



Weatherford[®]

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY				SHAKESPEARE OIL CO., INC.			
WELL				ORTEGA #1-25			
FIELD				WILDCAT			
PROVINCE/COUNTY				SCOTT			
COUNTRY/STATE				U.S.A. / KANSAS			
LOCATION				2000' FNL & 2287' FEL			
SEC	TWP	RGE	Other Services		MSS		
25	16S	34W	MAI/MFE				
API Number		15-171-21017					
Permit Number							
Permanent Datum GL, Elevation 3095 feet					Elevations: KB 3105.00 DF 3103.00 GL 3095.00		
Log Measured From KB							
Drilling Measured From KB							
Date	24-FEB-2014						
Run Number	ONE						
Service Order	4558-80419553						
Depth Driller	4870.00			feet			
Depth Logger	4868.00			feet			
First Reading	4836.00			feet			
Last Reading	3800.00			feet			
Casing Driller	265.00			feet			
Casing Logger	263.00			feet			
Bit Size	7.875			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.20	lb/USg	58.00	CP			
PH / Fluid Loss	10.50		10.00	ml/30Min			
Sample Source	FLOWLINE						
Rm @ Measured Temp	0.41	@ 76.0	ohm-m				
Rmf @ Measured Temp	0.33	@ 76.0	ohm-m				
Rmc @ Measured Temp	0.49	@ 76.0	ohm-m				
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.29	@109.0	ohm-m				
Time Since Circulation	5 HOURS						
Max Recorded Temp	109.00	deg F					
Equipment / Base	13057		LIB				
Recorded By	ADAM SILL			JEFFREY RANDLE			
Witnessed By	TIM PRIEST						
JOB #	LB14-053						

BOREHOLE RECORD					Last Edited: 24-FEB-2014 07:27
Bit Size inches		Depth From feet		Depth To feet	
7.875		265.00		4870.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	265.00	24.00	

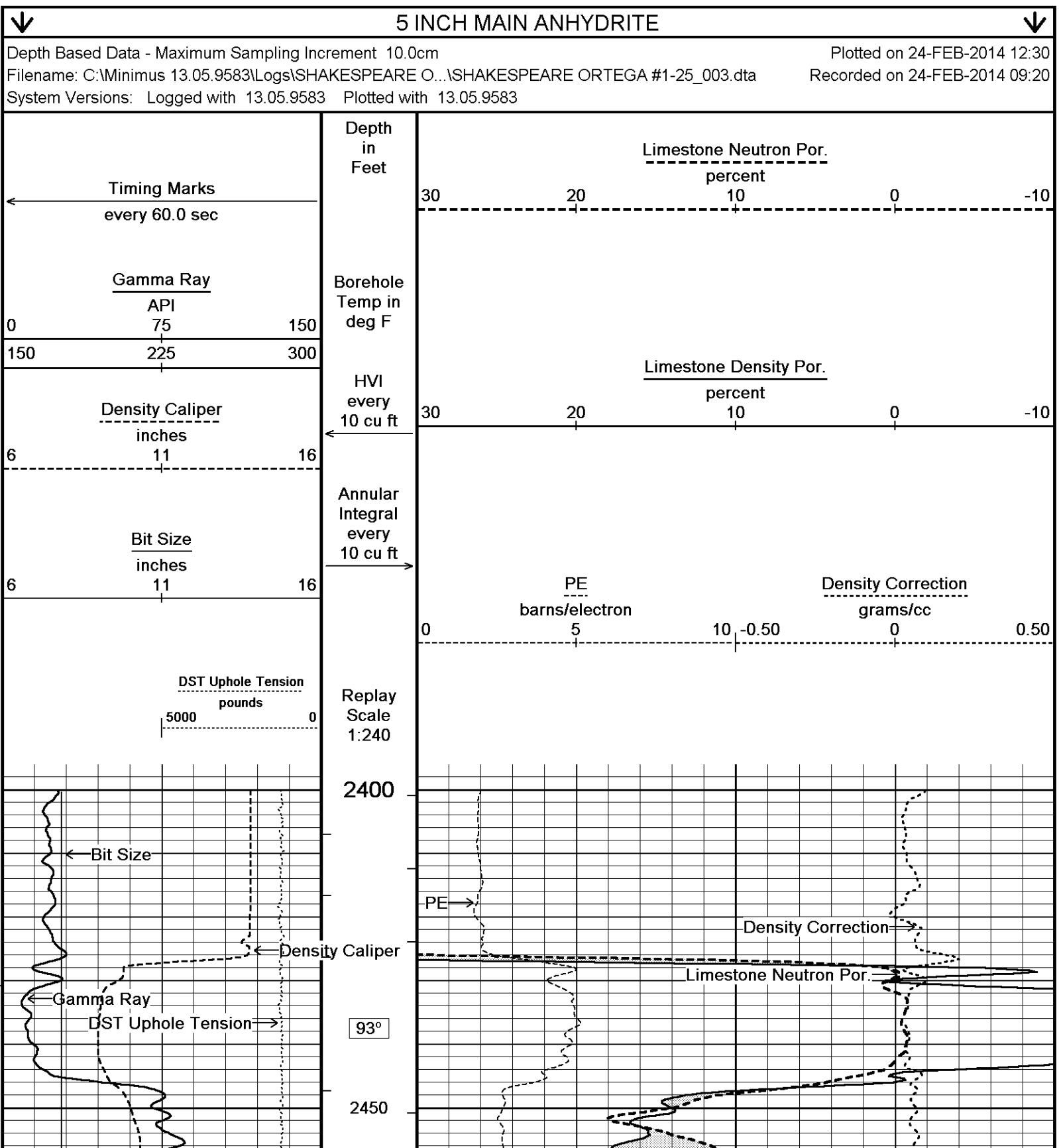
REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583.
- RUN 1: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL ECCENTRALISER USED ON MDN 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE 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 SURFACE CASING: 2253 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 212 CU. FT.

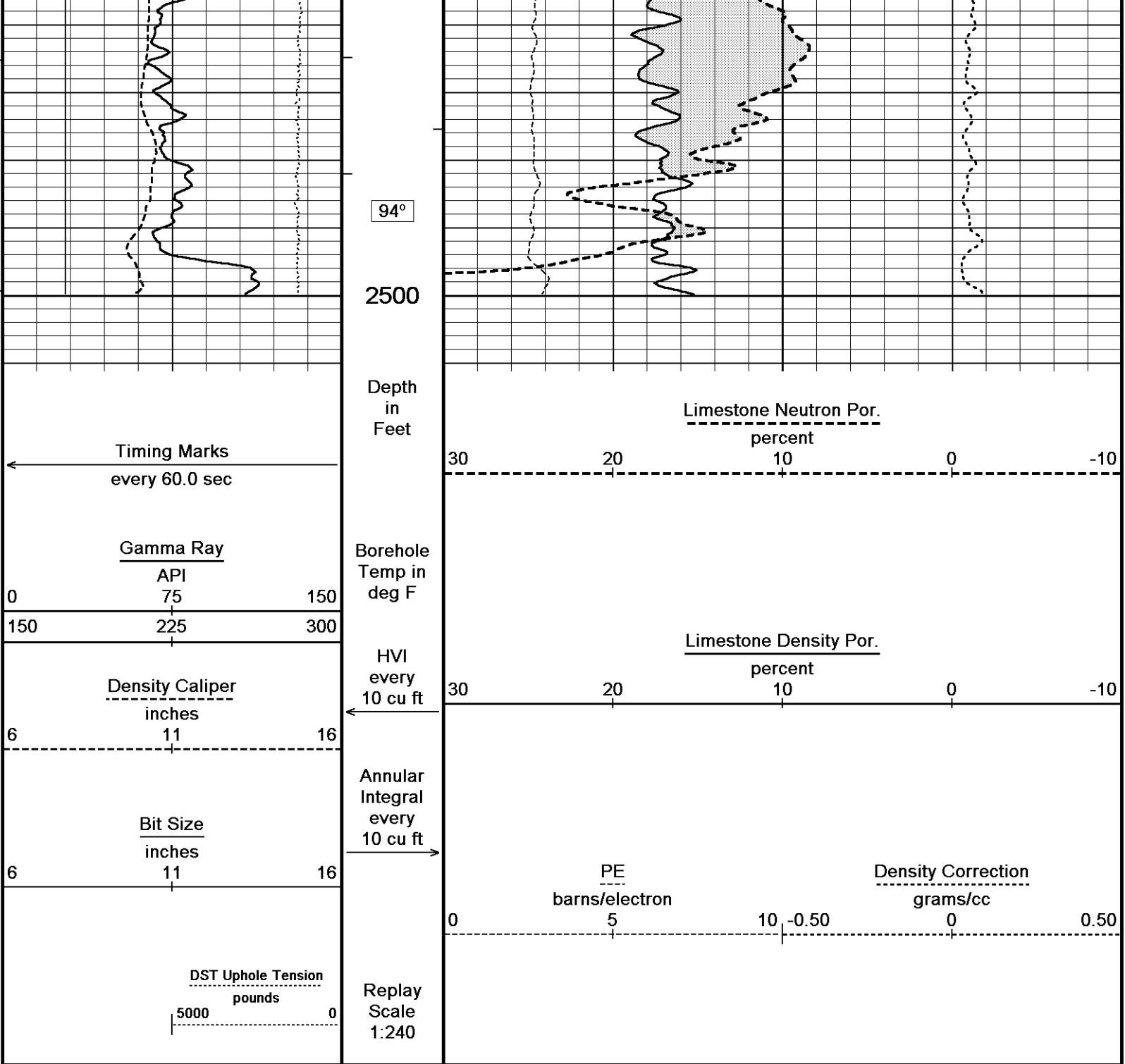
- RIG: HD DRILLING #2

- ENGINEER: A. SILL, J. RANDLE.

- OPERATOR(S): K. RINEHART.

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions in our price schedule.





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...SHAKESPEARE ORTEGA #1-25_003.dta
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

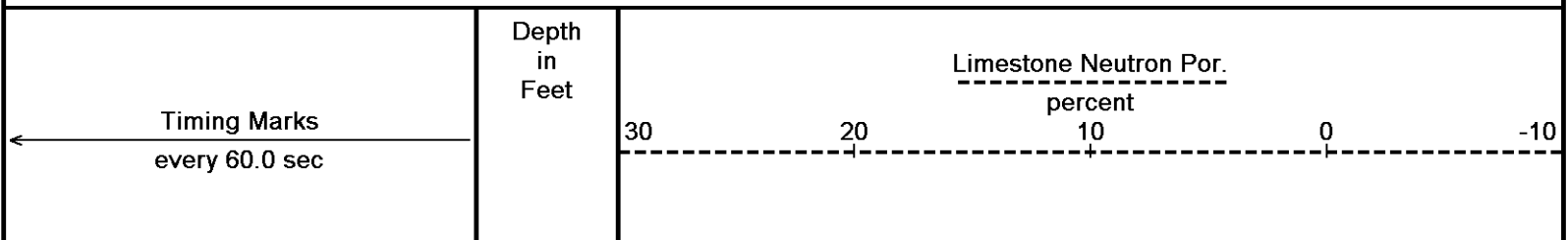
Plotted on 24-FEB-2014 12:30
Recorded on 24-FEB-2014 09:20

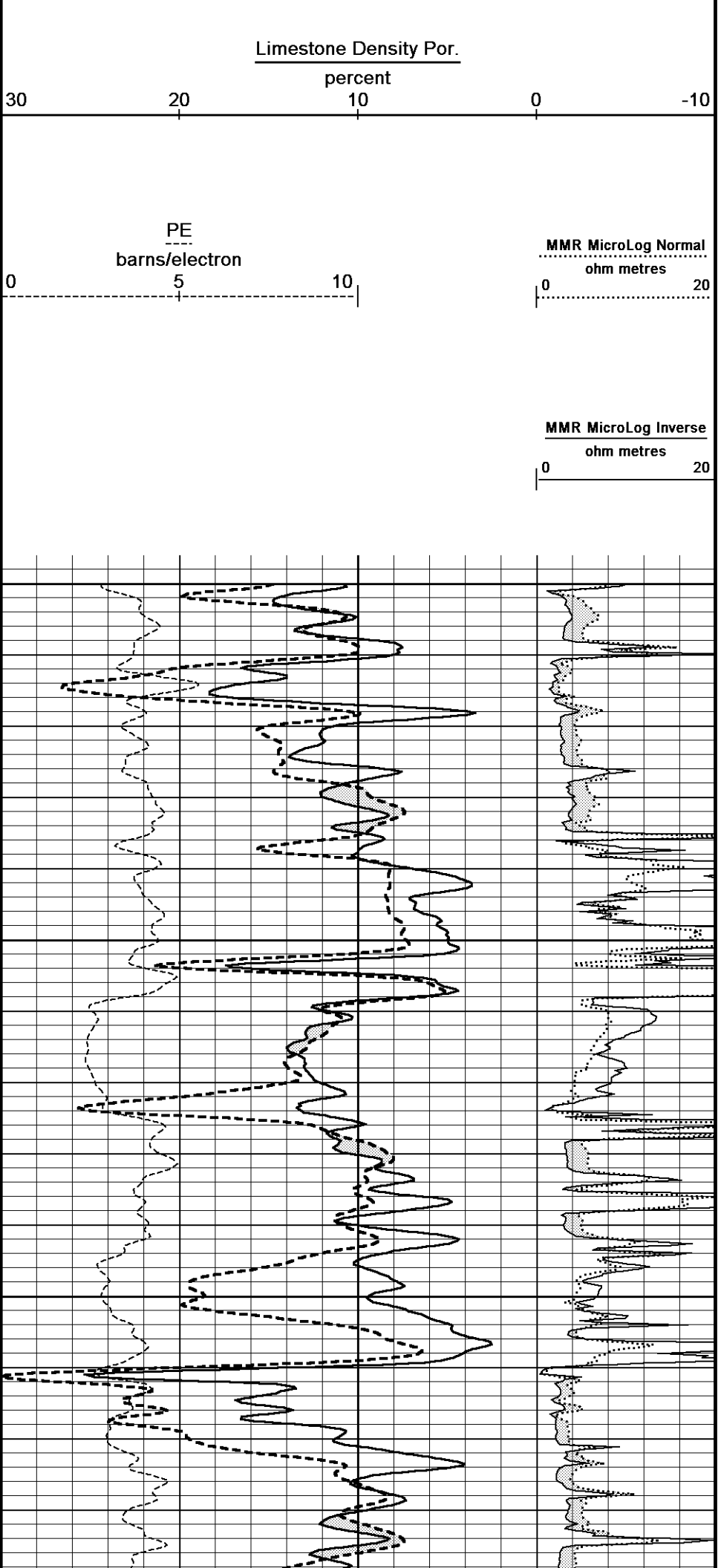
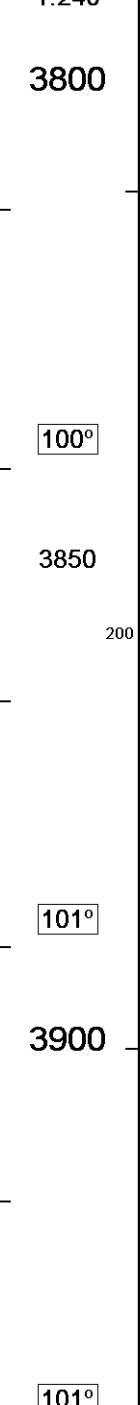
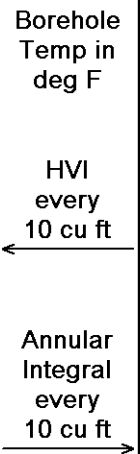
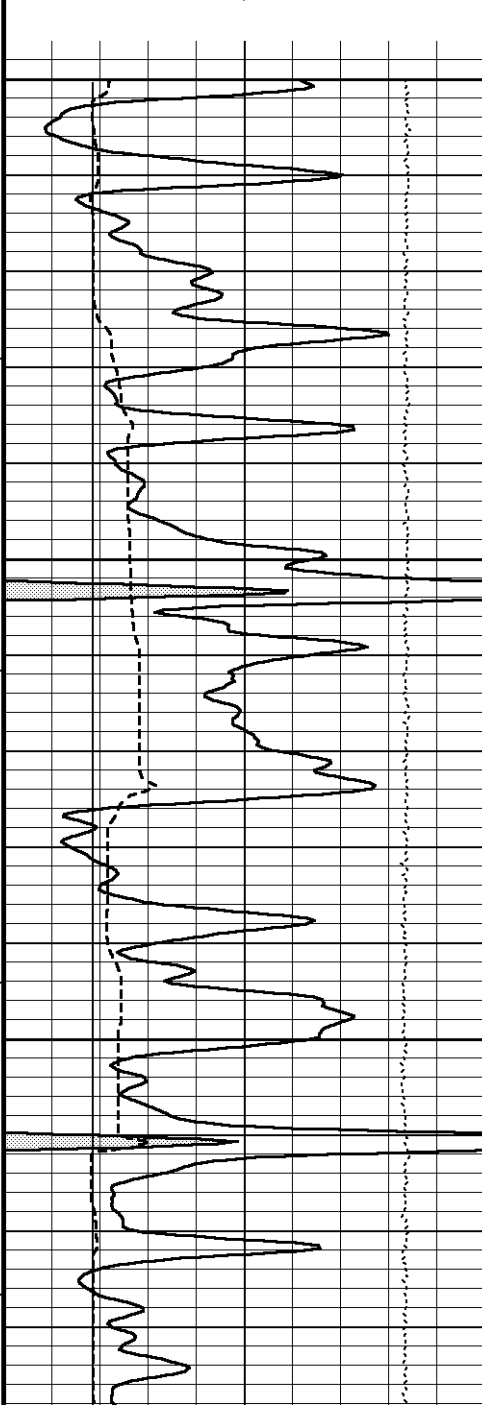
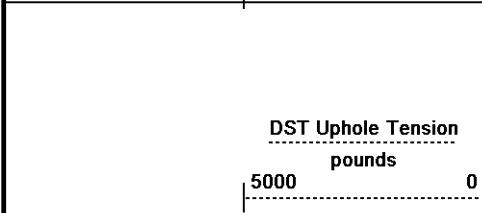
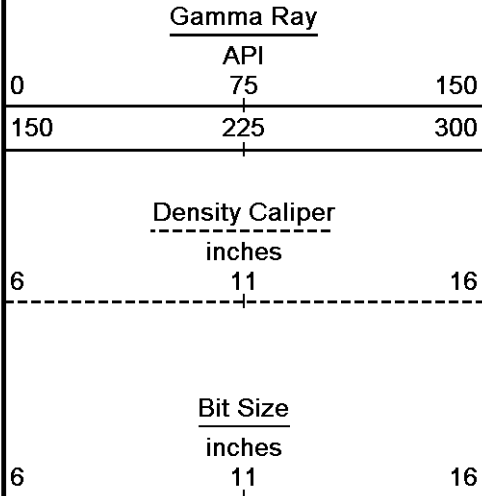
5 INCH MAIN ANHYDRITE

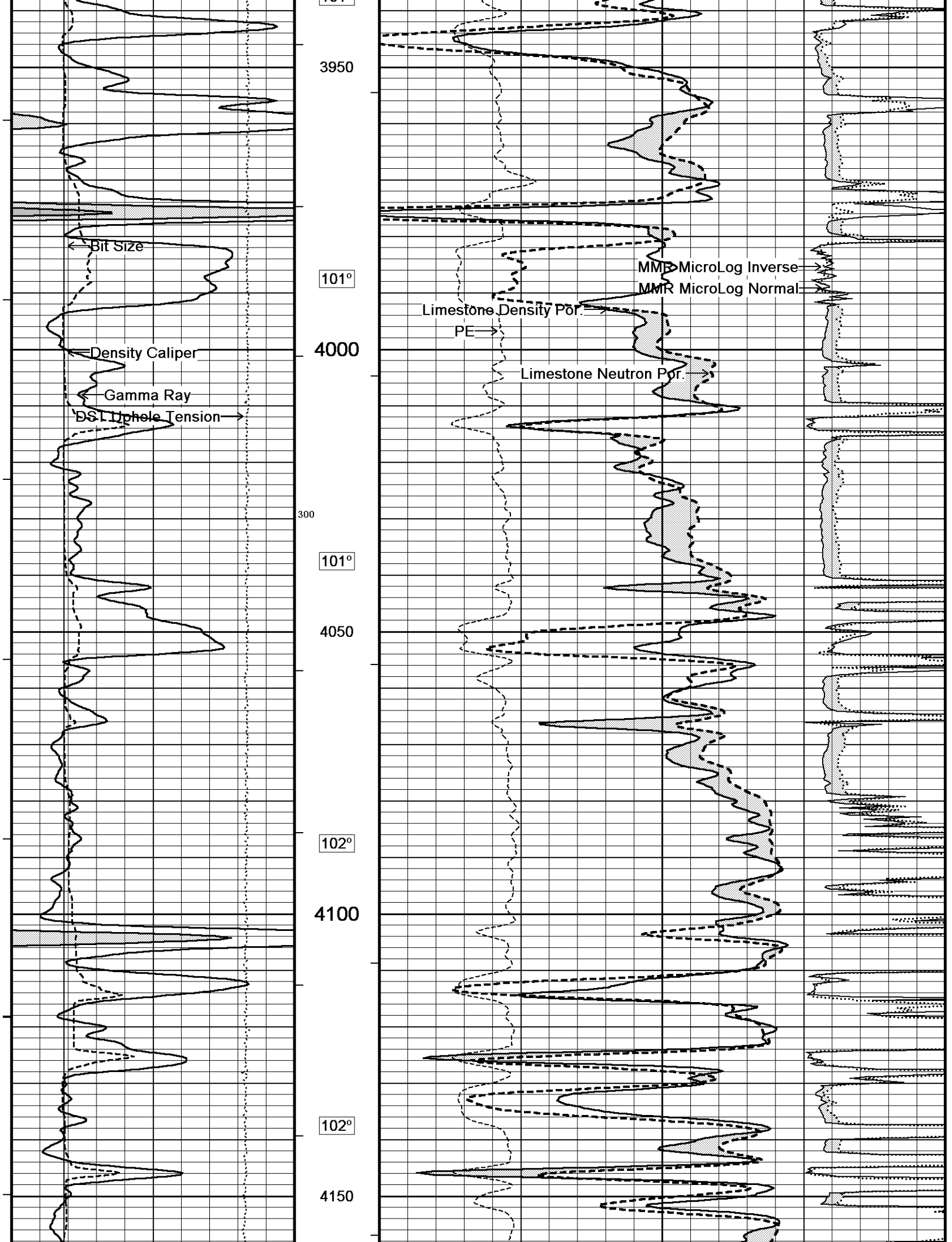
5 INCH MAIN

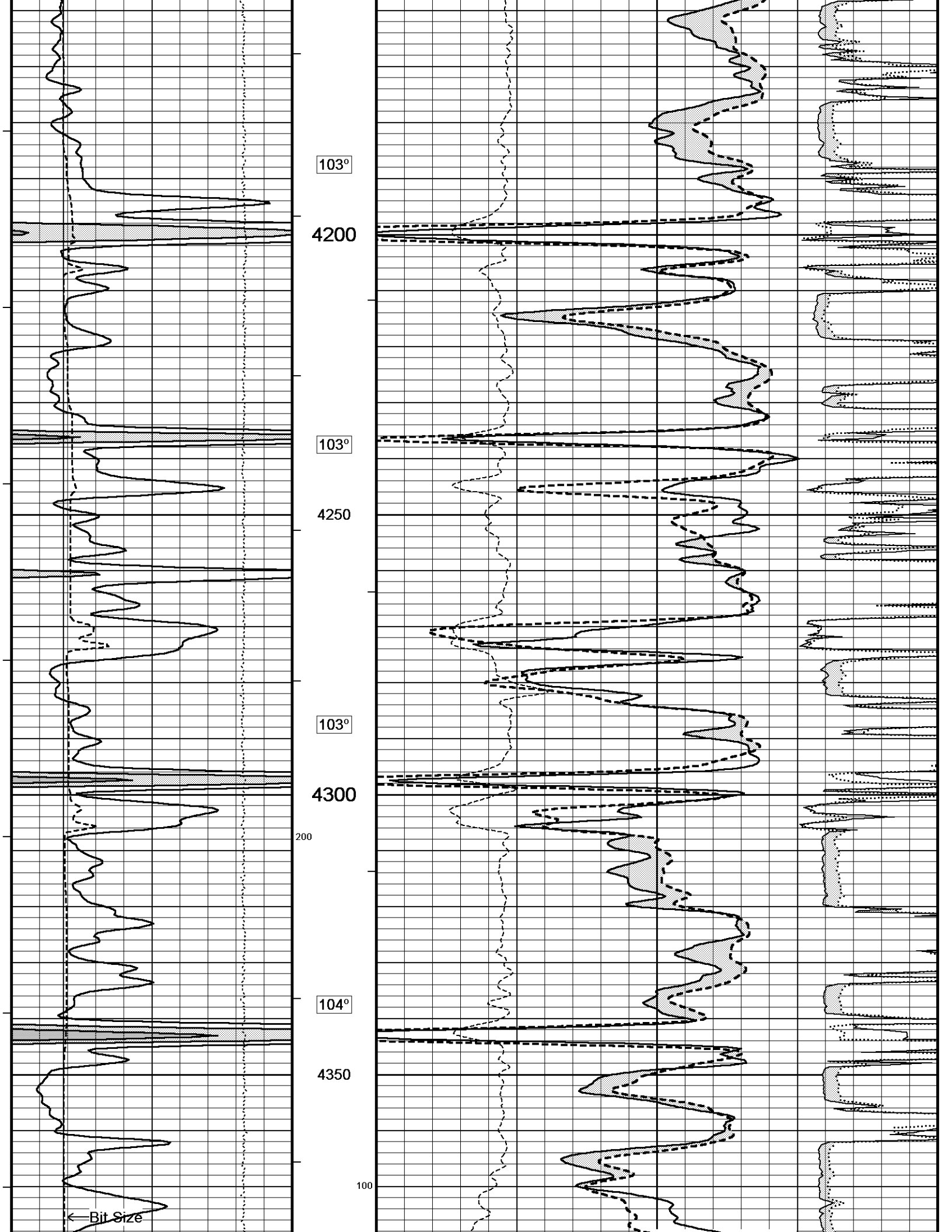
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...SHAKESPEARE ORTEGA #1-25_003.dta
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

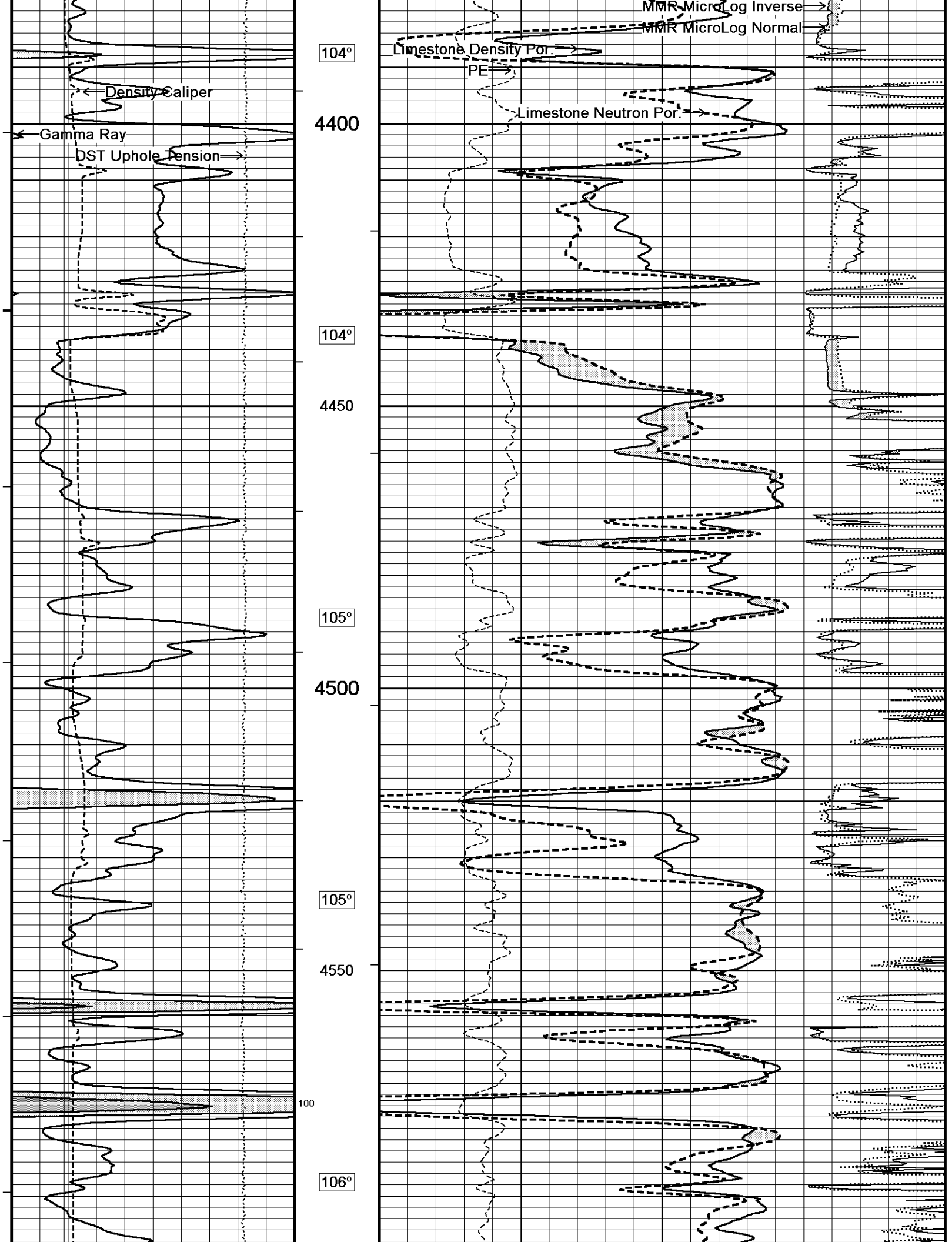
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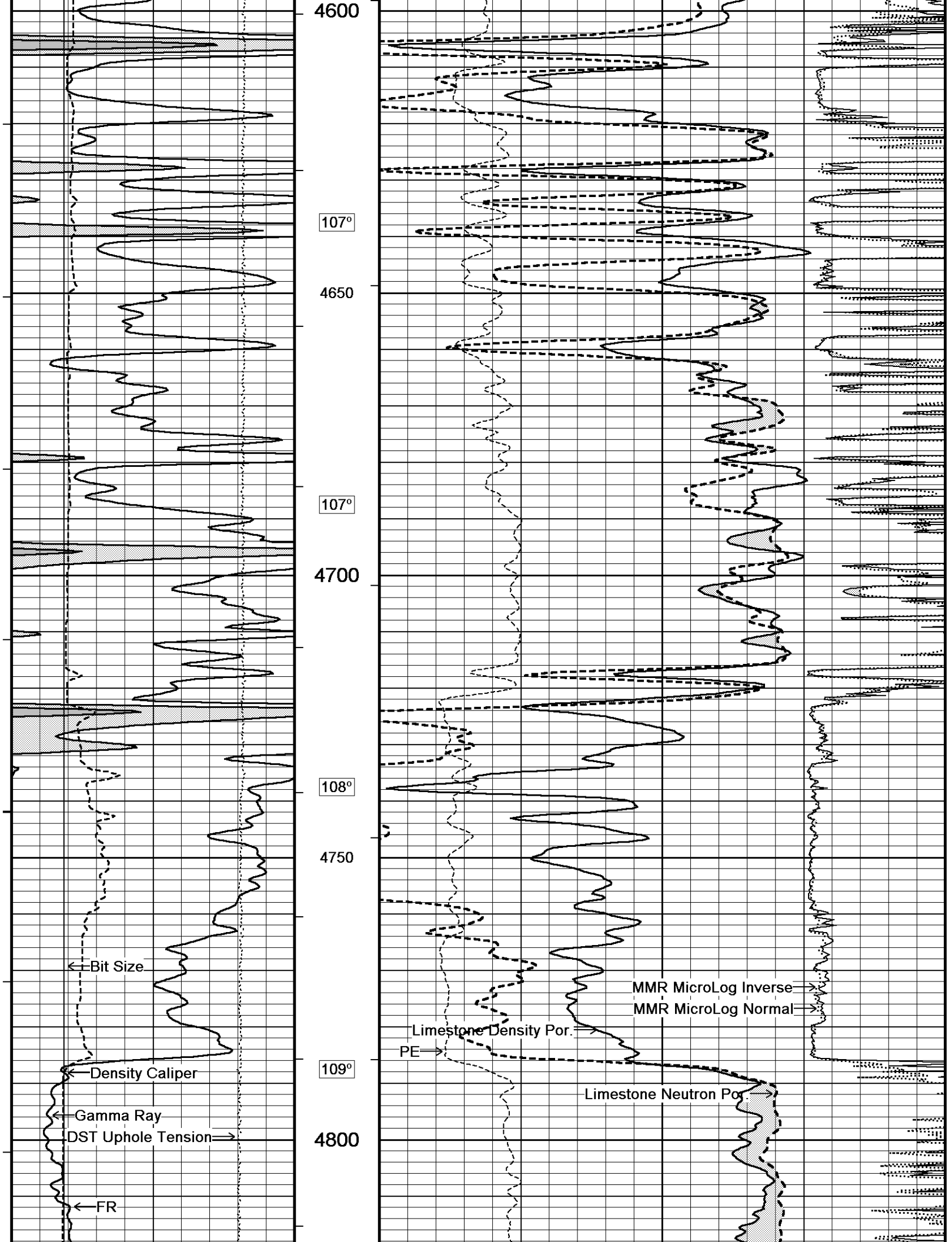


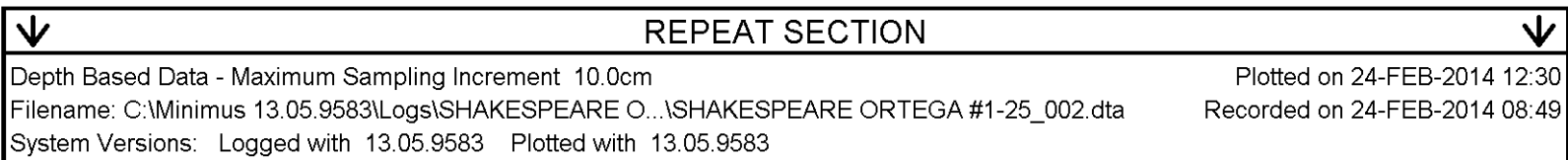
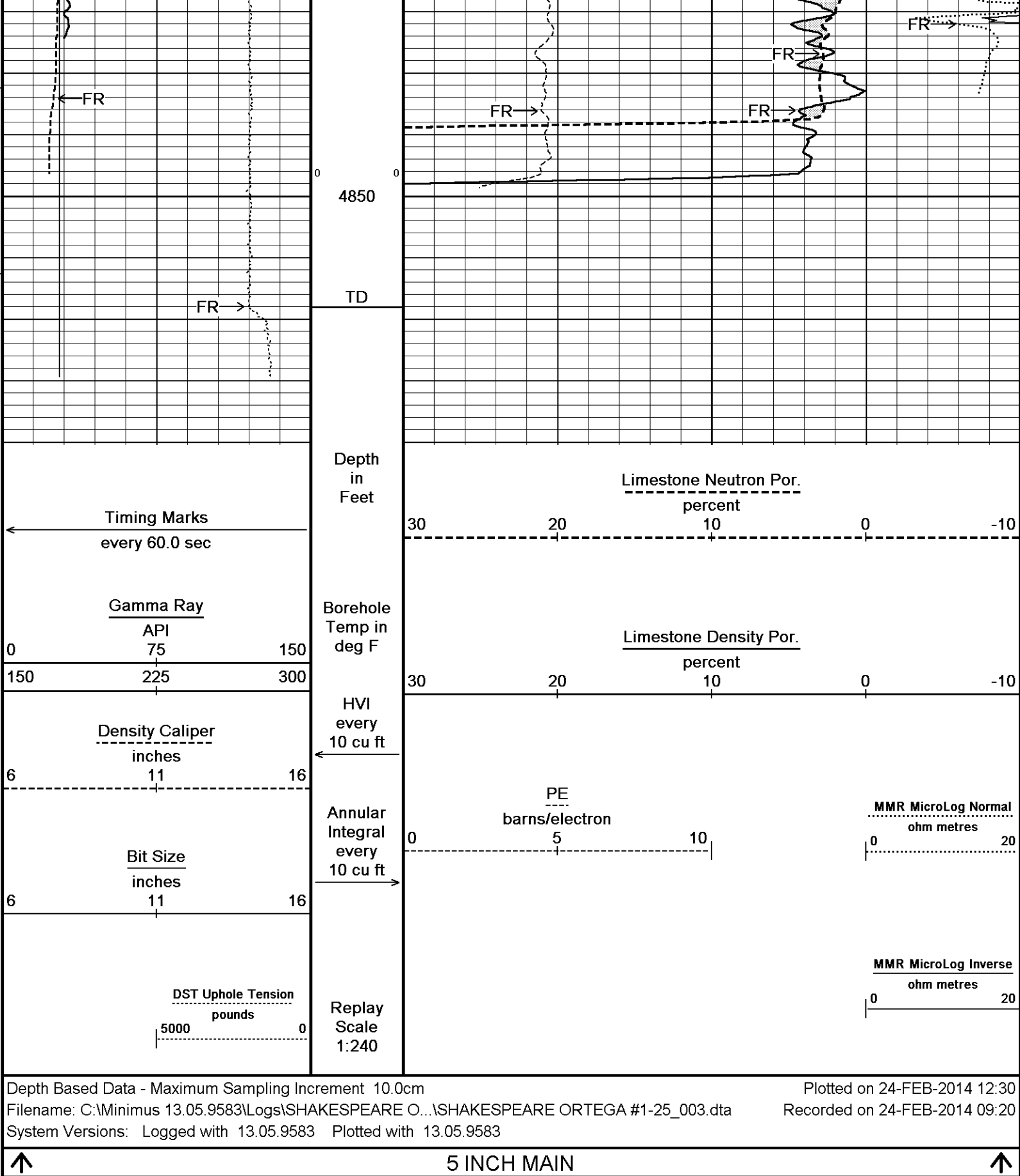


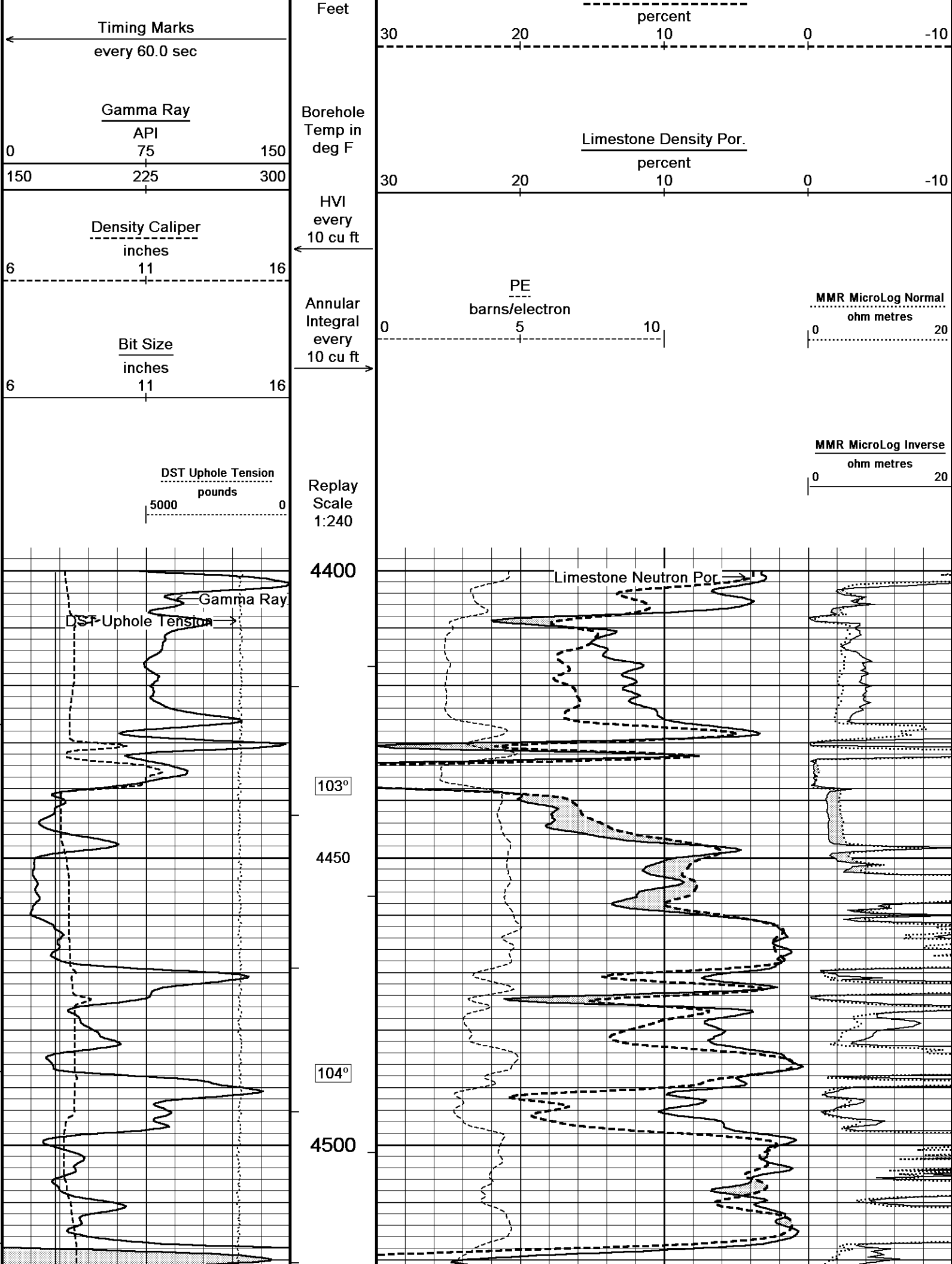


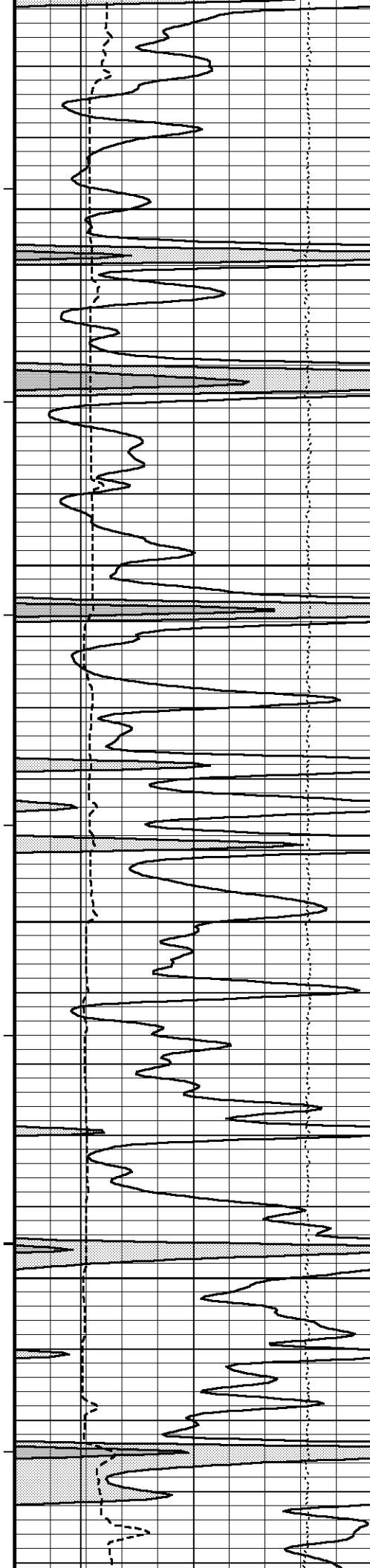












104°

4550

100

105°

4600

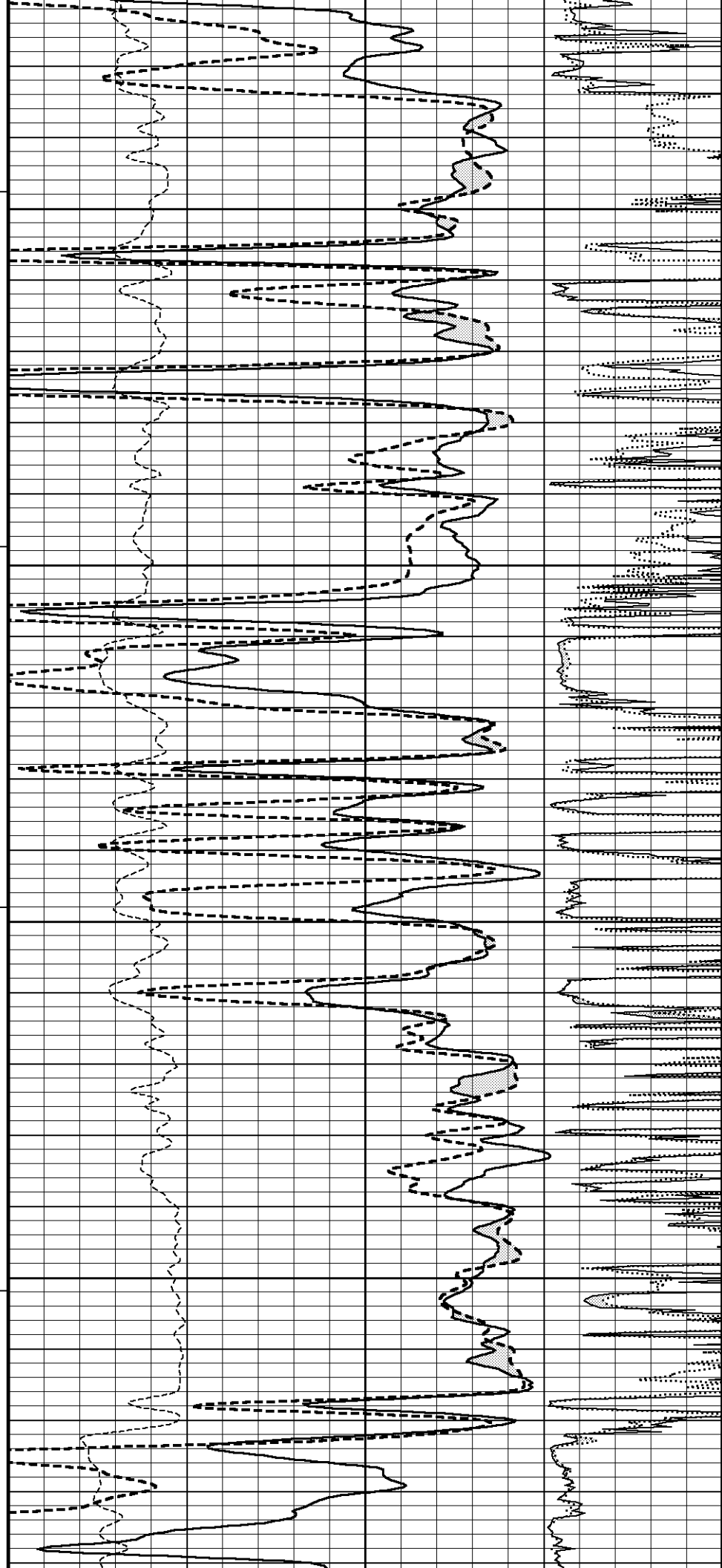
106°

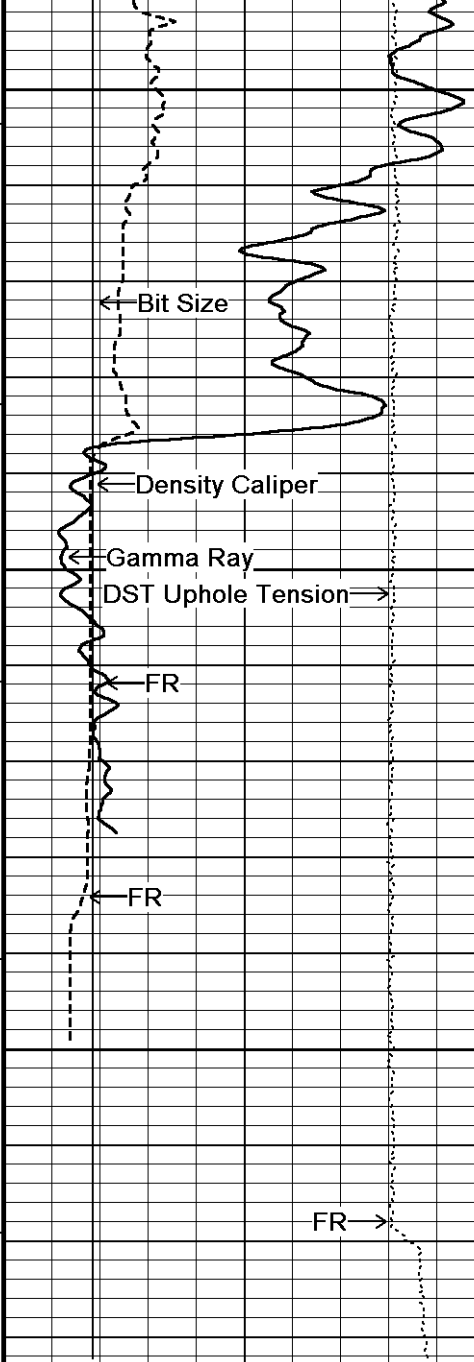
4650

106°

4700

107°





4750

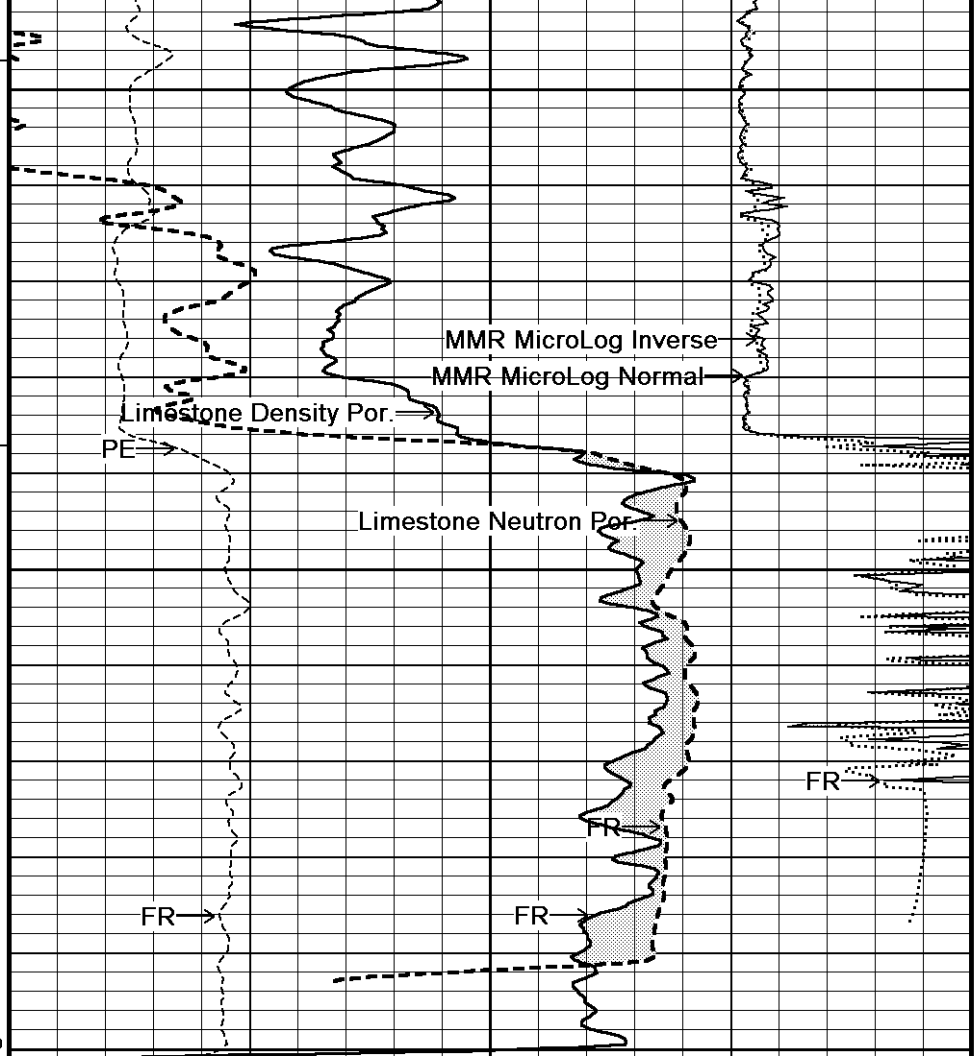
107°

4800

4850

0

TD



Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
6 11 16

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

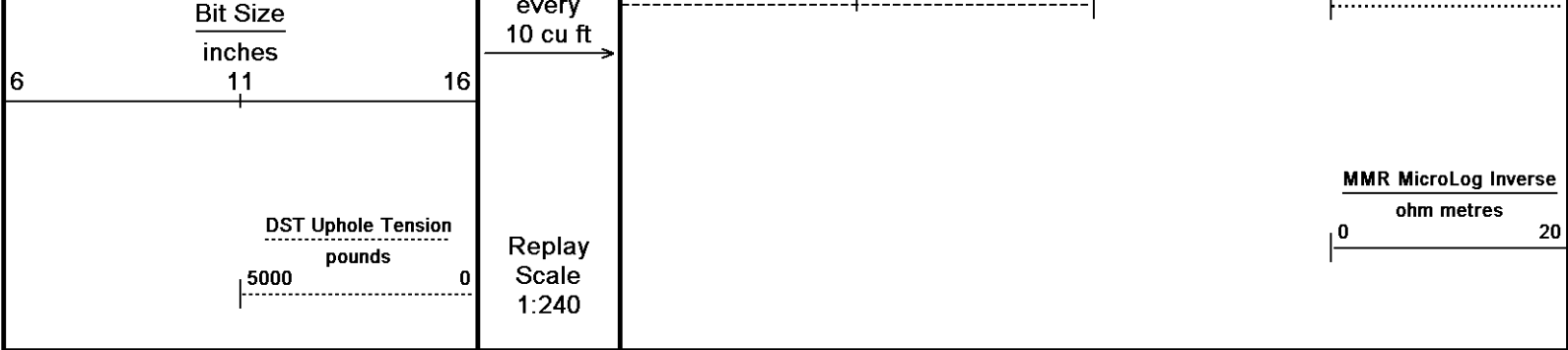
Annular
Integral

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



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 24-FEB-2014 12:30

Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...\SHAKESPEARE ORTEGA #1-25_002.dta

Recorded on 24-FEB-2014 08:49

System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑

REPEAT SECTION

↑

↓

5 INCH MAIN ANHYDRITE

↓

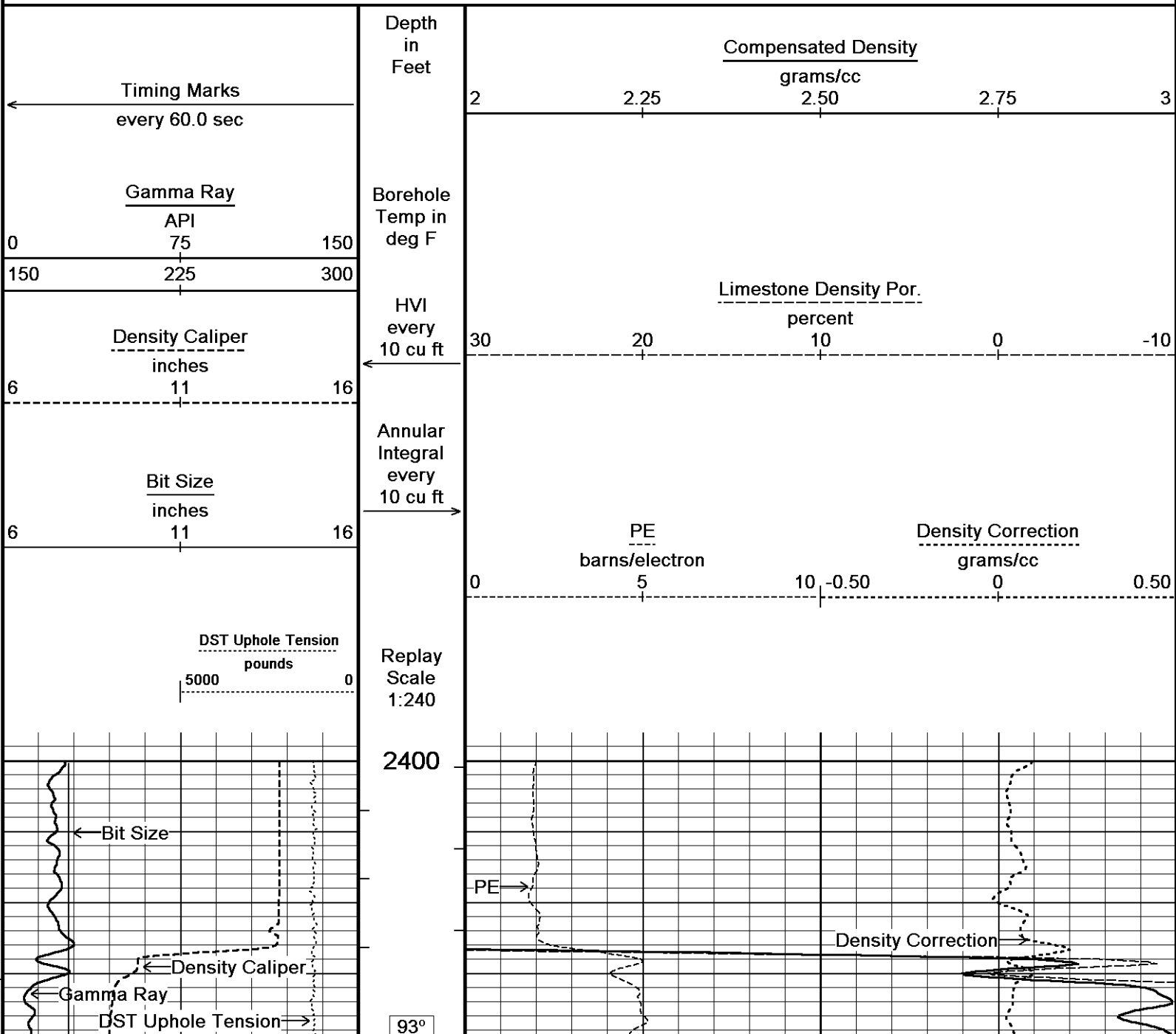
Depth Based Data - Maximum Sampling Increment 10.0cm

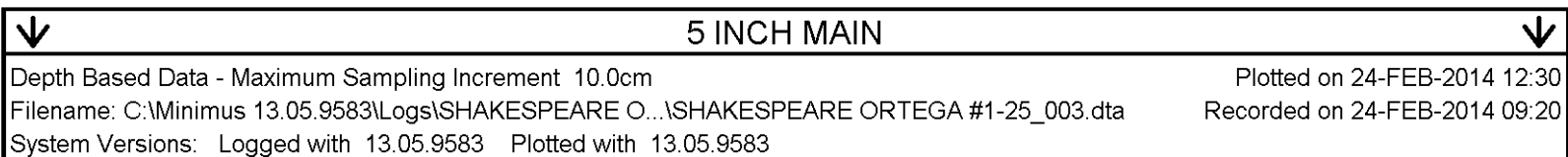
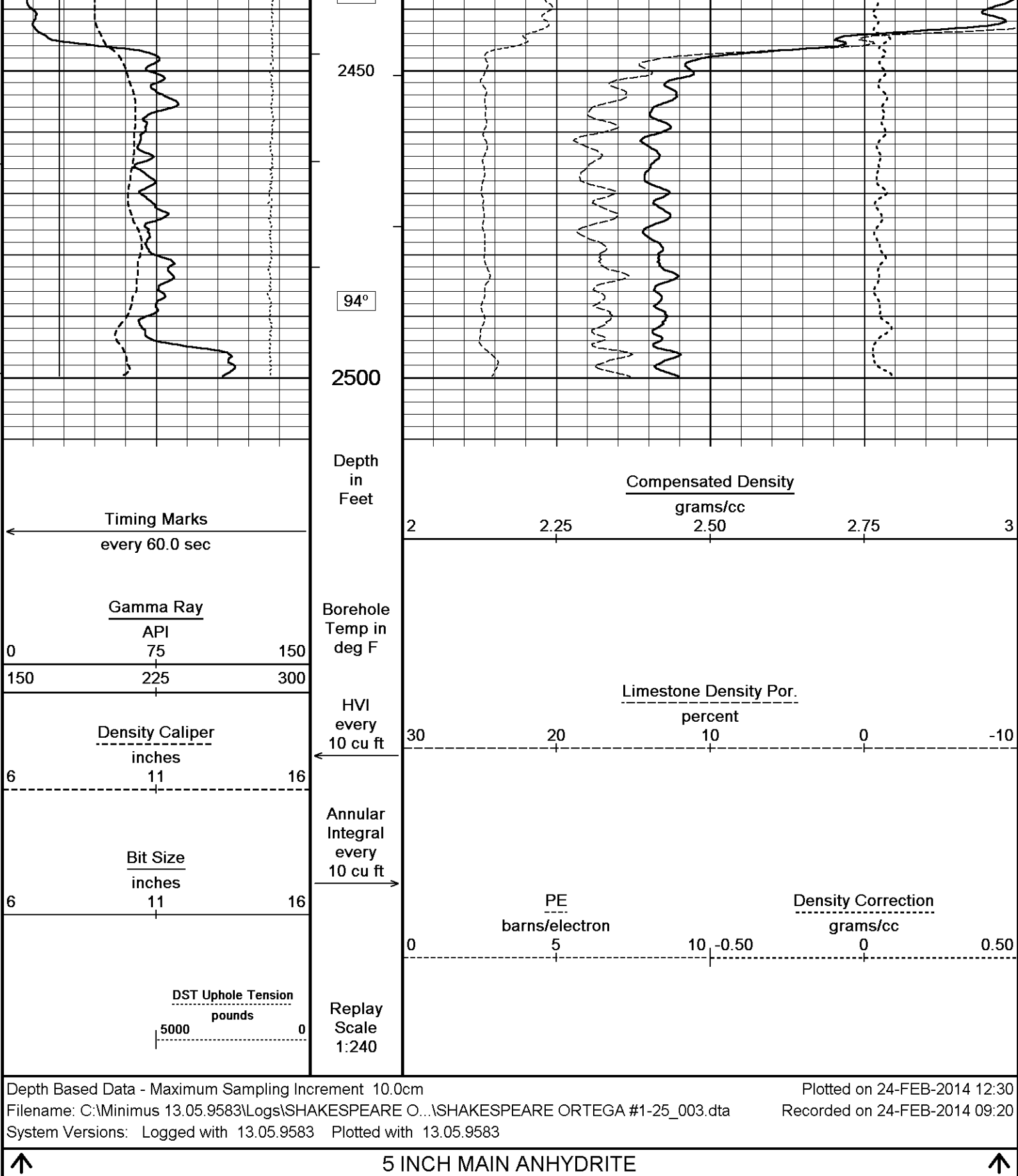
Plotted on 24-FEB-2014 12:30

Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...\SHAKESPEARE ORTEGA #1-25_003.dta

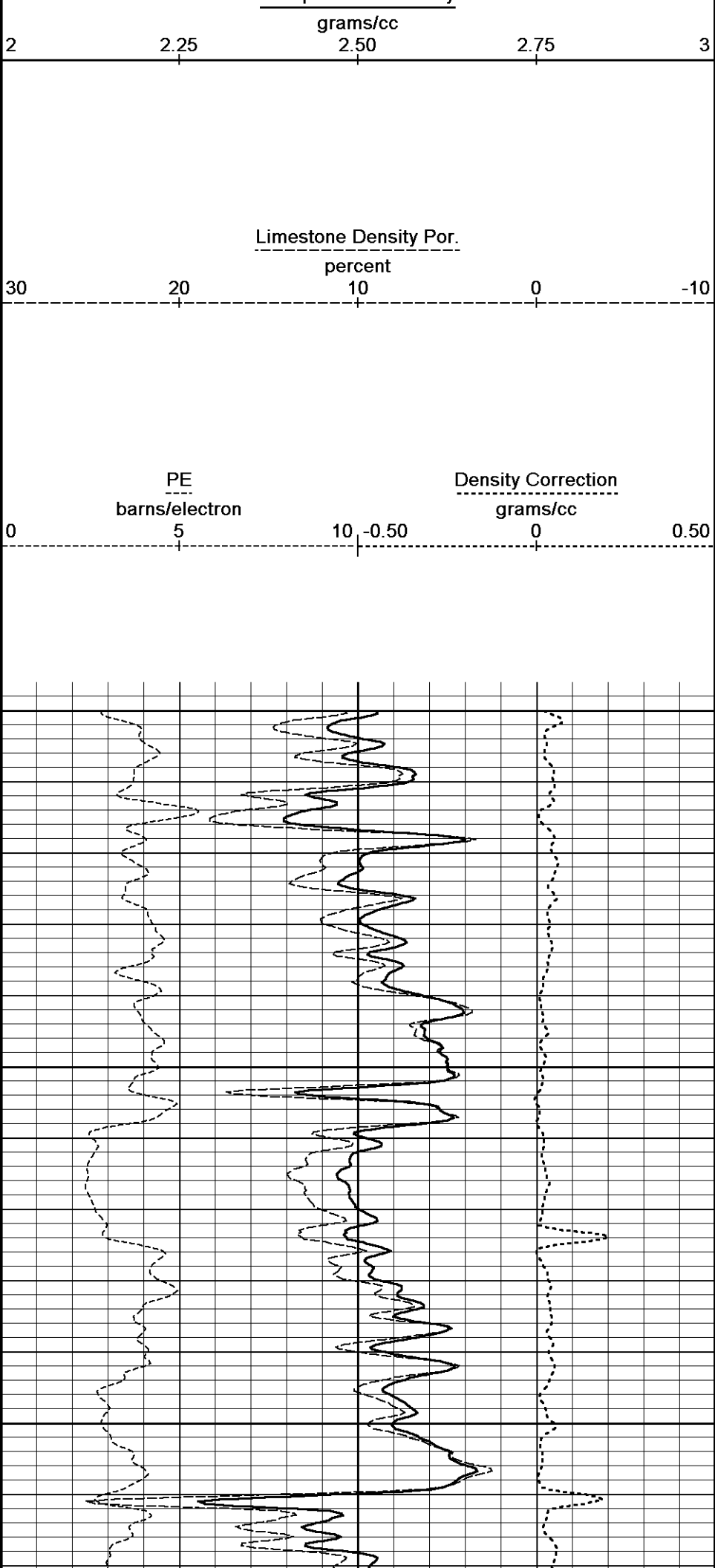
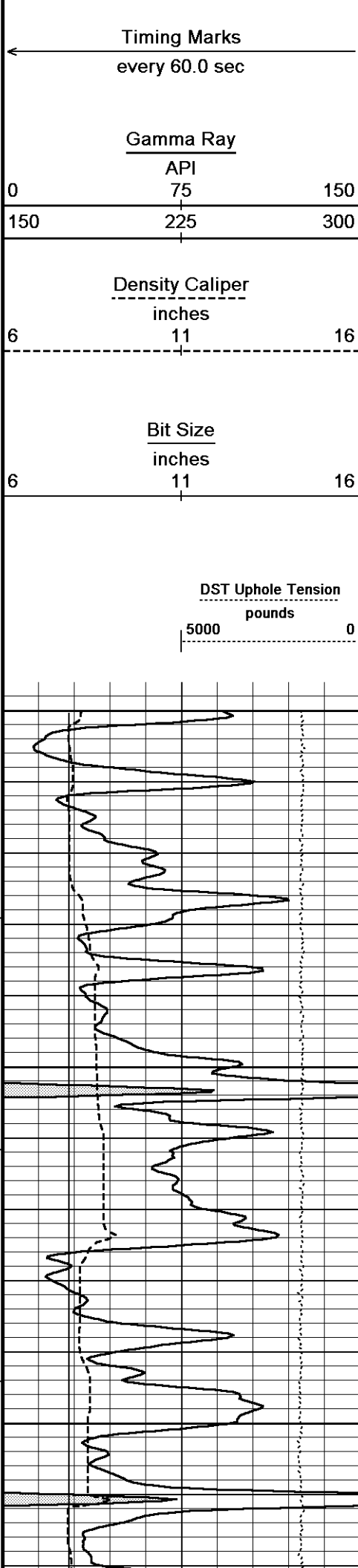
Recorded on 24-FEB-2014 09:20

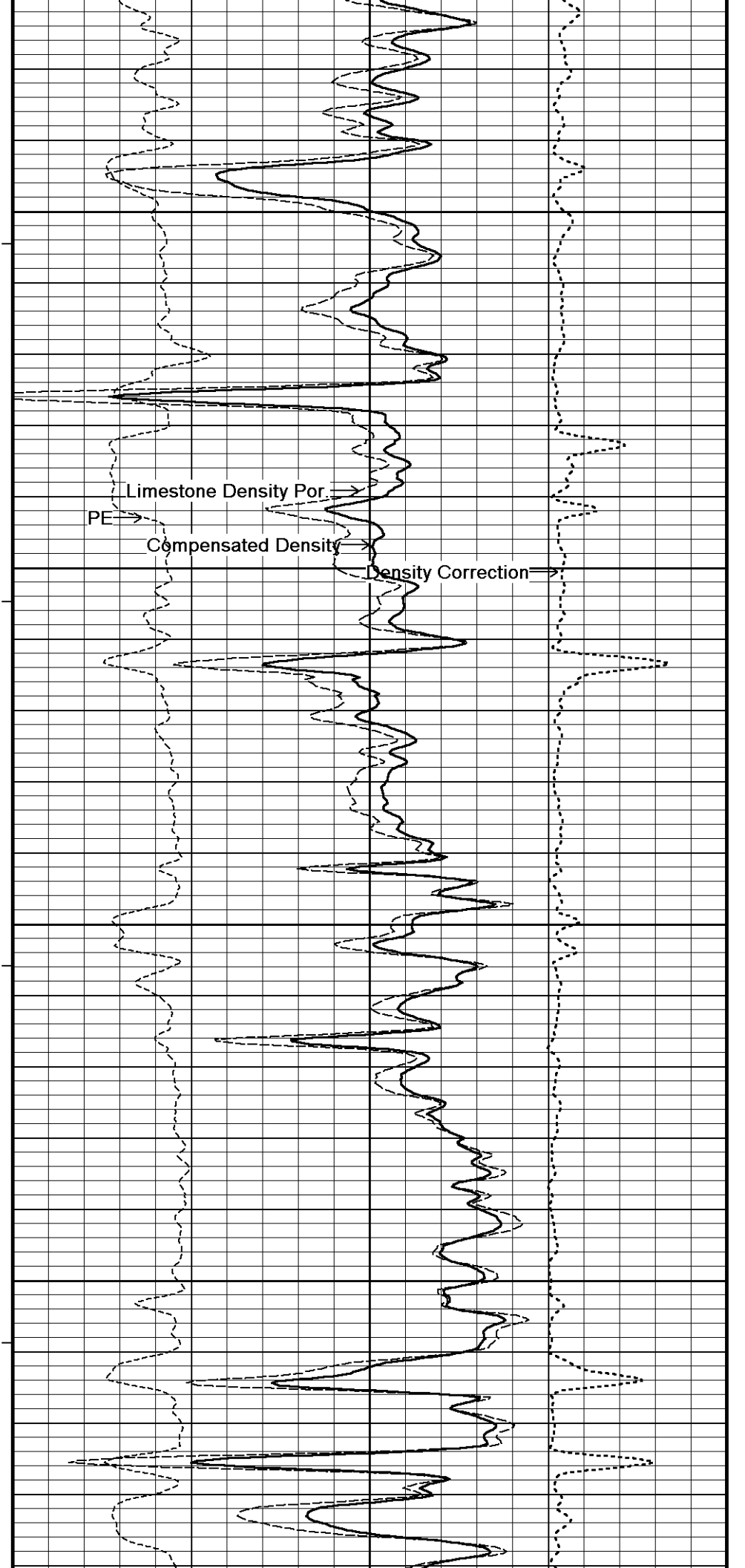
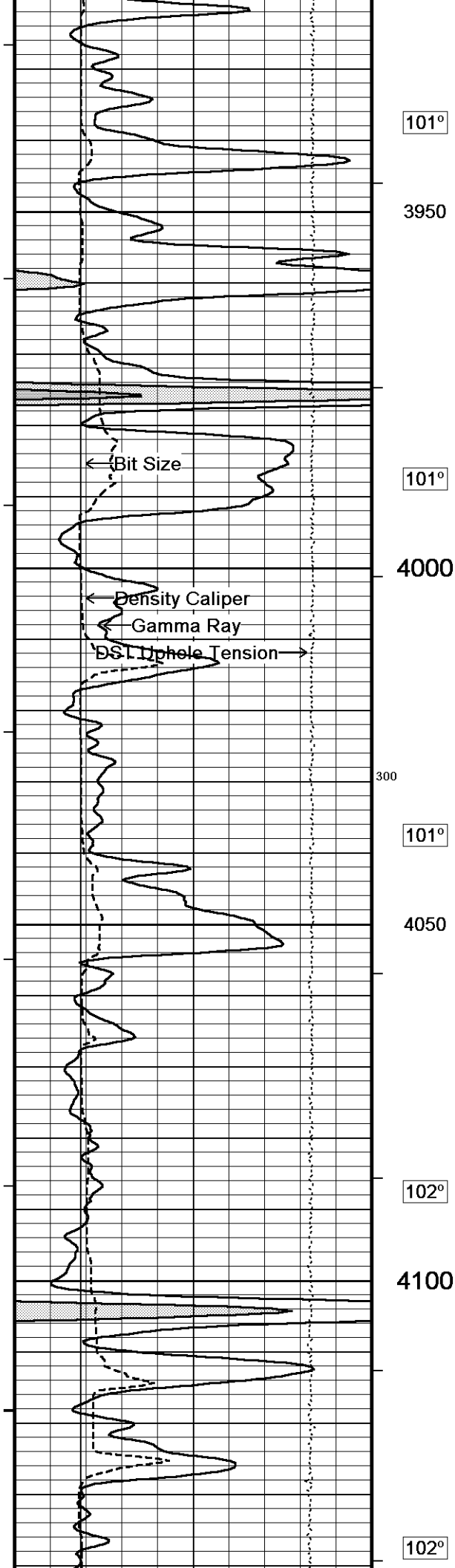
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

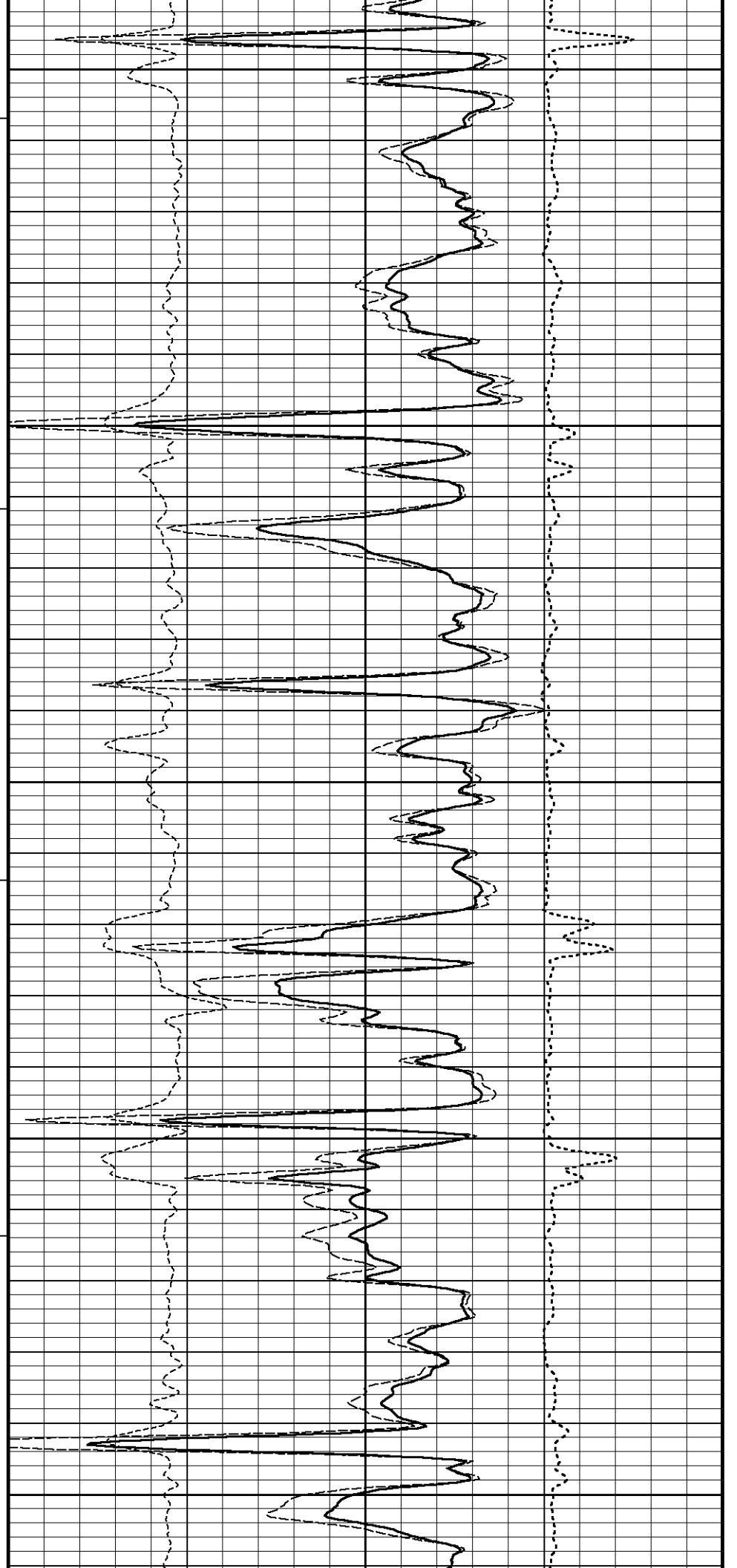
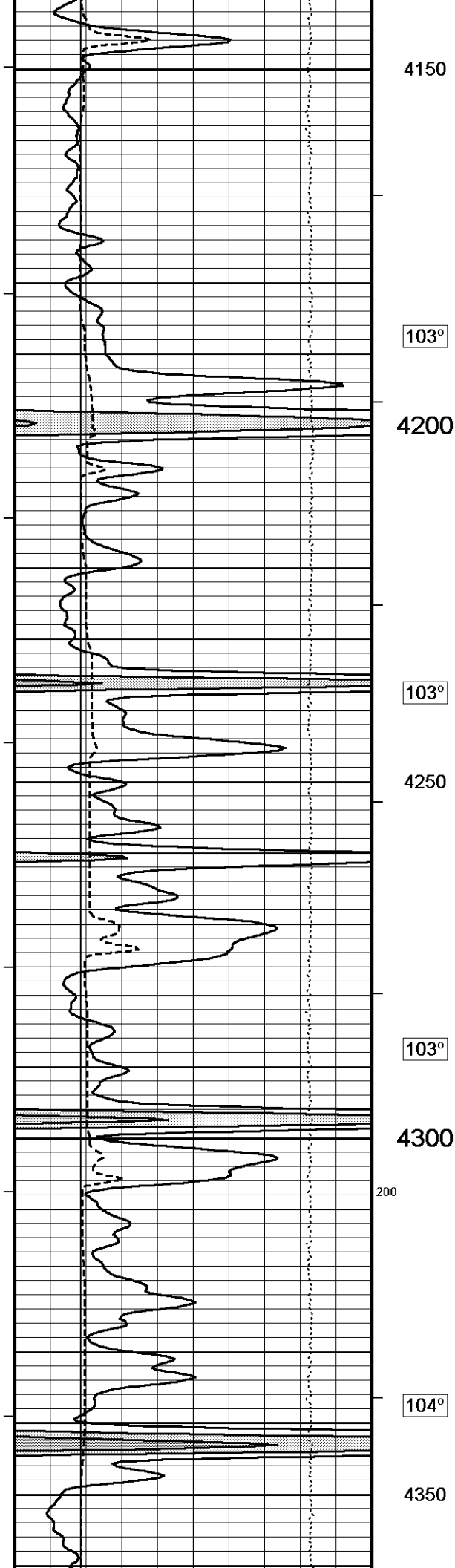


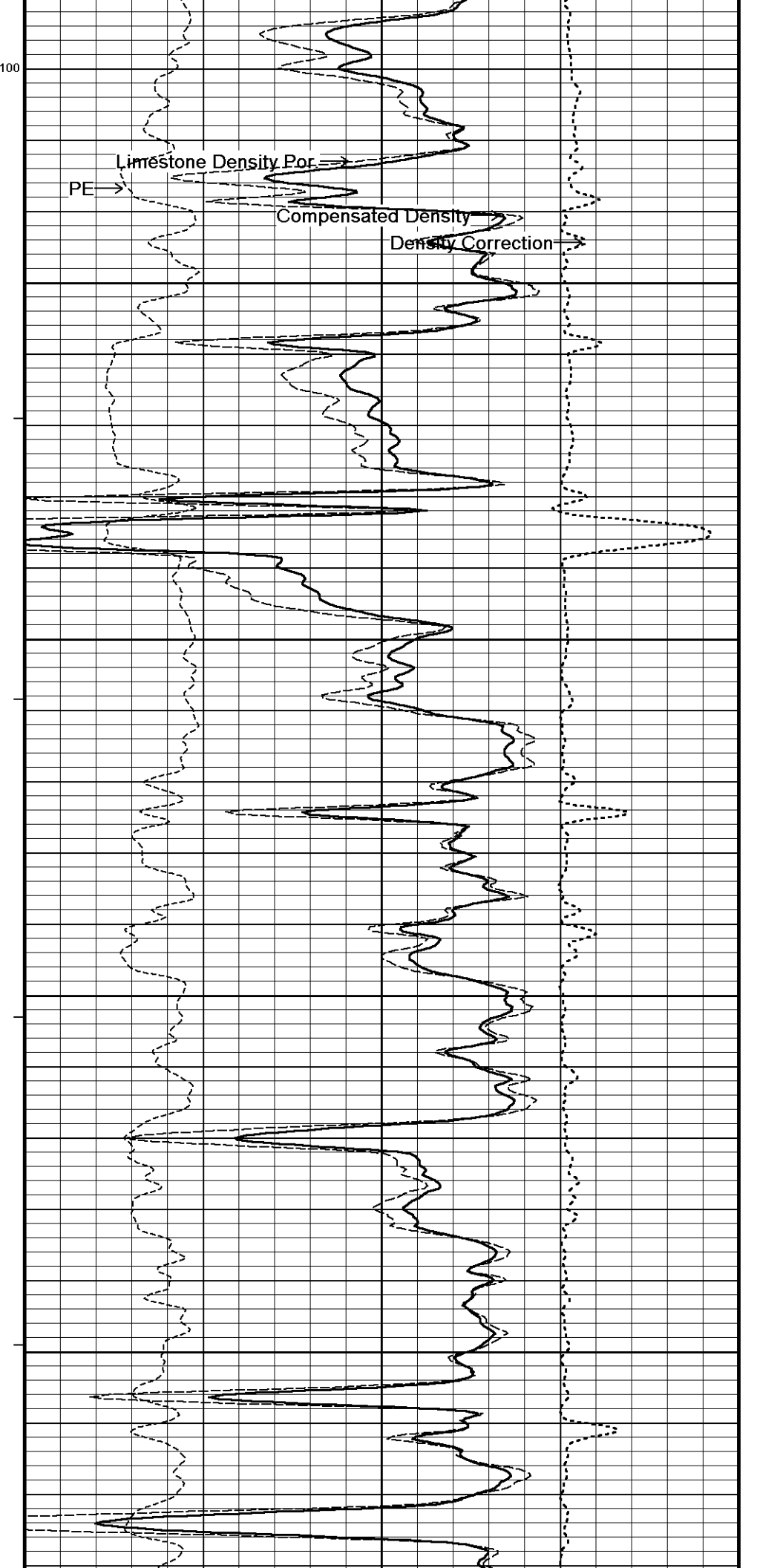
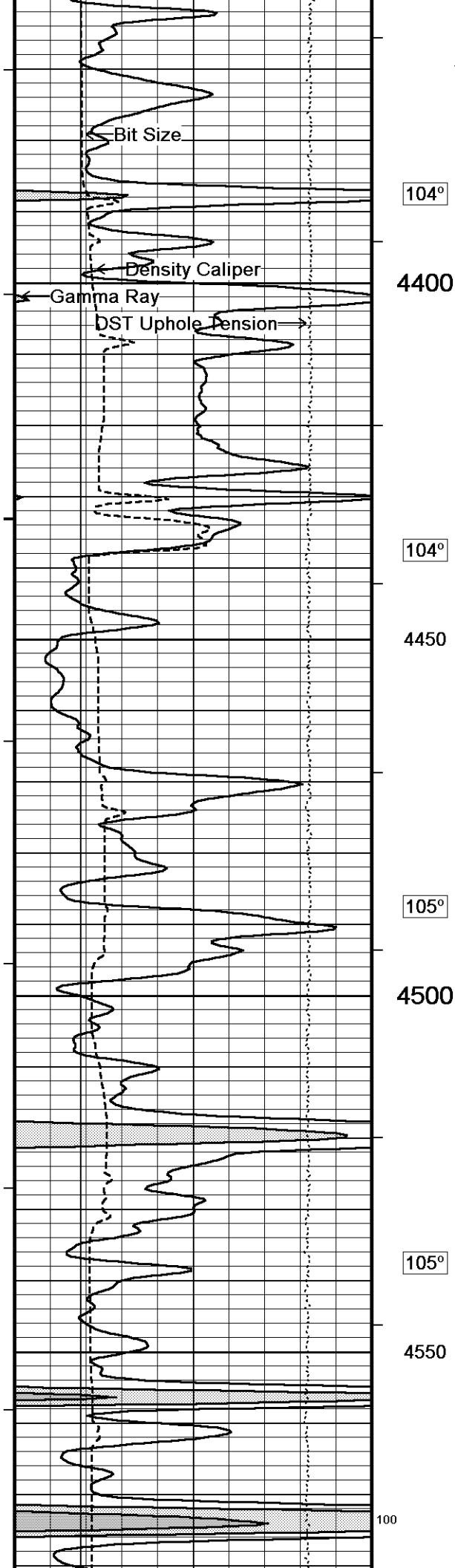


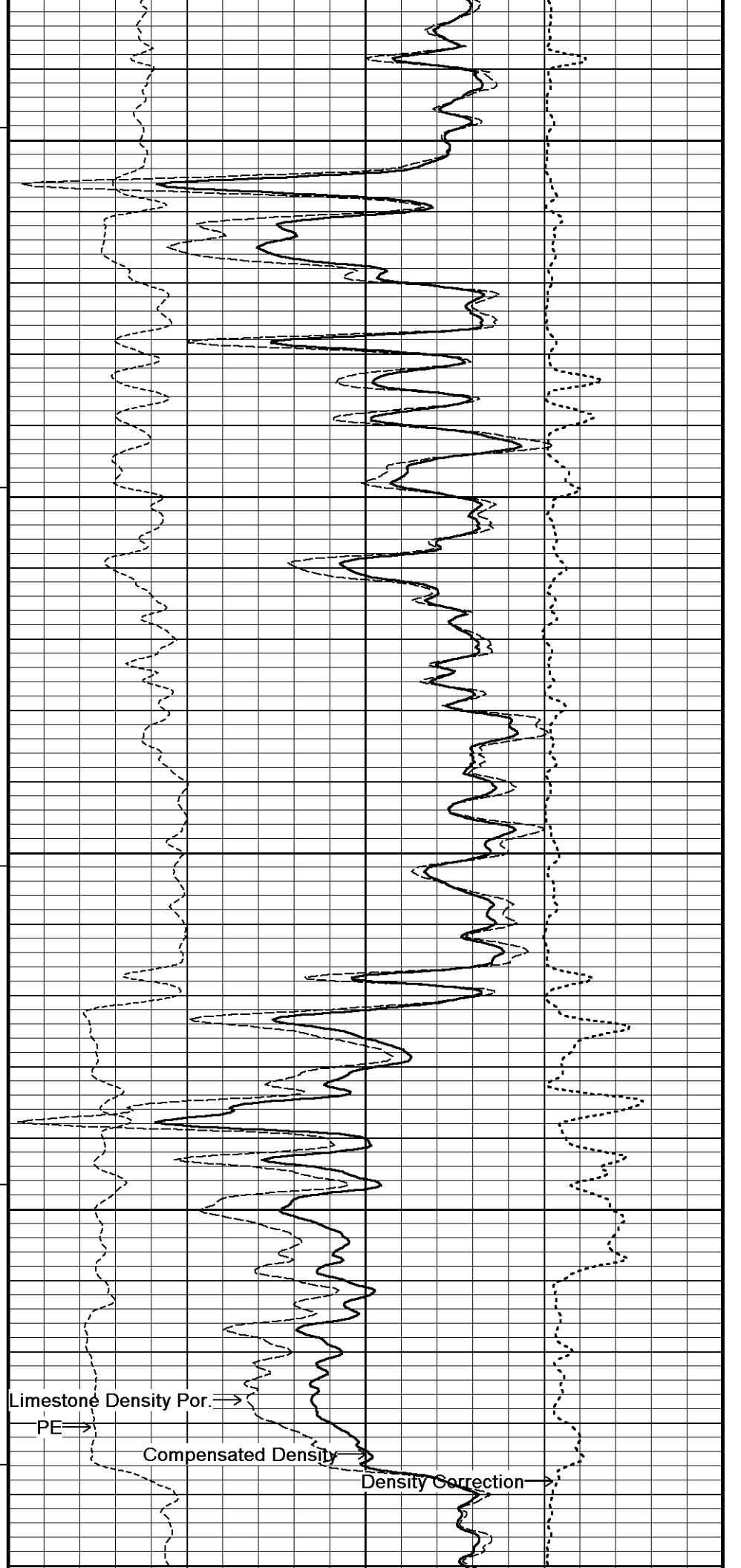
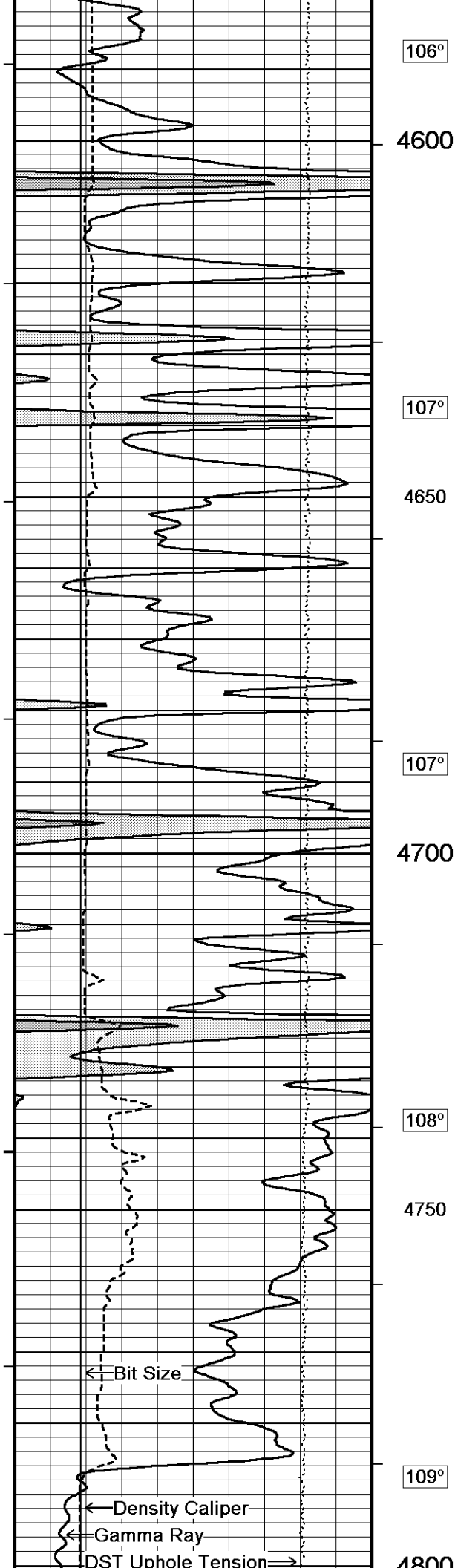
Depth in	Compensated Density
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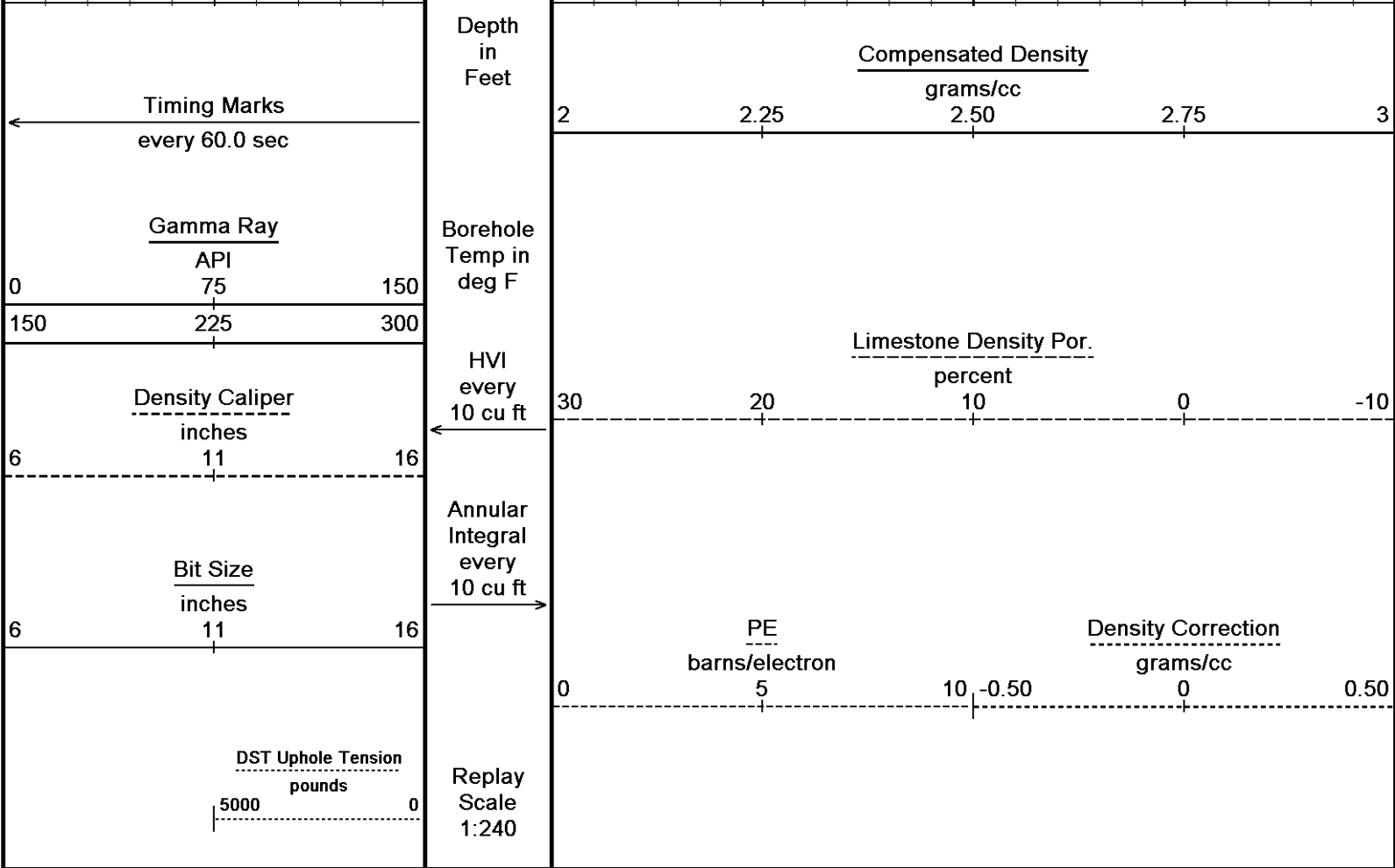
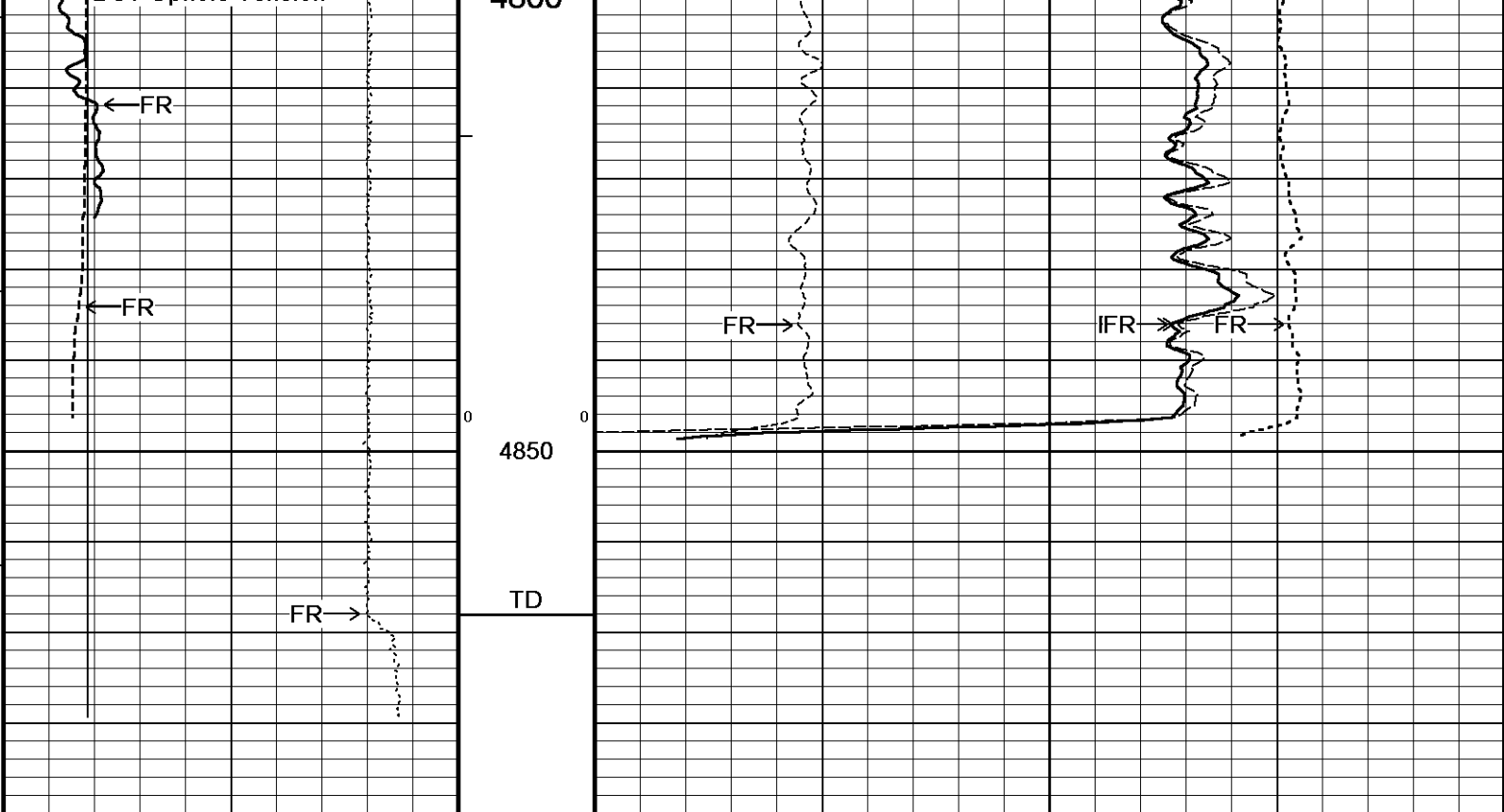










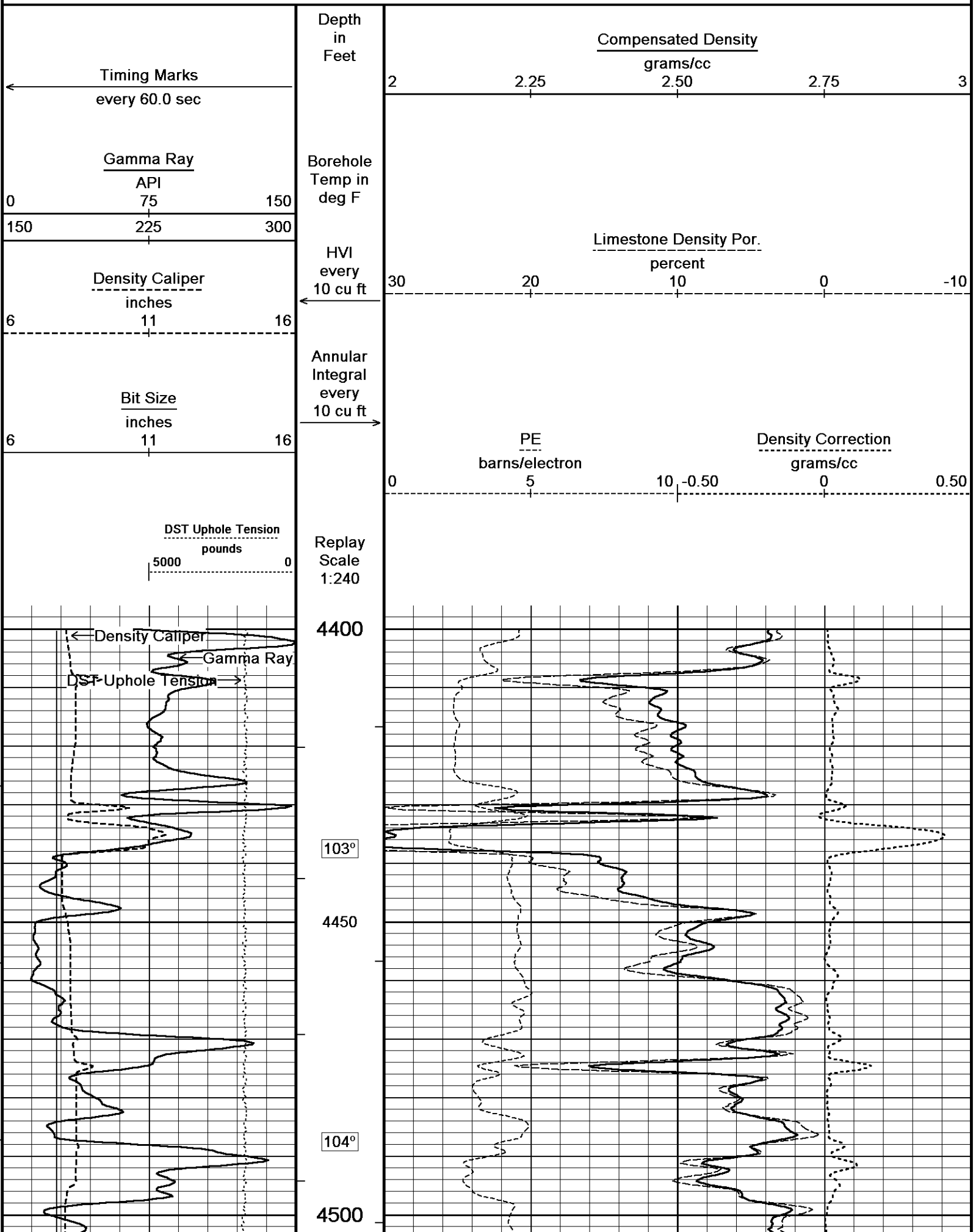


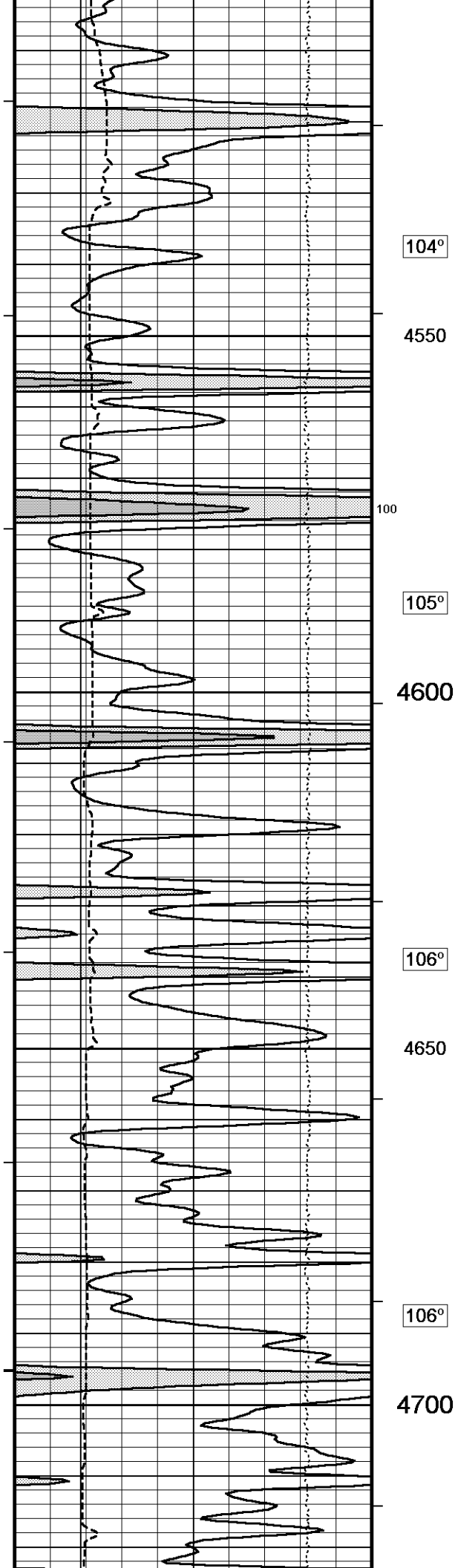
Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...SHAKESPEARE ORTEGA #1-25_003.dta
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

Plotted on 24-FEB-2014 12:30
Recorded on 24-FEB-2014 09:20

↑ 5 INCH MAIN ↑

↓ REPEAT SECTION ↓





104°

4550

100

105°

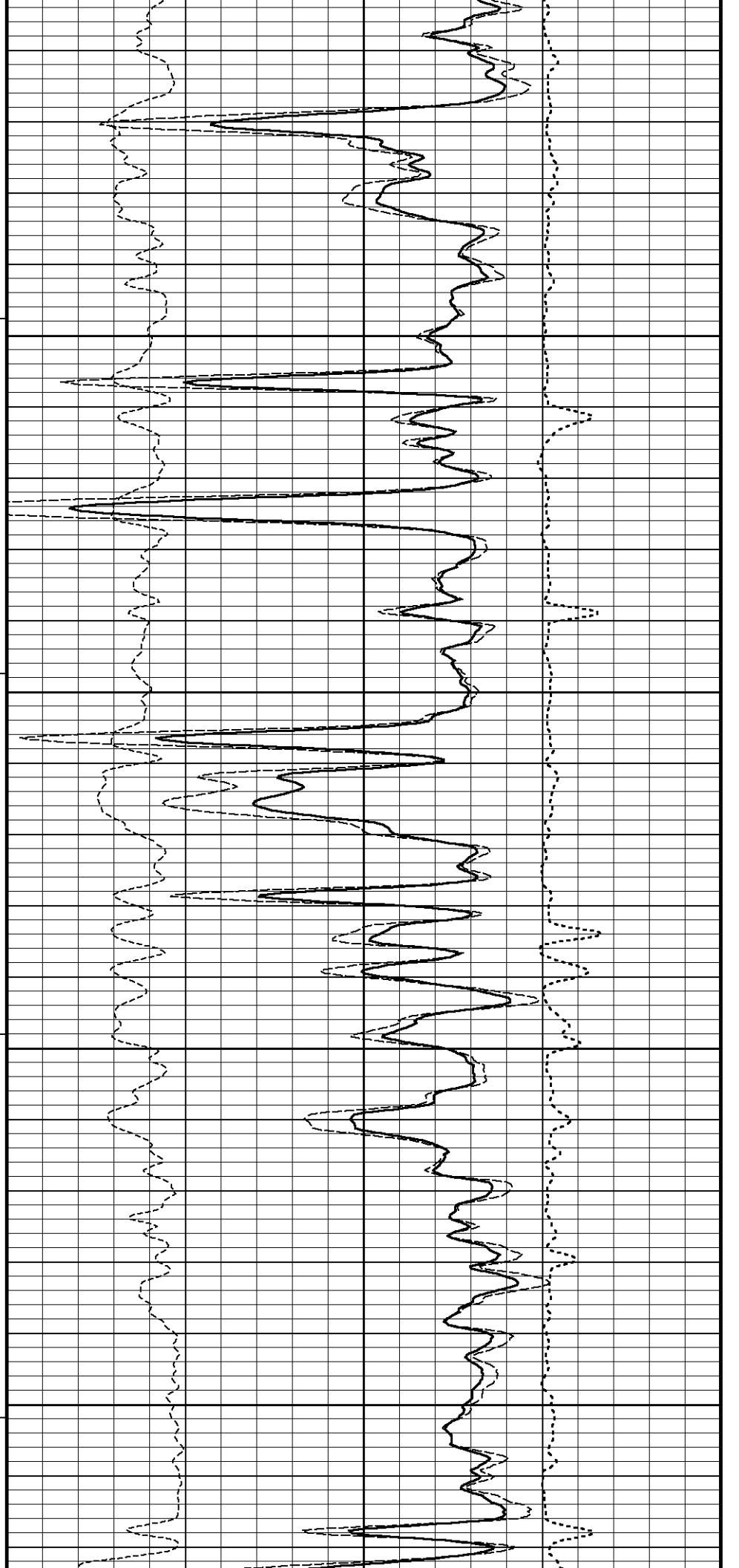
4600

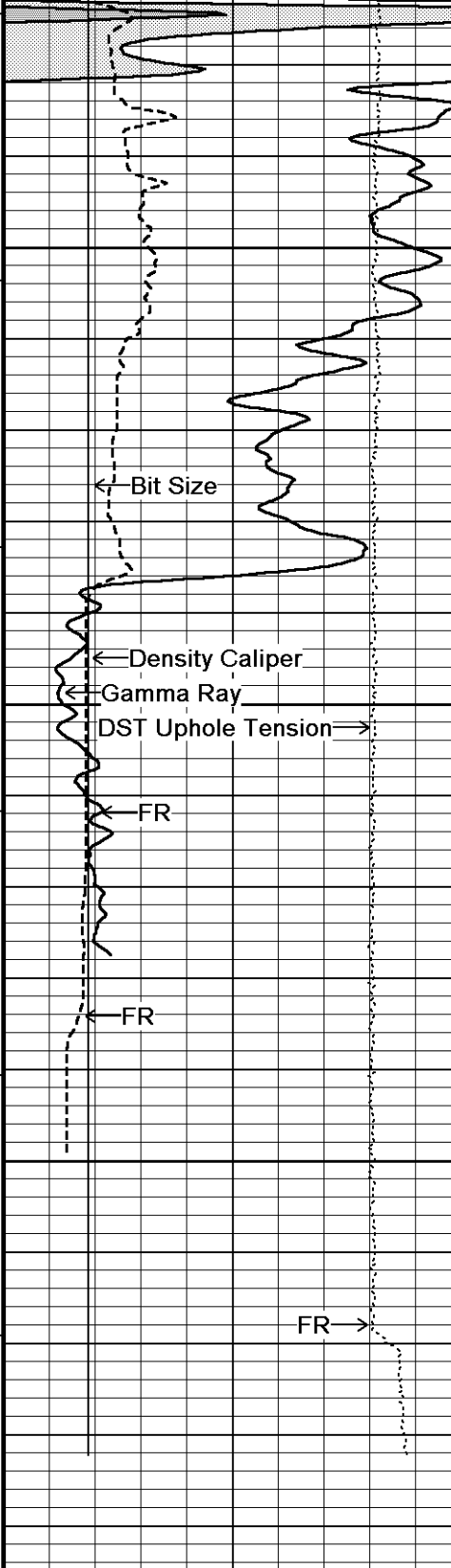
106°

4650

106°

4700





107°

4750

107°

4800

4850

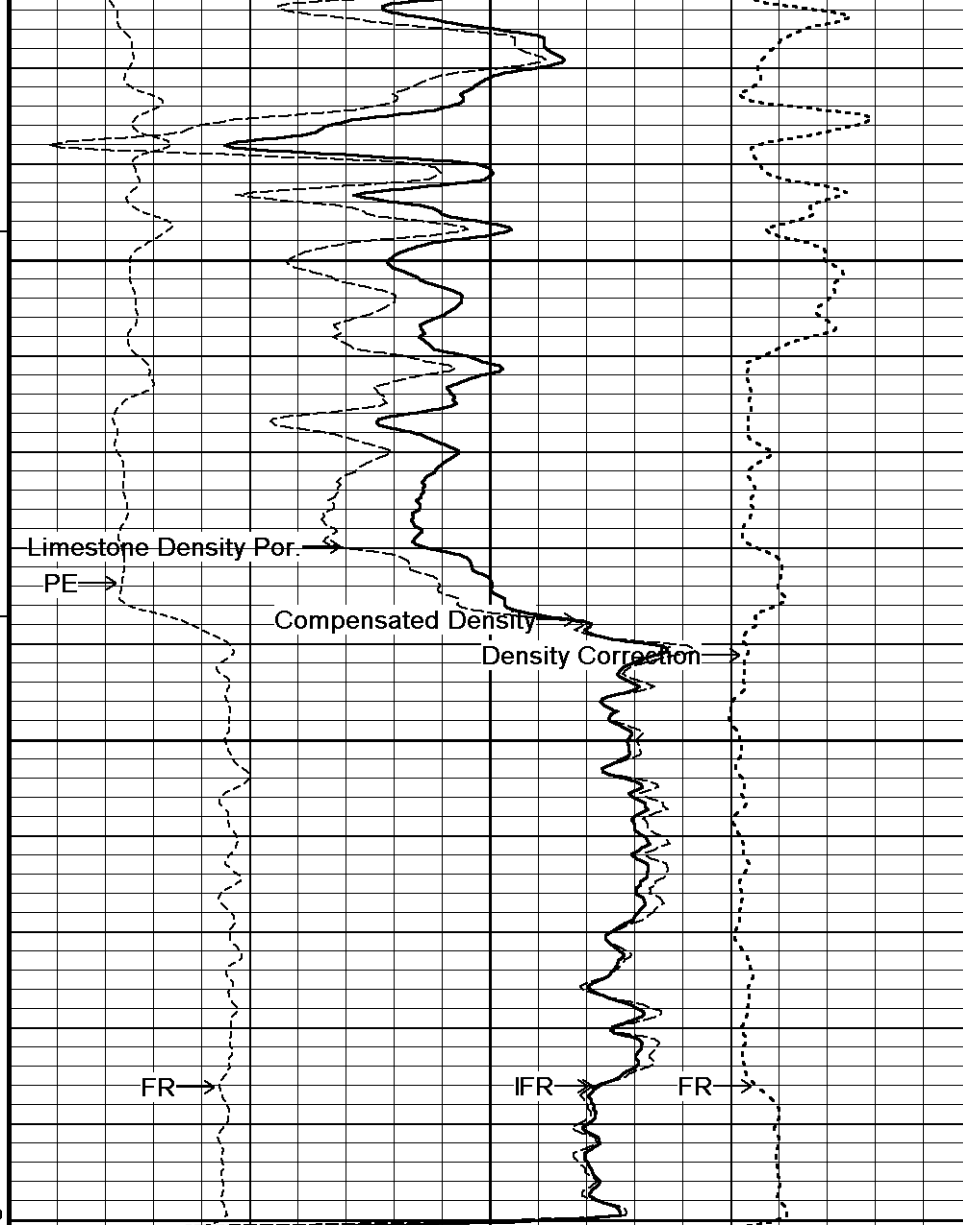
TD

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper



Limestone Density Por.

PE

Compensated Density

Density Correction

FR

IFR

FR

2 2.25 2.50 2.75 3

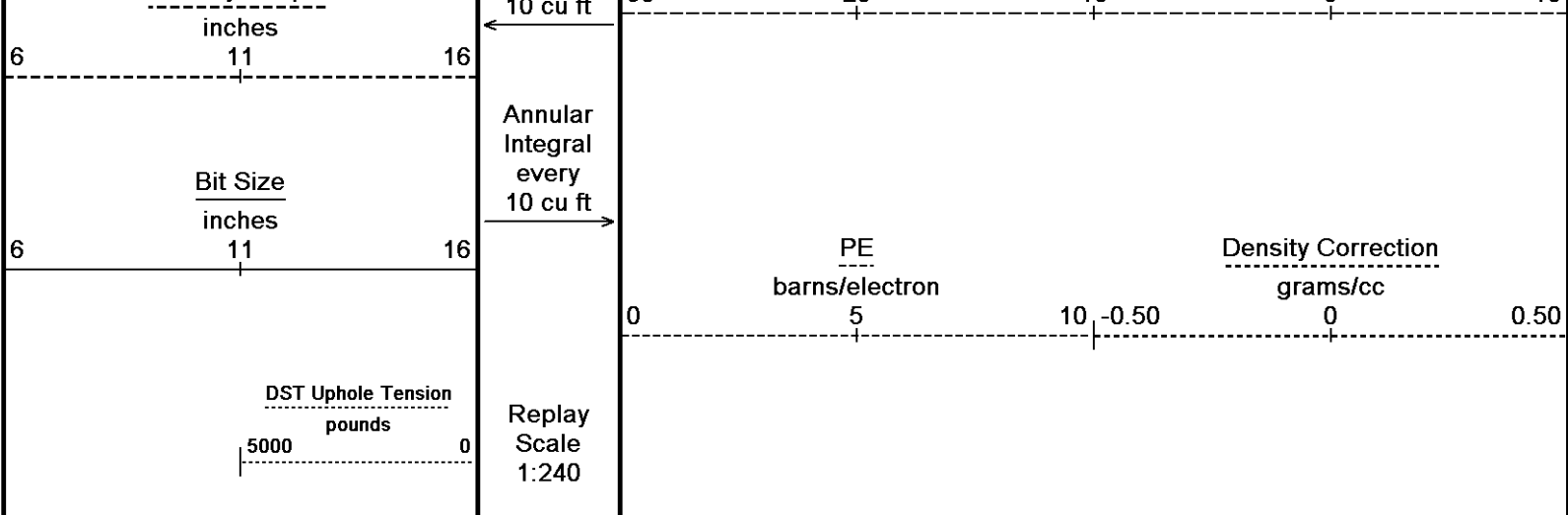
Compensated Density
grams/cc

30 20 10 0 -10

Limestone Density Por.
percent

Borehole
Temp in
deg F

HVI
every



Depth Based Data - Maximum Sampling Increment 10.0cm
 Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...SHAKESPEARE ORTEGA #1-25_002.dta
 System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

Plotted on 24-FEB-2014 12:30
 Recorded on 24-FEB-2014 08:49

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.dta

General Constants All 000 Last Edited on 24-FEB-2014,08:20

General Parameters		
Mud Resistivity	0.410	ohm-metres
Mud Resistivity Temperature	76.000	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	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Down-hole Tension Calibration SMS 0 Field Calibration on 19-JAN-2014 09:34

Reading No	Measured	Calibrated (lbs)
1	15482.72	0.00
2	16610.36	408.00

High Resolution Temperature Calibration MCG-C 84 Field Calibration on 21-AUG-2013,11:52

	Measured	Calibrated(Deg F)
Lower	11.00	11.00
Upper	111.00	111.00

High Resolution Temperature Constants MCG-C 84 Last Edited on 21-AUG-2013,11:52

Pre-filter Length	11
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SP Calibration MCG-C 84 Field Calibration on 21-AUG-2013 12:25

	Measured	Calibrated (mV)
Reference 1	105.4	100.7
Reference 2	-96.3	-100.8

Gamma Calibration MCG-C 84

Gamma Calibration MCG-C 84			Field Calibration on 20-FEB-2014 09:39	
Background	Measured	Calibrated (API)		
	65	44		
Calibrator (Gross)	1143	769		
Calibrator (Net)	1078	725		
Gamma Constants MCG-C 84			Last Edited on 24-FEB-2014,07:21	
Gamma Calibrator Number	GRC38			
Mud Density	1.10	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 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.	68.00	Deg F		
Mud Cake Resistivity Source	Constant Value			
Temp. Source Rmc Correc.	MCG External Temperature			
Caliper Calibration MMR-A 11			Base Calibration on 20-JAN-2014 14:07 Field Calibration on 20-FEB-2014 09:23	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	14089	5.98		
2	17229	7.97		
3	20490	9.86		
4	24430	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	7.99	7.97		
Micro Normal and Micro Inverse Calibration MMR-A 11			Base Calibration on 20-JAN-2014 13:46 Field Check on 20-FEB-2014 09:28	
Base Calibration				
	Measured	Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	59.7	5.0	25.0
Micro Inverse	15.5	77.5	5.0	25.0
Field Calibration				
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	76.5		76.5	
Micro Inverse	58.7		58.7	
Micro Normal and Micro Inverse Constants MMR-A 11			Last Edited on 18-APR-2013,13:52	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159			
Micro Normal K Factor	1.0000			
Micro Inverse K Factor	1.0000			

Micro Inverse K Factor	1.0000	
Standoff Offset	0.0000	inches

Neutron Calibration MDN-A.B 65

Base Calibration on 20-JAN-2014 15:06

Field Check on 20-FEB-2014 09:43

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2981	92	3714	110
Ratio		32.404		33.764

Field Calibrator at Base

	Calibrated (cps)
	1702 2459
Ratio	0.692

Field Check

	Calibrated (cps)
	1709 2452
Ratio	0.689

Neutron Constants MDN-A.B 65

Last Edited on 24-FEB-2014,07:20

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	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
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 352

Base Calibration on 17-JAN-2014 13:04

Field Check on 20-FEB-2014 09:16

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	9.9	1.3
Reference 2	962.7	126.8

Base Check	281.7
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Field Check	282.0
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FE Constants MFE-B.J 352

Last Edited on 24-FEB-2014,07:20

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-A.A 126

Last Edited on 24-FEB-2014,07:20

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
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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

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 29-OCT-2013, 14:20

	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-OCT-2013,14:20

Pre-filter Length	11
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Induction Calibration MAI-A.A 45

Base Calibration on 21-MAY-2013,16:47
Field Check on 20-FEB-2014 09:15

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	0.0	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.6	3850.3

2	31.8	3628.6
3	28.8	3048.7
4	18.4	2078.7
Deep	16.1	1910.7
Medium	42.7	4059.7
Shallow	49.8	5482.0
Array Temperature	60.1	Deg F

Induction Constants MAI-A.A 45

Last Edited on 24-FEB-2014,07:24

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		

Photo Density Calibration MPD-B 31

Base Calibration on 20-JAN-2014 16:43
Field Check on 20-FEB-2014 09:22

Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	43628	22294	59556	30836
Reference 2	17956	1856	24941	2541
Field Check at Base				
	665.1	818.8		
Field Check				
	664.6	820.3		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	124	593		
Reference 1	17926	43516	0.415	0.371
Reference 2	5248	17873	0.297	0.272
Field Check at Base				

Field Check at Base 123.9 593.3

Field Check

121.9 588.3

Density Constants MPD-B 31

Last Edited on 24-FEB-2014,07:20

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	1.10	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 24-FEB-2014 03:42

Field Calibration on 24-FEB-2014 03:43

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	18272	3.99
2	26496	5.98
3	35155	7.97
4	43472	9.86
5	52816	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.97	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.dta

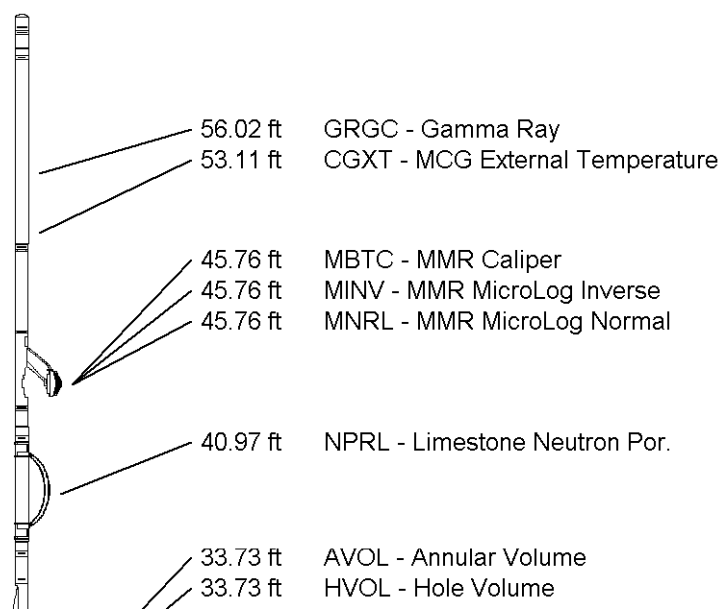
3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

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

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

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

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

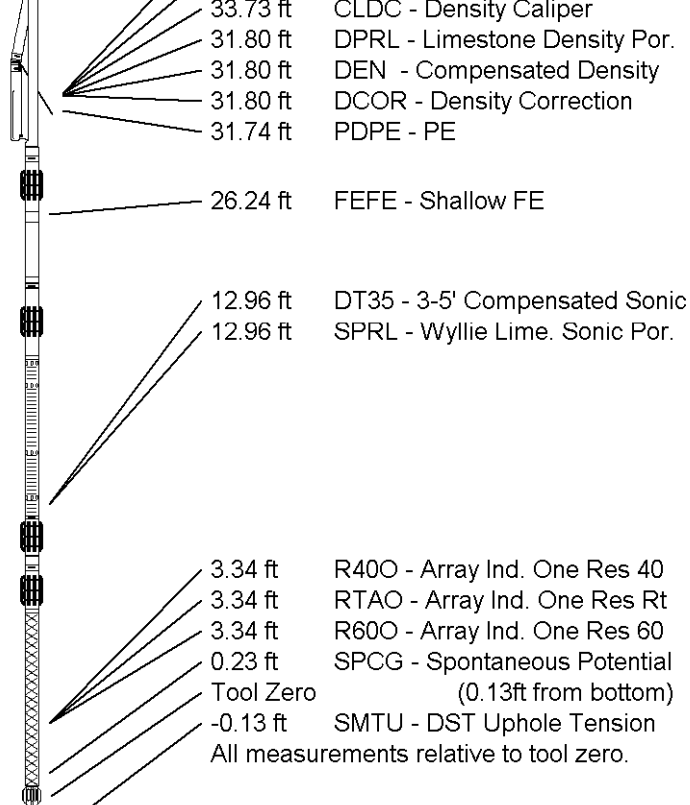


Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

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: 62.88 ft Weight: 471.8 lb



COMPANY	SHAKESPEARE OIL CO., INC.
WELL	ORTEGA #1-25
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3105.00	feet	First Reading	4836.00	feet
Elevation Drill Floor	3103.00	feet	Depth Driller	4870.00	feet
Elevation Ground Level	3095.00	feet	Depth Logger	4868.00	feet



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COMPENSATED NEUTRON
MICRORESISTIVITY LOG