



Weatherford¹⁸⁰

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY CHOLLA PRODUCTION LLC

WELL BONTRAGER #29-1 OWWO

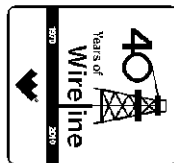
FIELD WILDCAT

PROVINCE/COUNTY SCOTT

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 2305' FNL & 2142' FEL

NE SW SW NE



SEC TWP RGE Other Services
29 19S 33W MA/MFE

API Number 15-171-20742

Permit Number

Permanent Datum G.L., Elevation 2988 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations: feet
KB 2993.00
DF 2992.00
GL 2988.00

Date 16-JUN-2012

Run Number ONE

Depth Driller 5296.00 feet

Depth Logger 5303.00 feet

First Reading 5283.00 feet

Last Reading 4250.00 feet

Casing Driller 538.00 feet

Casing Logger 539.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.10 lb/USg 47.00 CP

PH / Fluid Loss 11.00 8.80 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.73 @ 91.0 ohm-m

Rmf @ Measured Temp 0.58 @ 91.0 ohm-m

Rmc @ Measured Temp 0.88 @ 91.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.52 @ 128.0 ohm-m

Time Since Circulation 4 HOURS

Max Recorded Temp 128.00 deg F

Equipment Name COMPACT

Equipment / Base 13057 LIB

Recorded By L. SCOTT

Witnessed By BILL GOFF

S.O.# / JOB# 3534589 LB12-150

BOREHOLE RECORD

Last Edited: 16-JUN-2012 16:47

Bit Size
inches

Depth From
feet

Depth To
feet

7.875

539.00

5303.00

CASING RECORD

Type

Size
inches

Depth From
feet

Shoe Depth
feet

Weight
pounds/ft

SURFACE

8.625

0.00

539.00

24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MAI.

Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used.

MFE: 0.5 inch Standoff = 1

MAI: 0.5 inch Standoff = 1

2.71 g/cc Limestone Density Matrix used to calculate porosity.

Tight pulls, borehole rugosity, and wash outs will affect data quality.

All intervals logged and scaled per customer's request.

Annular volume with 5.5 inch production casing= 237 cu. ft.

Total hole volume from TD to surface casing= 408 cu. ft.

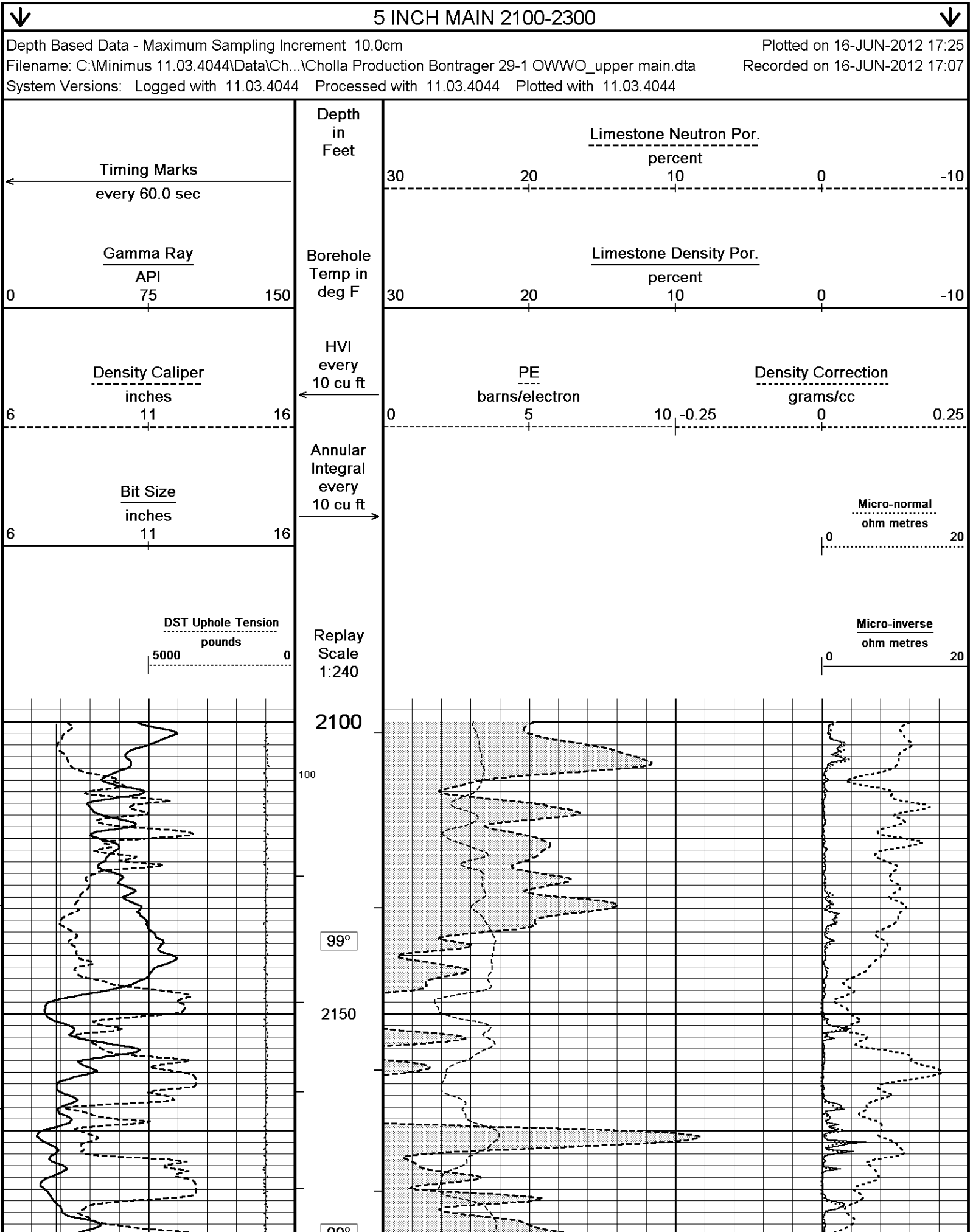
Service order: #3534589

Rig: WW #8

Engineer: L. Scott

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





99°

2200

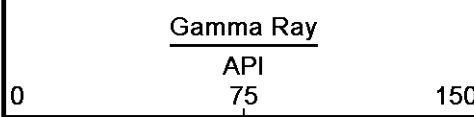
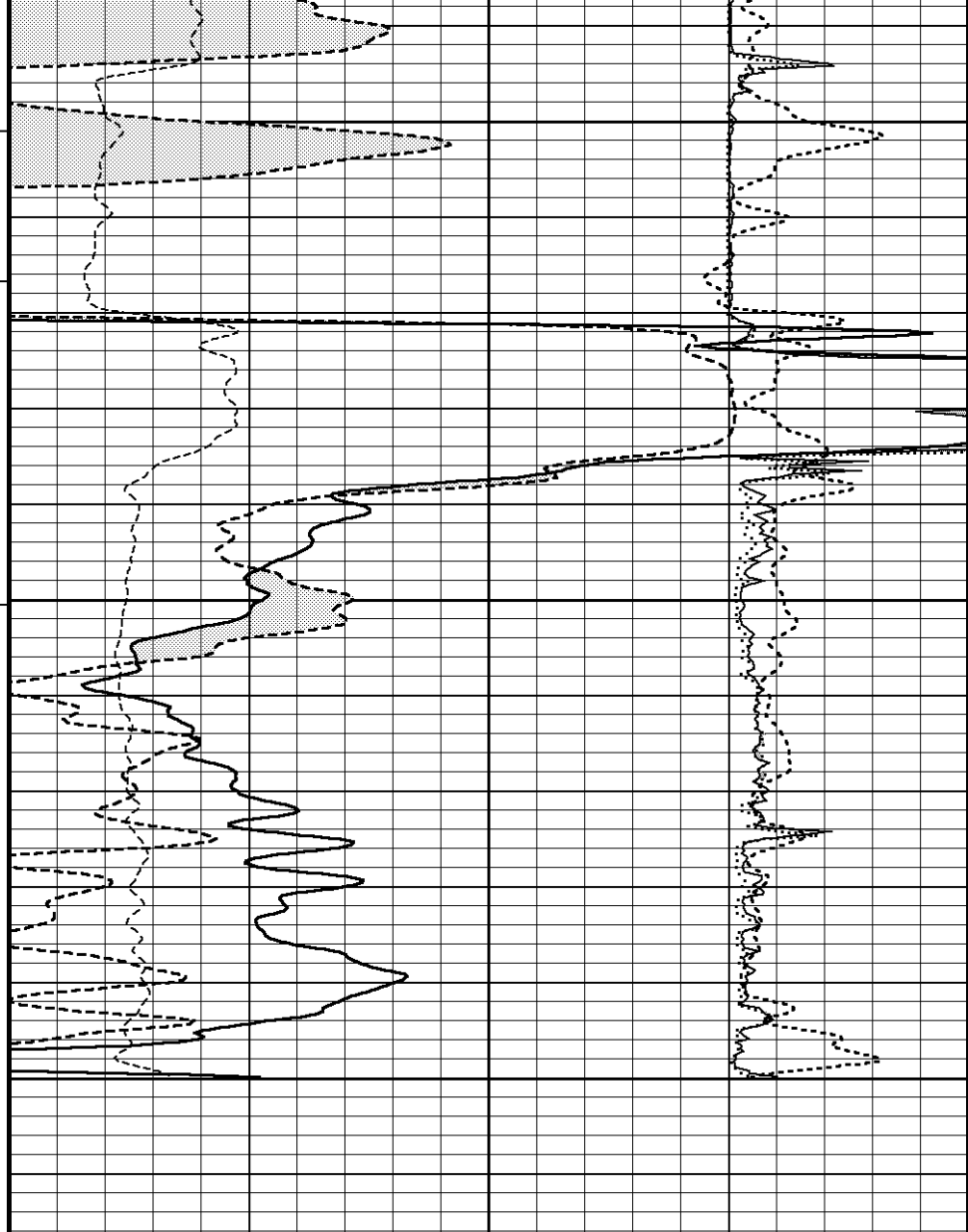
100°

2250

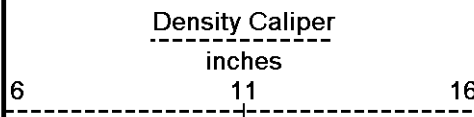
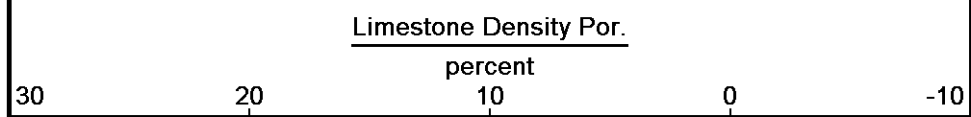
101°

2300

2314
Depth
in
Feet

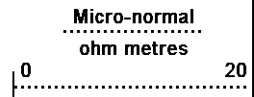


Borehole
Temp in
deg F



HVI
every
10 cu ft

Annular
Integral
every
10 cu ft



DST Uphole Tension

Micro-inverse

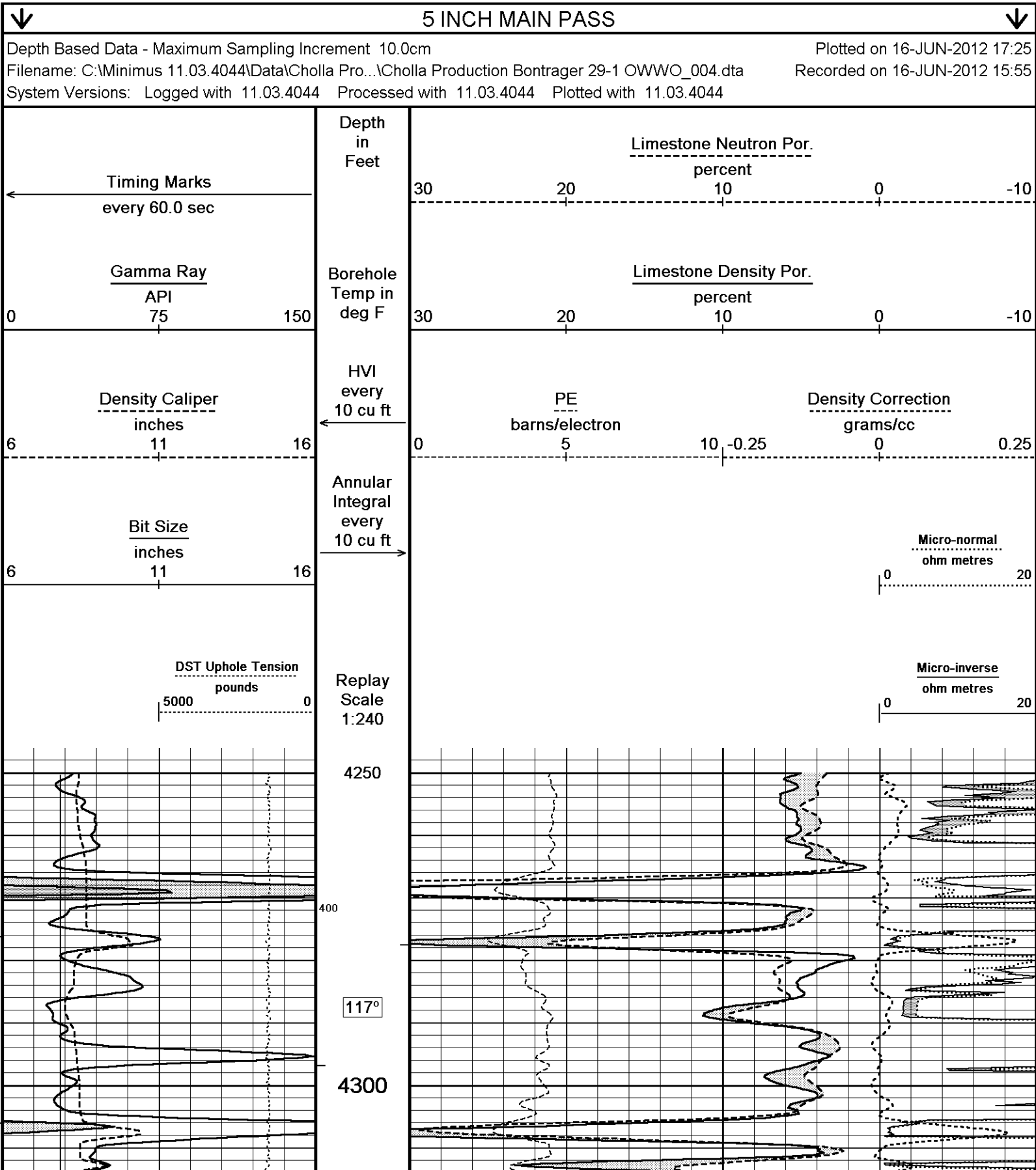
5000pounds0

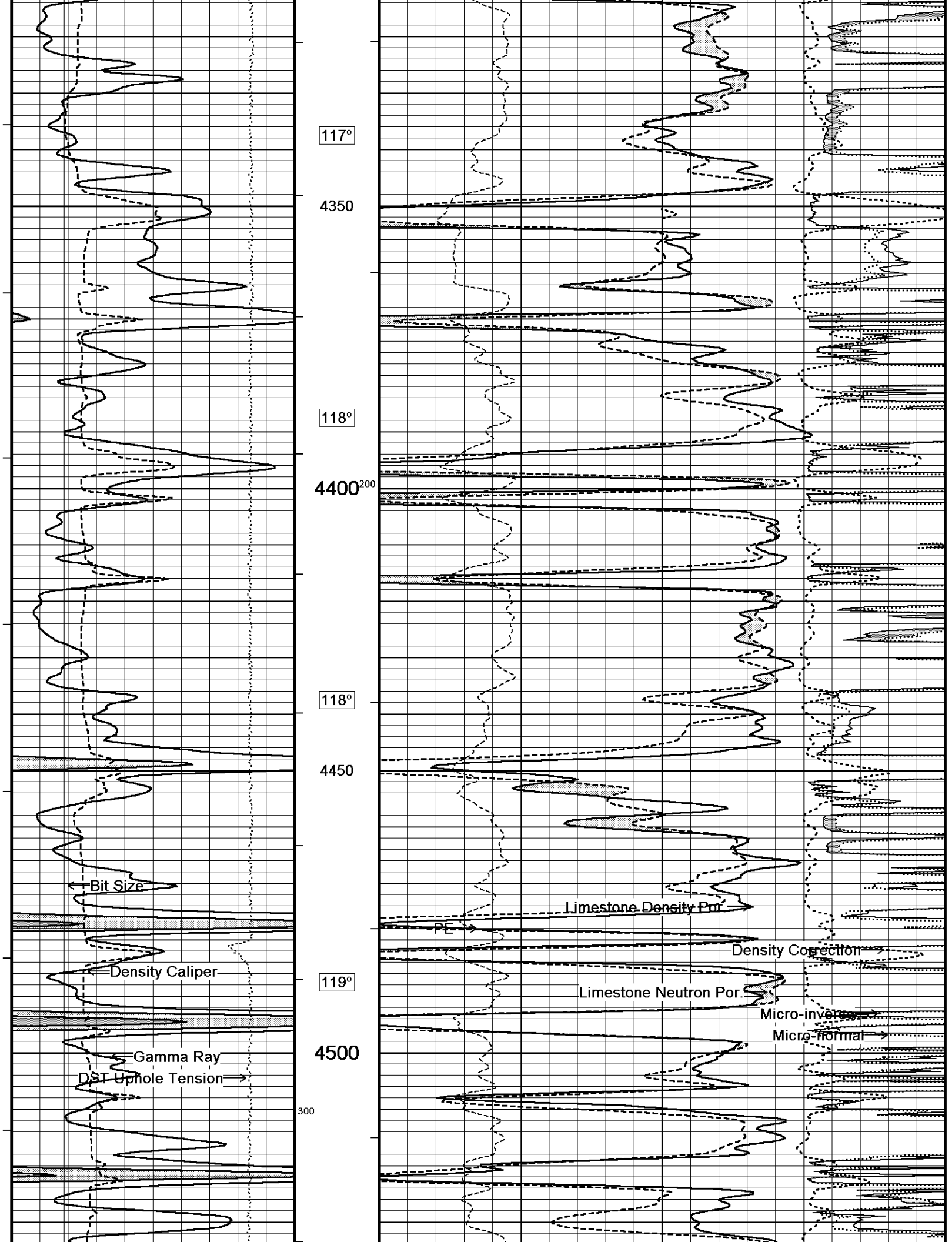
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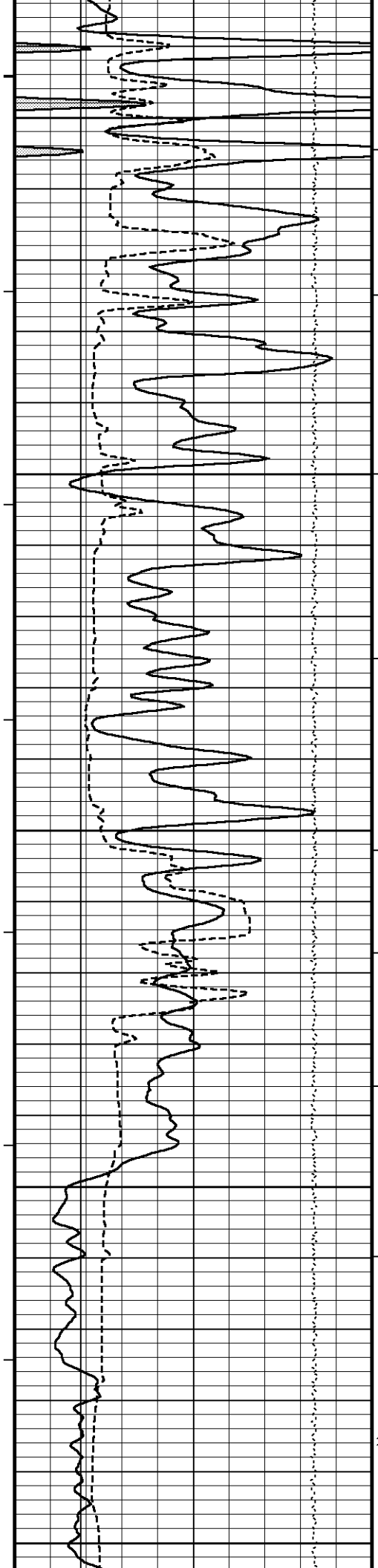
0ohm metres20

Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 16-JUN-2012 17:25
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System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

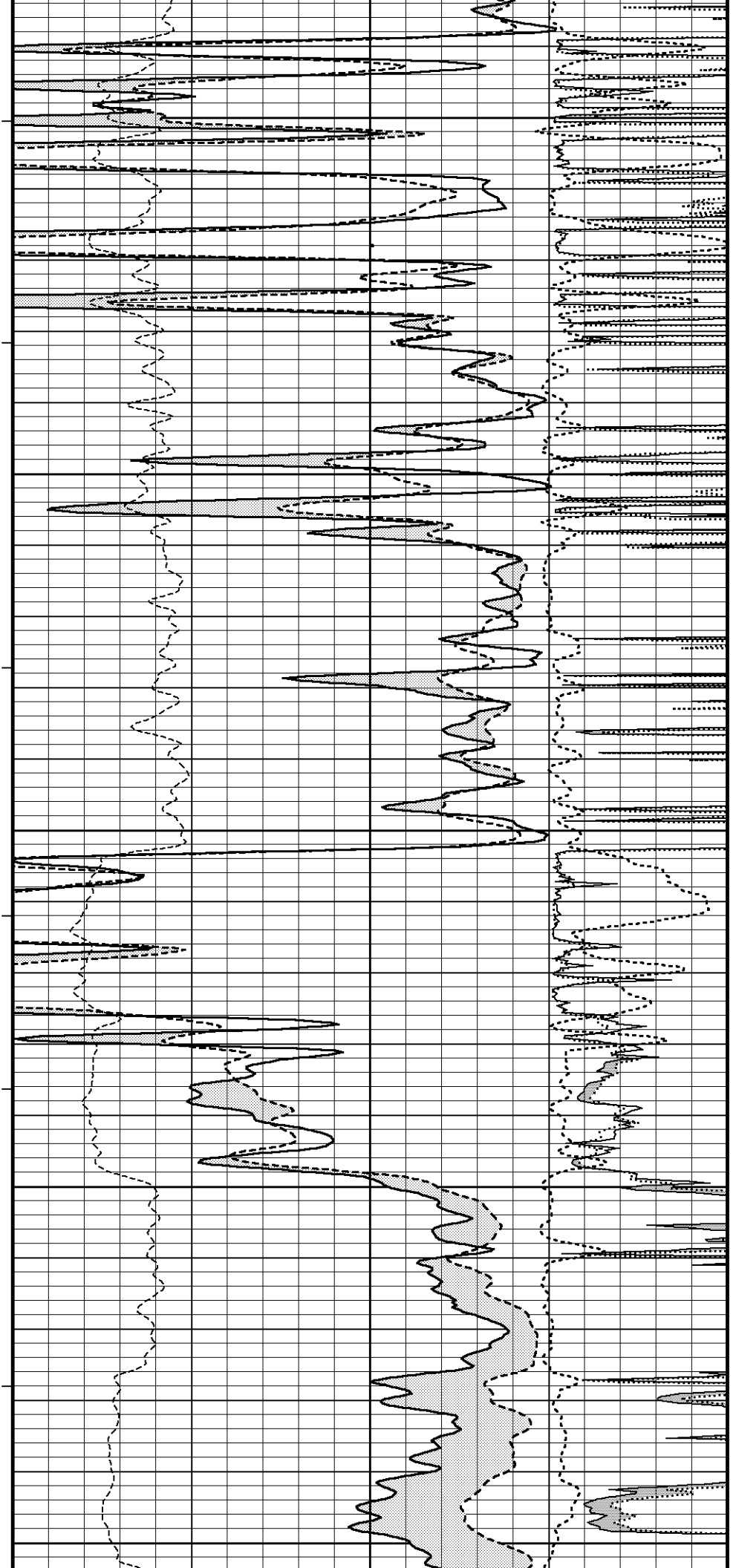
↑5 INCH MAIN 2100-2300↑

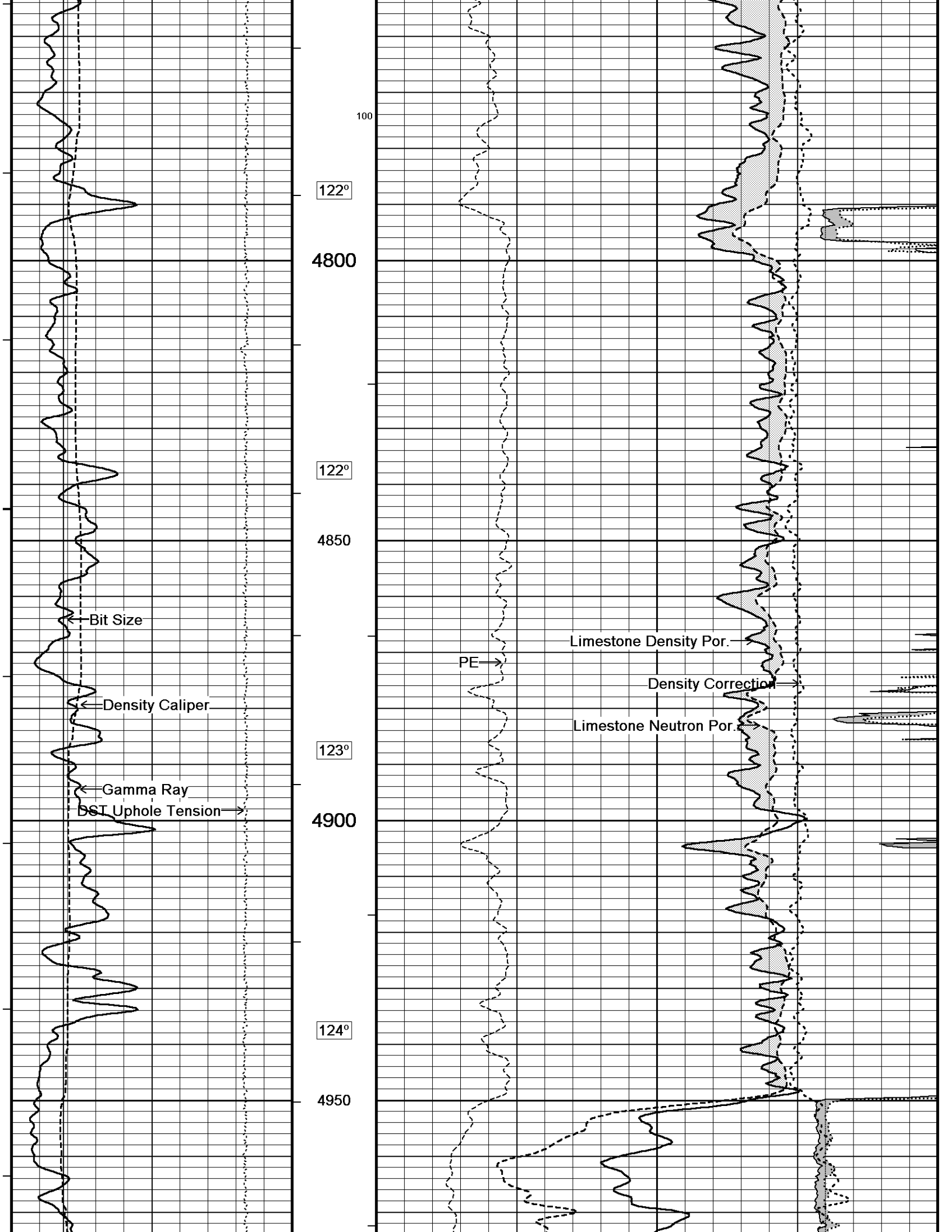


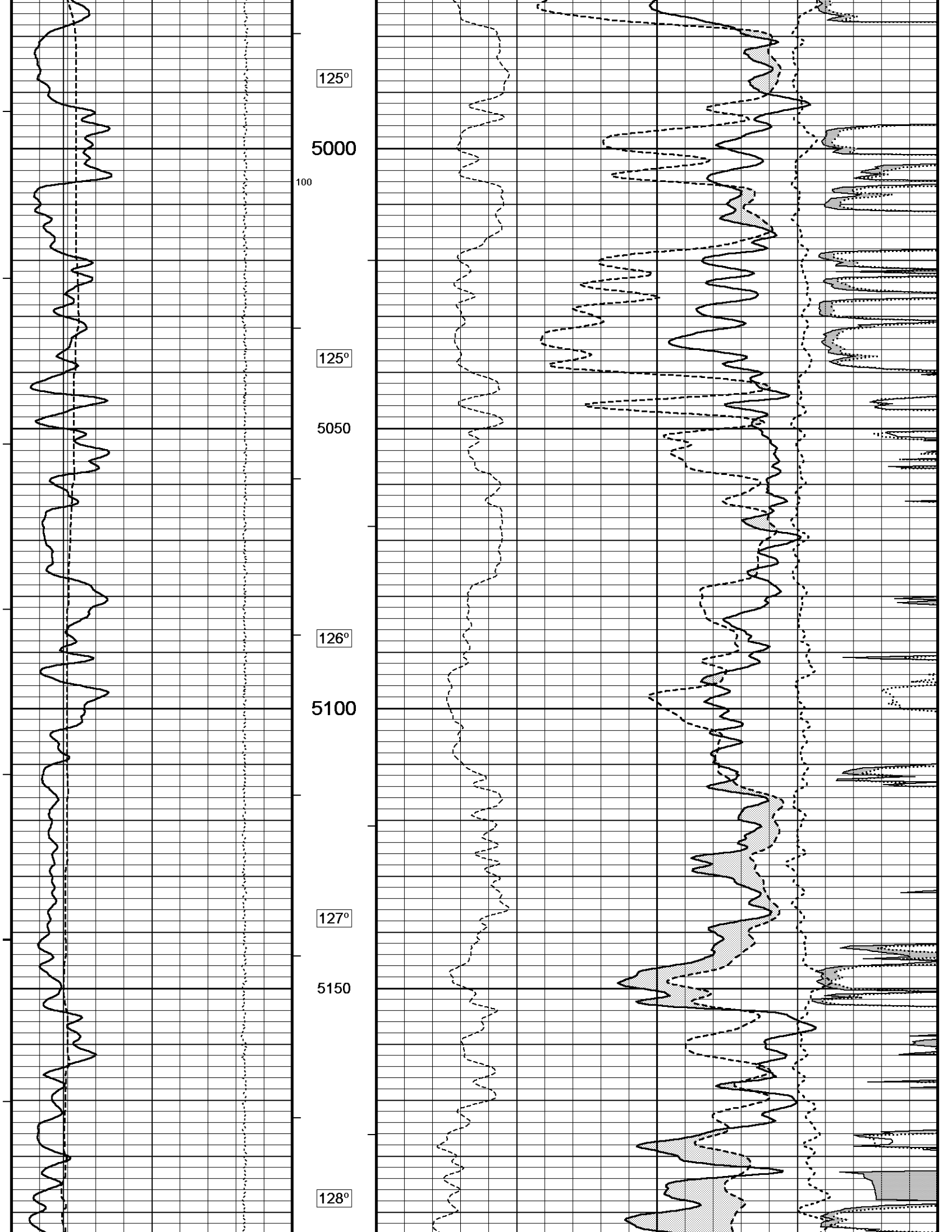


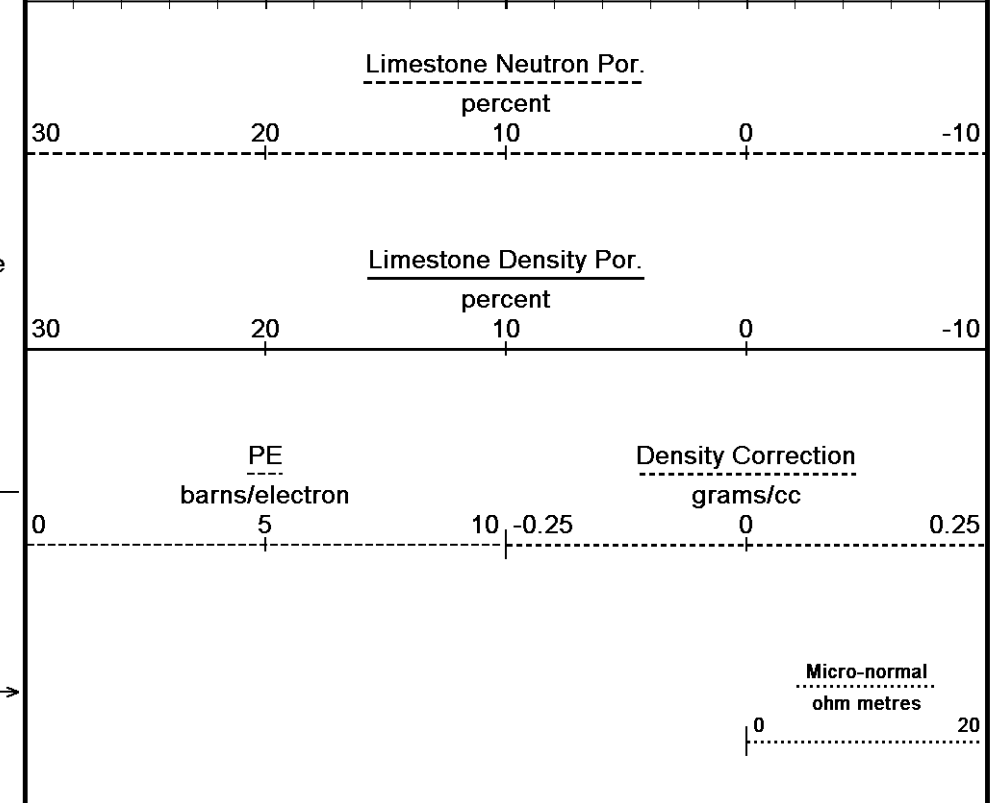
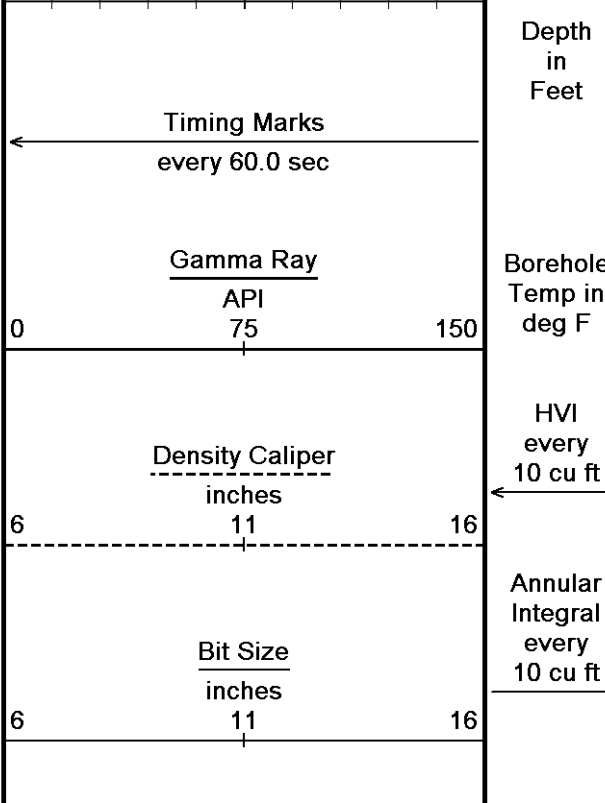
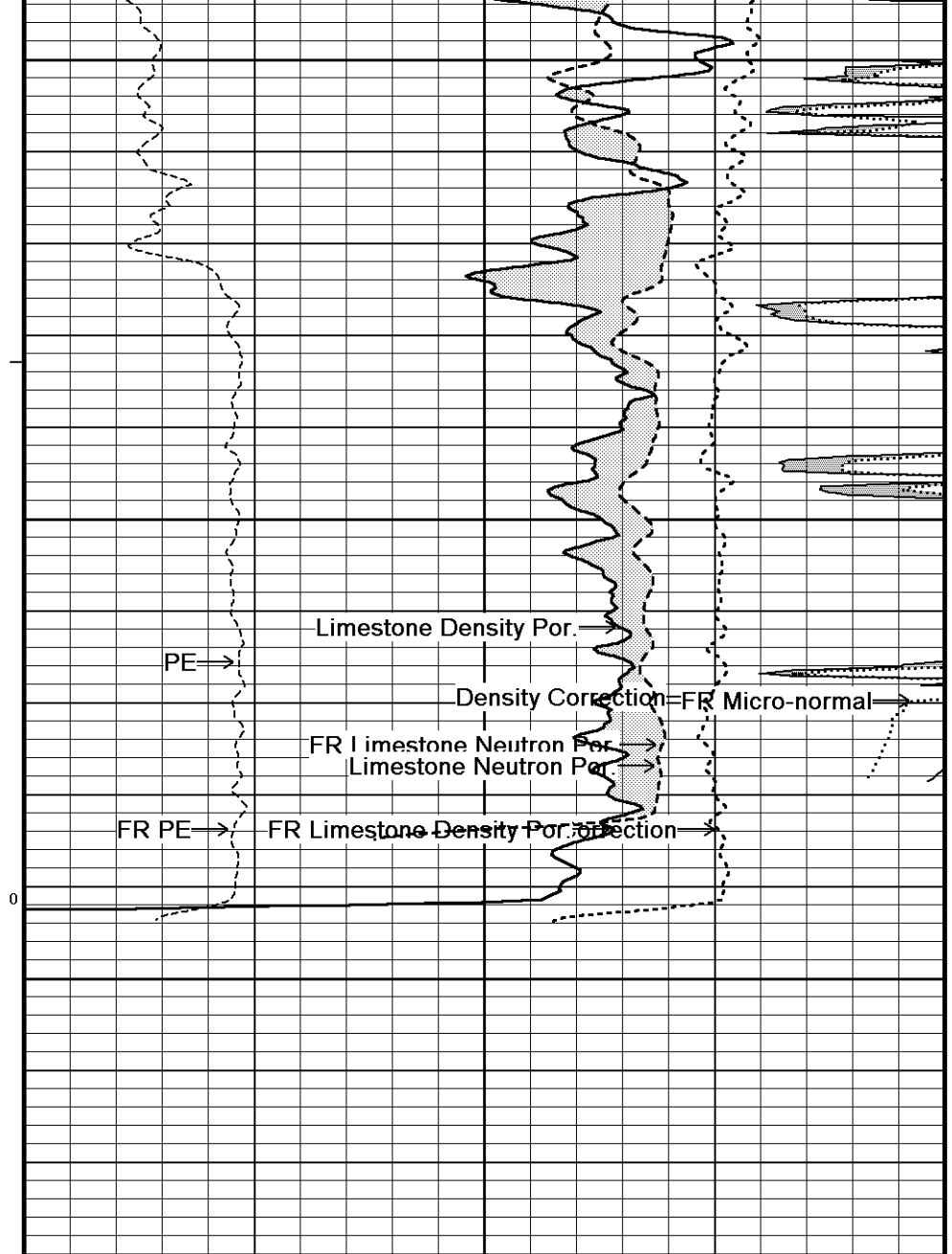
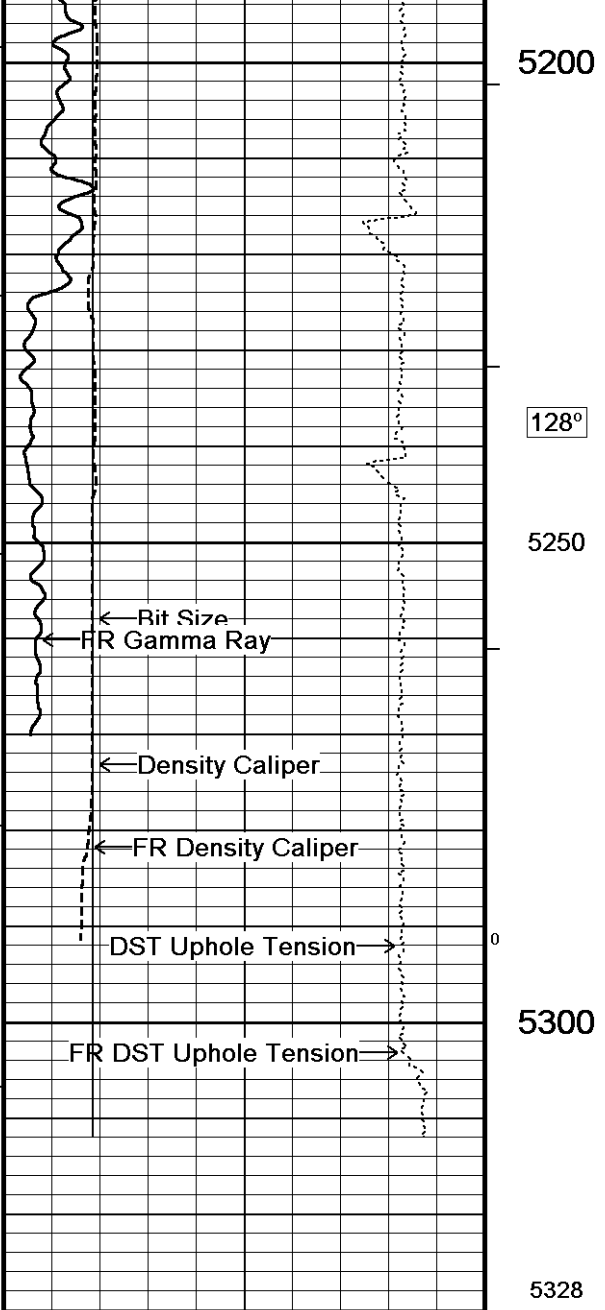


119°
4550
120°
4600
120°
4650
121°
4700
200
122°
4750









DST Uphole Tension
pounds

50000

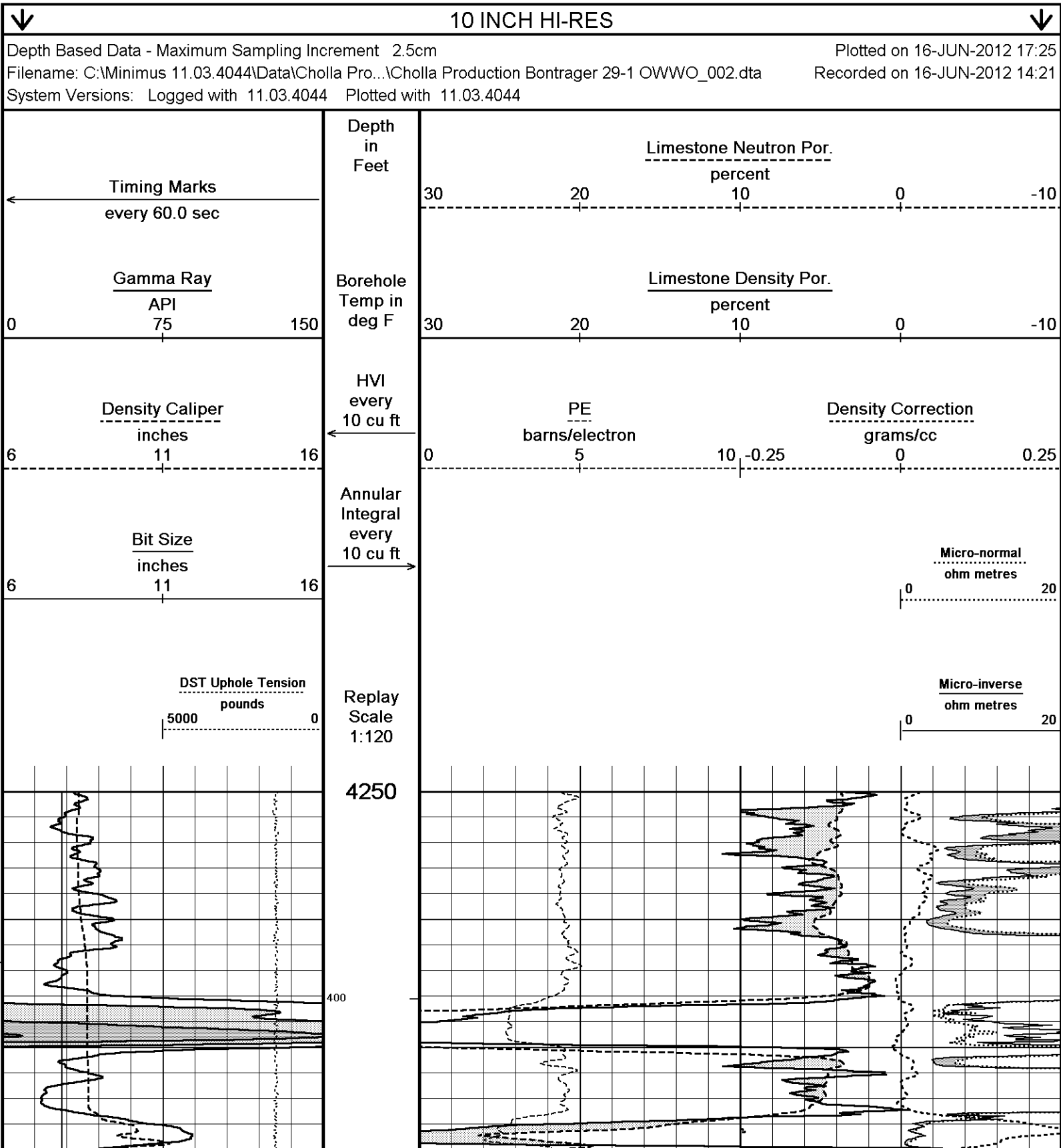
Replay
Scale
1:240

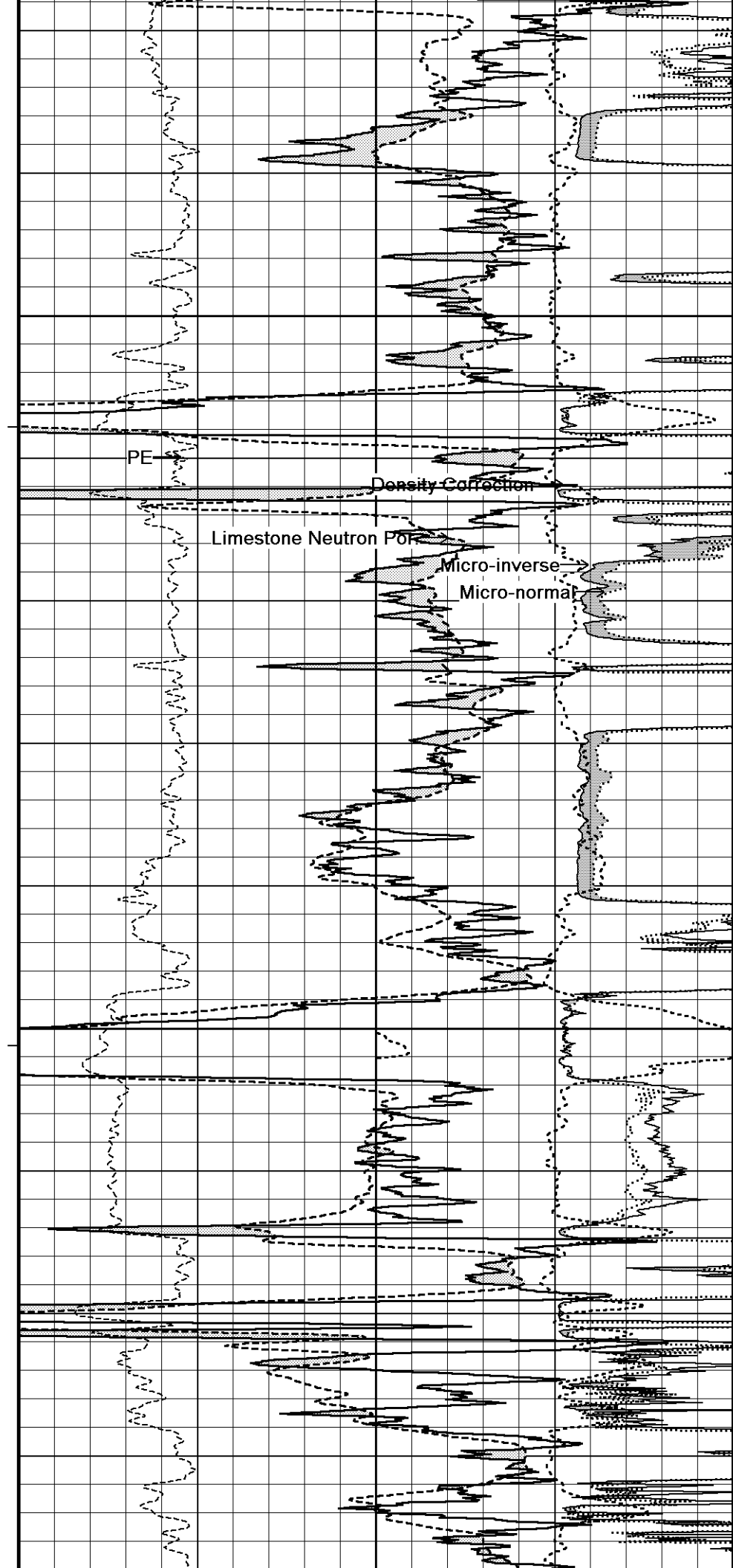
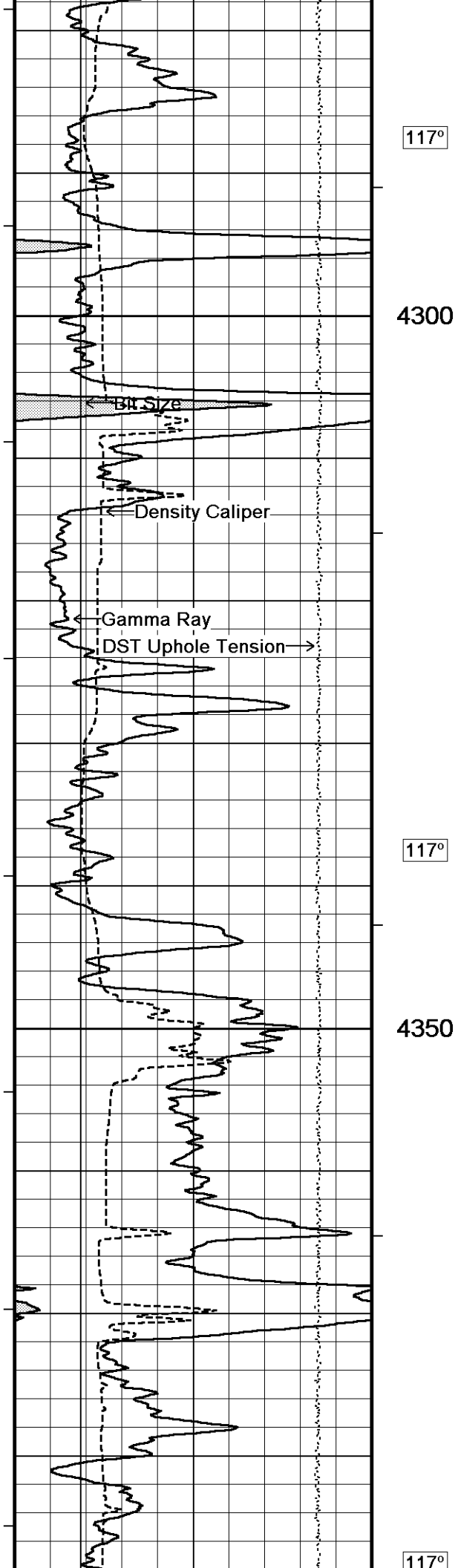
Micro-inverse
ohm metres

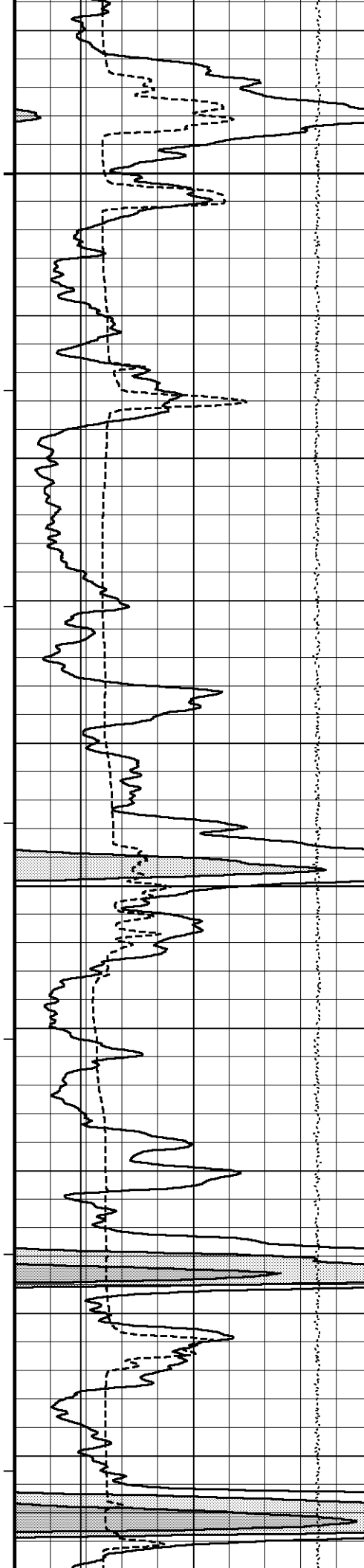
020

Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 16-JUN-2012 17:25
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System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

5 INCH MAIN PASS







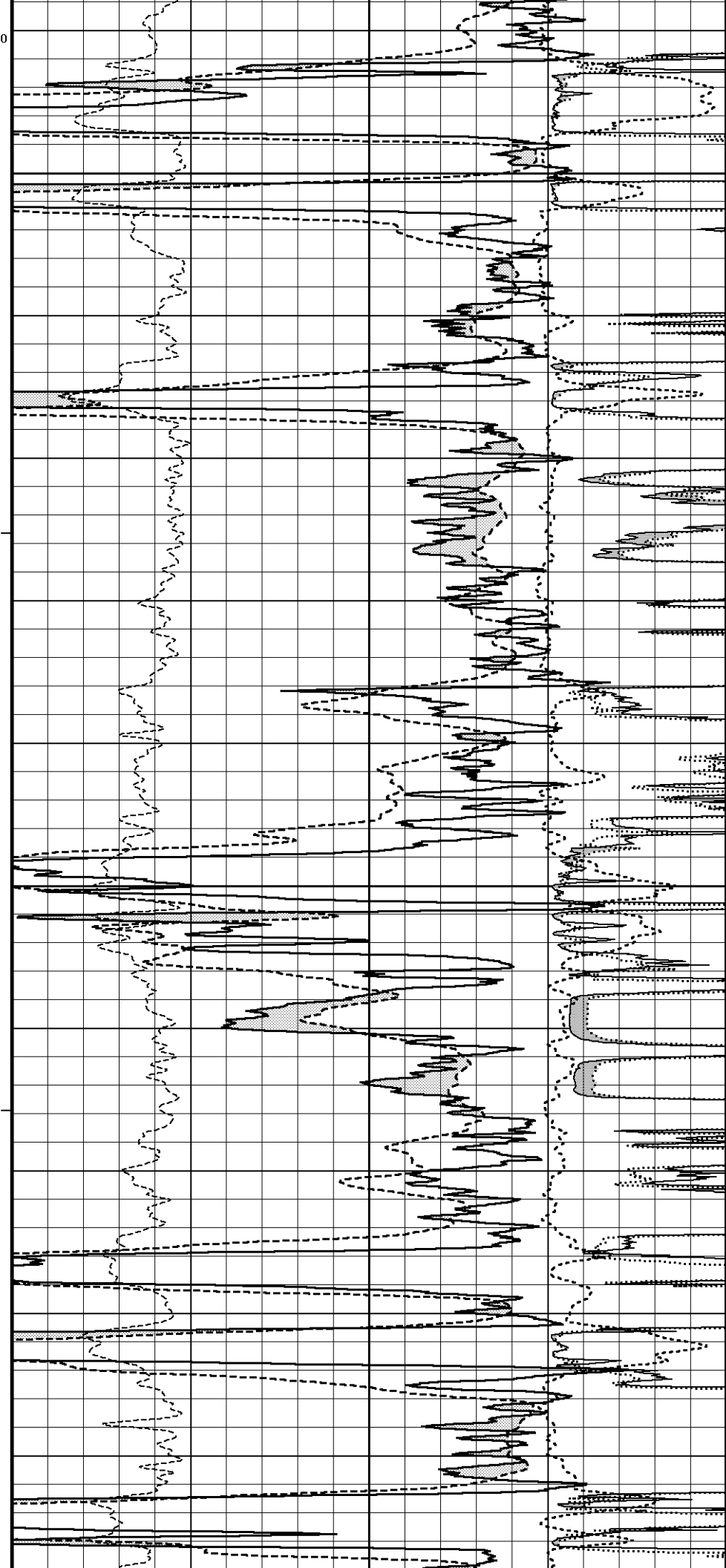
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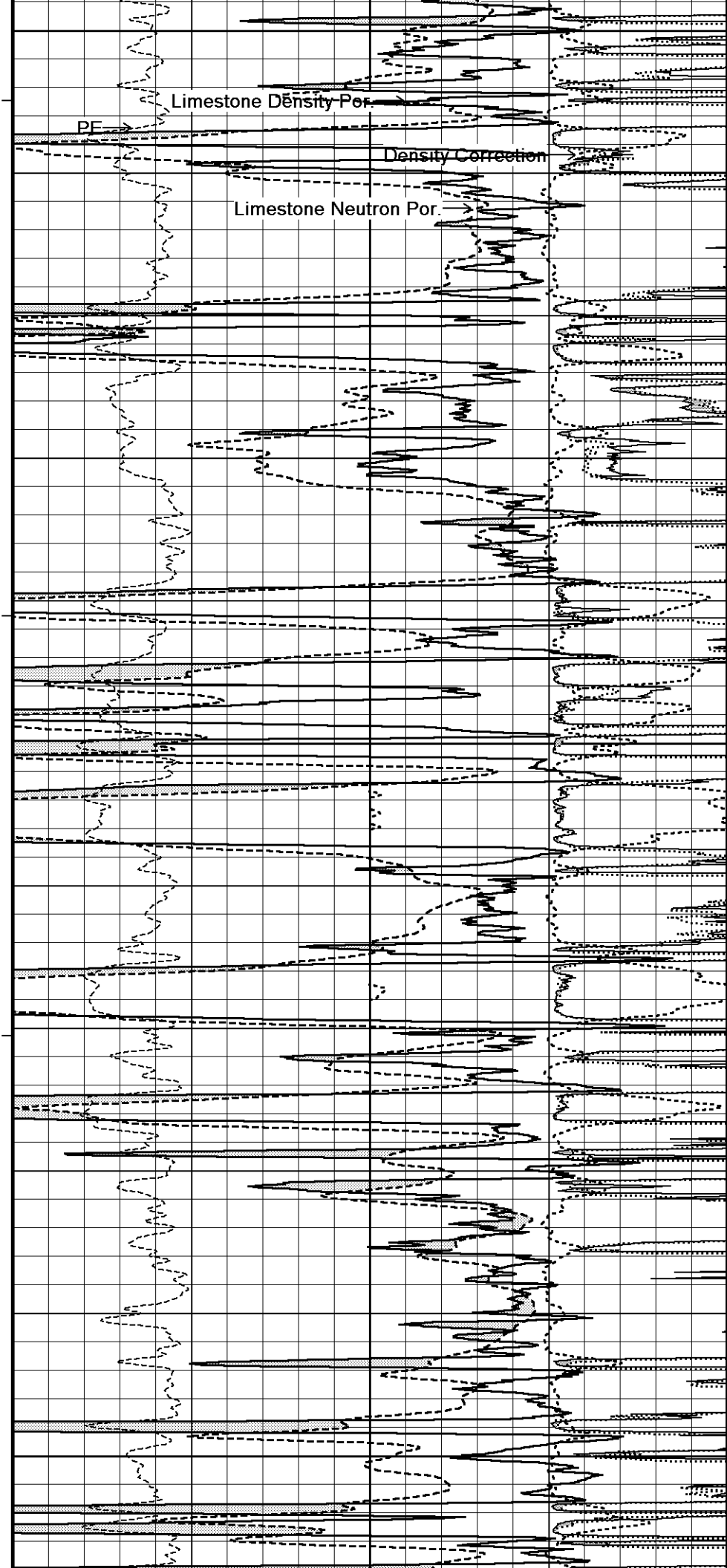
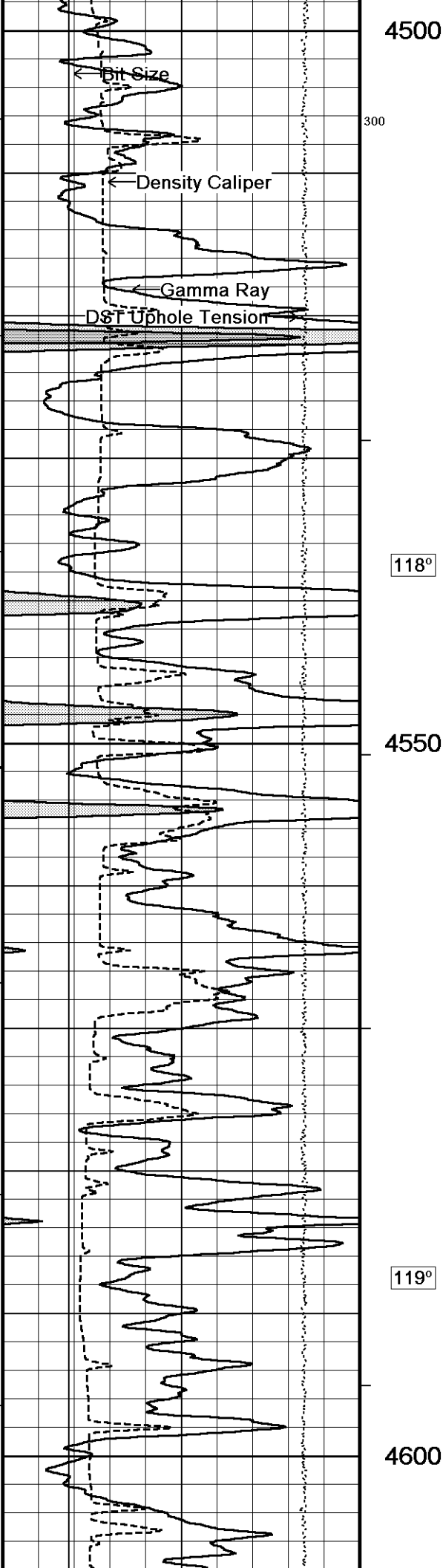
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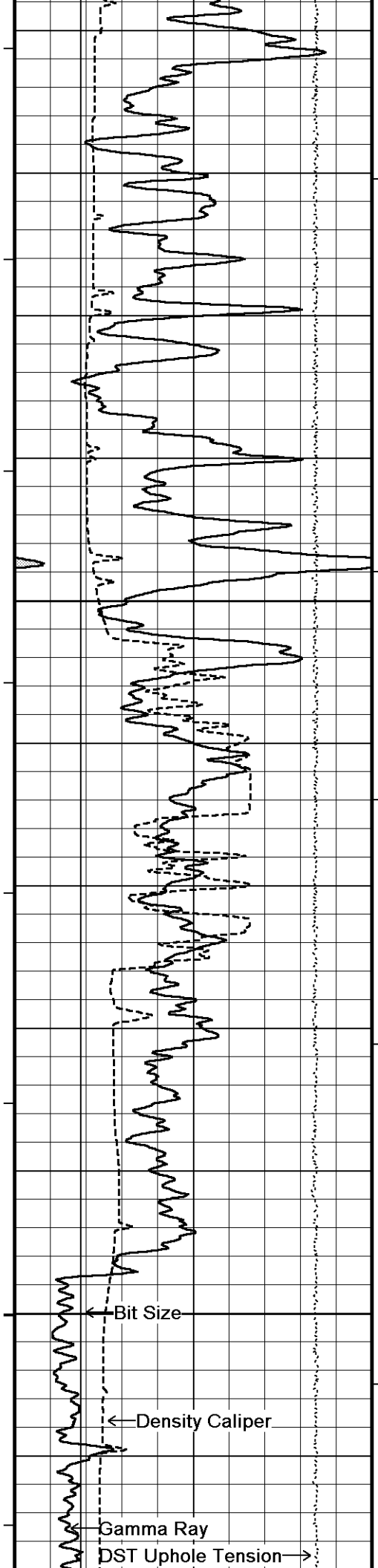
118°

4450

118°





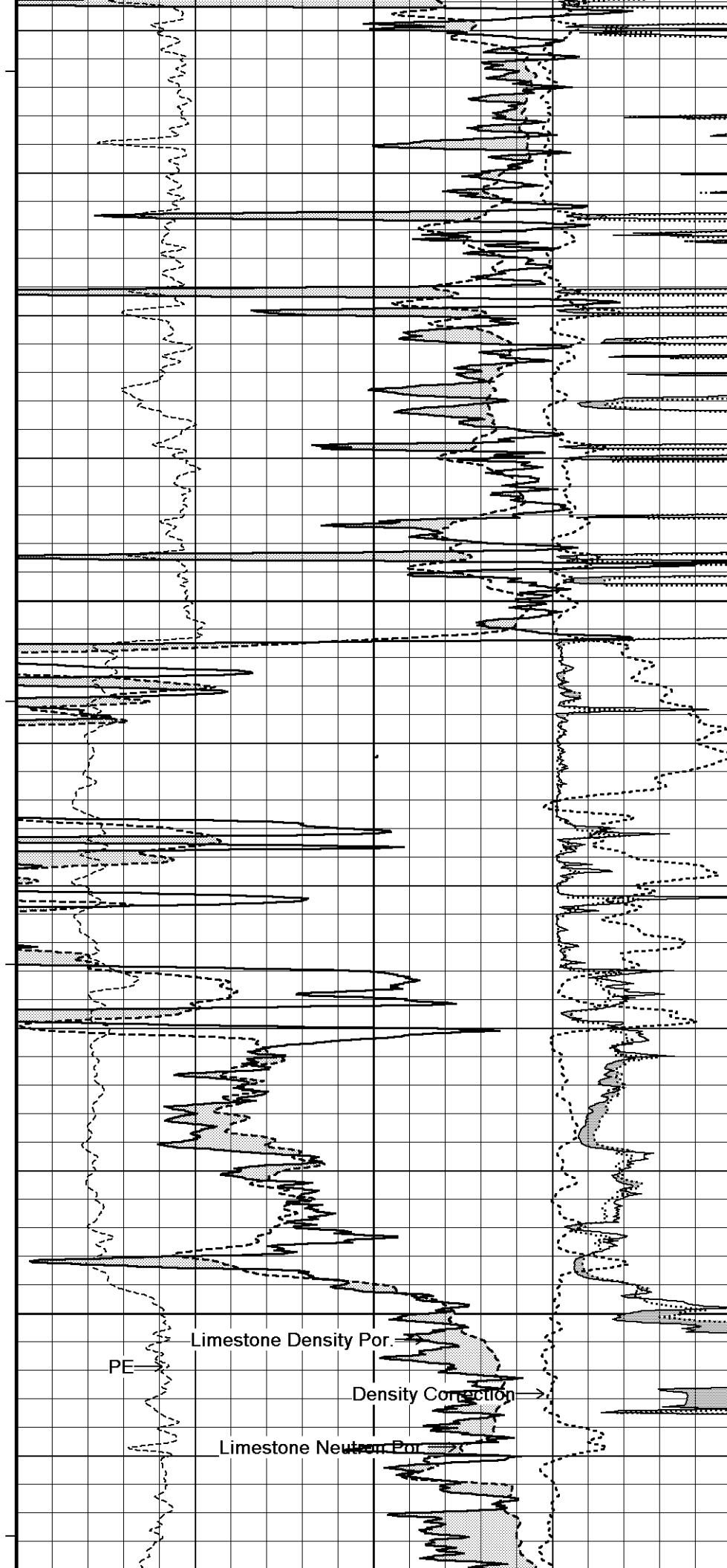


119°

4650

121°

4700

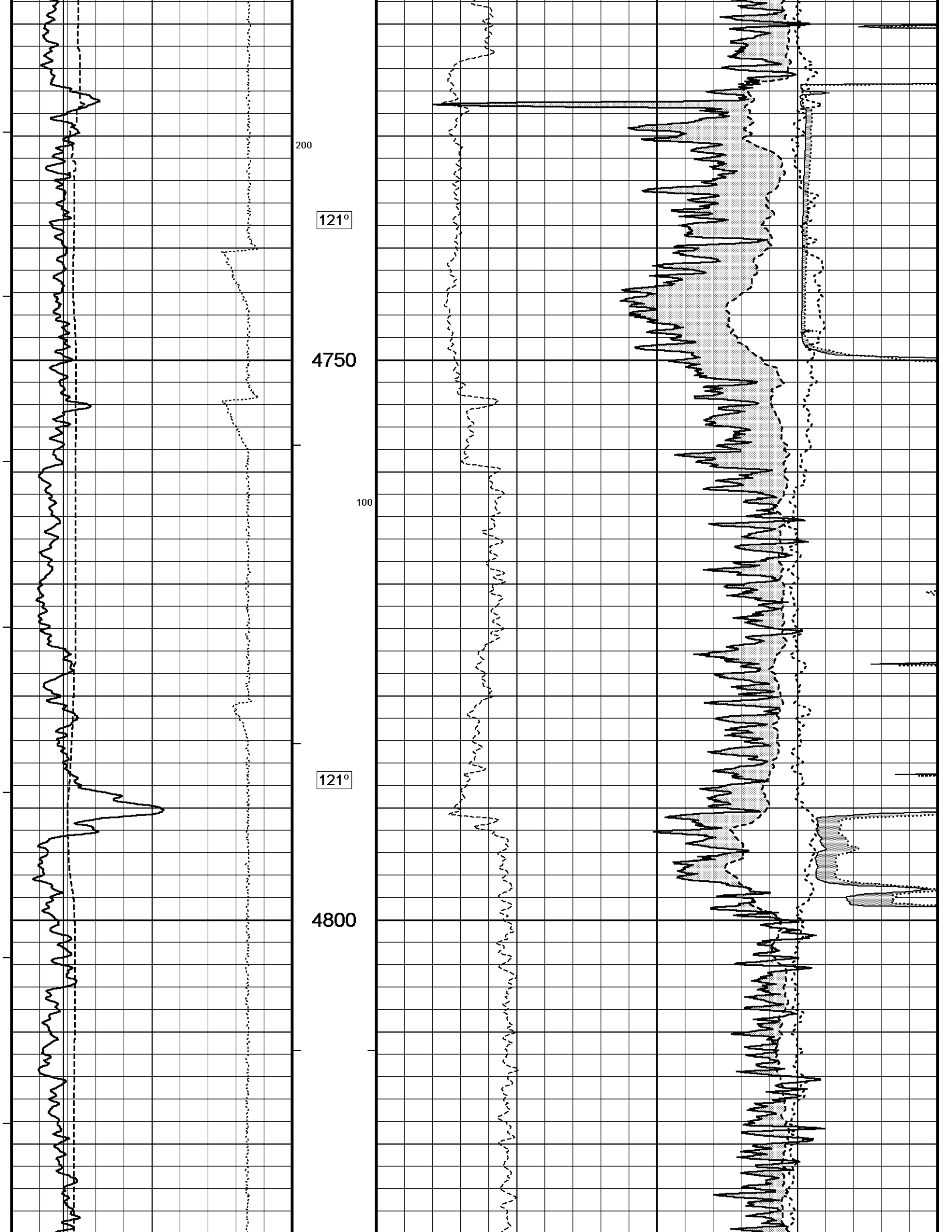


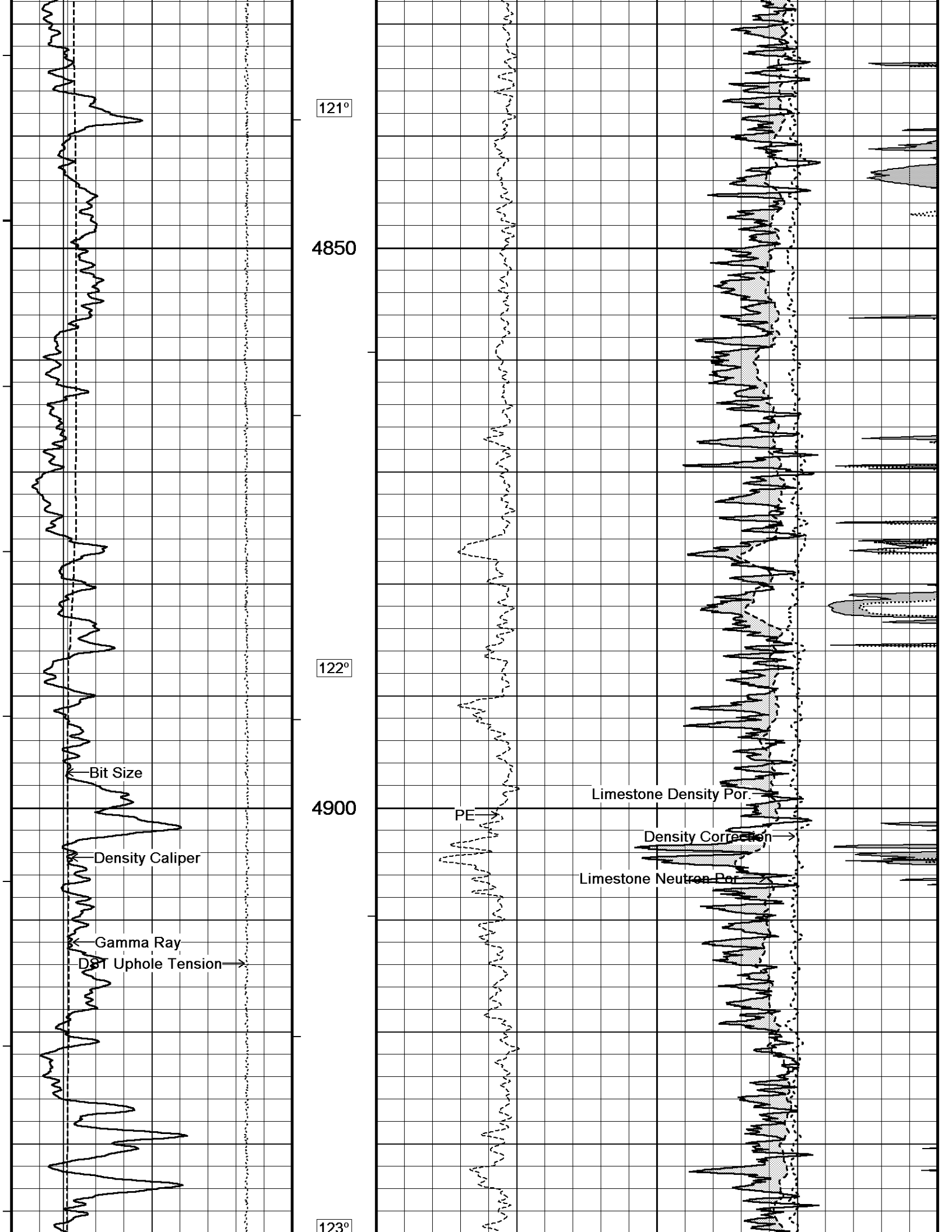
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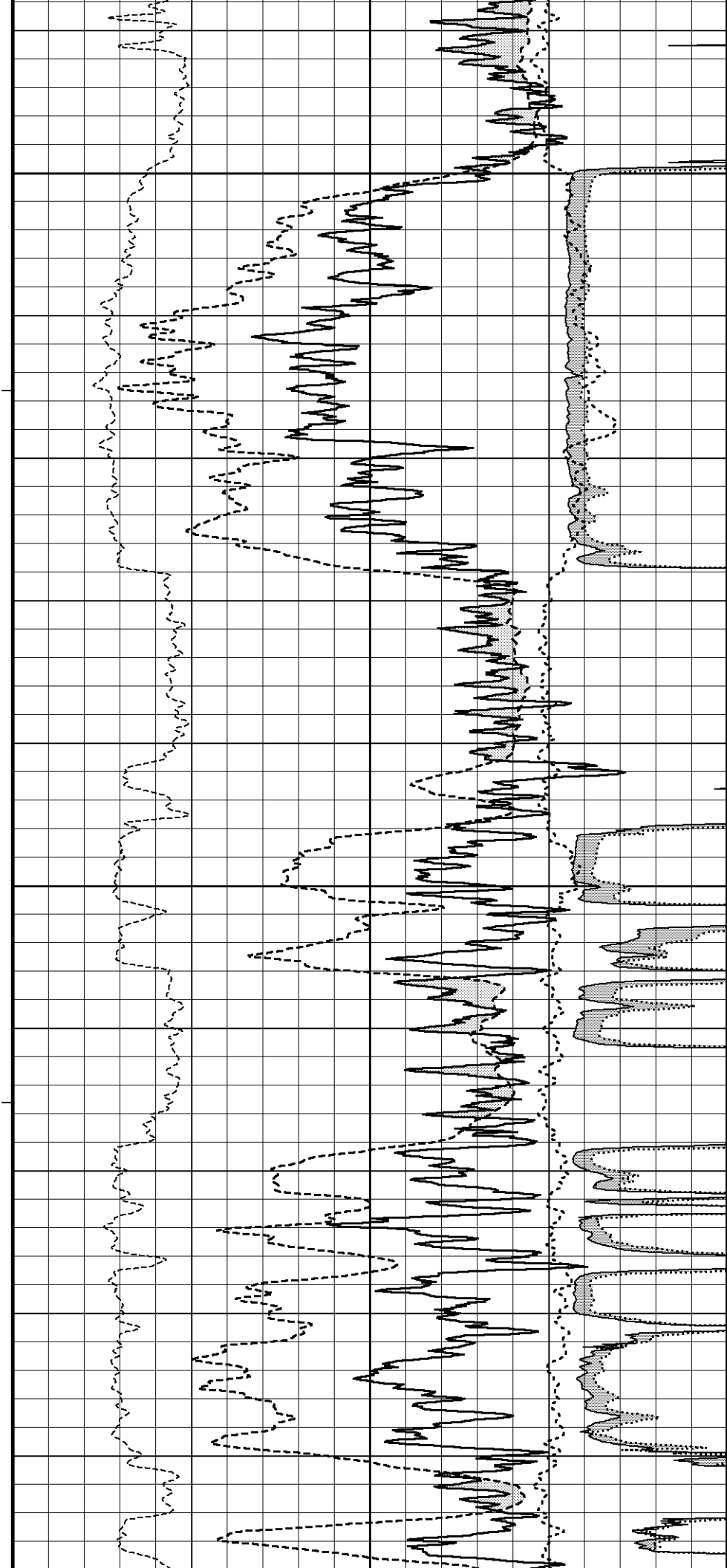
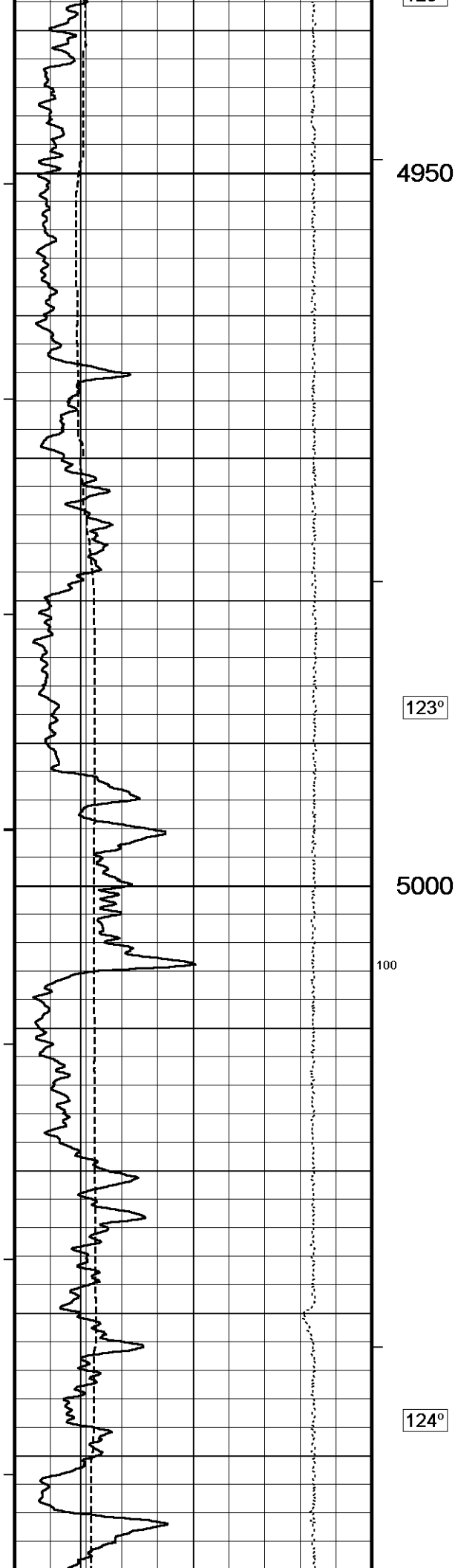
Limestone Density Por.

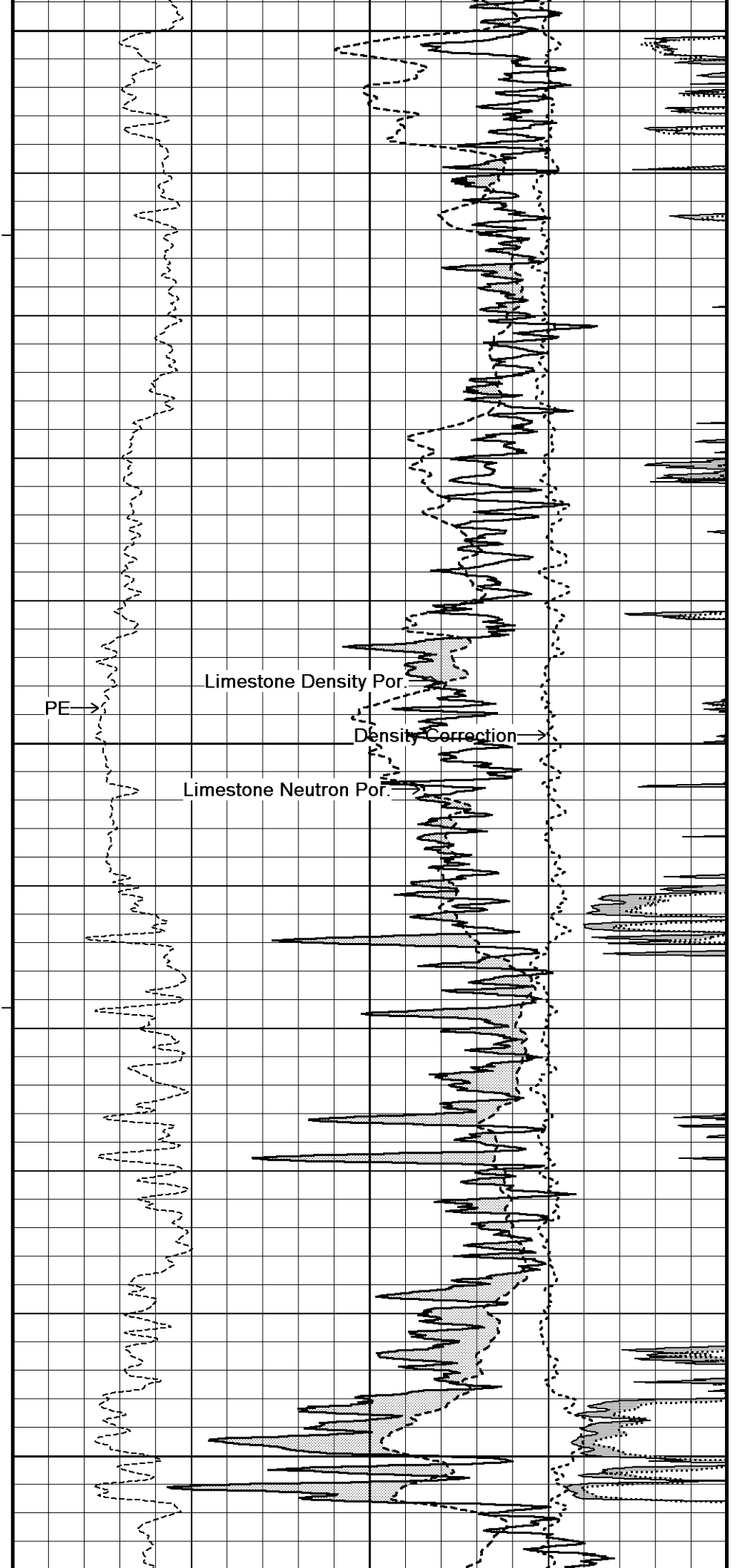
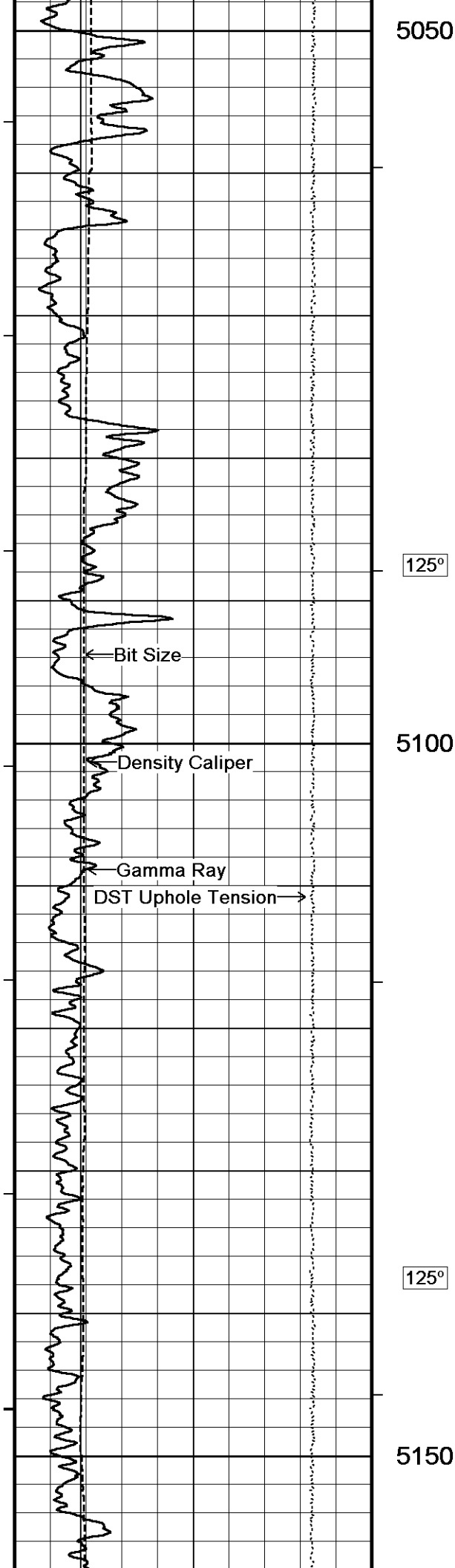
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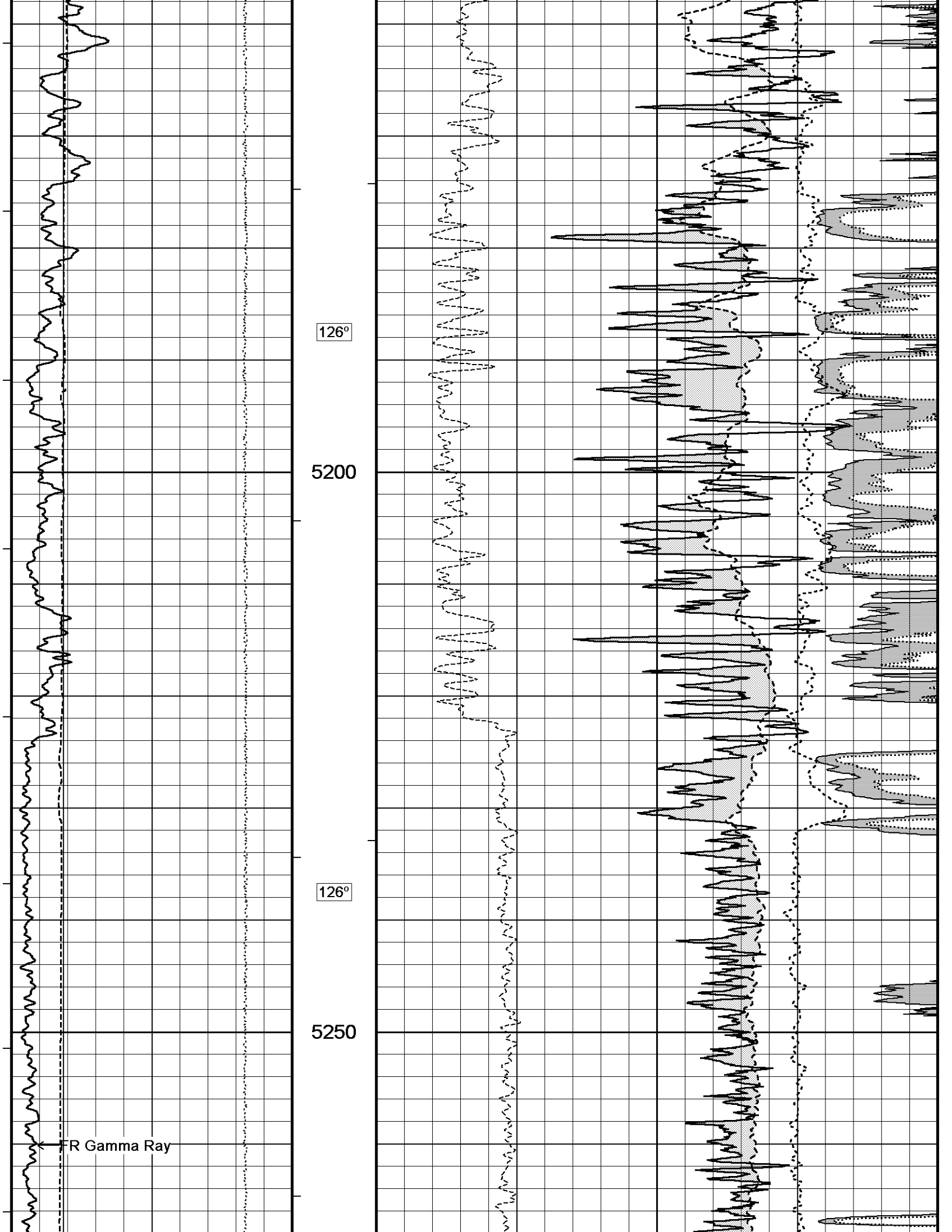
Limestone Neutron Por.

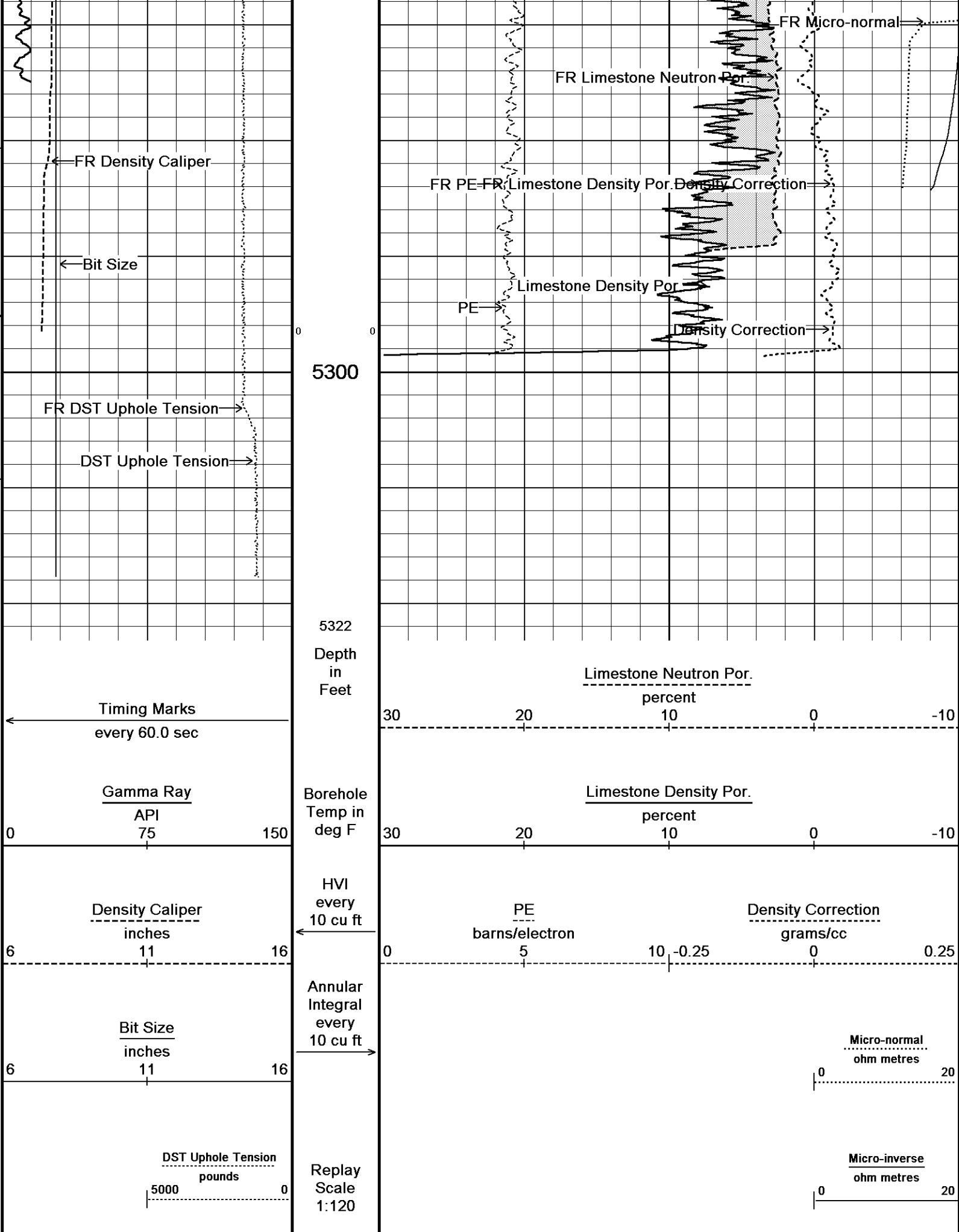




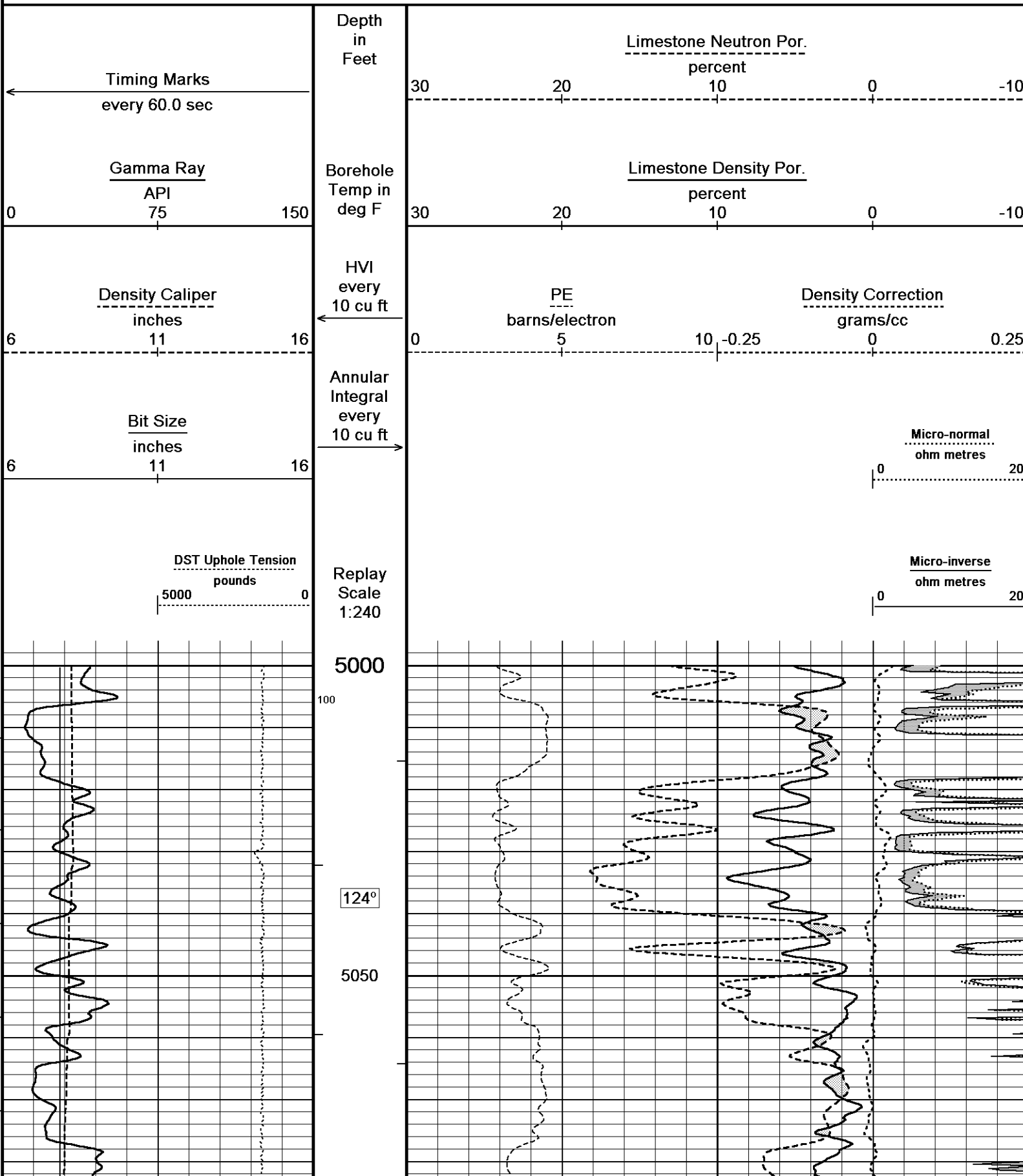


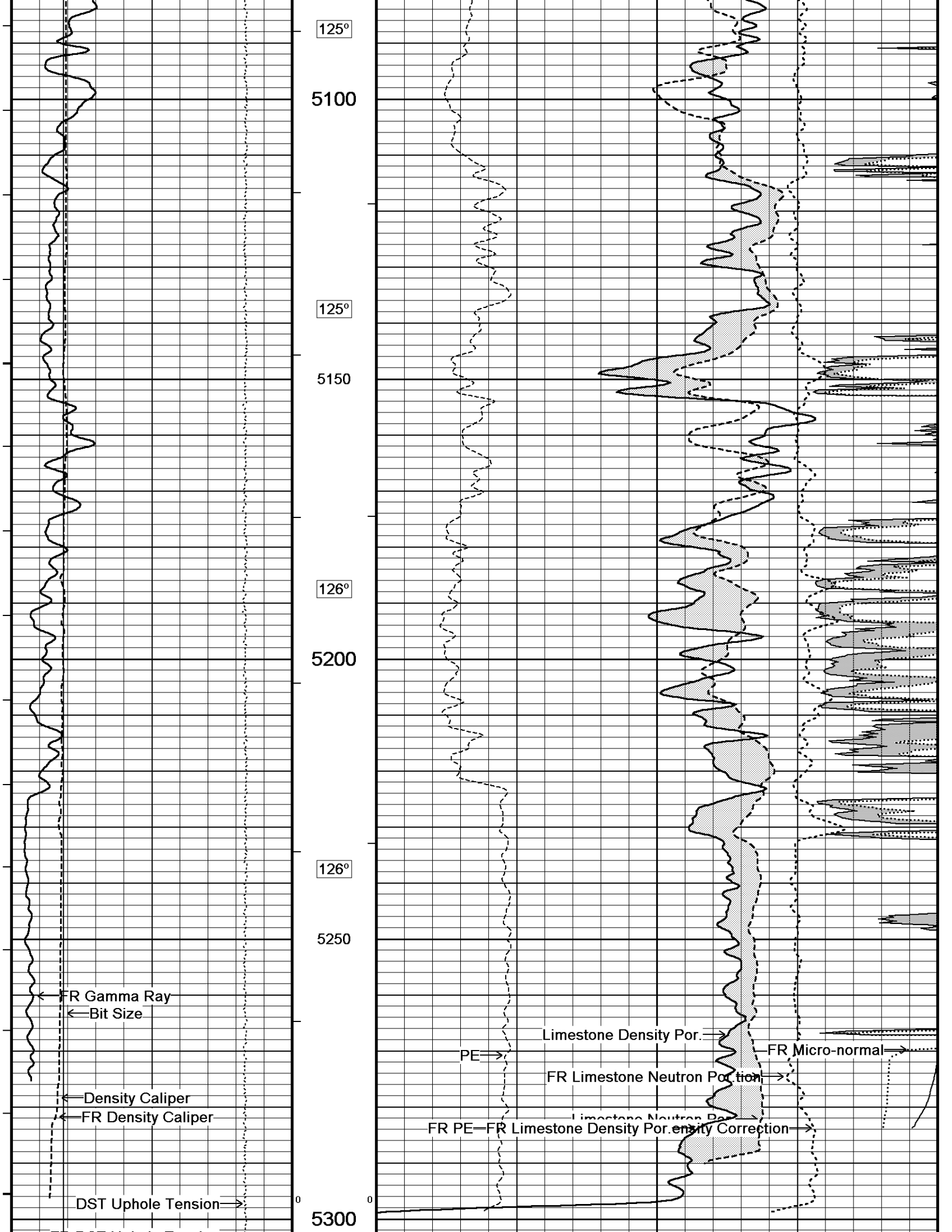


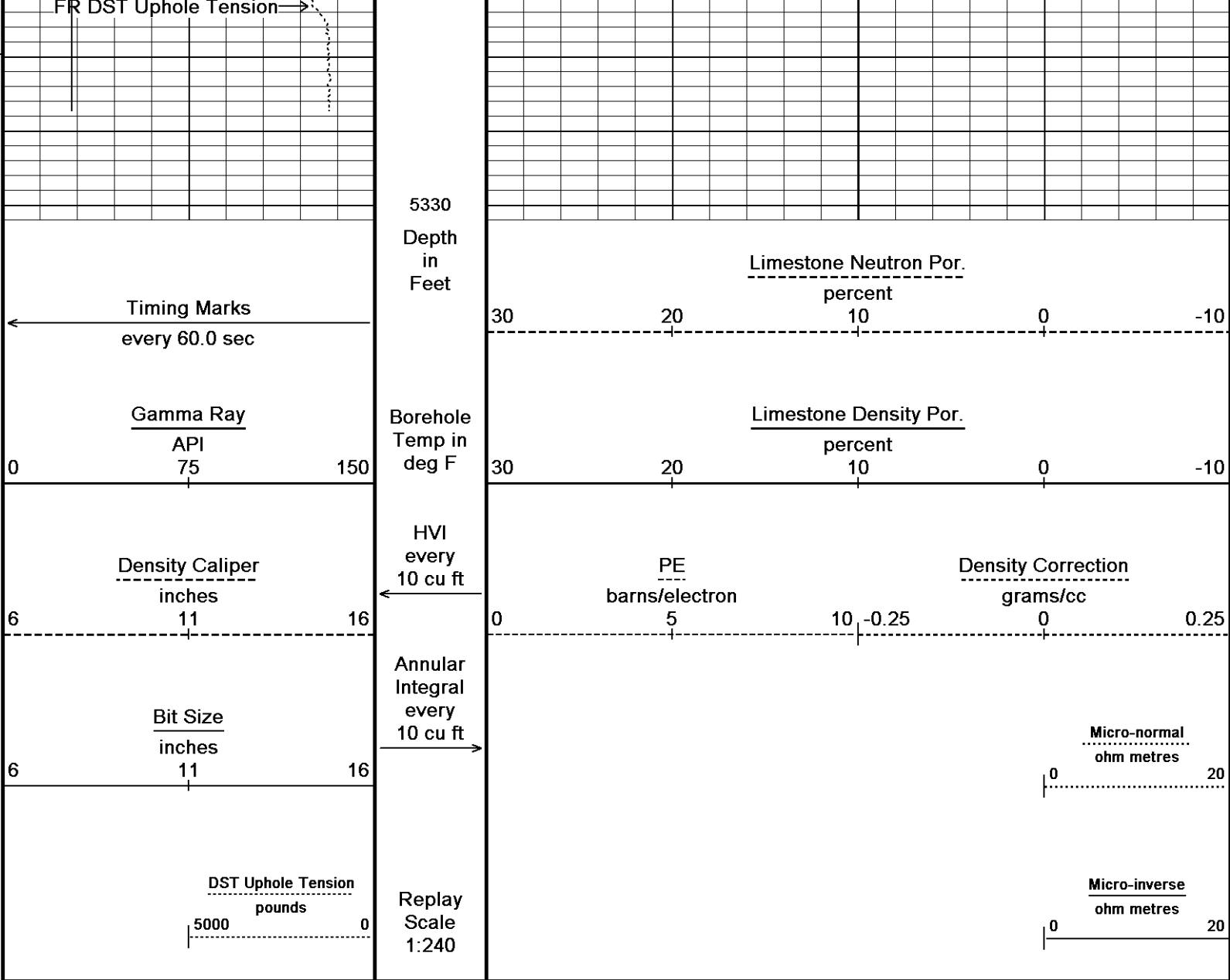




Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-JUN-2012 17:25
Filename: C:\Minimus 11.03.4044\Data\Cholla Pro...\Cholla Production Bontrager 29-1 OWWO_003.dta
Recorded on 16-JUN-2012 14:21
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044







Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 16-JUN-2012 17:25

Filename: C:\Minimus 11.03.4044\Data\Cholla Pro...\Cholla Production Bontrager 29-1 OWWO_003.dta

Recorded on 16-JUN-2012 14:21

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

5 INCH REPEAT PASS

5 INCH MAIN PASS

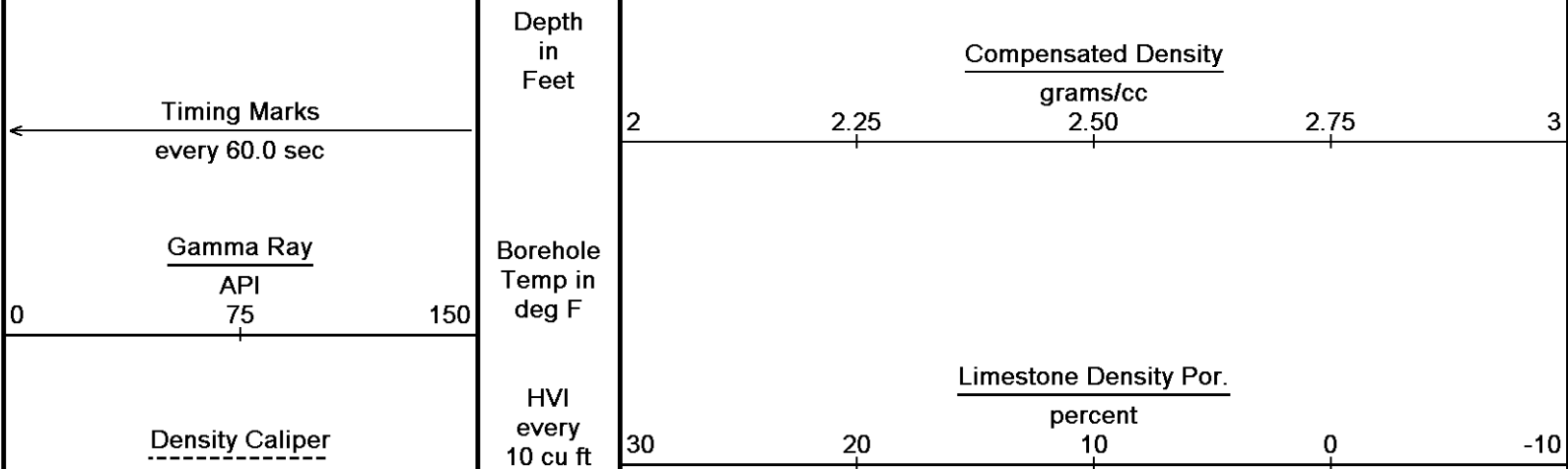
Depth Based Data - Maximum Sampling Increment 10.0cm

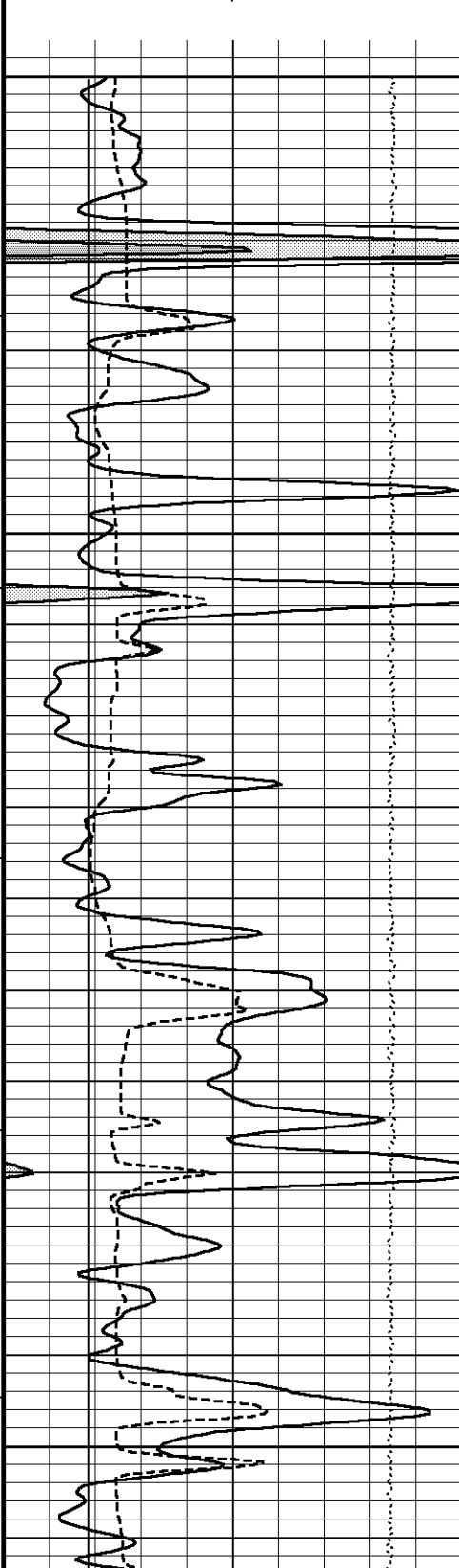
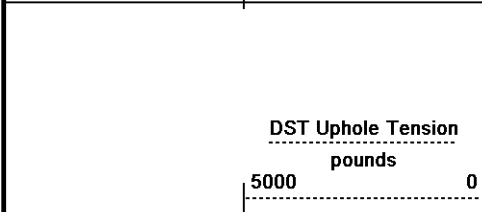
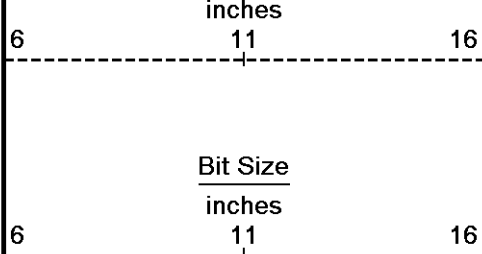
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Recorded on 16-JUN-2012 15:55

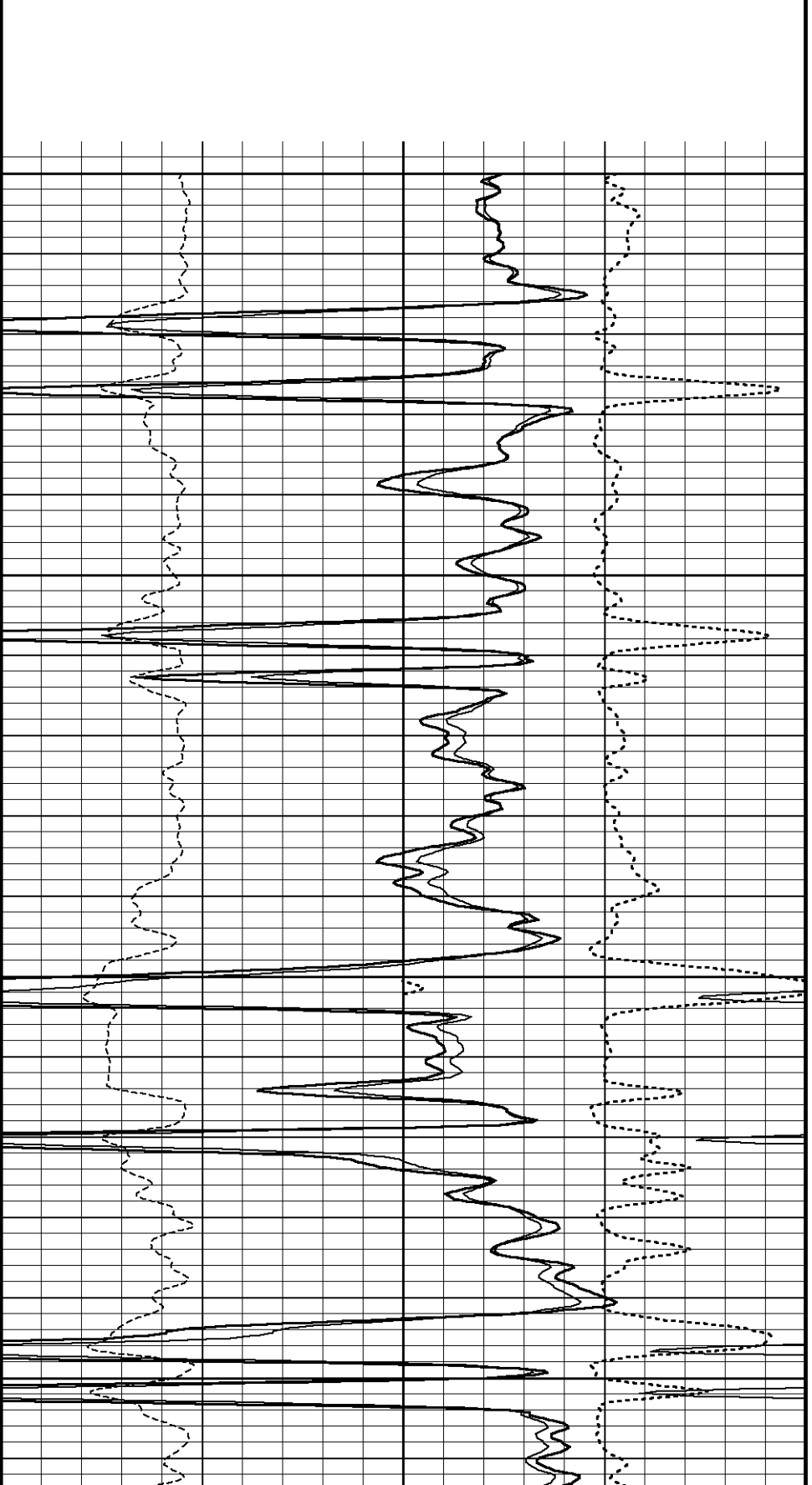
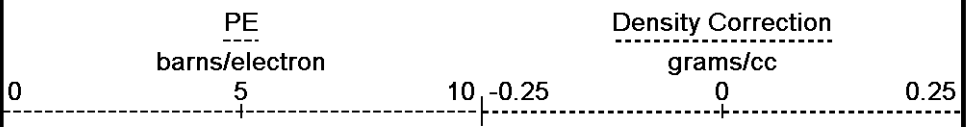
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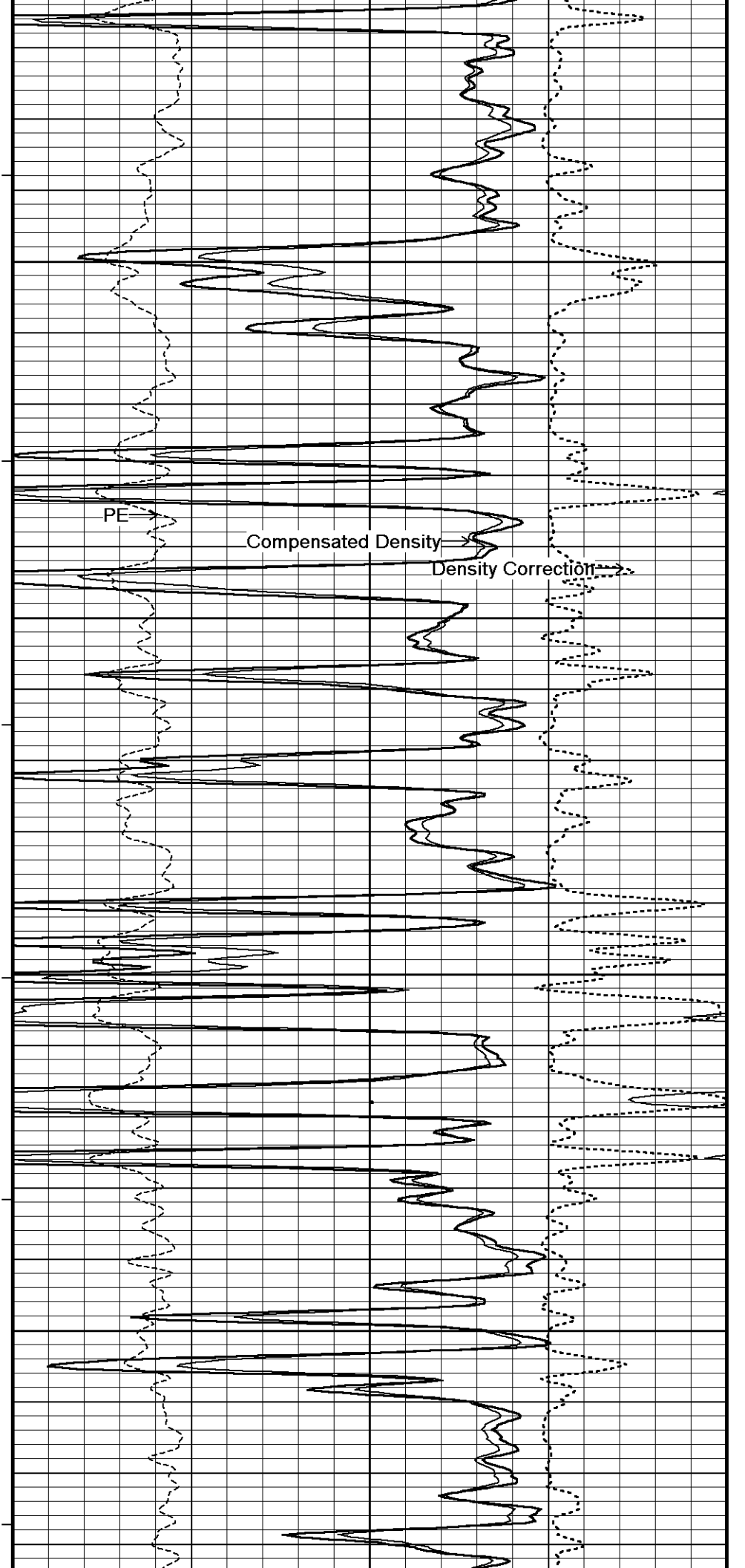
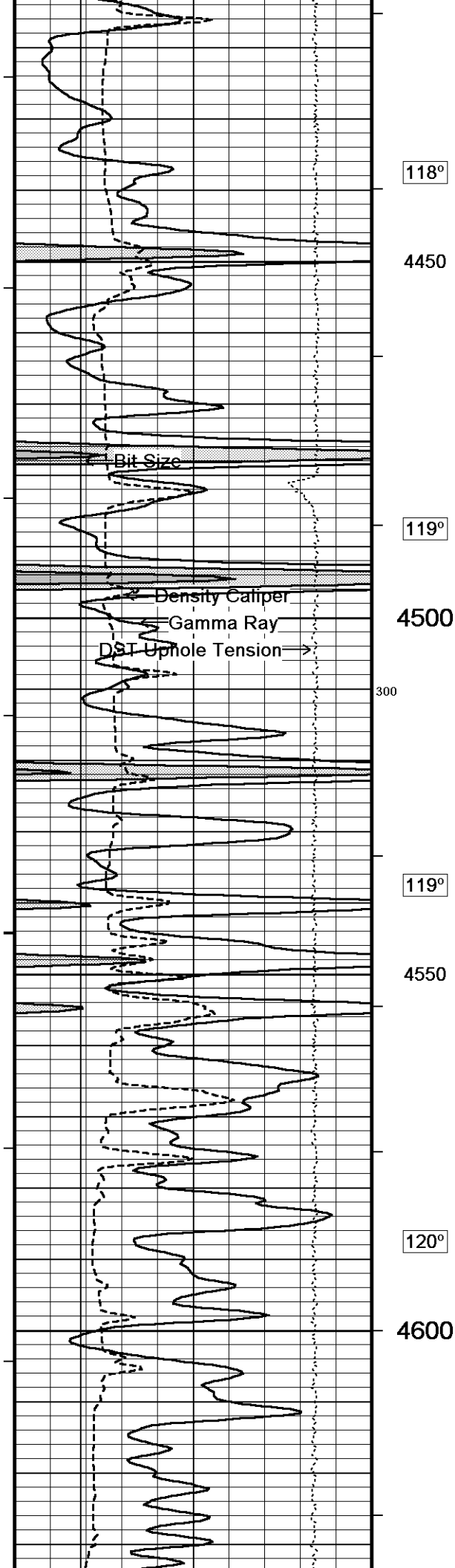


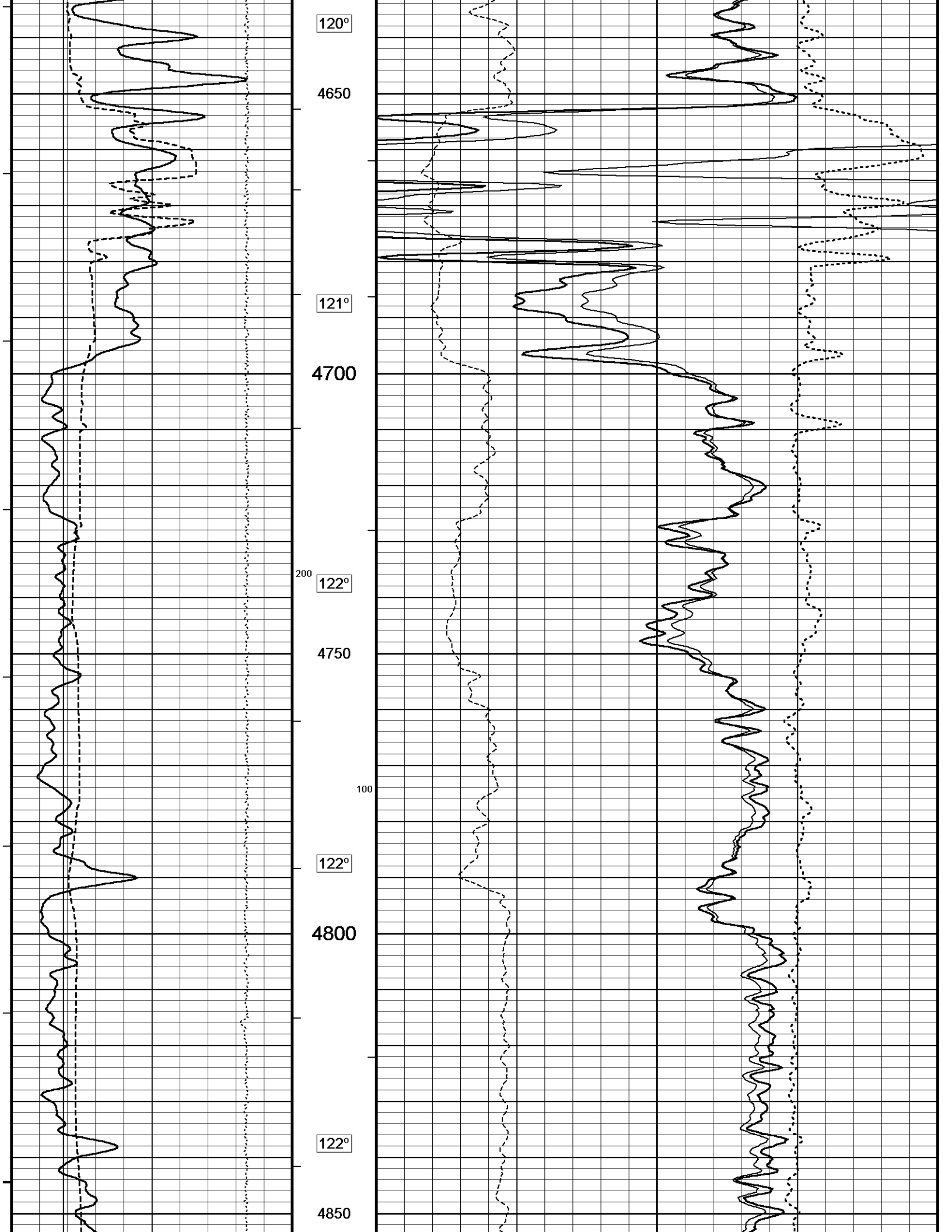


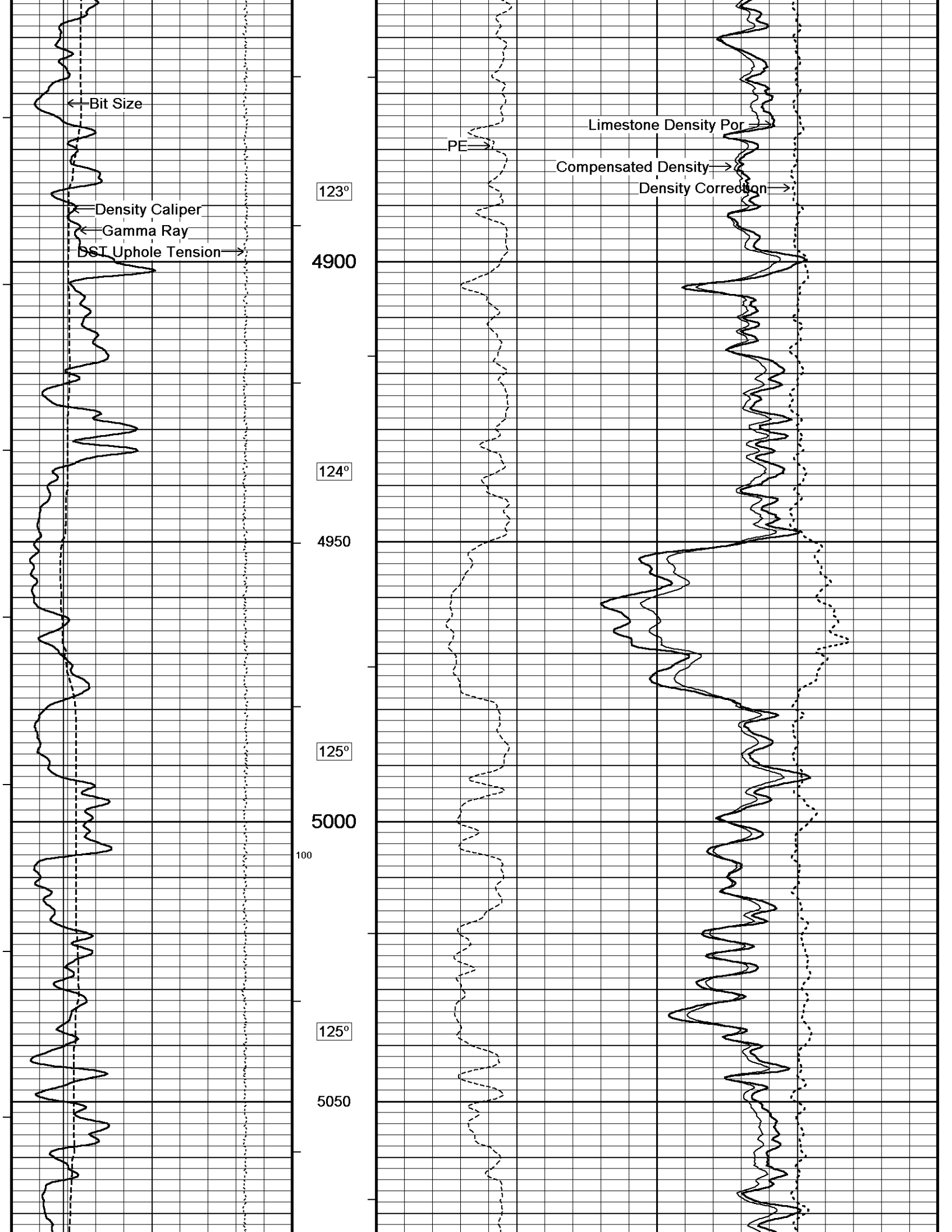
←
Annular
Integral
every
10 cu ft
→

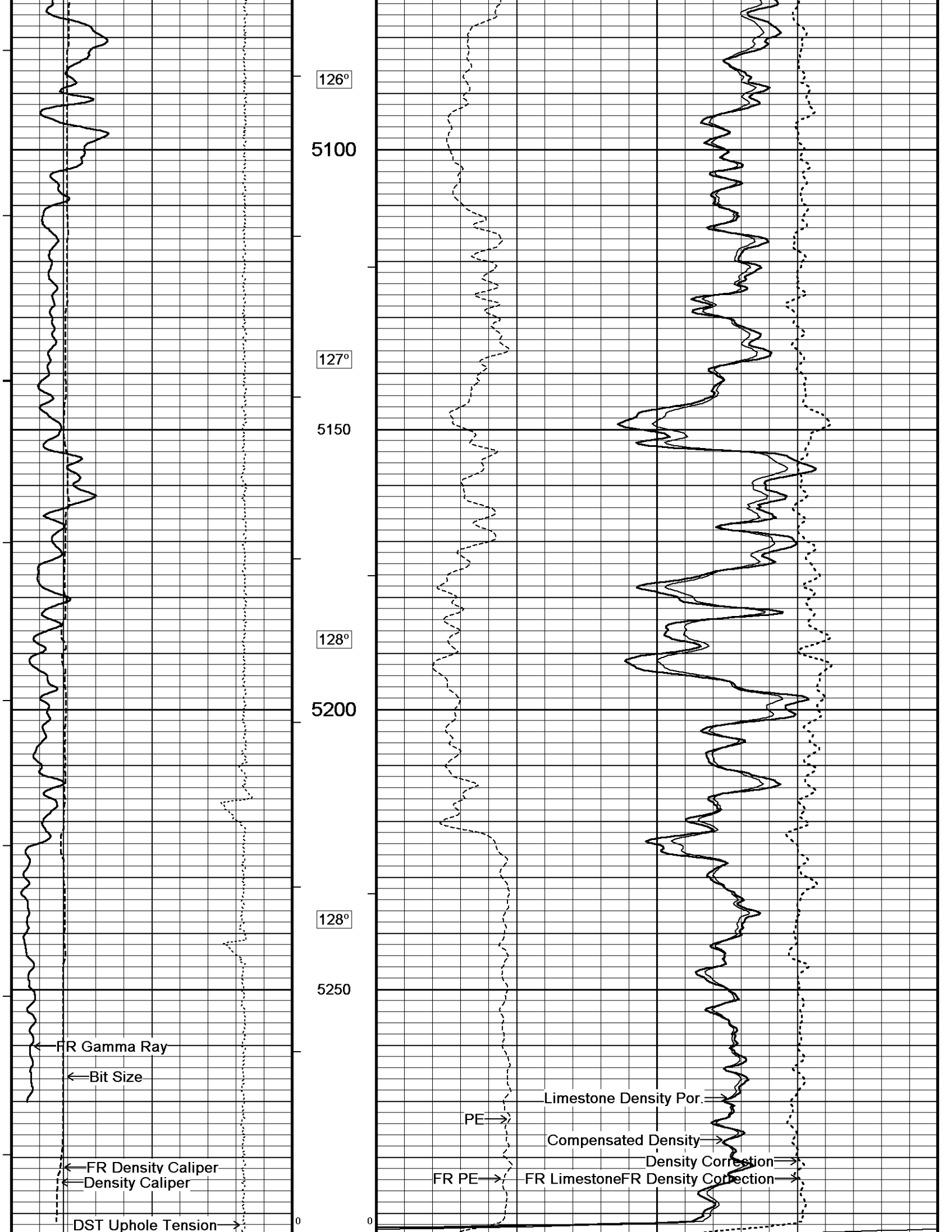
Replay
Scale
1:240

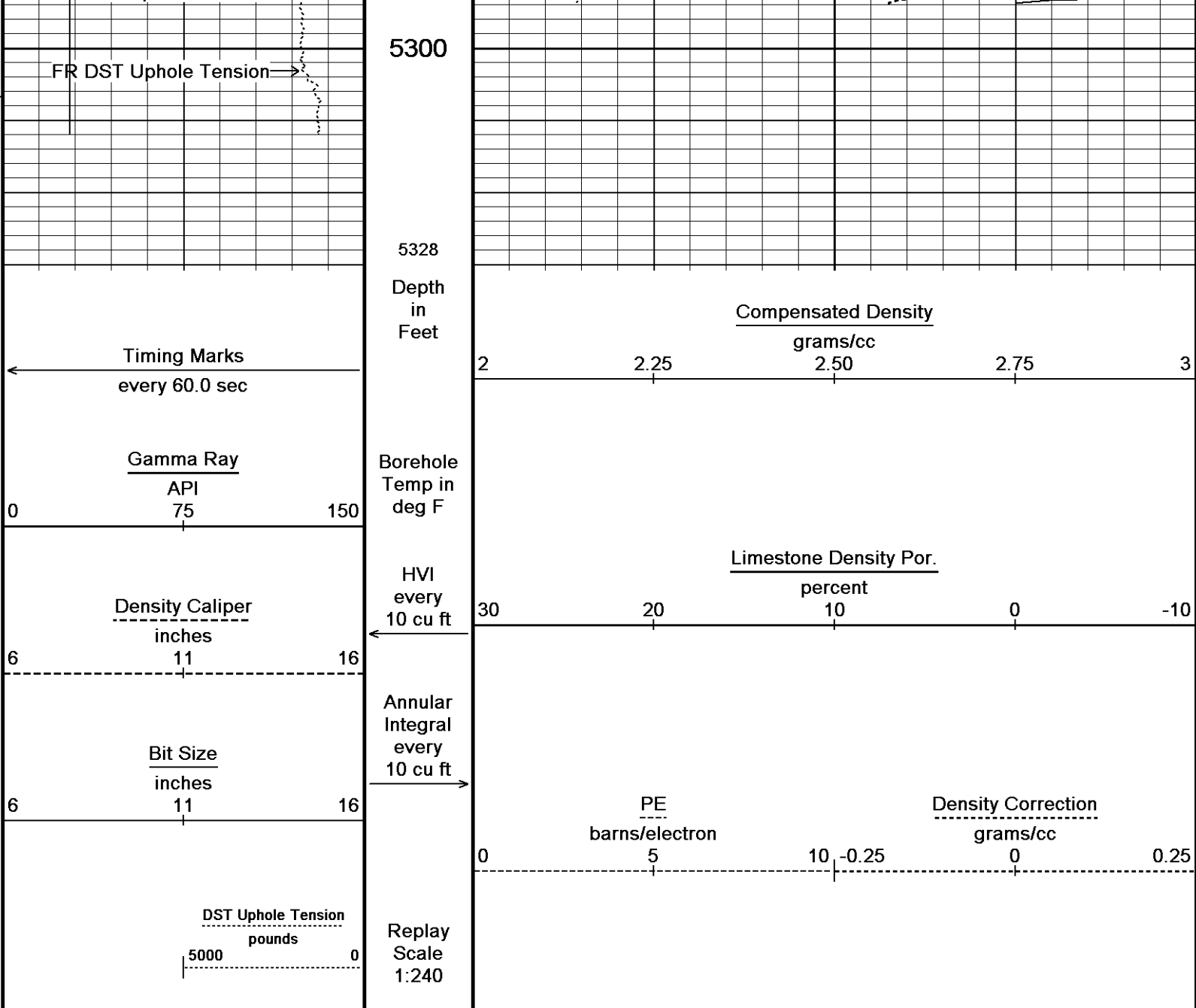












Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 16-JUN-2012 17:25

Filename: C:\Minimus 11.03.4044\Data\Cholla Pro...\Cholla Production Bontrager 29-1 OWWO_004.dta

Recorded on 16-JUN-2012 15:55

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

5 INCH MAIN PASS

10 INCH HI-RES

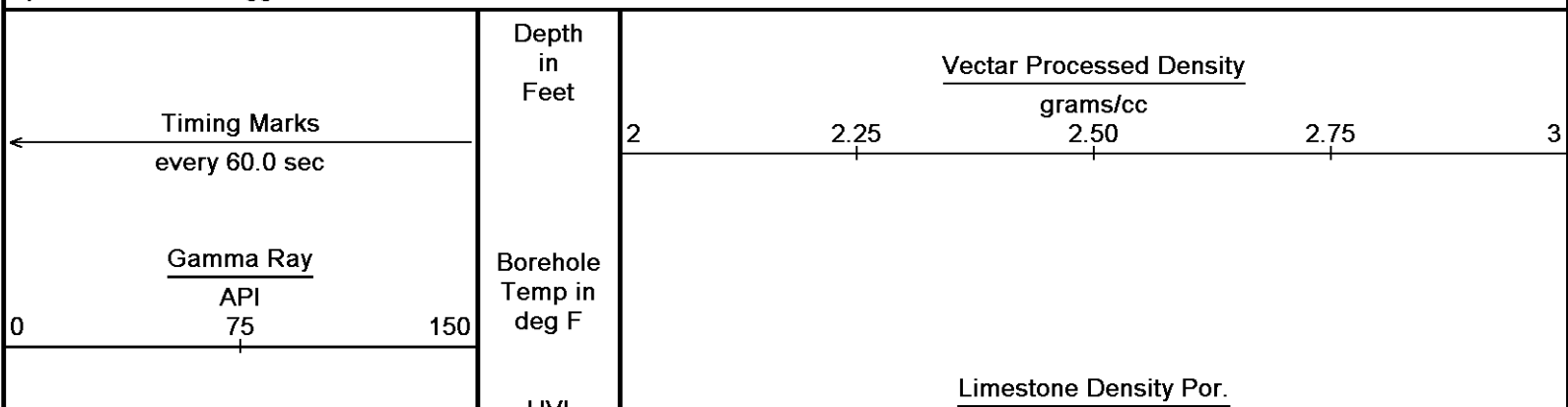
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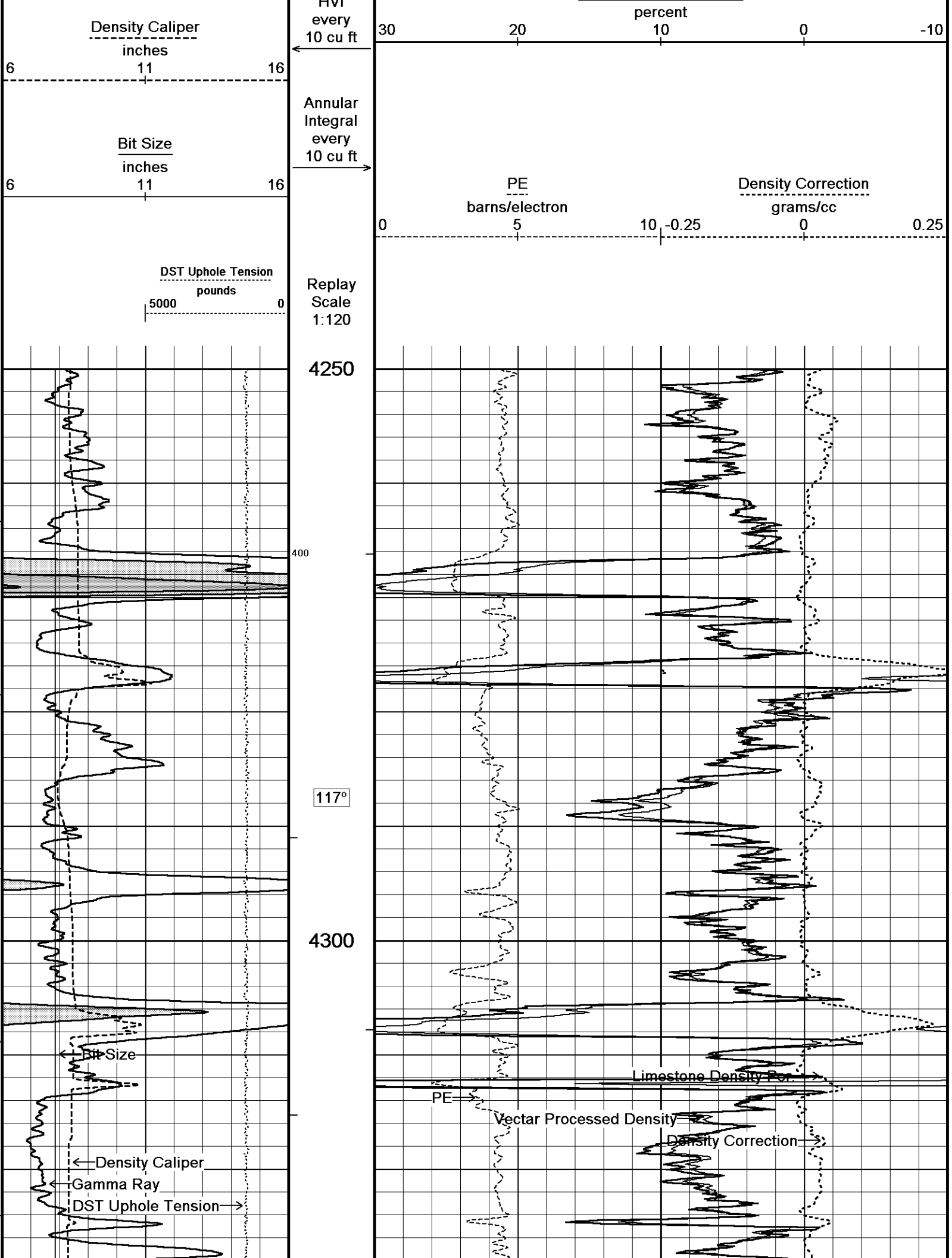
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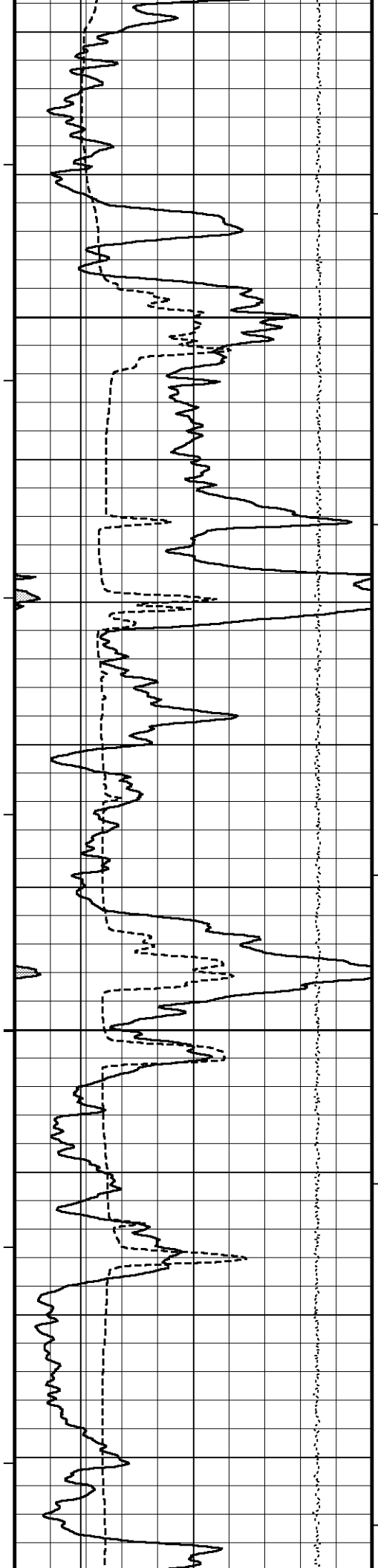
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Recorded on 16-JUN-2012 14:21

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044







117°

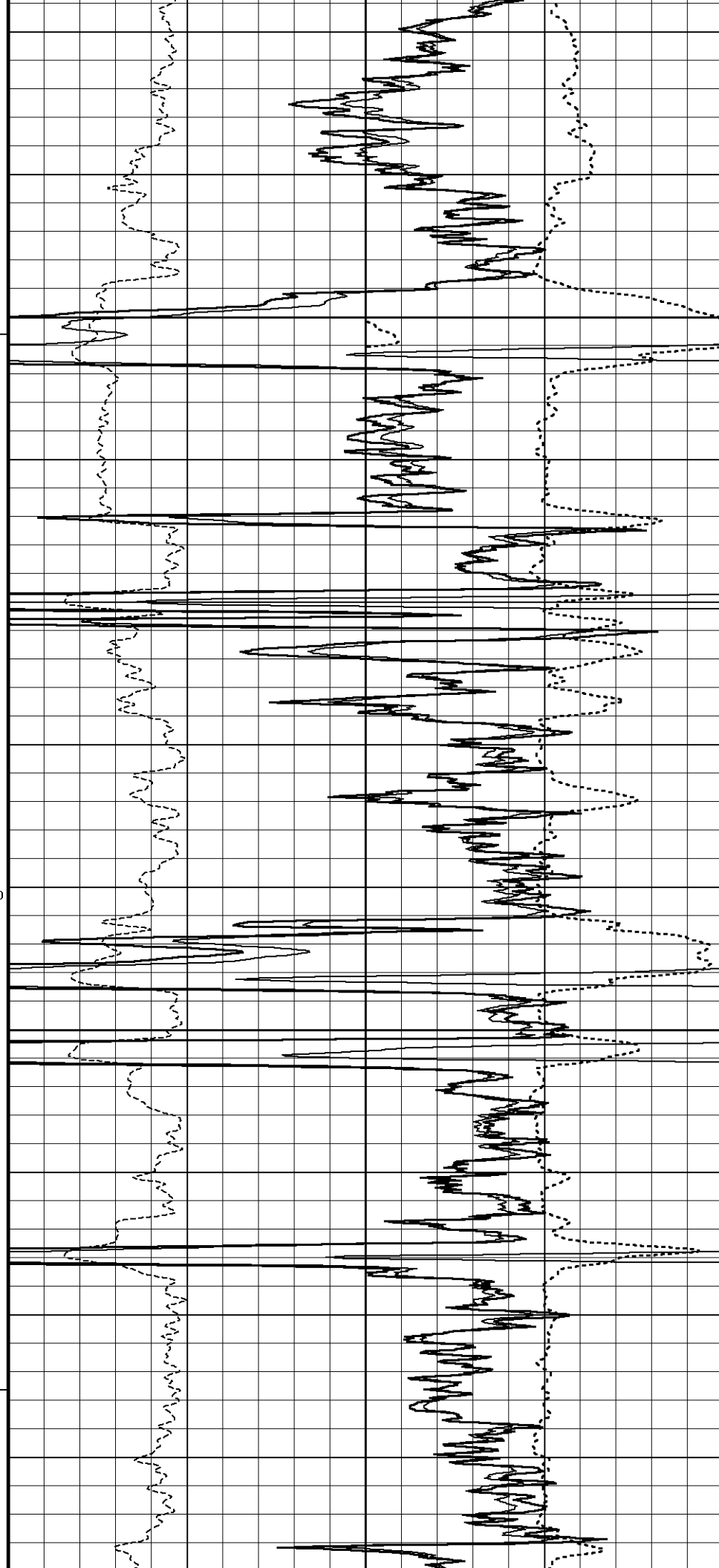
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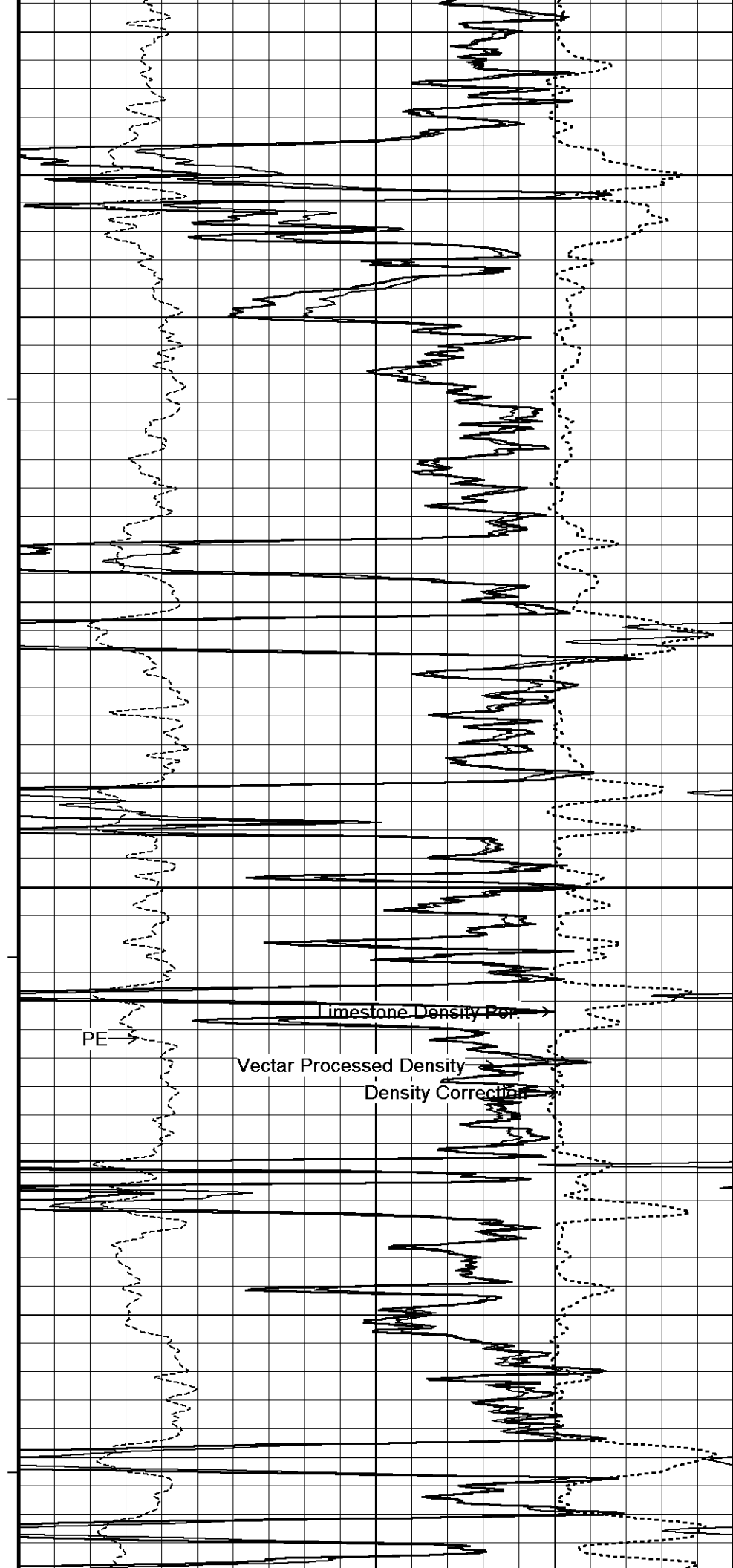
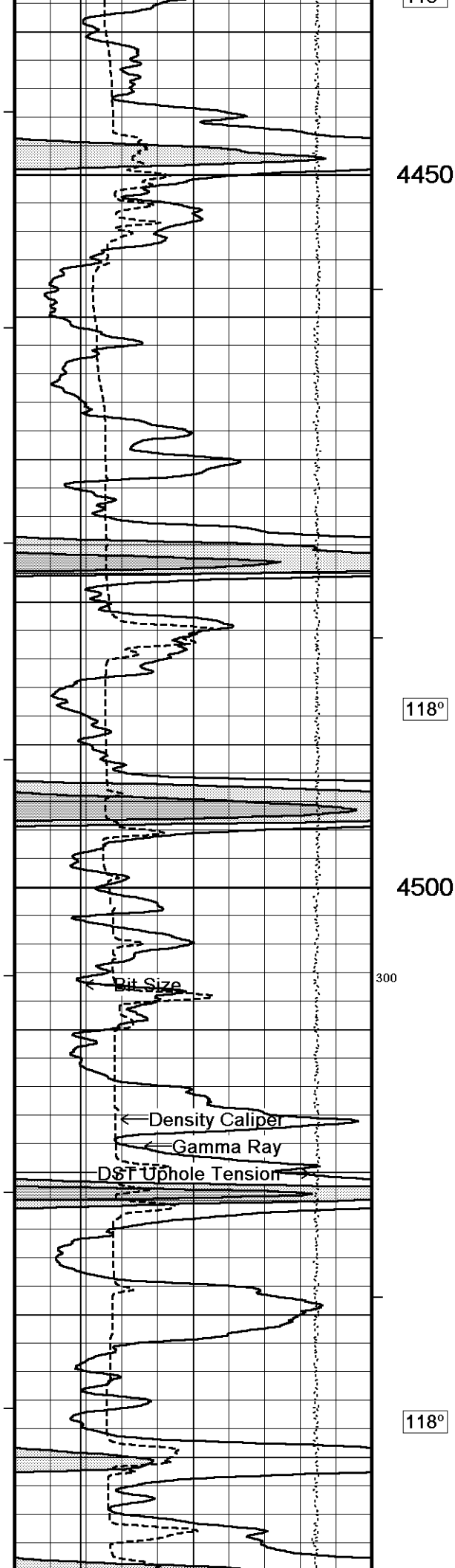
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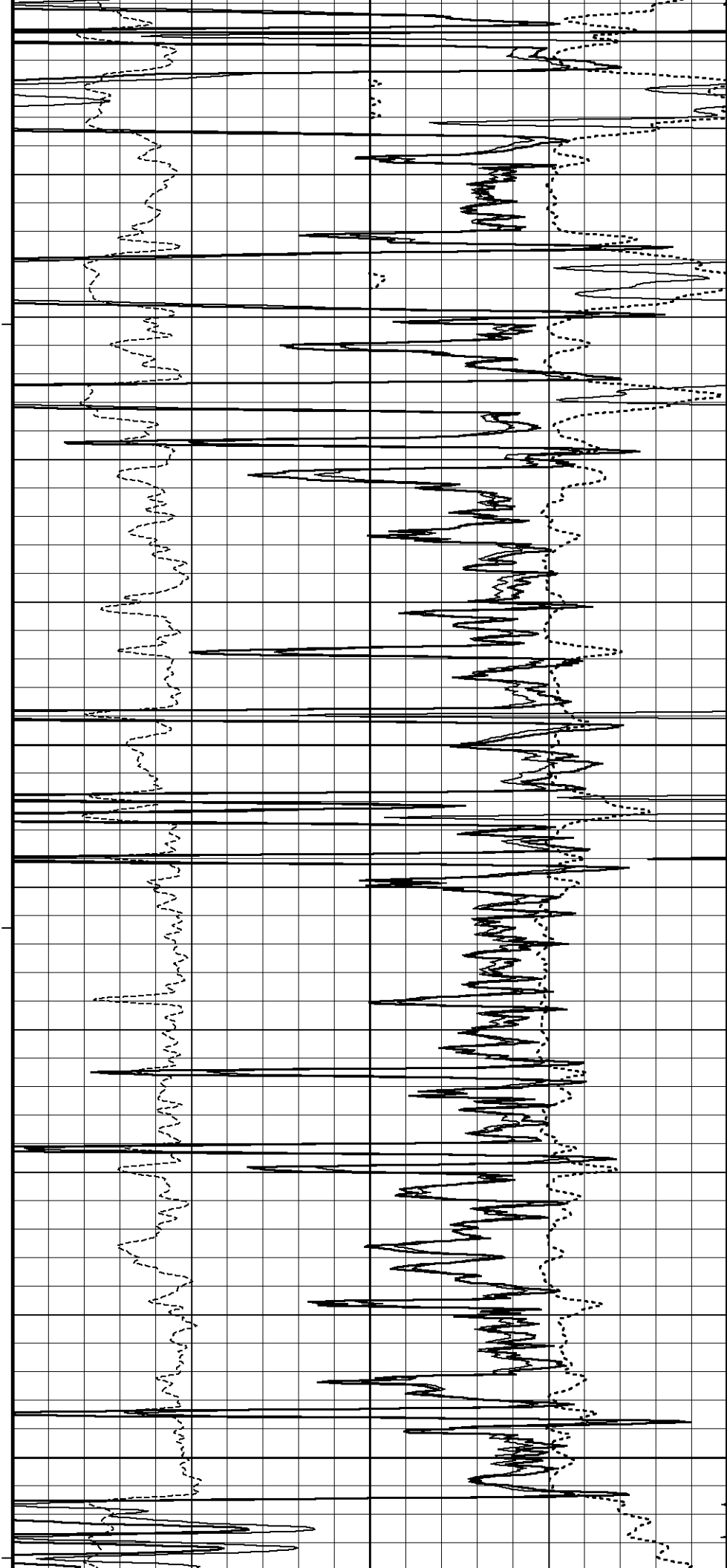
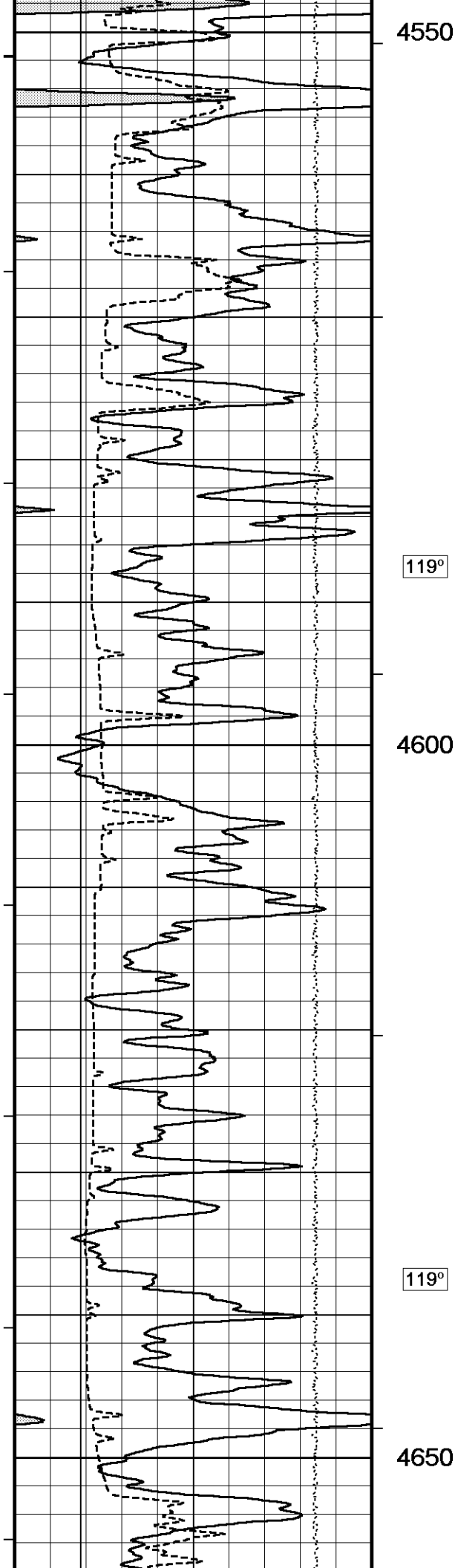
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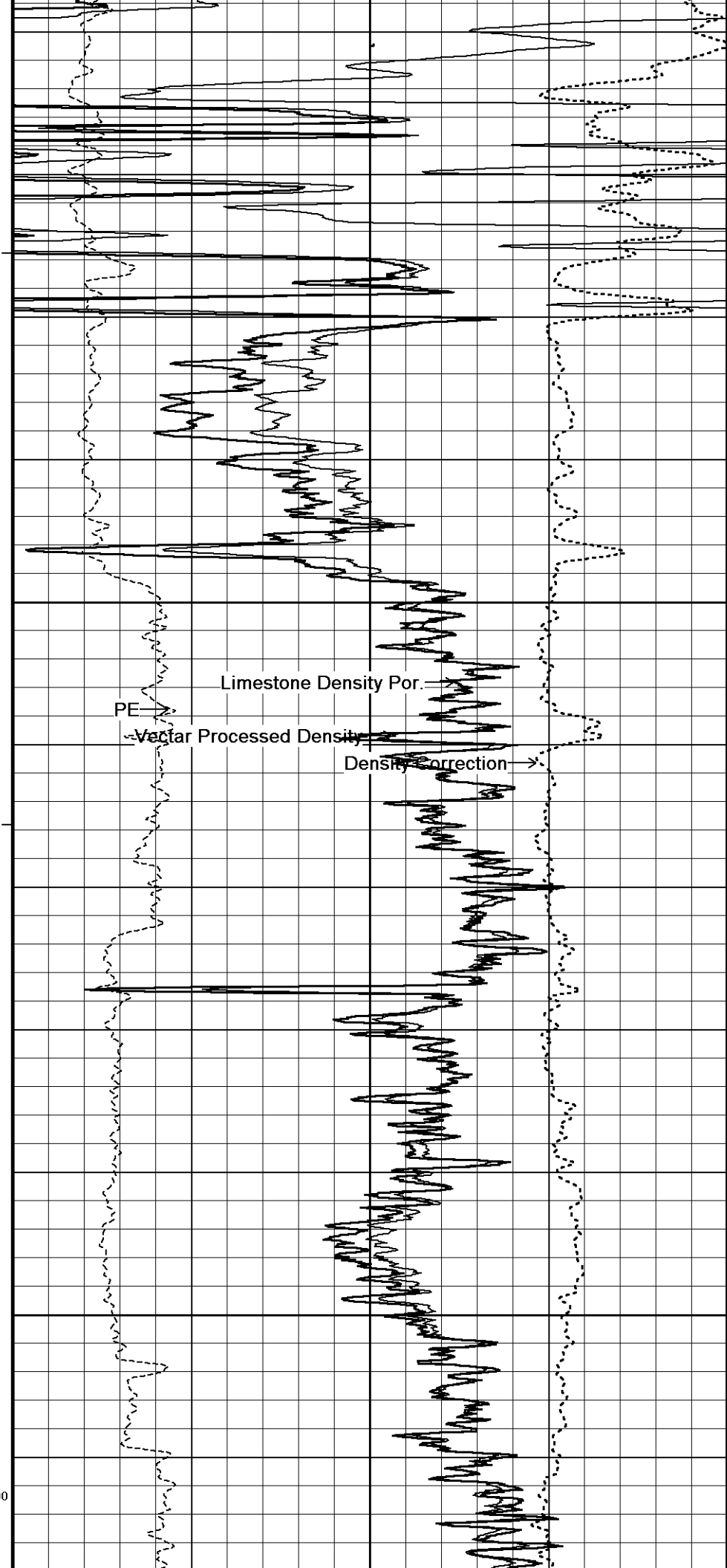
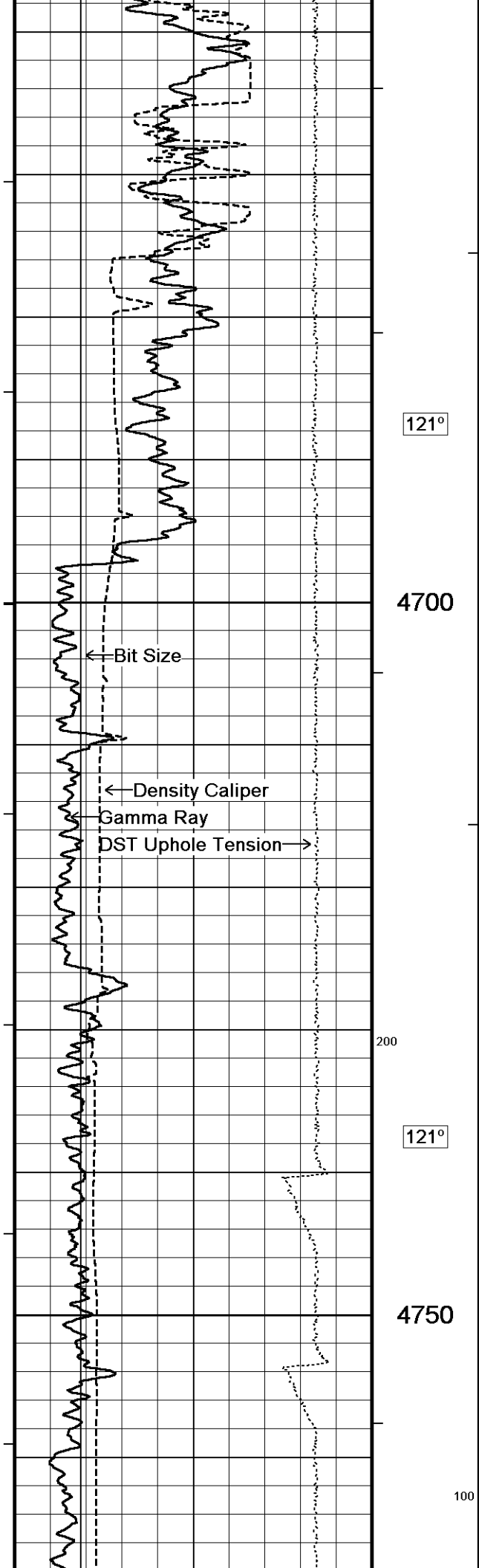
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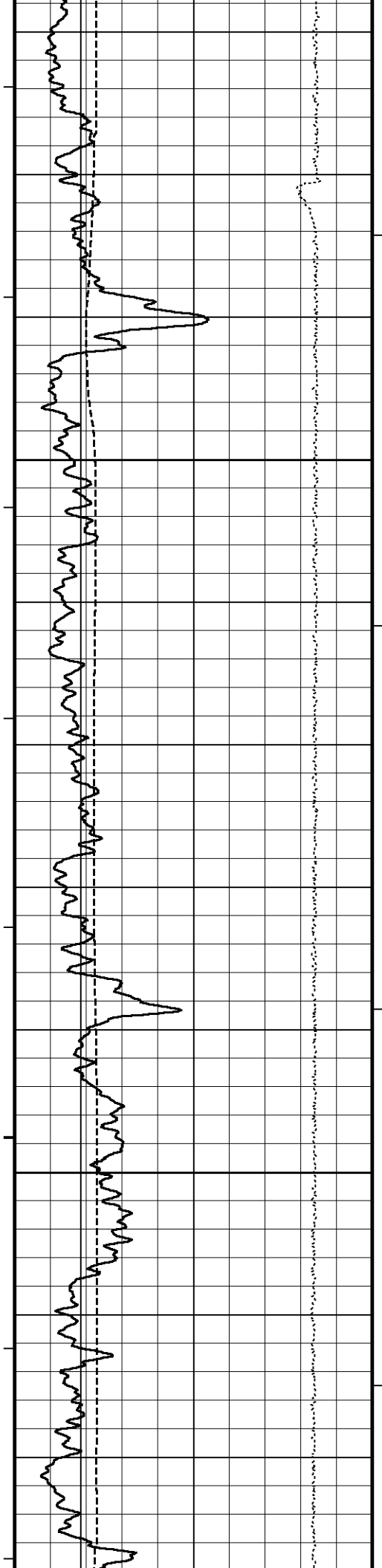
118°









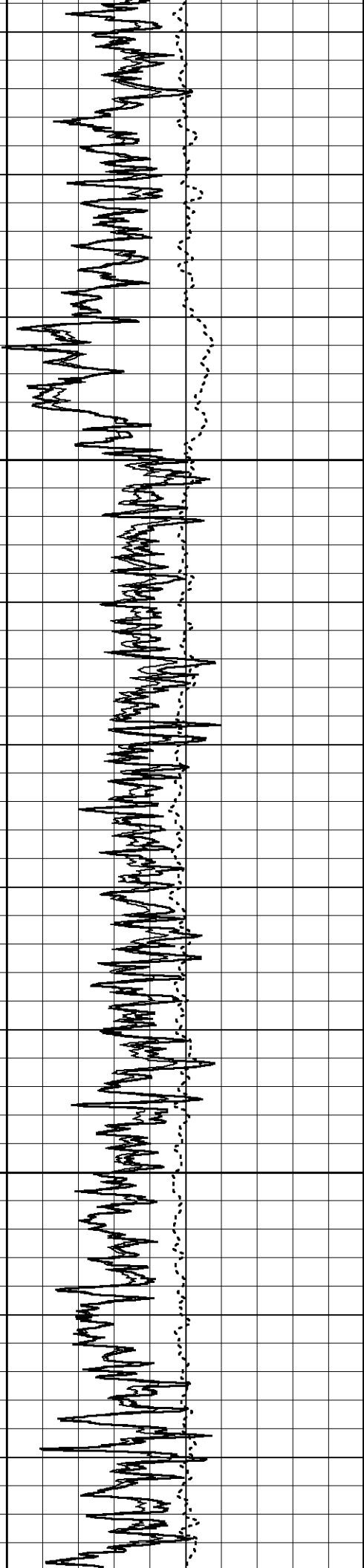
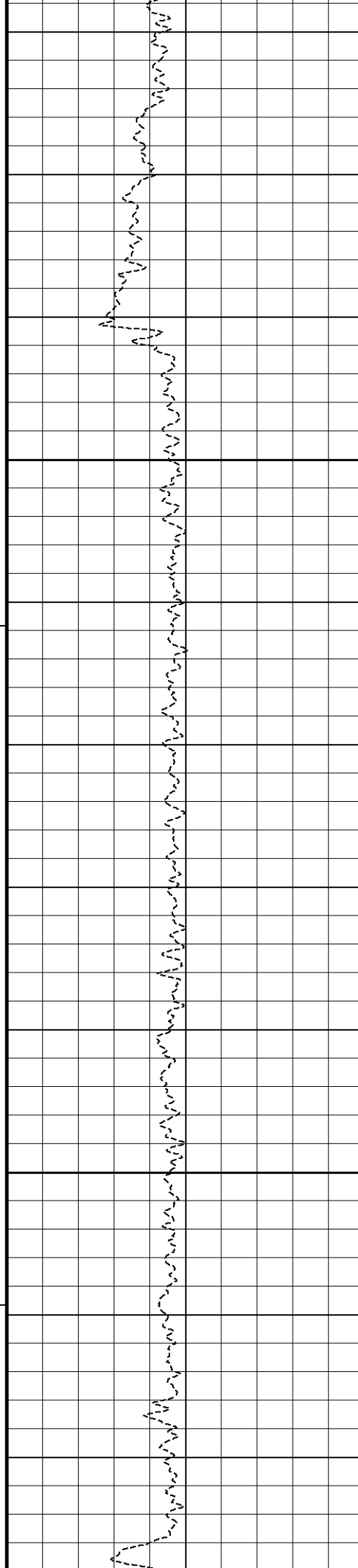


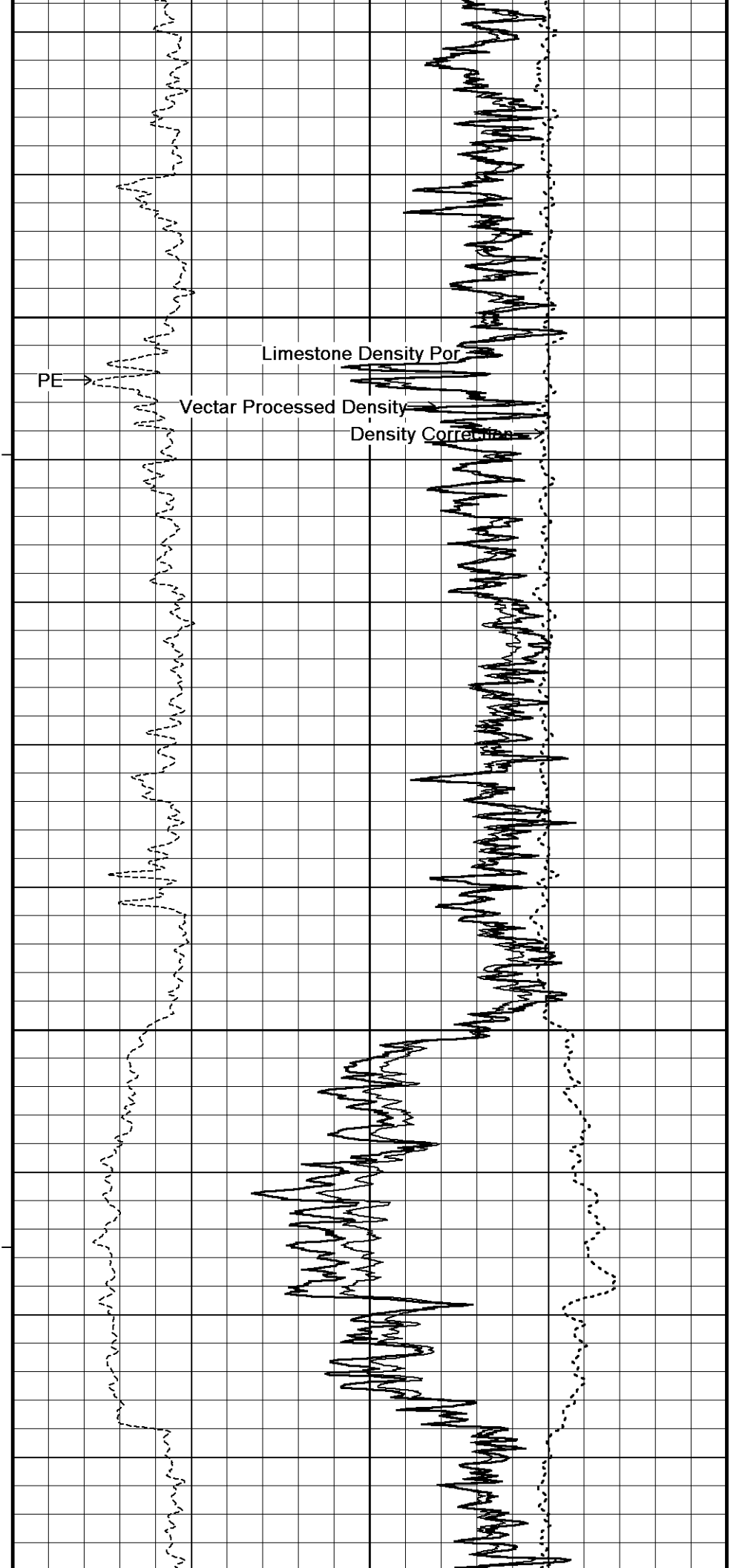
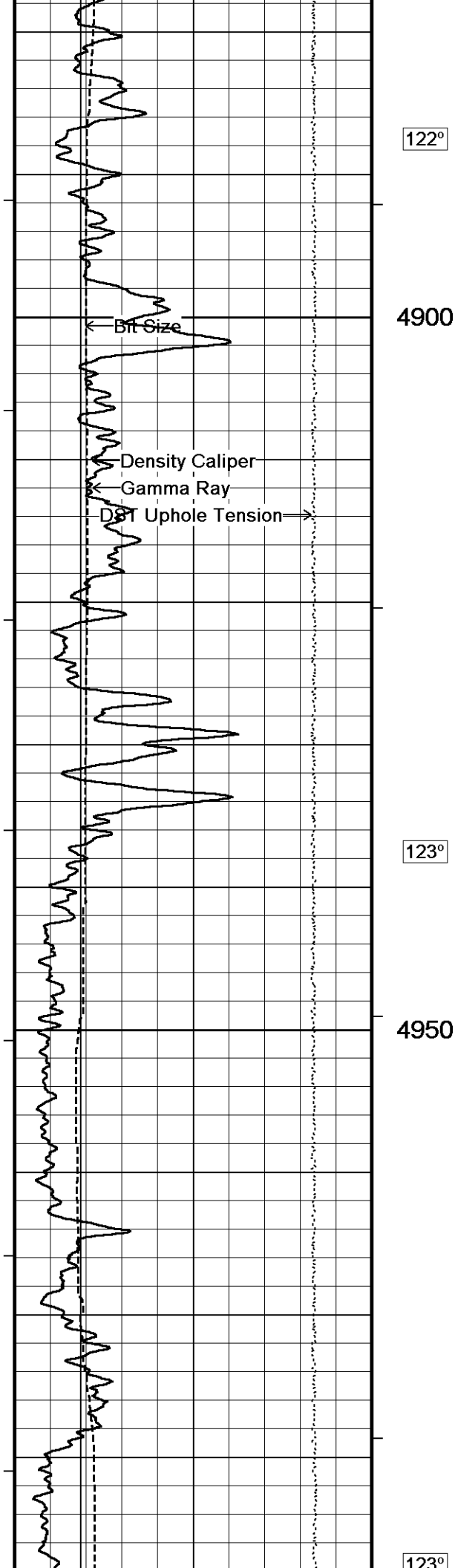
121°

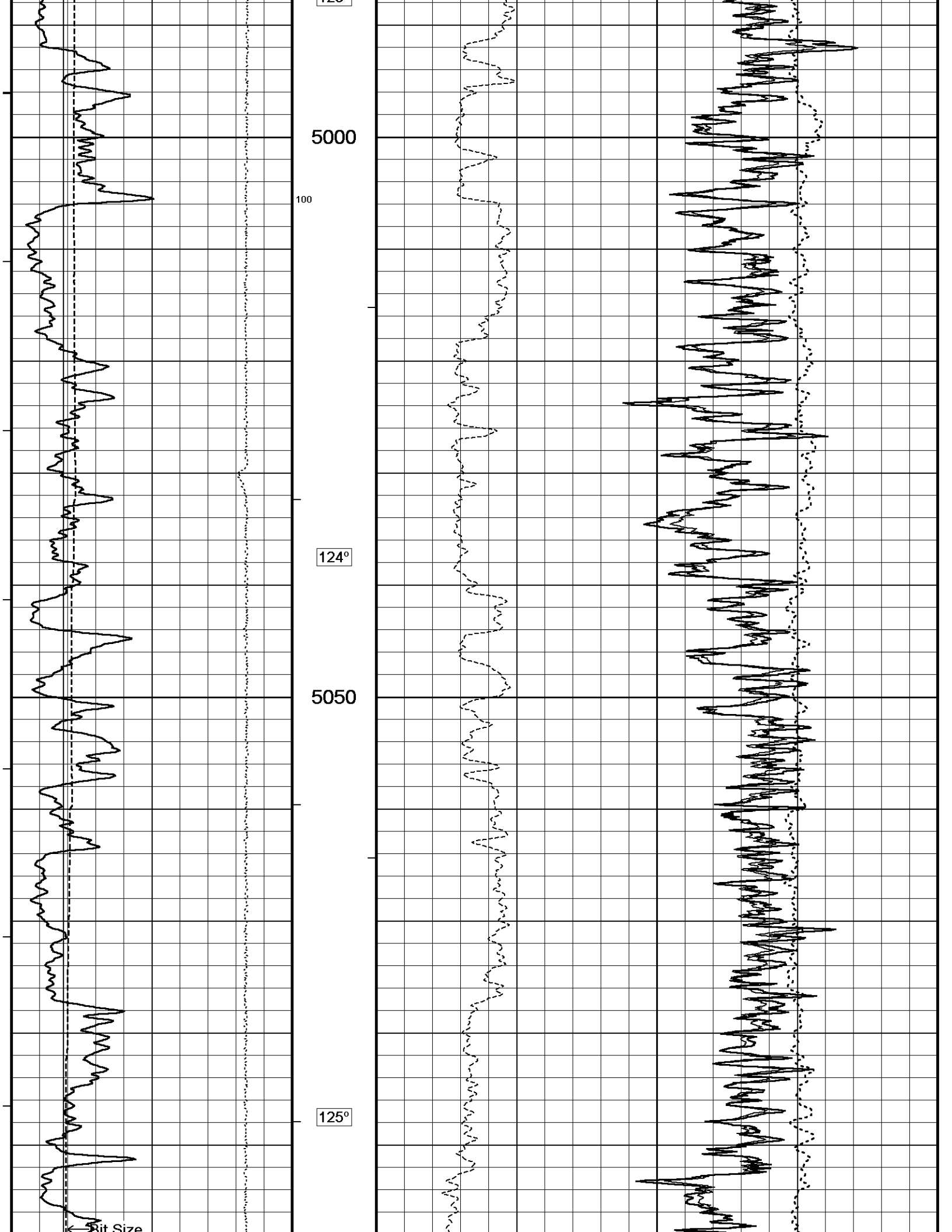
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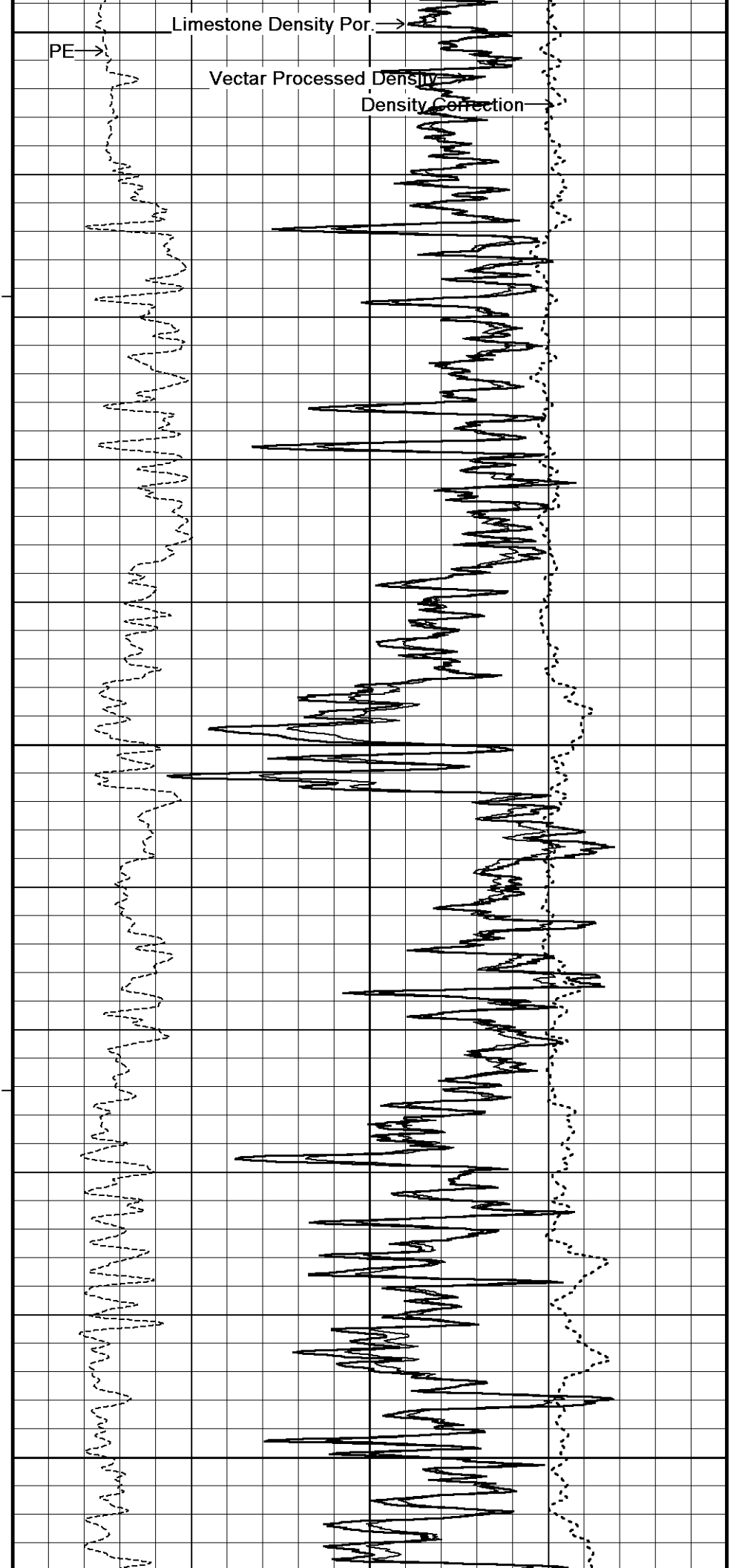
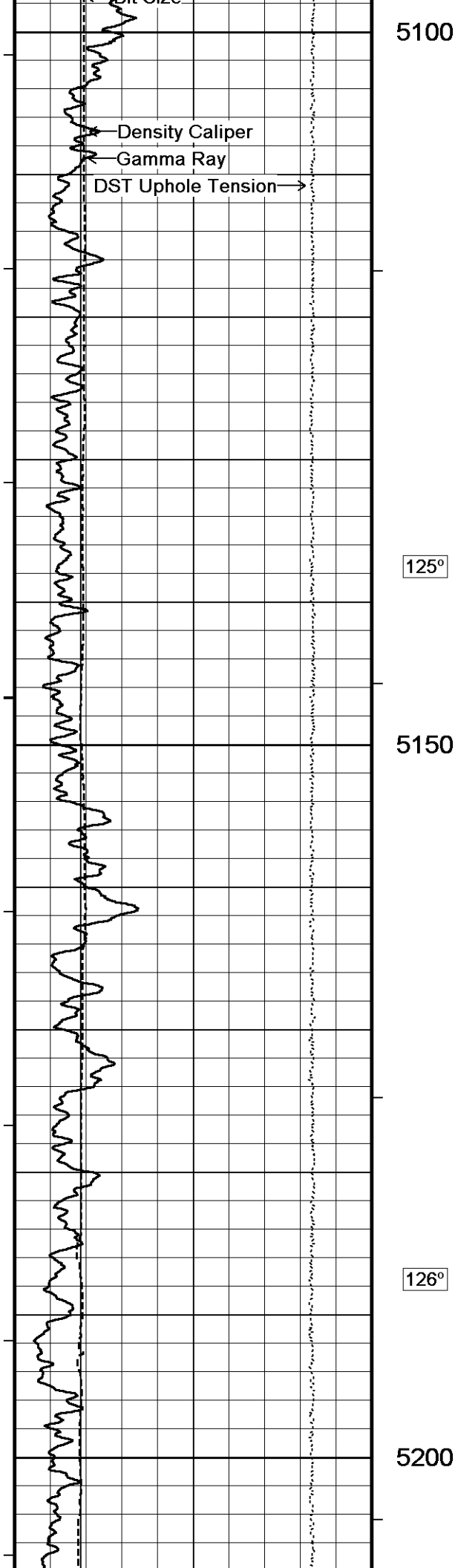
121°

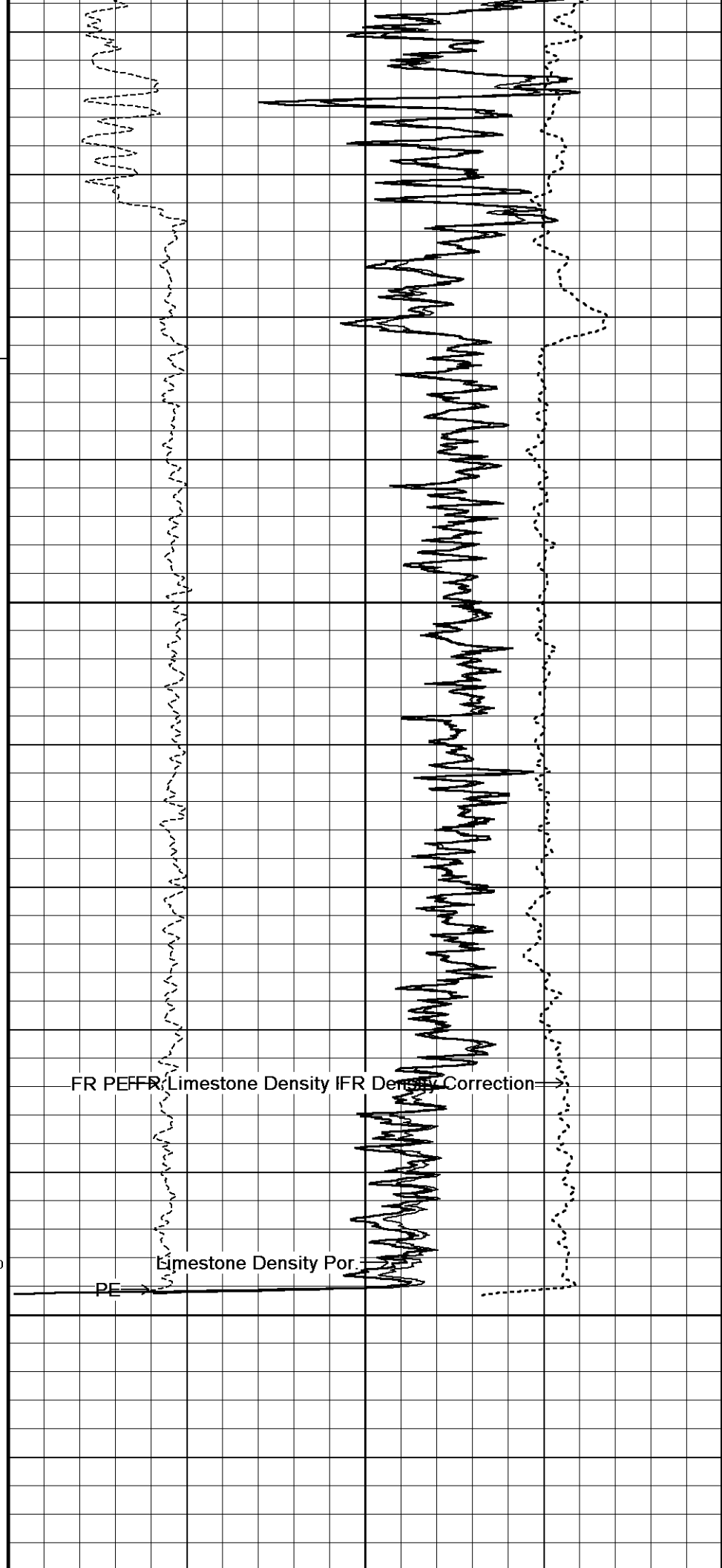
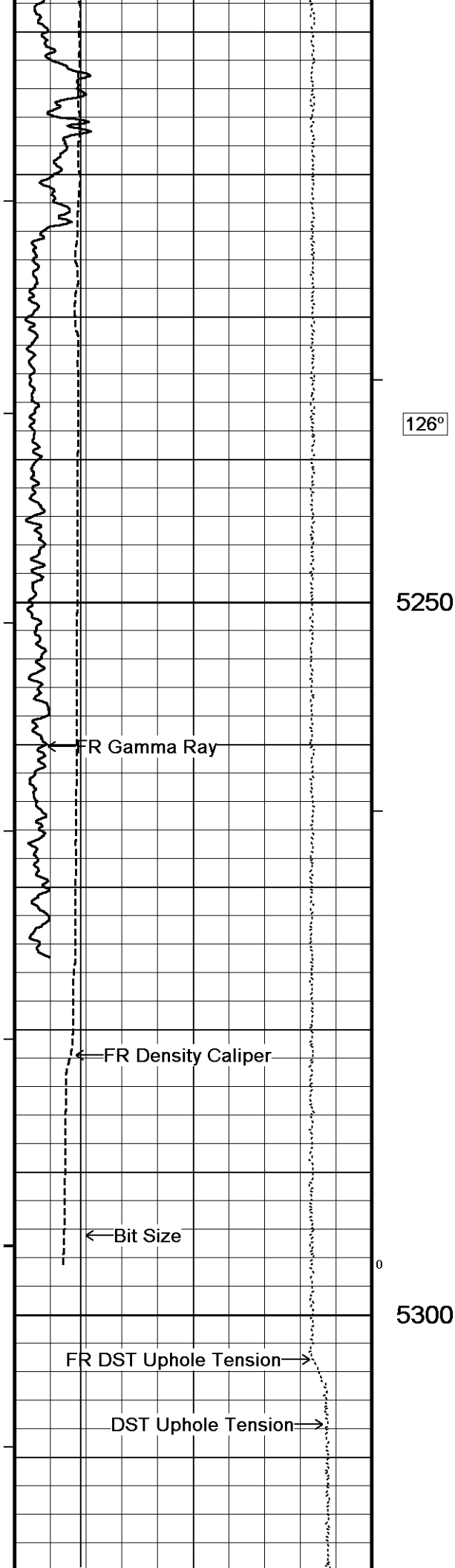
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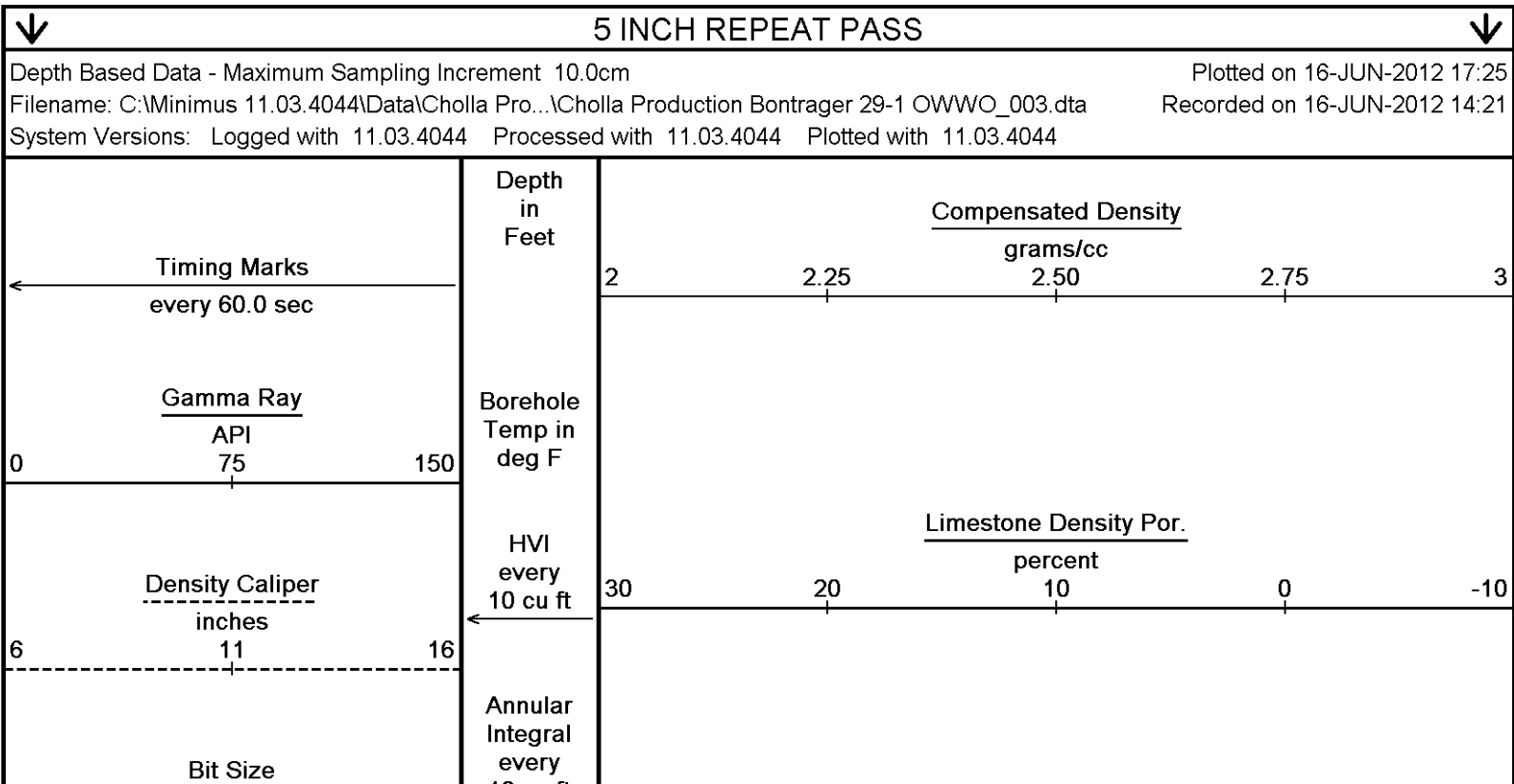
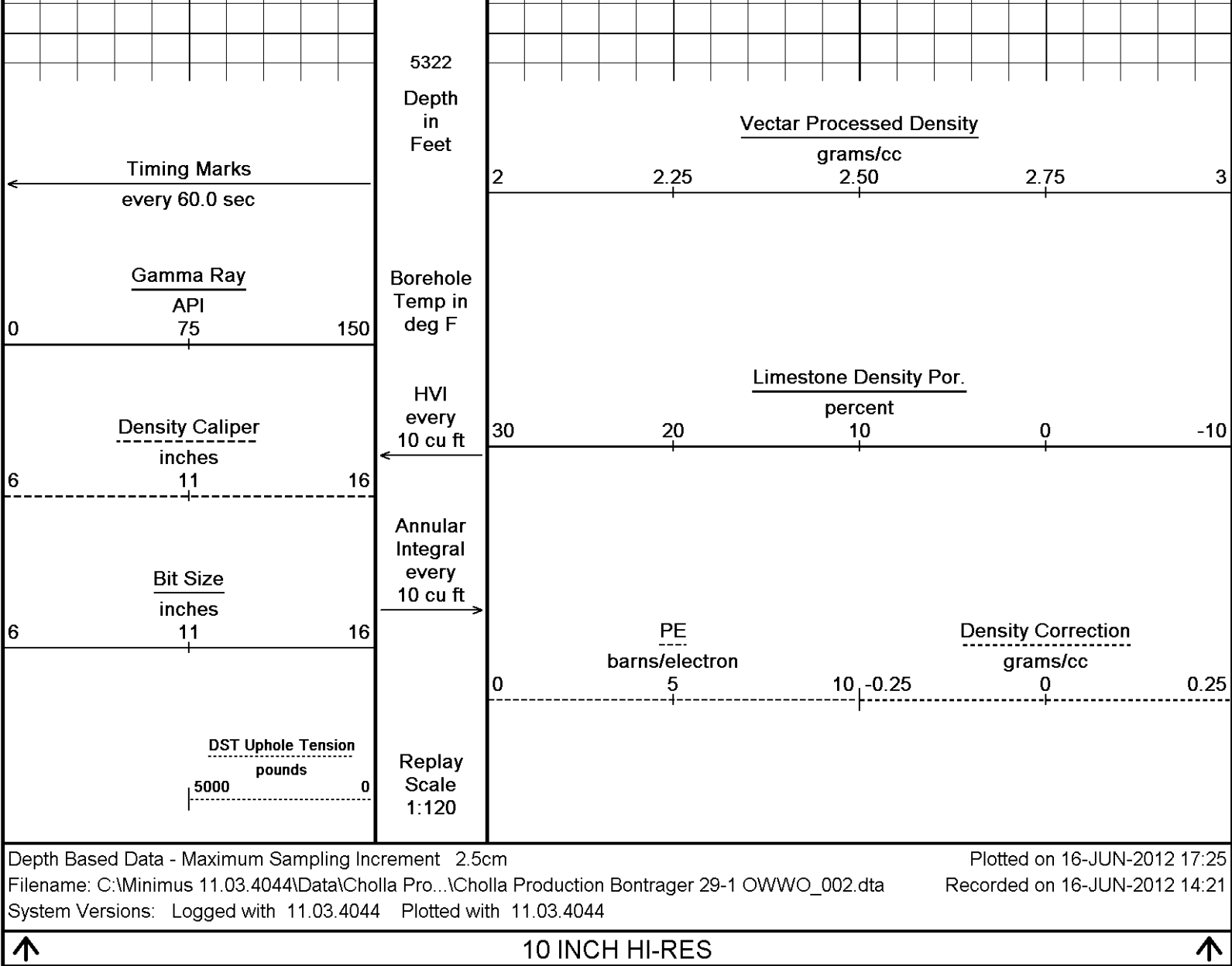


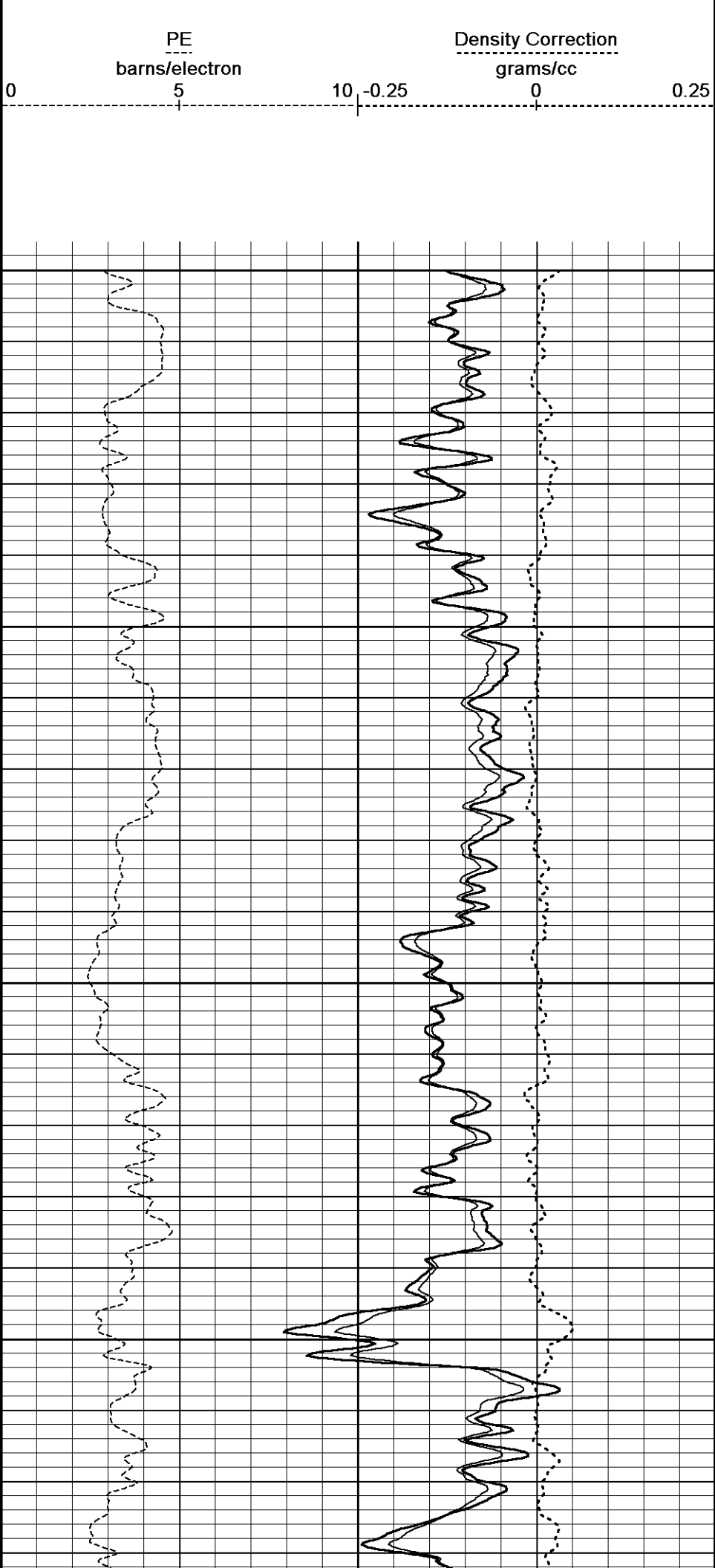
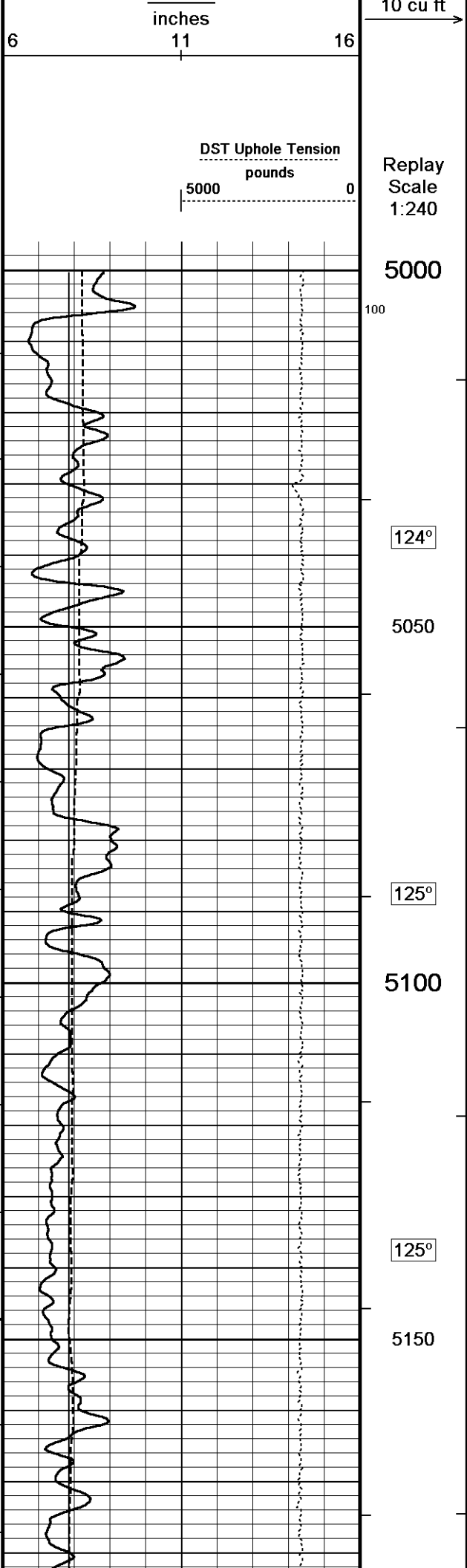


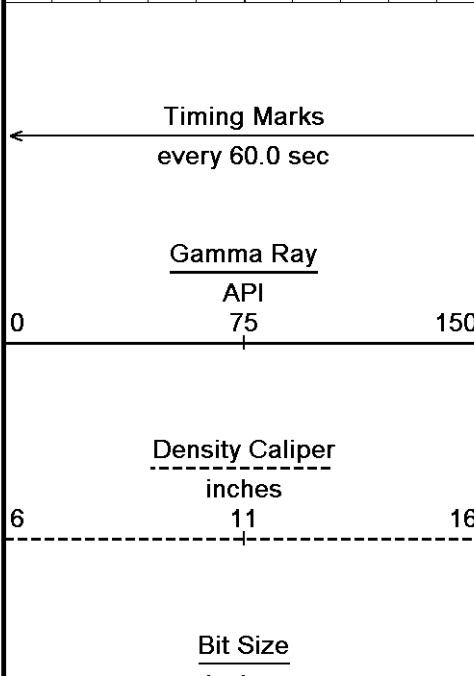
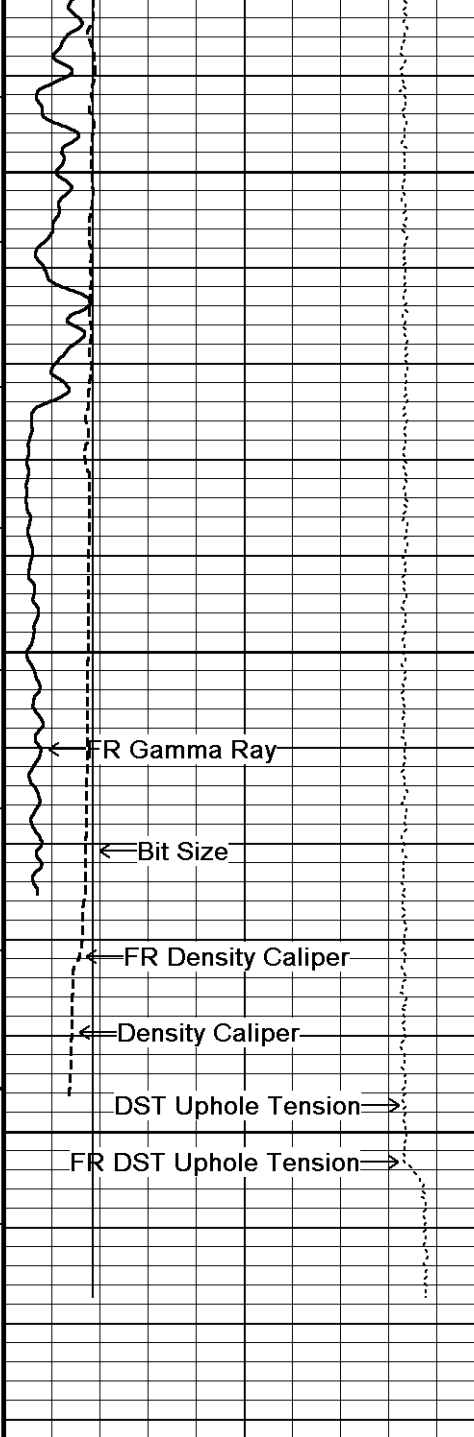












126°

5200

126°

5250

5300

5330

Depth in Feet

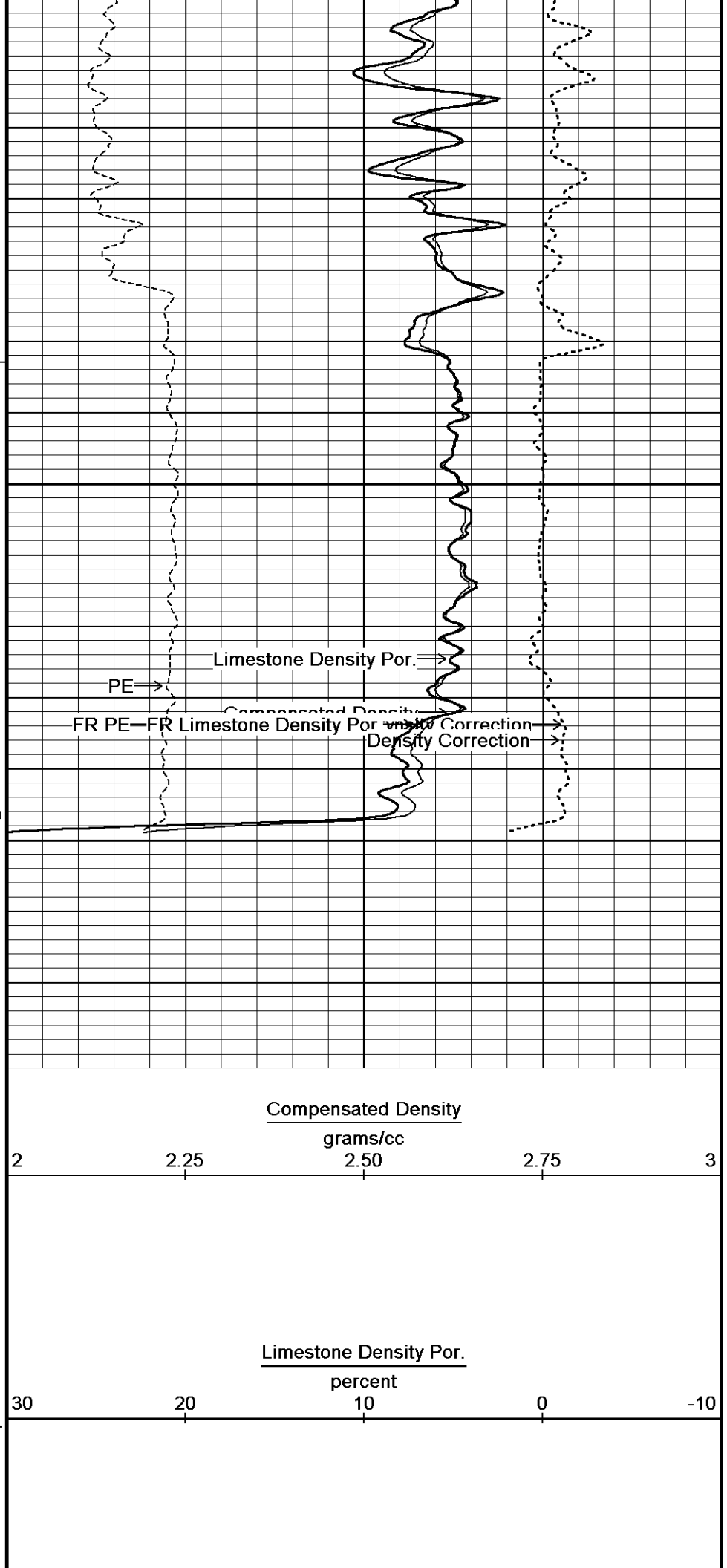
Timing Marks every 60.0 sec

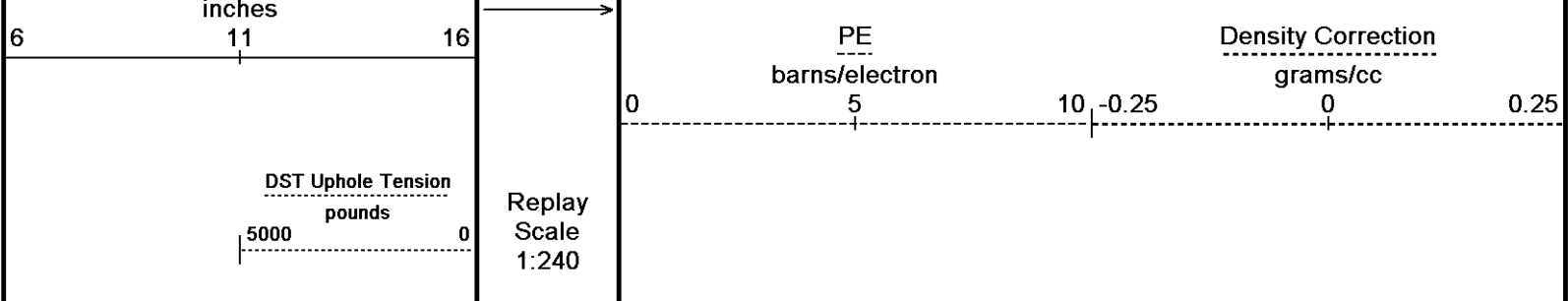
Gamma Ray API 0 75 150

Borehole Temp in deg F

HVI every 10 cu ft 30 20 10 0 -10

Annular Integral every 10 cu ft





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 16-JUN-2012 17:25
 Filename: C:\Minimus 11.03.4044\Data\Cholla Production Bontrager 29-1 OWWO_003.dta Recorded on 16-JUN-2012 14:21
 System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 11.03.4044

↑ 5 INCH REPEAT PASS ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.4044\Data\Cholla Production Bontrager 29-1 OWWO\Cholla Production Bontrager 29-1 OWWO_001.dta

General Constants All 000			Last Edited on 16-JUN-2012,07:58		
General Parameters					
Mud Resistivity	0.730		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	Density Caliper				
HVOL Caliper 2	N/A				
Annular Volume Diameter	5.500		inches		
Caliper for Differential Caliper	Density Caliper				
Rwa Parameters					
Porosity used	Base Density Porosity				
Resistivity used	Array Ind. One Res Rt				
RWA Constant A	0.610				
RWA Constant M	2.150				

Down-hole Tension Calibration SMS 0		Field Calibration on 12-JUN-2012 09:35	
Reading No	Measured	Calibrated (lbs)	
1	13926.45	0.00	
2	13949.48	240.30	

Gamma Calibration MCG-C 84		Field Calibration on 15-JUN-2012 09:03	
	Measured	Calibrated (API)	
Background	69	46	
Calibrator (Gross)	1149	771	
Calibrator (Net)	1080	725	

Gamma Constants MCG-C 84		Last Edited on 16-JUN-2012,07:56	
Gamma Calibrator Number	GR38		
Mud Density	1.09	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	

SP Calibration MCG-C 84		Field Calibration on 28-MAY-2012,07:31	
	Measured	Calibrated (mV)	
Reference 1	103.5	100.0	
Reference 2	-96.9	-100.0	

High Resolution Temperature Calibration MCG-C 84		Field Calibration on 28-MAY-2012,07:32	
	Measured	Calibrated (Deg F)	
Lower	50.00	50.00	

Upper	75.00	75.00		
High Resolution Temperature Constants MCG-C 84			Last Edited on	
Pre-filter Length	11			
Caliper Calibration MML-A 16			Base Calibration on 23-MAY-2012 11:59 Field Calibration on 15-JUN-2012 08:53	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	14501	5.98		
2	17771	7.97		
3	21107	9.86		
4	24905	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	5.98	5.98		
Micro Normal and Micro Inverse Calibration MML-A 16			Base Calibration on 23-MAY-2012 12:04 Field Check on 15-JUN-2012 08:55	
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) 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	
Micro Normal and Micro Inverse Constants MML-A 16			Last Edited on 13-JUN-2012,14:27	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159			
Micro Normal K Factor	1.0000			
Micro Inverse K Factor	1.0000			
Standoff Offset	N/A inches			
Neutron Calibration MDN-A.B 65			Base Calibration on 23-MAY-2012 14:31 Field Check on 15-JUN-2012 09:11	
Base Calibration				
	Near	Measured Far	Calibrated (cps) Near Far	
	3164	98	3714 110	
Ratio	32.187		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1615 2315	
Ratio	0.697			
Field Check			Calibrated (cps)	
			1619 2335	
Ratio	0.693			
Neutron Constants MDN-A.B 65			Last Edited on 15-JUN-2012,09:05	
Neutron Source Id	PN-521			
Neutron Jig Number	5824NE			
Epithermal Neutron	No			
Caliper Source for Processing	Density Caliper			
Stand-off	0.00		inches	
Mud Density	1.00		gm/cc	
Limestone Sigma	7.10		cu	
Sandstone Sigma	4.26		cu	
Dolomite Sigma	4.70		cu	
Formation Pressure Source	Constant Value			
Formation Pressure	0.00		kpsi	
Temperature Source	Constant Value			
Temperature	68.00		degrees F	
Mud Salinity	0.00		kppm	
Formation Fluid Salinity Source	Constant Value			

Formation Fluid Salinity Source	Constant Value	0.00	kppm
Barite Mud Correction	Not Applied		

FE Calibration MFE-A.A 55			Base Calibration on 23-MAY-2012 09:37
			Field Check on 15-JUN-2012 08:42
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	951.5	126.8	
Base Check		281.5	
Field Check		281.5	

FE Constants MFE-A.A 55			Last Edited on 16-JUN-2012,07:56
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 45				Base Calibration on 12-JAN-2012,13:34	
				Field Check on 15-JUN-2012 08:39	
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		79.4	Deg F		
Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	0.0	0.0	18.4	3852.2	
2	0.0	0.0	31.7	3630.1	
3	0.0	0.0	28.6	3049.8	
4	0.0	0.0	18.3	2079.3	
Deep	0.0	0.0	16.0	1911.1	
Medium	0.0	0.0	42.5	4061.3	
Shallow	0.0	0.0	49.6	5484.6	
Array Temperature		0.0	72.3	Deg F	

Induction Constants MAI-A.A 45			Last Edited on 16-JUN-2012,07:56
Induction Model	RtAP-WBM		
Caliper for Borehole Corr.	Density Caliper		
Hole Size for Borehole Correction	N/A	inches	
Tool Centred	No		
Stand-off Type	Fins		
Stand-off	0.50	inches	
Number of Fins on Stand-off	8.0000		
Stand-off Fin Angle	45.00	degrees	
Stand-off Fin Width	0.5000	inches	
Borehole Corr. Rm Source	Temperature Corr		
Temp. for Rm Corr.	MCG External Temperature		
Squasher Start	0.0020	mhos/metre	
Squasher Offset	N/A	mhos/metre	
Borehole Normalisation			
DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

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

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 12-JAN-2012,13:36

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

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 12-JAN-2012,11:13

Pre-filter Length	11
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Caliper Calibration MPD-B 59

Base Calibration on 13-JUN-2012 09:13
Field Calibration on 15-JUN-2012 08:44

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	17499	3.99
2	27390	5.98
3	37376	7.97
4	47038	9.86
5	58183	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.98	5.98

Photo Density Calibration MPD-B 59

Base Calibration on 16-MAY-2012 14:49
Field Check on 15-JUN-2012 08:51

Density Calibration				
Base Calibration				
		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	49293	24802	59556	30836
Reference 2	20819	2436	24941	2541
Field Check at Base				
	1213.5	1290.5		
Field Check				
	1226.1	1295.9		
PE Calibration				
Base Calibration				
	WS	Measured	Calibrated	
		WH	Ratio	Ratio
Background	220	1092		
Reference 1	18022	49118	0.371	0.371
Reference 2	5449	20689	0.267	0.272
Field Check at Base				
	220.3	1091.9		
Field Check				
	213.7	1106.6		

Density Constants MPD-B 59

Last Edited on 16-JUN-2012,07:56

Density Source Id	254
Nylon Calibrator Number	DNCE695

Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.09	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 11.03.4044\Data\Cholla Production Bontrager 29-1 OWWO\Cholla Production Bontrager 29-1 OWWO_001.dta

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

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

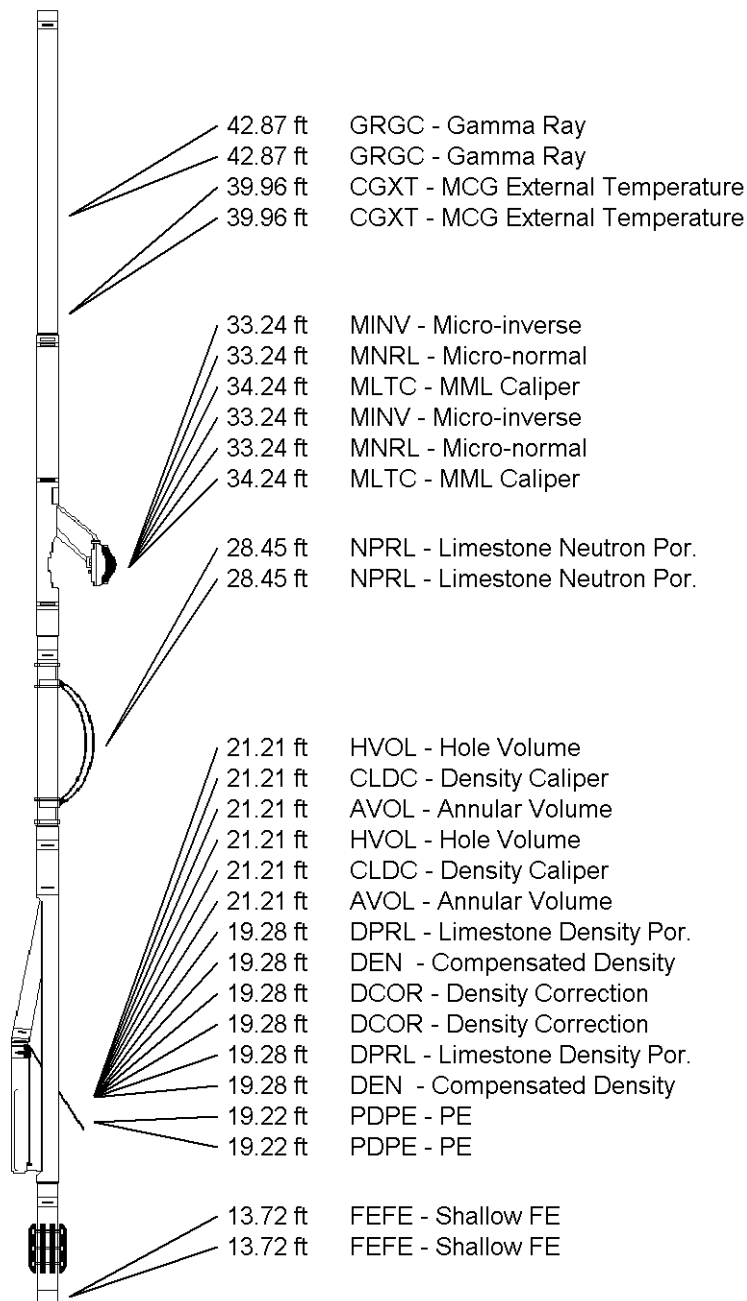
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 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

Compact Induction

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

Total Length: 48.16 ft Weight: 383.6 lb

Total Length: 48.16 ft Weight: 383.6 lb



3.34 ft RTAO - Array Ind. One Res Rt
3.34 ft R60O - Array Ind. One Res 60
3.34 ft R40O - Array Ind. One Res 40
3.34 ft R40O - Array Ind. One Res 40
3.34 ft R60O - Array Ind. One Res 60
3.34 ft RTAO - Array Ind. One Res Rt
0.23 ft SPCG - Spontaneous Potential
0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.
All measurements relative to tool zero.

COMPANY	CHOLLA PRODUCTION LLC
WELL	BONTRAGER #29-1 OWWO
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2993.00	feet	First Reading	5283.00	feet
Elevation Drill Floor	2992.00	feet	Depth Driller	5296.00	feet
Elevation Ground Level	2988.00	feet	Depth Logger	5303.00	feet



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