

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY SHAKESPEARE OIL CO., INC.

WELL ELLIS #1-6

FIELD WILDCAT

PROVINCE/COUNTY SCOTT

COUNTRY/STATE U.S.A. / KANSAS

LOCATION 960' FSL & 565' FWL

SEC 6 TWP 16S RGE 32W Other Services

Latitude 38.6882684 MAI/MFE

Longitude -100.9053200

API Number 15-171-21233

Permanent Datum GL, Elevation 2983 feet

Log Measured From KB, 8.00 feet above Permanent Datum

Drilling Measured From KB

Elevations:
KB 2991.00
DF 2989.00
GL 2983.00

Date 24-SEP-2018

Run Number ONE

Service Order 18089-224935717

Depth Driller 4730.00 feet

Depth Logger 4728.00 feet

First Reading 4707.00 feet

Last Reading 3800.00 feet

Casing Driller 264.00 feet

Casing Logger 263.00 feet

Bit Size 7.875 inches

Hole Fluid Type CHEMICAL

Density / Viscosity 9.40 lb/USg 59.00 sec/qt

PH / Fluid Loss 8.00 11.20 ml/30Min

Sample Source FLOWLINE

Rm @ Measured Temp 0.67 @ 91.0 ohm-m

Rmf @ Measured Temp 0.54 @ 91.0 ohm-m

Rmc @ Measured Temp 0.80 @ 91.0 ohm-m

Source Rmf / Rmc CALC CALC

Rm @ BHT 0.54 @114.0 ohm-m

Time Since Circulation 4 HOURS

Max Recorded Temp 114.00 deg F

Equipment / Base 13379 ELRENO

Recorded By HAYDEN LEJEUNE

Witnessed By STEVE DAVIS

BOREHOLE RECORD

Last Edited: 24-SEP-2018 03:11

Bit Size
inches

7.875

Depth From
feet

264.00

Depth To
feet

4750.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

264.00

Weight
pounds/ft

24.00

SURFACE

REMARKS

- LOGGING SOFTWARE: 18.03.8633

- TOOLSTRING: MCB, SHA, MCG, MMR, MDN, MPD, SKJ, MFE, MAI RAN IN COMBINATION.

- HARDWARE USED:

MAI: TWO 0.5 INCH STANDOFFS.

MFE: ONE 0.5 INCH STANDOFF.

MDN: DUAL BOWSPRING

MPD: 8 INCH PROFILE PLATE.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

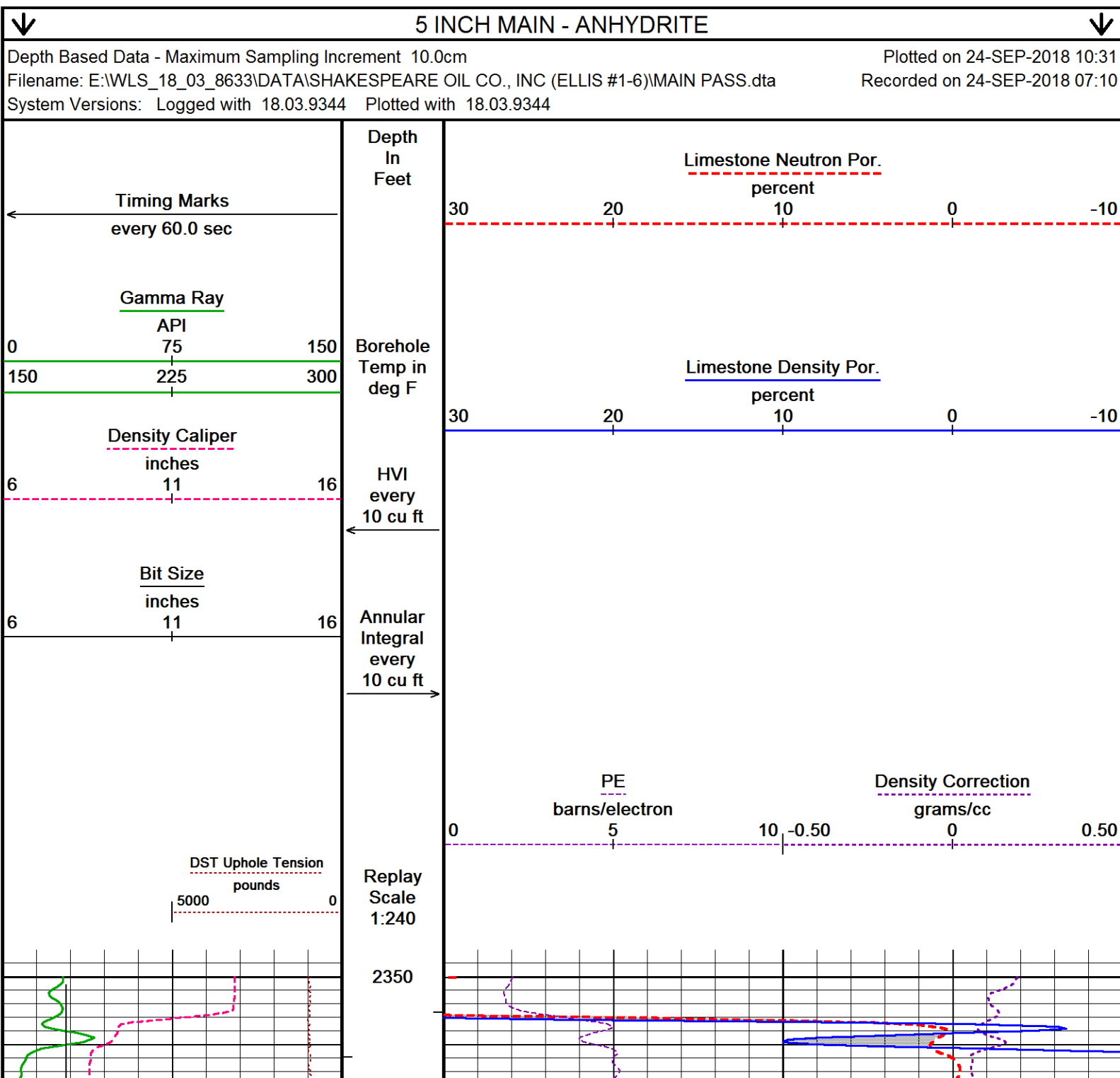
NEUTRON / DENSITY / MICROLOG = TD - 3800'

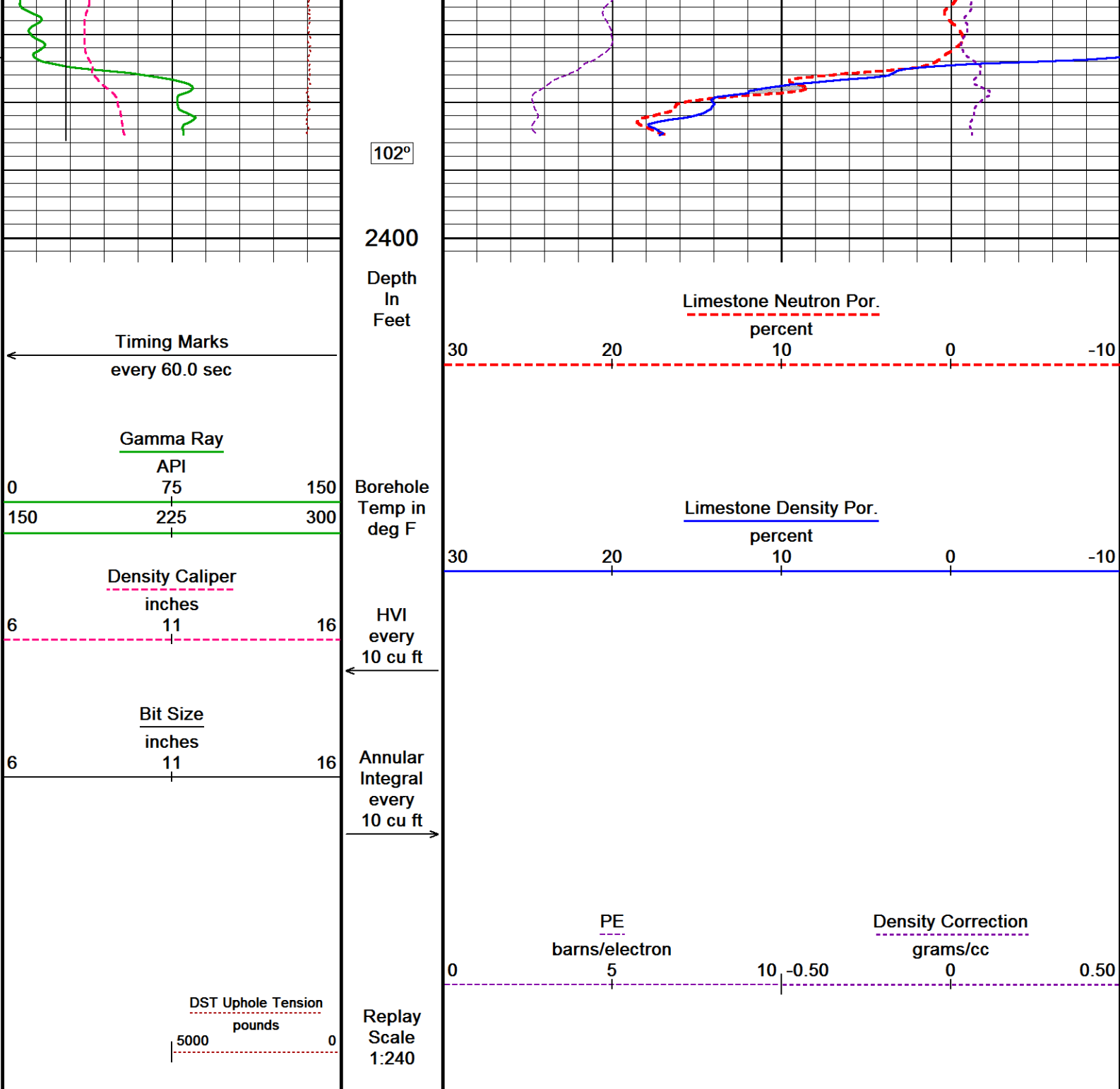
GAMMA / INDUCTION / CALIPER = TD - CASING SHOE

- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 1960 CU.FT.

- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 1470 CU.FT.

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

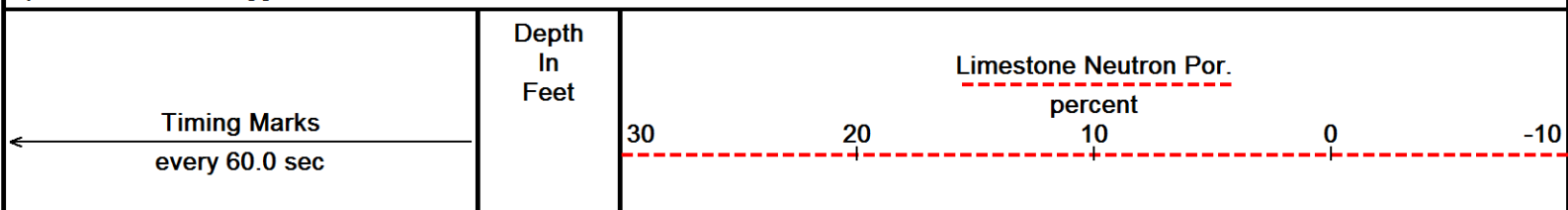
Plotted on 24-SEP-2018 10:31
Recorded on 24-SEP-2018 07:10

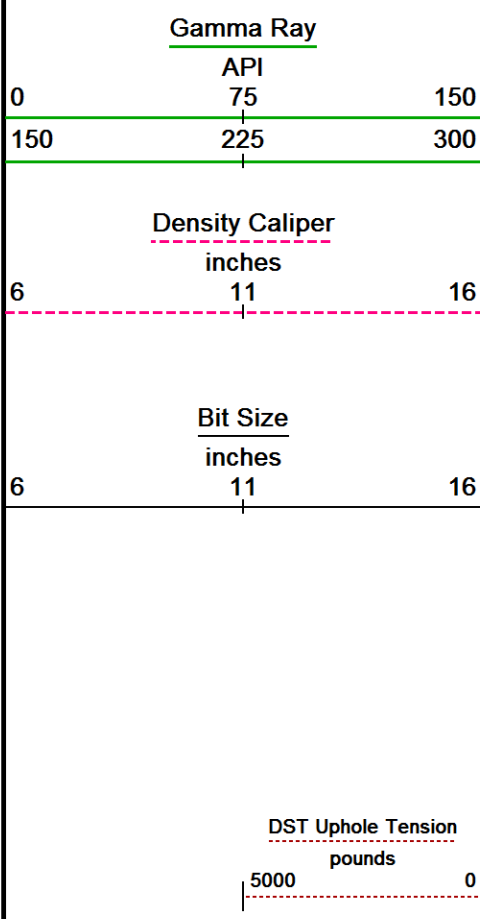
5 INCH MAIN - ANHYDRITE

5 INCH LIMESTONE MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

Plotted on 24-SEP-2018 10:31
Recorded on 24-SEP-2018 07:10



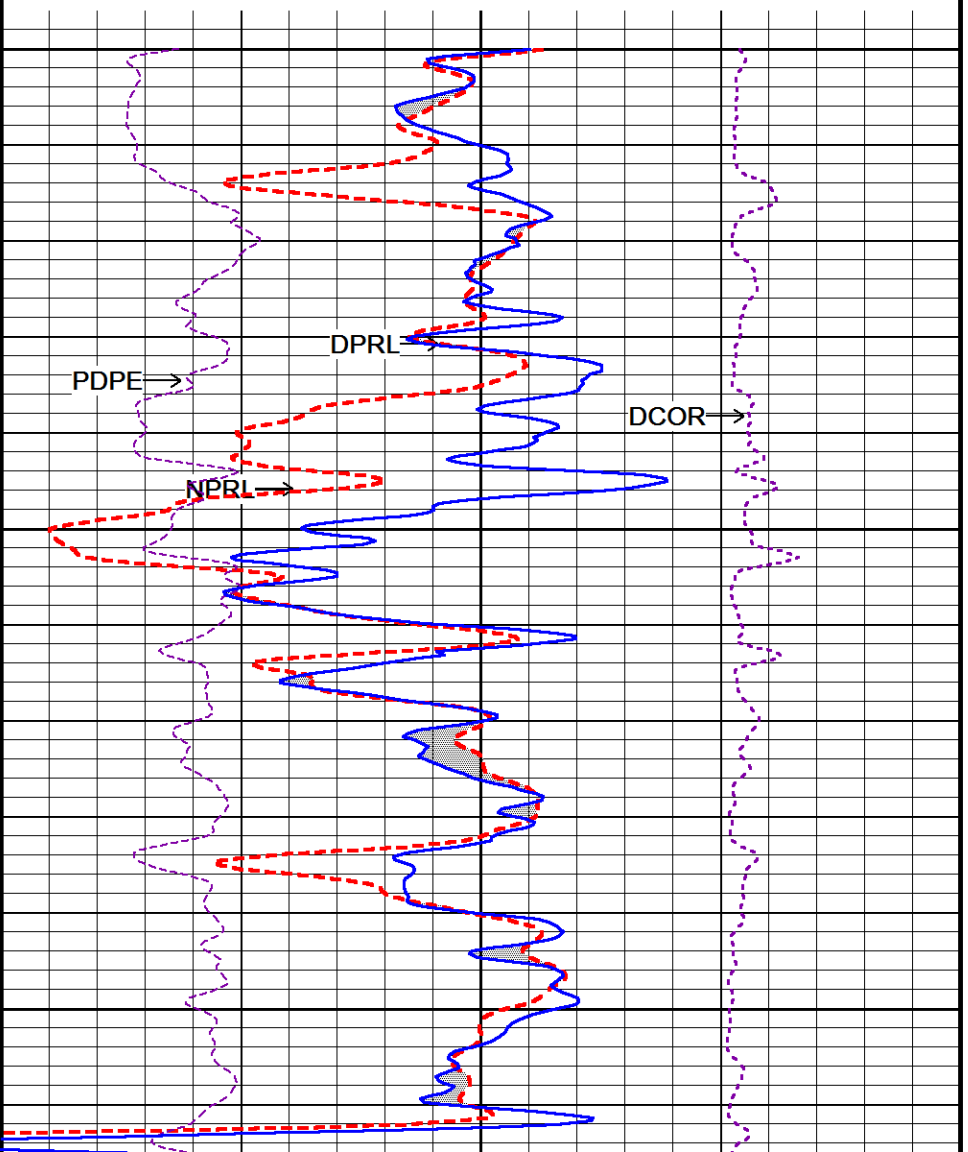
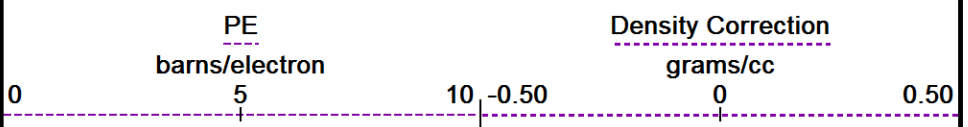
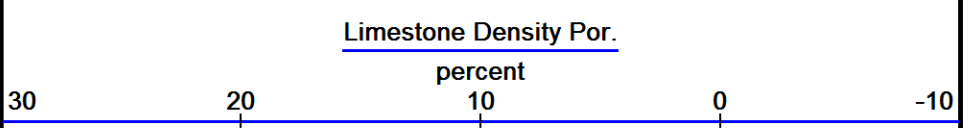
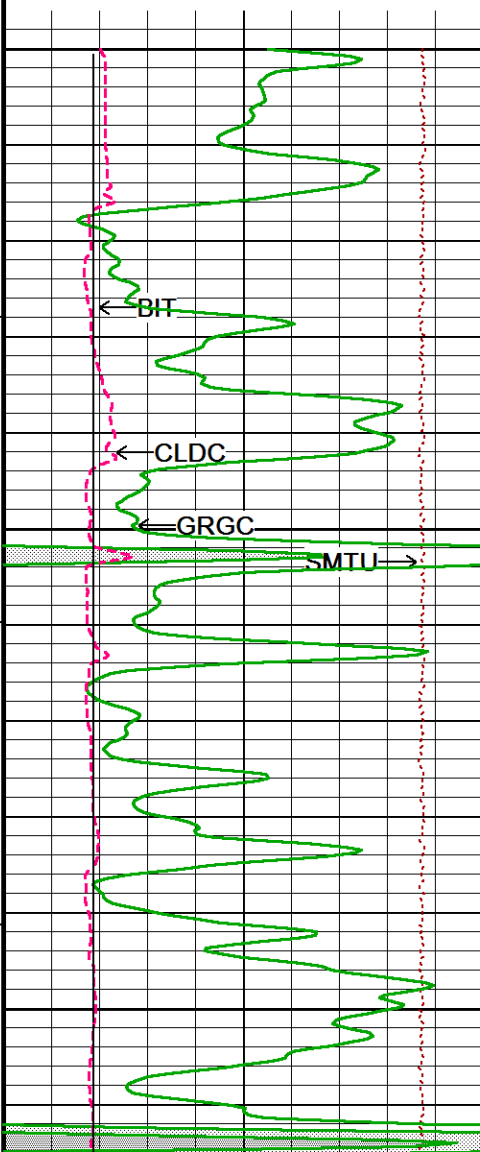


Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every
10 cu ft

Replay
Scale
1:240



3800

109°

3850

109°

3900

← BIT

← CLDC

← GRGC

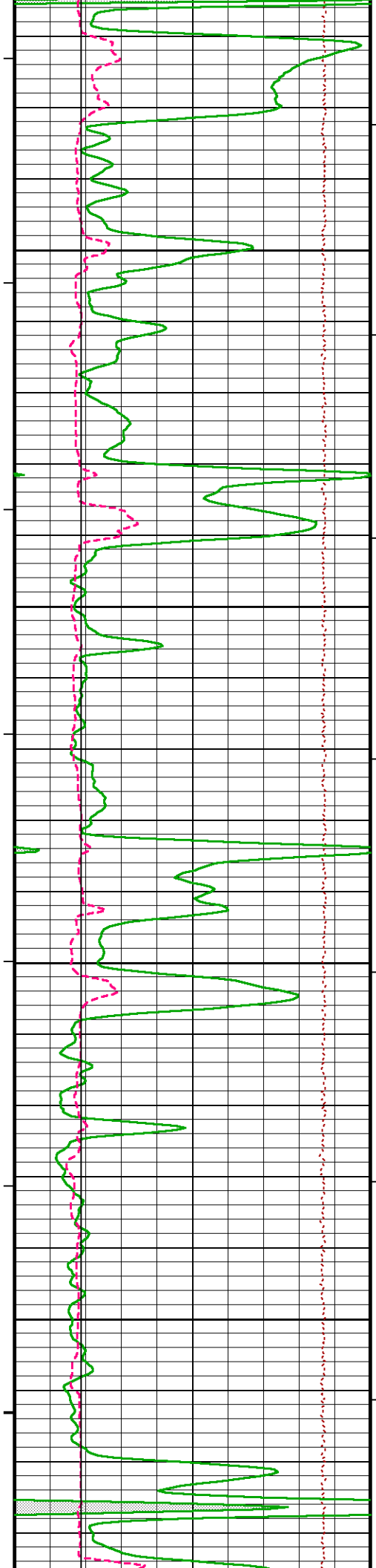
SMTU →

PDPE →

DPRL →

NPRL →

DCOR →



110°

3950

110°

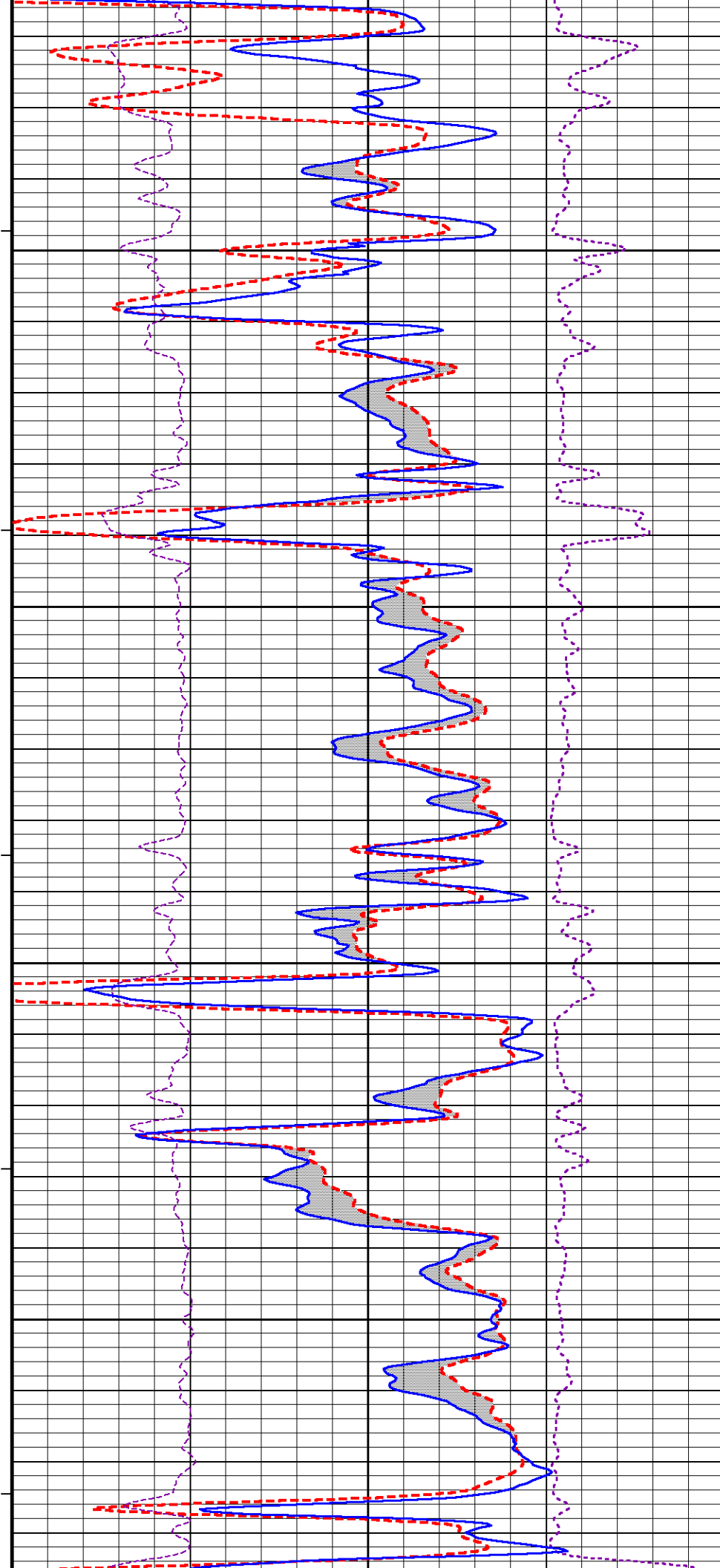
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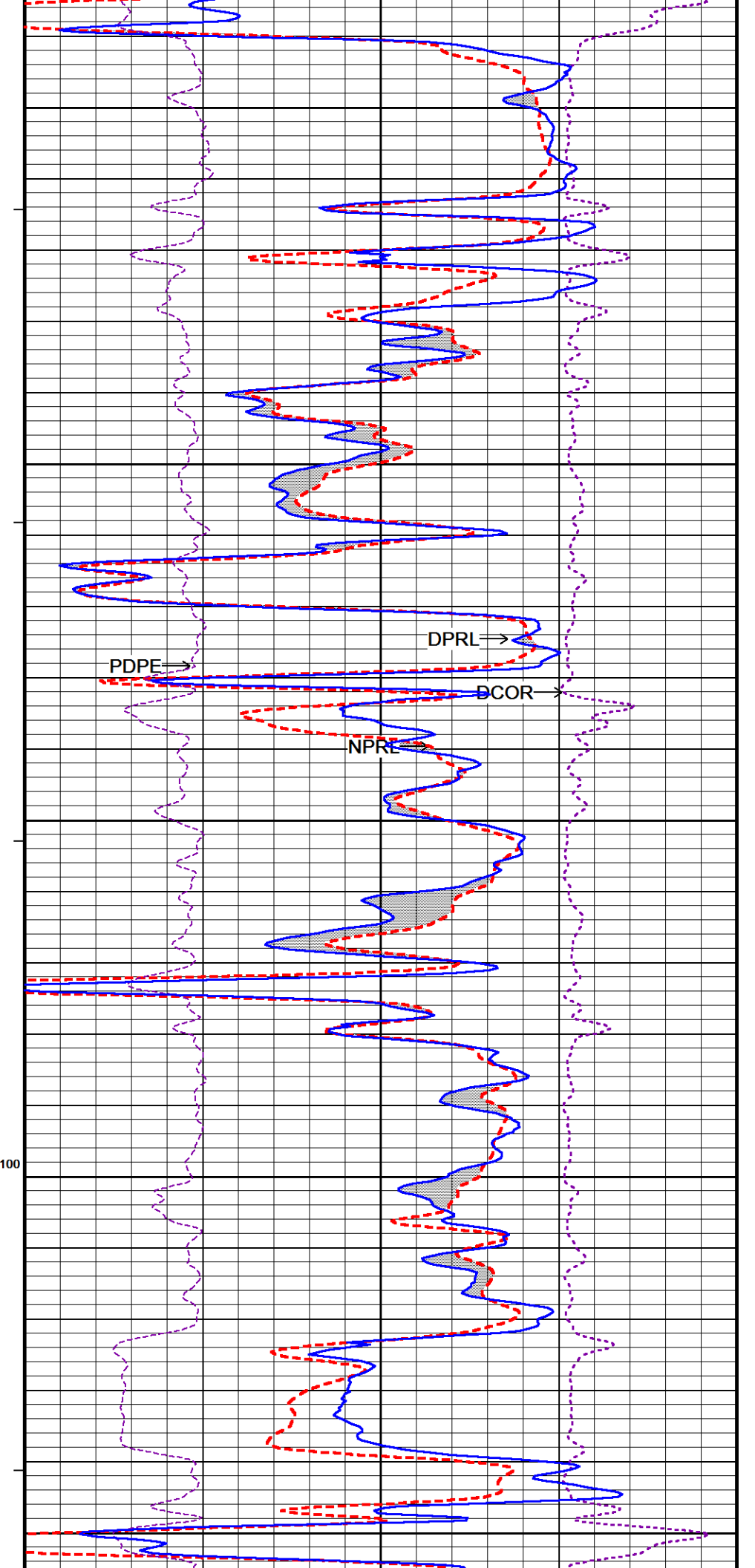
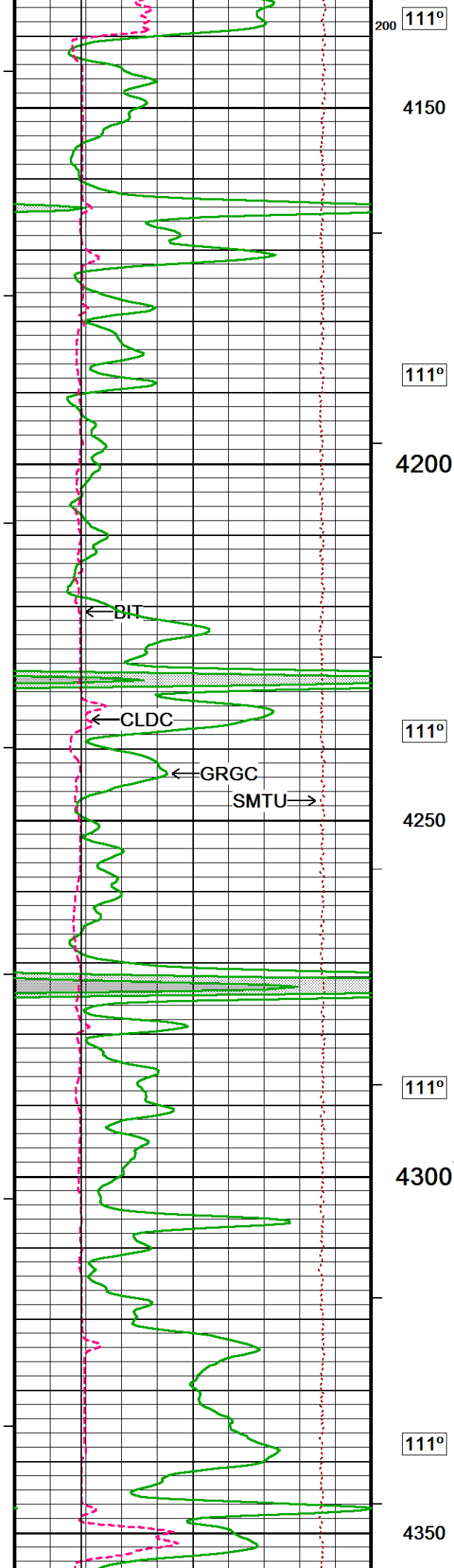
110°

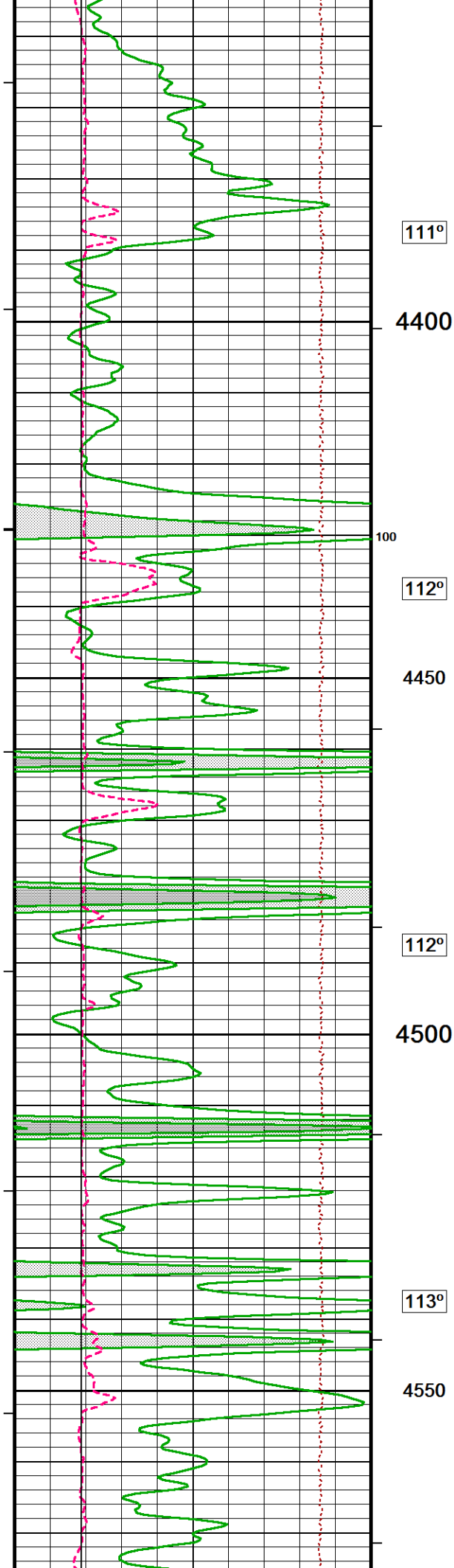
4050

111°

4100







111°

4400

100

112°

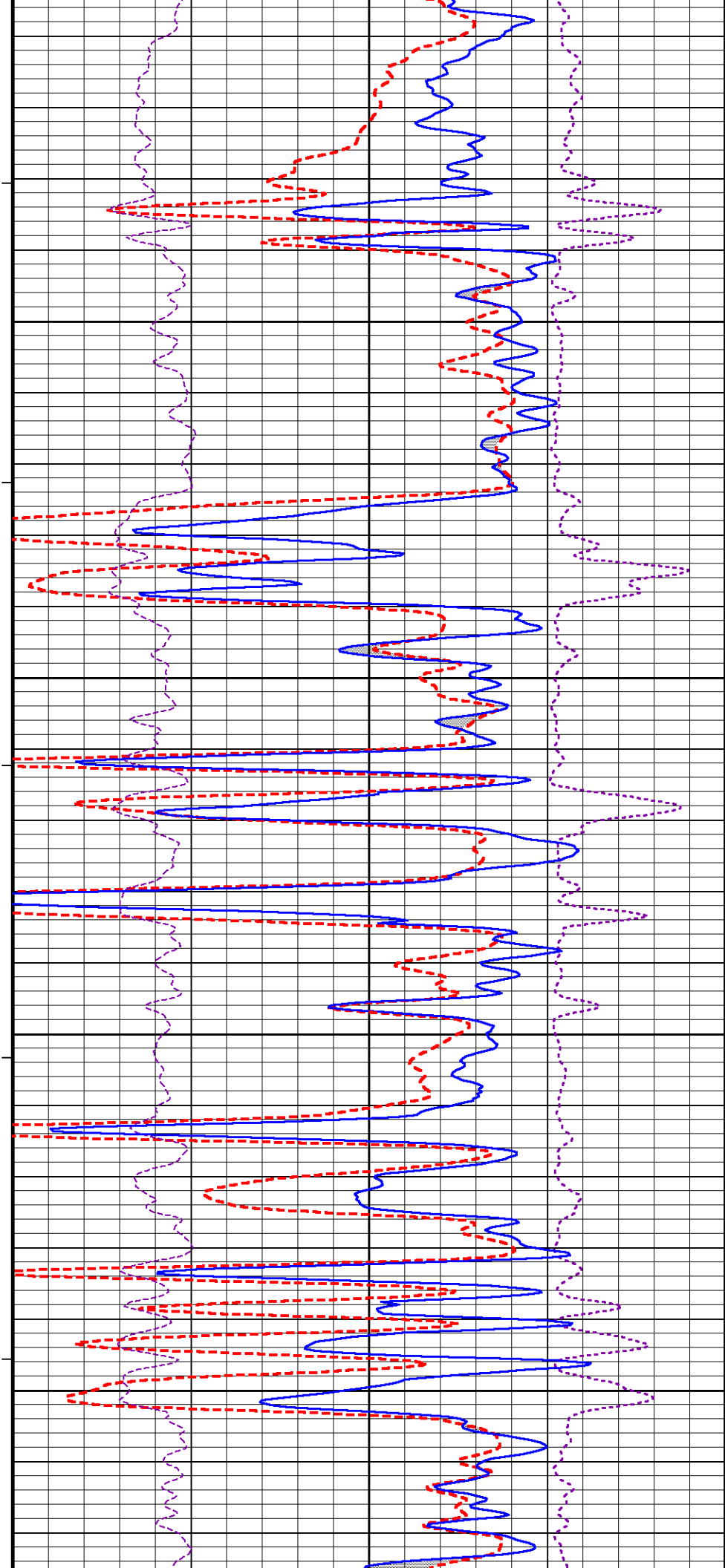
4450

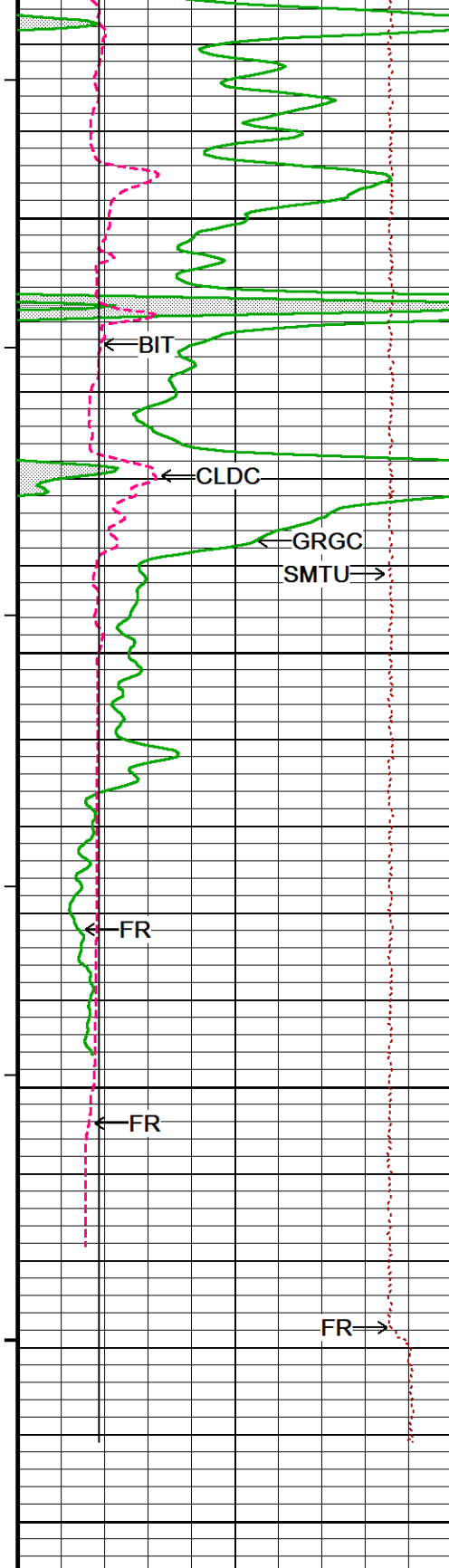
112°

4500

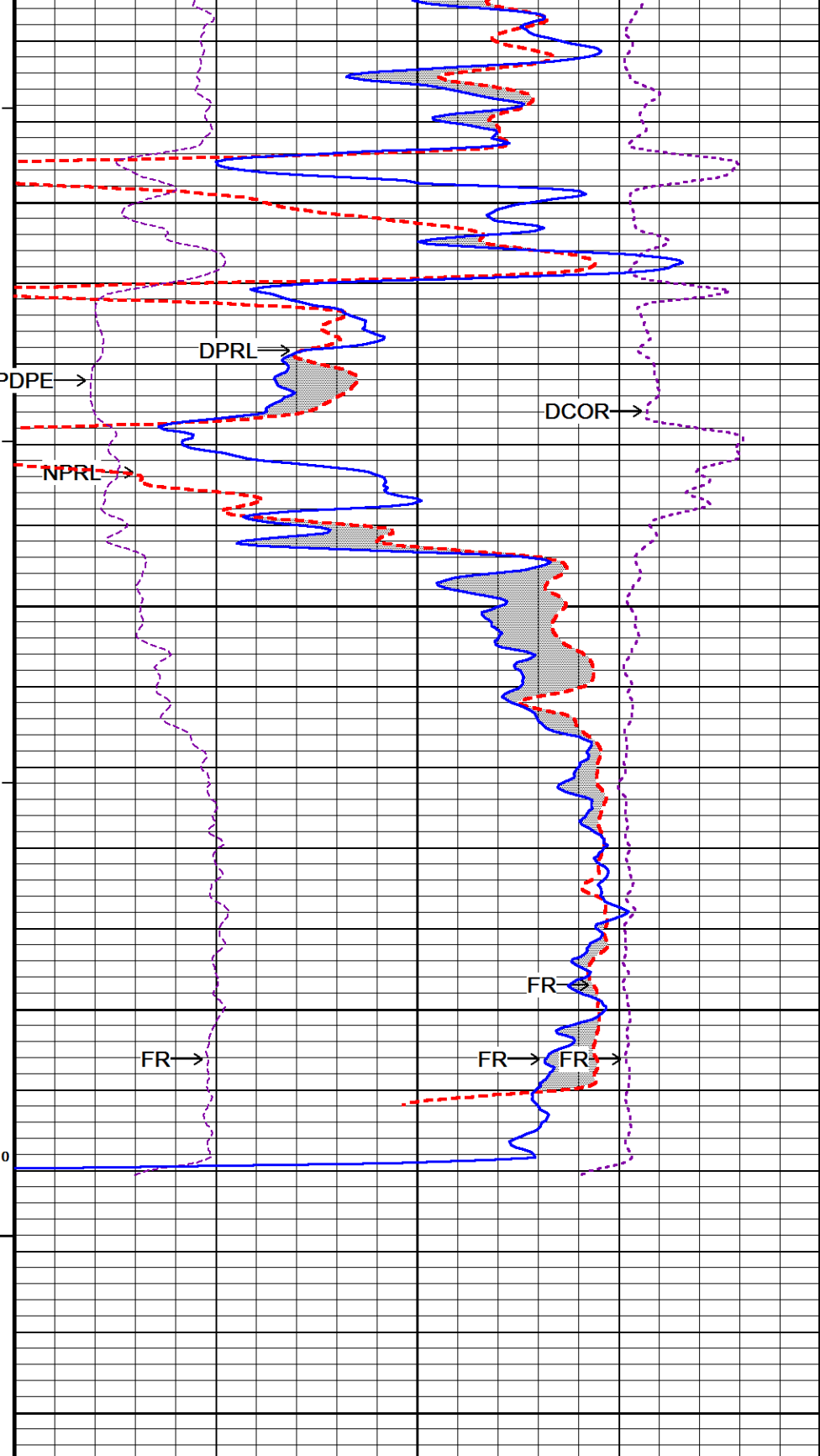
113°

4550





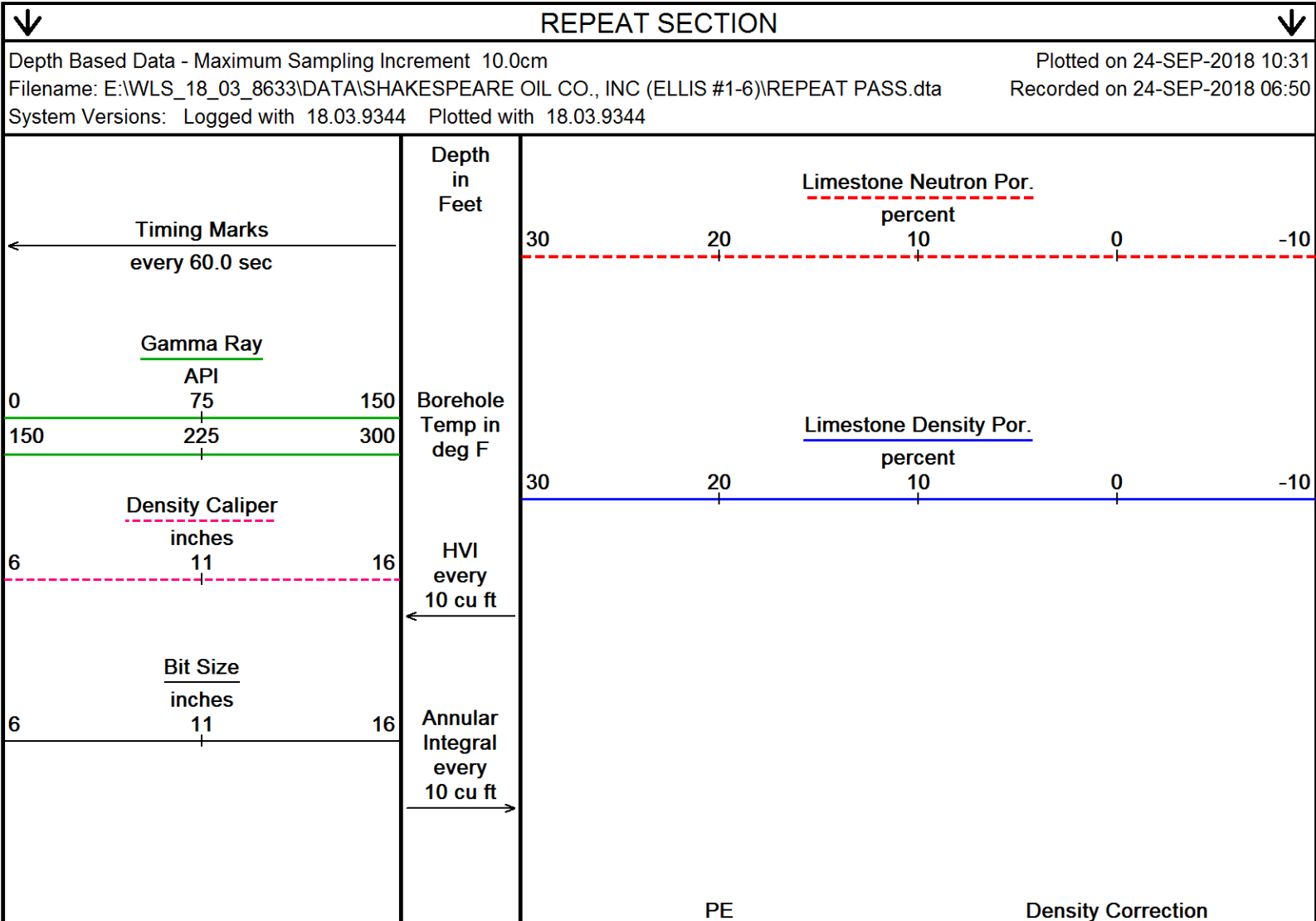
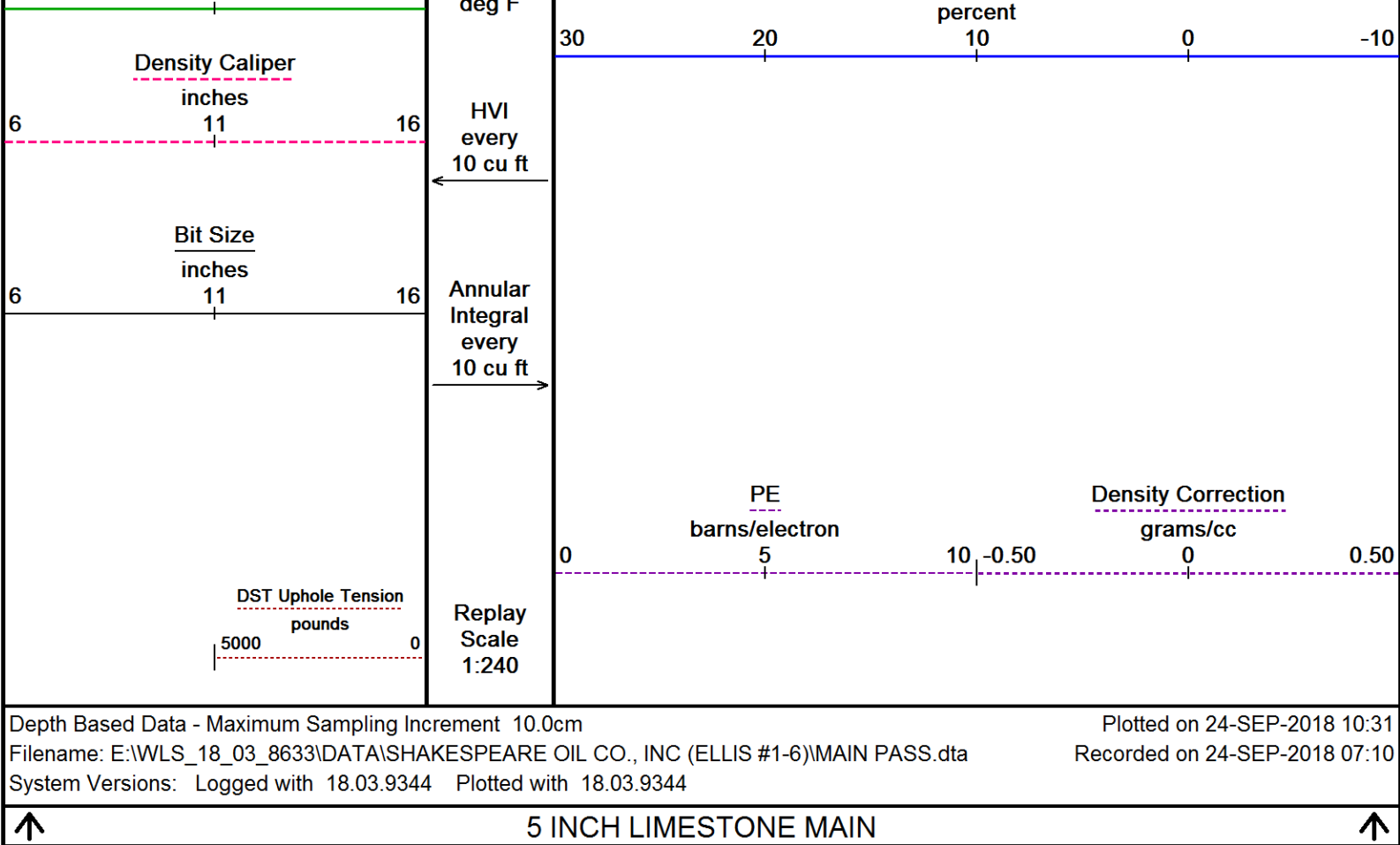
113°
4600
114°
4650
114°
4700
0
TD
4750
Depth In Feet

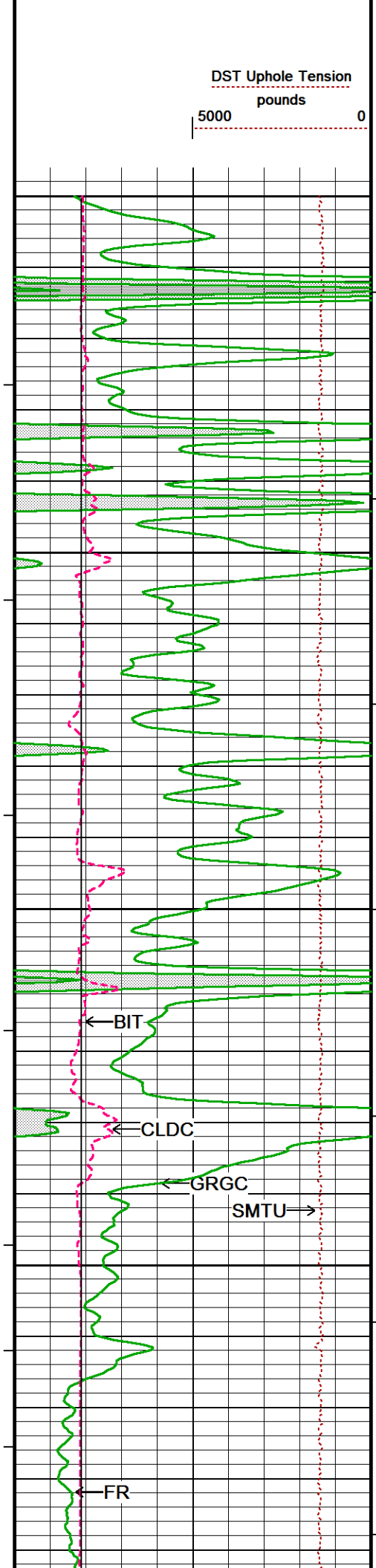


Limestone Neutron Por.
percent
30 20 10 0 -10
Limestone Density Por.

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300
Borehole Temp in deg F





Replay
Scale
1:240

4500

113°

4550

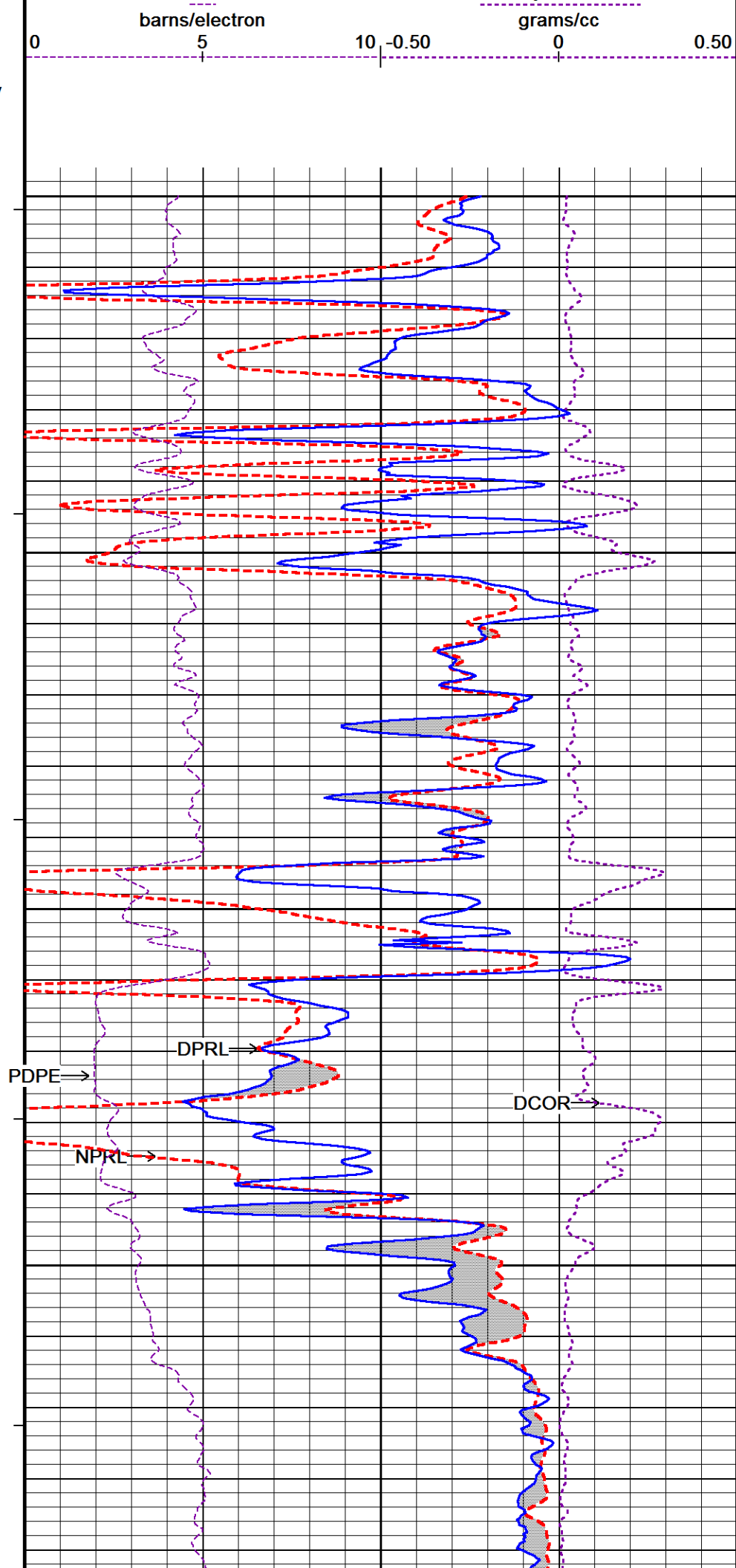
114°

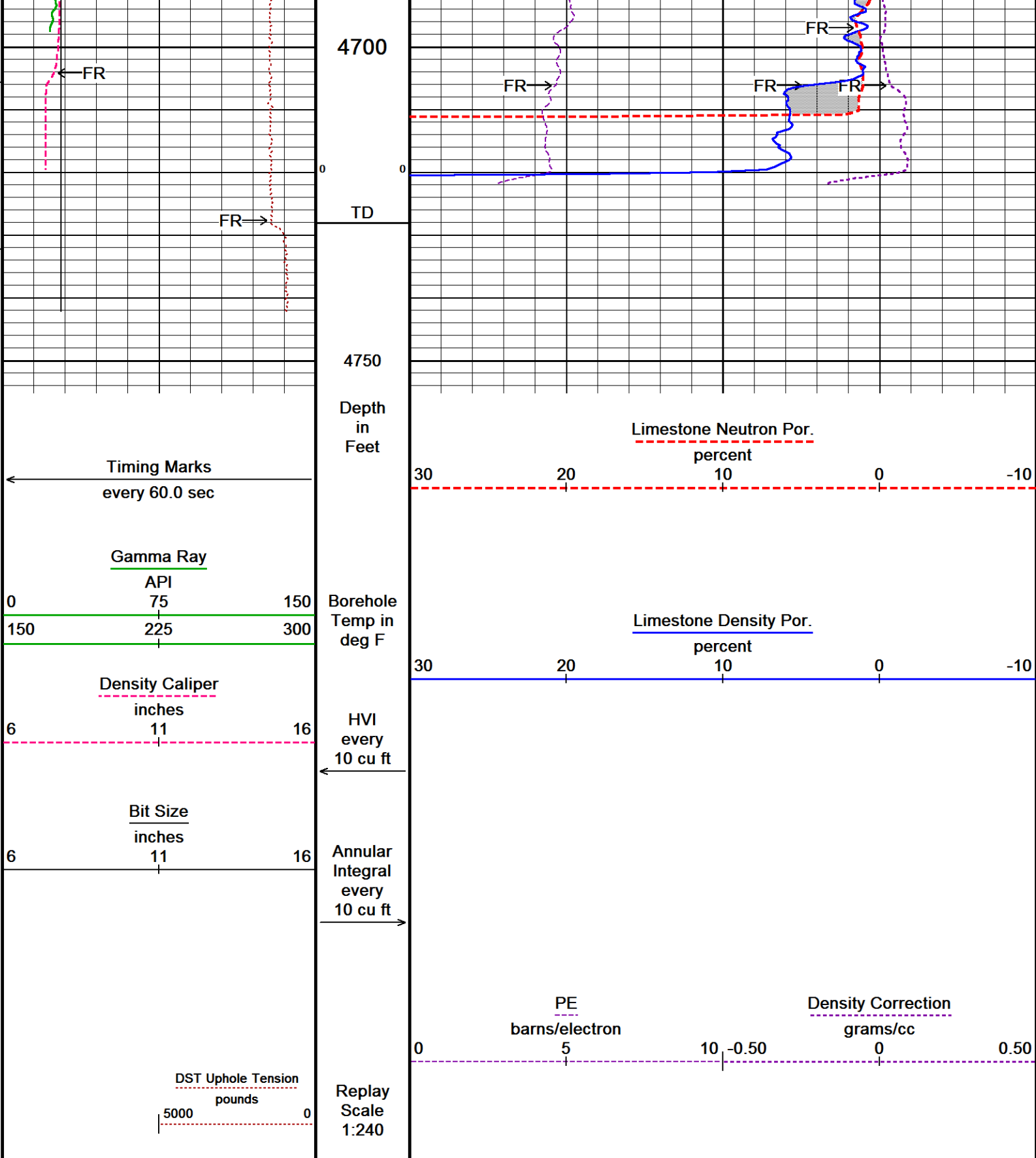
4600

113°

4650

113°



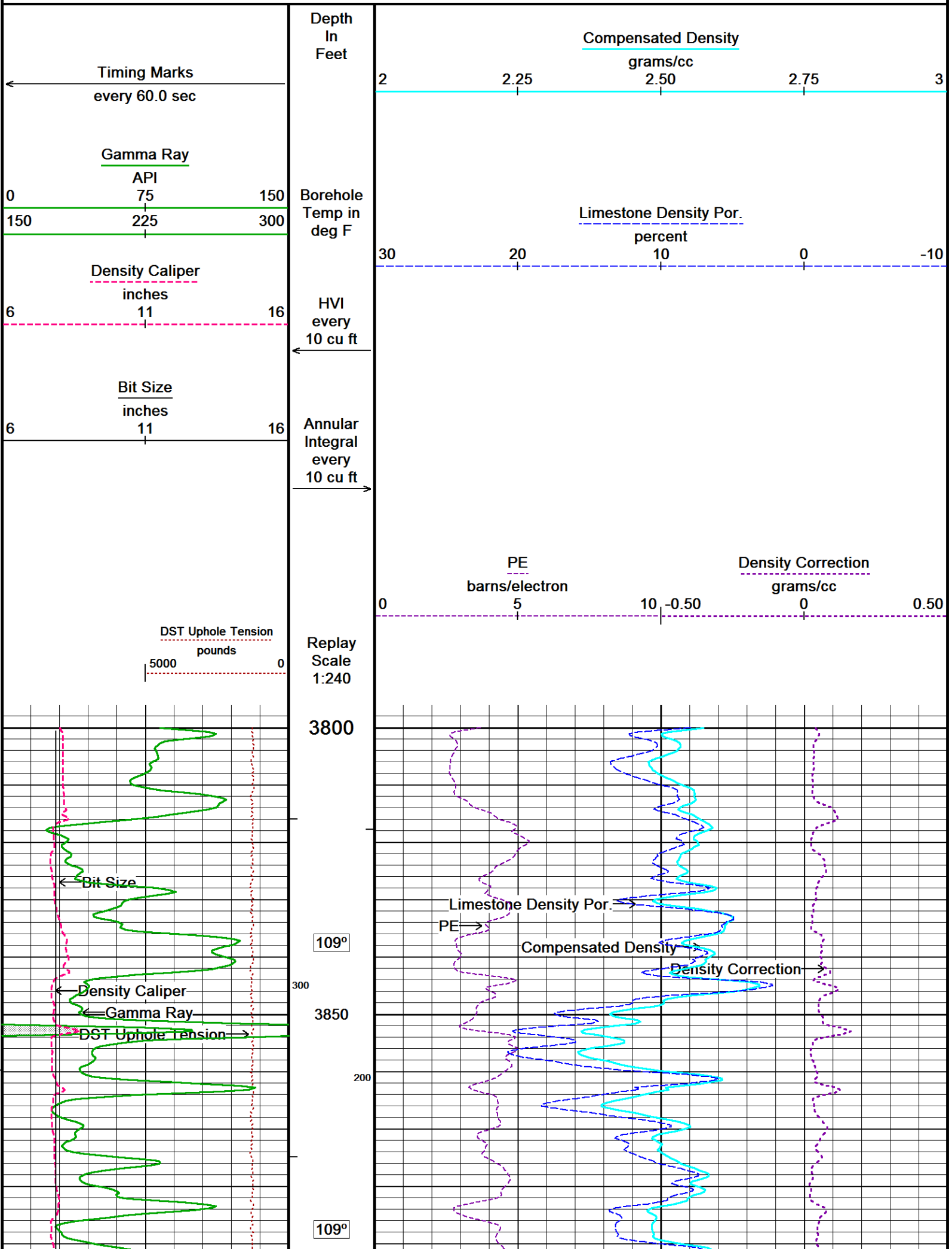


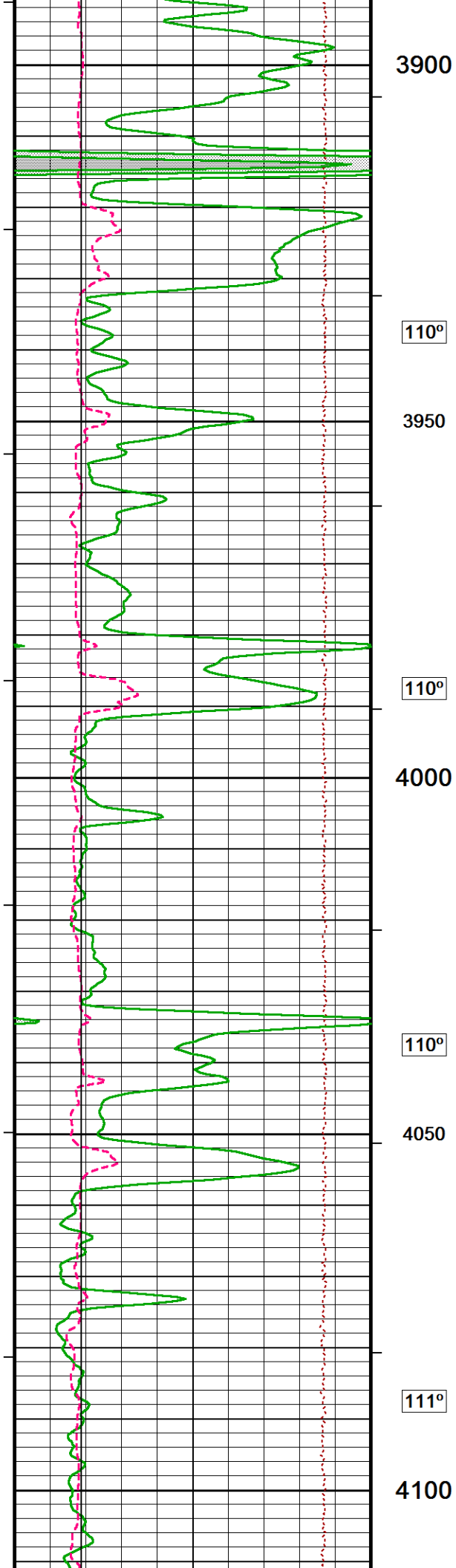
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 24-SEP-2018 10:31
Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\REPEAT PASS.dta Recorded on 24-SEP-2018 06:50
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

↑ REPEAT SECTION ↑

↓ 5 INCH BULK DENSITY MAIN ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 24-SEP-2018 10:31
Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta Recorded on 24-SEP-2018 07:10
System Versions: Logged with 18.03.9344 Plotted with 18.03.9344





3900

110°

3950

110°

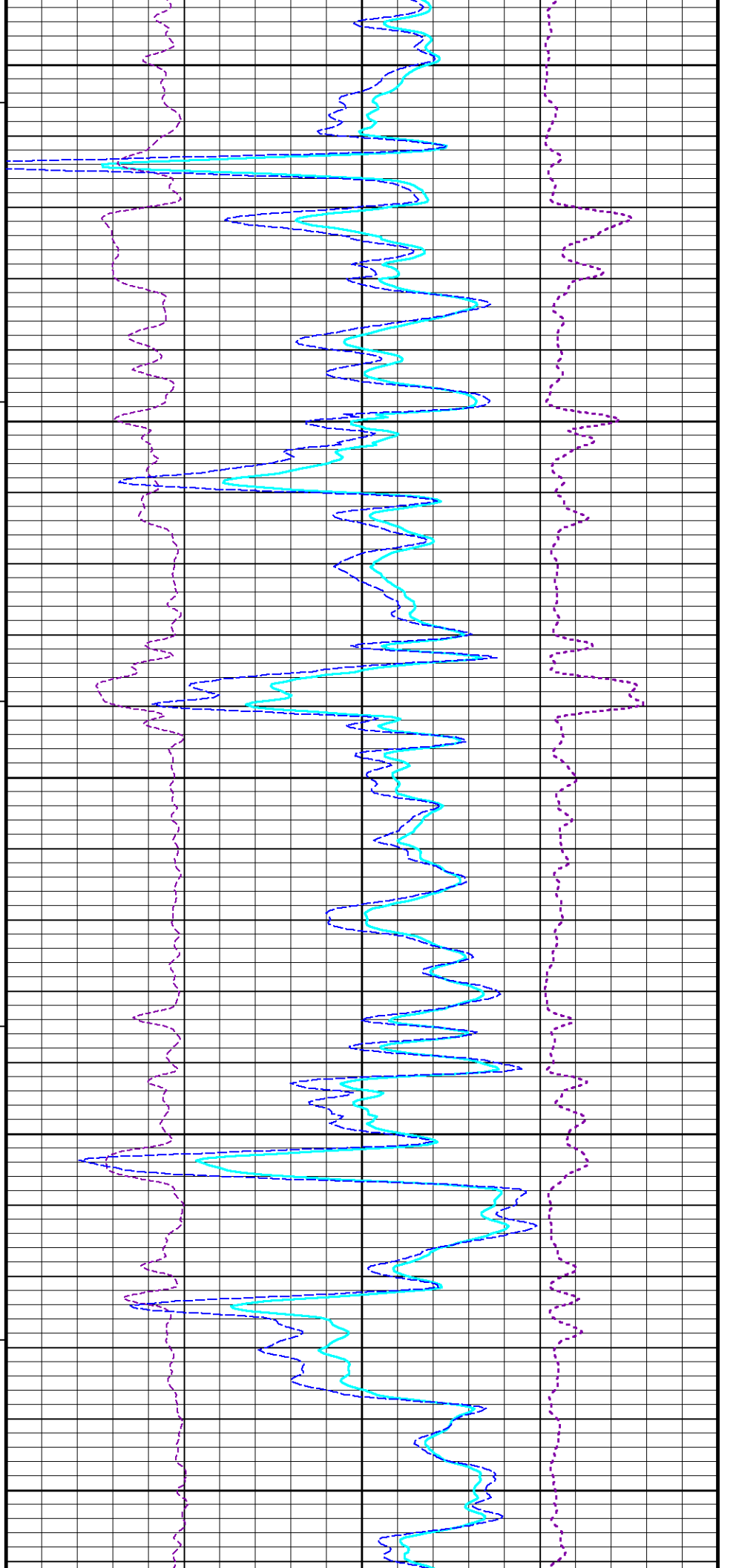
4000

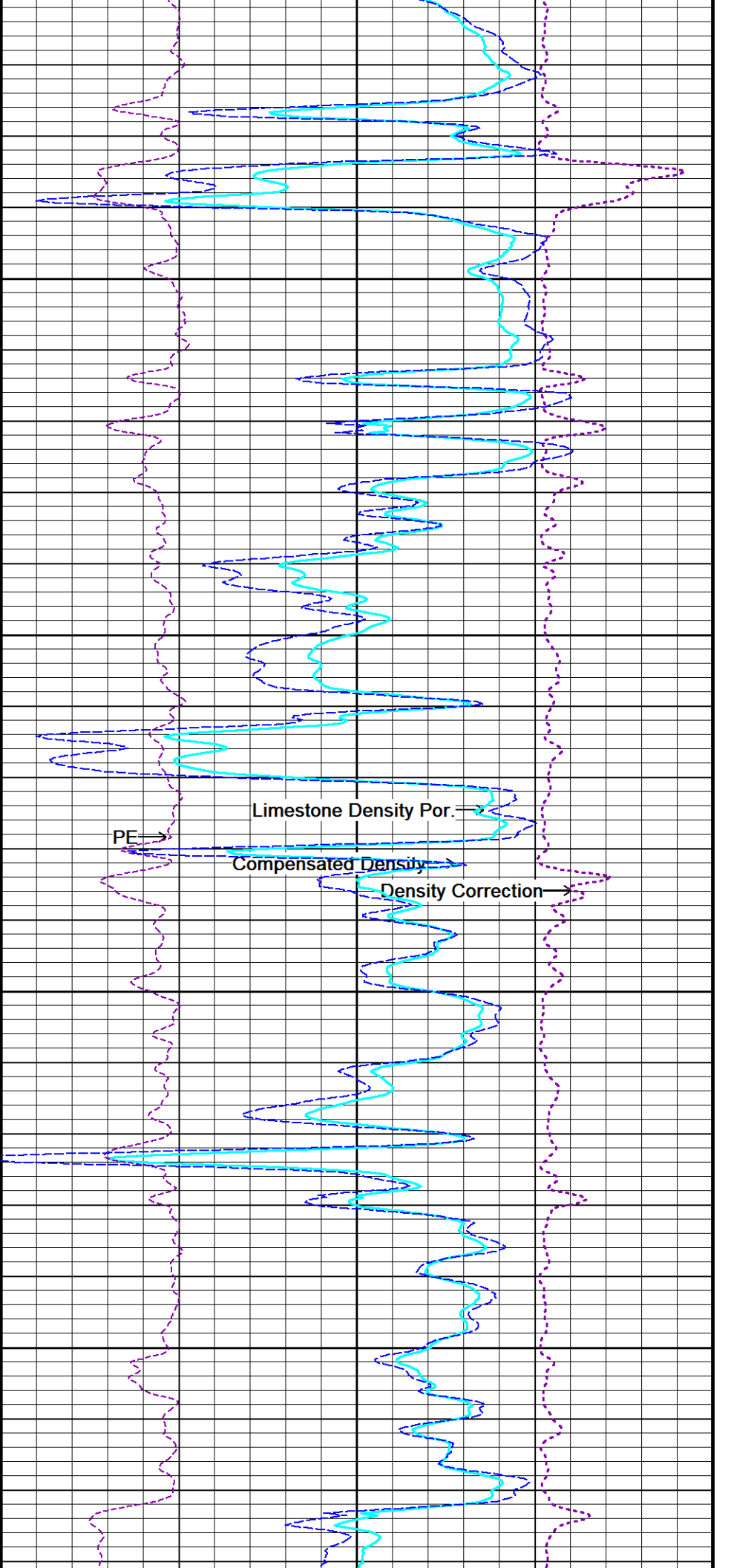
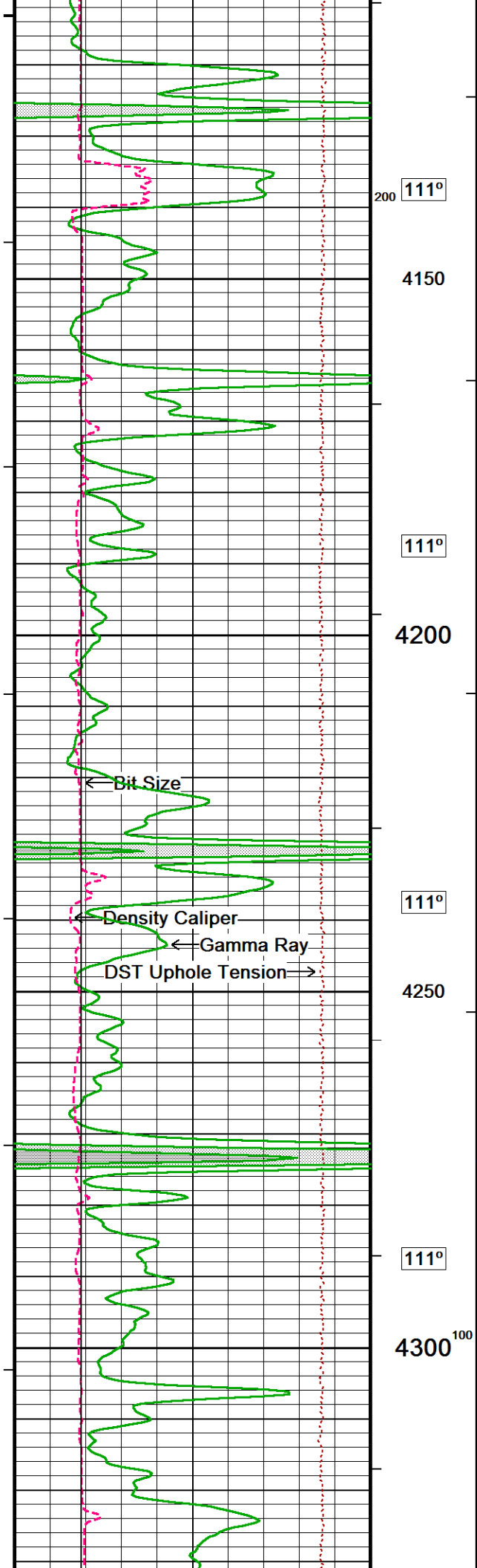
110°

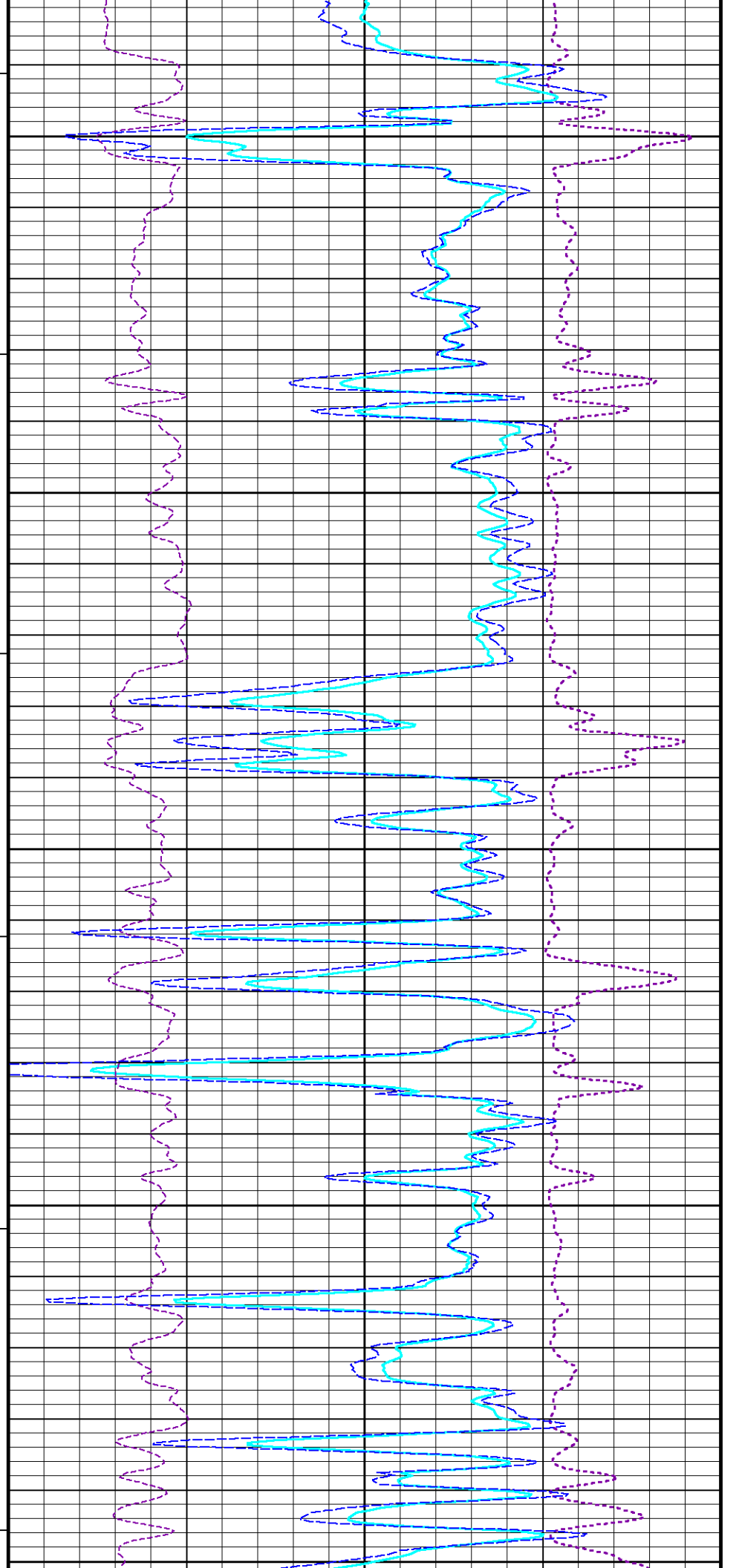
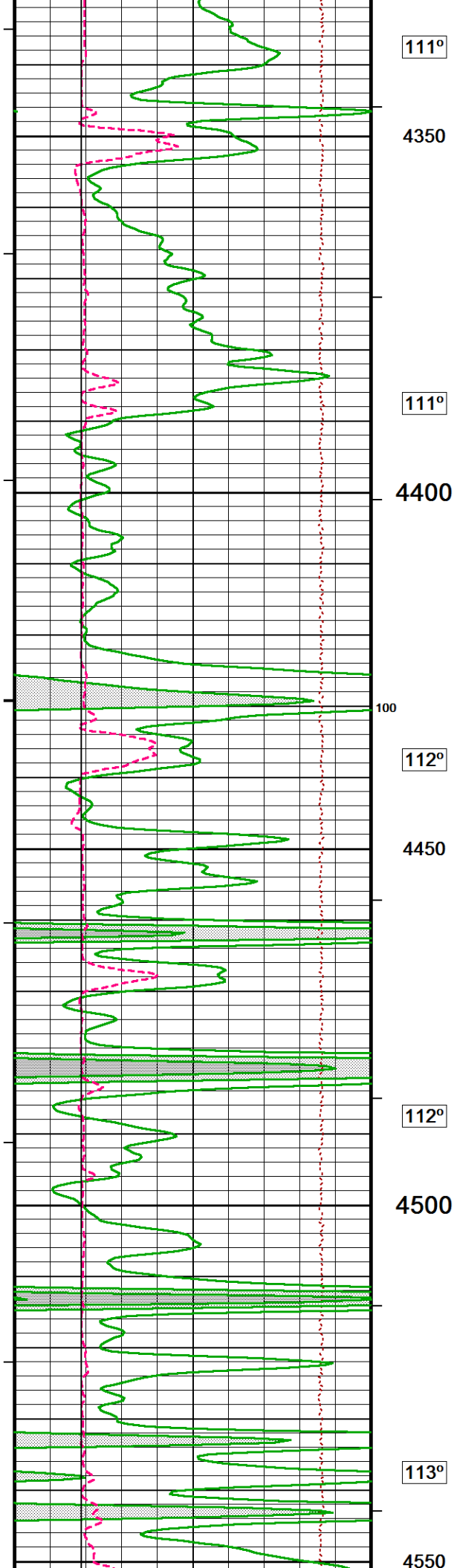
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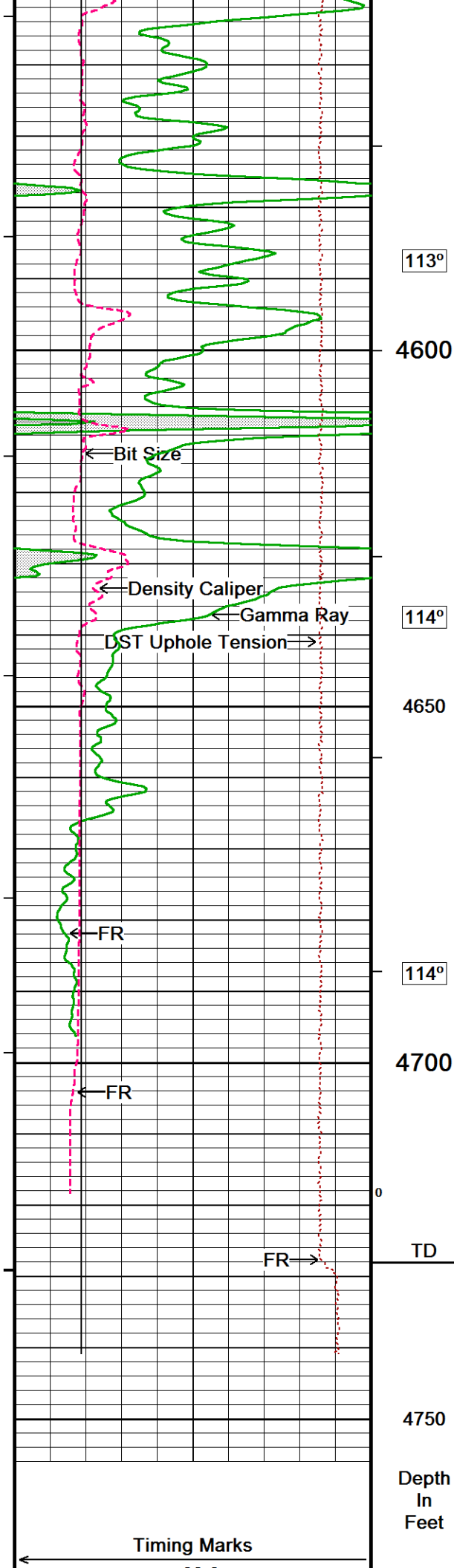
111°

4100









113°

4600

114°

4650

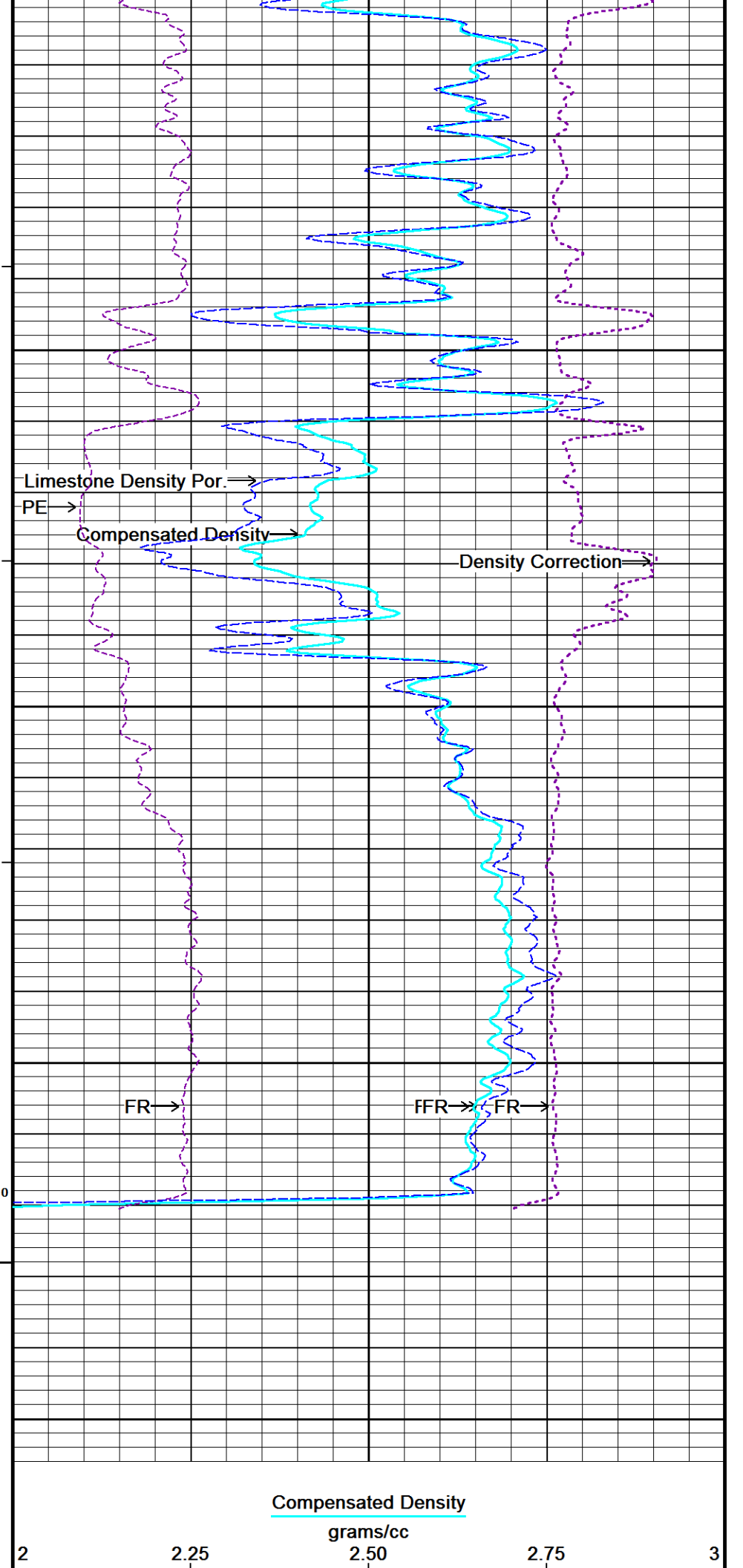
114°

4700

TD

4750

Depth
In
Feet



Limestone Density Por. →

PE →

Compensated Density →

Density Correction →

FR →

FFR →

FR →

Compensated Density

grams/cc

2

2.25

2.50

2.75

3

every 60.0 sec

Gamma Ray

API

75

225

300

Density Caliper

inches

11

Bit Size

inches

11

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 Density Por.

percent

30

20

10

0

-10

PE

barns/electron

0

5

10

-0.50

Density Correction

grams/cc

0

0.50

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 24-SEP-2018 10:31

Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta

Recorded on 24-SEP-2018 07:10

System Versions: Logged with 18.03.9344 Plotted with 18.03.9344



5 INCH BULK DENSITY MAIN



REPEAT SECTION



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 24-SEP-2018 10:31

Filename: E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\REPEAT PASS.dta

Recorded on 24-SEP-2018 06:50

System Versions: Logged with 18.03.9344 Plotted with 18.03.9344

Timing Marks

every 60.0 sec

Gamma Ray

API

75

225

300

Density Caliper

inches

11

Bit Size

inches

11

Depth
in
Feet

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular

Compensated Density

grams/cc

2

2.25

2.50

2.75

3

Limestone Density Por.

percent

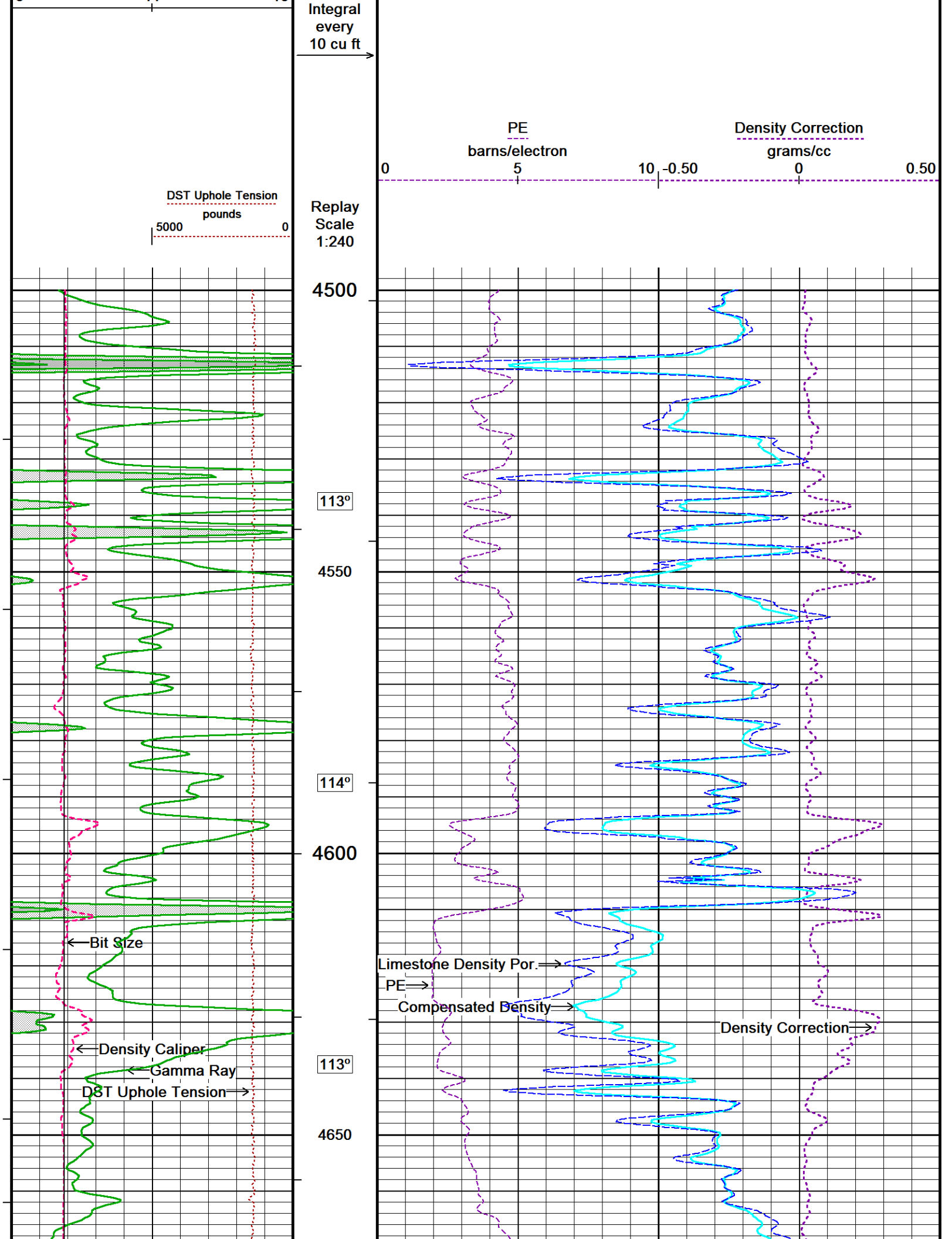
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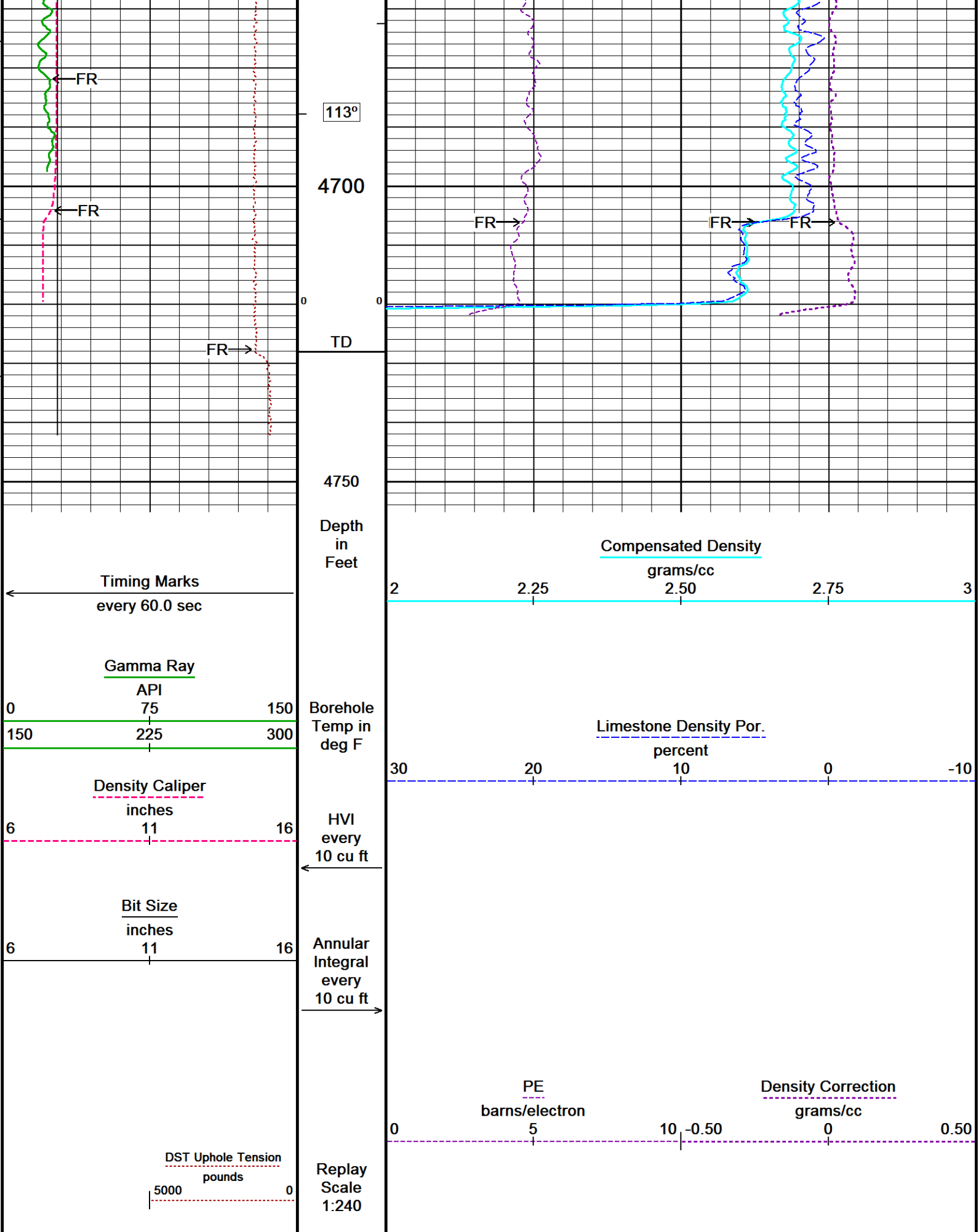
20

10

0

-10





BEFORE SURVEY CALIBRATION

E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta

General Constants All 000			Last Edited on 24-SEP-2018,06:22
General Parameters			
Mud Resistivity	0.670	ohm-metres	
Mud Resistivity Temperature	91.000	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	4.500	inches	
Caliper for Differential Caliper	Density Caliper		
Rwa Parameters			
Porosity used	Crossplot Porosity		
Resistivity used	Array Ind. Two Res Rt		
RWA Constant A	0.620		
RWA Constant M	2.150		
SW/APOR Tool Source	0.000		

High Resolution Temperature Calibration MCG-D.K 424		Field Calibration on 19-SEP-2018,09:20	
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	212.00	212.00	

High Resolution Temperature Constants MCG-D.K 424		Last Edited on 01-SEP-2018,11:30	
Pre-filter Length	11		

Gamma Calibration MCG-D.K 424		Field Calibration on 24-SEP-2018,03:05	
	Measured	Calibrated (API)	
Background	63	45	
Calibrator (Gross)	1840	1306	
Calibrator (Net)	1777	1261	

Gamma Calibration Tolerances MCG-D.K 424			
Ratio	1.409	1.40 1.475 1.55	Counts/API

Gamma Constants MCG-D.K 424			Last Edited on 24-SEP-2018,03:04		
Gamma Calibrator Number	046				
GRC-M Calibrator Jig in Use?	NO				
Inactive Background Jig in Use?	NO				
Mud Density	1.13	gm/cc			
Caliper Source for Processing	Density Caliper				
Tool Position	Eccentred				
Potassium Equivalence	Chloride				
K Mud Concentration	0.00	%			

Caliper Calibration MPD-C.A 271			Base Calibration on 01-SEP-2018 21:29	
			Field Calibration on 21-SEP-2018 11:38	
Base Calibration				
Reading No		Measured	Calibrator Size (in)	
1		14576	4.00	
2		24544	5.98	
3		34624	7.99	
4		44144	9.86	
5		54767	11.88	
6		N/A	N/A	
Field Calibration				

Actual Caliper (in)
7.96

Short Arm Field Cal. 7.96

	7.76	7.96	8.16

 in

Base Calibration on 01-SEP-2018 21:13
Field Check on 24-SEP-2018,03:06

Measured		Calibrated (sdu)	
Near	Far	Near	Far
1059	1241		
47125	23357	59494	30754
19293	2321	24557	2522

Field Check at Base	1058.8	1240.8
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Field Check	1061.0	1223.6
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	Measured		Calibrated
WS	WH	Ratio	Ratio
191	957		
17573	46966	0.378	0.367
5208	19180	0.275	0.271

Field Check at Base	191.5	956.9
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Field Check	188.6	956.0
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		-5%	2.52	+5%
Near Density Ratio	2.53	0.089	0.110	0.131
PE Calibration	0.097			

Far Density Ratio 20.47

	0.089	0.110	0.131
PE Calibration	0.097		

Near Den. Field Check 1061.0 

Far Den. Field Check 1223.6

		-5%	191.5	+5%
PE WS Field Check	188.6			

PE WH Field Check	956.0				
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Last Edited on 24-SEP-2018,03:06

Density Source Id	P561358B	
Nylon Calibrator Number	766	
Aluminium Calibrator Number	633	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.13	gm/cc
Mud Density Type		
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	
Precision Enhanced Density Processing	Applied	

[illegible]

DOWNHOLE EQUIPMENT

E:\WLS_18_03_8633\DATA\SHAKESPEARE OIL CO., INC (ELLIS #1-6)\MAIN PASS.dta

11B Tension Cablehead
MCB-A 1 LG: 2.18 ft WT: 19.8 lb OD: 2.244 in

Compact Swivel Head Adaptor
SHA-J.B 596 LG: 2.30 ft WT: 22.0 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 424 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-B.J 391 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

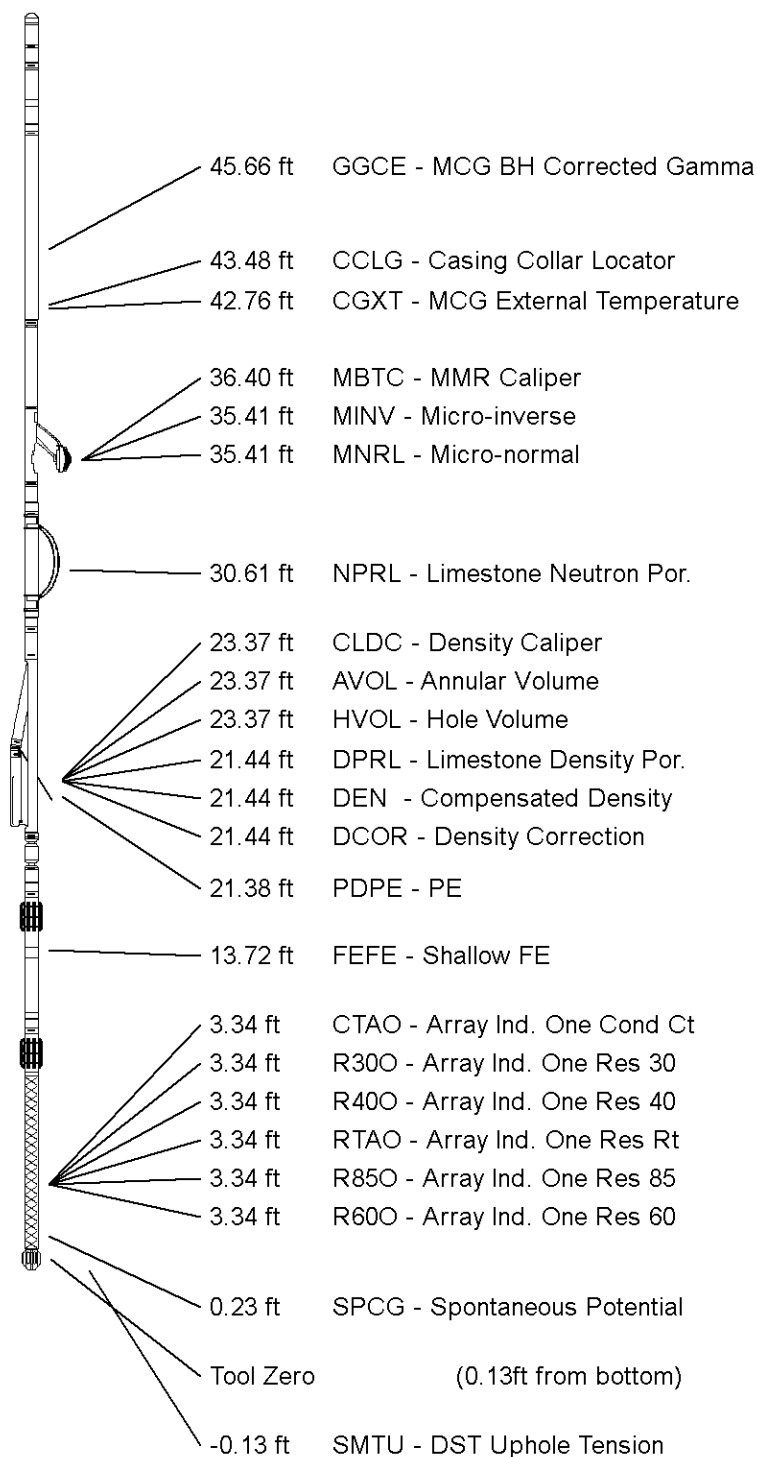
Compact Density/Caliper
MPD-C.A 271 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Knuckle Joint
SKJ-E.B 455 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in

Compact Focussed Electric
MFE-B.J 359 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Induction
MAI-B.J 375 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 55.43 ft Weight: 449.7 lb



All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	ELLIS #1-6
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2991	feet	First Reading	4707.00	feet
Elevation Drill Floor	2989	feet	Depth Driller	4730.00	feet
Elevation Ground Level	2983	feet	Depth Logger	4728.00	feet

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG