Weatherford®

COMPACT PHOTO DENSITY COMPENSATED NEUTRON MICRORESISTIVITY LOG

COMPANY	SDOCO, LLC.
WELL	REES RANCH 4-19
FIELD	REES RANCH
PROVINCE/COUNTY	WICHITA
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	878' FNL & 394' FWL NE SW NW NW

SEC	TWP	RGE	Other Services
19	19S	35W	MAI/MFE MSS

API Number 15-203-20219
Permit Number

Permanent Datum GL, Elevation 3172 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	3183.00
DF	3182.00
GL	3172.00

Date	15-MAY-2013			
Run Number	ONE			
Service Order	3539044			
Depth Driller	5250.00	feet		
Depth Logger	5254.00	feet		
First Reading	5222.00	feet		
Last Reading	2500.00	feet		
Casing Driller	350.00	feet		
Casing Logger	352.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.40 lb/USg		61.00 CP	
PH / Fluid Loss	9.50		8.80 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	0.60 @ 84.0	ohm-m		
Rmf @ Measured Temp	0.48 @ 84.0	ohm-m		
Rmc @ Measured Temp	0.72 @ 84.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.40 @125.0	ohm-m		
Time Since Circulation	8 HOURS			
Max Recorded Temp	125.00	deg F		
Equipment / Base	13096		LIB	
Recorded By	ADAM SILL			
Witnessed By	GARY DOKE			
JOB #	LB13-137			

BOREHOLE RECORD

Last Edited: 15-MAY-2013 19:01

Bit Size inches	Depth From feet	Depth To feet
7.875	350.00	5250.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	350.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583.
- 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: 2149 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 2500 FEET: 553 CU. FT.

- SERVICE ORDER # 3539044.

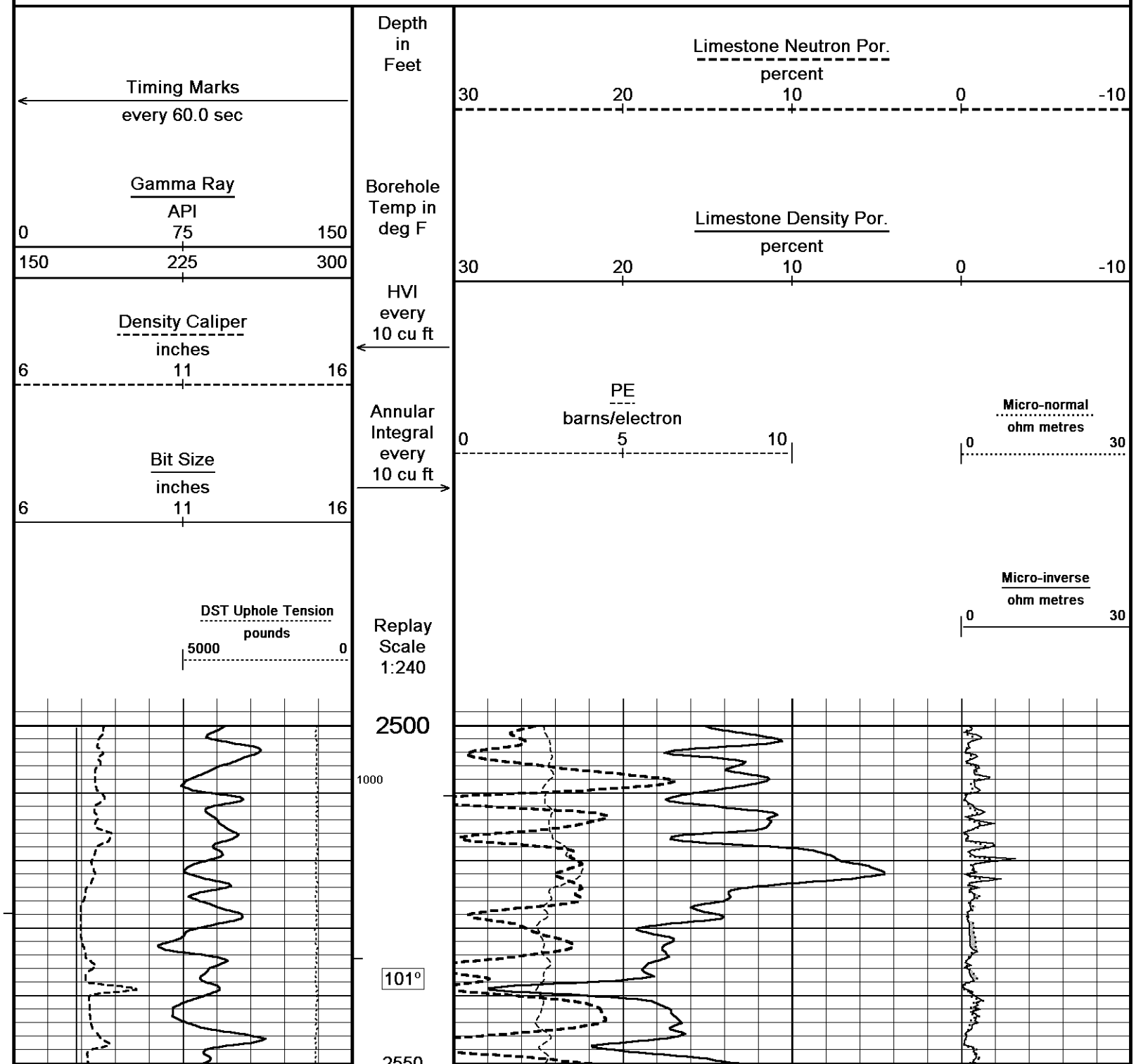
- RIG: H2 DRILLING #1.

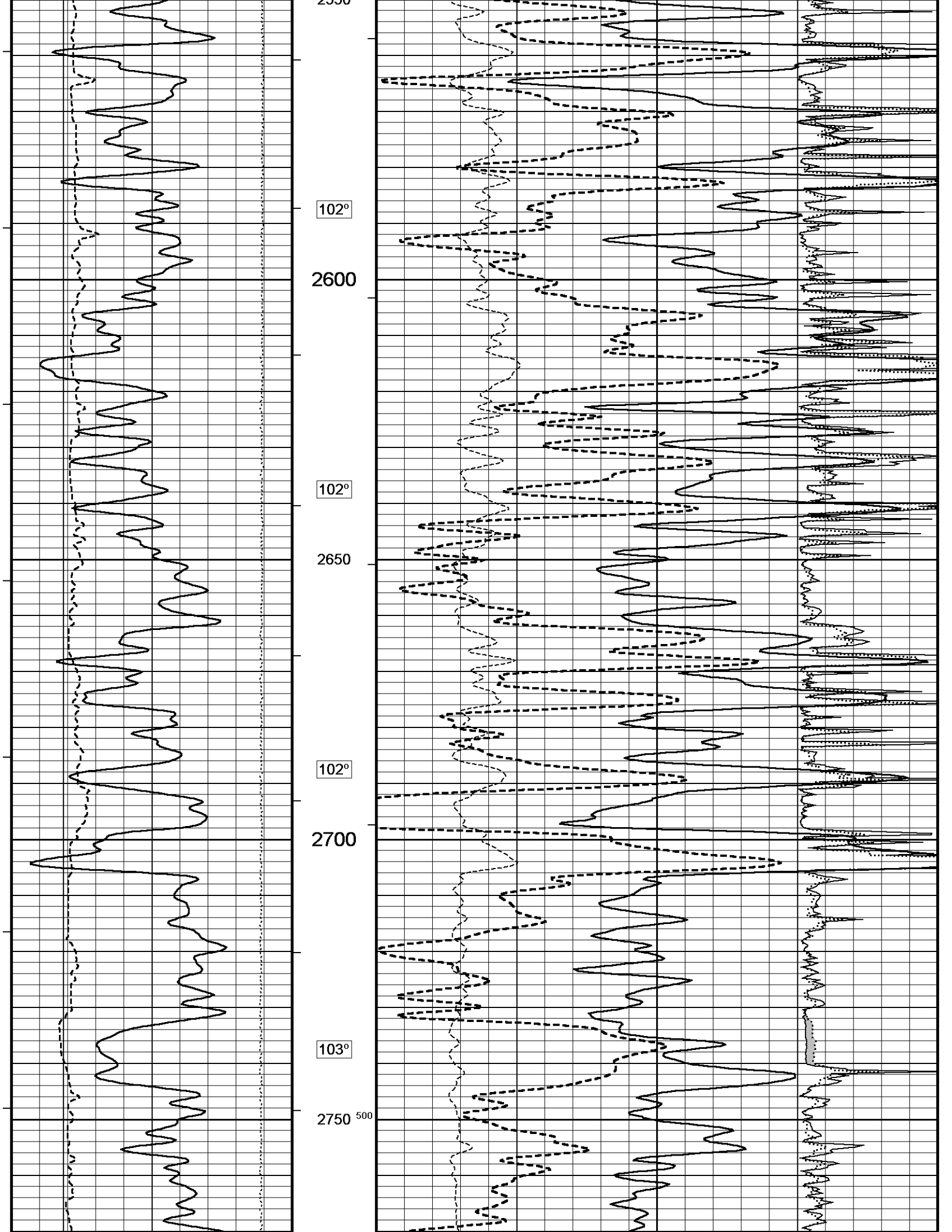
- ENGINEER: A. SILL.

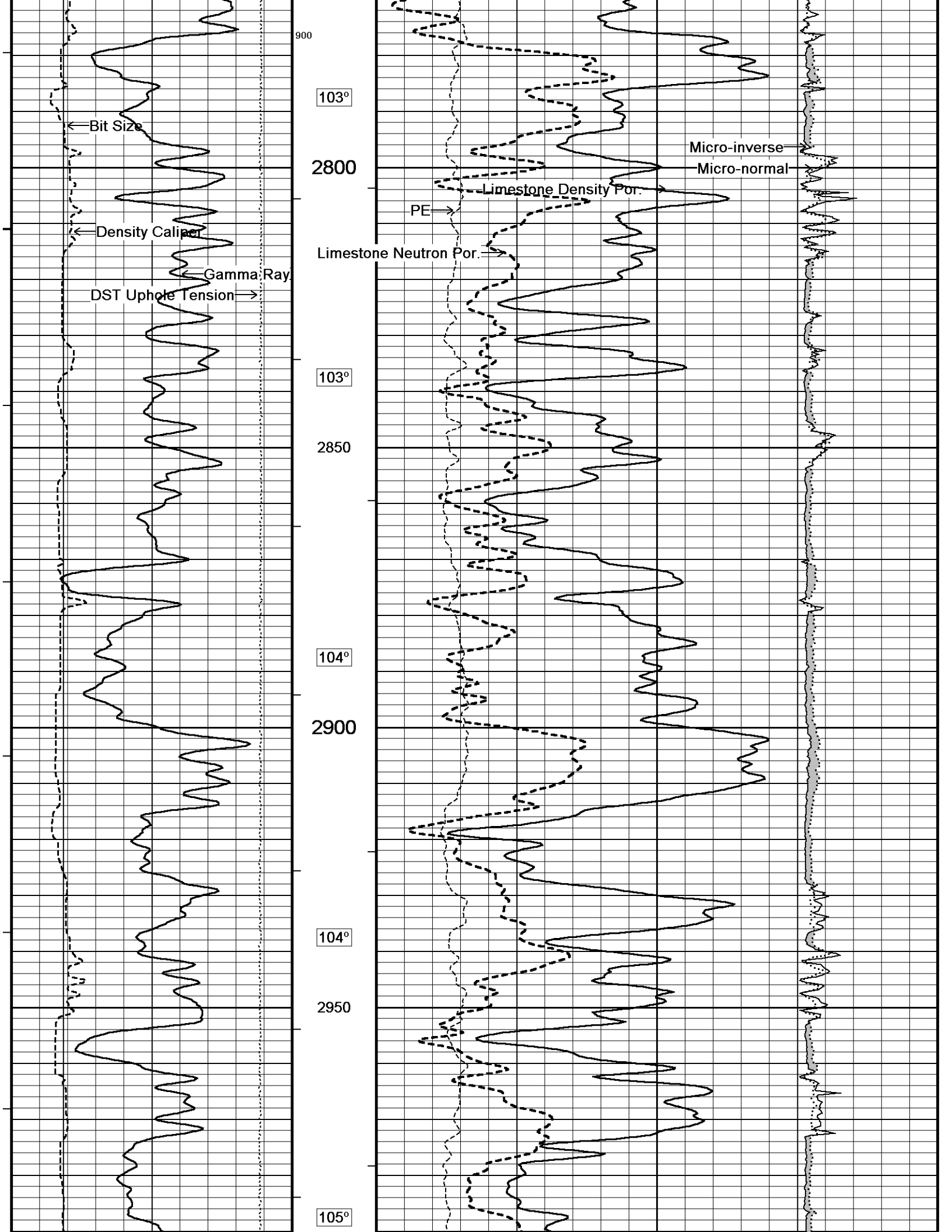
- OPERATOR(S): N. ADAME.

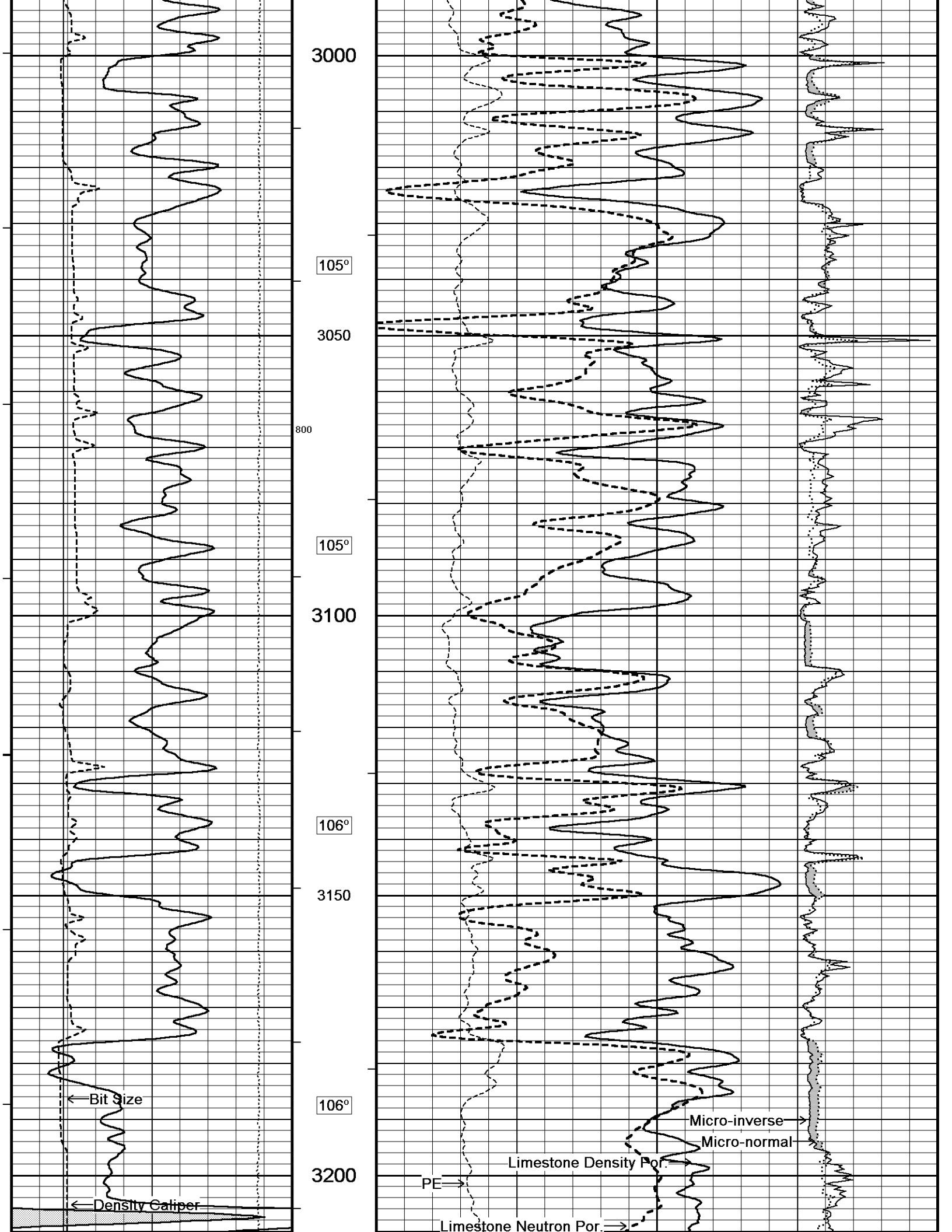
5 INCH MAIN

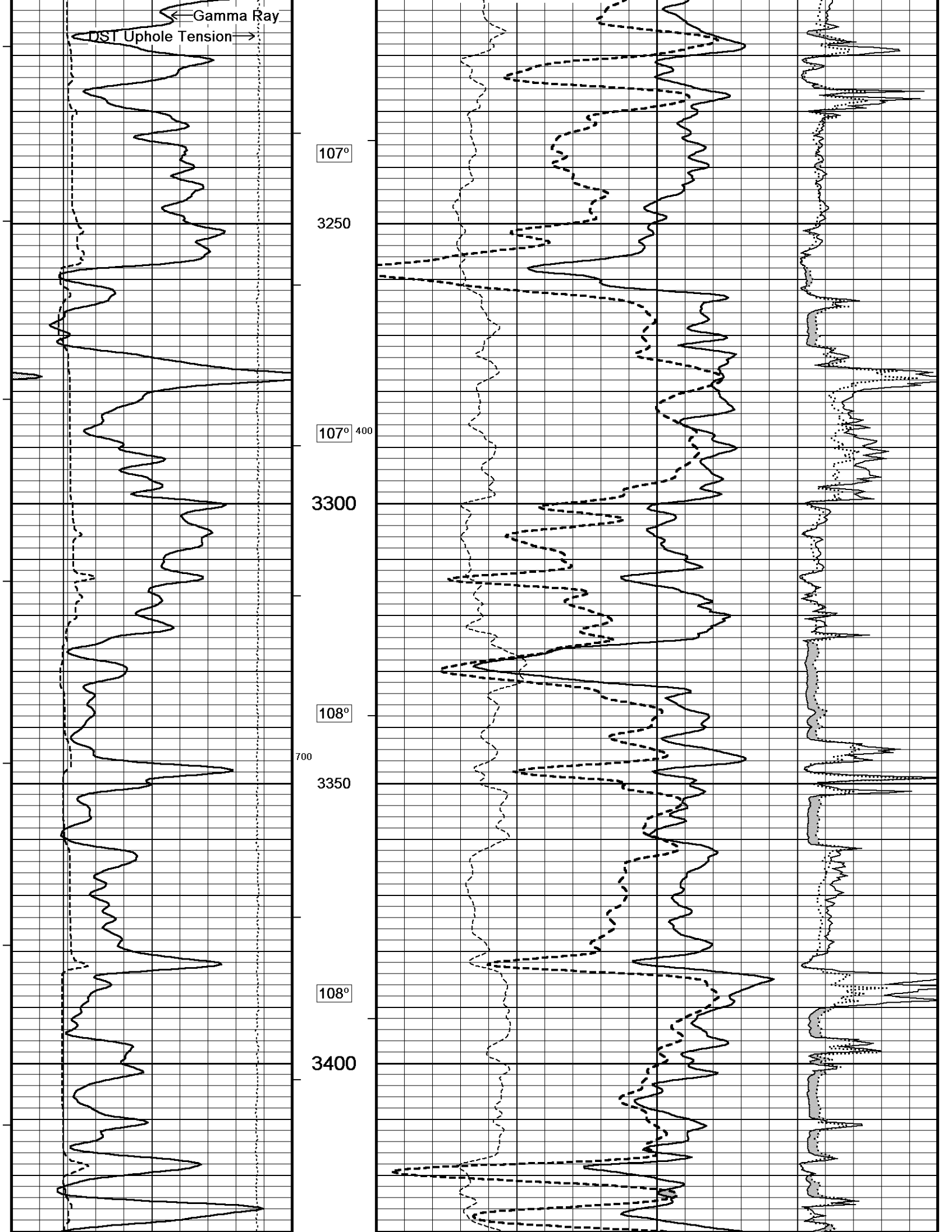
Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 16-MAY-2013 00:02
Filename: C:\Minimus 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Reese Ranch 4-19 Main.dta — Recorded on 15-MAY-2013 20:23
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

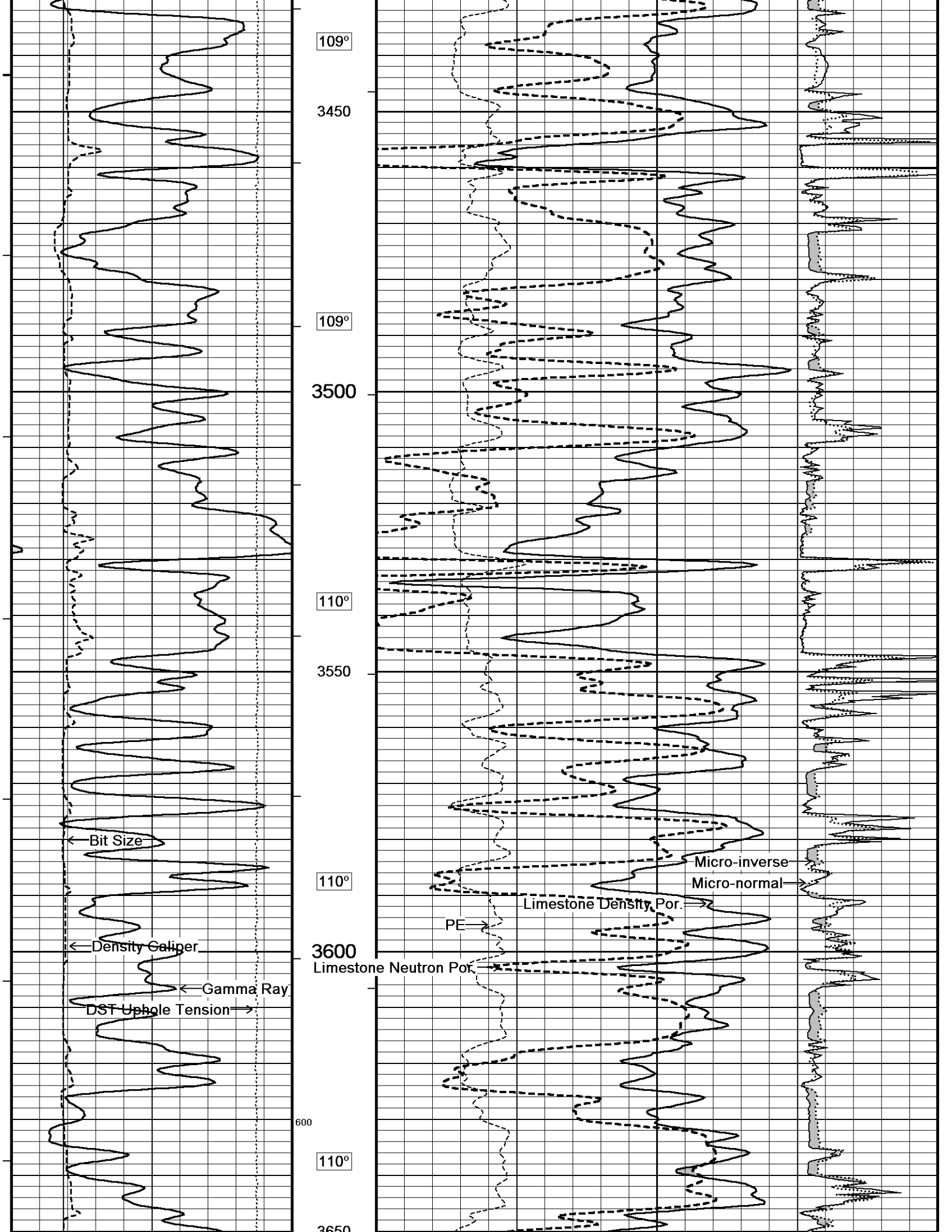


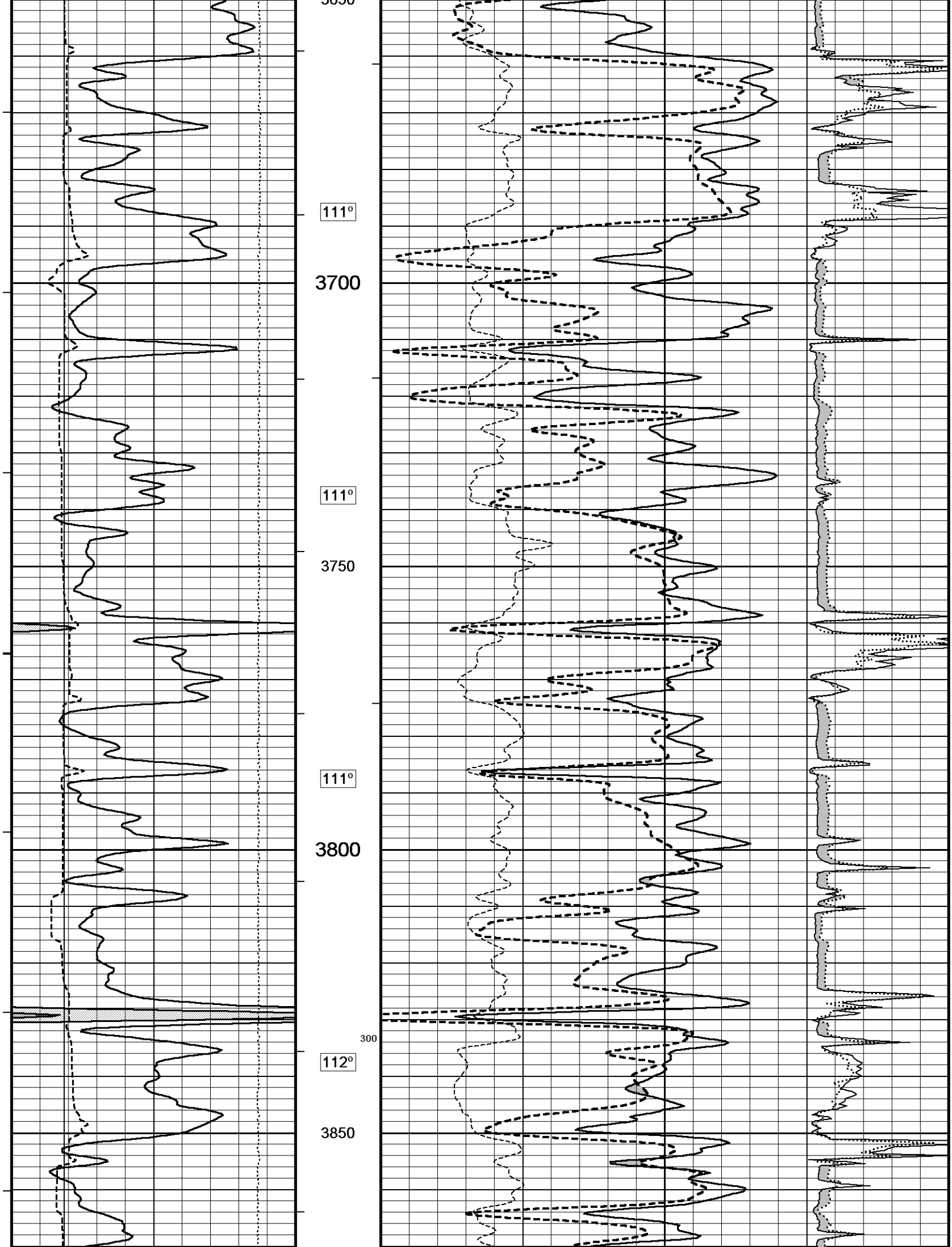

102°
2600
102°
2650
102°
2700
103°
2750

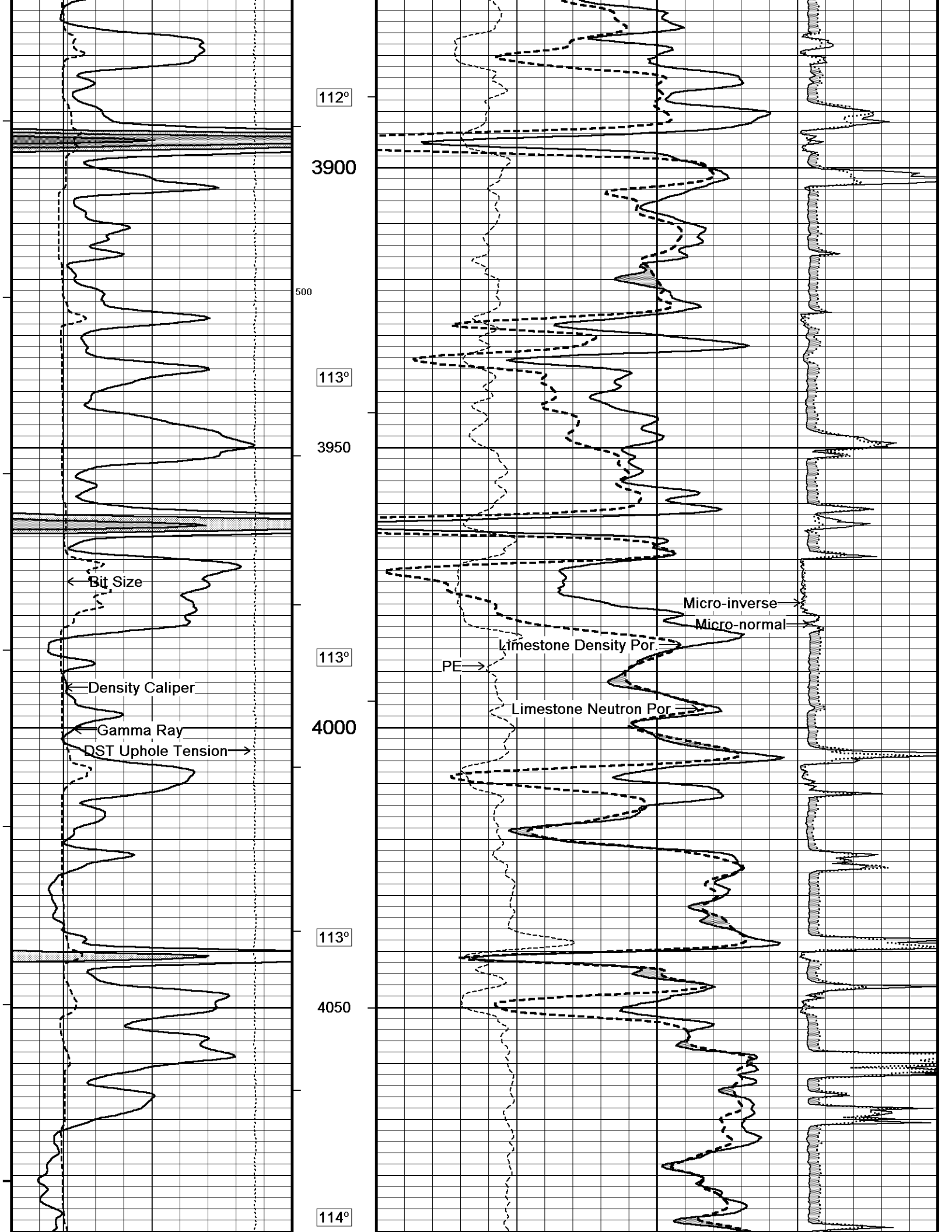

900
103°
2800
103°
2850
104°
2900
104°
2950
105°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Limestone Neutron Por.
PE
Limestone Density Por.
Micro-inverse
Micro-normal

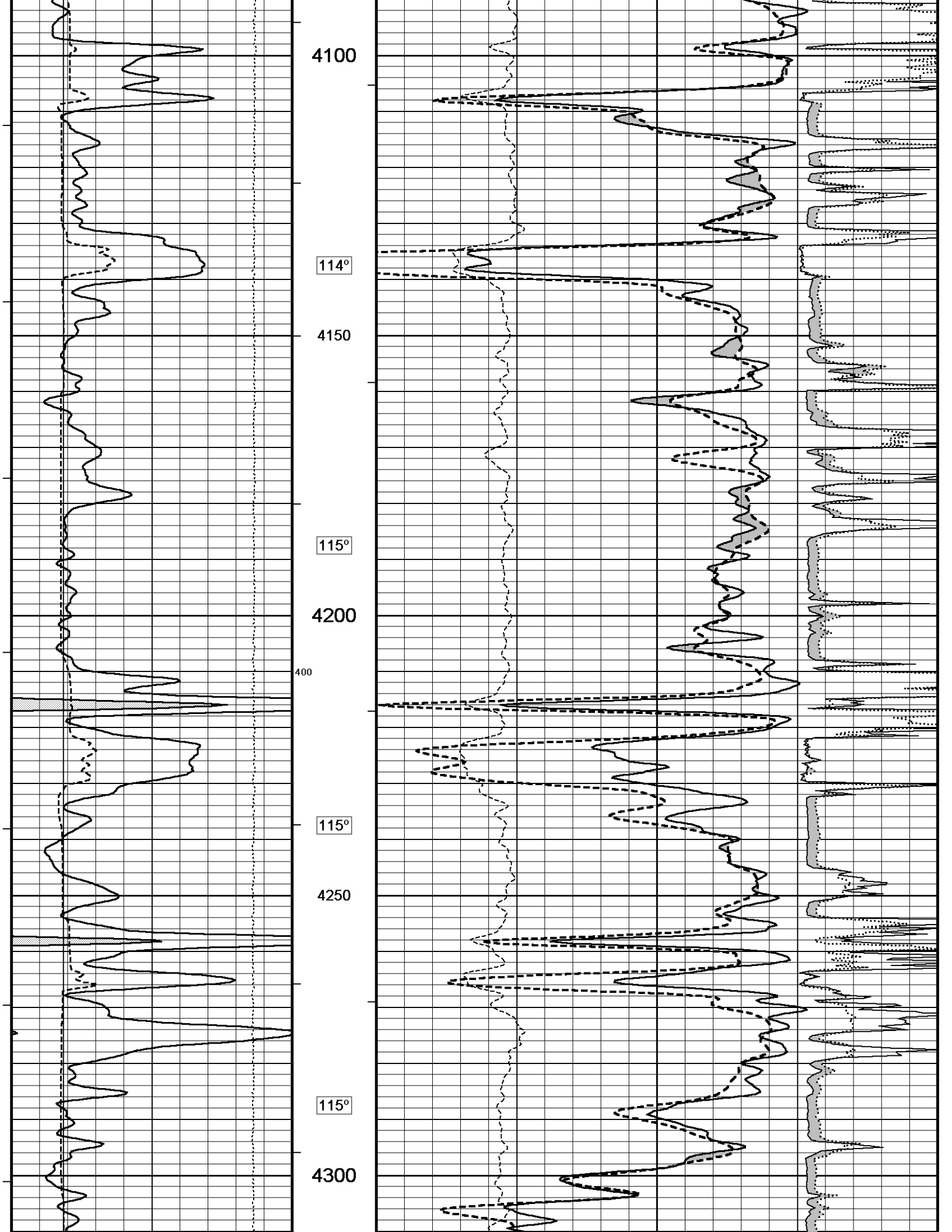

3000
105°
3050
800
105°
3100
106°
3150
106°
3200
Bit Size
Density Caliper
Micro-inverse
Micro-normal
Limestone Density Por.
PE
Limestone Neutron Por.

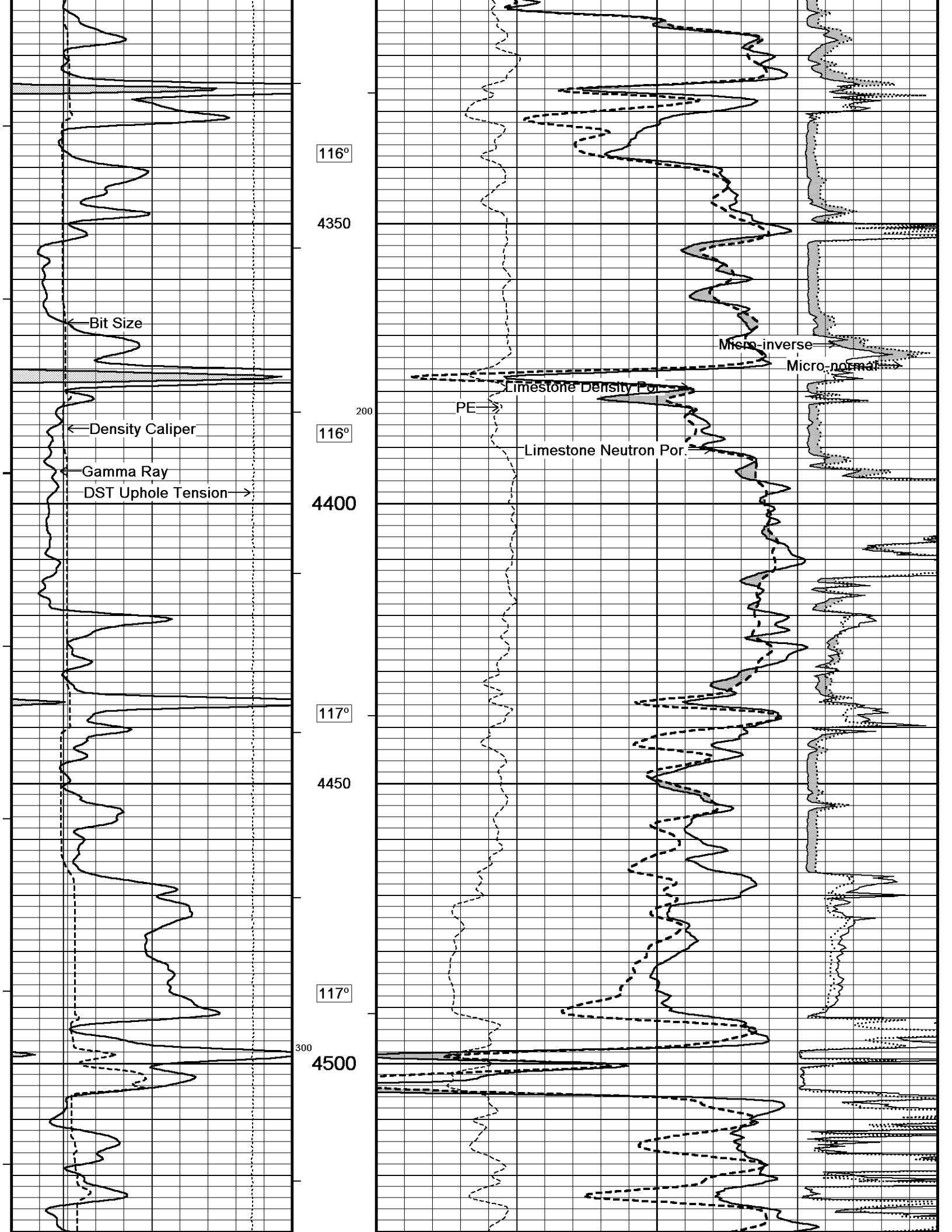

Gamma Ray
DST Uphole Tension
107°
3250
107°
400
3300
108°
700
3350
108°
3400

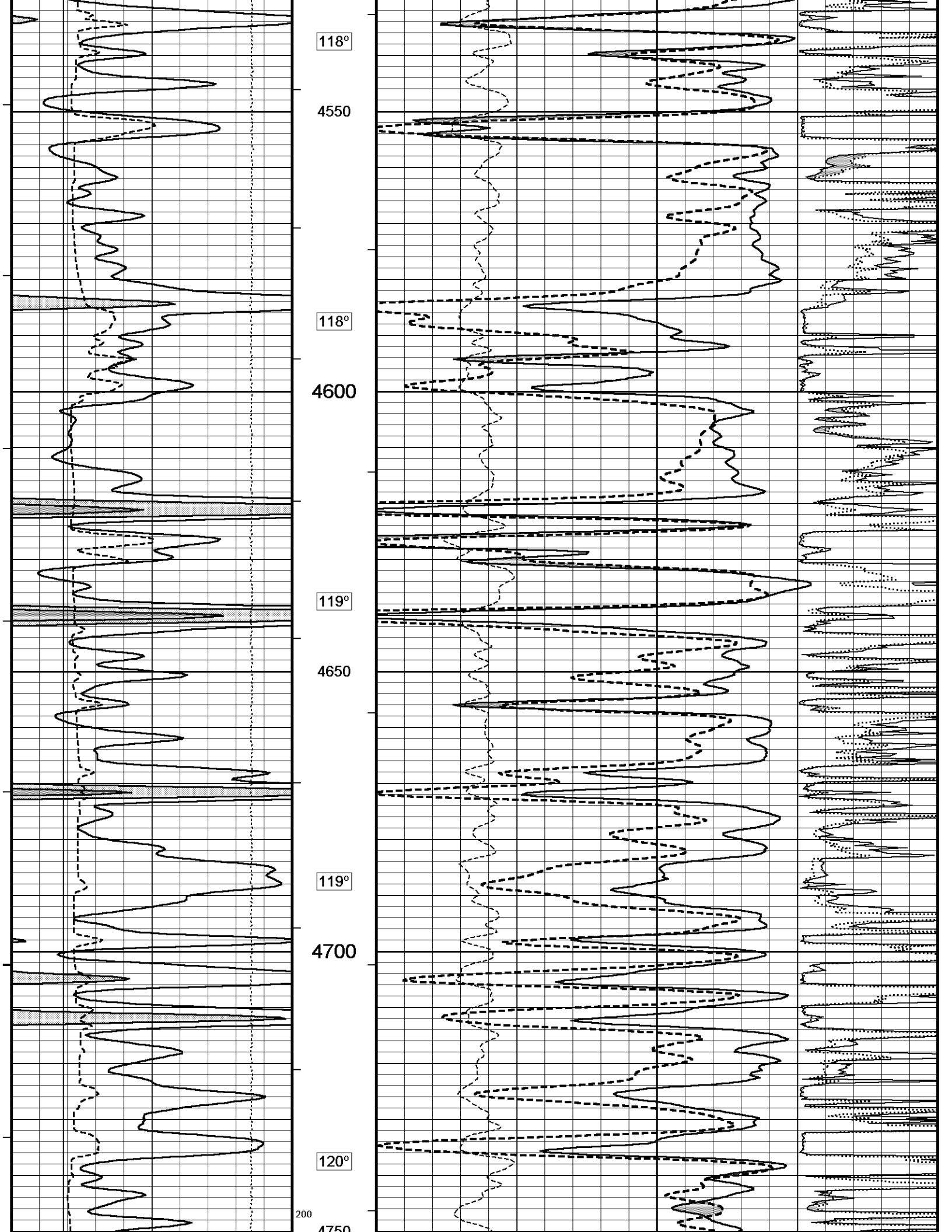

109°
3450
109°
3500
110°
3550
110°
3600
110°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Micro-inverse
Micro-normal
Limestone Density Por.
PE
Limestone Neutron Por.
600

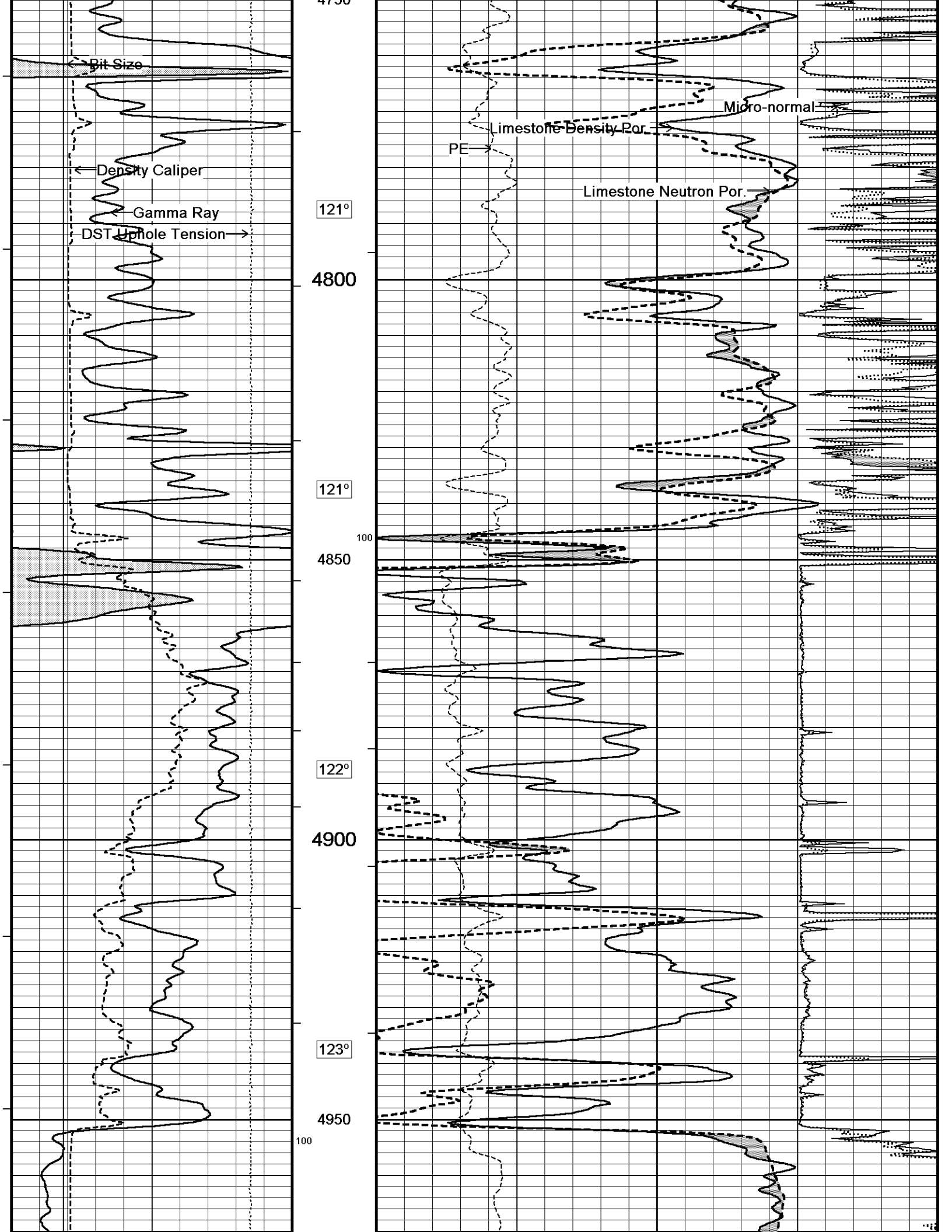

111°
3700
111°
3750
111°
3800
300
112°
3850

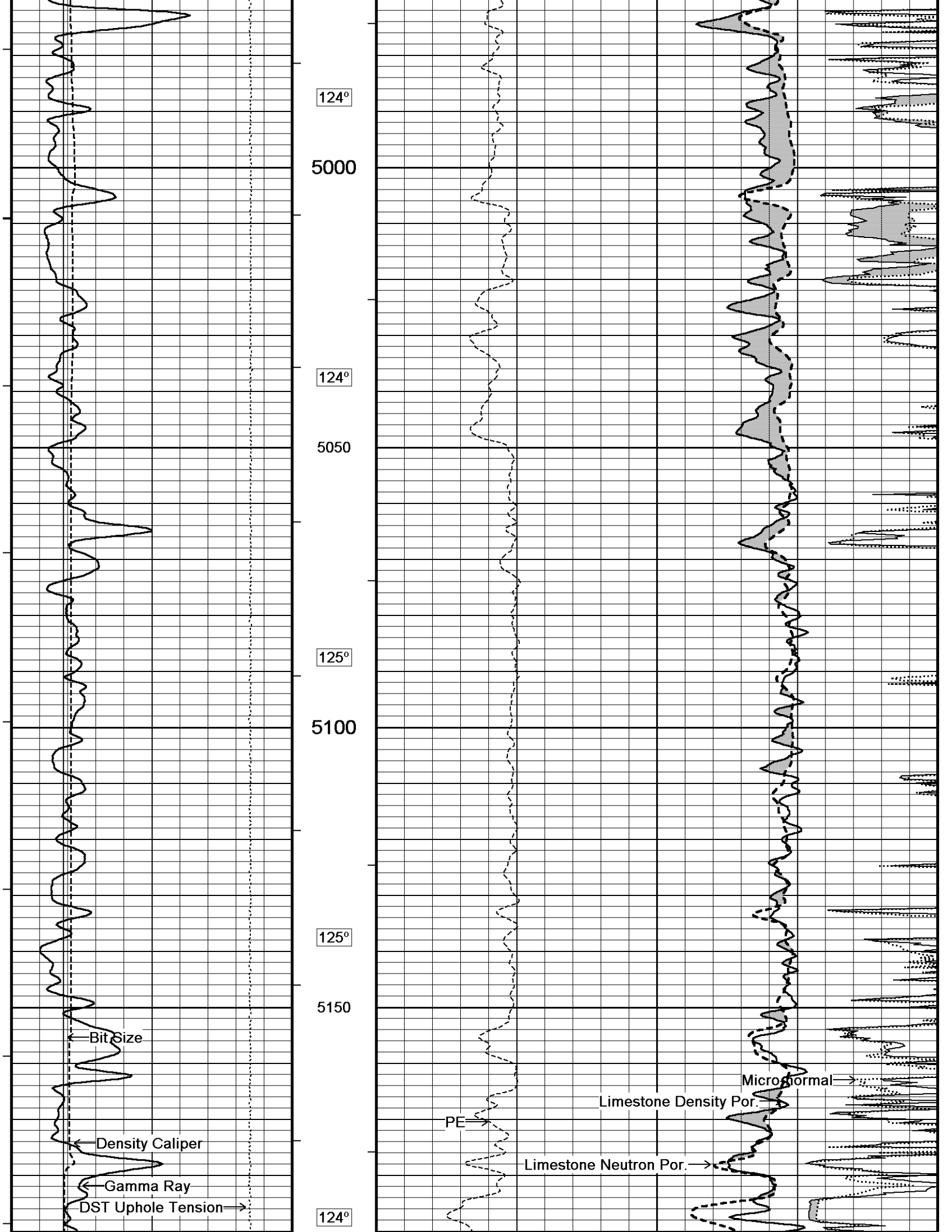

112°
3900
500
113°
3950
Bit Size
Micro-inverse
Micro-normal
Limestone Density Por
113°
PE
Density Caliper
Limestone Neutron Por
Gamma Ray
4000
DST Uphole Tension
113°
4050
114°

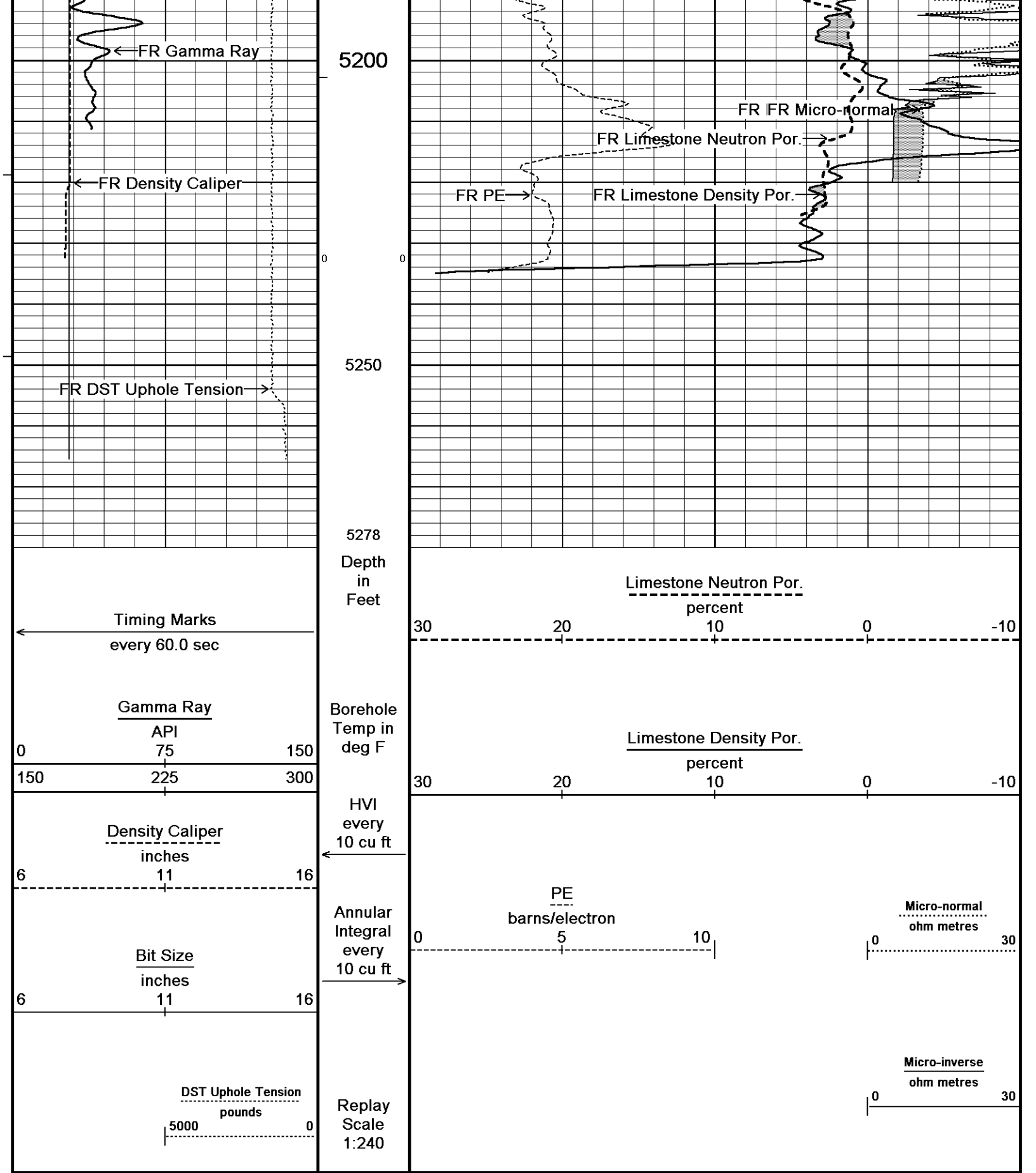

4100
114°
4150
115°
4200
400
115°
4250
115°
4300


116°
4350
Bit Size
Micro-inverse
Micro-normal
Limestone Density Por.
PE
200
116°
Density Caliper
Limestone Neutron Por.
Gamma Ray
DST Uphole Tension
4400
117°
4450
117°
300
4500


118°
4550
118°
4600
119°
4650
119°
4700
120°
200
4750


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Micro-normal
Limestone Density Por.
PE
Limestone Neutron Por.
121°
121°
122°
123°
4800
4850
4900
4950
100
100


124°
5000
124°
5050
125°
5100
125°
5150
124°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Neutron Por.
Limestone Density Por.
Microinormal



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5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-MAY-2013 00:02
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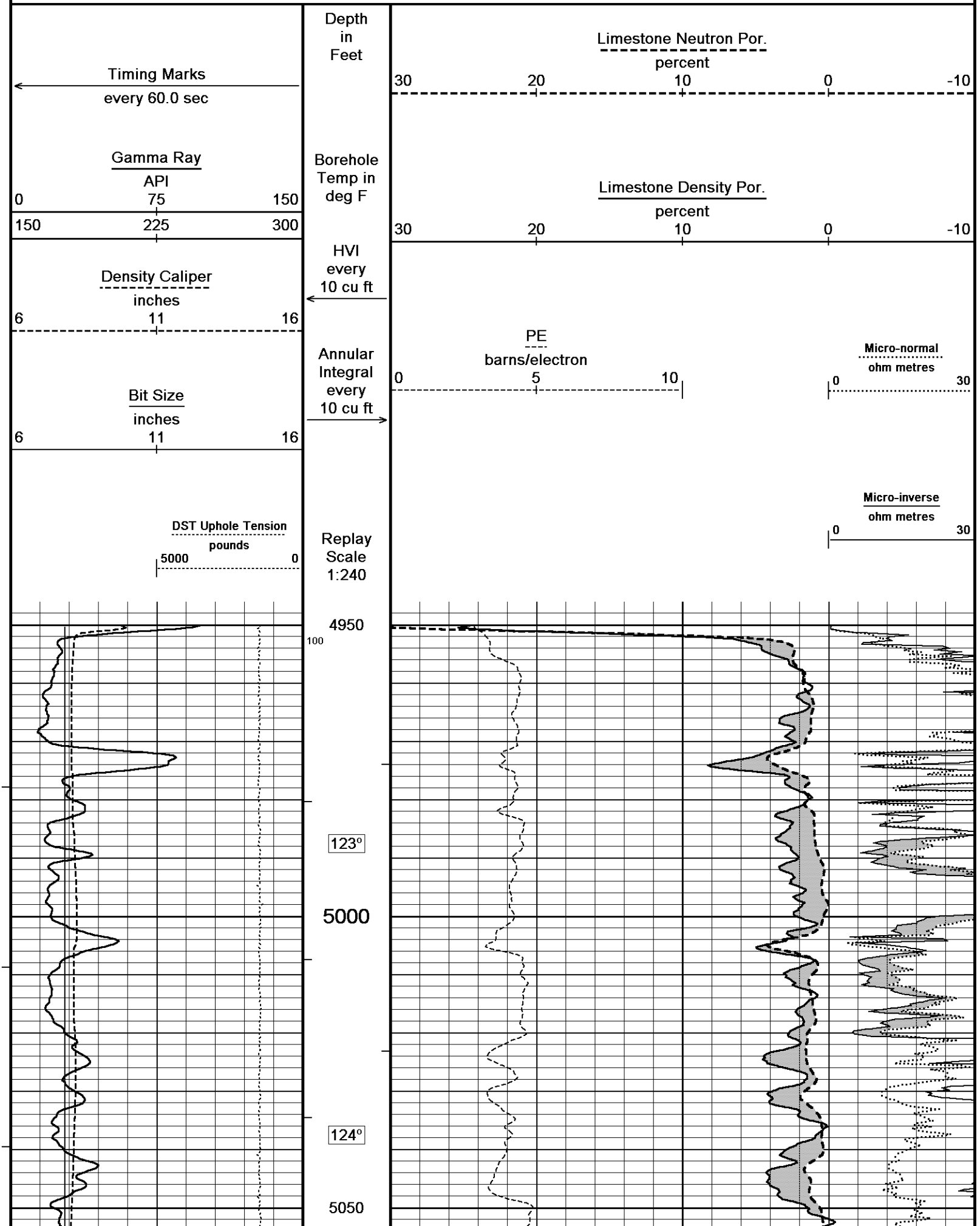
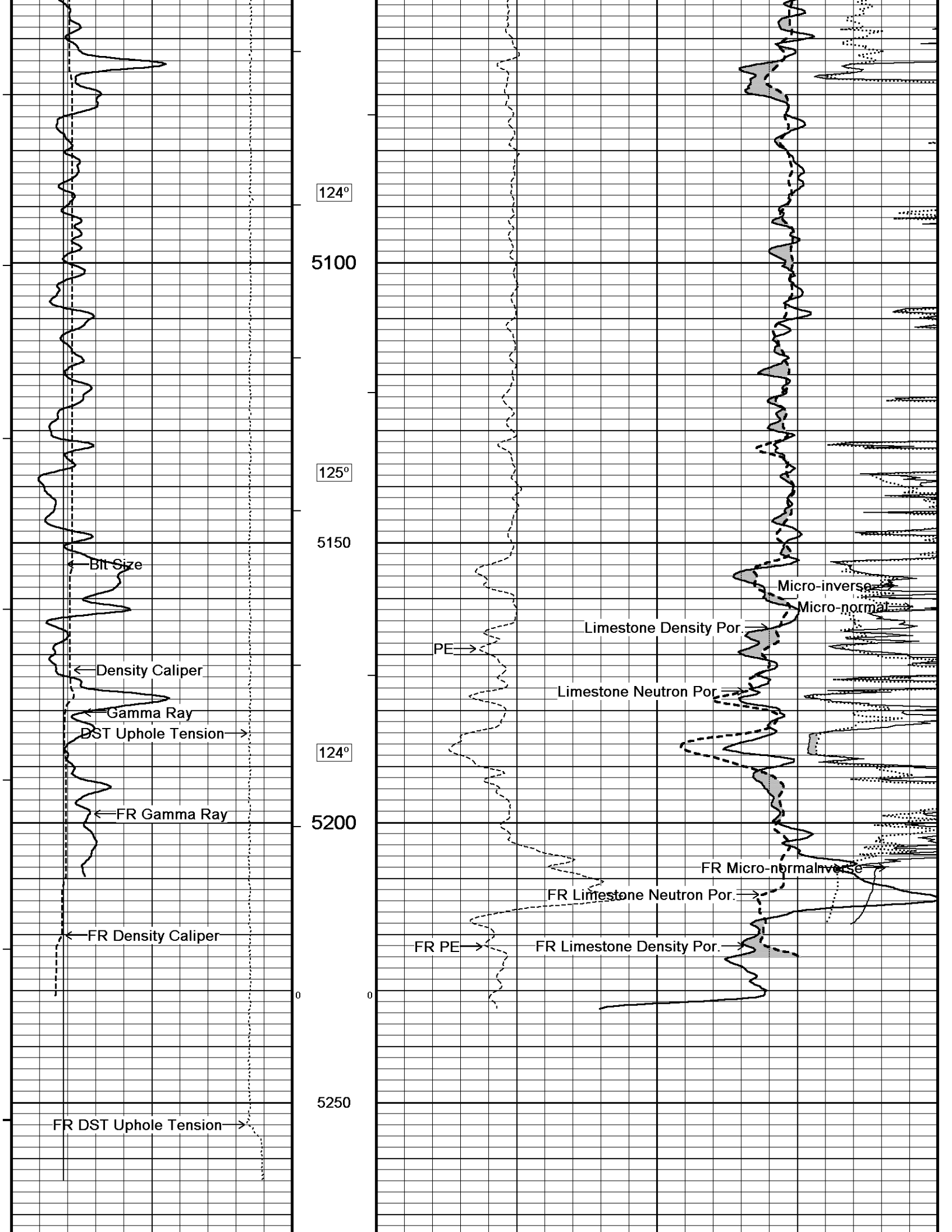
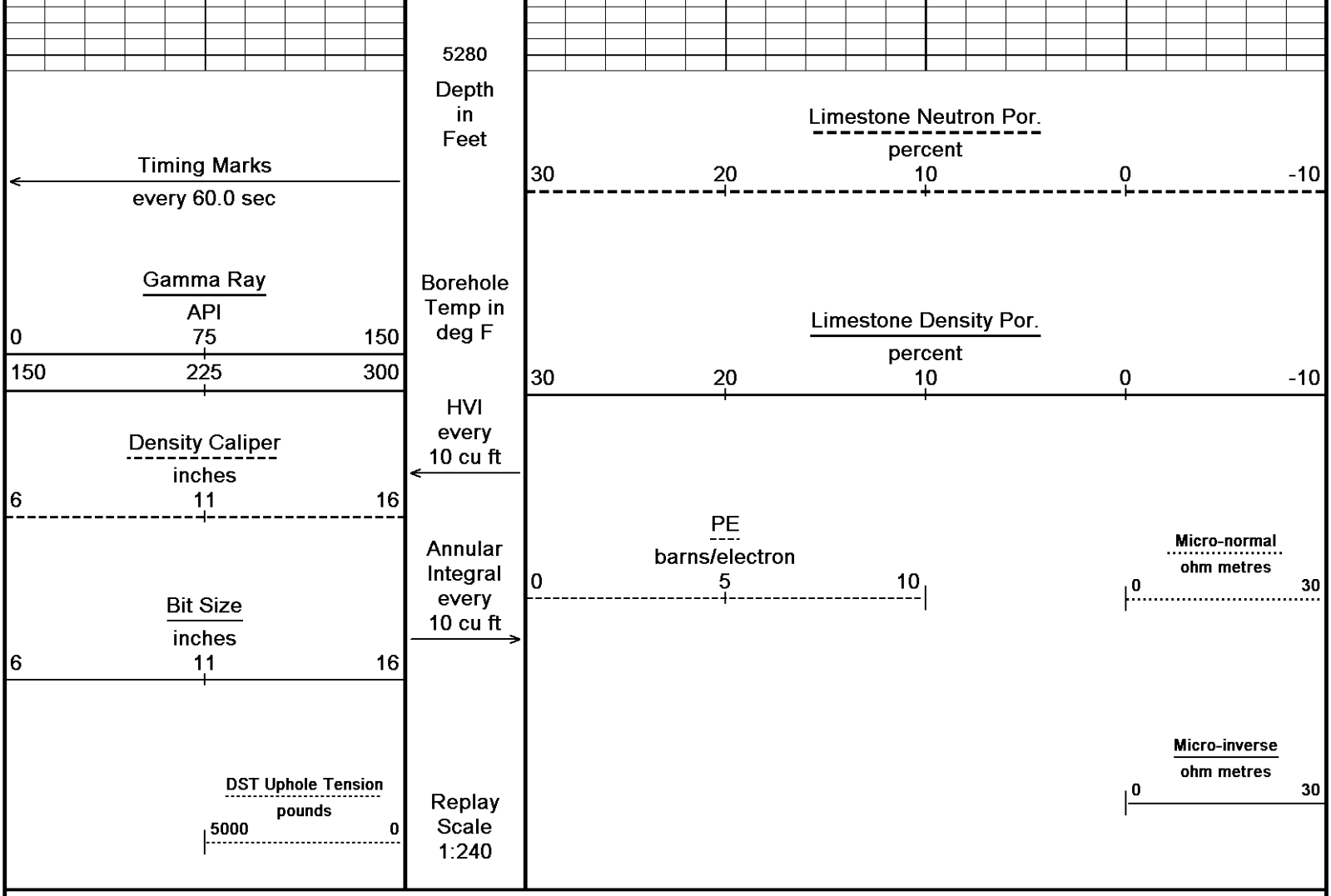



124°
5100
125°
5150
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
124°
5200
FR Gamma Ray
FR Density Caliper
0
5250
FR DST Uphole Tension
PE
0
Micro-inverse
Micro-normal
Limestone Density Por.
Limestone Neutron Por.
FR Micro-normalinverse
FR Limestone Neutron Por.
FR PE
FR Limestone Density Por.



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5 INCH MAIN

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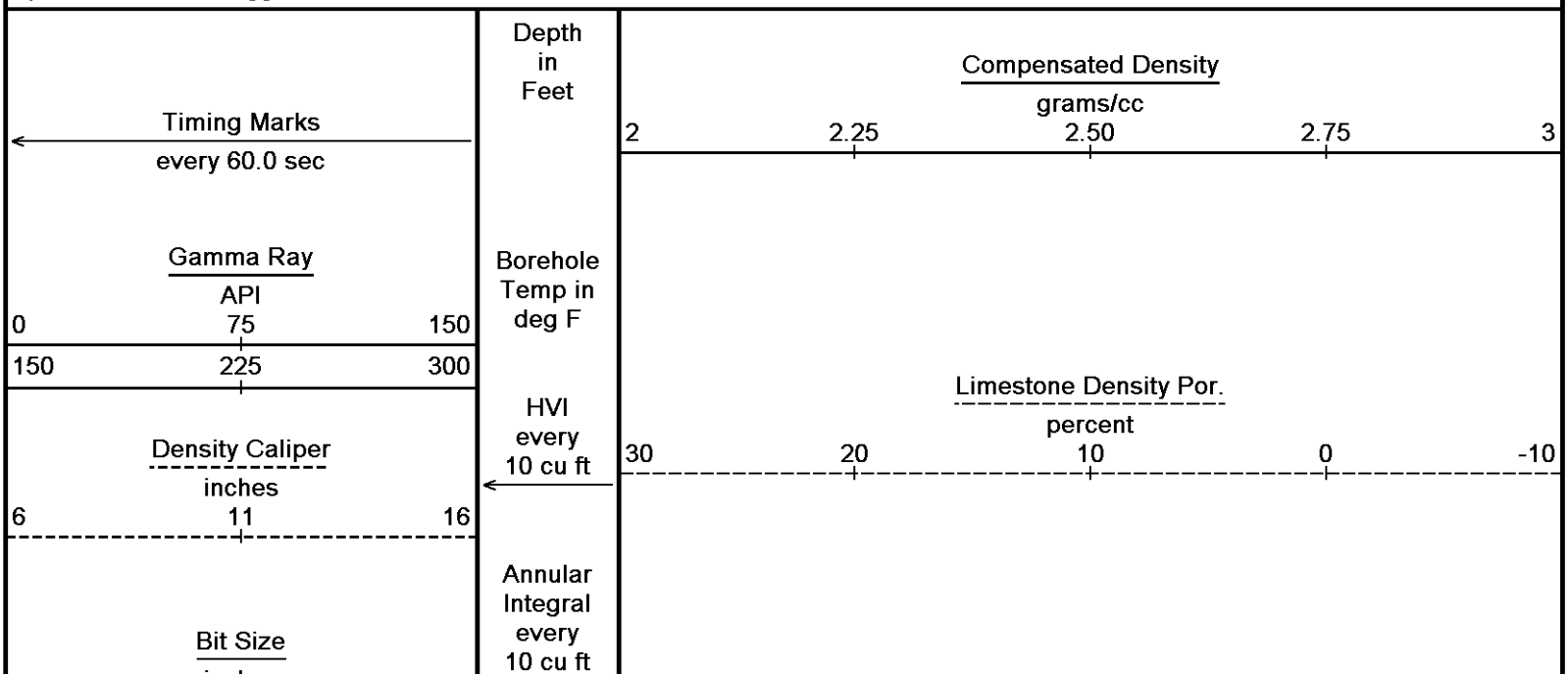
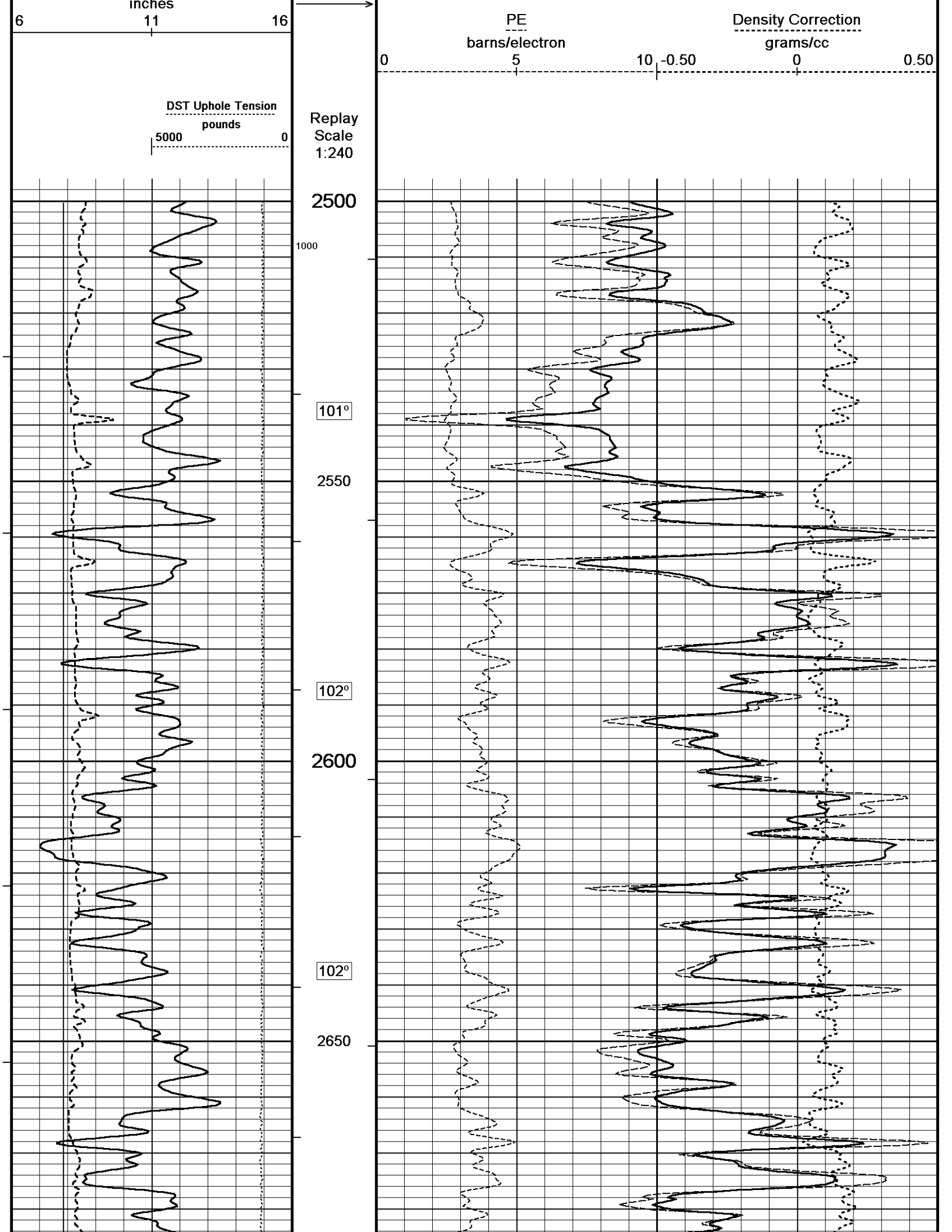
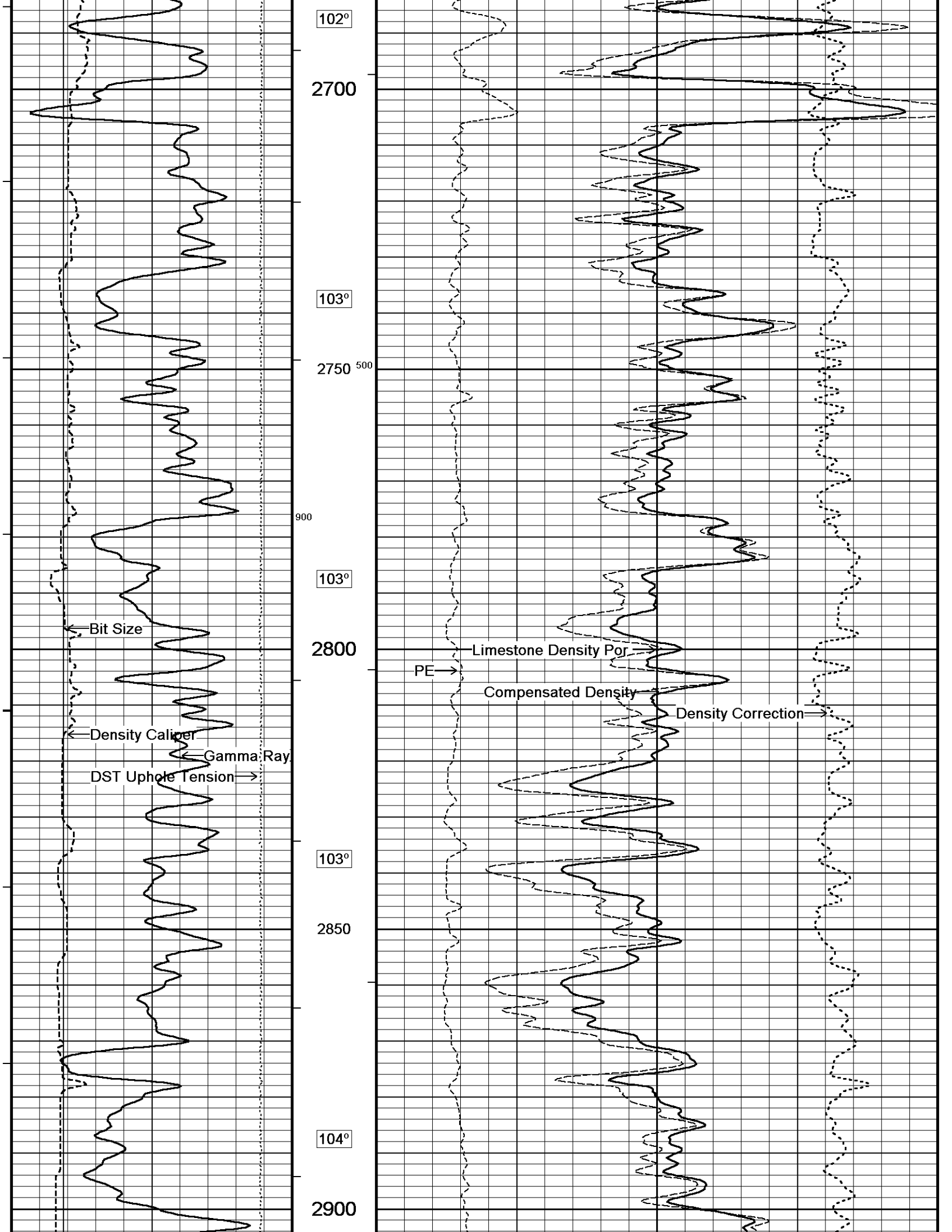
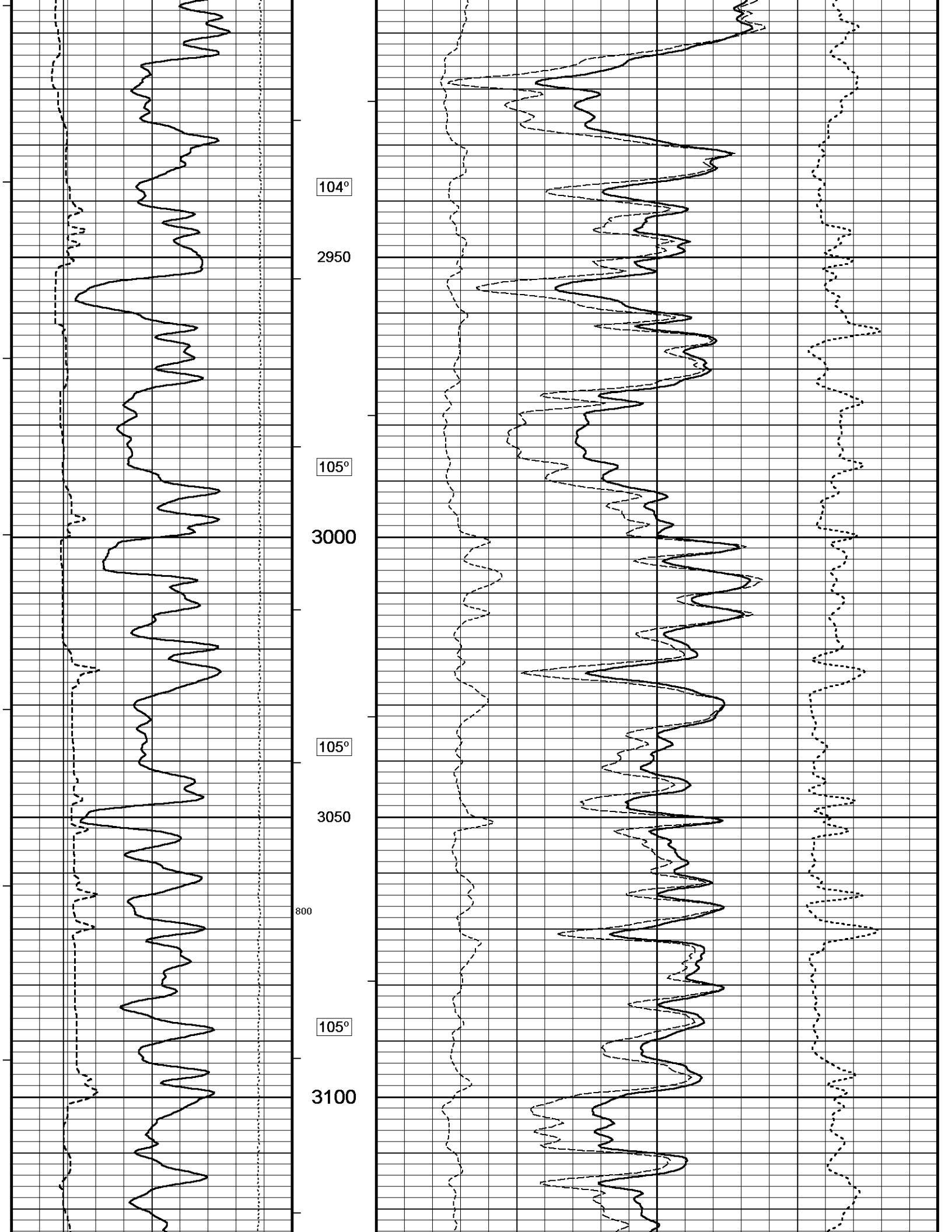
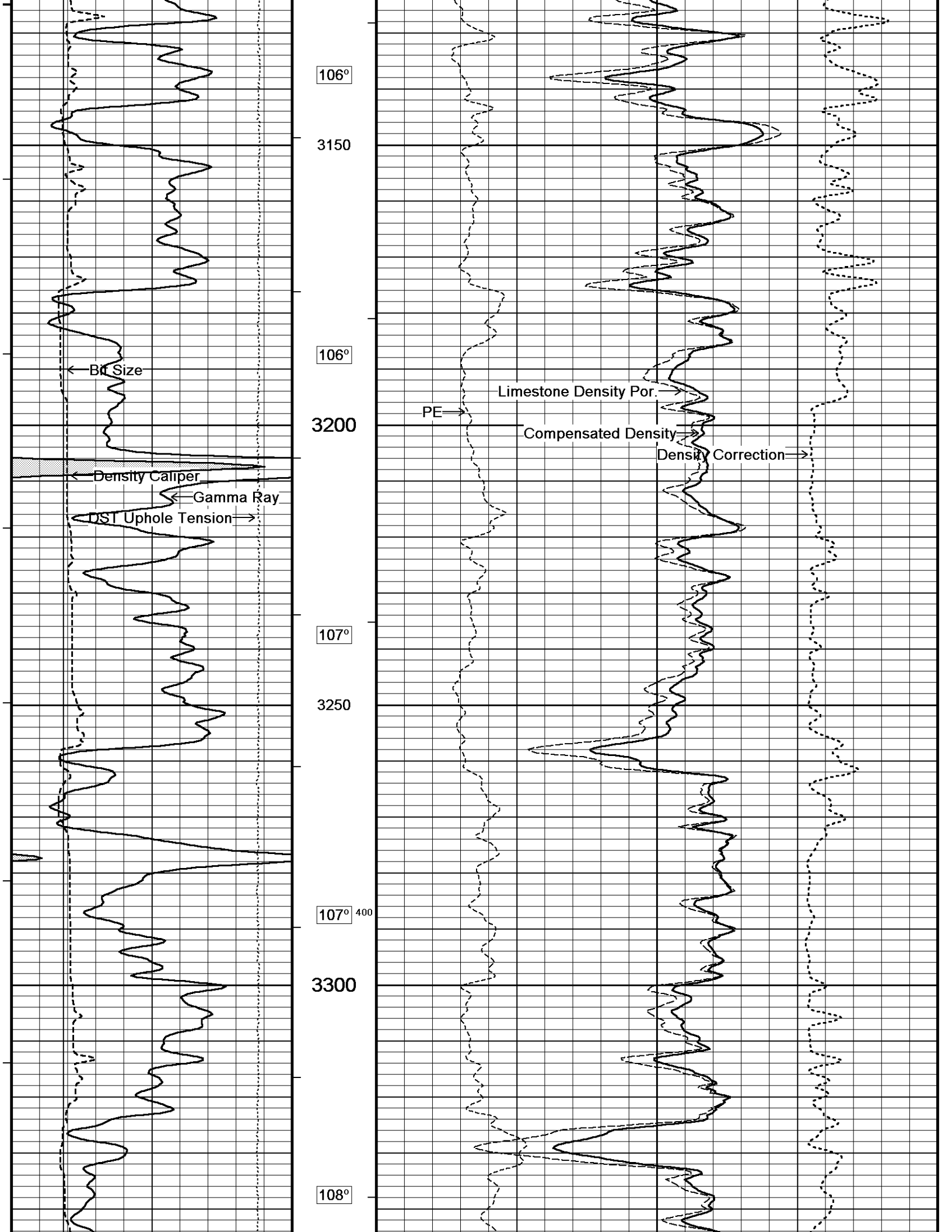
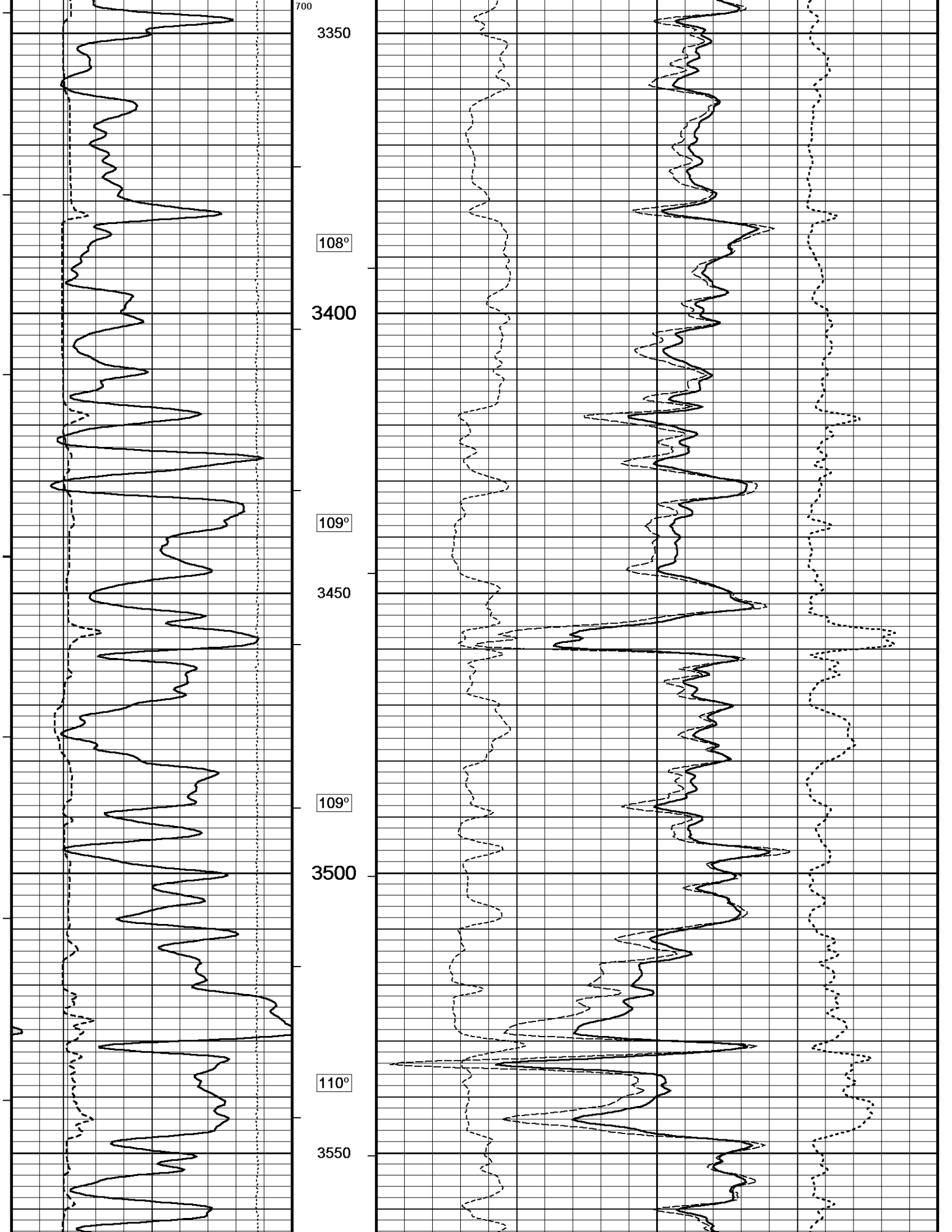


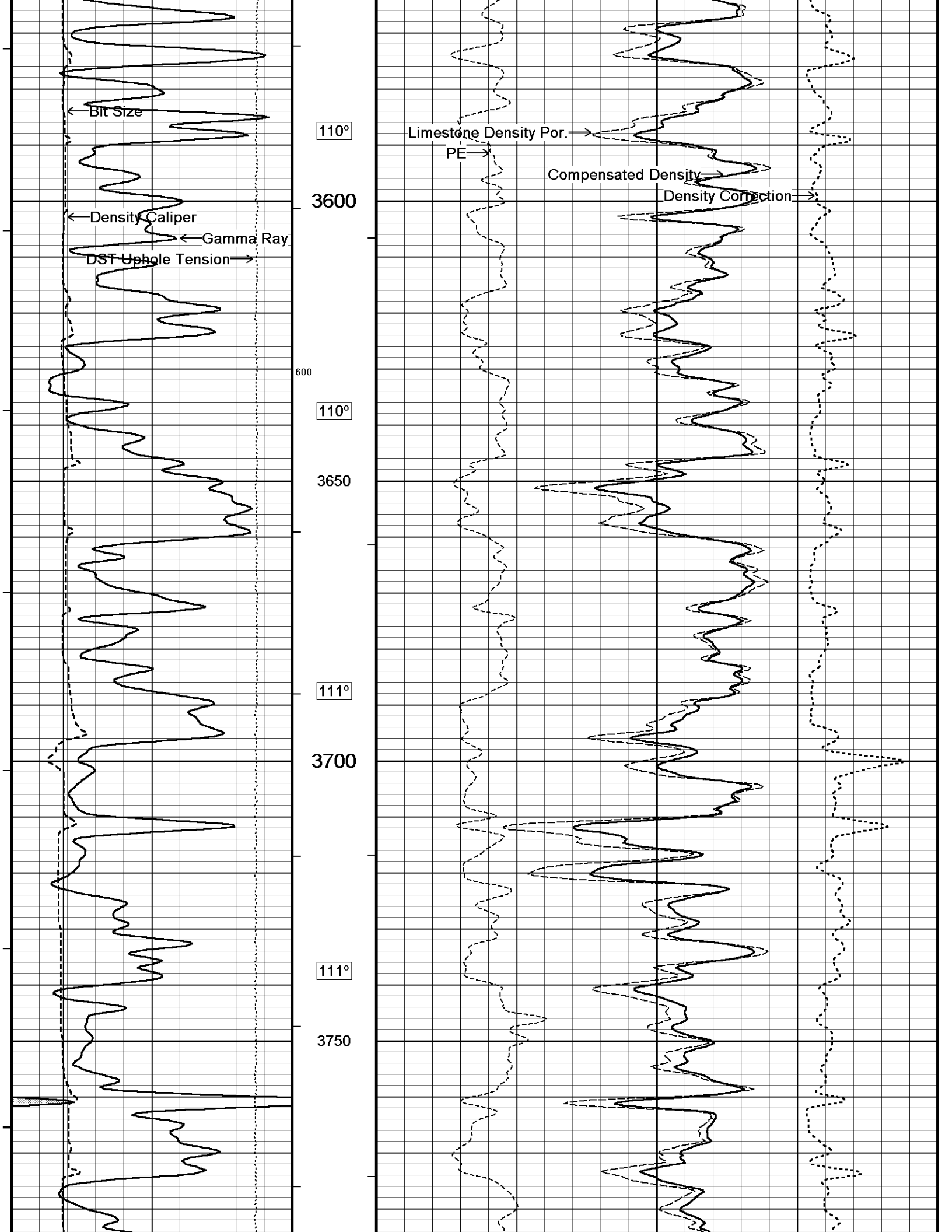

inches
6
11
16
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
2500
1000
101°
2550
102°
2600
102°
2650
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50

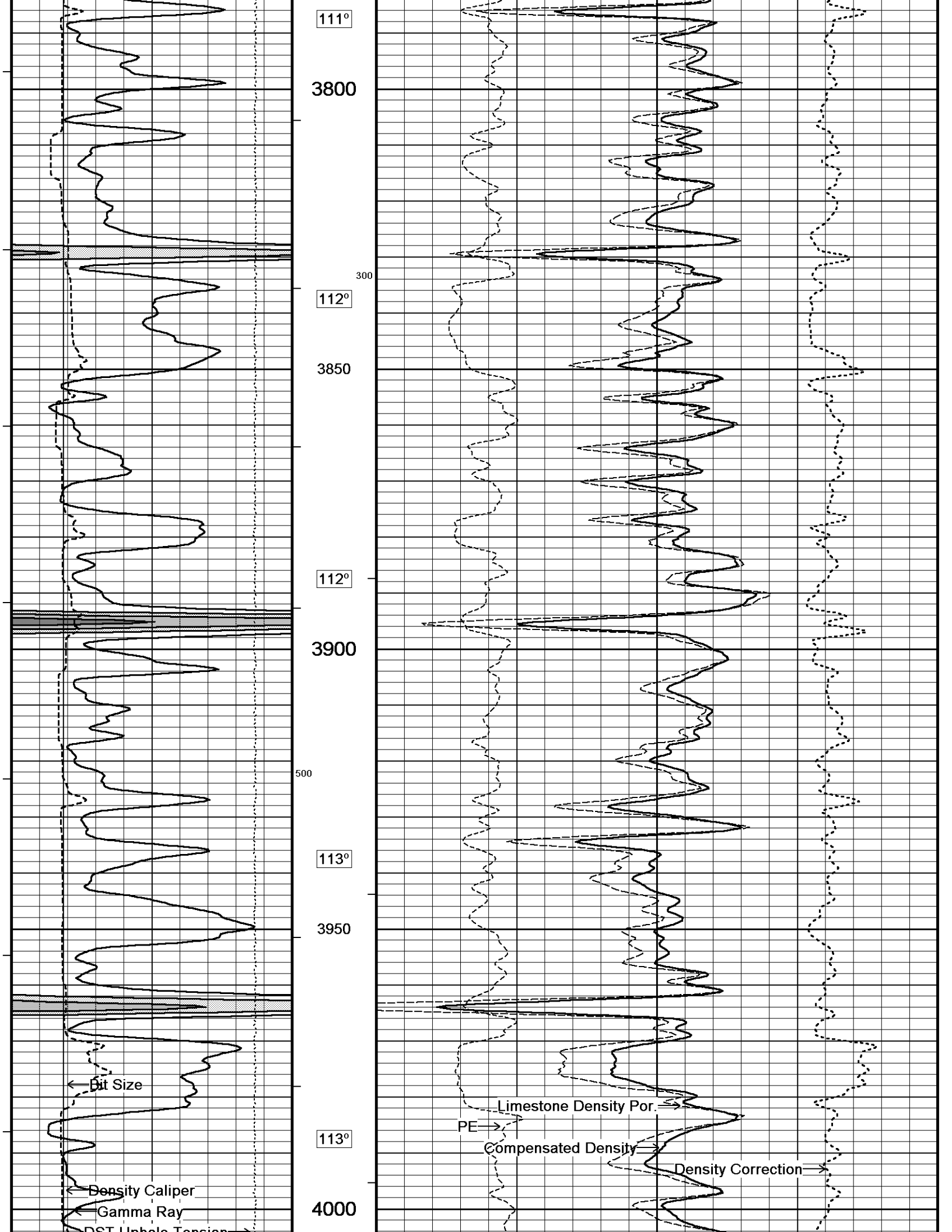

102°
2700
103°
2750
500
900
103°
Bit Size
2800
Limestone Density Por
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
103°
2850
104°
2900

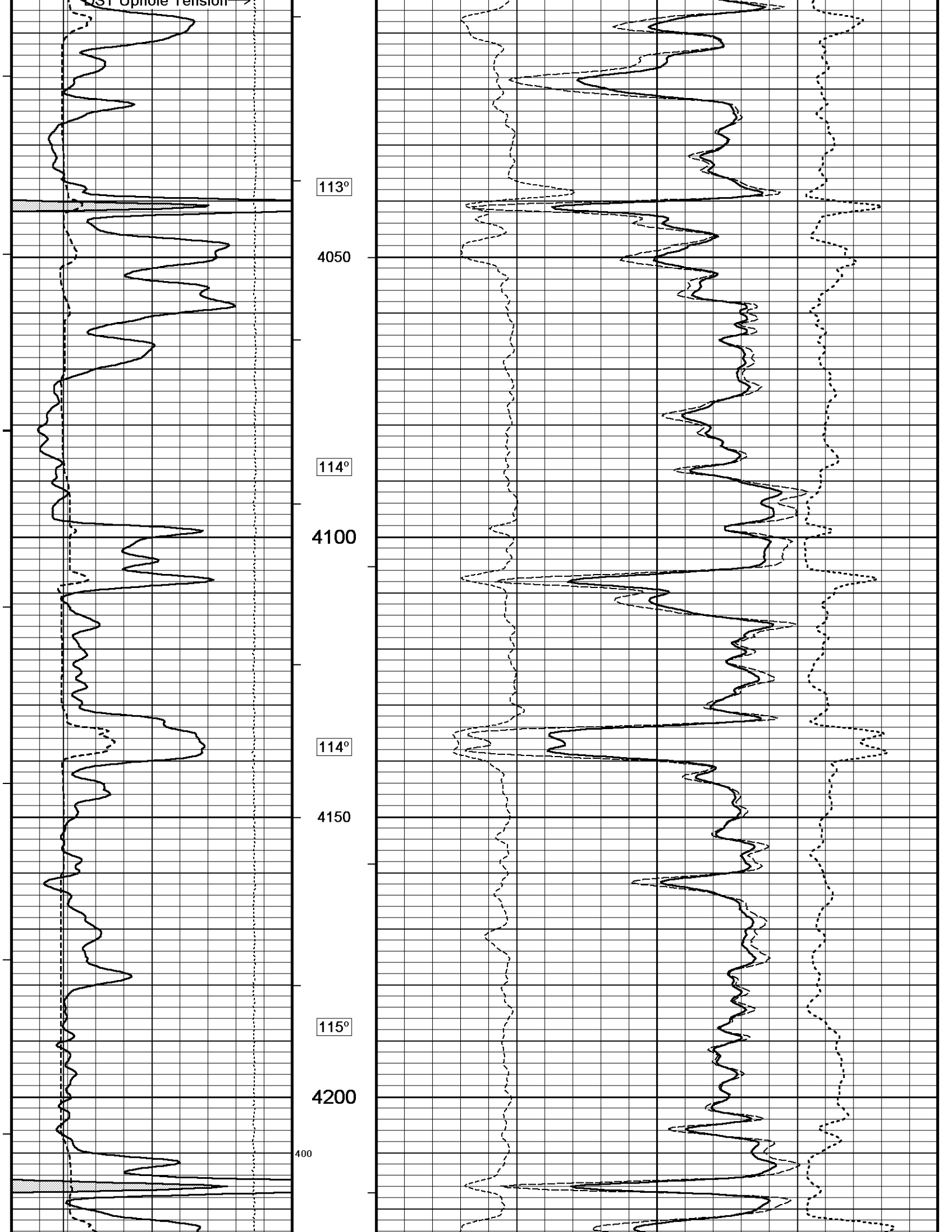

104°
2950
105°
3000
105°
3050
800
105°
3100

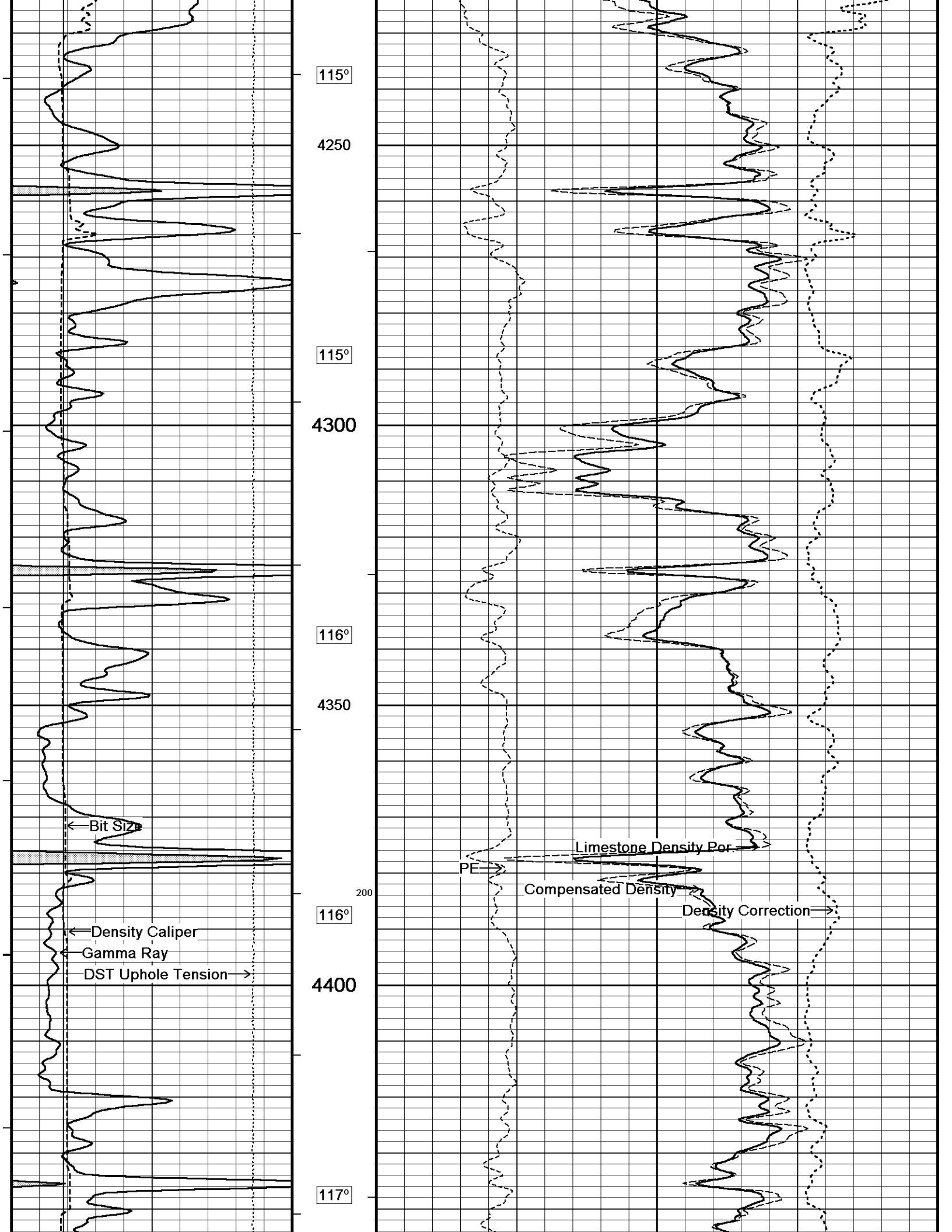

106°
3150
106°
Bit Size
Limestone Density Por.
PE
3200
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
107°
3250
107°
400
3300
108°

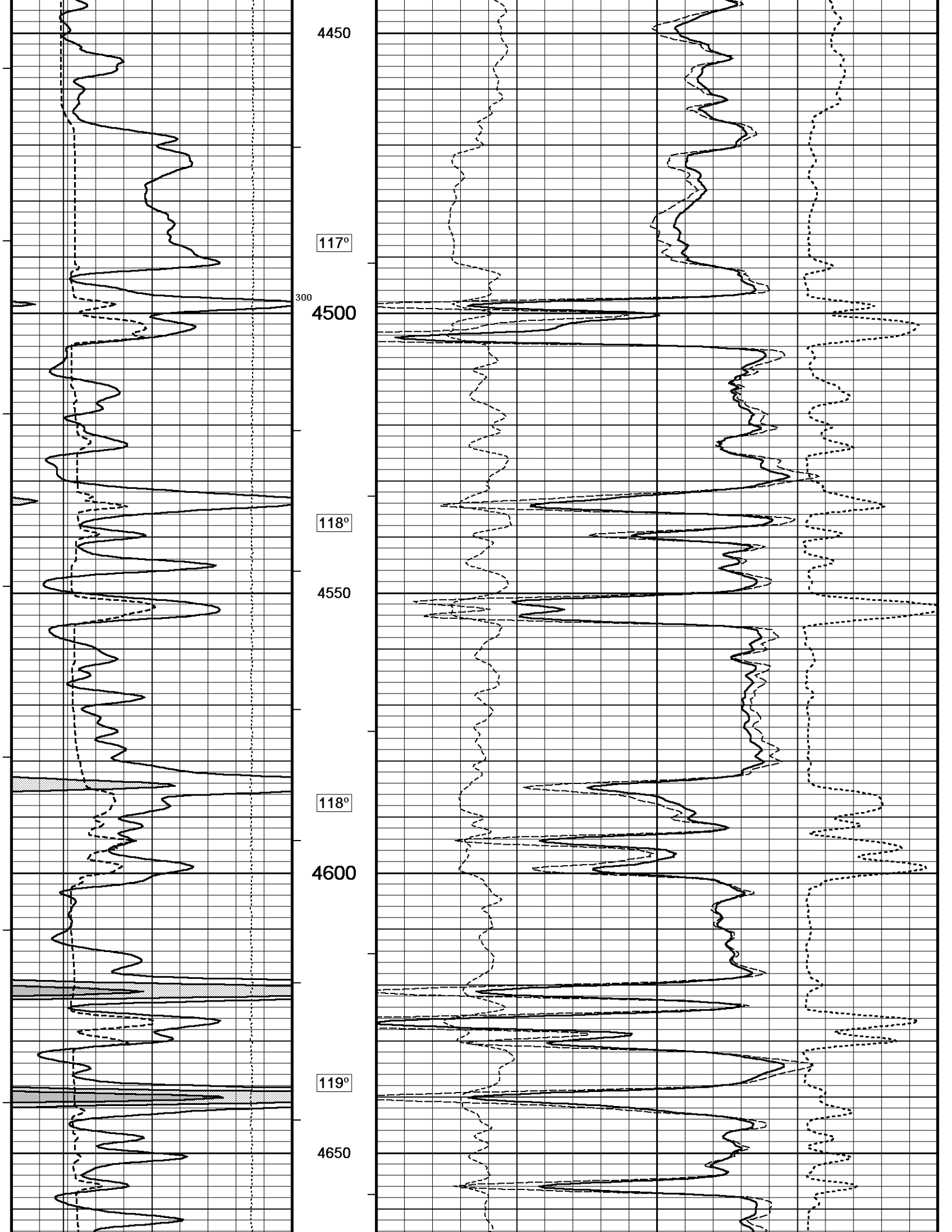

700
3350
108°
3400
109°
3450
109°
3500
110°
3550

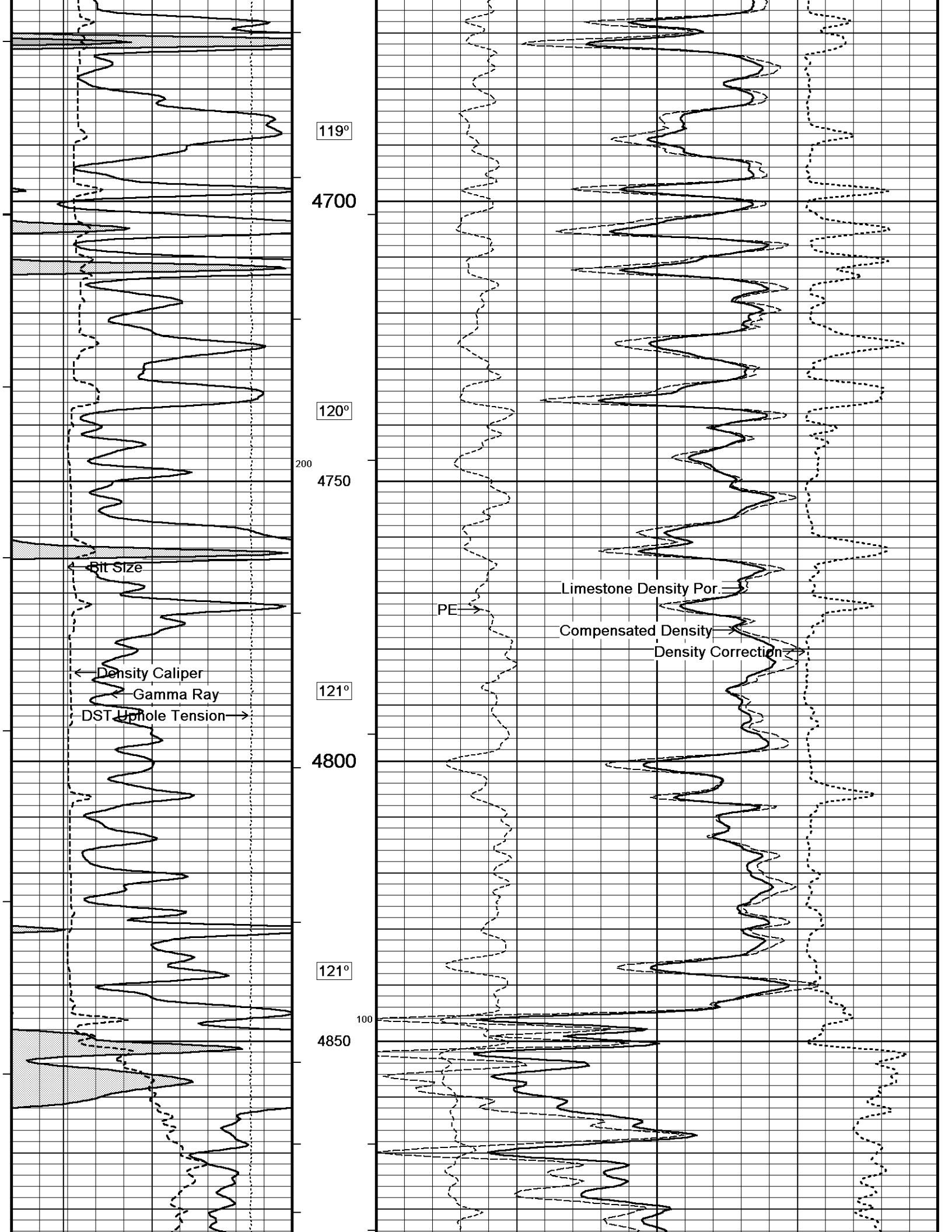

Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
110°
3600
600
110°
3650
111°
3700
111°
3750
Limestone Density Por.
PE
Compensated Density
Density Correction

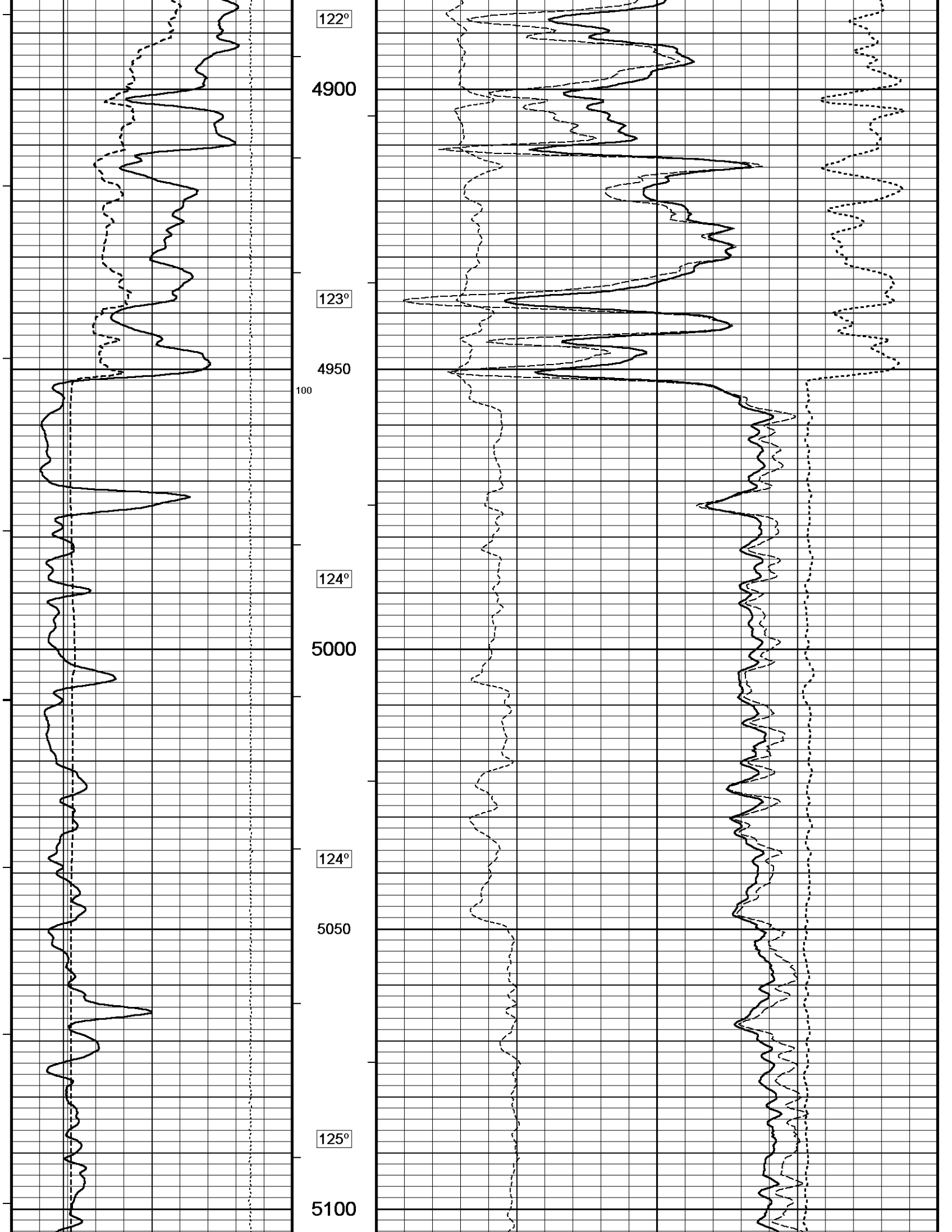

111°
3800
300
112°
3850
112°
3900
500
113°
3950
113°
4000
Bit Size
Density Caliper
Gamma Ray
DST Unhole Tension
Limestone Density Por
PE
Compensated Density
Density Correction

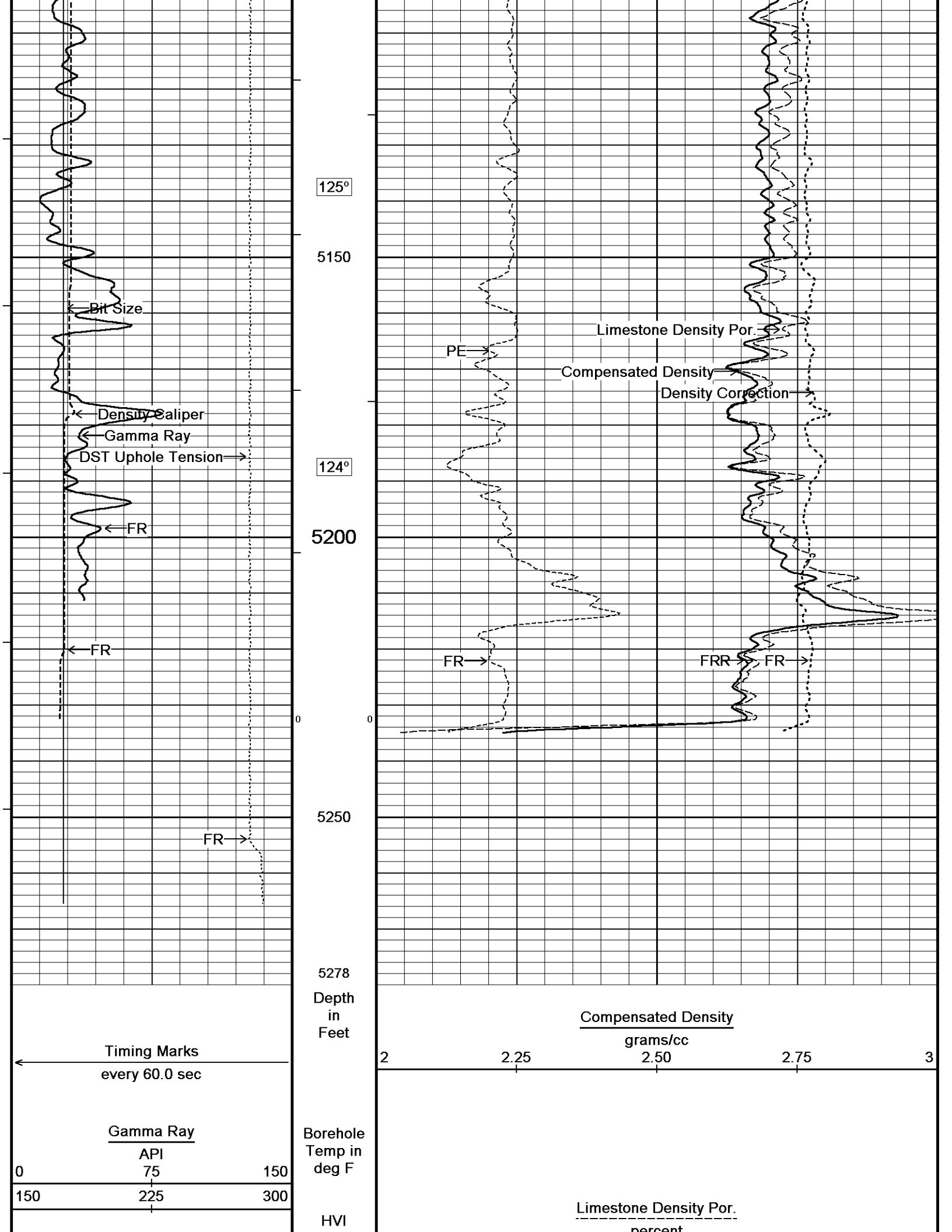

DST Uphole Tension →
113°
4050
114°
4100
114°
4150
115°
4200
400

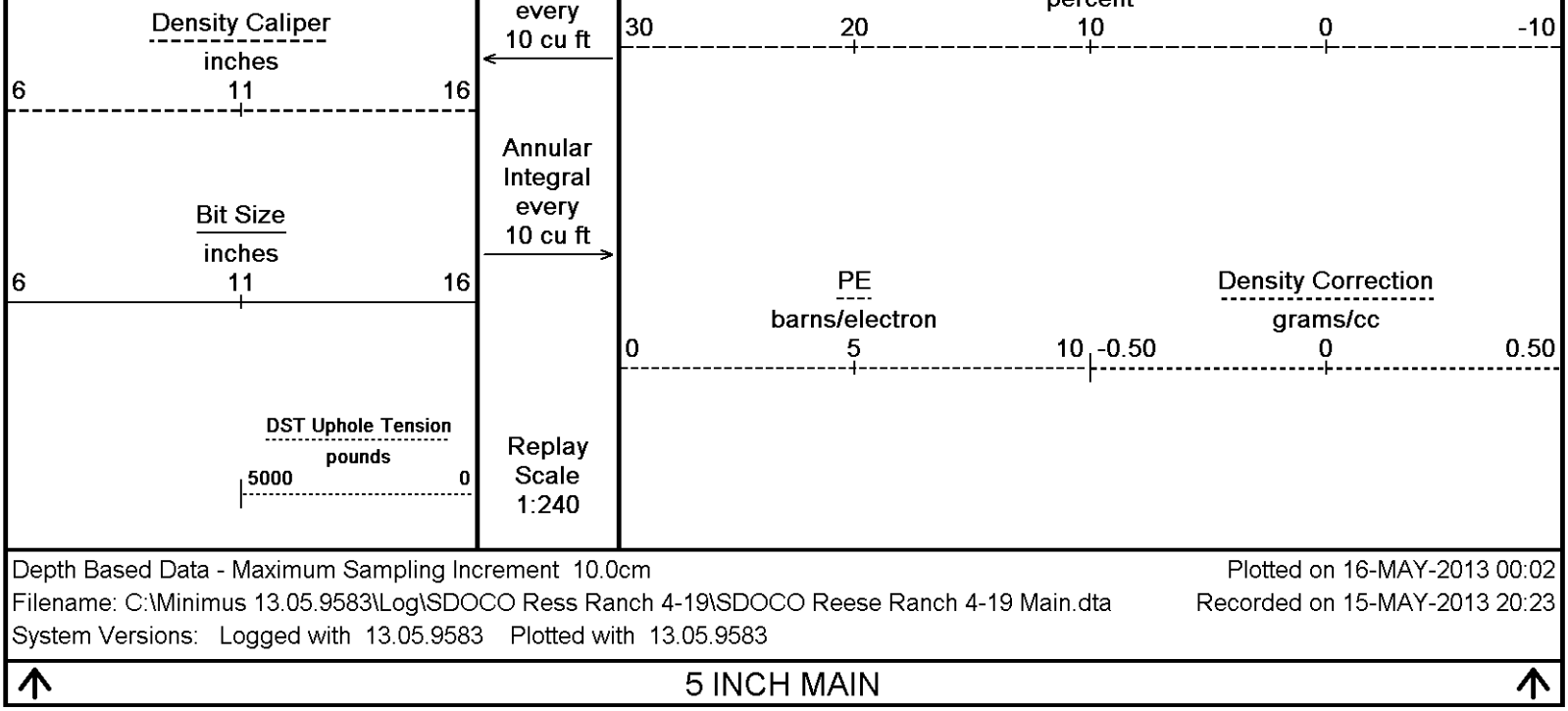

115°
4250
115°
4300
116°
4350
Bit Size
Limestone Density Por.
PE
Compensated Density
200
Density Correction
116°
Density Caliper
Gamma Ray
DST Uphole Tension
4400
117°


4450
117°
300
4500
118°
4550
118°
4600
119°
4650


119°
4700
120°
200
4750
Bit Size
Limestone Density Por
PE
Compensated Density
Density Correction
Density Caliper
Gamma Ray
DST Uphole Tension
121°
4800
121°
100
4850


122°
4900
123°
4950
100
124°
5000
124°
5050
125°
5100


Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
FR
FR
FR
125°
5150
124°
5200
5250
5278
Depth in Feet
PE
FR
Limestone Density Por.
Compensated Density
Density Correction
FRR
FR
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Timing Marks
every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Borehole Temp in deg F
HVI
Limestone Density Por.
percent



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5 INCH MAIN

REPEAT SECTION

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Filename: C:\Minimus 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Rees Ranch 4-19_001.dta
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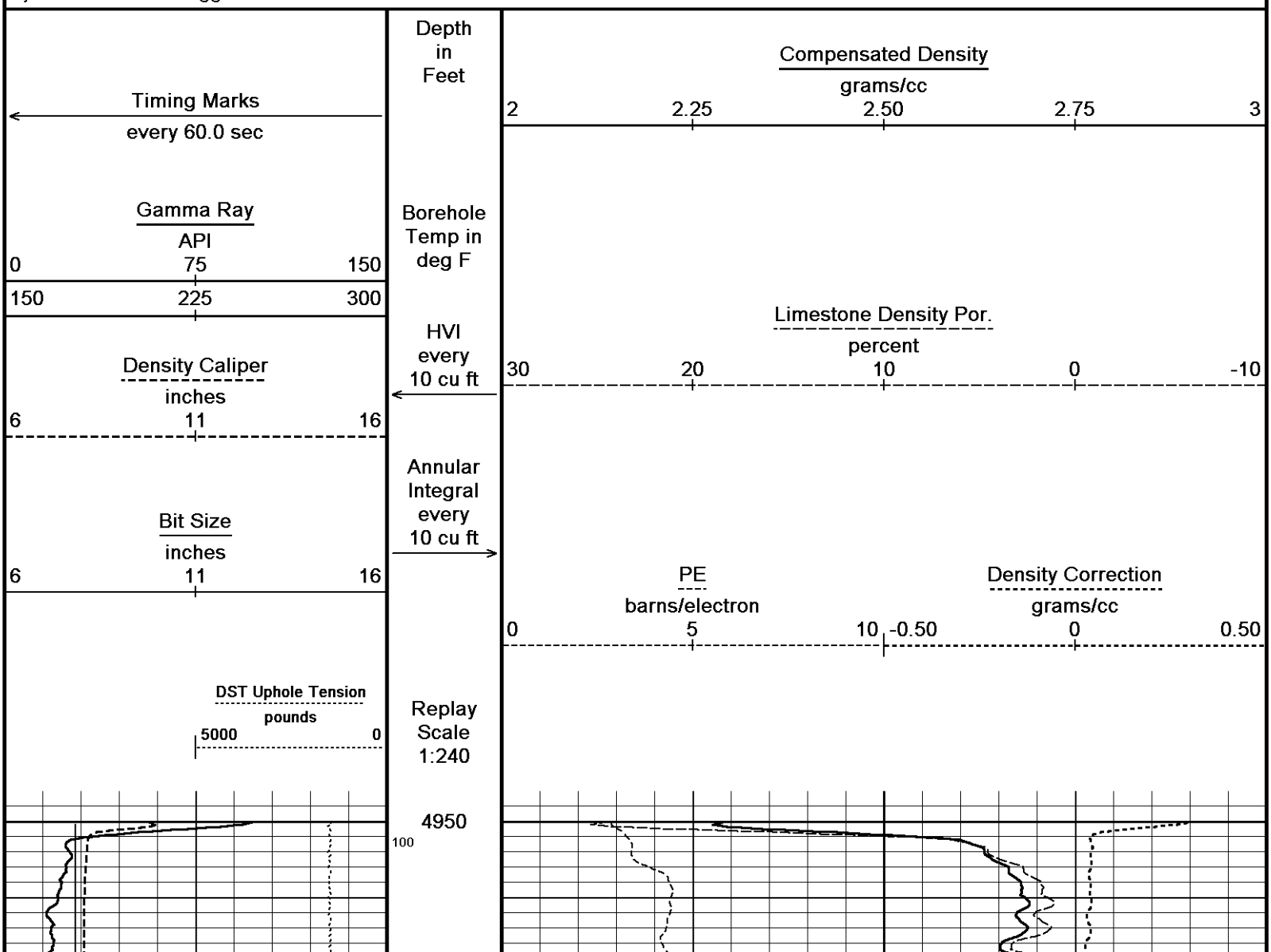
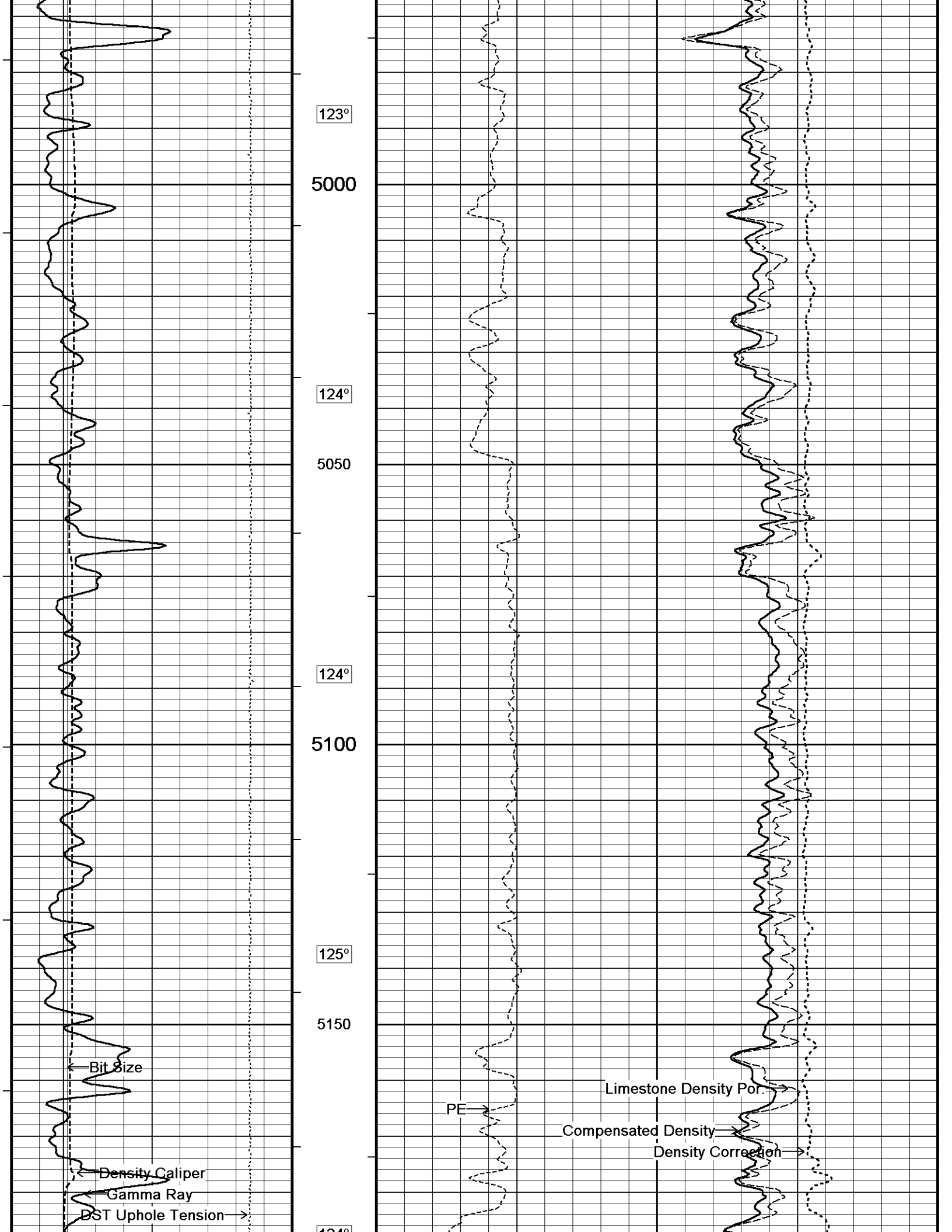
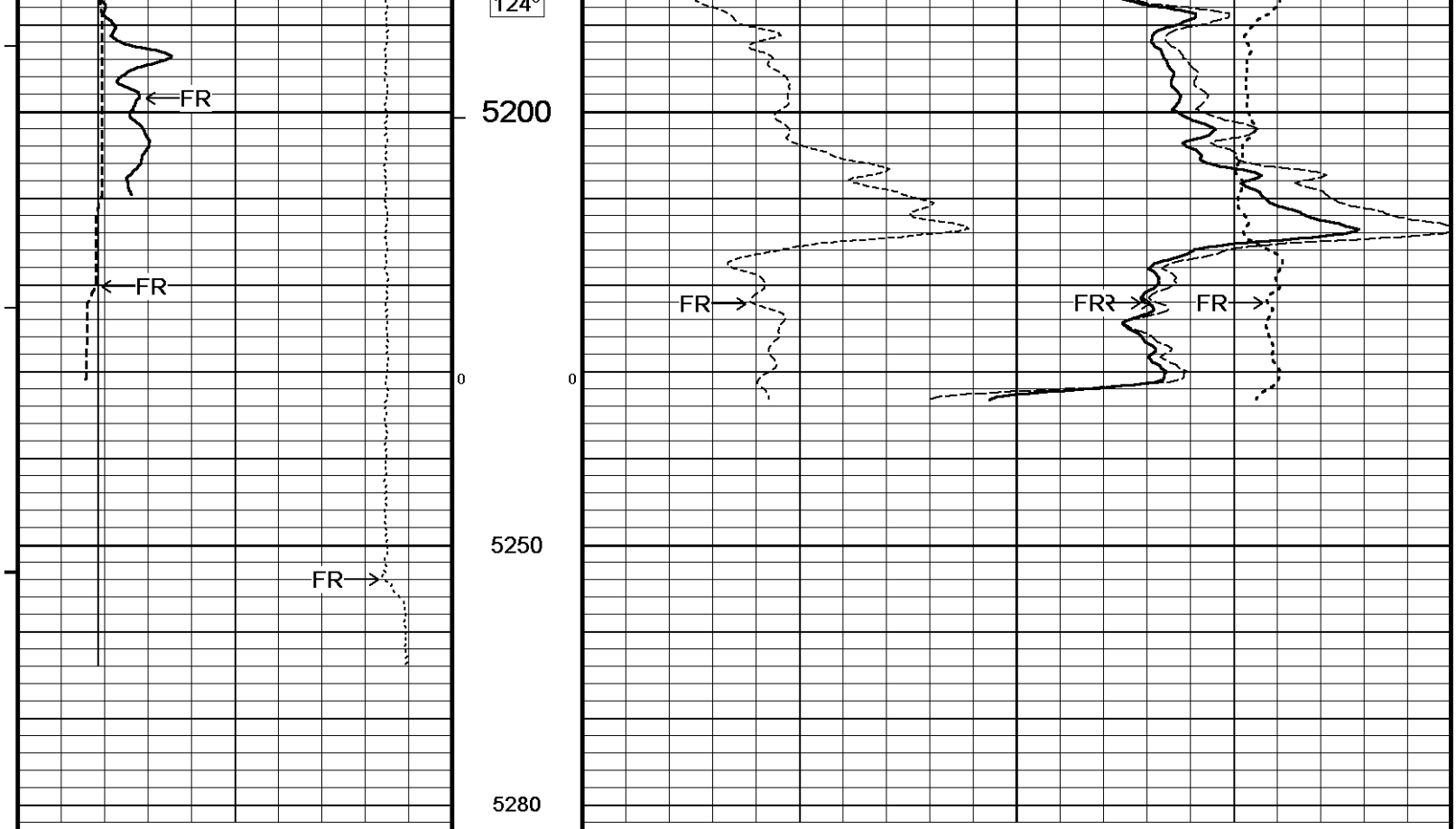



123°
5000
124°
5050
124°
5100
125°
5150
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
PE
Limestone Density Por.
Compensated Density
Density Correction



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
Plotted on 16-MAY-2013 00:02
Filename: C:\Minimus 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Rees Ranch 4-19_001.dta
Recorded on 15-MAY-2013 20:01
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Rees Ranch 4-19_001.dta

General Constants All 000

Last Edited on 15-MAY-2013,18:58

General Parameters		
Mud Resistivity	0.600	ohm-metres
Mud Resistivity Temperature	84.000	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	Deep Induction	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Gamma Calibration MCG-D.K 469

Field Calibration on 13-MAY-2013 11:25

	Measured	Calibrated (API)
Background	75	51
Calibrator (Gross)	1138	776
Calibrator (Net)	1063	725

Gamma Constants MCG-D.K 469

Last Edited on 15-MAY-2013,18:48

Gamma Calibrator Number	GRC38	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 07-MAY-2013,09:42

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

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 07-MAY-2013,09:42

Pre-filter Length	11

Caliper Calibration MPD-B 64

Base Calibration on 19-APR-2013 14:25
Field Calibration on 13-MAY-2013 11:06

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13997	3.99
2	22559	5.98
3	31072	7.97
4	39474	9.86
5	48864	11.92
6	N/A	N/A

Field Calibration

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

Photo Density Calibration MPD-B 64

Base Calibration on 19-APR-2013 15:00
Field Check on 13-MAY-2013 11:12

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	59471	32992	59556	30836

Reference 2	24990	2903	24941	2541

Field Check at Base

	1171.7	1360.0

Field Check

	1167.4	1353.5

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	212	1041		
Reference 1	22289	59266	0.379	0.371
Reference 2	6735	24851	0.274	0.272

Field Check at Base

	212.2	1041.5

Field Check

	212.1	1038.9

Density Constants MPD-B 64

Last Edited on 15-MAY-2013,18:47

Density Source Id	18235B	
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	1.13	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 (m)
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 13.05.9583\Log\SDOCO Ress Ranch 4-19\SDOCO Rees Ranch 4-19_001.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-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper

55.39 ft	GRGC - Gamma Ray
52.48 ft	CGXT - MCG External Temperature
45.76 ft	MINV - Micro-inverse
45.76 ft	MNRL - Micro-normal
46.76 ft	MLTC - MML Caliper
40.97 ft	NPRL - Limestone Neutron Por.
33.73 ft	AVOL - Annular Volume

MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.25 ft Weight: 471.8 lb

33.73 ft	HVOL - Hole Volume
33.73 ft	CLDC - Density Caliper
31.80 ft	DPRL - Limestone Density Por.
31.80 ft	DEN - Compensated Density
31.80 ft	DCOR - Density Correction
31.74 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
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
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	SDOCO, LLC.
WELL	REES RANCH 4-19
FIELD	REES RANCH
PROVINCE/COUNTY	WICHITA
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3183.00	feet	First Reading	5222.00	feet
Elevation Drill Floor	3182.00	feet	Depth Driller	5250.00	feet
Elevation Ground Level	3172.00	feet	Depth Logger	5254.00	feet

Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG