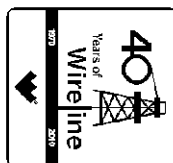




Weatherford

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG



COMPANY		GRAND MESA OPERATING	
WELL		DBY # 1-16	
FIELD		WILDCAT	
PROVINCE/COUNTY		SCOTT	
COUNTRY/STATE		U. S. A / KANSAS	
LOCATION		524' FSL & 1307' FWL	
SEC	TWP	RGE	Other Services
16	16S	33W	MAI/MFE
API Number	15-171-20822		MSS
Permit Number			
Permanent Datum G.L., Elevation 3075 feet			
Log Measured From KB			
Drilling Measured From K.B.			
Date	06-AUG-2011		Elevations:
Run Number	ONE		KB
Depth Driller	4900.00	feet	3086.00
Depth Logger	4902.00	feet	3084.00
First Reading	4866.00	feet	3075.00
Last Reading	3900.00	feet	
Casing Driller	226.00	feet	
Casing Logger	225.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.10 lb/USg	40.00 CP	
PH / Fluid Loss	10.00	9.60 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.47 @ 94.0	ohm-m	
Rmf @ Measured Temp	0.34 @ 94.0	ohm-m	
Rmc @ Measured Temp	0.56 @ 94.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.36 @126.0	ohm-m	
Time Since Circulation	4 HOURS		
Max Recorded Temp	126.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	13025	LIB	
Recorded By	R. HOFFMAN		F. MARTINS
Witnessed By	STEVE CARL		
S.O. # / JOB #	3529200		LB11 - 188

40

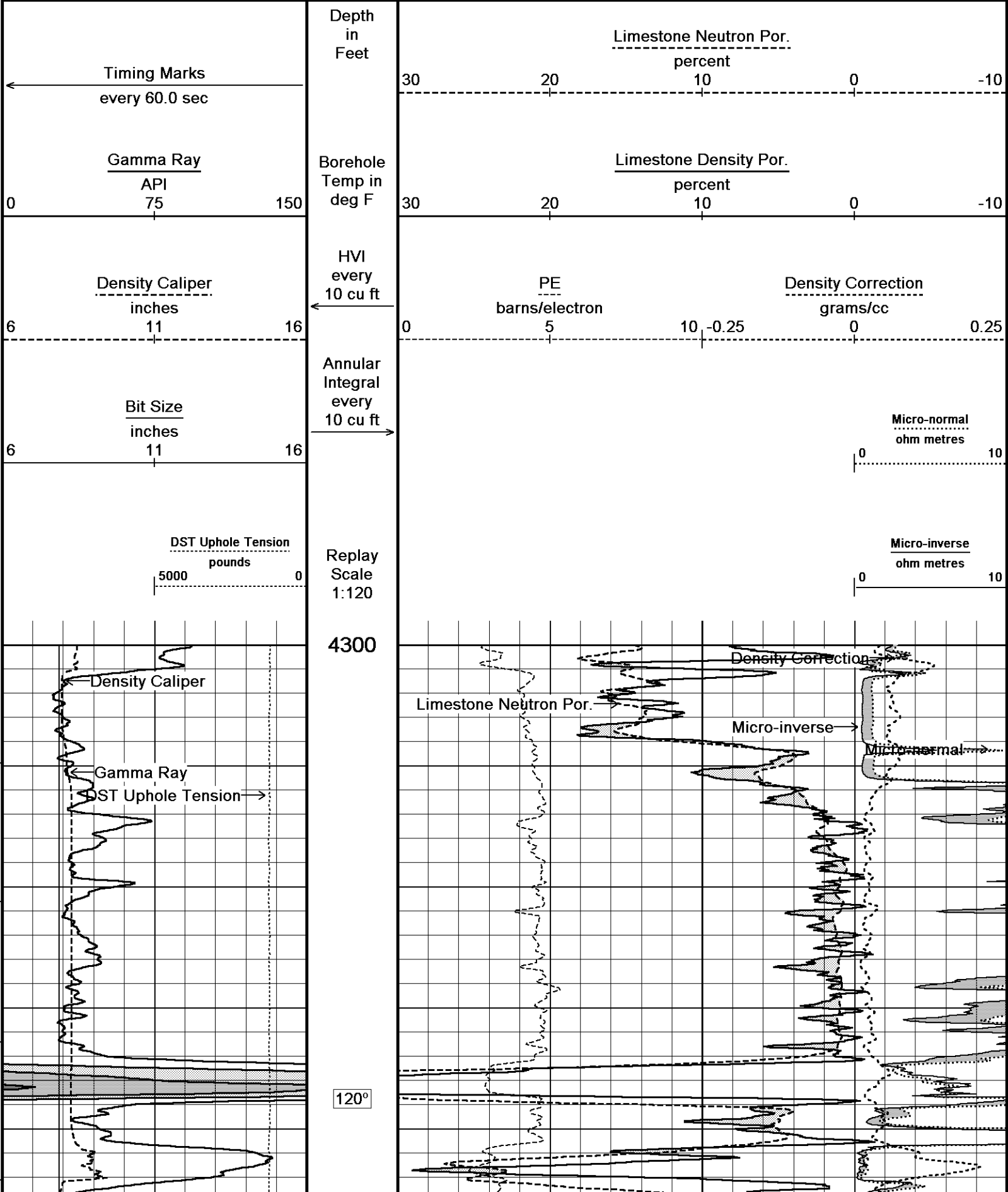
Years of
Wireline

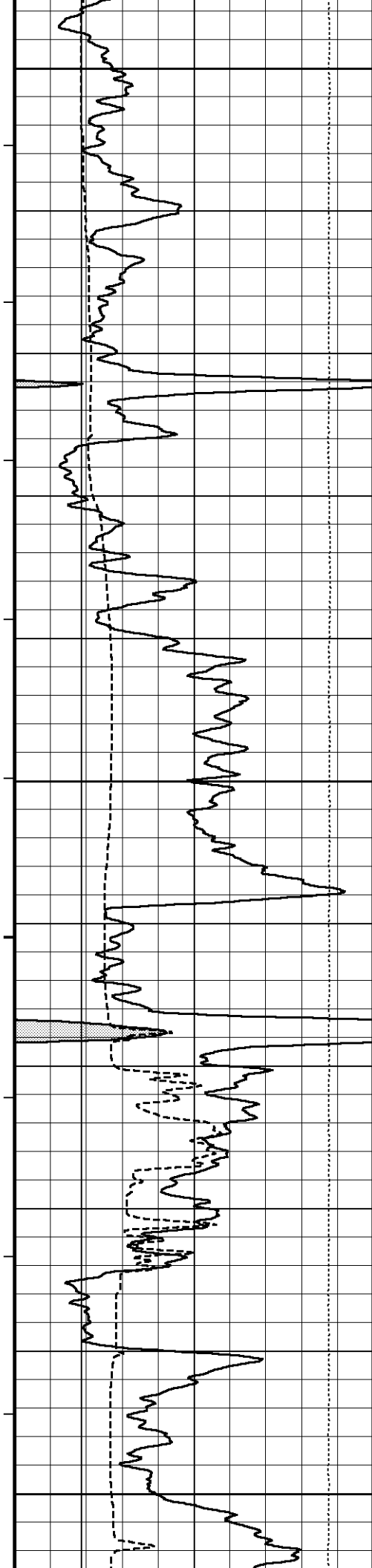
3073 2019

BOREHOLE RECORD			Last Edited: 06-AUG-2011 07:31	
Bit Size inches	Depth From feet		Depth To feet	
7.875	225.00		4902.00	
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	225.00	24.00

REMARKS
Tools Used: MPD, MCG, MDN, MML, MFE, MAI, MSS Hardware: MPD: 8 inch profile plate used. MDN: Dual Bowspring used. 2.71 G/CC Limestone density matrix used to calculate porosity. Sonic porosity calculated using a Limestone scale (47.5 usec/ft.). Borehole rugosity, tight pulls, and washouts will affect data quality. All intervals logged and scaled per customer's request. Annular volume with 5.5 inch production casing = 221 cu. ft. Service order #3529200 Rig: Murtin # 22 Engineer: R. Hoffman / F. Martins Operator(s): J. Lapoint

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.





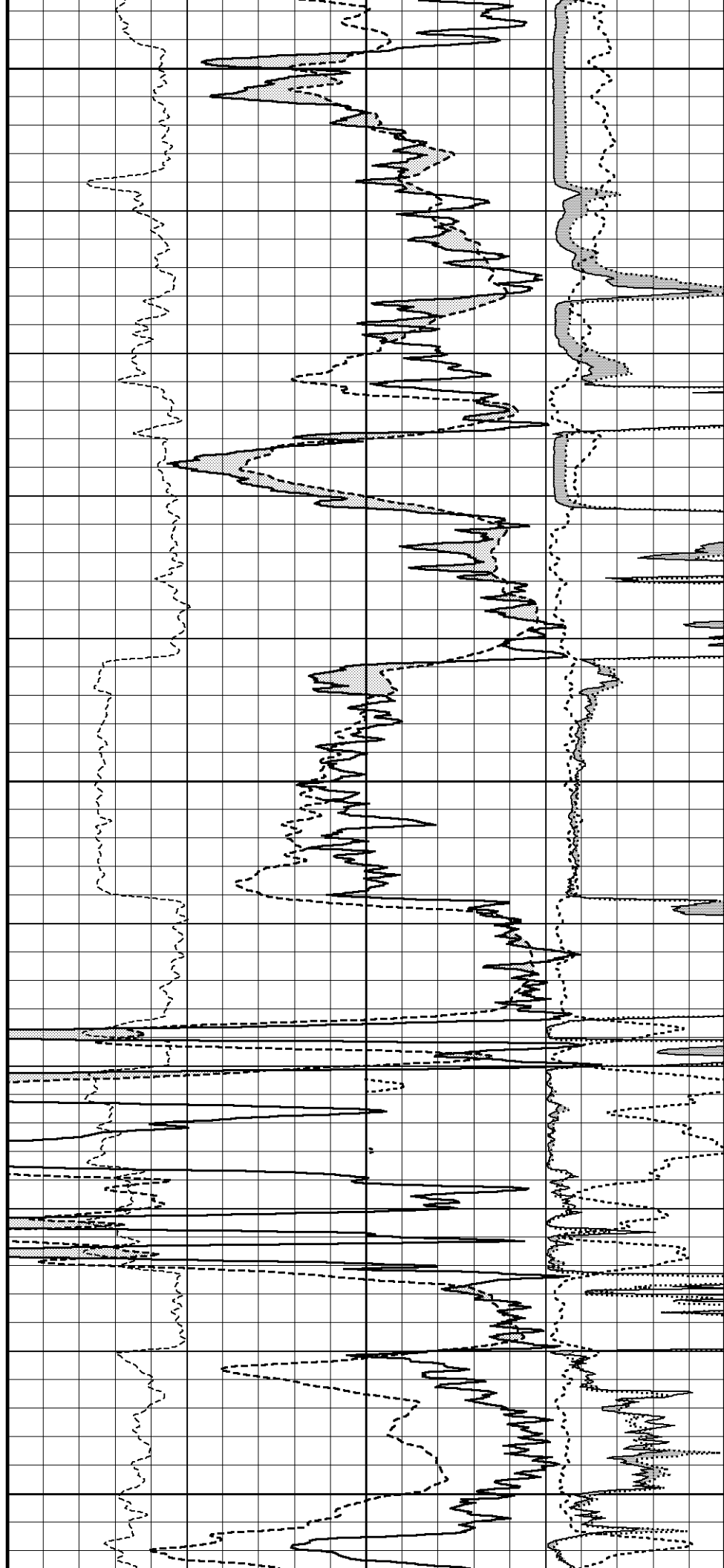
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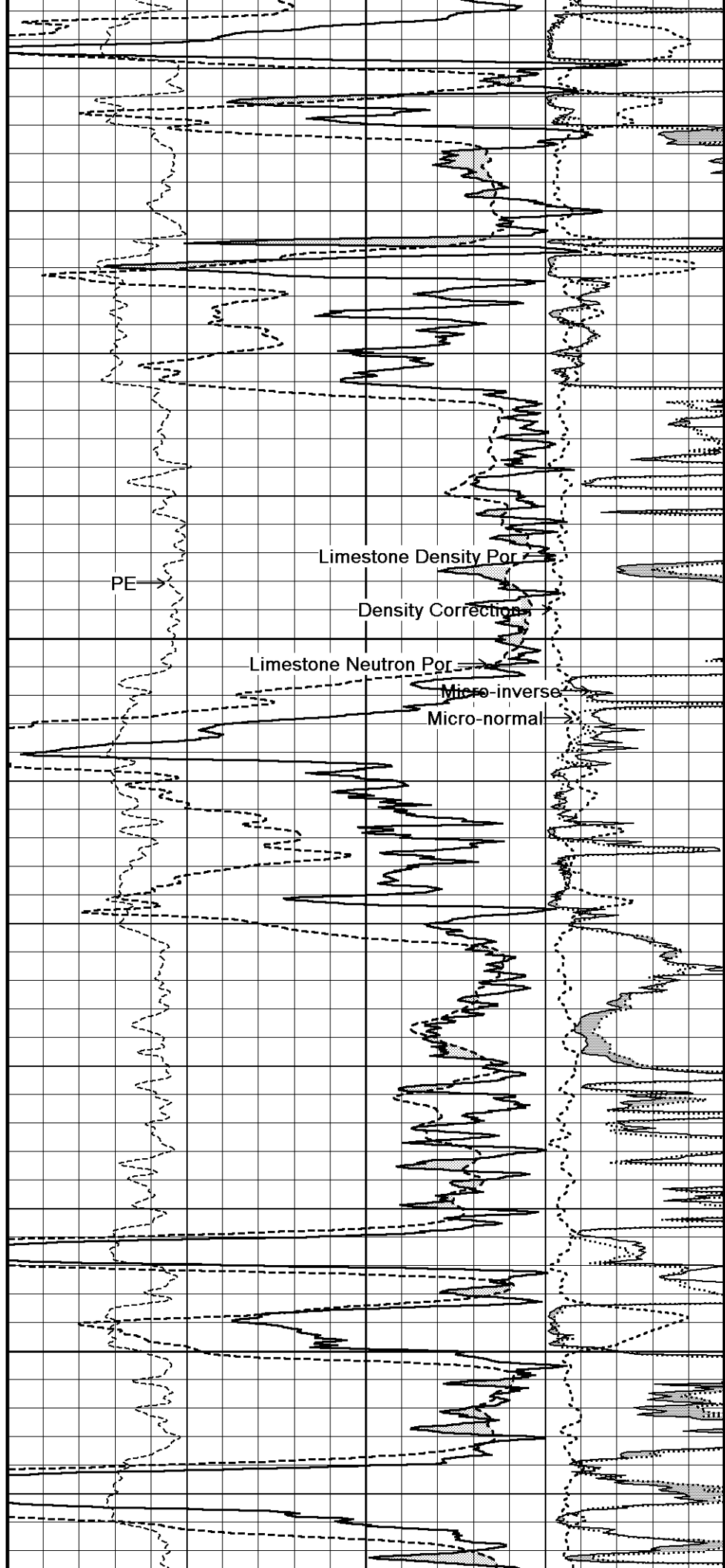
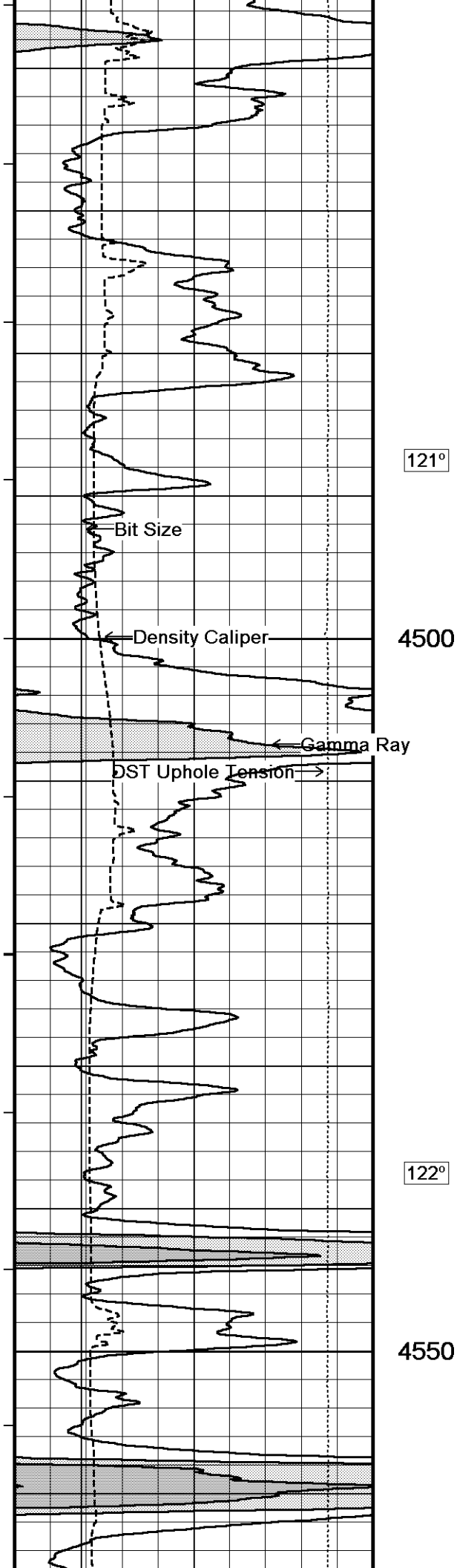
120°

