



Weatherford[®]

**CML MESSENGER SHUTTLE
COMPACT PHOTO DENSITY
COMPENSATED NEUTRON LOG**

COMPANY **SANDRIDGE ENERGY**
 WELL **TURNER 3406 1-7H**
 FIELD **EASTHAM**
 PROVINCE/COUNTY **HARPER**
 COUNTRY/STATE **USA / KANSAS**
 LOCATION **SHL: 250' FSL & 660' FEL SEC 7**
BHL: 2310' FSL & 660' FEL SEC 6

SEC	TWP	RGE	Other Services	Elevations:
7	34S	6W	MA/MI/FE	KB 1335.00 DF 1335.00 GL 1316.00
API Number	15-077-21868-01			
Permit Number				
Permanent Datum	G.L., Elevation 1316 feet			
Log Measured From	KB			
Drilling Measured From	K.B. @ 19 FEET			
Date	08-OCT-2012			
Run Number	ONE			
Depth Driller	11858.00	feet		
Depth Logger	11858.00	feet		
First Reading	11534.00	feet		
Last Reading	3000.00	feet		
Casing Driller	5045.00	feet		
Casing Logger	5045.00	feet		
Bit Size	6.125	inches		
Hole Fluid Type	WATER			
Density / Viscosity	1.01	g/c3	27.00	CP
PH / Fluid Loss	8.50		35.00	ml/30Min
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.50 @ 50.0	ohm-m		
Rmf @ Measured Temp	1.20 @ 50.0	ohm-m		
Rmc @ Measured Temp	1.80 @ 50.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.50 @ 149.0	ohm-m		
Time Since Circulation	0 HOURS			
Max Recorded Temp	149.00	deg F		
Equipment Name	COMPACT			
Equipment / Base	18006	OKC		
Recorded By	D. ROWEL			
Witnessed By	T. ALCORN			
S.O.# / AFE	3538627 / DC12304			

BOREHOLE RECORD

Last Edited: 08-OCT-2012 19:02

Bit Size inches	Depth From feet	Depth To feet
6.125	5054.00	11858.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	5054.00	26.00

REMARKS

LOGGED WITH WLS VER 13.02.6600 SOFTWARE

WELL LOGGED USING MESSENGER METHOD OF DEPLOYMENT, AND MEMORY LOGGING SYSTEM

HARDWARE: MAI: ISA STANDOFF BELOW

MPD: 4"PROFILE PLATE, MIS-A SINGLE SPRING DECENTRALIZER BELOW

MDN: MISD DOUBLE SPRING DECENTRALIZER RAN ABOVE

2.71 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST

LOGS WERE PUT BACK TO DEPTH USING MWD GAMMA RAY PROVIDED BY CUSTOMER

DRILL PIPE DEPTH DURING DEPLOYMENT - 11487

LOGGING TOOL DEPTH AFTER DEPLOYMENT: 11570

4.5" CASING USED TO CALCULATE AHV

CHLORIDES = 4000

SERVICE ORDER # 3538627

RIG: LARIAT 39

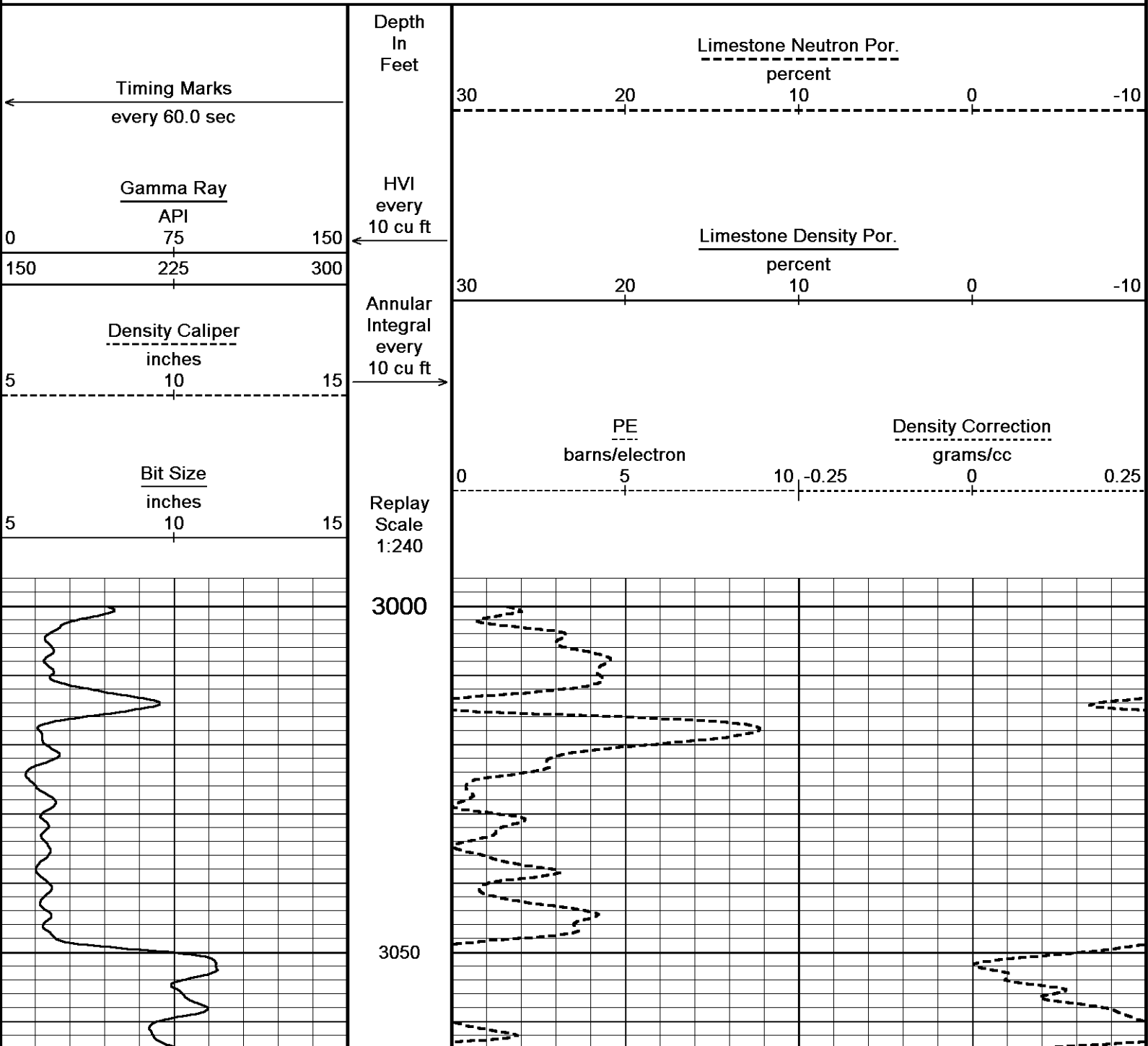
OPERATORS: R. BRADSHAW, D. TURNER

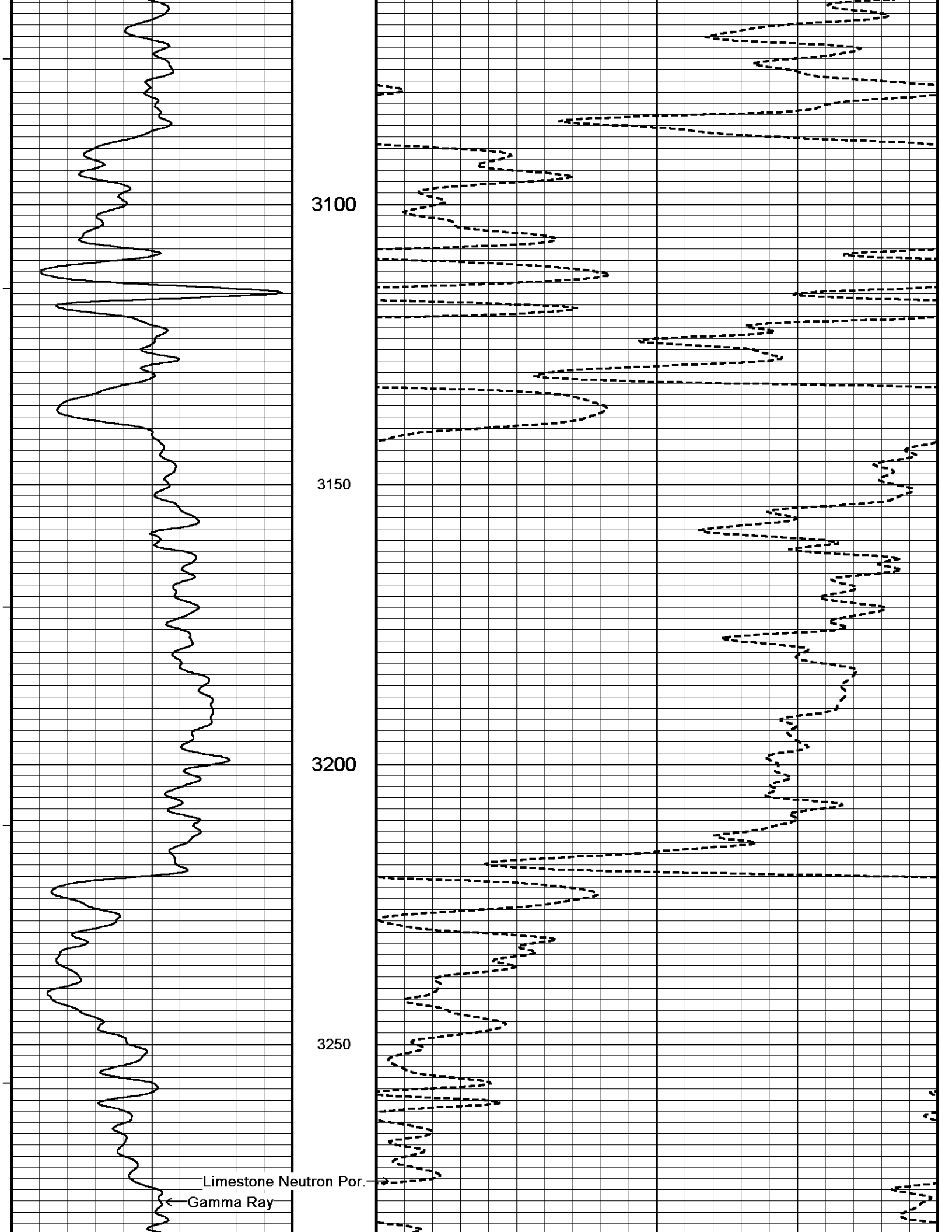
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

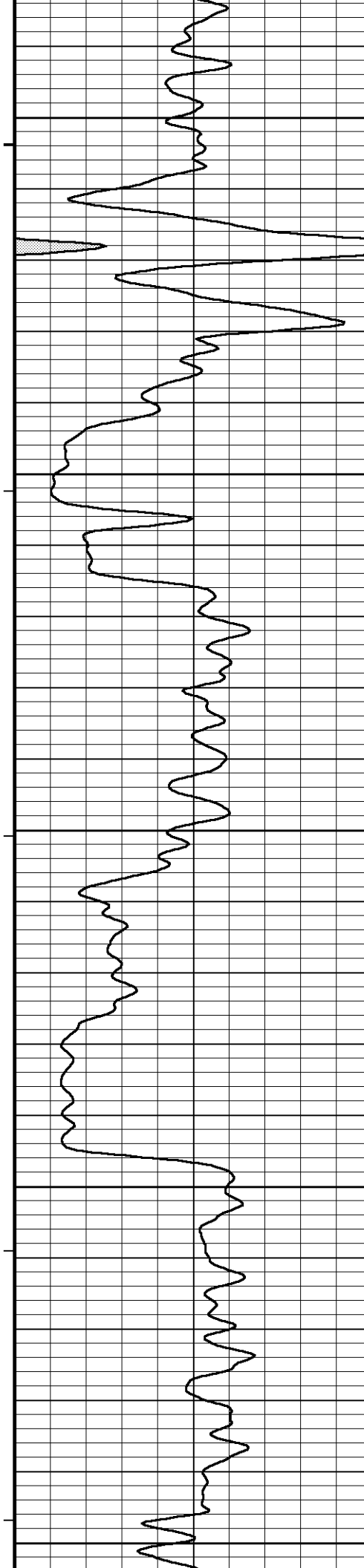
5 INCH MAIN LOG DSC

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 13.02.066\Data\SDRGE (TURNER)\35292 RTAP.dta
System Versions: Processed with 13.02.6600 Plotted with 13.02.6600

Plotted on 08-OCT-2012 23:05
Recorded on 08-OCT-2012 21:28







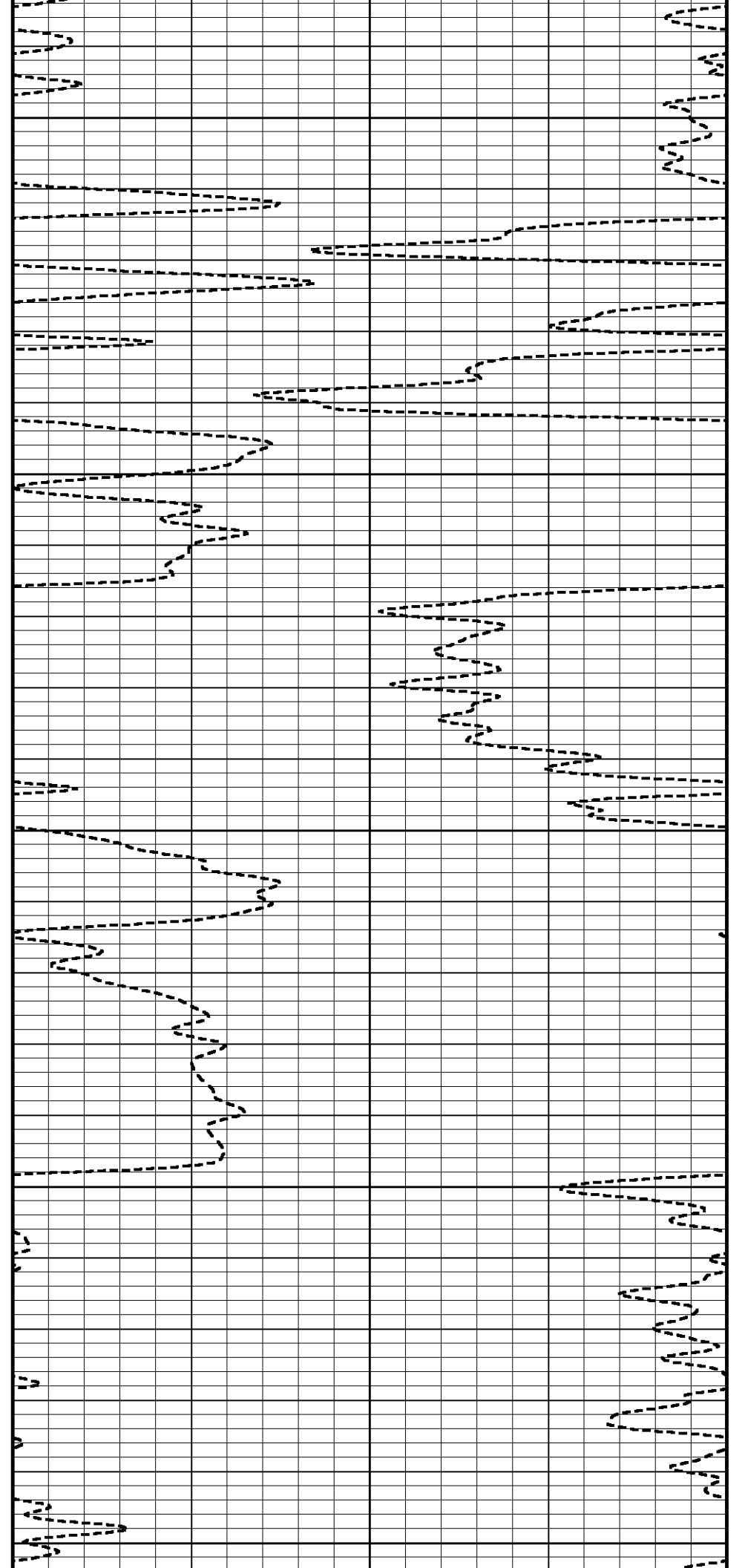
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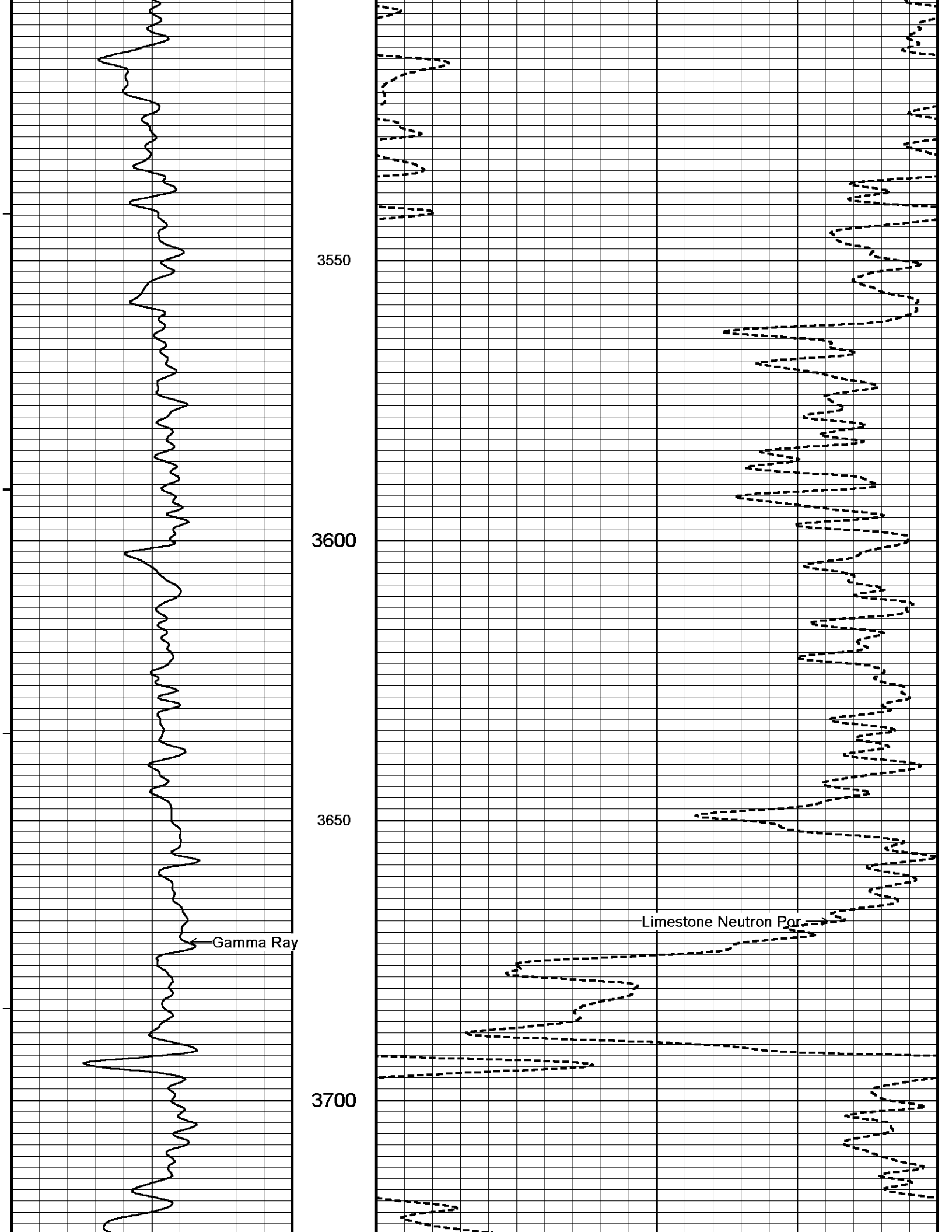
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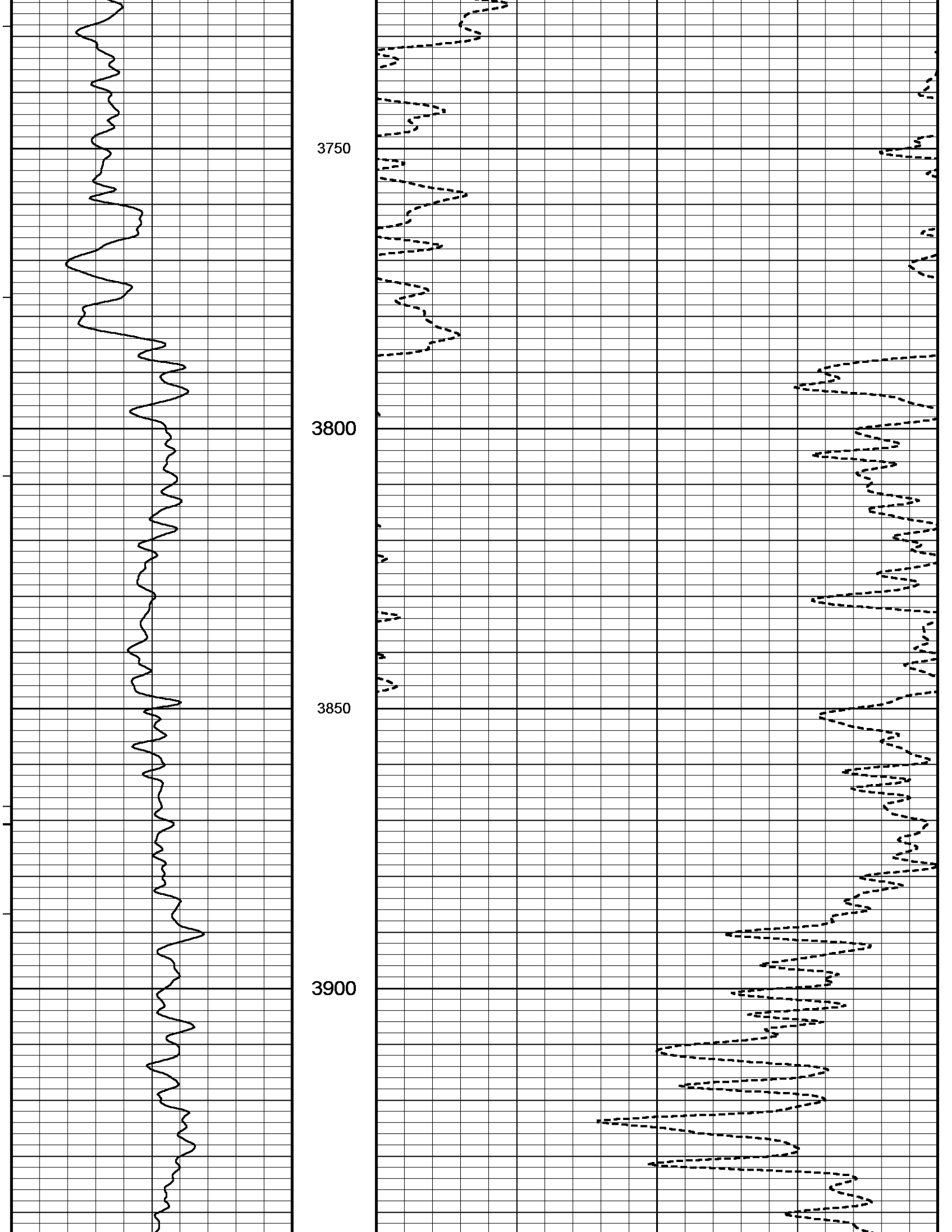
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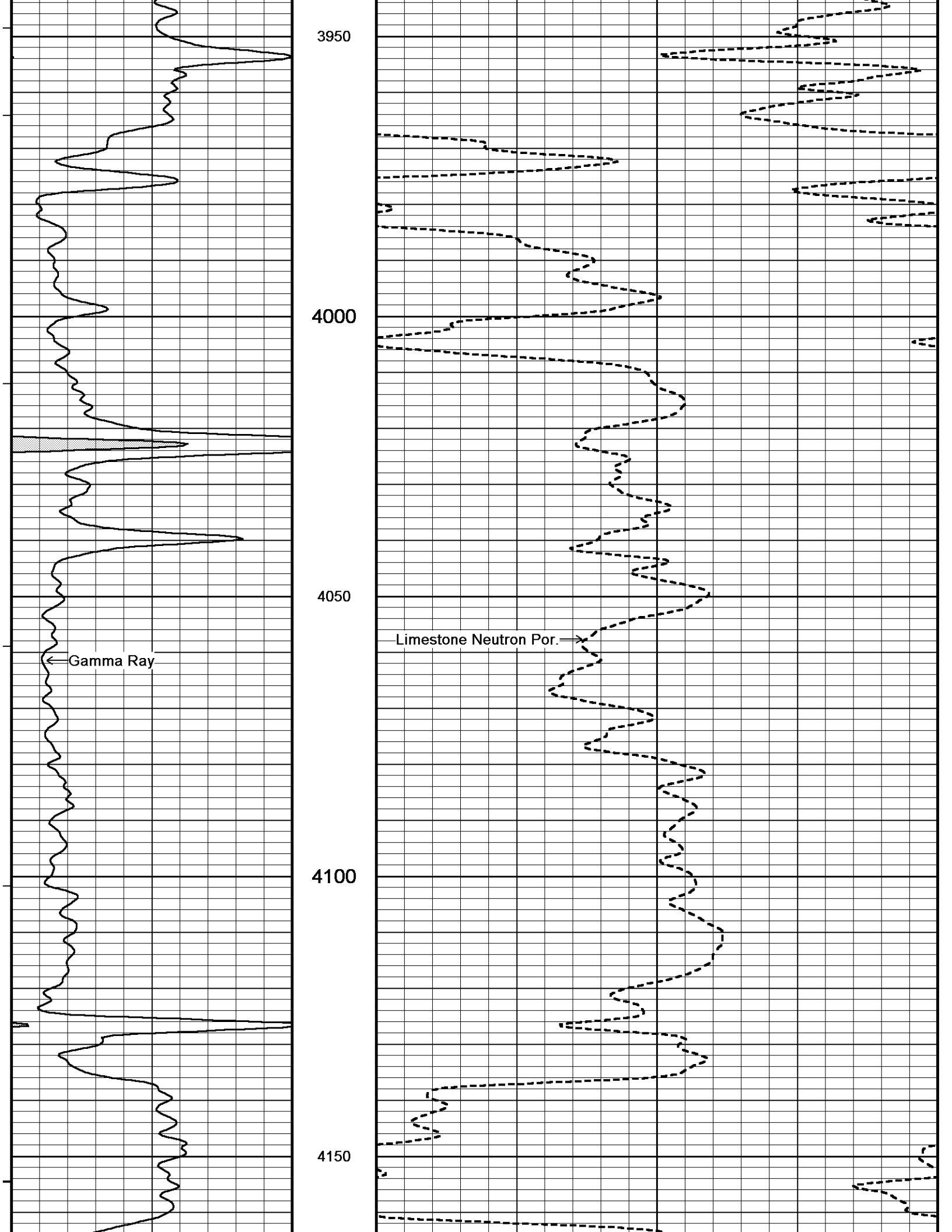
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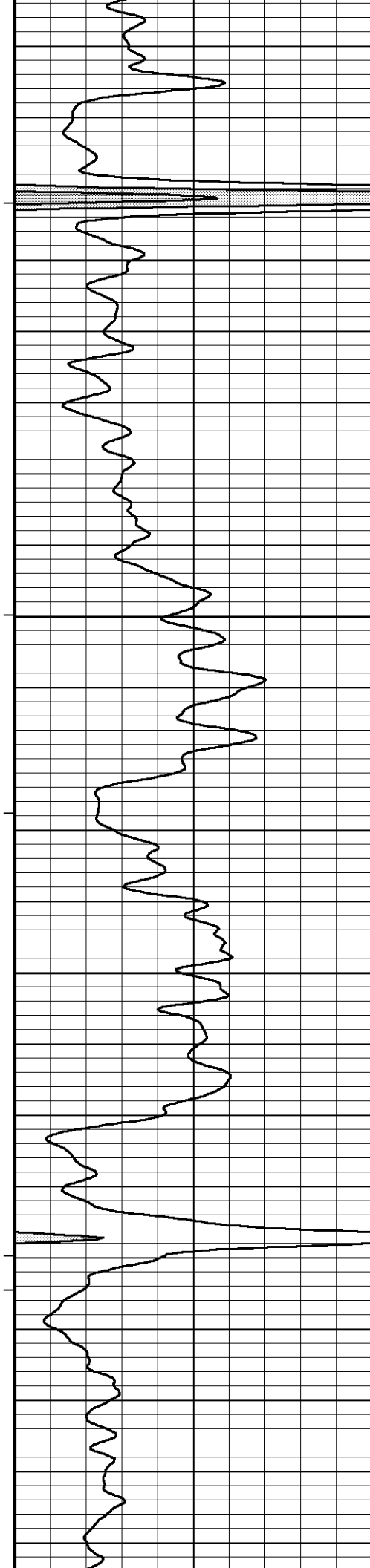
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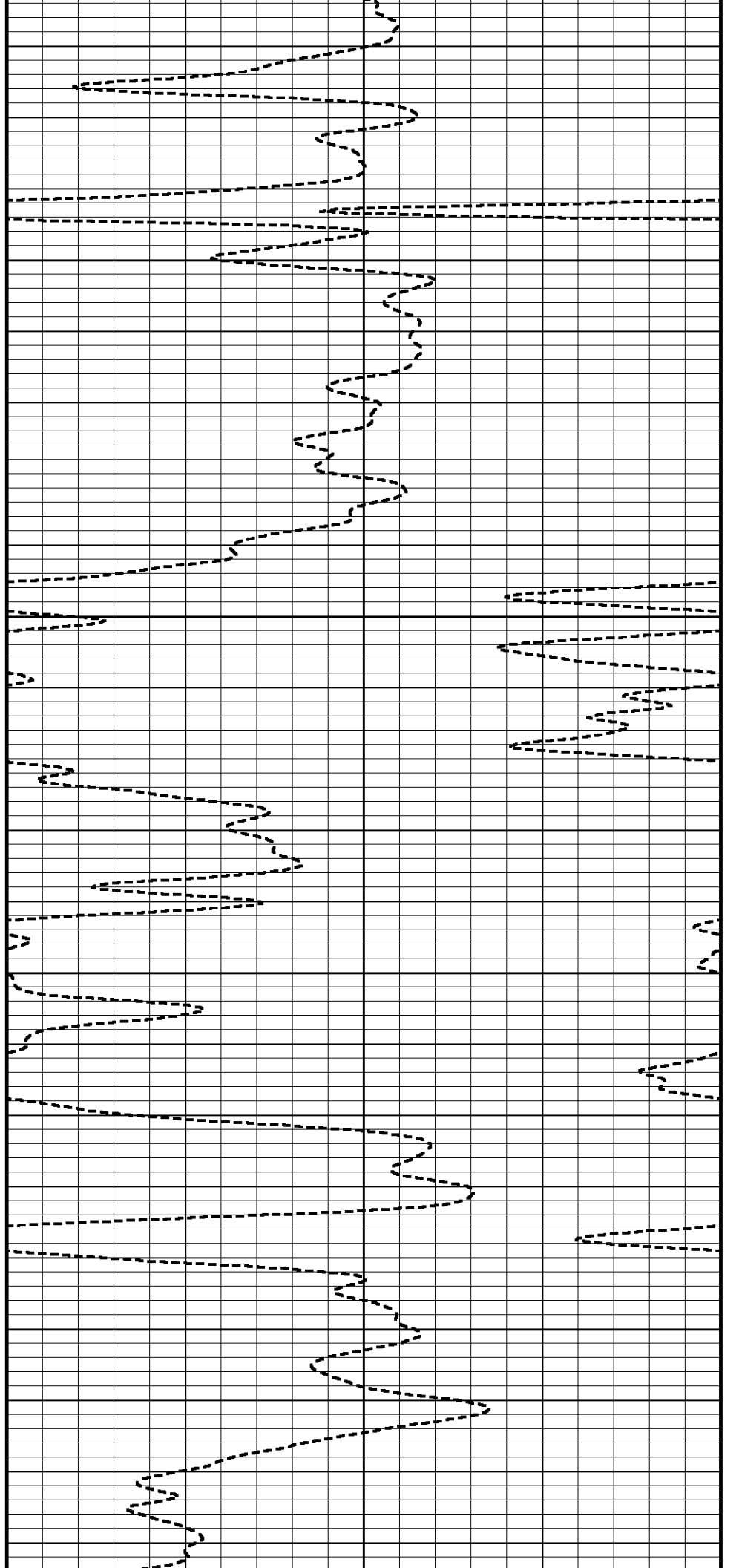


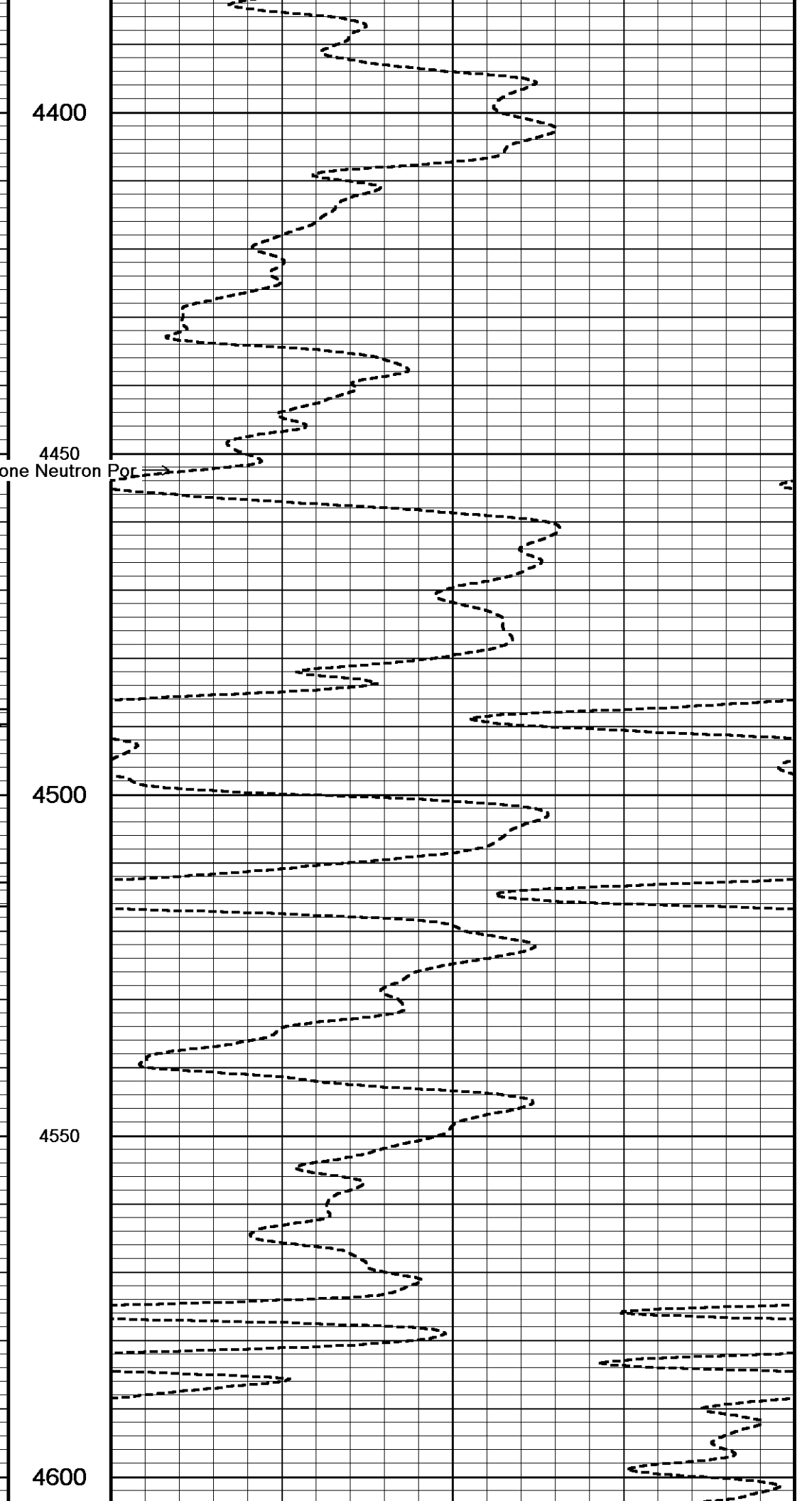
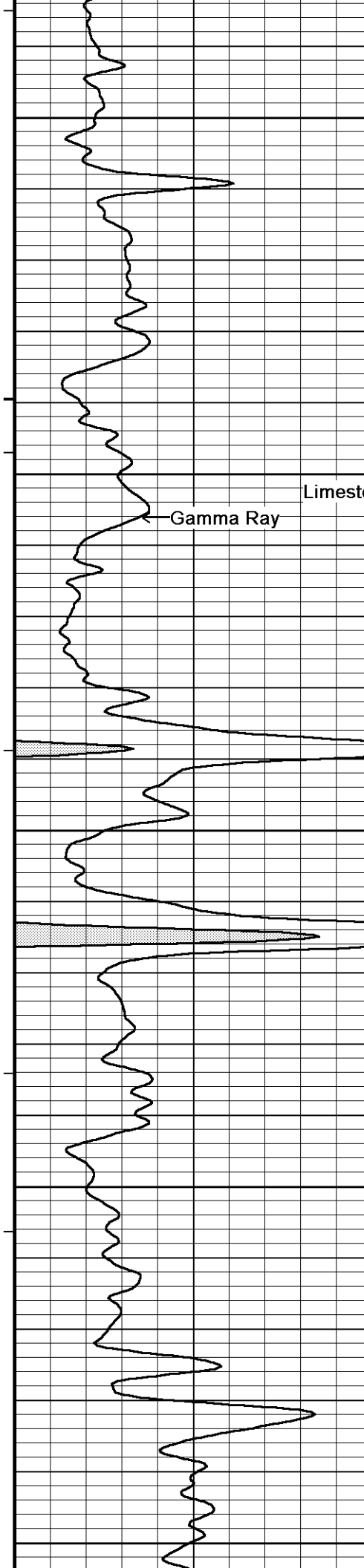
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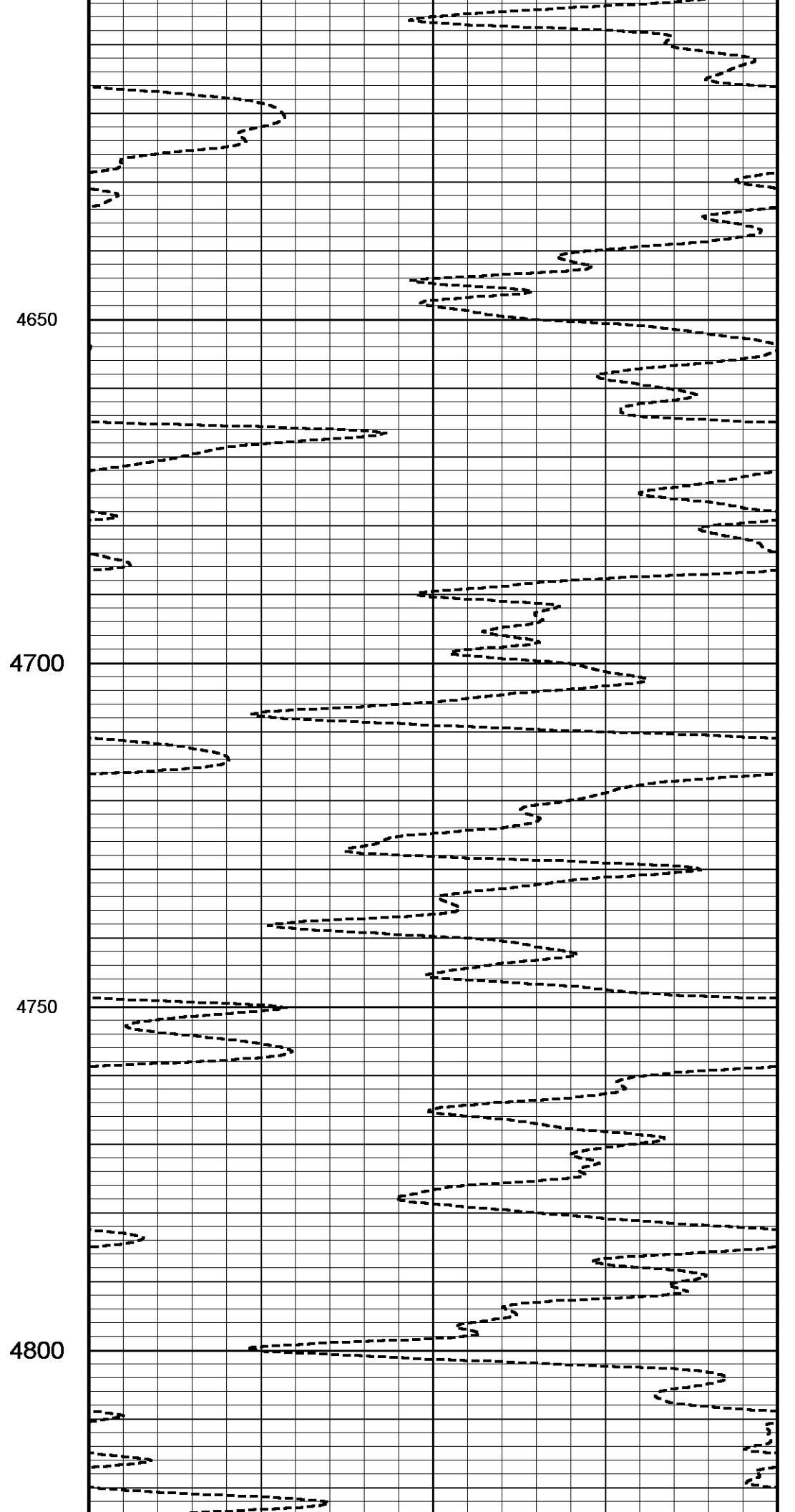
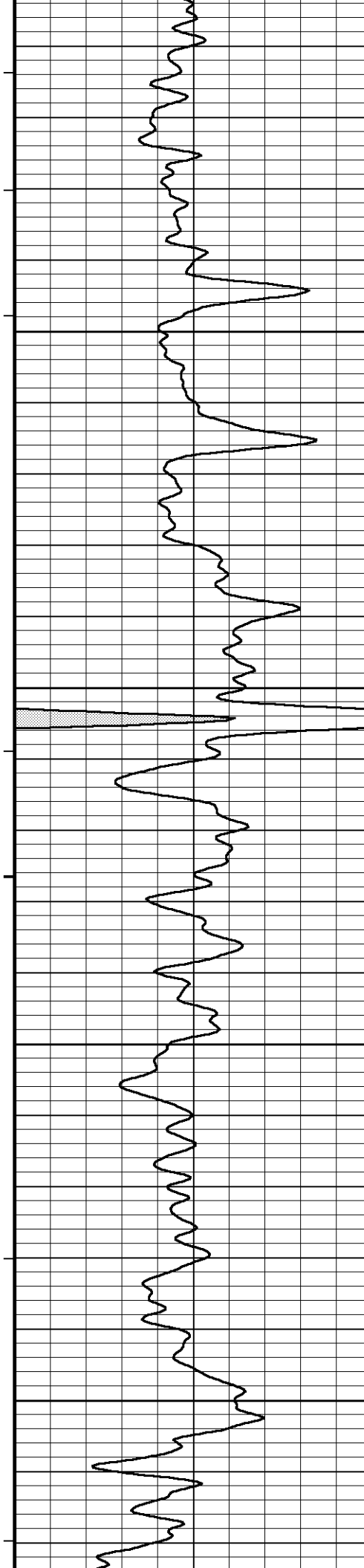
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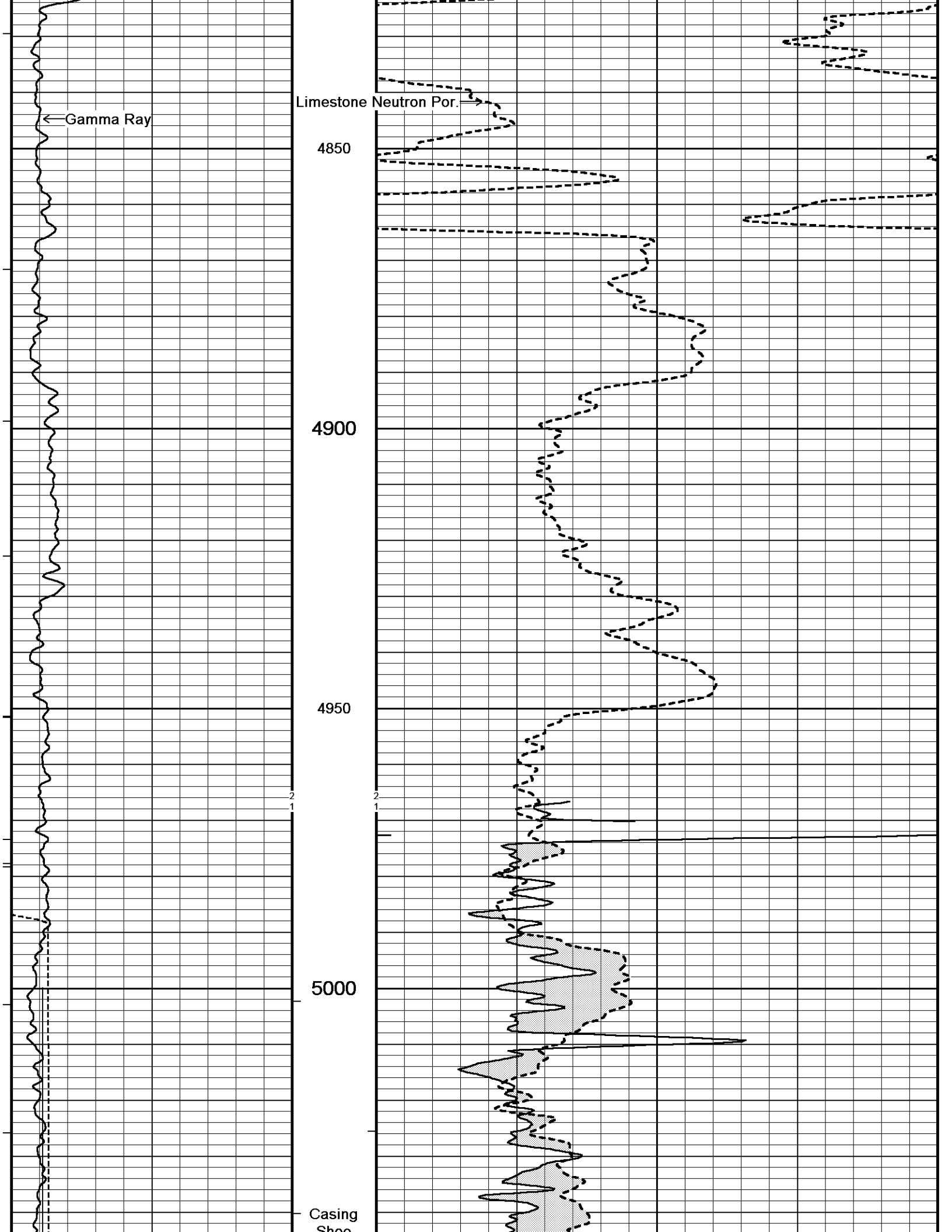
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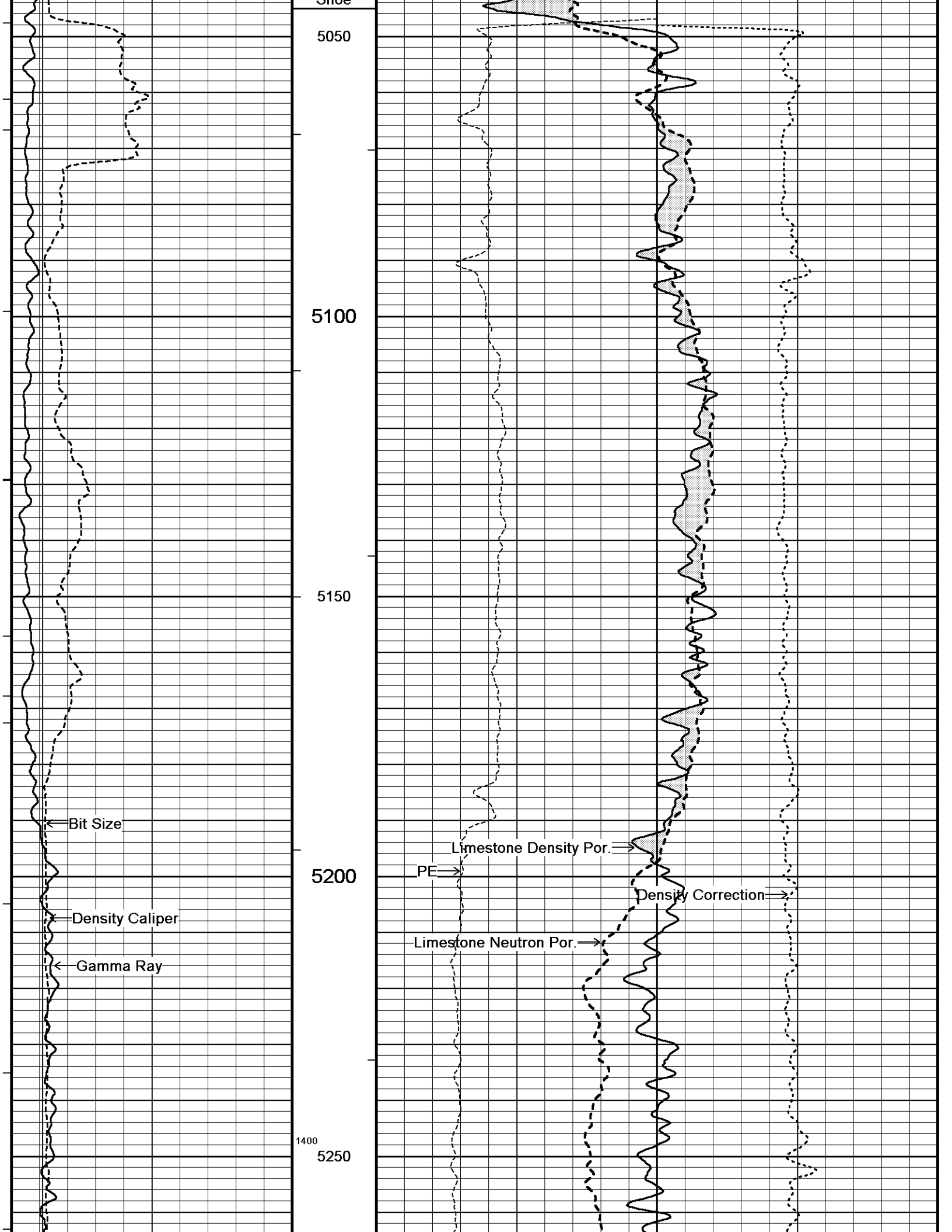
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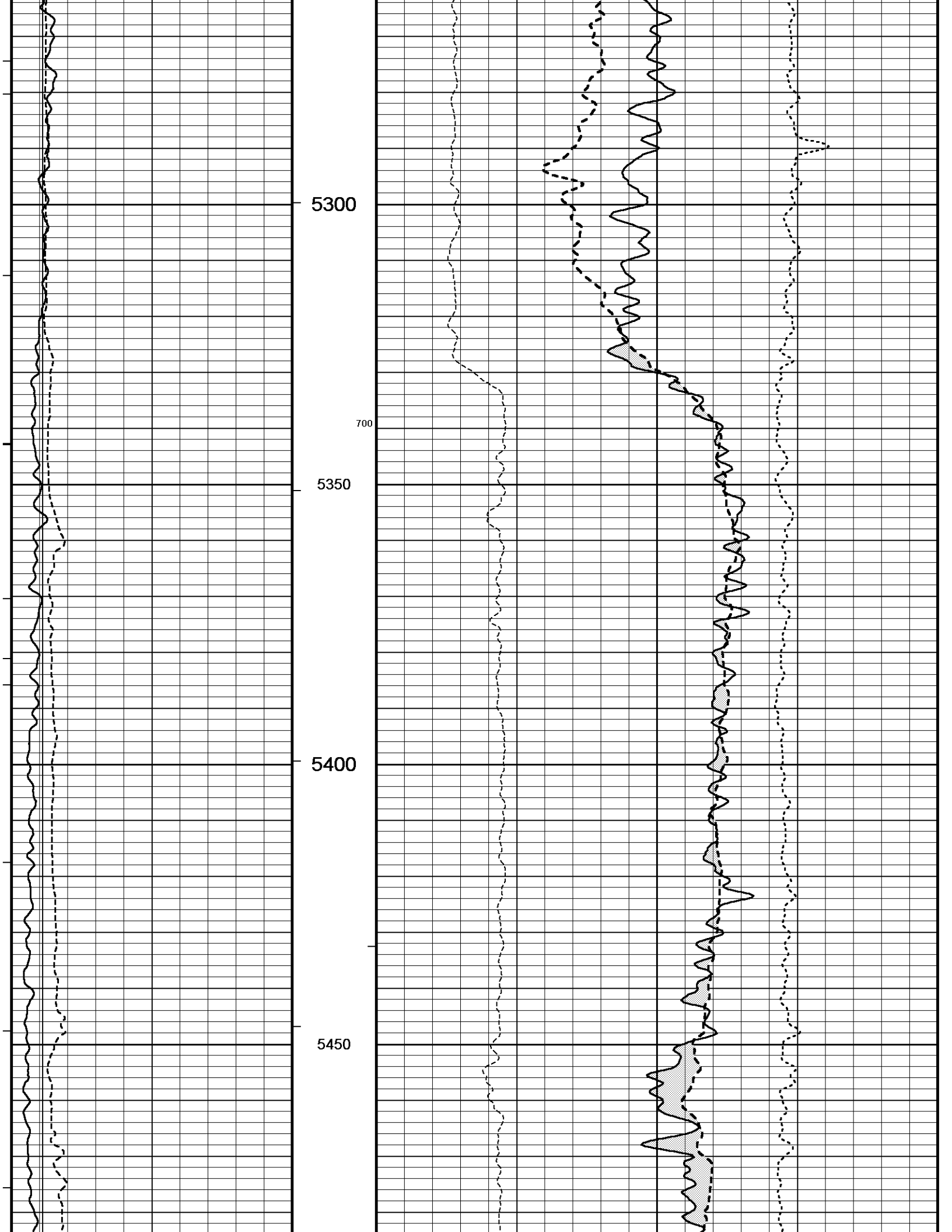


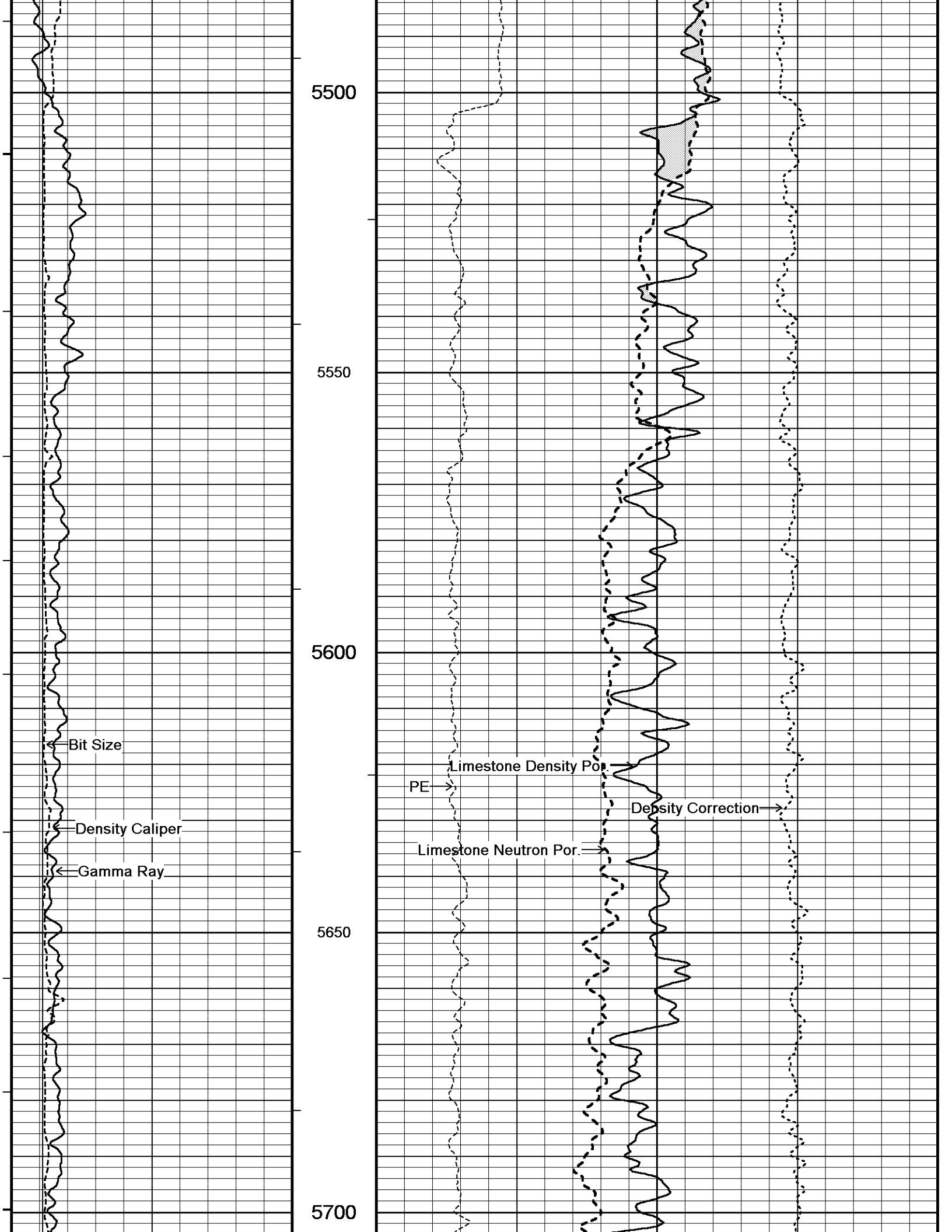


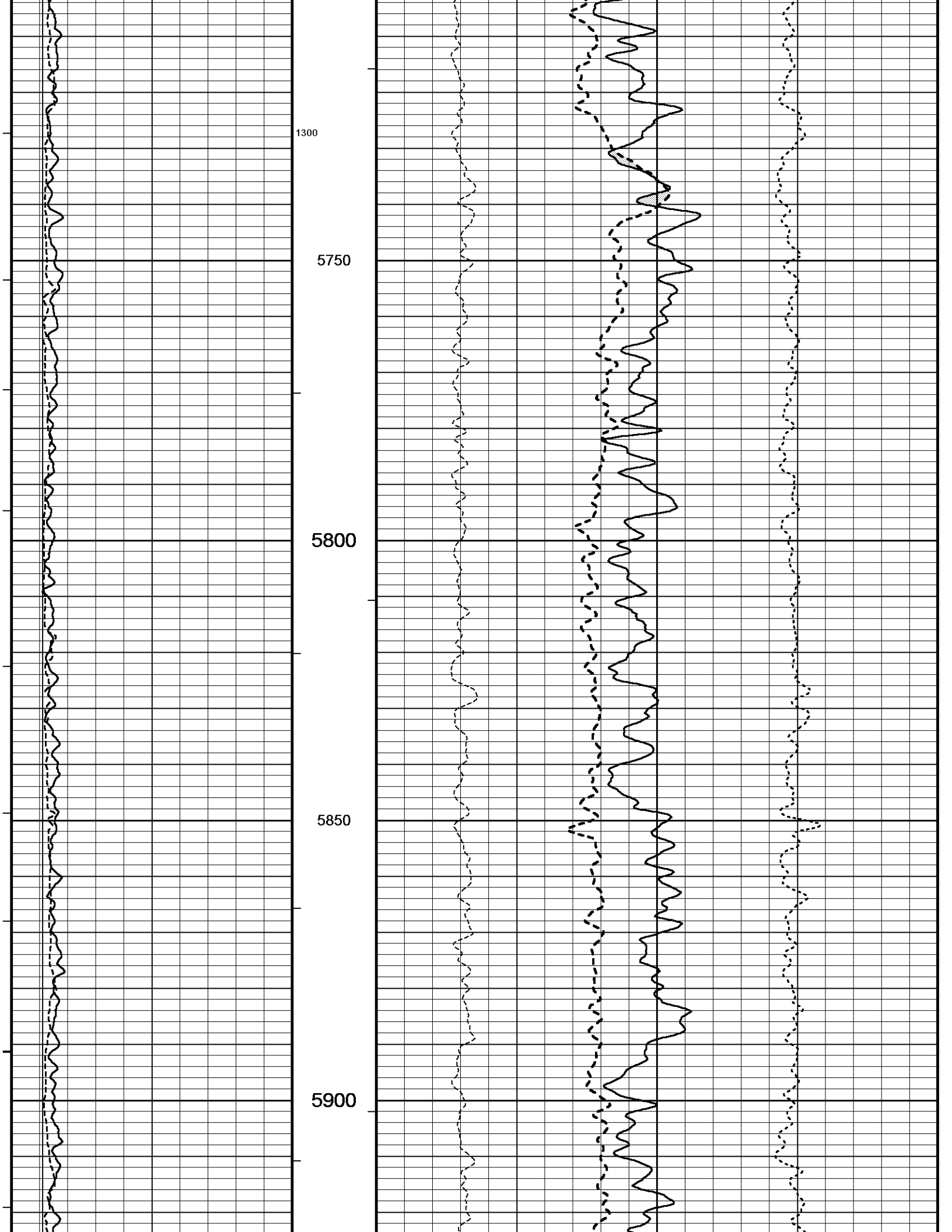


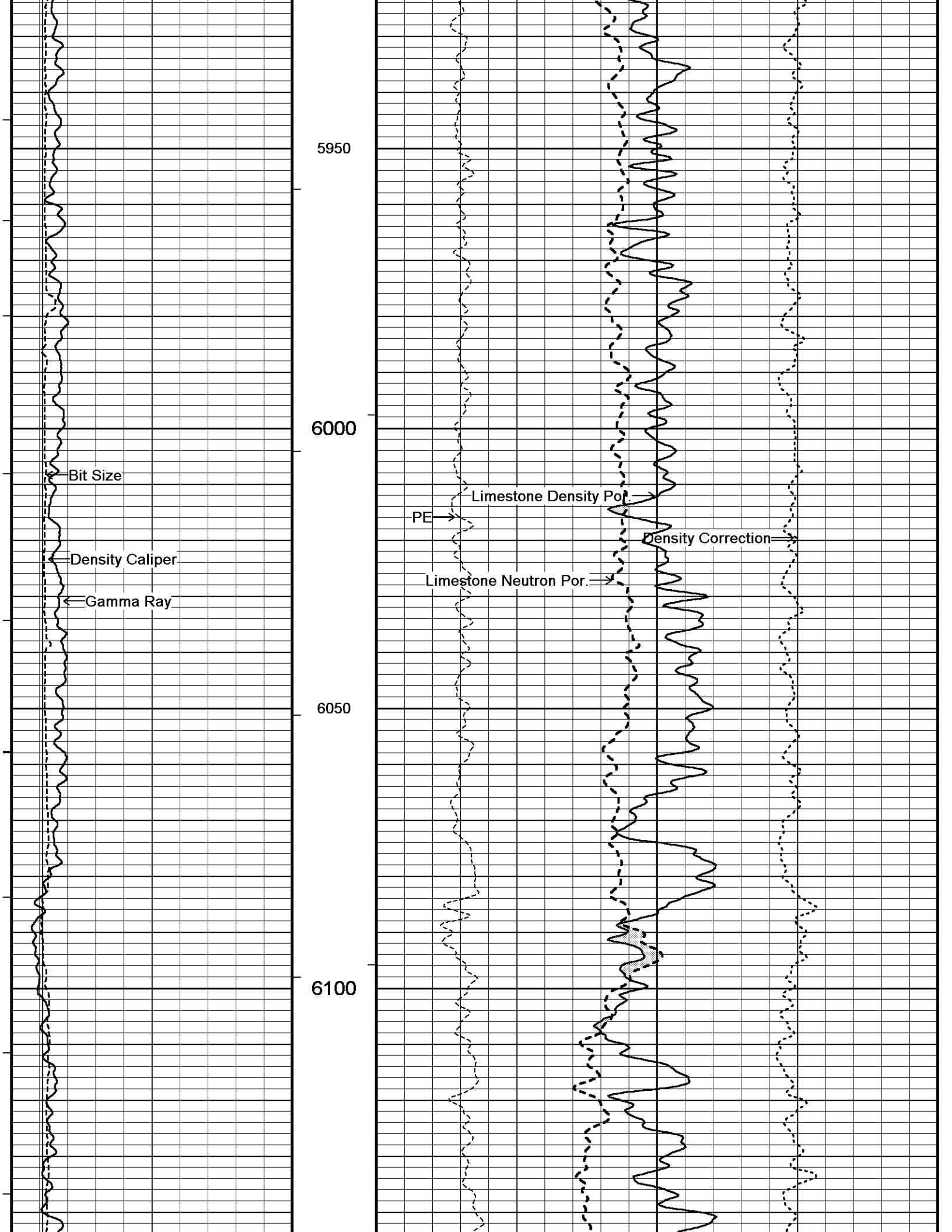


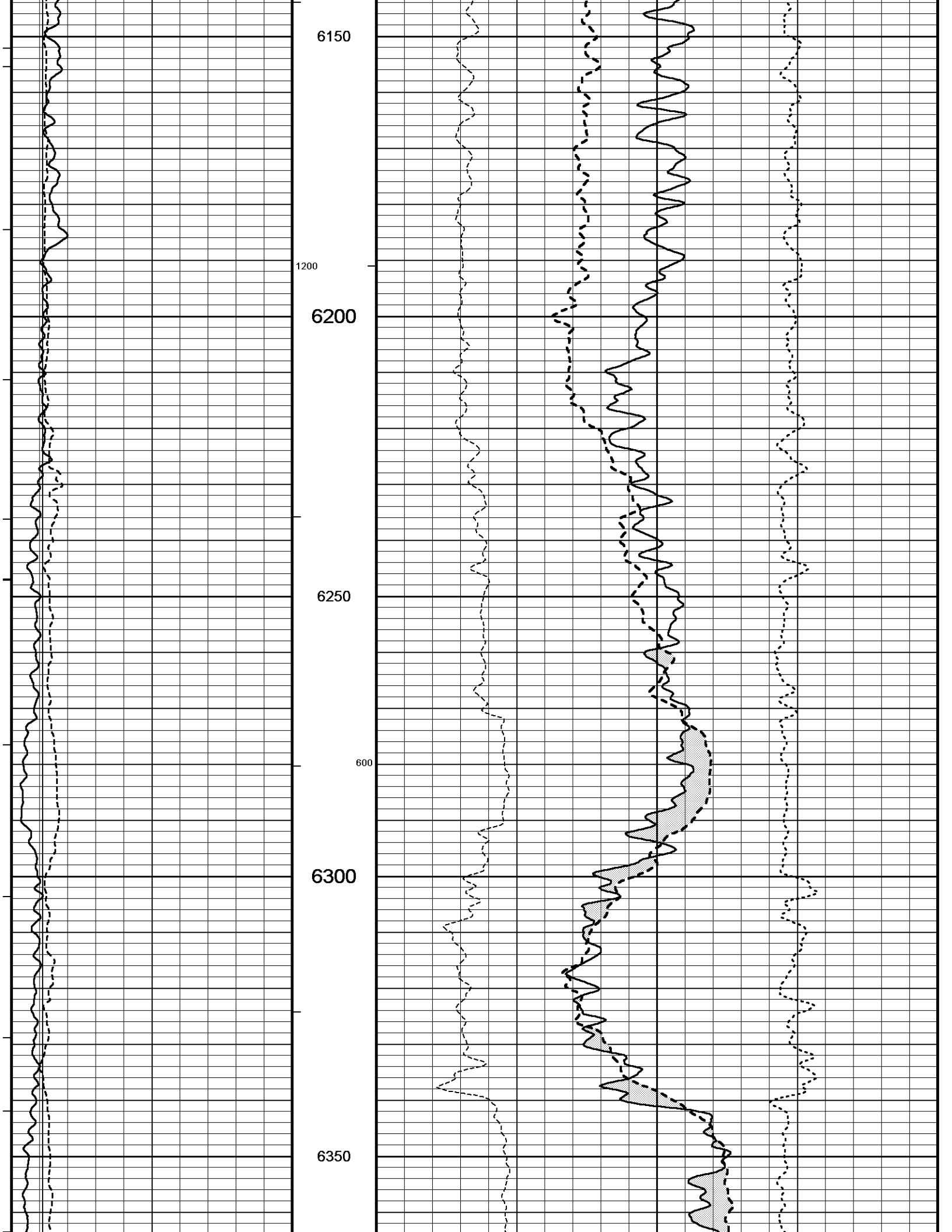


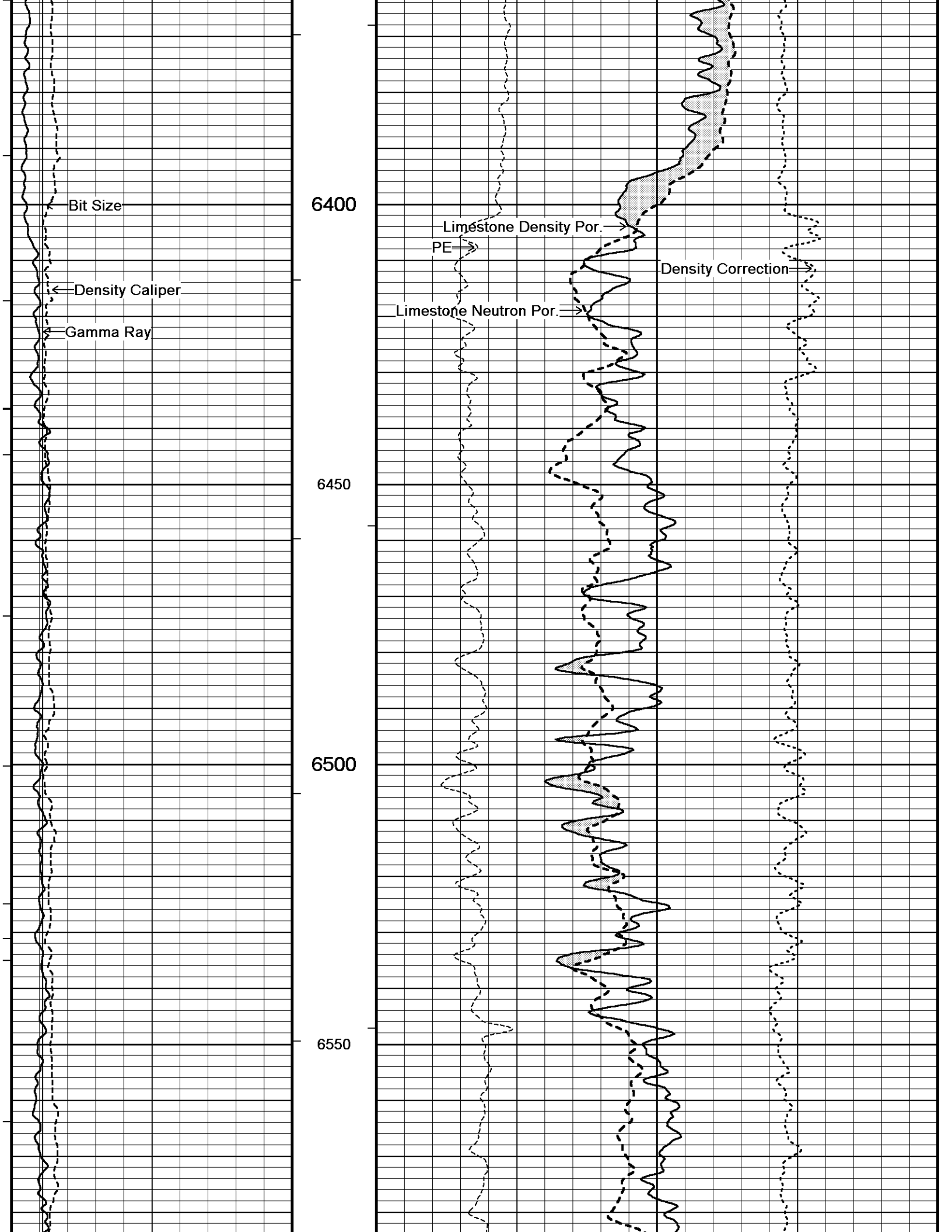


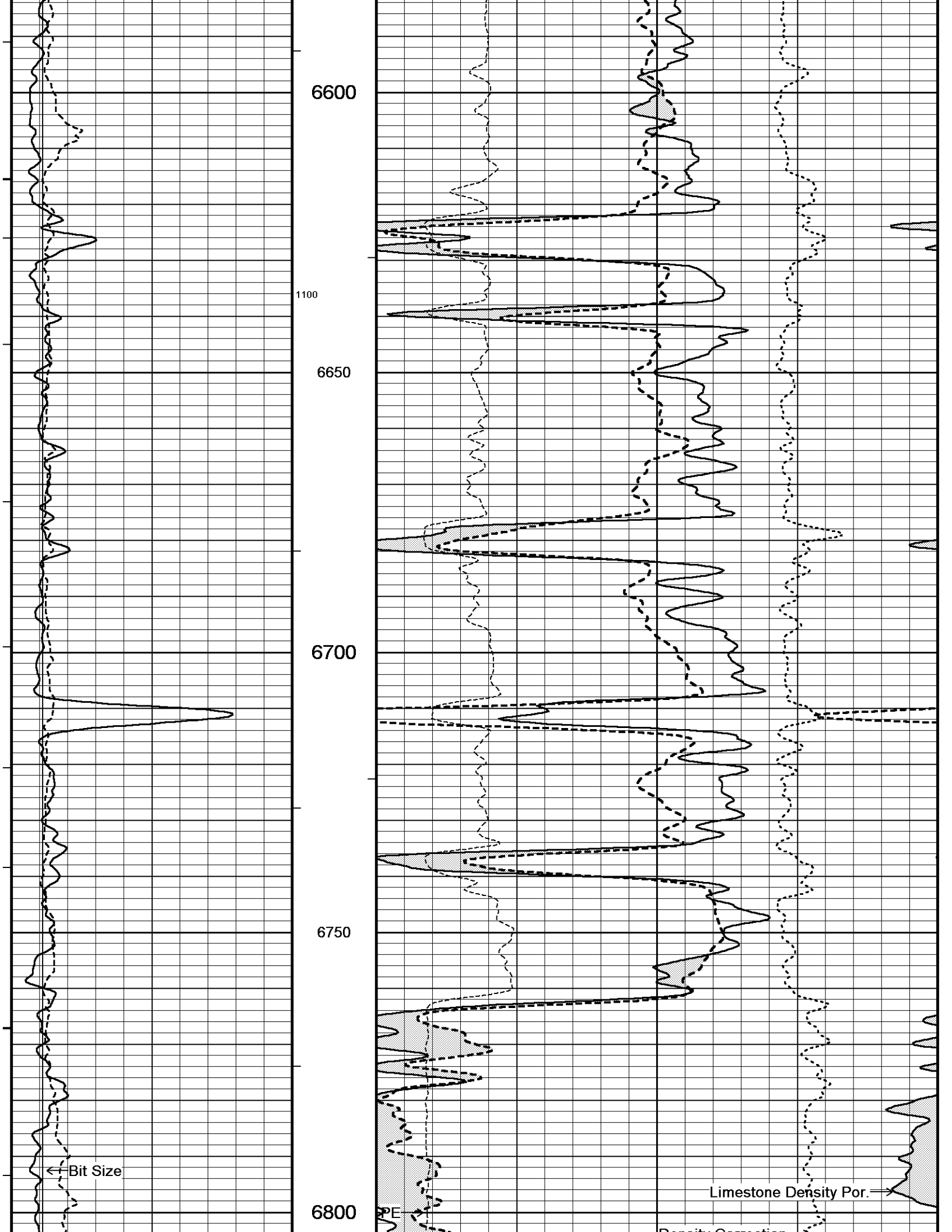


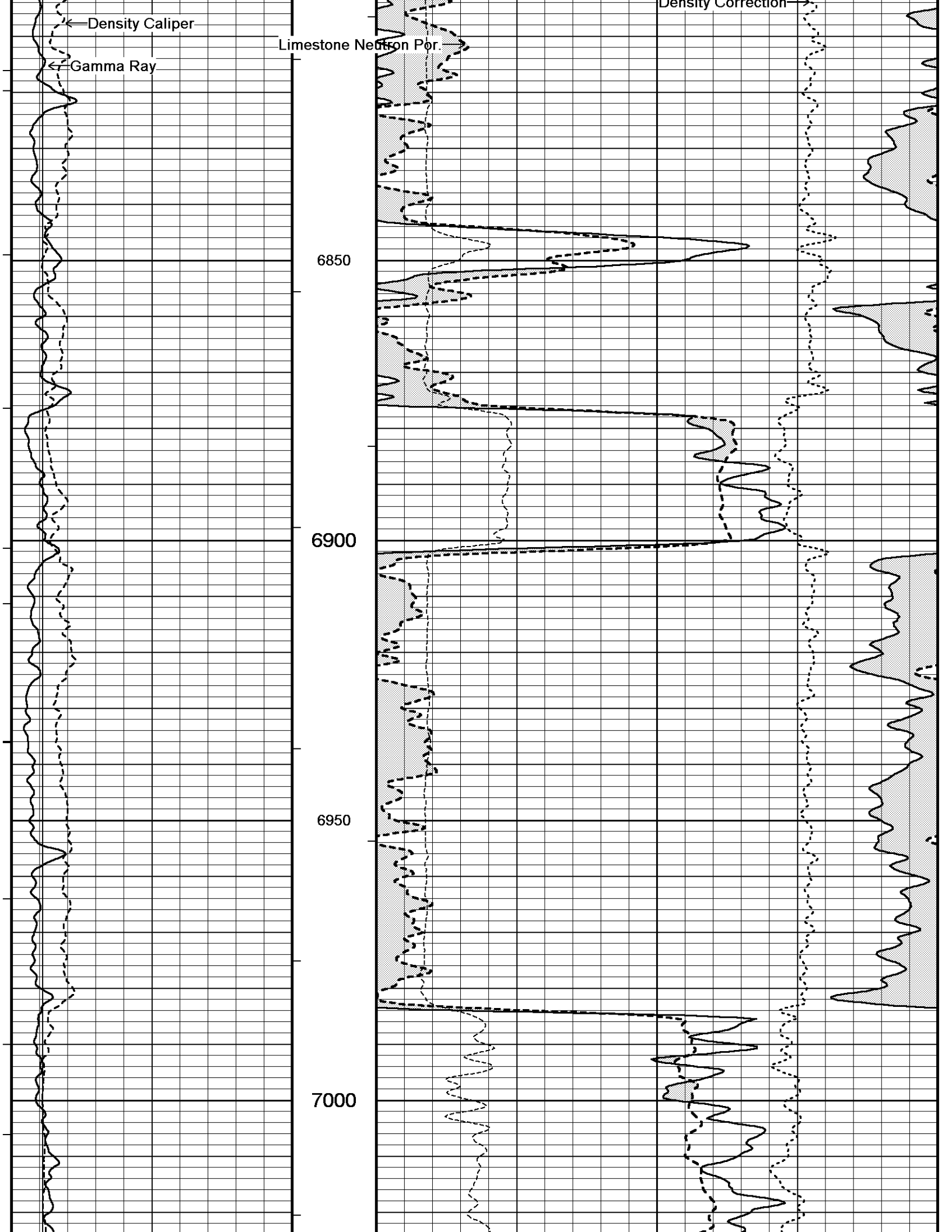


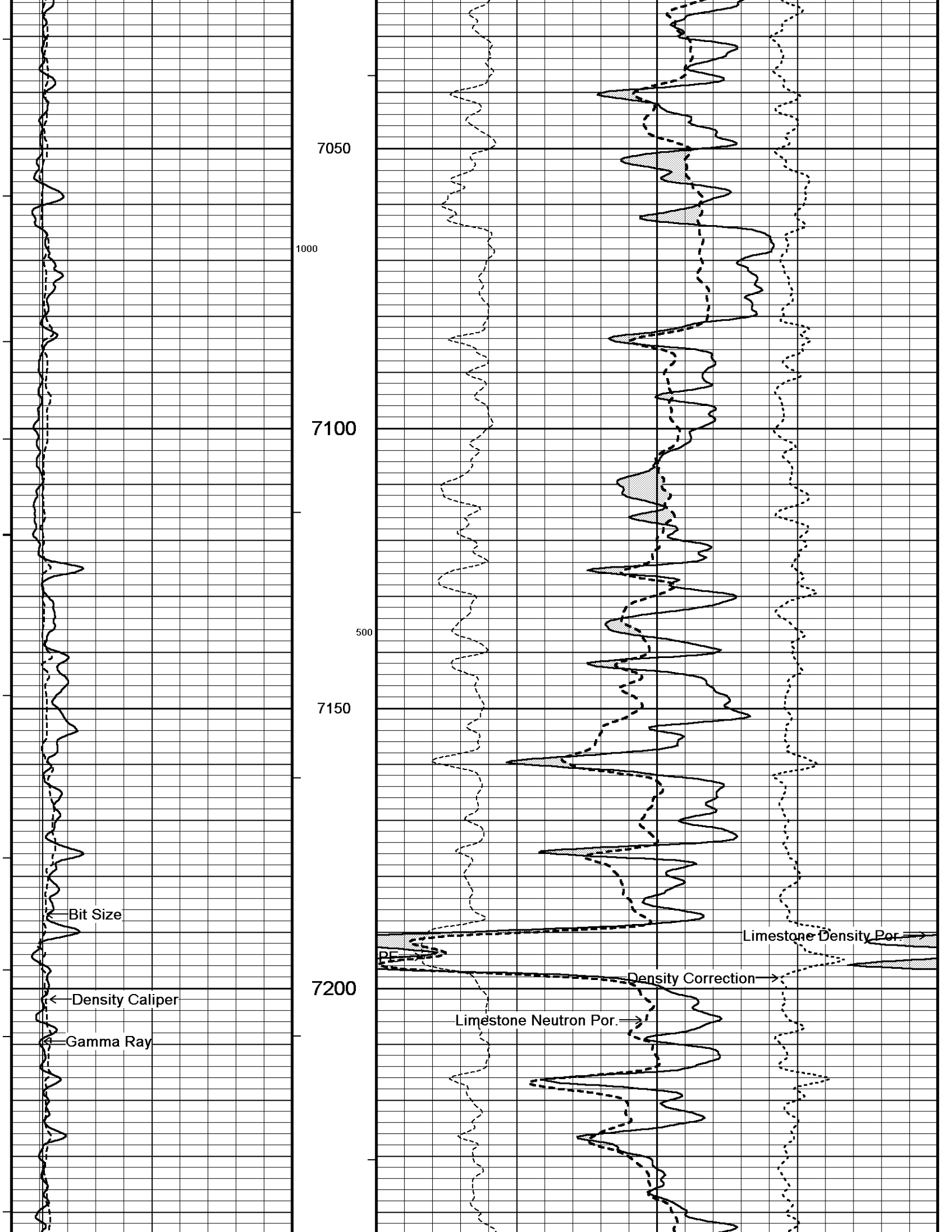


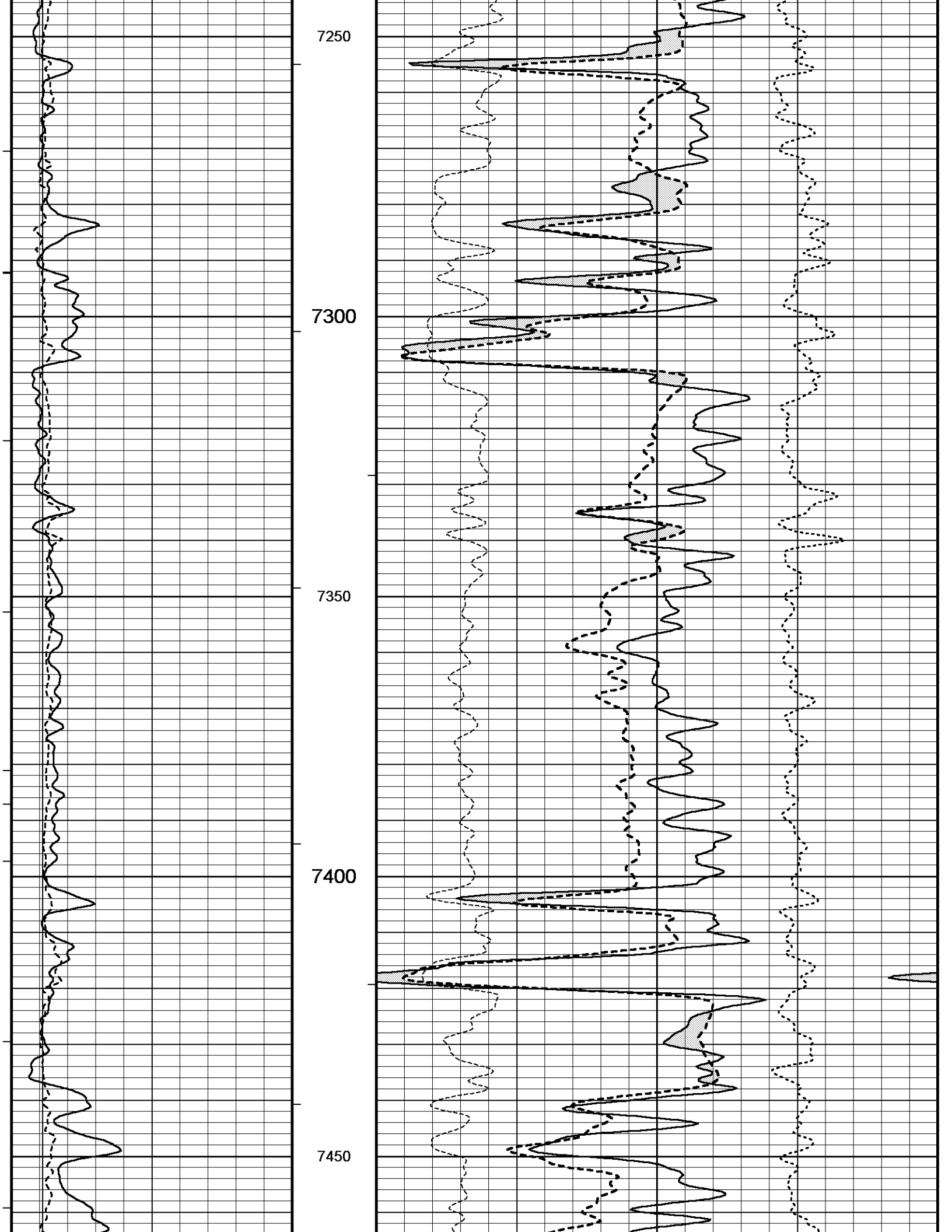


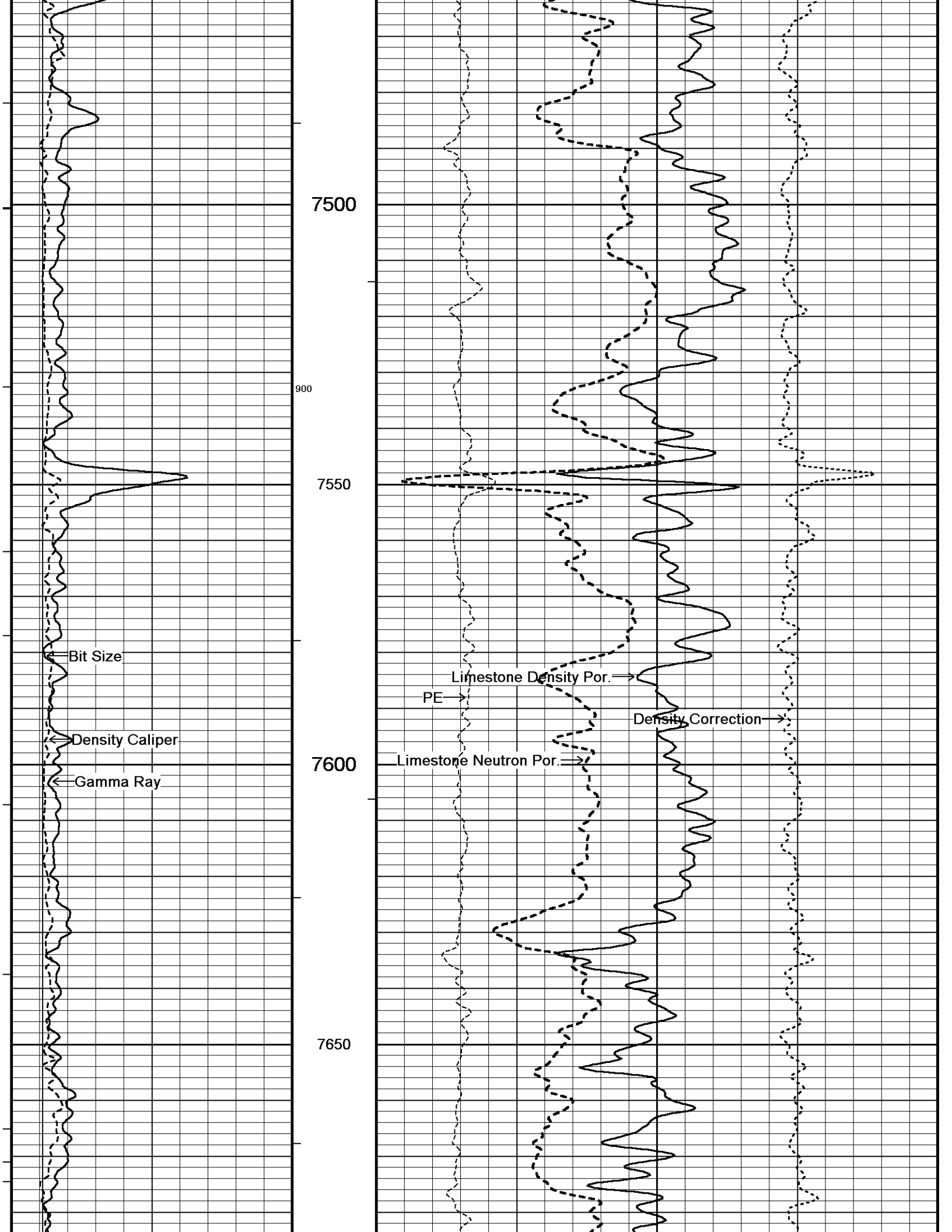


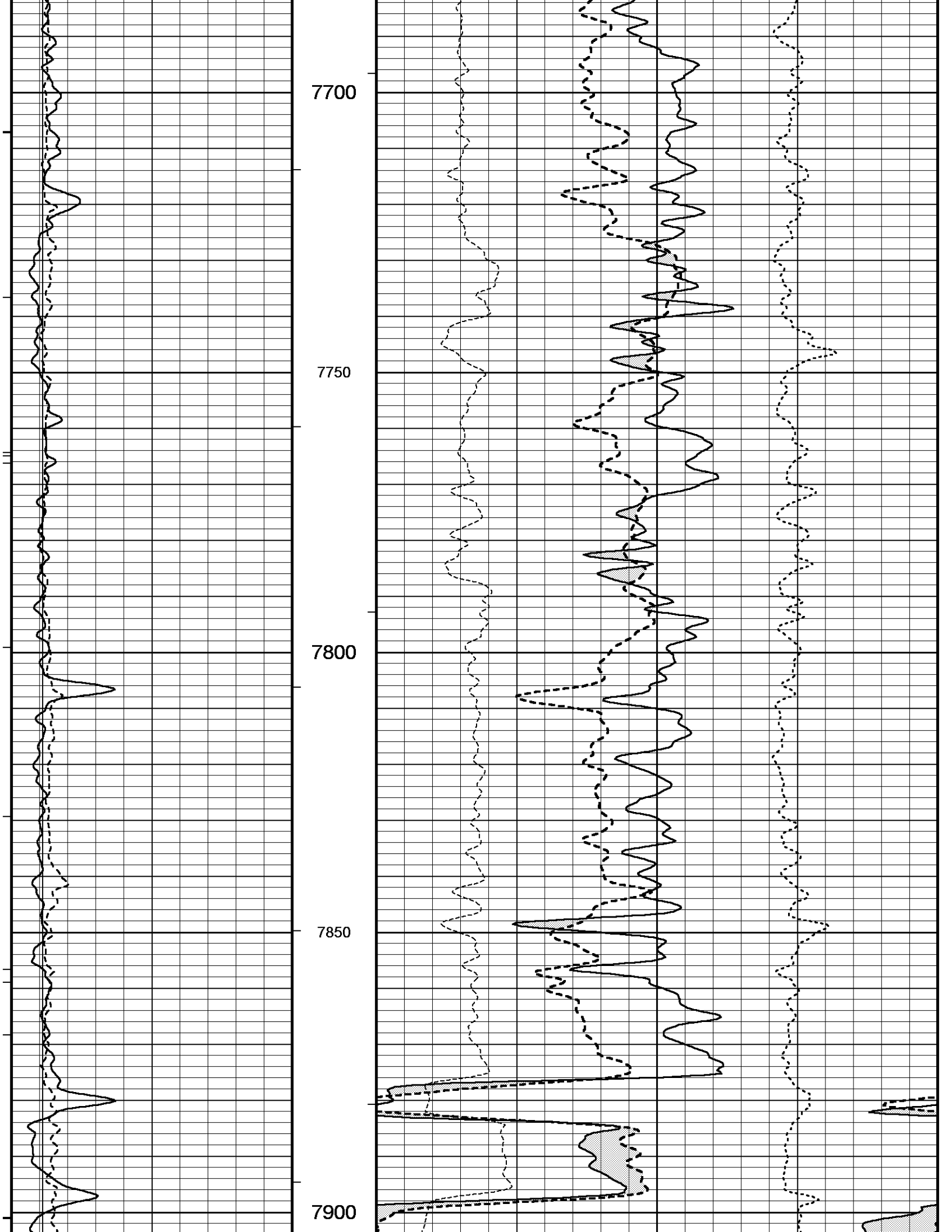


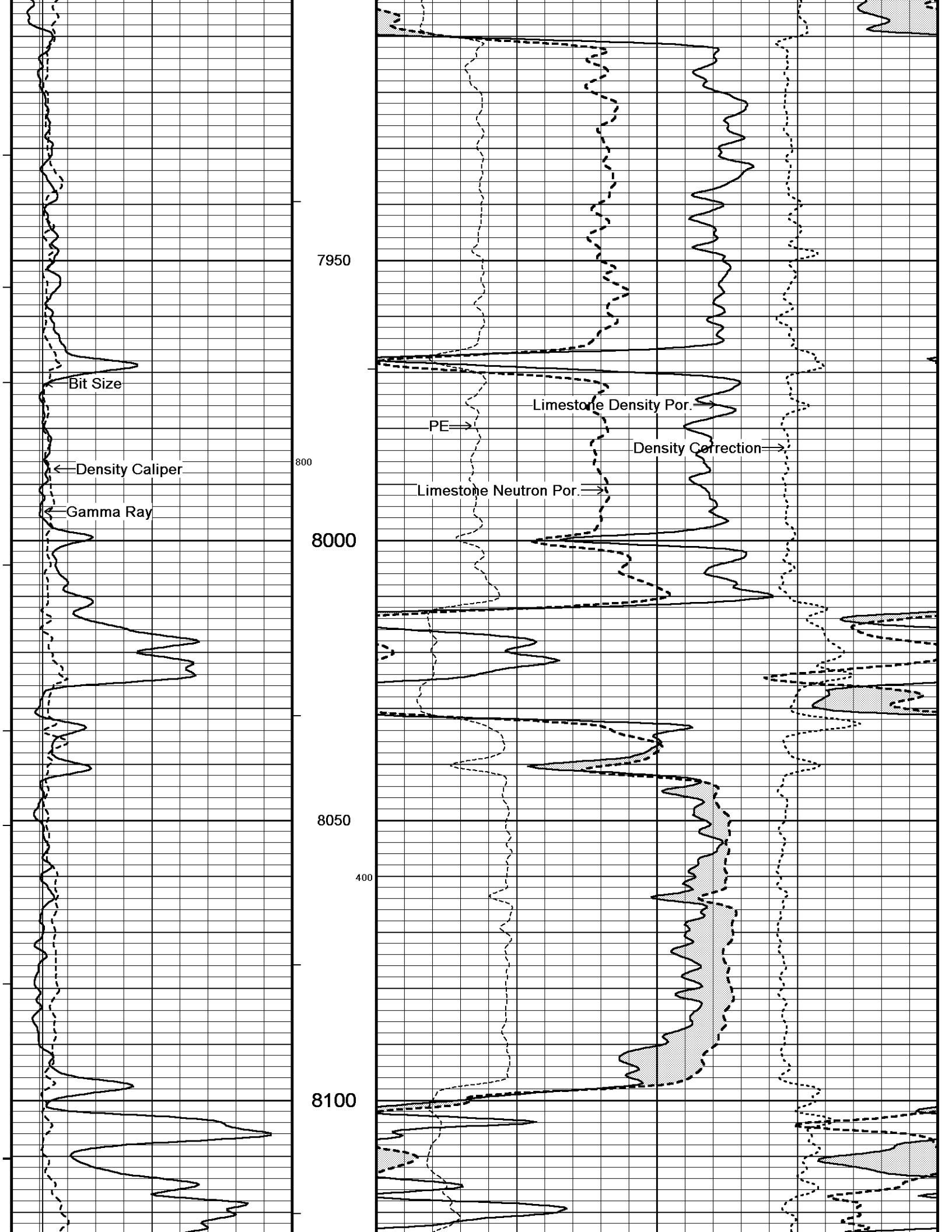


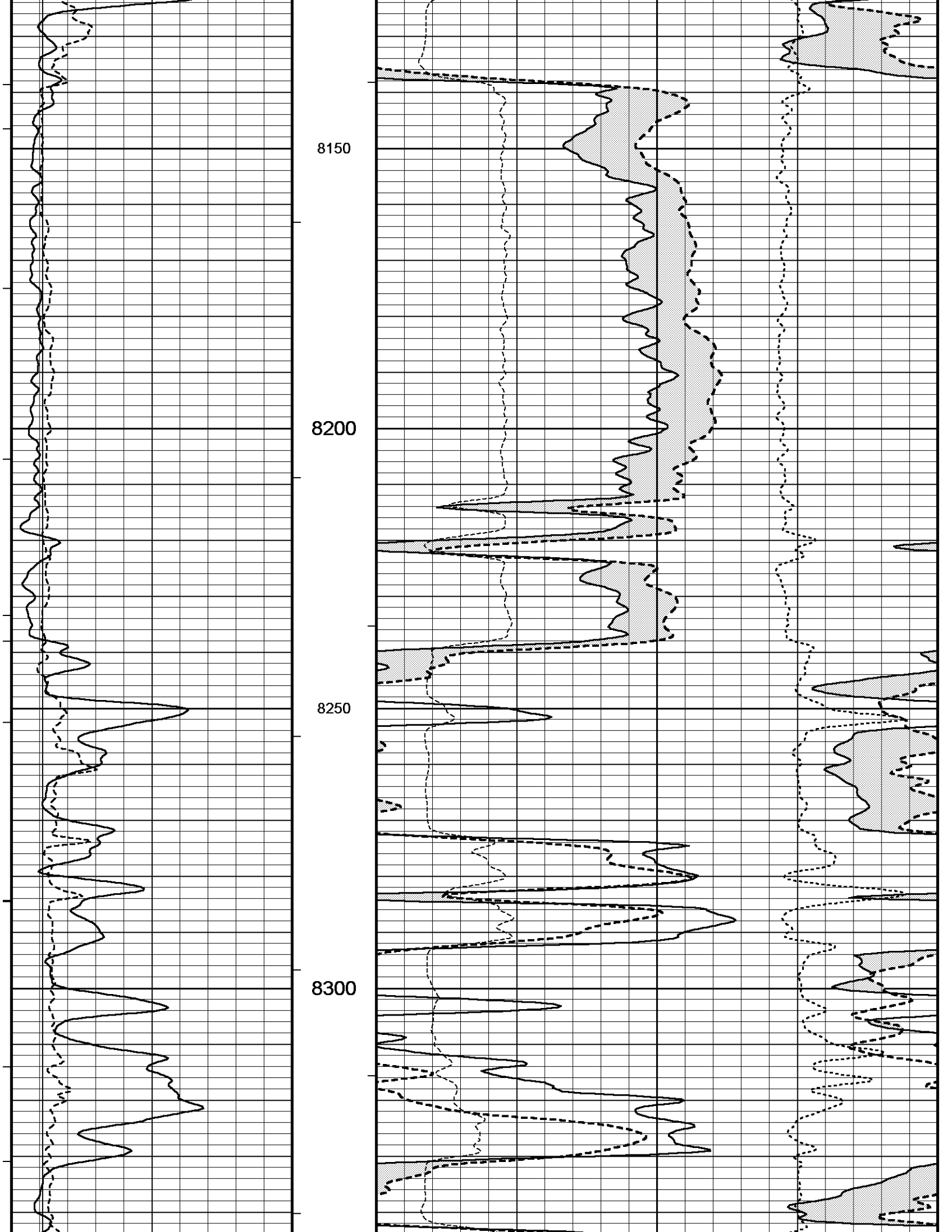


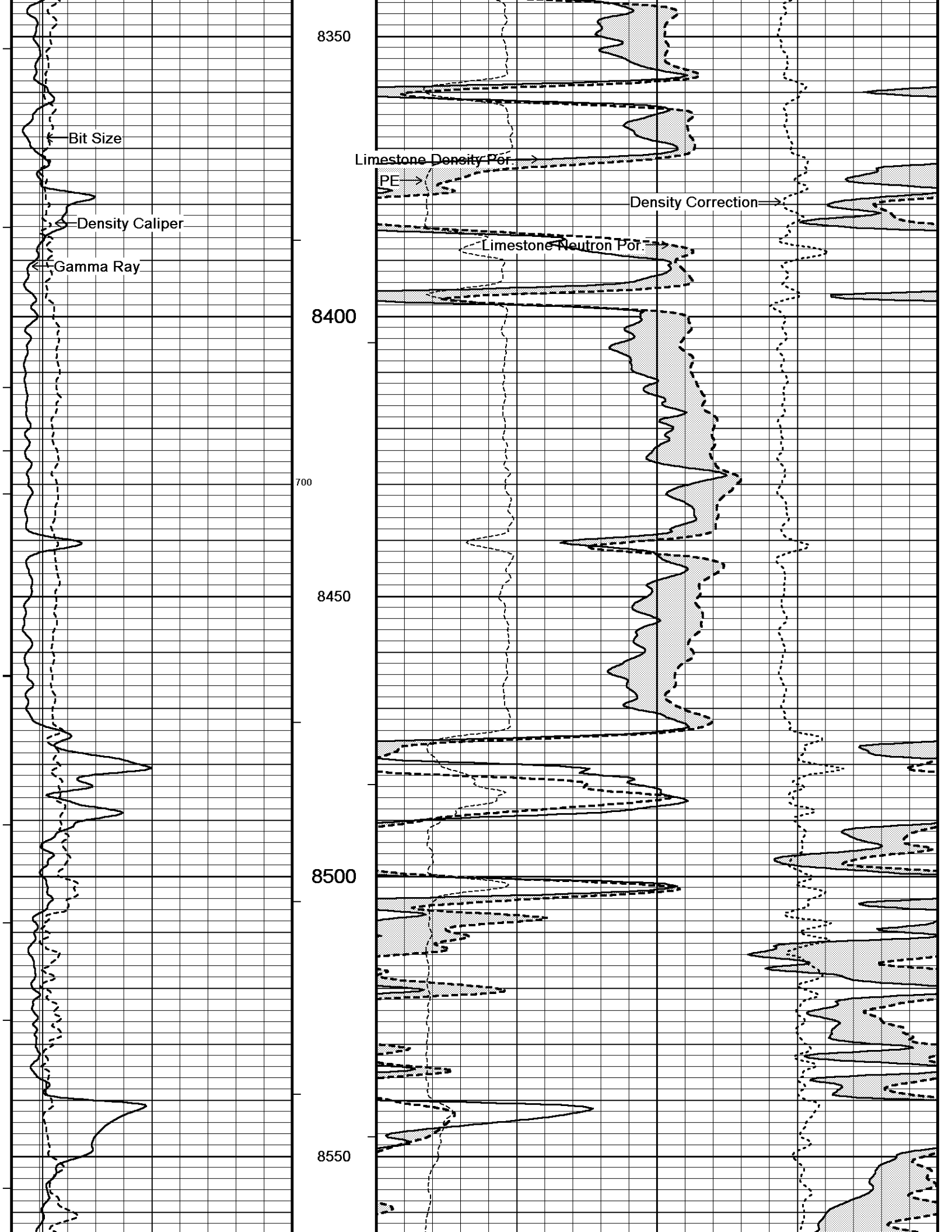


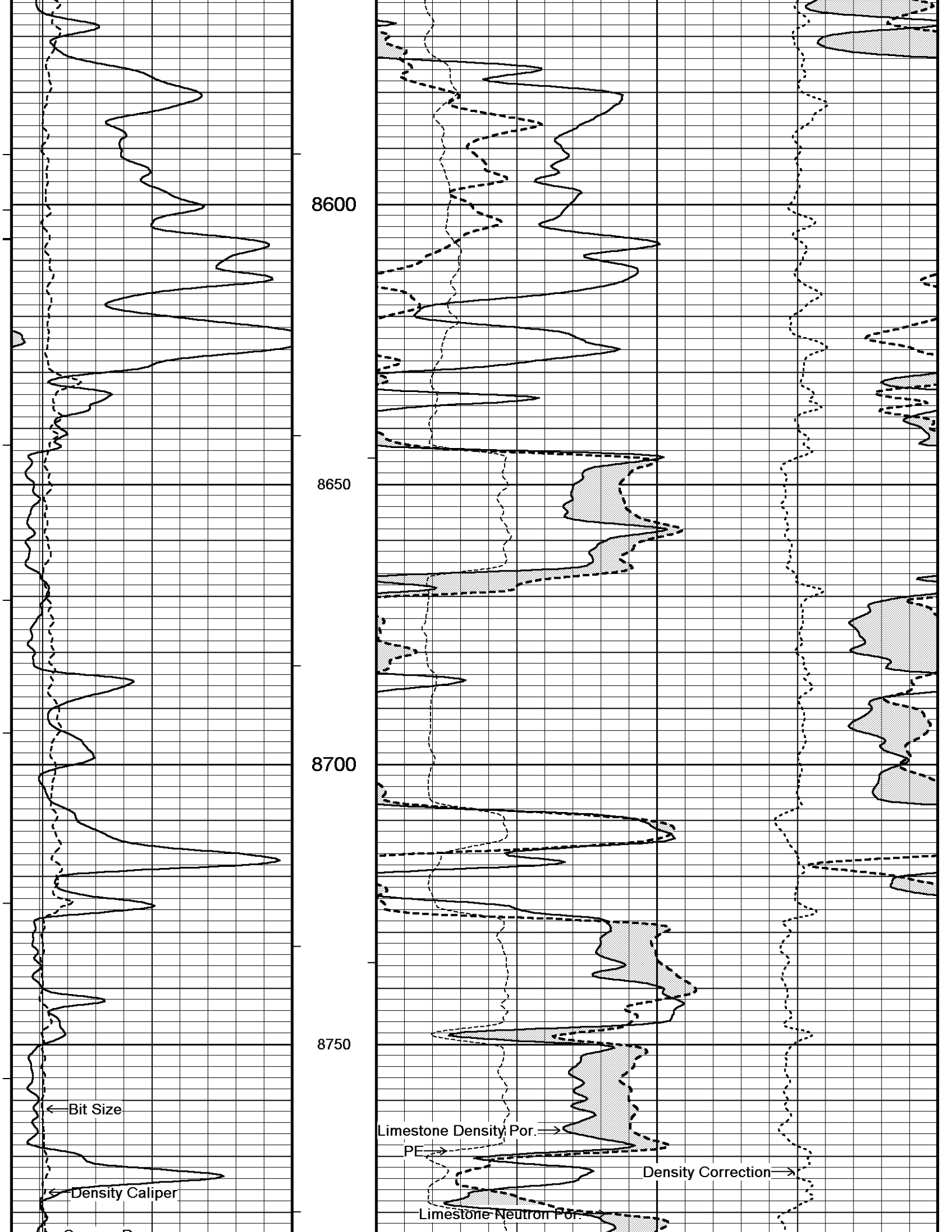




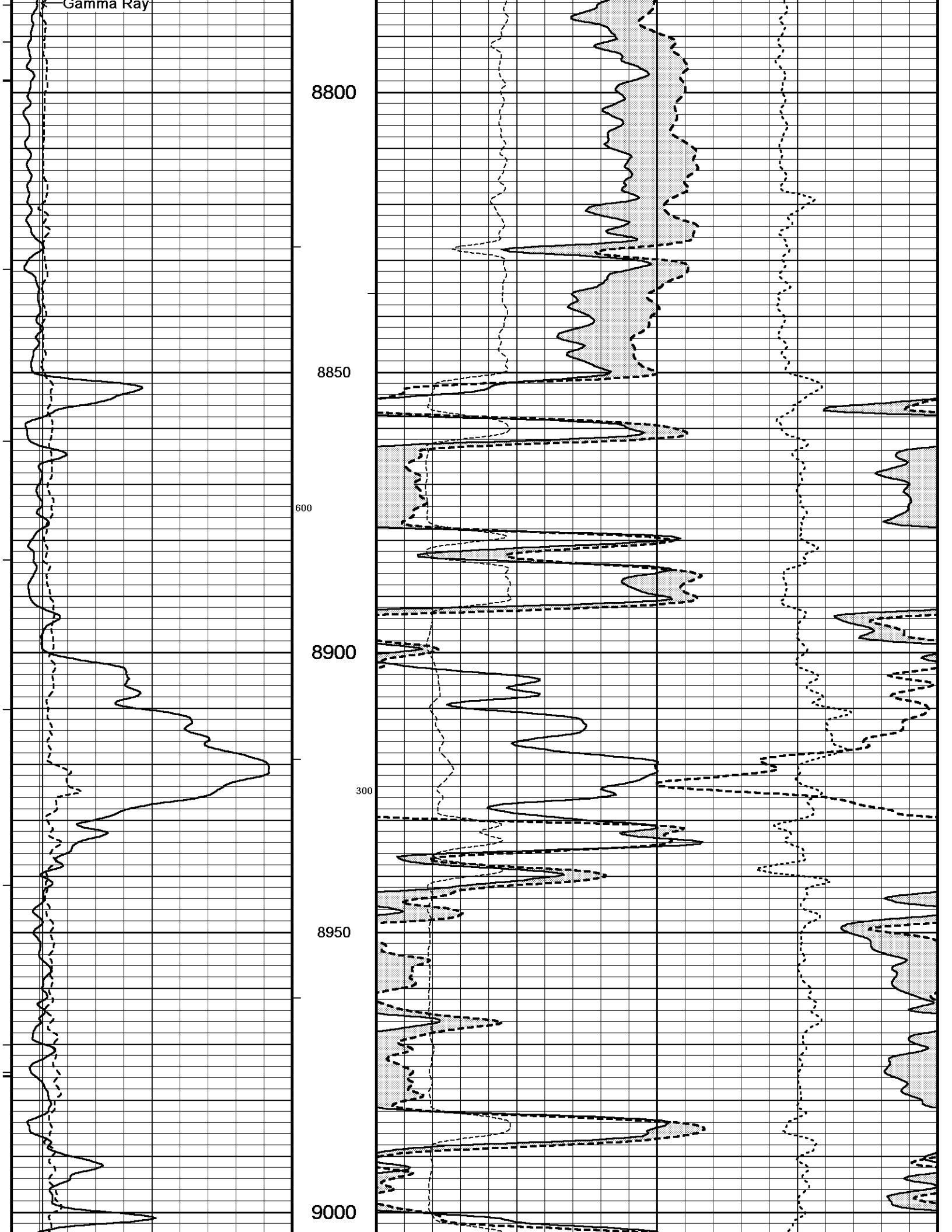


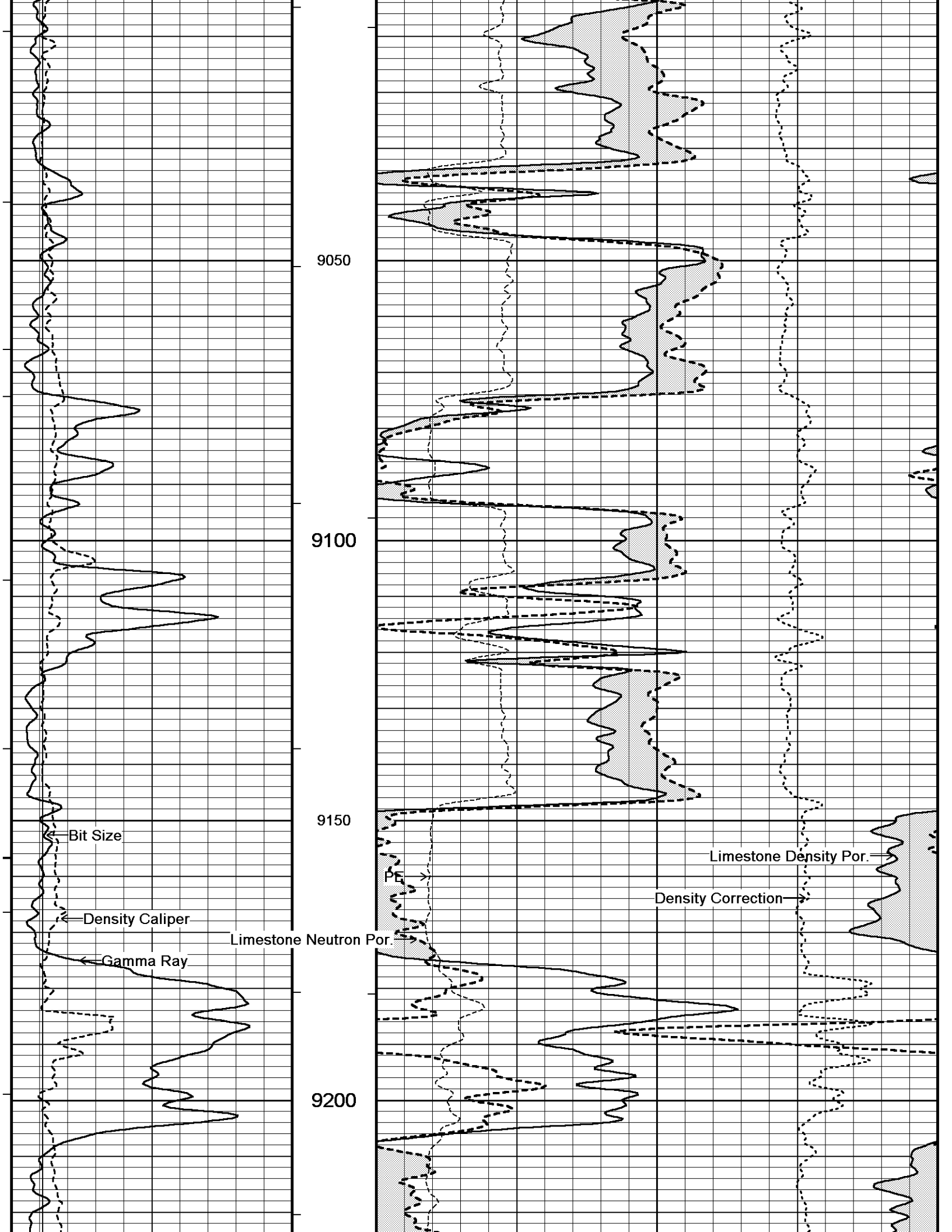


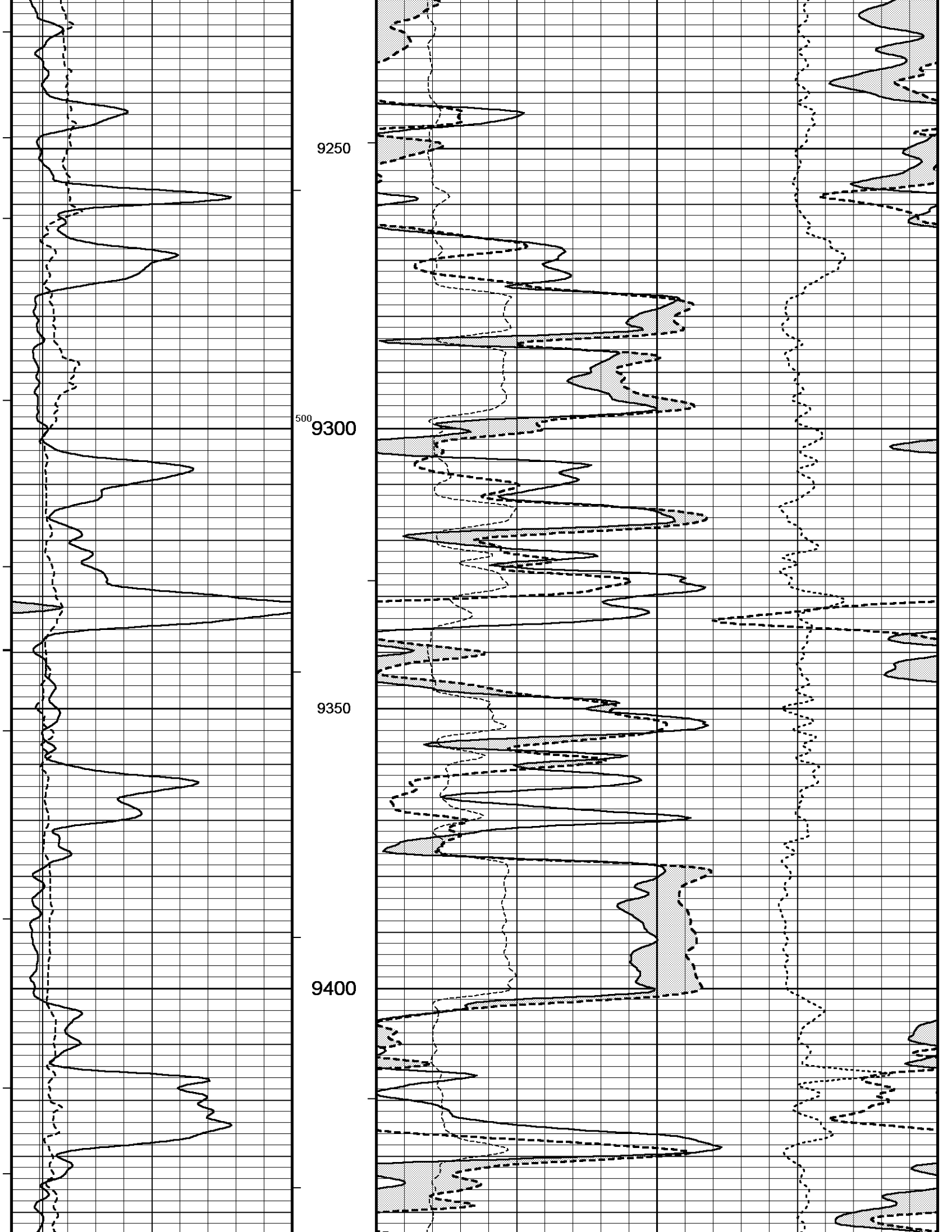


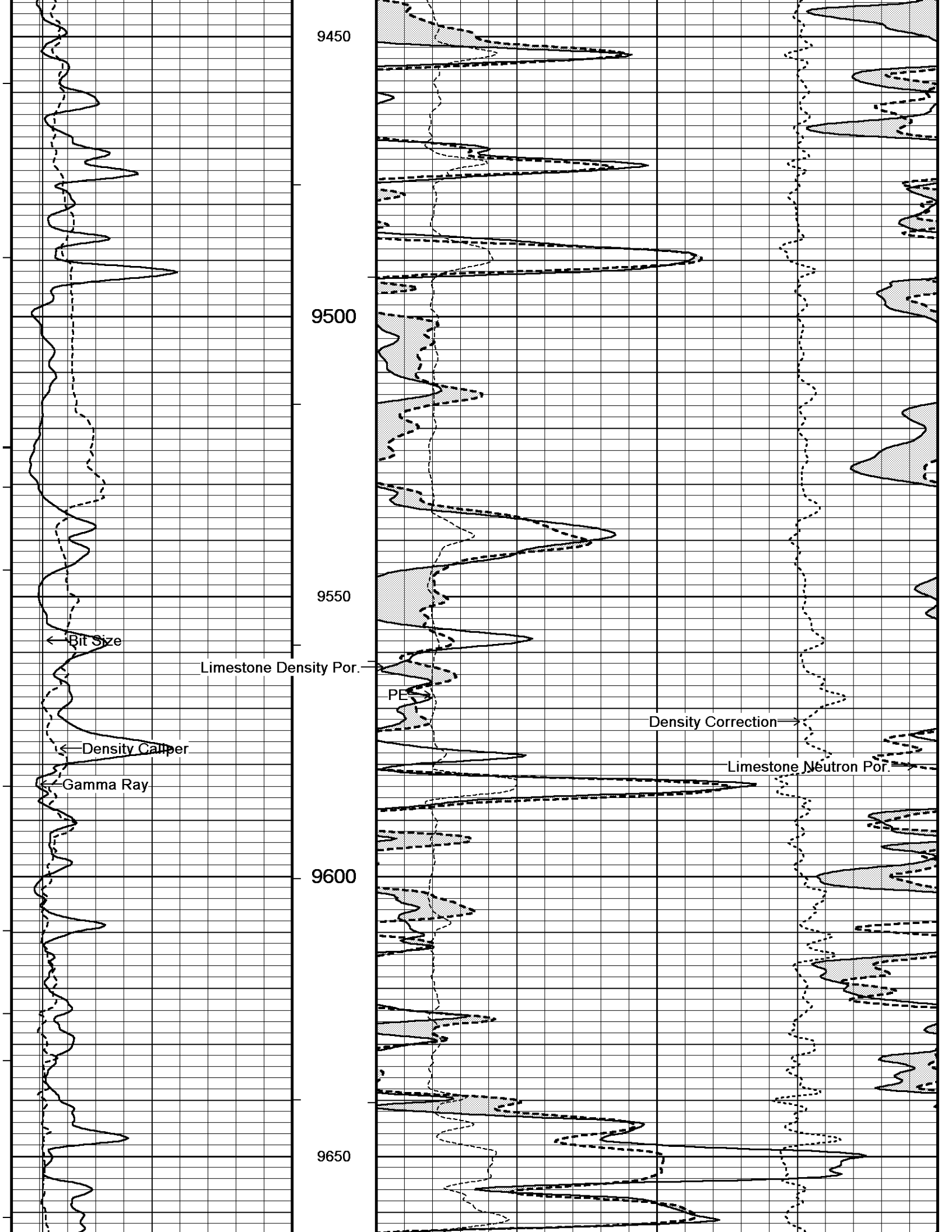


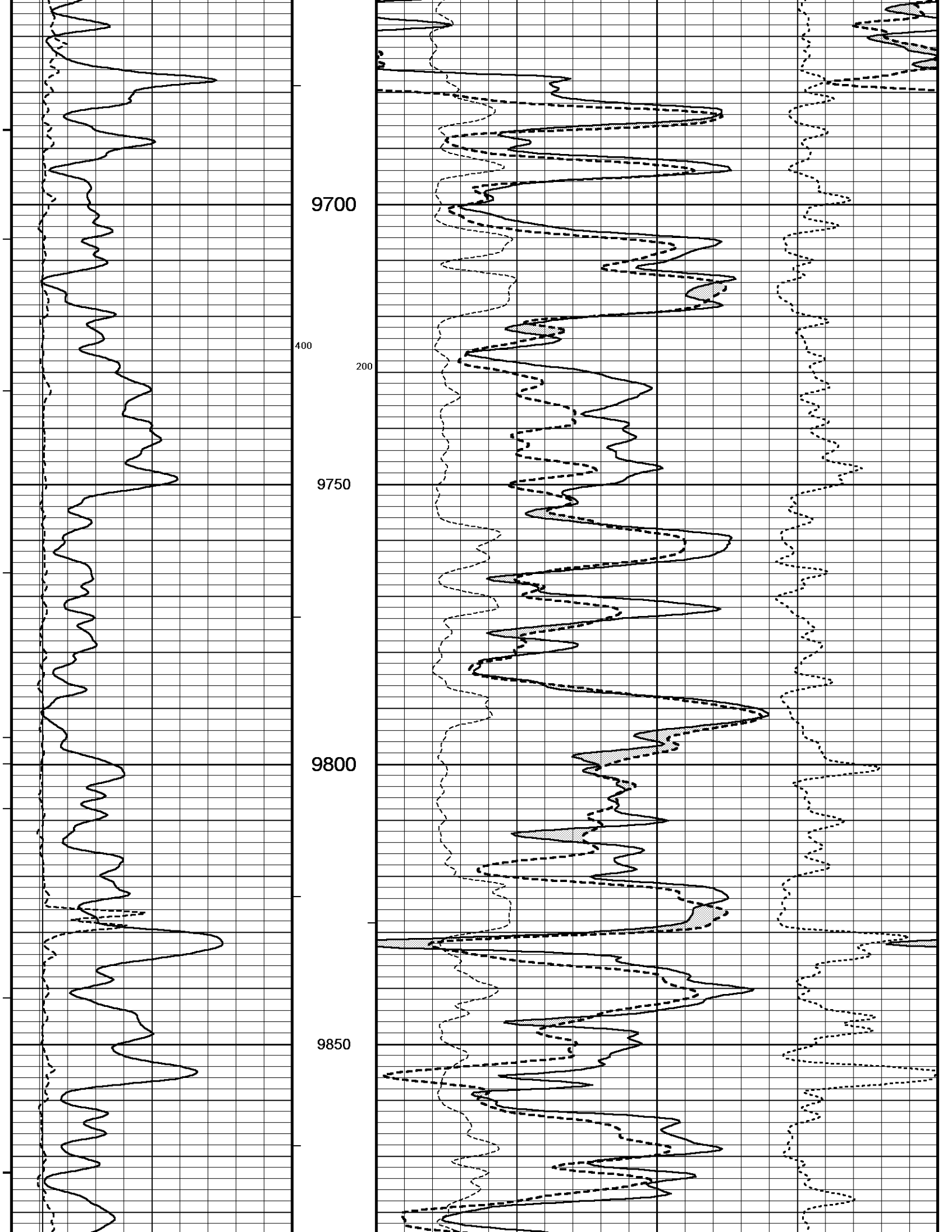
Gamma Ray

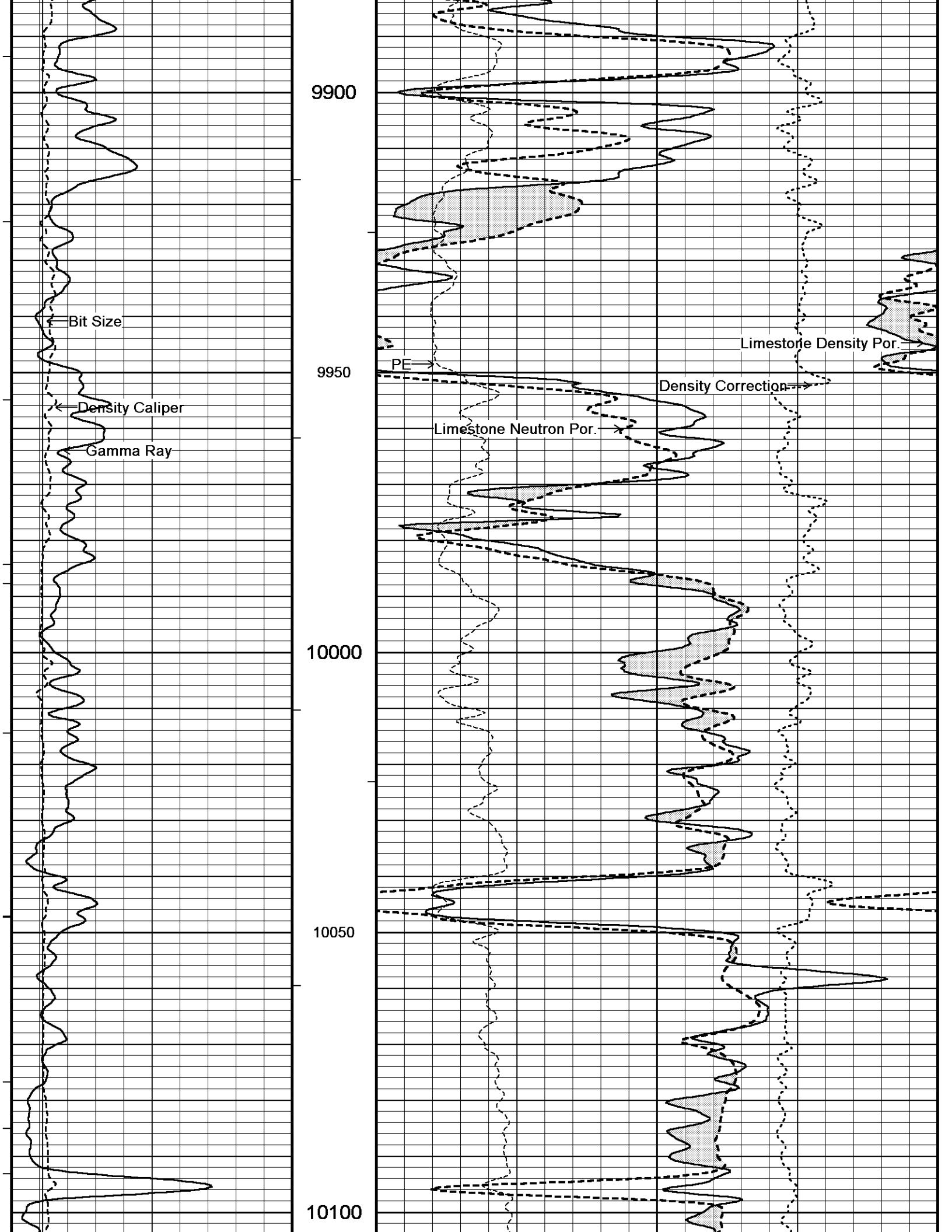


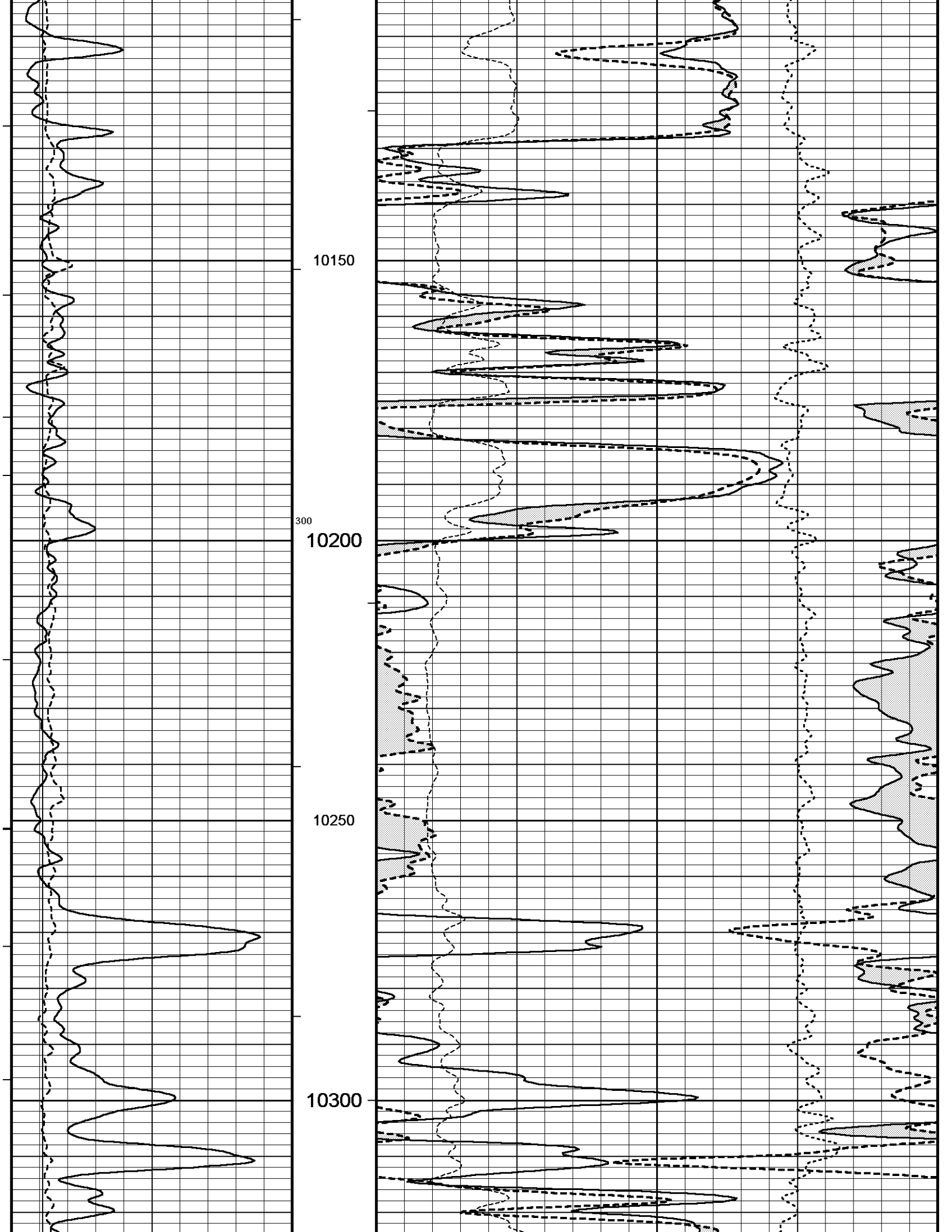


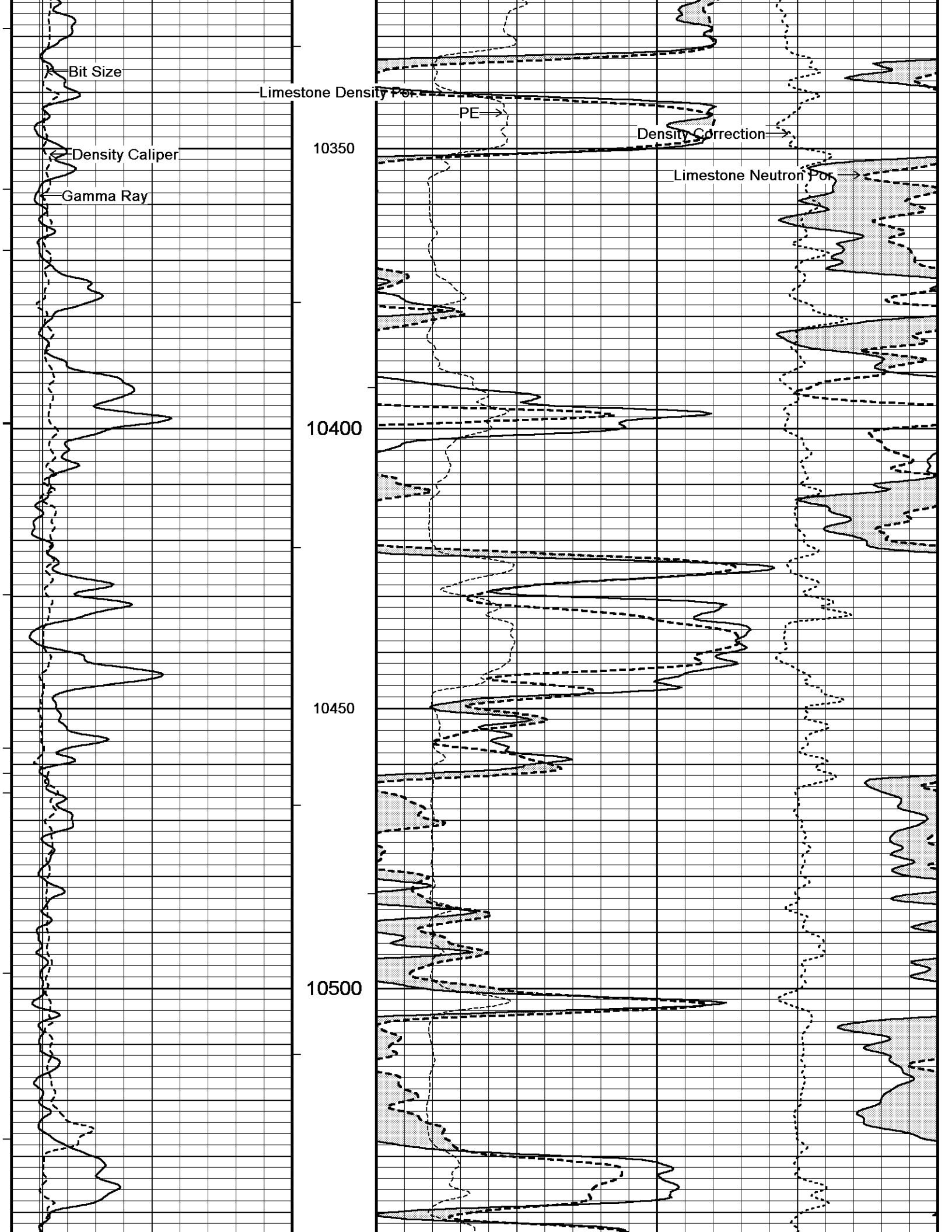


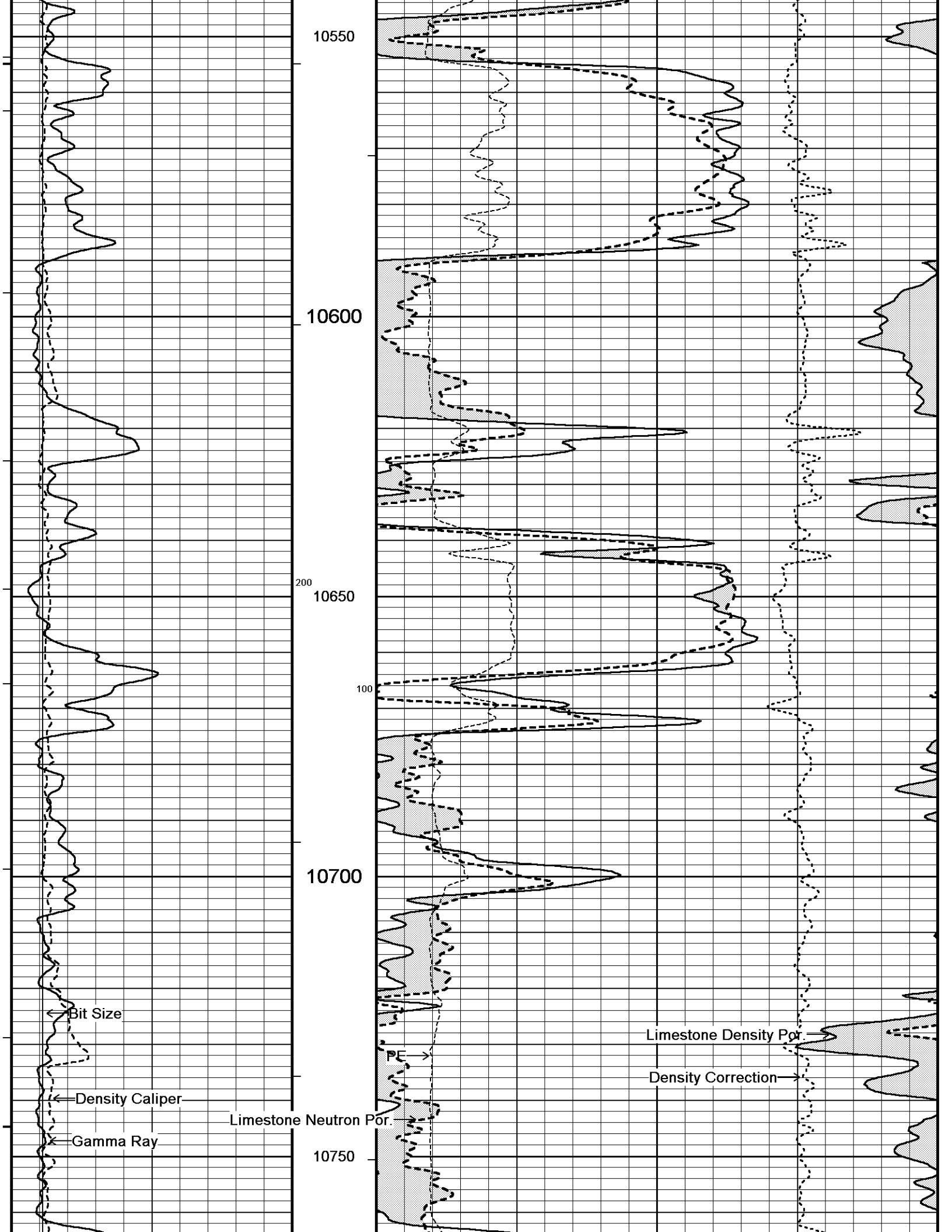


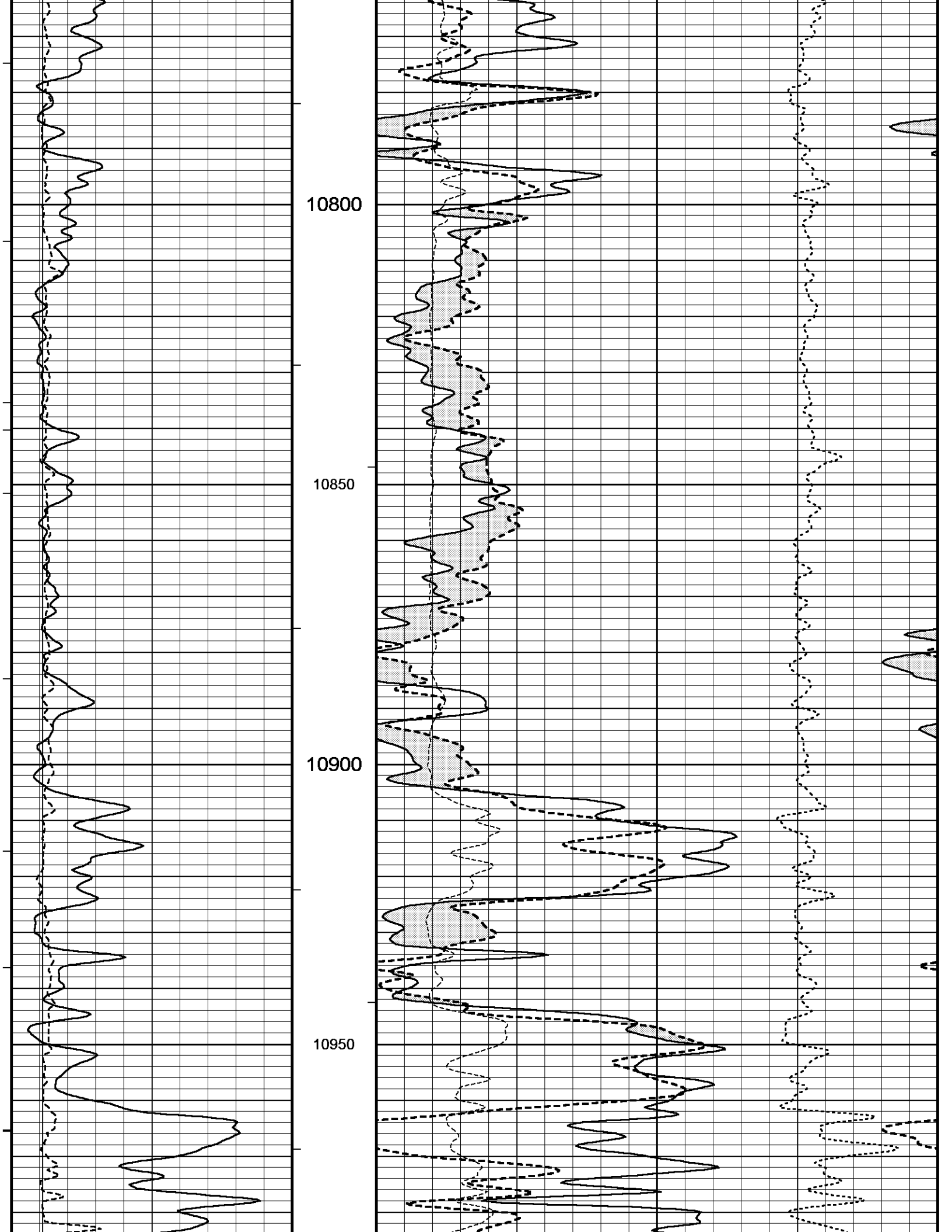


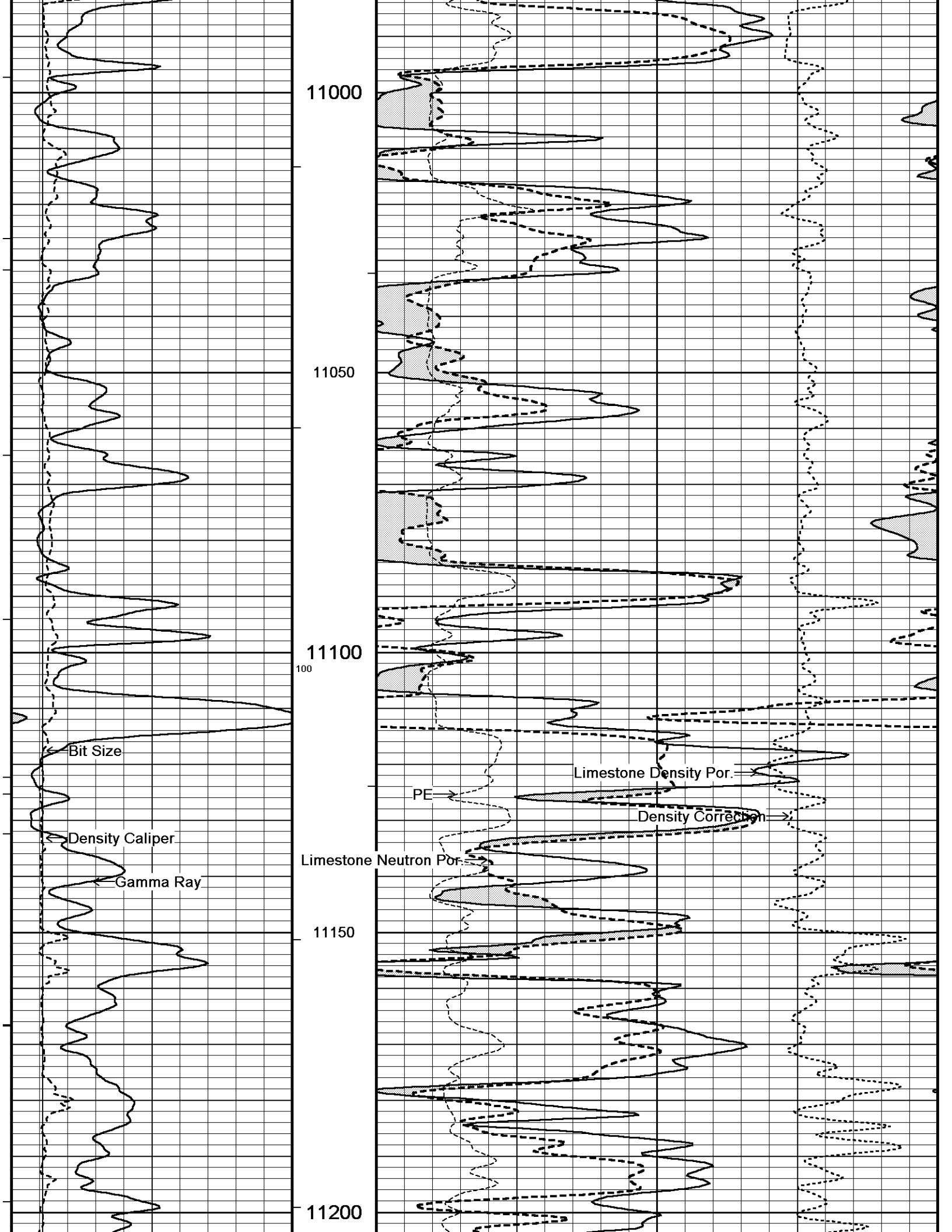


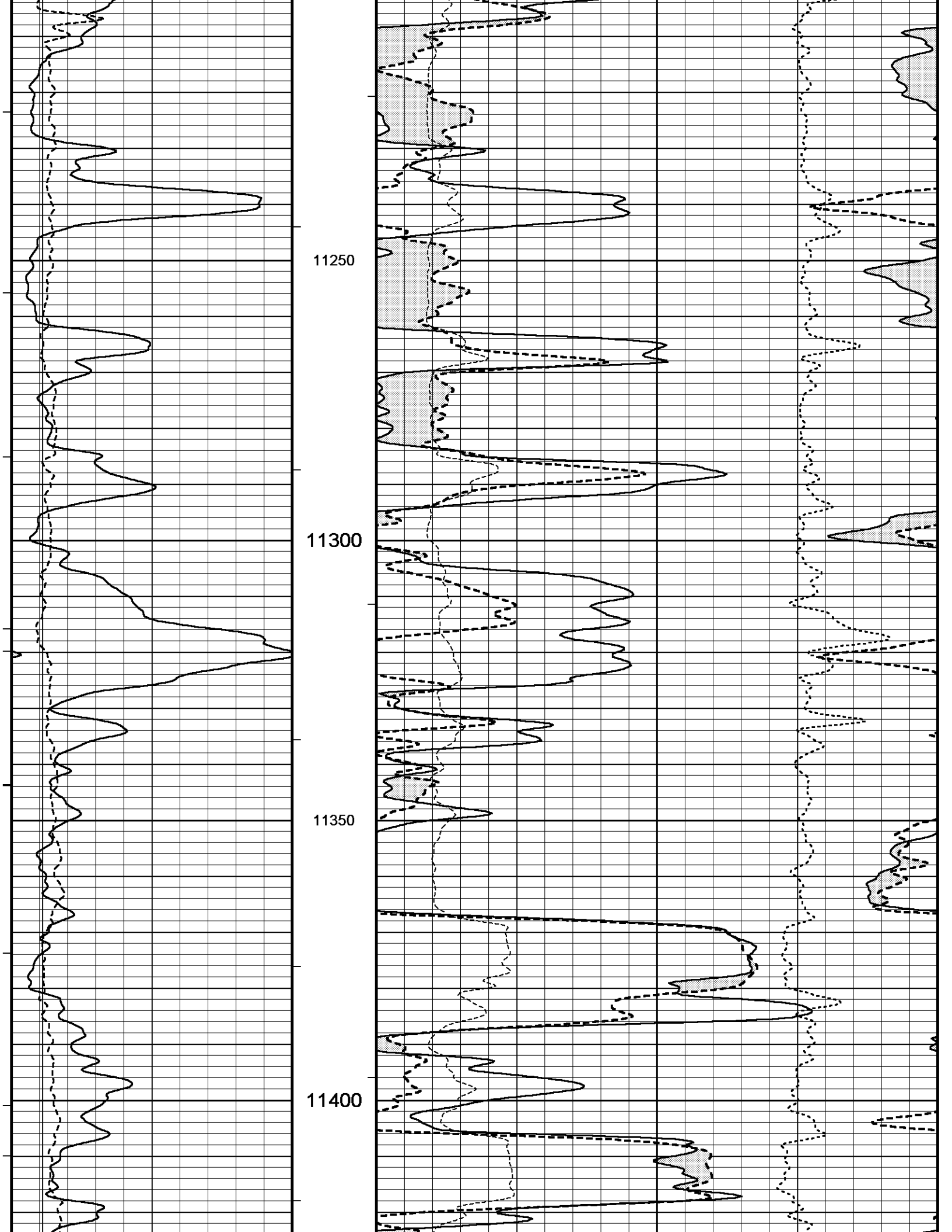


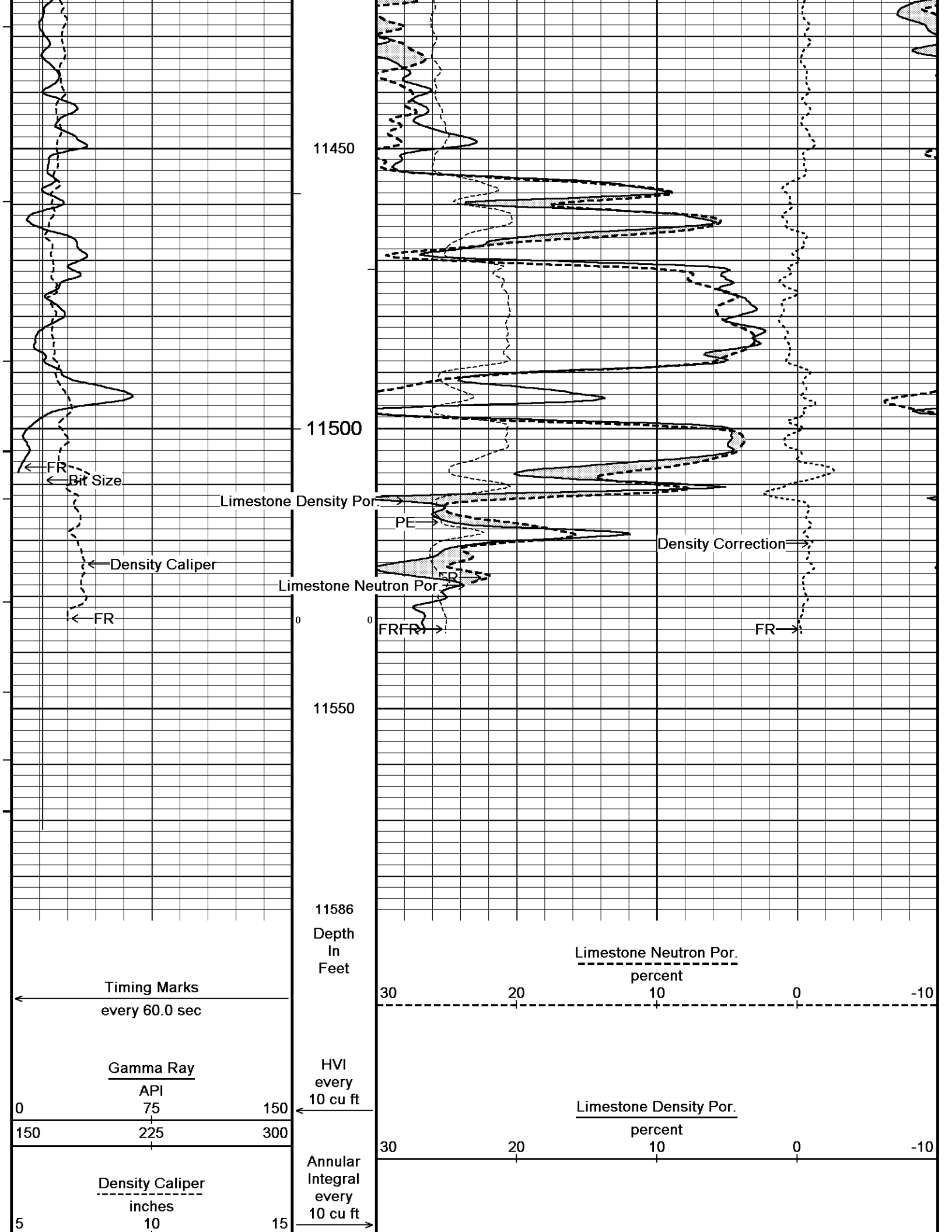


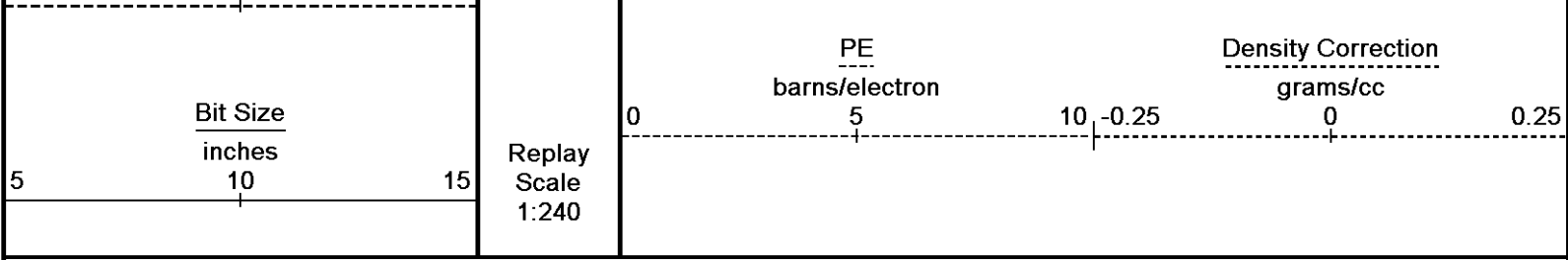










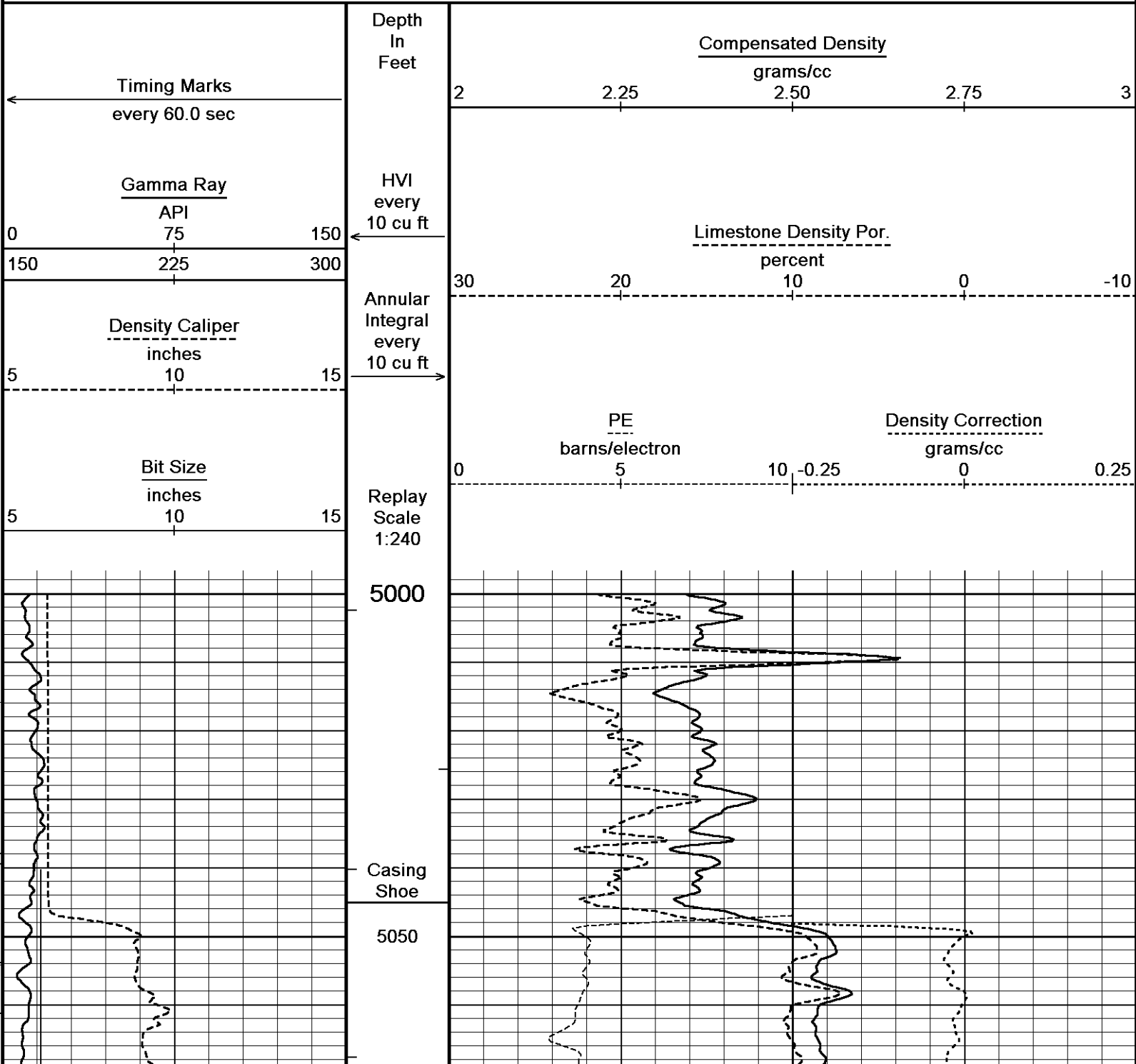


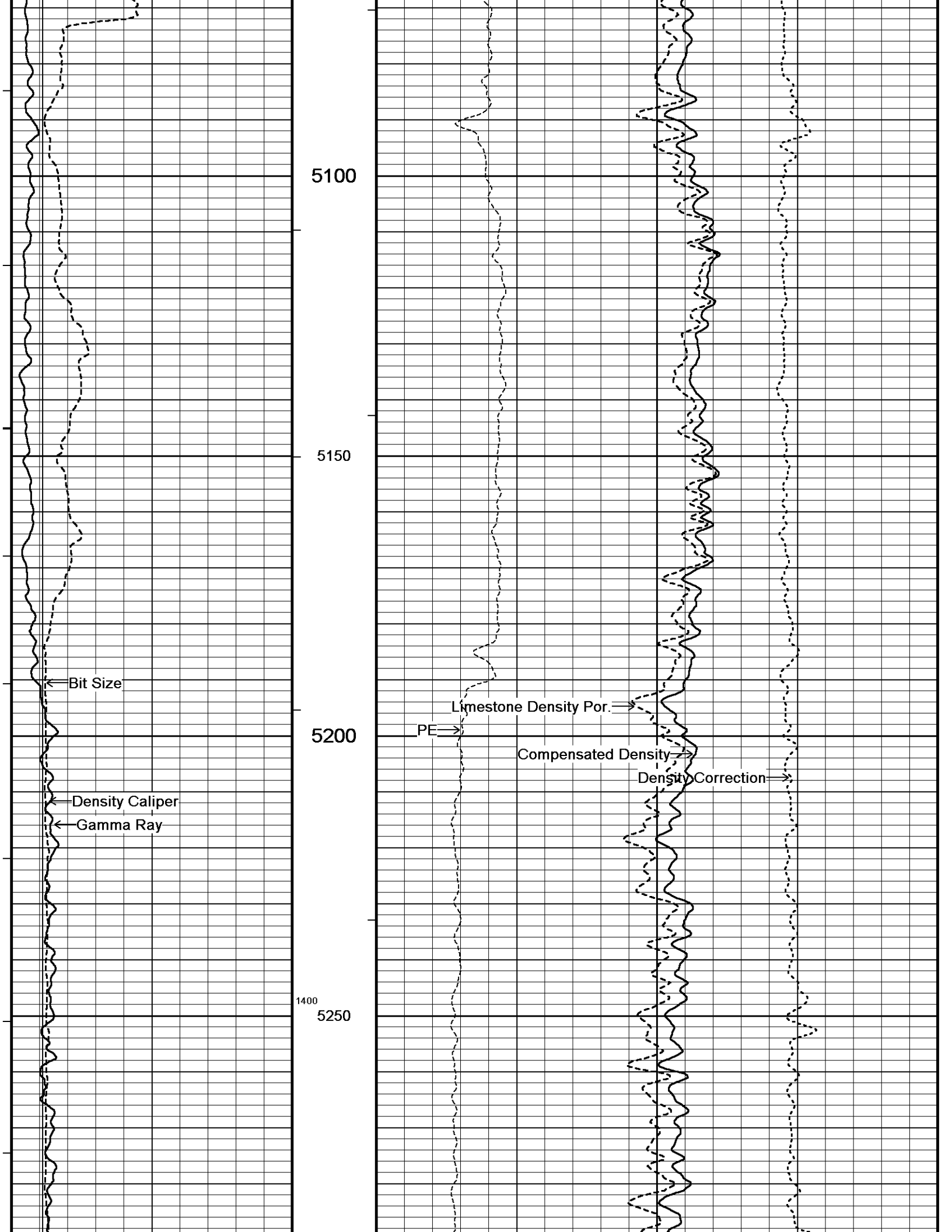
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 08-OCT-2012 23:05
 Filename: C:\Minimus 13.02.066\Data\SDRGE (TURNER)\35292 RTAP.dta Recorded on 08-OCT-2012 21:28
 System Versions: Processed with 13.02.6600 Plotted with 13.02.6600

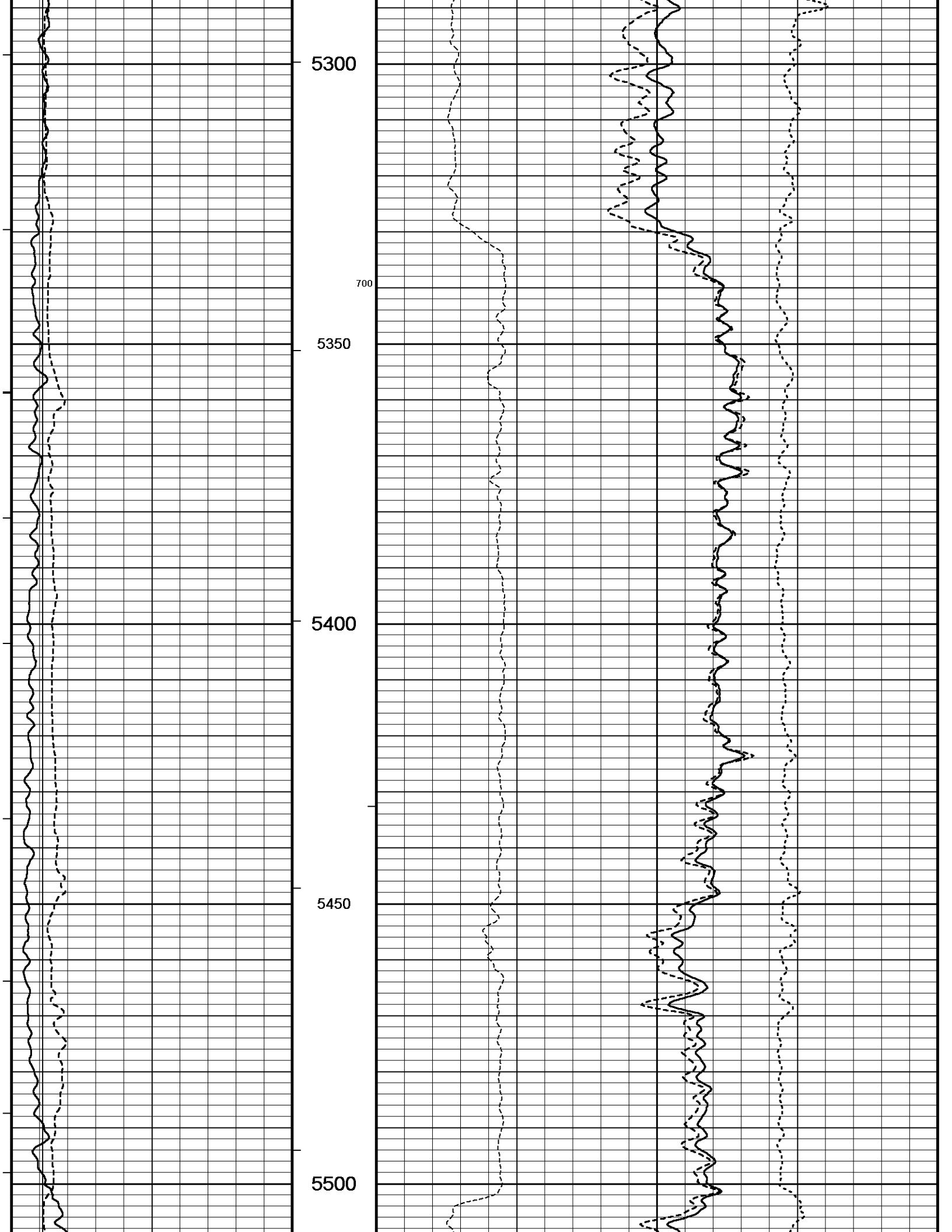
↑ **5 INCH MAIN LOG DSC** ↑

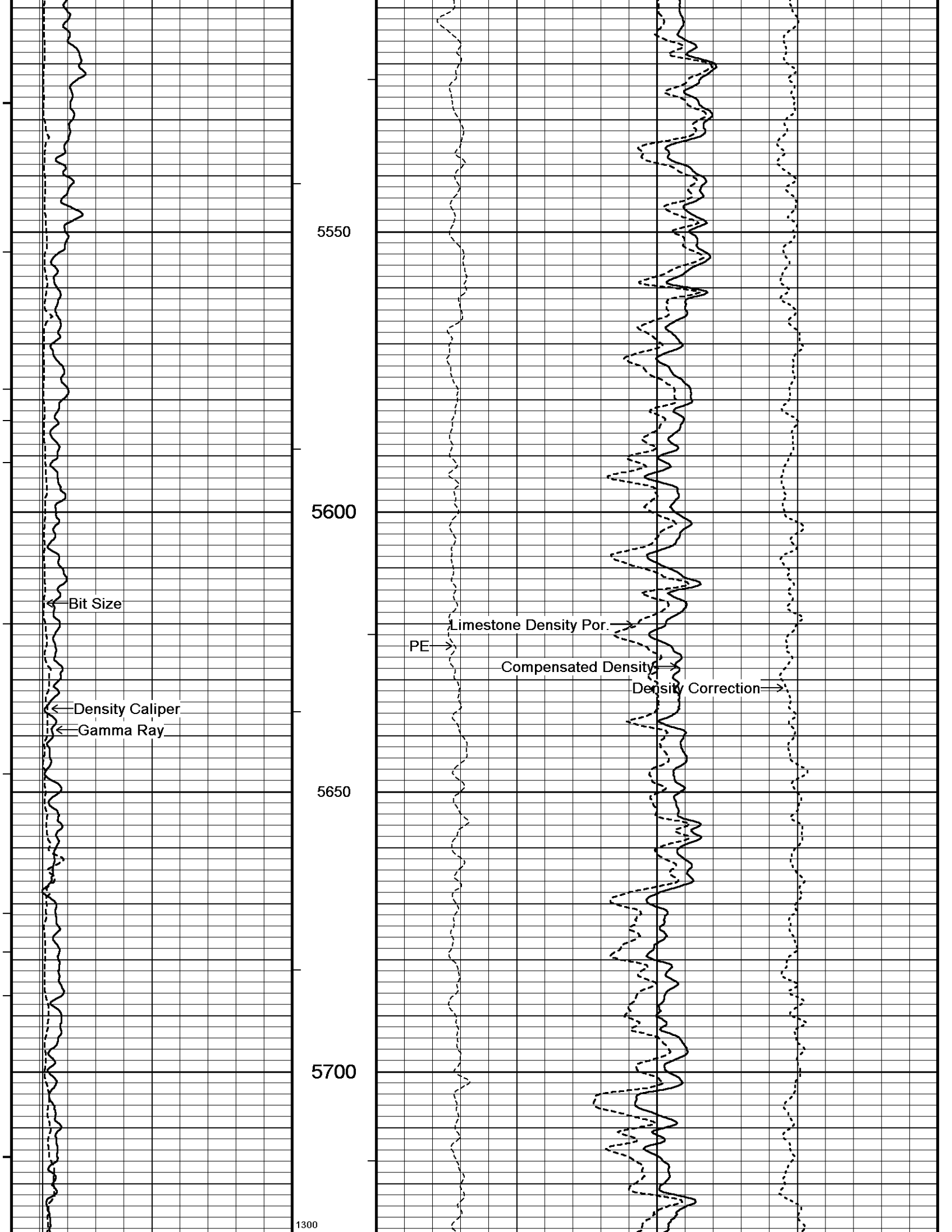
↓ **5 INCH BULK DENSITY LOG DSC** ↓

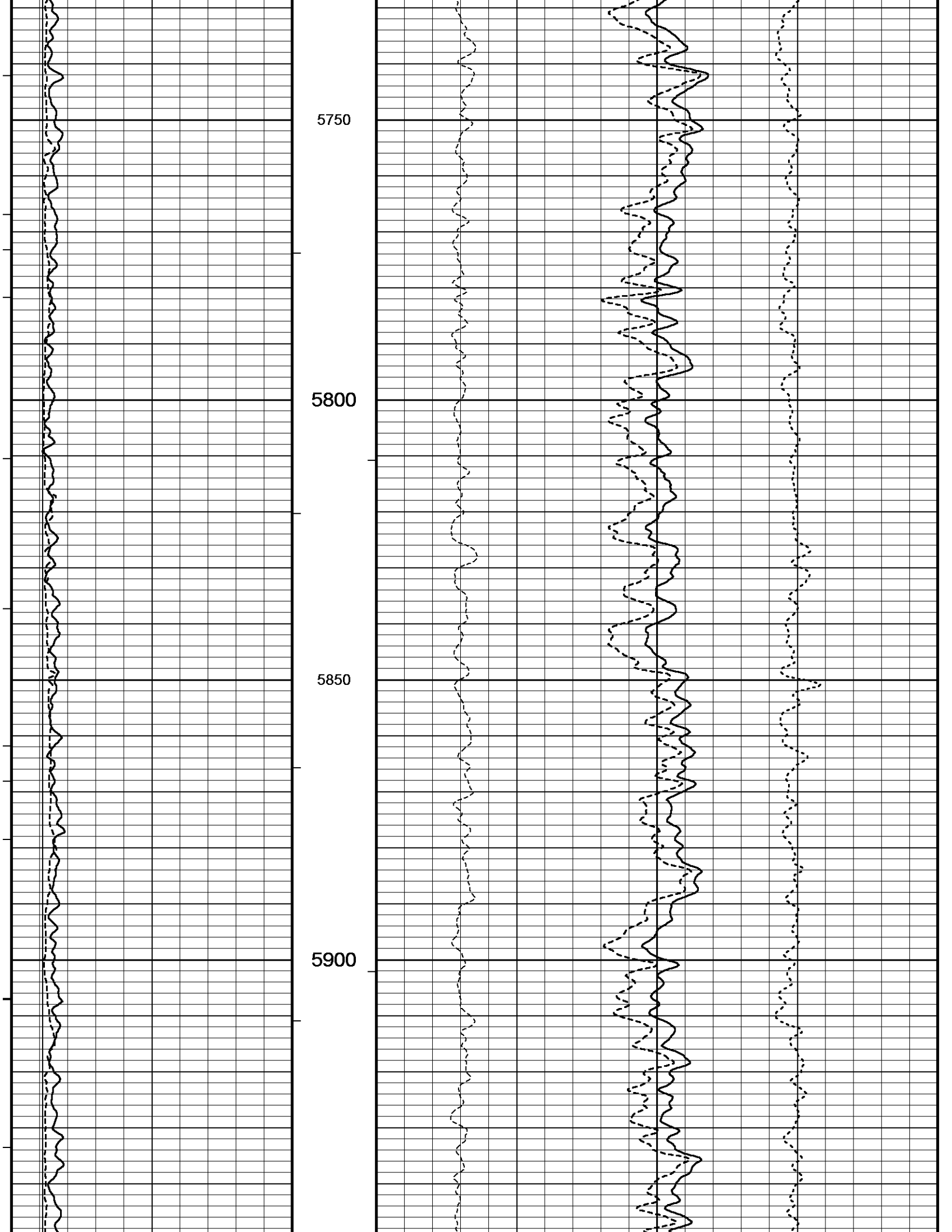
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 08-OCT-2012 23:05
 Filename: C:\Minimus 13.02.066\Data\SDRGE (TURNER)\35292 RTAP.dta Recorded on 08-OCT-2012 21:28
 System Versions: Processed with 13.02.6600 Plotted with 13.02.6600

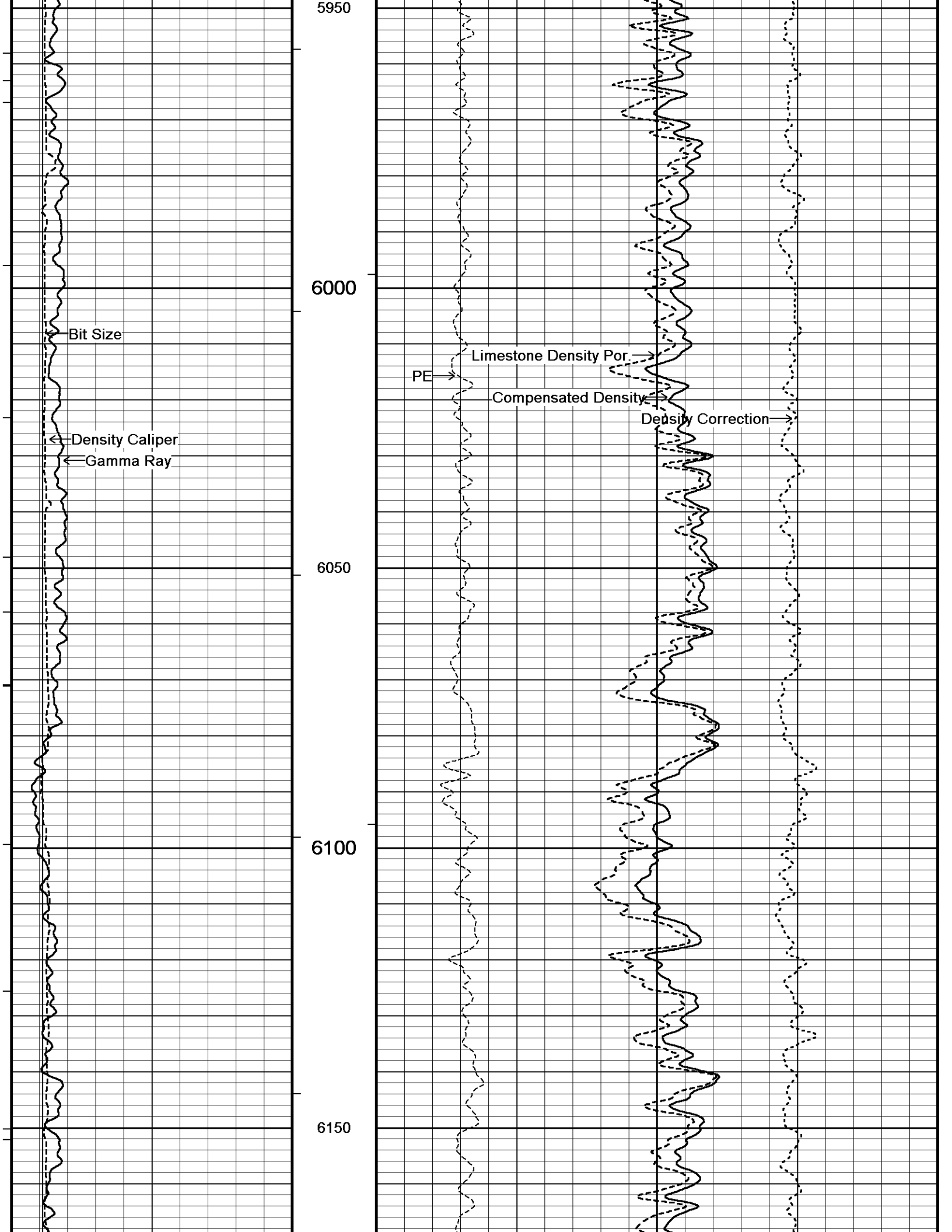


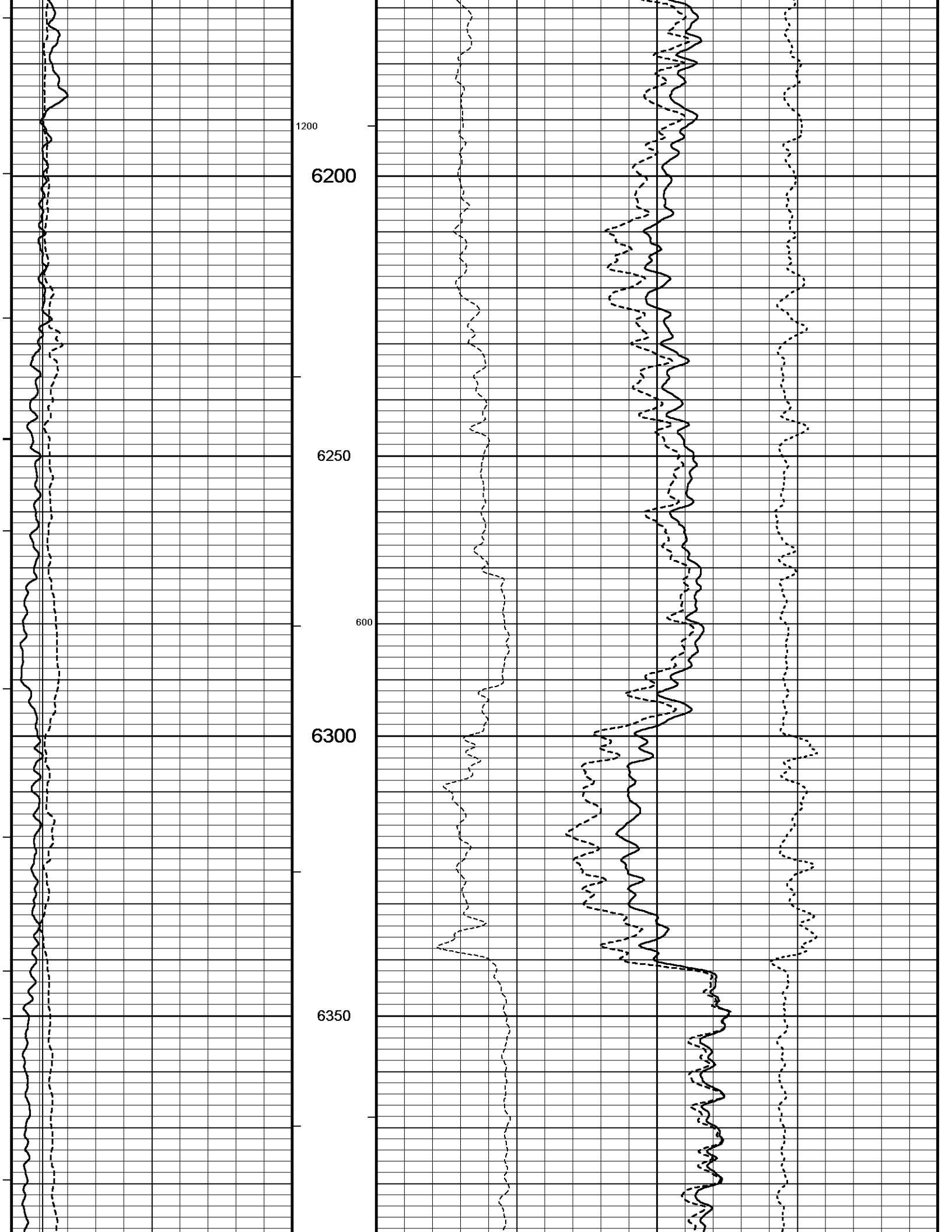


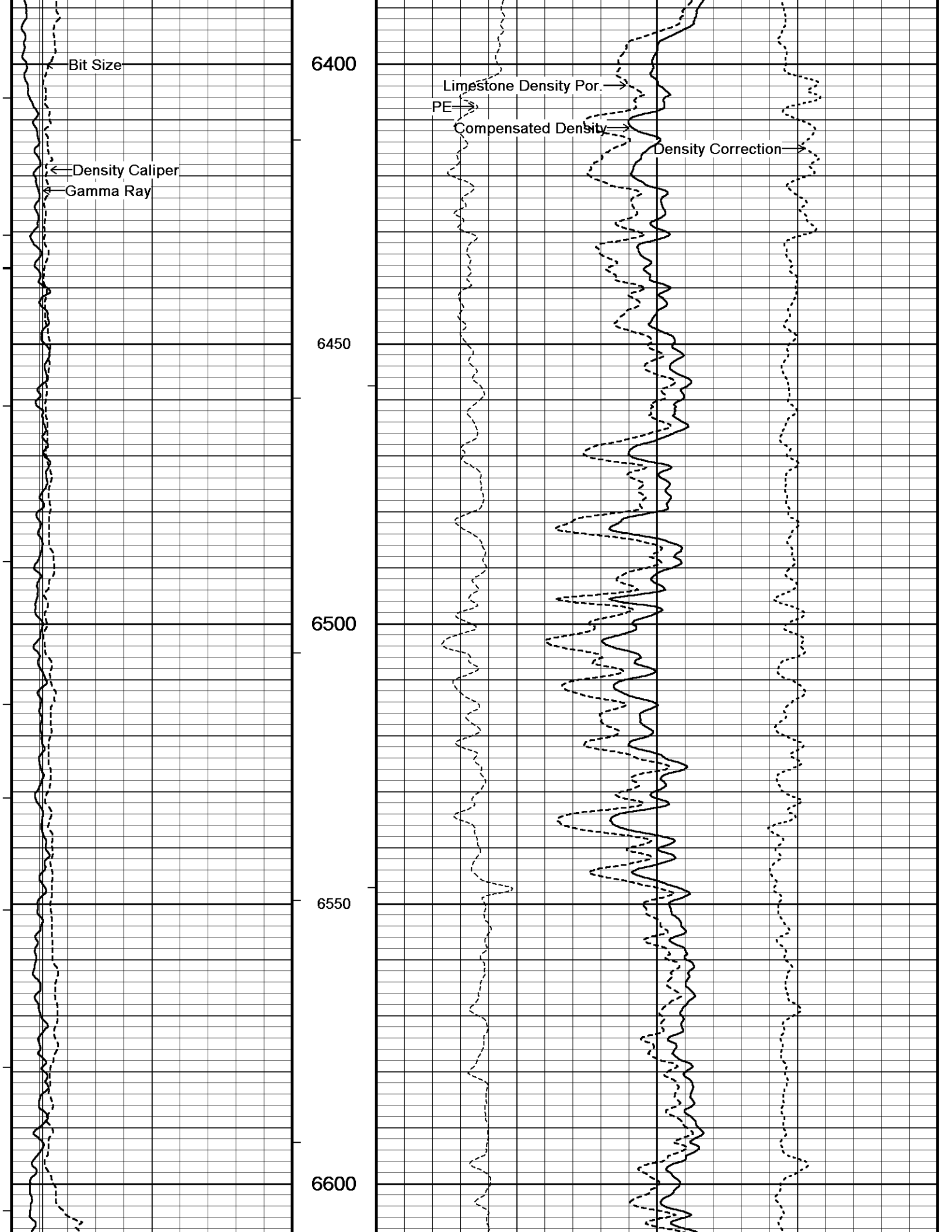












Bit Size

6400

Limestone Density Por.

PE

Compensated Density

Density Correction

Density Caliper

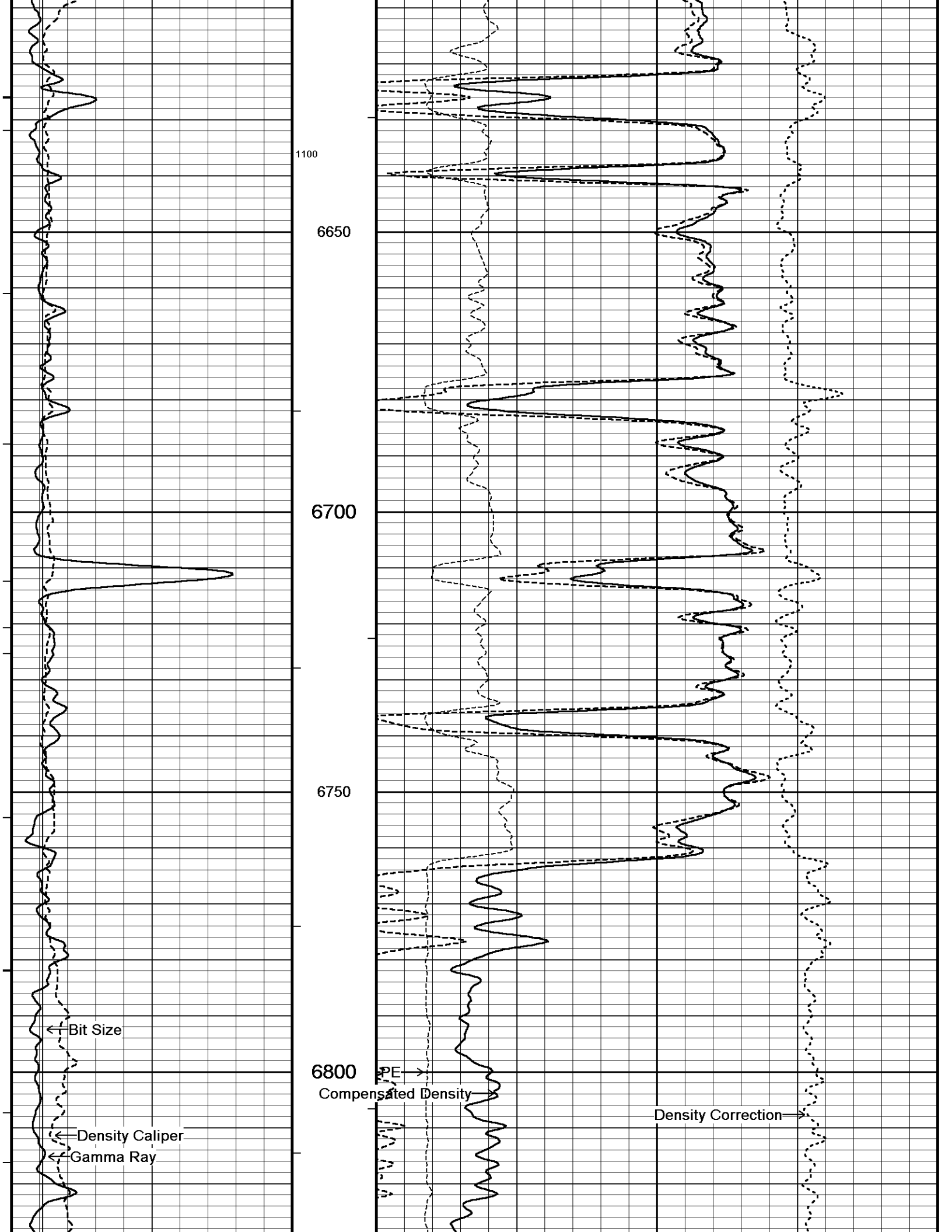
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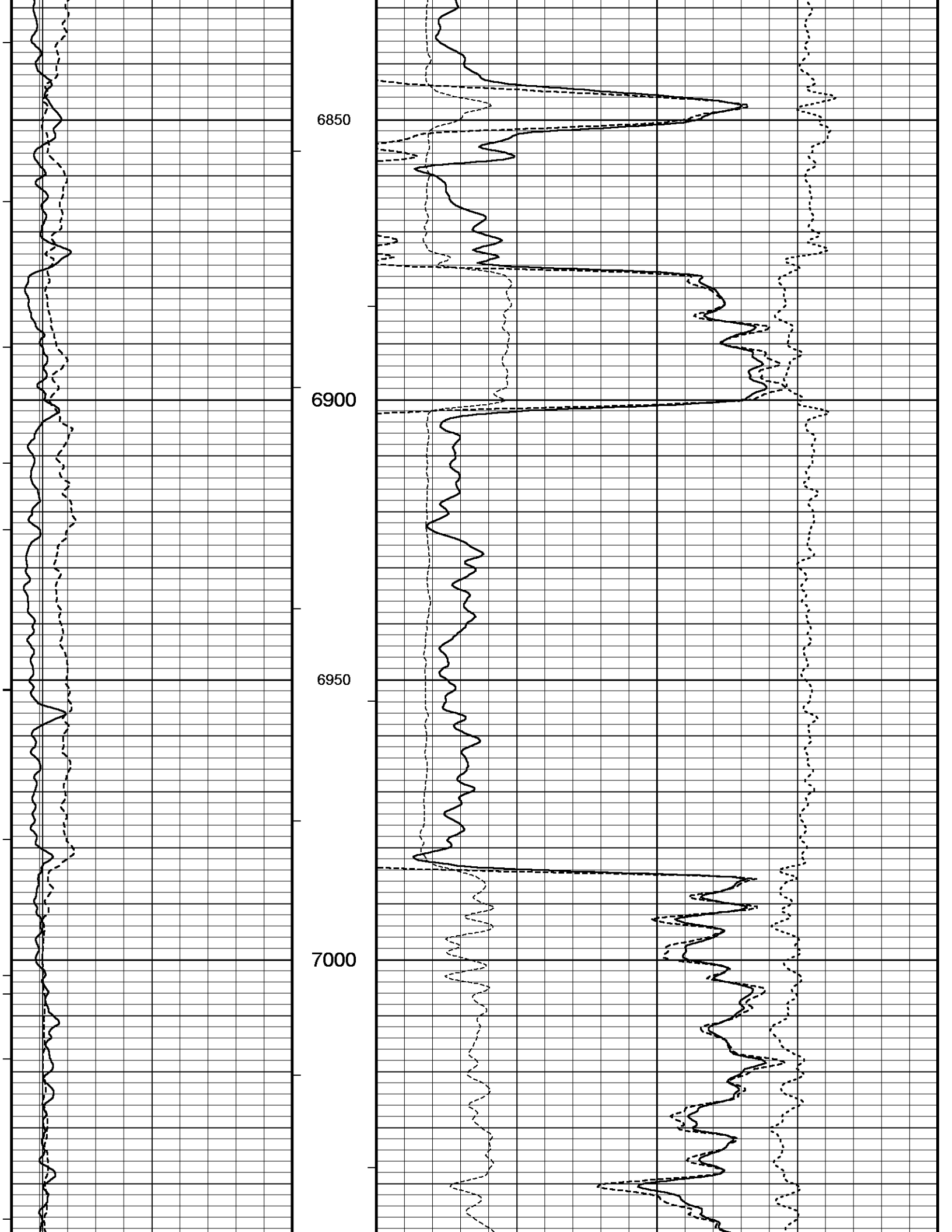
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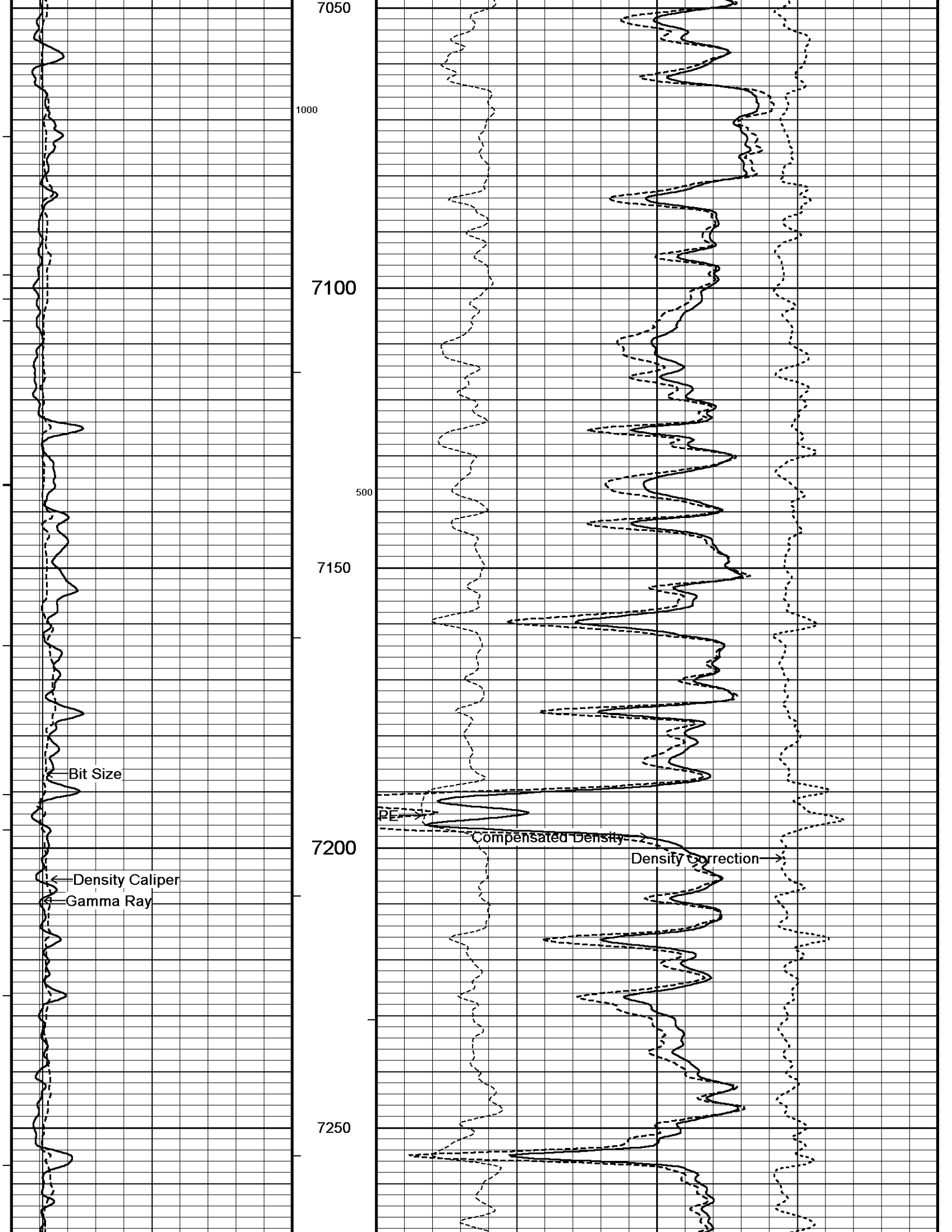
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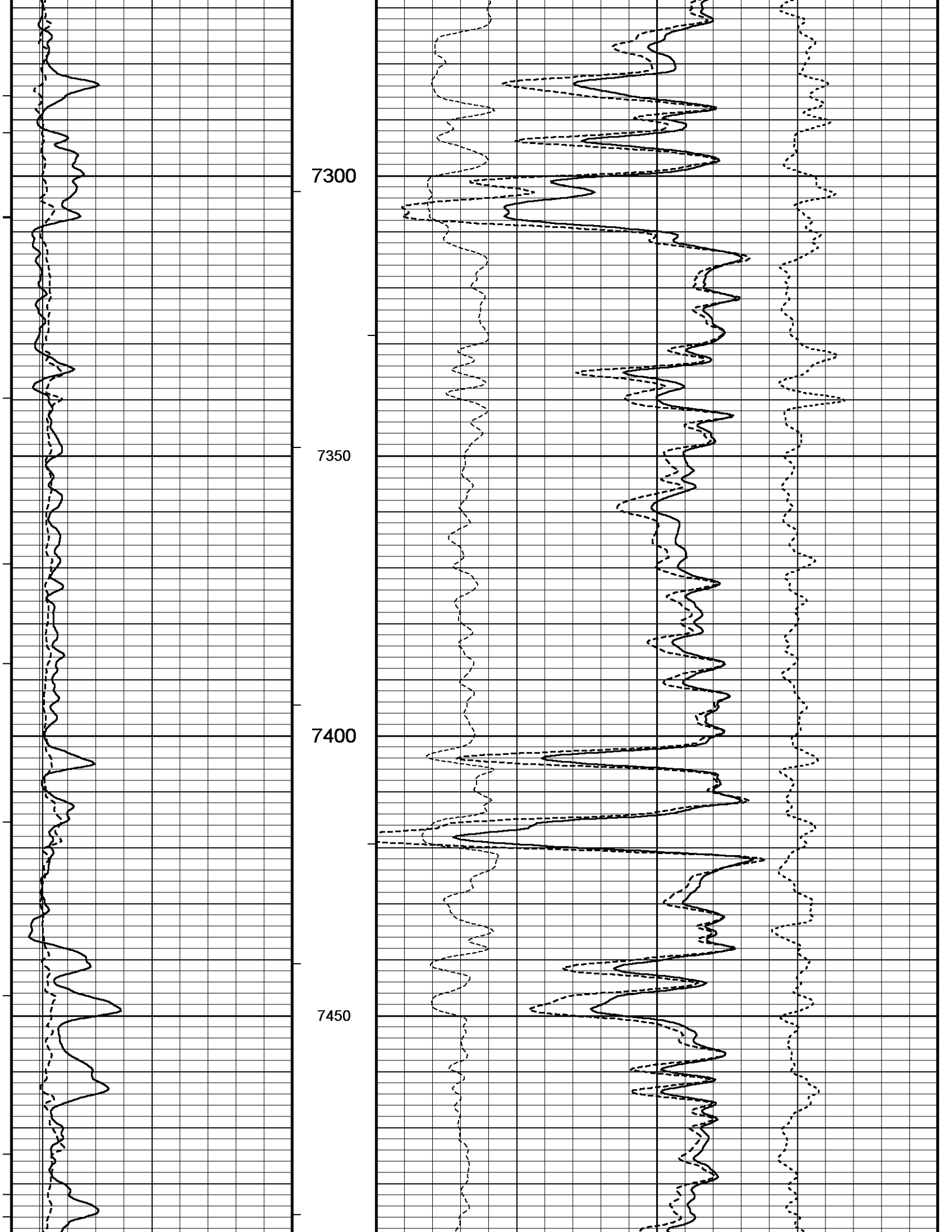
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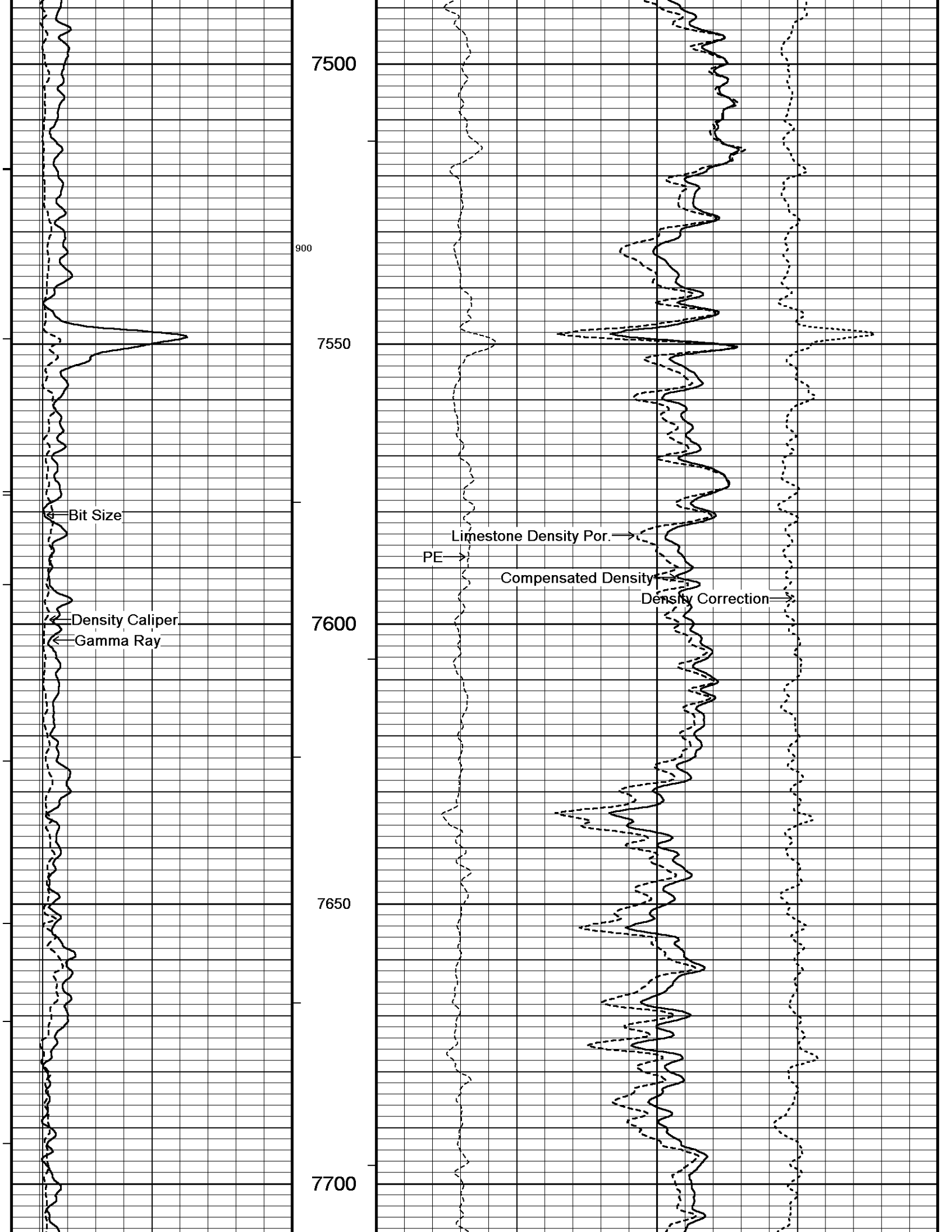
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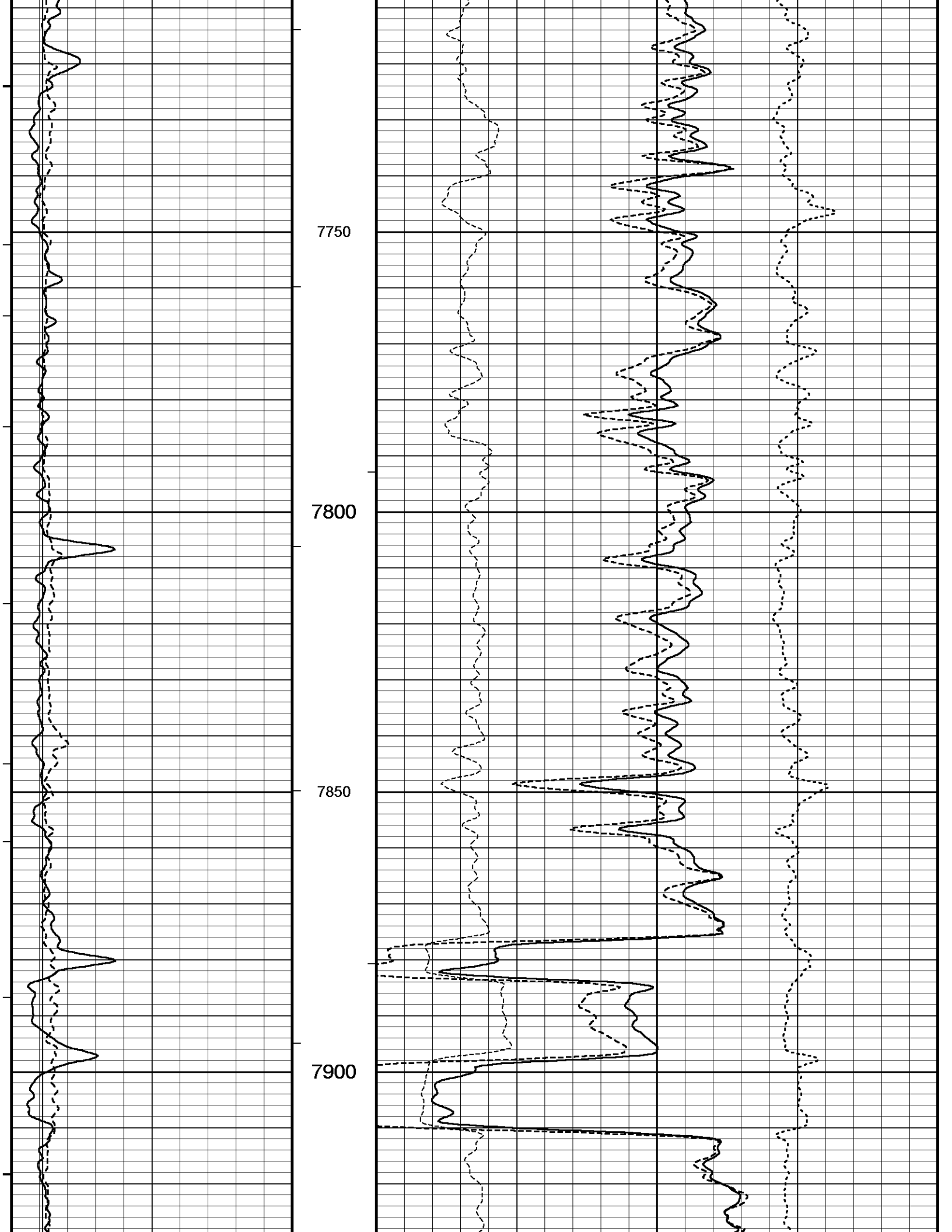


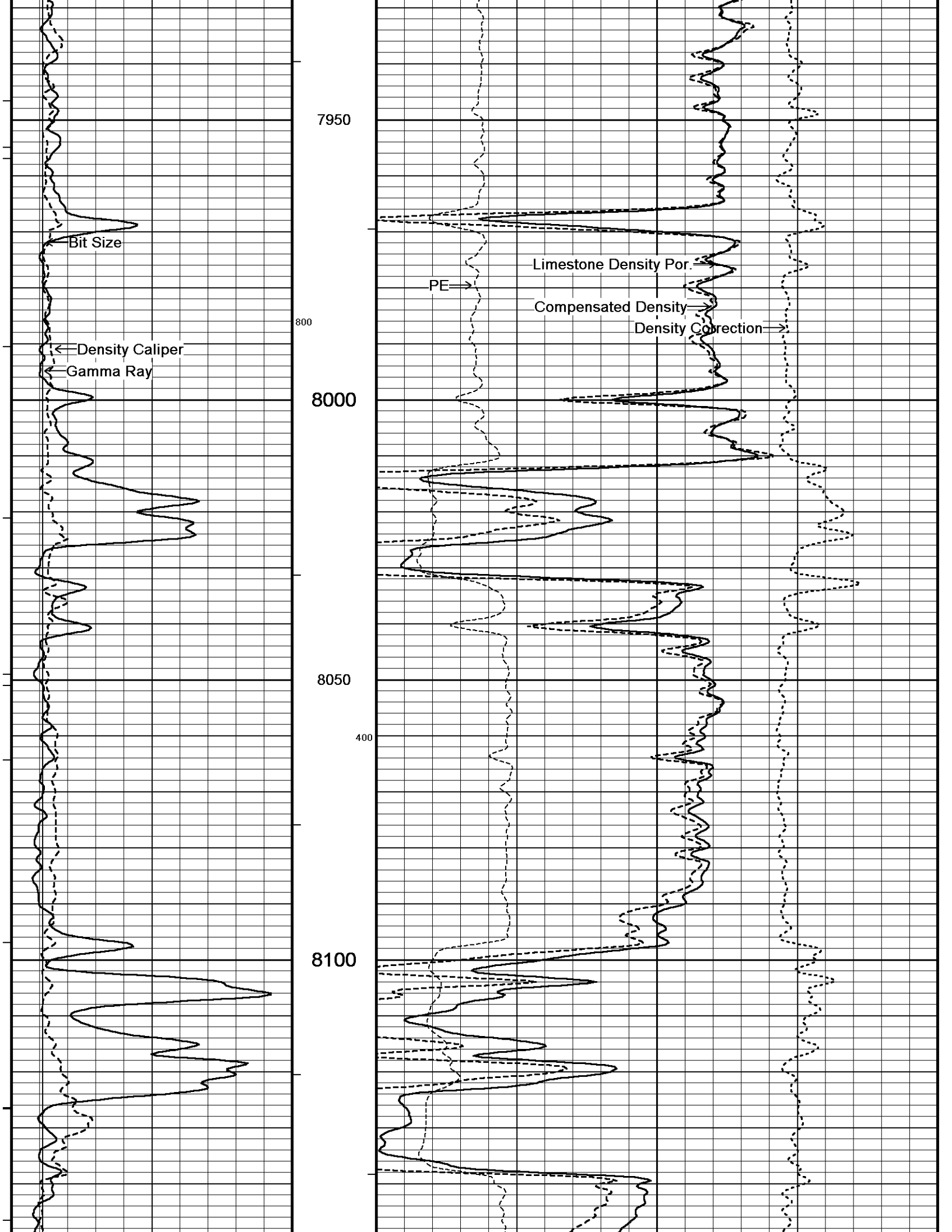


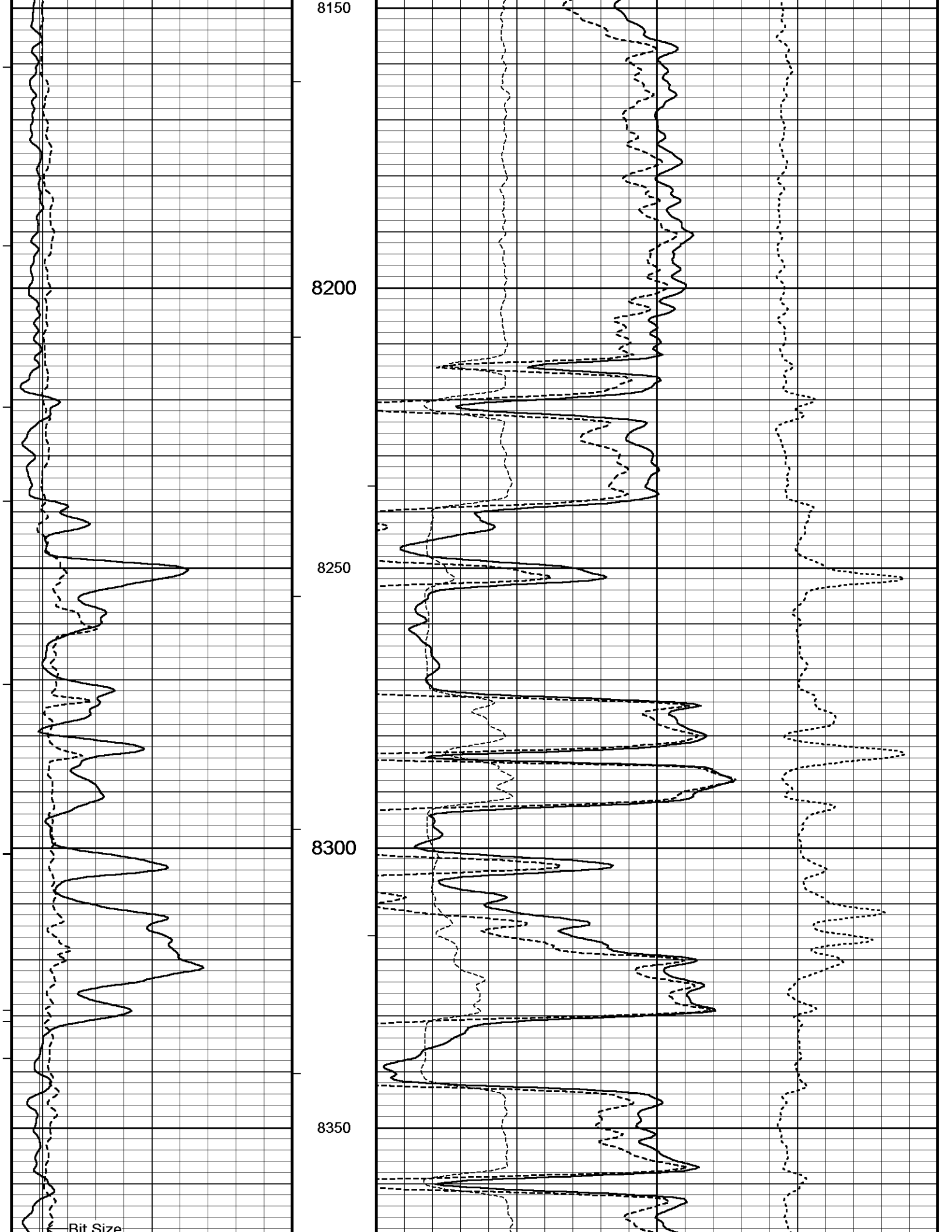












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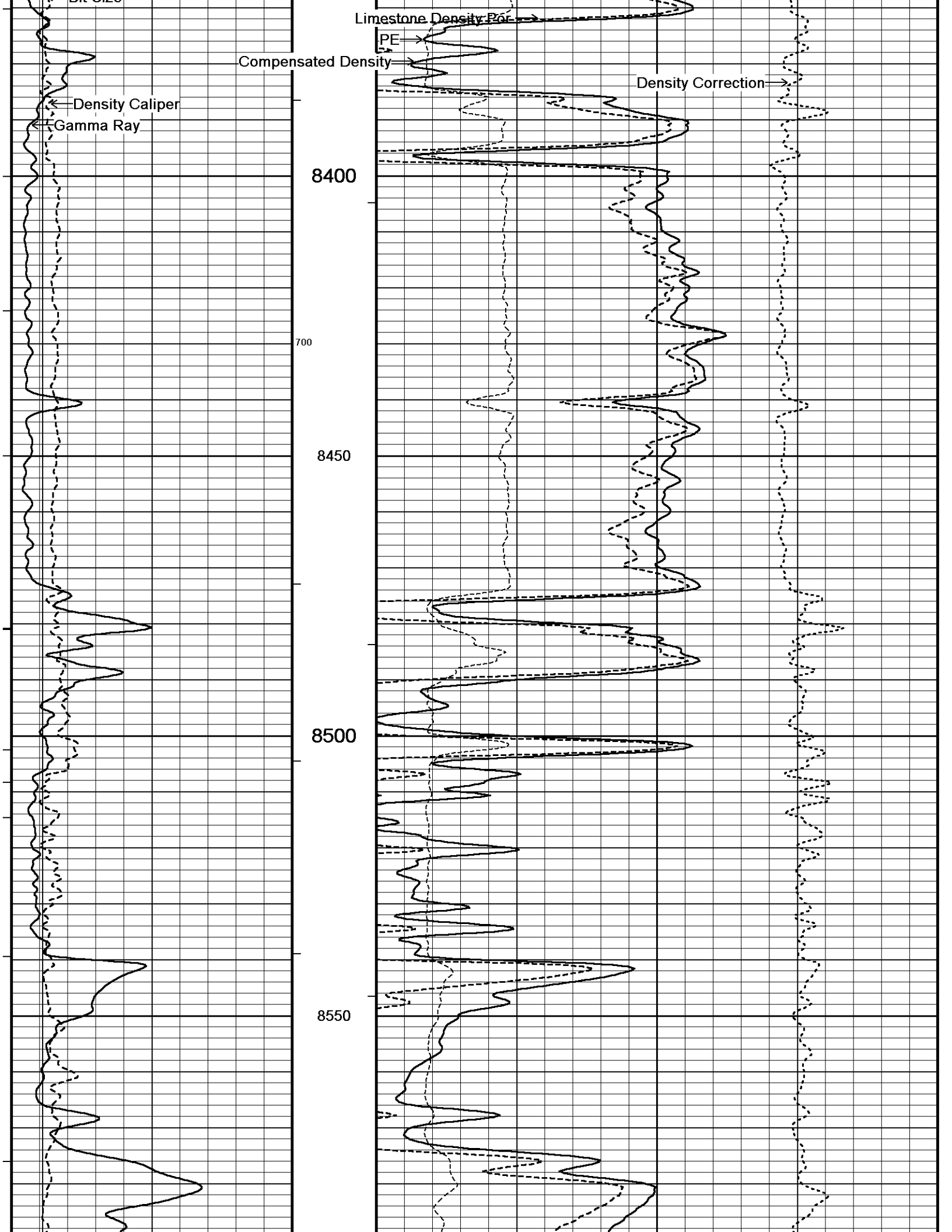
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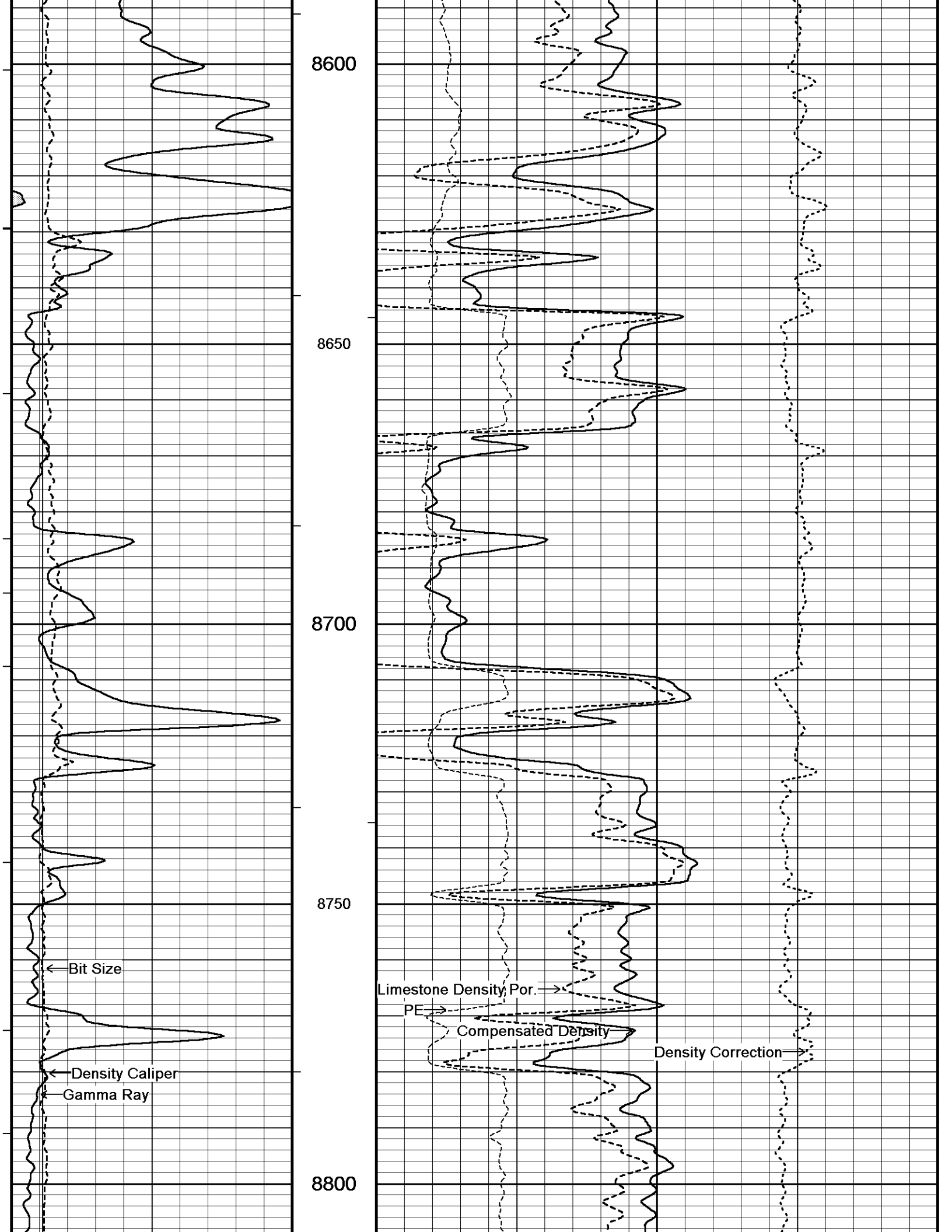
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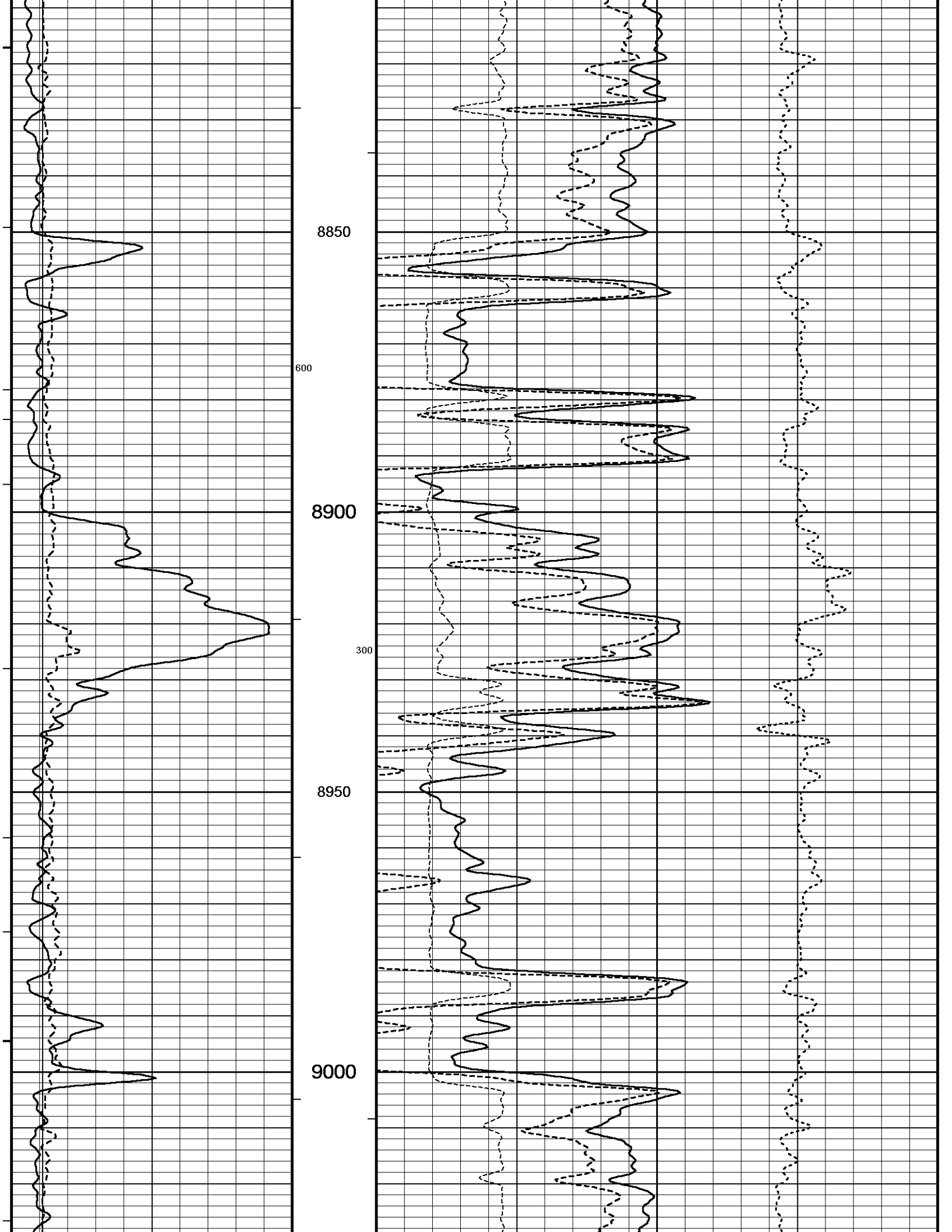
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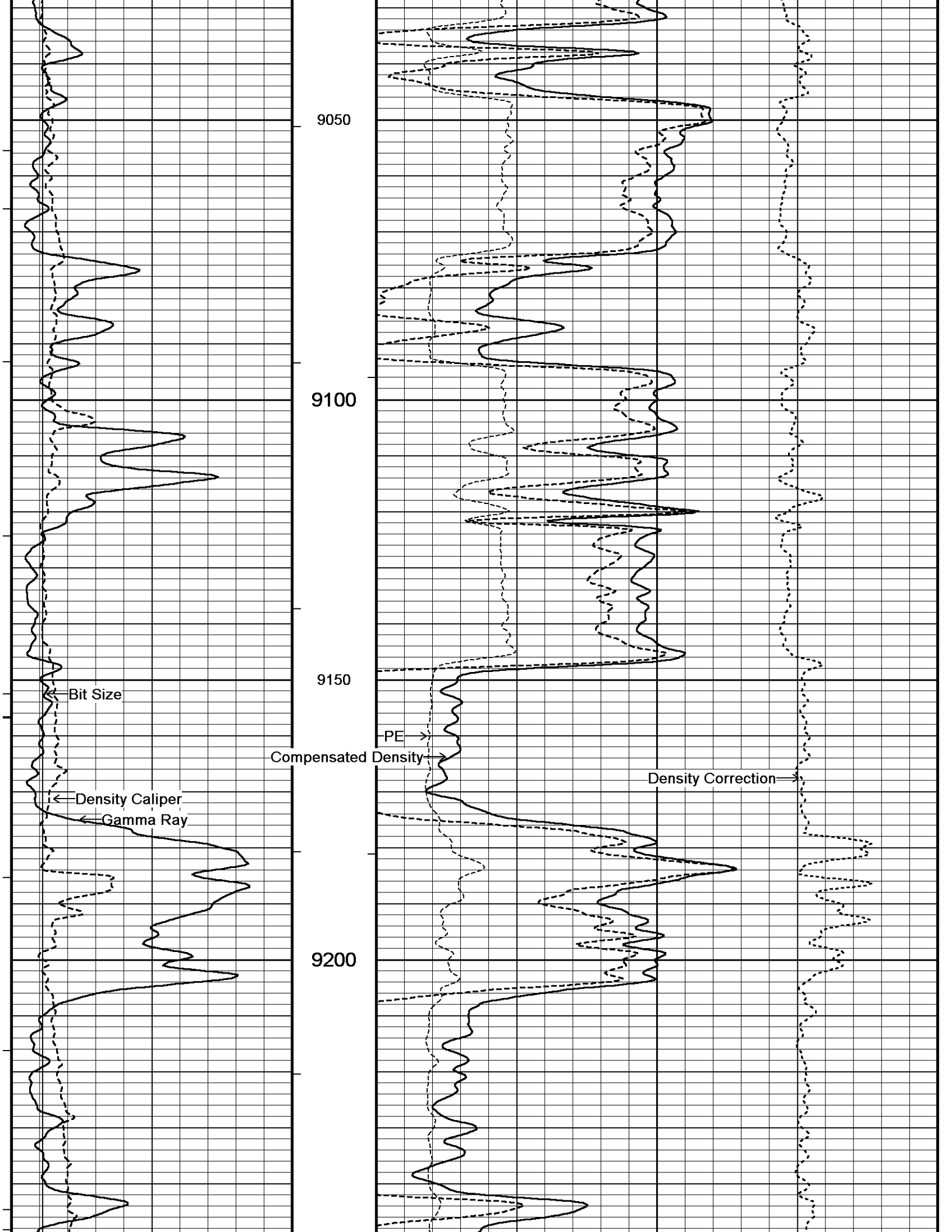
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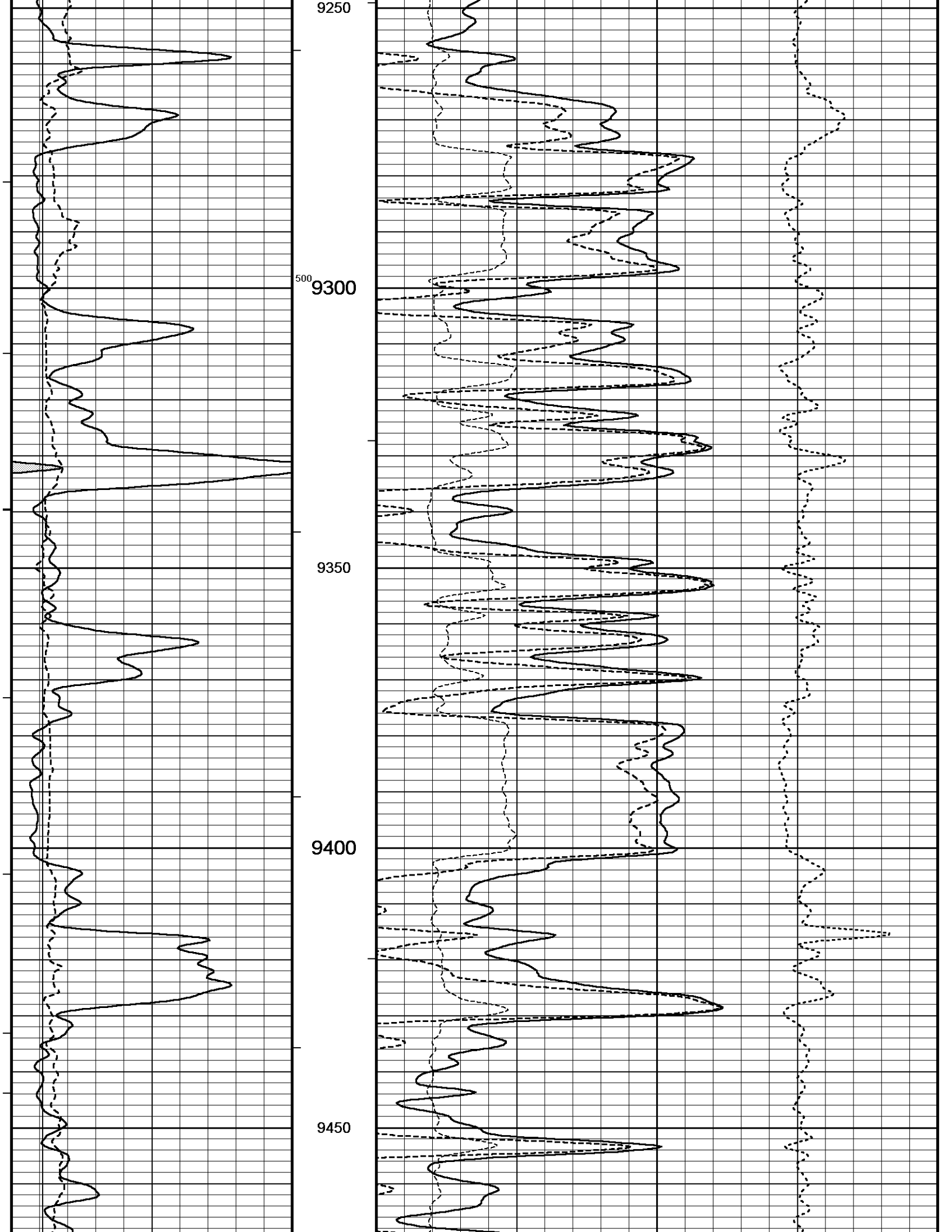
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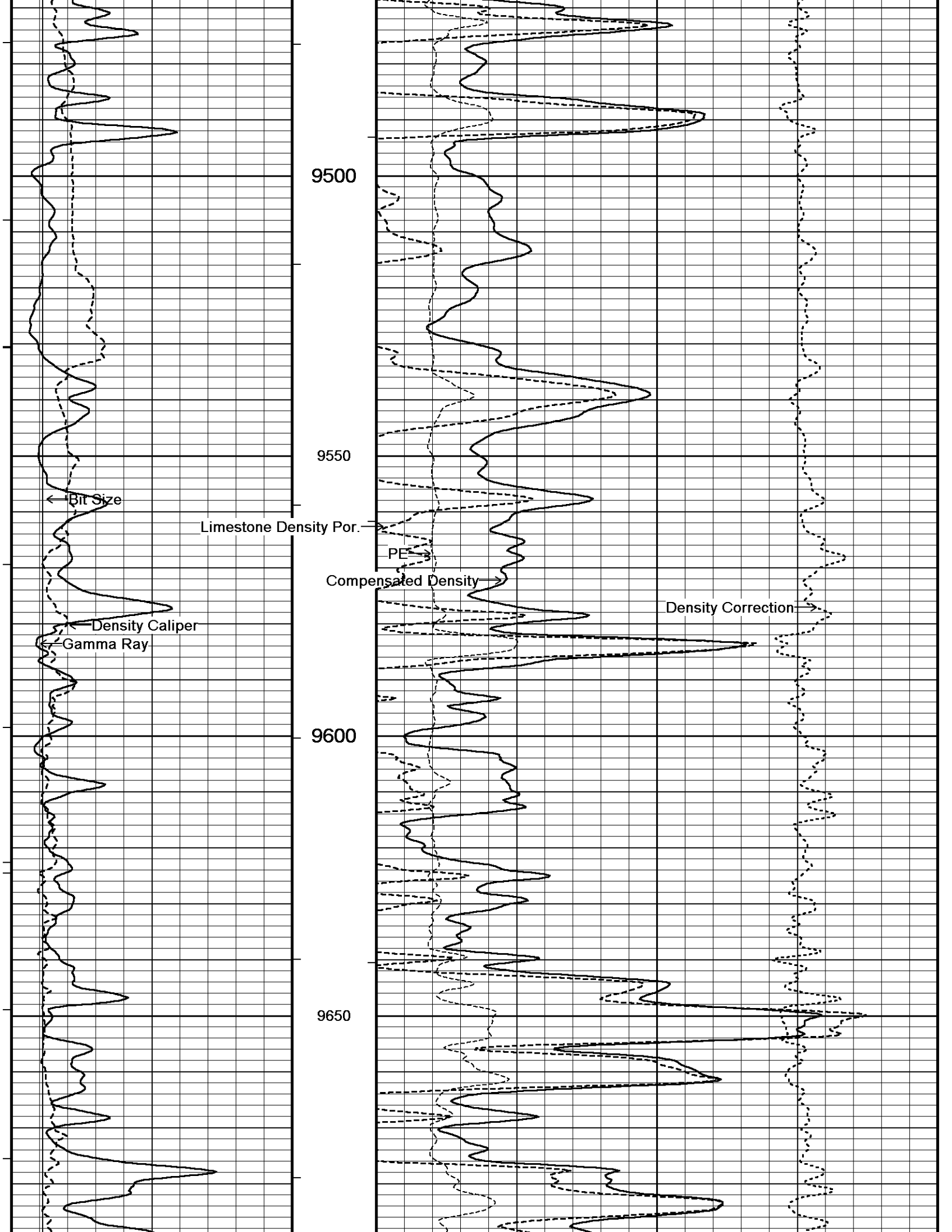


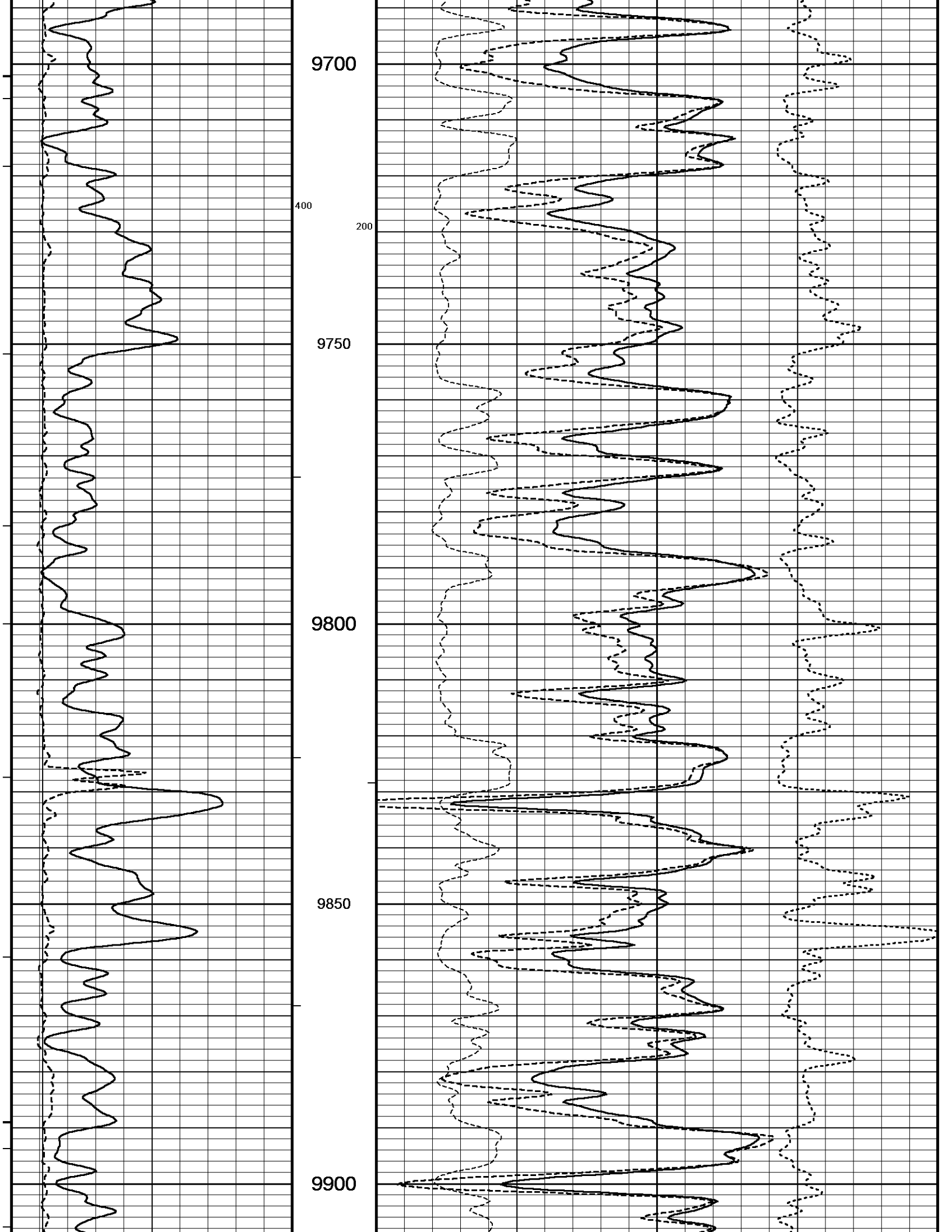


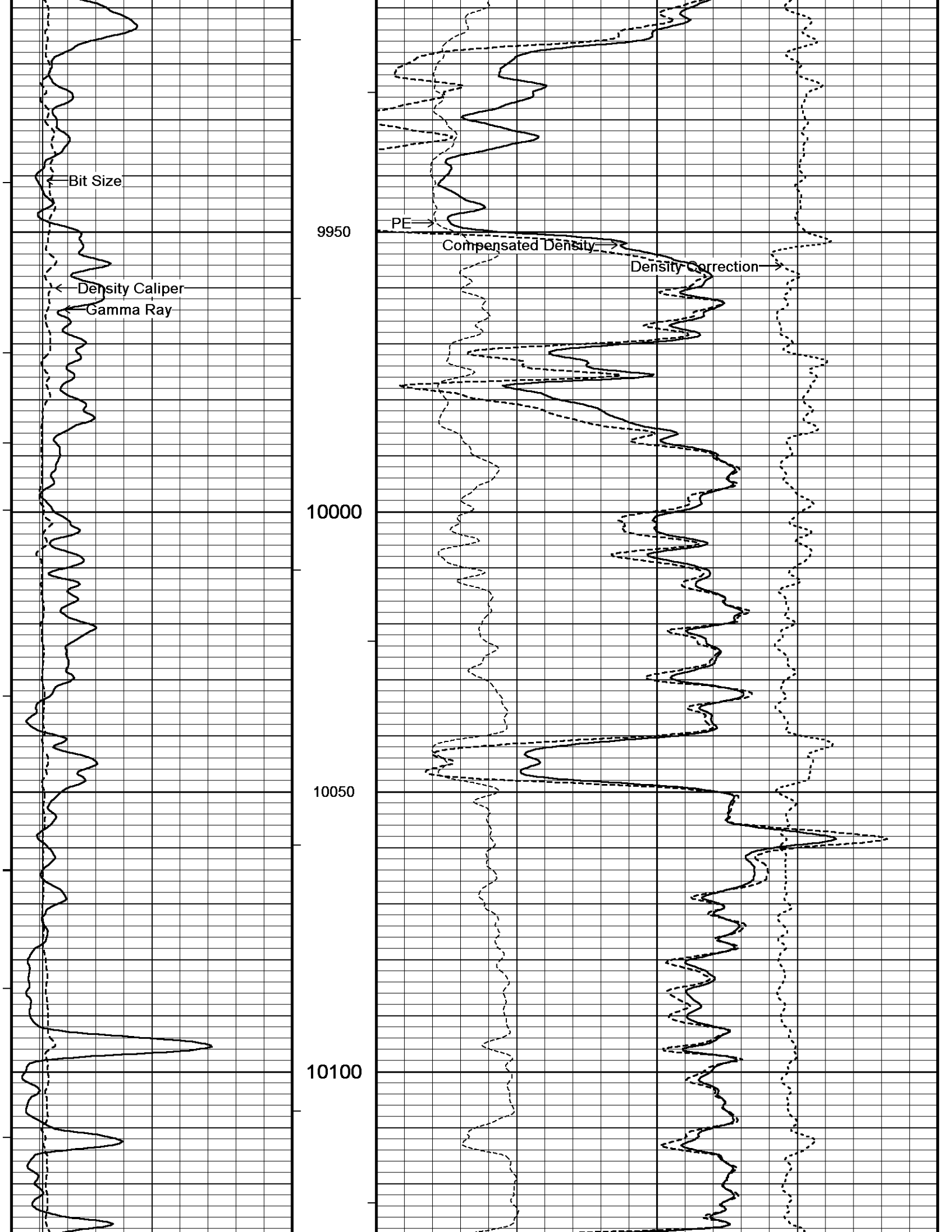


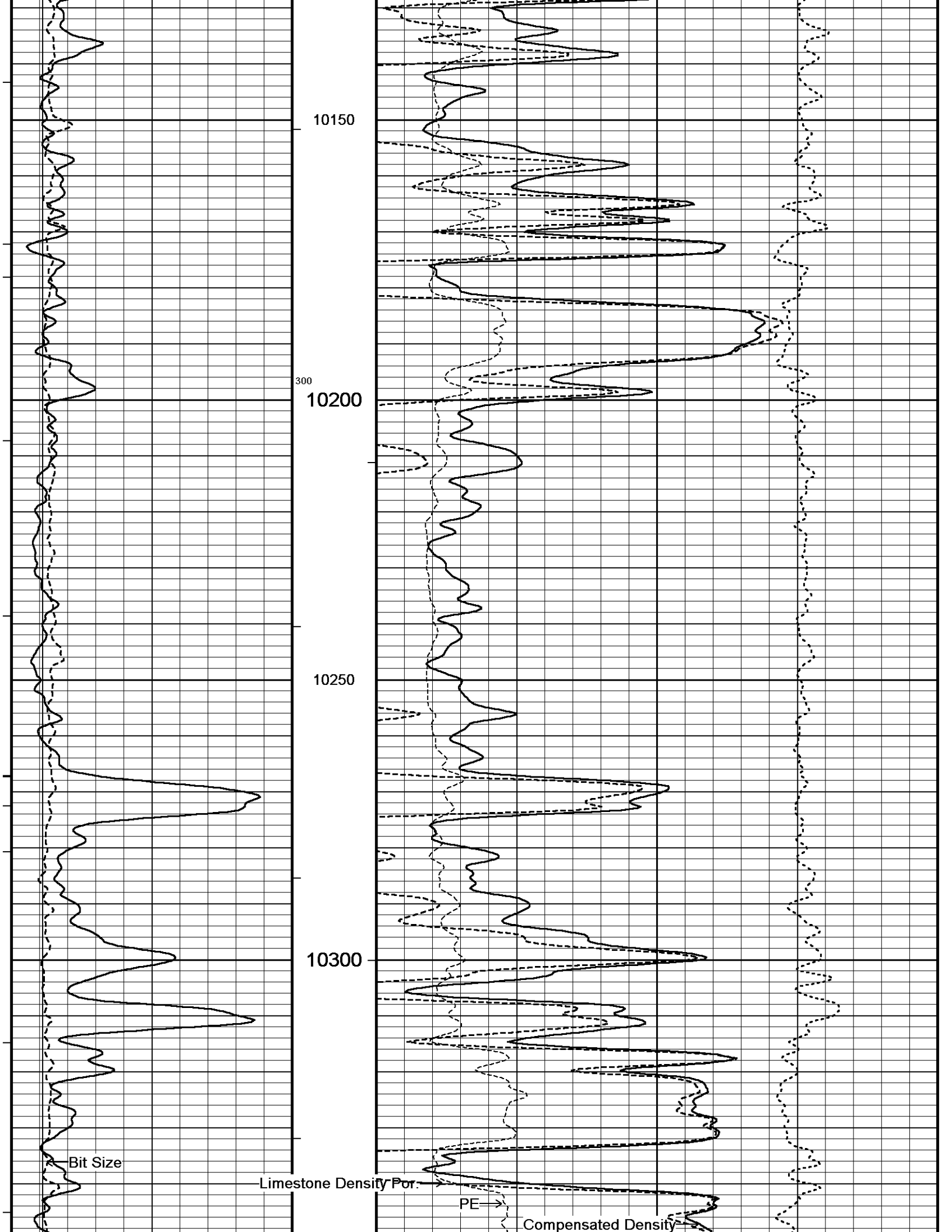


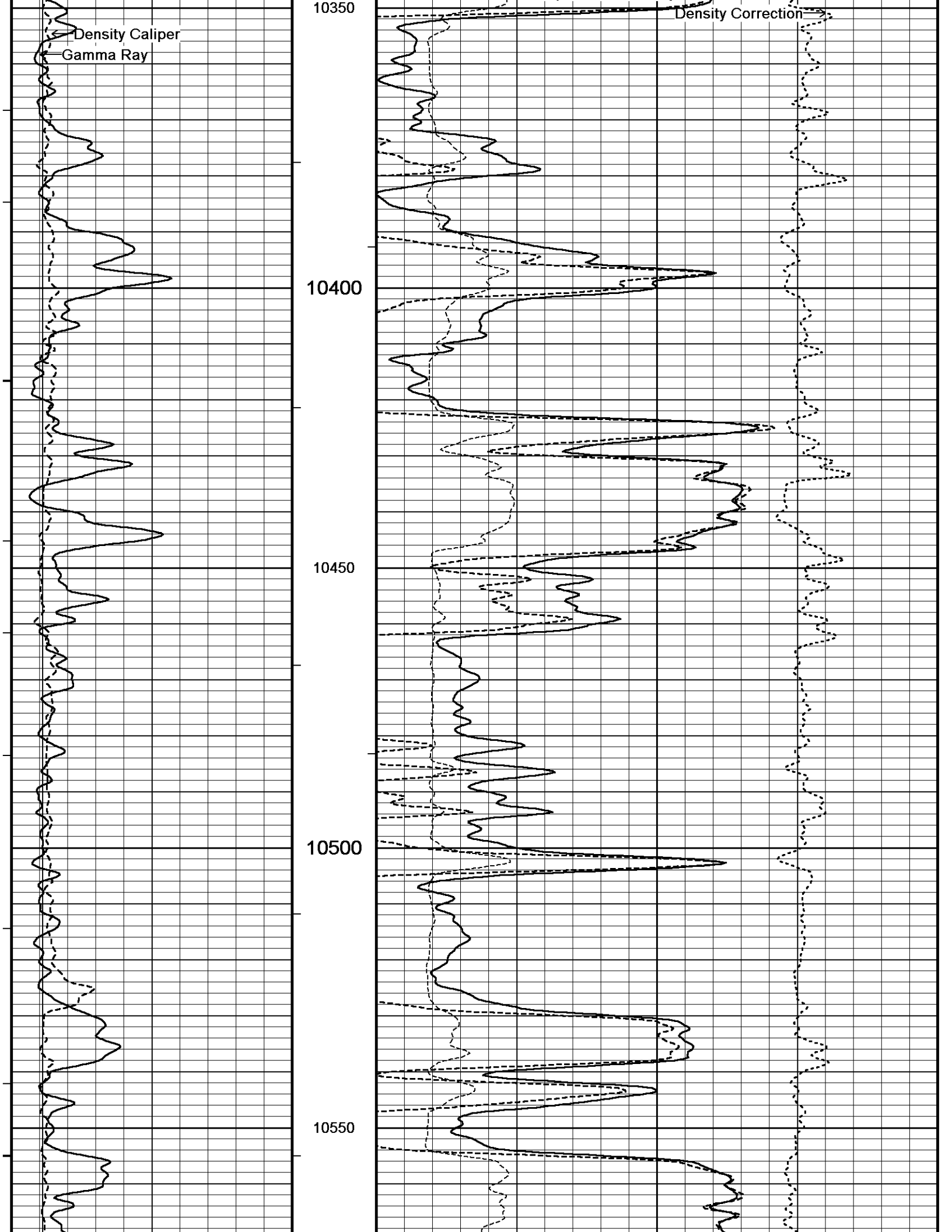


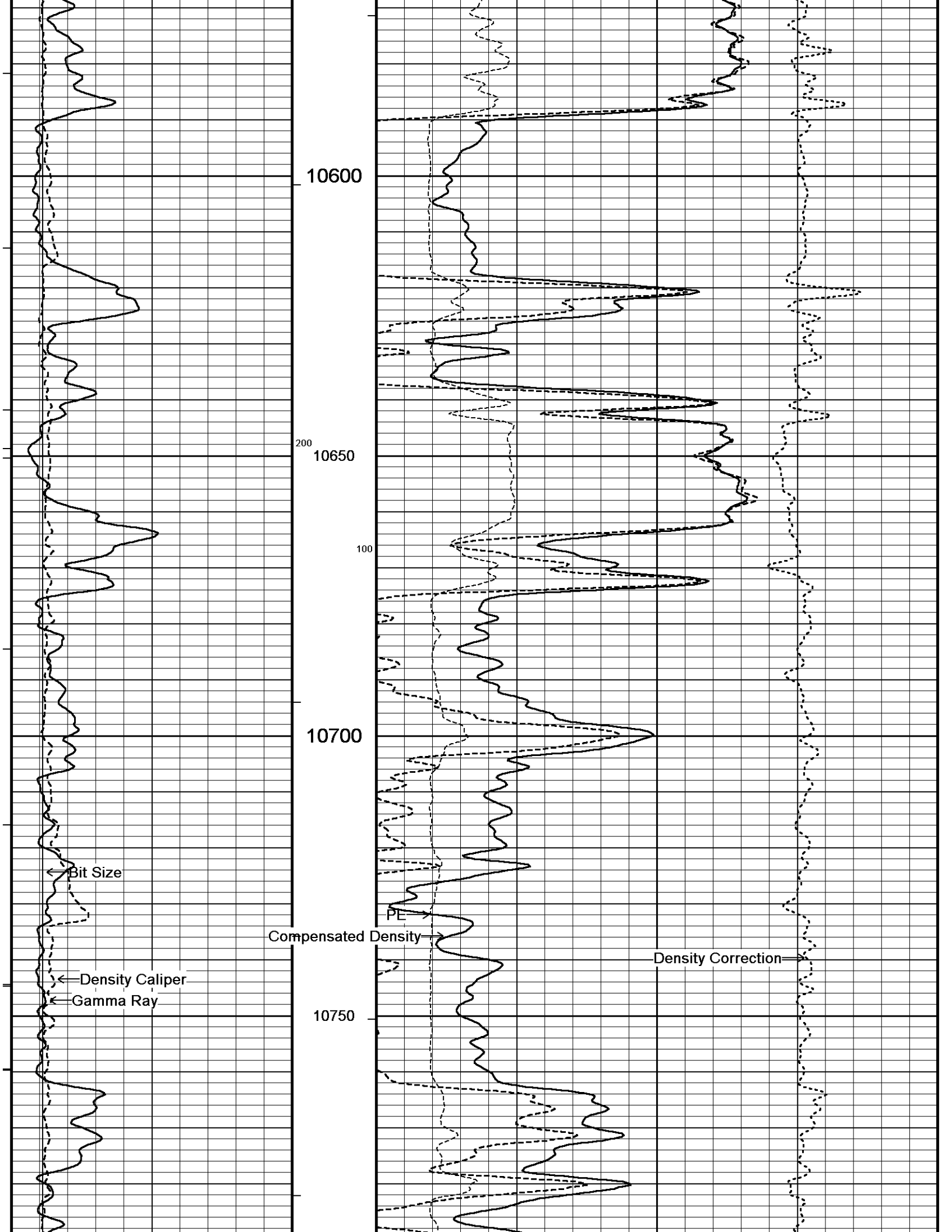


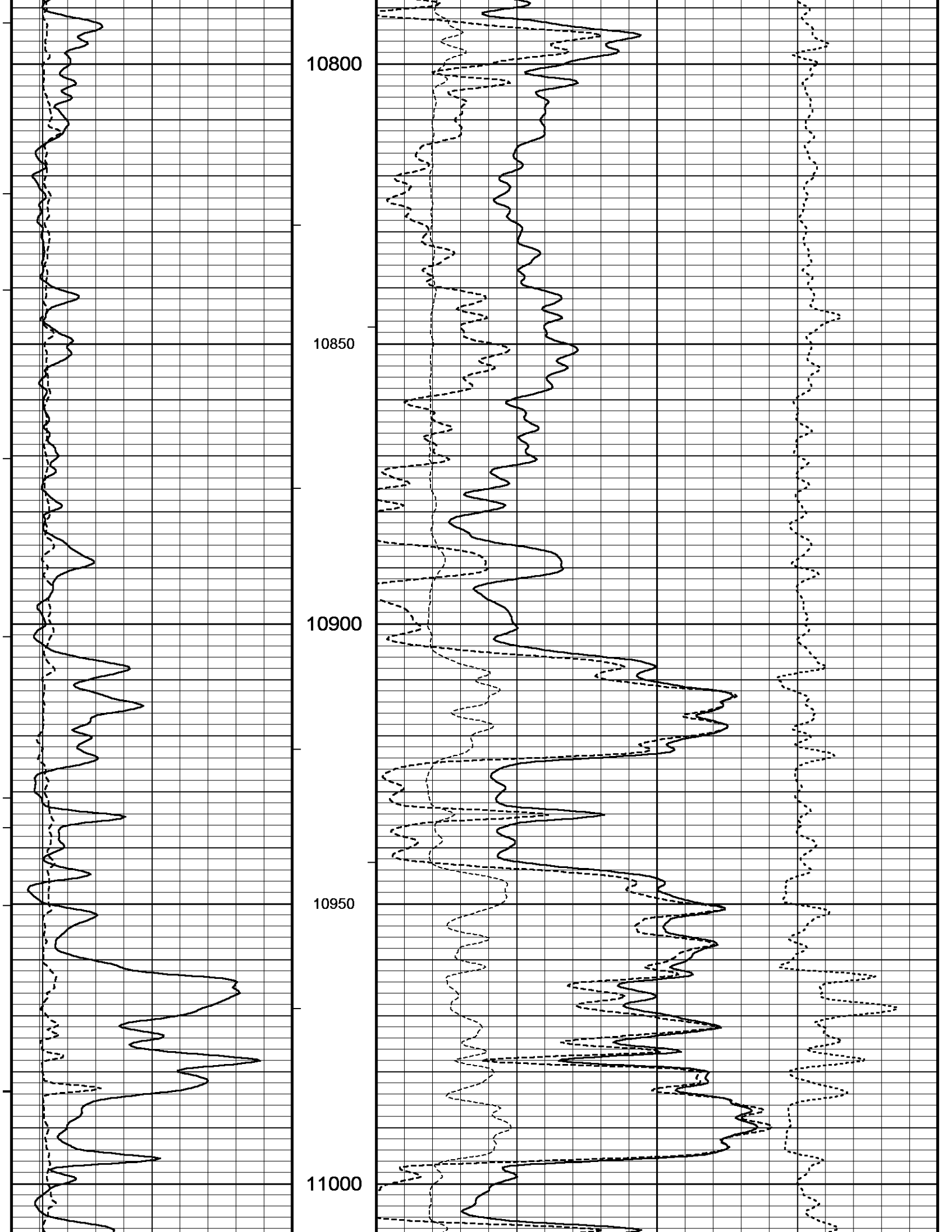


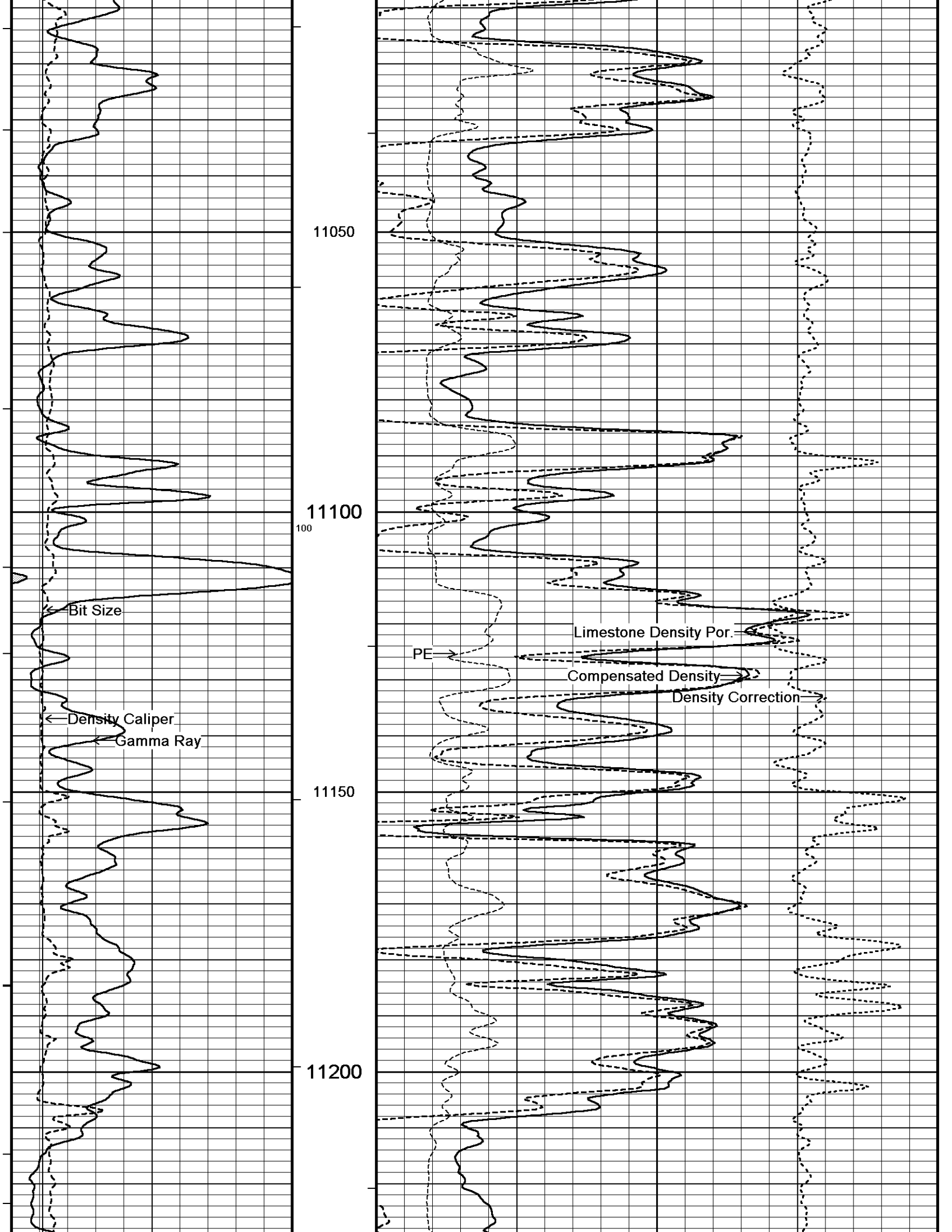


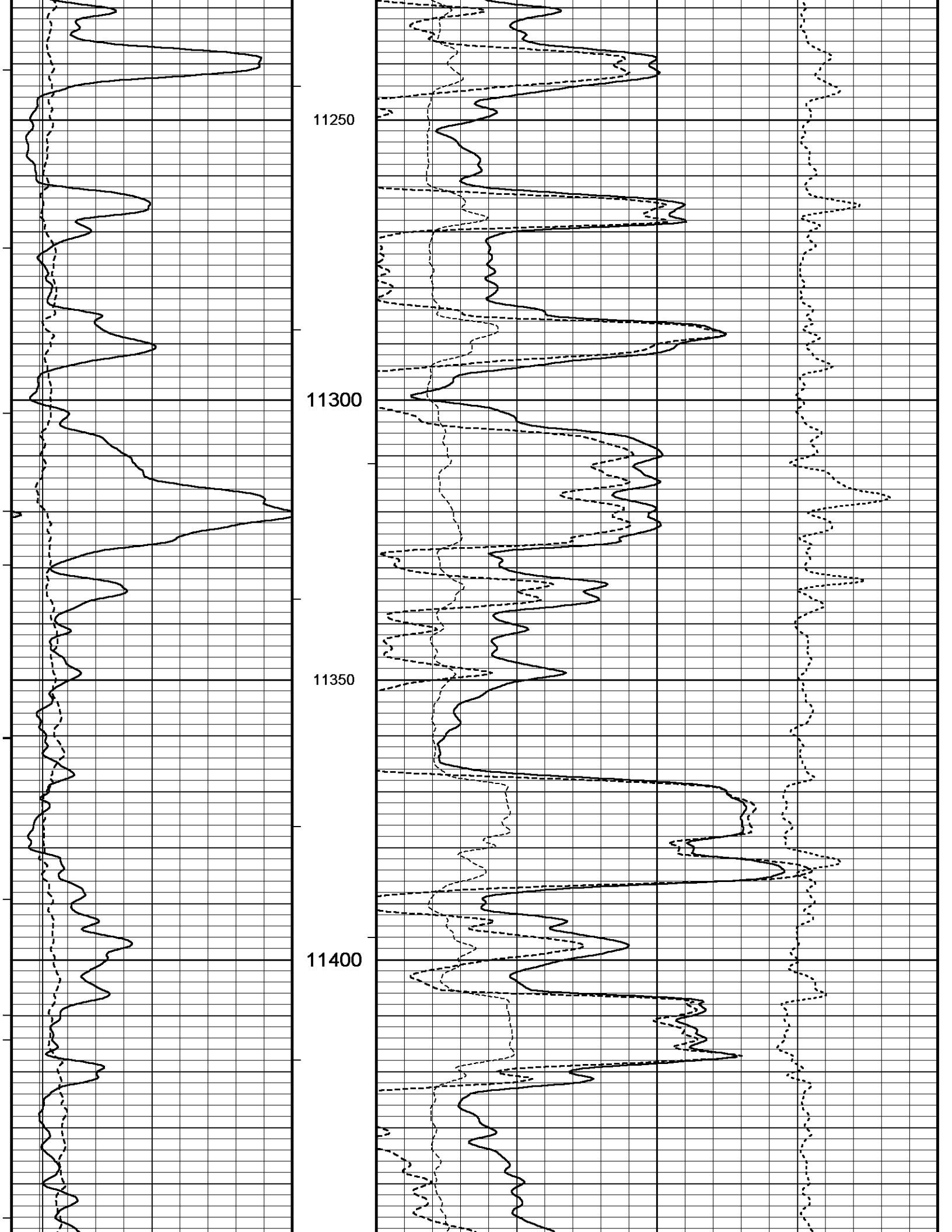


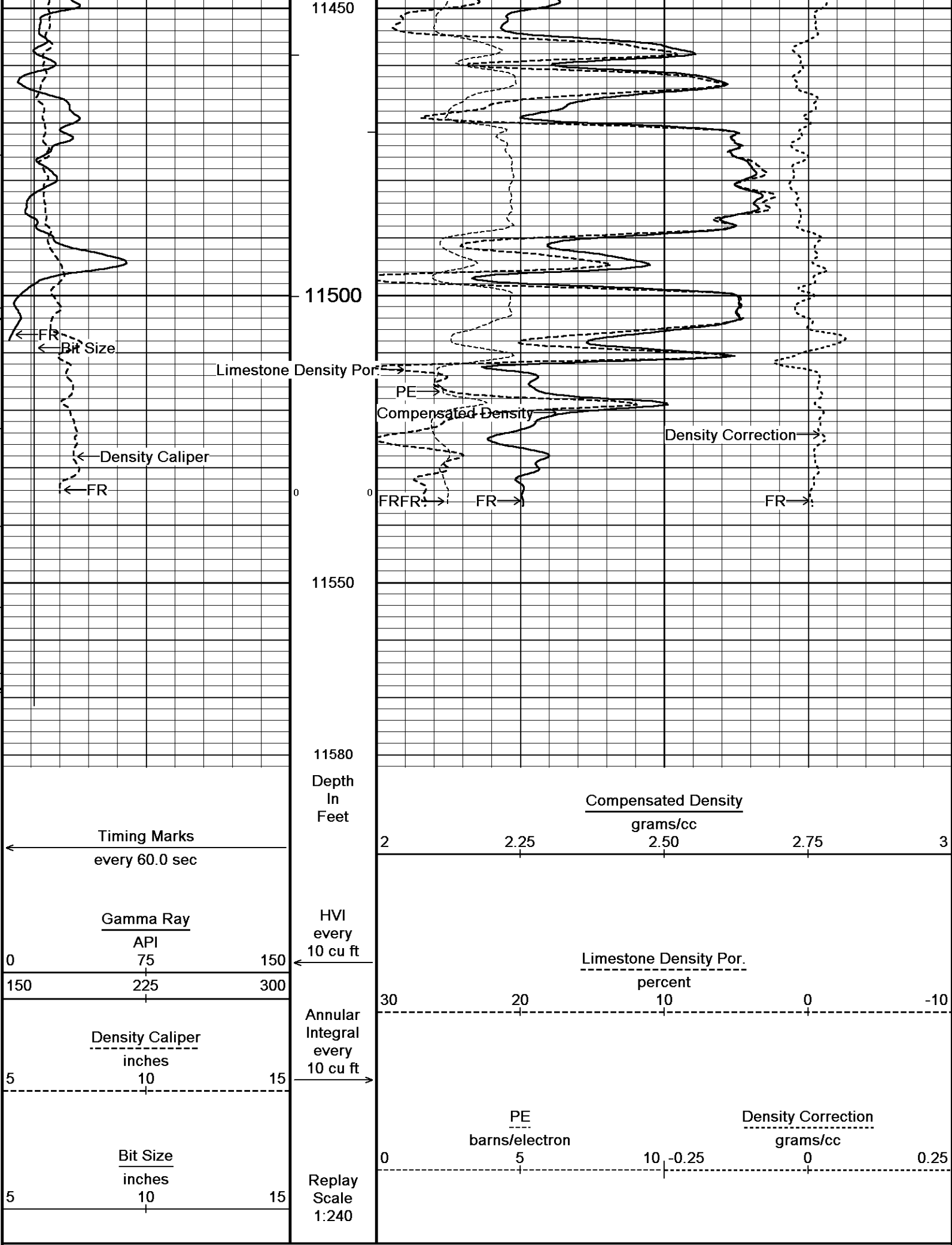












5 INCH BULK DENSITY LOG DSC

BEFORE SURVEY CALIBRATION

C:\Minimus 13.02.066\Data\SDRGE (TURNER)\35292 RTAP.dta

Down-hole Tension Calibration All 000

Field Calibration on 24-FEB-2009 00:00

Reading No	Measured	
1	14953.75	0.00
2	17846.38	1500.00

General Constants All 000

Last Edited on 08-OCT-2012,18:49

General Parameters

Mud Resistivity	1.500	ohm-metres
Mud Resistivity Temperature	50.000	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	4.500	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

Down-hole Tension Calibration SMS 0

Field Calibration on 29-MAR-2011 00:00

Reading No	Measured	
1	15152.07	0.00
2	19175.97	2000.00

High Resolution Temperature Calibration MCG-D.A 242

Field Calibration on 12-SEP-2012,19:54

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-D.A 242

Last Edited on

Pre-filter Length	11
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SP Calibration MCG-D.A 242

Field Calibration on 19-JUL-2012 11:23

	Measured	Calibrated (mV)
Reference 1	100.0	100.0
Reference 2	-100.0	-100.0

Gamma Calibration MCG-D.A 242

Field Calibration on 20-SEP-2012 20:36

	Measured	Calibrated (API)
Background	126	88
Calibrator (Gross)	1947	1349
Calibrator (Net)	1820	1261

Gamma Constants MCG-D.A 242

Last Edited on 08-OCT-2012,18:41

Gamma Calibrator Number	blue	
Mud Density	1.01	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN B 1300

Base Calibration on 11-SEP-2012 09:50

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
Ratio	3051	92	3714	110
	33.011		33.764	

Field Calibrator at Base

	Calibrated (cps)
Ratio	1253 / 1859
	0.674

Field Check

	Calibrated (cps)
Ratio	1244 / 1880
	0.662

Neutron Constants MDN-B.J 390

Last Edited on 08-OCT-2012,21:39

Neutron Source Id	P31112B		
Neutron Jig Number	EC13 BLUE		
Epithermal Neutron	No		
Caliper Source for Processing	Density Caliper		
Stand-off	0.00	inches	
Mud Density	1.01	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	MCG External Temperature		
Temperature	N/A	degrees F	
Mud Salinity	5.49	kppm	
Salinity Correction	Applied		
Formation Fluid Salinity Source	None		
Formation Fluid Salinity	N/A	kppm	
Barite Mud Correction	Not Applied		

FE Calibration MFE-B.J 329

Base Calibration on 31-AUG-2012 13:33
Field Check on 23-SEP-2012 00:24

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	961.8	126.8
Base Check		281.9
Field Check		282.2

FE Constants MFE-B.J 329

Last Edited on 08-OCT-2012,18:41

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	

High Resolution Temperature Calibration MAI-B.J 389

Field Calibration on 19-OCT-2011 09:44

	Measured	Calibrated(Deg F)
Lower	10.00	50.00
Upper	100.00	212.00

High Resolution Temperature Constants MAI-B.J 389

Last Edited on

Pre-filter Length	11
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Induction Calibration MAI-B.J 389

Base Calibration on 01-SEP-2012,07:44
Field Check on 23-SEP-2012 00:23

Base Calibration

Test Loop Calibration Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	10.7	105.5	0.0	0.0

1	16.7	465.5	9.3	966.2
2	6.4	384.0	7.6	821.4
3	3.1	258.9	5.2	566.0
4	1.8	133.7	2.6	279.2

Array Temperature 78.1 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	14.1	3895.8
2	0.0	0.0	29.3	3506.4
3	0.0	0.0	29.3	3047.1
4	0.0	0.0	19.6	2061.5
Deep	0.0	0.0	19.1	2011.4
Medium	0.0	0.0	42.2	4000.8
Shallow	0.0	0.0	41.9	5148.8
Array Temperature	0.0		77.5	Deg F

Induction Constants MAI-B.J 389

Last Edited on 08-OCT-2012,18:49

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		

Caliper Calibration MPD-C.J 435

Base Calibration on 31-AUG-2012 15:14
Field Calibration on 23-SEP-2012 00:38

Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	16672	4.01	
2	26192	5.96	
3	36288	7.98	
4	46016	9.86	
5	56865	11.88	
6	N/A	N/A	

Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	

Measured Caliper (in) 5.92

Actual Caliper (in) 5.96

Photo Density Calibration MPD-C.J 435

Base Calibration on 31-AUG-2012 17:03

Field Check on 23-SEP-2012 00:29

Density Calibration

Base Calibration

	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	56922	28137	59869	31110
Reference 2	23873	2636	24557	2522

Field Check at Base

1304.9 1353.6

Field Check

1298.0 1349.4

PE Calibration

Base Calibration

	WS	Measured		Calibrated Ratio
		WH	Ratio	
Background	238	1169		
Reference 1	22710	56709	0.405	0.369
Reference 2	6509	23724	0.278	0.271

Field Check at Base

237.7 1169.4

Field Check

237.0 1162.5

Density Constants MPD-C.J 435

Last Edited on 08-OCT-2012,21:39

Density Source Id	p31112b	
Nylon Calibrator Number	633	
Aluminium Calibrator Number	633	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.01	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

DOWNHOLE EQUIPMENT

C:\Minimus 13.02.066\Data\SDRGE (TURNER)\35292 RTAP.dta

RUNNING TOOL

MLK-A 1 LG: 4.87 ft WT: 30.9 lb OD: 2.24 in

MBS-A 400v Compact Battery Sub

MBS-A 13 LG: 7.84 ft WT: 57.3 lb OD: 2.24 in

Compact Comms Gamma

MCG-D.A 242 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Memory Sub A C



63.07 ft

60.16 ft

GGCE - Borehole Corrected Gamma

CGXT - MCG External Temperature

Compact In-line Standoff sub
 MMS-A.C 13 LG: 3.12 ft WT: 22.0 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
 SKJ-D.A 166 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-H Compact Swivel Head Adaptor
 SHA-H 167 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-D.B Compact In-line Bowspring sub
 MIS-D.B 596 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

Compact Neutron
 MDN-B.J 390 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
 MPD-C.J 435 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.A Compact In-line Bowspring sub
 MIS-D.A 609 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-F Compact Swivel Head Adaptor
 SHA-F 33 LG: 2.74 ft WT: 26.5 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
 SKJ-E.B 472 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

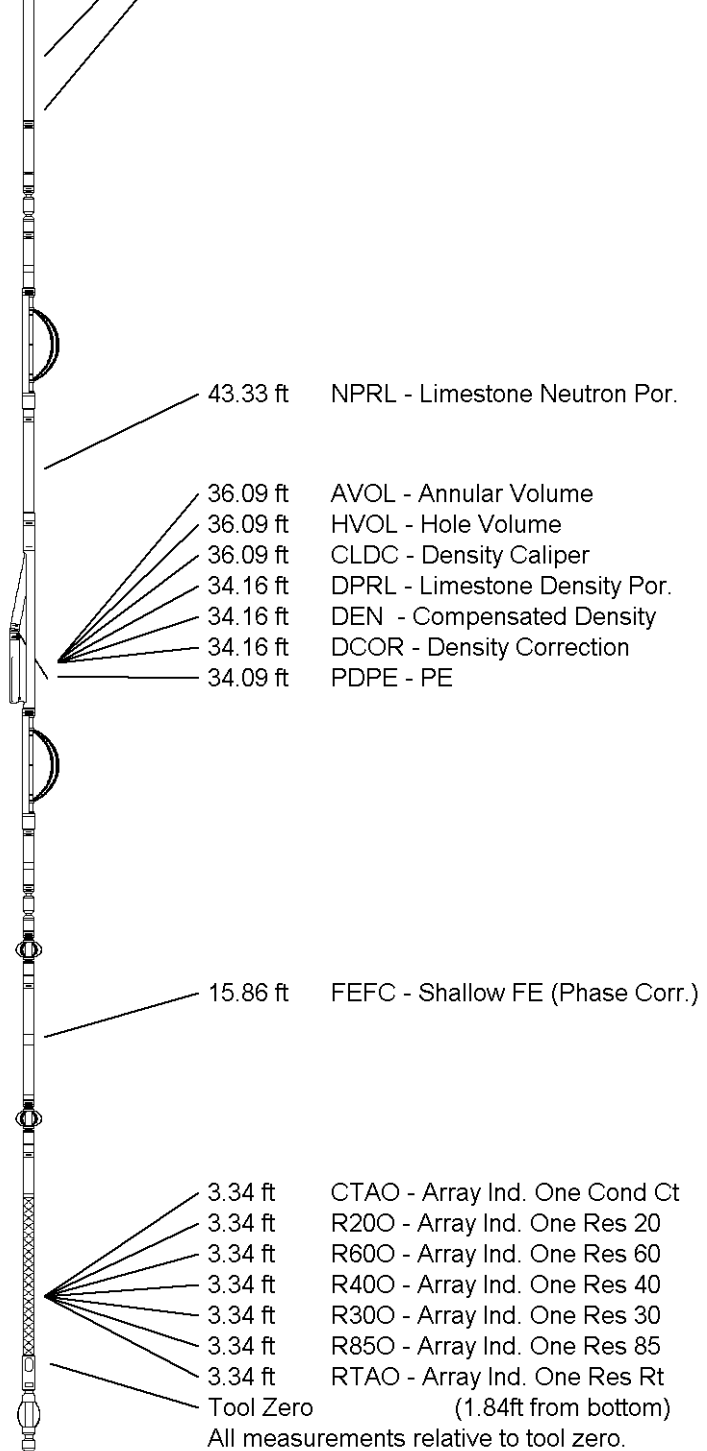
MIS-E.B Compact In-line Standoff sub
 MIS-E.B 573 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Focused Electric
 MFE-B.J 329 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

MIS-E.B Compact In-line Standoff sub
 MIS-E.B 577 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

Compact Induction
 MAI-B.J 389 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in

Total Length: 82.78 ft Weight: 606.3 lb



COMPANY SANDRIDGE ENERGY
WELL TURNER 3406 1-7H
FIELD EASTHAM
PROVINCE/COUNTY HARPER
COUNTRY/STATE USA / KANSAS

Elevation Kelly Bushing	1335.00	feet	First Reading	11534.00	feet
Elevation Drill Floor	1335.00	feet	Depth Driller	11858.00	feet
Elevation Ground Level	1316.00	feet	Depth Logger	11858.00	feet



Weatherford®

**CML MESSENGER SHUTTLE
 COMPACT PHOTO DENSITY
 COMPENSATED NEUTRON LOG**

