Weatherford®

# COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

| | |
|---|---|
| COMPANY | GRAND MESA OPERATING |
| WELL | SPONEY #1-33 |
| FIELD | WILDCAT |
| PROVINCE/COUNTY | GOVE |
| COUNTRY/STATE | U.S.A. / KANSAS |
| LOCATION | 1052' FSL & 583' FWL |

40 Years of Wireline 1979 2019

| SEC | TWP | RGE | Other Services |
|---|---|---|---|
| 33 | 13S | 31W | MAI/MFE |

API Number 15-063-21926
Permit Number

Permanent Datum G.L., Elevation 2929 feet
Log Measured From K.B. @ 5 FEET above Permanent Datum
Drilling Measured From K.B.

| Elevations: | feet |
|---|---|
| KB | 2934.00 |
| DF | 2932.00 |
| GL | 2929.00 |

| | | | | |
|---|---|---|---|---|
| Date | 28-JUL-2011 | | | |
| Run Number | ONE | | | |
| Depth Driller | 4680.00 | feet | | |
| Depth Logger | 4675.00 | feet | | |
| First Reading | 4653.00 | feet | | |
| Last Reading | 3600.00 | feet | | |
| Casing Driller | 222.00 | feet | | |
| Casing Logger | 221.00 | feet | | |
| Bit Size | 7.875 | inches | | |
| Hole Fluid Type | CHEMICAL | | | |
| Density / Viscosity | 9.40 lb/USg | 52.00 CP | | |
| PH / Fluid Loss | 9.50 | 9.60 ml/30Min | | |
| Sample Source | FLOWLINE | | | |
| Rm @ Measured Temp | 1.05 @ 91.0 | ohm-m | | |
| Rmf @ Measured Temp | 0.84 @ 91.0 | ohm-m | | |
| Rmc @ Measured Temp | 1.26 @ 91.0 | ohm-m | | |
| Source Rmf / Rmc | CALC | CALC | | |
| Rm @ BHT | 0.80 @120.0 | ohm-m | | |
| Time Since Circulation | 4 HOURS | | | |
| Max Recorded Temp | 120.00 | deg F | | |
| Equipment Name | COMPACT | | | |
| Equipment / Base | 13057 | LIB | | |
| Recorded By | R. HOFFMAN | | | |
| Witnessed By | BOB PETERSEN | | | |
| S.O. # / JOB # | 3531112 | | 3531112 | |

## BOREHOLE RECORD

Last Edited: 28-JUL-2011 02:19

| Bit Size inches | Depth From feet | Depth To feet |
|---|---|---|
| 7.875 | 221.00 | 4675.00 |

## CASING RECORD

| Type | Size inches | Depth From feet | Shoe Depth feet | Weight pounds/ft |
|---|---|---|---|---|
| SURFACE | 8.625 | 0.00 | 221.00 | 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 = 240 cu. ft.
Service order #3531112
Rig: Murfin Drilling Rig #24
Engineer: R. Hoffman
Operator(s): J. LaPoint

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

5 INCH MAIN PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherf...\Grand Mesa Sponey #1-33_002.dta
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Plotted on 31-AUG-2011 09:38
Recorded on 28-JUL-2011 02:24

Timing Marks
every 60.0 sec

Depth in Feet

Limestone Neutron Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150

Borehole Temp in deg F

Limestone Density Por.
percent
30 20 10 0 -10

HVI every 10 cu ft

Density Caliper
inches
6 11 16

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Annular Integral every 10 cu ft

Bit Size
inches
6 11 16

Micro-normal
ohm metres
0 10

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

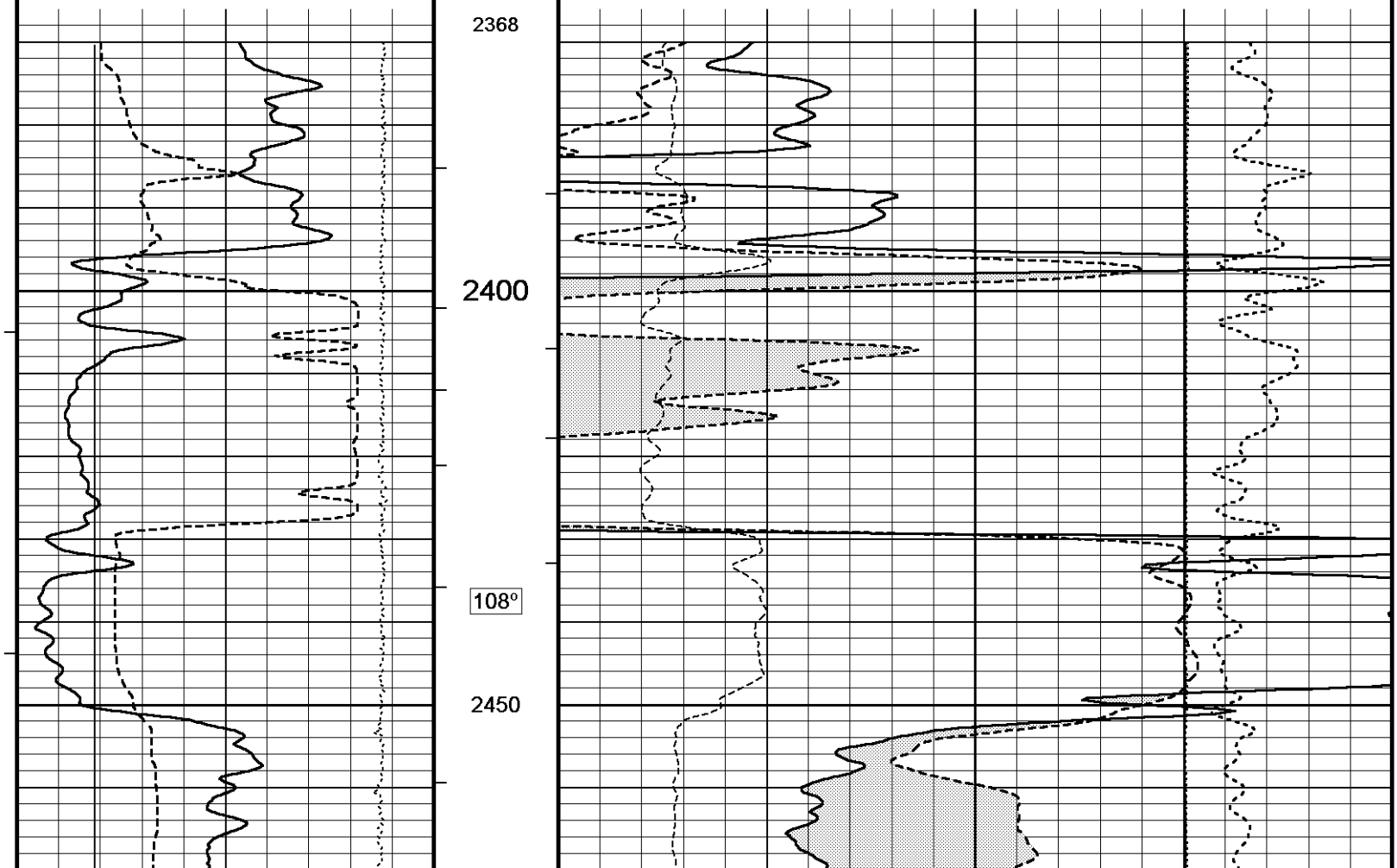
Micro-inverse
ohm metres
0 10

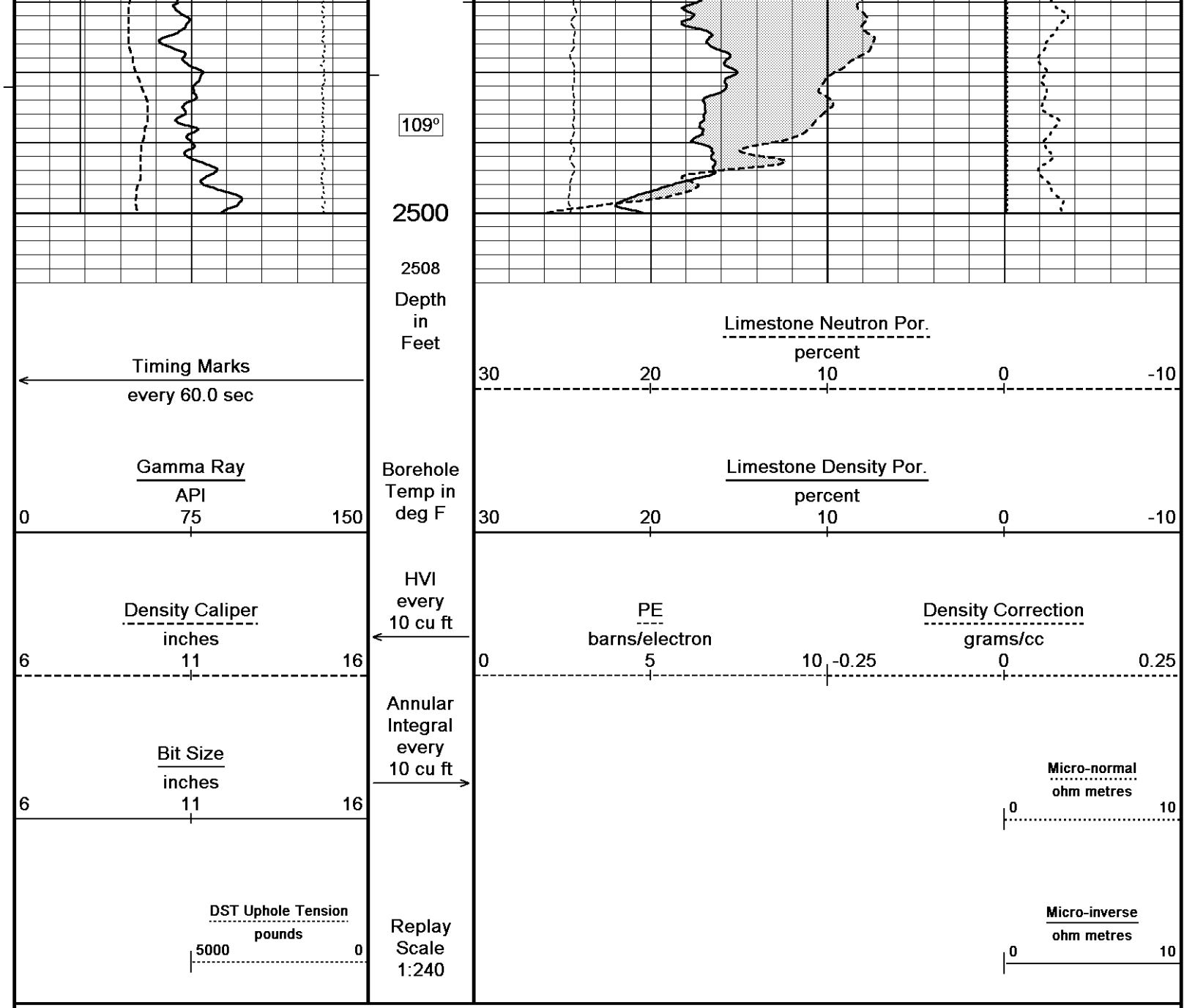
2368

2400

108°

2450



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5 INCH MAIN PASS

5 INCH MAIN PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 31-AUG-2011 09:38
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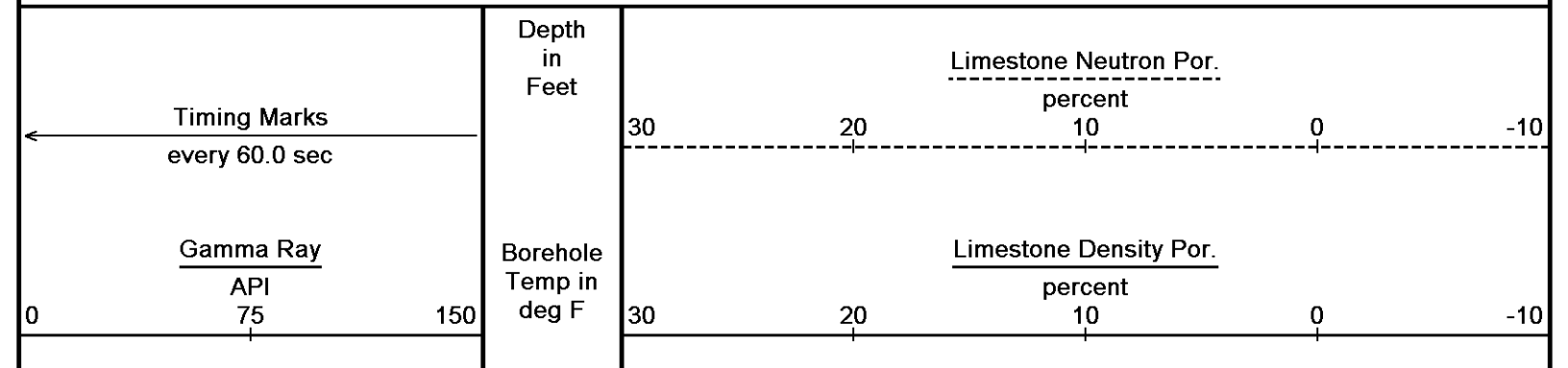
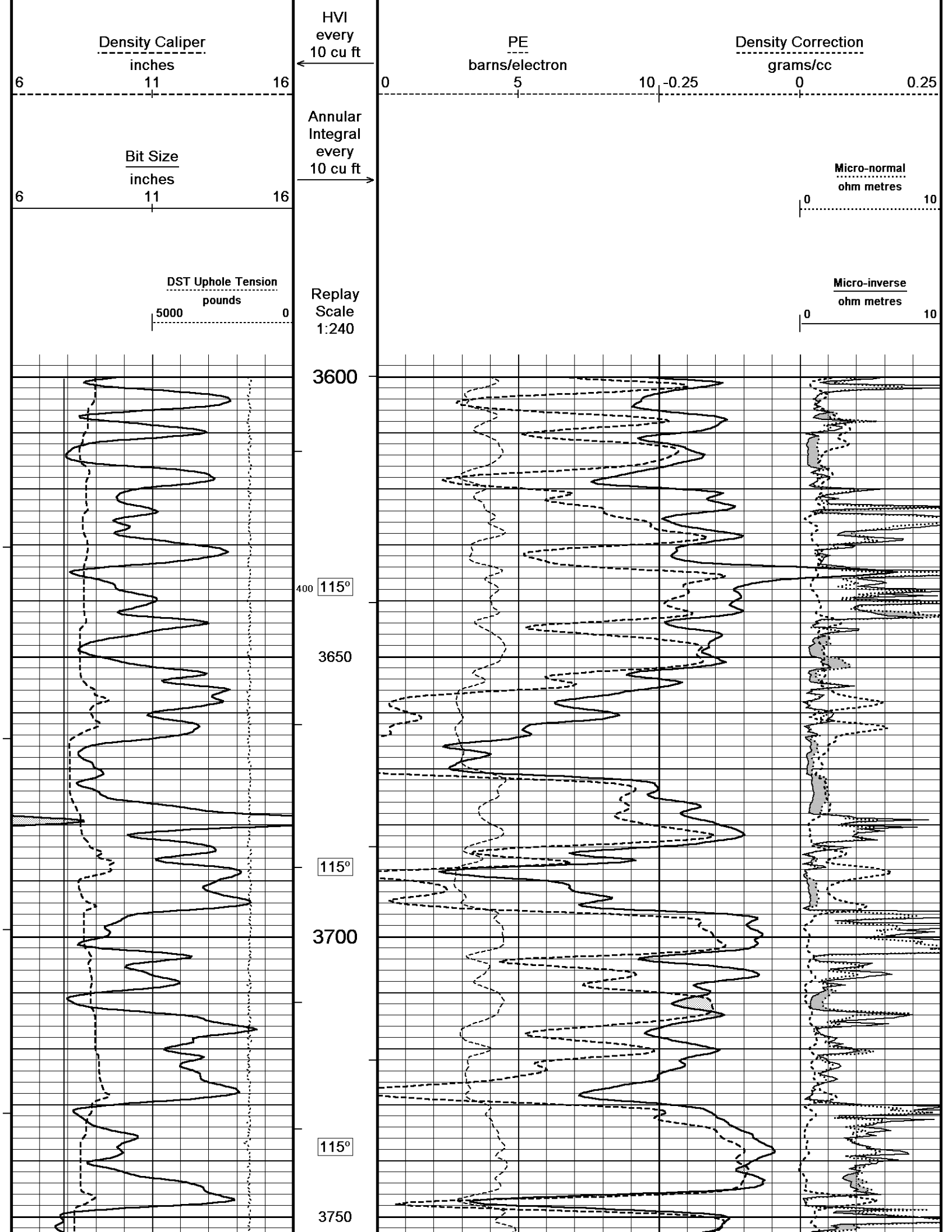
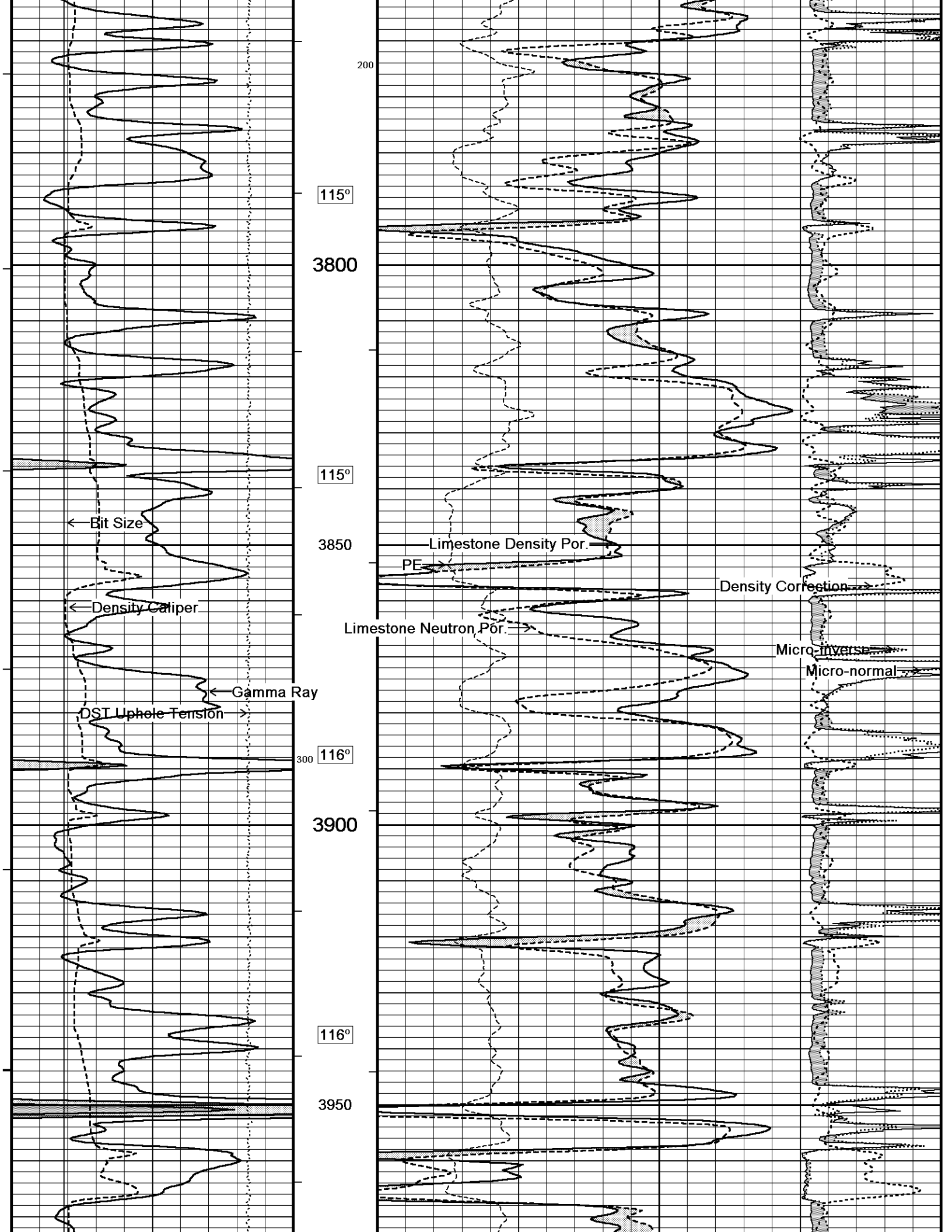
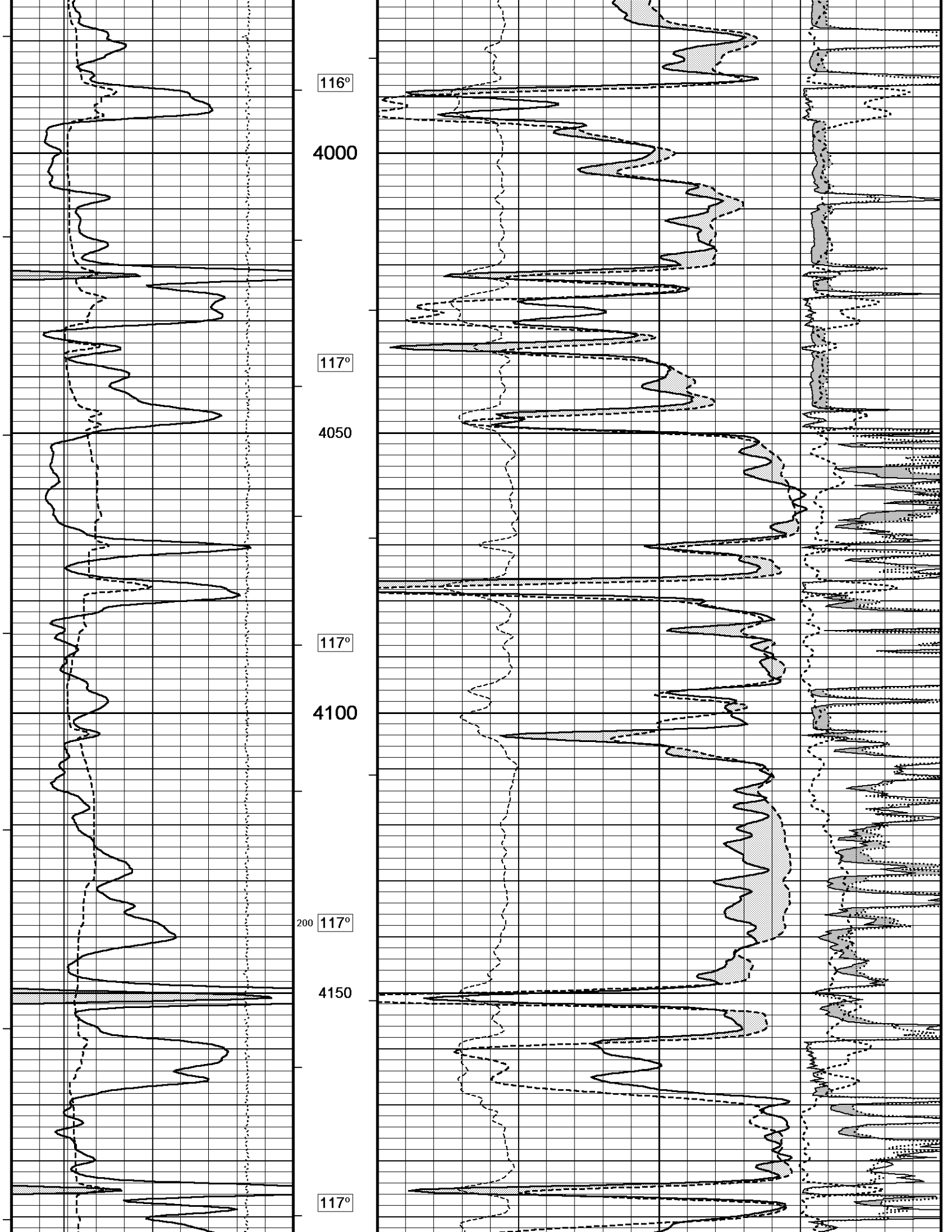
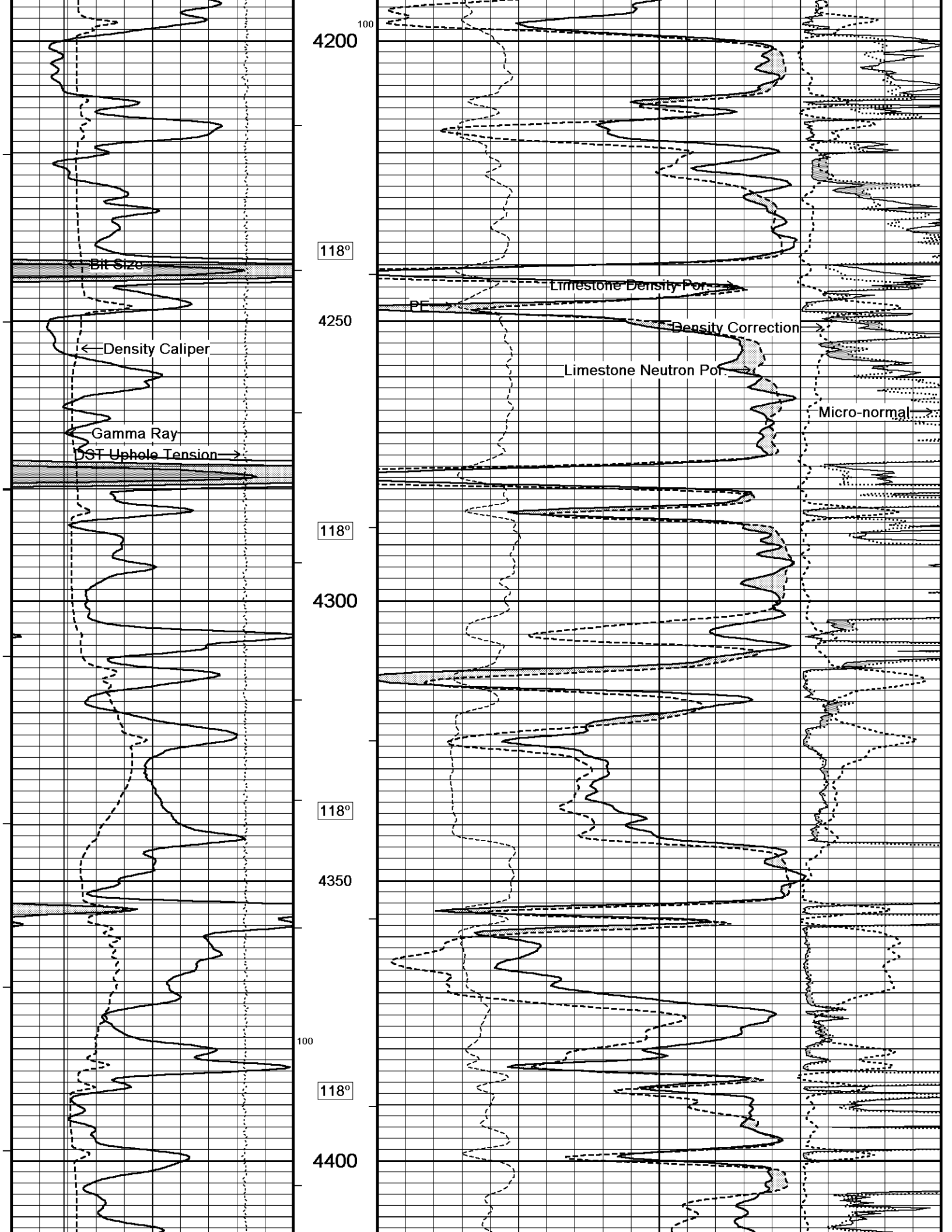
Recorded on 28-JUL-2011 03:10
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

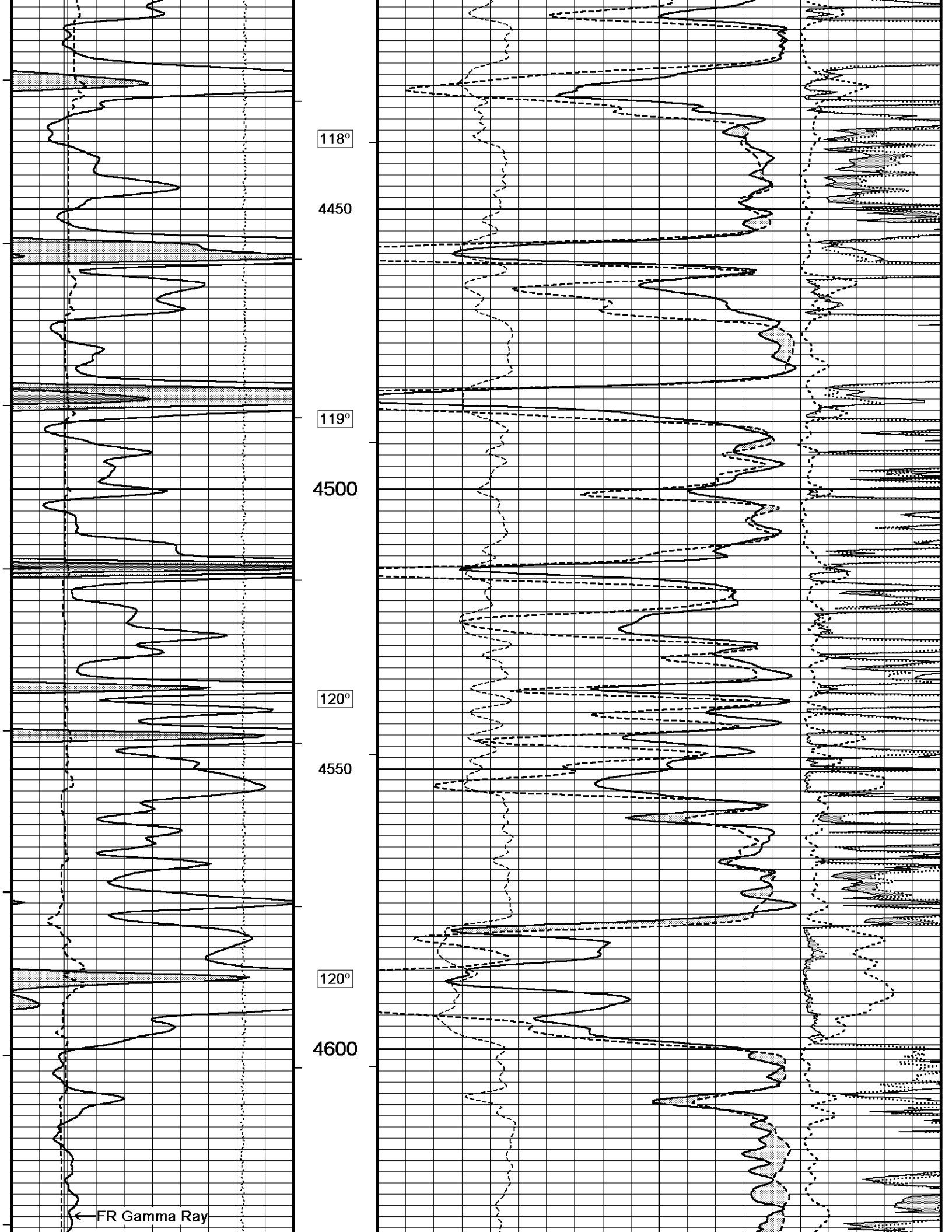


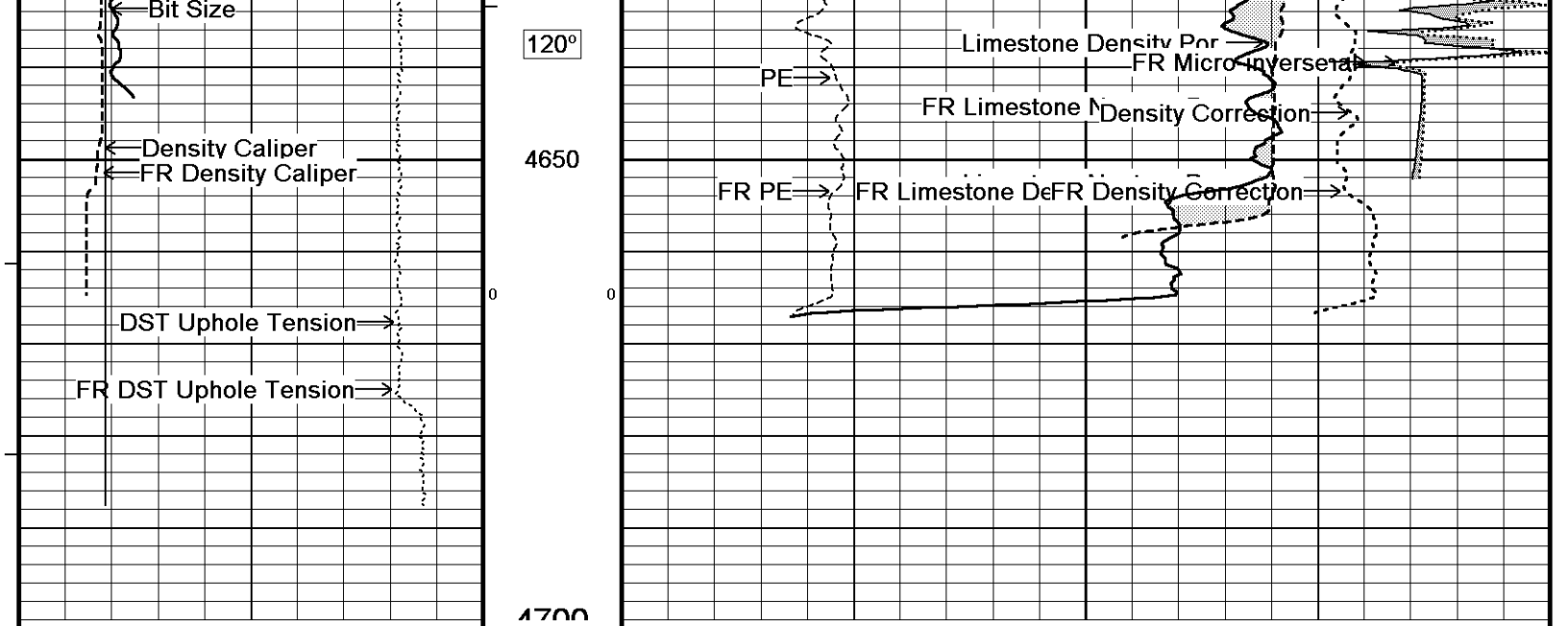

Density Caliper
inches
6
11
16
HVI
every
10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
Annular
Integral
every
10 cu ft
Bit Size
inches
6
11
16
Micro-normal
ohm metres
0
10
DST Uphole Tension
pounds
5000
0
Micro-inverse
ohm metres
0
10
Replay
Scale
1:240
3600
400
115°
3650
115°
3700
115°
3750


200
115°
3800
115°
Bit Size
3850
Limestone Density Por.
PE
Density Correction
Density Caliper
Limestone Neutron Por.
Micro-inverse
Micro-normal
Gamma Ray
DST Uphole Tension
300
116°
3900
116°
3950


116°
4000
117°
4050
117°
4100
200
117°
4150
117°


100
4200
118°
Bit Size
Limestone Density Por.
PE
4250
Density Correction
Density Caliper
Limestone Neutron Por.
Micro-normal
Gamma Ray
DST Uphole Tension
118°
4300
118°
4350
100
118°
4400


118°
4450
119°
4500
120°
4550
120°
4600
FR Gamma Ray




Depth in Feet

Timing Marks
every 60.0 sec

Limestone Neutron Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150

Borehole Temp in deg F

Limestone Density Por.
percent
30 20 10 0 -10

HVI every 10 cu ft

Density Caliper
inches
6 11 16

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Annular Integral every 10 cu ft

Bit Size
inches
6 11 16

Micro-normal
ohm metres
0 10

DST Uphole Tension
pounds
5000 0

Micro-inverse
ohm metres
0 10

Replay Scale 1:240

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\...\Grand Mesa Sponey #1-33_002 spooled section.dta
Recorded on 28-JUL-2011 03:10
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

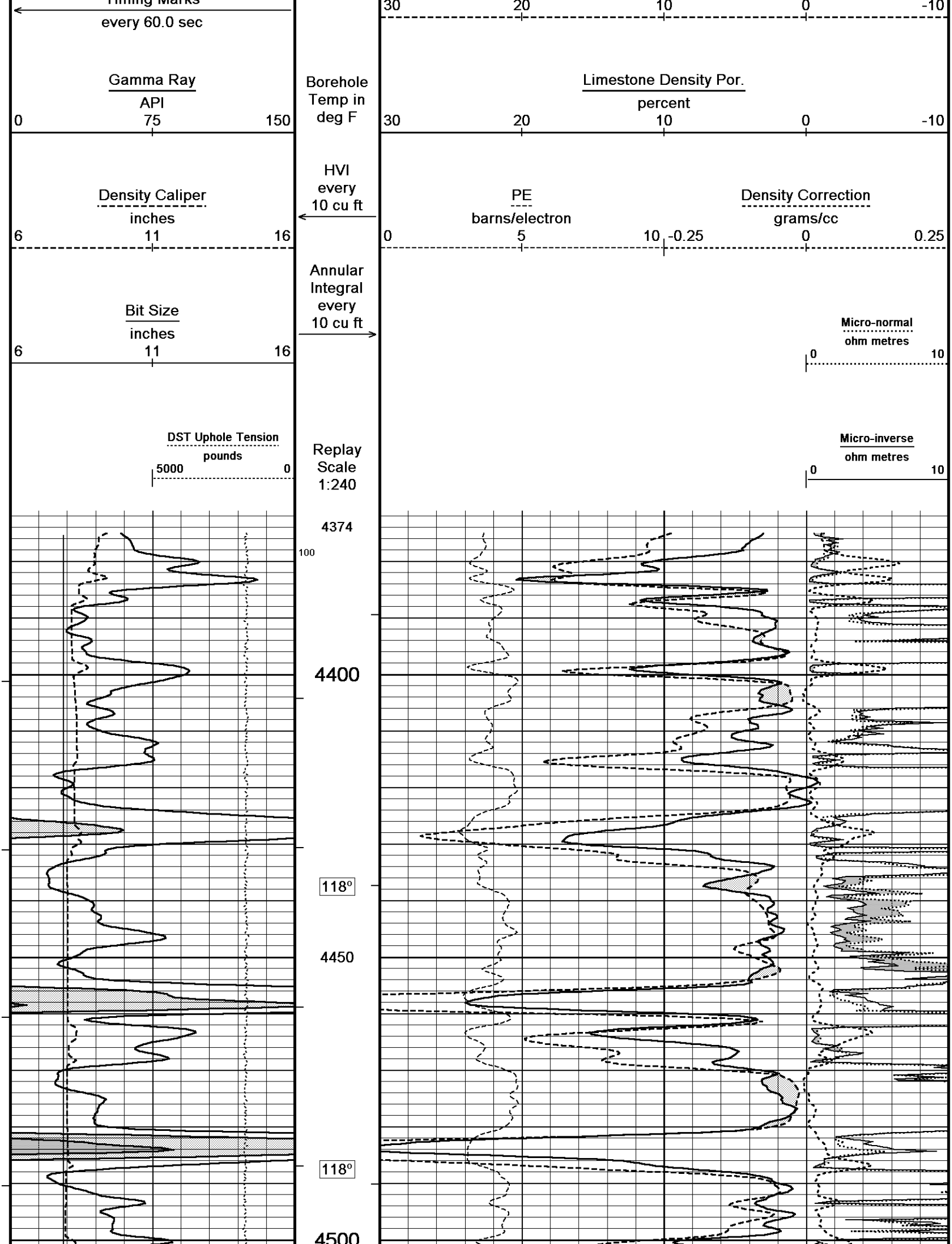
## 5 INCH MAIN PASS

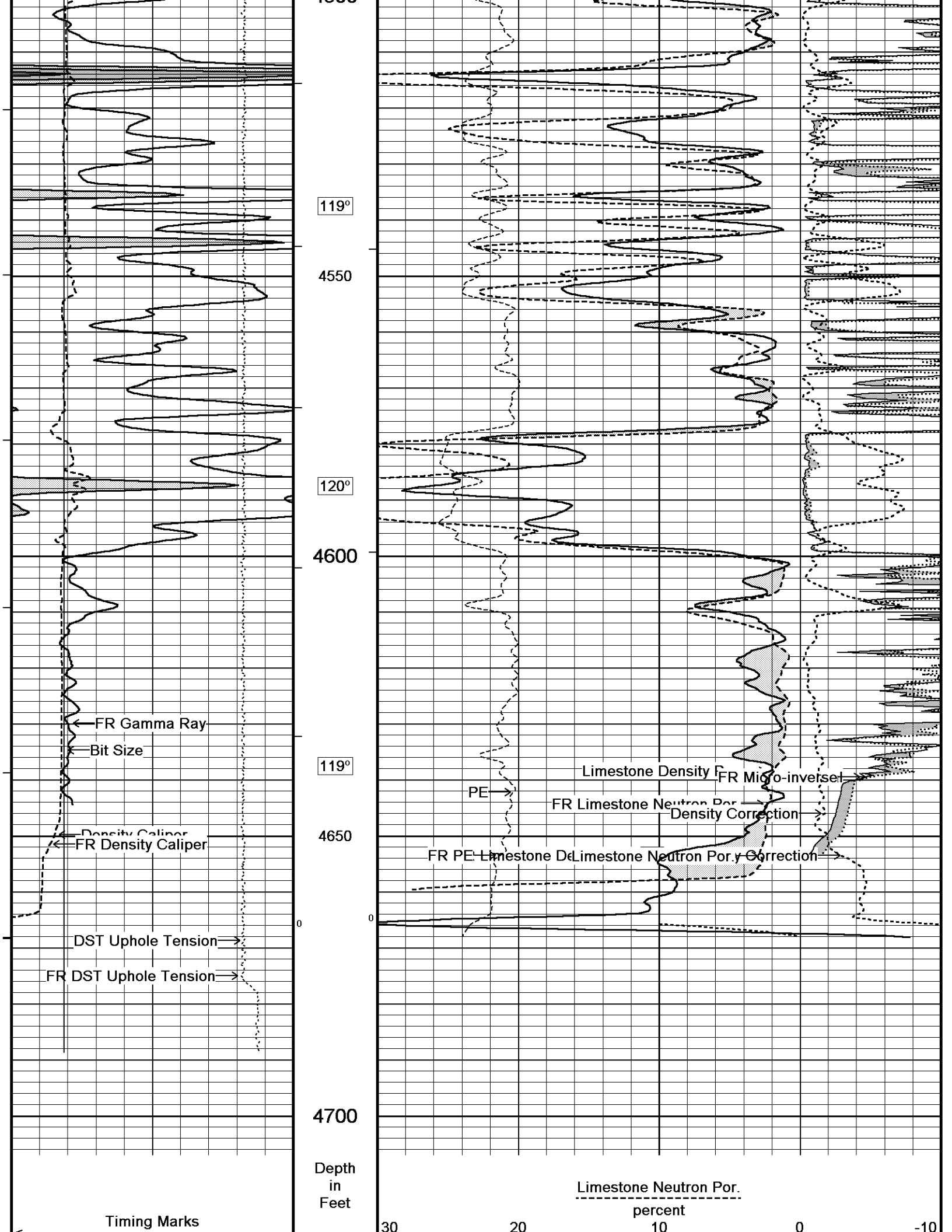
## 5 INCH REPEAT PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta
Recorded on 28-JUL-2011 02:04
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Depth in Feet

Limestone Neutron Por.
percent


Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole Temp in deg F
30
20
10
0
-10
Limestone Density Por.
percent
30
20
10
0
-10
Density Caliper
inches
6
11
16
HVI
every 10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
Micro-normal
ohm metres
0
10
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
Micro-inverse
ohm metres
0
10
4374
100
4400
118°
4450
118°
4500


119°
4550
120°
4600
119°
4650
4700
FR Gamma Ray
Bit Size
Density Caliper
FR Density Caliper
DST Uphole Tension
FR DST Uphole Tension
PE
FR Micro-inverse
Density Correction
Limestone Neutron Por. Correction
0
0
Depth
in
Feet
Timing Marks
Limestone Neutron Por.
percent
30
20
10
0
-10

every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.25 0 0.25

Micro-normal
ohm metres
0 10

Micro-inverse
ohm metres
0 10

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Plotted on 31-AUG-2011 09:38
Recorded on 28-JUL-2011 02:04

5 INCH REPEAT PASS

5 INCH MAIN PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\...\Grand Mesa Sponey #1-33_002 spooled section.dta
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

Plotted on 31-AUG-2011 09:38
Recorded on 28-JUL-2011 03:10

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

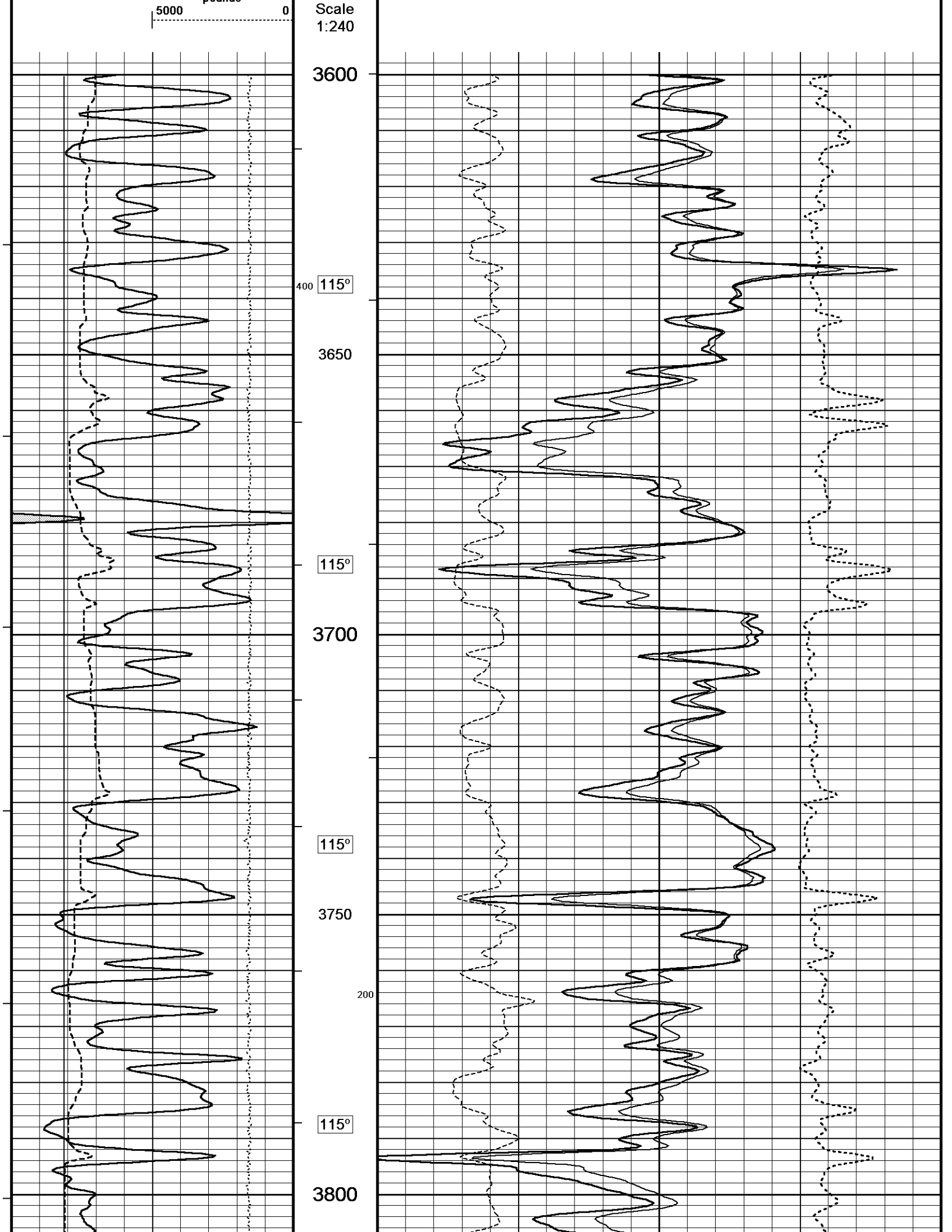
Replay

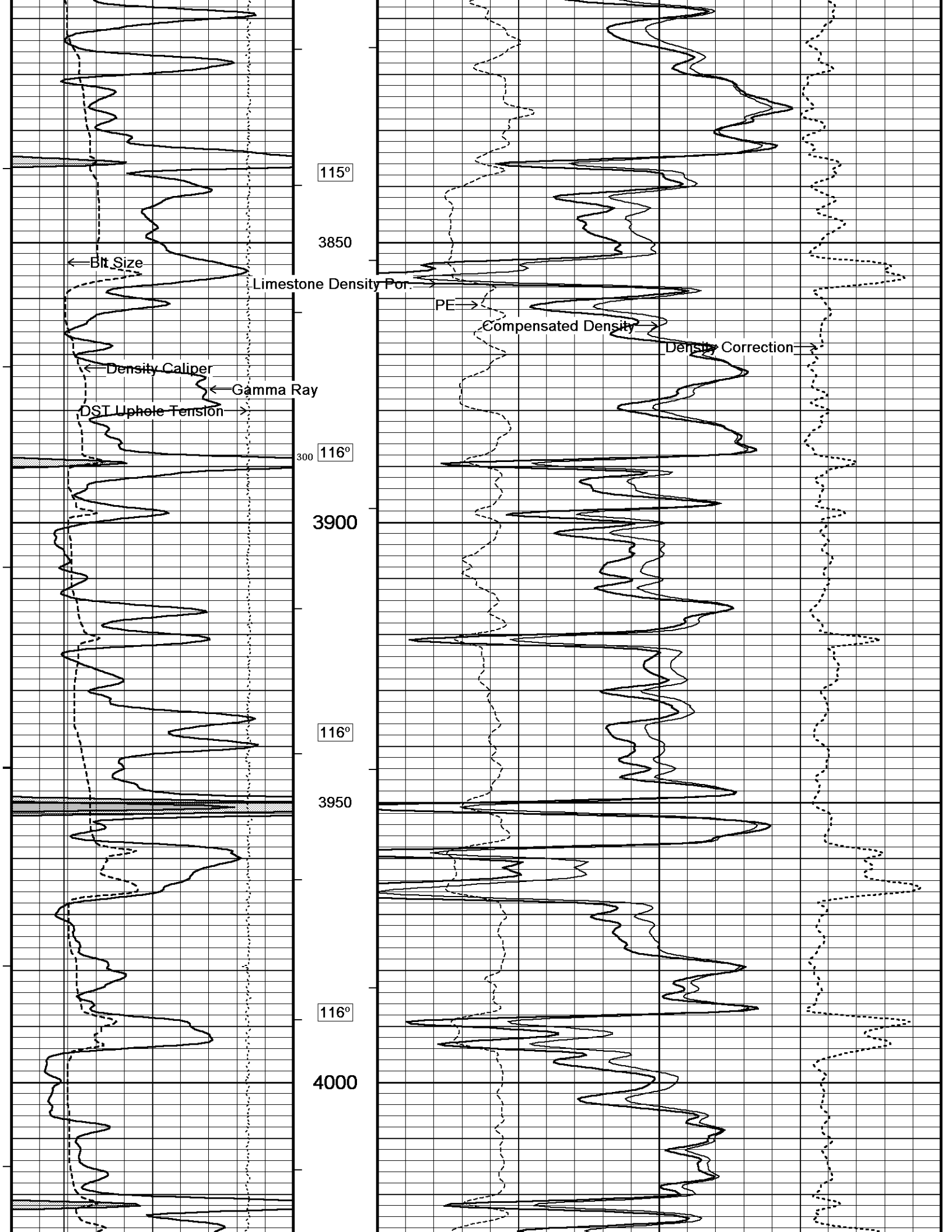
Compensated Density
grams/cc
2 2.25 2.50 2.75 3

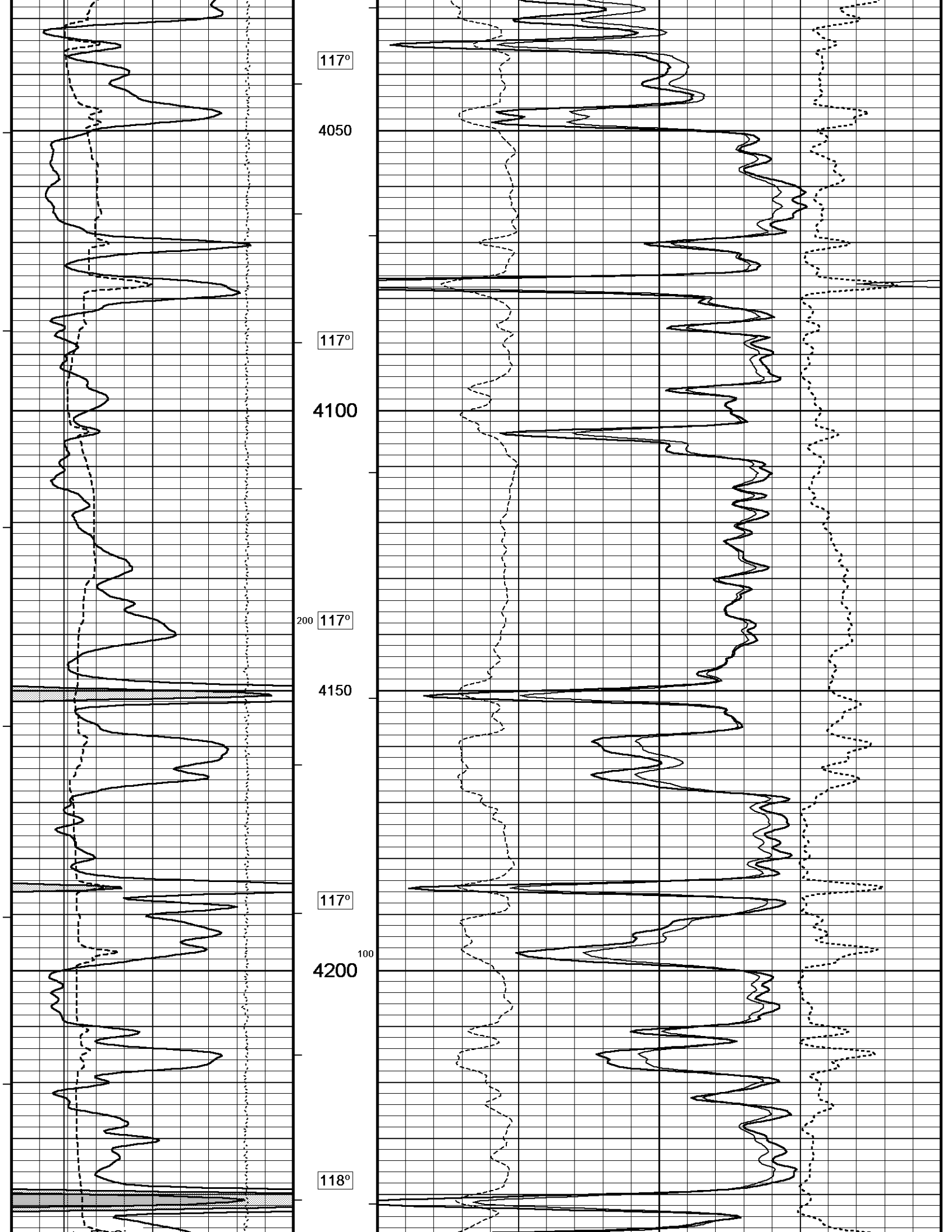
Limestone Density Por.
percent
30 20 10 0 -10

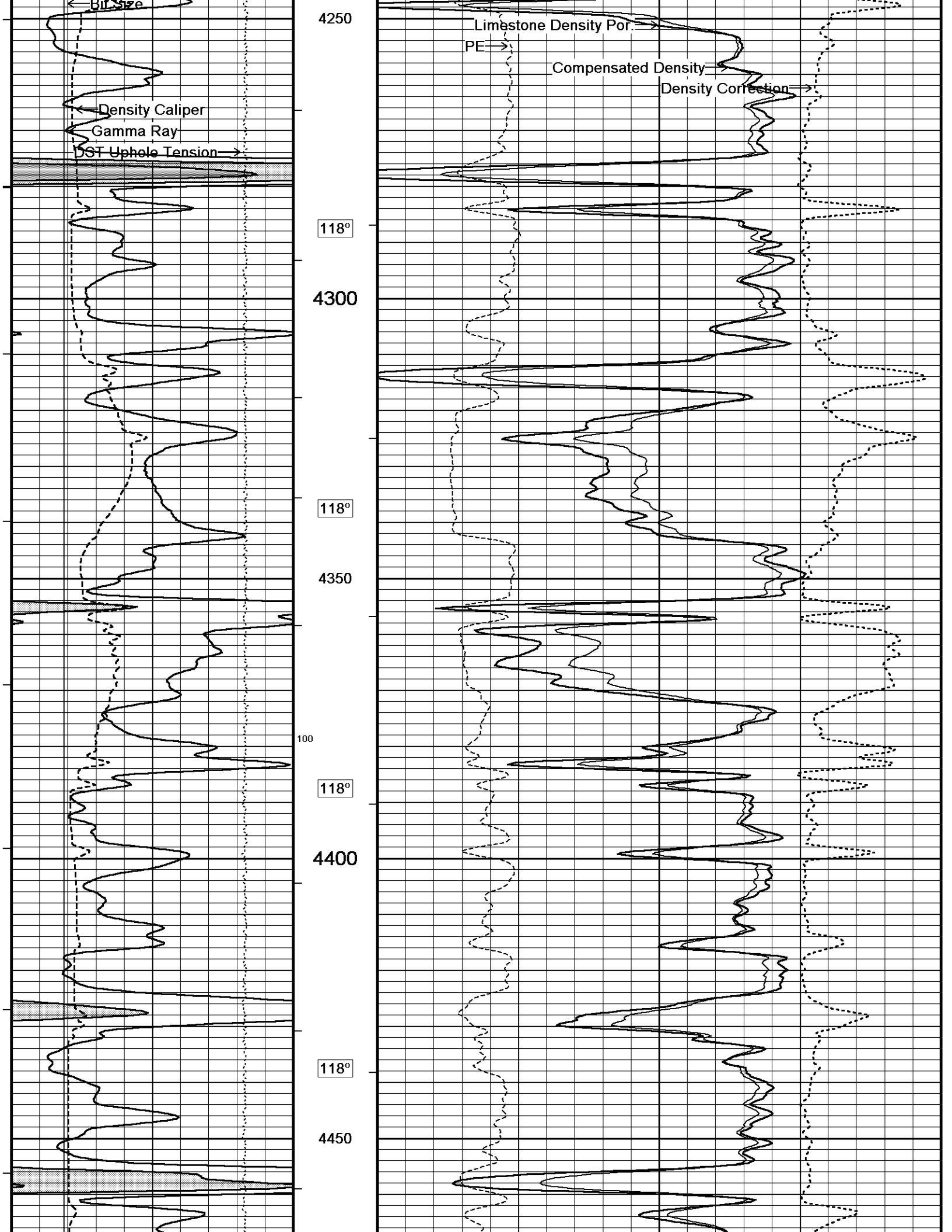
PE
barns/electron
0 5 10

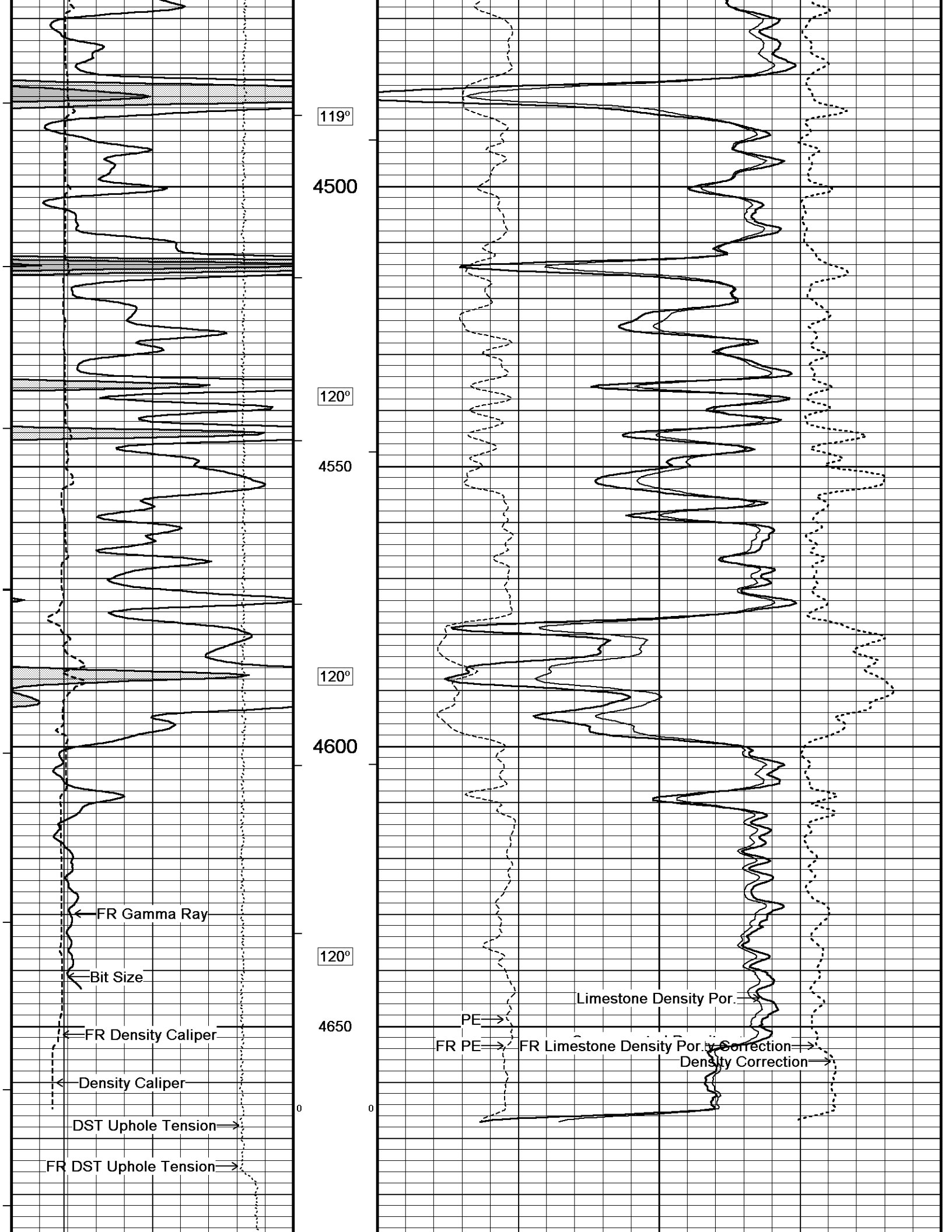
Density Correction
grams/cc
-0.25 0 0.25

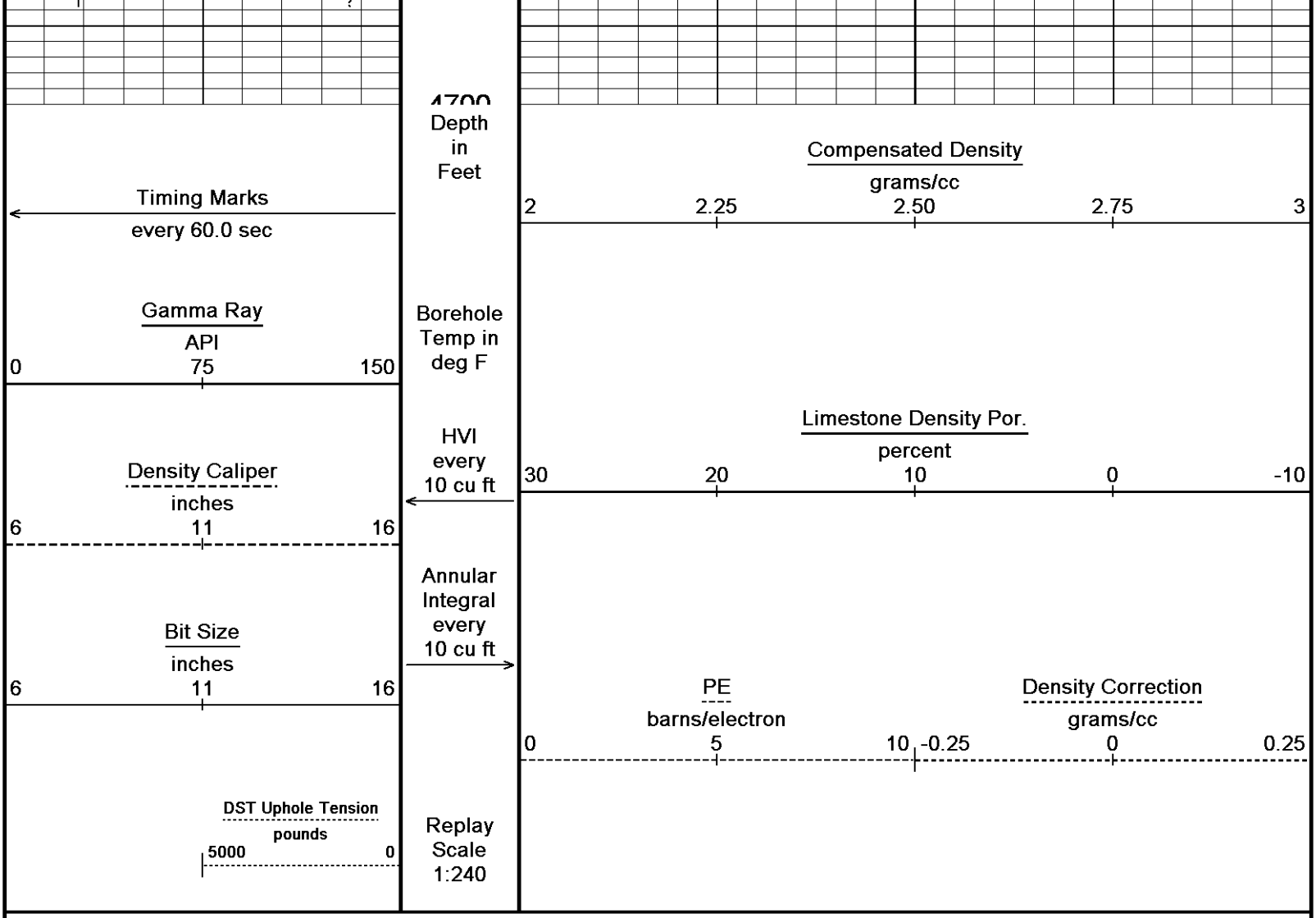

pounds
5000
0
Scale
1:240
3600
400
115°
3650
115°
3700
115°
3750
200
115°
3800


115°
3850
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
300
116°
3900
116°
3950
116°
4000


117°
4050
117°
4100
200
117°
4150
117°
100
4200
118°


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
4250
Limestone Density Por.
PE
Compensated Density
Density Correction
118°
4300
118°
4350
100
118°
4400
118°
4450


119°
4500
120°
4550
120°
4600
120°
4650
FR Gamma Ray
Bit Size
FR Density Caliper
Density Caliper
DST Uphole Tension
FR DST Uphole Tension
0
0
Limestone Density Por.
PE
FR PE
FR Limestone Density Por.
Density Correction




Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\...\Grand Mesa Sponey #1-33_002 spooled section.dta — Recorded on 28-JUL-2011 03:10
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

5 INCH MAIN PASS

5 INCH REPEAT PASS

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta — Recorded on 28-JUL-2011 02:04
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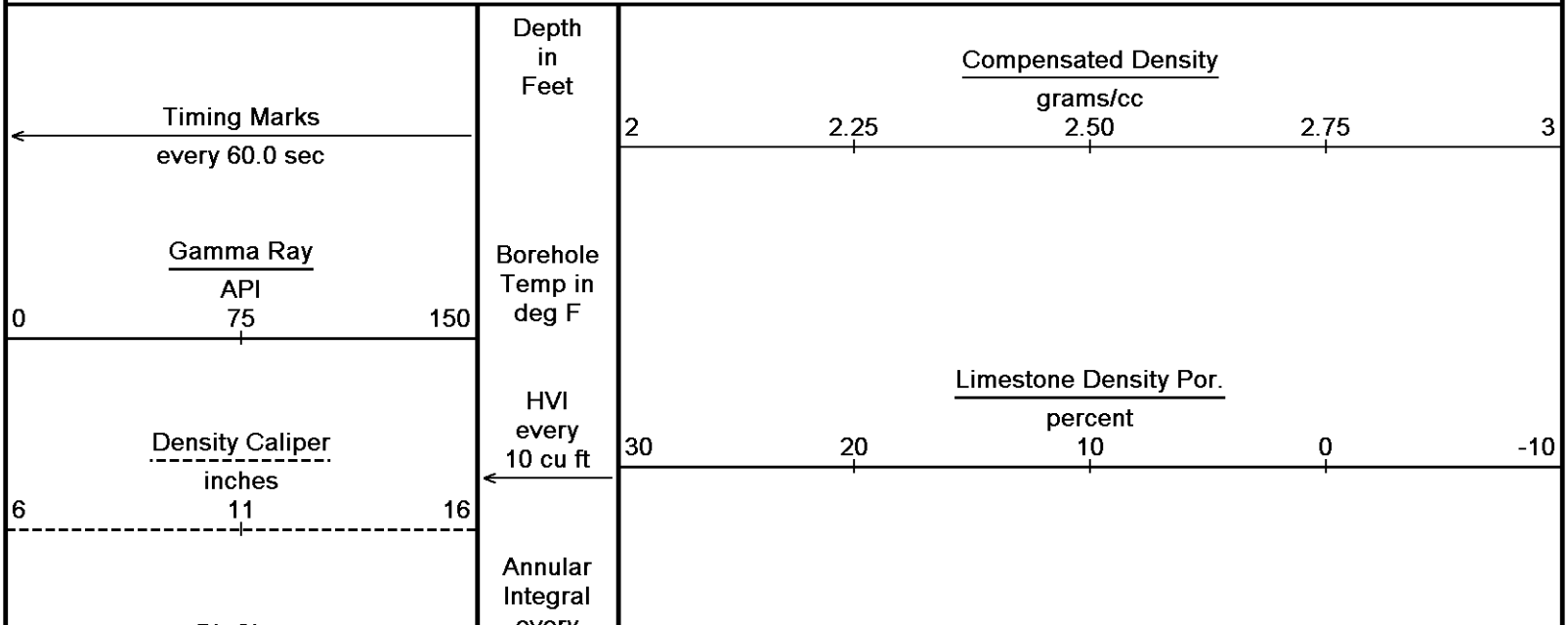
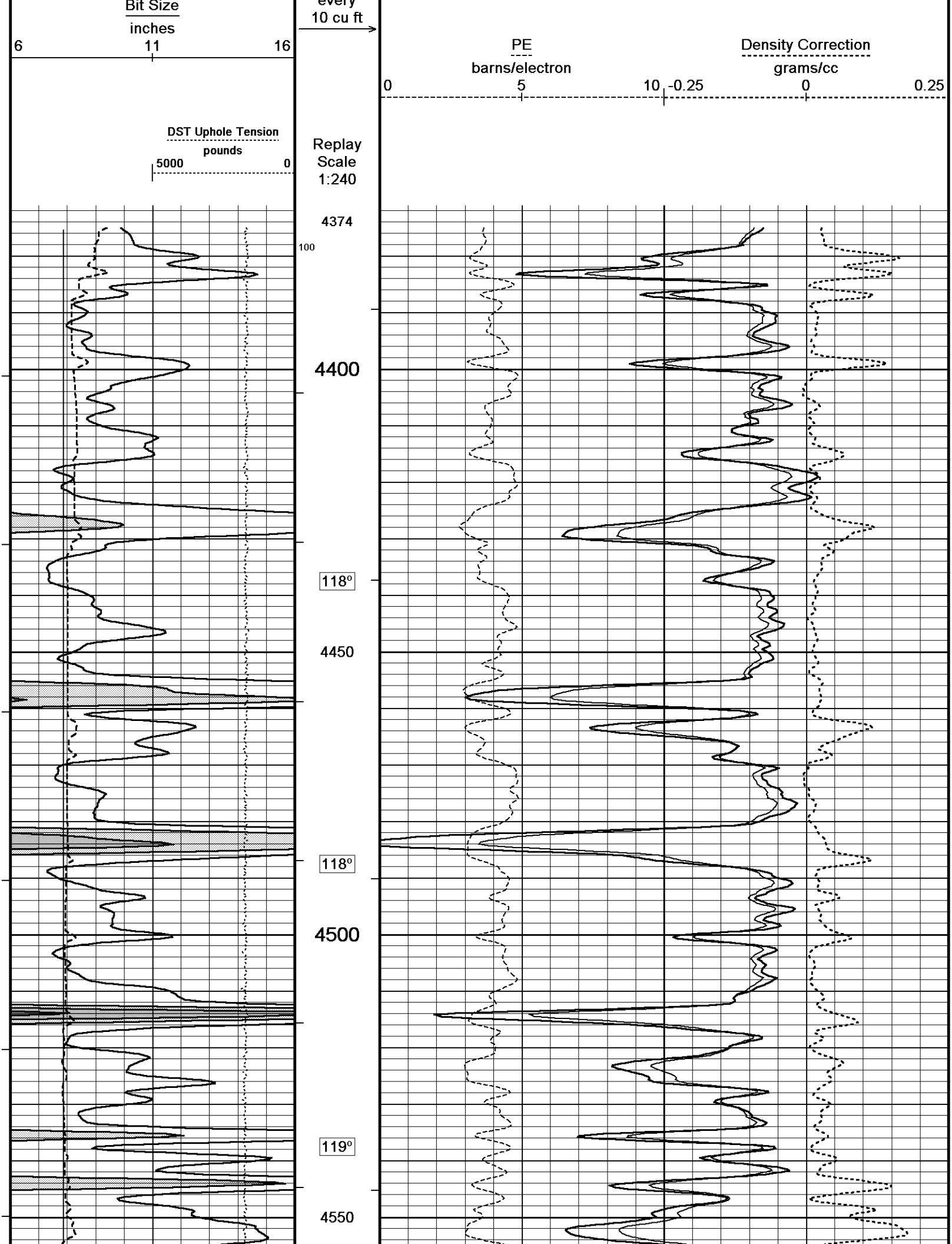
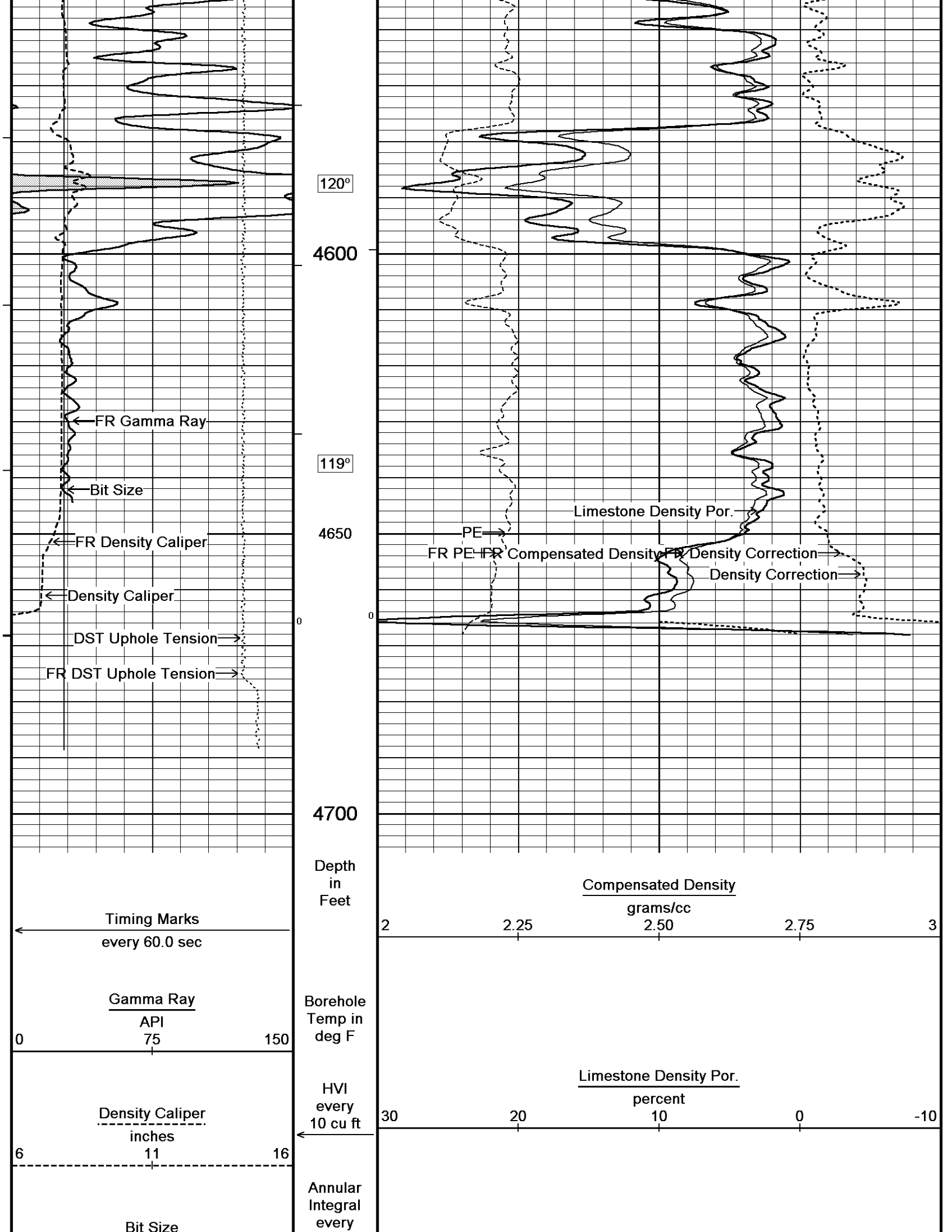
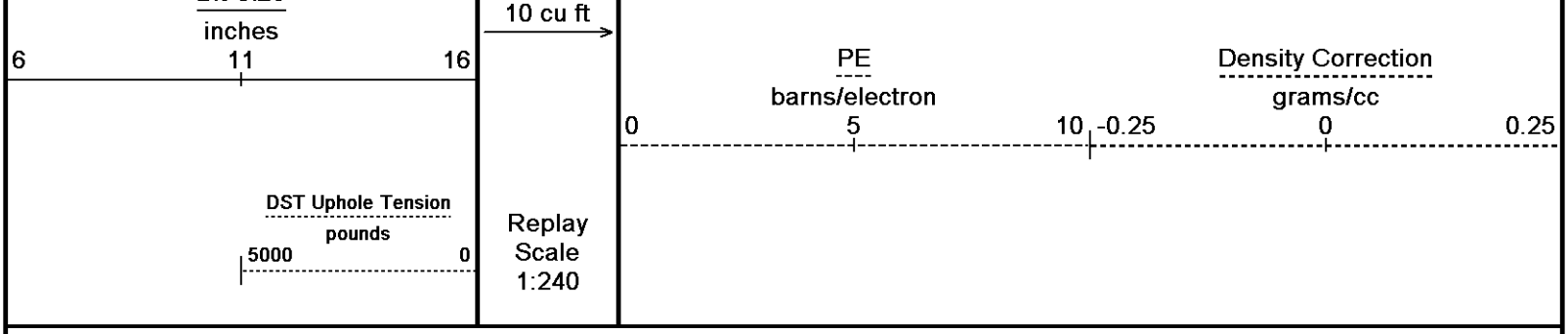



Bit Size
inches
6
11
16
every
10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4374
100
4400
118°
4450
118°
4500
119°
4550


120°
4600
119°
4650
4700
FR Gamma Ray
Bit Size
FR Density Caliper
Density Caliper
DST Uphole Tension
FR DST Uphole Tension
0
0
Limestone Density Por.
PE
FR PE
FR Compensated Density
FR Density Correction
Density Correction
Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Density Caliper
inches
6
11
16
Bit Size
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Limestone Density Por.
percent
30
20
10
0
-10




Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 31-AUG-2011 09:38
Filename: C:\DOCUME~1\sysadmin\LOCALS~1\Temp\...\Copy of Grand Mesa Sponey #1-33_001.dta — Recorded on 28-JUL-2011 02:04
System Versions: Logged with 11.02.3186 Plotted with 12.01.3513

5 INCH REPEAT PASS

## BEFORE SURVEY CALIBRATION

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa Sponey #1-33_002 spooled section.dta

### General Constants All 000

Last Edited on 28-JUL-2011 01:48

| | | |
|---|---|---|
| **General Parameters** | | |
| Mud Resistivity | 1.050 | ohm-metres |
| Mud Resistivity Temperature | 91.000 | 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 05-JUN-2011 05:37

| Reading No | Measured | Calibrated (lbs) |
|---|---|---|
| 1 | 13499.89 | 0.00 |
| 2 | 14983.70 | 496.00 |

### High Resolution Temperature Calibration MCG-B 34

Field Calibration on 05-MAR-2011 23:56

| | 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 11-JUL-2011 13:13

| | Measured | Calibrated (mV) |
|---|---|---|
| Reference 1 | 106.9 | 100.0 |
| Reference 2 | -94.7 | -100.0 |

### Gamma Calibration MCG-B 34

Field Calibration on 27-JUL-2011 15:31

| | Measured | Calibrated (API) |
|---|---|---|
| Background | 70 | 48 |
| Calibrator (Gross) | 1122 | 773 |
| Calibrator (Net) | 1053 | 725 |

### Gamma Constants MCG-B 34

Last Edited on 28-JUL-2011 01:47

| | | |
|---|---|---|
| Gamma Calibrator Number | grc38 | |
| Mud Density | 1.13 | gm/cc |
| Caliper Source for Processing | Density Caliper | |
| Tool Position | Eccentred | |
| Concentration of KCl | 0.00 | kppm |

## Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 16-MAY-2011 10:23
Field Check on 27-JUL-2011 15:16

Base Calibration

| Channel | Measured Resistor 1 | Measured Resistor 2 | Calibrated (ohm-m) Resistor 1 | Calibrated (ohm-m) Resistor 2 |
|---|---|---|---|---|
| Micro Normal | 12.1 | 60.1 | 2.6 | 12.8 |
| Micro Inverse | 15.6 | 78.3 | 1.7 | 8.4 |

| Channel | Base Check (ohm-m) | Field Check (ohm-m) |
|---|---|---|
| Micro Normal | 32.2 | 32.2 |
| Micro Inverse | 16.3 | 16.3 |

## Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 19-JUL-2011 12:17

| | | |
|---|---|---|
| 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 |

## Caliper Calibration MML-A 4

Base Calibration on 16-MAY-2011 10:38
Field Calibration on 27-JUL-2011 15:15

Base Calibration

| Reading No | Measured | Calibrator Size (in) |
|---|---|---|
| 1 | 14953 | 5.98 |
| 2 | 18280 | 7.97 |
| 3 | 21656 | 9.86 |
| 4 | 25588 | 11.92 |
| 5 | 0 | 0.00 |
| 6 | N/A | N/A |

Field Calibration

| Measured Caliper (in) | Actual Caliper (in) |
|---|---|
| 6.03 | 5.98 |

## Neutron Calibration MDN-A.B 65

Base Calibration on 03-JUL-2011 00:27
Field Check on 27-JUL-2011 15:37

Base Calibration

| | Measured Near | Measured Far | Calibrated (cps) Near | Calibrated (cps) Far |
|---|---|---|---|---|
| | 3269 | 103 | 3714 | 110 |
| Ratio | 31.795 | | 33.764 | |

Field Calibrator at Base

| | Calibrated (cps) | |
|---|---|---|
| | 1562 | 2227 |
| Ratio | 0.701 | |

Field Check

| | Calibrated (cps) | |
|---|---|---|
| | 1562 | 2257 |
| Ratio | 0.692 | |

## Neutron Constants MDN-A.B 65

Last Edited on 28-JUL-2011 01:47

| | | |
|---|---|---|
| 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 | None | |
| Formation Pressure | N/A | kpsi |
| 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 21-JUN-2011 11:19
Field Check on 27-JUL-2011 15:13

Base Calibration

| | Measured | Calibrated (ohm-m) |
|---|---|---|
| Reference 1 | 0.0 | 0.0 |
| Reference 2 | 953.6 | 126.8 |
| Base Check | | 281.3 |
| Field Check | | 281.2 |

## FE Constants MFE-A.A 55

Last Edited on 28-JUL-2011 01:46

| | | |
|---|---|---|
| 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 13-AUG-2010 14:31

| | 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-AUG-2010 14:32
Field Check on 27-JUL-2011 15:49

Base Calibration

Test Loop Calibration

| Channel | Measured Low | Measured High | Calibrated (mmho/m) Low | Calibrated (mmho/m) High |
|---|---|---|---|---|
| 1 | 14.5 | 473.5 | 9.3 | 966.2 |
| 2 | 5.2 | 373.4 | 7.6 | 821.4 |
| 3 | 2.8 | 260.6 | 5.2 | 566.0 |
| 4 | 1.6 | 132.2 | 2.6 | 279.2 |
| Array Temperature | | 86.2 | Deg F | |

| Channel | Base Check (mmho/m) Low | Base Check (mmho/m) High | Field Check (mmho/m) Low | Field Check (mmho/m) High | |
|---|---|---|---|---|---|
| 1 | 0.0 | 0.0 | 20.4 | 3847.5 | |
| 2 | 0.0 | 0.0 | 33.4 | 3633.0 | |
| 3 | 0.0 | 0.0 | 30.3 | 3051.2 | |
| 4 | 0.0 | 0.0 | 20.6 | 2094.3 | |
| Deep | 0.0 | 0.0 | 18.2 | 1920.9 | |
| Medium | 0.0 | 0.0 | 43.5 | 4052.1 | |
| Shallow | 0.0 | 0.0 | 50.8 | 5477.8 | |
| Array Temperature | | 0.0 | | 97.4 | Deg F |

## Induction Constants MAI-A.A 45

Last Edited on 28-JUL-2011 01:45

| | | |
|---|---|---|
| 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 | |

## Caliper Calibration MPD-B 31

Base Calibration on 21-JUL-2011 09:22
Field Calibration on 27-JUL-2011 15:24

Base Calibration

| Reading No | Measured | Calibrator Size (in) |
|---|---|---|
| 1 | 16370 | 3.99 |
| 2 | 25015 | 5.98 |
| 3 | 33579 | 7.97 |
| 4 | 41872 | 9.86 |
| 5 | 51168 | 11.92 |
| 6 | N/A | N/A |

Field Calibration

| Measured Caliper (in) | Actual Caliper (in) |
|---|---|
| 5.92 | 5.98 |

## Photo Density Calibration MPD-B 31

Base Calibration on 21-JUL-2011 09:42
Field Check on 27-JUL-2011 15:21

Density Calibration

| Base Calibration | Measured | | Calibrated (sdu) | |
|---|---|---|---|---|
| | Near | Far | Near | Far |
| Reference 1 | 45837 | 23493 | 59556 | 30836 |
| Reference 2 | 18956 | 1961 | 24941 | 2541 |

Field Check at Base

| | |
|---|---|
| 706.7 | 875.5 |

Field Check

| | |
|---|---|
| 706.8 | 872.3 |

PE Calibration

| Base Calibration | Measured | | | Calibrated |
|---|---|---|---|---|
| | WS | WH | Ratio | Ratio |
| Background | 131 | 621 | | |
| Reference 1 | 19154 | 45718 | 0.422 | 0.371 |
| Reference 2 | 5486 | 18861 | 0.294 | 0.272 |

Field Check at Base

| | |
|---|---|
| 130.9 | 620.8 |

Field Check

| | |
|---|---|
| 130.4 | 620.7 |

## Density Constants MPD-B 31

Last Edited on 28-JUL-2011 01:46

| | |
|---|---|
| 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 | 1.13 | 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 |

## DOWNHOLE EQUIPMENT

C:\DOCUME~1\sysadmin\LOCALS~1\Temp\Weatherford PreView\0\Grand Mesa Sponey #1-33_002 spooled section.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-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 Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

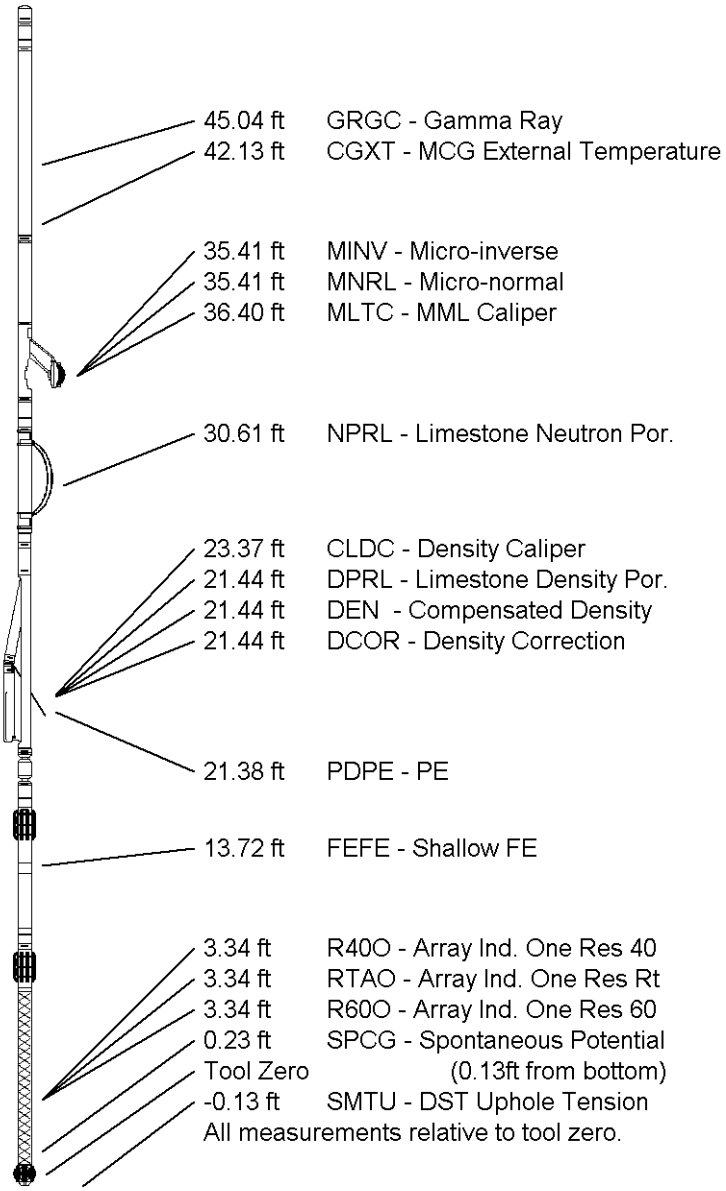
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

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

Total Length: 51.90 ft Weight: 423.3 lb



| | |
|---|---|
| COMPANY | GRAND MESA OPERATING |
| WELL | SPONEY #1-33 |
| FIELD | WILDCAT |
| PROVINCE/COUNTY | GOVE |
| COUNTRY/STATE | U.S.A. / KANSAS |

| | | | | | |
|---|---|---|---|---|---|
| Elevation Kelly Bushing | 2934.00 | feet | First Reading | 4653.00 | feet |
| Elevation Drill Floor | 2932.00 | feet | Depth Driller | 4680.00 | feet |
| Elevation Ground Level | 2929.00 | feet | Depth Logger | 4675.00 | feet |

Weatherford®

# COMPACT PHOTO DENSITY
# COMPENSATED NEUTRON
# MICRORESISTIVITY LOG