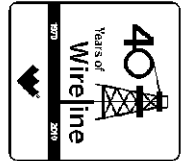




**Weatherford**<sup>®</sup>

**COMPACT PHOTO DENSITY  
COMPENSATED NEUTRON  
MICRORESISTIVITY LOG**

COMPANY **SHAKESPEARE OIL CO., INC.**  
WELL **CARSON #1-25**  
FIELD **WILDCAT**  
PROVINCE/COUNTY **SCOTT**  
COUNTRY/STATE **U.S.A. / KANSAS**  
LOCATION **1540' FNL & 1130' FWL**



SEC **25** TWP **16S** RGE **34W** Other Services  
MAI/MFE  
API Number **15-171-20883** MSS  
Permit Number  
Permanent Datum GL, Elevation 3104 feet  
Log Measured From KB  
Drilling Measured From KB

Date **05-JUN-2012** Elevations: feet  
Run Number **ONE** KB 3114.00  
Depth Driller **4880.00** DF 3112.00  
Depth Logger **4882.00** GL 3104.00

First Reading **4850.00** feet  
Last Reading **3700.00** feet  
Casing Driller **264.00** feet  
Casing Logger **265.00** feet  
Bit Size **7.875** inches

Hole Fluid Type **CHEMICAL**  
Density / Viscosity **9.30** lb/USg **62.00** CP  
PH / Fluid Loss **9.50** **10.40** ml/30Min  
Sample Source **FLOWLINE**  
Rm @ Measured Temp **0.46 @ 85.0** ohm-m  
Rmf @ Measured Temp **0.37 @ 85.0** ohm-m  
Rmc @ Measured Temp **0.55 @ 85.0** ohm-m

Source Rmf / Rmc **CALC** **CALC**  
Rm @ BHT **0.35 @ 113.0** ohm-m  
Time Since Circulation **5 HOURS**  
Max Recorded Temp **113.00** deg F

Equipment Name **COMPACT**  
Equipment / Base **13057** LIB  
Recorded By **ADAM SILL**  
Witnessed By **TIM PRIEST**  
S.O. # / JOB # **3534585** LB12-140

BOREHOLE RECORD			Last Edited: 05-JUN-2012 06:15	
Bit Size inches	Depth From feet	Depth To feet		
7.875	264.00	4880.00		
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	264.00	24.00

**REMARKS**

- SOFTWARE ISSUE: WLS 11.03.4044.

- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION.  
 - HARDWARE: DUAL BOWSPRING USED ON MDN.  
 0.5 INCH STANDOFF USED ON MAI.  
 TWO 0.5 INCH STANDOFFS USED ON MSS.  
 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: 445 CU.FT.

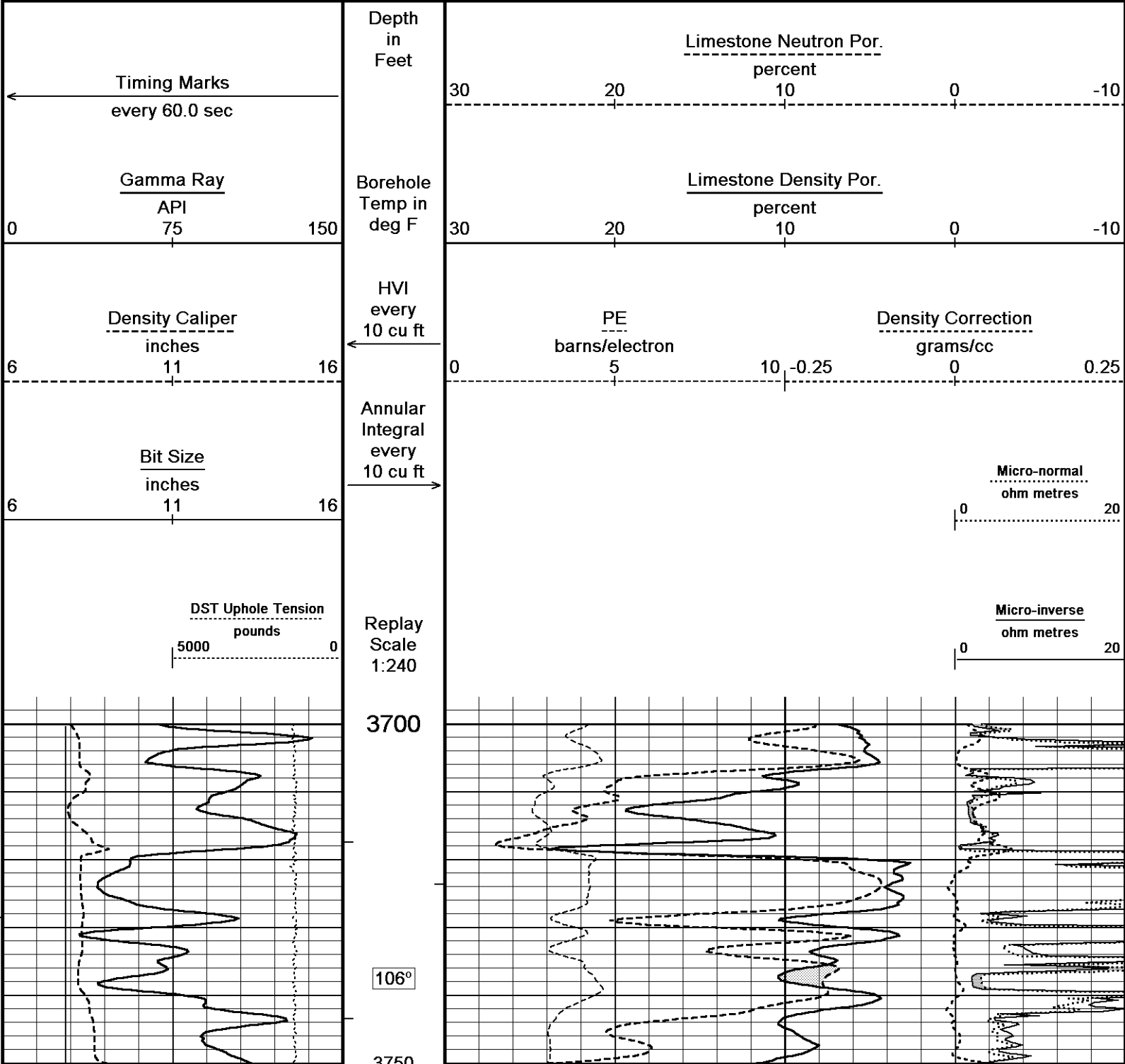
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING: 255 CU. FT.

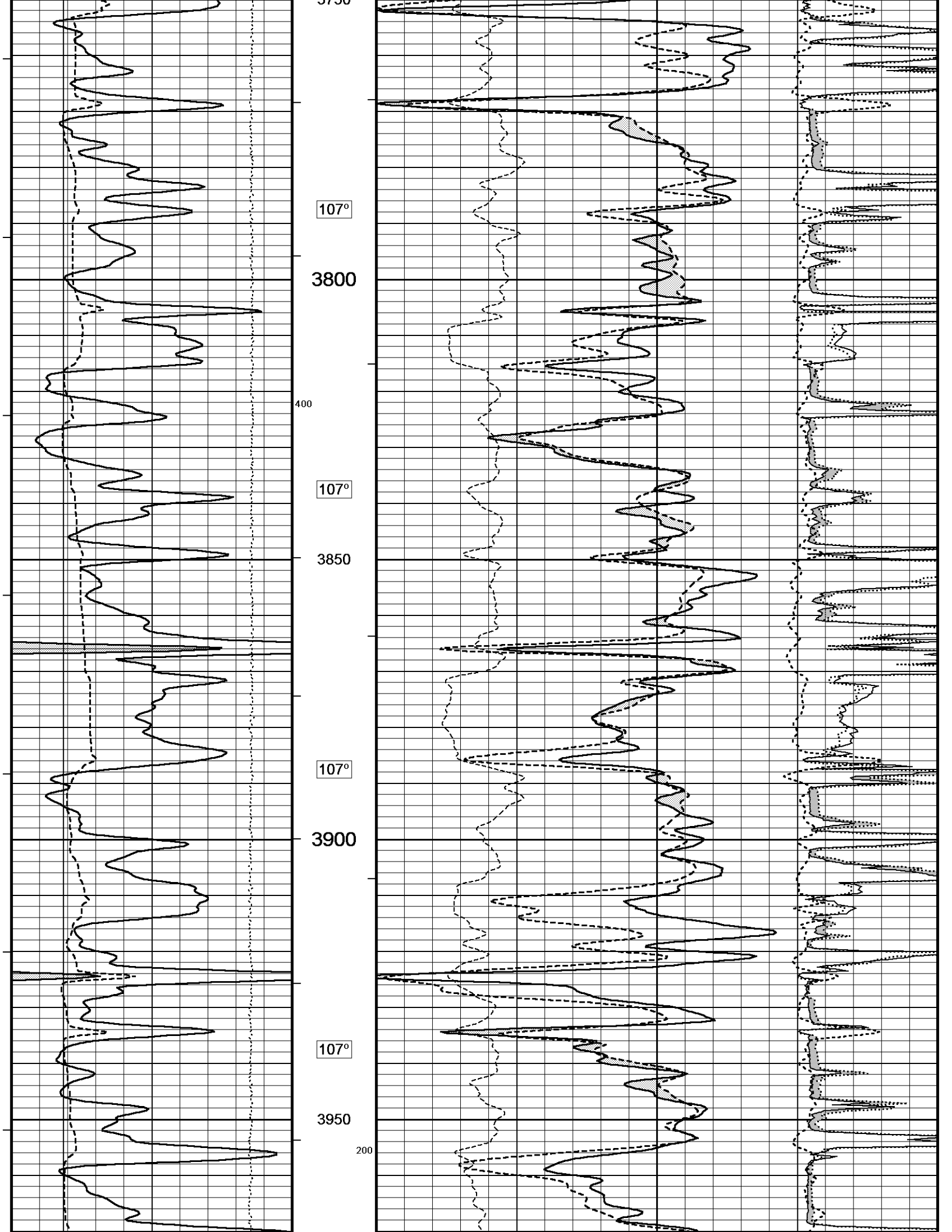
- SERVICE ORDER # 3534585.  
 - RIG: H-D DRILLING #2  
 - ENGINEER: A. SILL.  
 - OPERATOR(S): B. REEVES.

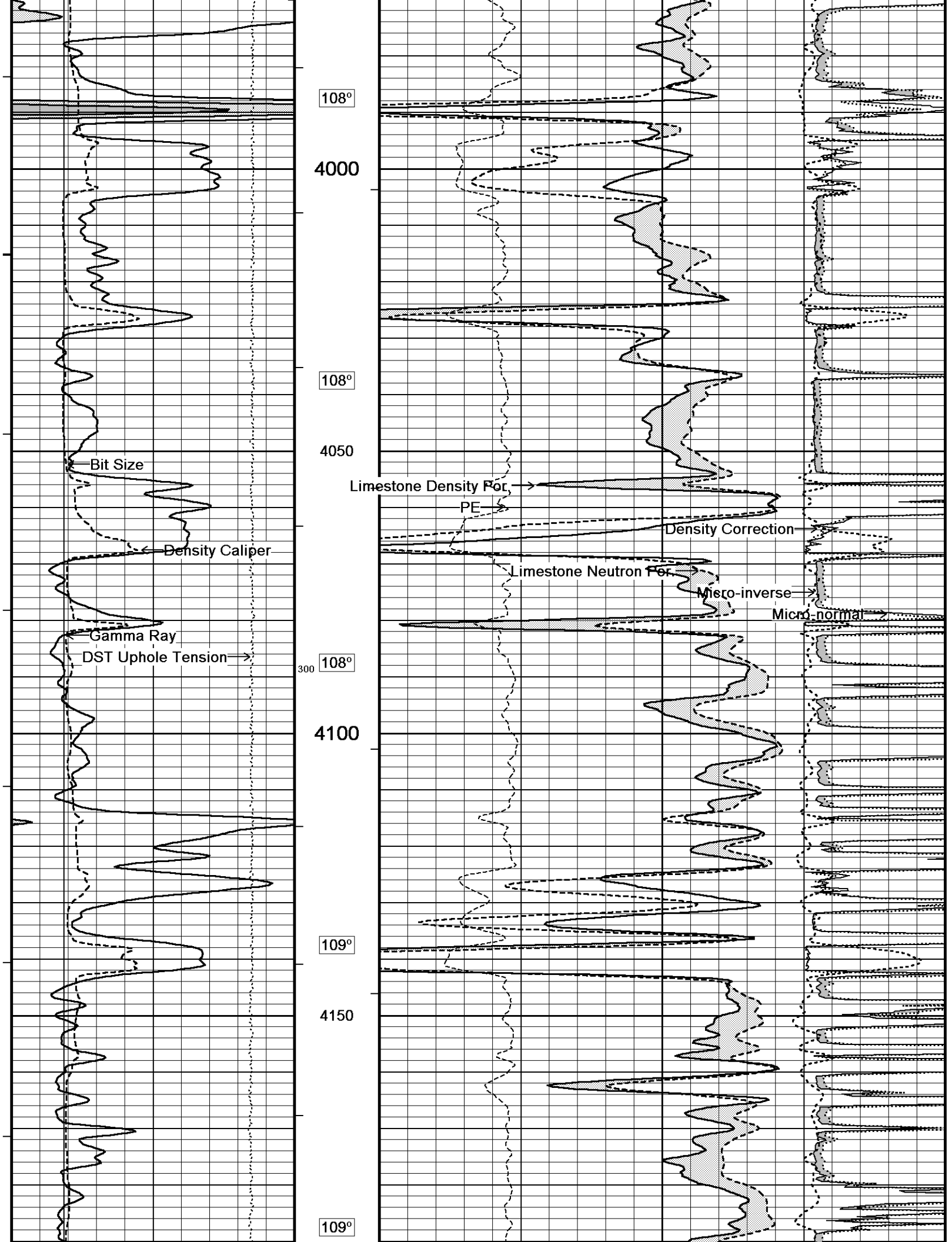
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

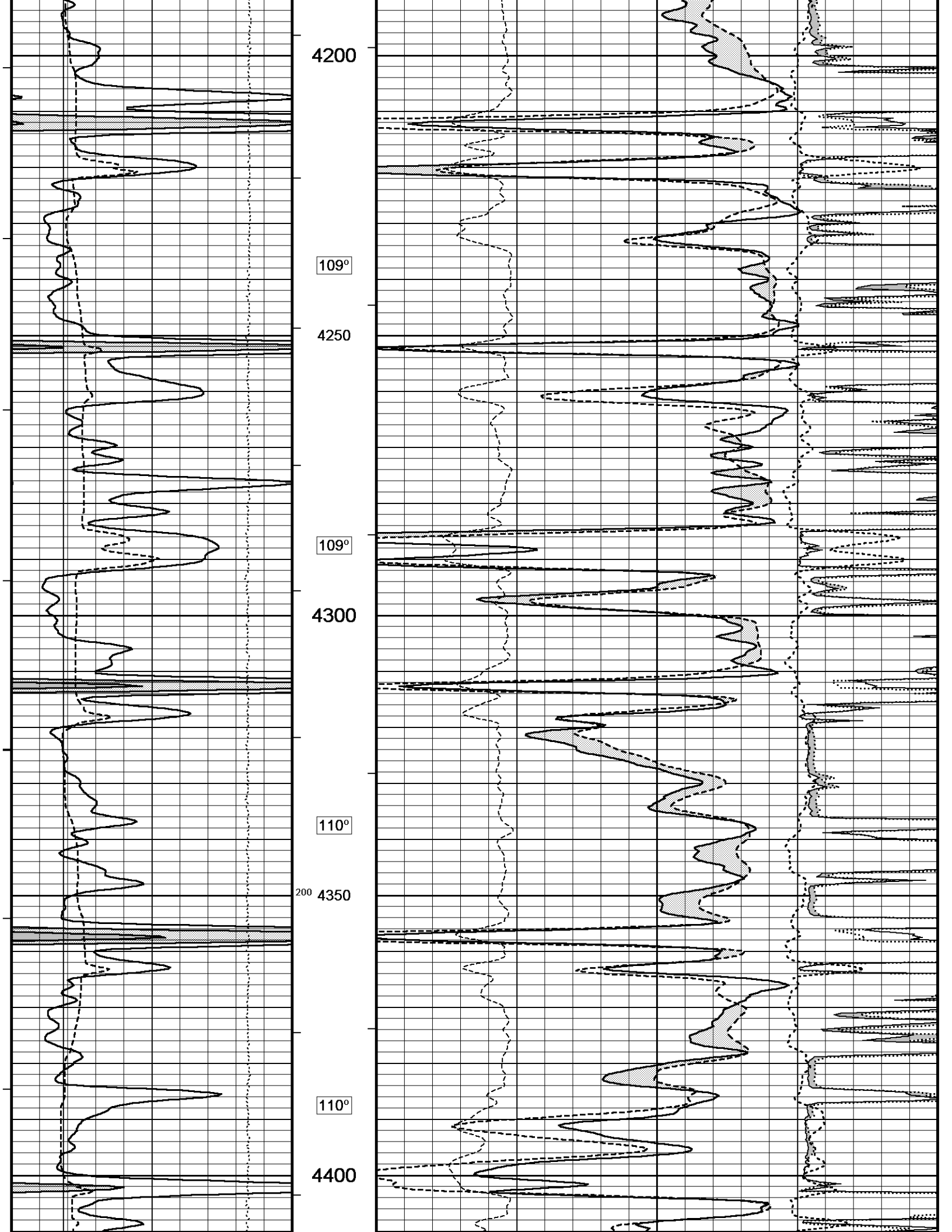
**5 INCH MAIN PASS**

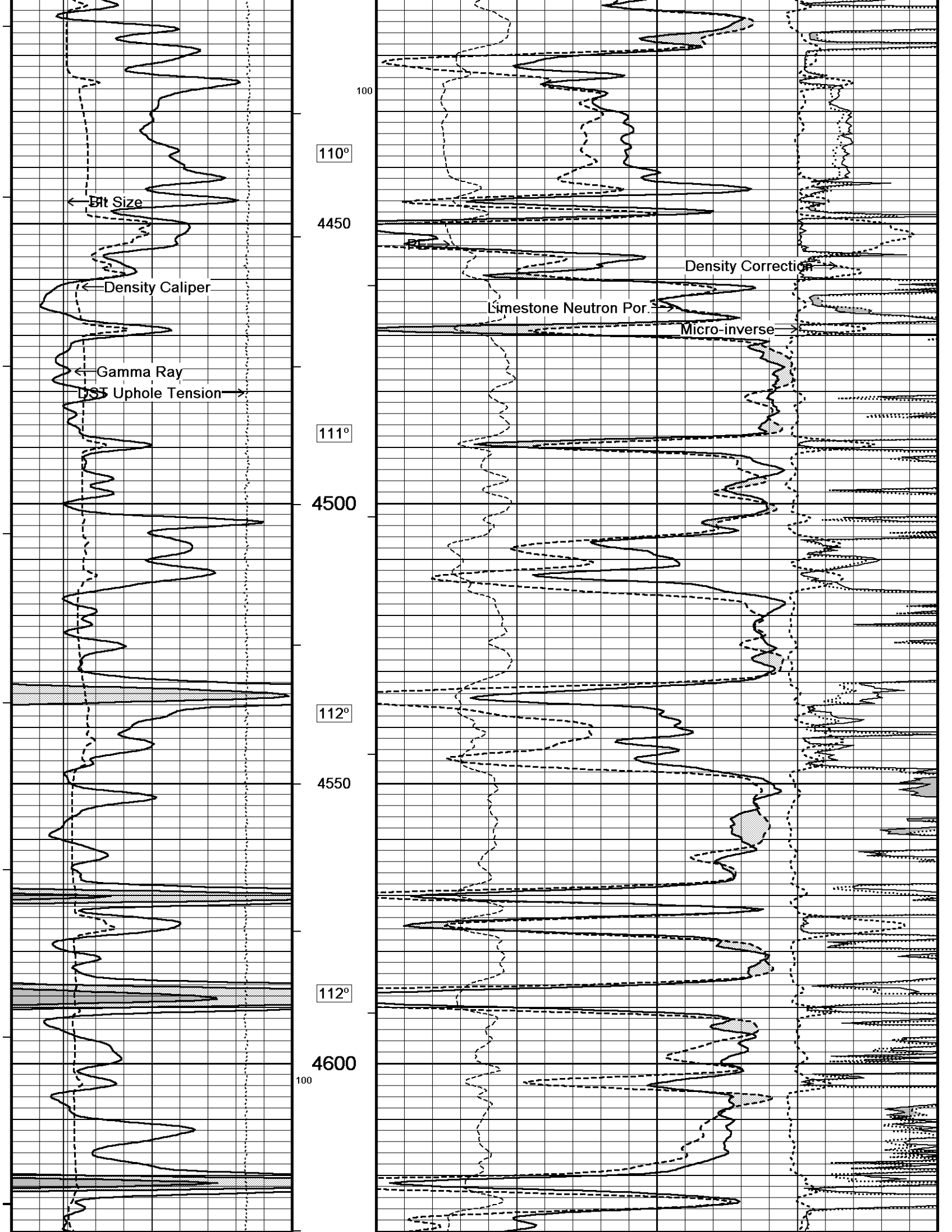
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 05-JUN-2012 11:28  
 Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_002.dta Recorded on 05-JUN-2012 08:07  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

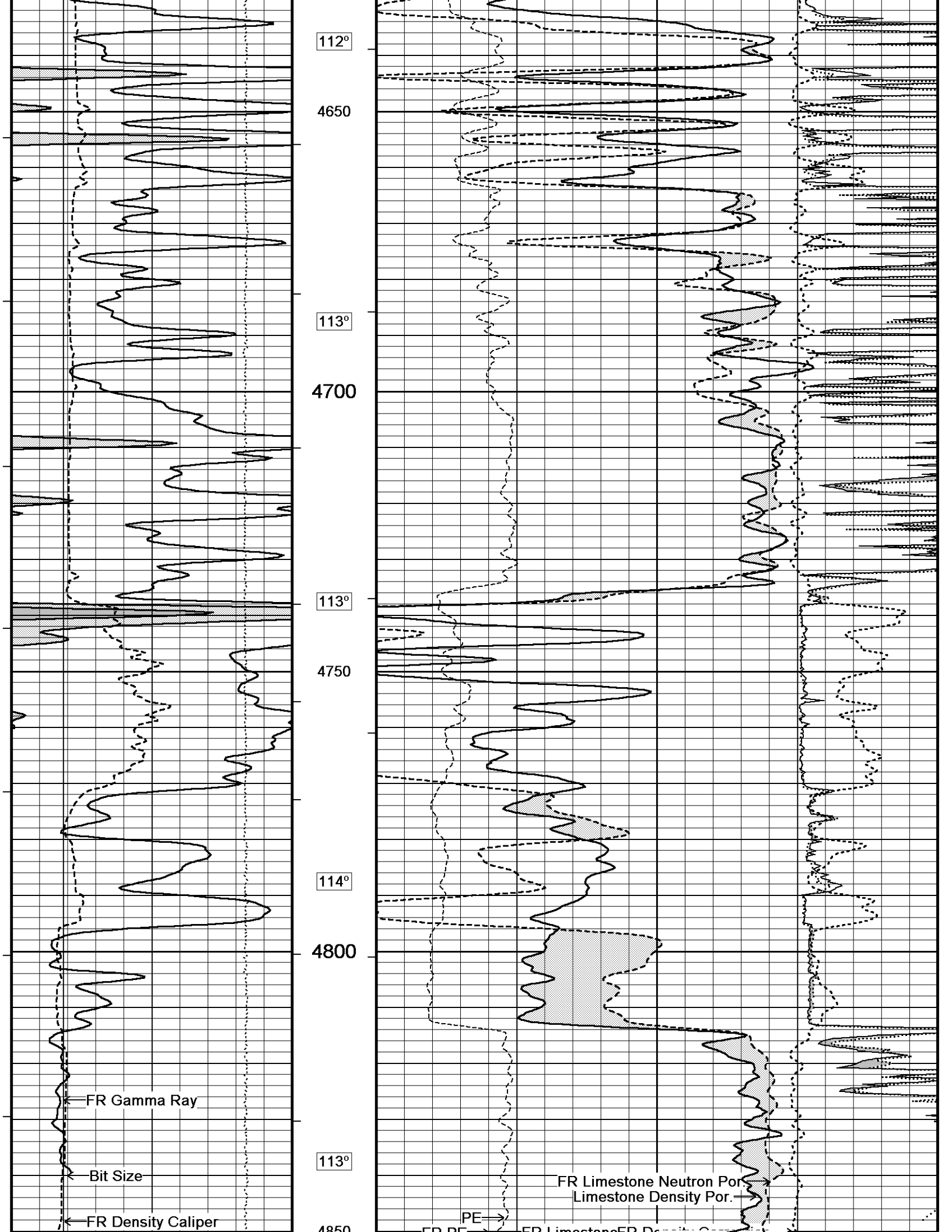


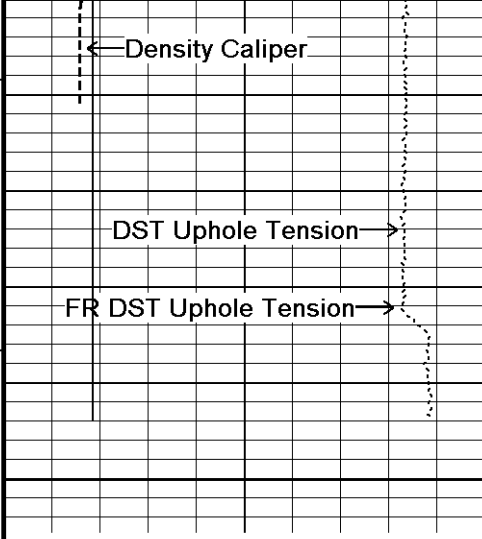










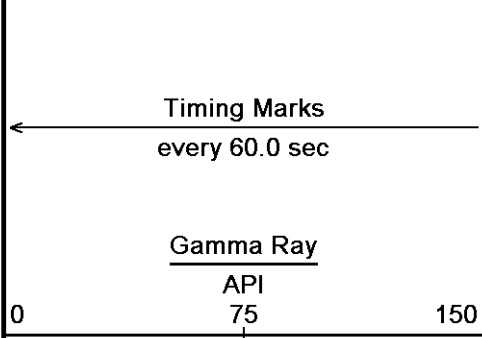
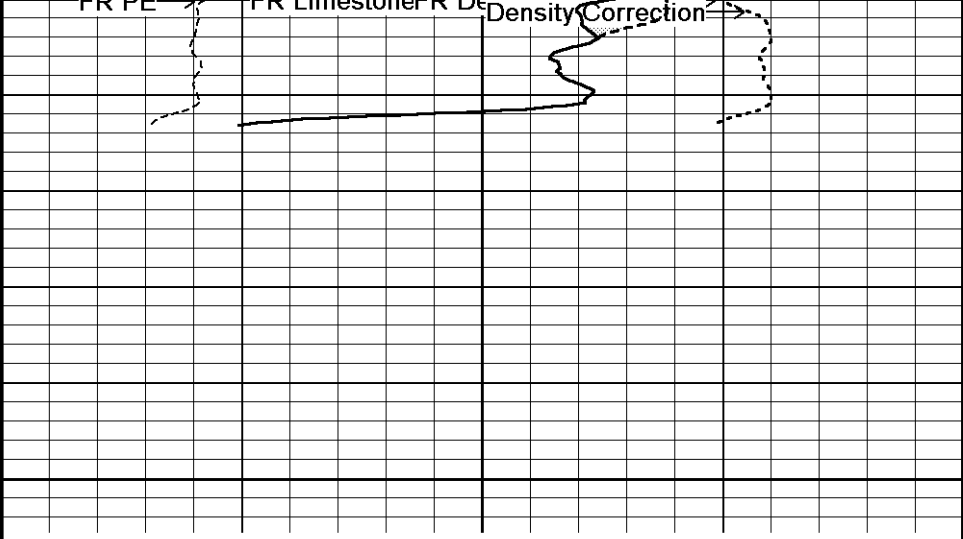


4830

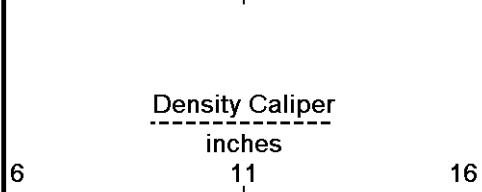
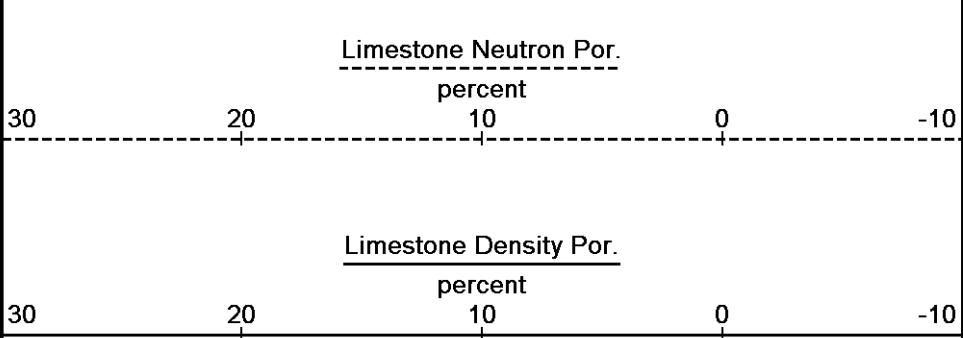
0

4900

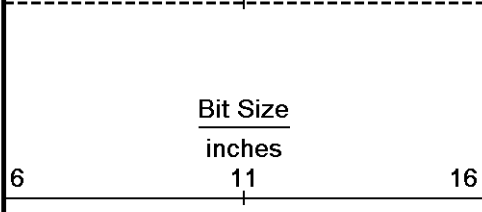
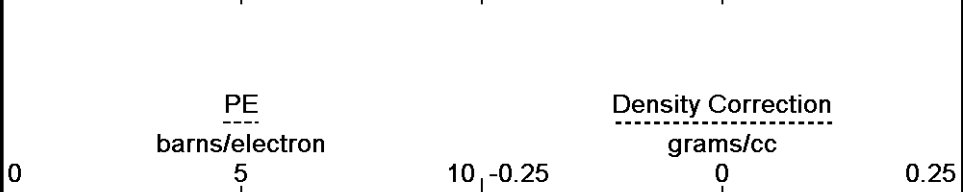
Depth in Feet



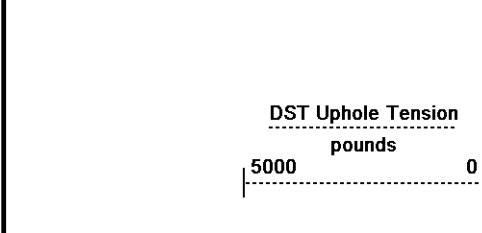
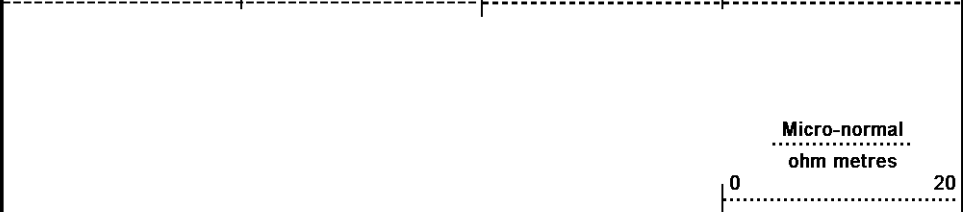
Borehole Temp in deg F



HVI every 10 cu ft



Annular Integral every 10 cu ft



Replay Scale 1:240



Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 05-JUN-2012 11:28

Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_002.dta Recorded on 05-JUN-2012 08:07

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

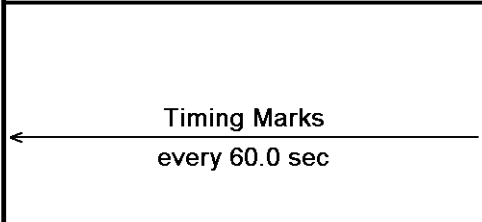
5 INCH MAIN PASS

5 INCH REPEAT PASS

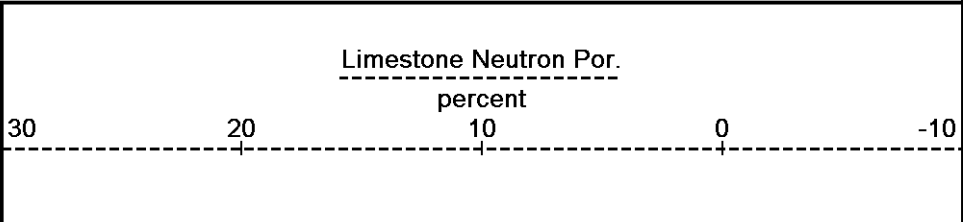
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 05-JUN-2012 11:28

Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_001.dta Recorded on 05-JUN-2012 07:45

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044



Depth in Feet





Gamma Ray  
API  
0 75 150

Density Caliper  
inches  
6 11 16

Bit Size  
inches  
6 11 16

DST Uphole Tension  
pounds  
5000 0

Borehole  
Temp in  
deg F

HVI  
every  
10 cu ft

Annular  
Integral  
every  
10 cu ft

Replay  
Scale  
1:240

4578  
4600  
112°  
4650  
112°  
4700

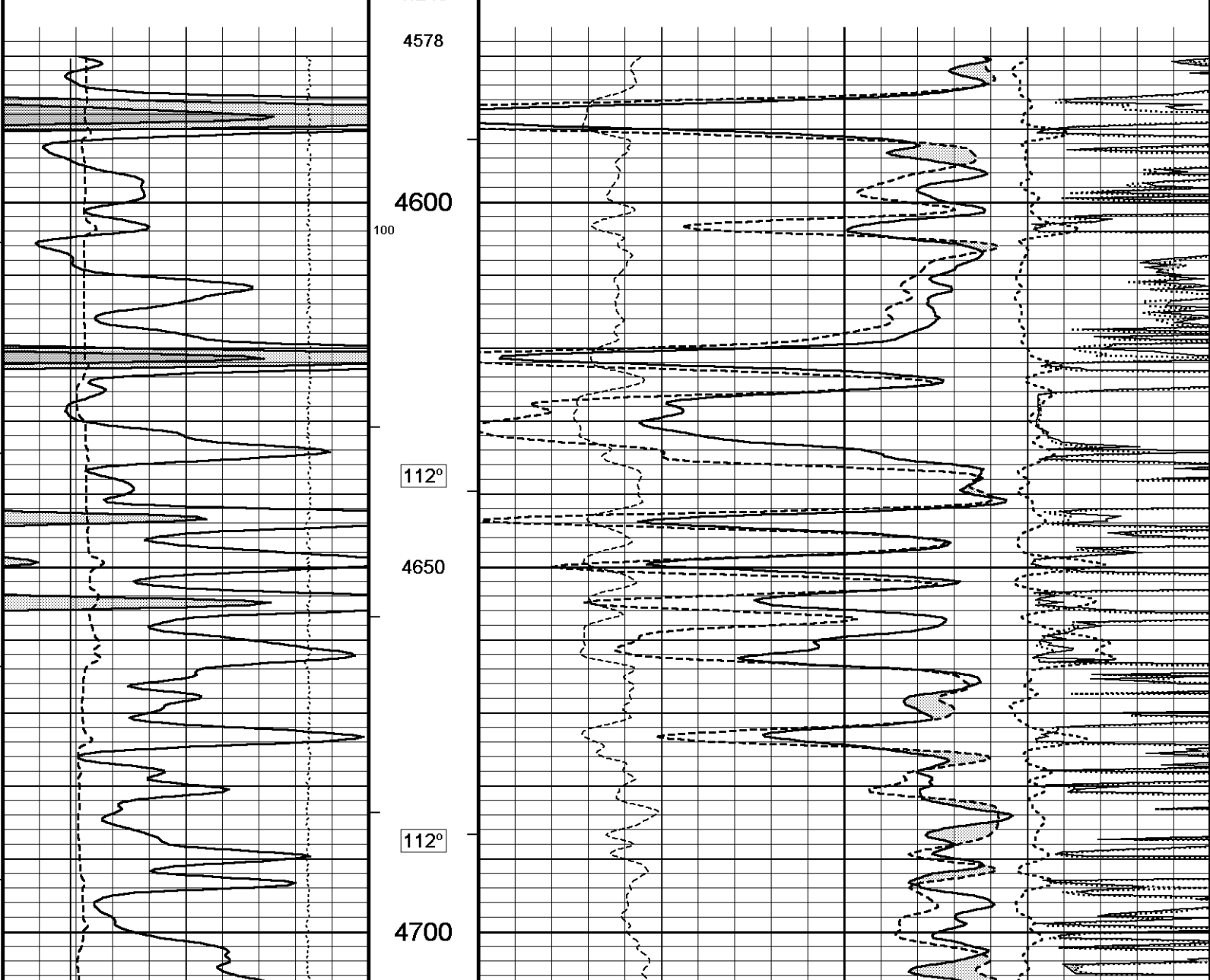
Limestone Density Por.  
percent  
30 20 10 0 -10

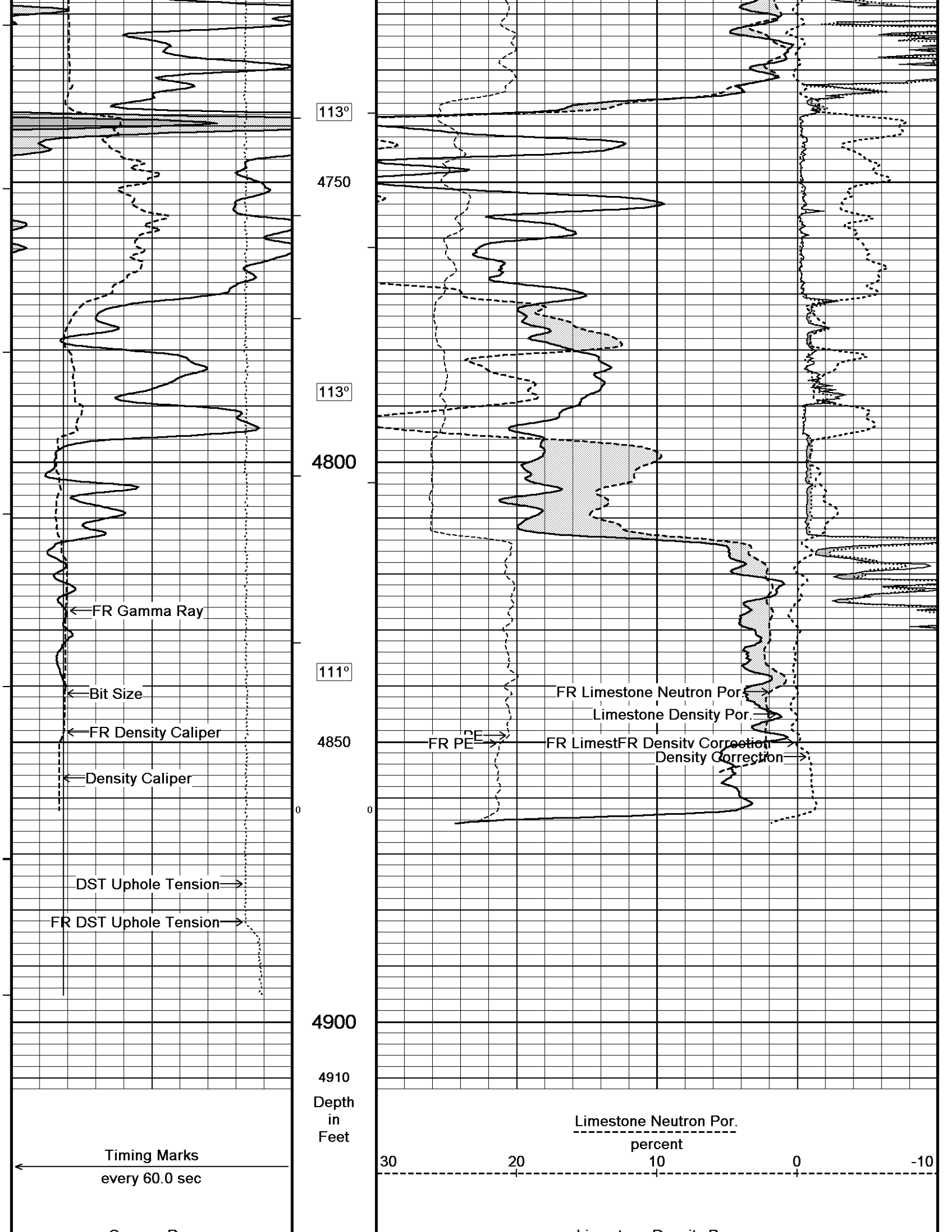
PE  
barns/electron  
0 5 10 -0.25

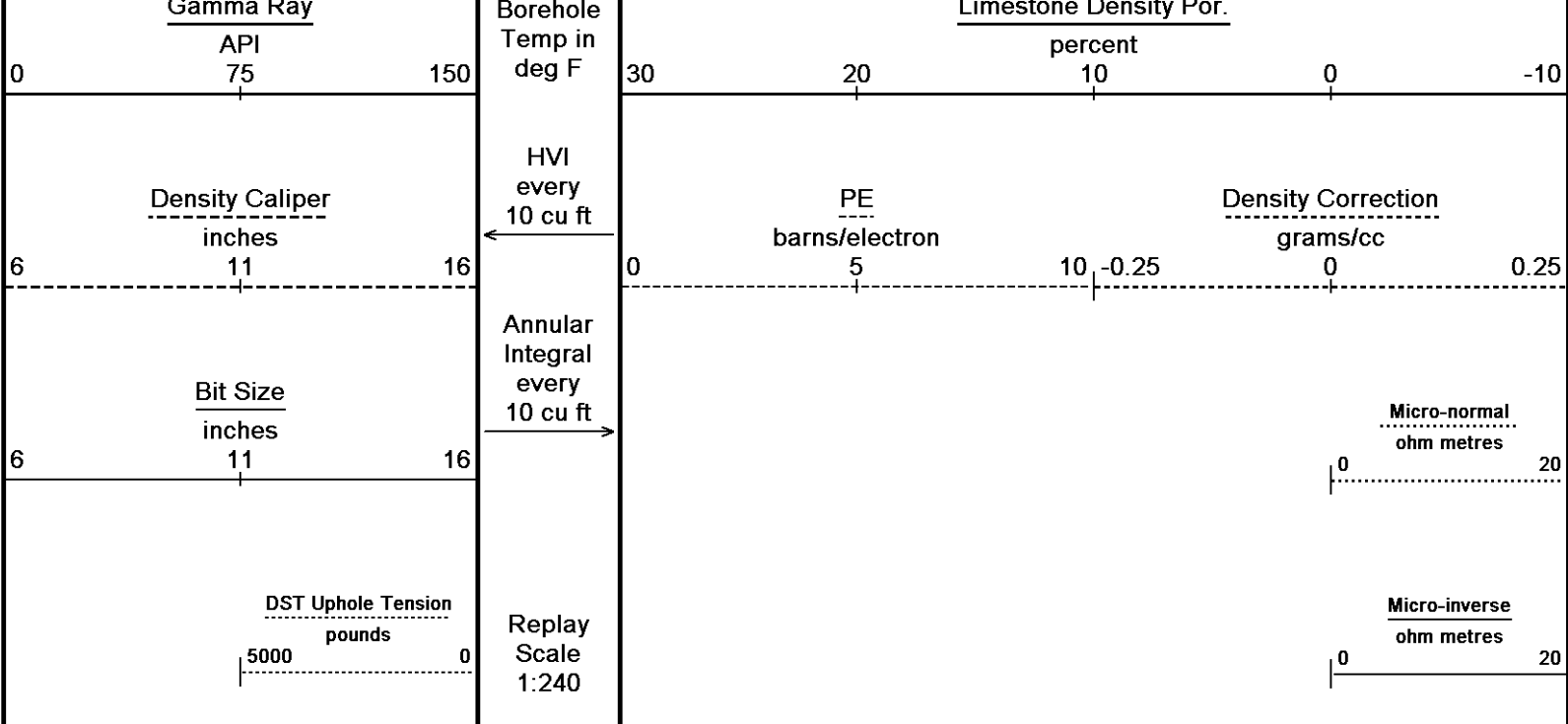
Density Correction  
grams/cc  
0 0.25

Micro-normal  
ohm metres  
0 20

Micro-inverse  
ohm metres  
0 20



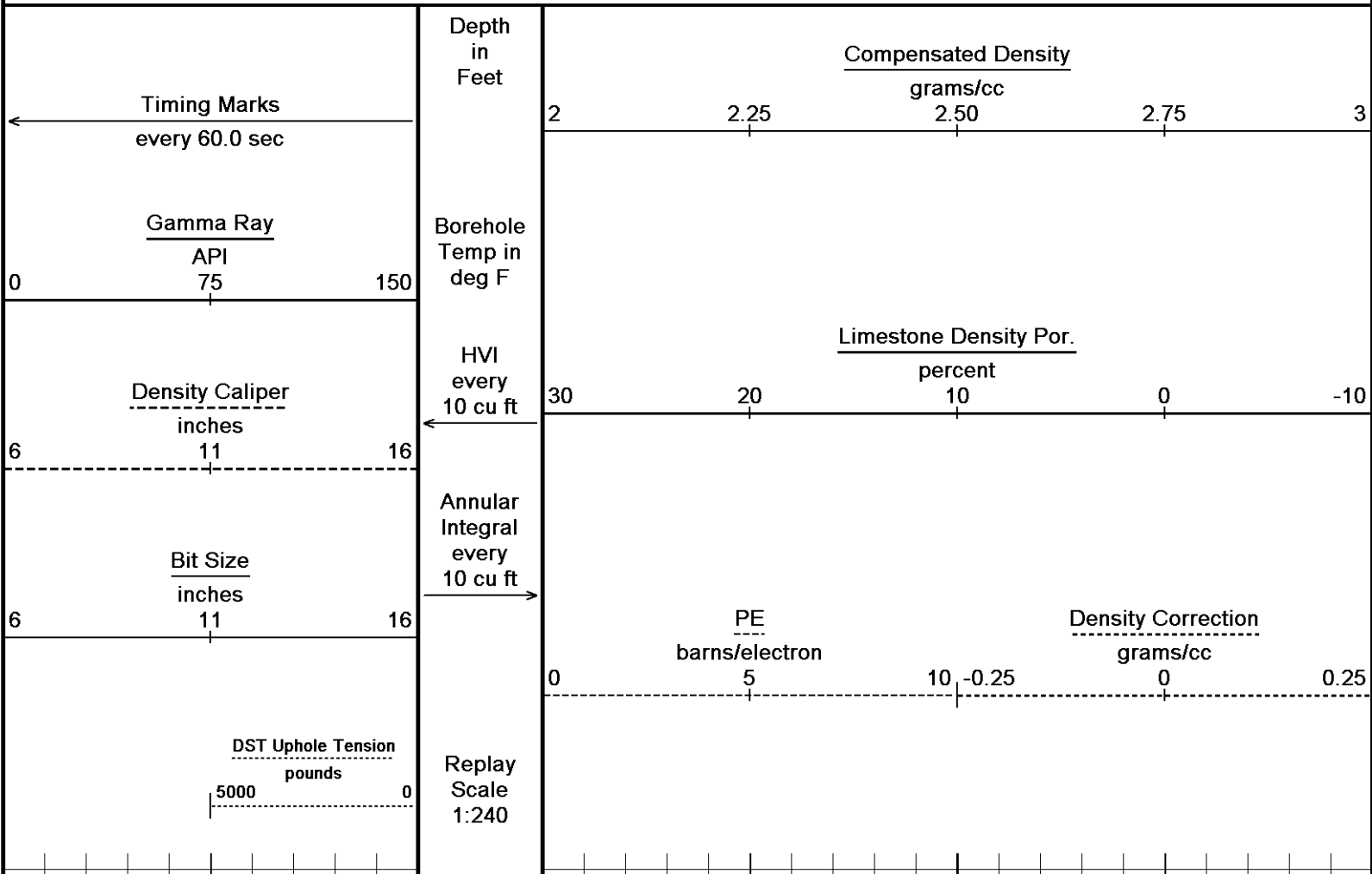


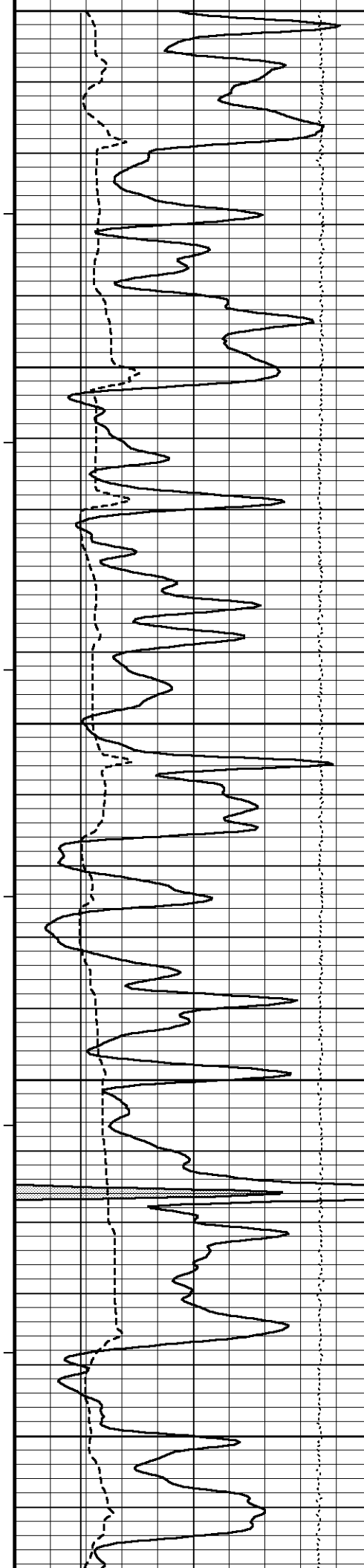


Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 05-JUN-2012 11:28  
 Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_001.dta  
 Recorded on 05-JUN-2012 07:45  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

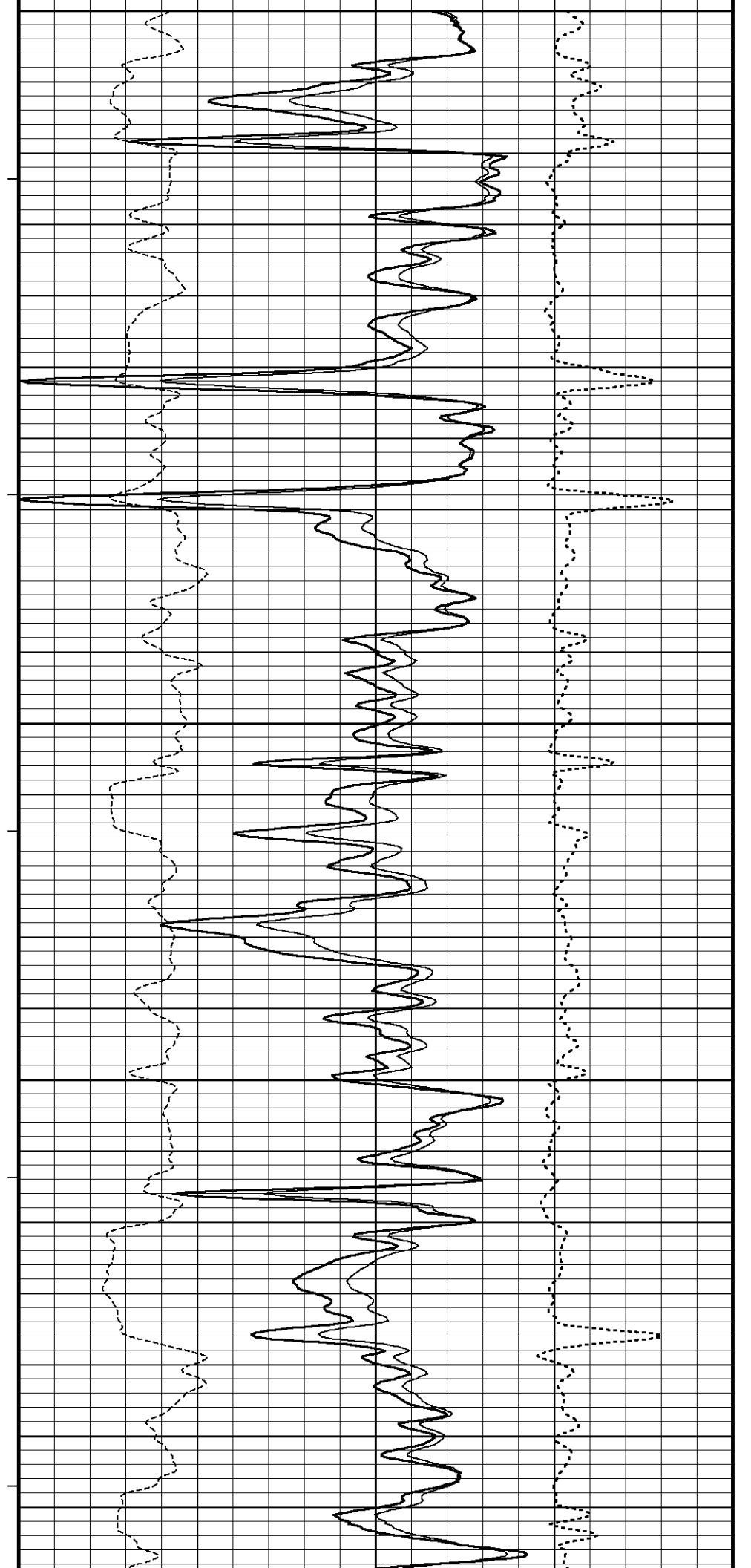
5 INCH REPEAT PASS

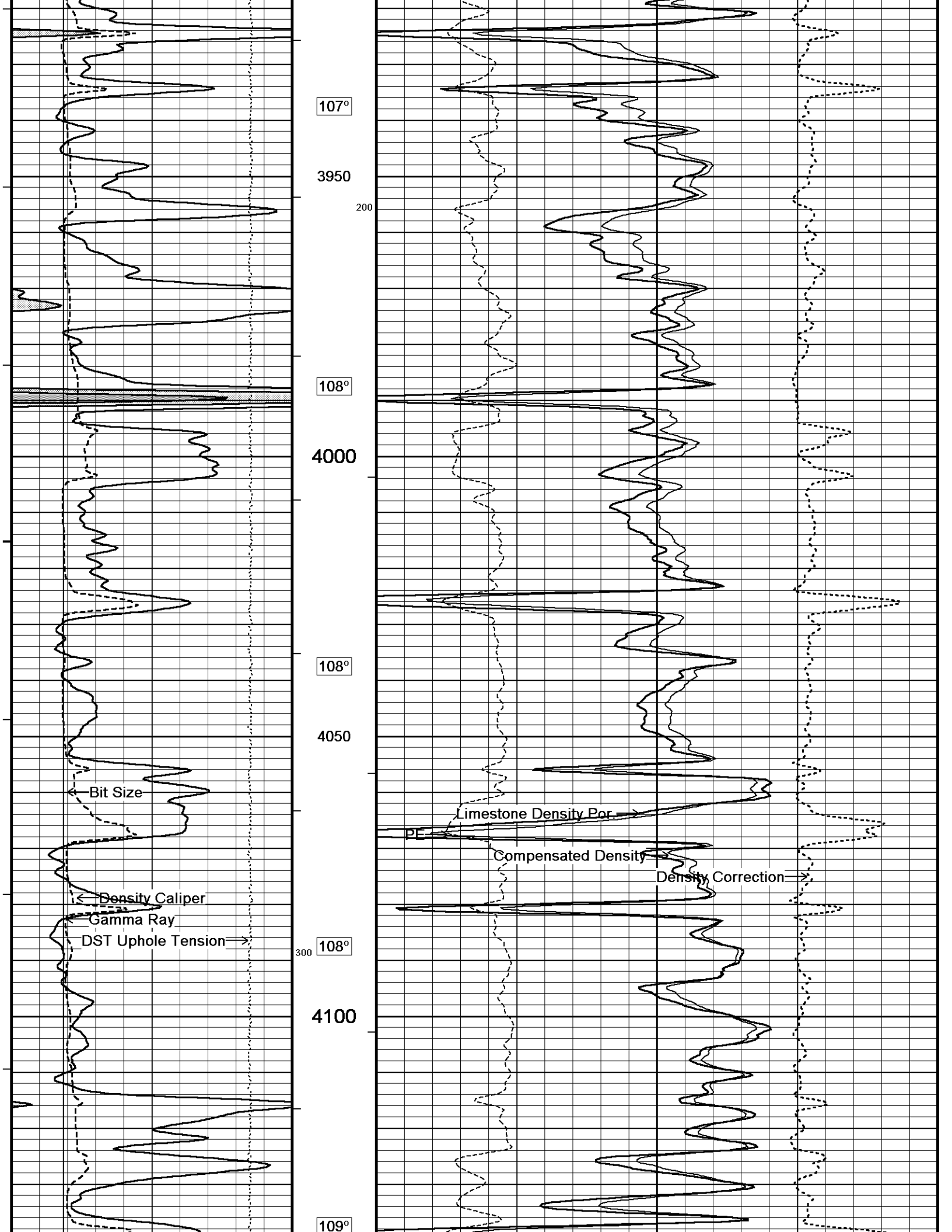
Depth Based Data - Maximum Sampling Increment 10.0cm  
 Plotted on 05-JUN-2012 11:28  
 Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_002.dta  
 Recorded on 05-JUN-2012 08:07  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

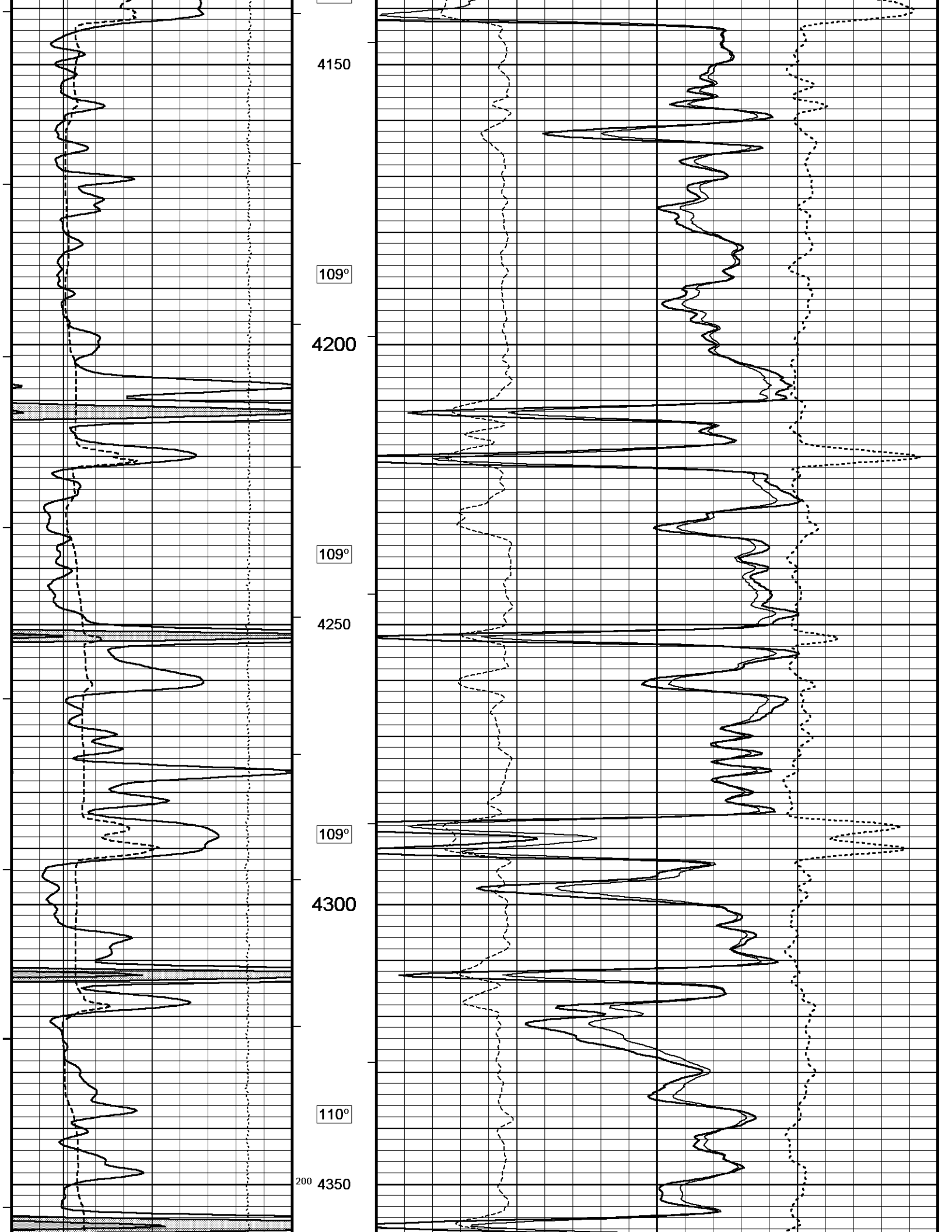


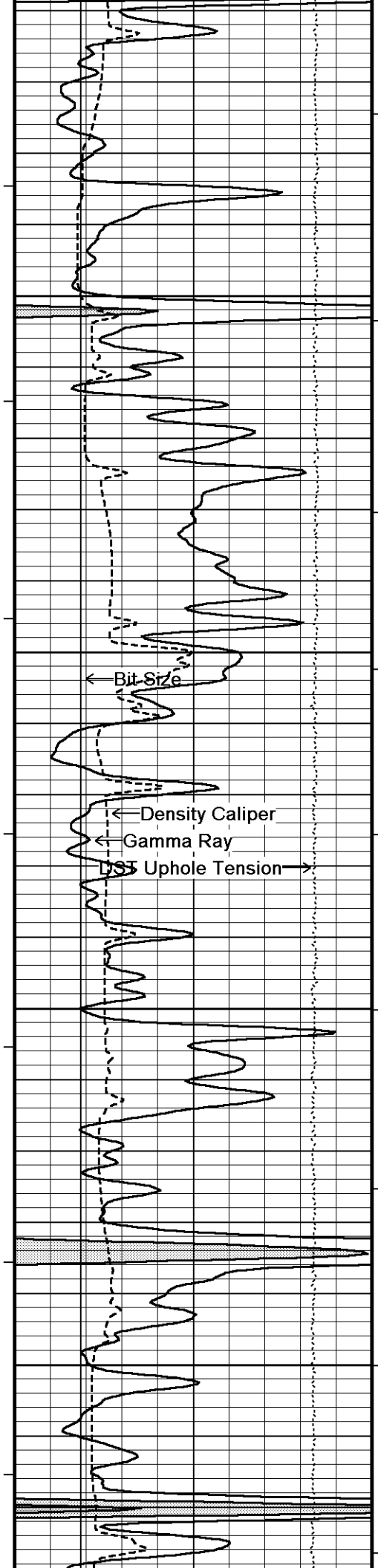


3700  
106°  
3750  
107°  
3800  
400  
107°  
3850  
107°  
3900









110°

4400

110°

4450

111°

4500

112°

4550

← Bit Size

← Density Caliper

← Gamma Ray

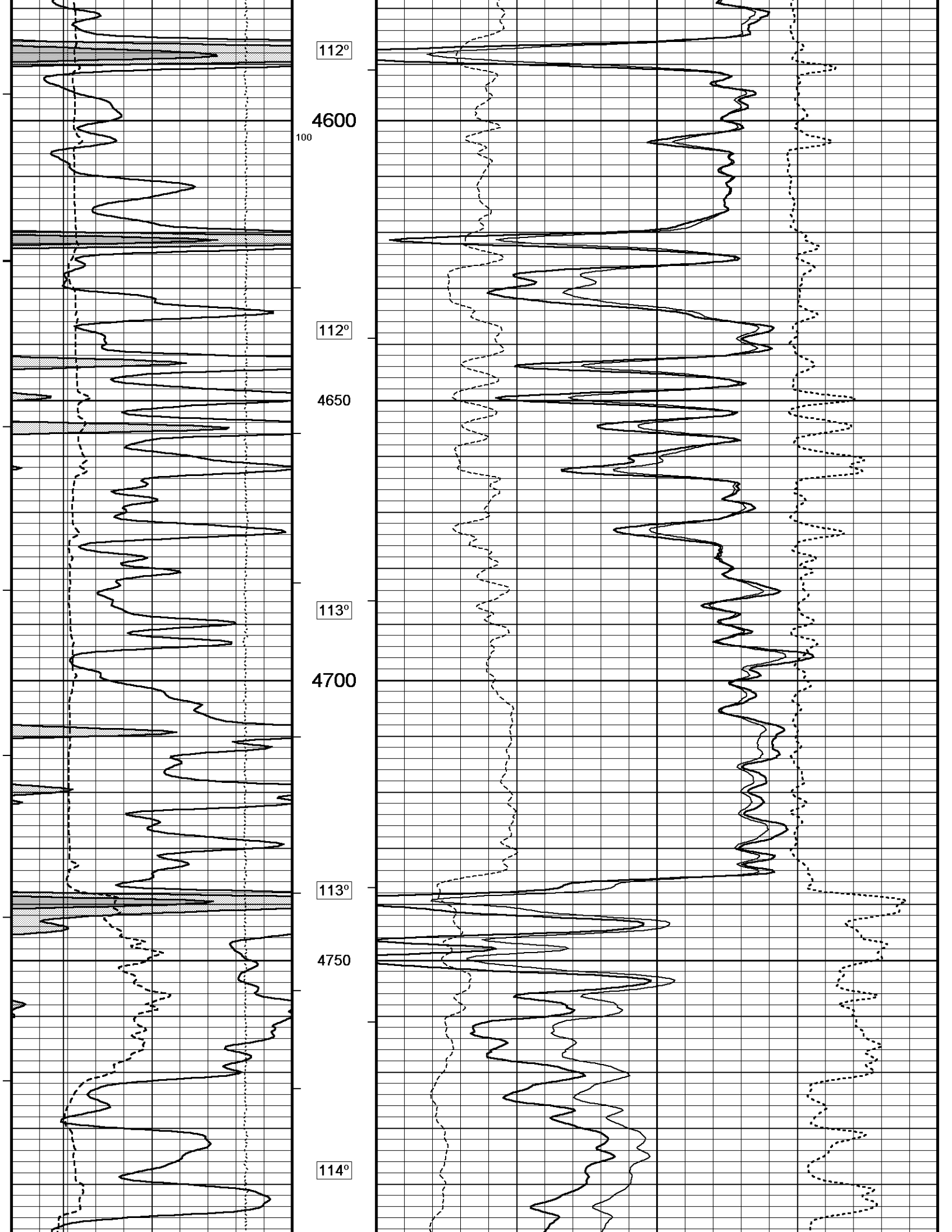
← DST Uphole Tension →

Limestone Density Por →

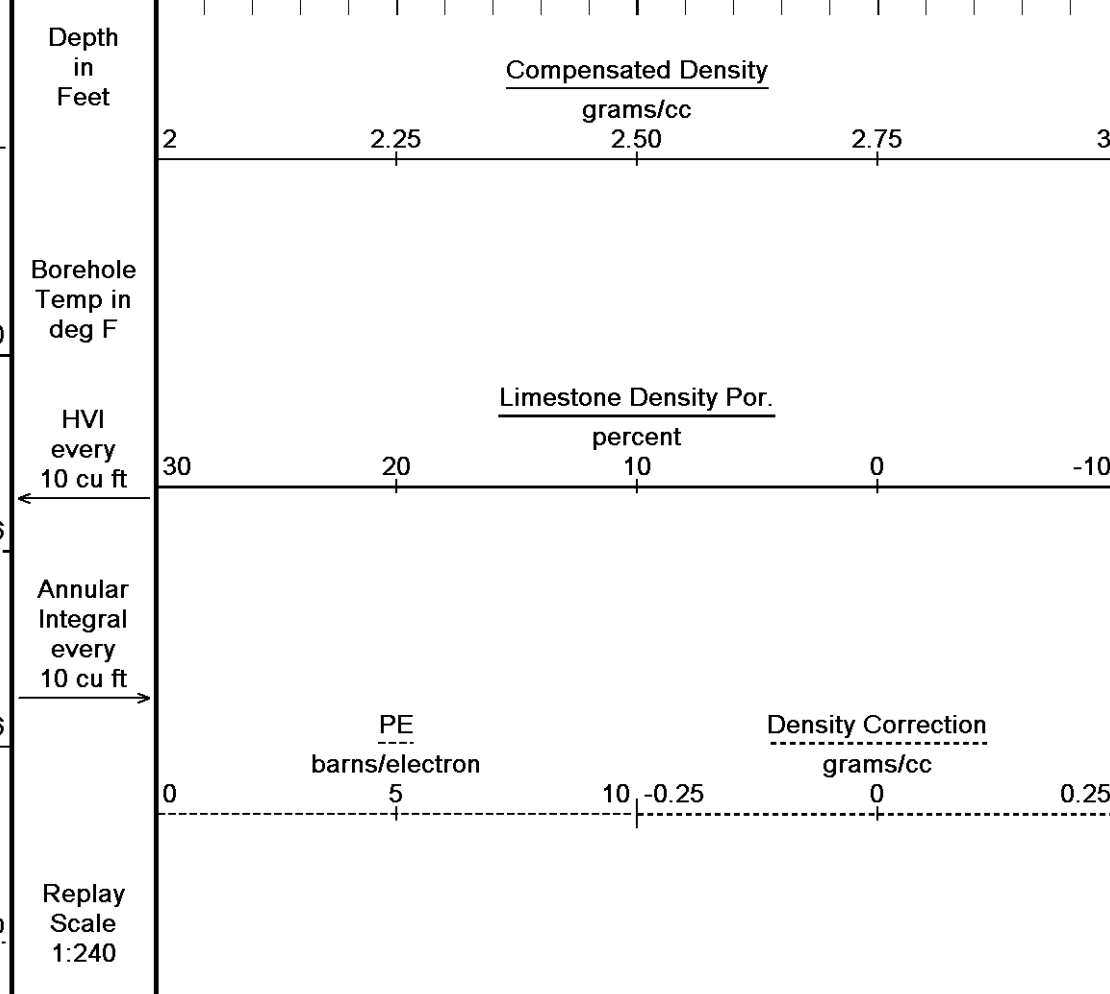
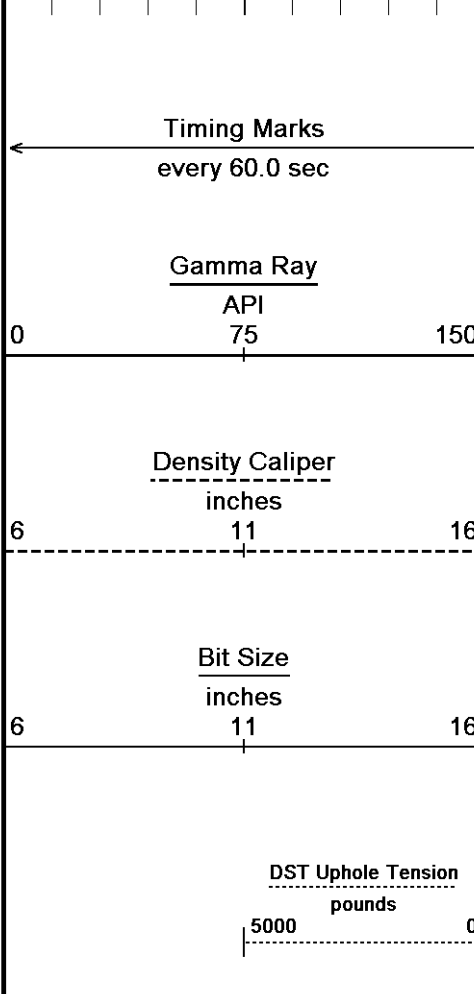
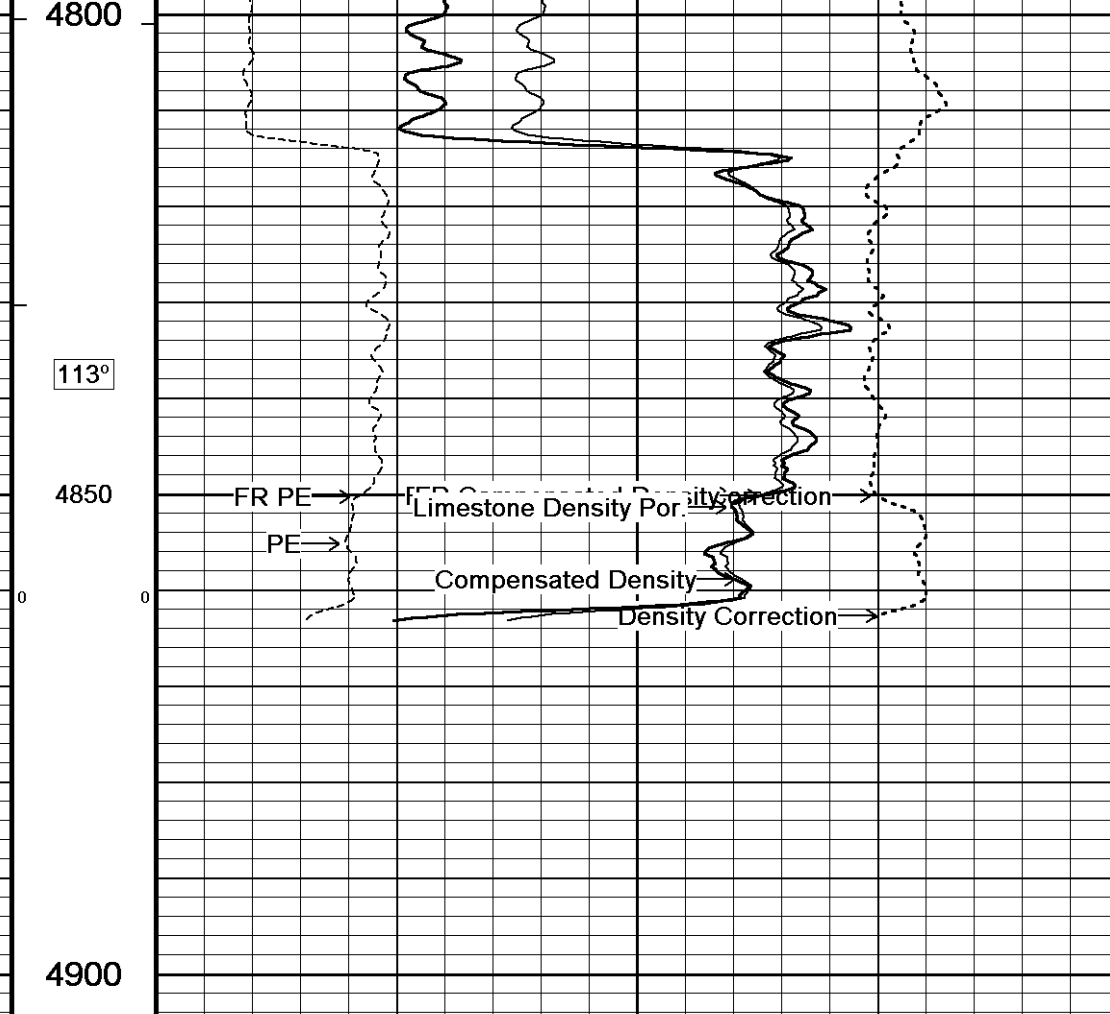
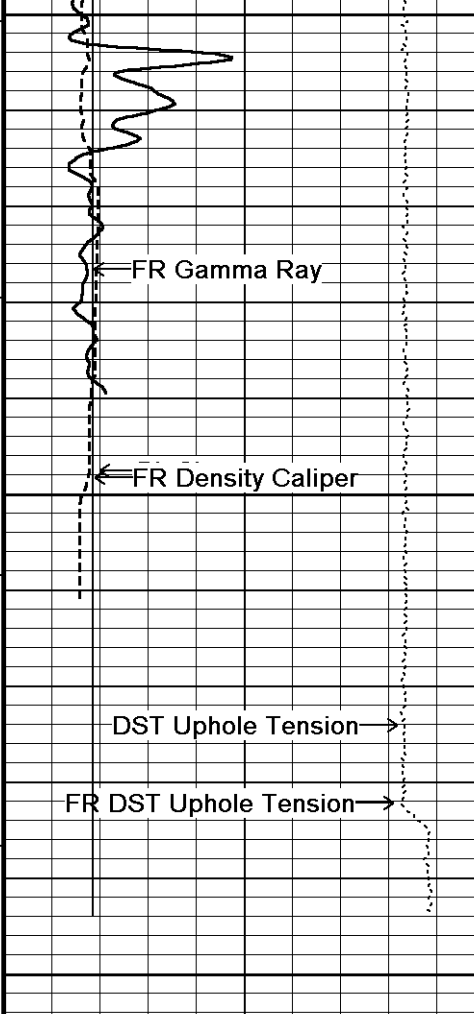
PE →

Compensated Density →

Density Correction →









# 5 INCH MAIN PASS



# 5 INCH REPEAT PASS



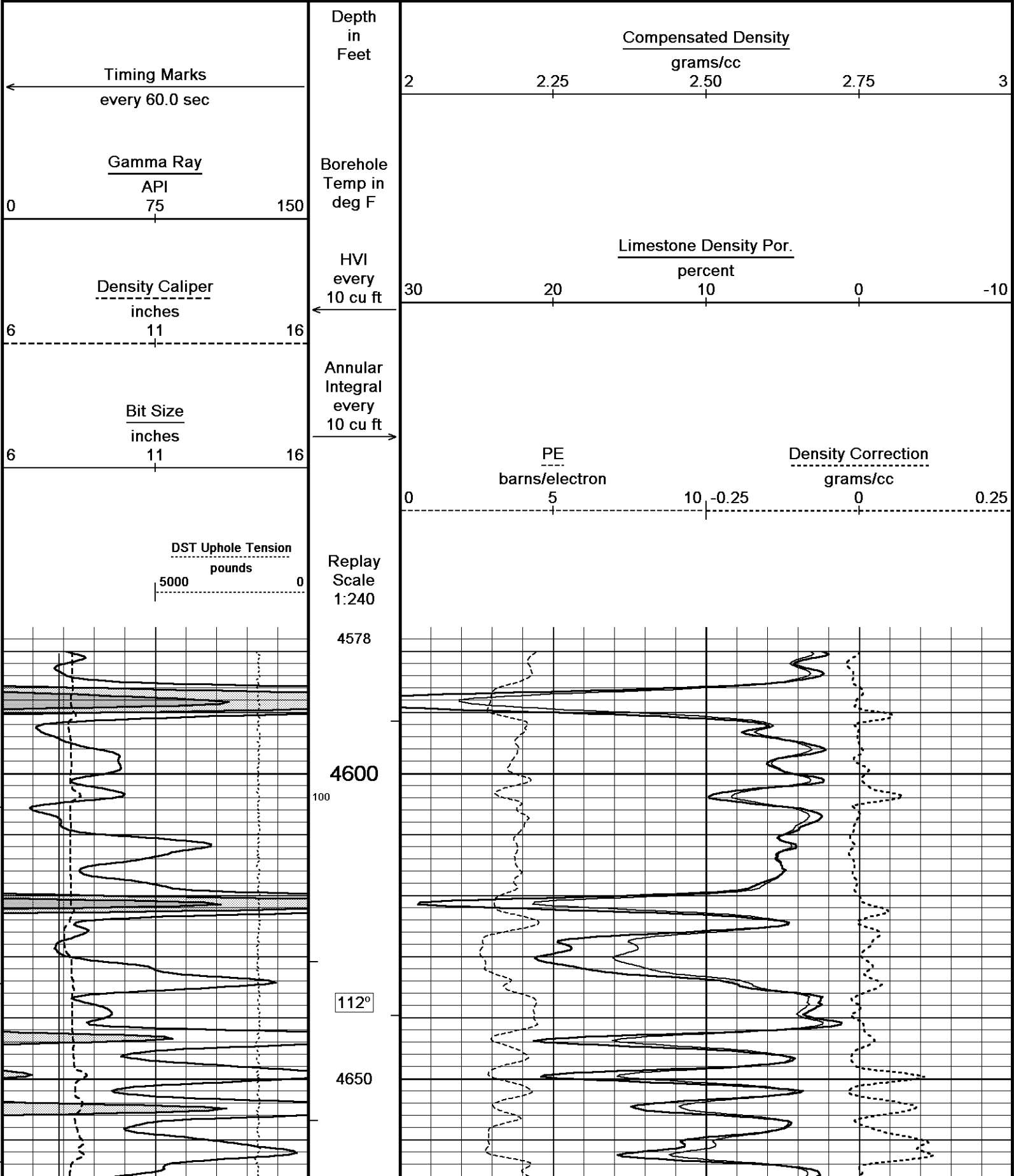
Depth Based Data - Maximum Sampling Increment 10.0cm

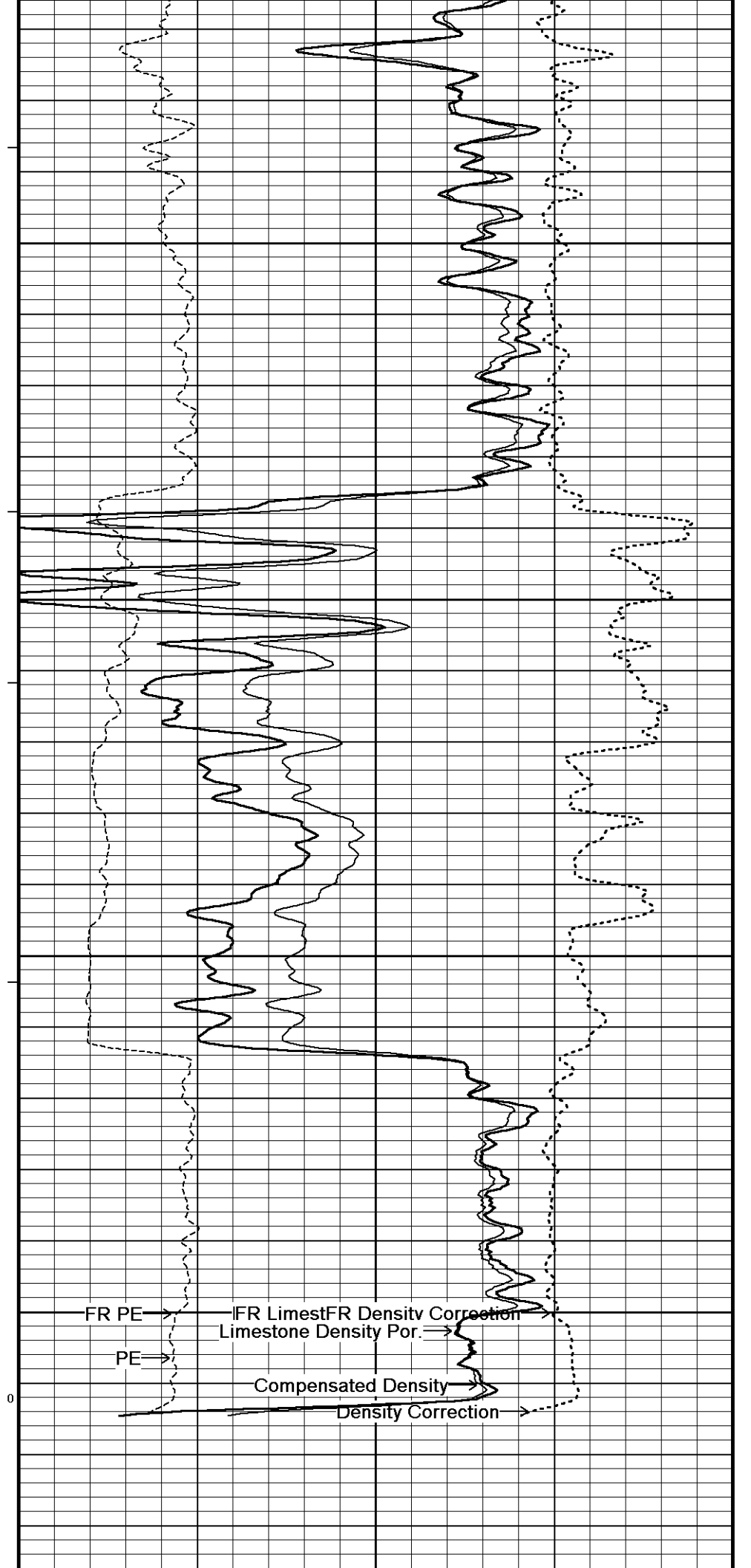
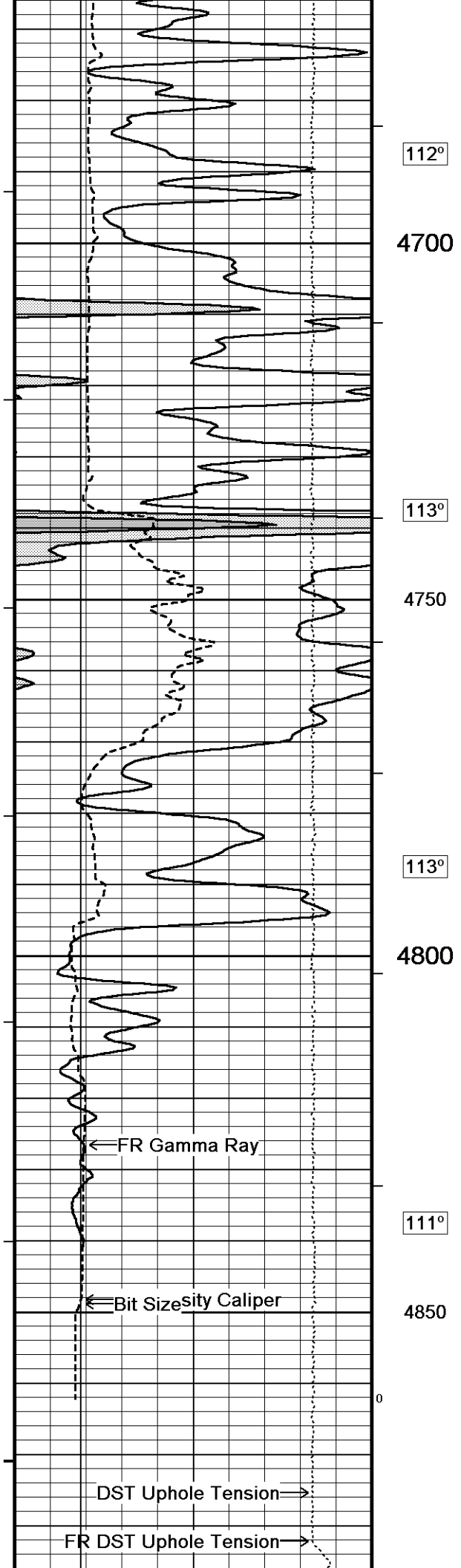
Plotted on 05-JUN-2012 11:28

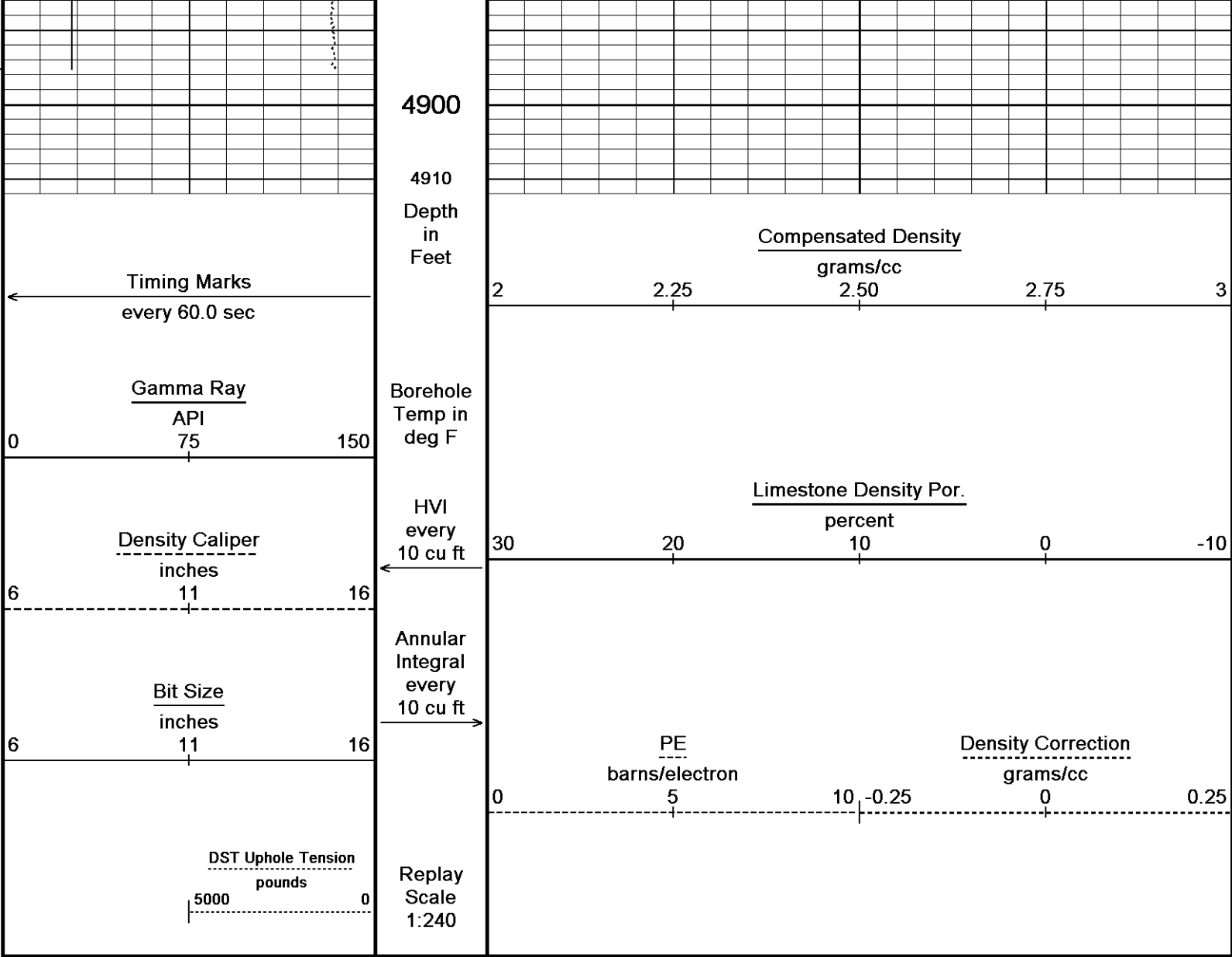
Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_001.dta

Recorded on 05-JUN-2012 07:45

System Versions: Logged with 11.03.4044 Plotted with 11.03.4044







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 05-JUN-2012 11:28  
 Filename: C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_001.dta Recorded on 05-JUN-2012 07:45  
 System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

↑ **5 INCH REPEAT PASS** ↑

**BEFORE SURVEY CALIBRATION**  
 C:\Minimus 11.03.4044\Data\Shakespeare Carson #1-25\Shakespeare Carson #1-25\_001.dta

General Constants All 000 Last Edited on 05-JUN-2012,07:09

**General Parameters**  
 Mud Resistivity 0.460 ohm-metres  
 Mud Resistivity Temperature 85.000 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. Four Res Rt  
 RWA Constant A 0.610

## Gamma Calibration MCG-C 84

Field Calibration on 31-MAY-2012 09:46

	Measured	Calibrated (API)
Background	66	44
Calibrator (Gross)	1148	769
Calibrator (Net)	1082	725

## Gamma Constants MCG-C 84

Last Edited on 05-JUN-2012,06:12

Gamma Calibrator Number	GR38	
Mud Density	1.12	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 31-MAY-2012 09:39

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)
	6.01	5.98

## Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 23-MAY-2012 12:04

Field Check on 31-MAY-2012 09:40

Base Calibration					
Channel	Resistor 1	Measured		Calibrated (ohm-m)	
		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

## Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 05-JUN-2012,06:12

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 31-MAY-2012 09:51

Base Calibration					
Ratio	Near	Measured		Calibrated (cps)	
		Far	Near	Far	
	3164	98	3714	110	
		32.187		33.764	

Field Calibrator at Base	Calibrated (cps)
	1615      2315
Ratio	0.697

Field Check	Calibrated (cps)
	1630      2345
Ratio	0.695

Neutron Constants MDN-A.B 65

Last Edited on 05-JUN-2012,06:12

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	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 31-MAY-2012 09:30

Base Calibration	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.5	126.8
Base Check		281.5
Field Check		281.6

FE Constants MFE-A.A 55

Last Edited on 05-JUN-2012,06:11

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 05-JUN-2012,06:11

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 Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	
Sonde Parameters		
	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A

Peak Amplitude Source	N/A				
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		Discriminator (mV)	N/A
Start Time (micro-sec)	End Time (micro-sec)			
N/A	N/A		N/A	
N/A	N/A		N/A	N/A
N/A	N/A		N/A	N/A
N/A	N/A		N/A	N/A
N/A	N/A		N/A	N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

Induction Calibration MAI-A.A 45

Base Calibration on 12-JAN-2012,13:34  
Field Check on 31-MAY-2012 09:29

Base Calibration

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	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	18.3	3851.3
2	0.0	0.0	31.6	3629.3
3	0.0	0.0	28.5	3049.3
4	0.0	0.0	18.2	2079.0
Deep	0.0	0.0	16.0	1911.0
Medium	0.0	0.0	42.4	4060.5
Shallow	0.0	0.0	49.4	5483.1

Array Temperature 0.0 70.7 Deg F

Induction Constants MAI-A.A 45

Last Edited on 05-JUN-2012,06:11

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

Stand-off Filter 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 16-MAY-2012 14:32  
Field Calibration on 31-MAY-2012 09:33

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	19200	3.99
2	29152	5.98
3	39216	7.97
4	48949	9.86
5	60064	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.93	5.98

#### Photo Density Calibration MPD-B 59

Base Calibration on 16-MAY-2012 14:49  
Field Check on 31-MAY-2012 09:38

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
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Field Check	1206.1	1292.9
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PE Calibration				
Base Calibration				
	WS	Measured	Calibrated	
		WH	Ratio	Ratio





Compact Focussed Electric  
MFE-A.A 55 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

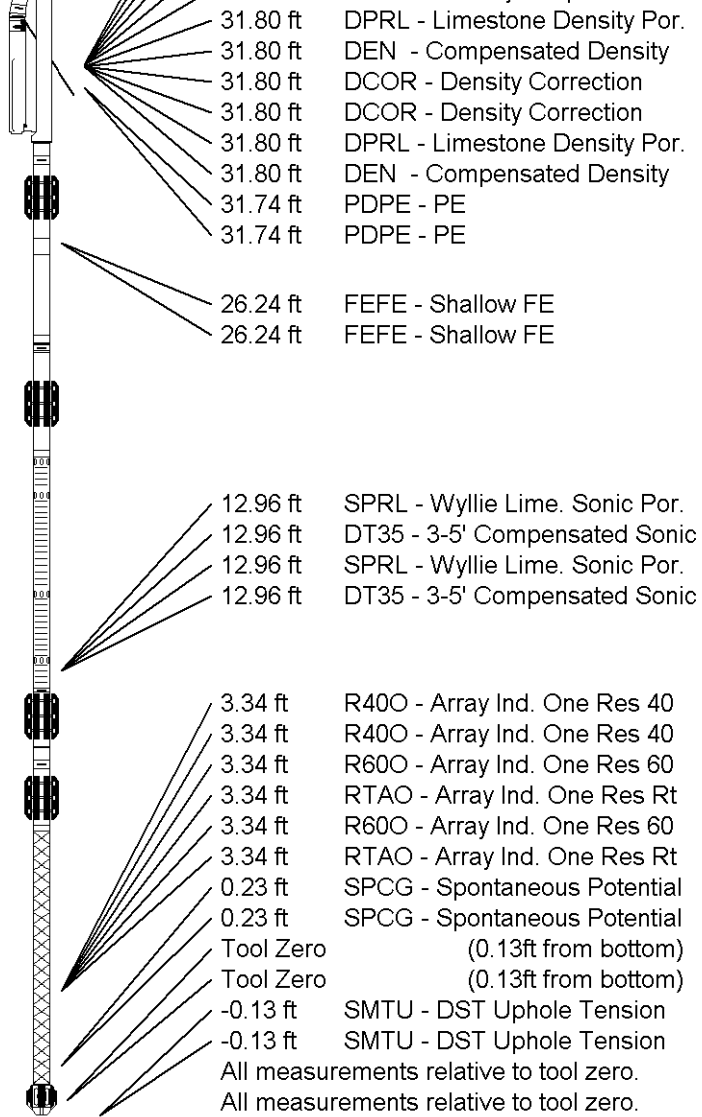
Compact Sonic  
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction  
MAI-A.A 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: 60.68 ft Weight: 456.4 lb

Total Length: 60.68 ft Weight: 456.4 lb



<b>COMPANY</b>	<b>SHAKESPEARE OIL CO., INC.</b>
<b>WELL</b>	<b>CARSON #1-25</b>
<b>FIELD</b>	<b>WILDCAT</b>
<b>PROVINCE/COUNTY</b>	<b>SCOTT</b>
<b>COUNTRY/STATE</b>	<b>U.S.A. / KANSAS</b>

Elevation Kelly Bushing	3114.00	feet	First Reading	4850.00	feet
Elevation Drill Floor	3112.00	feet	Depth Driller	4880.00	feet
Elevation Ground Level	3104.00	feet	Depth Logger	4882.00	feet



**COMPACT PHOTO DENSITY  
COMPENSATED NEUTRON  
MICRORESISTIVITY LOG**

