



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

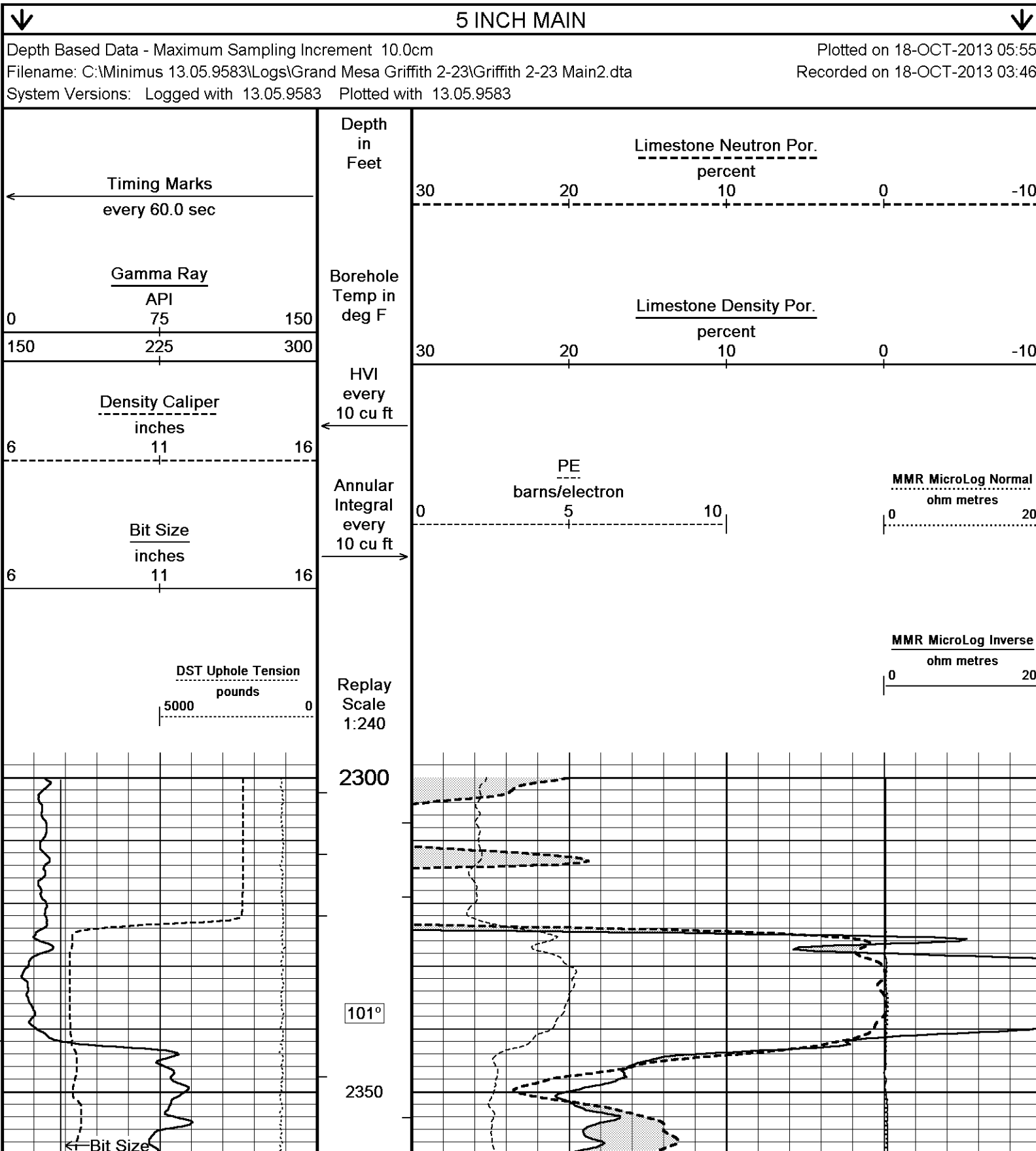
COMPANY		GRAND MESA OPERATING COMPANY	
WELL		GRIFFITH 2-23	
FIELD		WILDCAT	
PROVINCE/COUNTY		SCOTT	
COUNTRY/STATE		U.S.A. / KANSAS	
LOCATION		1429' FSL & 775' FEL SE SW NE SE	
SEC	TWP	RGE	Other Services
23	16S	33W	MAI/MFE
API Number		15-171-20988	MML
Permit Number			
Permanent Datum GL, Elevation 2968 feet			Elevations:
Log Measured From KB			KB 2978.00
Drilling Measured From KB @ 9 FEET			DF 2977.00
			GL 2968.00
Date	18-OCT-2013		
Run Number	ONE		
Service Order	3541125		
Depth Driller	4810.00		feet
Depth Logger	4814.00		feet
First Reading	4795.00		feet
Last Reading	3800.00		feet
Casing Driller	221.00		feet
Casing Logger	220.00		feet
Bit Size	7.875		inches
Hole Fluid Type	CHEM		
Density / Viscosity	9.20 lb/USg		67.00 CP
PH / Fluid Loss	10.00		7.20 ml/30Min
Sample Source	PIT		
Rm @ Measured Temp	1.0 @ 58.0		ohm-m
Rmf @ Measured Temp	0.80 @ 58.0		ohm-m
Rmc @ Measured Temp	1.20 @ 58.0		ohm-m
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.49 @ 117.0		ohm-m
Time Since Circulation	4 HRS		
Max Recorded Temp	117.00		deg F
Equipment / Base	13057		KANSAS
Recorded By	D. COLE		
Witnessed By	K. MATSON		
IOB#	LB 13-294		

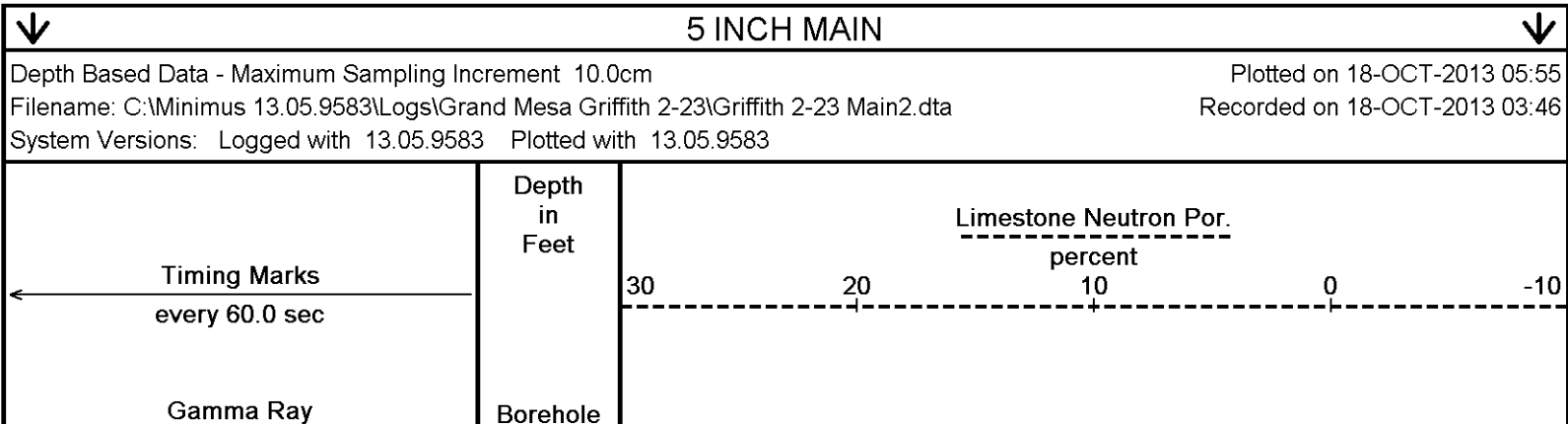
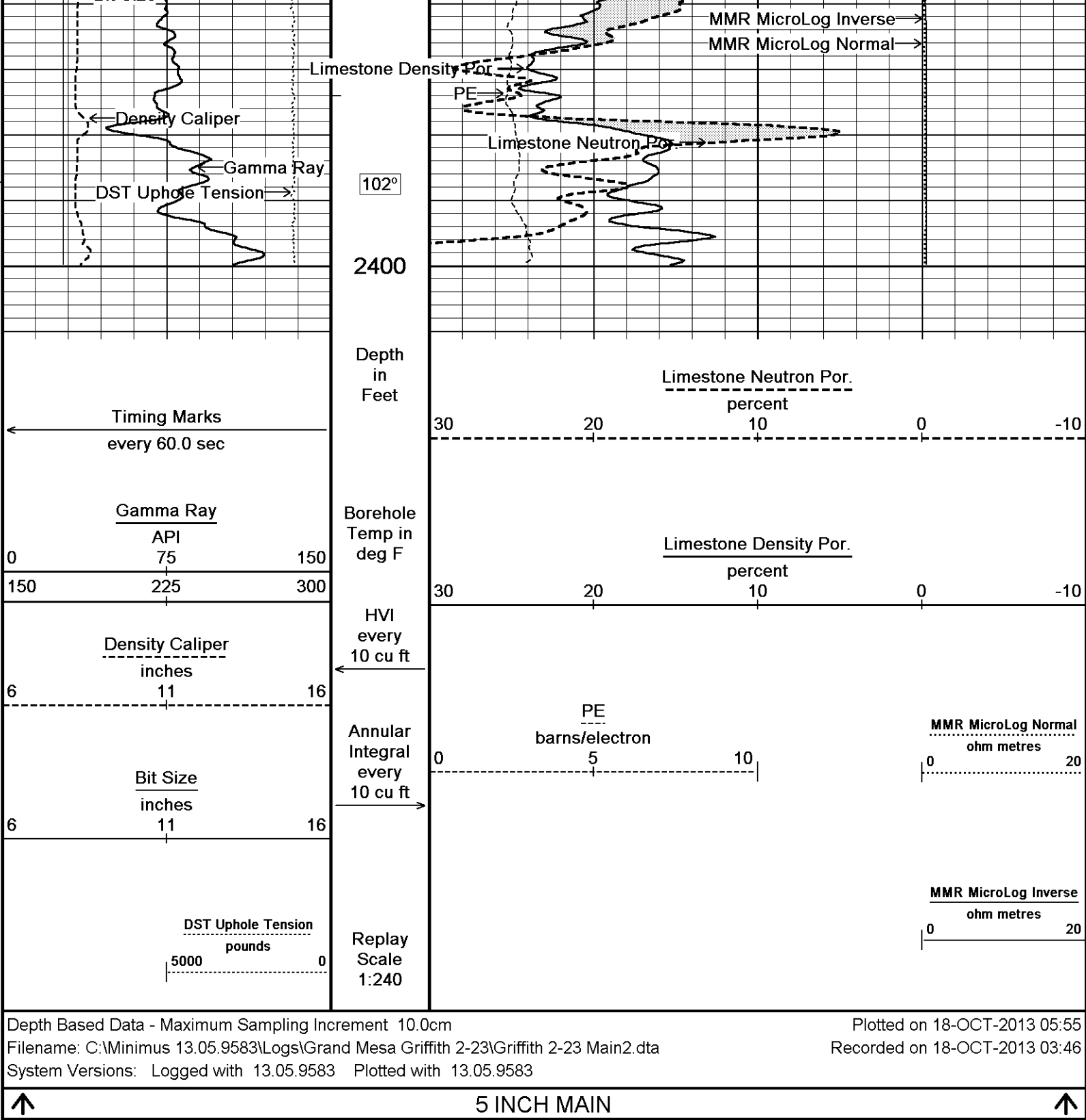
BOREHOLE RECORD			Last Edited: 18-OCT-2013 03:03	
Bit Size inches	Depth From feet		Depth To feet	
7.875	220.00		4814.00	
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	220.00	24.00

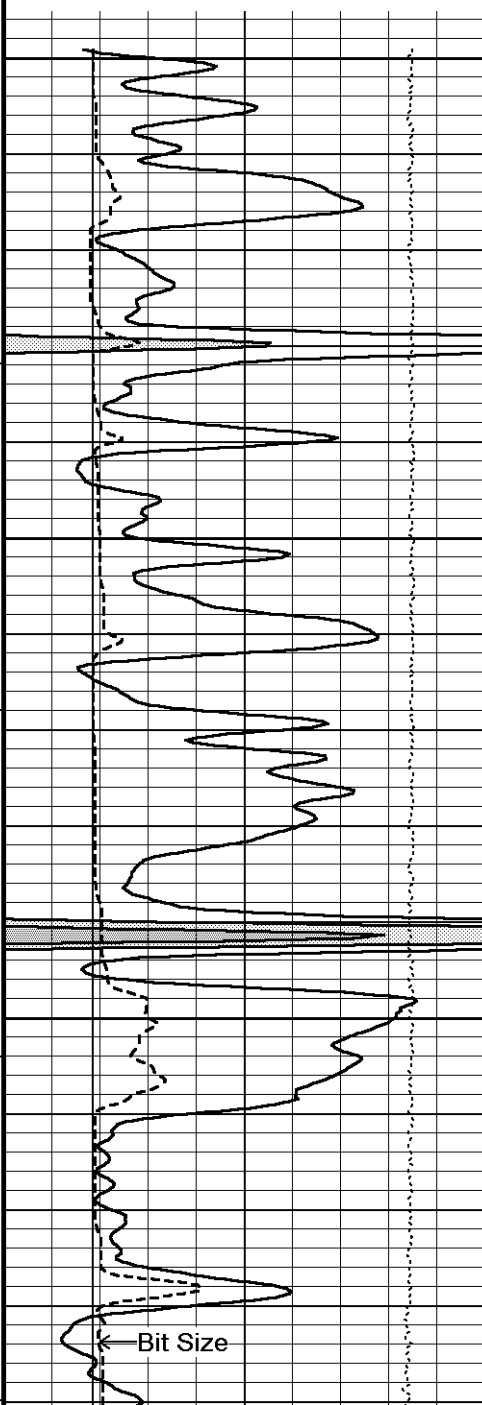
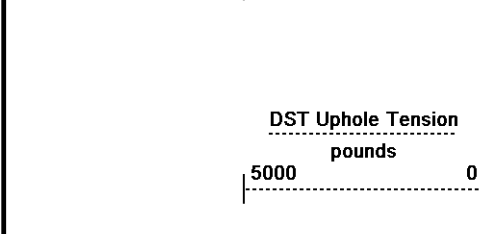
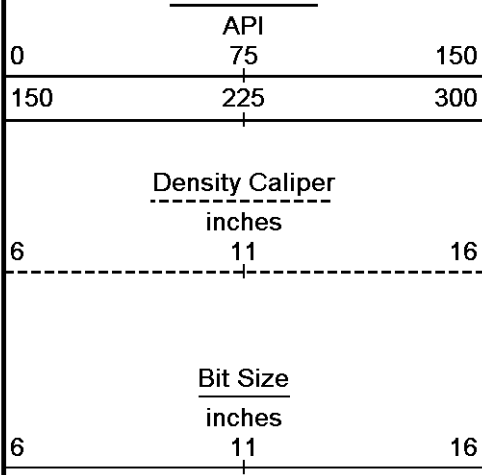
REMARKS
- SOFTWARE ISSUE: 13.05.9583
- MCG, MML, MDN, MPD, MFE AND MAI RAN IN COMBINATION
- HARDWARE: DUAL BOWSPRING USED ON MDN 0.5 INCH STANDOFF USED ON MFE AND MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL EFFECT DATA QUALITY
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMRES REQUEST
- TOTAL HOLE VOLUME FROM TD TO 3800: 375 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING TD TO 3800: 210 CU.FT.
-RIG: DUKE DRILLING RIG #10

- ENGINEER: D. COLE
- OPERATOR: J. LAPOINT AND C. RAMIREZ

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.





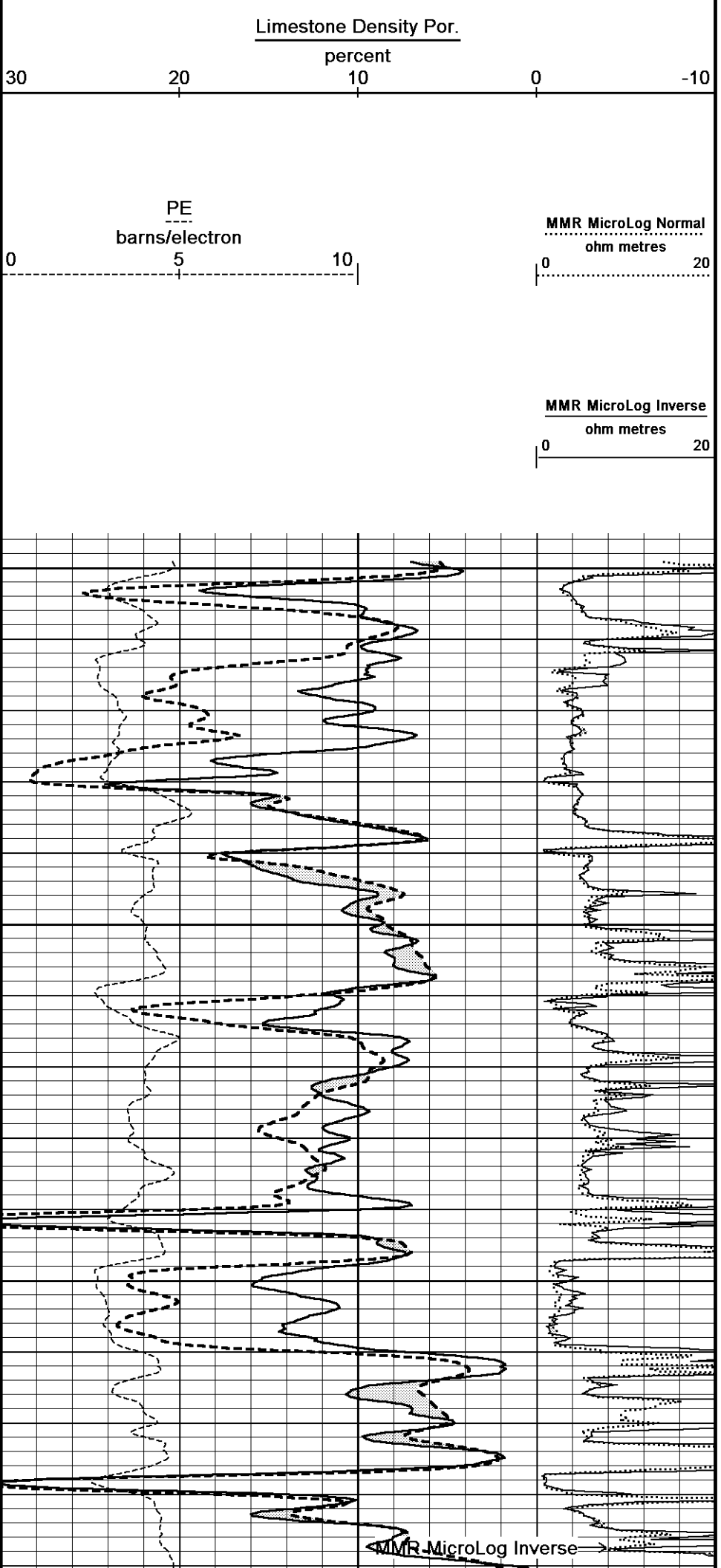


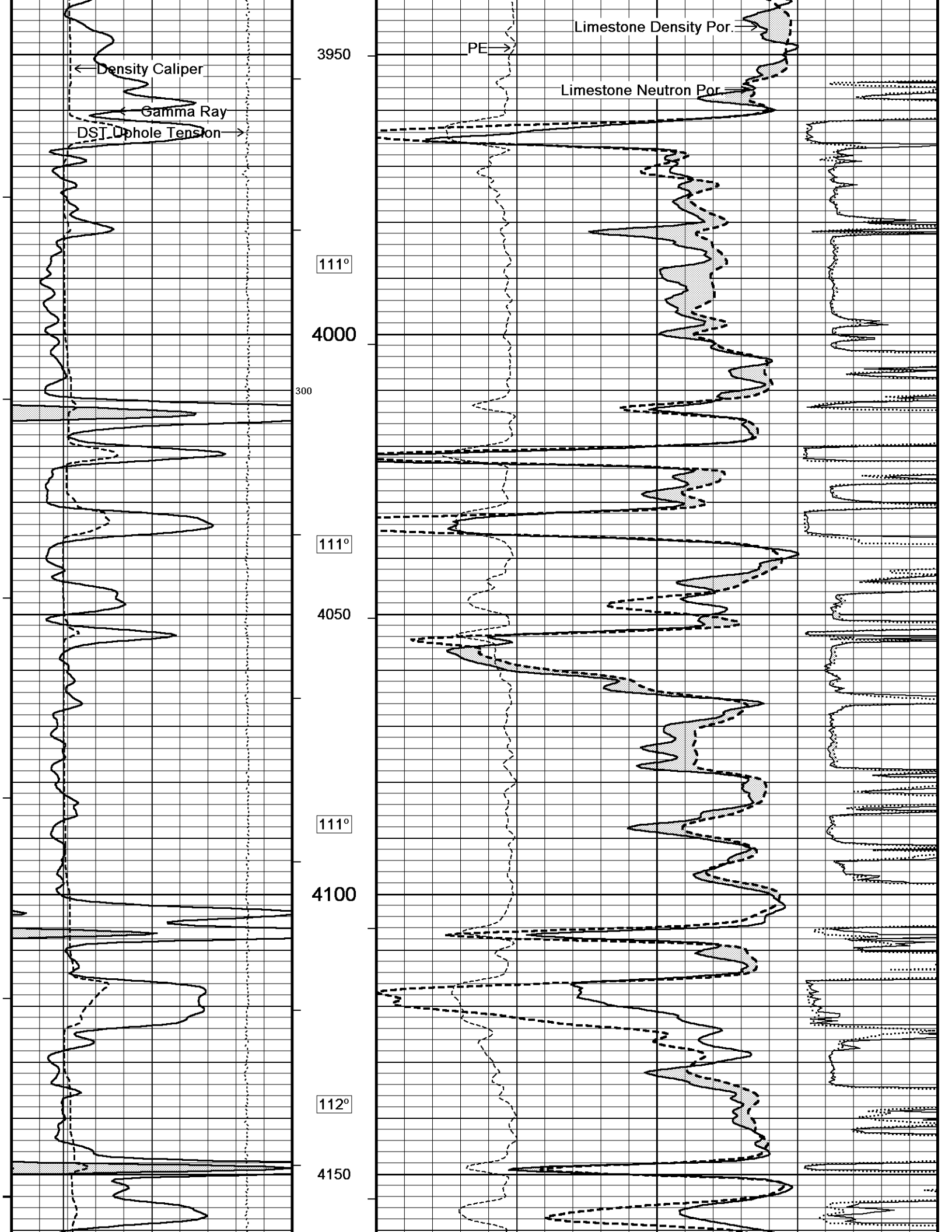
Temp in deg F

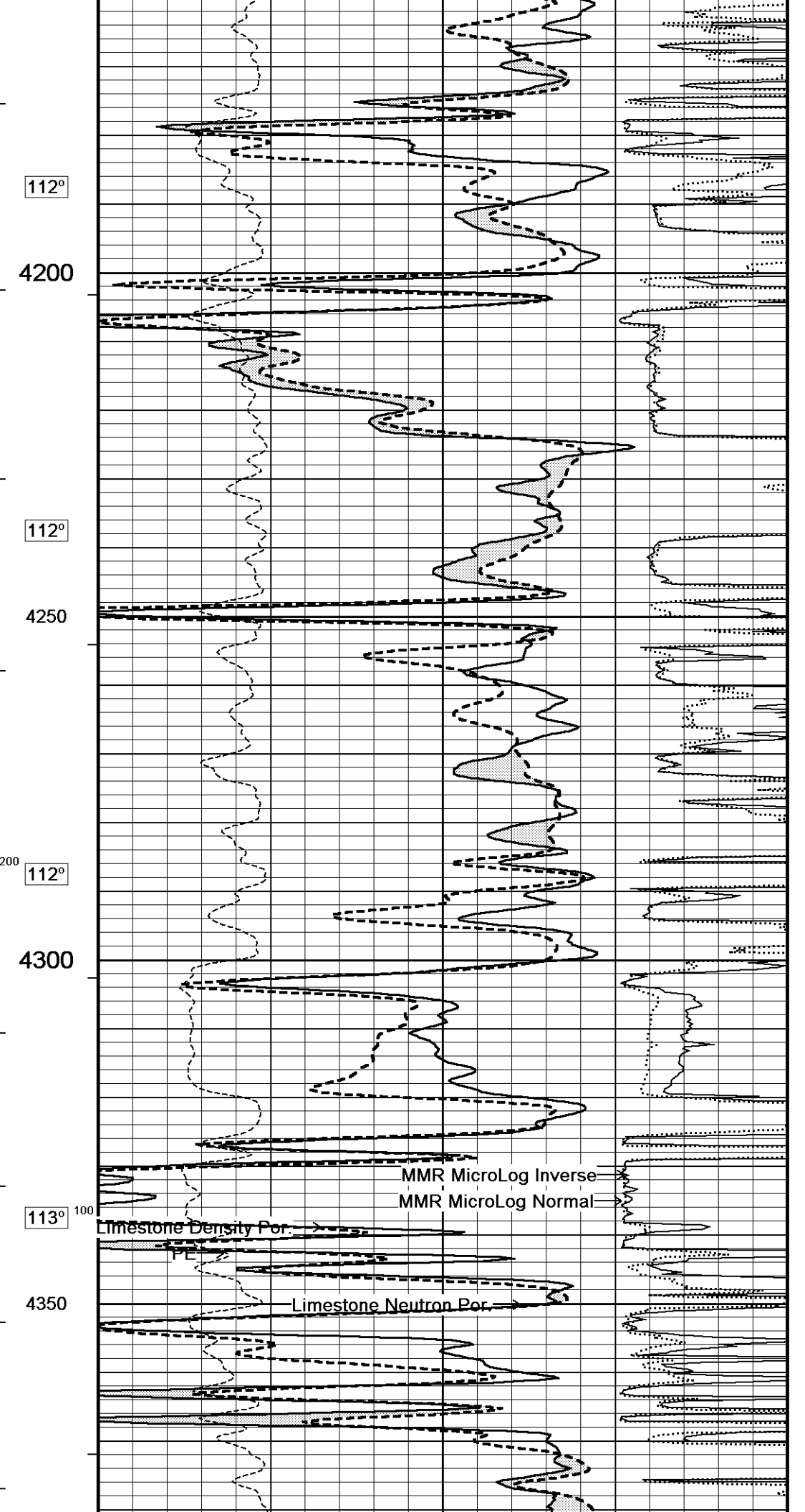
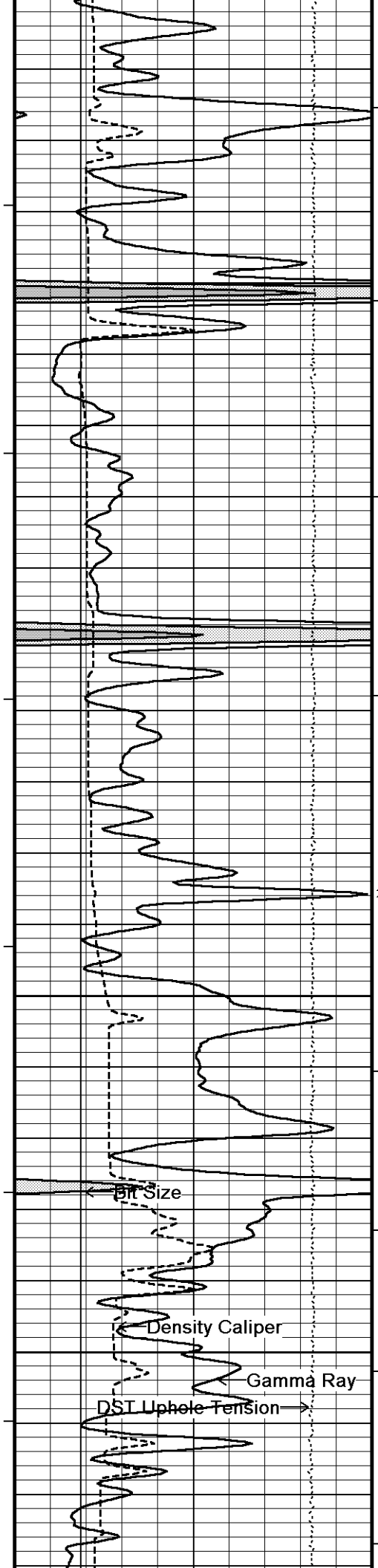
HVI every 10 cu ft

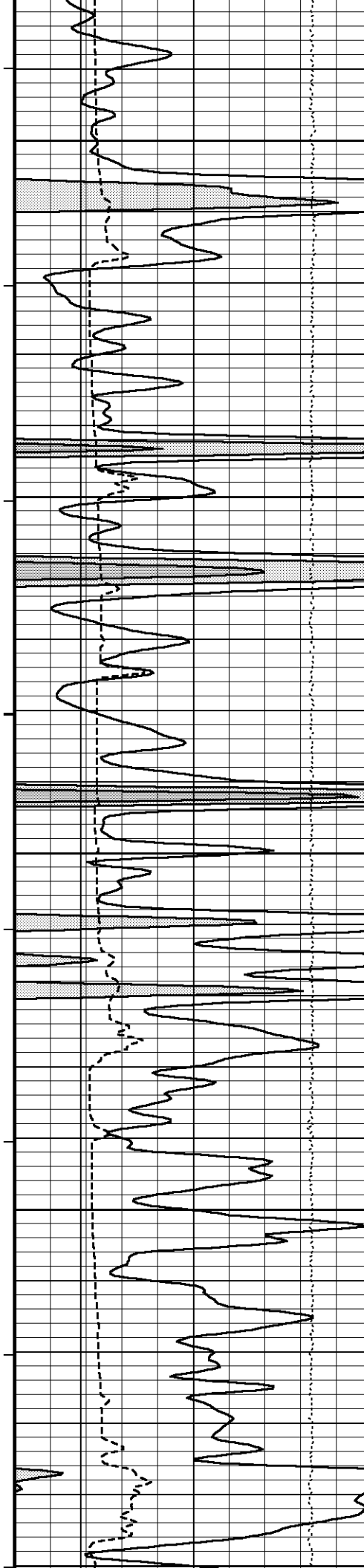
Annular Integral every 10 cu ft

Replay Scale 1:240

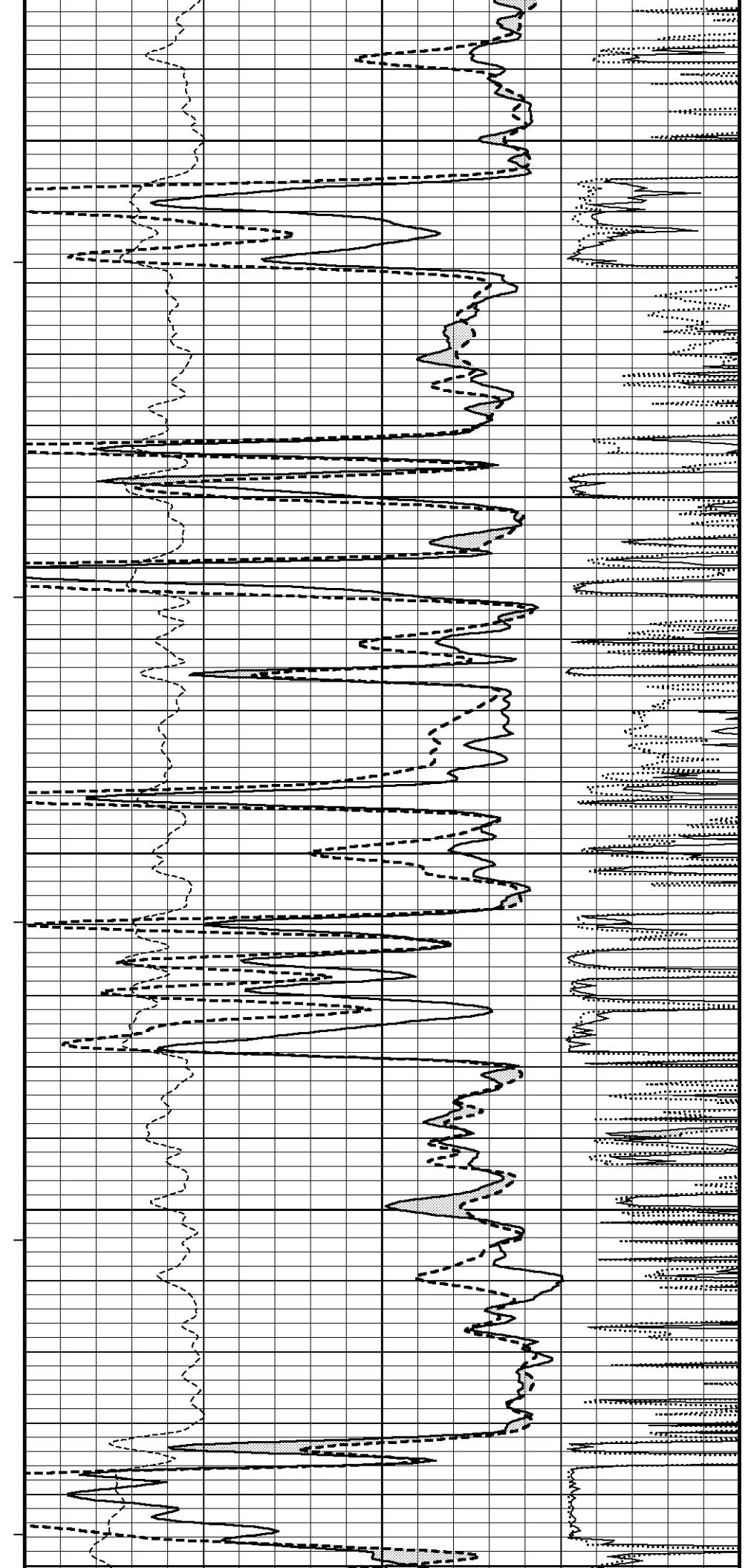


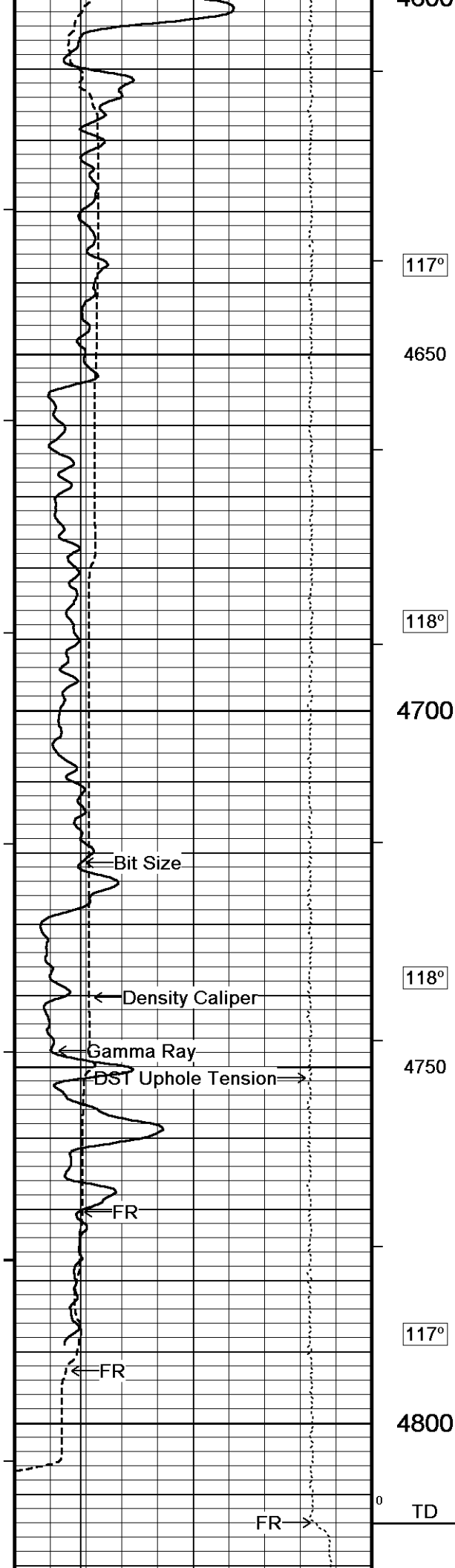






114°
4400
114°
4450
115°
4500
100
115°
4550
116°
4600





117°

4650

118°

4700

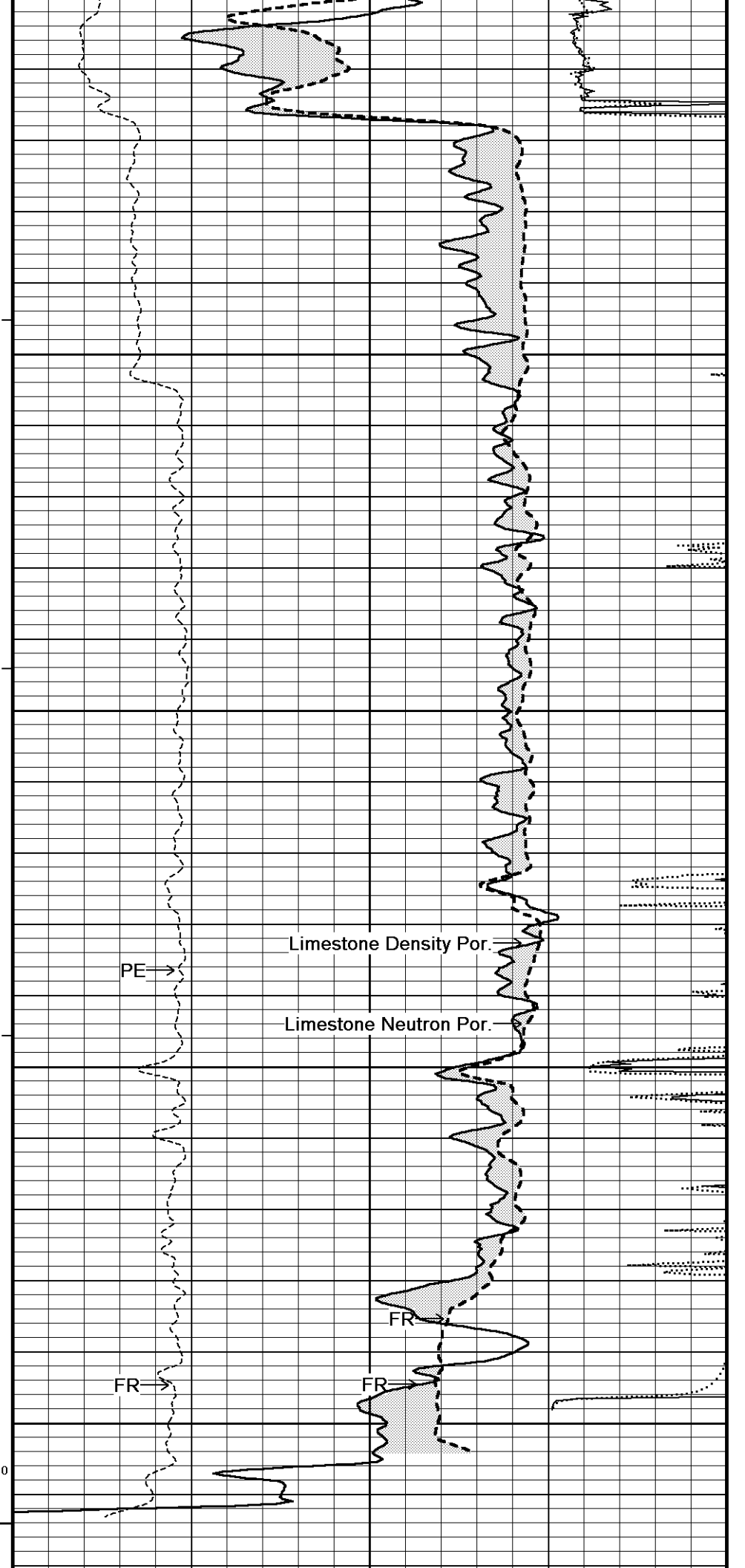
118°

4750

117°

4800

TD



PE

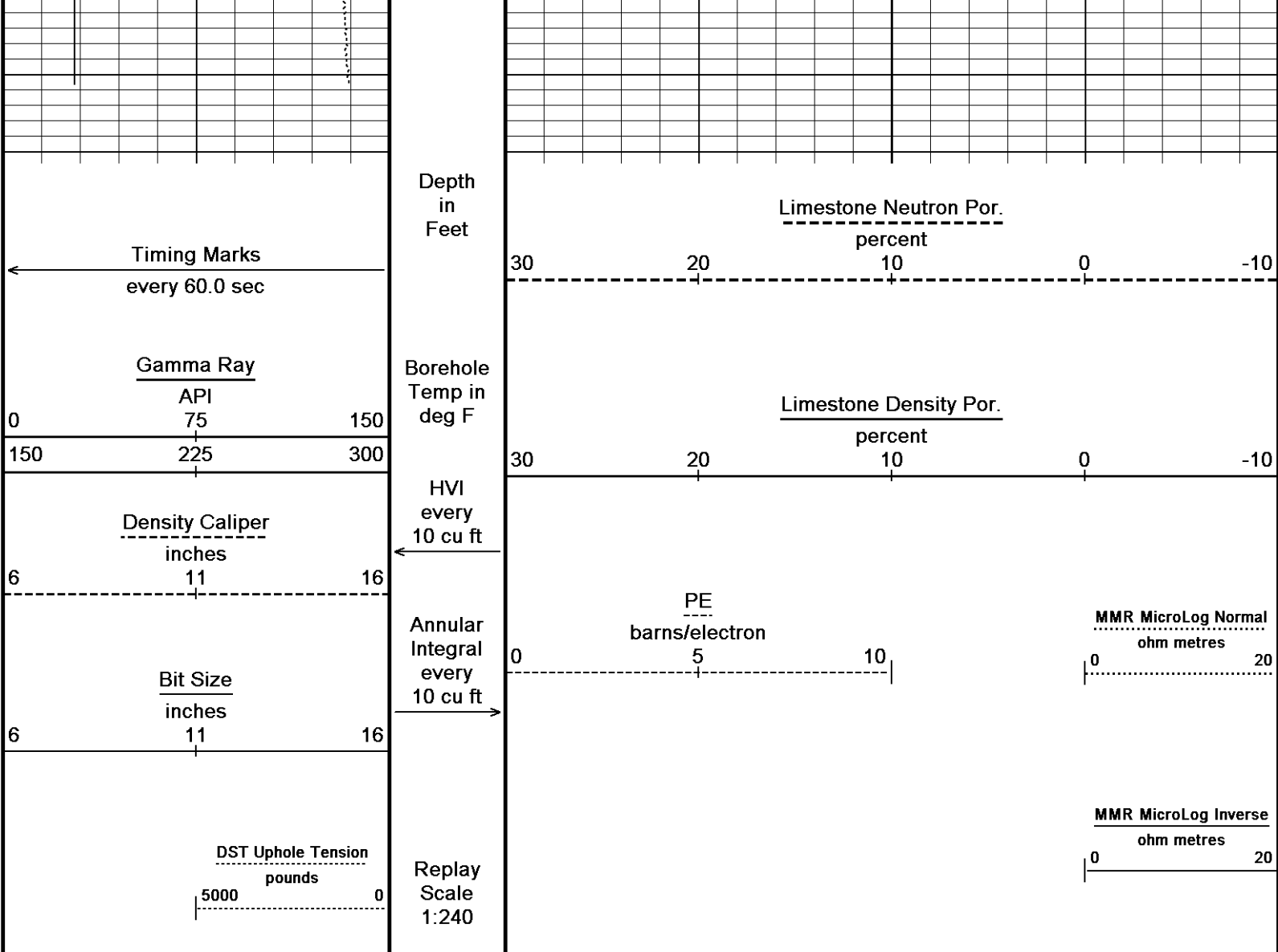
Limestone Density Por.

Limestone Neutron Por.

FR

FR

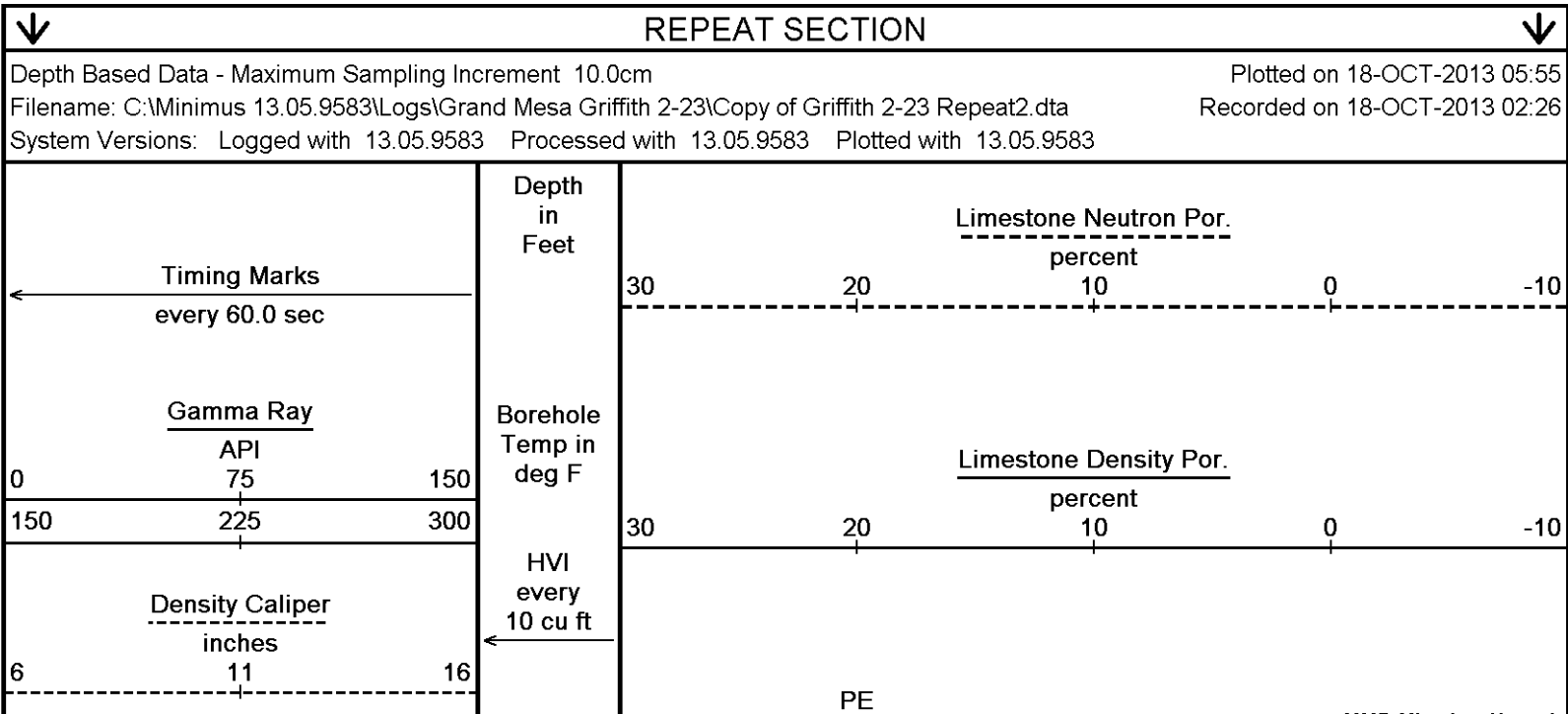
FR

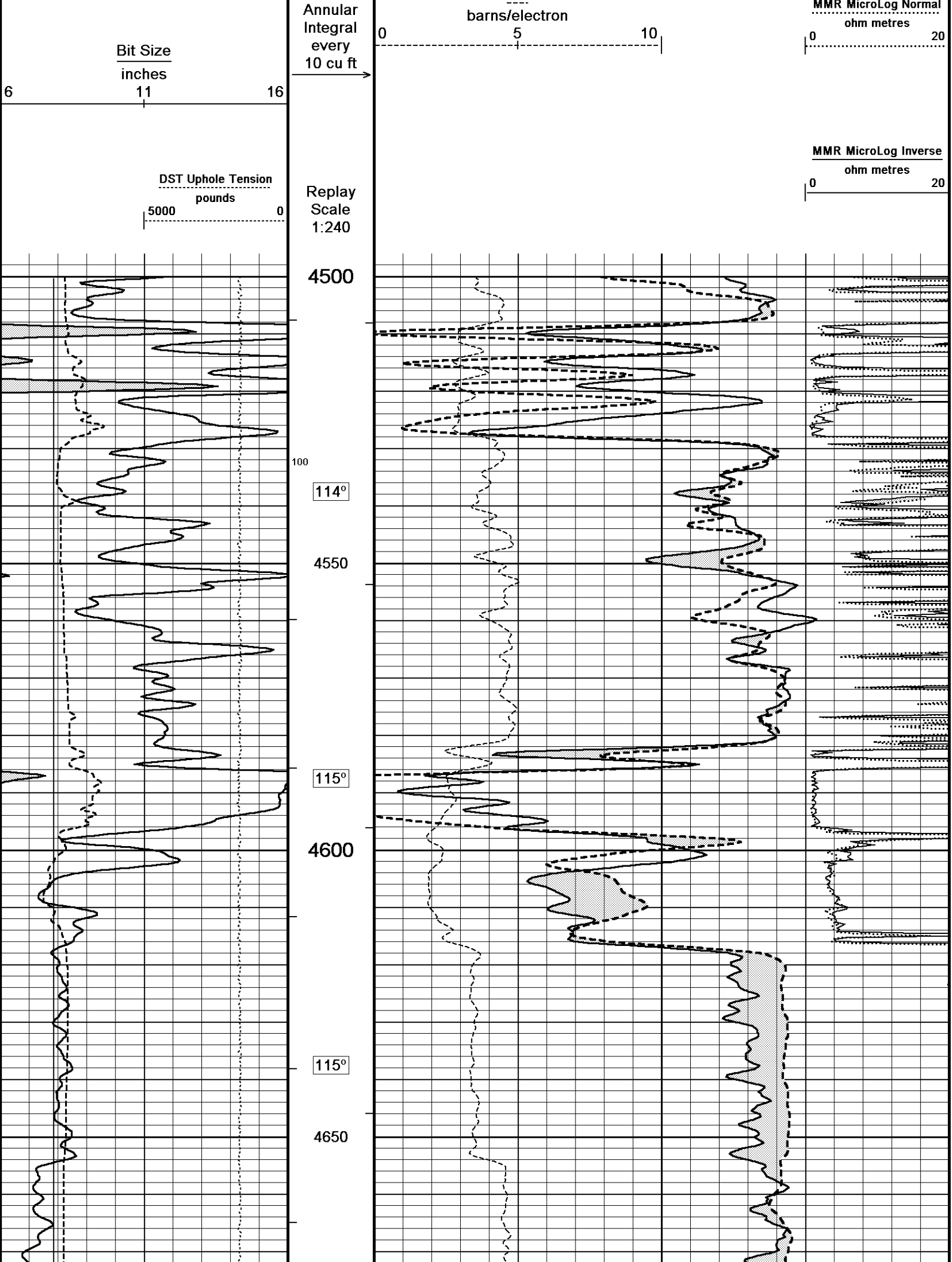


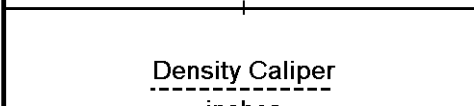
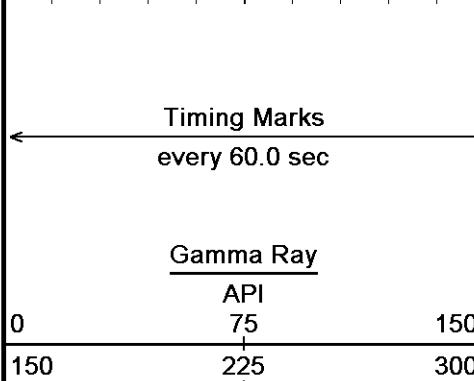
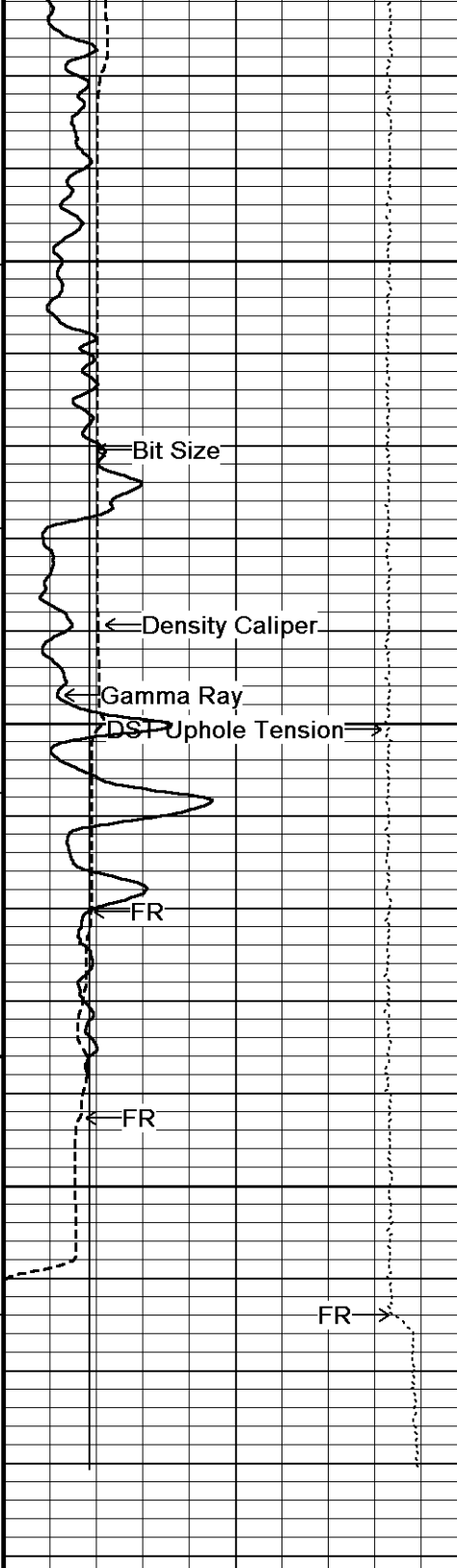
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Griffith 2-23 Main2.dta
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

Plotted on 18-OCT-2013 05:55
Recorded on 18-OCT-2013 03:46

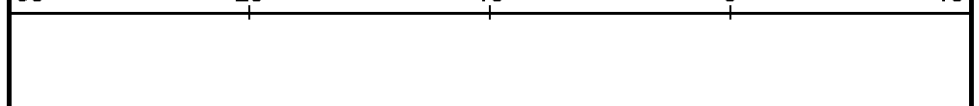
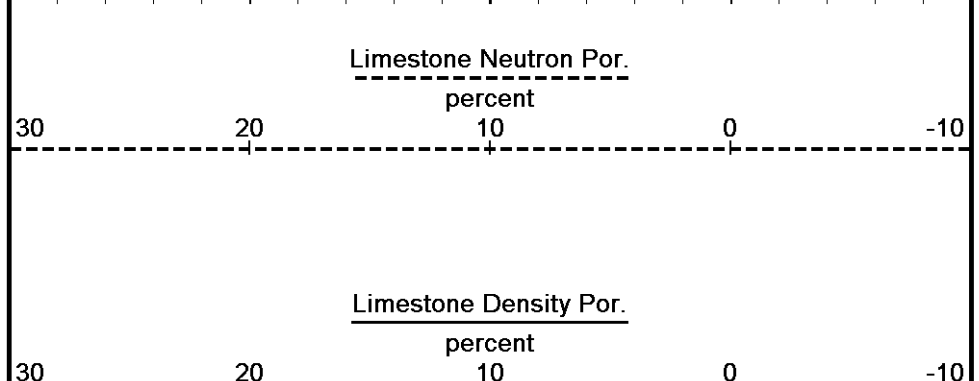
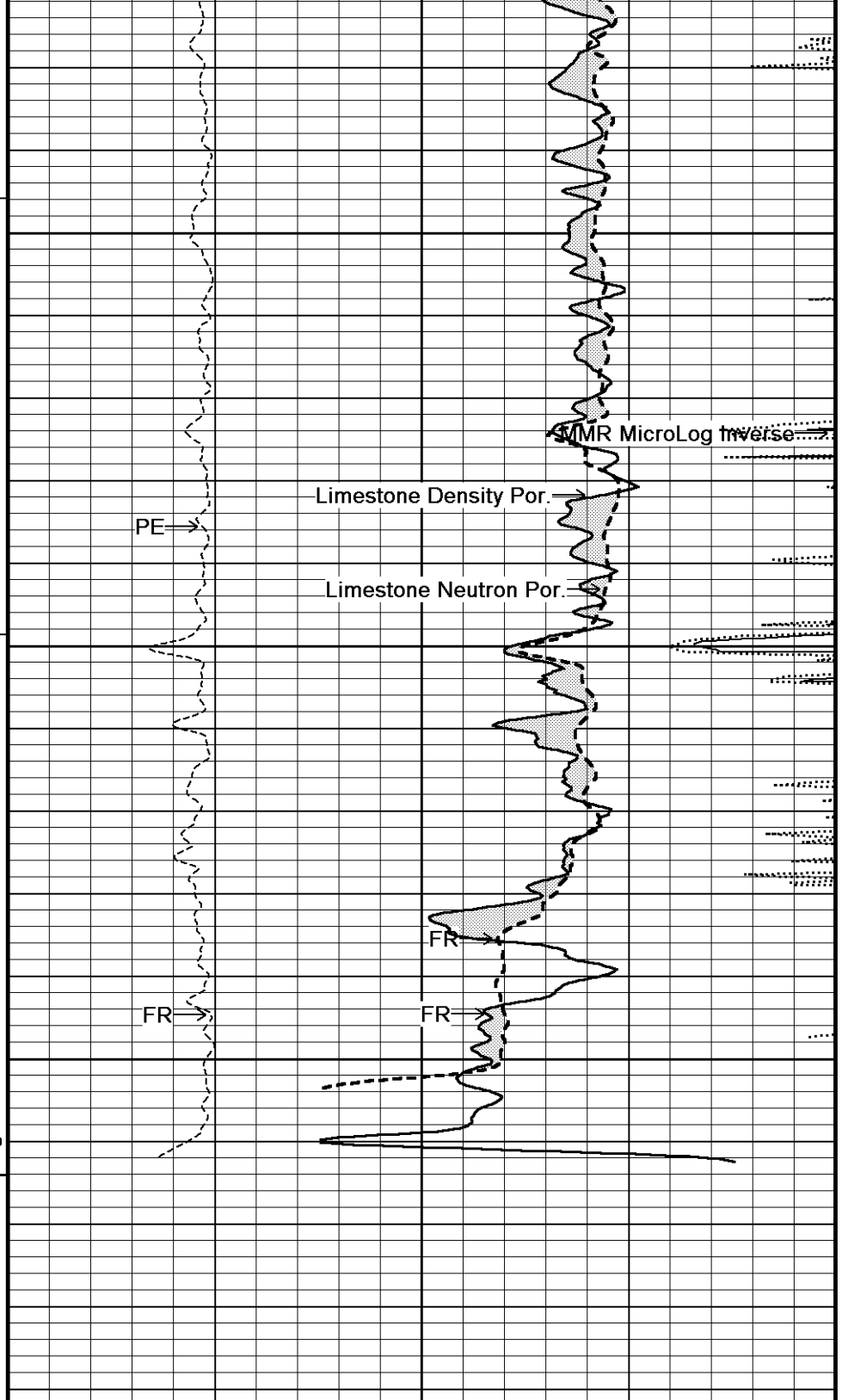
5 INCH MAIN

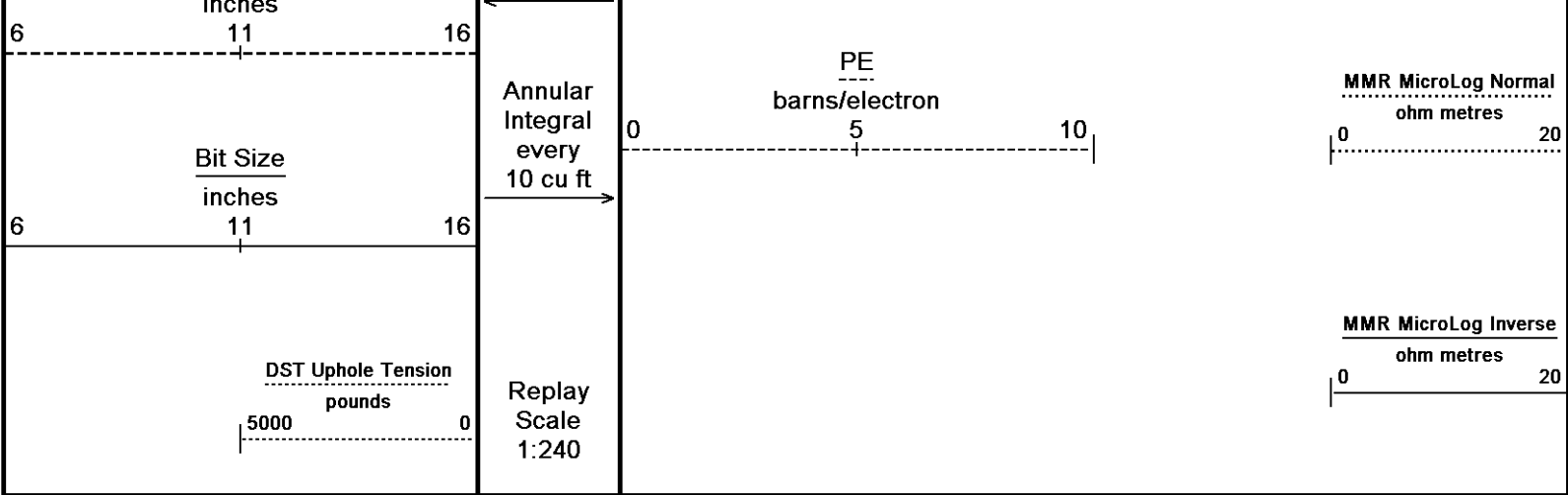






116°
4700
116°
4750
115°
4800
0 TD 0
Depth in Feet
Borehole Temp in deg F
HVI every 10 cu ft





Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 18-OCT-2013 05:55

Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Copy of Griffith 2-23 Repeat2.dta

Recorded on 18-OCT-2013 02:26

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

↑

REPEAT SECTION

↑

↓

5 INCH MAIN

↓

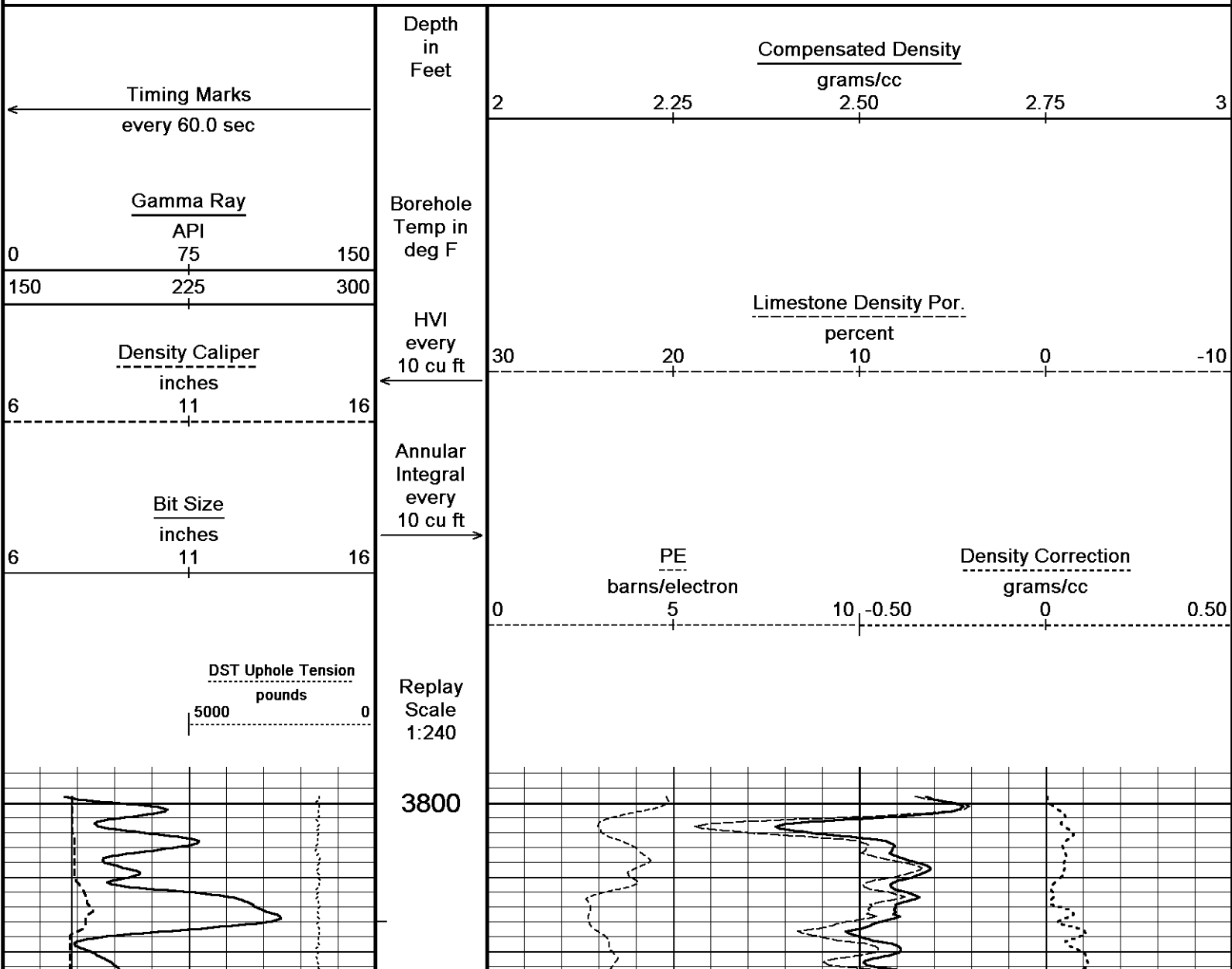
Depth Based Data - Maximum Sampling Increment 10.0cm

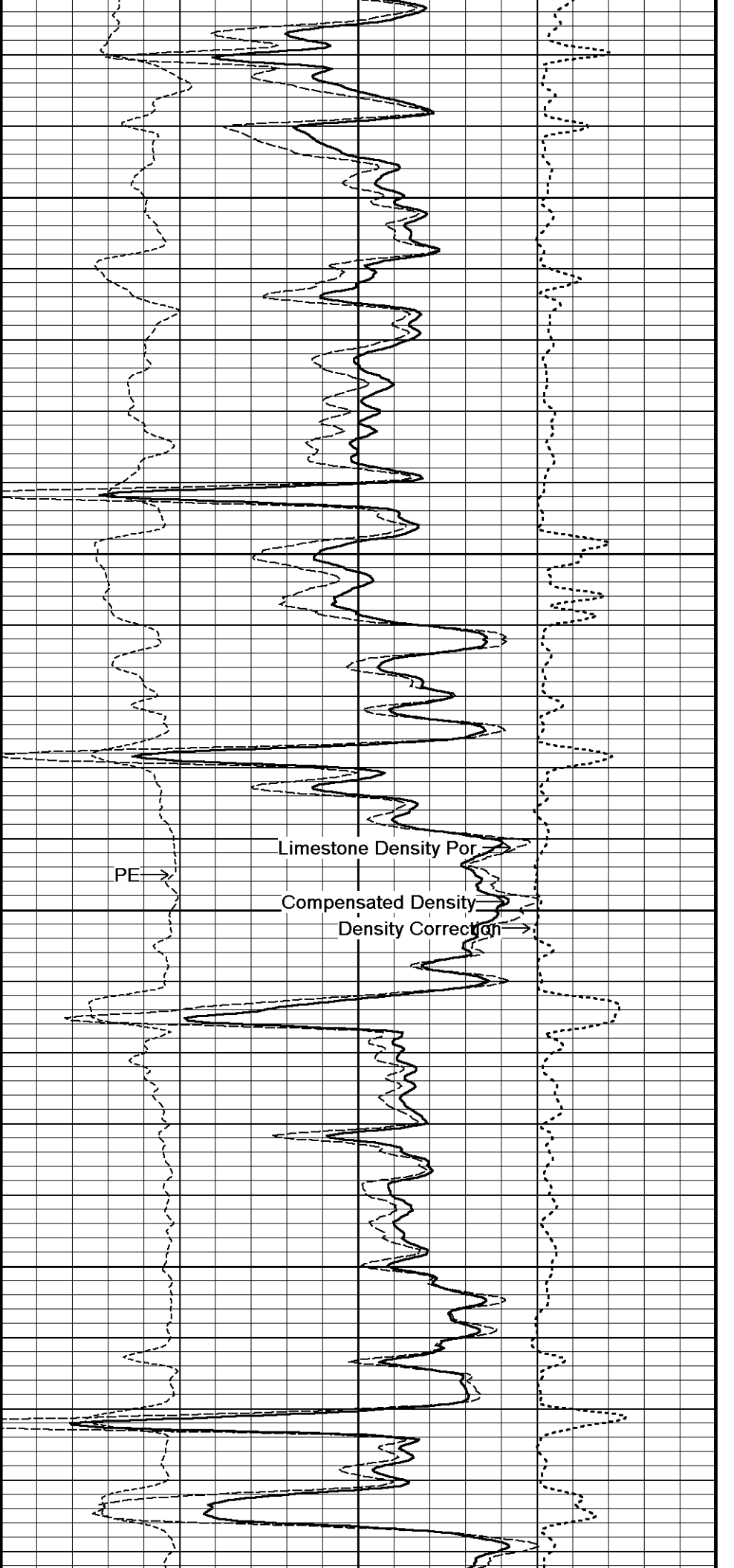
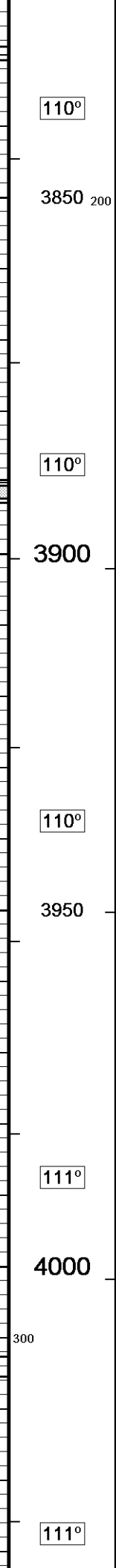
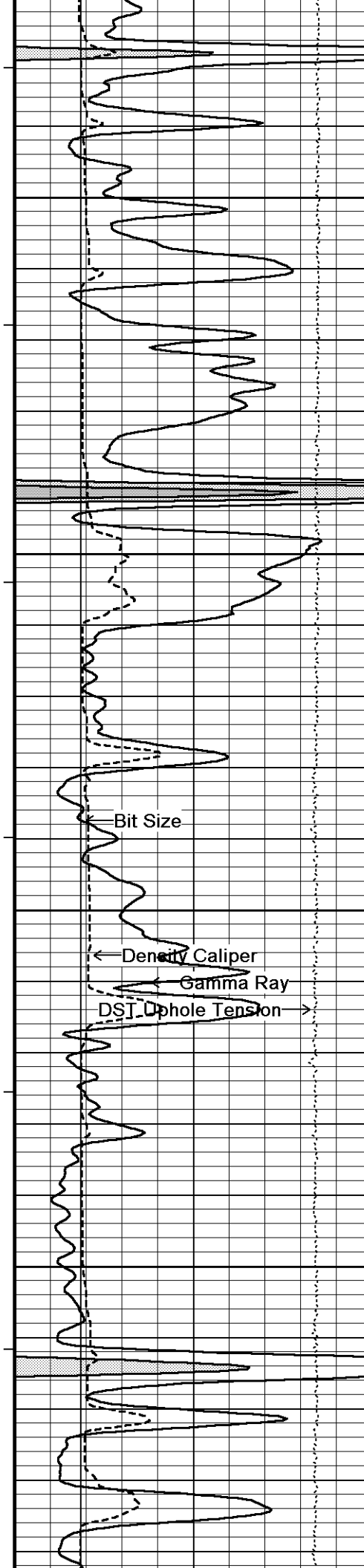
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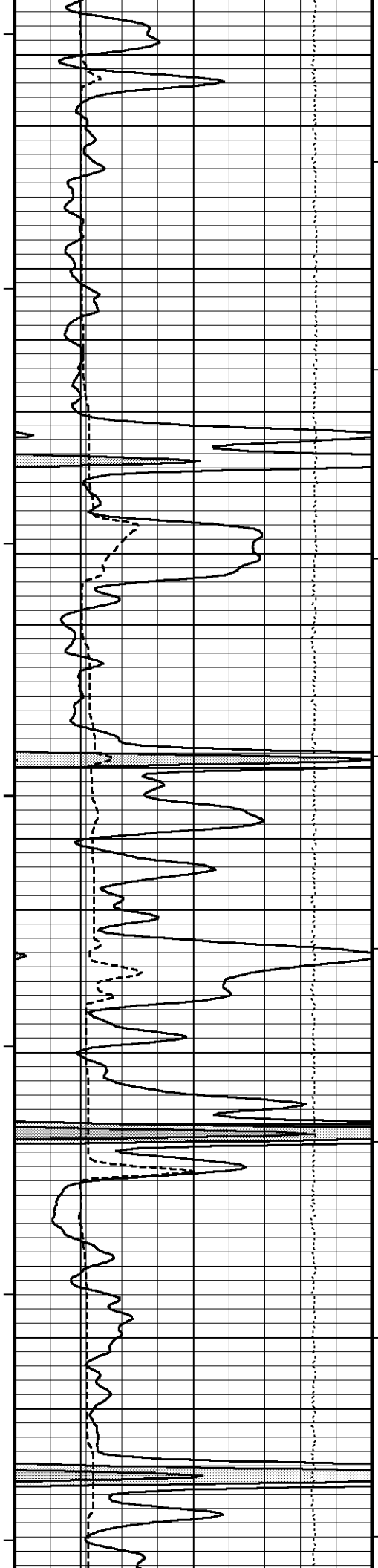
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Griffith 2-23 Main2.dta

Recorded on 18-OCT-2013 03:46

System Versions: Logged with 13.05.9583 Plotted with 13.05.9583







4050

111°

4100

112°

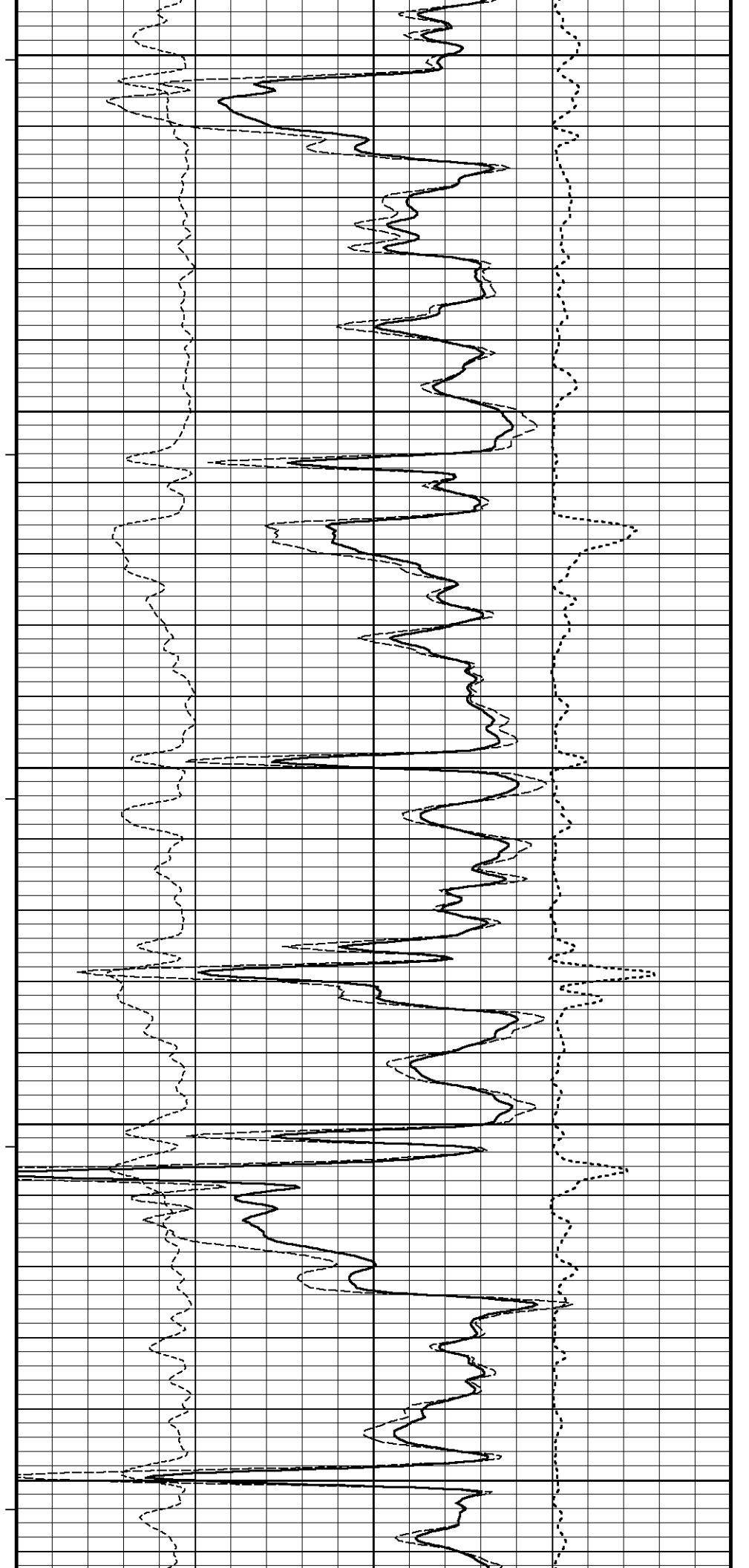
4150

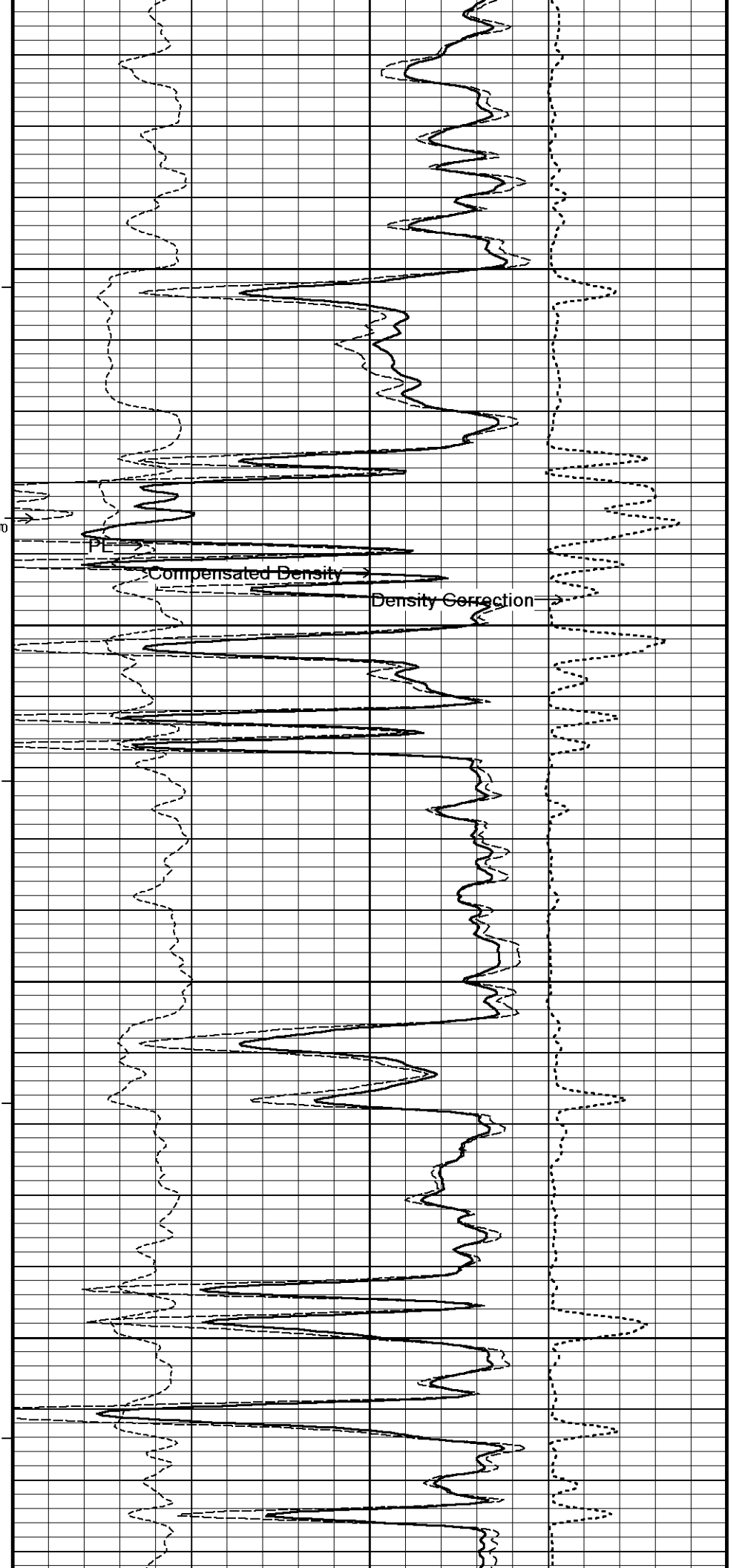
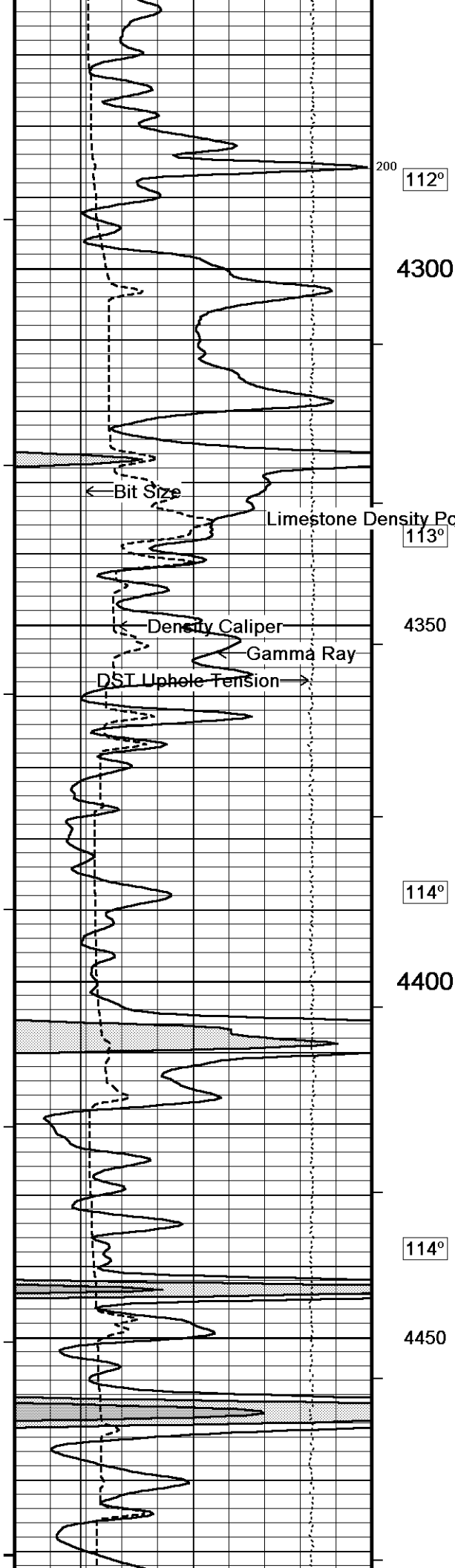
112°

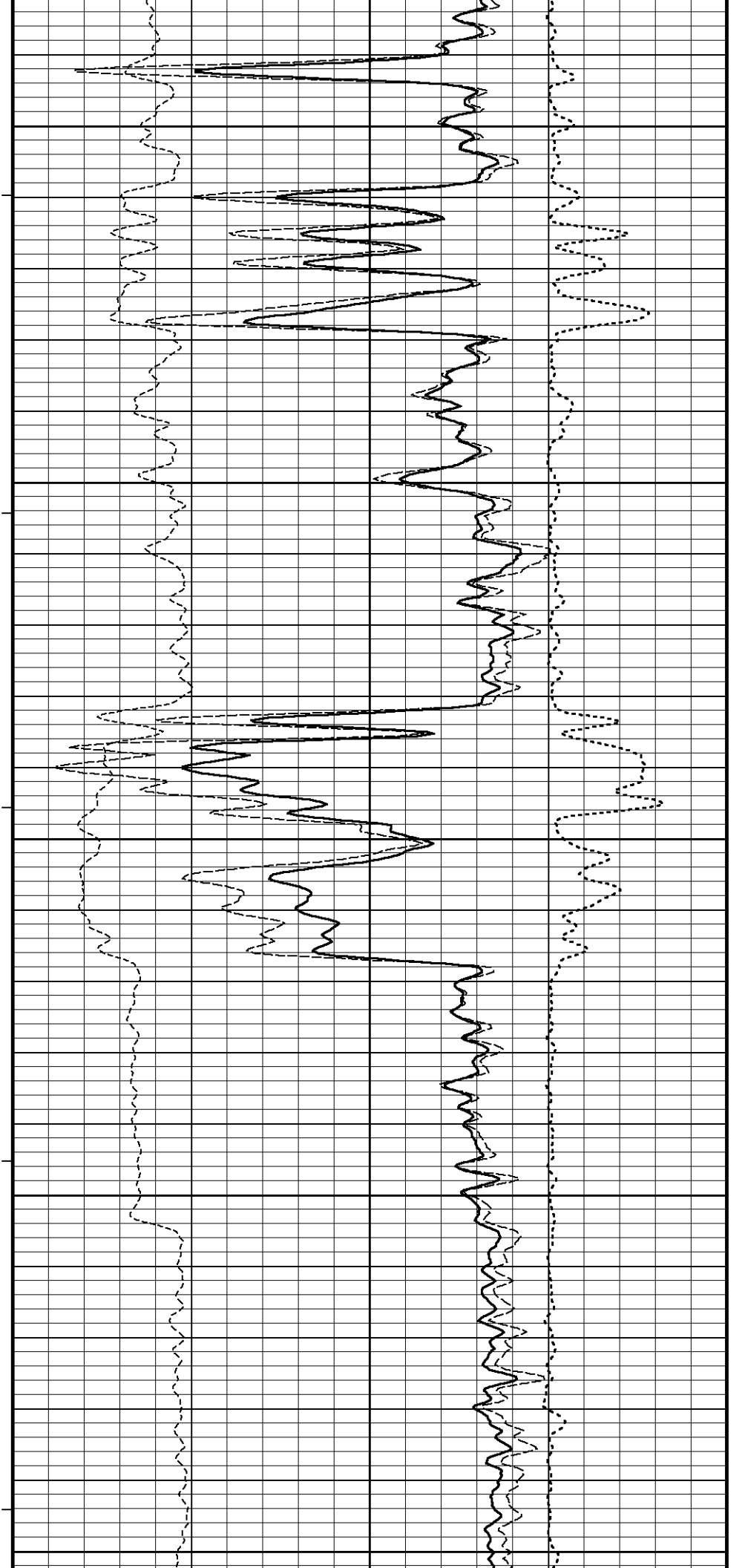
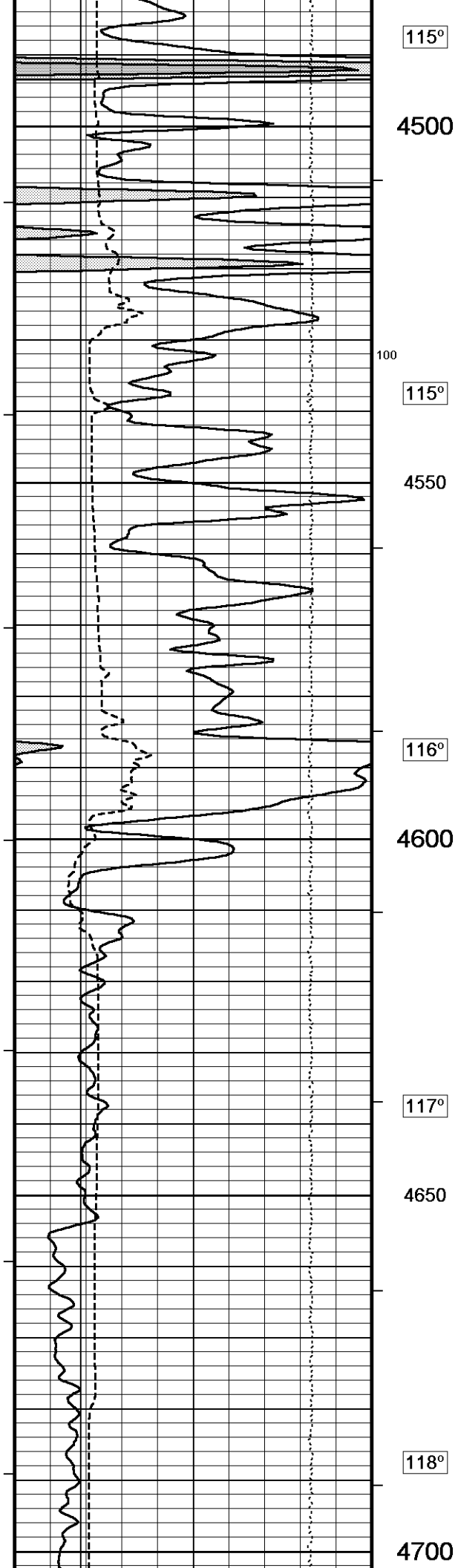
4200

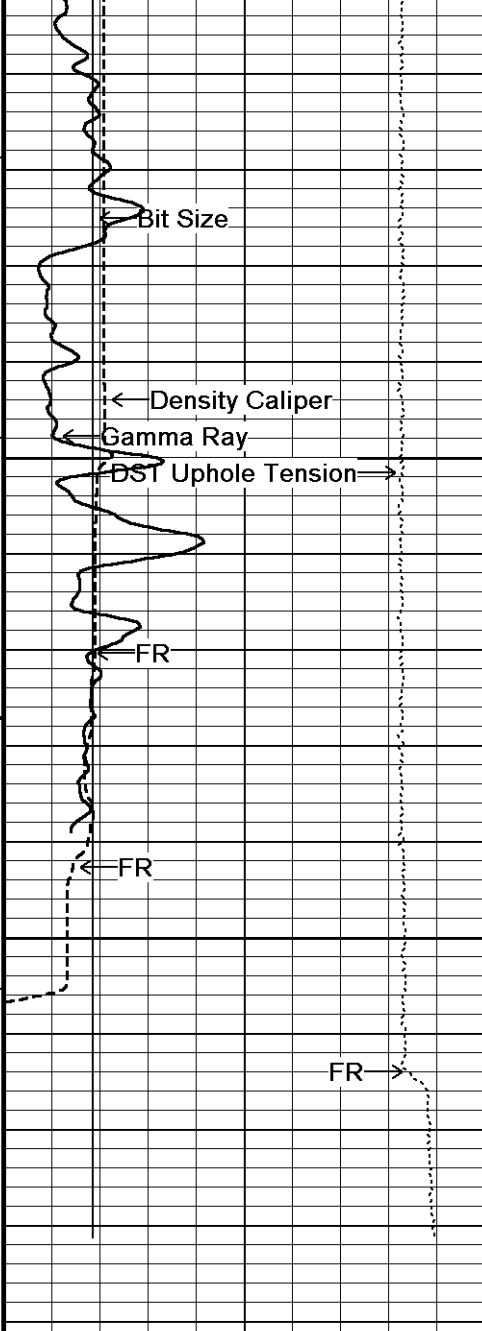
112°

4250









118°

4750

117°

4800

4840

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

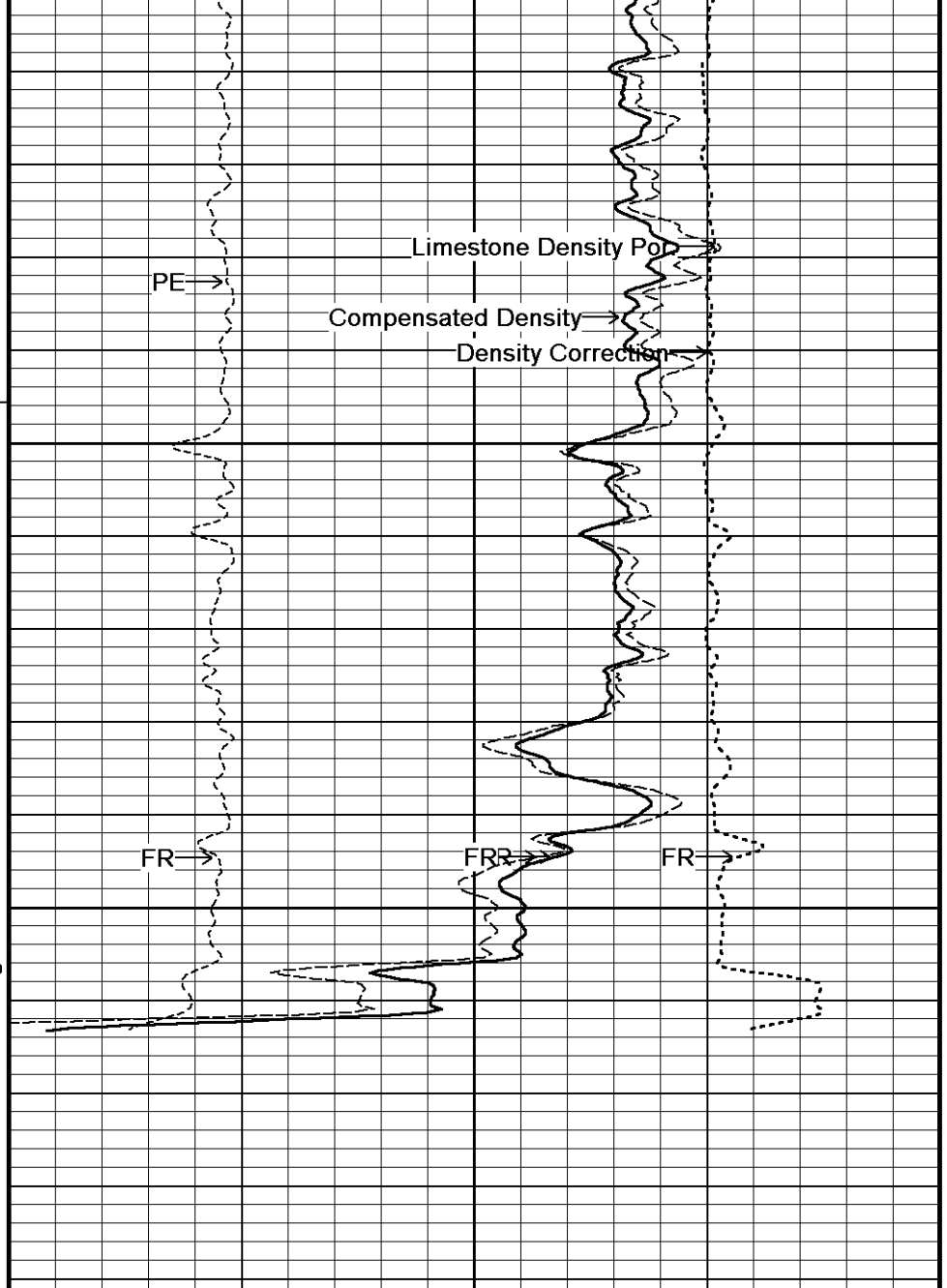
Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft



Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10 0.50
Density Correction
grams/cc
0 0.50

DST Uphole Tension
pounds

50000

Replay
Scale
1:240

0500.50

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Griffith 2-23 Main2.dta
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

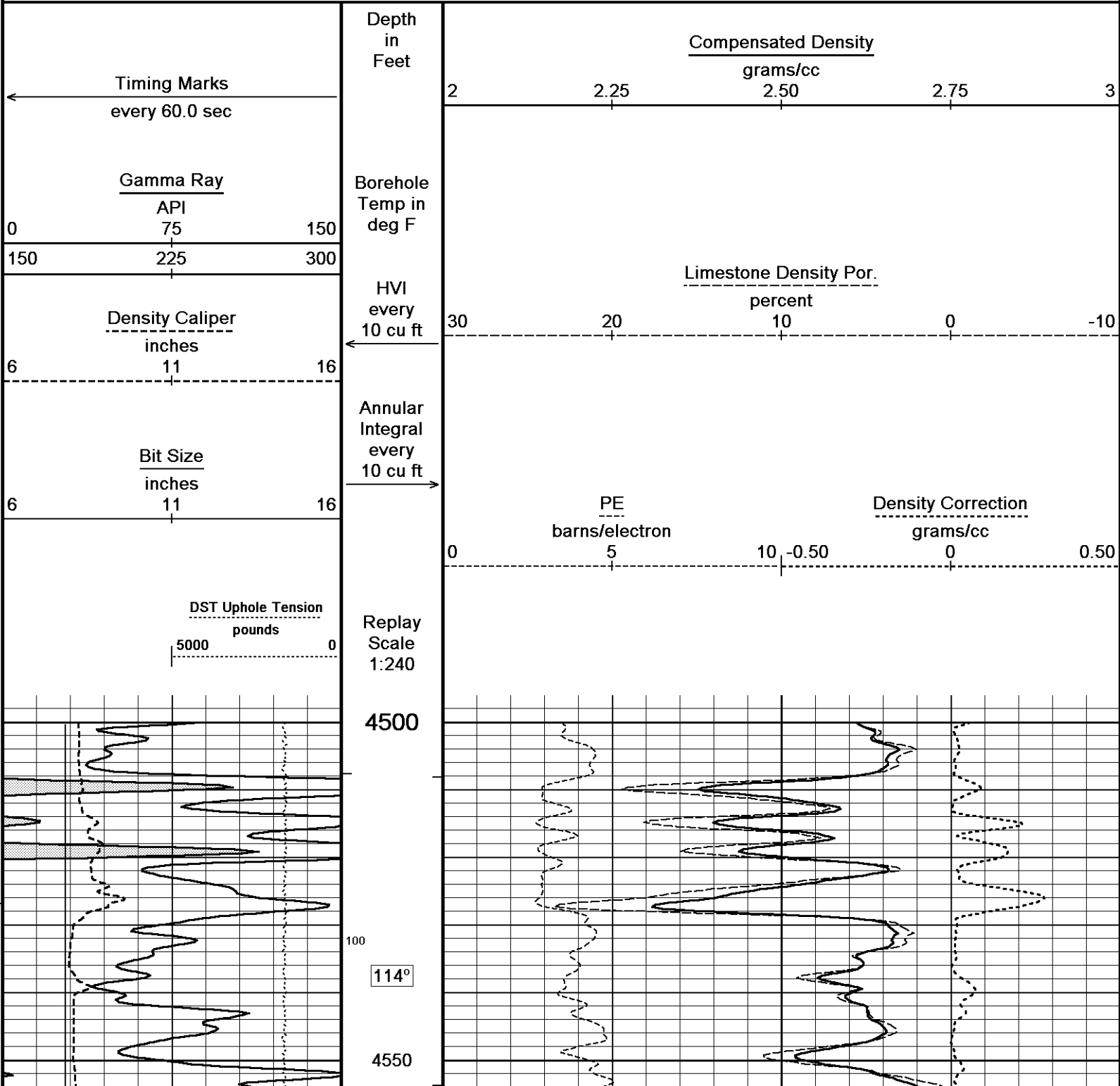
Plotted on 18-OCT-2013 05:55
Recorded on 18-OCT-2013 03:46

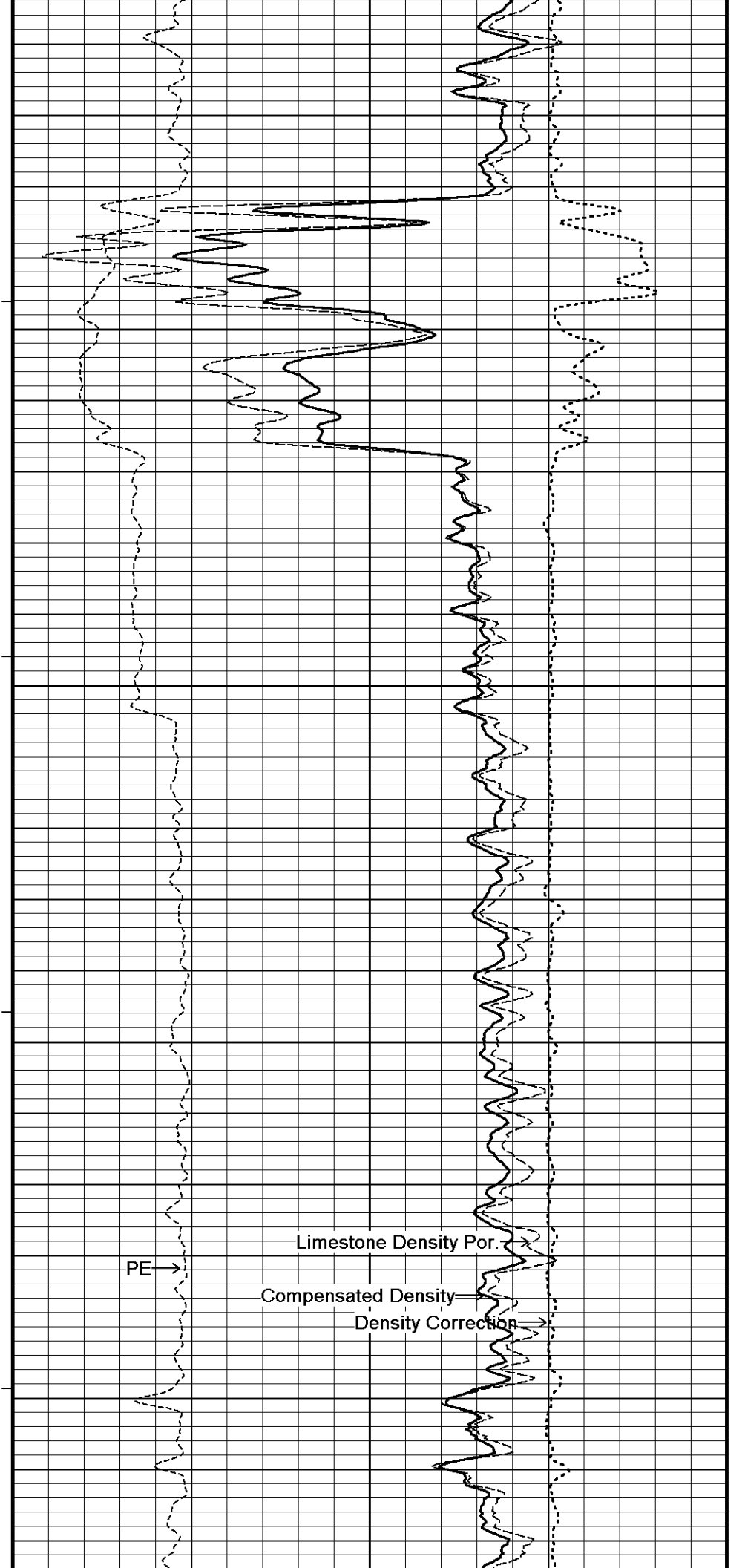
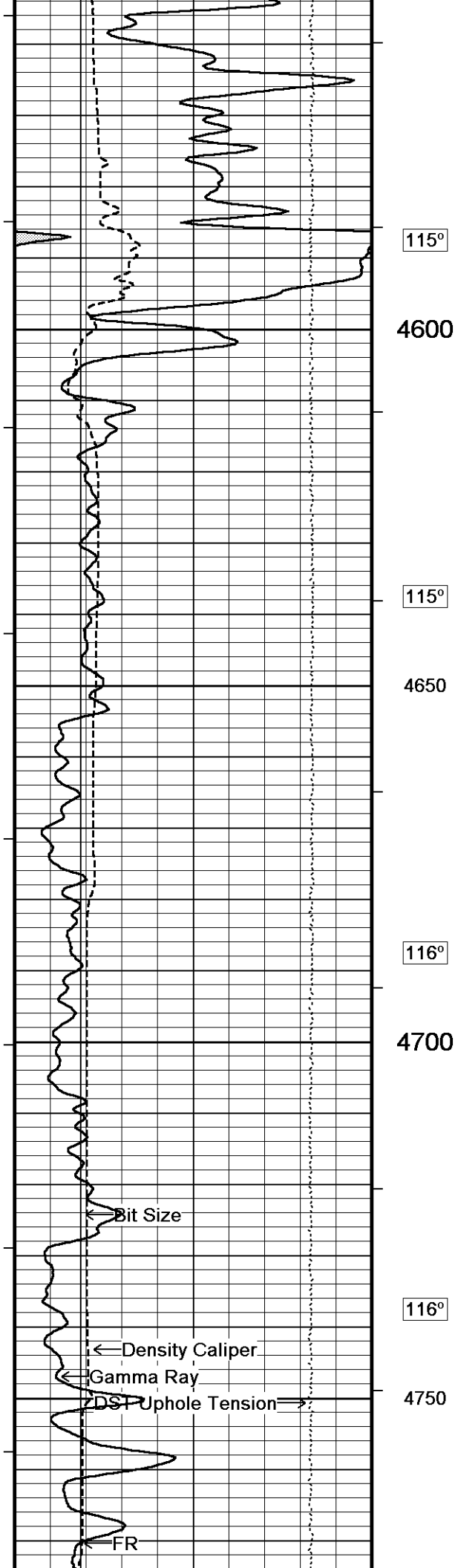
5 INCH MAIN

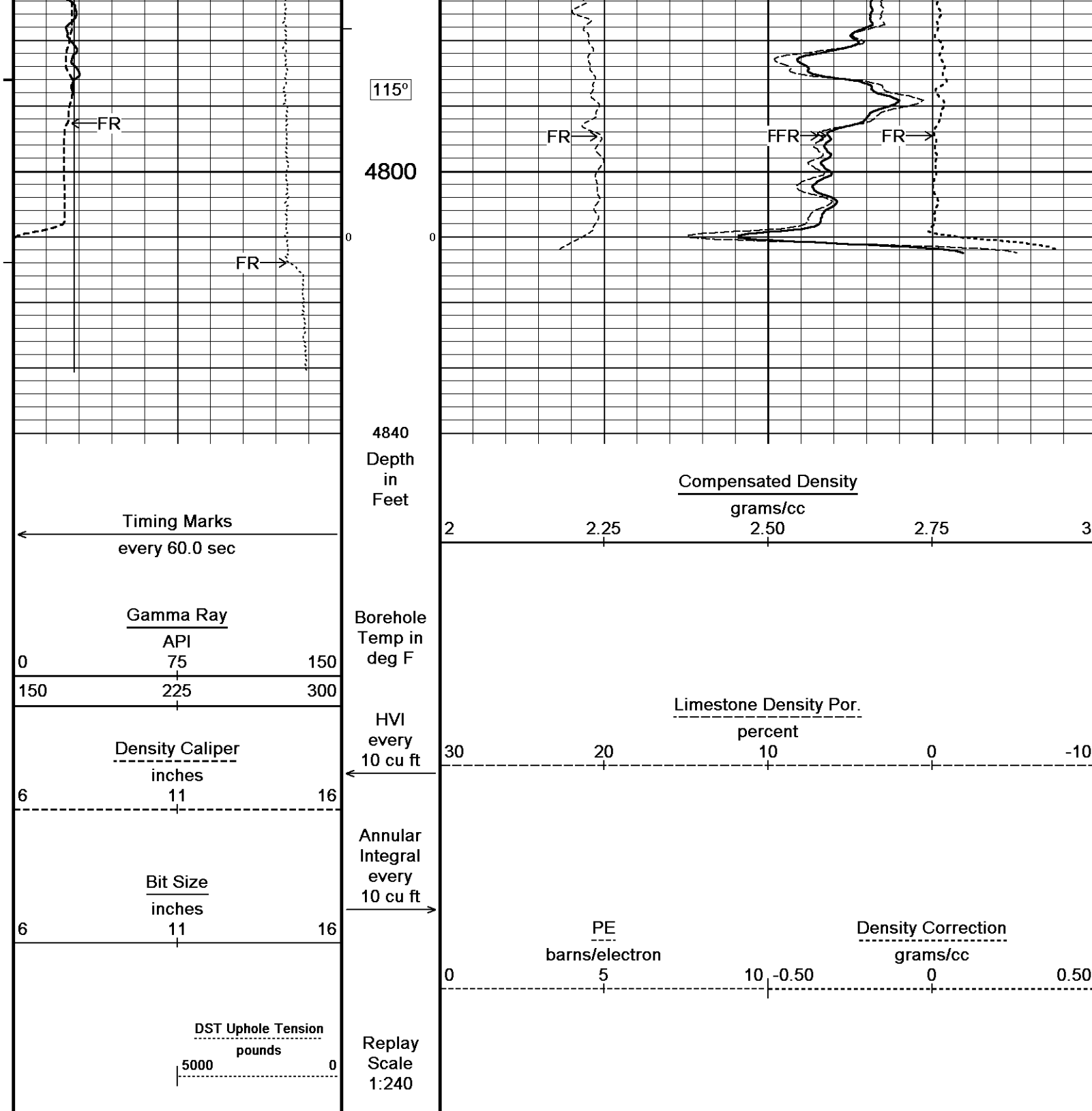
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Copy of Griffith 2-23 Repeat2.dta
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

Plotted on 18-OCT-2013 05:55
Recorded on 18-OCT-2013 02:26







Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 18-OCT-2013 05:55

Filename: C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Copy of Griffith 2-23 Repeat2.dta

Recorded on 18-OCT-2013 02:26

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

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Copy of Griffith 2-23 Repeat2.dta

General Constants All 000

Last Edited on 18-OCT-2013,01:48

General Parameters

Mud Resistivity	1.000	ohm-metres
Mud Resistivity Temperature	58.000	degrees F
Water Level	0.000	feet

Water Level	0.000	feet
Borehole Fluid 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	MMR Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

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 16-OCT-2013 07:50
	Measured	Calibrated (API)	
Background	72	49	
Calibrator (Gross)	1147	774	
Calibrator (Net)	1075	725	

Gamma Constants MCG-D.K 442			Last Edited on 18-OCT-2013,00:46
Gamma Calibrator Number	GRC38		
Mud Density	1.10	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl		kppm	
K Mud Type	Chloride		
K Mud Concentration	0.00	%	

Photo Density Calibration MPD-B 31			Base Calibration on 11-OCT-2013 13:32	Field Check on 16-OCT-2013 07:39
Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	44679	22866	59556	30836
Reference 2	18345	1888	24941	2541
Field Check at Base				
	669.8	824.9		
Field Check				
	670.0	829.5		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	125	594		
Reference 1	18704	44569	0.422	0.371
Reference 2	5436	18261	0.301	0.272
Field Check at Base				
	124.9	594.3		
Field Check				
	125.3	595.1		

Density Constants MPD-B 31			Last Edited on 18-OCT-2013,00:47
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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	1.10	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 11-OCT-2013 13:50
Field Calibration on 16-OCT-2013 07:40

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18160	3.99
2	27038	5.98
3	35584	7.97
4	43976	9.86
5	53328	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.96	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\Grand Mesa Griffith 2-23\Copy of Griffith 2-23 Repeat2.dta

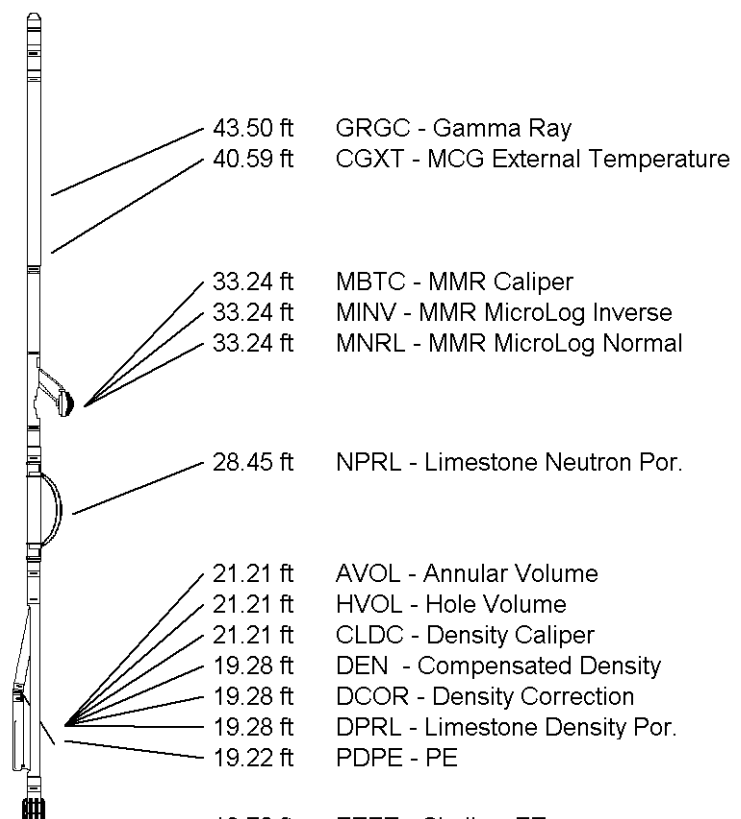
CBH-C, Cablehead, 11 pin
CBH-CA 170 LG: 2.40 ft WT: 24.3 lb OD: 2.24 in

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

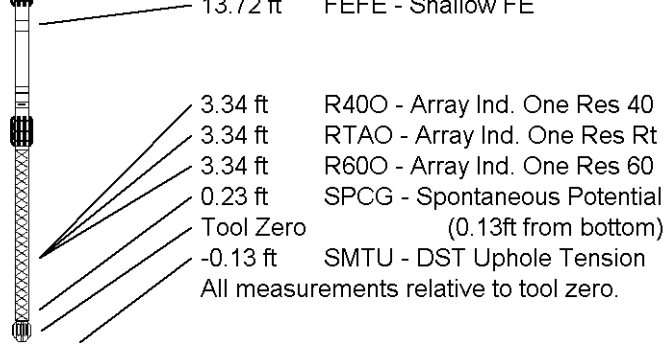
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in



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: 51.18 ft Weight: 407.9 lb



COMPANY	GRAND MESA OPERATING COMPANY
WELL	GRIFFITH 2-23
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2978.00	feet	First Reading	4795.00	feet
Elevation Drill Floor	2977.00	feet	Depth Driller	4810.00	feet
Elevation Ground Level	2968.00	feet	Depth Logger	4814.00	feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG