Weatherford

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	O'BRIEN RESOURCES, LLC.
WELL	JECHA 4 #2
FIELD	WILDCAT
PROVINCE/COUNTY	RUSH
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	1302' FNL & 2137' FWL

SEC 4	TWP 19S	RGE 17W	Other Services
Latitude			MAI/MFE MSS
Longitude			
API Number	15-165-22137		

Permanent Datum GL, Elevation 2070 feet
Log Measured From KB
Drilling Measured From KB @ 13 FEET

Elevations:	feet
KB	2083.00
DF	2081.00
GL	2070.00

Date	04-OCT-2016			
Run Number	ONE			
Service Order	4558-162772378			
Depth Driller	3907.00	feet		
Depth Logger	3908.00	feet		
First Reading	3876.00	feet		
Last Reading	2300.00	feet		
Casing Driller	265.00	feet		
Casing Logger	267.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.35 lb/USg		53.00 CP	
PH / Fluid Loss	9.50		13.60 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.46 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.37 @ 75.0	ohm-m		
Rmc @ Measured Temp	0.55 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.33 @103.0	ohm-m		
Time Since Circulation	4 HOURS			
Max Recorded Temp	103.00	deg F		
Equipment / Base	13096		OKC	
Recorded By	ADAM SILL			
Witnessed By	JIM MUSGROVE			

BOREHOLE RECORD

Last Edited: 04-OCT-2016 13:29

Bit Size inches	Depth From feet	Depth To feet
7.875	265.00	3907.00

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 15.03.5939.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN 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: 1742 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 2300: 466 CU.FT.

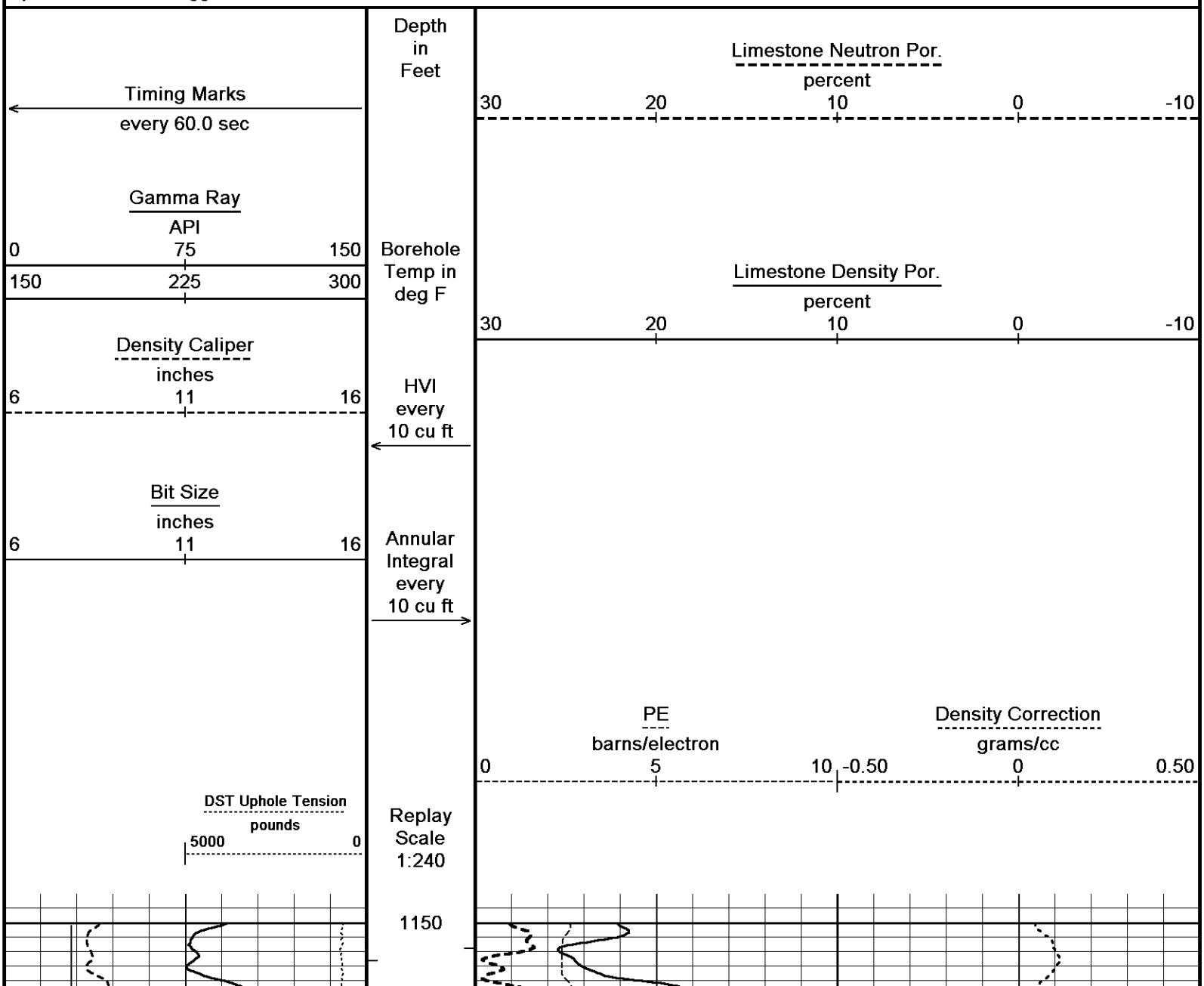
- RIG: DUKE #7.

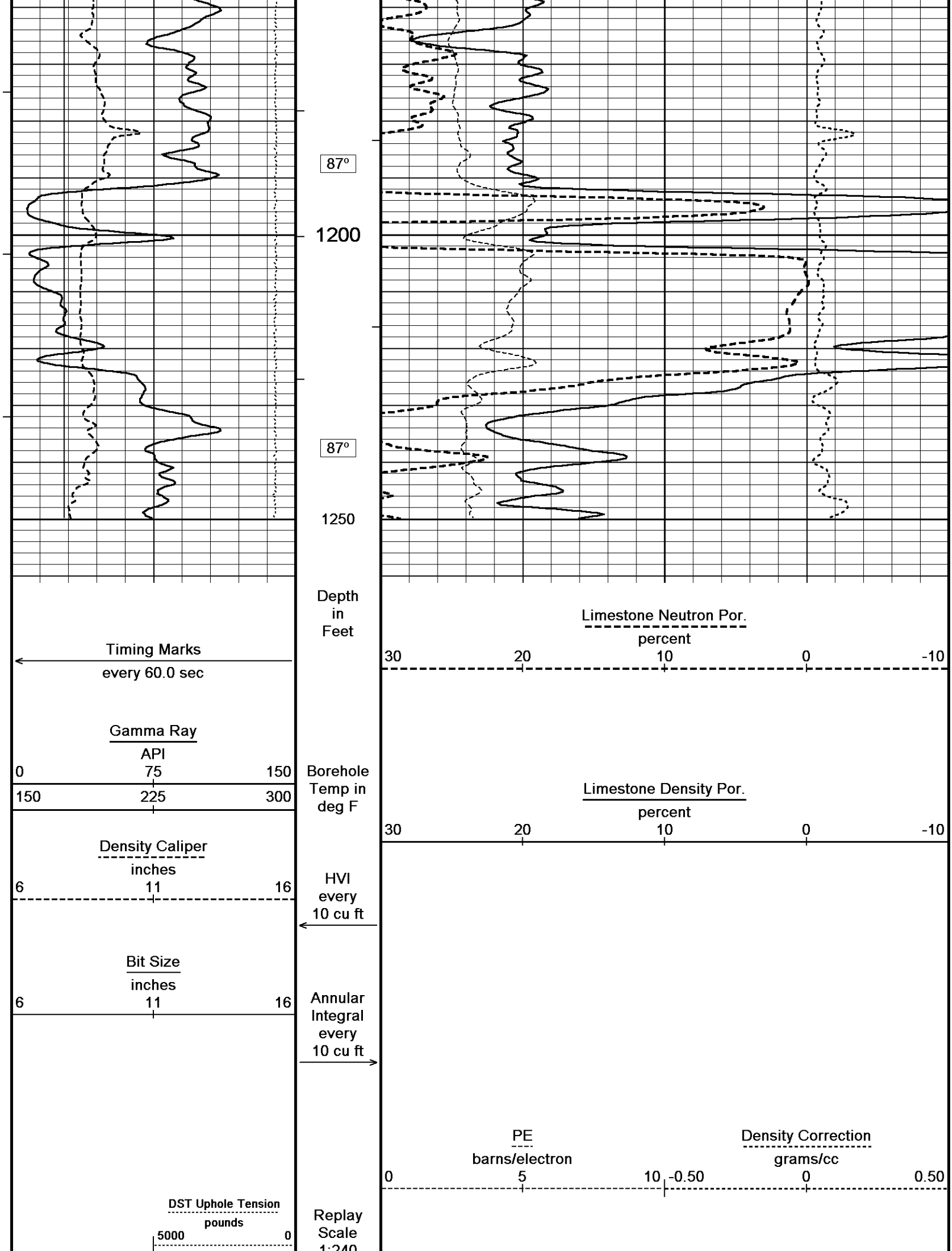
- ENGINEER: A. SILL.

- OPERATOR: B. TOVAR.

5 INCH LIMESTONE MAIN- ANHYDRITE

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 04-OCT-2016 18:56
Filename: C:\Minimus 15.03.5939\Logs\O'Brien (LA) Jecha 4 #2\O'Brien (LA) Jecha 4 #2_002.dta
Recorded on 04-OCT-2016 16:29
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939




87°
1200
87°
1250
Depth
in
Feet
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Borehole
Temp in
deg F
Density Caliper
inches
6
11
16
HVI
every
10 cu ft
Bit Size
inches
6
11
16
Annular
Integral
every
10 cu ft
DST Uphole Tension
pounds
5000
0
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 04-OCT-2016 18:56
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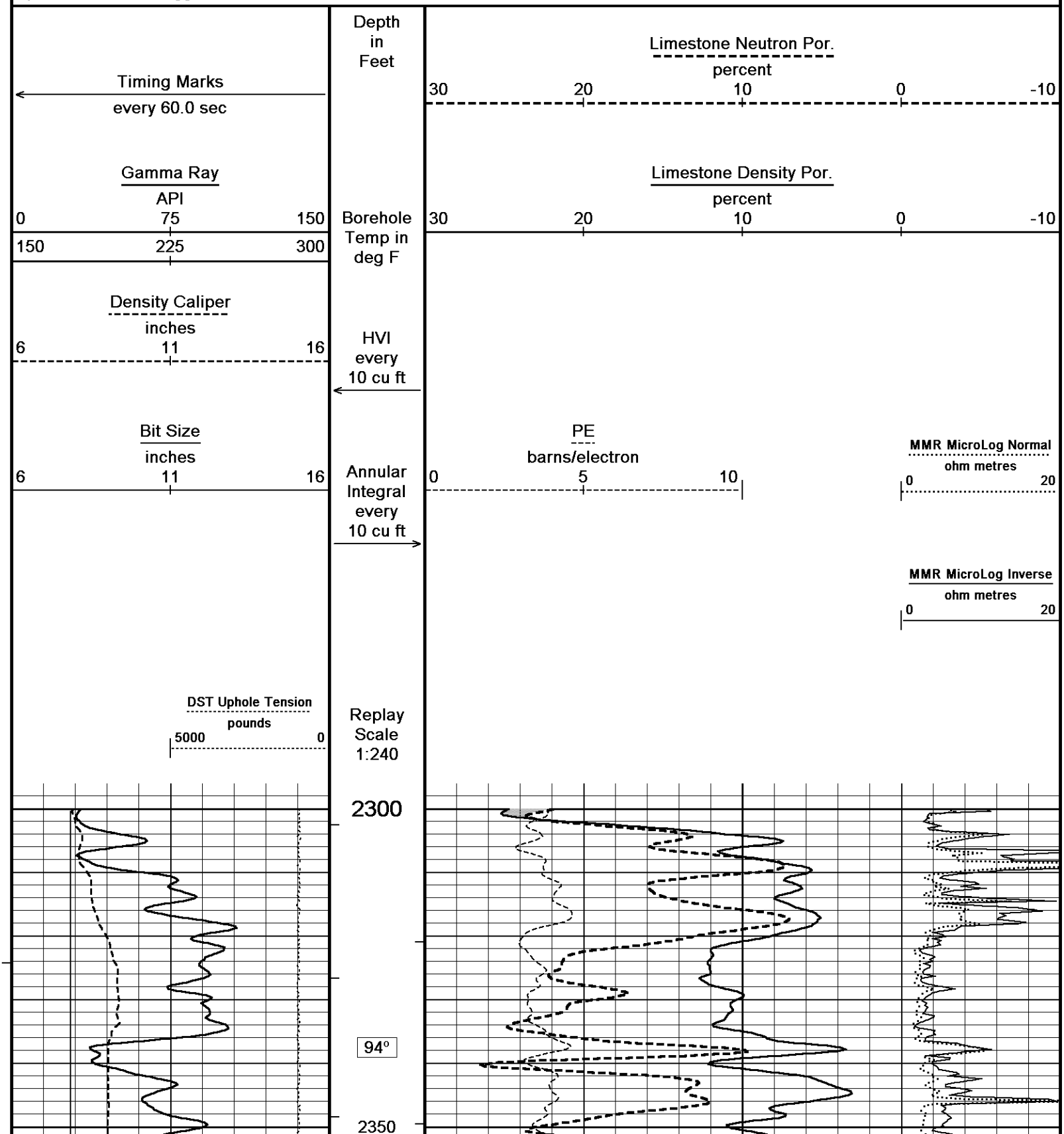
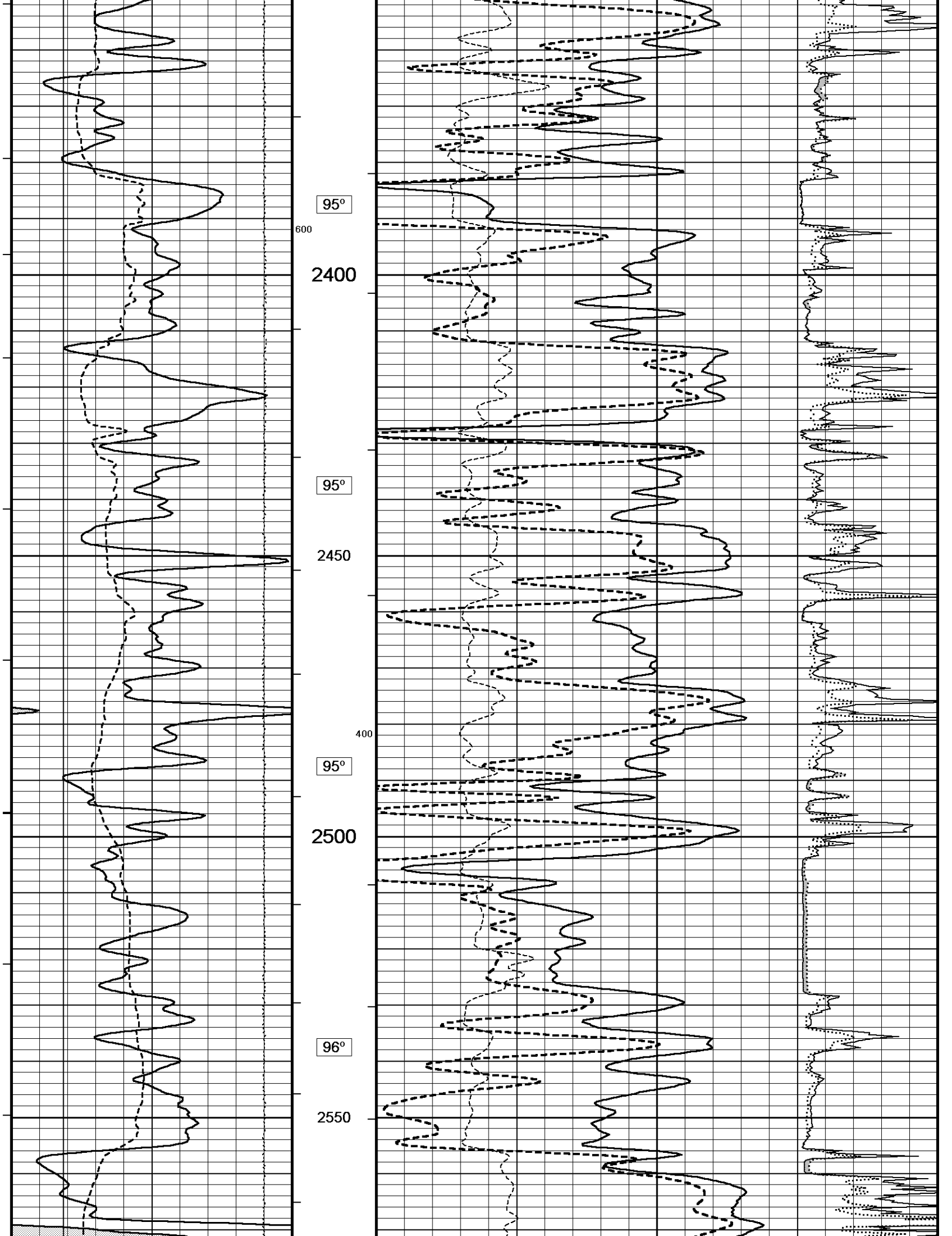
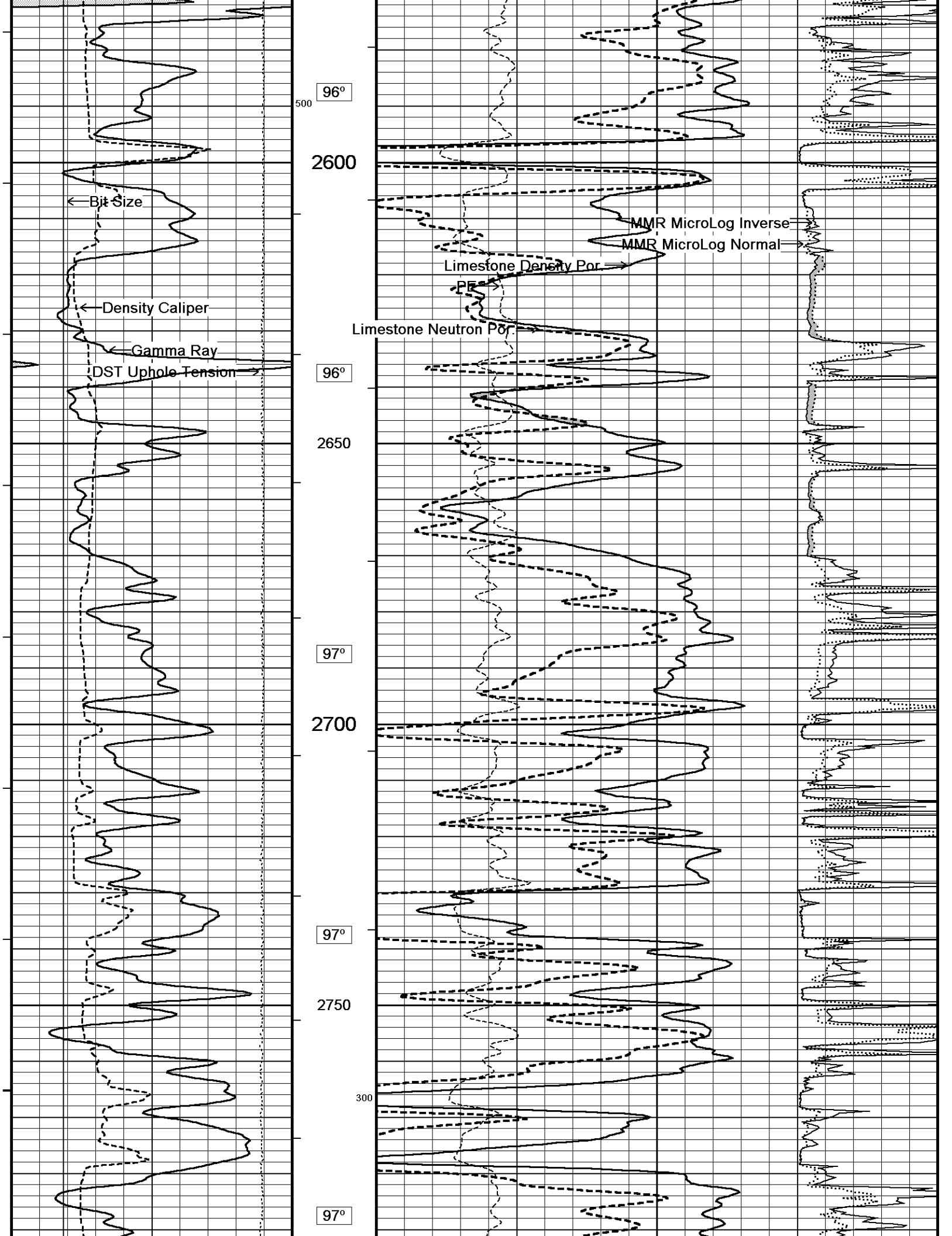
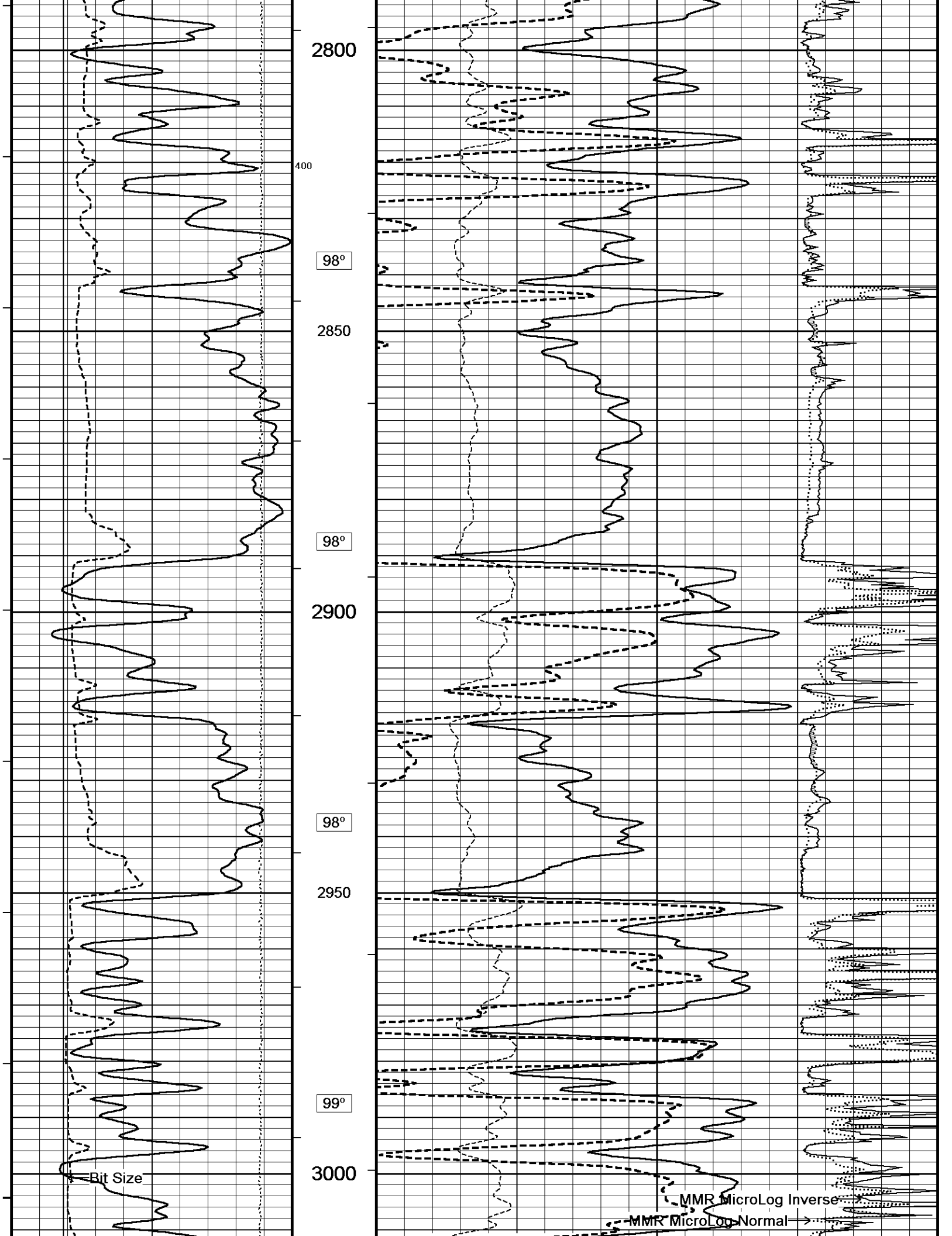
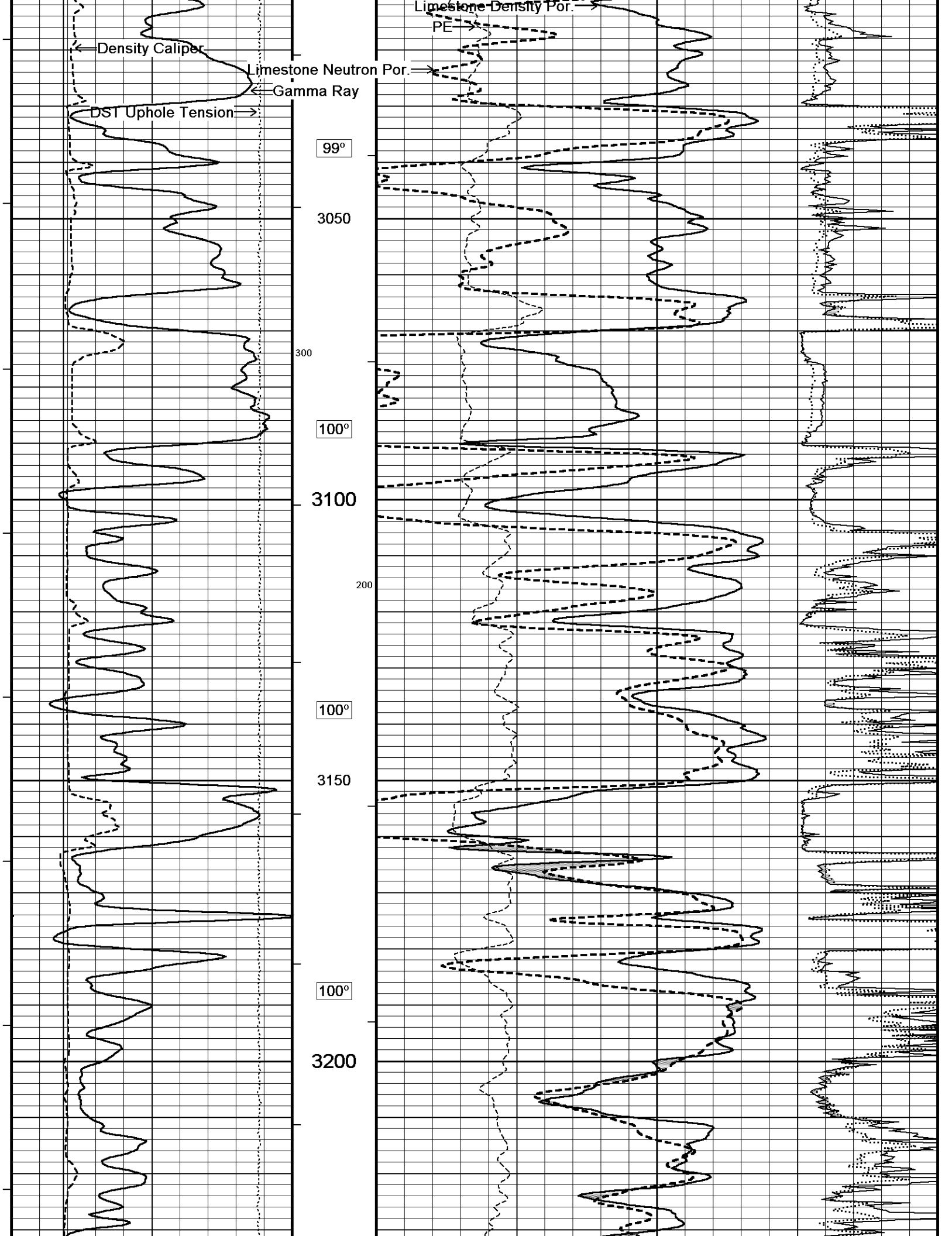
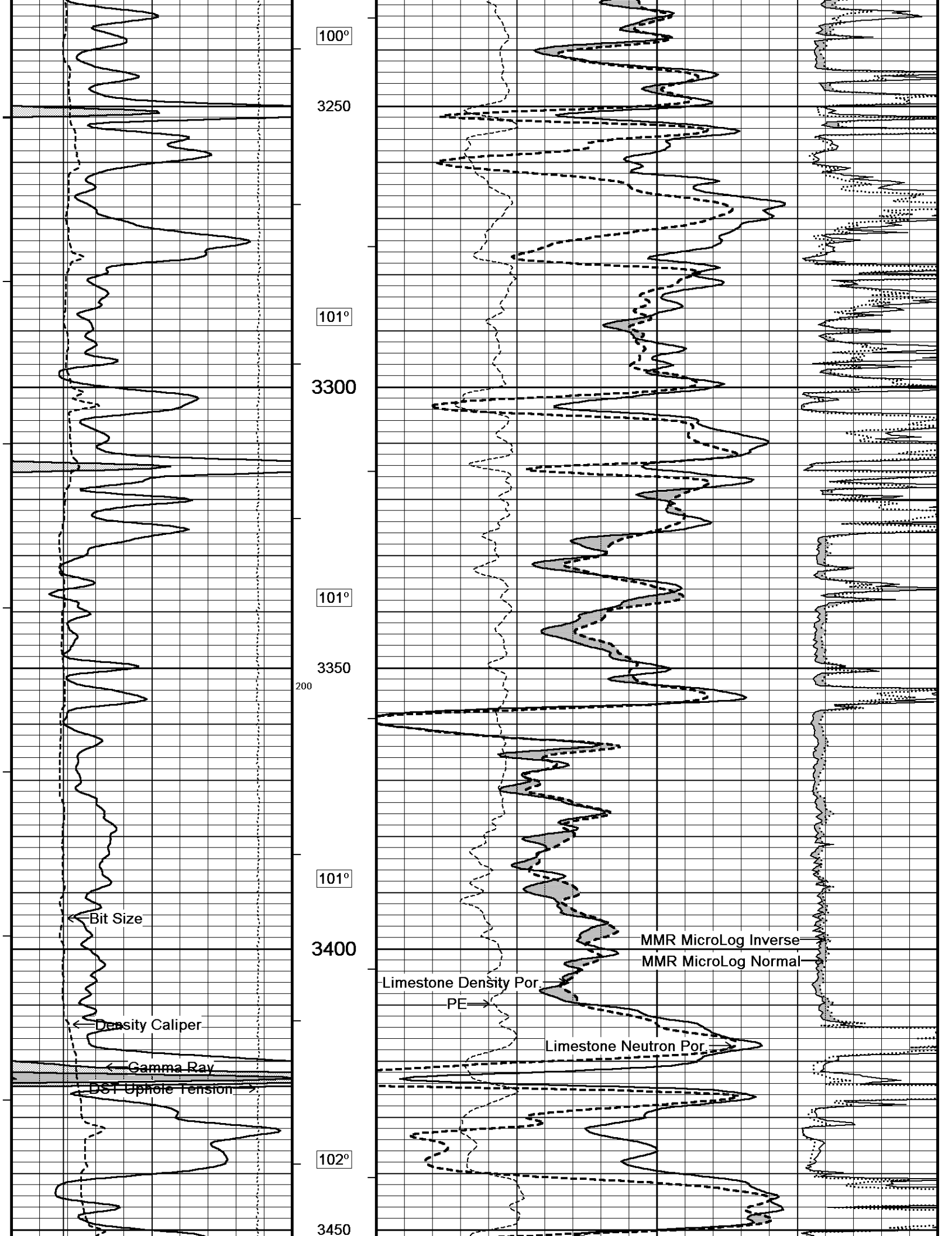


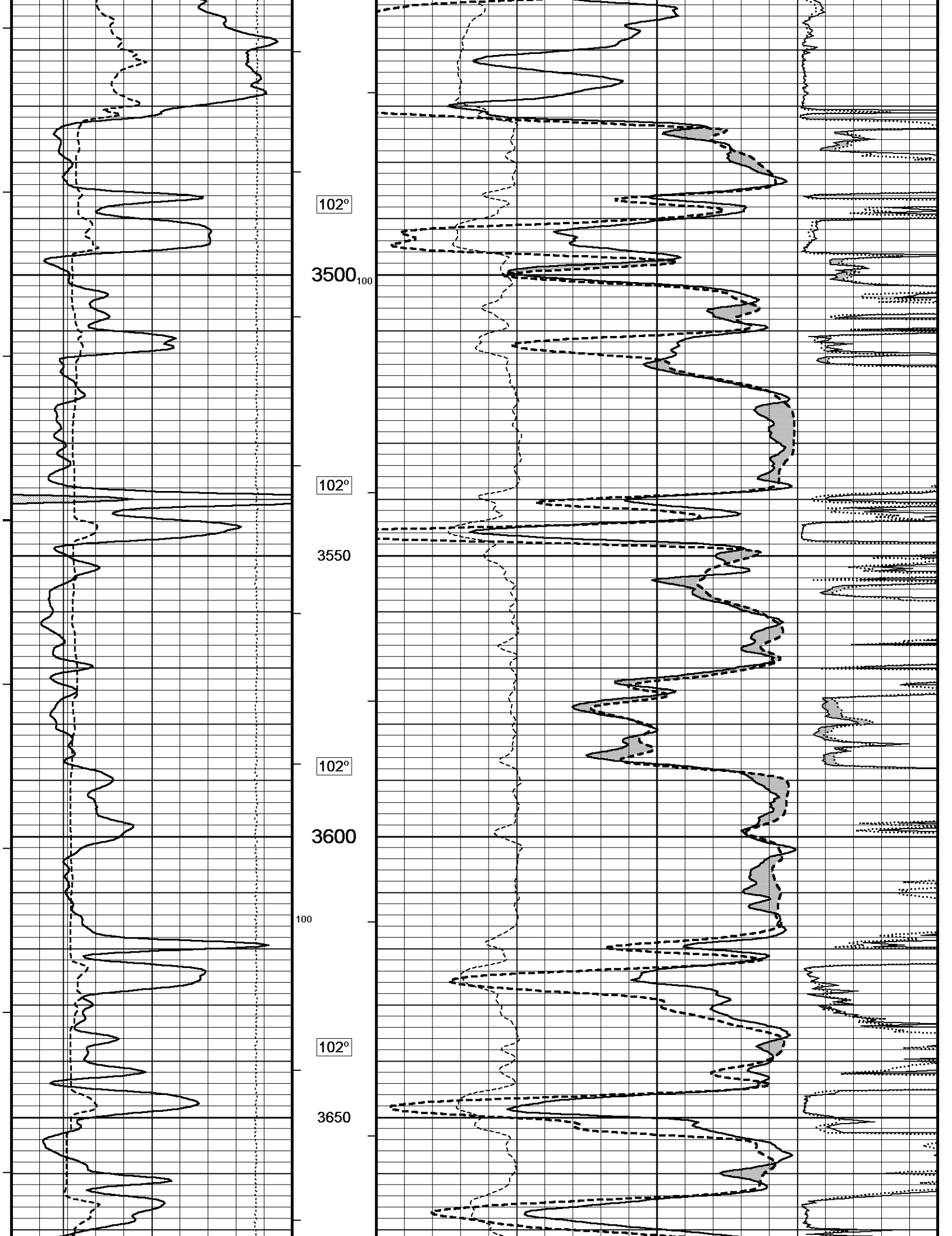

95°
600
2400
95°
2450
400
95°
2500
96°
2550

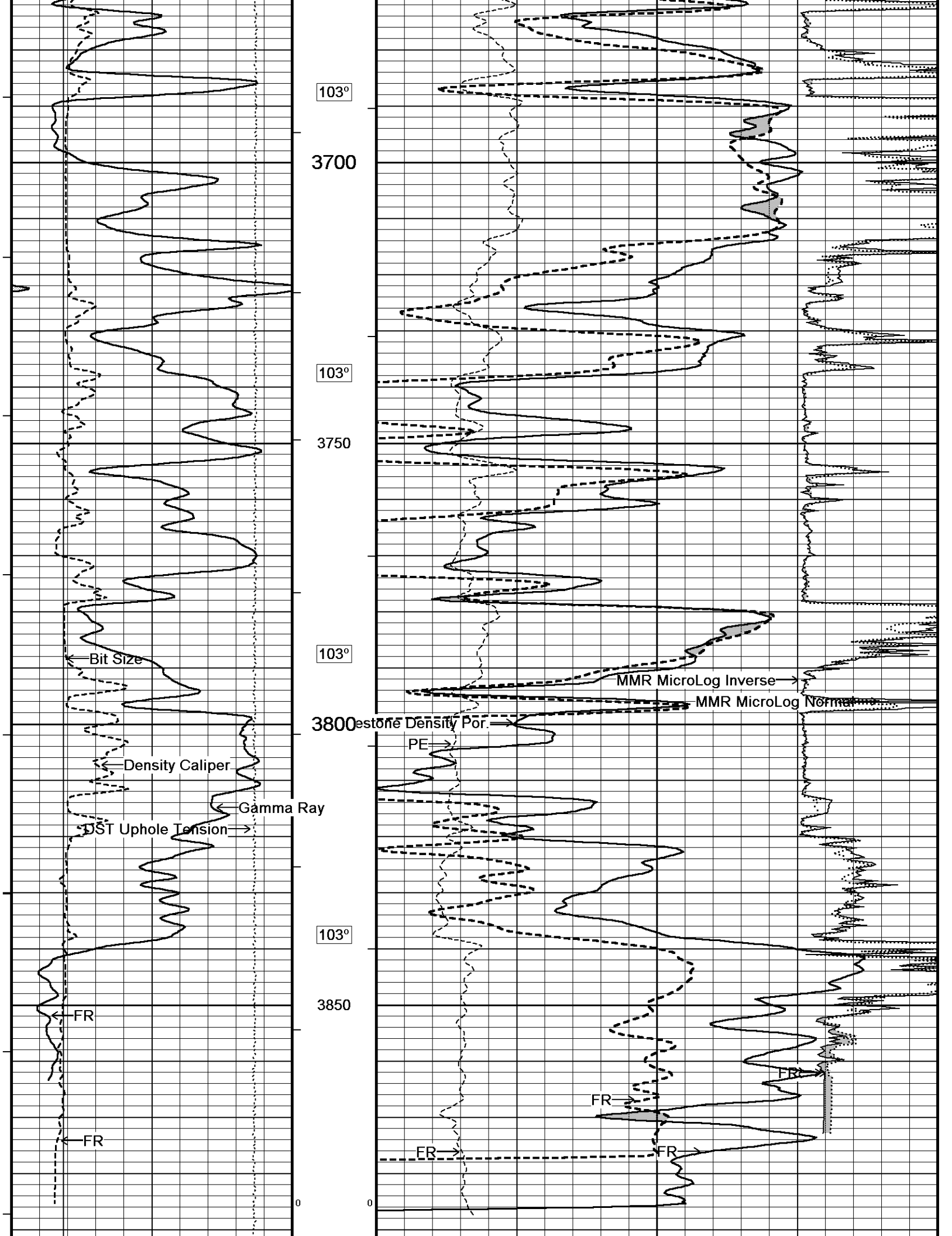

Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
500
96°
2600
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por.
PE
Limestone Neutron Por.
96°
2650
97°
2700
97°
2750
300
97°

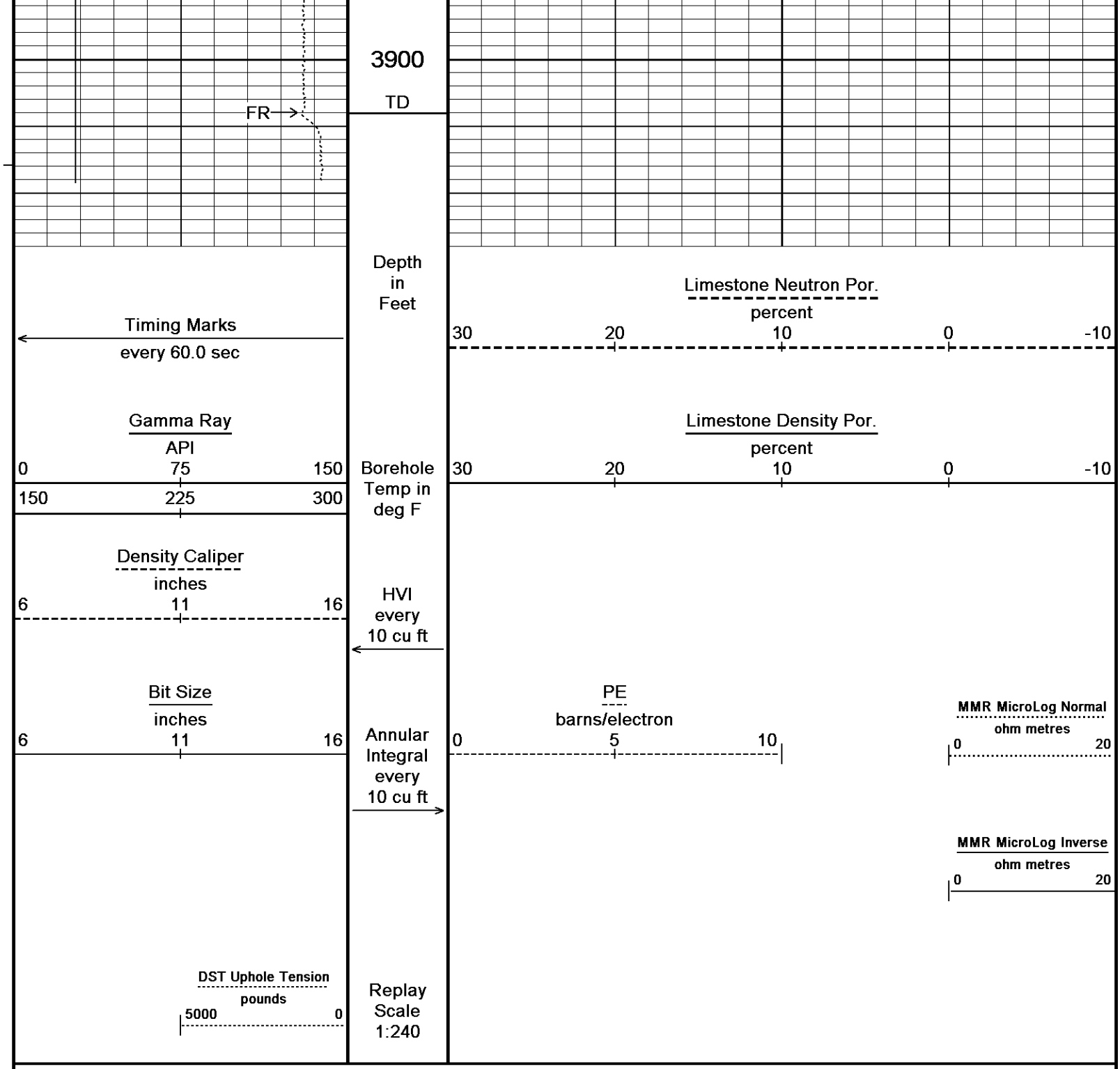

2800
400
98°
2850
98°
2900
98°
2950
99°
3000
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal


Limestone Density Por.
PE
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
99°
3050
300
100°
3100
200
100°
3150
100°
3200


100°
3250
101°
3300
101°
3350
200
101°
3400
102°
3450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
MMR MicroLog Inverse
MMR MicroLog Normal
Limestone Density Por
PE
Limestone Neutron Por


102°
3500
100
102°
3550
102°
3600
100
102°
3650


103°
3700
103°
3750
103°
3800
103°
3850
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
MMR MicroLog Inverse
MMR MicroLog Normal
estone Density Por.
PE
FR
FR
FR
FR
0
0



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5 INCH LIMESTONE MAIN

REPEAT SECTION

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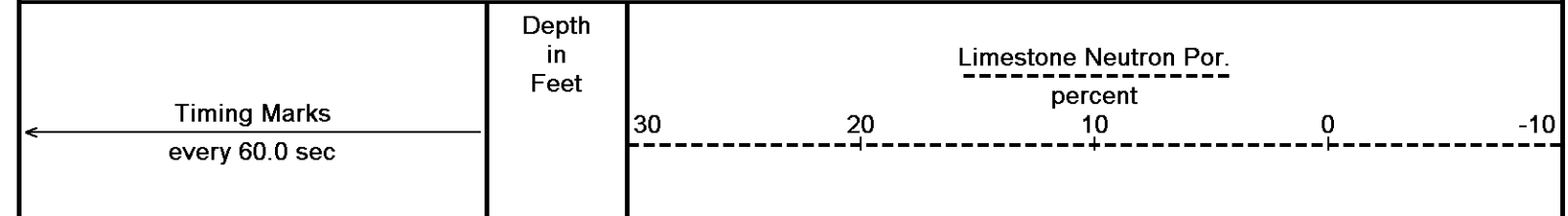
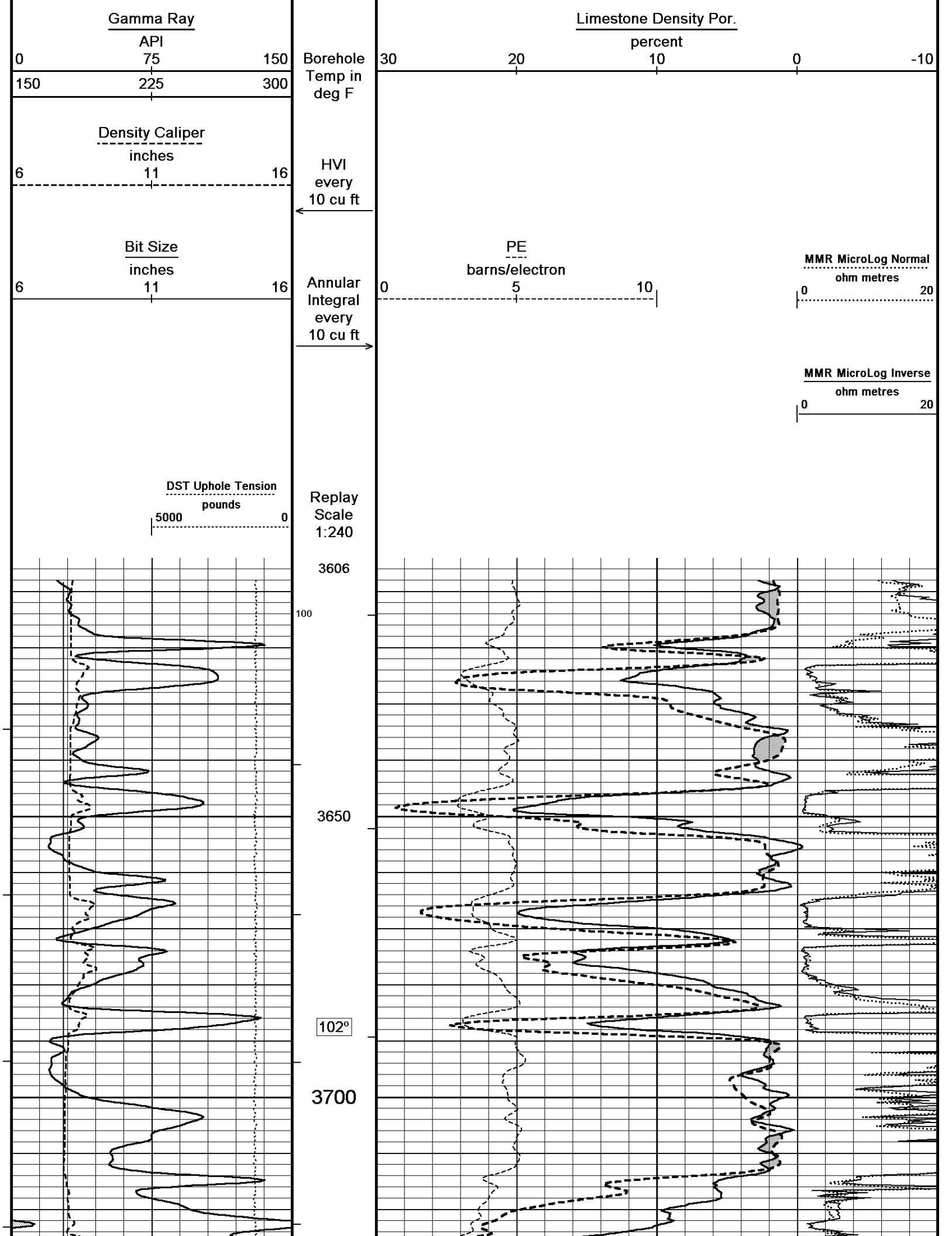
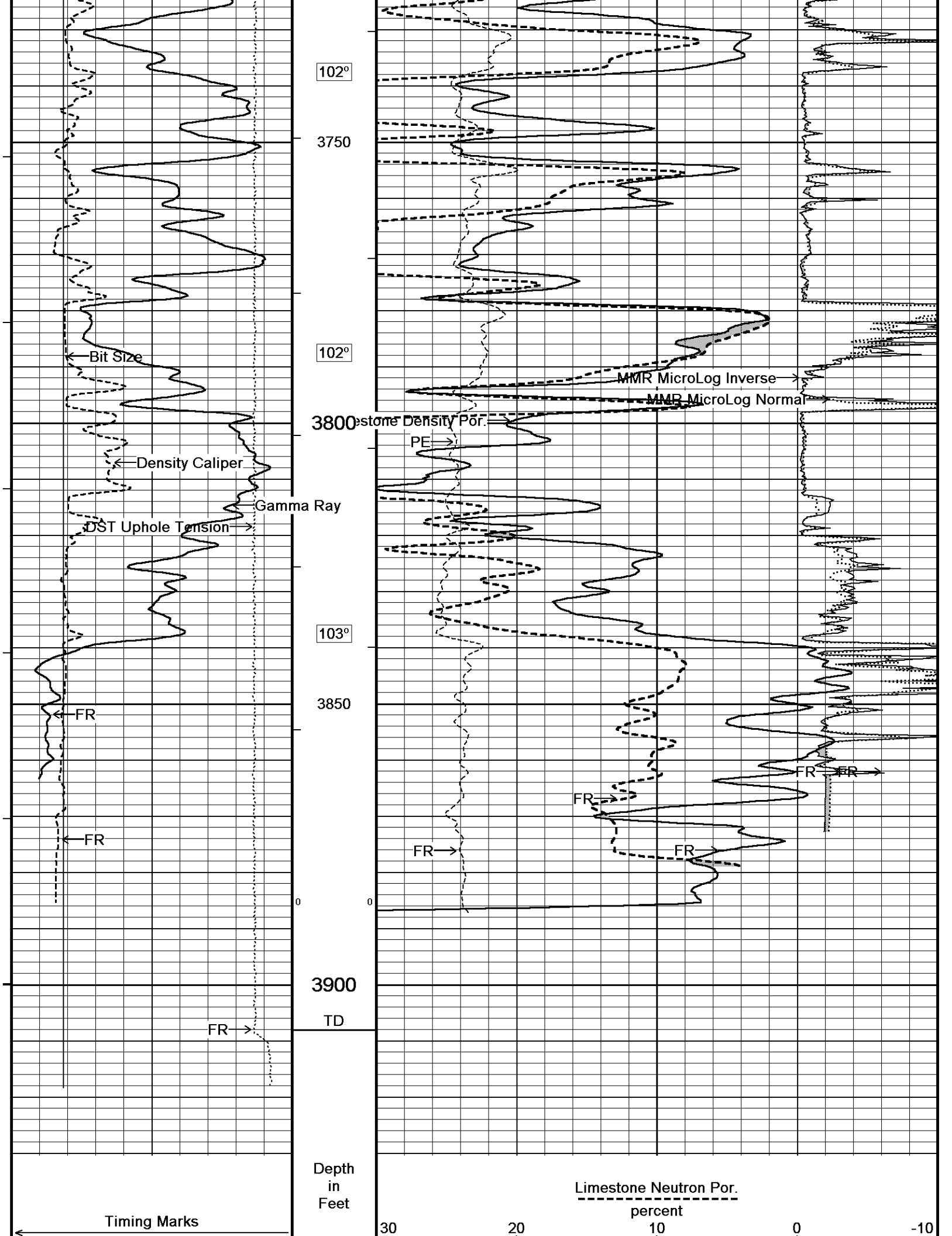



Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
Density Caliper
inches
6
11
16
HVI every 10 cu ft
Bit Size
inches
6
11
16
Annular Integral every 10 cu ft
Limestone Density Por.
percent
30
20
10
0
-10
PE
barns/electron
0
5
10
MMR MicroLog Normal
ohm metres
0
20
MMR MicroLog Inverse
ohm metres
0
20
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
3606
100
3650
102°
3700


102°
3750
102°
Bit Size
MMR MicroLog Inverse
MMR MicroLog Normal
3800
stone Density Por.
PE
Density Caliper
Gamma Ray
DST Uphole Tension
103°
3850
FR
FR
FR
FR
FR
FR
FR
0
0
3900
TD
FR
Depth
in
Feet
Timing Marks
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 1:240

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

MMR MicroLog Normal
ohm metres
0 20

MMR MicroLog Inverse
ohm metres
0 20

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REPEAT SECTION

5 INCH BULK DENSITY MAIN

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Recorded on 04-OCT-2016 16:29

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

Depth in Feet

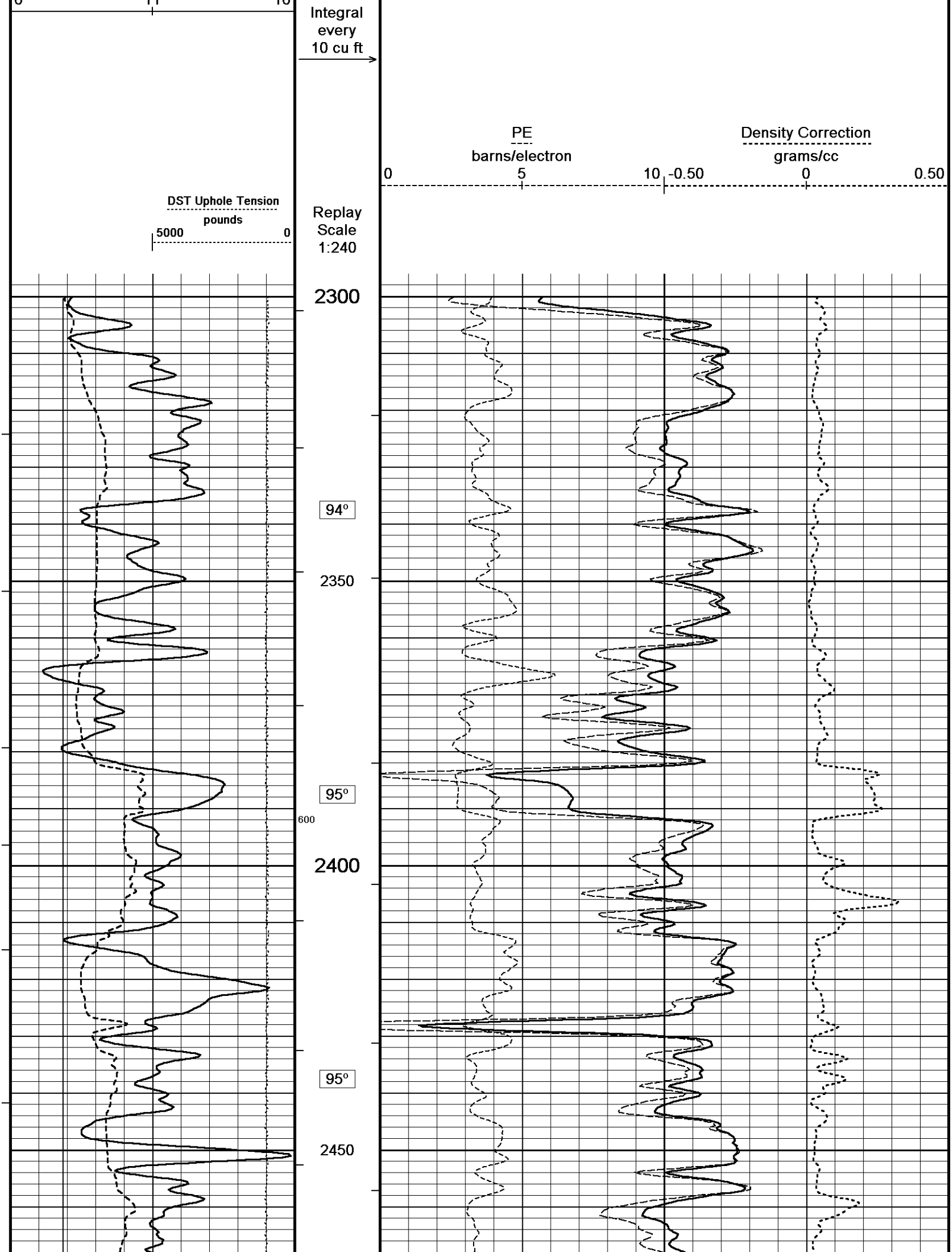
Borehole Temp in deg F

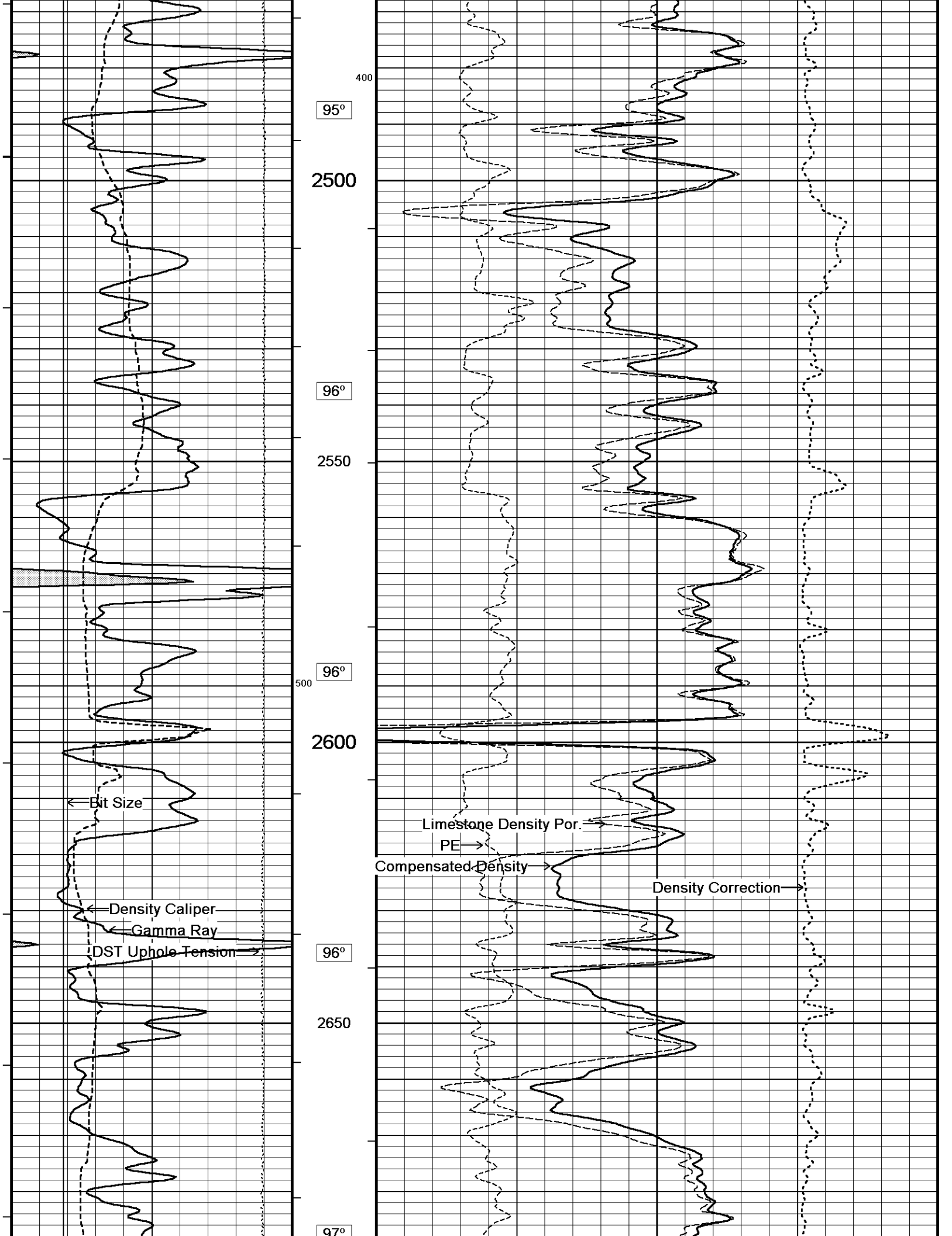
HVI every 10 cu ft

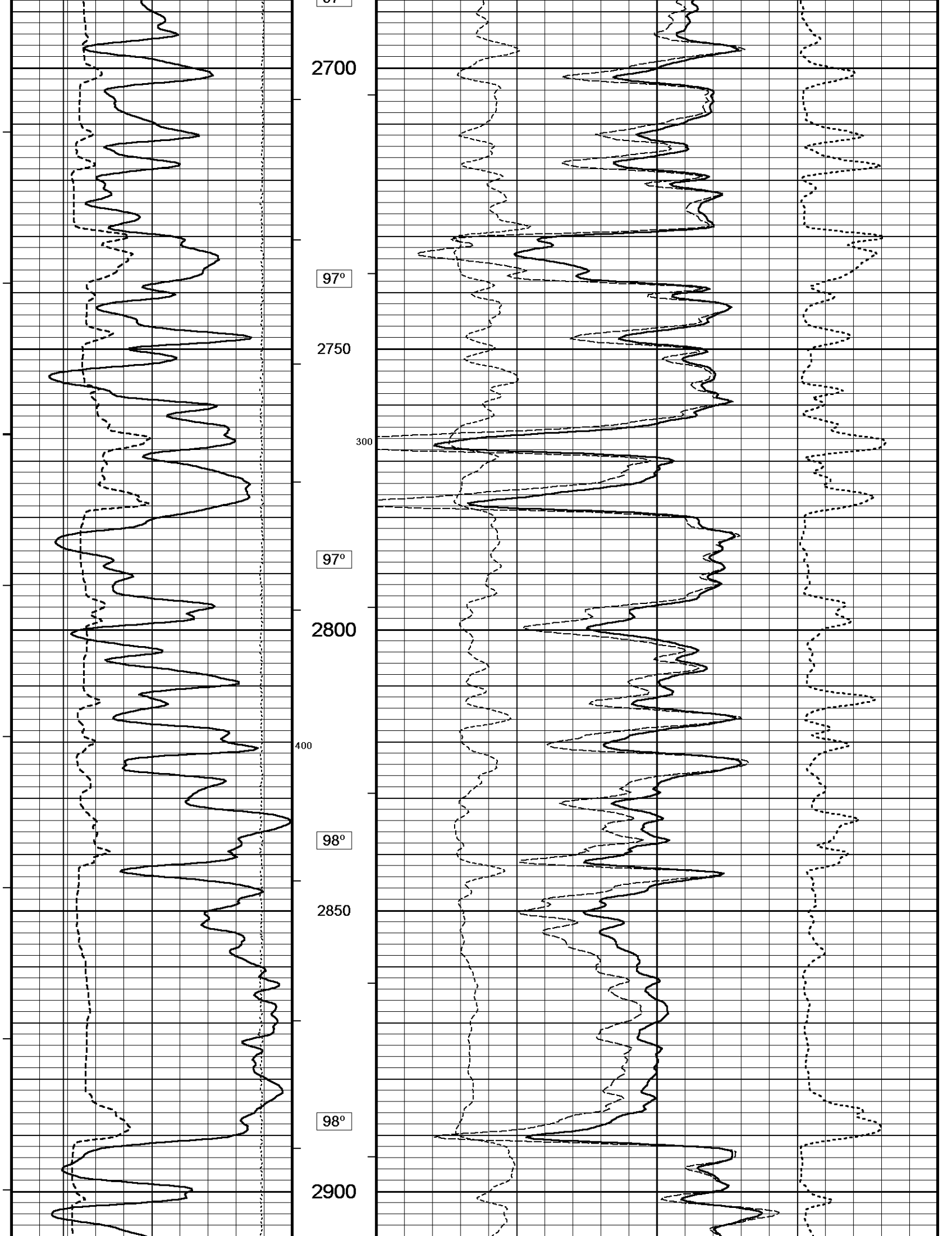
Annular

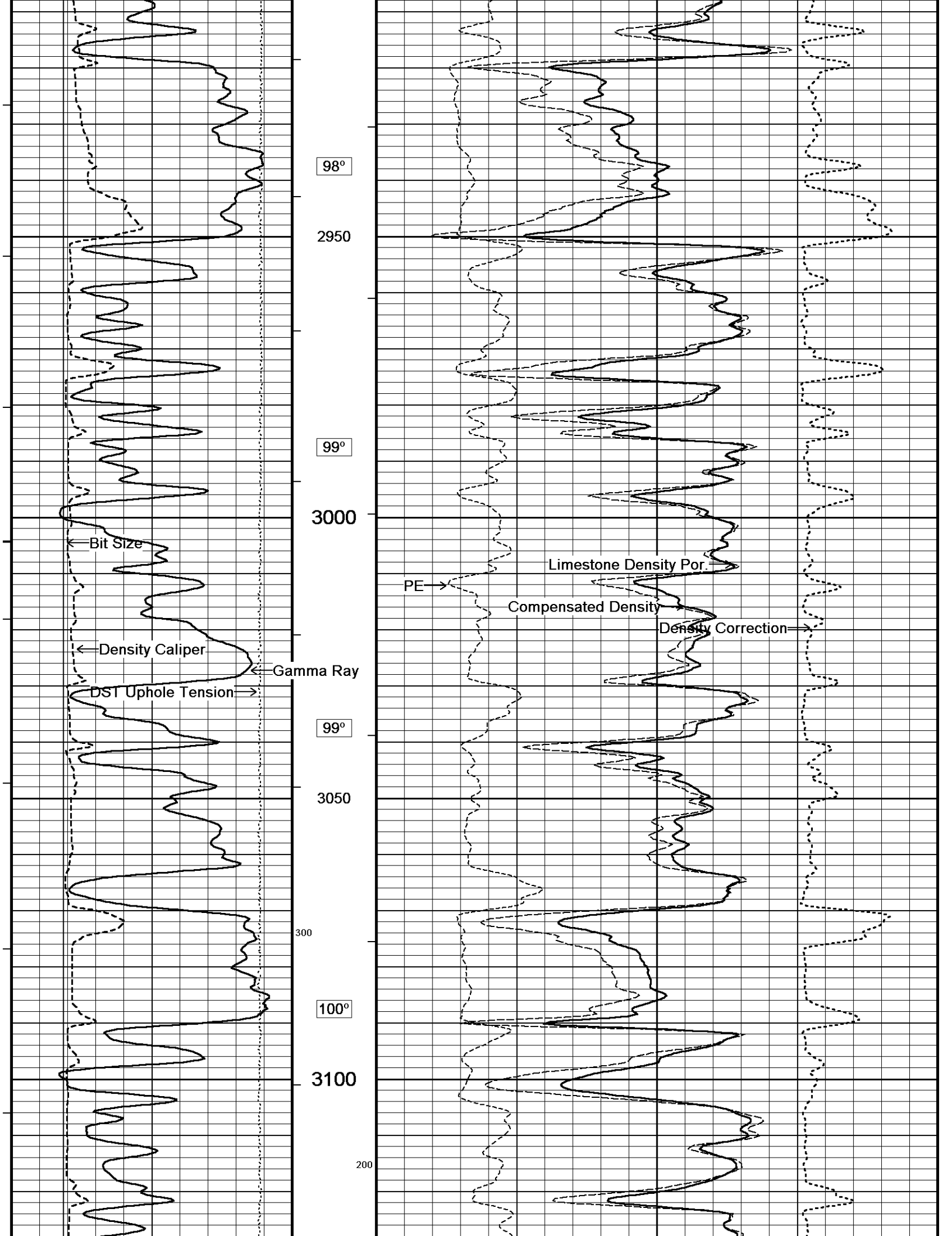
Compensated Density
grams/cc
2 2.25 2.50 2.75 3

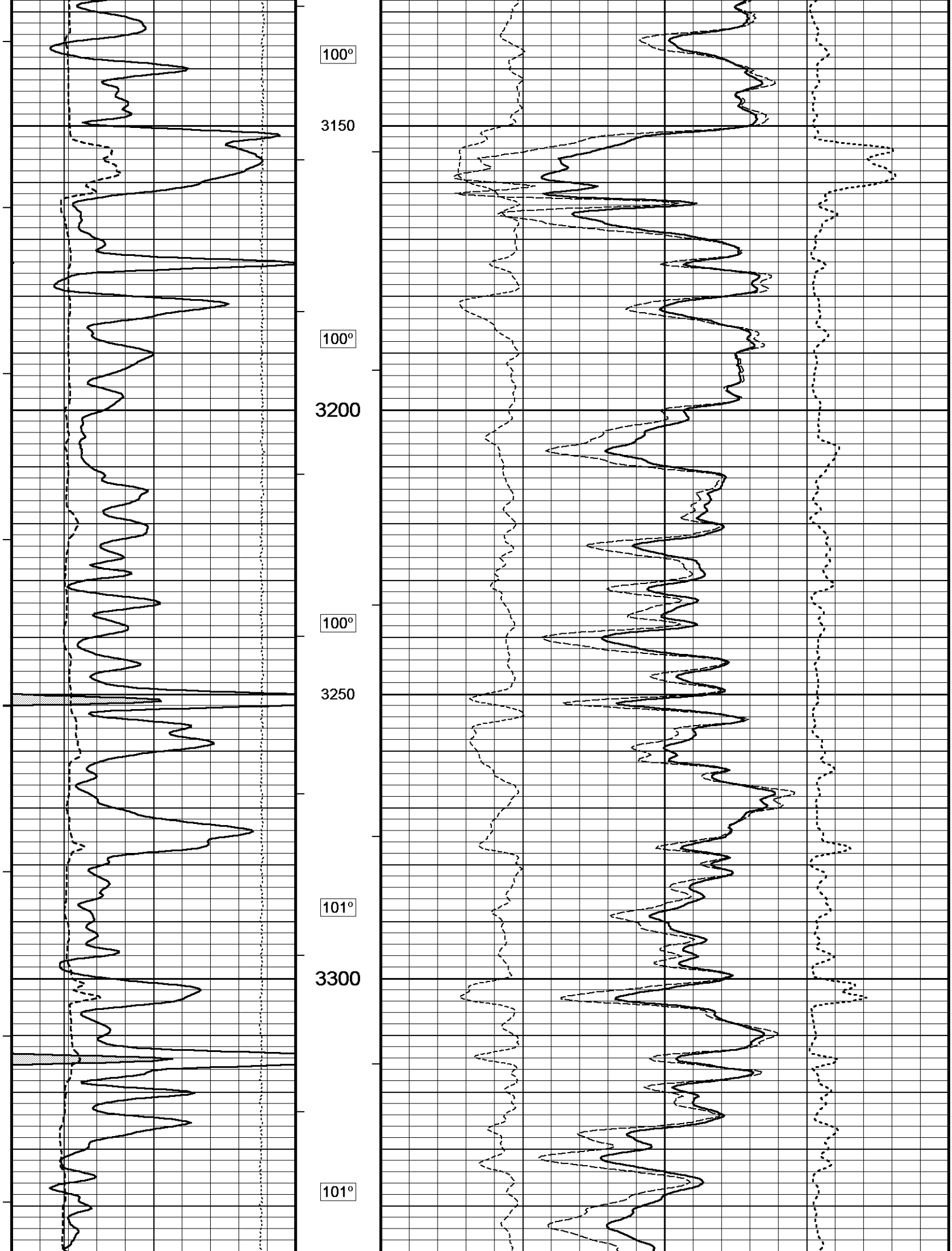
Limestone Density Por.
percent
30 20 10 0 -10

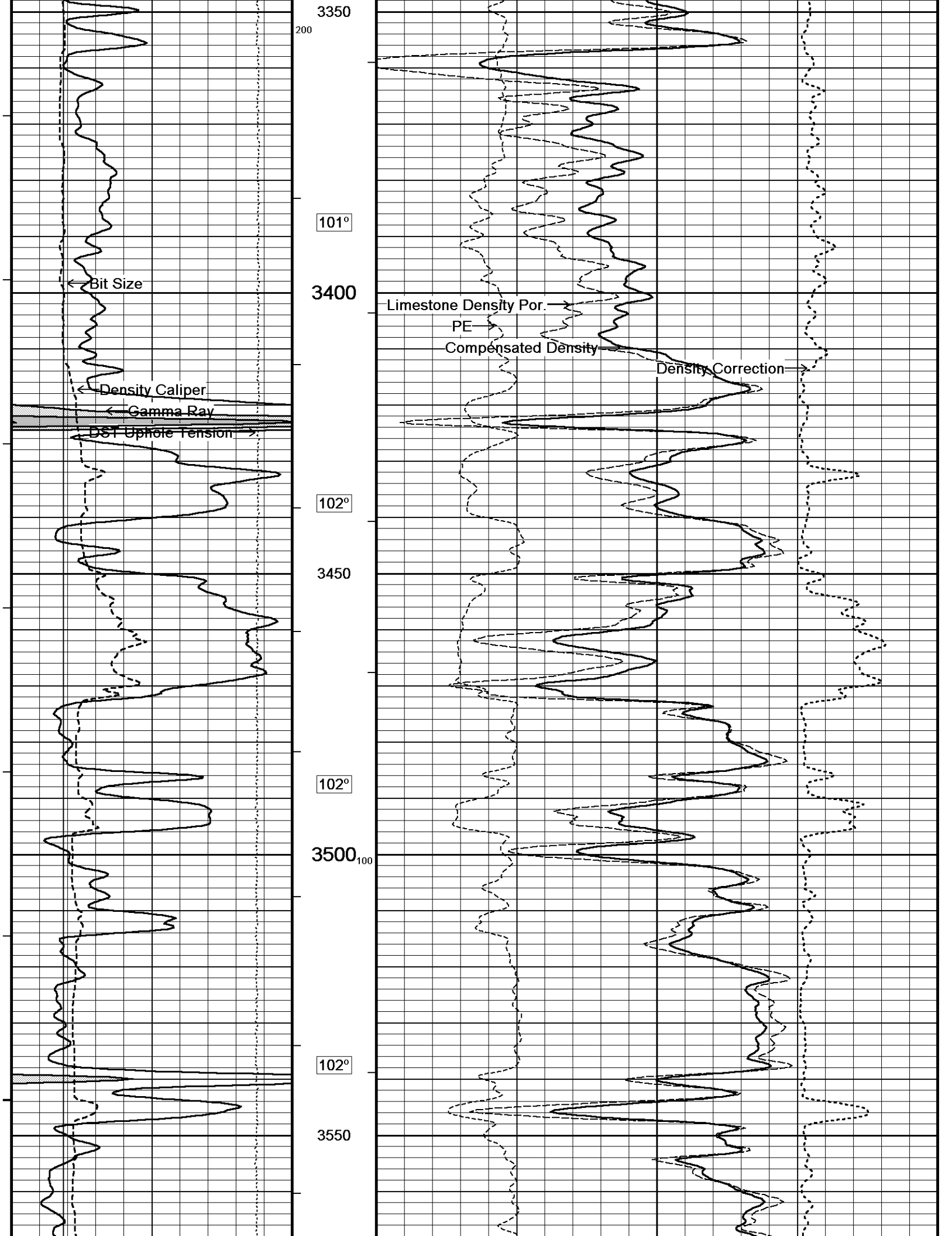

0
10
Integral
every
10 cu ft
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
2300
94°
2350
95°
600
2400
95°
2450

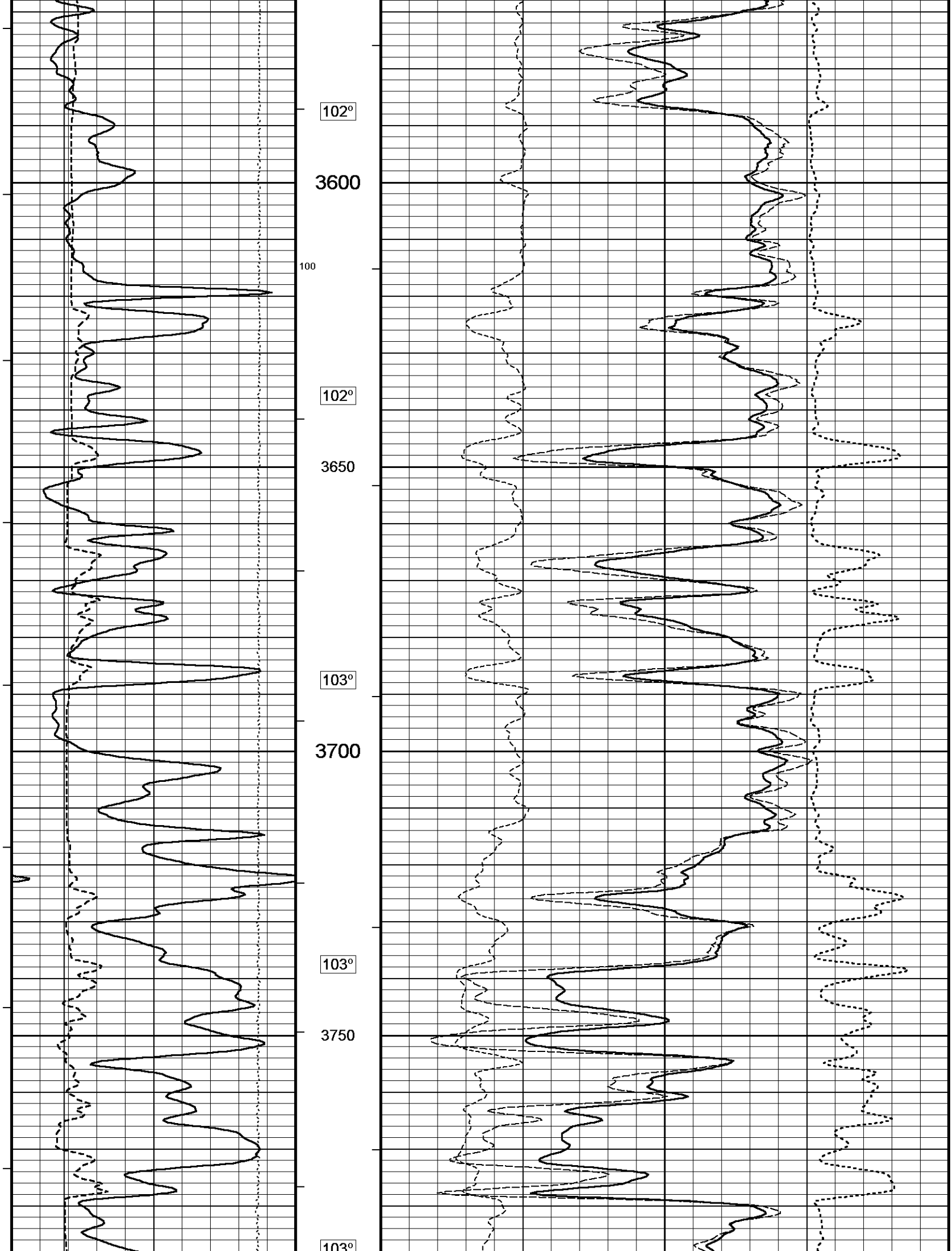

400
95°
2500
96°
2550
500
96°
2600
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
96°
2650
97°

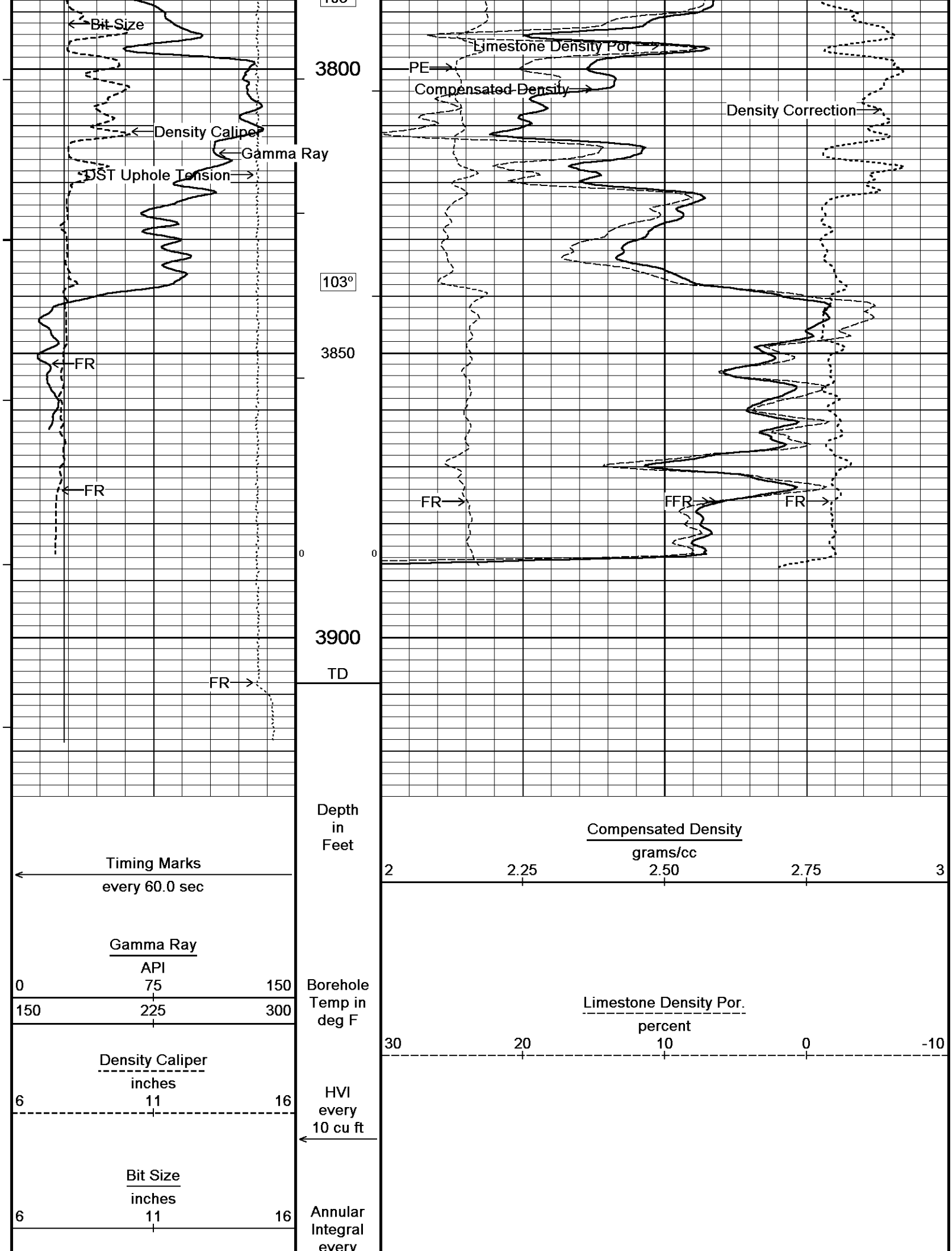

2700
97°
2750
300
97°
2800
400
98°
2850
98°
2900


98°
2950
99°
3000
Bit Size
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
99°
3050
300
100°
3100
200


100°
3150
100°
3200
100°
3250
101°
3300
101°


3350
200
101°
Bit Size
3400
Limestone Density Por.
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
102°
3450
102°
3500
100
102°
3550


102°
3600
100
102°
3650
103°
3700
103°
3750
103°


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
3800
103°
3850
3900
TD
Limestone Density Por
PE
Compensated Density
Density Correction
FR
FFR
FR
0
0
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
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

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

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5 INCH BULK DENSITY MAIN

REPEAT SECTION

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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
150 225 300

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

Bit Size
inches
6 11 16

Annular
Integral
every
10 cu ft

PE
barns/electron
0 5 10

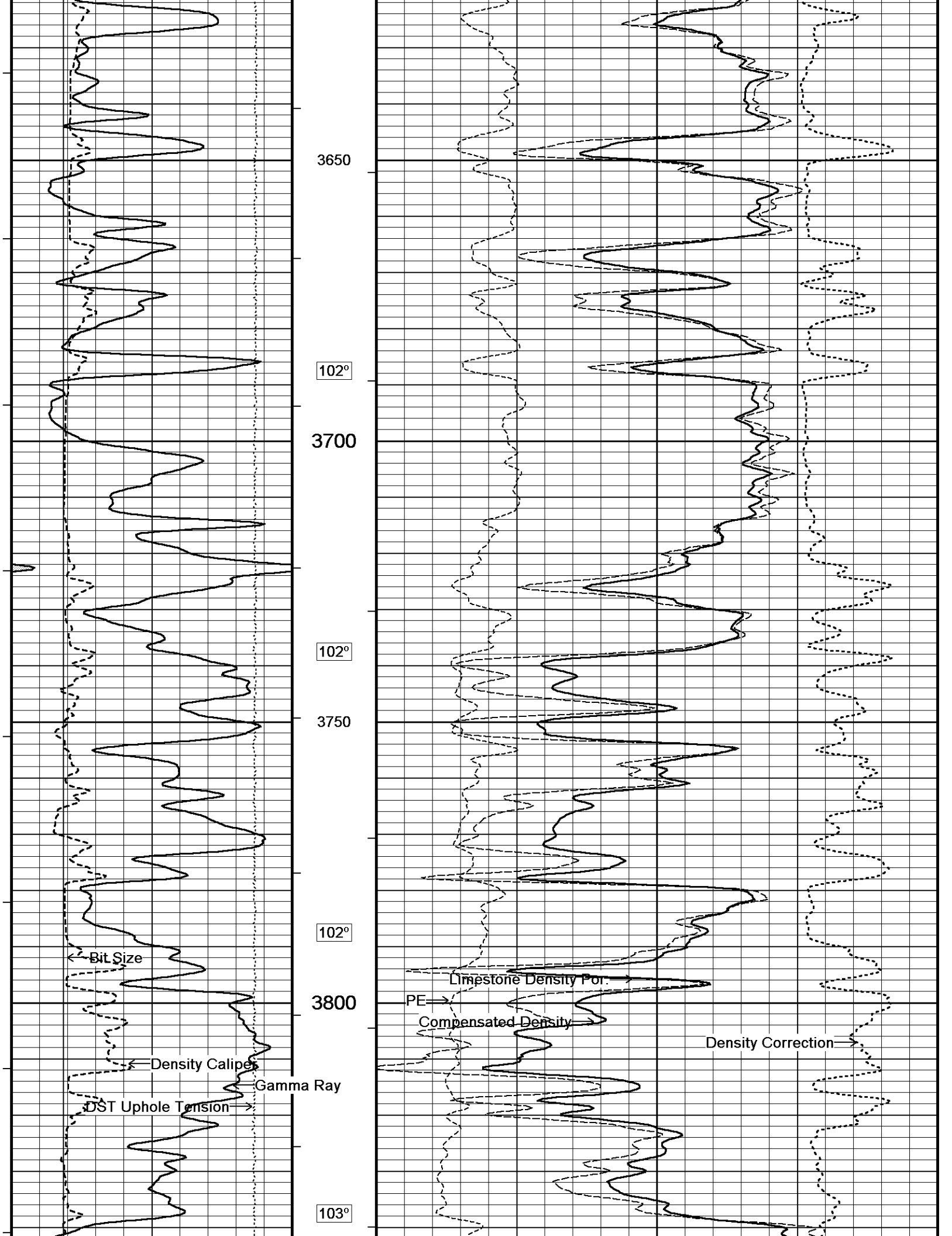
Density Correction
grams/cc
-0.50 0 0.50

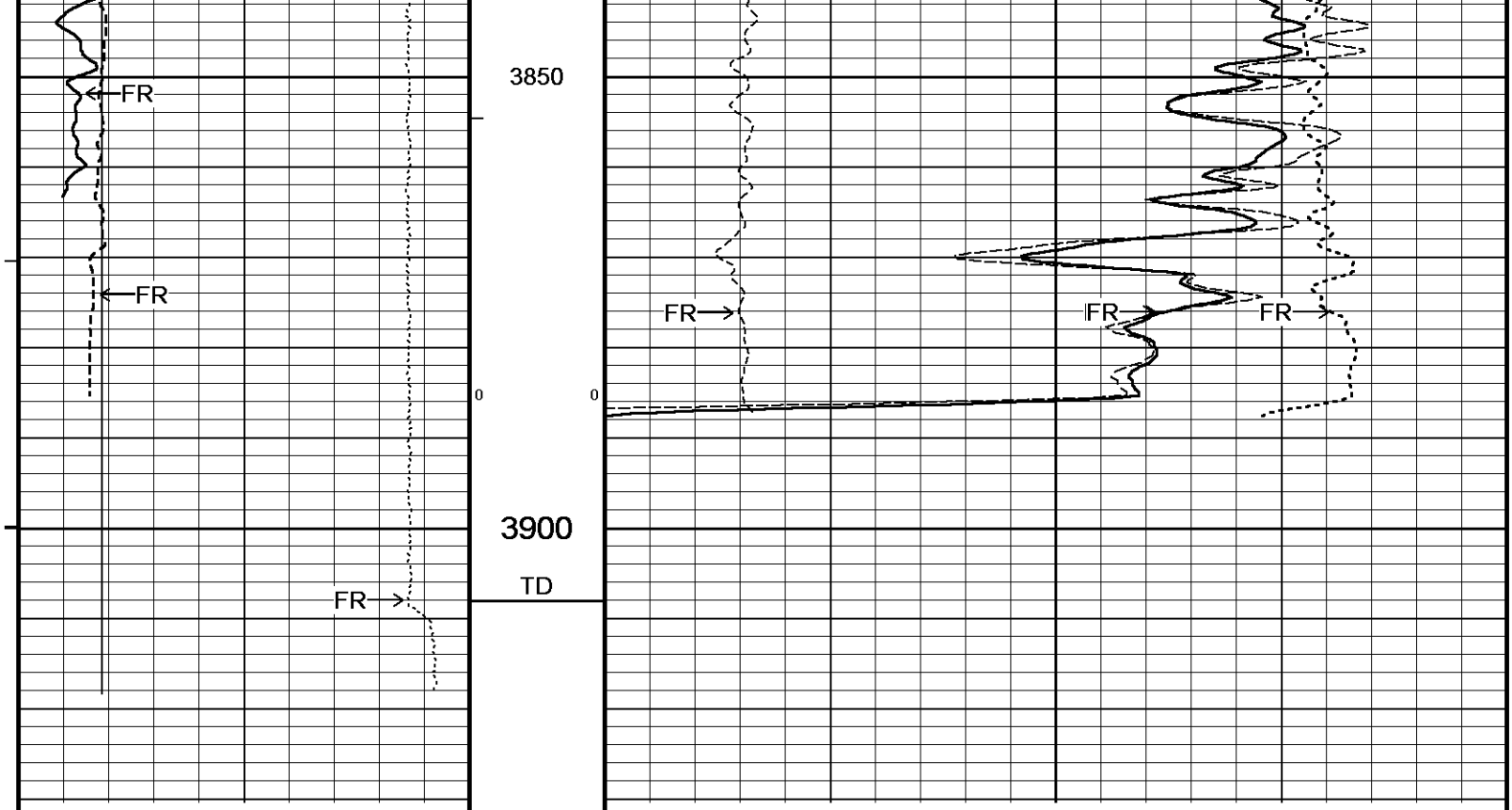
DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

3606

100


3650
102°
3700
102°
3750
102°
3800
103°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Density Por.
PE
Compensated Density
Density Correction



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

Compensated Density
grams/cc
2 2.25 2.50 2.75 3

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
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REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 15.03.5939\Logs\O'Brien (LA) Jecha 4 #2\O'Brien (LA) Jecha 4 #2_001.dta

General Constants All 000

Last Edited on 04-OCT-2016,15:43

General Parameters		
Mud Resistivity	0.460	ohm-metres
Mud Resistivity Temperature	75.000	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	None	
Rwa Parameters		
Porosity used	Limestone Density Por.	
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 24-JUL-2016 15:20

Reading No	Measured	Calibrated (lbs)
1	15235.81	0.00
2	16026.61	481.00

Gamma Calibration MCG-C 123

Field Calibration on 04-OCT-2016 08:13

	Measured	Calibrated (API)
Background	143	100
Calibrator (Gross)	795	556
Calibrator (Net)	652	456

Gamma Calibration Tolerances MCG-C 123

Ratio 1.431 (1.40 – 1.475 – 1.55) Counts/API

Gamma Constants MCG-C 123

Last Edited on 04-OCT-2016,13:32

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-C 123

Field Calibration on 31-OCT-2015,17:05

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-C 123

Last Edited on 22-SEP-2015,11:43

Pre-filter Length	11

SP Calibration MCG-C 123

Field Calibration on 14-JUL-2016 12:06

	Measured	Calibrated (mV)
Reference 1	101.2	100.6
Reference 2	-99.1	-99.9

Micro Normal and Micro Inverse Calibration MMR-C.A 247

Base Calibration on 28-AUG-2016 19:13
Field Check on 04-OCT-2016 15:26

Base Calibration

Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	10.2	49.9	5.1	25.6
Micro Inverse	10.0	49.5	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.6	93.6
Micro Inverse	62.2	62.2

Micro Normal & Micro Inverse Calibration Tolerance MMR-C.A 247

Micro Normal Res. 1 10.2 ohm (-5% 10.0 +5%)
Micro Inverse Res. 1 10.0 ohm (-5% 10.0 +5%)
Micro Normal Res. 2 49.9 ohm (-5% 50.0 +5%)
Micro Inverse Res. 2 49.5 ohm (-5% 50.0 +5%)

Micro Normal Base Check 93.6 ohm-m (-2% 93.19 +2%)
Micro Inverse Base Check 62.2 ohm-m (-2% 62.11 +2%)

Micro Normal Field Check 93.6 ohm-m (-2% 93.6 +2%)
Micro Inverse Field Check 62.2 ohm-m (-2% 62.2 +2%)

Micro Normal and Micro Inverse Constants MMR-C.A 247

Last Edited on 26-JUN-2016,15:44

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	0.0000	inches

Caliper Calibration MMR-C.A 247

Base Calibration on 28-AUG-2016 19:08
Field Calibration on 04-OCT-2016 15:24

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14869	5.98
2	18207	7.97
3	21411	9.86
4	25389	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.27	8.10

Caliper Calibration Tolerances MMR-C.A 247

Short Arm Field Cal. 8.27 in (7.90 8.10 8.30)

Micro-Resistivity Caliper Constants MMR-C.A 247

Last Edited on

Sonde Configuration Resistivity Mode

Neutron Calibration MDN-A.B 66

Base Calibration on 22-MAY-2016,18:15
Field Check on 04-OCT-2016 08:22

Base Calibration

	Measured Near	Measured Far	Calibrated (cps) Near	Calibrated (cps) Far
	3116	97	3714	110
Ratio	32.277		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	2061	3028
Ratio	0.681	

Field Check

	Calibrated (cps)	
	2167	3105
Ratio	0.698	

Neutron Calibration Tolerances MDN-A.B 66

		-5%	33	+5%
Ratio	32.277			

		0.65	0.7	0.75
Base Check	0.681			

		0.661	0.681	0.701
Field Check	0.698			

Neutron Constants MDN-A.B 66

Last Edited on 04-OCT-2016,13:32

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
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 28-AUG-2016 18:58
Field Check on 04-OCT-2016 15:05

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.3	126.8
Base Check		281.3
Field Check		281.4

FE Calibration Tolerances MFE-B.J 352

		-3%	980.0	+3%	
Reference 2	963.3				ohm

		-2%	277.0	+2%	
Base Check	281.3				ohm-m

		-2%	281.3	+2%	
Field Check	281.4				ohm-m

FE Constants MFE-B.J 352

Last Edited on 04-OCT-2016,15:04

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Sonic Constants MSS-A.A 55

Last Edited on 04-OCT-2016,13:31

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

Induction Calibration MAI-A.A 111

Base Calibration on 05-AUG-2014,09:34
Field Check on 04-OCT-2016 15:23

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2

Array Temperature 23.0 Deg F

Test Loop Calibration Verified 22-MAY-2016,17:59

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	12.1	3873.0	15.9	3871.4
2	29.8	3528.1	32.3	3525.6
3	29.1	3021.3	31.1	3019.0
4	19.1	2058.5	20.5	2056.8
Deep	17.7	1962.1	19.1	1960.6
Medium	43.1	3976.4	45.6	3973.2

Shallow	44.4	5232.7	48.1	5229.1	
Array Temperature		65.8		86.7	Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6	13.0 / 17.0 / 21.0	mmho/m	High Conductivity 1	473.6	430.0 / 475.0 / 520.0	mmho/m
Low Conductivity 2	6.4	4.5 / 6.0 / 7.5	mmho/m	High Conductivity 2	385.9	345.0 / 385.0 / 425.0	mmho/m
Low Conductivity 3	3.2	1.0 / 3.5 / 6.0	mmho/m	High Conductivity 3	264.0	240.0 / 260.0 / 280.0	mmho/m
Low Conductivity 4	2.1	0.0 / 2.0 / 4.0	mmho/m	High Conductivity 4	135.5	120.0 / 135.0 / 150.0	mmho/m
Background Vx 1	0.0	-110.0 / -32.5 / 45.0	mmho/m	Phase Check Loop 1	0.0	-2.0 / 0.0 / 2.0	%
Background Vx 2	0.0	-35.0 / 20.0 / 75.0	mmho/m	Phase Check Loop 2	0.0	-2.0 / 0.0 / 2.0	%
Background Vx 3	0.0	-60.0 / 2.5 / 65.0	mmho/m	Phase Check Loop 3	0.0	-2.0 / 0.0 / 2.0	%
Background Vx 4	0.0	-50.0 / -17.5 / 15.0	mmho/m	Phase Check Loop 4	0.0	-2.0 / 0.0 / 2.0	%

Induction Constants MAI-A.A 111

Last Edited on 04-OCT-2016,15:21

Induction Model	RtAP-WBM		
Borehole Correction Constants			
Tool Centred	No		
Hole Size Source	Density Caliper		
Hole Size Constant Value	N/A	inches	
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	
Rm Source	Global Value: Temperature Corrected		
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
Symmetrised Receiver Gains		
Receiver 1	1.00	
Receiver 2	1.00	
Receiver 3	1.00	
Receiver 4	1.00	
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 111

Field Calibration on 24-NOV-2014,10:23

	Measured	Calibrated(Deg F)
Lower	10.00	10.00

Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Photo Density Calibration MPD-B 104

Base Calibration on 28-AUG-2016 20:24
Field Check on 04-OCT-2016 15:09

Density Calibration

Base Calibration	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Background	1145	1339		
Reference 1	49665	24007	59556	30836
Reference 2	20032	2442	24941	2541
Field Check at Base	1144.9	1338.6		
Field Check	1142.9	1322.6		

PE Calibration

Base Calibration	WS	WH	Ratio	Calibrated Ratio
Background	211	1021		
Reference 1	20773	49486	0.424	0.371
Reference 2	5807	19899	0.296	0.272
Field Check at Base	211.3	1021.2		
Field Check	209.1	1022.7		

Photo Density Calibration Tolerances MPD-B 104

Near Density Ratio	2.57	-5% 2.52 +5%	Far Density Ratio	20.54	-5% 21.00 +5%
PE Calibration	0.119	0.089 0.110 0.131			
Near Den. Field Check	1142.9	-3% 1144.9 +3%	Far Den. Field Check	1322.6	-3% 1338.6 +3%
PE WS Field Check	209.1	-6% 211.3 +6%	PE WH Field Check	1022.7	-6% 1021.2 +6%

Density Constants MPD-B 104

Last Edited on 04-OCT-2016,15:09

Density Source Id	P50557B	
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	1.12	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 104

Base Calibration on 28-AUG-2016 19:51
Field Calibration on 04-OCT-2016 15:20

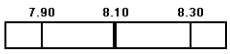
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13646	3.99
2	22688	5.98
3	31297	7.97
4	39521	9.86
5	48608	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.09	8.10

Caliper Calibration Tolerances MPD-B 104

Short Arm Field Cal. 8.09 

in

DOWNHOLE EQUIPMENT

C:\Minimus 15.03.5939\Logs\O'Brien (LA) Jecha 4 #2\O'Brien (LA) Jecha 4 #2_001.dta

Cablehead, 11 pin
CBH-CA 176 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-C.A 247 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-B 104 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

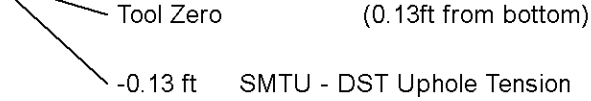
Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb

56.02 ft	GRGC - MCG Gamma Ray
53.11 ft	CGXT - MCG External Temperature
46.76 ft	MBTC - MMR Caliper
45.76 ft	MINV - MMR MicroLog Inverse
45.76 ft	MNRL - MMR MicroLog Normal
40.97 ft	NPRL - Limestone Neutron Por.
33.73 ft	AVOL - Annular Volume
33.73 ft	HVOL - Hole Volume
33.73 ft	CLDC - Density Caliper
31.80 ft	DPRL - Limestone Density Por.
31.80 ft	DCOR - Density Correction
31.74 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
16.96 ft	TR11 - 4' Transit Time
16.46 ft	TR21 - 3' Transit Time
15.95 ft	TR12 - 6' Transit Time
15.46 ft	TR22 - 5' Transit Time
12.96 ft	DT35 - 3-5' Compensated Sonic
12.96 ft	SPRL - Wyllie Lime. Sonic Por.
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	RTAO - Array Ind. One Res Rt
3.34 ft	R60O - Array Ind. One Res 60
0.23 ft	SPCG - Spontaneous Potential



All measurements relative to tool zero.

COMPANY	O'BRIEN RESOURCES, LLC.
WELL	JECHA 4 #2
FIELD	WILDCAT
PROVINCE/COUNTY	RUSH
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2083.00	feet	First Reading	3876.00	feet
Elevation Drill Floor	2081.00	feet	Depth Driller	3907.00	feet
Elevation Ground Level	2070.00	feet	Depth Logger	3908.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG