COMPACT PHOTO-DENSITY
DUAL SPACED NEUTRON
MICRO-RESISTIVITY LOG

Weatherford®

COMPANY	SHAKESPEARE OIL CO., INC.
WELL	SCHOWALTER #8-12
FIELD	BECKLEY NORTH
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	SE NW SE SE 985' FSL & 940' FEL

SEC	TWP	RGE	Other Services
12	18S	32W	MAI/MFE

Latitude	38.500277
Longitude	-100.800000
API Number	15-171-21253

Permanent Datum GL, Elevation 2962 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	2972.00
DF	2970.00
GL	2962.00

Date	26-JUN-2019				
Run Number	ONE				
Service Order	17937-248748599				
Depth Driller	4650.00	feet			
Depth Logger	4649.00	feet			
First Reading	4628.00	feet			
Last Reading	3600.00	feet			
Casing Driller	265.00	feet			
Casing Logger	265.00	feet			
Bit Size	7.875	inches			
Hole Fluid Type	WATER-BASED				
Density / Viscosity	9.10	lb/USg	46.00	sec/qt	
PH / Fluid Loss	10.00		8.80	ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	0.98 @ 96.0	ohm-m			
Rmf @ Measured Temp	0.78 @ 96.0	ohm-m			
Rmc @ Measured Temp	1.18 @ 96.0	ohm-m			
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.78 @122.0	ohm-m			
Time Since Circulation	4 HOURS				
Max Recorded Temp	122.00	deg F			
Equipment / Base	13057		ELRENO		
Recorded By	MATT MCGLOTHLIN				
Witnessed By	VERN SCHARG				

BOREHOLE RECORD

Last Edited: 26-JUN-2019 21:10

Bit Size (inches)	Depth From (feet)	Depth To (feet)
7.875	265.00	4650.00

CASING RECORD

Type	Size (inches)	Depth From (feet)	Shoe Depth (feet)	Weight (pounds/ft)
SURFACE	8.625	0.00	265.00	24.00

REMARKS

- LOGGING SOFTWARE: 18.01.6830

- TOOLSTRING:
  MCB, SHA, MCG, MML, MDN, MPD, SKJ, MFE, MAI LOGGED IN COMBINATION.

- HARDWARE USED:
  MAI: TOW 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 - 3600'.
  GAMMA RAY / INDUCTION / SP / CALIPER = TD - SURFACE CASING.

- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 1820 CU FT

- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 1340 CU.FT.

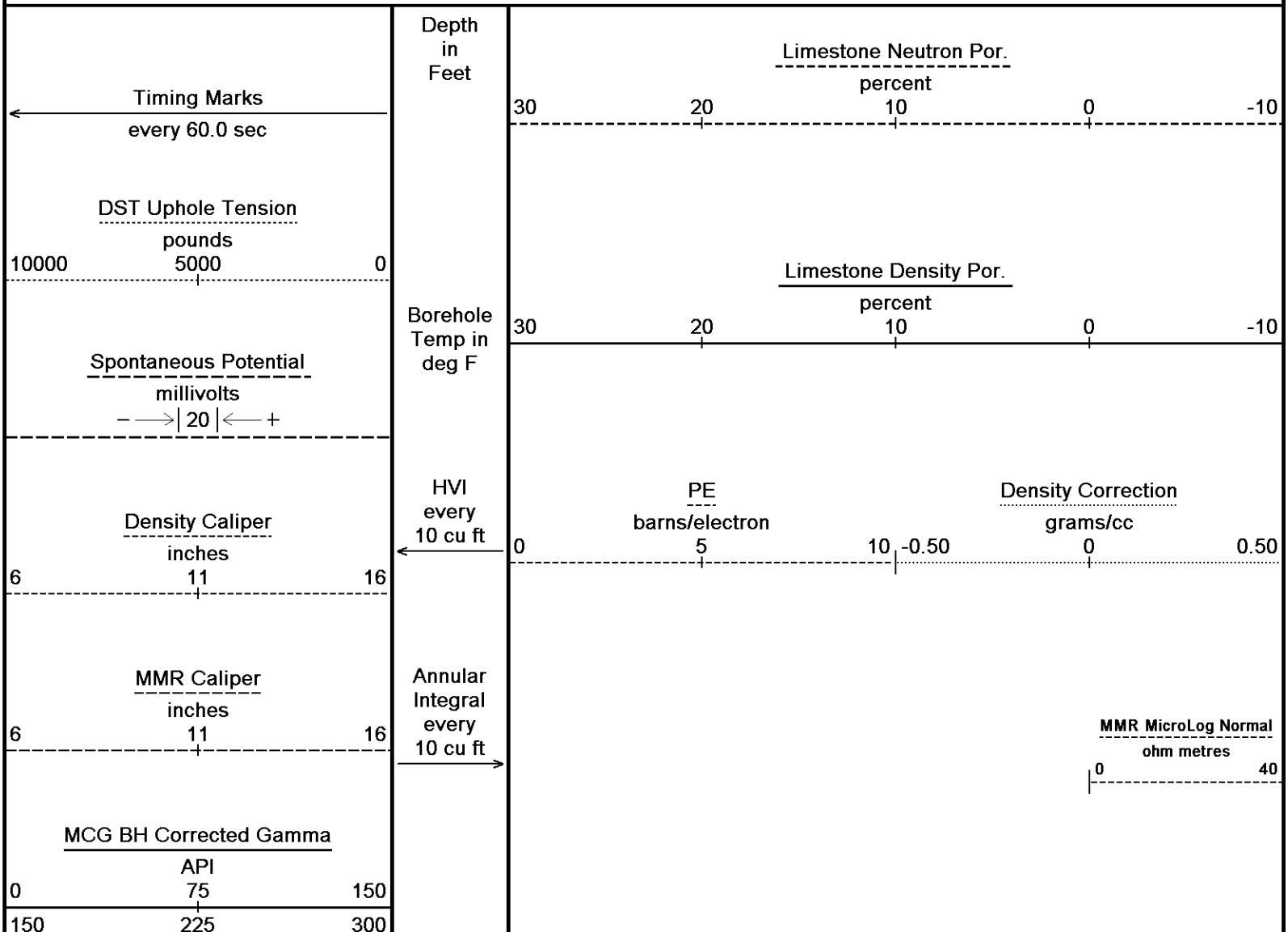
- OPERATORS: J. KLINE, C. BAKER.

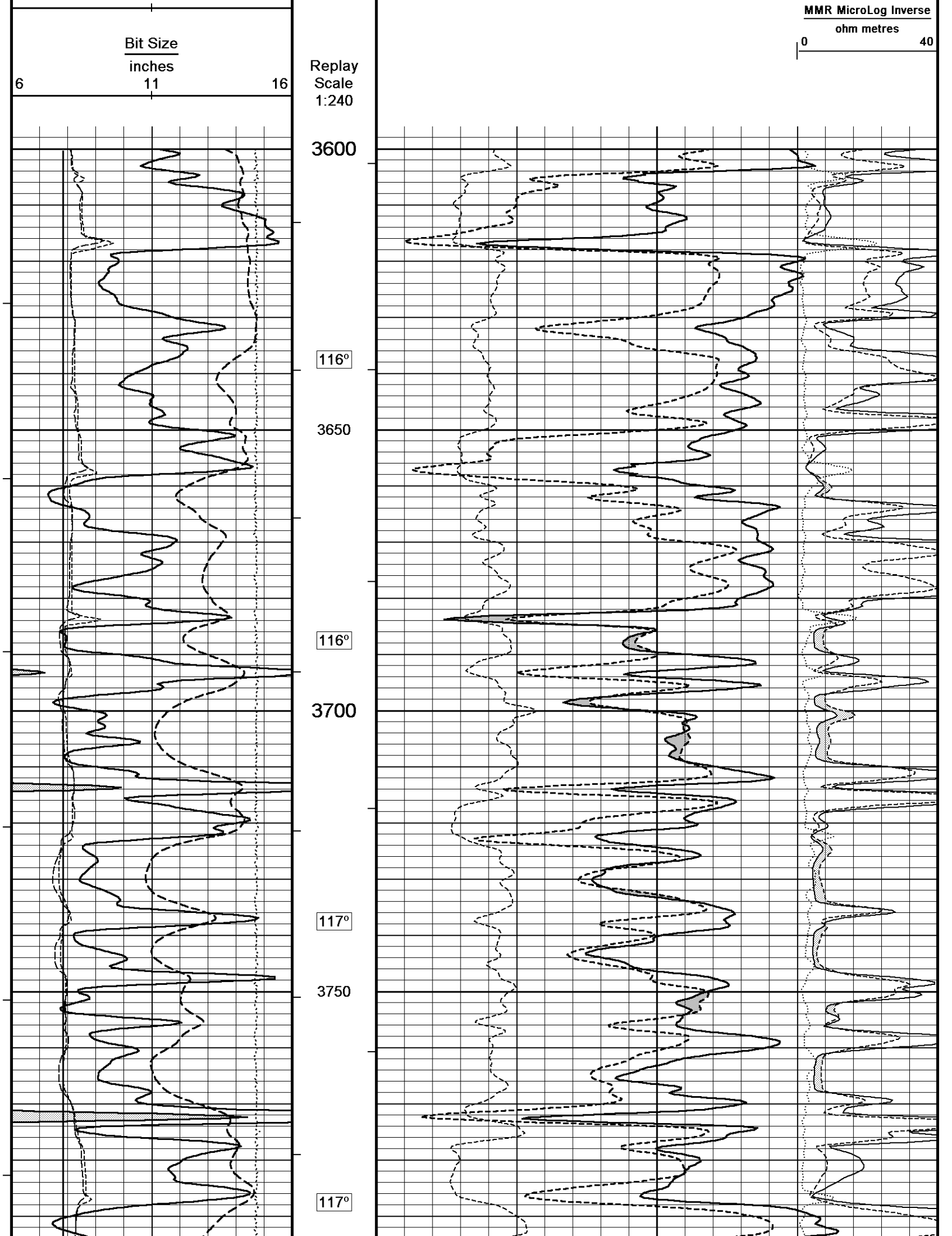
- MUD PROPERTIES:
  CHLORIDES: 4400 PPM.
  LCM: 1.5 #/BBL.

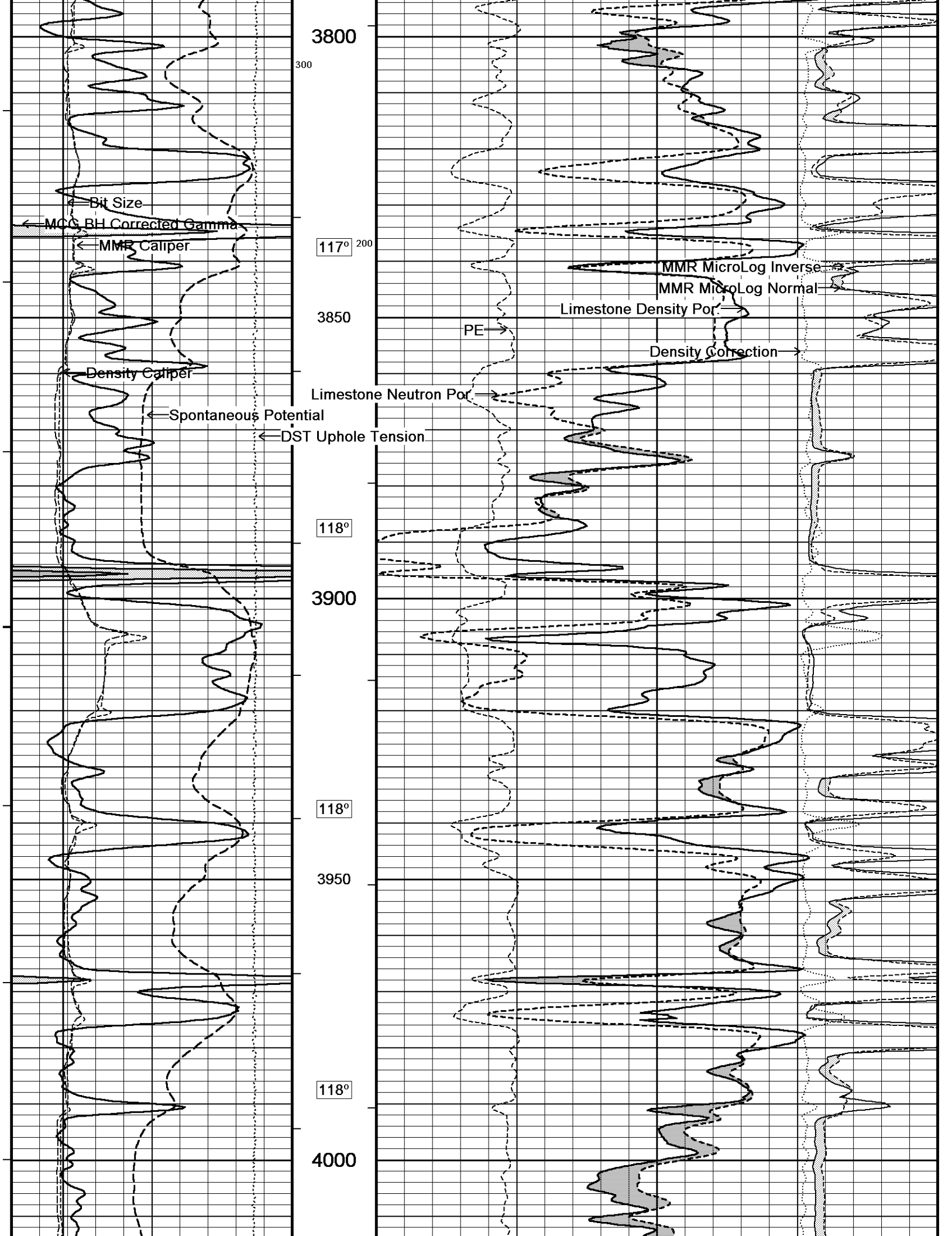
NEUTRON TOOL WILL BE CALIBRATED AFTER JOB AND READINGS WILL BE NORMALIZED TO NEW CALIBRATION.

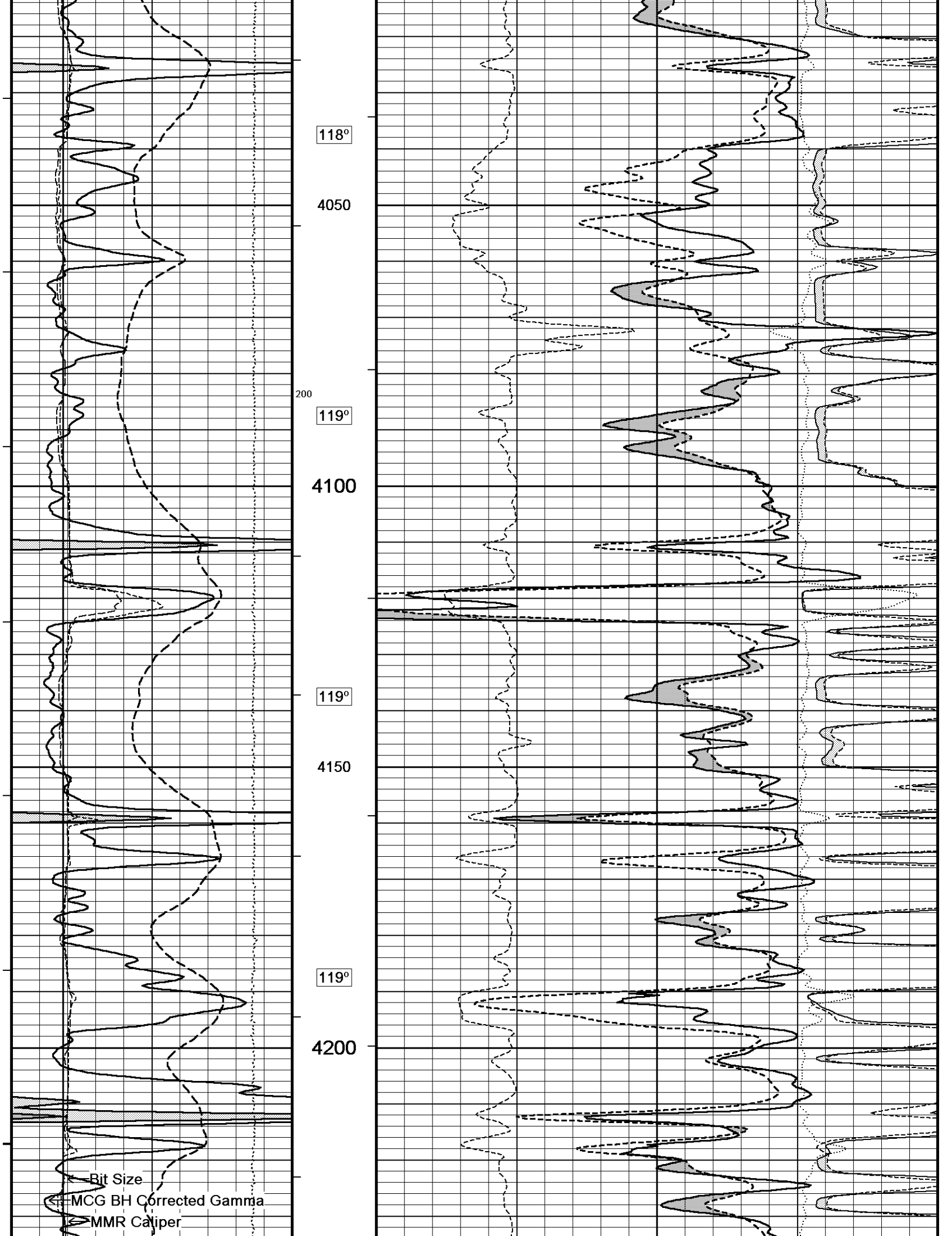
5 INCH MAIN PASS 1:240

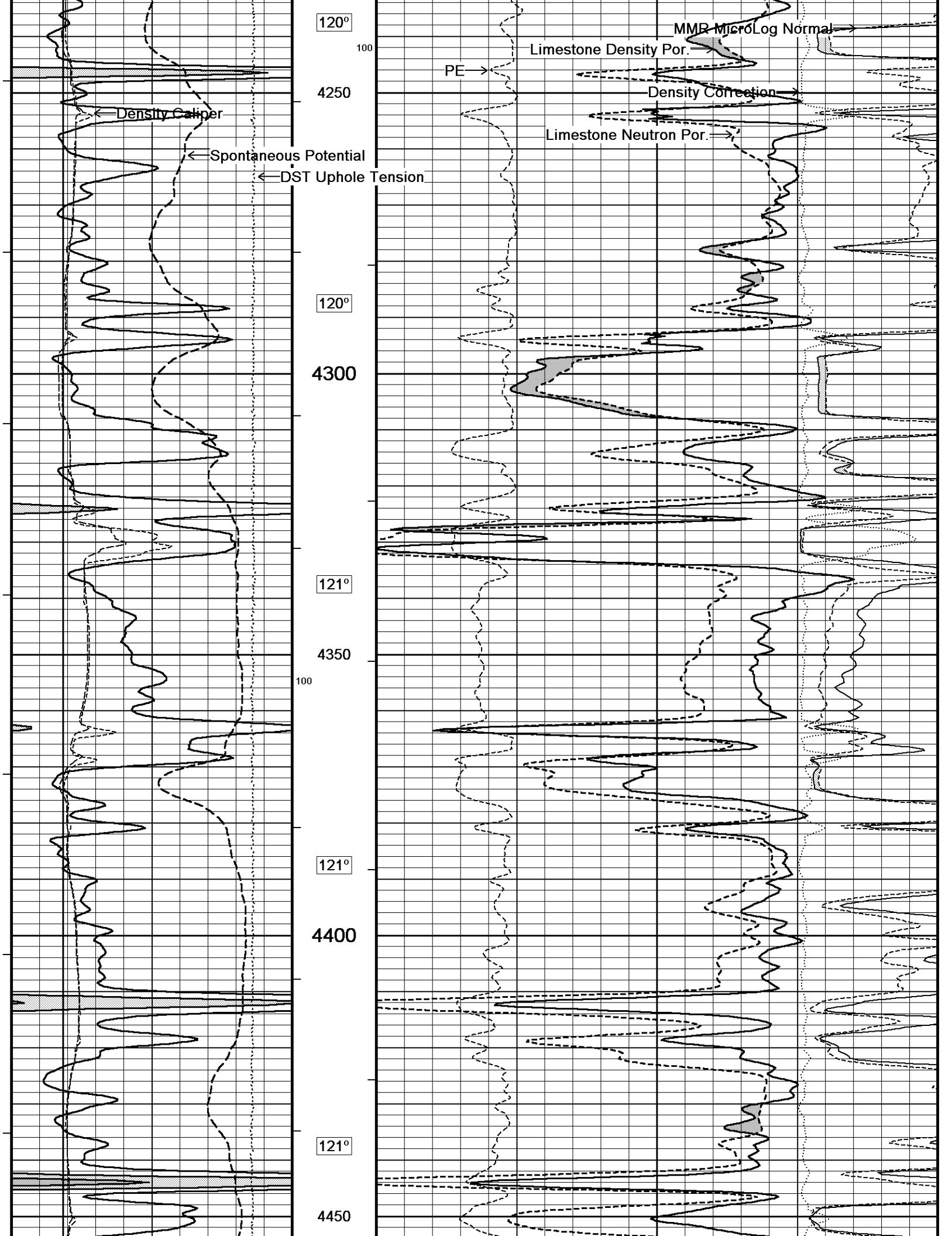
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 27-JUN-2019 07:32
Filename: C:\Users\DHELPI~1\AppData\Local\Temp\Weatherford PreView\0\MAIN PASS 001.dta — Recorded on 26-JUN-2019 22:04
System Versions: Logged with 18.01.6830 Processed with 18.01.6830 Plotted with 14.04.4365

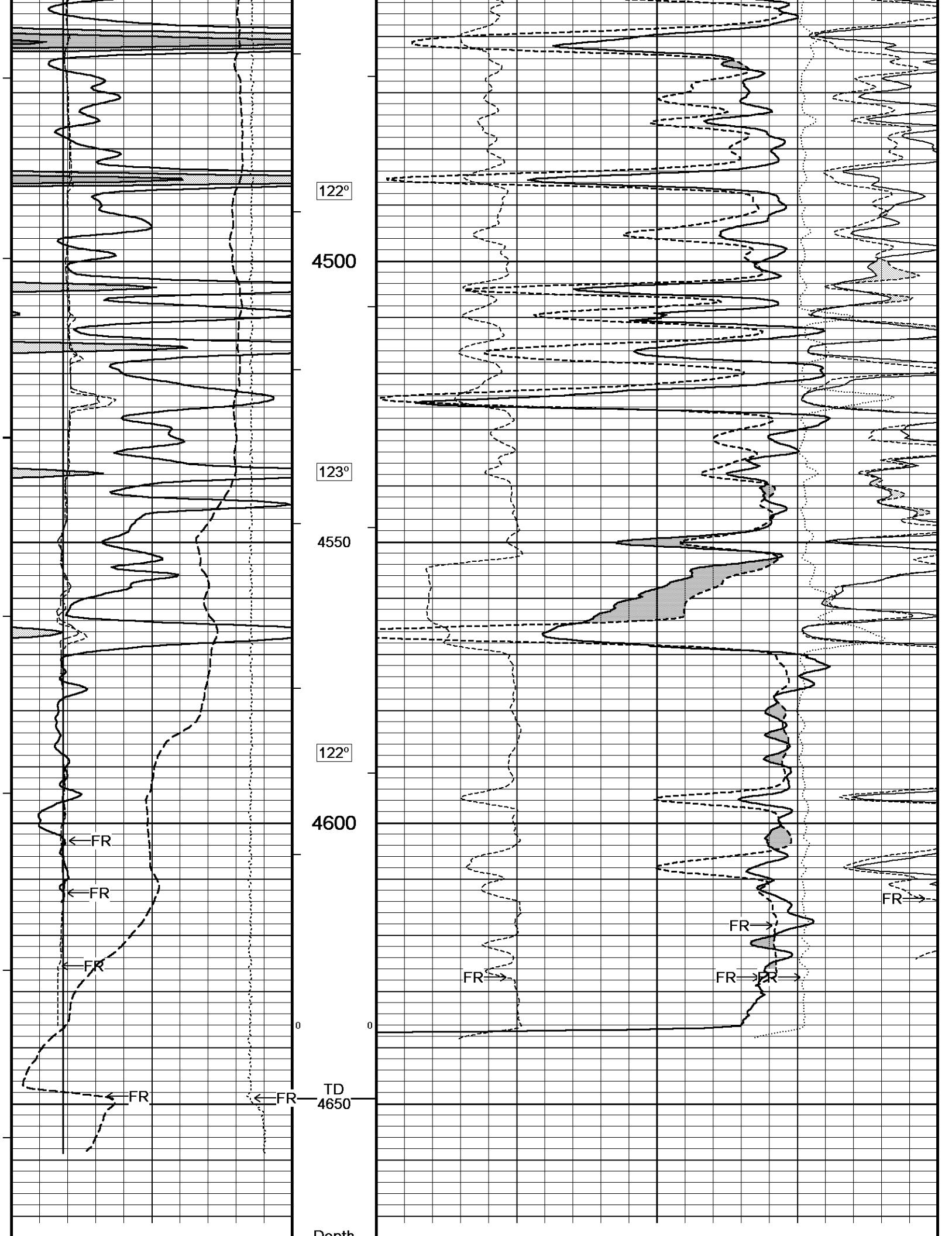


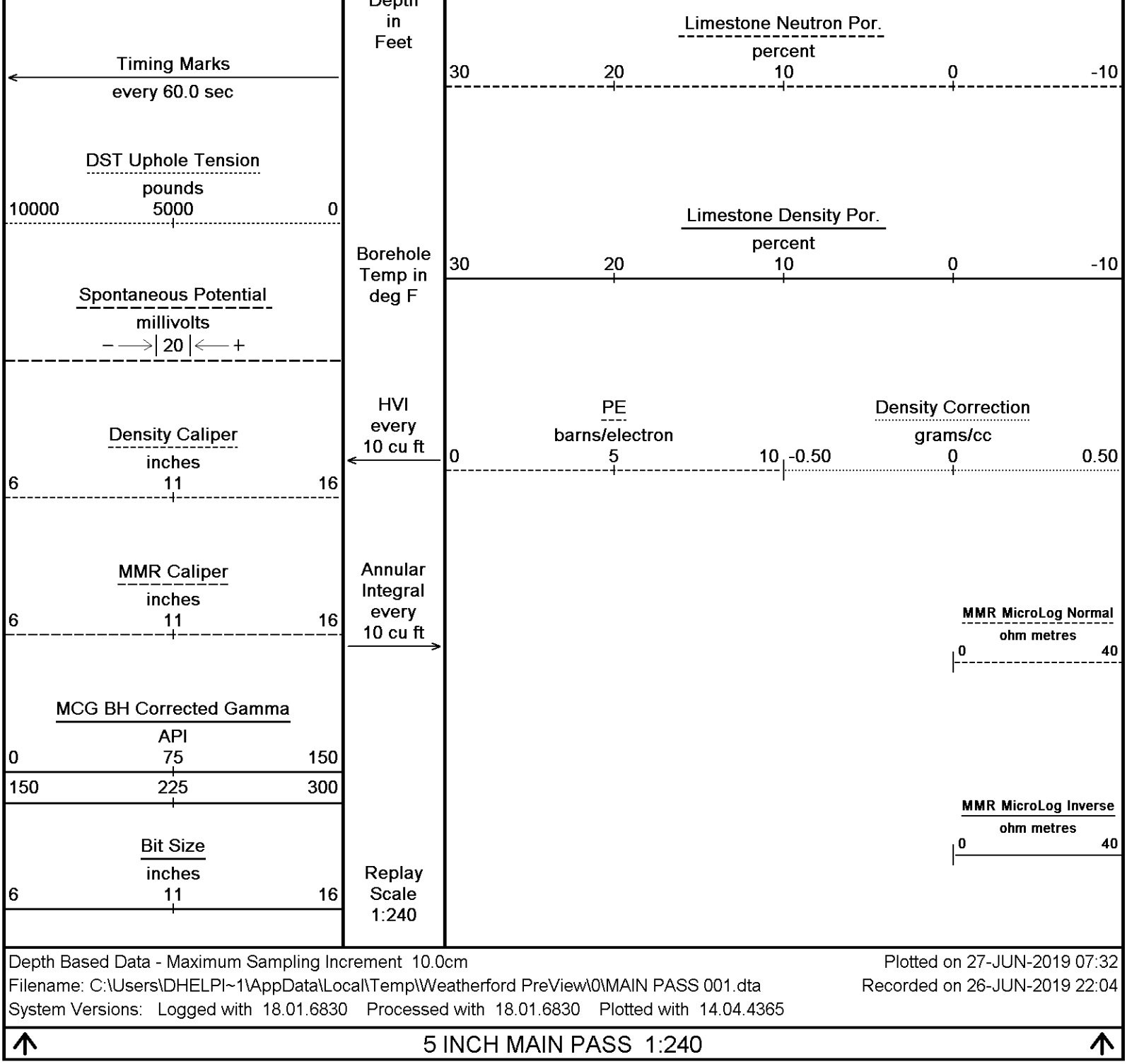

Bit Size
inches
6
11
16
Replay
Scale
1:240
3600
116°
3650
116°
3700
117°
3750
117°
MMR MicroLog Inverse
ohm metres
0
40


3800
300
Bit Size
MCG BH Corrected Gamma
MMR Caliper
117°
200
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
3850
PE
Density Correction
Density Caliper
Limestone Neutron Por.
Spontaneous Potential
DST Uphole Tension
118°
3900
118°
3950
118°
4000


118°
4050
200
119°
4100
119°
4150
119°
4200
Bit Size
MCG BH Corrected Gamma
MMR Caliper


120°
100
4250
120°
4300
121°
4350
100
121°
4400
121°
4450
MMR MicroLog Normal
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.
Density Caliper
Spontaneous Potential
DST Uphole Tension


122°
4500
123°
4550
122°
4600
FR
FR
FR
FR
FR
FR
FR
FR
FR
FR
0
0
TD
4650
Depth



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 27-JUN-2019 07:32
Filename: C:\Users\DHELPI~1\AppData\Local\Temp\Weatherford PreView\0\MAIN PASS 001.dta
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5 INCH MAIN PASS 1:240

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
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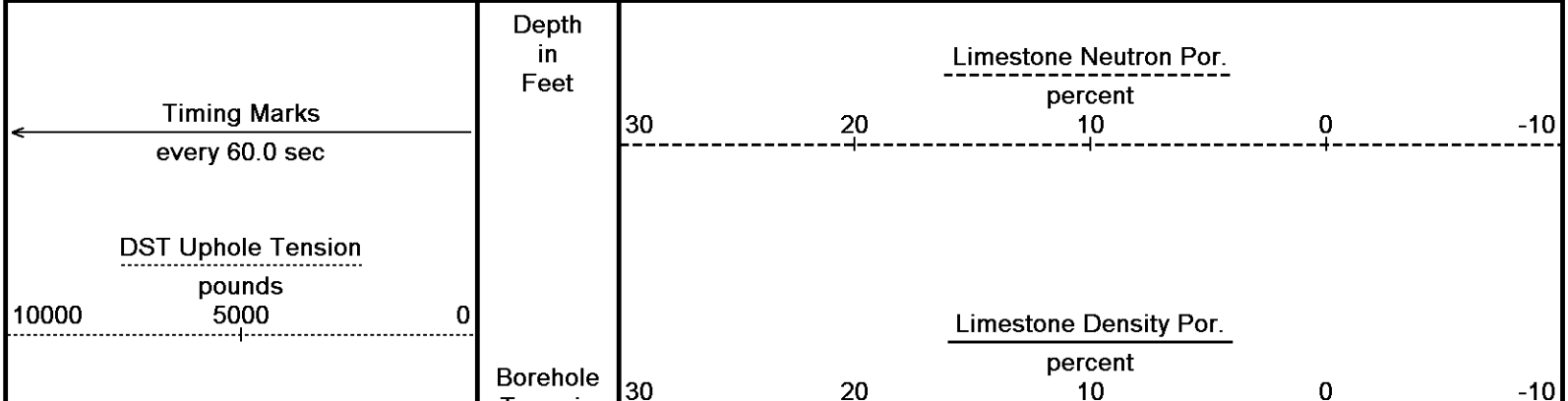
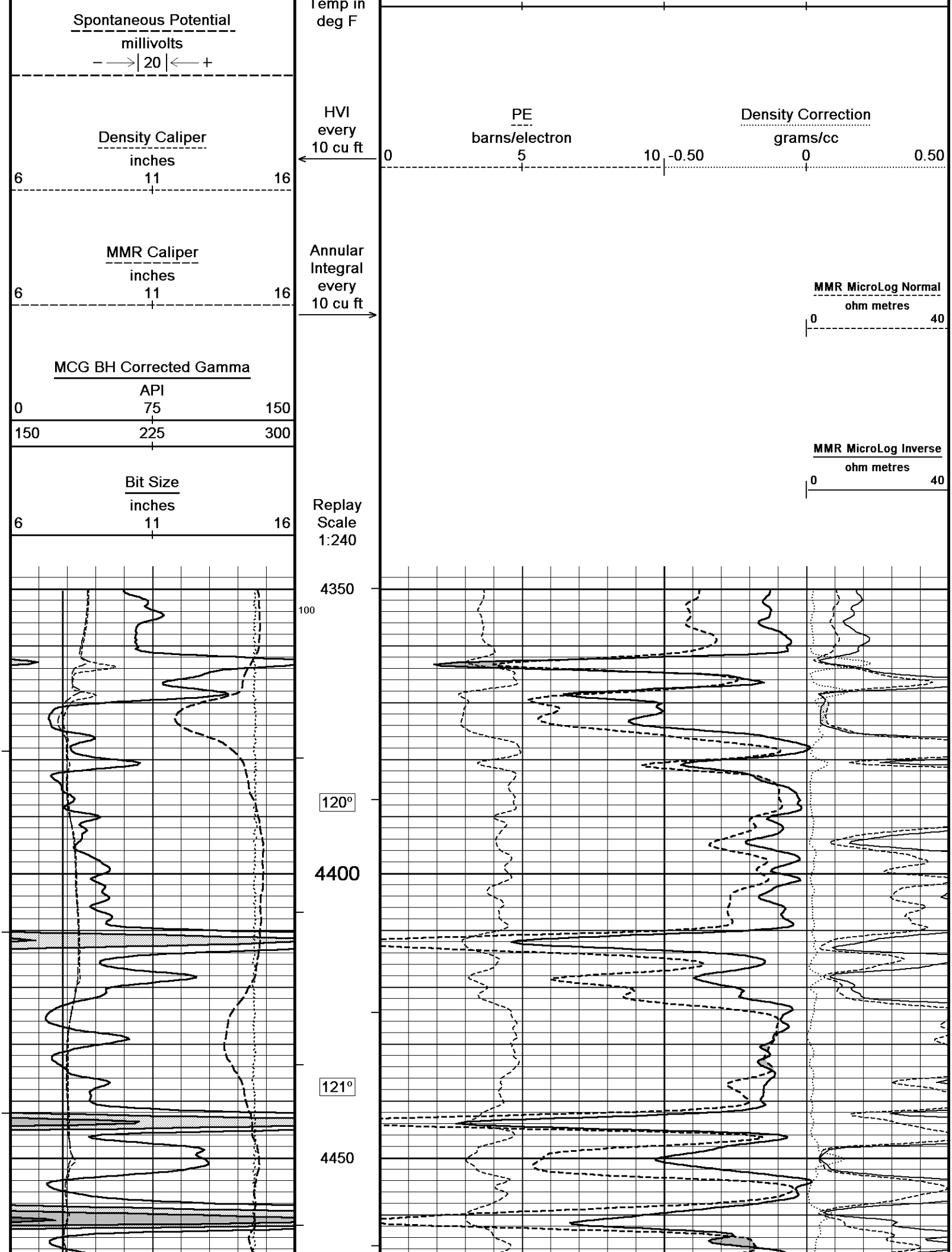
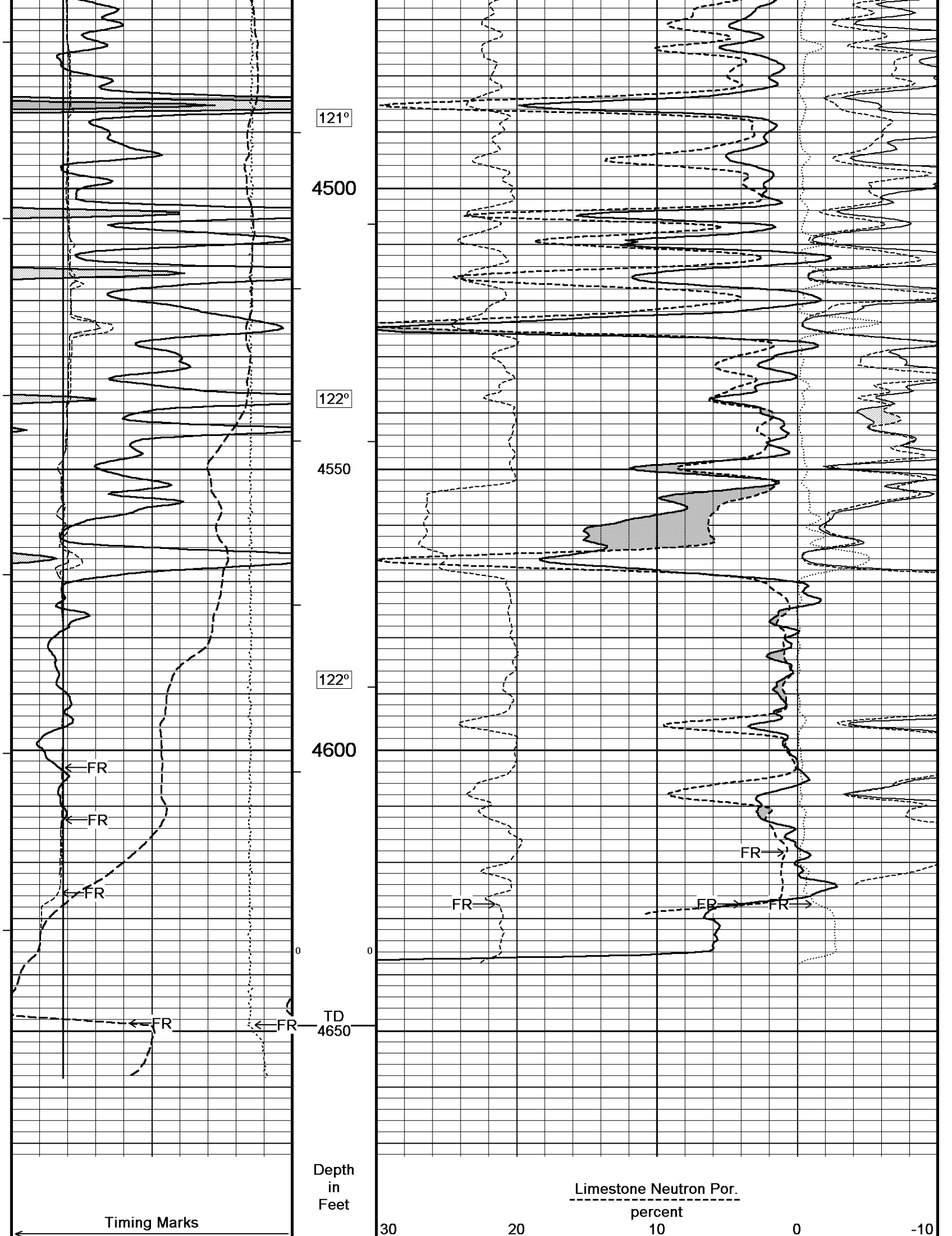
Filename: C:\Users\DHELPI~1\AppData\Local\Temp\Weatherford PreView\0\REPEAT PASS 001.dta
Recorded on 26-JUN-2019 21:48
System Versions: Logged with 18.01.6830 Processed with 18.01.6830 Plotted with 14.04.4365




Spontaneous Potential
millivolts
− → | 20 | ← +
Temp in deg F
HVI every 10 cu ft
PE
barns/electron
0 5 10
Density Correction
grams/cc
-0.50 0 0.50
Density Caliper
inches
6 11 16
MMR Caliper
inches
6 11 16
Annular Integral every 10 cu ft
MMR MicroLog Normal
ohm metres
0 40
MCG BH Corrected Gamma
API
0 75 150
150 225 300
MMR MicroLog Inverse
ohm metres
0 40
Bit Size
inches
6 11 16
Replay Scale 1:240
4350
100
120°
4400
121°
4450


121°
4500
122°
4550
122°
4600
FR
FR
FR
FR
FR
FR
FR
FR
FR
0
0
TD
4650
Depth
in
Feet
Timing Marks
Limestone Neutron Por.
percent
30
20
10
0
-10

every 60.0 sec

DST Uphole Tension
pounds
10000 5000 0

Spontaneous Potential
millivolts
− → | 20 | ← +

Density Caliper
inches
6 11 16

MMR Caliper
inches
6 11 16

MCG BH Corrected Gamma
API
0 75 150
150 225 300

Bit Size
inches
6 11 16

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

Density Correction
grams/cc
-0.50 0 0.50

MMR MicroLog Normal
ohm metres
0 40

MMR MicroLog Inverse
ohm metres
0 40

Depth Based Data - Maximum Sampling Increment 10.0cm
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REPEAT SECTION

5 INCH BULK DENSITY 1:240

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Timing Marks
every 60.0 sec

Density Caliper
inches
6 11 16

MCG BH Corrected Gamma
API
0 75 150

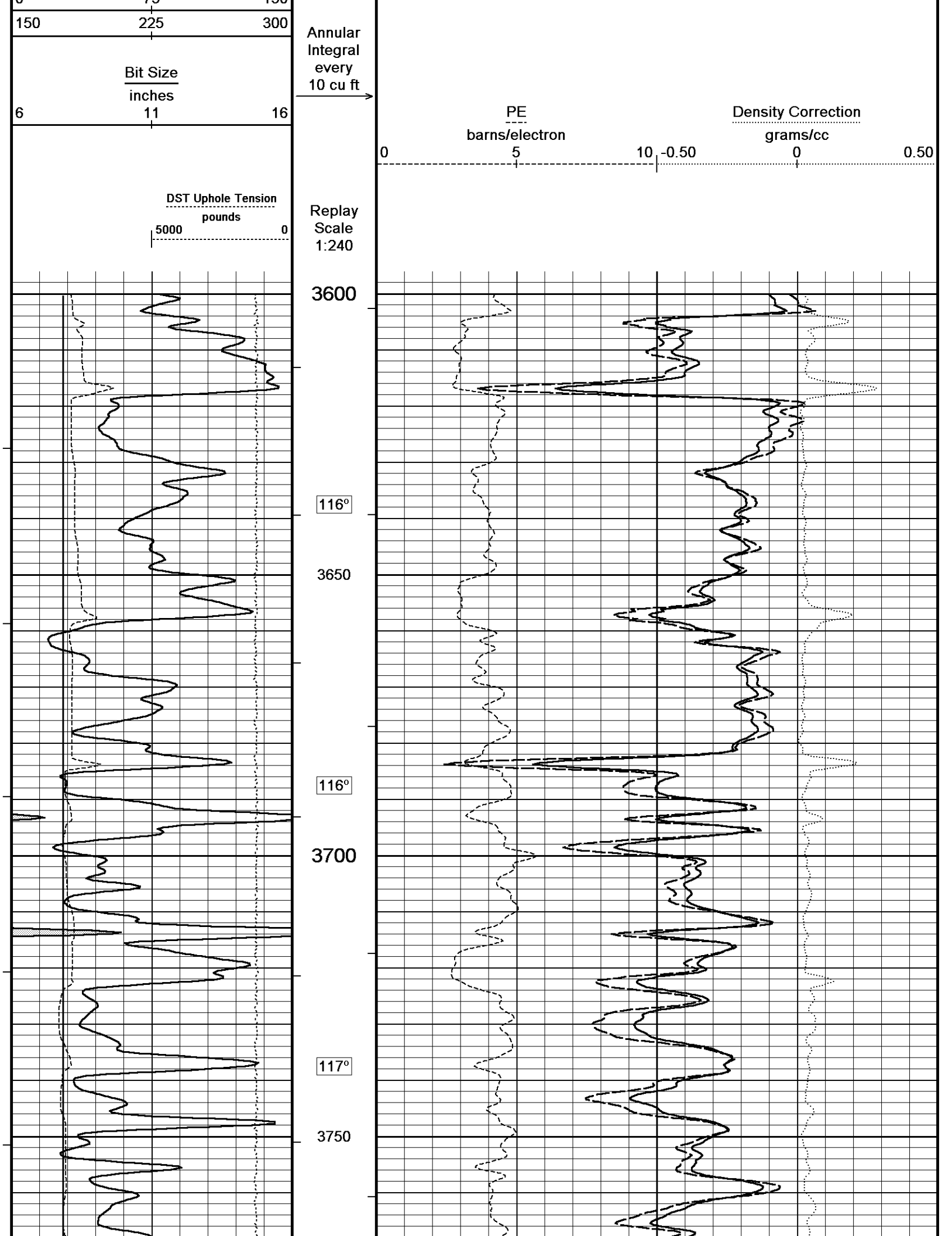
Depth in Feet

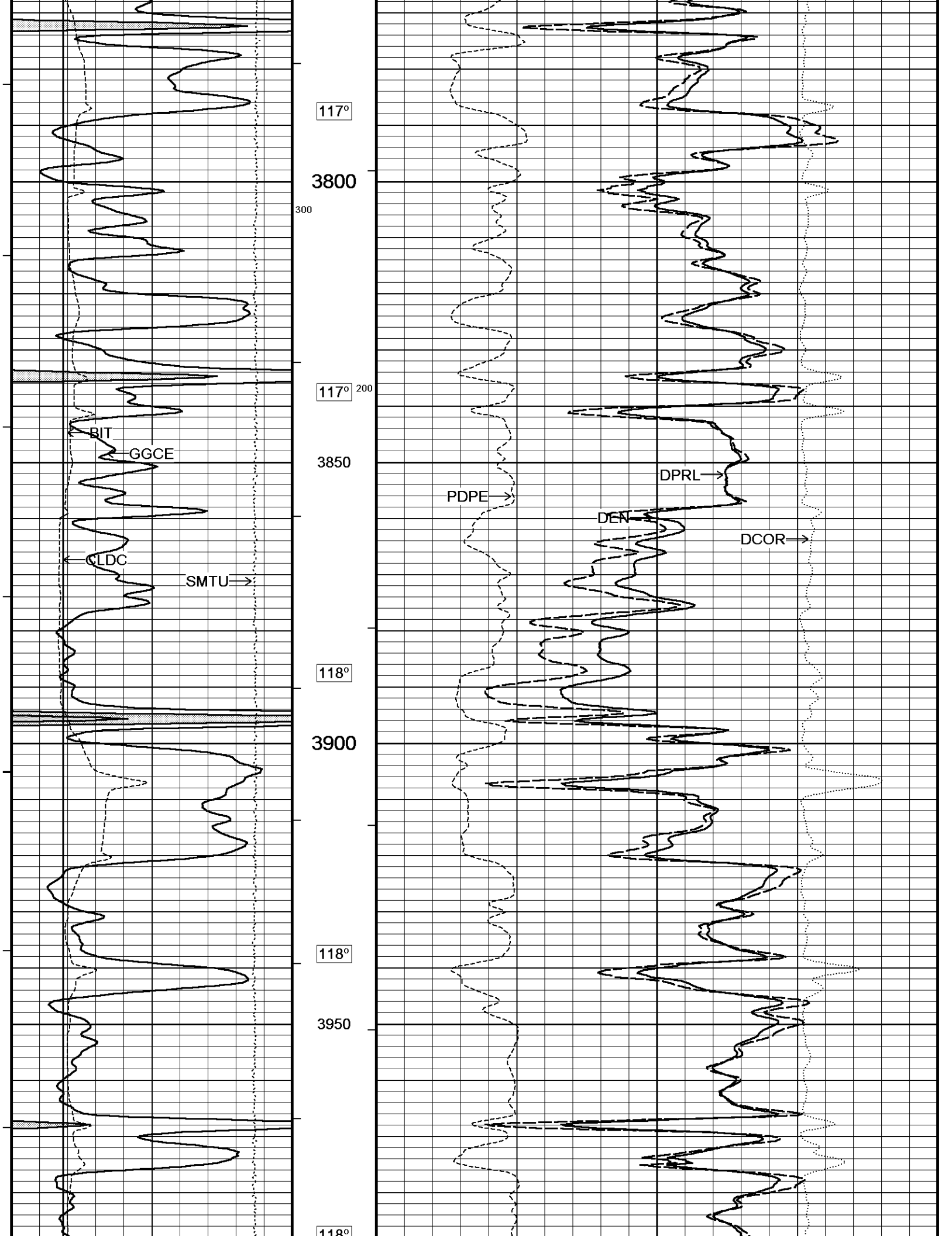
Borehole Temp in deg F

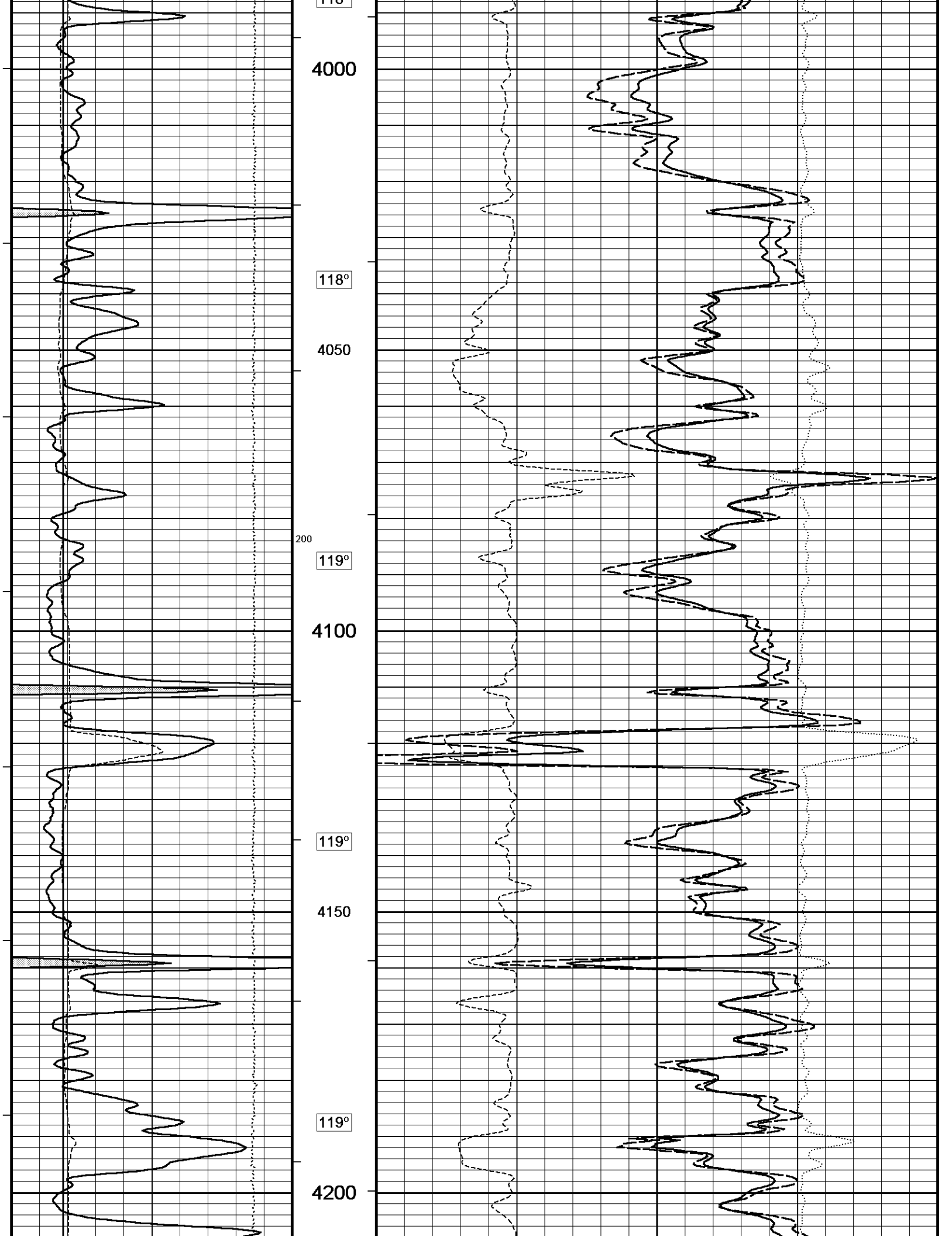
HVI every 10 cu ft

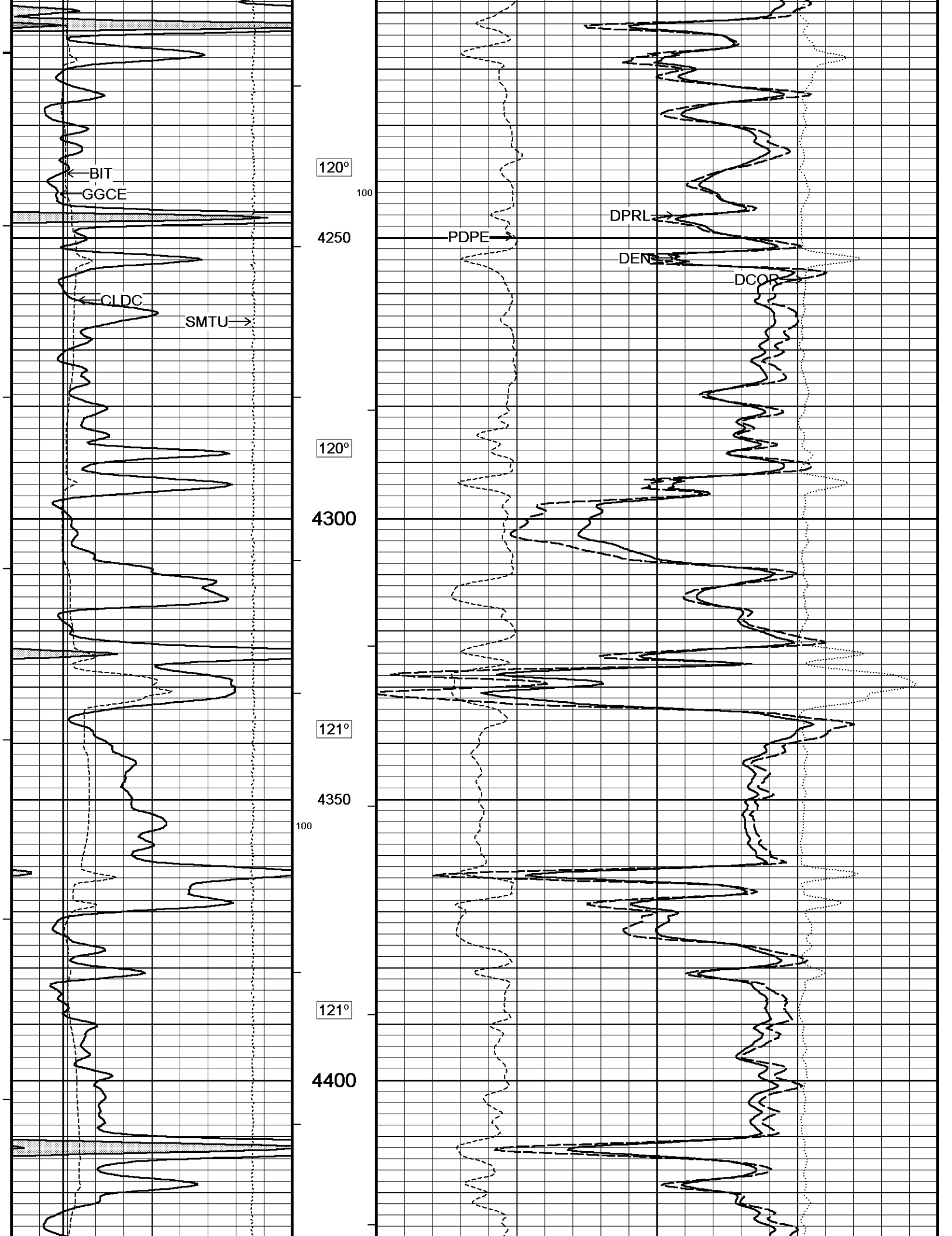
Compensated Density
grams/cc
2 2.25 2.50 2.75 3

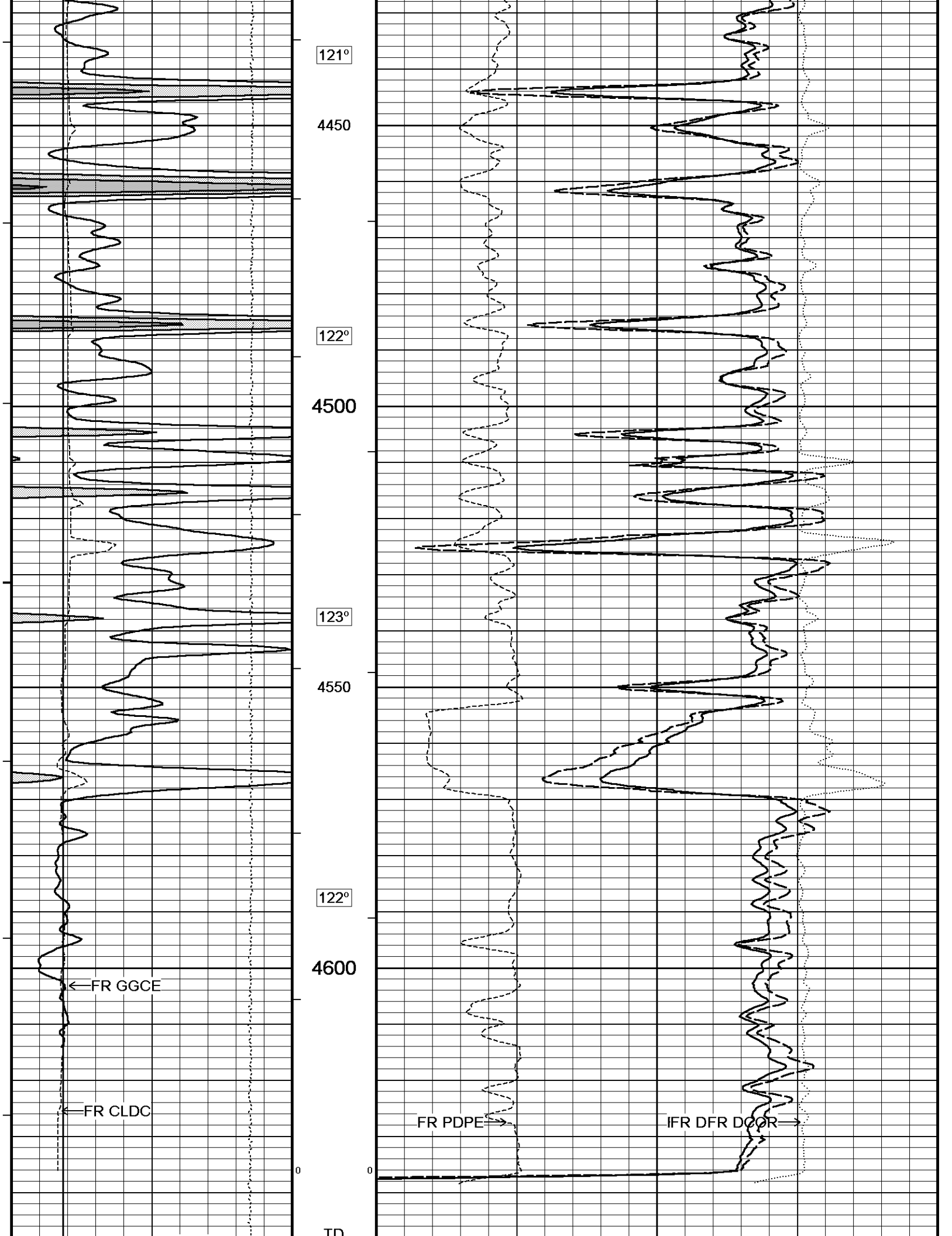
Limestone Density Por.
percent
30 20 10 0 -10

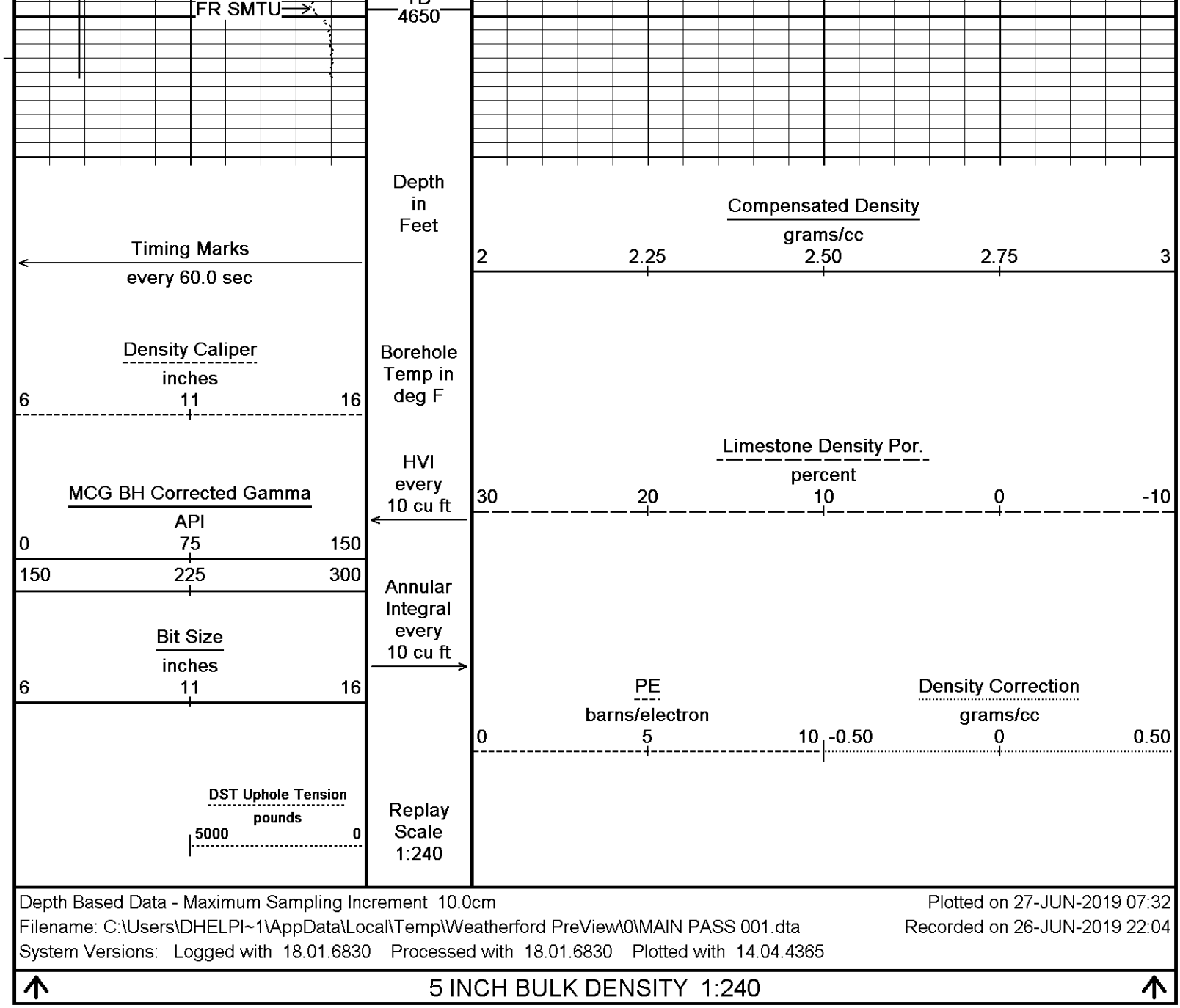

150
225
300
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Annular
Integral
every
10 cu ft
Replay
Scale
1:240
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
3600
116°
3650
116°
3700
117°
3750


117°
3800
300
117°
200
BIT
GGCE
3850
DPRL
PDPE
DEN
DCOR
CLDC
SMTU
118°
3900
118°
3950
118°


4000
118°
4050
200
119°
4100
119°
4150
119°
4200


BIT
GGCE
CLDC
SMTU
120°
100
4250
PDPE
DPRL
DEN
DCOR
120°
4300
121°
4350
100
121°
4400


121°
4450
122°
4500
123°
4550
122°
4600
FR GGCE
FR CLDC
FR PDPE
IFR DFR DCOR
0
0
TD



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5 INCH BULK DENSITY 1:240

REPEAT SECTION 1:240

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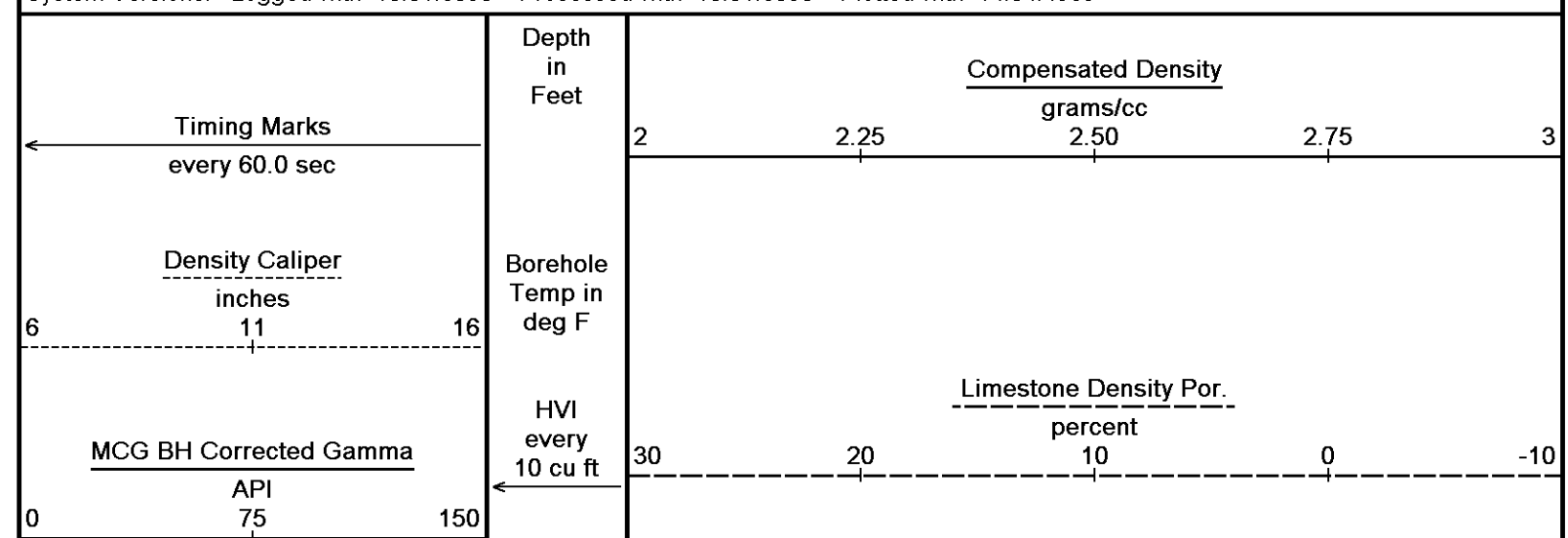
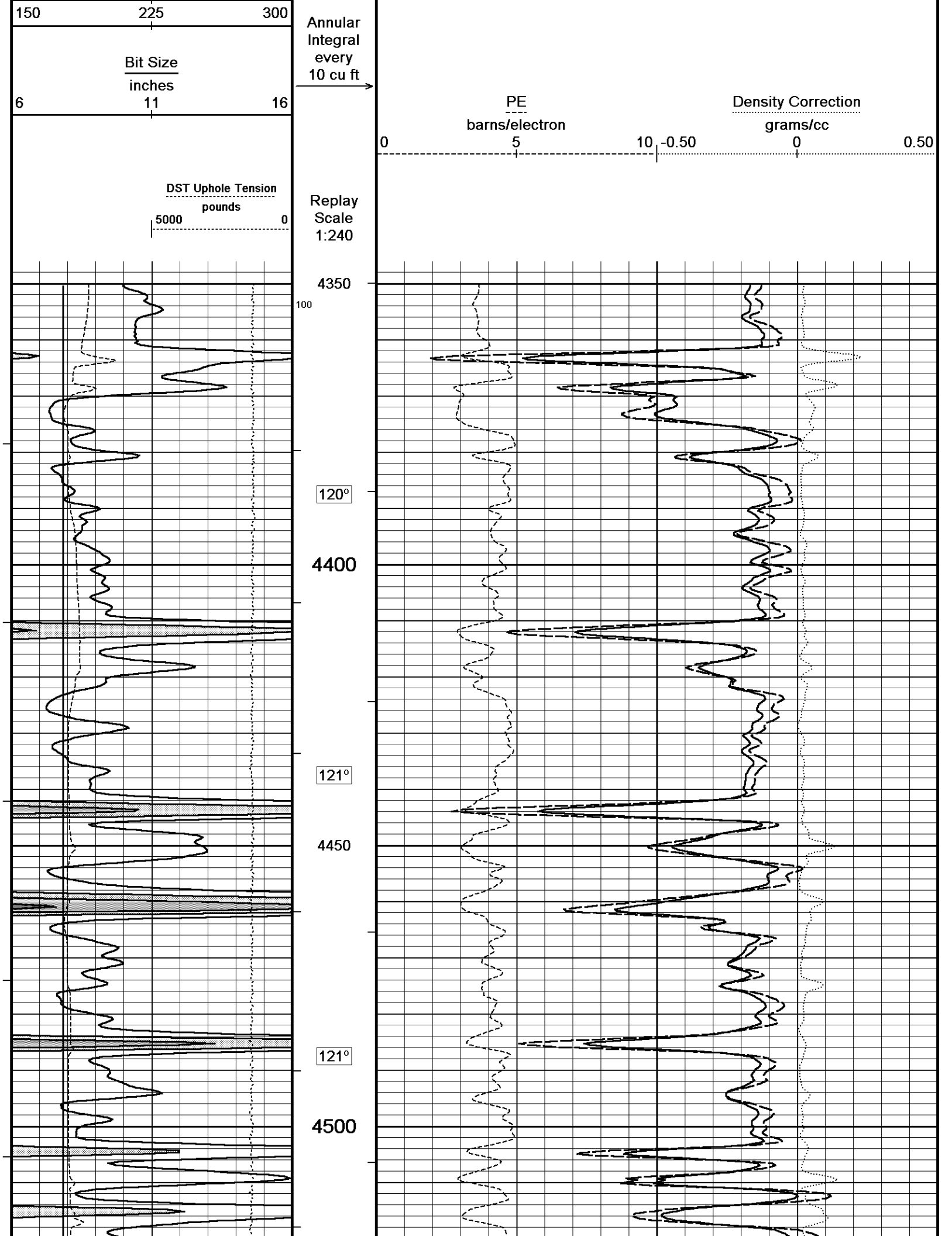
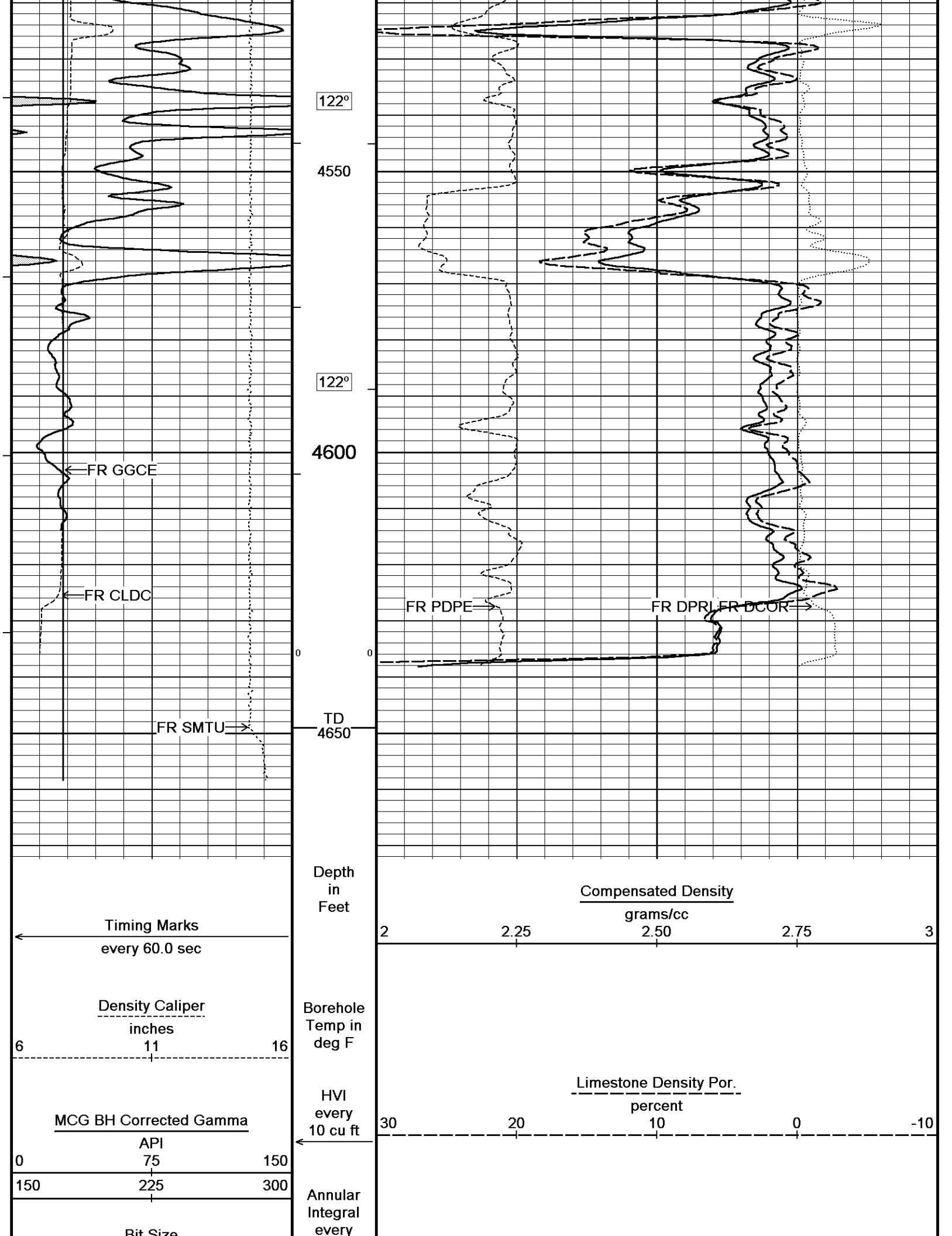
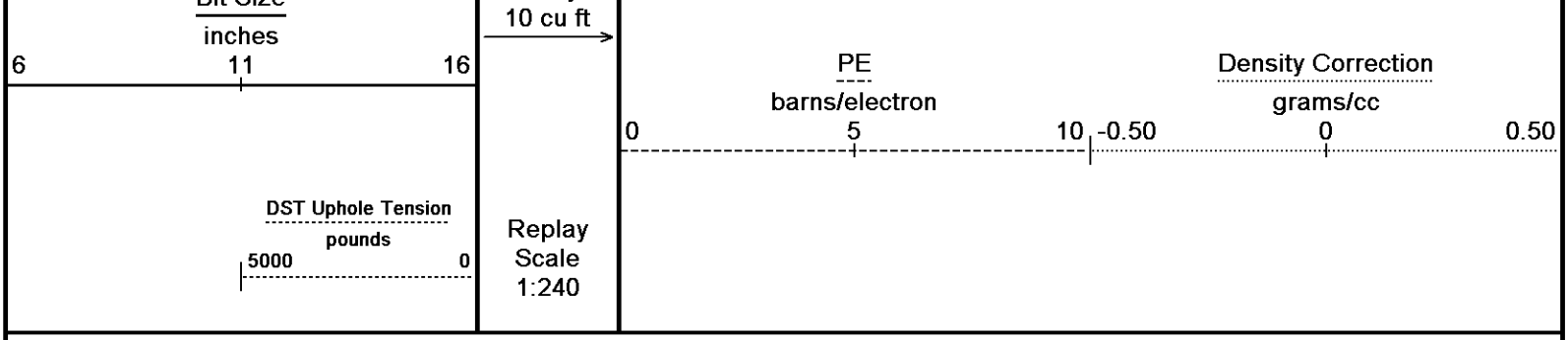



150
225
300
Bit Size
inches
6
11
16
DST Uphole Tension
pounds
5000
0
Annular
Integral
every
10 cu ft
Replay
Scale
1:240
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
4350
100
120°
4400
121°
4450
121°
4500


122°
4550
122°
4600
FR GGCE
FR CLDC
FR SMTU
TD
4650
FR PDPE
FR DPRL FR DCOR
Depth
in
Feet
Timing Marks
every 60.0 sec
Density Caliper
inches
6
11
16
MCG BH Corrected Gamma
API
0
75
150
150
225
300
Bit Size
Borehole
Temp in
deg F
HVI
every
10 cu ft
Annular
Integral
every
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Limestone Density Por.
percent
30
20
10
0
-10



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