



Weatherford

**COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
MICRORESISTIVITY LOG**

COMPANY	MCELVAIN ENERGY, INC.		
WELL	WALZ 31-8		
FIELD	WILDCAT		
PROVINCE/COUNTY	GRAHAM		
COUNTRY/STATE	U.S.A./KANSAS		
LOCATION	2230' FNL & 330' FEL N2 SE SE NE		
SEC	TWP	RGE	Other Services
31	10S	21W	MA/MFE
API Number	15-065-23995		MSS
Permit Number			
Permanent Datum GL, Elevation 2221 feet			Elevations:
Log Measured From KB			KB 2231.00
Drilling Measured From KB @ 2231			DF 2229.00
Date	15-DEC-2013		GL 2221.00
Run Number	ONE		
Service Order	3547680		
Depth Driller	4000.00	feet	
Depth Logger	3995.00	feet	
First Reading	3963.00	feet	
Last Reading	330.00	feet	
Casing Driller	352.00	feet	
Casing Logger	352.00	feet	
Bit Size	7.875	inches	
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.40 lb/USg	56.00 CP	
PH / Fluid Loss	10.50	7.60 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	1.32 @ 82.0	ohm-m	
Rmf @ Measured Temp	1.06 @ 82.0	ohm-m	
Rmc @ Measured Temp	1.58 @ 82.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	1.01 @ 107.0	ohm-m	
Time Since Circulation	4 HOURS		
Max Recorded Temp	107.00	deg F	
Equipment / Base	13244	LIB	
Recorded By	JOHN LAPOINT		
Witnessed By	CHRIS MITCHELL		
IOB#	LB13-354		

BOREHOLE RECORD				Last Edited: 15-DEC-2013 07:19
Bit Size inches		Depth From feet		Depth To feet
7.875		352.00		4000.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	352.00	24.00

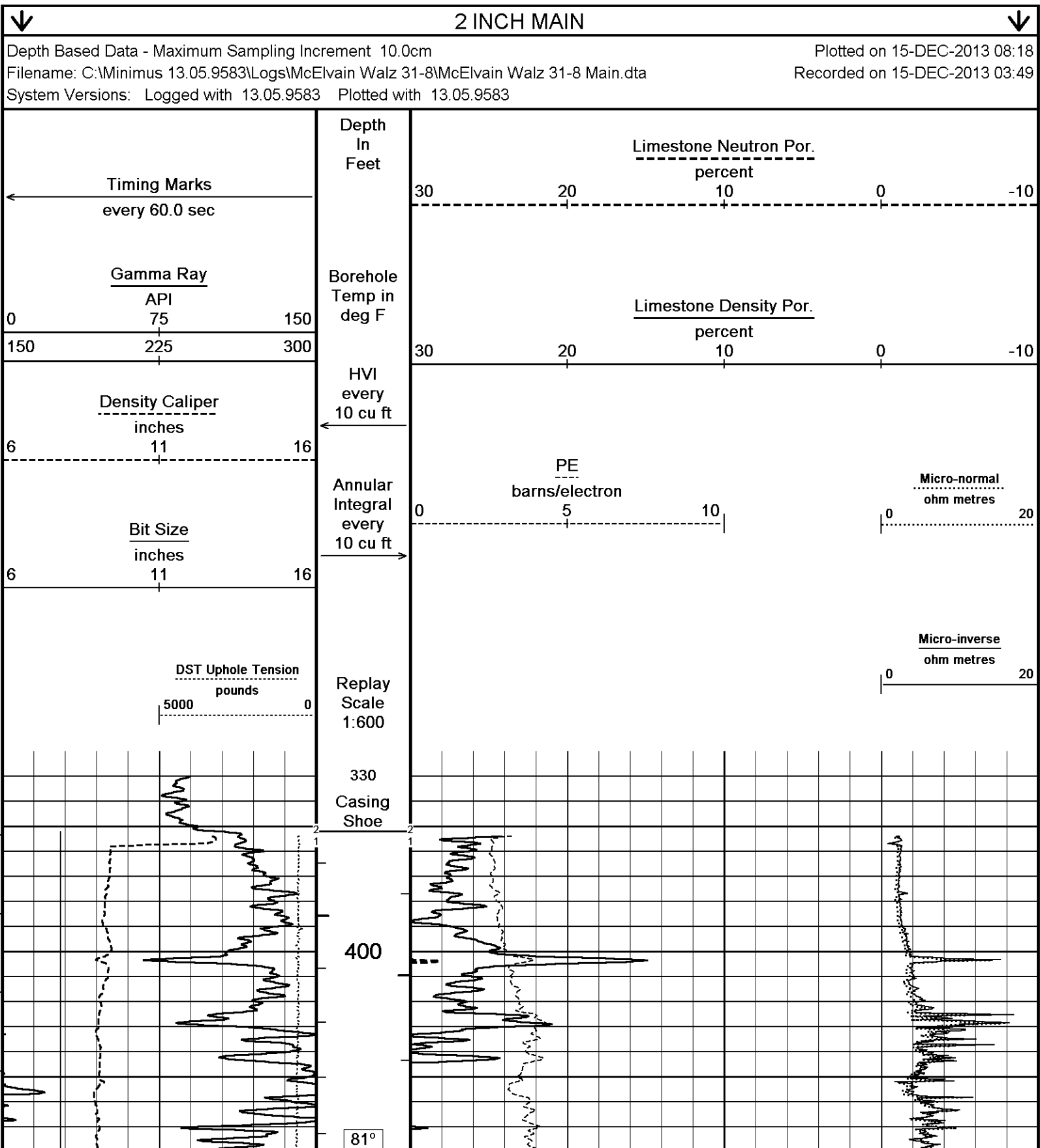
REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583. - MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. 0.5 INCH STANDOFF USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE 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 AT 352 FEET: 1415 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO SURFACE CASING AT 352 FEET: 819 CU. FT.
- DRILLING RIG: VAL RIG 6

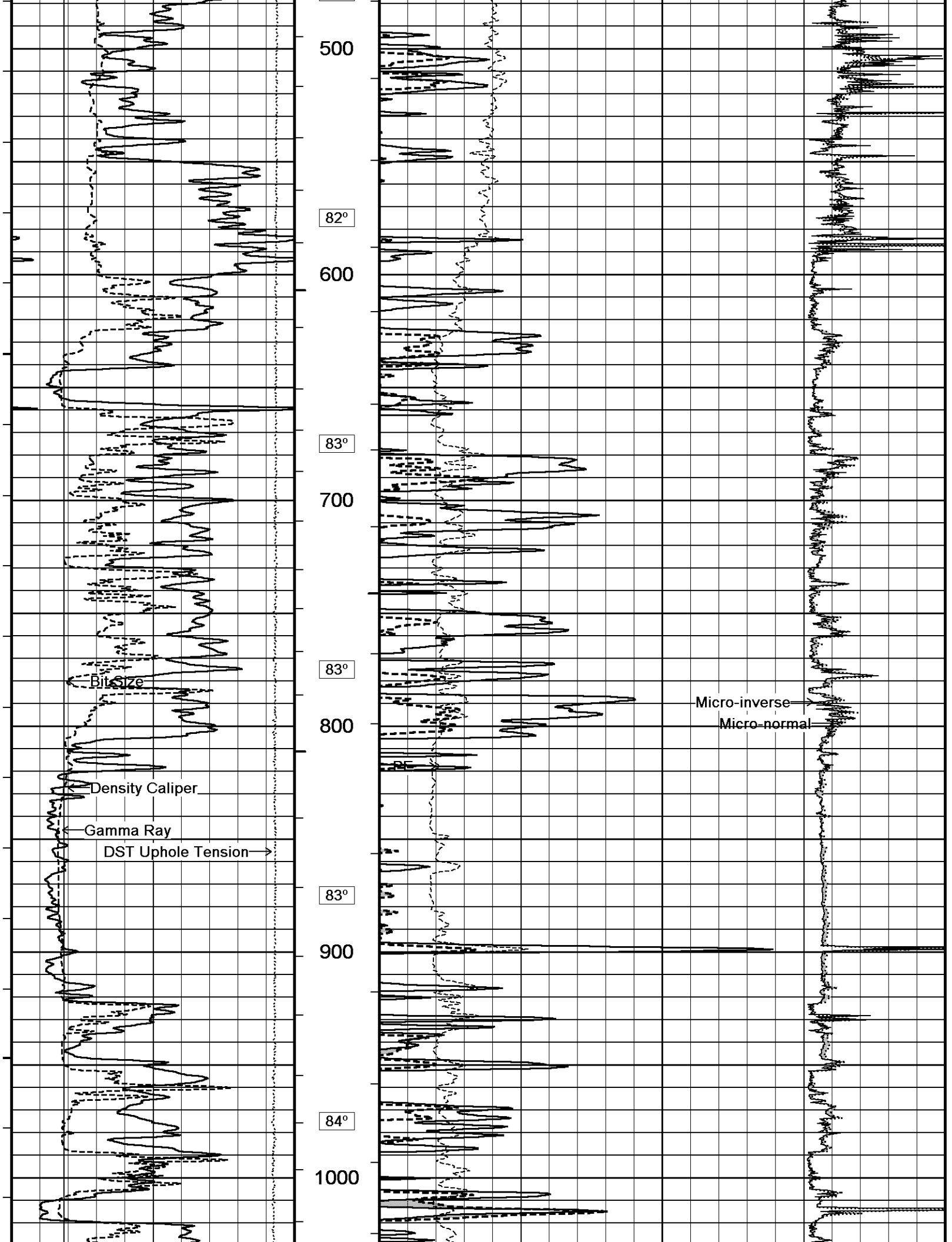
- DRILLING RIG: VALERIO S.

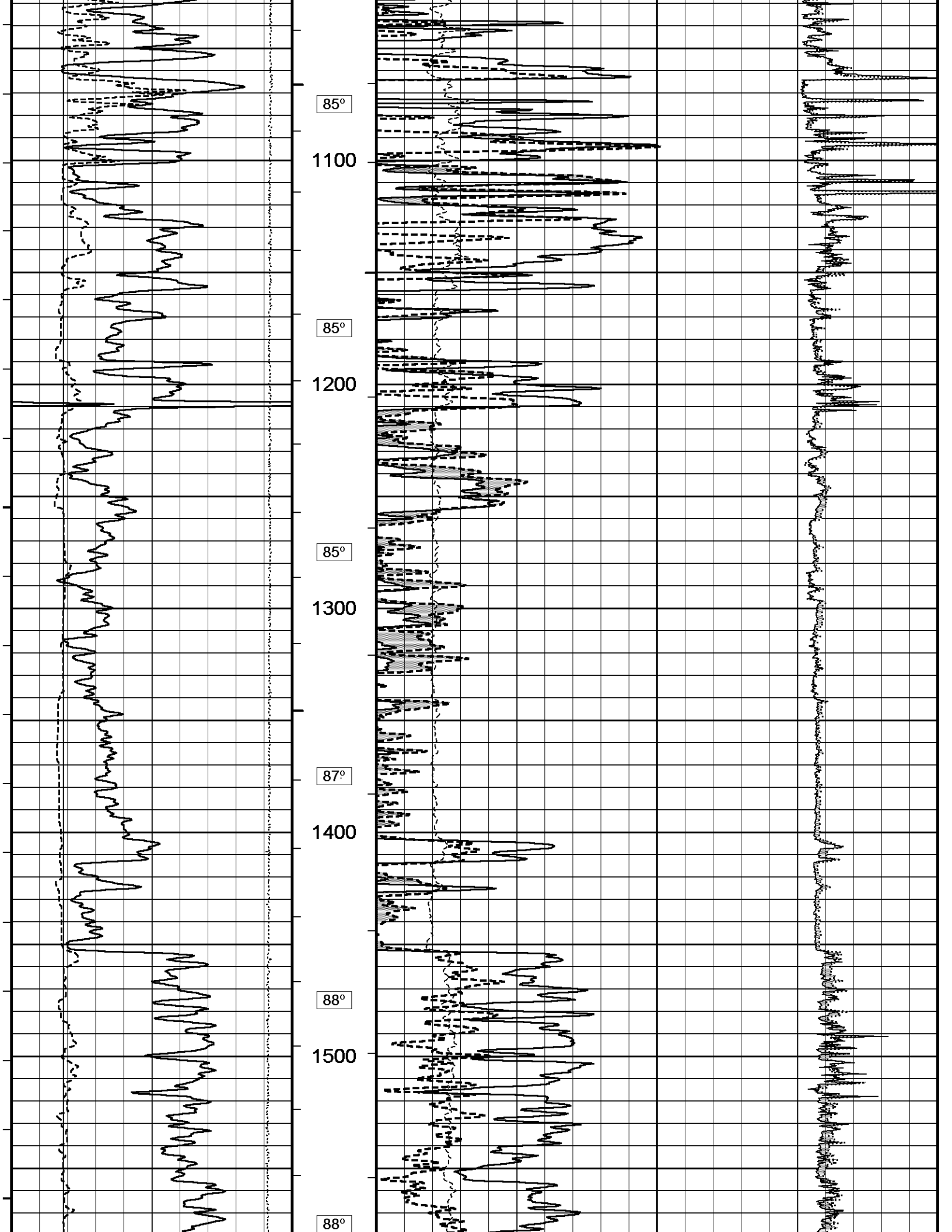
- ENGINEER: J. LAPOINT AND R. HOFFMAN.

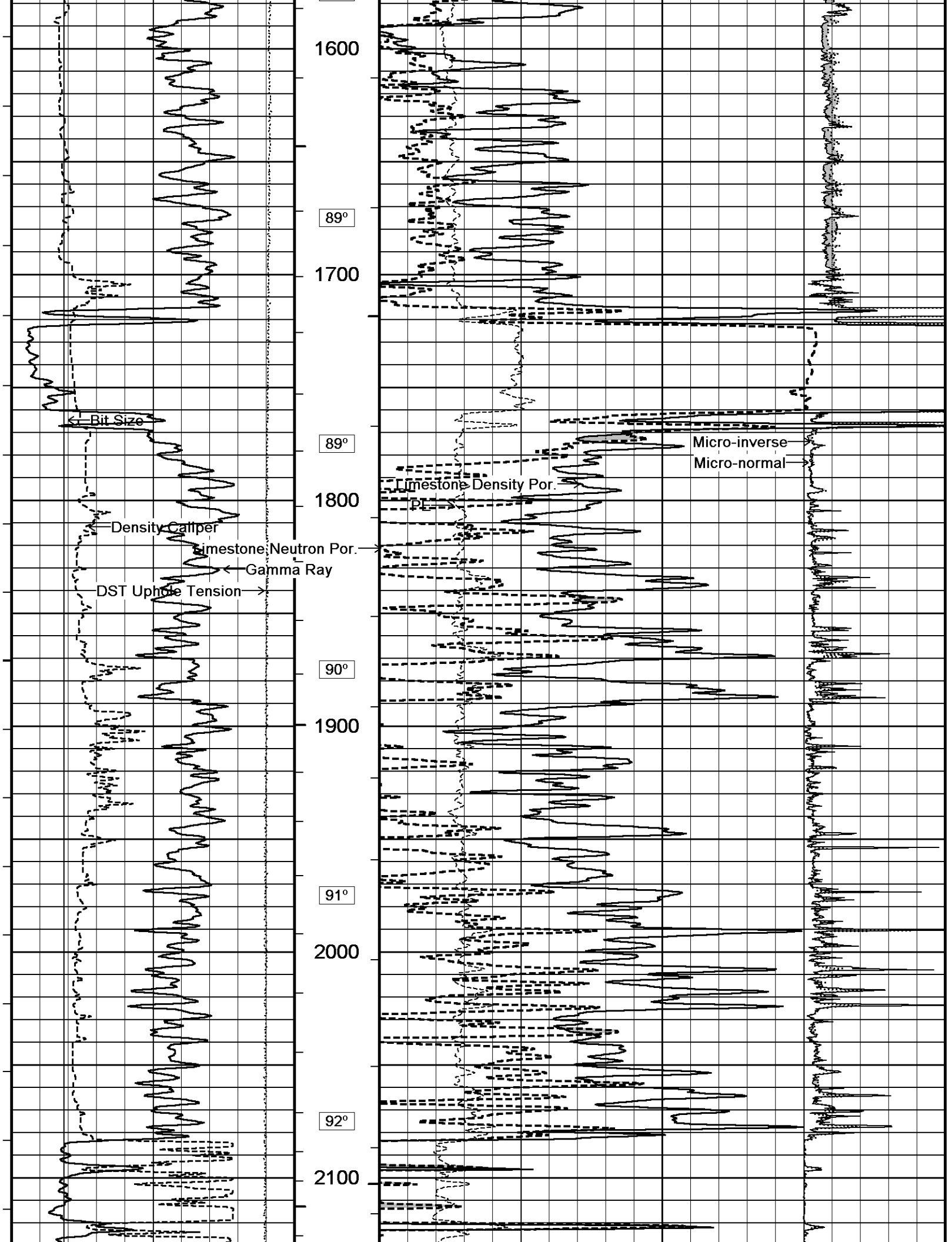
- OPERATOR(S): N. ADAME.

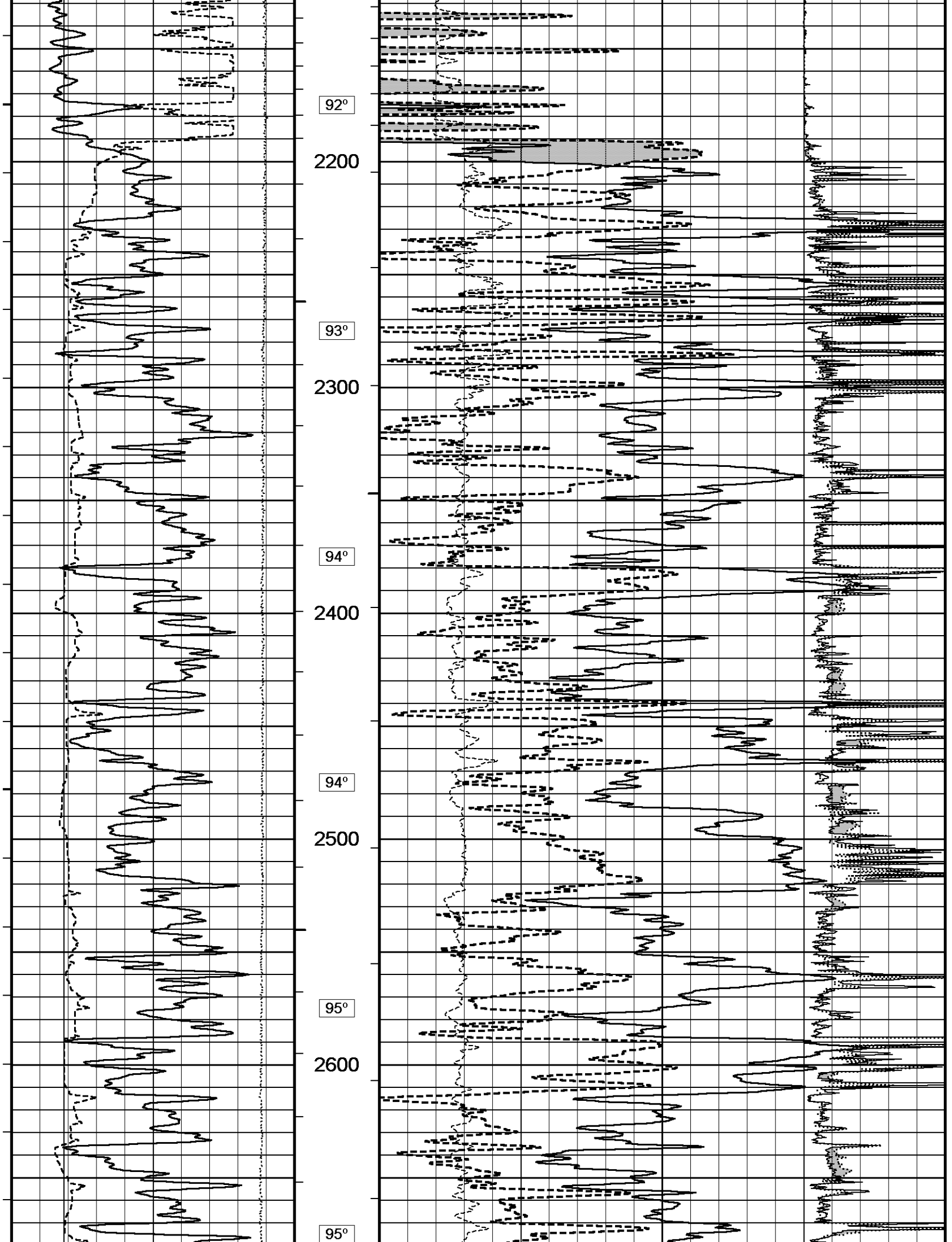
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs, 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.

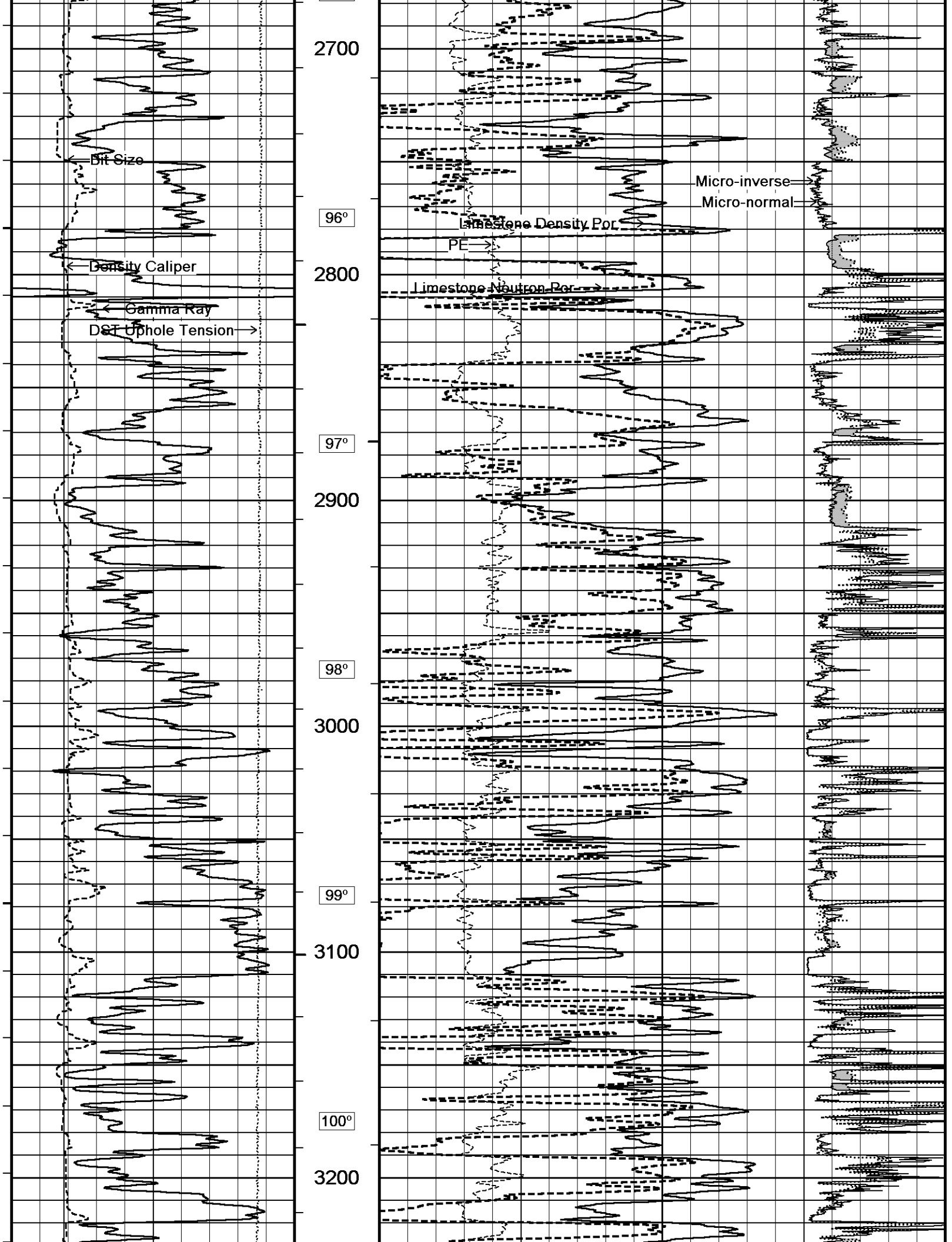


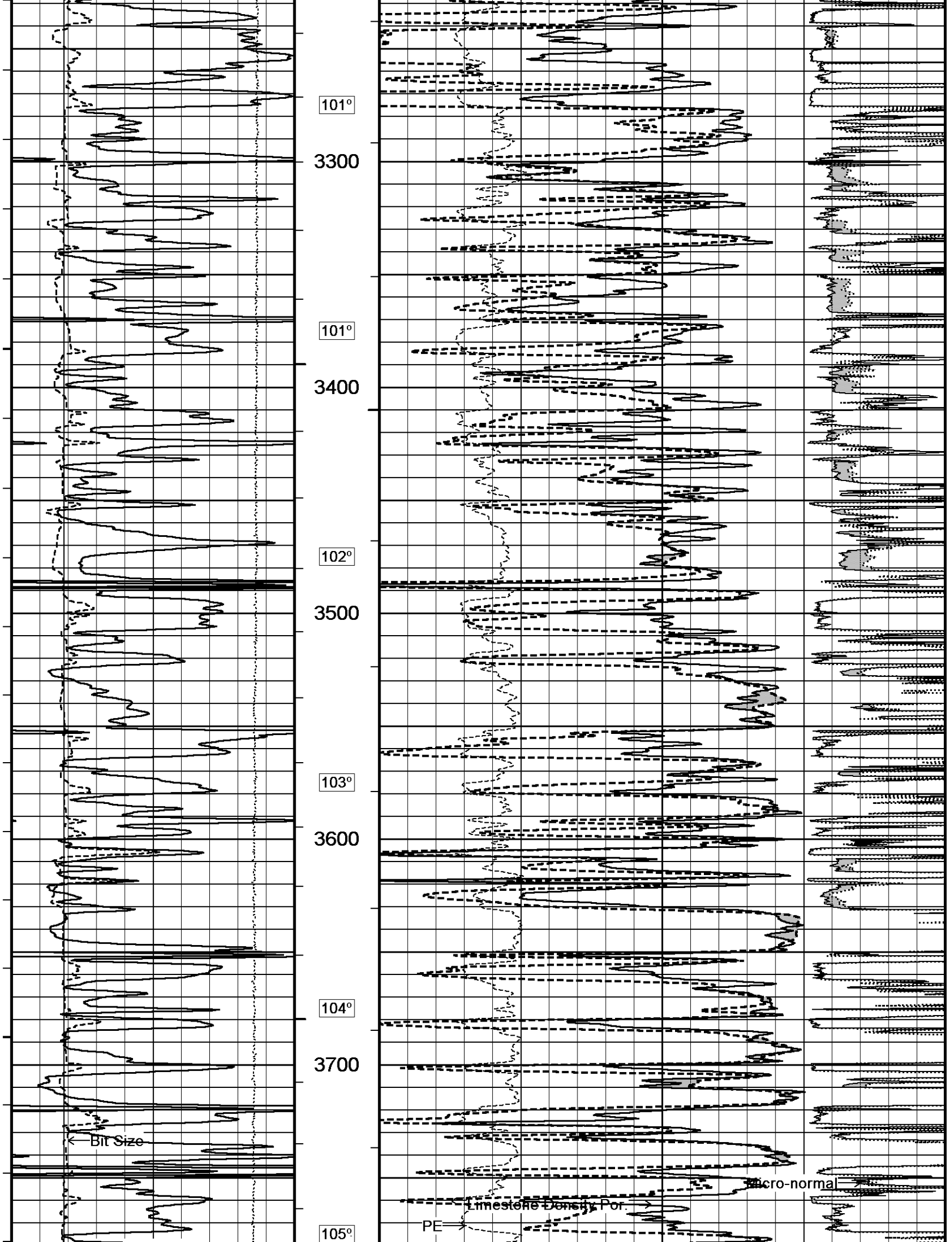


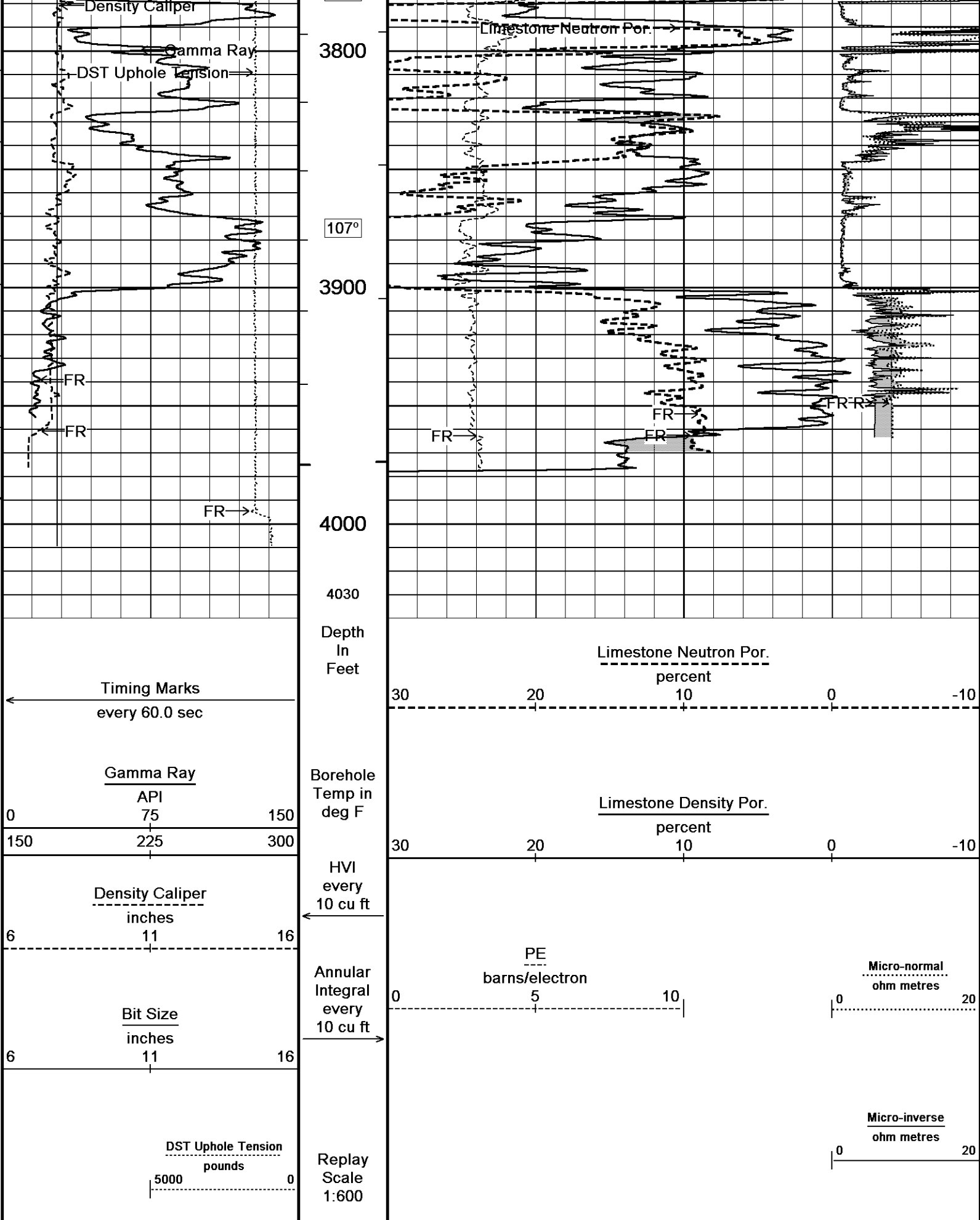


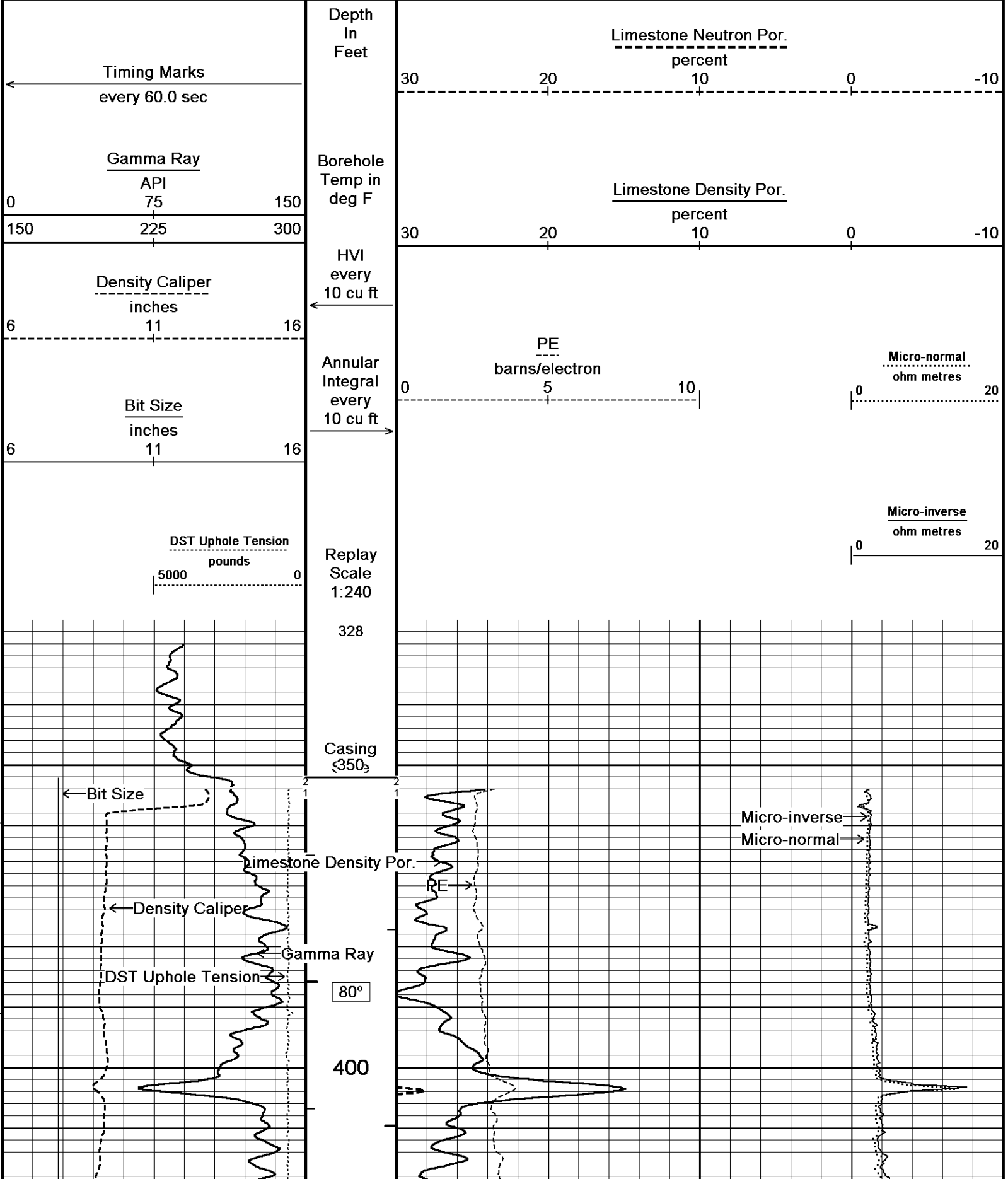


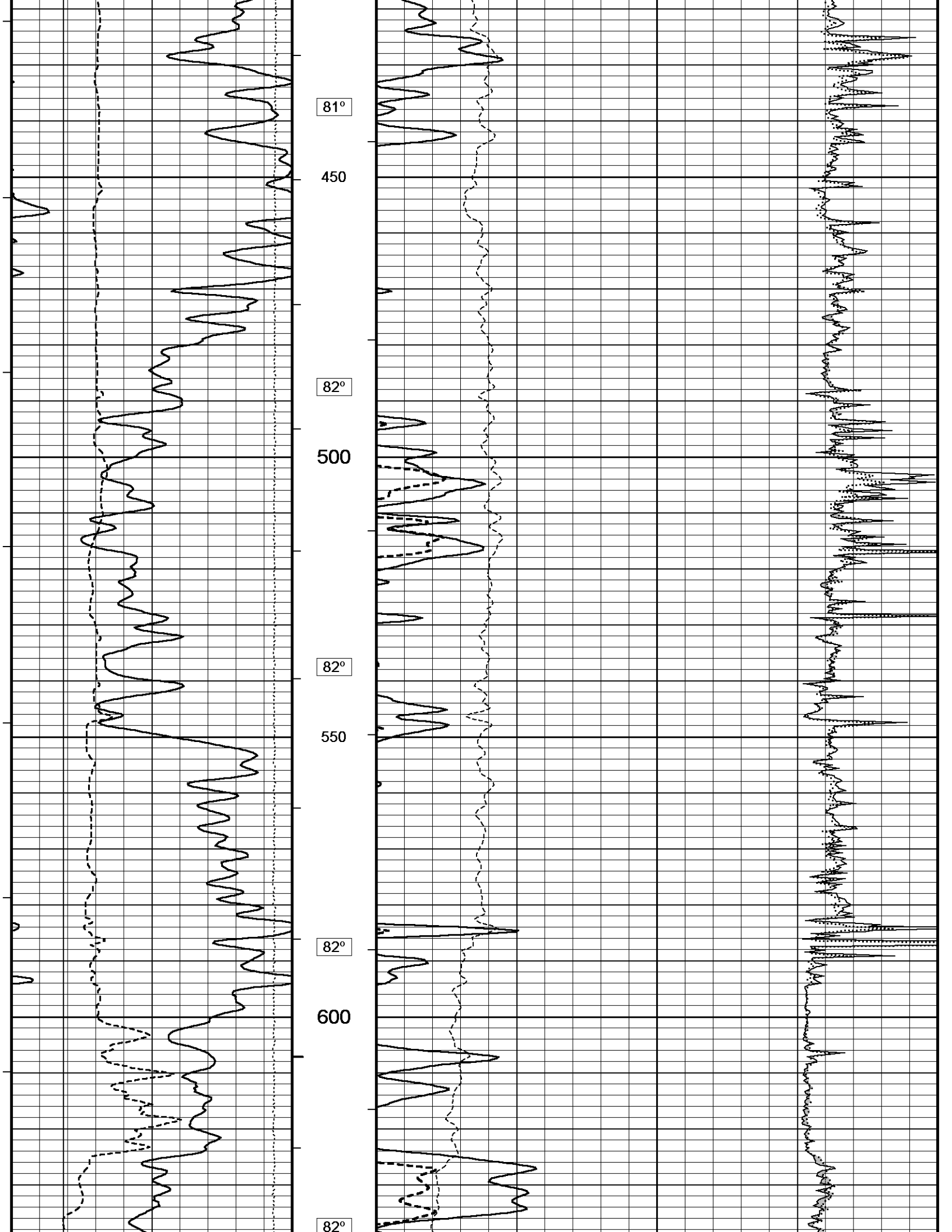


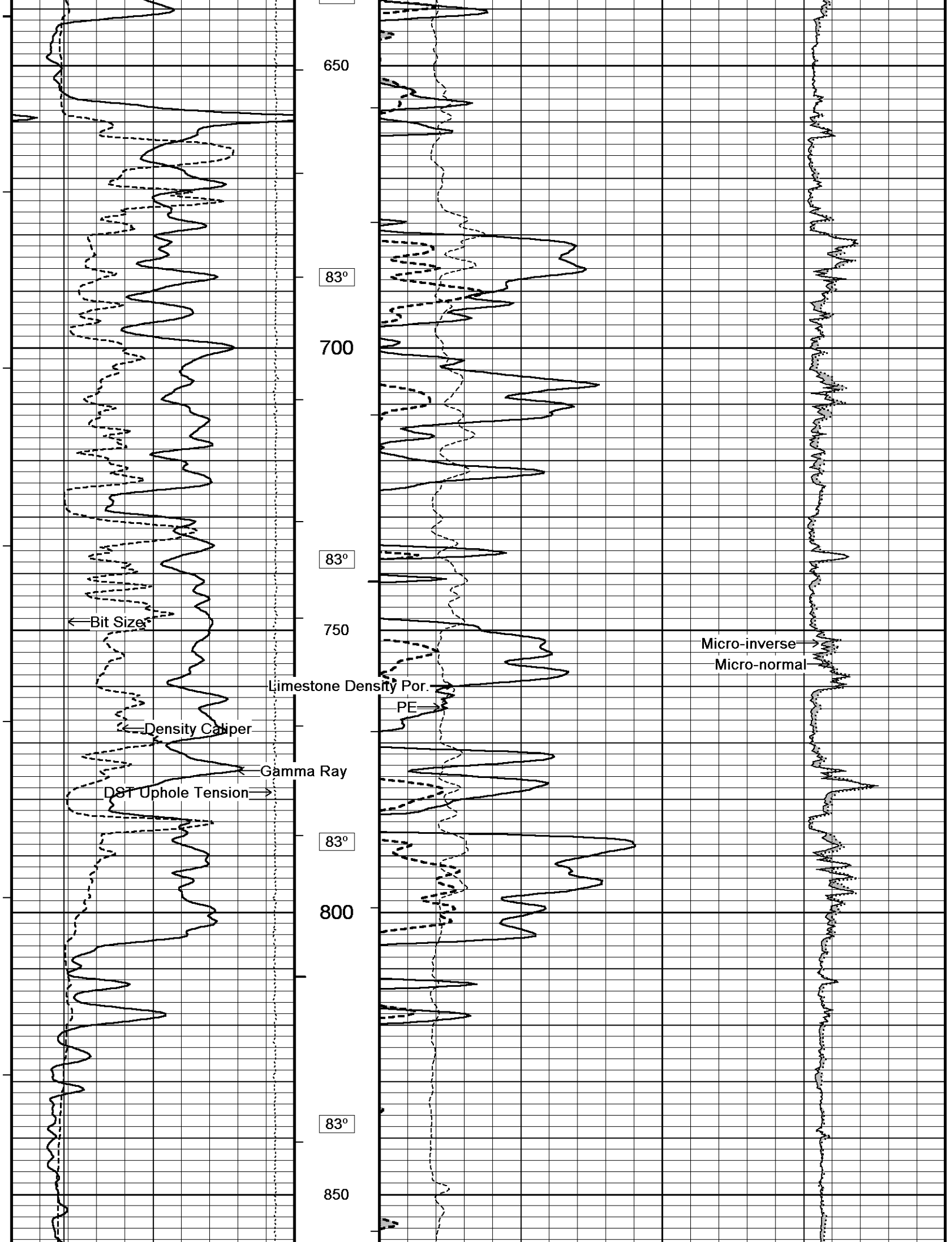


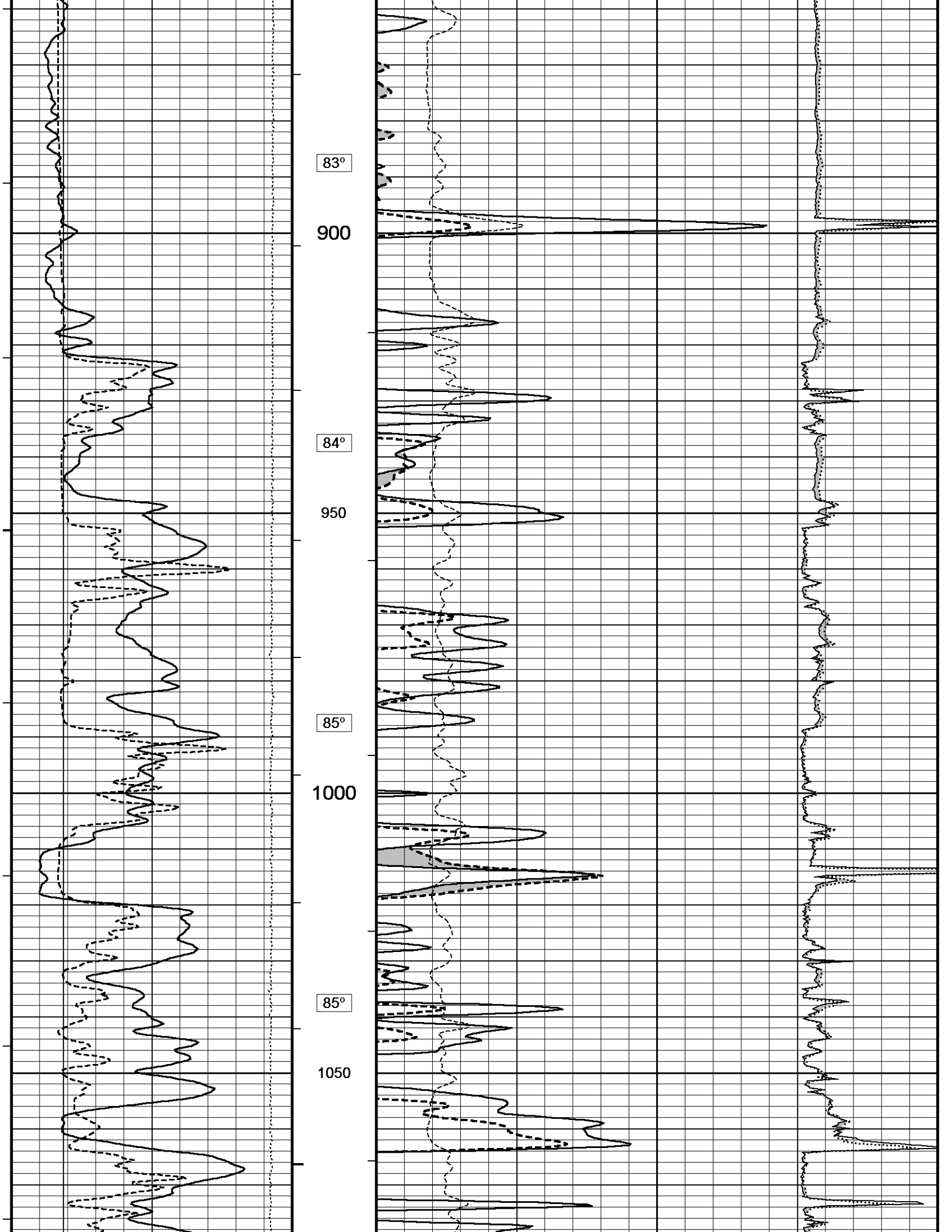


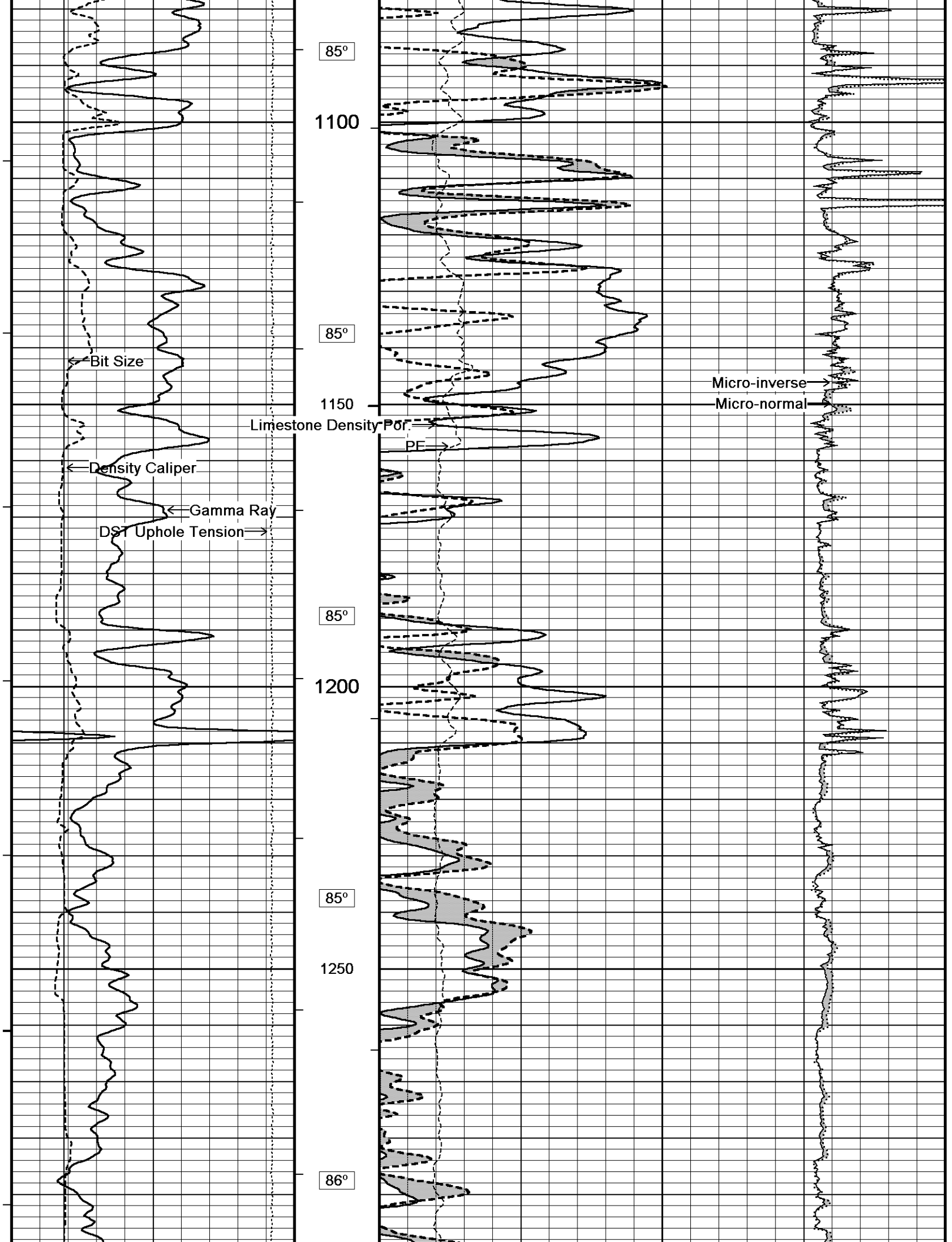


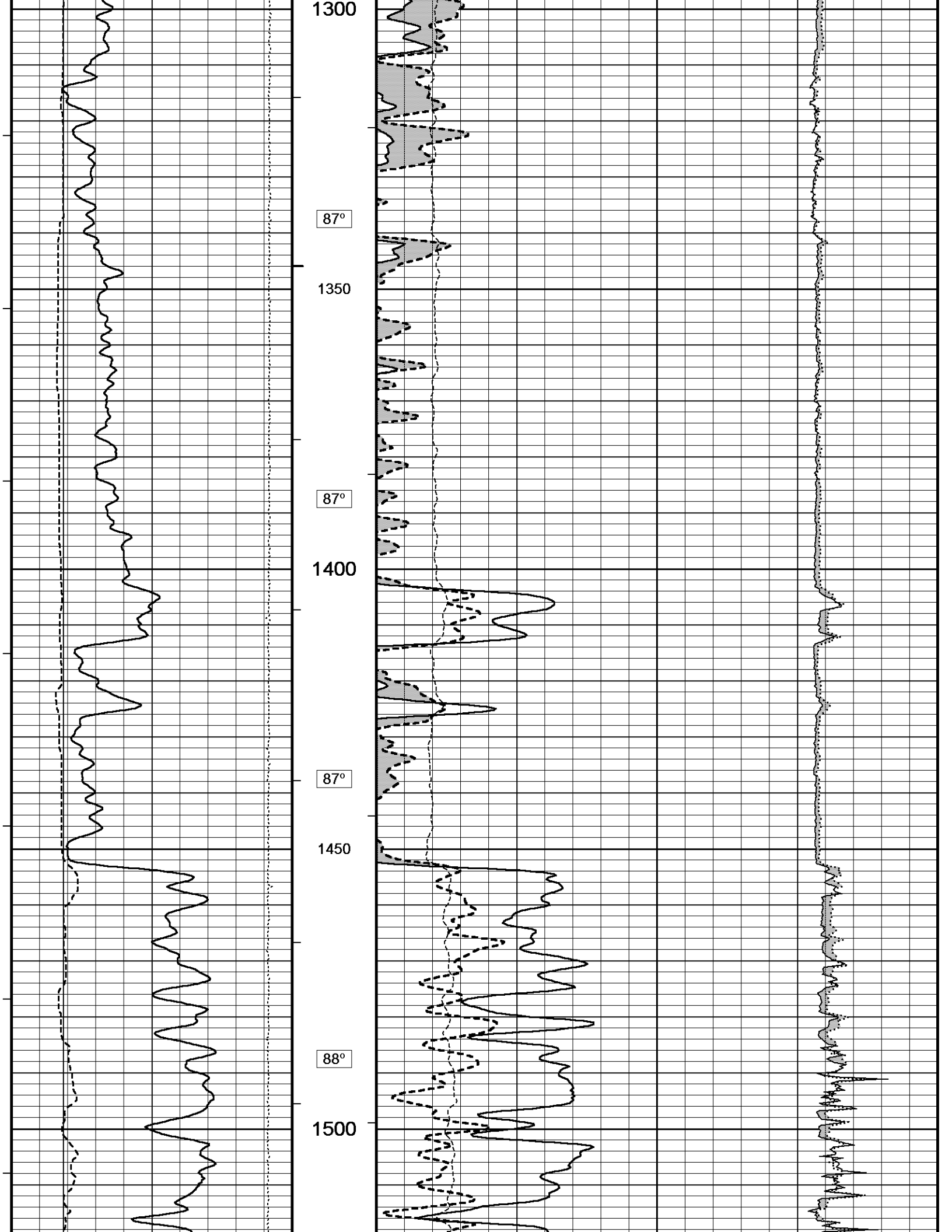


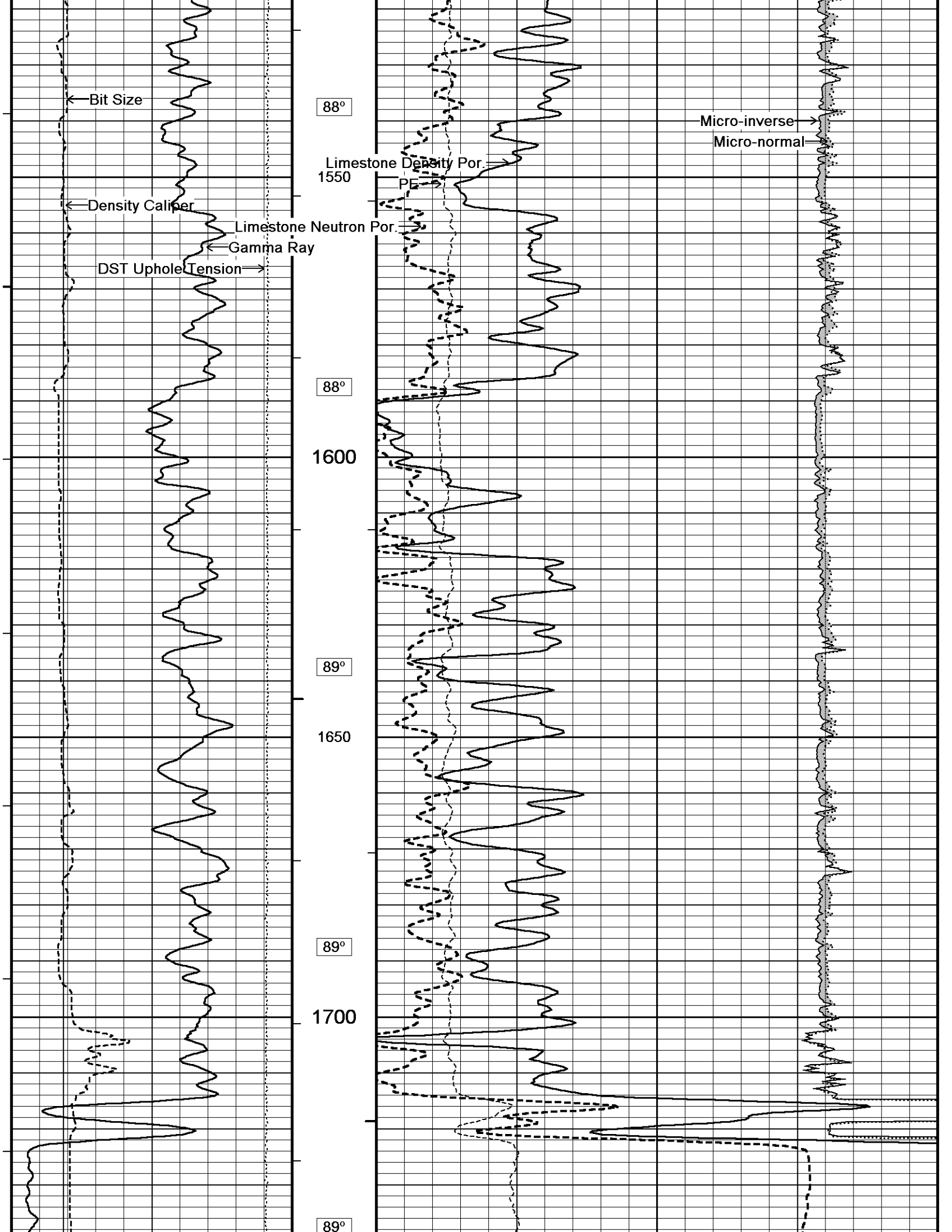


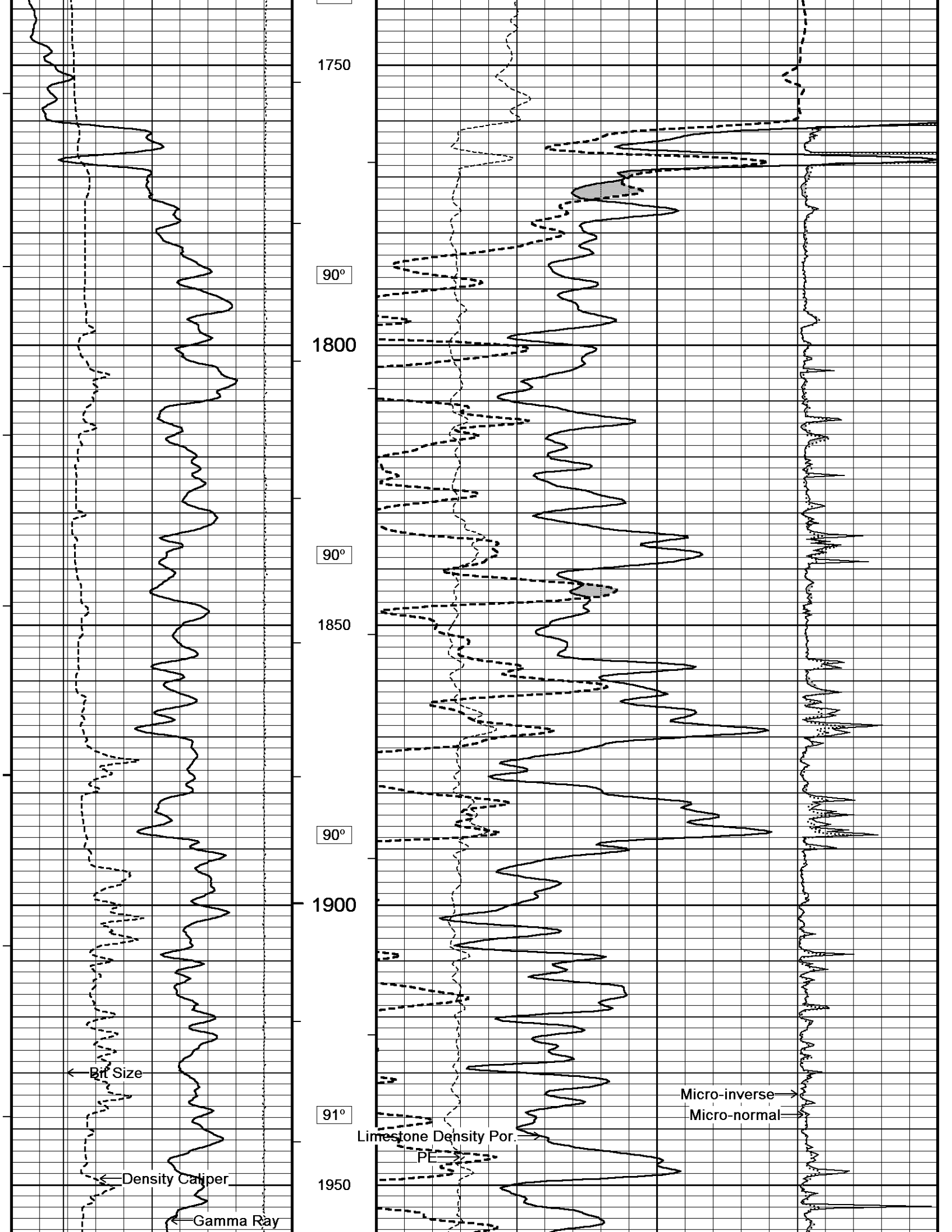


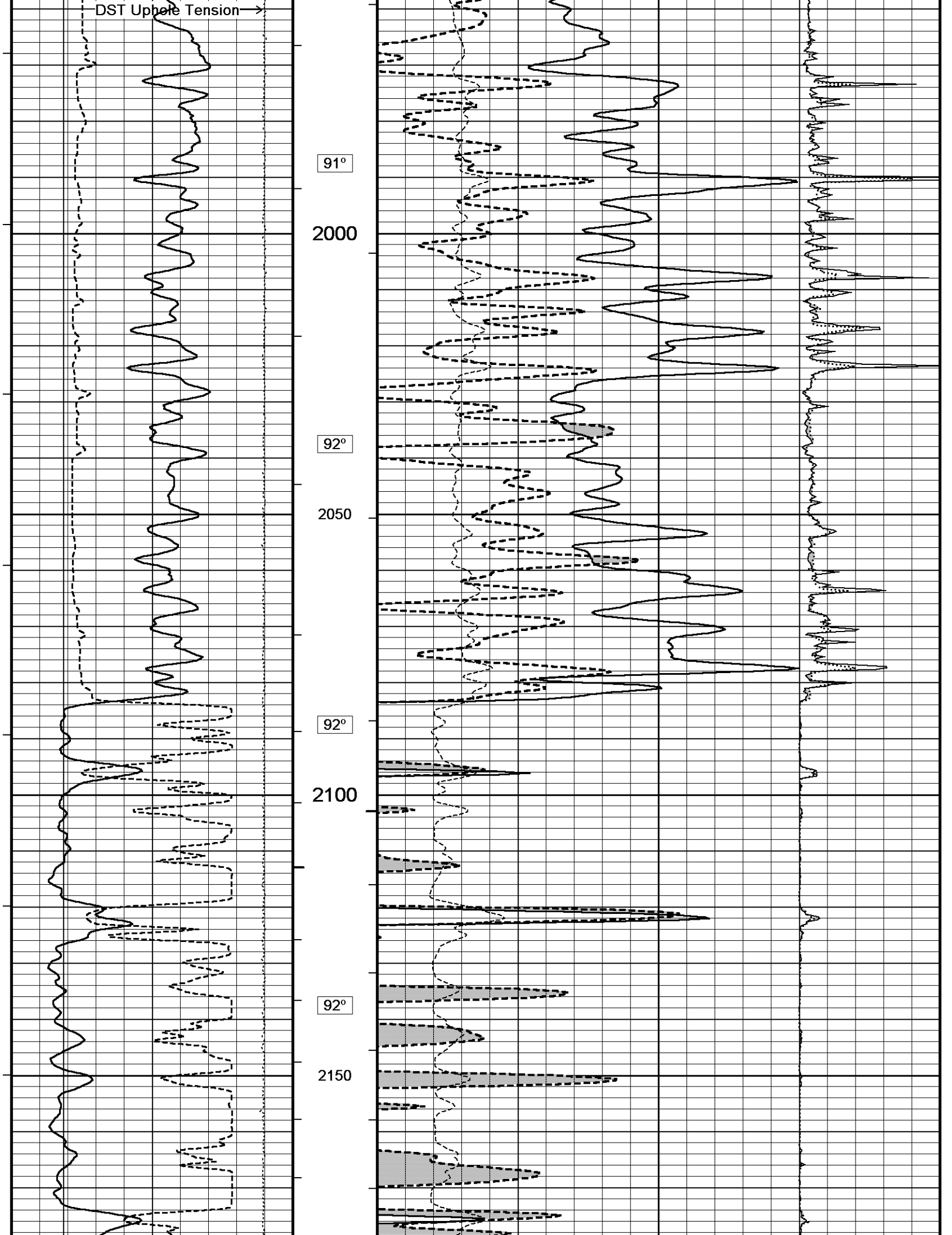


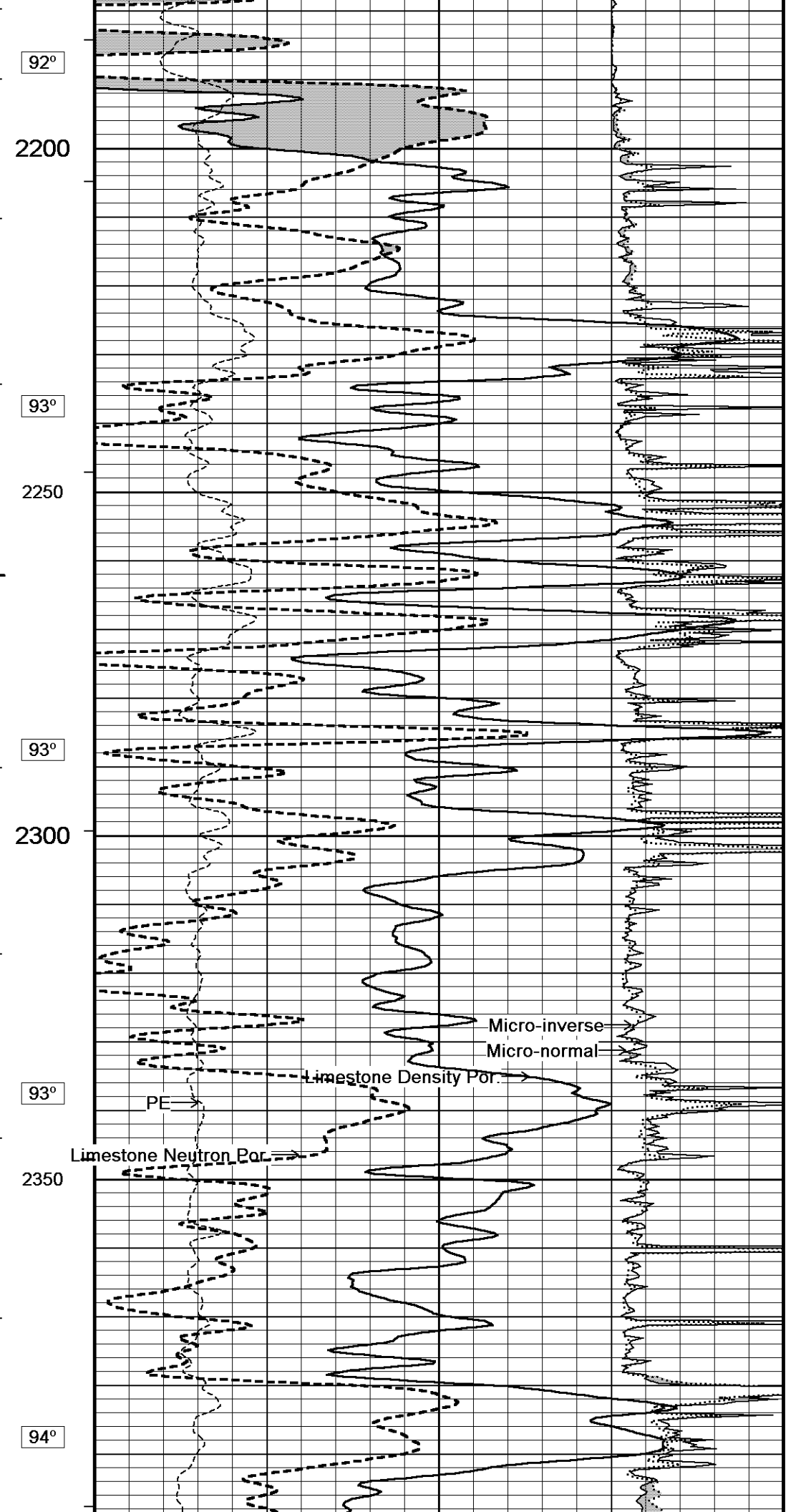
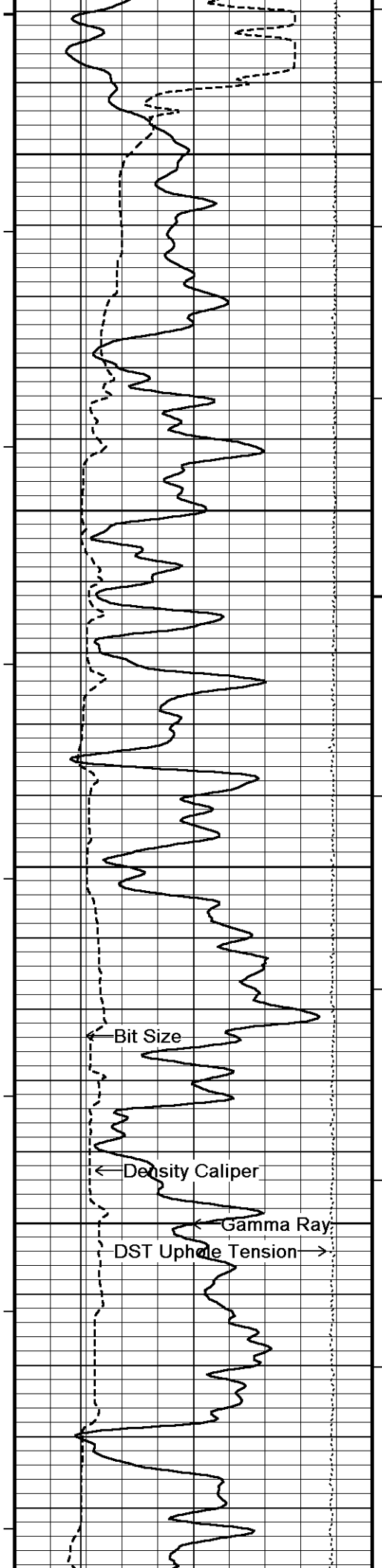


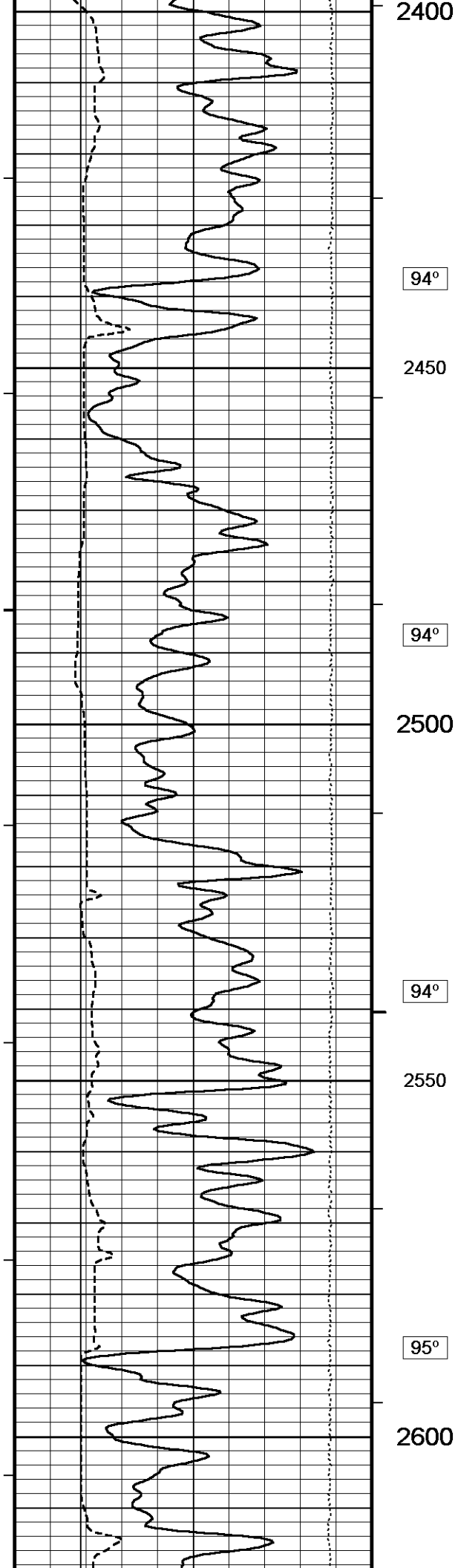












2400

94°

2450

94°

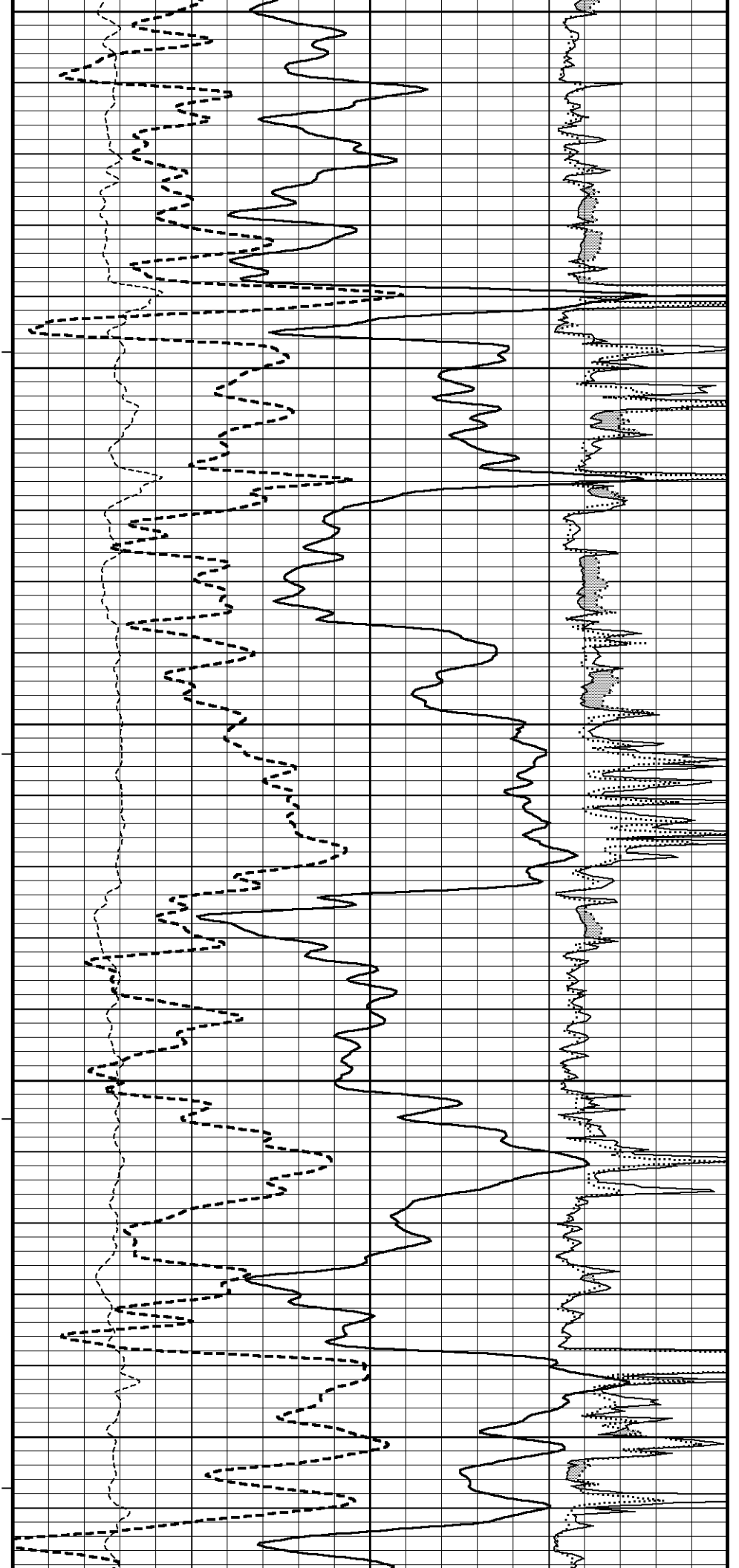
2500

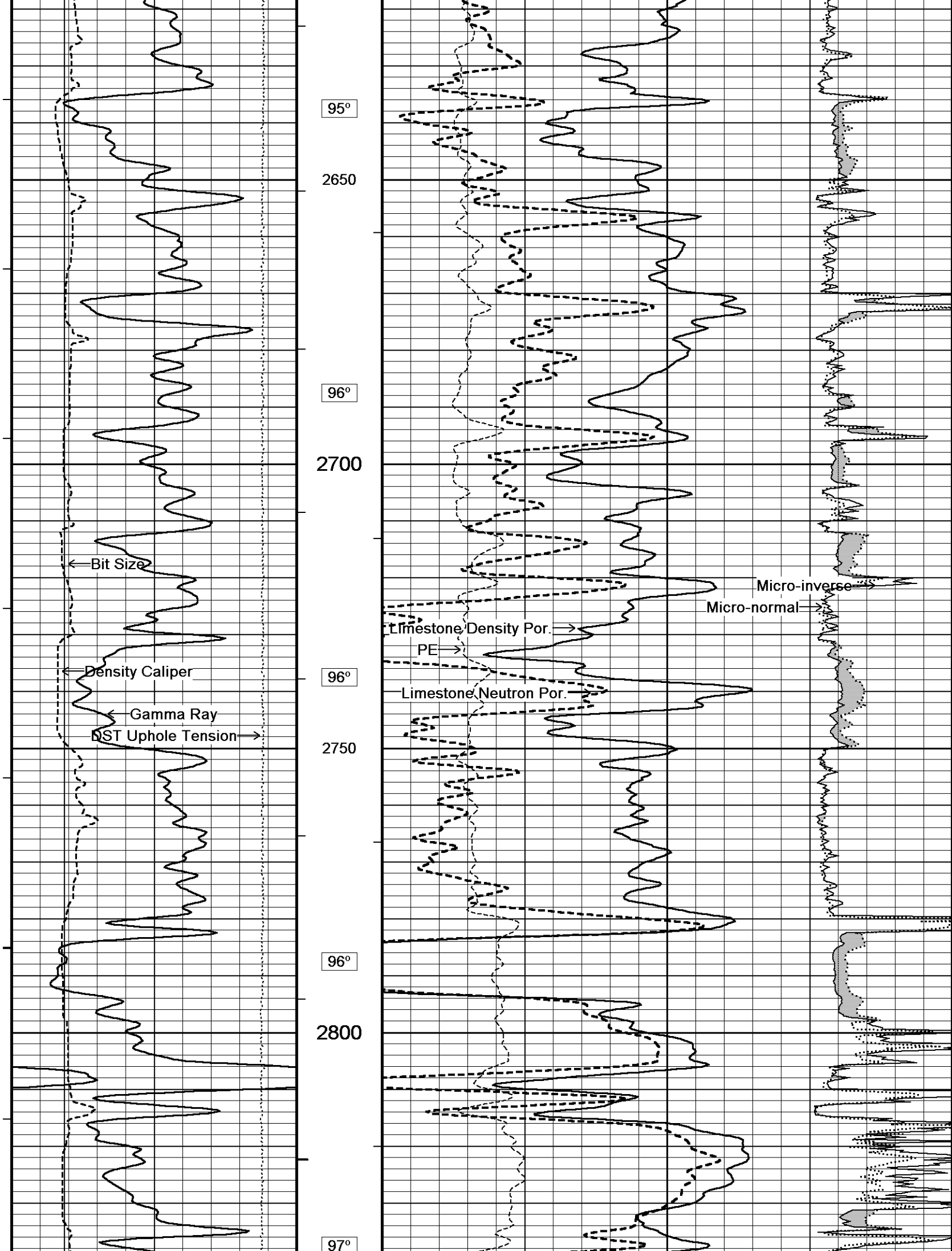
94°

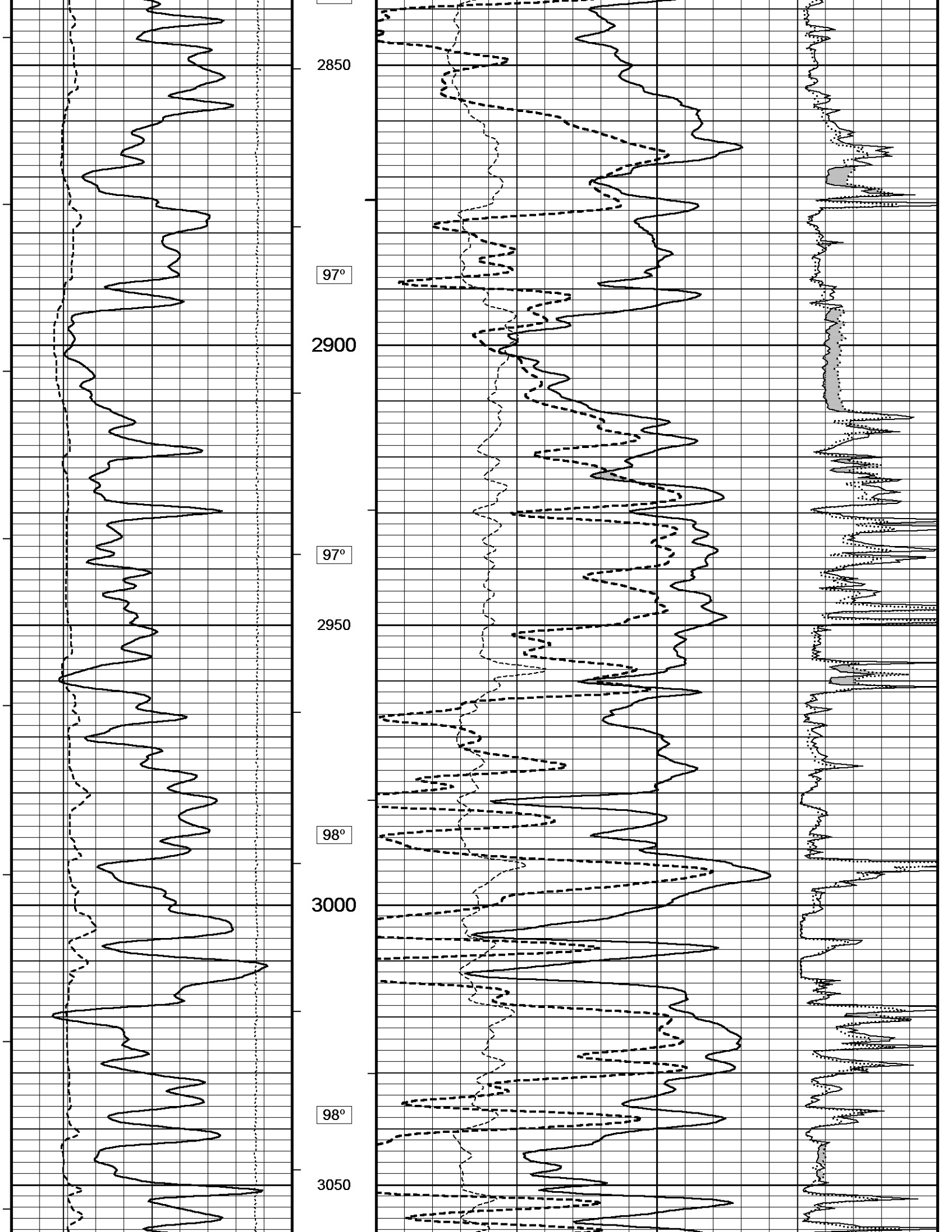
2550

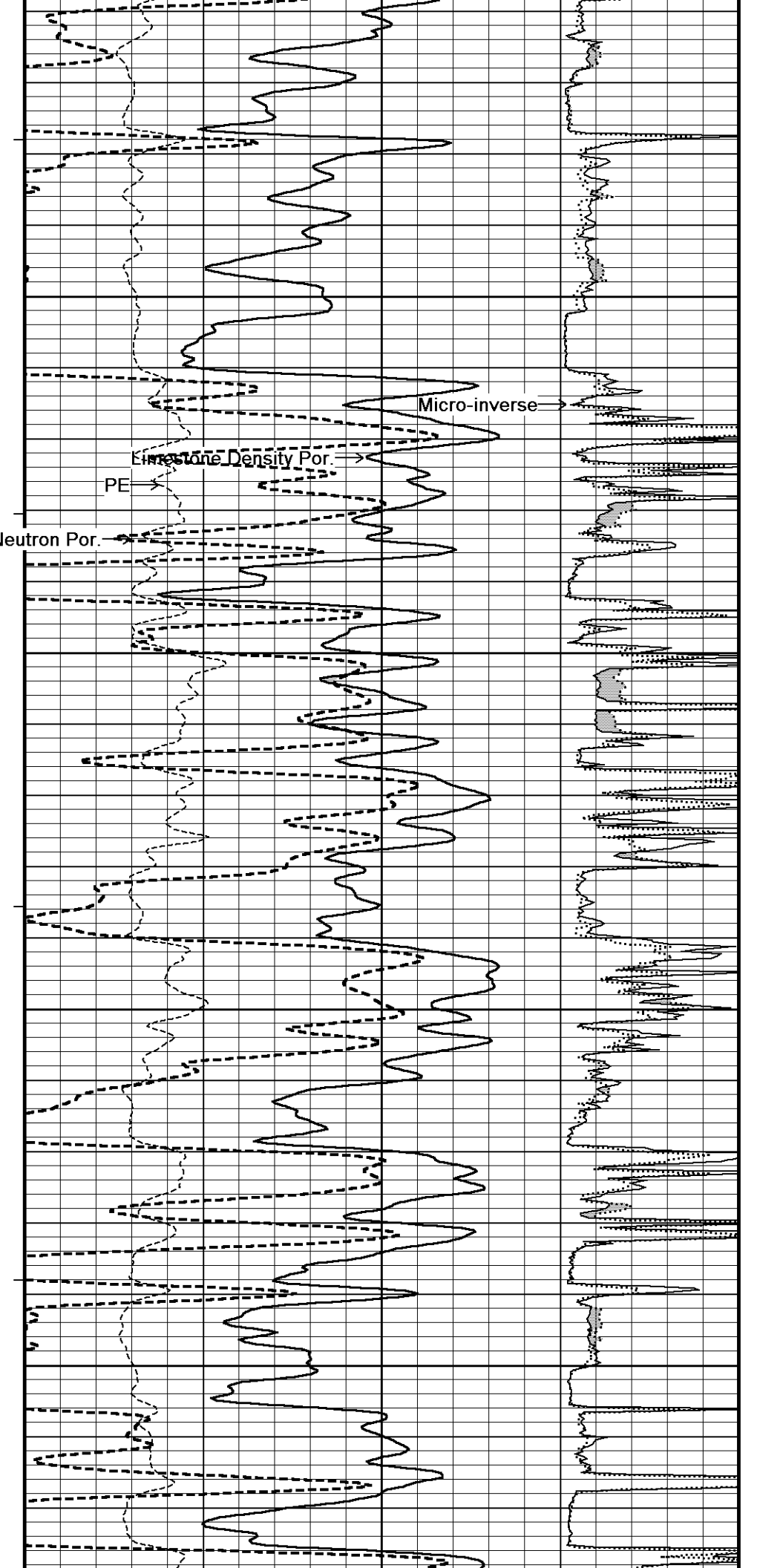
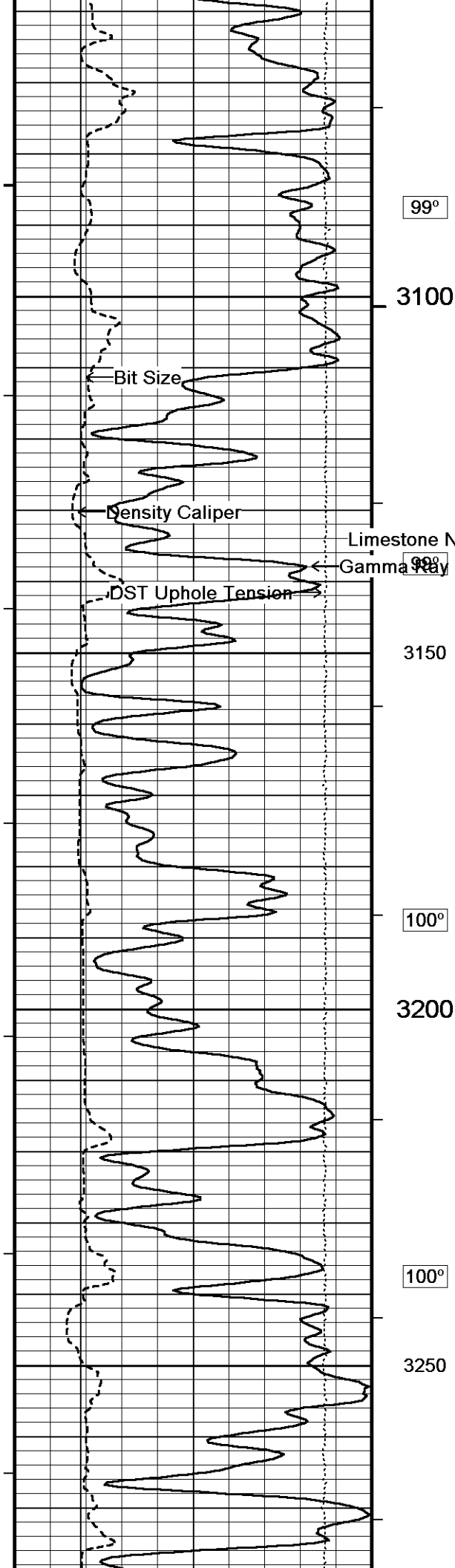
95°

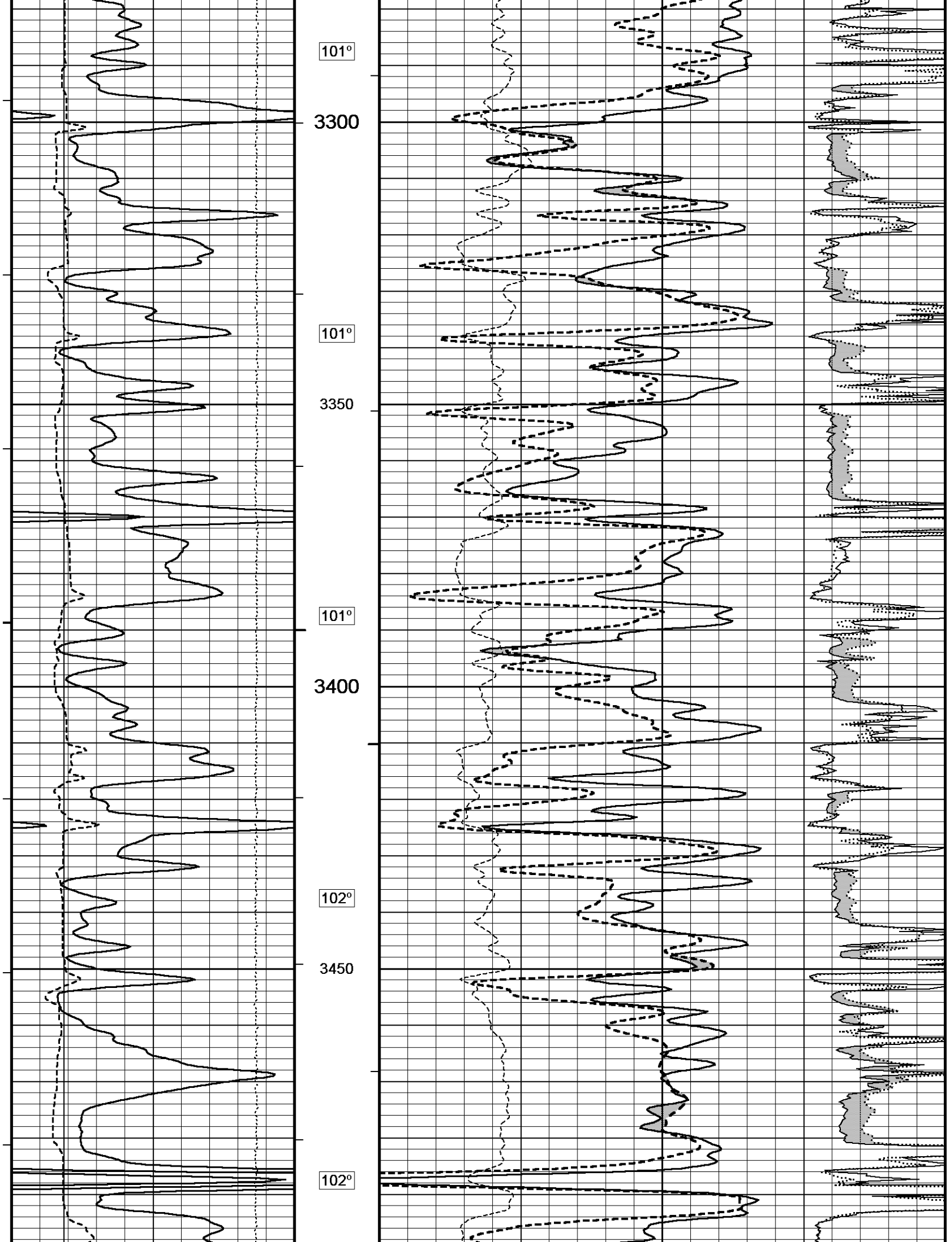
2600

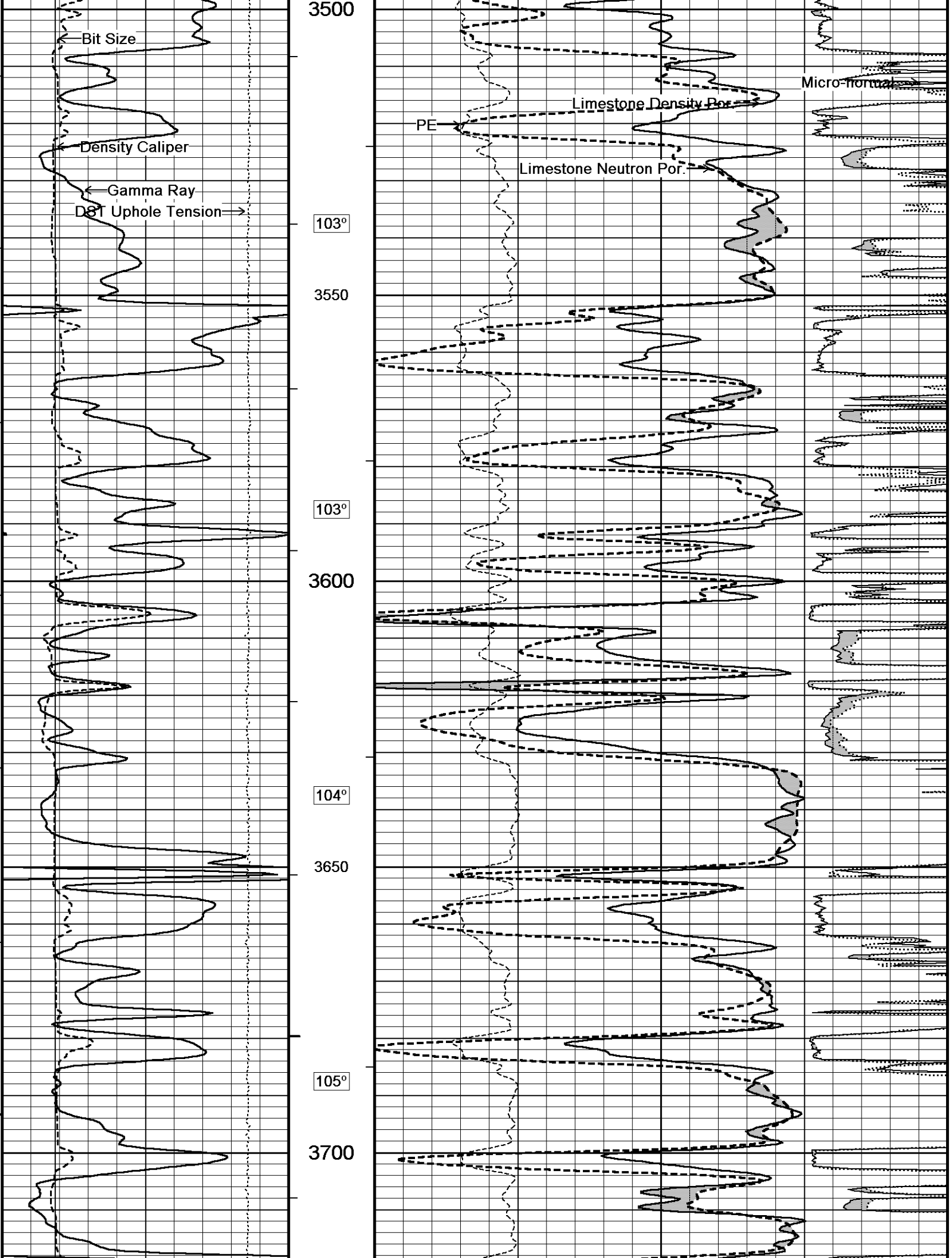


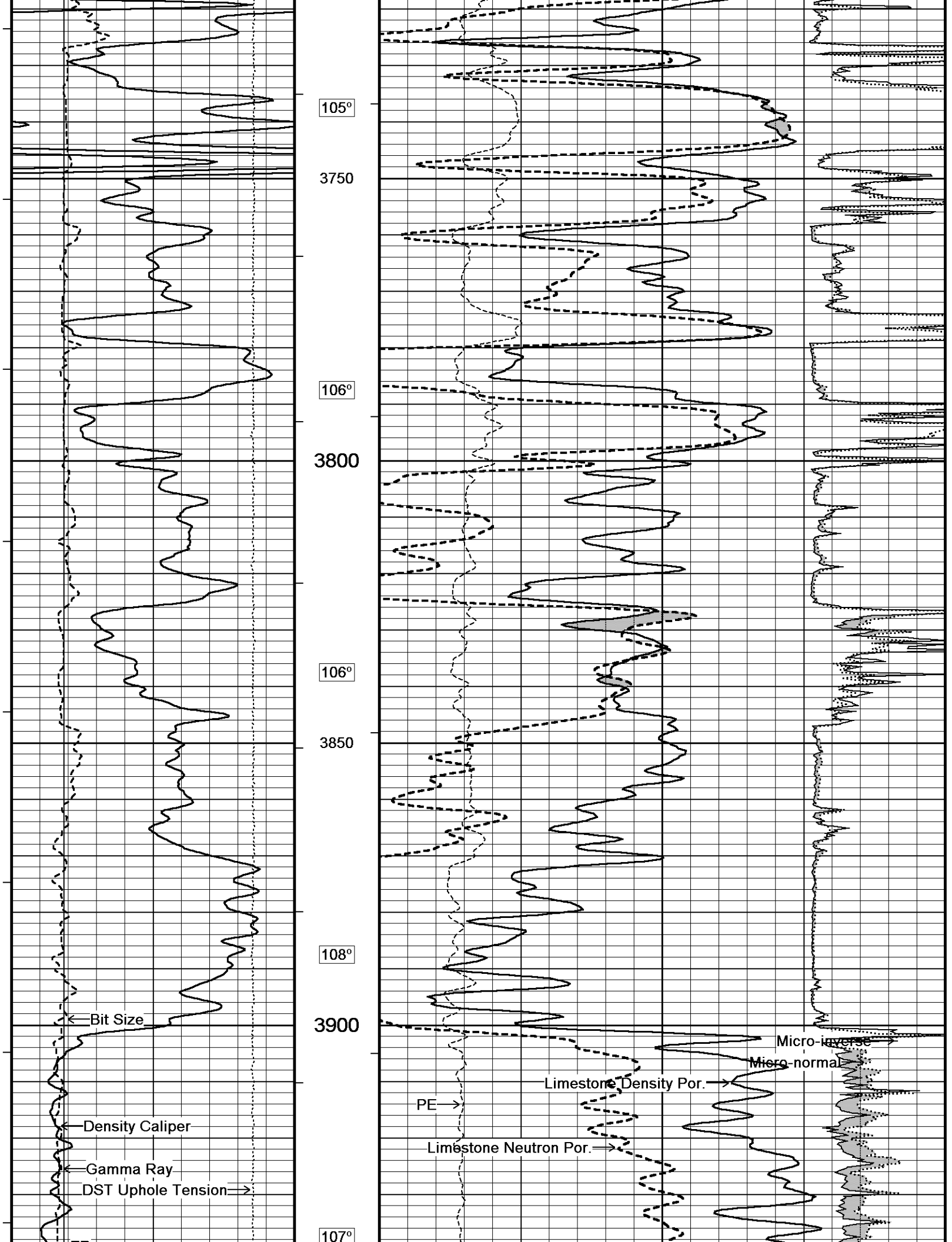


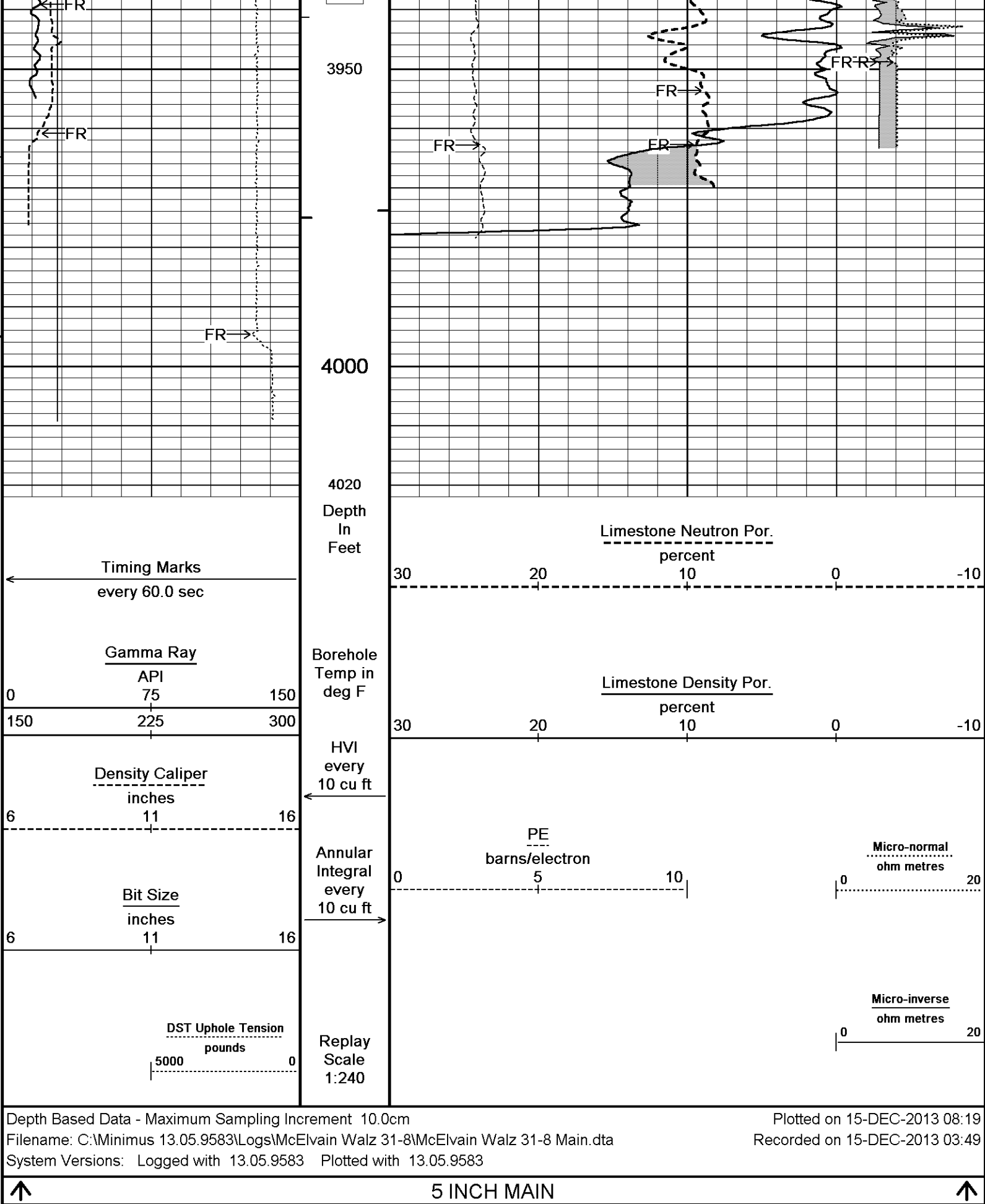


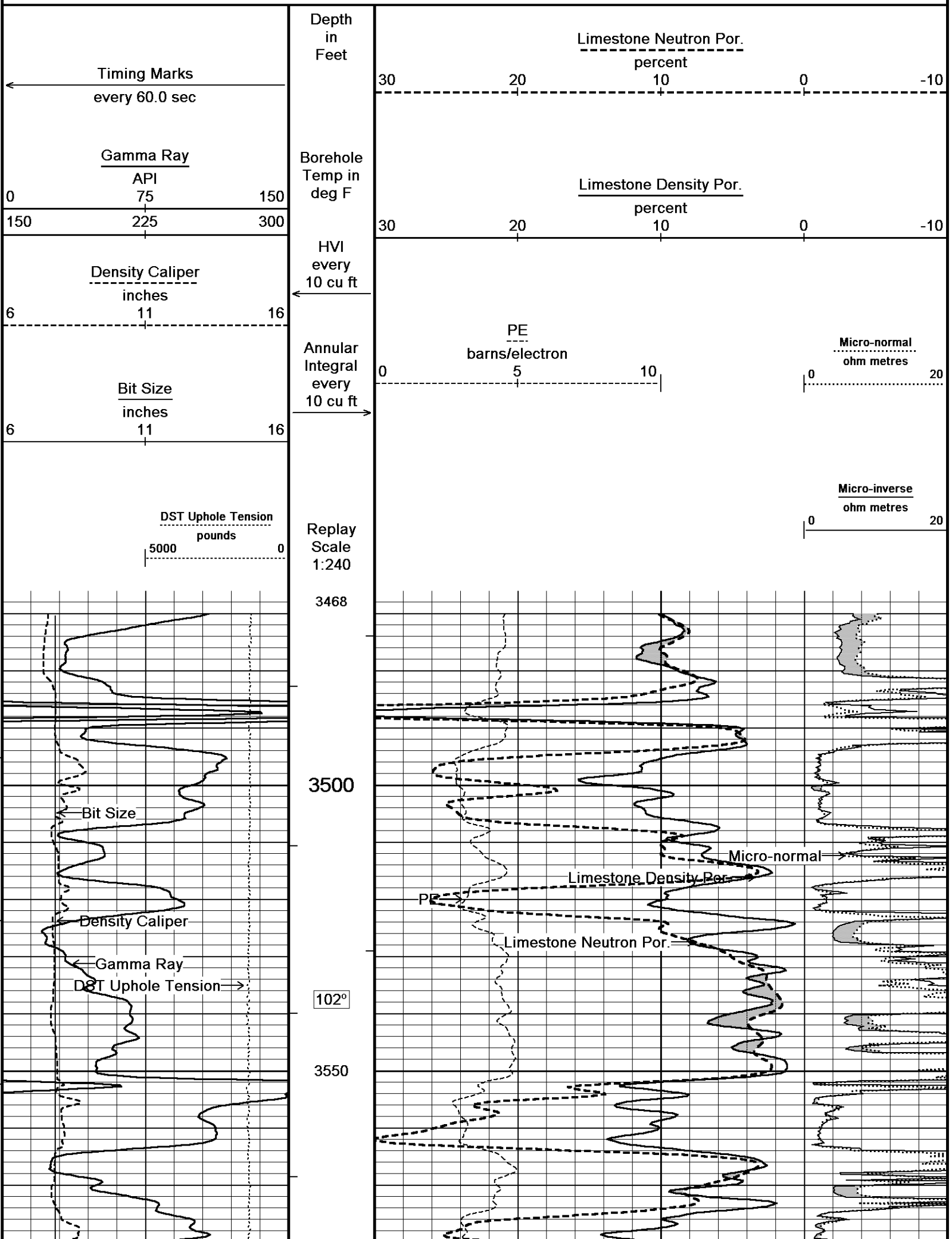


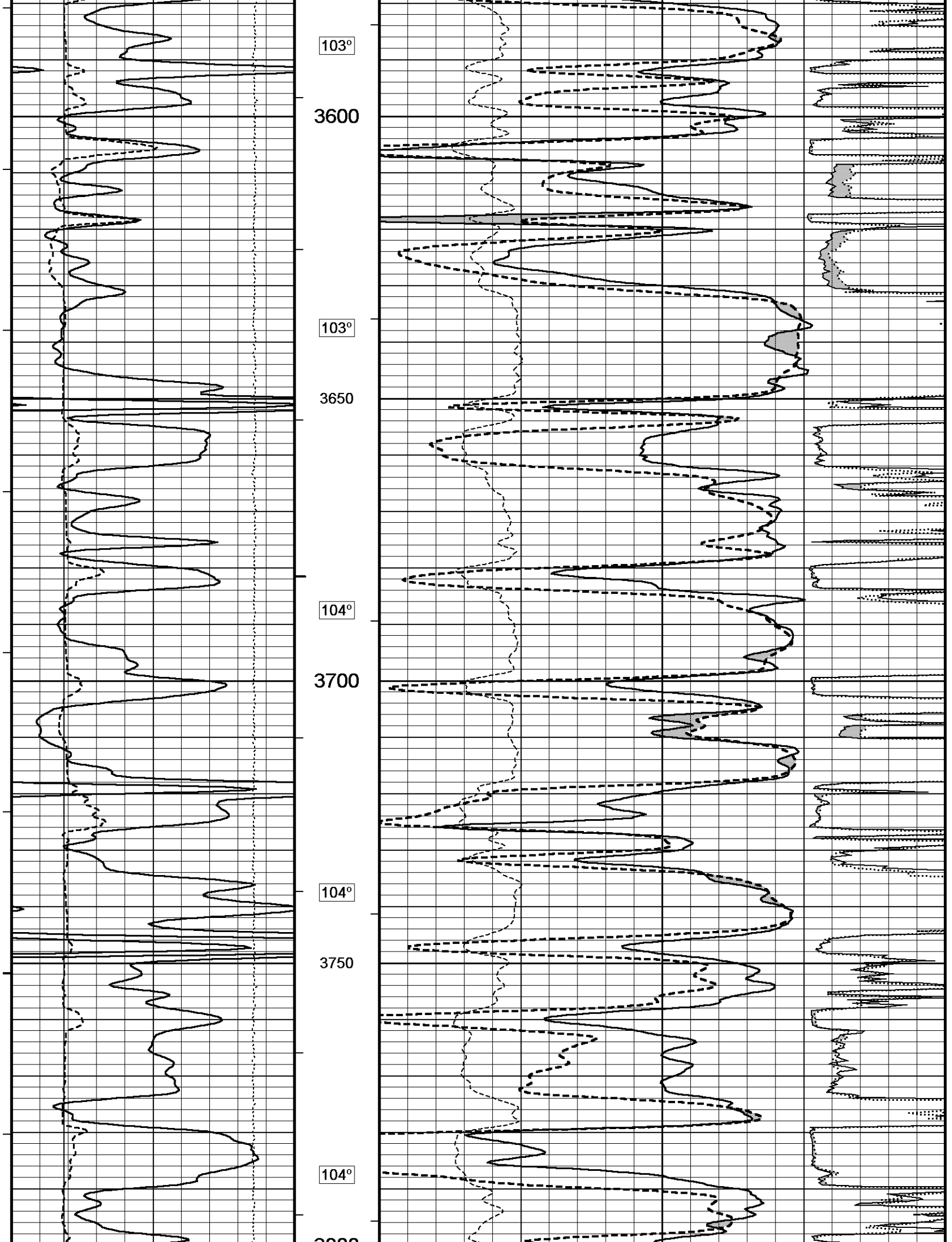


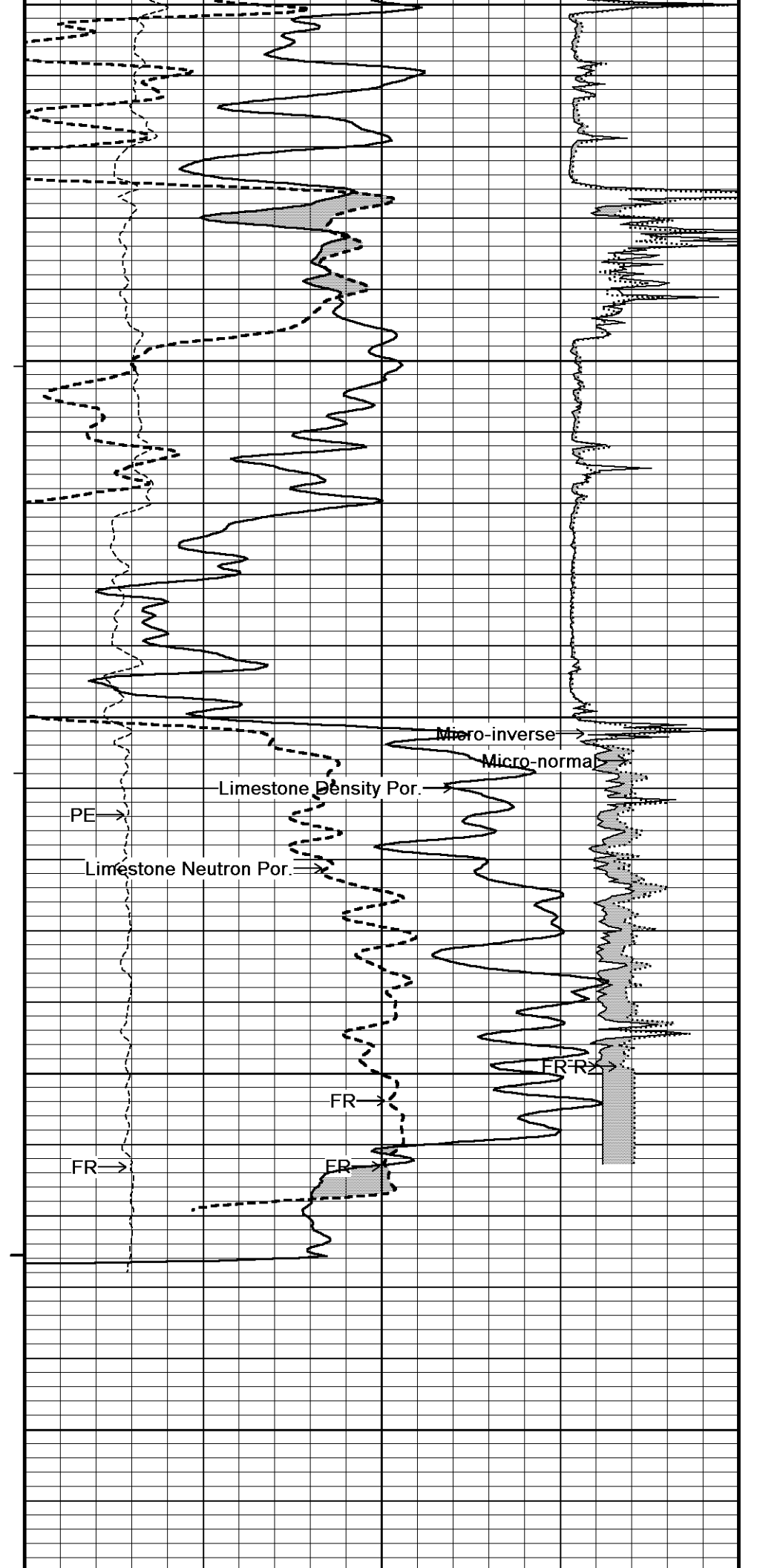
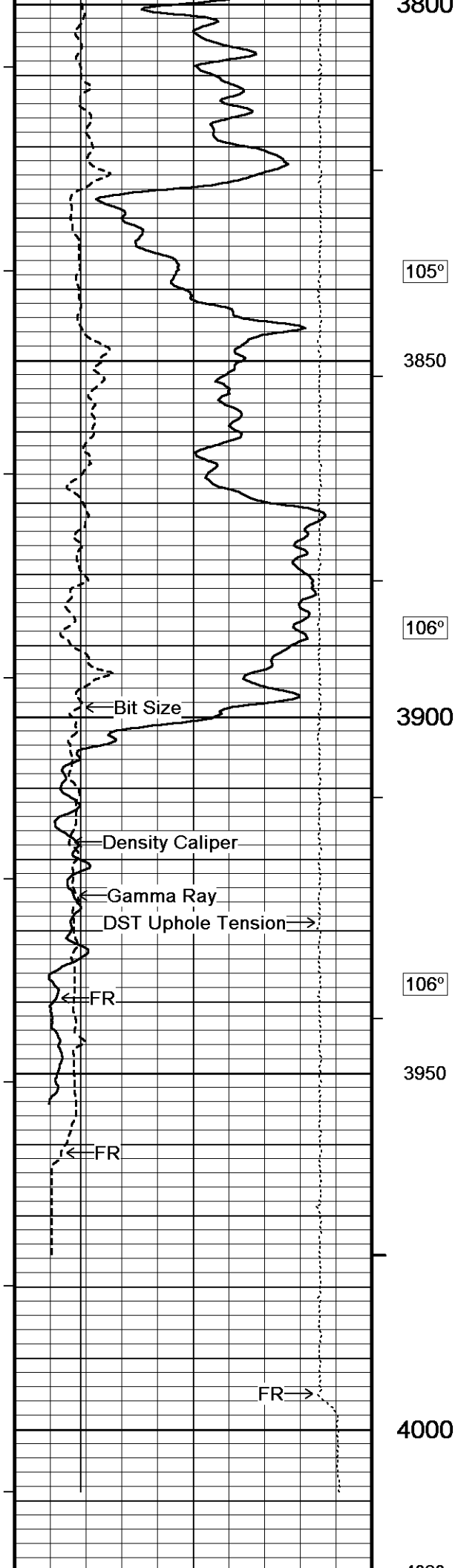


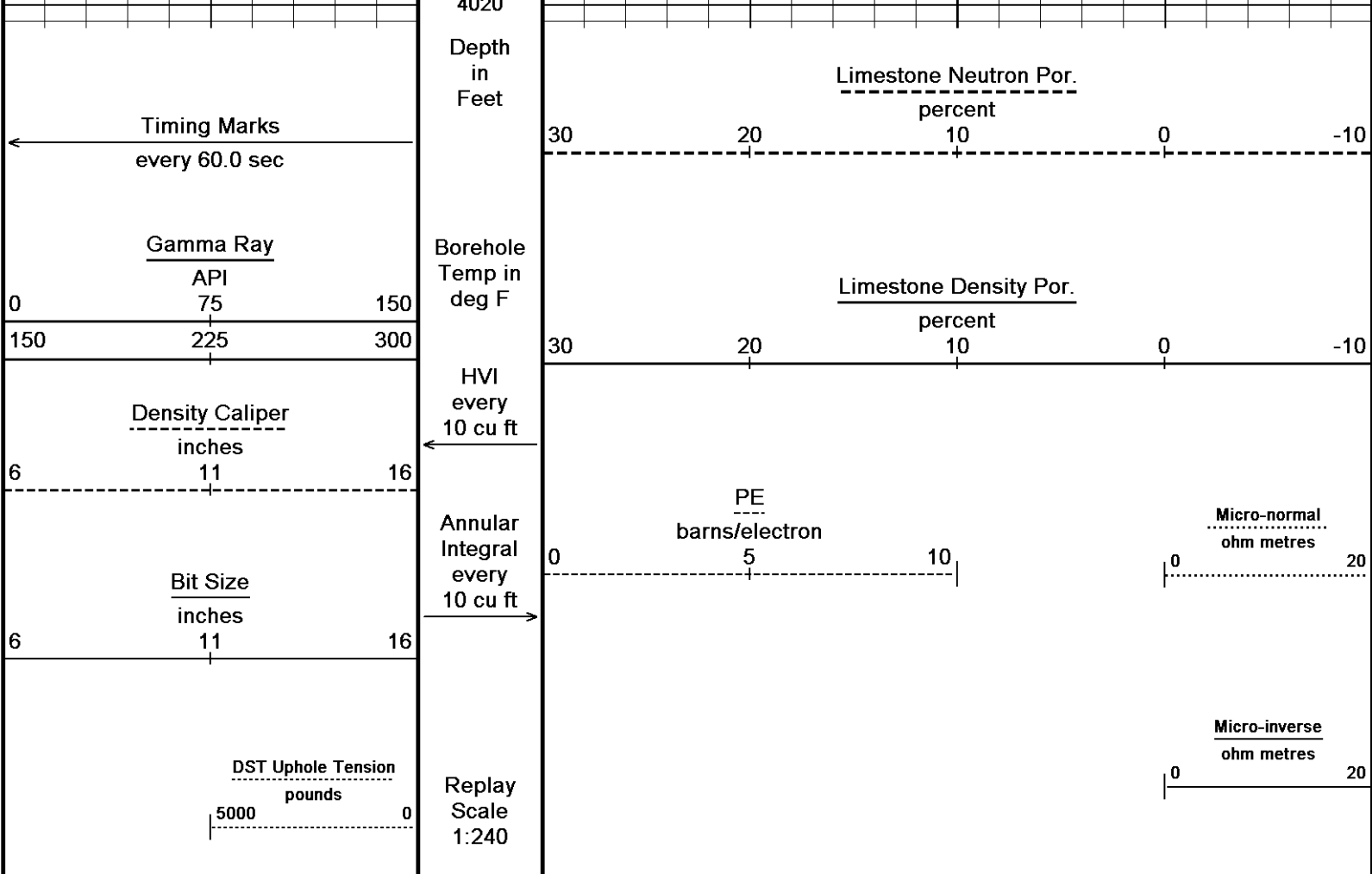












Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 15-DEC-2013 08:19

Filename: C:\Minimus 13.05.9583\Logs\McElvain Walz 31-8\McElvain Walz 31-8 Repeat.dta

Recorded on 15-DEC-2013 03:12

System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑

REPEAT SECTION

↑

↓

5 INCH MAIN

↓

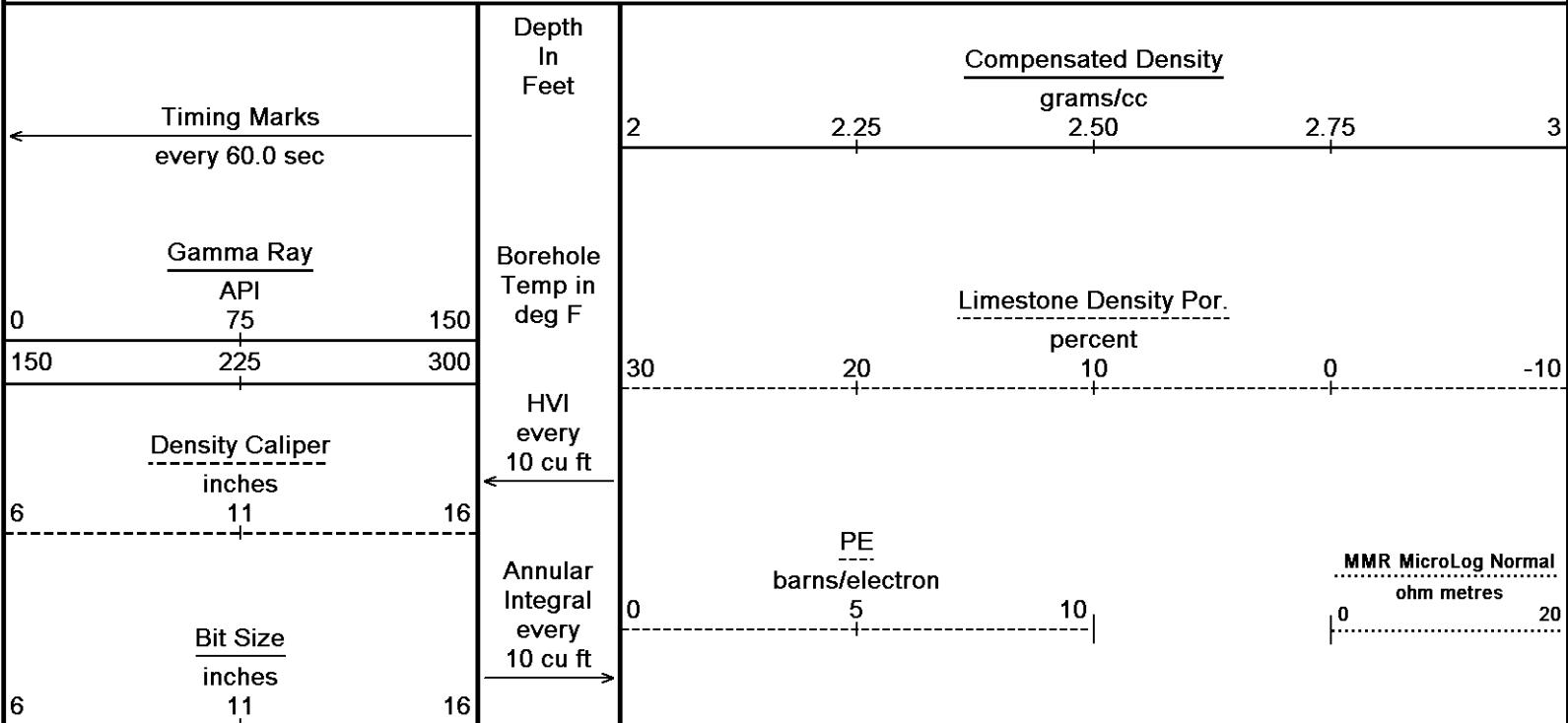
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 15-DEC-2013 08:19

Filename: C:\Minimus 13.05.9583\Logs\McElvain Walz 31-8\McElvain Walz 31-8 Main.dta

Recorded on 15-DEC-2013 03:49

System Versions: Logged with 13.05.9583 Plotted with 13.05.9583



DST Uphole Tension
pounds

5000

0

Replay
Scale
1:240

328

Casing
{350}

Density Caliper

Gamma Ray

DST Uphole Tension

1400
80°

400

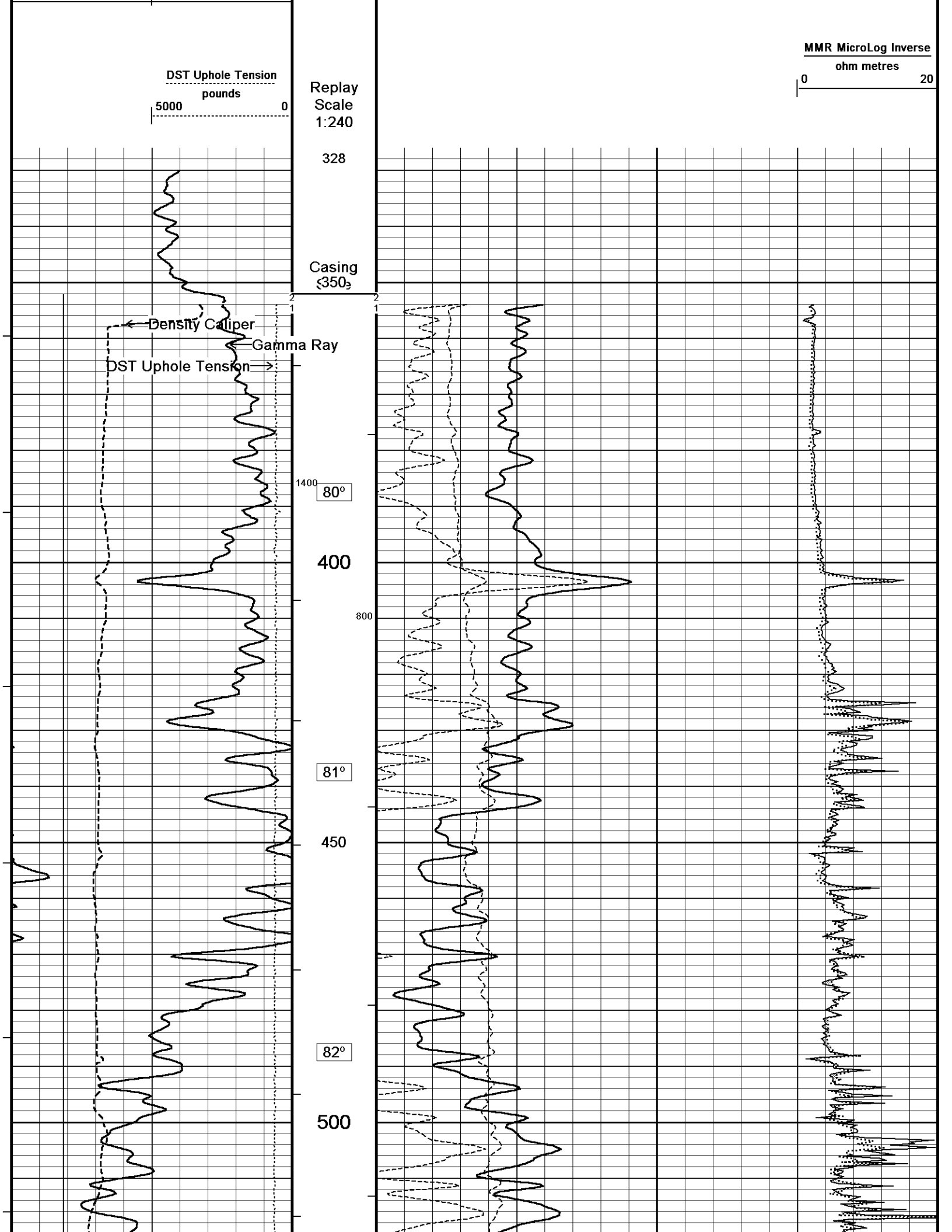
800

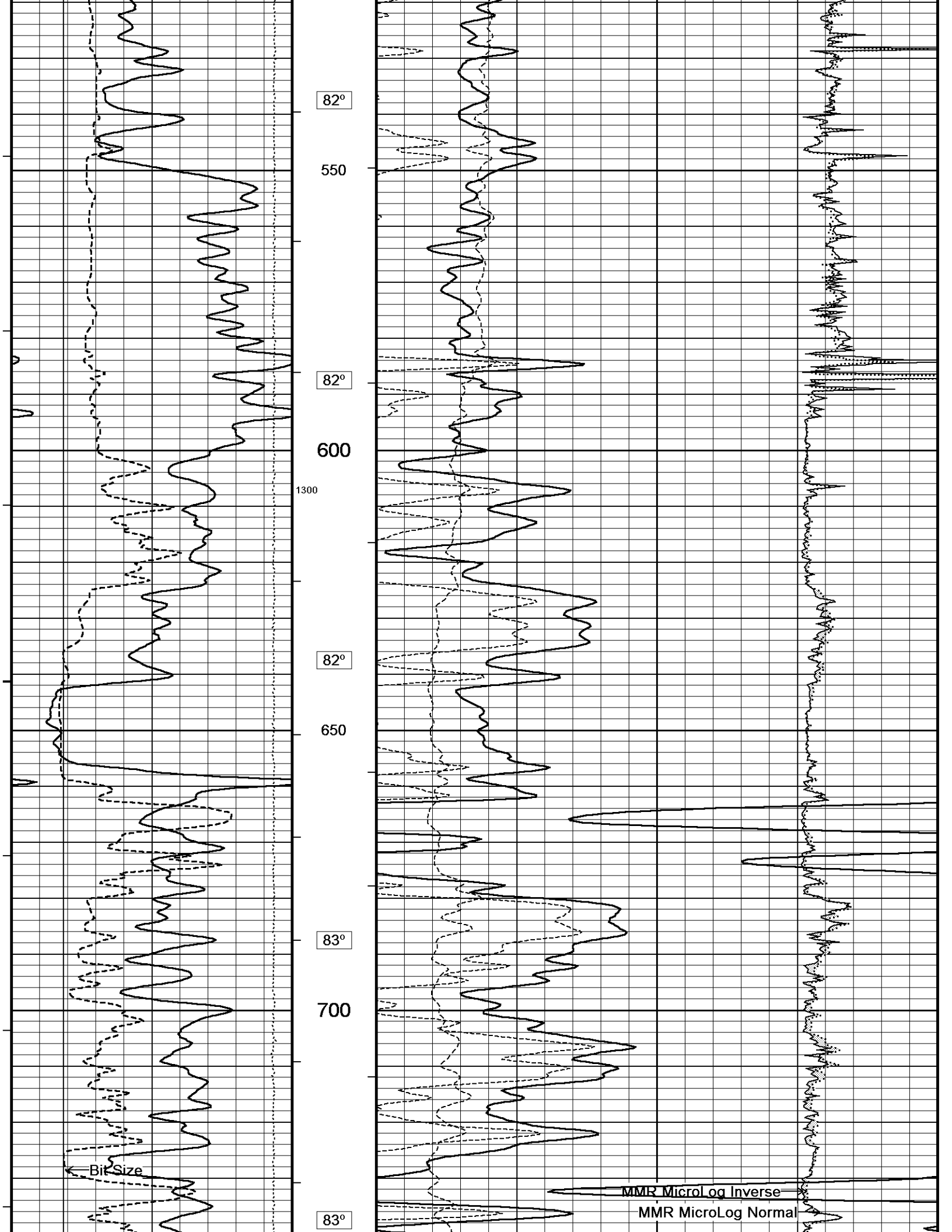
81°

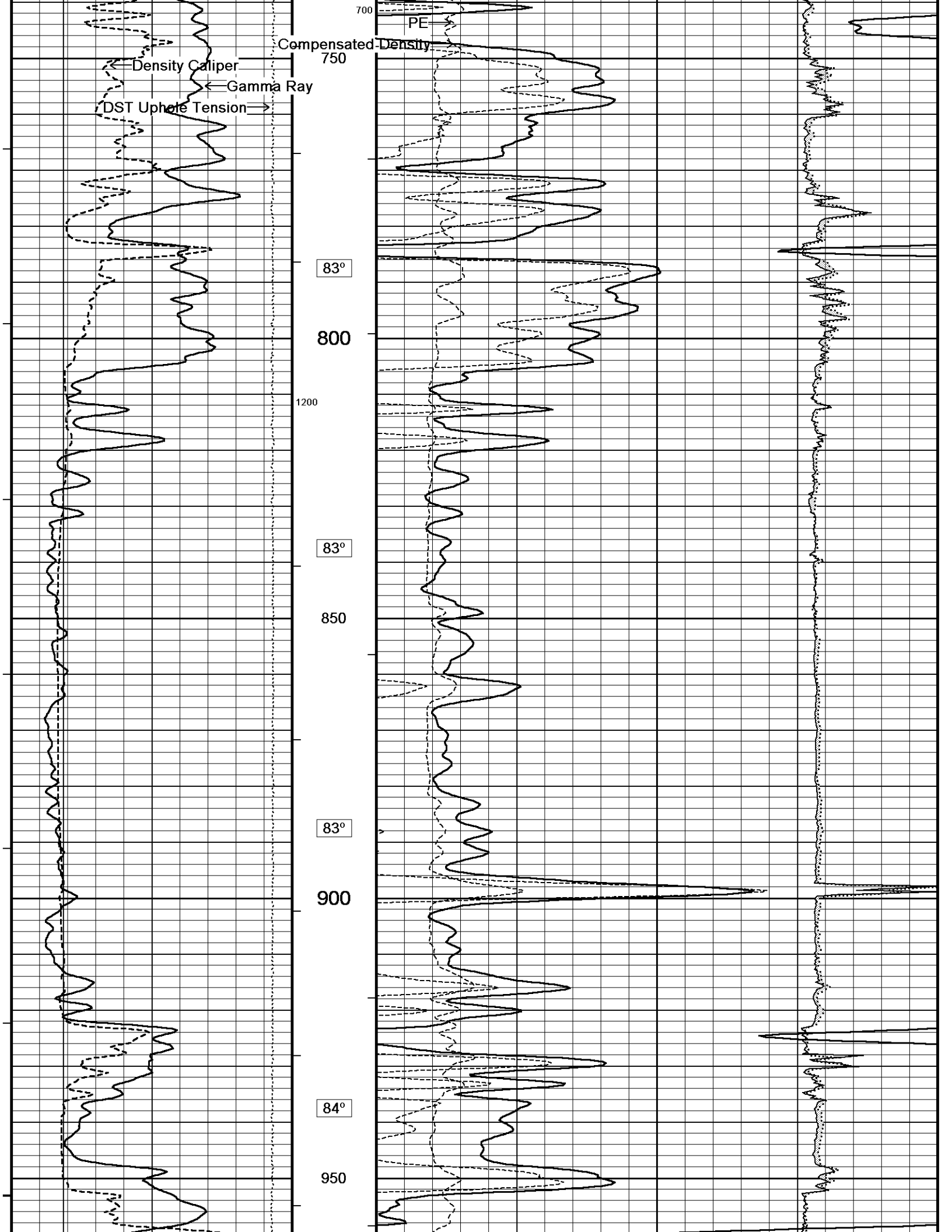
450

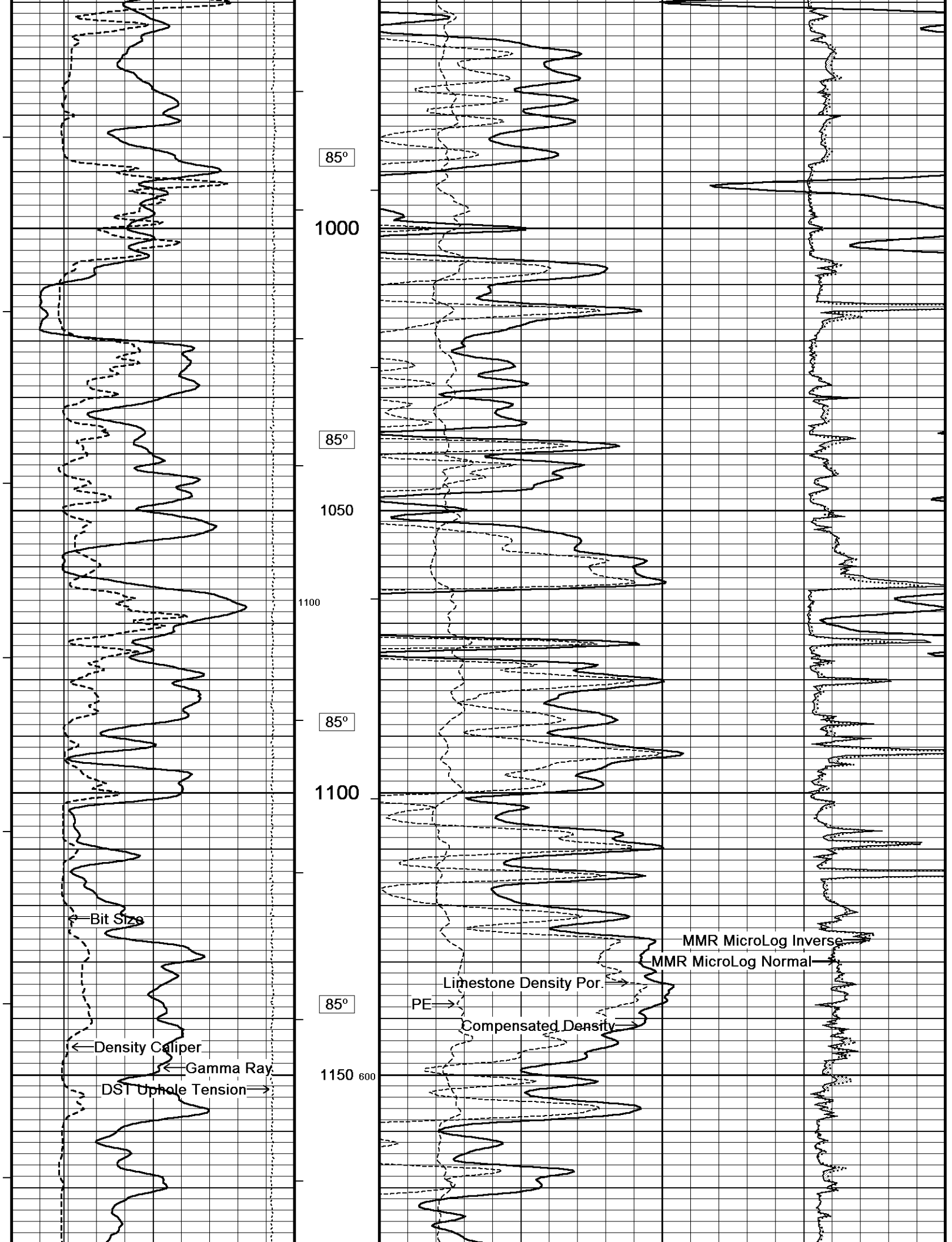
82°

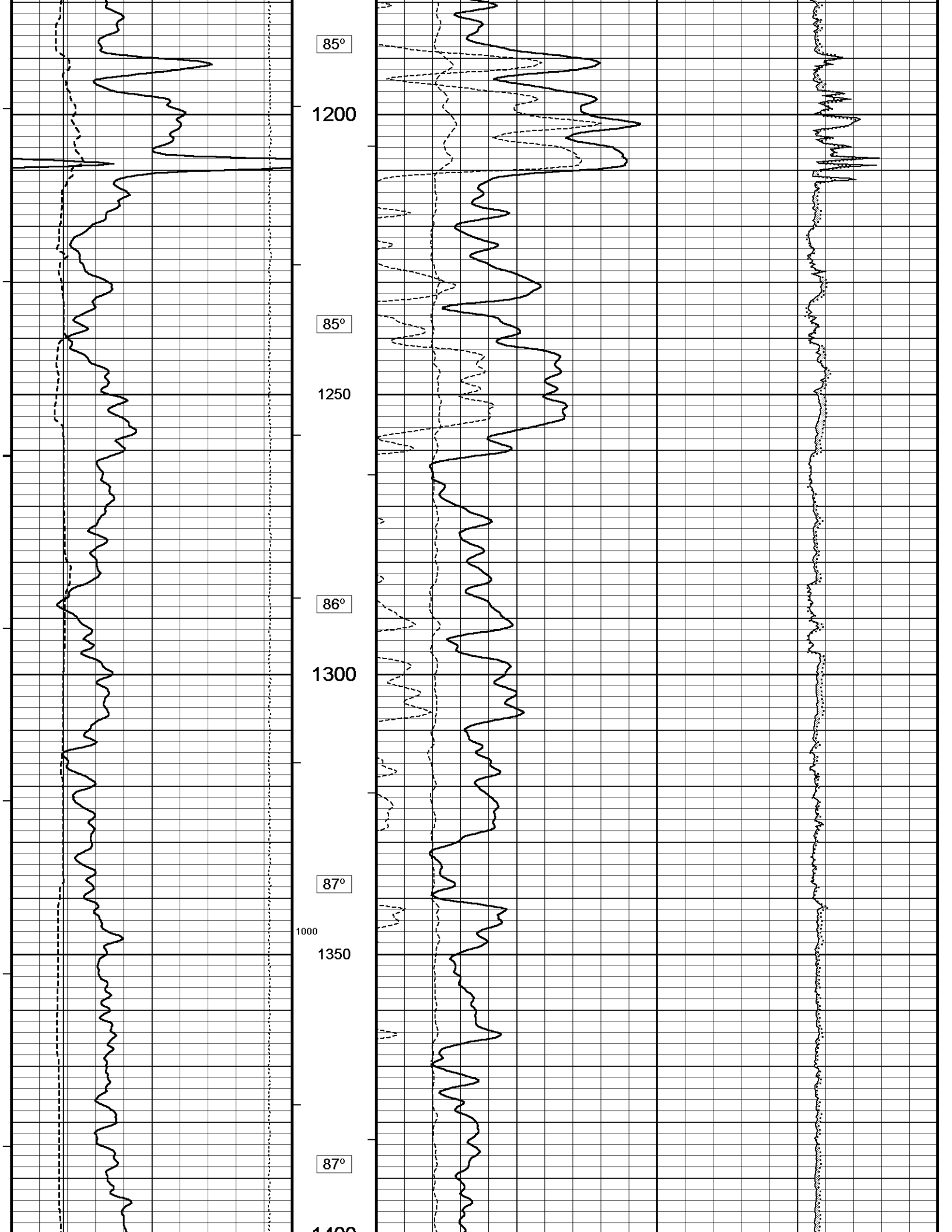
500

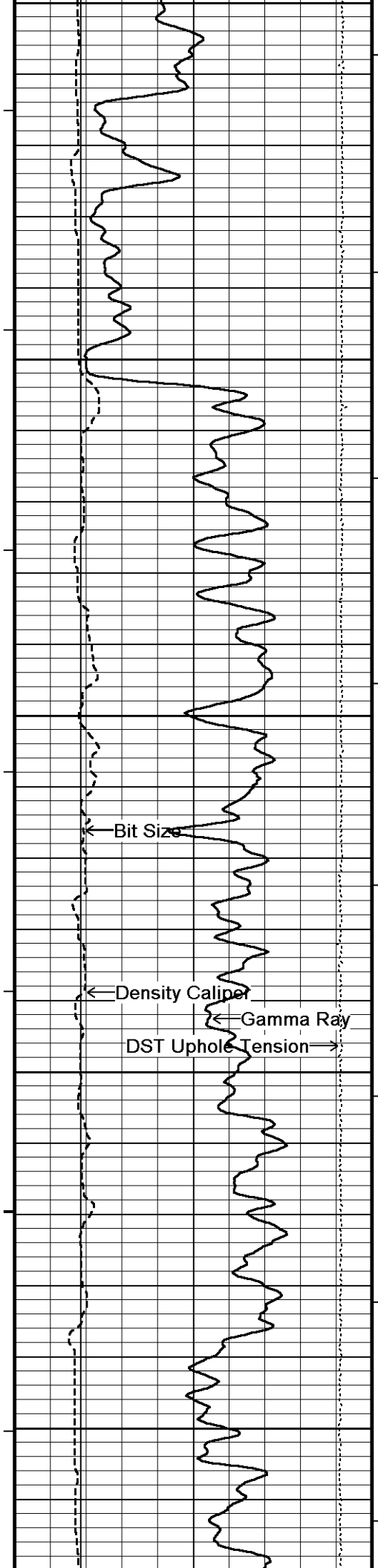












1400

87°

1450

88°

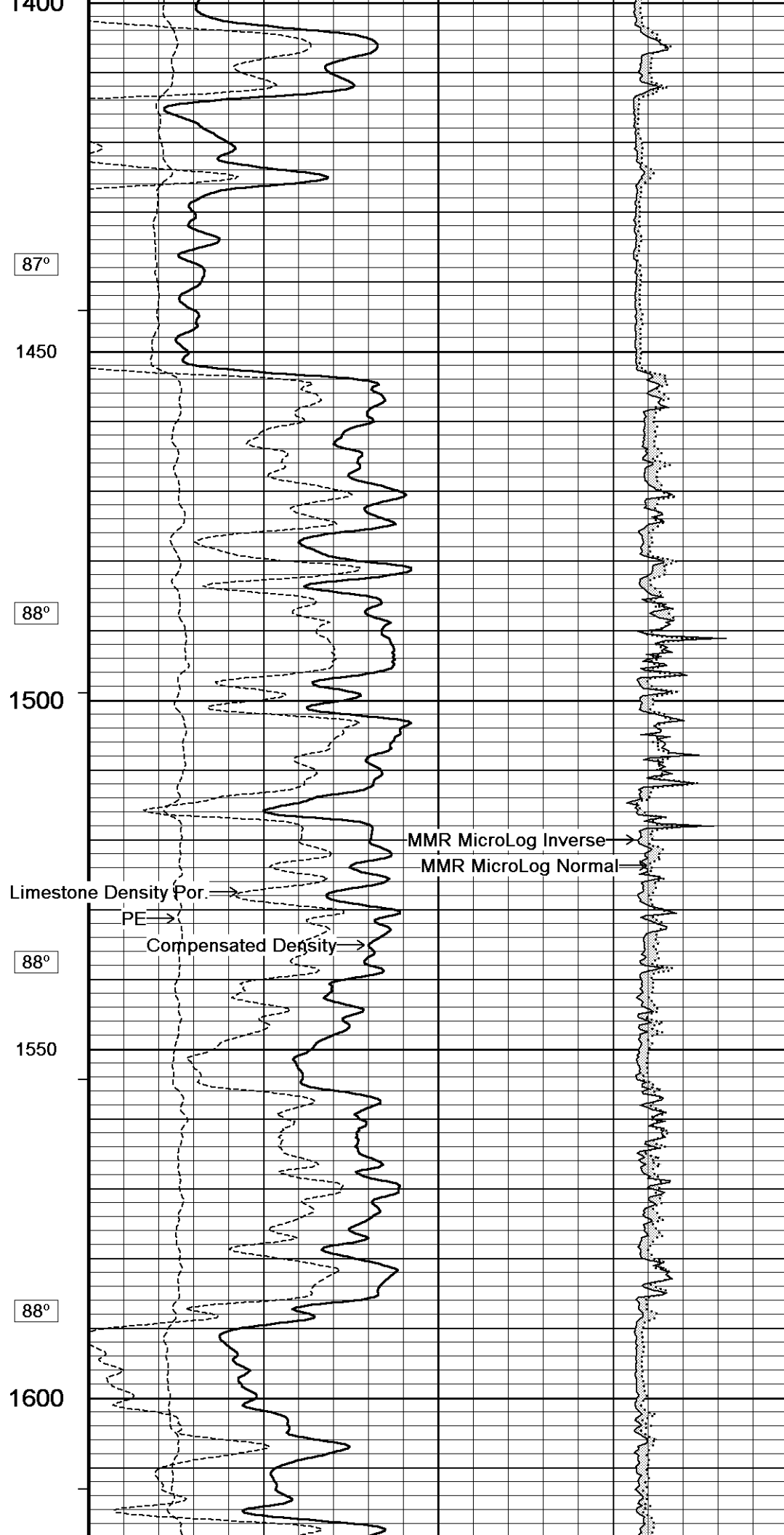
1500

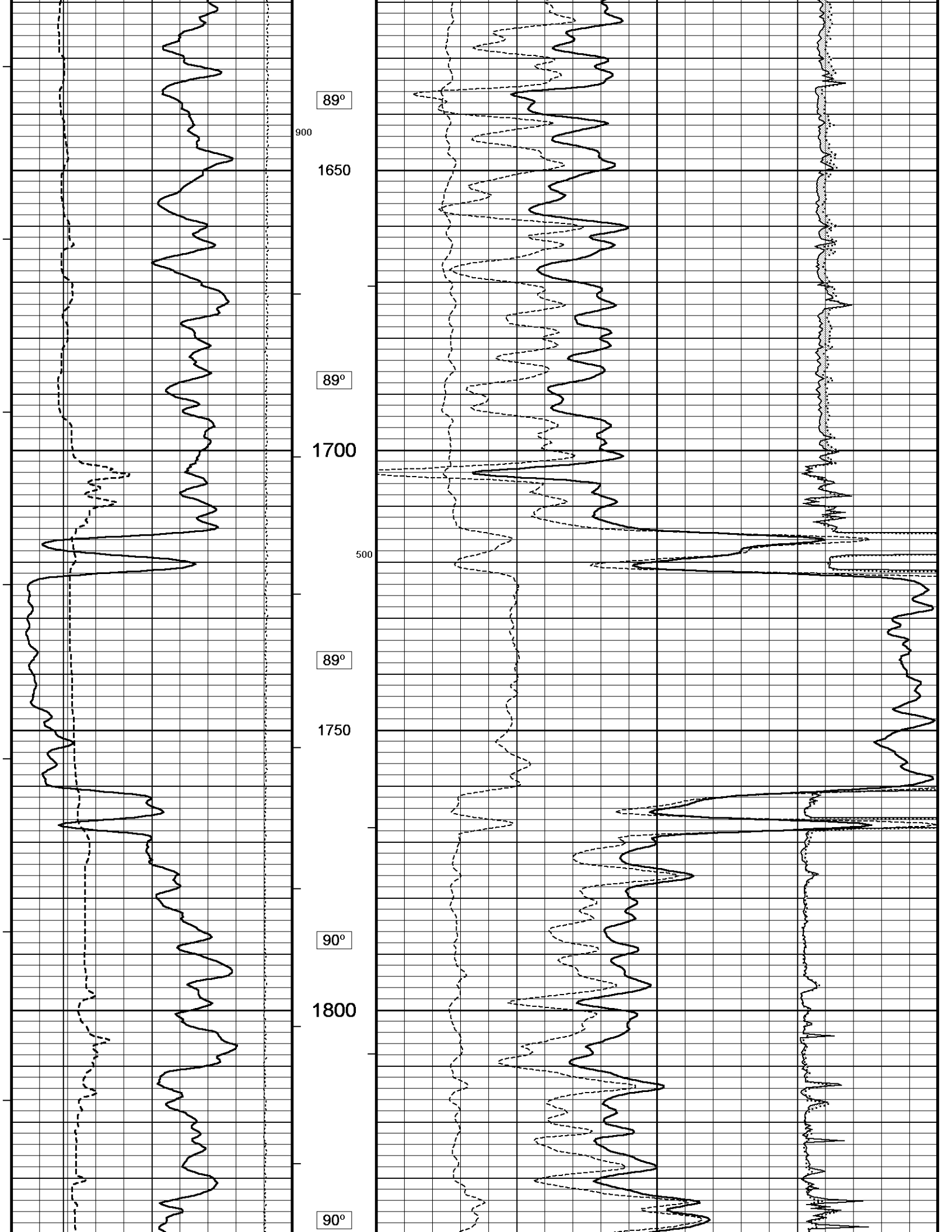
88°

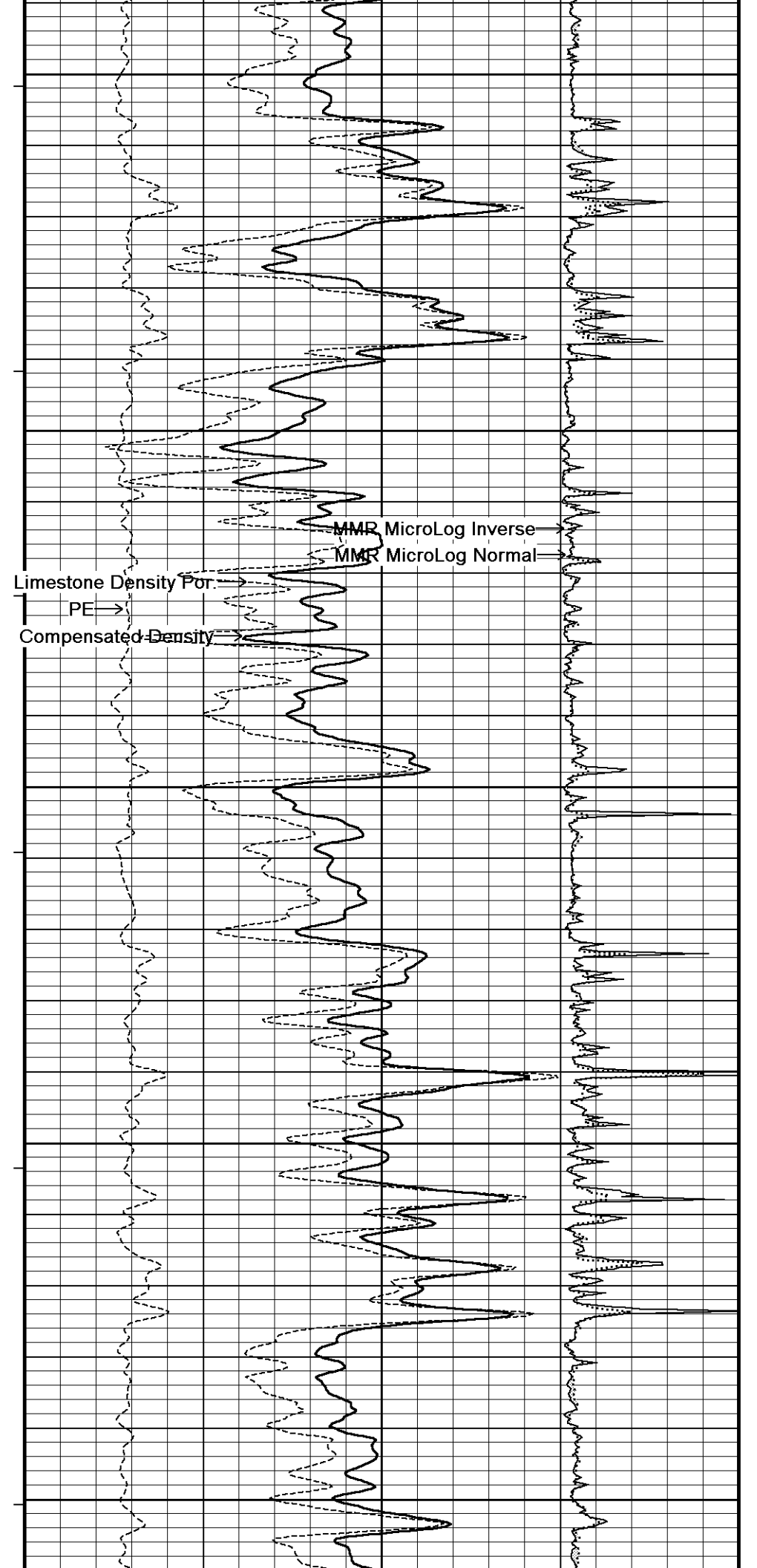
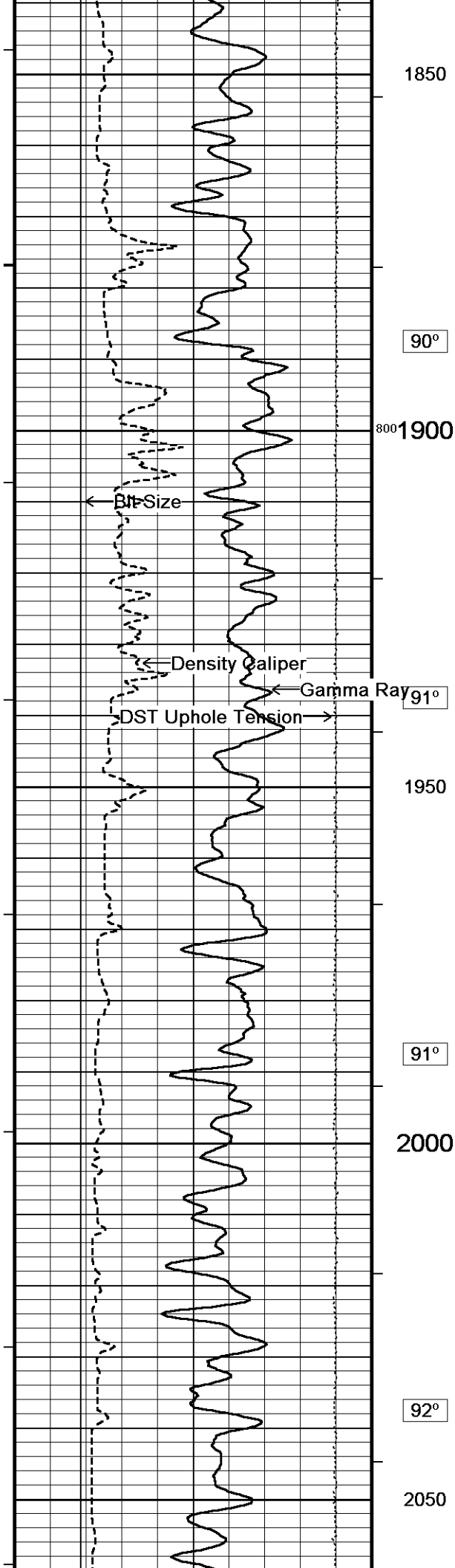
1550

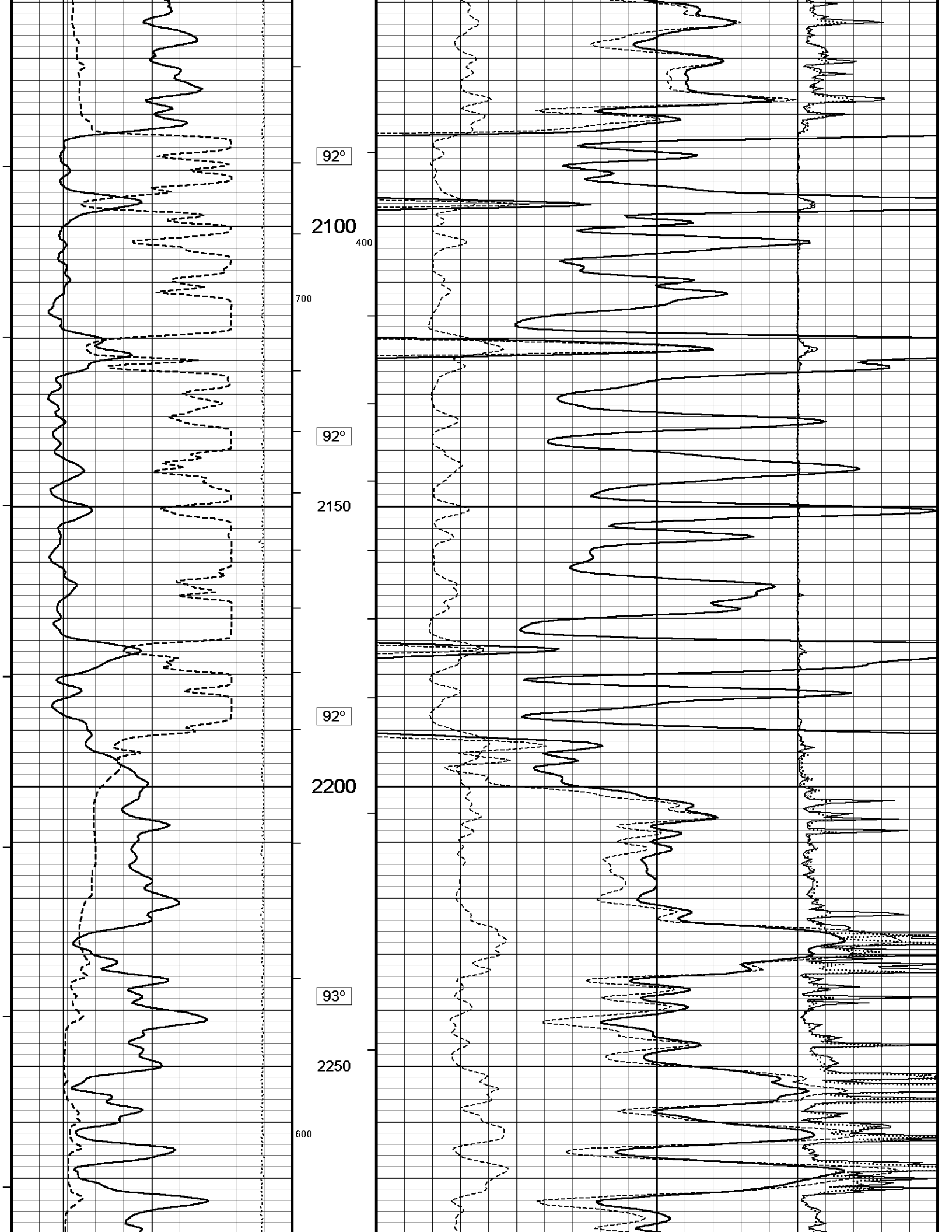
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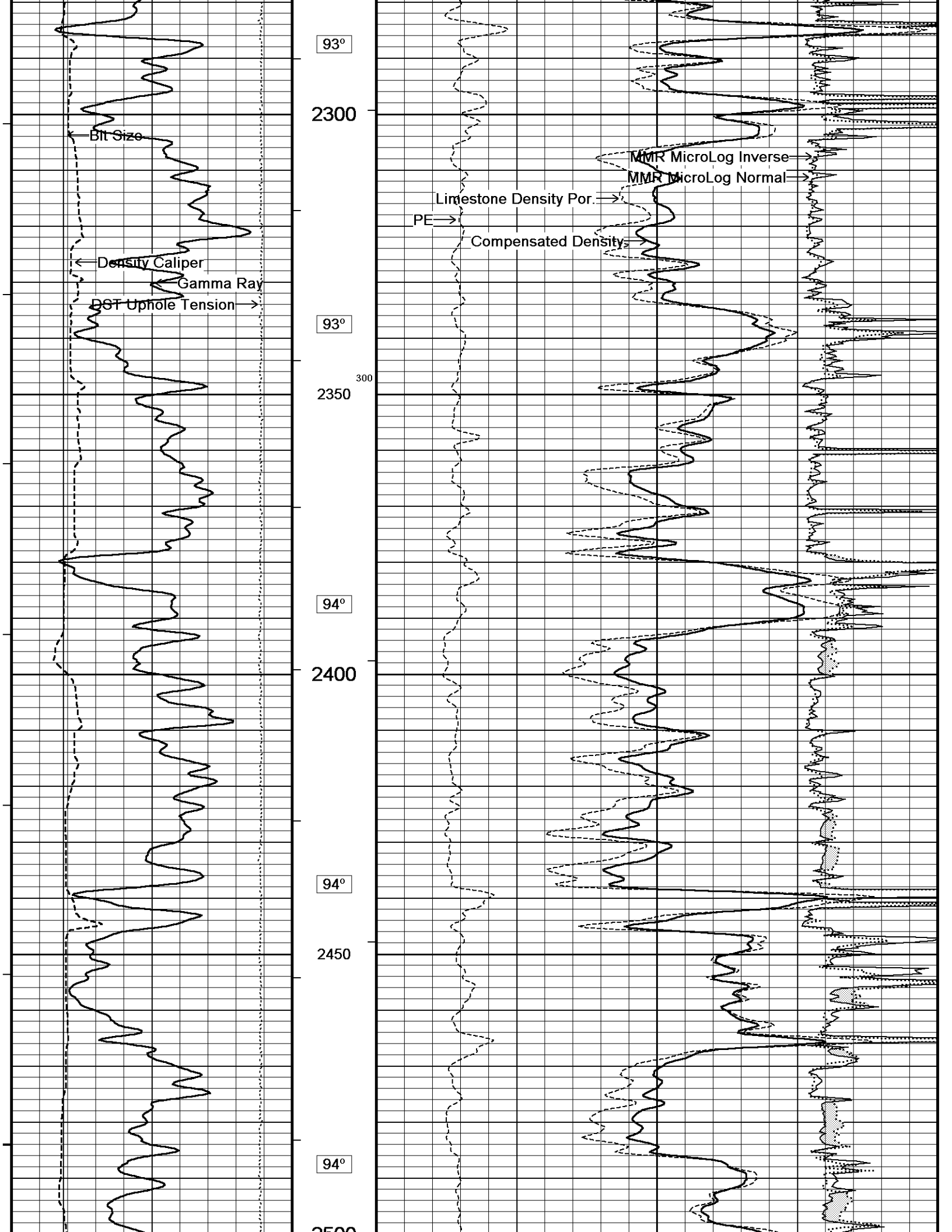
1600

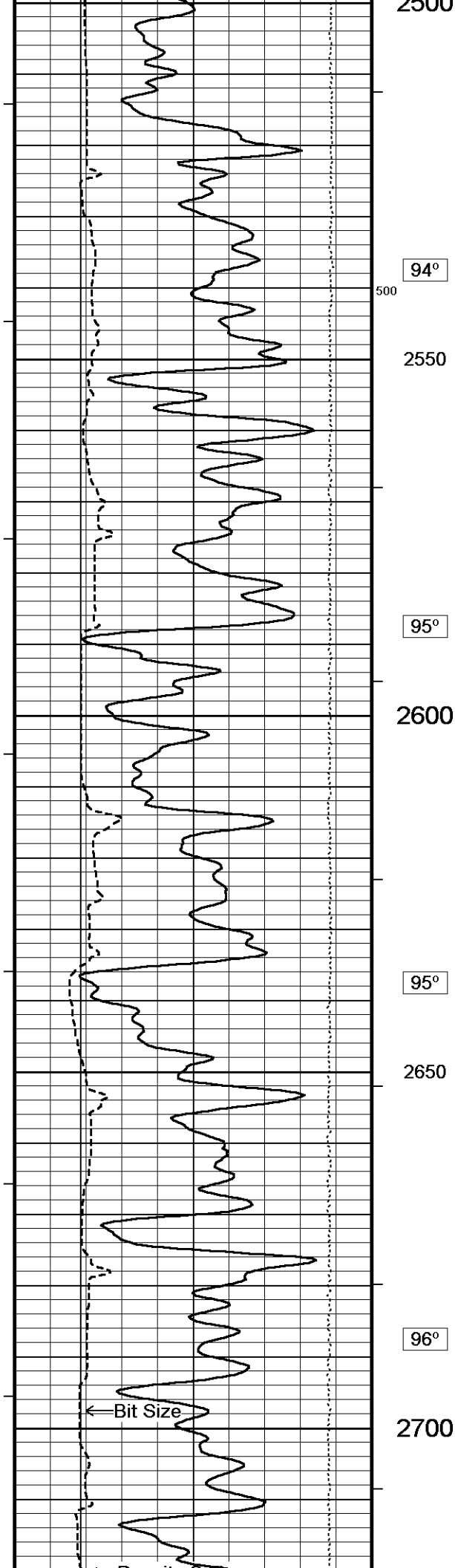












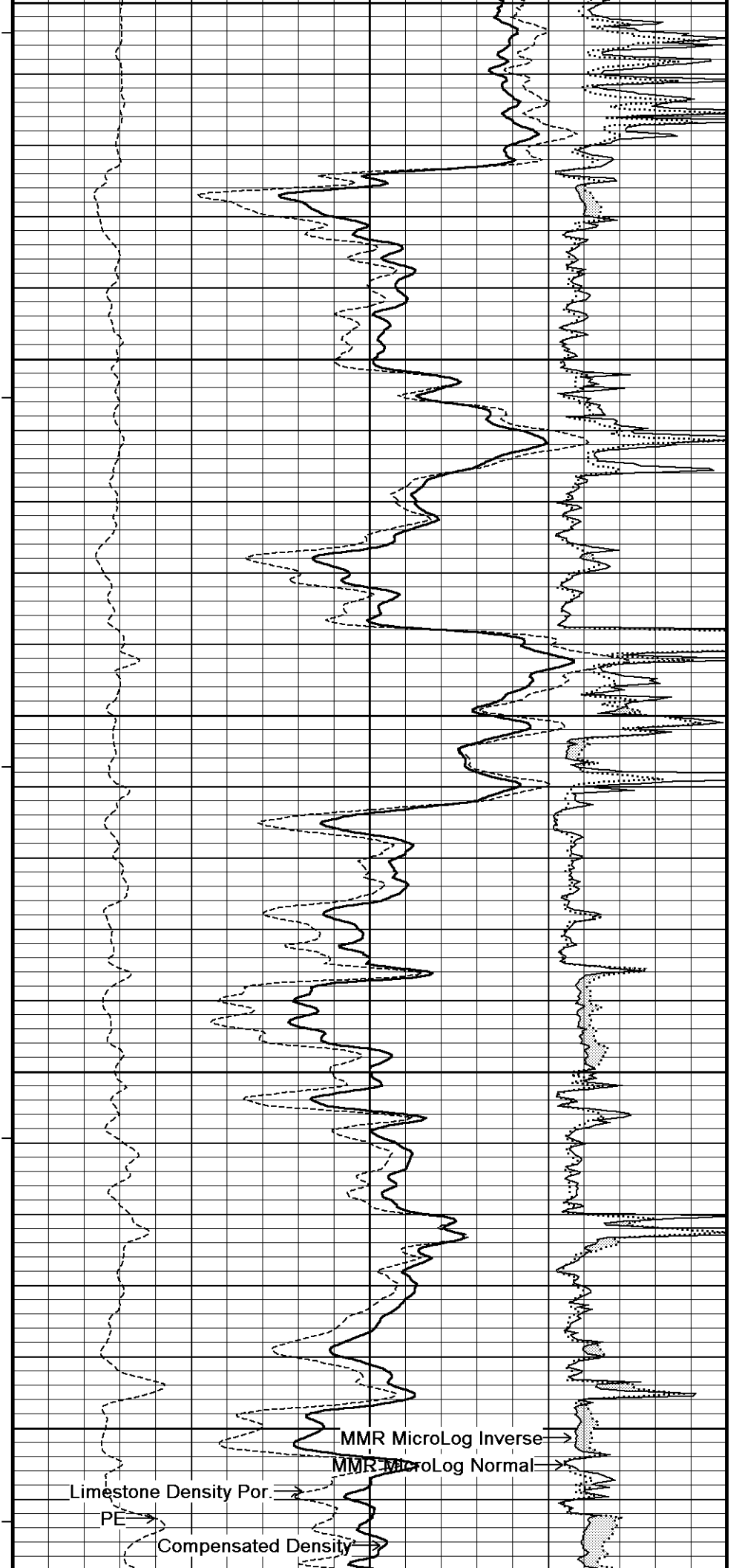
94°

95°

95°

96°

2700



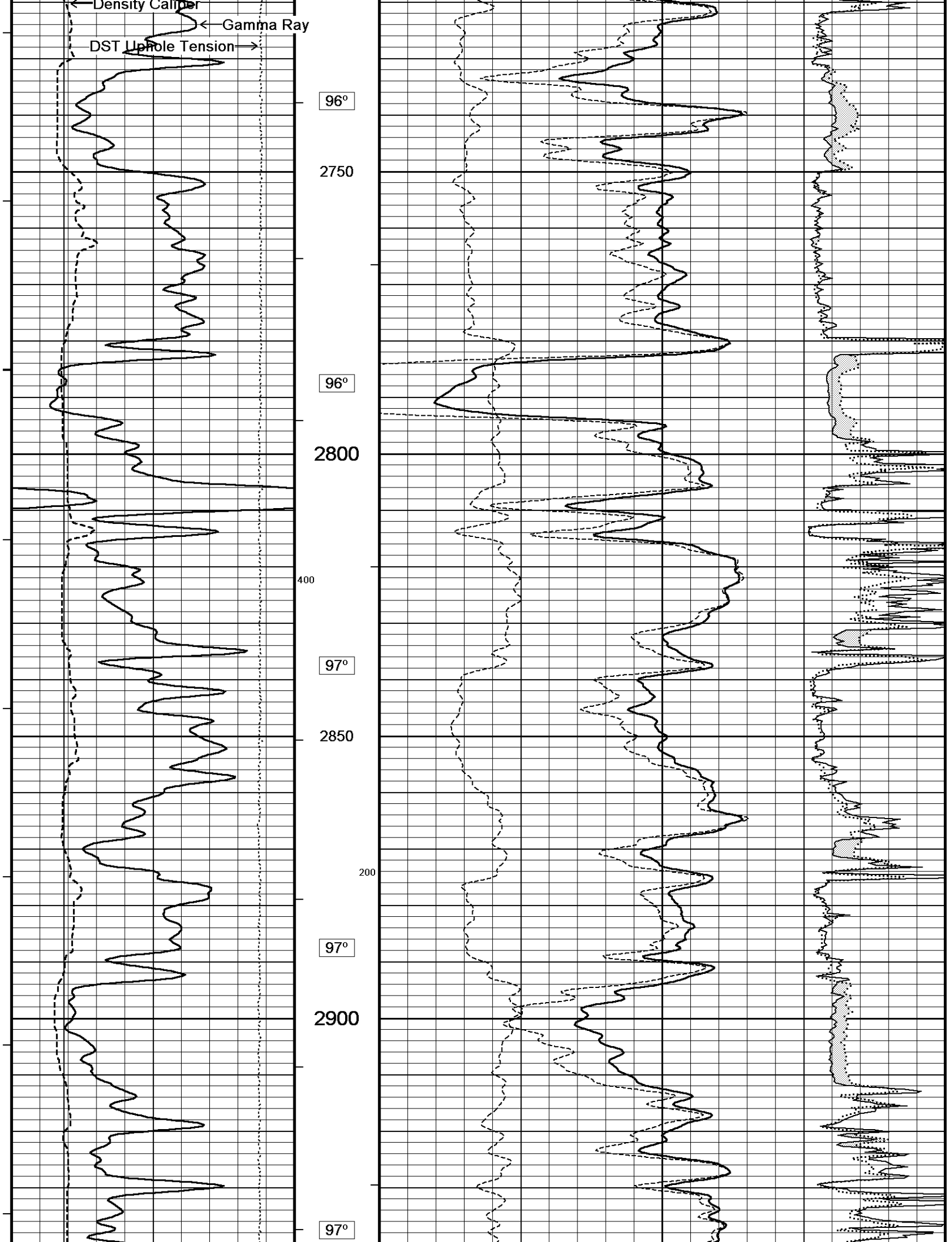
MMR MicroLog Inverse

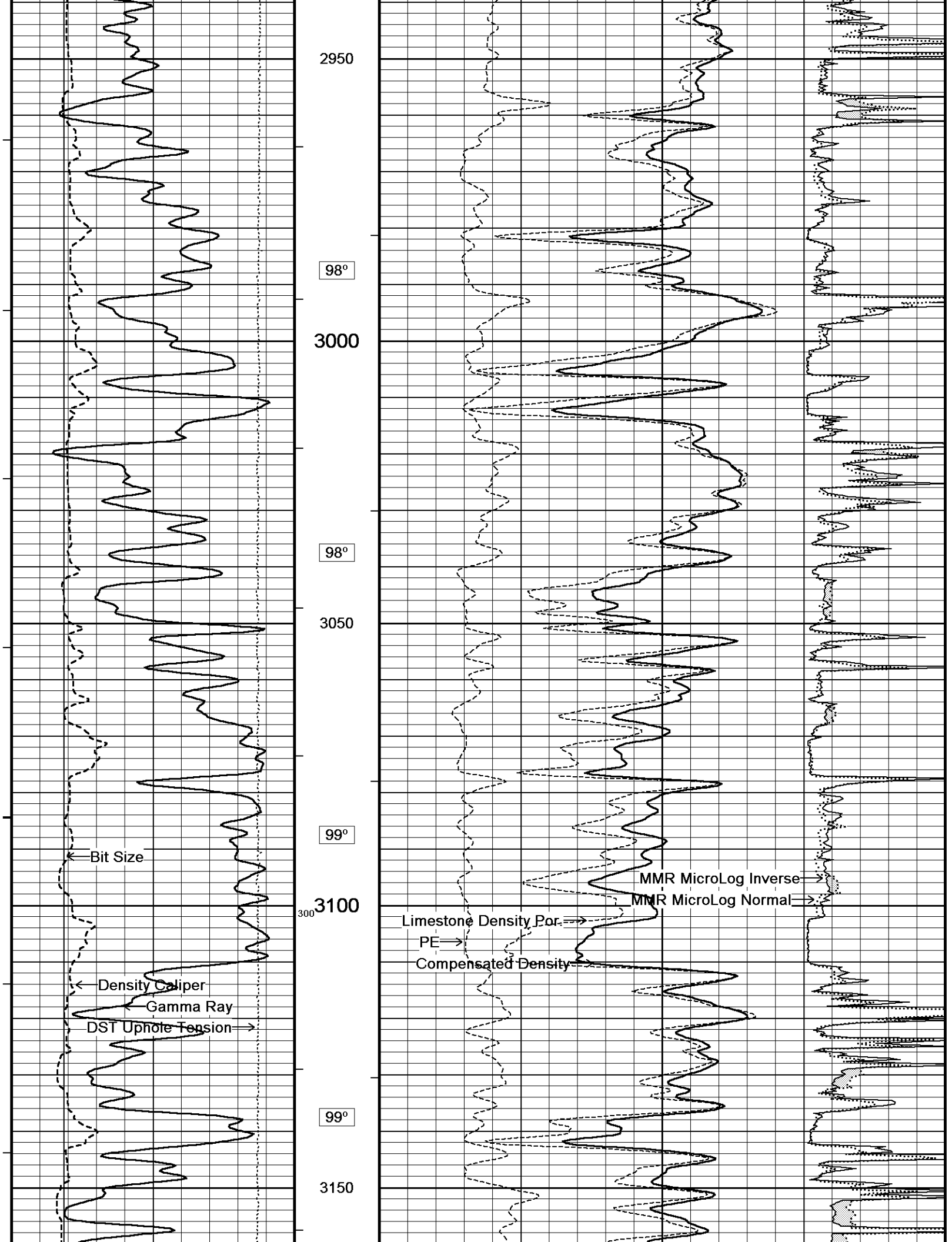
MMR MicroLog Normal

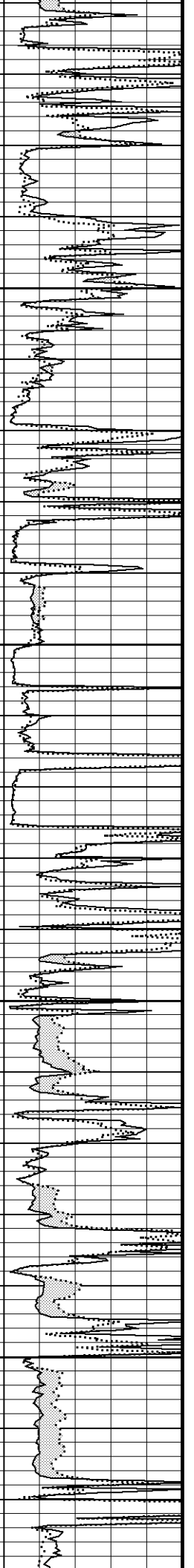
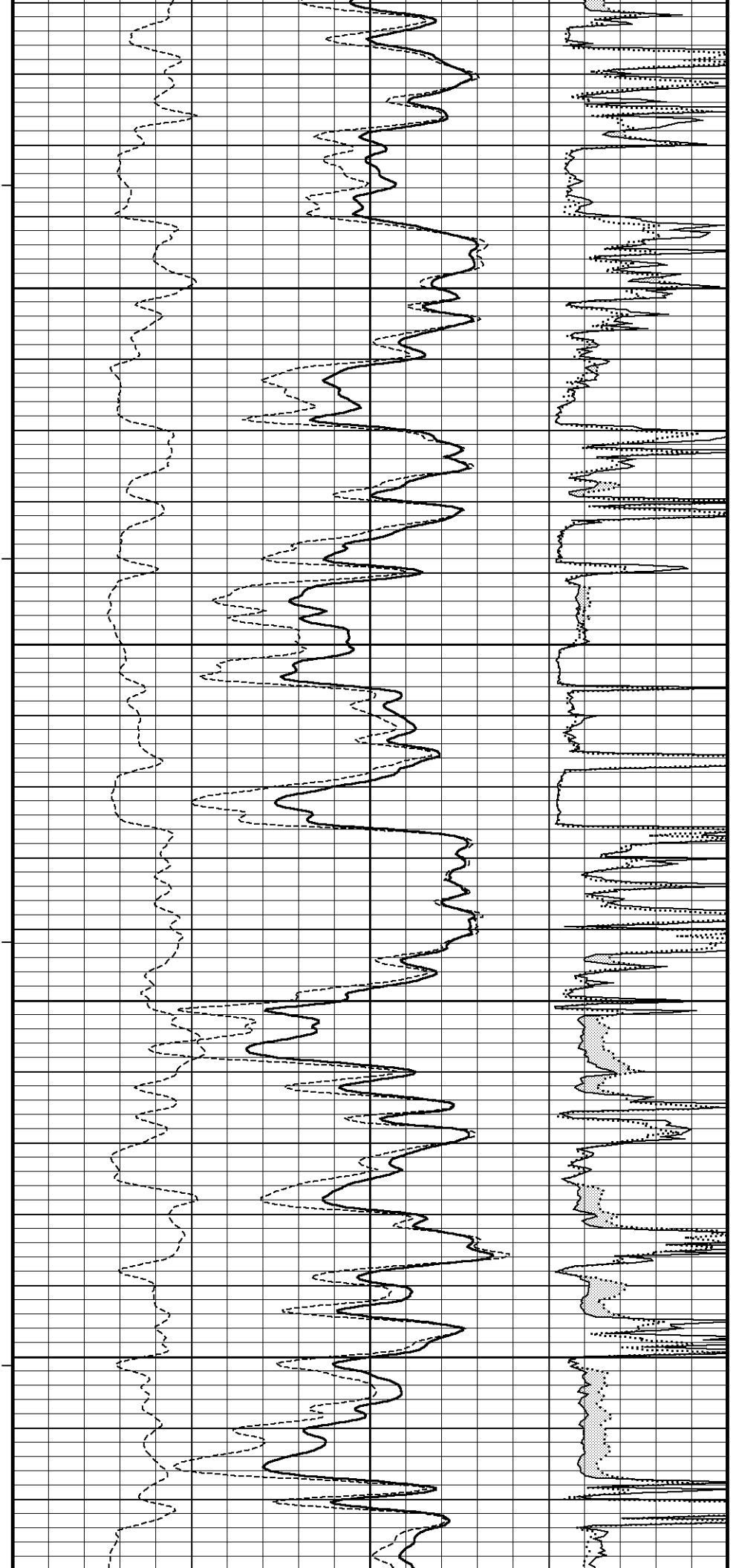
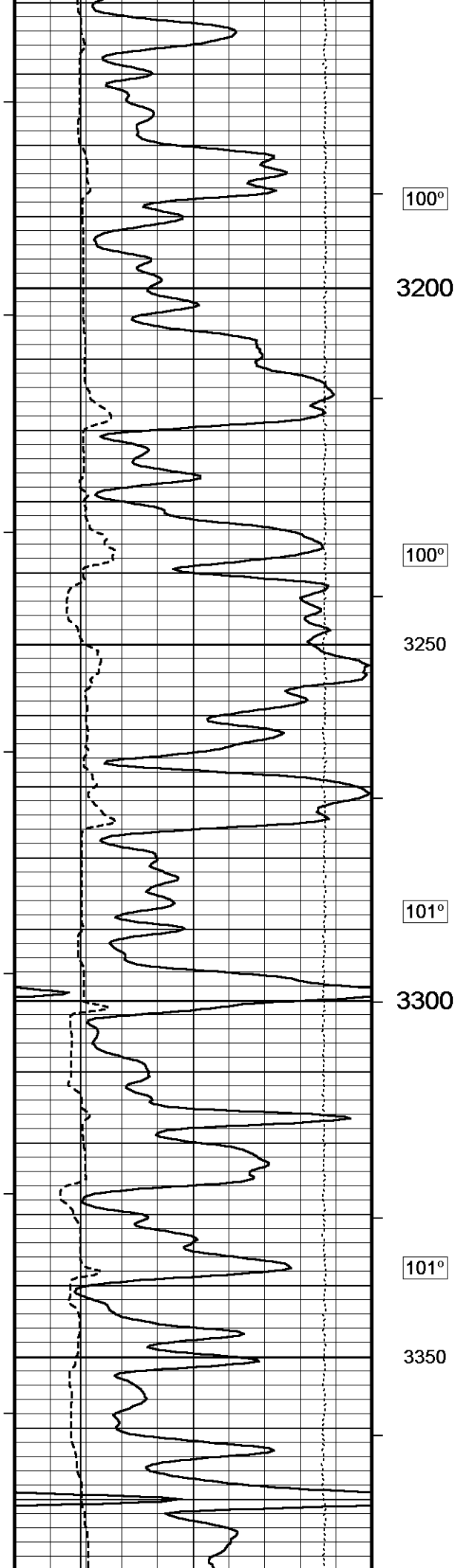
Limestone Density Por.

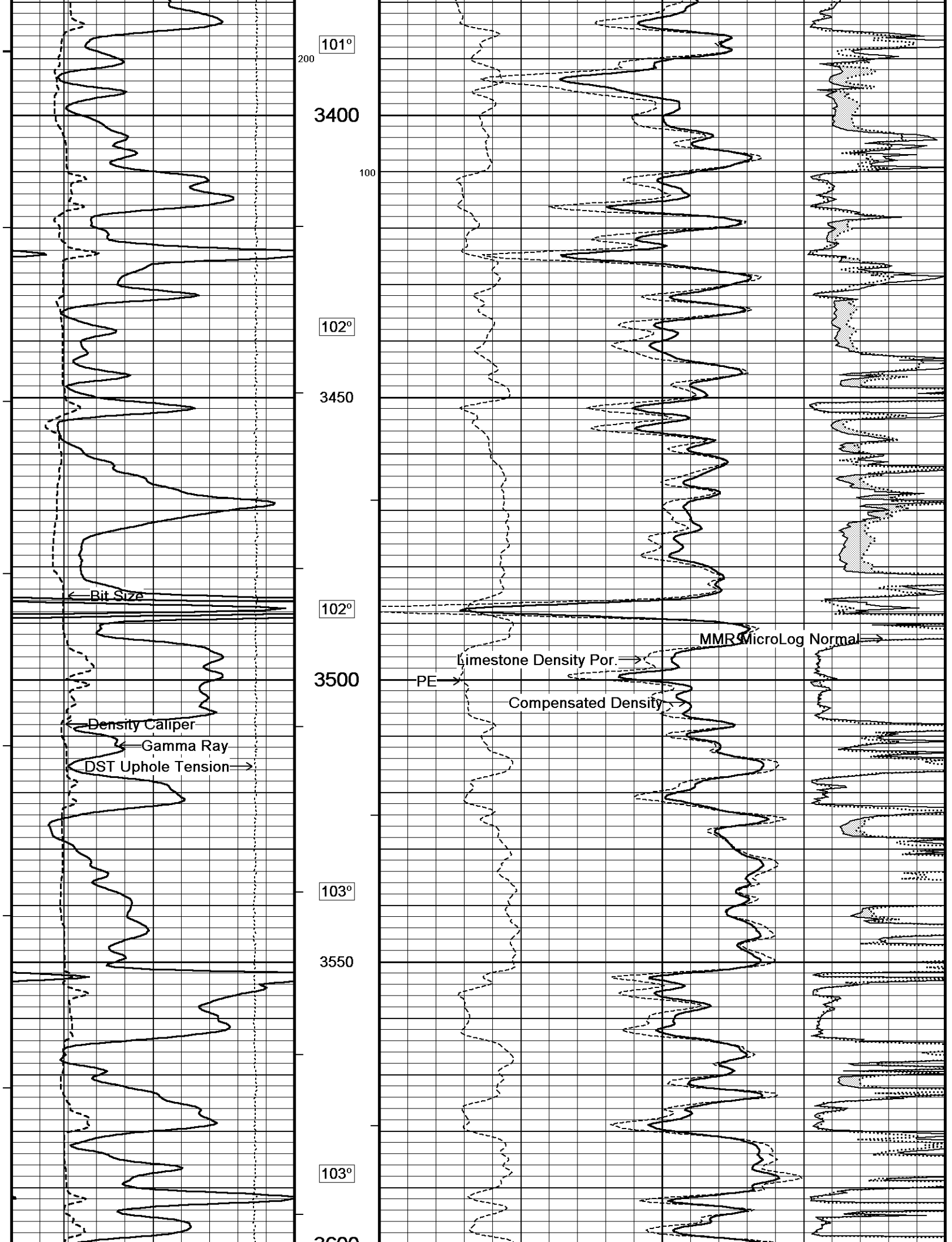
PE

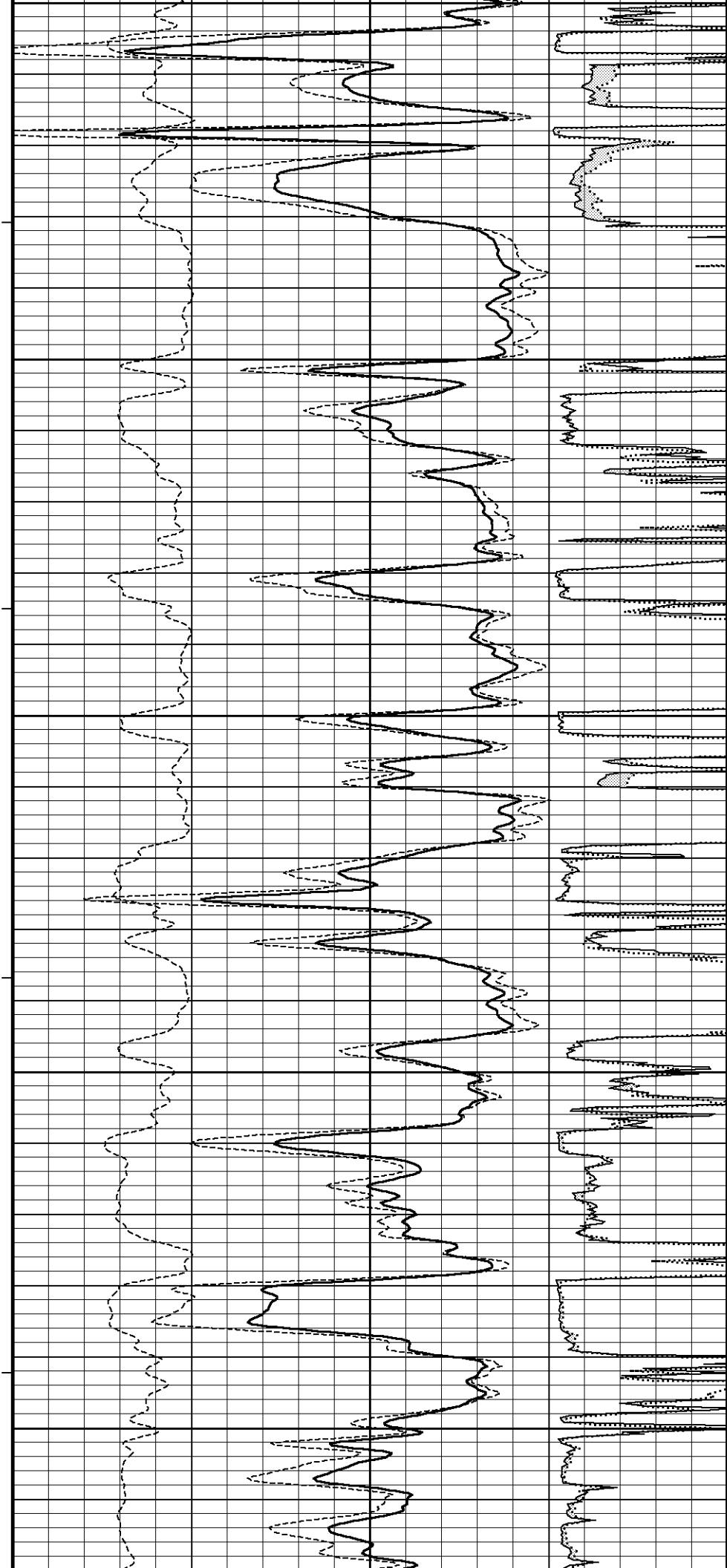
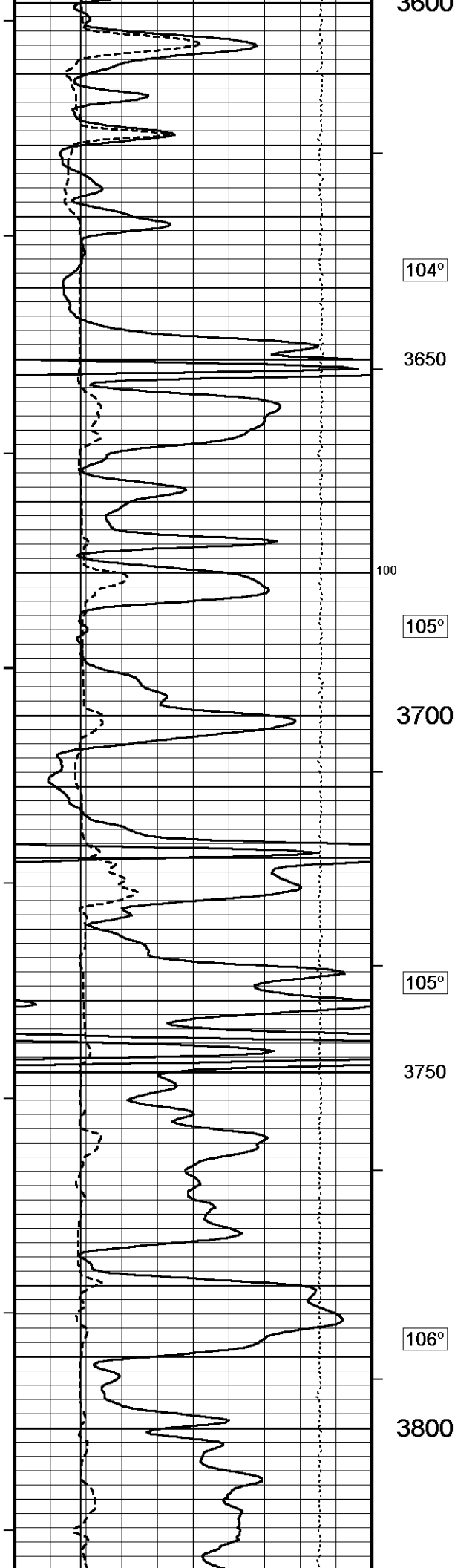
Compensated Density

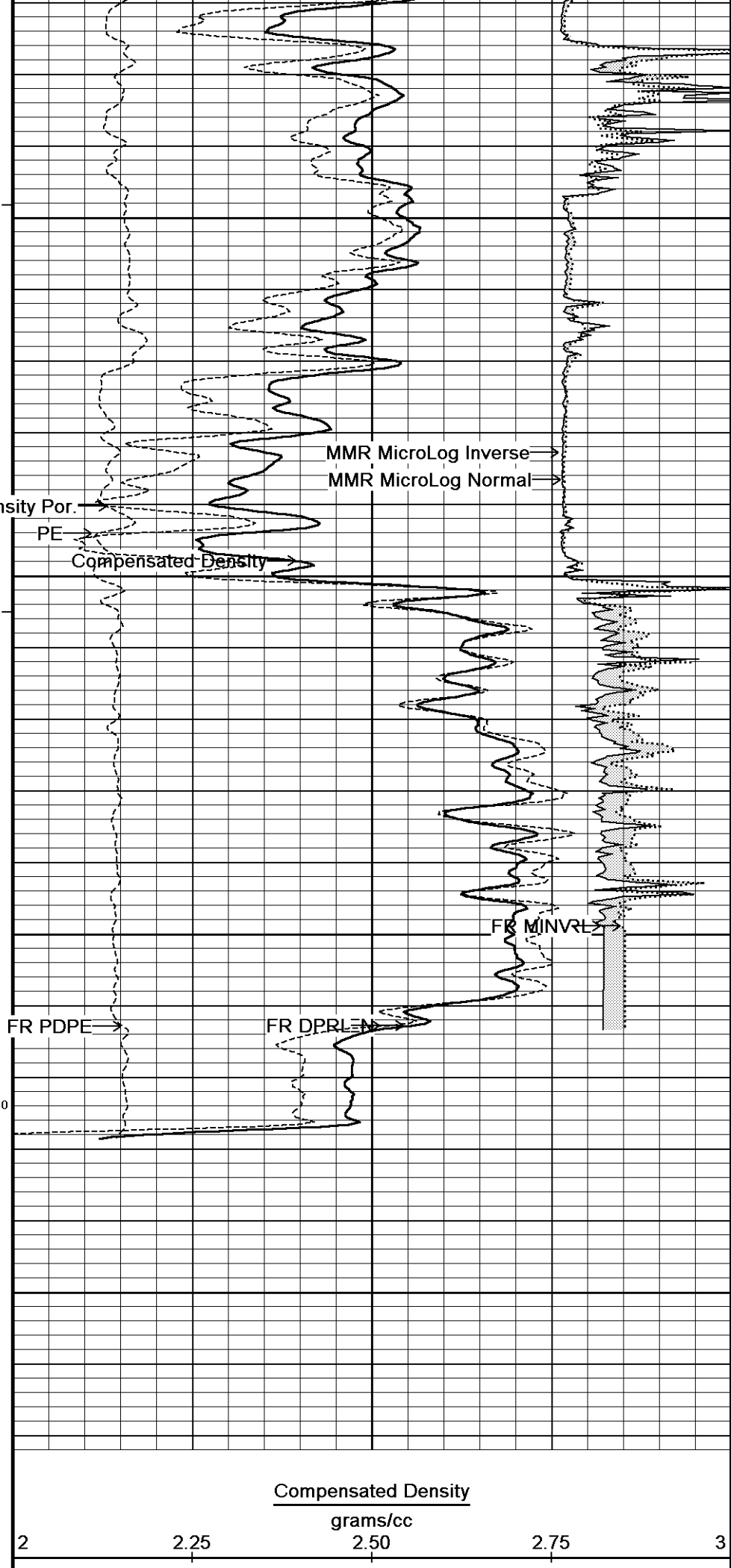
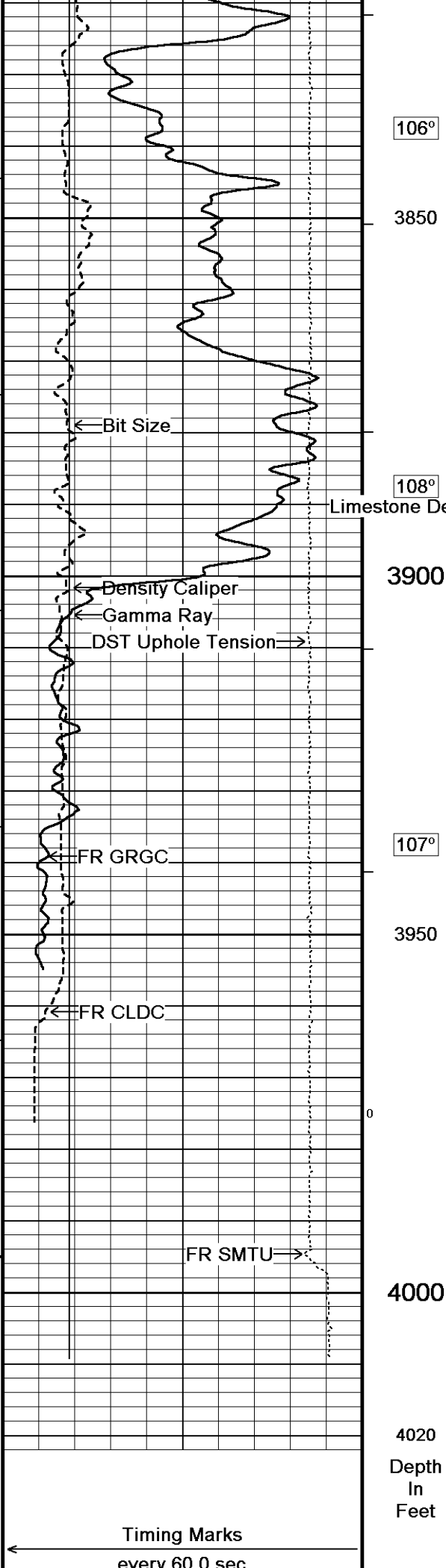




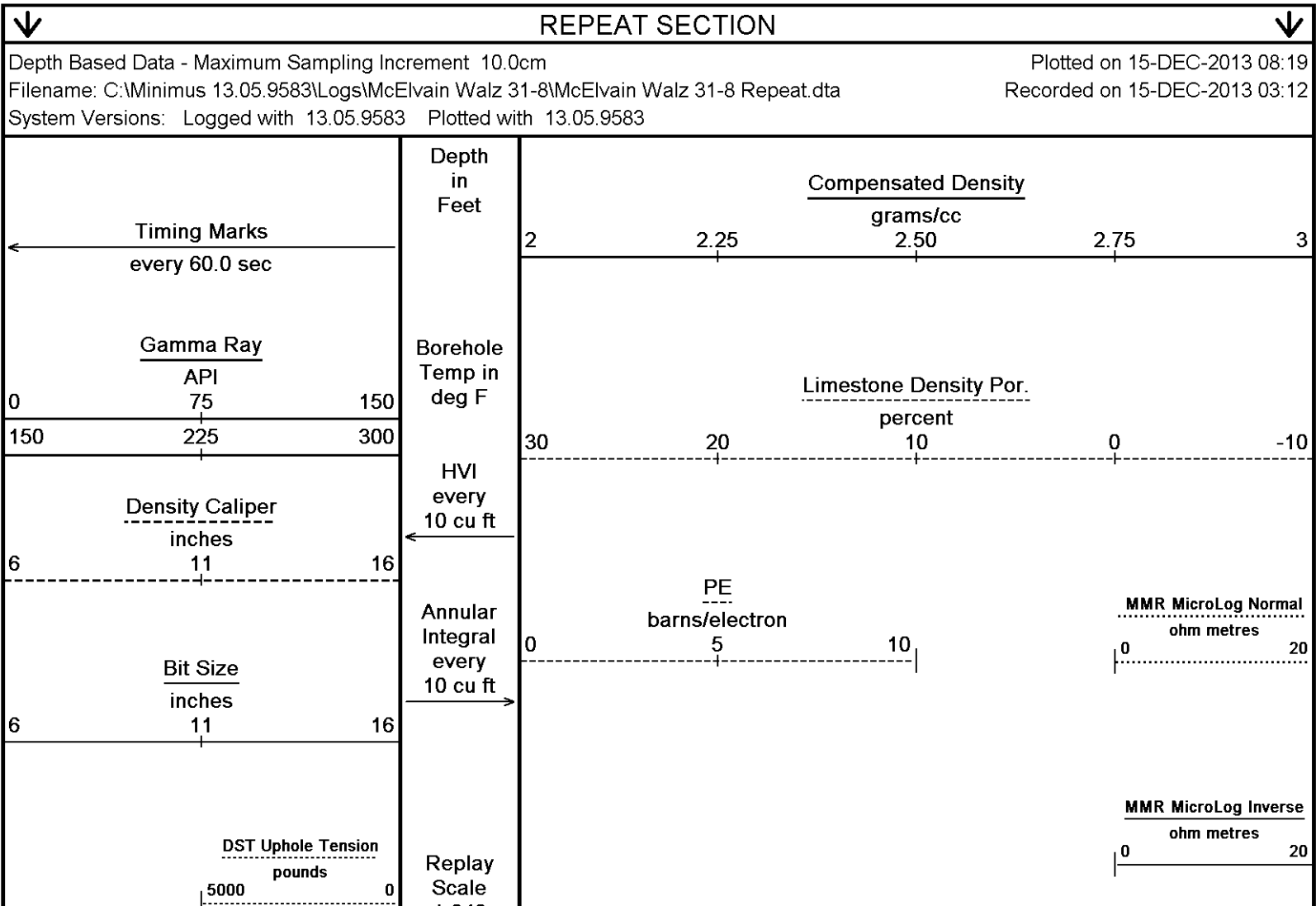
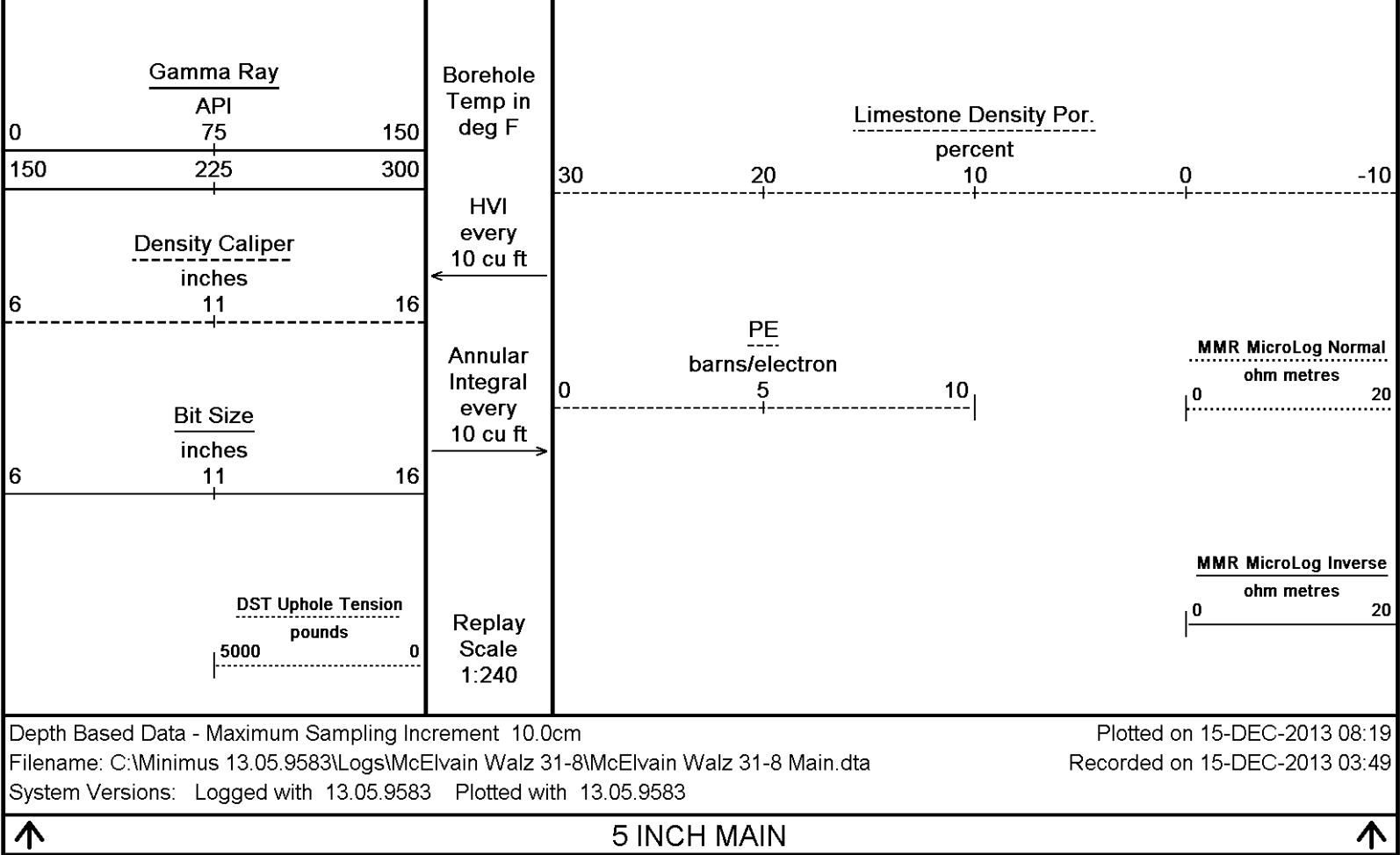








Timing Marks
every 60.0 sec



1:240

3468

3500

3550

3600

3650

Bit Size

Density Caliper

Gamma Ray

DST Uphole Tension

PE

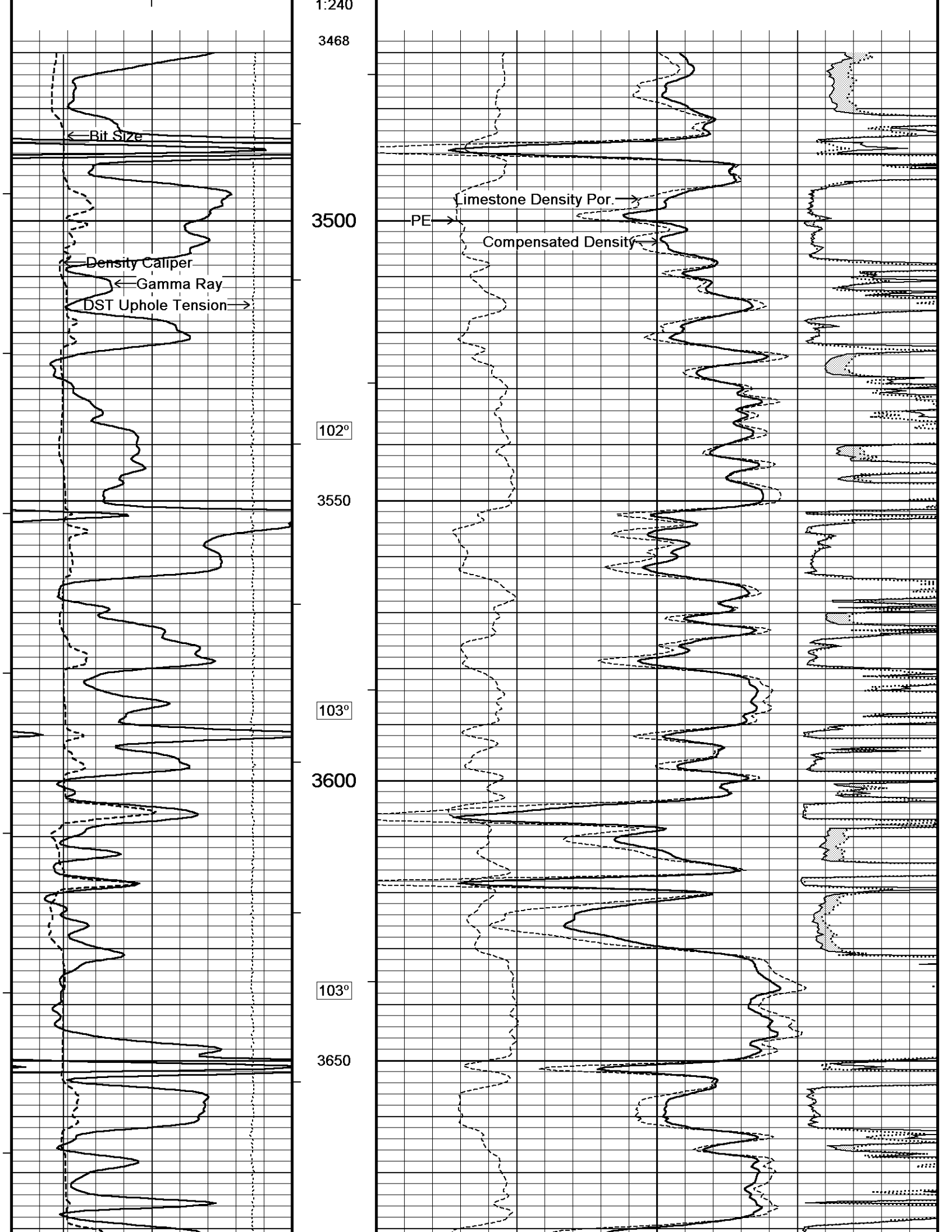
Limestone Density Por.

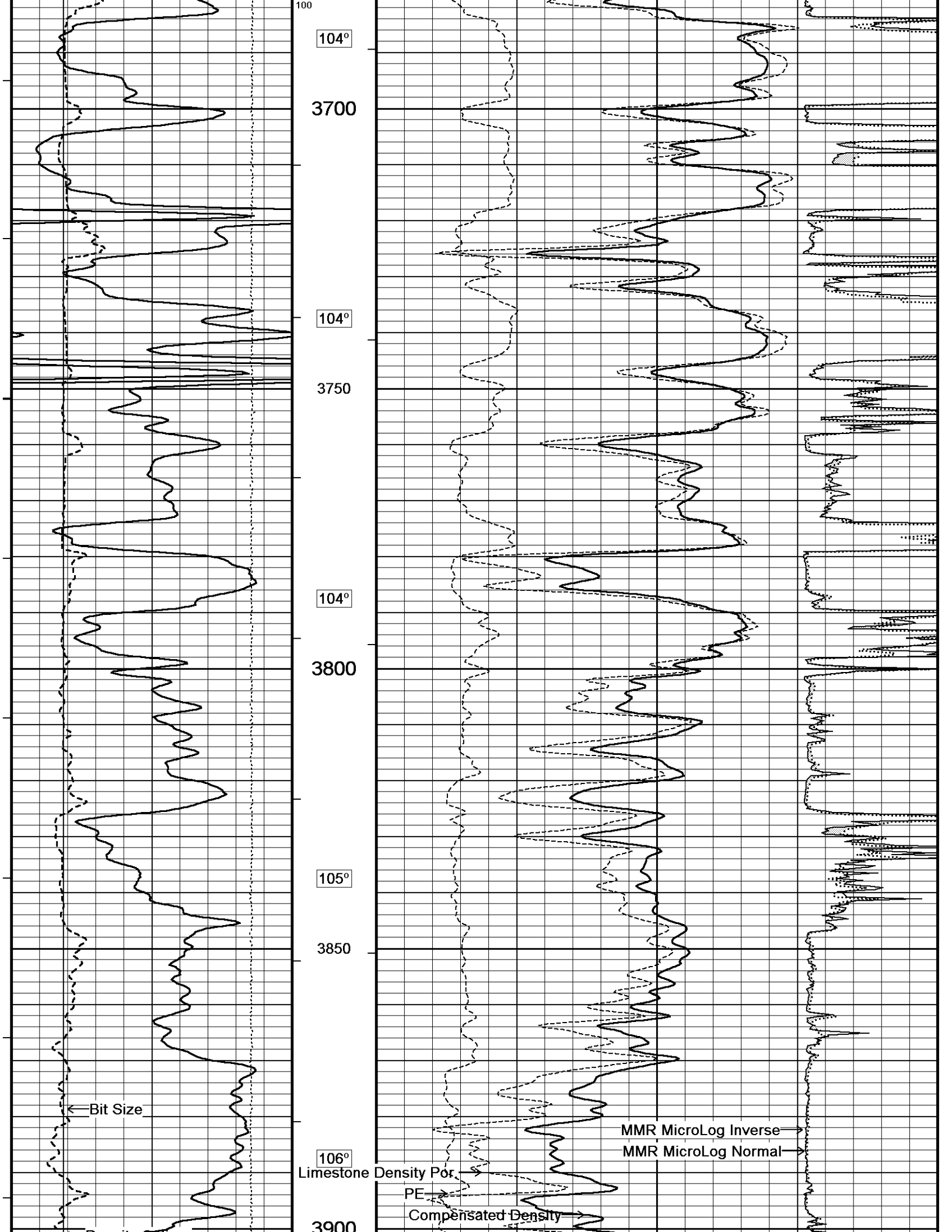
Compensated Density

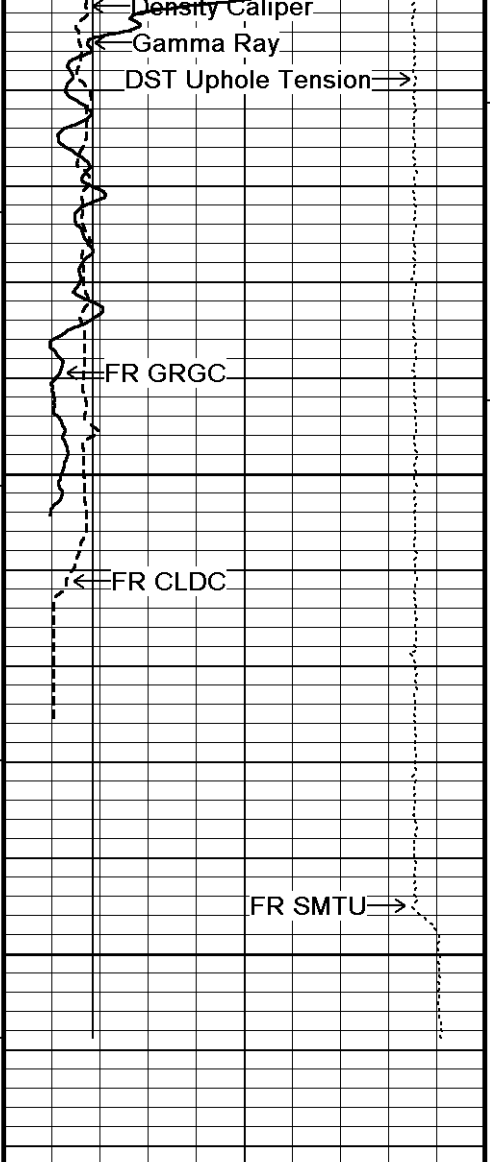
102°

103°

103°







106°

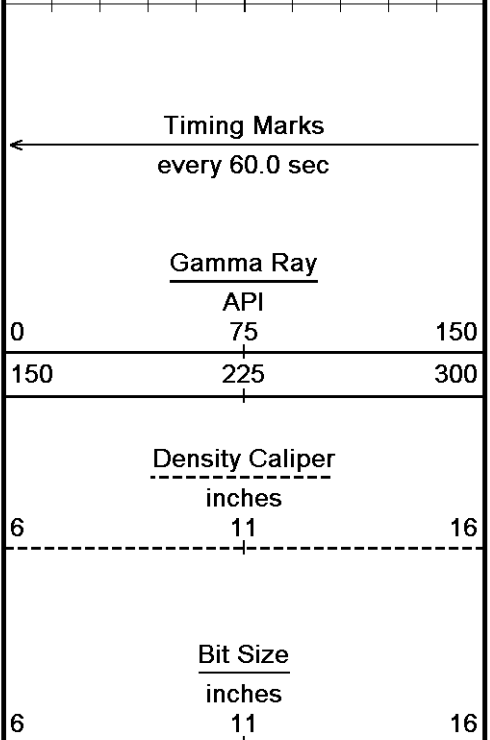
3950

0

4000

4020

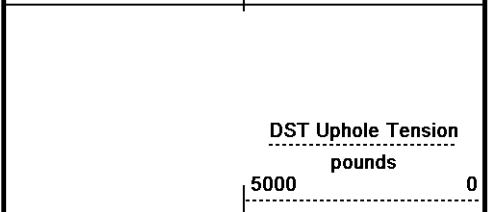
Depth in Feet



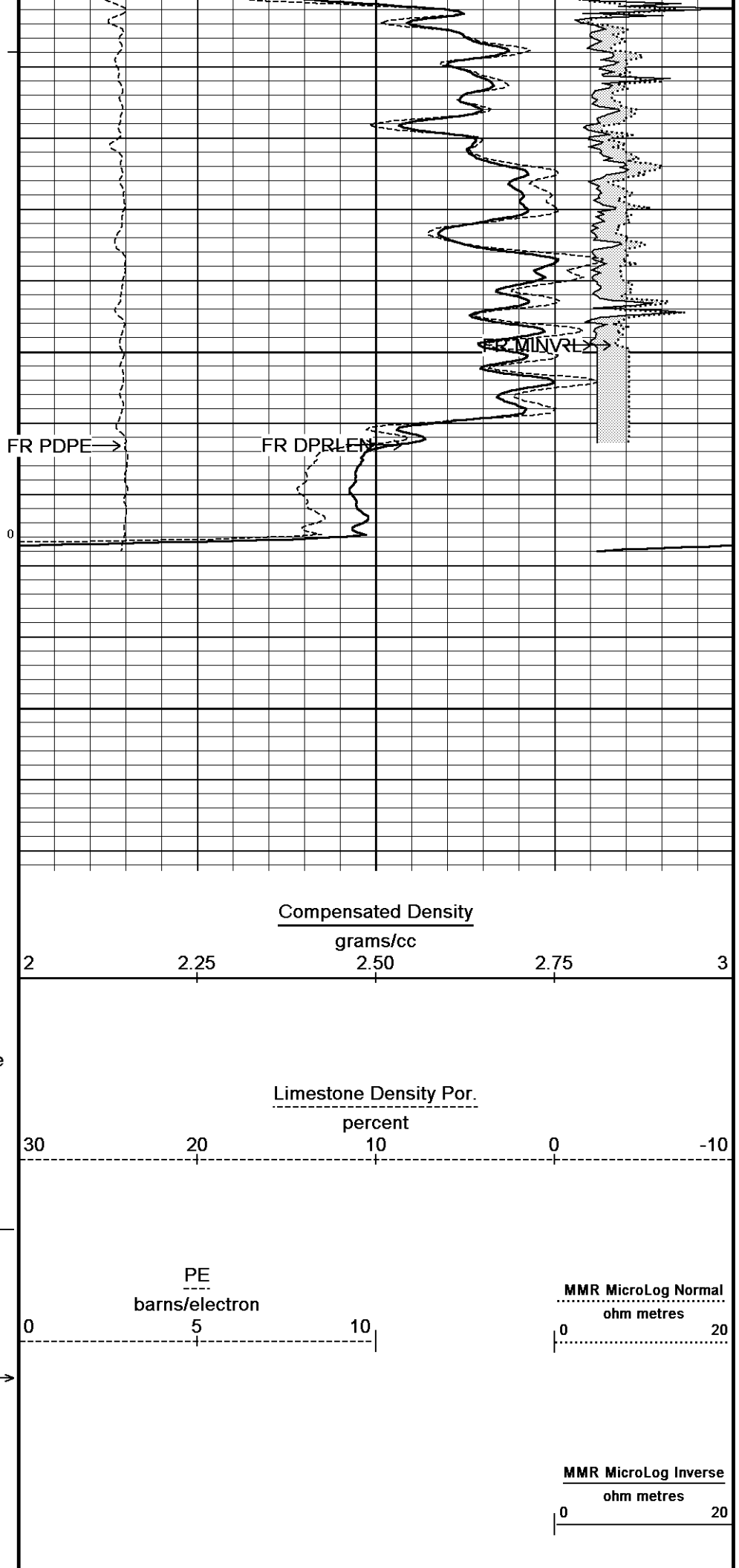
Borehole Temp in deg F

HVI every 10 cu ft

Annular Integral every 10 cu ft



Replay Scale 1:240



↑	REPEAT SECTION	↑
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BEFORE SURVEY CALIBRATION C:\Minimus 13.05.9583\Logs\McElvain Walz 31-8\McElvain Walz 31-8 Main.dta

General Constants All 000		Last Edited on 15-DEC-2013,01:31
General Parameters		
Mud Resistivity	1.320	ohm-metres
Mud Resistivity Temperature	83.000	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	Crossplot 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 15-DEC-2013 02:26
Reading No	Measured	Calibrated (lbs)
1	14592.41	0.00
2	15135.27	456.40

Gamma Calibration MCG-C 208		Field Calibration on 14-DEC-2013 06:42
	Measured	Calibrated (API)
Background	72	49
Calibrator (Gross)	1139	774
Calibrator (Net)	1067	725

Gamma Constants MCG-C 208		Last Edited on 15-DEC-2013,01:30
Gamma Calibrator Number	GRC038	
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	%

SP Calibration MCG-C 208		Field Calibration on 11-NOV-2013 16:06
	Measured	Calibrated (mV)
Reference 1	99.8	98.8
Reference 2	-97.8	-98.9

High Resolution Temperature Calibration MCG-C 208		Field Calibration on 12-JUN-2013,14:22
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 208		Last Edited on 23-AUG-2013,11:59
Pre-filter Length	11	

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14048	5.98
2	17183	7.97
3	20399	9.86
4	24282	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.97	7.97

Micro Normal and Micro Inverse Calibration MML-A 16

Base Calibration on 26-NOV-2013 15:45
Field Check on 14-DEC-2013 06:34

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	12.2	60.2	5.0	25.0
Micro Inverse	15.7	78.4	5.0	25.0

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	62.9	62.9
Micro Inverse	48.2	48.2

Micro Normal and Micro Inverse Constants MML-A 16

Last Edited on 15-DEC-2013,01:30

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159		
Micro Normal K Factor	1.0000		
Micro Inverse K Factor	1.0000		
Standoff Offset	N/A	inches	

Neutron Calibration MDN-B.J 387

Base Calibration on 20-NOV-2013 14:17
Field Check on 14-DEC-2013 06:46

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2899	88	3714	110
Ratio	32.794		33.764	

Field Calibrator at Base

	Calibrated (cps)
	1704 2522
Ratio	0.676

Field Check

	Calibrated (cps)
Ratio	0.681

Neutron Constants MDN-B.J 387

Last Edited on 15-DEC-2013,01:30

Neutron Source Id	P58125B
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-A.A 55

Base Calibration on 26-NOV-2013 15:32
Field Check on 14-DEC-2013 06:25

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	951.3	126.8
Base Check		281.6
Field Check		281.7

FE Constants MFE-A.A 55

Last Edited on 15-DEC-2013,01:29

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-C.K 368

Last Edited on 15-DEC-2013,01:29

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.60	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	

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 5				
Base Calibration on 10-JUN-2013,14:52 Field Check on 14-DEC-2013 06:24				
Base Calibration				
Test Loop Calibration		Measured		Calibrated (mmho/m)
Channel	Low	High	Low	High
1	16.3	470.8	9.3	966.2
2	5.6	376.1	7.6	821.4
3	2.6	266.1	5.2	566.0
4	1.6	130.0	2.6	279.2
Array Temperature		71.1	Deg F	
Channel		Base Check (mmho/m)		Field Check (mmho/m)
		Low	High	Low High
1				14.9 3864.0
2				31.8 3591.9
3				29.8 2972.2
4				20.8 2126.8
Deep				18.4 1912.7
Medium				43.1 3862.3
Shallow				47.3 5374.5
Array Temperature			67.8	Deg F
Induction Constants MAI-A.A 5				
Last Edited on 15-DEC-2013,01:29				
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		0.00	inches	
Number of Fins on Stand-off		8.0000		
Stand-off Fin Angle		60.00	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			

High Resolution Temperature Calibration MAI-A.A 5		Field Calibration on 10-DEC-2013,18:45	
Lower	Measured	Calibrated(Deg F)	
	50.00	50.00	
Upper	75.00	75.00	
High Resolution Temperature Constants MAI-A.A 5		Last Edited on 10-DEC-2013,18:45	
Pre-filter Length		11	
Photo Density Calibration MPD-B 64		Base Calibration on 20-NOV-2013 16:18 Field Check on 14-DEC-2013 06:32	
Density Calibration			
Base Calibration			
	Near	Measured	Calibrated (sdu)
		Far	Near Far
Reference 1	54813	28391	59556 30836
Reference 2	22141	2599	24941 2541
Field Check at Base			
	1158.1	1339.6	
Field Check			
	1152.5	1334.2	
PE Calibration			
Base Calibration			
	WS	Measured	Calibrated
		WH	Ratio
Background	209	1029	
Reference 1	20544	54619	0.379 0.371
Reference 2	5974	22004	0.275 0.272
Field Check at Base			
	208.8	1029.0	
Field Check			
	207.1	1024.2	
Density Constants MPD-B 64		Last Edited on 15-DEC-2013,01:29	
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		1.13	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 (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	
0.00		0.00	
Caliper Calibration MPD-B 64		Base Calibration on 20-NOV-2013 16:00 Field Calibration on 14-DEC-2013 06:27	
Base Calibration			
Reading No		Measured	Calibrator Size (in)
1		16386	3.99
2		25312	5.98
3		33872	7.97
4		42289	9.86
5		51520	11.92
6		N/A	N/A

Field Calibration

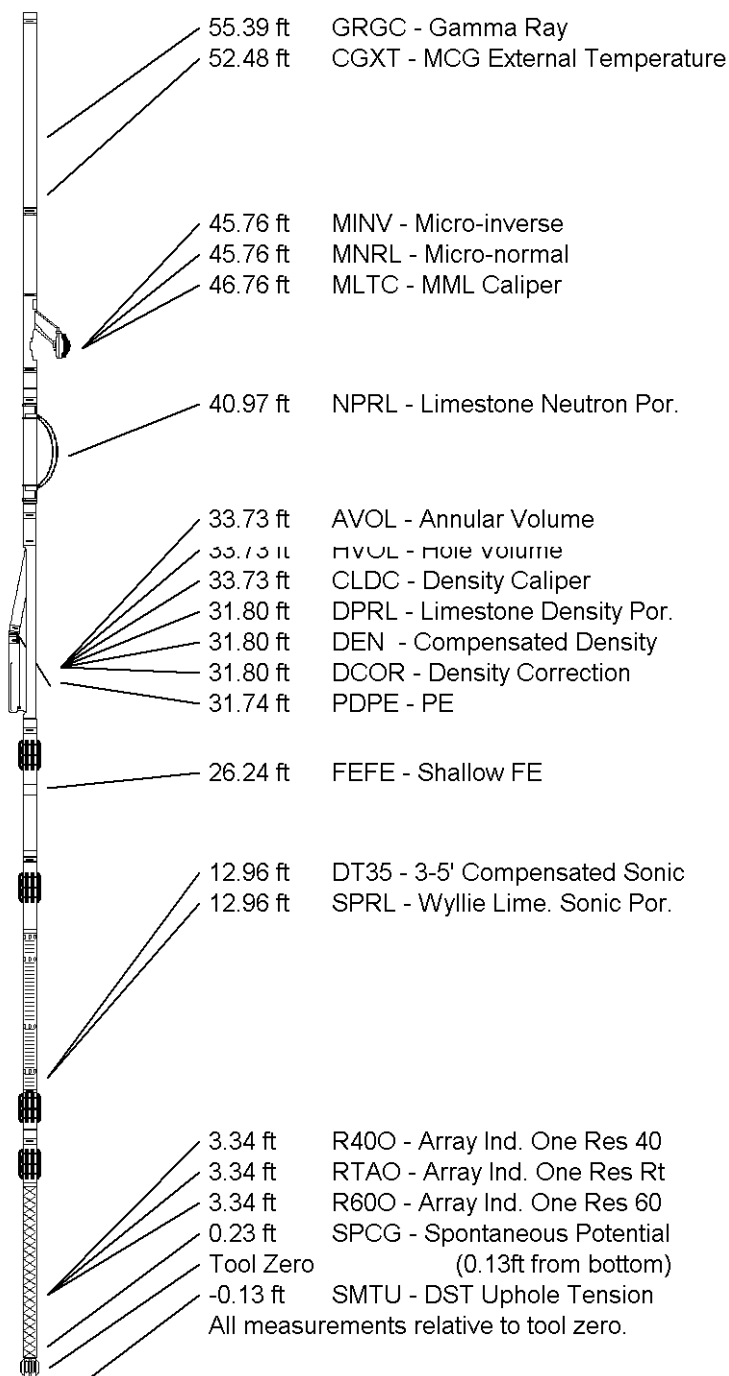
Measured Caliper (in)
7.98Actual Caliper (in)
7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\McElvain Walz 31-8\McElvain Walz 31-8 Main.dta

Compact Comms Gamma
MCG-C 208 LG: 8.70 ft WT: 63.9 lb OD: 2.24 inCompact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 inCompact Neutron
MDN-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.24 inCompact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 inCompact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 inCompact Sonic
MSS-C.K 368 LG: 12.52 ft WT: 72.8 lb OD: 2.24 inCompact Induction
MAI-A.A 5 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 60.68 ft Weight: 456.4 lb



COMPANY

MCELVAIN ENERGY, INC.

WELL

WALZ 31-8

FIELD

WILDCAT

PROVINCE/COUNTY

GRAHAM

COUNTRY/STATE

U.S.A./KANSAS

Elevation Kelly Bushing 2231.00 feet

Elevation Drill Floor 2229.00 feet

Elevation Ground Level 2231.00 feet

First Reading 3963.00 feet

Depth Driller 4000.00 feet

Depth Logger 3995.00 feet

Elevation Ground Level 2221.00 feet

Depth Logger 5555.00 feet



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