Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	SHAKESPEARE OIL COMPANY
WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	UNITED STATES / KANSAS
LOCATION	985' FNL & 335' FEL NW SE NE NE

SEC	TWP	RGE
28	16W	34

API Number 15-171-20930
Permit Number

Other Services
MAI/MFE
MSS
MML

Permanent Datum G.L., Elevation feet
Log Measured From KB
Drilling Measured From K.B. @ 10 FEET

Elevations:	feet
KB	3140.00
DF	3138.00
GL	3130.00

Date	30-MAR-2013			
Run Number	ONE			
Service Order	3539880			
Depth Driller	4875.00	feet		
Depth Logger	4873.00	feet		
First Reading	4841.00	feet		
Last Reading	3700.00	feet		
Casing Driller	265.00	feet		
Casing Logger	263.00	inches		
Bit Size	7.880			
Hole Fluid Type	CHEMICAL	lb/USg		
Density / Viscosity	9.30 lb/USg	59.00 CP		
PH / Fluid Loss	10.00	10.00		
Sample Source	MUDPIT			
Rm @ Measured Temp	0.49 @ 72.0	ohm-m		
Rmf @ Measured Temp	0.39 @ 72.0	ohm-m		
Rmc @ Measured Temp	0.59 @ 72.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.32 @109.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	109.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	W. STAMBAUGH		J. LAPOINT	
Witnessed By	TIM PRIEST			
JOB #	LB13-084			

BOREHOLE RECORD

Last Edited: 30-MAR-2013 15:31

Bit Size inches	Depth From feet	Depth To feet
7.875	263.00	4873.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	263.00	8.63

REMARKS

- SOFTWARE ISSUE: WLS 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION.
  - HARDWARE: DUAL BOWSPRING 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 SURFACE CASING: 2420 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 2000 FEET: 290 CU. FT.

- SERVICE ORDER # 3539880.

- RIG: HD RIG #2

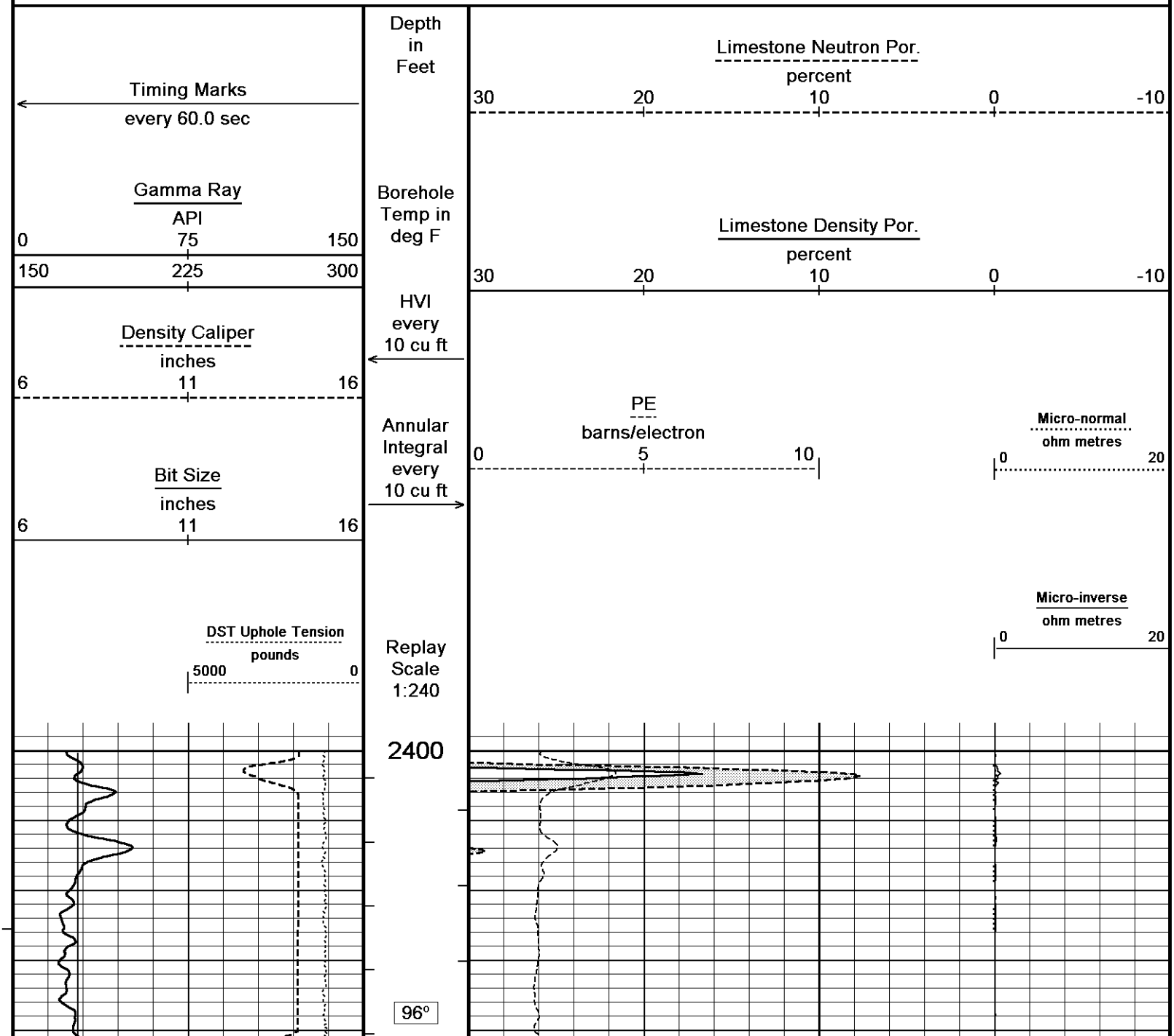
- ENGINEER: W. STAMBAUGH, J. LAPOINT

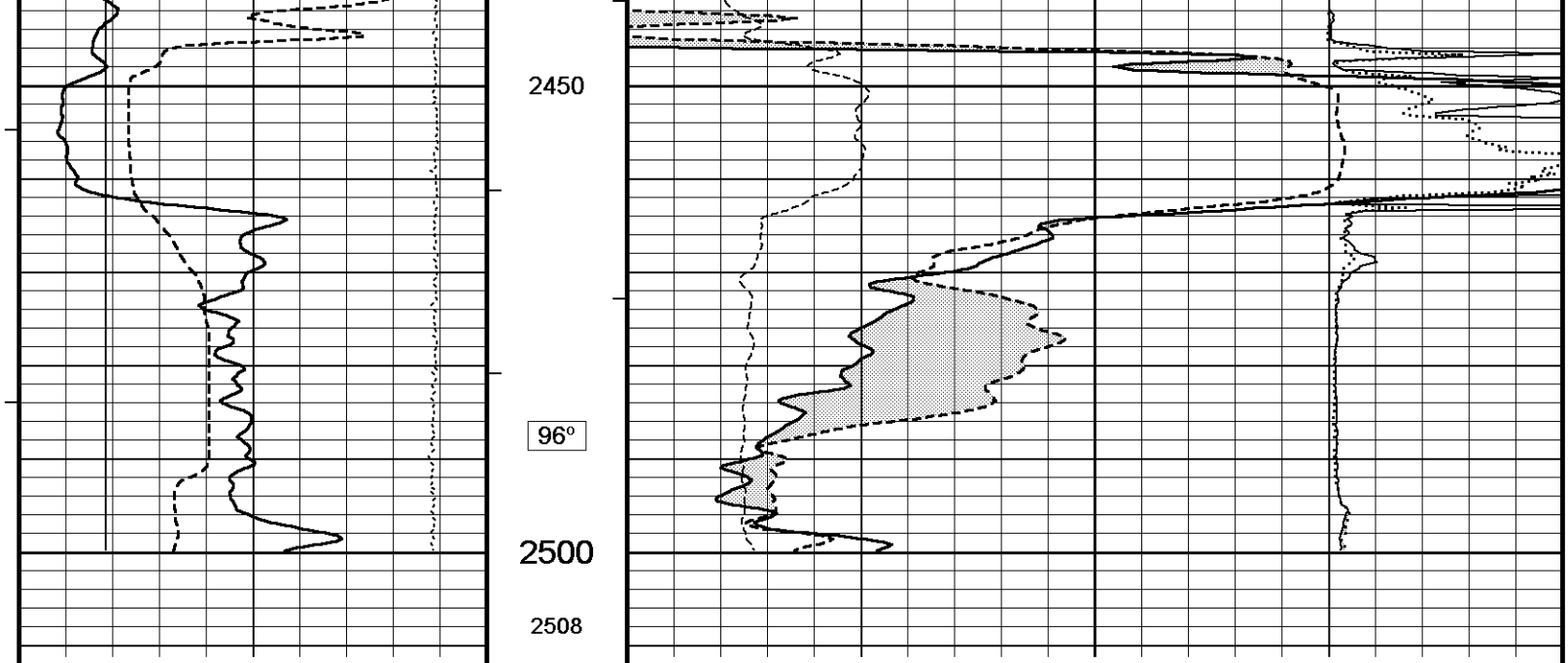
- OPERATOR(S): K. RINEHART.

**** SOFTWARE ISSUE CHANGED FLUID LOSS TO MATCH PH. FLUID LOSS SHOULD BE 8.8 ML/30MIN. ****
****HIGH RESOLUTION INTERVAL FROM 4550 FEET TO 4400 FEET.****

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_003.dta — Recorded on 30-MAR-2013 12:03
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492





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

Limestone Neutron Por.
percent
30 20 10 0 -10

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Micro-normal
ohm metres
0 20

Micro-inverse
ohm metres
0 20

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

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Depth Based Data - Maximum Sampling Increment 10.0cm
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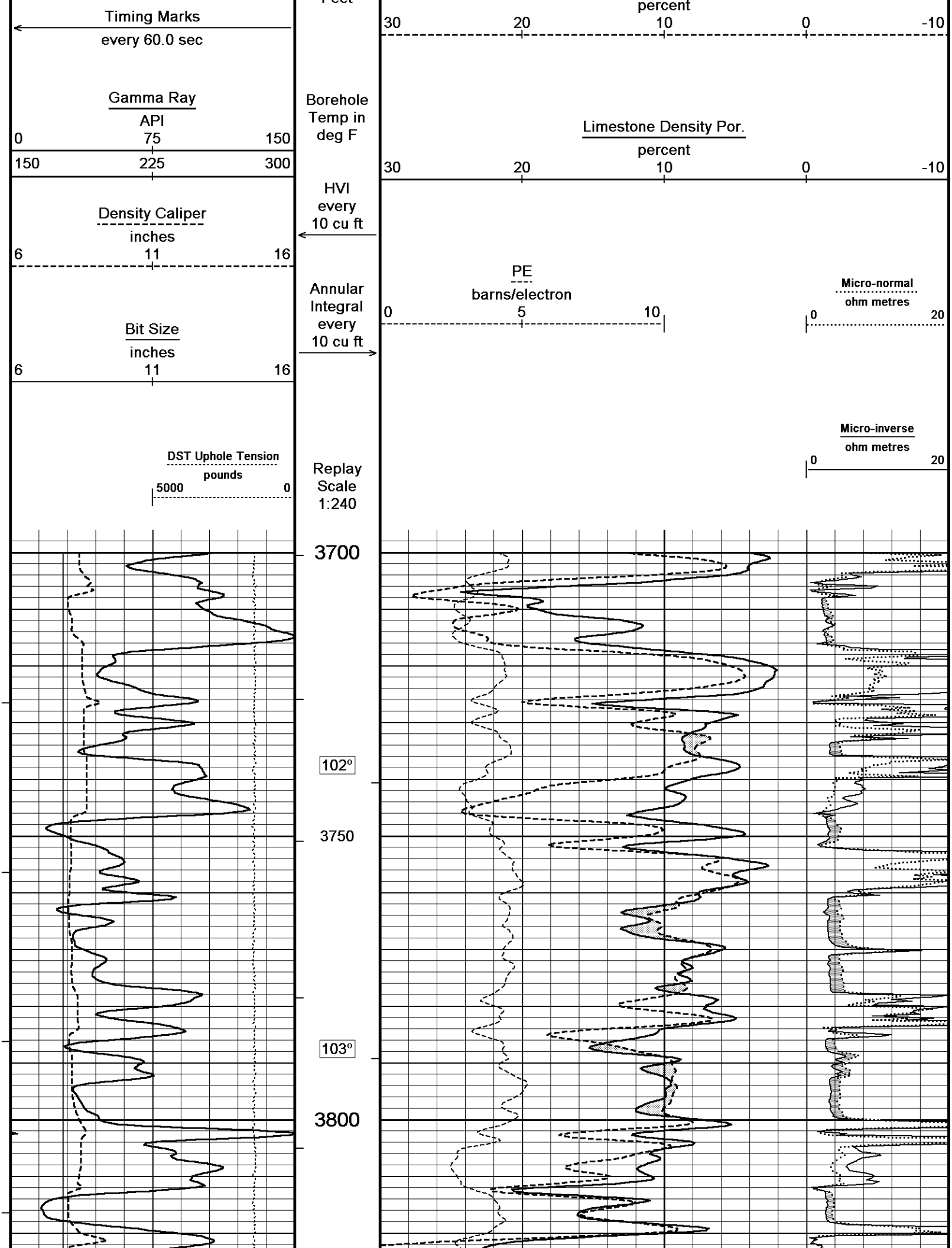
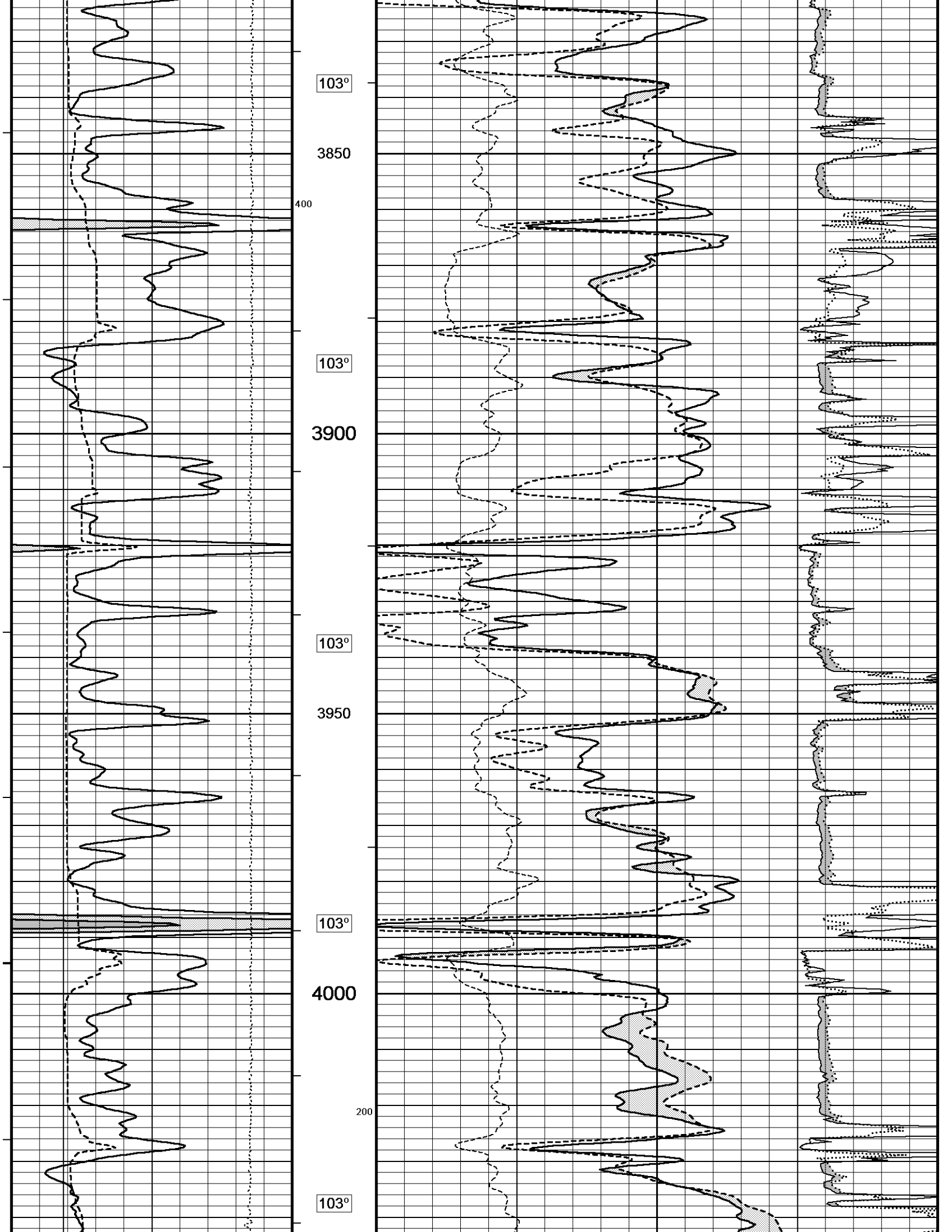
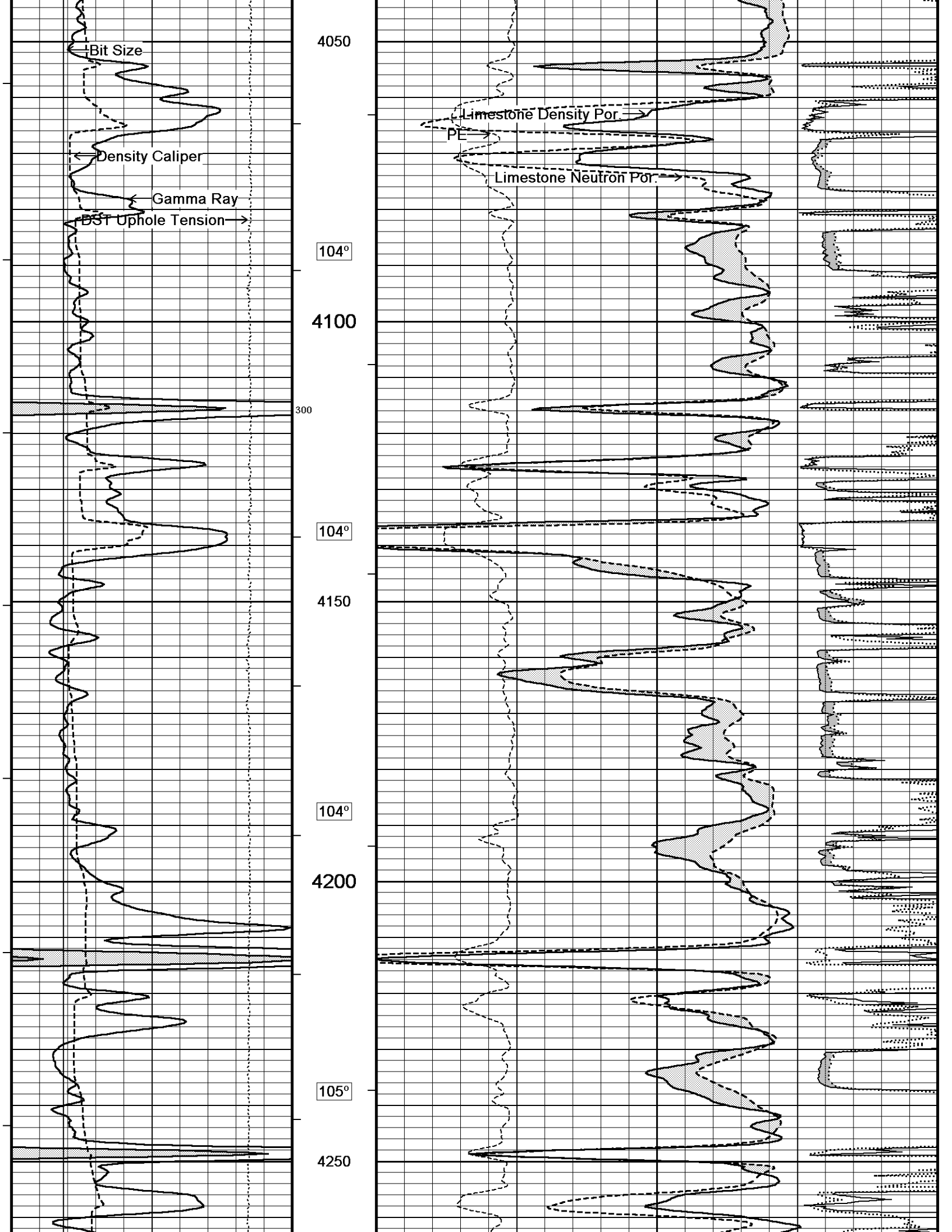
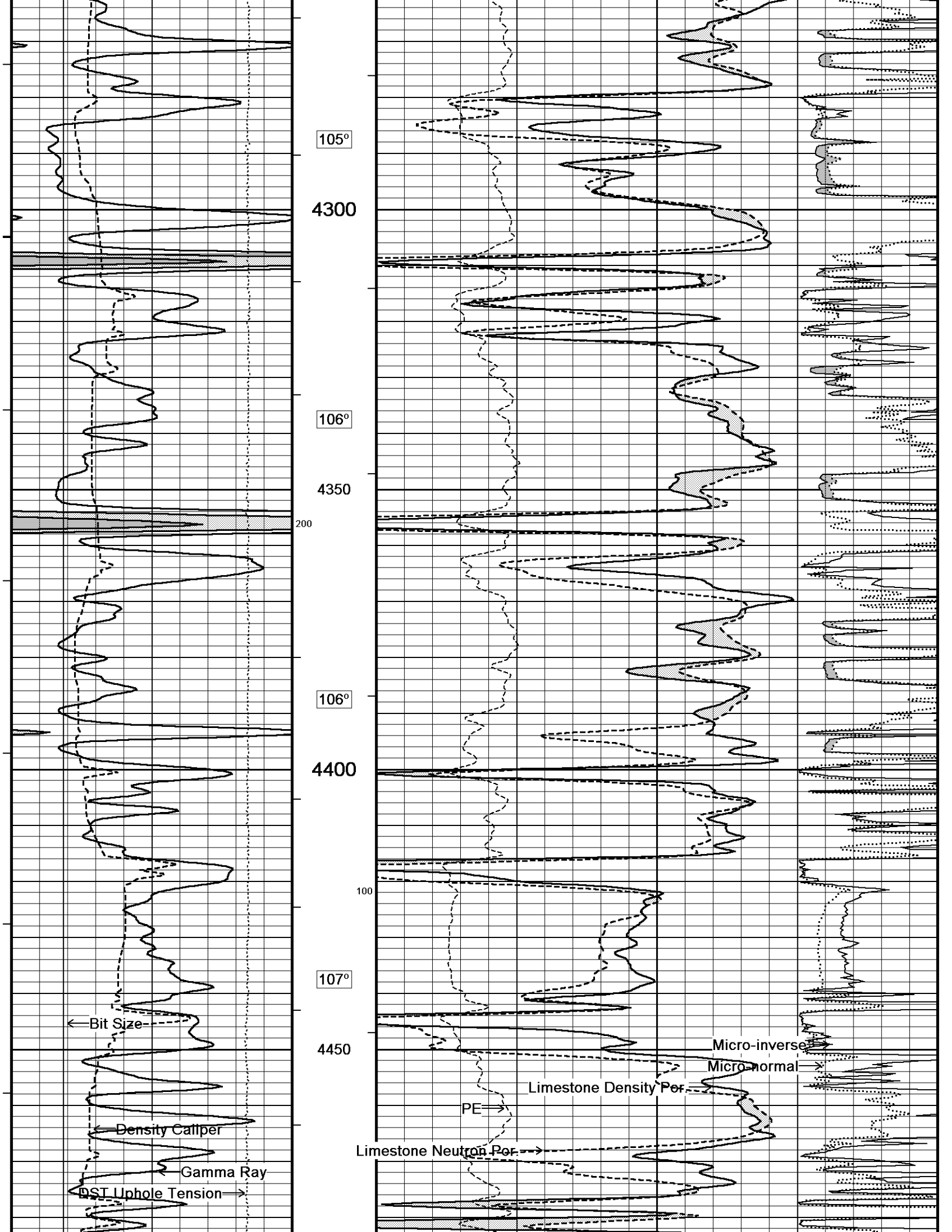
Depth in Feet

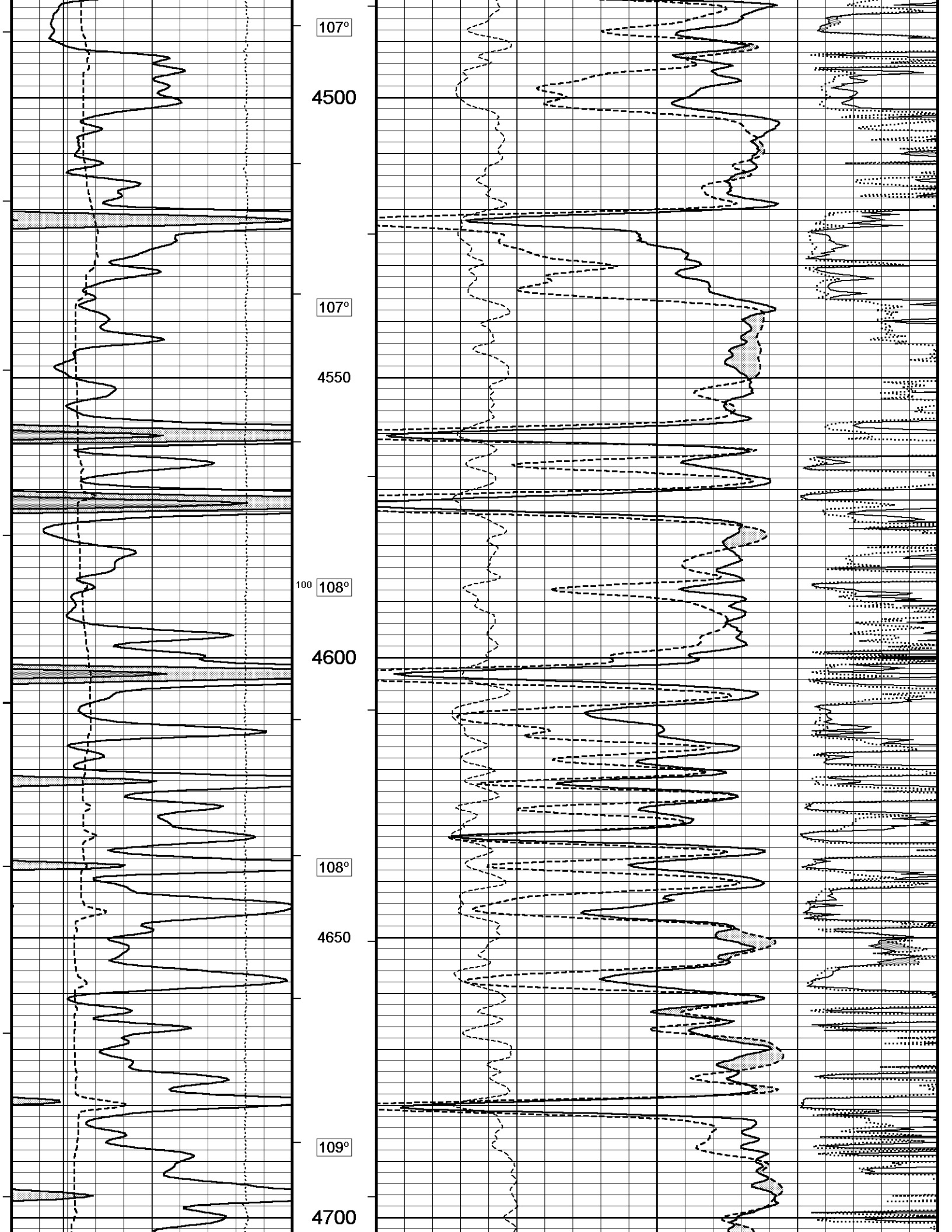
Limestone Neutron Por.

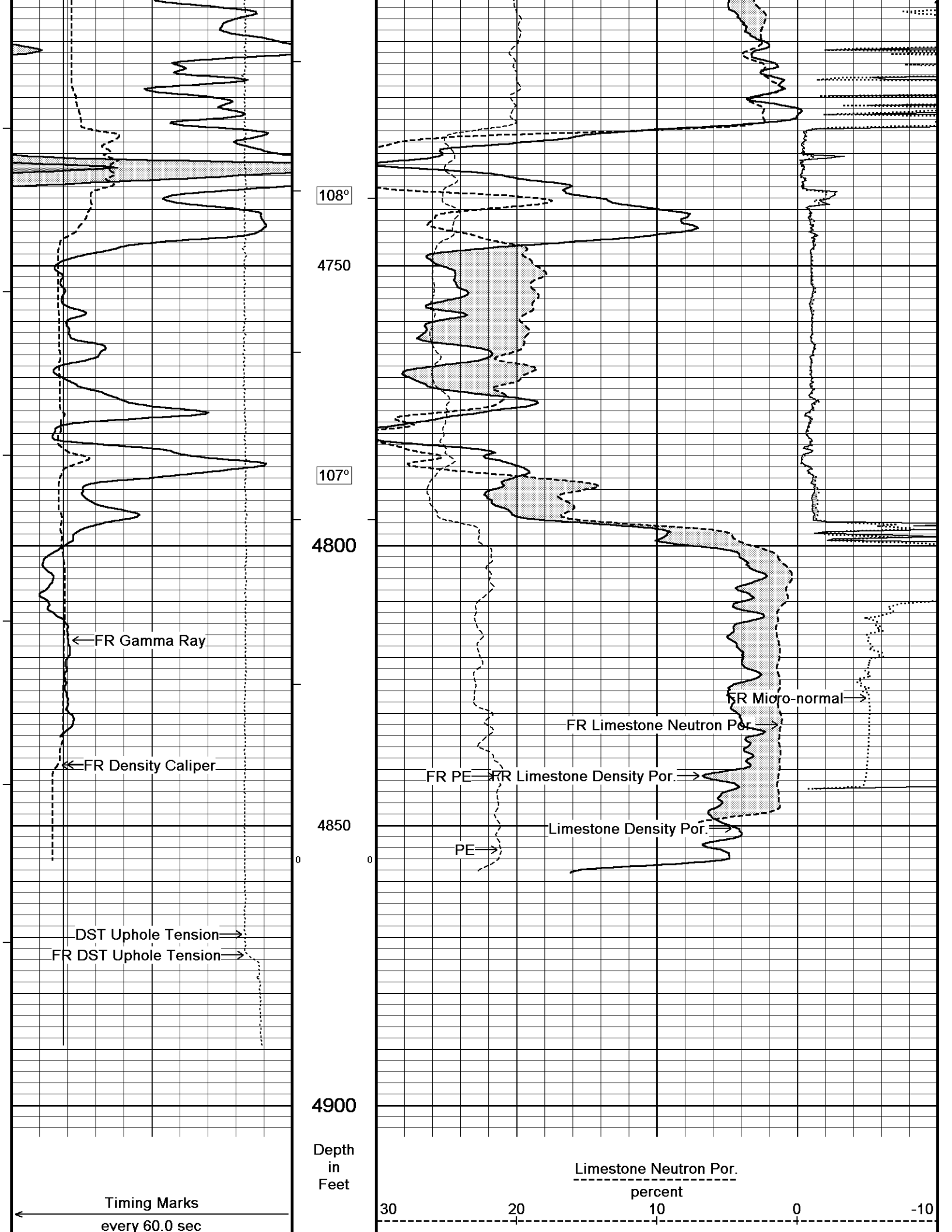

Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Density Caliper
inches
6
11
16
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Feet
Borehole Temp in deg F
HVI every 10 cu ft
Annular Integral every 10 cu ft
Replay Scale 1:240
percent
30
20
10
0
-10
Limestone Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
Micro-normal
ohm metres
0
20
Micro-inverse
ohm metres
0
20
3700
102°
3750
103°
3800

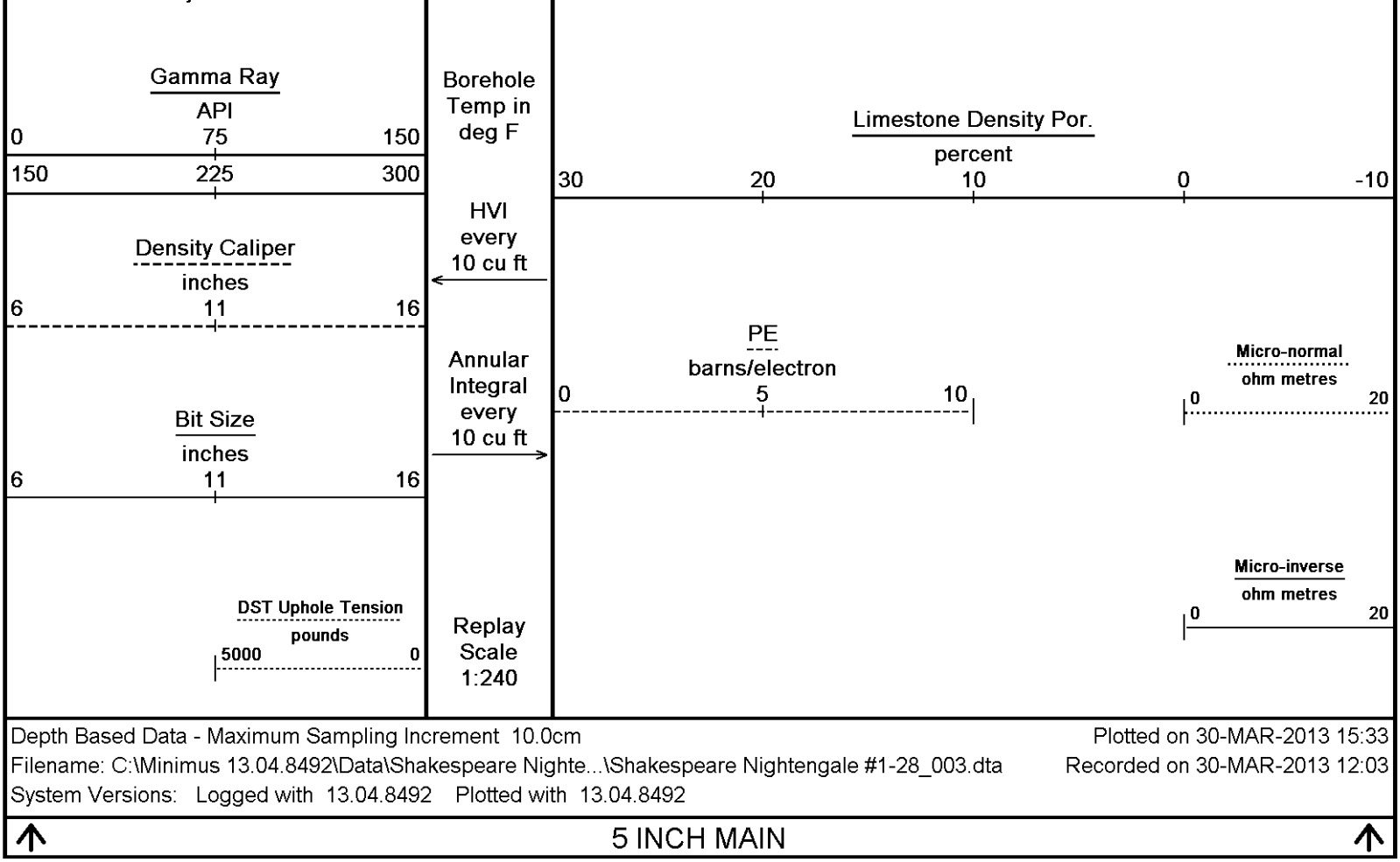

103°
3850
400
103°
3900
103°
3950
103°
4000
200
103°


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por
PE
Limestone Neutron Por
4050
104°
4100
300
104°
4150
104°
4200
105°
4250


105°
4300
106°
4350
200
106°
4400
100
107°
4450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Neutron Por.
Limestone Density Por.
Micro-inverse
Micro-normal


107°
4500
107°
4550
100
108°
4600
108°
4650
109°
4700


108°
4750
107°
4800
4850
4900
FR Gamma Ray
FR Density Caliper
DST Uphole Tension
FR DST Uphole Tension
FR Micro-normal
FR Limestone Neutron Por.
FR PE
FR Limestone Density Por.
Limestone Density Por.
PE
0
0
Depth
in
Feet
Timing Marks
every 60.0 sec
Limestone Neutron Por.
percent
30
20
10
0
-10



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:33
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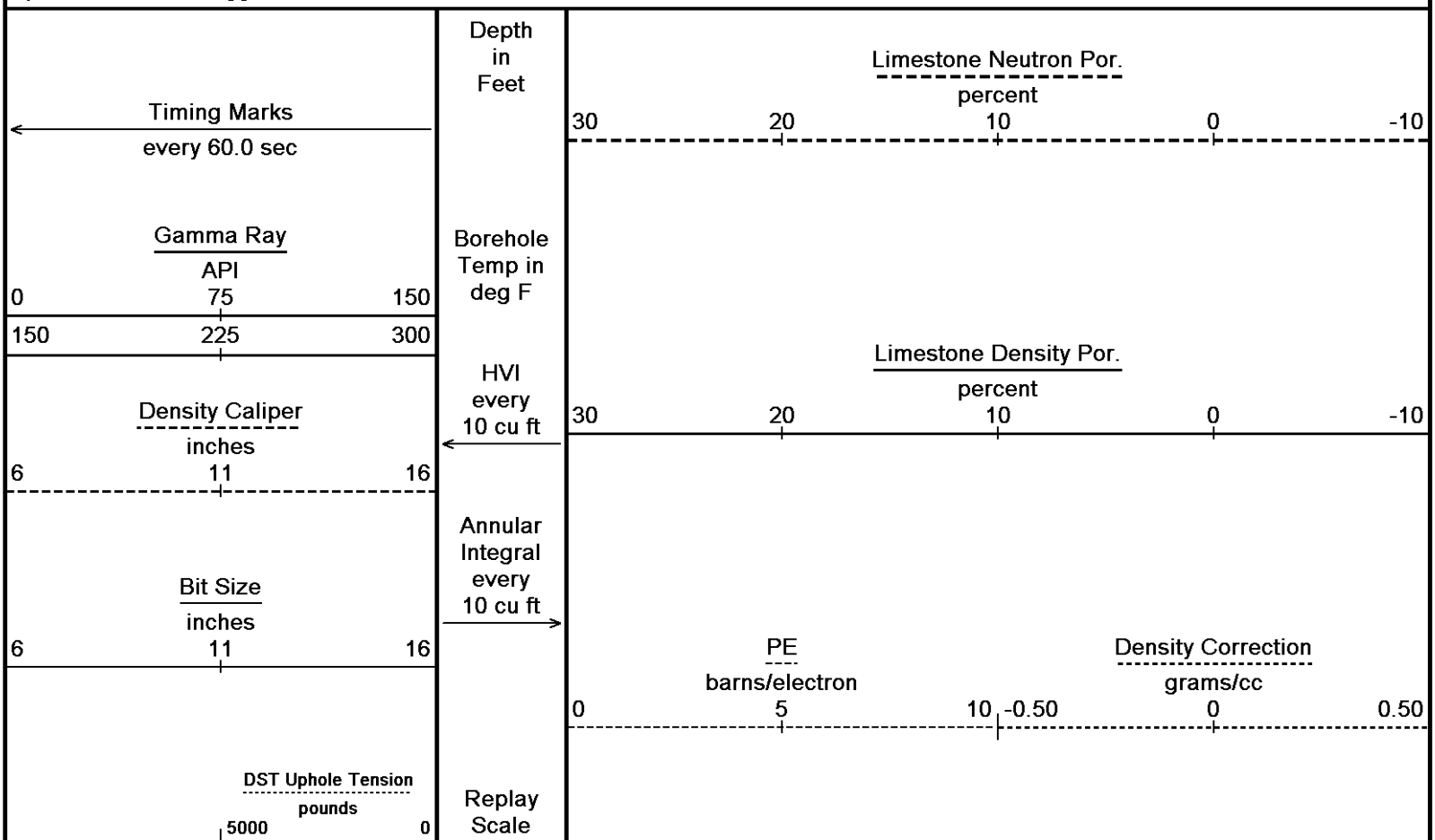
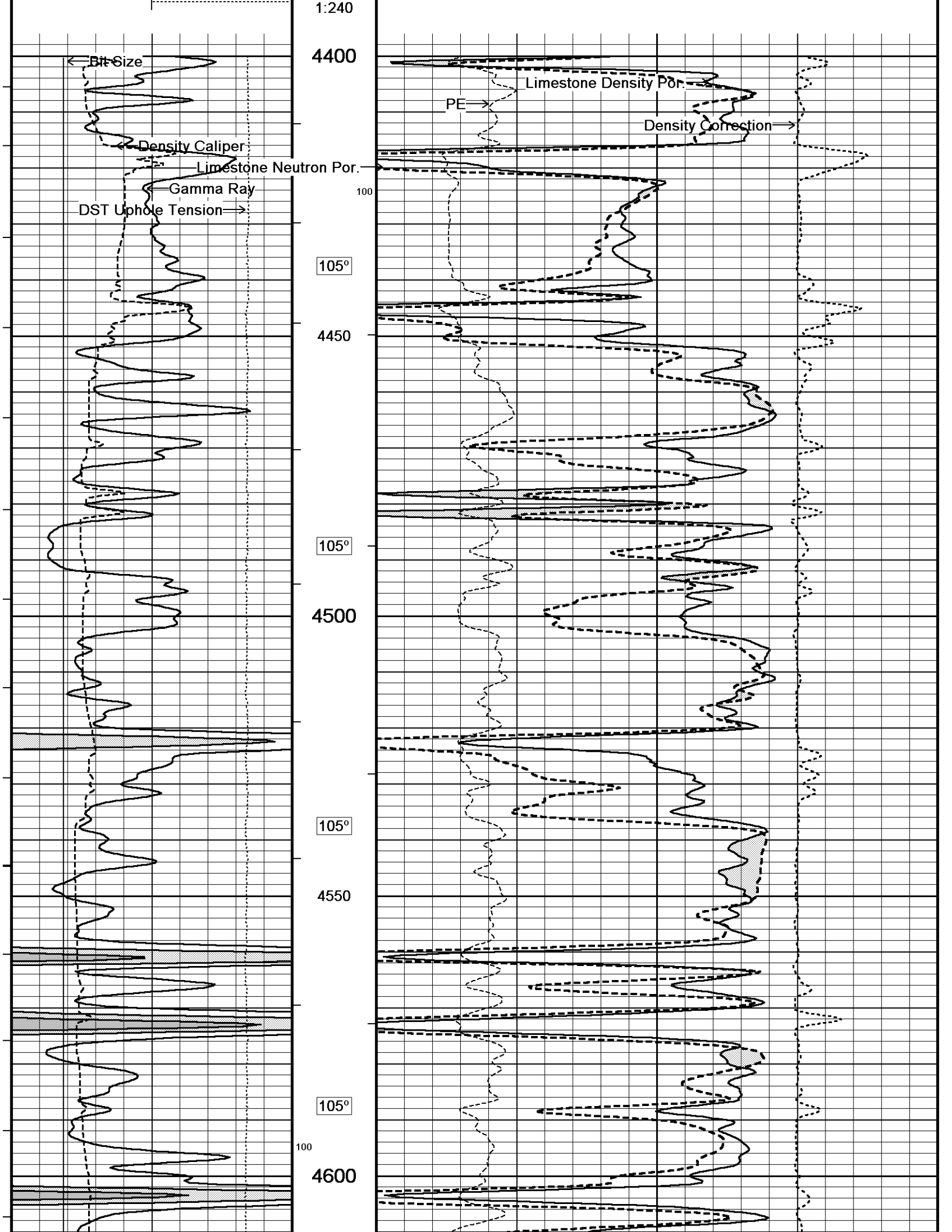
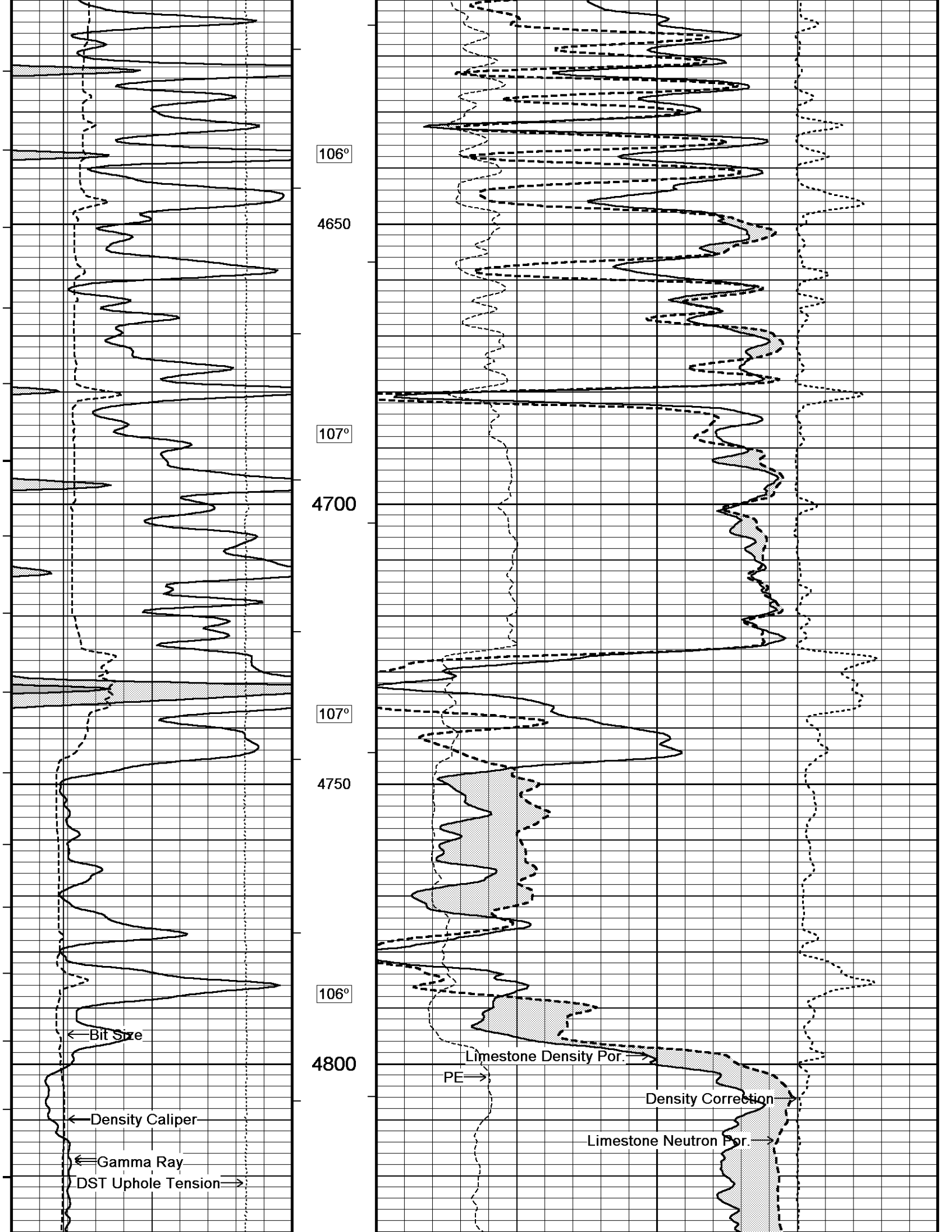
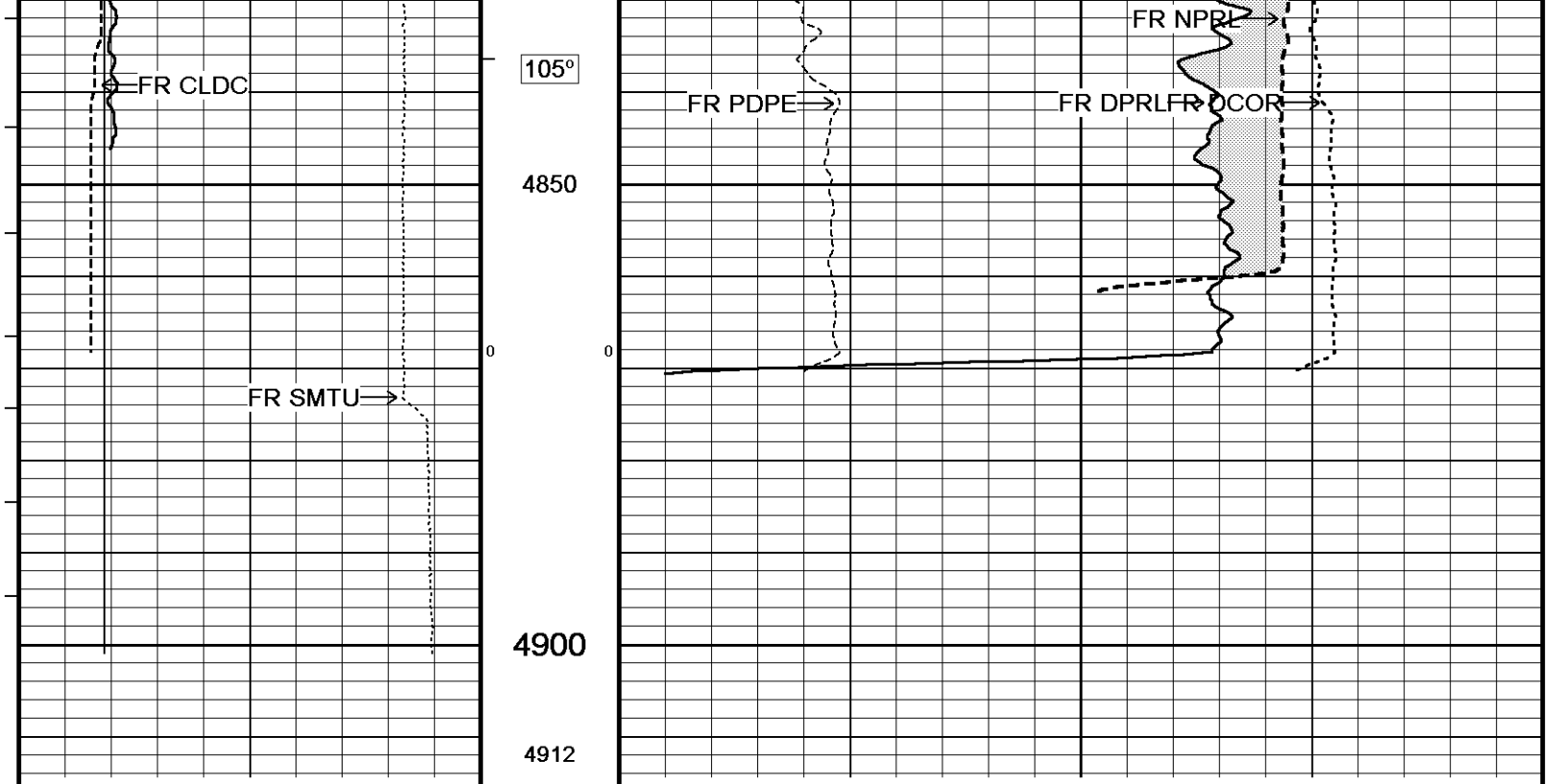
5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_002.dta — Recorded on 30-MAR-2013 11:03
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492




1:240
Bit Size
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Density Correction
4400
4450
4500
4550
4600
105°
105°
105°
100
100


106°
4650
107°
4700
107°
4750
106°
4800
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.



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

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
-0.50 0 0.50

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_002.dta
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Depth Based Data - Maximum Sampling Increment 2.5cm
Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_001.dta
Recorded on 30-MAR-2013 11:03

System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492

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

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

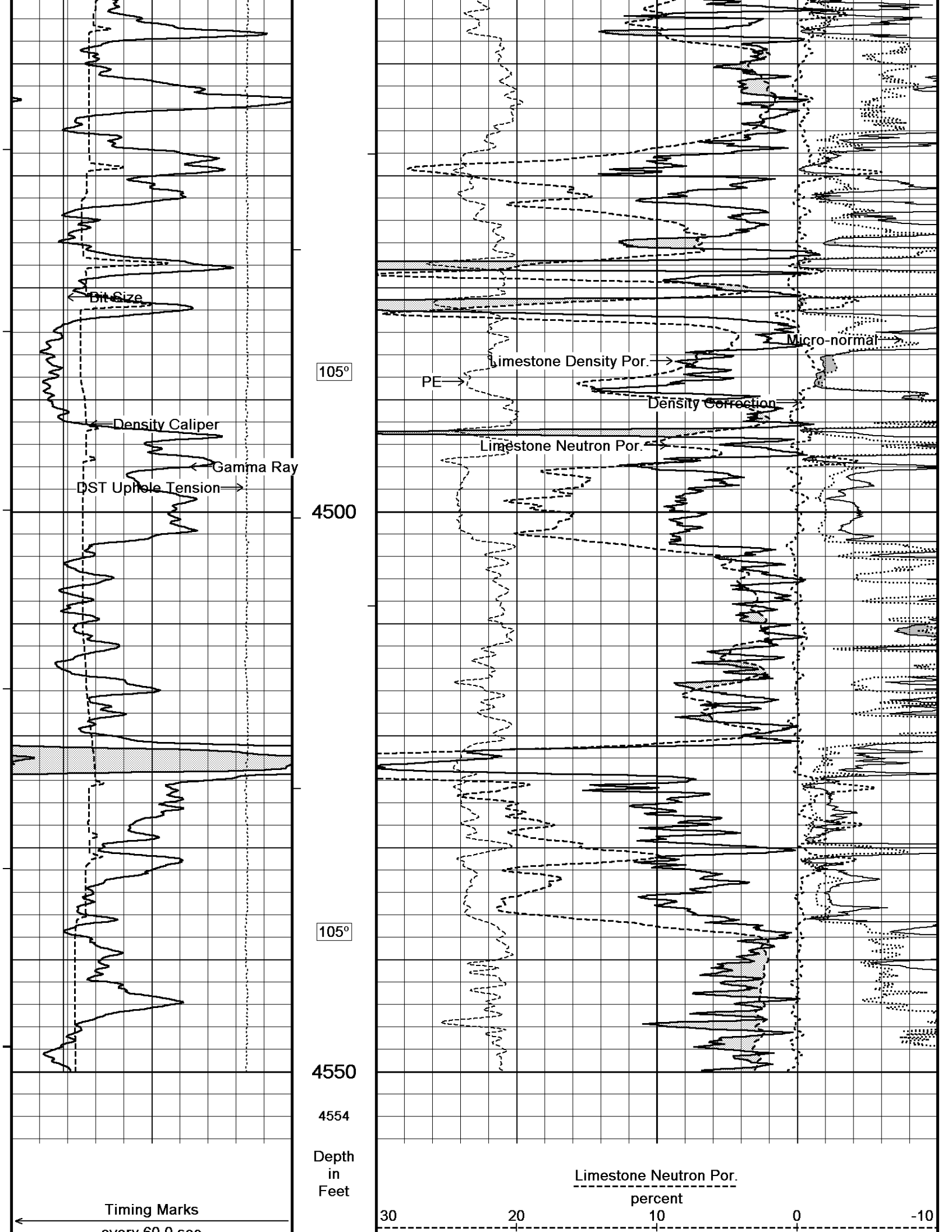
Micro-normal
ohm metres
0 20

Micro-inverse
ohm metres
0 20

4400

105°

4450


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
105°
4500
105°
4550
4554
Depth
in
Feet
Timing Marks
every 60.0 sec
Micro-normal
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
Limestone Neutron Por.
percent
30
20
10
0
-10

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 1:120

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

Depth Based Data - Maximum Sampling Increment 2.5cm — Plotted on 30-MAR-2013 15:33
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Depth Based Data - Maximum Sampling Increment 2.5cm — Plotted on 30-MAR-2013 15:33
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Timing Marks
every 60.0 sec

Depth in Feet

Vectar Processed Density
grams/cc
2 2.25 2.50 2.75 3

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

HVI every 10 cu ft

Density Caliper
inches
6 11 16

Limestone Density Por.
percent
30 20 10 0 -10

Annular Integral every 10 cu ft

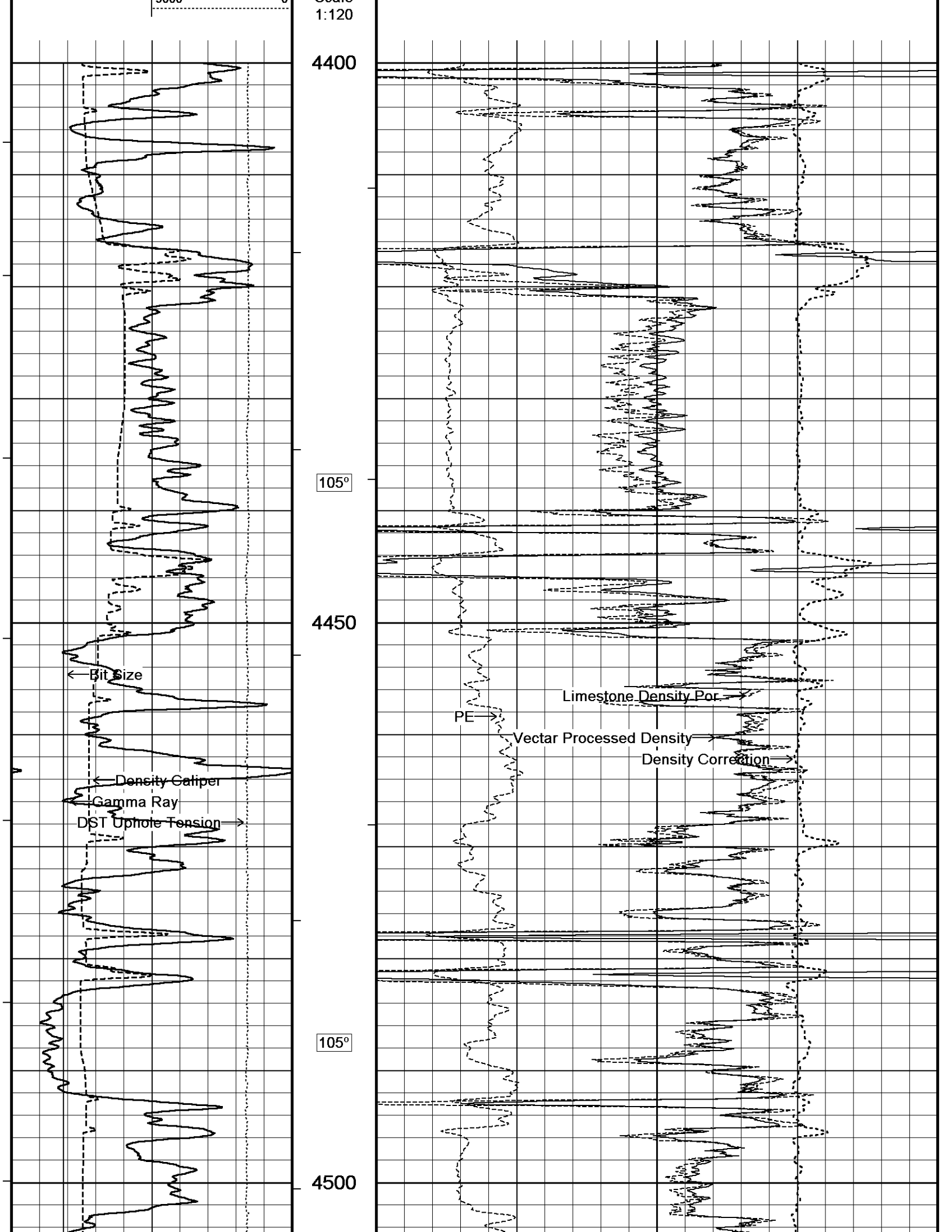
Bit Size
inches
6 11 16

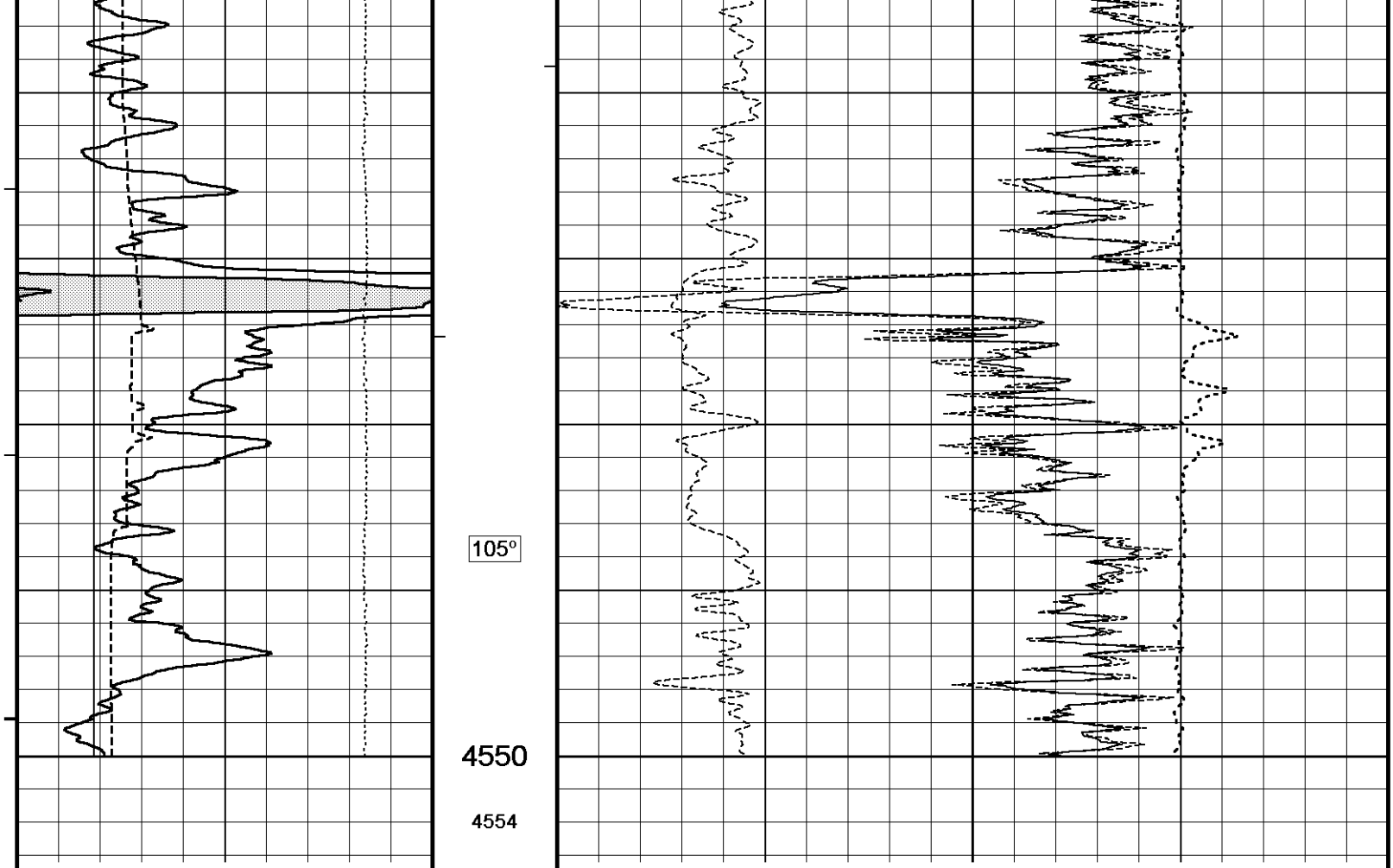
PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.50 0 0.50

DST Uphole Tension
pounds
5000 0

Replay Scale


1:120
4400
105°
4450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por
PE
Vectar Processed Density
Density Correction
105°
4500



105°

4550

4554

Depth in Feet

Timing Marks
every 60.0 sec

Vectar Processed Density
grams/cc
2 2.25 2.50 2.75 3

Gamma Ray
API
0 75 150
150 225 300

Borehole Temp in deg F

HVI every 10 cu ft

Limestone Density Por.
percent
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
-0.50 0 0.50

DST Uphole Tension
pounds
5000 0

Replay Scale 1:120

Depth Based Data - Maximum Sampling Increment 2.5cm
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5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
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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

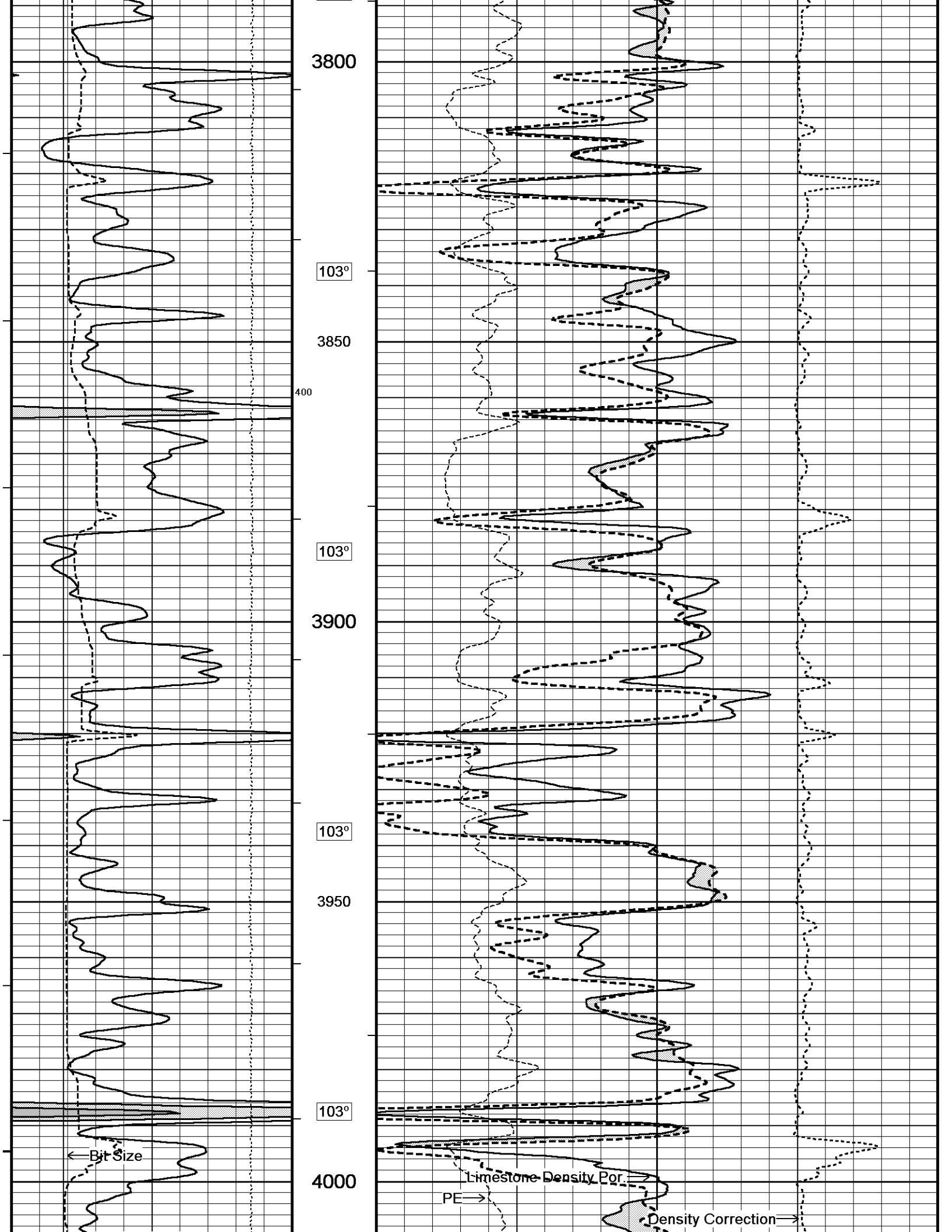
Density Correction
grams/cc
-0.50 0 0.50

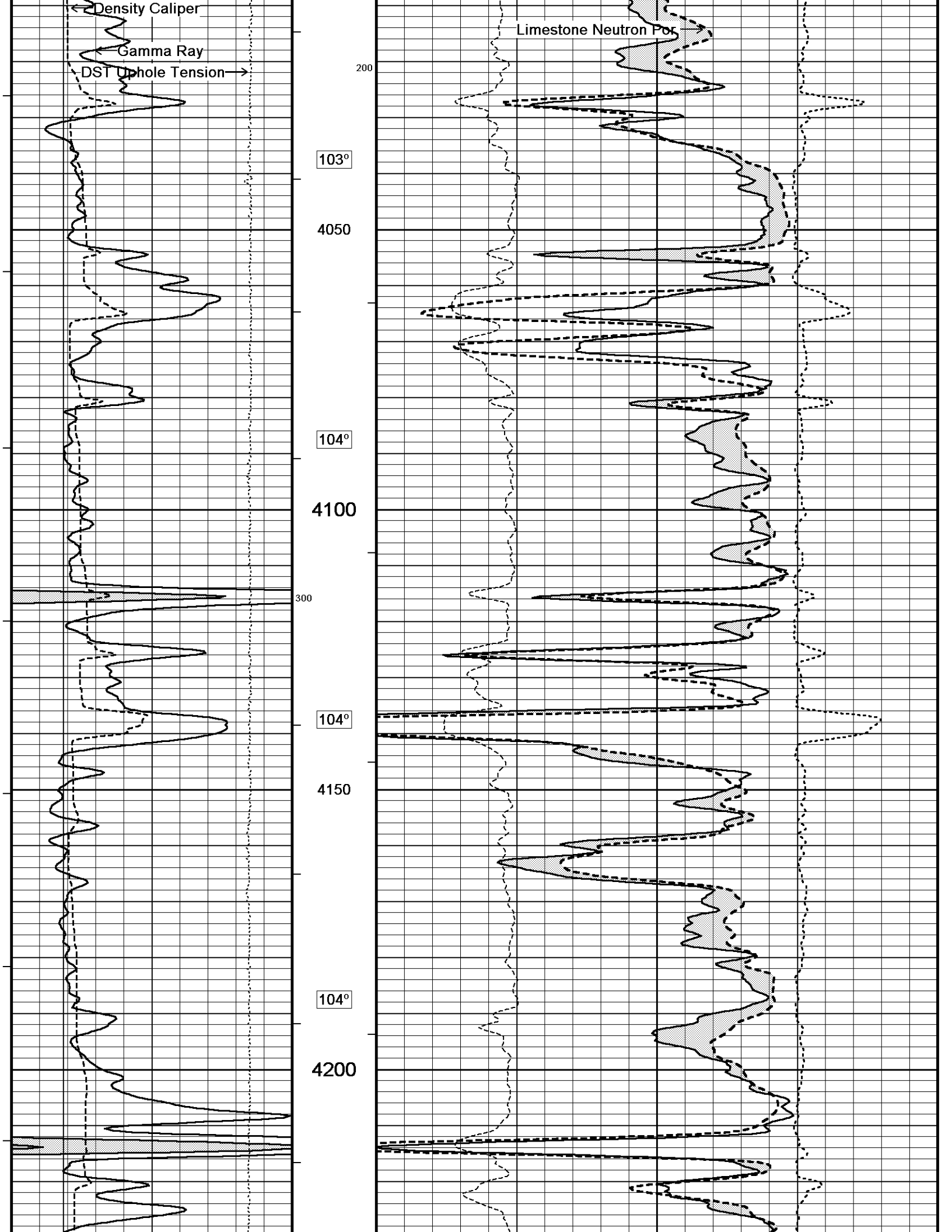
3700

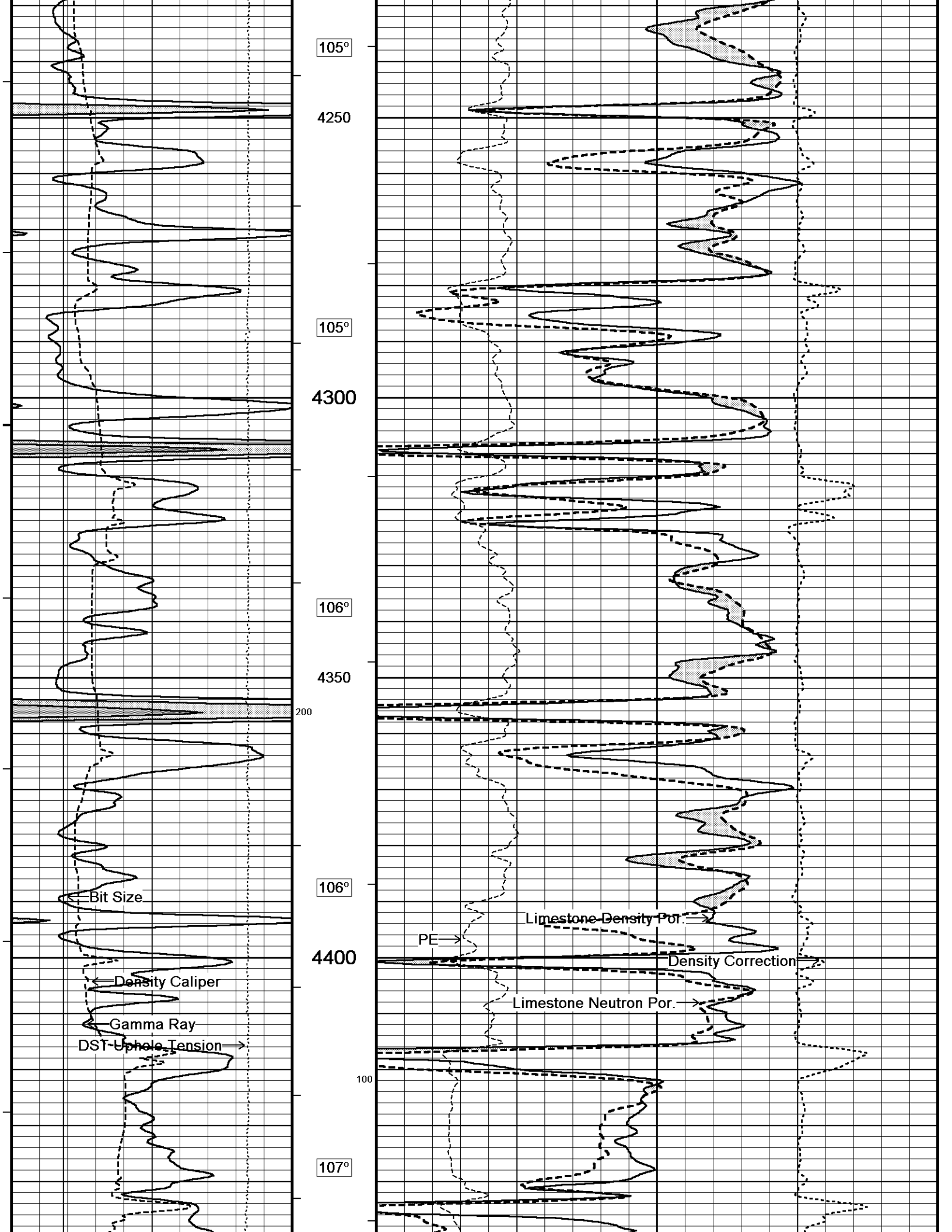
102°

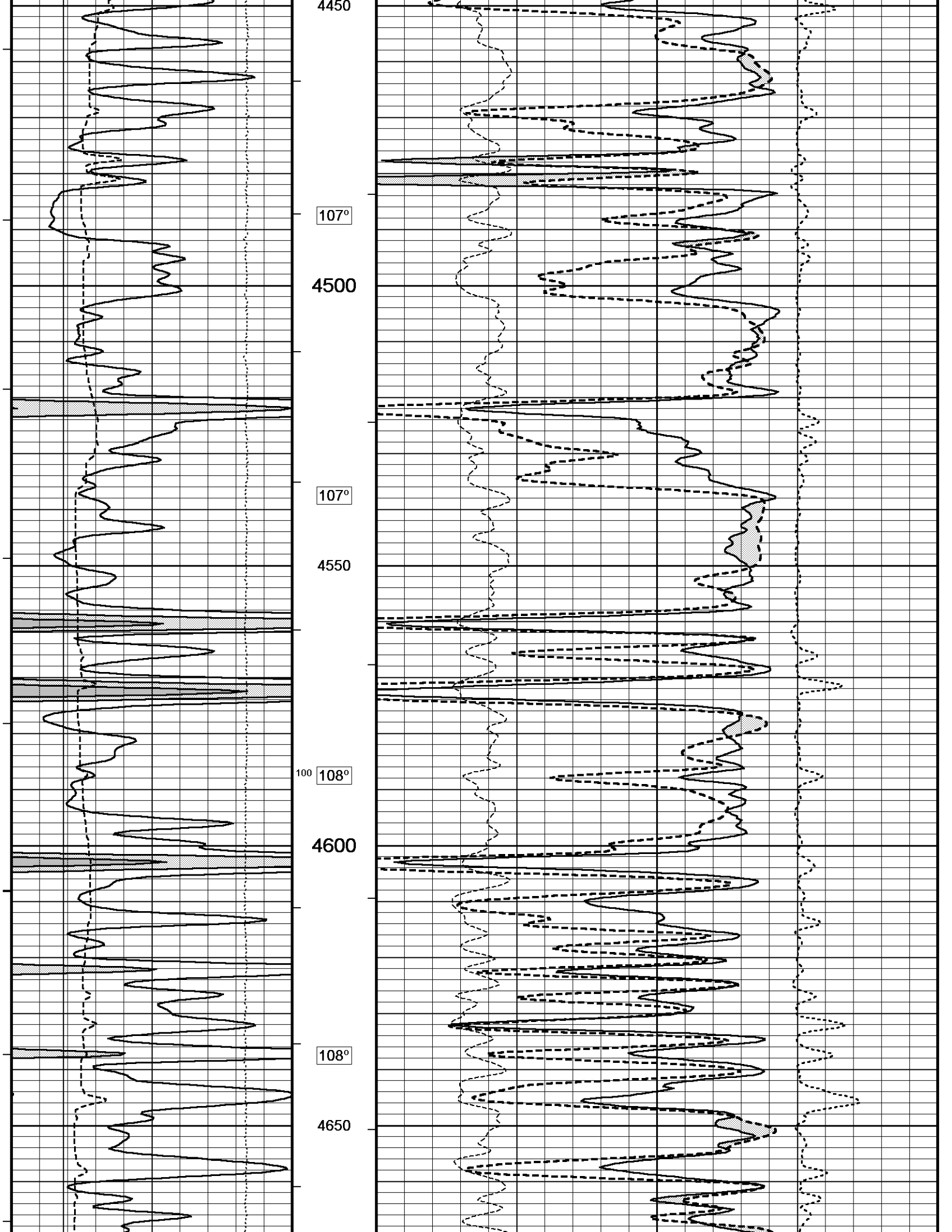
3750

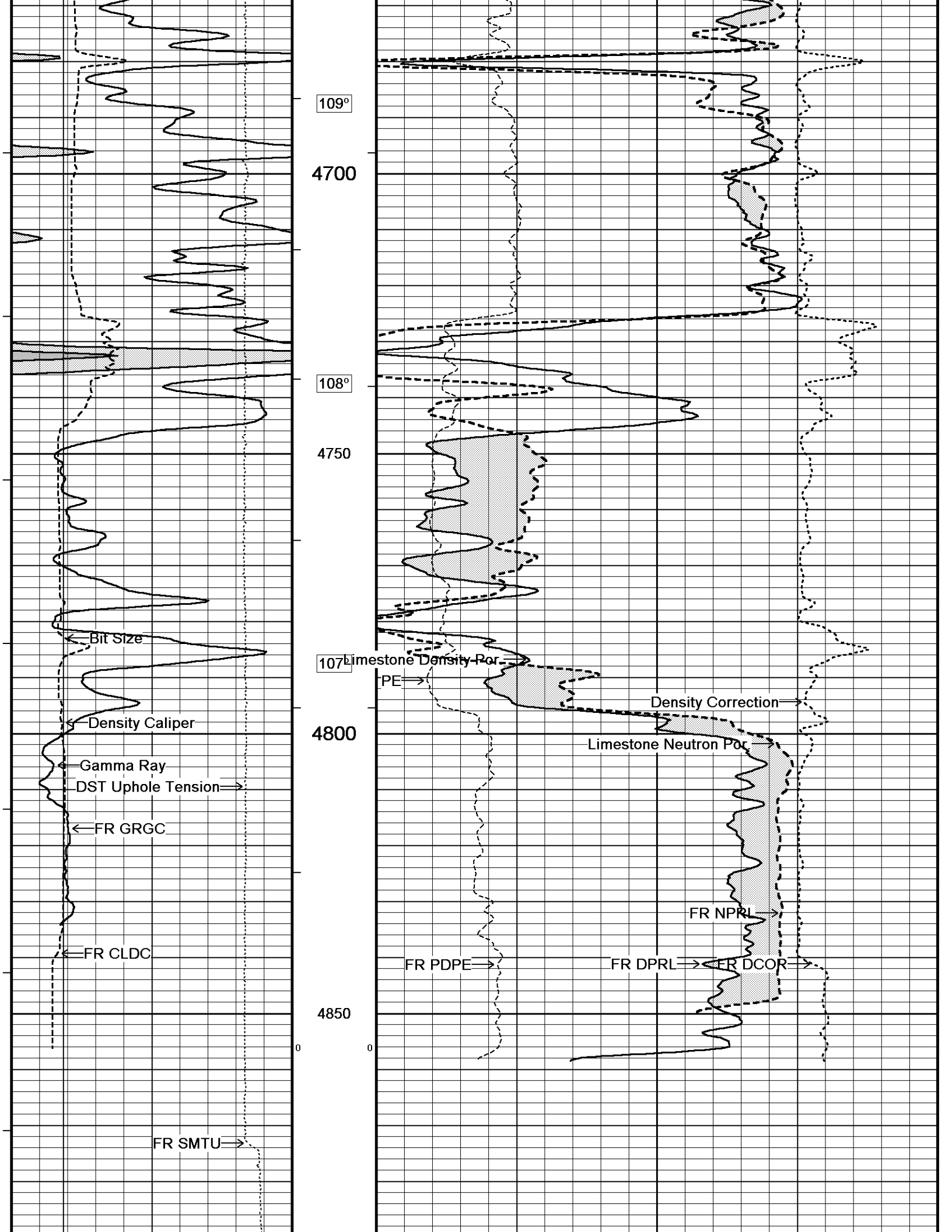
103°

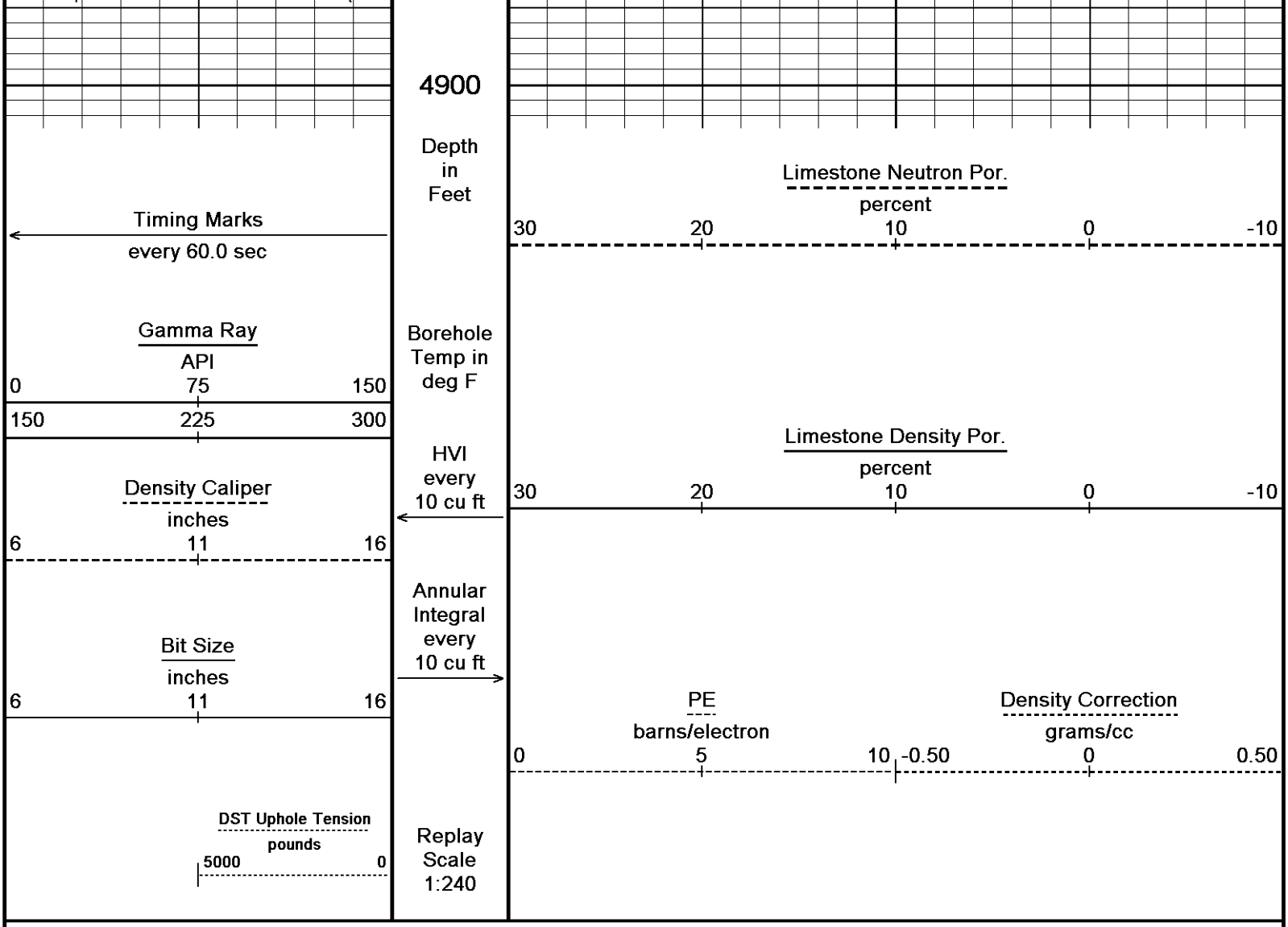

3800
103°
3850
400
103°
3900
103°
3950
103°
4000
Bit Size
Limestone Density Por.
PE
Density Correction


Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Neutron Por
200
103°
4050
104°
4100
300
104°
4150
104°
4200


105°
4250
105°
4300
106°
4350
200
106°
4400
100
107°
Bit Size
Density Caliper
Gamma Ray
DST-Uphole Tension
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.


4450
107°
4500
107°
4550
100
108°
4600
108°
4650


109°
4700
108°
4750
Bit Size
107°
Limestone Density Por
PE
Density Correction
Density Caliper
4800
Limestone Neutron Por
Gamma Ray
DST Uphole Tension
FR GRGC
FR NPRL
FR CLDC
FR PDPE
FR DPRL
FR DCOR
4850
0
0
FR SMTU



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_003.dta — Recorded on 30-MAR-2013 12:03
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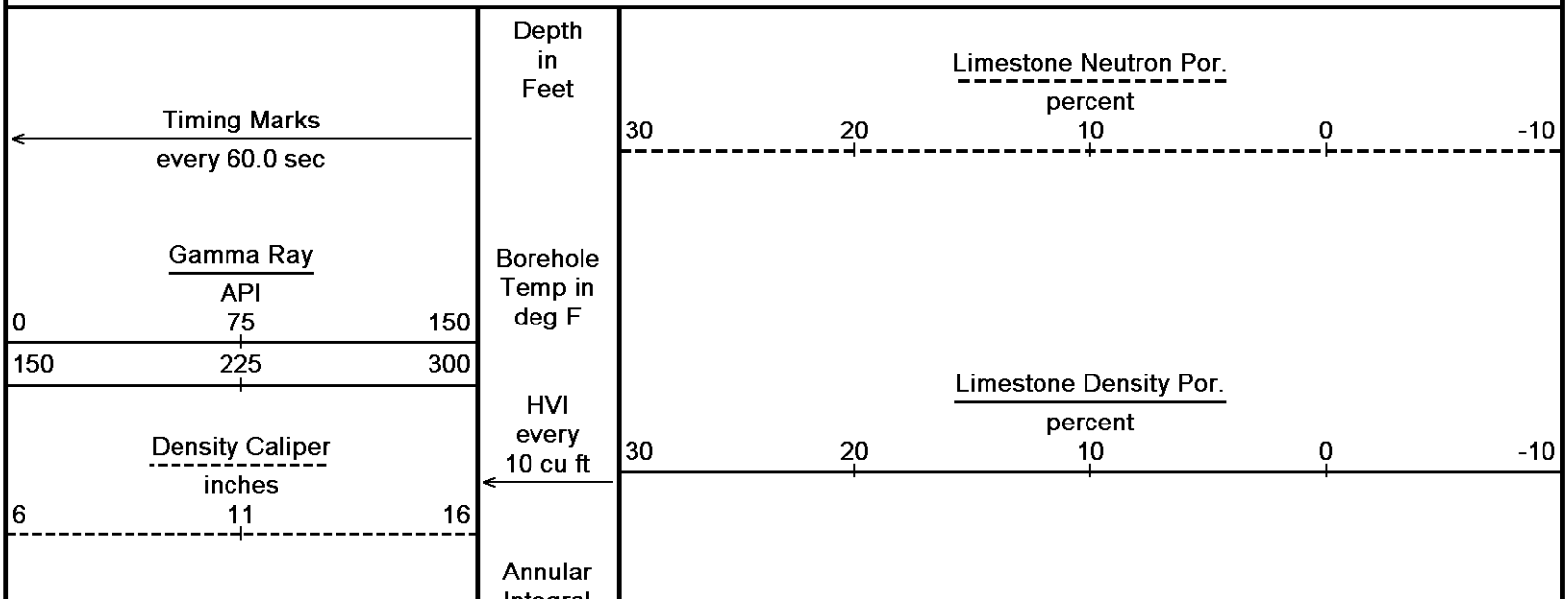
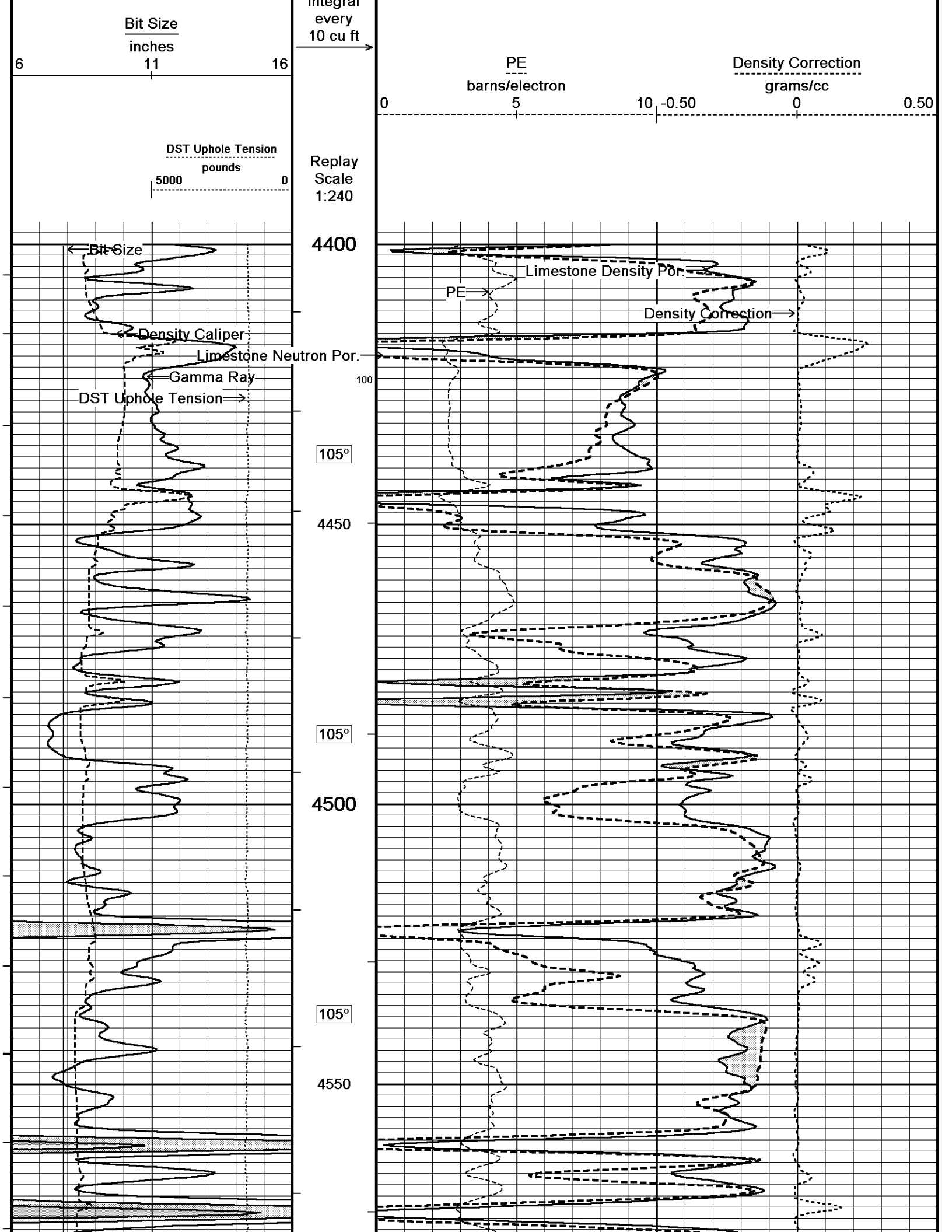
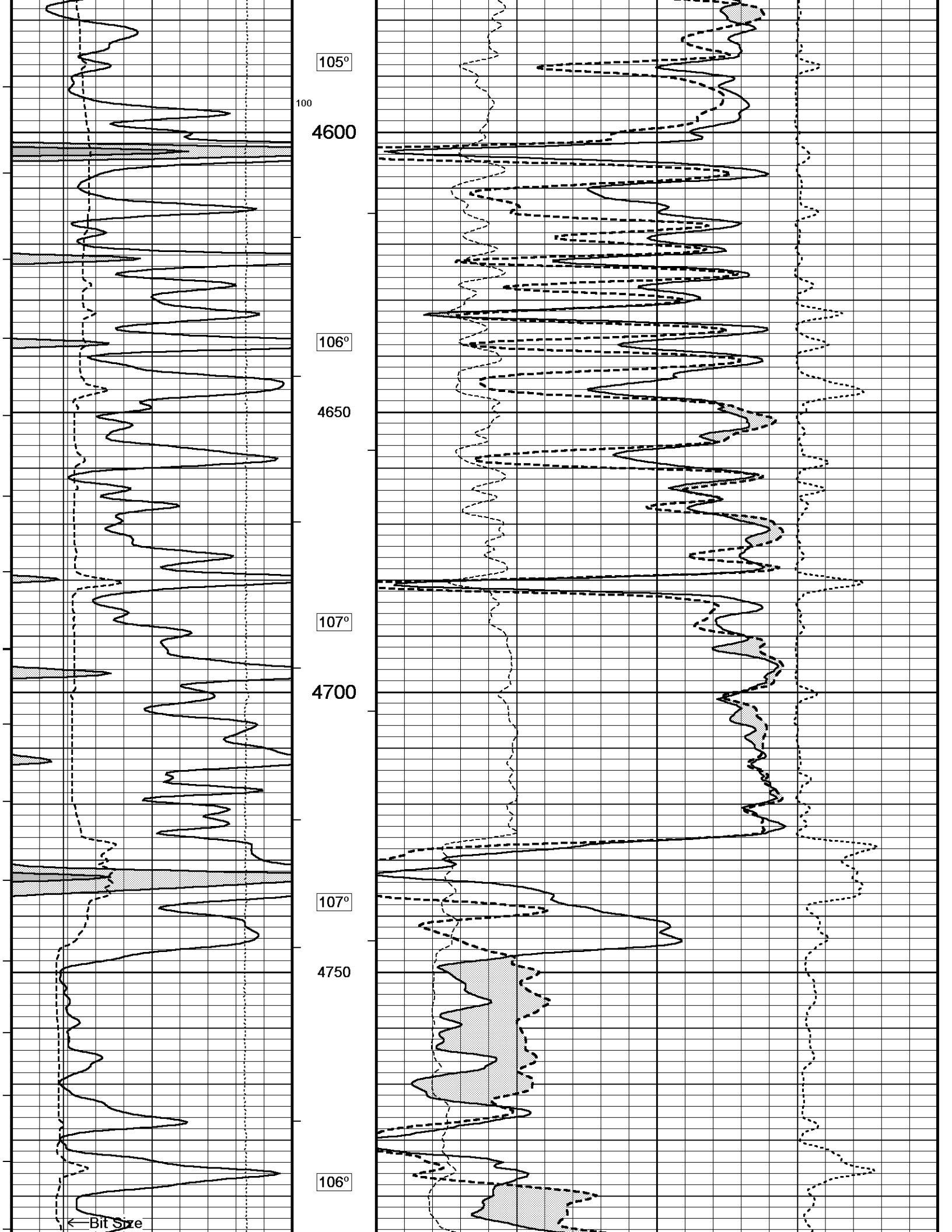
5 INCH MAIN

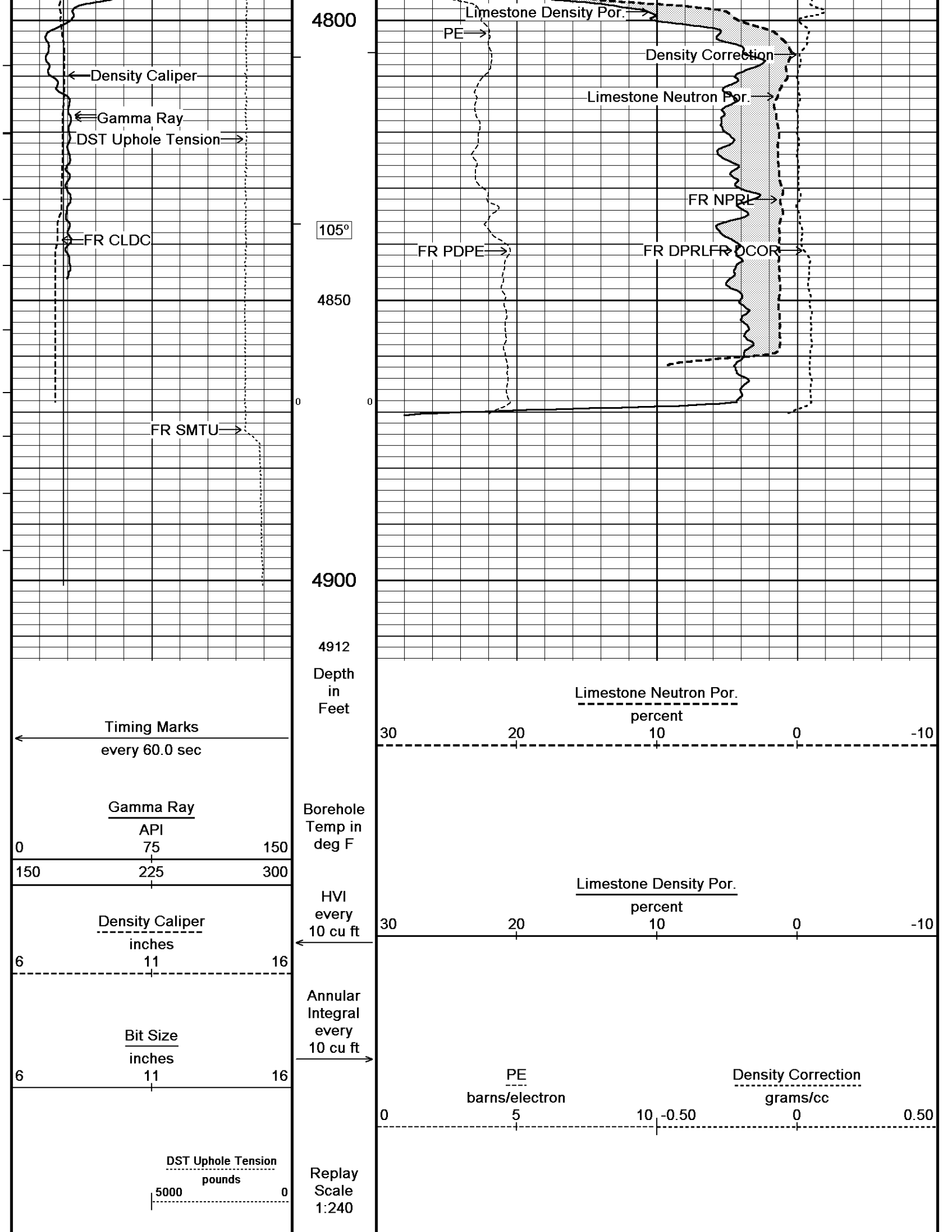
REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 30-MAR-2013 15:33
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Nighte...\Shakespeare Nightengale #1-28_002.dta — Recorded on 30-MAR-2013 11:03
System Versions: Logged with 13.04.8492 Processed with 13.04.8492 Plotted with 13.04.8492




Bit Size
inches
6
11
16
Integral every 10 cu ft
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
4400
4450
4500
4550
105°
105°
105°
100
Bit Size
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Density Correction


105°
100
4600
106°
4650
107°
4700
107°
4750
106°
←Bit Size


Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
Density Caliper
Gamma Ray
DST Uphole Tension
FR NPRL
FR CLDC
105°
FR PDPE
FR DPRL
FR DCOR
FR SMTU
4800
4850
4900
4912
Depth in Feet
Limestone Neutron Por.
percent
30 20 10 0 -10
Timing Marks
every 60.0 sec
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
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

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\Shakespeare Nightengale #1-28\Shakespeare Nightengale #1-28_002.dta

General Constants All 000

Last Edited on 30-MAR-2013,09:17

General Parameters

Mud Resistivity	0.490	ohm-metres
Mud Resistivity Temperature	72.000	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	Base Density Porosity	
Resistivity used	Array Ind. Six Res Rt	
RWA Constant A	1.000	
RWA Constant M	2.000	

Down-hole Tension Calibration SMS 0

Field Calibration on 29-MAR-2013 11:57

Reading No	Measured	Calibrated (lbs)
1	13764.62	0.00
2	14299.14	460.00

Gamma Calibration MCG-B 34

Field Calibration on 28-MAR-2013 11:13

	Measured	Calibrated (API)
Background	71	49
Calibrator (Gross)	1120	774
Calibrator (Net)	1049	725

Gamma Constants MCG-B 34

Last Edited on 30-MAR-2013,09:13

Gamma Calibrator Number	GR38	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-B 34

Field Calibration on 29-MAR-2013,12:58

	Measured	Calibrated (mV)
Reference 1	101.0	100.0
Reference 2	-99.0	-100.0

High Resolution Temperature Calibration MCG-B 34

Field Calibration on 29-MAR-2013,12:58

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

High Resolution Temperature Constants MCG-B 34

Last Edited on 29-MAR-2013,12:58

Pre-filter Length	11

Micro Laterolog Calibration MMR-A 11

Base Calibration on 31-DEC-1999 00:00
Field Check on 31-DEC-1999 00:00

Base Calibration

	Measured		Calibrated (ohm-m)	
	Ref 1	Ref 2	Ref 1	Ref 2

	0.0	0.0	0.0	0.0

Base Check (ohm-m)	Field Check (ohm-m)
0.0	0.0

Micro Laterolog Constants MMR-A 11

Last Edited on

Pad Type	6 in Solid Nylon B23059	
Micro Laterolog K Factor	0.0128	
Standoff Offset	0.0000	inches

Mudcake Thickness Correction Constants

Mud Cake Source	Constant Value	
Mud Cake Thickness	0.4000	inches
Mud Cake Thickness Caliper		
Mud Cake Resistivity	0.1500	ohm-m
Mud Cake Resistivity Temp.	20.00	Degrees C
Mud Cake Resistivity Source	Constant Value	
Temp. Source Rmc Correc.	MCG External Temperature	

Micro Normal and Micro Inverse Calibration MMR-A 11

Base Calibration on 08-MAR-2013 17:36
Field Check on 28-MAR-2013 11:05

Base Calibration

	Measured		Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.4	60.0	5.0	25.0
Micro Inverse	15.5	77.5	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	76.3	76.3
Micro Inverse	58.7	58.7

Micro Normal and Micro Inverse Constants MMR-A 11

Last Edited on 05-NOV-2012,13:54

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	0.0000	inches

Caliper Calibration MMR-A 11

Base Calibration on 08-MAR-2013 17:30
Field Calibration on 28-MAR-2013 11:03

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13647	5.98
2	16765	7.97
3	19976	9.86
4	23885	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.02	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 13-MAR-2013 16:17
Field Check on 28-MAR-2013 11:17

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2980	92	3714	110
Ratio	32.499		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1736	2464
Ratio	0.705	

Field Check

	Calibrated (cps)	
	1736	2470
Ratio	0.688	

Neutron Constants MDN-A.B 65

Last Edited on 29-MAR-2013,11:23

Neutron Source Id	PN-521

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	None	
Formation Pressure	0.00	kpsi
Temperature Source	None	
Temperature	20.00	degrees F
Mud Salinity	0.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352

Base Calibration on 16-JAN-2013 10:20
Field Check on 28-MAR-2013 11:02

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	964.3	126.8
Base Check		281.2
Field Check		281.5

FE Constants MFE-B.J 352

Last Edited on 29-MAR-2013,11:23

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

Sonic Constants MSS-C.K 330

Last Edited on 29-MAR-2013,11:23

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft
Sonde Mode	Compensated	
Hole Type	Open Hole	

Sonde Parameters

	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A

Peak Amplitude Source N/A

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing N/A

Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A
N/A	N/A	N/A	
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A
N/A	N/A	N/A	

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
3' Waveform Filter	N/A	
4' Waveform Filter	N/A	
5' Waveform Filter	N/A	
6' Waveform Filter	N/A	
Semblance Level	N/A	
Semblance Window Width	N/A	micro-sec
Sonic 1 Despiker	N/A	N/A
Sonic 2 Despiker	N/A	N/A

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 13-DEC-2012,10:54

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

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 29-MAR-2013,12:59

Pre-filter Length	11

Induction Calibration MAI-A.A 45

Base Calibration on 26-JUL-2012,09:22
Field Check on 28-MAR-2013 11:01

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	14.4	472.6	9.3	966.2
2	5.7	374.0	7.6	821.4
3	3.4	261.2	5.2	566.0
4	2.5	133.9	2.6	279.2

Array Temperature	78.4	Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.3	3850.9
2			31.7	3628.9
3			28.6	3048.9
4			18.3	2078.8
Deep			16.0	1910.7
Medium			42.5	4060.0
Shallow			49.5	5482.7

Array Temperature	58.1	Deg F

Induction Constants MAI-A.A 45

Last Edited on 29-MAR-2013,12:59

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	2.500	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 28-MAR-2013 13:43
Field Calibration on 28-MAR-2013 13:47

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16832	3.99
2	24690	5.98
3	33328	7.97
4	41600	9.86
5	50976	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.02	5.98

Photo Density Calibration MPD-B 31

Base Calibration on 13-MAR-2013 15:17
Field Check on 28-MAR-2013 13:51

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46119	23502	59556	30836
Reference 2	19149	1933	24941	2541

Field Check at Base

681.1	838.4

Field Check

679.6	841.1

PE Calibration

Base Calibration		Measured		Calibrated
	WS	WH	Ratio	Ratio
Background	125	604		
Reference 1	19219	46004	0.421	0.371
Reference 2	5674	19062	0.301	0.272

Field Check at Base

125.1	603.7

Field Check

125.6	602.3

Density Constants MPD-B 31

Last Edited on 30-MAR-2013 09:12

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	1.11	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 13.04.8492\Data\Shakespeare Nightengale #1-28\Shakespeare Nightengale #1-28_002.dta

Compact Comms Gamma
MCG-B 34 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 MNRL - MMR MicroLog Normal
45.76 ft MINV - MMR MicroLog Inverse

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

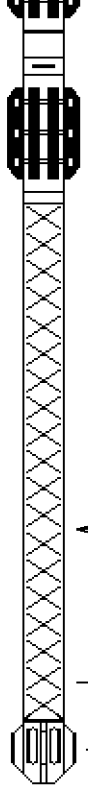
Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

26.24 ft FEFE - Shallow FE

Compact Sonic
MSS-C.K 330 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

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

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



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

Total Length: 61.30 ft Weight: 456.4 lb

All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL COMPANY
WELL	NIGHTINGALE #1-28
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	UNITED STATES / KANSAS

Elevation Kelly Bushing	3140.00	feet	First Reading	4841.00	feet
Elevation Drill Floor	3138.00	feet	Depth Driller	4875.00	feet
Elevation Ground Level	3130.00	feet	Depth Logger	4873.00	feet

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COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG