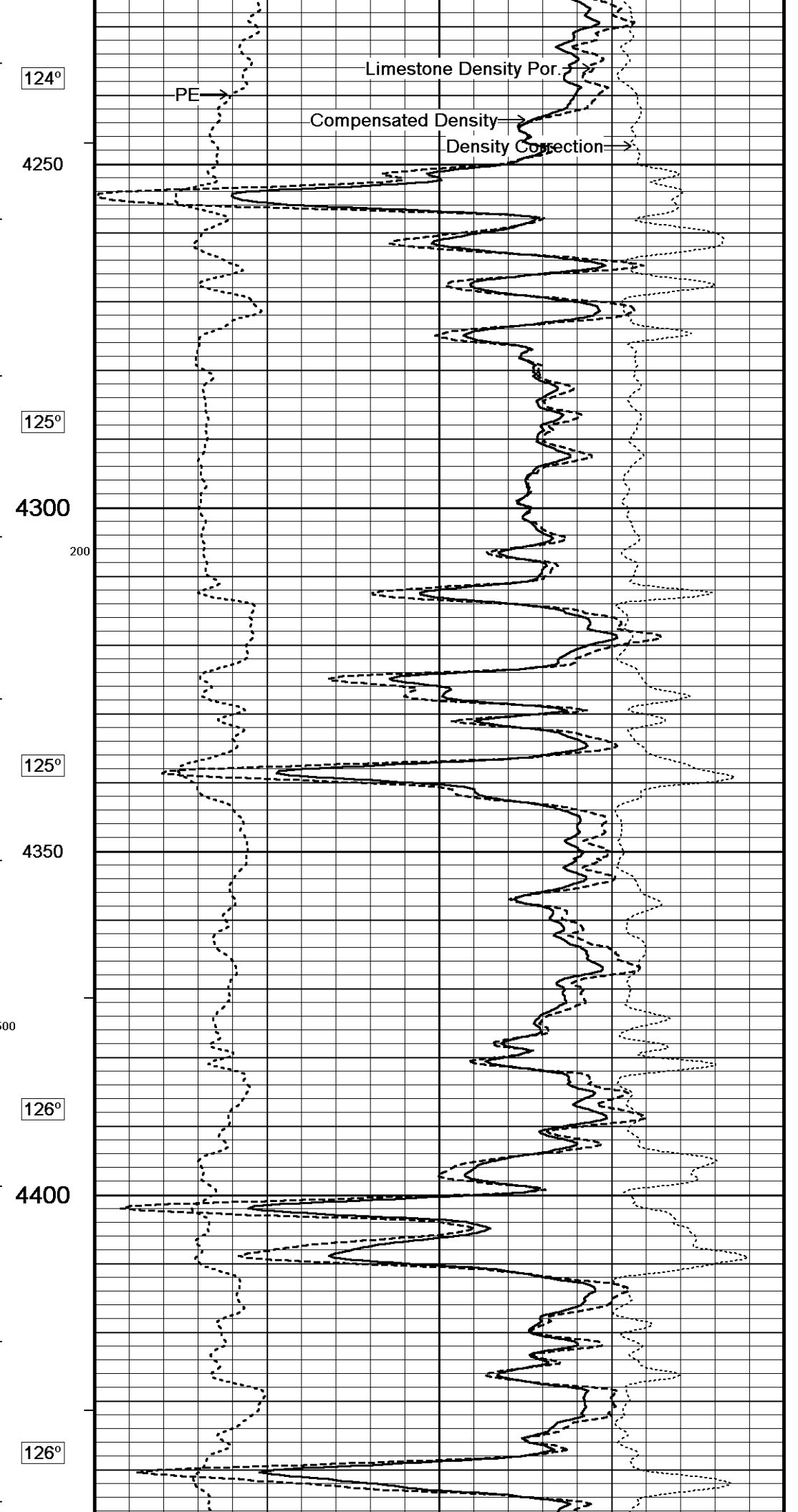
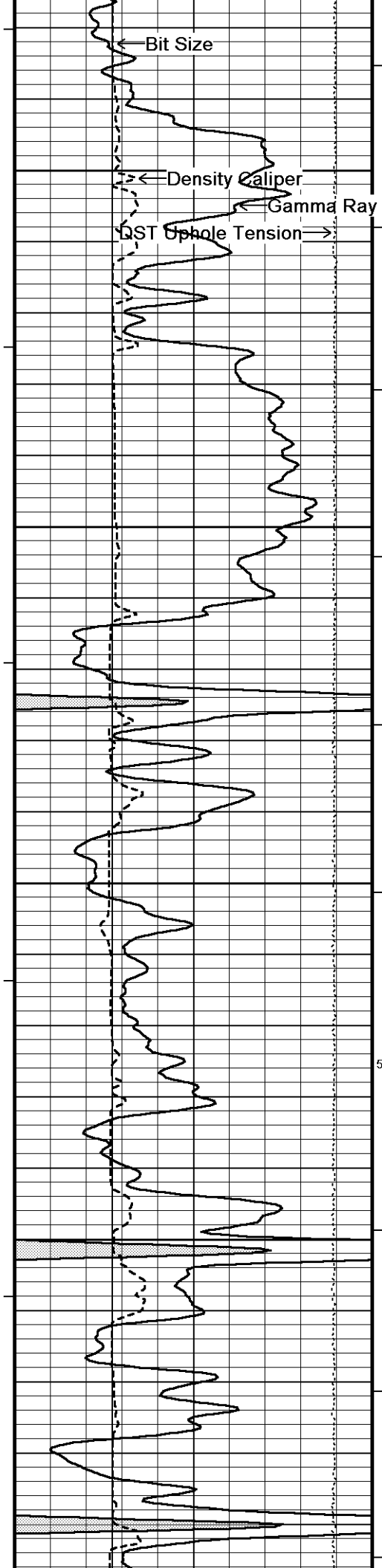


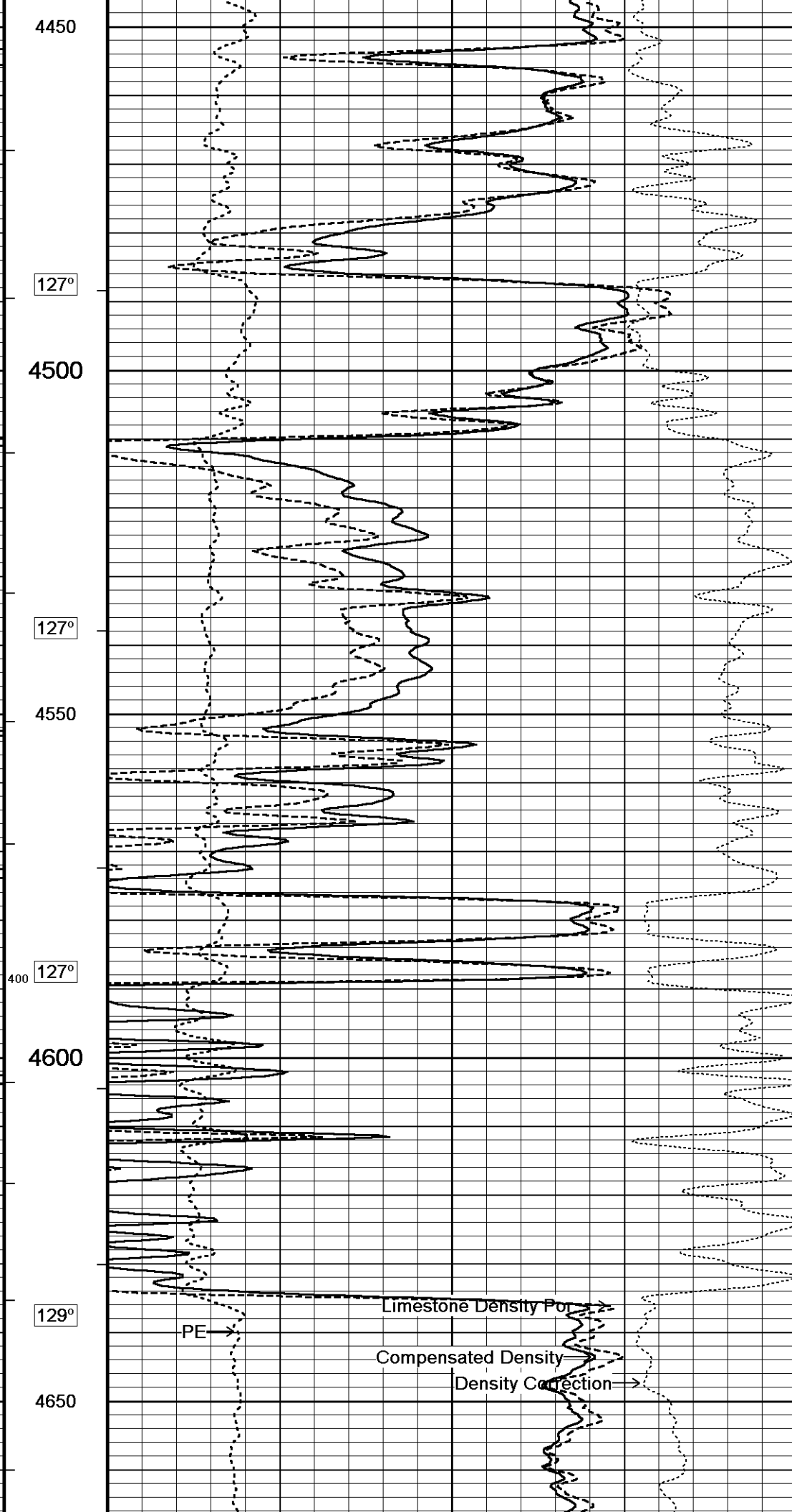
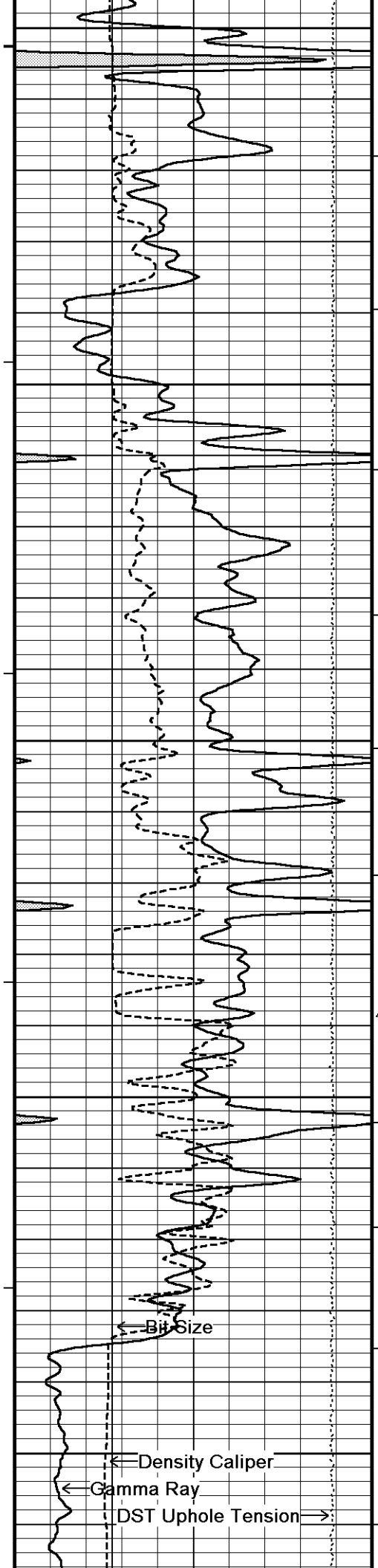


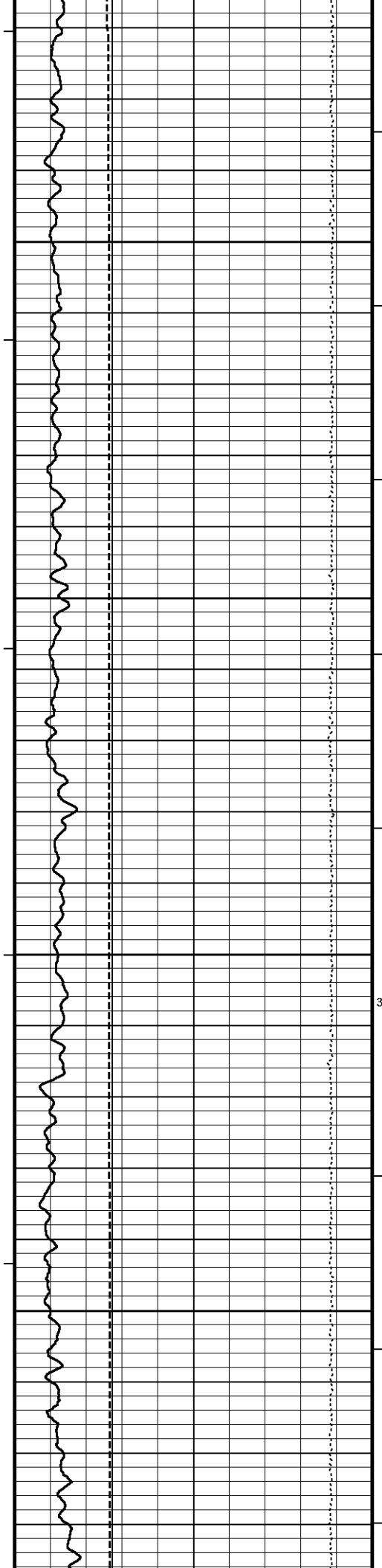












130°

4700

130°

4750

131°

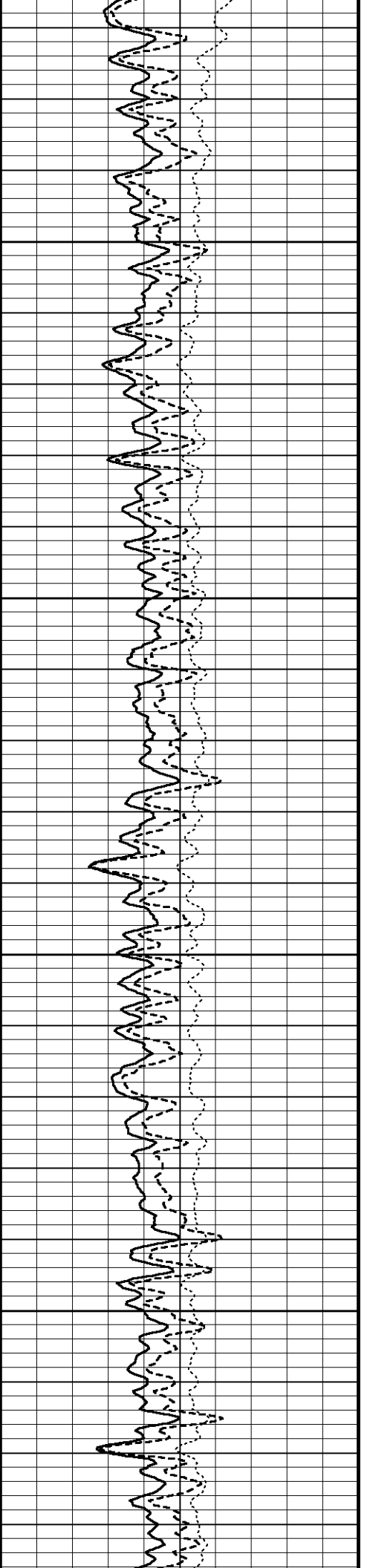
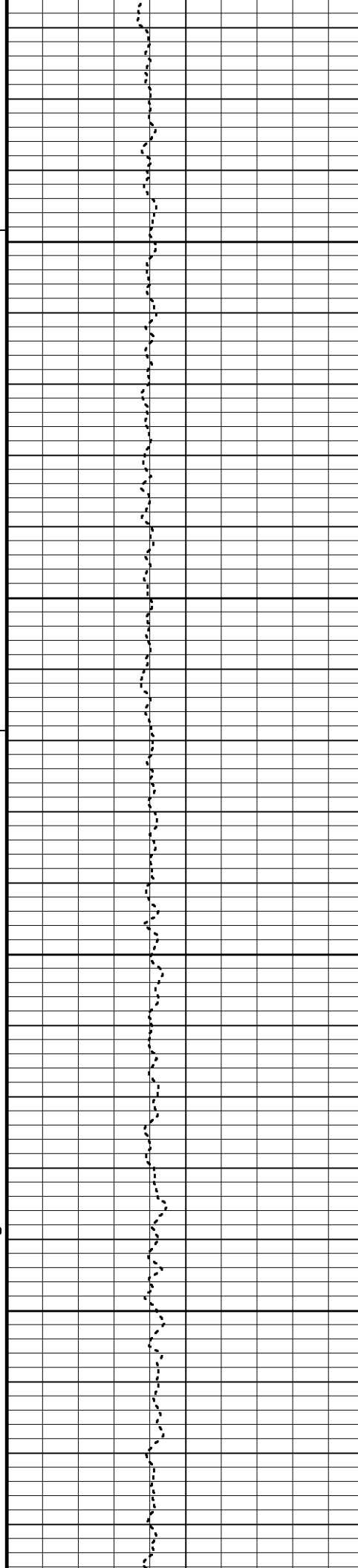
4800

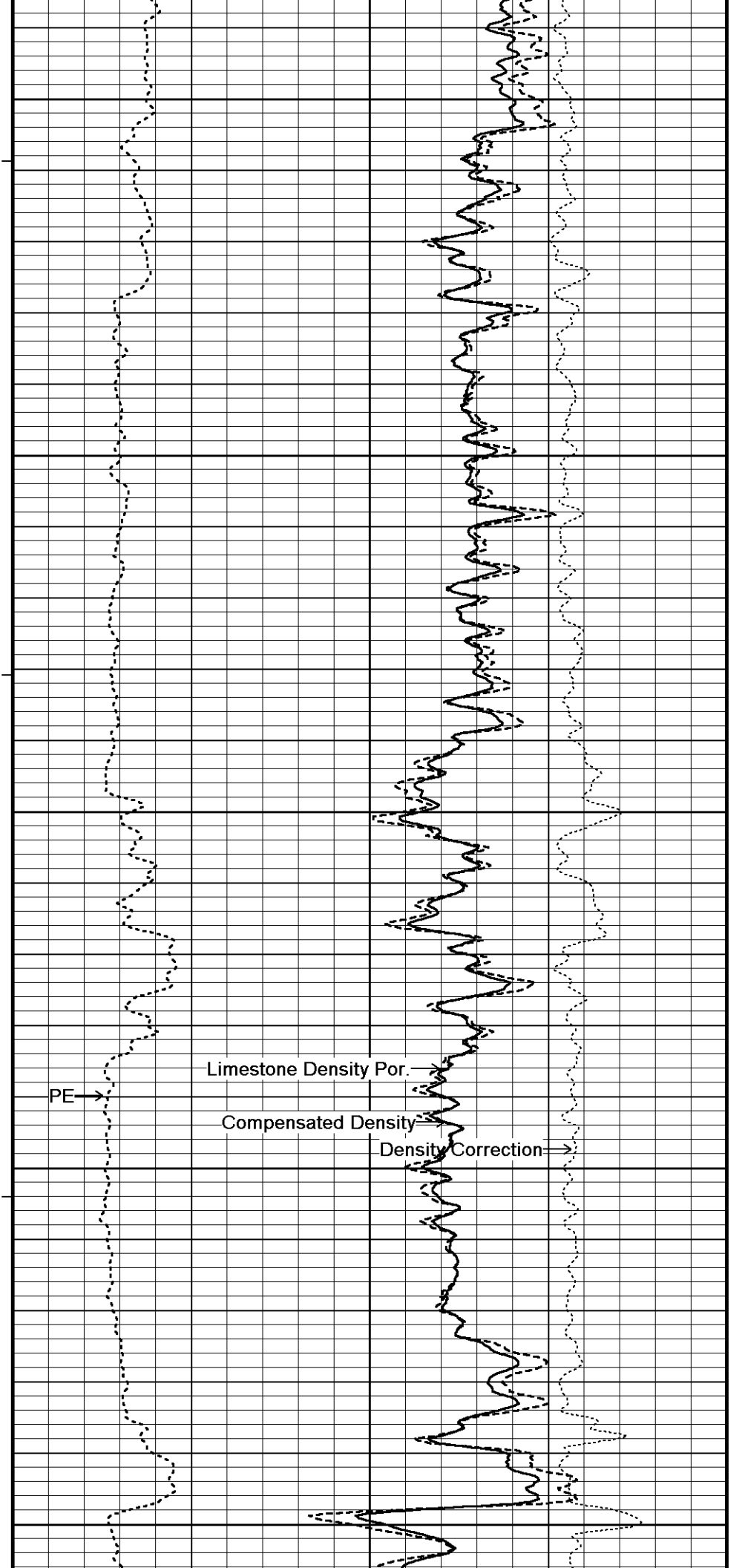
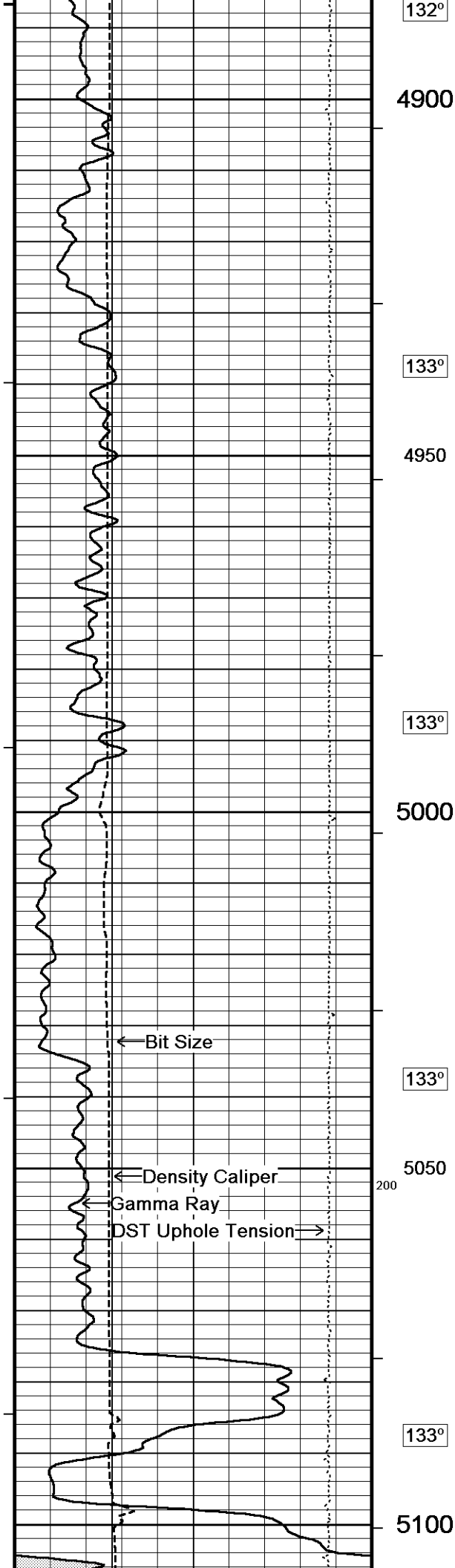
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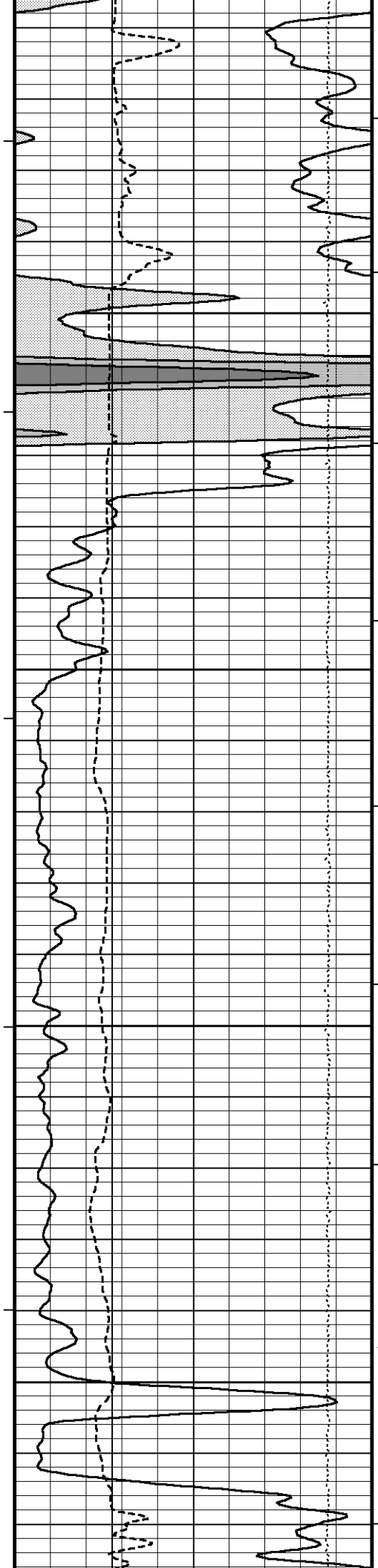
131°

100

4850







134°

5150

135°

5200

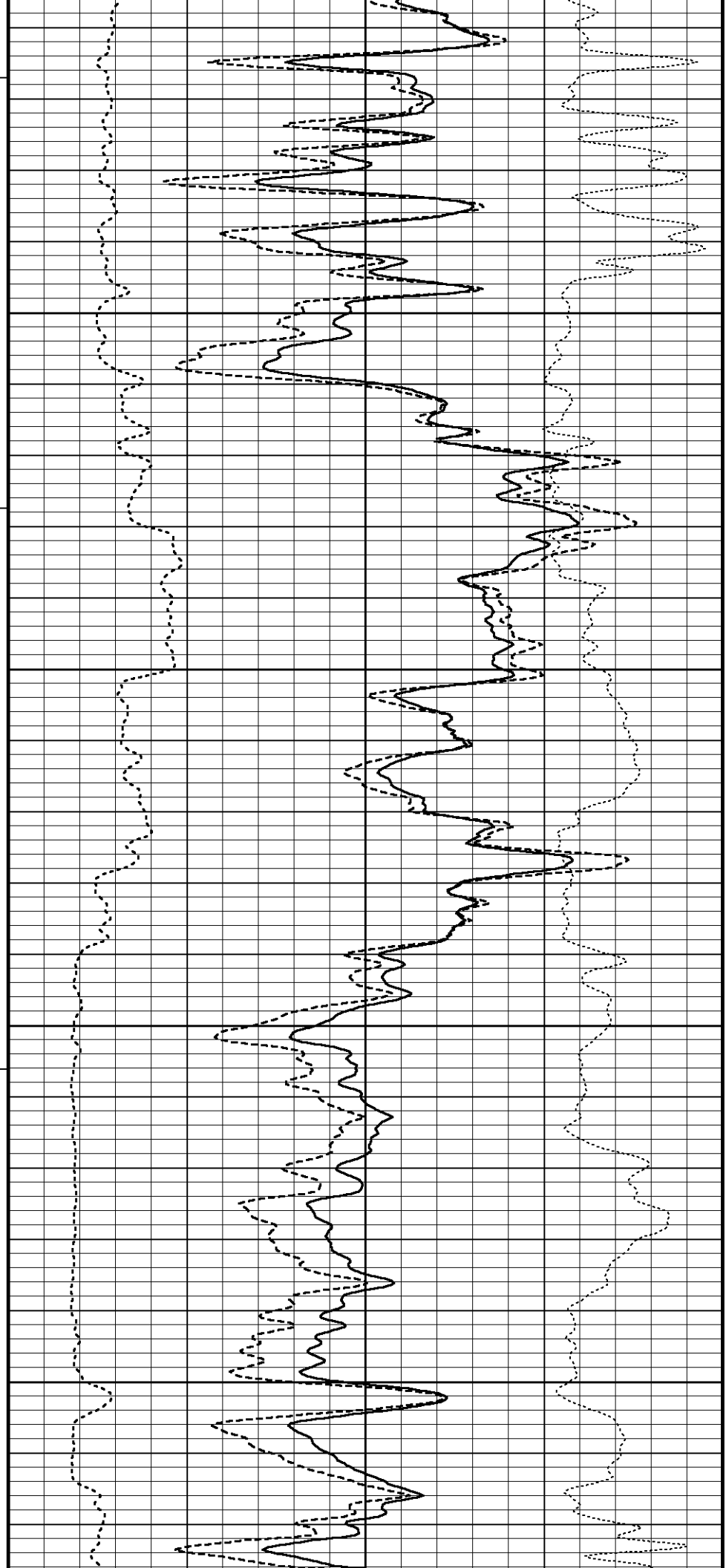
137°

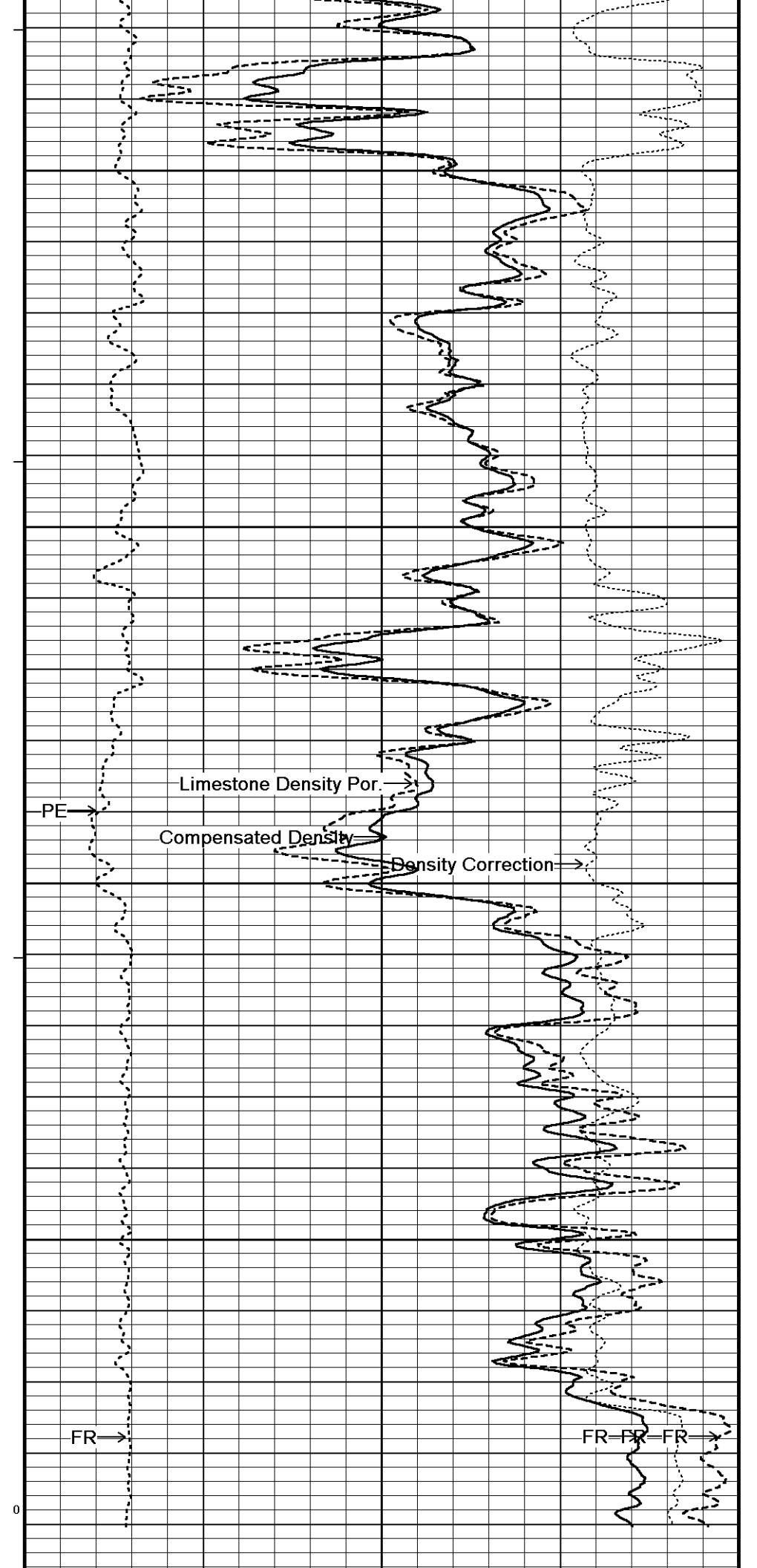
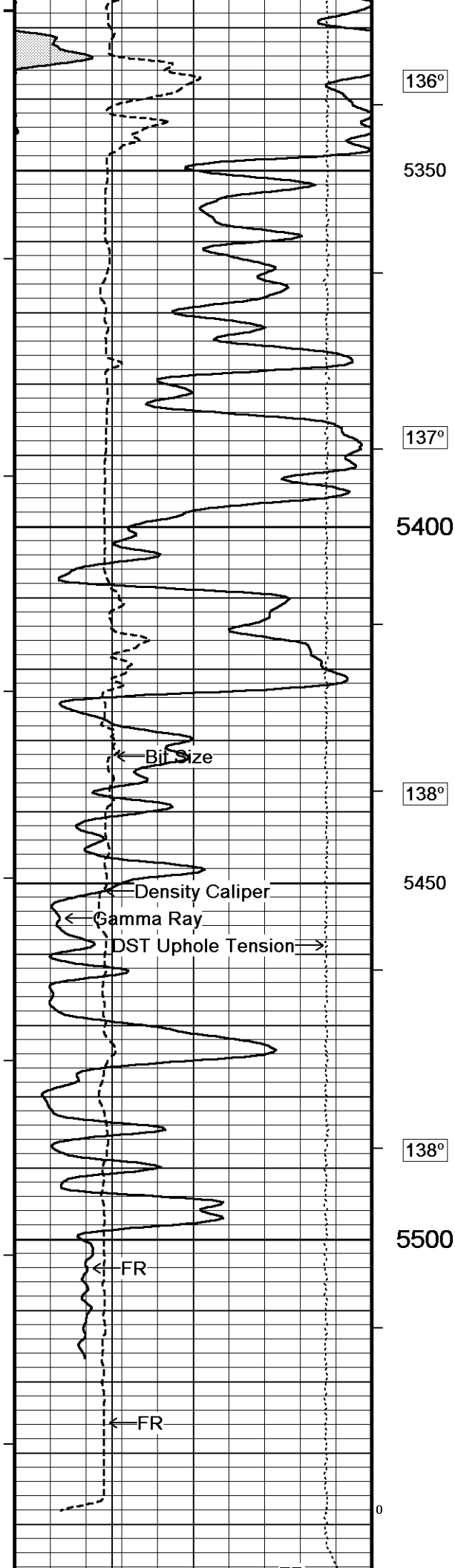
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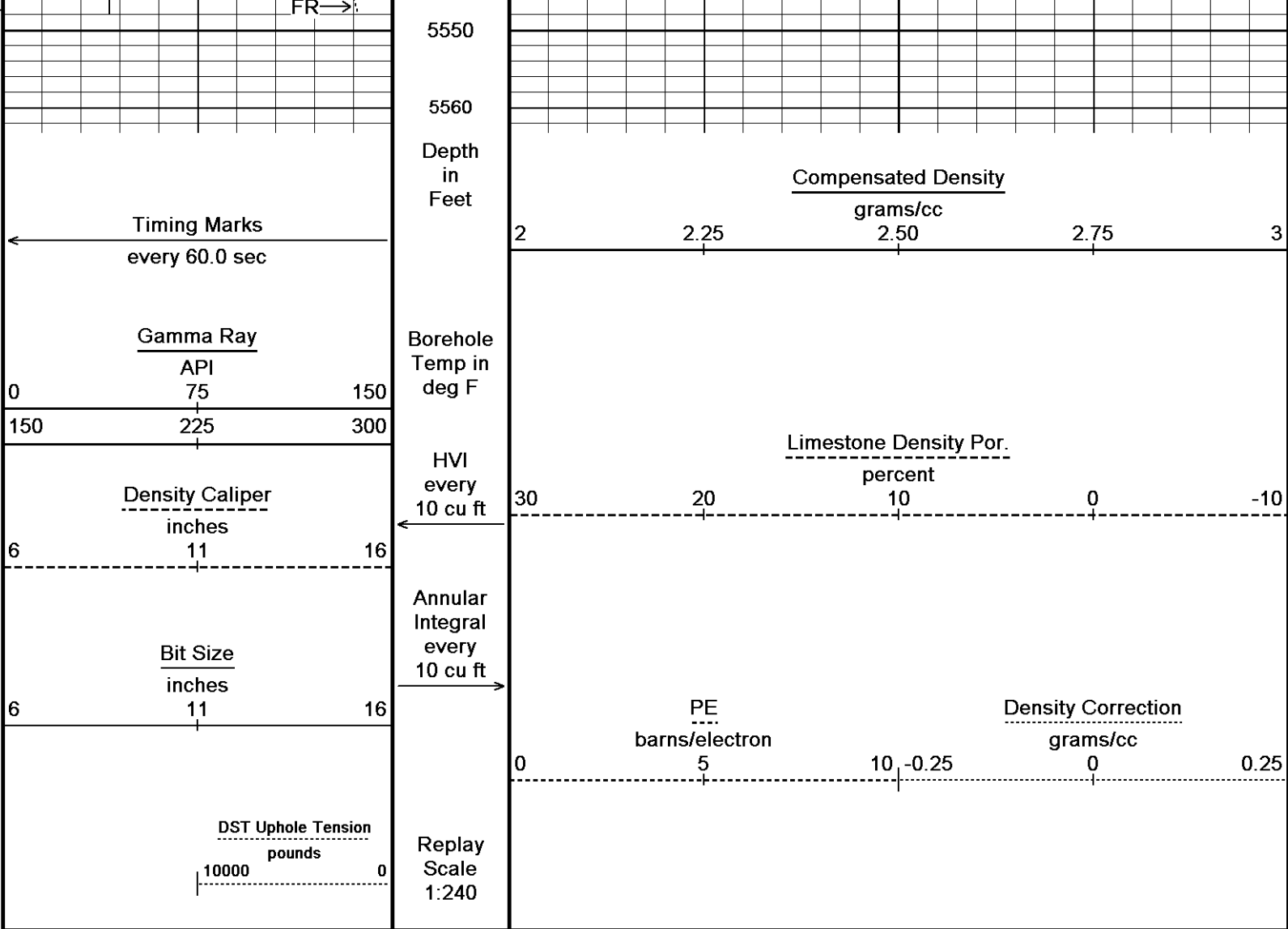
136°

100

5300







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 03-JAN-2012 01:46

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System Versions: Logged with 12.02.4401 Processed with 12.02.4401 Plotted with 12.02.4401

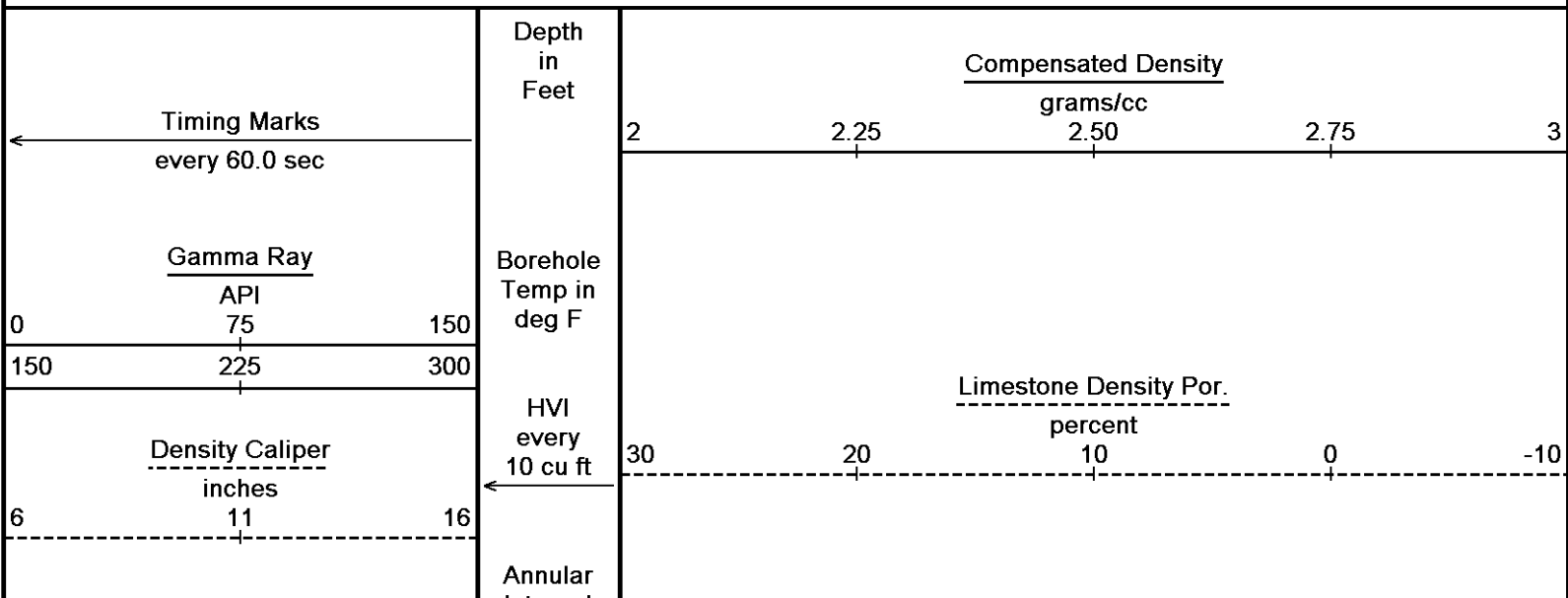
↑ 5 INCH BULK DENSITY ↑

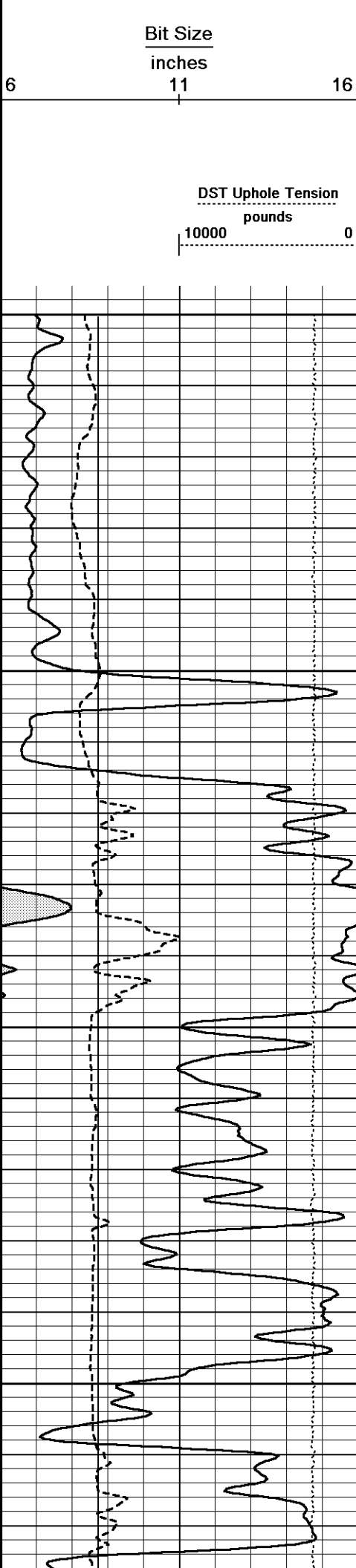
↓ REPEAT SECTION ↓

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Integral
every
10 cu ft

Replay
Scale
1:240

5250

135°

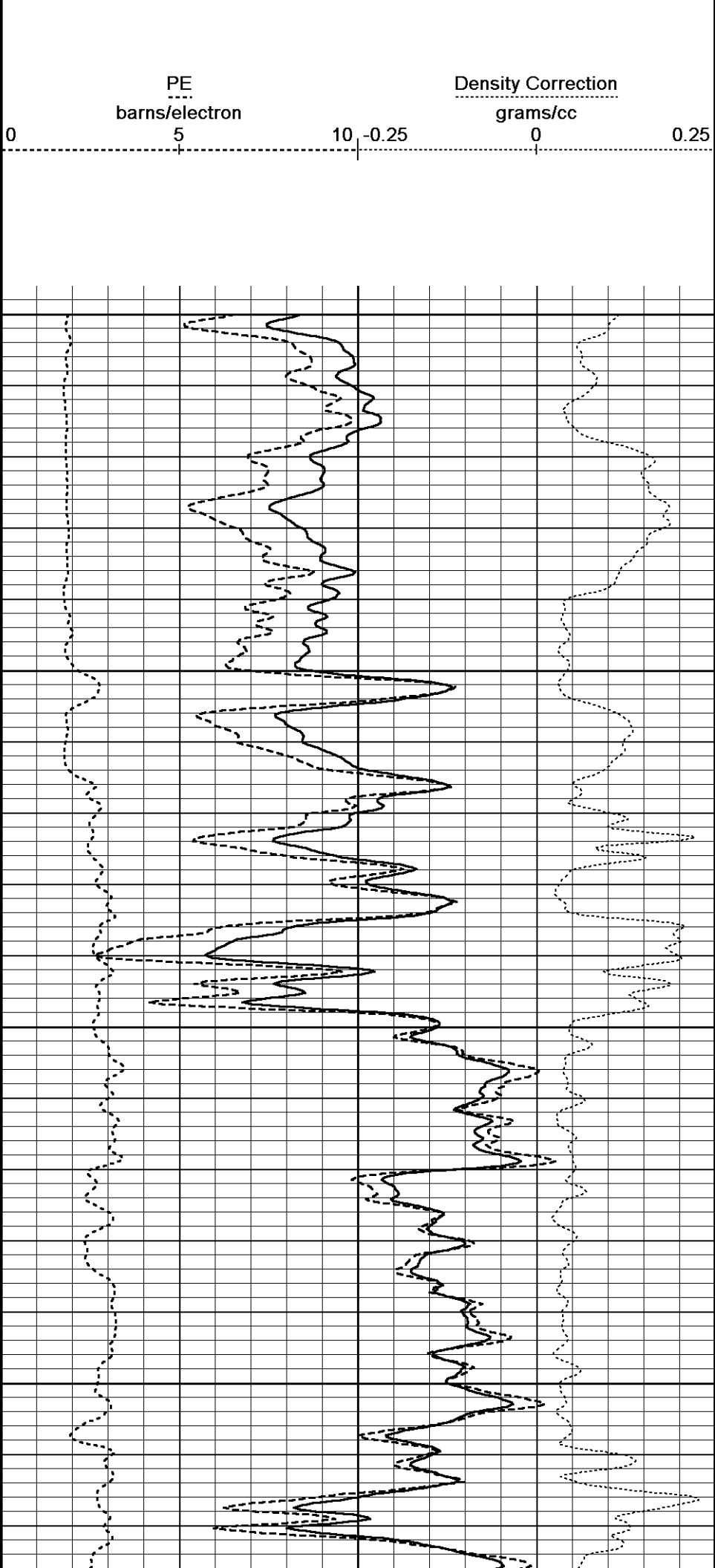
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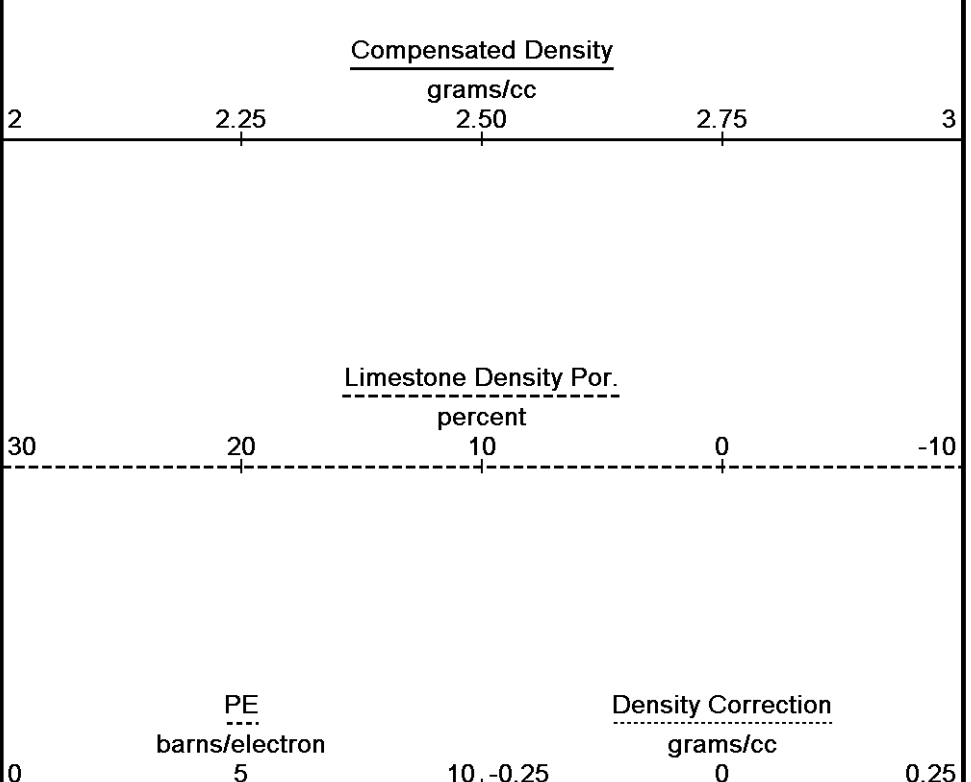
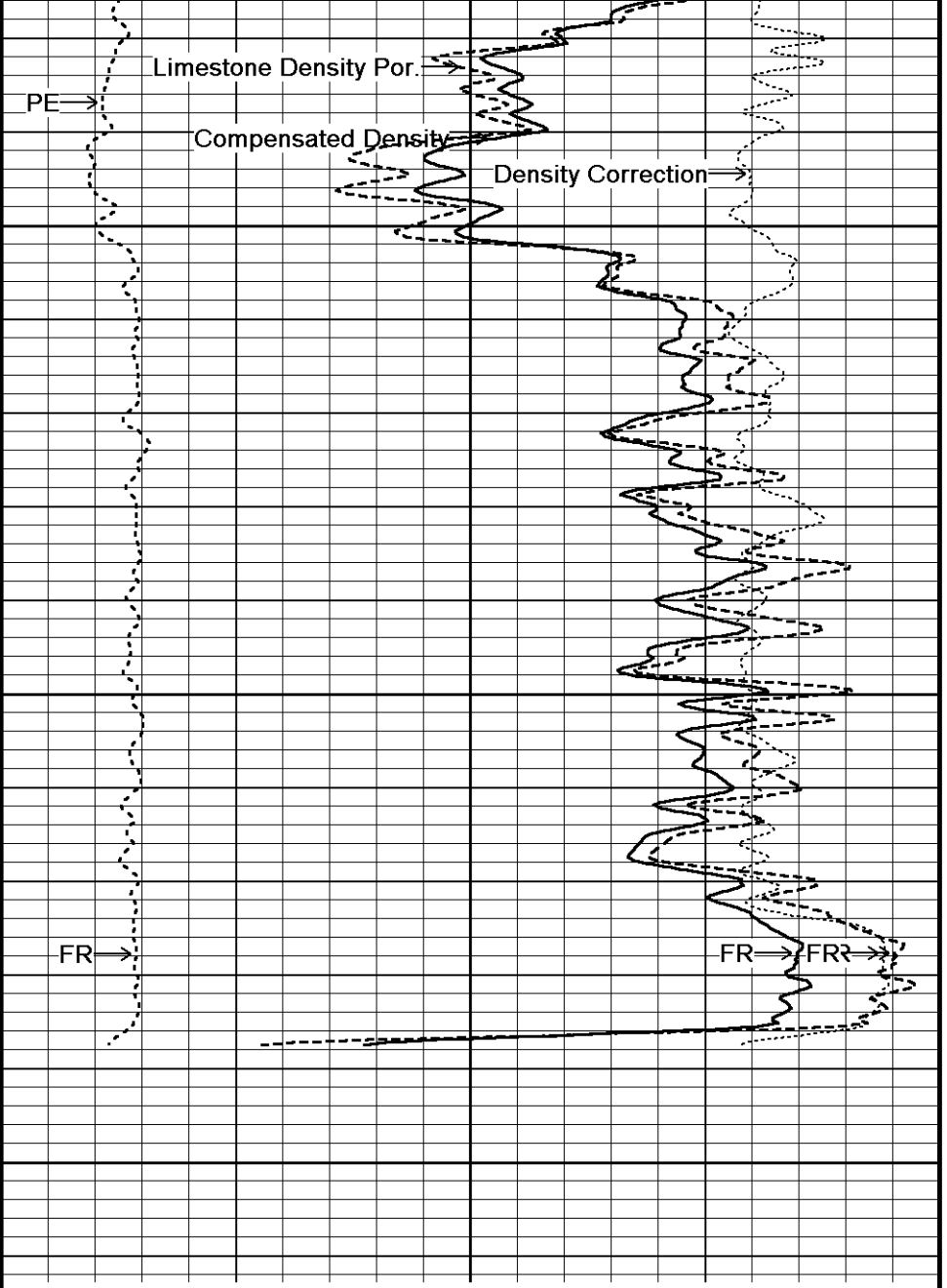
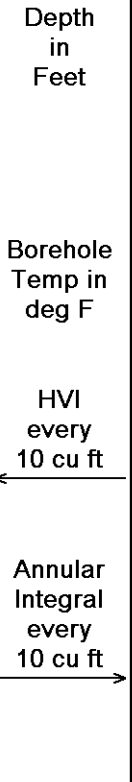
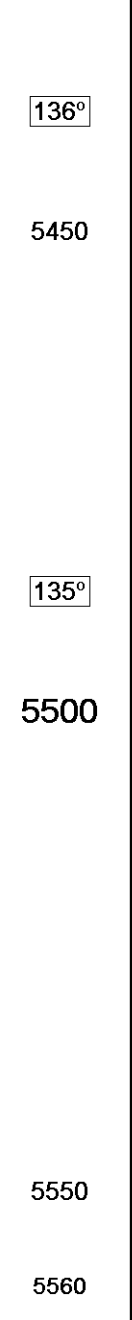
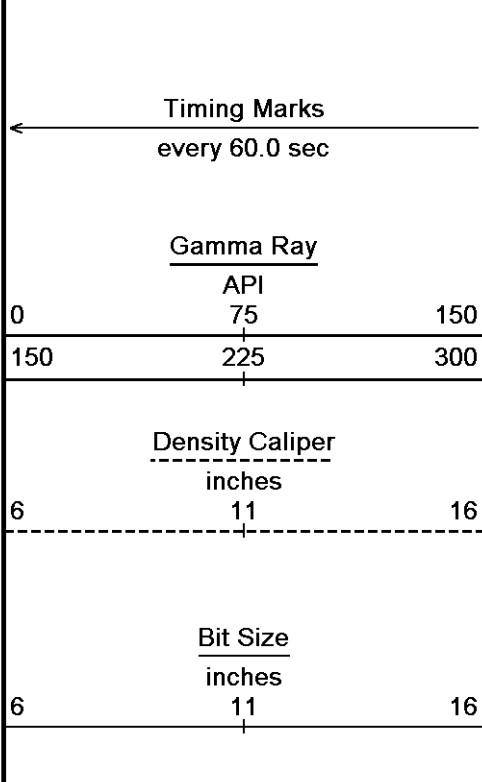
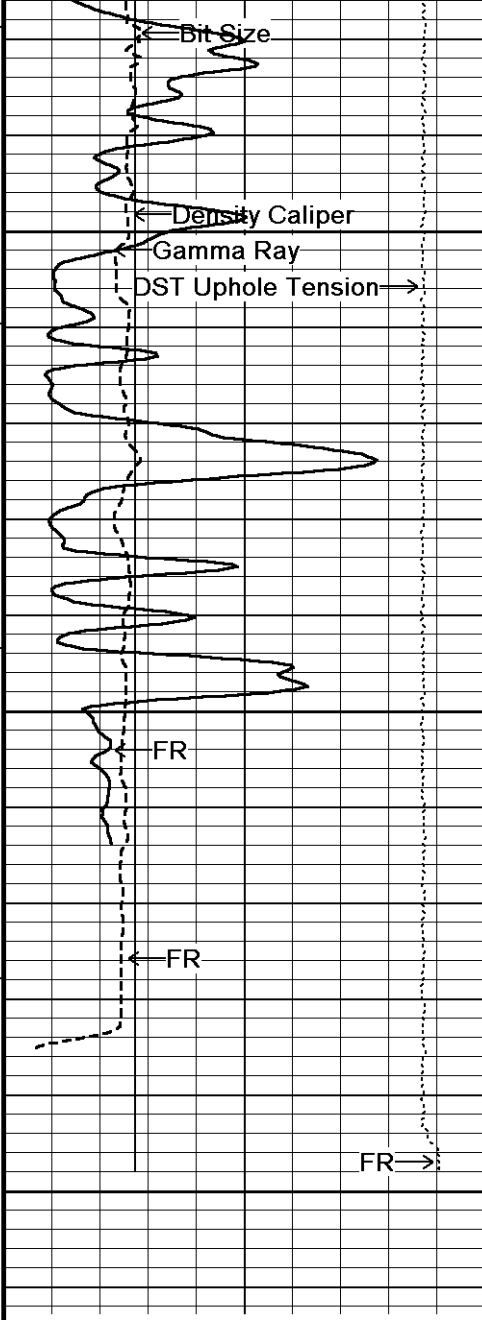
135°

5350

136°

5400





DST Uphole Tension
pounds
10000 0

Replay
Scale
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 03-JAN-2012 01:46
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System Versions: Logged with 12.02.4401 Plotted with 12.02.4401



REPEAT SECTION



BEFORE SURVEY CALIBRATION

C:\Program Files\Weatherford\WLS 12.02\Data\SANDRIDGE(SUNNIE 1-16 SWD)\SDRGE(SUNNIE 1-16) DATA.dta

General Constants All 000

Last Edited on 03-JAN-2012 01:20

General Parameters

Mud Resistivity	0.650	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	Bit Size	
HVOL Caliper 2	N/A	
Annular Volume Diameter	7.000	inches
Caliper for Differential Caliper	None	

Rwa Parameters

Porosity used	Limestone Density Por.
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 14-OCT-2011 15:32

Reading No	Measured	Calibrated (lbs)
1	14312.35	0.00
2	14895.53	205.00

High Resolution Temperature Calibration MCG-D.J 431

Field Calibration on 02-JAN-2012 21:52

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

High Resolution Temperature Constants MCG-D.J 431

Last Edited on

Pre-filter Length 11

SP Calibration MCG-D.J 431

Field Calibration on 02-JAN-2012 21:52

	Measured	Calibrated (mV)
Reference 1	100.0	100.0
Reference 2	-100.0	-100.0

Gamma Calibration MCG-D.J 431

Field Calibration on 02-JAN-2012 21:51

	Measured	Calibrated (API)
Background	48	29
Calibrator (Gross)	2147	1290
Calibrator (Net)	2099	1261

Gamma Constants MCG-D.J 431

Last Edited on 02-JAN-2012 21:51

Gamma Calibrator Number	46	
Mud Density	1.07	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Calibration of KOL	0.22	

Concentration of KCl

0.00

kppm

Micro Normal and Micro Inverse Calibration MML-A 2

Base Calibration on 02-JAN-2012 22:10

Field Check on

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.0	59.7	2.6	12.8
Micro Inverse	14.9	77.9	1.7	8.4

Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal		32.4		0.0
Micro Inverse		16.3		0.0

Micro Normal and Micro Inverse Constants MML-A 2

Last Edited on 02-JAN-2012 22:11

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	

Caliper Calibration MML-A 2

Base Calibration on 02-JAN-2012 22:09

Field Calibration on

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15886	5.96
2	19417	7.98
3	22902	9.94
4	26750	11.91
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
0.00	0.00

Neutron Calibration MDN-A.A 10

Base Calibration on 12-MAY-2011 18:29

Field Check on 02-JAN-2012 21:55

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3130	98	3714	110
	31.818		33.764	

Field Calibrator at Base

Calibrated (cps)
1248
1792
0.696

Field Check

Calibrated (cps)
914
1360
0.672

Neutron Constants MDN-A.A 10

Last Edited on 27-DEC-2011 12:19

Neutron Source Id	P14033B	
Neutron Jig Number	13226	
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	None	
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	
Salinity Correction	Not Applied	

FE Calibration MFE-A.A 65		Base Calibration on 04-OCT-2011 13:00 Field Check on 02-JAN-2012 21:56	
Base Calibration		Measured	Calibrated (ohm-m)
Reference 1		0.0	0.0
Reference 2		959.5	126.8
Base Check			281.4
Field Check			281.2

FE Constants MFE-A.A 65			Last Edited on 27-DEC-2011 12:19		
Running Mode		No Sleeve			
MFE K Factor		0.1268			
Caliper Source for FE correction		Bit Size			
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 102		Field Calibration on 02-JAN-2012 21:57	
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	

High Resolution Temperature Constants MAI-A.A 102		Last Edited on
Pre-filter Length	11	

Induction Calibration MAI-A.A 102				Base Calibration on 24-FEB-2011 20:51	
				Field Check on 02-JAN-2012 21:56	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High	
1	17.3	481.3	9.3	966.2	
2	5.4	377.6	7.6	821.4	
3	2.4	255.3	5.2	566.0	
4	1.5	133.4	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	13.2	3809.2	
2	0.0	0.0	32.5	3606.3	
3	0.0	0.0	31.5	3124.9	
4	0.0	0.0	20.5	2086.7	
Deep	0.0	0.0	18.9	1999.9	
Medium	0.0	0.0	47.0	4180.8	
Shallow	0.0	0.0	48.8	5374.2	
Array Temperature		0.0	75.3	Deg F	

Induction Constants MAI-A.A 102			Last Edited on 02-JAN-2012 21:57	
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		6.0000		
Stand-off Fin Angle		60.00	degrees	
Stand-off Fin Width		0.5000	inches	
Borehole Corr. Rm Source		Temperature Corr		
Temp. for Rm Corr.		MCG External Temperature		
Squasher Start		0.0060	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	

Caliper Calibration MPD-A 3

Base Calibration on 04-OCT-2011 14:09
Field Calibration on 02-JAN-2012 21:56

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	20208	3.98
2	28784	5.95
3	37424	7.97
4	45392	9.84
5	54503	11.91
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.76	7.98

Photo Density Calibration MPD-A 3

Base Calibration on 21-SEP-2011 14:08
Field Check on 02-JAN-2012 21:56

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	47357	25239	60364	31945
Reference 2	20102	2812	25079	2547

Field Check at Base

1315.7	1670.4
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Field Check

1291.5	1624.9
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PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	242	1164		
Reference 1	19956	47156	0.429	0.399
Reference 2	5535	19946	0.282	0.273

Field Check at Base

241.8	1163.6
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Field Check

236.2	1154.3
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Density Constants MPD-A 3

Last Edited on 02-JAN-2012 21:56

Density Source Id	260
Nylon Calibrator Number	633
Aluminium Calibrator Number	633
Density Shoe Profile	8 inch
Caliper Source for Processing	Density Caliper

PE Correction to Density	Not Applied	
Mud Density	1.07	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:\Program Files\Weatherford\WLS 12.02\Data\SANDRIDGE(SUNNIE 1-16 SWD)\SDRGE(SUNNIE 1-16) DATA.dta

SHA-F Compact Swivel Head Adaptor

SHA-F 45 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

Compact Comms Gamma

MCG-D.J 431 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log

MML-A 2 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron

MDN-A.A 10 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper

MPD-A 3 LG: 9.53 ft WT: 90.4 lb OD: 2.45 in

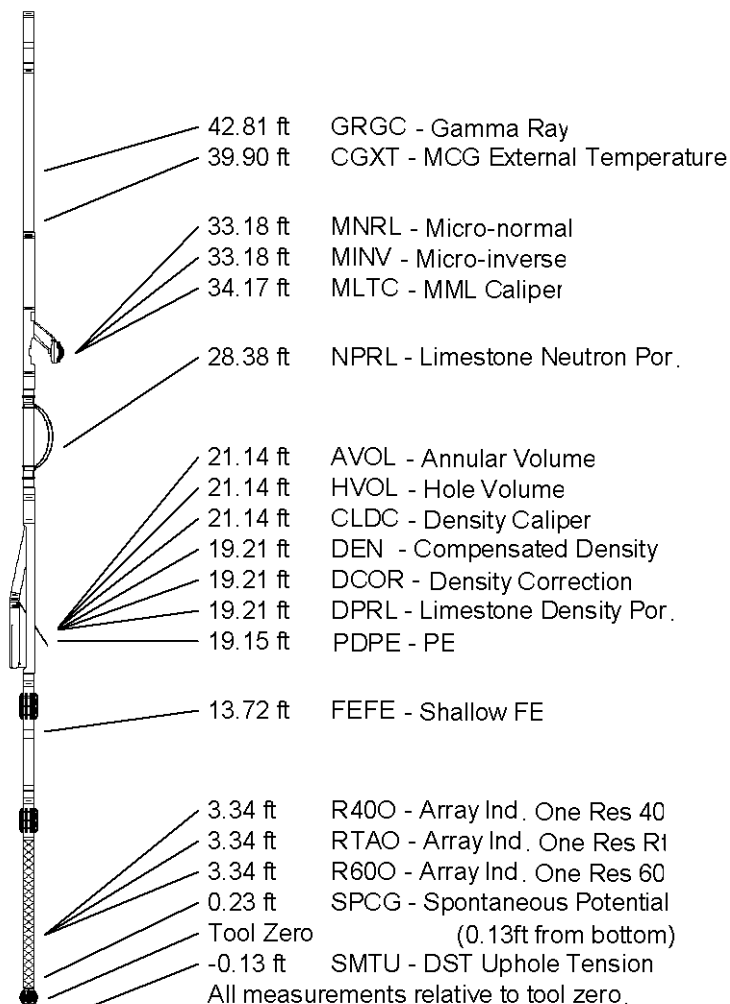
Compact Focussed Electric

MFE-A.A 65 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction

MAI-A.A 102 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.83 ft Weight: 410.1 lb



COMPANY

SANDRIDGE ENERGY, INC.

WELL

SUNNIE 1-16 SWD

FIELD

WALDRON WEST

PROVINCE/COUNTY

HARPER

COUNTRY/STATE

U.S.A/ KANSAS

Elevation Kelly Bushing 1239.00 feet

First Reading 5528.00 feet

Elevation Kelly Bushing	1239.00	feet	First Reading	5520.00	feet
Elevation Drill Floor	1237.00	feet	Depth Driller	5552.00	feet
Elevation Ground Level	1227.00	feet	Depth Logger	5547.00	feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRO -RESISTIVITY LOG

