Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	SHAKESPEARE OIL COMPANY INC.
WELL	K OTTLEY #1-14
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2298' FSL & 800' FWL

40 Years of Wireline 1970 2010

SEC	TWP	RGE	Other Services
14	14S	32W	MAI/MFE

API Number 15-109-21091
Permit Number

Permanent Datum G.L., Elevation 2819 feet
Log Measured From KB
Drilling Measured From K.B. @ 5FT

Elevations:	feet
KB	2824.00
DF	2822.00
GL	2819.00

Date	06-JUN-2012		
Run Number	ONE		
Depth Driller	4570.00 feet		
Depth Logger	4570.00 feet		
First Reading	4550.00 feet		
Last Reading	3700.00 feet		
Casing Driller	219.00 feet		
Casing Logger	219.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.10 lb/USg	58.00 CP	
PH / Fluid Loss	10.00	8.80 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.78 @ 93.0 ohm-m		
Rmf @ Measured Temp	0.62 @ 93.0 ohm-m		
Rmc @ Measured Temp	0.94 @ 93.0 ohm-m		
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.63 @115.0 ohm-m		
Time Since Circulation	4 HOURS		
Max Recorded Temp	115.00 deg F		
Equipment Name	COMPACT		
Equipment / Base	13057	LIB	
Recorded By	R. HOFFMAN		
Witnessed By	STEVE DAVIS		
S.O. # / JOB #	3534586	LB12-141	

BOREHOLE RECORD

Last Edited: 06-JUN-2012 15:50

Bit Size inches	Depth From feet	Depth To feet
7.875	219.00	4570.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	219.00	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, MSS 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 from TD to 3700 ft = 175 cu. ft.
Service order #3534586
Rig: WW Drilling Rig #2
Engineer: R. Hoffman
Operator(s): M. Stegman

5 INCH MAIN PASS

5 INCH MAIN PASS

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 06-JUN-2012 18:31
Filename: C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1...\Shakespeare K Ottley #1-14_002.dta
Recorded on 06-JUN-2012 15:58
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

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
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

2250

103°

2300

2320

Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray

Borehole

Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

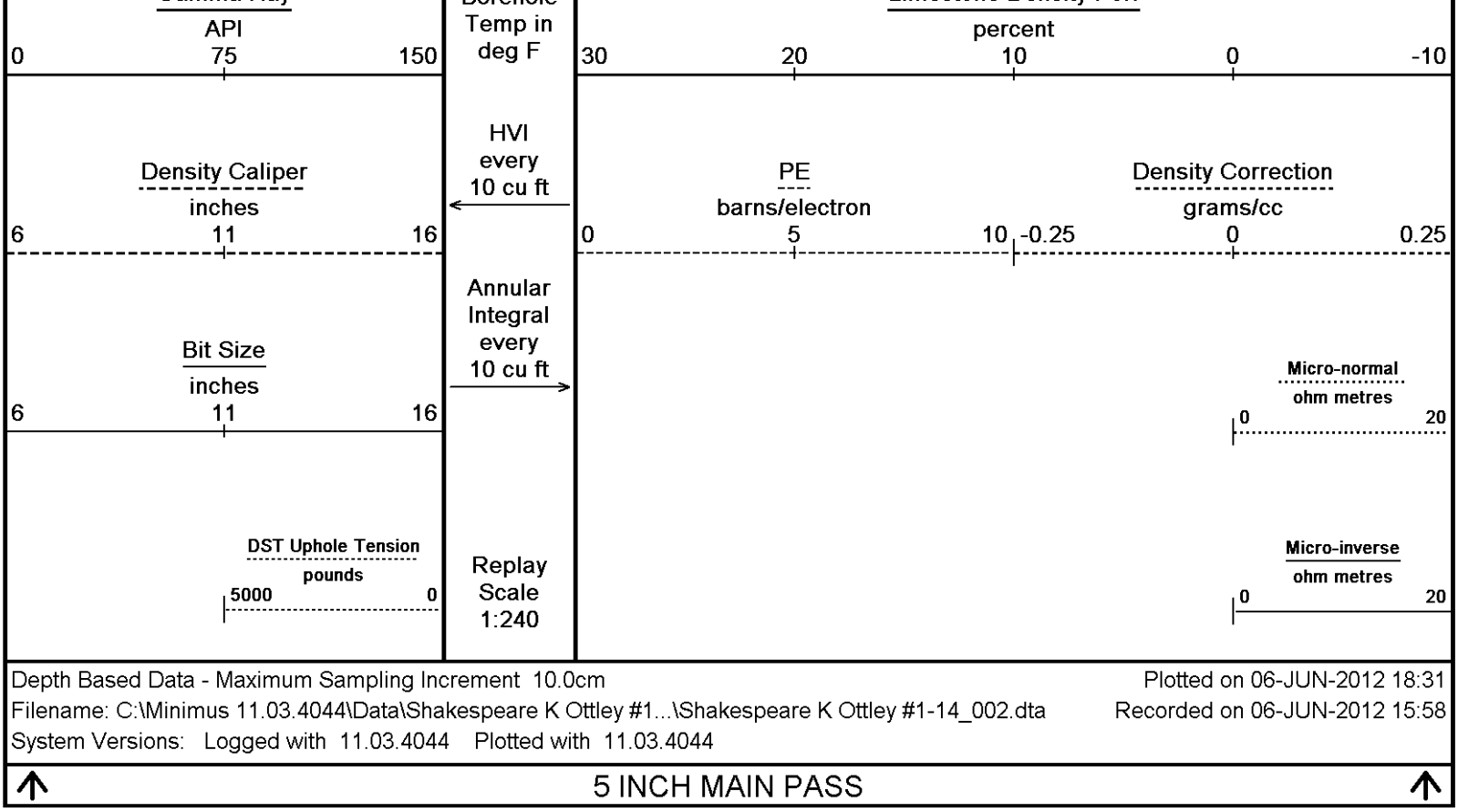
Density Correction
grams/cc
-0.25 0 0.25

Micro-normal
ohm metres
0 20

Micro-inverse
ohm metres
0 20

Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.



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5 INCH MAIN PASS

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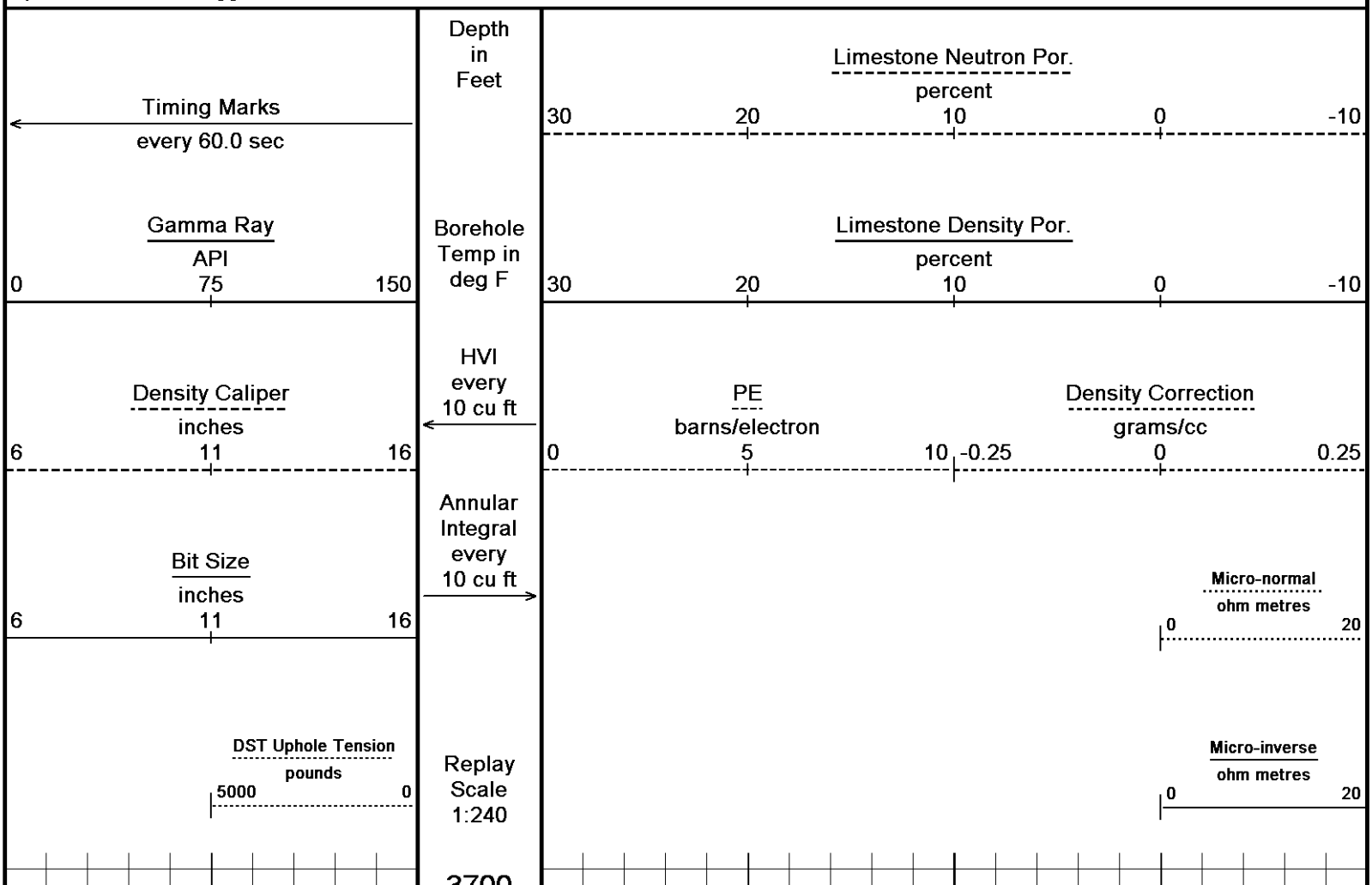
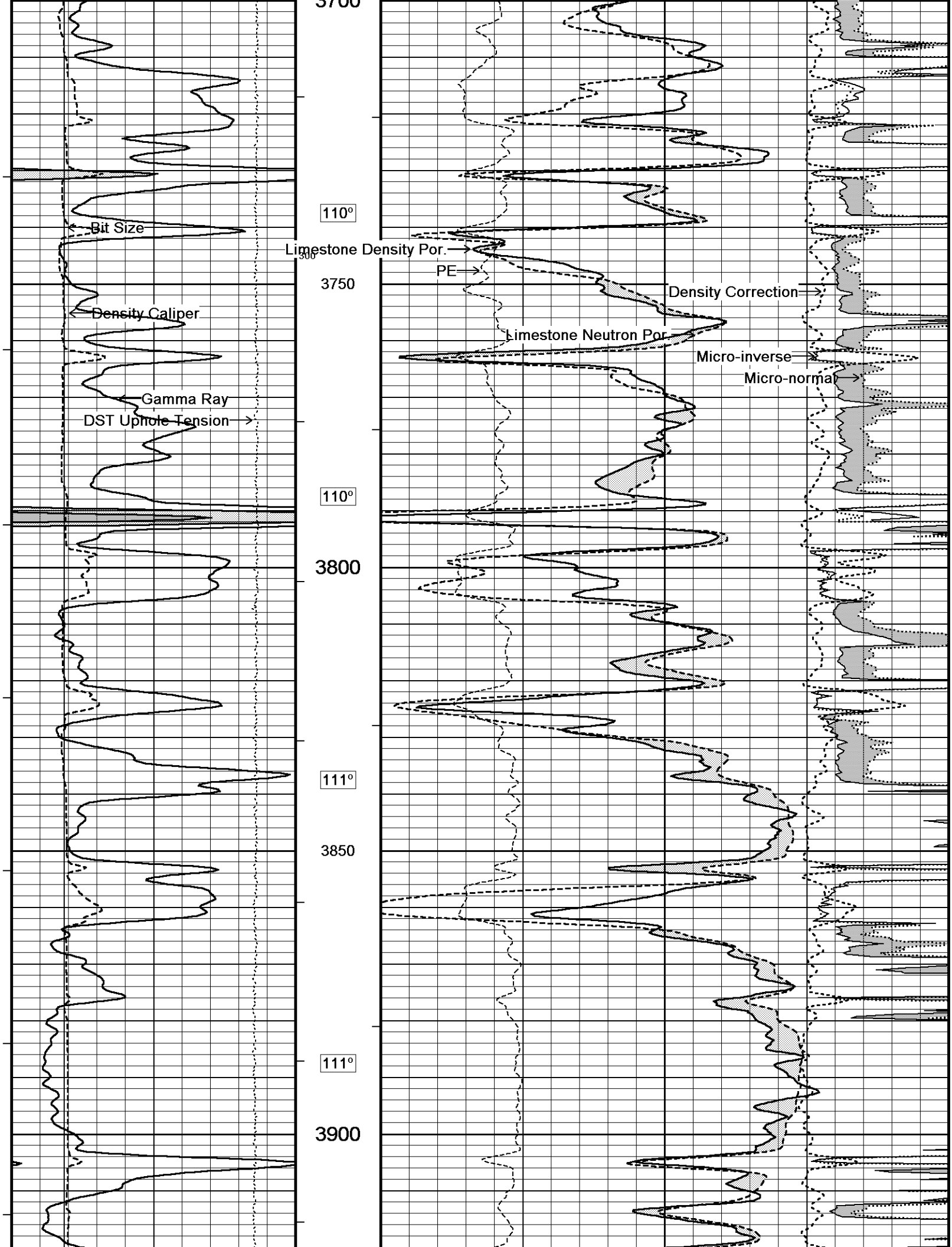
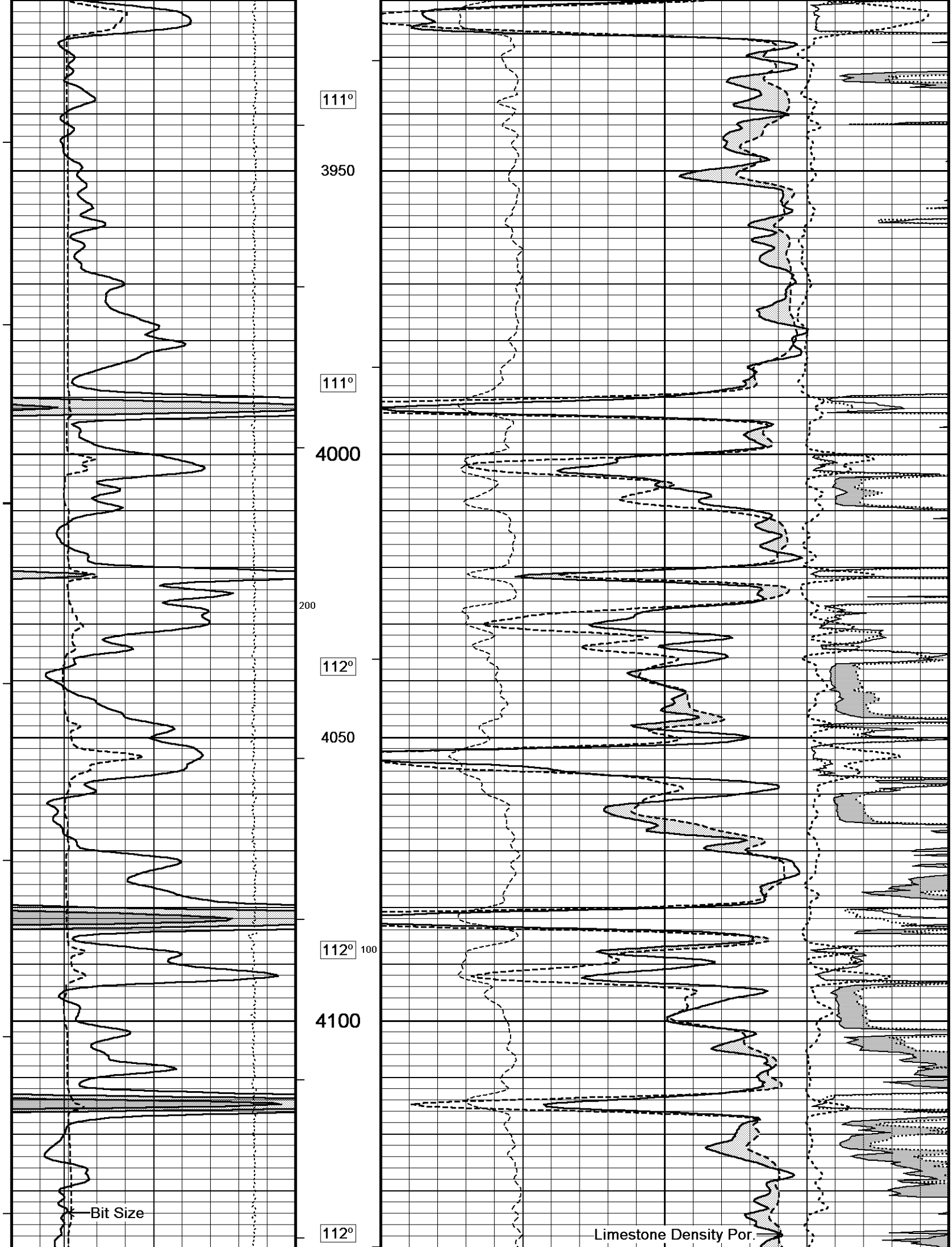
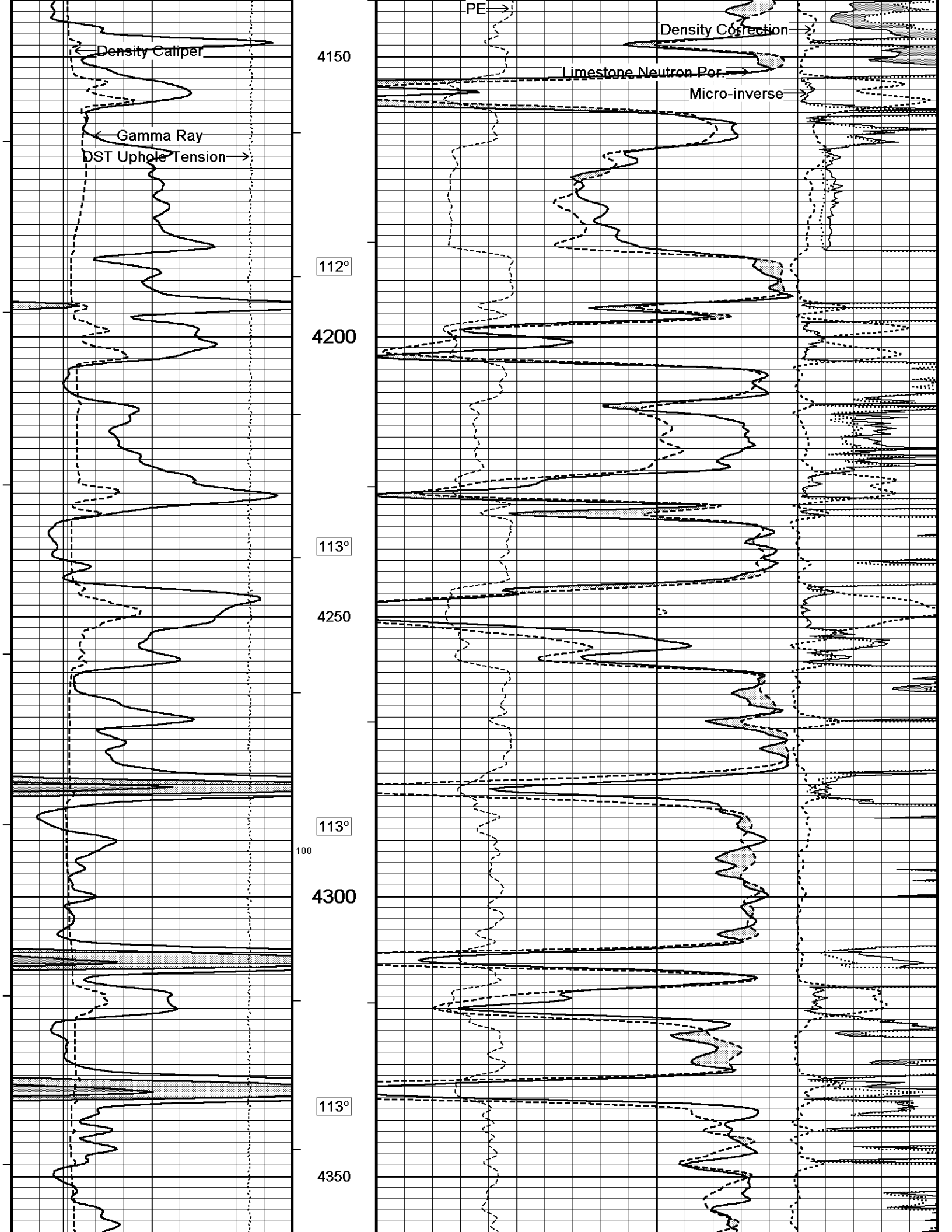
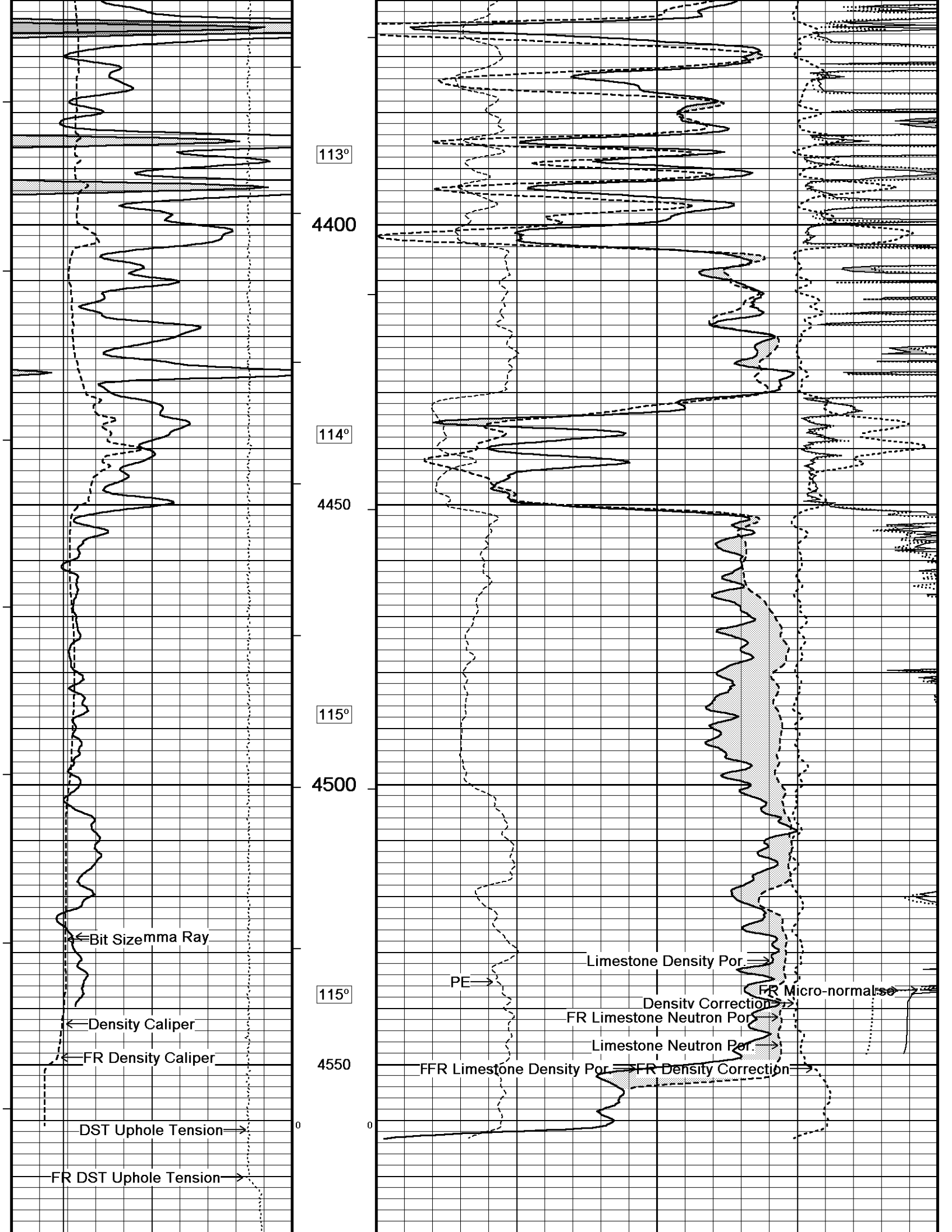
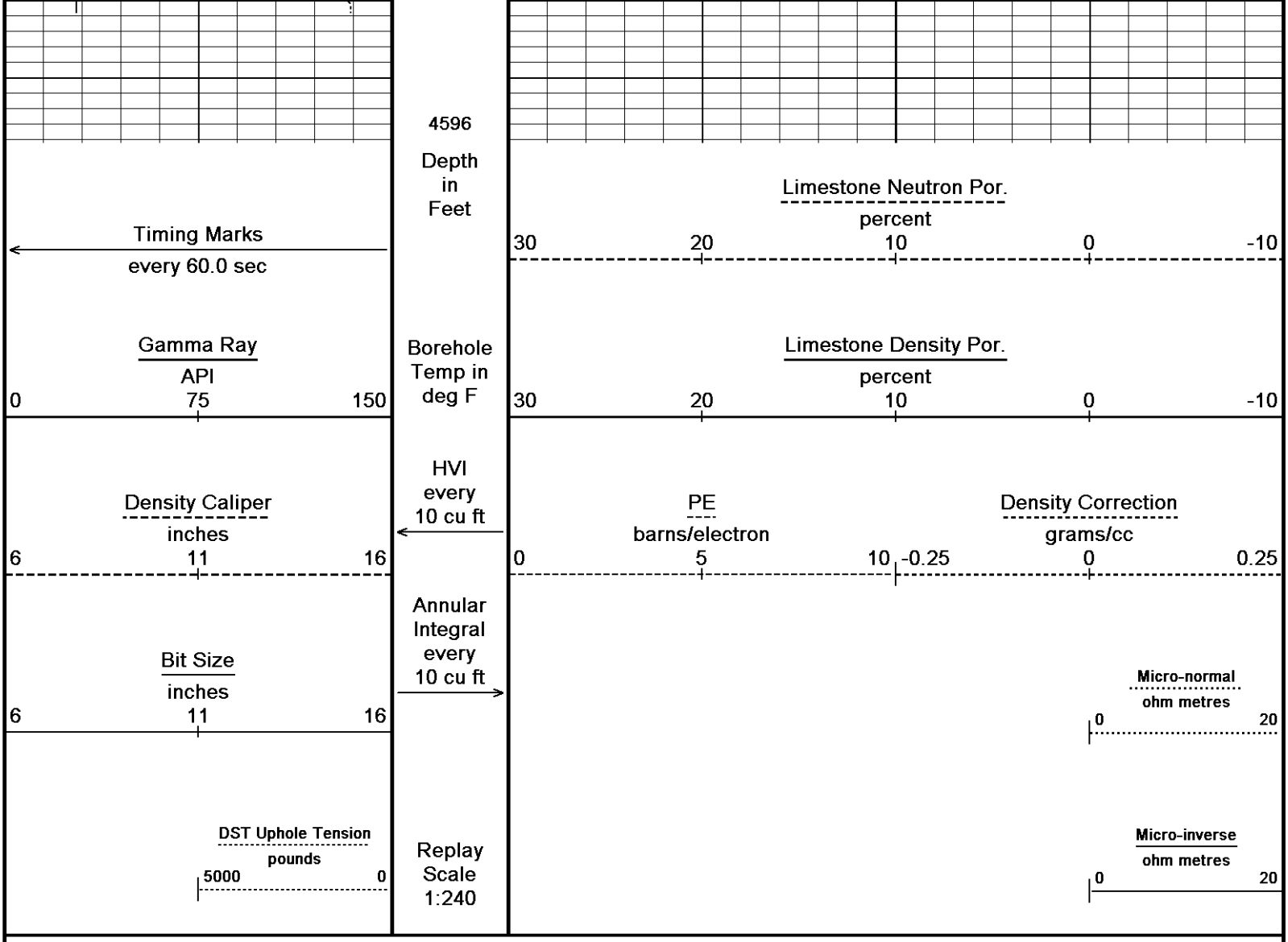



3700
110°
Bit Size
Limestone Density Por.
300
PE
3750
Density Correction
Density Caliper
Limestone Neutron Por.
Micro-inverse
Micro-normal
Gamma Ray
DST Uphole Tension
110°
3800
111°
3850
111°
3900


111°
3950
111°
4000
200
112°
4050
112° 100
4100
112°
Bit Size
Limestone Density Por.


PE
Density Correction
Limestone Neutron Por
Micro-inverse
Density Caliper
Gamma Ray
DST Uphole Tension
4150
112°
4200
113°
4250
113°
100
4300
113°
4350


113°
4400
114°
4450
115°
4500
115°
4550
Bit Size
mma Ray
Density Caliper
FR Density Caliper
DST Uphole Tension
FR DST Uphole Tension
0
PE
Limestone Density Por
FR Micro-normalise
Density Correction
FR Limestone Neutron Por
Limestone Neutron Por.
FFR Limestone Density Por.
FR Density Correction
0



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-JUN-2012 18:31
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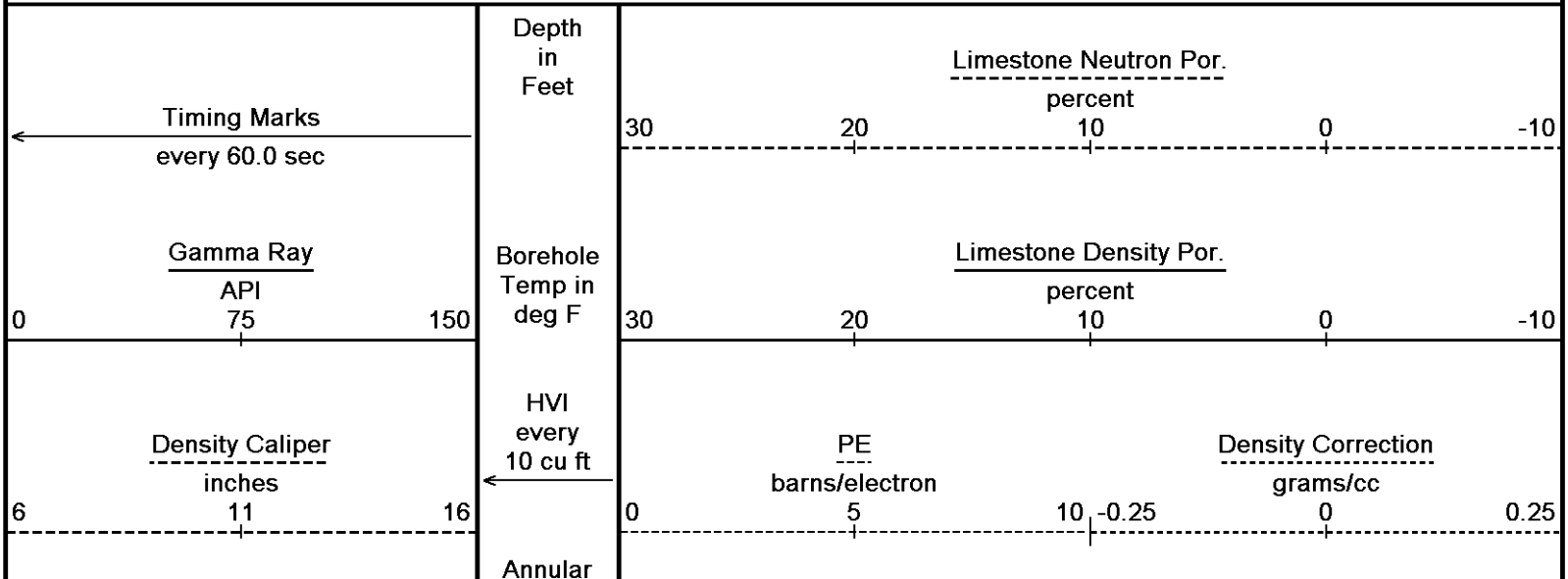
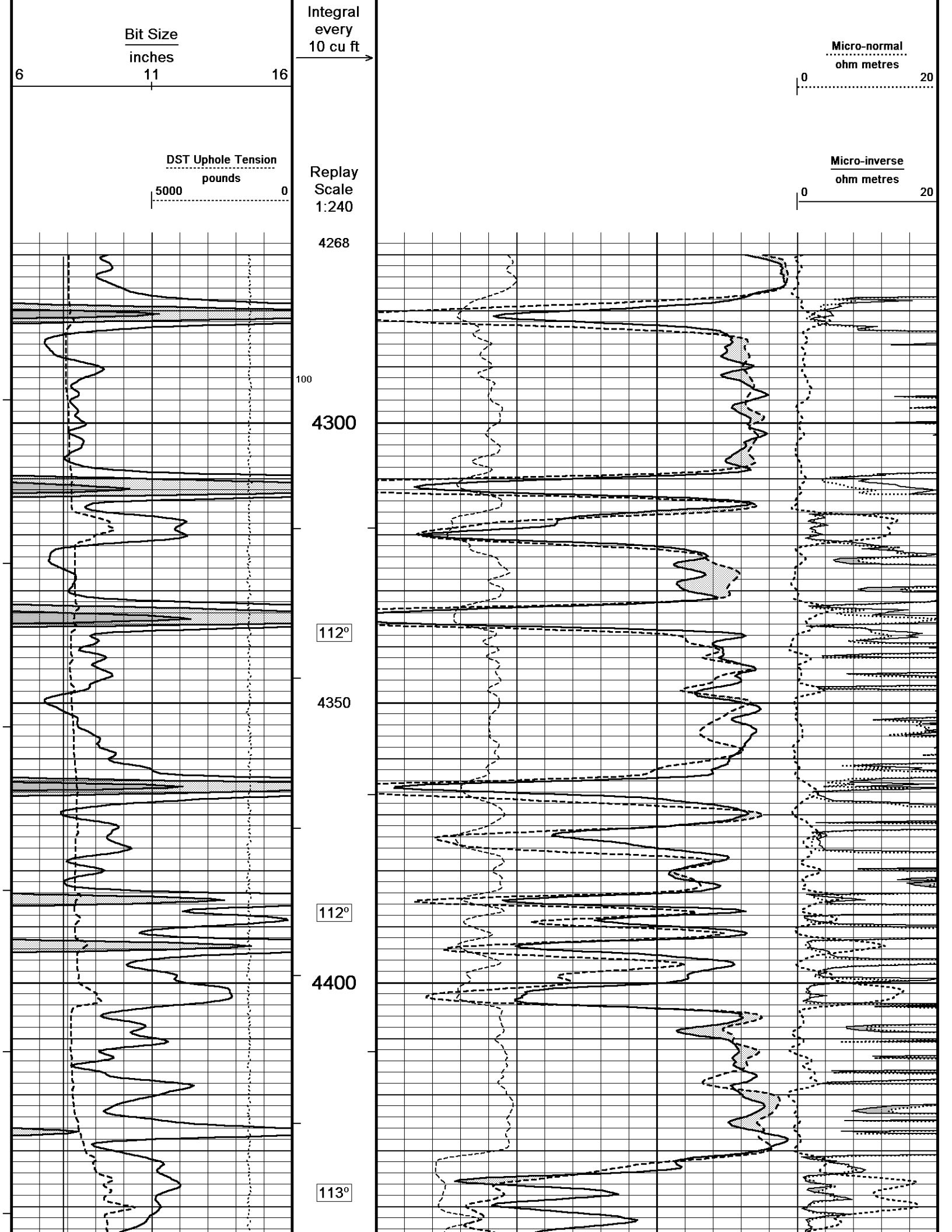
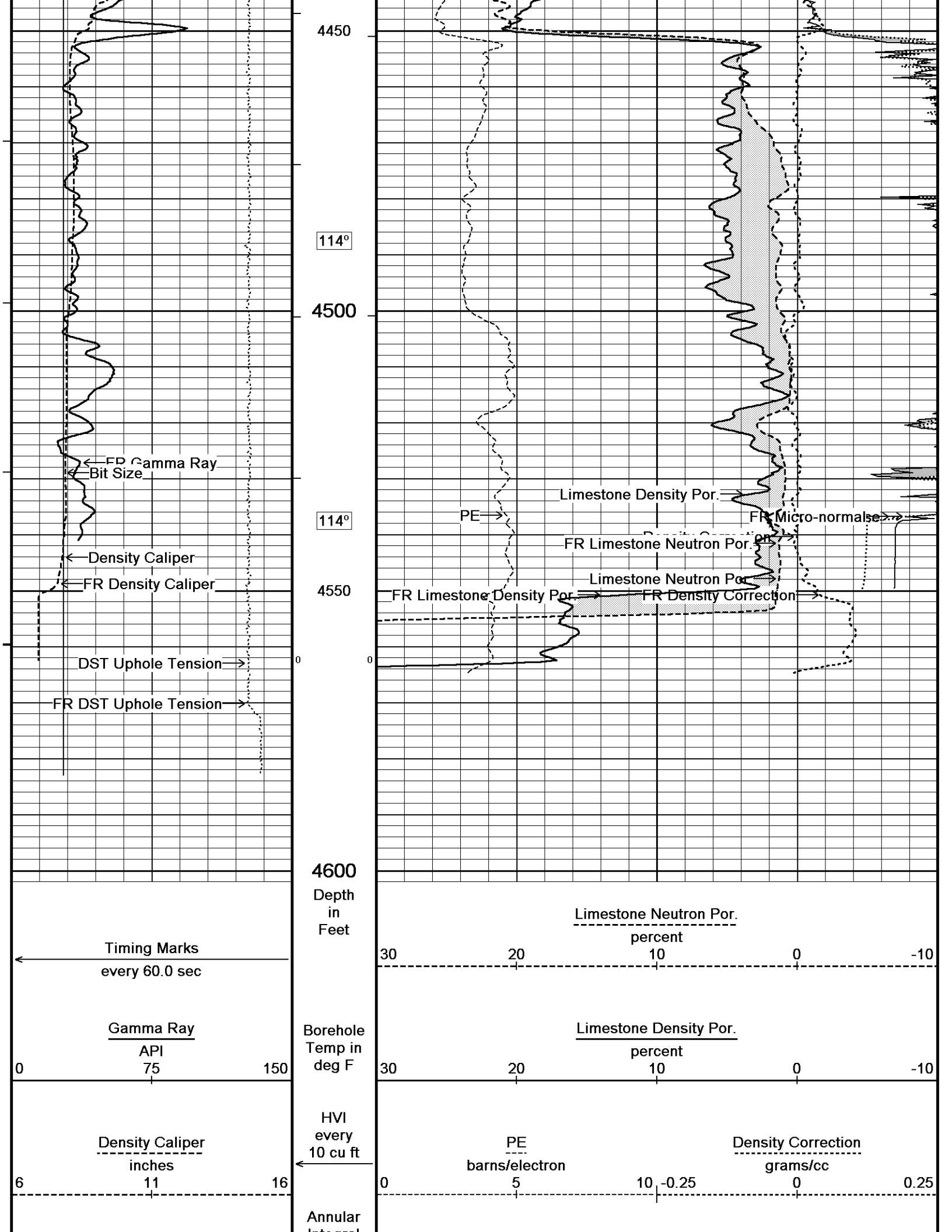
5 INCH MAIN PASS

5 INCH REPEAT PASS

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-JUN-2012 18:31
Filename: C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1...\Shakespeare K Ottley #1-14_001.dta — Recorded on 06-JUN-2012 15:42
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044




Bit Size
inches
6
11
16
Integral
every
10 cu ft
Micro-normal
ohm metres
0
20
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
Micro-inverse
ohm metres
0
20
4268
100
4300
112°
4350
112°
4400
113°


4450
114°
4500
114°
4550
4600
FR Gamma Ray
Bit Size
Density Caliper
FR Density Caliper
DST Uphole Tension
FR DST Uphole Tension
PE
Limestone Density Por.
FR Micro-normalse
FR Limestone Neutron Por.
Limestone Neutron Por.
FR Limestone Density Por.
FR Density Correction
0
0
Depth in Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
Density Caliper
inches
6
11
16
Borehole Temp in deg F
HVI
every 10 cu ft
Annular
Limestone Neutron Por.
percent
30
20
10
0
-10
Limestone Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.25
0
0.25

Bit Size
inches
6 11 16

Integral every 10 cu ft

Micro-normal
ohm metres
0 20

DST Uphole Tension
pounds
5000 0

Replay Scale 1:240

Micro-inverse
ohm metres
0 20

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-JUN-2012 18:31
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5 INCH REPEAT PASS

5 INCH MAIN PASS

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System Versions: Logged with 11.03.4044 Plotted with 11.03.4044

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

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

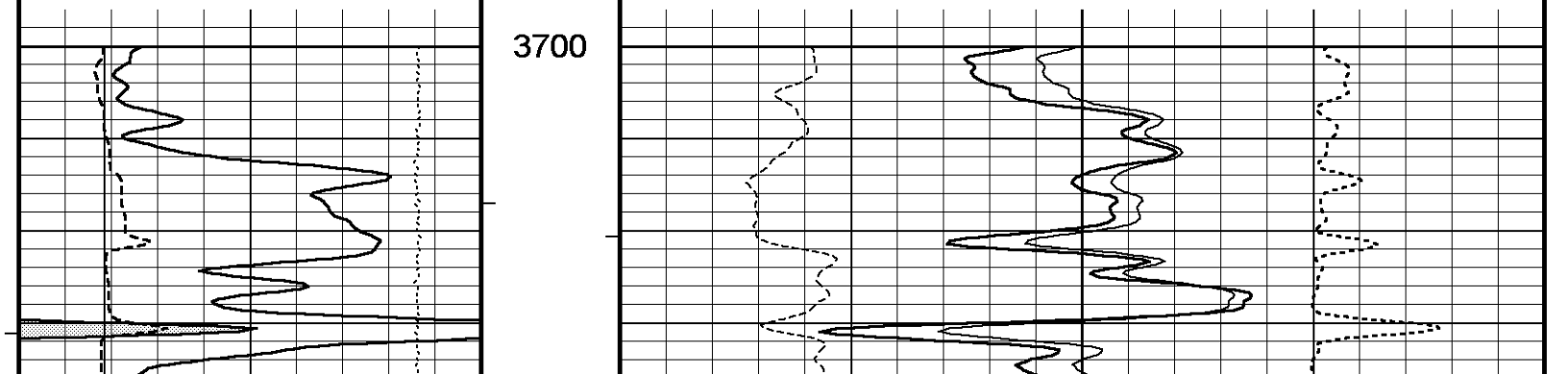
PE
barns/electron
0 5 10

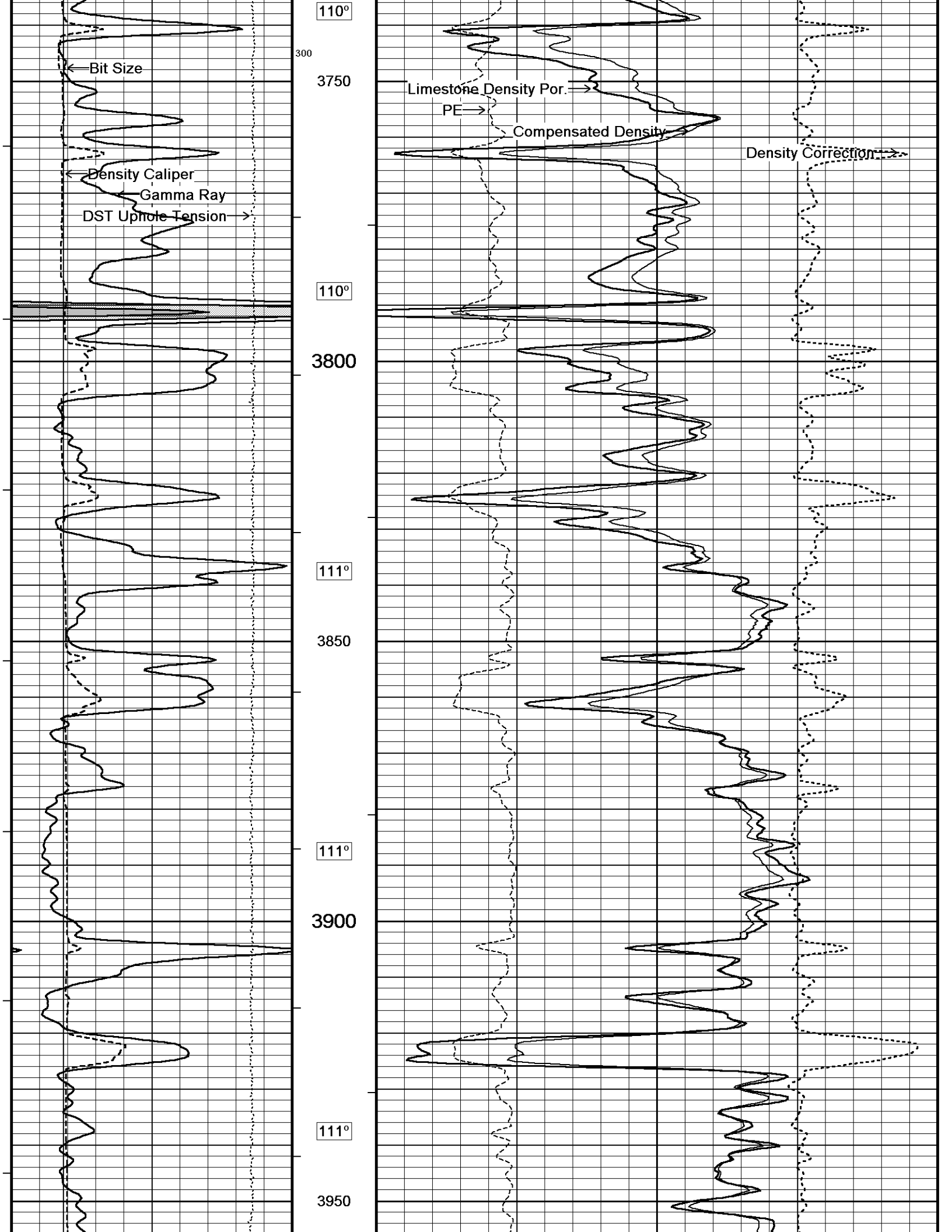
Density Correction
grams/cc
-0.25 0 0.25

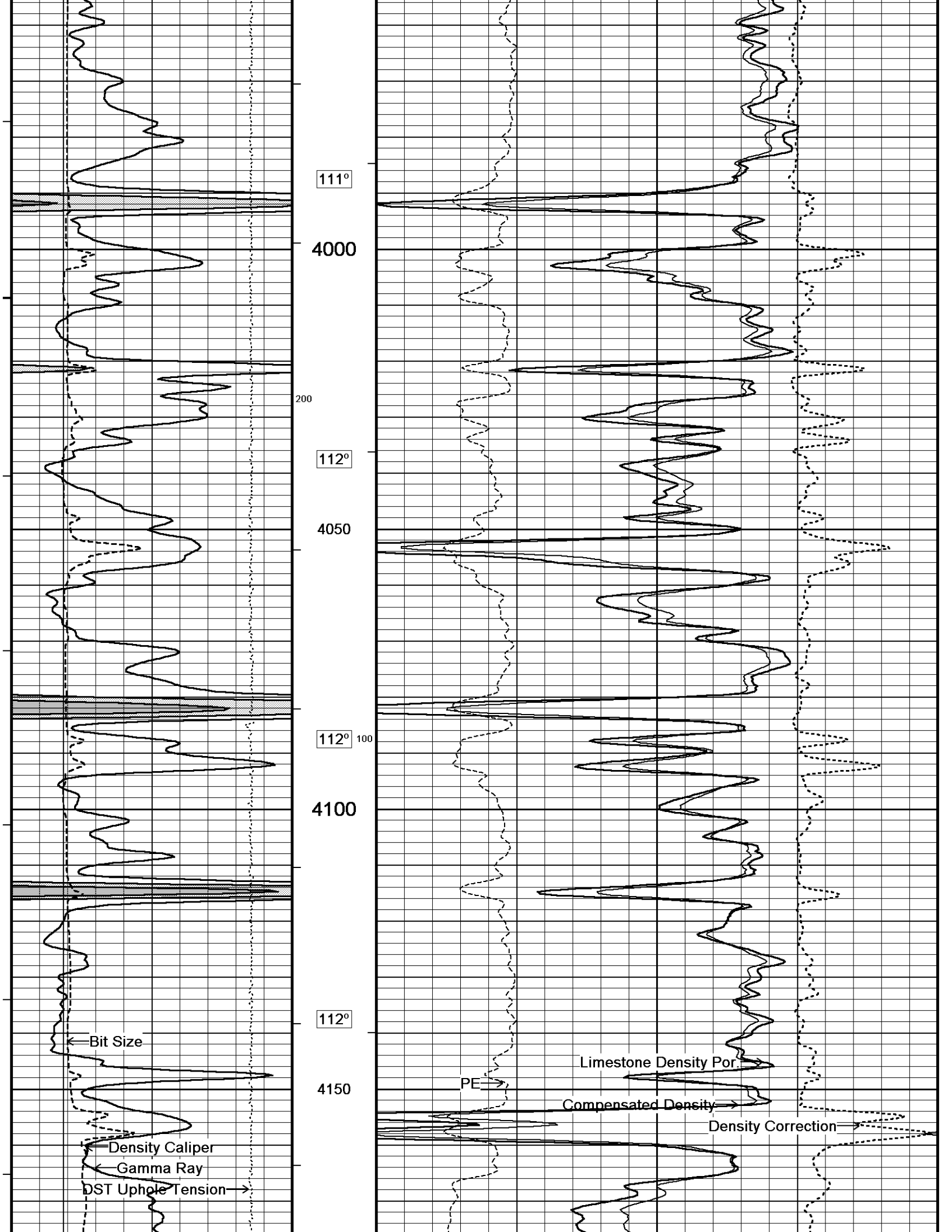
DST Uphole Tension
pounds
5000 0

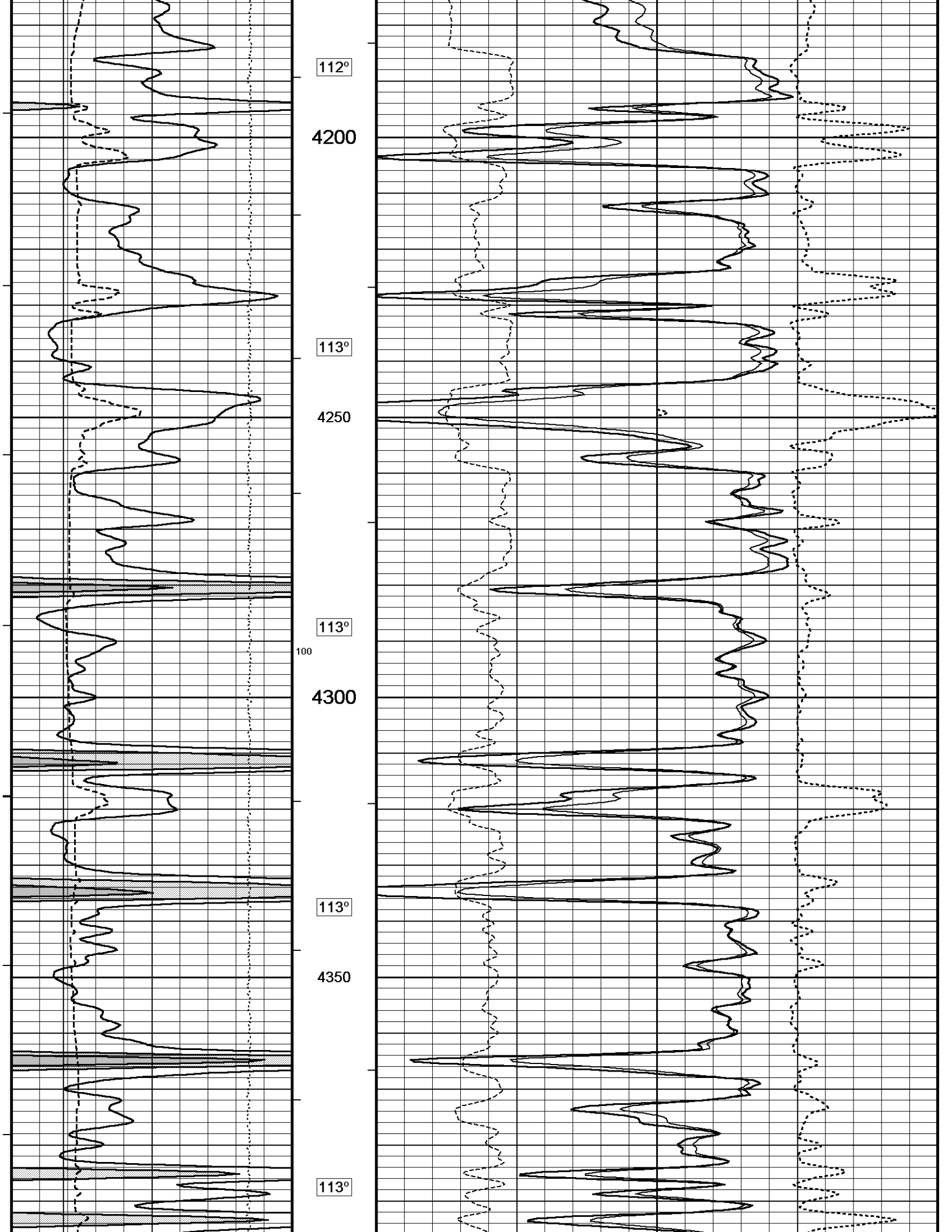
Replay Scale 1:240

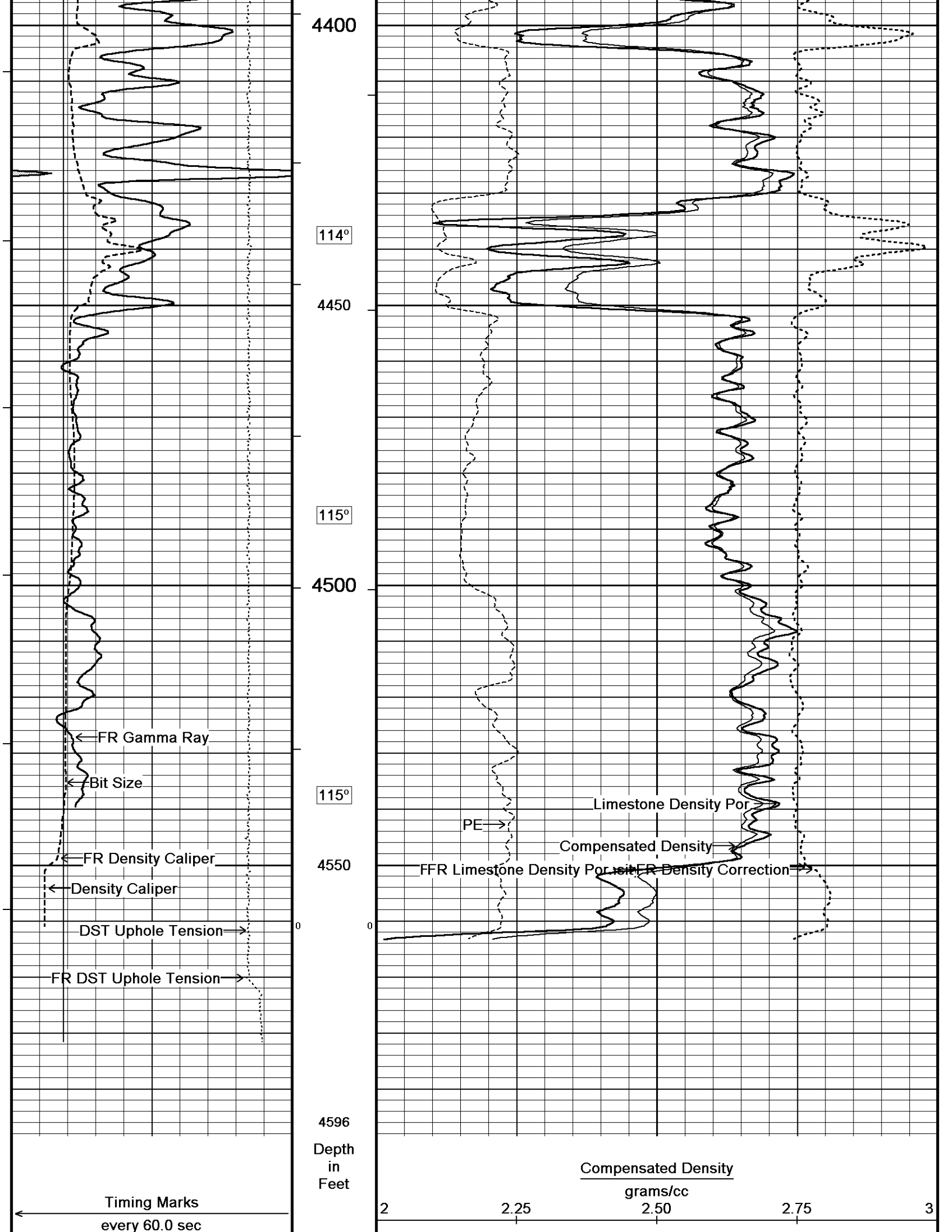
3700

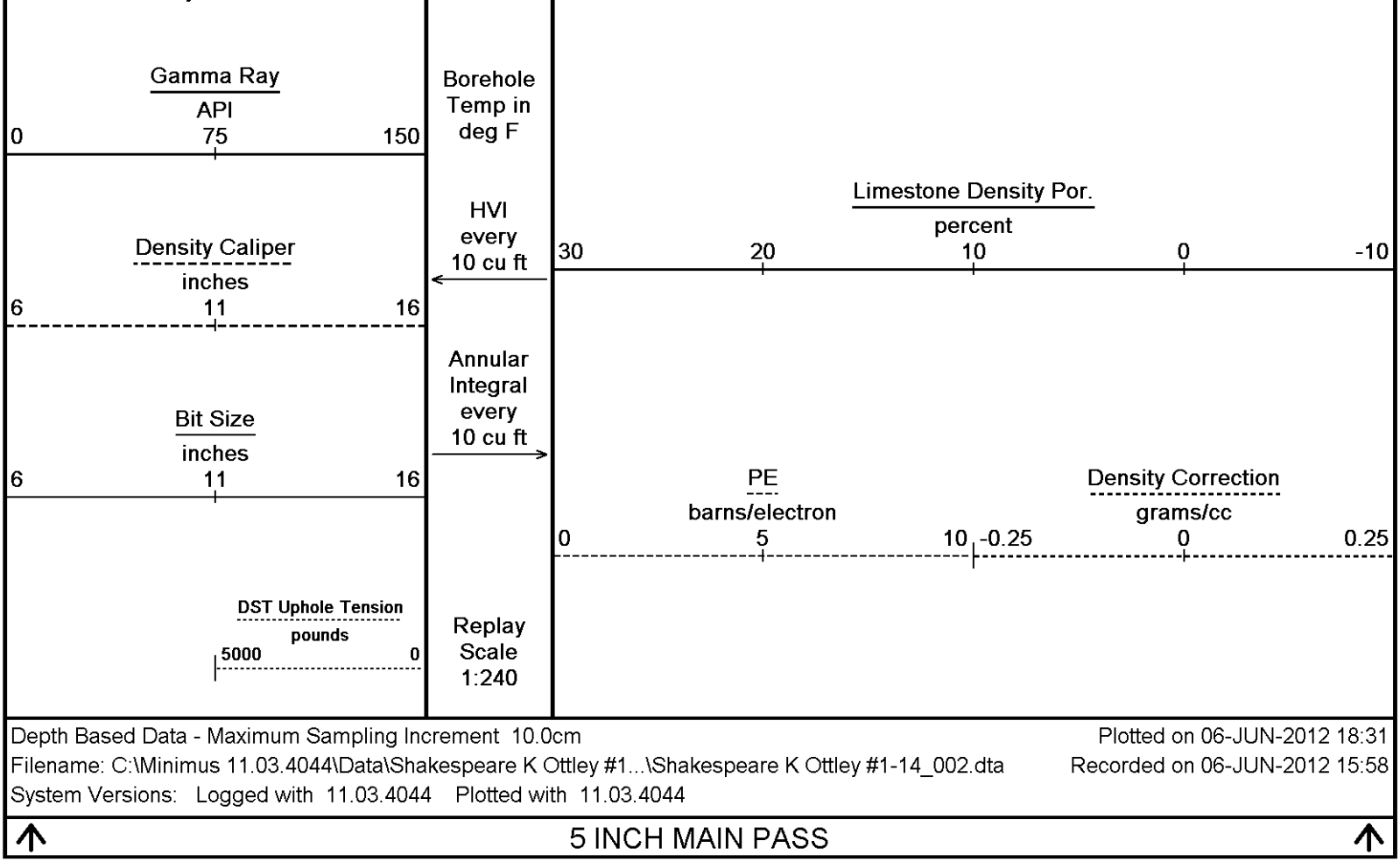


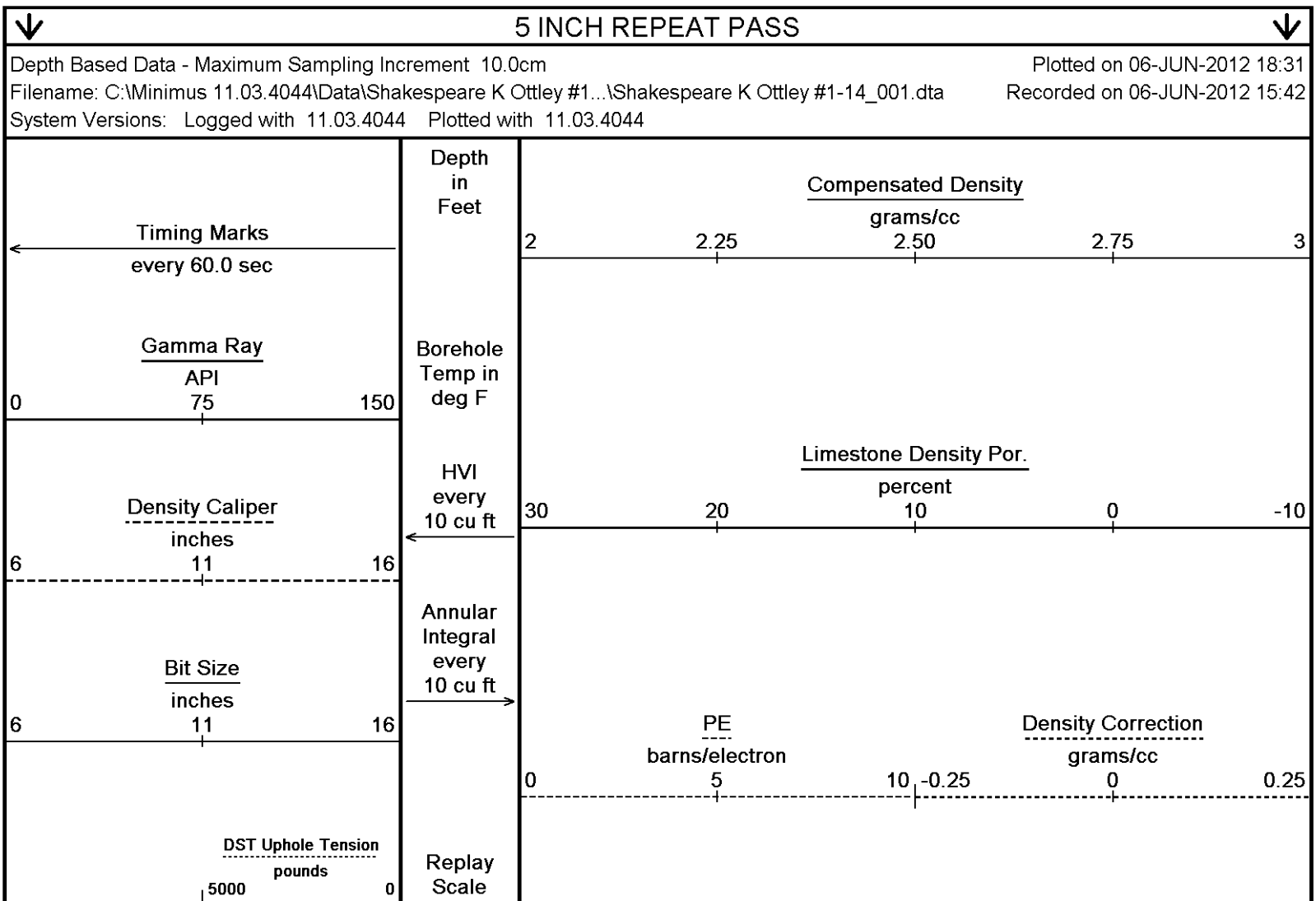

110°
300
3750
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
110°
3800
111°
3850
111°
3900
111°
3950

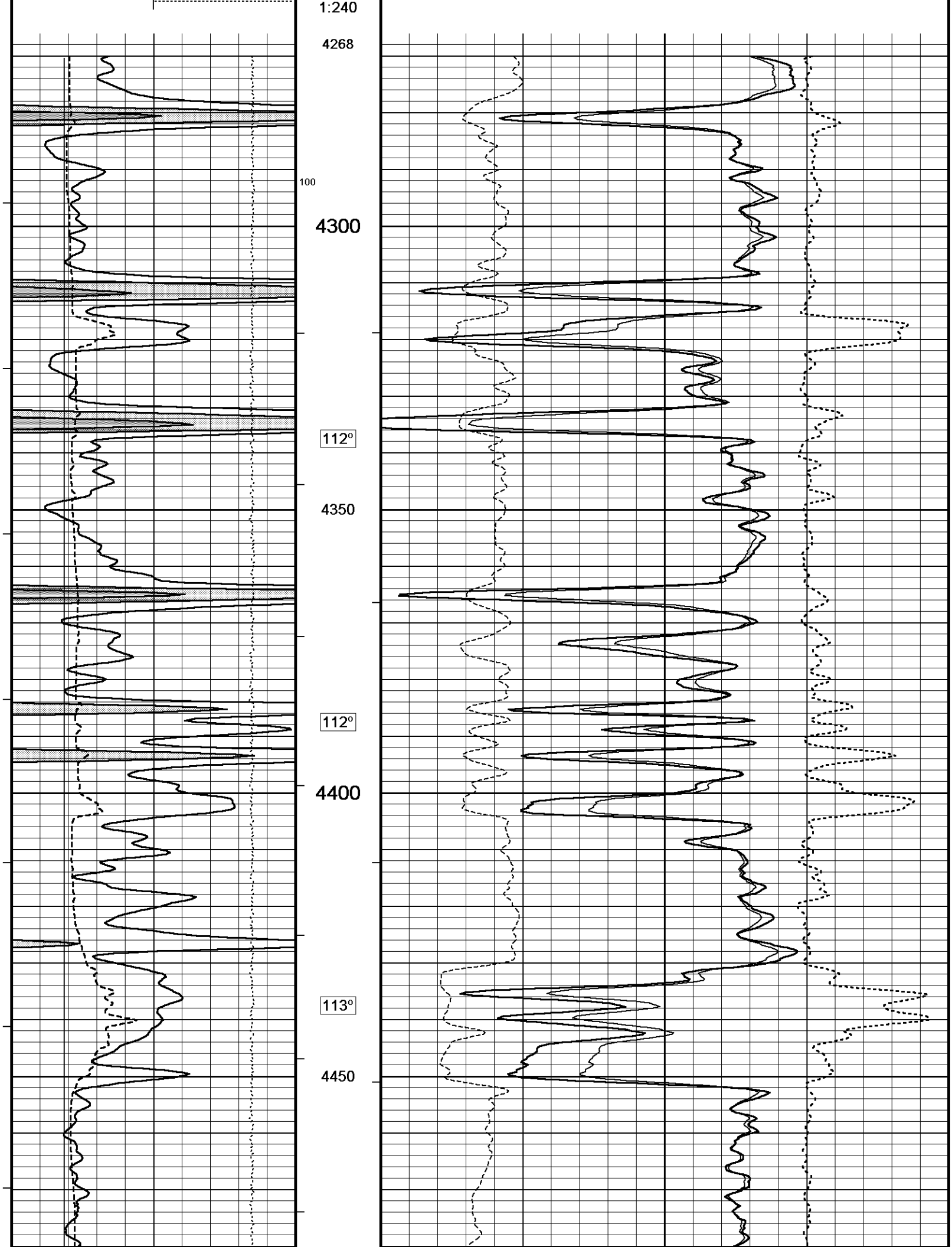

111°
4000
200
112°
4050
112°
100
4100
112°
4150
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por
Compensated Density
Density Correction

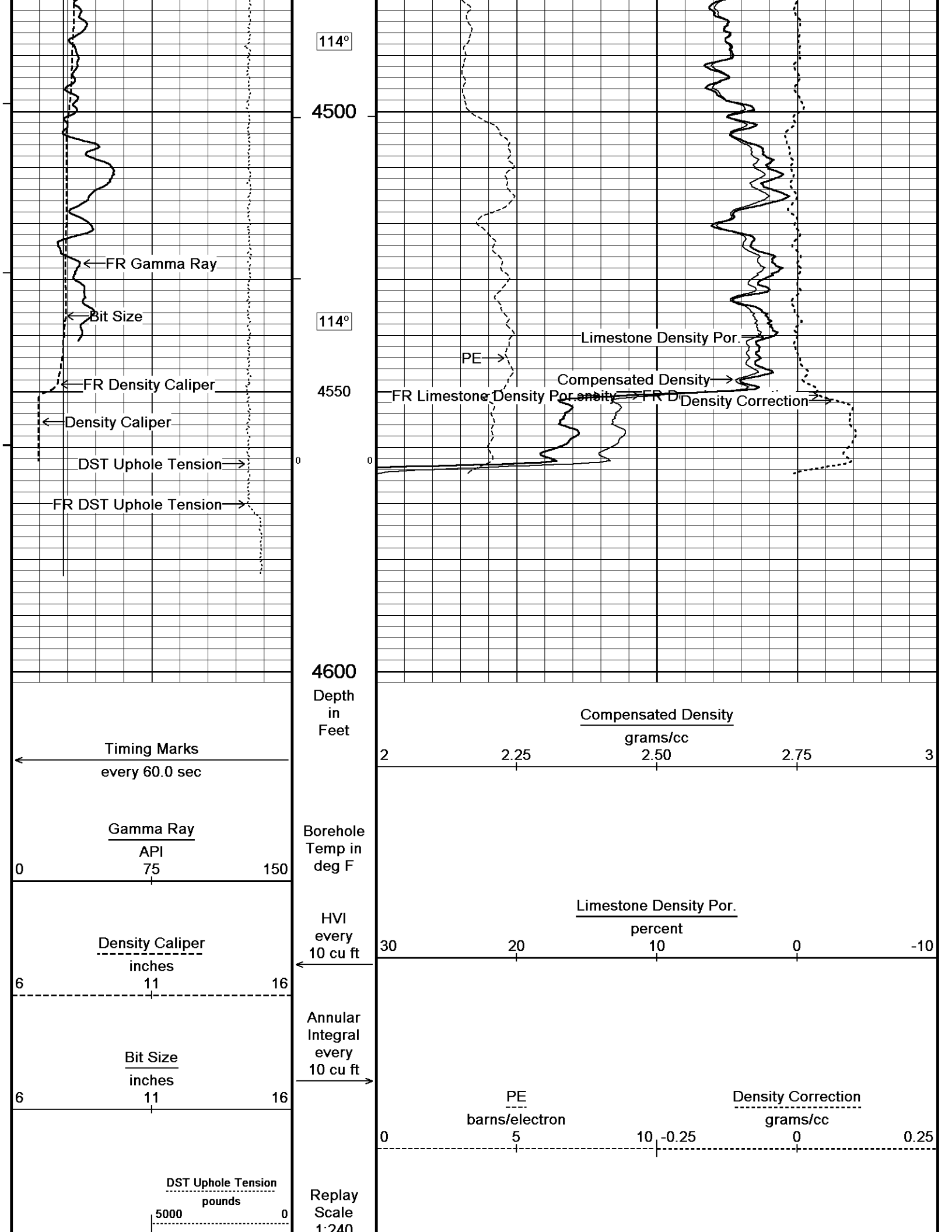

112°
4200
113°
4250
113°
100
4300
113°
4350
113°


4400
114°
4450
115°
4500
115°
4550
4596
Depth
in
Feet
FR Gamma Ray
Bit Size
FR Density Caliper
Density Caliper
DST Uphole Tension
FR DST Uphole Tension
PE
Limestone Density Por
Compensated Density
FFR Limestone Density Por
FR Density Correction
0
0
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
Limestone Density Por.
percent
30
20
10
0
-10
HVI every 10 cu ft
Density Caliper
inches
6
11
16
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
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
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 06-JUN-2012 18:31
Filename: C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1...\Shakespeare K Ottley #1-14_002.dta
Recorded on 06-JUN-2012 15:58
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044
5 INCH MAIN PASS


5 INCH REPEAT PASS
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 06-JUN-2012 18:31
Filename: C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1...\Shakespeare K Ottley #1-14_001.dta
Recorded on 06-JUN-2012 15:42
System Versions: Logged with 11.03.4044 Plotted with 11.03.4044
Depth in Feet
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Timing Marks
every 60.0 sec
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
Annular Integral every 10 cu ft
Bit Size
inches
6
11
16
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
4268
100
4300
112°
4350
112°
4400
113°
4450


114°
4500
FR Gamma Ray
Bit Size
114°
FR Density Caliper
4550
Density Caliper
DST Uphole Tension
0
FR DST Uphole Tension
PE
Limestone Density Por.
Compensated Density
FR Limestone Density Por.
FR D
Density Correction
0
4600
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
Limestone Density Por.
percent
HVI
every
10 cu ft
30
20
10
0
-10
Density Caliper
inches
6
11
16
Annular
Integral
every
10 cu ft
Bit Size
inches
6
11
16
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

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 06-JUN-2012 18:31
Filename: C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1...\Shakespeare K Ottley #1-14_001.dta — Recorded on 06-JUN-2012 15:42
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5 INCH REPEAT PASS

BEFORE SURVEY CALIBRATION

C:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1-14\Shakespeare K Ottley #1-14_002.dta

General Constants All 000

Last Edited on 06-JUN-2012,14:34

General Parameters		
Mud Resistivity	0.780	ohm-metres
Mud Resistivity Temperature	93.000	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. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Gamma Calibration MCG-C 84

Field Calibration on 06-JUN-2012 09:18

	Measured	Calibrated (API)
Background	73	49
Calibrator (Gross)	1142	774
Calibrator (Net)	1069	725

Gamma Constants MCG-C 84

Last Edited on 06-JUN-2012,14:34

Gamma Calibrator Number	GR38	
Mud Density	1.09	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-C 84

Field Calibration on 28-MAY-2012,07:31

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 28-MAY-2012,07:32

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 84

Last Edited on

Pre-filter Length	11

Caliper Calibration MML-A 16

Base Calibration on 23-MAY-2012 11:59
Field Calibration on 06-JUN-2012 09:11

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14501	5.98
2	17771	7.97
3	21107	9.86
4	24905	11.92
5	0	0.00

6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.01	5.98

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 23-MAY-2012 12:04
Field Check on 06-JUN-2012 09:13

Base Calibration

		Measured	Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	5.0	25.0
Micro Inverse	15.6	78.3	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	62.9	62.9
Micro Inverse	48.2	48.2

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 06-JUN-2012,09:11

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	1.0000	
Micro Inverse K Factor	1.0000	
Standoff Offset	N/A	inches

Neutron Calibration MDN-A.B 65

Base Calibration on 23-MAY-2012 14:31
Field Check on 06-JUN-2012 09:23

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3164	98	3714	110
Ratio	32.187		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1615	2315
Ratio	0.697	

Field Check

	Calibrated (cps)	
	1627	2350
Ratio	0.692	

Neutron Constants MDN-A.B 65

Last Edited on 06-JUN-2012,09:18

Neutron Source Id	PN-521	
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	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 23-MAY-2012 09:37
Field Check on 06-JUN-2012 09:02

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.5	126.8
Base Check		281.5
Field Check		281.7

FE Constants MFE-A.A 55

Last Edited on 06-JUN-2012 09:01

FE Constants MFE A.A 45 — Last Edited on 06-JUN-2012,08:59

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

Induction Calibration MAI-A.A 45

Base Calibration on 12-JAN-2012,13:34
Field Check on 06-JUN-2012 09:00

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) 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) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	0.0	0.0	18.4	3851.3
2	0.0	0.0	31.7	3629.4
3	0.0	0.0	28.7	3049.6
4	0.0	0.0	18.3	2079.3
Deep	0.0	0.0	16.0	1911.4
Medium	0.0	0.0	42.6	4060.9
Shallow	0.0	0.0	49.7	5483.1
Array Temperature	0.0		72.1	Deg F

Induction Constants MAI-A.A 45

Last Edited on 06-JUN-2012,08:59

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

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 12-JAN-2012,13:36

	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 12-JAN-2012,11:13

Pre-filter Length	11

Caliper Calibration MPD-B 59

Base Calibration on 16-MAY-2012 14:32
Field Calibration on 06-JUN-2012 09:04

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	19200	3.99
2	29152	5.98
3	39216	7.97
4	48949	9.86
5	60064	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.96	5.98

Photo Density Calibration MPD-B 59

Base Calibration on 16-MAY-2012 14:49
Field Check on 06-JUN-2012 09:08

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	49293	24802	59556	30836
Reference 2	20819	2436	24941	2541

Field Check at Base

1213.5	1290.5

Field Check

1210.5	1290.3

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	220	1092		
Reference 1	18022	49118	0.371	0.371
Reference 2	5449	20689	0.267	0.272

Field Check at Base

220.3	1091.9

Field Check

219.5	1088.5

Density Constants MPD-B 59

Last Edited on 06-JUN-2012,14:34

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	1.09	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:\Minimus 11.03.4044\Data\Shakespeare K Ottley #1-14\Shakespeare K Ottley #1-14_002.dta

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

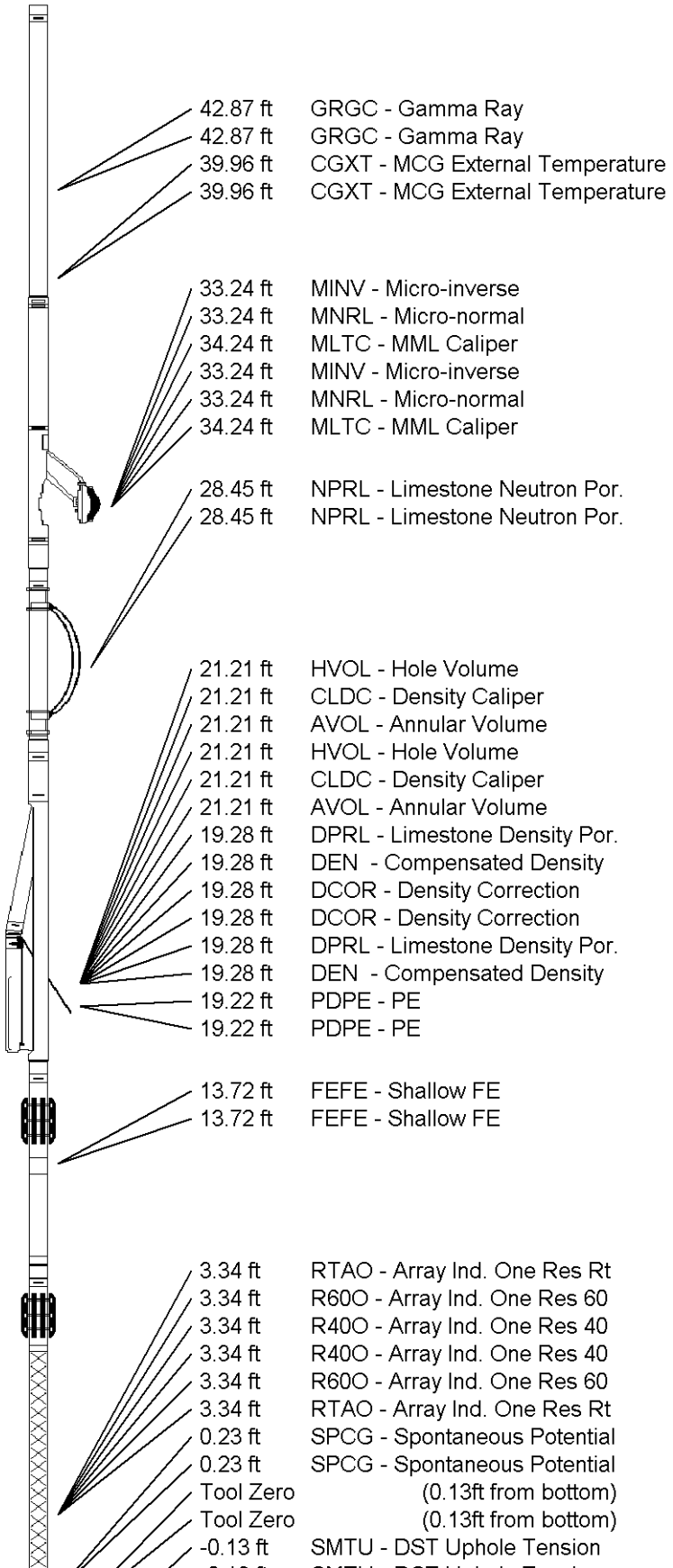
Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

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

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper
MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

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



42.87 ft	GRGC - Gamma Ray
42.87 ft	GRGC - Gamma Ray
39.96 ft	CGXT - MCG External Temperature
39.96 ft	CGXT - MCG External Temperature
33.24 ft	MINV - Micro-inverse
33.24 ft	MNRL - Micro-normal
34.24 ft	MLTC - MML Caliper
33.24 ft	MINV - Micro-inverse
33.24 ft	MNRL - Micro-normal
34.24 ft	MLTC - MML Caliper
28.45 ft	NPRL - Limestone Neutron Por.
28.45 ft	NPRL - Limestone Neutron Por.
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
21.21 ft	AVOL - Annular Volume
21.21 ft	HVOL - Hole Volume
21.21 ft	CLDC - Density Caliper
21.21 ft	AVOL - Annular Volume
19.28 ft	DPRL - Limestone Density Por.
19.28 ft	DEN - Compensated Density
19.28 ft	DCOR - Density Correction
19.28 ft	DCOR - Density Correction
19.28 ft	DPRL - Limestone Density Por.
19.28 ft	DEN - Compensated Density
19.22 ft	PDPE - PE
19.22 ft	PDPE - PE
13.72 ft	FEFE - Shallow FE
13.72 ft	FEFE - Shallow FE
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	R40O - Array Ind. One Res 40
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
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

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: 48.16 ft Weight: 383.6 lb

Total Length: 48.16 ft Weight: 383.6 lb

-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.
All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL COMPANY INC.
WELL	K OTTLEY #1-14
FIELD	WILDCAT
PROVINCE/COUNTY	LOGAN
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2824.00	feet	First Reading	4550.00	feet
Elevation Drill Floor	2822.00	feet	Depth Driller	4570.00	feet
Elevation Ground Level	2819.00	feet	Depth Logger	4570.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG

40 Years of Wireline 1970 2010