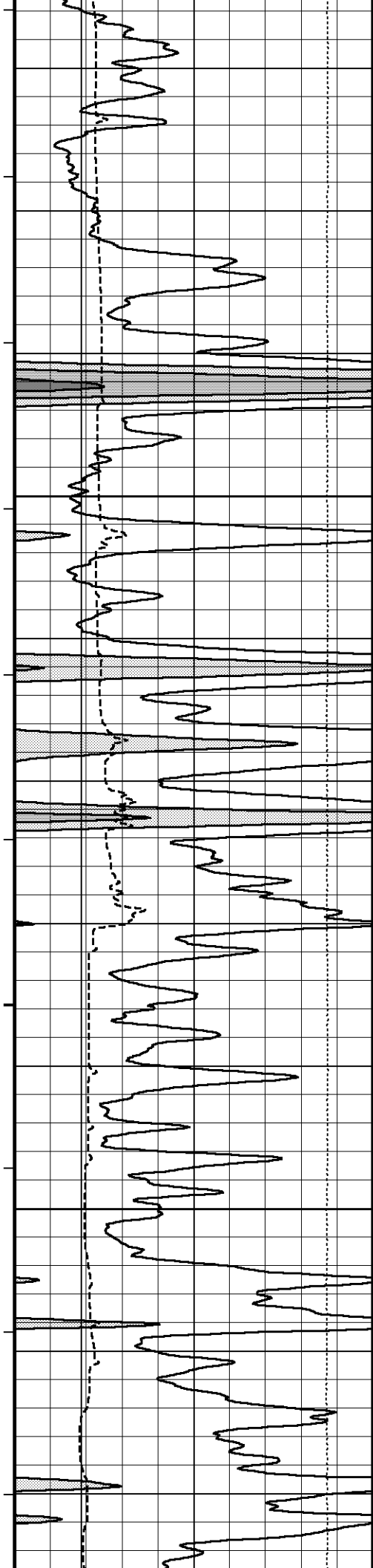
4400

121°

4450





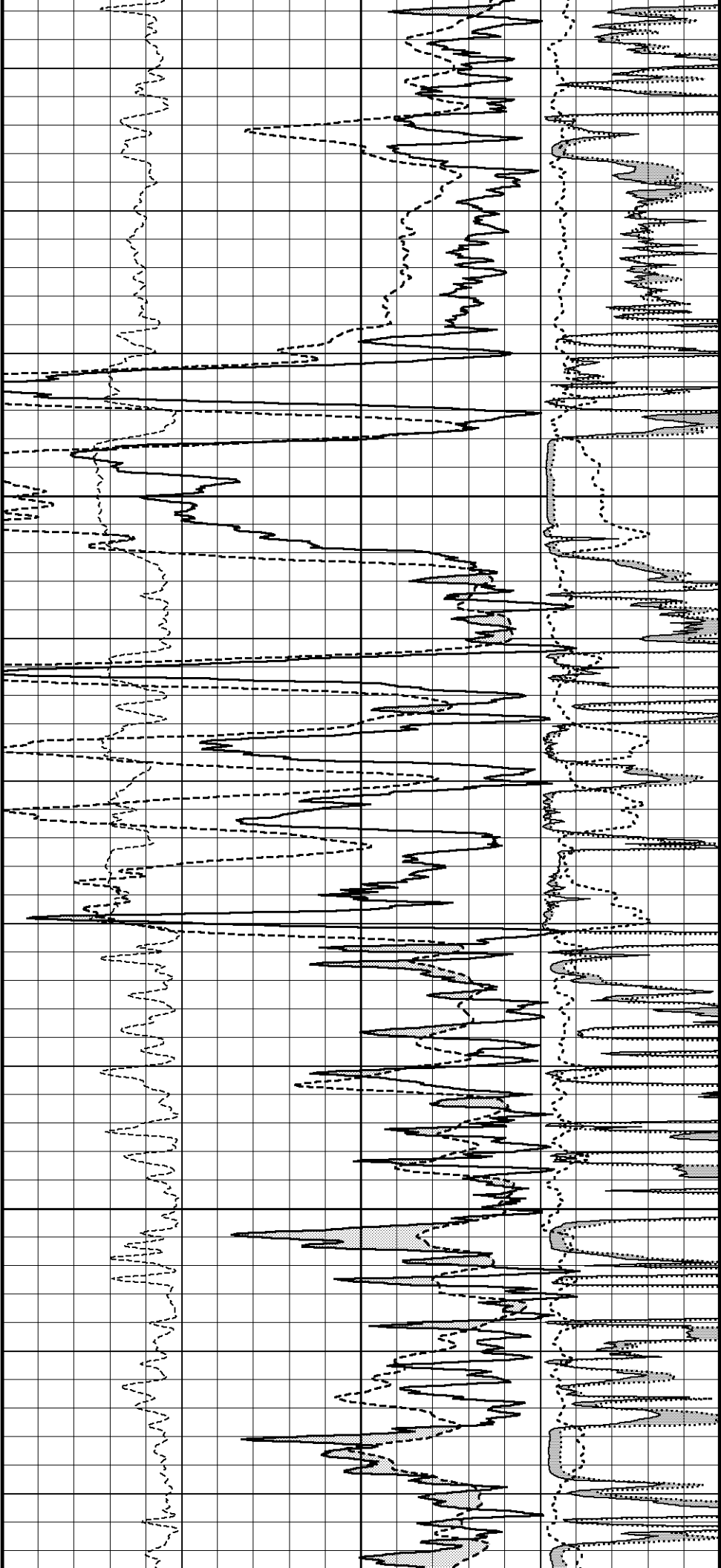


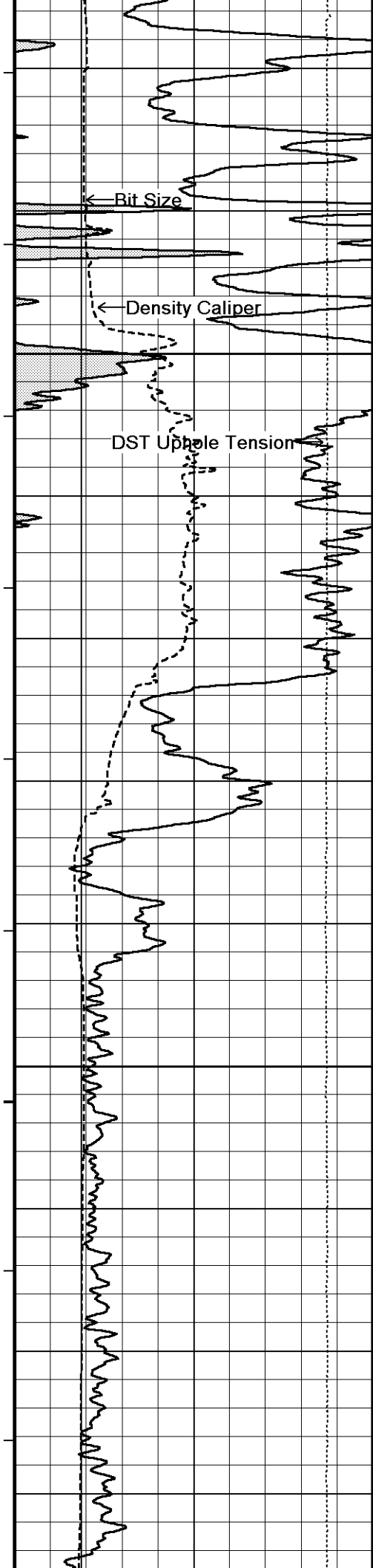
122°

4600

122°

4650



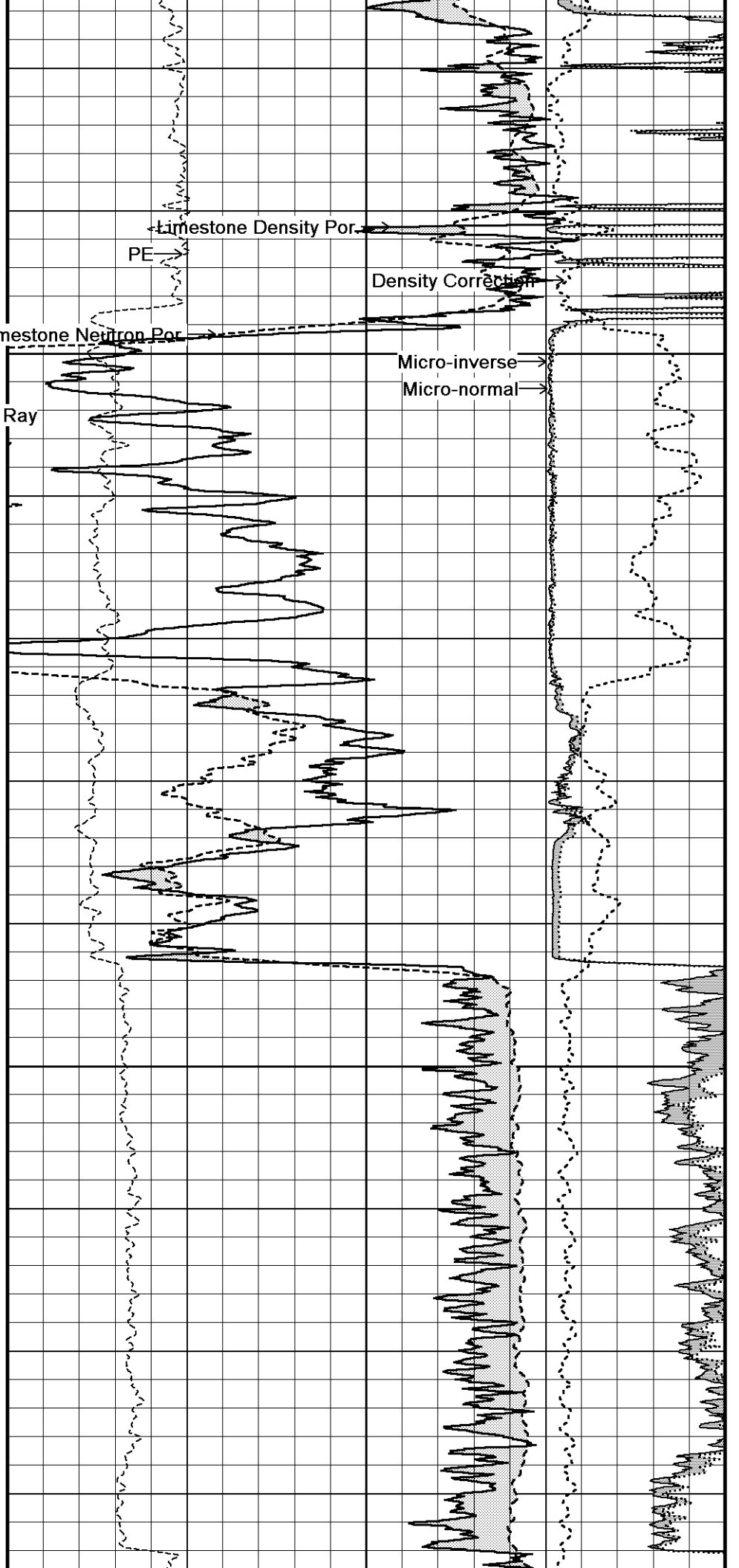


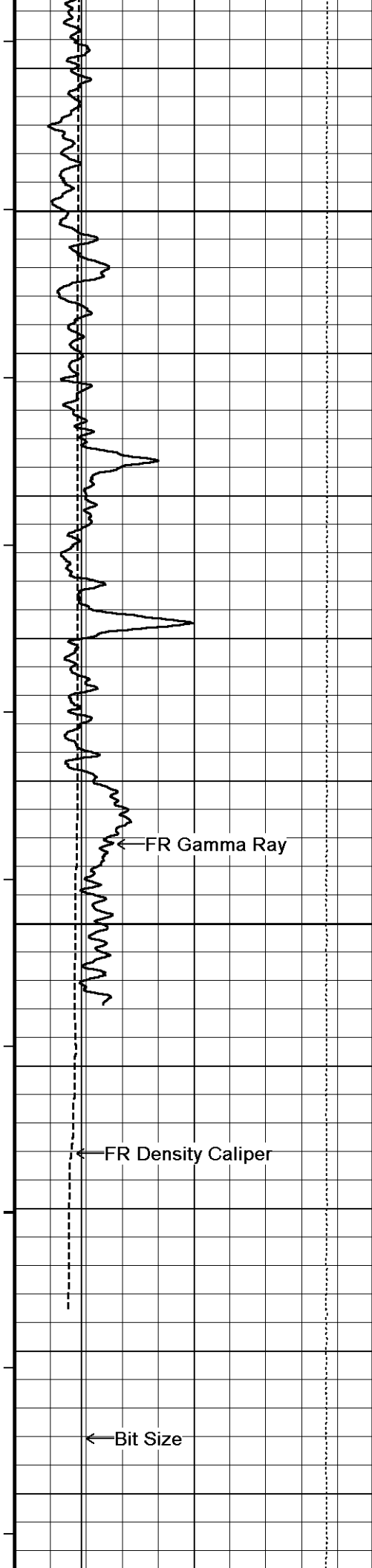
123°

4700

124°

4750





125°

4800

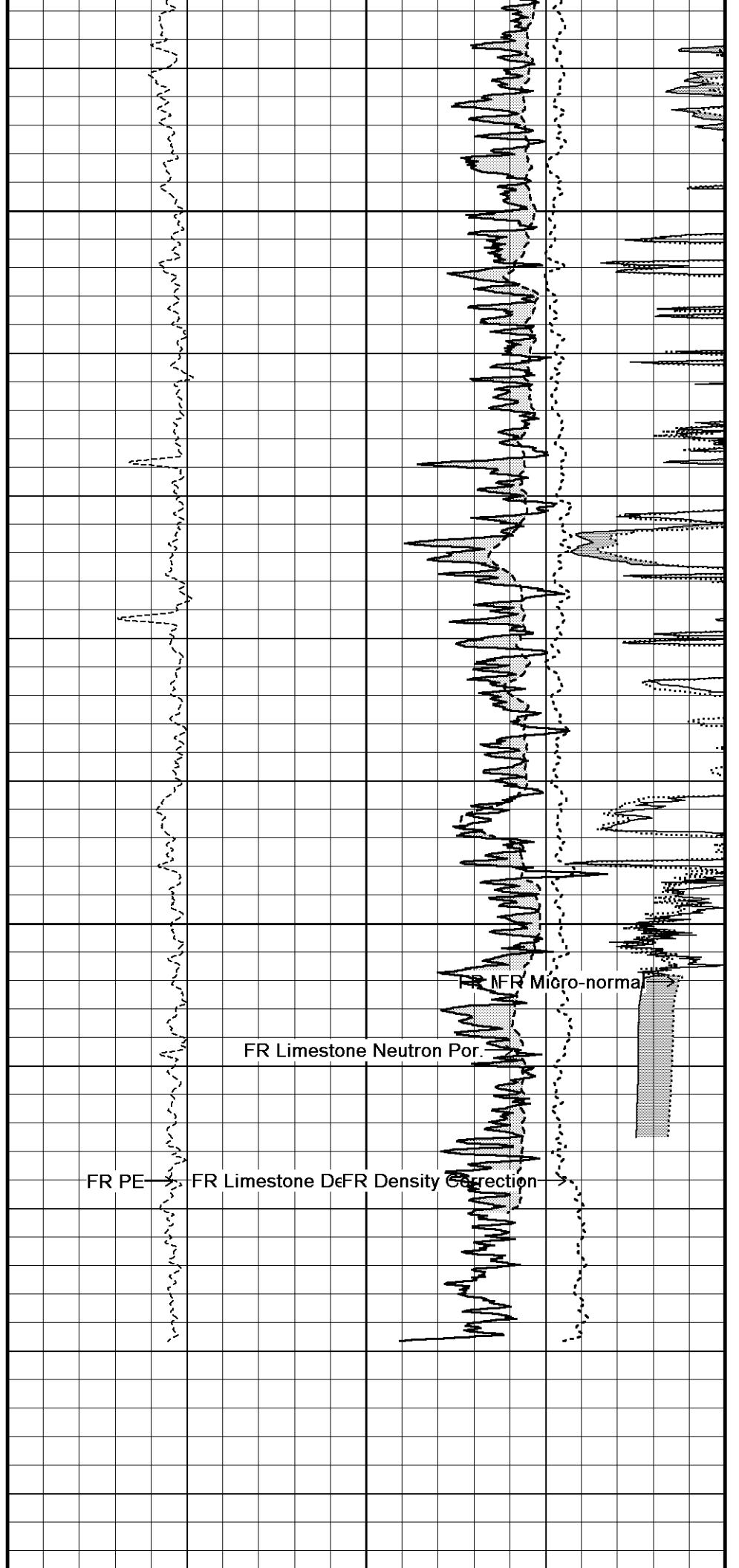
125°

4850

FR Gamma Ray

FR Density Caliper

Bit Size

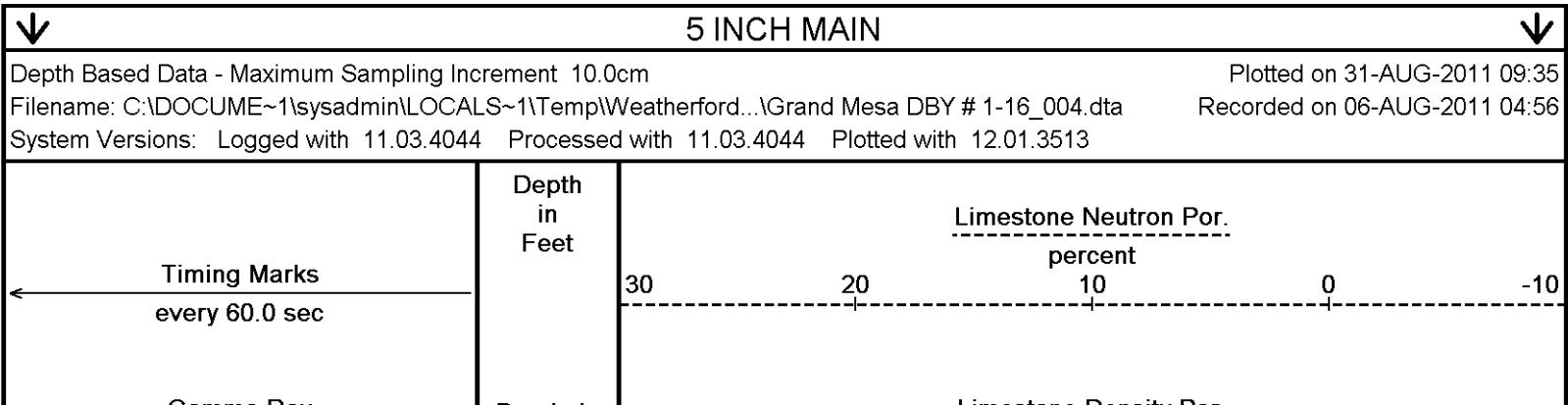
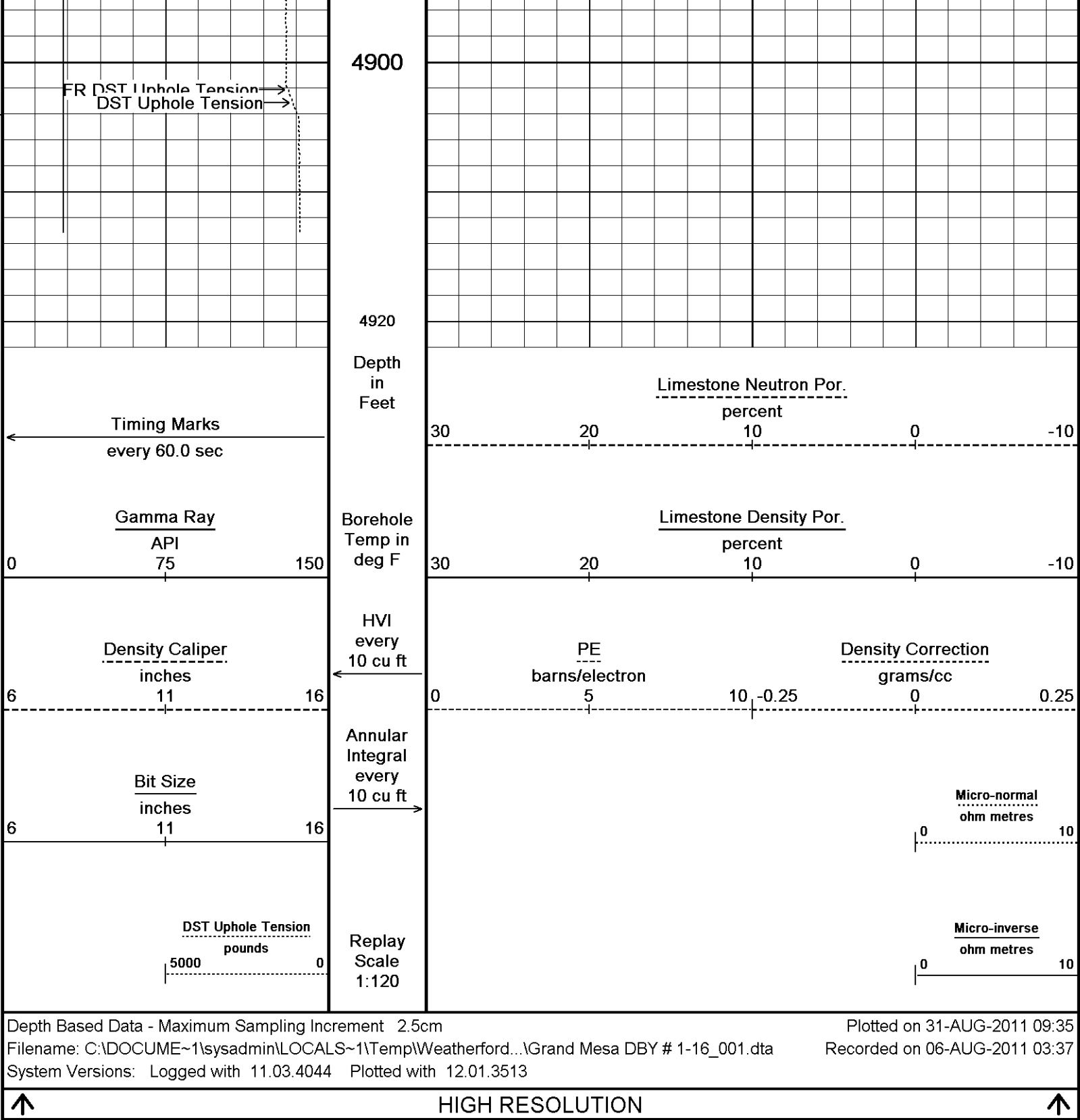


