



Weatherford[®]

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY SHAKESPEARE OIL COMPANY, INC.
WELL CAMPBELL #2-17
FIELD WILDCAT
PROVINCE/COUNTY LOGAN
COUNTRY/STATE U.S.A. / KANSAS
LOCATION 1180' FSL & 1010' FEL
NW NW SE SE

SEC	TWP	RGE	Other Services	Elevations:
17	13S	32W	MA/MFE	KB 3037.00 DF 3036.00 GL 3027.00
API Number	15-109-21097			
Permit Number				
Permanent Datum	G.L., Elevation 3027 feet			
Log Measured From	KB			
Drilling Measured From	K.B.			
Date	10-SEP-2012			
Run Number	ONE			
Depth Driller	4700.00			feet
Depth Logger	4700.00			feet
First Reading	4680.00			feet
Last Reading	3700.00			feet
Casing Driller	254.00			feet
Casing Logger	254.00			feet
Bit Size	7.875			inches
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.10	lb/USg	47.00	CP
PH / Fluid Loss	11.00		9.60	ml/30Min
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.78	@ 97.0		ohm-m
Rmf @ Measured Temp	0.62	@ 97.0		ohm-m
Rmc @ Measured Temp	0.94	@ 97.0		ohm-m
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.64	@118.0		ohm-m
Time Since Circulation	3 HOURS			
Max Recorded Temp	118.00			deg F
Equipment Name	COMPACT			
Equipment / Base	13057		LIB	
Recorded By	L. SCOTT			
Witnessed By	STEVE DAVIS			
S.O. / JOB#	3537842		LB12-247	

BOREHOLE RECORD

Last Edited: 10-SEP-2012 08:52

Bit Size inches	Depth From feet	Depth To feet
7.875	254.00	4700.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	254.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE, MSS and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Tight pulls, washouts and borehole rugosity will affect data quality.
Annular volume with 5.5 inch production casing= 175 cu. ft.
Total hole volume from TD to Surface casing= 1800 cu. ft.
Service order: #3537842
Rig: Val #7
Engineer: L. Scott
Operator(s): J. LaPoint, M. Stegman

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

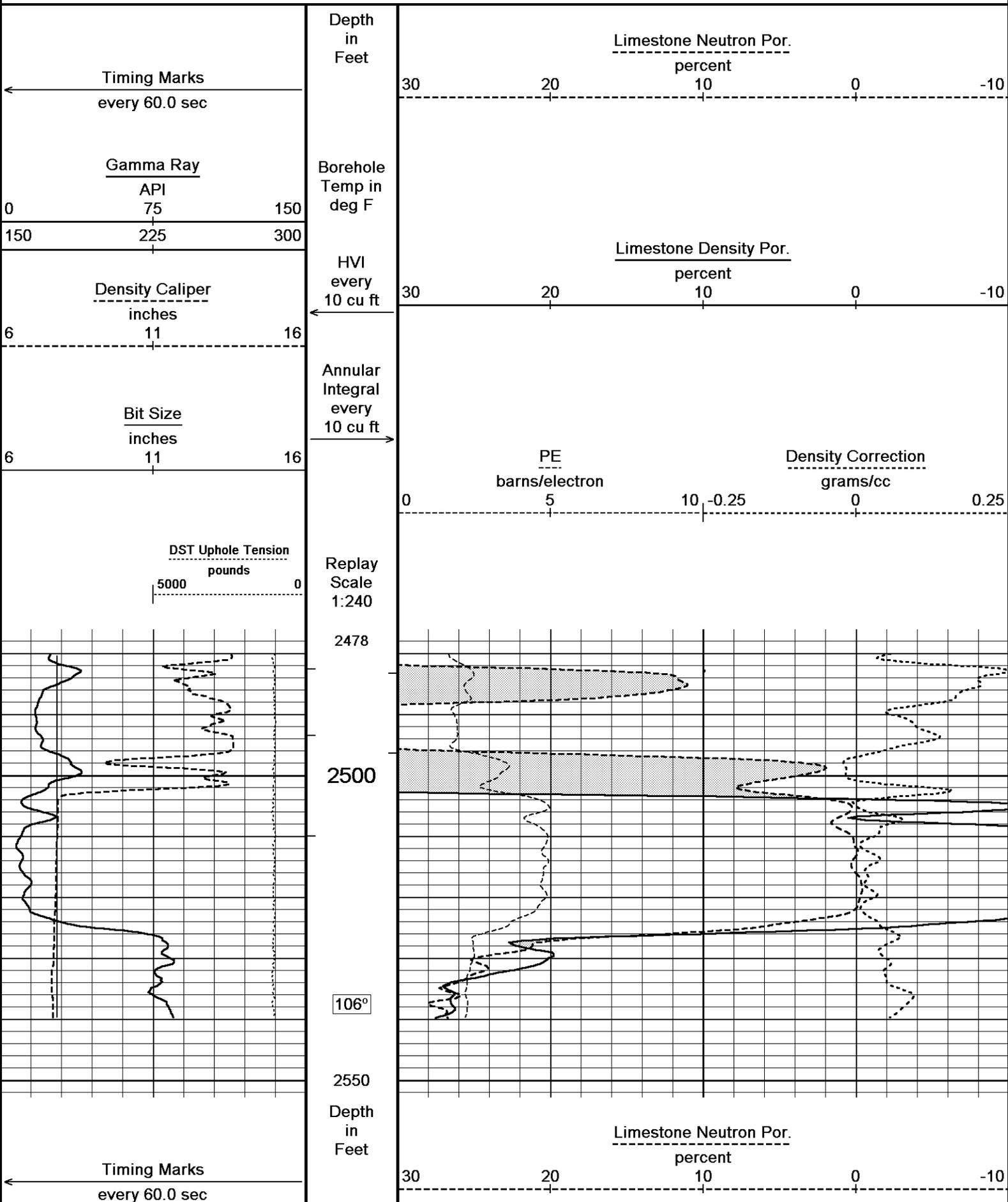
Depth Based Data - Maximum Sampling Increment 10.0cm

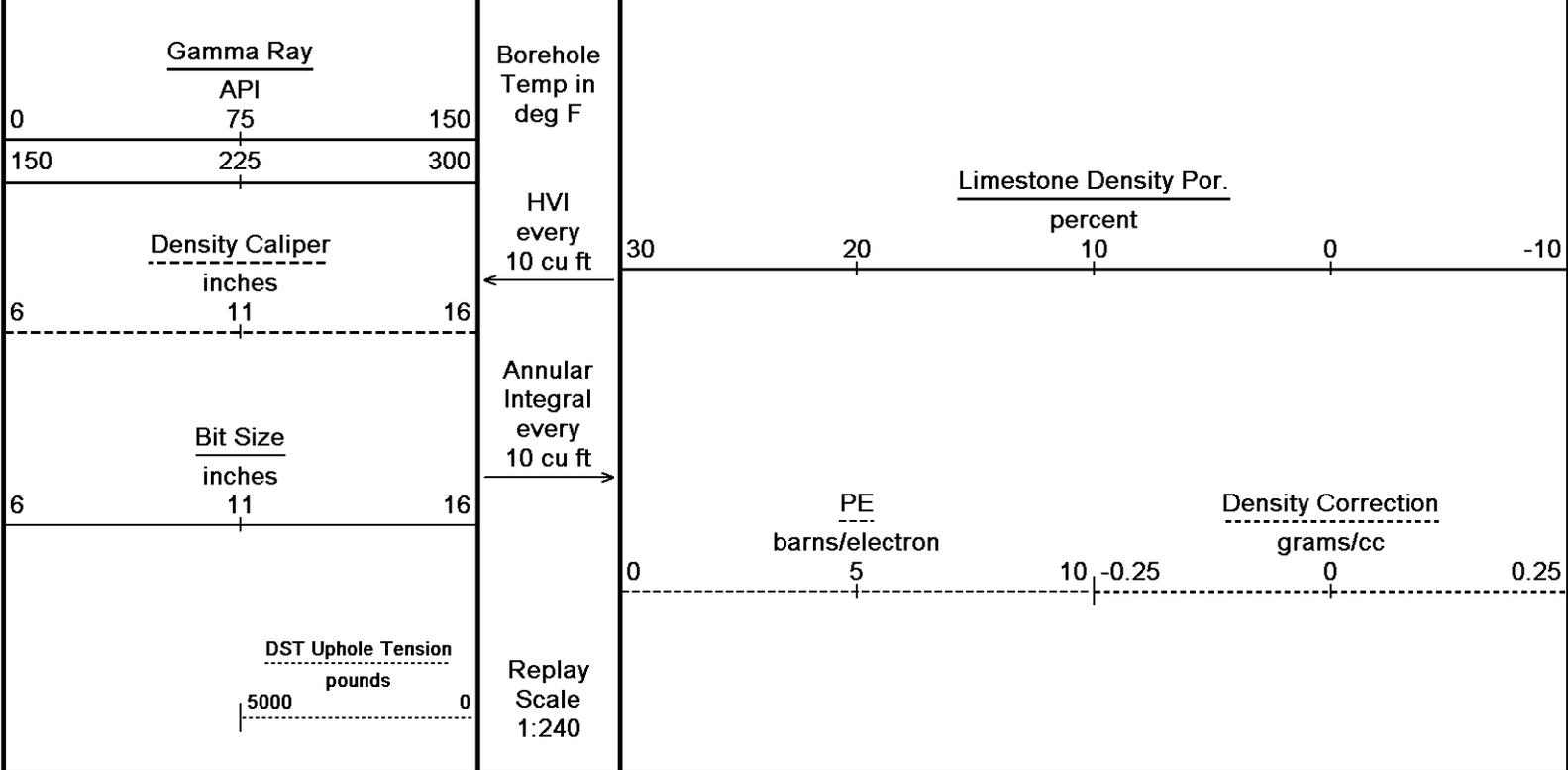
Plotted on 10-SEP-2012 14:38

Filename: C:\Minimus 13.02.6600\Data\Shakespeare Campbel...\Shakespeare Campbell #2-17_002.dta

Recorded on 10-SEP-2012 12:12

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600



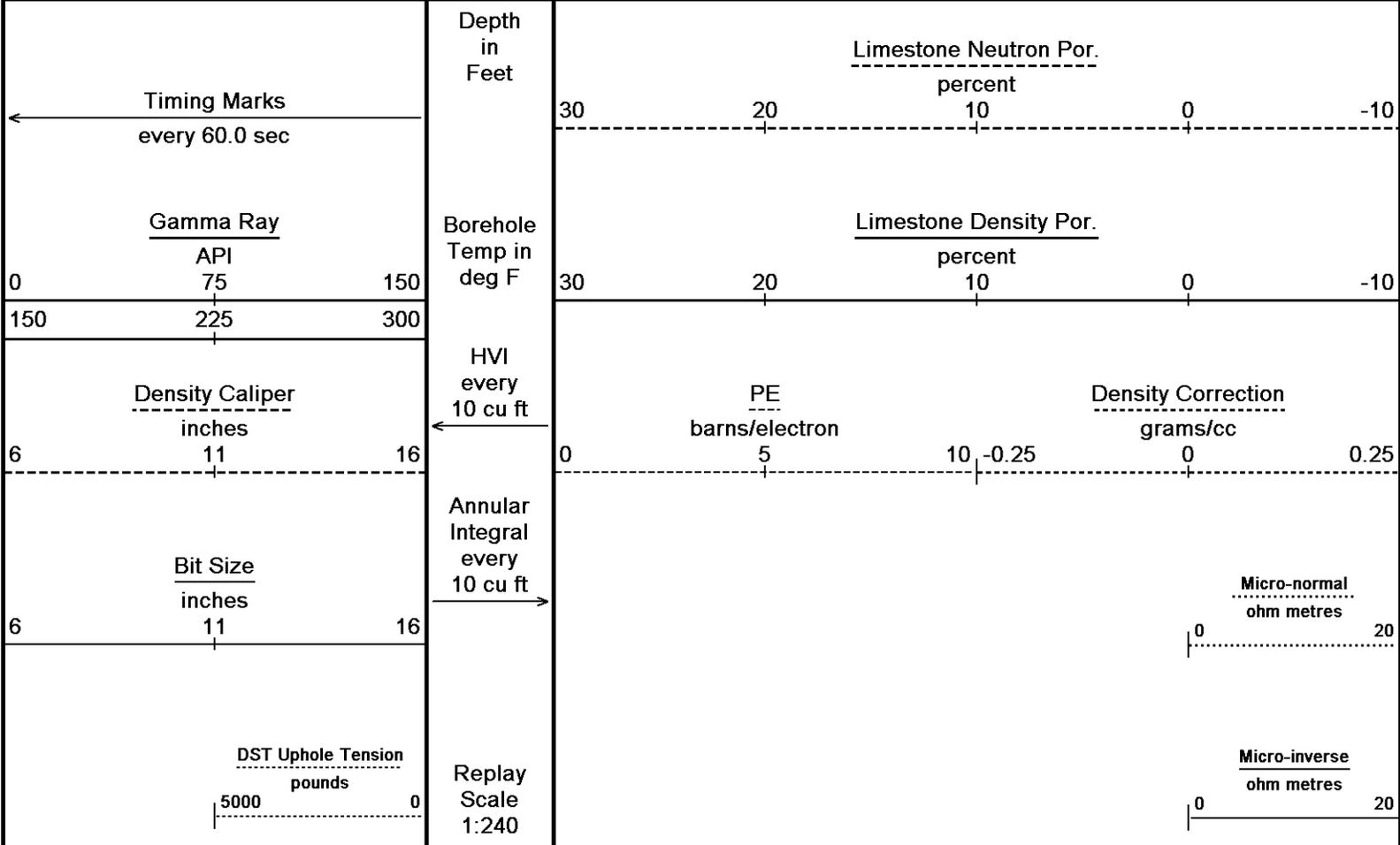


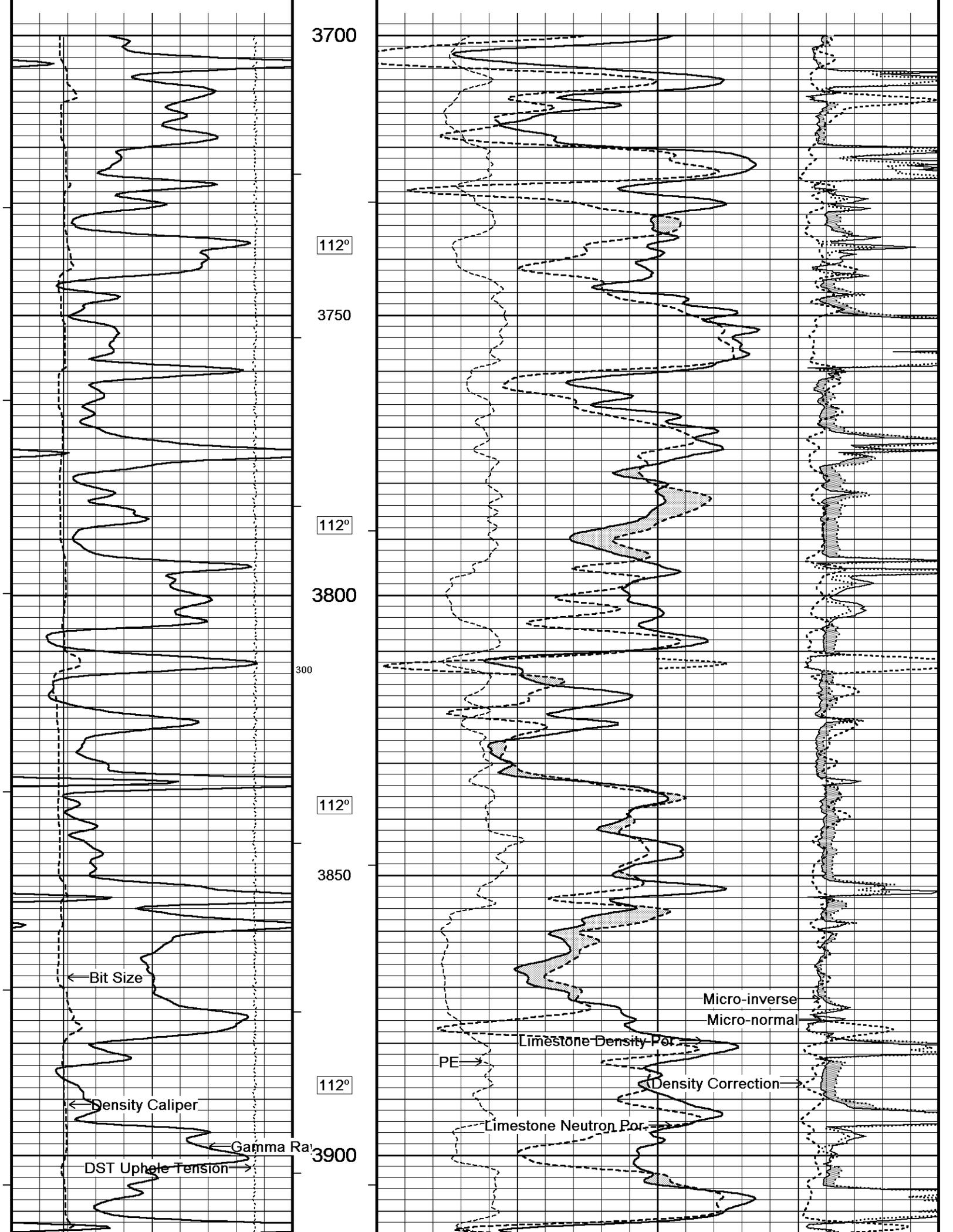
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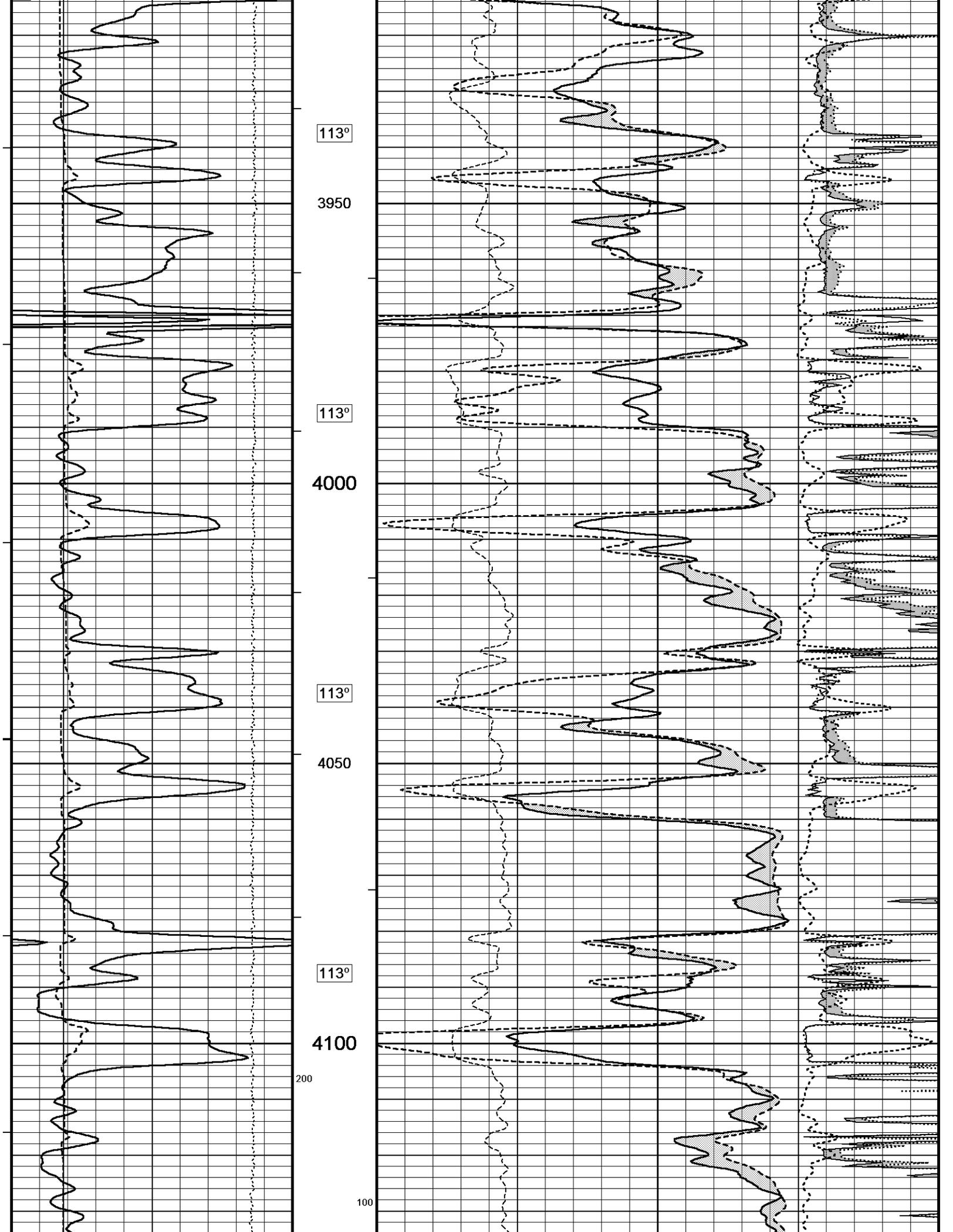
↑ 5 INCH MAIN ↑

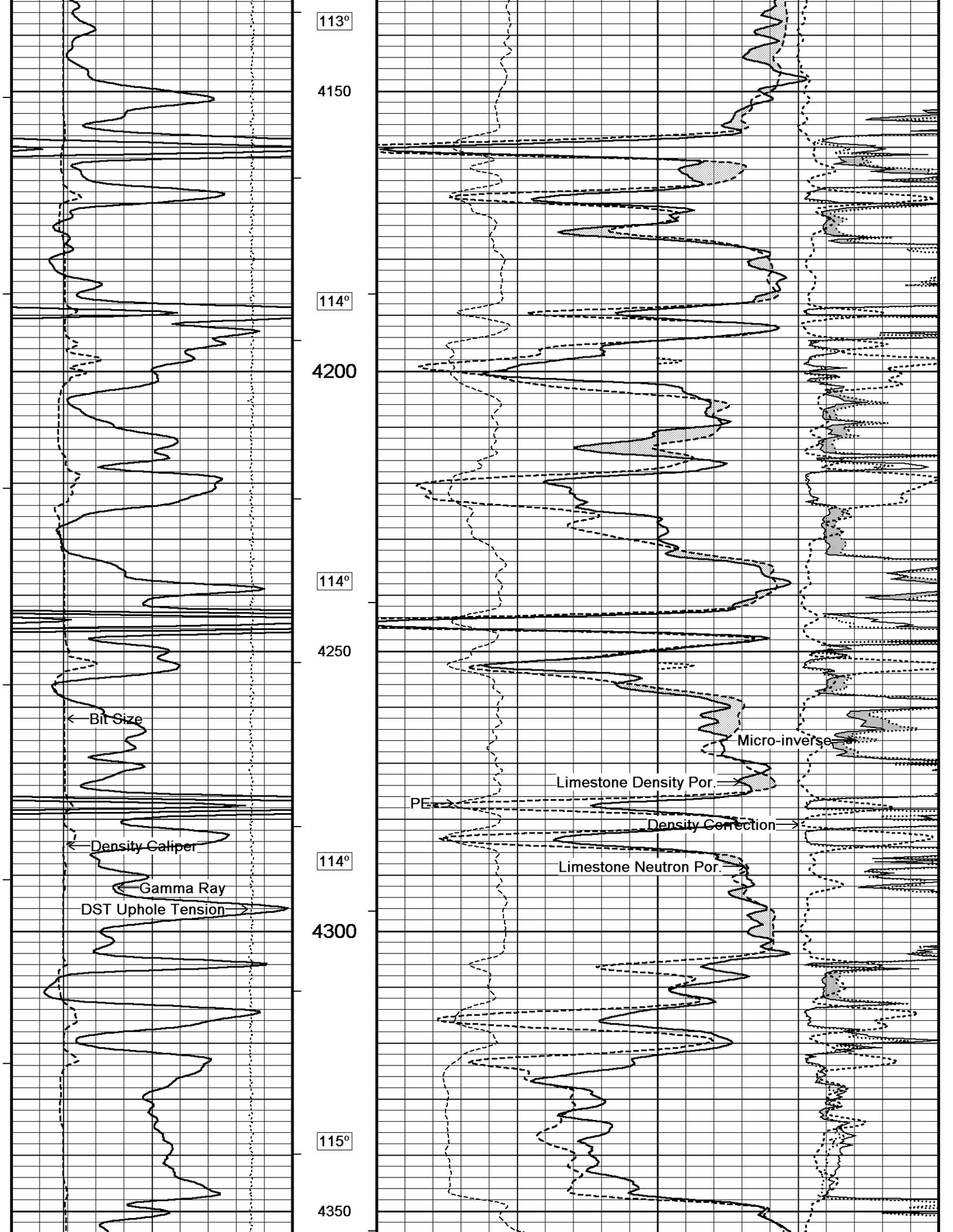
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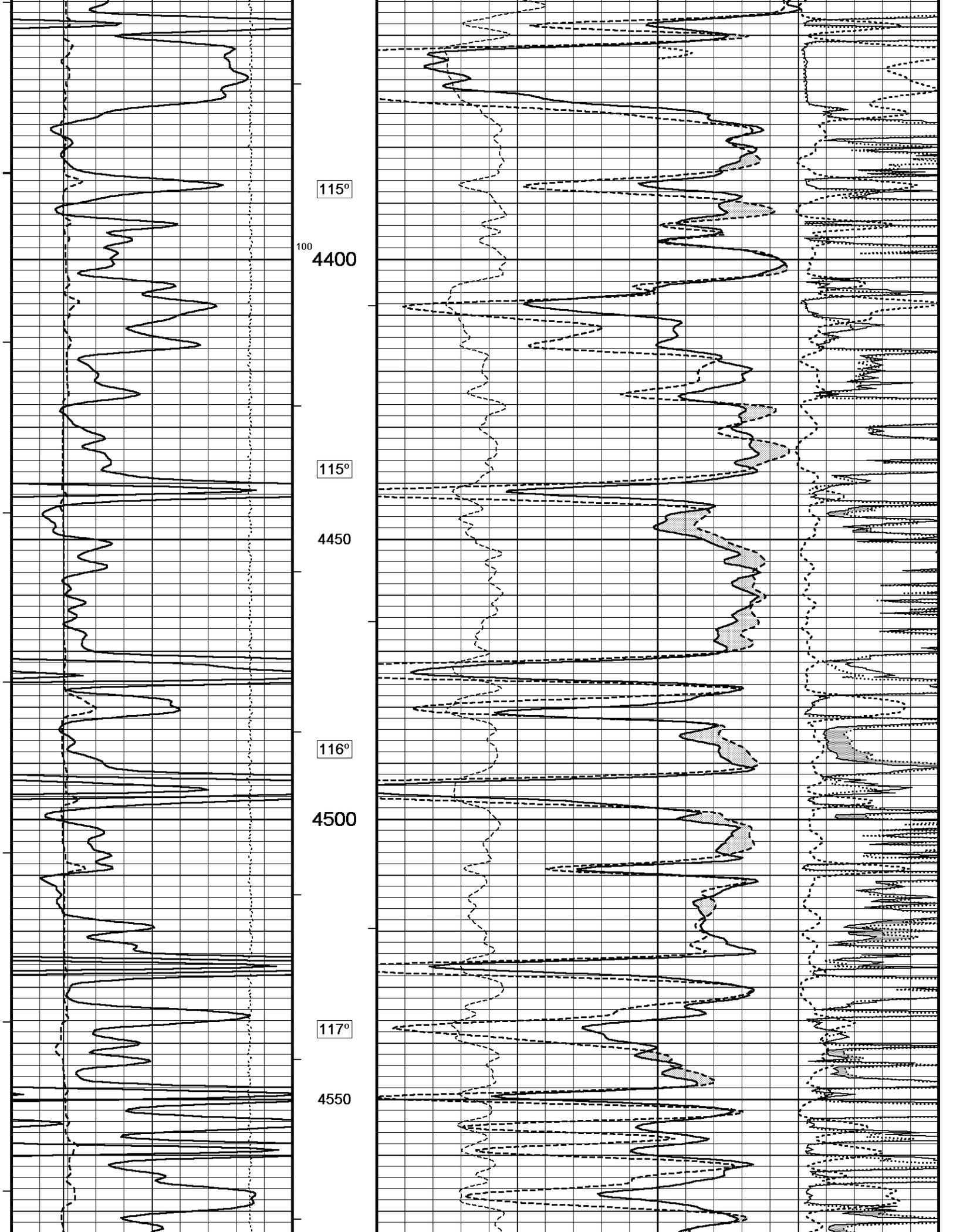
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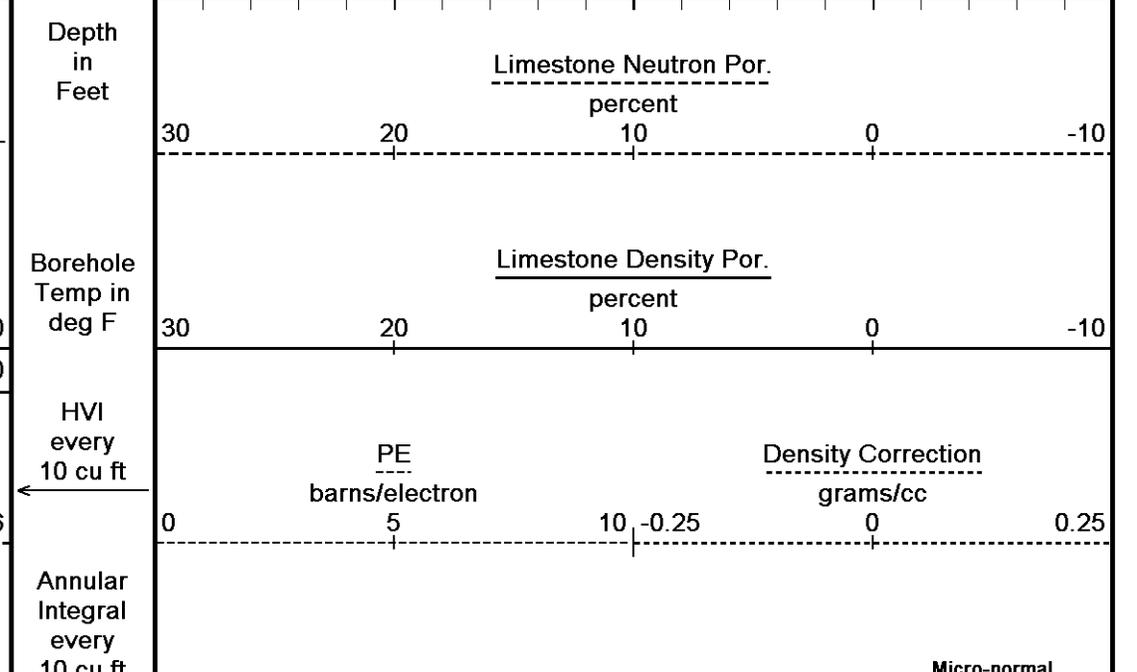
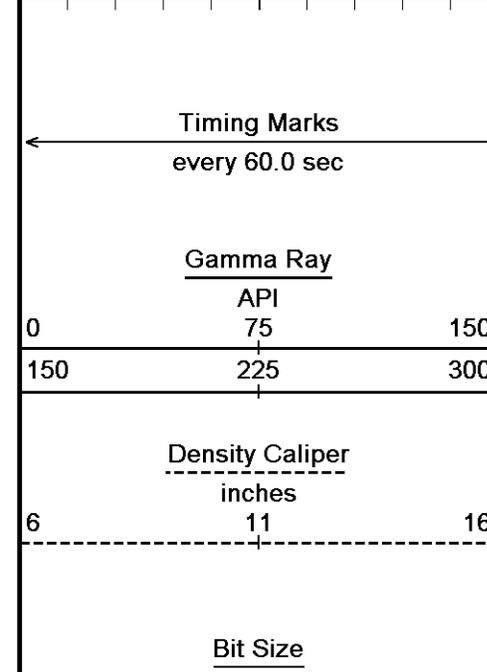
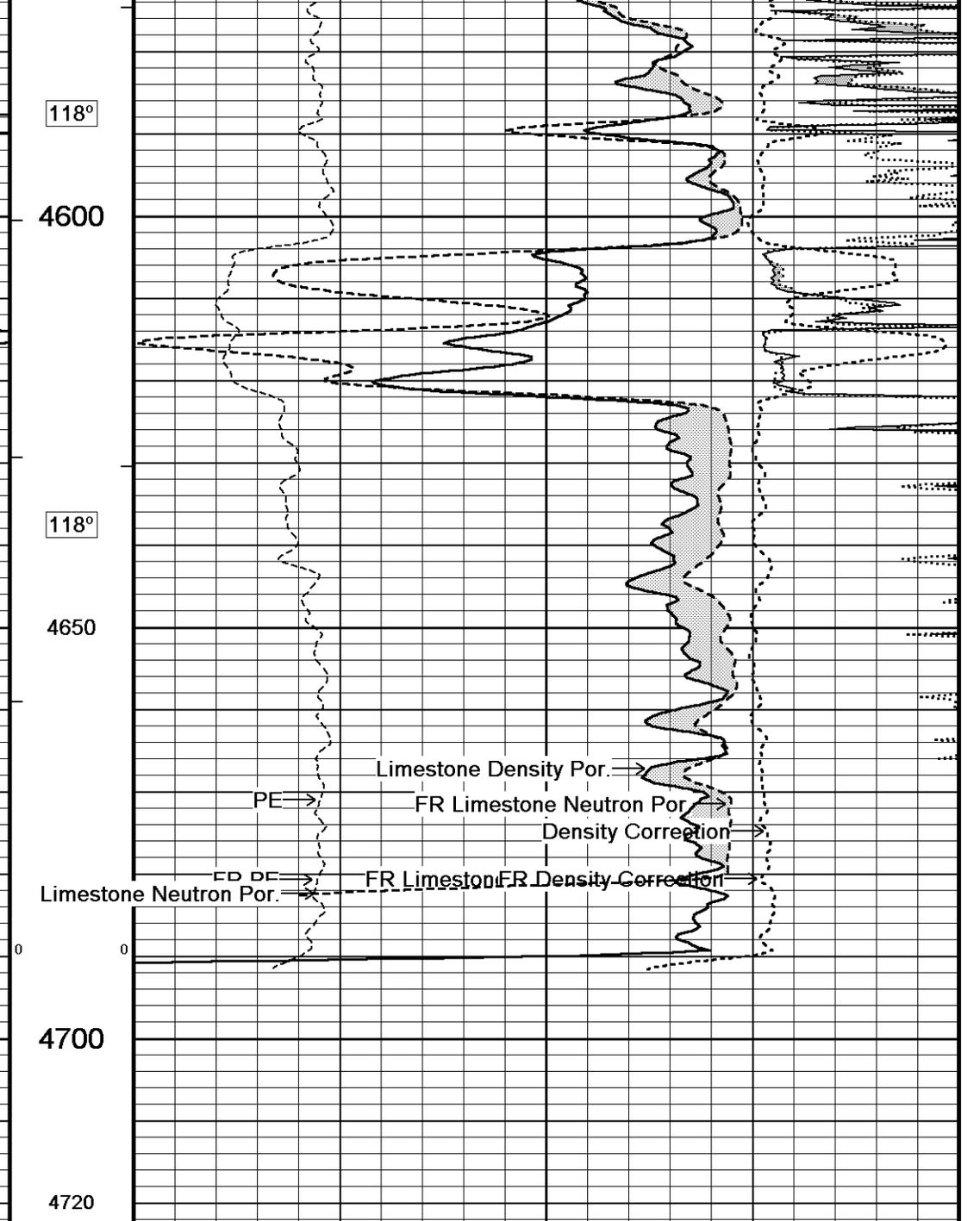
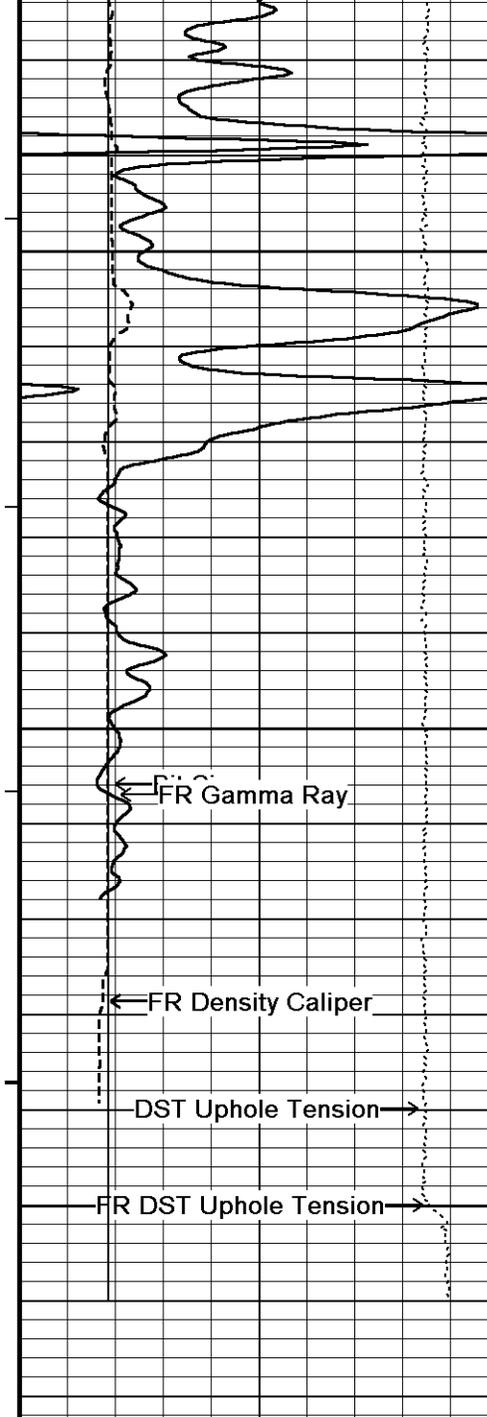


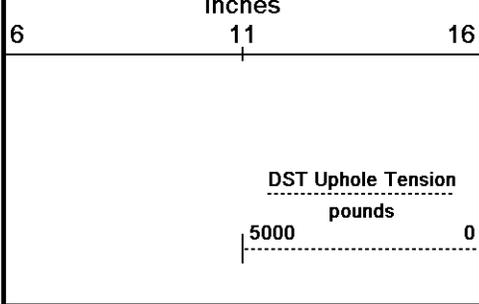




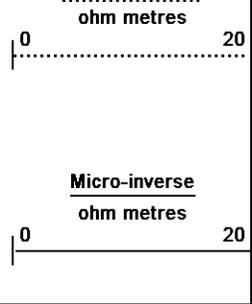








Replay
Scale
1:240

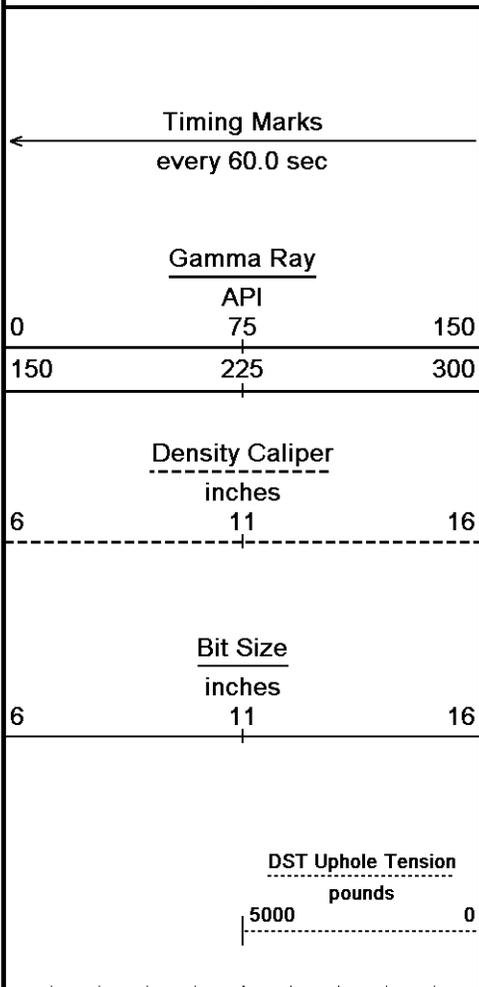


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↑ 5 INCH MAIN ↑

↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 10-SEP-2012 14:38
 Filename: C:\Minimus 13.02.6600\Data\Shakespeare Campbel...\Shakespeare Campbell #2-17_001.dta
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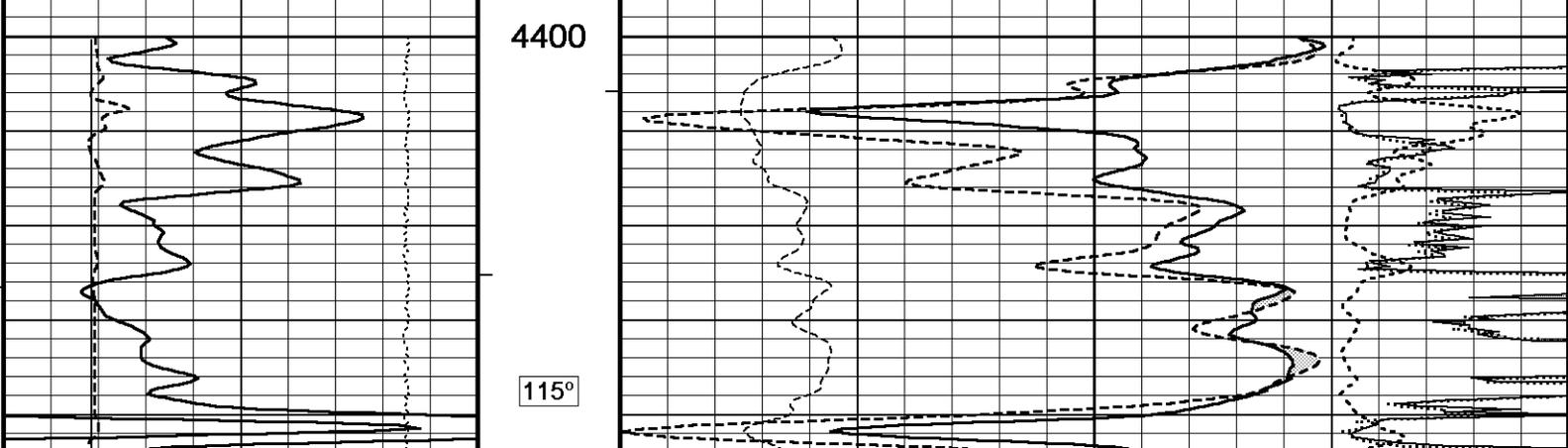
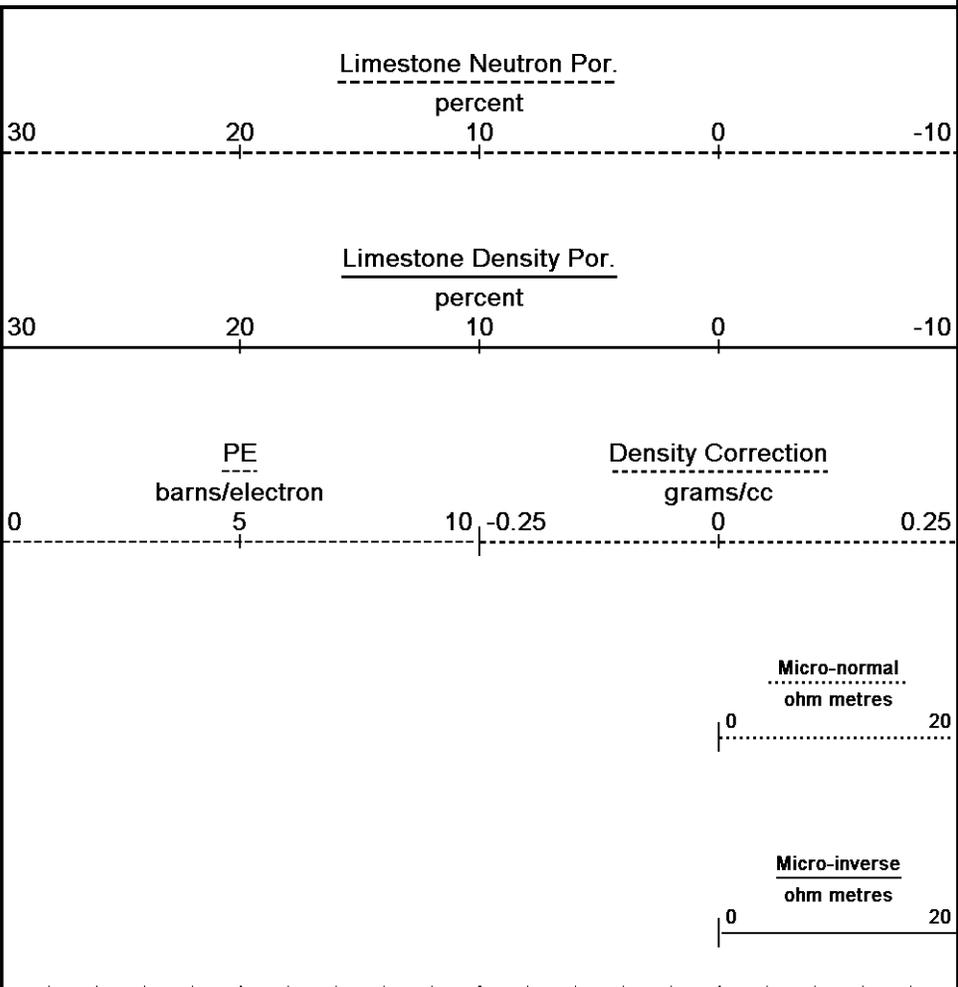
Depth
in
Feet

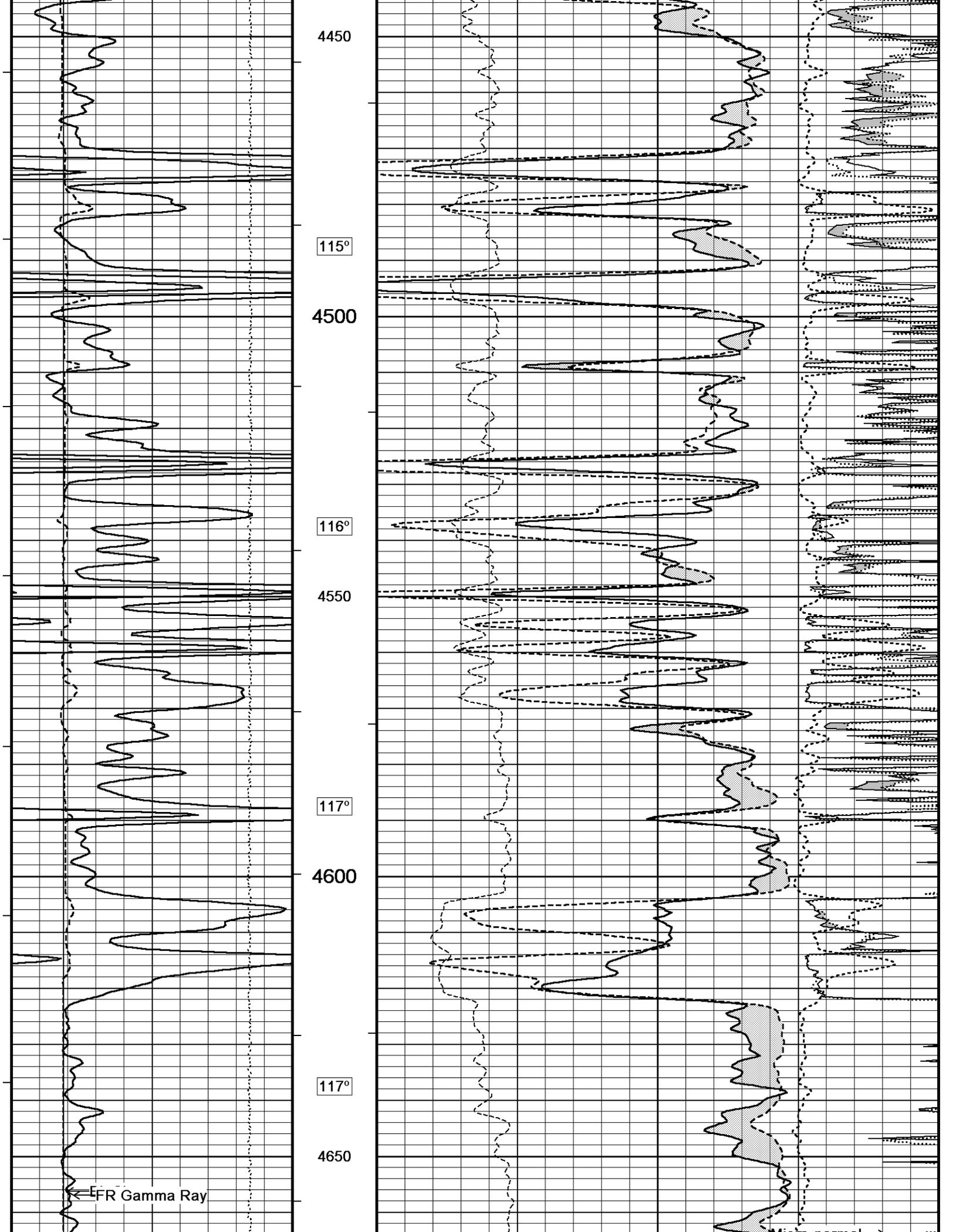
Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240





4450

115°

4500

116°

4550

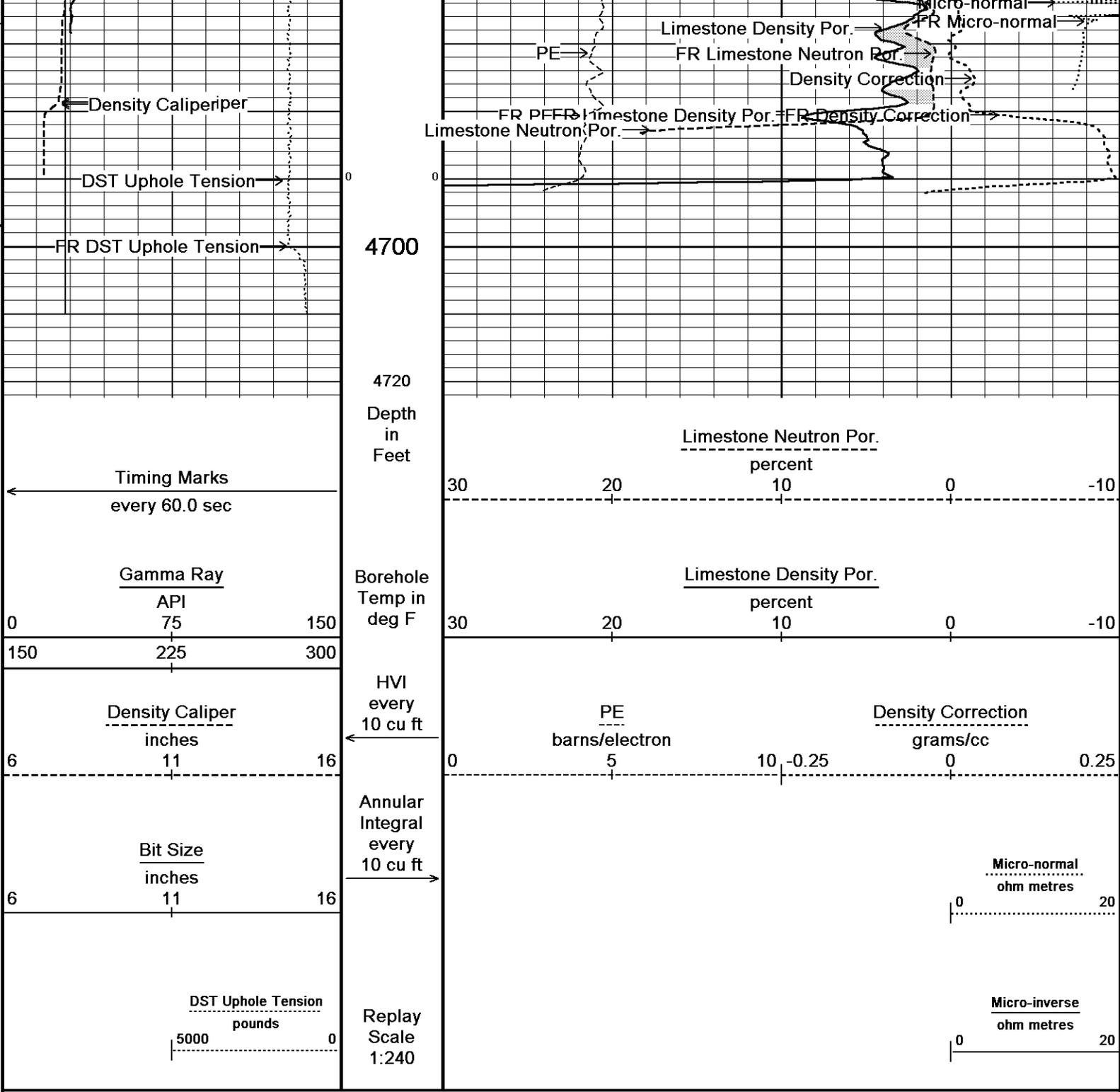
117°

4600

117°

4650

EFR Gamma Ray

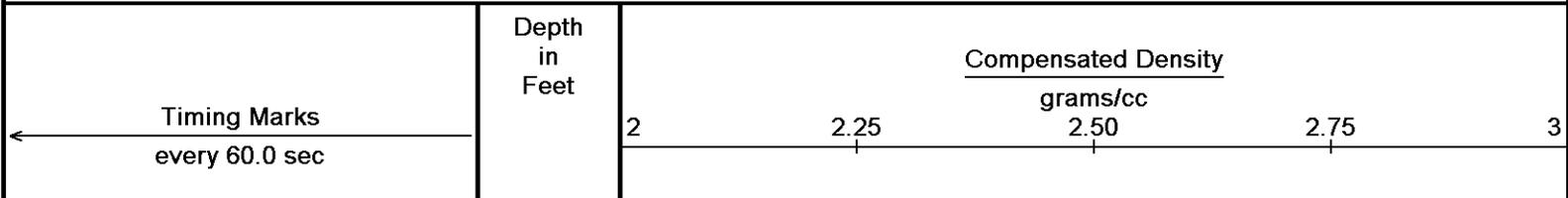


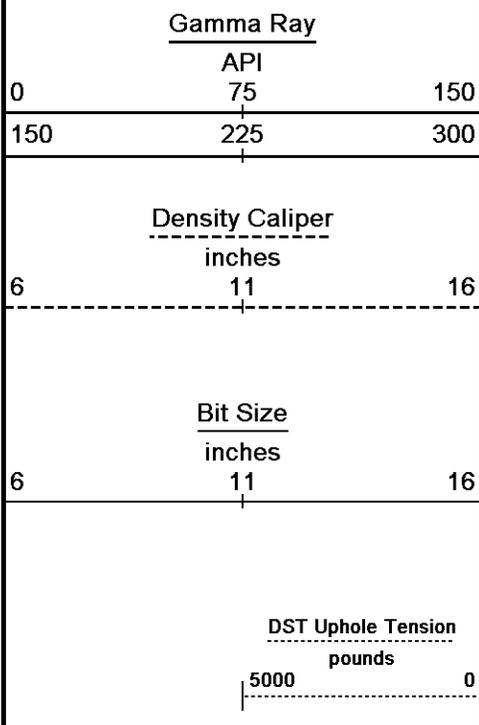
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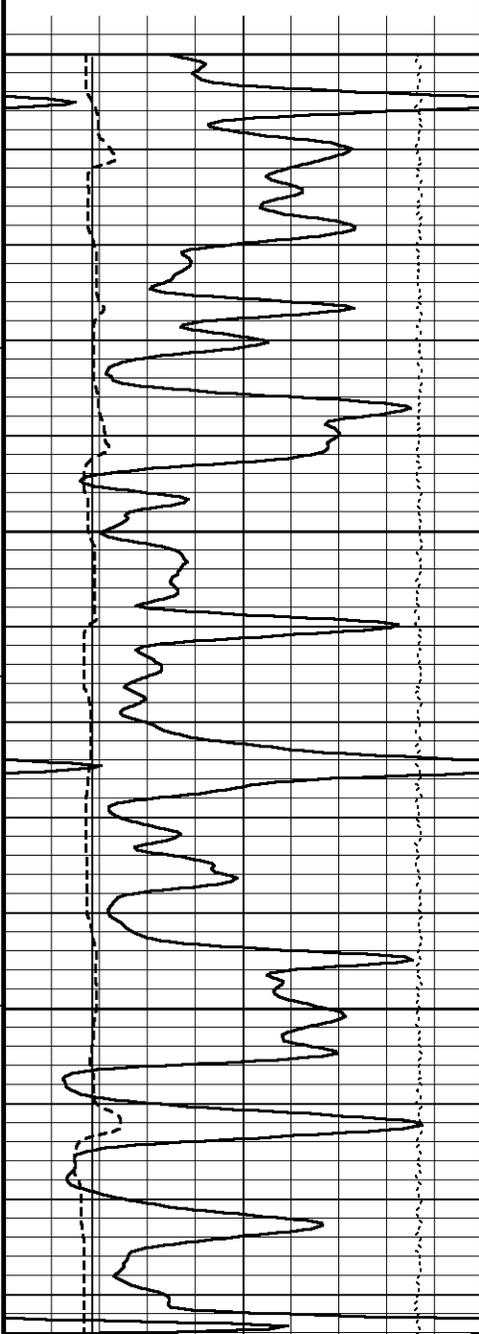
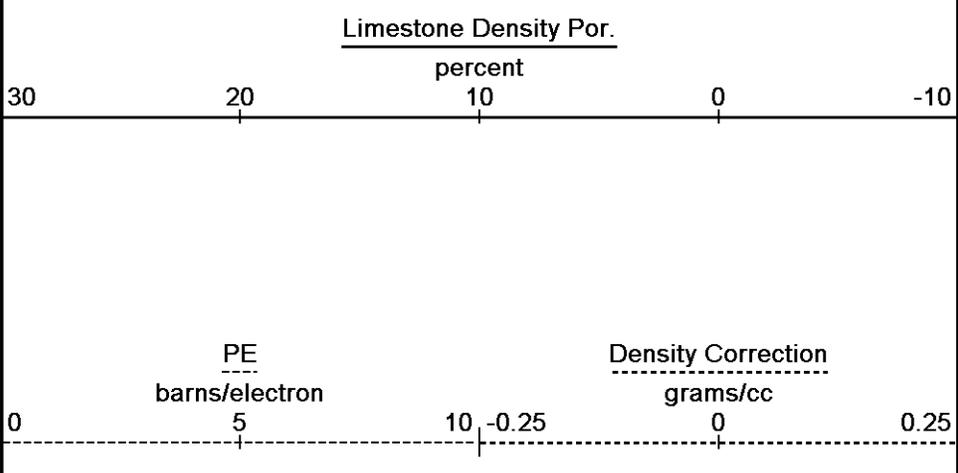
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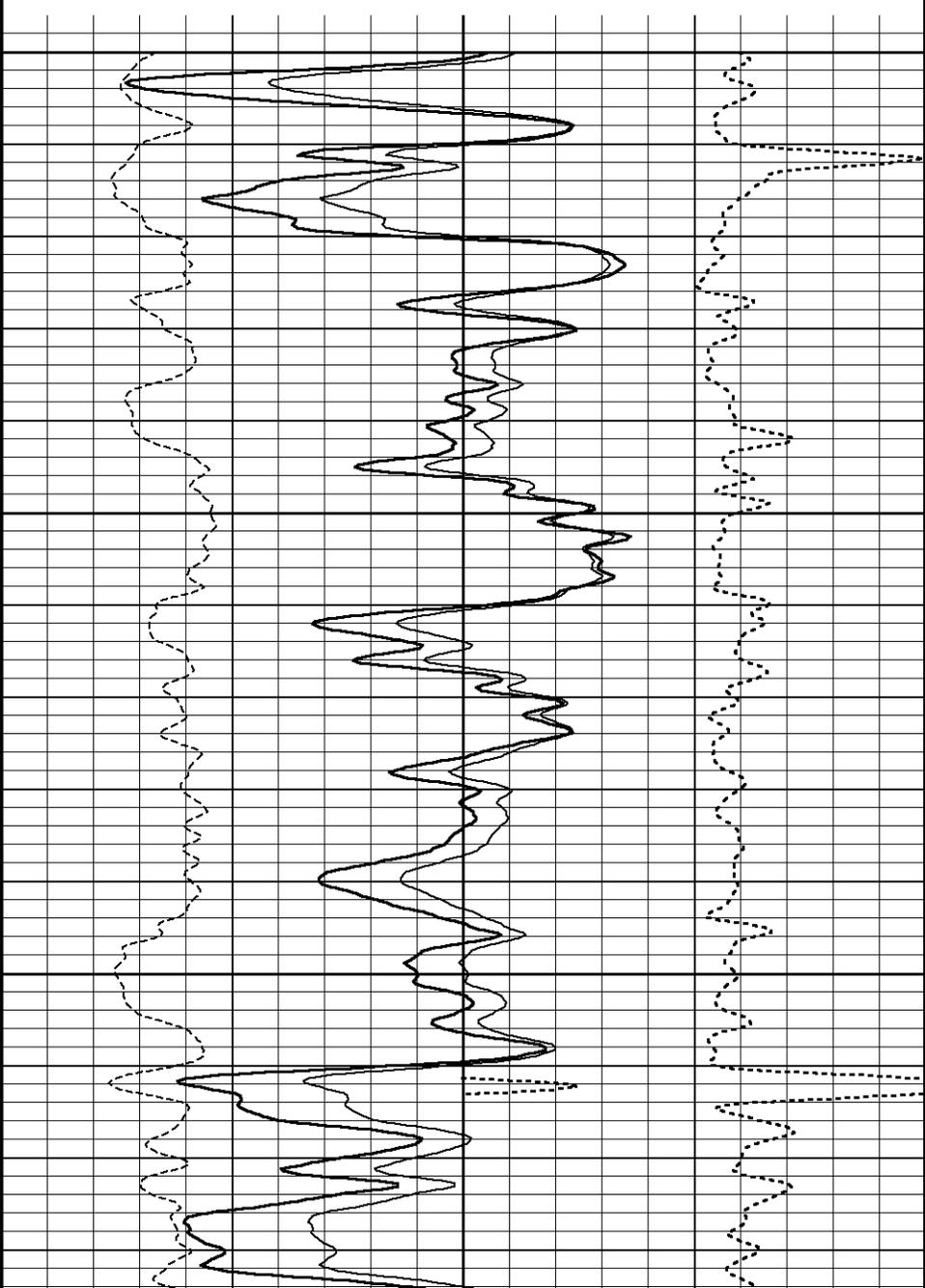


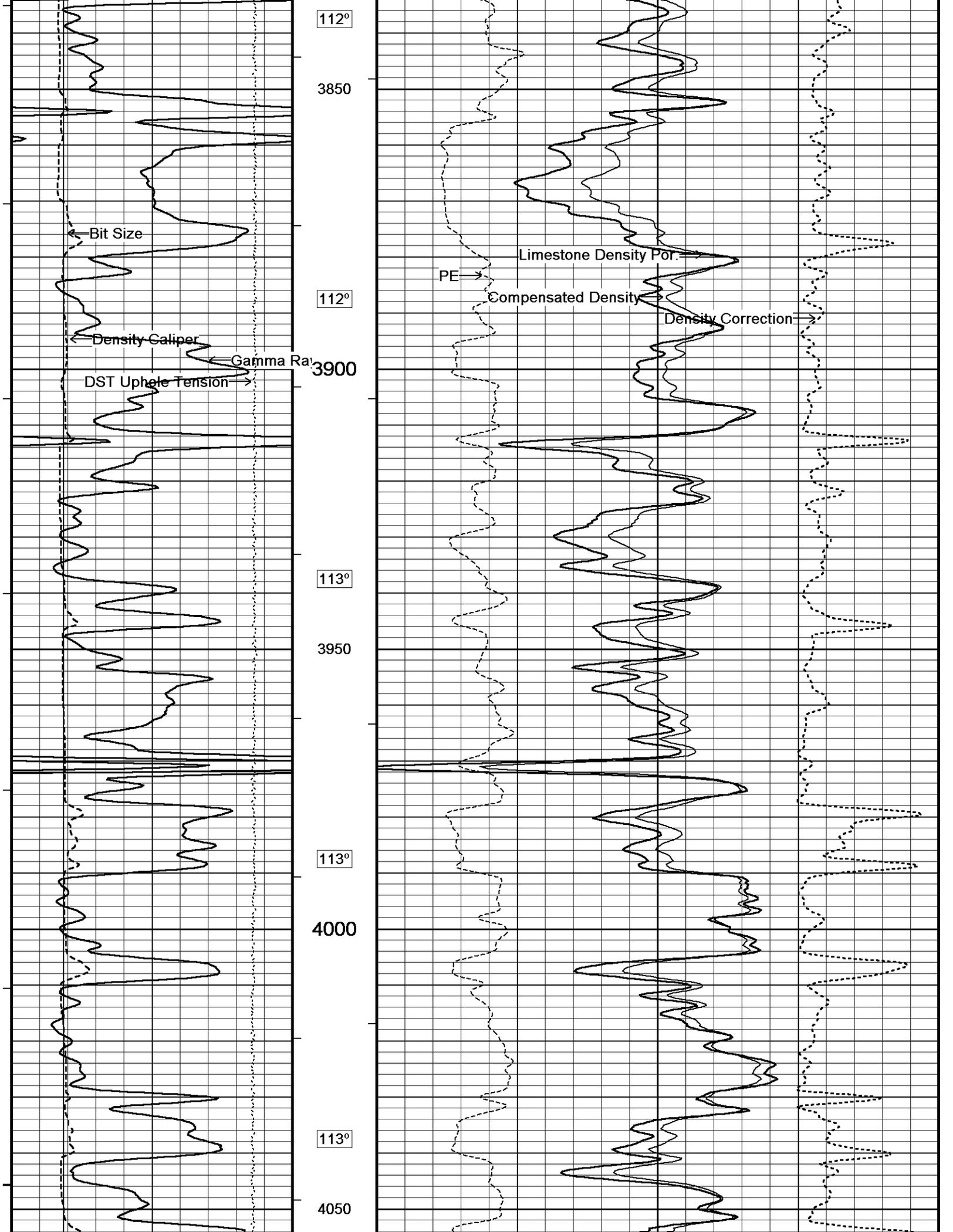


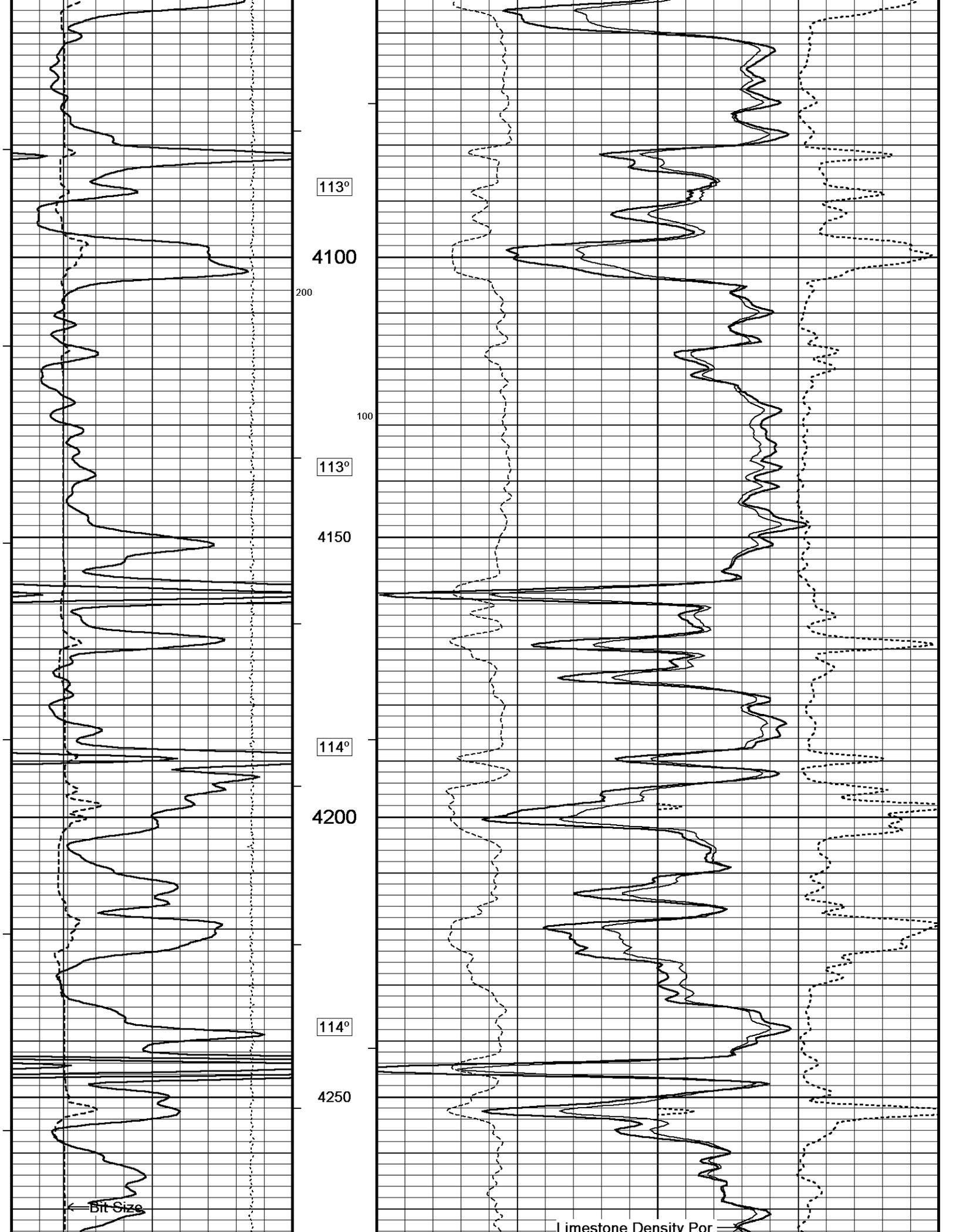
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:240

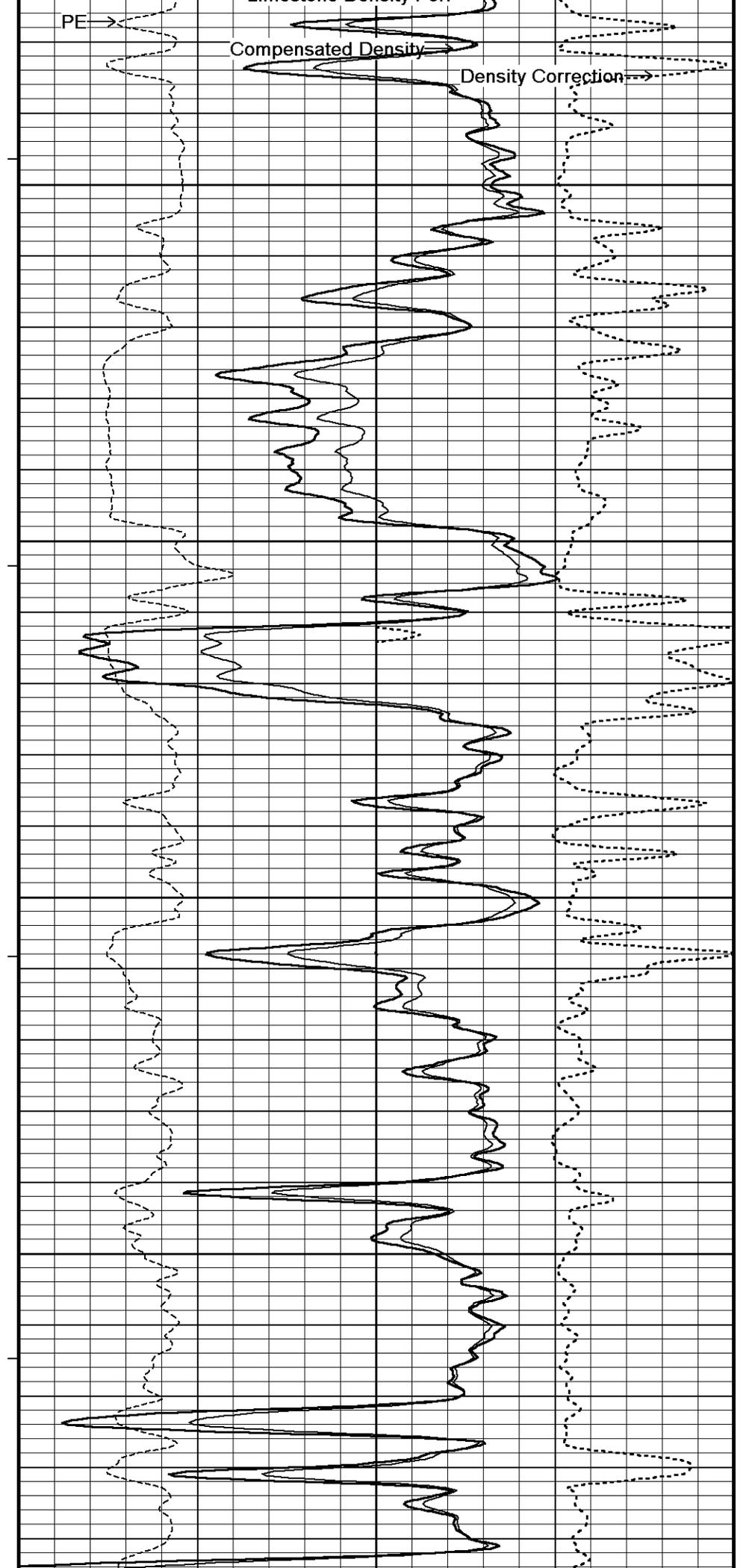
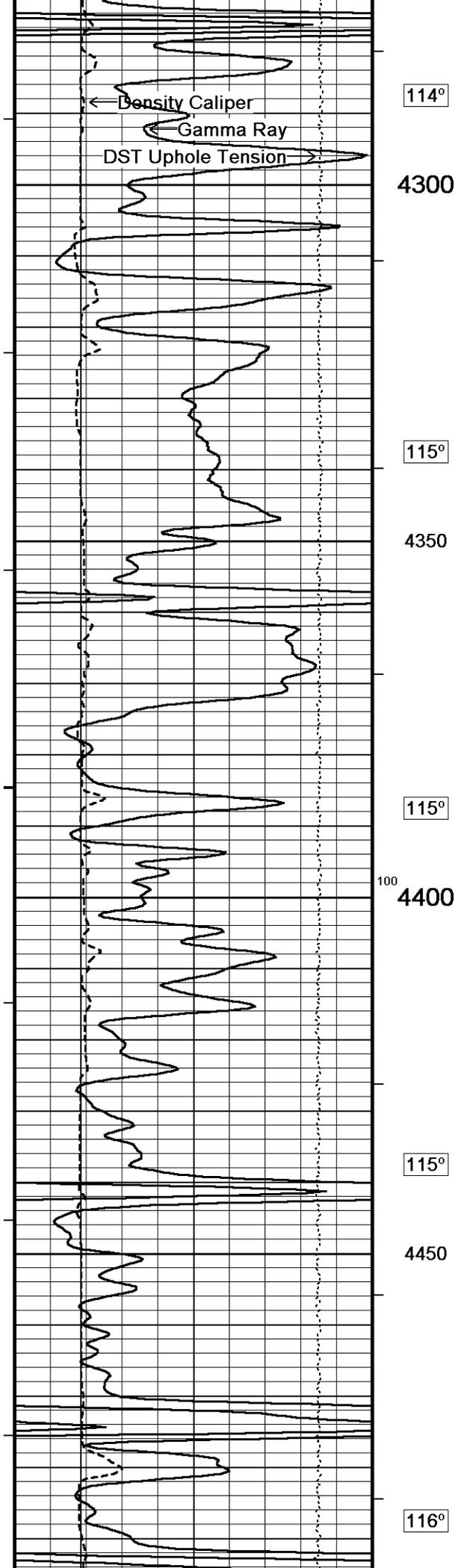


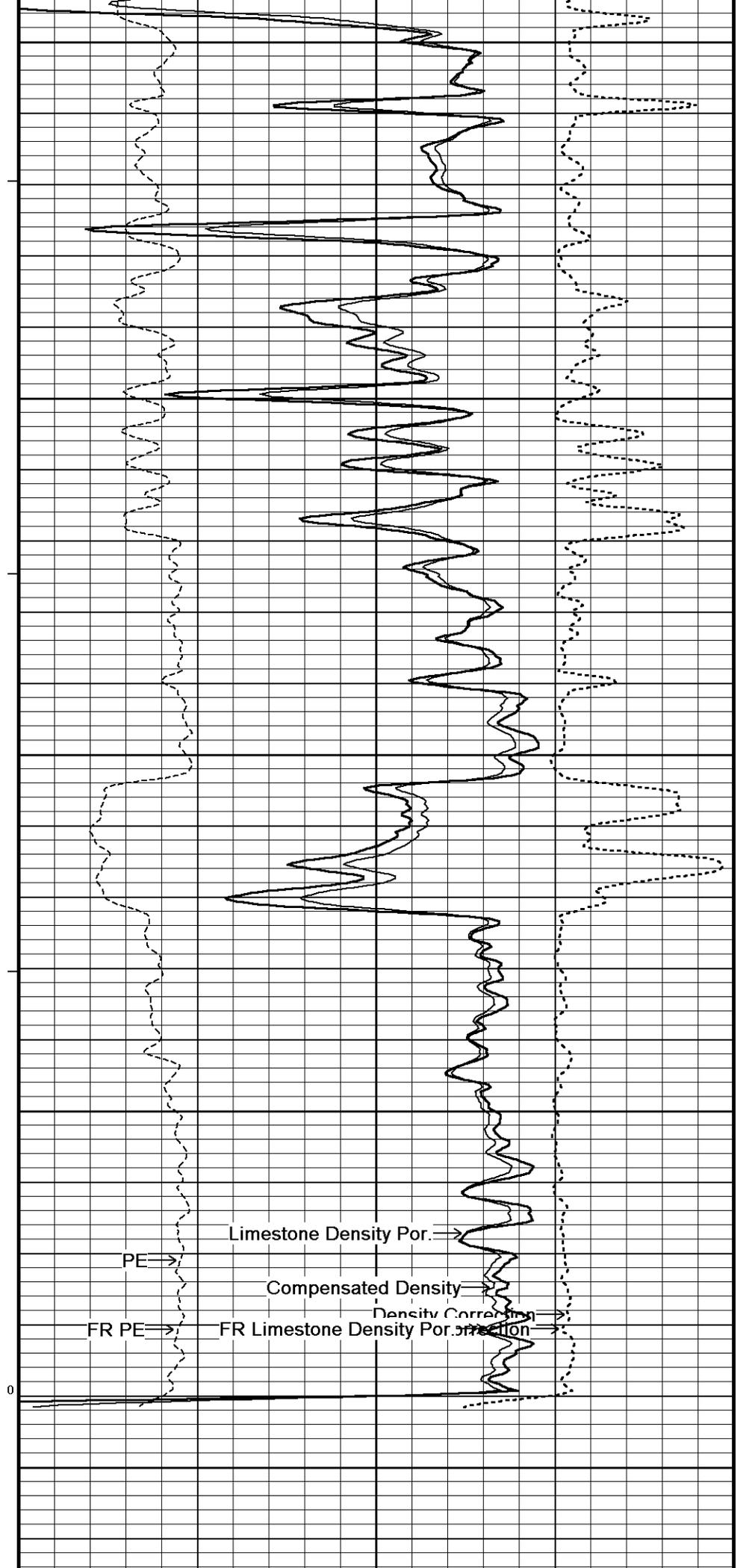
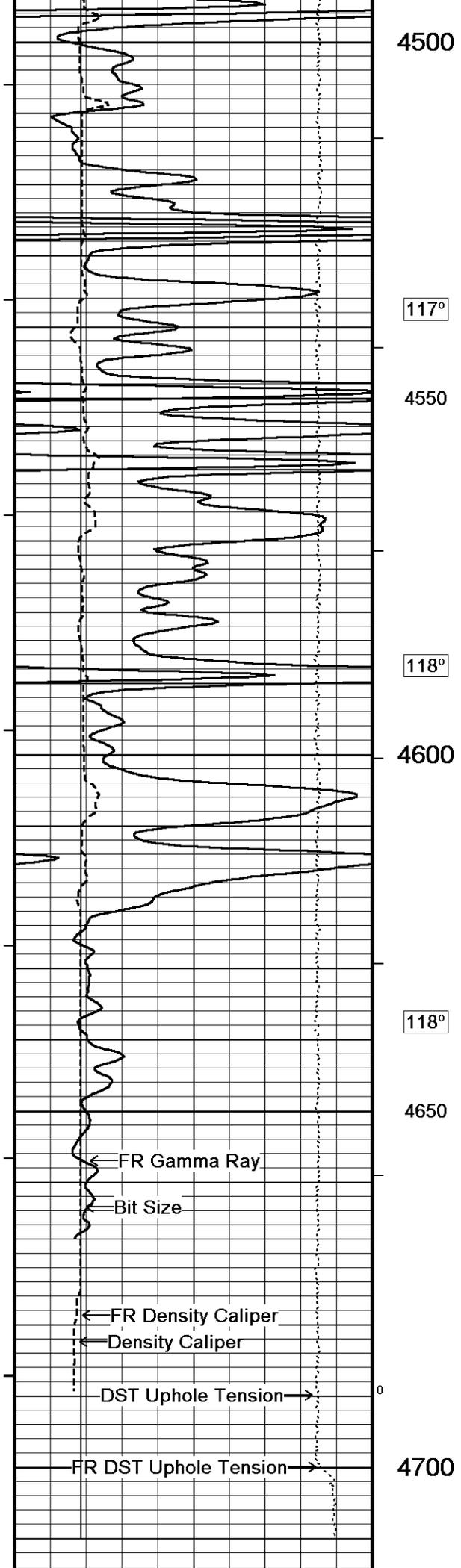
3700
112°
3750
112°
3800
300

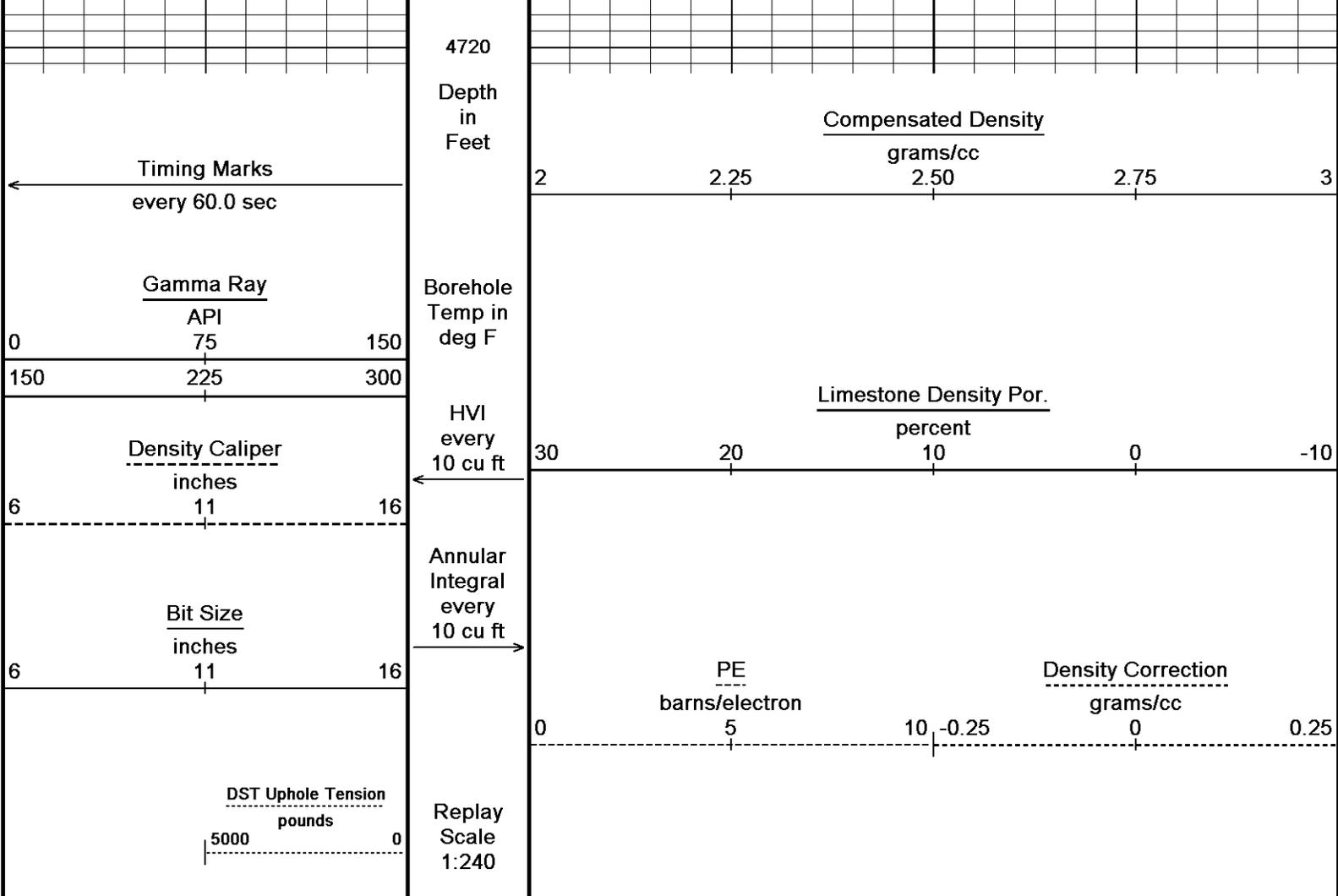










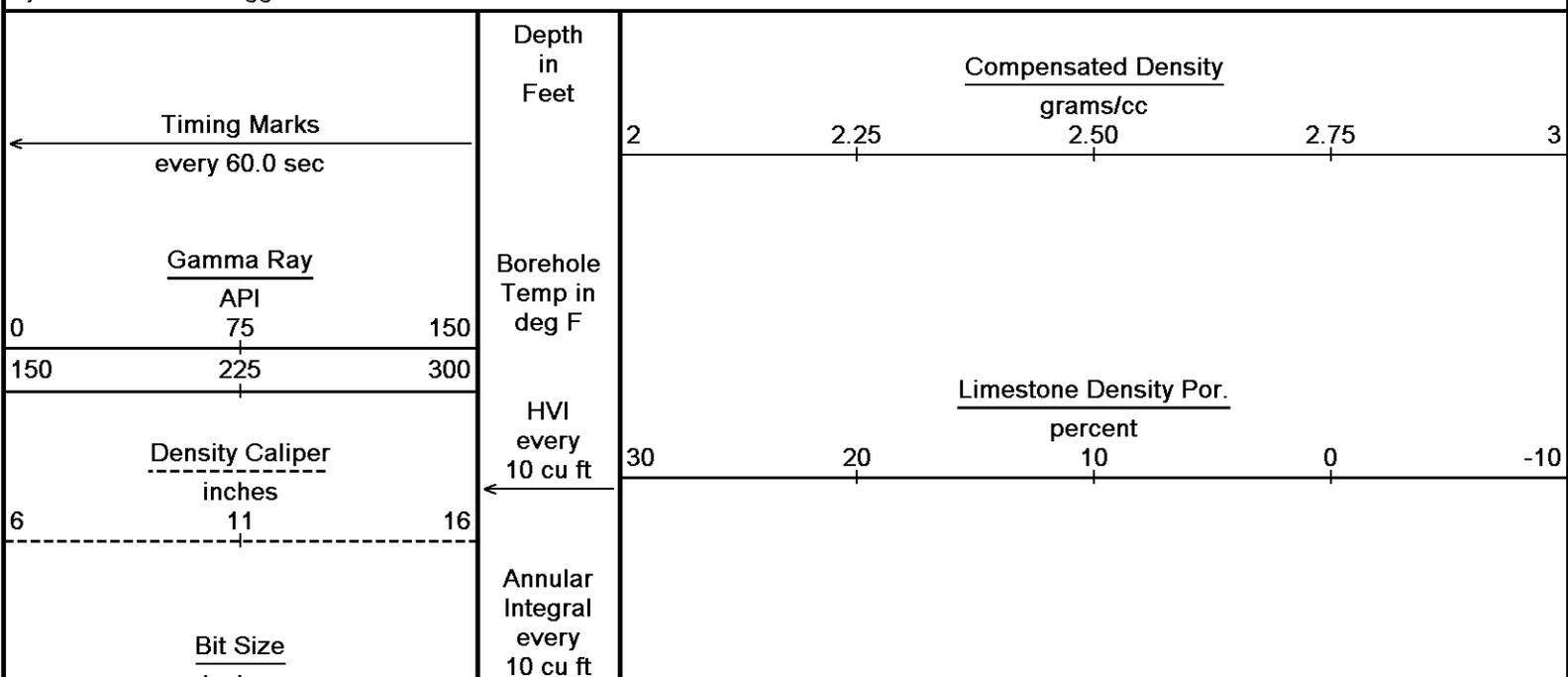


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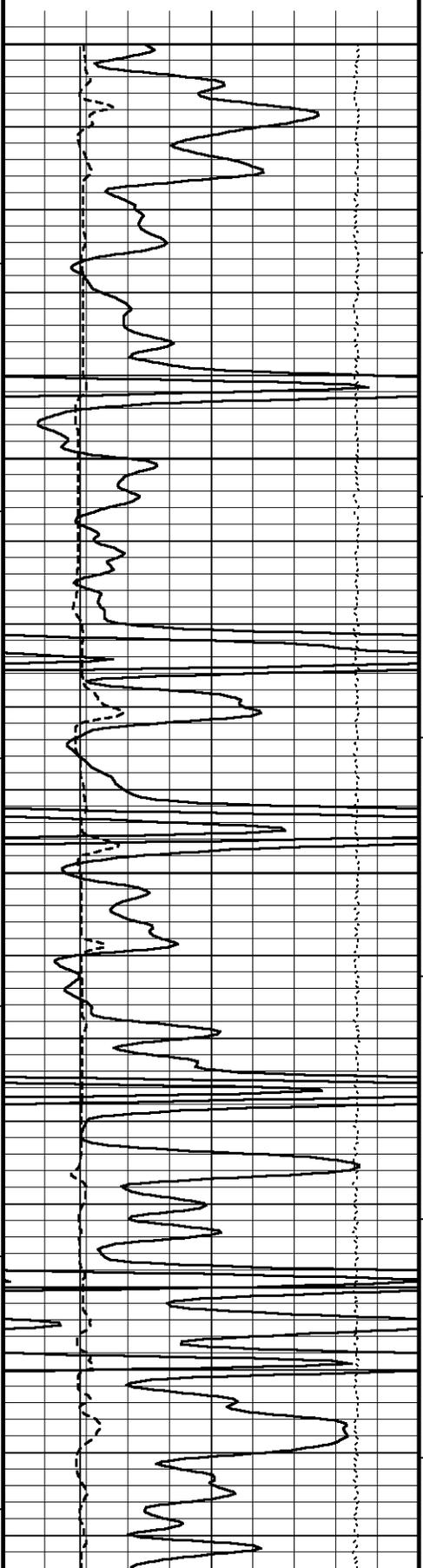
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Inches
6 11 16
DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

PE
barns/electron
0 5 10
Density Correction
grams/cc
-0.25 0 0.25



4400

115°

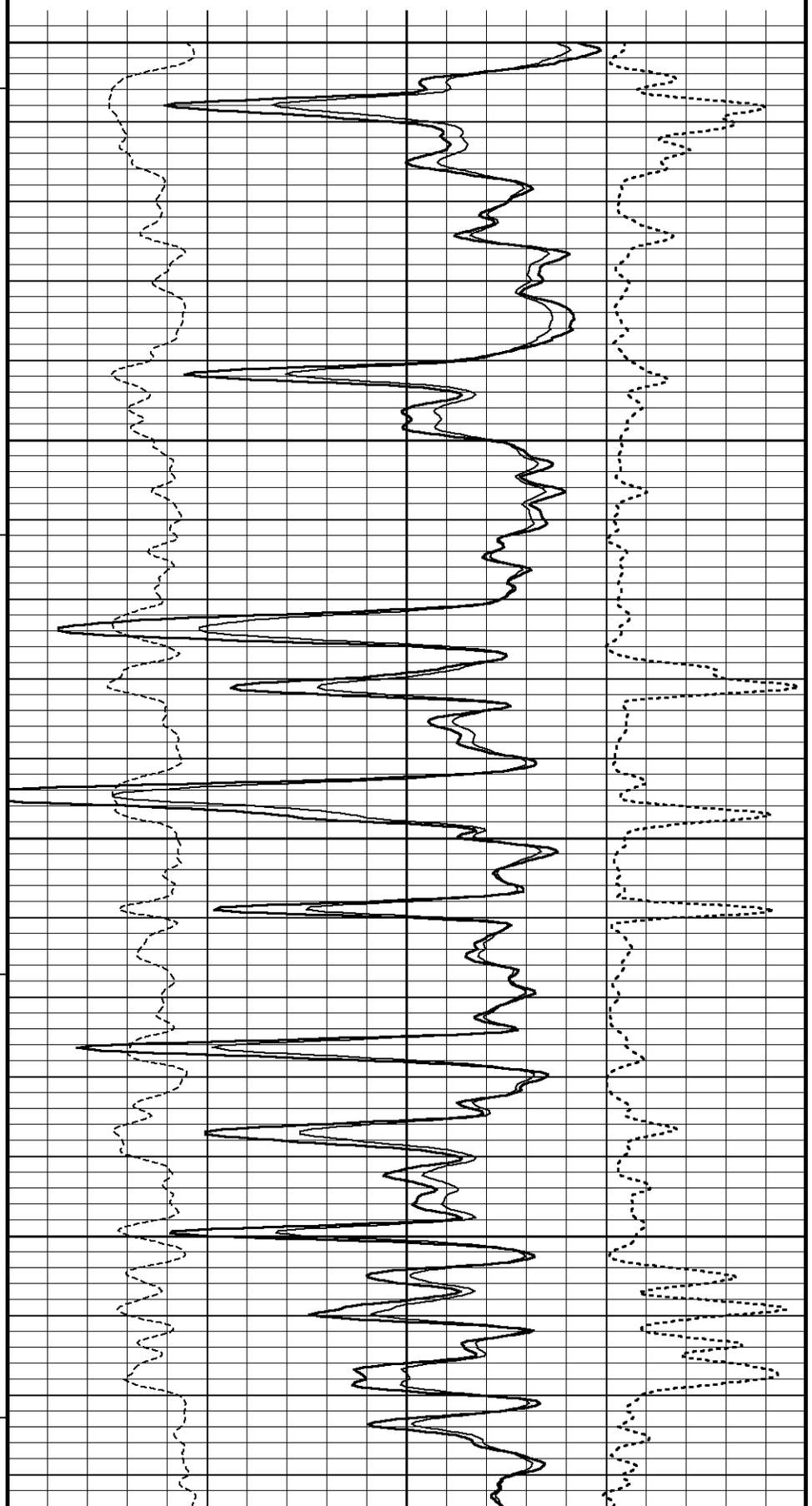
4450

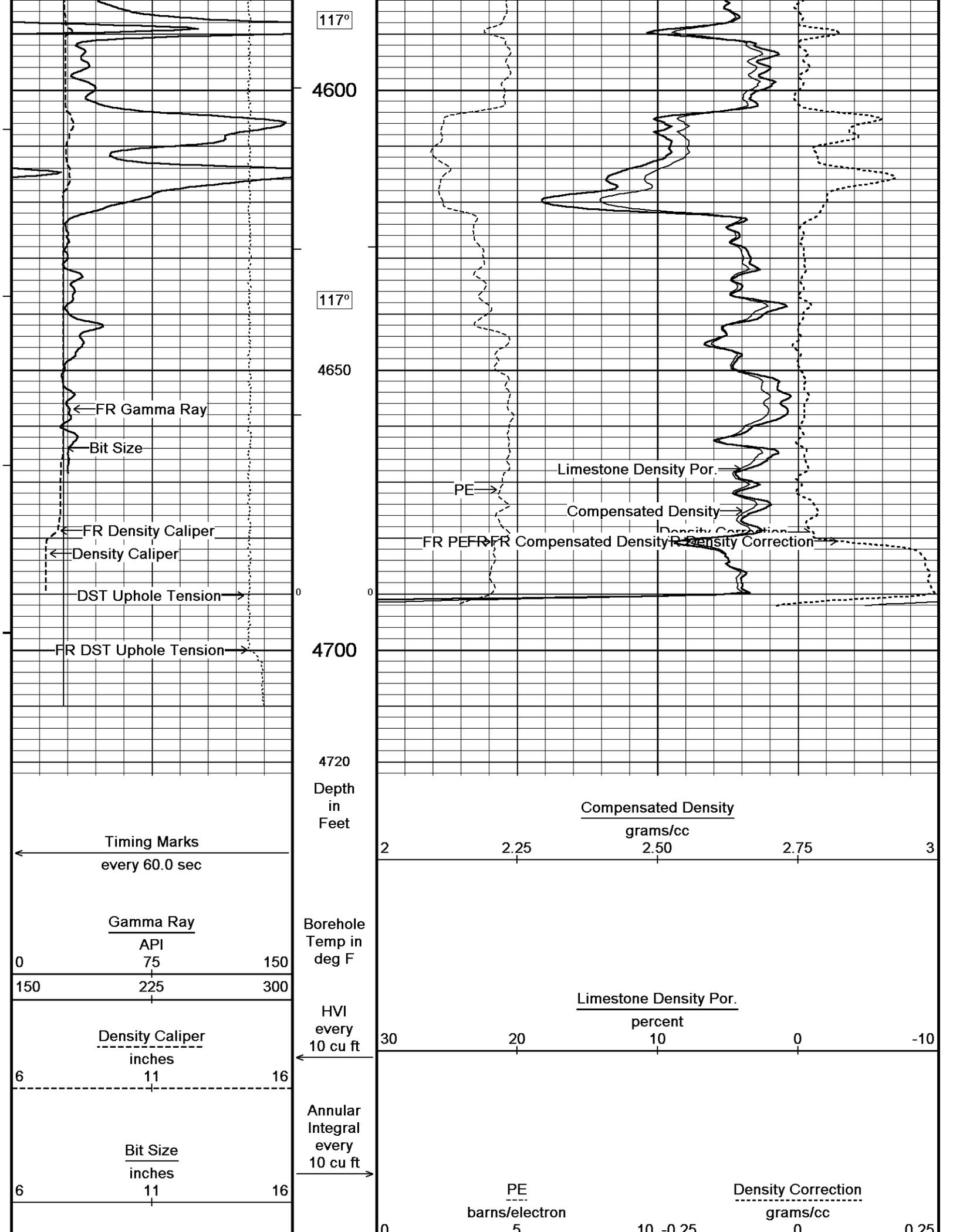
115°

4500

116°

4550





DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

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↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 13.02.6600\Data\Shakespeare Campbell #2-17\Shakespeare Campbell #2-17_001.dta

General Constants All 000 Last Edited on 10-SEP-2012,09:04

General Parameters

Mud Resistivity	0.780	ohm-metres
Mud Resistivity Temperature	97.000	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 02-SEP-2012 08:42

Reading No	Measured	Calibrated (lbs)
1	15850.66	0.00
2	16330.28	400.00

Gamma Calibration MCG-C 208 Field Calibration on 09-SEP-2012 11:32

	Measured	Calibrated (API)
Background	71	49
Calibrator (Gross)	1113	774
Calibrator (Net)	1042	725

Gamma Constants MCG-C 208 Last Edited on 10-SEP-2012,09:04

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 208 Field Calibration on 03-AUG-2012 22:37

	Measured	Calibrated (mV)
Reference 1	100.2	101.0
Reference 2	-101.3	-101.0

High Resolution Temperature Calibration MCG-C 208 Field Calibration on 03-AUG-2012,16:18

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 208 Last Edited on

Caliper Calibration MML-A 4

Base Calibration on 27-AUG-2012 09:13

Field Calibration on 09-SEP-2012 11:18

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15511	5.98
2	18793	7.97
3	22115	9.86
4	26057	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 4

Base Calibration on 27-AUG-2012 09:21

Field Check on 09-SEP-2012 11:16

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	15.7	78.5	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 4

Last Edited on 10-SEP-2012,09:01

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 28-AUG-2012 10:35

Field Check on 09-SEP-2012 11:37

Base Calibration

Ratio	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3134	97	3714	110
	32.240		33.764	

Field Calibrator at Base

Ratio	Calibrated (cps)
	1654 2401
	0.689

Field Check

Ratio	Calibrated (cps)
	1646 2391
	0.688

Neutron Constants MDN-A.B 65

Last Edited on 09-SEP-2012,15:38

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

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.9	126.8
Base Check		281.2
Field Check		281.5

FE Constants MFE-B.J 352

Last Edited on 10-SEP-2012,08:58

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 26-JUL-2012,09:22
Field Check on 09-SEP-2012 11:07

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	78.4		Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	19.5	3851.5
2	0.0	0.0	32.1	3629.5
3	0.0	0.0	28.9	3049.6
4	0.0	0.0	18.5	2079.4
Deep	0.0	0.0	16.3	1911.5
Medium	0.0	0.0	42.8	4060.8
Shallow	0.0	0.0	50.2	5483.0
Array Temperature	0.0		72.1 Deg F	

Induction Constants MAI-A.A 45

Last Edited on 10-SEP-2012,08:58

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 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 26-JUL-2012,09:09

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on

Pre-filter Length	11
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Caliper Calibration MPD-B 31

Base Calibration on 28-AUG-2012 11:03
Field Calibration on 09-SEP-2012 11:14

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18576	3.99
2	27056	5.98
3	35613	7.97
4	44032	9.86
5	53360	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.99	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 28-AUG-2012 11:22
Field Check on 09-SEP-2012 11:12

Density Calibration				
Base Calibration				
		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46103	23728	59556	30836
Reference 2	19270	1960	24941	2541

Field Check at Base	688.3	844.7
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Field Check	693.4	850.3
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PE Calibration				
Base Calibration				
	WS	Measured	Calibrated	
		WH	Ratio	Ratio
Background	127	604		
Reference 1	18457	45978	0.404	0.371
Reference 2	5504	19174	0.290	0.272

Field Check at Base	127.0	604.2
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Field Check	126.3	607.6
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Density Constants MPD-B 31

Last Edited on 10-SEP-2012,08:59

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	Density Caliper	Not Applied
Mud Density		1.09 gm/cc
Mud Density Z/A Multiplier		1.13
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 (m)
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

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.6600\Data\Shakespeare Campbell #2-17\Shakespeare Campbell #2-17_001.dta

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

Compact Micro-log
MML-A 4 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

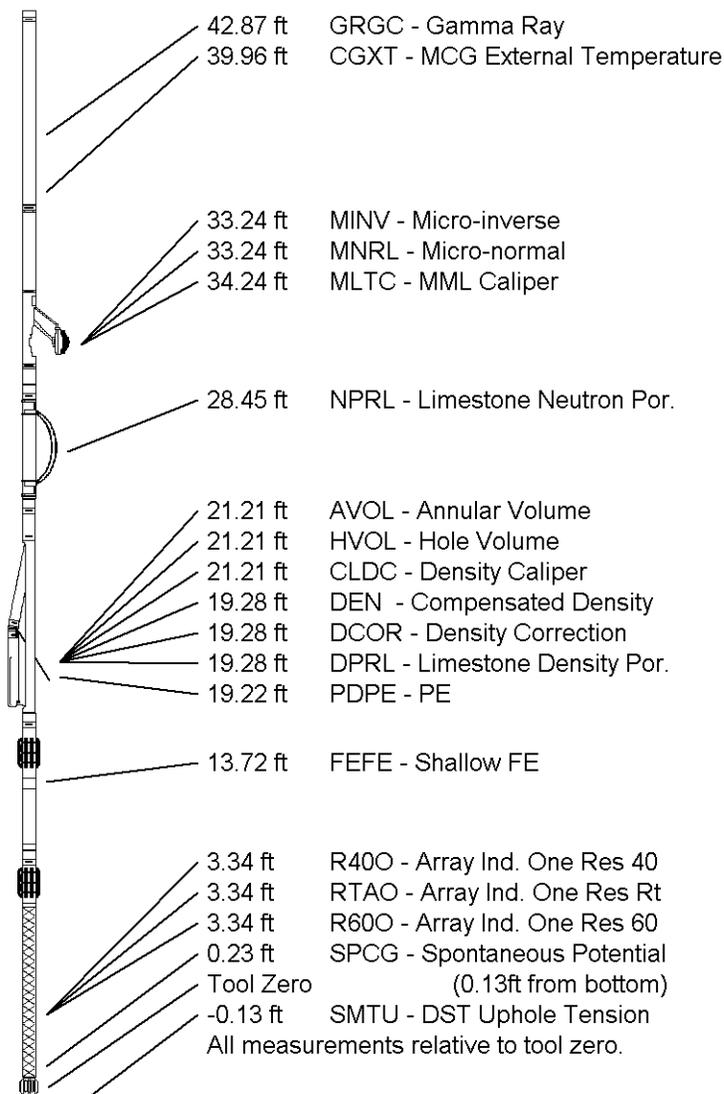
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focused Electric
MFE-B.J 352 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

Total Length: 48.16 ft Weight: 383.6 lb



COMPANY	SHAKESPEARE OIL COMPANY, INC.
WELL	CAMPBELL #2-17
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing	3037.00	feet	First Reading	4680.00	feet
Elevation Drill Floor	3036.00	feet	Depth Driller	4700.00	feet
Elevation Ground Level	3027.00	feet	Depth Logger	4700.00	feet



Weatherford[®]

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG