



Weatherford

**COMPENSATED PHOTO DENSITY
COMPENSATED DUAL NEUTRON
LOG**

COMPANY

BILL BARRETT CORPORATION

WELL

GGU KAUFMAN 32D-30-691

FIELD

GIBSON GULCH

PROVINCE/COUNTY

GARFIELD

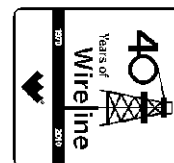
COUNTRY/STATE

U.S.A. / COLORADO

LOCATION

SHL: 1680' FNL & 1007' FWL

BHL: 1510' FNL & 1984' FEL



SEC TWP RGE Other Services

30 6S 91W

MAI/MFE

Permit Number

05-045-20741

Permanent Datum G.L., Elevation 5635 feet

Log Measured From KB

Drilling Measured From K.B. @ 23 FT.

Elevations:
KB 5658.00
DF 5858.00
GL 5635.00

Date

19-DEC-2011

Run Number

ONE

Depth Driller

7900.00 feet

Depth Logger

7899.00 feet

First Reading

7878.00

Last Reading

824.00

Casing Driller

825.00 feet

Casing Logger

824.00 feet

Bit Size

7.875 inches

Hole Fluid Type

LSND

Density / Viscosity

10.90 lb/USg 43.00 sec/qt

PH / Fluid Loss

9.30 10.00 ml/30Min

Sample Source

FLOW LINE

Rm @ Measured Temp

4.0 @ 91.5 ohm-m

Rmf @ Measured Temp

3.20 @ 91.5 ohm-m

Rmc @ Measured Temp

4.80 @ 91.5 ohm-m

Source Rmf / Rmc

CALC CALC

Rm @ BHT

1.986 @187.0 ohm-m

Time Since Circulation

6 HOURS

Max Recorded Temp

187.00 deg F

Equipment Name

COMPACT

Equipment / Base

13045 GD JCT

Recorded By

D. KUNTZ

Witnessed By

D. MILLER

Service Order

3531779

BOREHOLE RECORD

Last Edited: 19-DEC-2011 17:19

Bit Size inches	Depth From feet	Depth To feet
8.750	824.00	5497.00
7.875	5497.00	7900.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	9.625	0.00	824.00	36.00

REMARKS

LOGGED USING WLS SOFTWARE VERSION 12.02.4401

TOOLS: SHA, MCG, MDN, MPD, SKJ, MFE, AND MAI RAN IN COMBINATION

HARDWARE: MPD: (1) 8 INCH PROFILE PLATE
MAI: (2) 0.5 INCH STANDOFF
MFE: (1) 0.5 INCH STANDOFF
MDN: (1) DUAL BOWSPRING

2.68 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

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

MAXIMUM DEVIATION OF 38.6 DEGREES.

CALIPER CHECK IN CASING PRESENTED, REFERENCE I.D. = 9.05" (9 5/8", 36 LB/FT CASING)

8.75 INCH BIT USED FROM SURFACE CASING TO 5497 FEET.

TOTAL HOLE VOLUME FROM TD TO SURFACE CASING = 3295 CU.FT.

ANNULAR VOLUME WITH 4.5 INCH PRODUCTION CASING = 2515 CU.FT.

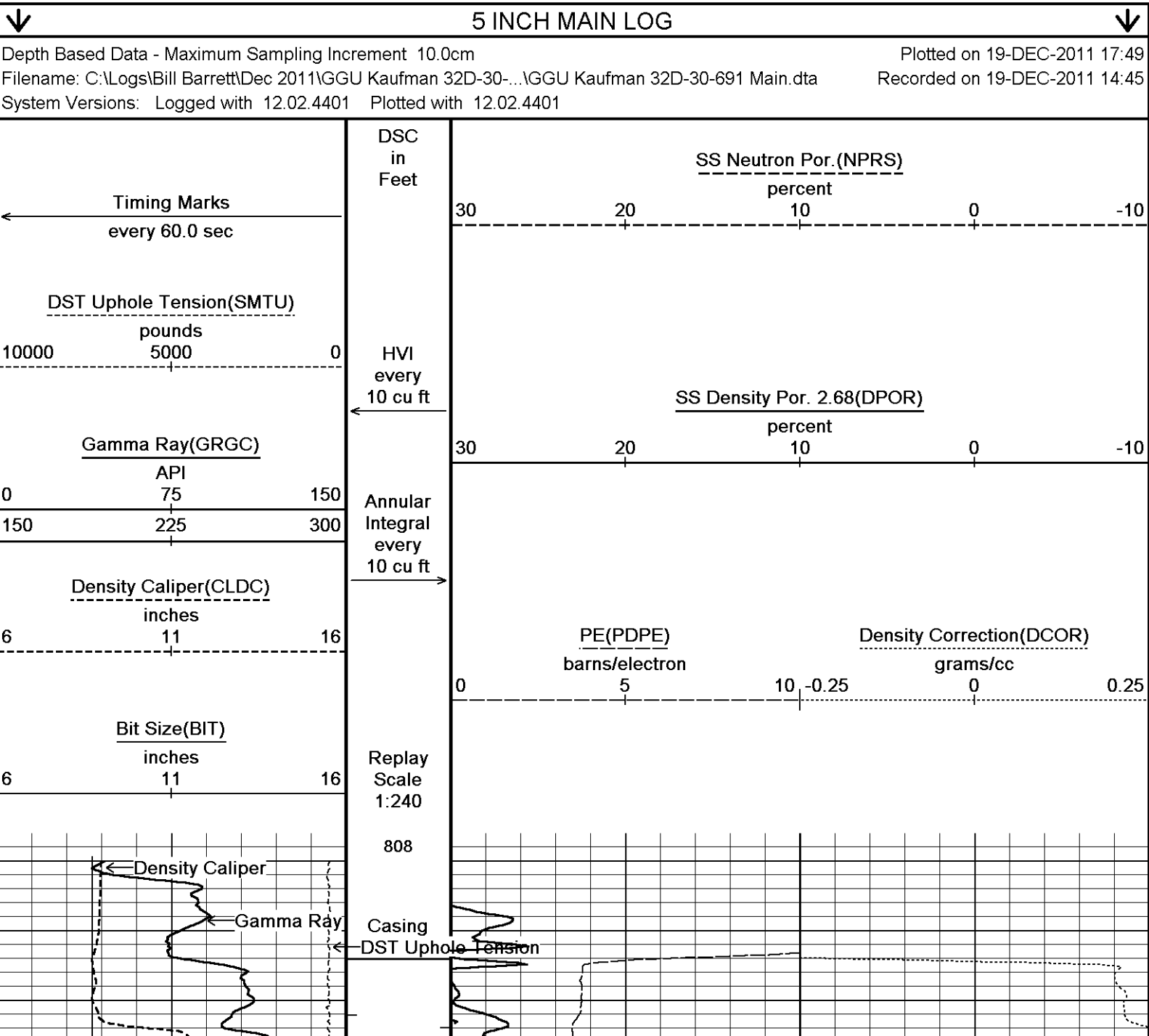
ENGINEER(S): D. KUNTZ, M. BRENNAN(JFE)

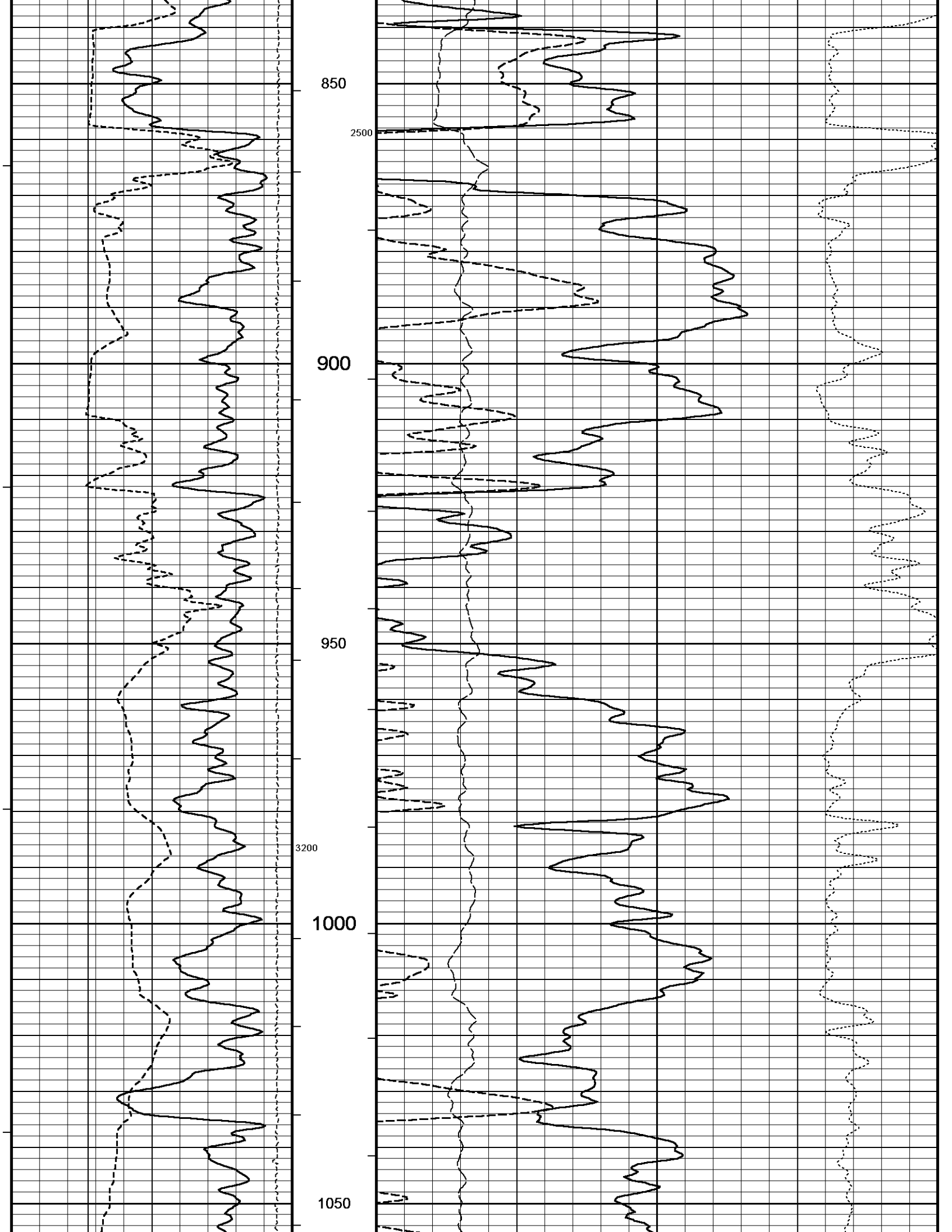
OPERATOR(S): A. ALLRED, B. FRISBIE

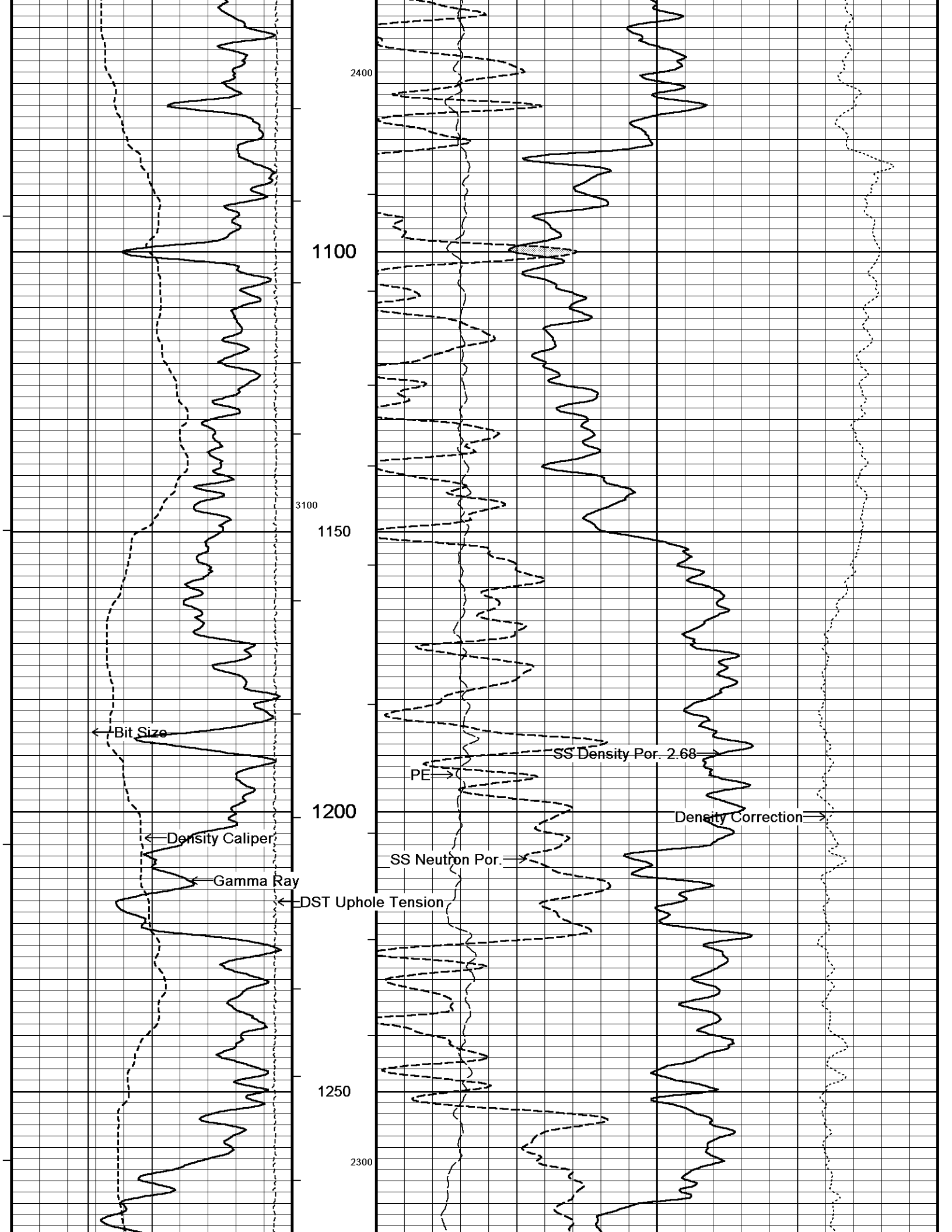
RIG: PATTERSON 313

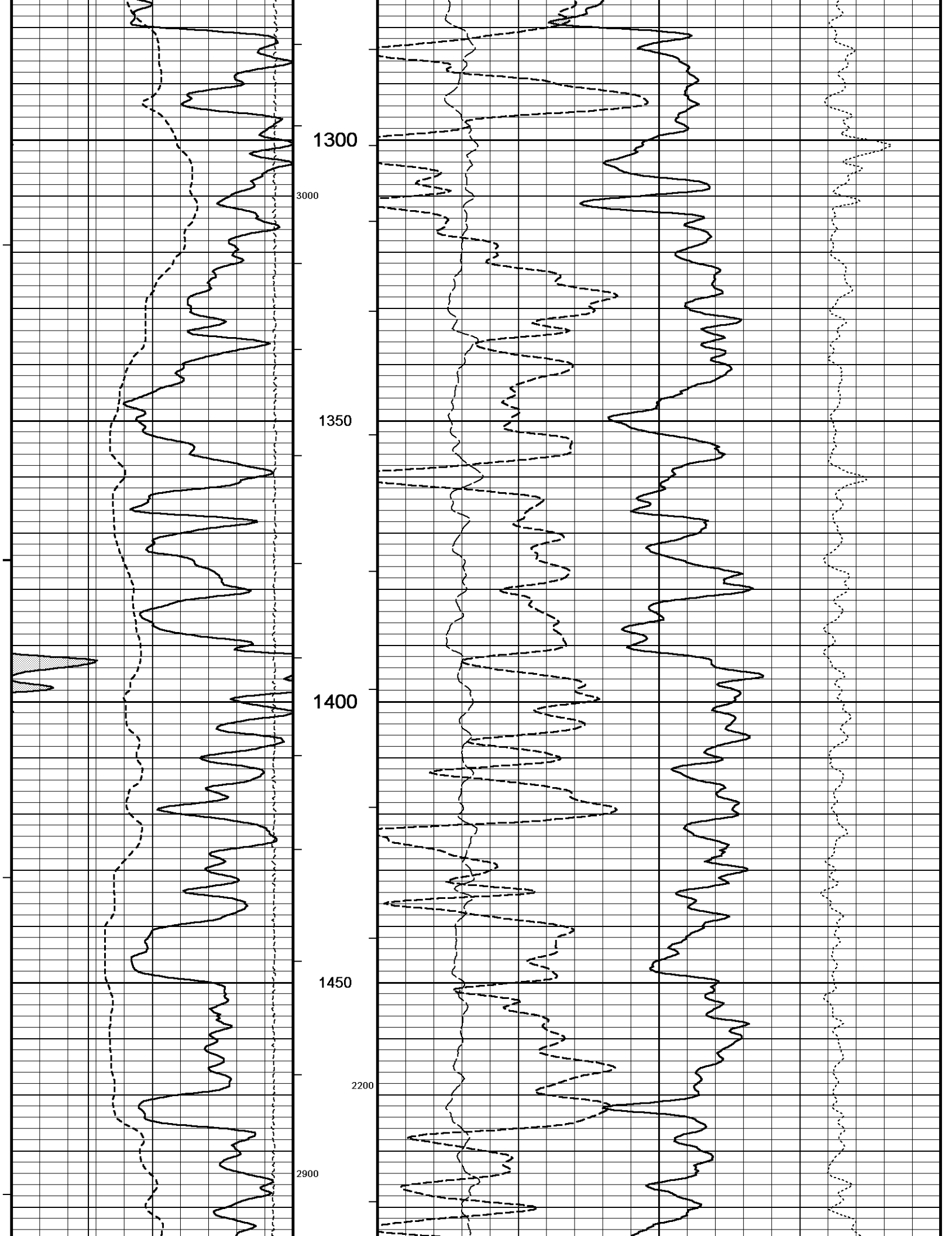
SERVICE ORDER: #3531779

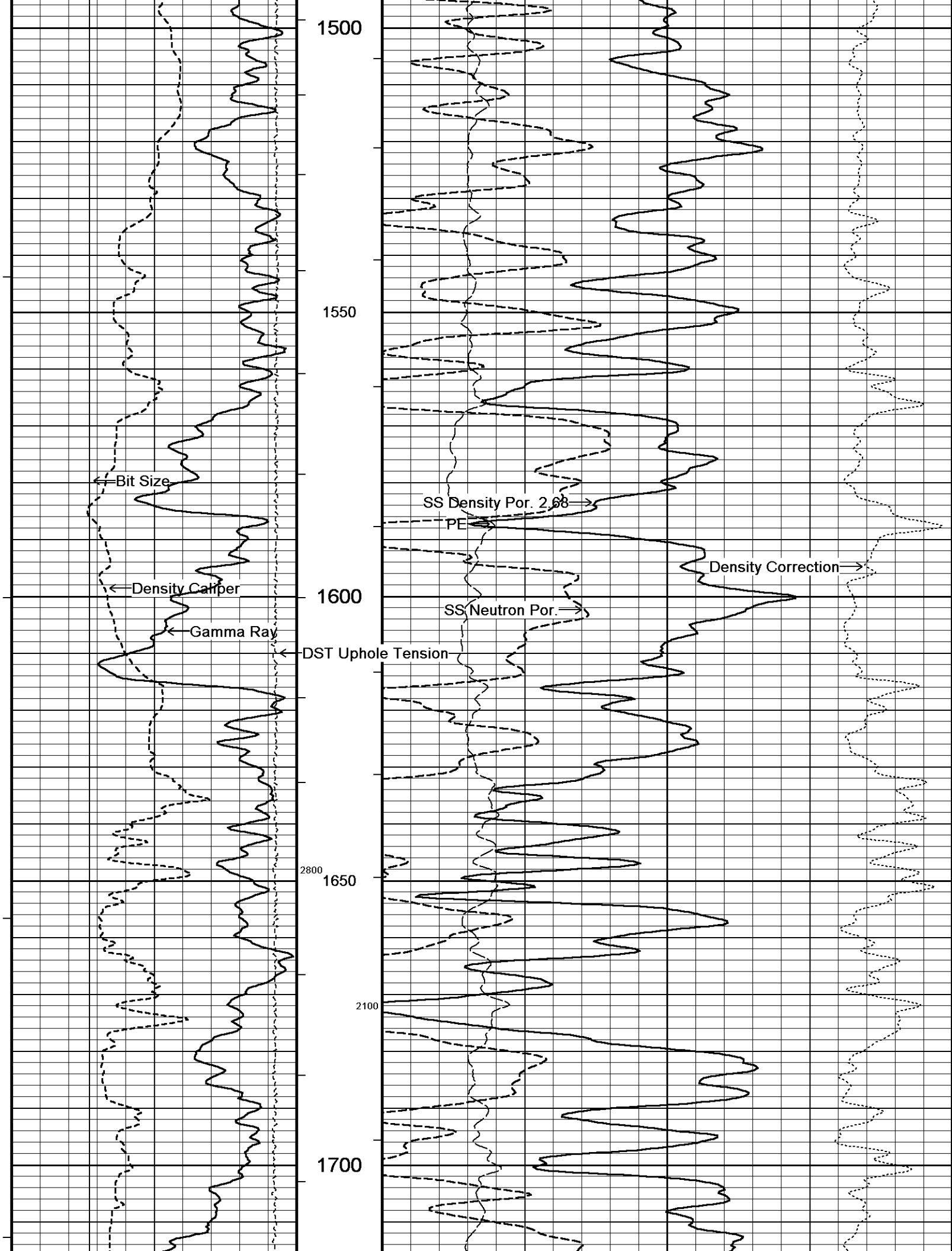
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