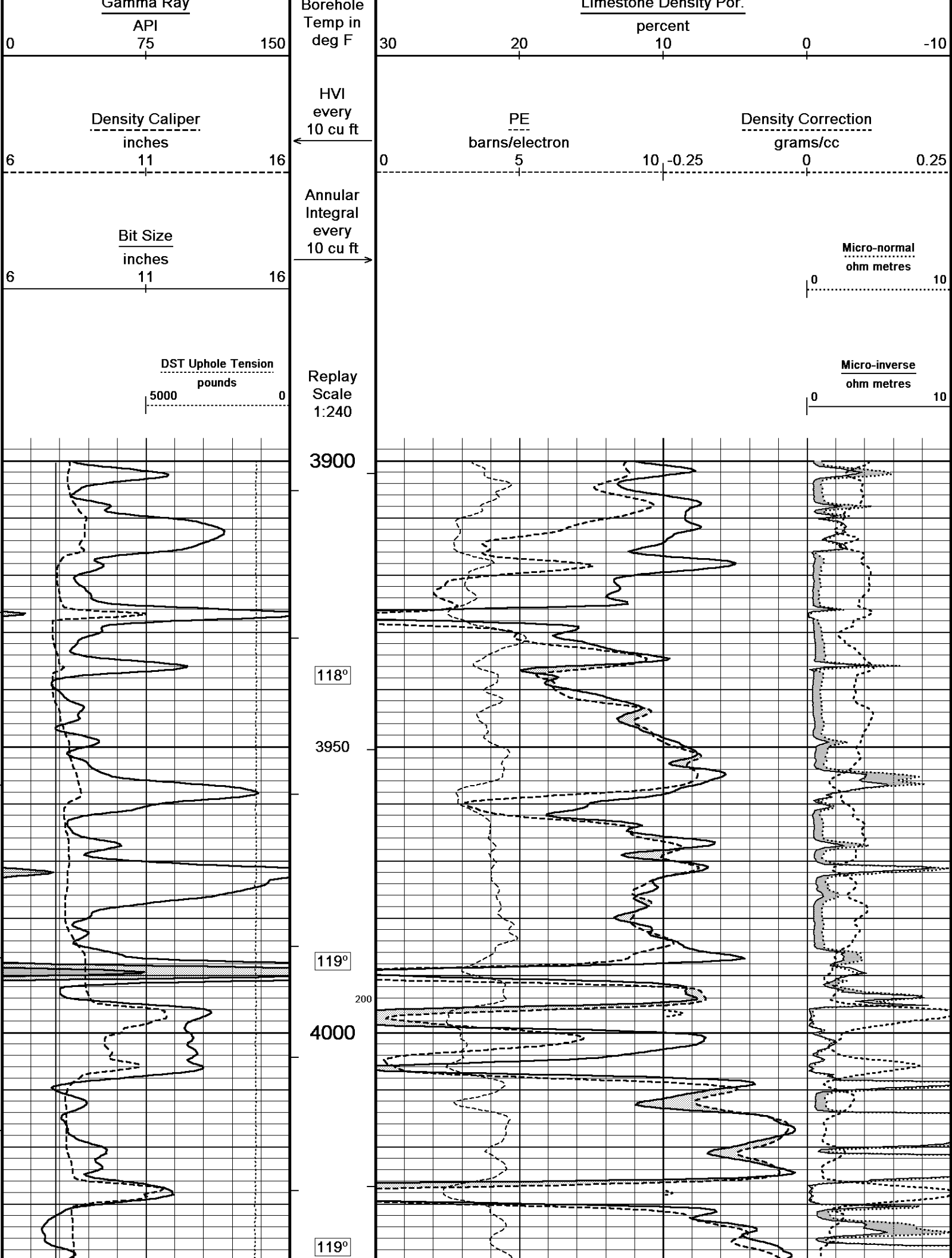
FR PE

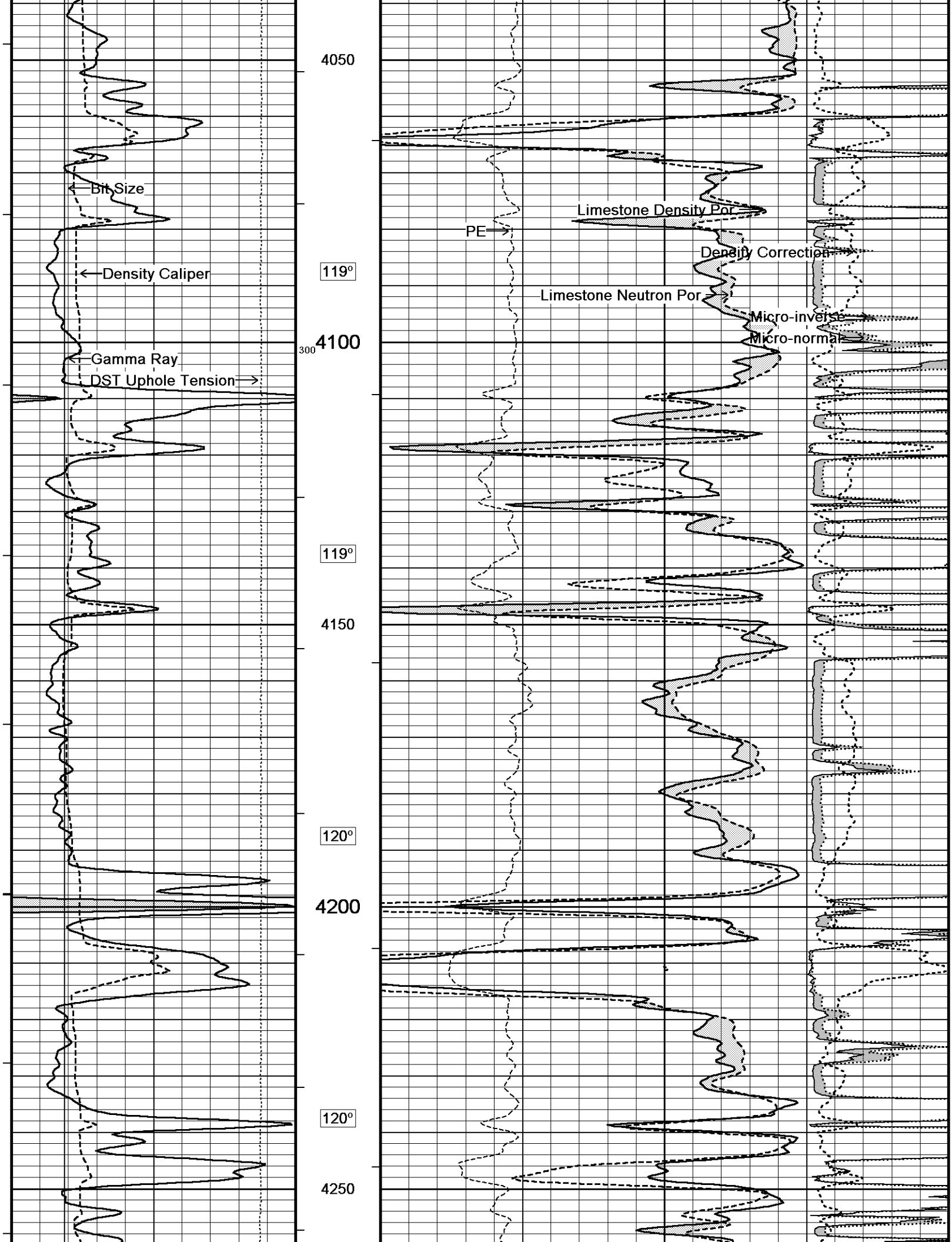
FR Limestone DeFR Density Correction

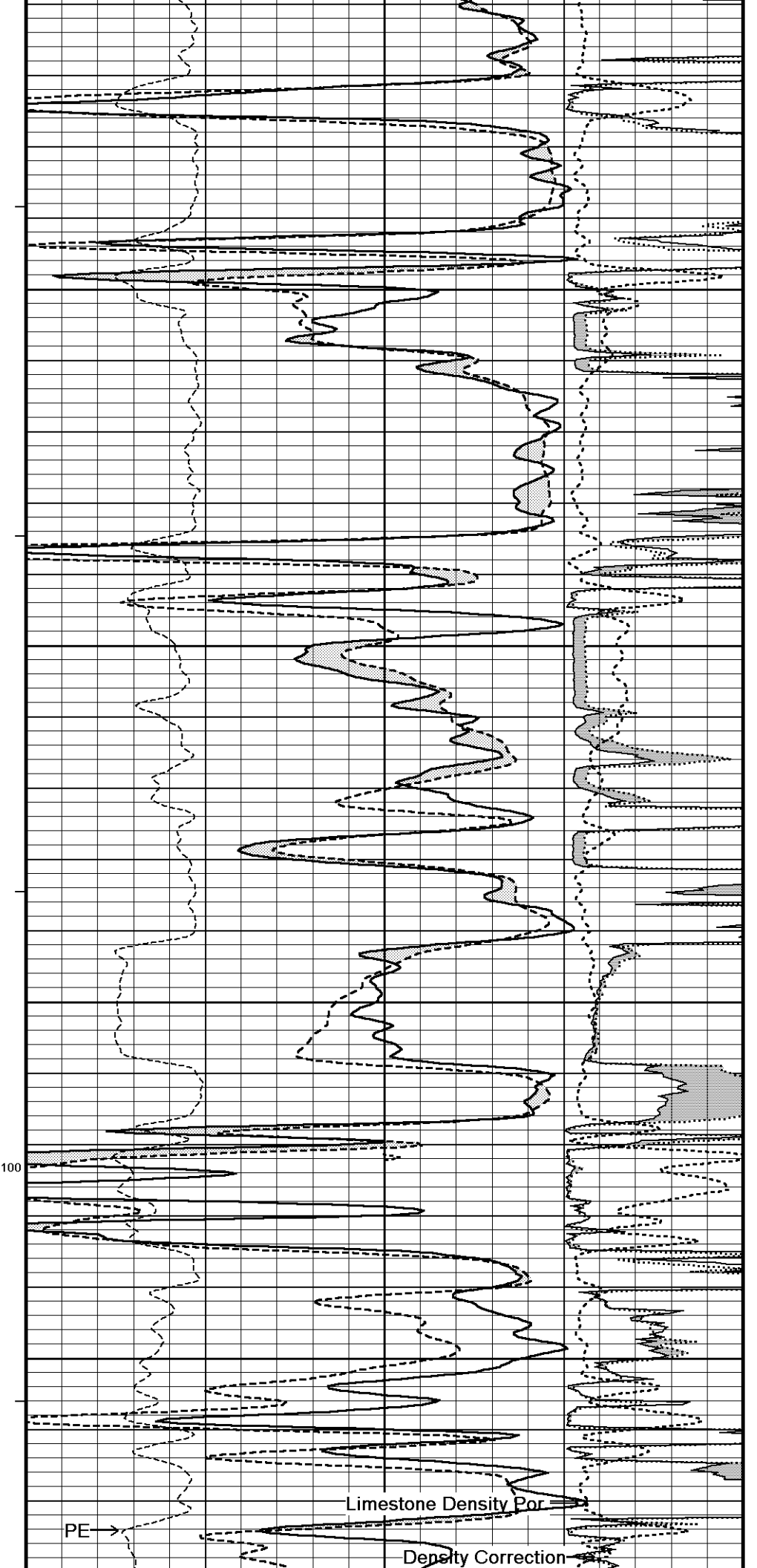
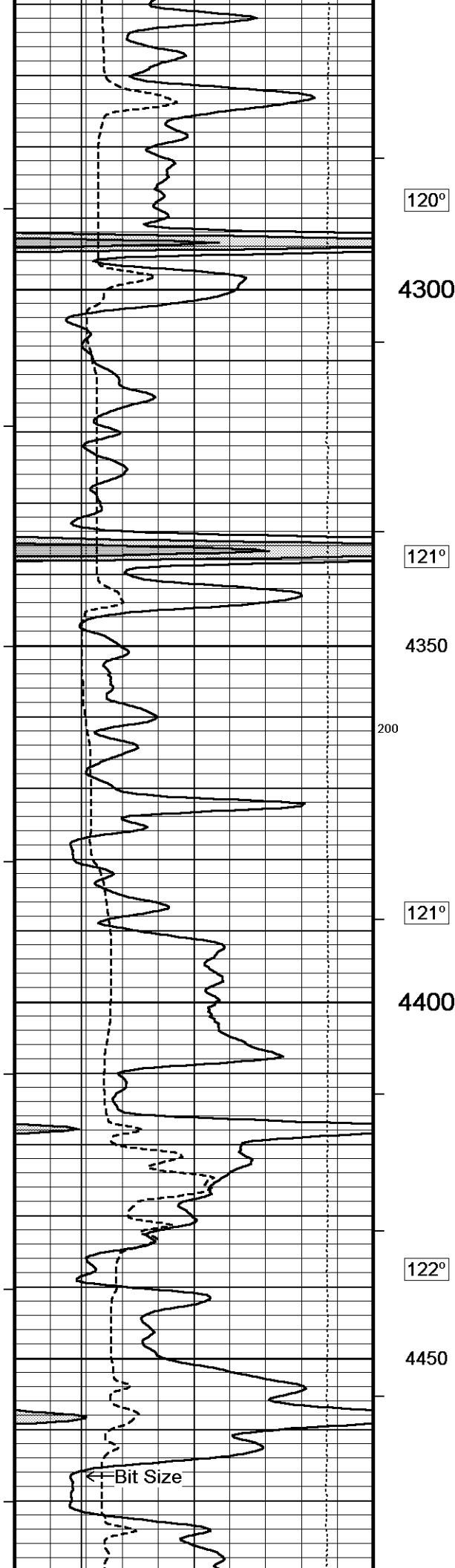
FR Limestone Neutron Por.

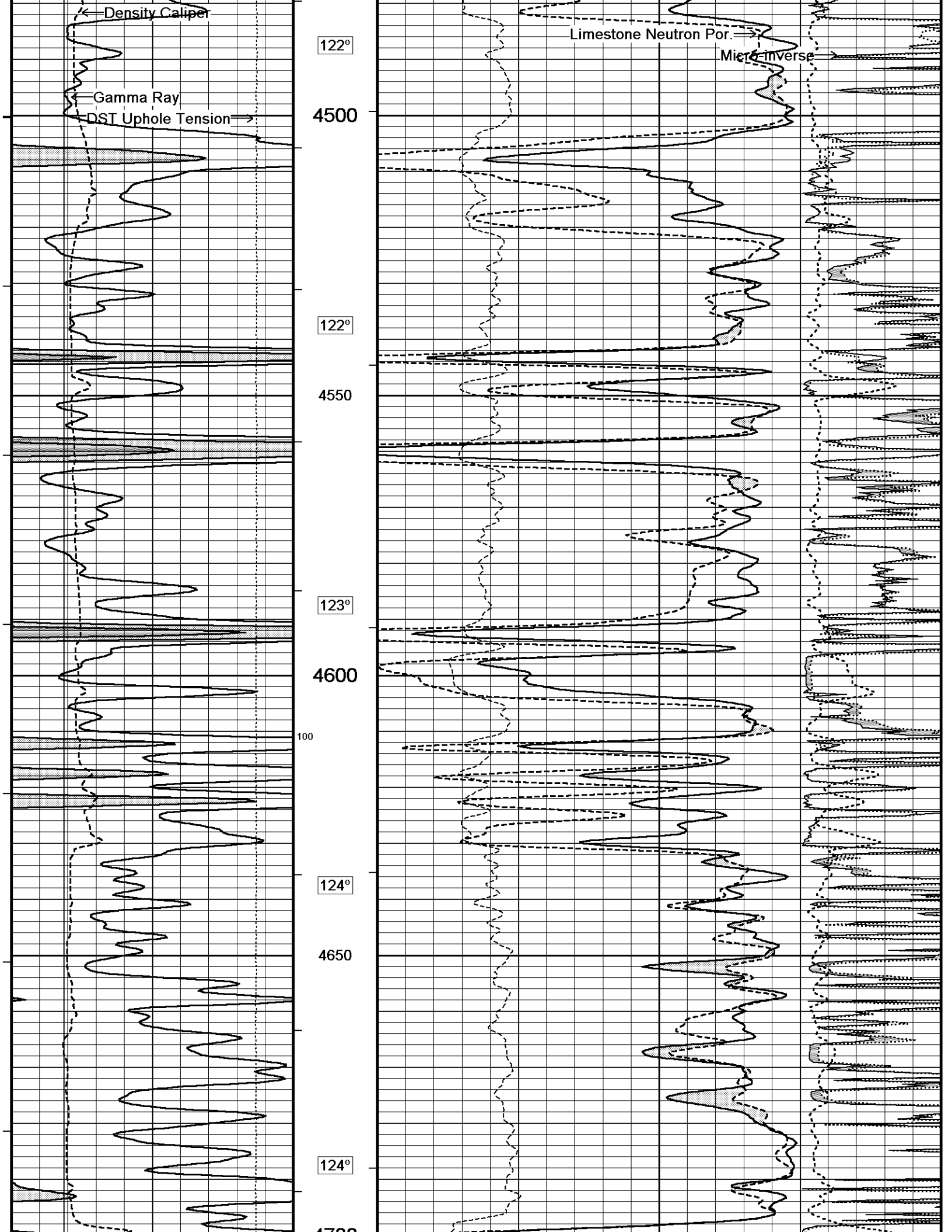
FR Micro-normal

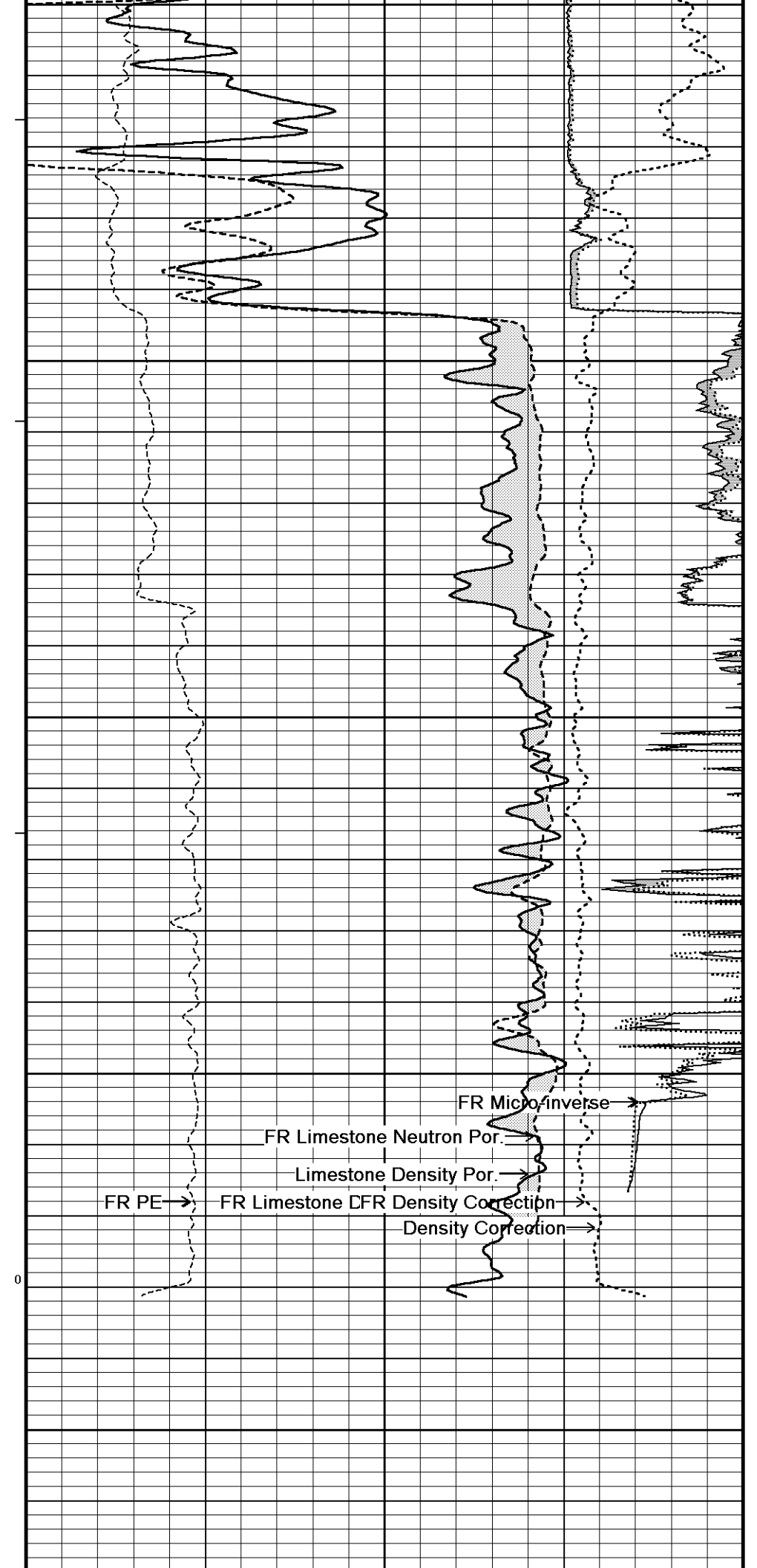
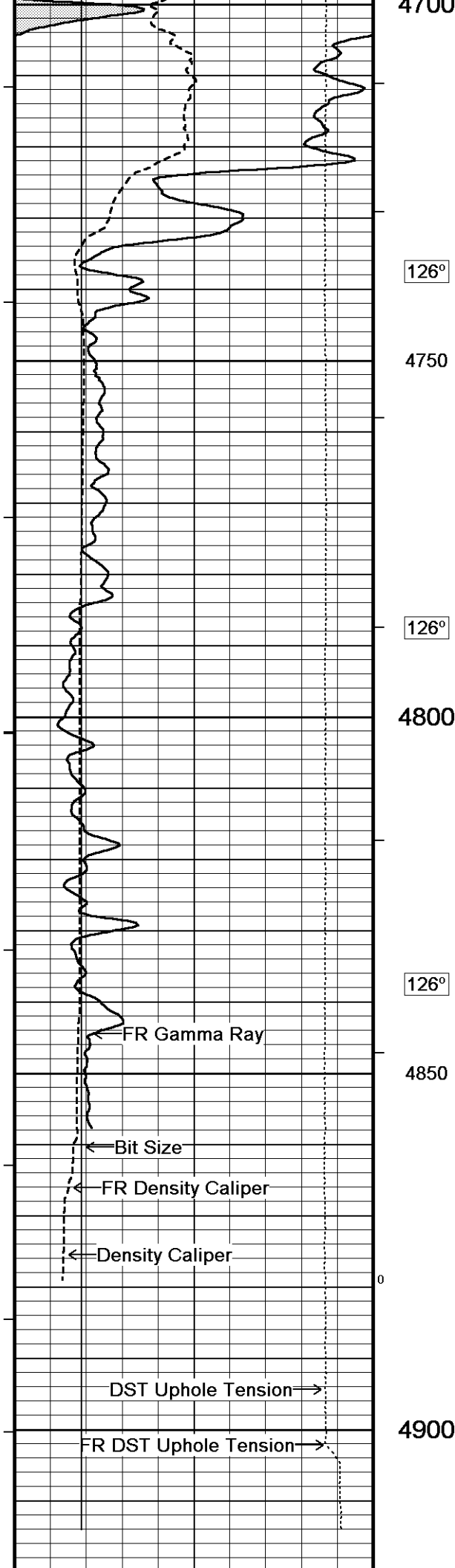


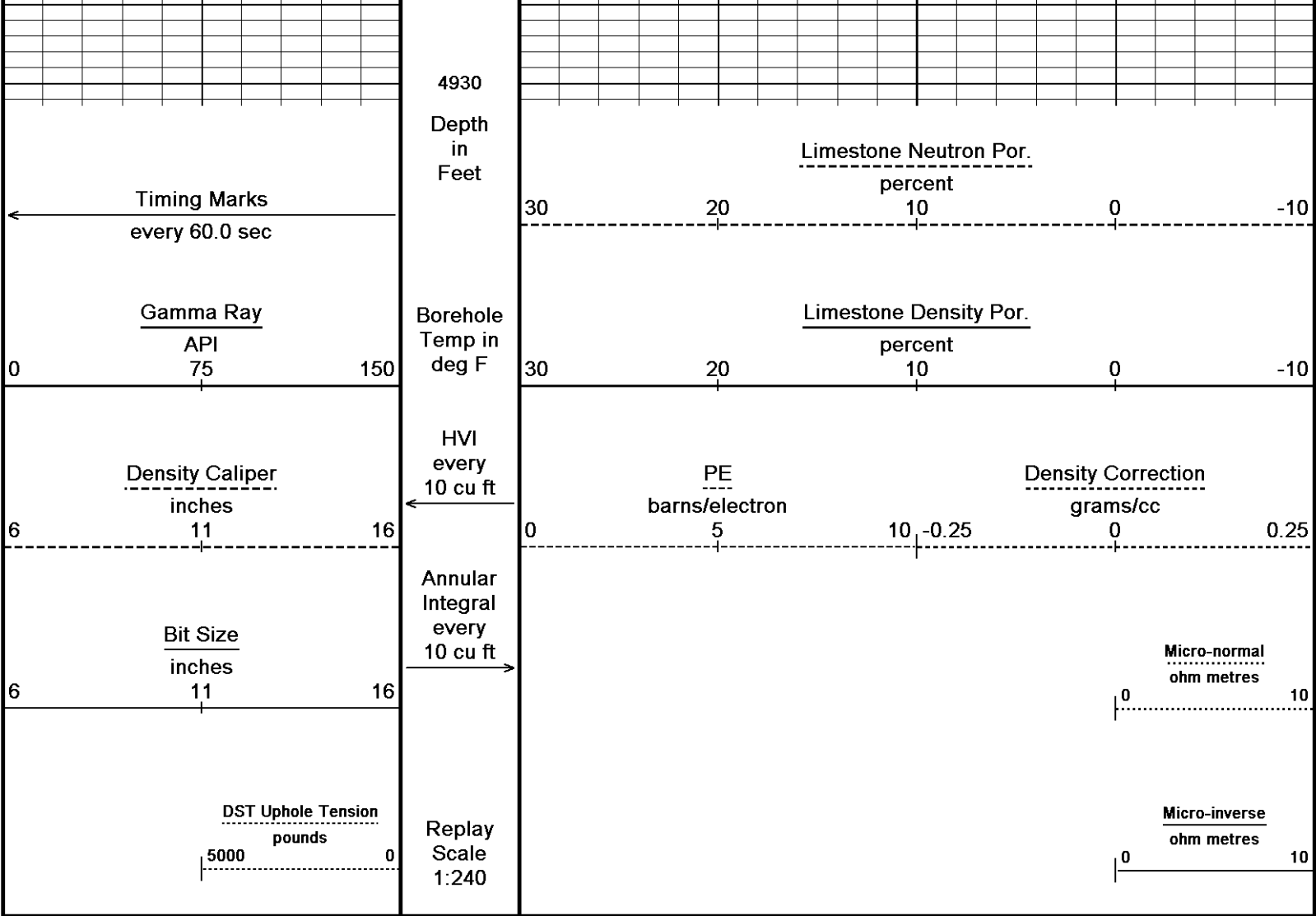












Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford...\Grand Mesa DBY # 1-16_004.dta
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

Plotted on 31-AUG-2011 09:35
Recorded on 06-AUG-2011 04:56

↑

5 INCH MAIN

↑

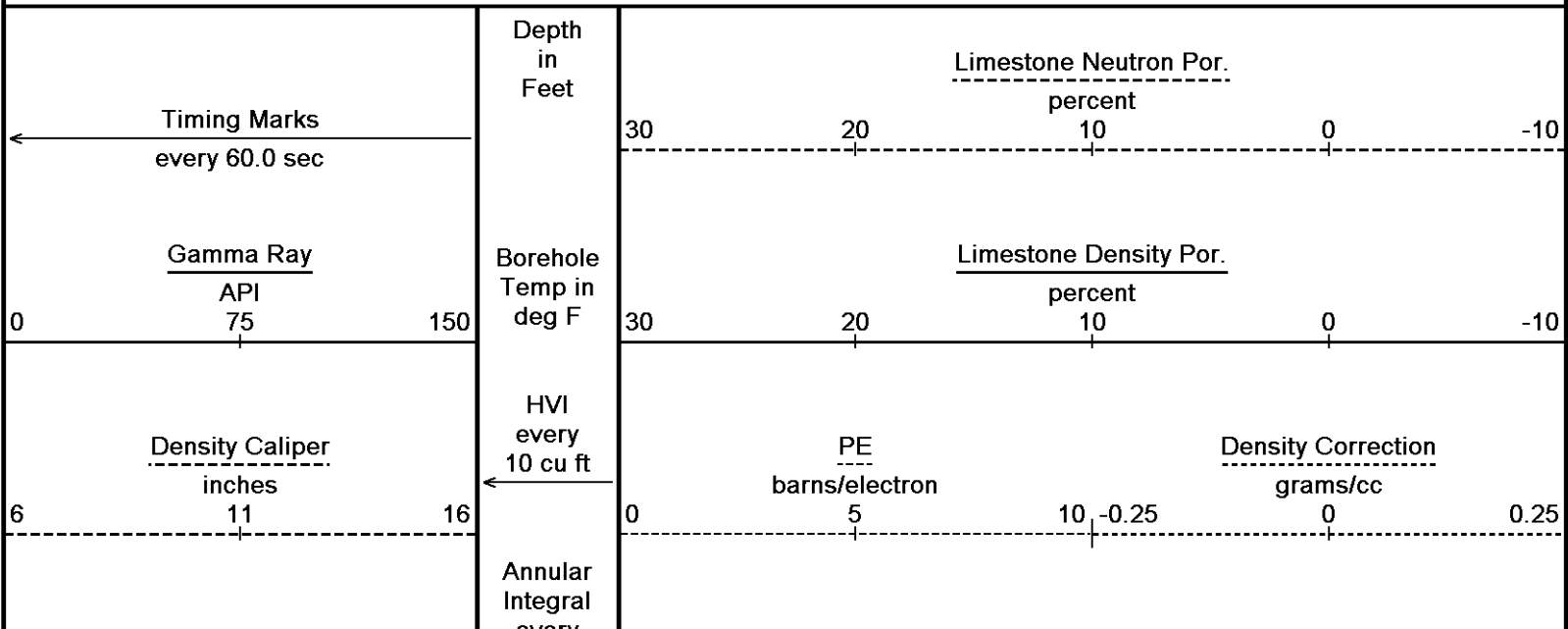
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REPEAT SECTION

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford...\Grand Mesa DBY # 1-16_002.dta
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

Plotted on 31-AUG-2011 09:35
Recorded on 06-AUG-2011 03:37



Bit Size
inches

6 11 16

DST Uphole Tension
pounds

5000 0

every
10 cu ft

Replay
Scale
1:240

Micro-normal
ohm metres

0 10

Micro-inverse
ohm metres

0 10

4300

120°

4350

120°

4400

121°

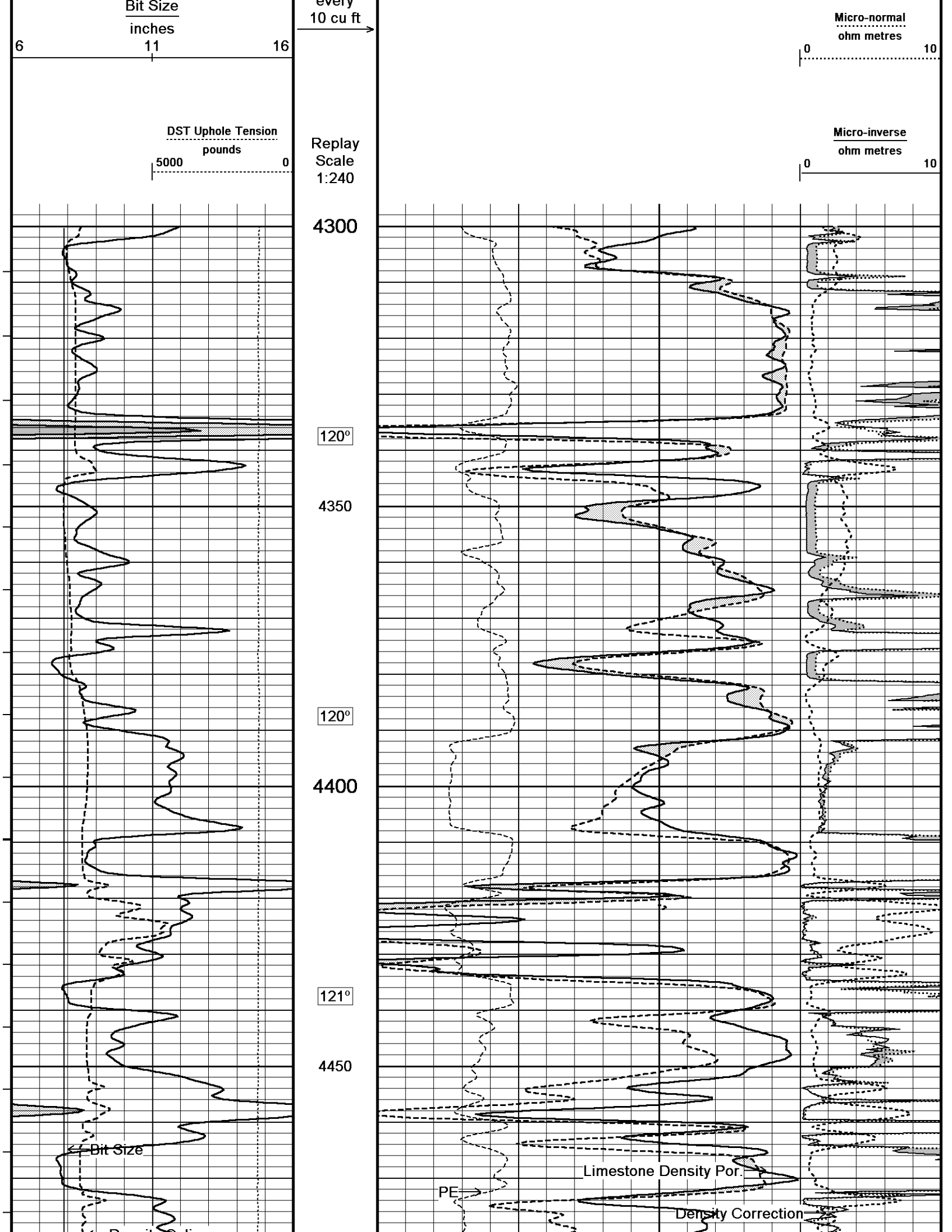
4450

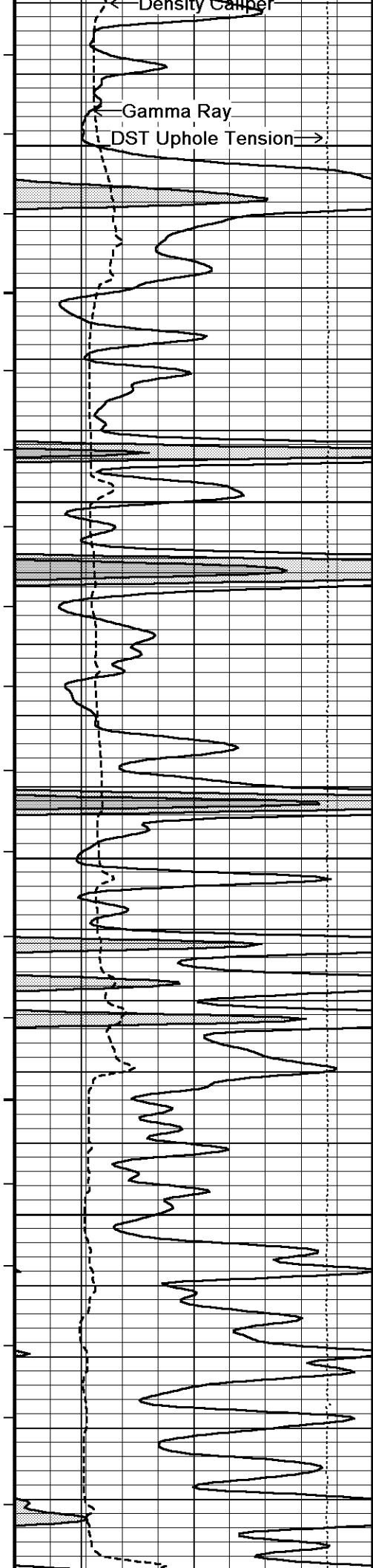
Bit Size

PE

Limestone Density Por.

Density Correction





121°

4500

122°

4550

122°

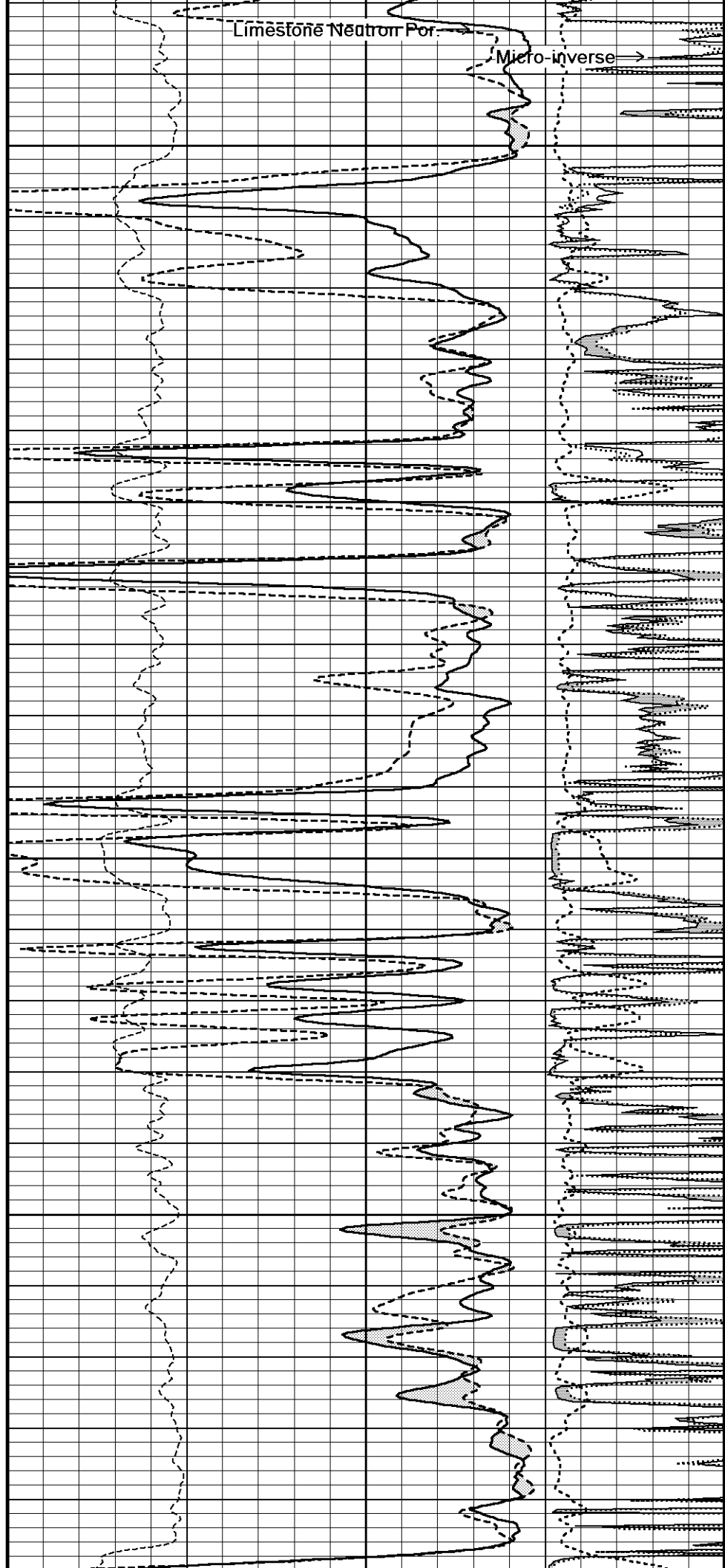
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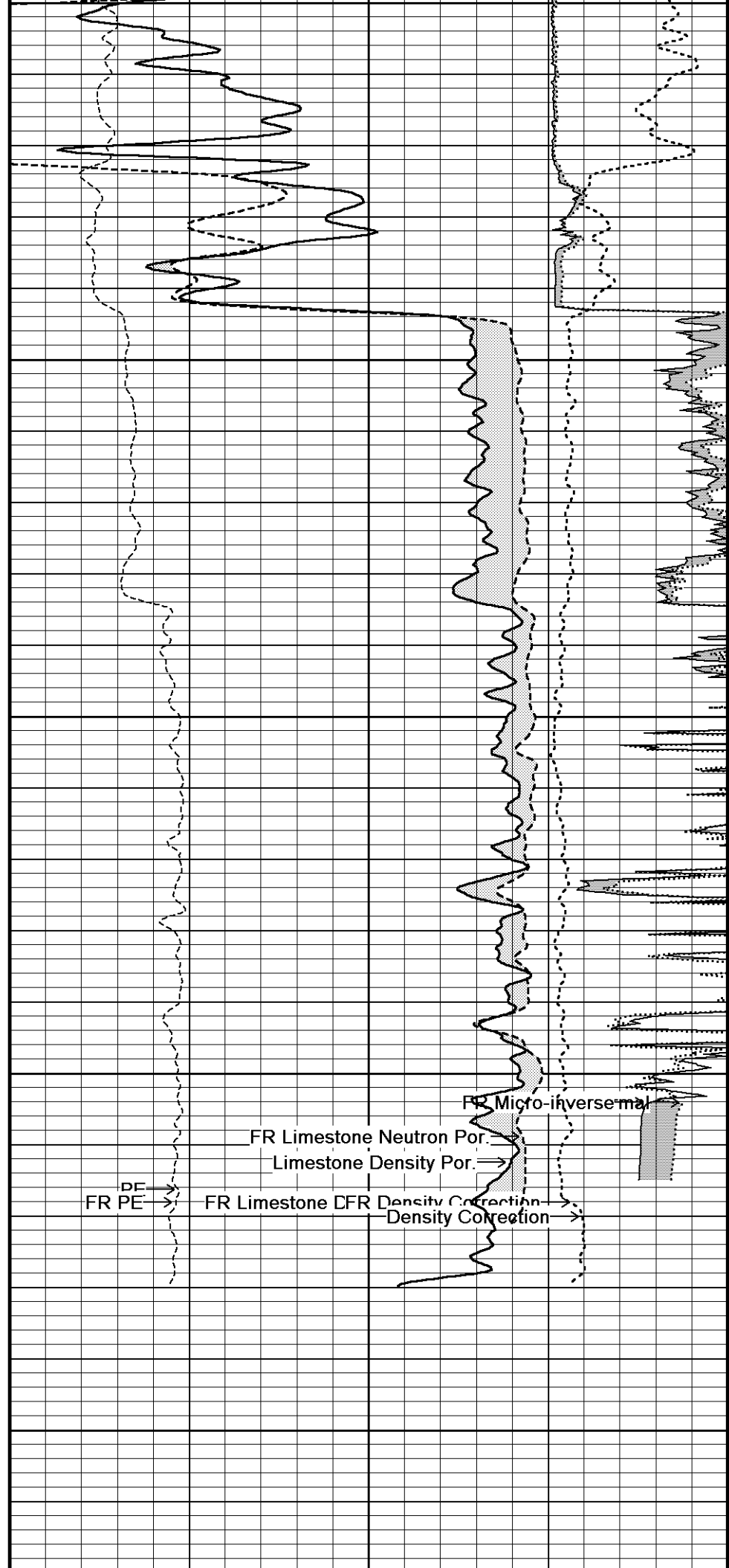
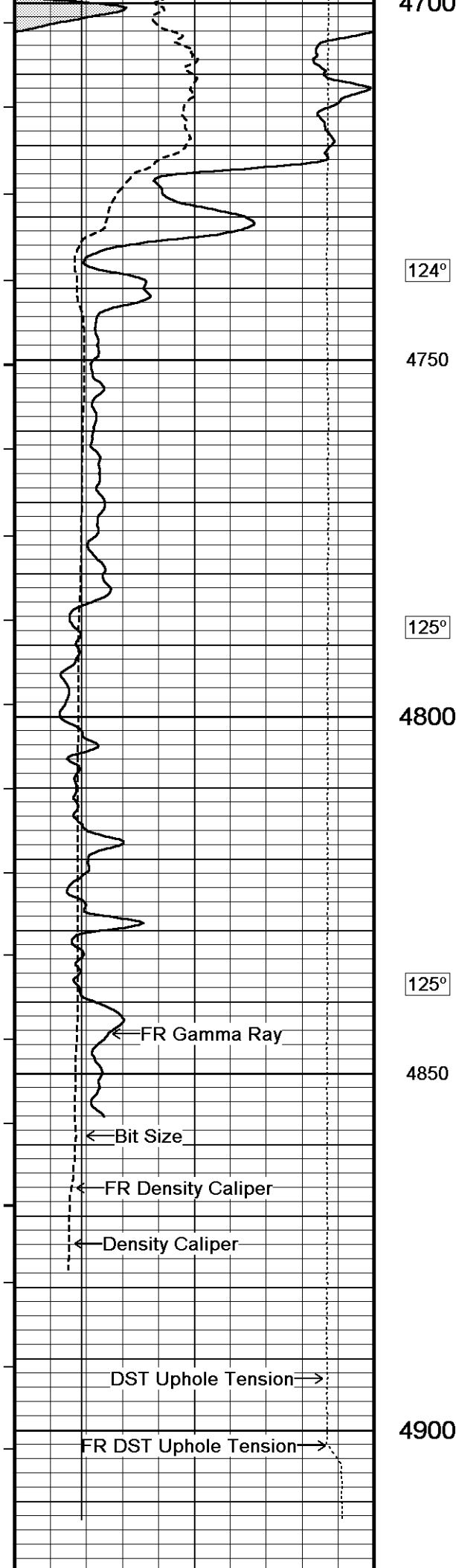
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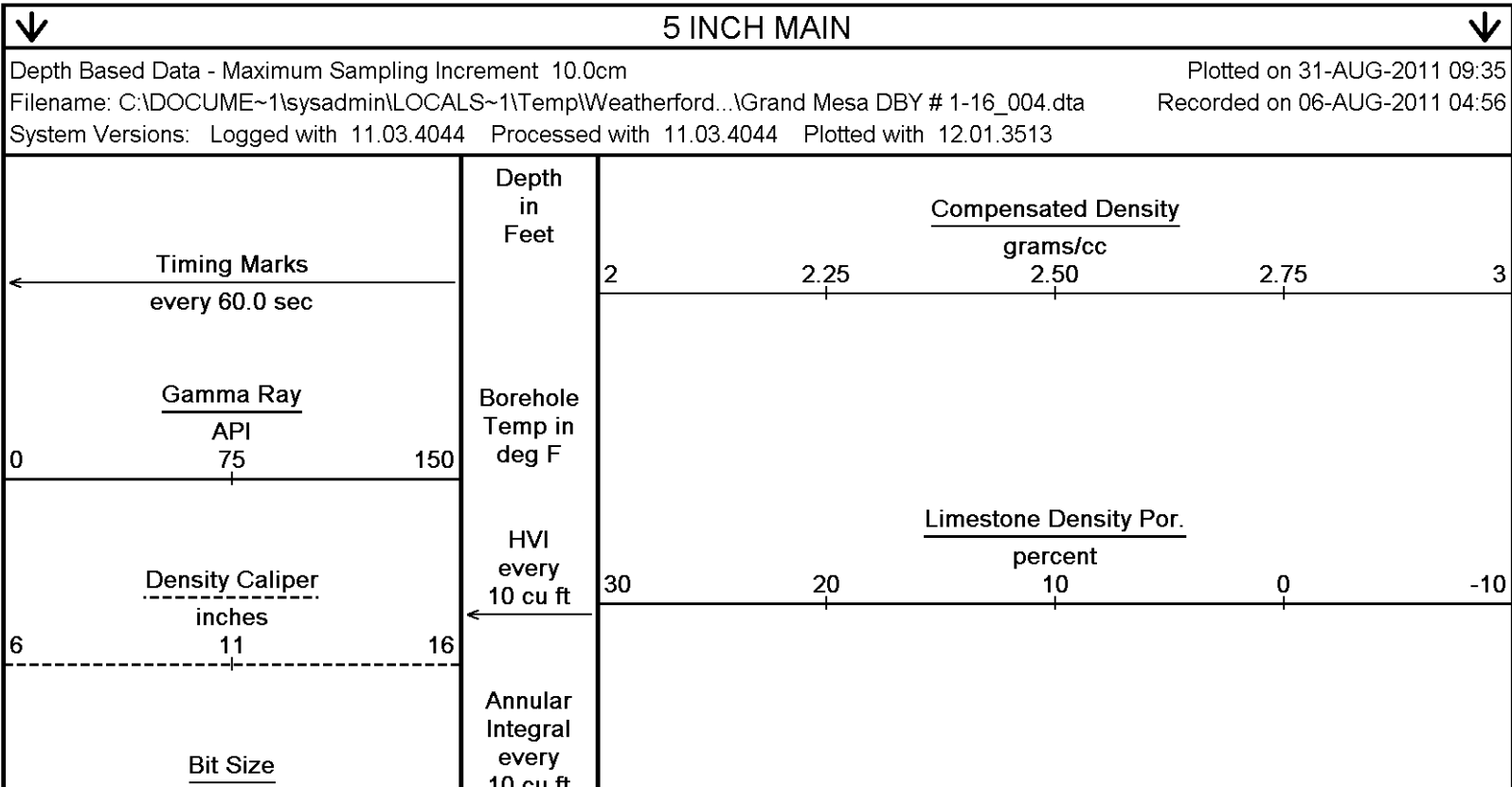
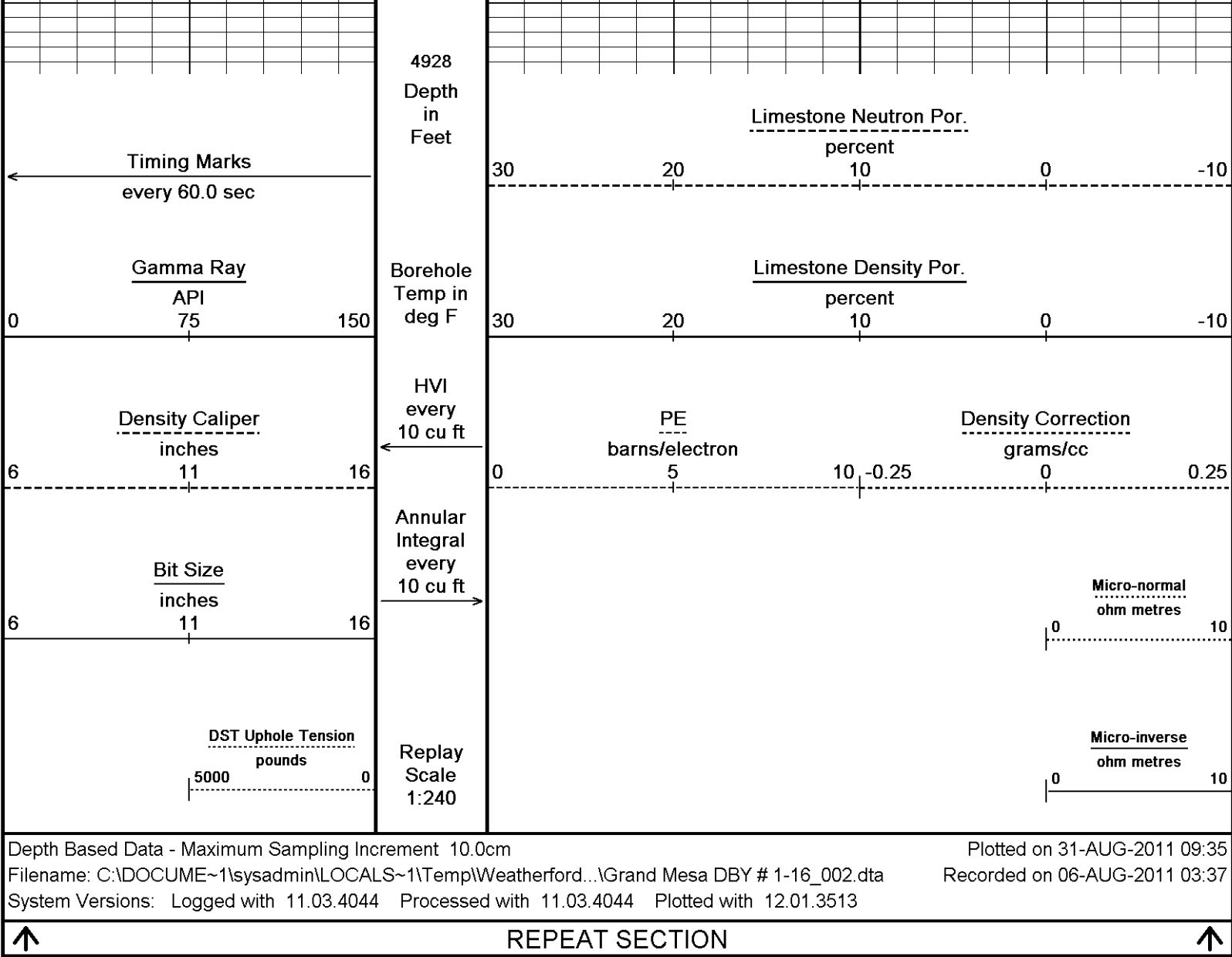
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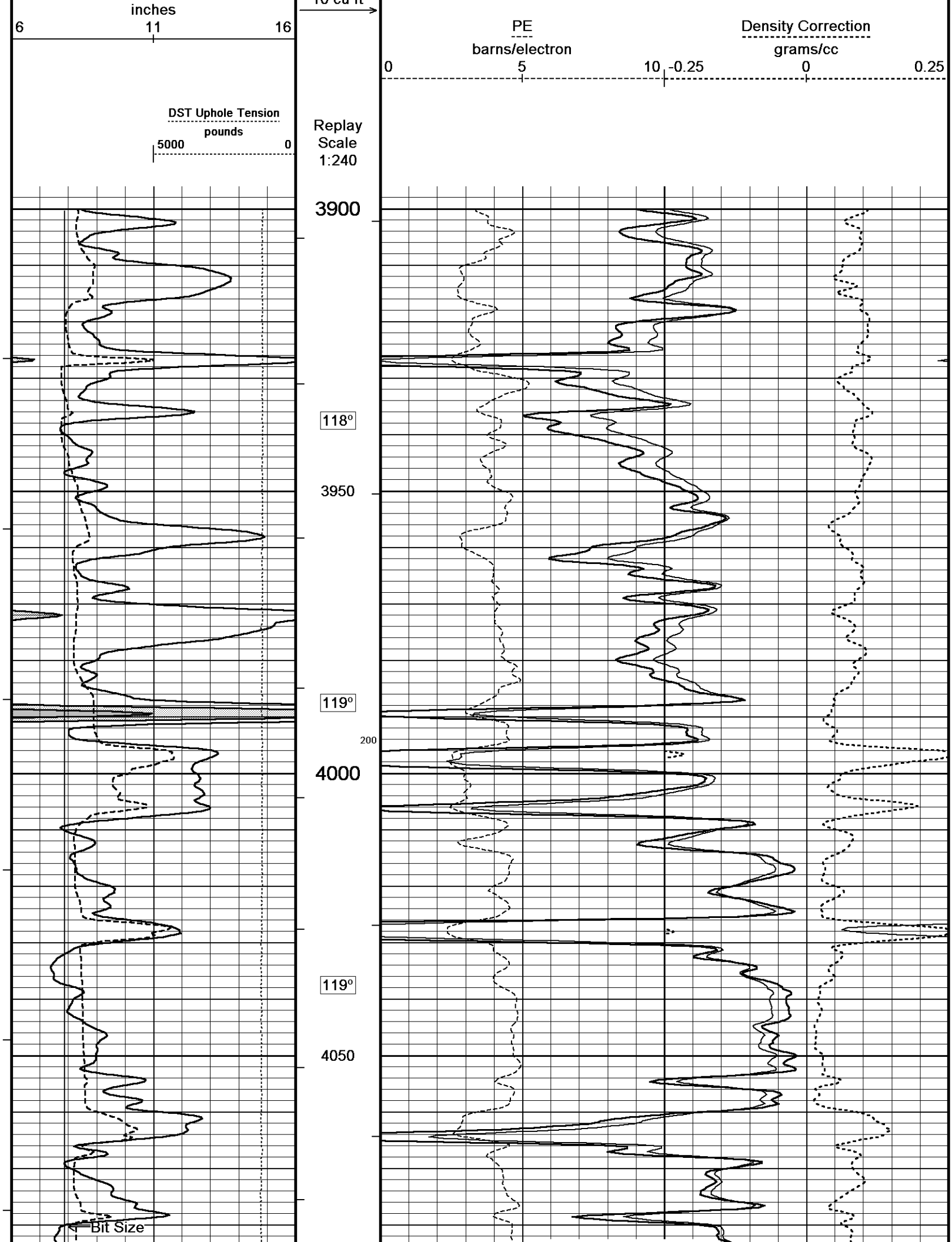
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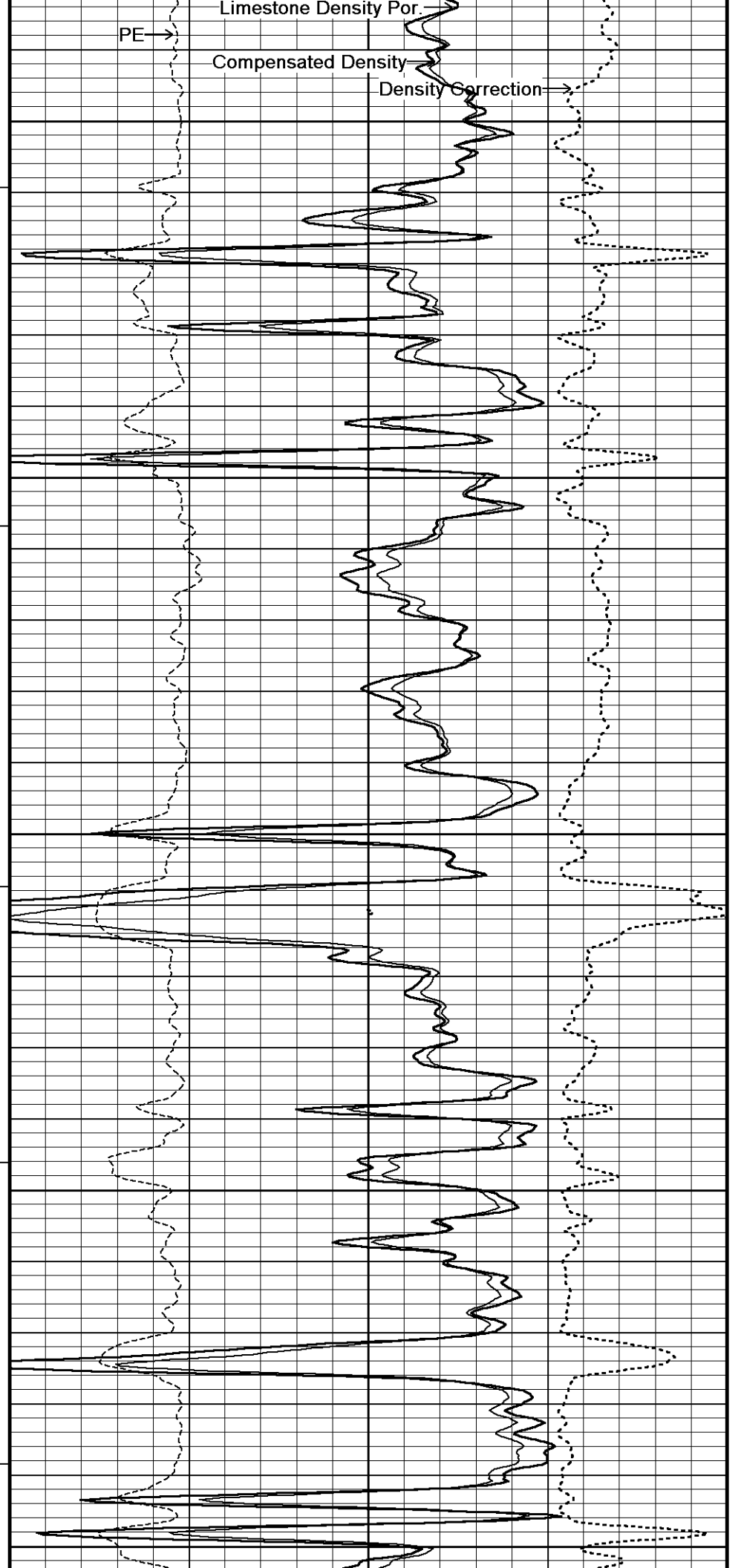
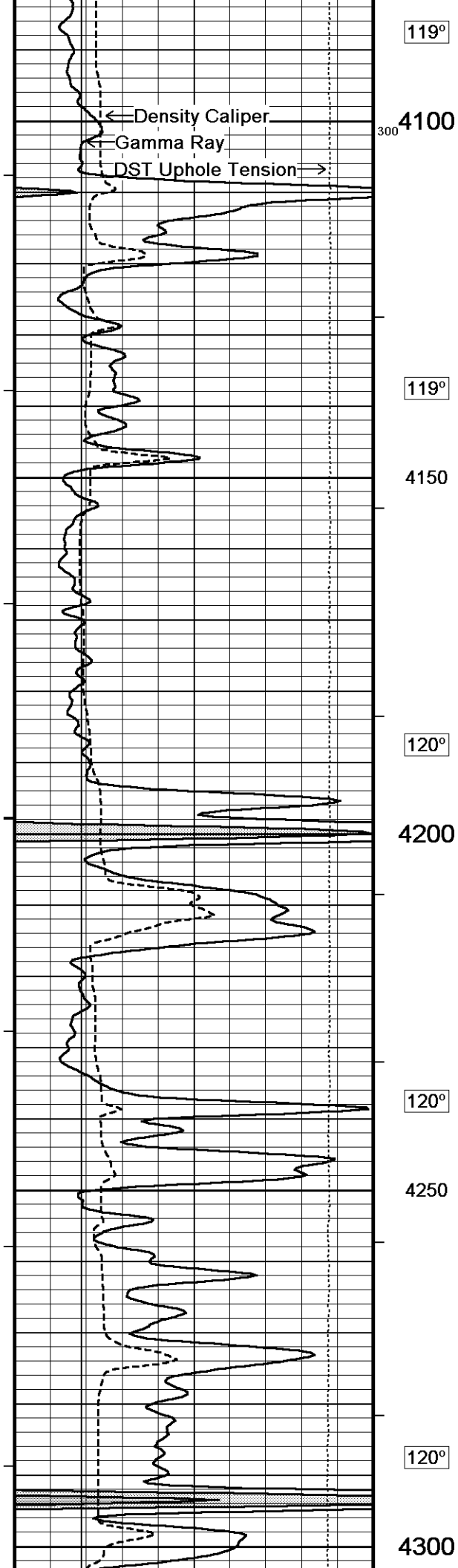
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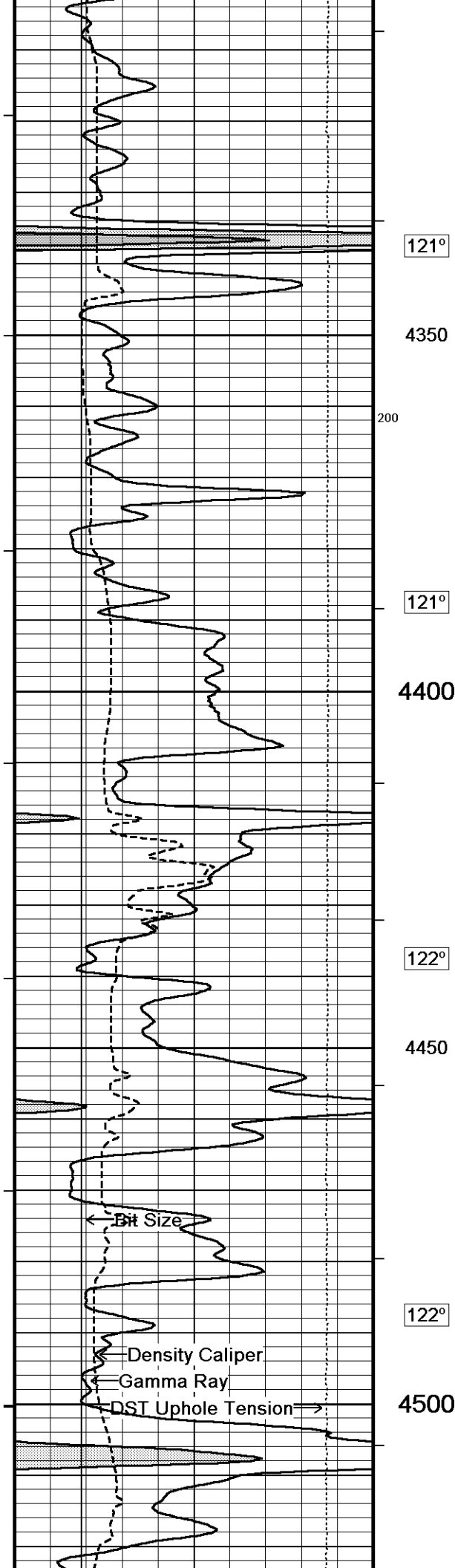












121°

4350

200

121°

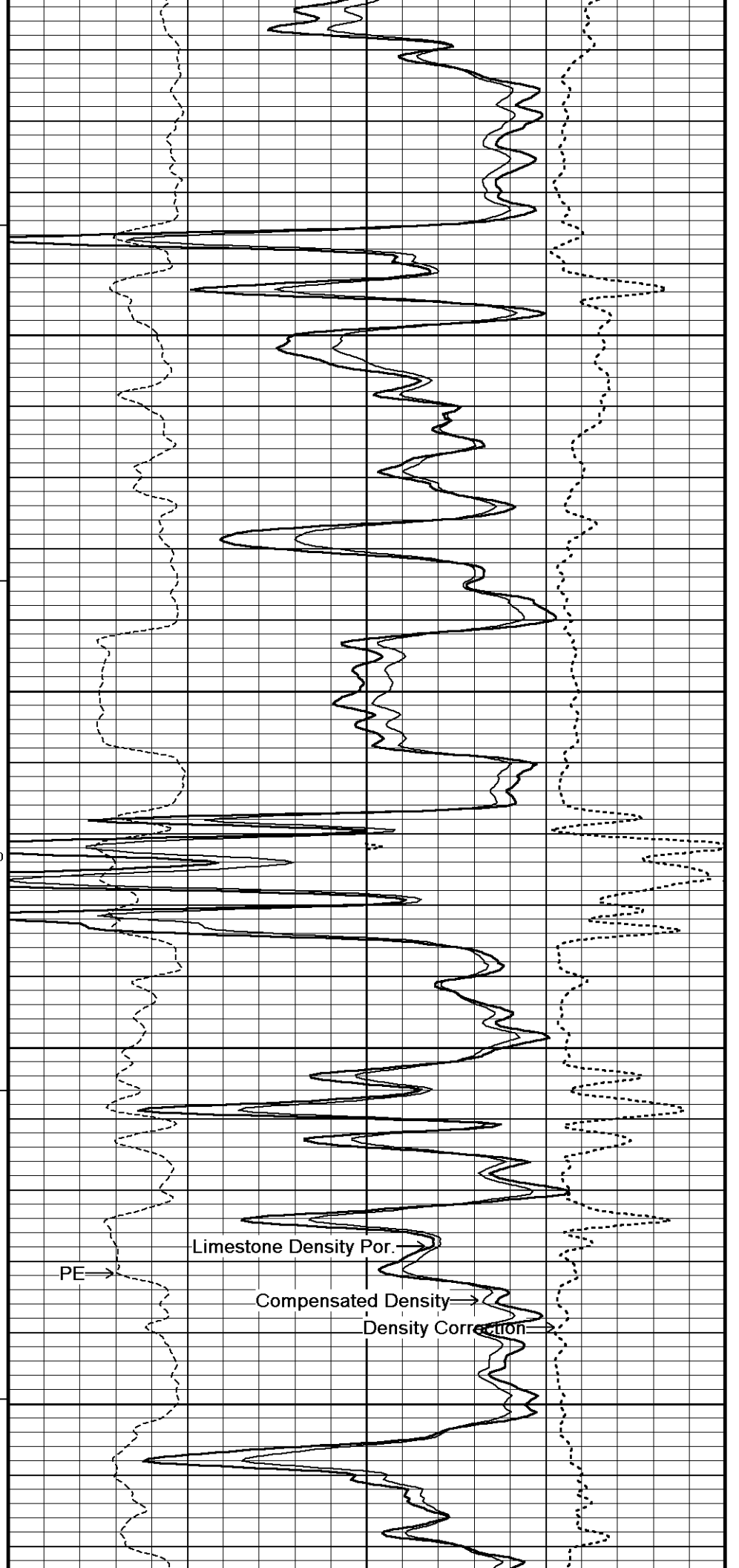
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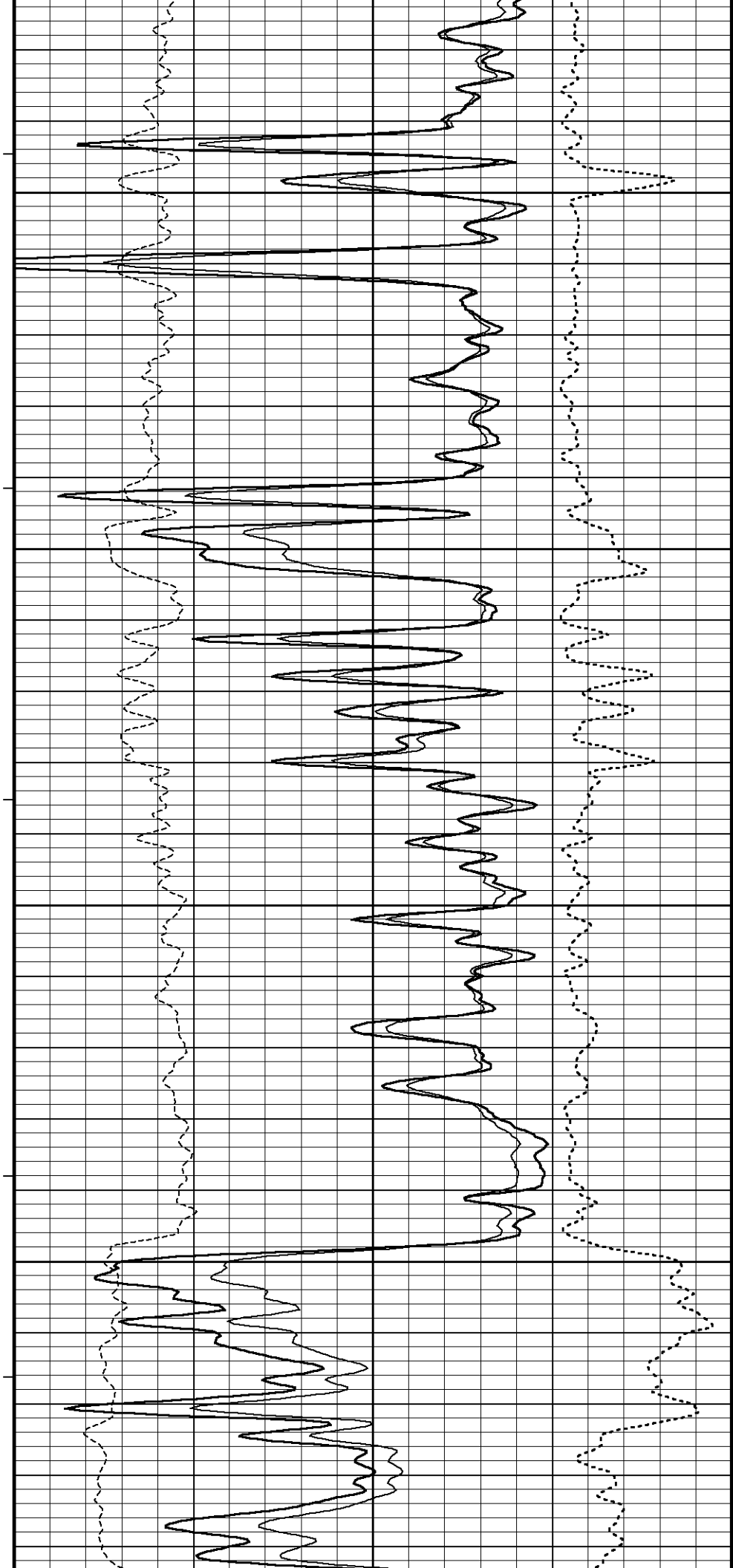
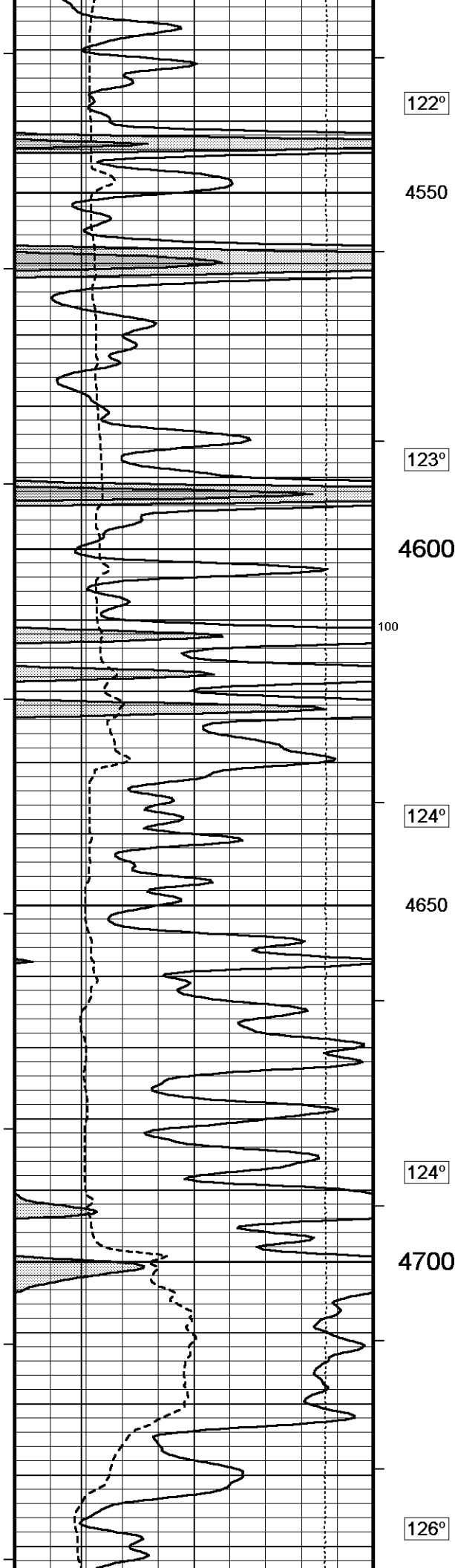
122°

