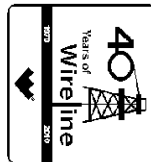




# Weatherford

## COMPENSATED PHOTO DENSITY COMPENSATED DUAL NEUTRON LOG

COMPANY **FRAM OPERATING LLC**  
WELL **MANSUR 33-1-G**  
FIELD **WILDCAT**  
PROVINCE/COUNTY **MESA**  
COUNTRY/STATE **U.S.A. / COLORADO**  
LOCATION **SHL: 2165' FNL & 2087' FWL**  
**BHL: 1732' FNL & 588' FWL**



SEC **33** TWP **12S** RGE **97W** Other Services  
API Number **05-077-09473** MAI/MFE  
Permit Number **MSS**

Permanent Datum G.L., Elevation 6087 feet  
Log Measured From K.B. @ 14 FEET above Permanent Datum  
Drilling Measured From K.B.

Elevations:  
KB 6097.00  
DF 6096.00  
GL 6083.00

Date	13-JUN-2011		
Run Number	ONE		
Depth Driller	4227.00	feet	
Depth Logger	4196.00	feet	
First Reading	4120.00		
Last Reading	506.00		
Casing Driller	503.00	feet	
Casing Logger	506.00	feet	
Bit Size	8.750	inches	
Hole Fluid Type	DAP		
Density / Viscosity	9.20 lb/USg	38.00 CP	
PH / Fluid Loss	7.90	8.00 ml/30Min	
Sample Source	FLOW LINE		
Rm @ Measured Temp	1.05 @ 86.9	ohm-m	
Rmf @ Measured Temp	0.84 @ 86.9	ohm-m	
Rmc @ Measured Temp	1.26 @ 86.9	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.729 @ 127.0	ohm-m	
Time Since Circulation	1 HOUR		
Max Recorded Temp	127.00	deg F	
Equipment Name	COMPACT		
Equipment / Base	18063	RK SPG	
Recorded By	J. BOON		
Witnessed By	J. GRIGGS		

### BOREHOLE RECORD

Last Edited: 13-JUN-2011 20:21

Bit Size inches	Depth From feet	Depth To feet
8.750	503.00	4227.00

### CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
	9.625	0.00	503.00	36.00

### REMARKS

TOOLS: MCG, MDN, MPD, MAI RAN IN COMBINATION.

WLS VERSION 11.02.3186

LOGGED USING COMPACT WELL SHUTTLE - CWS MESSENGER 475

HARDWARE: SEE TOOL DIAGRAM

2.68 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST

ALL INTERVALS LOGGED AND CORRECTED PER CUSTOMER'S REQUEST.

TIGHT PULLS, BOREHOLE SIZE, AND RUGOSITY WILL AFFECT REPEATABILITY AND DATA QUALITY.

5.5 INCH PRODUCTION CASING USED TO CALCULATE ANNULAR HOLE VOLUME.

TOTAL HOLE VOLUME FROM TD TO CASING = 2090 CU.FT.

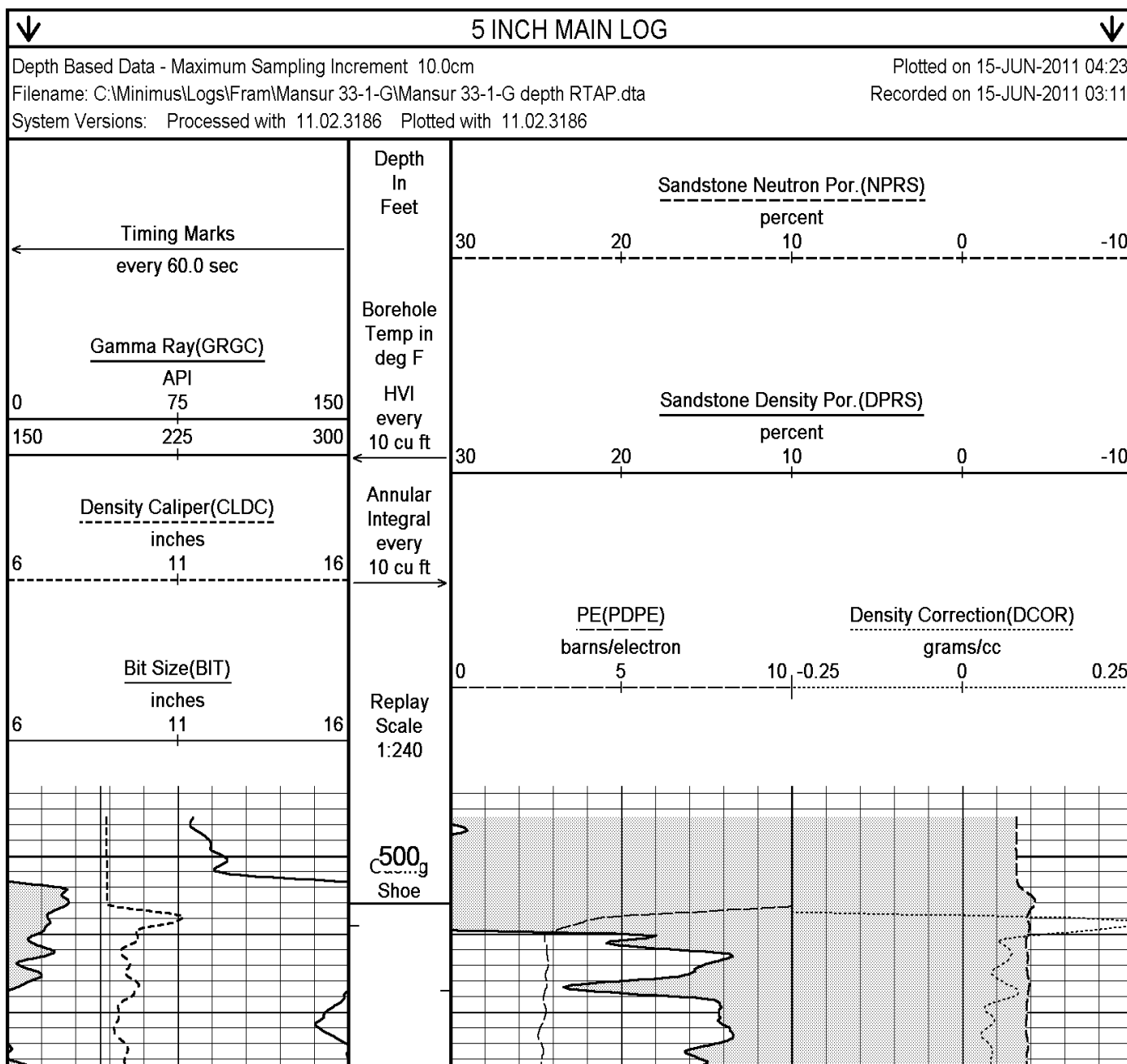
ANNULAR VOLUME WITH 7 INCH PRODUCTION CASING = 1485 CU.FT.

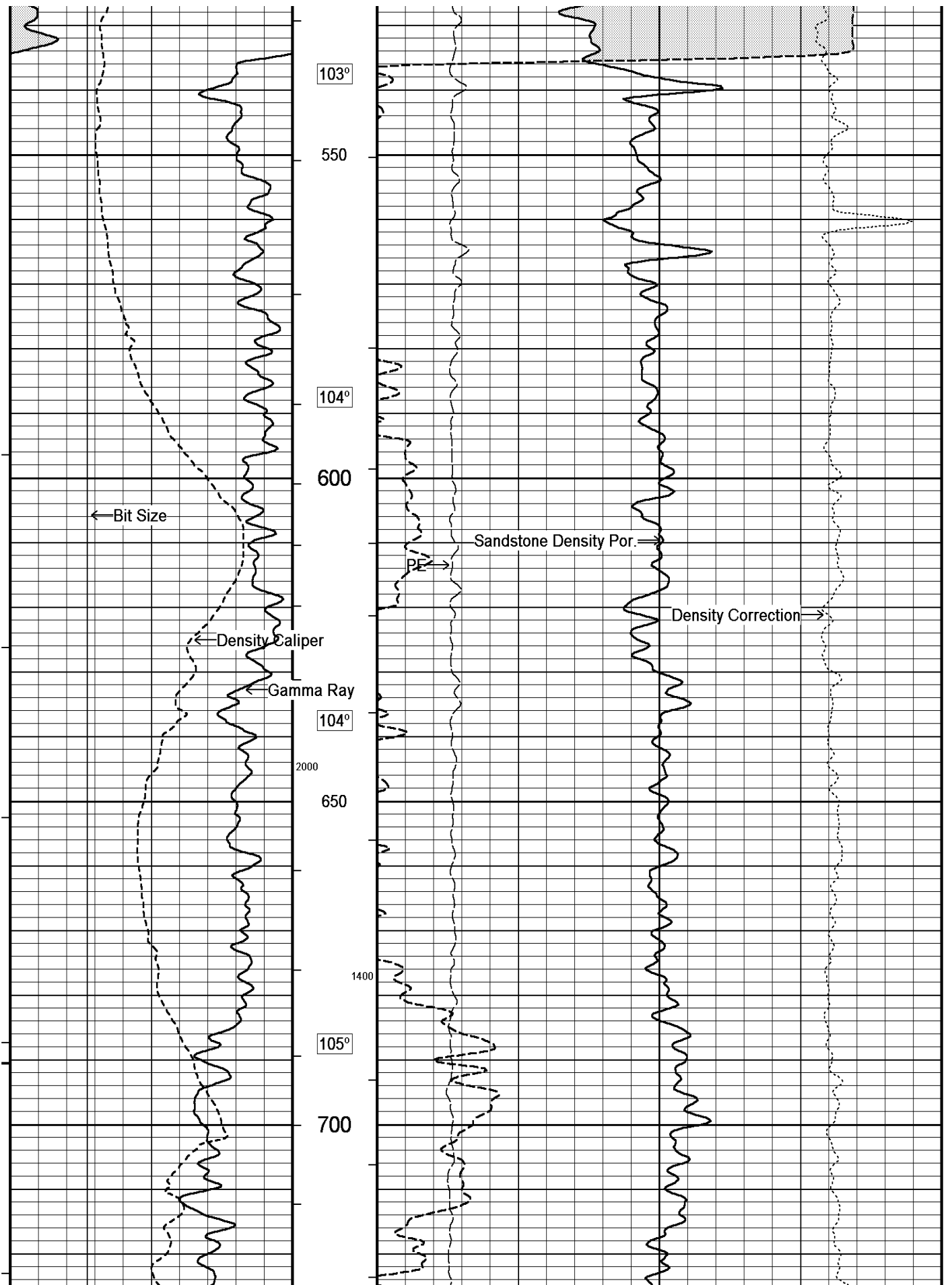
OPERATOR: B. SUMMERALL, M. LAMOREAX

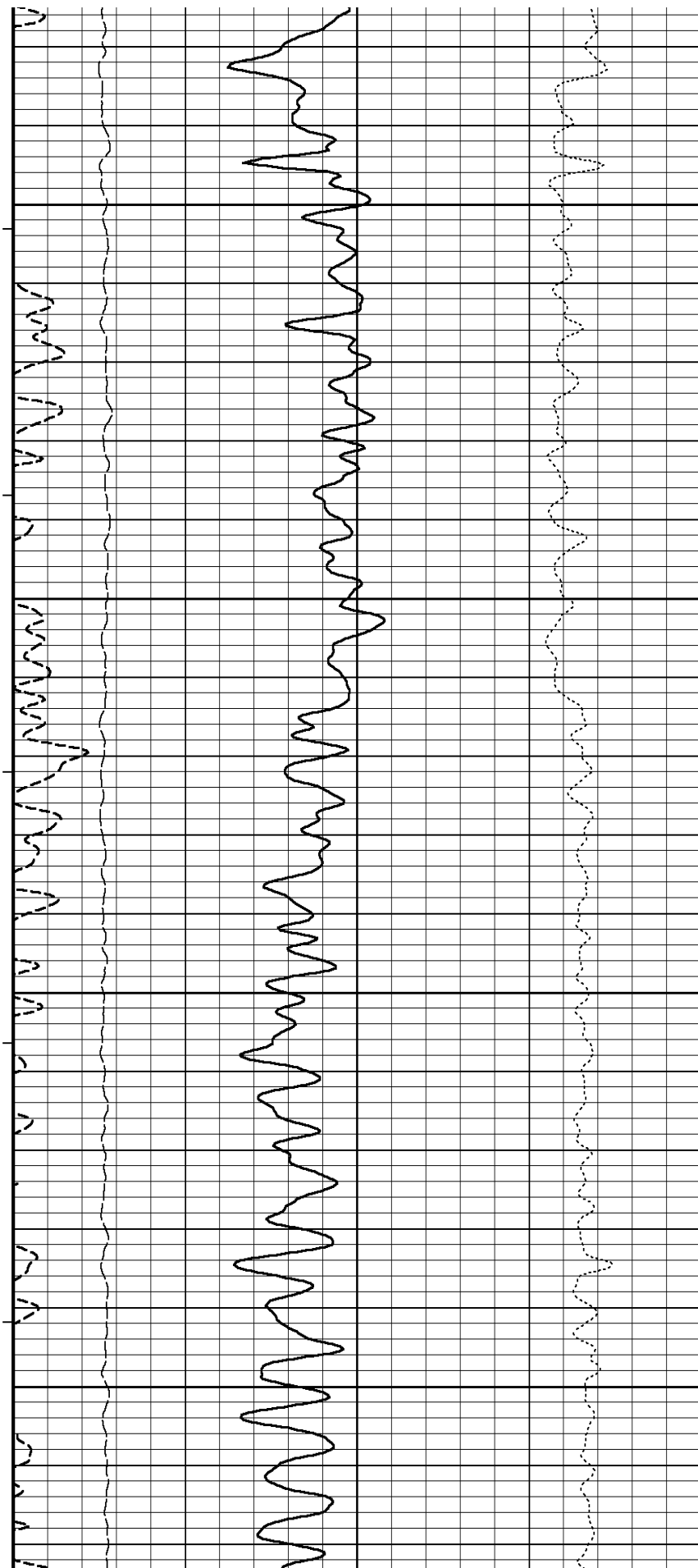
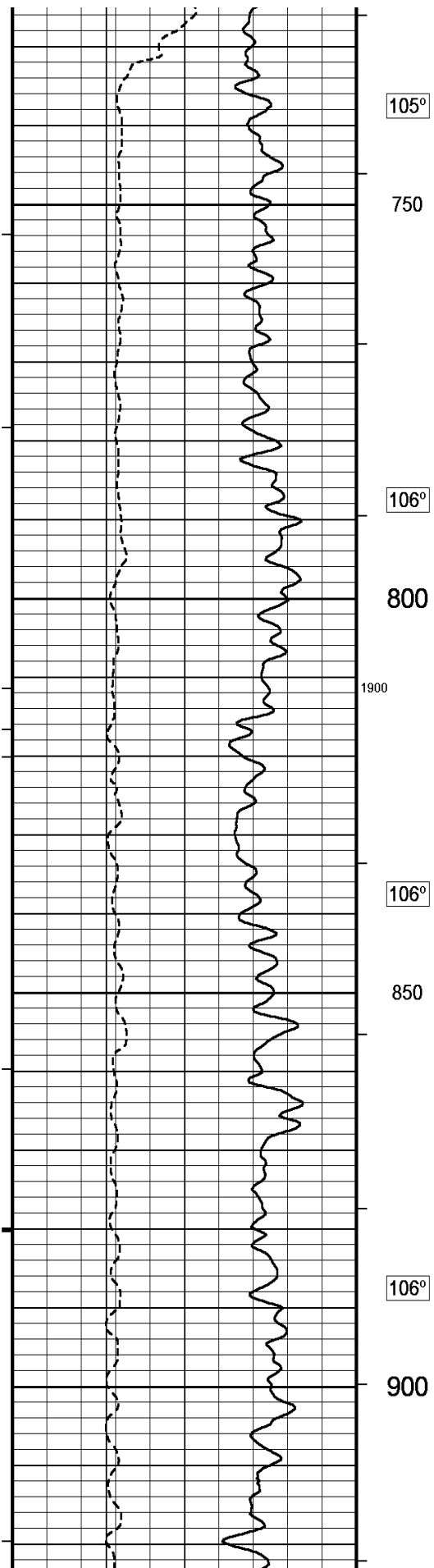
SERVICE ORDER 3529599

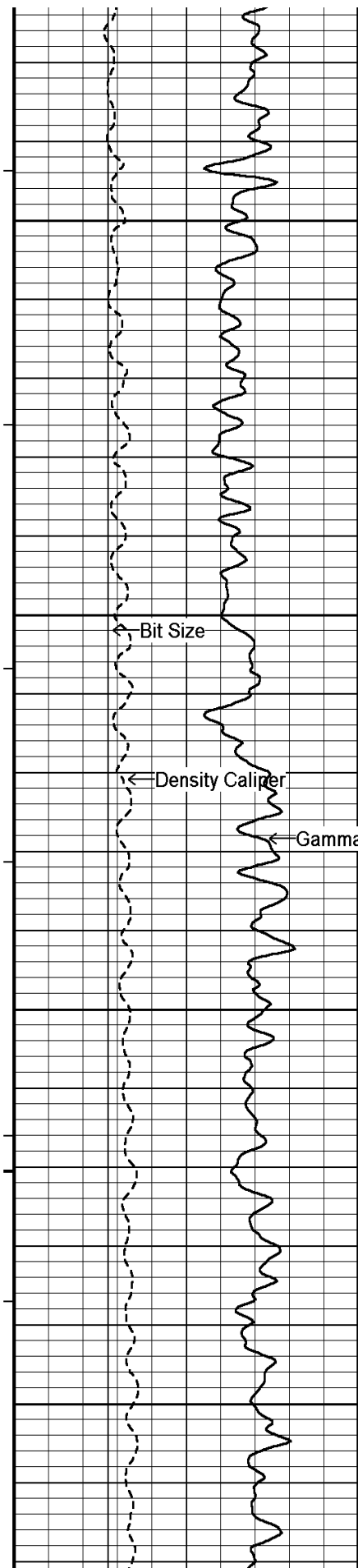
RIG: FRONTIER 4

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.









107°

950

1300

107°

1000

Bit Size

Density Caliper

Gamma Ray

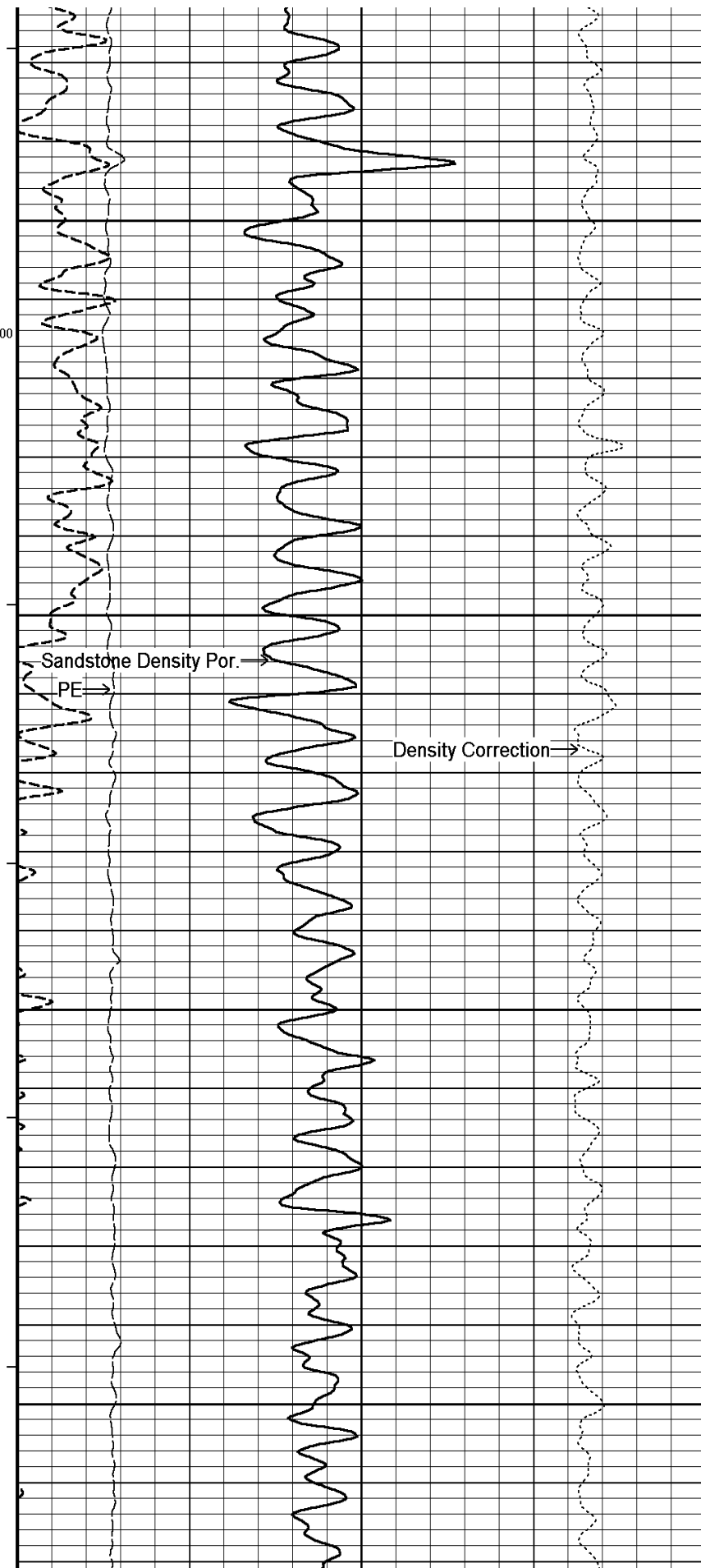
1800

108°

1050

108°

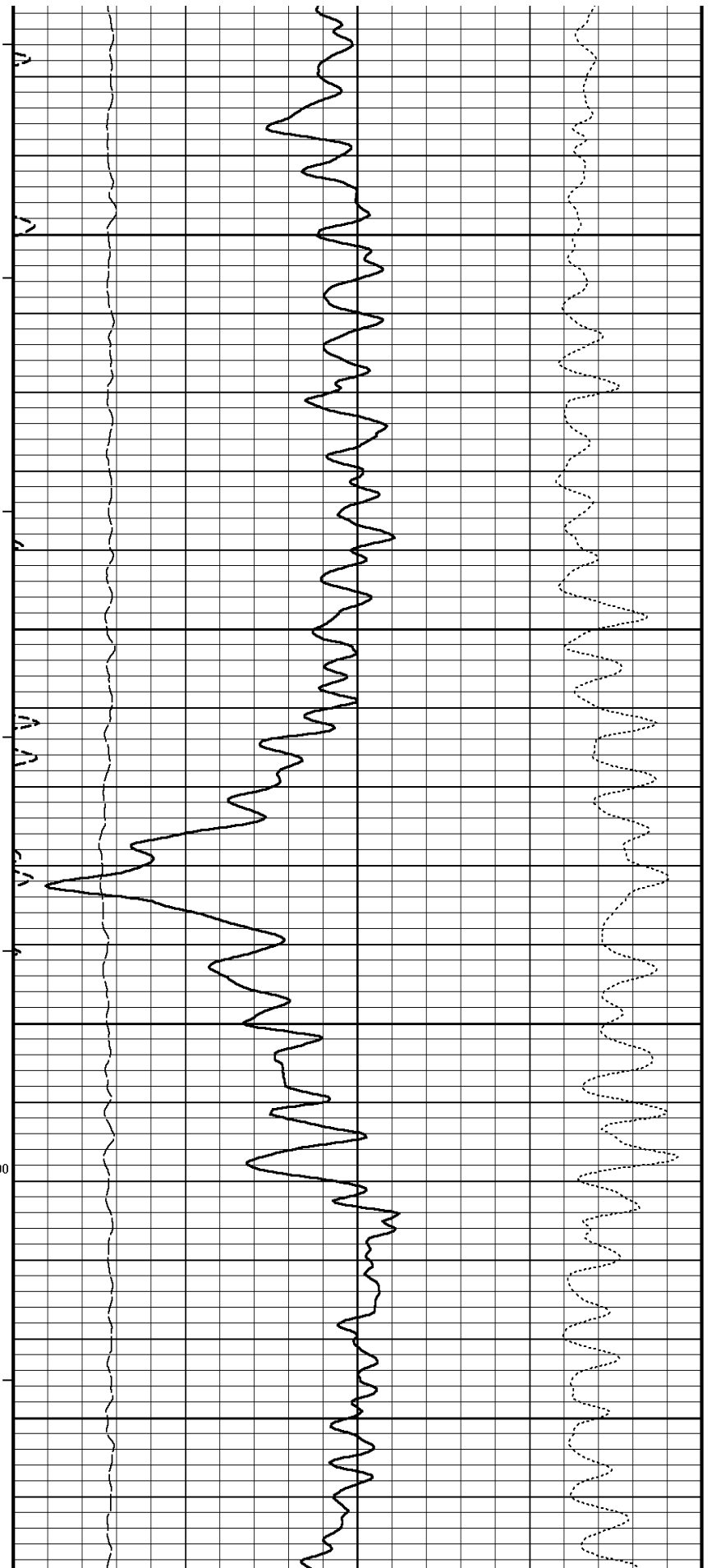
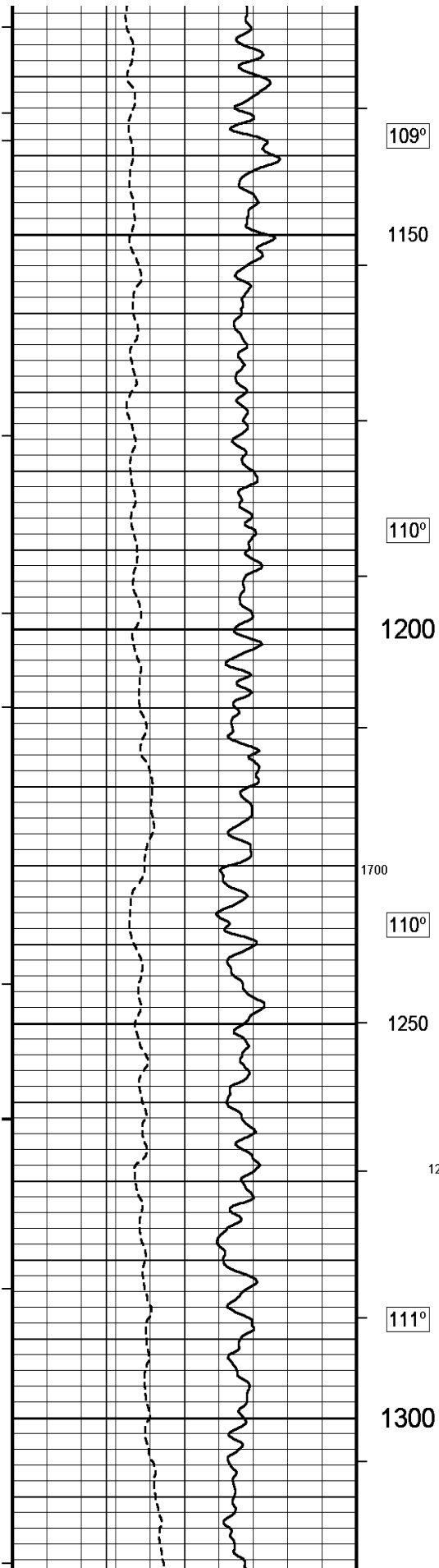
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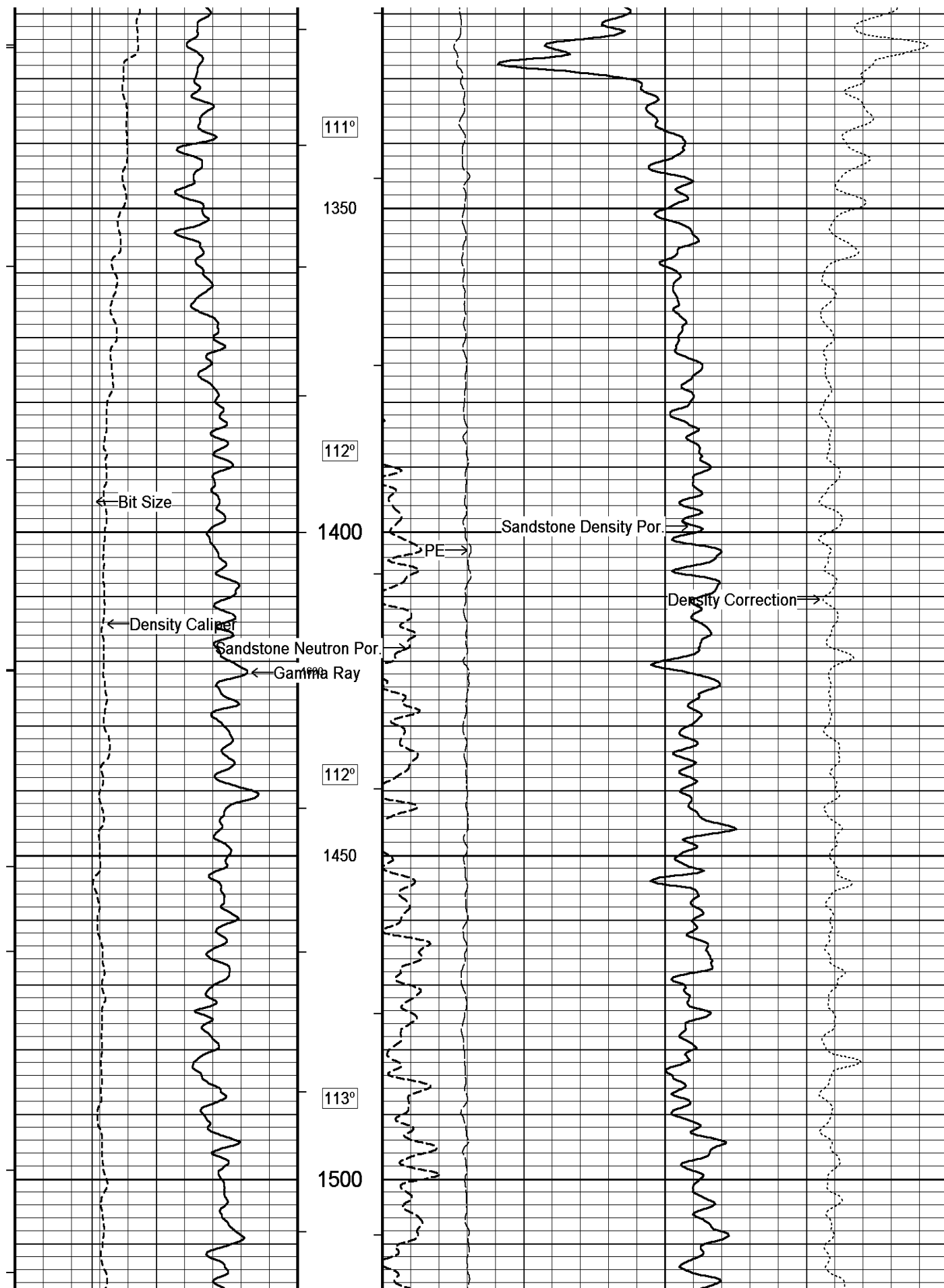


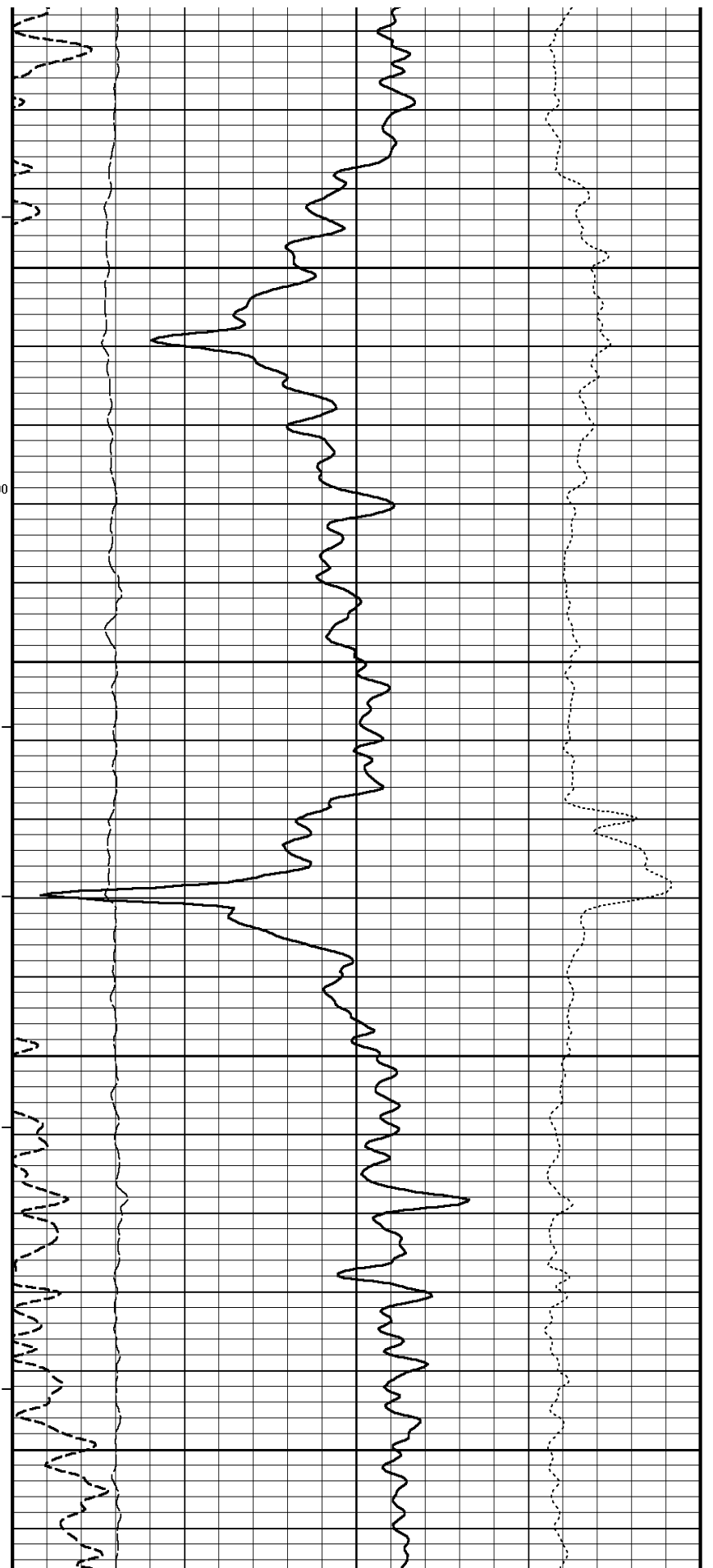
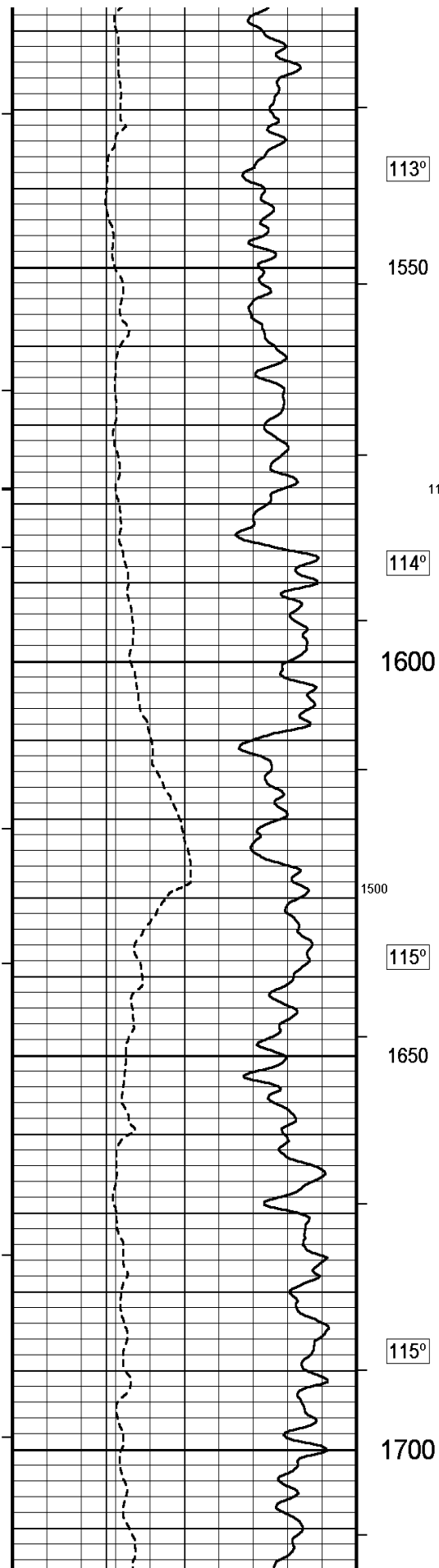
Sandstone Density Por.

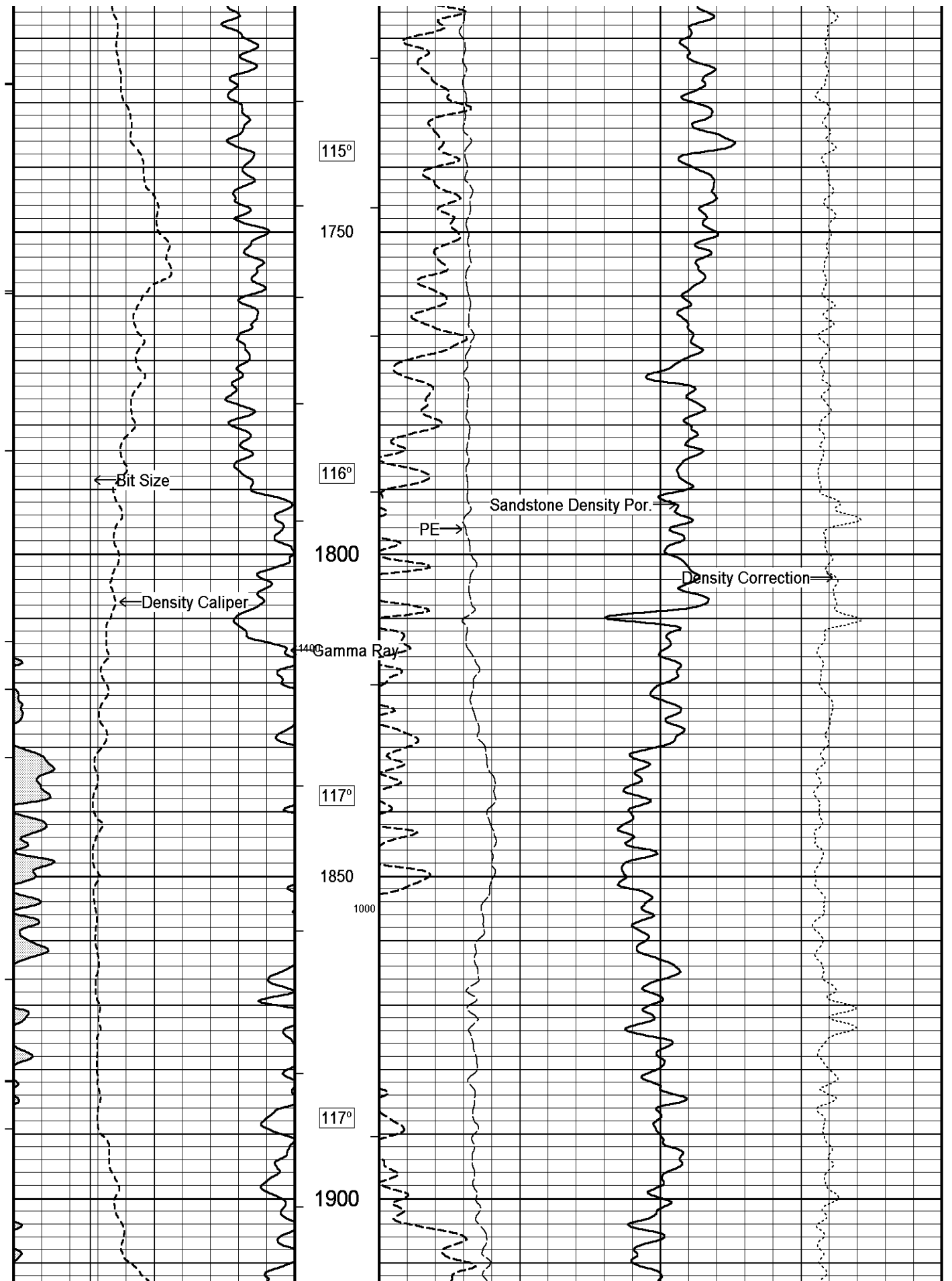
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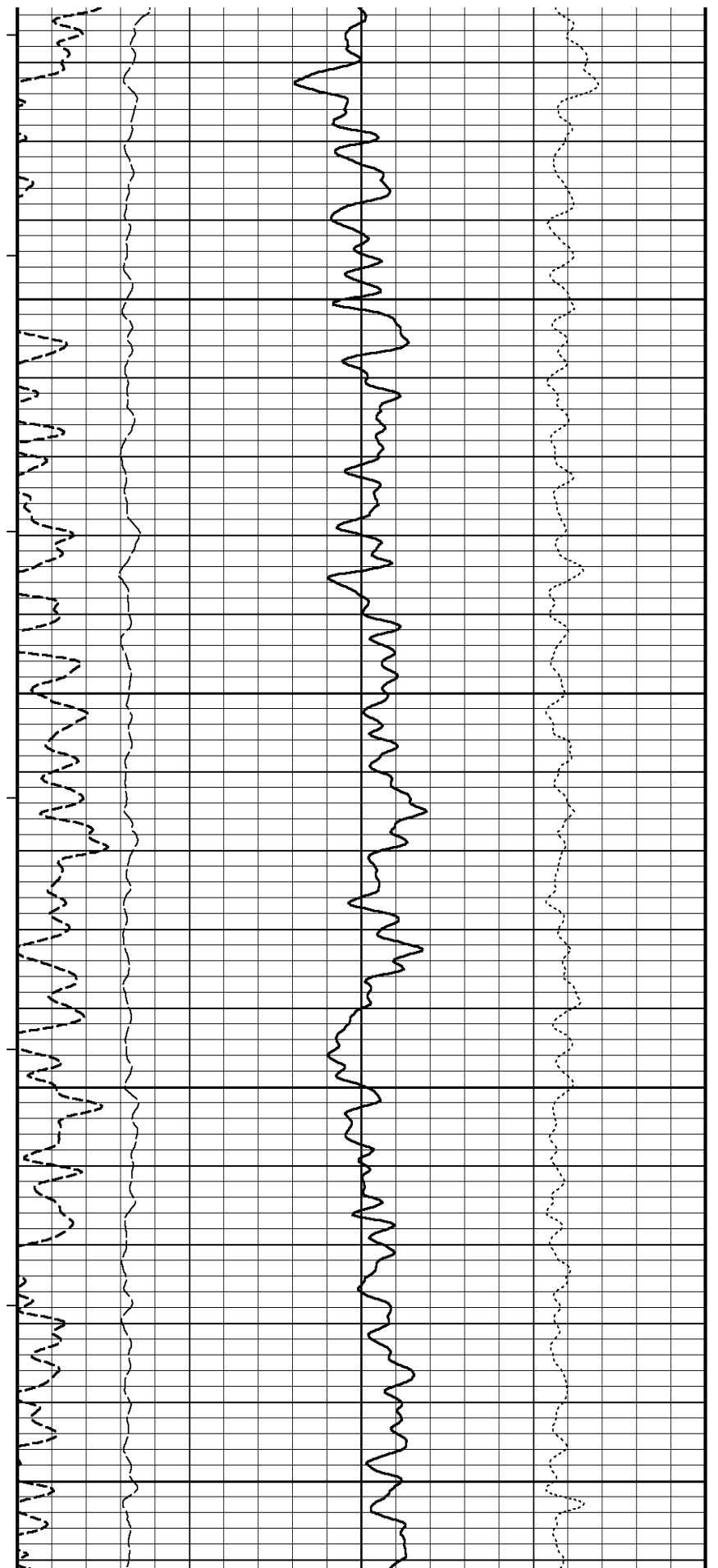
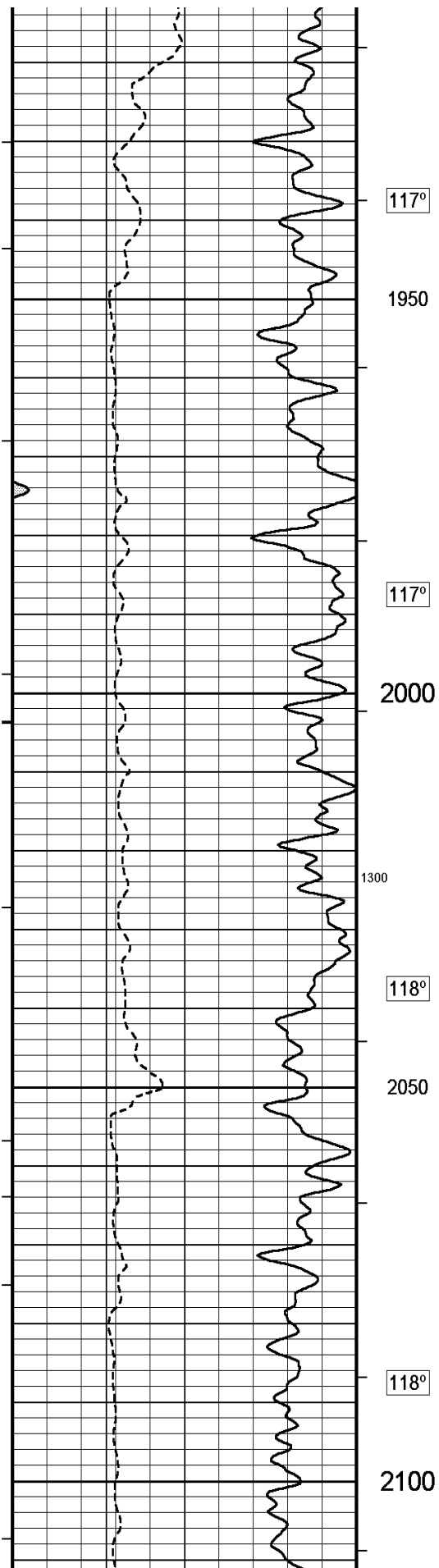
Density Correction

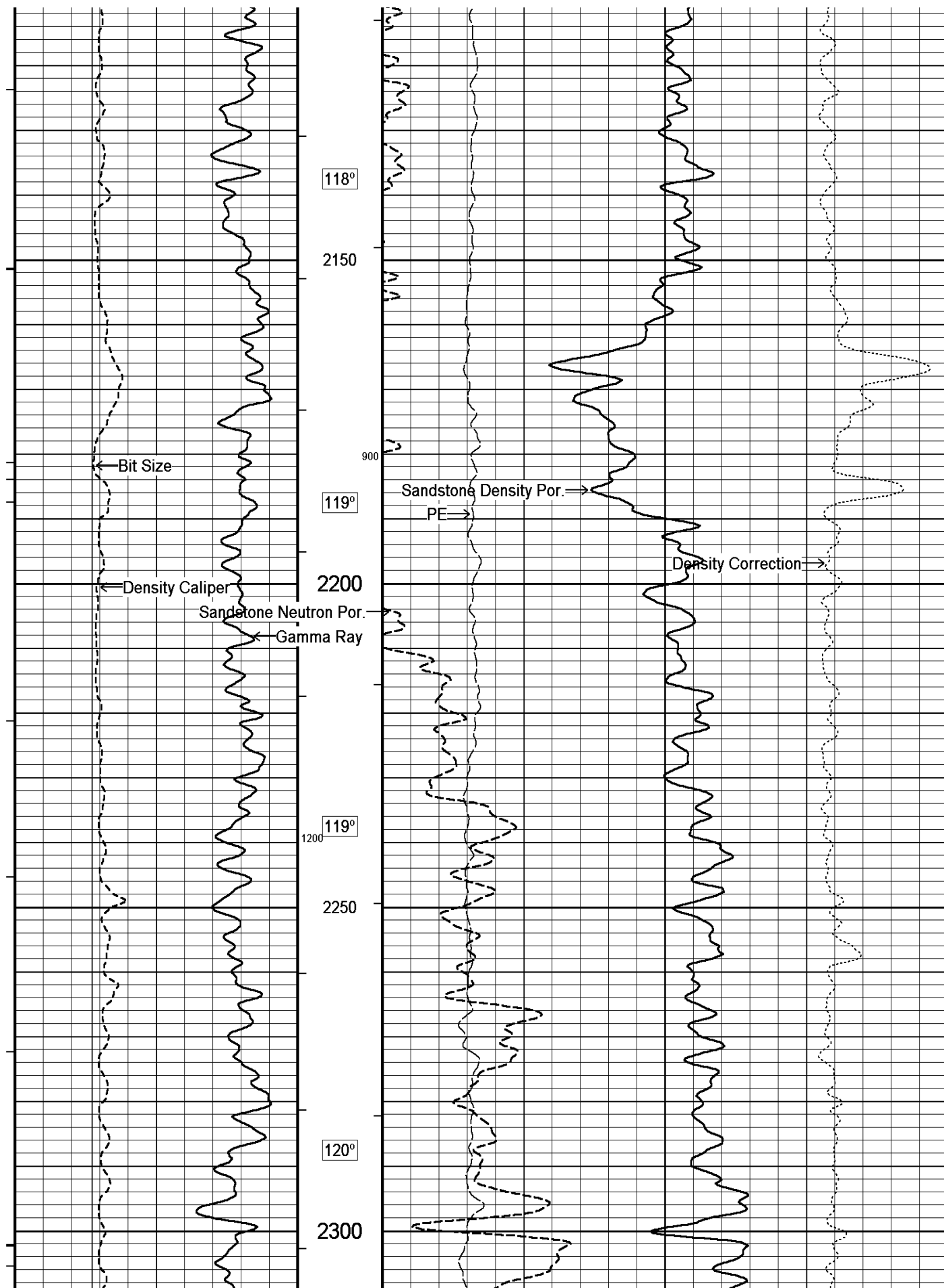


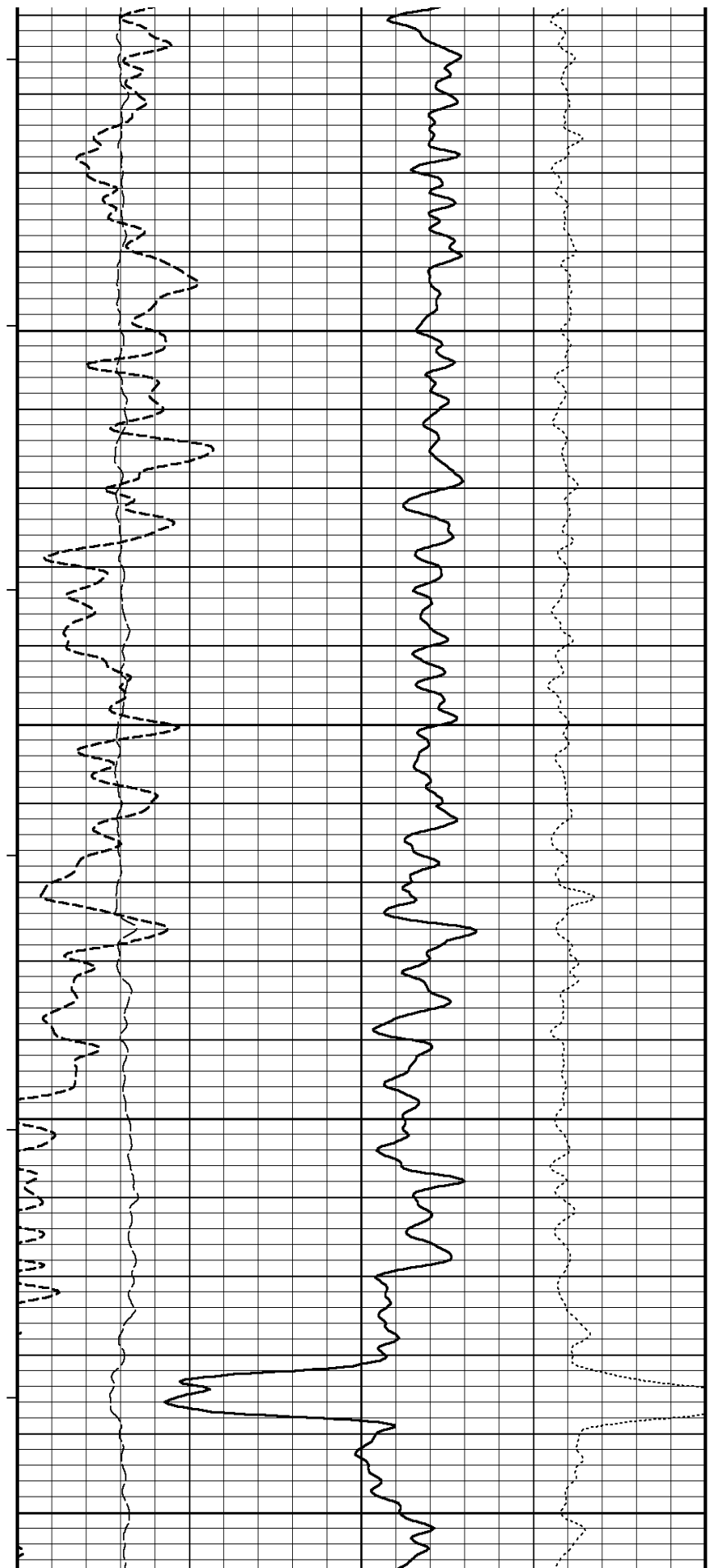
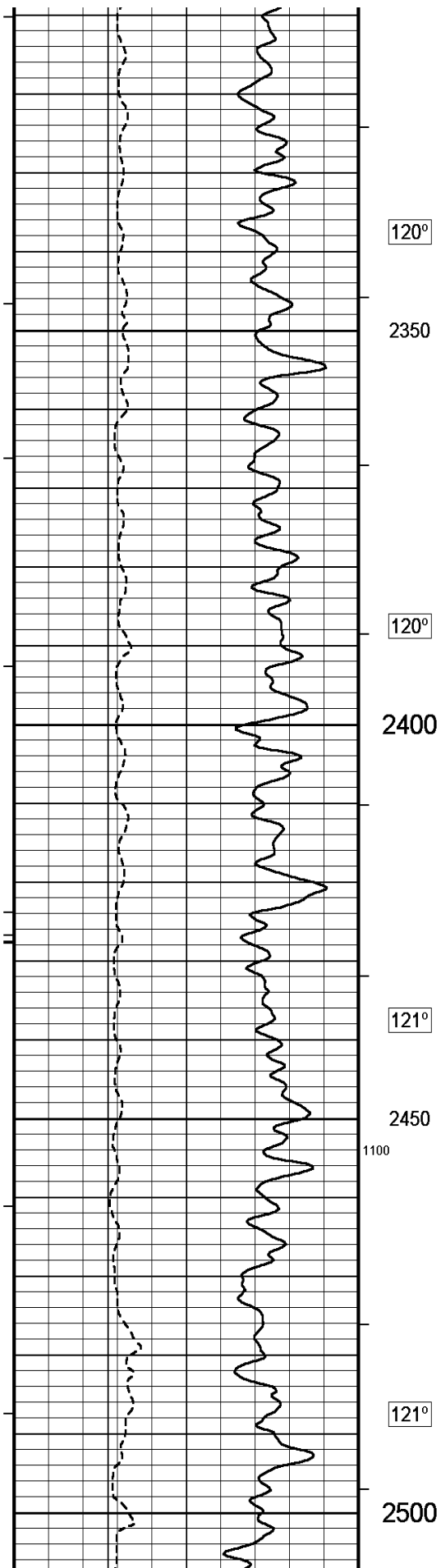


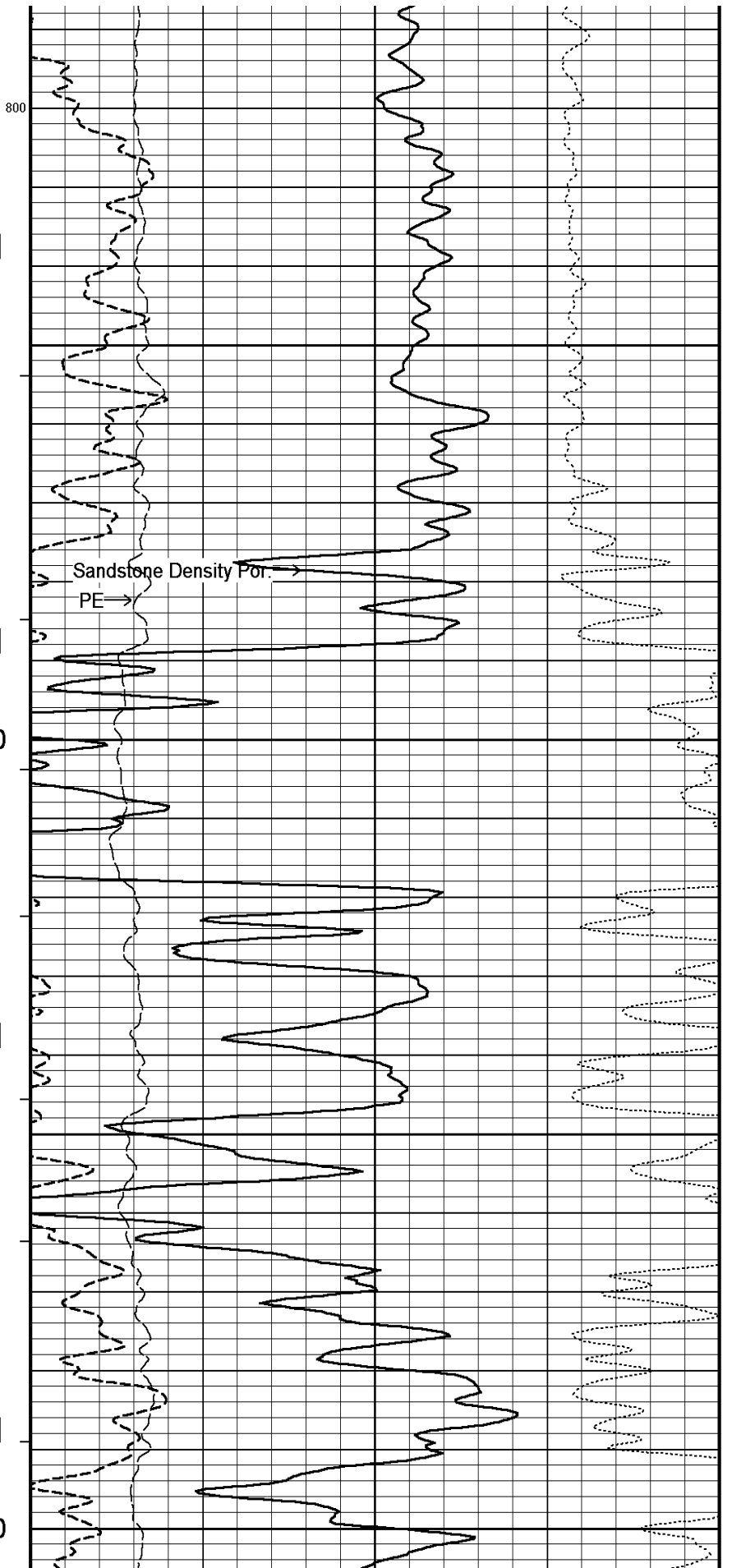
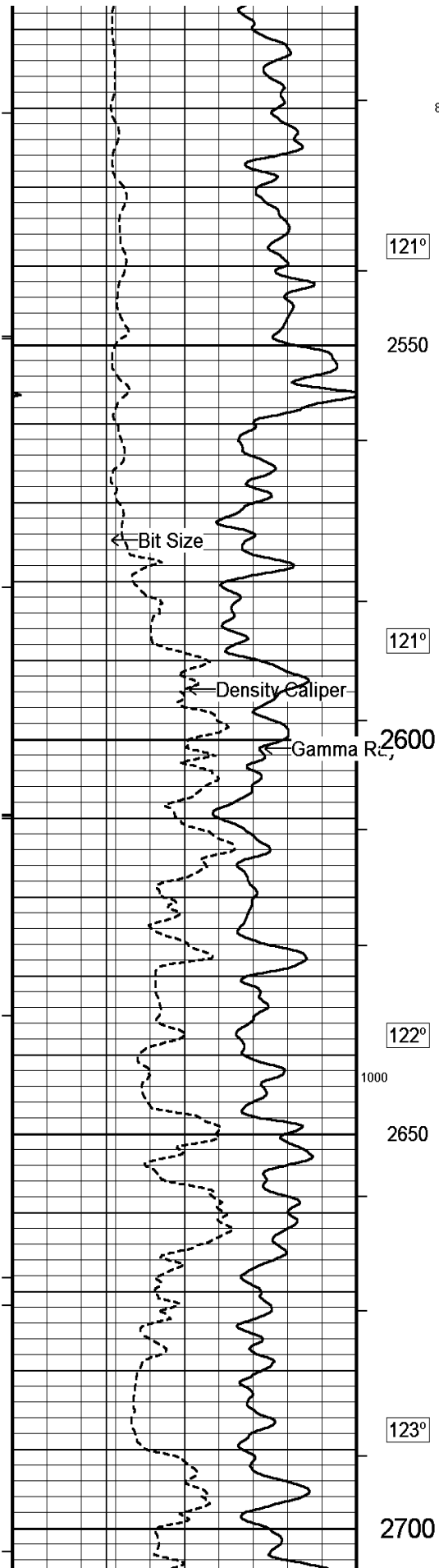


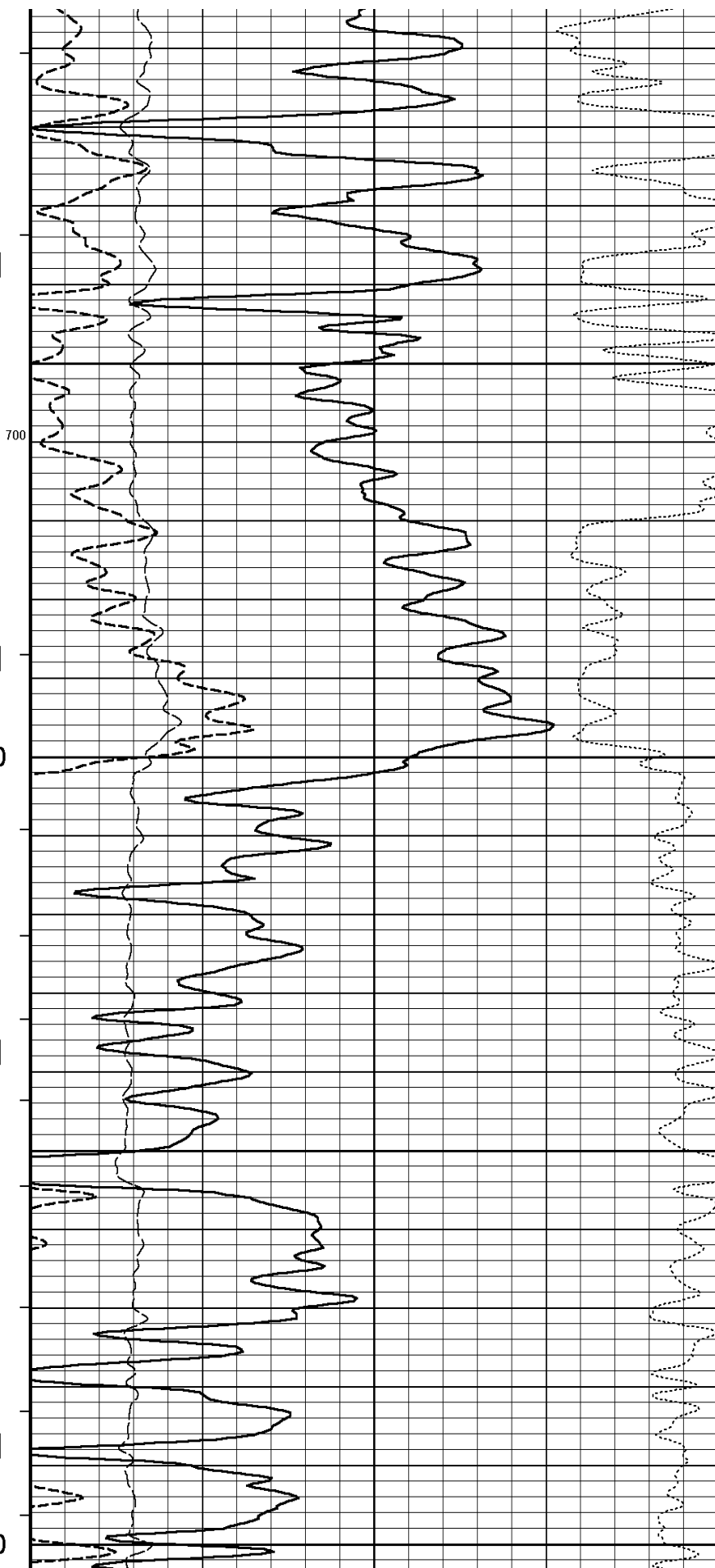
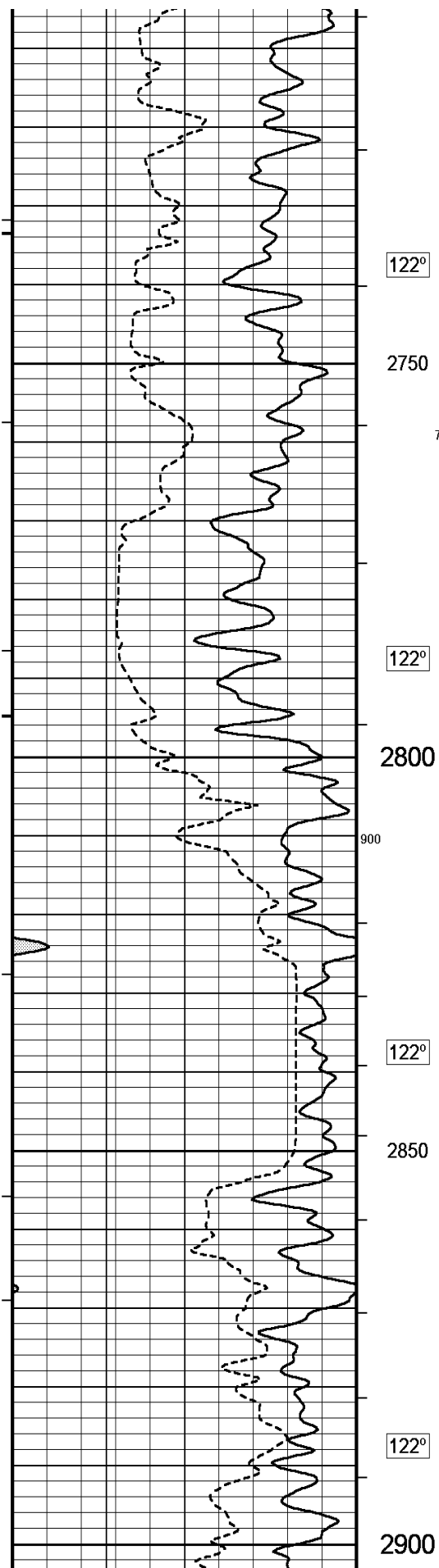


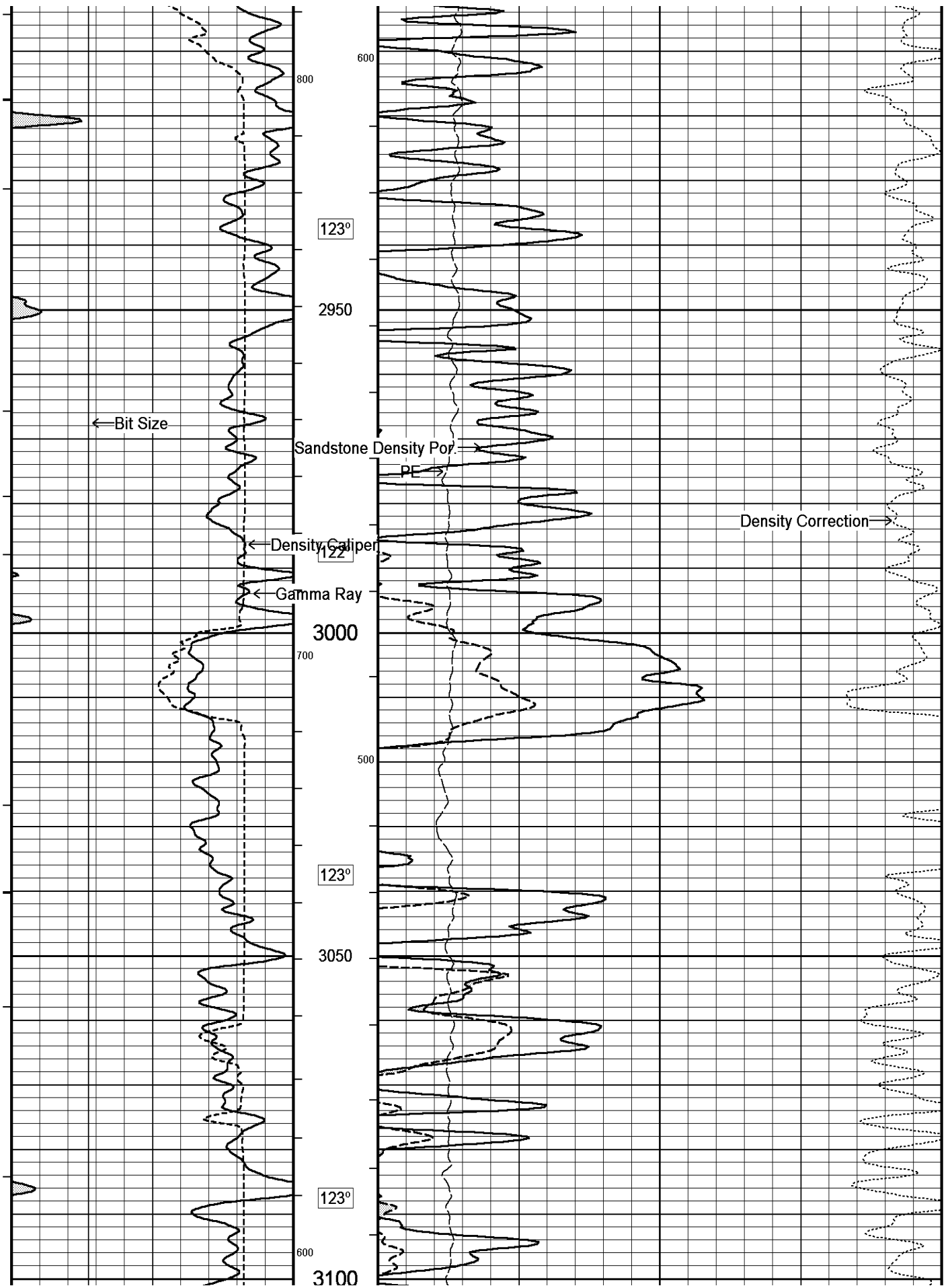


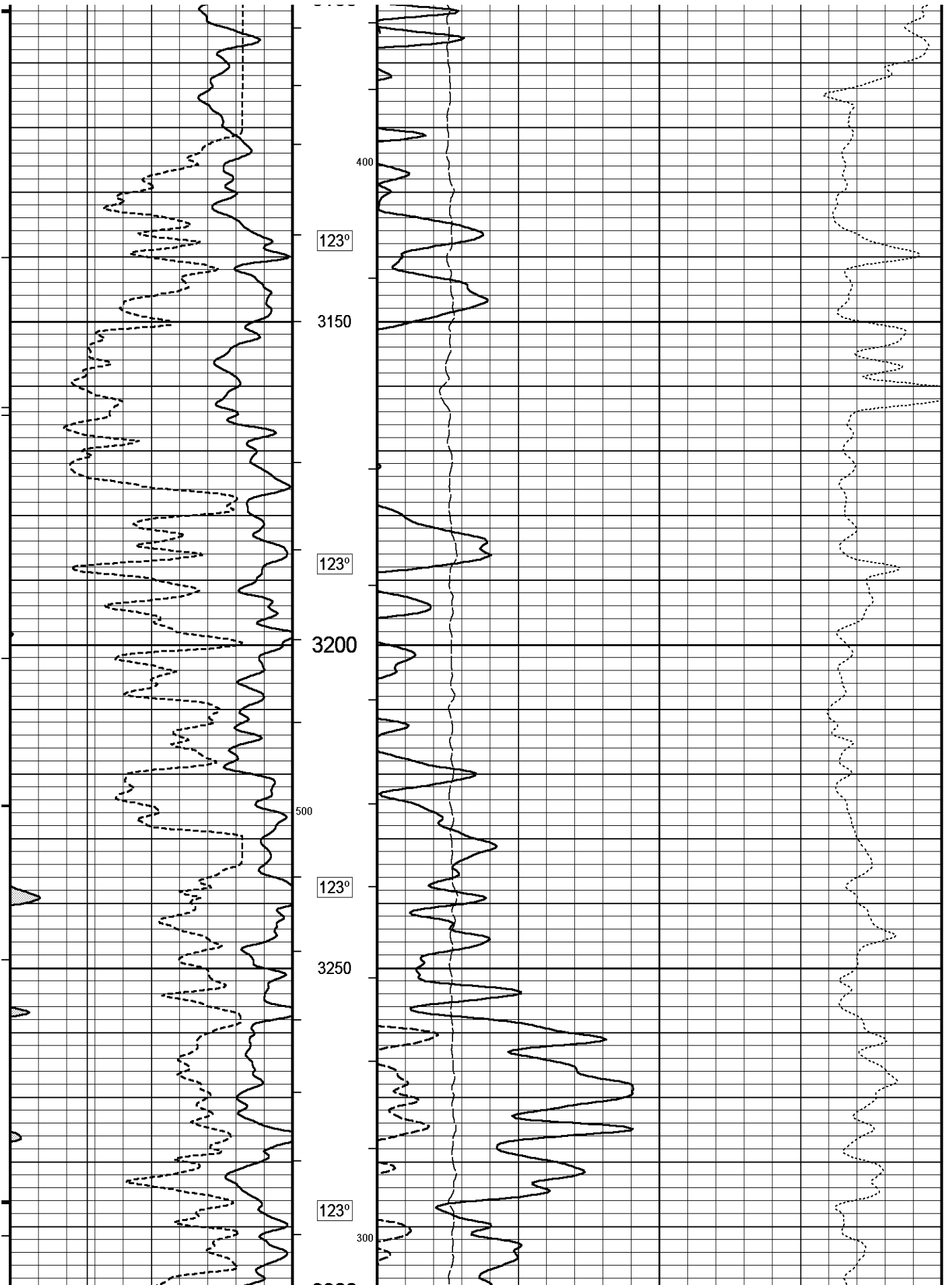


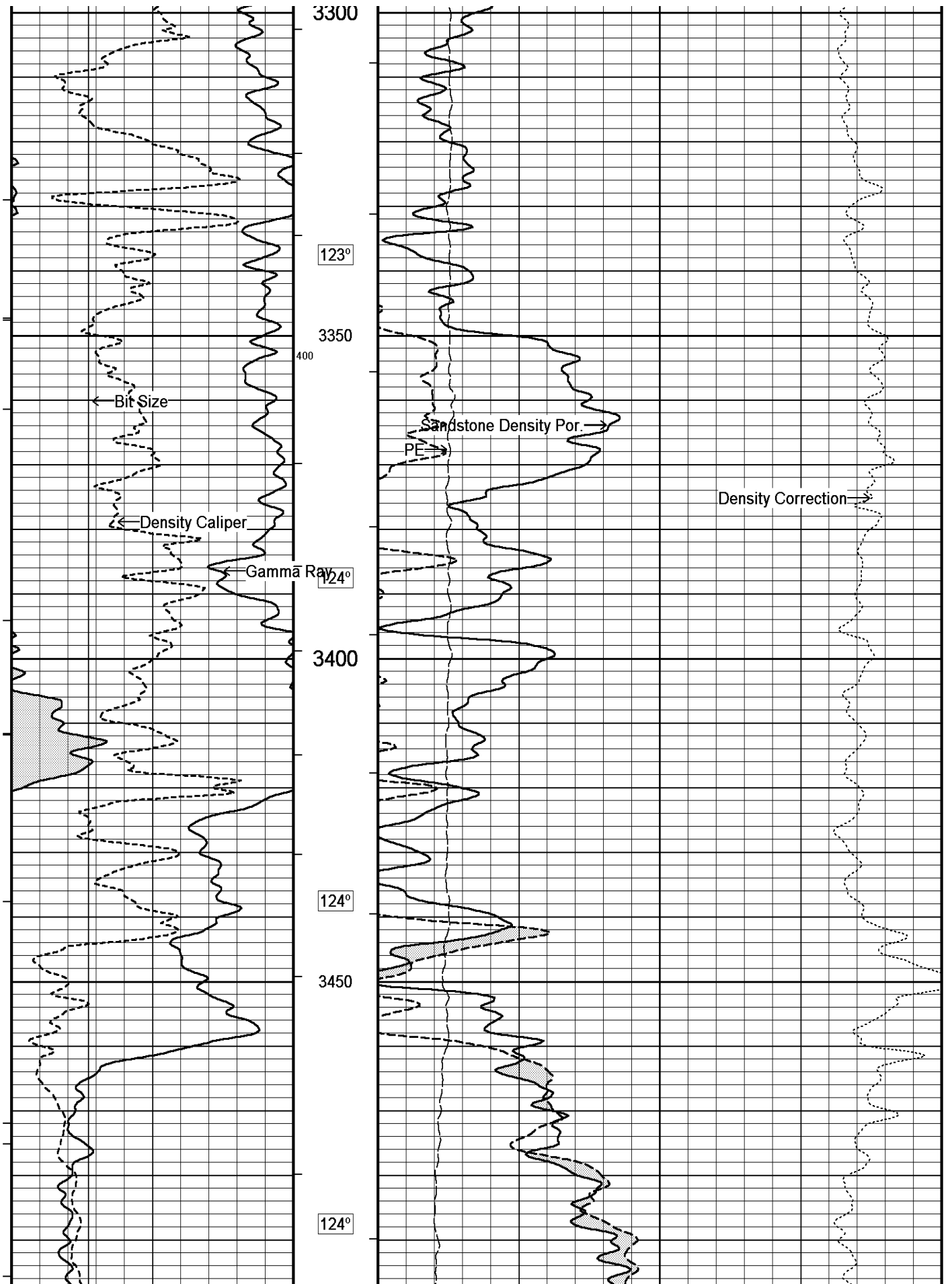


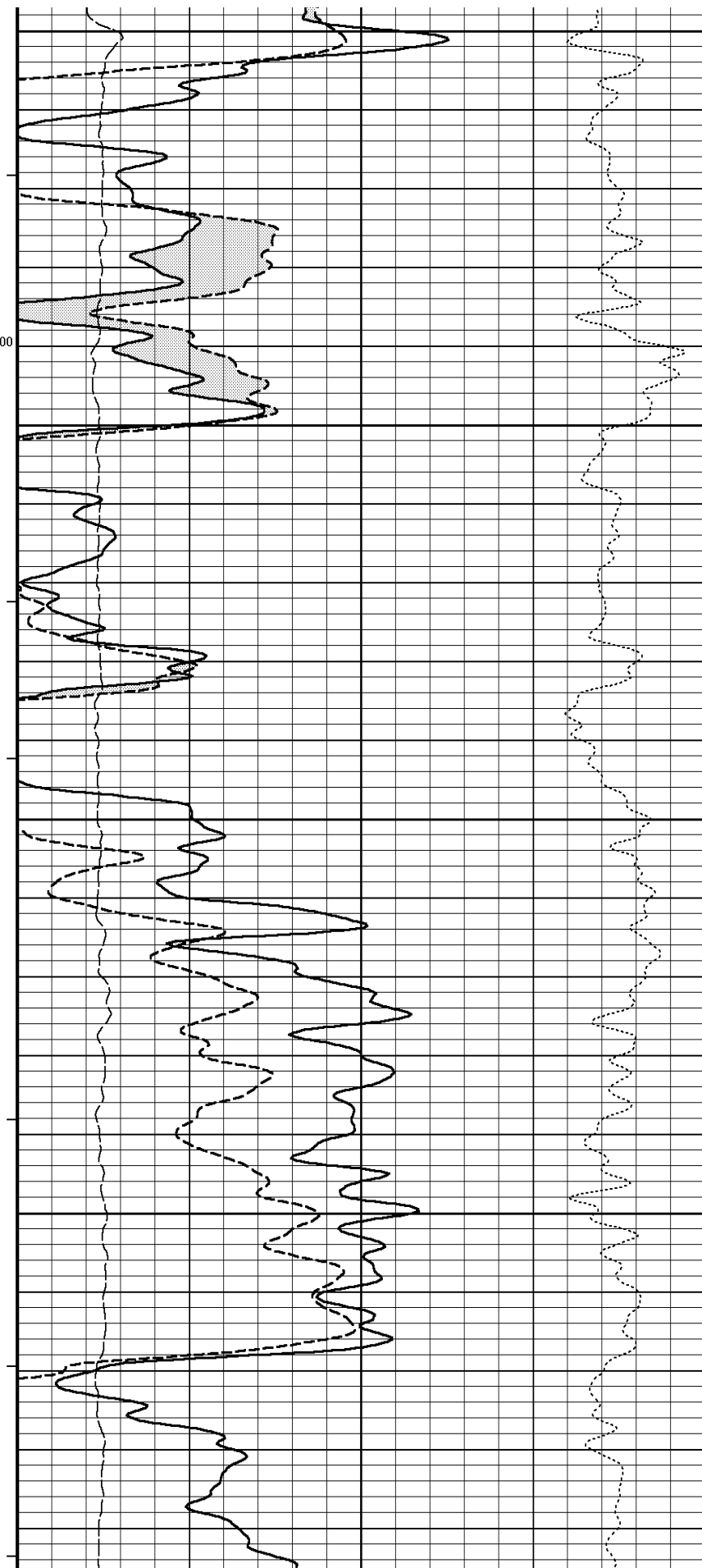
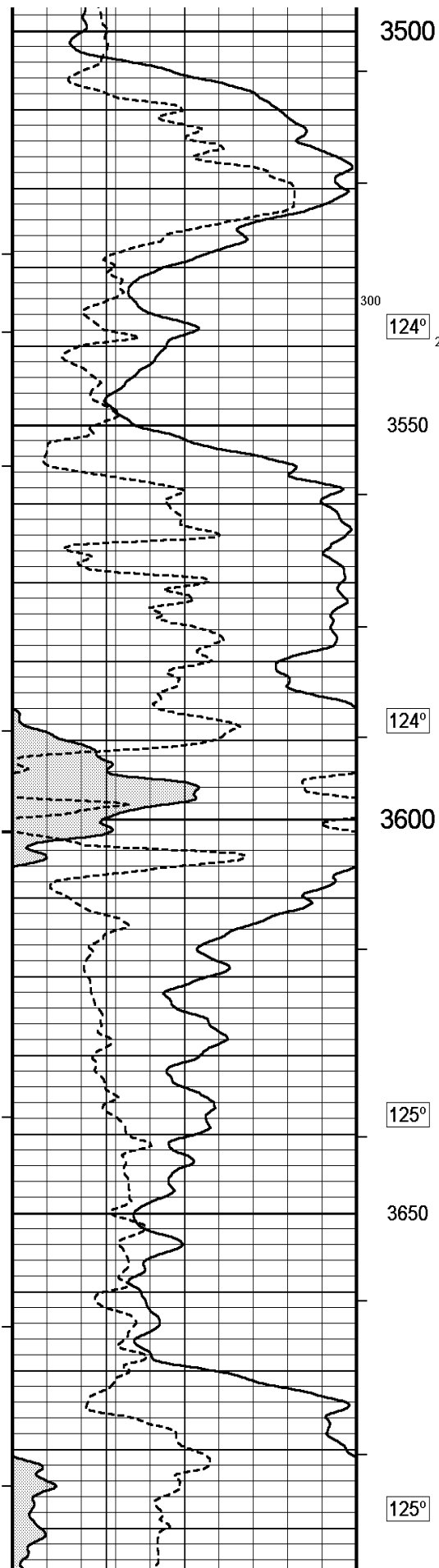


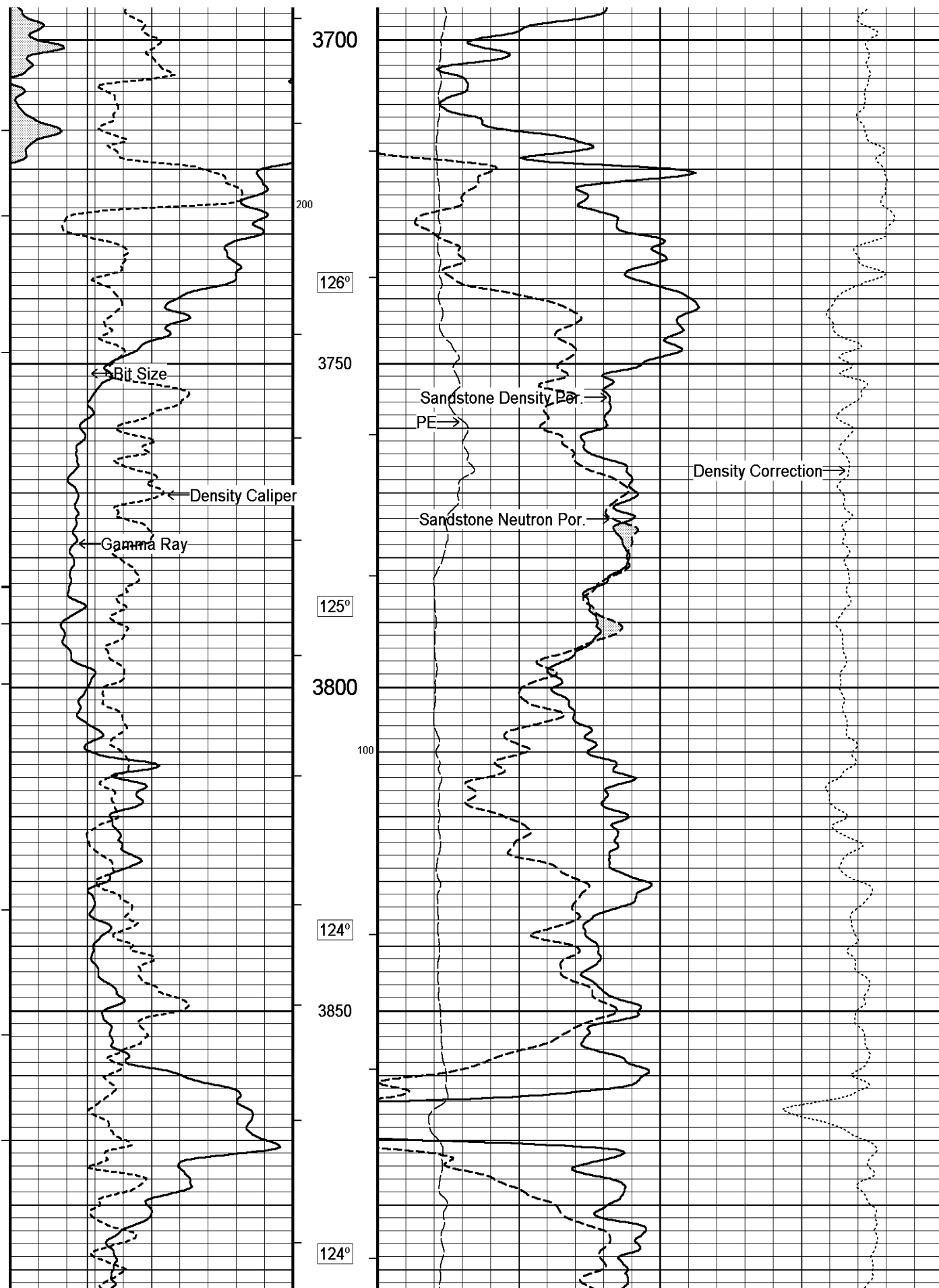


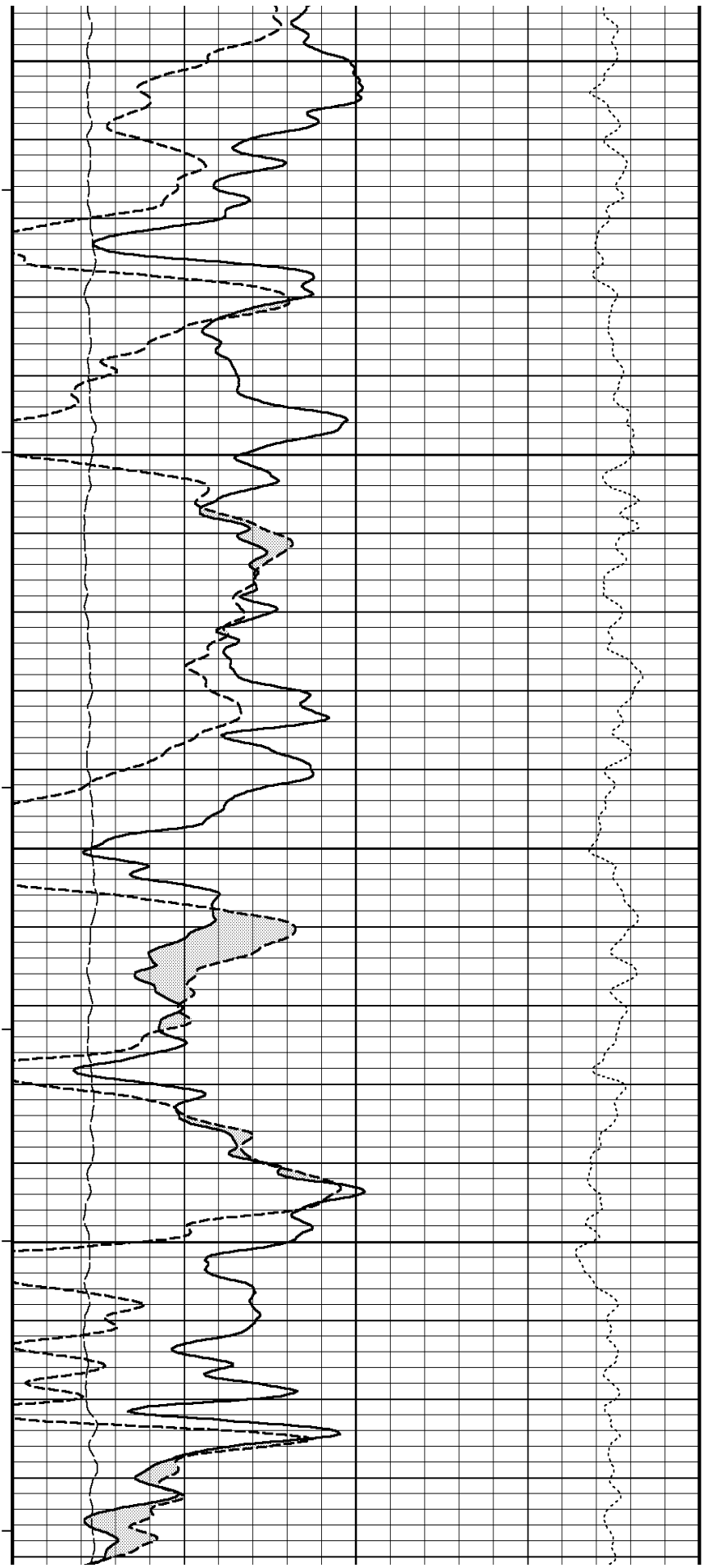
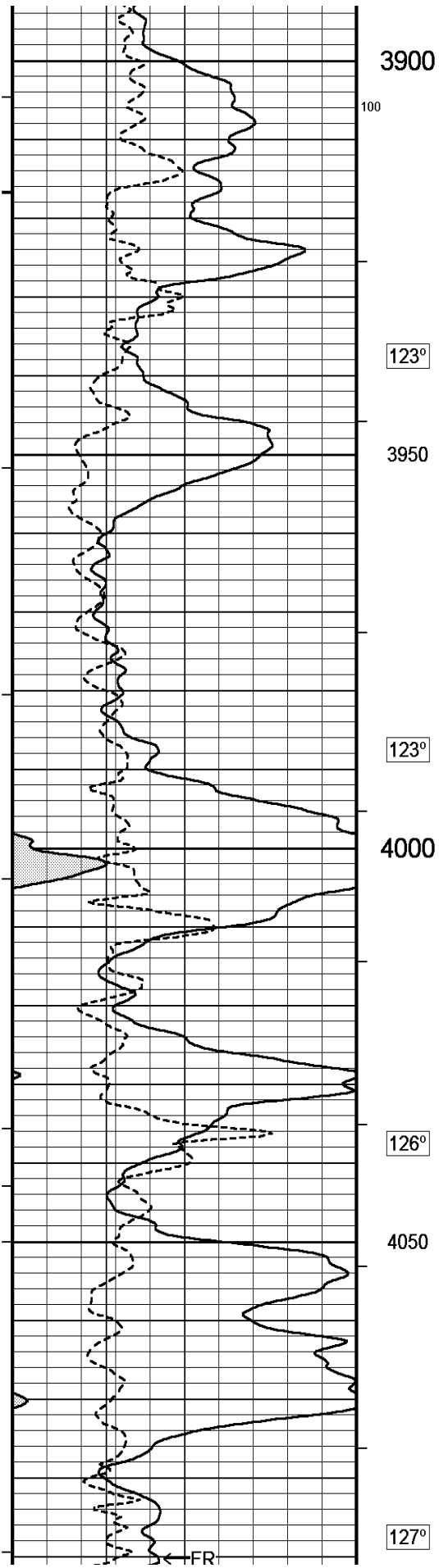


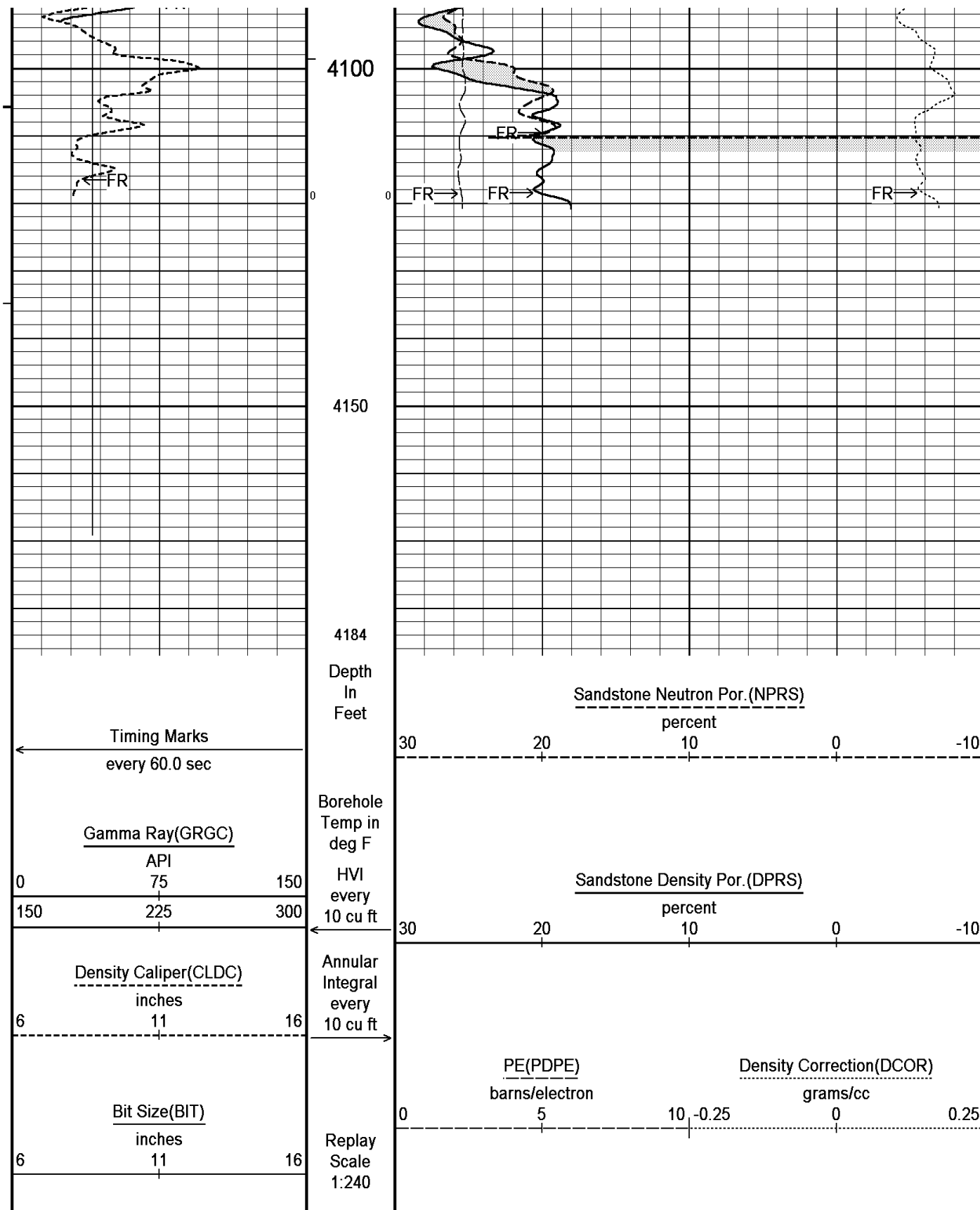


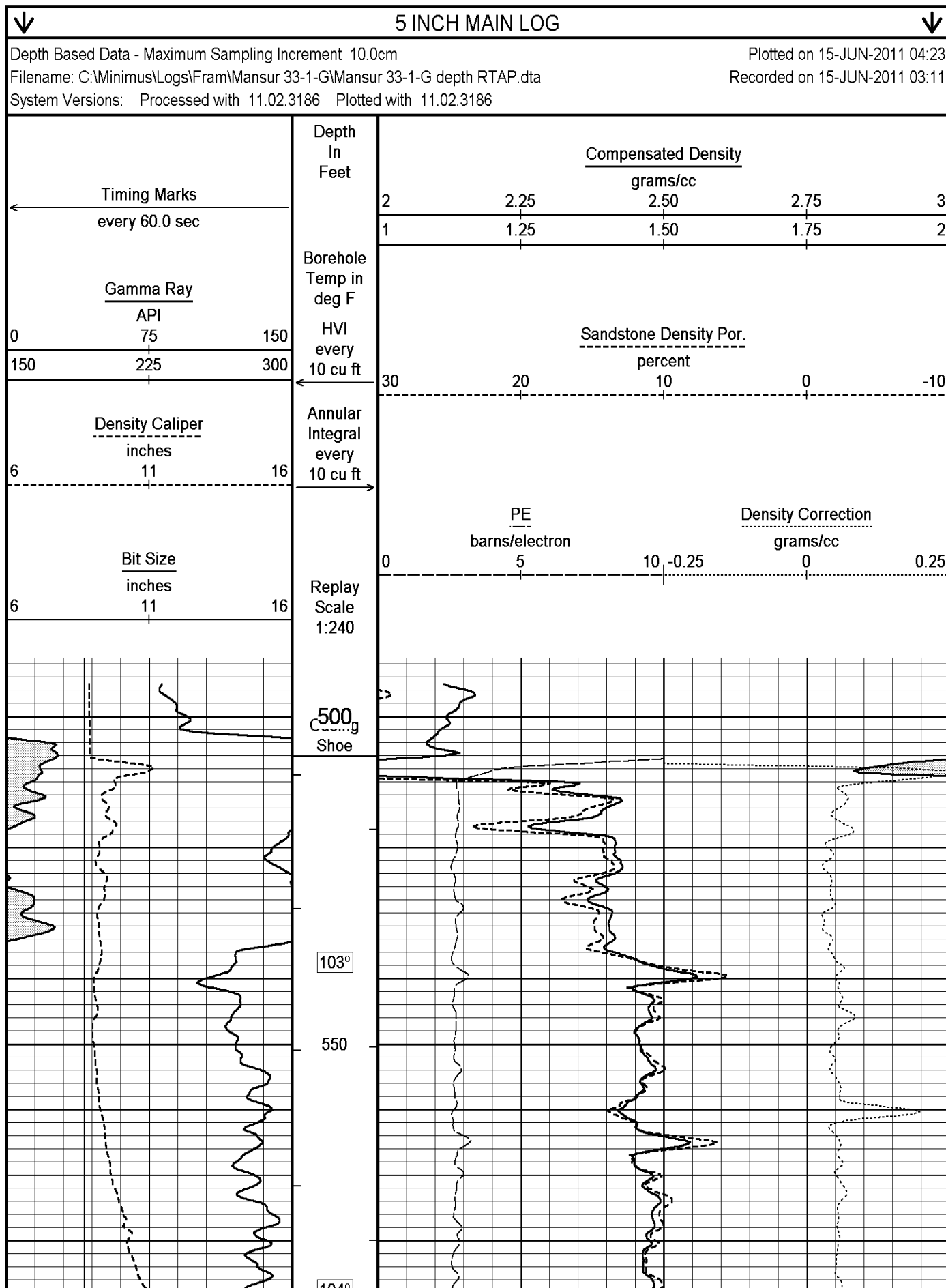


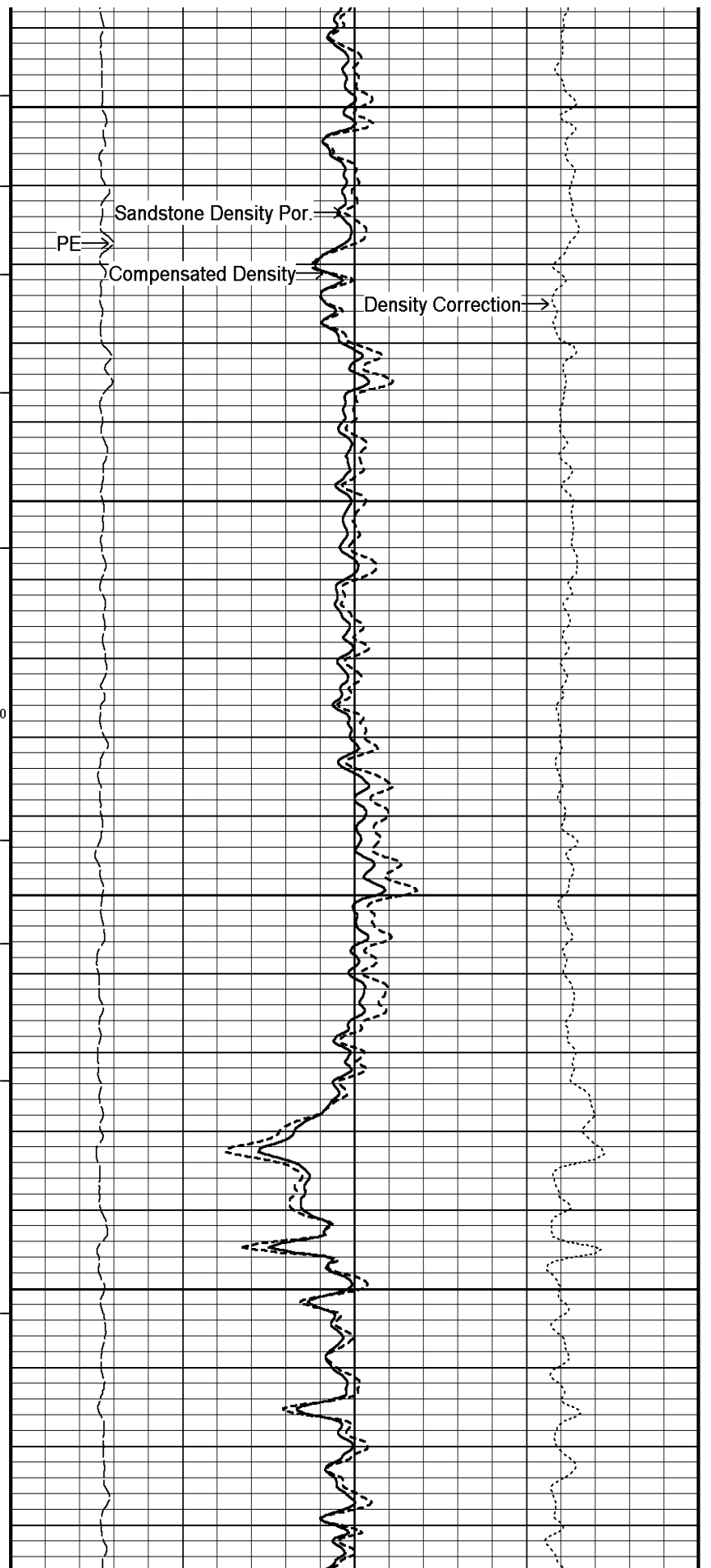
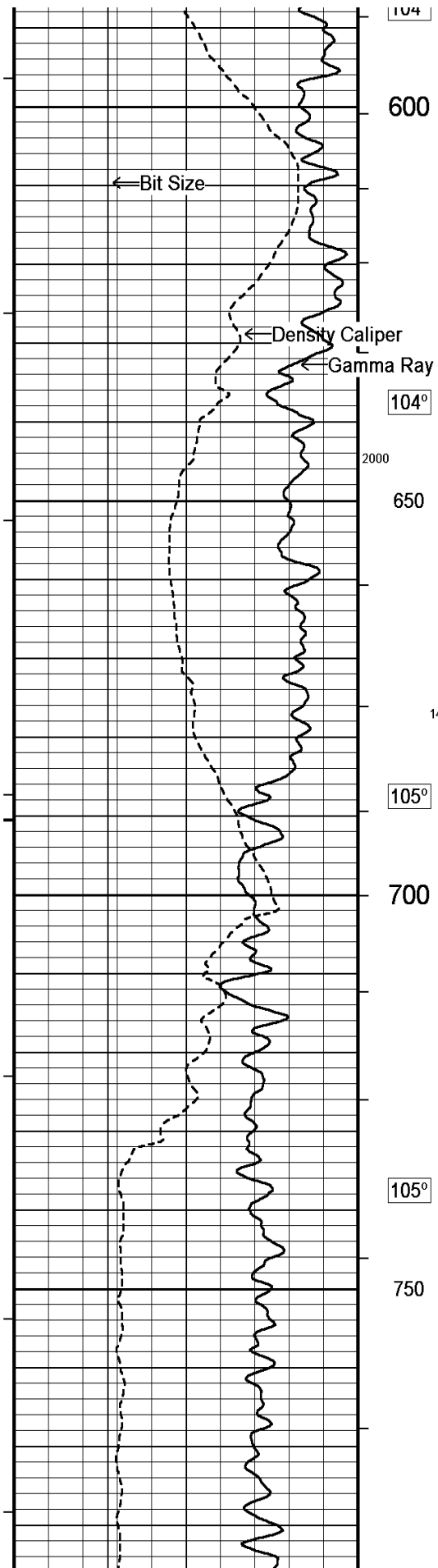


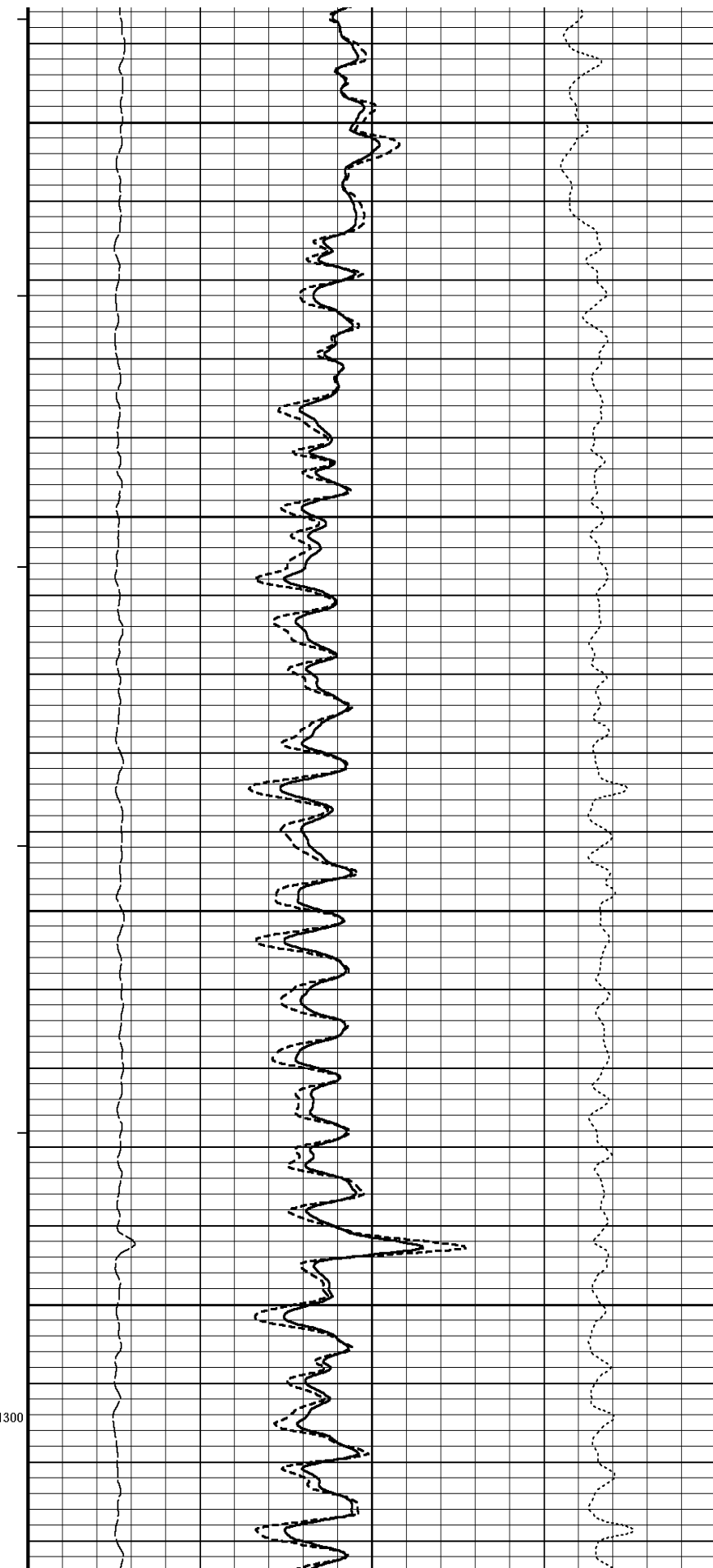
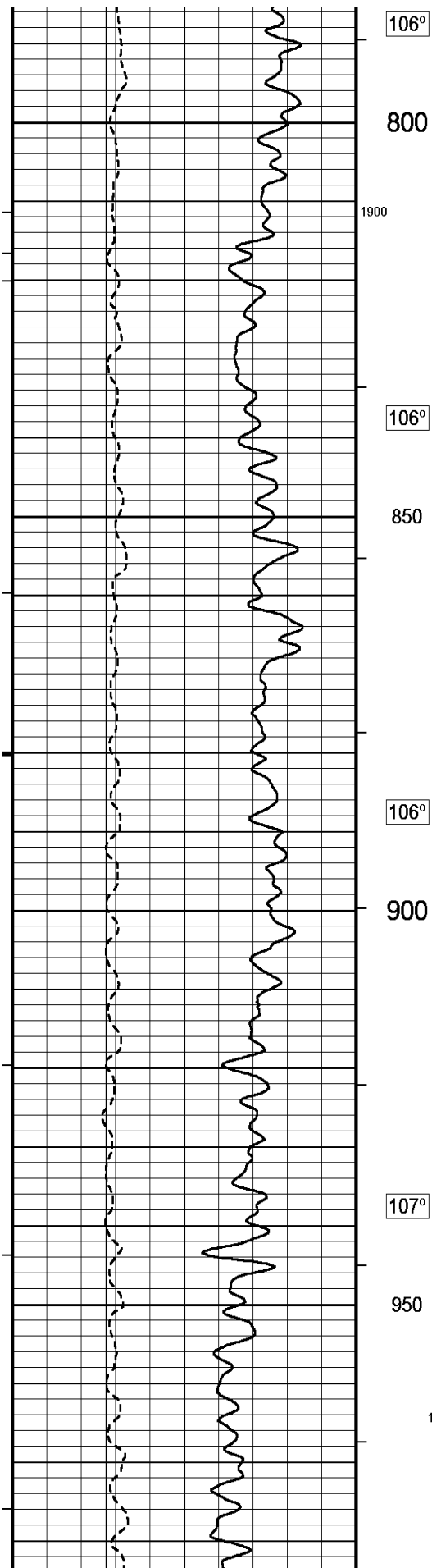


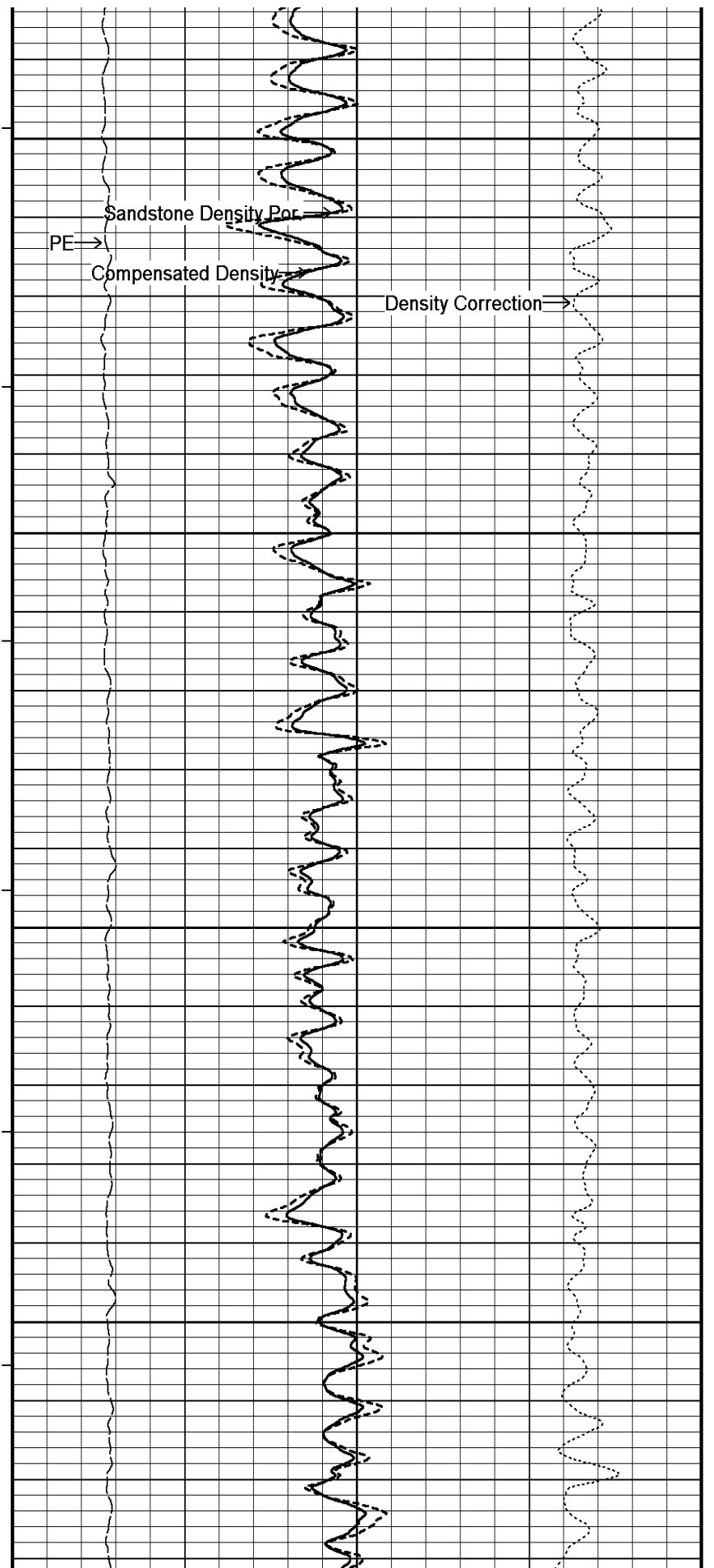
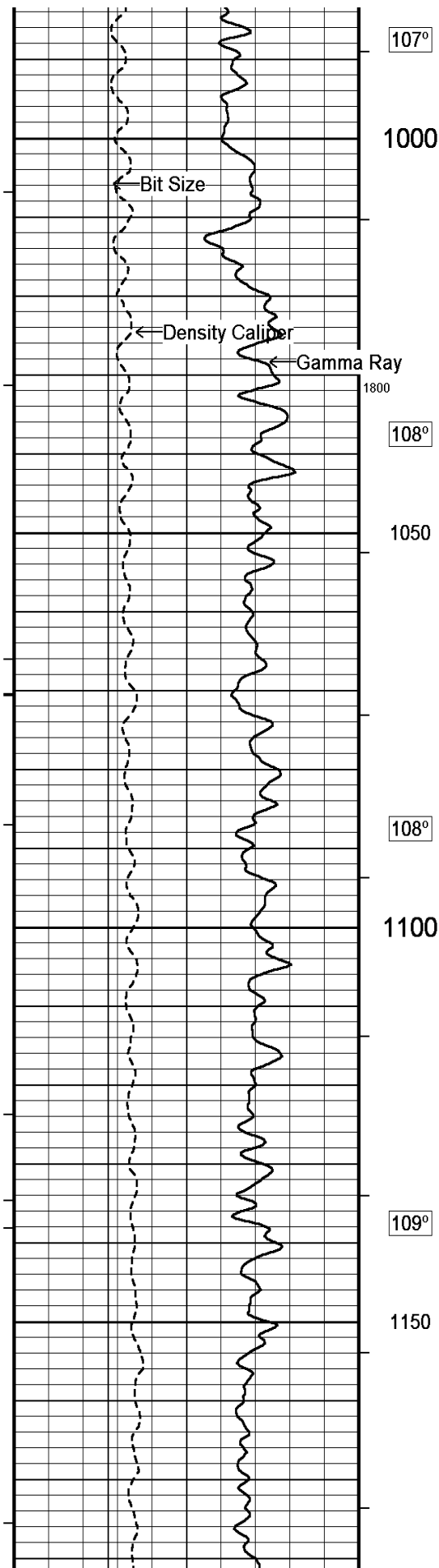


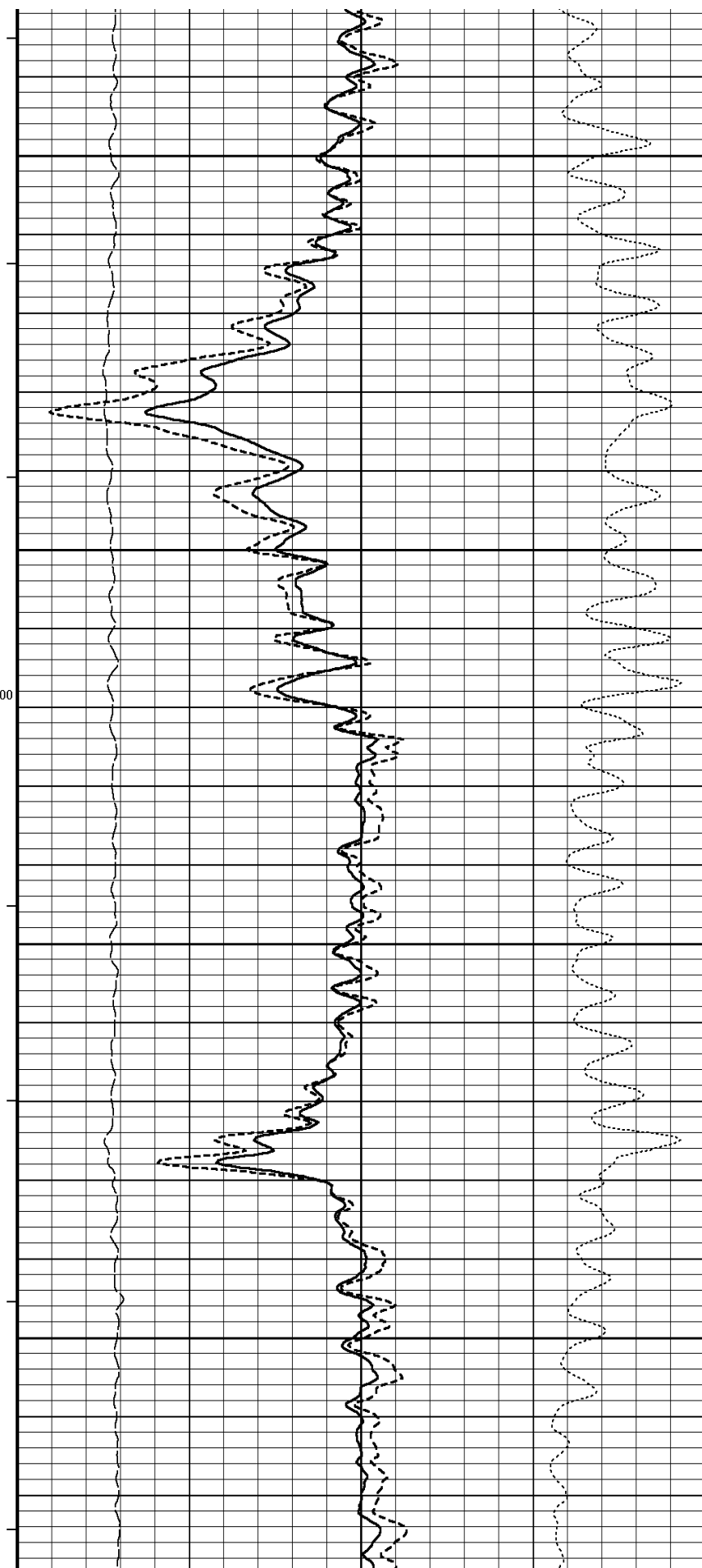
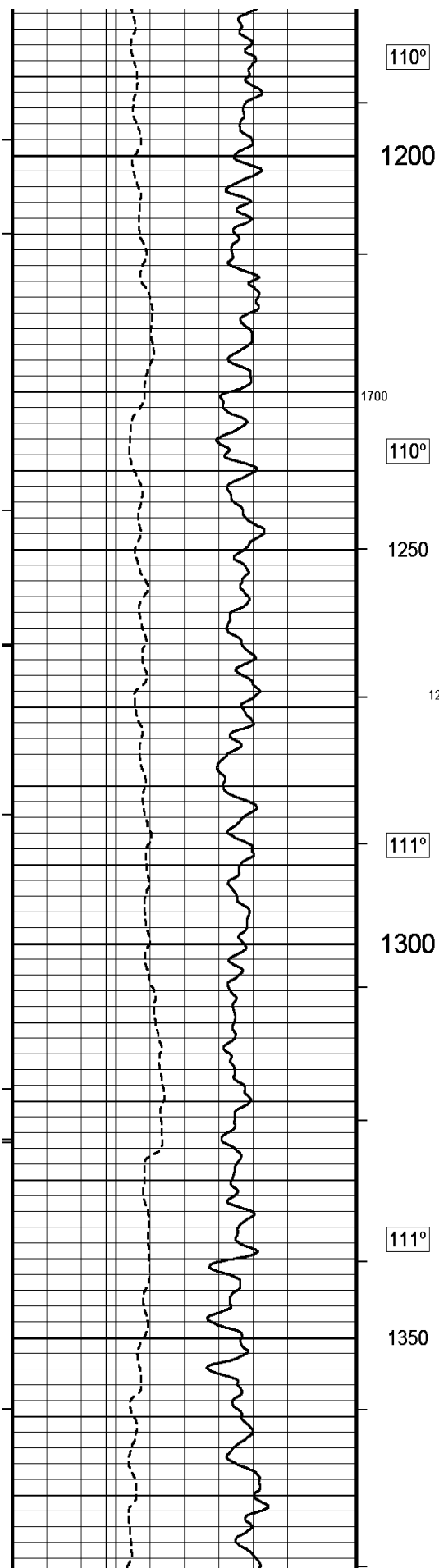


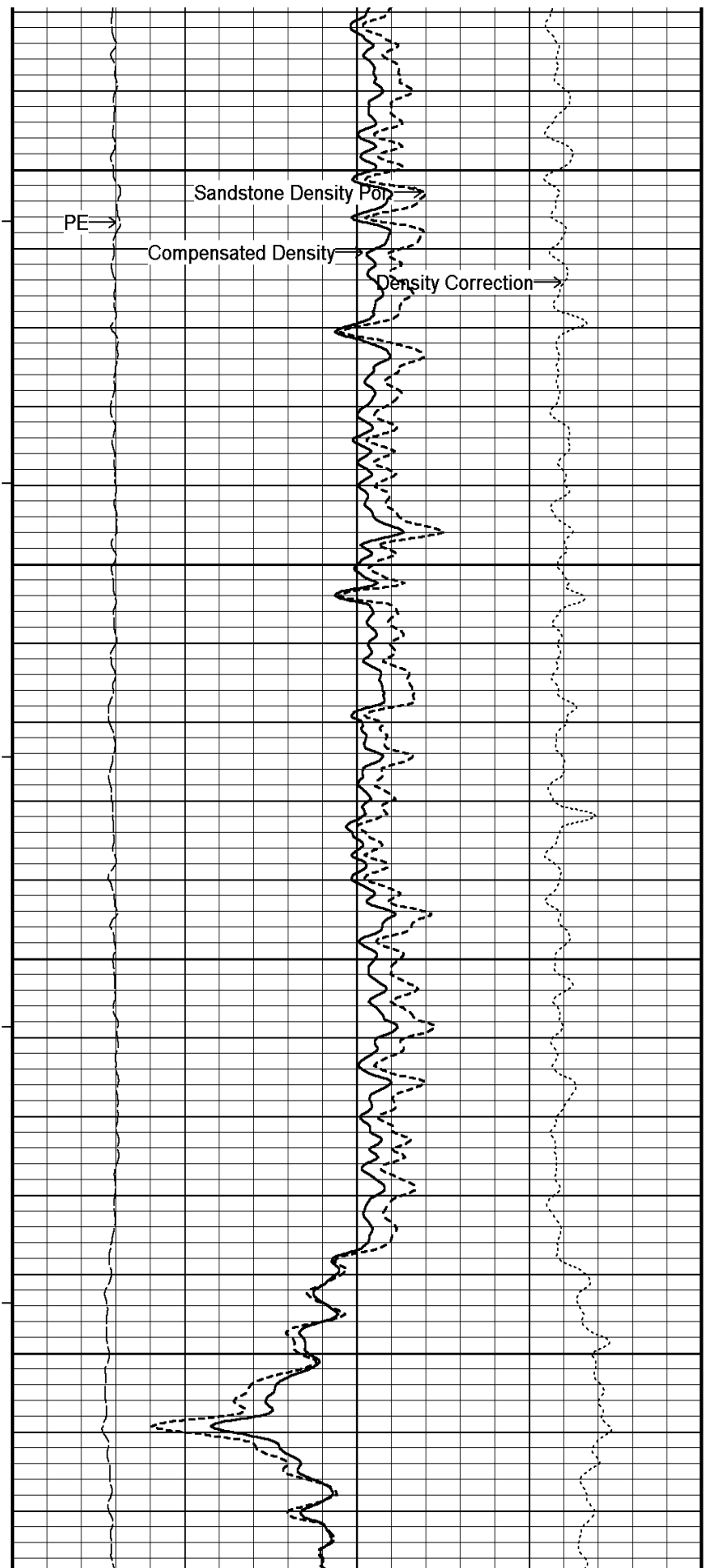
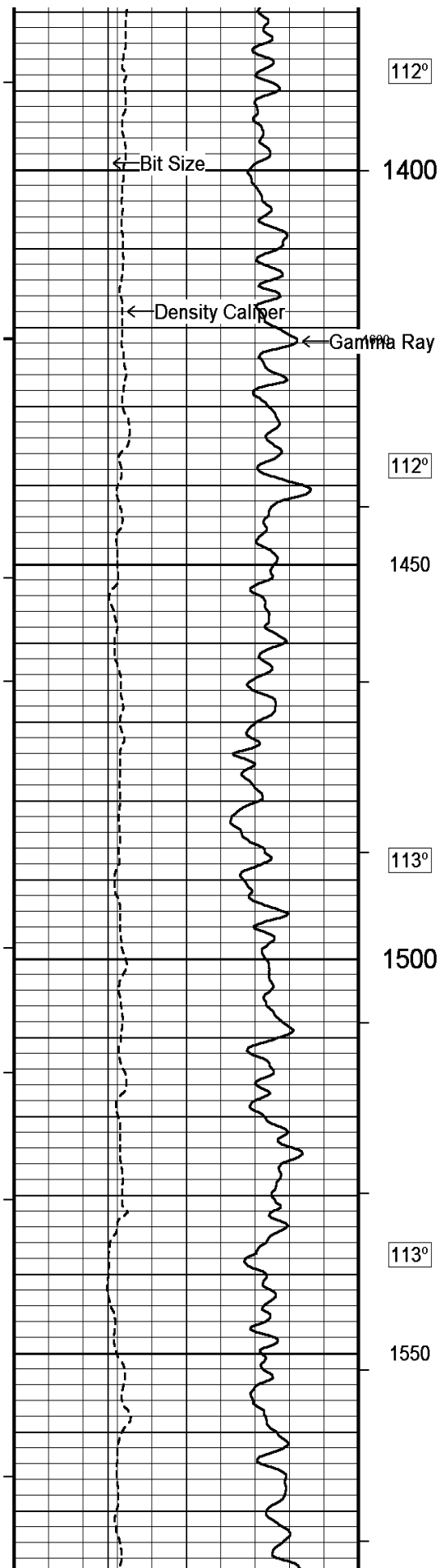


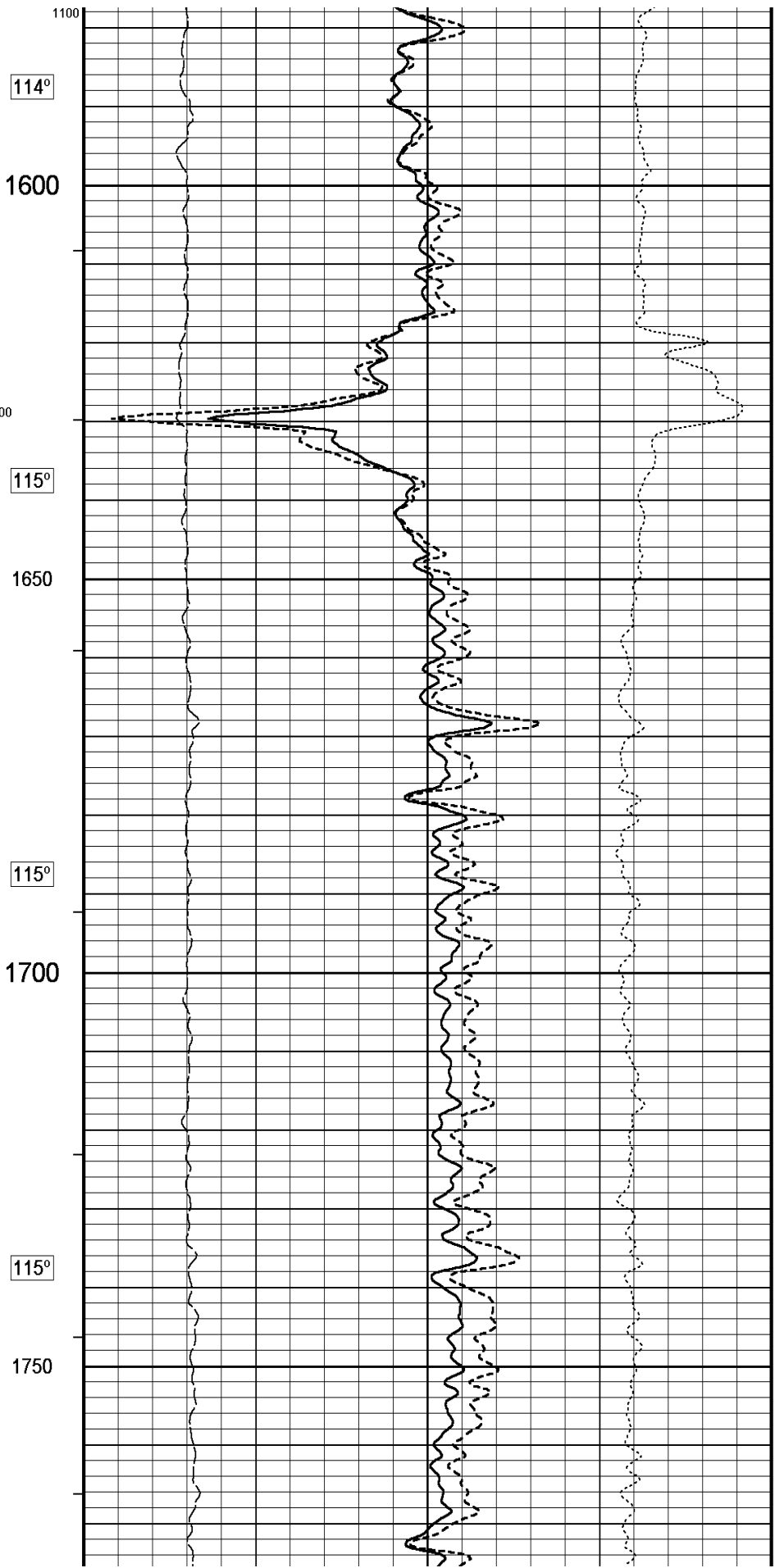
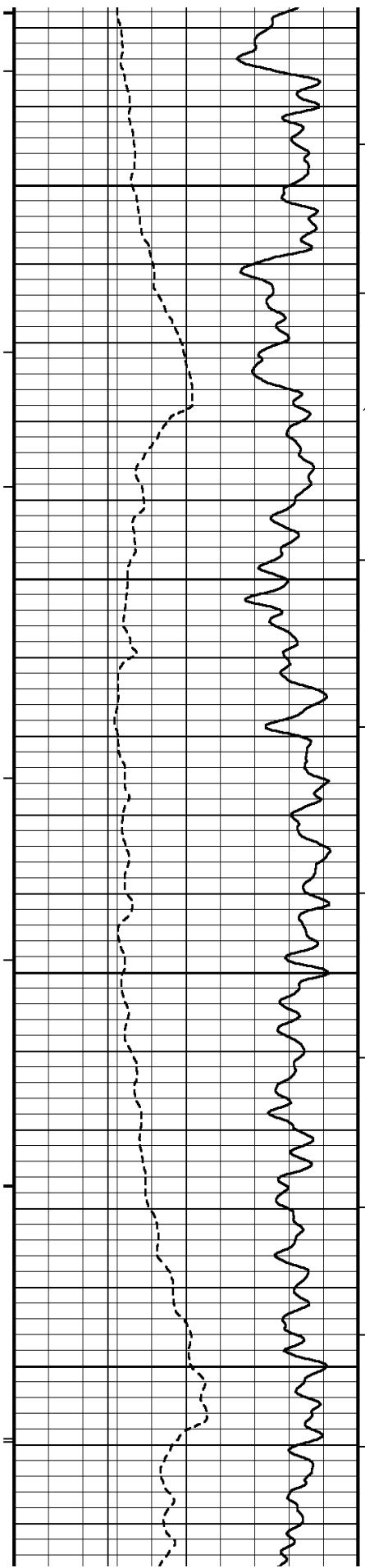


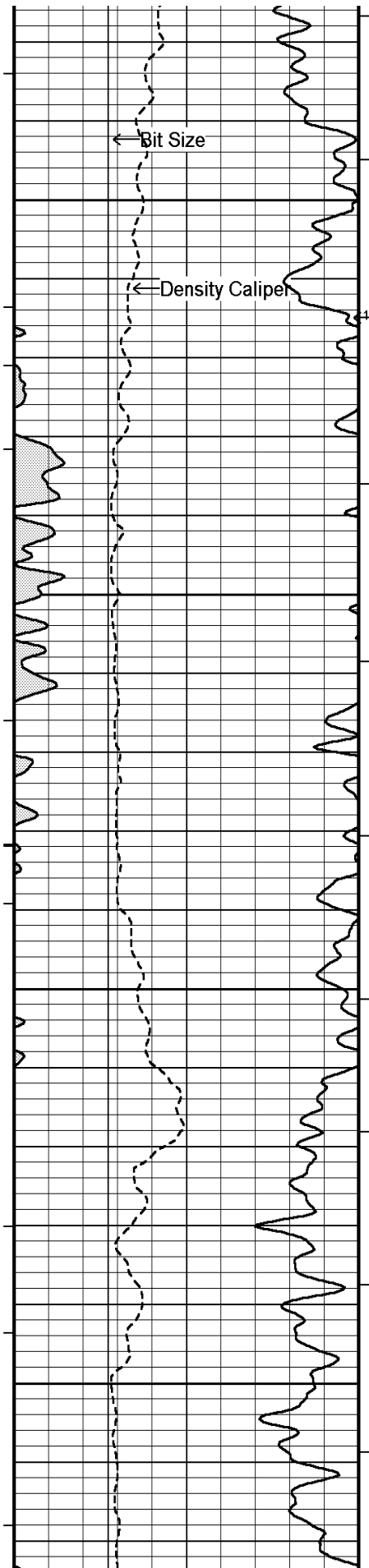












116°

1800

117°

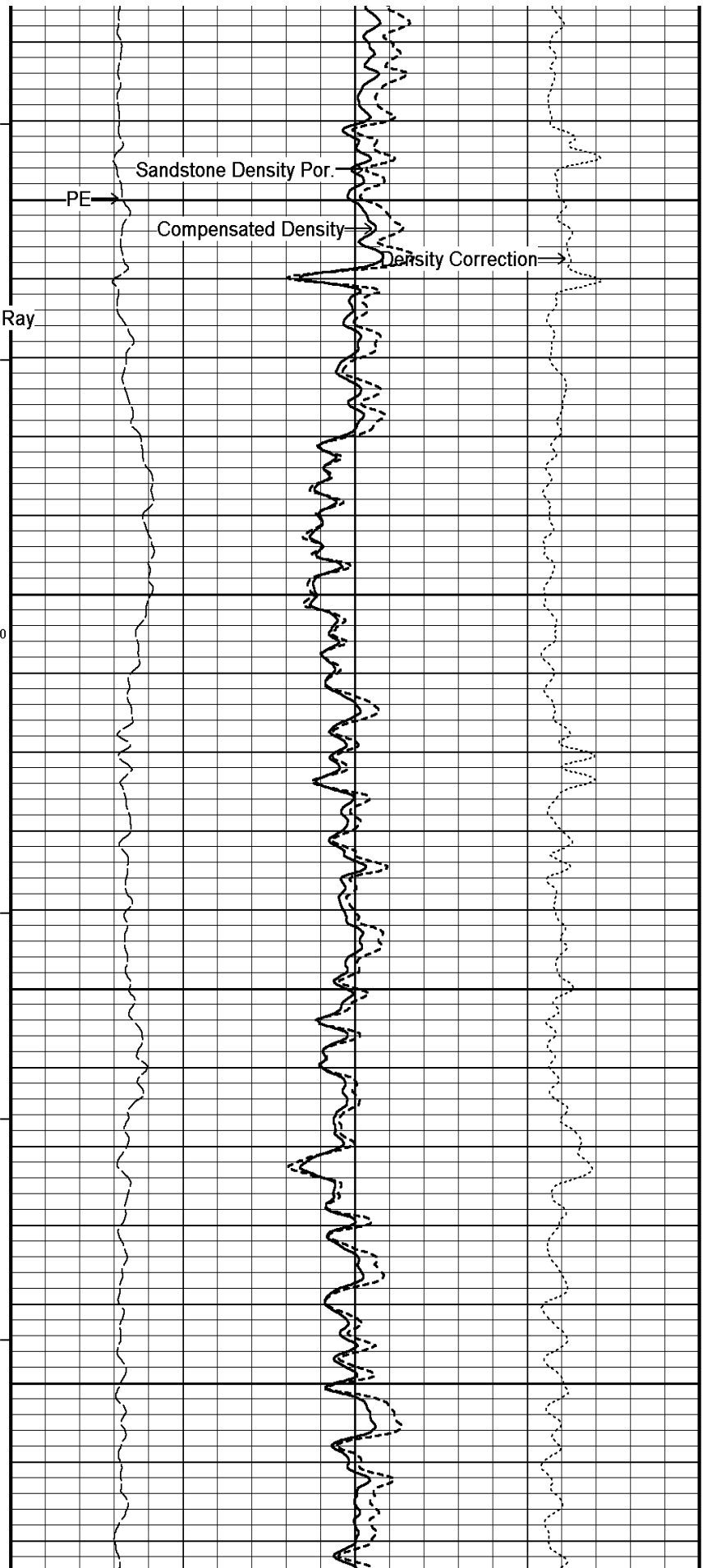
1850

117°

1900

117°

1950



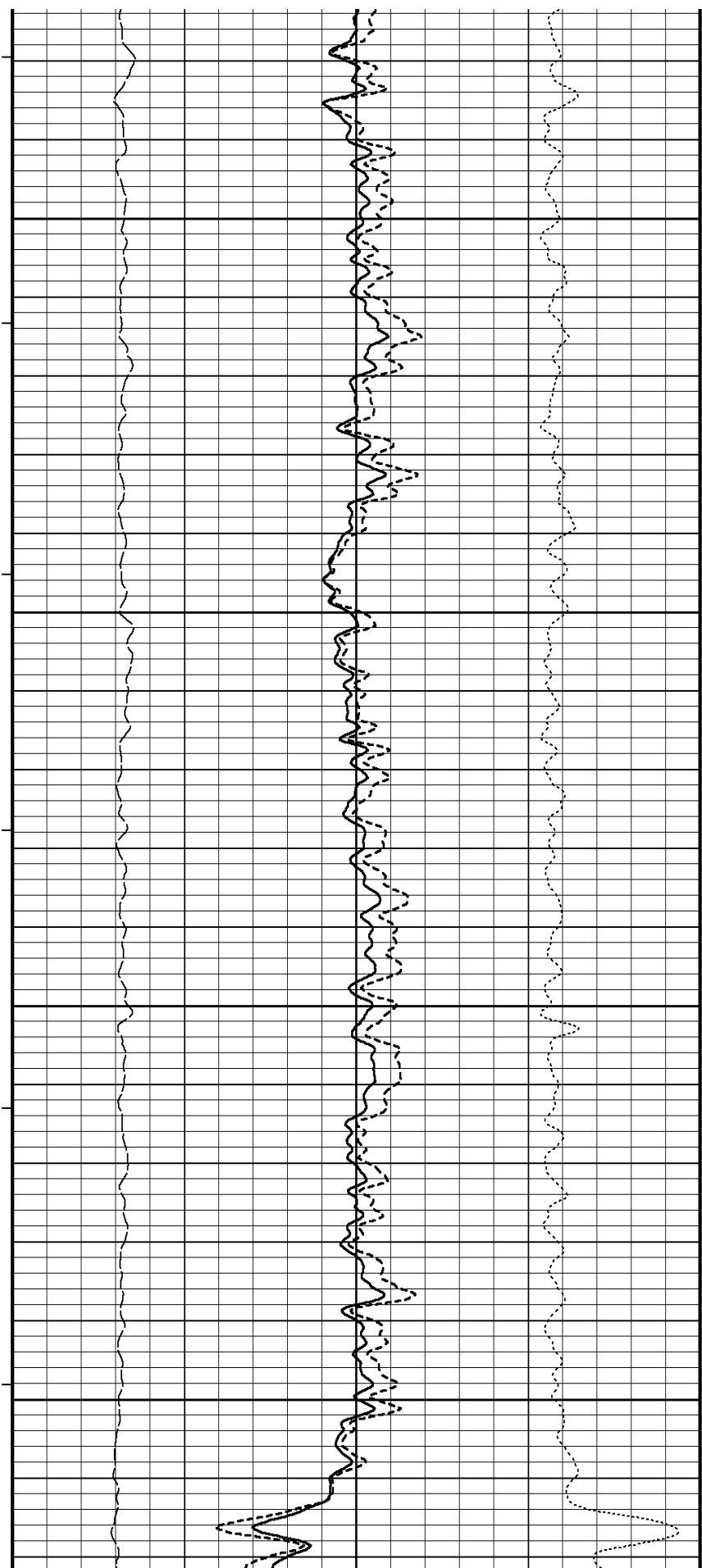
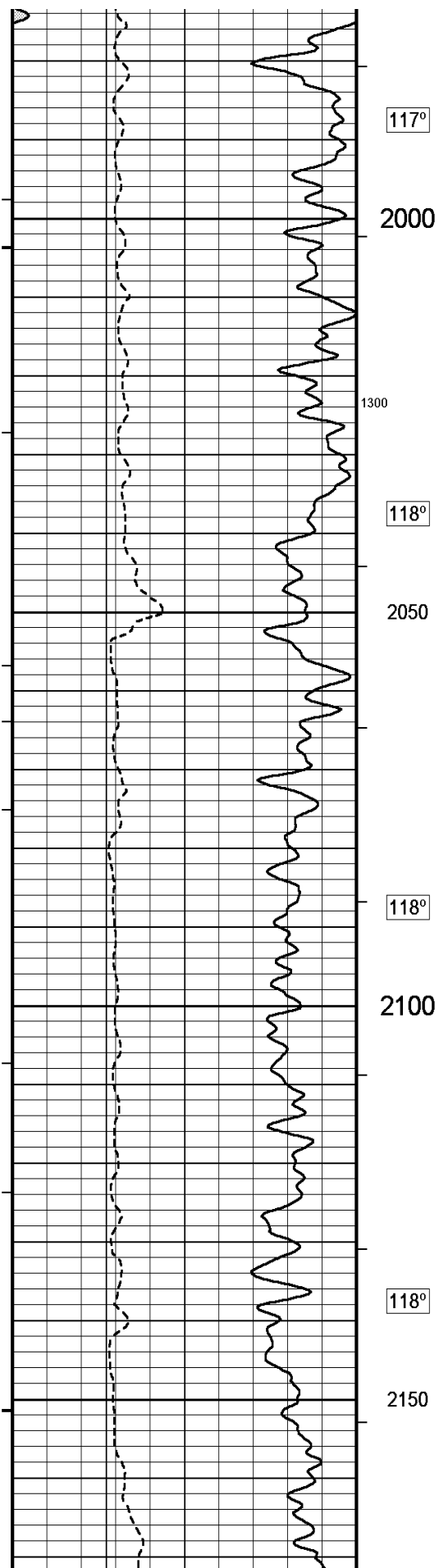
PE

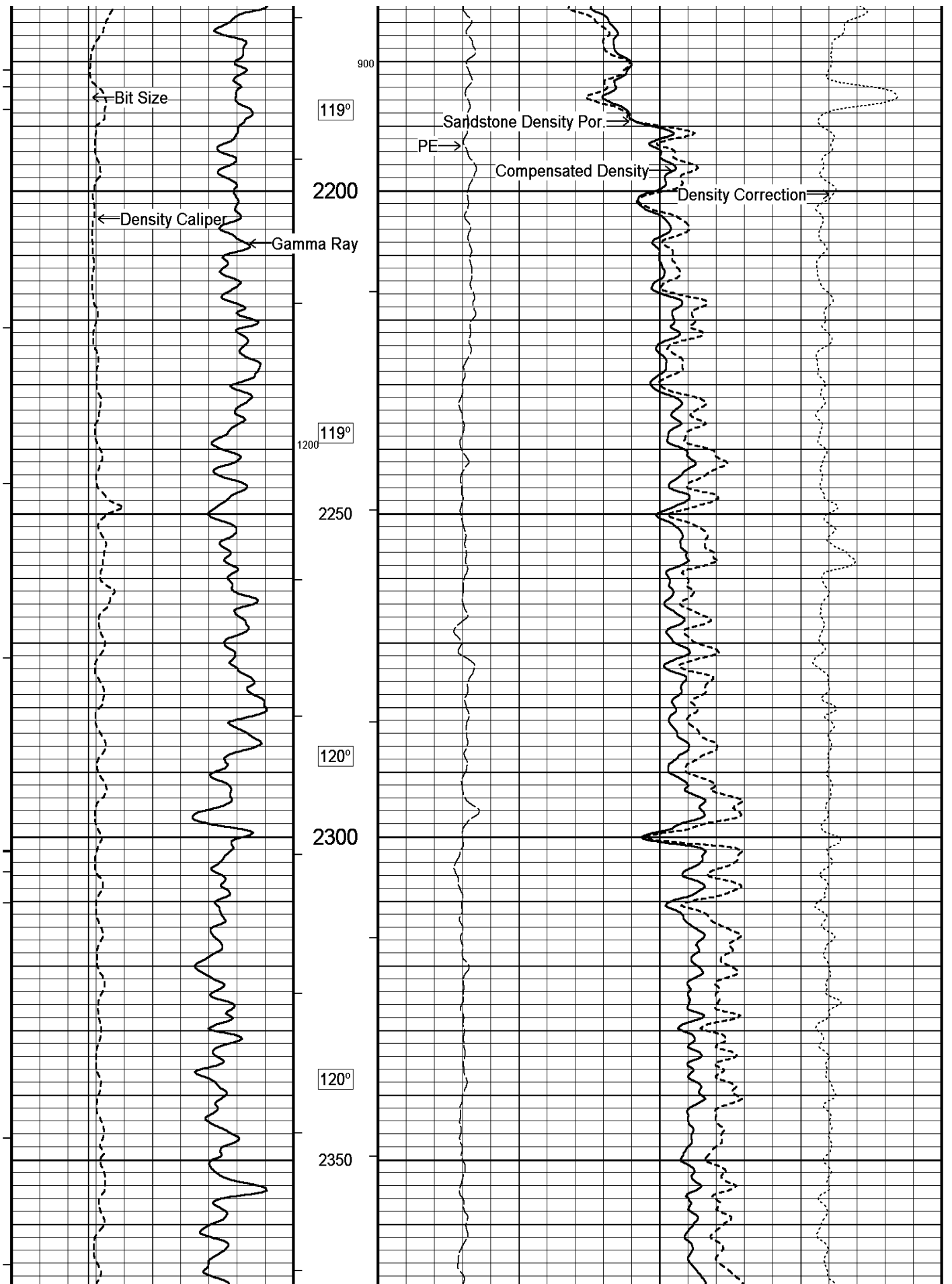
Sandstone Density Por.

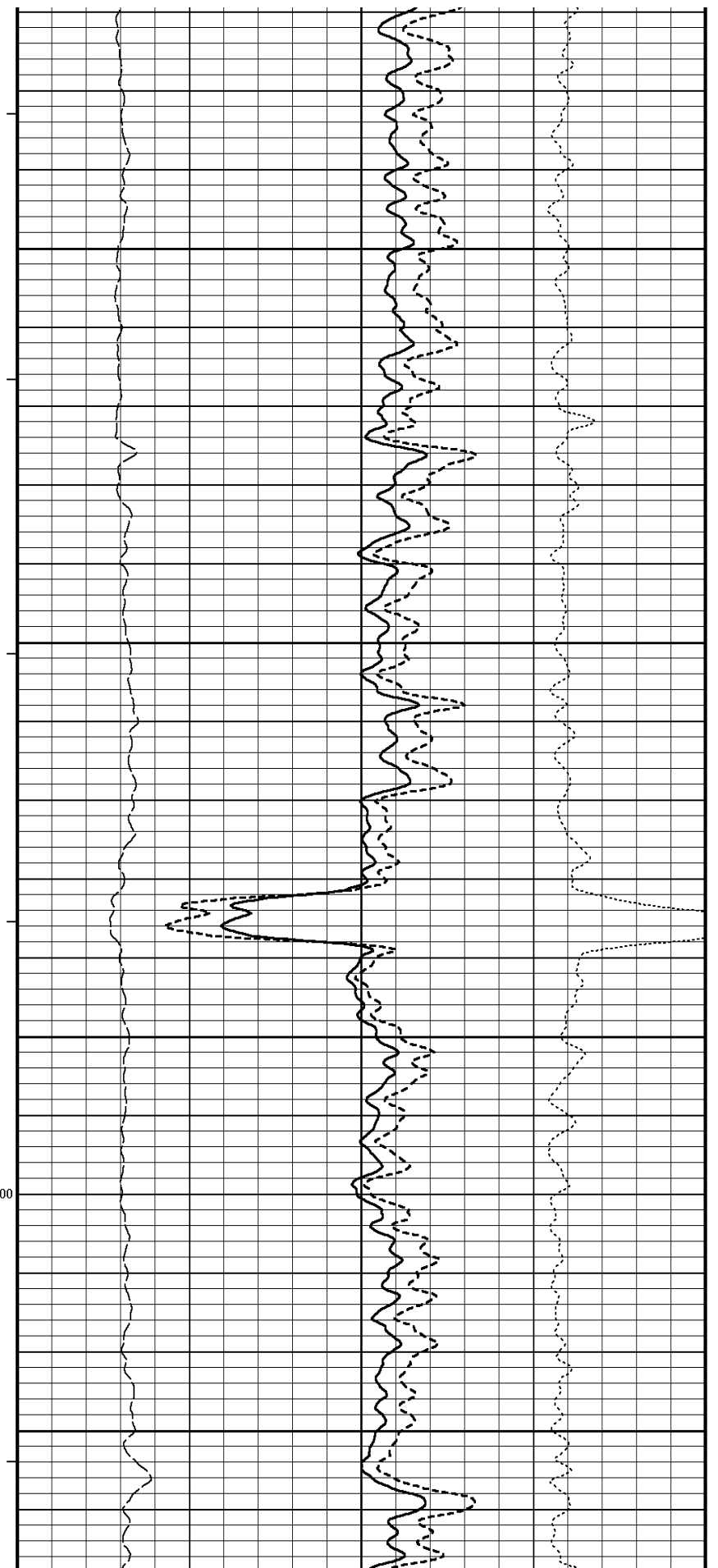
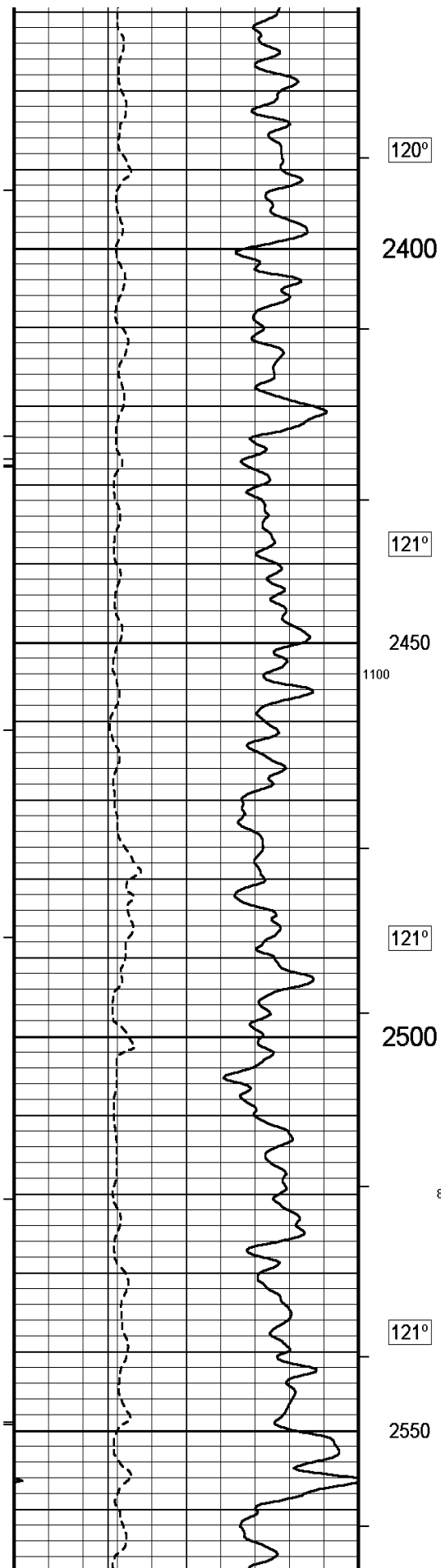
Compensated Density

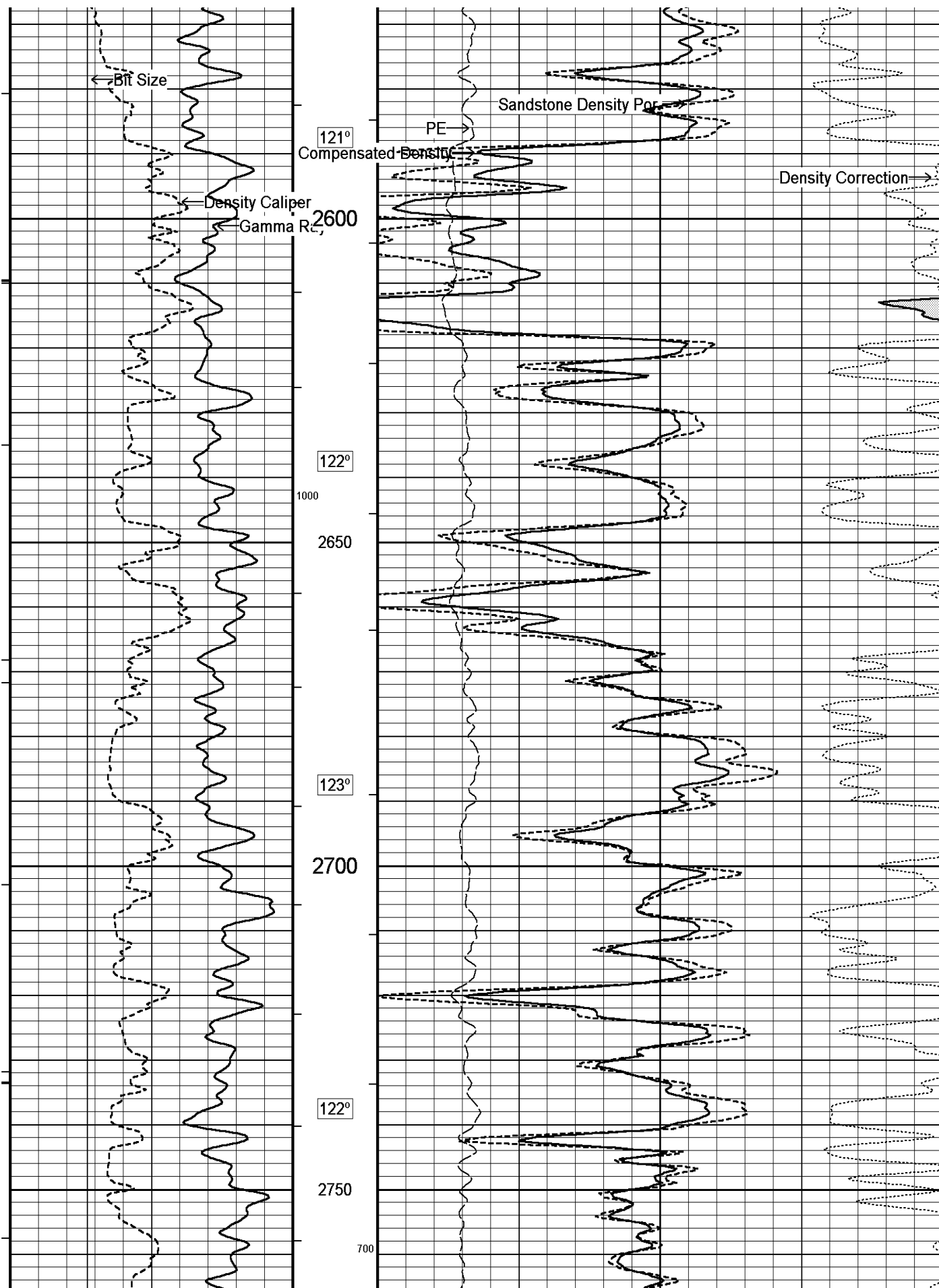
Density Correction

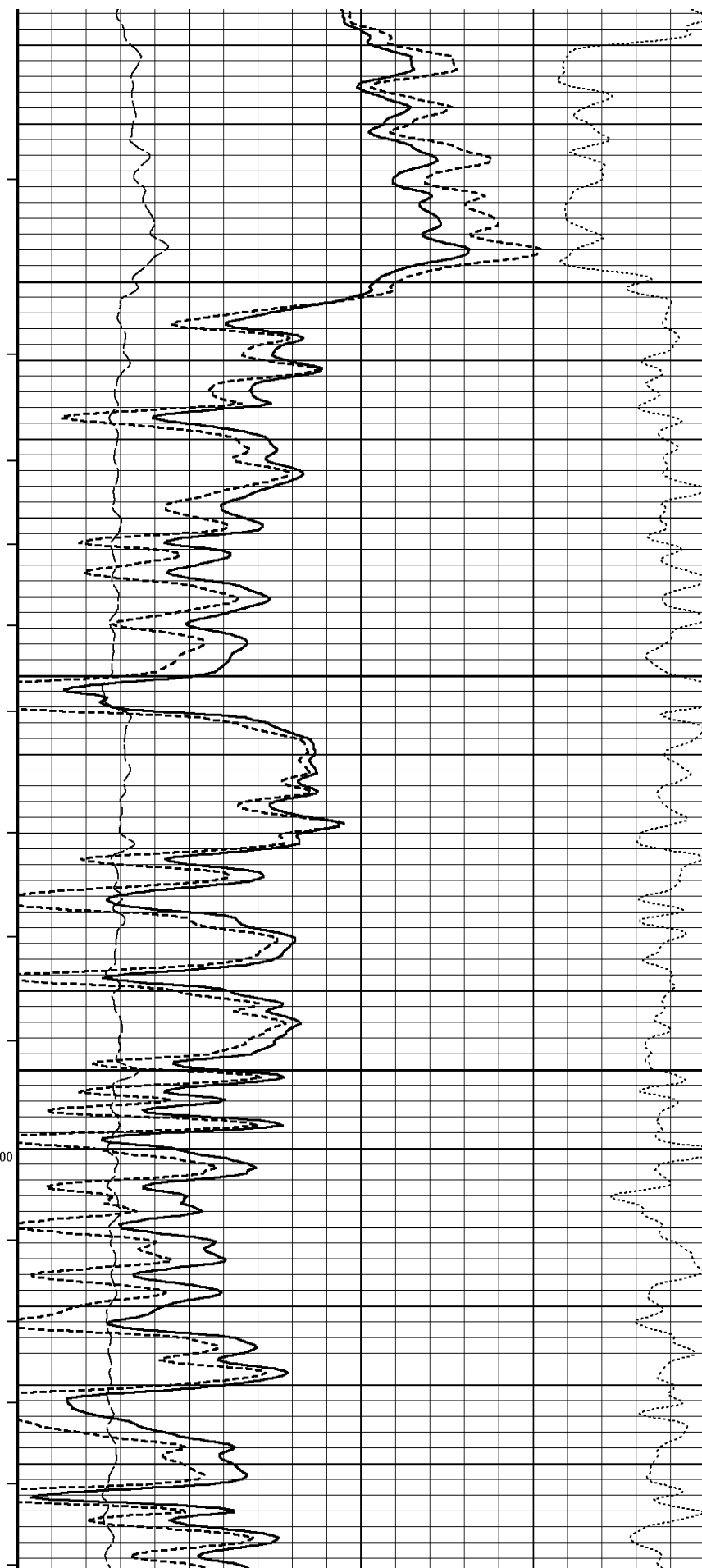
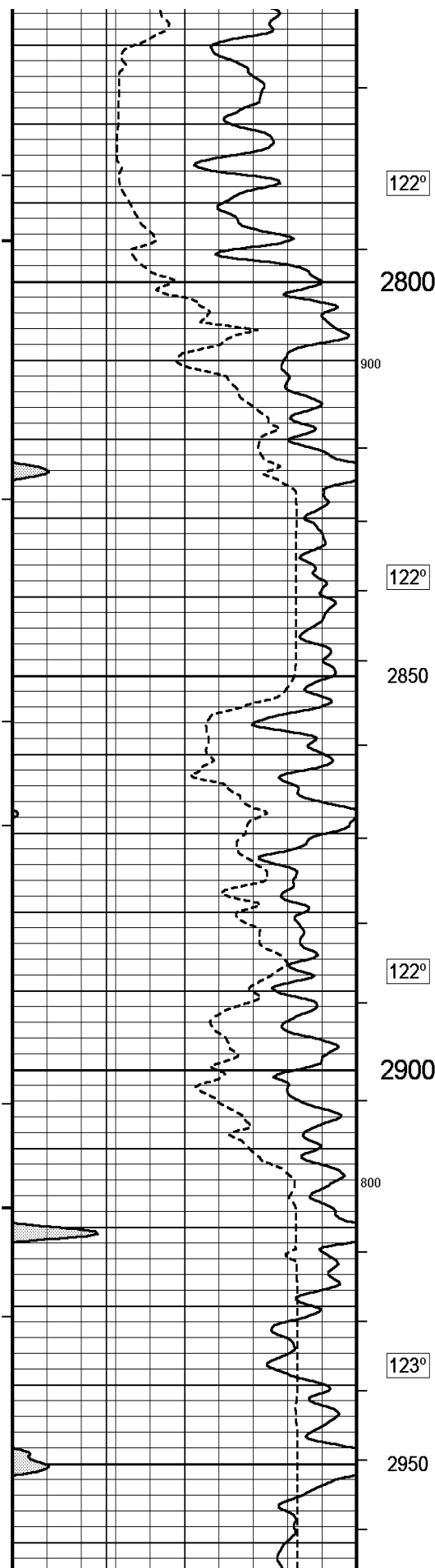
1000

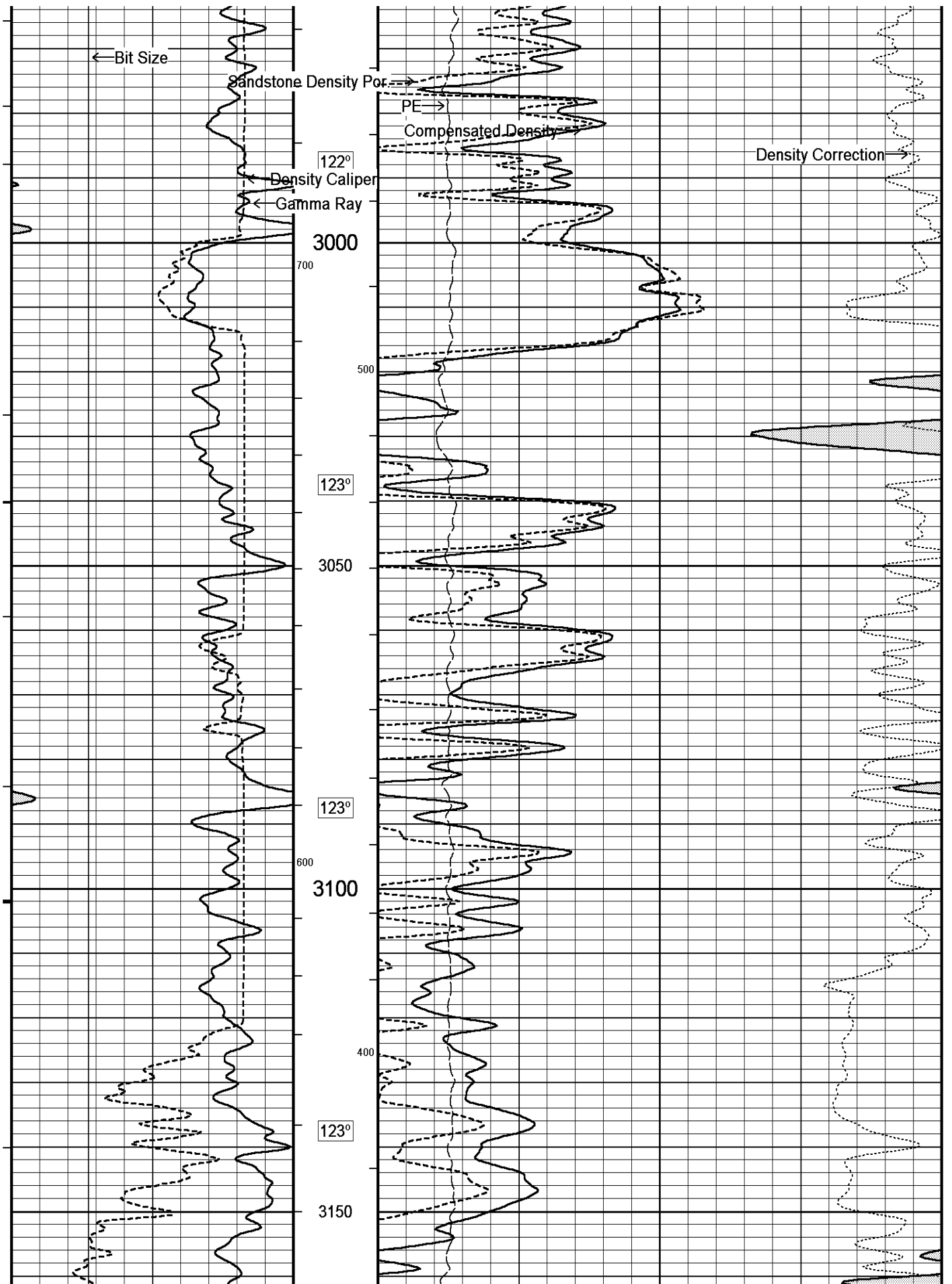


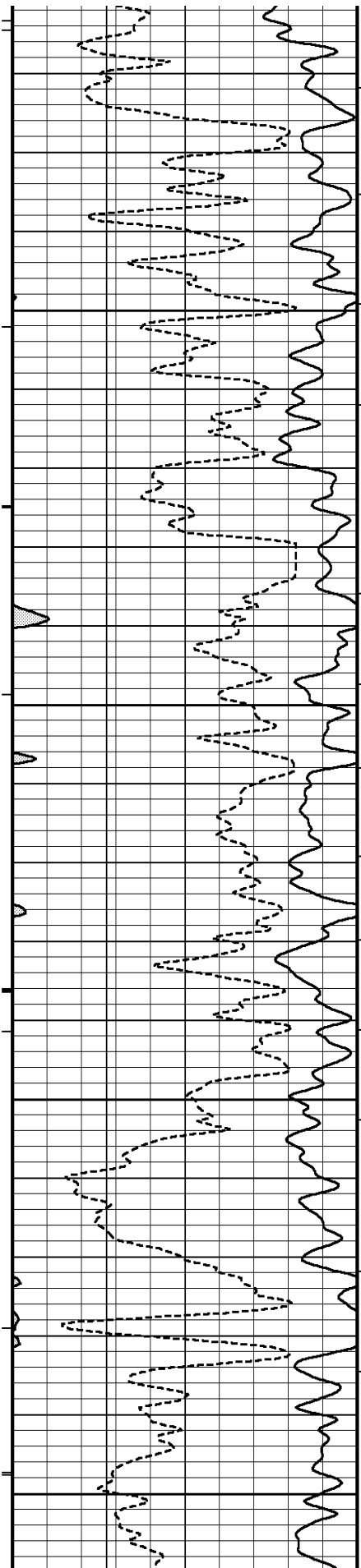












123°

3200

500

123°

3250

123°

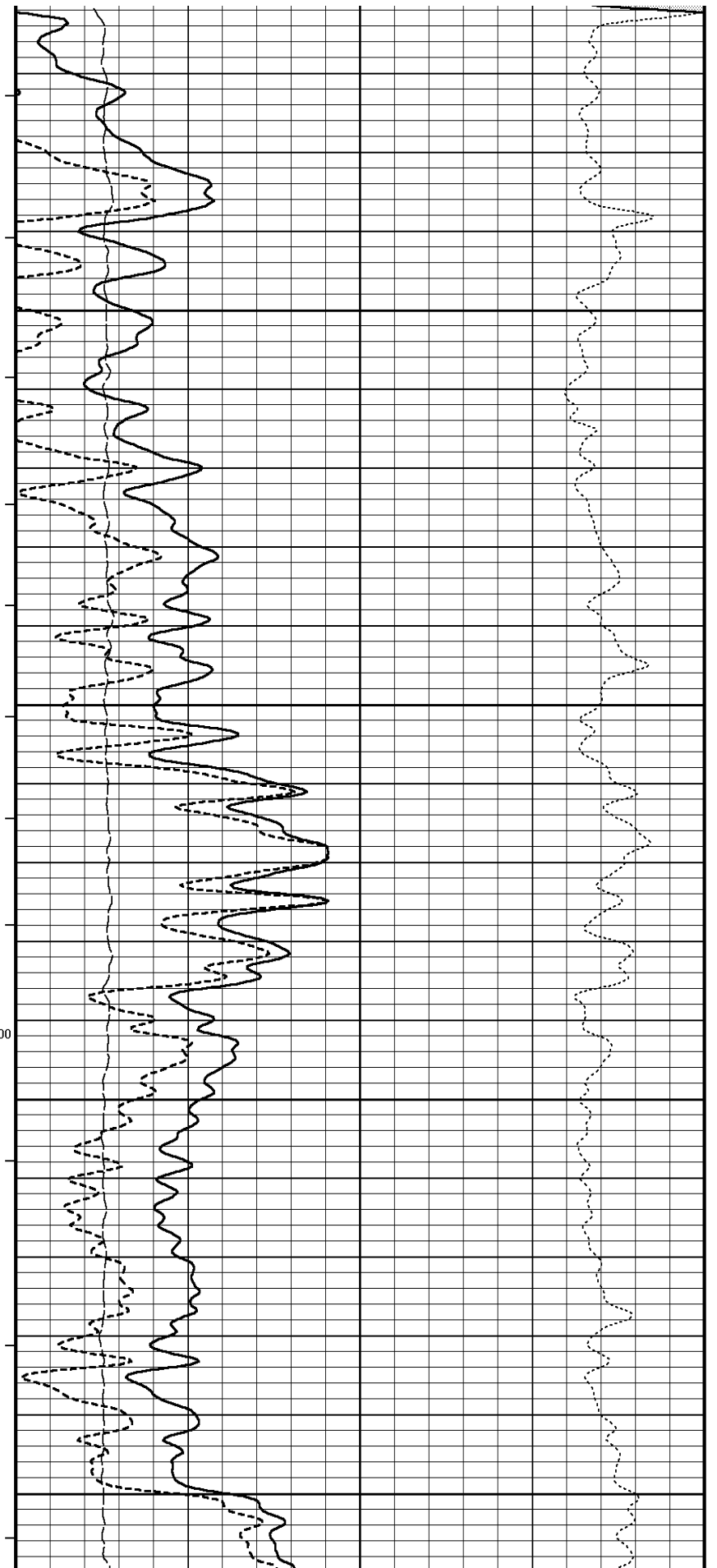
300

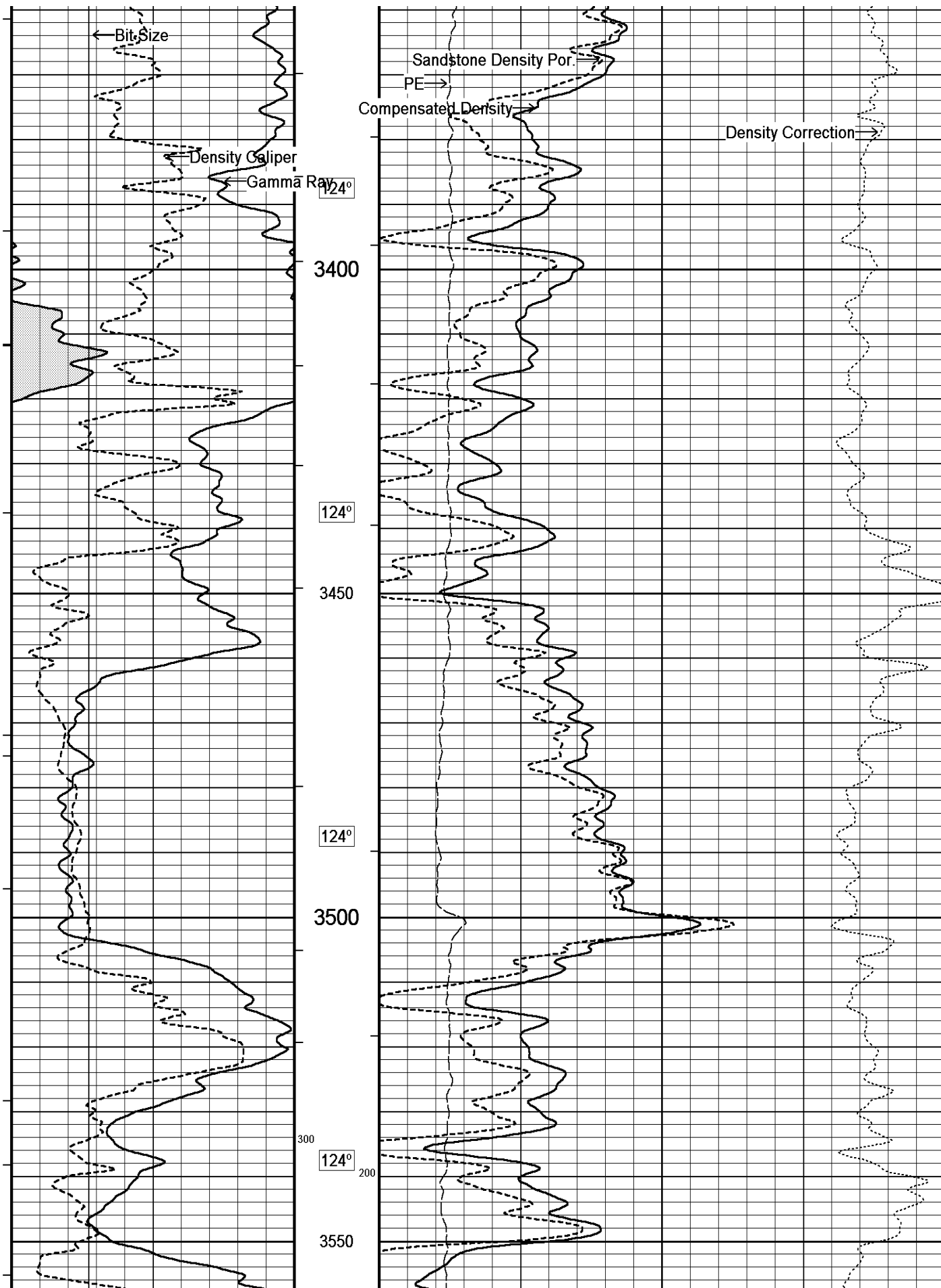
3300

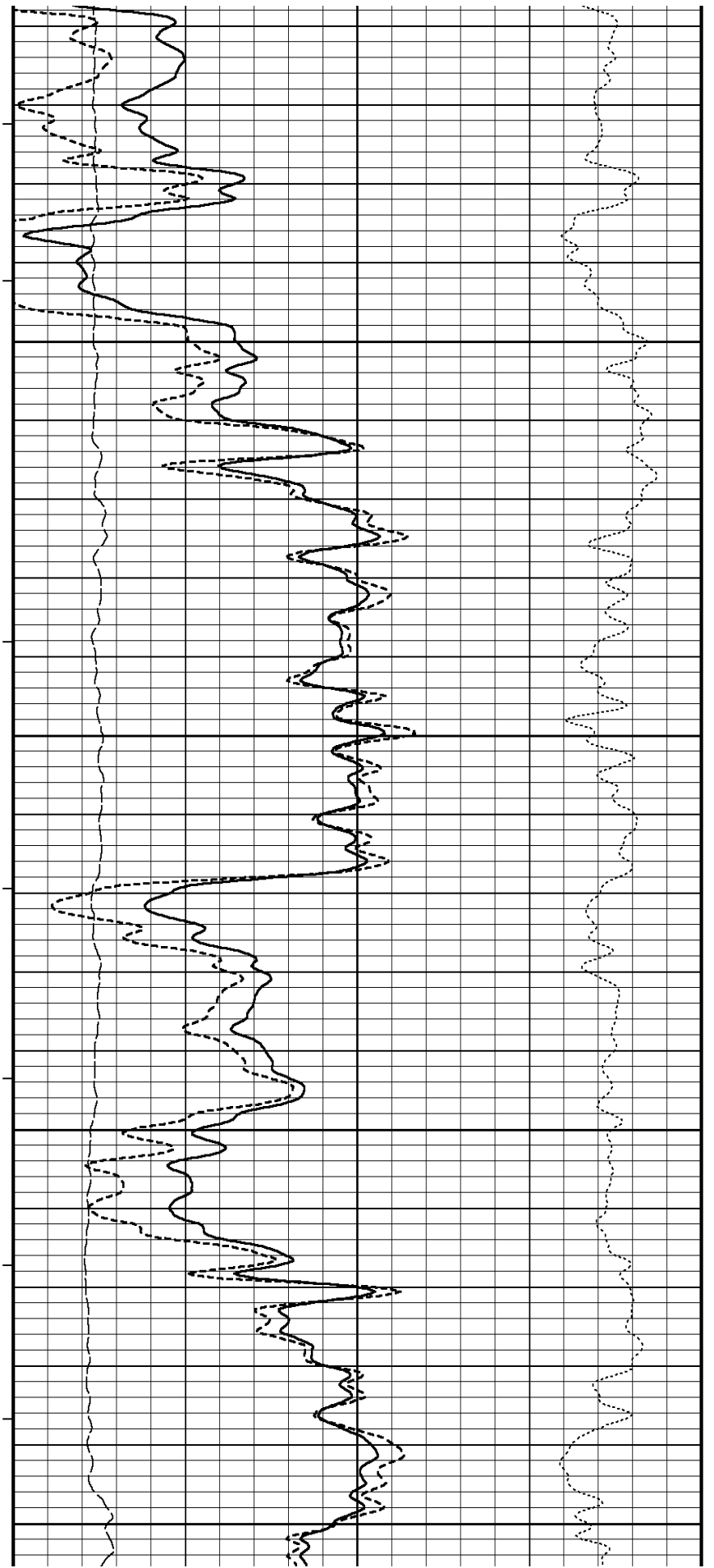
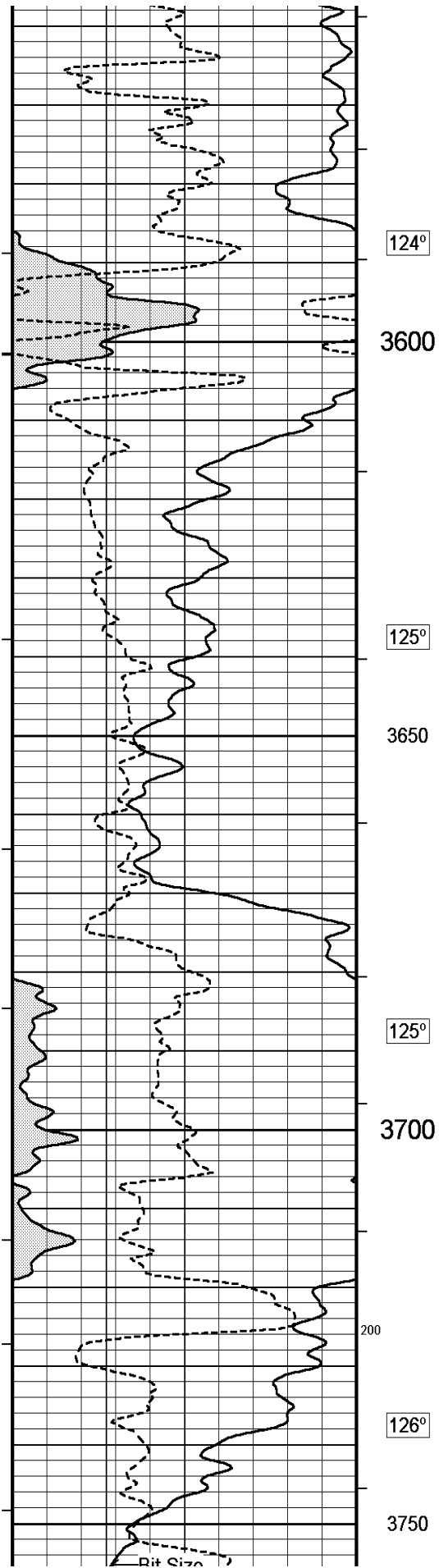
123°

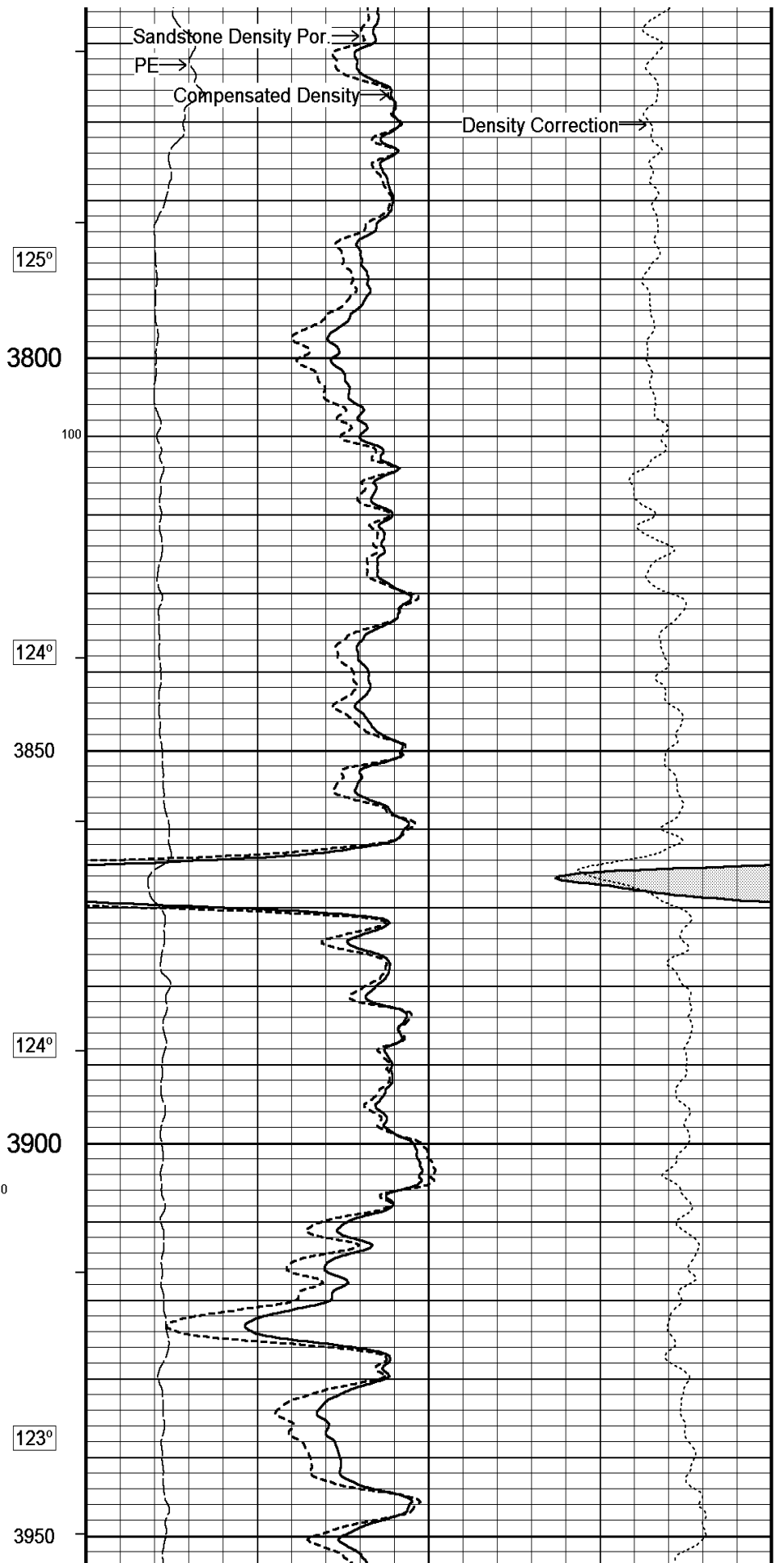
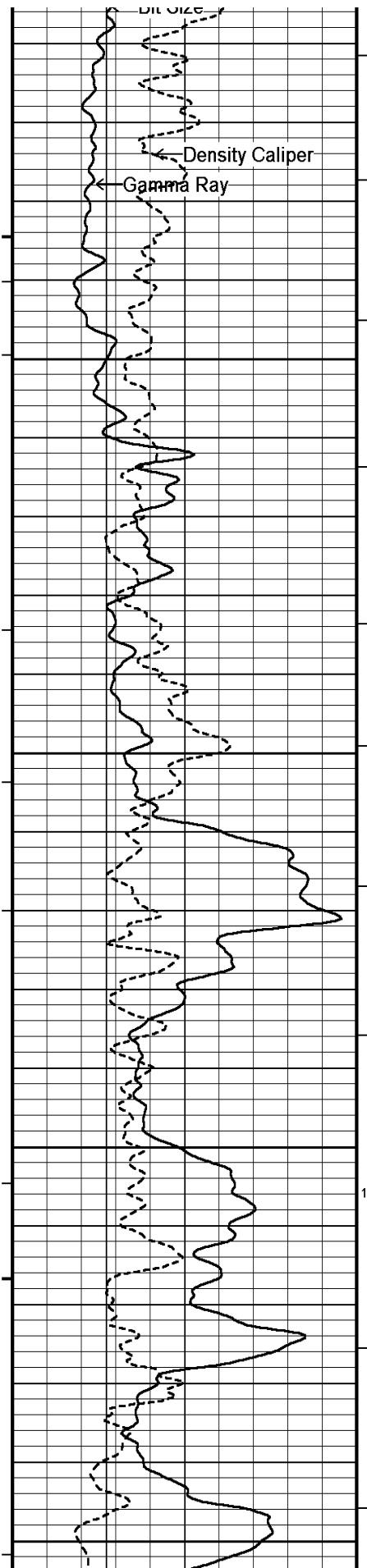
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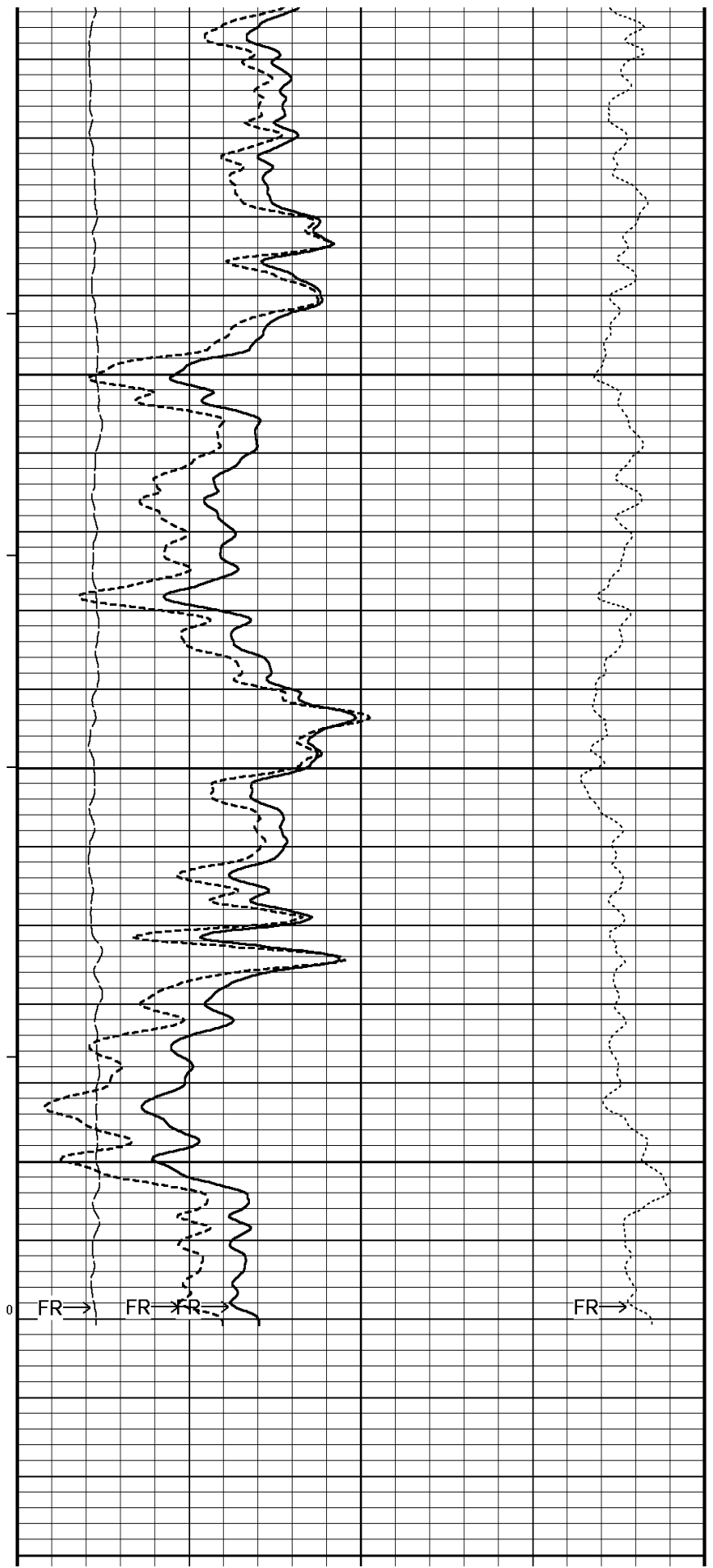
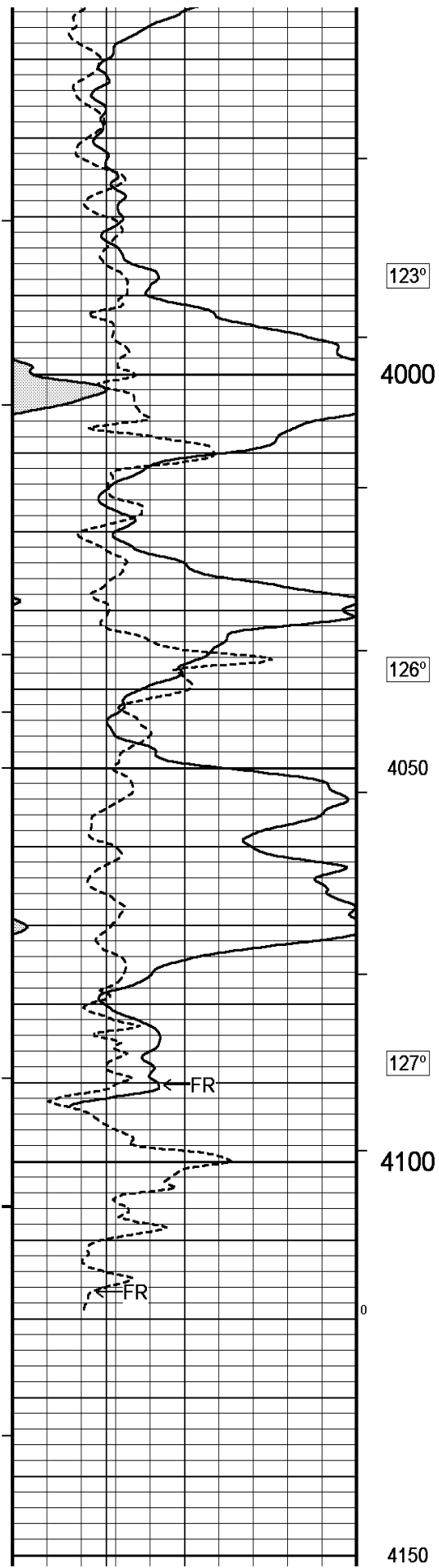
400

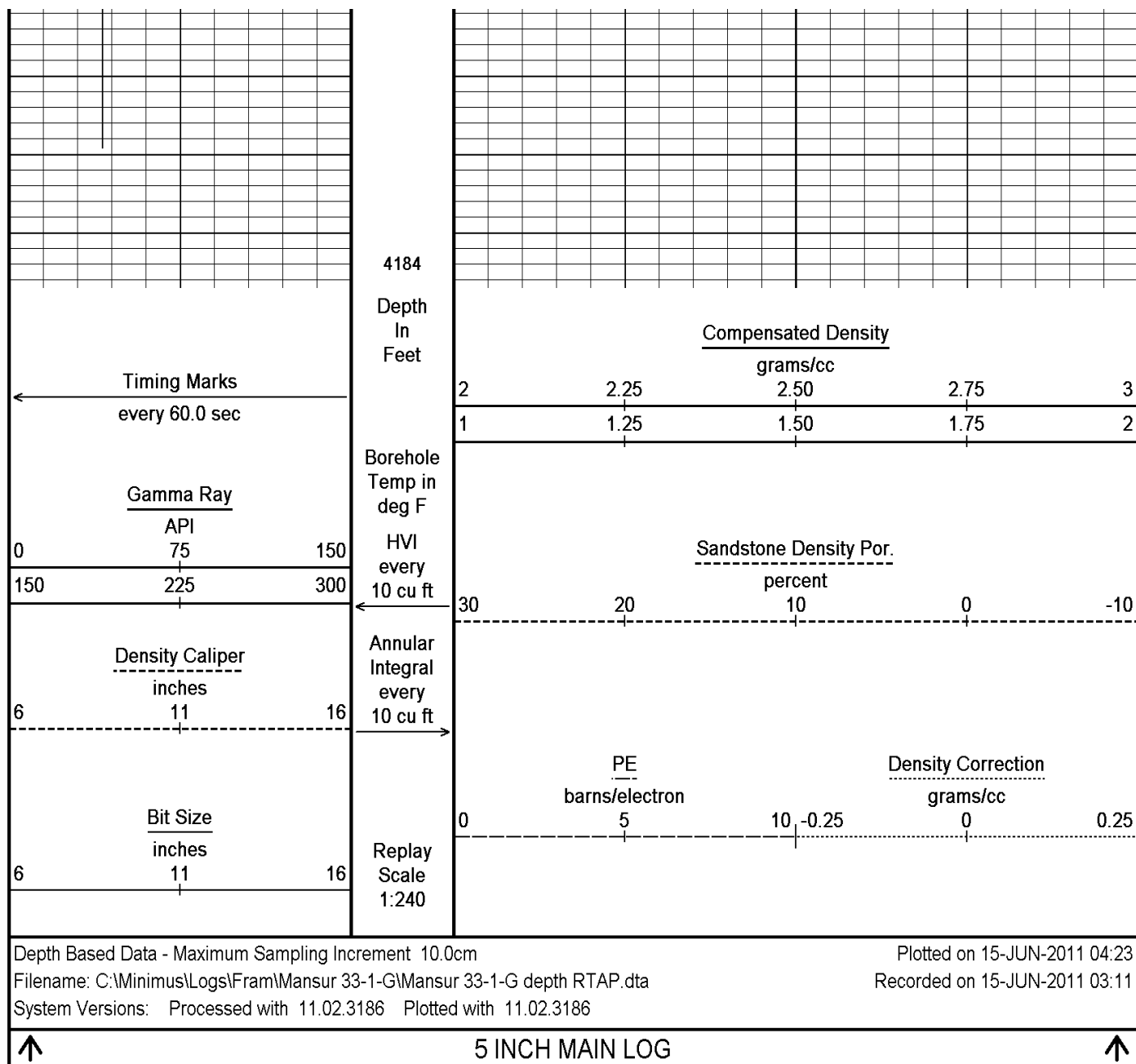












## BEFORE SURVEY CALIBRATION

C:\Minimus\Logs\Fram\Mansur 33-1-G\Mansur 33-1-G depth RTAP.dta

General Constants All 000

Last Edited on 15-JUN-2011,01:17

### General Parameters

Mud Resistivity	1.050	ohm-metres
Mud Resistivity Temperature	86.900	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	None	

Rwa Parameters			
Porosity used		Base Density Porosity	
Resistivity used		Array Ind. Four Res Rt	
RWA Constant A		0.610	
RWA Constant M		2.150	
Down-hole Tension Calibration SMS 0		Field Calibration on 08-OCT-2007 09:22	
Reading No	Measured	Calibrated (lbs)	
1	15585.87	0.00	
2	15586.05	0.10	
Gamma Calibration MCG-D.J 423		Field Calibration on 11-MAY-2011 16:15	
	Measured	Calibrated (API)	
Background	71	49	
Calibrator (Gross)	851	583	
Calibrator (Net)	779	534	
Gamma Constants MCG-D.J 423		Last Edited on 15-JUN-2011,01:17	
Gamma Calibrator Number	GRCC225		
Mud Density	1.00	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
High Resolution Temperature Constants MCG-D.J 423		Last Edited on	
Pre-filter Length	11		
Neutron Calibration MDN-A.B 180		Base Calibration on 11-MAY-2011 15:18 Field Check on 13-JUN-2011 17:17	
Base Calibration			
	Measured	Calibrated (cps)	
	Near Far	Near Far	
	2919 91	3714 110	
Ratio	32.187	33.764	
Field Calibrator at Base		Calibrated (cps)	
		2362 3474	
Ratio		0.680	
Field Check		Calibrated (cps)	
		2382 3540	
Ratio		0.673	
Neutron Constants MDN-A.B 180		Last Edited on 15-JUN-2011,01:18	
Neutron Source Id	P31131B		
Neutron Jig Number	NJ6630		
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	7.00	cu	
Dolomite Sigma	4.70	cu	
Formation Pressure Source	None		
Formation Pressure	N/A	kpsi	
Temperature Source	None		
Temperature	N/A	degrees F	
Mud Salinity	0.00	kppm	
Formation Fluid Salinity Source	None		
Formation Fluid Salinity	N/A	kppm	
Barite Mud Correction	Not Applied		

## FE Calibration MFE-B.J 314

Base Calibration on 16-MAY-2011 14:12

Field Check on 13-JUN-2011 17:40

## Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	962.4	126.8
Base Check		280.7
Field Check		280.8

## FE Constants MFE-B.J 314

Last Edited on 15-JUN-2011,01:19

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 322

Last Edited on 15-JUN-2011,01:19

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	Full Waveform
Hole Type	Open Hole

## Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	0.0000

Peak Amplitude Source	0
-----------------------	---

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 3 foot

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 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

# Induction Calibration MAI-B.J 376

Base Calibration on 11-MAY-2011,16:18

Field Check on 13-JUN-2011 16:52

## Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		16.4	461.5	9.3	966.2
2		5.9	377.0	7.6	821.4
3		3.1	255.4	5.2	566.0
4		1.7	130.3	2.6	279.2

Array Temperature 73.8 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	15.2	3907.0
2	0.0	0.0	30.9	3550.4
3	0.0	0.0	29.8	3073.4
4	0.0	0.0	20.4	2104.2
Deep	0.0	0.0	18.9	2032.2
Medium	0.0	0.0	43.0	4024.2
Shallow	0.0	0.0	45.2	5211.7

Array Temperature 0.0 82.2 Deg F

# Induction Constants MAI-B.J 376

Last Edited on 15-JUN-2011,01:21

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	0.0020	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 Constants MAI-B.J 376				Last Edited on
Pre-filter Length	11			
Photo Density Calibration MPD-C.J 376			Base Calibration on 11-MAY-2011 10:50 Field Check on 13-JUN-2011 17:31	
Density Calibration				
Base Calibration		Measured	Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	51222	16994	52994	19128
Reference 2	24121	2659	25185	2558
Field Check at Base				
	1246.9	1415.2		
Field Check				
	1241.4	1421.9		
PE Calibration				
Base Calibration		Measured	Calibrated	
	WS	WH	Ratio	Ratio
Background	227	1117		
Reference 1	16986	51033	0.336	0.309
Reference 2	6836	23979	0.289	0.274
Field Check at Base				
	226.7	1117.1		
Field Check				
	226.6	1114.1		
Density Constants MPD-C.J 376			Last Edited on 15-JUN-2011,01:35	
Density Source Id P21136B				
Nylon Calibrator Number 527				
Aluminium Calibrator Number 527				
Density Shoe Profile 4 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 68				

----	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-C.J 376

Base Calibration on 08-JUN-2011 20:12  
Field Calibration on 13-JUN-2011 17:35

## Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16928	4.01
2	25105	5.97
3	33035	7.96
4	41488	9.86
5	50640	11.92
6	N/A	N/A

## Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.00	7.96

## DOWNHOLE EQUIPMENT

C:\Minimus\Logs\Fram\Mansur 33-1-G\Mansur 33-1-G depth RTAP.dta

Shuttle Running Tool 3.5" (SRT A)  
SRT-A 34 LG: 5.42 ft WT: 37.5 lb OD: 2.52 in

MBS-A 400v Compact Battery Sub  
MBS-A 26 LG: 14.24 ft WT: 105.8 lb OD: 2.24 in

Compact Comms Gamma  
MCG-D.J 423 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Memory Sub A.C  
MMS-A.C 21 LG: 3.12 ft WT: 30.9 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint  
SKJ-D.A 89 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor  
SHA-J.A 397 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub  
MIS-A.A 23 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron  
MDN-A.B 180 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper  
MPD-C.J 376 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub  
MIS-A.A 274 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor



SHA-J.A 225 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint

SKJ-D.A 143 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.A Compact Inline Standoff sub

MIS-E.A 333 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focussed Electric

MFE-B.J 314 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

MIS-E.A Compact Inline Standoff sub

MIS-E.A 334 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Sonic

MSS-C.K 322 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

MIS-E.A Compact Inline Standoff sub

MIS-E.A 108 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction

MAI-B.J 376 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in

Total Length: 103.94 ft Weight 754.0 lb



Tool Zero (1.84ft from bottom)  
All measurements relative to tool zero.

COMPANY	FRAM OPERATING LLC
WELL	MANSUR 33-1-G
FIELD	WILDCAT
PROVINCE/COUNTY	MESA
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	6097.00	feet
Elevation Drill Floor	6096.00	feet
Elevation Ground Level	6083.00	feet

First Reading	4120.00
Depth Driller	4227.00 feet
Depth Logger	4196.00 feet



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COMPENSATED DUAL NEUTRON  
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