

**Weatherford****COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
LOG**

COMPANY

COMANCHE RESOURCES CO., LLC

WELL

MASSEY 5-1

FIELD

WILDCAT

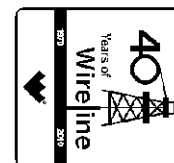
PROVINCE/COUNTY

COWLEY

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

**2490' FNL & 1670' FWL
SE SW SE NW**

SEC TW/P RGE Other Services

5 33S 8E MFE/MAI

API Number 15-035-24471

MML

Permit Number

MSS

Permanent Datum GL, Elevation 1046 feet

Log Measured From KB

Drilling Measured From KB

Elevations:

feet

KB

DF

GL

1056.00
1054.00
1046.00

Date 16-APR-2012

Run Number ONE

Depth Driller 3050.00

feet

Depth Logger 3050.00

feet

First Reading 3019.00

feet

Last Reading 490.00

feet

Casing Driller 489.00

feet

Casing Logger 490.00

feet

Bit Size 7.875

inches

Hole Fluid Type GEL

inches

Density / Viscosity 9.20 lb/USg

40.00 CP

PH / Fluid Loss 9.00

6.00 ml/30Min

Sample Source MUD PIT

ohm-m

Rm @ Measured Temp 2.20 @ 65.0

ohm-m

Rmf @ Measured Temp 1.60 @ 65.0

ohm-m

Rmc @ Measured Temp 2.64 @ 65.0

ohm-m

Source Rmf / Rmc

CALC

Rm @ BHT 1.29 @ 111.0

ohm-m

Time Since Circulation 4 HOURS

deg F

Max Recorded Temp 111.00

deg F

Equipment Name COMPACT

OKC

Equipment / Base 13226

OKC

Recorded By B. ALLEN

J. SPELLMAN

Witnessed By

BOREHOLE RECORD

Last Edited: 16-APR-2012 04:23

Bit Size
inches

7.875

Depth From
feet

489.00

Depth To
feet

3050.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

489.00

Weight
pounds/ft

36.00

REMARKS

TOOLS RAN: MCG, MML, MDN, MPD, MFE, MSS, MAI RAN IN COMBINATION

HARDWARE: MAI: TWO 0.5 INCH STANDOFFS USED.

MDN: DUAL NEUTRON BOW SPRINGS USED.

MPD: 8 INCH PROFILE PLATE USED.

MFE: ONE 0.5 INCH STANDOFF USED.

MSS: THREE 0.5 INCH STANDOFF USED.

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 1110CU.FT.

ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING = 690CU.FT.

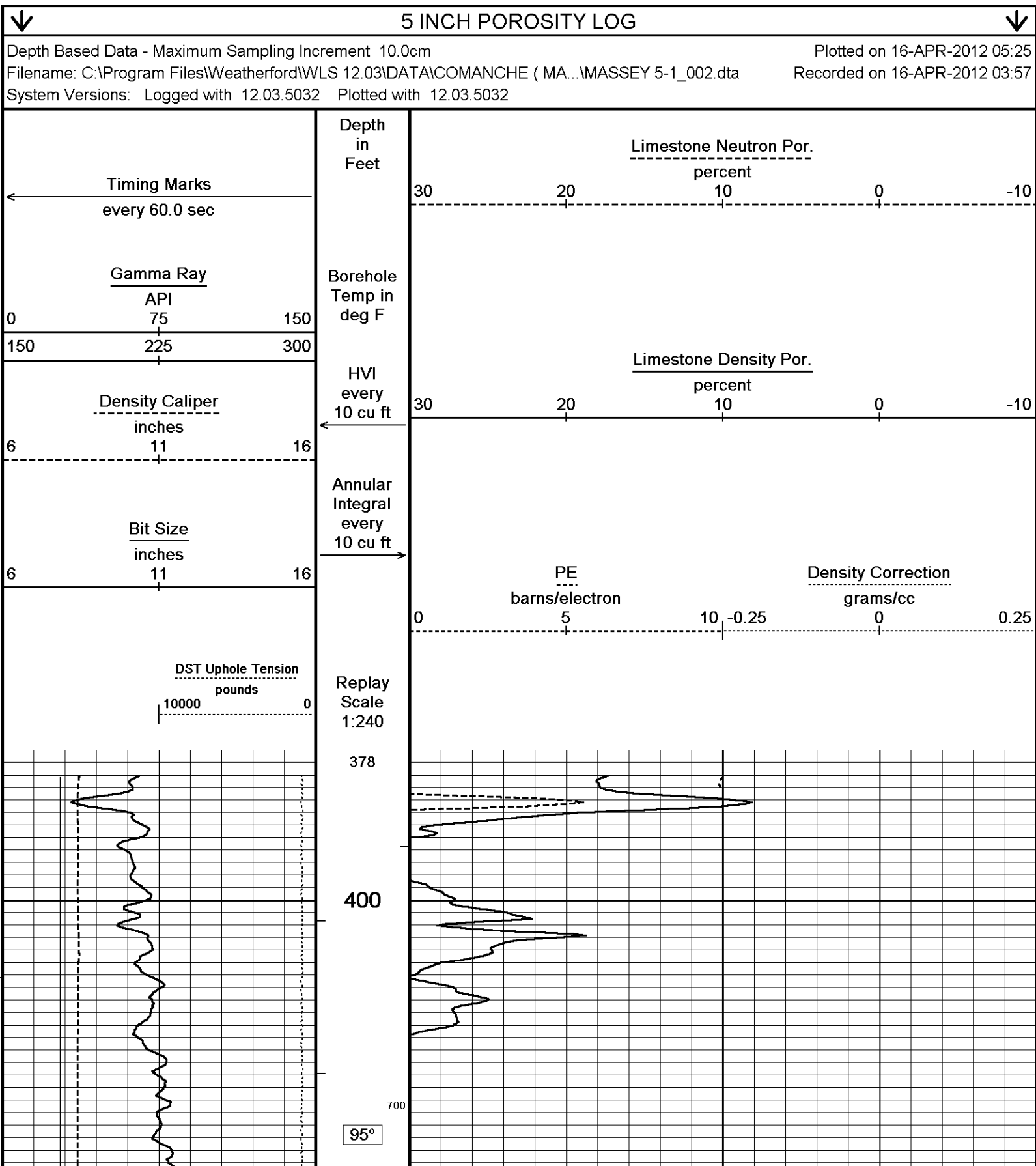
SERVICE ORDER # 3535125

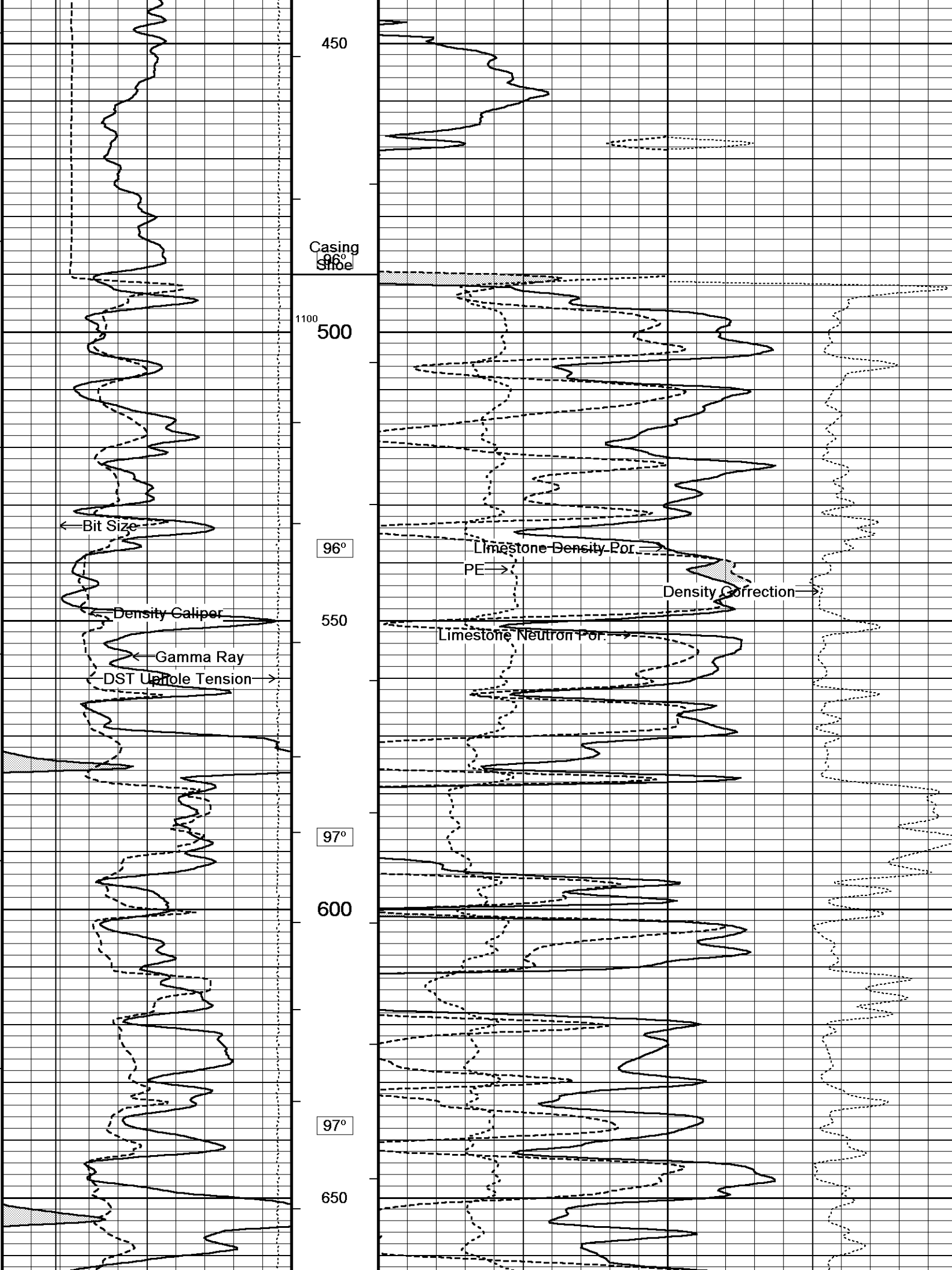
RIG: C_G #2

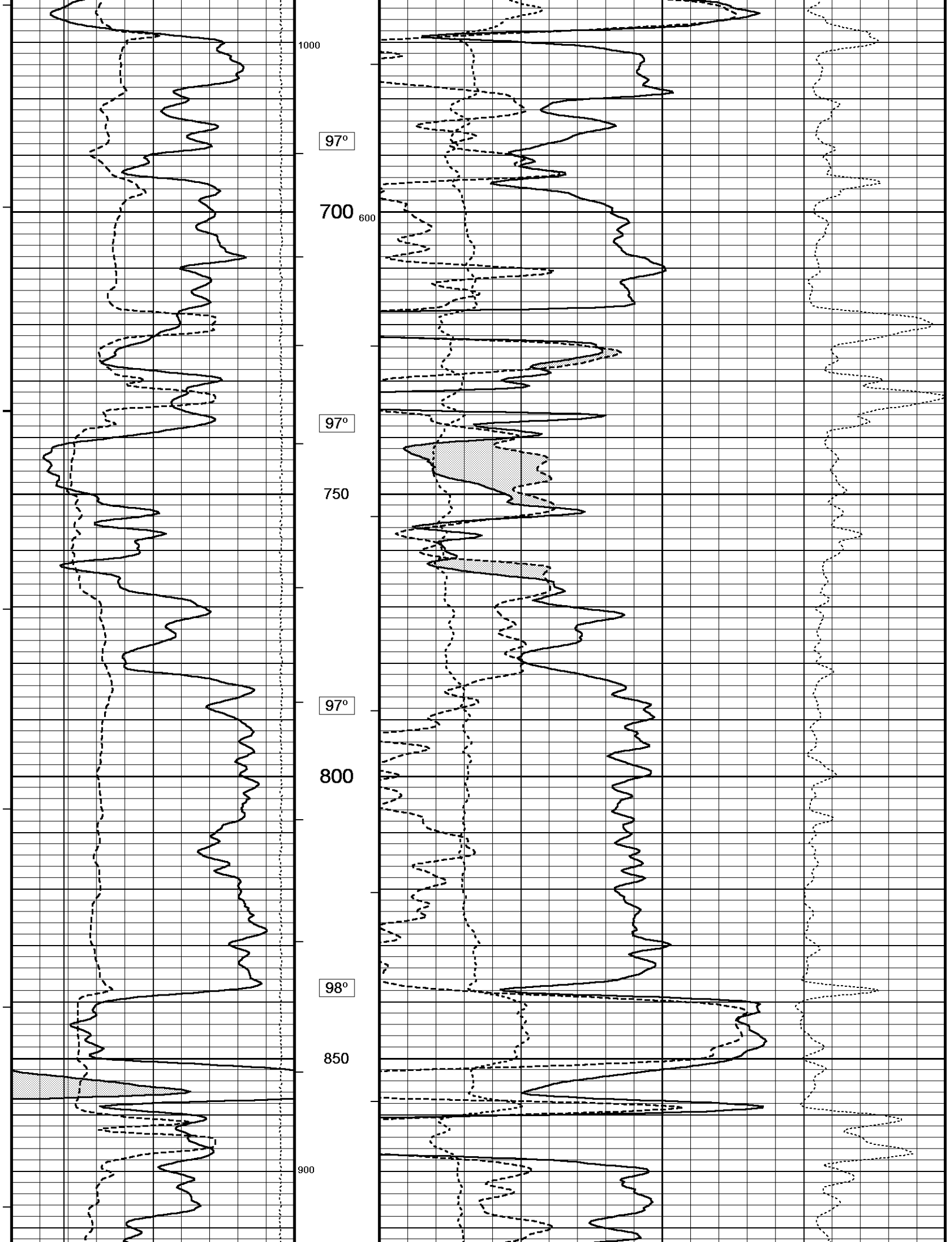
OPERATOR: S. WORLEY

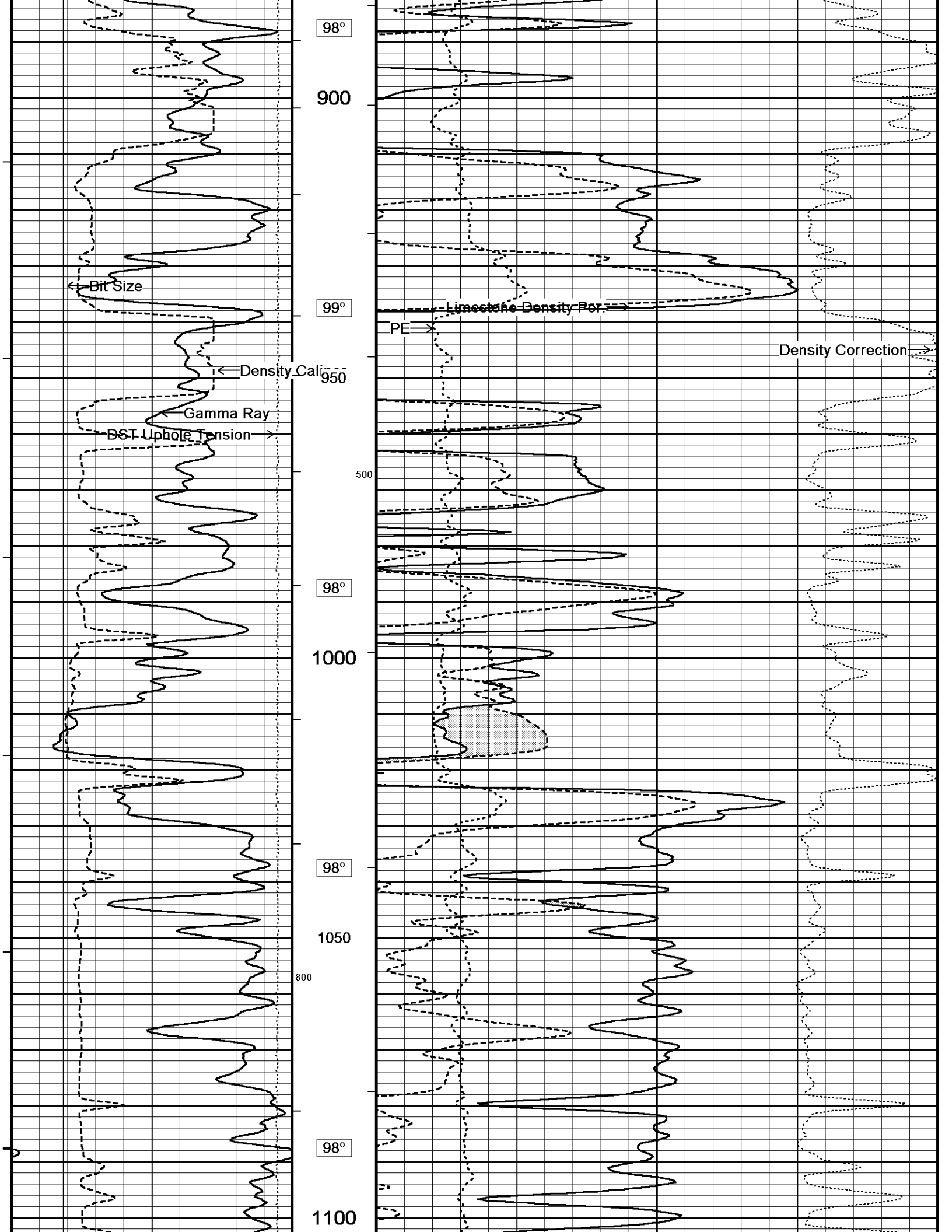
HOLE RUGOSITY MAY AFFECT LOG QUALITY.

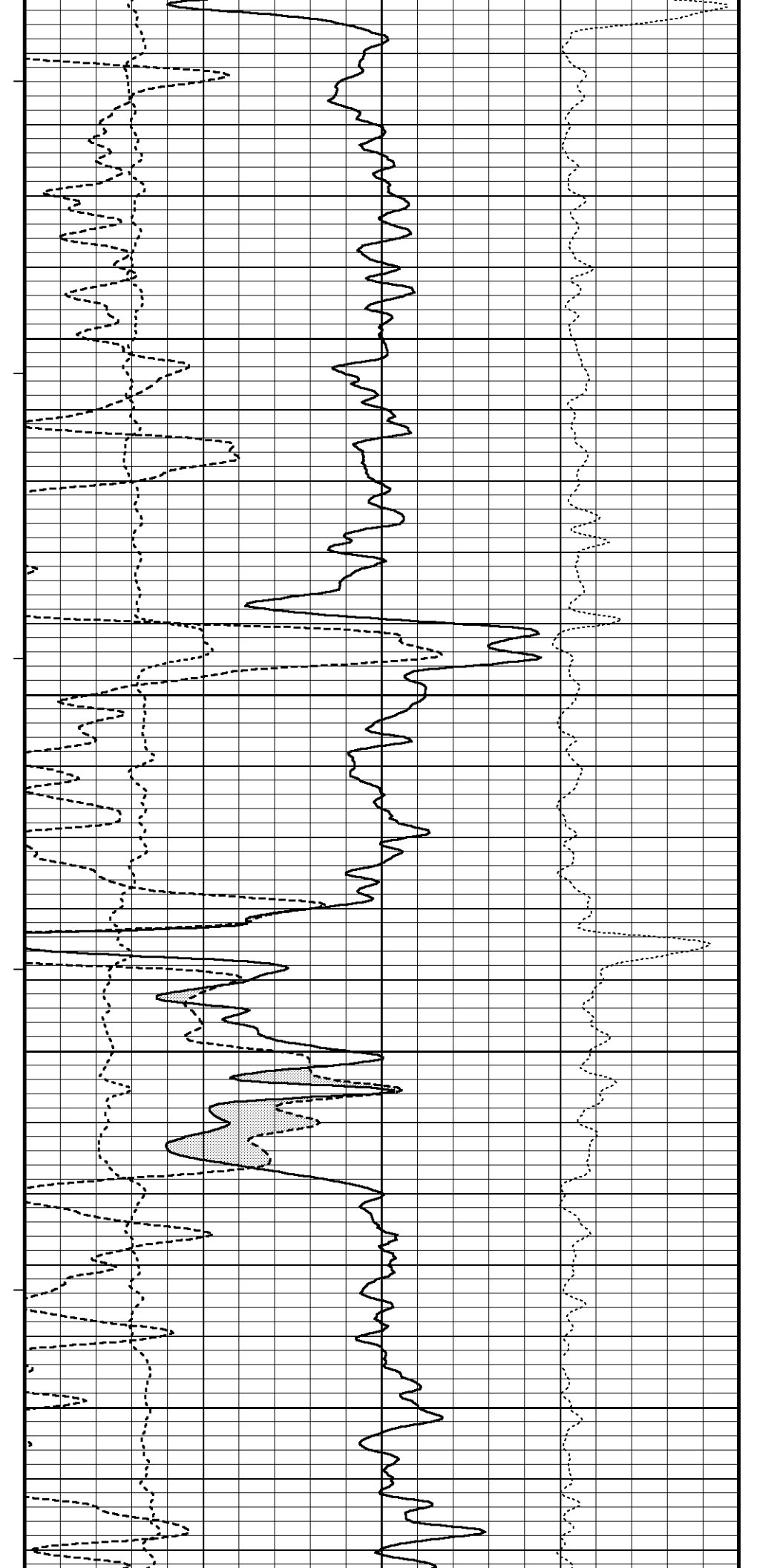
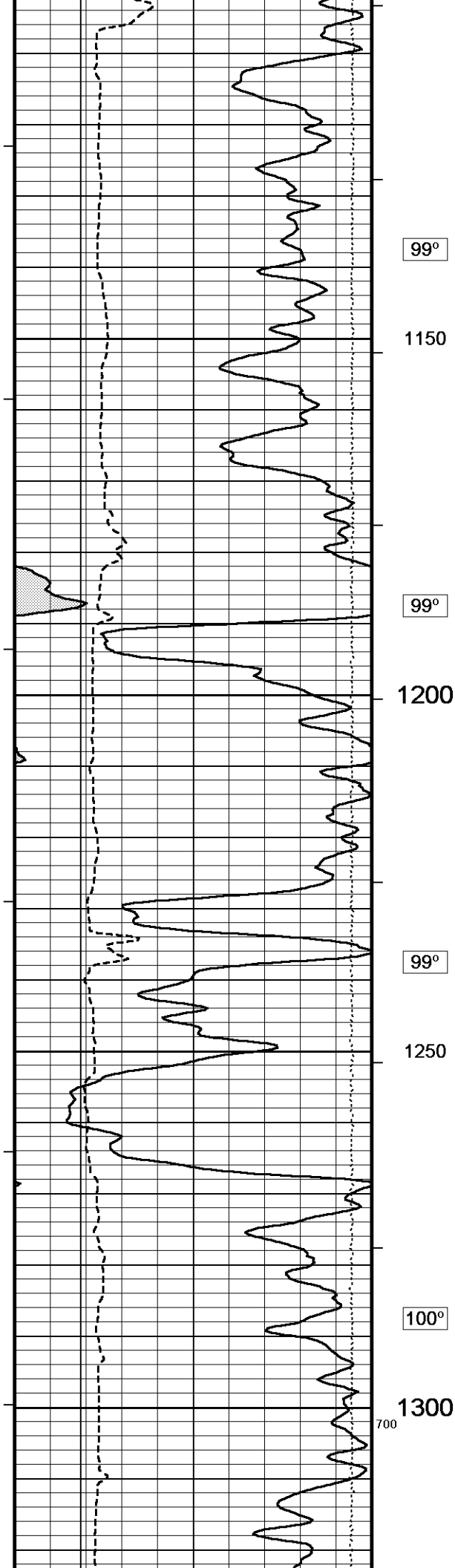
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

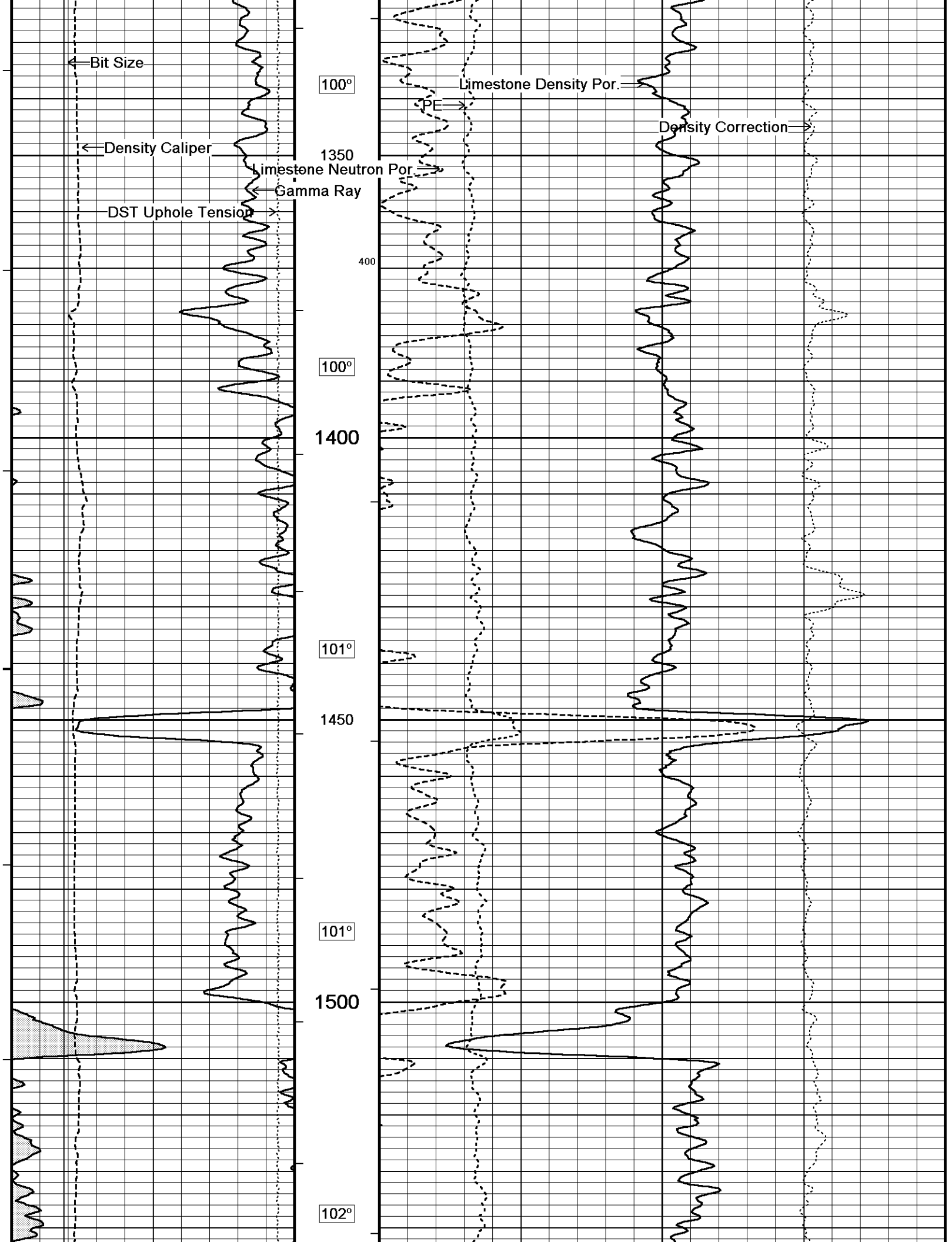


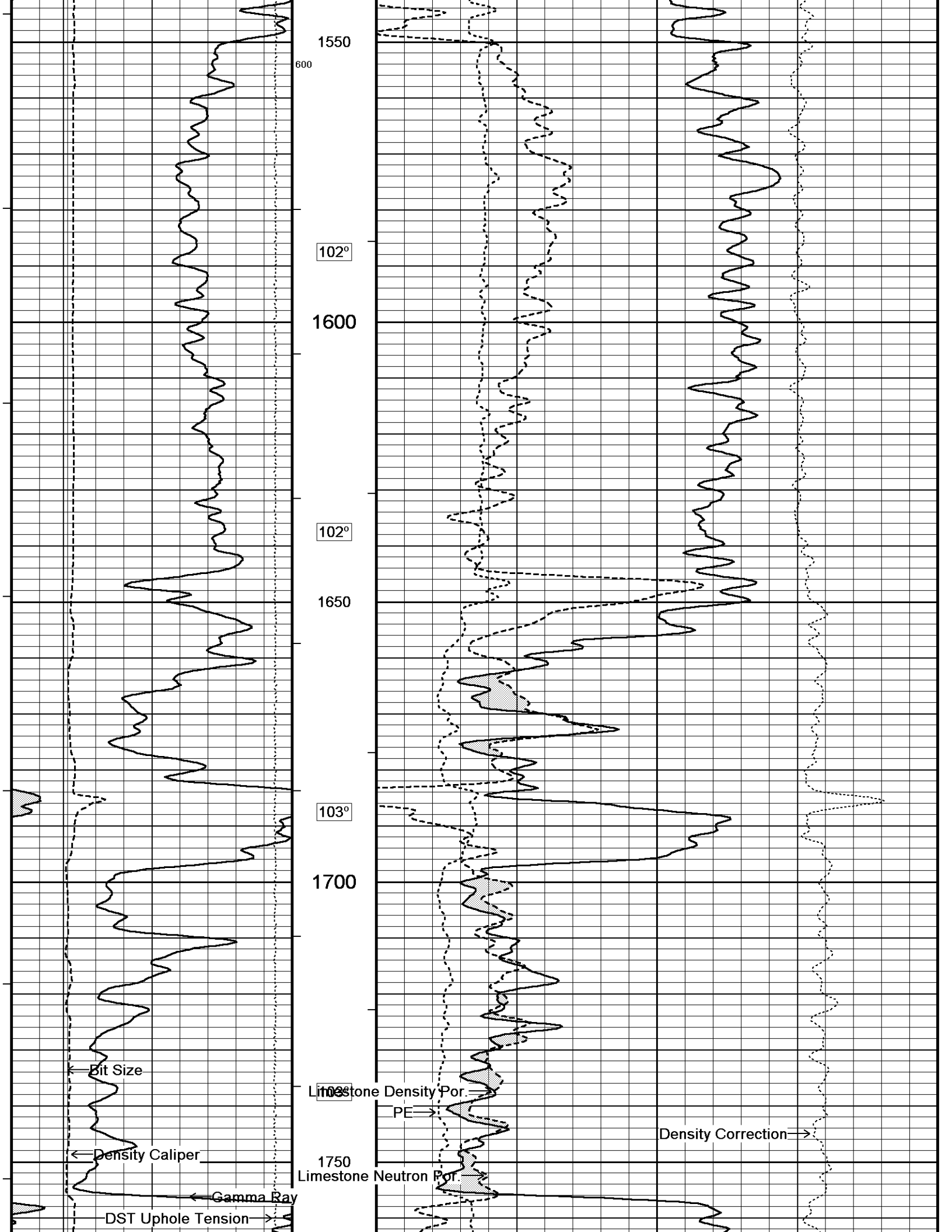


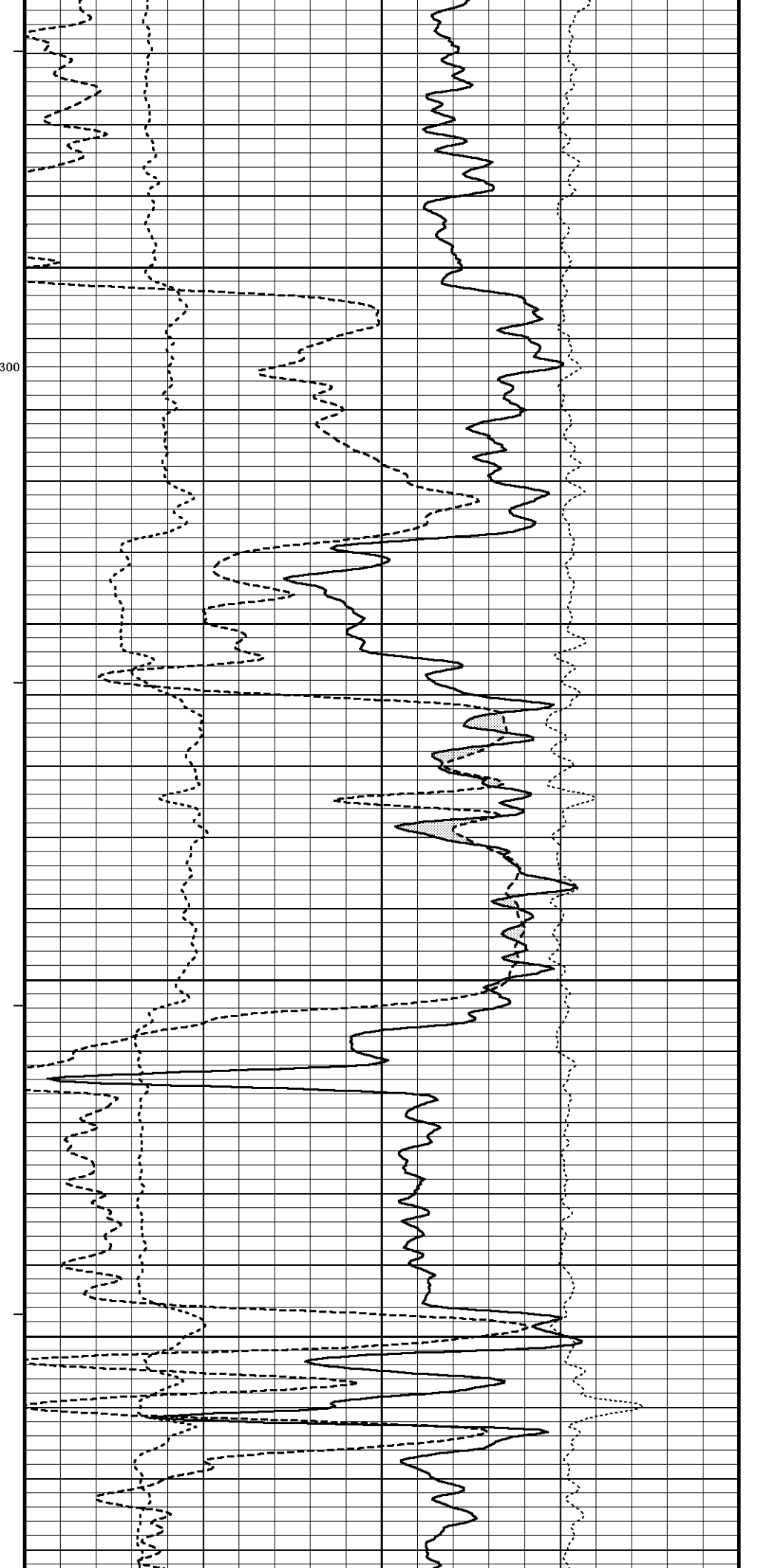
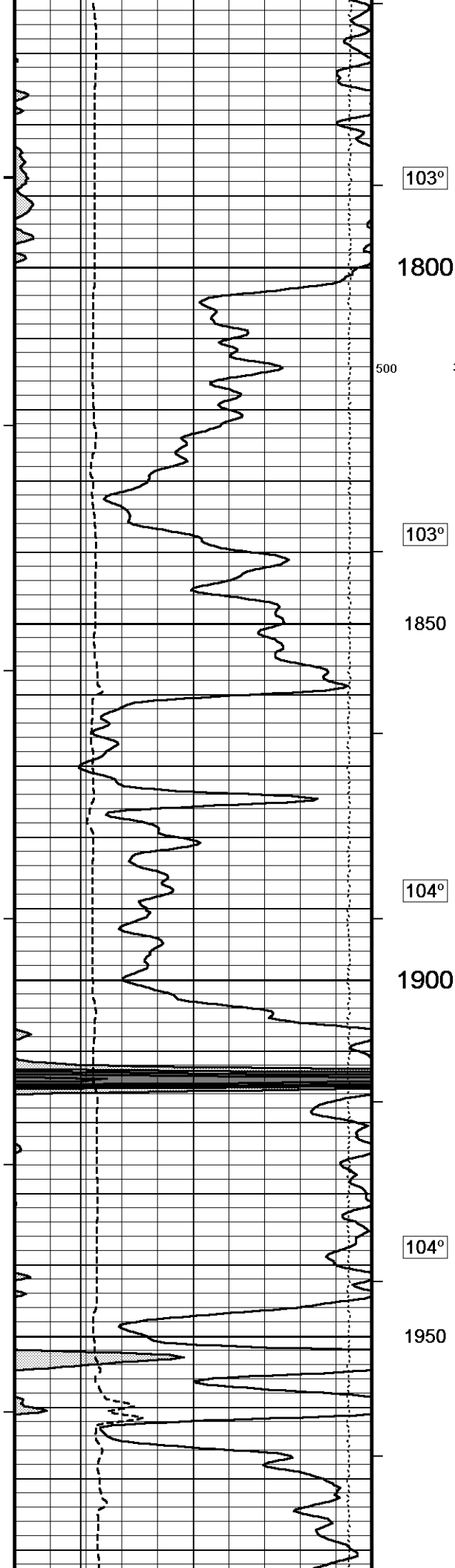


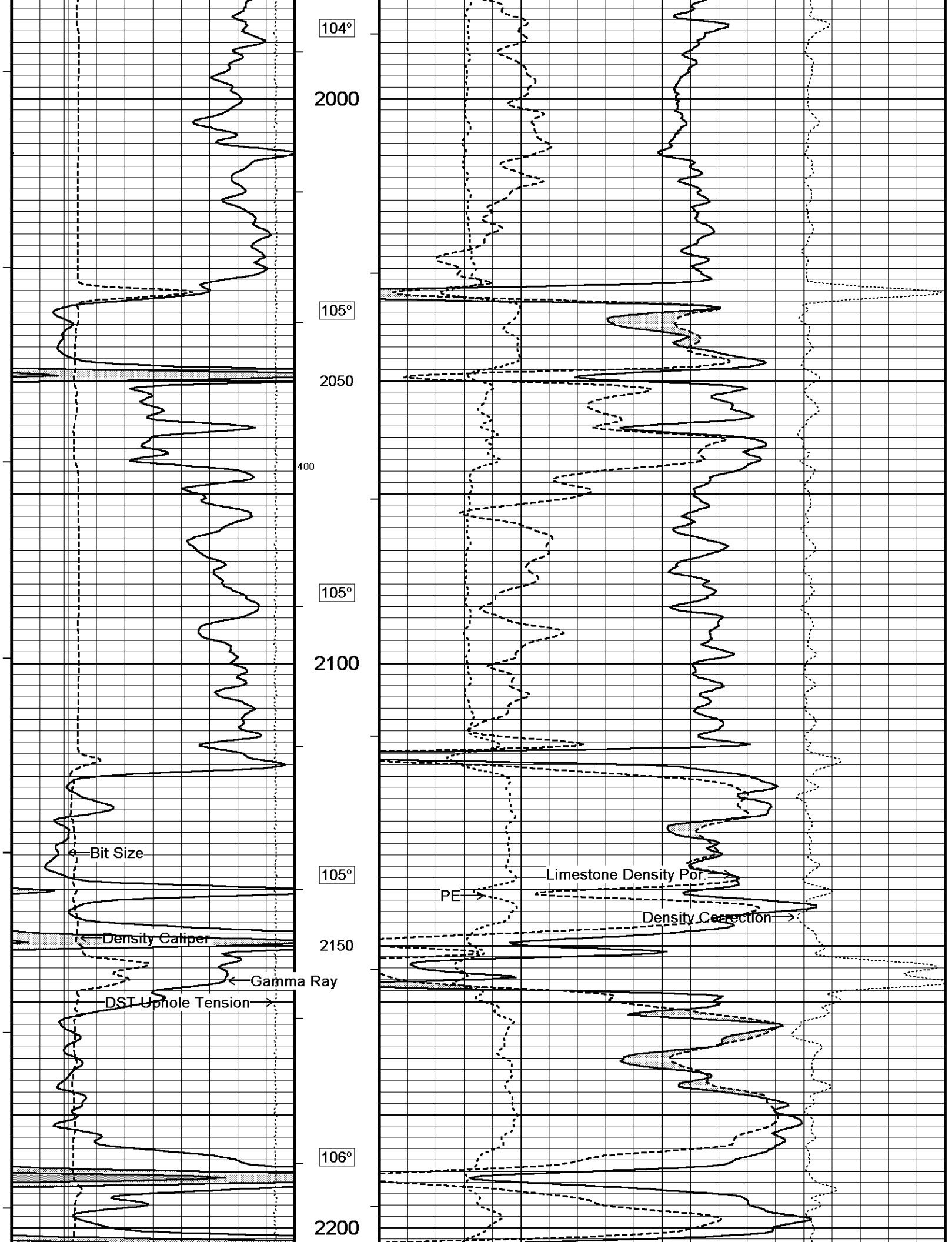


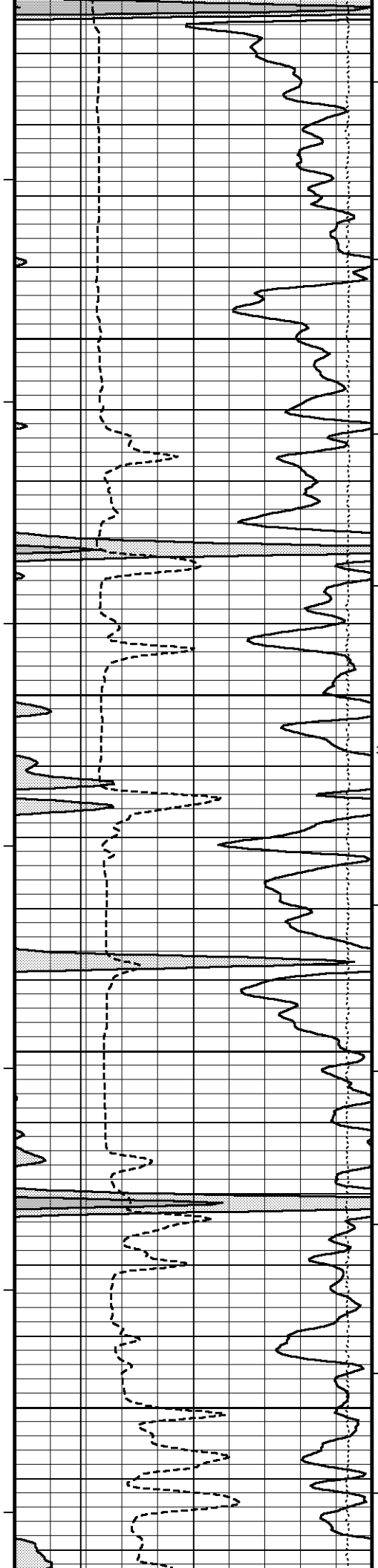












106°

200

2250

106°

2300

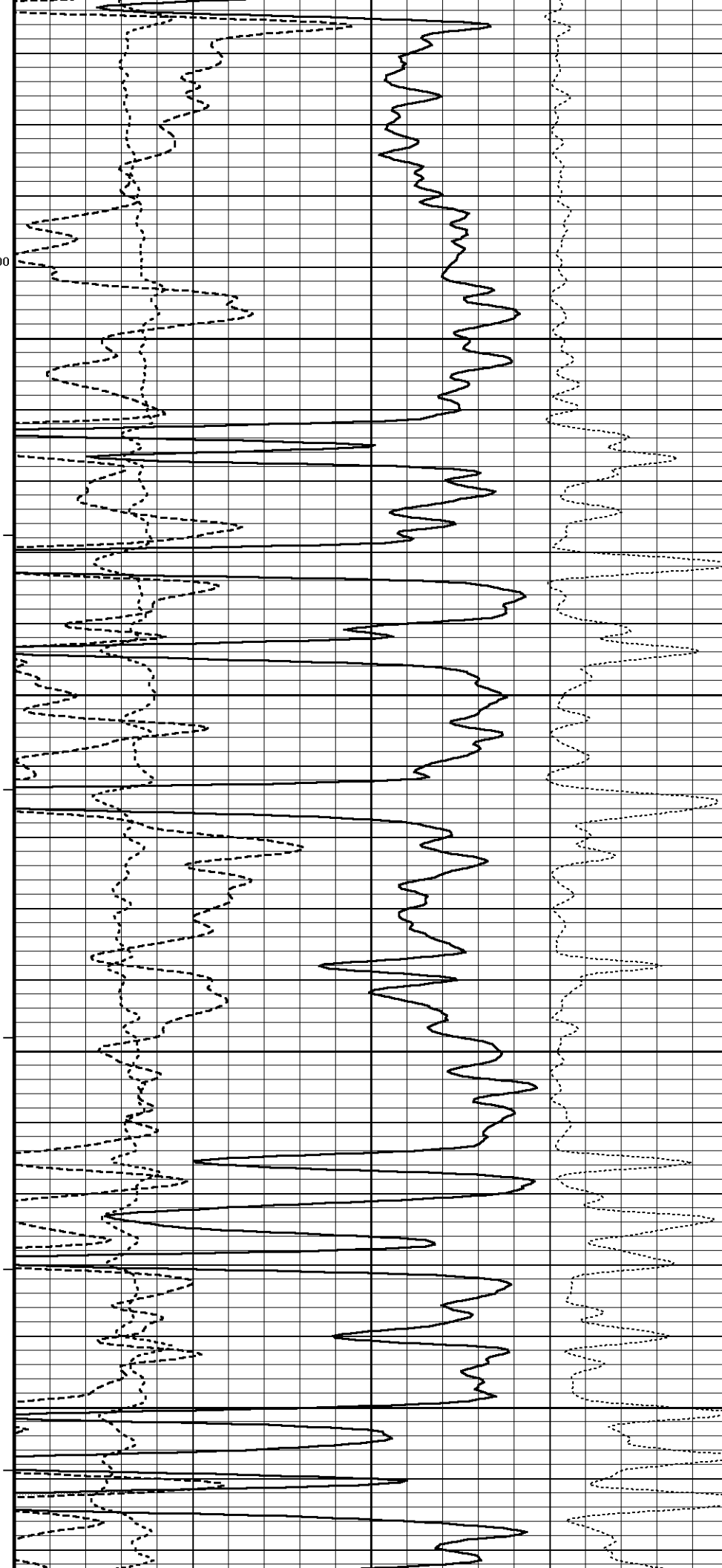
300

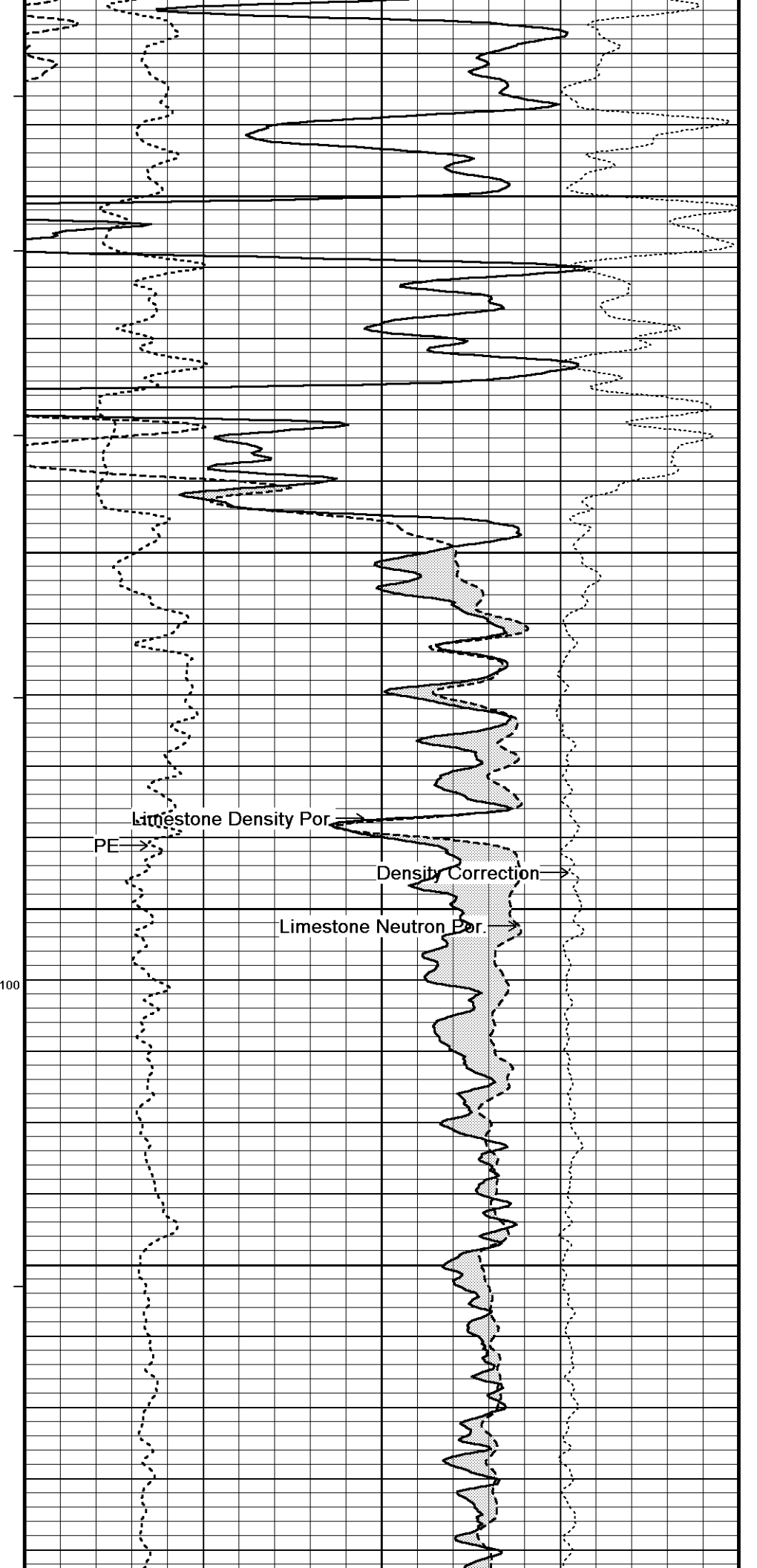
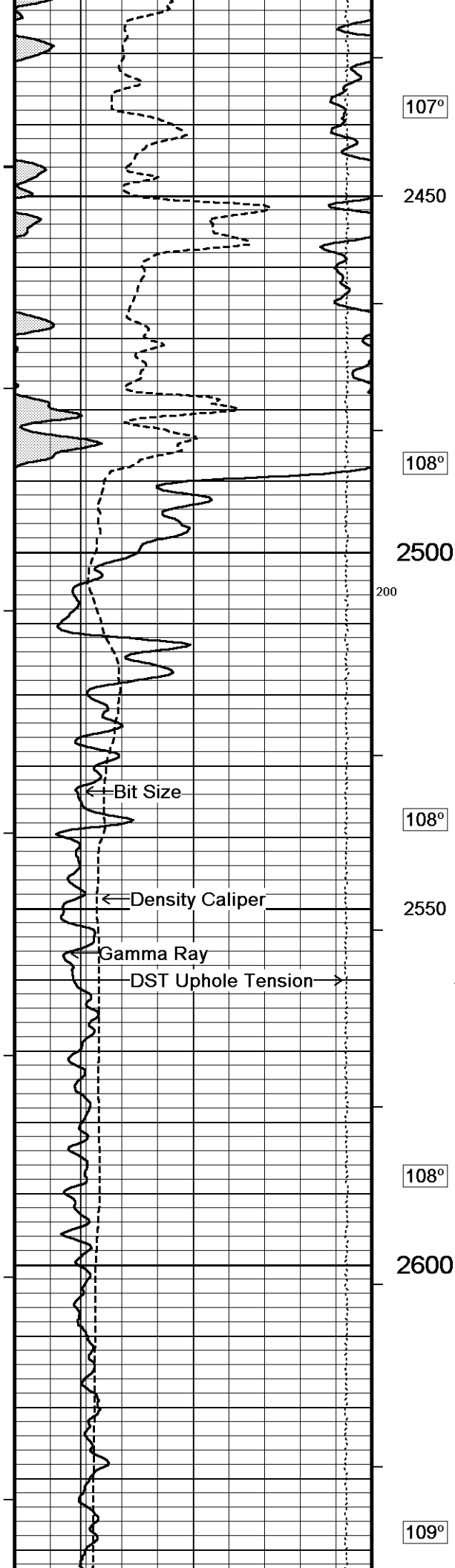
106°

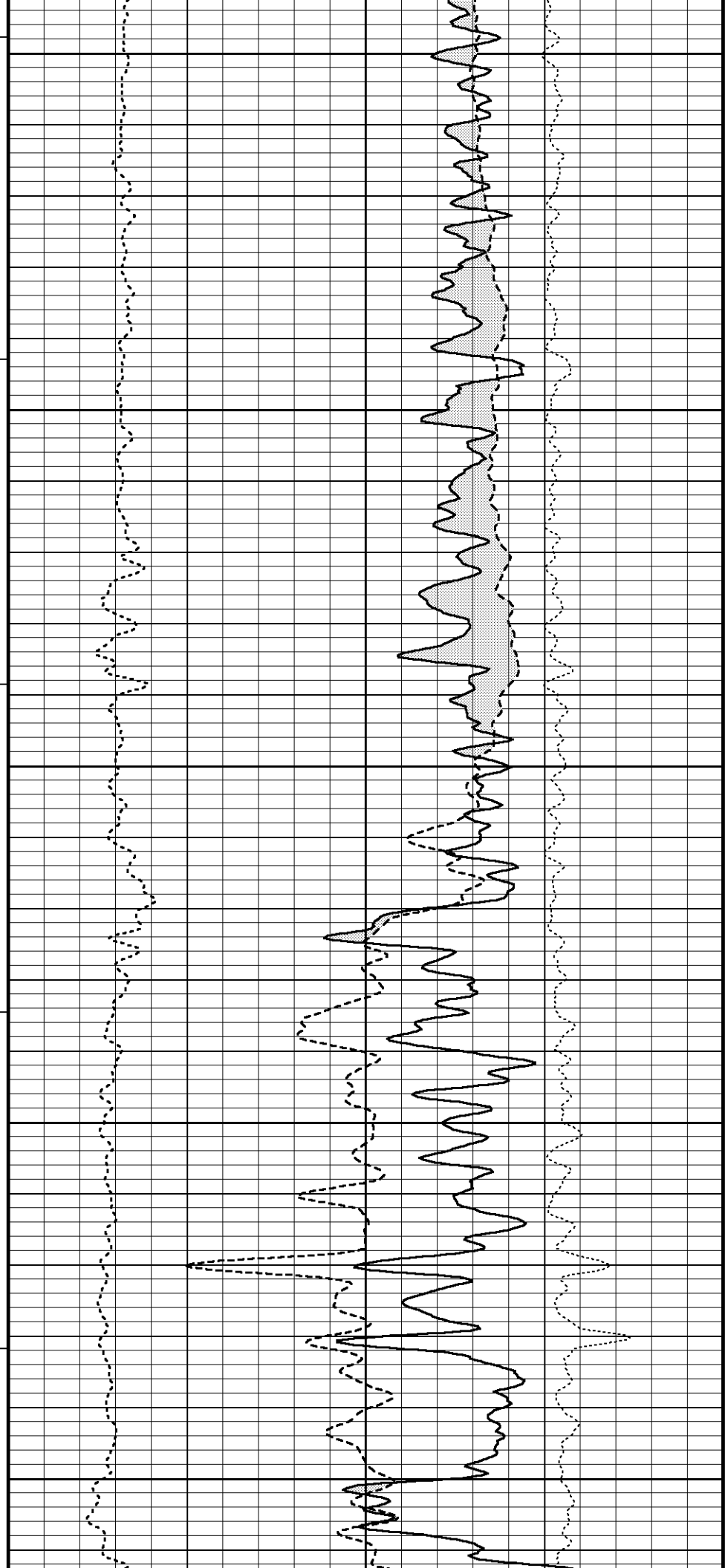
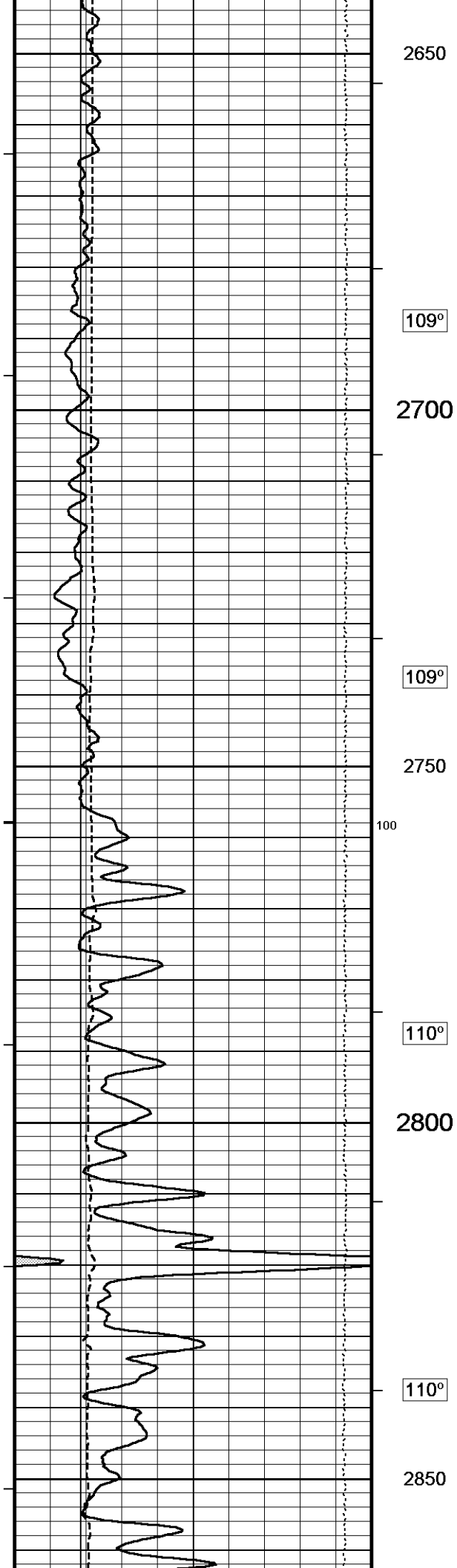
2350

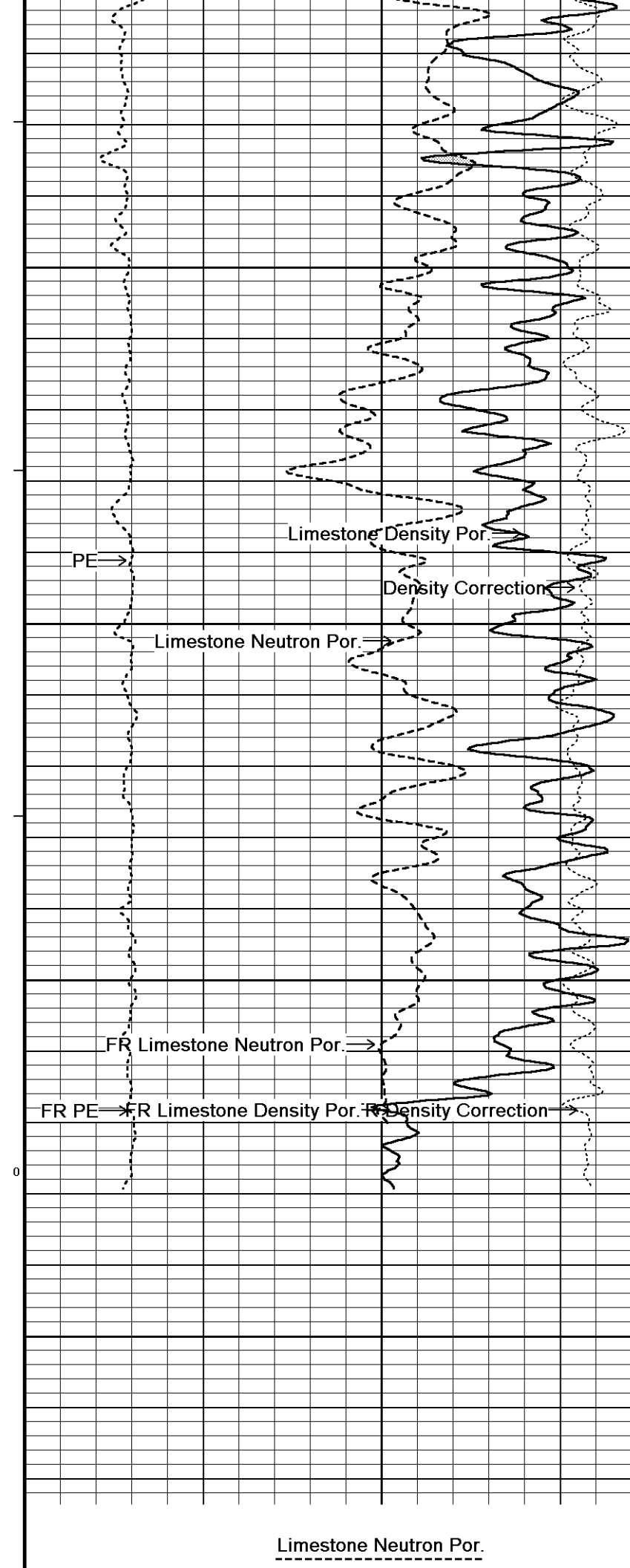
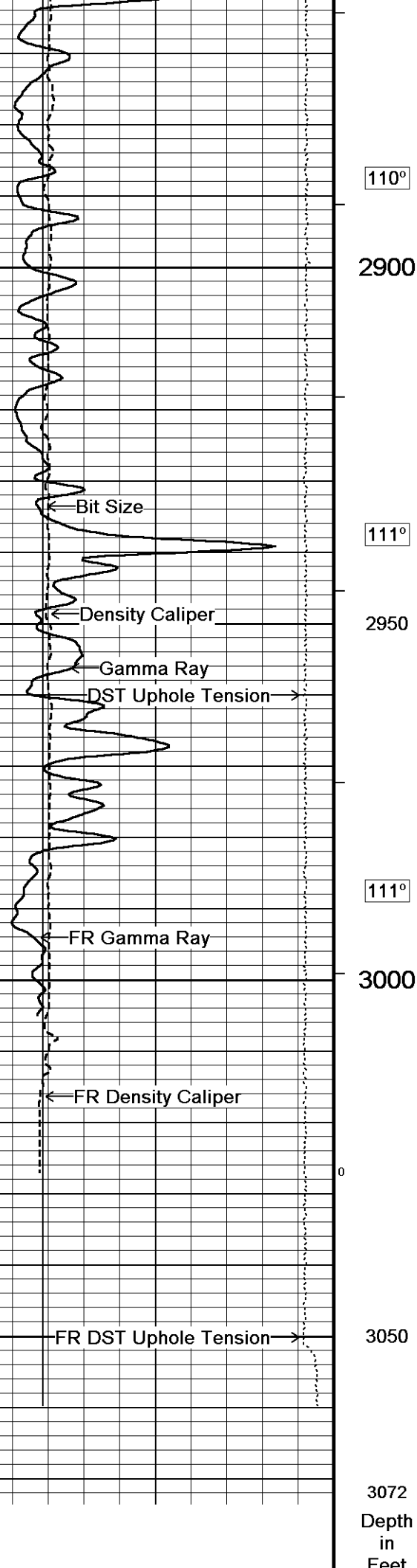
106°

2400

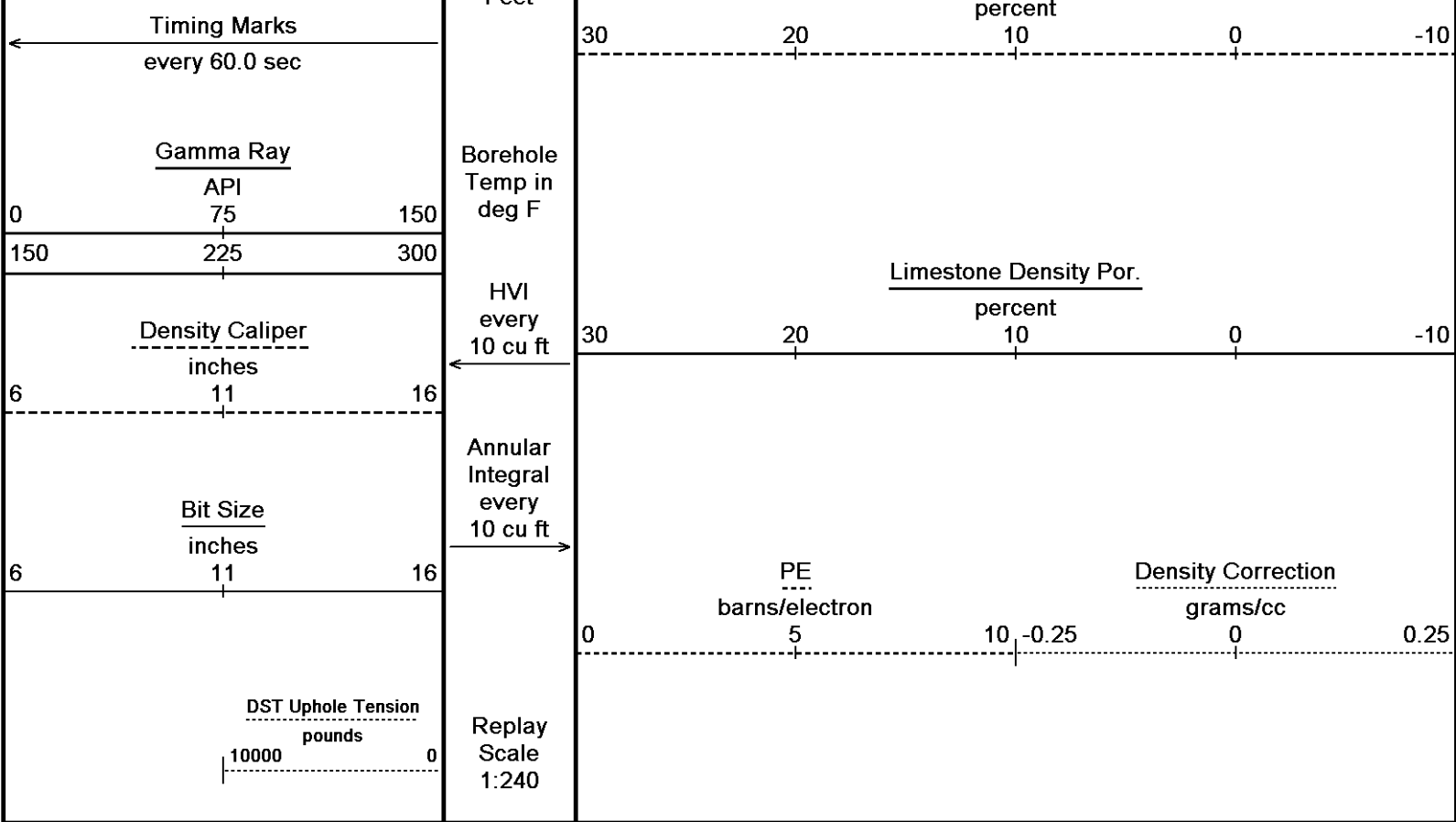








Limestone Neutron Por.



Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 16-APR-2012 05:25

Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA...MASSEY 5-1_002.dta

Recorded on 16-APR-2012 03:57

System Versions: Logged with 12.03.5032 Plotted with 12.03.5032

5 INCH POROSITY LOG

5 INCH REPEAT

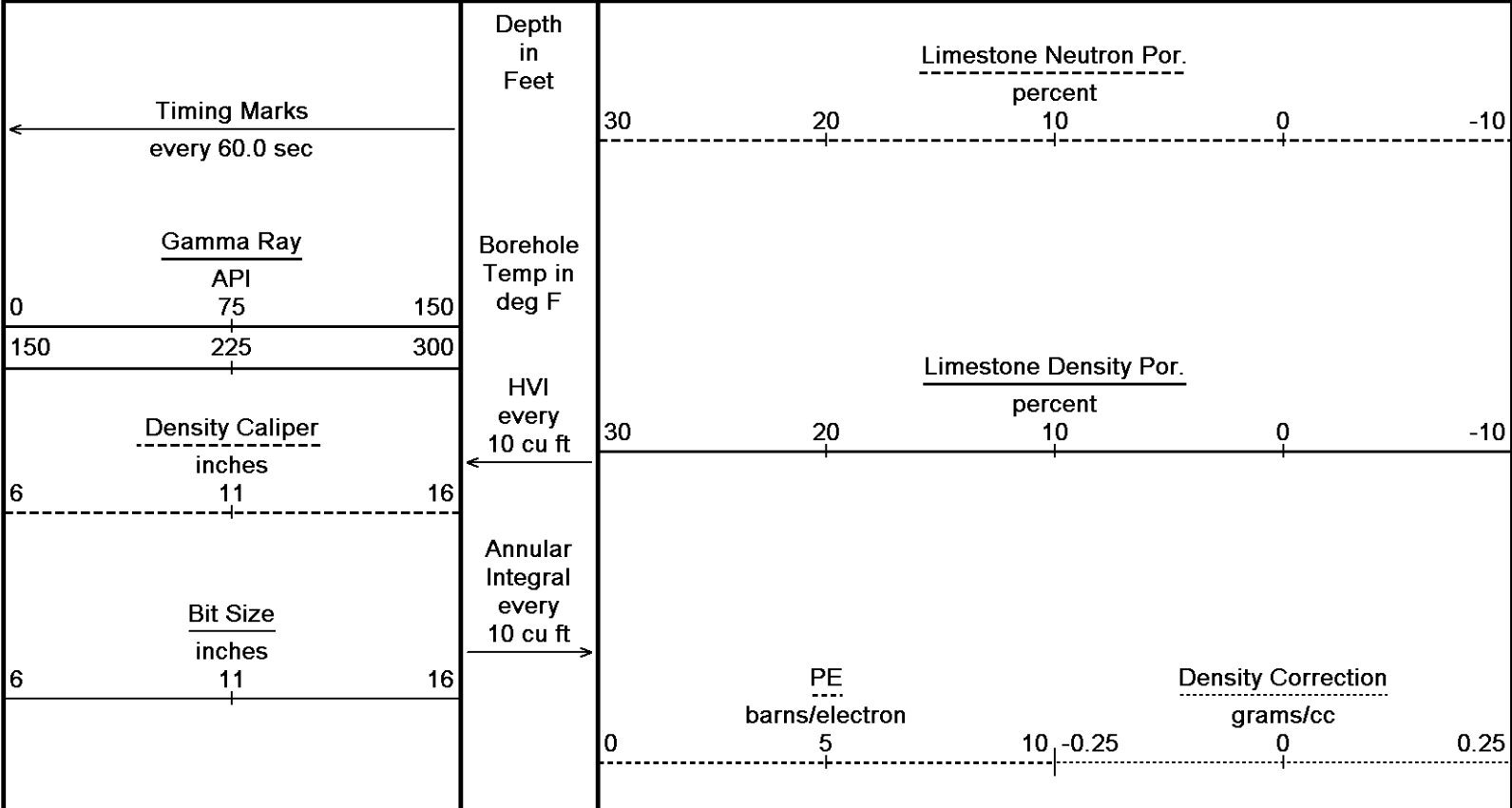
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 16-APR-2012 05:25

Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA...MASSEY 5-1_001.dta

Recorded on 16-APR-2012 03:39

System Versions: Logged with 12.03.5032 Plotted with 12.03.5032



DST Uphole Tension
pounds
10000 0

Replay
Scale
1:240

2800

109°

2850

109°

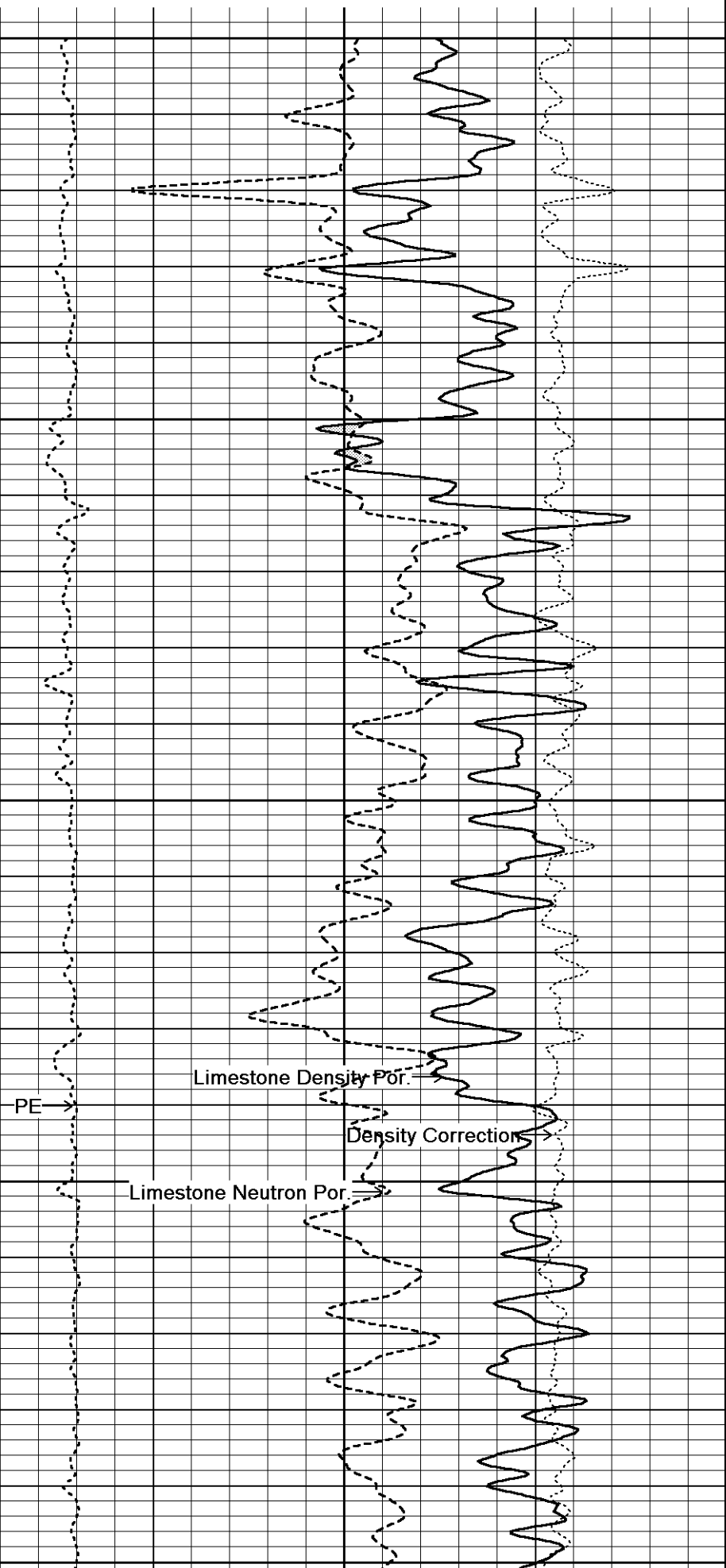
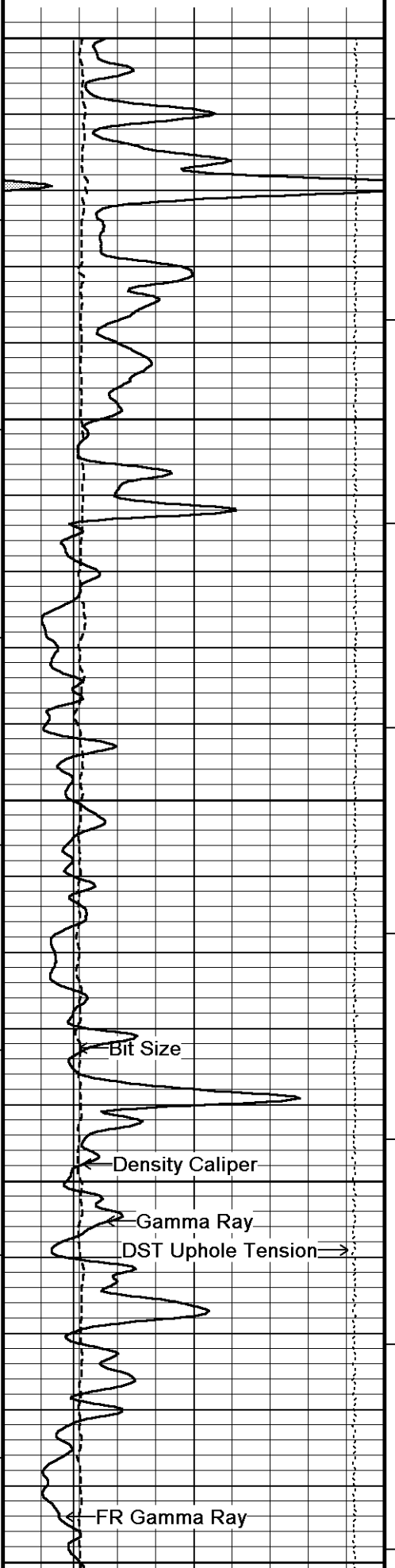
2900

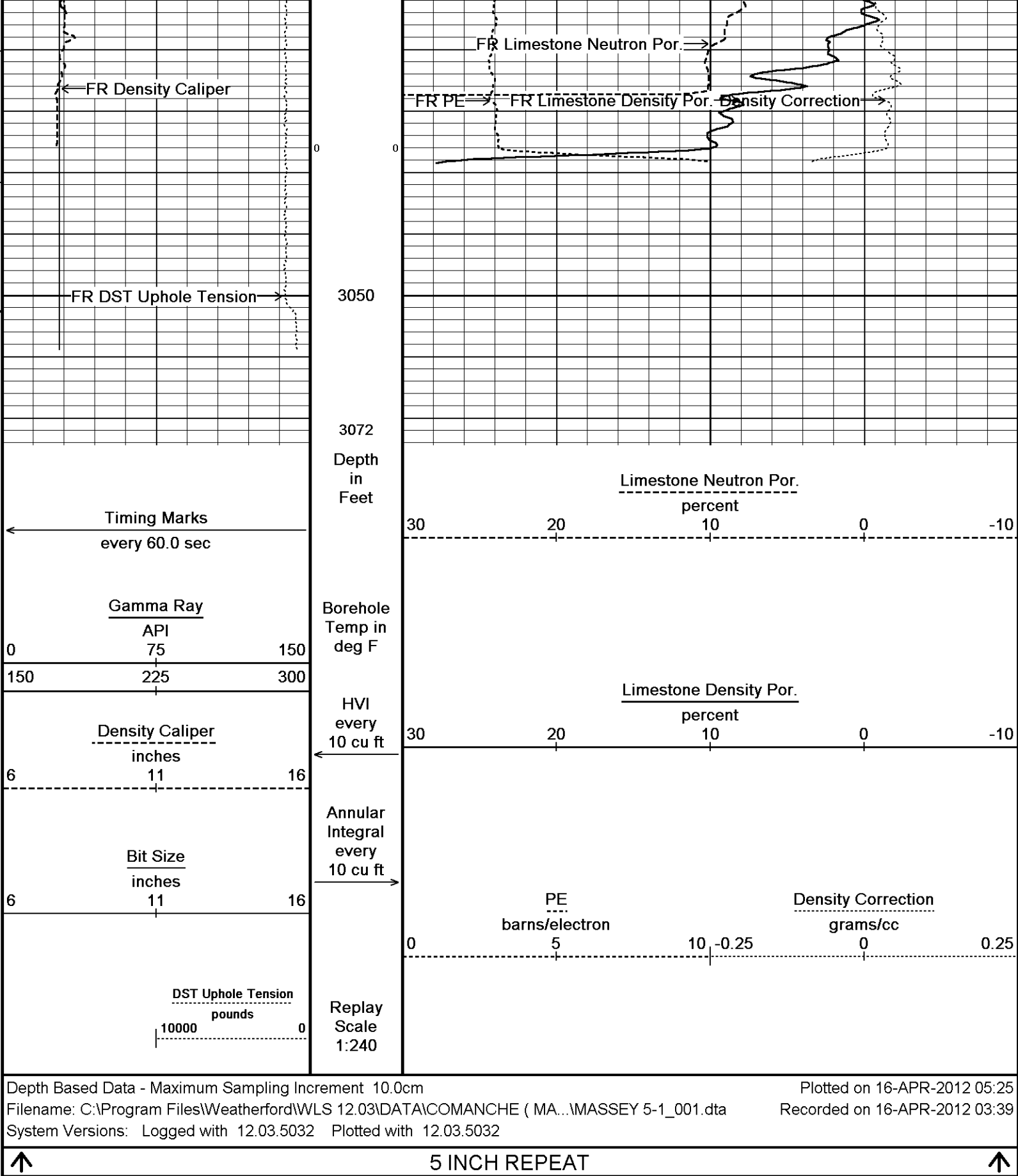
110°

2950

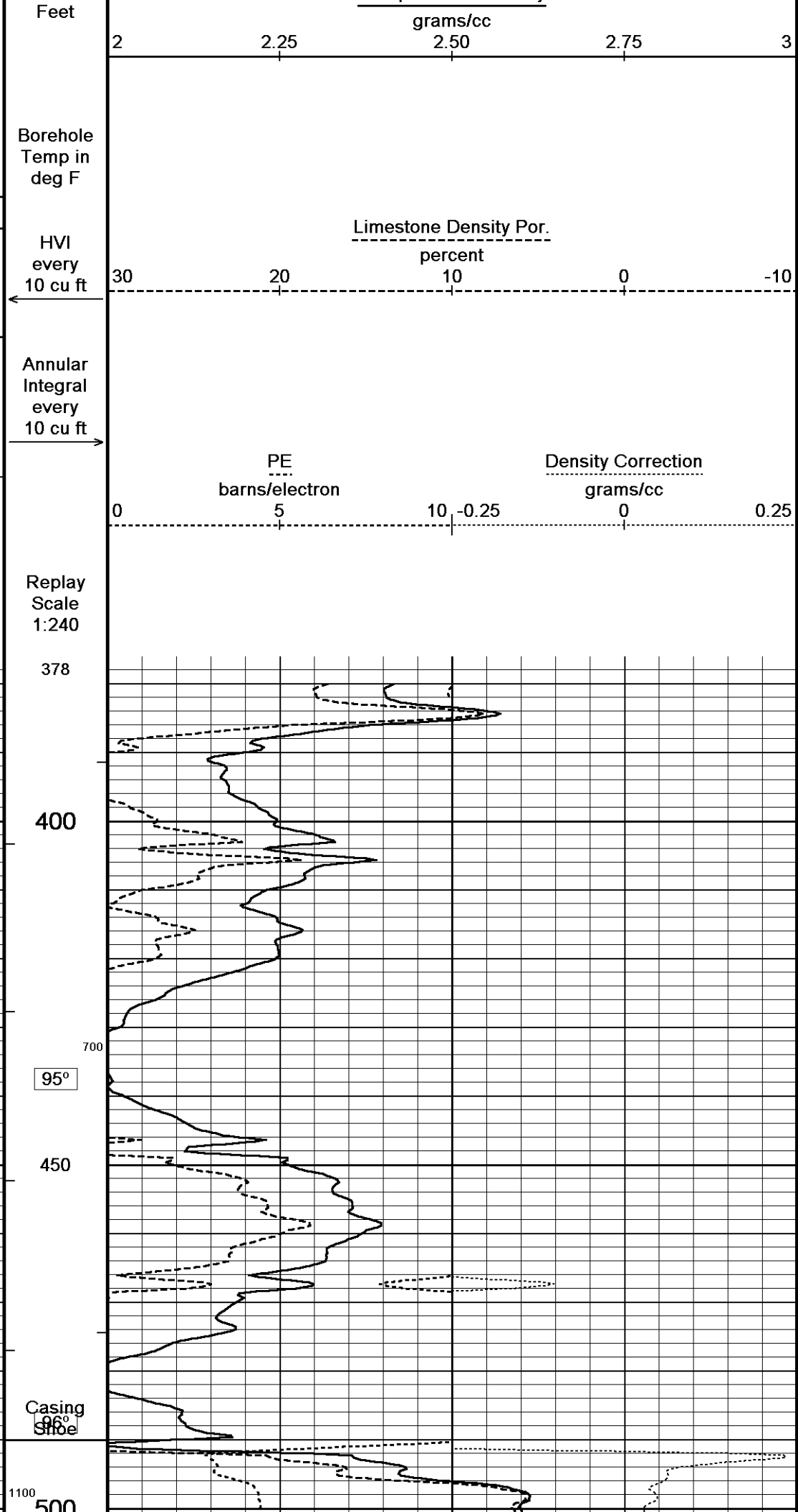
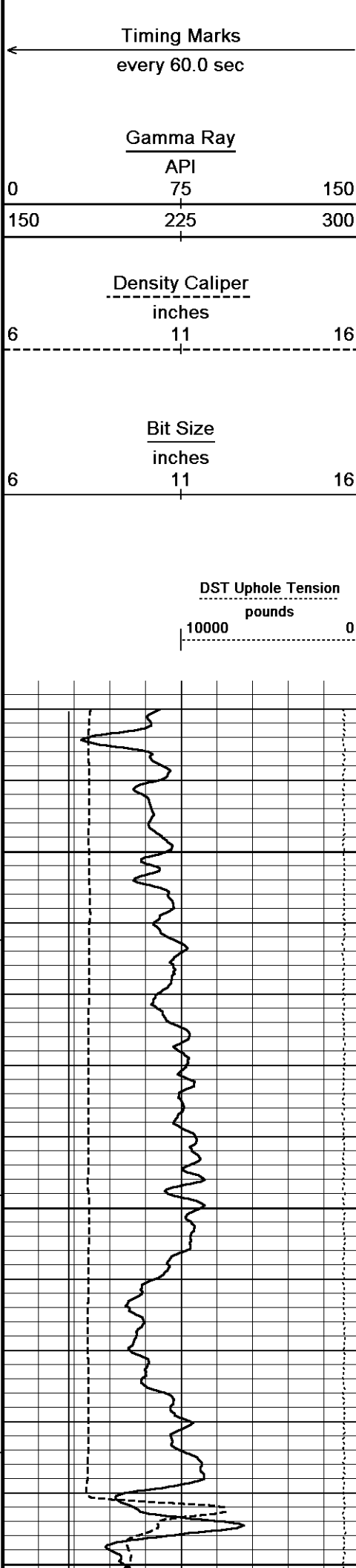
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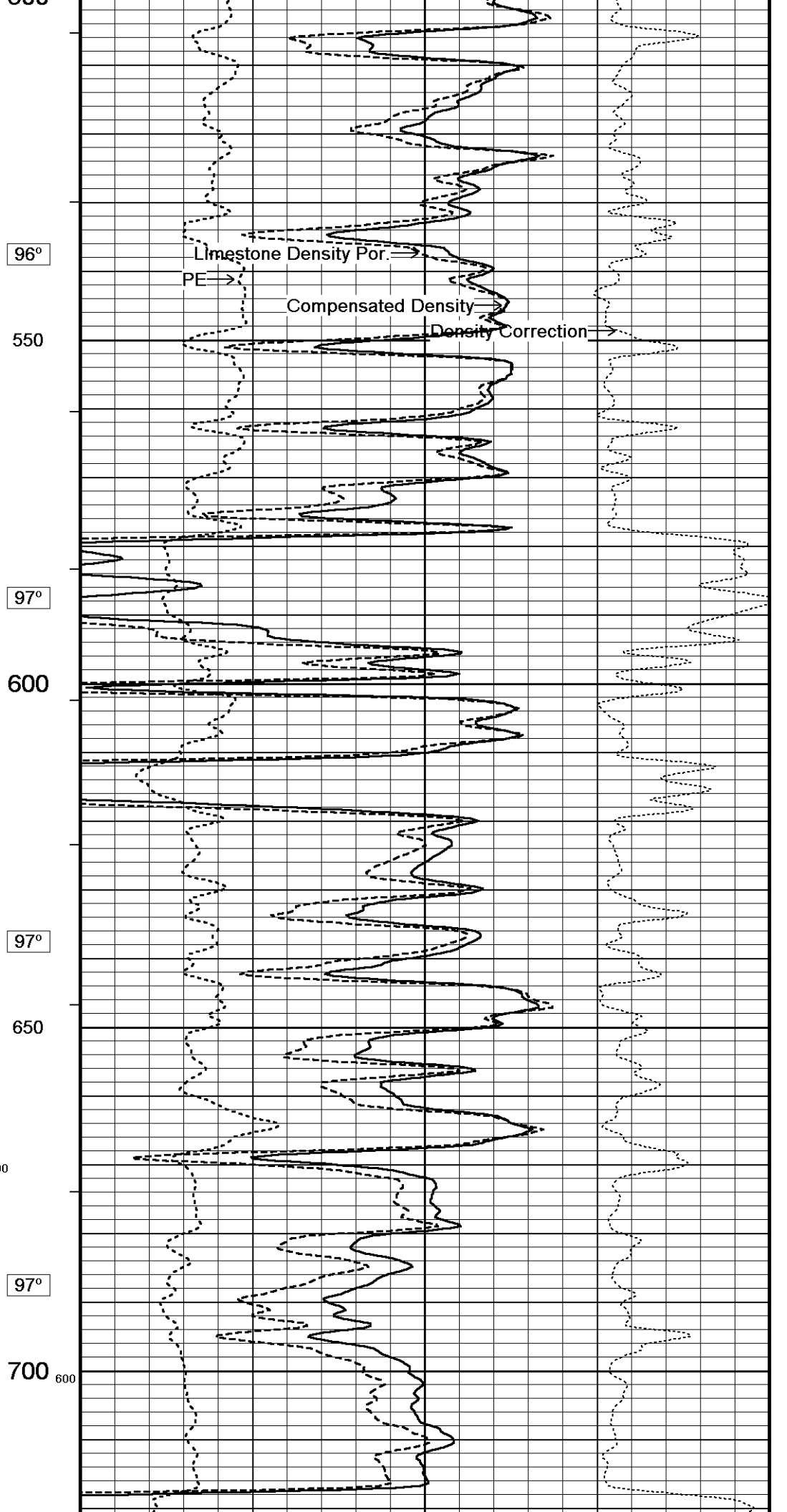
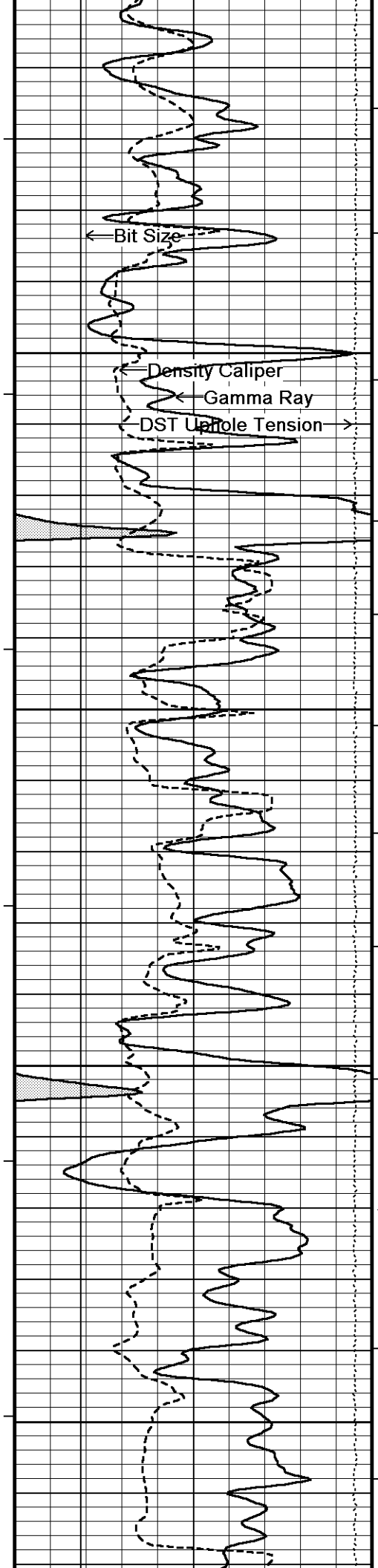
3000

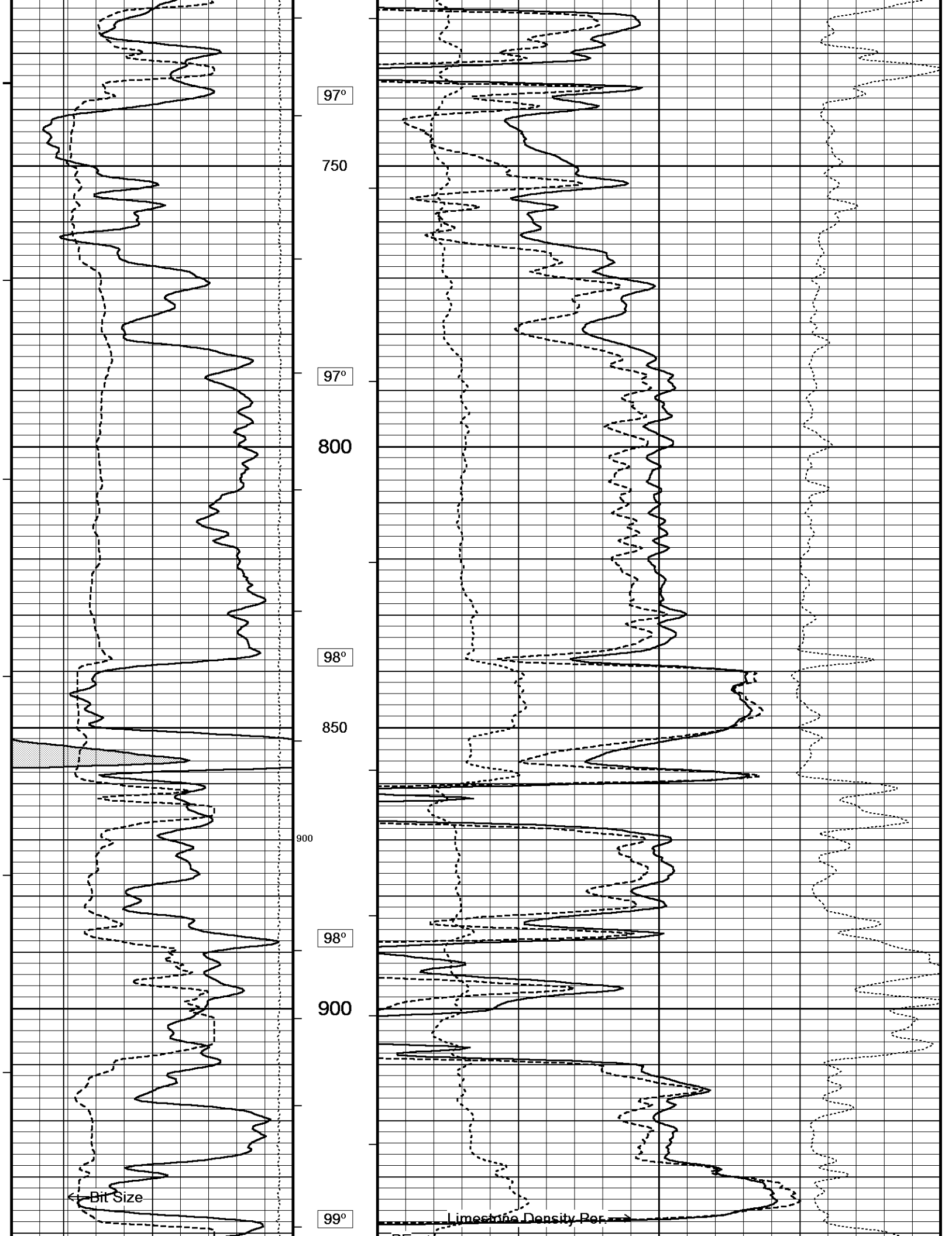


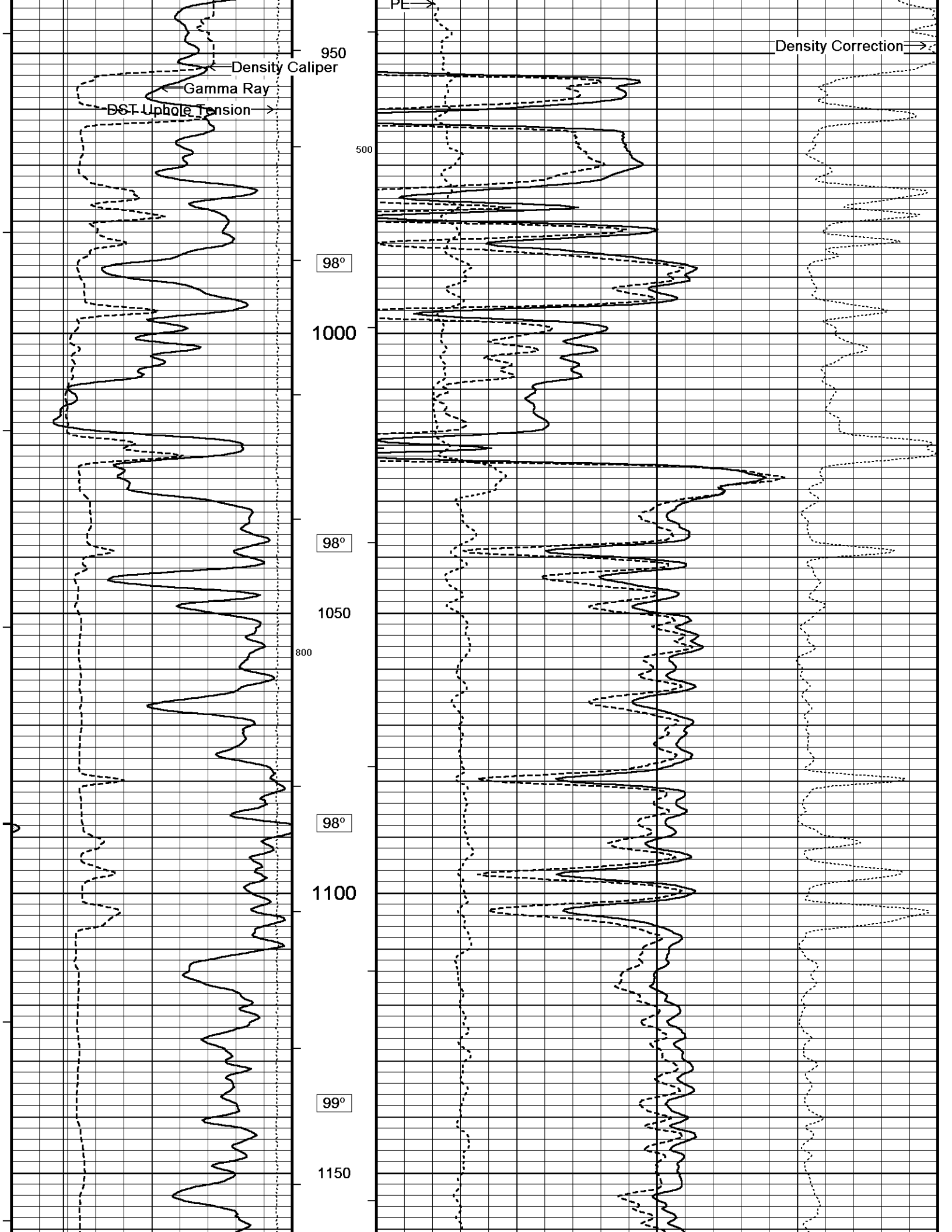


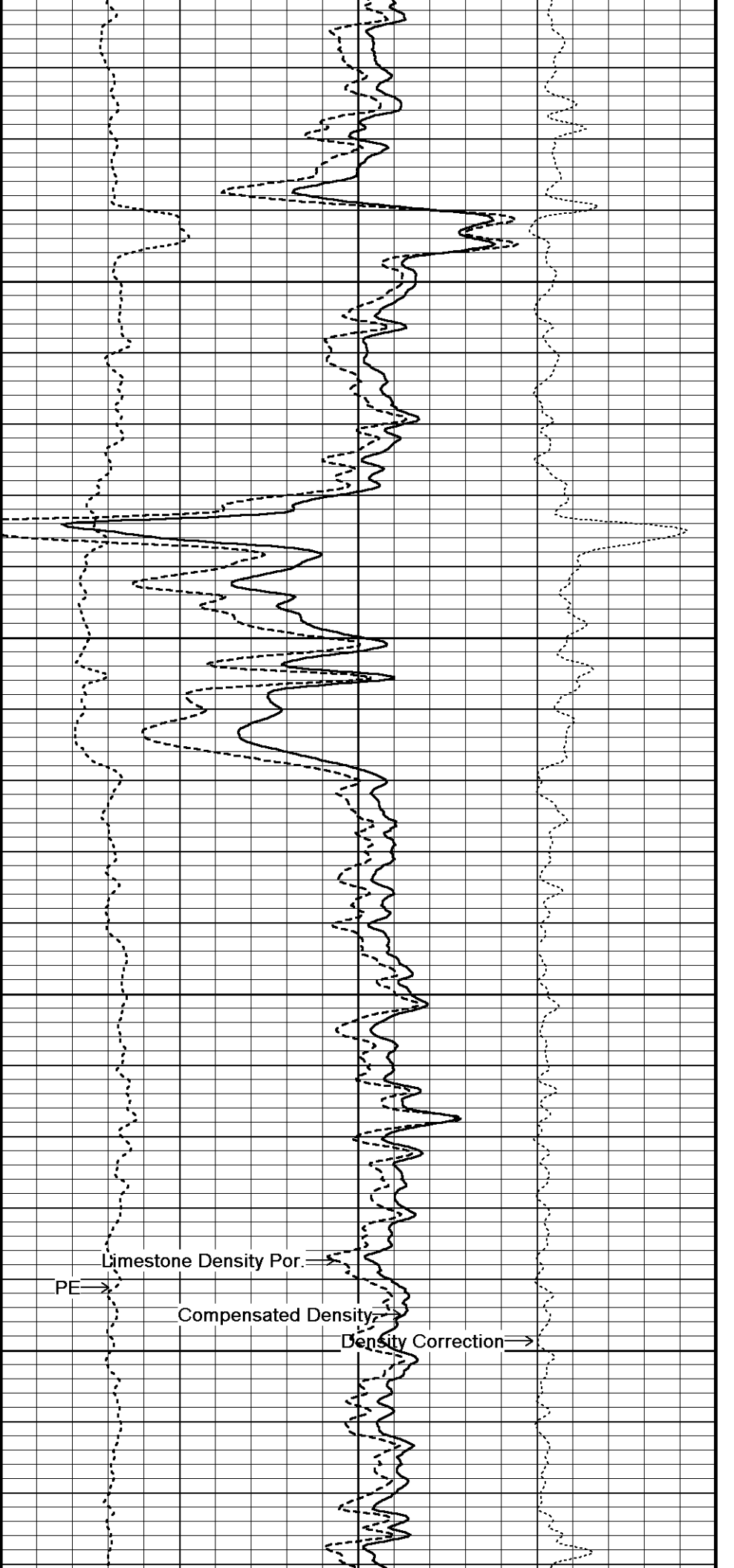
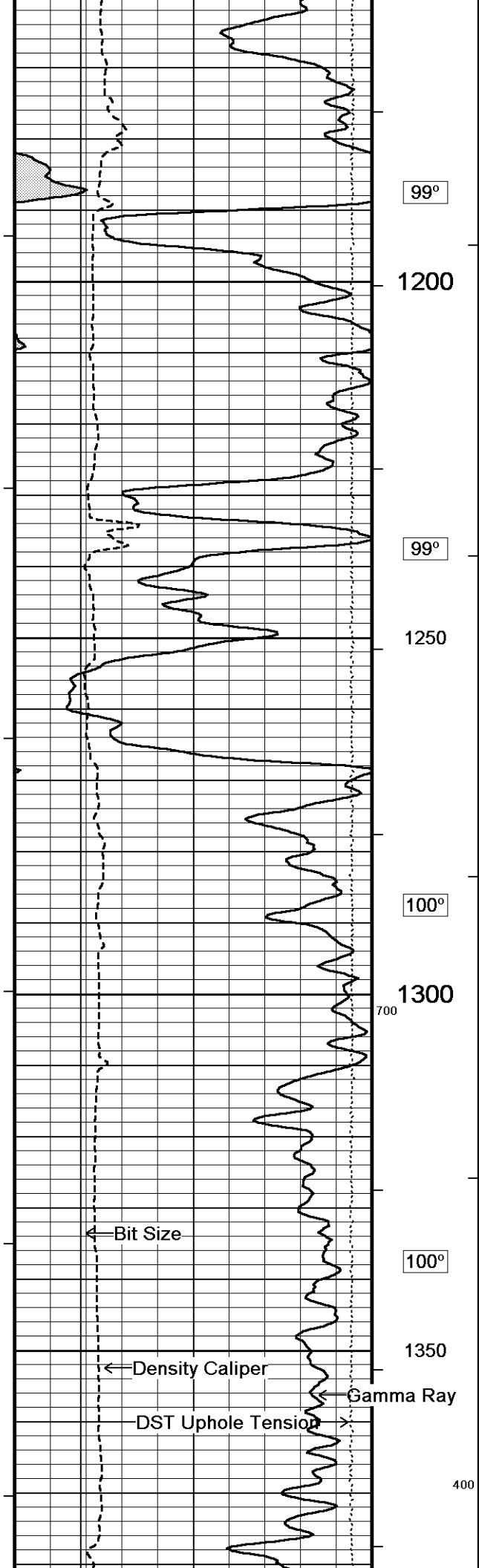
5 INCH BULK DENSITY		
Depth Based Data - Maximum Sampling Increment 10.0cm		
Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA...MASSEY 5-1_002.dta		
System Versions: Logged with 12.03.5032 Plotted with 12.03.5032		
Plotted on 16-APR-2012 05:25		
Recorded on 16-APR-2012 03:57		
	Depth in	Compensated Density

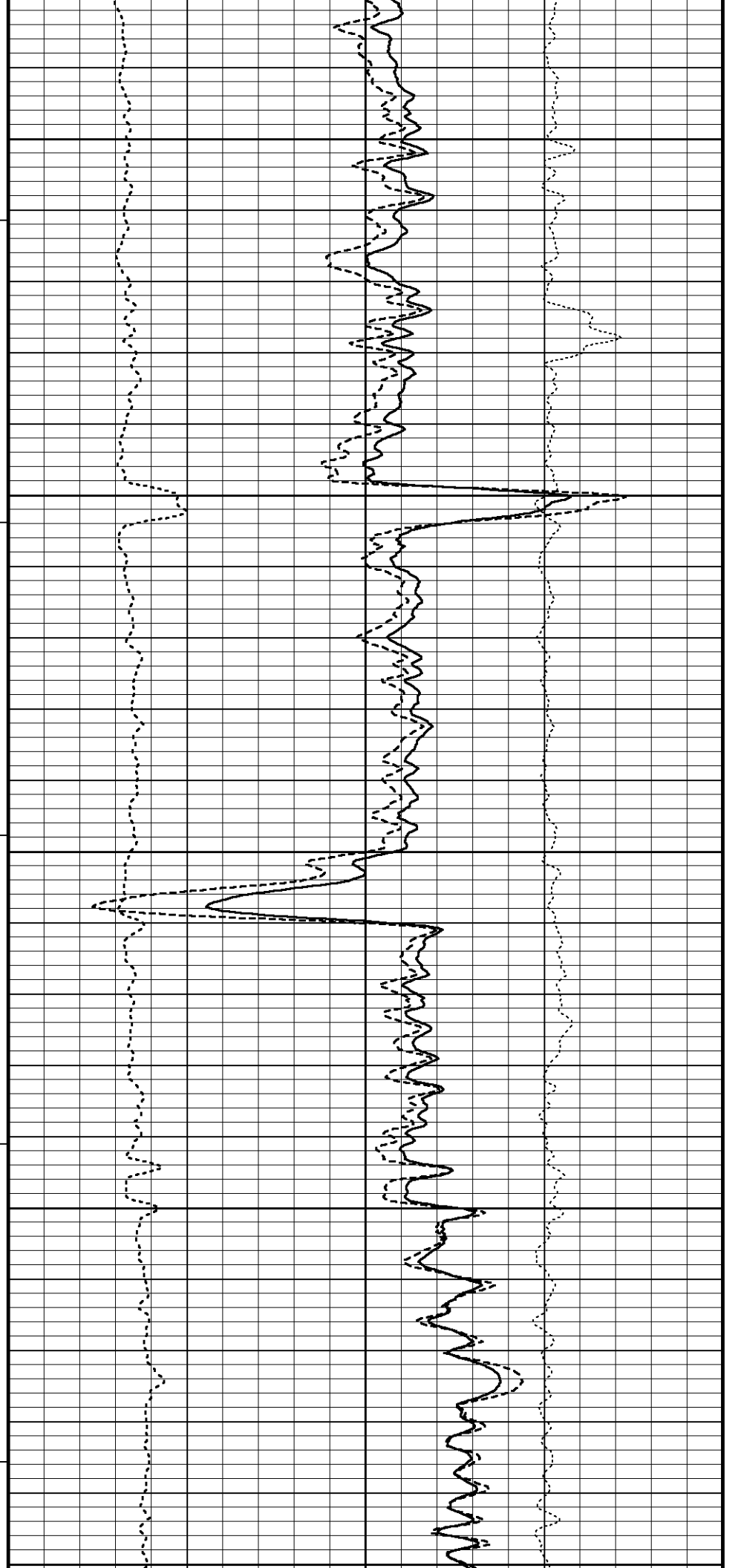
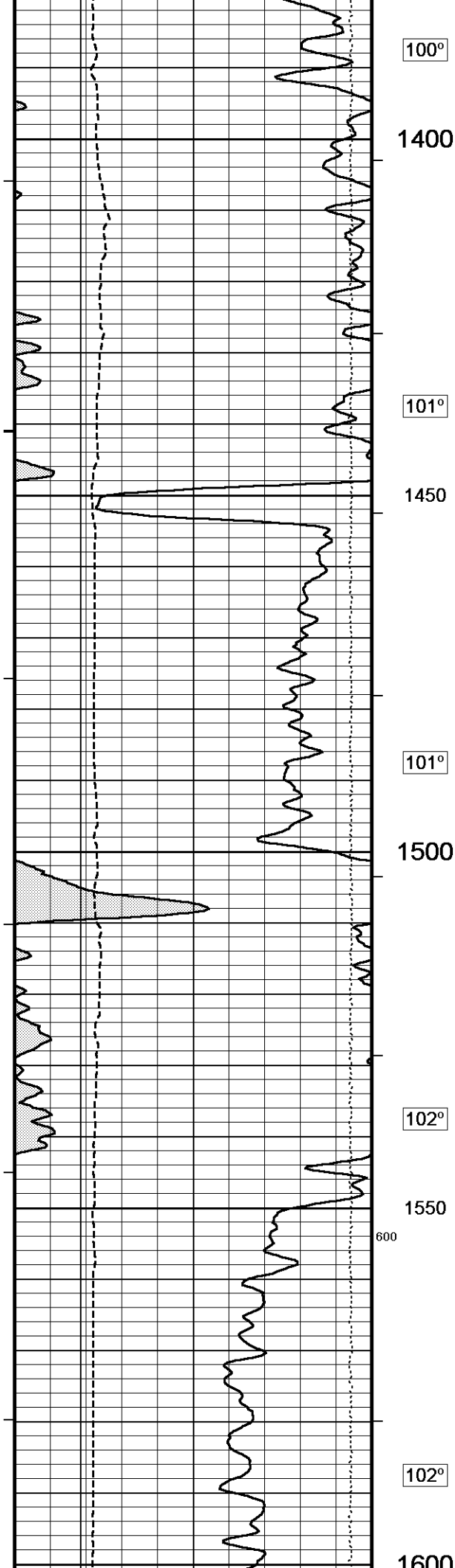


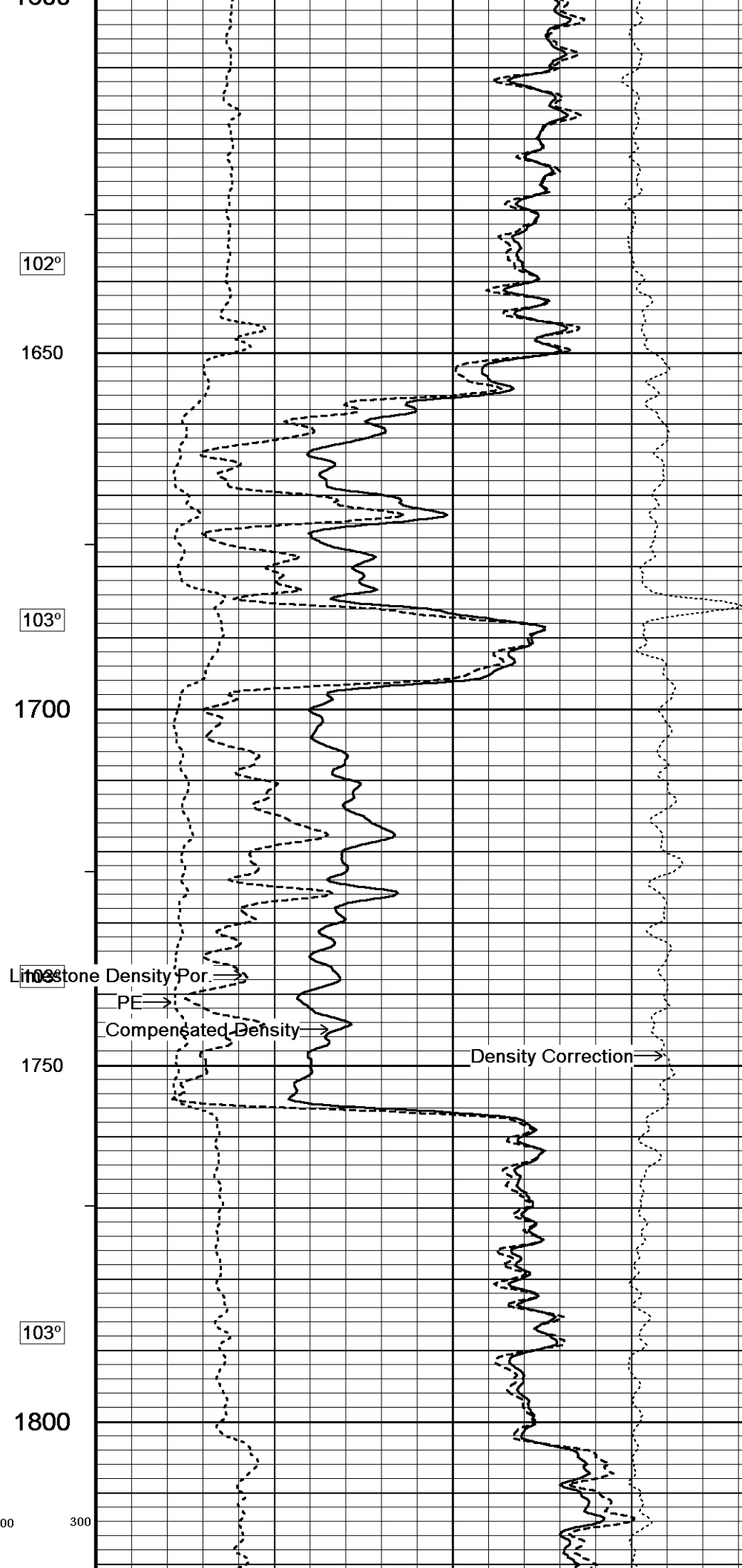
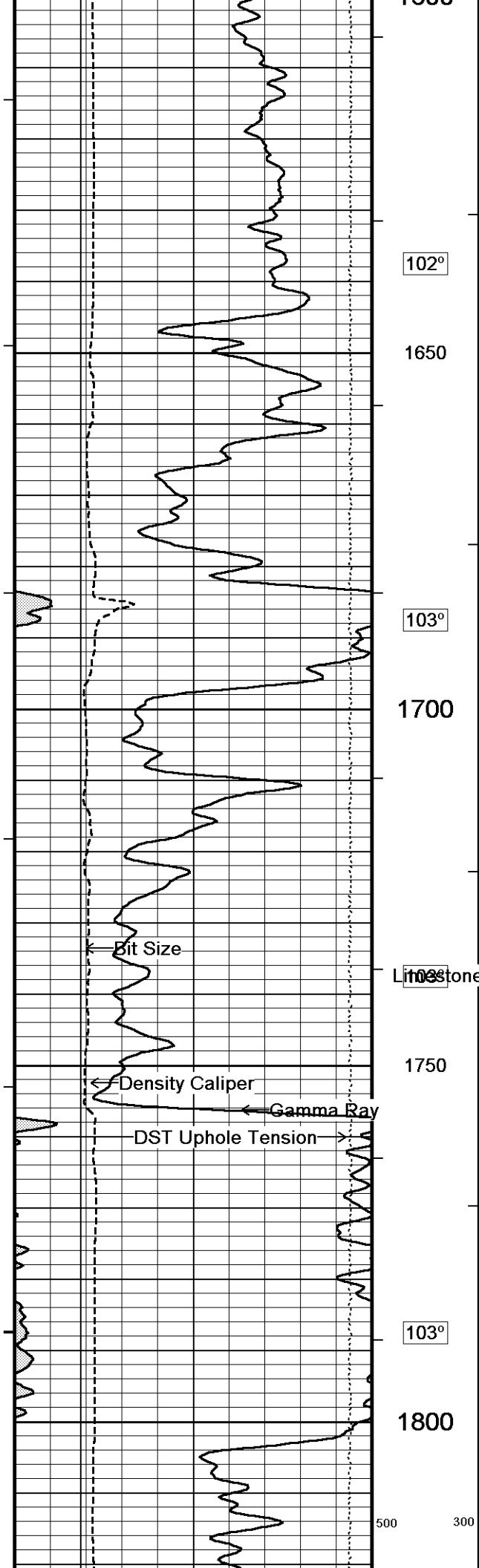


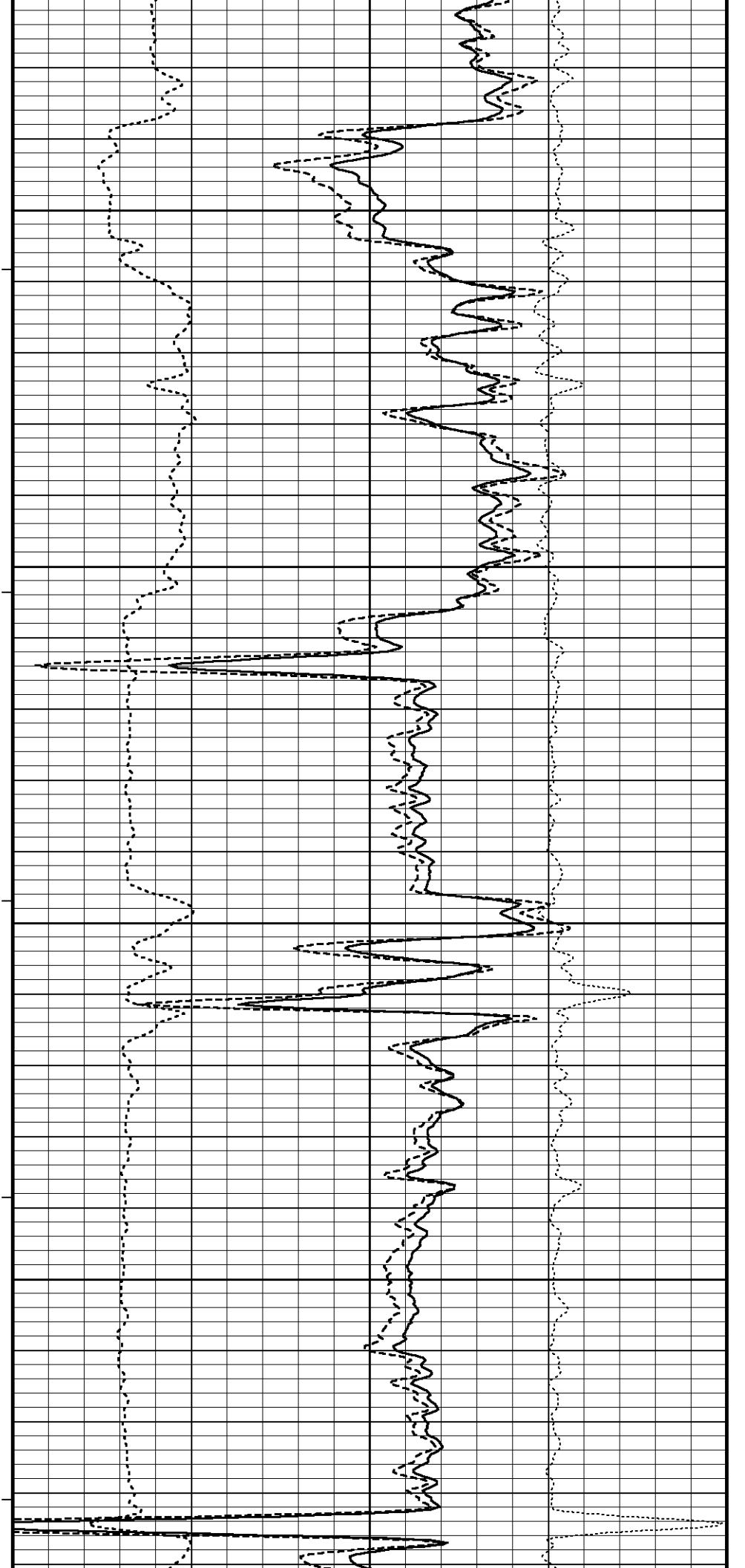
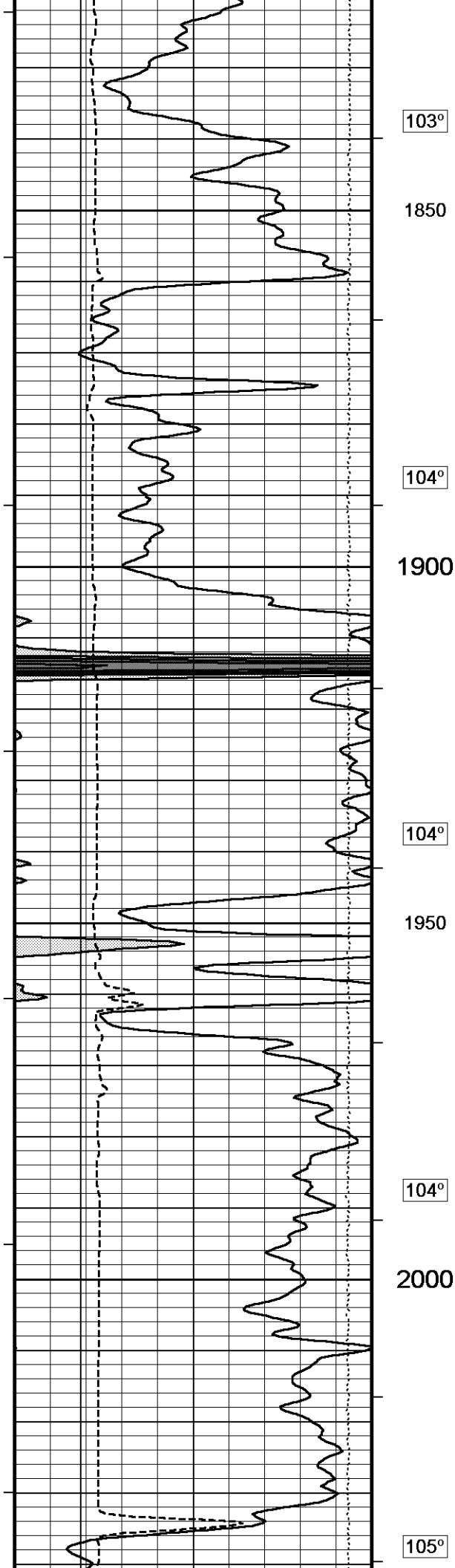


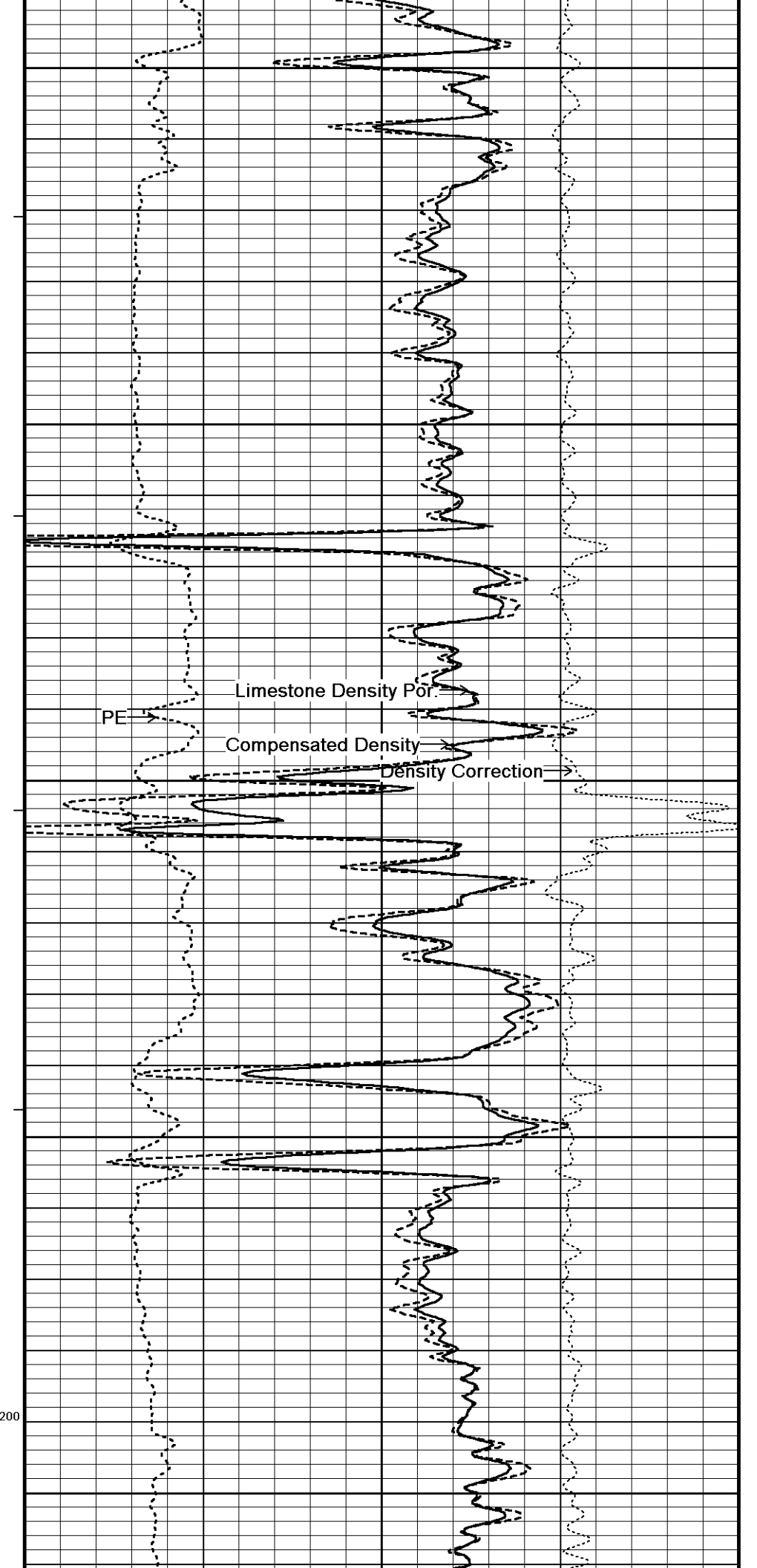
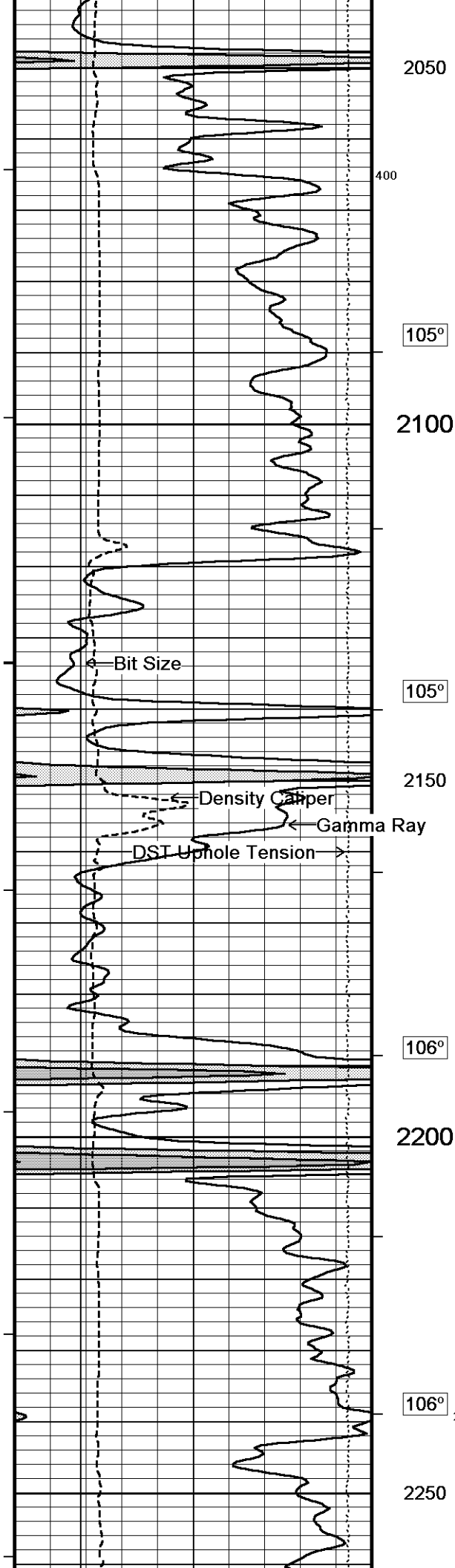


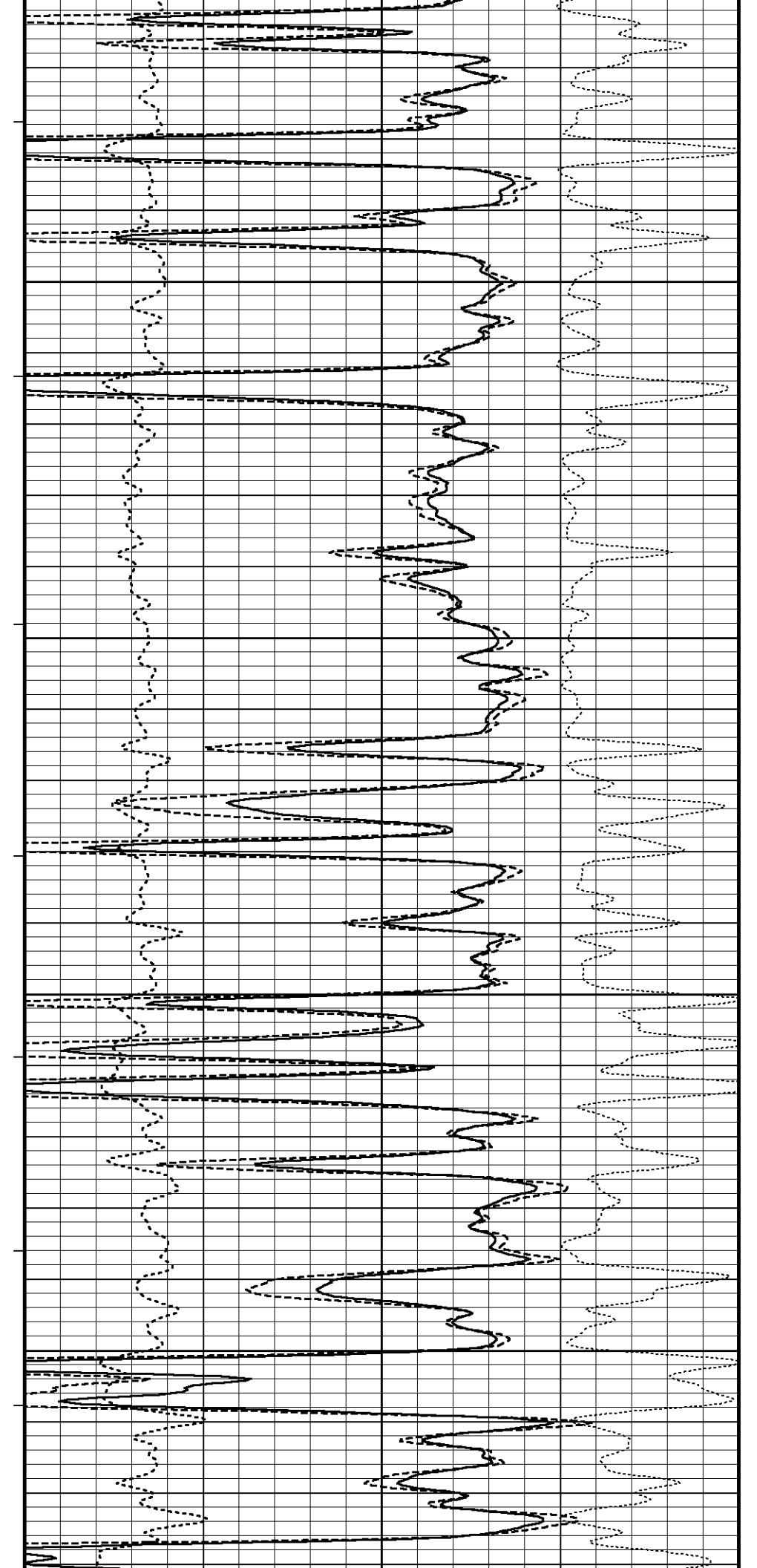
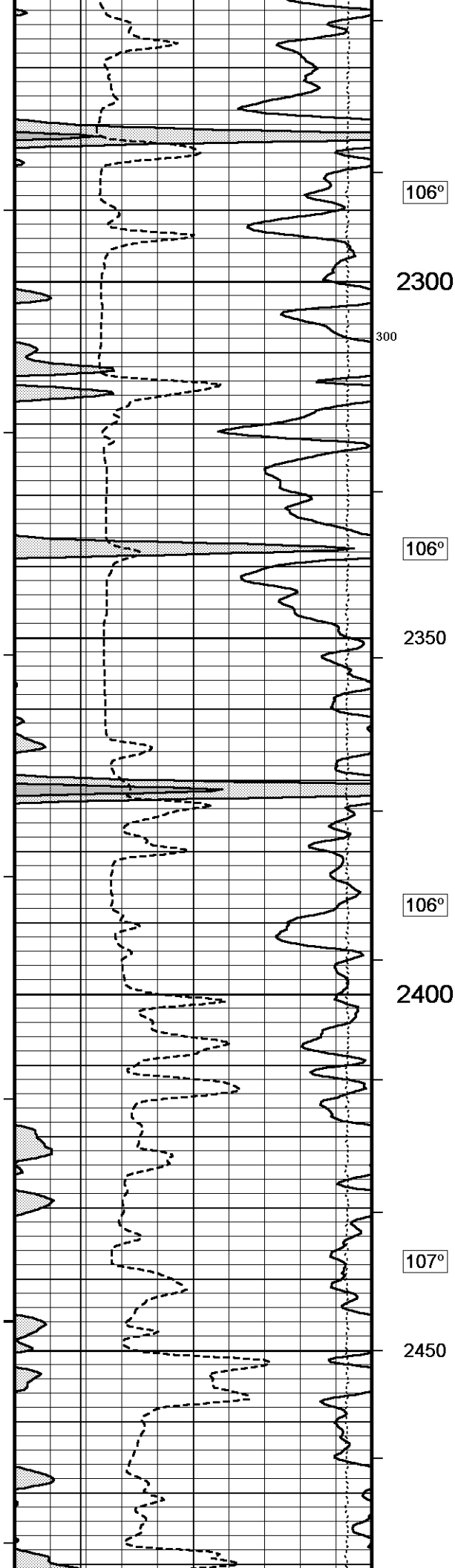


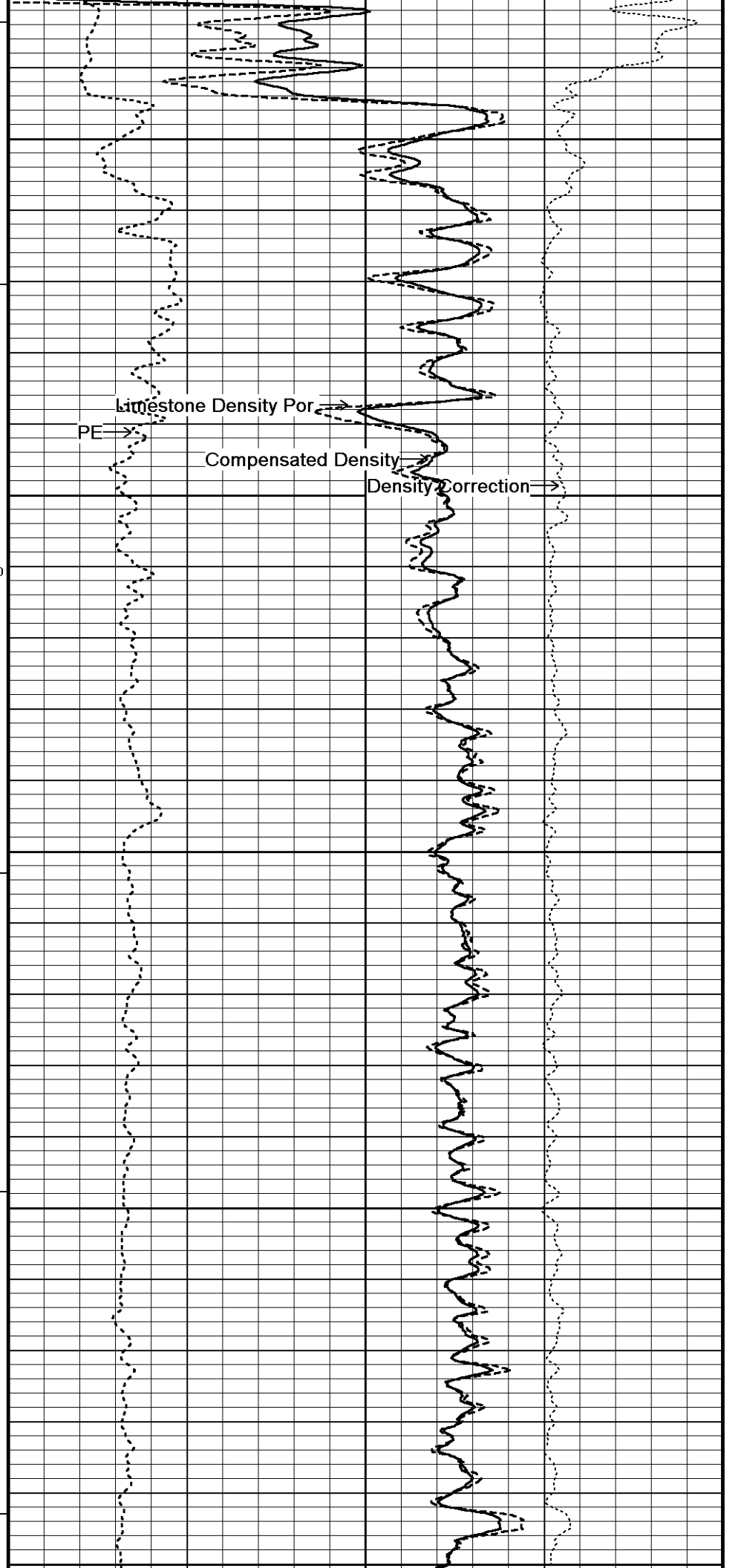
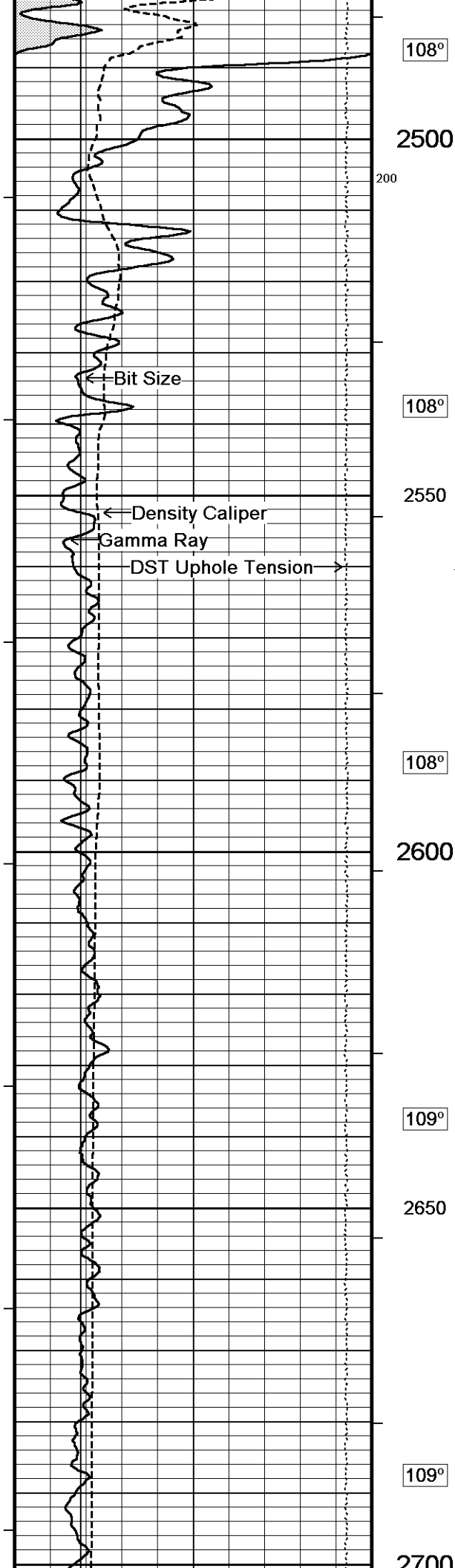


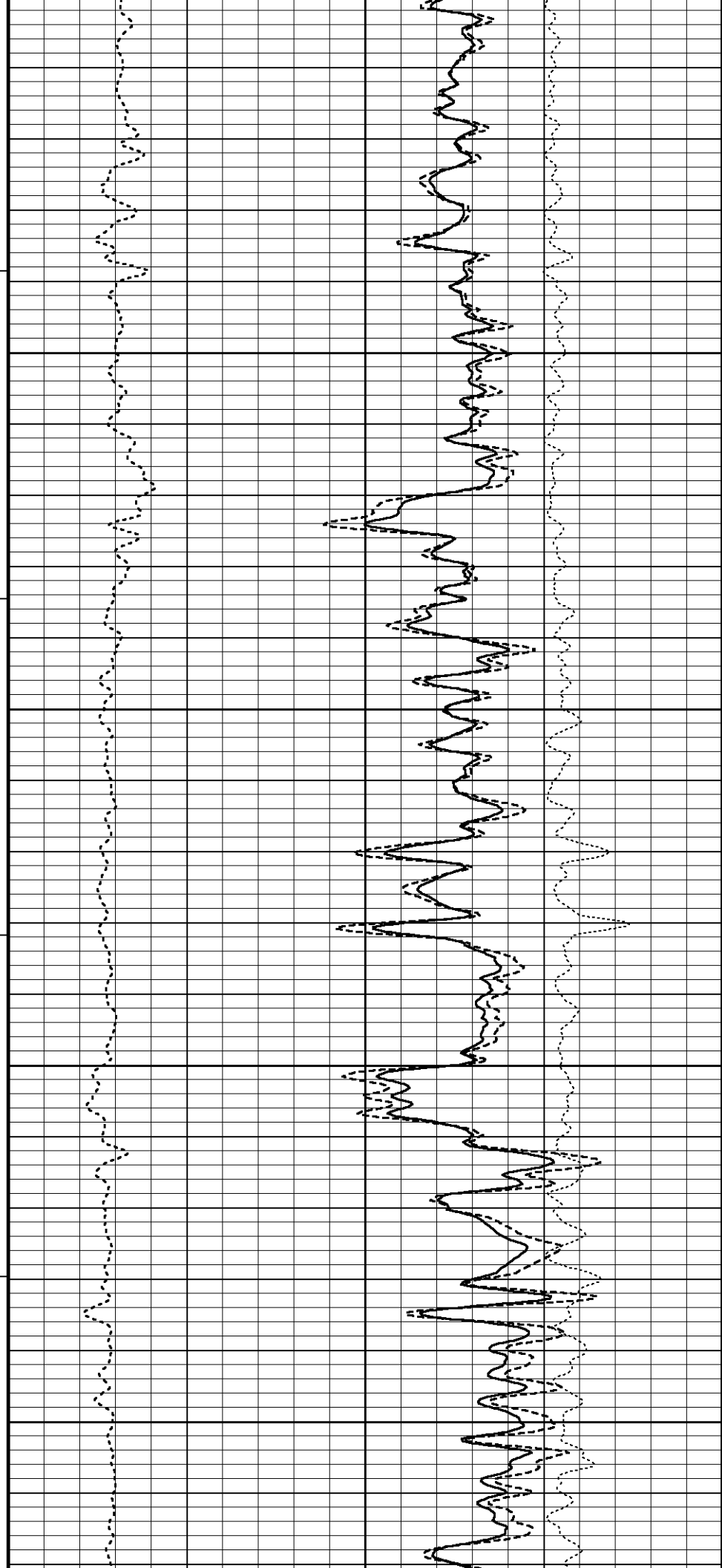
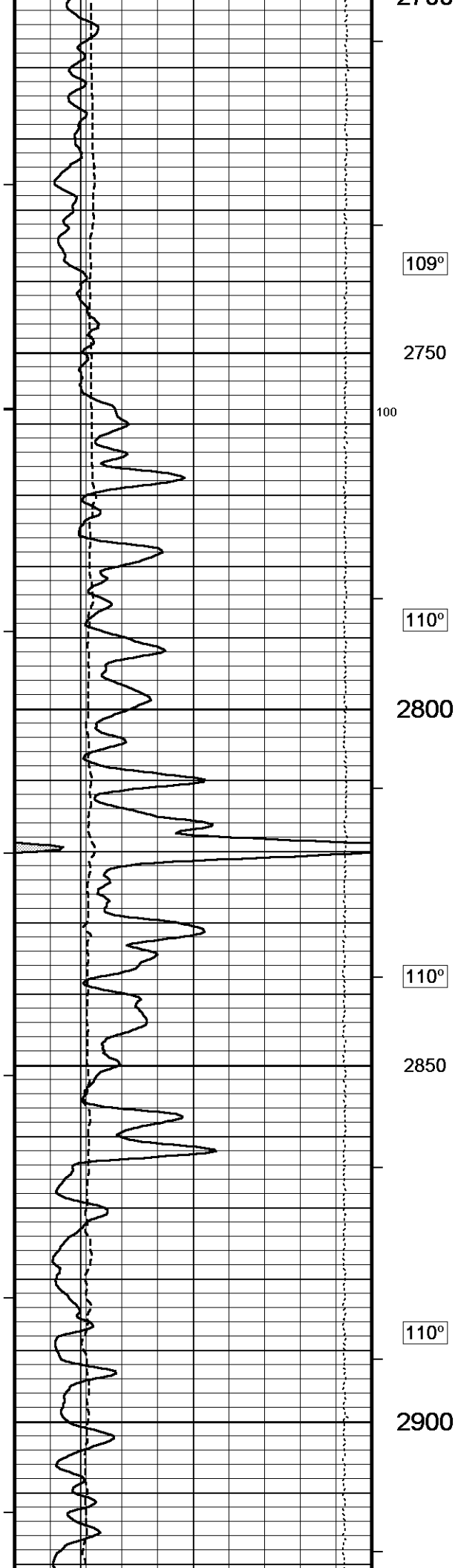


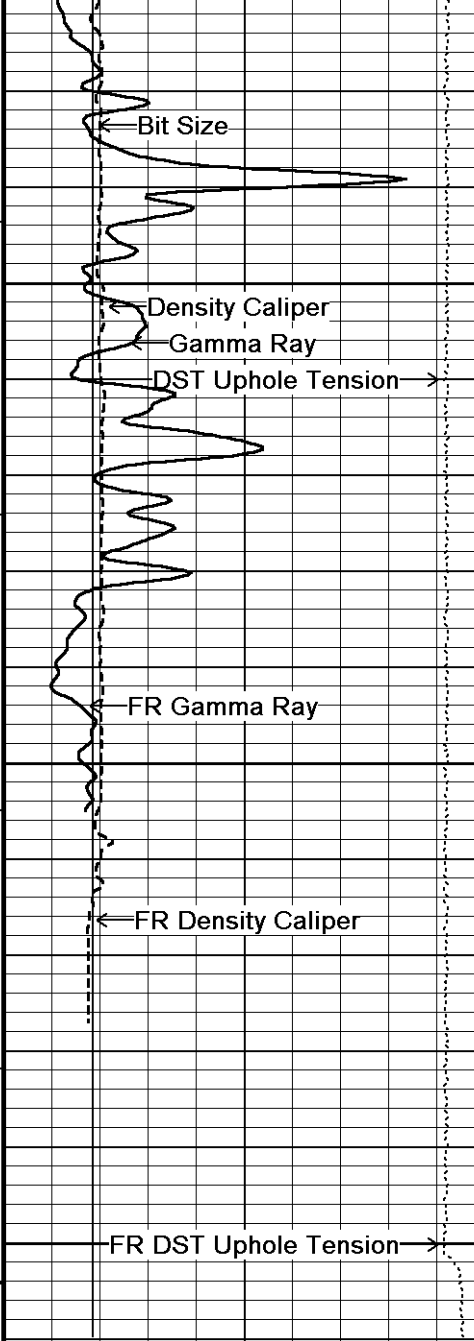












111°

2950

111°

3000

0

3050

3072

Depth
in
Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

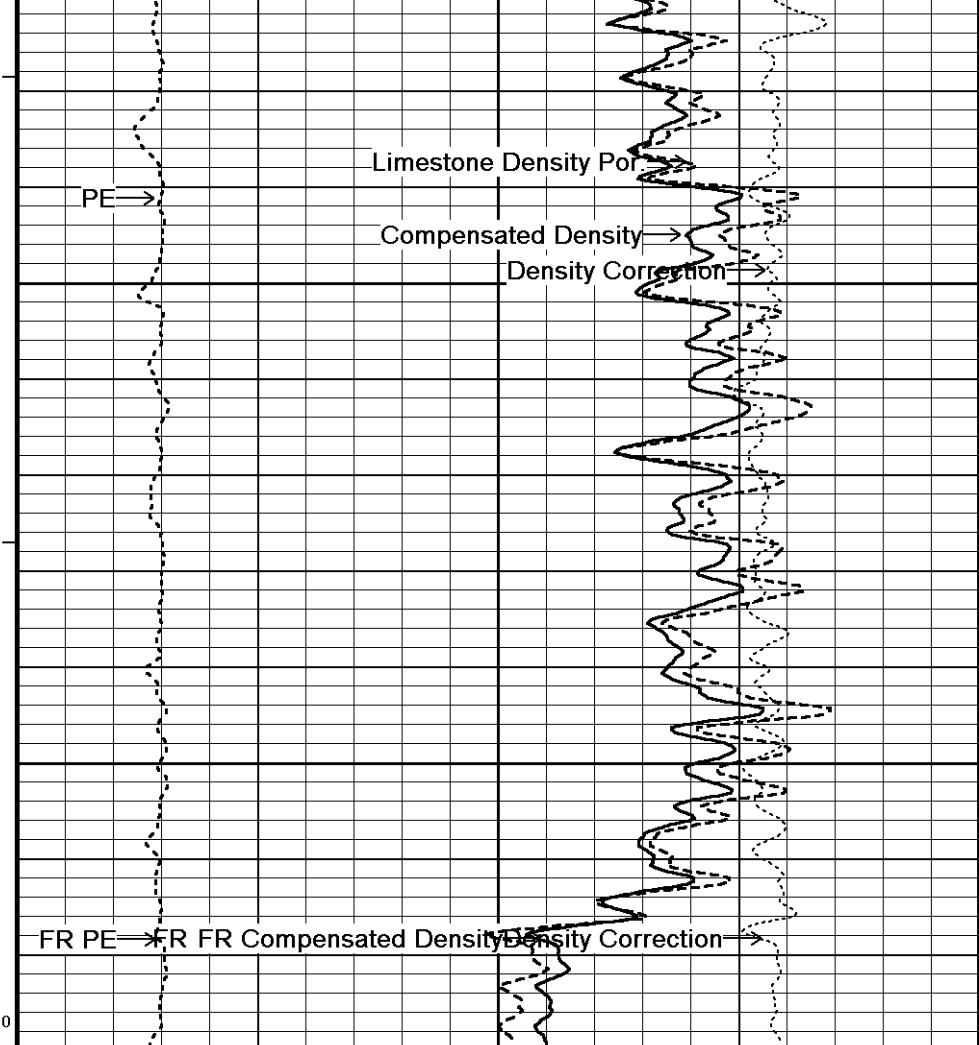
Density Caliper
inches
6 11 16

Bit Size

Borehole
Temp in
deg F

HVI
every
10 cu ft

Annular
Integral
every

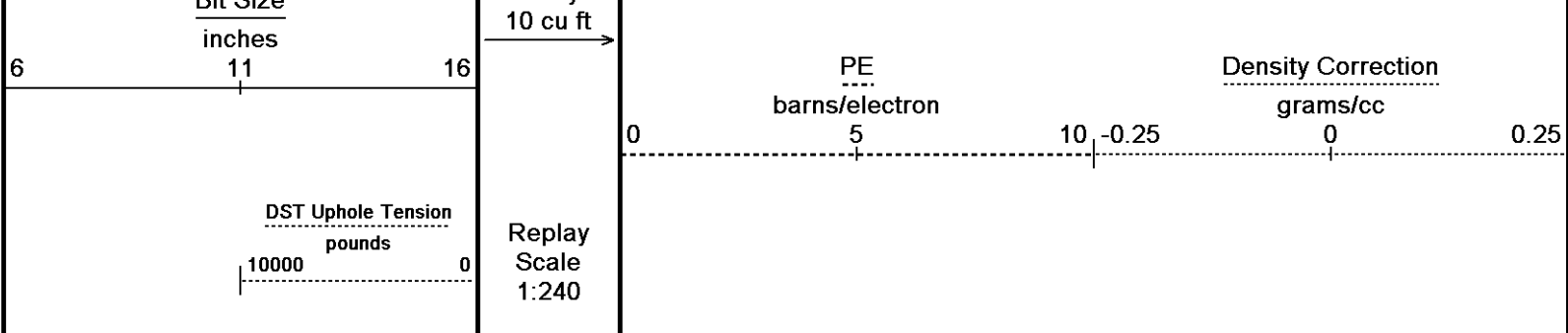


Compensated Density
grams/cc

2 2.25 2.50 2.75 3

Limestone Density Por.
percent

30 20 10 0 -10



Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-APR-2012 05:25
Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA... \MASSEY 5-1_002.dta
Recorded on 16-APR-2012 03:57
System Versions: Logged with 12.03.5032 Plotted with 12.03.5032

↑

5 INCH BULK DENSITY

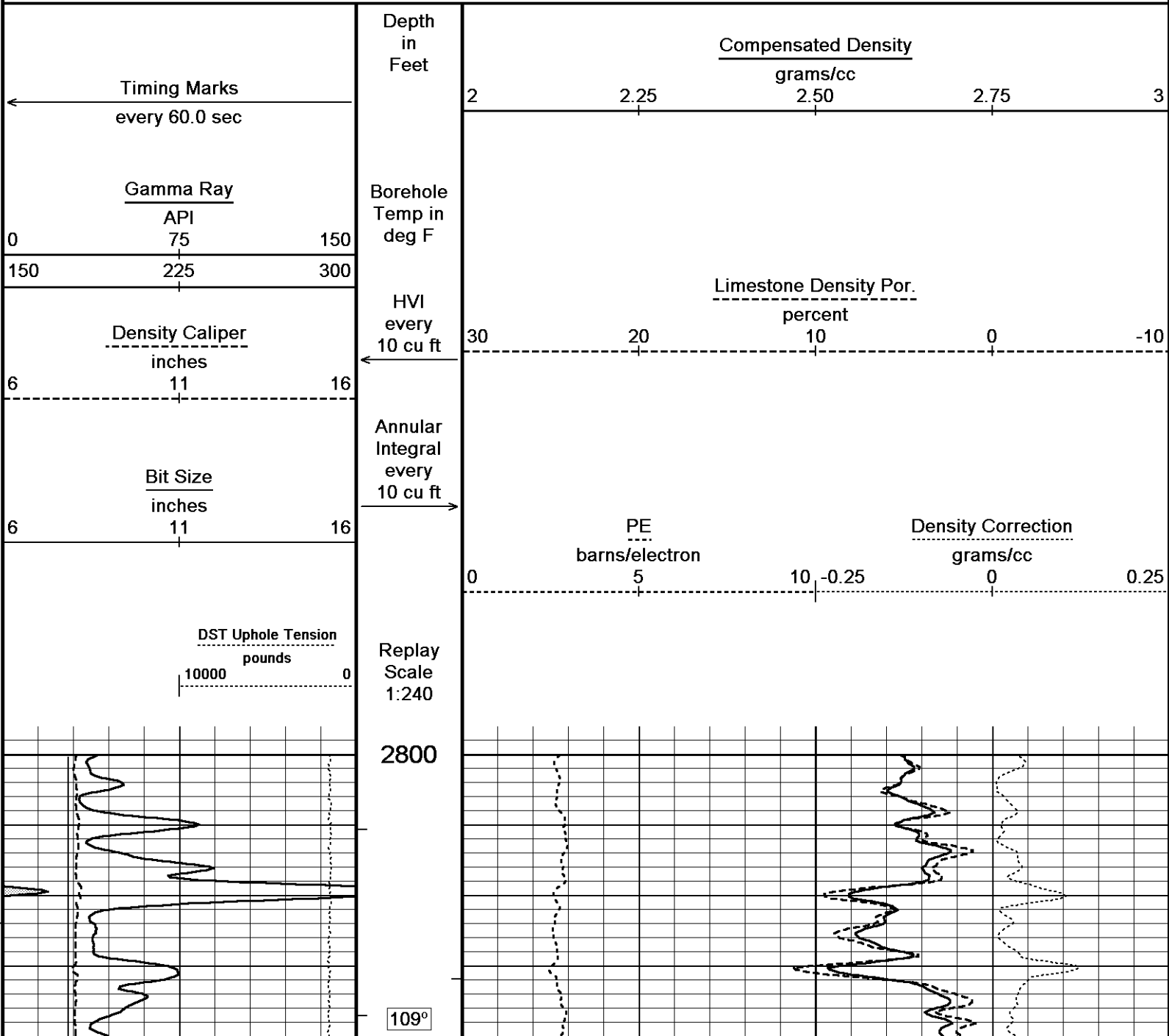
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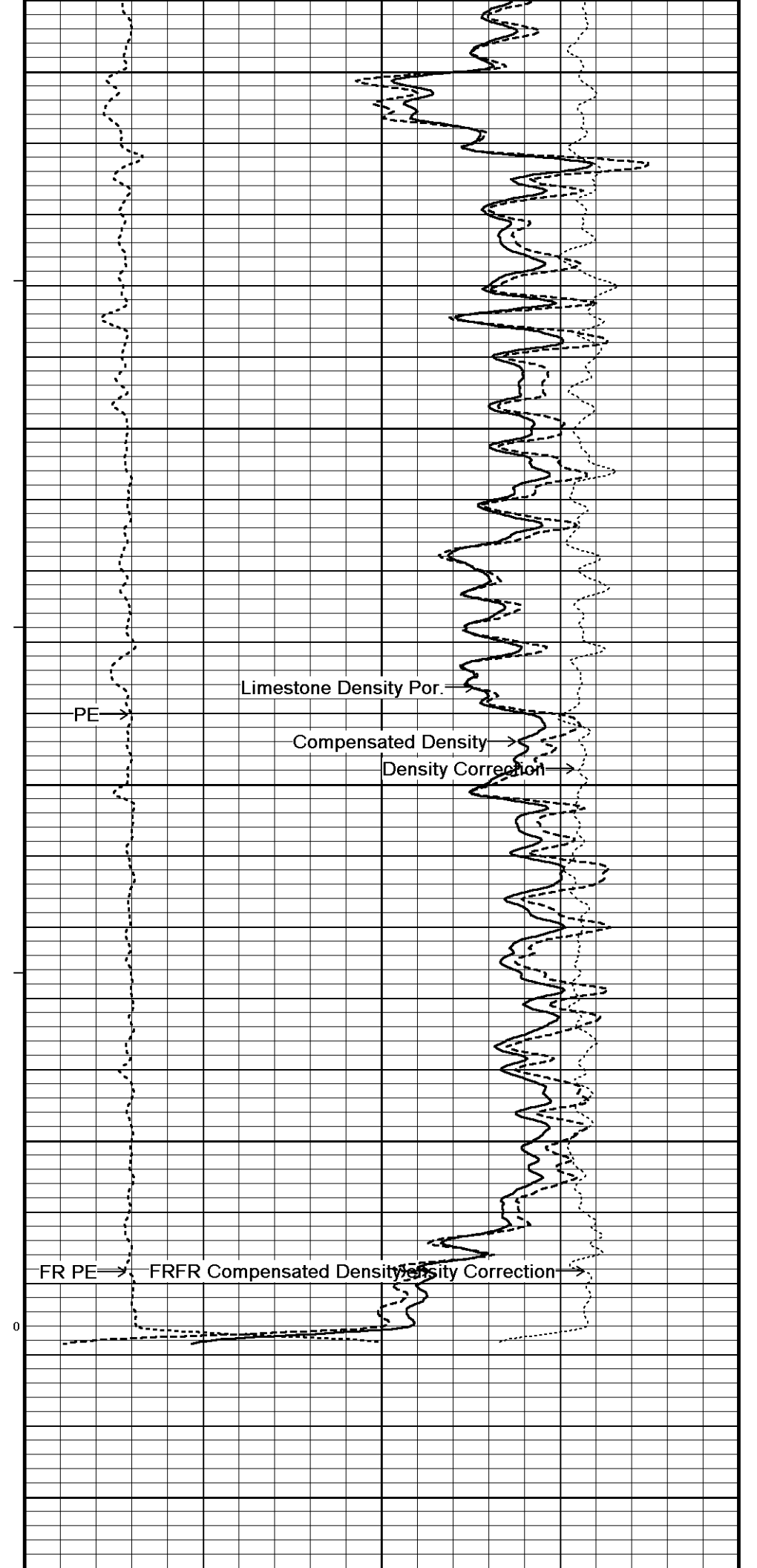
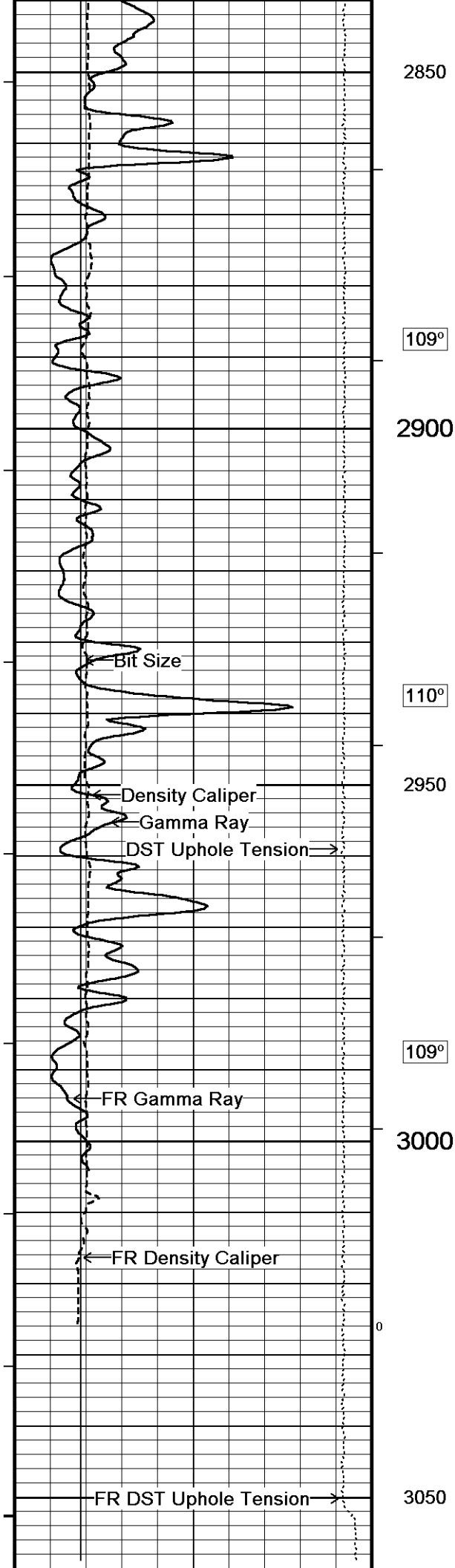
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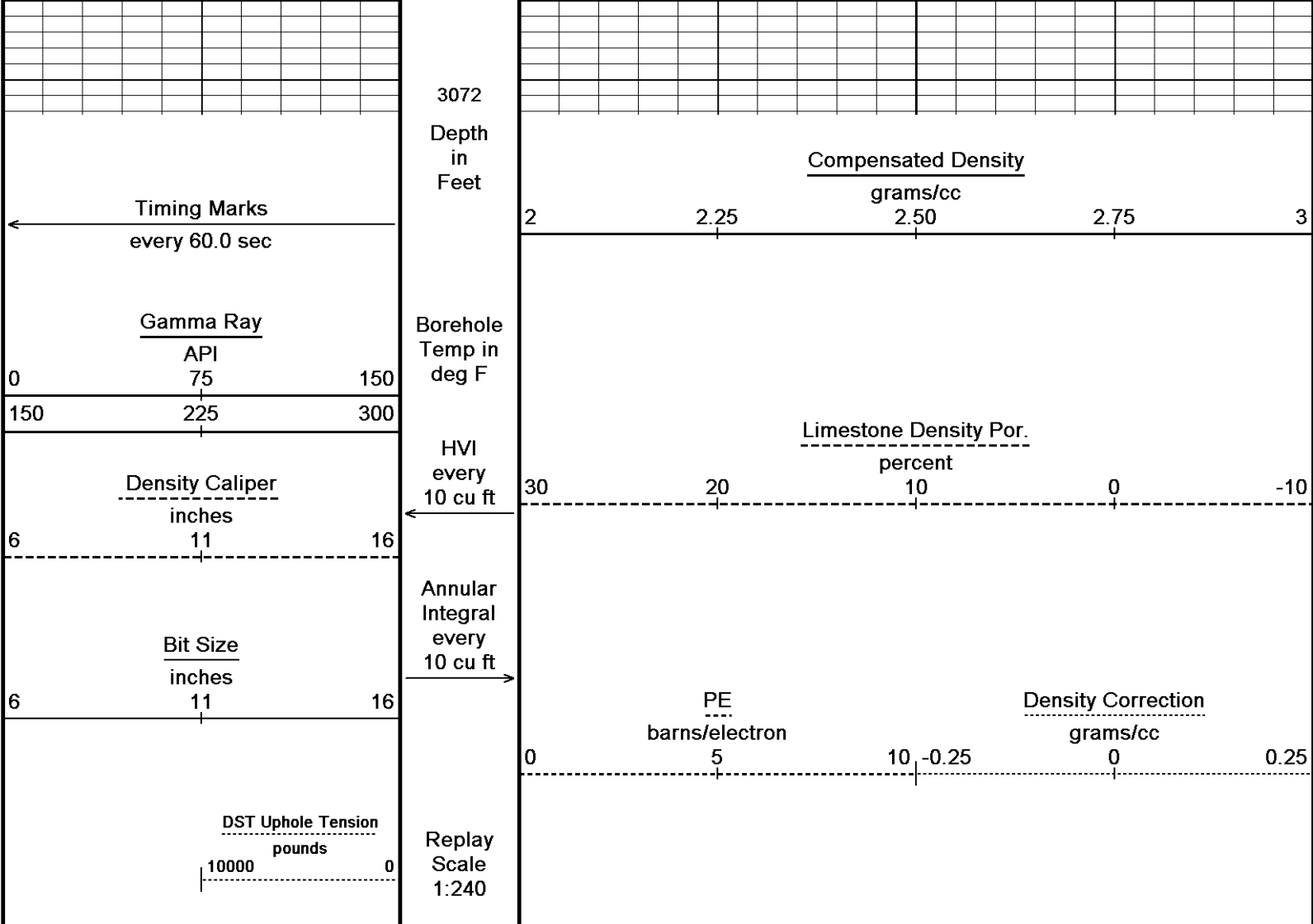
5 INCH REPEAT

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 16-APR-2012 05:25
Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA... \MASSEY 5-1_001.dta
Recorded on 16-APR-2012 03:39
System Versions: Logged with 12.03.5032 Plotted with 12.03.5032







Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 16-APR-2012 05:25
Filename: C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MA...MASSEY 5-1_001.dta Recorded on 16-APR-2012 03:39
System Versions: Logged with 12.03.5032 Plotted with 12.03.5032

↑ 5 INCH REPEAT ↑

BEFORE SURVEY CALIBRATION		
C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MASSEY 5-1)\MASSEY 5-1.dta		
General Constants All 000		Last Edited on 16-APR-2012,01:47
General Parameters		
Mud Resistivity	2.200	ohm-metres
Mud Resistivity Temperature	65.000	degrees F
Water Level	0.000	feet
Density/Neutron 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	Limestone Density Por.	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	

Reading No	Measured	Calibrated (lbs)	
1	14469.65	0.00	
2	16626.62	750.00	
Gamma Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated (API)	
Background	39	28	
Calibrator (Gross)	1770	1289	
Calibrator (Net)	1731	1261	
Gamma Constants MCG-C 86			Last Edited on 16-APR-2012,01:48
Gamma Calibrator Number	1		
Mud Density	1.10	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
SP Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated (mV)	
Reference 1	100.0	100.0	
Reference 2	-100.0	-100.0	
High Resolution Temperature Calibration MCG-C 86			Field Calibration on 16-APR-2012,01:48
	Measured	Calibrated(Deg F)	
Lower	50.00	50.00	
Upper	100.00	100.00	
High Resolution Temperature Constants MCG-C 86			Last Edited on
Pre-filter Length	11		
Micro Laterolog Calibration MMR-A.A 6			Base Calibration on 15-SEP-2008,10:36 Field Check on 15-SEP-2008,10:53
Base Calibration			
	Measured	Calibrated (ohm-m)	
Ref 1	Ref 2	Ref 1	Ref 2
0.0	9889.3	0.0	1.0
	Base Check (ohm-m)	Field Check (ohm-m)	
	4.0	3.2	
Micro Laterolog Constants MMR-A.A 6			Last Edited on 15-SEP-2008,14:57
Pad Type	6 in 2.25 in OD Solid Rubber B32069		
Micro Laterolog K Factor	0.0100		
Standoff Offset	0.0000	inches	
Mudcake Thickness Correction Constants			
Mud Cake Source	Differential Caliper		
Mud Cake Thickness	N/A		
Mud Cake Thickness Caliper	MMR Caliper		
Mud Cake Resistivity	0.1500	ohm-m	
Mud Cake Resistivity Temp.	68.00	Deg F	
Mud Cake Resistivity Source	Constant Value		
Temp. Source Rmc Correc.	N/A		
Micro Normal and Micro Inverse Calibration MMR-A.A 6			Base Calibration on 07-MAR-2012 12:48 Field Check on 16-APR-2012,01:48
Base Calibration			
	Measured	Calibrated (ohm-m)	
Channel	Resistor 1	Resistor 2	Resistor 1
Micro Normal	12.0	59.0	2.6
Micro Inverse	15.5	77.0	1.7
			8.4
Channel	Base Check (ohm-m)	Field Check (ohm-m)	
Micro Normal	39.5	39.5	
Micro Inverse	20.0	20.0	
Micro Normal and Micro Inverse Constants MMR-A.A 6			Last Edited on 29-OCT-2011,09:57

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-A.A 6			Base Calibration on 07-MAR-2012 13:10	
			Field Calibration on 16-APR-2012,01:48	
Base Calibration				
Reading No		Measured	Calibrator Size (in)	
1		13736	5.96	
2		17158	7.98	
3		20563	9.94	
4		24464	11.91	
5		0	0.00	
6		N/A	N/A	
Field Calibration				
		Measured Caliper (in)	Actual Caliper (in)	
		7.84	7.99	

Neutron Calibration MDN-A.A 10				Base Calibration on 16-FEB-2012,21:39	
				Field Check on 16-APR-2012,01:48	
Base Calibration					
		Measured		Calibrated (cps)	
	Near	Far		Near	Far
	3130	98		3714	110
Ratio	31.818			33.764	
Field Calibrator at Base					
				Calibrated (cps)	
				1248	1792
Ratio				0.696	
Field Check					
				Calibrated (cps)	
				1218	1776
Ratio				0.686	

Neutron Constants MDN-A.A 10			Last Edited on 16-APR-2012,01:49		
Neutron Source Id	P14033B				
Neutron Jig Number	13226				
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	Constant Value				
Formation Pressure	0.00	kpsi			
Temperature Source	None				
Temperature	N/A	degrees F			
Mud Salinity	0.00	kppm			
Salinity Correction	Not Applied				
Formation Fluid Salinity Source	Constant Value				
Formation Fluid Salinity	0.00	kppm			
Barite Mud Correction	Not Applied				

FE Calibration MFE-A.A 65		Base Calibration on 27-MAR-2012 13:32 Field Check on 16-APR-2012,01:49	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	9.7	1.3	
Reference 2	956.7	126.8	
Base Check		282.0	
Field Check		282.0	

FE Constants MFE-A.A 65		Last Edited on 16-APR-2012,01:49	
Running Mode	No Sleeve		
MFE K Factor	0.1268		
Caliper Source for FE correction	Density Caliper		

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-A.A 101

Last Edited on 03-MAR-2012,09:57

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	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000

Peak Amplitude Source	0
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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)	Depth (ft)
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	0.00	0.00	0.00

Full Waveform Parameters

Use 3' Waveform to derive TR	No
Use 4' Waveform to derive TR	No
Use 5' Waveform to derive TR	No
Use 6' Waveform to derive TR	No
3' Waveform Discriminator Level	0.30 mV
4' Waveform Discriminator Level	0.30 mV
5' Waveform Discriminator Level	0.15 mV
6' Waveform Discriminator Level	0.15 mV
3' Waveform Filter	0
4' Waveform Filter	0
5' Waveform Filter	0
6' Waveform Filter	0

Semblance Level	0.50
Semblance Window Width	120.00 micro-sec
Sonic 1 Despiker	100.00 micro-sec/ft
Sonic 2 Despiker	100.00 micro-sec/ft

High Resolution Temperature Calibration MAI-A.A 102

Field Calibration on 16-APR-2012,01:51

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

High Resolution Temperature Constants MAI-A.A 102

Last Edited on

Induction Calibration MAI-A.A 102

Base Calibration on 16-FEB-2012,21:42

Field Check on 16-APR-2012,01:50

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	17.3	481.3	9.3	966.2
2	5.4	377.6	7.6	821.4
3	2.4	255.3	5.2	566.0
4	1.5	133.4	2.6	279.2

Array Temperature 78.4 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	12.6	3809.9
2	0.0	0.0	32.6	3607.6
3	0.0	0.0	31.7	3125.9
4	0.0	0.0	20.7	2087.6
Deep	0.0	0.0	19.0	2000.5
Medium	0.0	0.0	47.3	4182.1
Shallow	0.0	0.0	48.9	5376.2
Array Temperature	0.0		59.3	Deg F

Induction Constants MAI-A.A 102

Last Edited on 16-APR-2012,01:51

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		0.50	inches
Number of Fins on Stand-off		6.0000	
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		0.0060	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	

Caliper Calibration MPD-A 3

Base Calibration on 20-FEB-2012,10:19

Field Calibration on 16-APR-2012,01:49

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	20208	3.98

2	28784	5.95
3	37424	7.97
4	45392	9.84
5	54503	11.91
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.92	7.99

Photo Density Calibration MPD-A 3

Base Calibration on 27-MAR-2012 10:10
Field Check on 16-APR-2012,01:49

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	46850	24590	59869	31110
Reference 2	20054	2765	24557	2522

Field Check at Base

1284.8 1616.3

Field Check

1284.6 1617.1

PE Calibration

Base Calibration	Measured		Calibrated
	WS	WH	Ratio
Background	235	1148	
Reference 1	18748	46659	0.407
Reference 2	5542	19909	0.283

Field Check at Base

234.9 1147.9

Field Check

233.2 1146.0

Density Constants MPD-A 3

Last Edited on 16-APR-2012,01:49

Density Source Id	260
Nylon Calibrator Number	633
Aluminium Calibrator Number	633
Density Shoe Profile	8 inch
Caliper Source for Processing	Density Caliper
PE Correction to Density	Not Applied
Mud Density	1.10 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

DOWNHOLE EQUIPMENT

C:\Program Files\Weatherford\WLS 12.03\DATA\COMANCHE (MASSEY 5-1)\MASSEY 5-1.dta

Compact Comms Gamma
MCG-C 86 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in



55.95 ft
53.04 ft

GRGC - Gamma Ray
CGXT - MCG External Temperature

Compact Micro-Resistivity
MMR-A.A 6 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.A 10 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

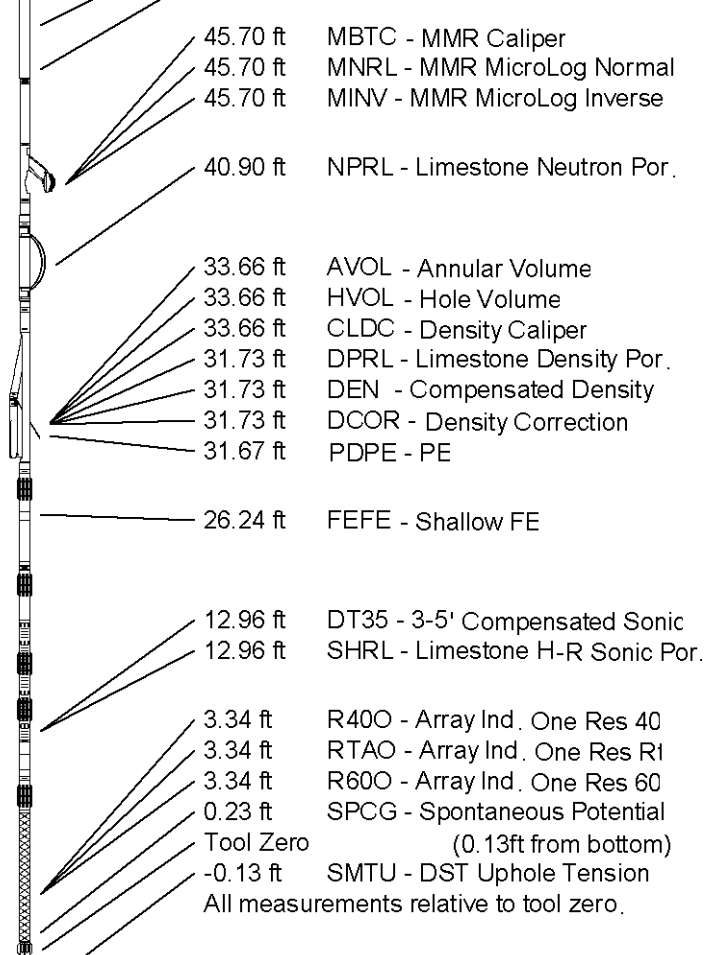
Compact Density/Caliper
MPD-A 3 LG: 9.53 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-A.A 65 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 101 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 102 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 61.24 ft Weight: 456.4 lb



COMPANY	COMANCHE RESOURCES CO., LLC
WELL	MASSEY 5-1
FIELD	WILDCAT
PROVINCE/COUNTY	COWLEY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1056.00	feet	First Reading	3019.00	feet
Elevation Drill Floor	1054.00	feet	Depth Driller	3050.00	feet
Elevation Ground Level	1046.00	feet	Depth Logger	3050.00	feet



Weatherford®

COMPACT PHOTO DENSITY
COMPENSATED NEUTRON
LOG

