



Weatherford[®]

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY GRAND MESA OPERATING COMPANY

WELL GLENNIS #1-27

FIELD WILDCAT

PROVINCE/COUNTY GOVE

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 2141' FSL & 541' FEL

SW NE NE SE

SEC 27 TWP 13S RGE 31W Other Services MA/MFE

API Number 15-063-22030

Permit Number

Permanent Datum G.L., Elevation 2848 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations:
KB 2853.00 feet
DF 2852.00
GL 2848.00

Date 16-AUG-2012

Run Number ONE

Depth Driller 4630.00 feet

Depth Logger 4626.00 feet

First Reading 4606.00 feet

Last Reading 3600.00 feet

Casing Driller 219.00 feet

Casing Logger 218.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.10 g/c3 50.00 CP

PH / Fluid Loss 10.00 8.00 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.97 @ 97.0 ohm-m

Rmf @ Measured Temp 0.78 @ 97.0 ohm-m

Rmc @ Measured Temp 1.16 @ 97.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.79 @ 119.0 ohm-m

Time Since Circulation 4 HOURS

Max Recorded Temp 119.00 deg F

Equipment Name COMPACT

Equipment / Base 13096 LIB

Recorded By L. SCOTT

Witnessed By KENT MATSON

S.O.# / JOB# 3534518

LB12-217

BOREHOLE RECORD

Last Edited: 16-AUG-2012 16:42

Bit Size inches	Depth From feet	Depth To feet
7.875	218.00	4626.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	218.00	24.00

REMARKS

Tools Ran: MCG, MML, MDN, MPD, MFE, MAI RAN IN COMBINATION.
 2.71 G/CC Limestone Density porosity 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 from TD to Surface casing= cubic feet
 Annular hole volume with 5.5 Inch casing= cubic feet
 Service order: 3534518
 Rig: Murfin #24
 Engineer: L. Scott
 Operator(s): R. Venegas

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 ANHYDRITE DETAIL

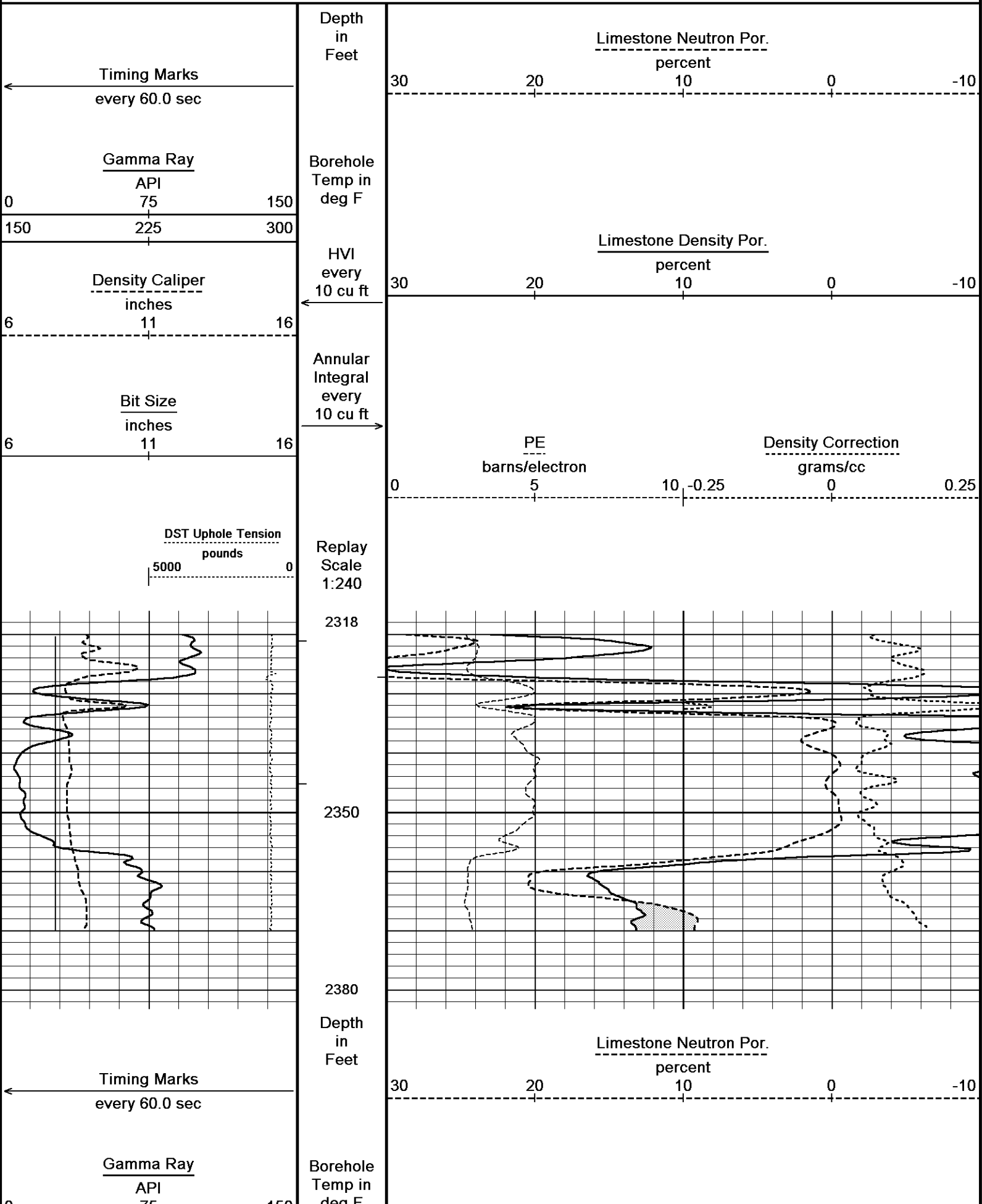
Depth Based Data - Maximum Sampling Increment 10.0cm

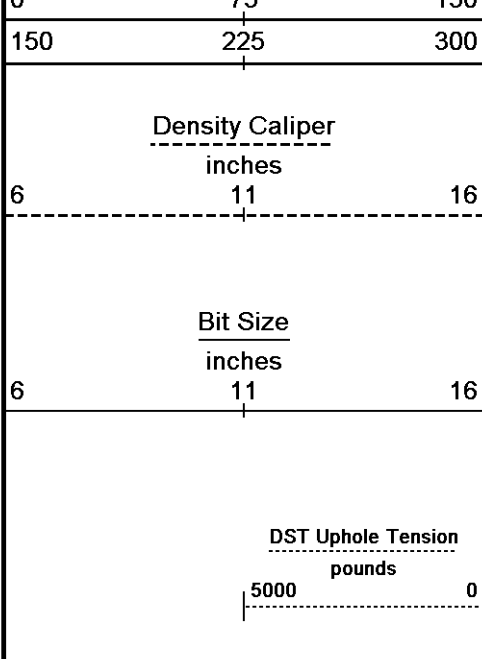
Plotted on 16-AUG-2012 18:10

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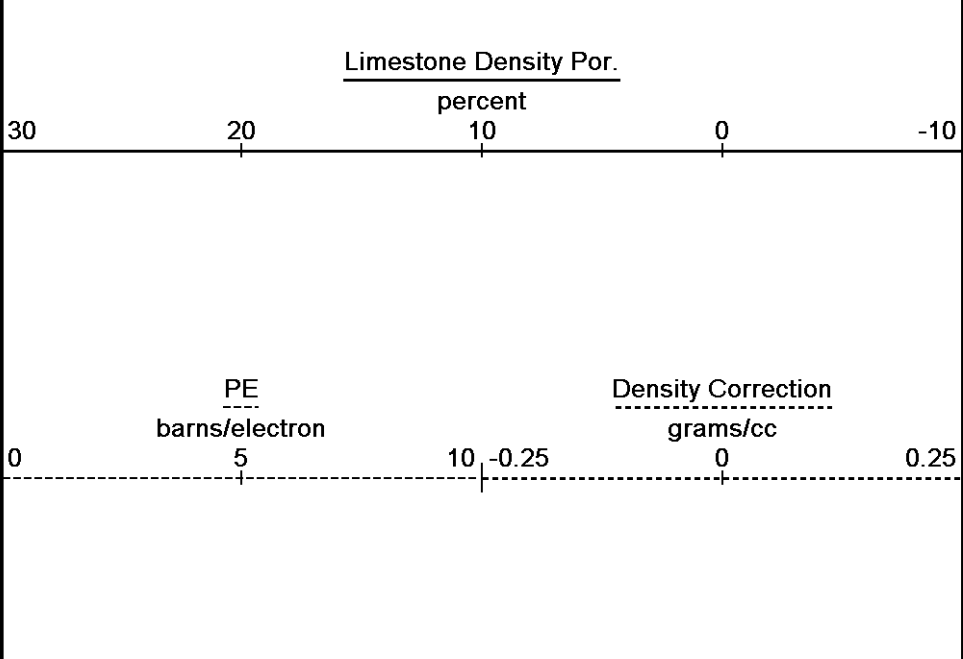
Recorded on 16-AUG-2012 15:54

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600





HVI
 every
 10 cu ft
 Annular
 Integral
 every
 10 cu ft
 Replay
 Scale
 1:240

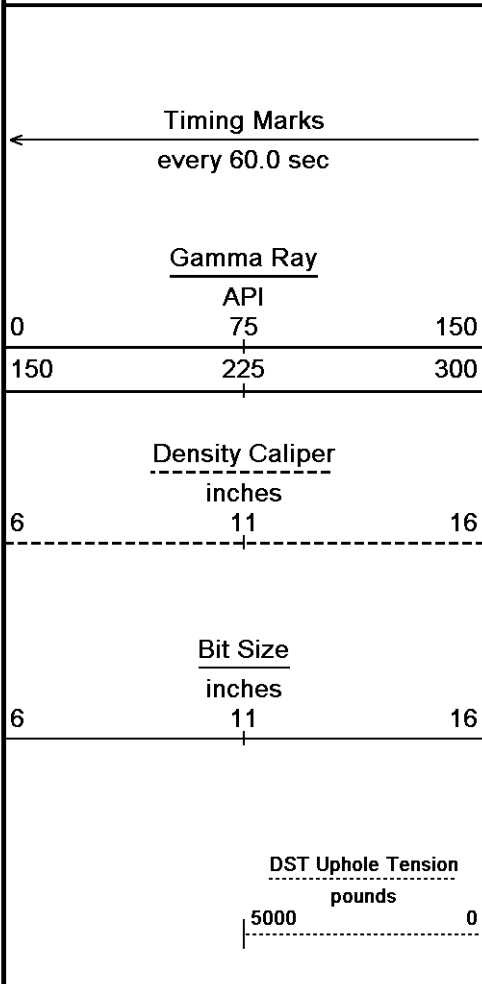


Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-AUG-2012 18:10
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa Op...\Grand Mesa Operating Glennis 1-27_002.dta
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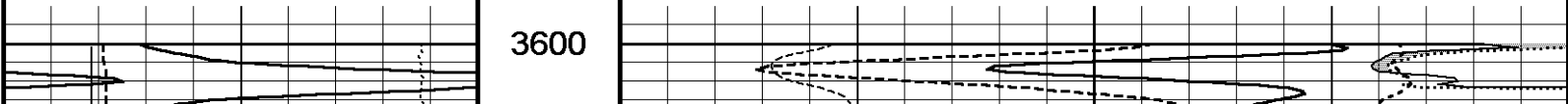
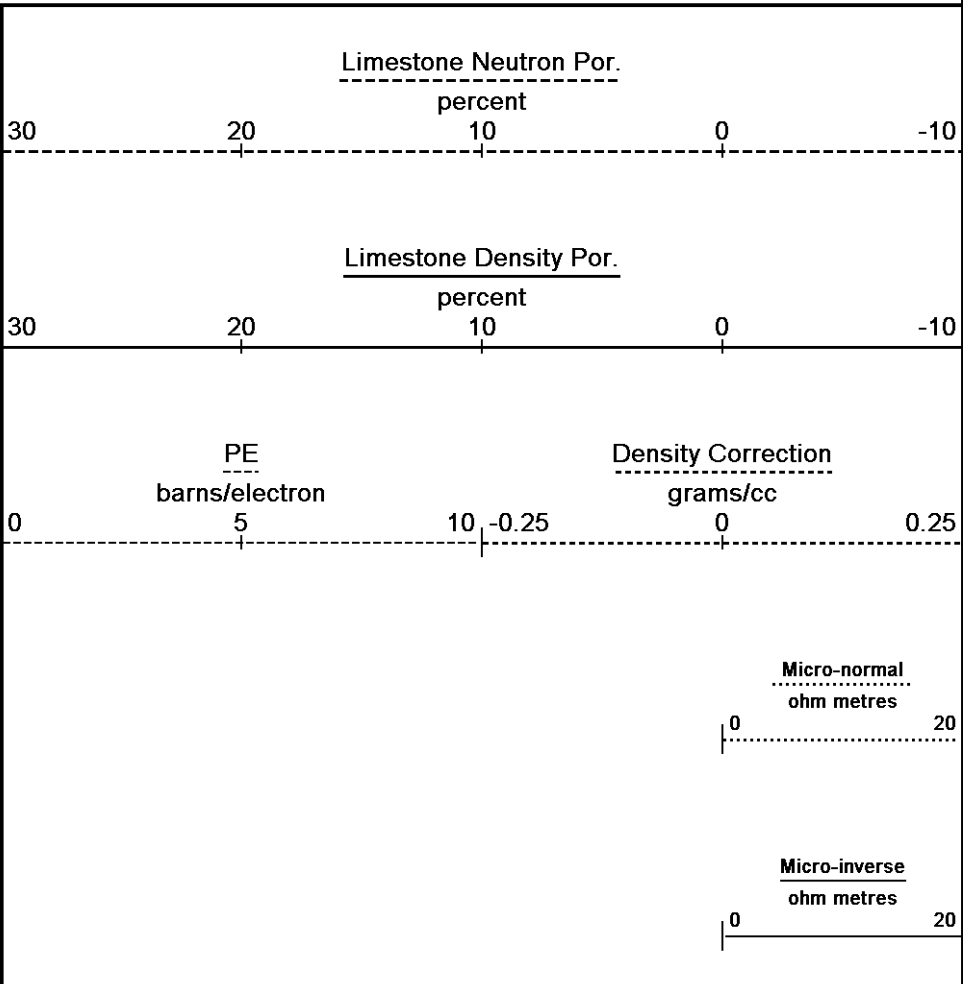
↑ 5 INCH MAIN ANHYDRITE DETAIL ↑

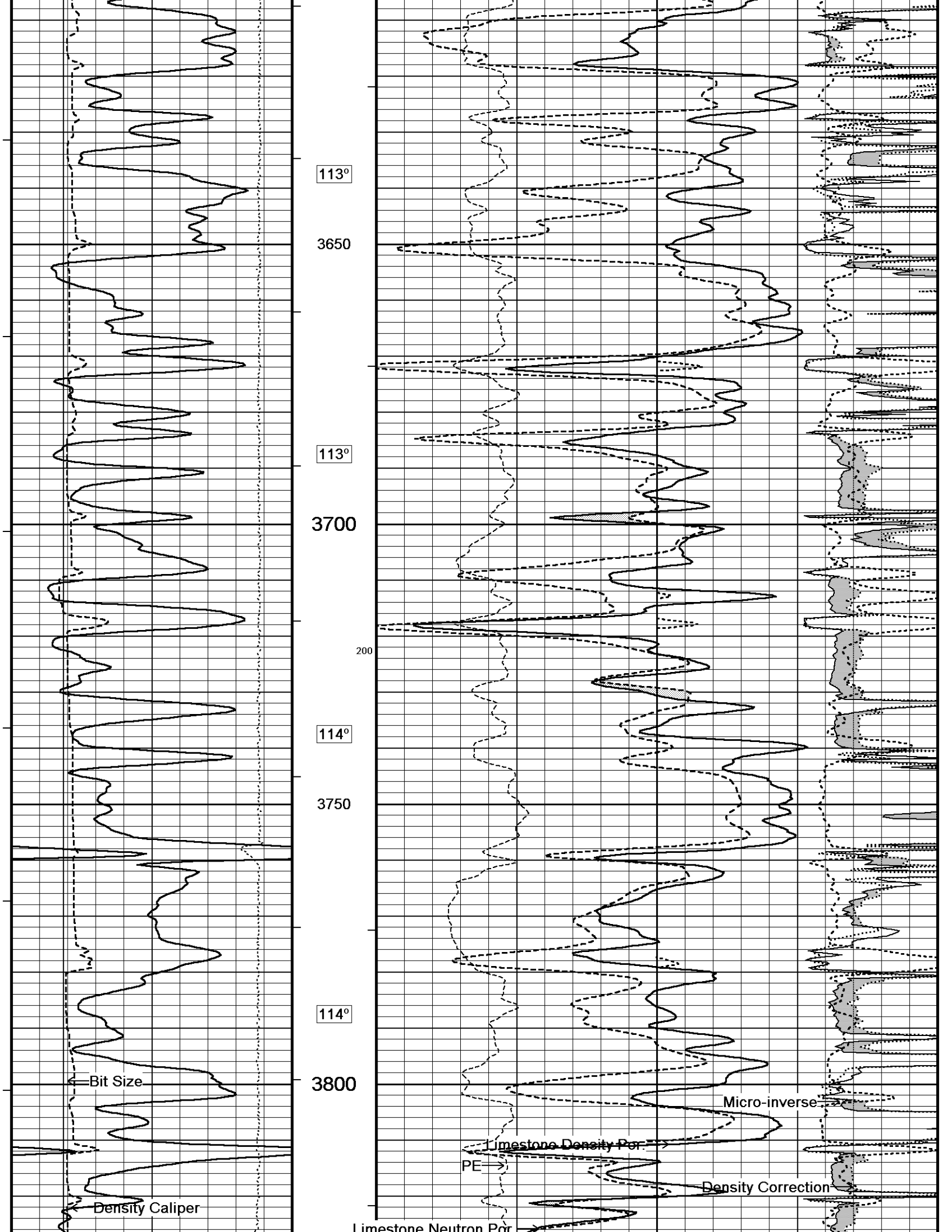
↓ 5 INCH MAIN ↓

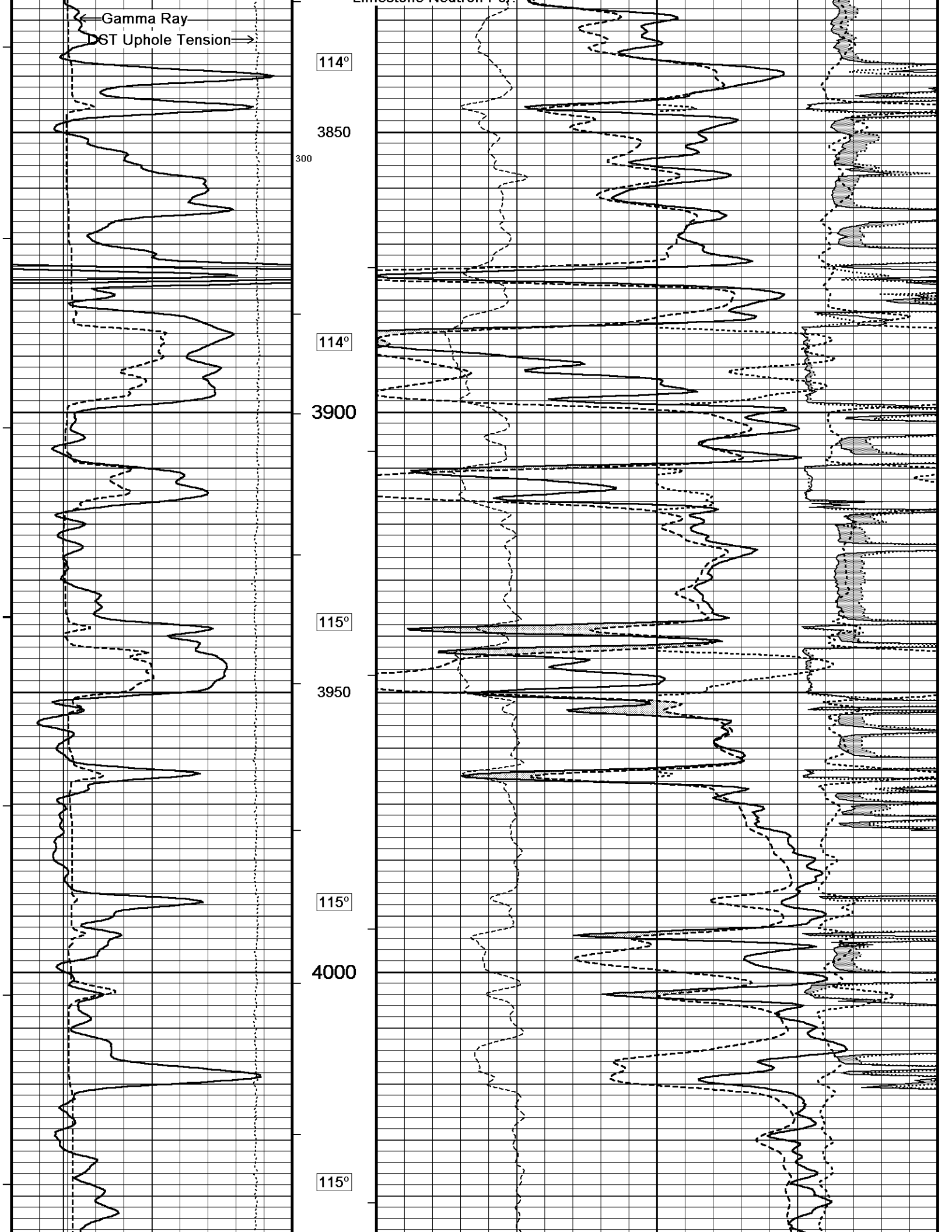
Depth Based Data - Maximum Sampling Increment 10.0cm
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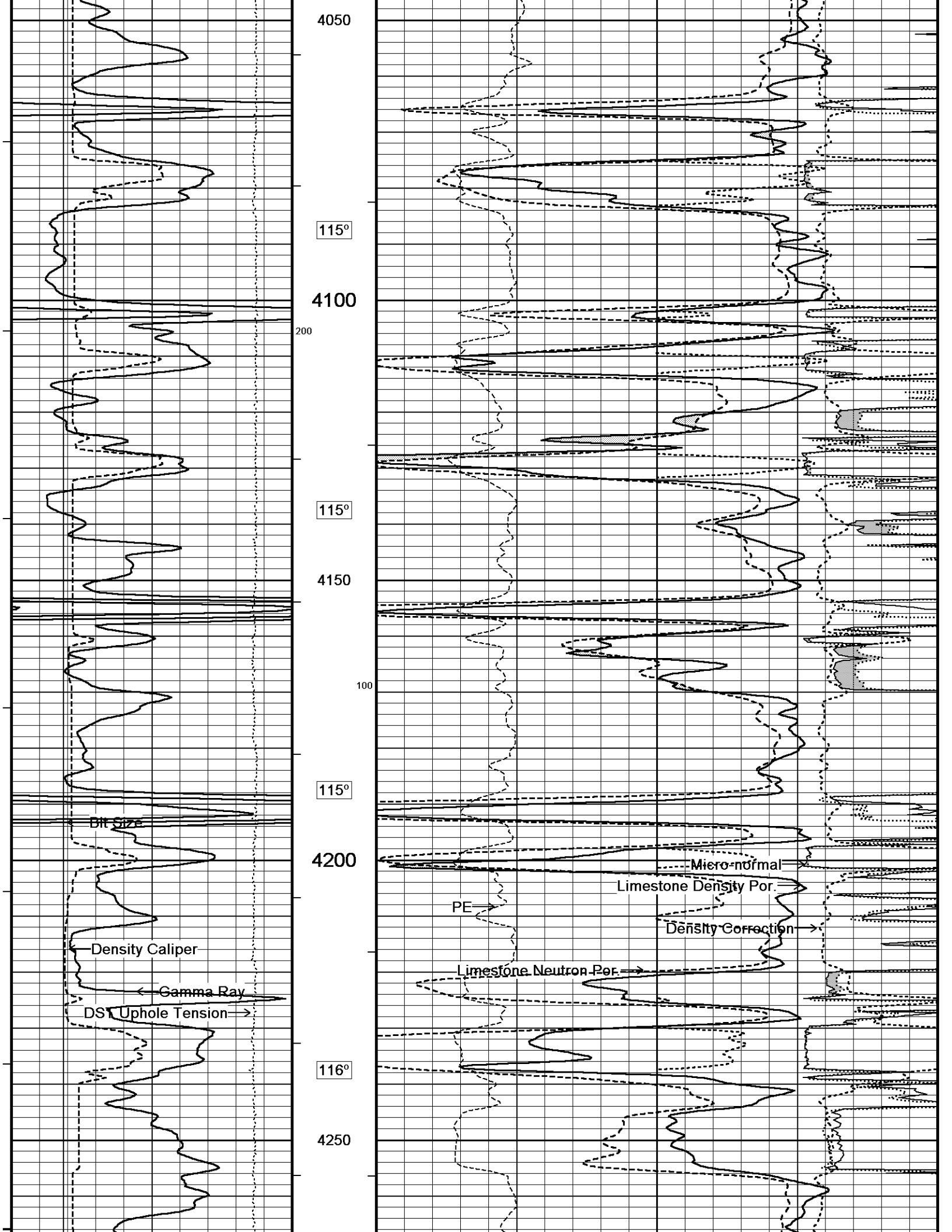


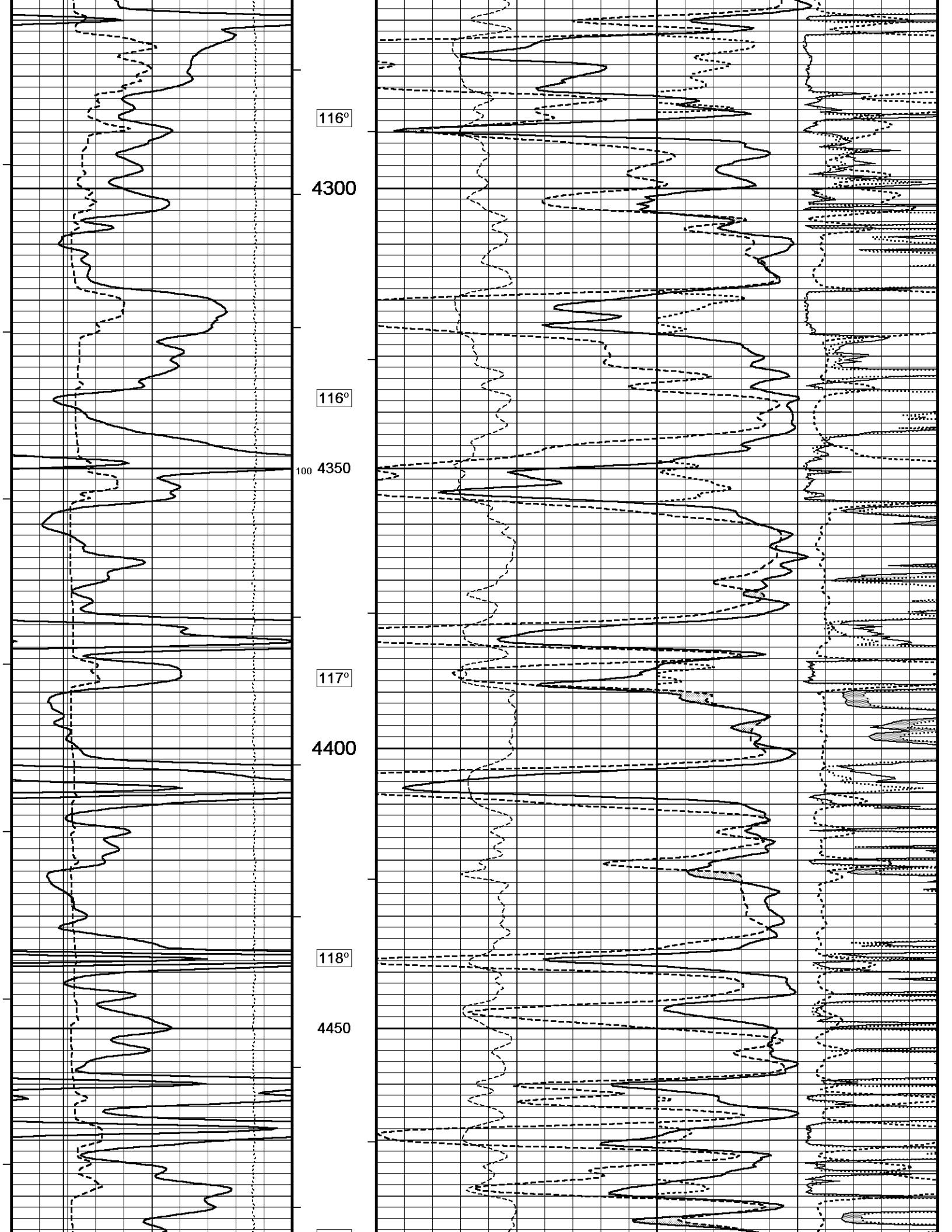
Depth
 in
 Feet
 Borehole
 Temp in
 deg F
 HVI
 every
 10 cu ft
 Annular
 Integral
 every
 10 cu ft
 Replay
 Scale
 1:240

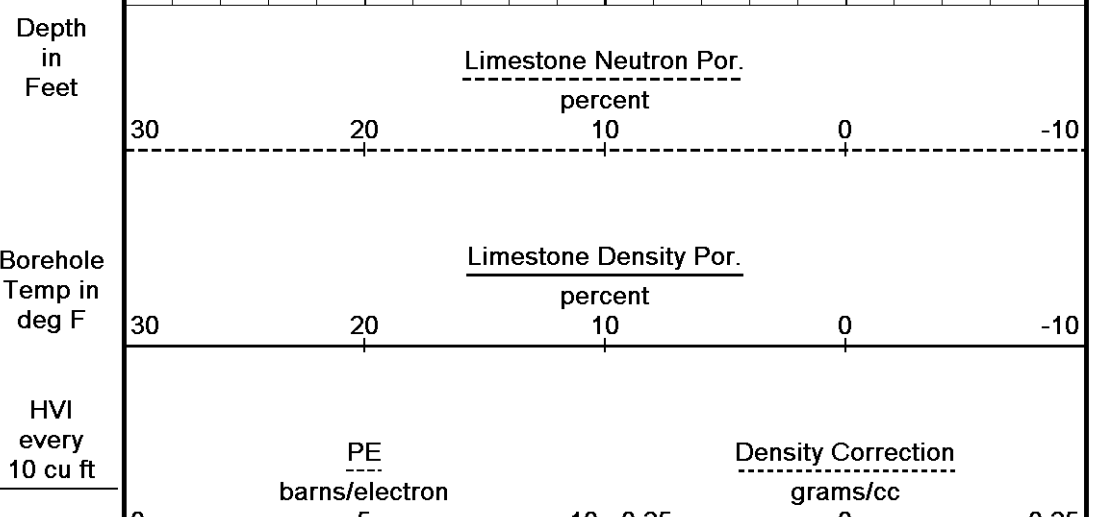
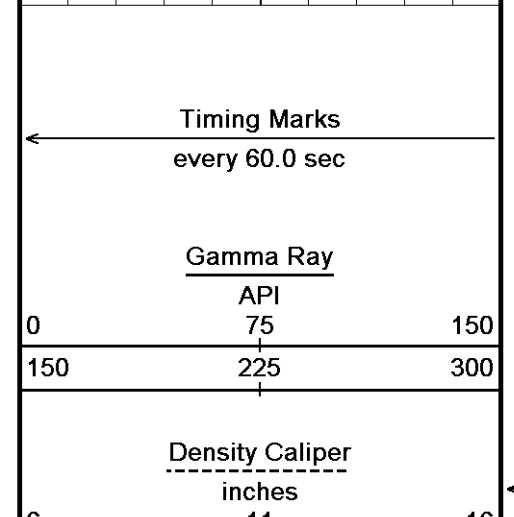
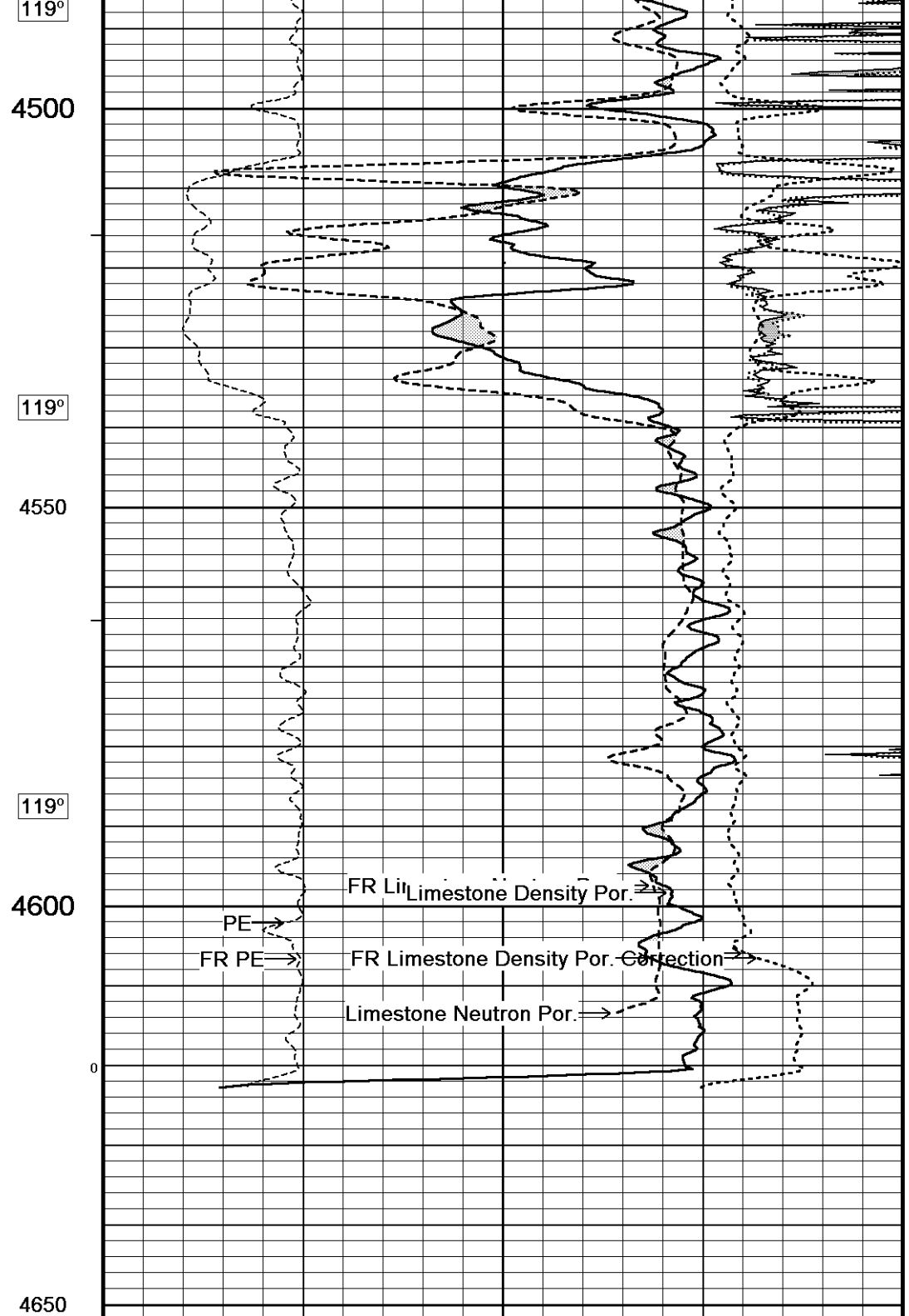
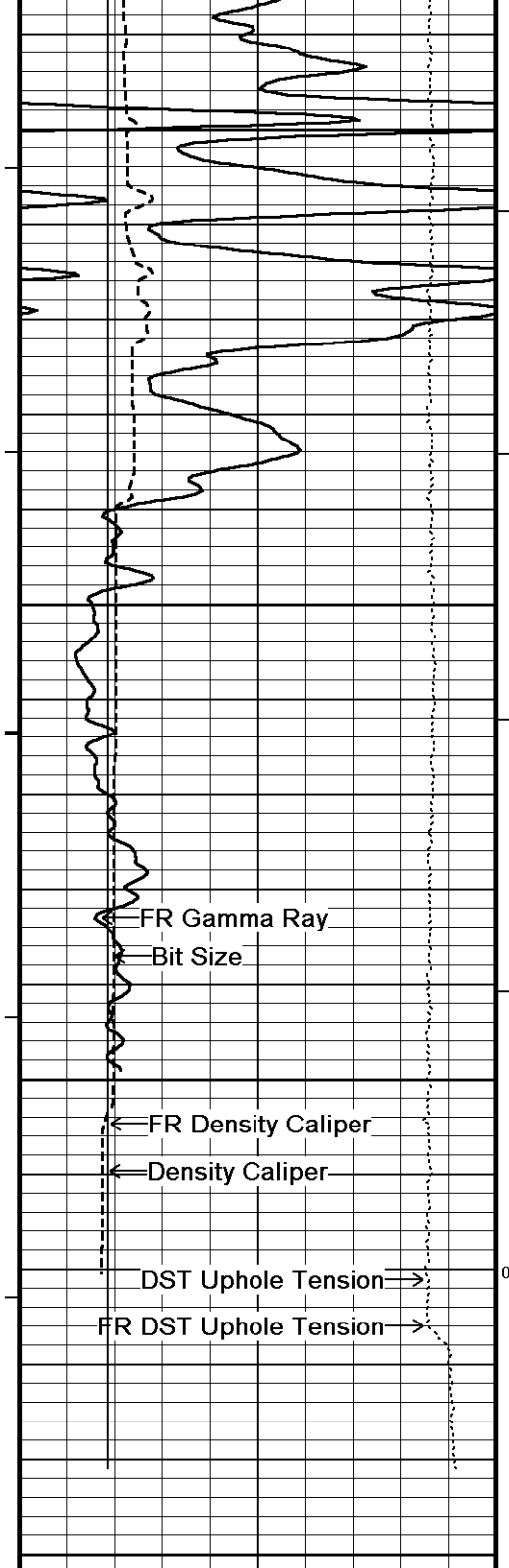


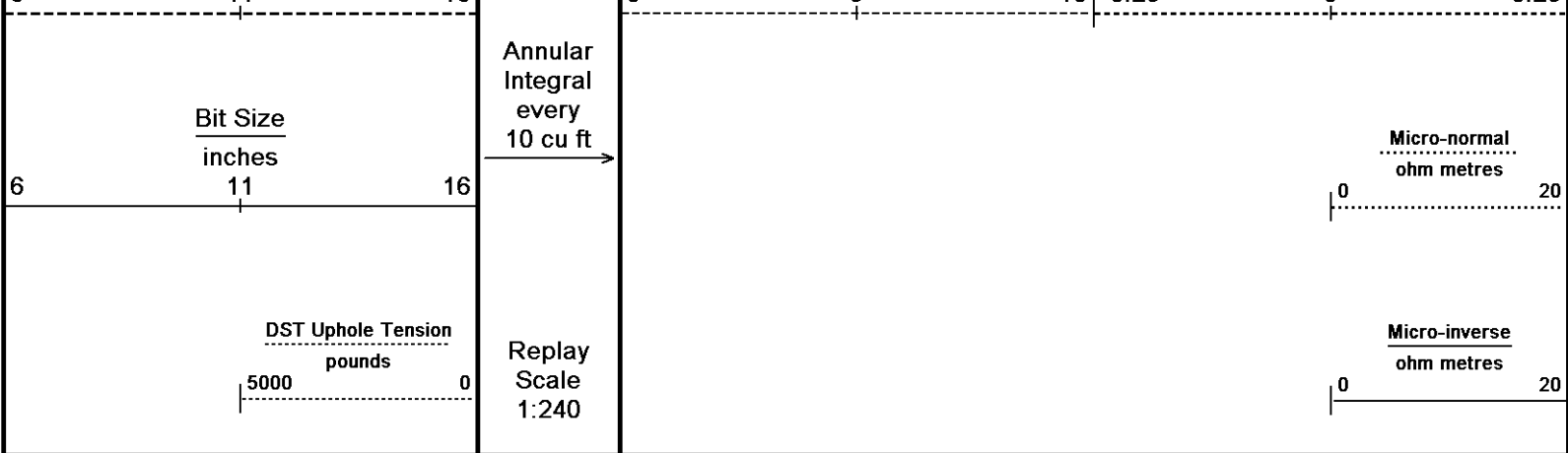










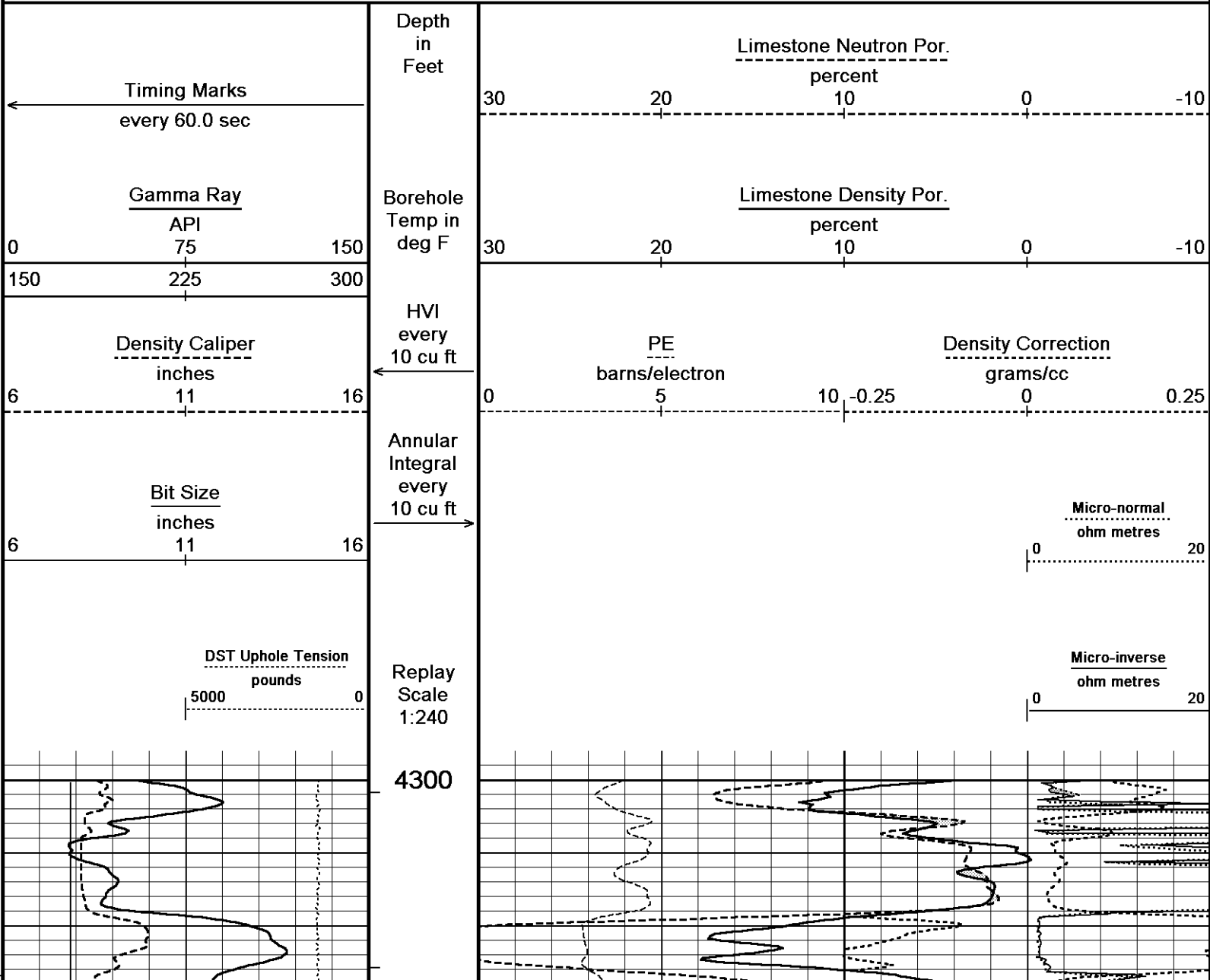


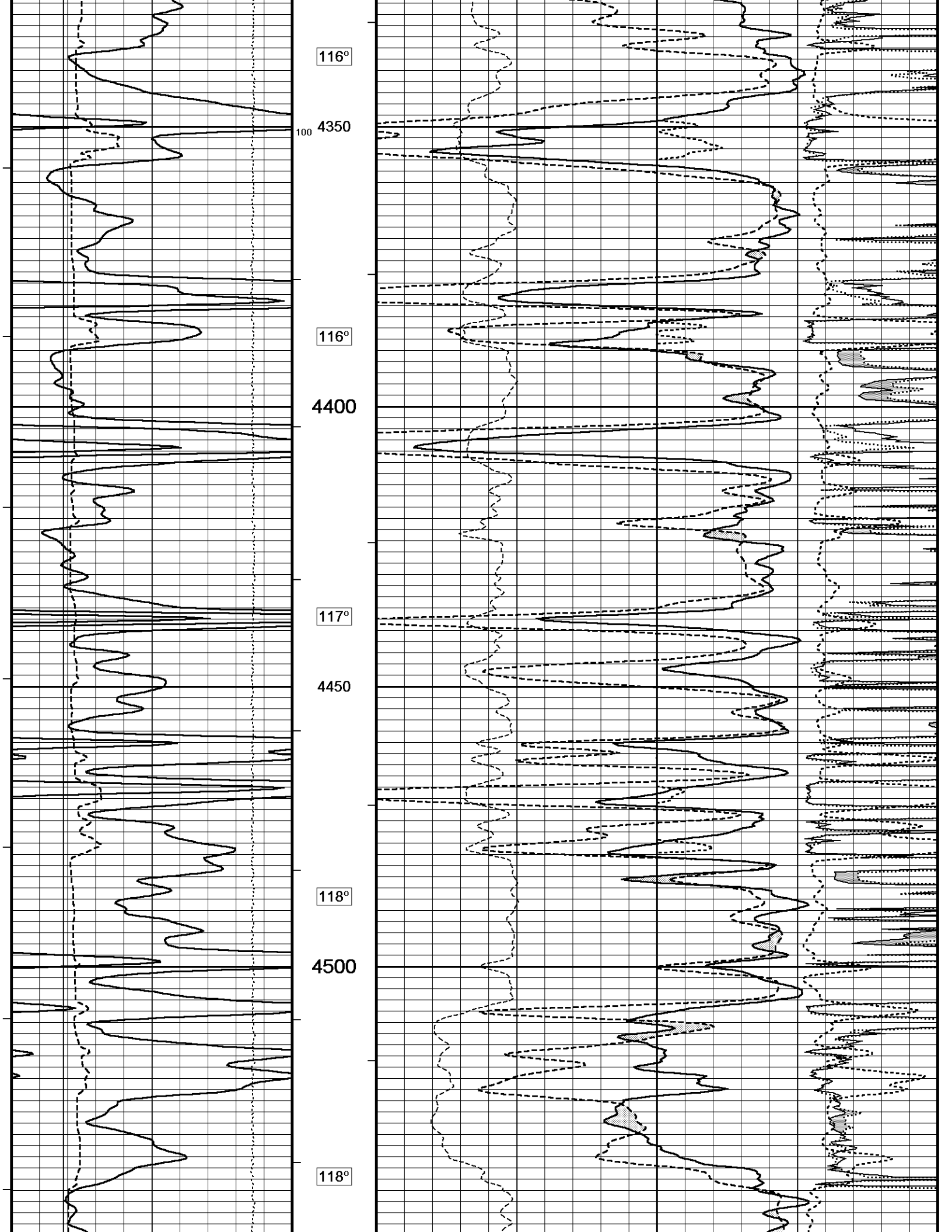
Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-AUG-2012 18:10
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa Op...\Grand Mesa Operating Glennis 1-27_002.dta
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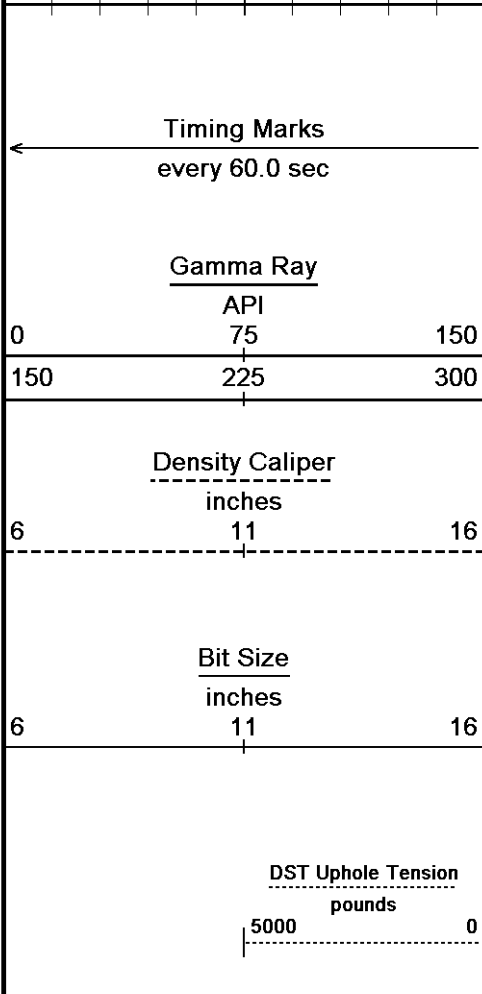
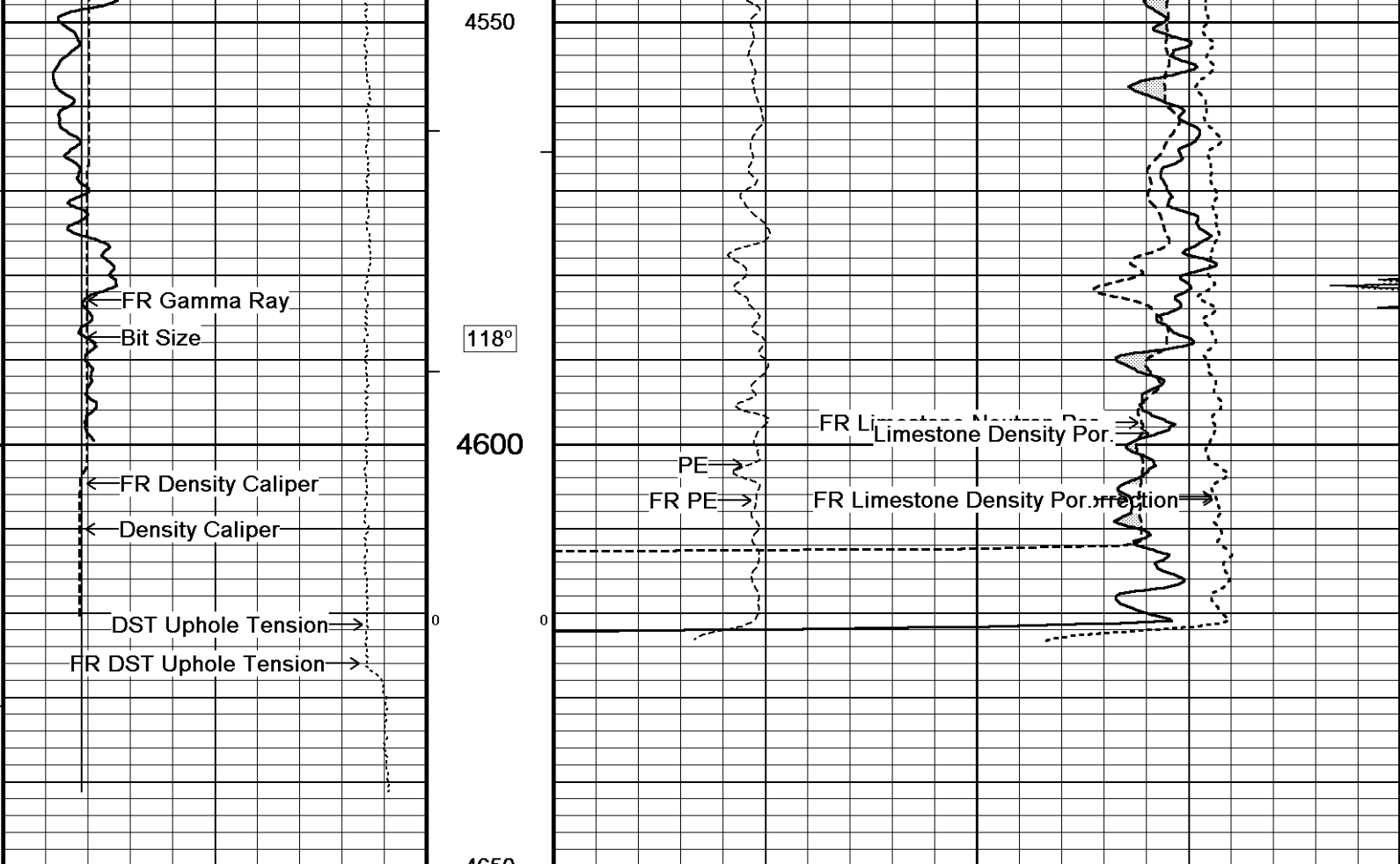
↑ 5 INCH MAIN ↑

↓ REPEAT SECTION ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
 Plotted on 16-AUG-2012 18:10
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa Op...\Grand Mesa Operating Glennis 1-27_001.dta
 Recorded on 16-AUG-2012 15:35
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600







4550
4600
4650
Depth in Feet

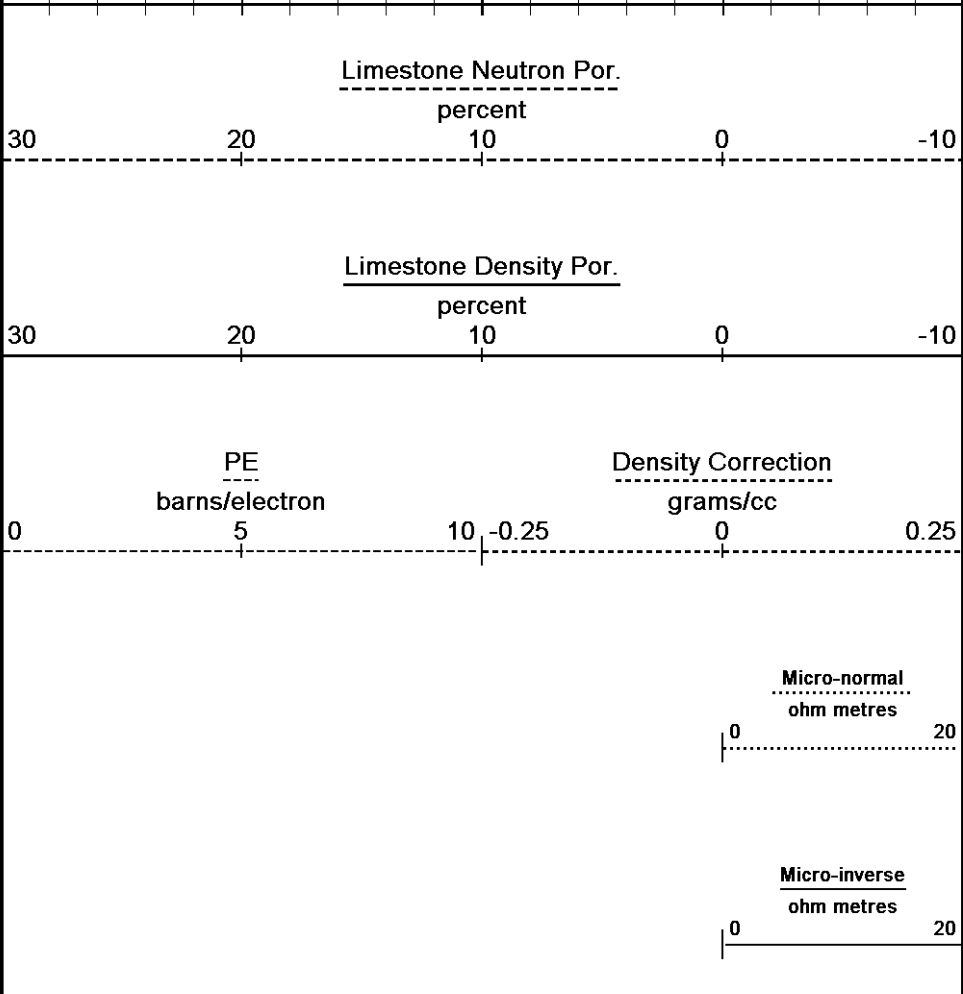
118°

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240



5 INCH MAIN

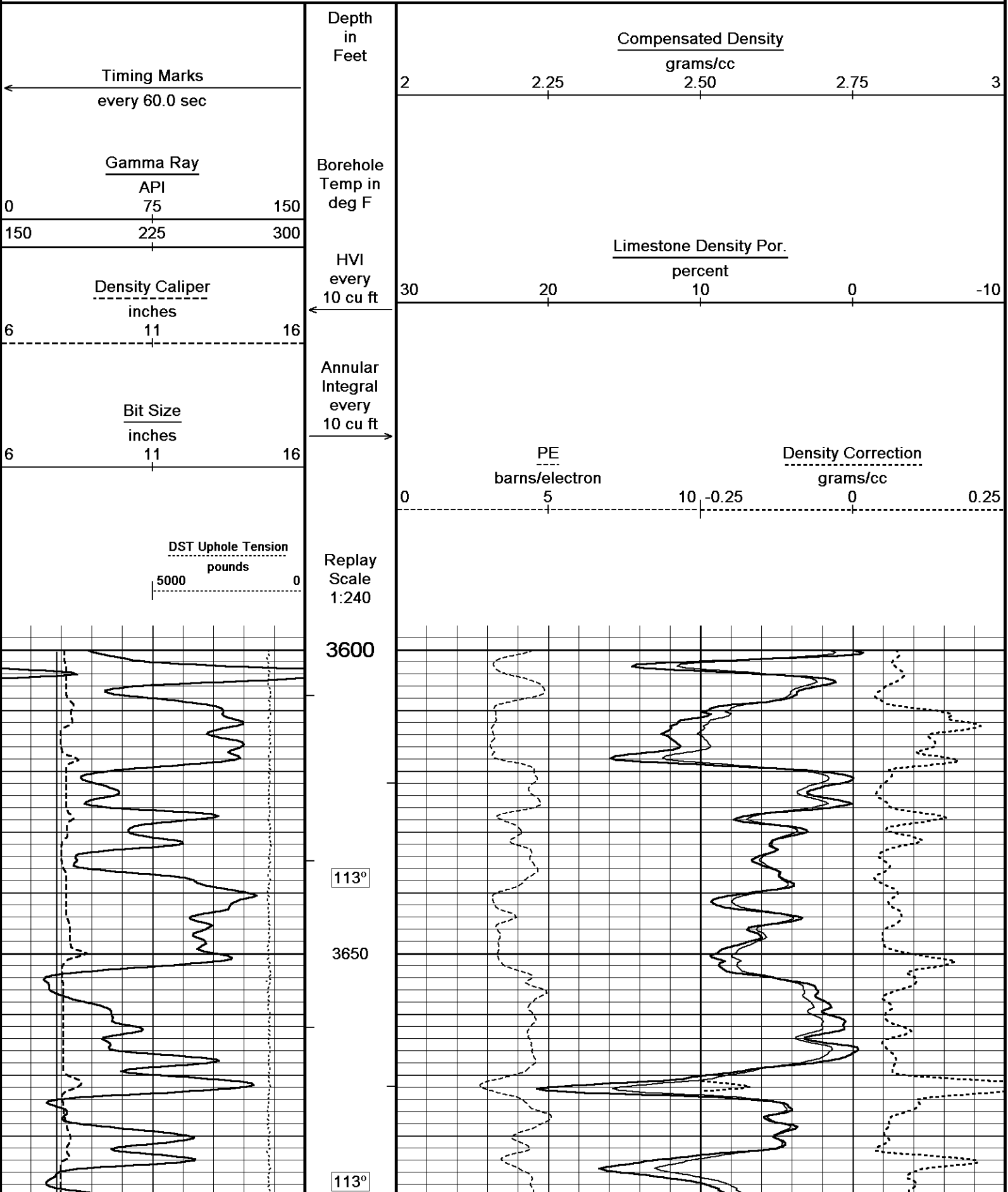
Depth Based Data - Maximum Sampling Increment 10.0cm

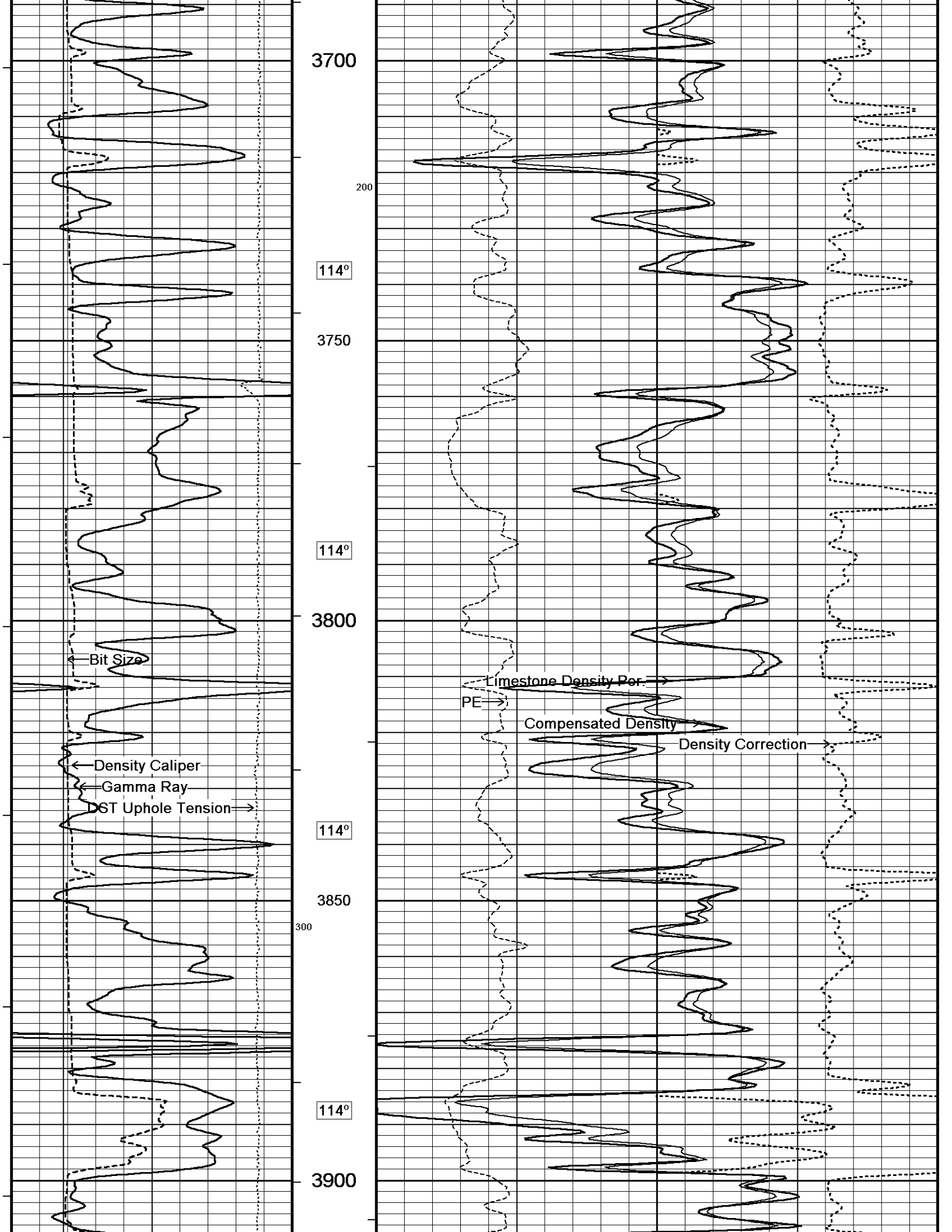
Plotted on 16-AUG-2012 18:10

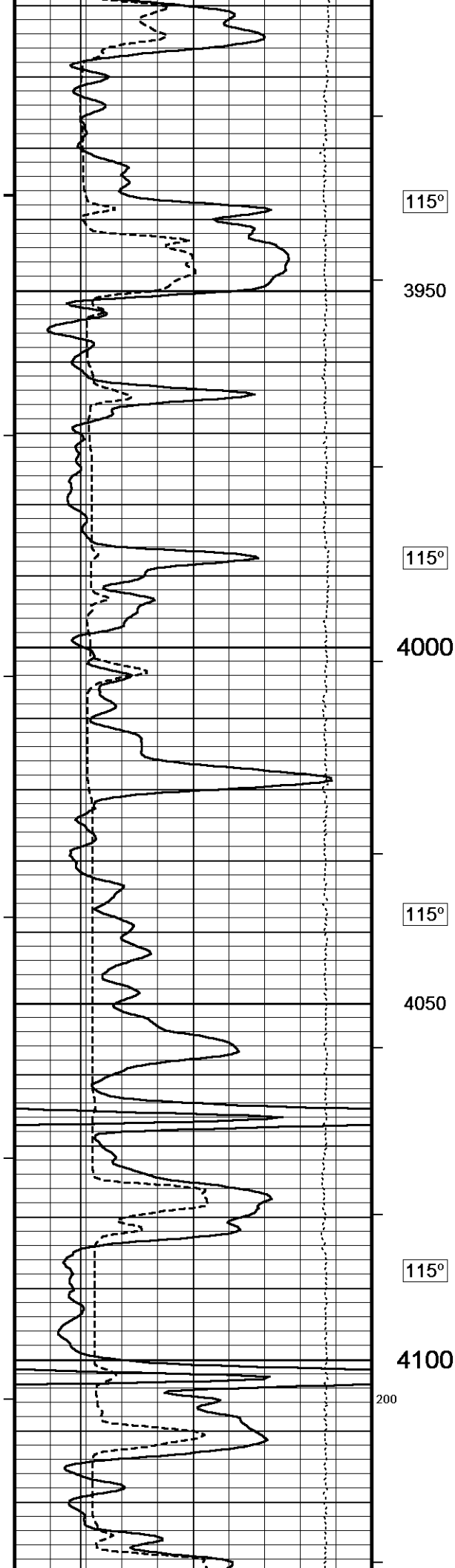
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Recorded on 16-AUG-2012 15:54

System Versions: Logged with 13.02.6600 Plotted with 13.02.6600







115°

3950

115°

4000

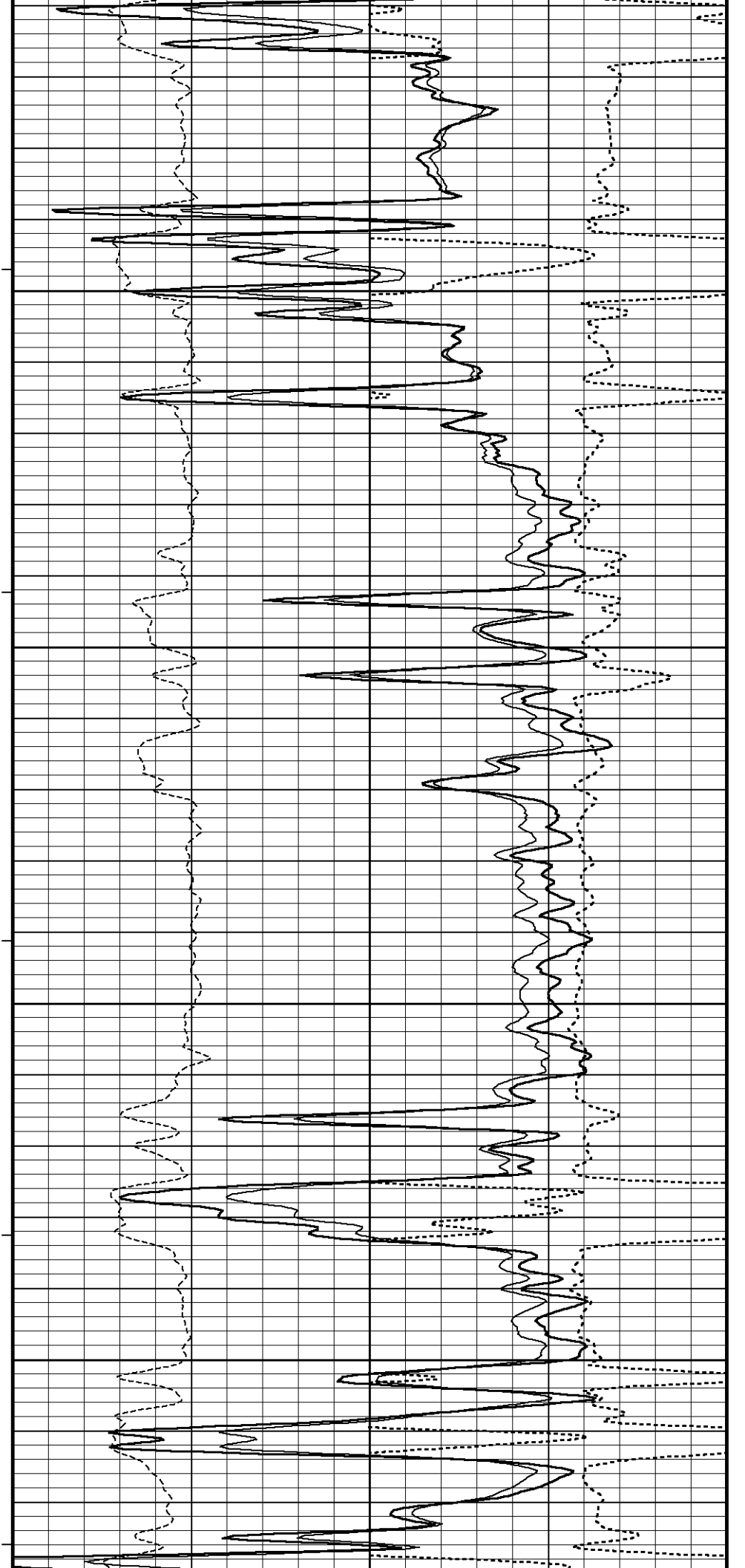
115°

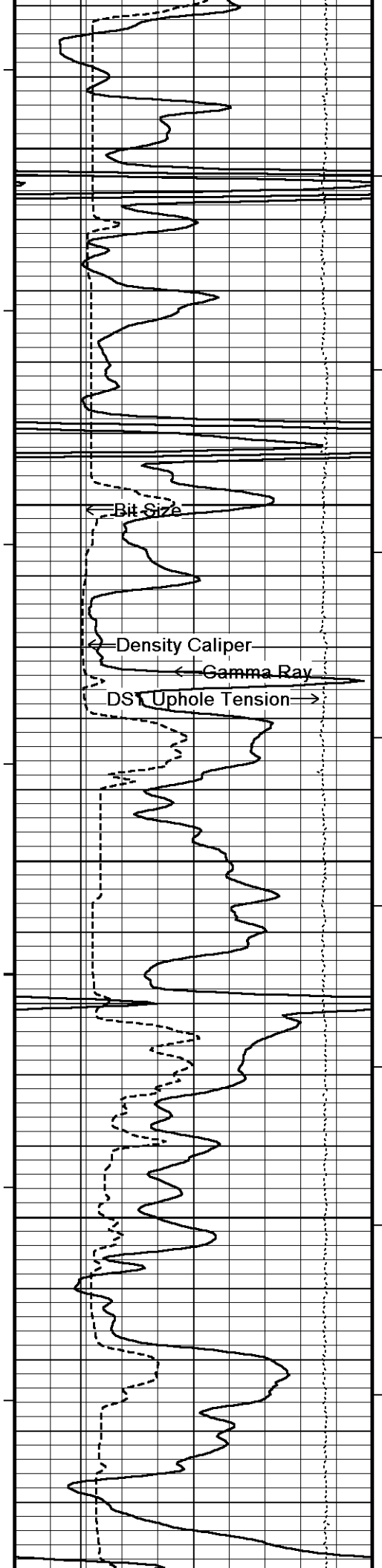
4050

115°

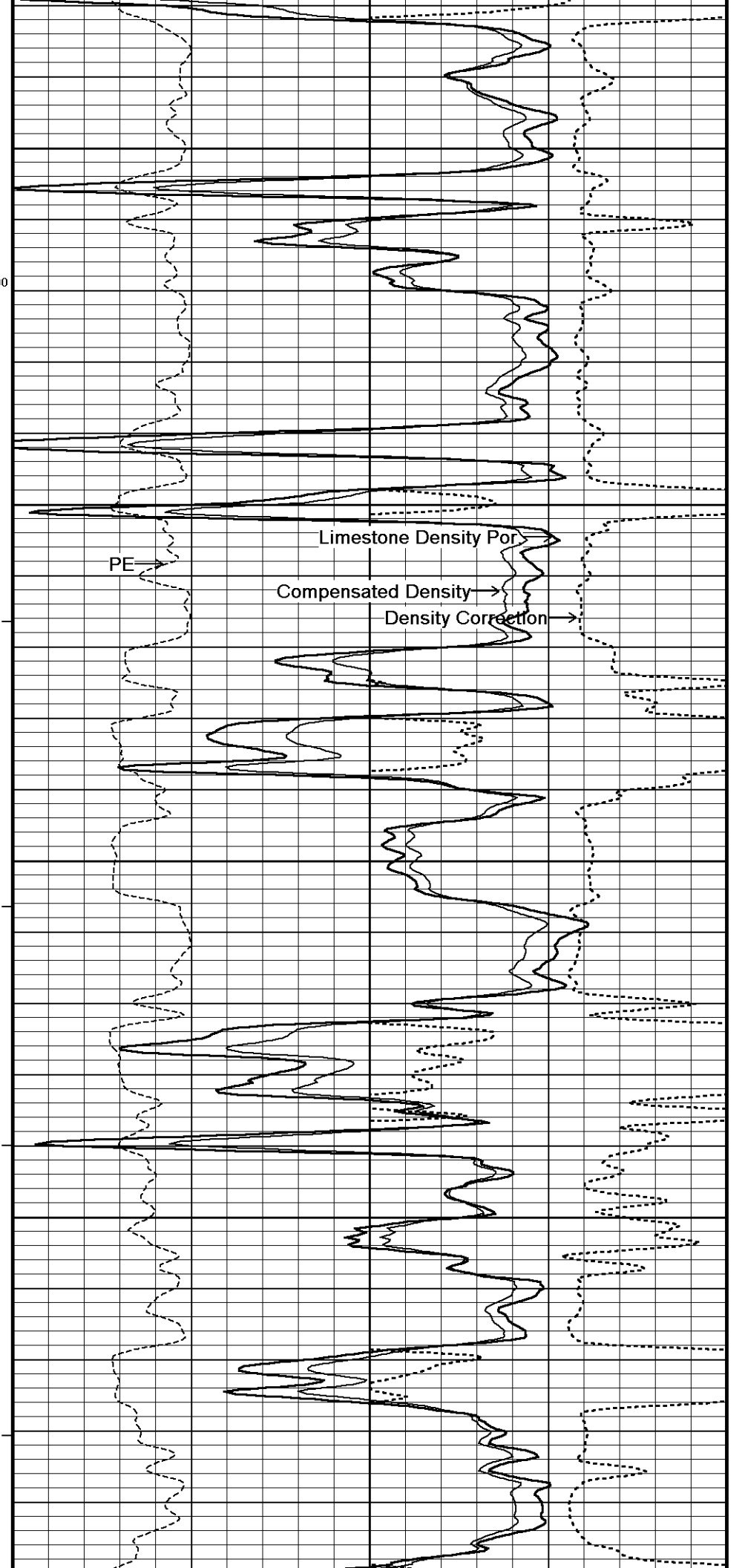
4100

200



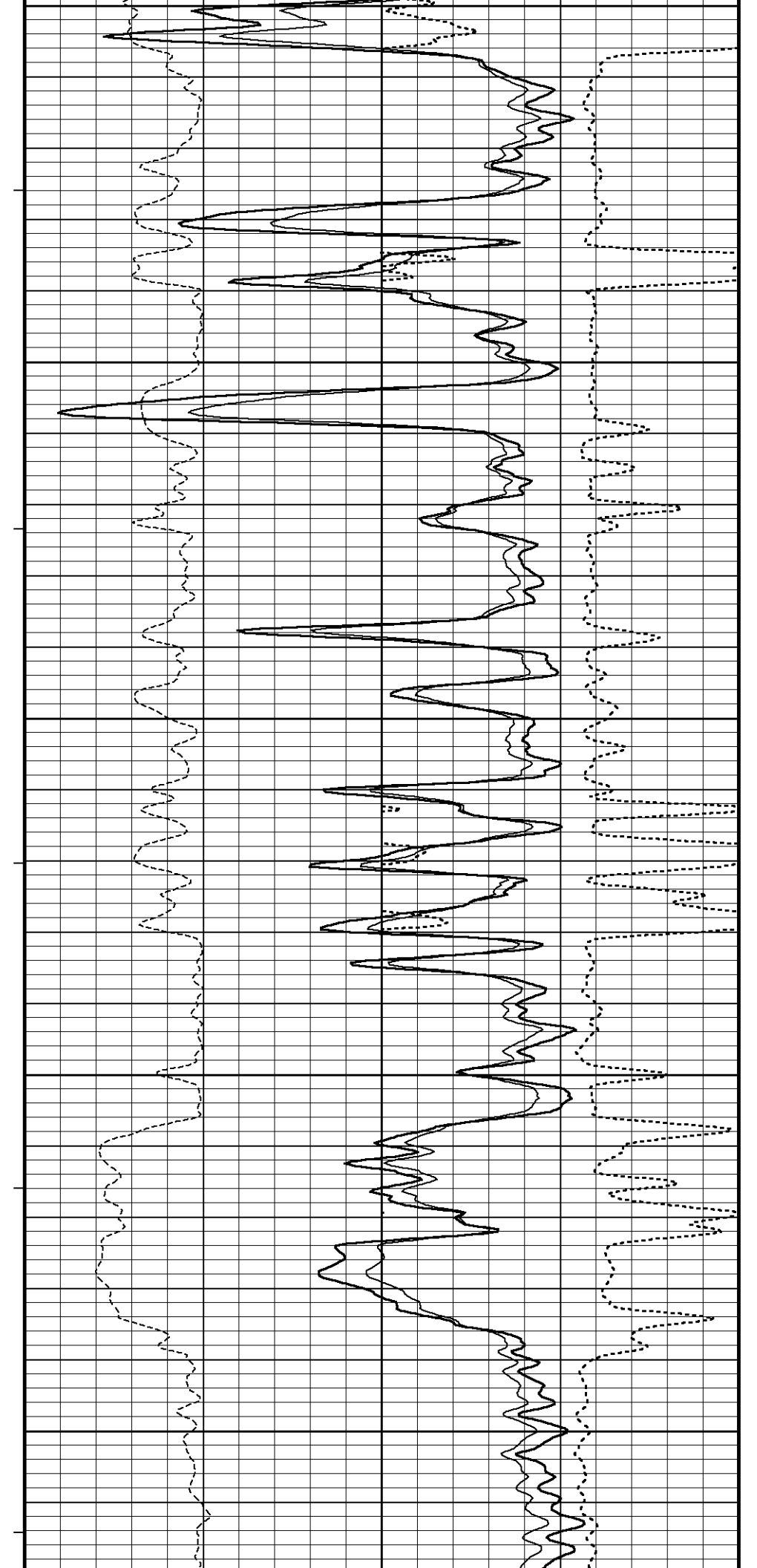
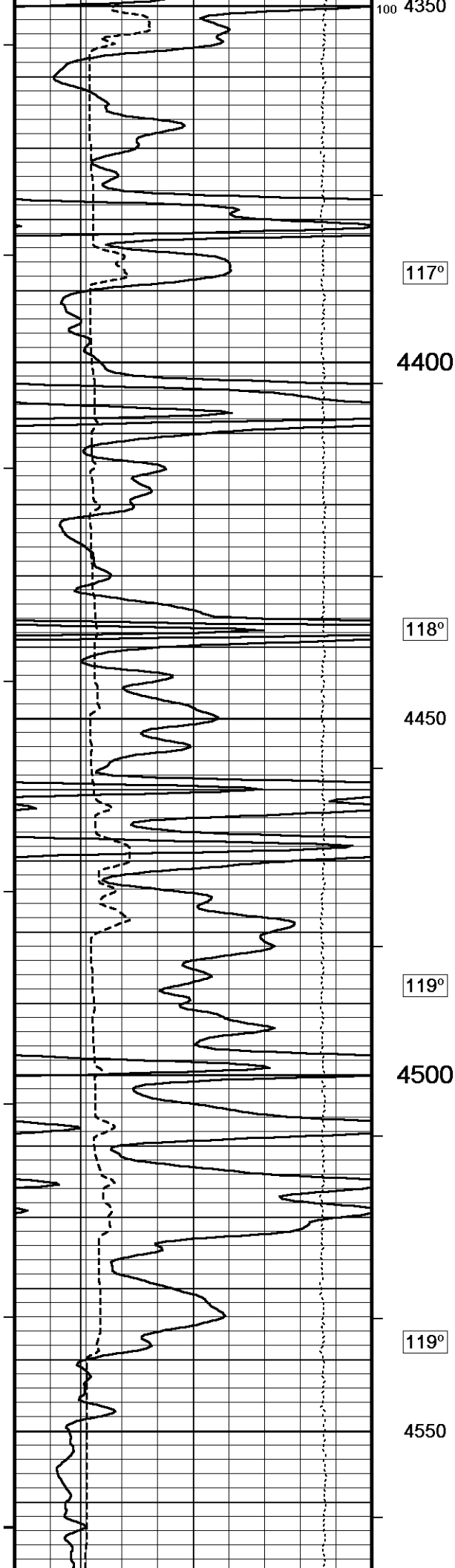


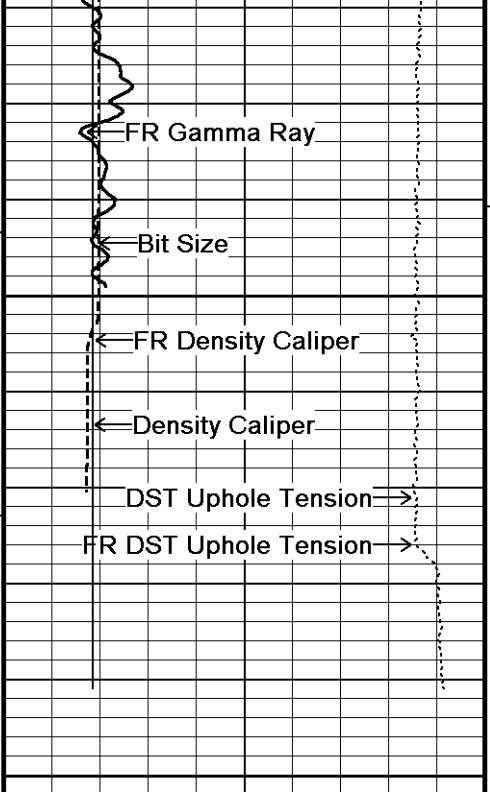
115°
4150
100
115°
4200
116°
4250
116°
4300
116°



← Bit Size
← Density Caliper
← Gamma Ray
DST Uphole Tension →

PE →
Limestone Density Por
Compensated Density →
Density Correction →



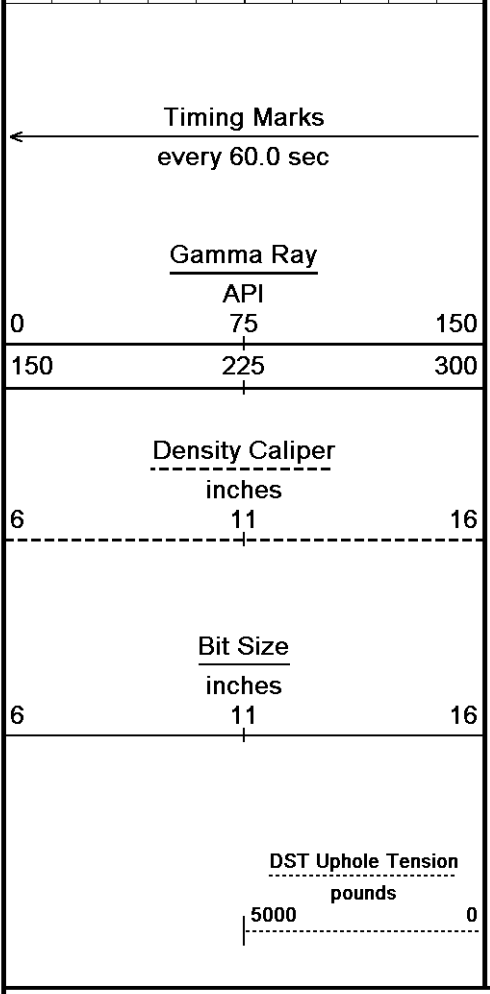
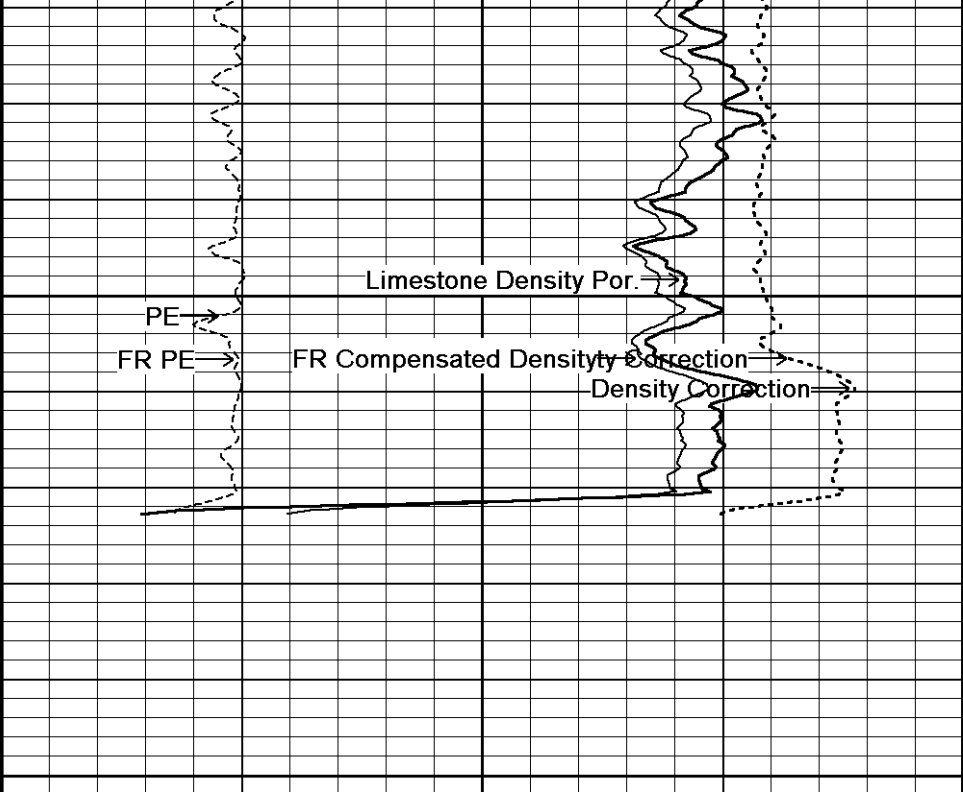


119°

4600

4650

Depth in Feet

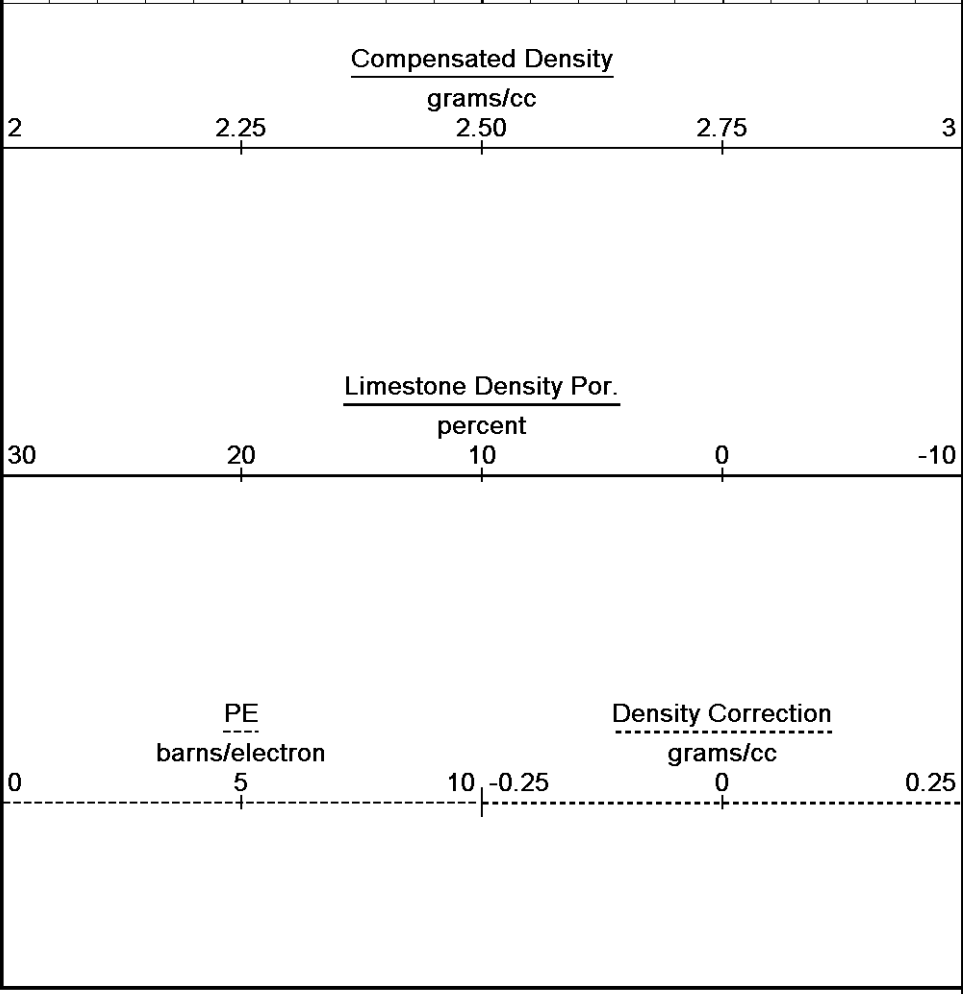


Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240



Depth Based Data - Maximum Sampling Increment 10.0cm
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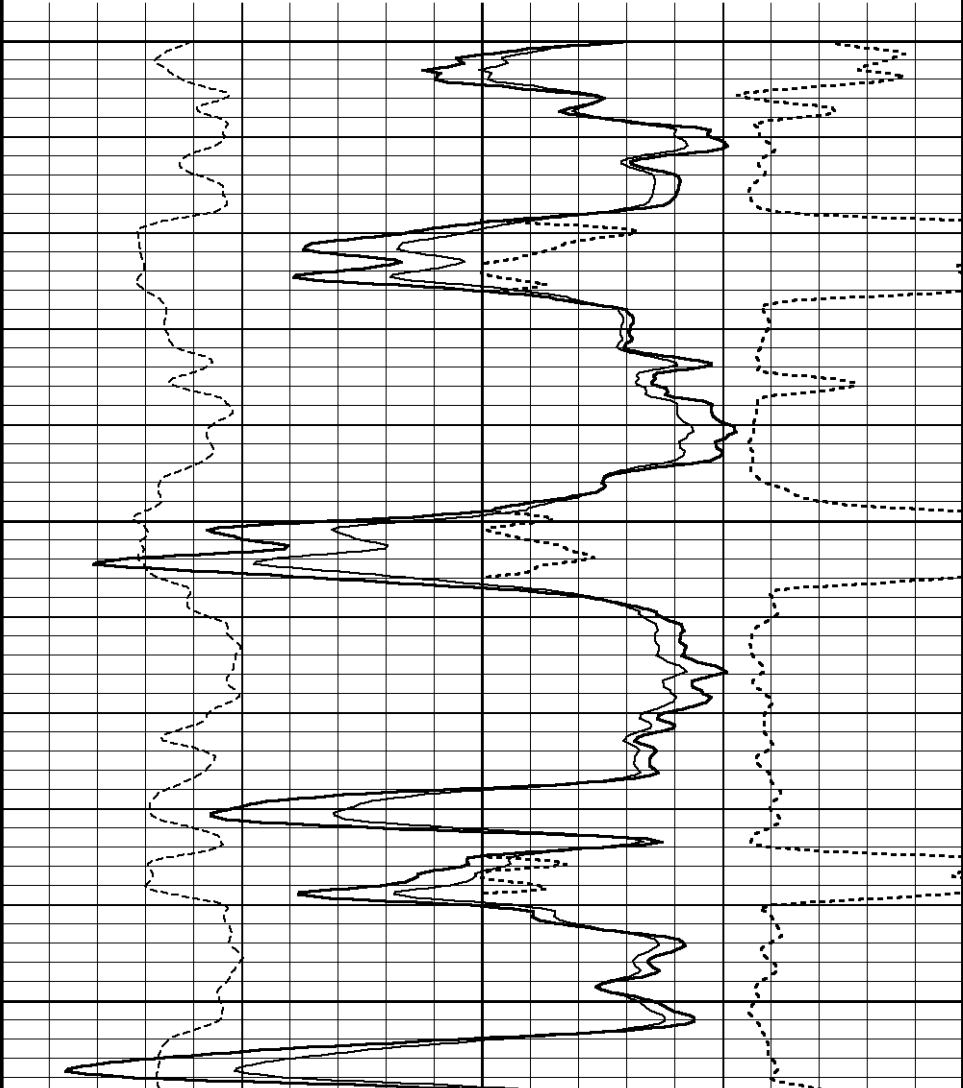
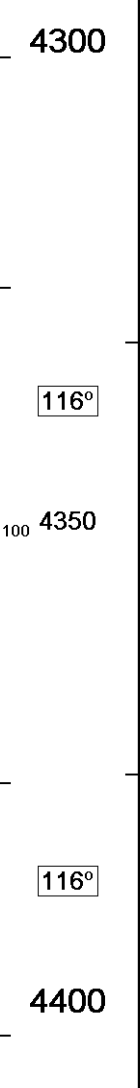
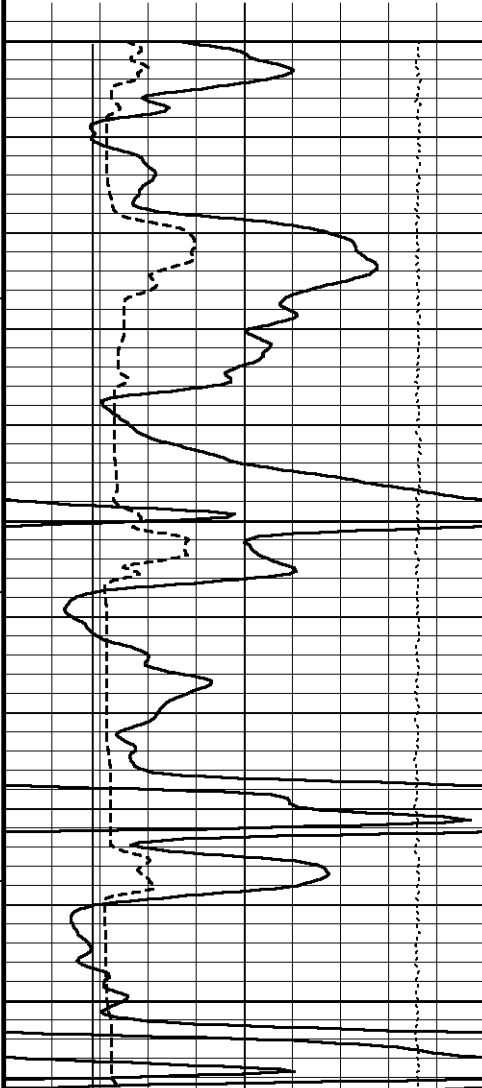
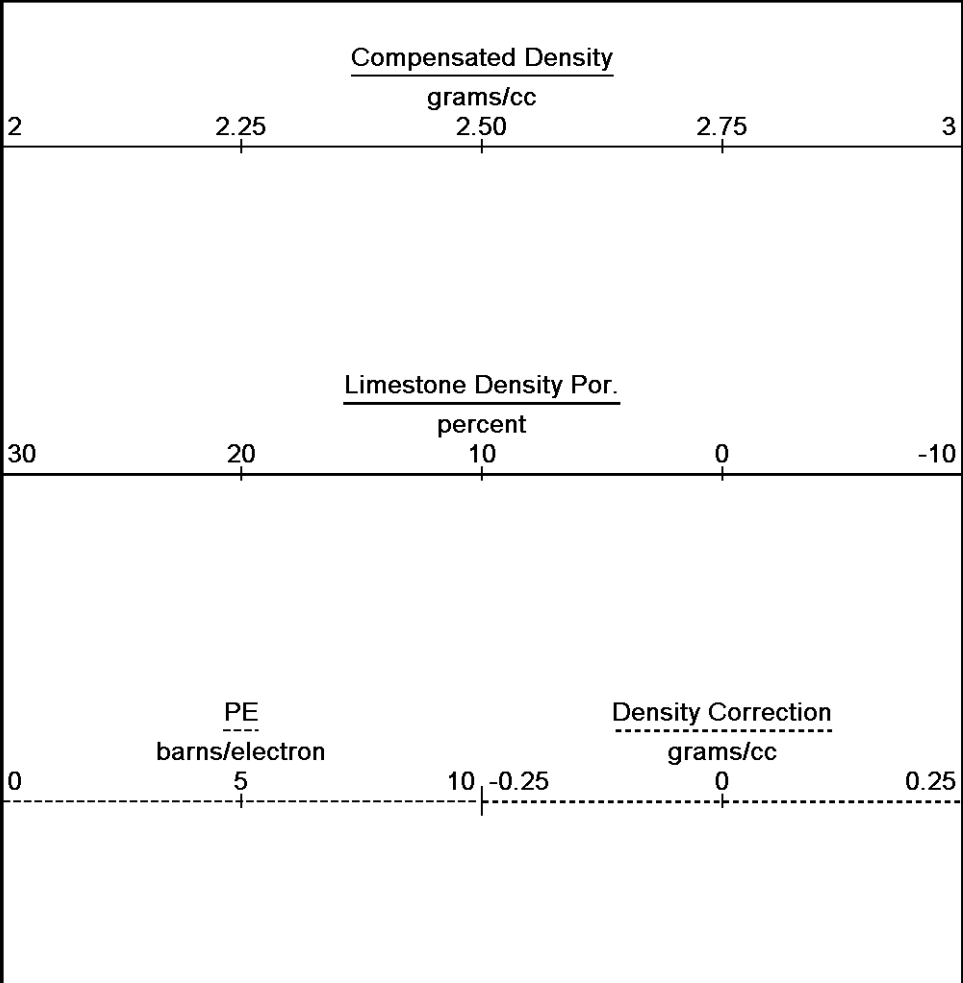
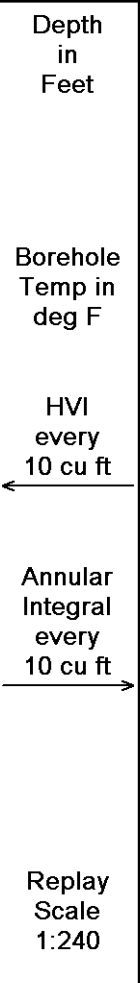
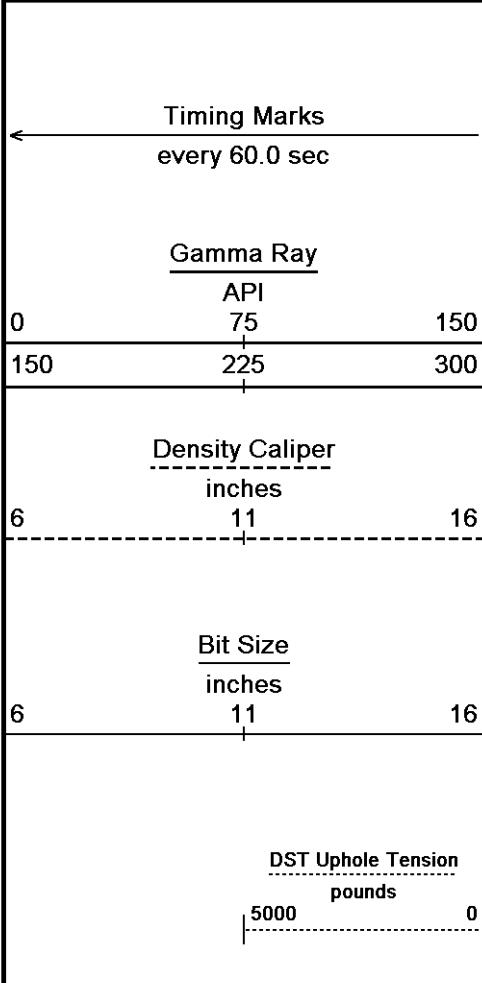
Plotted on 16-AUG-2012 18:10
 Recorded on 16-AUG-2012 15:54

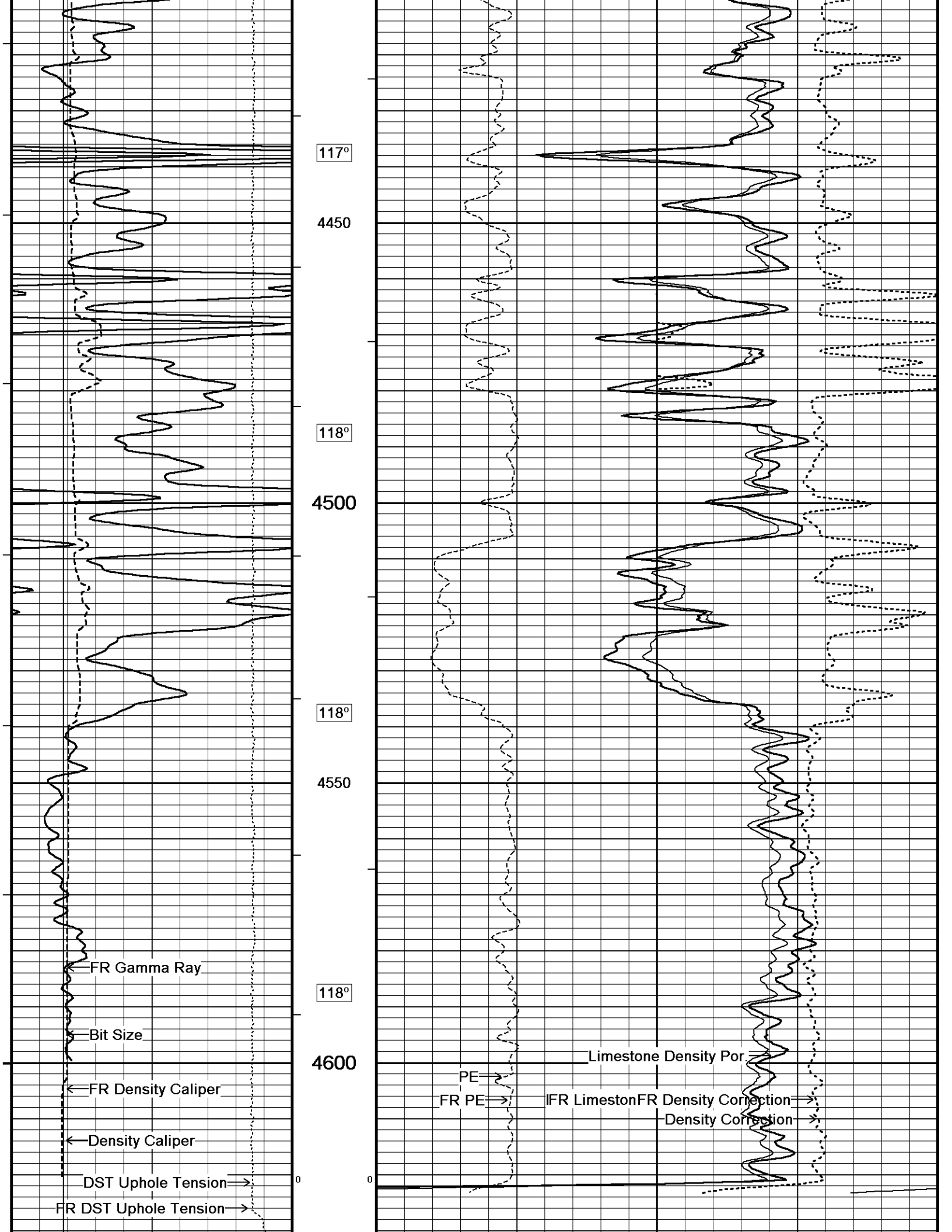
5 INCH MAIN

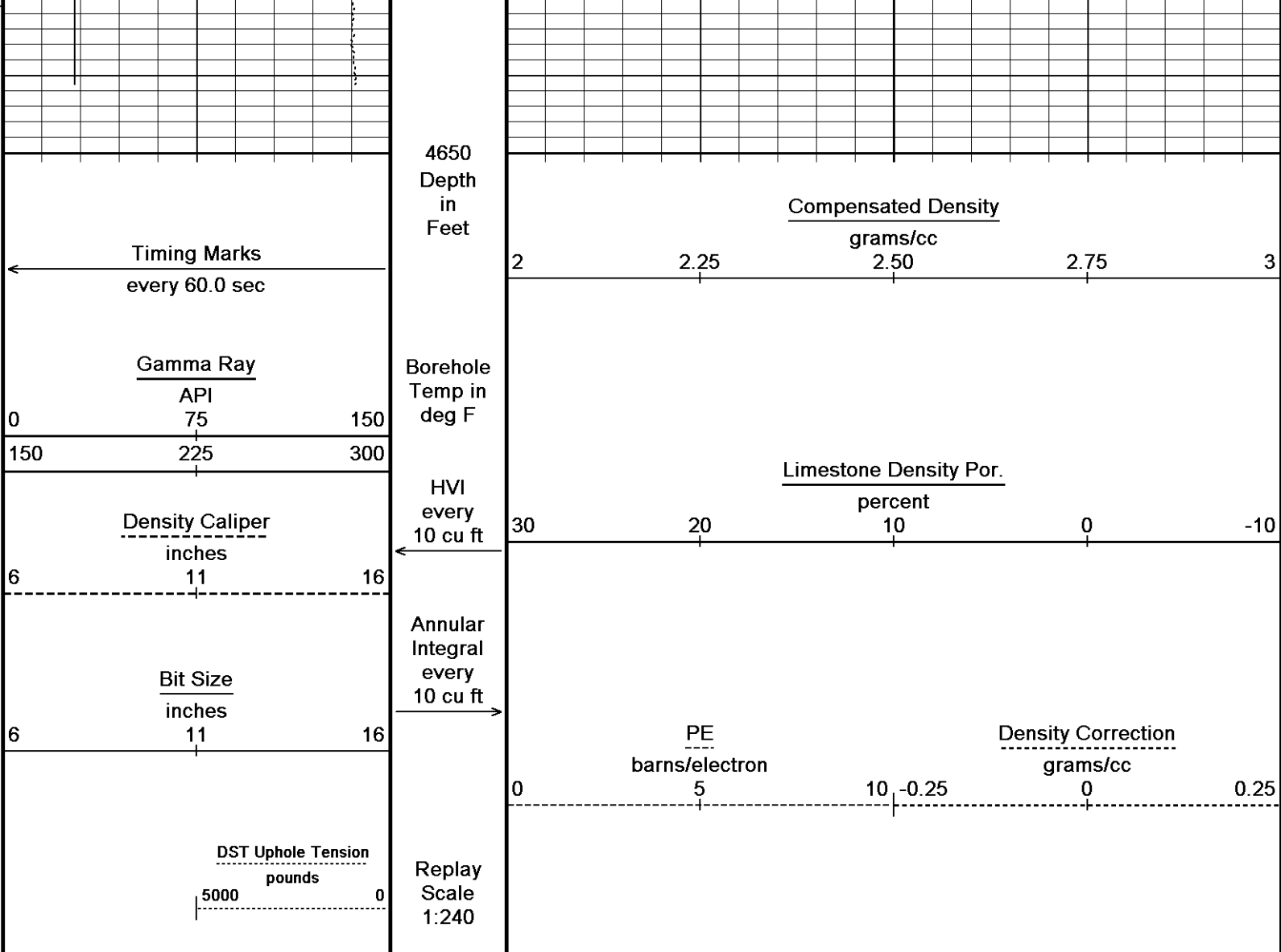
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
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 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

Plotted on 16-AUG-2012 18:10
 Recorded on 16-AUG-2012 15:55







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 16-AUG-2012 18:10
 Filename: C:\Minimus 13.02.6600\Data\Grand Mesa Op...\Grand Mesa Operating Glennis 1-27_001.dta Recorded on 16-AUG-2012 15:35
 System Versions: Logged with 13.02.6600 Plotted with 13.02.6600

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION
 C:\Minimus 13.02.6600\Data\Grand Mesa Operating Glennis #1-27\Grand Mesa Operating Glennis 1-27_001.dta

General Constants All 000 Last Edited on 16-AUG-2012,14:05

General Parameters		
Mud Resistivity	0.970	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. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Down-hole Tension Calibration SMS 0

Field Calibration on 25-JUL-2012 21:44

Reading No	Measured	Calibrated (lbs)
1	15962.51	0.00
2	17047.62	562.20

Gamma Calibration MCG-D.K 442

Field Calibration on 13-AUG-2012 09:24

	Measured	Calibrated (API)
Background	69	46
Calibrator (Gross)	1150	771
Calibrator (Net)	1081	725

Gamma Constants MCG-D.K 442

Last Edited on 16-AUG-2012,14:05

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

SP Calibration MCG-D.K 442

Field Calibration on 17-JUL-2012 16:34

	Measured	Calibrated (mV)
Reference 1	100.2	100.0
Reference 2	-99.9	-100.0

High Resolution Temperature Calibration MCG-D.K 442

Field Calibration on 17-JUL-2012,16:35

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

High Resolution Temperature Constants MCG-D.K 442

Last Edited on

Pre-filter Length	11
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Caliper Calibration MML-A 4

Base Calibration on 24-JUL-2012 08:53

Field Calibration on 13-AUG-2012 09:01

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	15504	5.98
2	18771	7.97
3	22124	9.86
4	25894	11.92
5	0	0.00
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.88	5.98

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 24-JUL-2012 08:59

Field Check on 13-AUG-2012 09:03

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	78.4	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 16-AUG-2012,14:06

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 66

Base Calibration on 17-JUL-2012 10:54

Field Check on 13-AUG-2012 09:29

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3220	101	3714	110
	31.859		33.764	
Field Calibrator at Base			Calibrated (cps)	
Ratio			1595	2289
			0.696	
Field Check			Calibrated (cps)	
Ratio			1598	2276
			0.702	

Neutron Constants MDN-A.B 66			Last Edited on 16-AUG-2012,14:05	
Neutron Source Id	P0204NN			
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			

FE Calibration MFE-B.J 353			Base Calibration on 17-JUL-2012 15:58 Field Check on 13-AUG-2012 09:00	
Base Calibration				
	Measured	Calibrated (ohm-m)		
Reference 1	0.0	0.0		
Reference 2	964.8	126.8		
Base Check				280.6
Field Check				280.9

FE Constants MFE-B.J 353			Last Edited on 16-AUG-2012,14:06	
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		

High Resolution Temperature Calibration MAI-A.A 167			Field Calibration on 17-JUL-2012,13:53	
	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 17-JUL-2012,13:49	
Pre-filter Length	11			

Induction Calibration MAI-A.A 167			Base Calibration on 17-JUL-2012,13:55 Field Check on 13-AUG-2012 08:59	
Base Calibration				
Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	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

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	13.3	3838.4
2	0.0	0.0	29.6	3476.3
3	0.0	0.0	29.1	3052.2
4	0.0	0.0	19.8	2081.0
Deep	0.0	0.0	18.6	2048.1
Medium	0.0	0.0	42.2	3990.5
Shallow	0.0	0.0	43.0	5053.7

Array Temperature 0.0 79.3 Deg F

Induction Constants MAI-A.A 167

Last Edited on 16-AUG-2012,14:06

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		
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 64

Base Calibration on 04-AUG-2012 20:18
Field Calibration on 13-AUG-2012 09:10

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	11106	3.99
2	20221	5.98
3	28496	7.97
4	37105	9.86
5	46524	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.98

Density Calibration Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	59921	33969	59556	30836
Reference 2	25388	2962	24941	2541
Field Check at Base	1193.4	1388.8		
Field Check	1183.8	1378.0		

PE Calibration Base Calibration	WS	Measured		Calibrated
		WH	Ratio	Ratio
Background	214	1064		
Reference 1	22602	59722	0.382	0.371
Reference 2	6872	25249	0.275	0.272
Field Check at Base	214.1	1063.8		
Field Check	213.4	1055.9		

Density Constants MPD-B 64

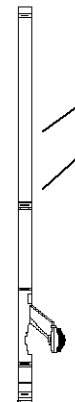
Last Edited on 16-AUG-2012,14:06

Density Source Id	18235B	
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)	
2.87	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 13.02.6600\Data\Grand Mesa Operating Glennis #1-27\Grand Mesa Operating Glennis 1-27_001.dta

Compact Comms Gamma
MCG-D.K 442 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in



42.87 ft GRGC - Gamma Ray
39.96 ft CGXT - MCG External Temperature

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

33.24 ft MINV - Micro-inverse
33.24 ft MNRL - Micro-normal
34.24 ft MLTC - MML Caliper

Compact Neutron

28.45 ft NPRL - Limestone Neutron Por

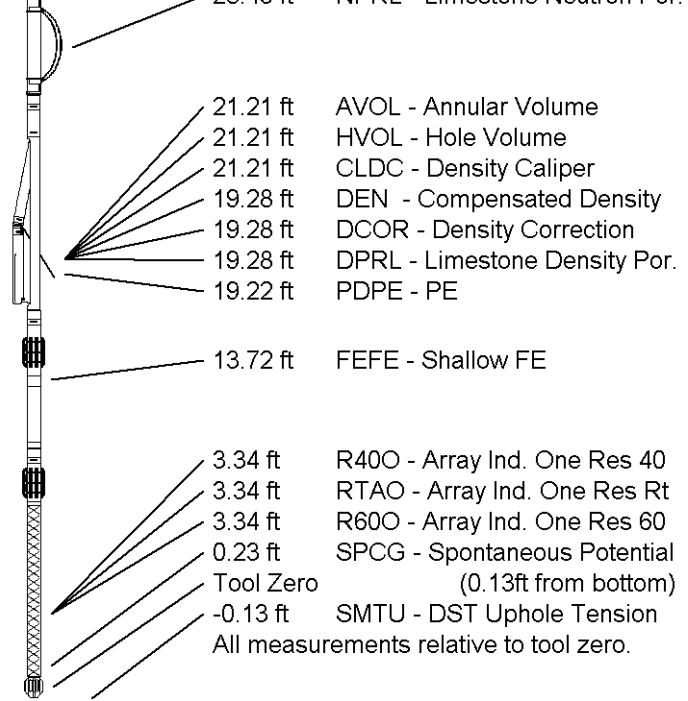
Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 353 LG: 6.05 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: 48.16 ft Weight: 383.6 lb



COMPANY	GRAND MESA OPERATING COMPANY
WELL	GLENNIS #1-27
FIELD	WILDCAT
PROVINCE/COUNTY	GOVE
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2853.00	feet	First Reading	4606.00	feet
Elevation Drill Floor	2852.00	feet	Depth Driller	4630.00	feet
Elevation Ground Level	2848.00	feet	Depth Logger	4626.00	feet



Weatherford®

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**