



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY				GRAND MESA OPERATING COMPANY			
WELL				WEBER #1-14			
FIELD				WILDCAT			
PROVINCE/COUNTY				GOVE			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				1306' FSL & 1170' FWL			
SEC	TWP	RGE	Other Services				
14	13S	31W	MAI/MFE				
API Number		15-063-22141					
Permit Number							
Permanent Datum G.L., Elevation 2881 feet						Elevations:	feet
Log Measured From KB						KB	2892.00
Drilling Measured From K.B. @ 11 FEET						DF	2890.00
						GL	2881.00
Date	08-OCT-2013						
Run Number	ONE						
Service Order	3539908						
Depth Driller	4680.00					feet	
Depth Logger	4669.00					feet	
First Reading	4650.00					feet	
Last Reading	3669.00					feet	
Casing Driller	227.00					feet	
Casing Logger	223.00					feet	
Bit Size	7.875					inches	
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.30 lb/USg					52.00 CP	
PH / Fluid Loss	10.50					6.40 ml/30Min	
Sample Source	FLOWLINE						
Rm @ Measured Temp	1.30 @ 72.0					ohm-m	
Rmf @ Measured Temp	1.04 @ 72.0					ohm-m	
Rmc @ Measured Temp	1.56 @ 72.0					ohm-m	
Source Rmf / Rmc	CALC					CALC	
Rm @ BHT	0.79 @119.0					ohm-m	
Time Since Circulation	3 HOURS						
Max Recorded Temp	119.00					deg F	
Equipment / Base	13057					LIB	
Recorded By	ROB HOFFMAN						
Witnessed By	KENT MATSON						
JOB #	LB13-285						

BOREHOLE RECORD					Last Edited: 08-OCT-2013 13:08
Bit Size inches		Depth From feet		Depth To feet	
7.875		227.00		4680.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	227.00	24.00	

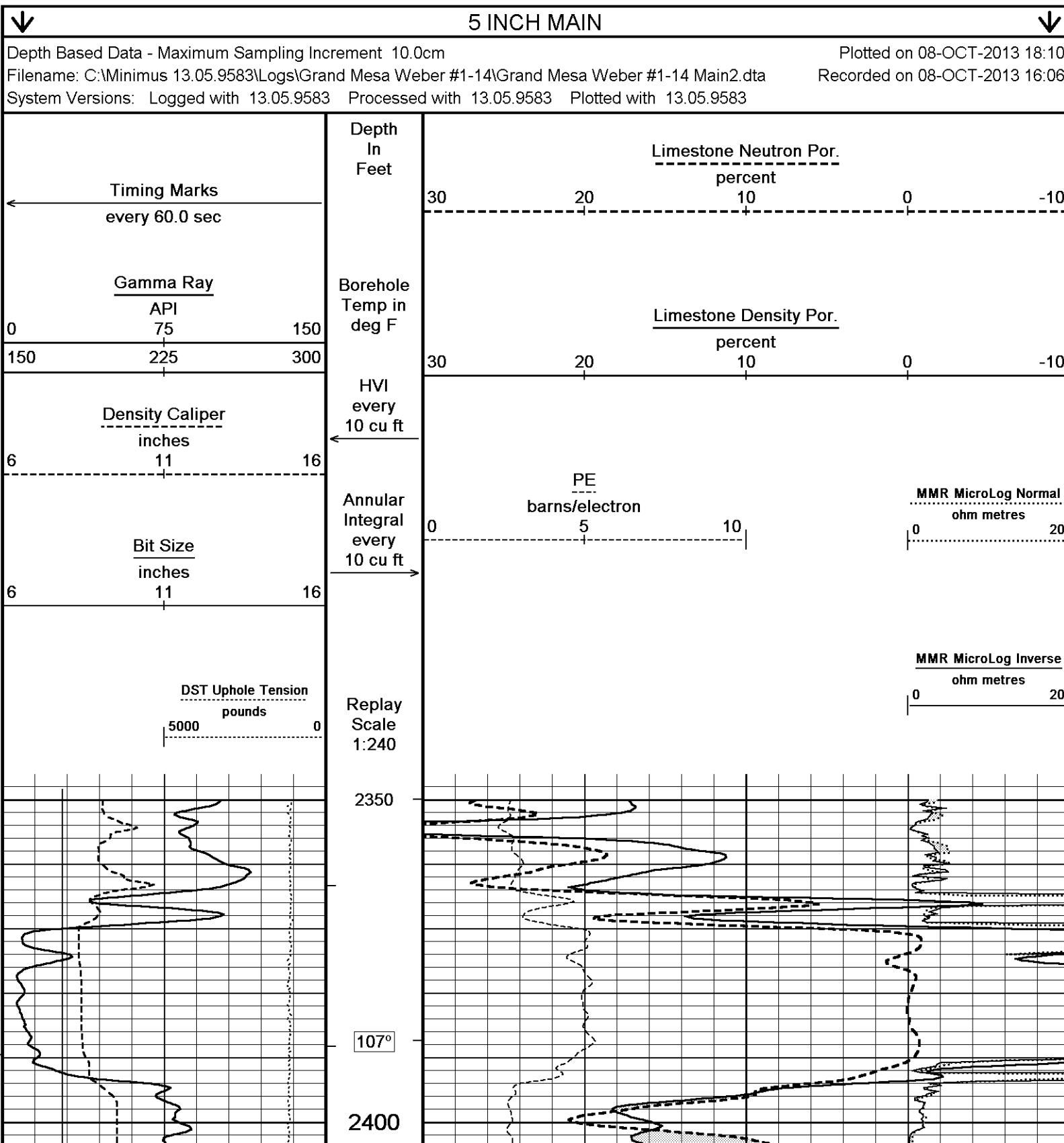
REMARKS
- SOFTWARE ISSUE: 13.05.9583
- MCG, MML, MDN, MPD, MFE AND MAI RAN IN COMBINATION
- HARDWARE: DUAL BOWSPRING USED ON MDN 0.5 INCH STANDOFF USED ON MFE AND MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL EFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMRES REQUEST
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 992 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3669FT: 496 CU.FT.
-RIG: DUKE DRILLING RIG #10

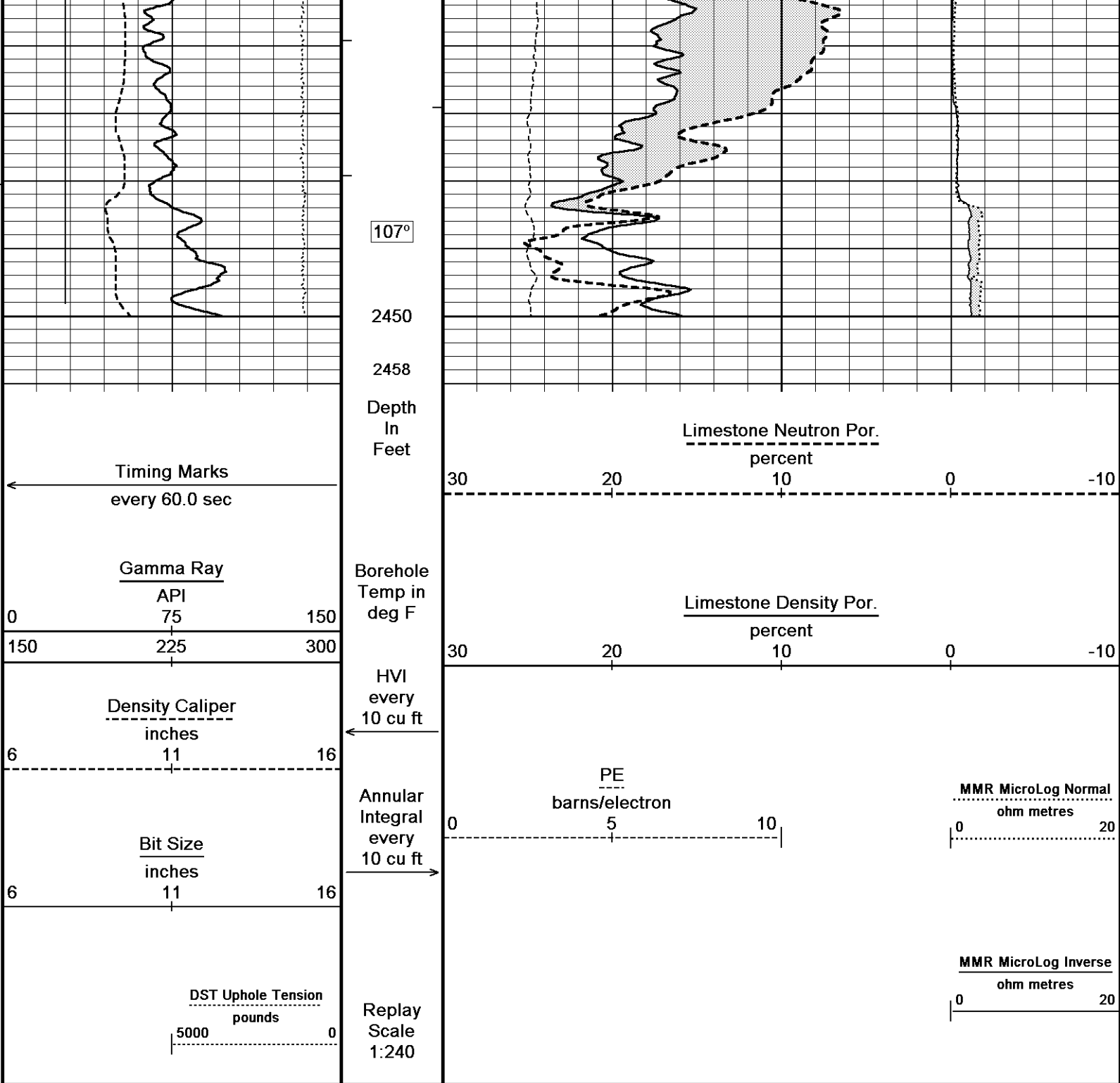
- ENGINEER: R. HOFFMAN

- OPERATOR: K. RINEHART

****CUSTOMER SAID THE RIG HAD SOME DEPTH ISSUES AND THOUGHT OUR DEPTH WAS GOOD****

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.



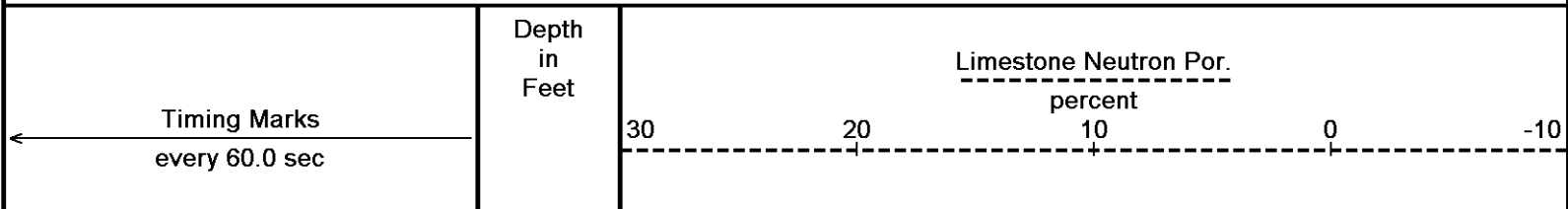


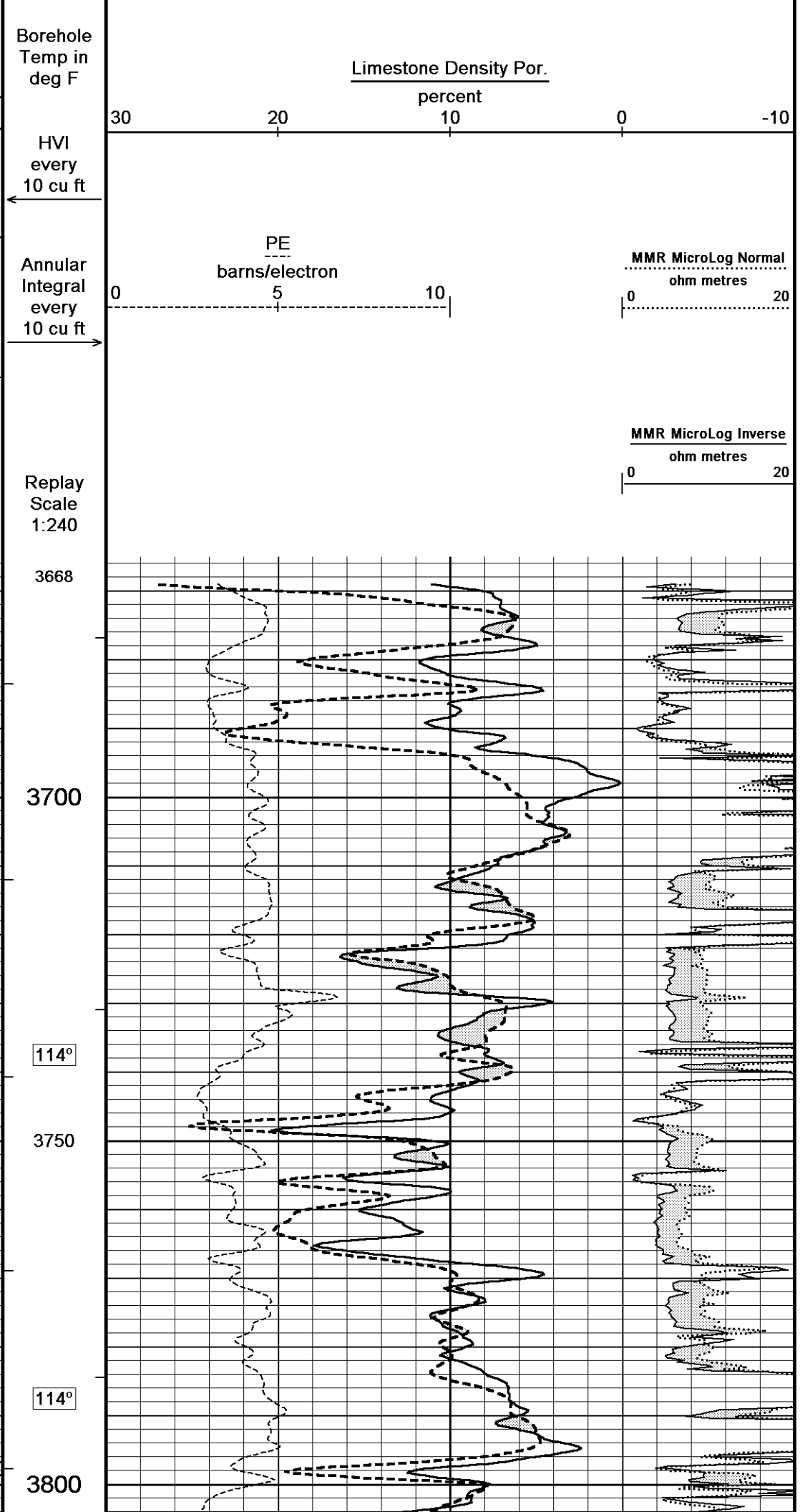
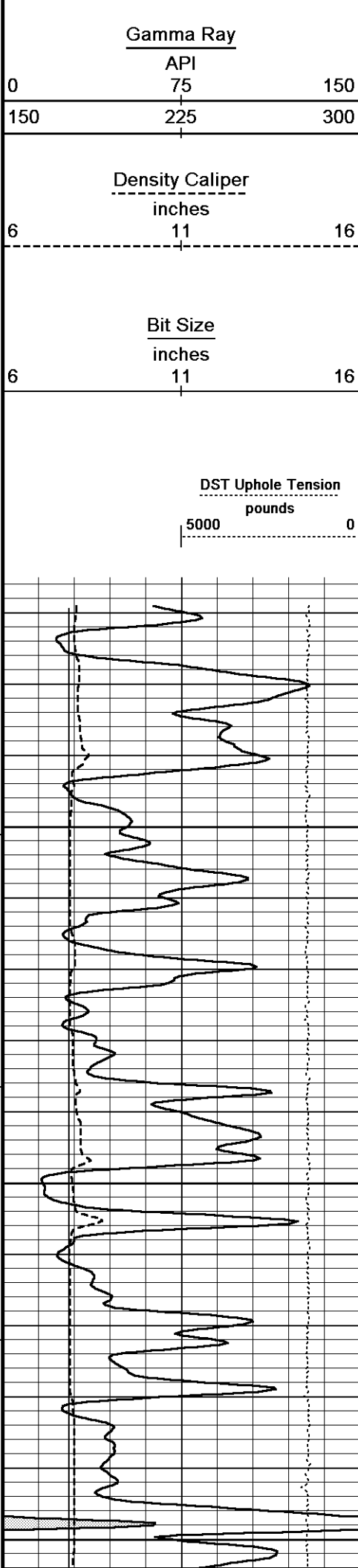
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 08-OCT-2013 18:10
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1-14\Grand Mesa Weber #1-14 Main2.dta	Recorded on 08-OCT-2013 16:06
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583	

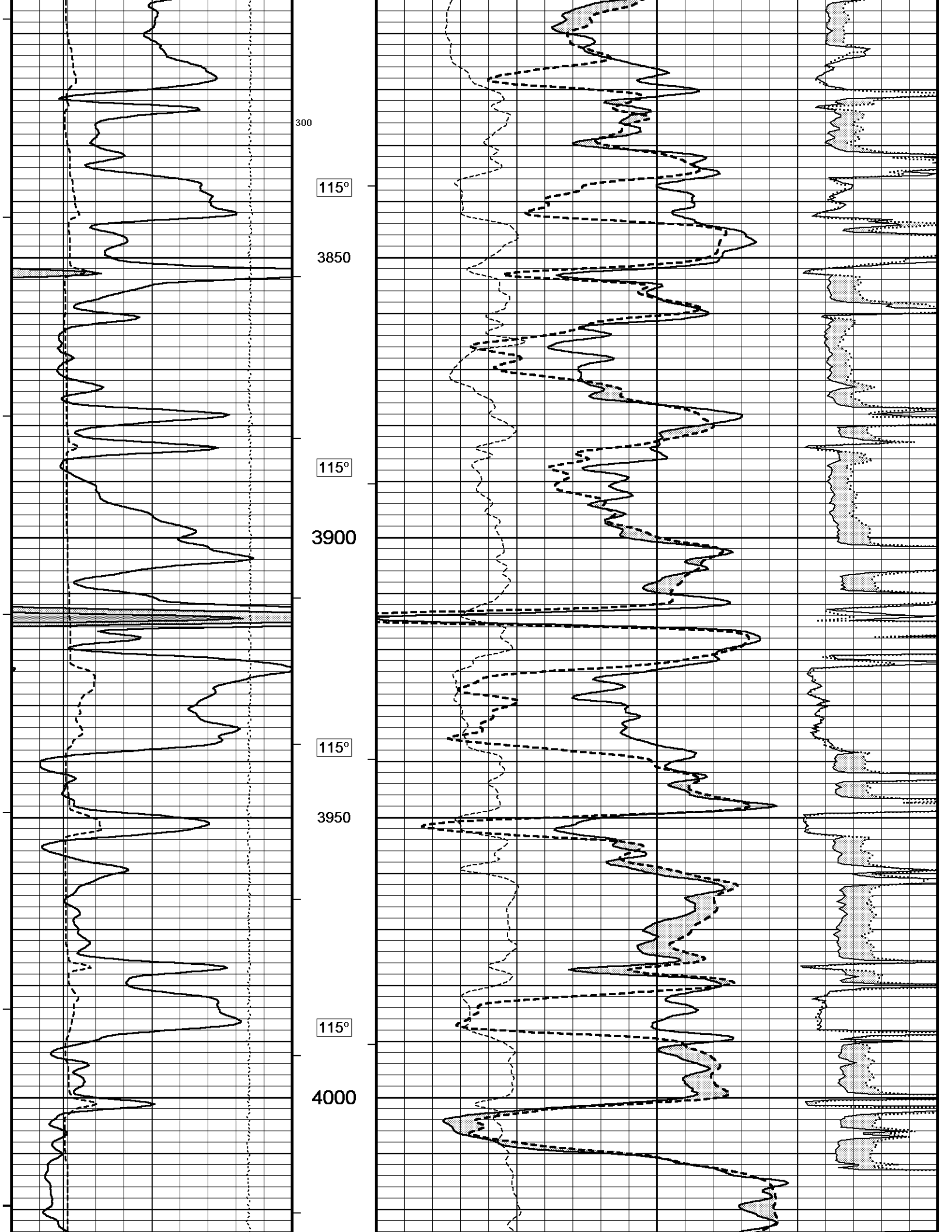
↑	5 INCH MAIN	↑
---	-------------	---

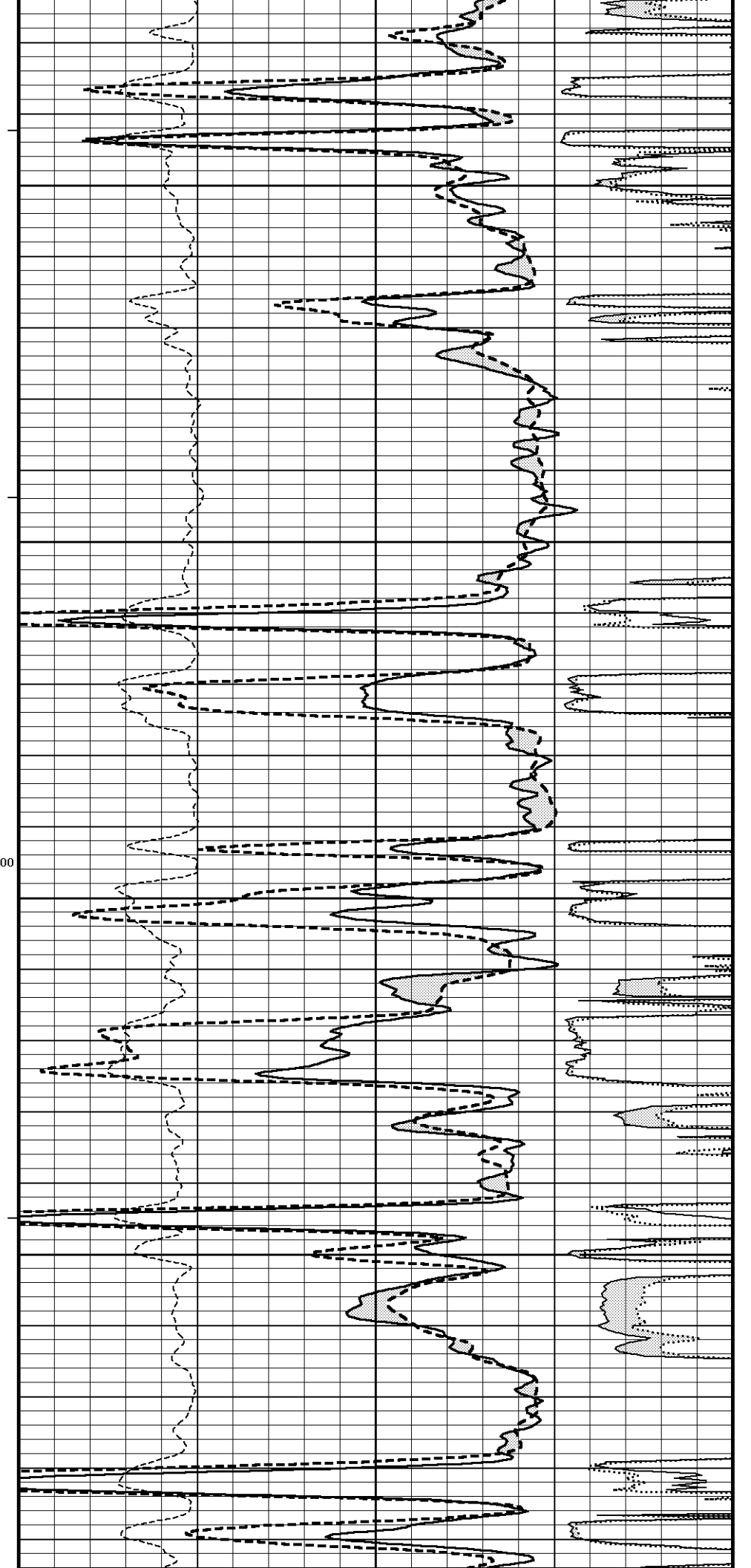
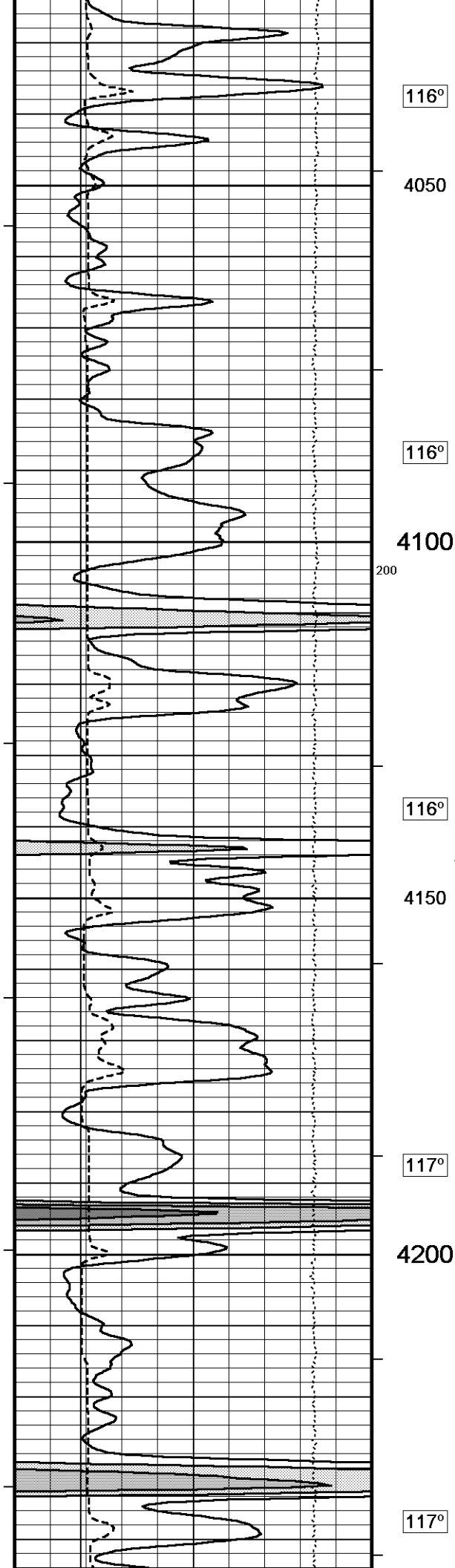
↓	5 INCH MAIN	↓
---	-------------	---

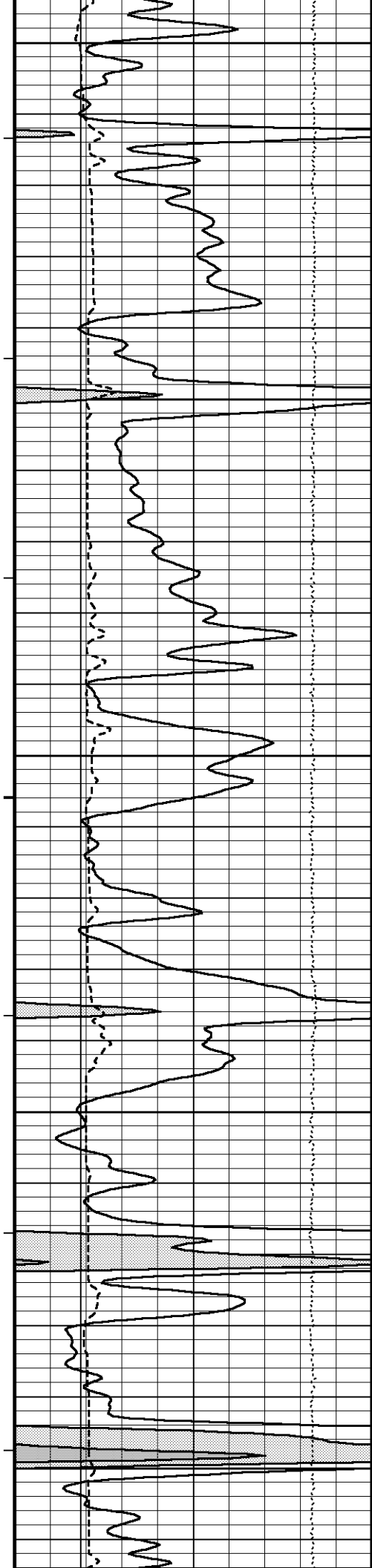
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 08-OCT-2013 18:10
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1-14\Grand Mesa Weber #1-14 Main2.dta	Recorded on 08-OCT-2013 16:06
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583	



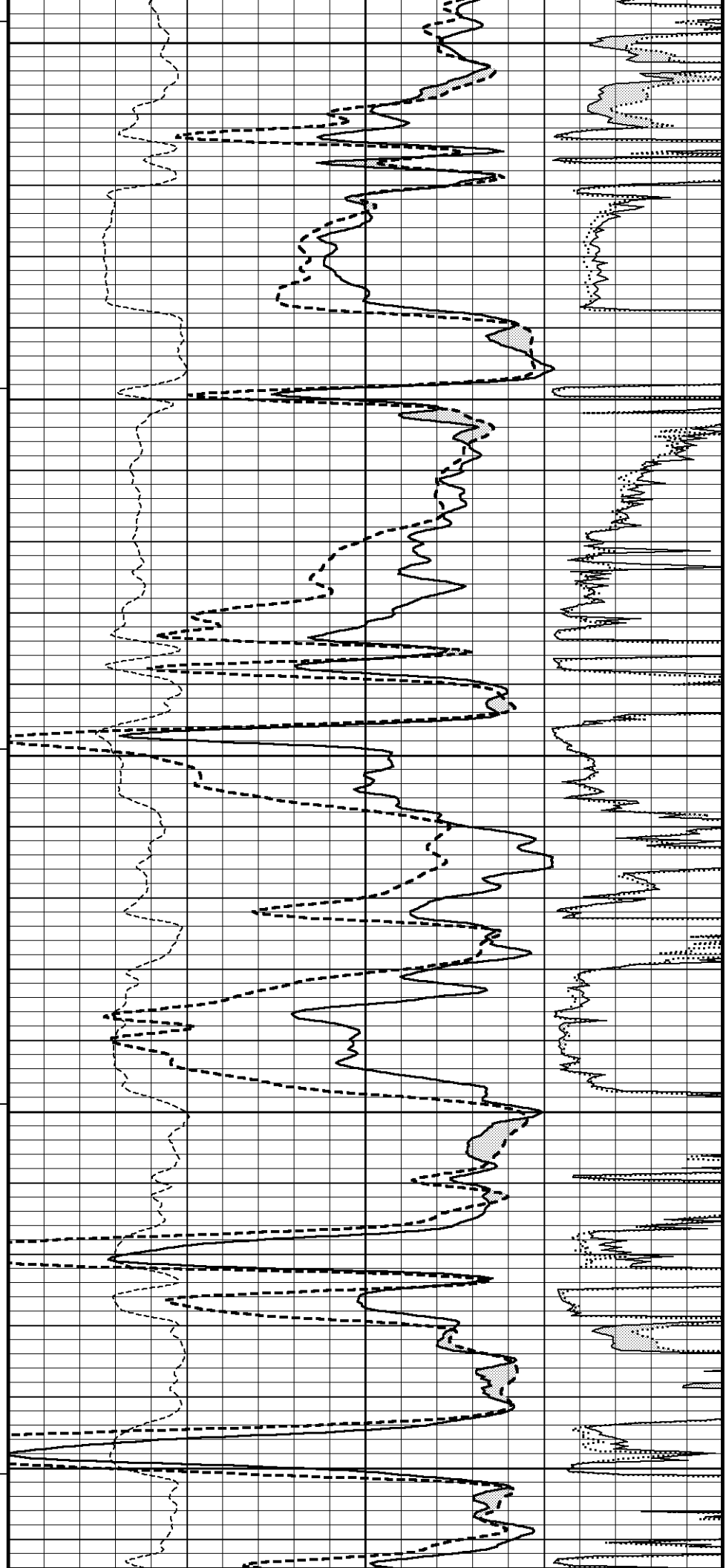


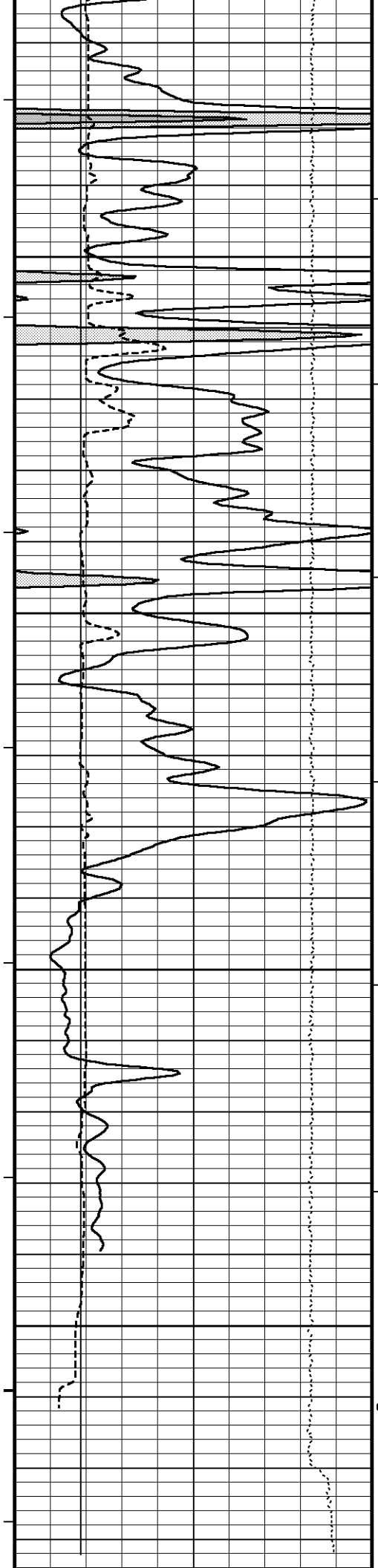






4250
117°
4300
118°
4350
100
118°
4400
118°
4450





119°

4500

120°

4550

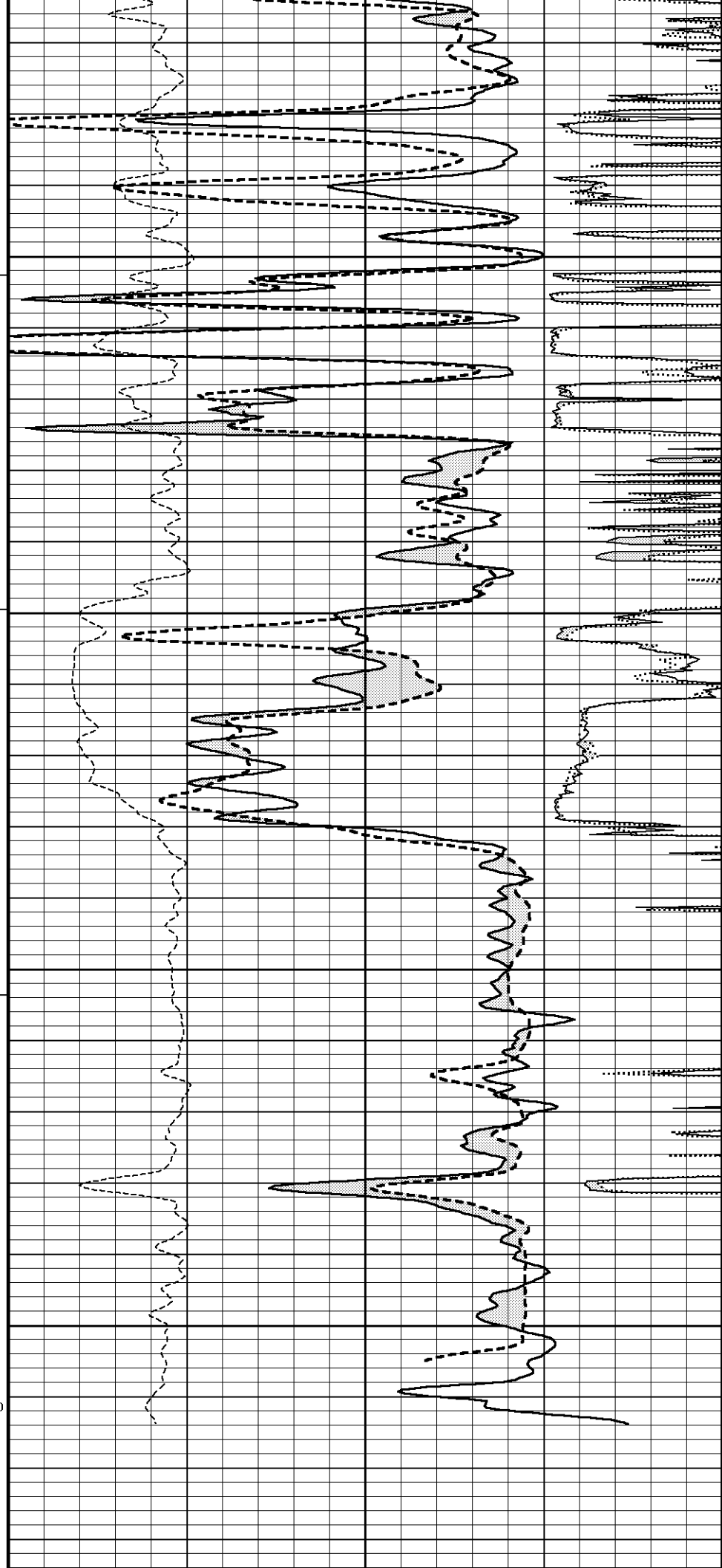
120°

4600

120°

4650

0

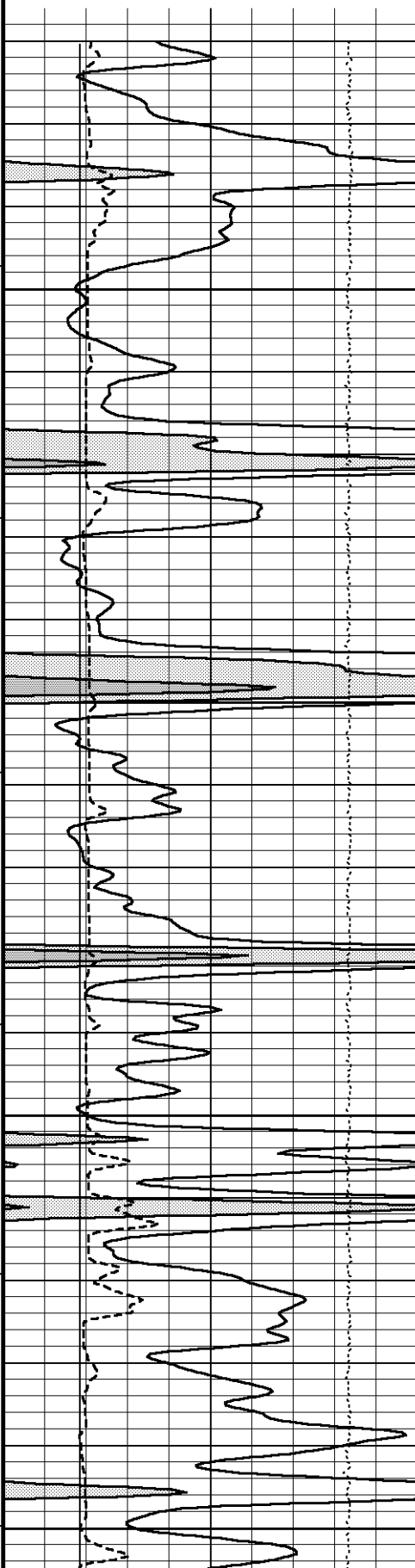


6 11 16
inches

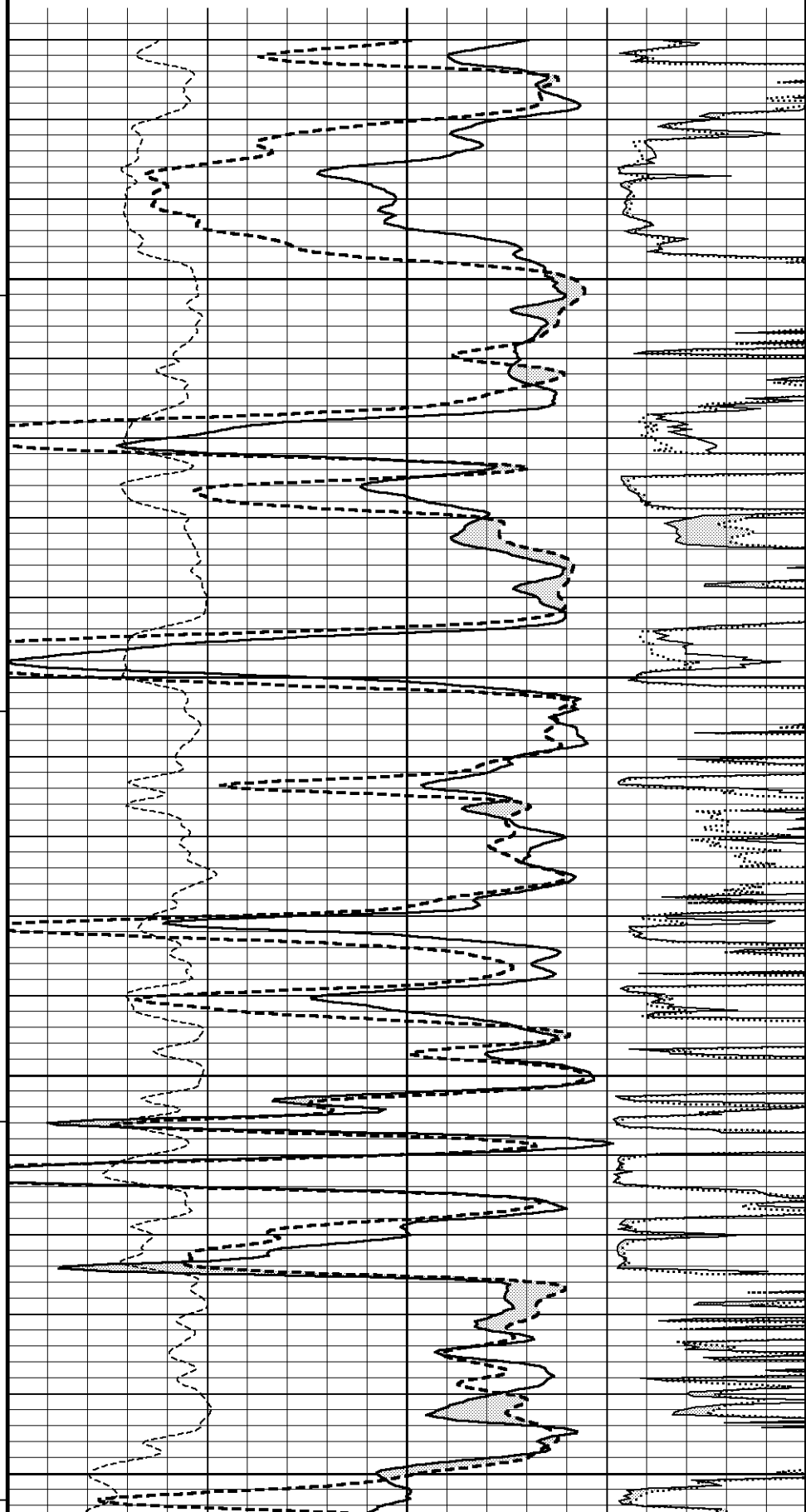
DST Uphole Tension
pounds
5000 0

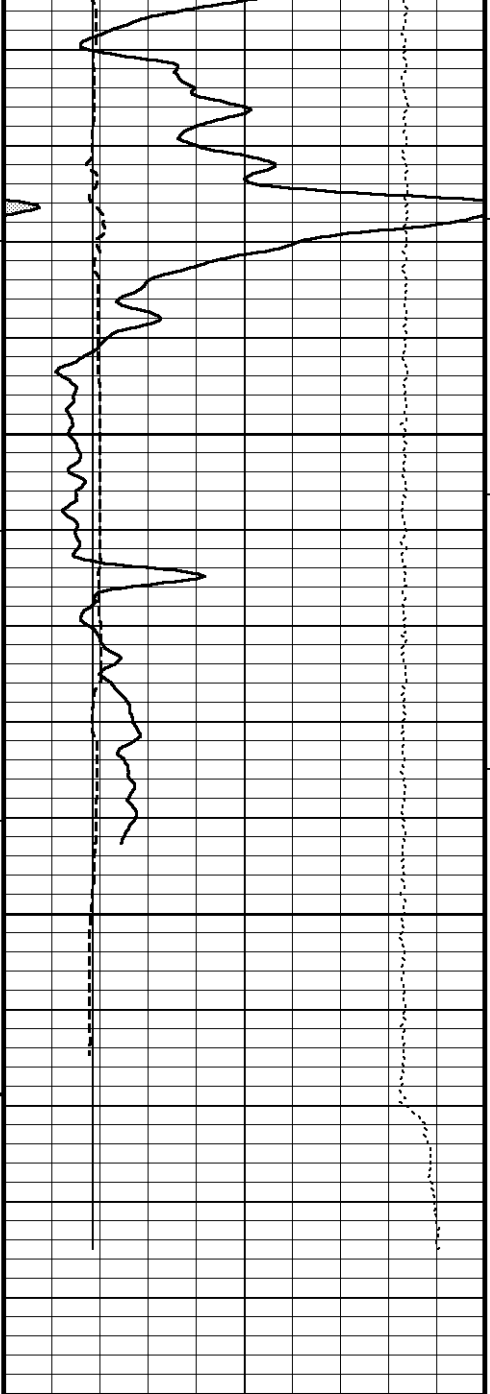
Replay
Scale
1:240

MMR MicroLog Inverse
ohm metres 0 20



4368
100
4400
117°
4450
117°
4500
118°
4550





119°

4600

118°

4650

0

4700

Depth
in
Feet

← Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

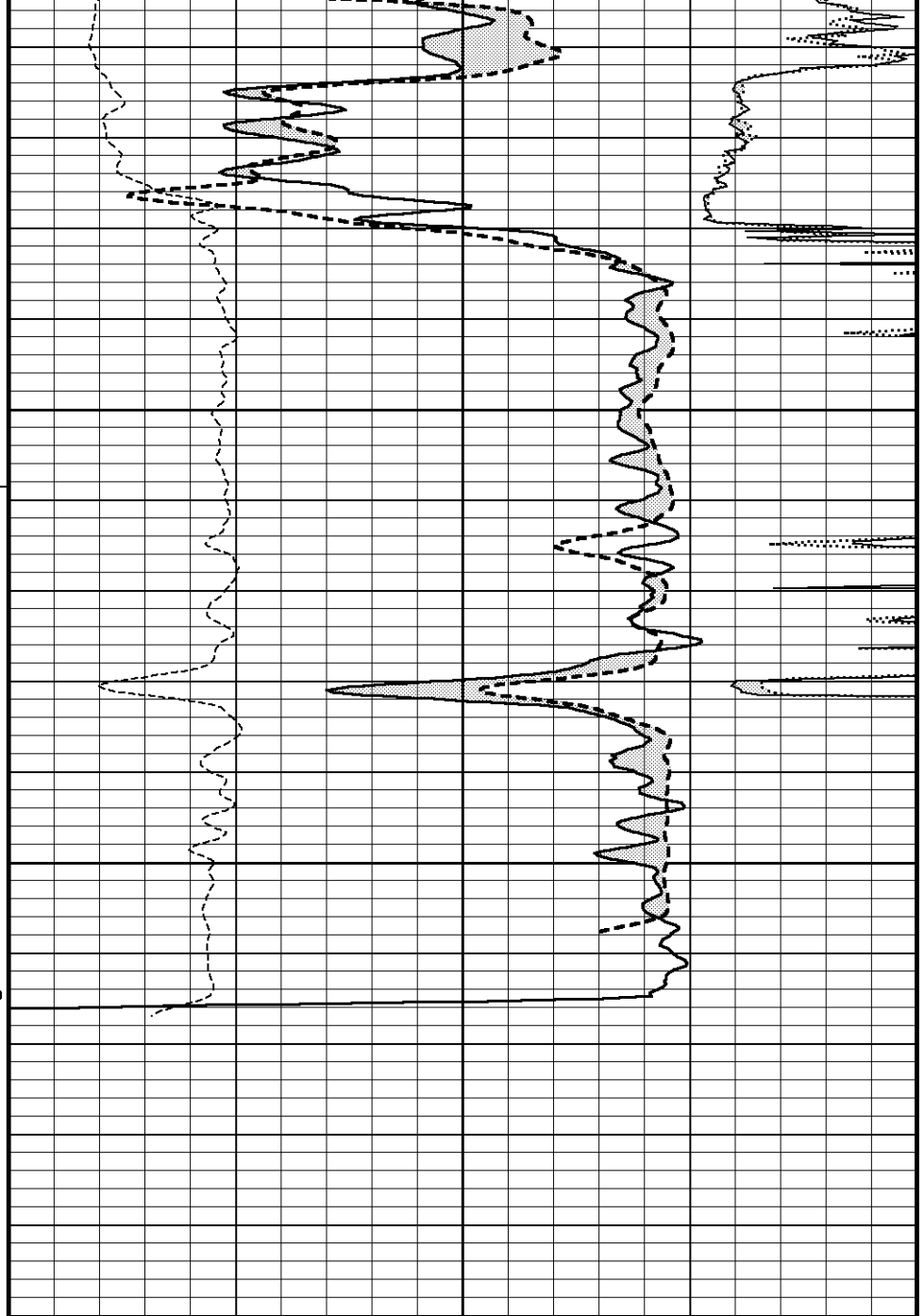
Density Caliper
inches
6 11 16

Bit Size
inches

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft
→



Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

01116

DST Uphole Tension
pounds

50000

Replay
Scale
1:240

MMR MicroLog Inverse
ohm metres
020

Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 08-OCT-2013 18:10

Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1...\Grand Mesa Weber #1-14 Repeat.dtaRecorded on 08-OCT-2013 15:18

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

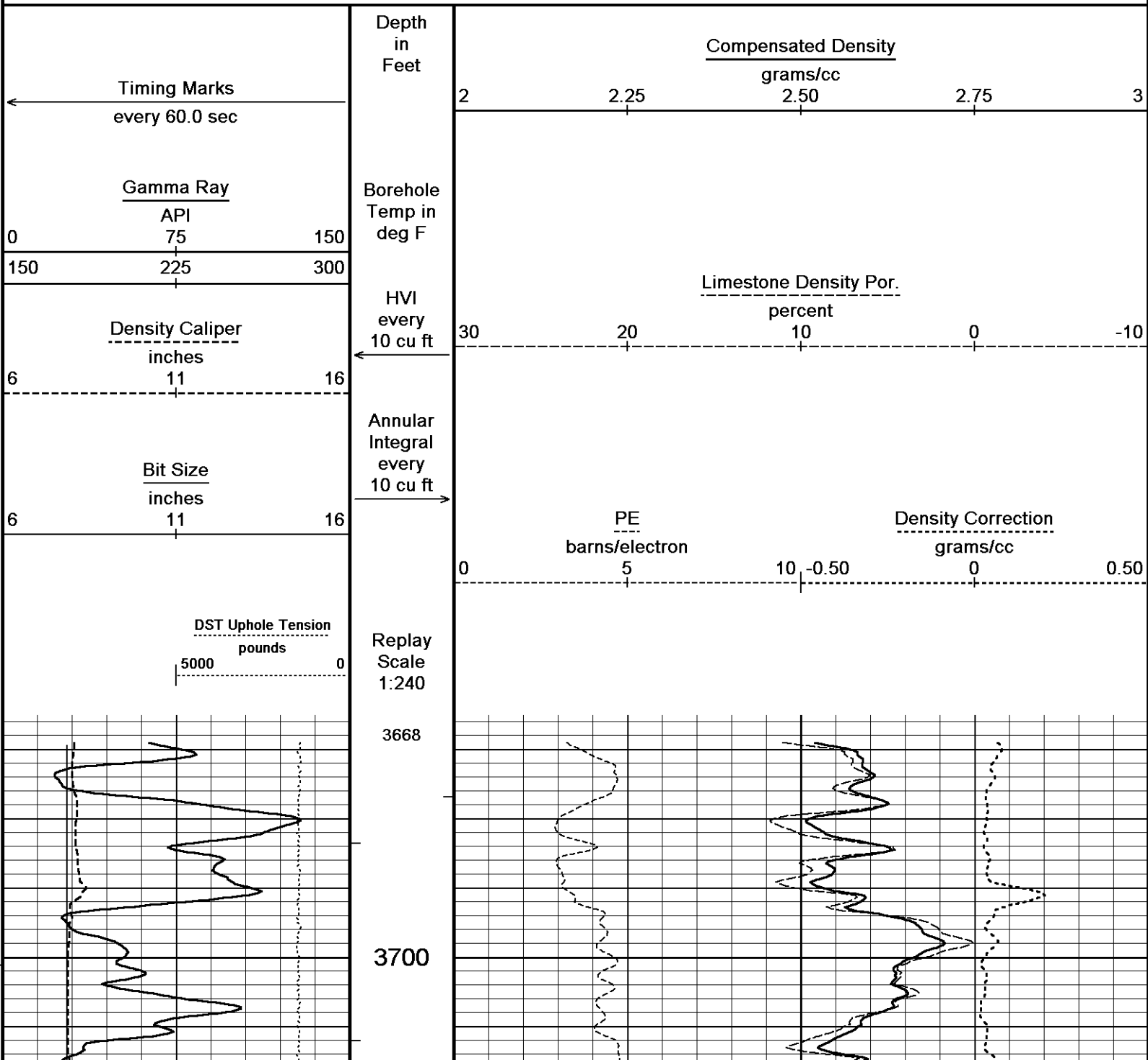
↑REPEAT SECTION↑

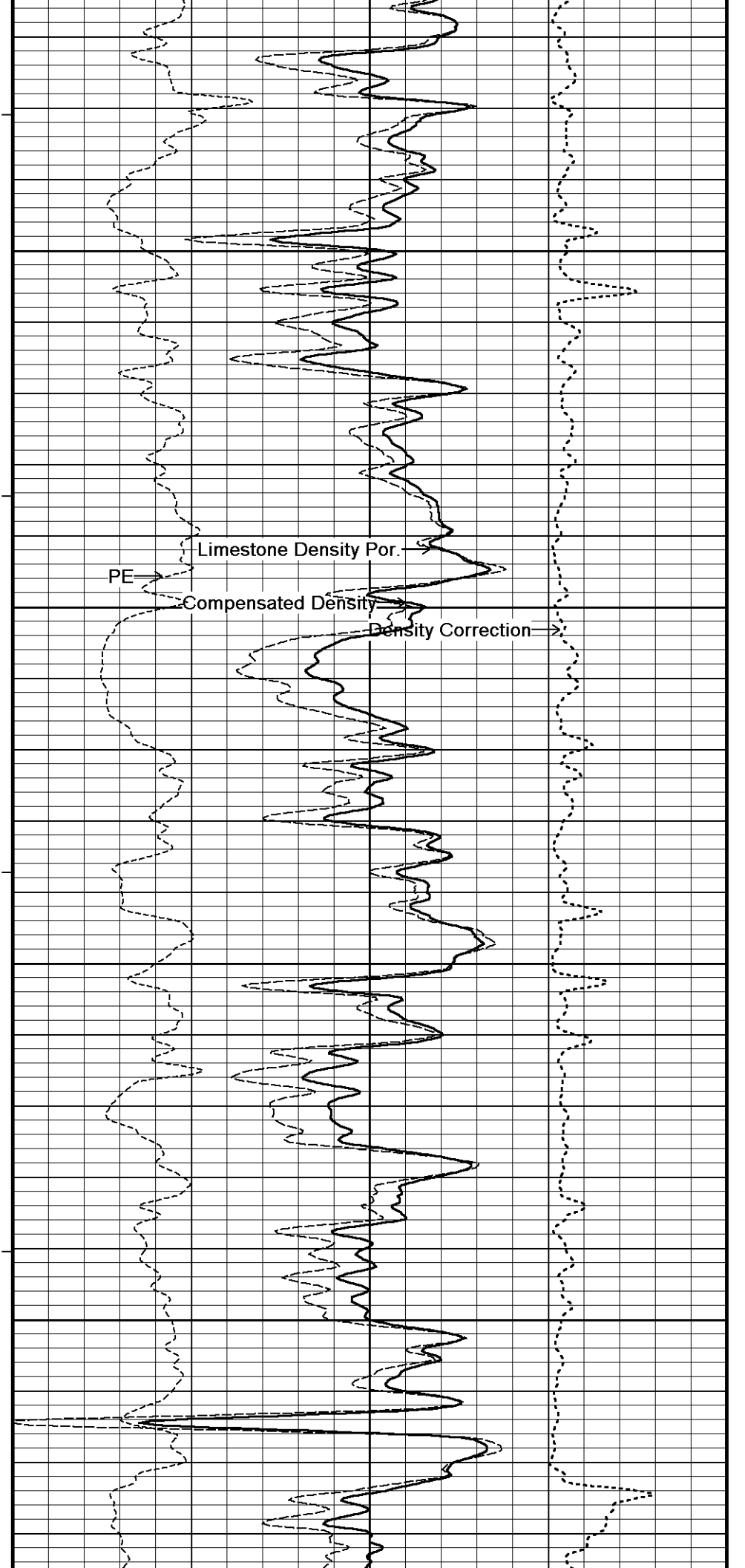
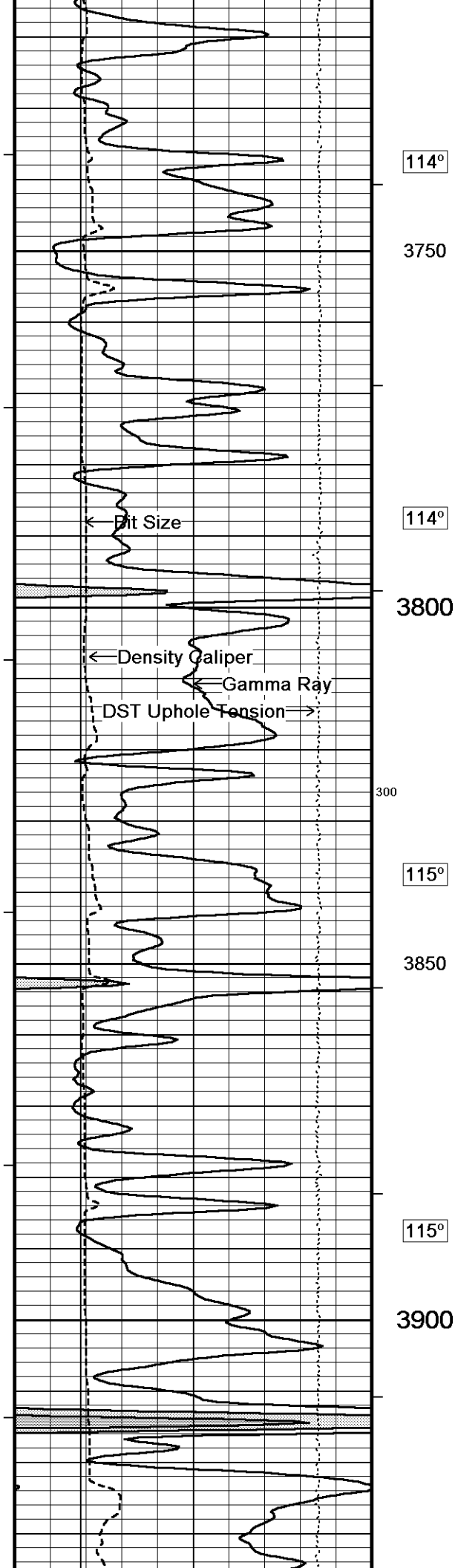
↓5 INCH MAIN↓

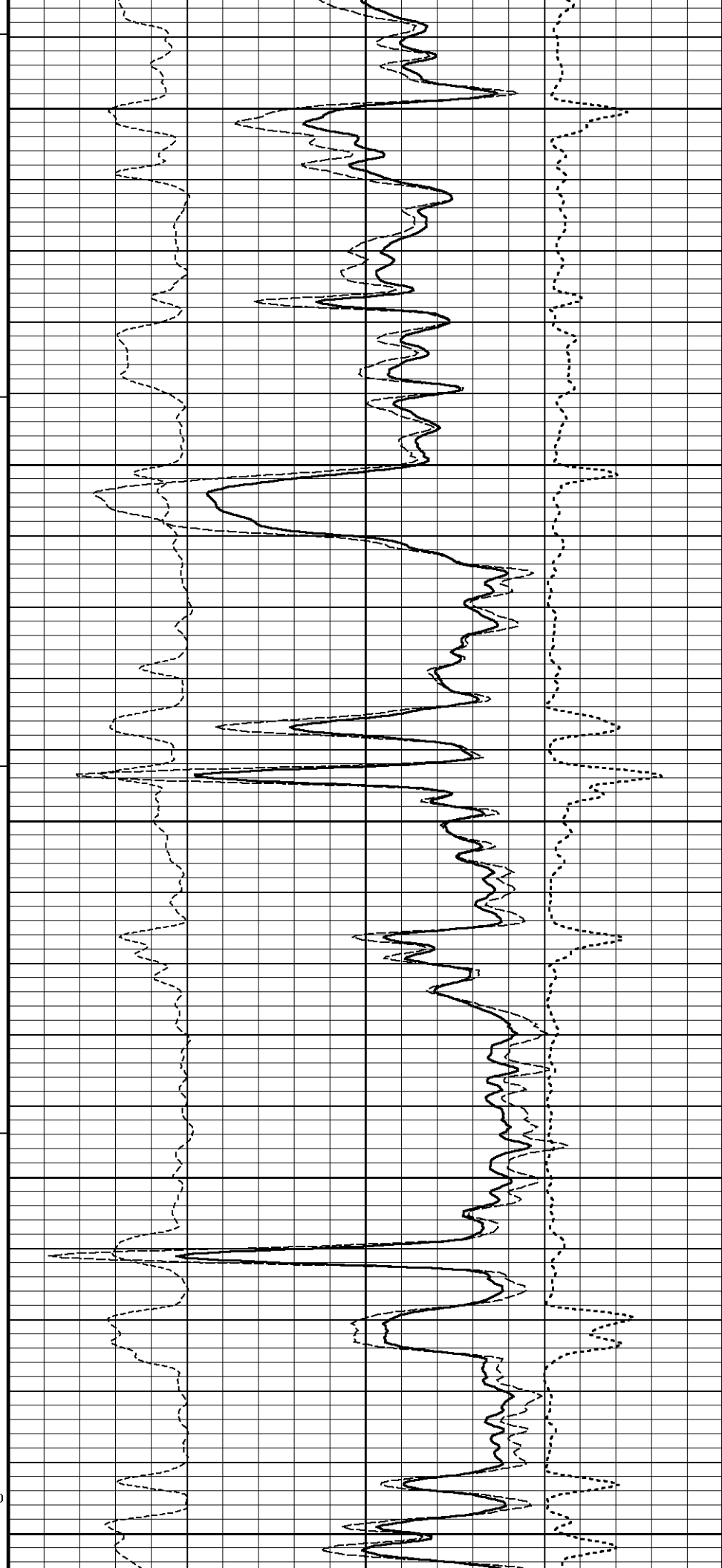
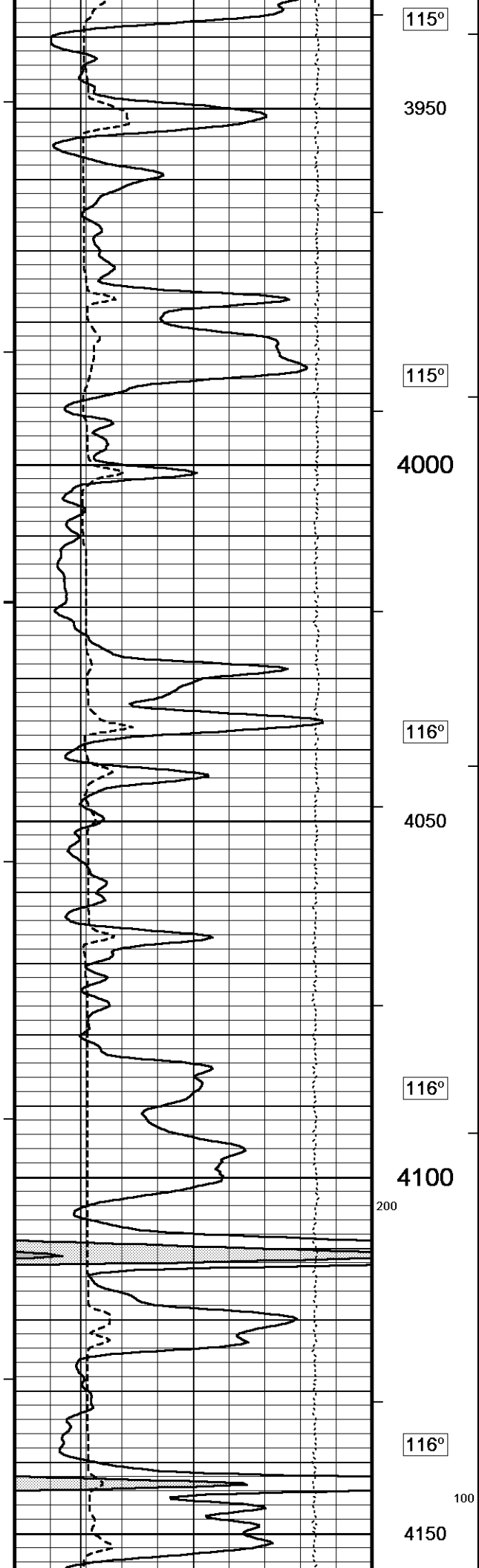
Depth Based Data - Maximum Sampling Increment 10.0cmPlotted on 08-OCT-2013 18:10

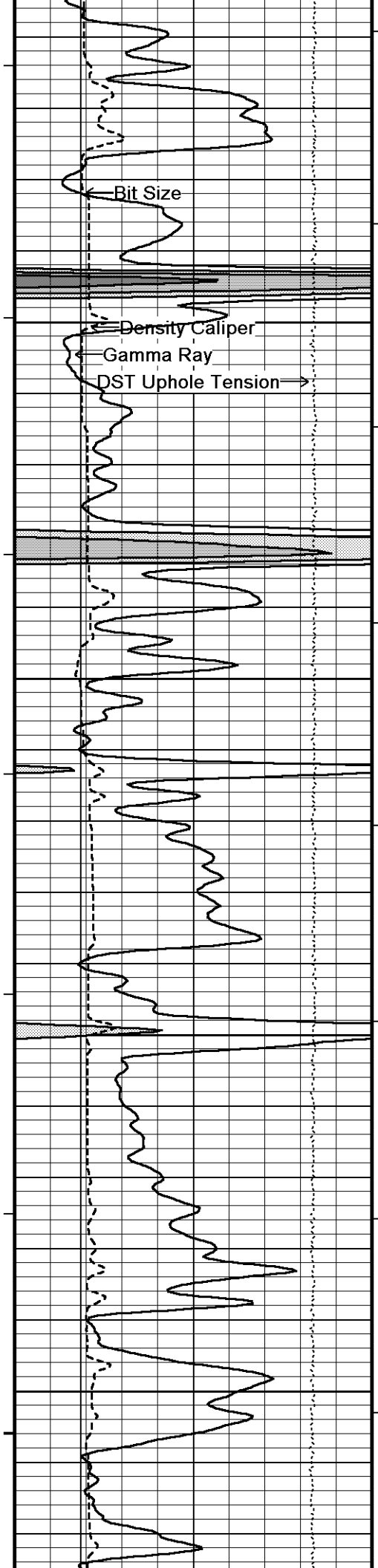
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1-14\Grand Mesa Weber #1-14 Main2.dtaRecorded on 08-OCT-2013 16:06

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583









117°

4200

117°

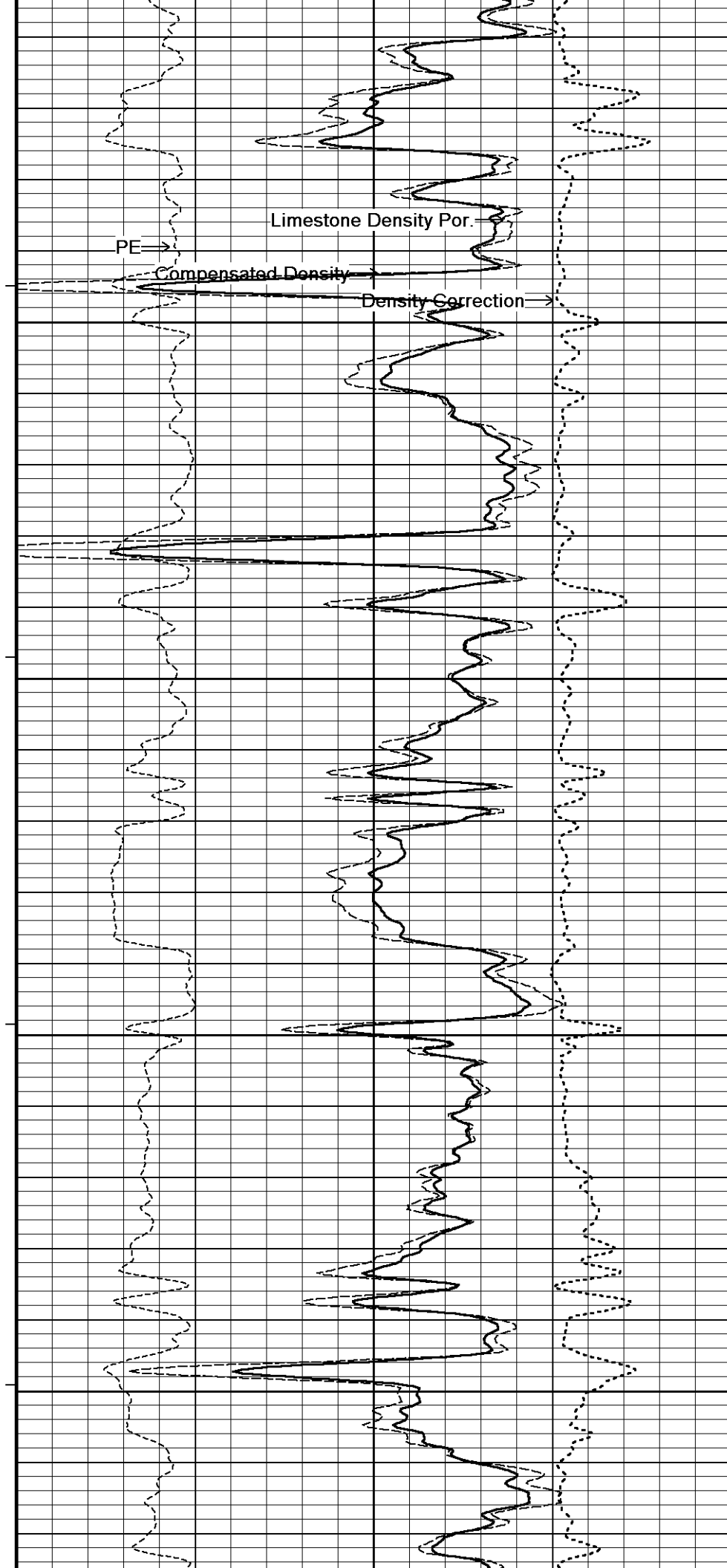
4250

117°

4300

118°

4350

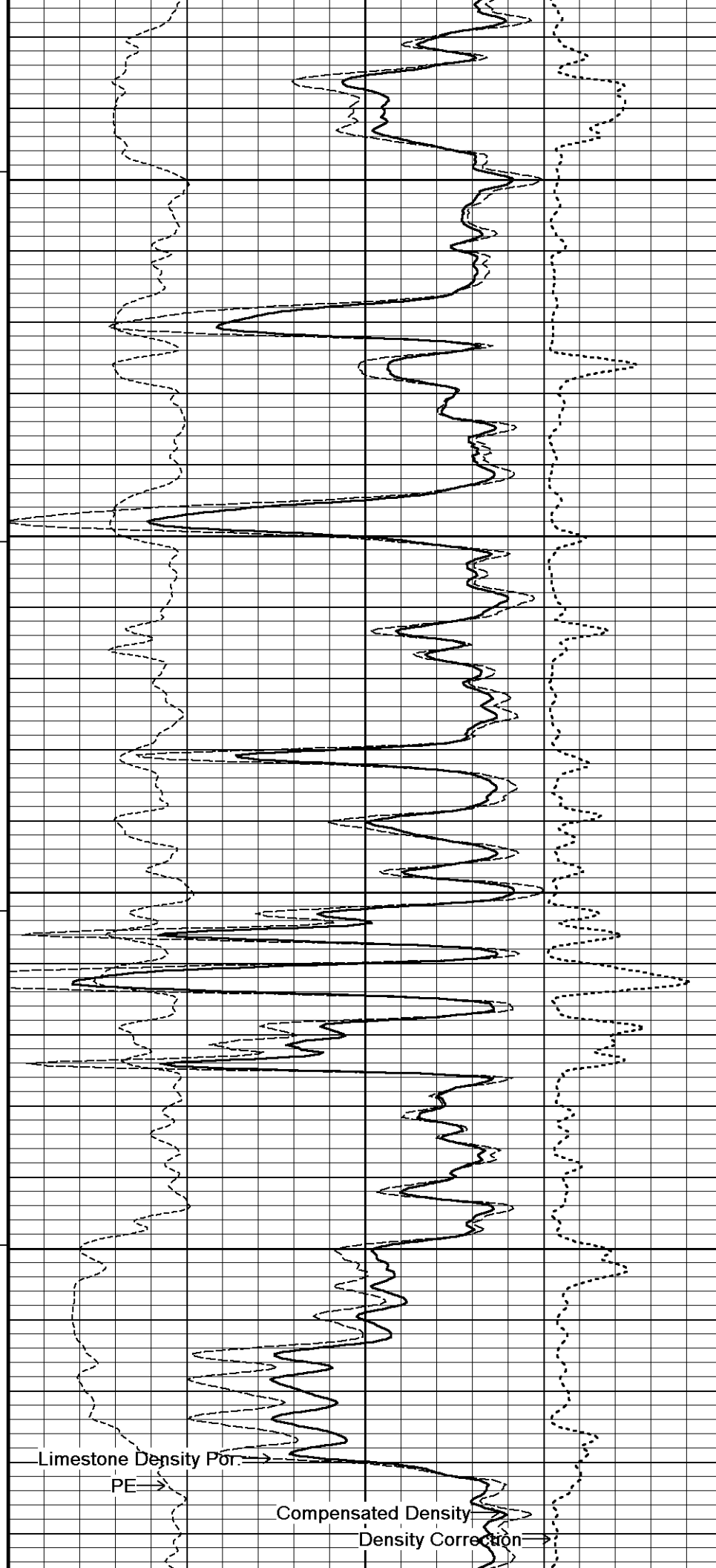
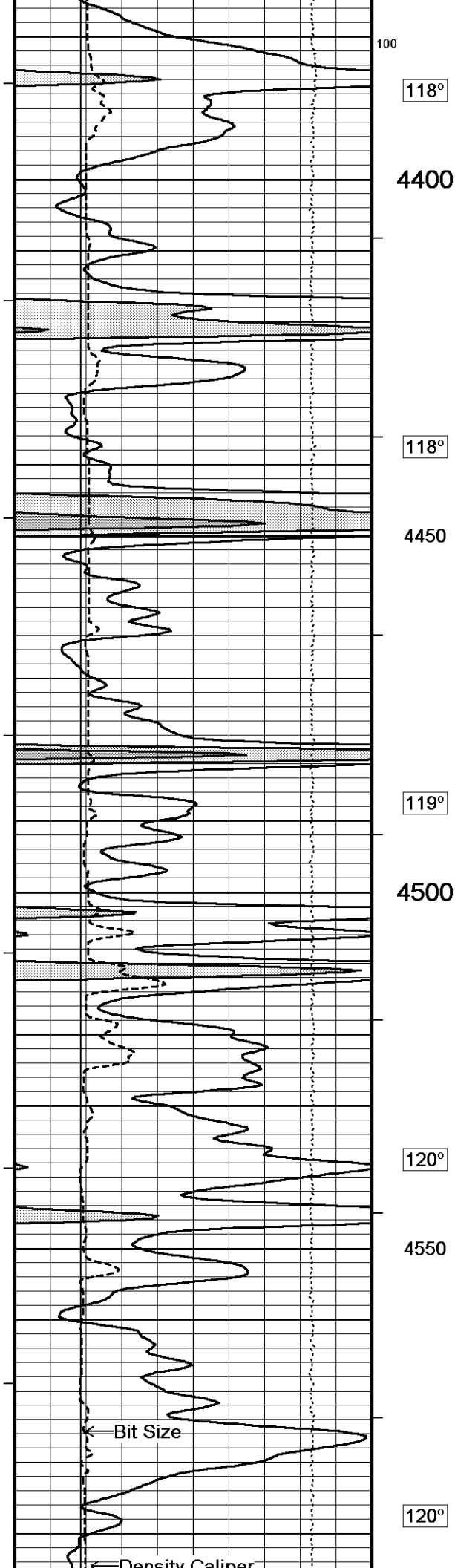


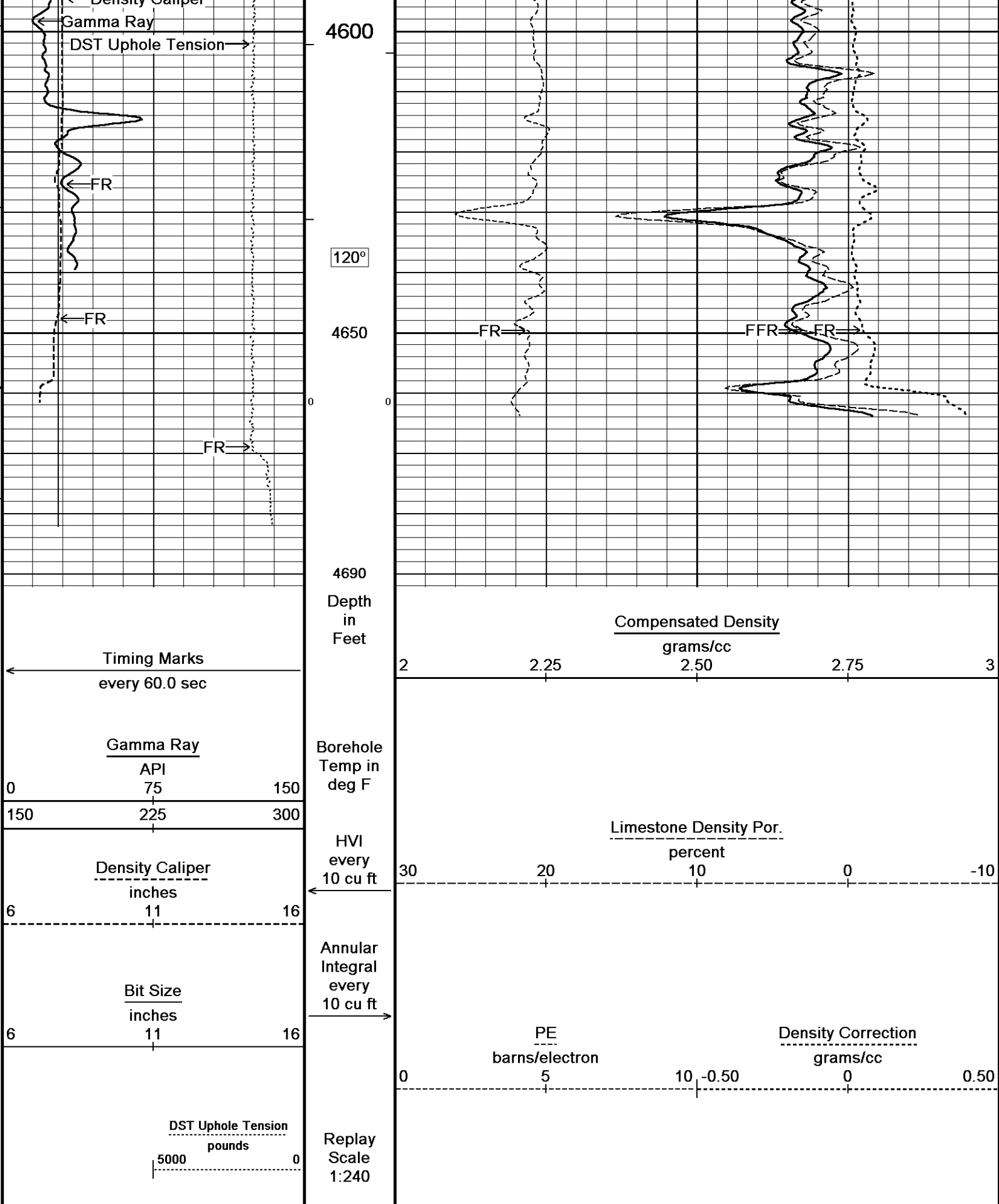
PE

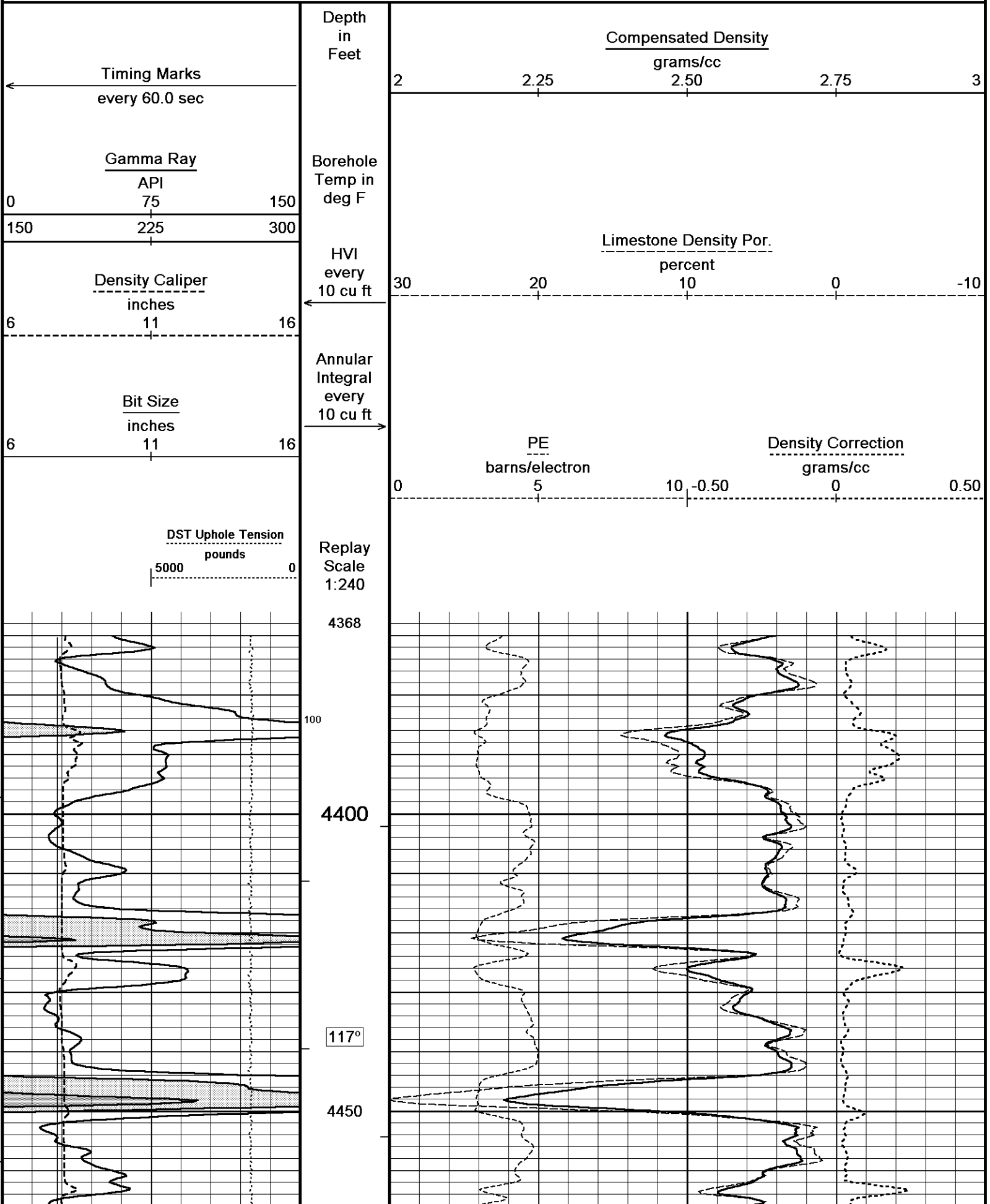
Limestone Density Por.

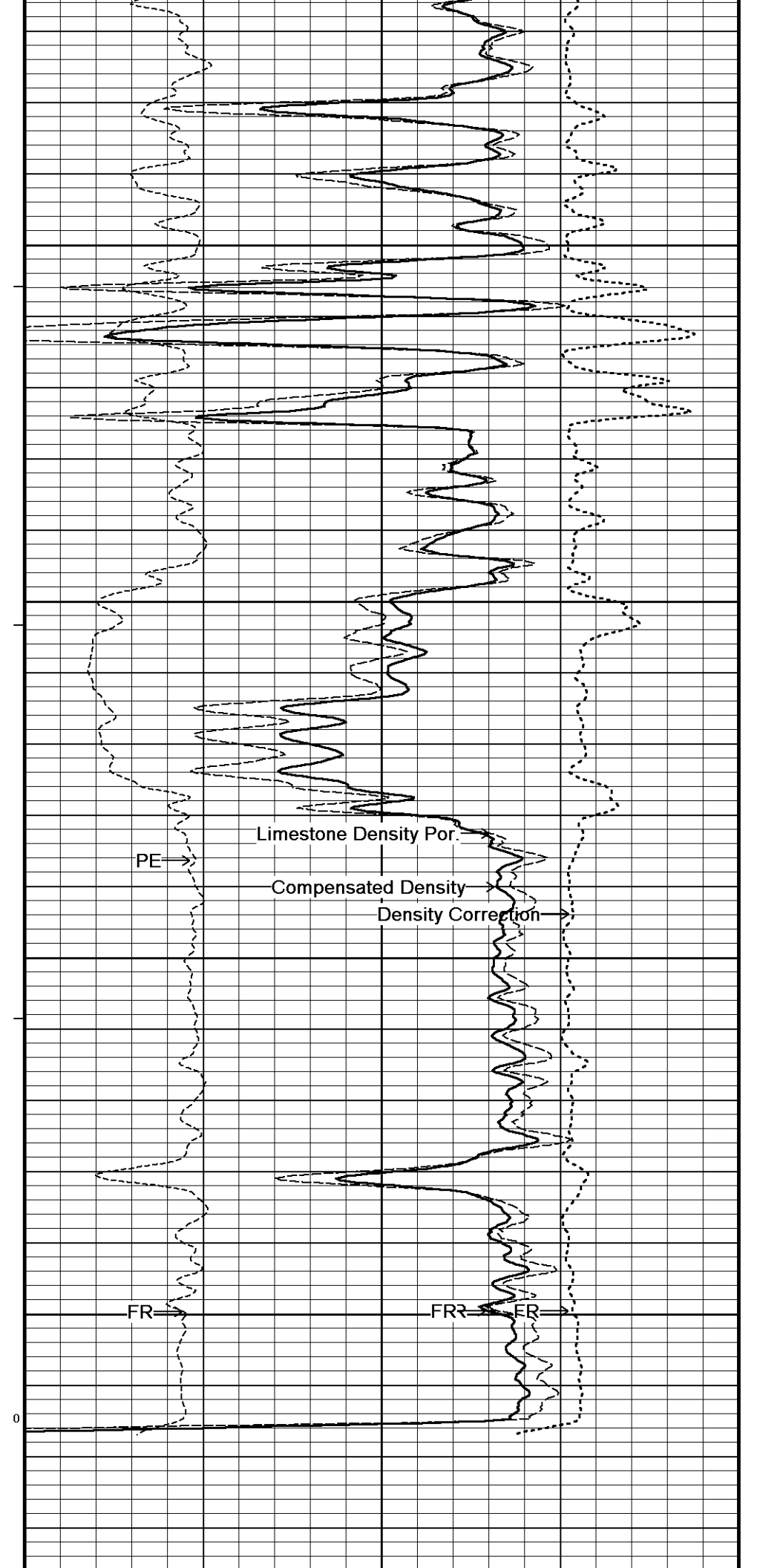
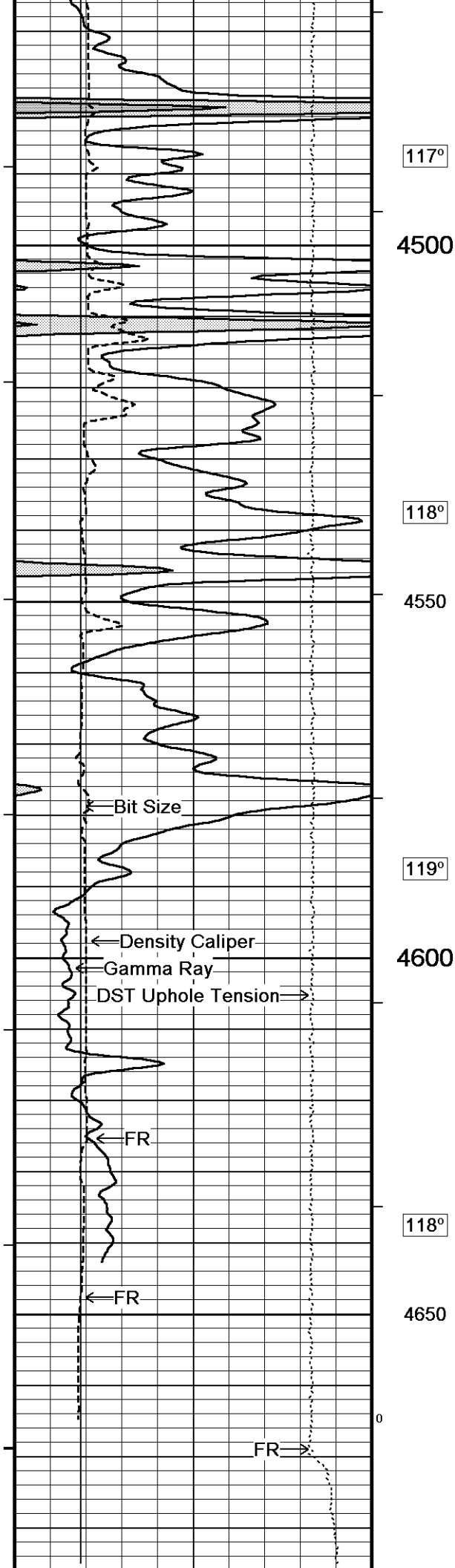
Compensated Density

Density Correction











↑ REPEAT SECTION ↑

C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1-14\Grand Mesa Weber #1-14 Main2.dta

Last Edited on 08-OCT-2013,13:19

Mud Resistivity	1.300	ohm-metres
Mud Resistivity Temperature	72.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	

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	

Crossplot Porosity

Resistivity used	Deep Induction
RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0			Field Calibration on 08-OCT-2013 14:25	
Reading No	Measured	Calibrated (lbs)		
1	14931.14	0.00		
2	16616.35	390.00		
SP Calibration MCG-D.K 442			Field Calibration on 09-AUG-2013,09:34	
	Measured	Calibrated (mV)		
Reference 1	100.9	100.0		
Reference 2	-100.5	-100.0		
High Resolution Temperature Calibration MCG-D.K 442			Field Calibration on 09-AUG-2013,09:35	
	Measured	Calibrated(Deg F)		
Lower	50.00	50.00		
Upper	75.00	75.00		
High Resolution Temperature Constants MCG-D.K 442			Last Edited on 09-AUG-2013,09:35	
Pre-filter Length	11			
Gamma Calibration MCG-D.K 442			Field Calibration on 08-OCT-2013 08:43	
	Measured	Calibrated (API)		
Background	68	46		
Calibrator (Gross)	1139	771		
Calibrator (Net)	1071	725		
Gamma Constants MCG-D.K 442			Last Edited on 08-OCT-2013,13:18	
Gamma Calibrator Number	GRC38			
Mud Density	1.12	gm/cc		
Caliper Source for Processing	Density Caliper			
Tool Position	Eccentred			
Concentration of KCl		kppm		
K Mud Type	Chloride			
K Mud Concentration	0.00	%		
Micro Laterolog Calibration MMR-A 11			Base Calibration on 31-DEC-1999 00:00 Field Check on 31-DEC-1999 00:00	
Base Calibration				
	Measured	Calibrated (ohm-m)		
	Ref 1 Ref 2	Ref 1 Ref 2		
	0.0 0.0	0.0 0.0		
	Base Check (ohm-m)	Field Check (ohm-m)		
	0.0	0.0		
Micro Laterolog Constants MMR-A 11			Last Edited on	
Pad Type	6 in Solid Nylon B23059			
Micro Laterolog K Factor	0.0128			
Standoff Offset	0.0000	inches		
Mudcake Thickness Correction Constants				
Mud Cake Source	Constant Value			
Mud Cake Thickness	0.4000	inches		
Mud Cake Thickness Caliper				
Mud Cake Resistivity	0.1500	ohm-m		
Mud Cake Resistivity Temp.	68.00	Deg F		
Mud Cake Resistivity Source	Constant Value			
Temp. Source Rmc Correc.	MCG External Temperature			
Caliper Calibration MMR-A 11			Base Calibration on 01-OCT-2013 09:07 Field Calibration on 08-OCT-2013 08:27	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	14311	5.98		
2	17410	7.97		
3	20706	9.86		
4	24667	11.92		
5	0	0.00		
6	N/A	N/A		

Field Calibration		Measured Caliper (in)	Actual Caliper (in)	
		5.90	5.98	
Micro Normal and Micro Inverse Calibration MMR-A 11			Base Calibration on 01-OCT-2013 08:58 Field Check on 08-OCT-2013 08:29	
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1 Resistor 2	
Micro Normal	12.1	58.8	5.0 25.0	
Micro Inverse	15.4	76.4	5.0 25.0	
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	77.8		77.8	
Micro Inverse	59.6		59.6	
Micro Normal and Micro Inverse Constants MMR-A 11			Last Edited on 18-APR-2013,13:52	
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	0.0000 inches			
Neutron Calibration MDN-A.B 65			Base Calibration on 12-SEP-2013 15:12 Field Check on 08-OCT-2013 08:49	
Base Calibration				
		Measured	Calibrated (cps)	
	Near	Far	Near	Far
	3130	94	3714	110
Ratio	33.369		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1648	2461
Ratio	0.670			
Field Check			Calibrated (cps)	
			1640	2460
Ratio	0.673			
Neutron Constants MDN-A.B 65			Last Edited on 08-OCT-2013,08:43	
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	None			
Formation Pressure	N/A		kpsi	
Temperature Source	Constant Value			
Temperature	68.00		degrees F	
Mud Salinity	0.00		kppm	
Salinity Correction	Not Applied			
Formation Fluid Salinity Source	None			
Formation Fluid Salinity	N/A		kppm	
Barite Mud Correction	Not Applied			
FE Calibration MFE-B.J 352			Base Calibration on 12-SEP-2013 11:04 Field Check on 08-OCT-2013 08:26	
Base Calibration				
		Measured	Calibrated (ohm-m)	
Reference 1	0.0		0.0	
Reference 2	963.1		126.8	
Base Check			281.6	
Field Check			281.7	
FE Constants MFE-B.J 352			Last Edited on 08-OCT-2013 08:25	

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 45

Field Calibration on 21-AUG-2013,11:21

	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 21-AUG-2013,11:21

Pre-filter Length 11

Induction Calibration MAI-A.A 45

Base Calibration on 21-MAY-2013,16:47

Field Check on 08-OCT-2013 08:25

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 0.0 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.8	3850.3
2			31.9	3628.2
3			28.7	3048.4
4			18.4	2078.5
Deep			16.1	1910.6
Medium			42.6	4059.1
Shallow			49.8	5481.2

Array Temperature 63.7 Deg F

Induction Constants MAI-A.A 45

Last Edited on 08-OCT-2013,08:24

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants		
Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

Photo Density Calibration MPD-B 31

Base Calibration on 12-SEP-2013 14:34

Field Check on 08-OCT-2013 08:35

Density Calibration				
Base Calibration		Measured		Calibrated (sdu)
		Near	Far	Near Far
Reference 1	44533	22959	59556	30836
Reference 2	18249	1888	24941	2541
Field Check at Base				
	671.8	823.4		
Field Check				
	670.1	827.8		

PE Calibration				
Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	125	598		
Reference 1	18732	44423	0.425	0.371
Reference 2	5465	18167	0.304	0.272
Field Check at Base				
	125.0	597.9		
Field Check				
	125.0	595.0		

Density Constants MPD-B 31

Last Edited on 08-OCT-2013,13:18

Density Source Id	254	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.12	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	

Caliper Calibration MPD-B 31

Base Calibration on 12-SEP-2013 14:44

Field Calibration on 08-OCT-2013 08:37

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	17985	3.99
2	27104	5.98
3	35456	7.97
4	43696	9.86

5
652880
N/A11.92
N/A

Field Calibration

Measured Caliper (in)
5.87Actual Caliper (in)
5.98

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\Grand Mesa Weber #1-14\Grand Mesa Weber #1-14 Main2.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

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

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

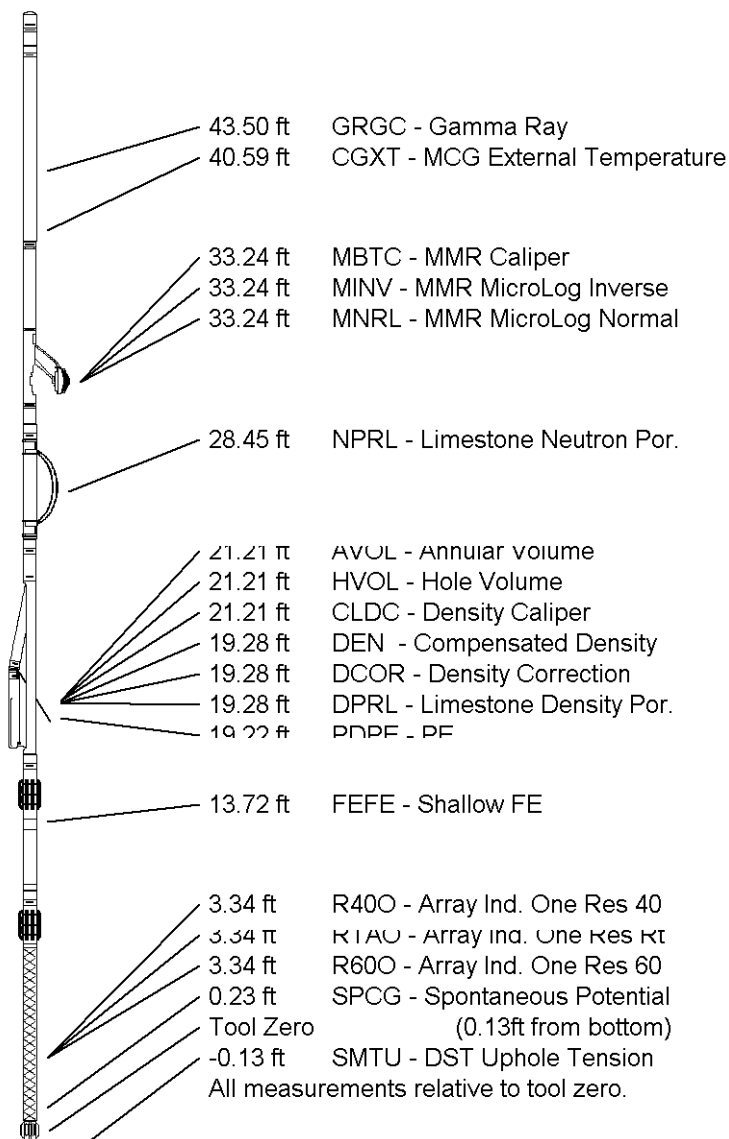
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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

Compact Focussed 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: 50.36 ft Weight: 399.0 lb



COMPANY

GRAND MESA OPERATING COMPANY

WELL

WEBER #1-14

FIELD

WILDCAT

PROVINCE/COUNTY

GOVE

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing	2892.00	feet
Elevation Drill Floor	2890.00	feet
Elevation Ground Level	2881.00	feet

First Reading	4650.00	feet
Depth Driller	4680.00	feet
Depth Logger	4669.00	feet

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON

Weatherford®

