Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	CMX, INC.
WELL	#1 JOHNNY B. GOODE
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2000' FSL & 1455' FEL SE NE NW SE

SEC	TWP	RGE
6	35S	11W

API Number 15-007-24087
Permit Number

Other Services
MAI/MFE
MML
MSS

Permanent Datum GL, Elevation 1371 feet
Log Measured From KB
Drilling Measured From KB @ 8 FEET

Elevations:	feet
KB	1379.00
DF	1377.00
GL	1371.00

Date	03-OCT-2013			
Run Number	ONE			
Service Order	3541120			
Depth Driller	5190.00	feet		
Depth Logger	5194.00	feet		
First Reading	5162.00	feet		
Last Reading	3700.00	feet		
Casing Driller	1012.00	feet		
Casing Logger	1013.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.40 lb/USg	64.00 CP		
PH / Fluid Loss	9.40	11.20 ml/30Min		
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.68 @ 80.0	ohm-m		
Rmf @ Measured Temp	0.54 @ 80.0	ohm-m		
Rmc @ Measured Temp	0.82 @ 80.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.46 @119.0	ohm-m		
Time Since Circulation	3 HOURS			
Max Recorded Temp	119.00	deg F		
Equipment / Base	13057	KANSAS		
Recorded By	D. COLE		J. LAPOINT	
Witnessed By	L. KASTEN			
JOB#	LB13-289			

BOREHOLE RECORD

Last Edited: 04-OCT-2013 11:38

Bit Size inches	Depth From feet	Depth To feet
7.875	1013.00	5194.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	1013.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583.
- RUN 1: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
  - HARDWARE: DUAL ECCENTRALISER USED ON MDN
    0.5 INCH STANDOFF USED ON MFE.
    TWO 0.5 INCH STANDOFFS USED ON MSS.
    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 3700 FEET CASING: 590 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3700 FEET: 348 CU. FT.

- RIG: DUKE RIG 2

- ENGINEER: DUANE COLE AND JOHN LAPOINT

- OPERATOR(S): CARLOS RAMIREZ

HI-RES

Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 06-OCT-2013 12:59
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode High-Res.dta
Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

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 1:120

4694

4700

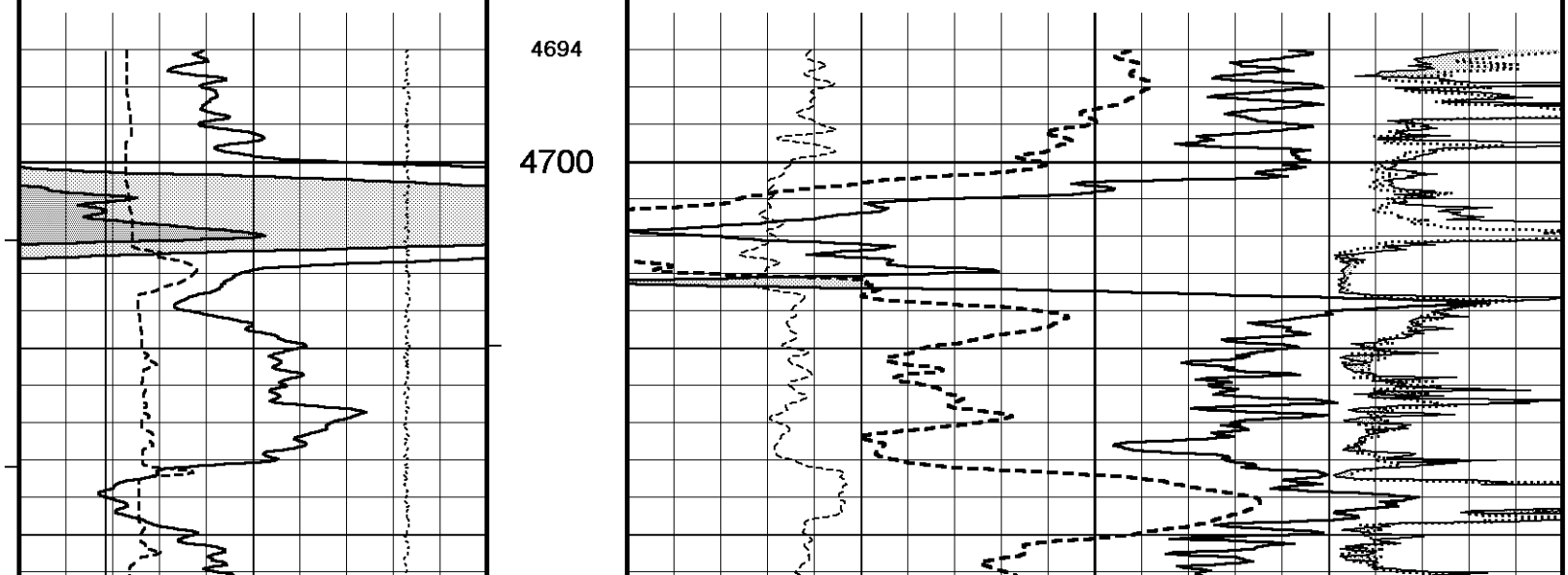
Limestone Neutron Por.
percent
30 20 10 0 -10

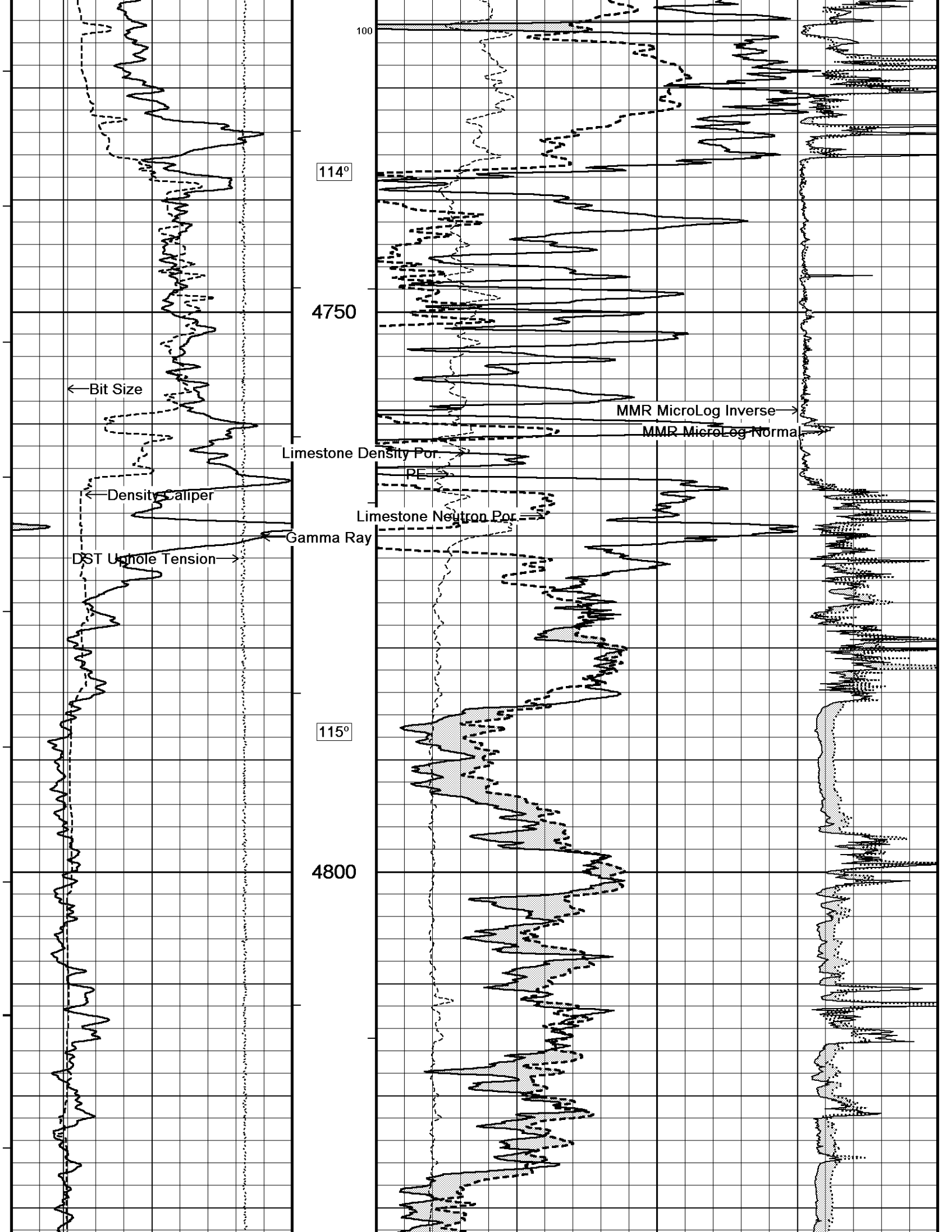
Limestone Density Por.
percent
30 20 10 0 -10

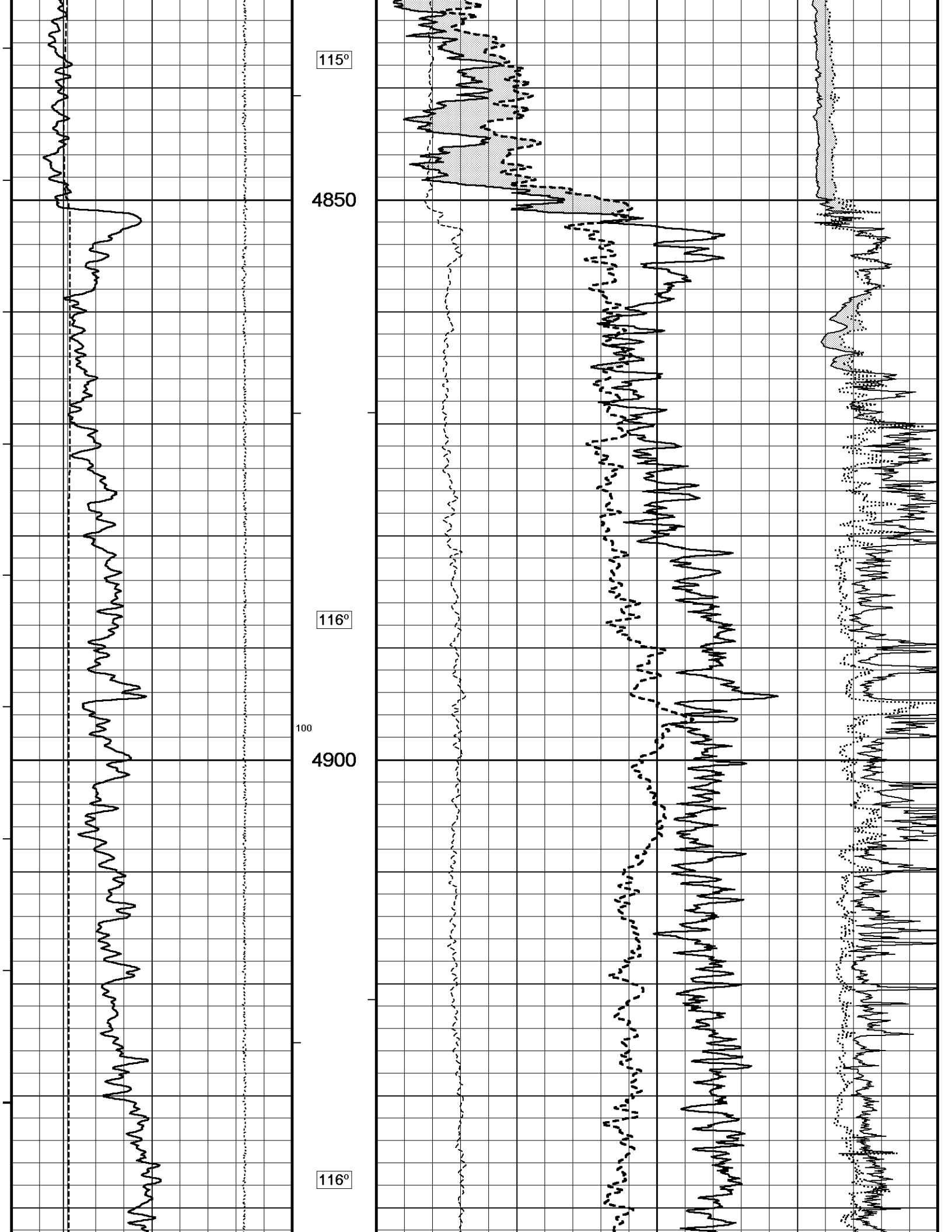
PE
barns/electron
0 5 10

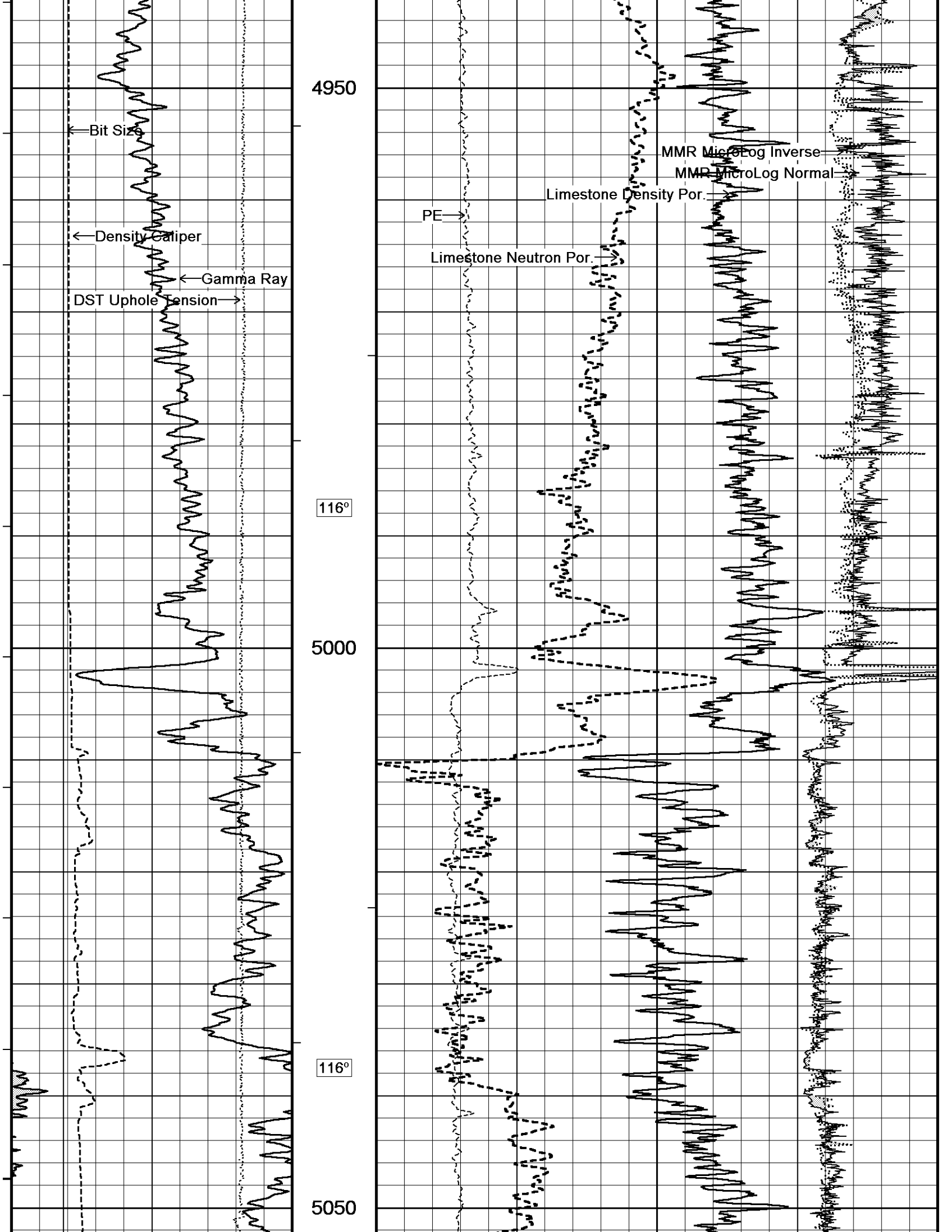
MMR MicroLog Normal
ohm metres
0 20

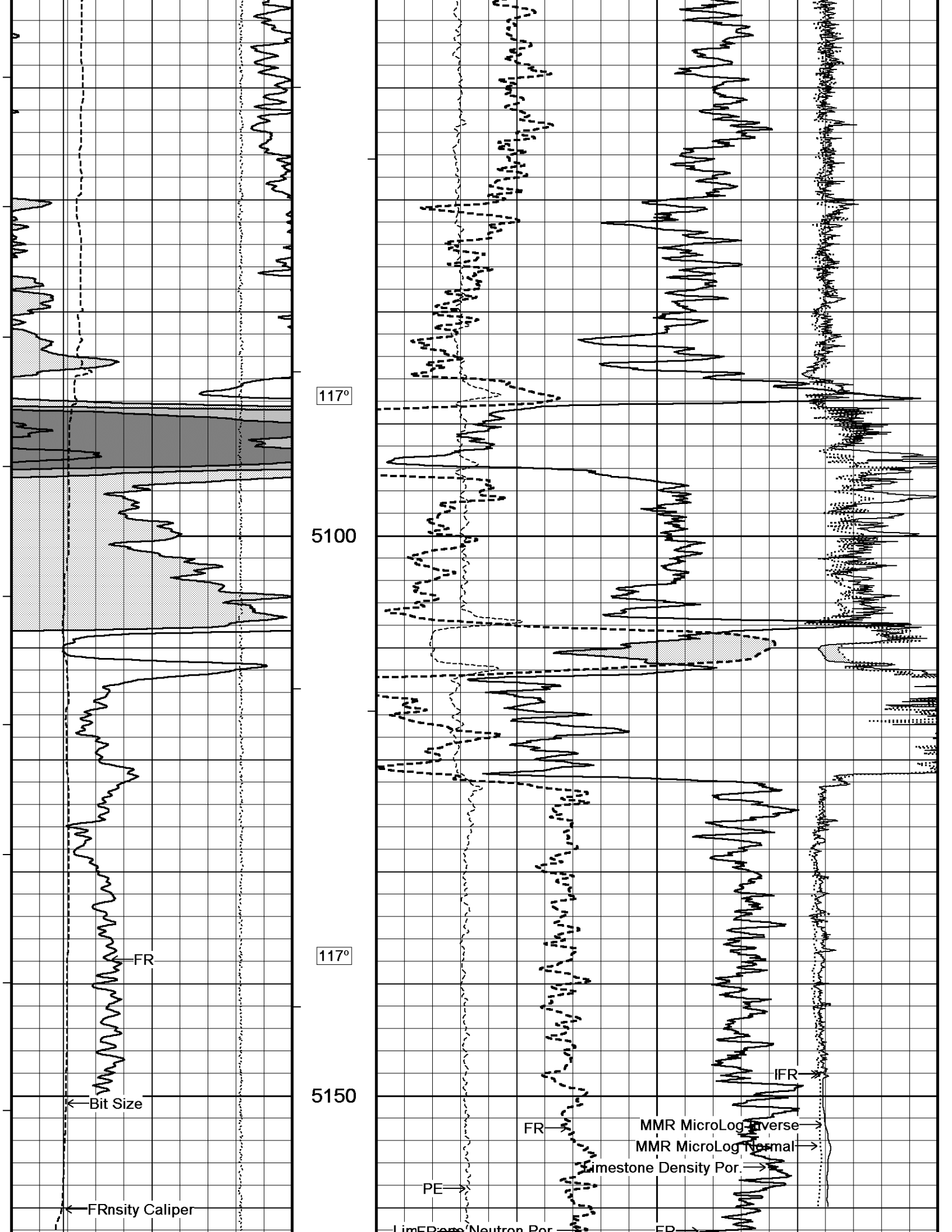
MMR MicroLog Inverse
ohm metres
0 20

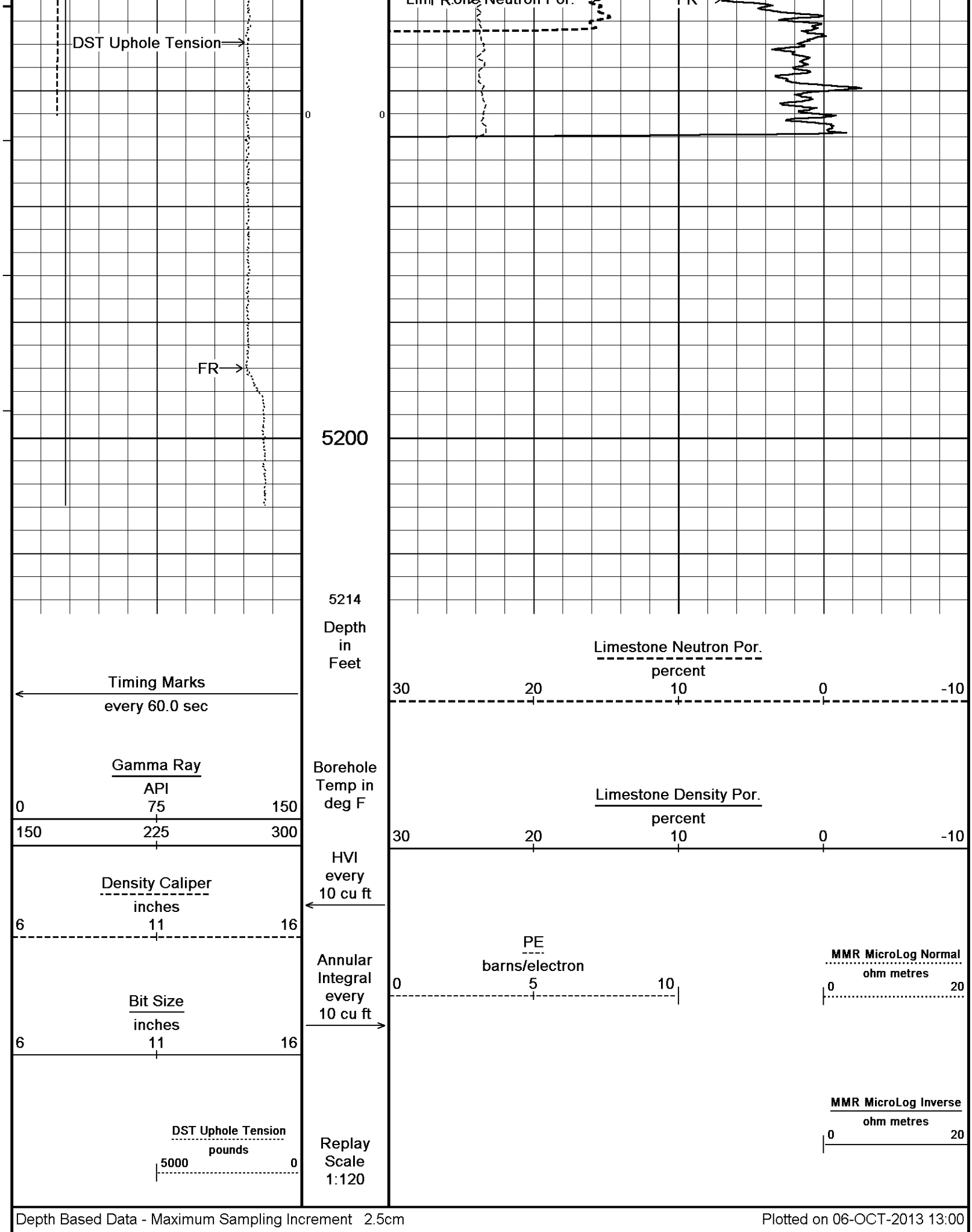



100
114°
4750
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
115°
4800


115°
4850
116°
100
4900
116°


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
4950
116°
5000
116°
5050
PE
Limestone Neutron Por.
Limestone Density Por.
MMR MicroLog Inverse
MMR MicroLog Normal


117°
5100
117°
5150
FR
Bit Size
FRnsity Caliper
PE
FR
IFR
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
LimFRsity/Neutron Por.
FR



Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode High-Res.dta
Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

HI-RES

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Main.dta
Recorded on 04-OCT-2013 08:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

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

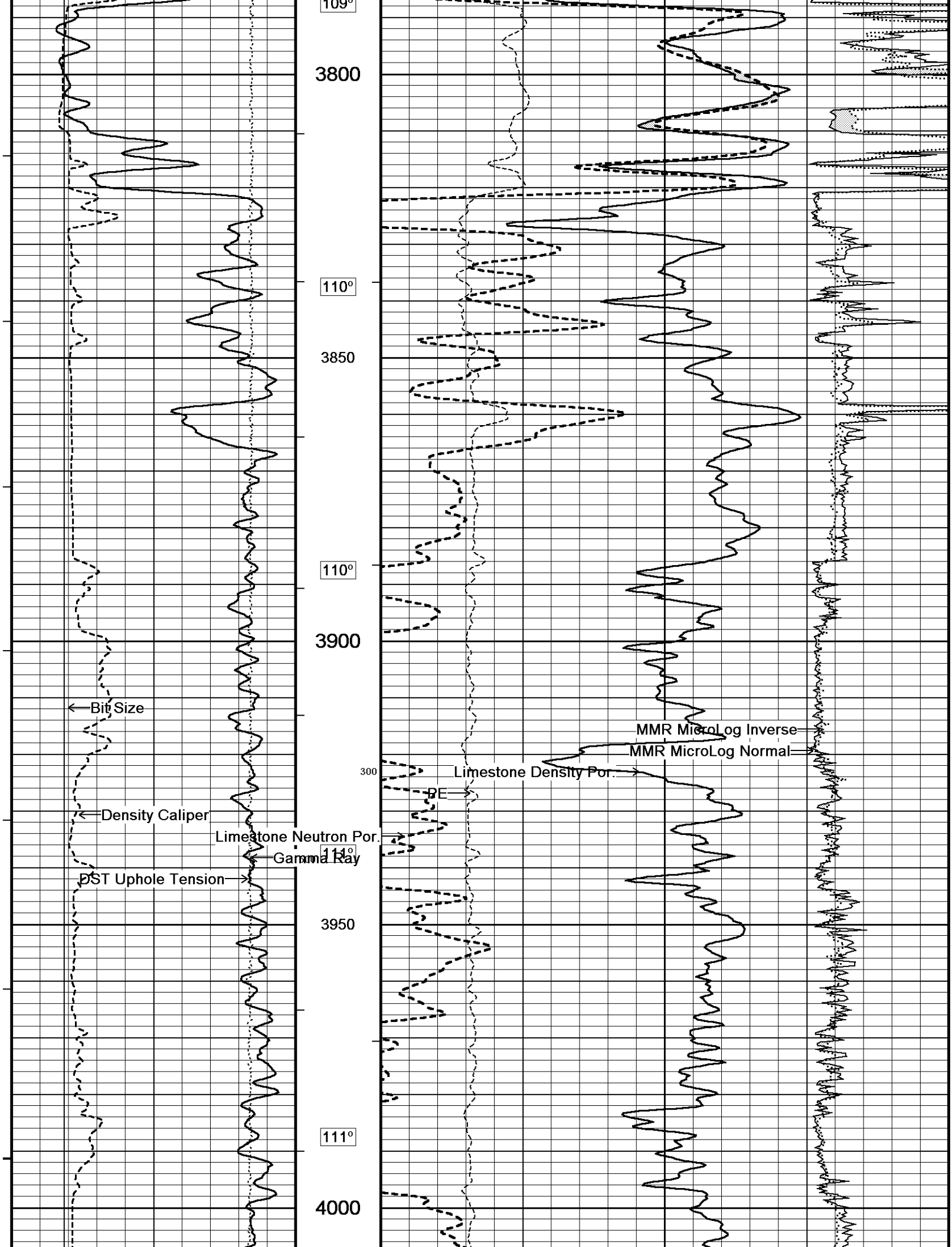
MMR MicroLog Normal
ohm metres
0 20

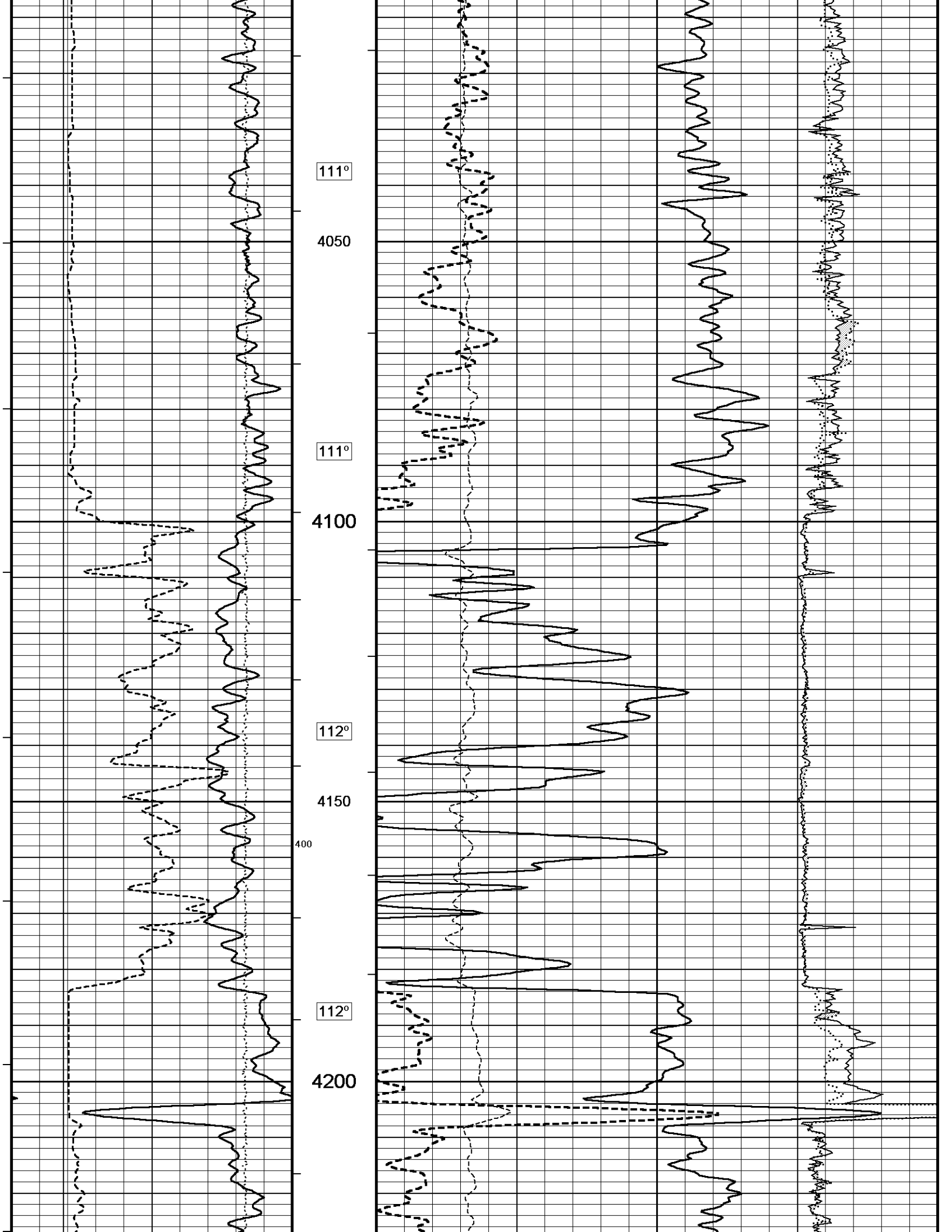
MMR MicroLog Inverse
ohm metres
0 20

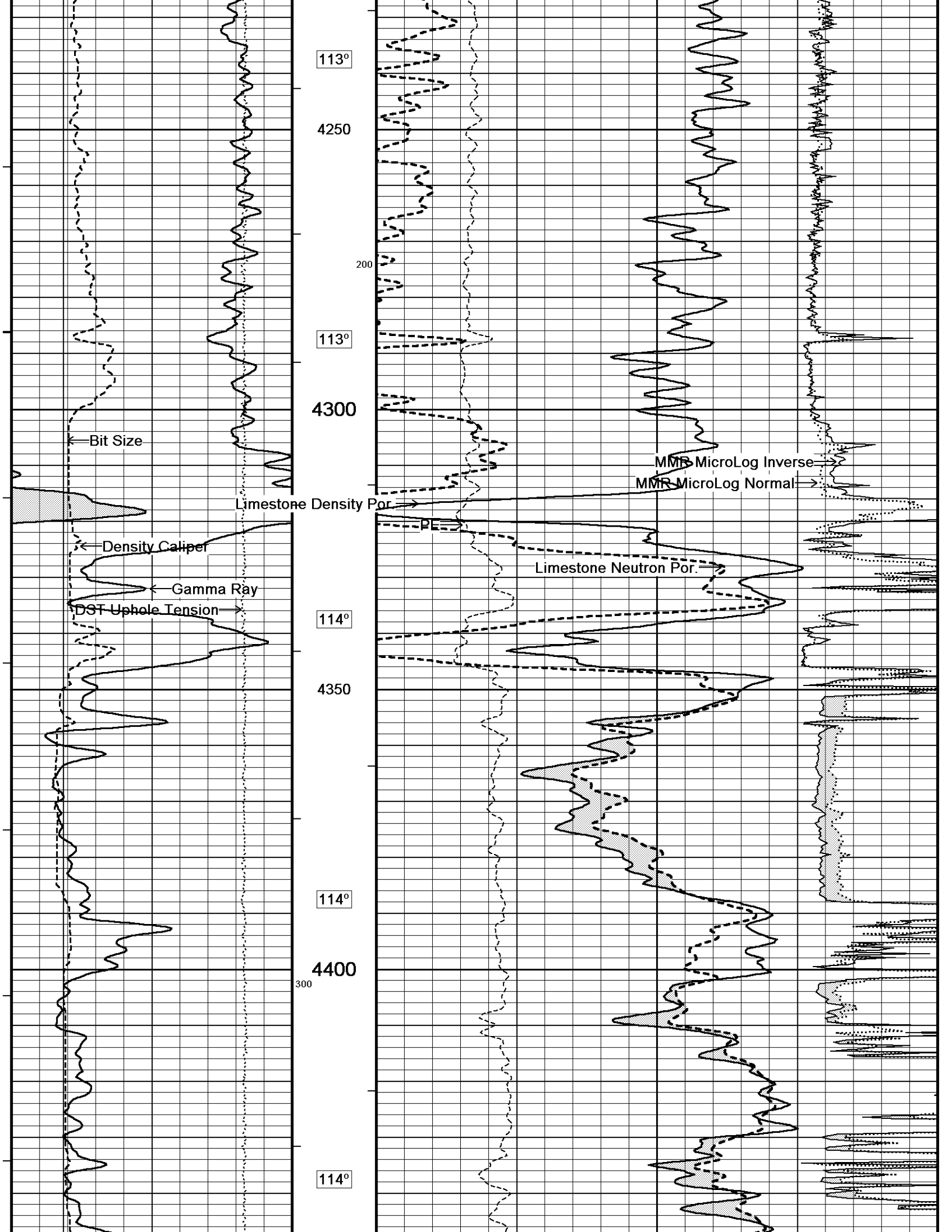
3700

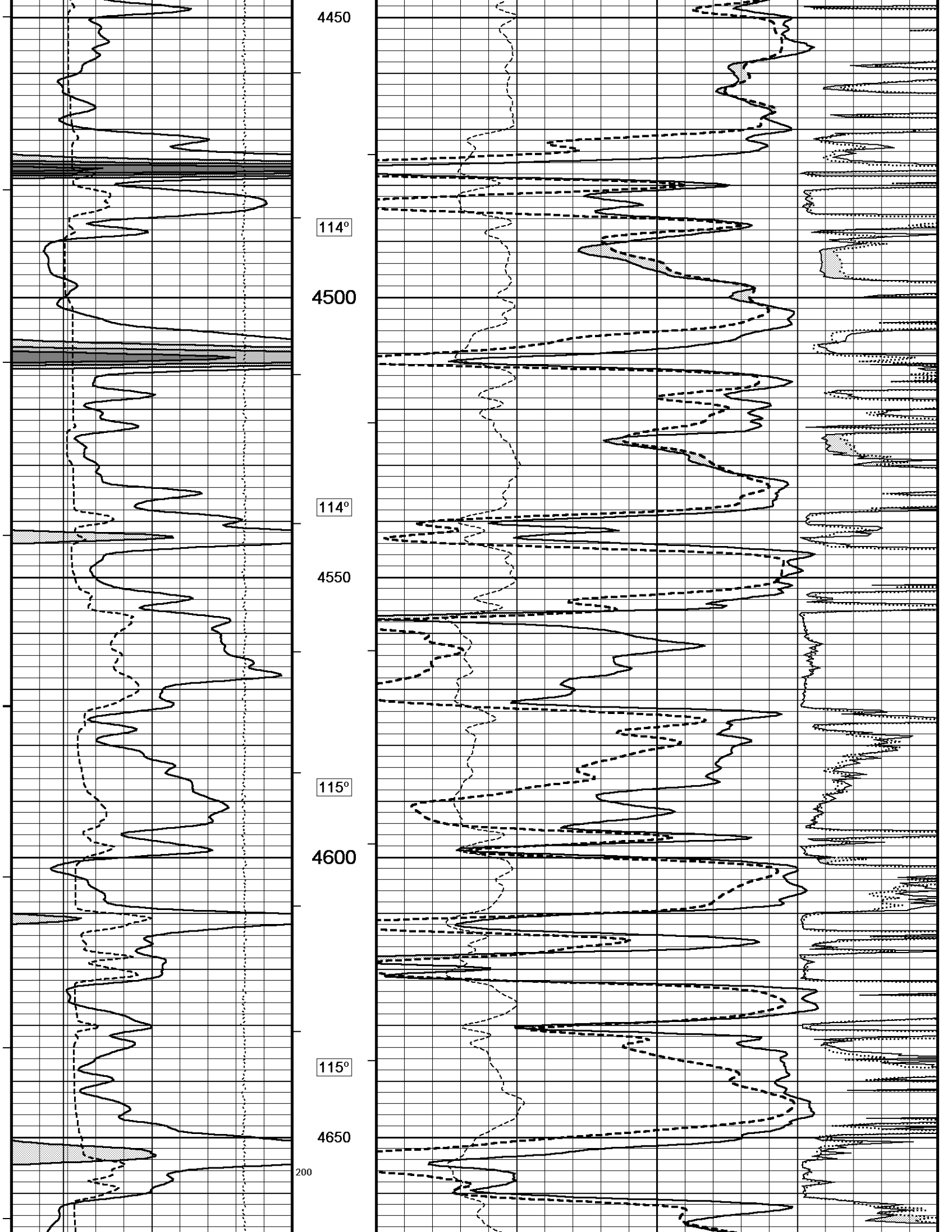
109°

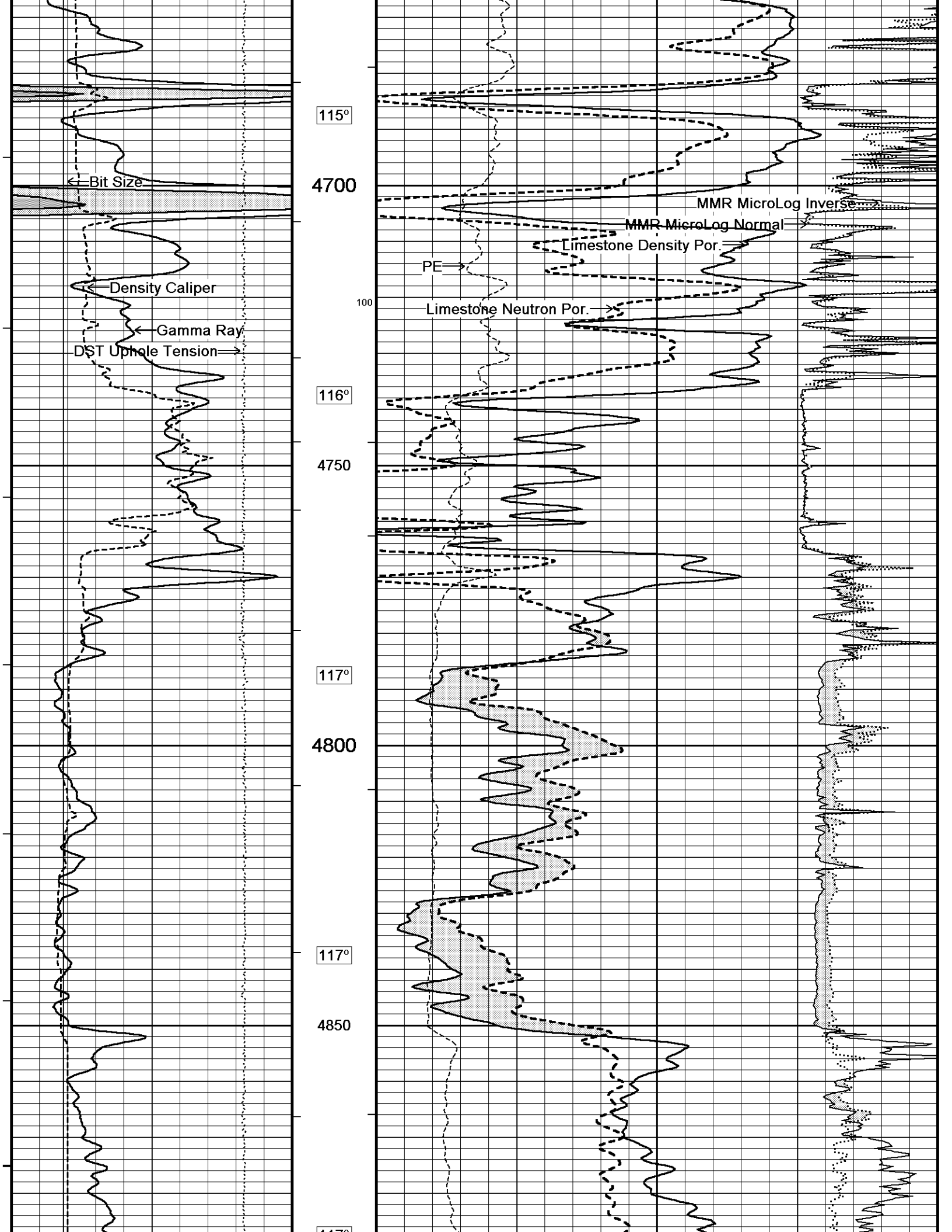
3750

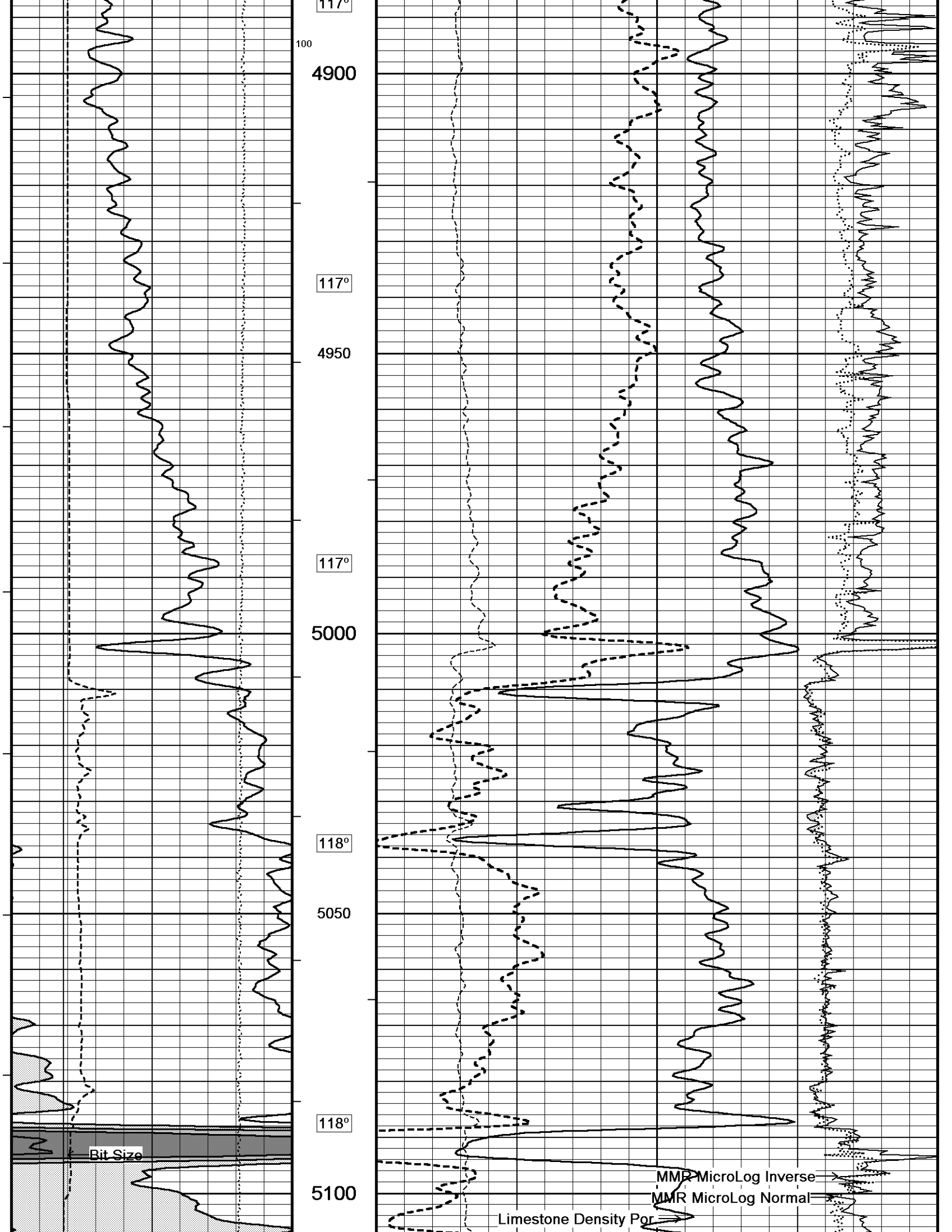

109°
3800
110°
3850
110°
3900
Bit Size
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
111°
3950
111°
4000
MMR MicroLog Inverse
MMR MicroLog Normal
300
Limestone Density Por.
PE

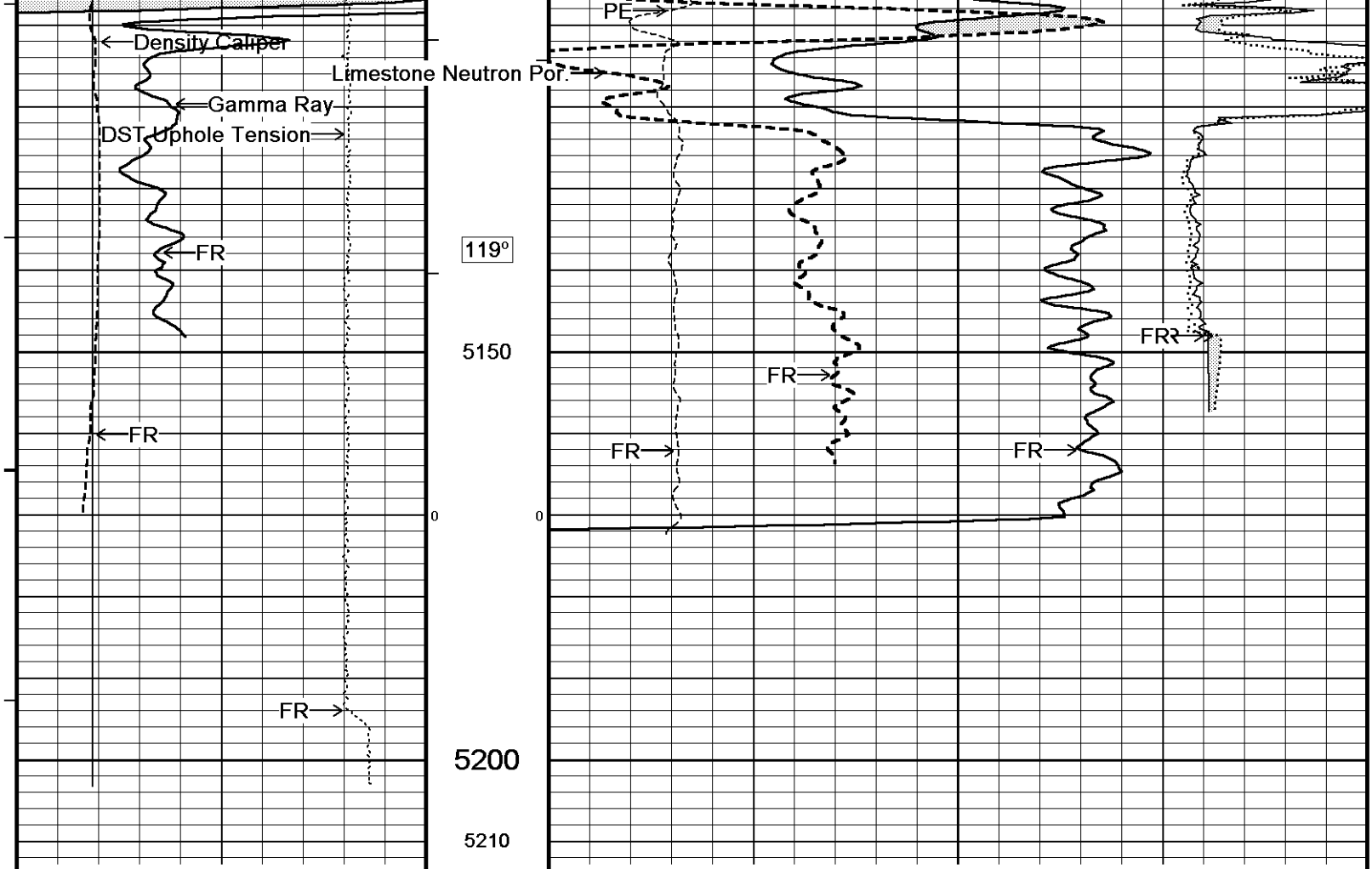

111°
4050
111°
4100
112°
4150
400
112°
4200


113°
4250
200
113°
4300
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por
PE
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
114°
4350
114°
4400
300
114°


4450
114°
4500
114°
4550
115°
4600
115°
4650
200


115°
4700
116°
4750
117°
4800
117°
4850
100
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Neutron Por.
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.


117°
100
4900
117°
4950
117°
5000
118°
5050
118°
5100
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por



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

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

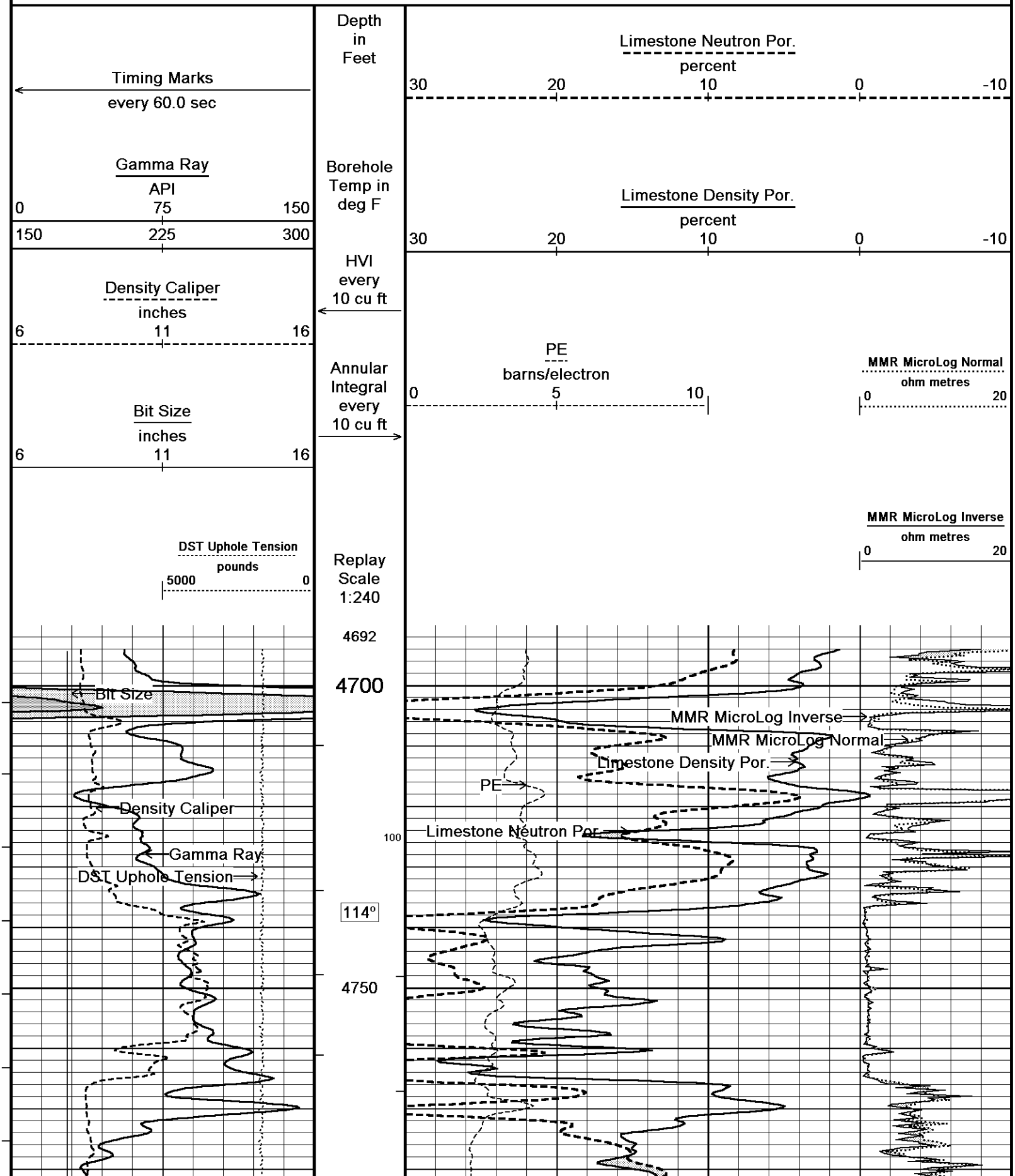
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Main.dta
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

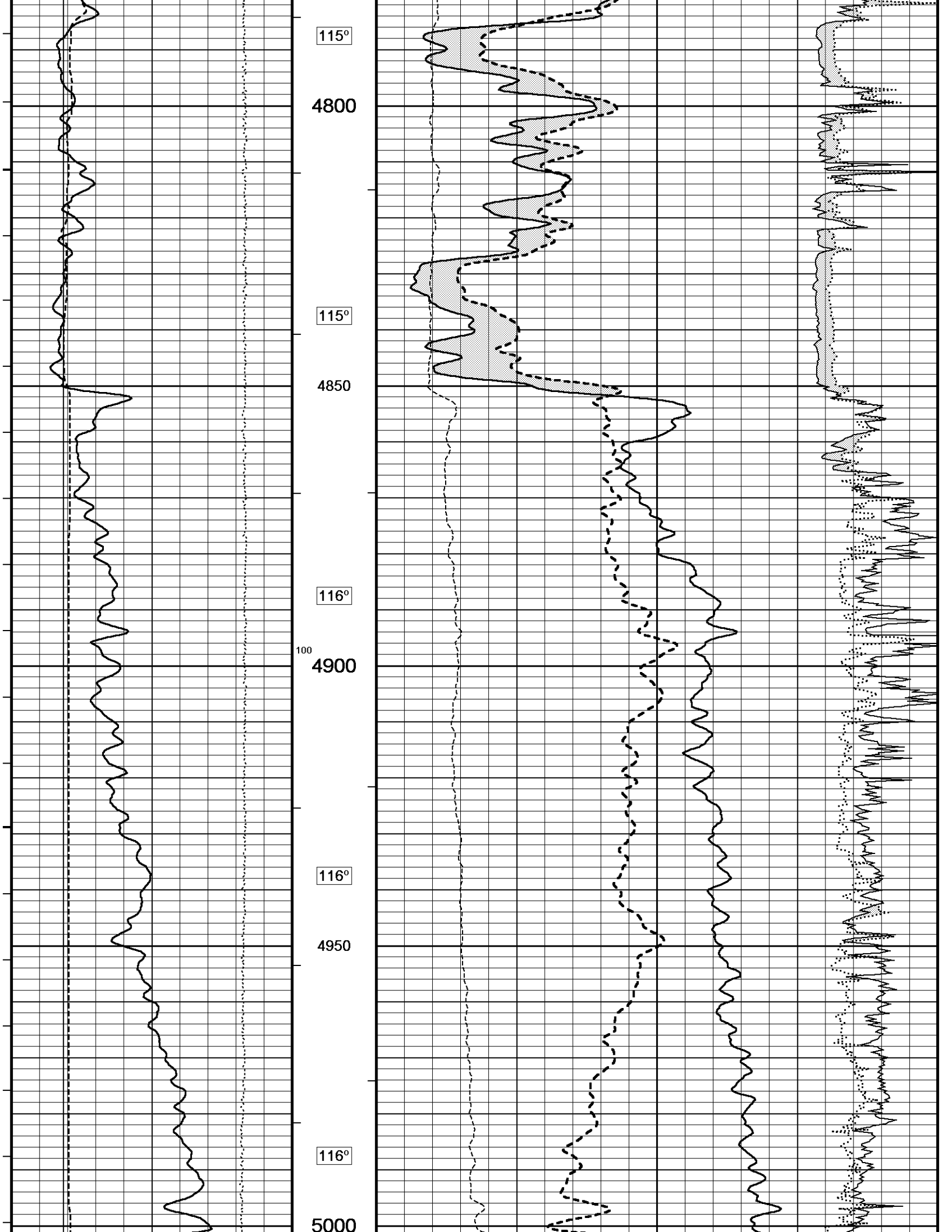
Plotted on 06-OCT-2013 13:00
Recorded on 04-OCT-2013 08:57

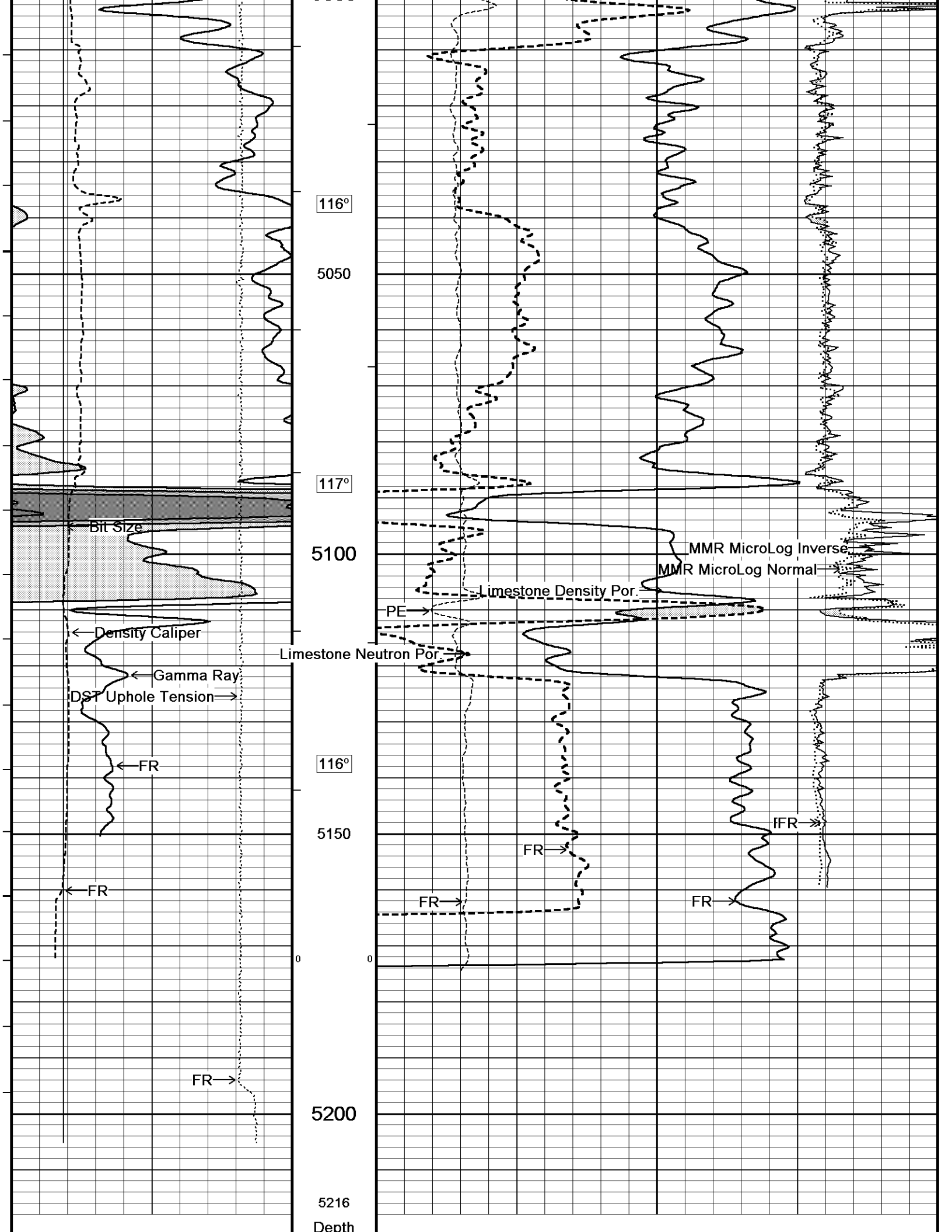
5 INCH MAIN

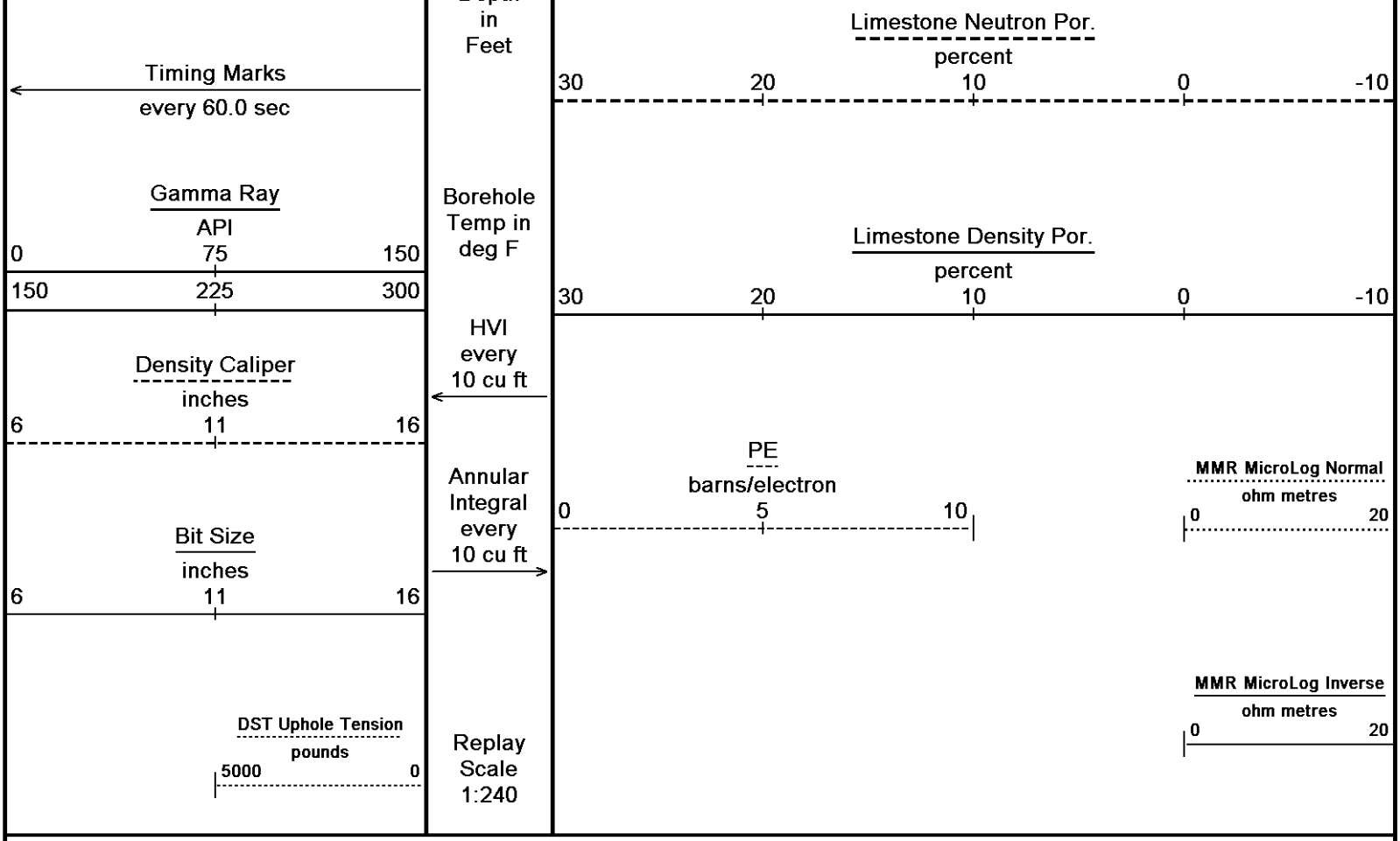
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.dta
Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583




115°
4800
115°
4850
116°
100
4900
116°
4950
116°
5000


116°
5050
117°
Bit Size
5100
Density Caliper
Gamma Ray
DST Uphole Tension
FR
116°
5150
FR
FR
0
FR
5200
5216
Depth
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Limestone Neutron Por.
FR
FR
FR
0

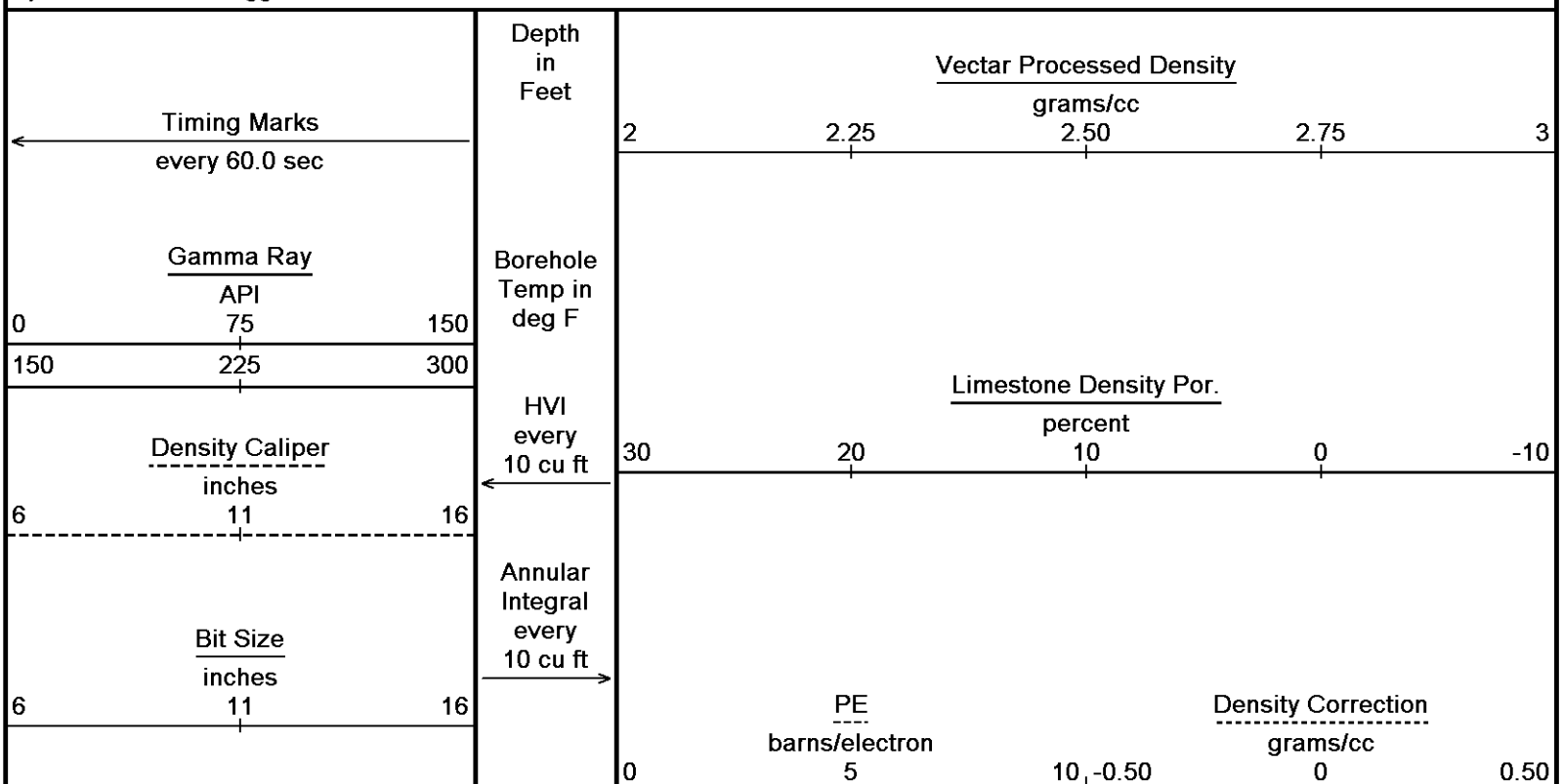


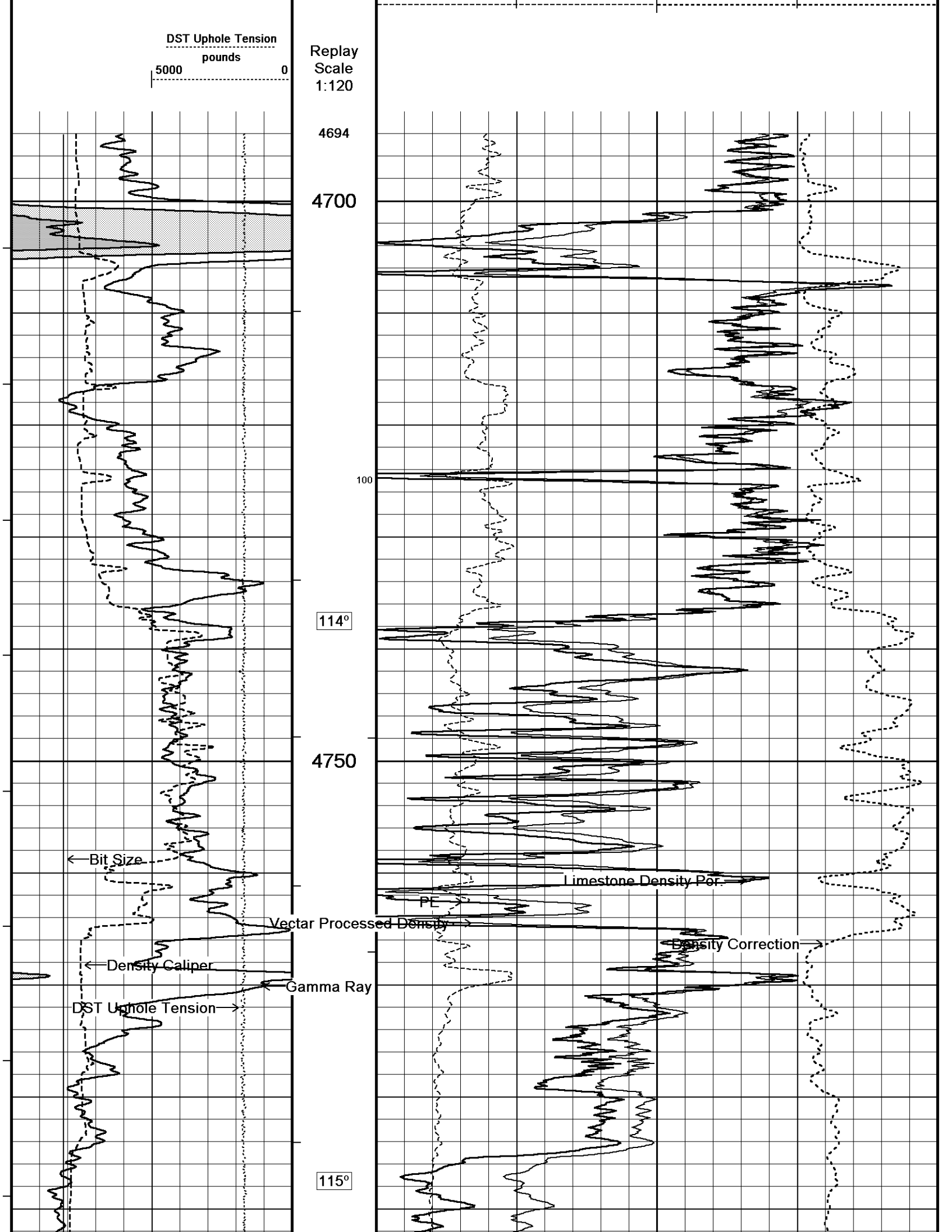
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.dta — Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

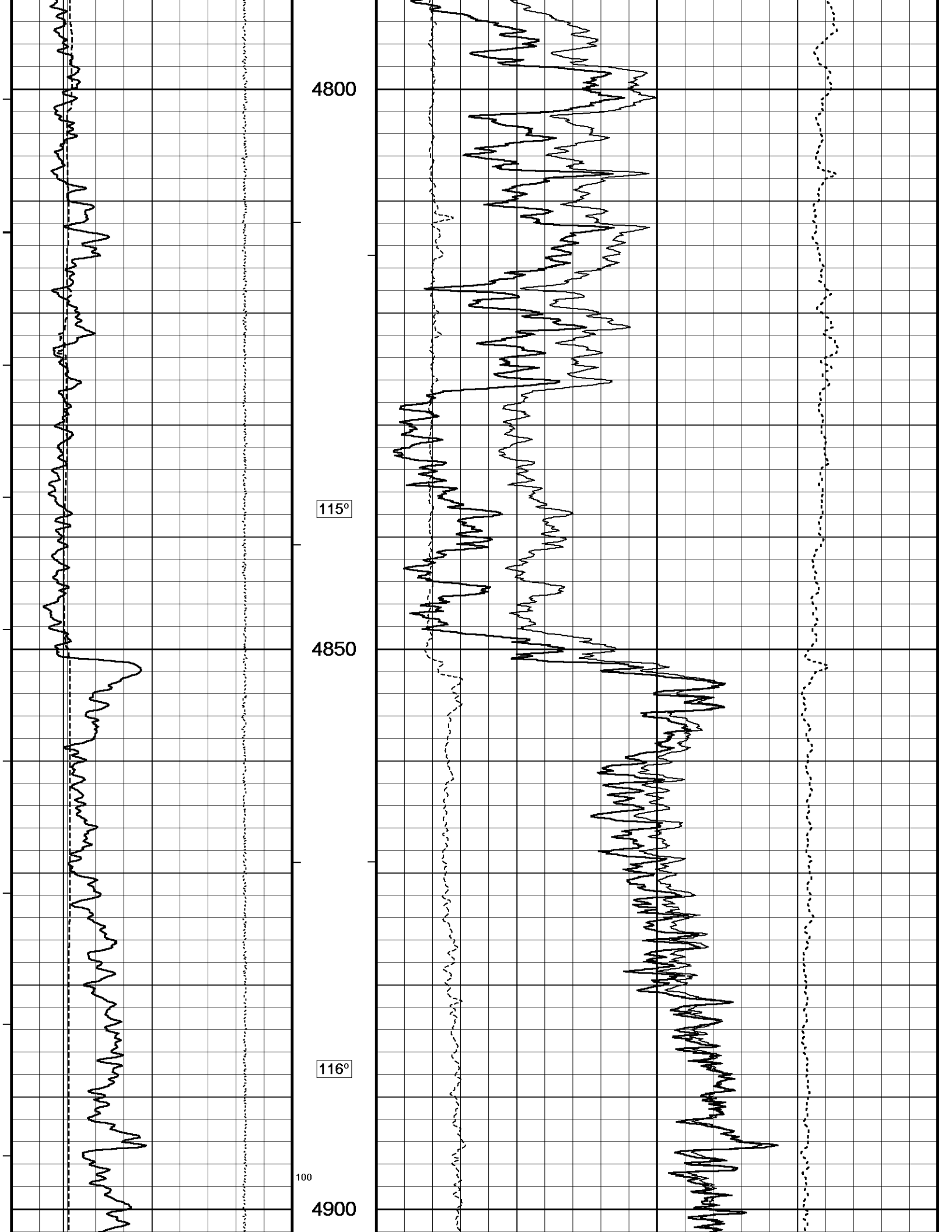
REPEAT SECTION

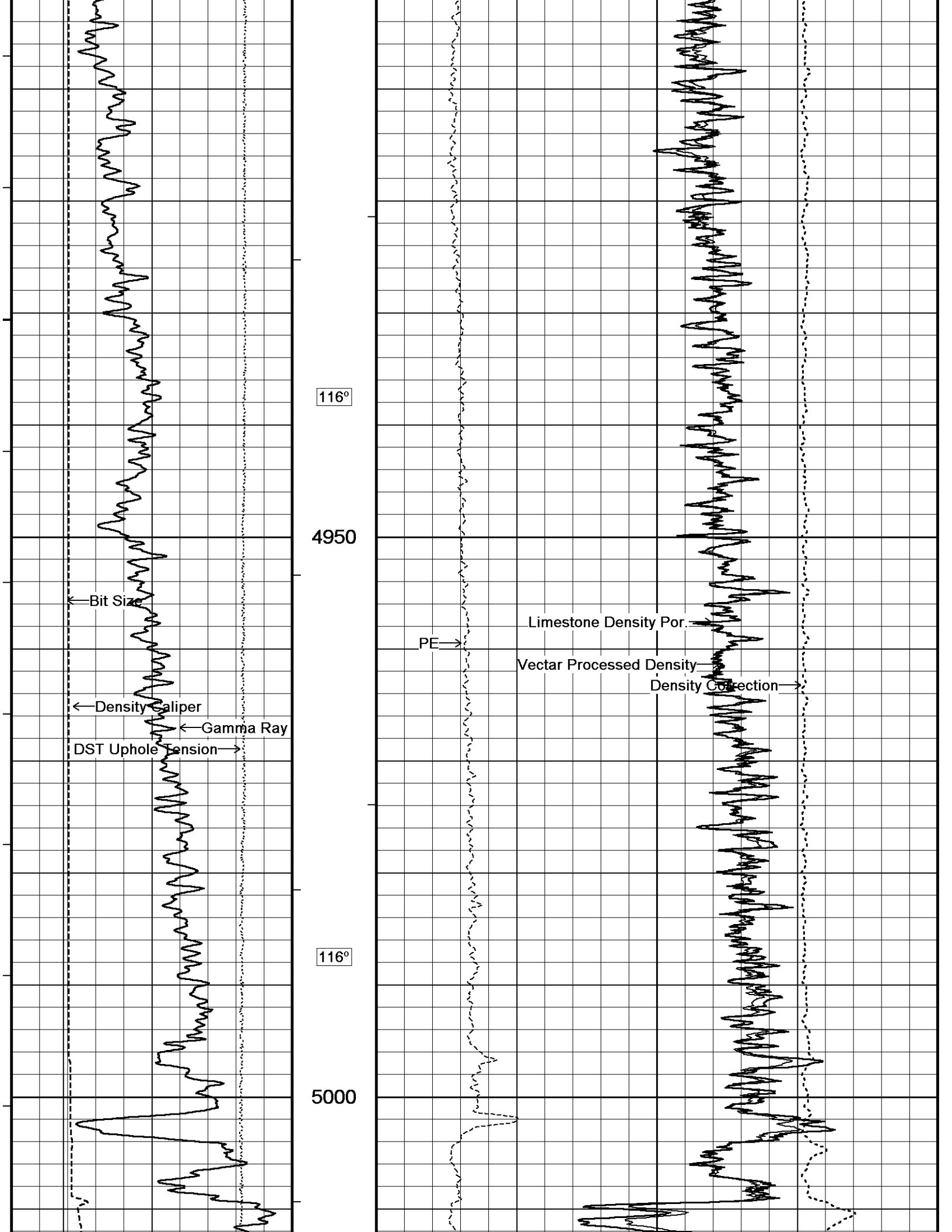
HI-RES

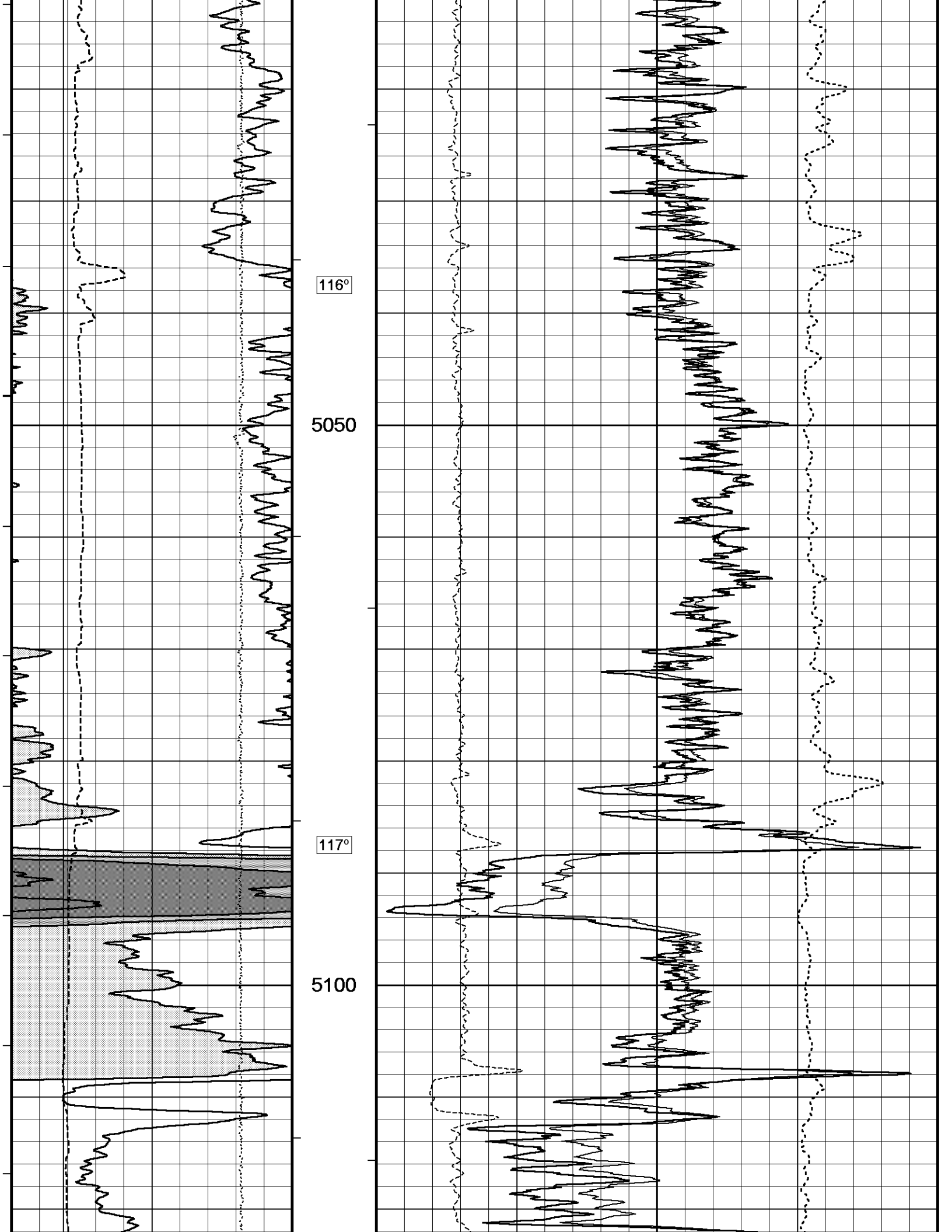
Depth Based Data - Maximum Sampling Increment 2.5cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode High-Res.dta — Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

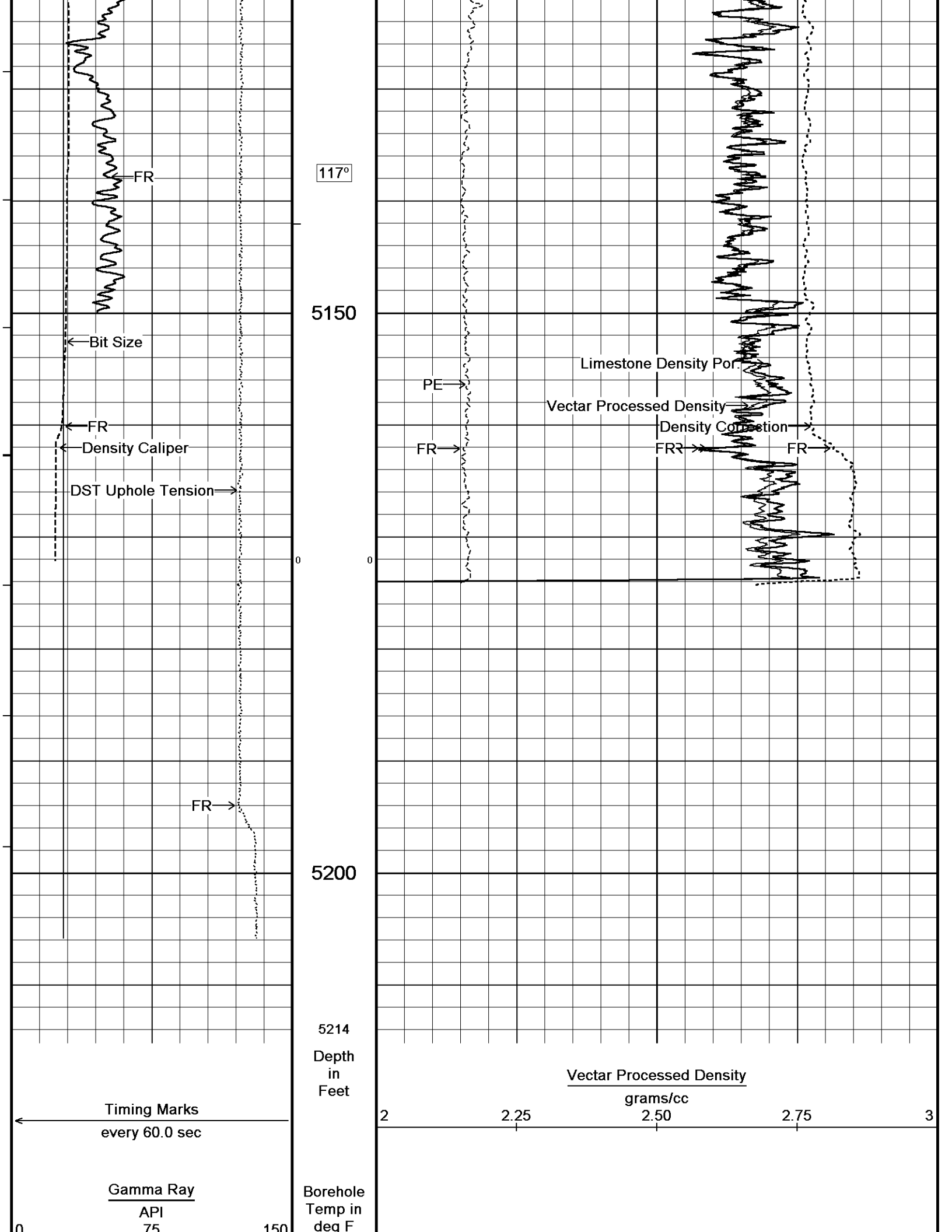


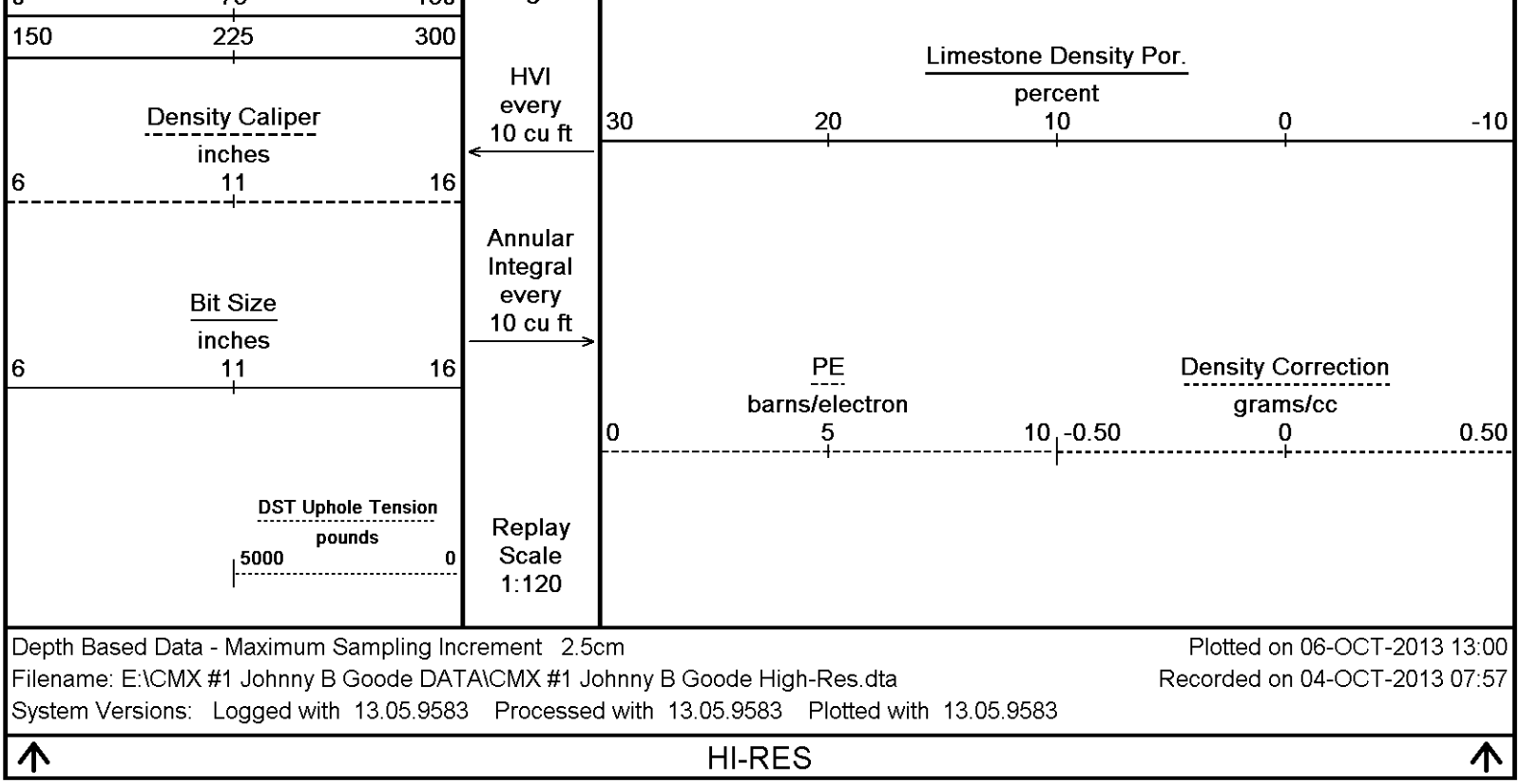

DST Uphole Tension
pounds
5000
0
Replay
Scale
1:120
4694
4700
100
114°
4750
115°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Vectar Processed Density
Density Correction


4800
115°
4850
116°
100
4900


116°
4950
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por.
Vectar Processed Density
Density Correction
116°
5000


116°
5050
117°
5100


FR
117°
5150
Bit Size
FR
Density Caliper
DST Uphole Tension
0
FR
5200
PE
FR
Limestone Density Por.
Vectar Processed Density
Density Correction
FR
FR
0
5214
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Borehole
Temp in
deg F
Vectar Processed Density
grams/cc
2
2.25
2.50
2.75
3

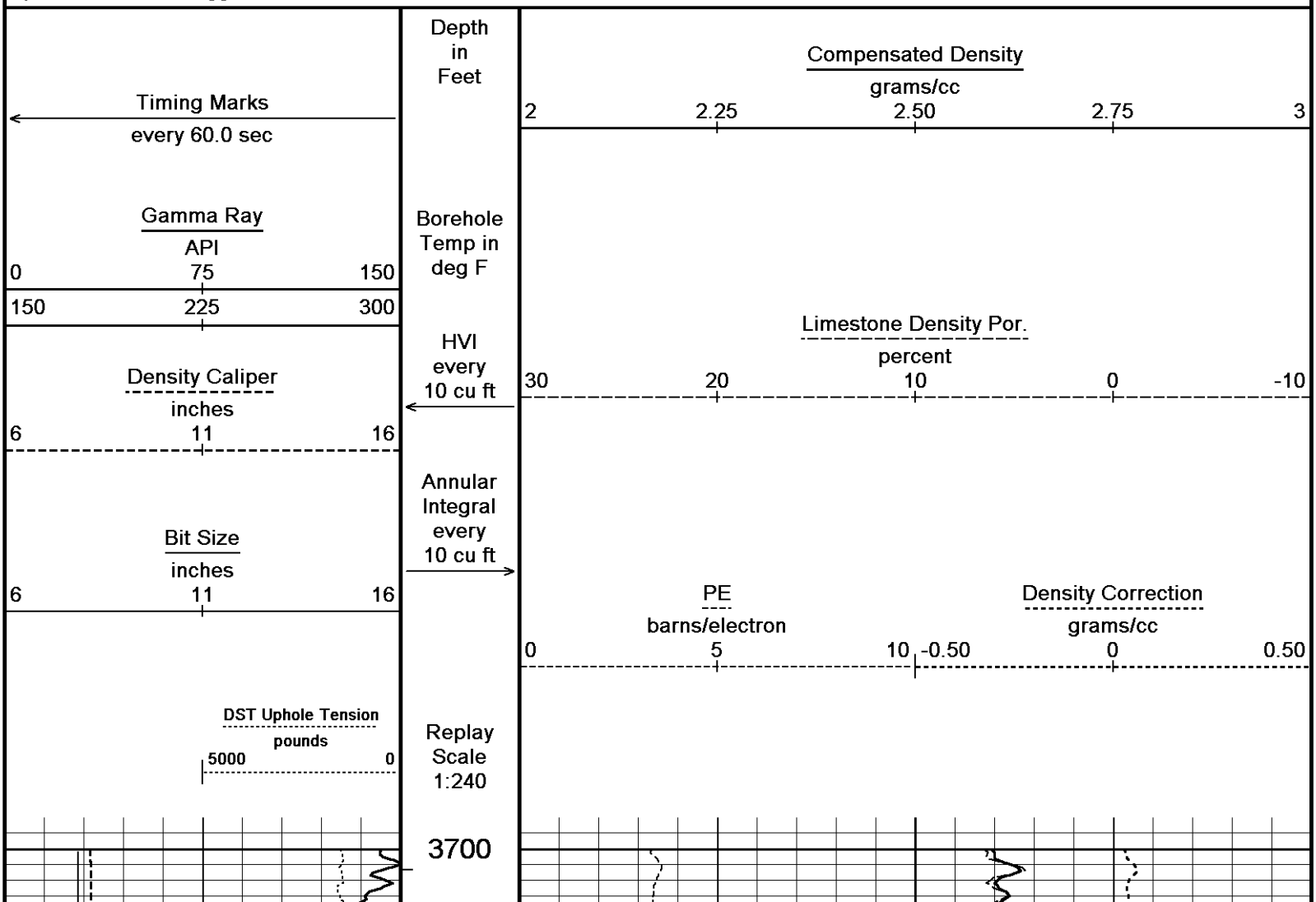


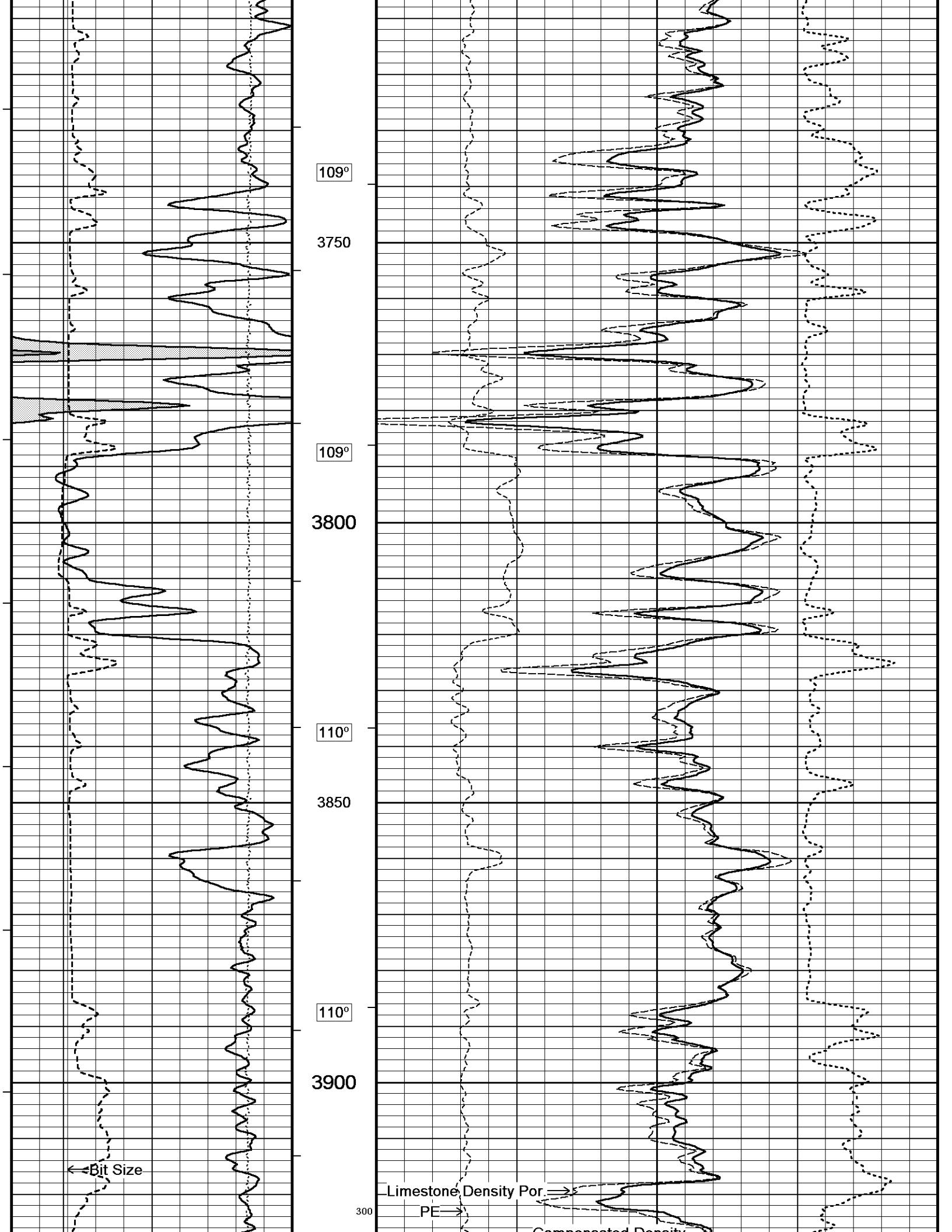
Depth Based Data - Maximum Sampling Increment 2.5cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode High-Res.dta — Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

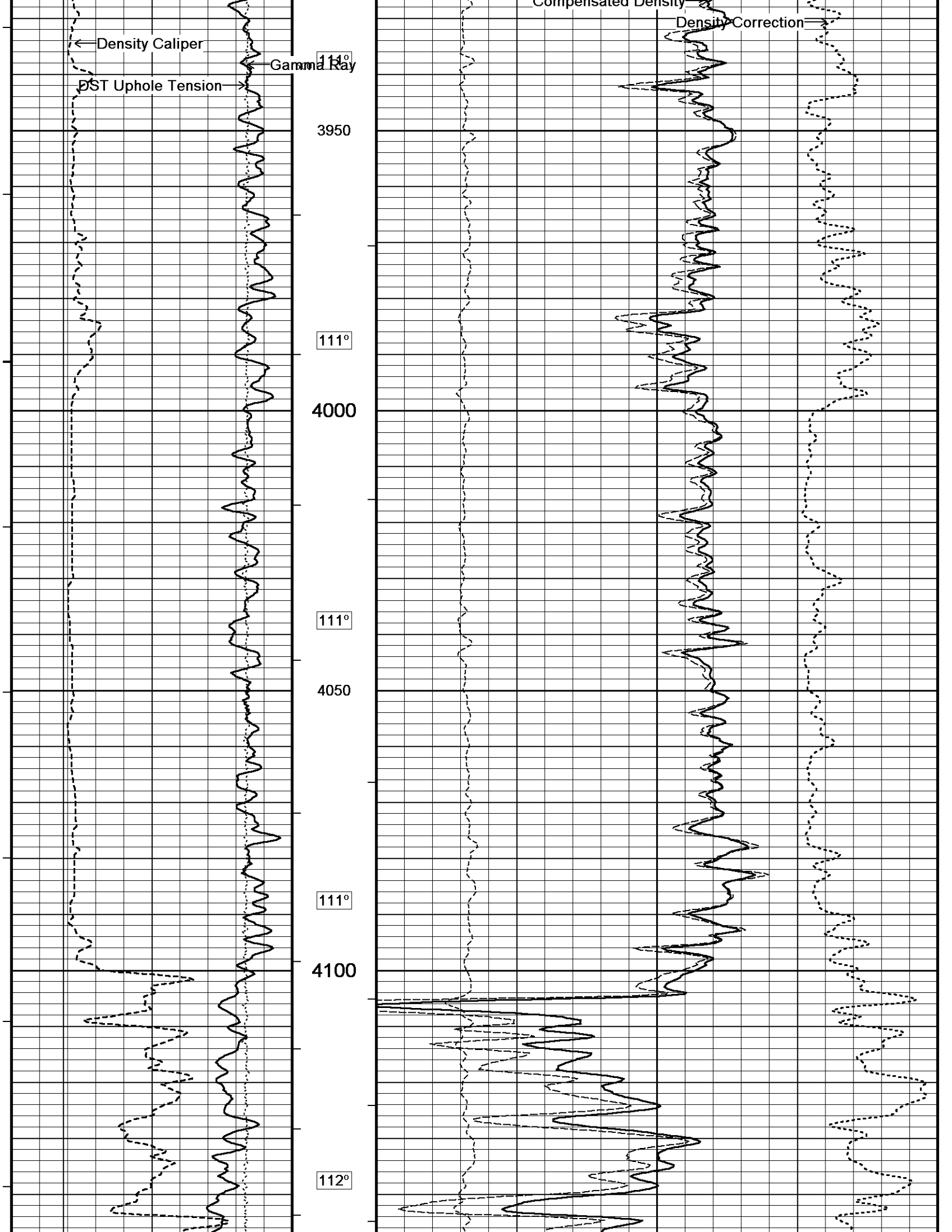
HI-RES

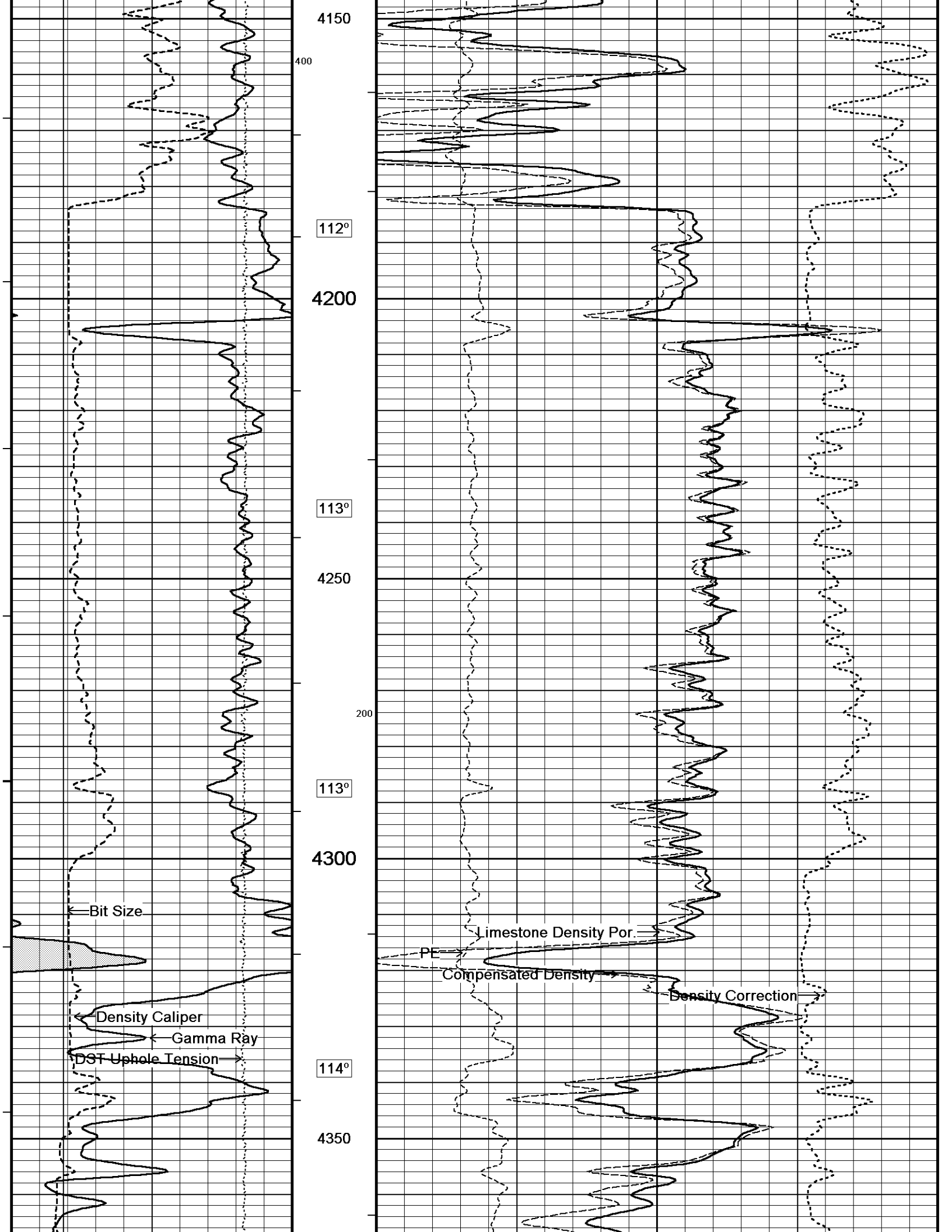
5 INCH MAIN

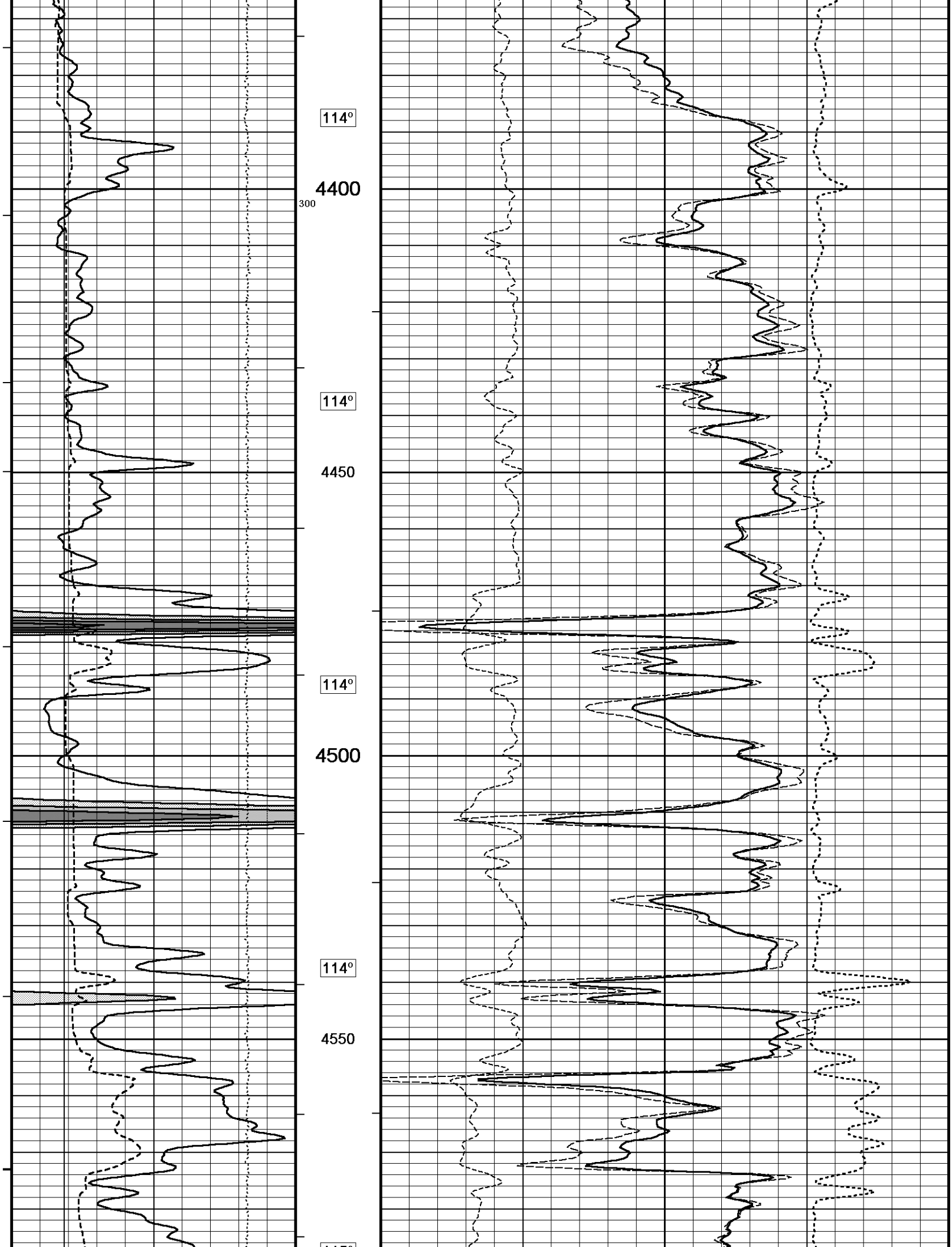
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Main.dta — Recorded on 04-OCT-2013 08:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

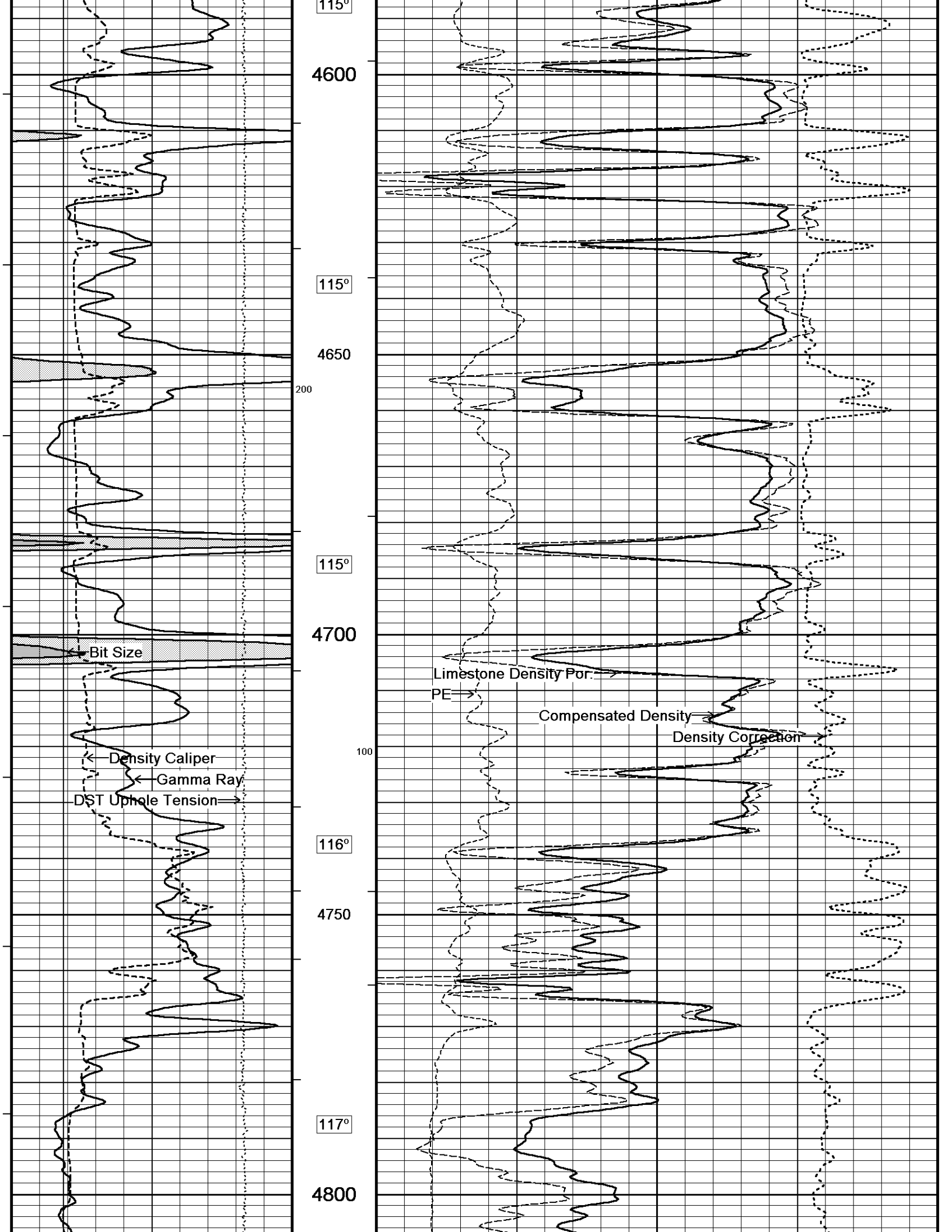


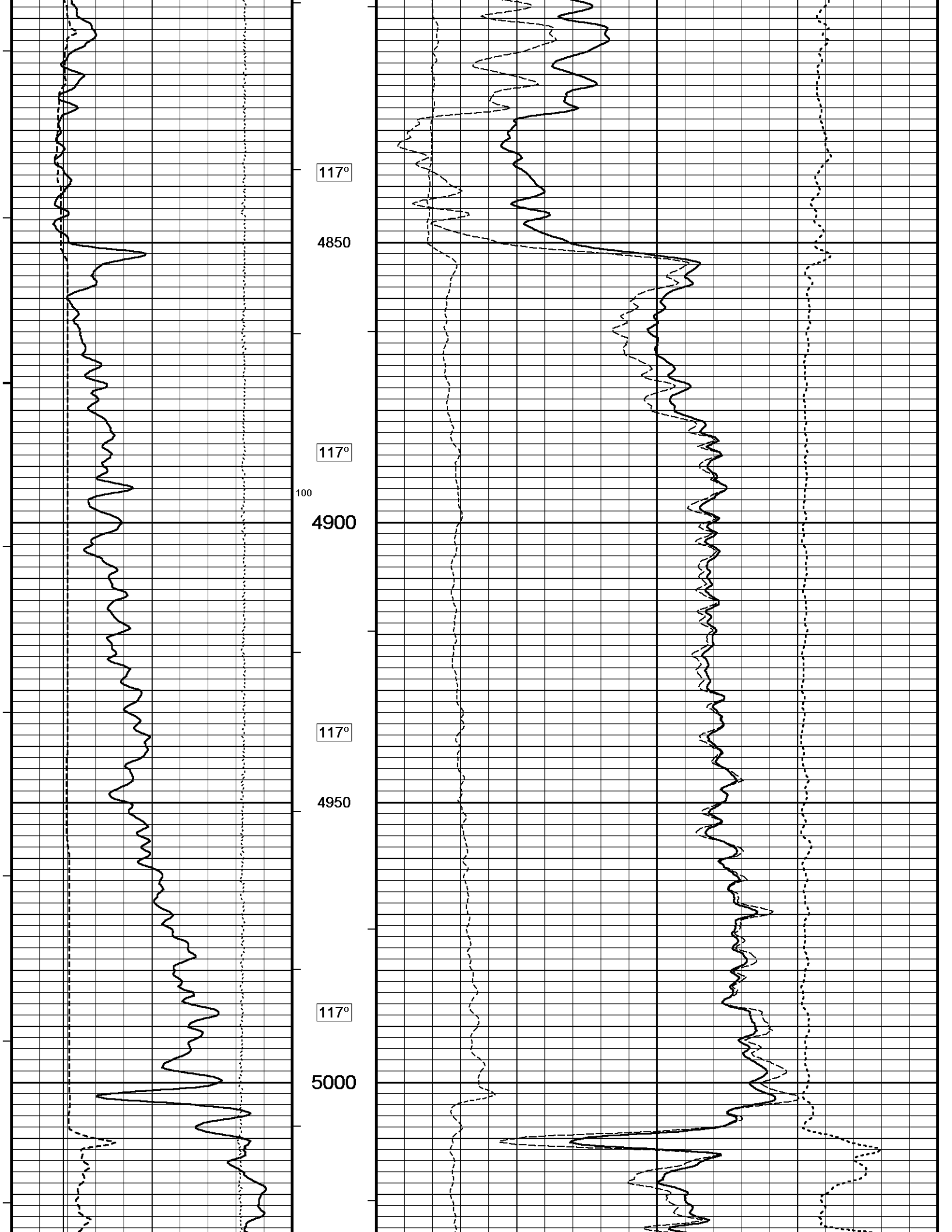

109°
3750
109°
3800
110°
3850
110°
3900
Bit Size
Limestone Density Por
PE
300

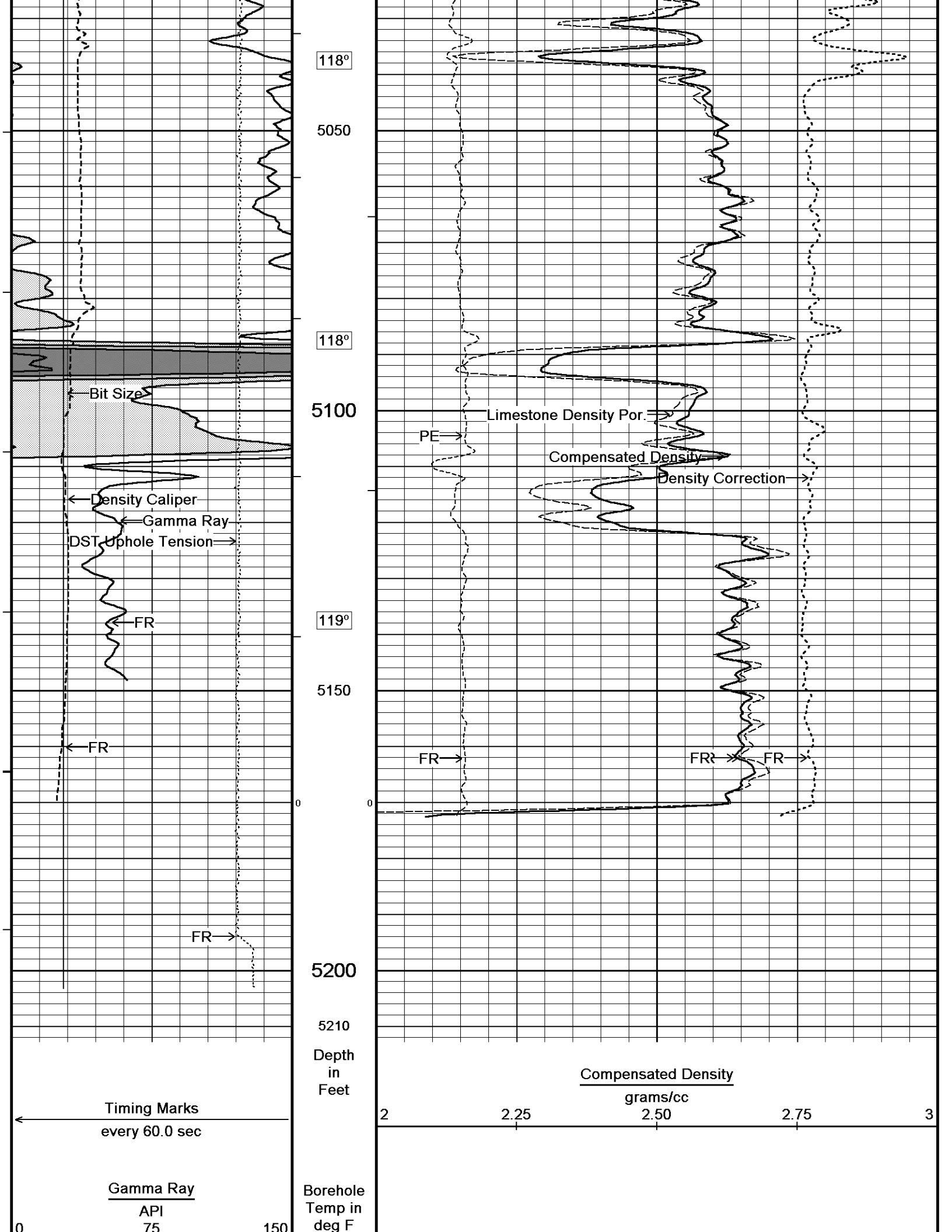

Density Caliper
Gamma Ray
DST Uphole Tension
Compensated Density
Density Correction
111°
3950
111°
4000
111°
4050
111°
4100
112°


4150
400
112°
4200
113°
4250
200
113°
4300
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
114°
4350


114°
4400
300
114°
4450
114°
4500
114°
4550


115°
4600
115°
4650
200
115°
4700
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Compensated Density
Density Correction
100
116°
4750
117°
4800


117°
4850
117°
100
4900
117°
4950
117°
5000


118°
5050
118°
Bit Size
5100
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
FR
119°
5150
FR
FR
FR
FR
0
0
FR
5200
5210
Depth
in
Feet
Timing Marks
every 60.0 sec
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Gamma Ray
API
0
75
150
Borehole
Temp in
deg F

150 225 300

Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

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
-0.50 0 0.50

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Main.dta — Recorded on 04-OCT-2013 08:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.dta — Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

Timing Marks
every 60.0 sec

Depth in Feet

Compensated Density
grams/cc
2 2.25 2.50 2.75 3

Gamma Ray
API
0 75 150

Borehole Temp in deg F

150 225 300

Limestone Density Por.
percent
30 20 10 0 -10

Density Caliper
inches
6 11 16

HVI every 10 cu ft

Annular Integral every 10 cu ft

Bit Size
inches
6 11 16

PE
barns/electron
0 5 10

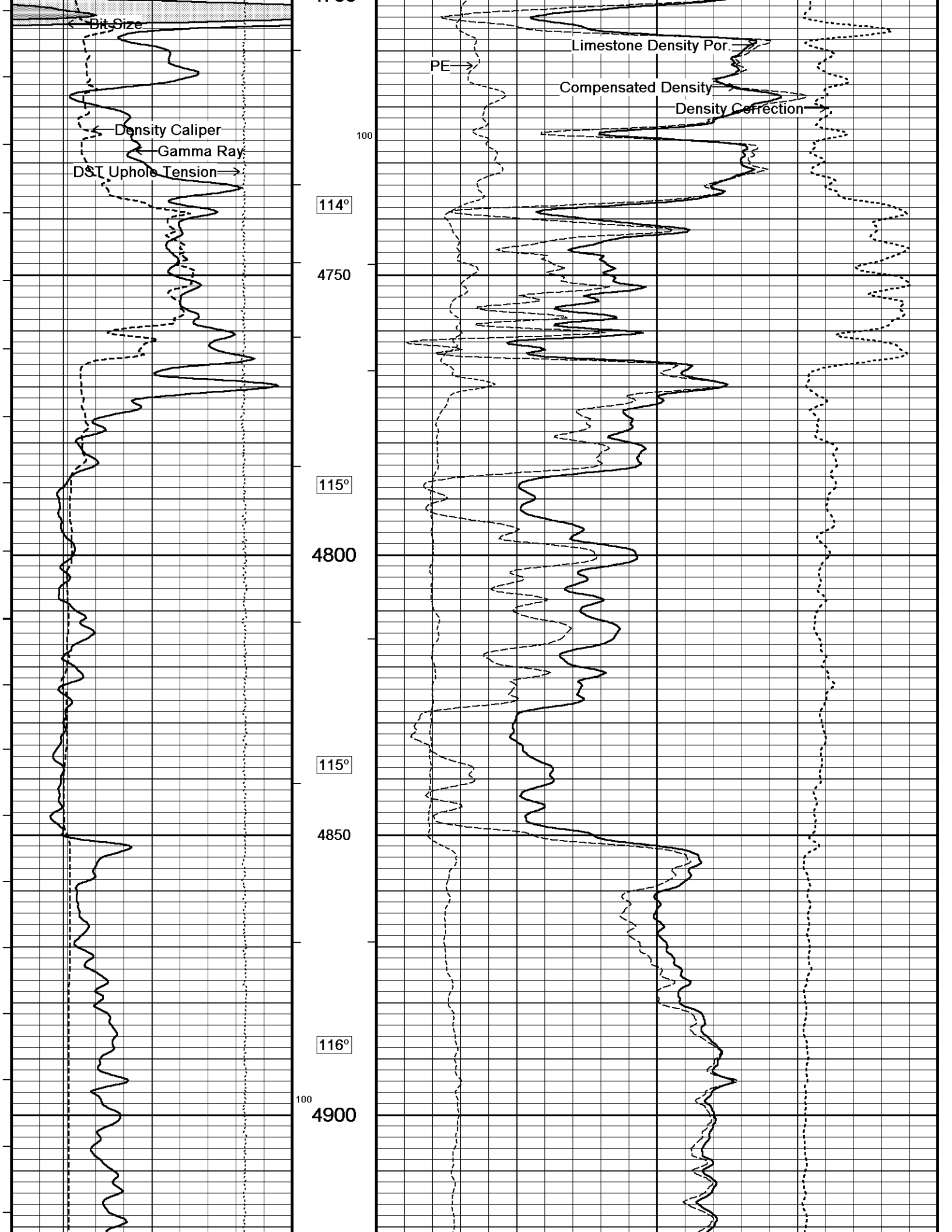
Density Correction
grams/cc
-0.50 0 0.50

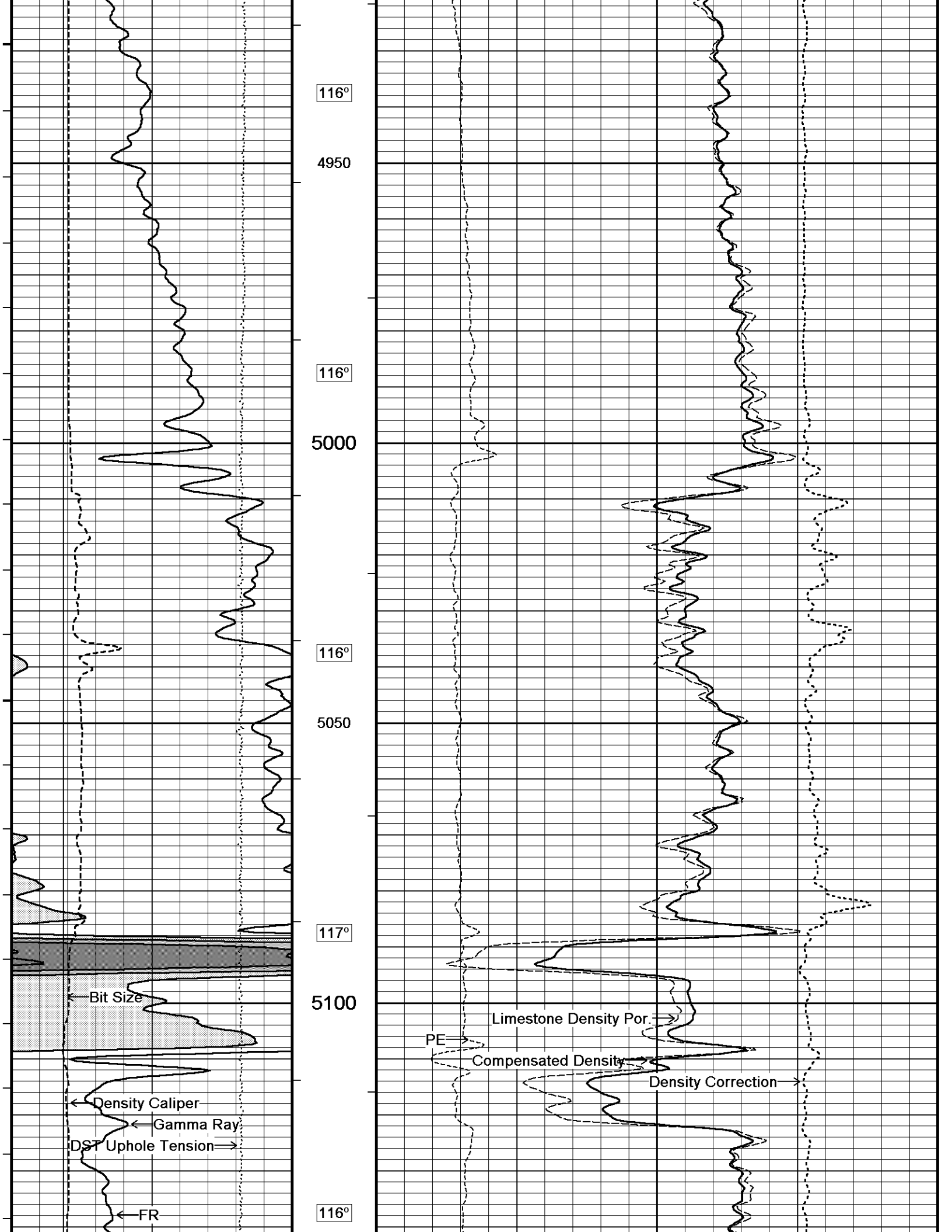
DST Uphole Tension
pounds
5000 0

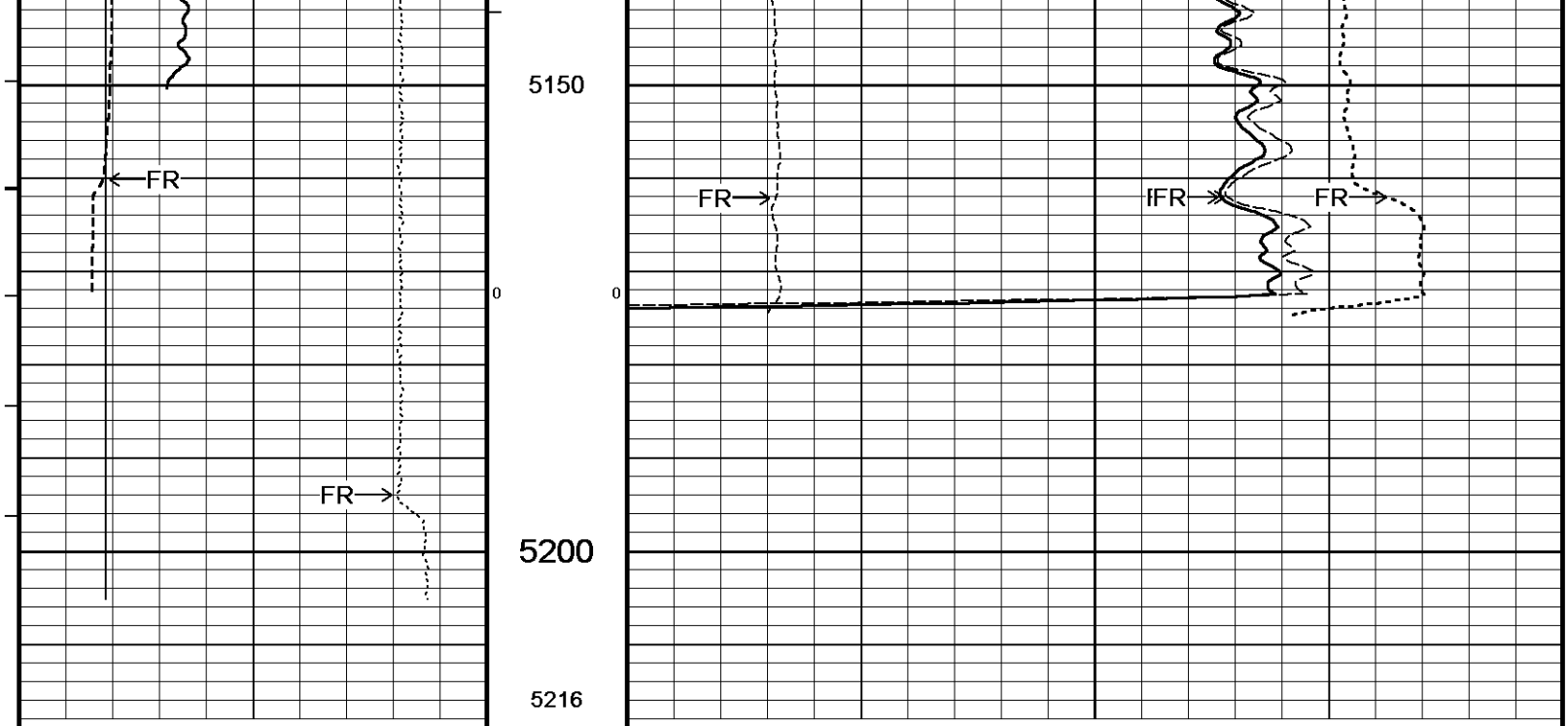
Replay Scale 1:240

4692

4700


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por.
Compensated Density
Density Correction
100
114°
4750
115°
4800
115°
4850
116°
100
4900


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



5216

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

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

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
Plotted on 06-OCT-2013 13:00
Filename: E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.dta
Recorded on 04-OCT-2013 07:57
System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

REPEAT SECTION

BEFORE SURVEY CALIBRATION

E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.dta

General Constants All 000

Last Edited on 03-OCT-2013,13:09

General Parameters

Mud Resistivity	0.720	ohm-metres
Mud Resistivity Temperature	83.000	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	MMR Caliper	

Rwa Parameters	
Porosity used	Crossplot Porosity
Resistivity used	Array Ind. Six Res Rt
RWA Constant A	1.000
RWA Constant M	2.000
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 03-OCT-2013 10:32

	Measured	Calibrated (API)
Background	72	49
Calibrator (Gross)	1140	774
Calibrator (Net)	1067	725

Gamma Constants MCG-D.K 442

Last Edited on 03-OCT-2013,10:25

Gamma Calibrator Number	GRC38	
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	%

Photo Density Calibration MPD-B 31

Base Calibration on 12-SEP-2013 14:34
Field Check on 03-OCT-2013 10:22

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		
	668.3	827.1

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		
	122.7	592.4

Density Constants MPD-B 31

Last Edited on 03-OCT-2013,10:18

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	1.00	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 (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 03-OCT-2013 10:17

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	52880	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

E:\CMX #1 Johnny B Goode DATA\CMX #1 Johnny B Goode Repeat.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

- 56.02 ft GRGC - Gamma Ray
- 53.11 ft CGXT - MCG External Temperature

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

- 45.76 ft MINV - MMR MicroLog Inverse
- 45.76 ft MNRL - MMR MicroLog Normal

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

- 40.97 ft NPRL - Limestone Neutron Por.

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

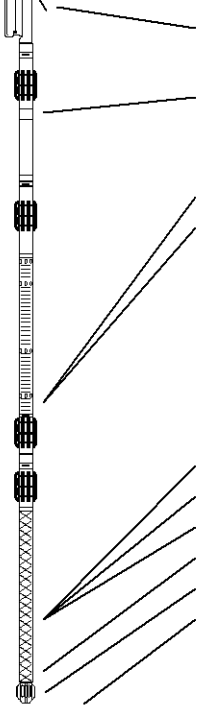
- 33.73 ft AVOL - Annular Volume
- 33.73 ft HVOL - Hole Volume
- 33.73 ft CLDC - Density Caliper
- 31.80 ft DPRL - Limestone Density Por.
- 31.80 ft DEN - Compensated Density
- 31.80 ft DCOR - Density Correction

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 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: 63.70 ft Weight: 480.6 lb



31.74 ft PDPE - PE

26.24 ft FEFE - Shallow FE

12.96 ft SPRL - Wyllie Lime. Sonic Por.
12.96 ft DT35 - 3-5' Compensated Sonic

3.34 ft R40O - Array Ind. One Res 40
3.34 ft R60O - Array Ind. One Res 60
3.34 ft RTAO - Array Ind. One Res Rt
0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.

COMPANY	CMX, INC.
WELL	#1 JOHNNY B. GOODE
FIELD	STRANATHAN
PROVINCE/COUNTY	BARBER
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1379.00	feet	First Reading	5162.00	feet
Elevation Drill Floor	1377.00	feet	Depth Driller	5190.00	feet
Elevation Ground Level	1371.00	feet	Depth Logger	5194.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG