



Weatherford

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY GRAND MESA OPERATING COMPANY

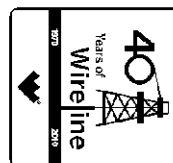
WELL RINER # 1-27

FIELD WILDCAT

PROVINCE/COUNTY SCOTT

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 1333' FNL & 1672' FEL



SEC 27

TWP 16S

RGE 33W

Other Services
MAI/MFE

API Number 15-171-20853

Permit Number

Permanent Datum G.L., Elevation 3032 feet

Log Measured From KB

Drilling Measured From K.B. @ 5 FEET

Elevations:
KB 3037.00
DF 3035.00
GL 3032.00

Date 23-NOV-2011

Run Number ONE

Depth Driller 4830.00

Depth Logger 4834.00

First Reading 4811.00

Last Reading 3800.00

Casing Driller 221.00

Casing Logger 220.00

Bit Size 7.875

Hole Fluid Type CHEMICAL

Density / Viscosity 9.20 lb/USg

PH / Fluid Loss 9.50

Sample Source MML DOWNHOLE

Rm @ Measured Temp 0.24 @ 87.0

Rmf @ Measured Temp 0.19 @ 87.0

Rmc @ Measured Temp 0.29 @ 87.0

Source Rmf / Rmc CALC

Rm @ BHT 0.19 @ 112.0

Time Since Circulation 4 HOURS

Max Recorded Temp 113.00

Equipment Name COMPACT

Equipment / Base 13057

Recorded By A. GIAMBALVO

Witnessed By STEVE CARL

S.O. / JOB # 3531237

BOREHOLE RECORD

Last Edited: 24-NOV-2011 02:21

Bit Size
inches

7.875

Depth From
feet

220.00

Depth To
feet

4834.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

5.00

Shoe Depth
feet

220.00

Weight
pounds/ft

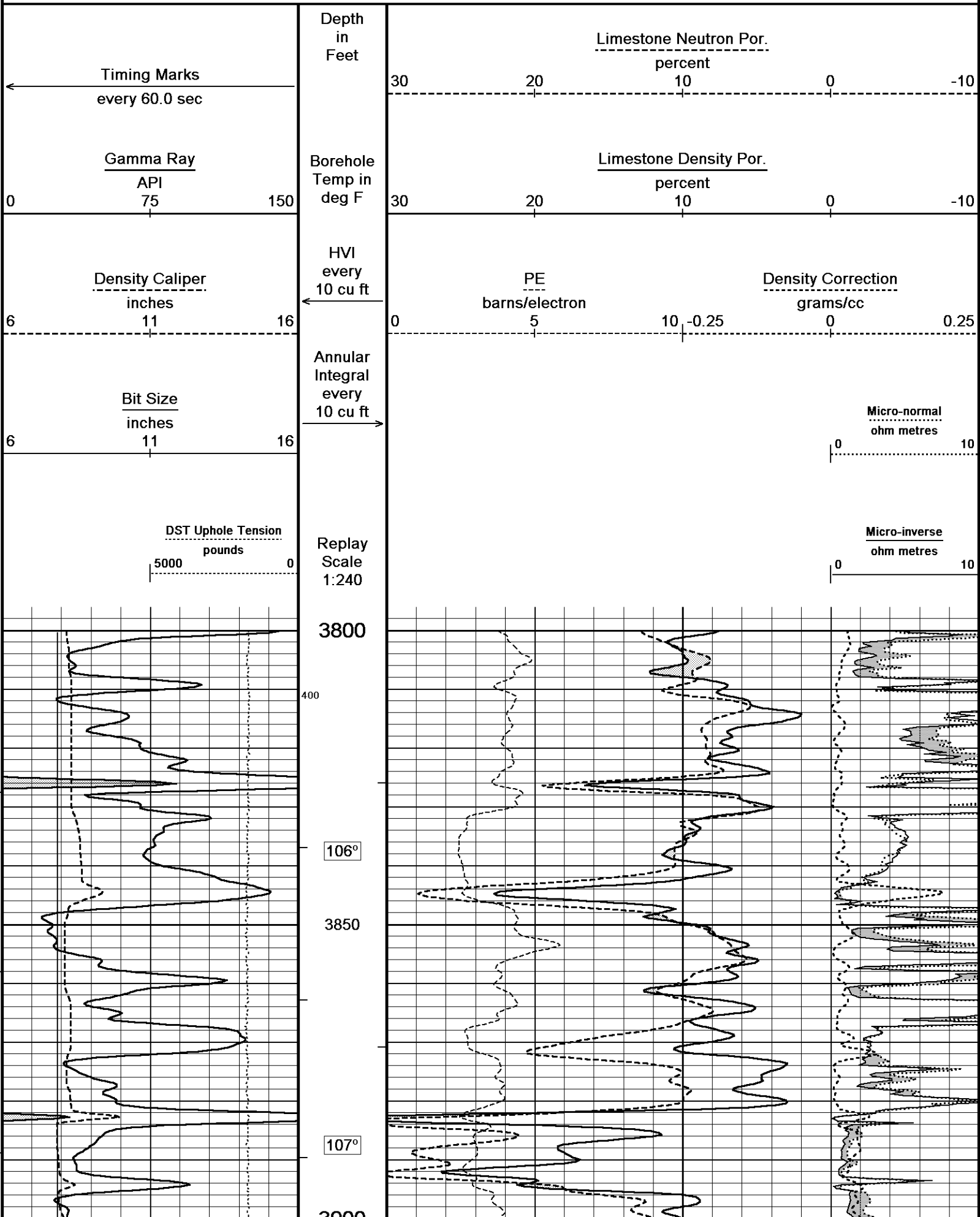
24.00

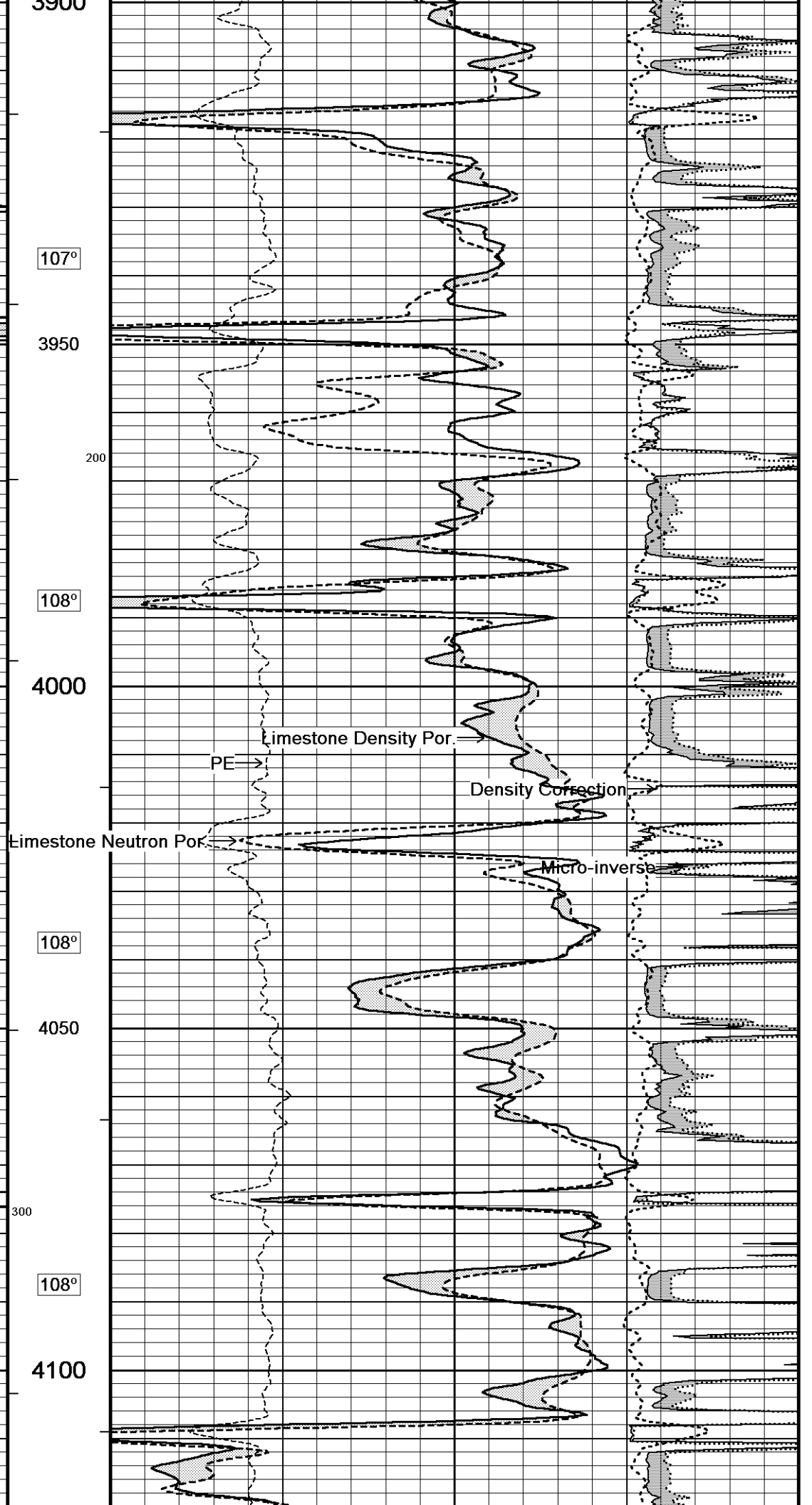
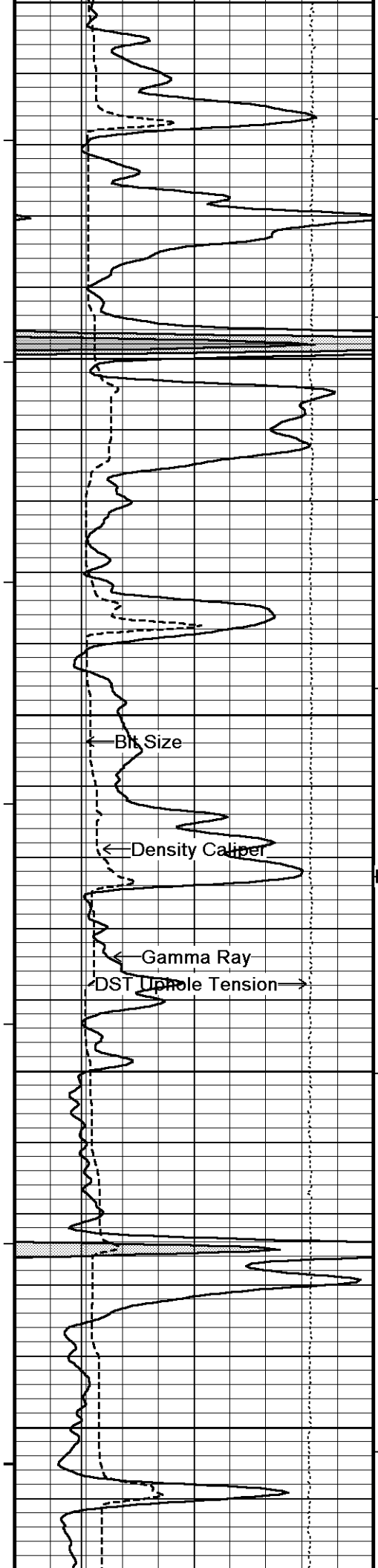
REMARKS

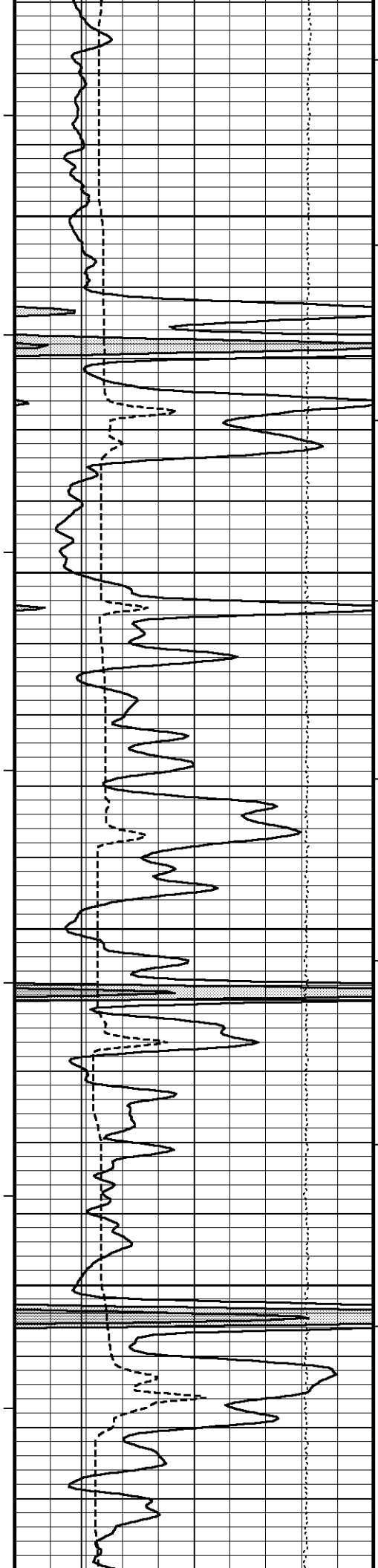
Tools Ran: MCG, MML, MDN, MPD, SKJ, MFE, MAI.
Hardware Used: MDN Dual Eccentralizer used. MPD 8 inch profile plate used. MFE and MAI 0.5 inch standoffs used.
2.71 g/cc Limestone Density Matrix used to calculate porosity.
All intervals logged and scaled per customer's request.
Annular volume with 5.5 inch production casing calculated 0 = 235 cu. ft.
Service order #3531237
Rig: Murfin Rig # 24
Engineer: A. Giambalvo
Operator(s): K. Rinehart

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







109°

4150

109°

4200

109°

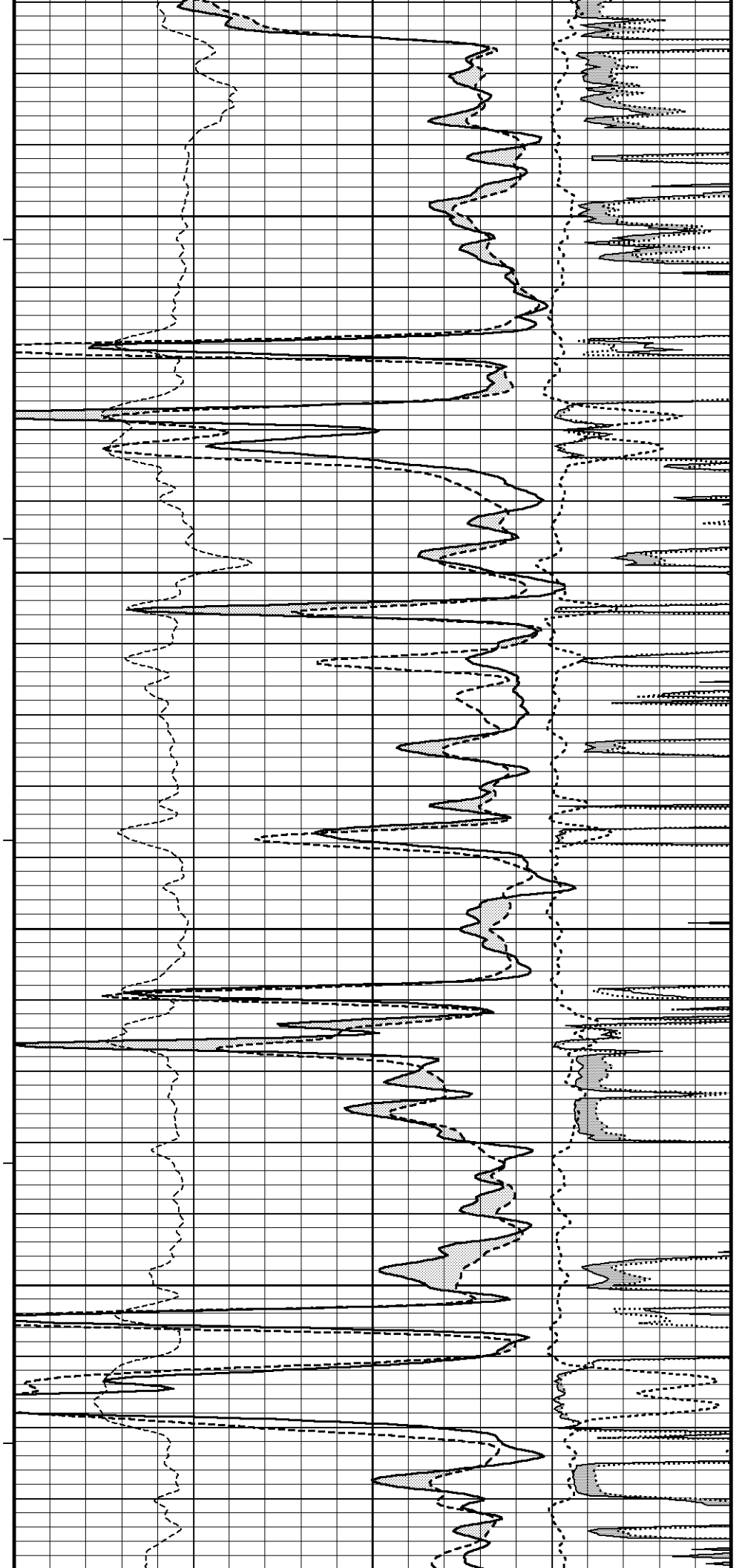
4250

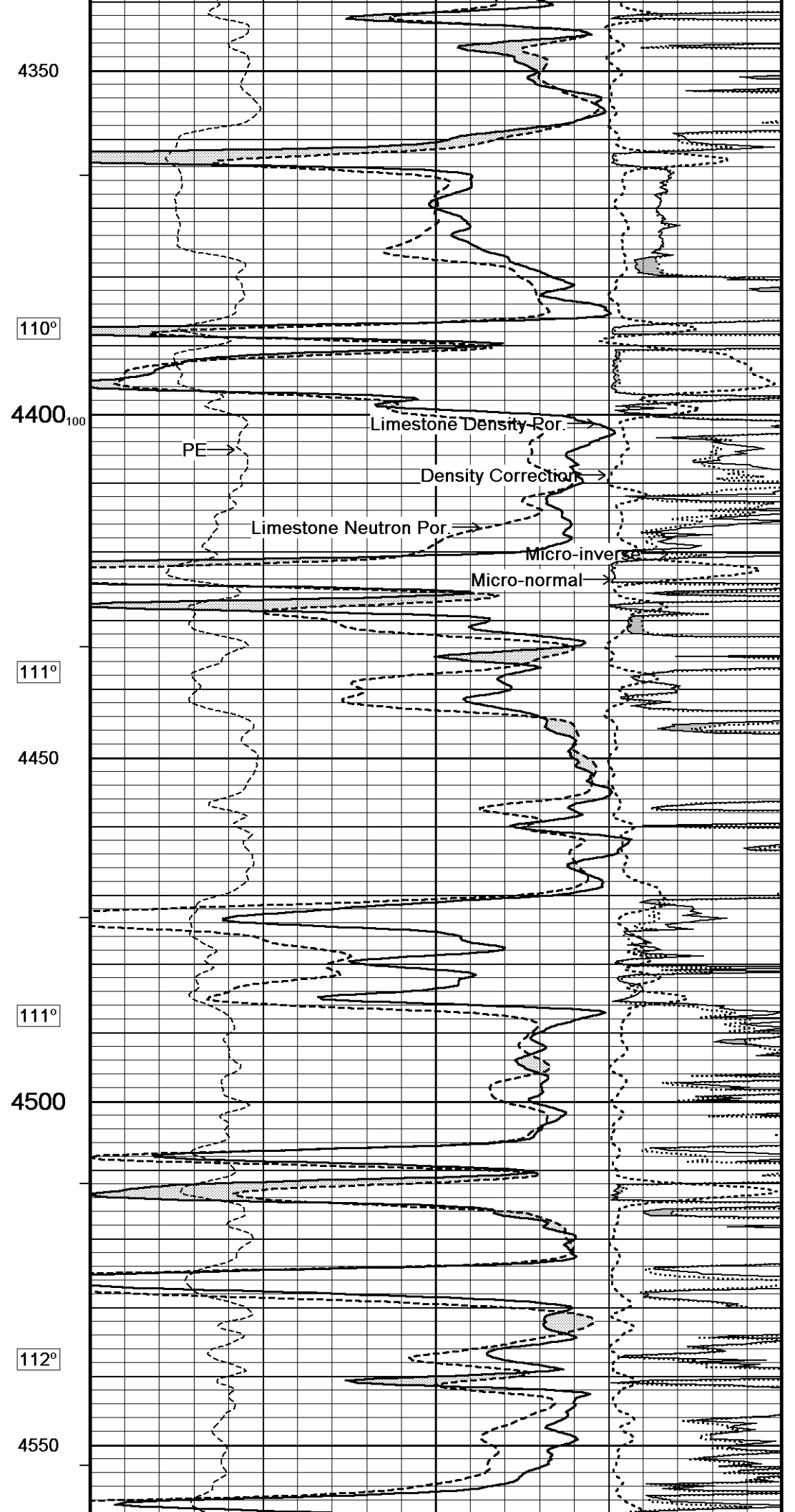
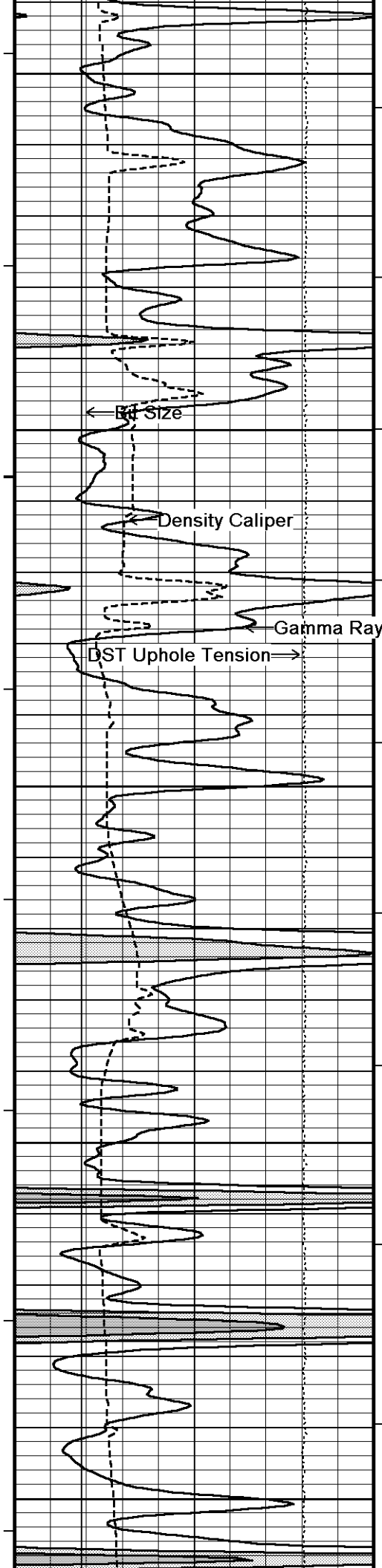
109°

4300

200

110°





4350

110°

4400₁₀₀

111°

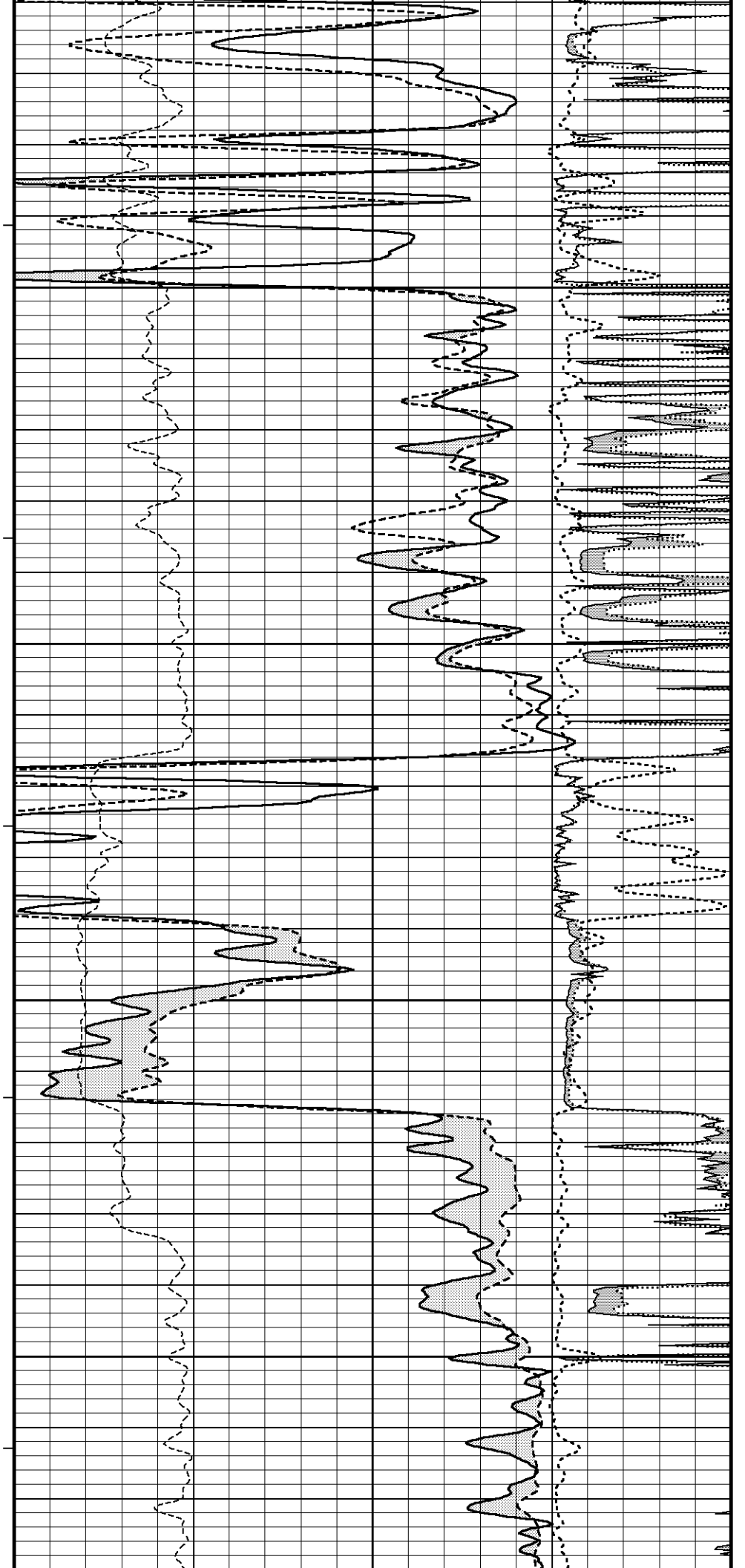
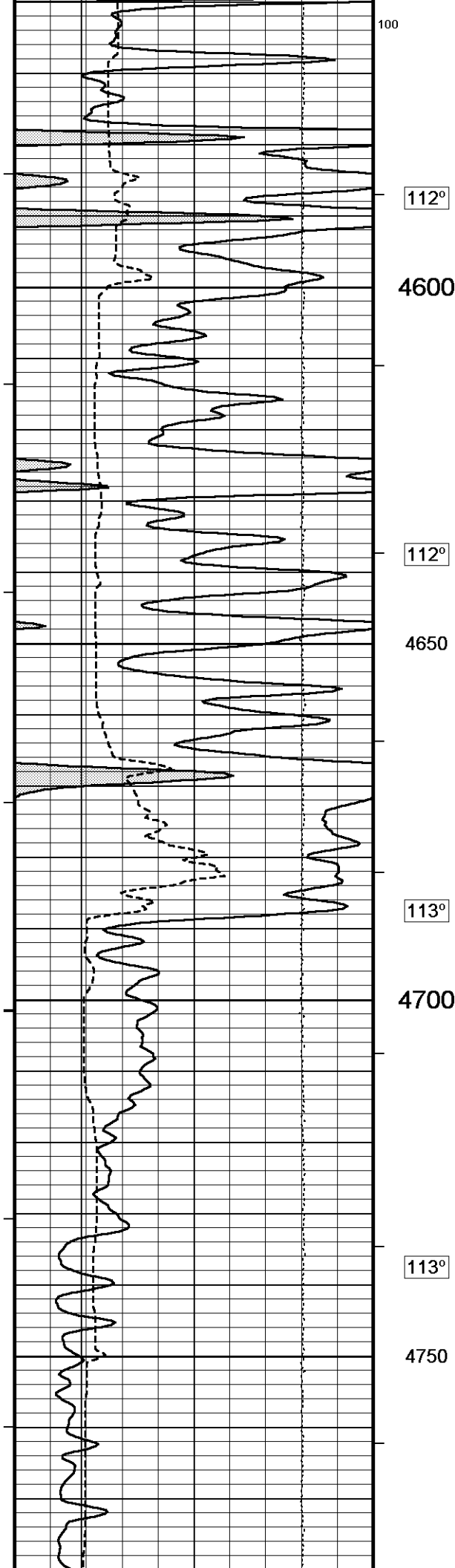
4450

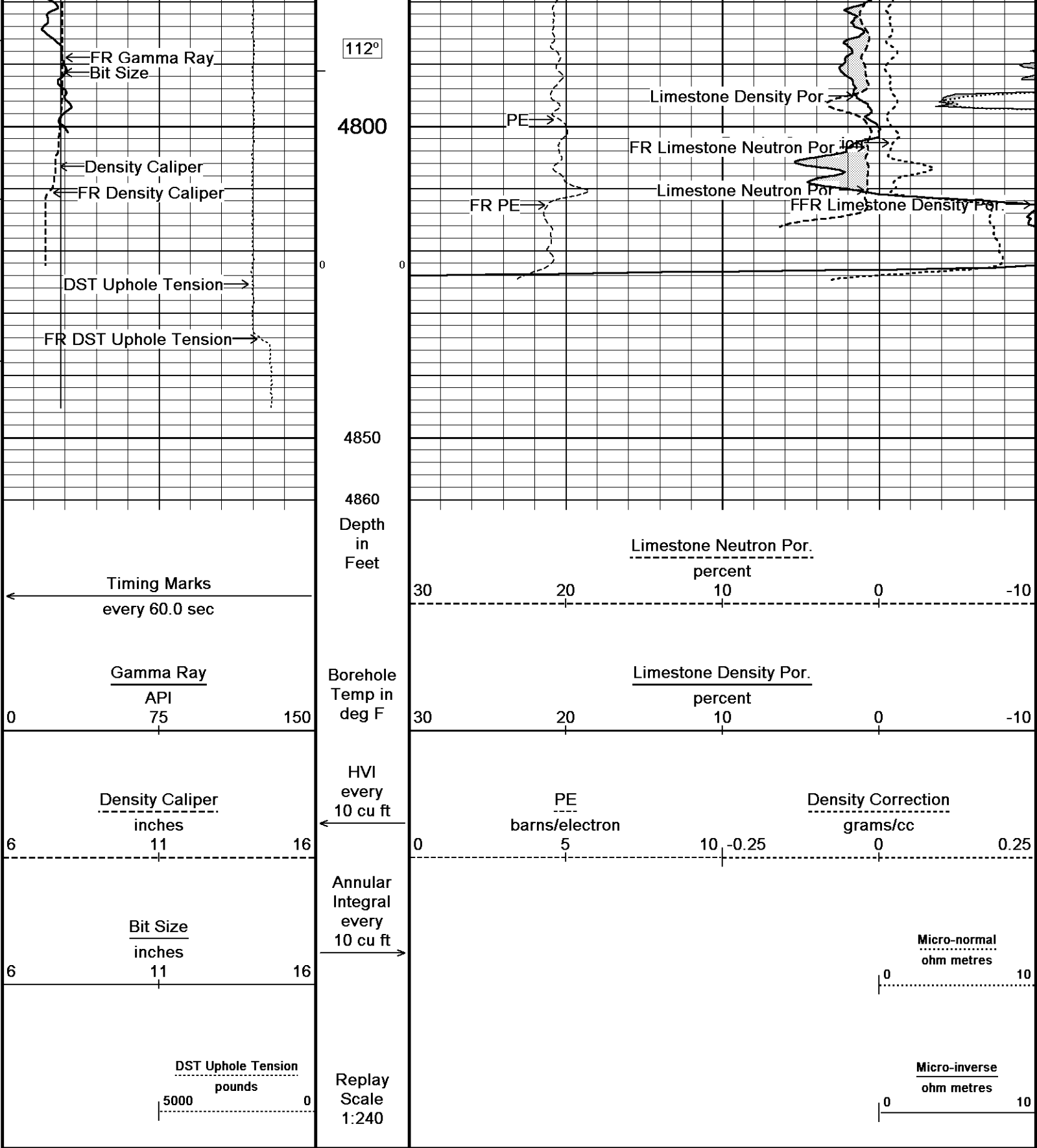
111°

4500

112°

4550



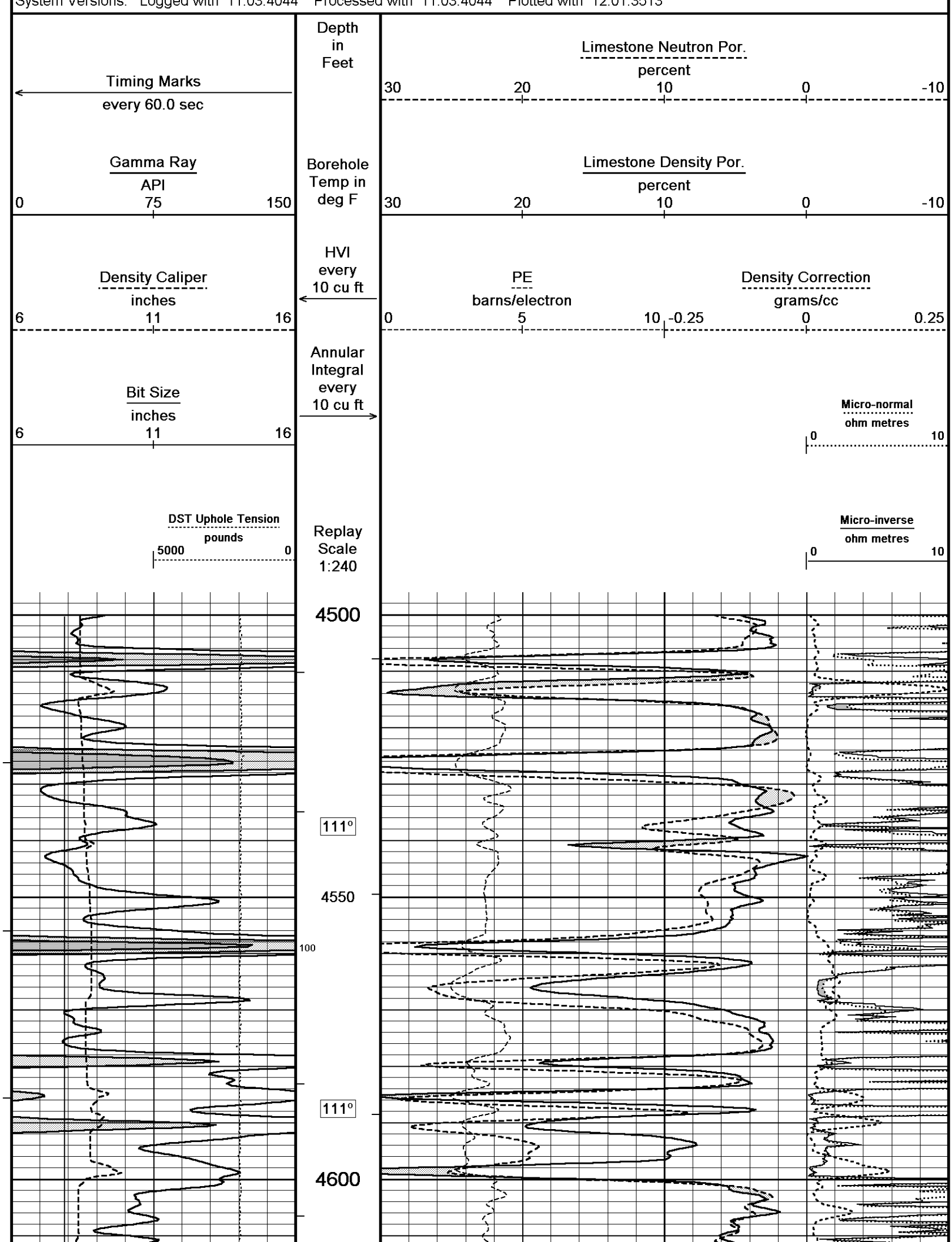


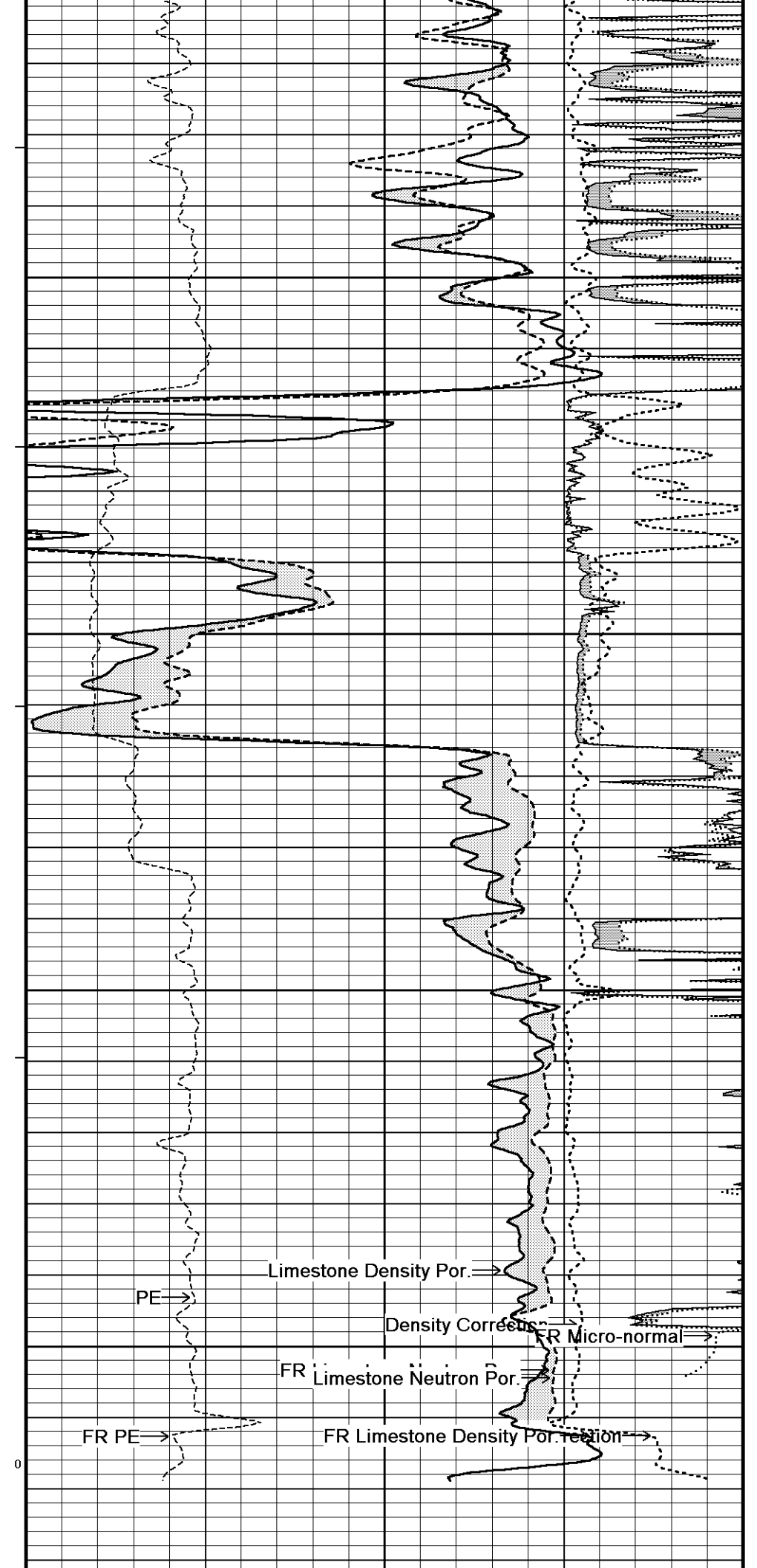
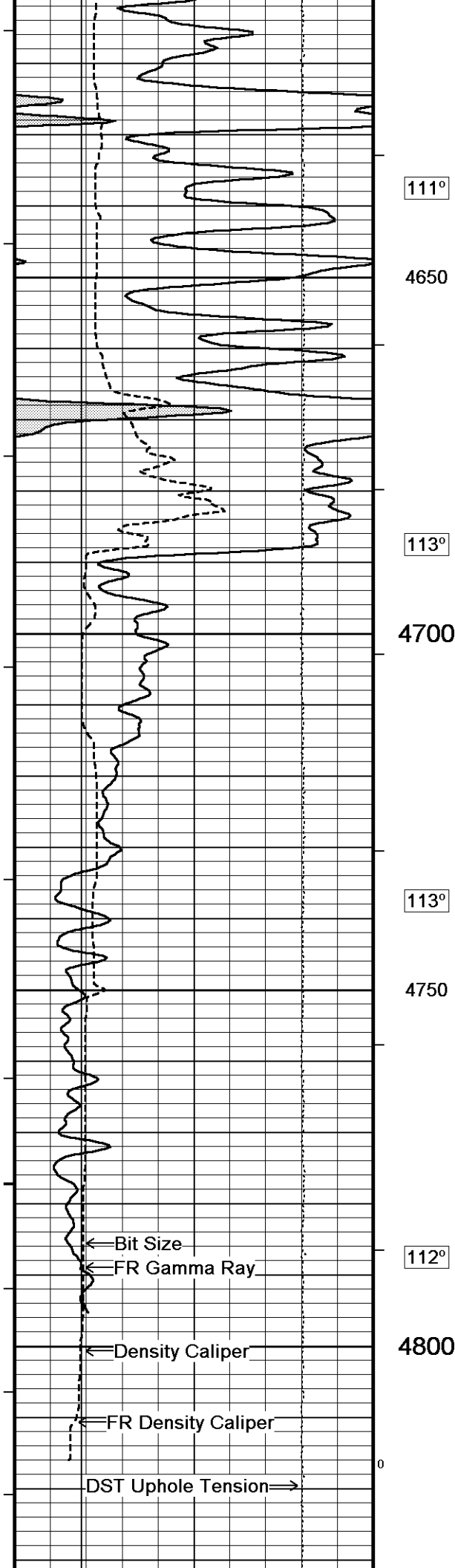
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherfor...\Grand Mesa Riner # 1-27_003.dta
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

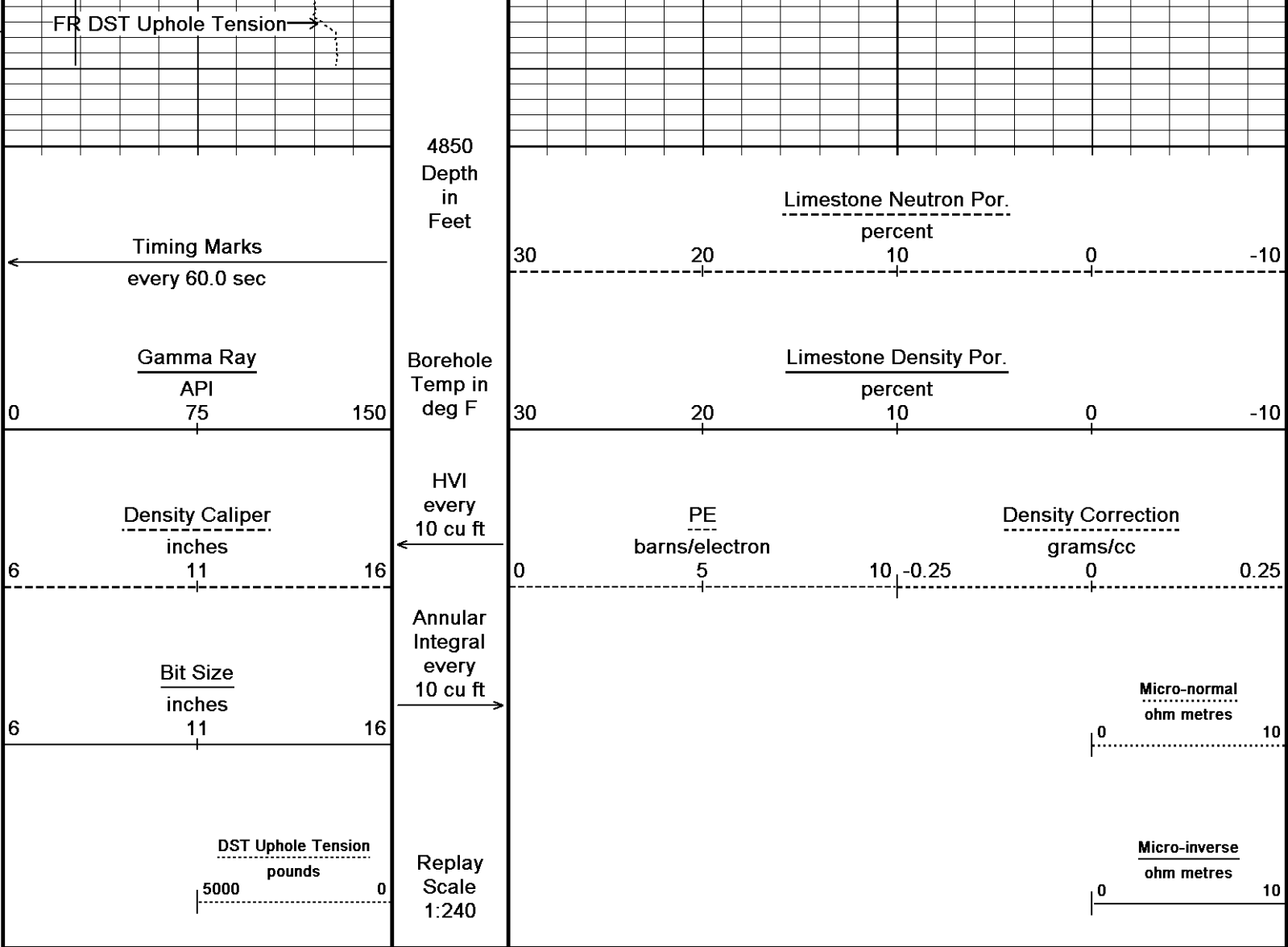
↑ 5 INCH MAIN PASS ↑

↓ 5 INCH REPEAT PASS ↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherfor...\Grand Mesa Riner # 1-27_002.dta
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513



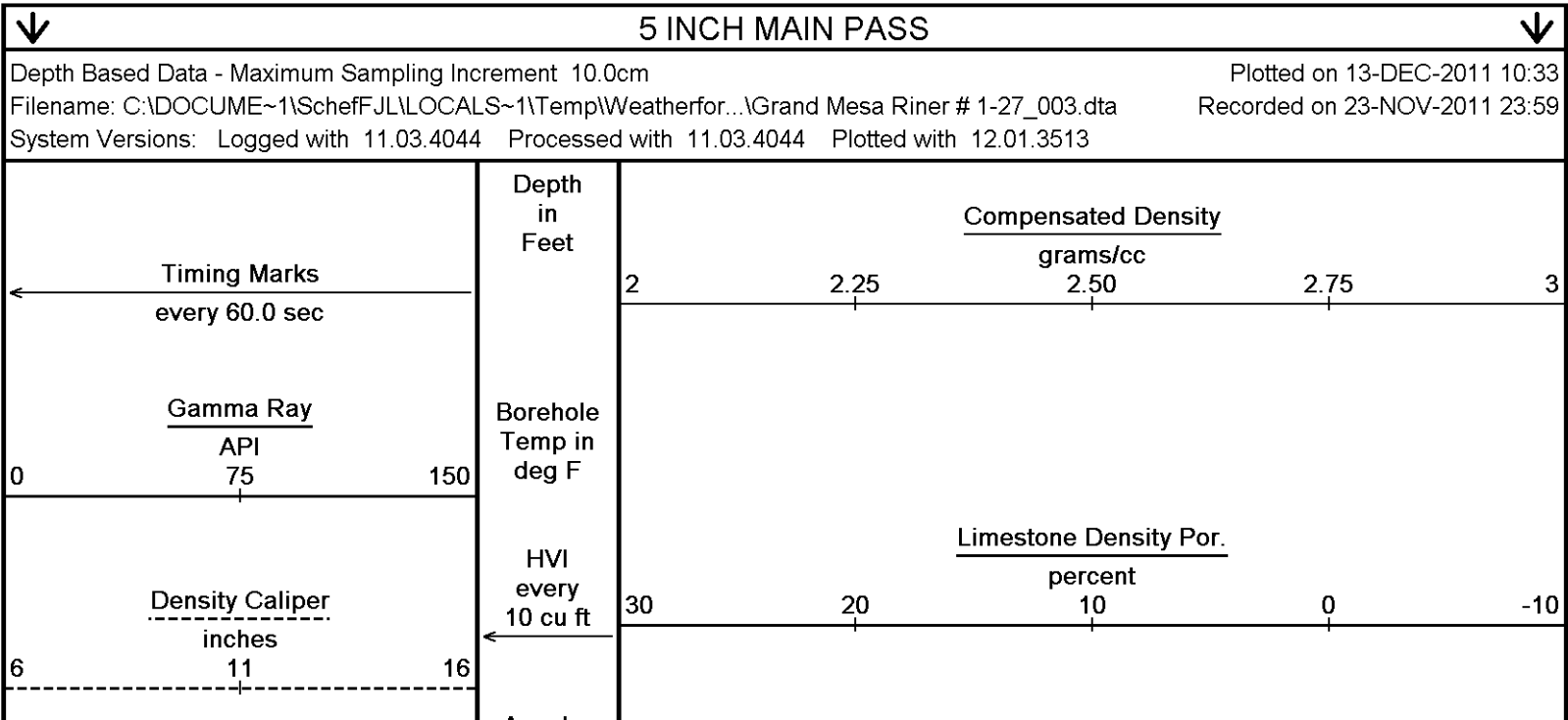


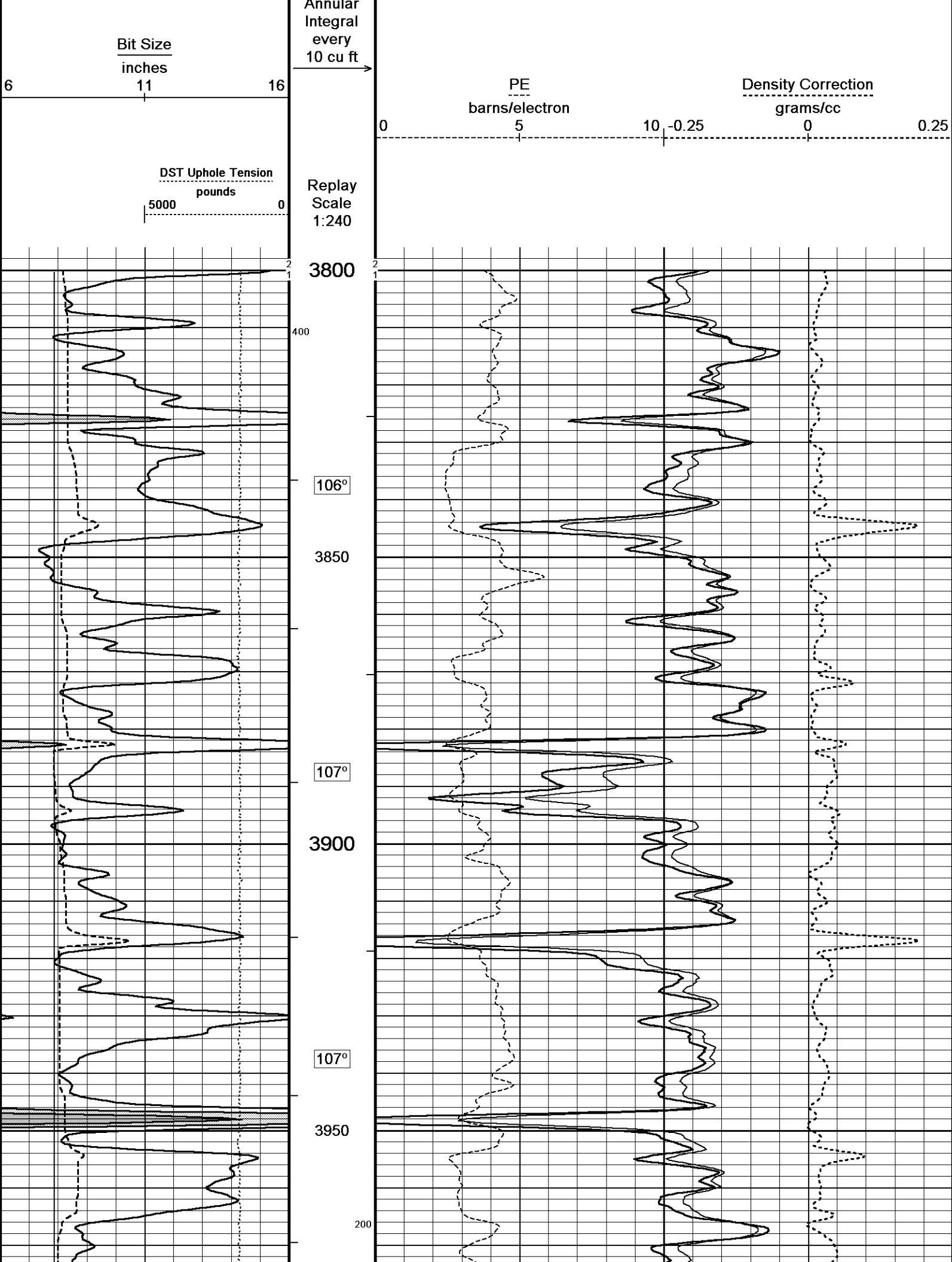


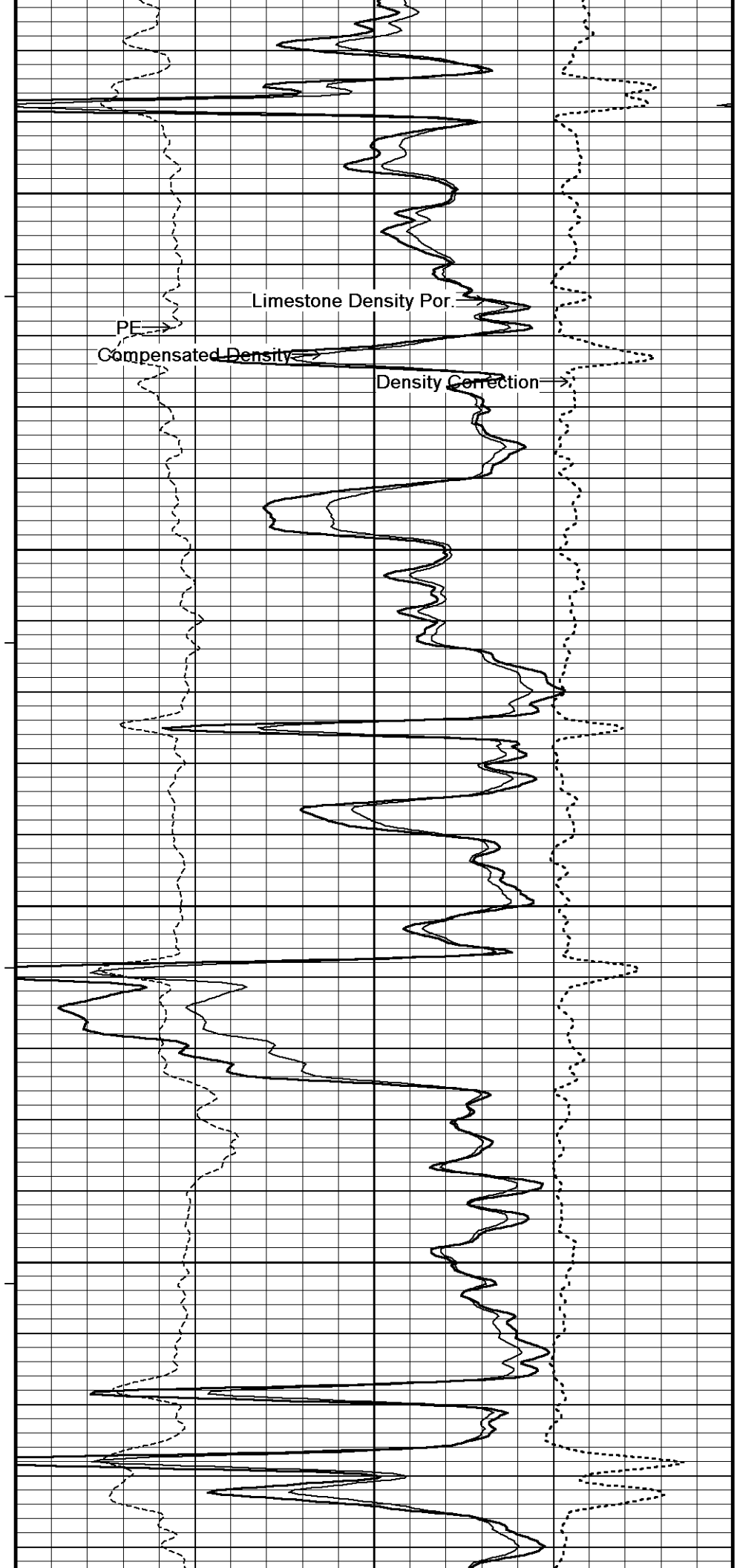
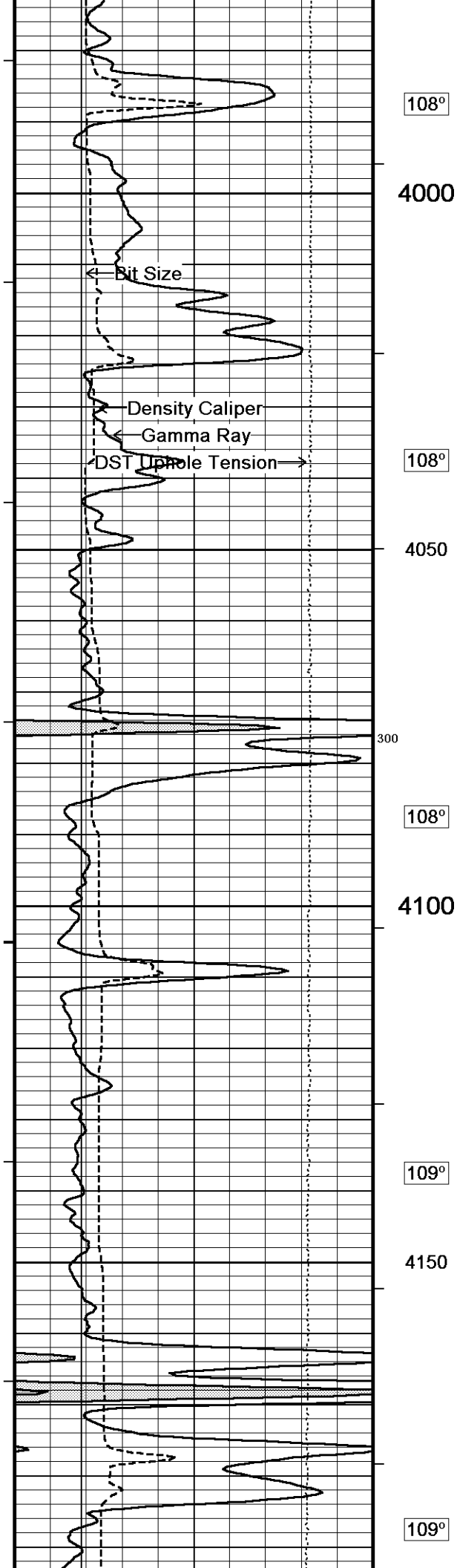
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherfor...\Grand Mesa Riner # 1-27_002.dta
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

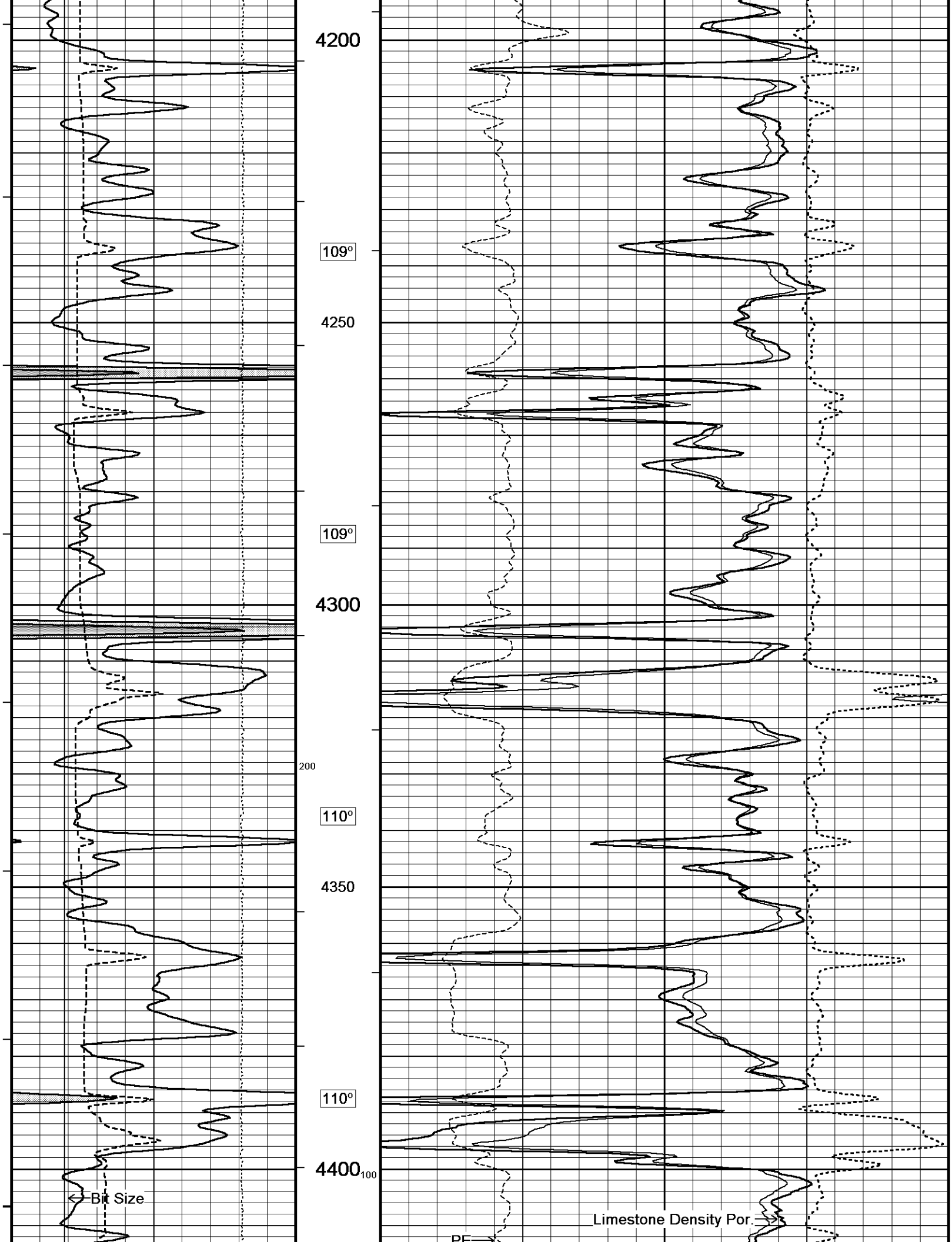
Plotted on 13-DEC-2011 10:33
Recorded on 23-NOV-2011 23:33

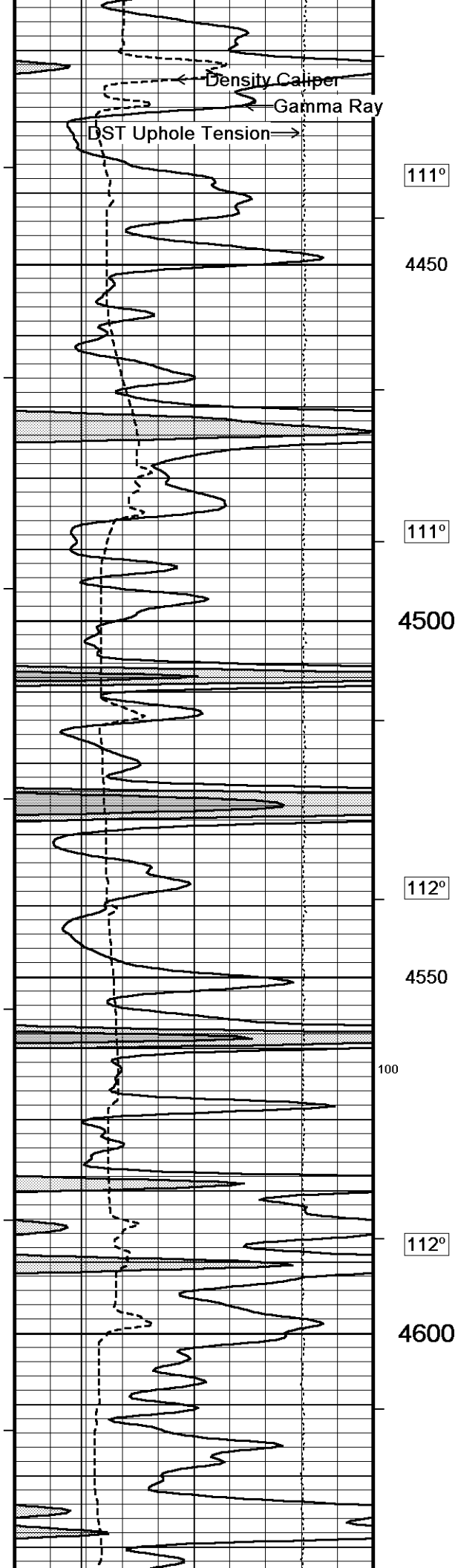
5 INCH REPEAT PASS











111°

4450

111°

4500

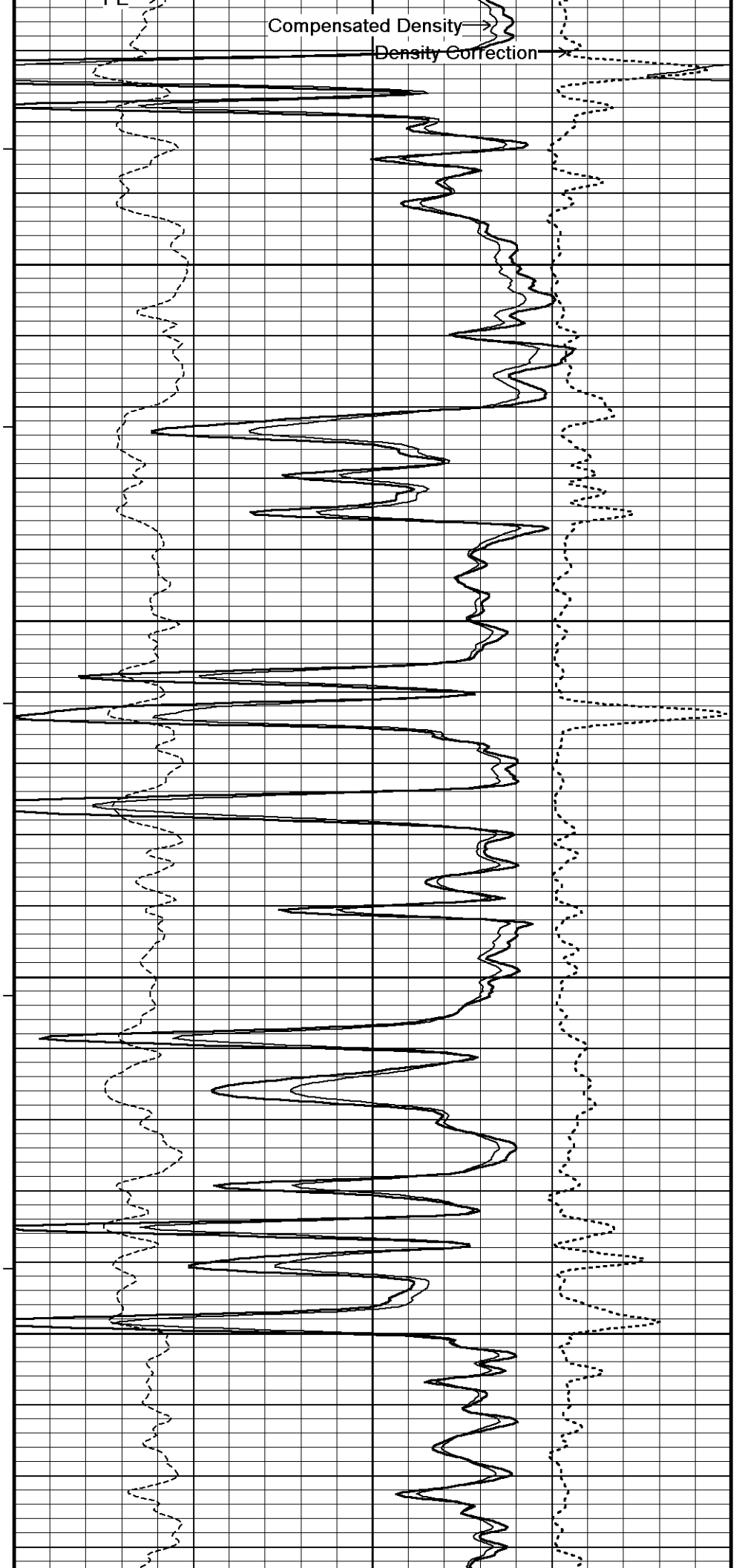
112°

4550

100

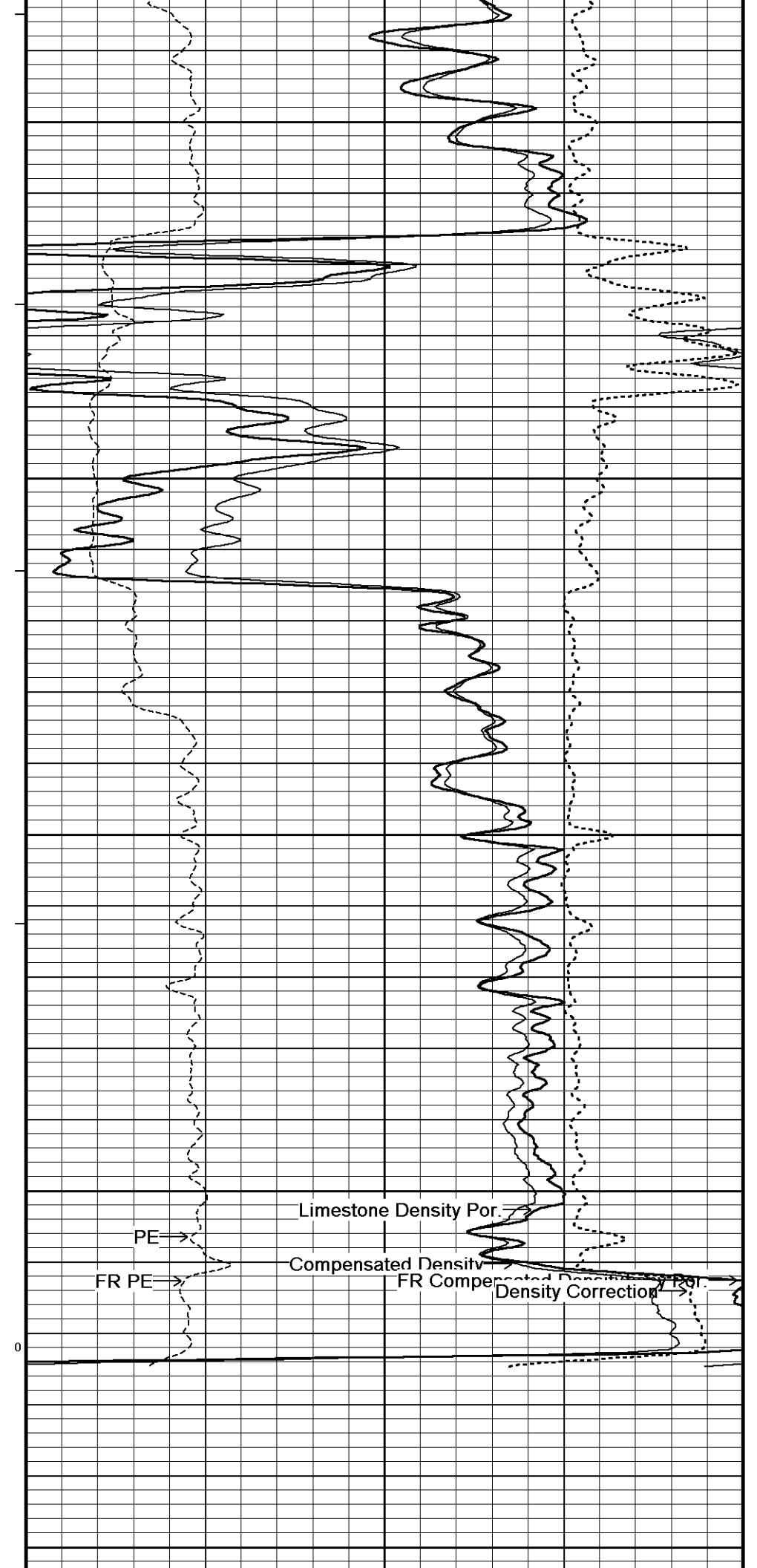
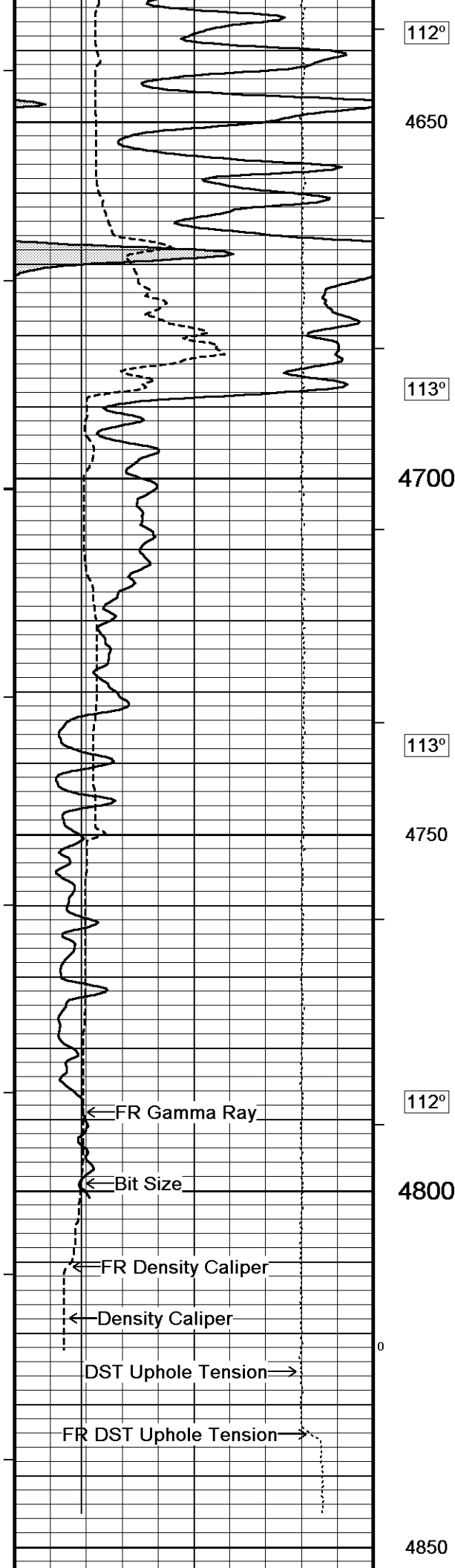
112°

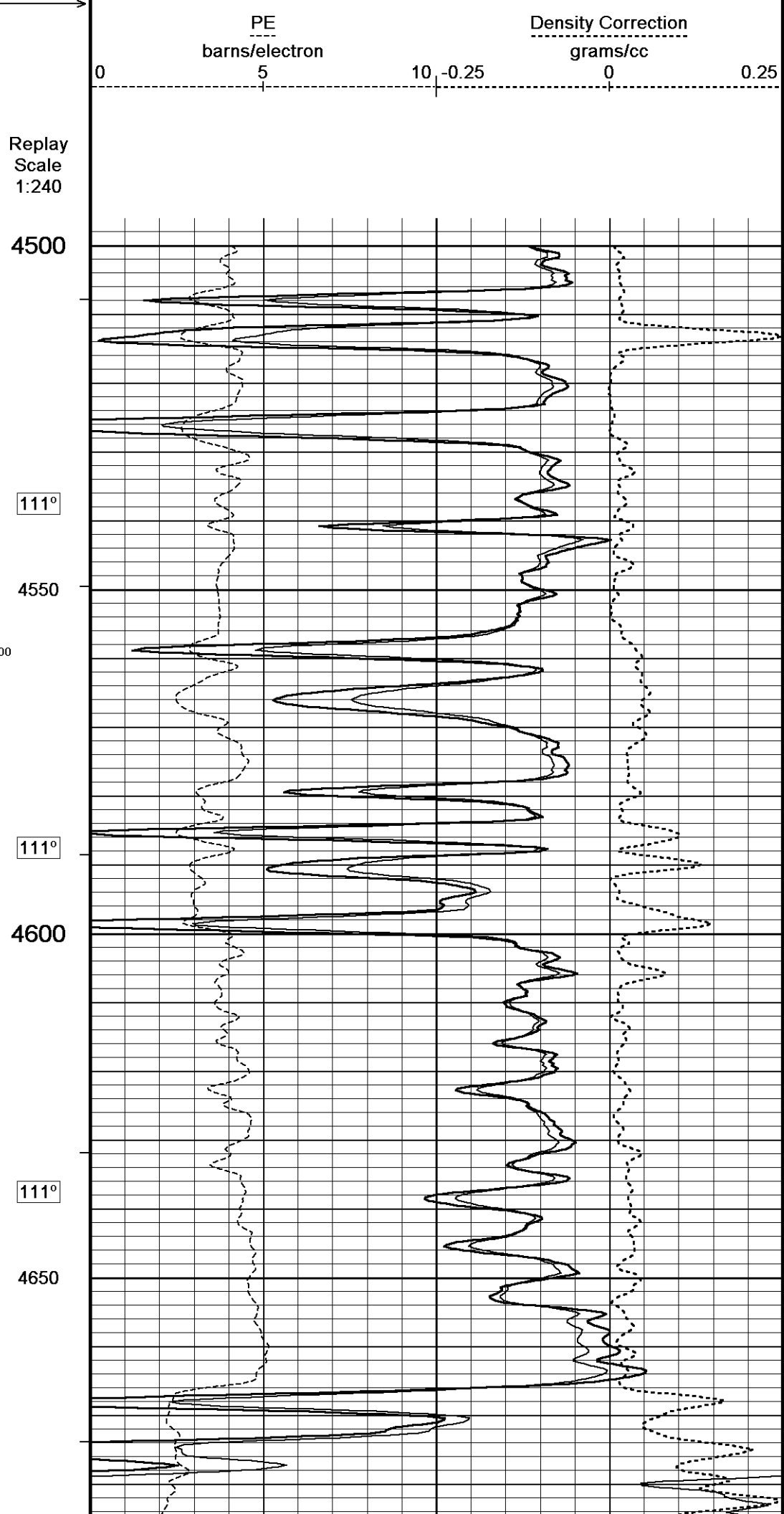
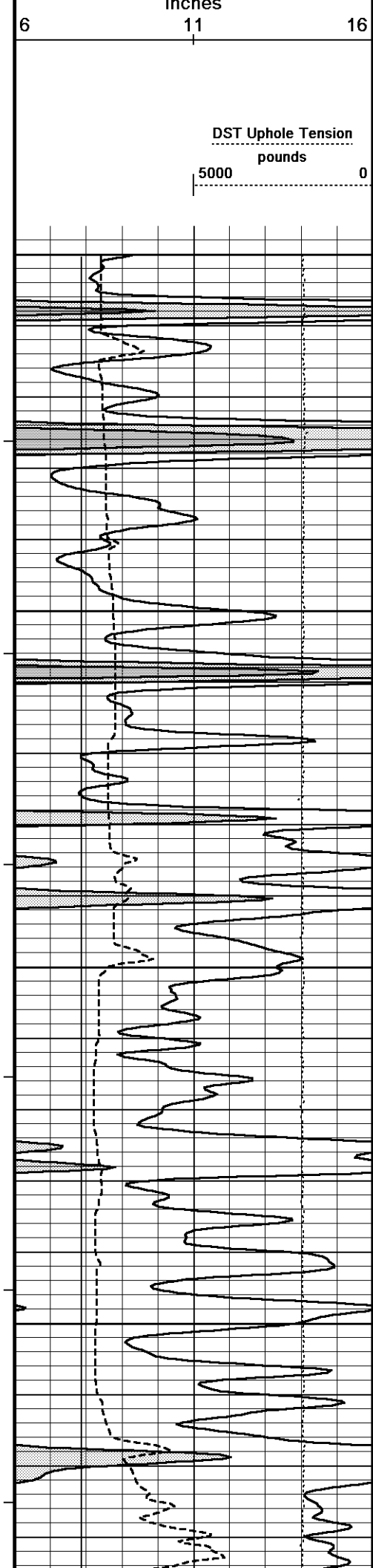
4600

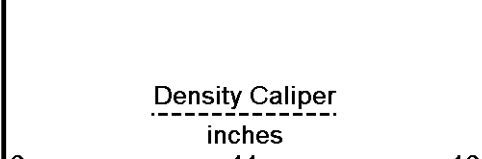
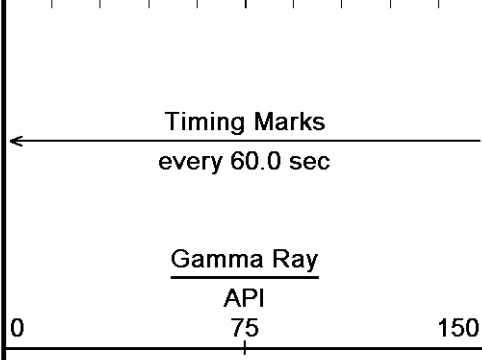
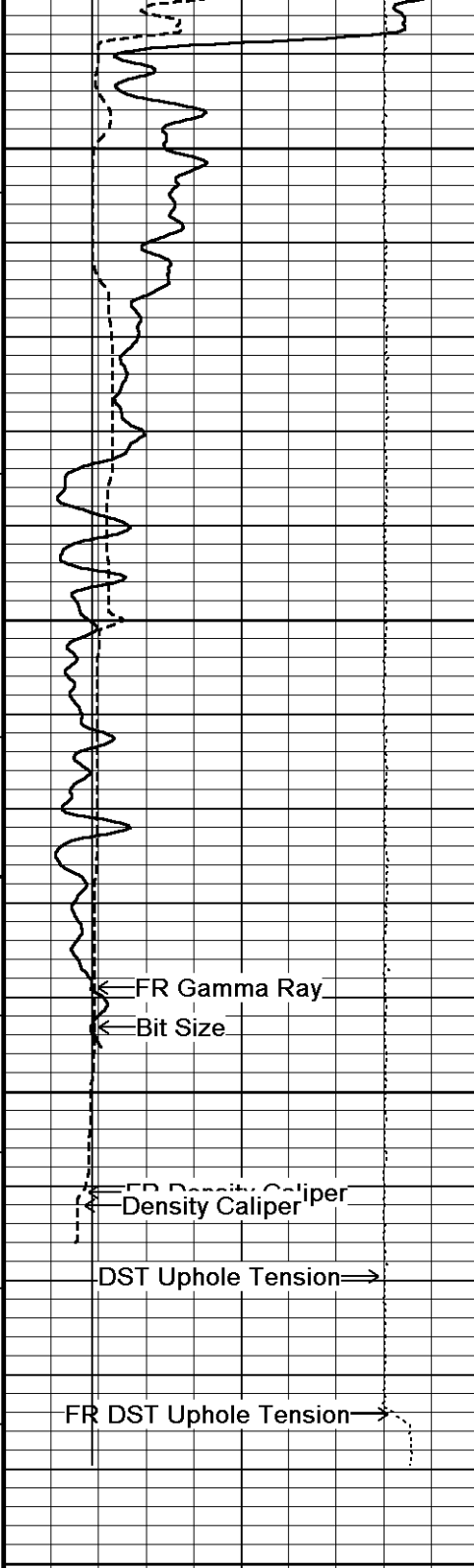


Compensated Density →

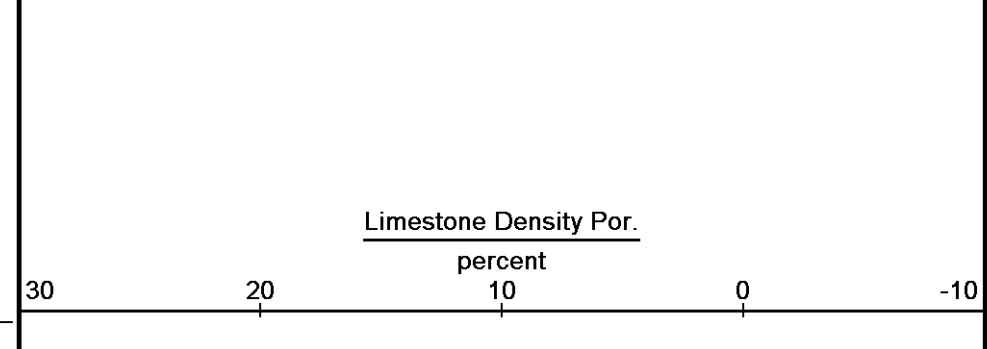
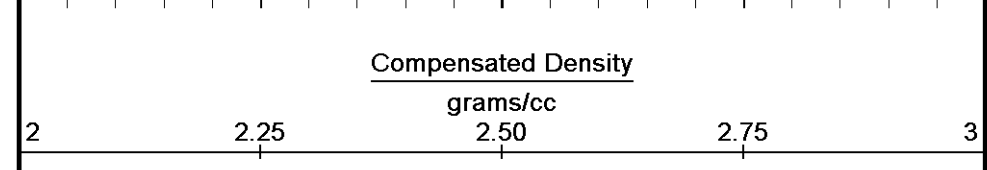
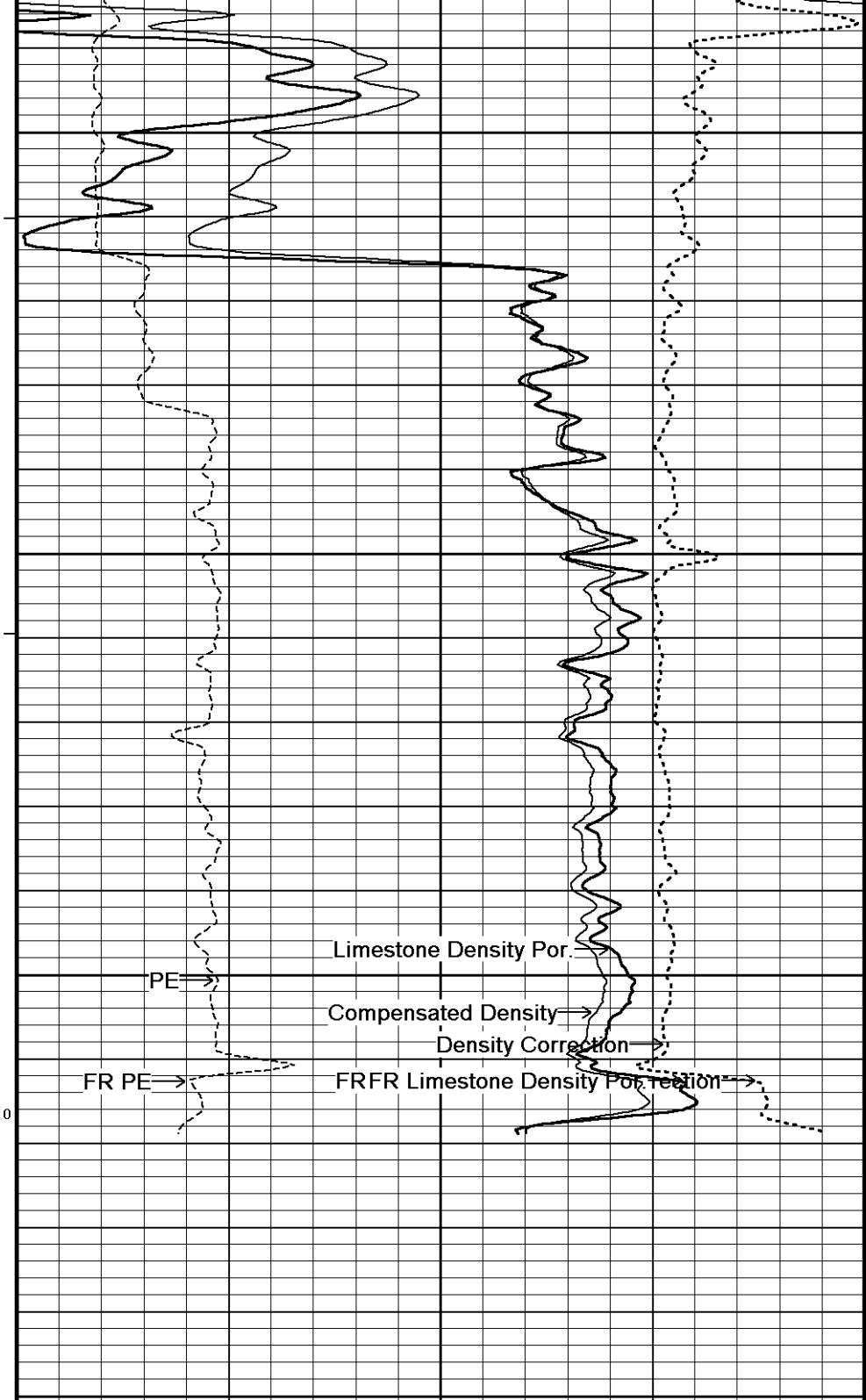
Density Correction →

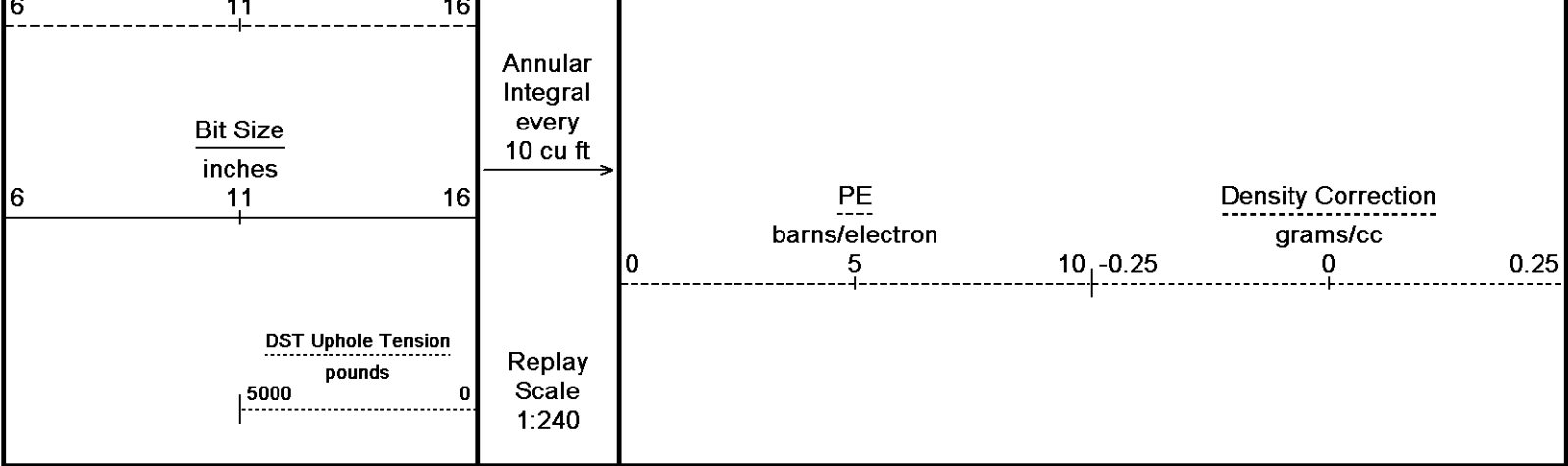






113°
4700
113°
4750
112°
4800
4850
Depth
in
Feet
Borehole
Temp in
deg F
HVI
every
10 cu ft





Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 13-DEC-2011 10:33
Filename: C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherfor...\Grand Mesa Riner # 1-27_002.dta Recorded on 23-NOV-2011 23:33
System Versions: Logged with 11.03.4044 Processed with 11.03.4044 Plotted with 12.01.3513

↑ 5 INCH REPEAT PASS ↑

BEFORE SURVEY CALIBRATION
C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\1\Grand Mesa Riner # 1-27_003.dta

General Constants All 000			Last Edited on 23-NOV-2011 23:00	
General Parameters				
Mud Resistivity	0.240		ohm-metres	
Mud Resistivity Temperature	87.000		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	1.000			
RWA Constant M	2.000			

Down-hole Tension Calibration SMS 0			Field Calibration on 21-SEP-2011 18:41
Reading No	Measured	Calibrated (lbs)	
1	10863.20	0.00	
2	11533.19	480.60	

High Resolution Temperature Calibration MCG-B 34			Field Calibration on 03-AUG-2011 23:33
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	75.00	75.00	

High Resolution Temperature Constants MCG-B 34		Last Edited on
Pre-filter Length	11	

SP Calibration MCG-B 34			Field Calibration on 03-AUG-2011 10:32
	Measured	Calibrated (mV)	
Reference 1	103.5	100.0	
Reference 2	-96.9	-100.0	

Gamma Calibration MCG-B 34			Field Calibration on 23-NOV-2011 17:26
	Measured	Calibrated (API)	
Background	22	12	

Background	69	48
Calibrator (Gross)	1105	773
Calibrator (Net)	1036	725
Gamma Constants MCG-B 34		Last Edited on 23-NOV-2011 21:21
Gamma Calibrator Number	grc38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm
Caliper Calibration MML-A 4		Base Calibration on 13-OCT-2011 10:57 Field Calibration on 23-NOV-2011 17:47
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	15159	5.96
2	18613	7.98
3	22024	9.95
4	25867	11.91
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	6.04	5.98
Micro Normal and Micro Inverse Calibration MML-A 4		Base Calibration on 13-OCT-2011 10:48 Field Check on 23-NOV-2011 17:44
Base Calibration		
Channel	Resistor 1	Measured Resistor 2
Micro Normal	12.2	60.2
Micro Inverse	15.7	78.4
		Calibrated (ohm-m)
		Resistor 1 Resistor 2
		2.6 12.8
		1.7 8.4
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3
Micro Normal and Micro Inverse Constants MML-A 4		Last Edited on 21-NOV-2011 01:45
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	N/A	inches
Neutron Calibration MDN-A.B 65		Base Calibration on 13-OCT-2011 12:53 Field Check on 23-NOV-2011 17:42
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	3127 96	3714 110
Ratio	32.586	33.764
Field Calibrator at Base		Calibrated (cps)
		1623 2377
Ratio		0.683
Field Check		Calibrated (cps)
		1634 2416
Ratio		0.676
Neutron Constants MDN-A.B 65		Last Edited on 23-NOV-2011 23:00
Neutron Source Id	757	
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	ksi
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 13-OCT-2011 11:13 Field Check on 23-NOV-2011 17:43	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	952.4	126.8	
Base Check		281.6	
Field Check		281.3	

FE Constants MFE-A.A 55			Last Edited on 23-NOV-2011 23:00		
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 03-NOV-2011 10:08	
	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
Pre-filter Length	11	

Induction Calibration MAI-A.A 45				Base Calibration on 13-OCT-2011 15:35	
				Field Check on 23-NOV-2011 17:28	
Base Calibration					
Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel	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	19.2	3852.9	
2	0.0	0.0	31.9	3630.6	
3	0.0	0.0	28.8	3050.4	
4	0.0	0.0	18.4	2079.8	
Deep	0.0	0.0	16.2	1911.8	
Medium	0.0	0.0	42.6	4062.0	
Shallow	0.0	0.0	49.9	5485.0	
Array Temperature		0.0	71.6	Deg F	

Induction Constants MAI-A.A 45		Last Edited on 23-NOV-2011 23:01	
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 Fins on Stand-off	15.0000		

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	

Caliper Calibration MPD-B 31

Base Calibration on 15-NOV-2011 12:09
Field Calibration on 23-NOV-2011 17:34

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16832	3.99
2	25344	5.98
3	33984	7.97
4	42368	9.86
5	51712	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 02-AUG-2011 17:24
Field Check on 23-NOV-2011 17:33

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	48081	24805	59556	30836
Reference 2	19867	2025	24941	2541

Field Check at Base

707.3 871.8

Field Check

701.0 866.2

PE Calibration

Base Calibration	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	131	626		
Reference 1	19081	47953	0.400	0.371
Reference 2	5693	19772	0.291	0.272

Field Check at Base

131.3 626.1

Field Check

Density Constants MPD-B 31

Last Edited on 23-NOV-2011 21:21

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	
0.00	0.00	

DOWNHOLE EQUIPMENT

C:\DOCUME~1\ScheffJL\LOCALS~1\Temp\Weatherford PreView\1\Grand Mesa Riner # 1-27_003.dta

MCB-A.A 11B Tension Cablehead
 MCB-A.A 156 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

MCB-A.A 11B Tension Cablehead
 MCB-A.A 156 LG: 2.40 ft WT: 19.8 lb OD: 2.24 in

Compact Comms Gamma
 MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
 MCG-B 34 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 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

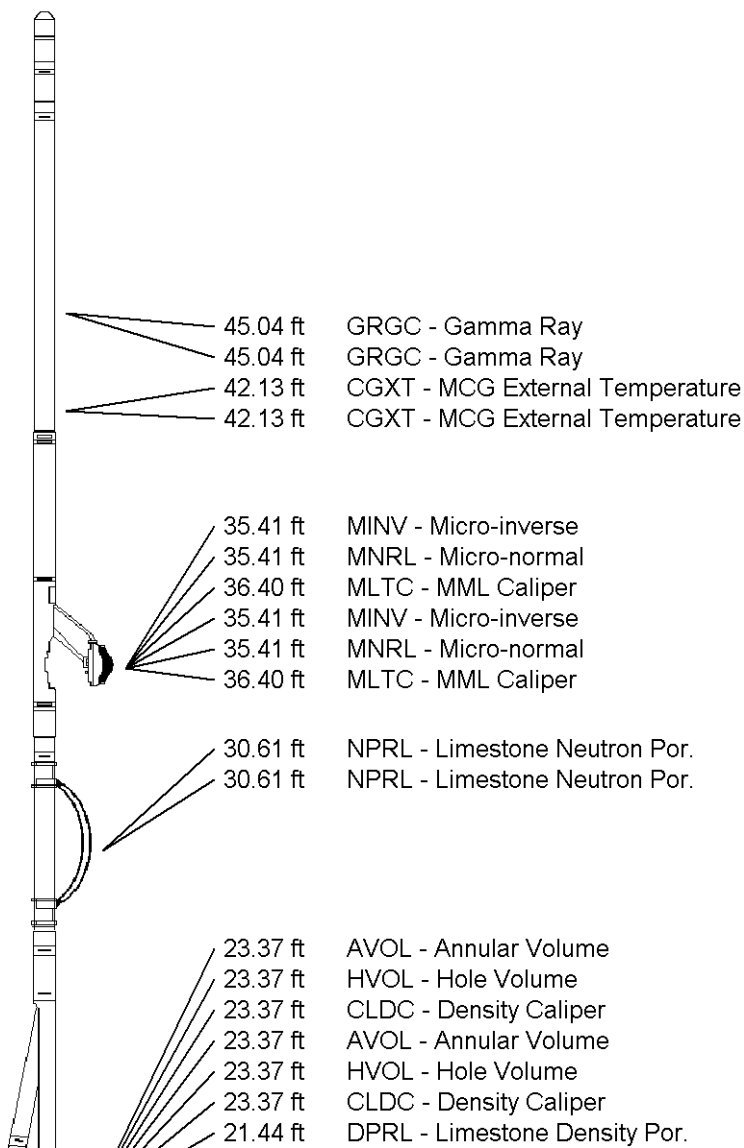
Compact Neutron
 MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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

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

SKJ-D.A Compact Knuckle Joint
 SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint



SKJ-D.A Compact Knuckle Joint
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

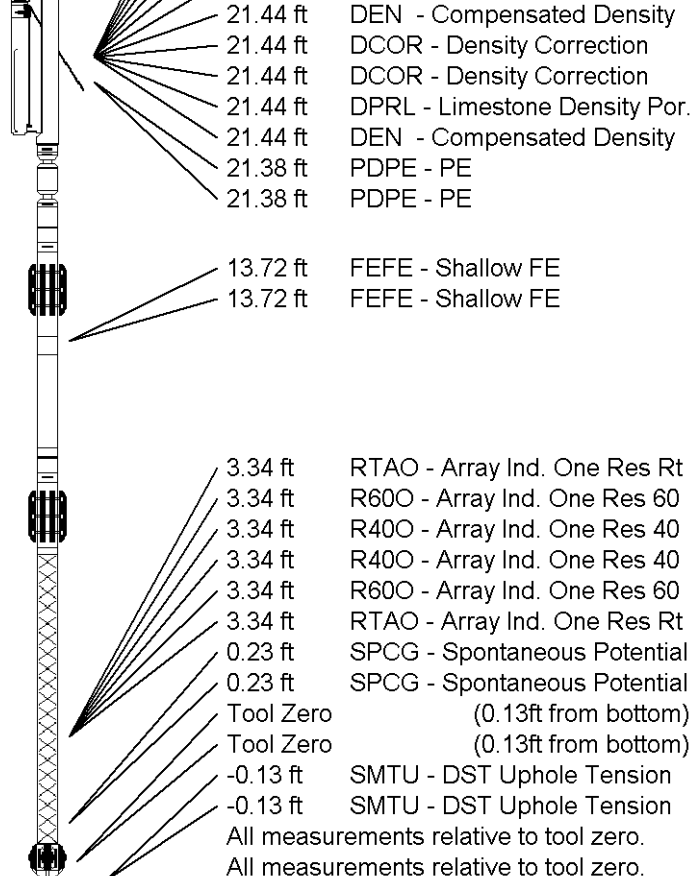
Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 52.72 ft Weight: 427.7 lb

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

Elevation Kelly Bushing	3037.00	feet	First Reading	4811.00	feet
Elevation Drill Floor	3035.00	feet	Depth Driller	4830.00	feet
Elevation Ground Level	3032.00	feet	Depth Logger	4834.00	feet



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MICRORESISTIVITY LOG