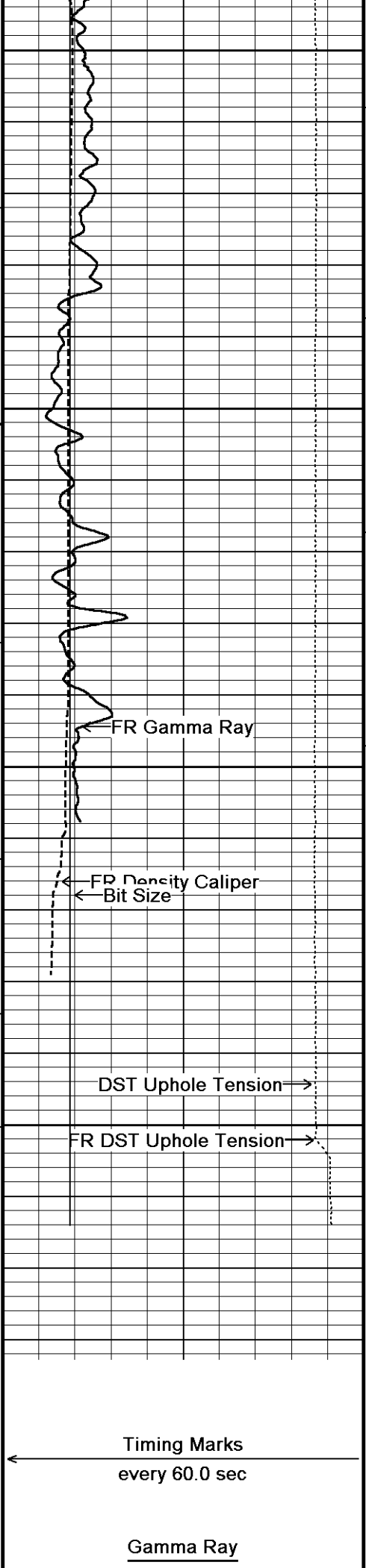
4450

122°

4500







4750

126°

4800

126°

4850

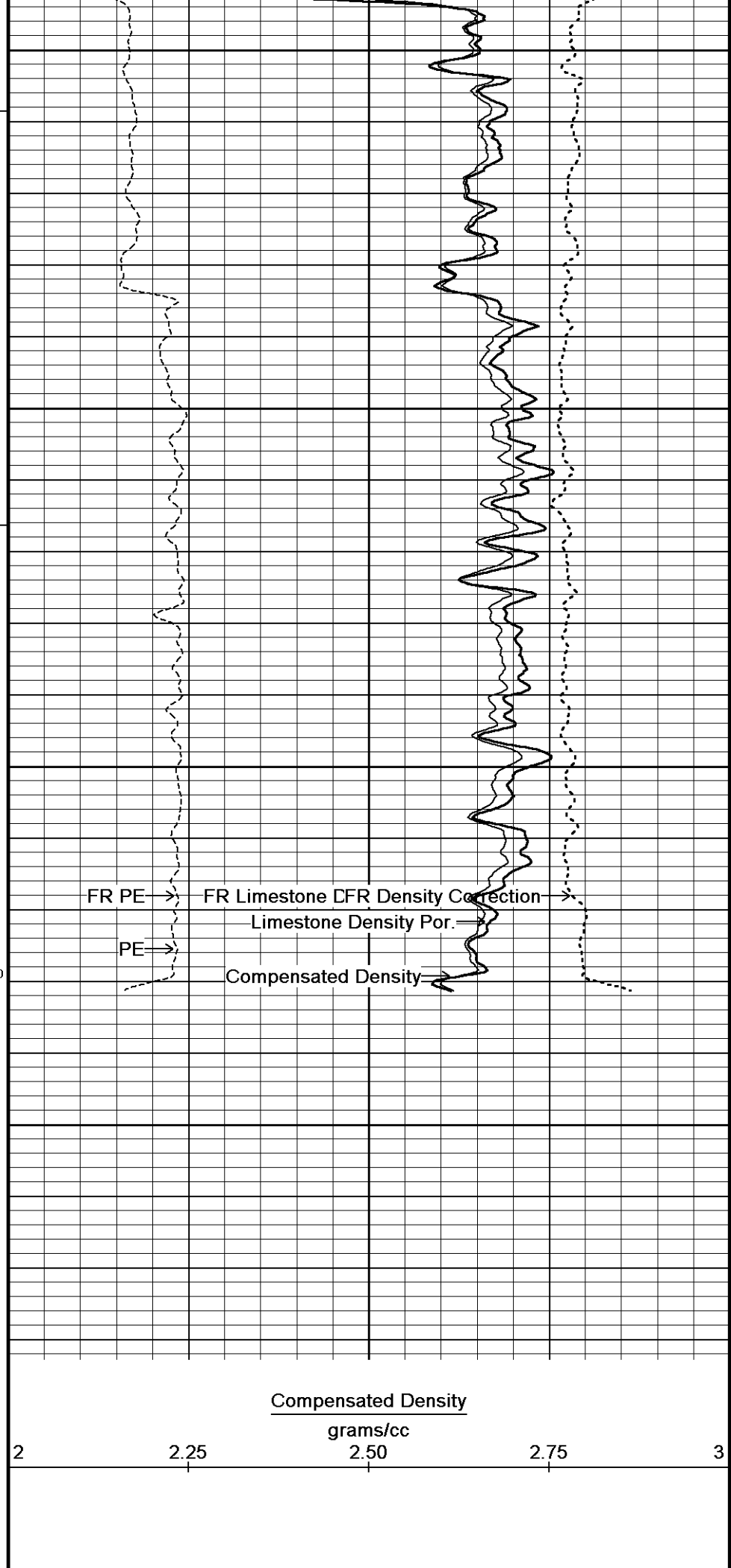
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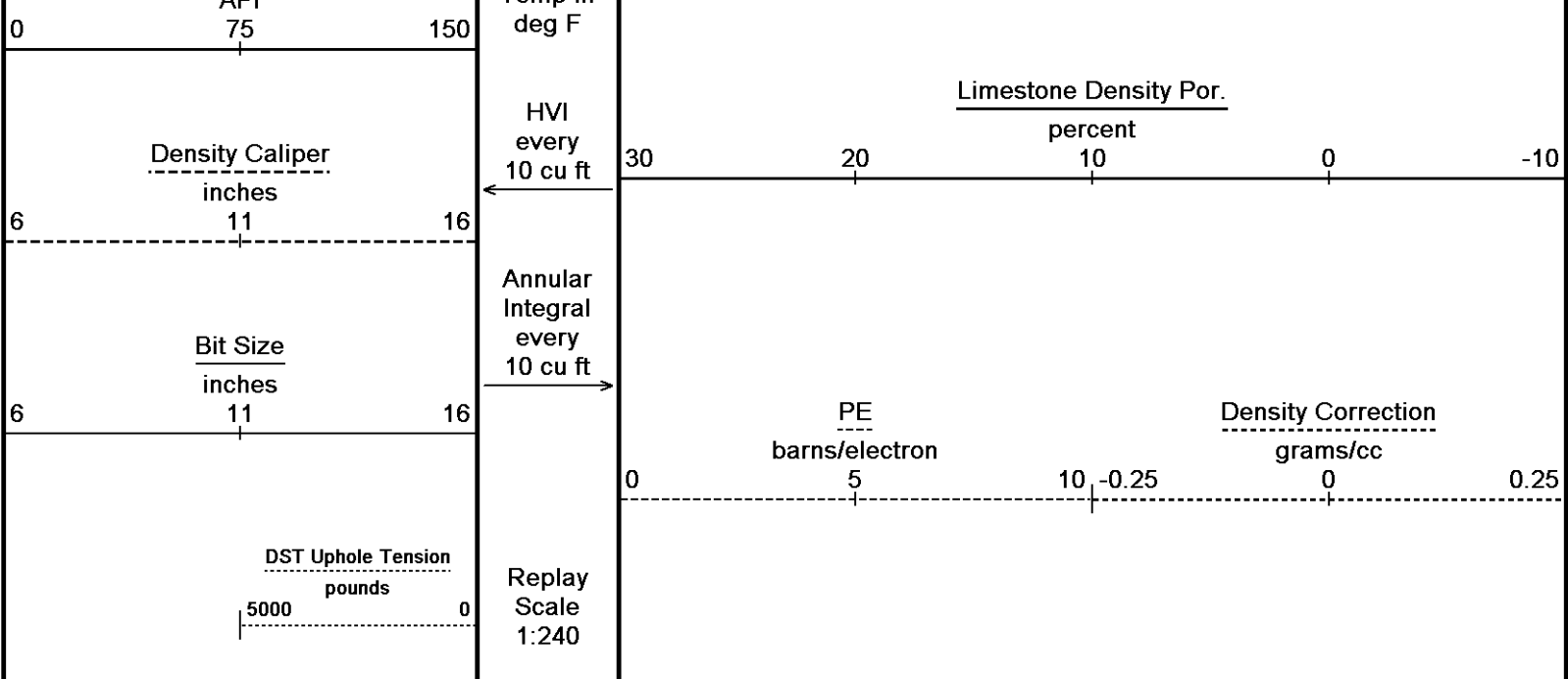
4900

4930

Depth
in
Feet

Borehole
Temp in





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 31-AUG-2011 09:35
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford...\Grand Mesa DBY # 1-16_004.dta Recorded on 06-AUG-2011 04:56
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

↑

5 INCH MAIN

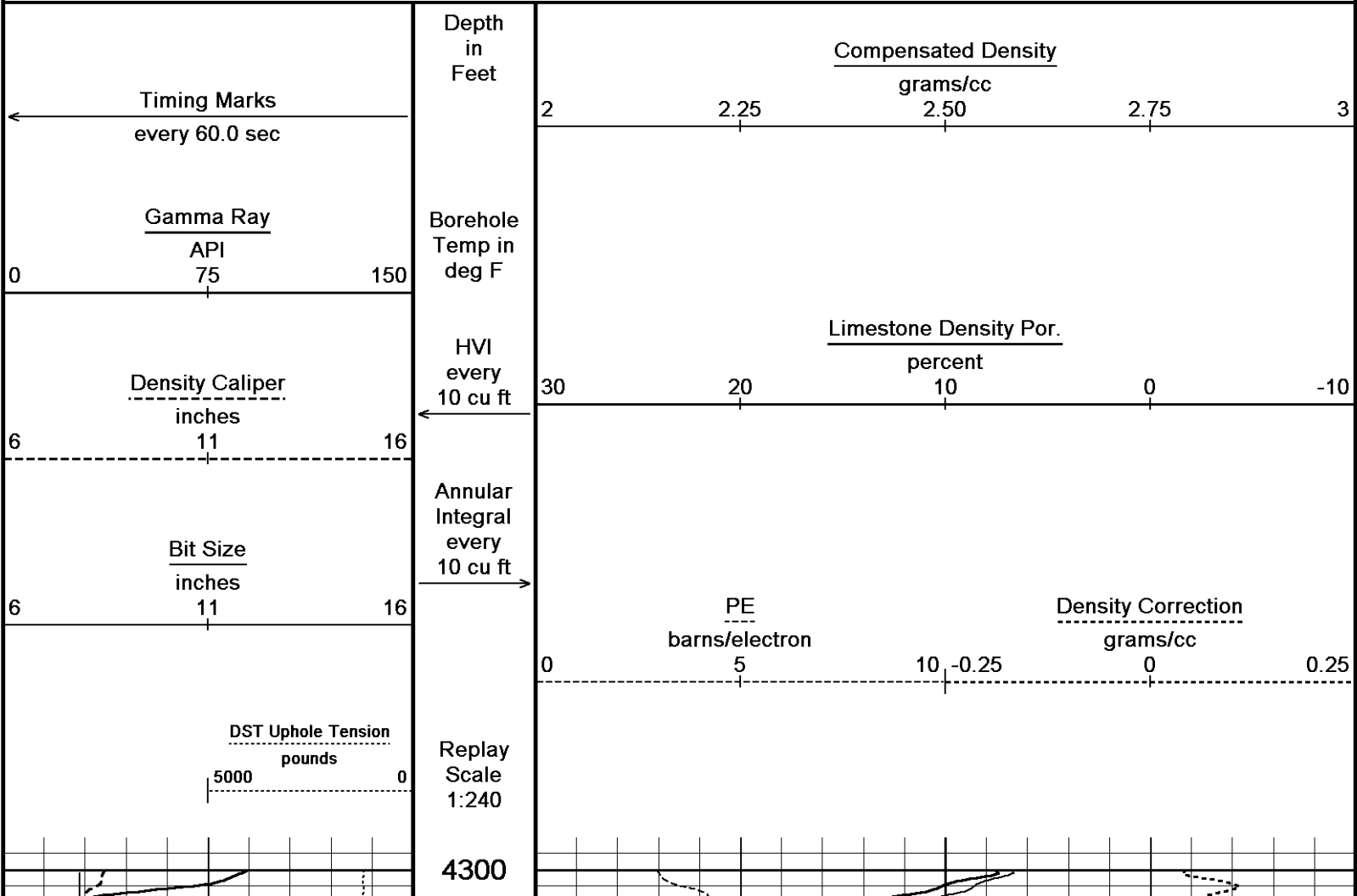
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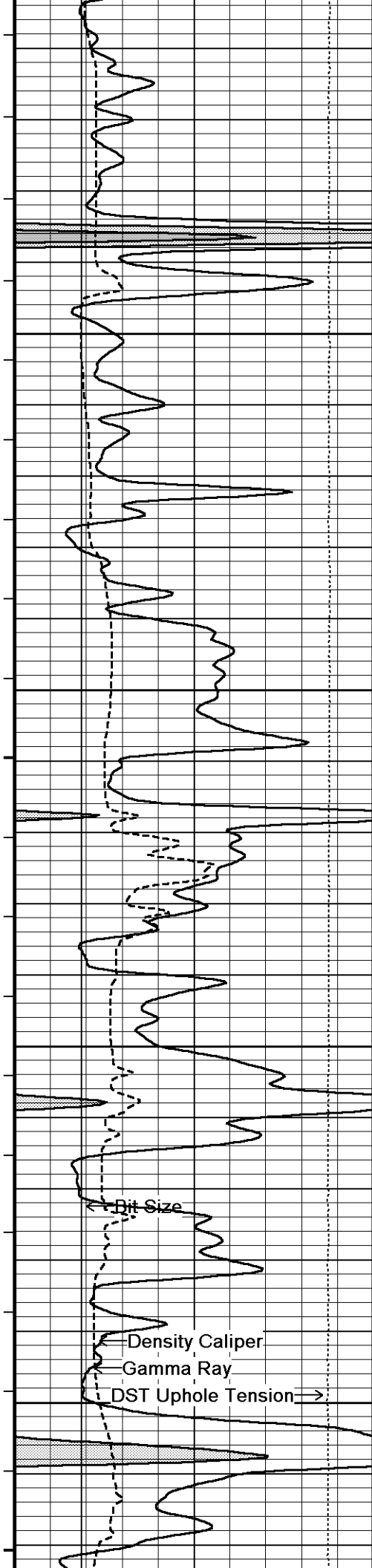
↓

REPEAT SECTION

↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 31-AUG-2011 09:35
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford...\Grand Mesa DBY # 1-16_002.dta Recorded on 06-AUG-2011 03:37
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513





120°

4350

120°

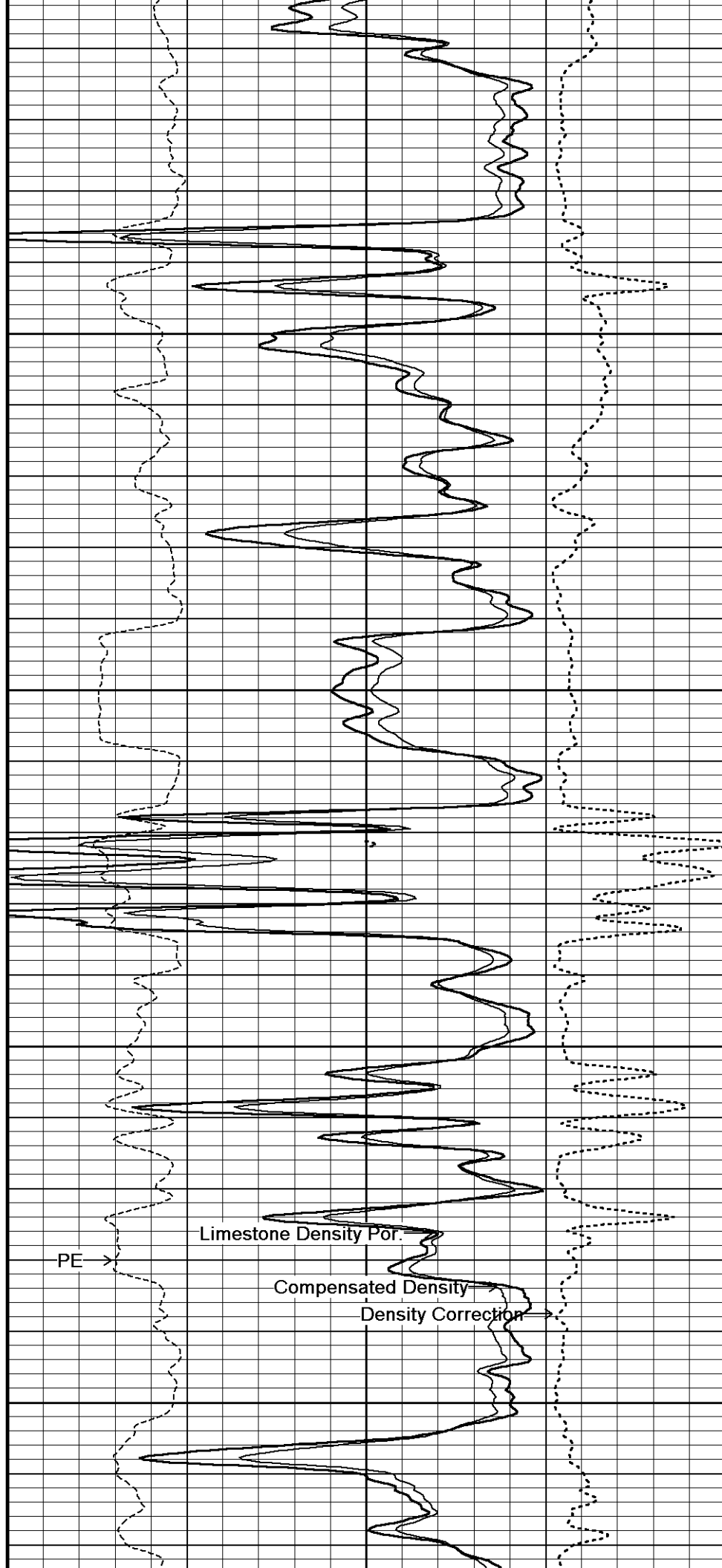
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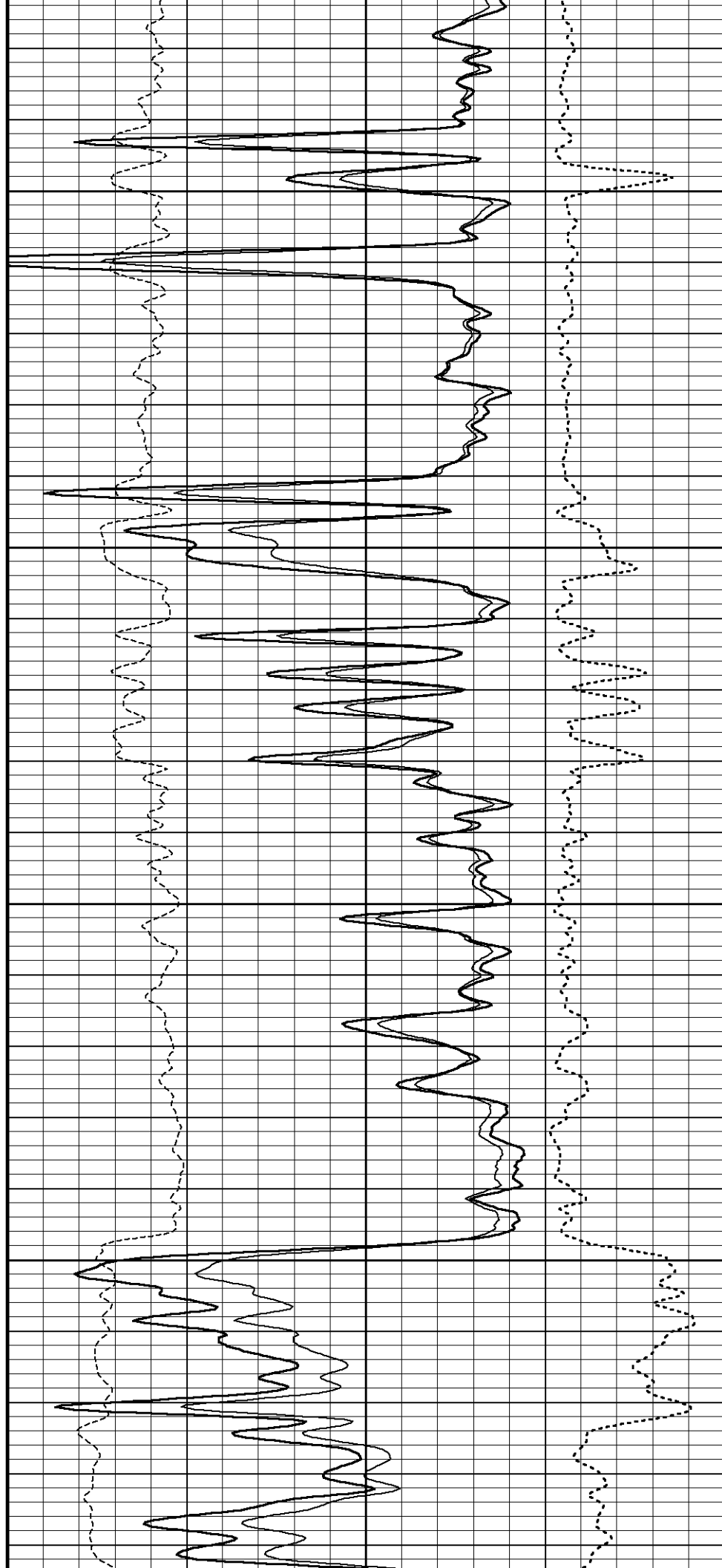
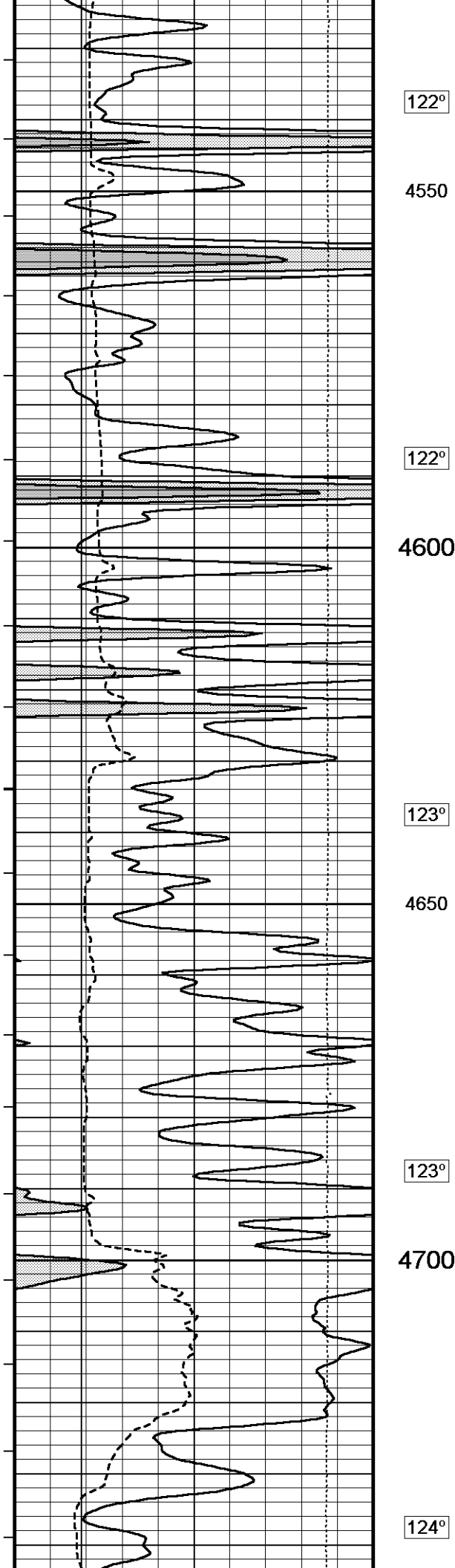
121°

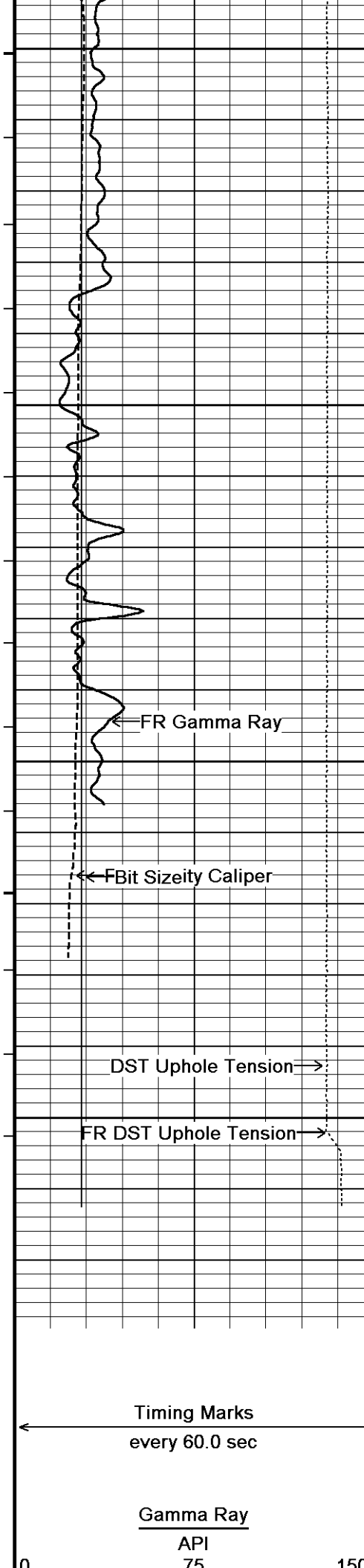
4450

121°

4500







4750

125°

4800

125°

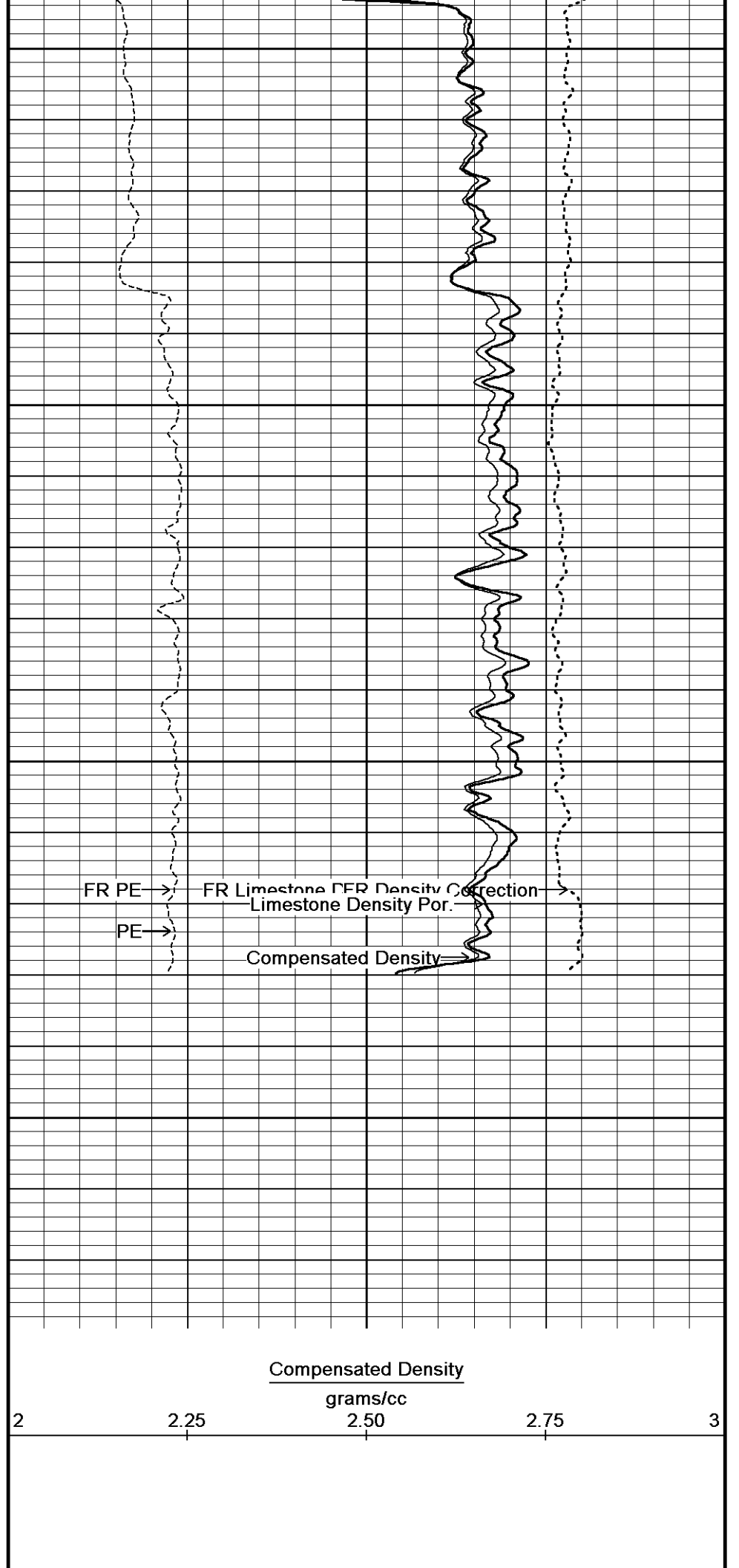
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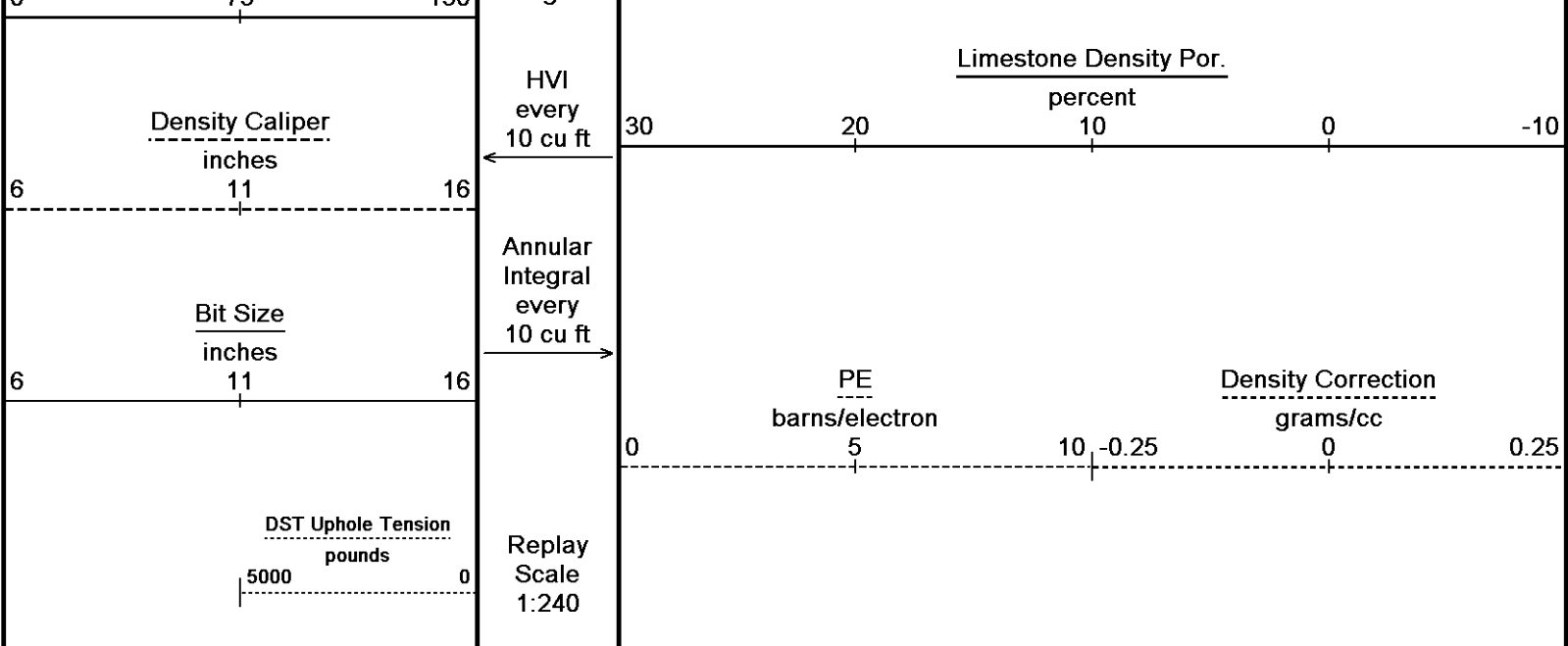
4900

4928

Depth
in
Feet

Borehole
Temp in
deg F





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 31-AUG-2011 09:35
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford...\Grand Mesa DBY # 1-16_002.dta Recorded on 06-AUG-2011 03:37
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION				C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa DBY # 1-16_003.dta
General Constants All 000			Last Edited on 06-AUG-2011 08:50	
General Parameters				
Mud Resistivity	0.470	ohm-metres		
Mud Resistivity Temperature	94.000	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	Deep Induction			
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 30-JUN-2010 01:00	
Reading No	Measured	Calibrated (lbs)		
1	14112.01	10.00		
2	15164.79	427.00		
High Resolution Temperature Calibration MCG-C 139			Field Calibration on 02-AUG-2011 18:13	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		

High Resolution Temperature Constants MCG-C 139				Last Edited on	
Pre-filter Length		11			
SP Calibration MCG-C 139				Field Calibration on 02-AUG-2011 18:12	
	Measured	Calibrated (mV)			
Reference 1	103.5	100.0			
Reference 2	-96.9	-100.0			
Gamma Calibration MCG-C 139				Field Calibration on 02-AUG-2011 18:12	
	Measured	Calibrated (API)			
Background	78	54			
Calibrator (Gross)	1136	779			
Calibrator (Net)	1058	725			
Gamma Constants MCG-C 139				Last Edited on 06-AUG-2011 02:50	
Gamma Calibrator Number	grc38				
Mud Density	1.09	gm/cc			
Caliper Source for Processing	Density Caliper				
Tool Position	Eccentred				
Concentration of KCl	0.00	kppm			
Micro Normal and Micro Inverse Calibration MML-A 16				Base Calibration on 02-AUG-2011 16:55 Field Check on 02-AUG-2011 16:57	
Base Calibration					
		Measured	Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2	
Micro Normal	12.2	60.2	2.6	12.8	
Micro Inverse	15.6	78.4	1.7	8.4	
Channel	Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal	32.1		32.1		
Micro Inverse	16.3		16.3		
Micro Normal and Micro Inverse Constants MML-A 16				Last Edited on 06-AUG-2011 02:28	
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 16				Base Calibration on 02-AUG-2011 17:07 Field Calibration on 02-AUG-2011 17:09	
Base Calibration					
Reading No	Measured		Calibrator Size (in)		
1	14087		5.98		
2	17465		7.97		
3	20778		9.86		
4	24732		11.92		
5	0		0.00		
6	N/A		N/A		
Field Calibration					
	Measured Caliper (in)		Actual Caliper (in)		
	6.04		5.98		
Neutron Calibration MDN-A.B 66				Base Calibration on 02-AUG-2011 19:16 Field Check on 02-AUG-2011 19:29	
Base Calibration					
		Measured	Calibrated (cps)		
	Near	Far	Near	Far	
	3250	102	3714	110	
Ratio	31.962		33.764		
Field Calibrator at Base					
			Calibrated (cps)		
			1591	2269	
Ratio	0.701				
Field Check					
			Calibrated (cps)		
			1573	2249	
Ratio	0.699				

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	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 52

Base Calibration on 02-AUG-2011 16:38

Field Check on 02-AUG-2011 16:48

Base Calibration		
	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.4	126.8
Base Check		280.0
Field Check		280.1

FE Constants MFE-A.A 52

Last Edited on 06-AUG-2011 02:27

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

Sonic Constants MSS-C.K 330

Last Edited on 30-JUN-2011 19:01

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000

Peak Amplitude Source	0
-----------------------	---

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A		
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	Depth (ft)
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	0.00	0.00	0.00

Full Waveform Parameters

Use 3' Waveform to derive TR	No
Use 4' Waveform to derive TR	No
Use 5' Waveform to derive TR	No
Use 6' Waveform to derive TR	No
3' Waveform Discriminator Level	0.30 mV
4' Waveform Discriminator Level	0.30 mV
5' Waveform Discriminator Level	0.15 mV
6' Waveform Discriminator Level	0.15 mV
3' Waveform Filter	0
4' Waveform Filter	0
5' Waveform Filter	0
6' Waveform Filter	0
Semblance Level	0.50
Semblance Window Width	120.00 micro-sec
Sonic 1 Despiker	100.00 micro-sec/ft
Sonic 2 Despiker	100.00 micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 167

Field Calibration on 02-AUG-2011 18:25

	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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Induction Calibration MAI-A.A 167

Base Calibration on 11-MAR-2011 09:58
Field Check on 02-AUG-2011 18:28

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	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

Array Temperature	76.8	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	14.6	3835.9
2	0.0	0.0	30.0	3472.7
3	0.0	0.0	29.3	3049.0
4	0.0	0.0	19.8	2078.8
Deep	0.0	0.0	18.6	2046.2
Medium	0.0	0.0	42.3	3985.8
Shallow	0.0	0.0	43.7	5048.2

Array Temperature	0.0	98.0	Deg F
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Induction Constants MAI-A.A 167

Last Edited on 06-AUG-2011 02:27

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 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	

Caliper Calibration MPD-B 35

Base Calibration on 02-AUG-2011 17:17

Field Calibration on 02-AUG-2011 17:18

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	19303	3.99
2	29535	5.98
3	39888	7.97
4	49472	9.86
5	60384	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.97	5.98

Photo Density Calibration MPD-B 35

Base Calibration on 02-AUG-2011 18:00

Field Check on 02-AUG-2011 18:07

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	56174	27139	59556	30836
Reference 2	22984	2574	24941	2541

Field Check at Base

1165.2 1387.5

Field Check

1166.3 1381.9

PE Calibration

Base Calibration	Measured			Calibrated Ratio
	WS	WH	Ratio	
Background	207	1028		
Reference 1	20811	55977	0.375	0.371
Reference 2	6055	22836	0.268	0.272

Field Check at Base

207.3 1028.3

Field Check

Density Constants MPD-B 35

Last Edited on 06-AUG-2011 02:28

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	1.09	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:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa DBY # 1-16_003.dta

Compact Comms Gamma
MCG-C 139 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 139 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 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 35 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

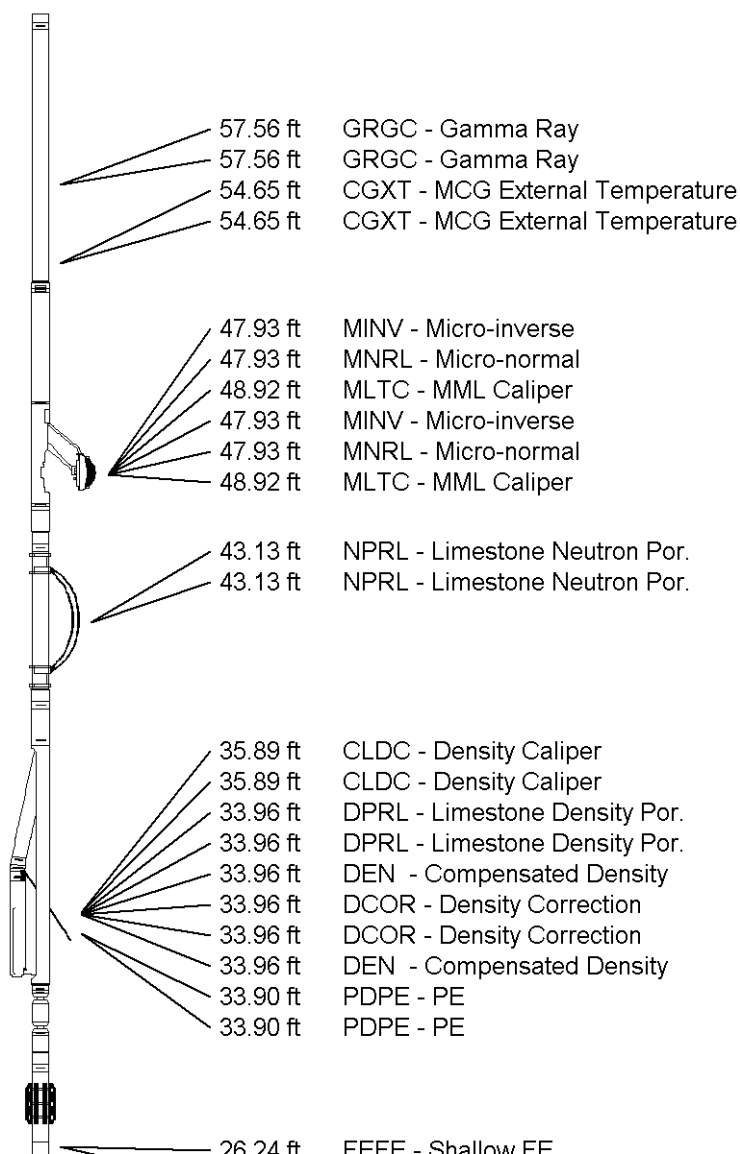
Compact Density/Caliper
MPD-B 35 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 36 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 52 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Focussed Electric



Compact Processed Lithium
MFE-A.A 52 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic

MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Sonic

MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction

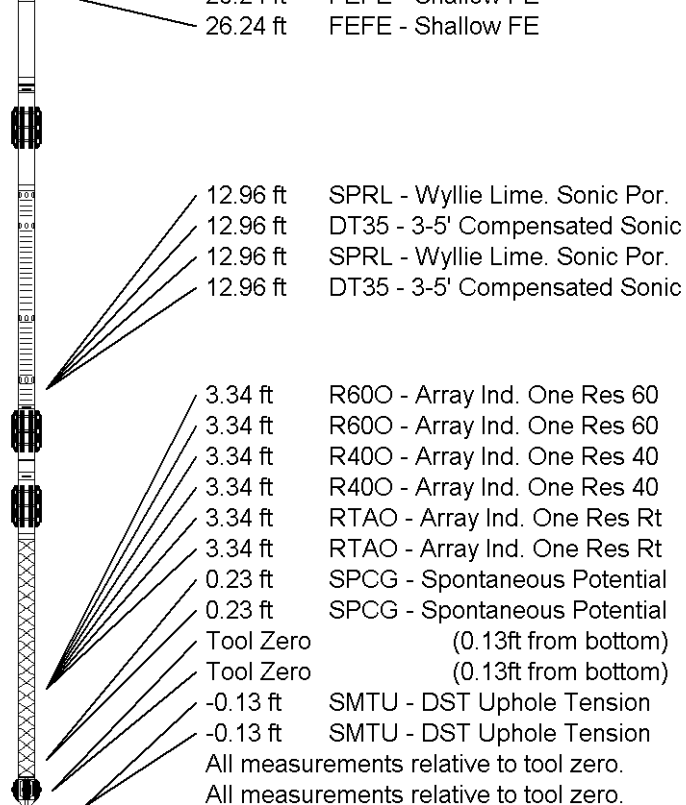
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction

MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.84 ft Weight: 480.6 lb

Total Length: 62.84 ft Weight: 480.6 lb



COMPANY GRAND MESA OPERATING
WELL DBY # 1-16
FIELD WILDCAT
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U. S. A / KANSAS

Elevation Kelly Bushing	3086.00	feet	First Reading	4866.00	feet
Elevation Drill Floor	3084.00	feet	Depth Driller	4900.00	feet
Elevation Ground Level	3075.00	feet	Depth Logger	4902.00	feet



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COMPACT PHOTO DENSITY
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MICRORESISTIVITY LOG