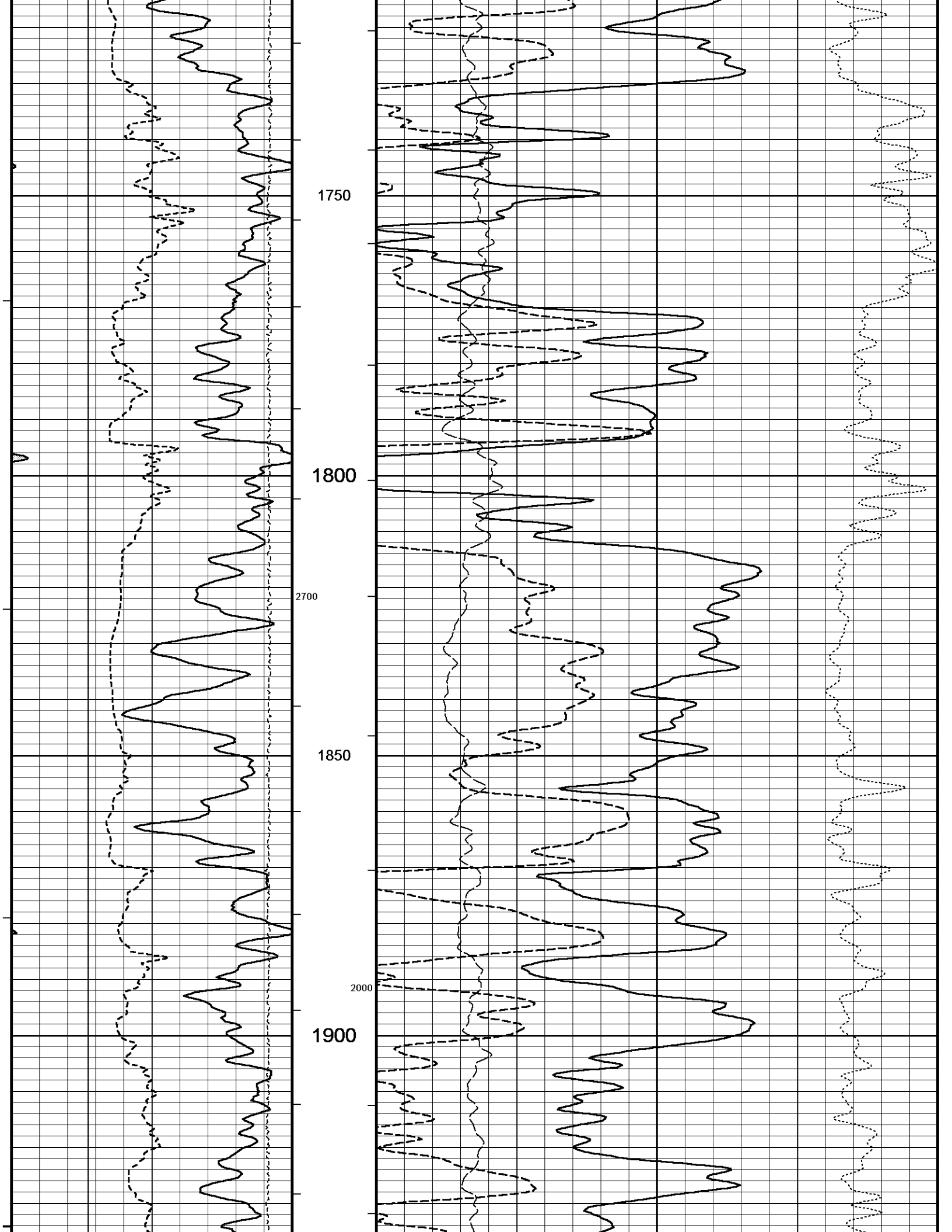


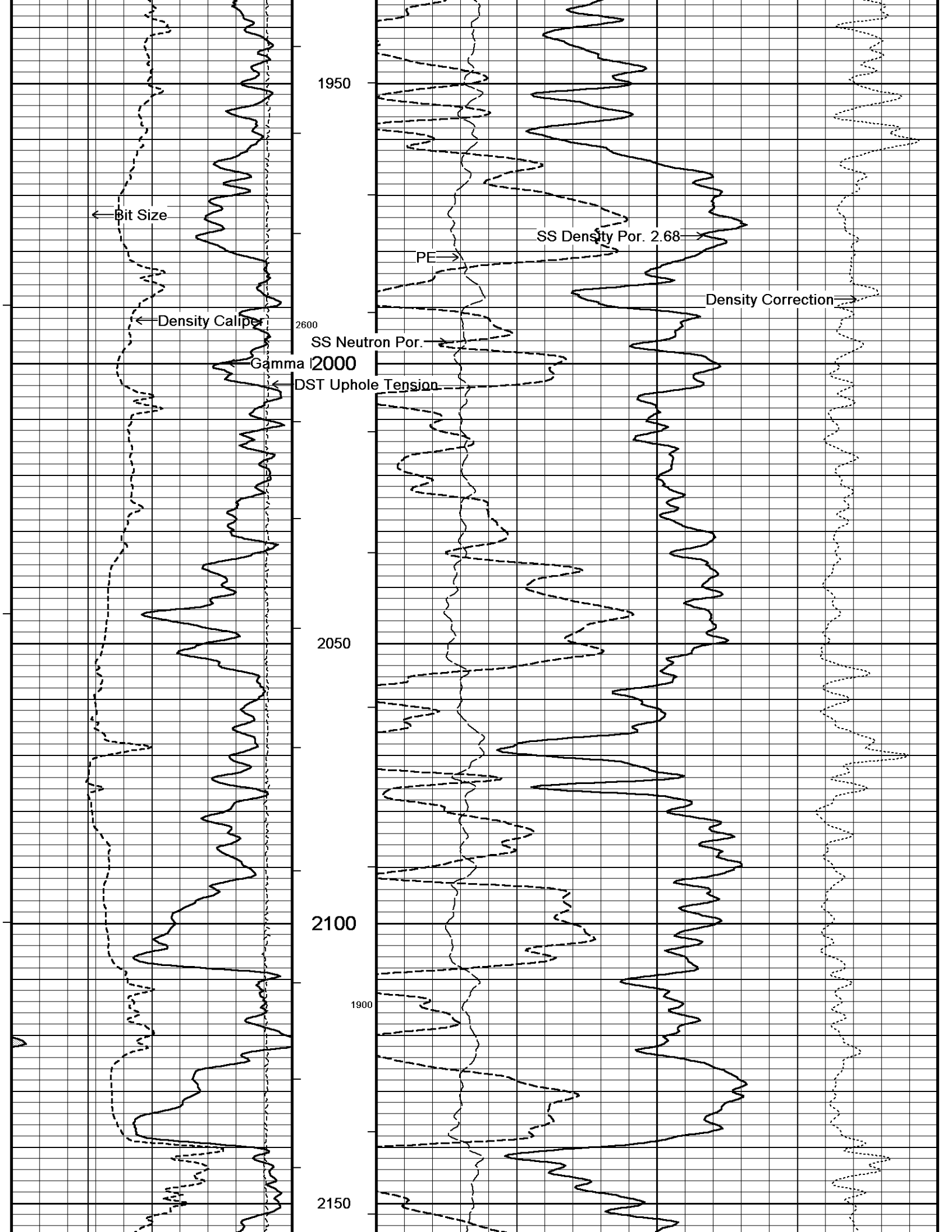


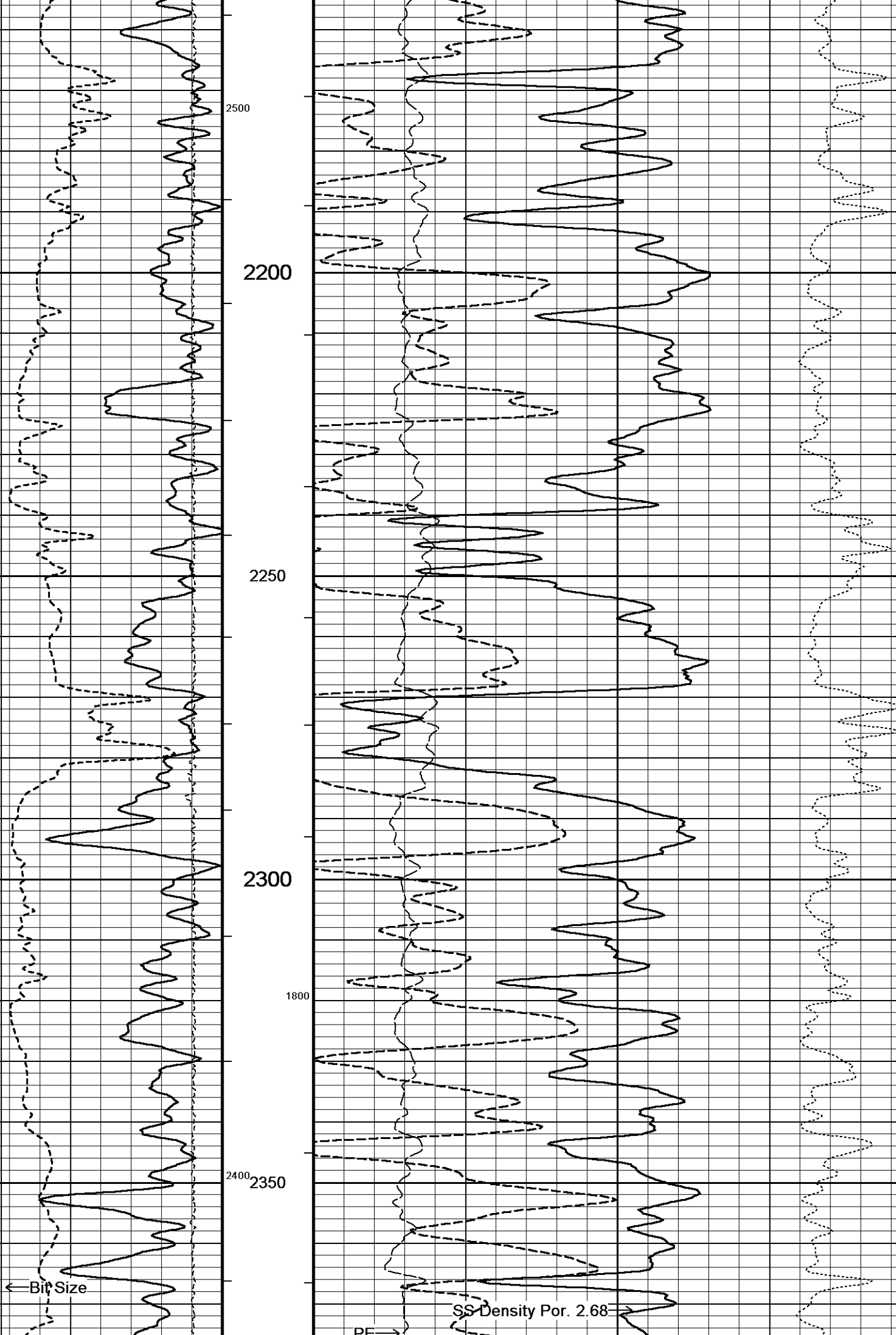


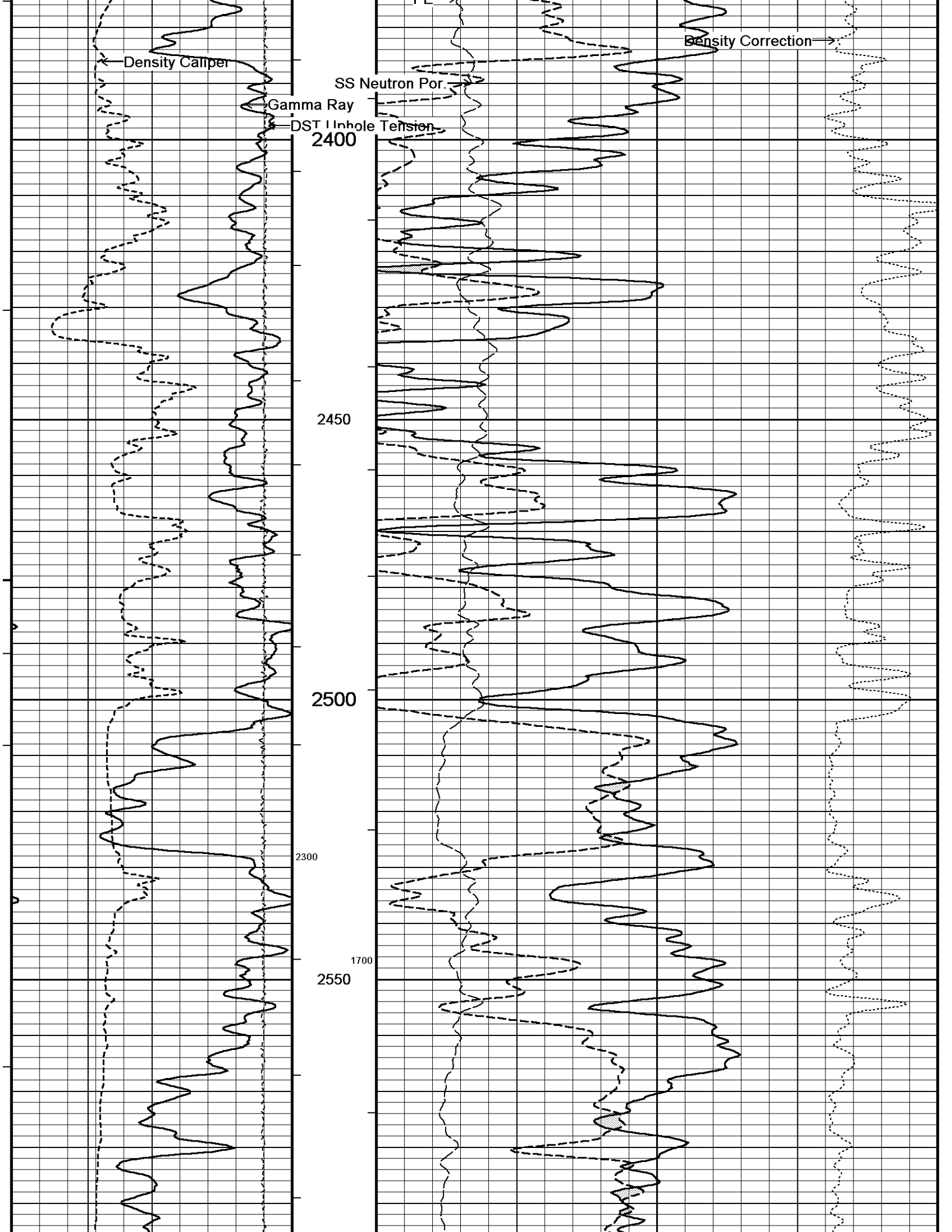


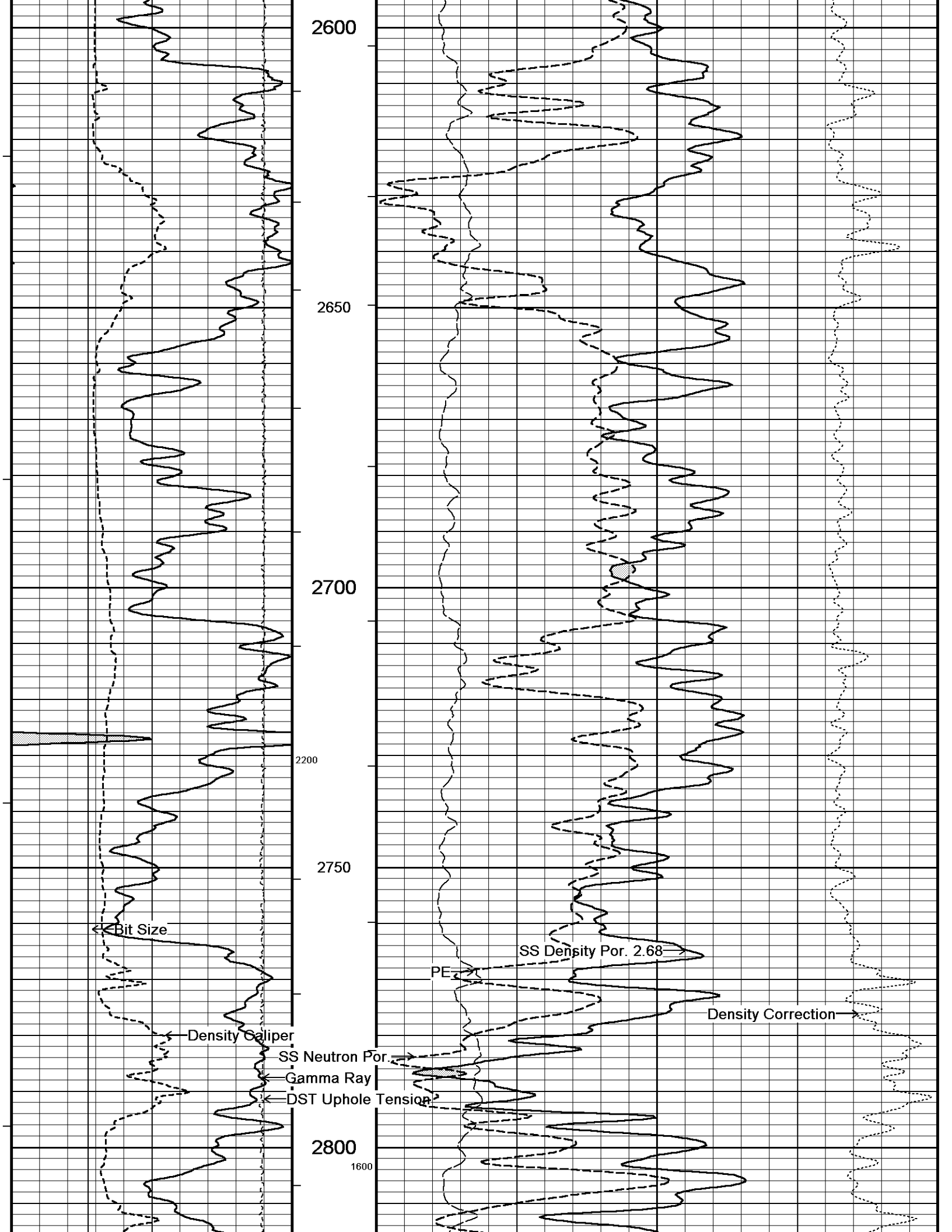


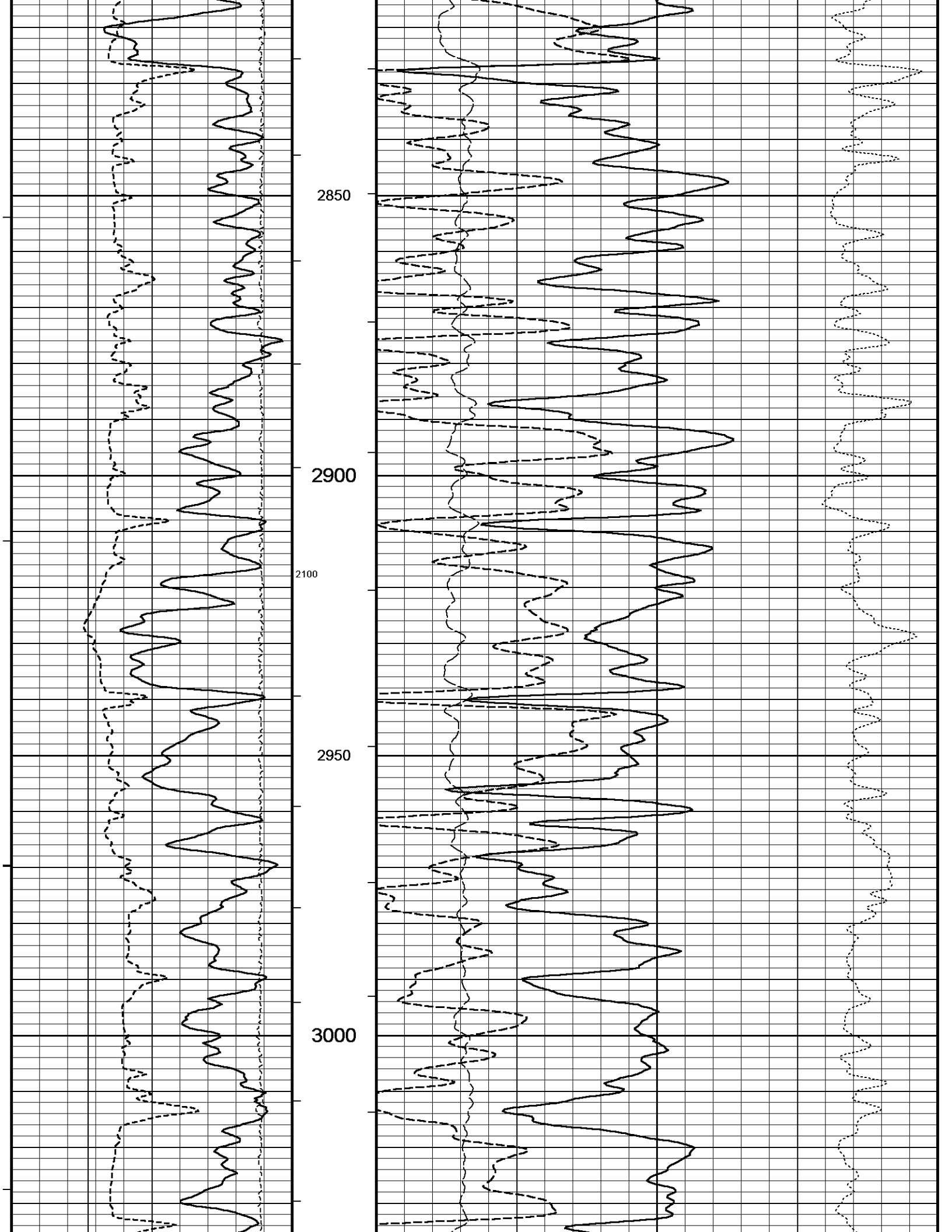


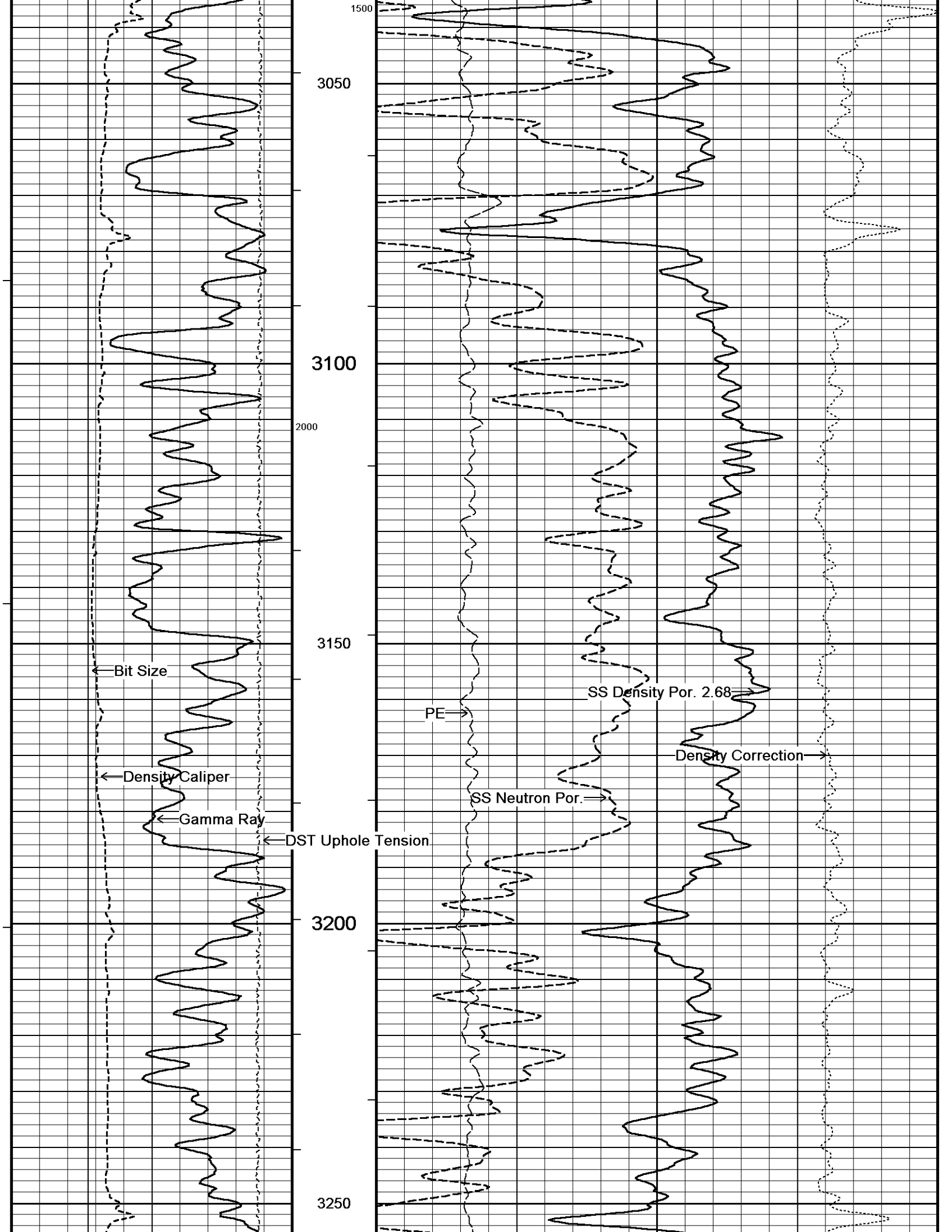


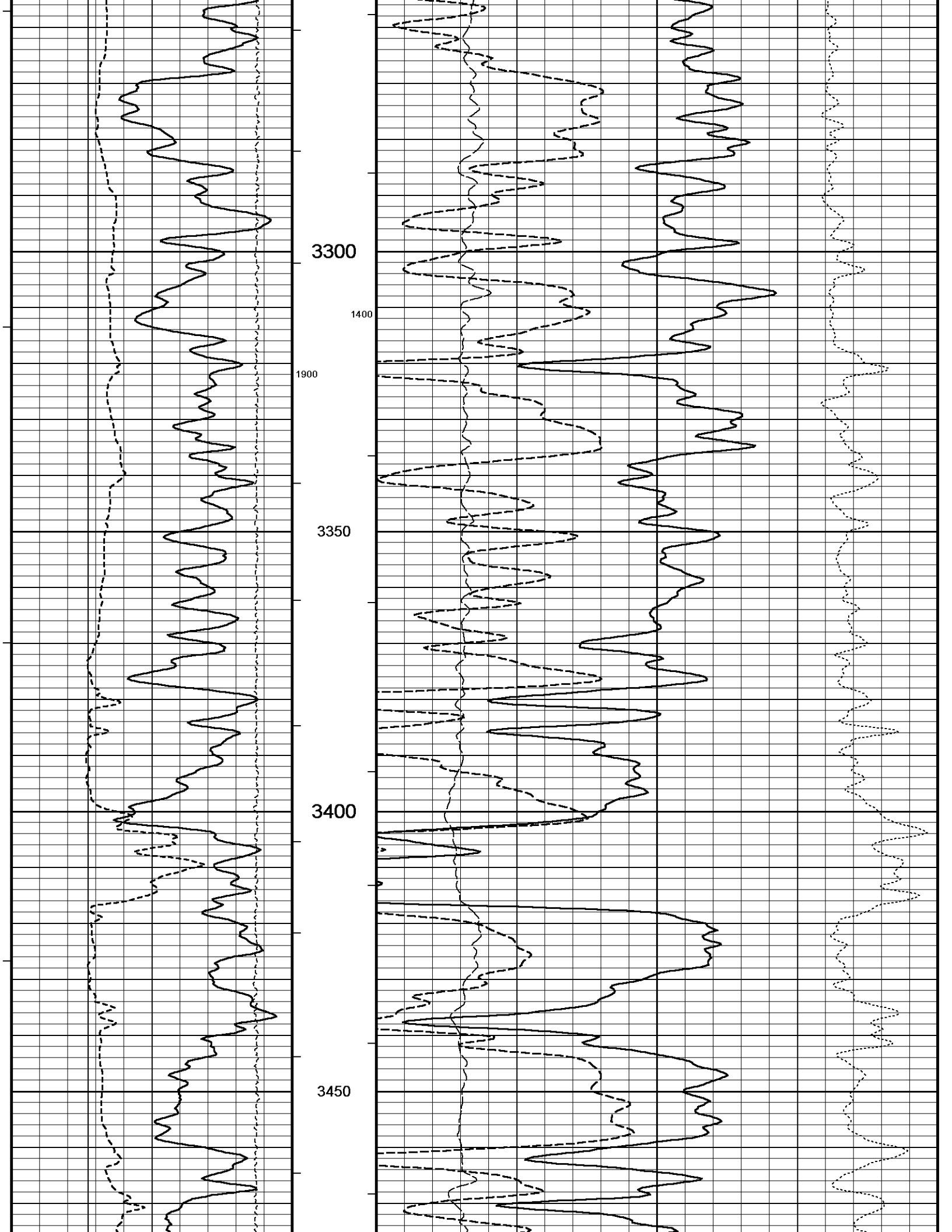


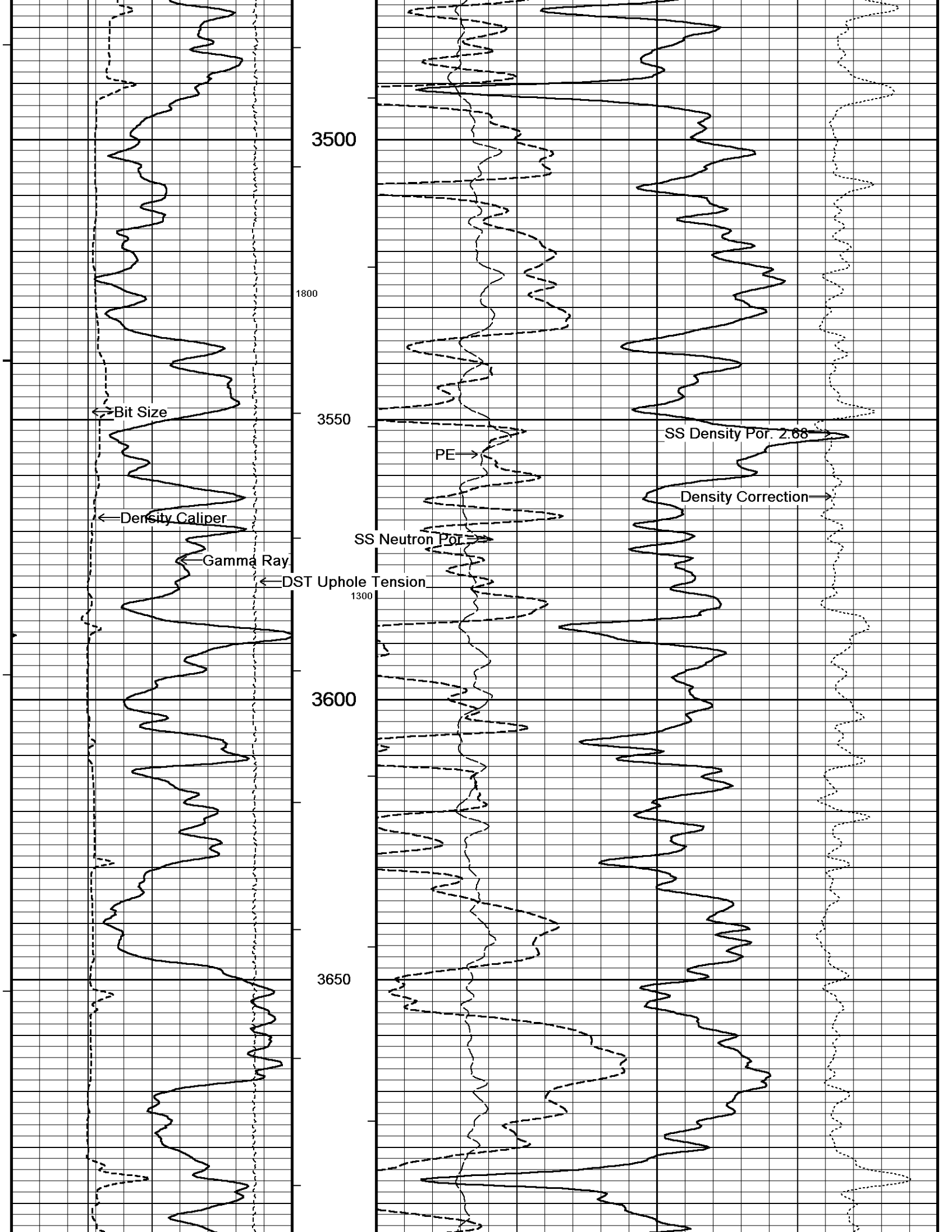


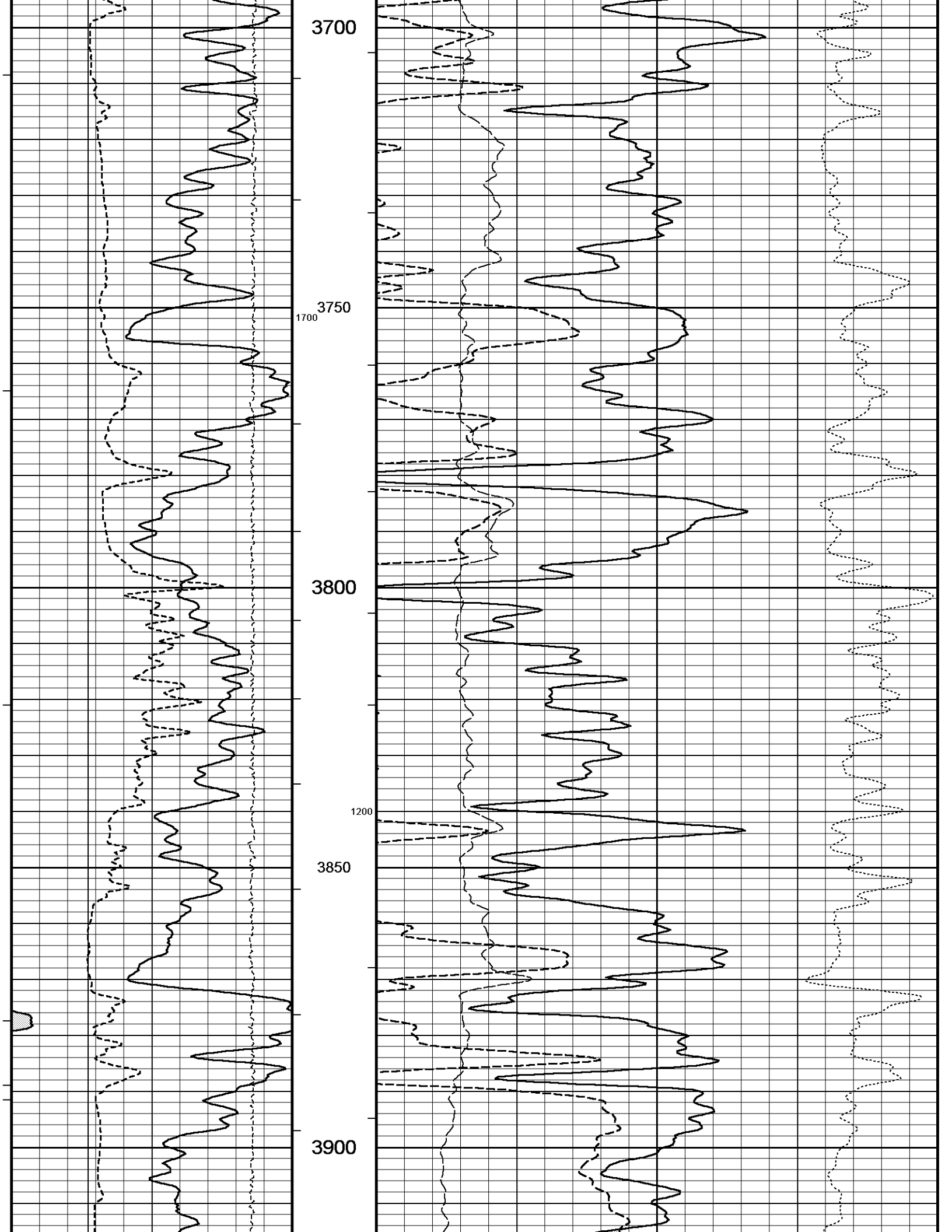


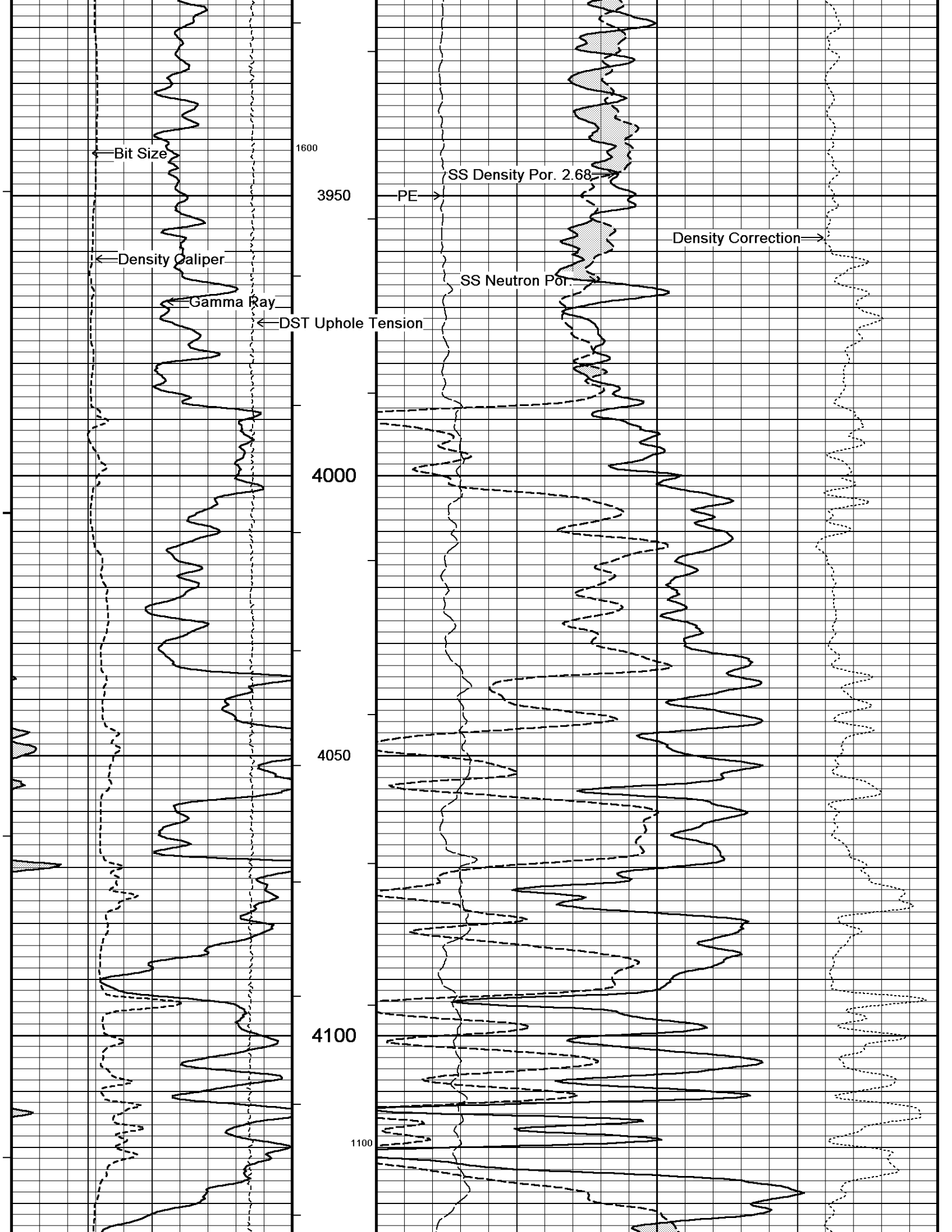


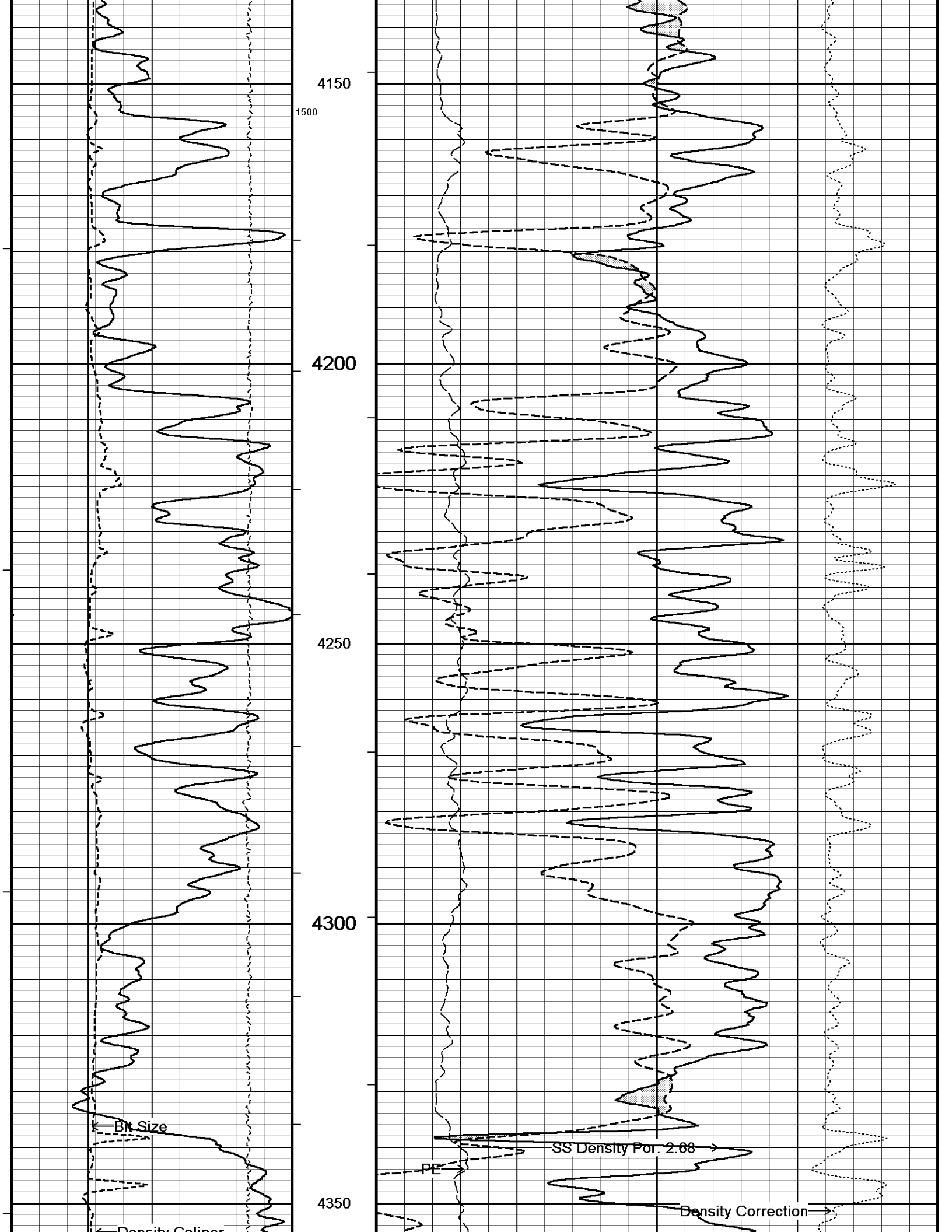


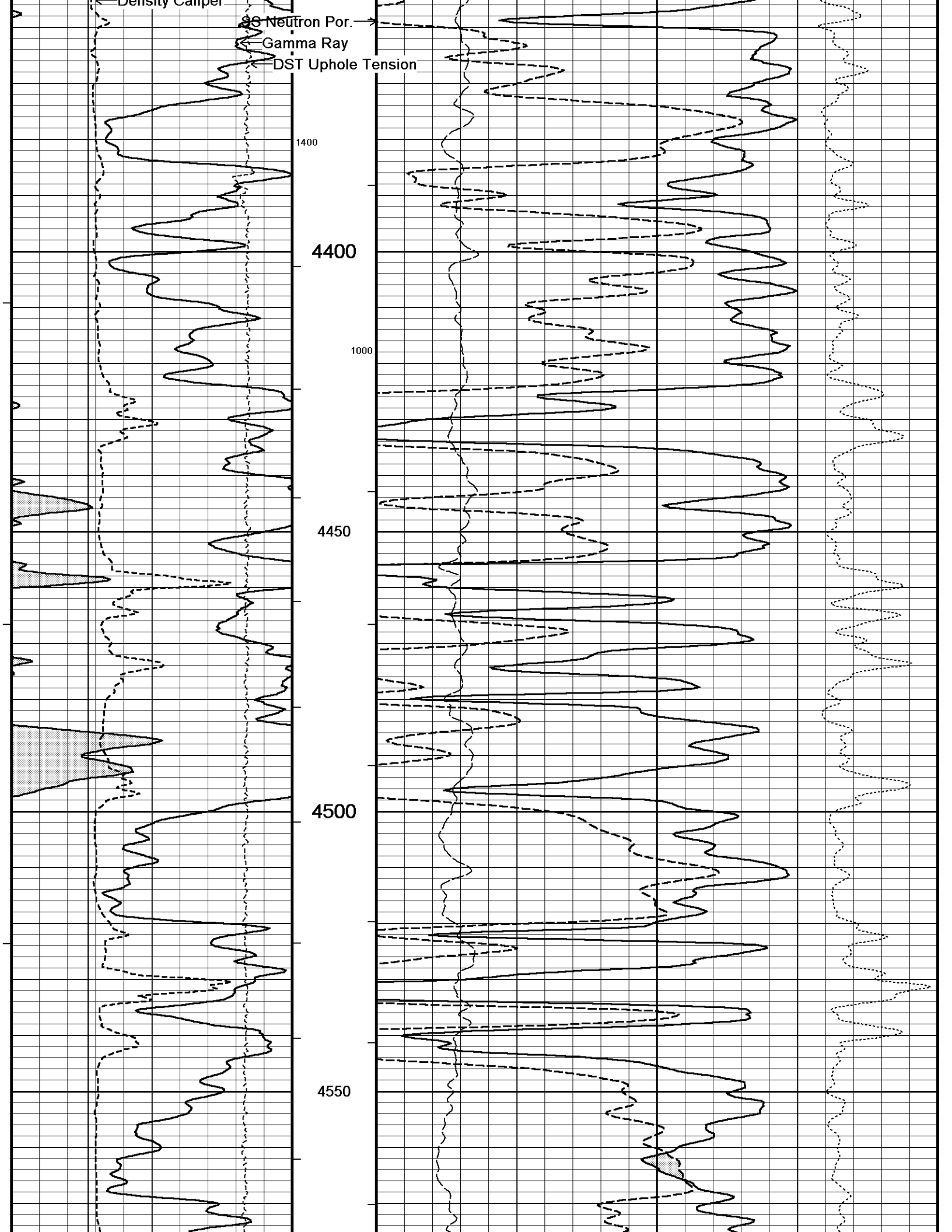


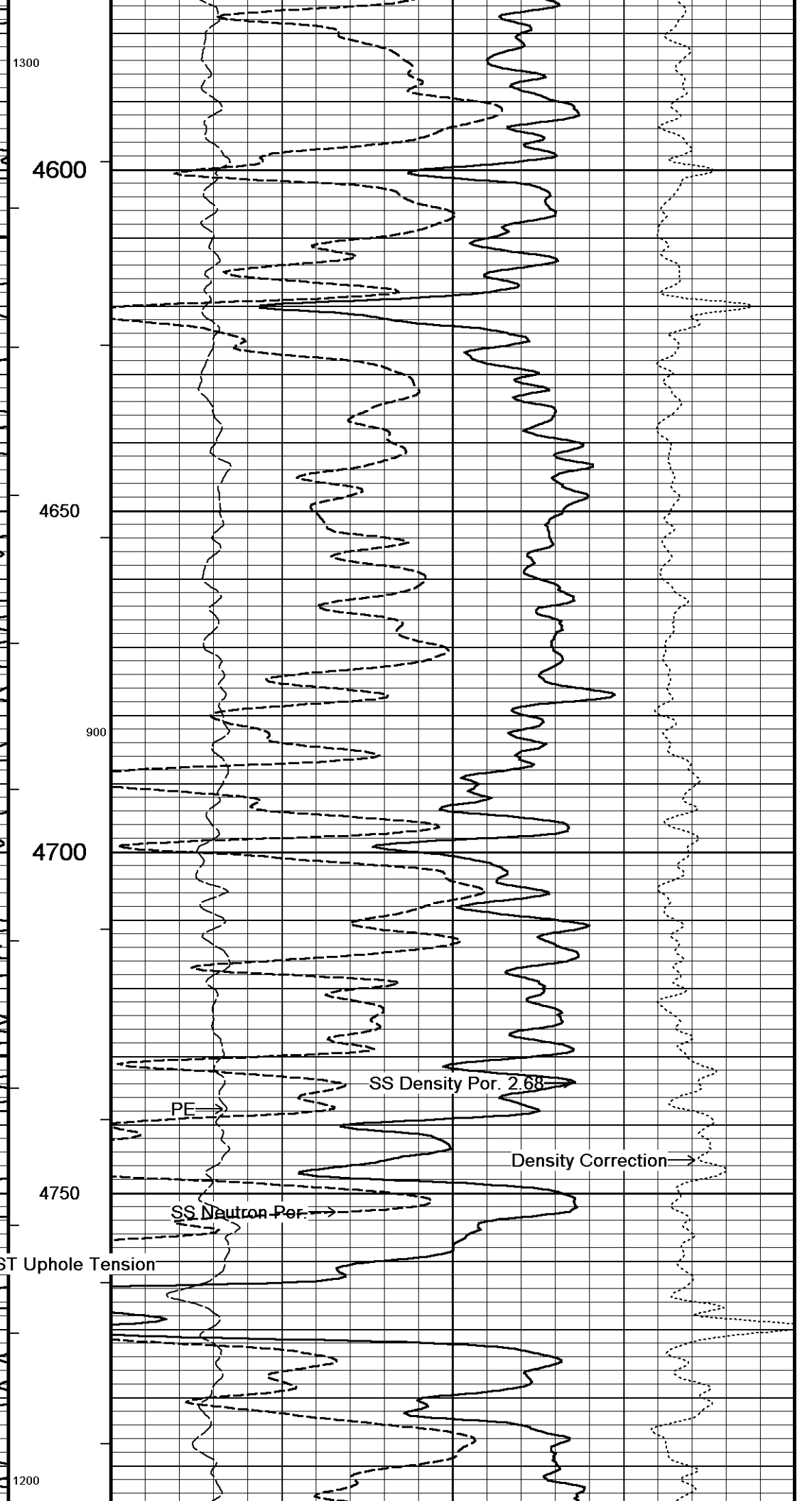
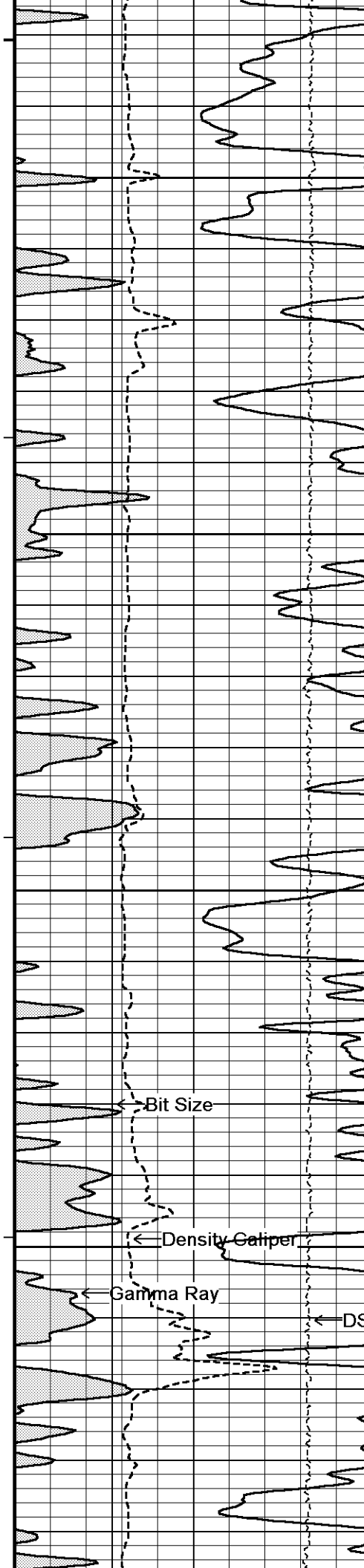


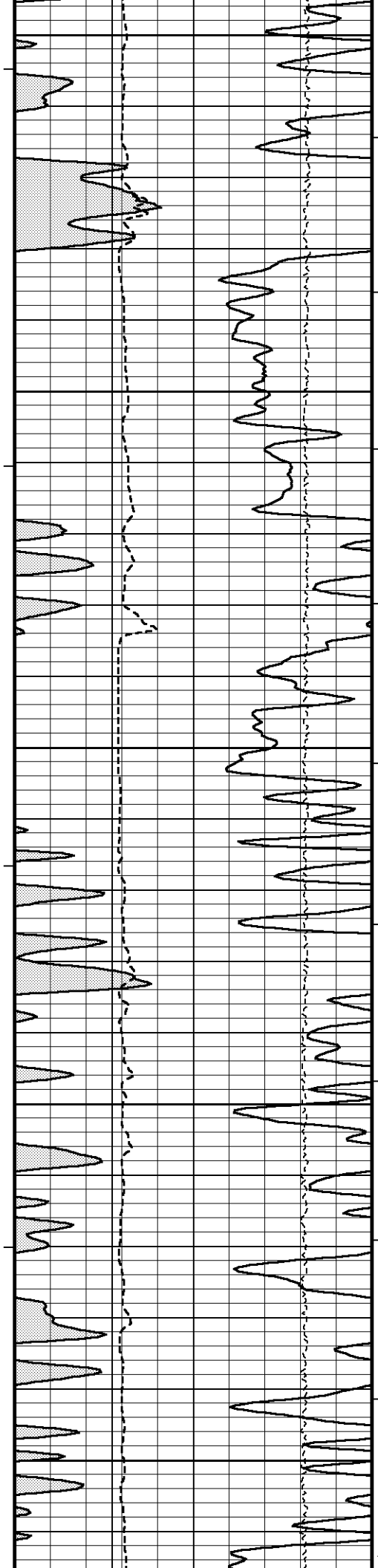




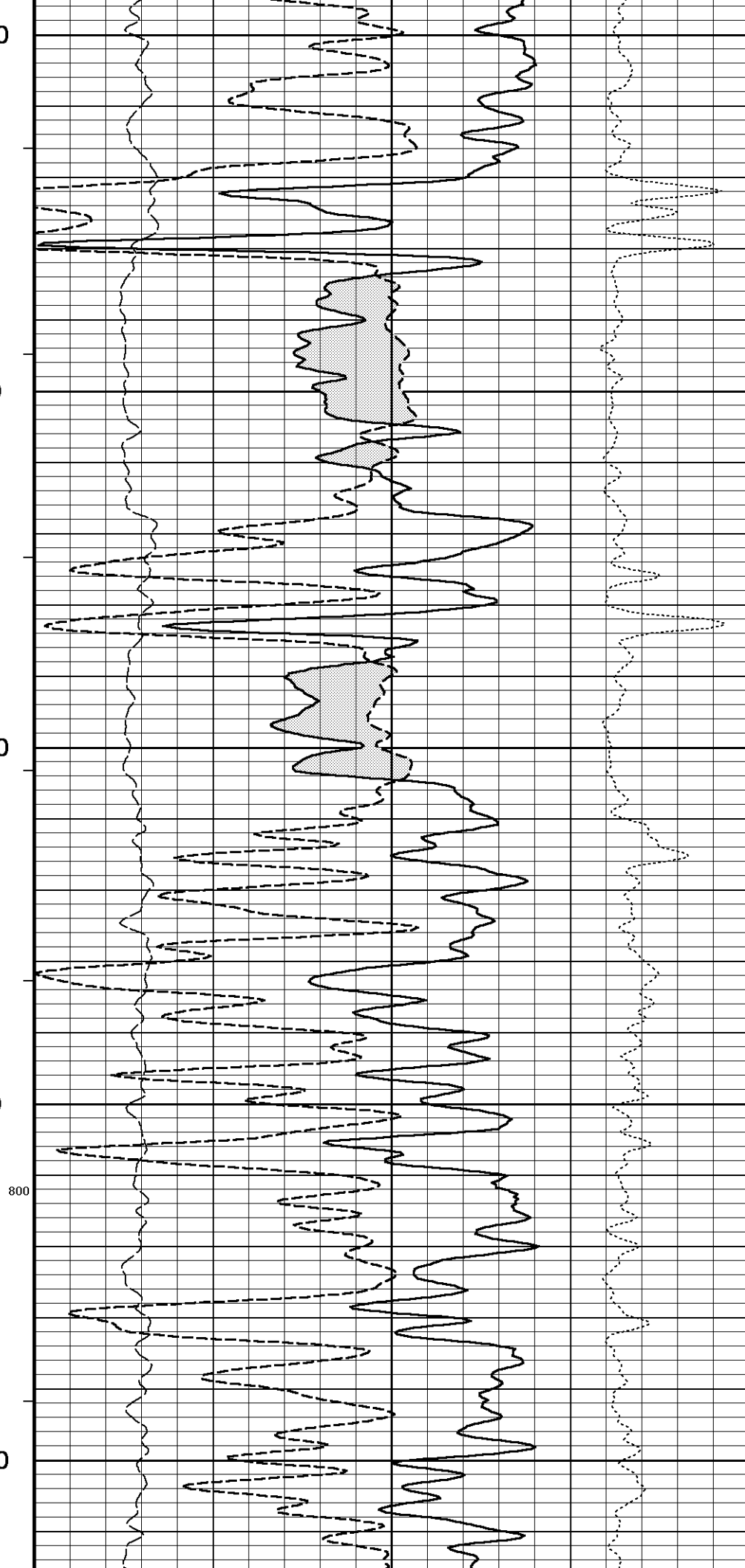


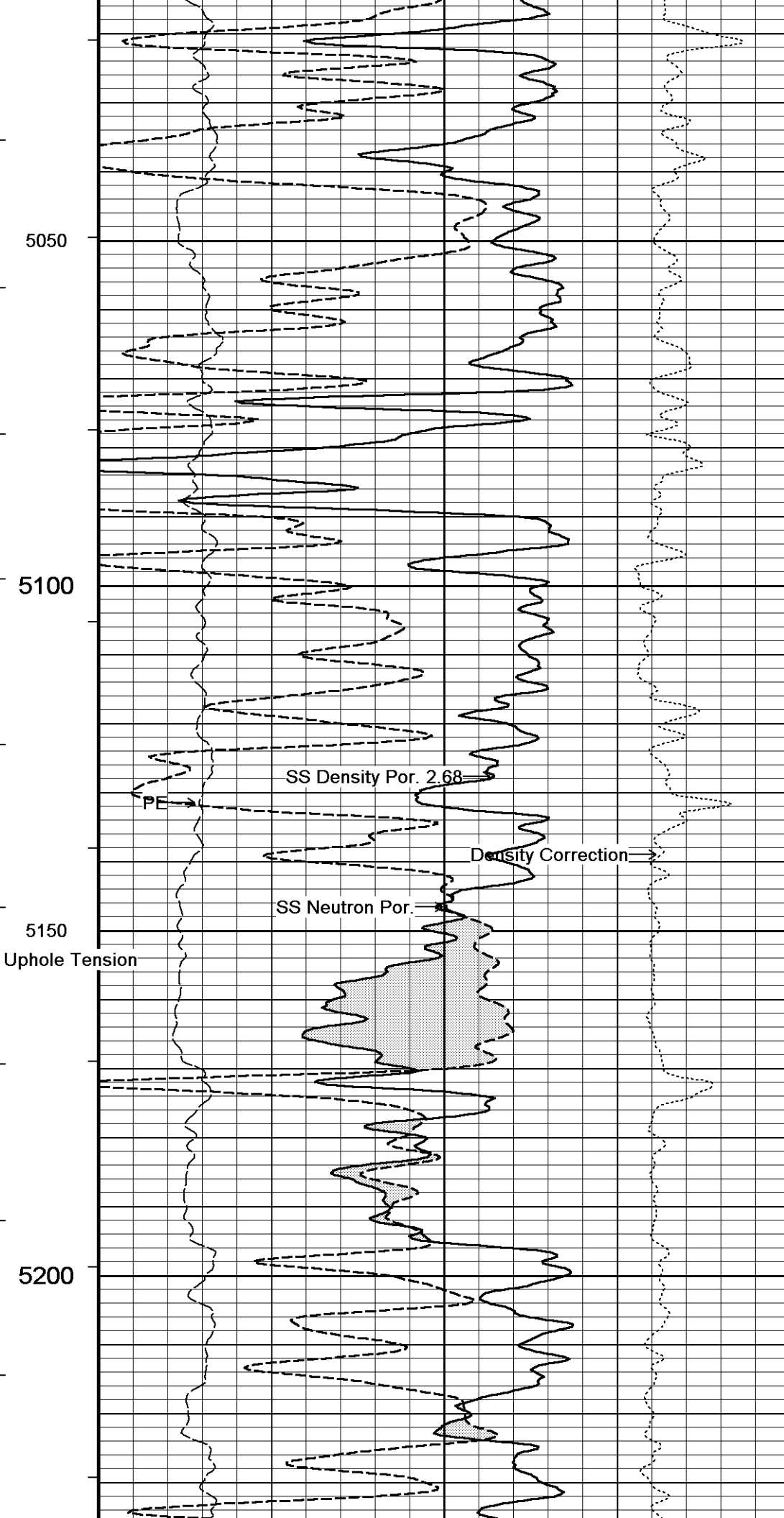
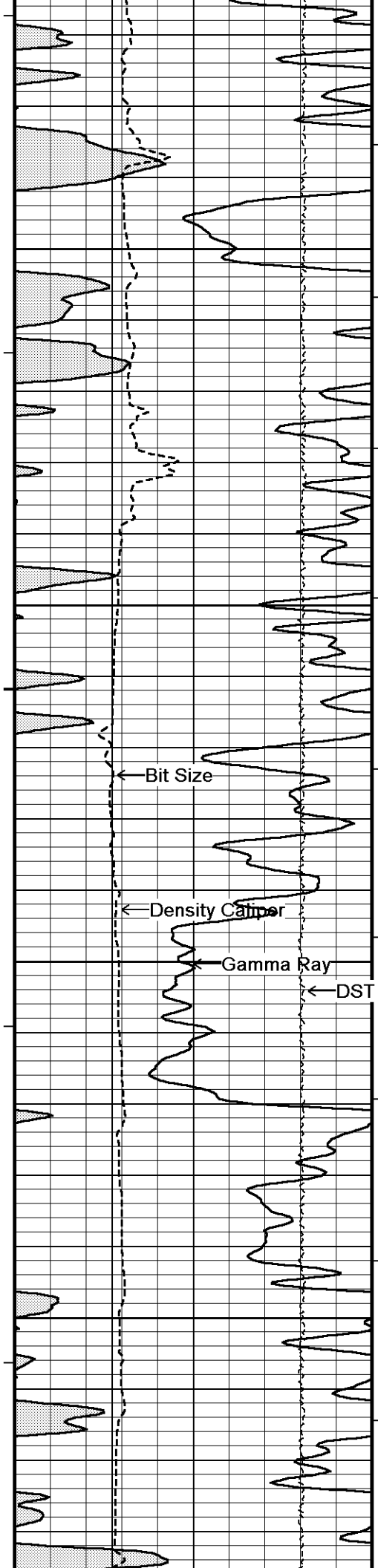


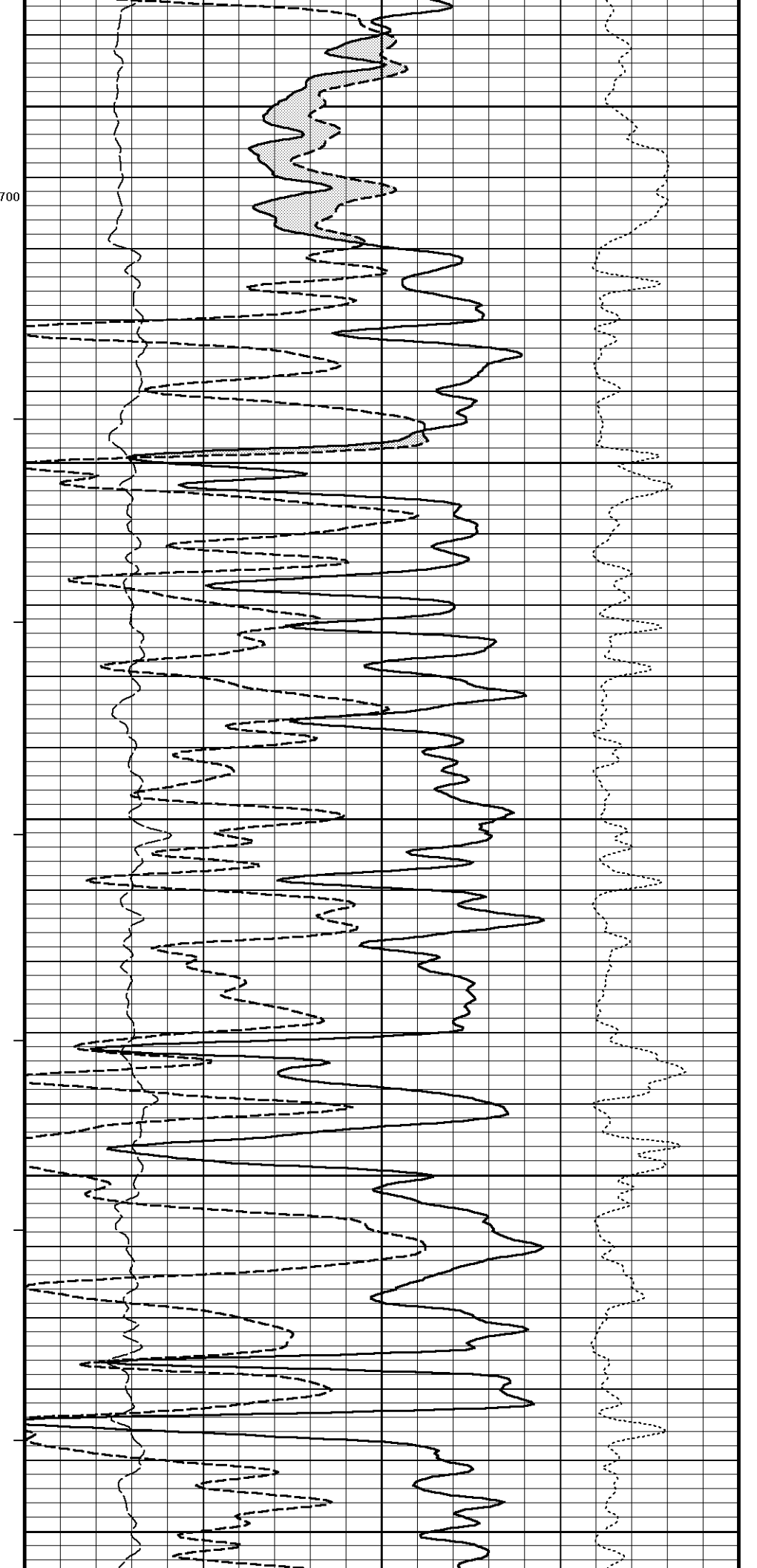
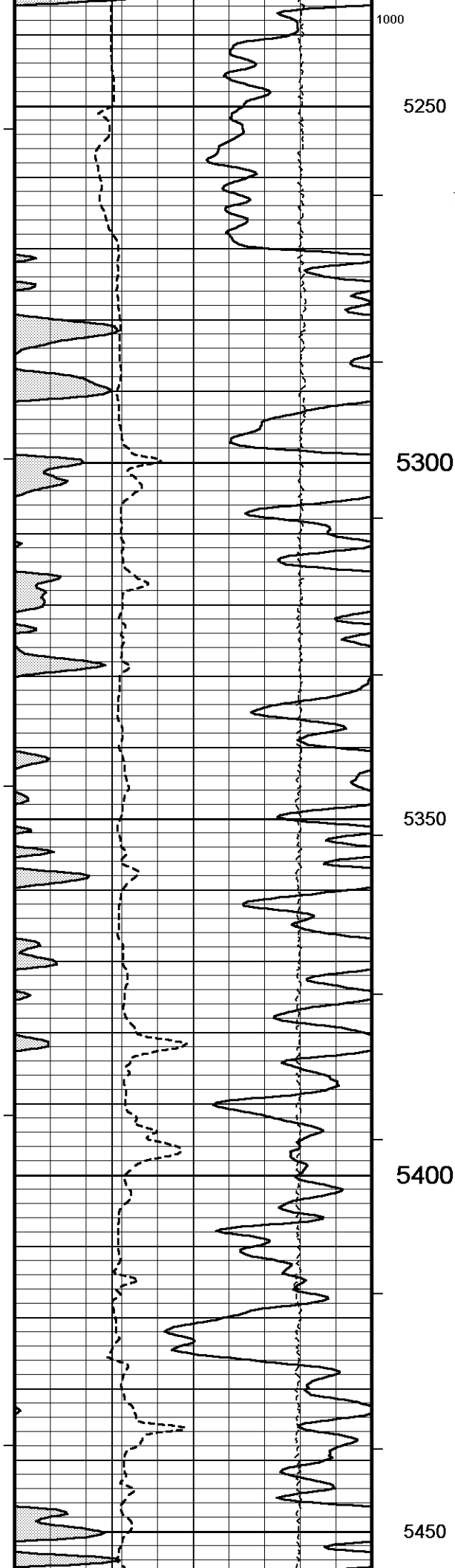


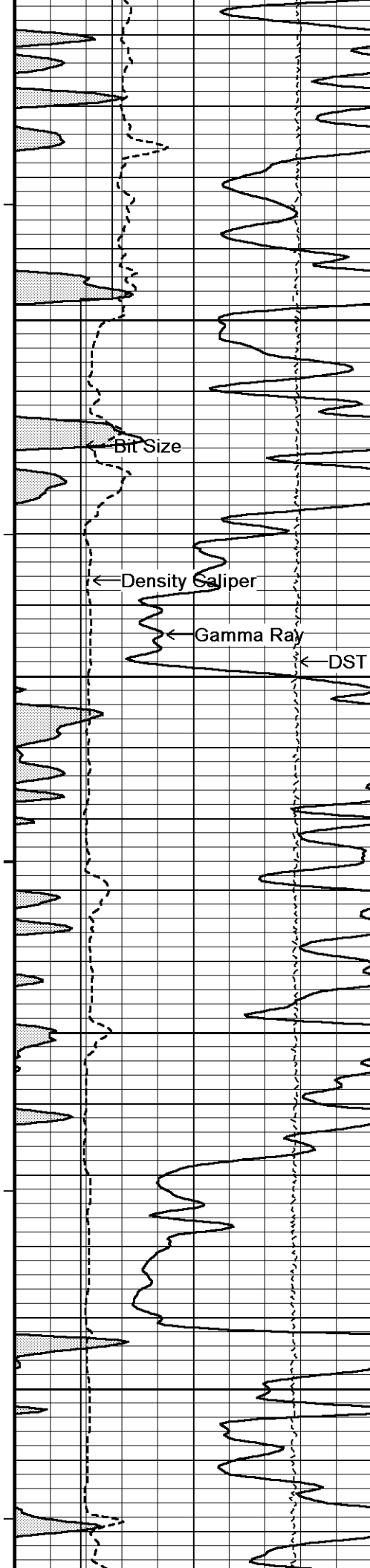


4800
4850
4900
4950
5000
1100

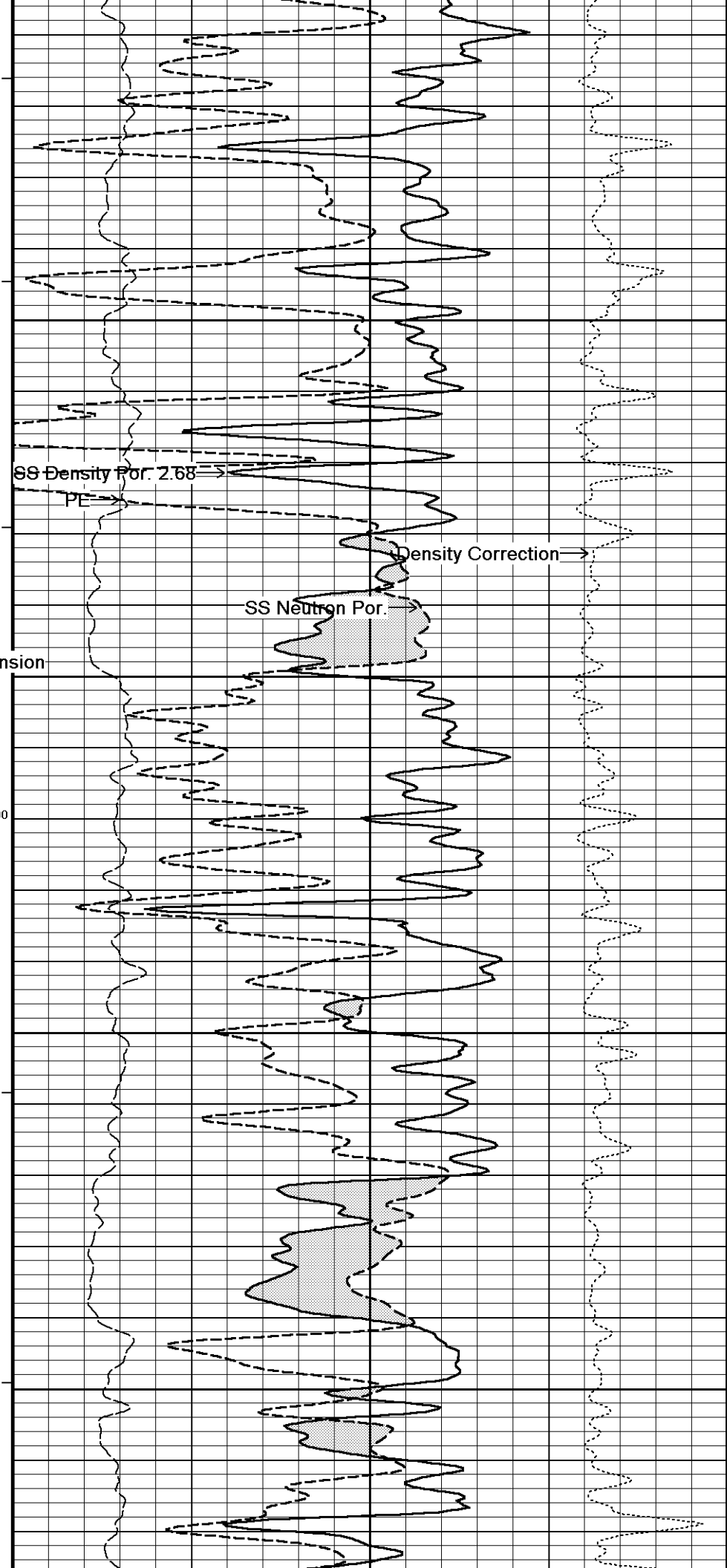








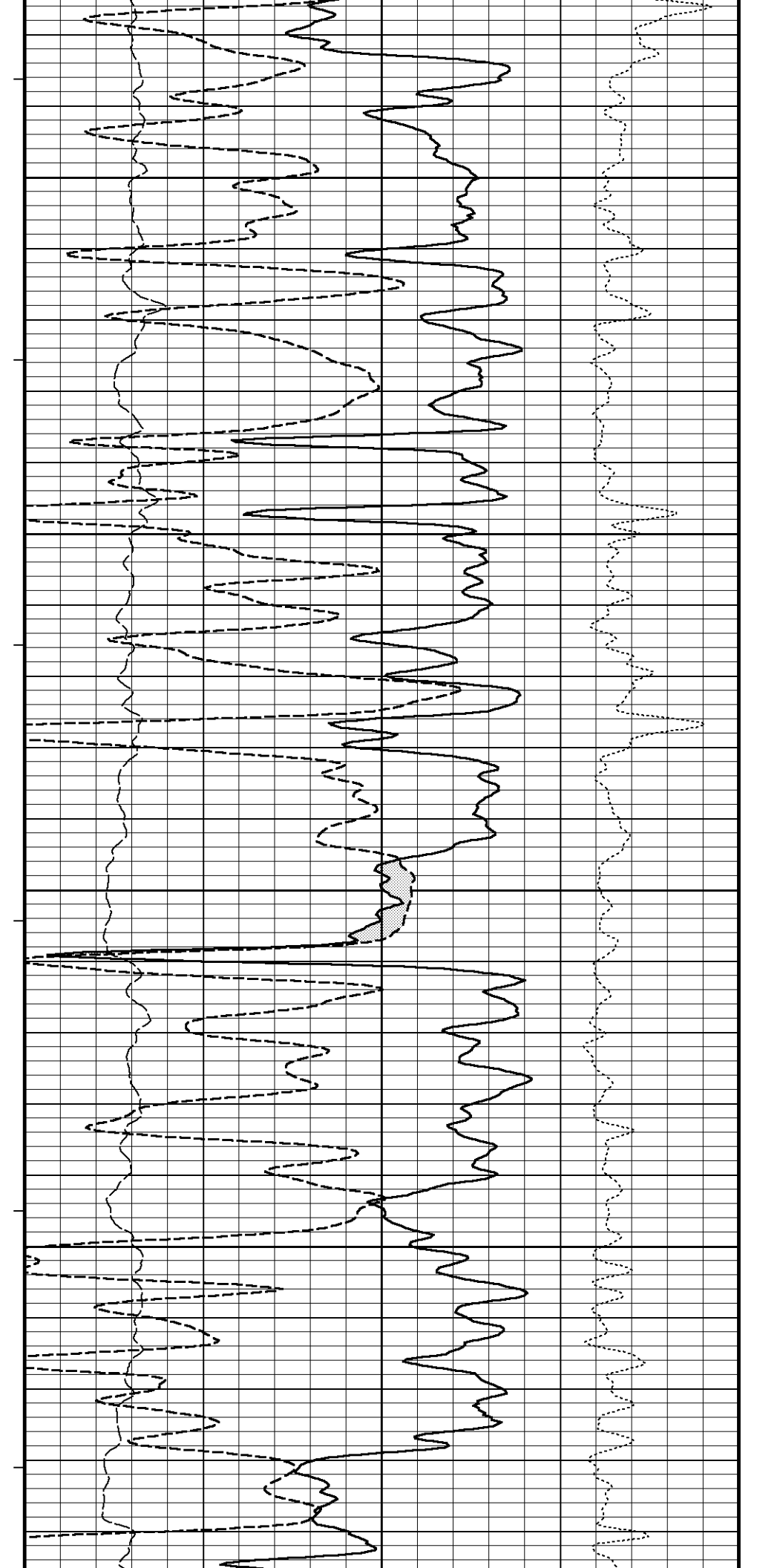
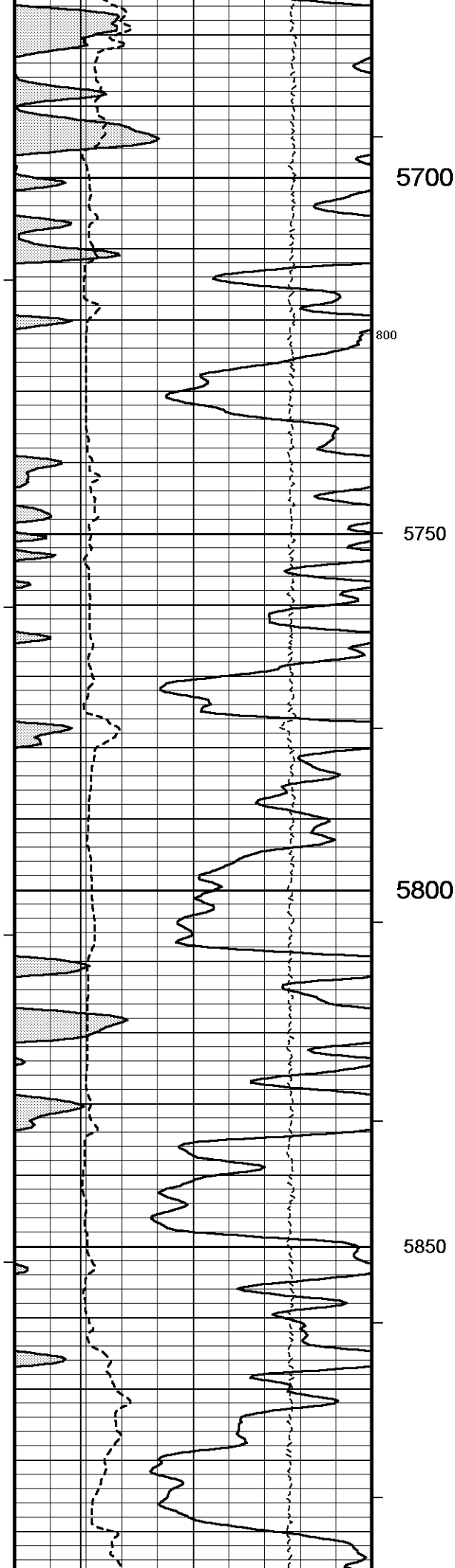
900
5500
5550
5600
5650

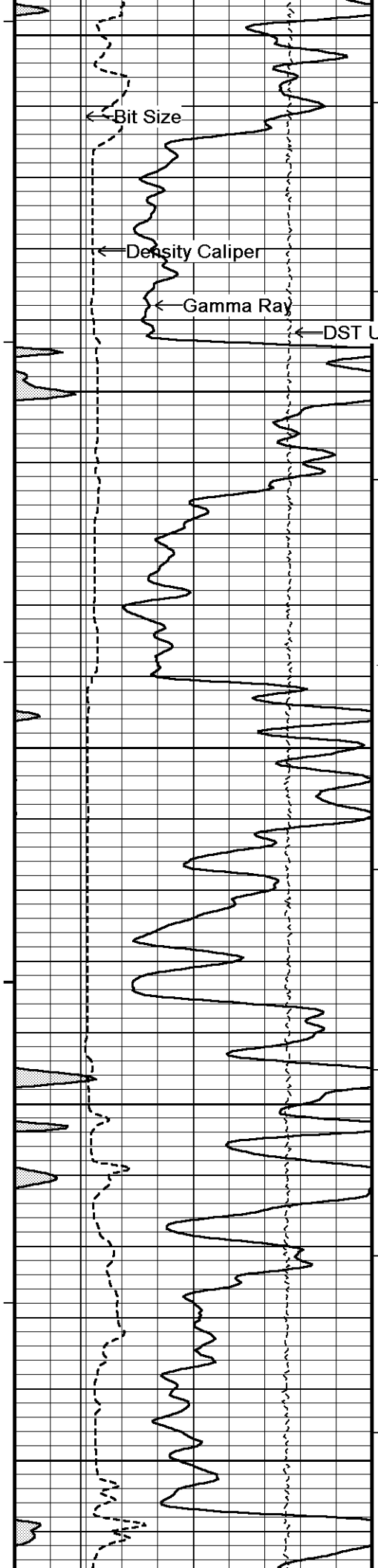


SS Density Por. 2.68
PE

SS Neutron Por.

Density Correction





5900

← Bit Size

← Density Caliper

← Gamma Ray

← DST Uphole Tension

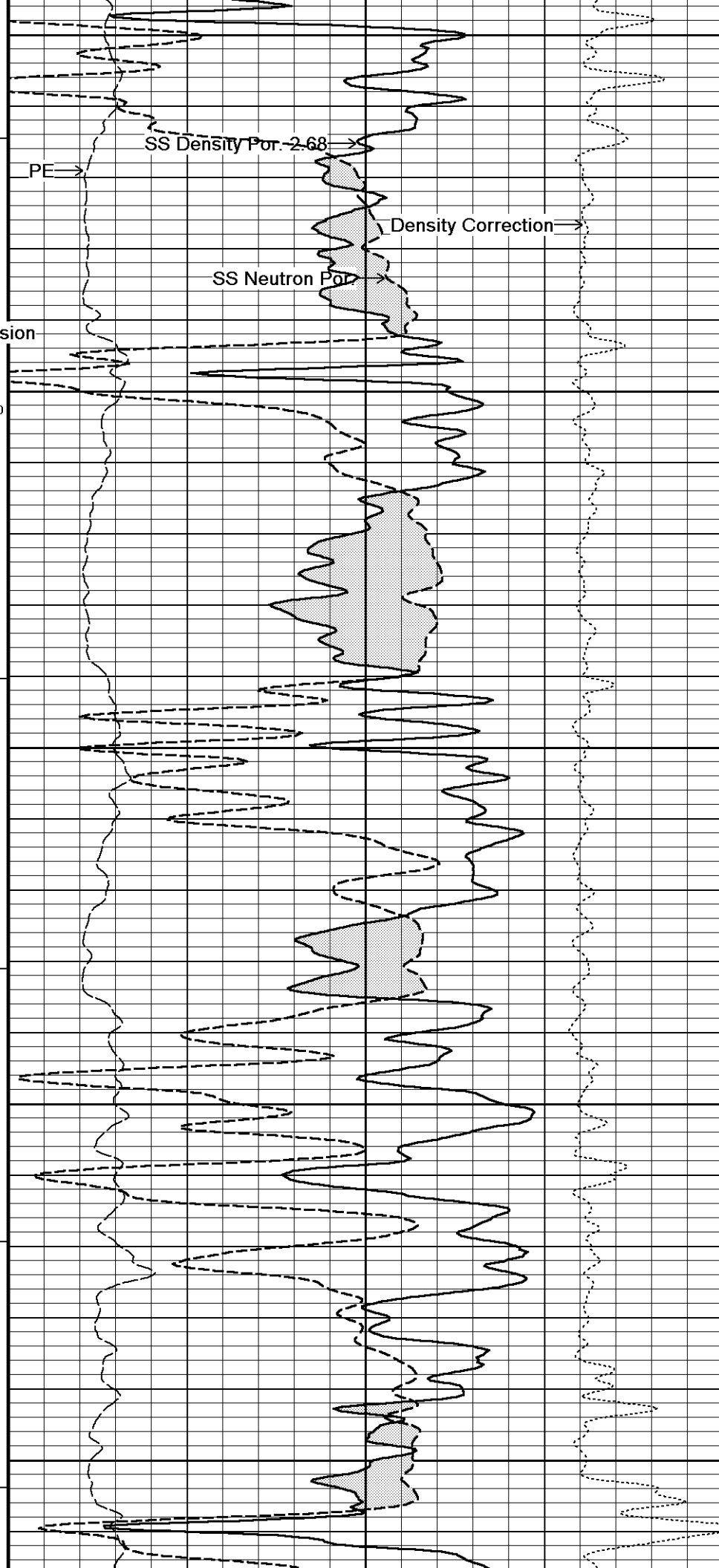
700

6000

6050

6100

500

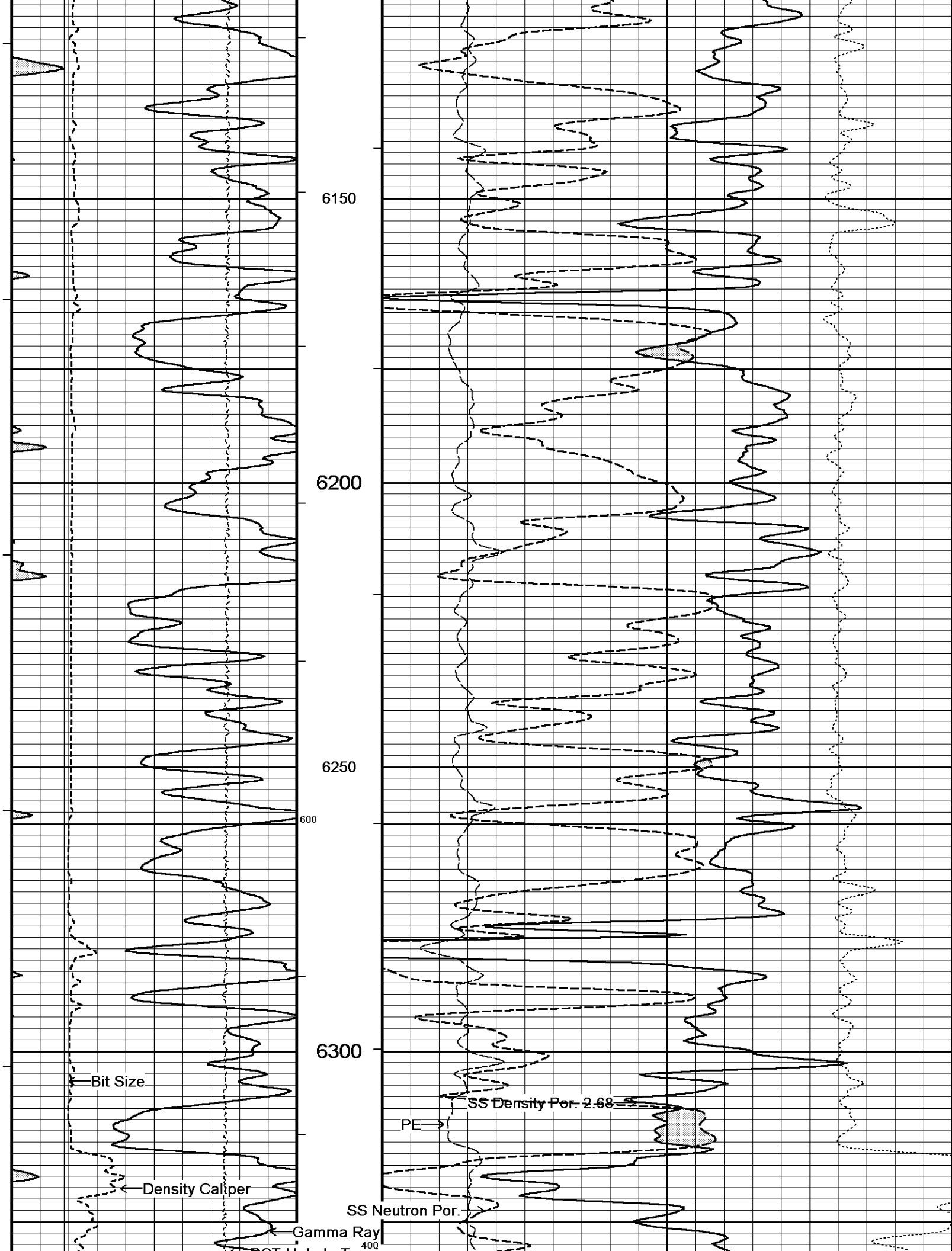


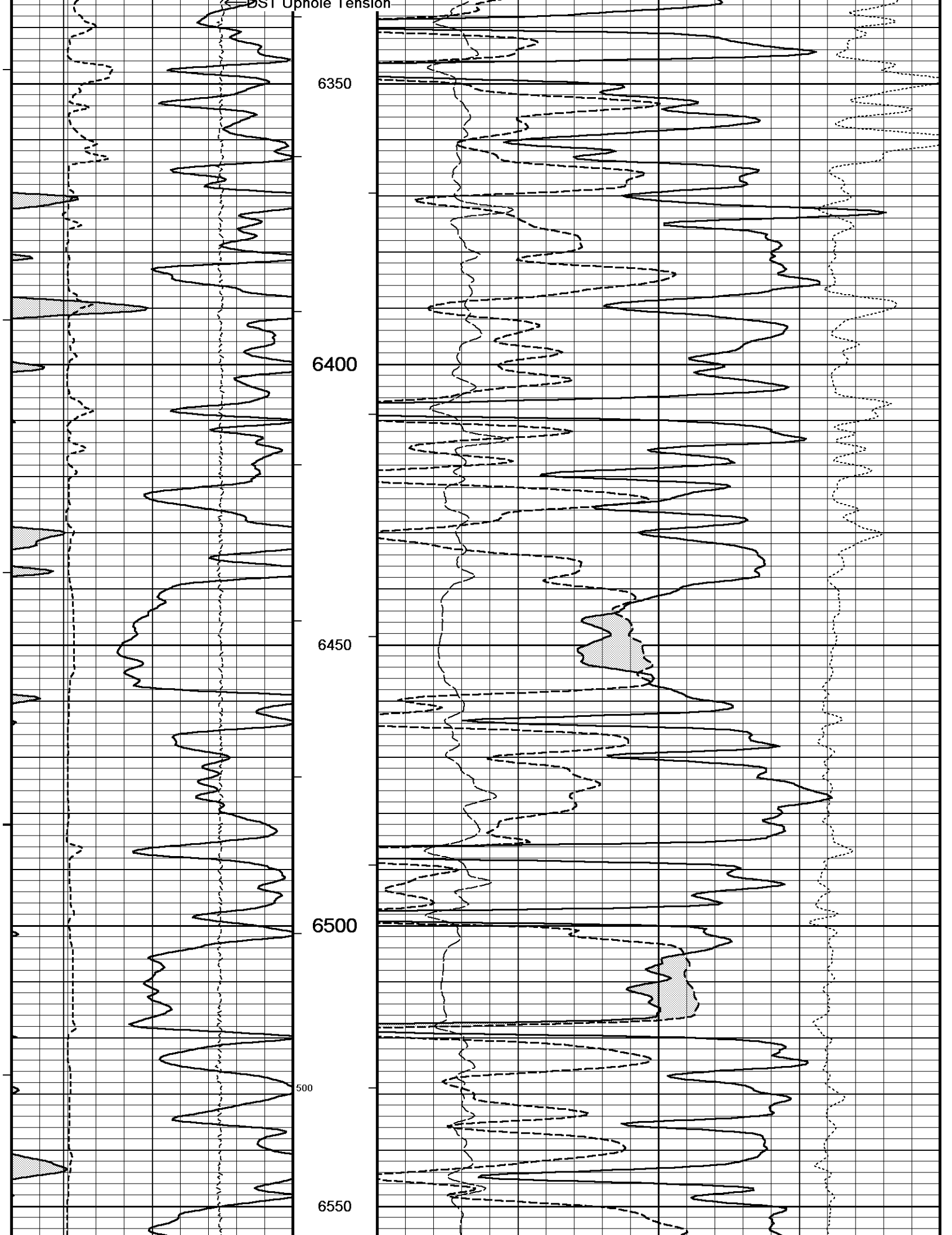
SS Density Por. 2.68

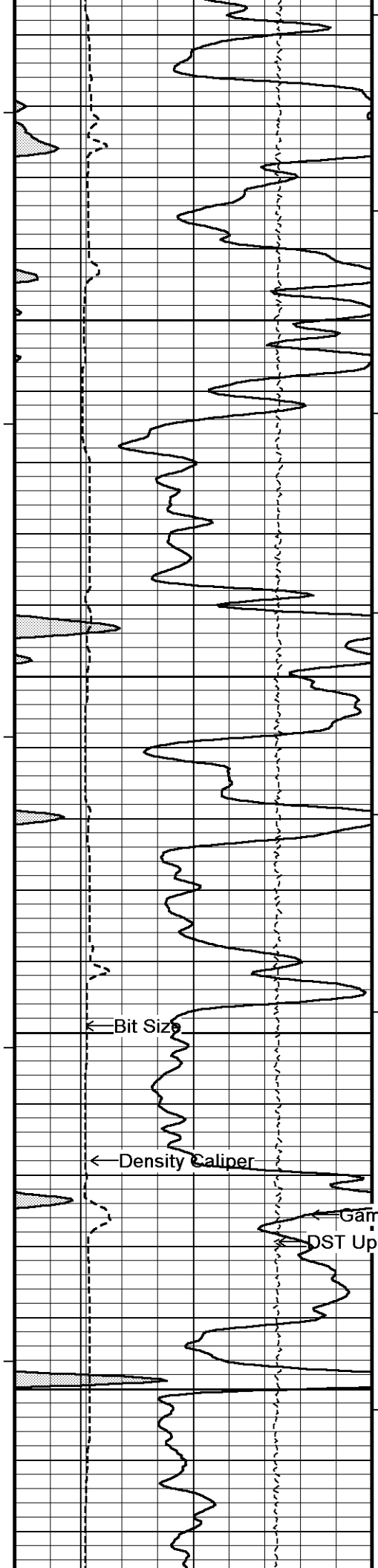
PE →

SS Neutron Por.

Density Correction →





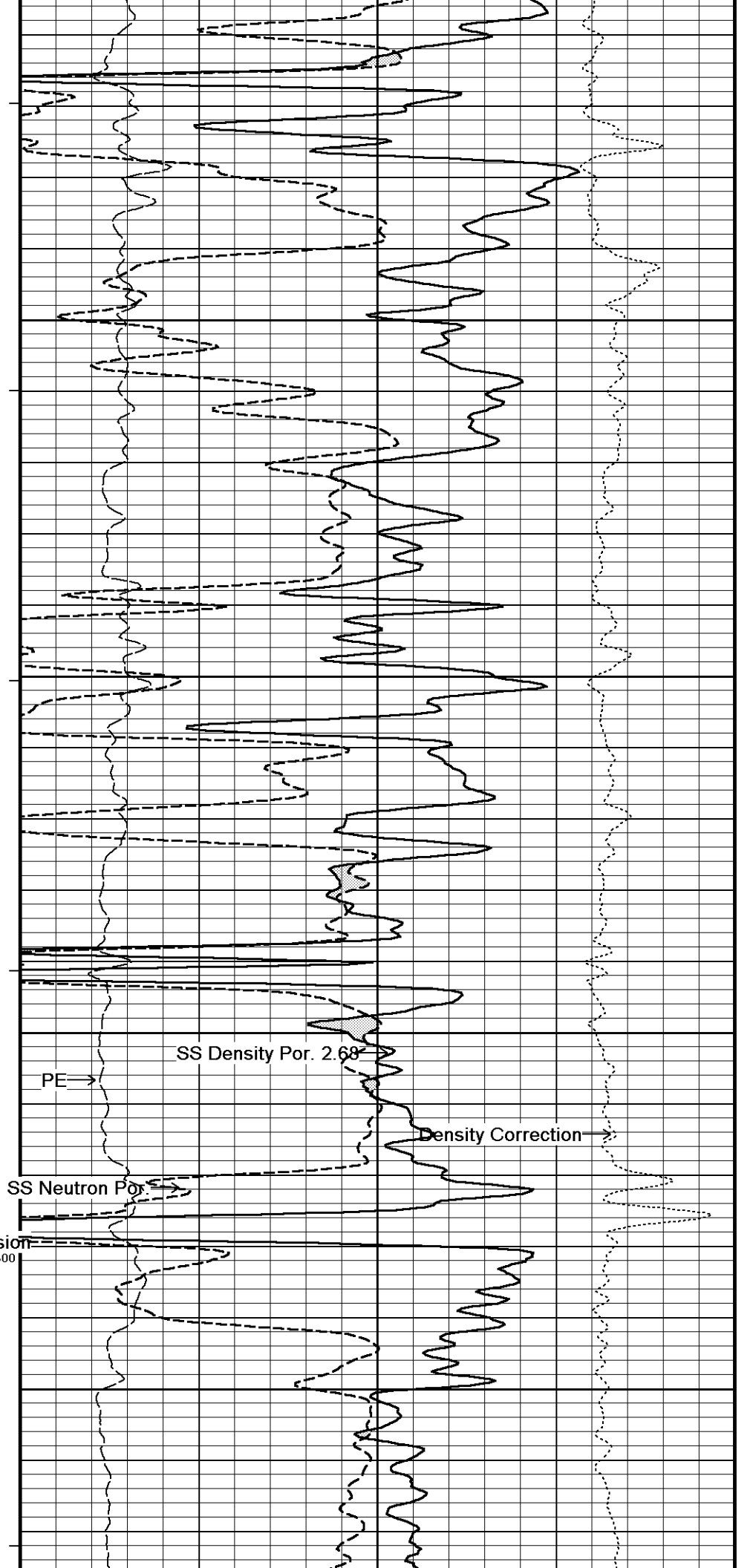


6600

6650

6700

6750



SS Density Por. 2.68

PE

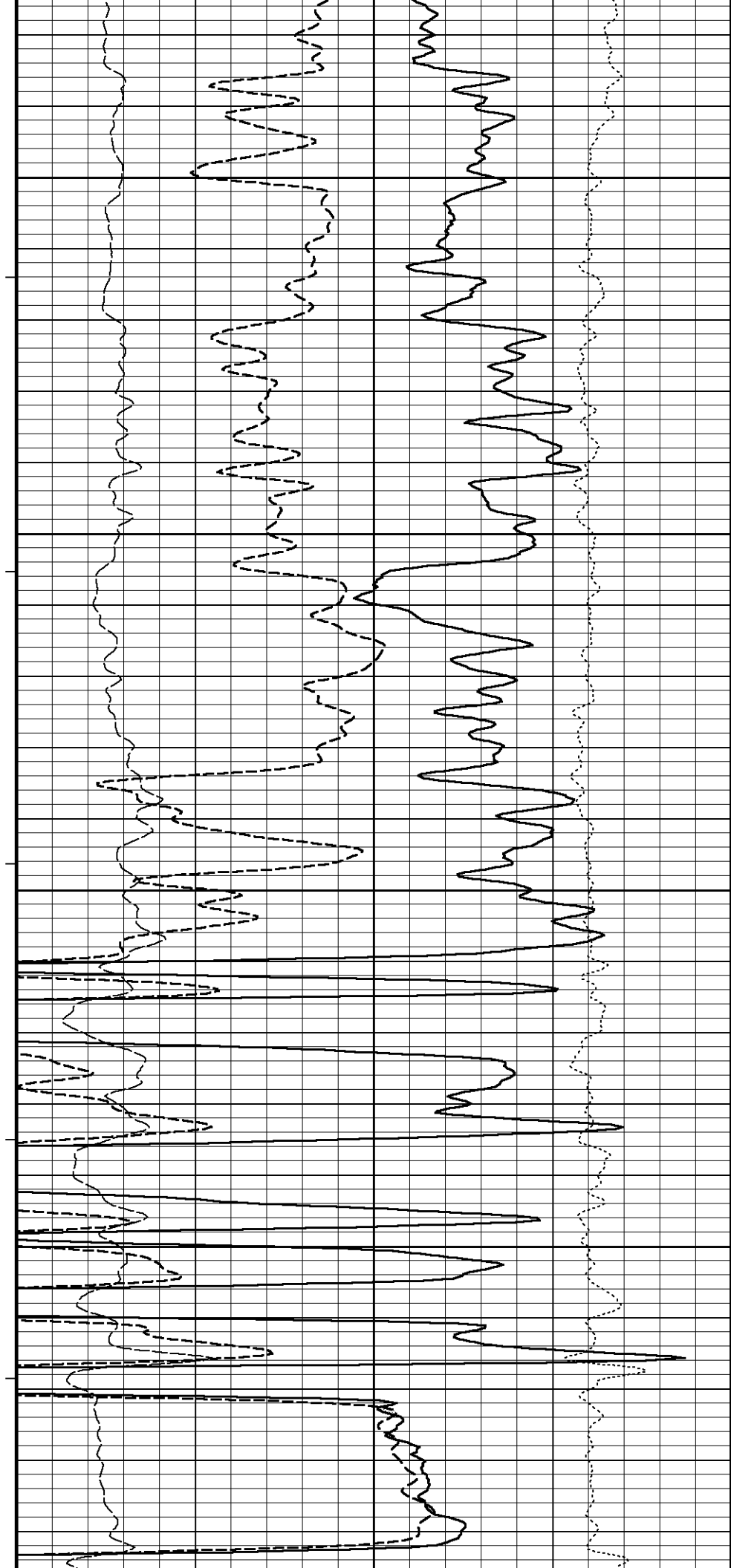
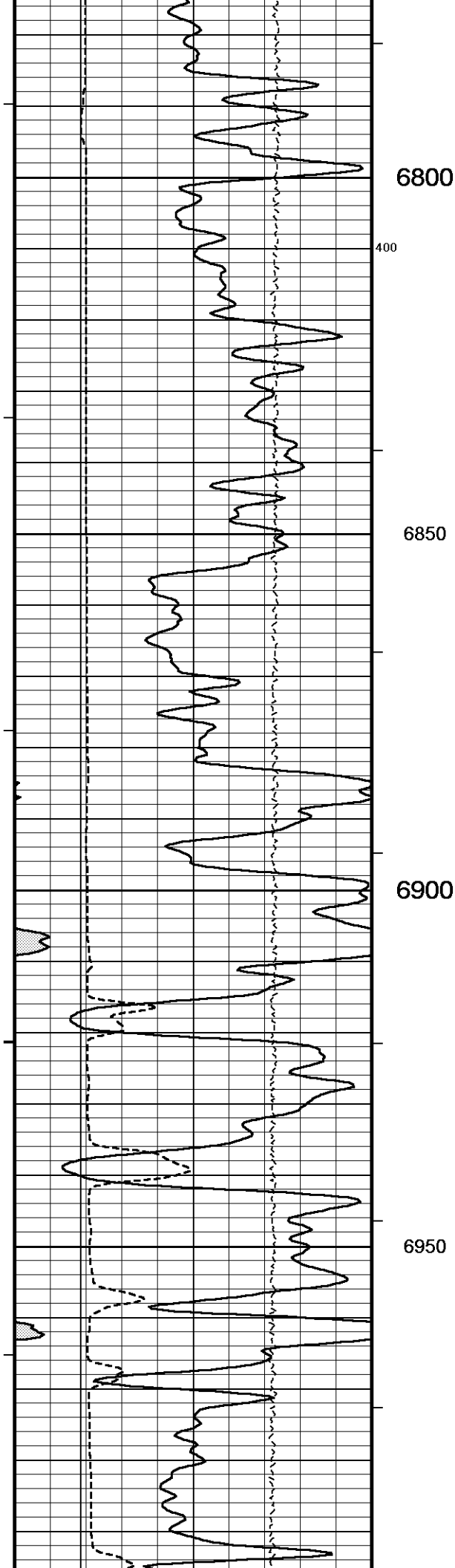
SS Neutron Por.

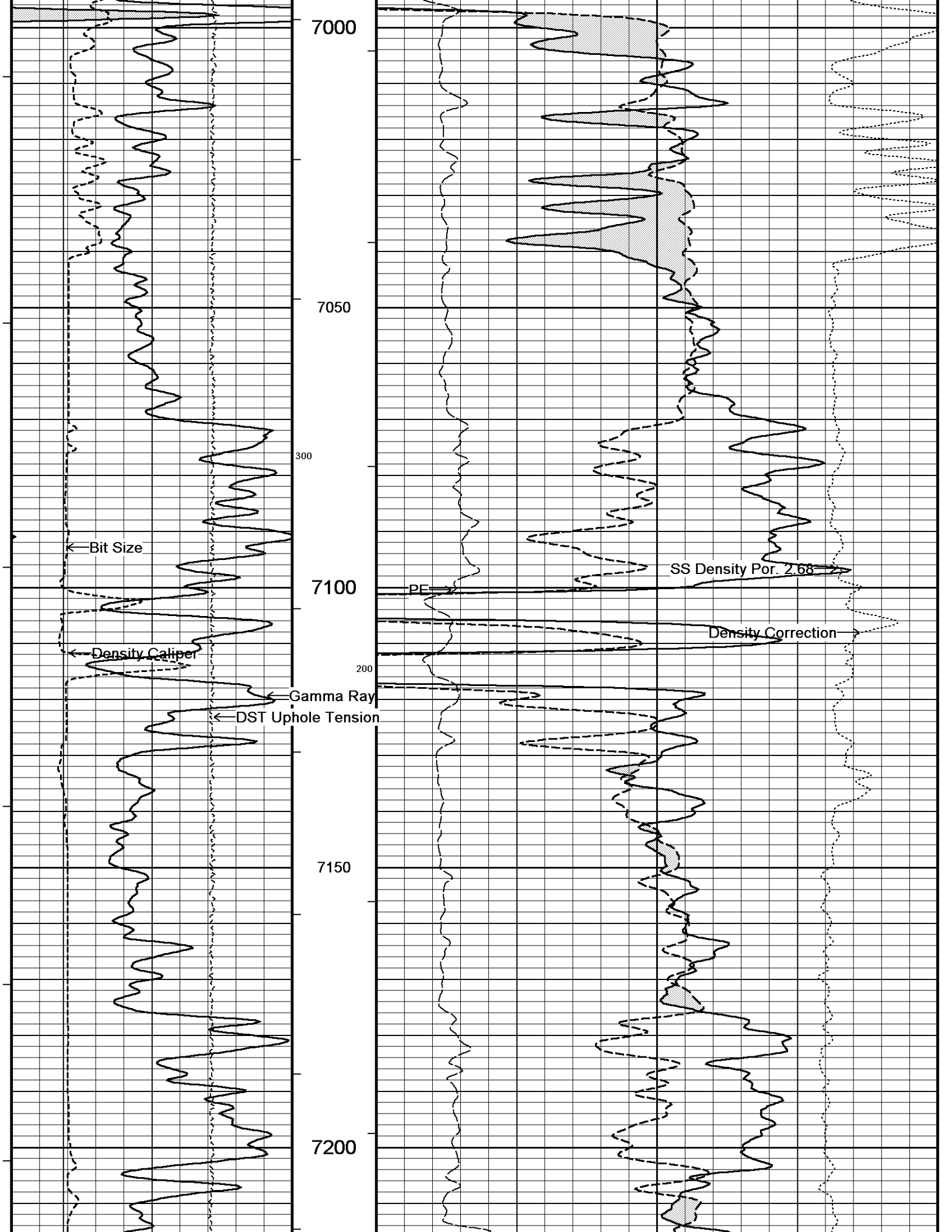
Density Correction

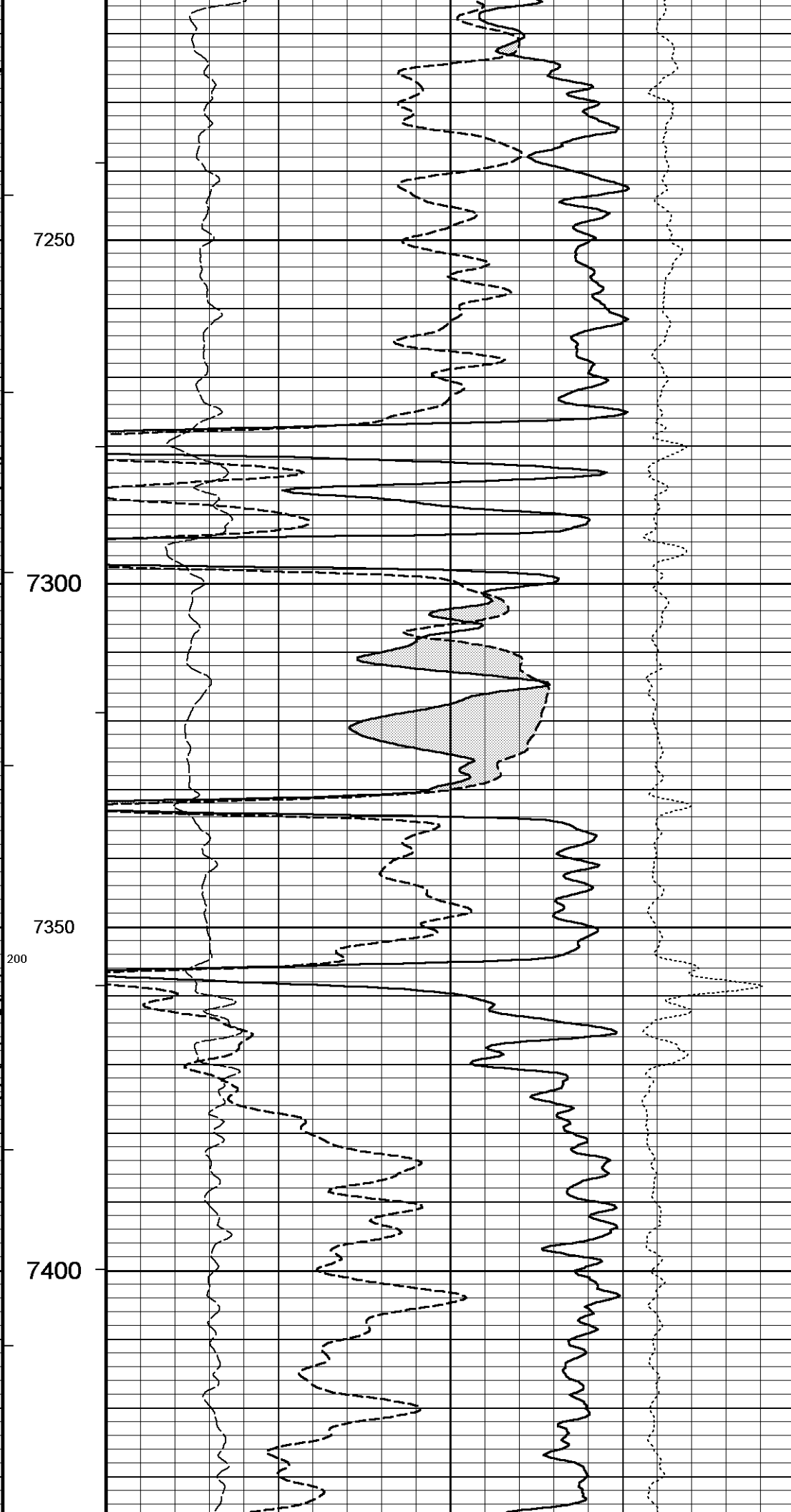
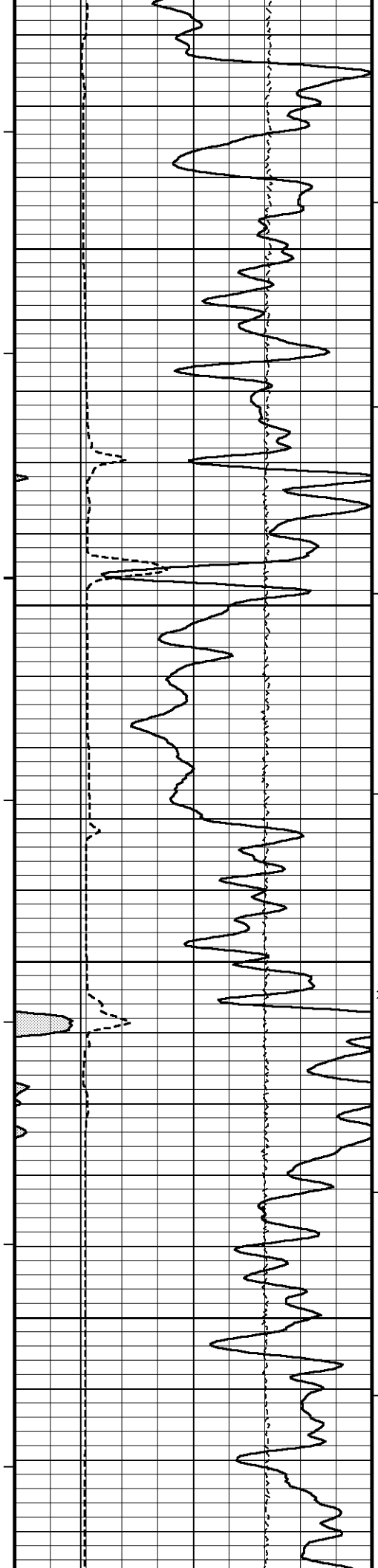
Gamma Ray

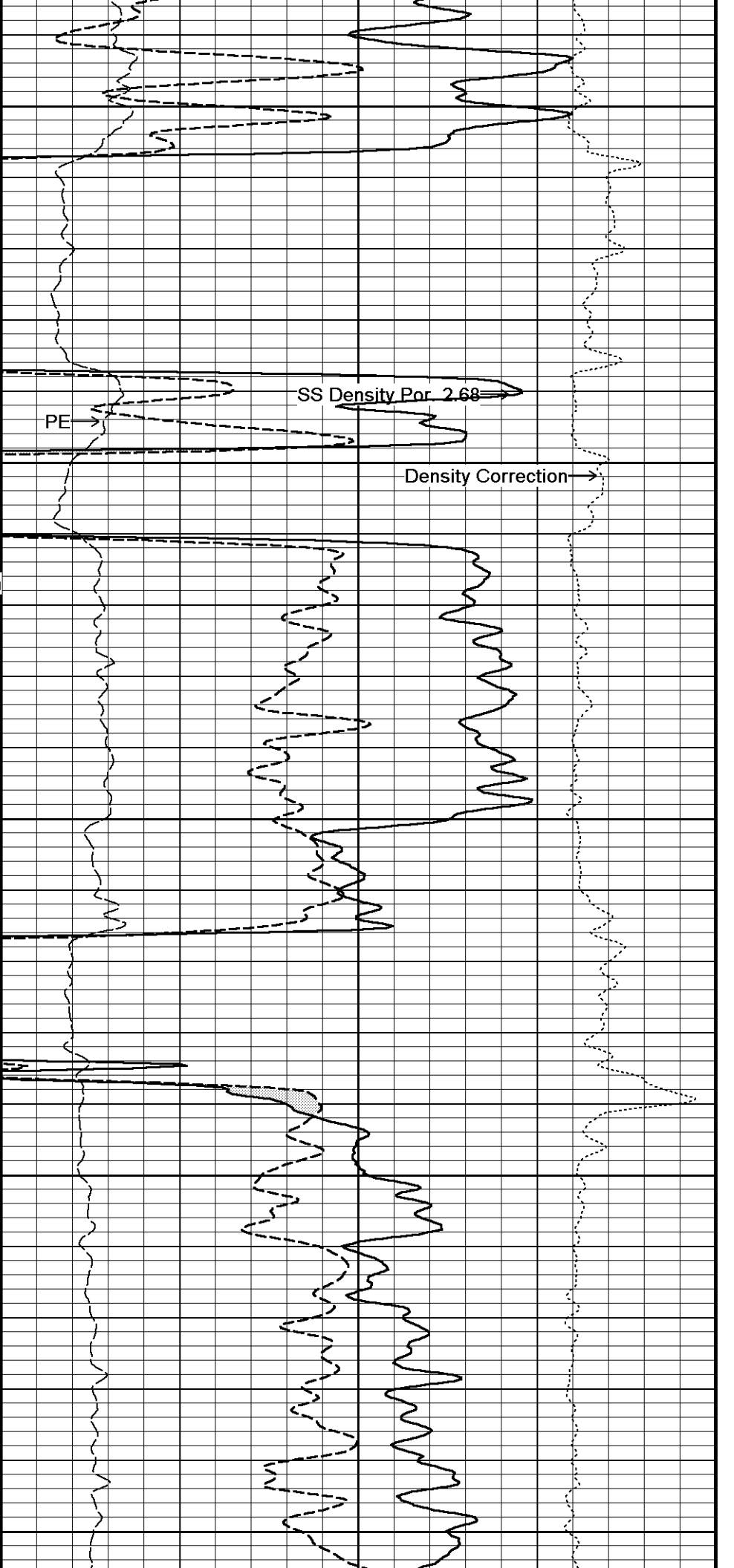
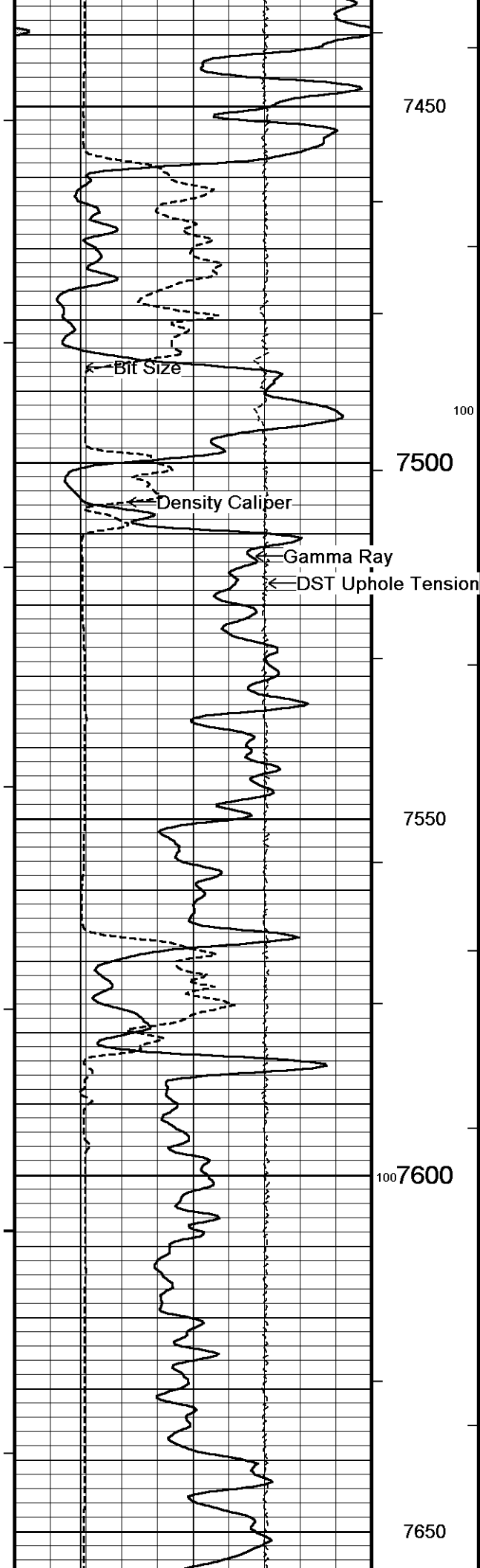
DST Uphole Tension

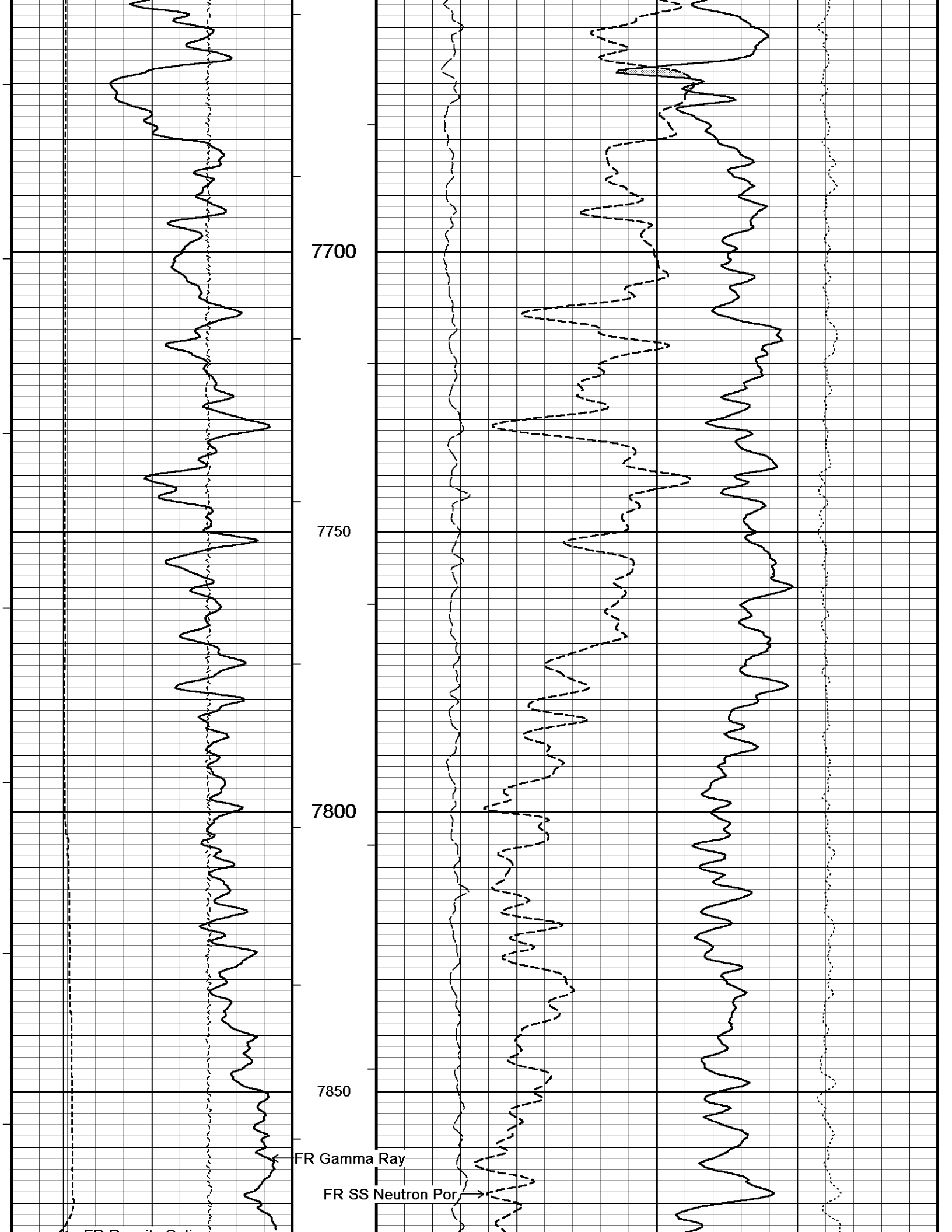
300

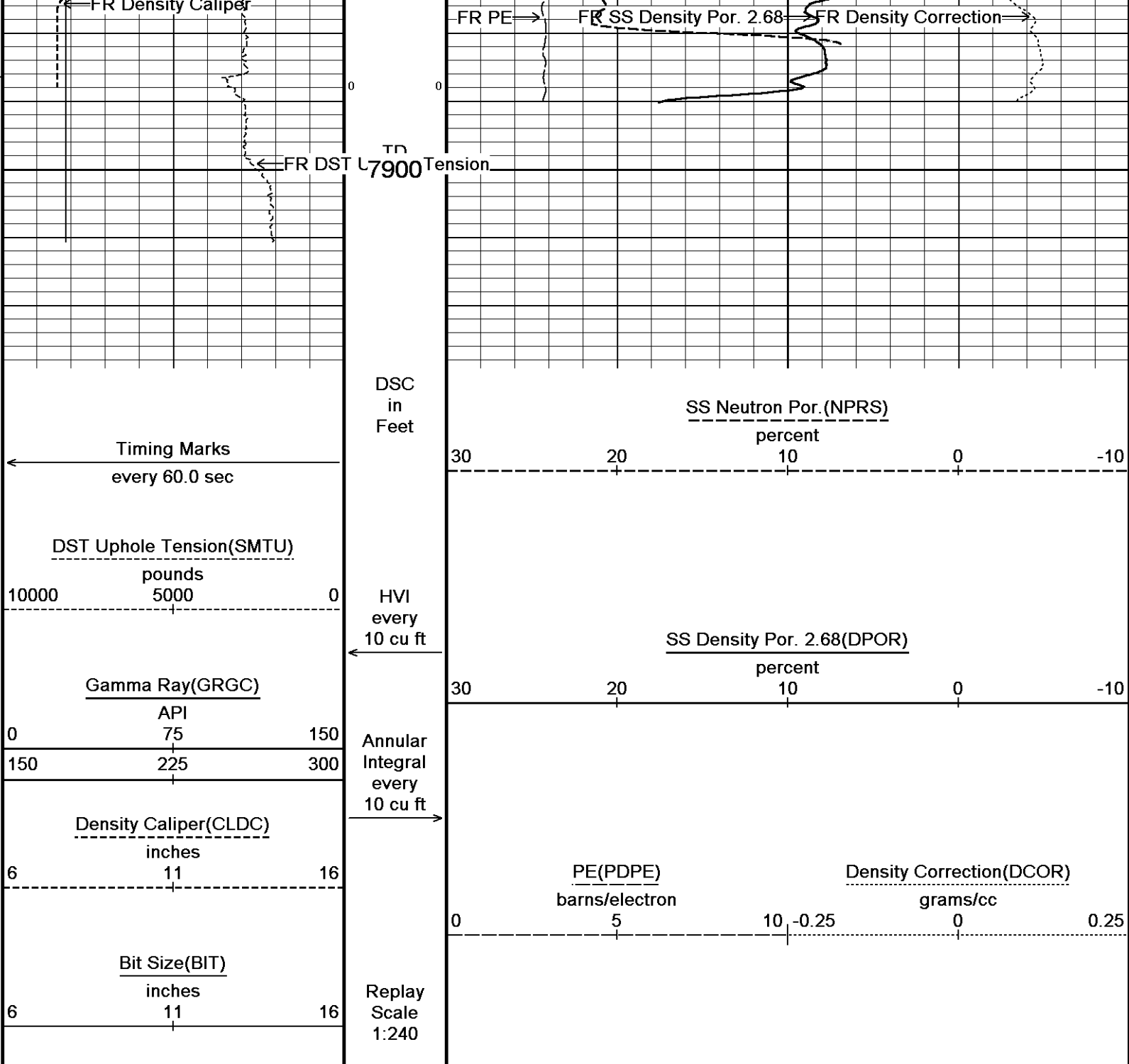












Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-...\GGU Kaufman 32D-30-691 Main.dta
System Versions: Logged with 12.02.4401 Plotted with 12.02.4401

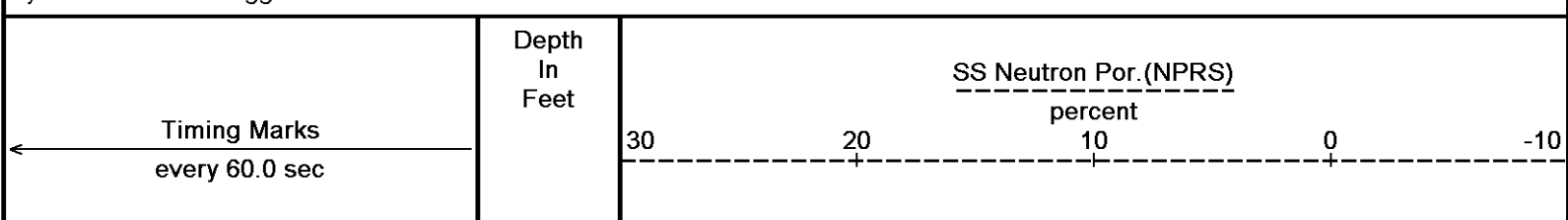
Plotted on 19-DEC-2011 17:49
Recorded on 19-DEC-2011 14:45

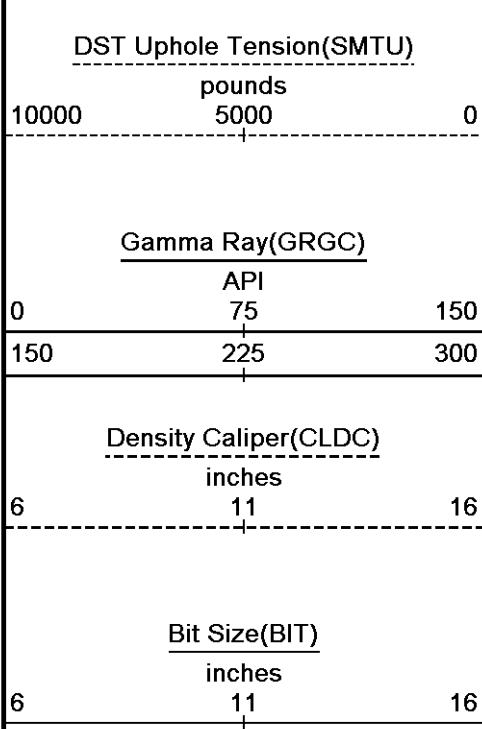
5 INCH MAIN LOG

OVERLAY

Depth Based Data - Maximum Sampling Increment 10.0cm
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Filename: C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-...\GGU Kaufman 32D-30-691 Repeat.dta
System Versions: Logged with 12.02.4401 Plotted with 12.02.4401

Plotted on 19-DEC-2011 17:49
Recorded on 19-DEC-2011 14:45
Recorded on 19-DEC-2011 14:29



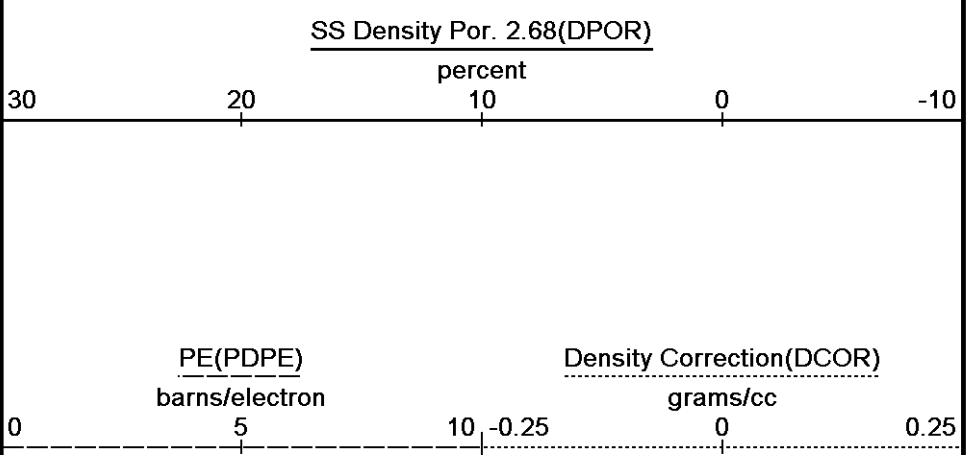


HVI
every
10 cu ft

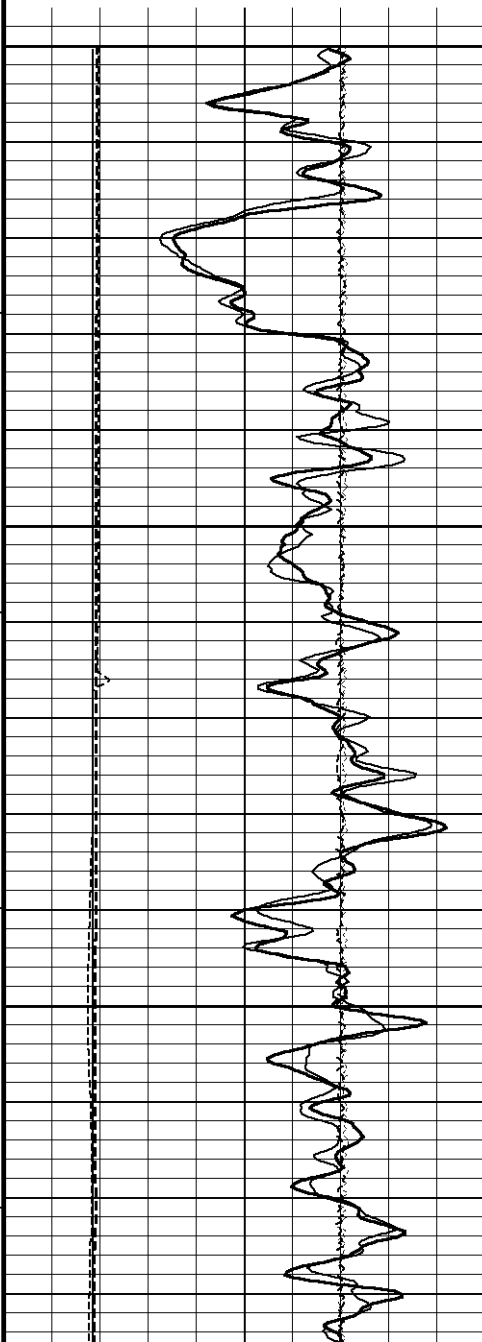
←

Annular
Integral
every
10 cu ft

→



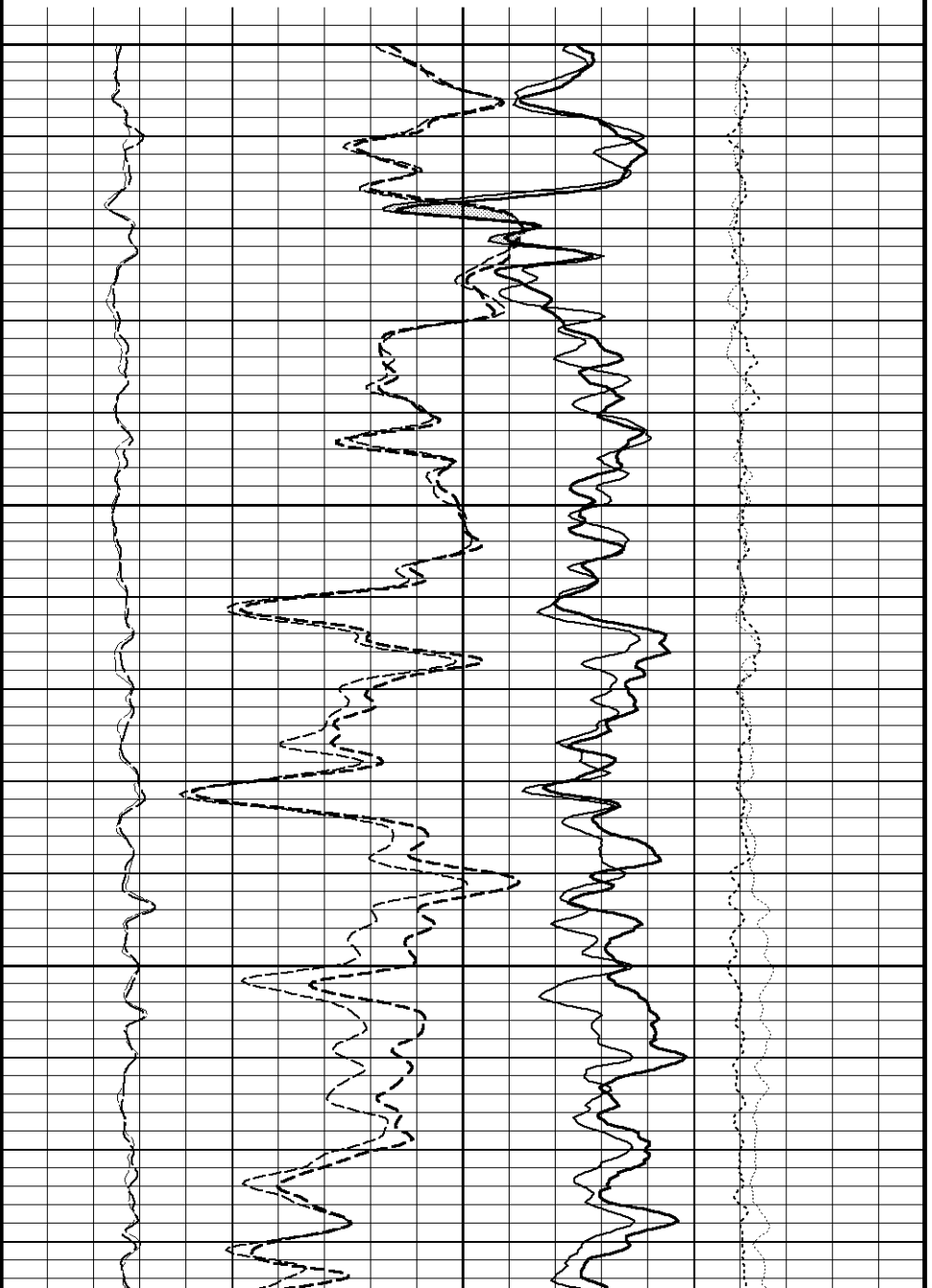
Replay
Scale
1:240

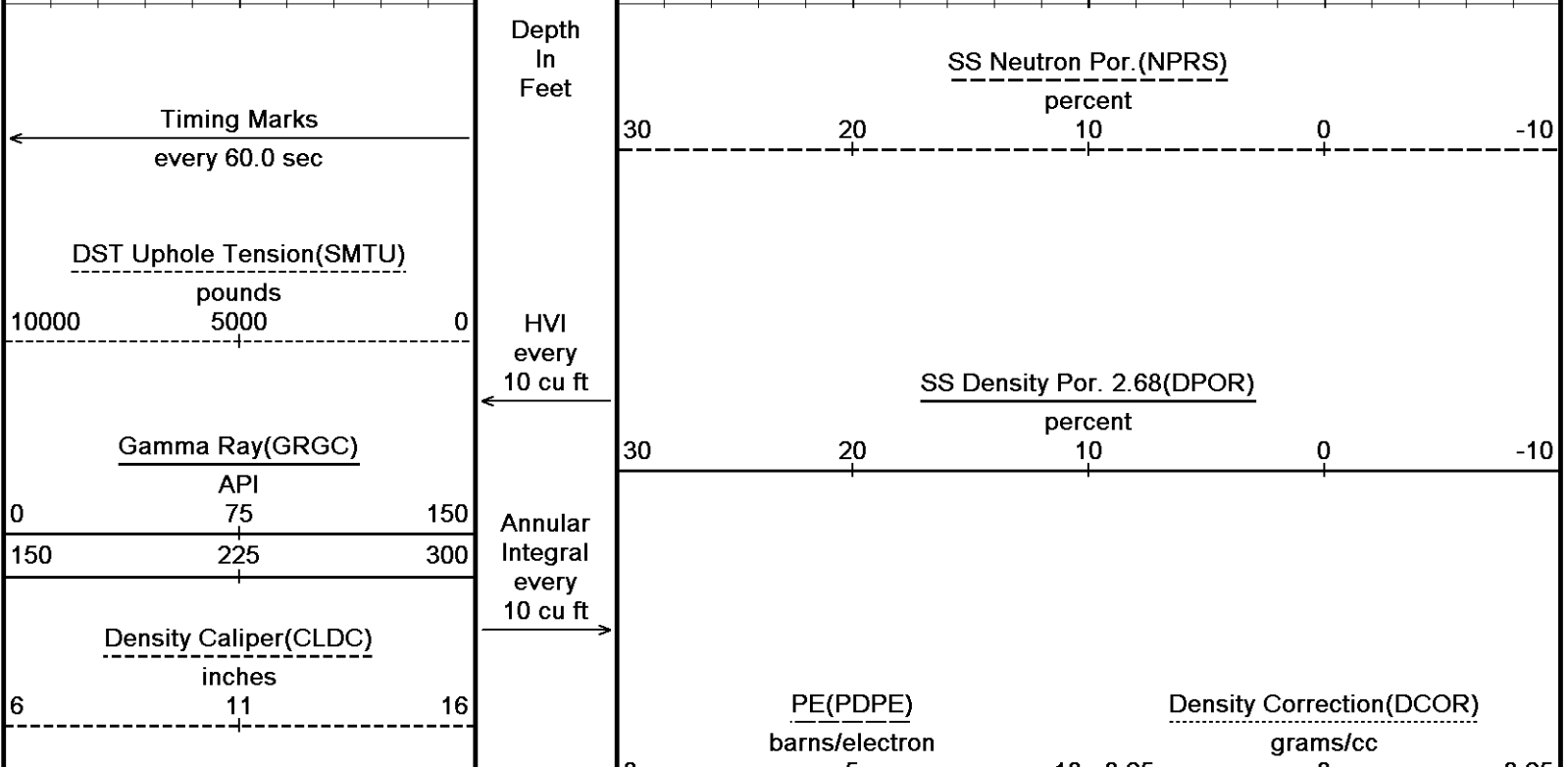
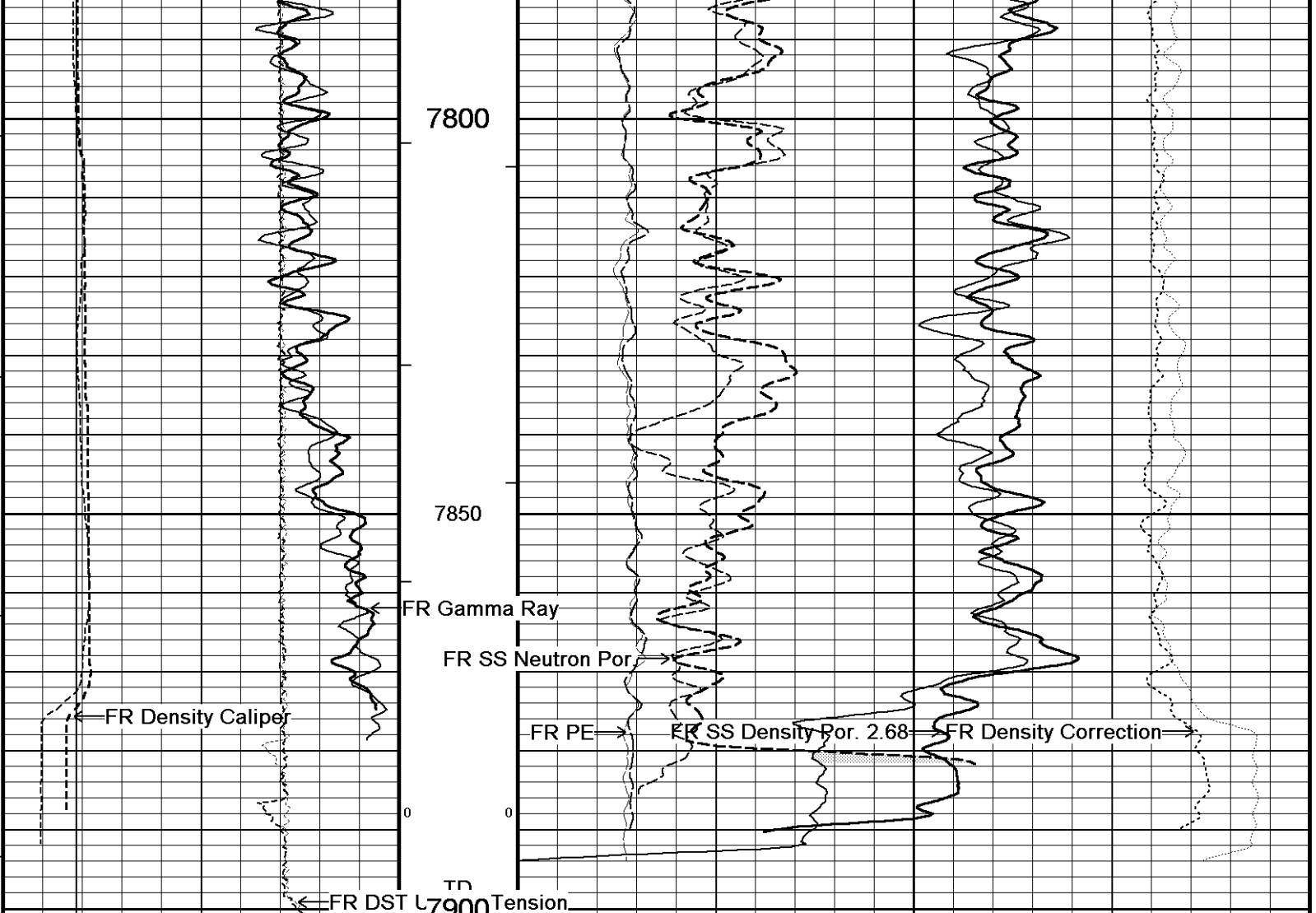


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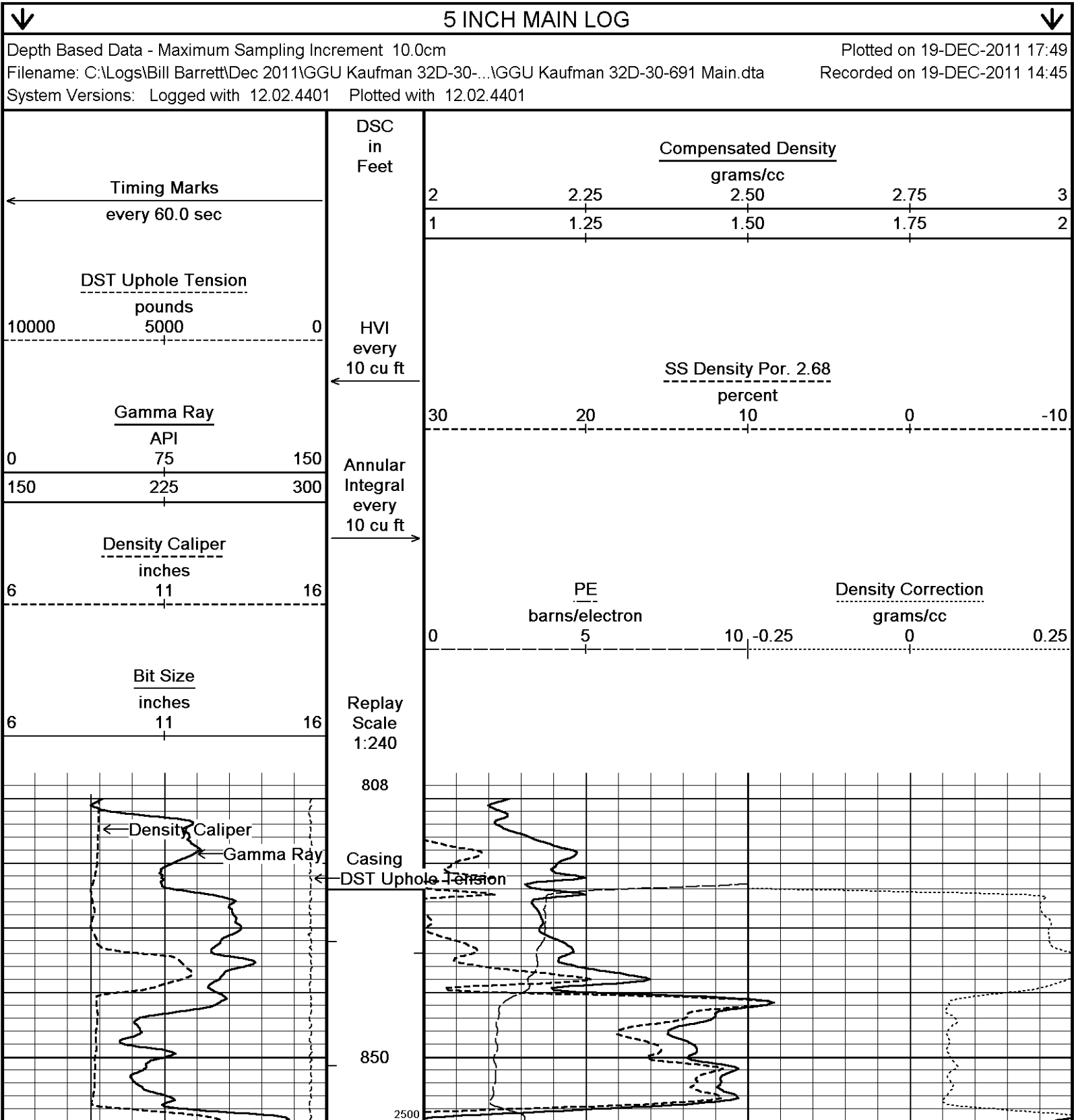
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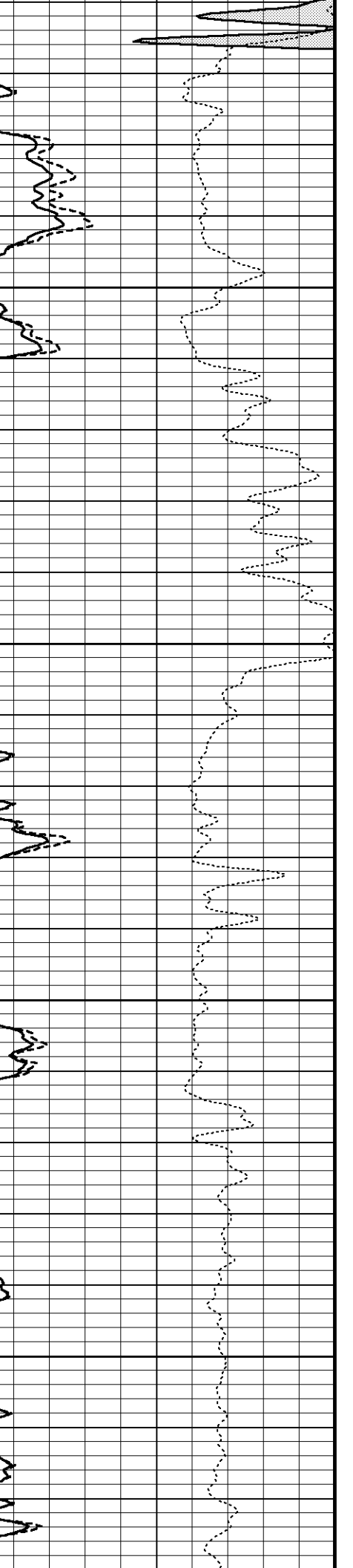
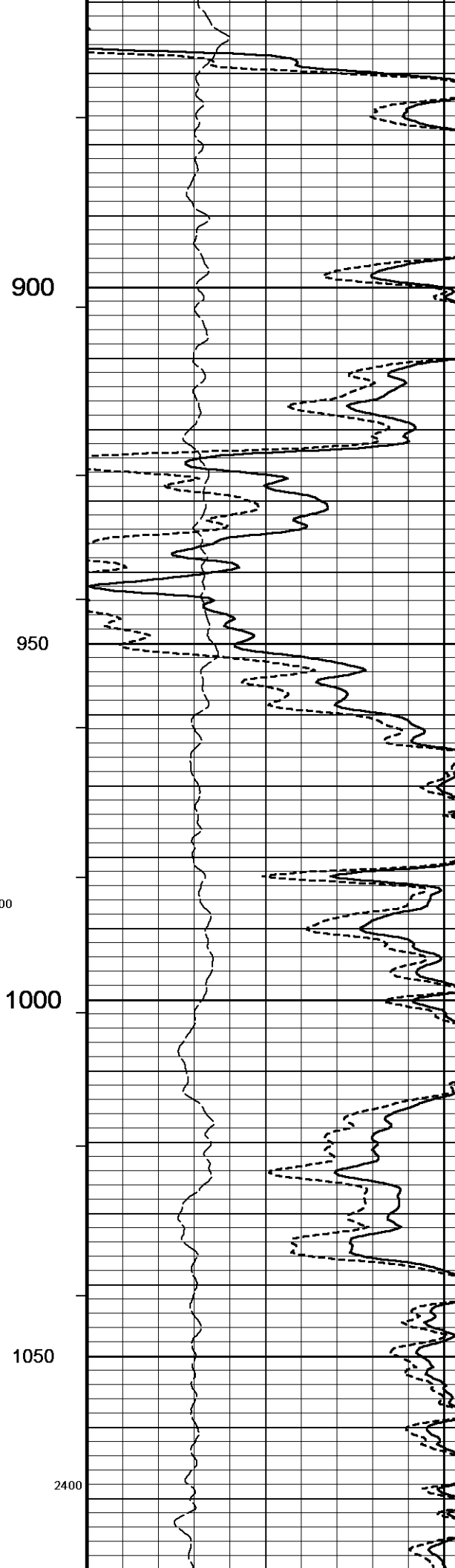
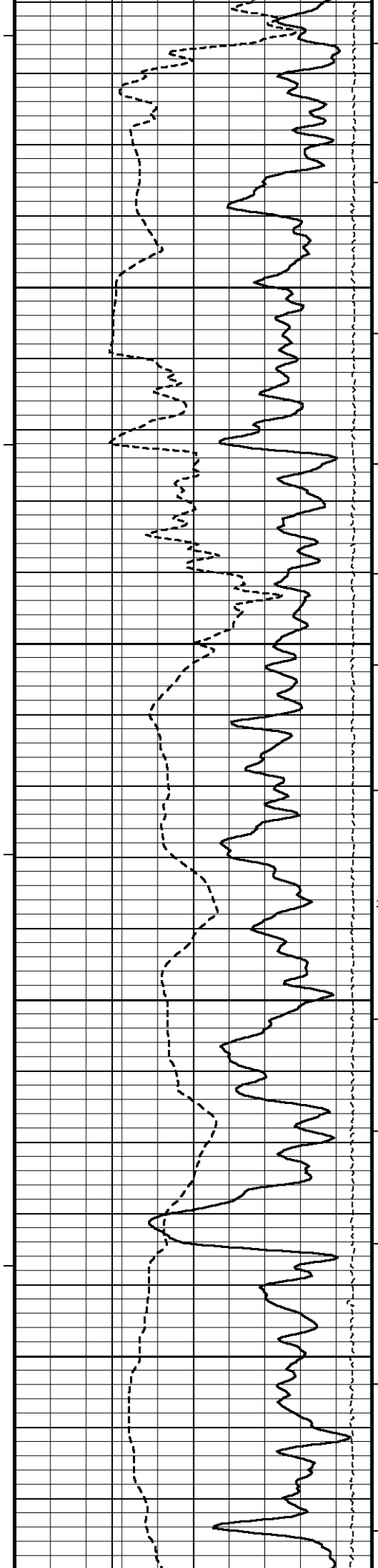
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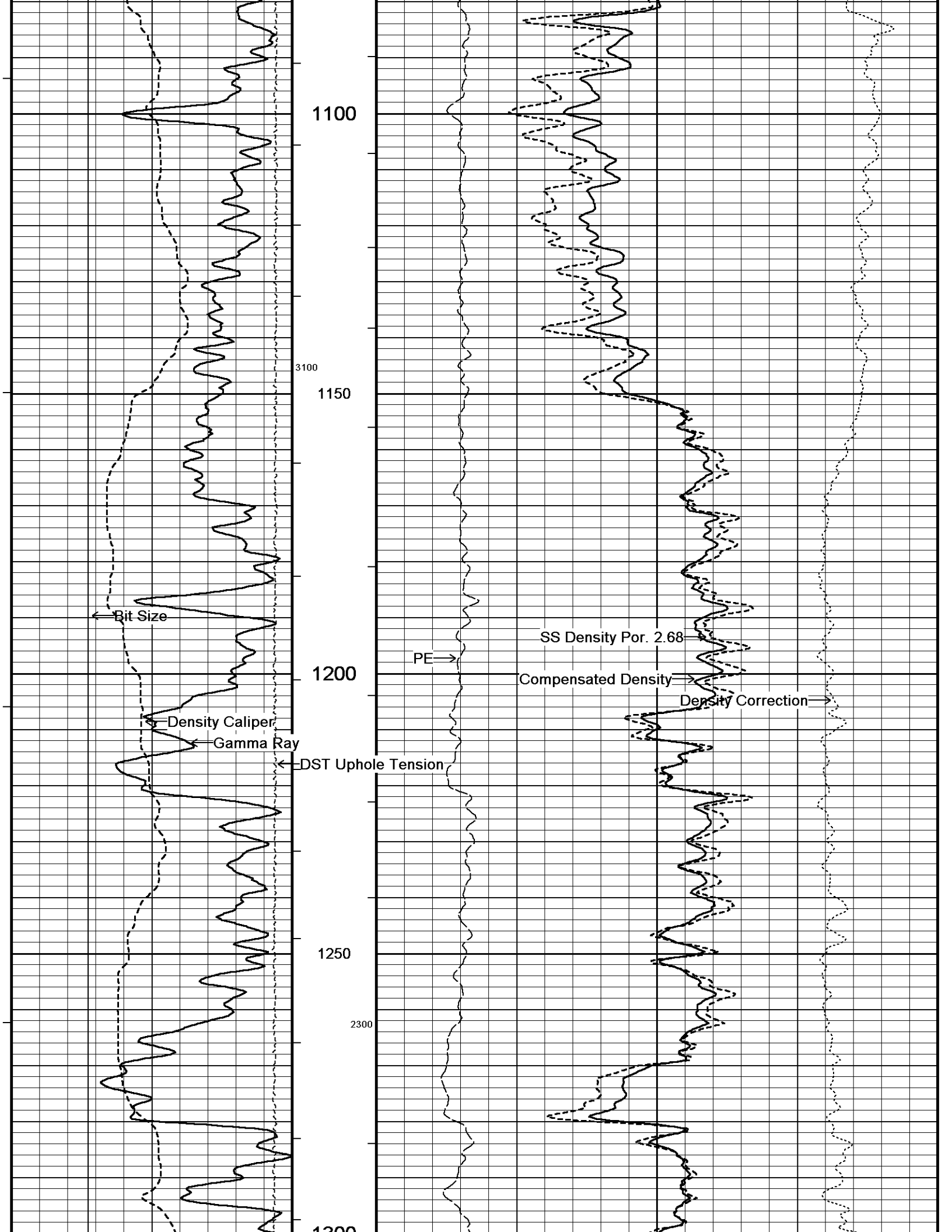


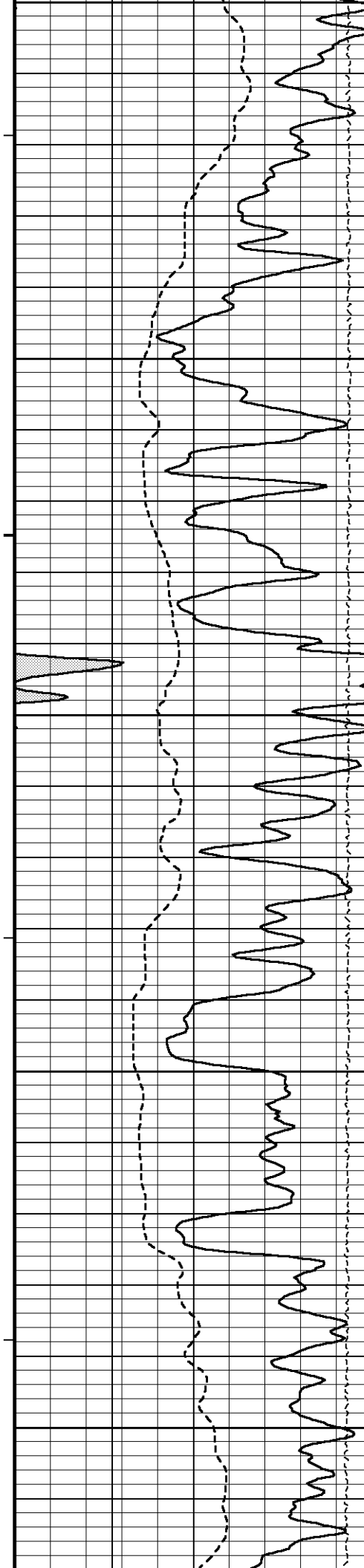


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Depth Based Data - Maximum Sampling Increment 10.0cm			Plotted on 19-DEC-2011 17:49
Filename: C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-...\GGU Kaufman 32D-30-691 Main.dta			Recorded on 19-DEC-2011 14:45
Filename: C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-...\GGU Kaufman 32D-30-691 Repeat.dta			Recorded on 19-DEC-2011 14:29
System Versions: Logged with 12.02.4401 Plotted with 12.02.4401			
<div>↑OVERLAY↑</div>			

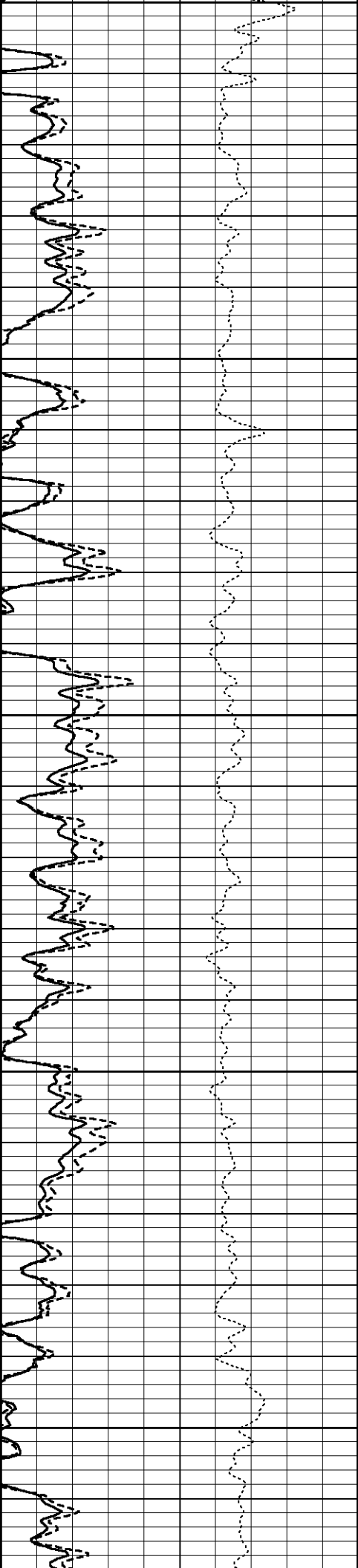
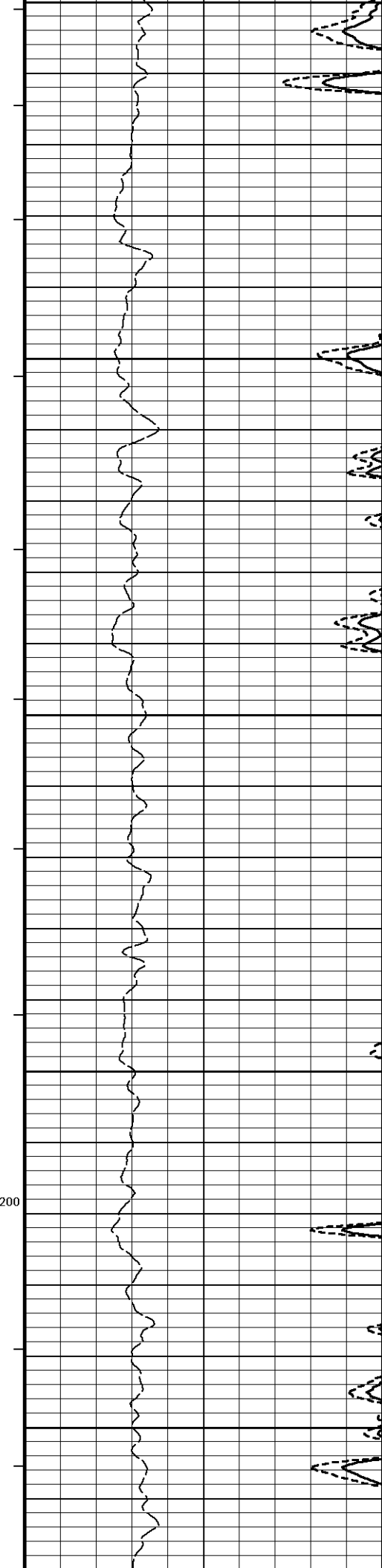


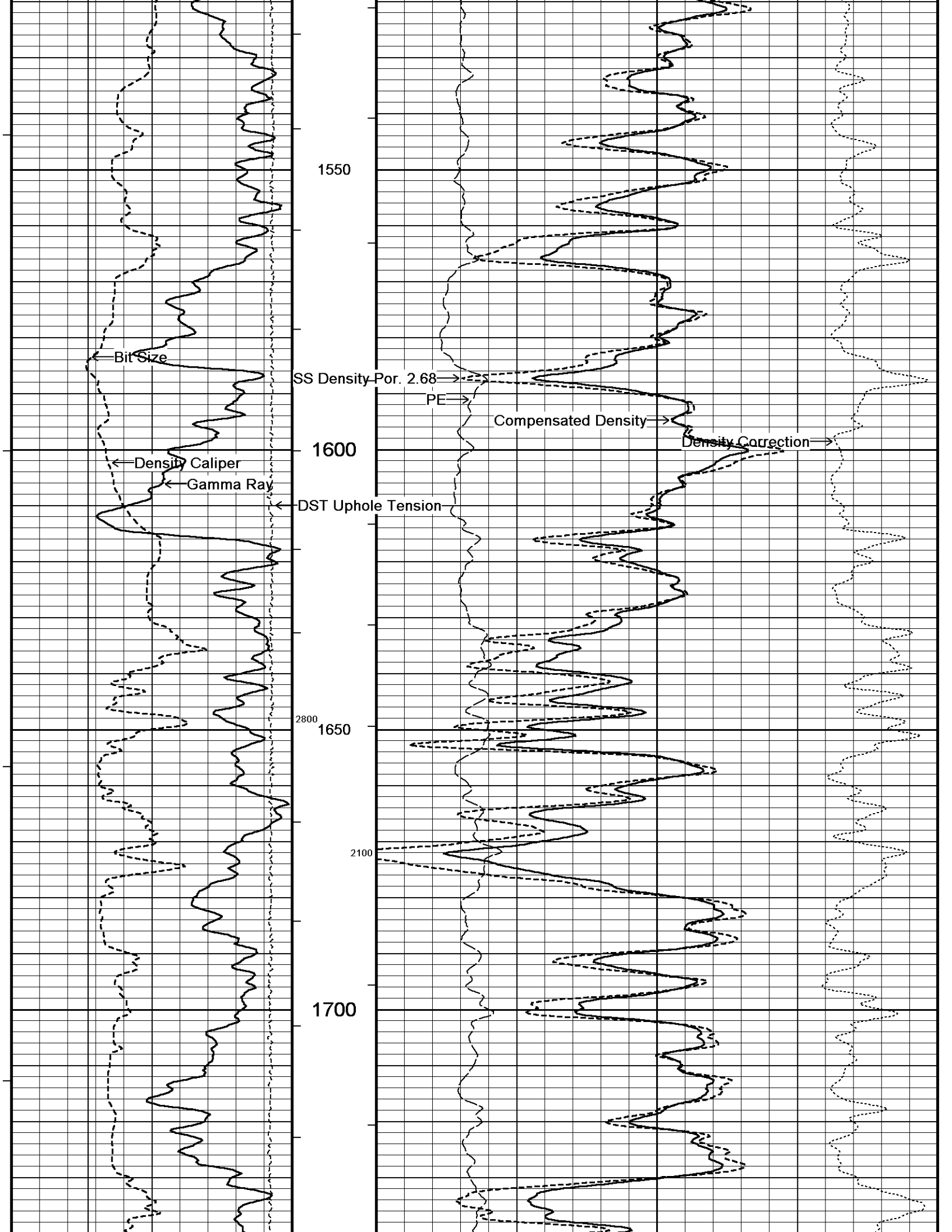


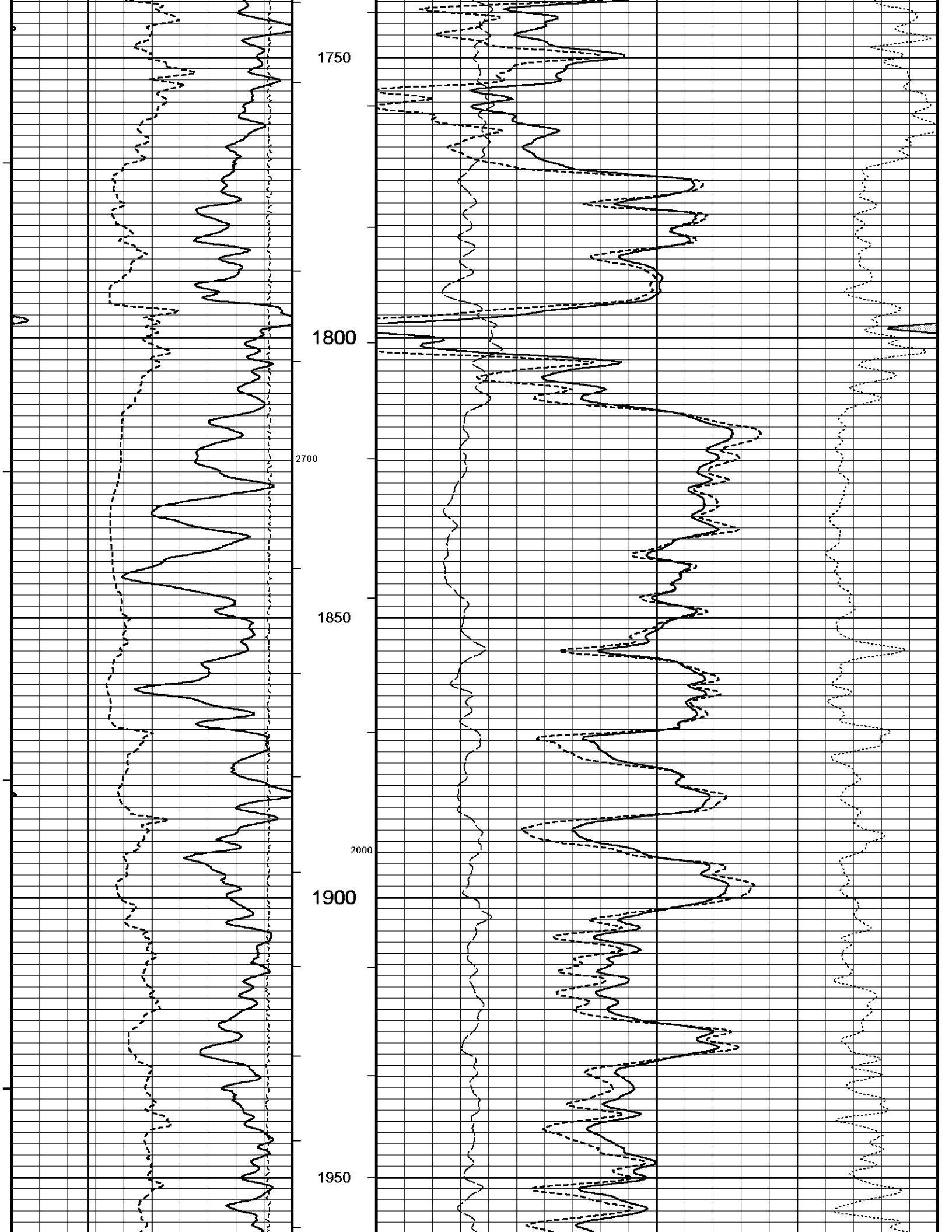


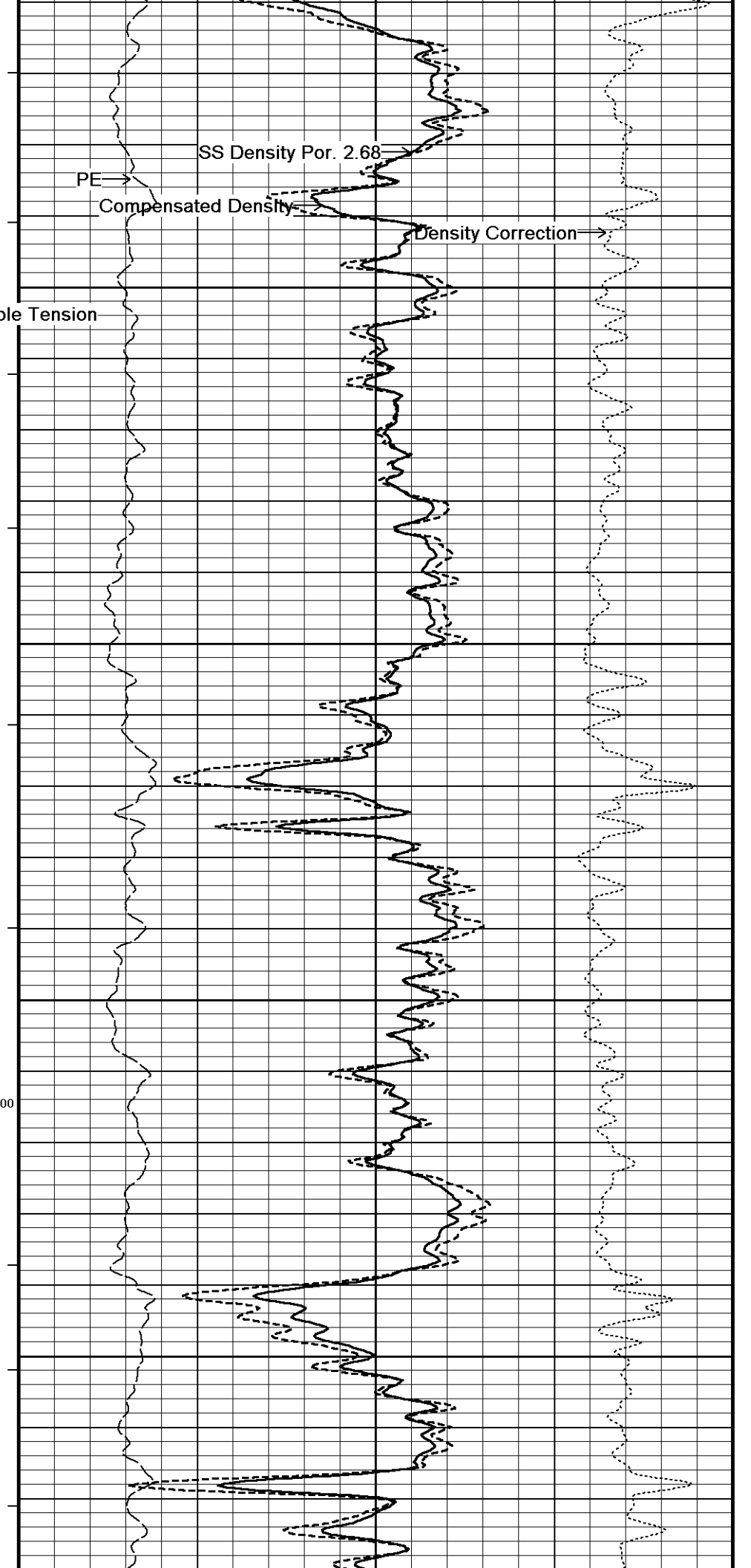
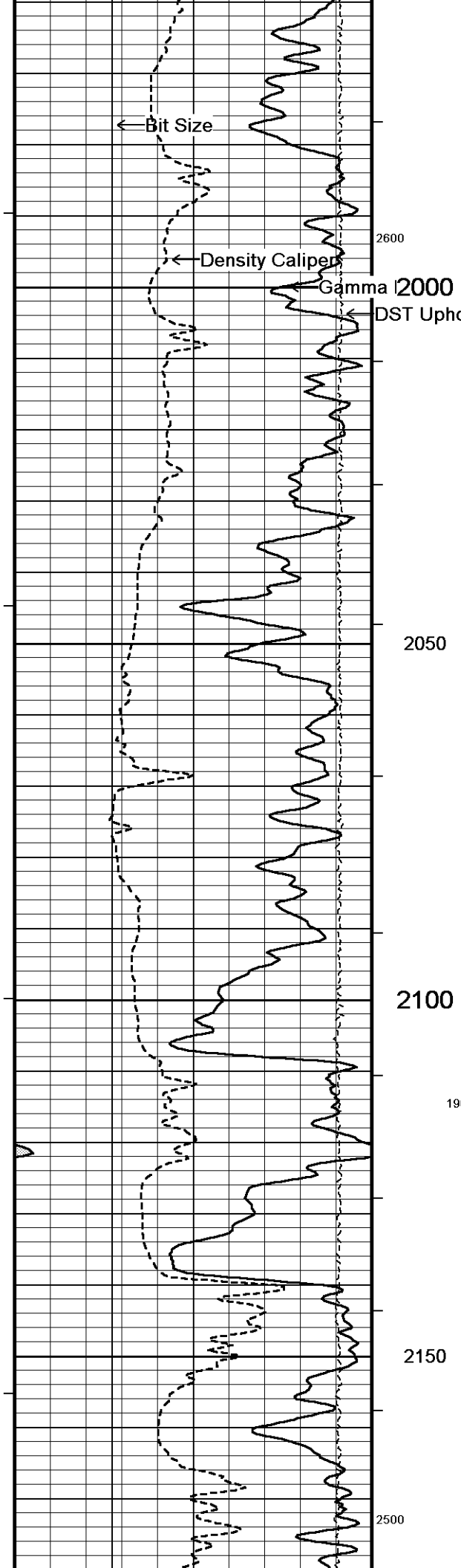


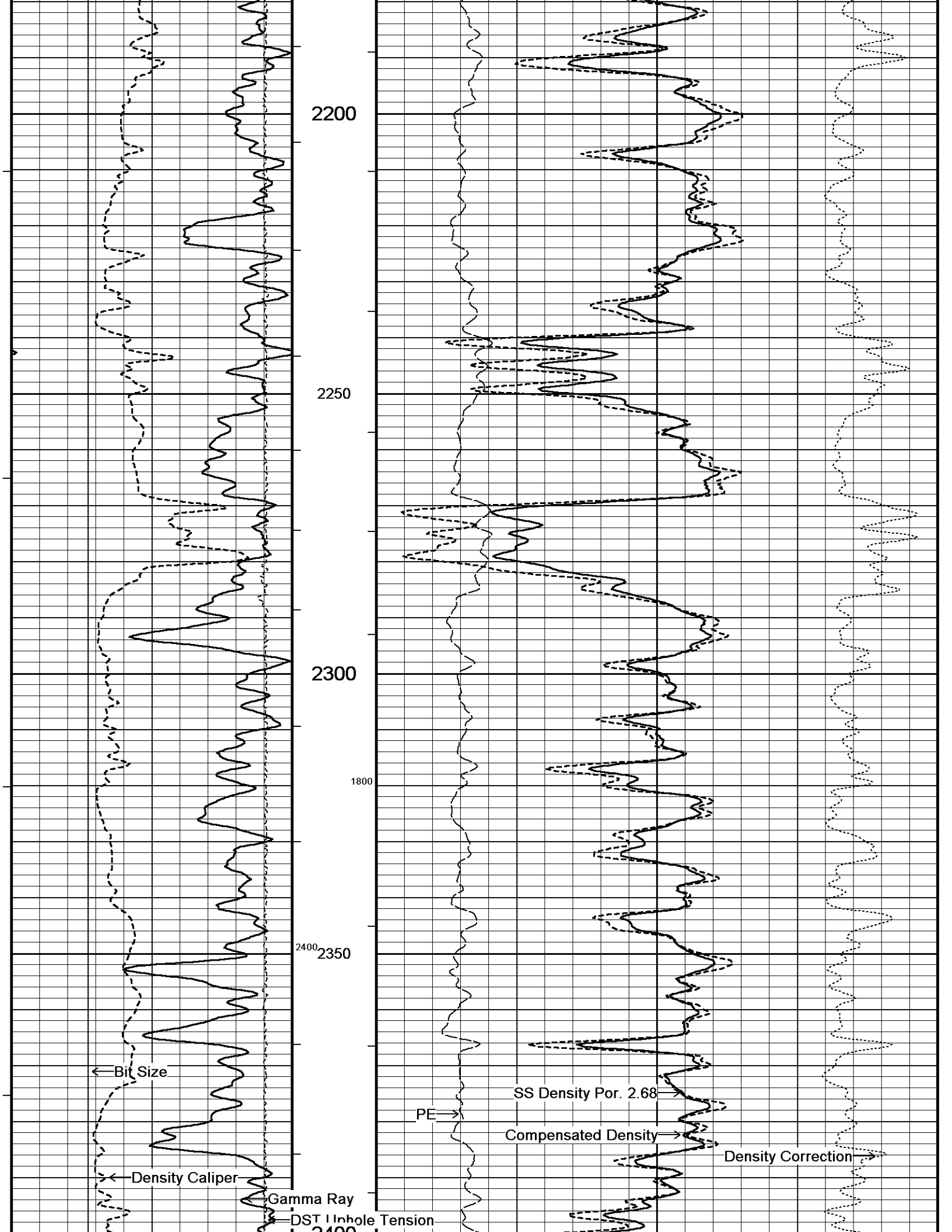
1500
3000
1350
1400
1450
2200
2900
1500

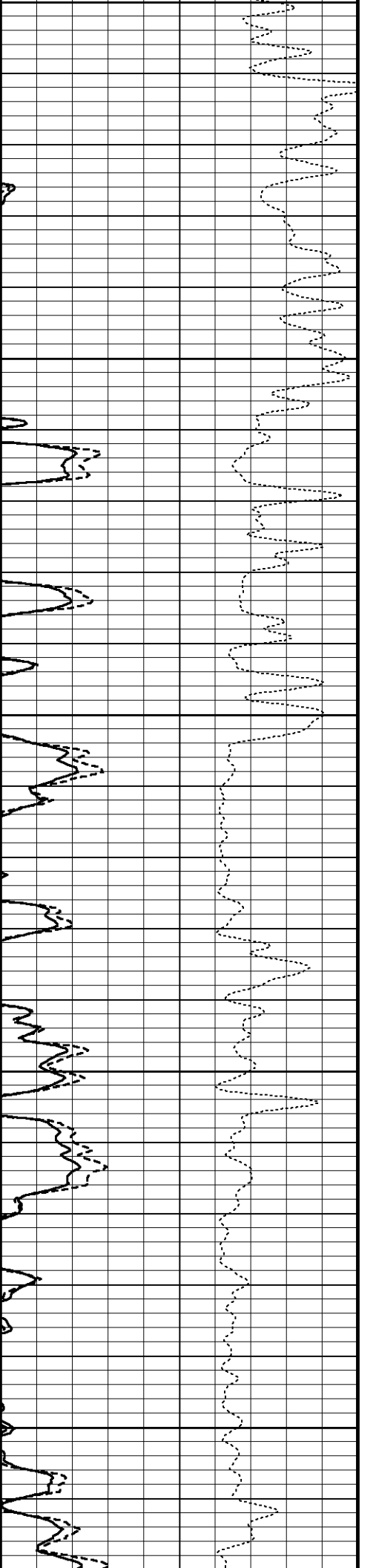
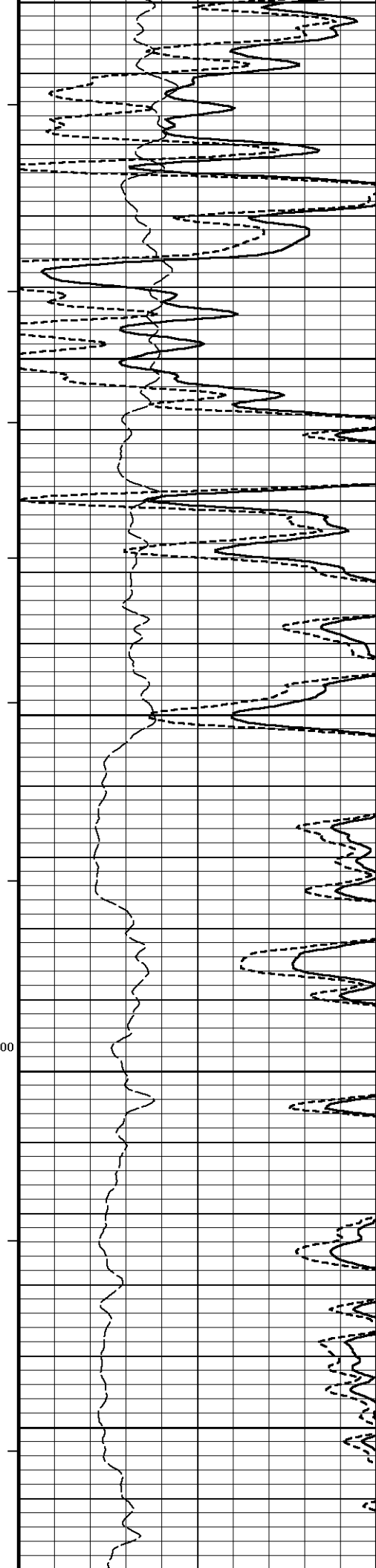
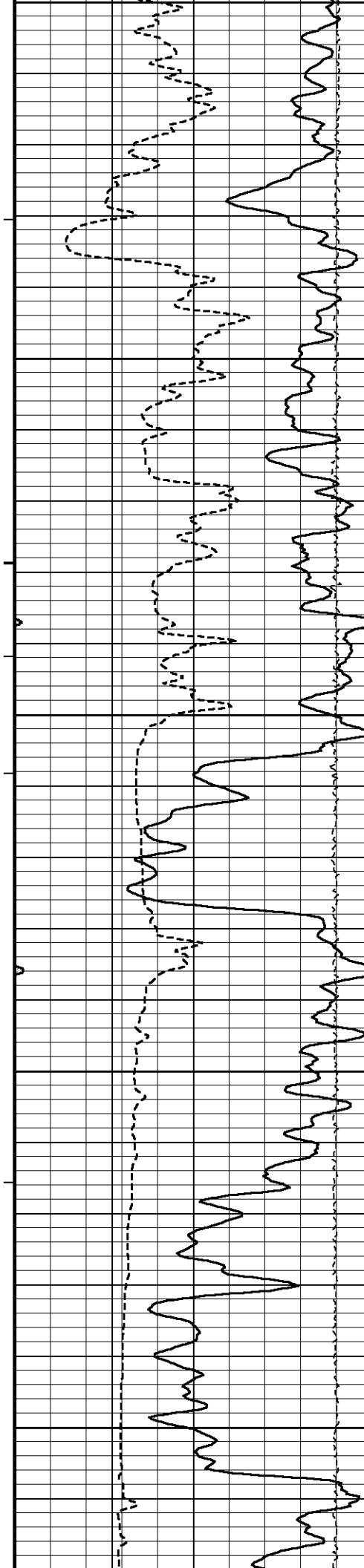


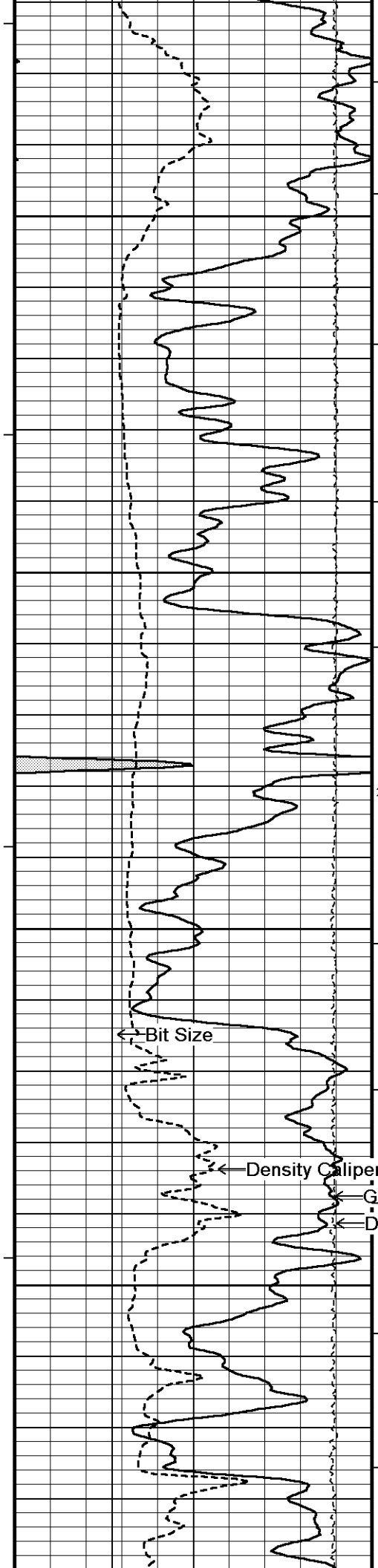




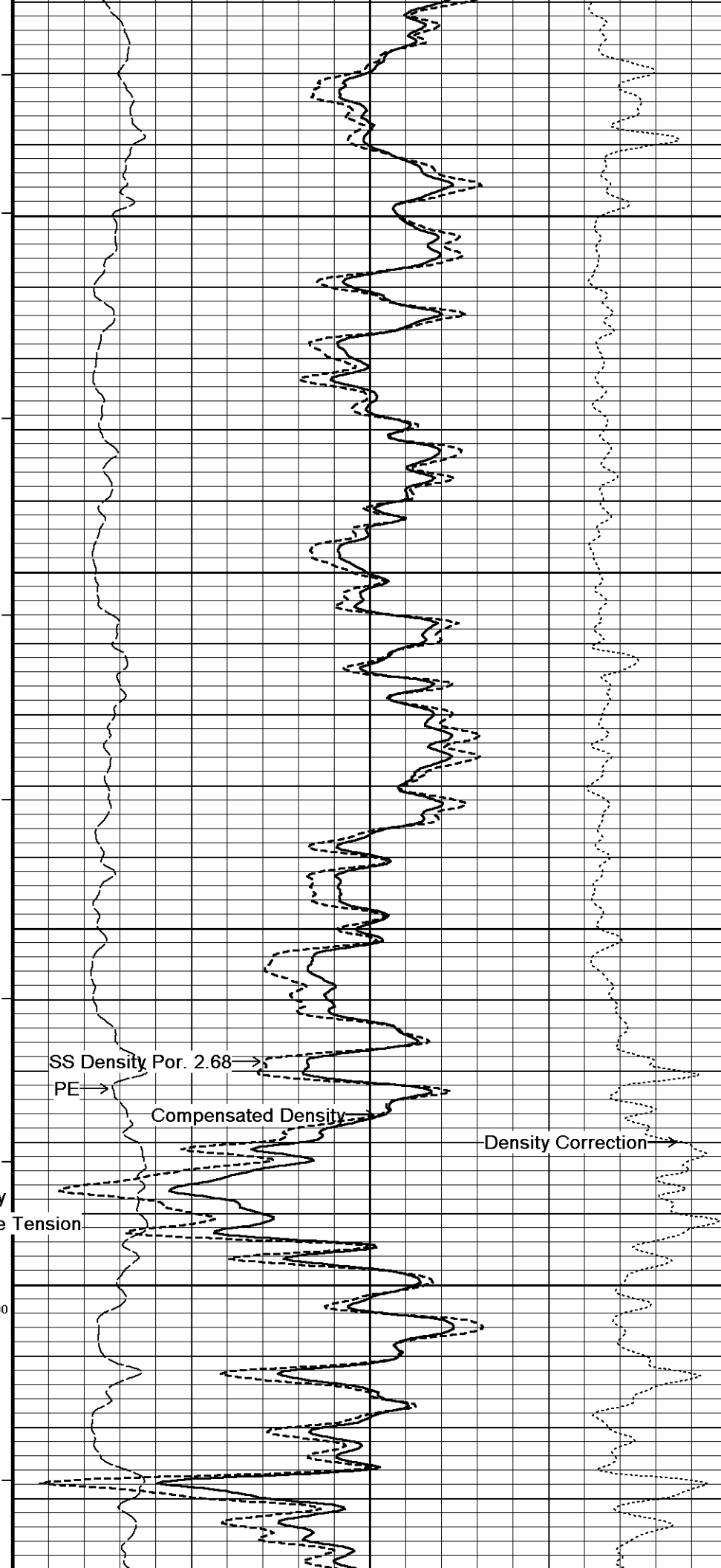




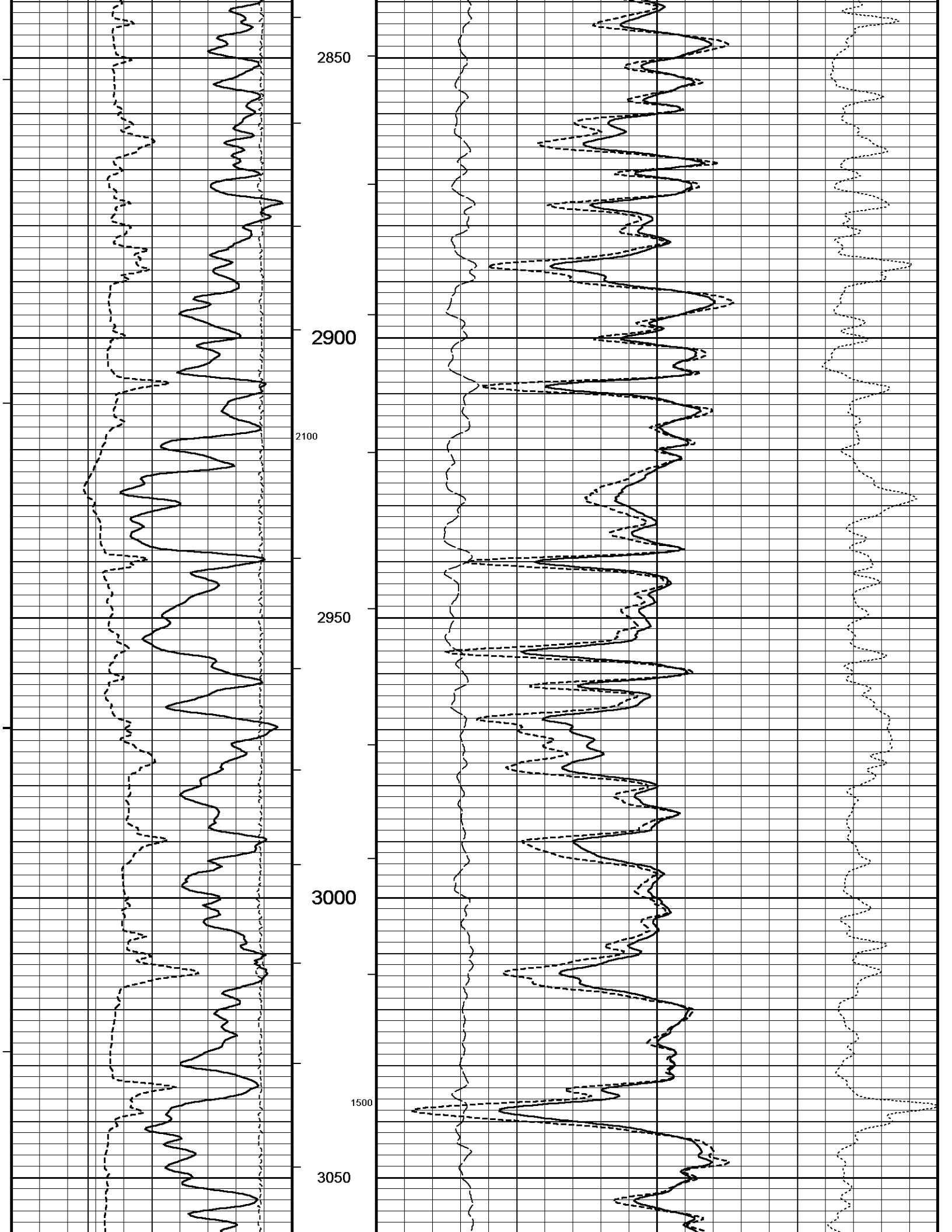


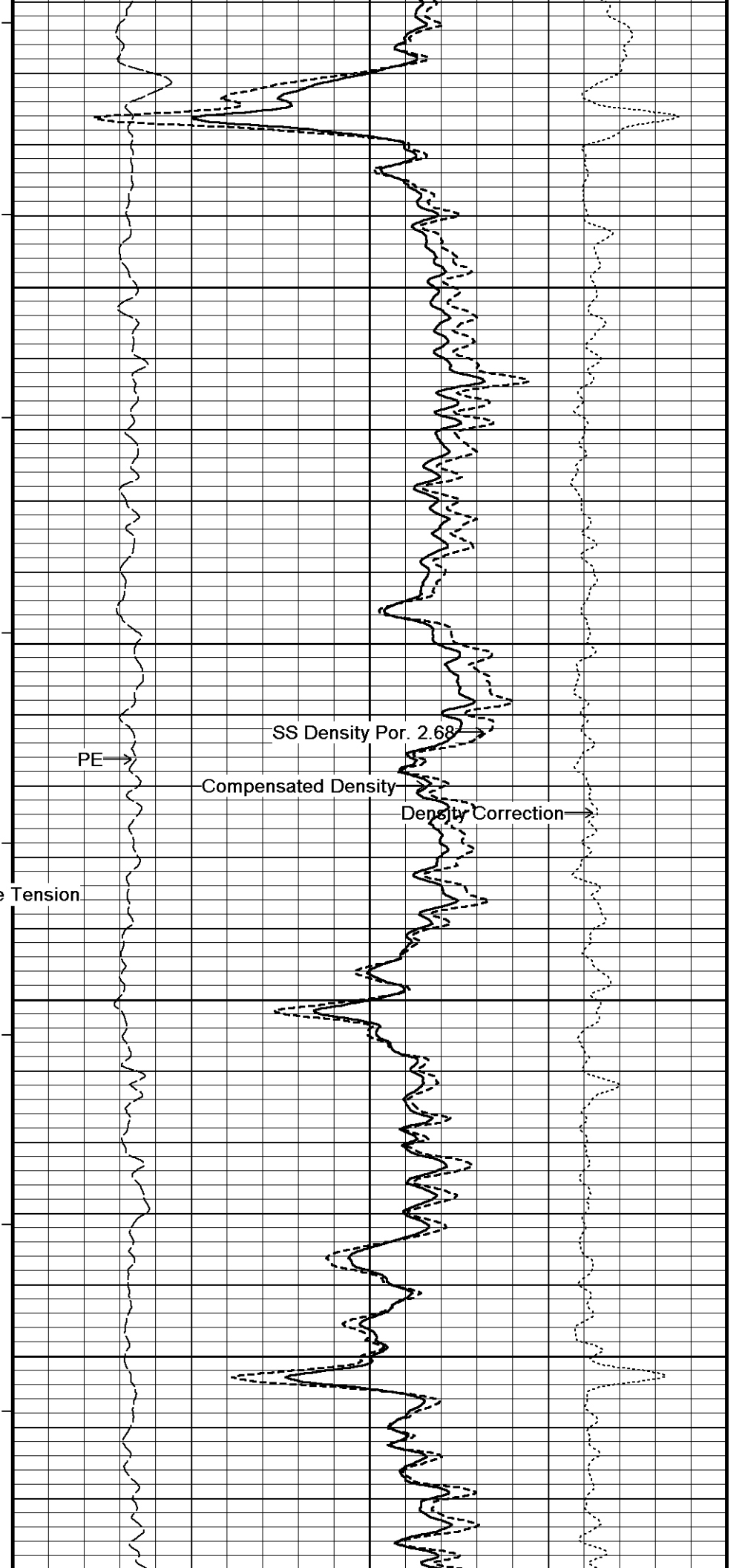
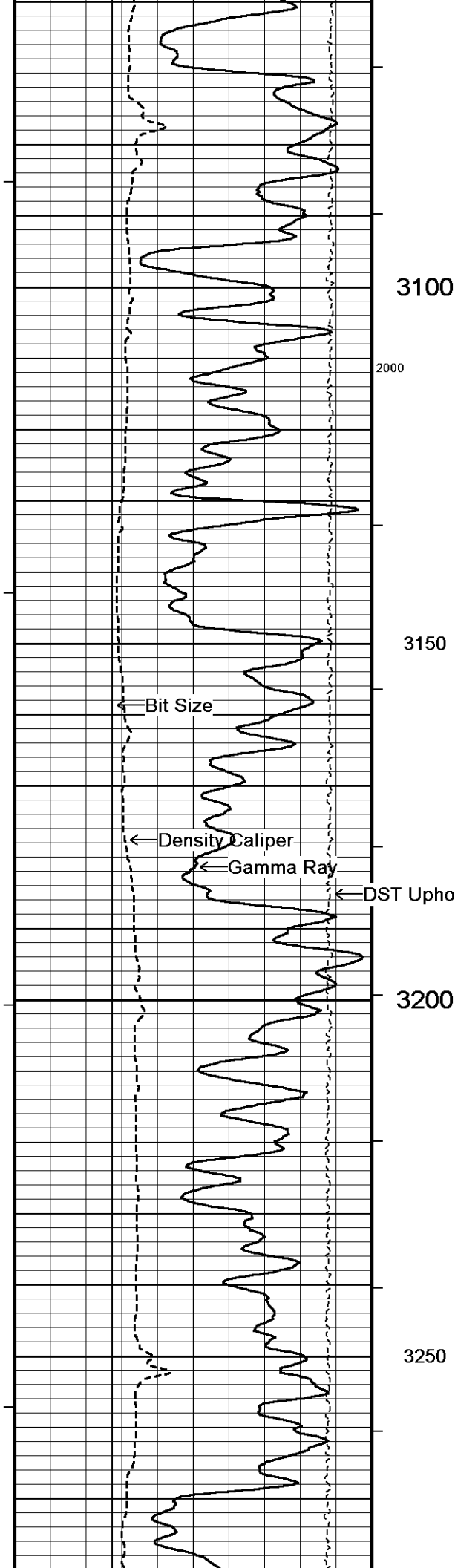


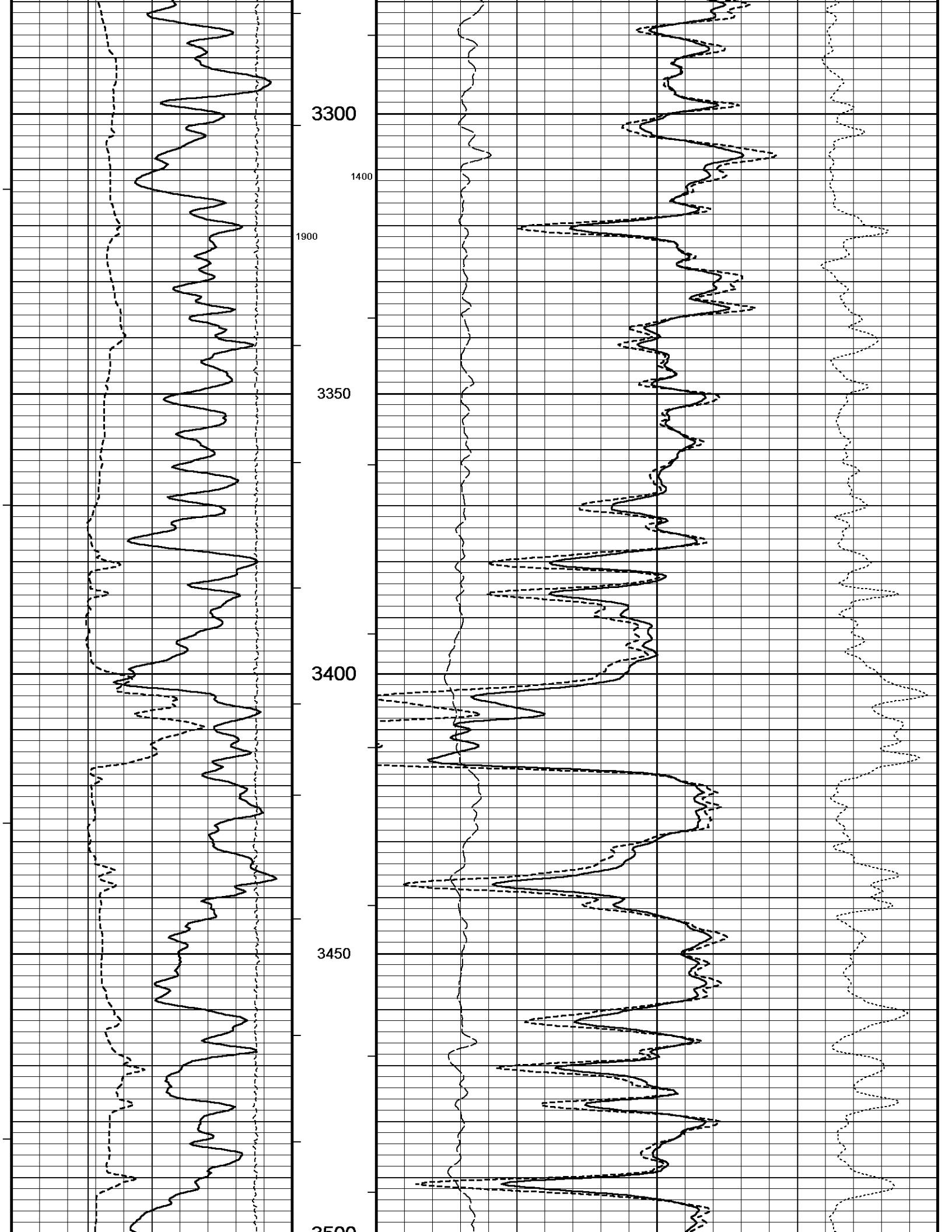
2650
2700
2750
2800
1600

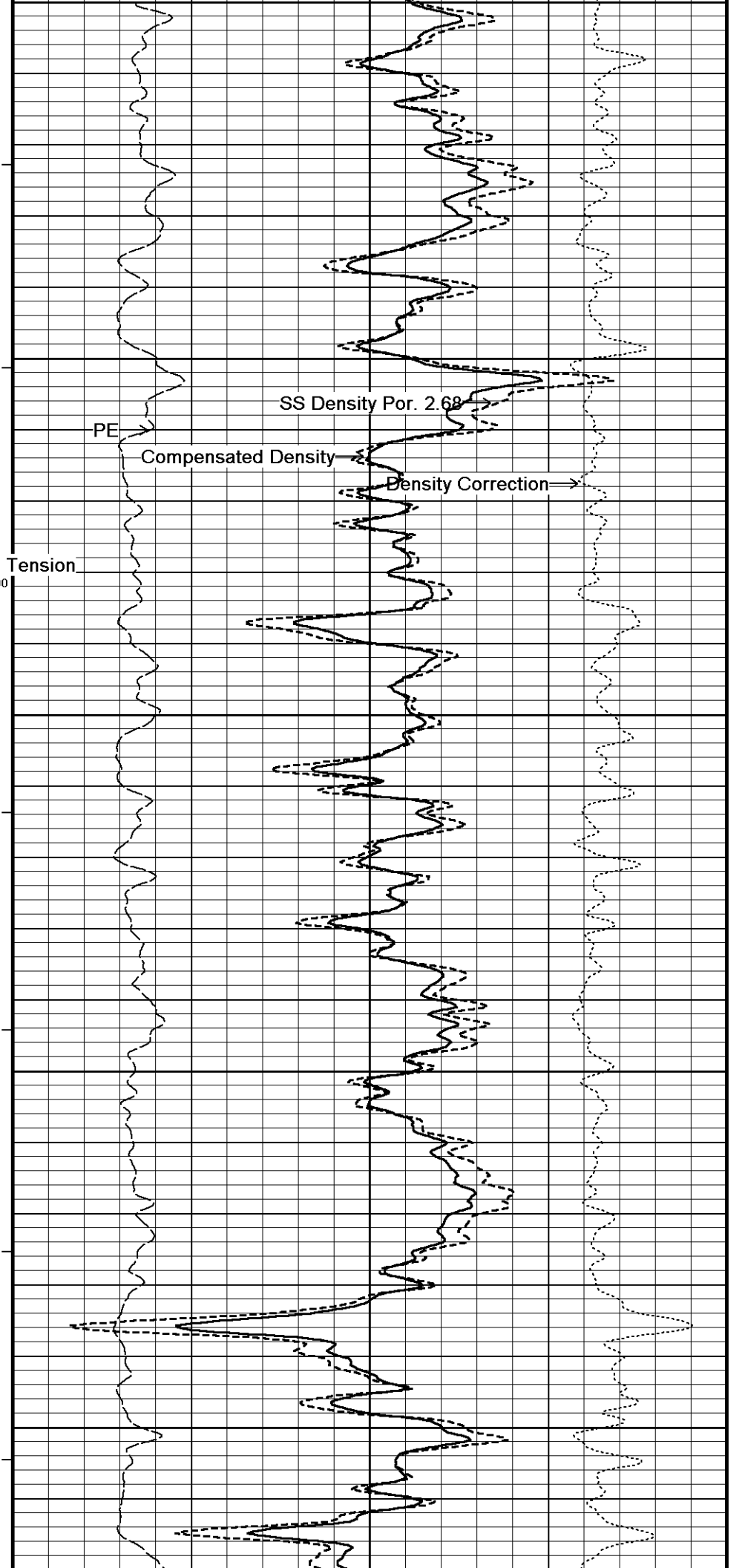
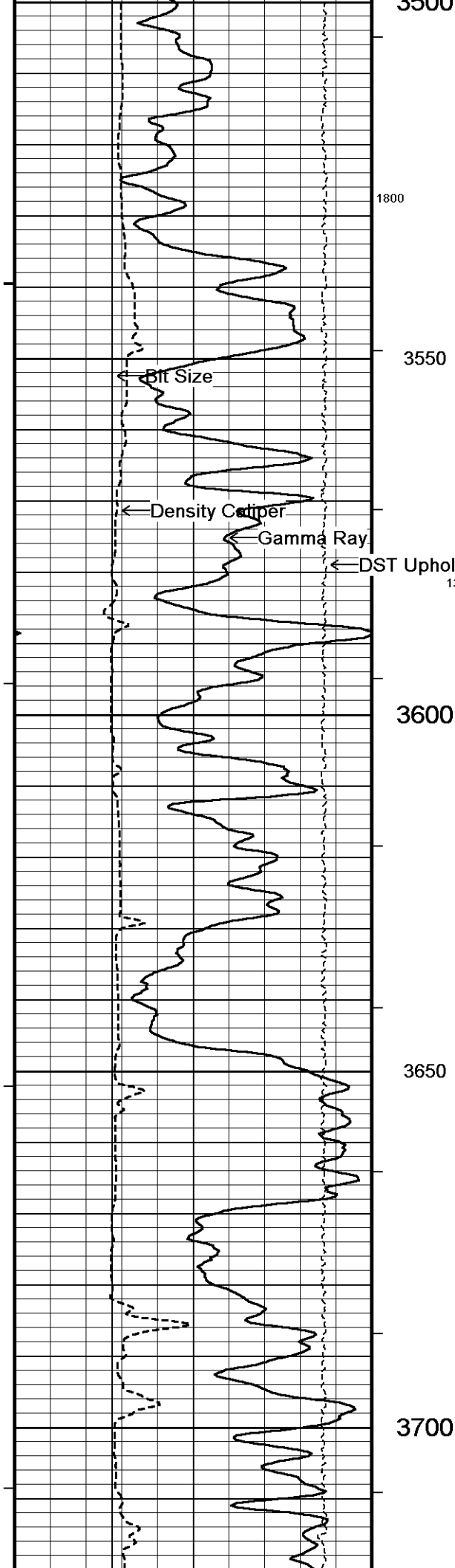


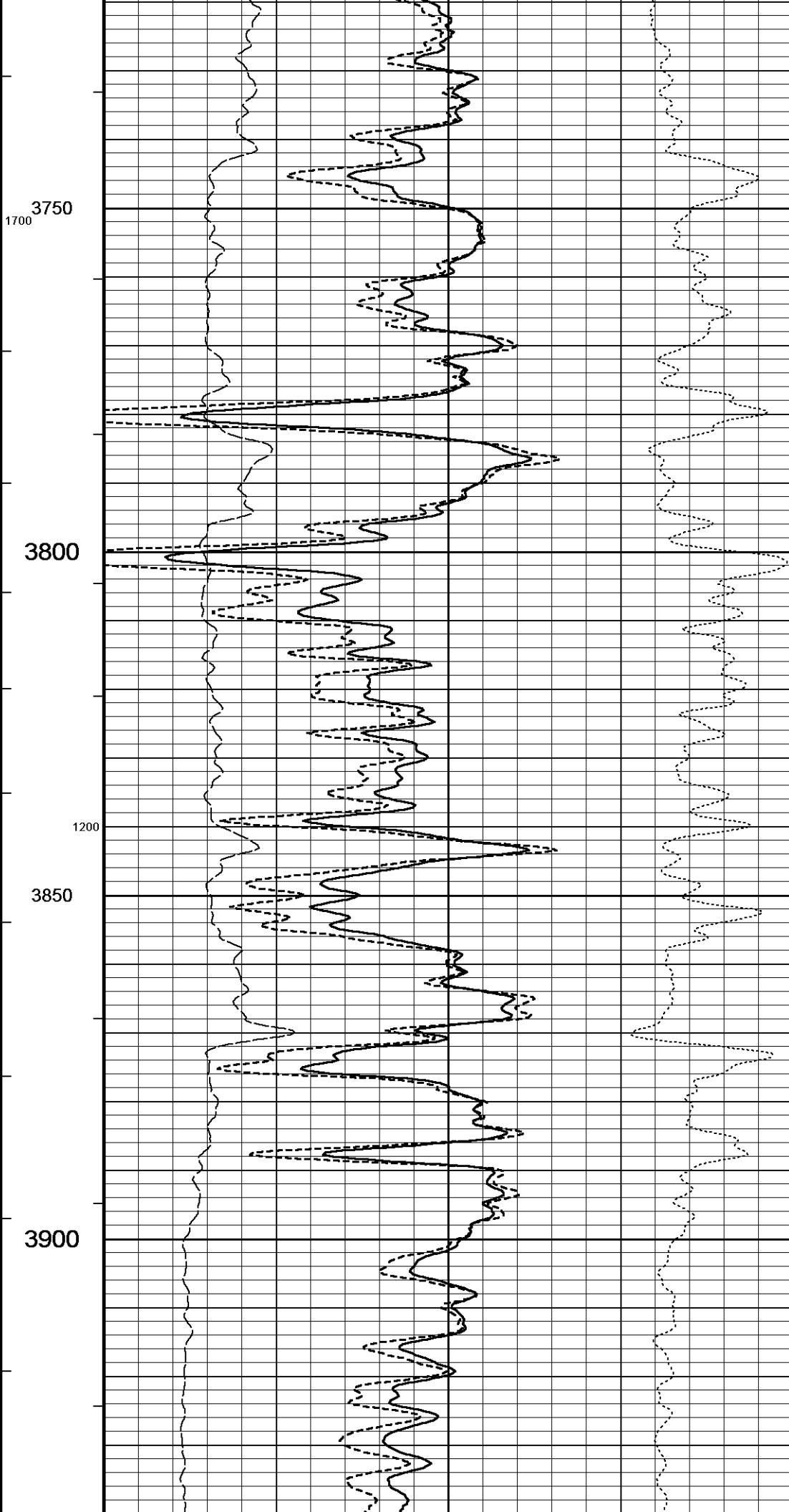
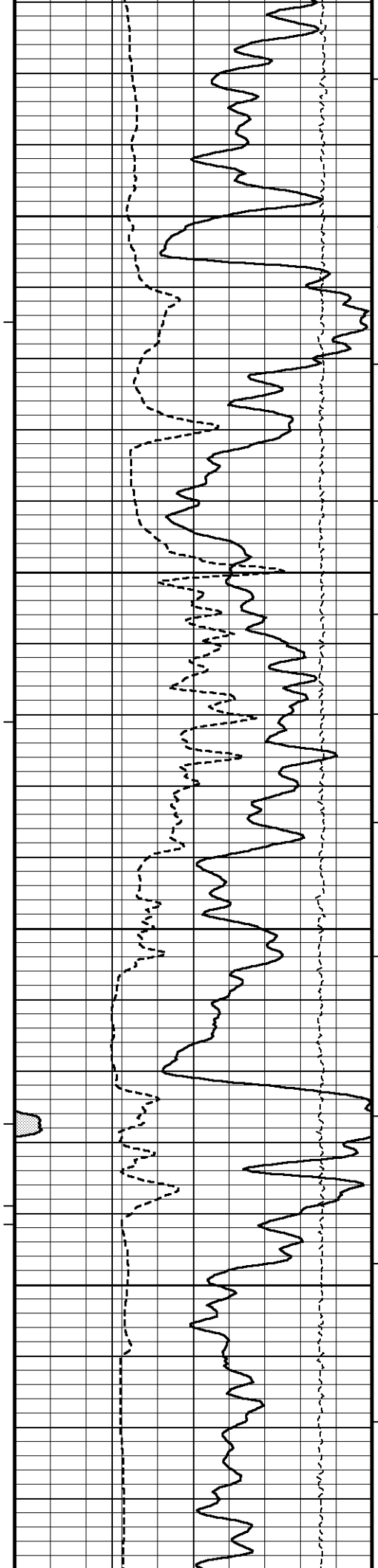
SS Density Por. 2.68
PE
Compensated Density
Density Correction

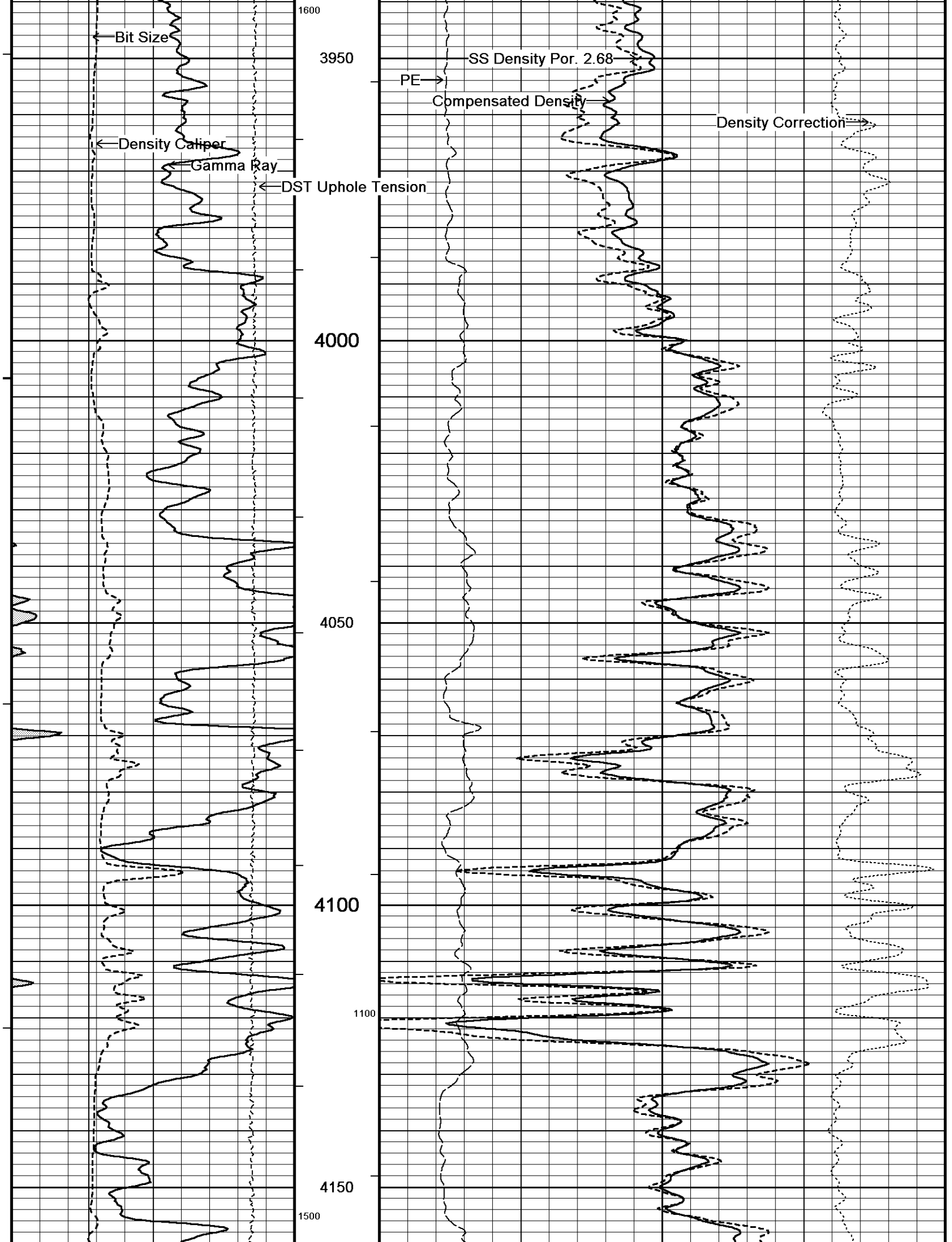


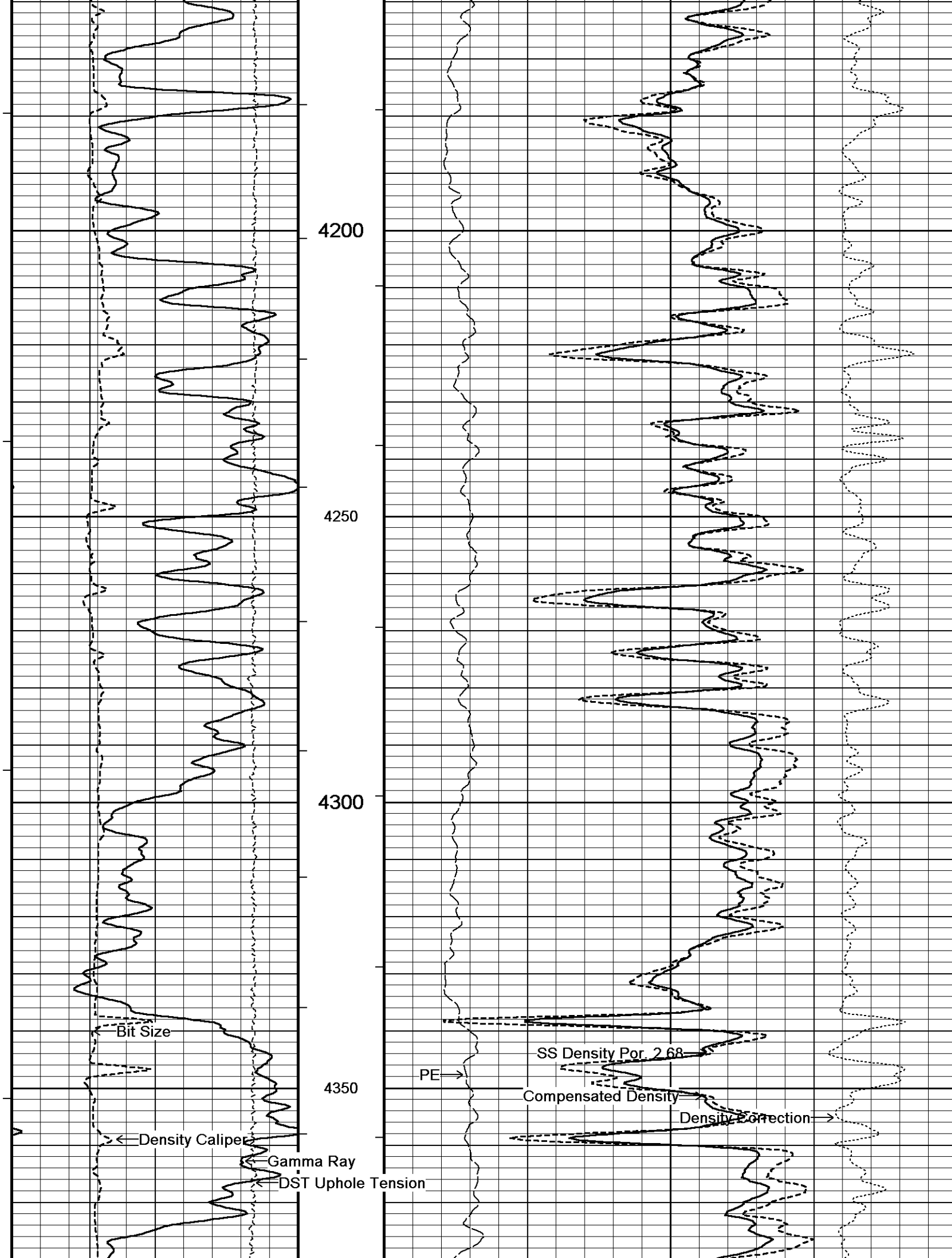


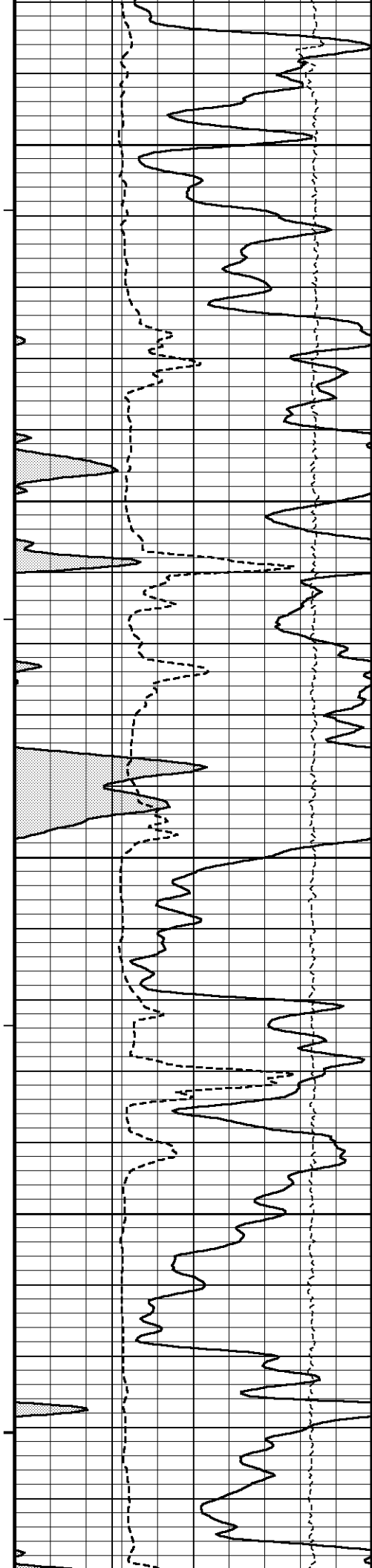




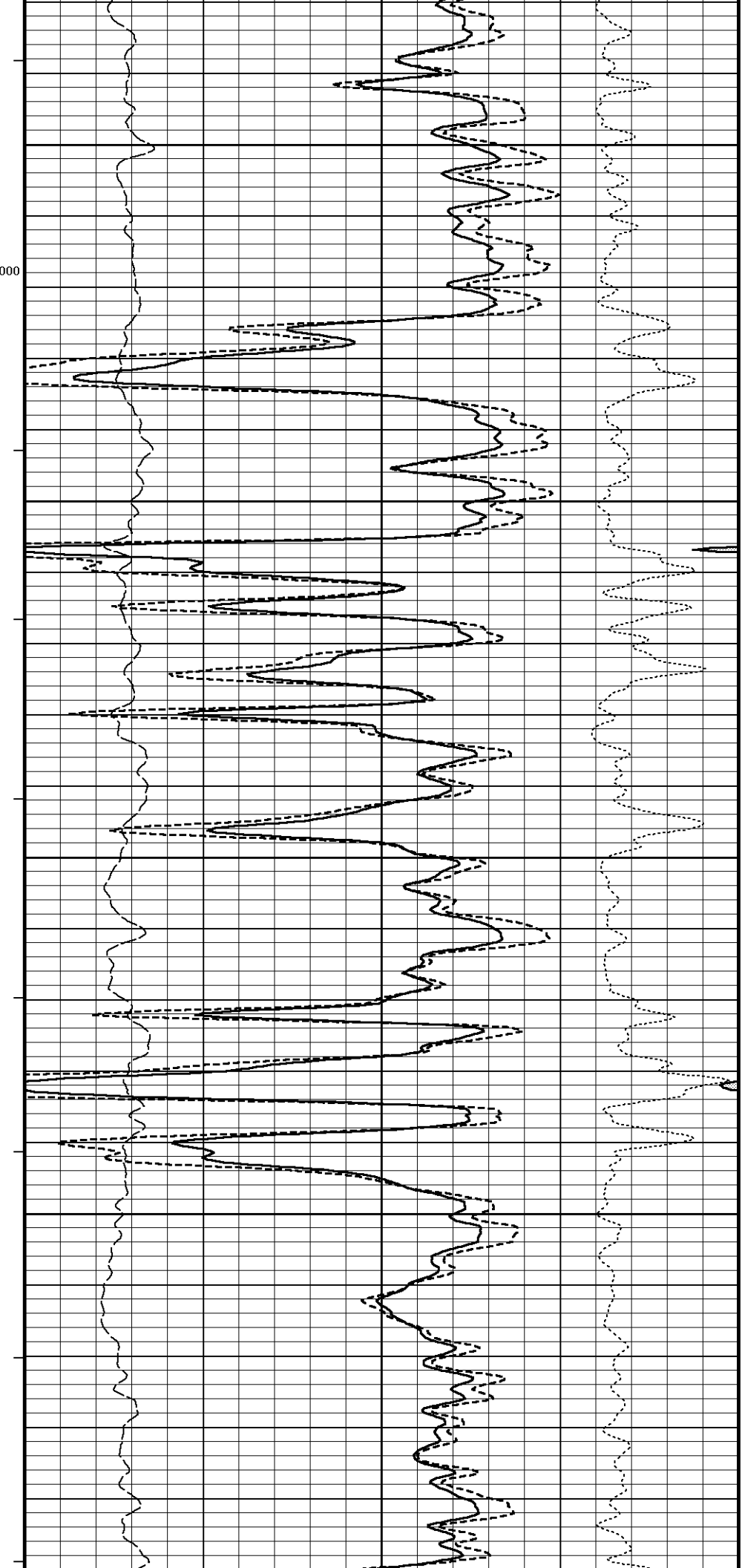


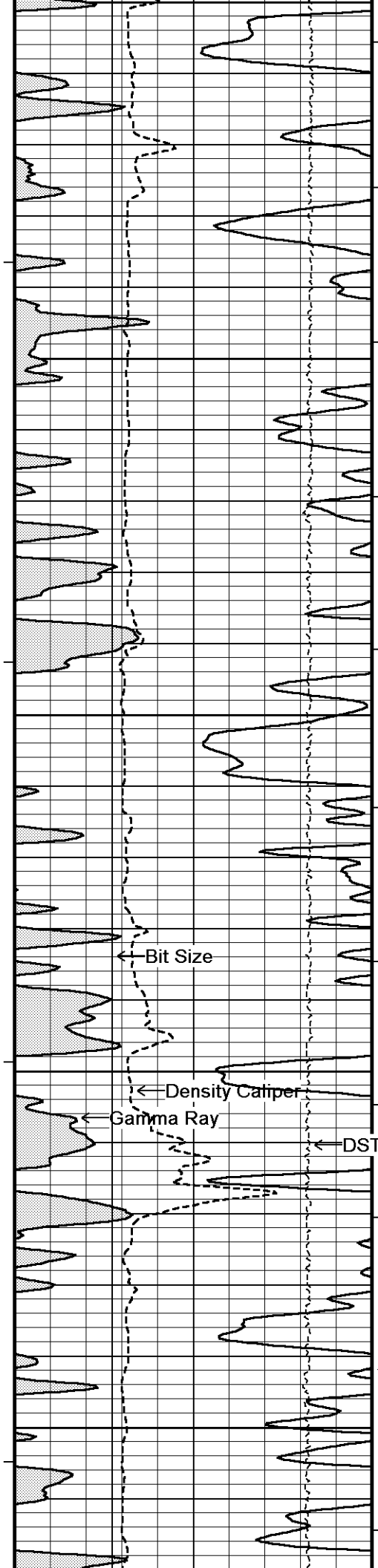






1400
4400
1000
4450
4500
4550
1300
4600





4600

4650

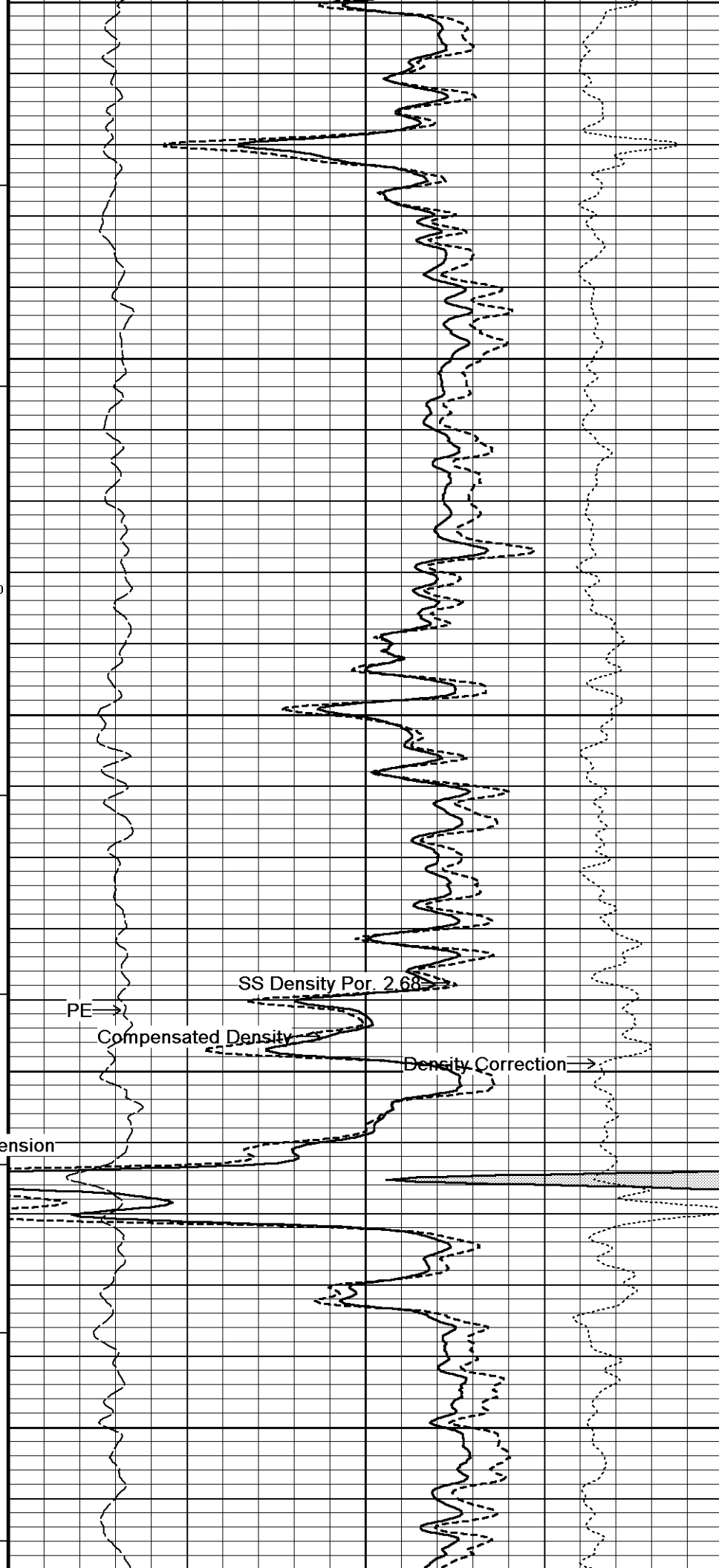
900

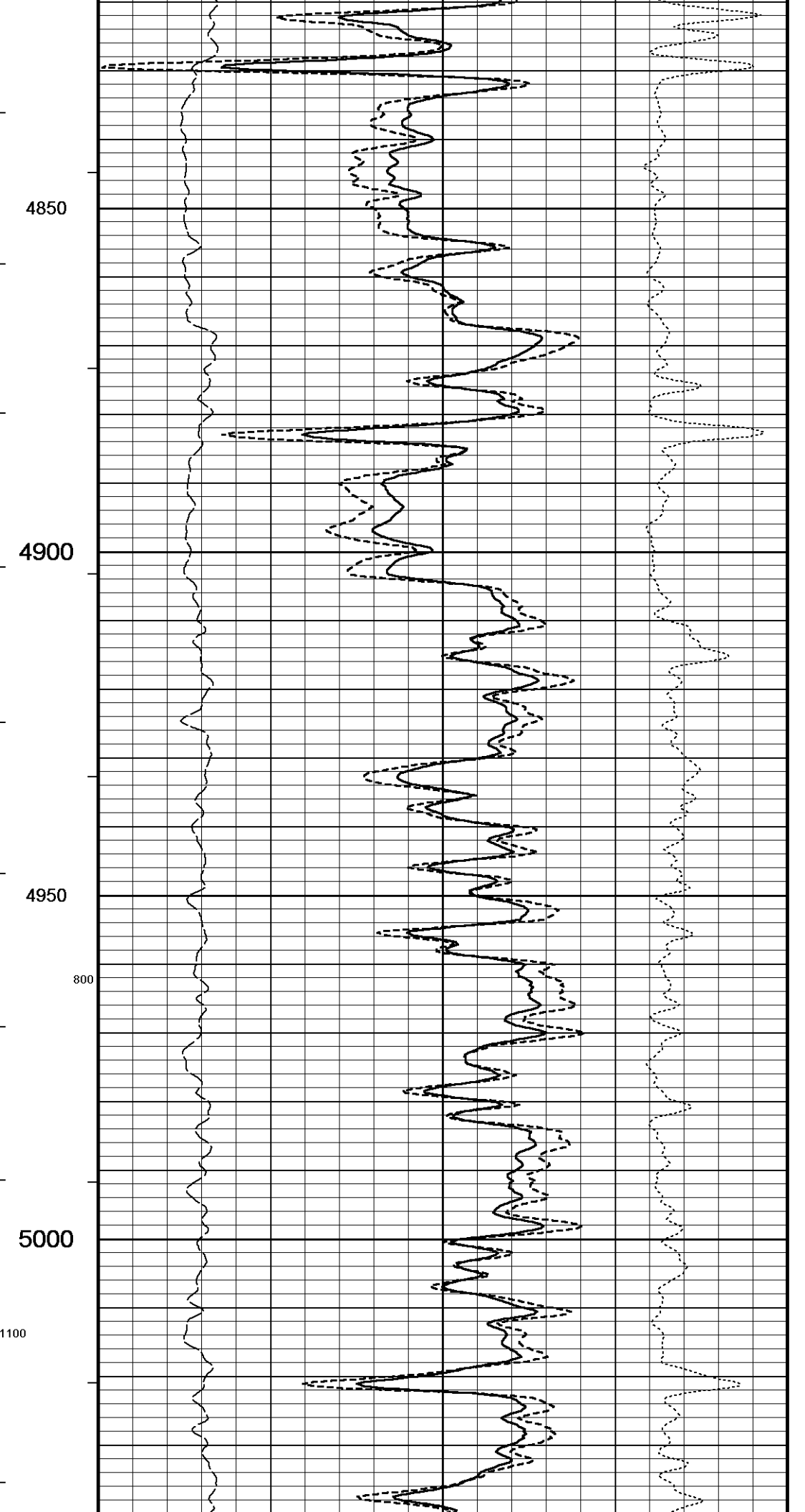
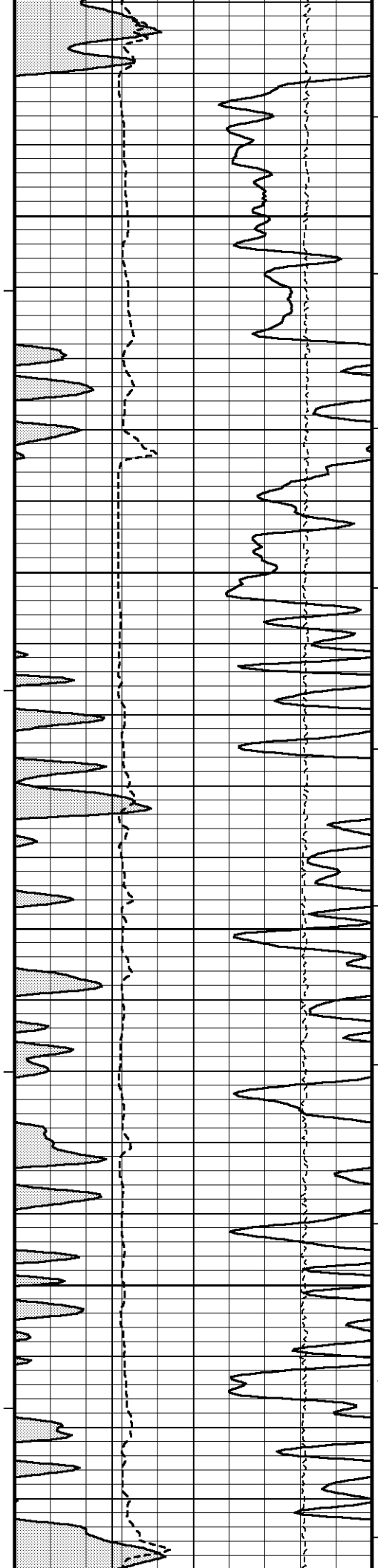
4700

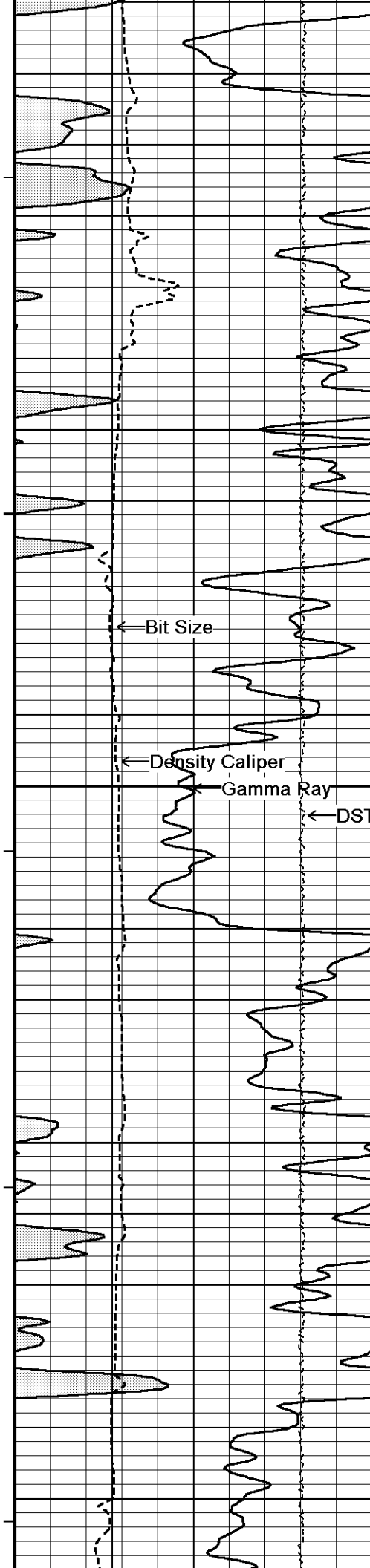
4750

1200

4800







5050

5100

5150

5200

1000

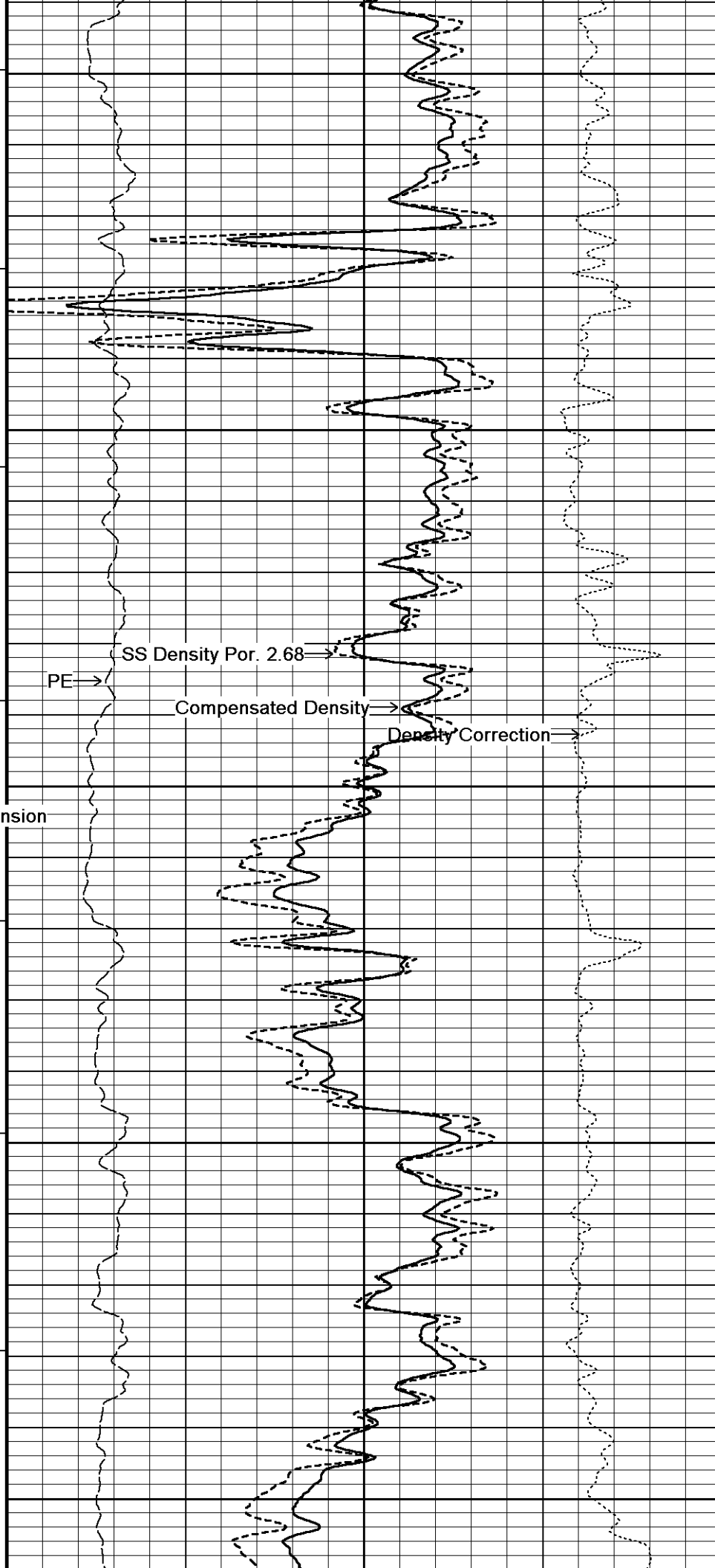
5250

← Bit Size

← Density Caliper

← Gamma Ray

← DST Uphole Tension

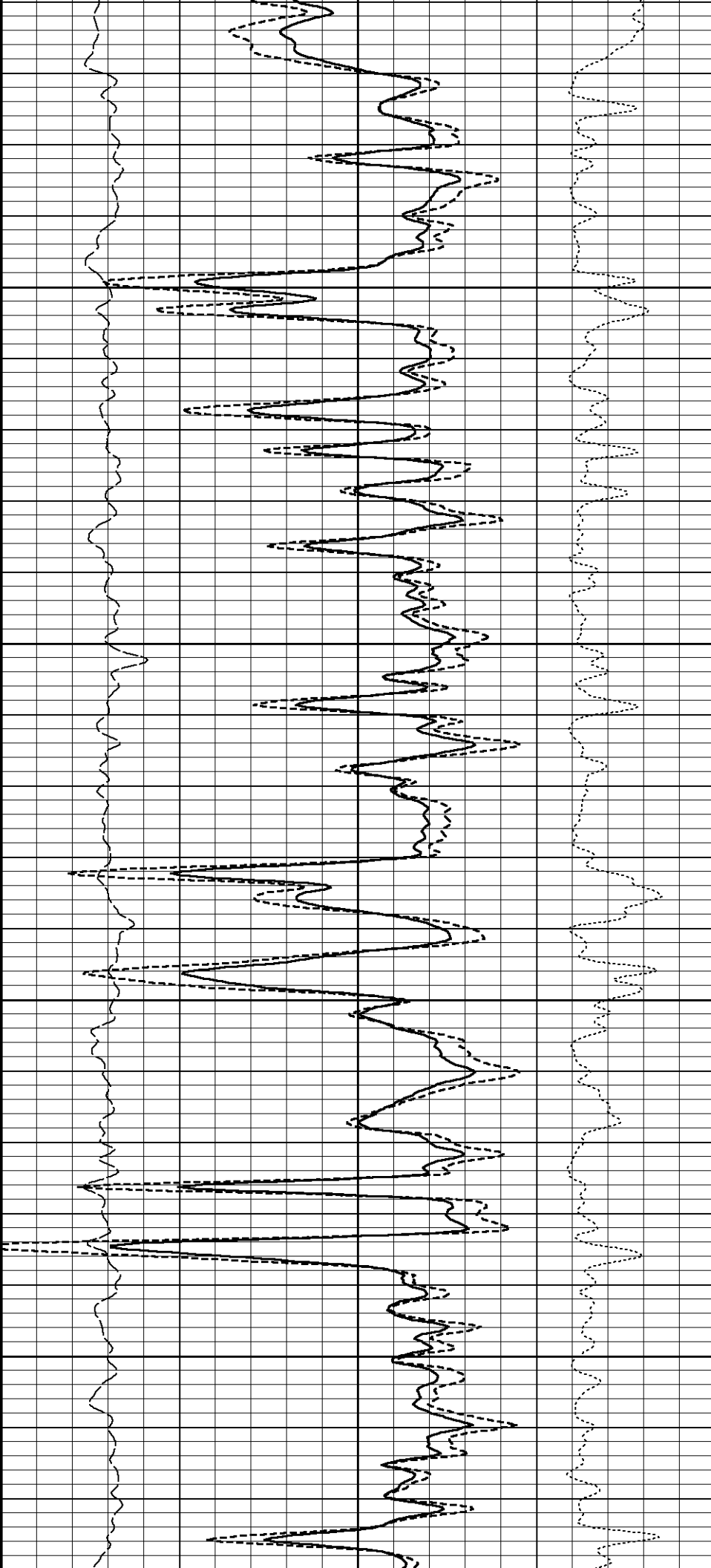
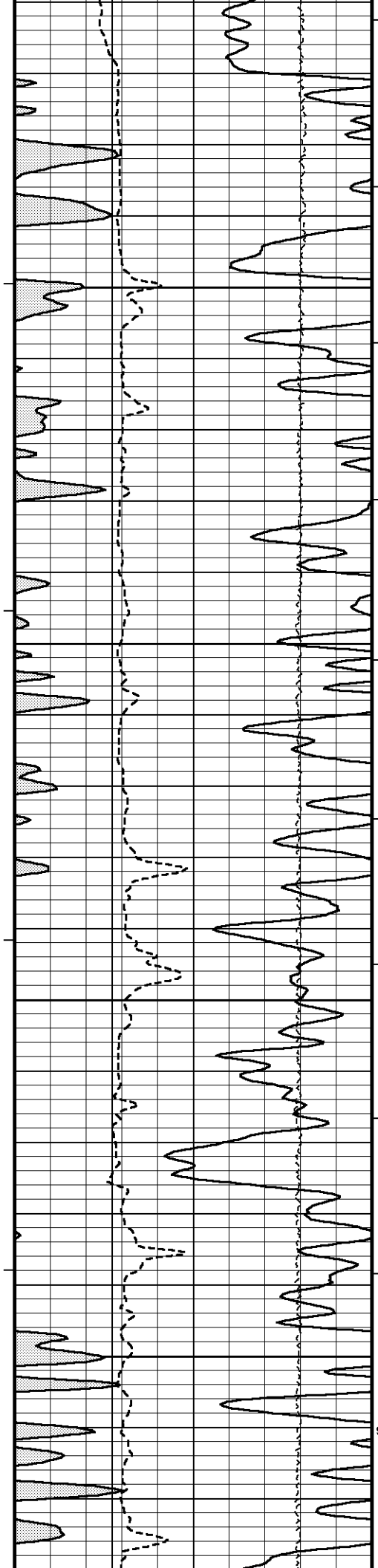


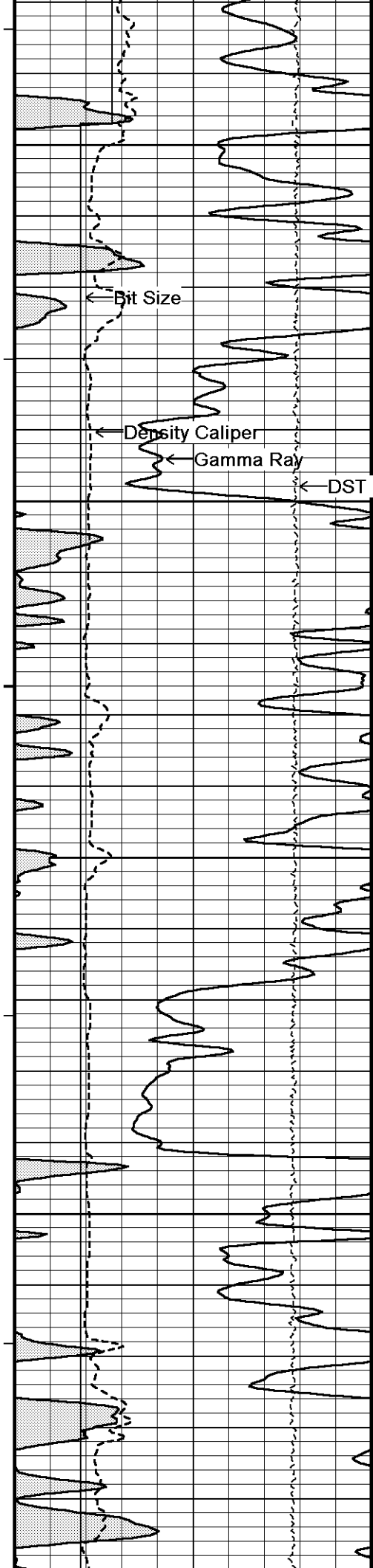
PE →

SS Density Por. 2.68 →

Compensated Density →

Density Correction →





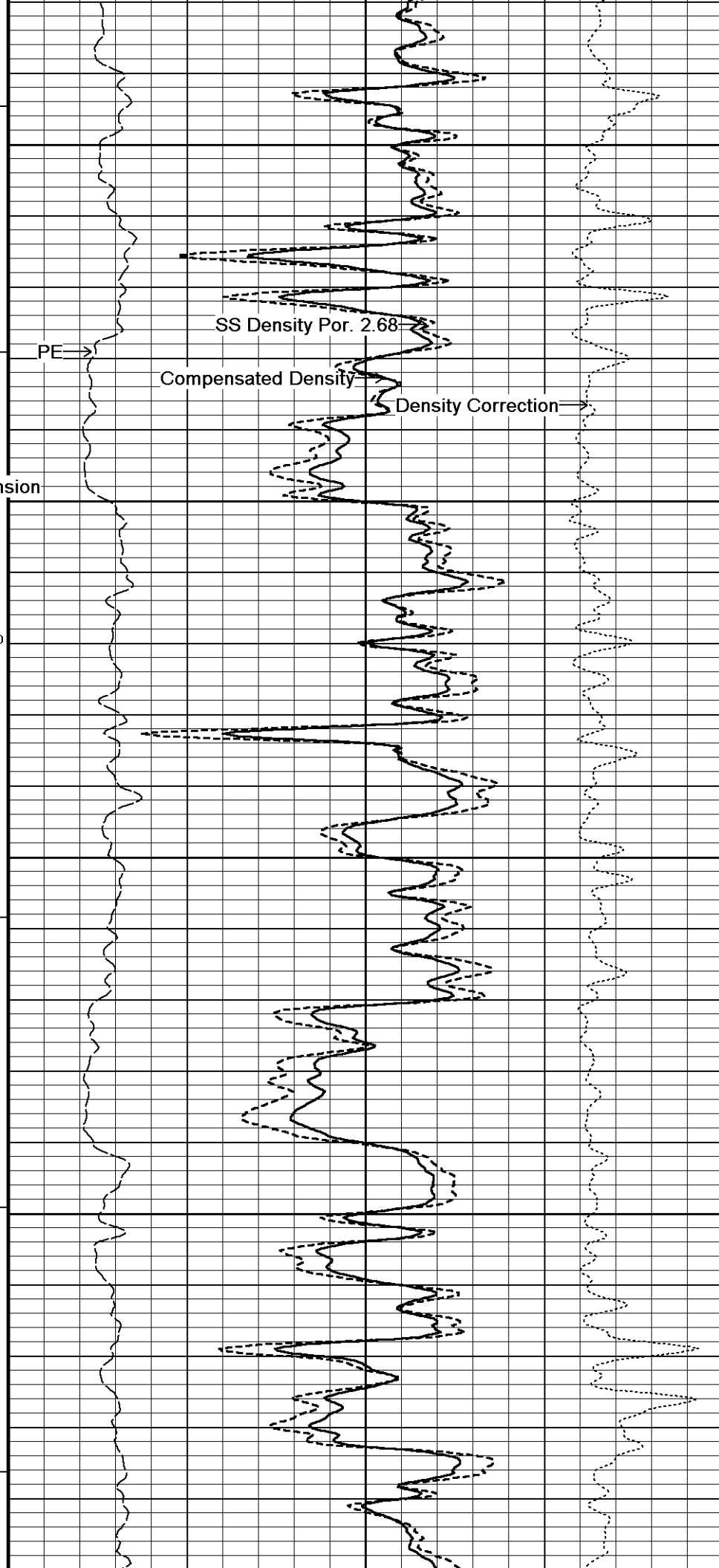
5500

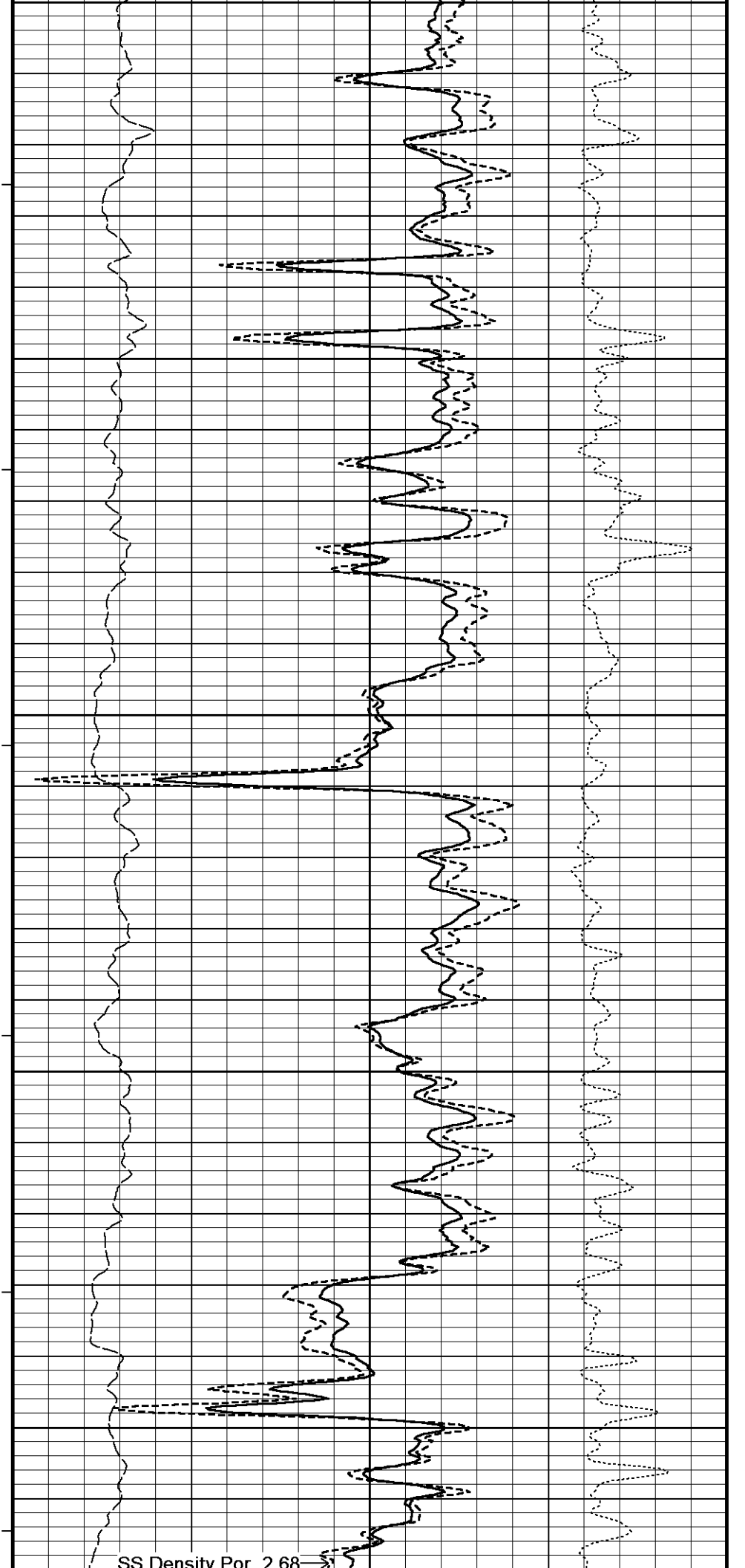
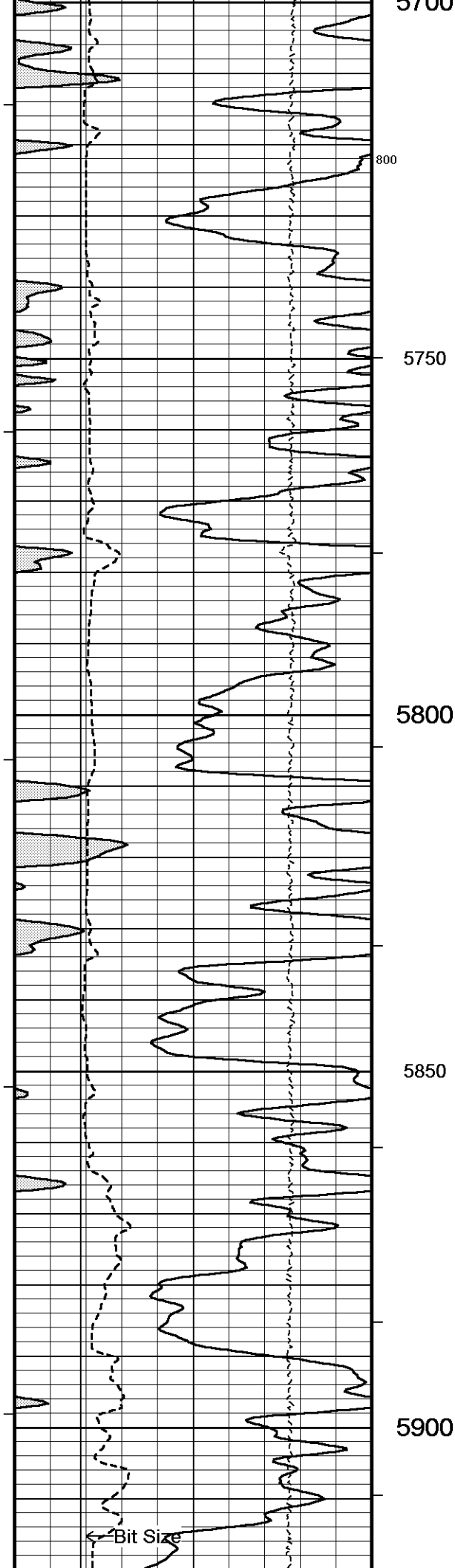
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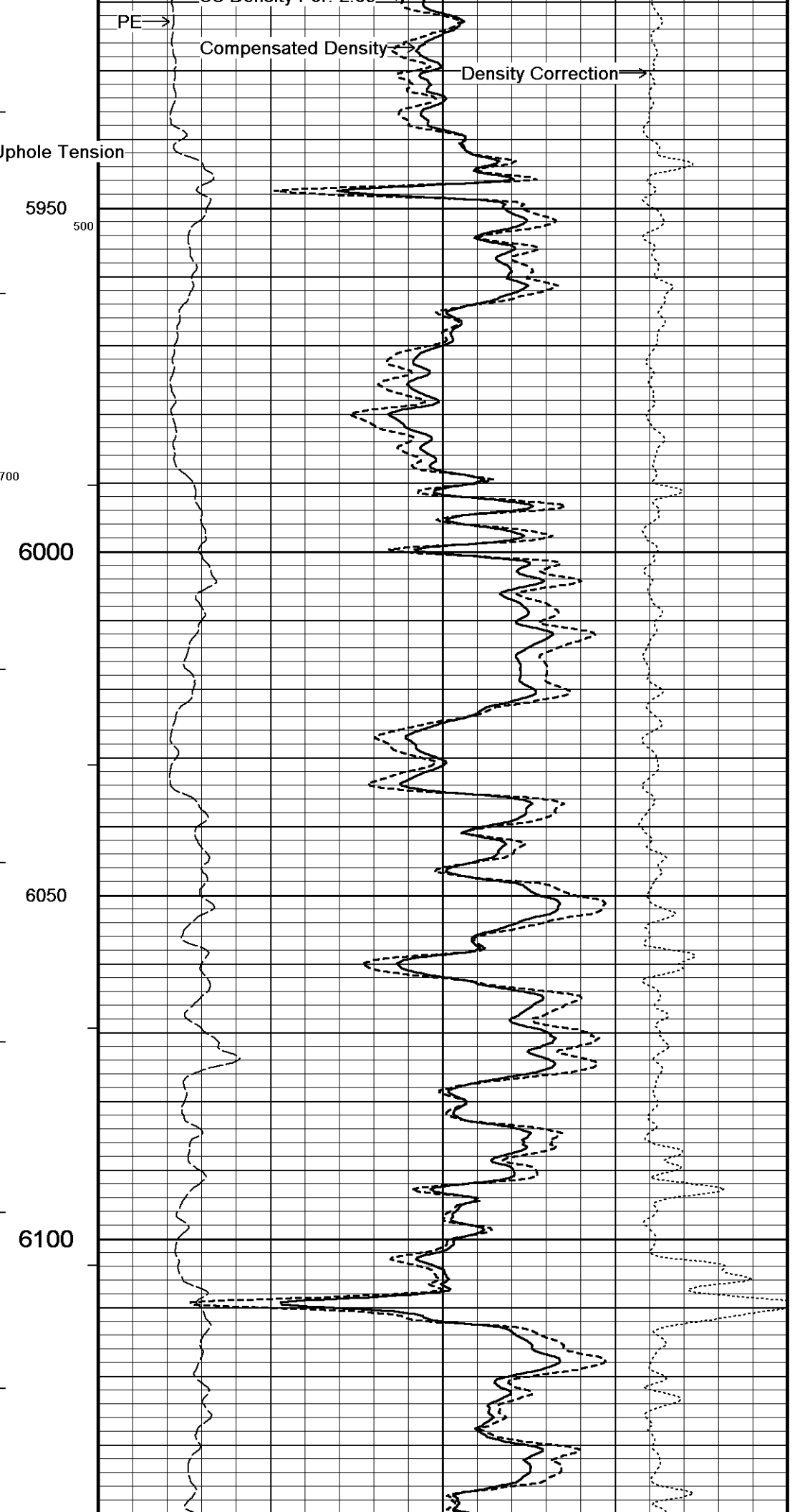
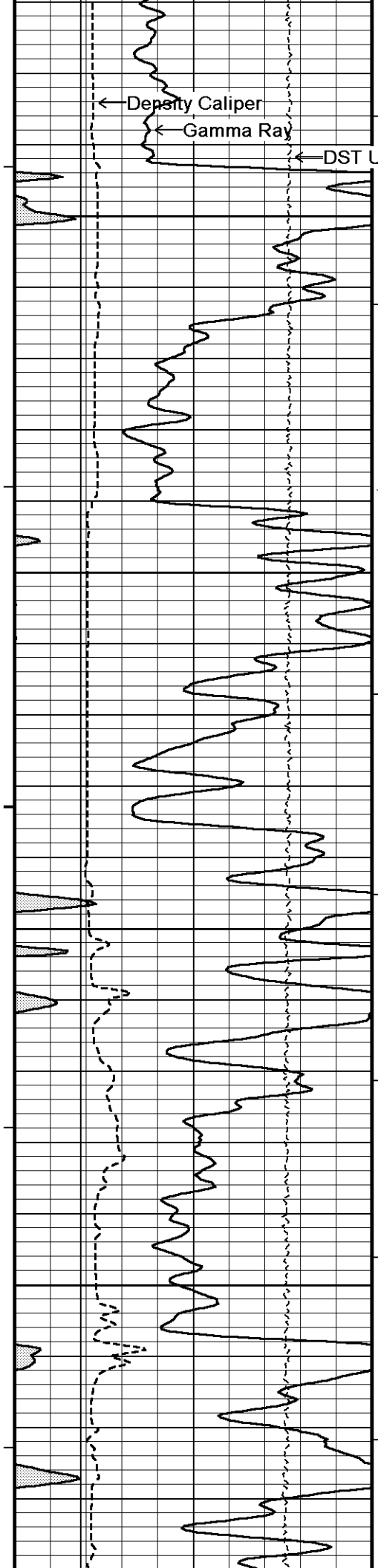
5600

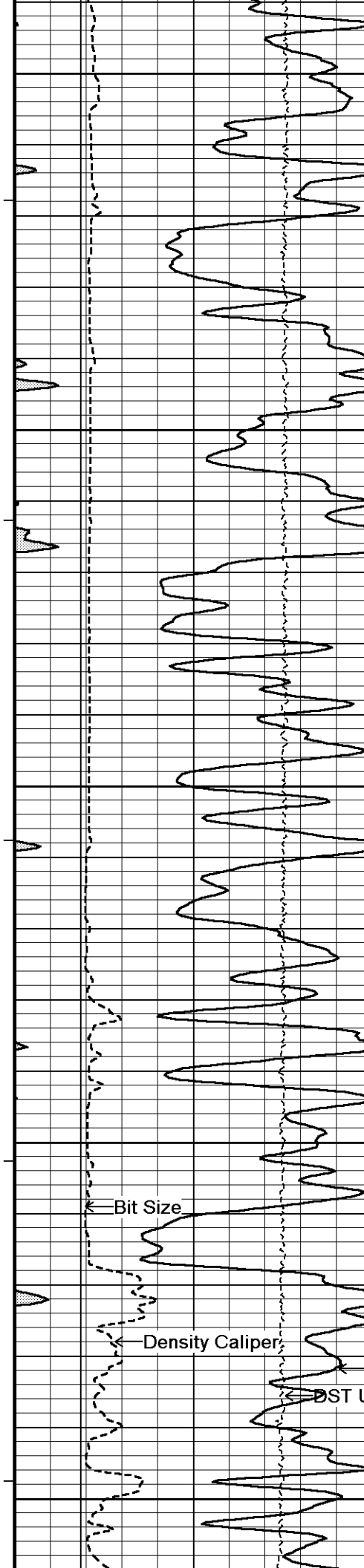
5650

5700

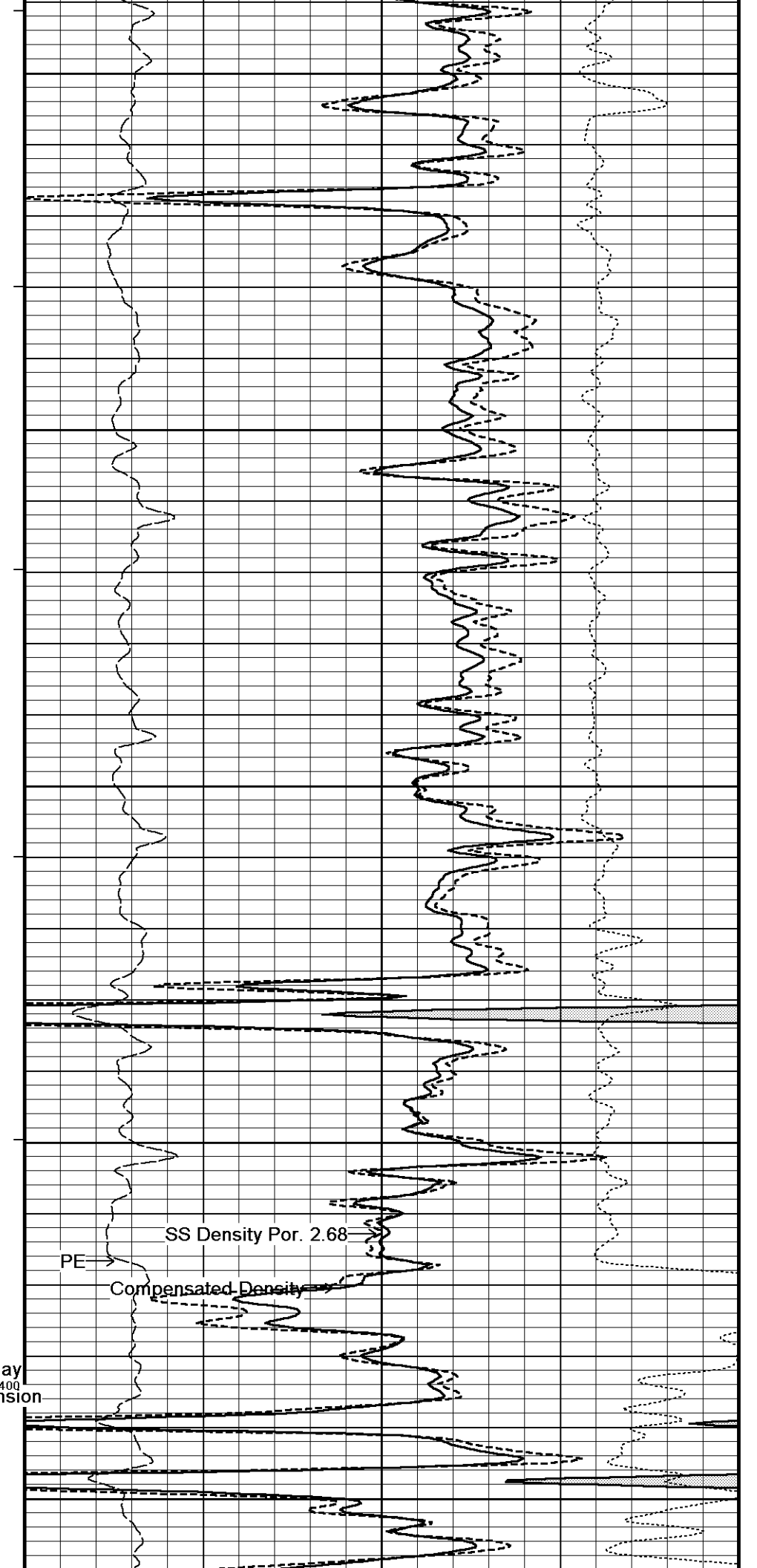








6150
6200
6250
6300
6350



Bit Size

Density Caliper

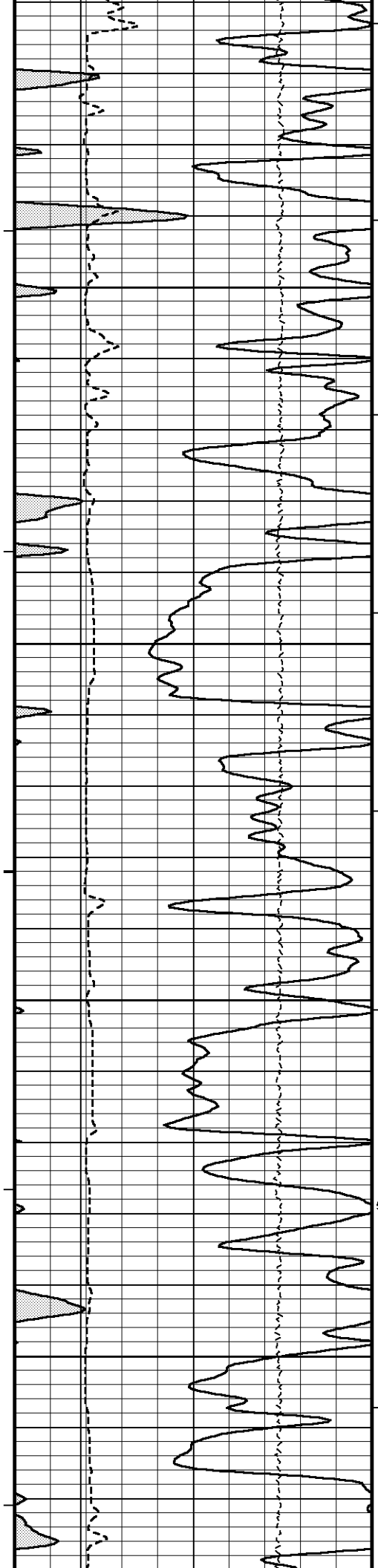
Gamma Ray

DST Uphole Tension

SS Density Por. 2.68

PE

Compensated Density



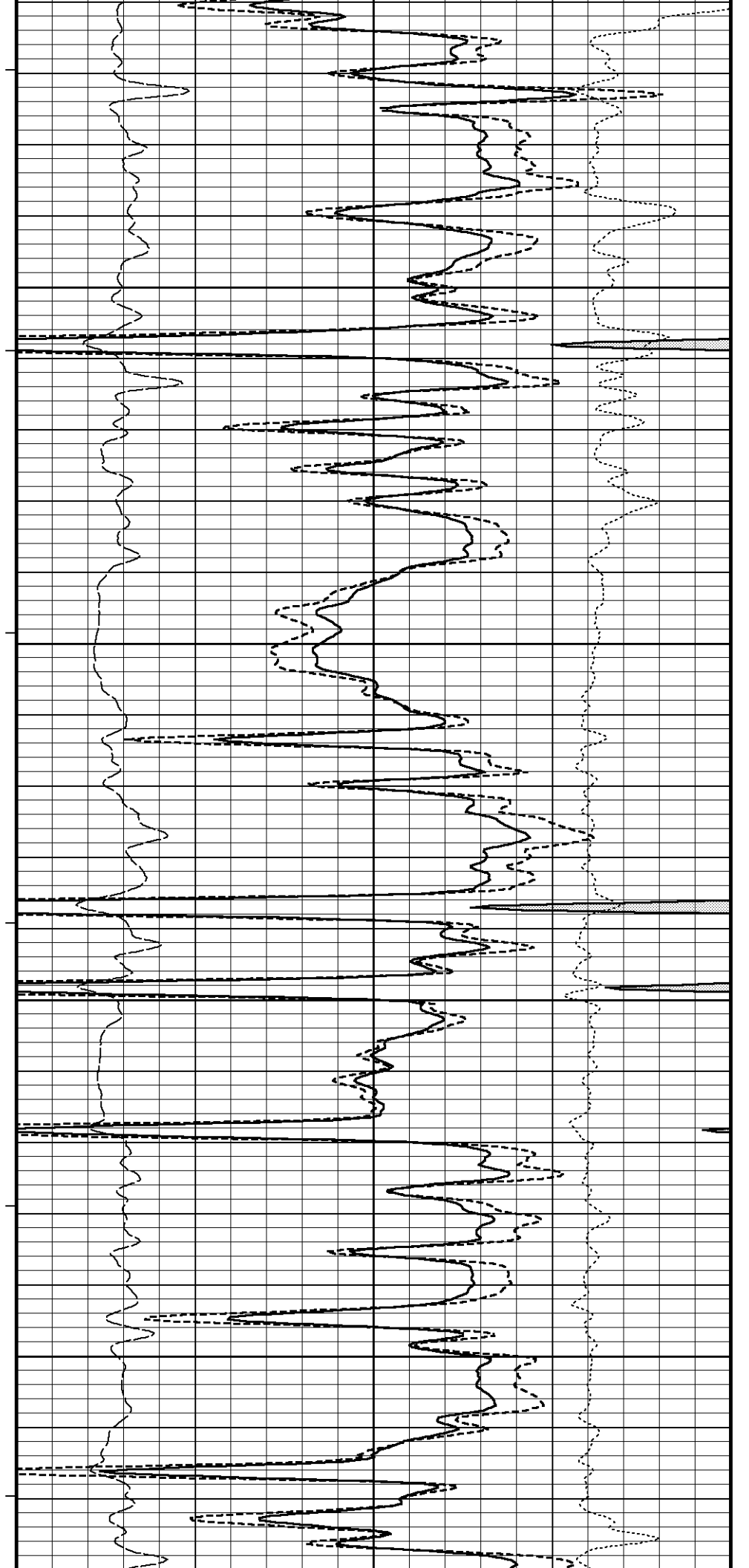
6400

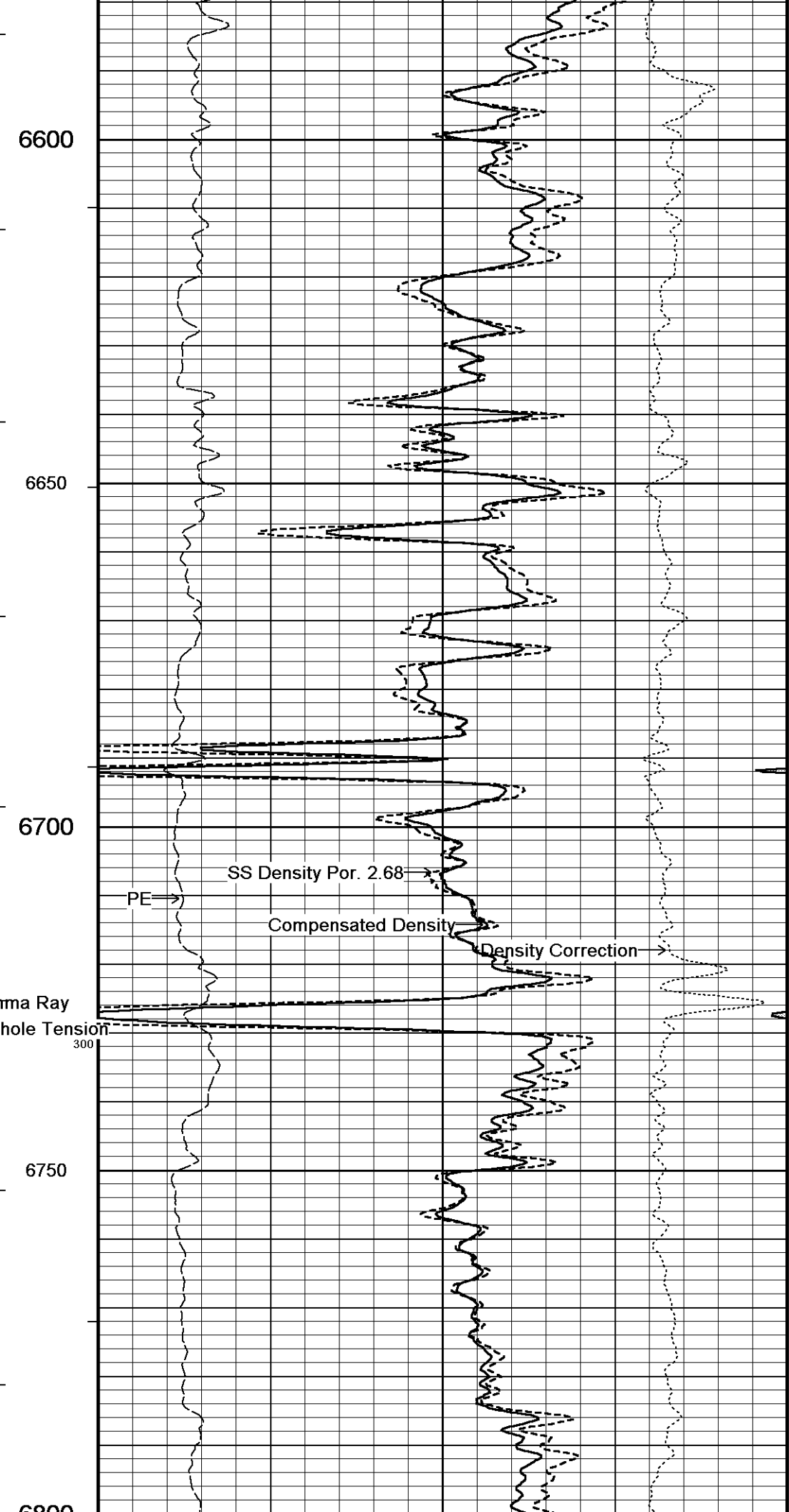
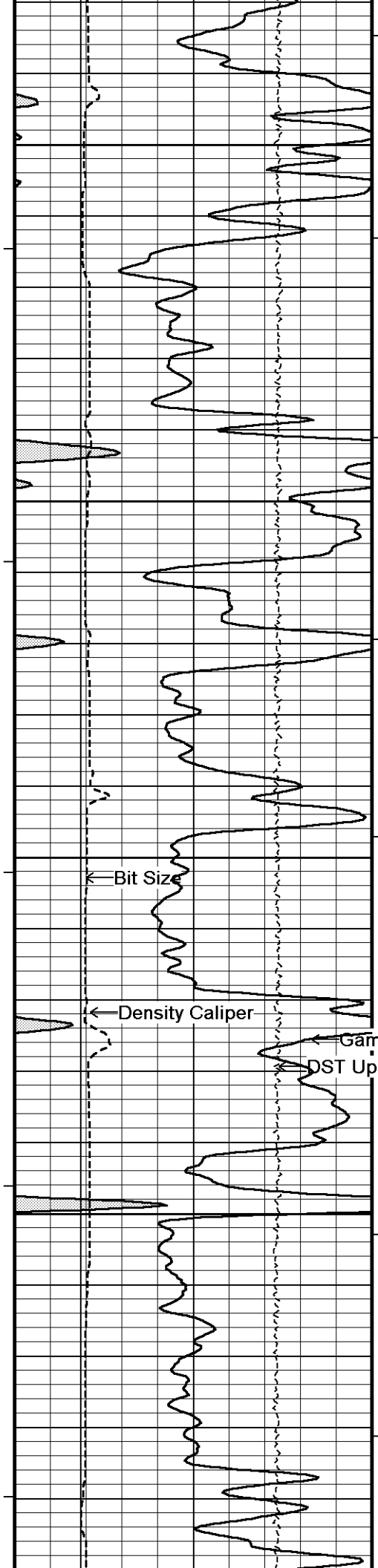
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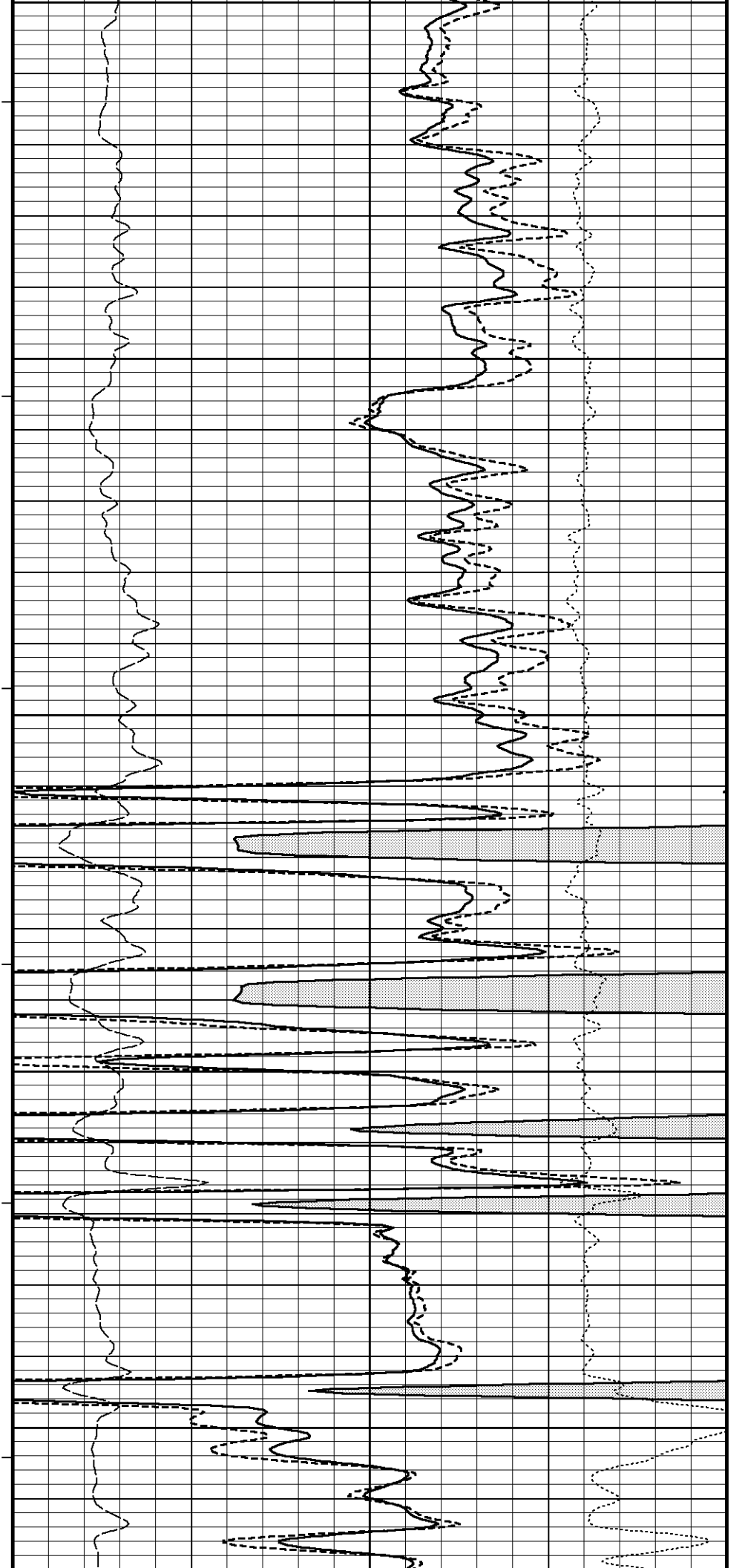
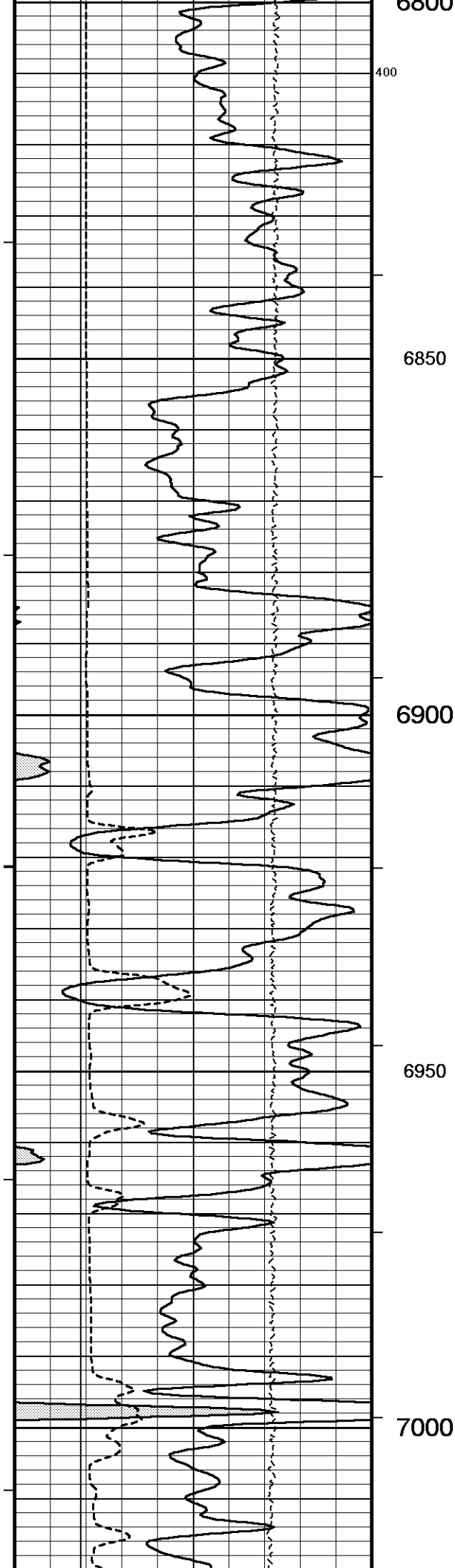
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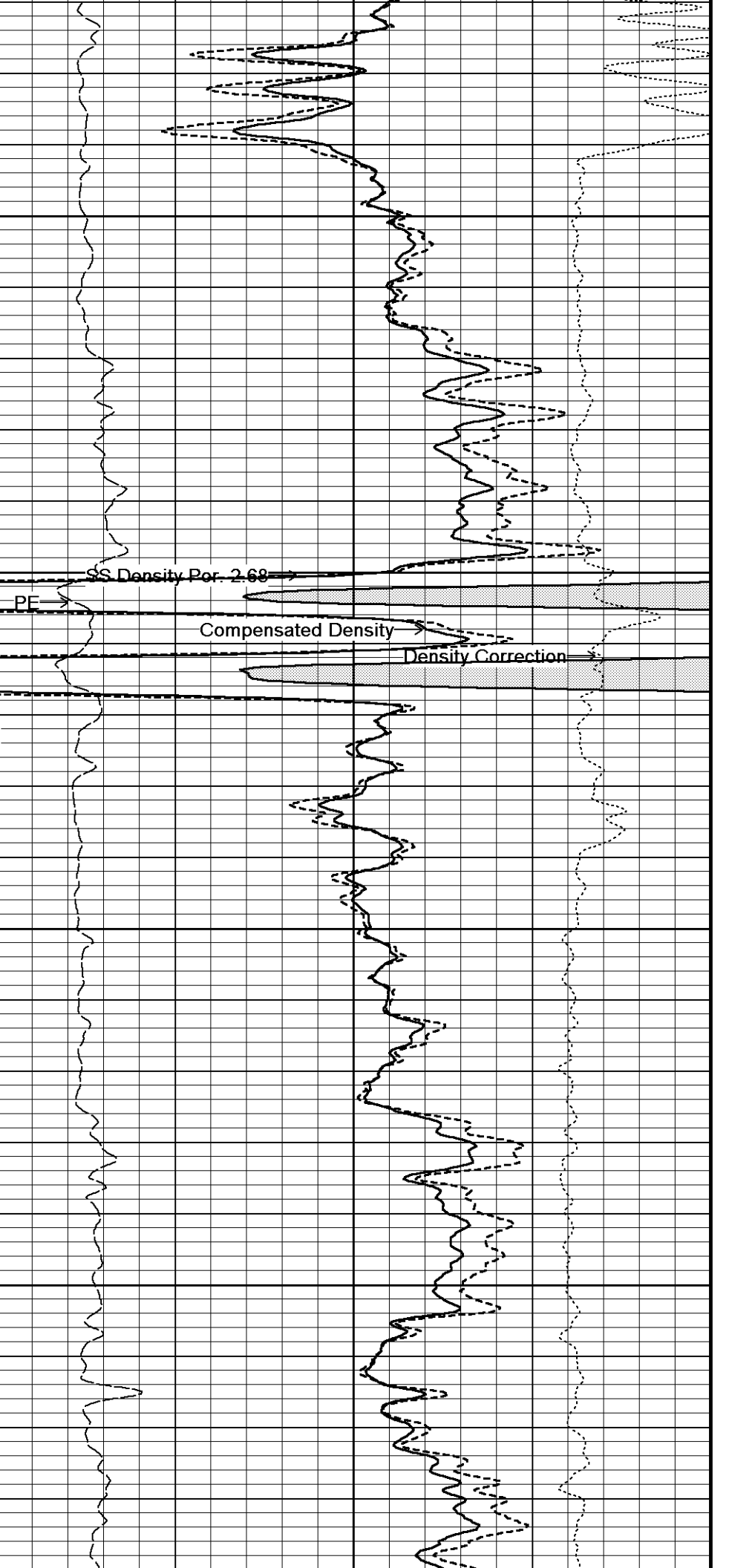
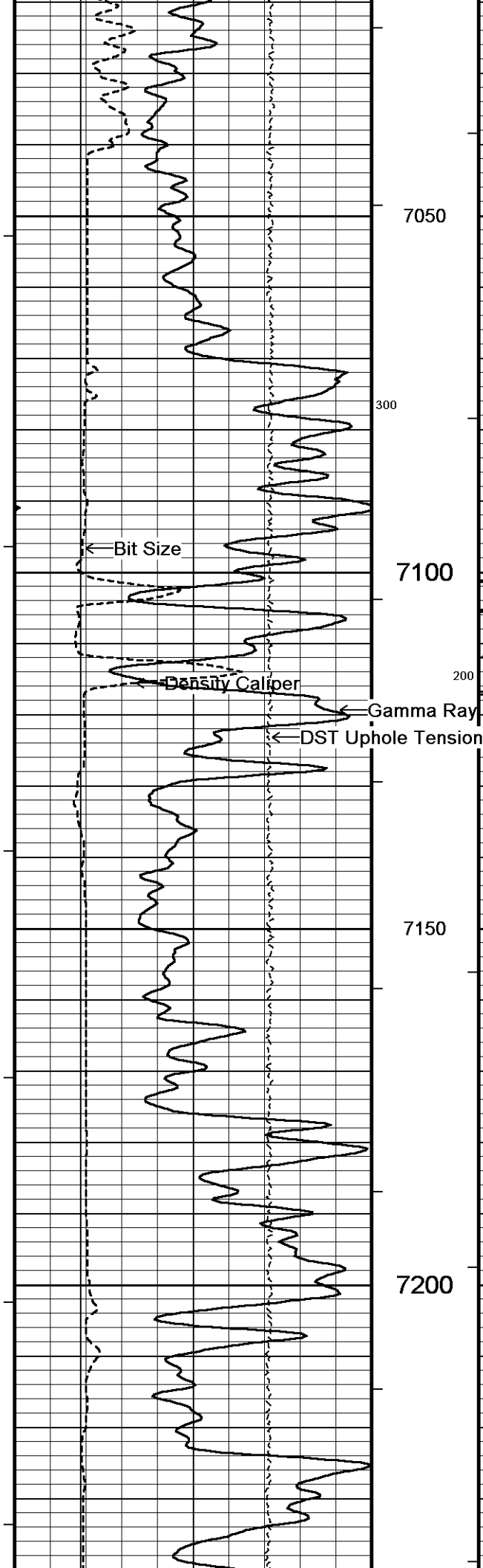
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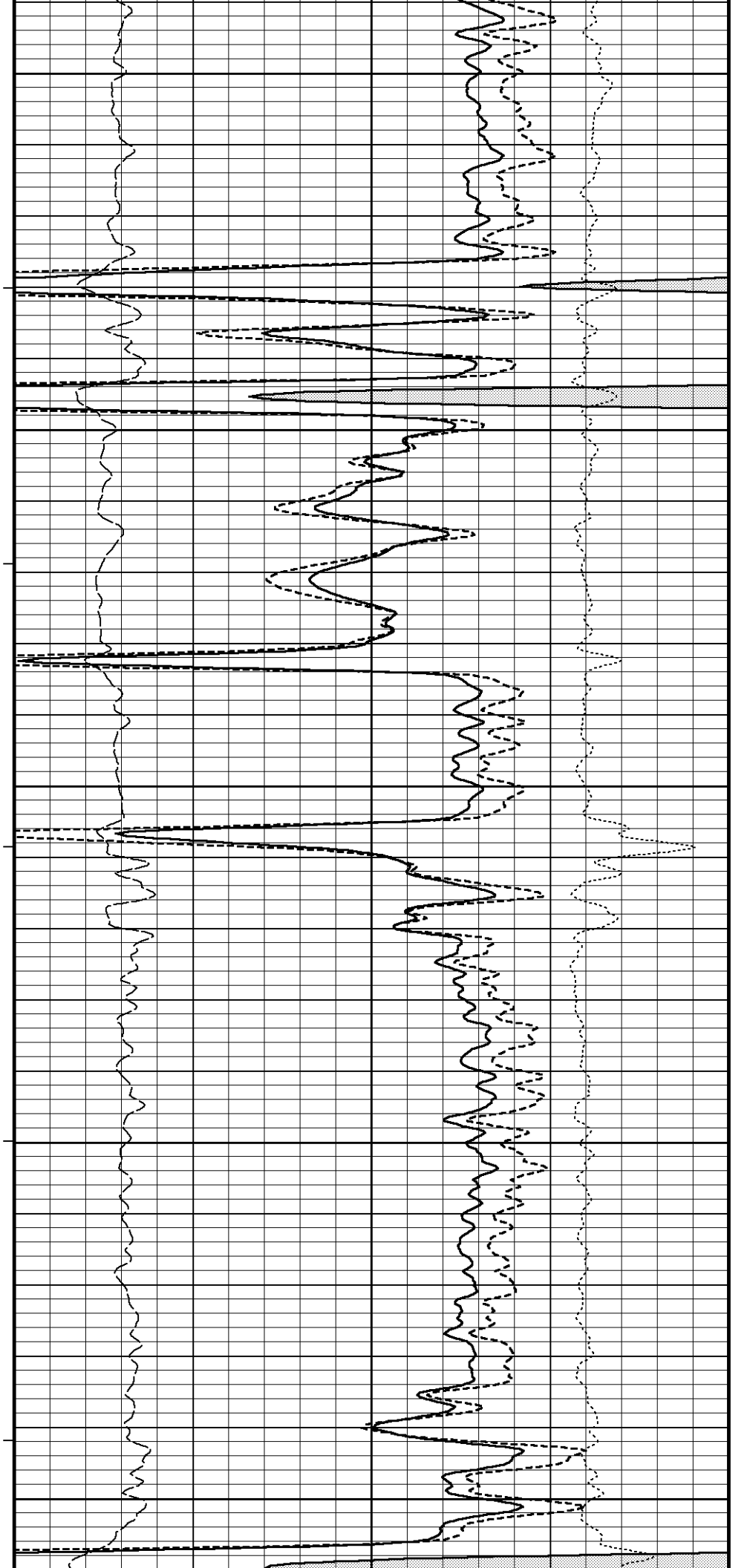
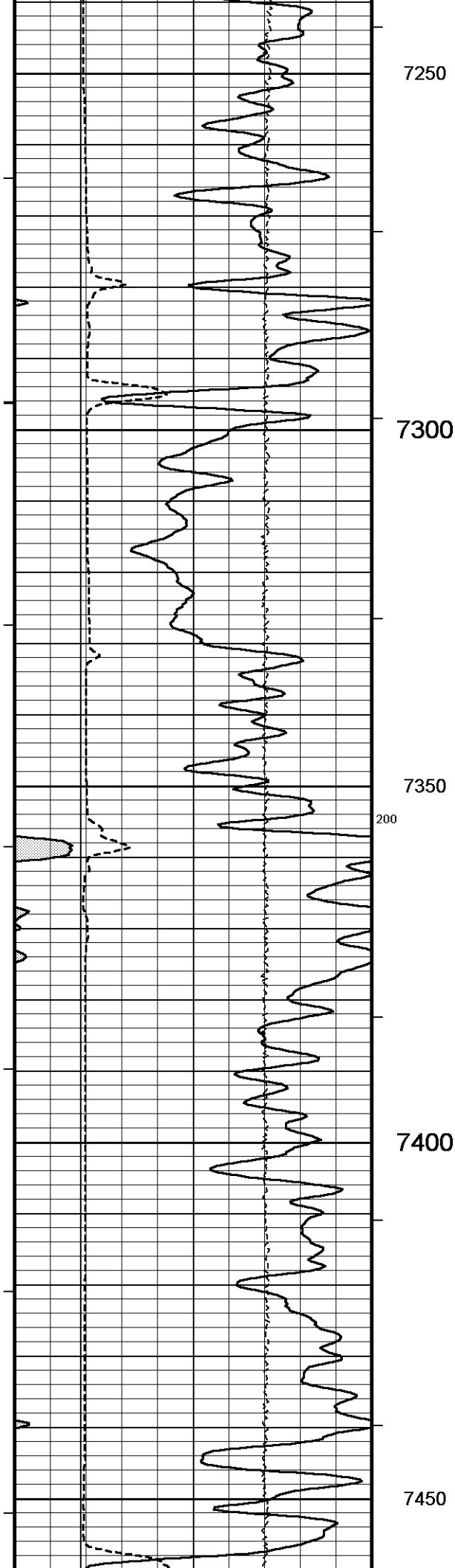
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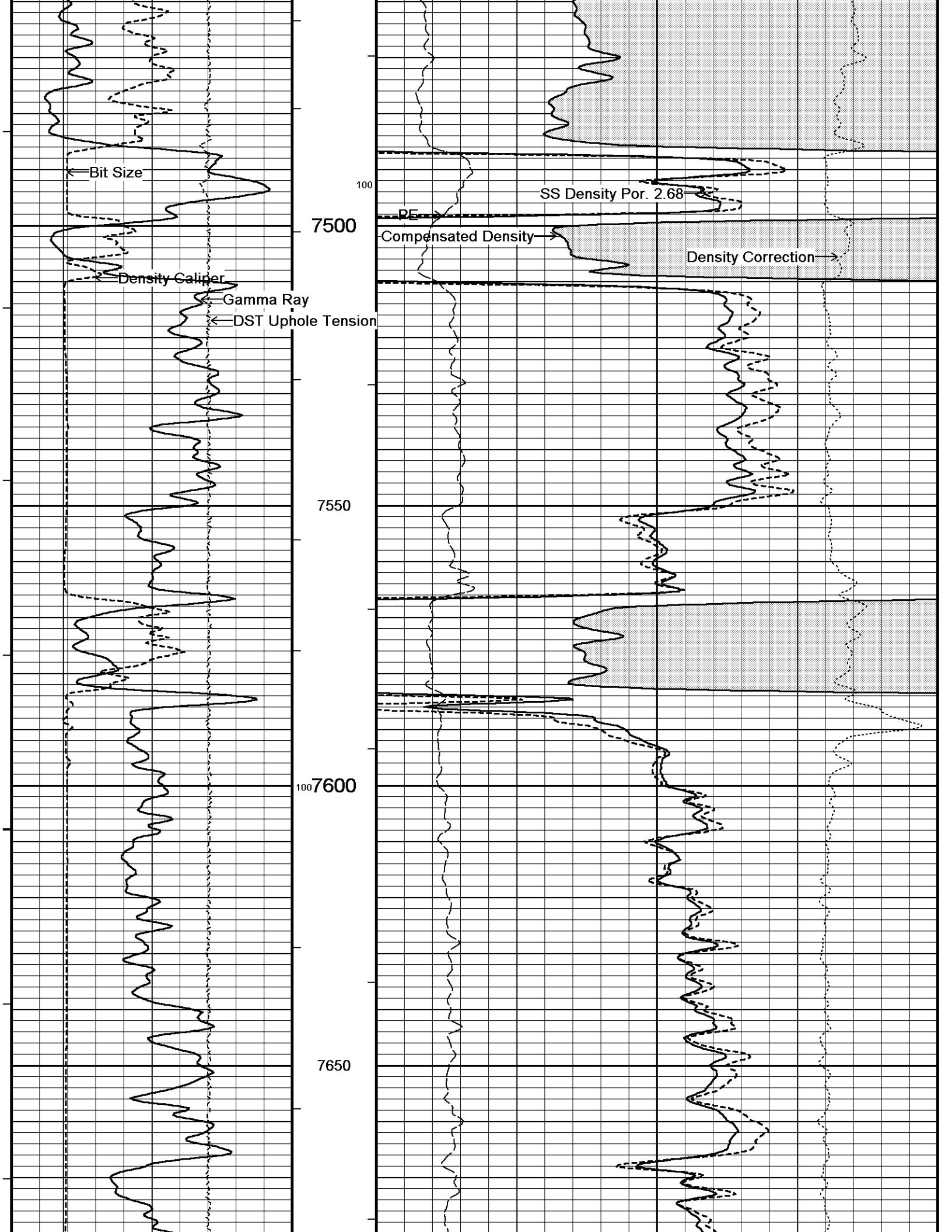


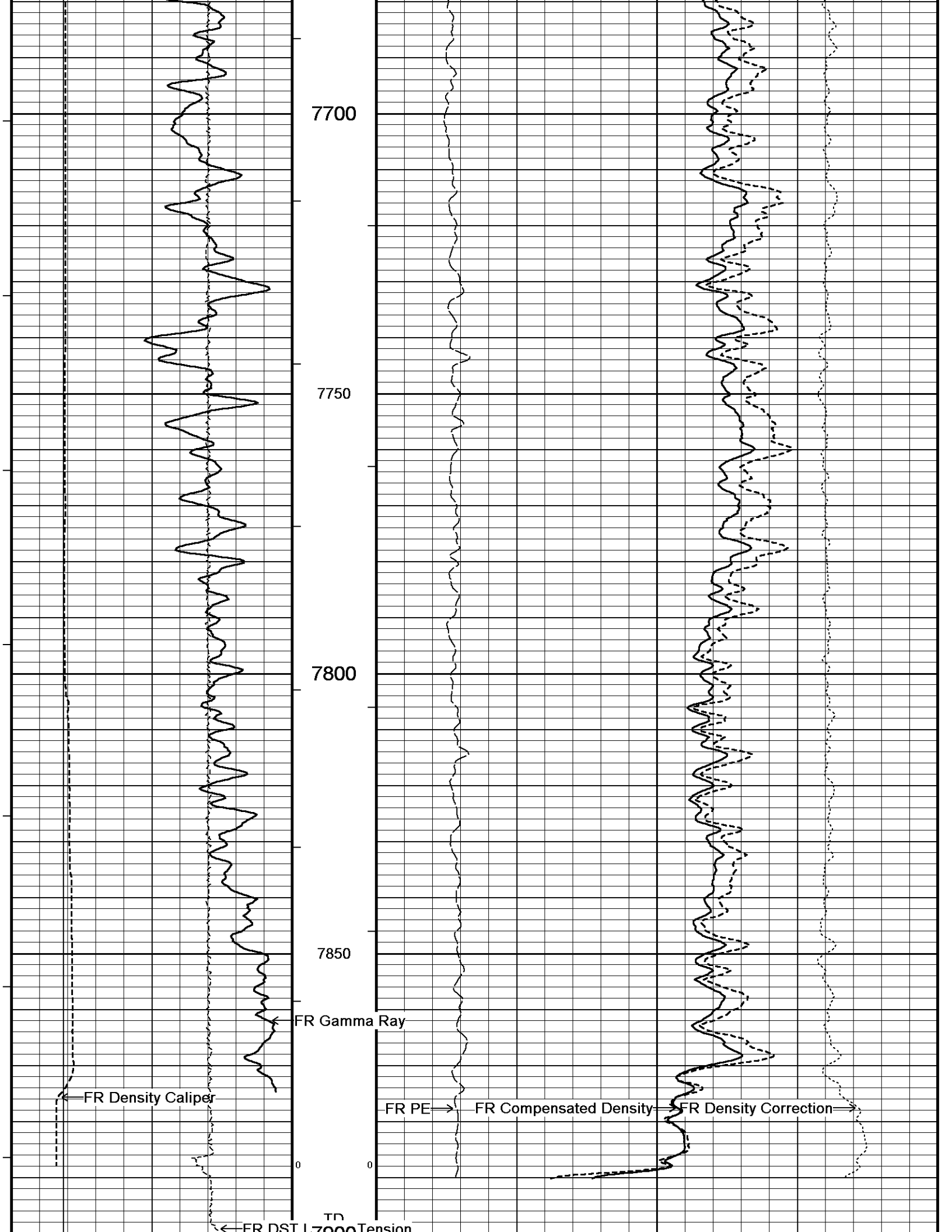


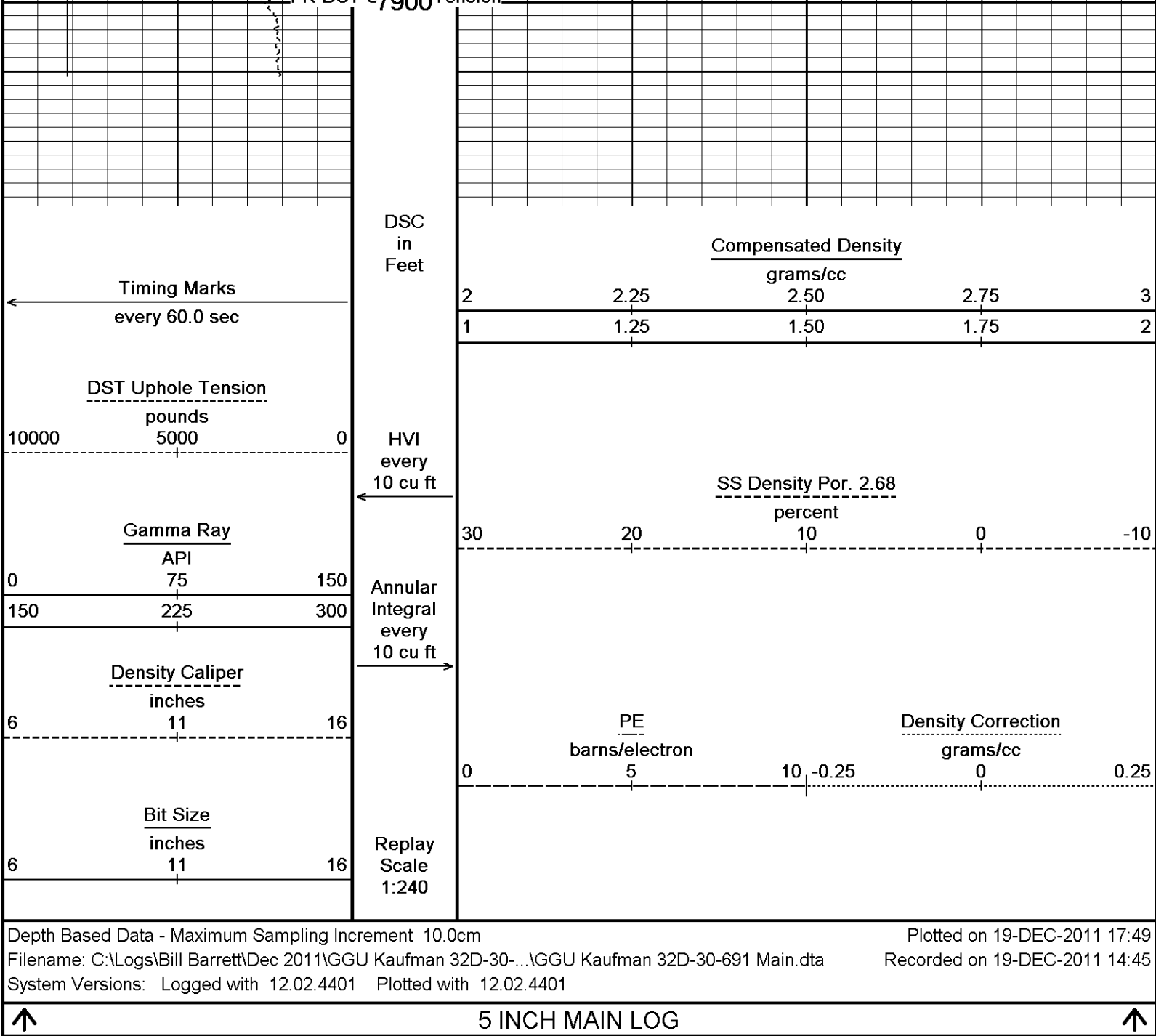












BEFORE SURVEY CALIBRATION		
C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-691\GGU Kaufman 32D-30-691 Main.dta		
General Constants All 000		Last Edited on 19-DEC-2011 12:04
General Parameters		
Mud Resistivity	4.000	ohm-metres
Mud Resistivity Temperature	91.500	degrees F
Water Level	0.000	feet
Density/Neutron 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	4.500	inches
Caliper for Differential Caliper	Density Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	

RWA Constant A		0.610	
RWA Constant M		2.150	
Gamma Calibration MCG-D.A 342			
		Field Calibration on 19-DEC-2011 11:38	
	Measured	Calibrated (API)	
Background	121	81	
Calibrator (Gross)	903	608	
Calibrator (Net)	782	527	
Gamma Constants MCG-D.A 342			
		Last Edited on 19-DEC-2011 12:04	
Gamma Calibrator Number	GRC-174		
Mud Density	1.00	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
Caliper Calibration MPD-B 167			
		Base Calibration on 08-DEC-2011 11:58	
		Field Calibration on 19-DEC-2011 11:47	
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14191	3.98	
2	22640	5.96	
3	31232	7.96	
4	39520	9.86	
5	48571	11.88	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	7.99	7.96	
Photo Density Calibration MPD-B 167			
		Base Calibration on 28-NOV-2011 14:53	
		Field Check on 19-DEC-2011 11:47	
Density Calibration			
Base Calibration		Measured	
	Near	Far	Calibrated (sdu)
		Near	Far
Reference 1	51237	17934	53115 19186
Reference 2	24001	2998	25020 2536
Field Check at Base			
	1237.2	1713.8	
Field Check			
	1225.1	1709.6	
PE Calibration			
Base Calibration		Measured	
	WS	WH	Ratio
Background	226	1112	
Reference 1	17253	51055	0.341 0.320
Reference 2	6645	23865	0.282 0.272
Field Check at Base			
	225.6	1112.1	
Field Check			
	224.5	1099.0	
Density Constants MPD-B 167			
		Last Edited on 19-DEC-2011 12:06	
Density Source Id	P44263B		
Nylon Calibrator Number	507		
Aluminium Calibrator Number	507		
Density Shoe Profile	8 inch		
Caliper Source for Processing	Density Caliper		
PE Correction to Density	Not Applied		
Mud Density	1.31	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	

AFTER SURVEY CALIBRATION

C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-691\GGU Kaufman 32D-30-691 Main.dta

FE Check MFE-B.A 179

Before Survey Check 19-DEC-2011 11:51
After Survey Check on 19-DEC-2011 17:39

Before (ohm-m)	After (ohm-m)
279.7	279.5

Induction Check MAI-A.A 191

Before Survey Check on 19-DEC-2011 11:54
After Survey Check on 19-DEC-2011 17:37

Channel	Before Survey (mmho/m)		After Survey (mmho/m)		
	Low	High	Low	High	
1	14.3	3864.1	16.3	3864.5	
2	29.6	3514.2	30.3	3513.6	
3	27.5	3064.1	28.0	3063.9	
4	18.6	2020.6	18.8	2020.5	
Deep	16.4	1982.5	16.8	1982.9	
Medium	40.3	4080.5	40.9	4079.8	
Shallow	44.8	5208.0	45.8	5206.2	
Array Temperature	46.8		73.0		Deg F

Photo Density Check MPD-B 167

Before Survey Check on 19-DEC-2011 11:47
After Survey Check on 19-DEC-2011 17:43

Density Check

	Near		Far	
	Before	After	Before	After
	1225.1	1229.4	1709.6	1711.3

PE Check

	Before	After
WS	224.5	223.3
WH	1099.0	1104.0

DOWNHOLE EQUIPMENT

C:\Logs\Bill Barrett\Dec 2011\GGU Kaufman 32D-30-691\GGU Kaufman 32D-30-691 Main.dta

SHA-J.A Compact Swivel Head Adaptor

SHA-J.A 314 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

Compact Comms Gamma

MCG-D.A 342 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Neutron

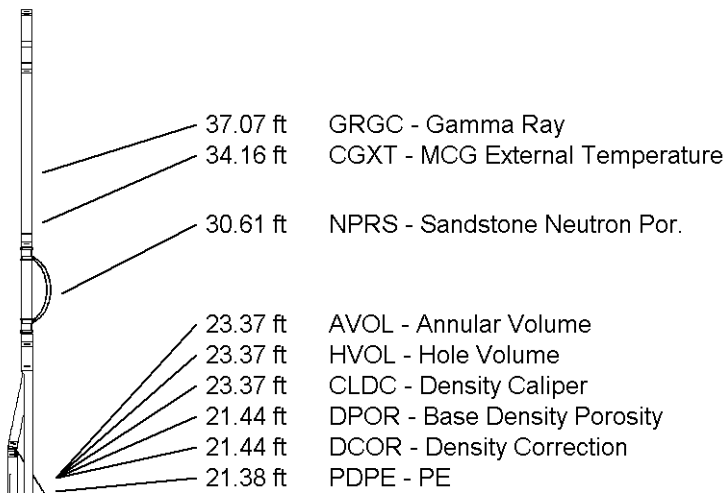
MDN-B.A 250 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper

MPD-B 167 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint

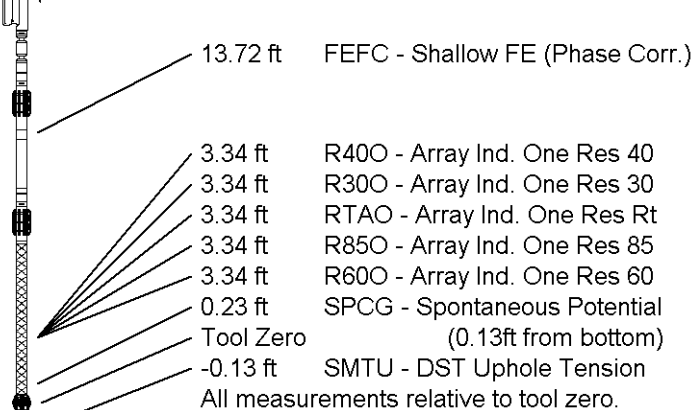
SKJ-D.A 88 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in



Compact Focussed Electric
MFE-B.A 179 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 191 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 44.66 ft Weight: 348.3 lb



COMPANY BILL BARRETT CORPORATION
WELL GGU KAUFMAN 32D-30-691
FIELD GIBSON GULCH
PROVINCE/COUNTY GARFIELD
COUNTRY/STATE U.S.A. / COLORADO

Elevation Kelly Bushing	5858.00	feet	First Reading	7878.00	
Elevation Drill Floor	5858.00	feet	Depth Driller	7900.00	feet
Elevation Ground Level	5835.00	feet	Depth Logger	7899.00	feet



Weatherford®

COMPENSATED PHOTO DENSITY
COMPENSATED DUAL NEUTRON
LOG

