Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	COG #2-35
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1000' FSL & 1300' FEL

SEC 35	TWP 16S	RGE 34W	Other Services
Latitude			MAI/MFE
Longitude			
API Number	15-171-21091		

Permanent Datum GL, Elevation 3105 feet	Elevations:	feet
Log Measured From KB	KB	3115.00
Drilling Measured From KB @ 10 FEET	DF	3113.00
	GL	3105.00

Date	22-NOV-2014			
Run Number	ONE			
Service Order	4558-103839570			
Depth Driller	5100.00	feet		
Depth Logger	5103.00	feet		
First Reading	5084.00	feet		
Last Reading	3800.00	feet		
Casing Driller	267.00	feet		
Casing Logger	266.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.00 lb/USg		51.00 CP	
PH / Fluid Loss	9.00		9.60 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.37 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.30 @ 75.0	ohm-m		
Rmc @ Measured Temp	0.44 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.24 @117.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	117.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	TIM PRIEST			
JOB #	LB14-363			

BOREHOLE RECORD

Last Edited: 22-NOV-2014 07:51

Bit Size inches	Depth From feet	Depth To feet
7.875	267.00	5100.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	267.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 14.05.5280.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING USED ON MDN.
  0.5 INCH STANDOFF USED ON MFE.
  0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX 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: 2247 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 244 CU.FT.
- RIG: H-D DRILLING #2

- RIG: TPD DRILLING #2.

- ENGINEER: A. SILL.

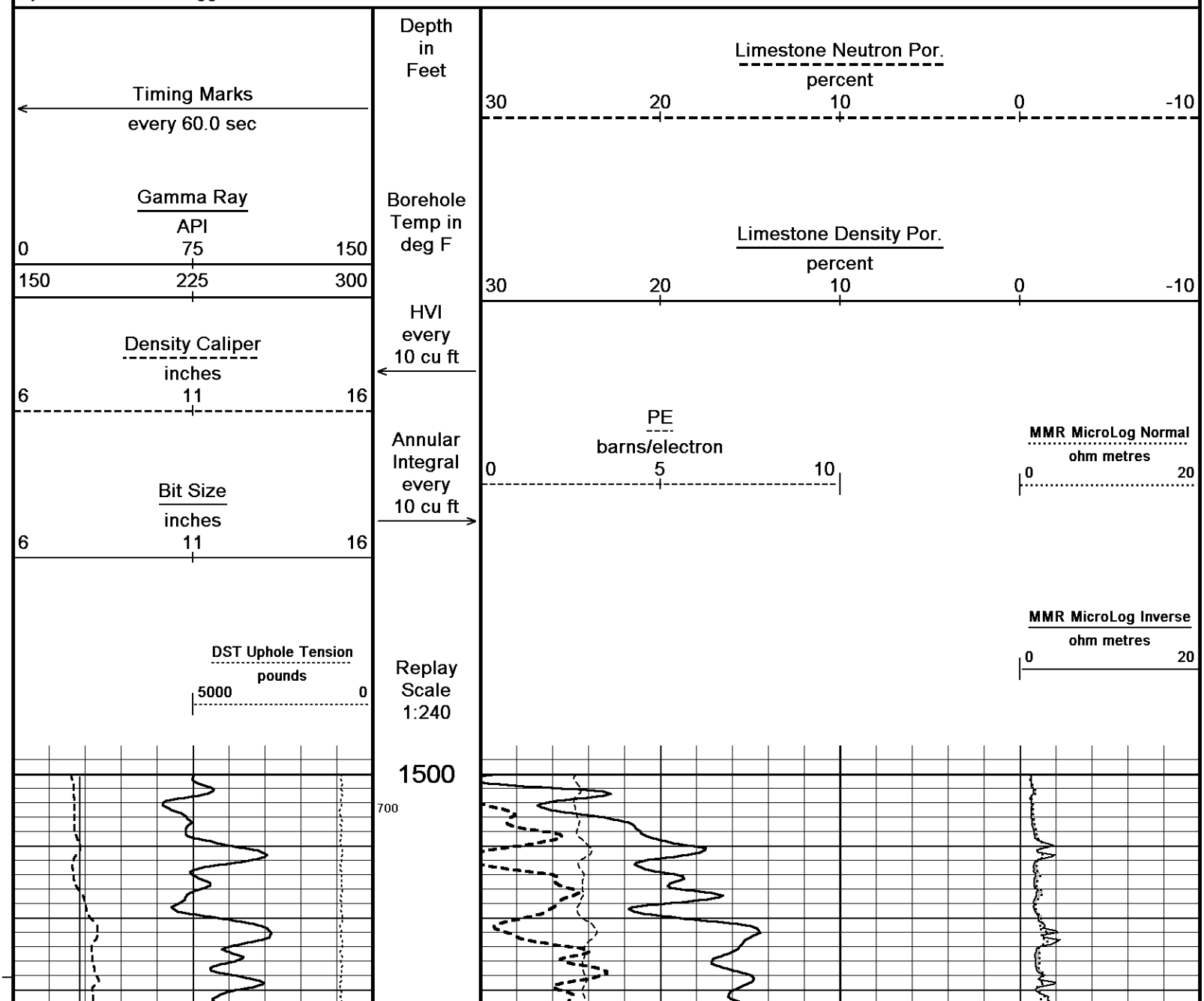
- OPERATOR: J. DUNLAP.

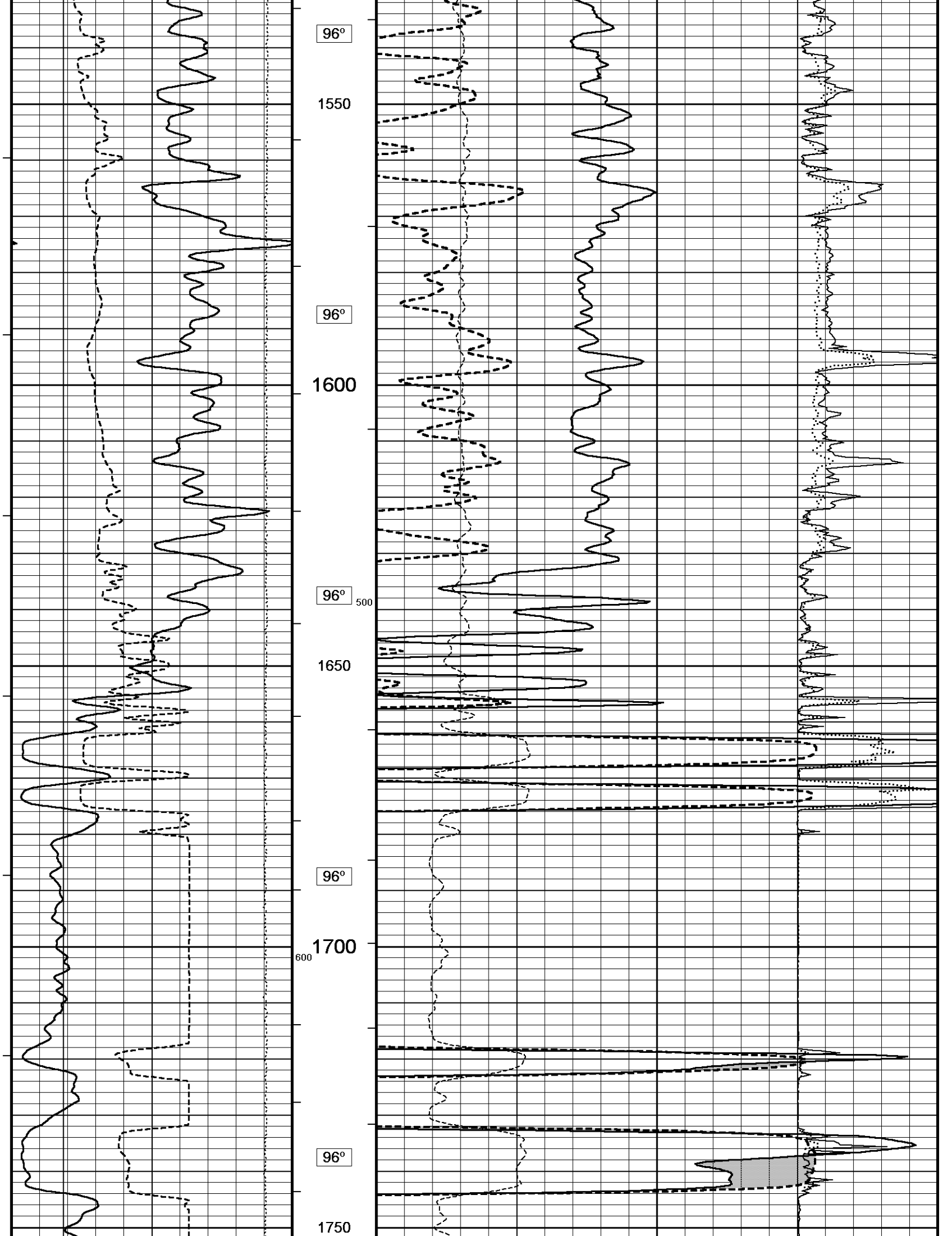
5 INCH LIMESTONE MAIN - UPPER SECTION

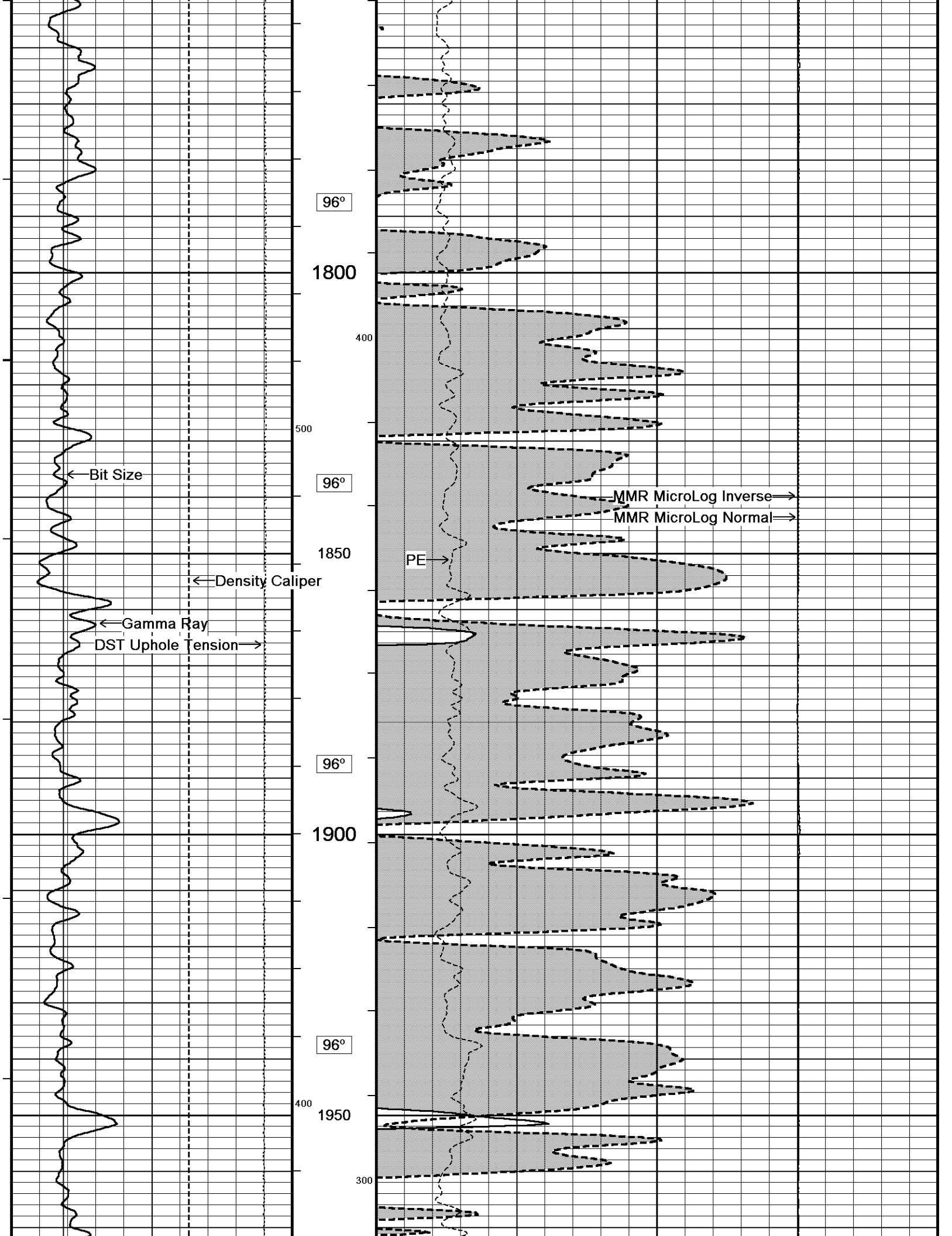
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-NOV-2014 17:41

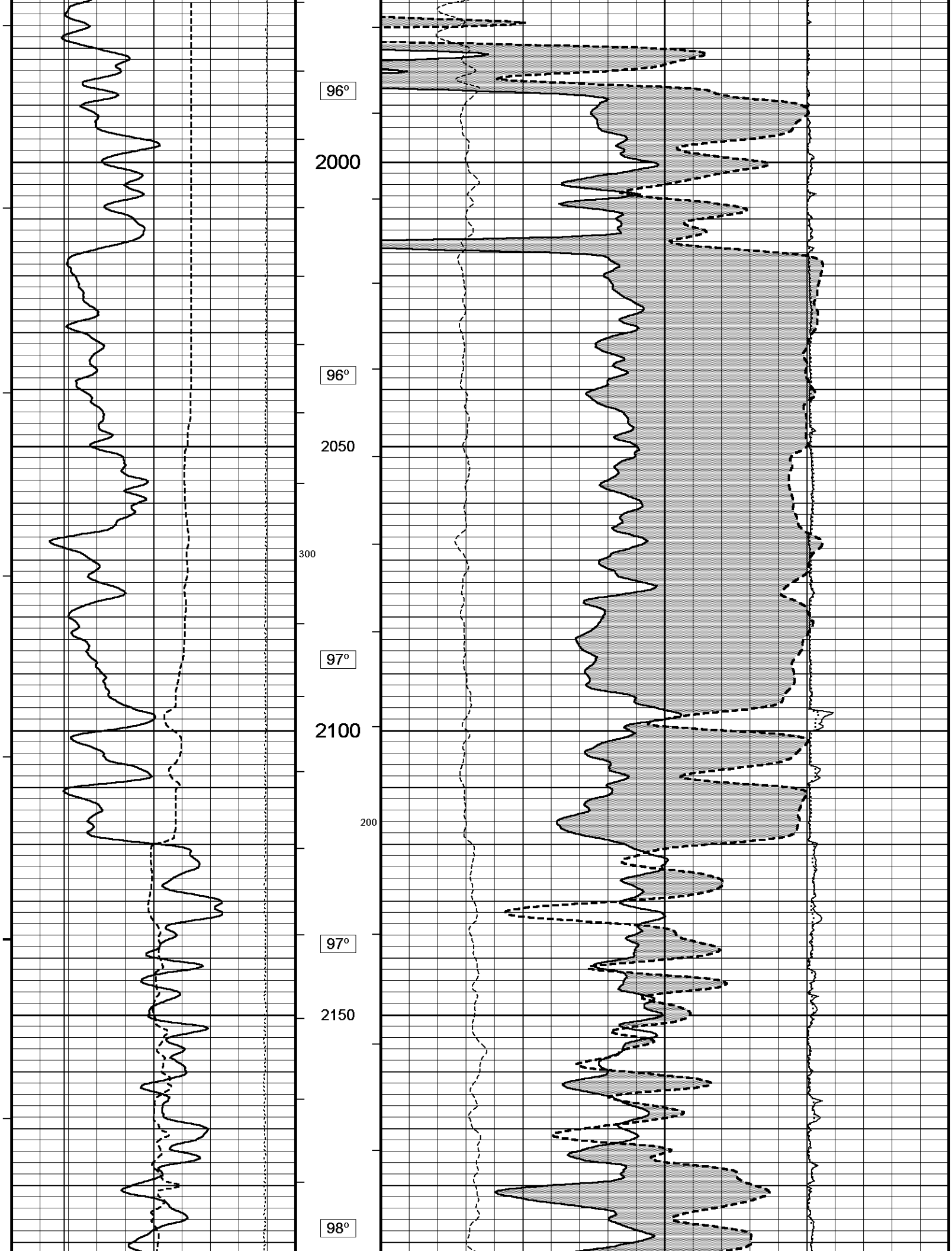
Filename: C:\Minimus 14.05\Log Data\Shakespeare COG #2-35\Shakespeare COG #2-35_002.dta — Recorded on 22-NOV-2014 14:20

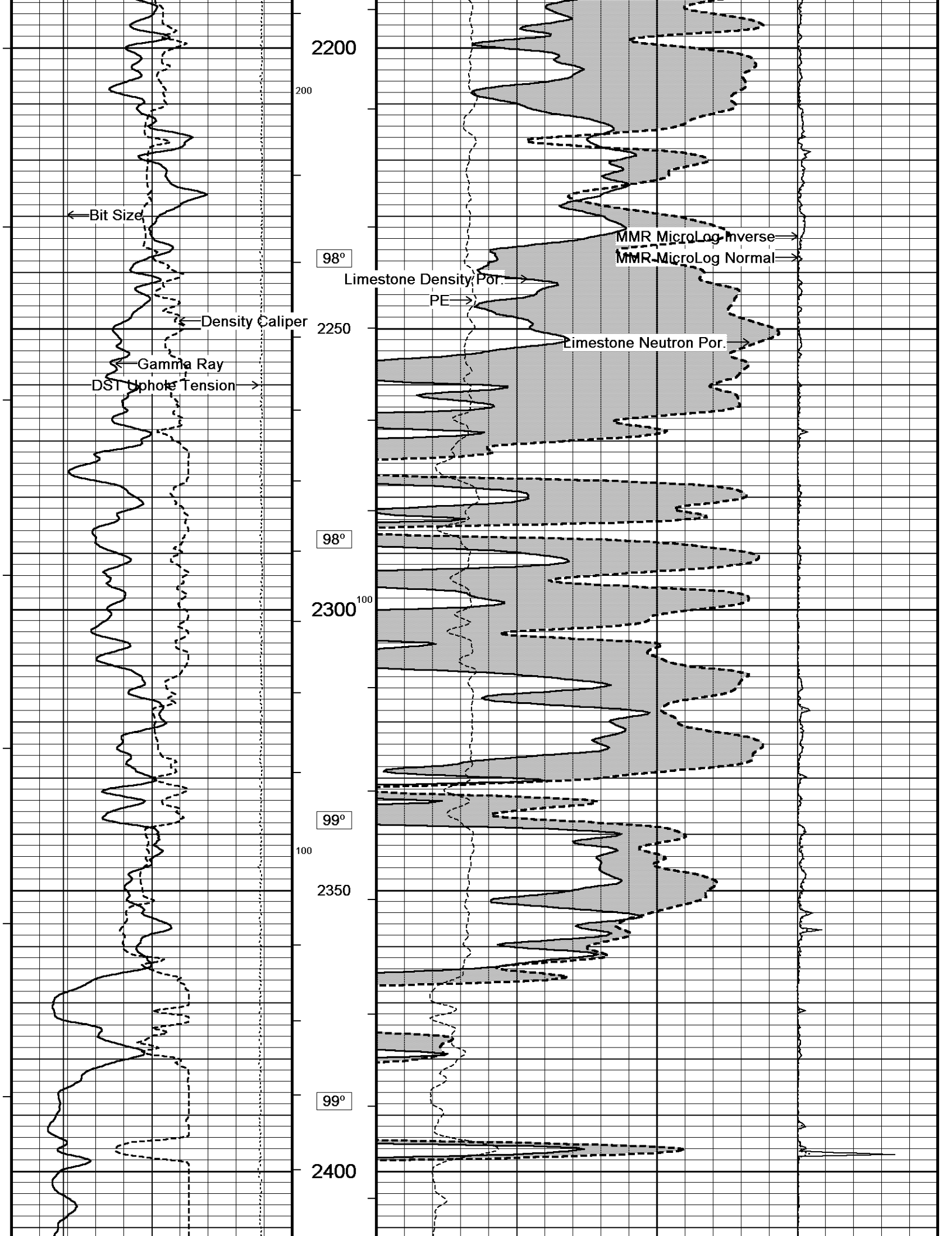
System Versions: Logged with 14.05.5280 Plotted with 14.05.5280

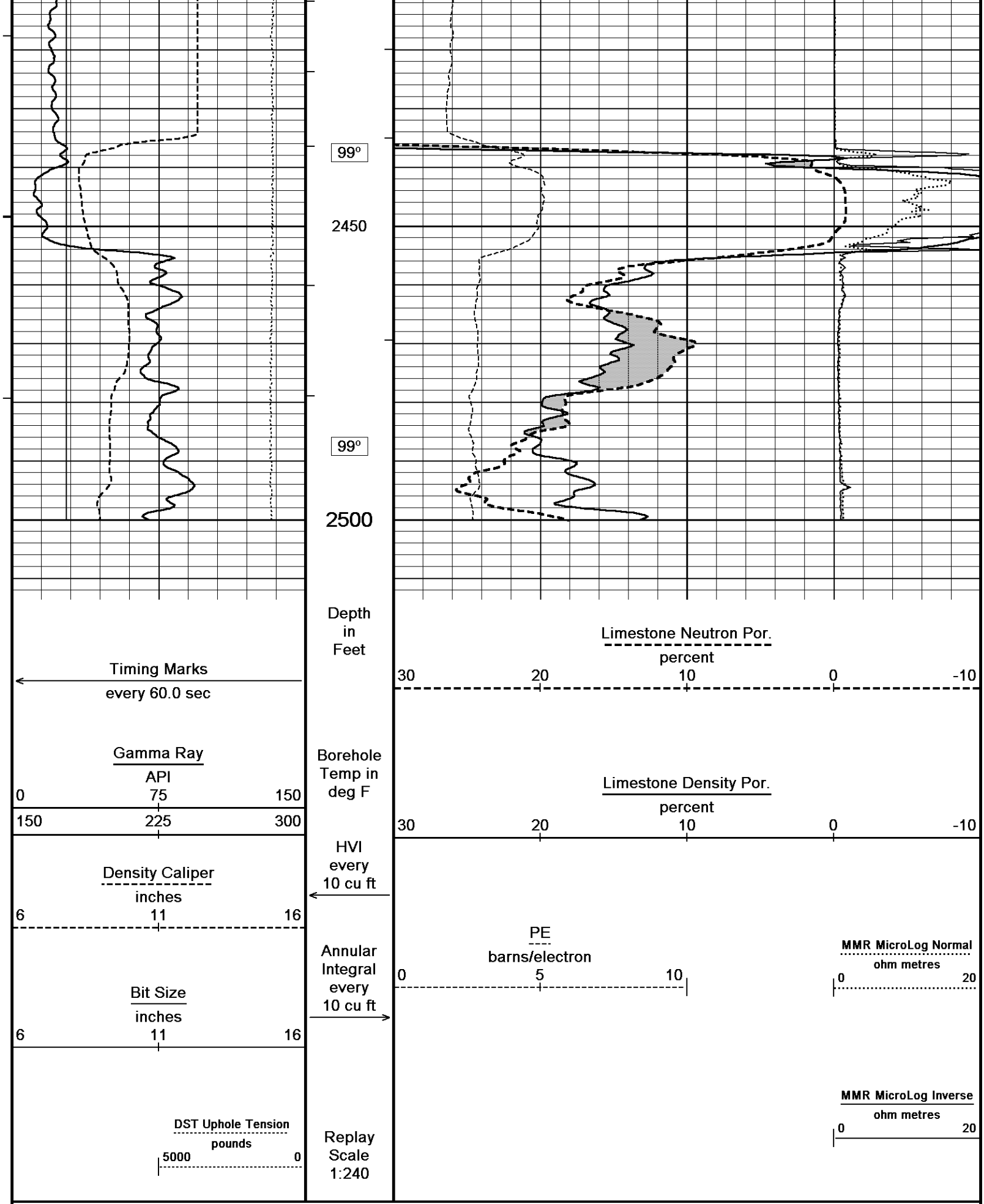



96°
1550
96°
1600
96°
500
1650
96°
600
1700
96°
1750


96°
1800
400
500
96°
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
1850
PE
Density Caliper
Gamma Ray
DST Uphole Tension
96°
1900
96°
400
1950
300


96°
2000
96°
2050
300
97°
2100
200
97°
2150
98°


2200
200
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
98°
Limestone Density Por.
PE
Density Caliper
2250
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
98°
2300
100
99°
100
2350
99°
2400



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-NOV-2014 17:41
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5 INCH LIMESTONE MAIN - UPPER SECTION

5 INCH LIMESTONE MAIN - LOWER SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 14.05\Log Data\Shakespeare COG #2-35\Shakespeare COG #2-35_002.dta
System Versions: Logged with 14.05.5280 Plotted with 14.05.5280

Plotted on 22-NOV-2014 17:41
Recorded on 22-NOV-2014 14:20

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

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

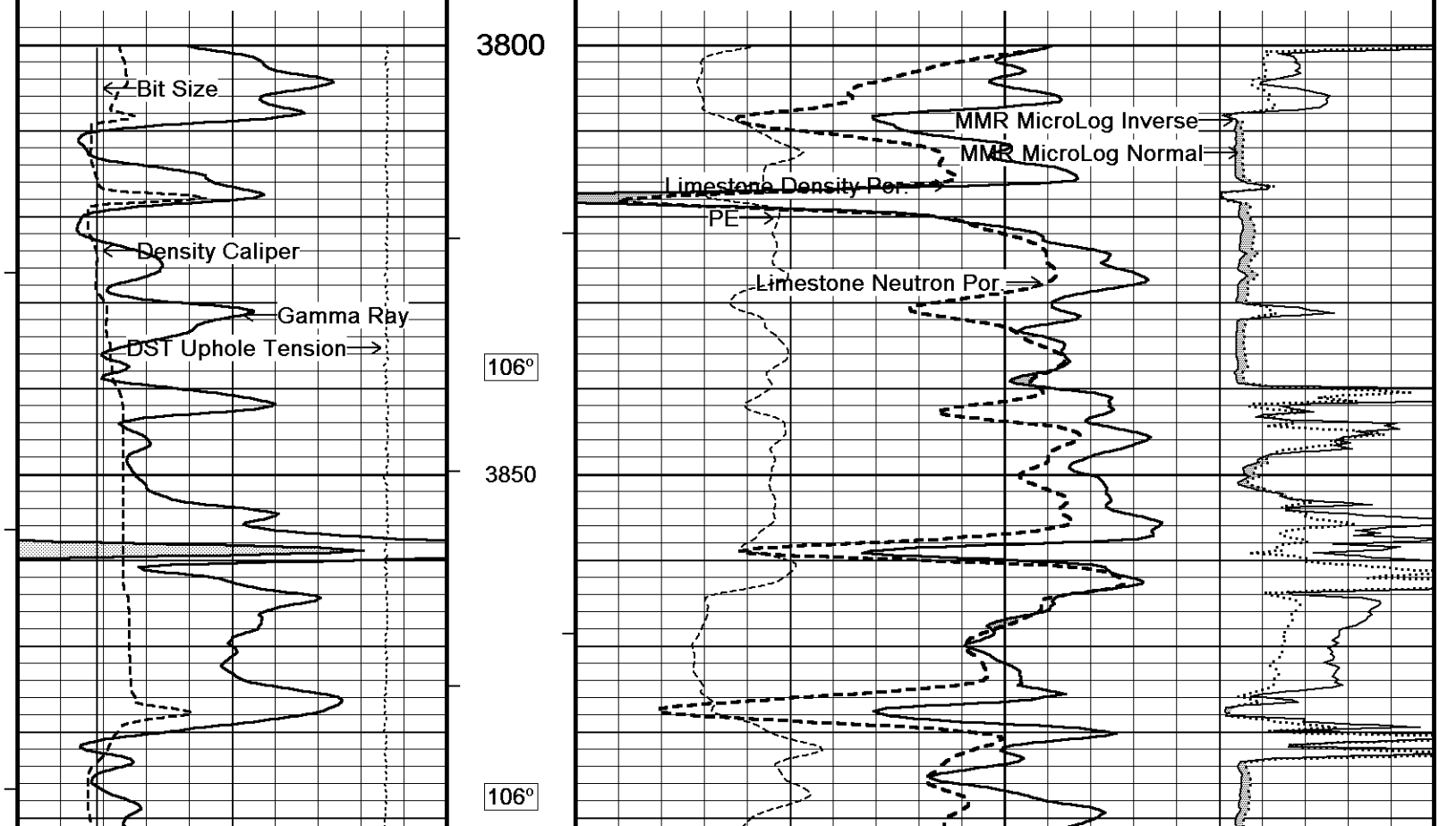
Limestone Neutron Por.
percent
30 20 10 0 -10

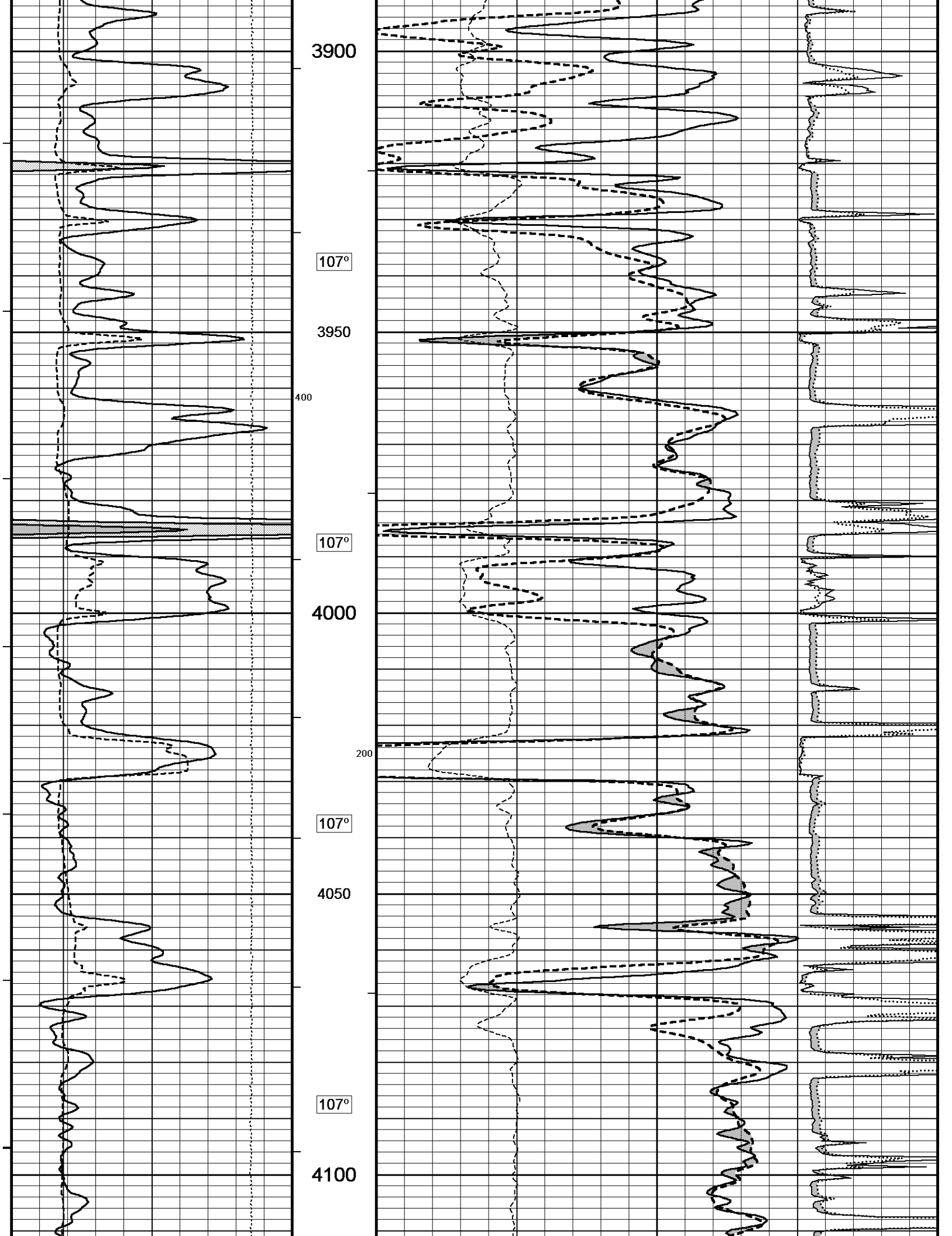
Limestone Density Por.
percent
30 20 10 0 -10

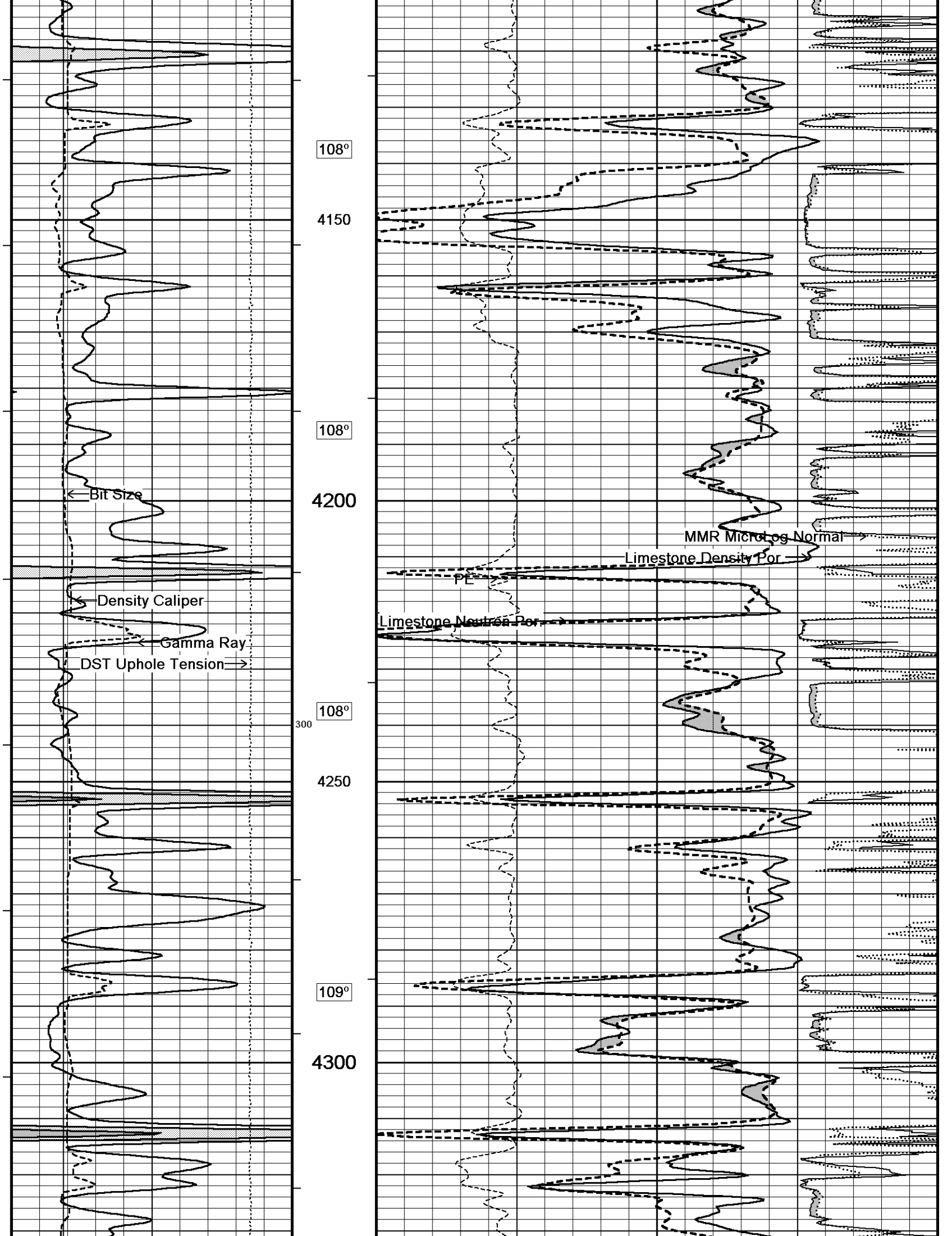
PE
barns/electron
0 5 10

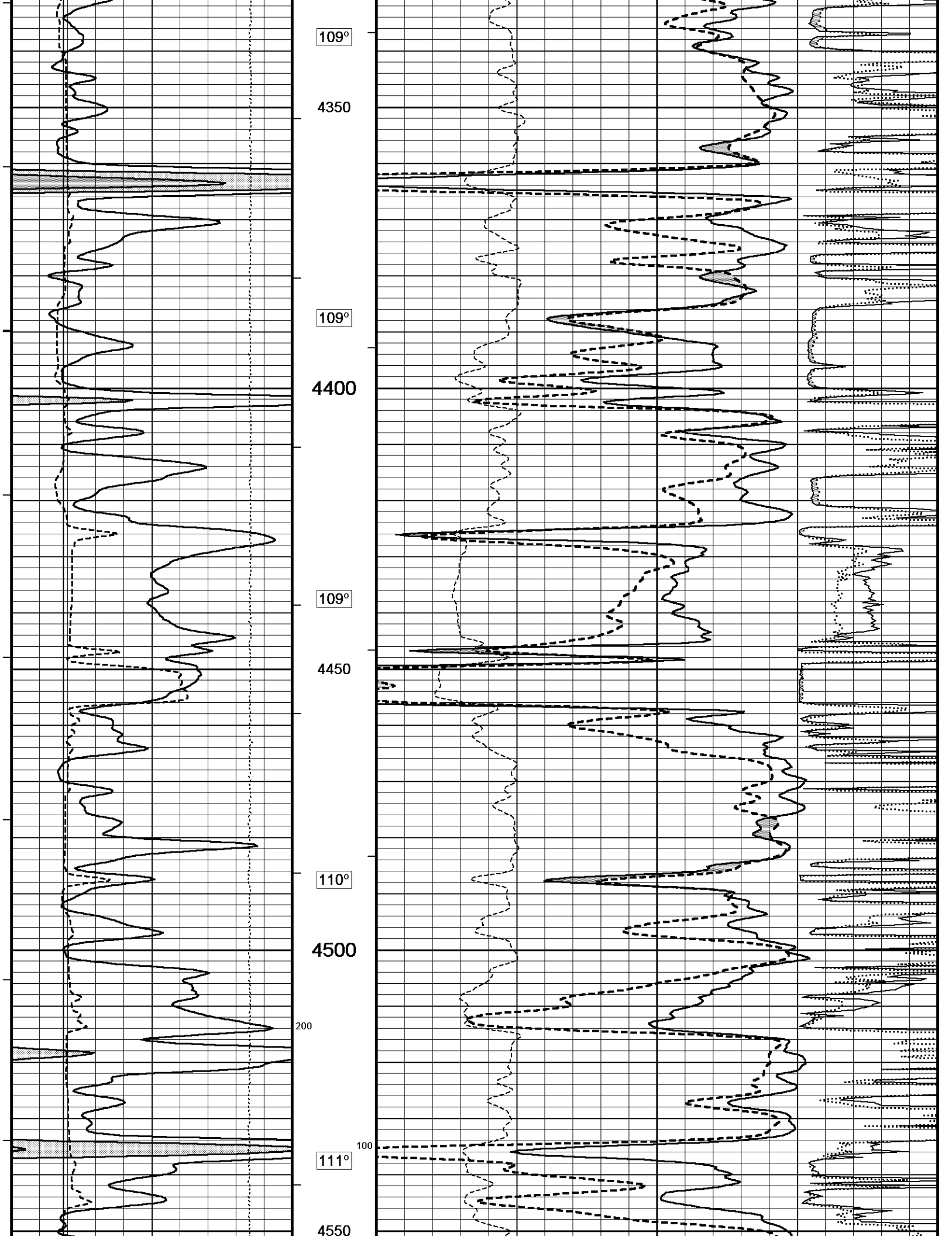
MMR MicroLog Normal
ohm metres
0 20

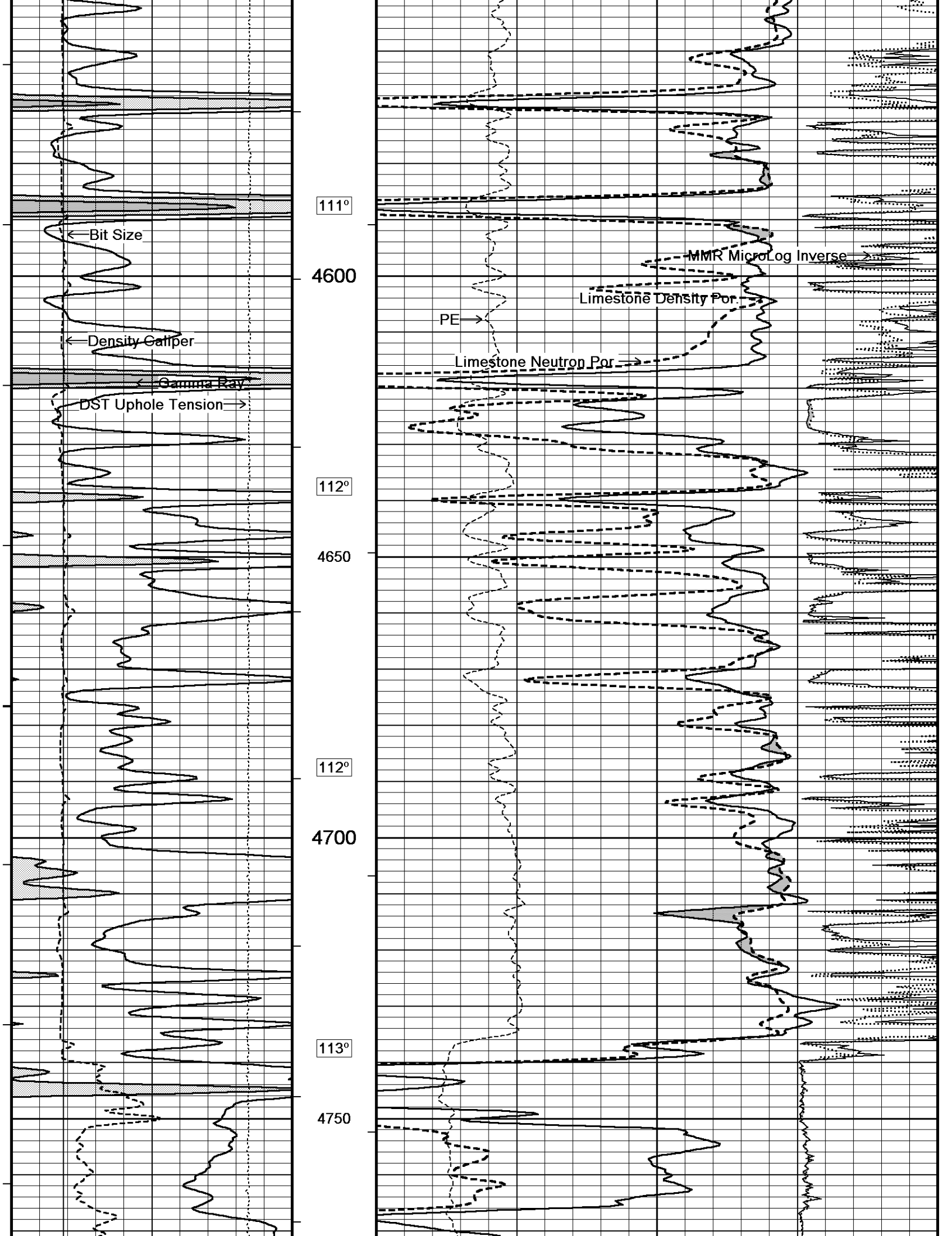
MMR MicroLog Inverse
ohm metres
0 20

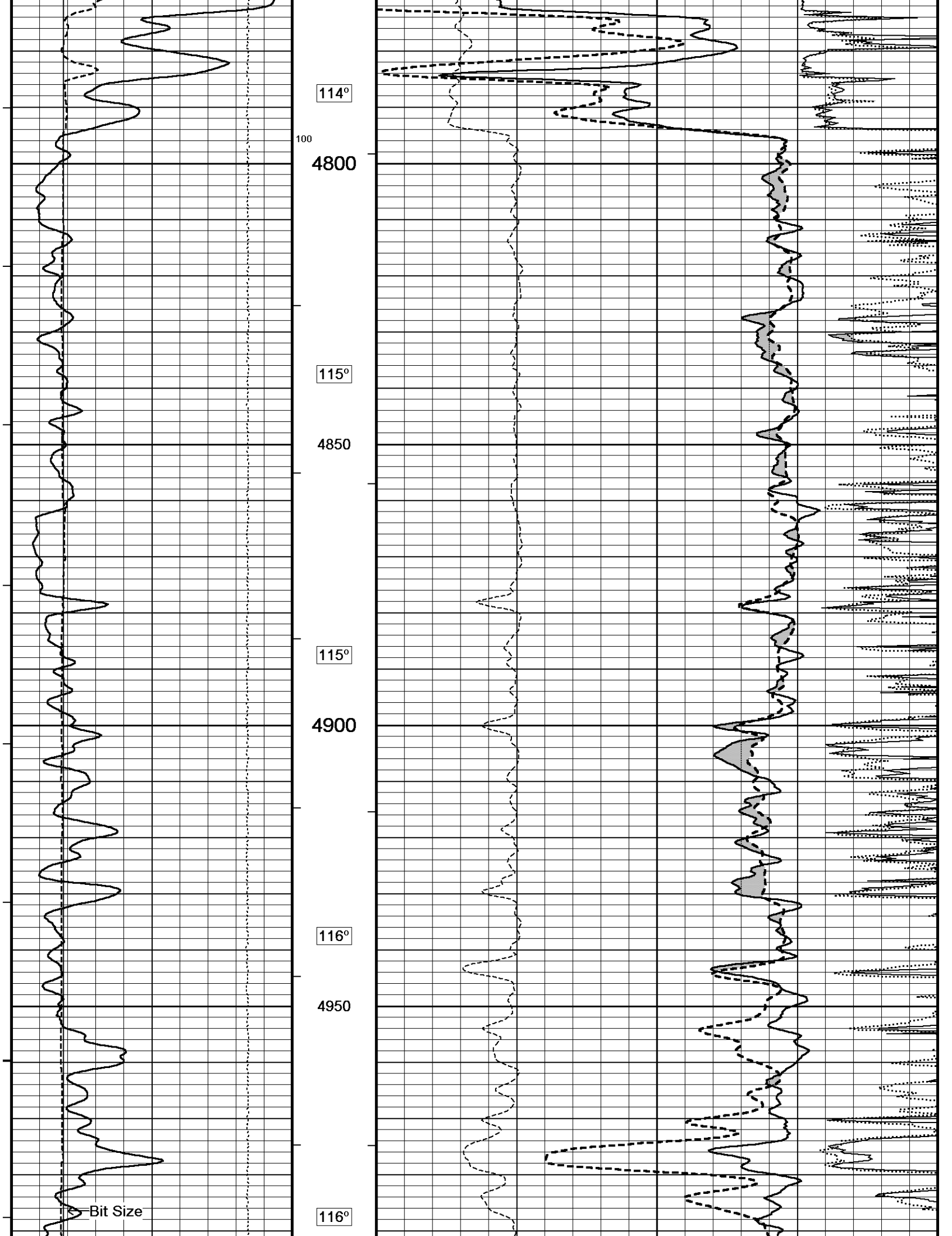


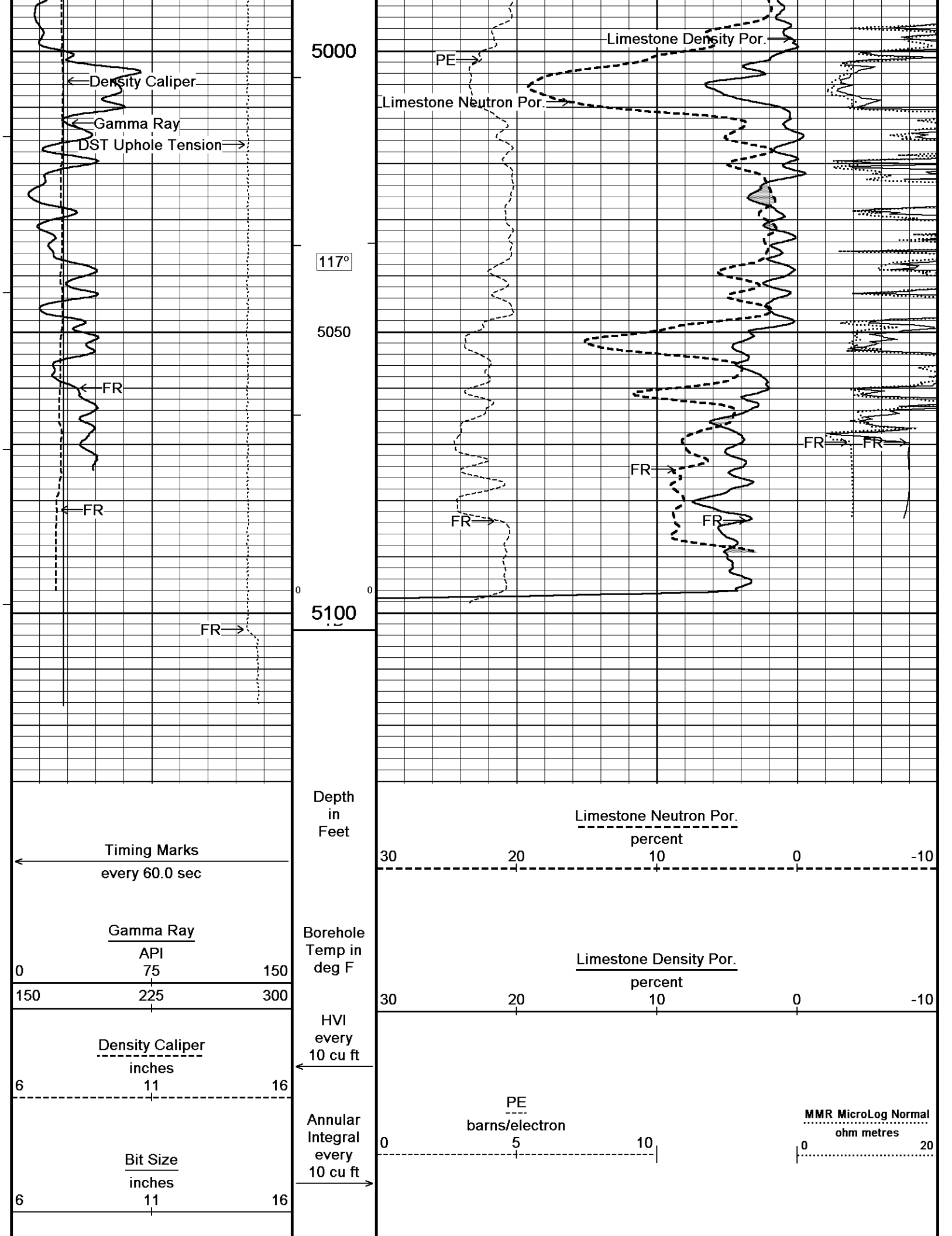

3900
107°
3950
400
107°
4000
200
107°
4050
107°
4100


108°
4150
108°
Bit Size
4200
MMR Micrd og Normal
Limestone Density Por
PE
Density Caliper
Limestone Neutron Por
Gamma Ray
DST Uphole Tension
108°
300
4250
109°
4300


109°
4350
109°
4400
109°
4450
110°
4500
200
100
111°
4550


111°
Bit Size
4600
MMR MicroLog Inverse
Limestone Density Por
PE
Density Caliper
Limestone Neutron Por
Gamma Ray
DST Uphole Tension
112°
4650
112°
4700
113°
4750


114°
100
4800
115°
4850
115°
4900
116°
4950
Bit Size
116°


5000
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por.
Limestone Neutron Por.
117°
5050
FR
FR
FR
FR
FR
FR
FR
0
0
5100
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
150
225
300
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
MMR MicroLog Normal
ohm metres
0
20
Annular
Integral
every
10 cu ft
Bit Size
inches
6
11
16

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

MMR MicroLog Inverse
ohm metres
0 20

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Plotted on 22-NOV-2014 17:41
Recorded on 22-NOV-2014 14:20

5 INCH LIMESTONE MAIN - LOWER SECTION

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
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System Versions: Logged with 14.05.5280 Plotted with 14.05.5280

Plotted on 22-NOV-2014 17:41
Recorded on 22-NOV-2014 13:55

Timing Marks
every 60.0 sec

Depth
in
Feet

Limestone Neutron Por.
percent
30 20 10 0 -10

Gamma Ray
API
0 75 150
150 225 300

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

Annular
Integral
every
10 cu ft

MMR MicroLog Normal
ohm metres
0 20

Bit Size
inches
6 11 16

MMR MicroLog Inverse
ohm metres
0 20

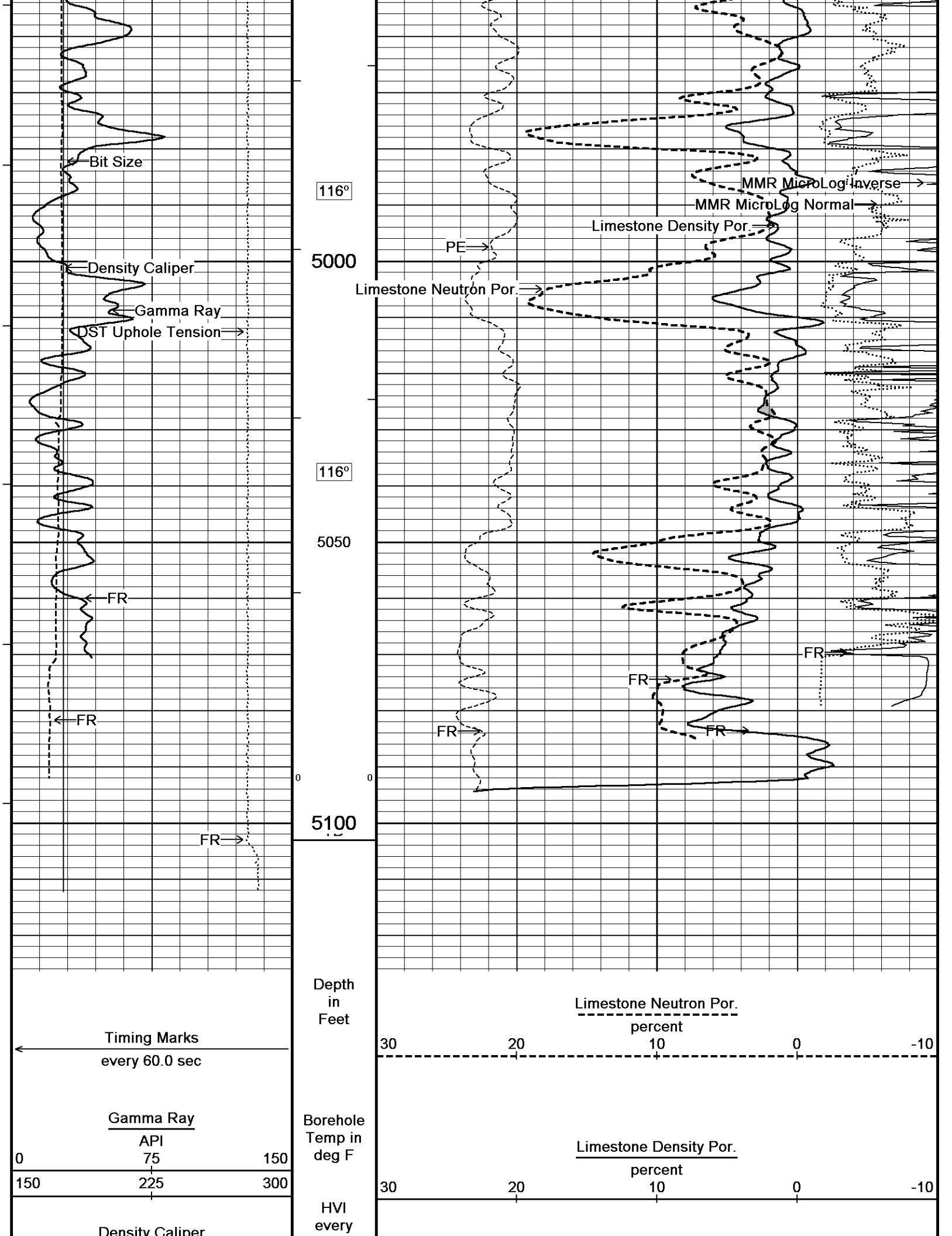
DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

4900

115°

4950


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
116°
5000
116°
5050
5100
0
0
PE
Limestone Neutron Por.
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
FR
FR
FR
FR
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Density Caliper
Depth
in
Feet
Borehole
Temp in
deg F
HVI
every
Limestone Neutron Por.
percent
30
20
10
0
-10
Limestone Density Por.
percent
30
20
10
0
-10

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-NOV-2014 17:41
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REPEAT SECTION

5 INCH BULK DENSITY MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 22-NOV-2014 17:41
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Recorded on 22-NOV-2014 14:20
System Versions: Logged with 14.05.5280 Plotted with 14.05.5280

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

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

3800

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

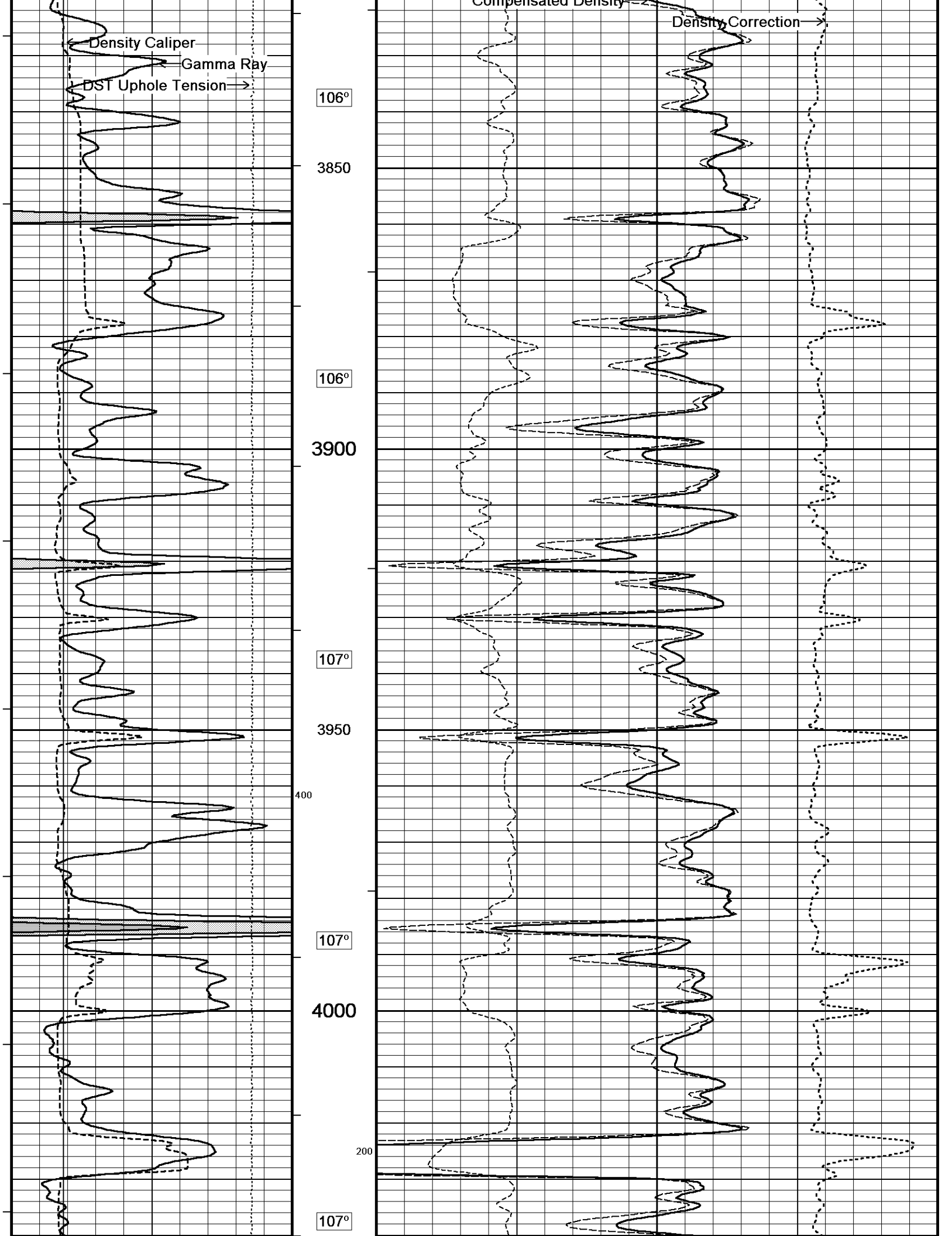
Density Correction
grams/cc
-0.50 0 0.50

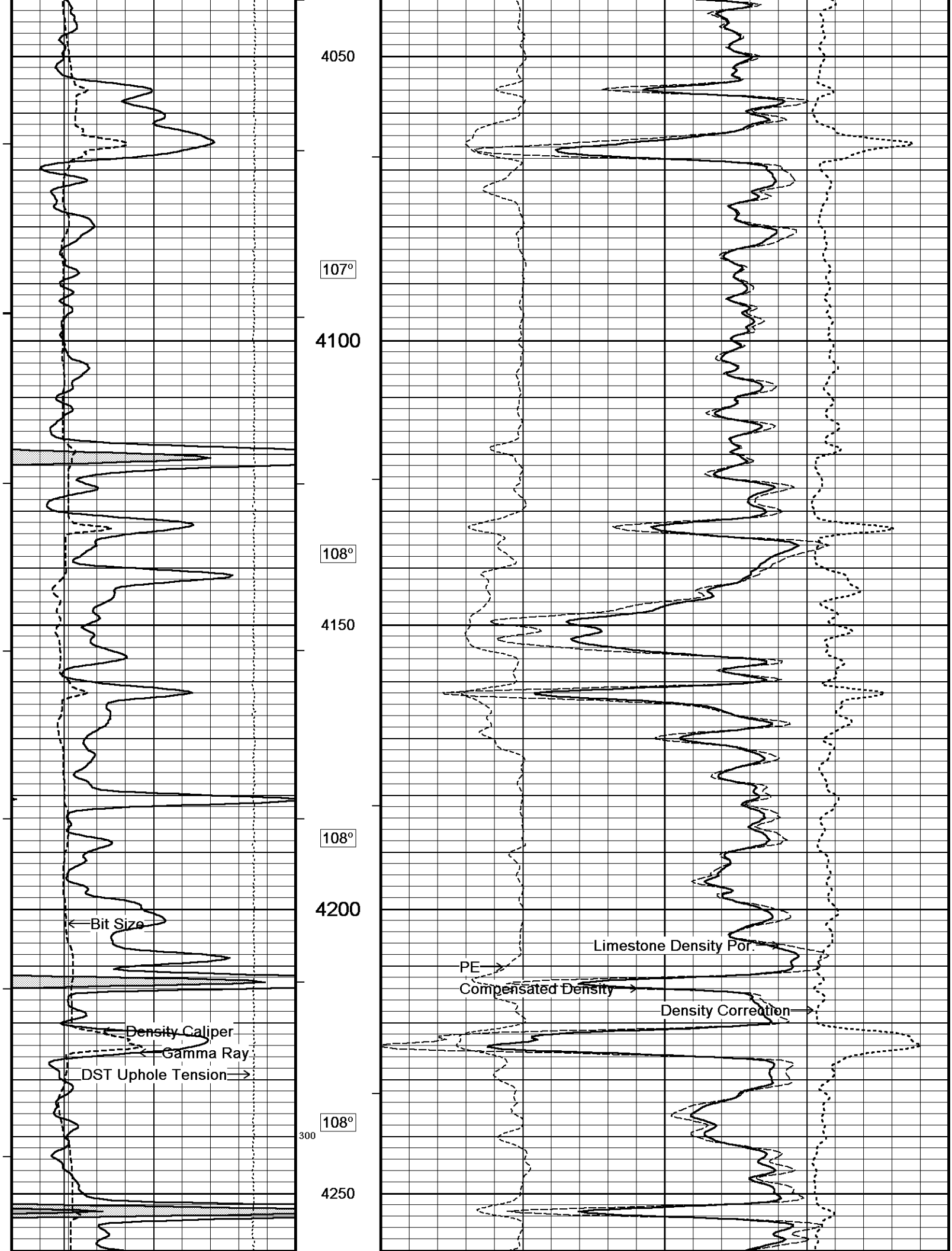
Bit Size

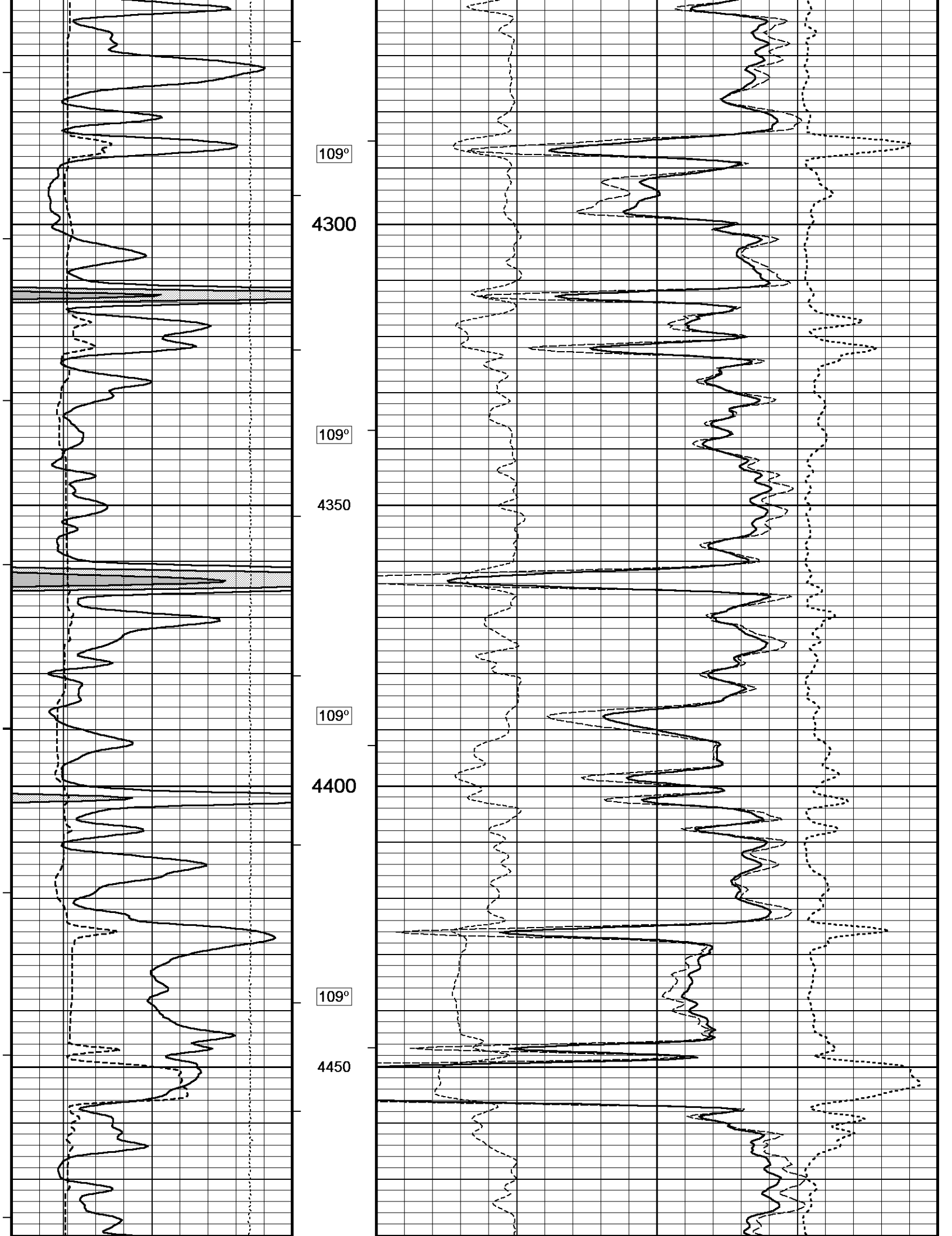
Limestone Density Por.

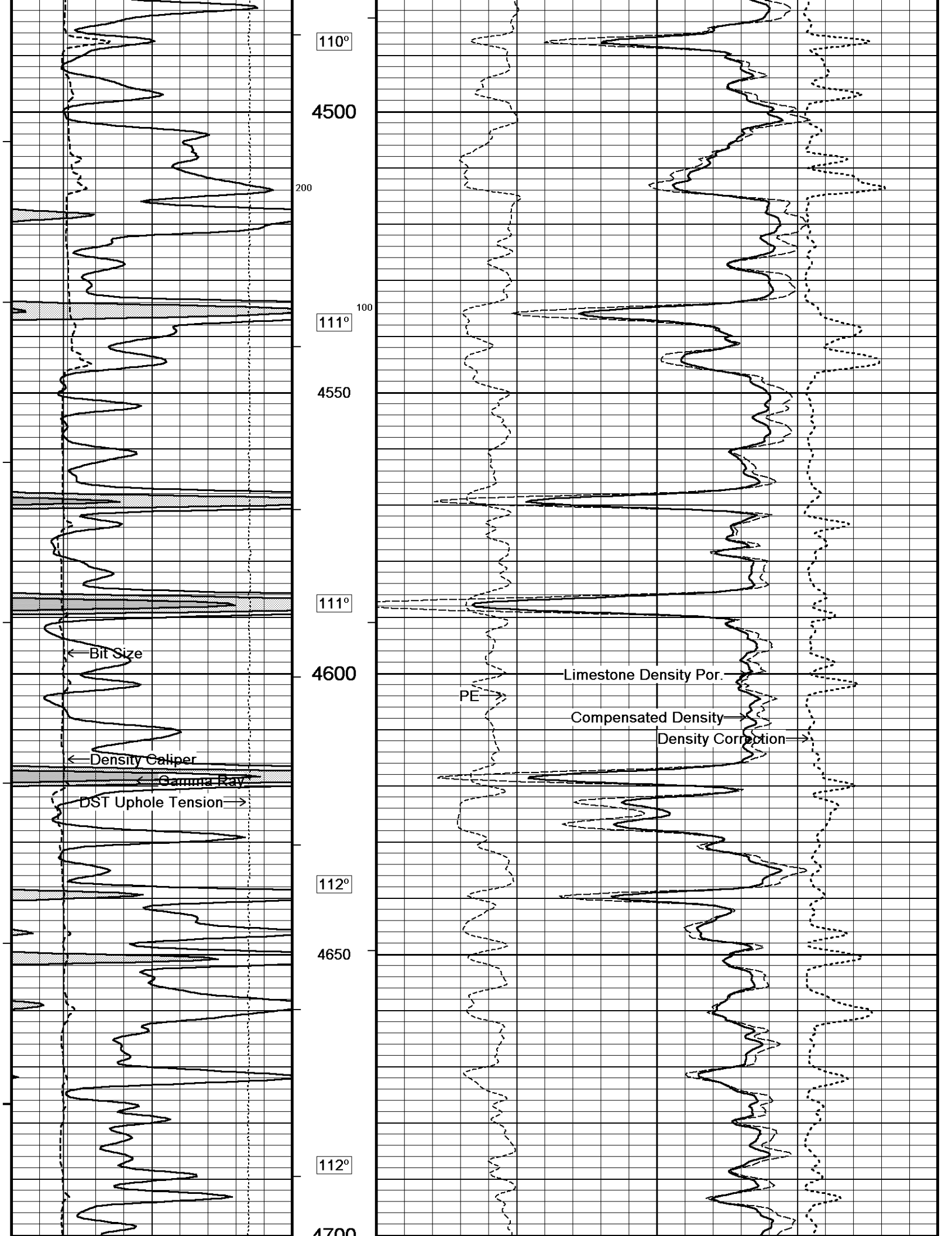
PE

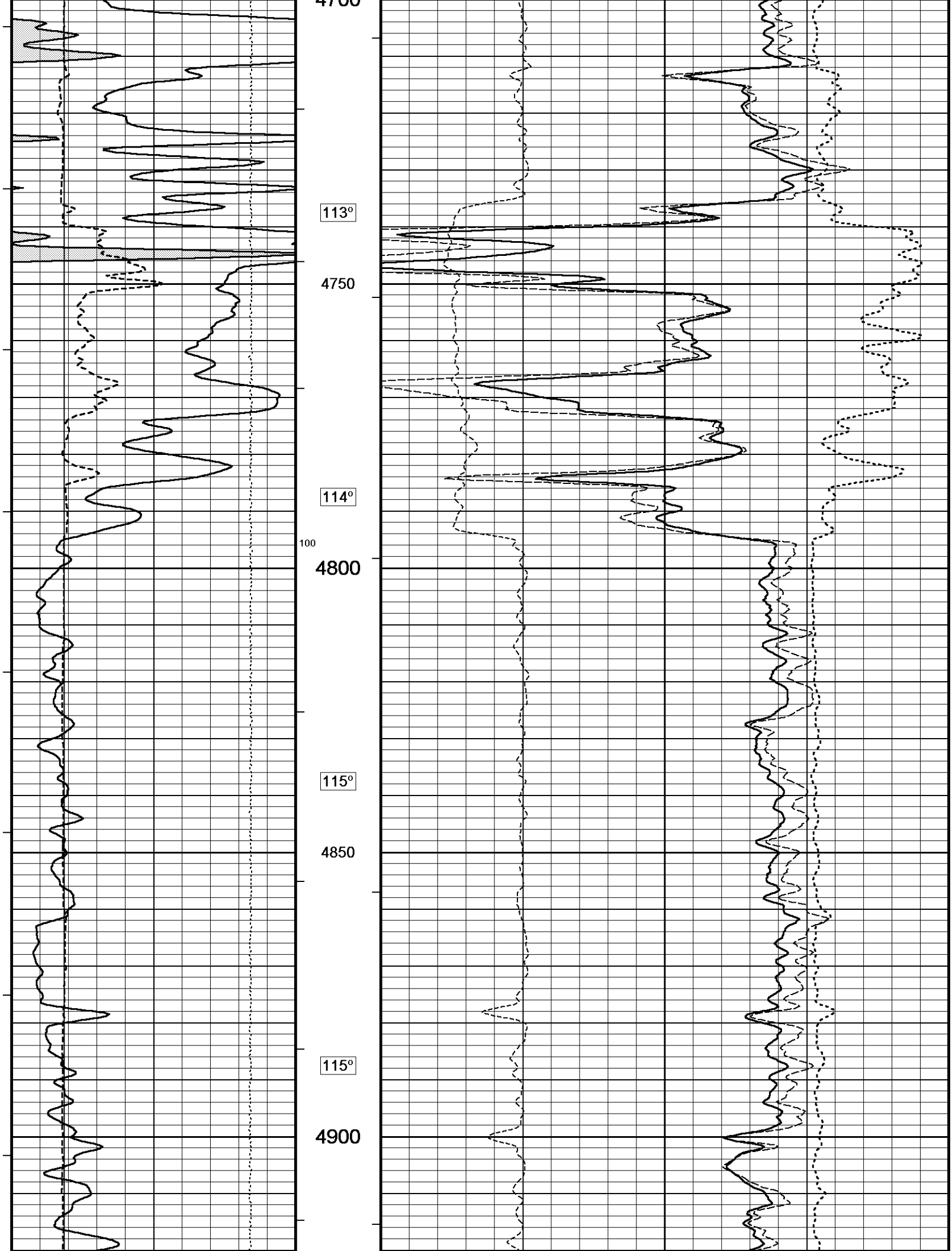
Compensated Density

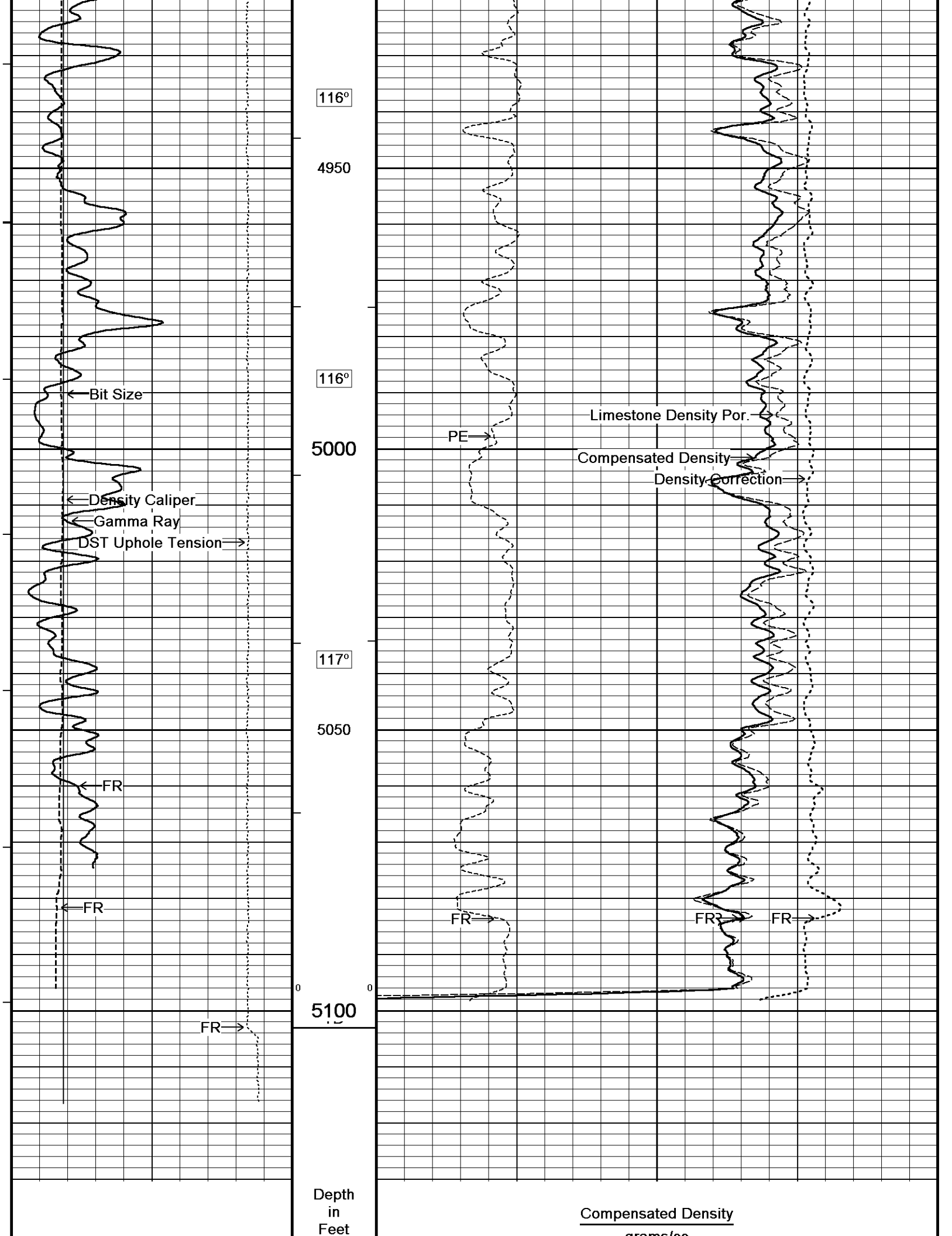

Density Caliper
Gamma Ray
DST Uphole Tension
Compensated Density
Density Correction
106°
3850
106°
3900
107°
3950
400
107°
4000
200
107°


4050
107°
4100
108°
4150
108°
4200
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
108°
300
4250
Limestone Density Por.
PE
Compensated Density
Density Correction


109°
4300
109°
4350
109°
4400
109°
4450


110°
4500
200
100
111°
4550
111°
Bit Size
4600
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
112°
4650
112°
4700


4700
113°
4750
114°
100
4800
115°
4850
115°
4900


116°
4950
116°
Bit Size
5000
Density Caliper
Gamma Ray
DST Uphole Tension
117°
5050
FR
FR
0
0
5100
FR
PE
FR
Limestone Density Por.
Compensated Density
Density Correction
FR
FR
Depth
in
Feet
Compensated Density

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

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

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
-0.50 0 0.50

Depth Based Data - Maximum Sampling Increment 10.0cm
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5 INCH BULK DENSITY MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
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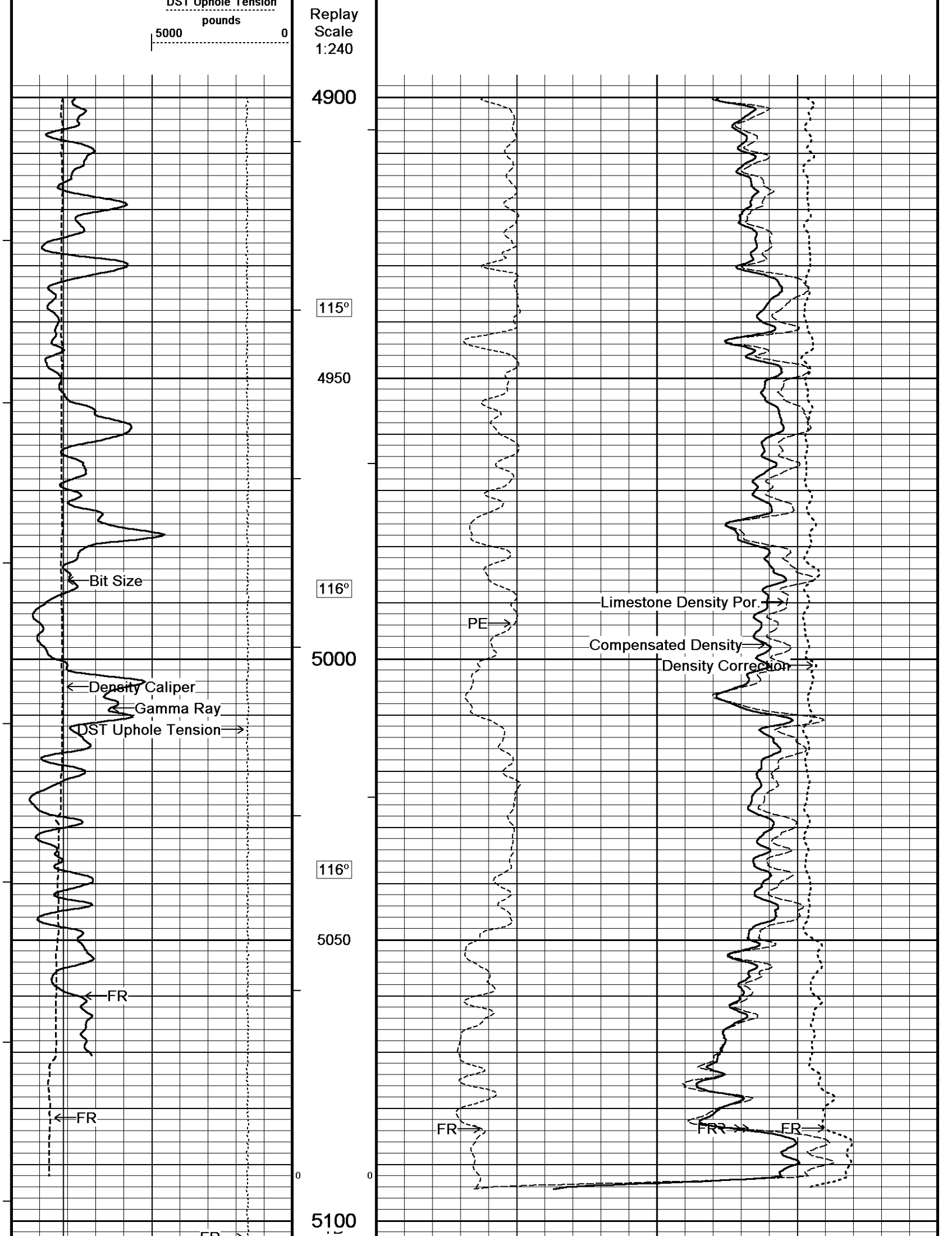
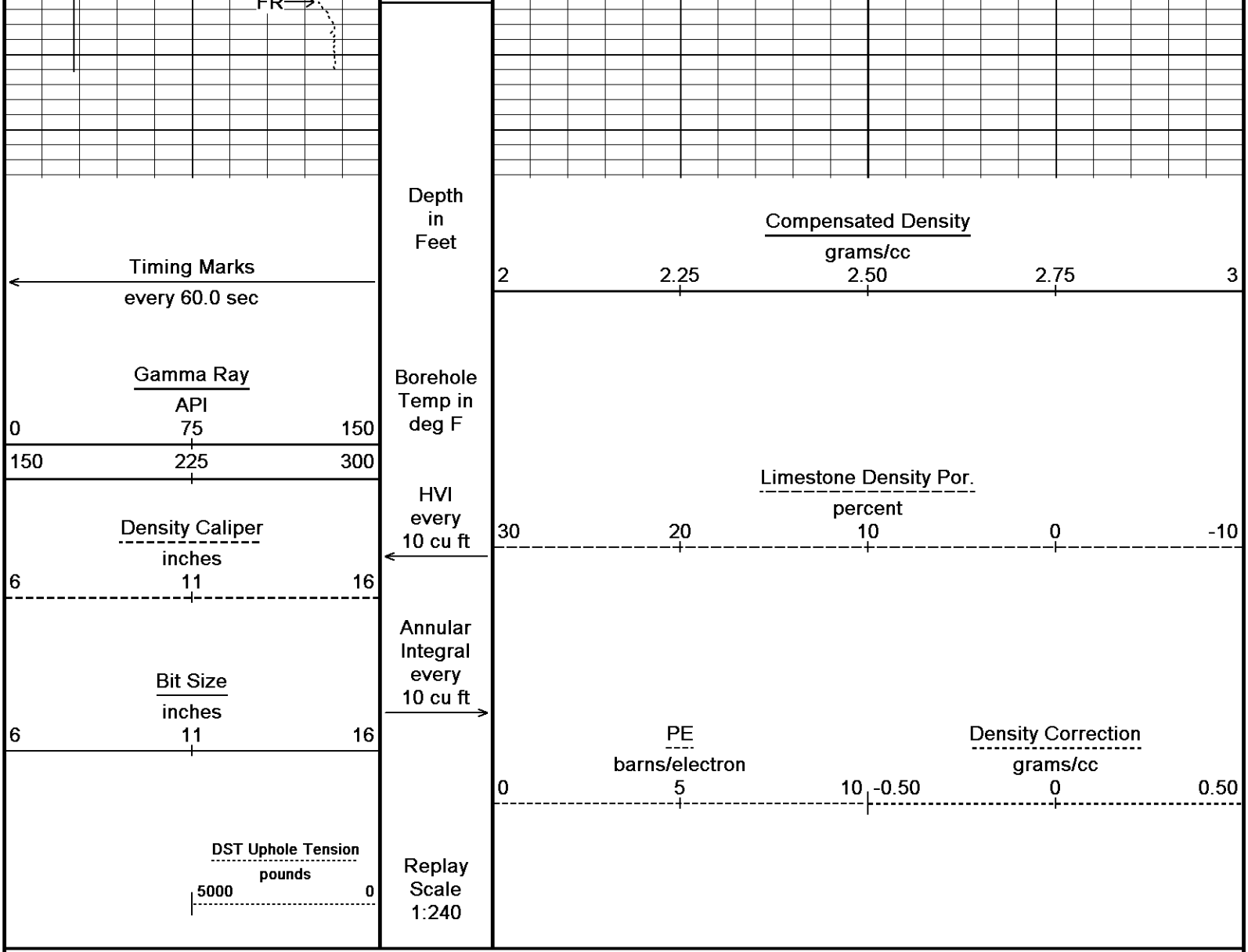

DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
4900
115°
4950
116°
5000
116°
5050
0
0
5100
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
PE
Limestone Density Por.
Compensated Density
Density Correction
FR
FR
FR



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 22-NOV-2014 17:41

Filename: C:\Minimus 14.05\Log Data\Shakespeare COG #2-35\Shakespeare COG #2-35_001.dta — Recorded on 22-NOV-2014 13:55

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REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 14.05\Log Data\Shakespeare COG #2-35\Shakespeare COG #2-35_001.dta

General Constants All 000 — Last Edited on 22-NOV-2014,13:18

General Parameters		
Mud Resistivity	0.370	ohm-metres
Mud Resistivity Temperature	75.000	degrees F
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	Density Caliper	
Rwa Parameters		
Porosity used	Crossplot Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 19-NOV-2014 03:12

Reading No	Measured	Calibrated (lbs)
1	14313.79	0.00
2	15256.53	446.00

High Resolution Temperature Calibration MCG-B 39

Field Calibration on 18-NOV-2014,10:02

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-B 39

Last Edited on 28-AUG-2014,01:02

Pre-filter Length	11

SP Calibration MCG-B 39

Field Calibration on 18-NOV-2014,10:02

	Measured	Calibrated (mV)
Reference 1	102.6	99.9
Reference 2	-97.9	-100.0

Gamma Calibration MCG-B 39

Field Calibration on 20-NOV-2014 15:11

	Measured	Calibrated (API)
Background	67	46
Calibrator (Gross)	1140	771
Calibrator (Net)	1072	725

Gamma Calibration Tolerances MCG-B 39

Ratio	1.479	1.40 / 1.475 / 1.55	Counts/API

Gamma Constants MCG-B 39

Last Edited on 20-NOV-2014,14:59

Gamma Calibrator Number	GRC038	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.00	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 Normal and Micro Inverse Calibration MML-A 3

Base Calibration on 24-OCT-2014 15:09
Field Check on 20-NOV-2014 14:59

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.0	49.9	5.1	25.6
Micro Inverse	10.0	49.9	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	77.4	77.4
Micro Inverse	51.3	51.3

Micro Normal & Micro Inverse Calibration Tolerance MML-A 3

Micro Normal Res. 1	10.0	-5% / 10.0 / +5%	ohm	Micro Normal Res. 2	49.9	-5% / 50.0 / +5% ohm
Micro Inverse Res. 1	10.0	-5% / 10.0 / +5%	ohm	Micro Inverse Res. 2	49.9	-5% / 50.0 / +5% ohm

Micro Normal Base Check	77.4	-2% / 77.28 / +2%	ohm-m
Micro Inverse Base Check	51.3	-2% / 51.19 / +2%	ohm-m
Micro Normal Field Check	77.4	-2% / 77.4 / +2%	ohm-m
Micro Inverse Field Check	51.3	-2% / 51.3 / +2%	ohm-m

Micro Normal and Micro Inverse Constants MML-A 3

Last Edited on 22-NOV-2014 08:00

Micro Normal and Micro Inverse Constants MML-A 3

Last Edited on 22-NOV-2014,08:00

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 3

Base Calibration on 24-OCT-2014 14:47
Field Calibration on 20-NOV-2014 14:57

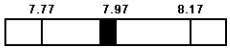
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15153	5.98
2	18429	7.97
3	21713	9.86
4	25537	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.92	7.97

Caliper Calibration Tolerances MML-A 3

Short Arm Field Cal. 7.92 

in

Neutron Calibration MDN-A.B 152

Base Calibration on 24-OCT-2014 12:40
Field Check on 20-NOV-2014 15:18

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2866	87	3714	110
Ratio	33.093		33.764	

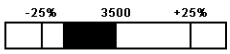
Field Calibrator at Base

	Calibrated (cps)	
	1779	2659
Ratio	0.669	

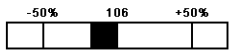
Field Check

	Calibrated (cps)	
	1771	2611
Ratio	0.678	

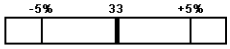
Neutron Calibration Tolerances MDN-A.B 152

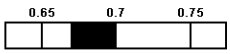
Near Reading 2866 

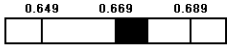
cps

Far Reading 87 

cps

Ratio 33.093 

Base Check 0.669 

Field Check 0.678 

Neutron Constants MDN-A.B 152

Last Edited on 22-NOV-2014,08:00

Neutron Source Id	P0204NN	
Neutron Jig Number	5824NE	
Air Hole Processing	Legacy	
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
Borite Mud Correction	Not Applied	

Barite Mud Correction: Not Applied

FE Calibration MFE-B.J 353

Base Calibration on 24-OCT-2014 15:33
Field Check on 20-NOV-2014 14:49

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.2	126.8
Base Check		281.0
Field Check		281.1

FE Calibration Tolerances MFE-B.J 353

Reference 2	964.2	-3% 980.0 +3%	ohm
Base Check	281.0	-2% 277.0 +2%	ohm-m
Field Check	281.1	-2% 281.0 +2%	ohm-m

FE Constants MFE-B.J 353

Last Edited on 22-NOV-2014,08:00

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	Obtain Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 18-NOV-2014,09:35

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Induction Calibration MAI-A.A 111

Base Calibration on 05-AUG-2014,09:34
Field Check on 20-NOV-2014 14:47

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2
Array Temperature		23.0	Deg F	

Test Loop Calibration Verified

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	12.3	3871.6
2	0.0	0.0	29.8	3527.2
3	0.0	0.0	29.1	3020.8
4	0.0	0.0	19.2	2057.9
Deep			17.8	1961.7
Medium			43.1	3976.0
Shallow			44.5	5231.5
Array Temperature		0.0	68.4	Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6	13.0 17.0 21.0	mmho/m	High Conductivity 1	473.6	430.0 475.0 520.0	mmho/m
Low Conductivity 2	6.4	4.5 6.0 7.5	mmho/m	High Conductivity 2	385.9	345.0 385.0 425.0	mmho/m
		1.0 3.5 6.0				240.0 260.0 280.0	

Low Conductivity 3	3.2	0.0 2.0 4.0	mmho/m	High Conductivity 3	264.0	120.0 135.0 150.0	mmho/m
Low Conductivity 4	2.1	-110.0 -32.5 45.0	mmho/m	High Conductivity 4	135.5	-2.0 0.0 2.0	mmho/m
Background Vx 1	0.0	-35.0 20.0 75.0	mmho/m	Phase Check Loop 1	0.0	-2.0 0.0 2.0	%
Background Vx 2	0.0	-60.0 2.5 65.0	mmho/m	Phase Check Loop 2	0.0	-2.0 0.0 2.0	%
Background Vx 3	0.0	-50.0 -17.5 15.0	mmho/m	Phase Check Loop 3	0.0	-2.0 0.0 2.0	%
Background Vx 4	0.0		mmho/m	Phase Check Loop 4	0.0		%

Induction Constants MAI-A.A 111

Last Edited on 22-NOV-2014,08:00

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	Value: Temperature Corrected	
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-C.A 216

Base Calibration on 24-OCT-2014 11:23
Field Calibration on 20-NOV-2014 14:50

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18960	3.99
2	28807	5.98
3	38852	7.97
4	48518	9.86
5	59792	11.92
6	N/A	N/A

Field Calibration

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

Caliper Calibration Tolerances MPD-C.A 216

Short Arm Field Cal.	7.96	7.77 7.97 8.17	in

Photo Density Calibration MPD-C.A 216

Base Calibration on 24-OCT-2014 11:46
Field Check on 20-NOV-2014 14:55

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1094	1297		
Reference 1	59838	31173	59556	30836
Reference 2	24858	2730	24941	2541
Field Check at Base	1094.4	1296.6		
Field Check	1098.3	1286.1		

PE Calibration

Base Calibration	WS	Measured WH	Ratio	Calibrated Ratio
Background	201	974		
Reference 1	25019	59646	0.423	0.371
Reference 2	7097	24723	0.290	0.272
Field Check at Base	201.2	973.6		
Field Check	197.8	978.4		

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.47	-5% 2.52 +5%	Far Density Ratio	20.84	-5% 21.00 +5%
PE Calibration	0.124	0.089 0.110 0.131			
Near Den. Field Check	1098.3	-3% 1094.4 +3%	Far Den. Field Check	1286.1	-3% 1296.6 +3%
PE WS Field Check	197.8	-6% 201.2 +6%	PE WH Field Check	978.4	-6% 973.6 +6%

Density Constants MPD-C.A 216

Last Edited on 20-NOV-2014,14:59

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	1.00	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 (m)
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

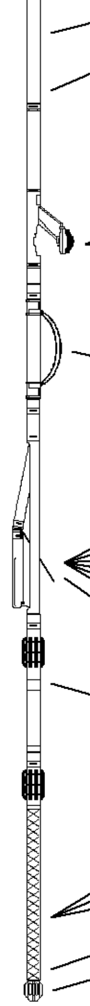
DOWNHOLE EQUIPMENT

C:\Minimus 14.05\Log Data\Shakespeare COG #2-35\Shakespeare COG #2-35_001.dta

CBH-C, Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-B 39 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

42.87 ft GRGC - Gamma Ray

Tool		Depth	Measurement
		39.96 ft	CGXT - MCG External Temperature
Compact Micro-log MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.240 in		34.24 ft	MLTC - MML Caliper
		33.24 ft	MINV - Micro-inverse
		33.24 ft	MNRL - Micro-normal
Compact Neutron MDN-A.B 152 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in		28.45 ft	NPRL - Limestone Neutron Por.
Compact Density/Caliper MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in		21.21 ft	AVOL - Annular Volume
		21.21 ft	HVOL - Hole Volume
		21.21 ft	CLDC - Density Caliper
		19.28 ft	DEN - Compensated Density
		19.28 ft	DCOR - Density Correction
		19.28 ft	DPRL - Limestone Density Por.
		19.22 ft	PDPE - PE
Compact Focussed Electric MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in		13.72 ft	FEFE - Shallow FE
Compact Induction MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in		3.34 ft	R40O - Array Ind. One Res 40
Total Length: 50.55 ft Weight: 407.9 lb		3.34 ft	RTAO - Array Ind. One Res Rt
		3.34 ft	R60O - Array Ind. One Res 60
		0.23 ft	SPCG - Spontaneous Potential
		Tool Zero	(0.13ft from bottom)
		-0.13 ft	SMTU - DST Uphole Tension

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	COG #2-35
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3115.00	feet	First Reading	5084.00	feet
Elevation Drill Floor	3113.00	feet	Depth Driller	5100.00	feet
Elevation Ground Level	3105.00	feet	Depth Logger	5103.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG