CML MESSENGER SHUTTLE
COMPACT PHOTO DENSITY
COMPENSATED NEUTRON LOG

Weatherford®

COMPANY	SANDRIDGE ENERGY
WELL	SALLY 3420 2-12H
FIELD	COMANCHE PROSPECT
PROVINCE/COUNTY	COMANCHE
COUNTRY/STATE	USA / KANSAS
LOCATION	200' FNL & 2200' FWL NW NE NE NW

SEC	TWP	RGE	Other Services
12	34S	20W	MAI

API Number 15-033-21713
Permit Number

Permanent Datum G.L., Elevation 1791 feet
Log Measured From DF
Drilling Measured From DF @ 1809 FEET

Elevations:	feet
KB	1809.00
DF	1809.00
GL	1791.00

Date	10-MAY-2013			
Run Number	ONE			
Service Order	3539416			
Depth Driller	9599.00	feet		
Depth Logger	9599.00	feet		
First Reading	9537.00	feet		
Last Reading	3500.00	feet		
Casing Driller	5706.00	feet		
Casing Logger	5706.00	inches		
Bit Size	6.125			
Hole Fluid Type	WATER	lb/USg		
Density / Viscosity	9.00 lb/USg	31.00 CP		
PH / Fluid Loss	8.50	8.50		
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.60 @ 74.0	ohm-m		
Rmf @ Measured Temp	1.28 @ 74.0	ohm-m		
Rmc @ Measured Temp	1.92 @ 74.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.925 @128.0	ohm-m		
Time Since Circulation	1 HOUR			
Max Recorded Temp	128.00	deg F		
Equipment / Base	18006	OKC		
Recorded By	B.ALLEN			
Witnessed By	M. RODEN		W. SCOTT	
AFE #/ S.O.	DC128959		3539416	

BOREHOLE RECORD

Last Edited: 10-MAY-2013 18:40

Bit Size inches	Depth From feet	Depth To feet
12.250	0.00	326.00
8.750	326.00	5706.00
6.125	5706.00	9599.00

REMARKS

LOGGED WITH WLS VER 13.04.8492 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 TOCALCULATE POROSITY
ALL INTERVALS LOGGED AND SCALED PER CUSTOMER REQUEST

DRILL PIPE DEPTH DURING DEPLOYMENT - 9487
LOGGING TOOL DEPTH AFTER DEPLOYMENT: 9570

4.5" CASING USED TO CALCULATE AHV

SERVICE ORDER # 3539416
RIG: LARIAT 45

OPERATORS: S.WORLEY, D. TURNER

5 INCH MAIN PASS DSC

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 11-MAY-2013 02:44
Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta
Recorded on 11-MAY-2013 01:31
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

Timing Marks
every 60.0 sec

Density Caliper
inches
4 9 14

MGS Gamma Ray
API
0 75 150
150 225 300

MGS Gamma Ray
API
0 75 150
150 225 300

Bit Size
inches
4 9 14

Depth In Feet

HVI every 10 cu ft

Annular Integral every 10 cu ft

Replay Scale 1:240

Limestone Neutron Por.
percent
30 20 10 0 -10

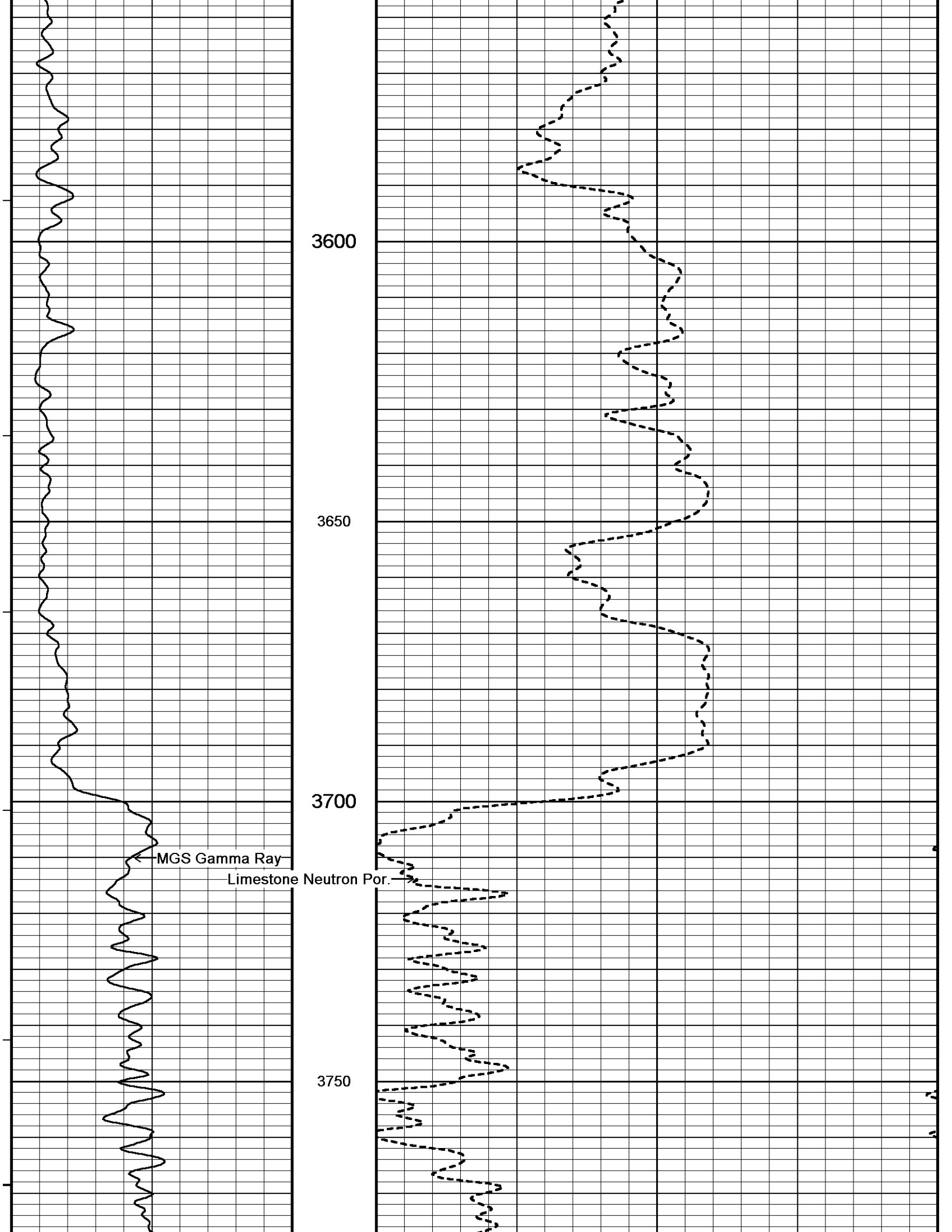
Limestone Neutron Por.
percent
30 20 10 0 -10
70 60 50 40 30

Limestone Density Por.
percent
30 20 10 0 -10

PE
barns/electron
0 5 10

Density Correction
grams/cc
-0.50 0 0.50

3488
3500
3550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3650
3700
3750
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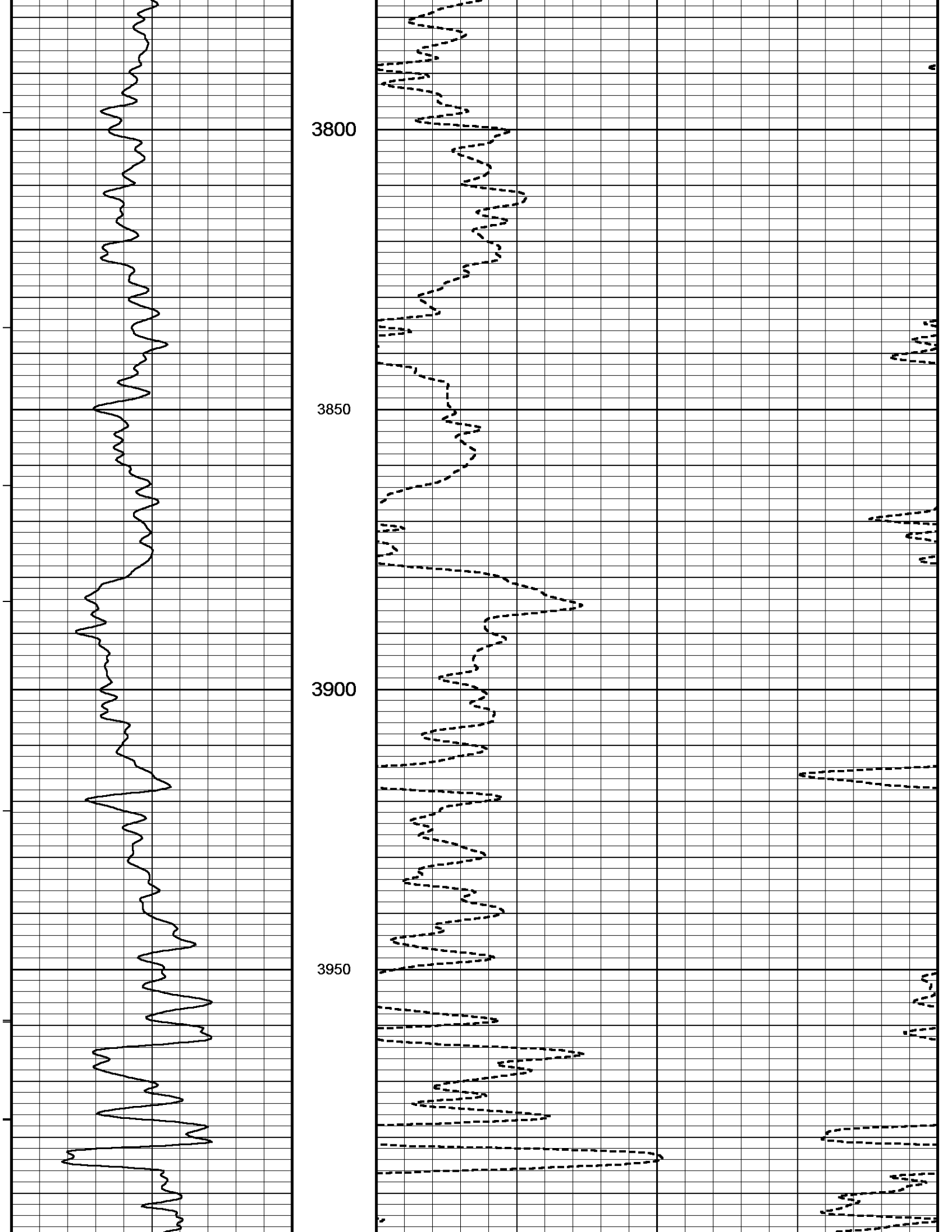
Limestone Neutron Por.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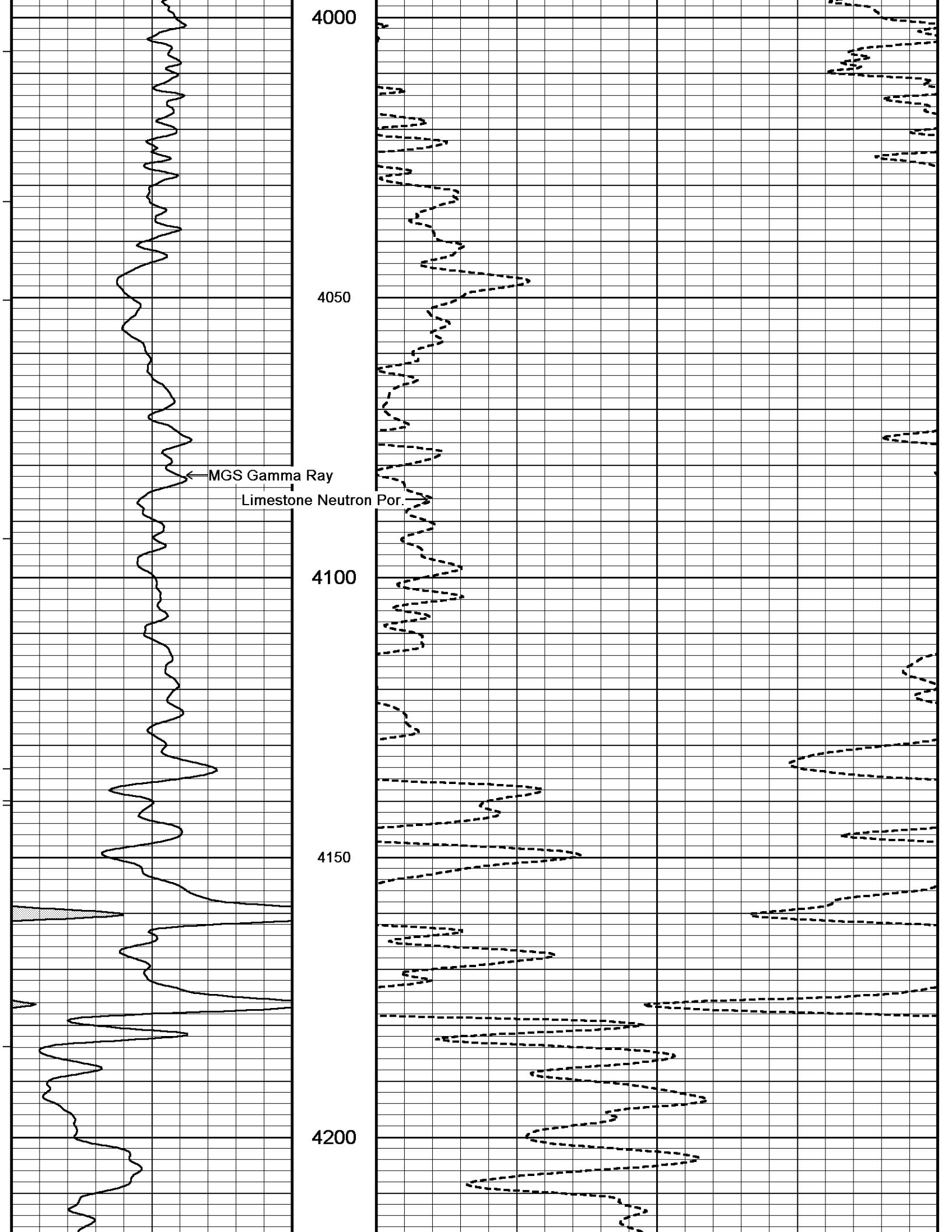
3850
3900
3950


4000
4050
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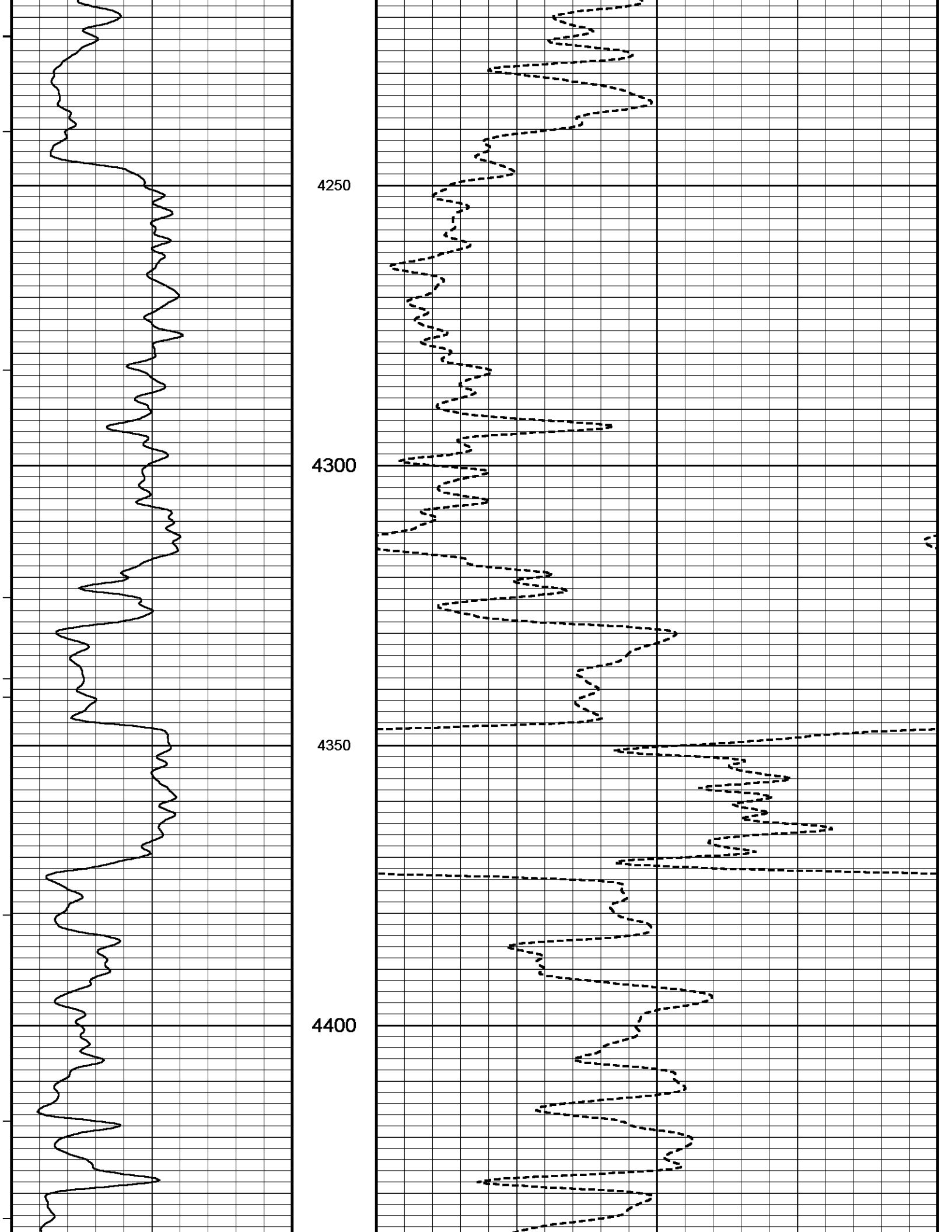
4100
4150
4200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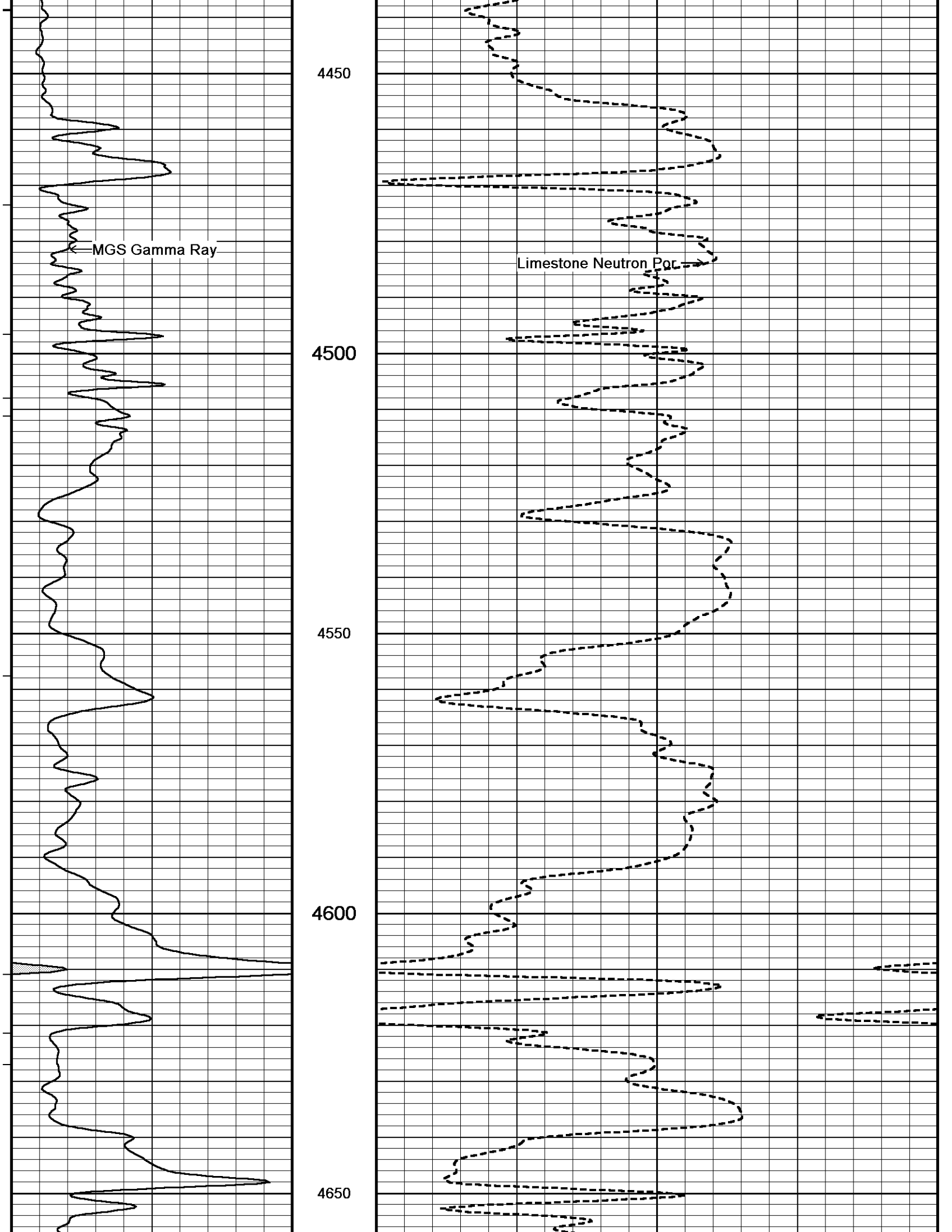
4300
4350
4400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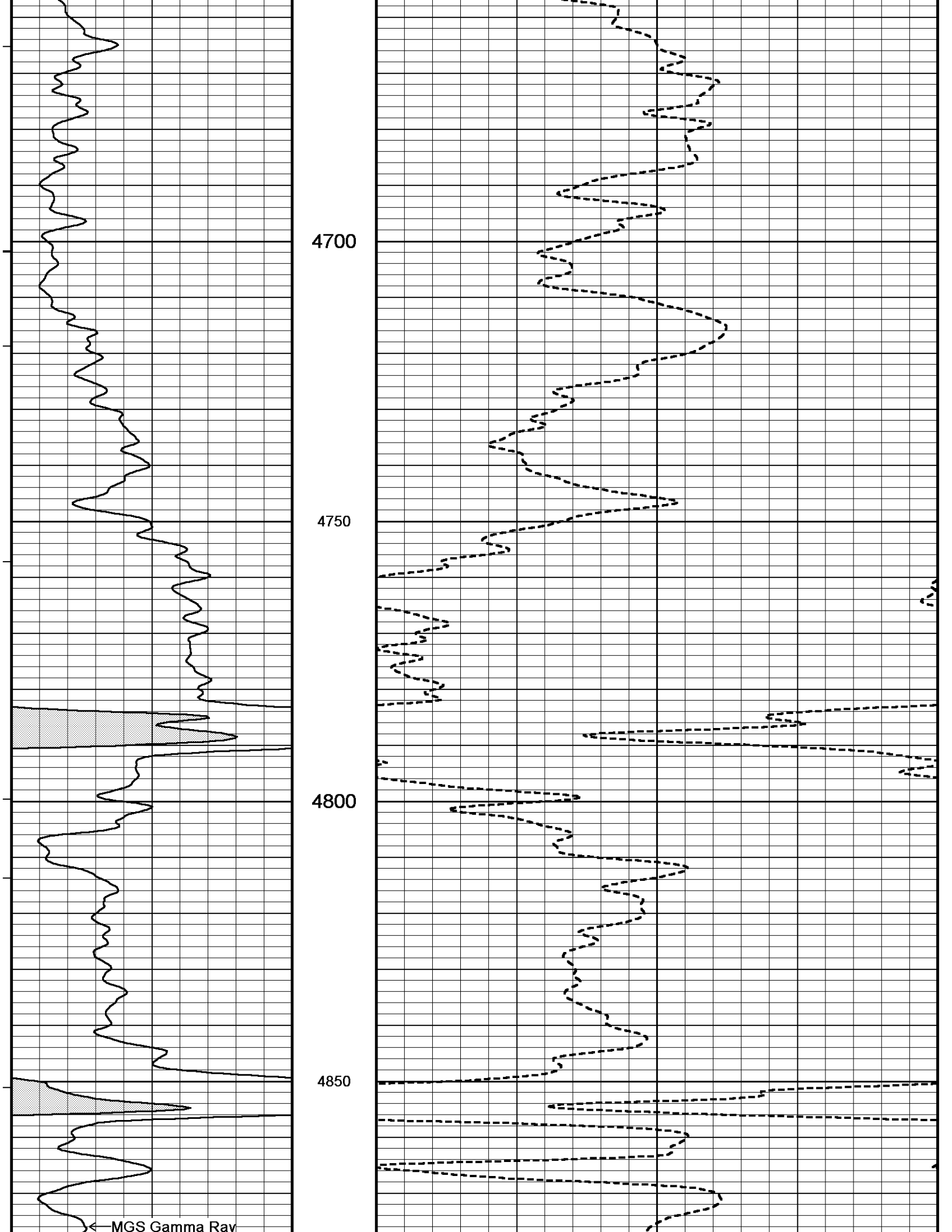
4500
4550
4600
4650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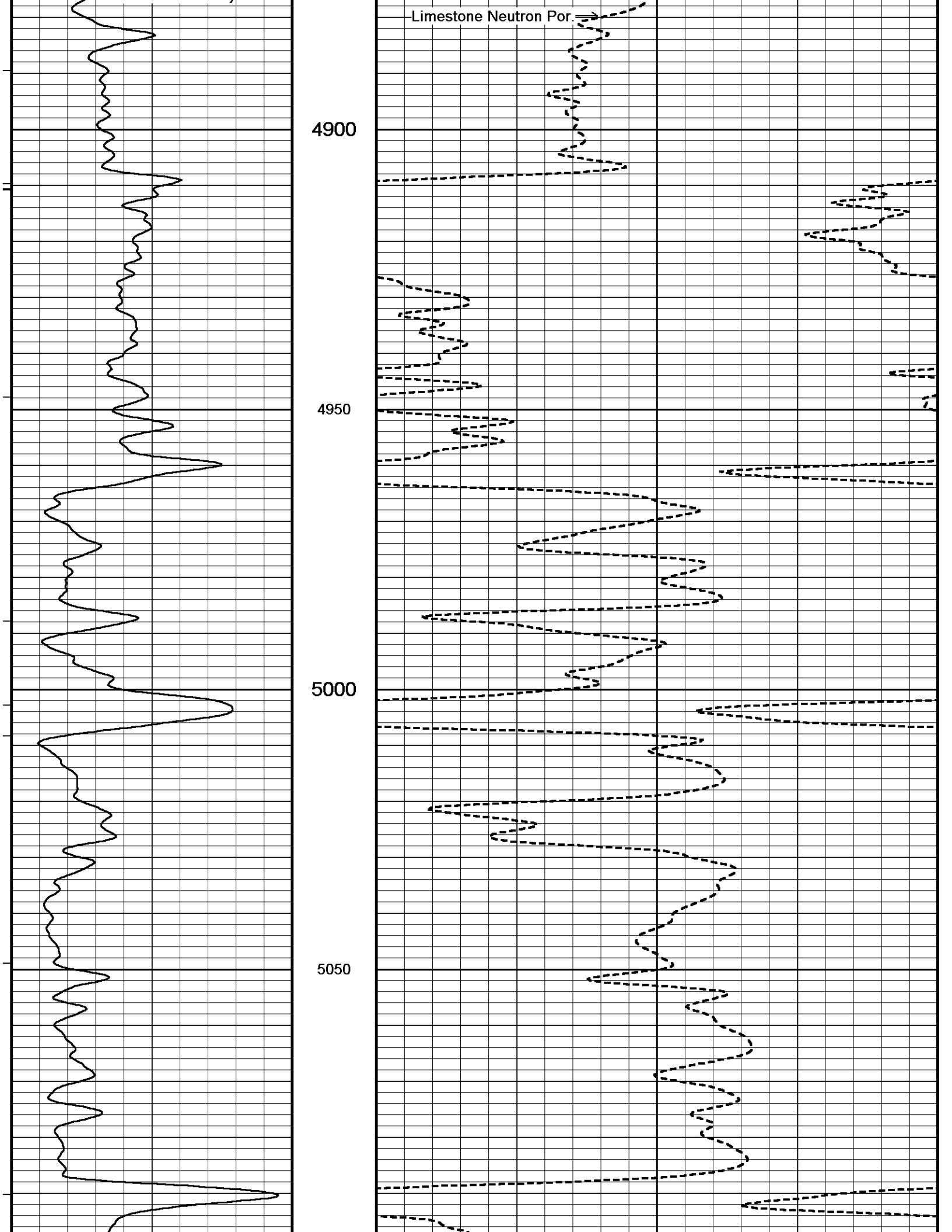
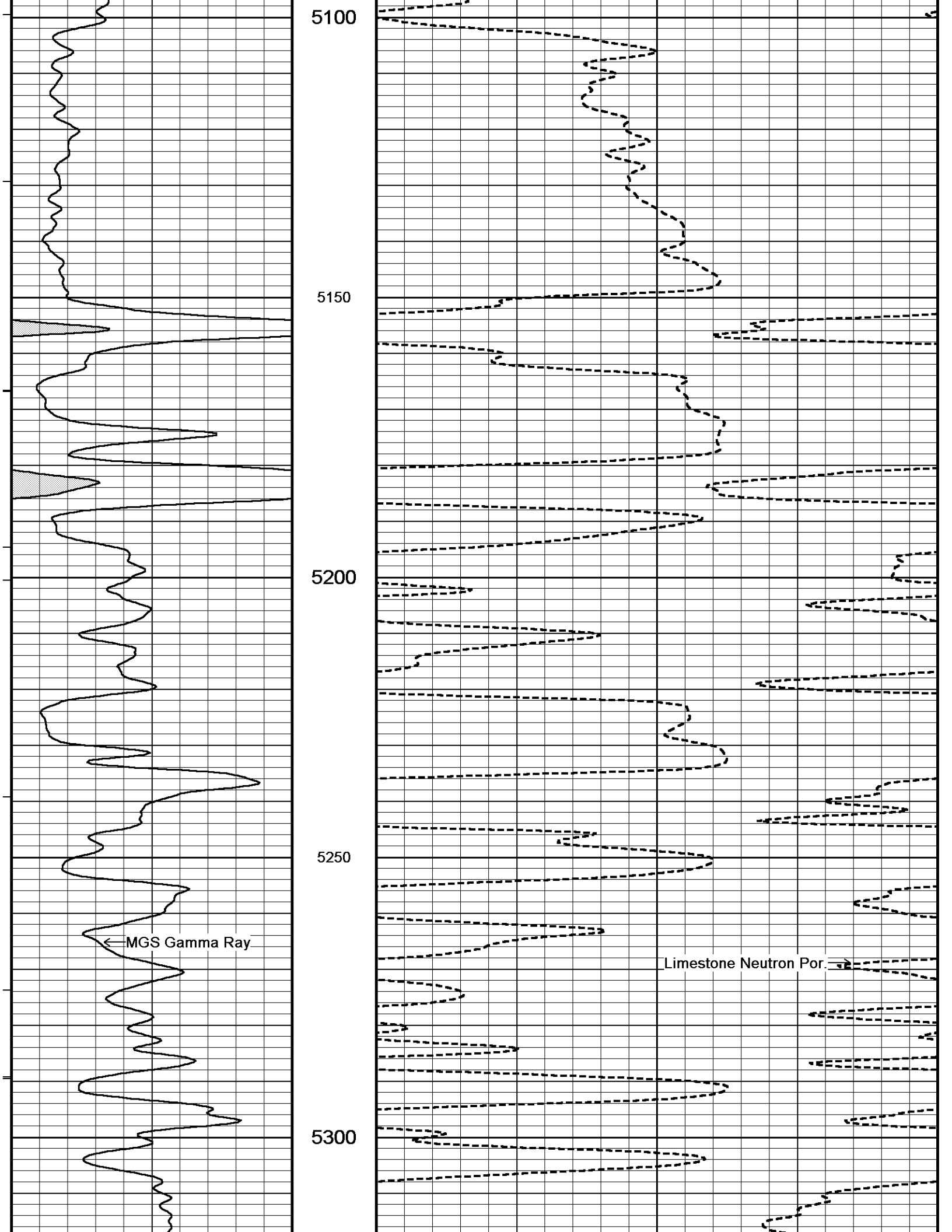
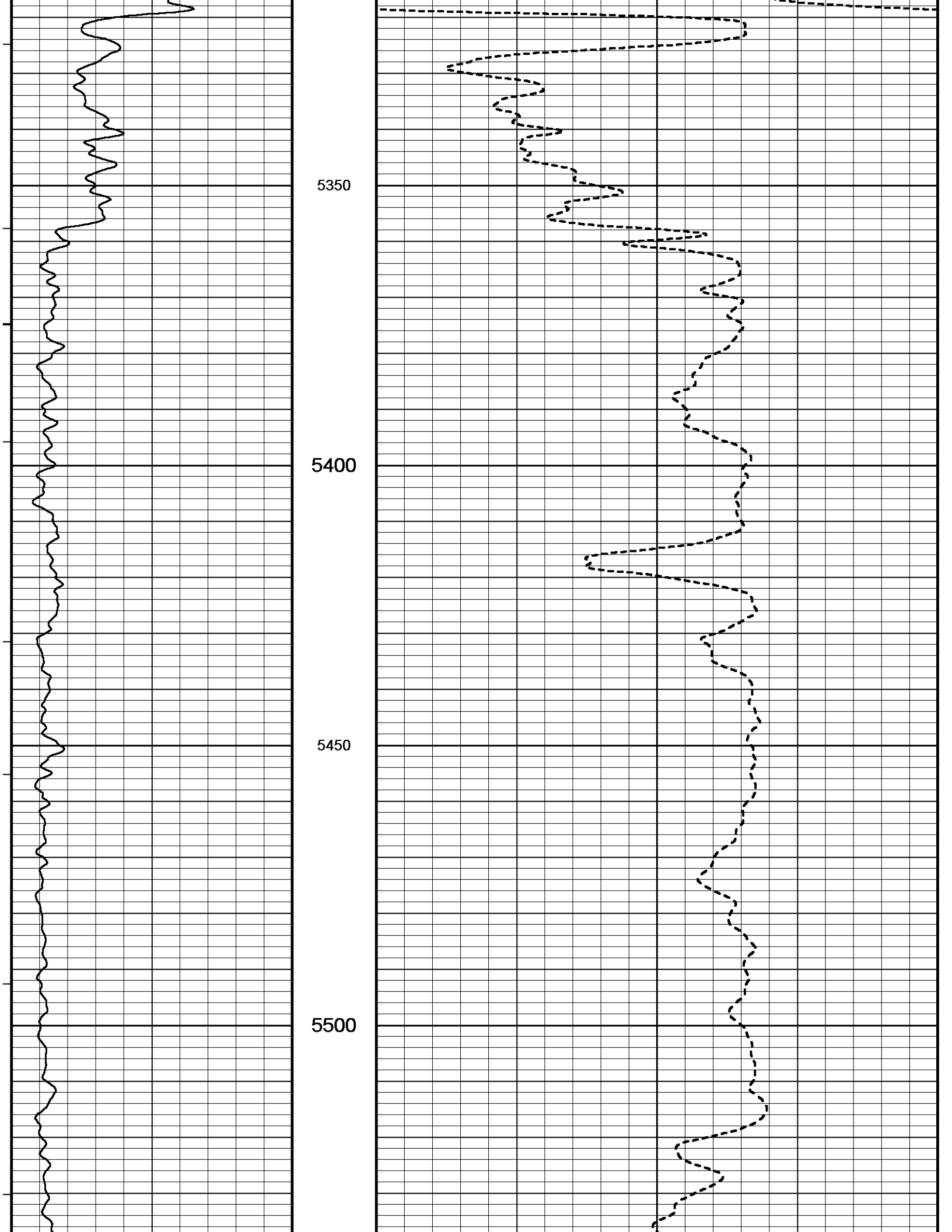
4750
4800
4850
MGS Gamma Ray


Limestone Neutron Por.
4900
4950
5000
5050


5100
5150
5200
5250
5300
←MGS Gamma Ray
Limestone Neutron Por.→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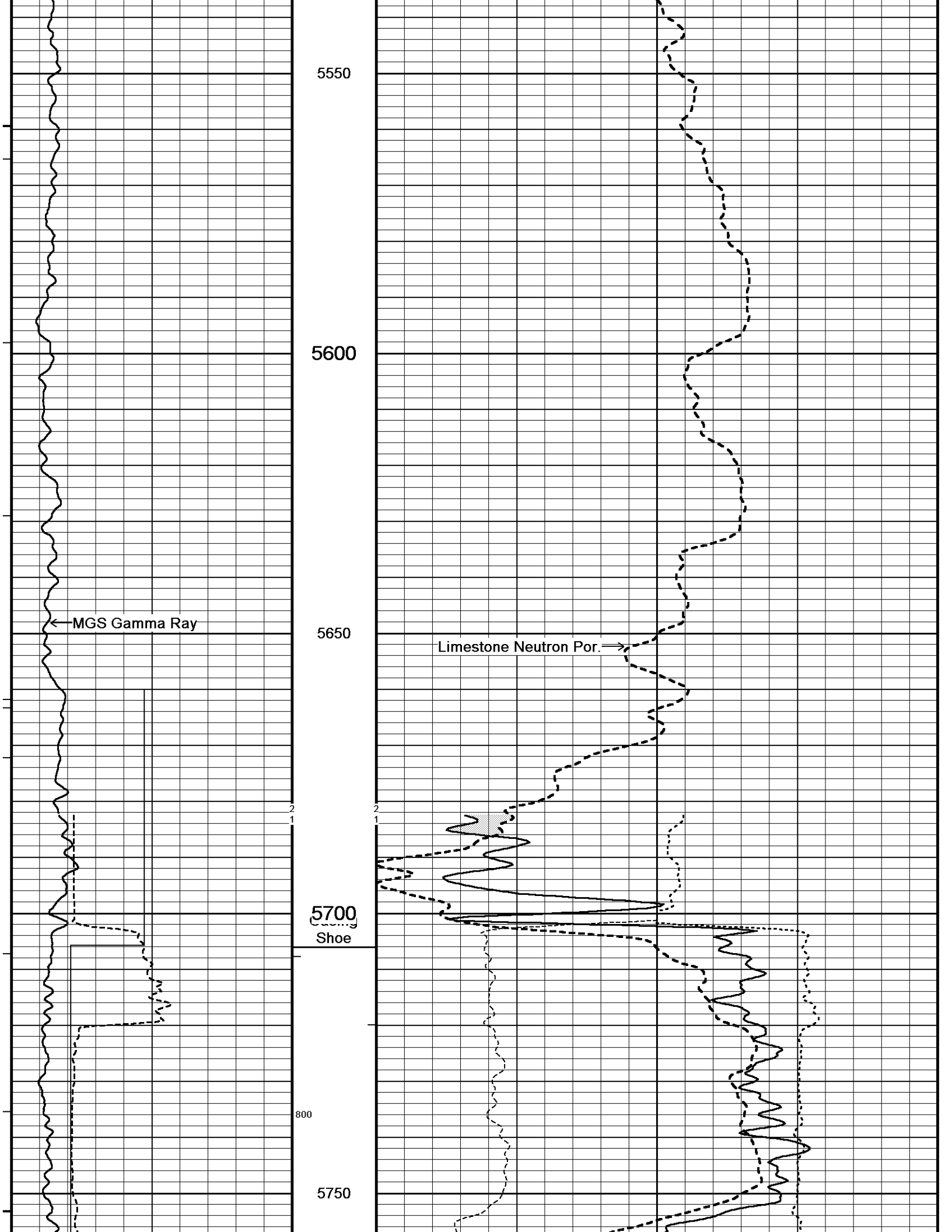
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5600
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5700
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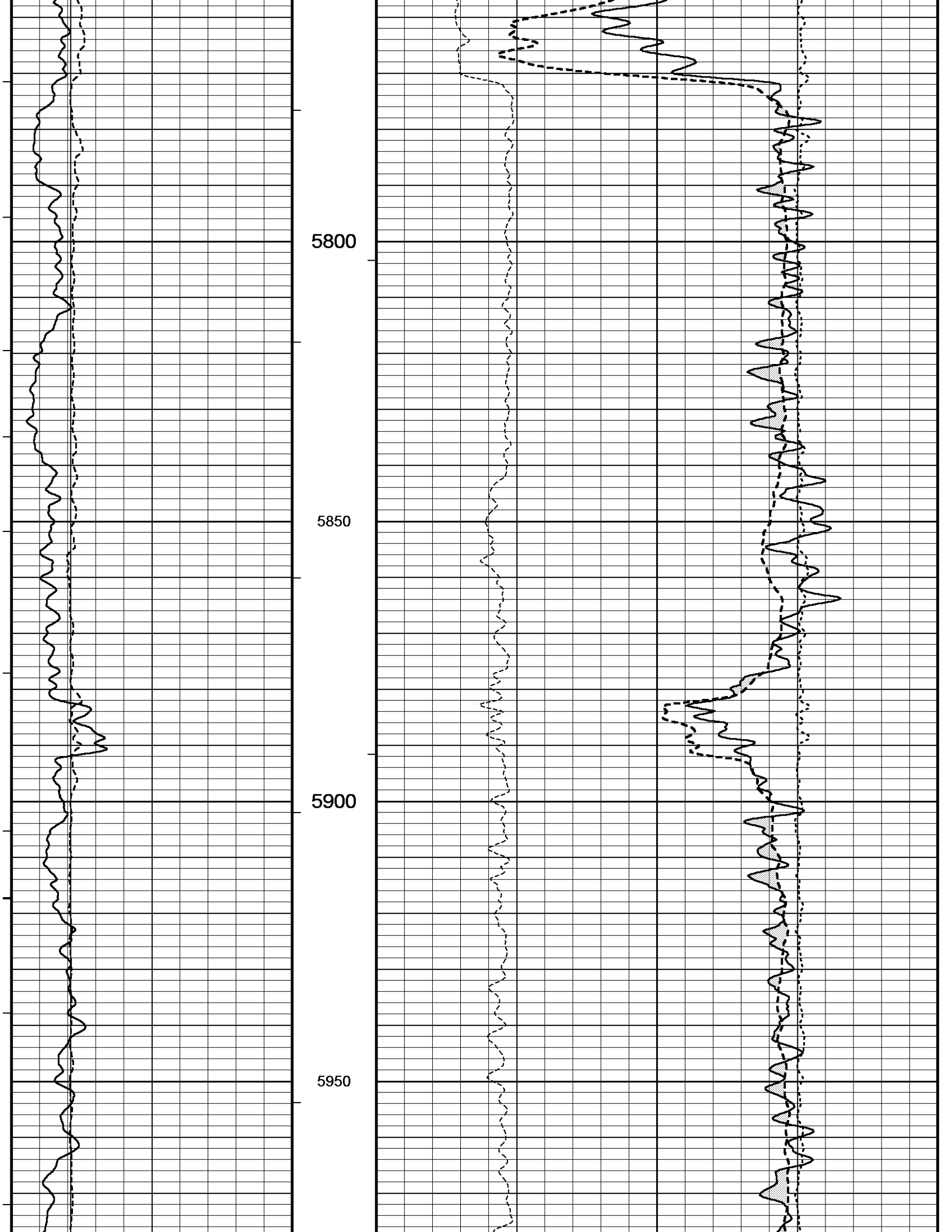
MGS Gamma Ray
Limestone Neutron Por.
Casing
Shoe
2
1
2
1
800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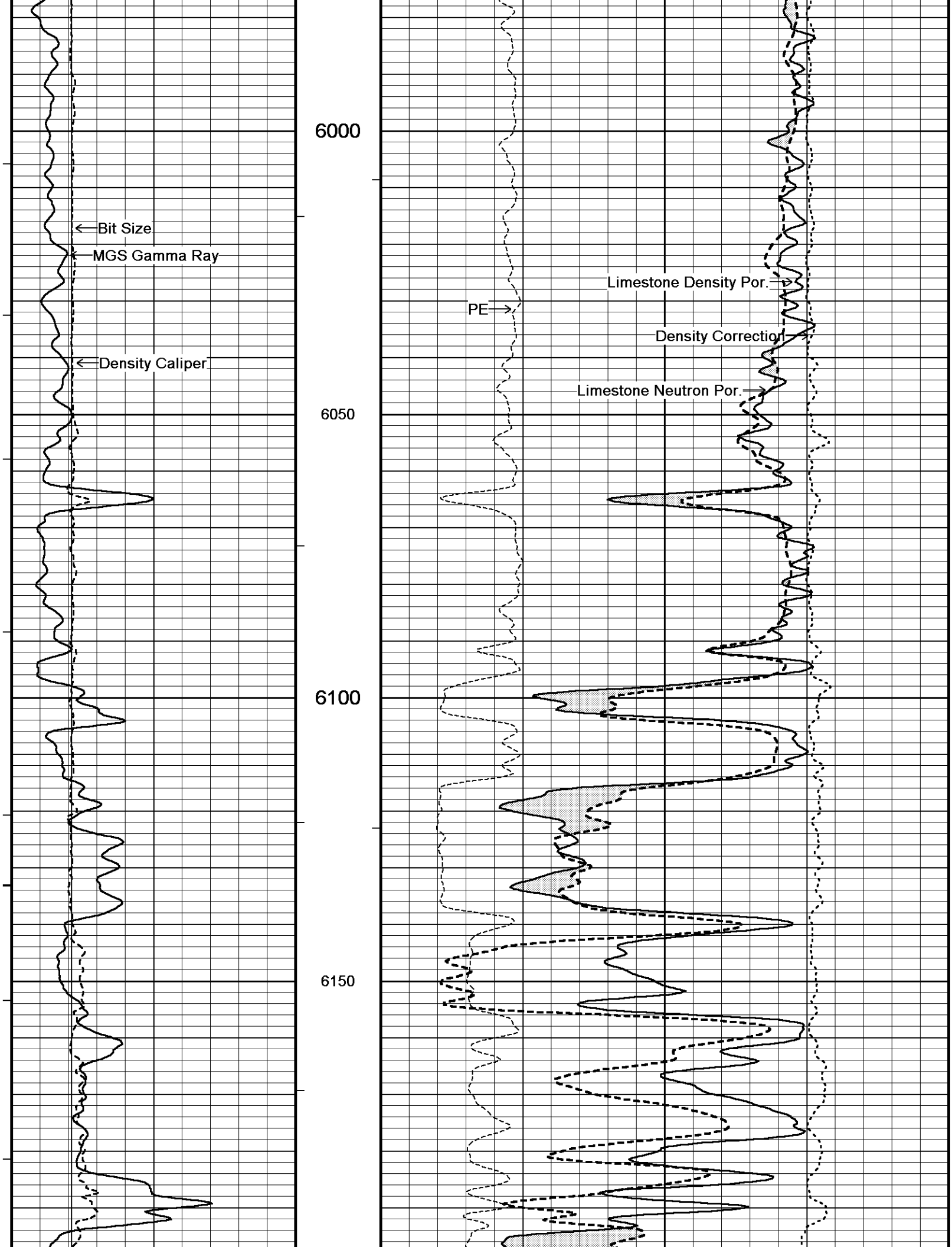
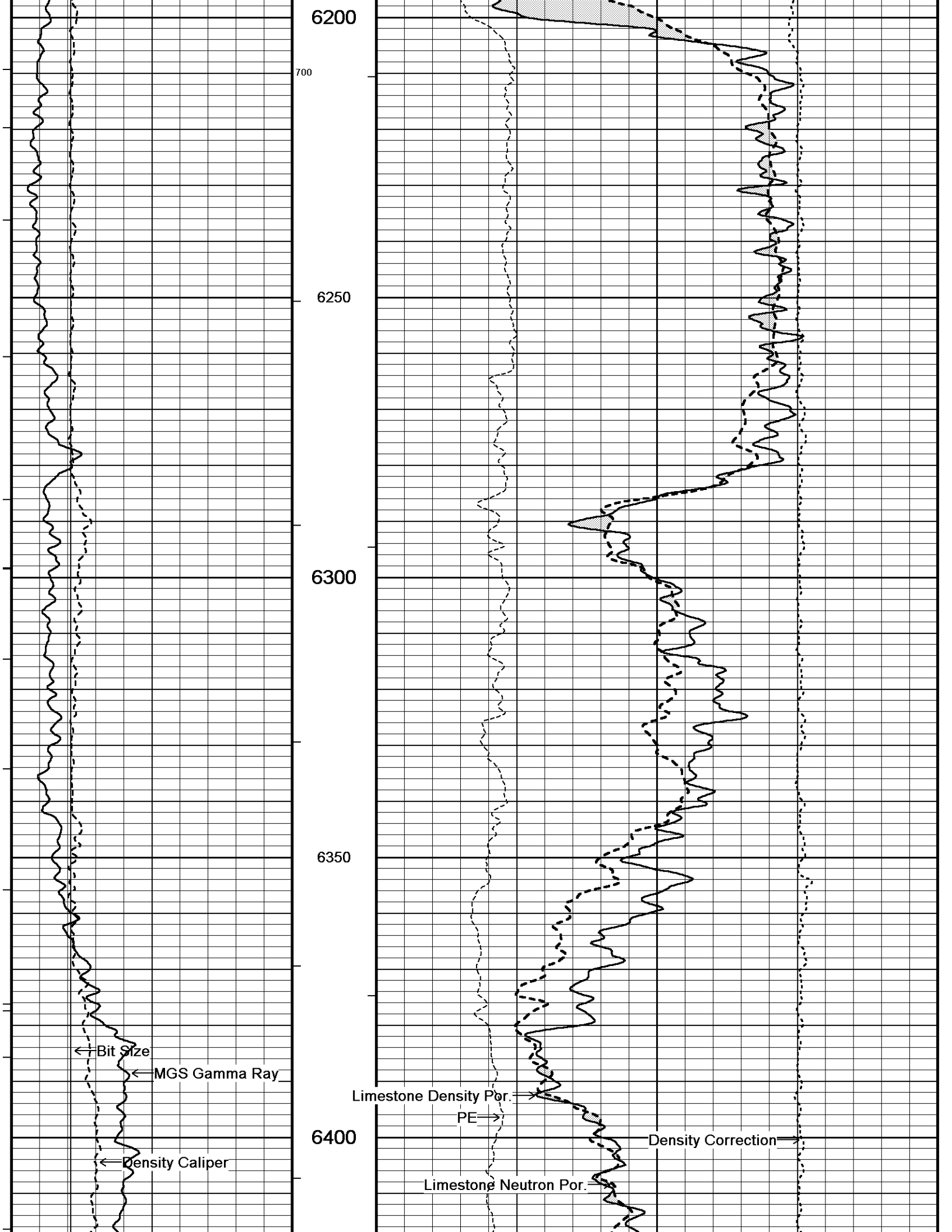
5950


6000
6050
6100
6150
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.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700
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6300
6350
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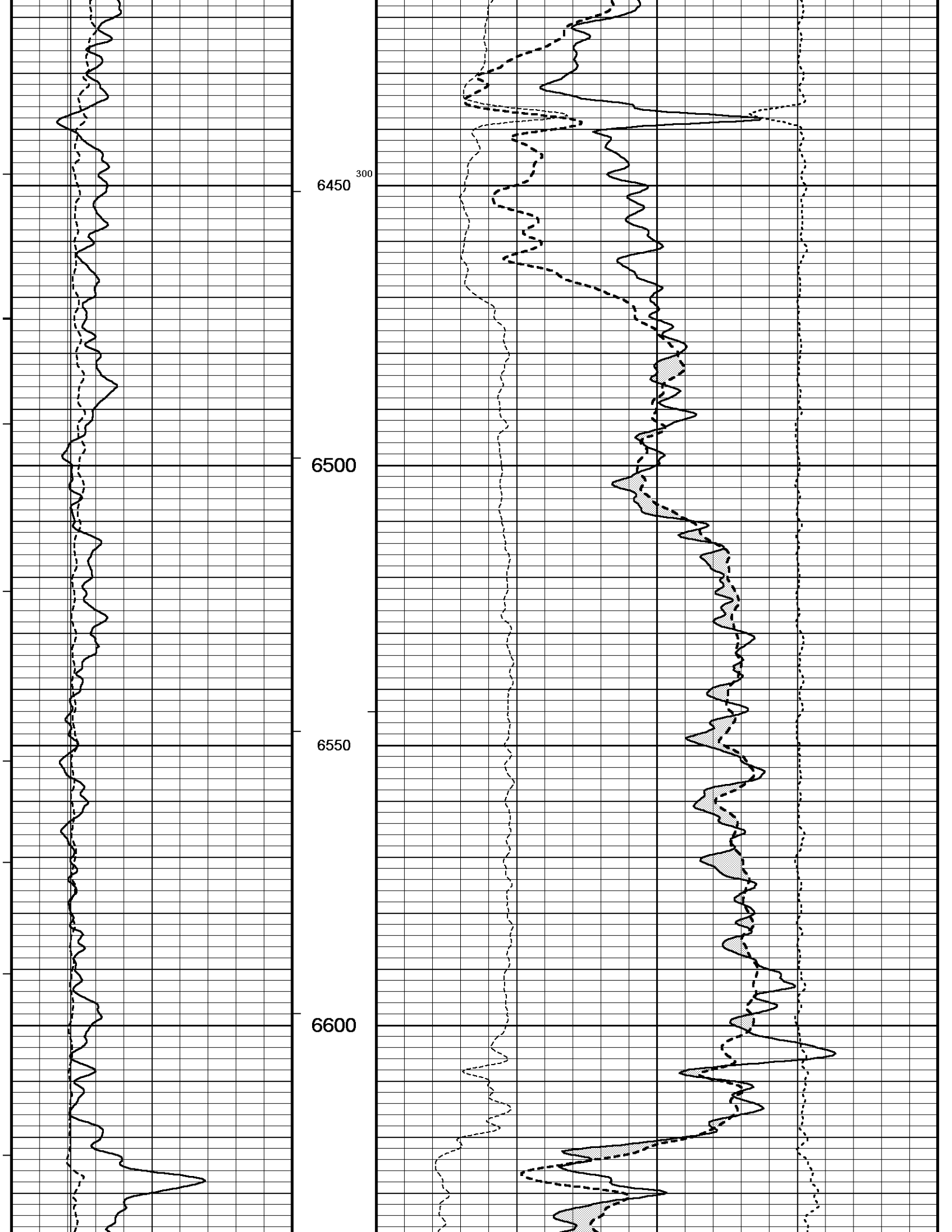
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.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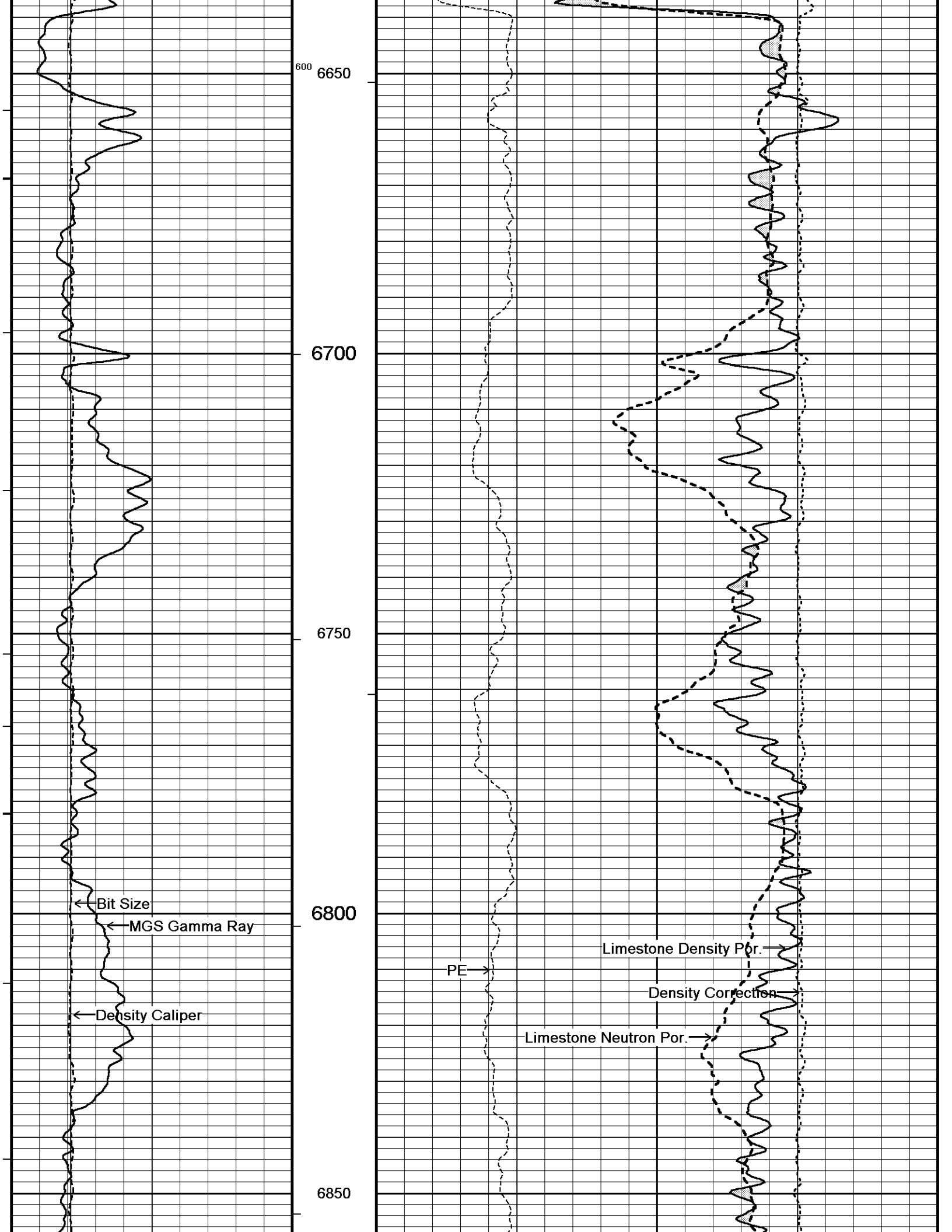
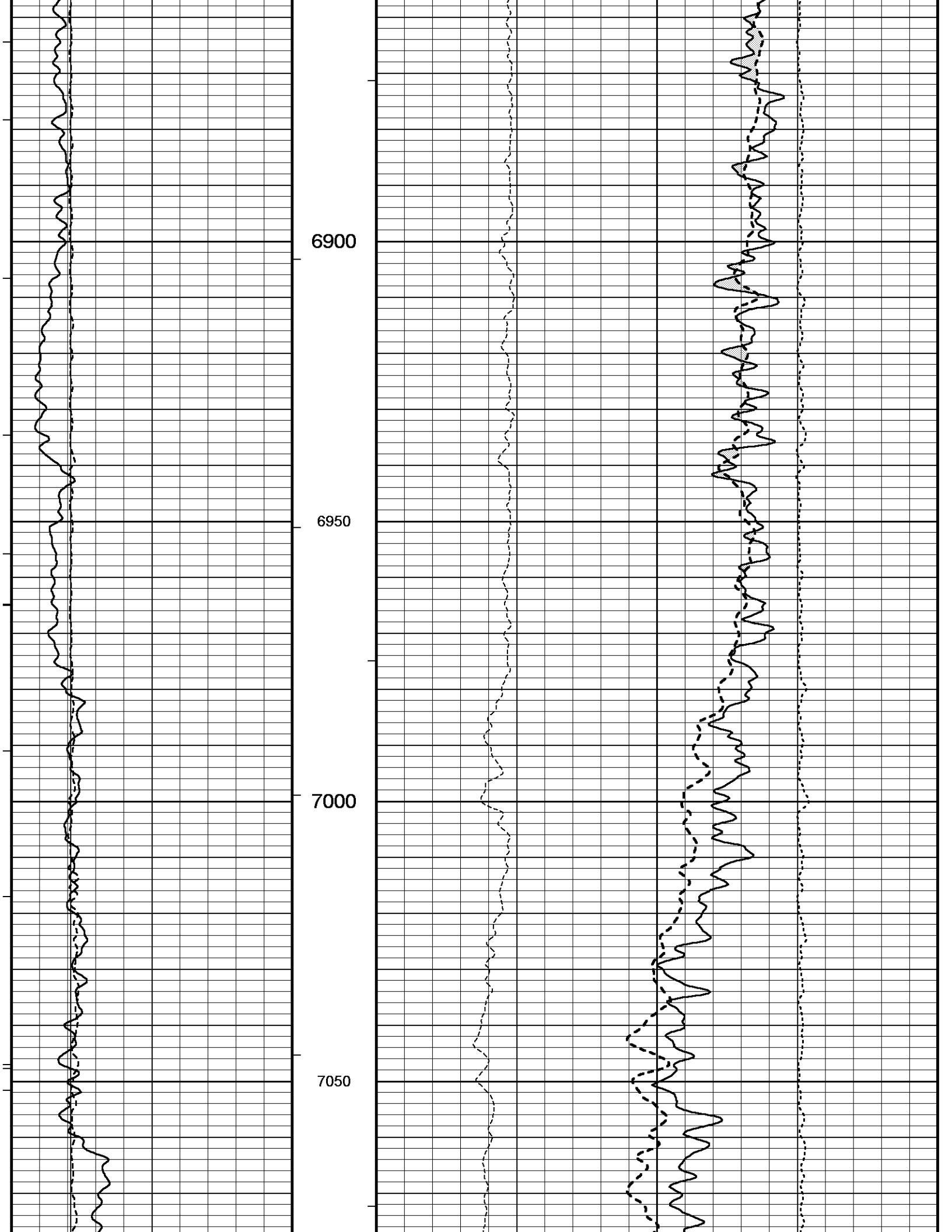
6450
6500
6550
6600


600
6650
6700
6750
6800
6850
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.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6950
7000
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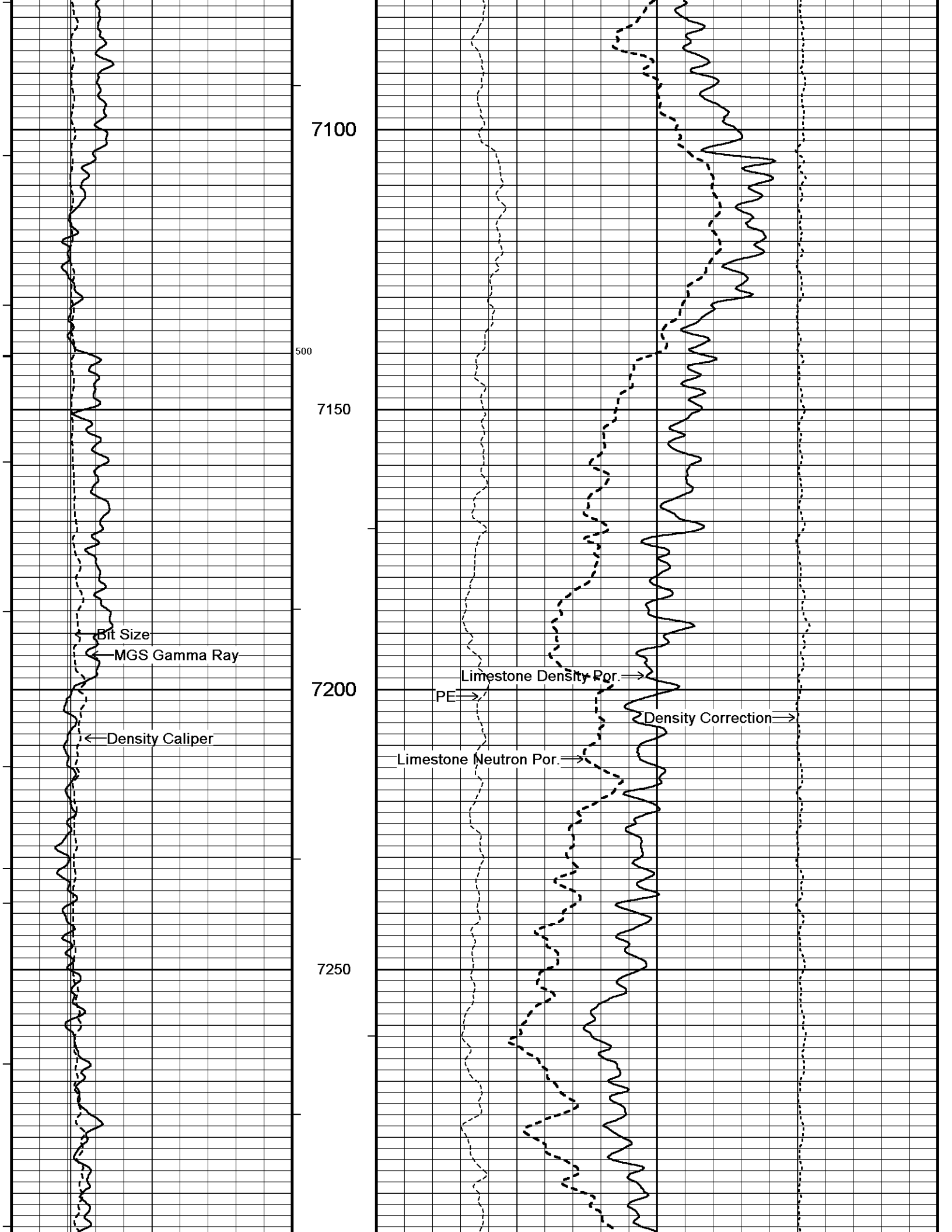
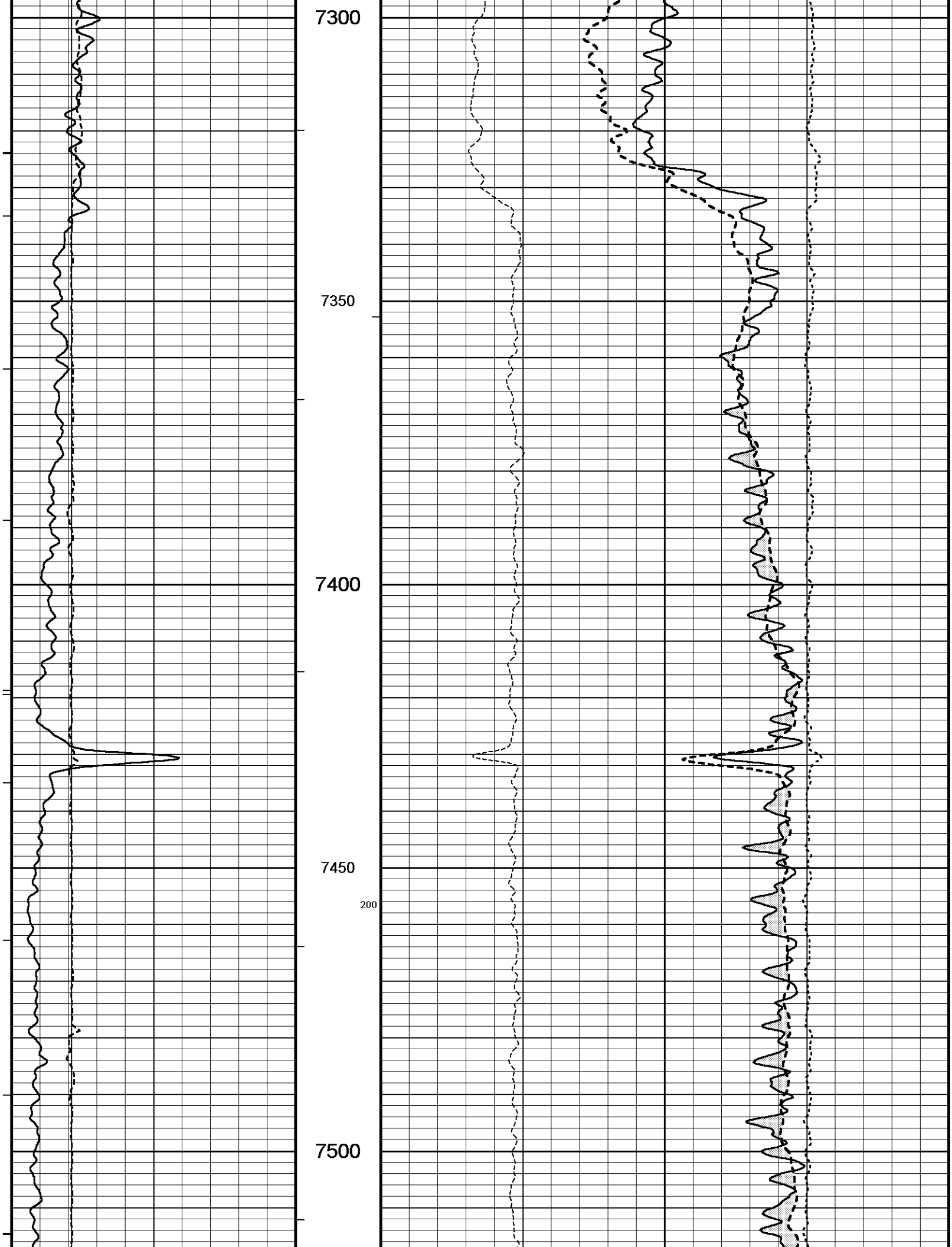

7100
500
7150
7200
7250
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.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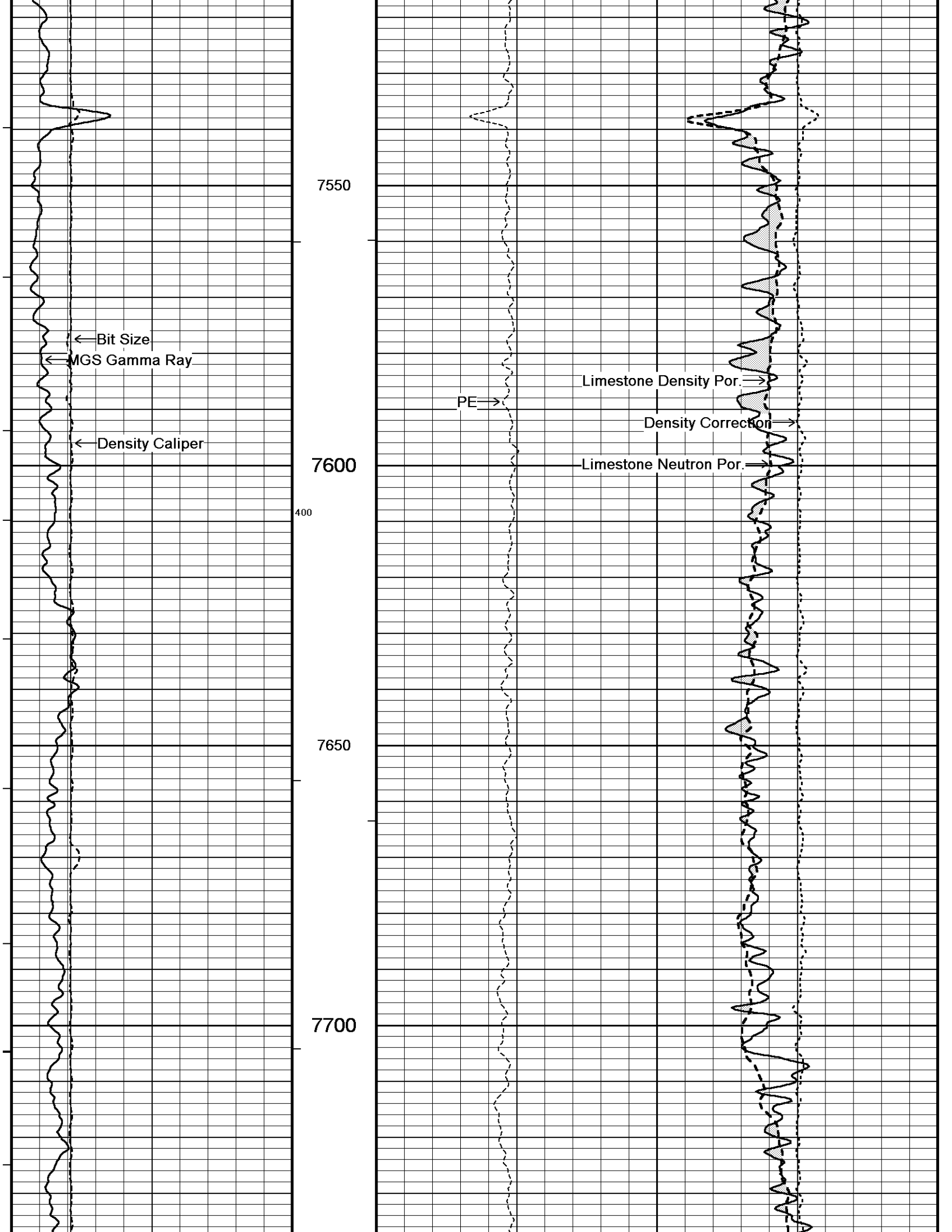
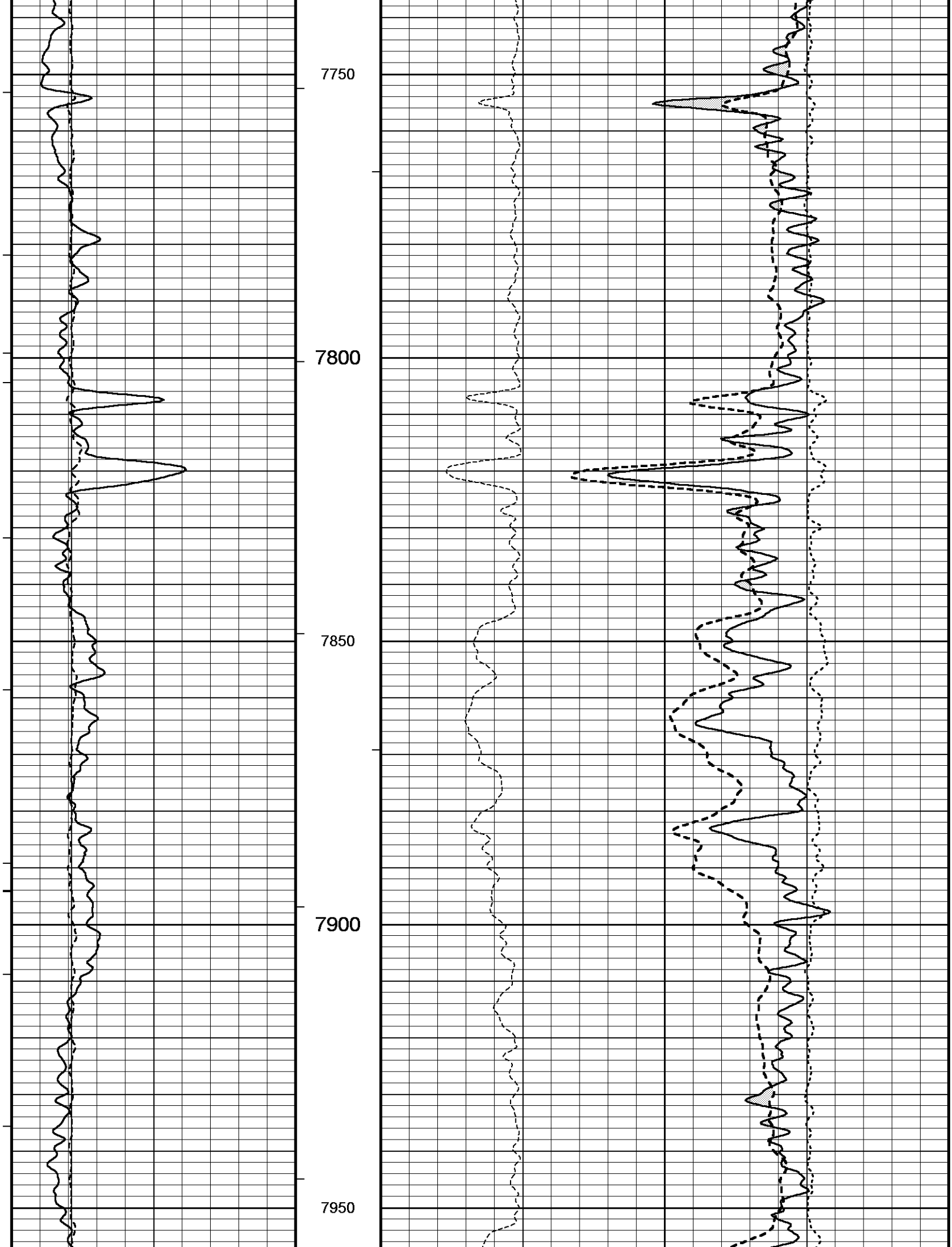
7350
7400
7450
200
7500


7550
7600
400
7650
7700
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.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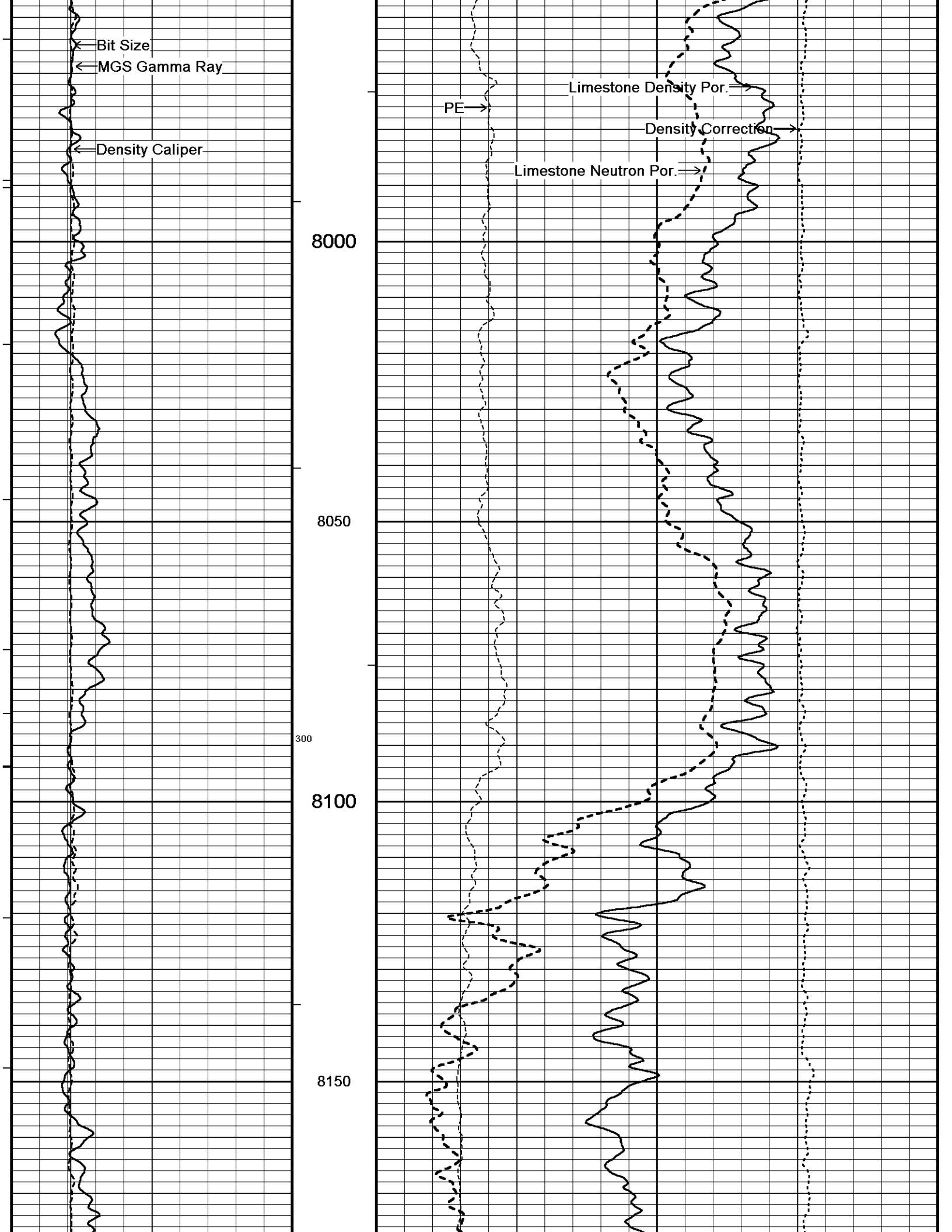
Bit Size
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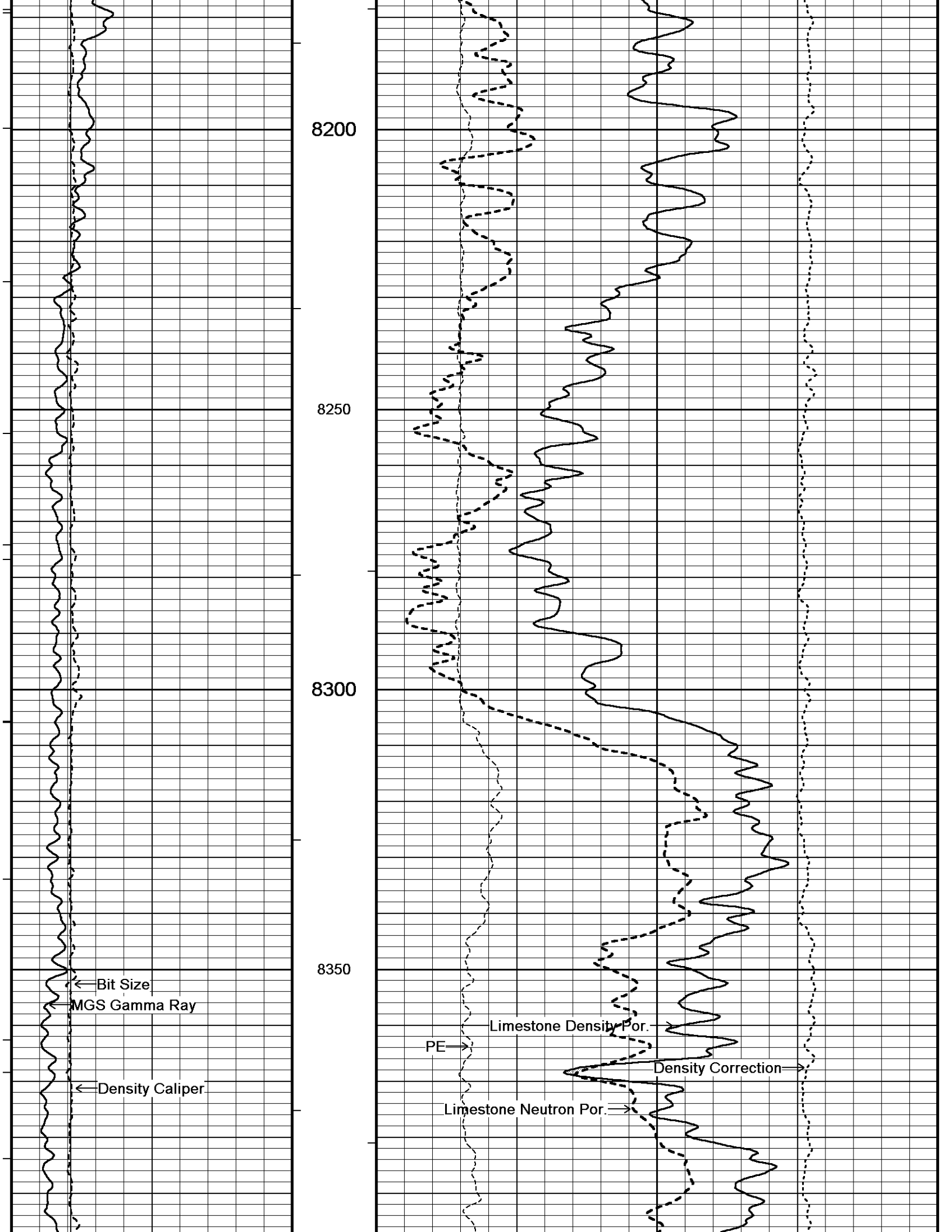
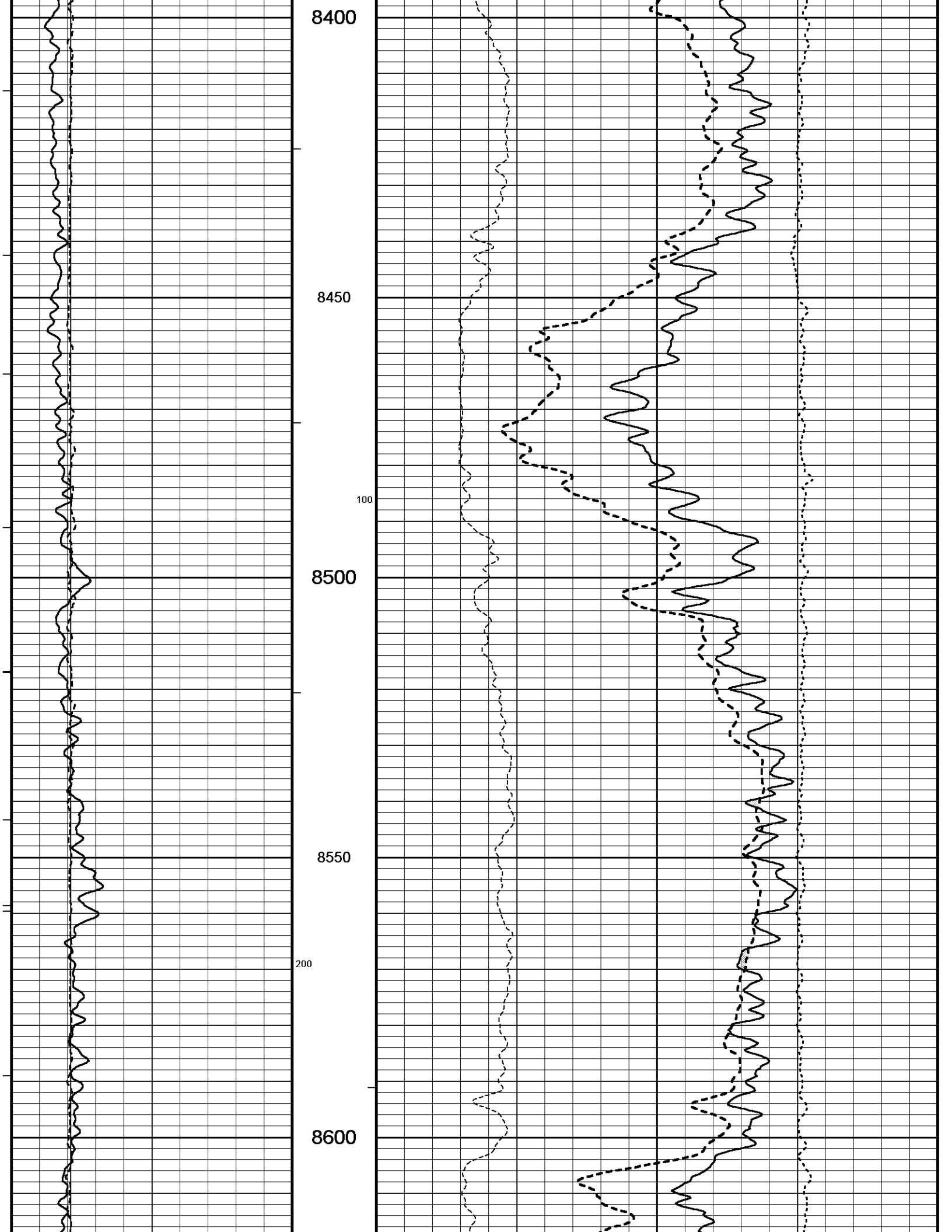
Density Caliper
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.
8000
8050
300
8100
8150


8200
8250
8300
8350
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Density Correction
Limestone Neutron Por.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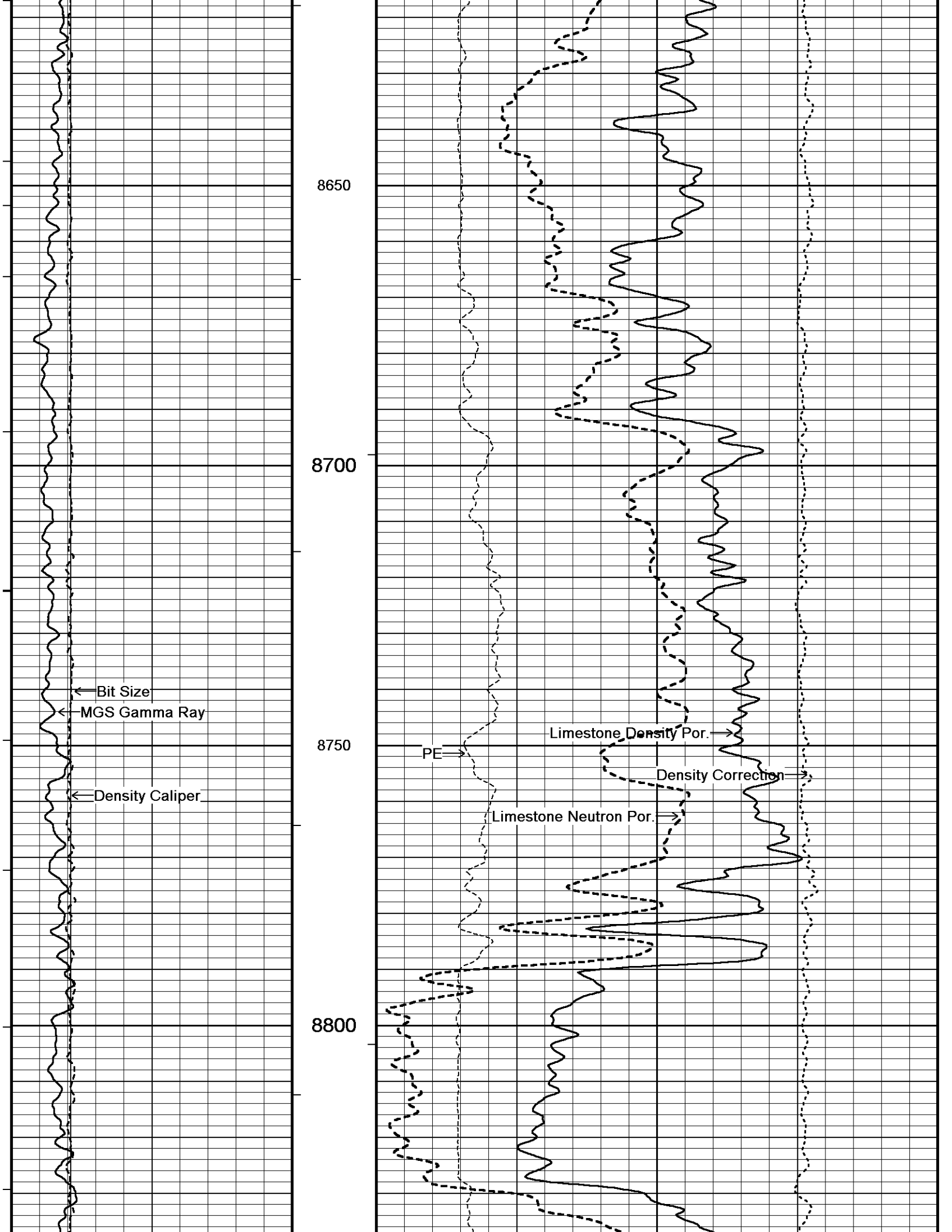
8450
100
8500
8550
200
8600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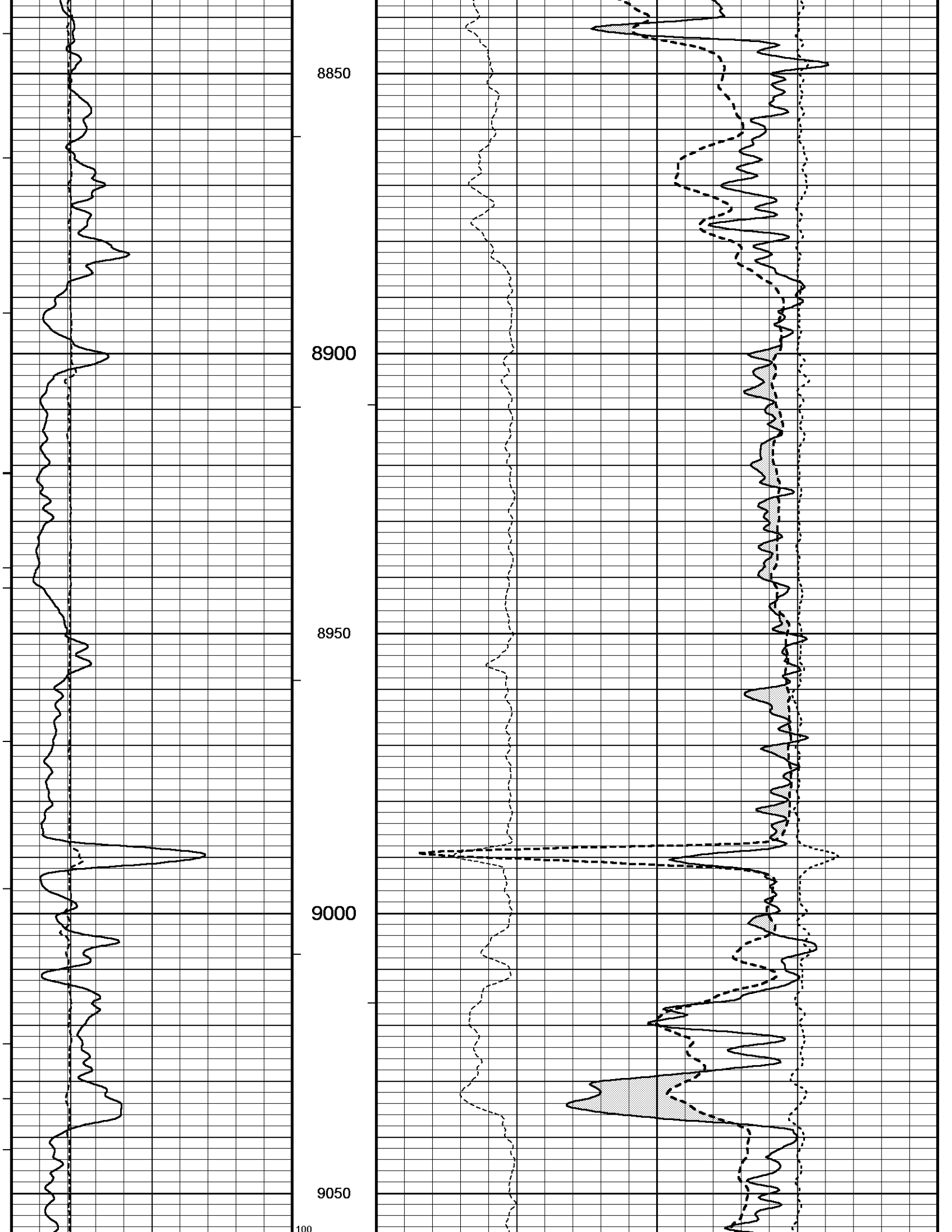
8750
8800
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Density Correction
Limestone Neutron Por.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8950
9000
9050
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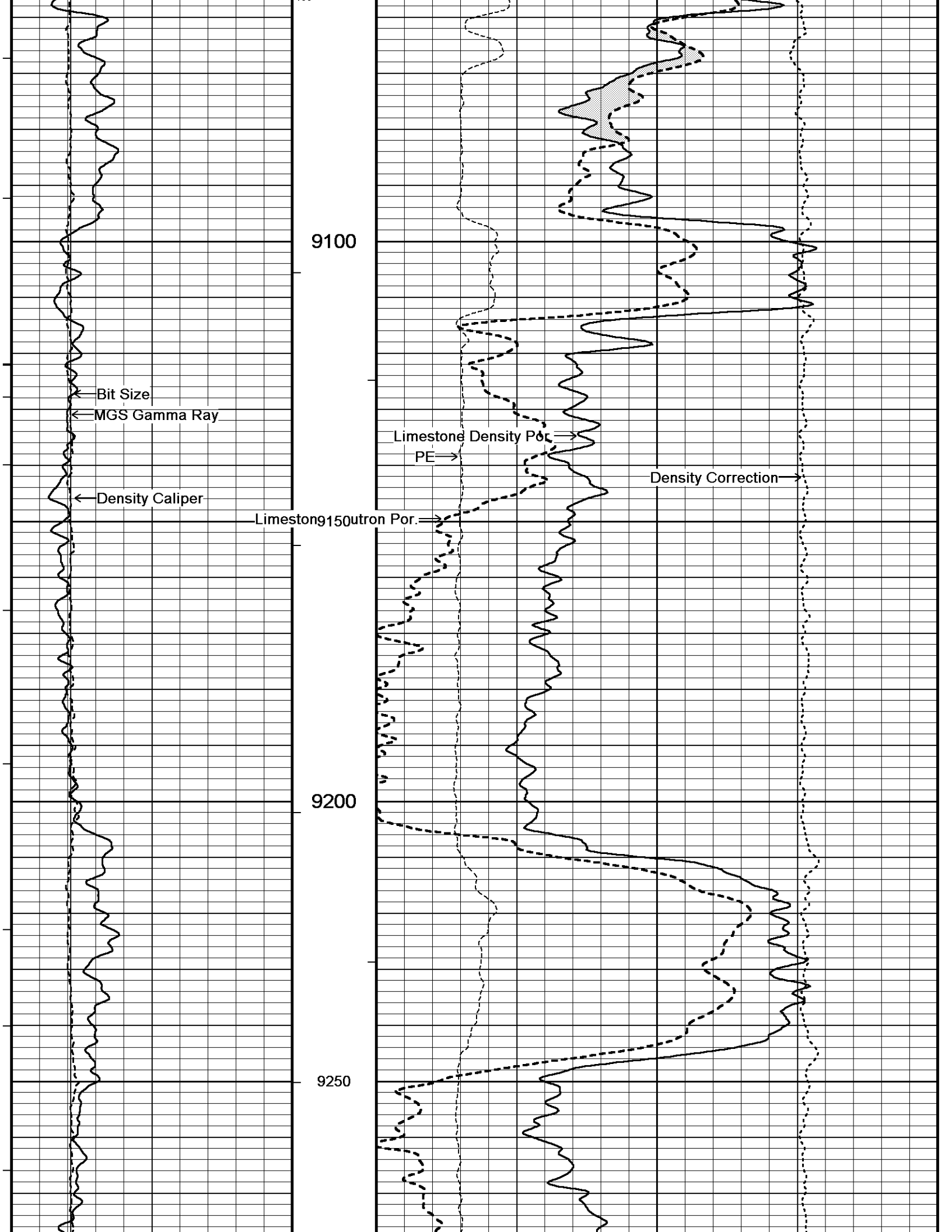
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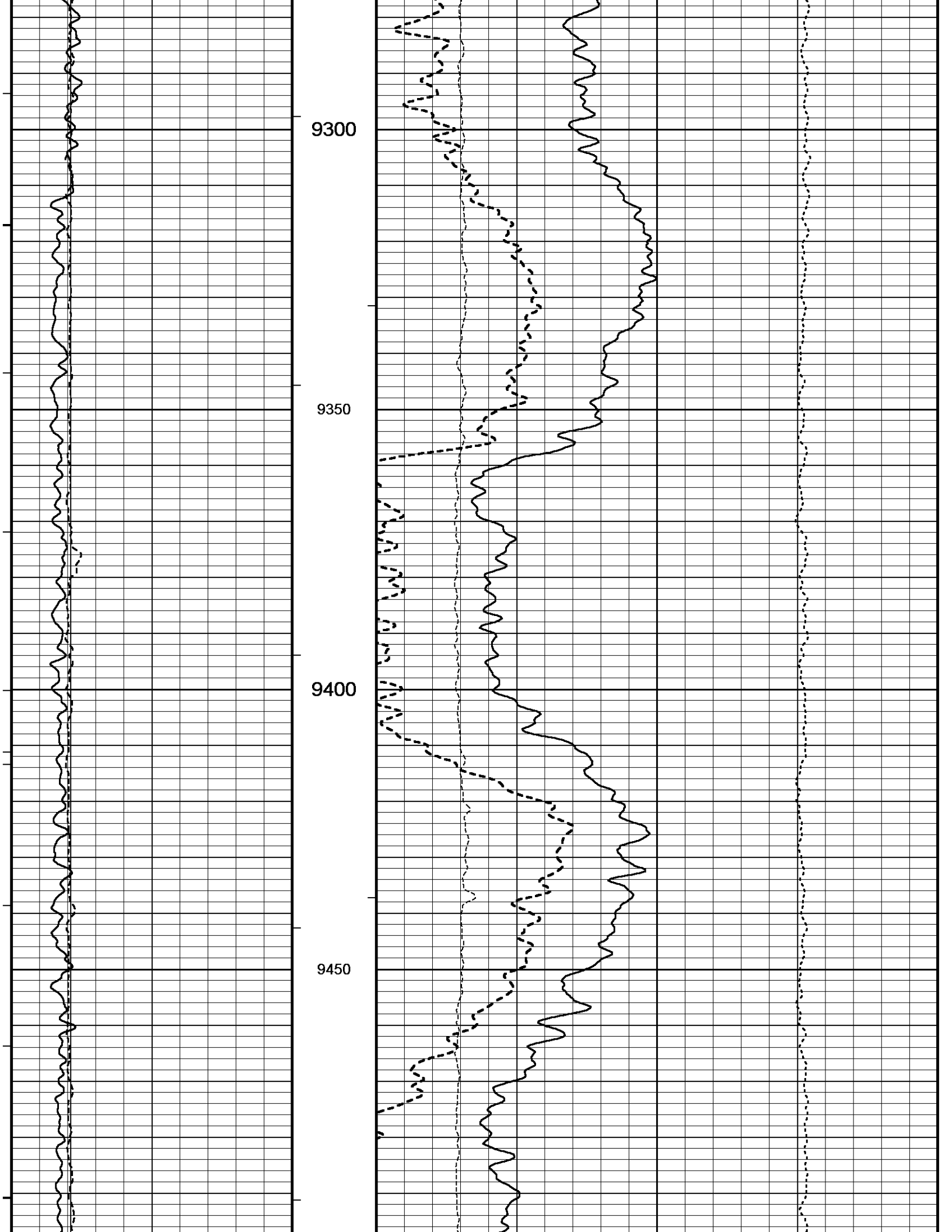
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Density Correction
Limeston
9150
utron Por.
9200
9250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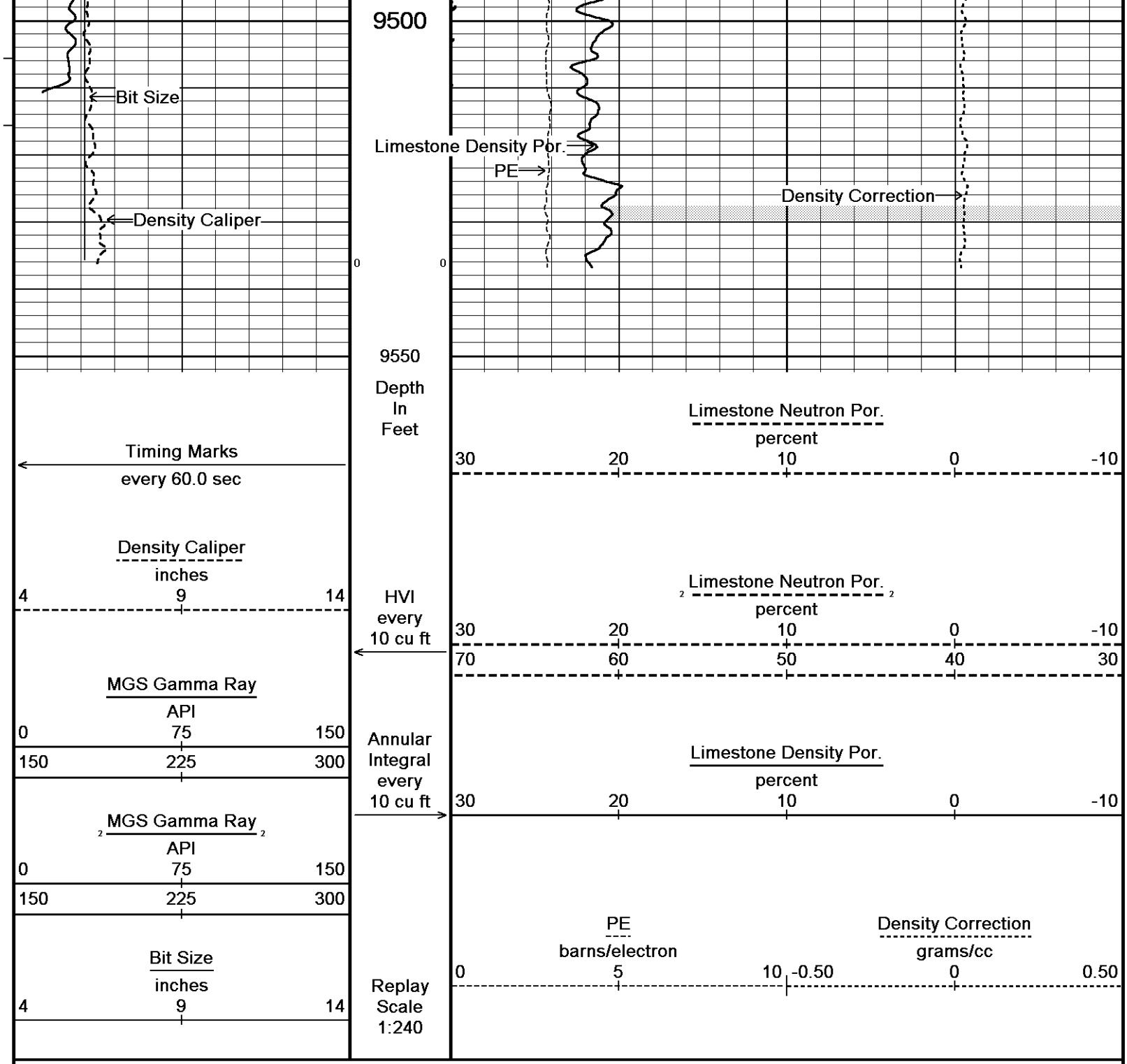
9400
9450

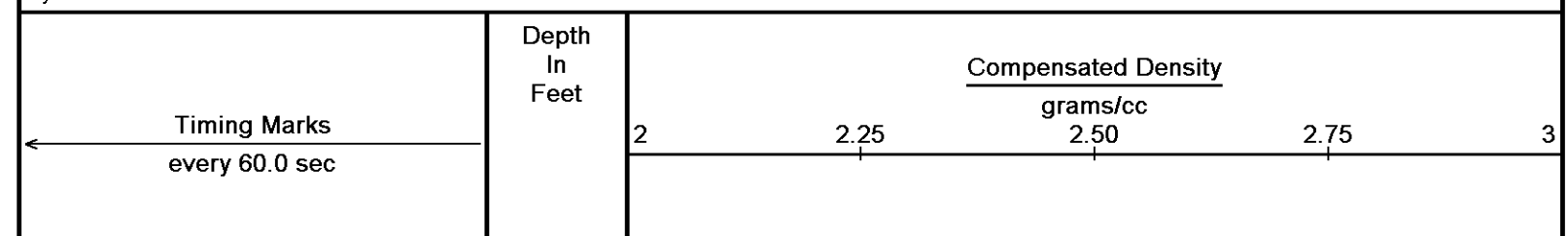


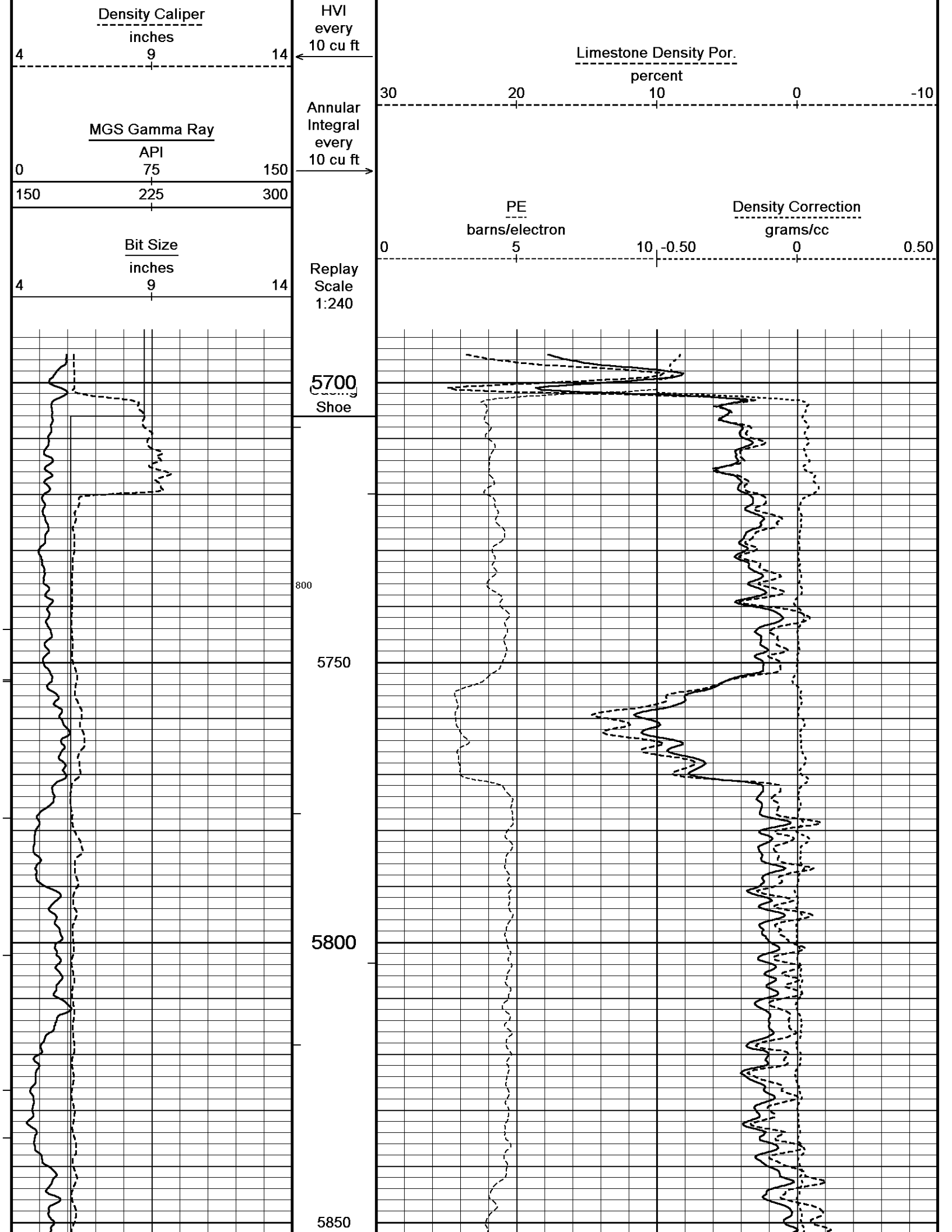
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 11-MAY-2013 02:44
Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta
Recorded on 11-MAY-2013 01:31
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

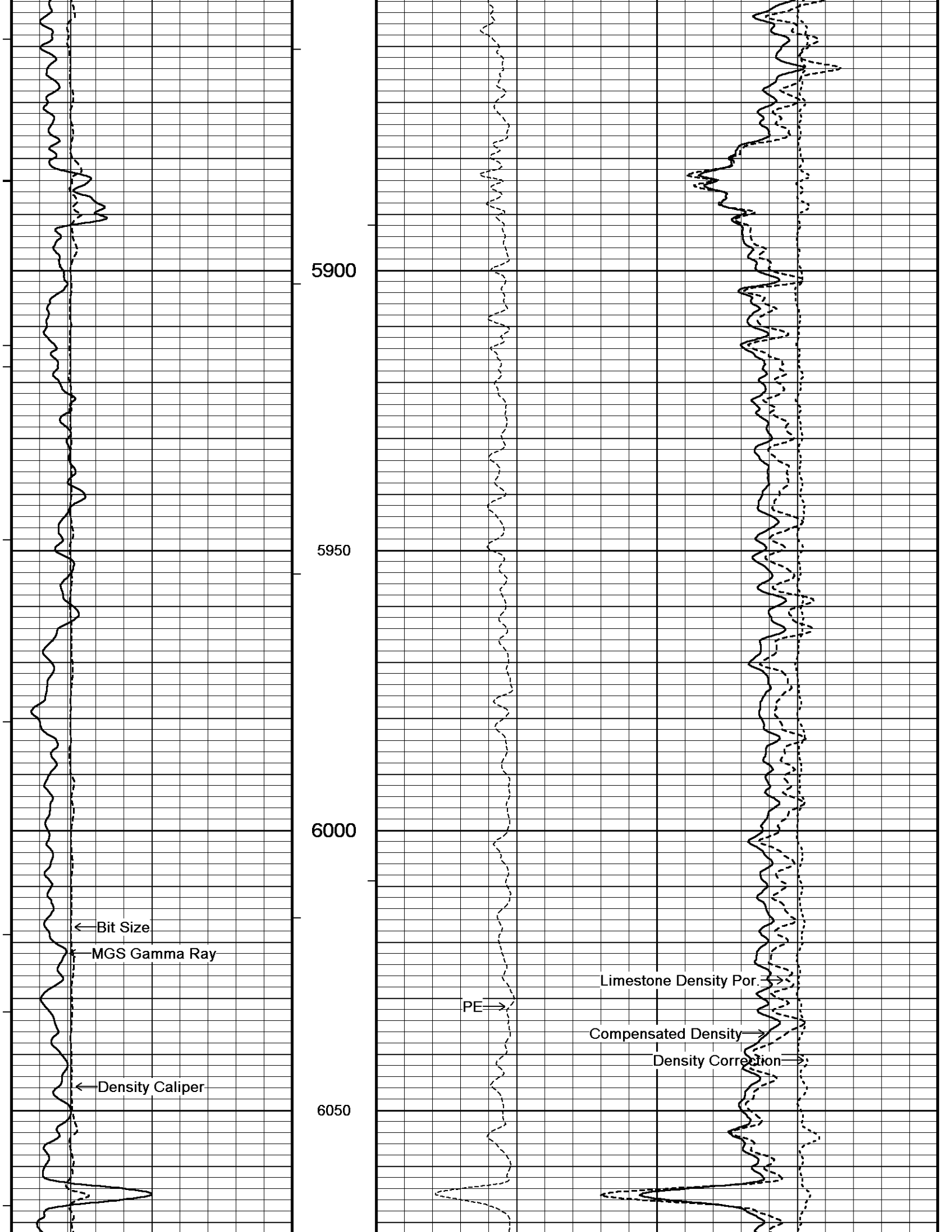
5 INCH MAIN PASS DSC

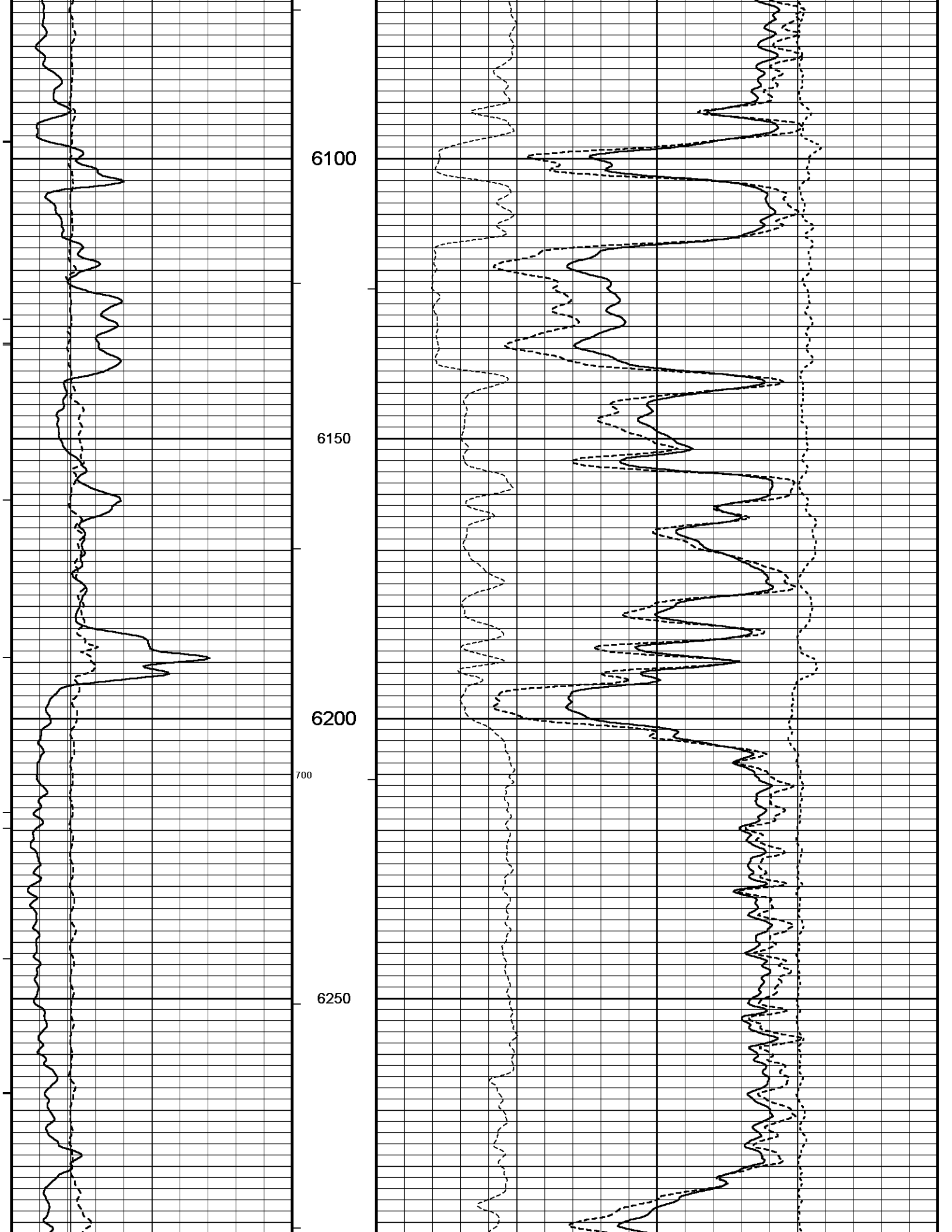
5 INCH BULK DENSITY DSC

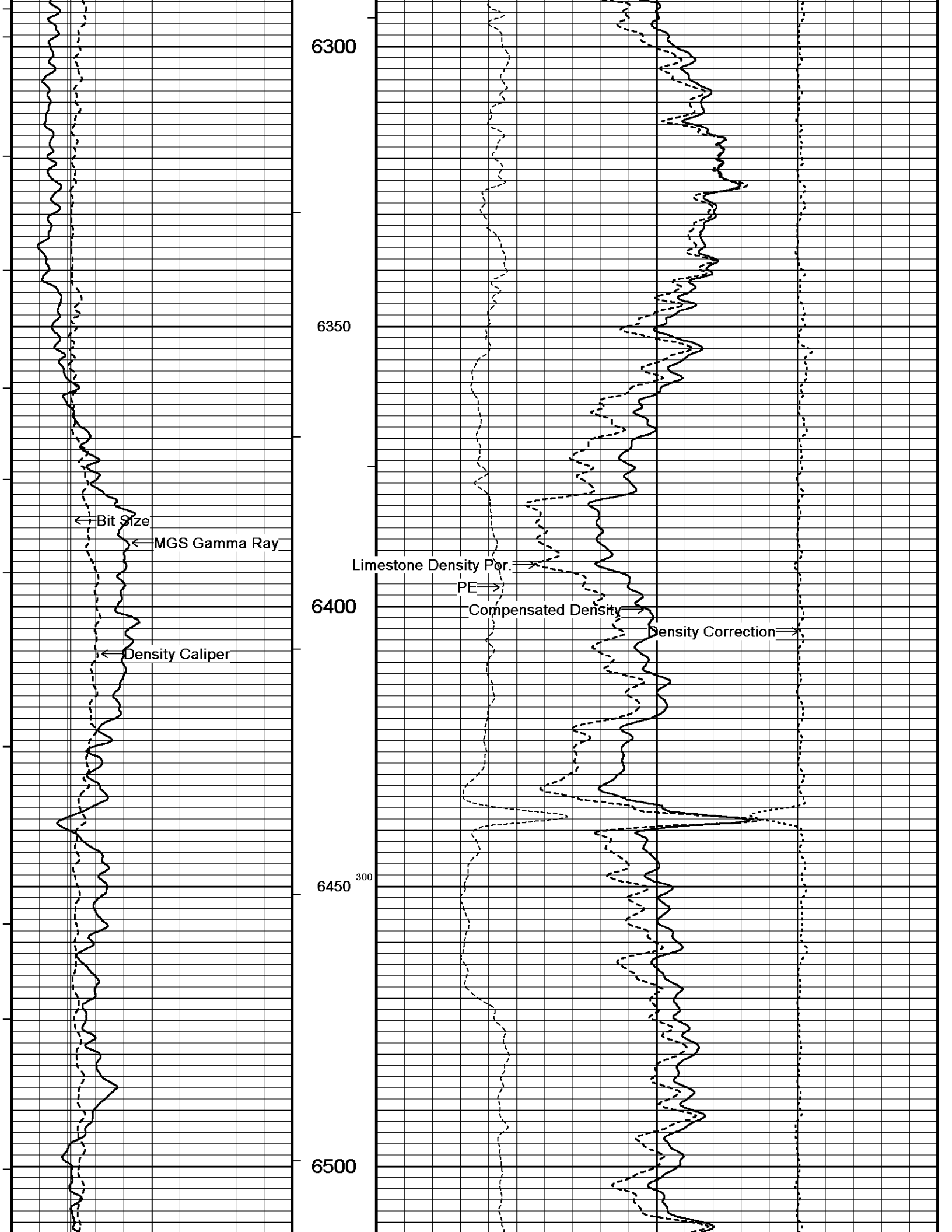
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 11-MAY-2013 02:44
Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta
Recorded on 11-MAY-2013 01:31
System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

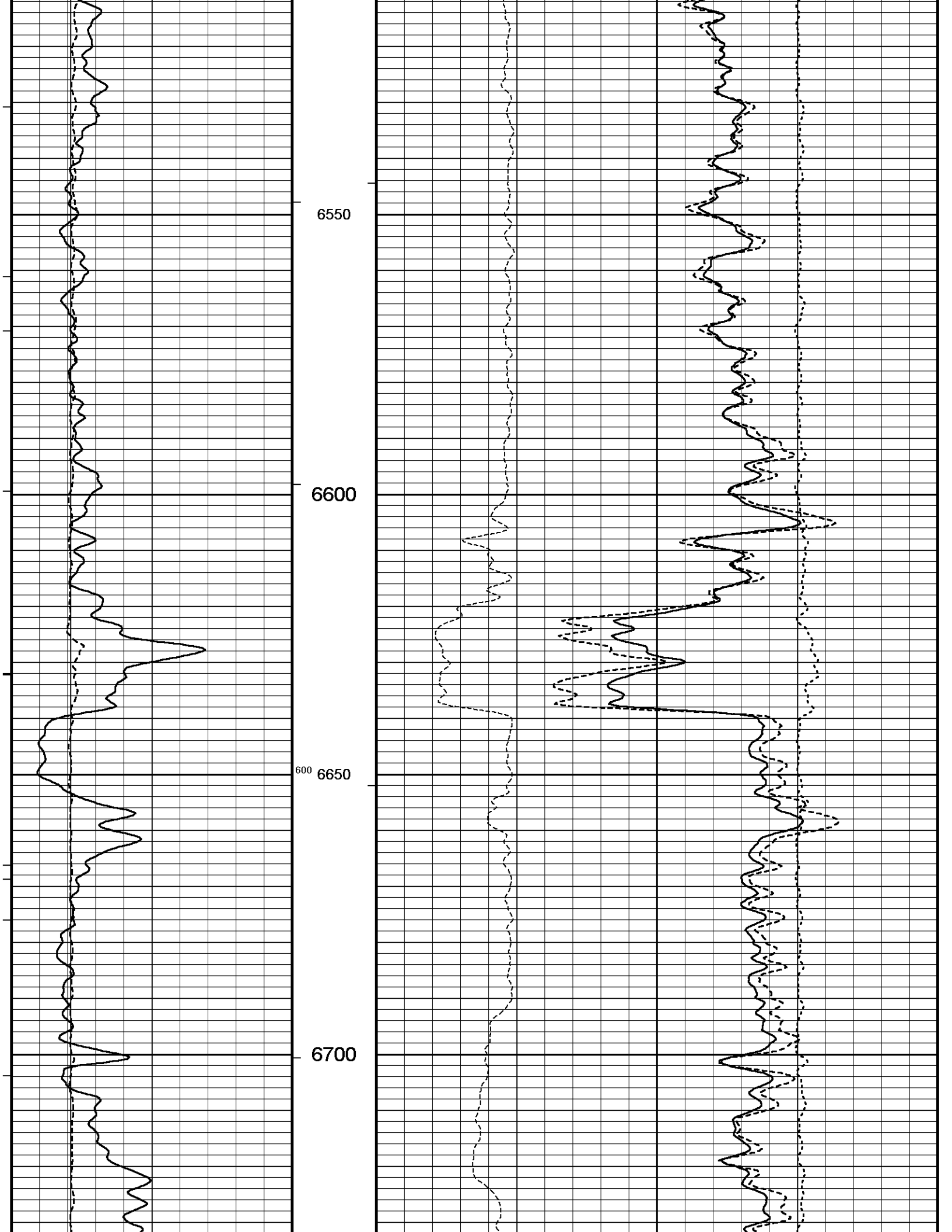



Density Caliper
inches
4
9
14
HVI
every
10 cu ft
Limestone Density Por.
percent
30
20
10
0
-10
Annular
Integral
every
10 cu ft
MGS Gamma Ray
API
0
75
150
150
225
300
PE
barns/electron
0
5
10
Density Correction
grams/cc
-0.50
0
0.50
Bit Size
inches
4
9
14
Replay
Scale
1:240
5700
Shoe
800
5750
5800
5850


5900
5950
6000
6050
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Compensated Density
Density Correction


6100
6150
6200
700
6250


6300
6350
6400
6450
6500
300
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Compensated Density
Density Correction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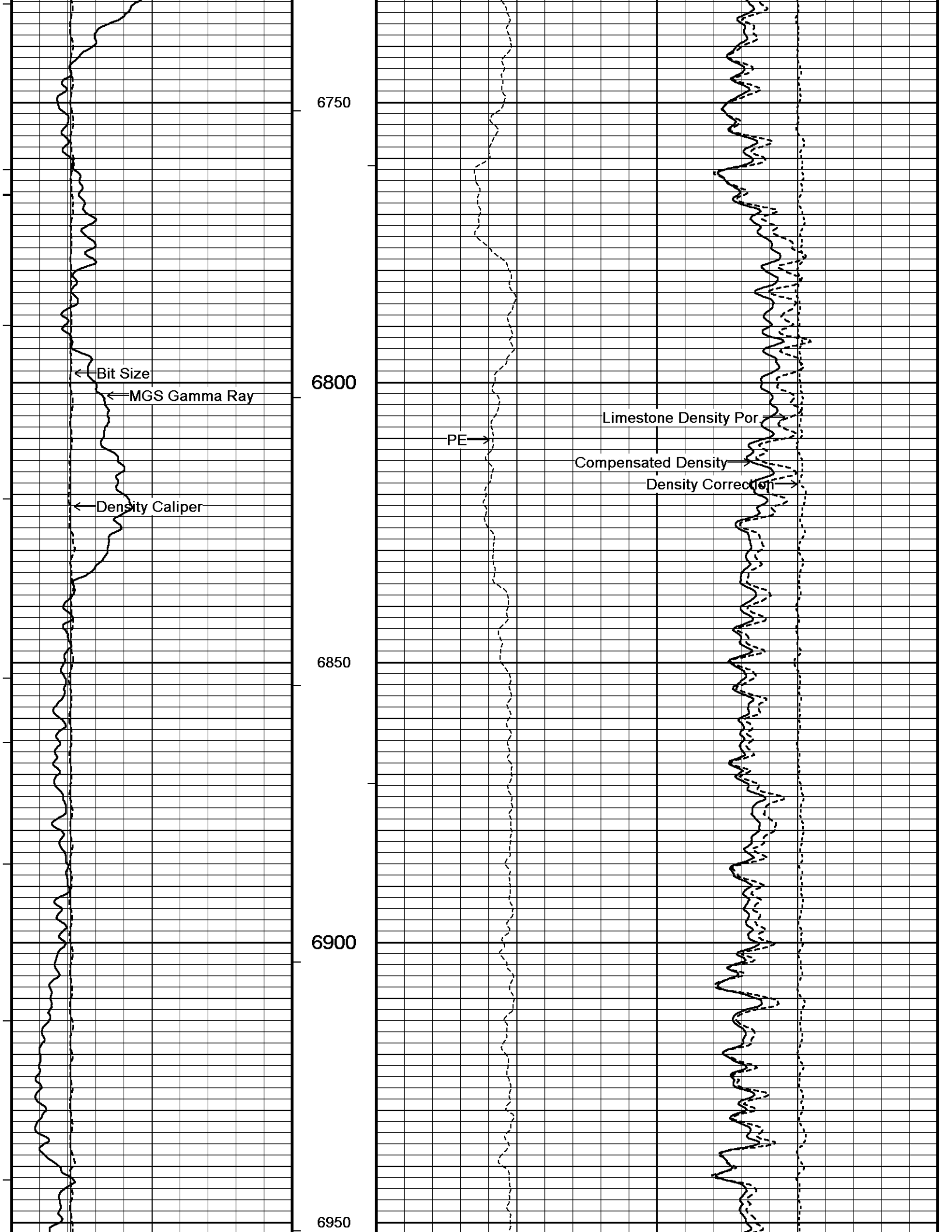
6600
600
6650
6700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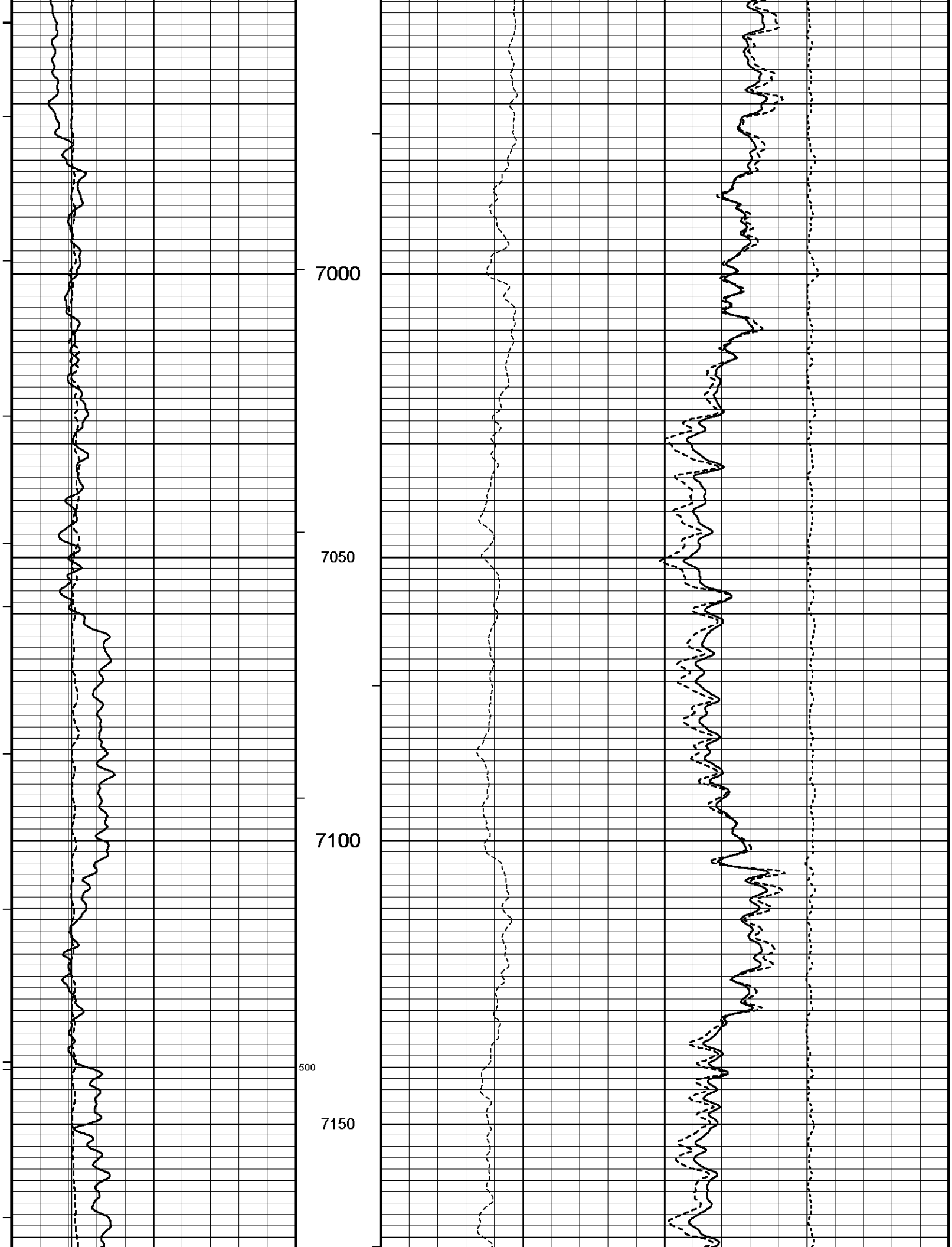
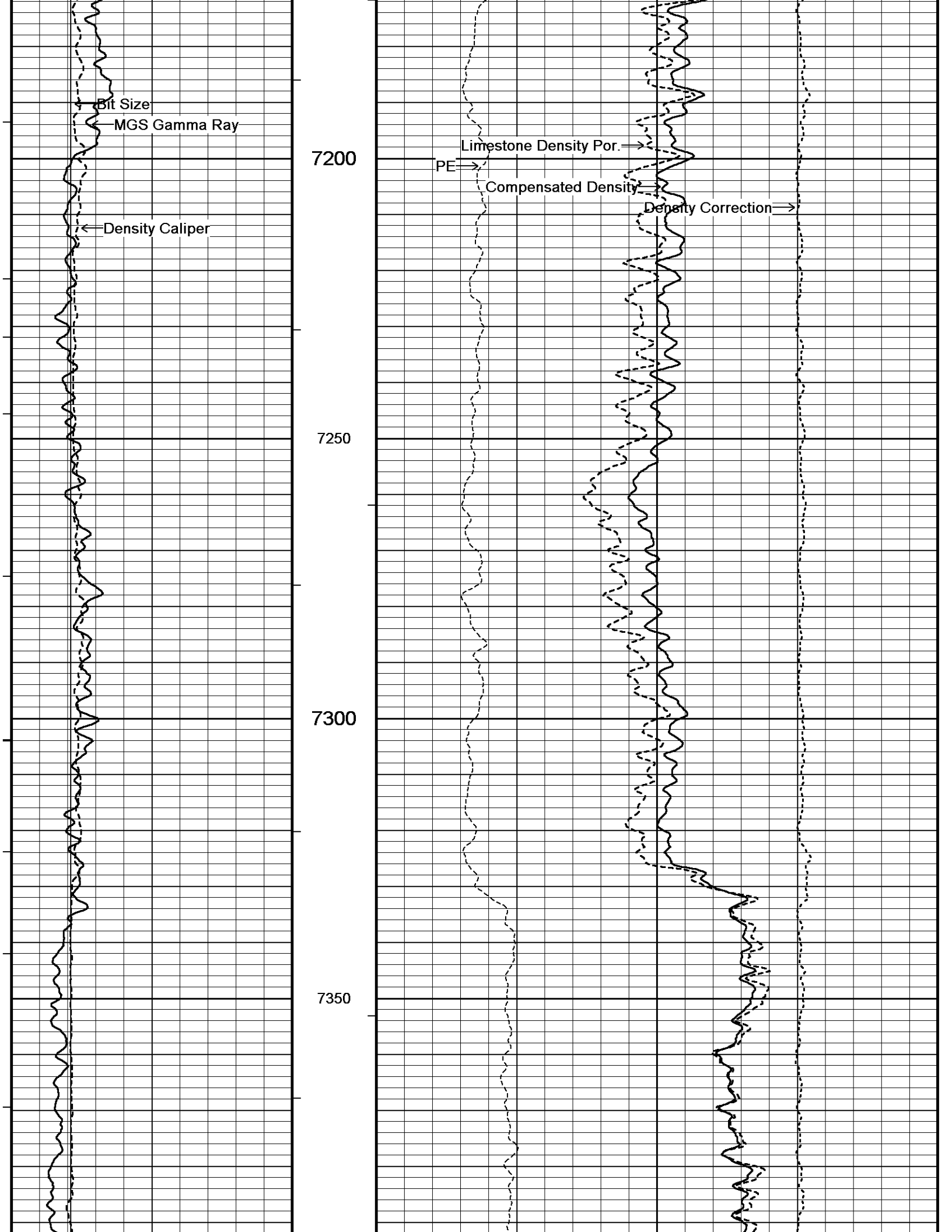
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por
Compensated Density
Density Correction


7000
7050
7100
500
7150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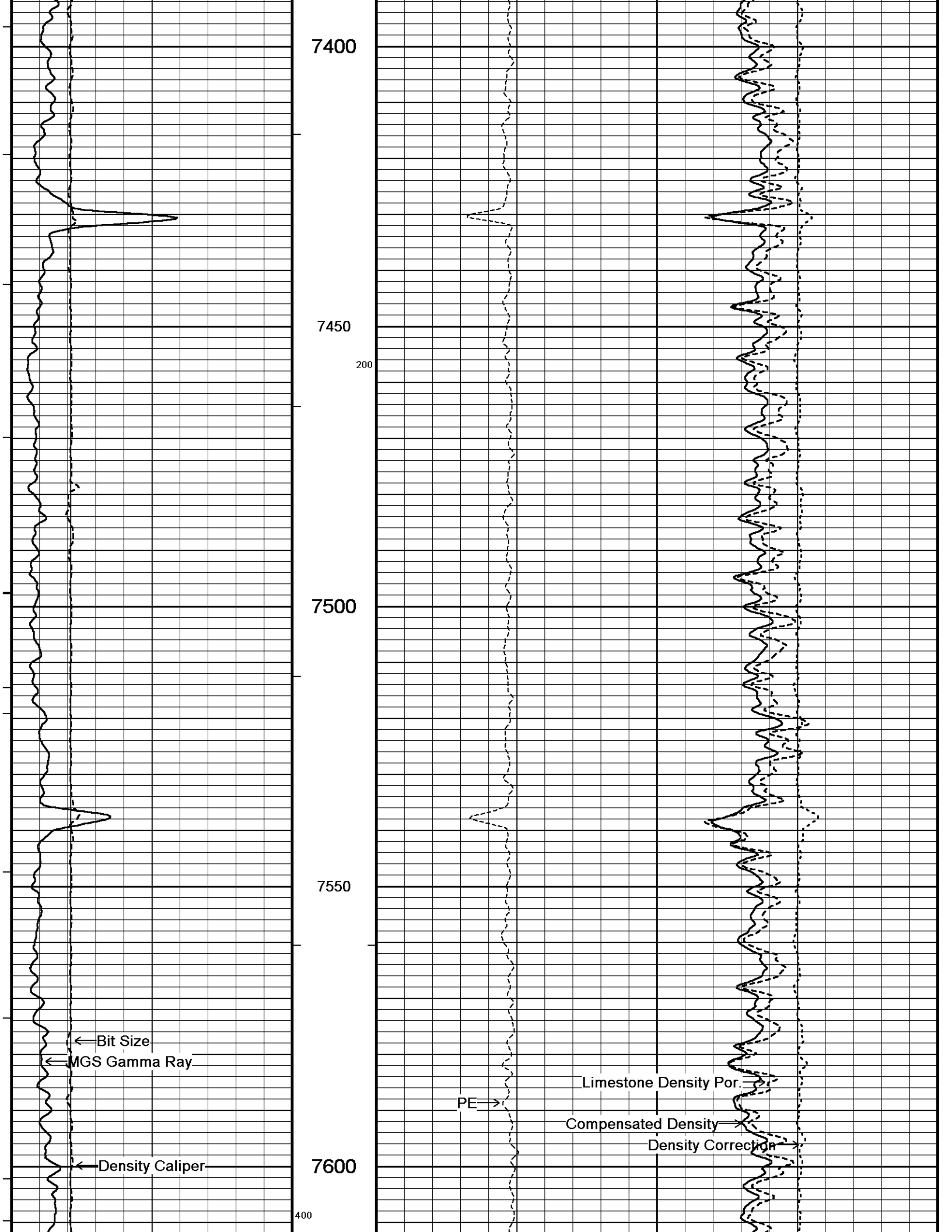
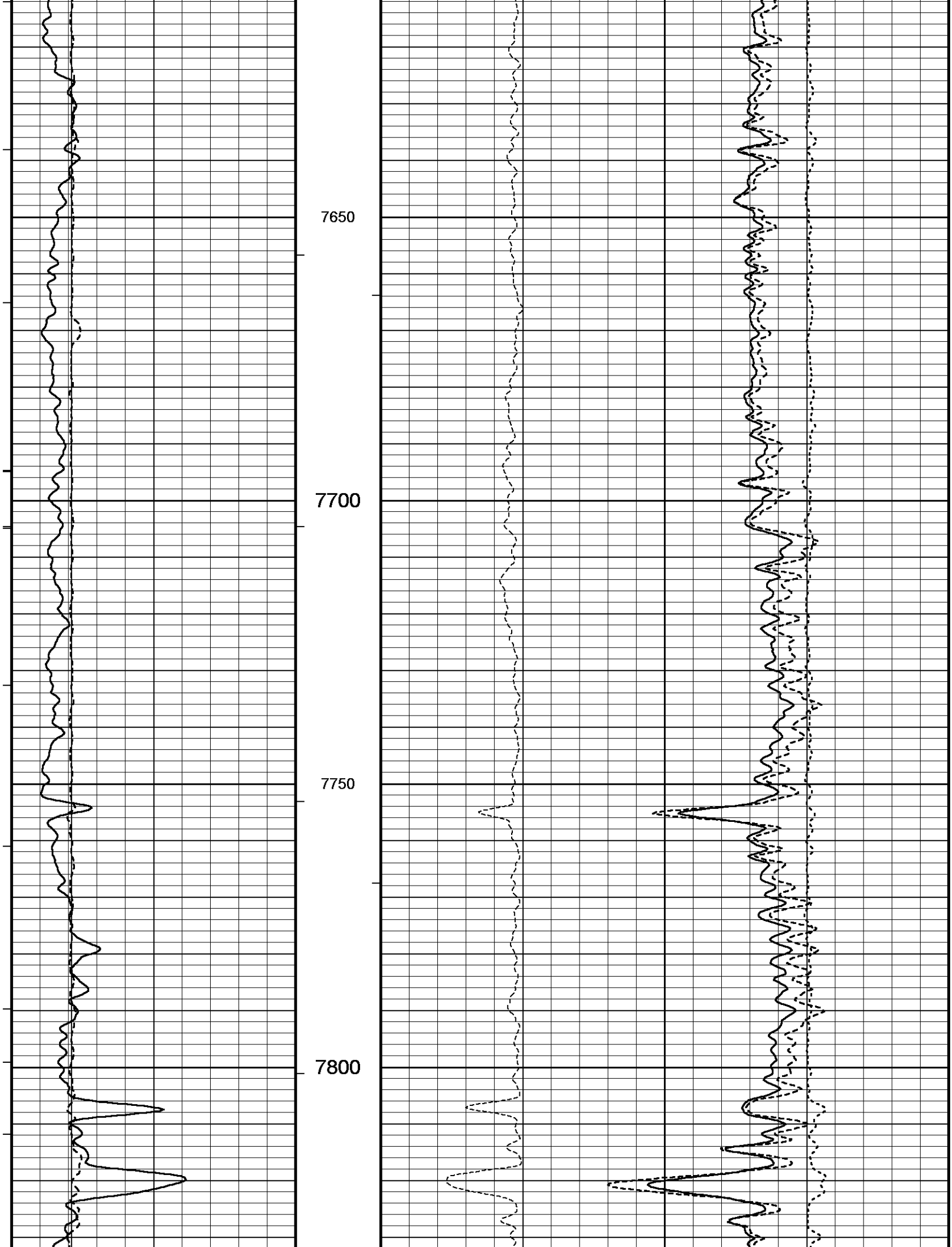
MGS Gamma Ray
Density Caliper
7200
7250
7300
7350
Limestone Density Por.
PE
Compensated Density
Density Correction


7400
7450
200
7500
7550
7600
400
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Compensated Density
Density Correction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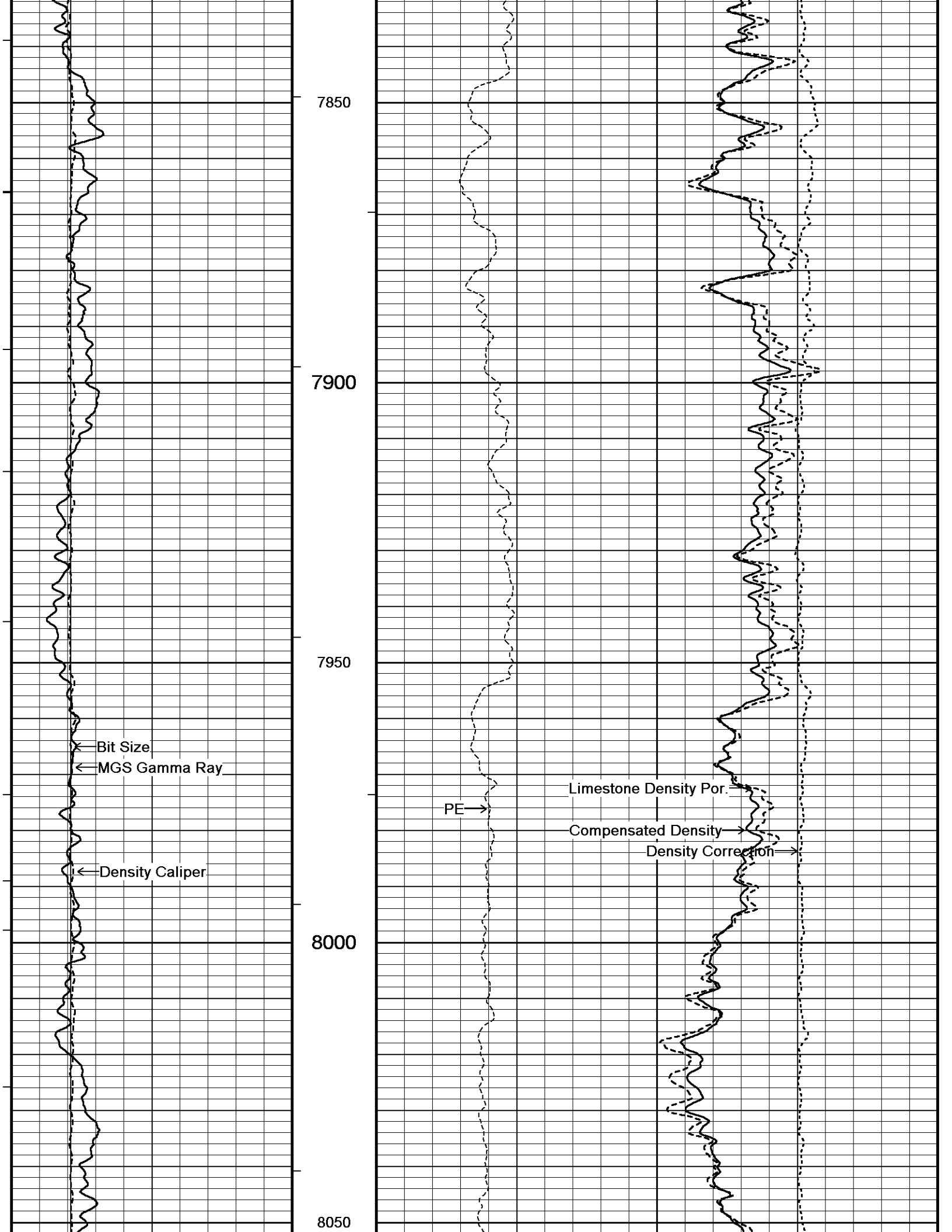
7700
7750
7800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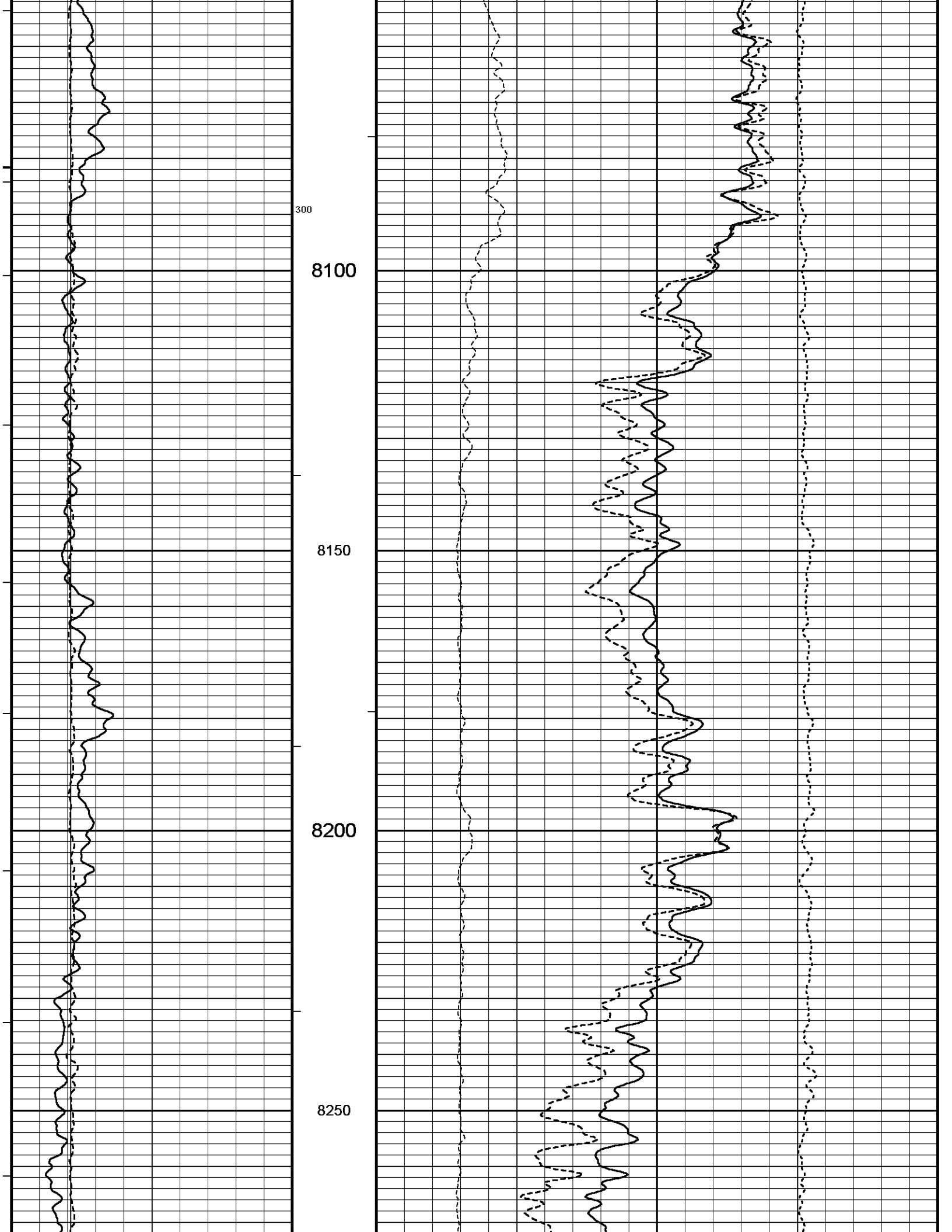
7900
7950
8000
8050
Bit Size
MGS Gamma Ray
Density Caliper
PE
Limestone Density Por.
Compensated Density
Density Correction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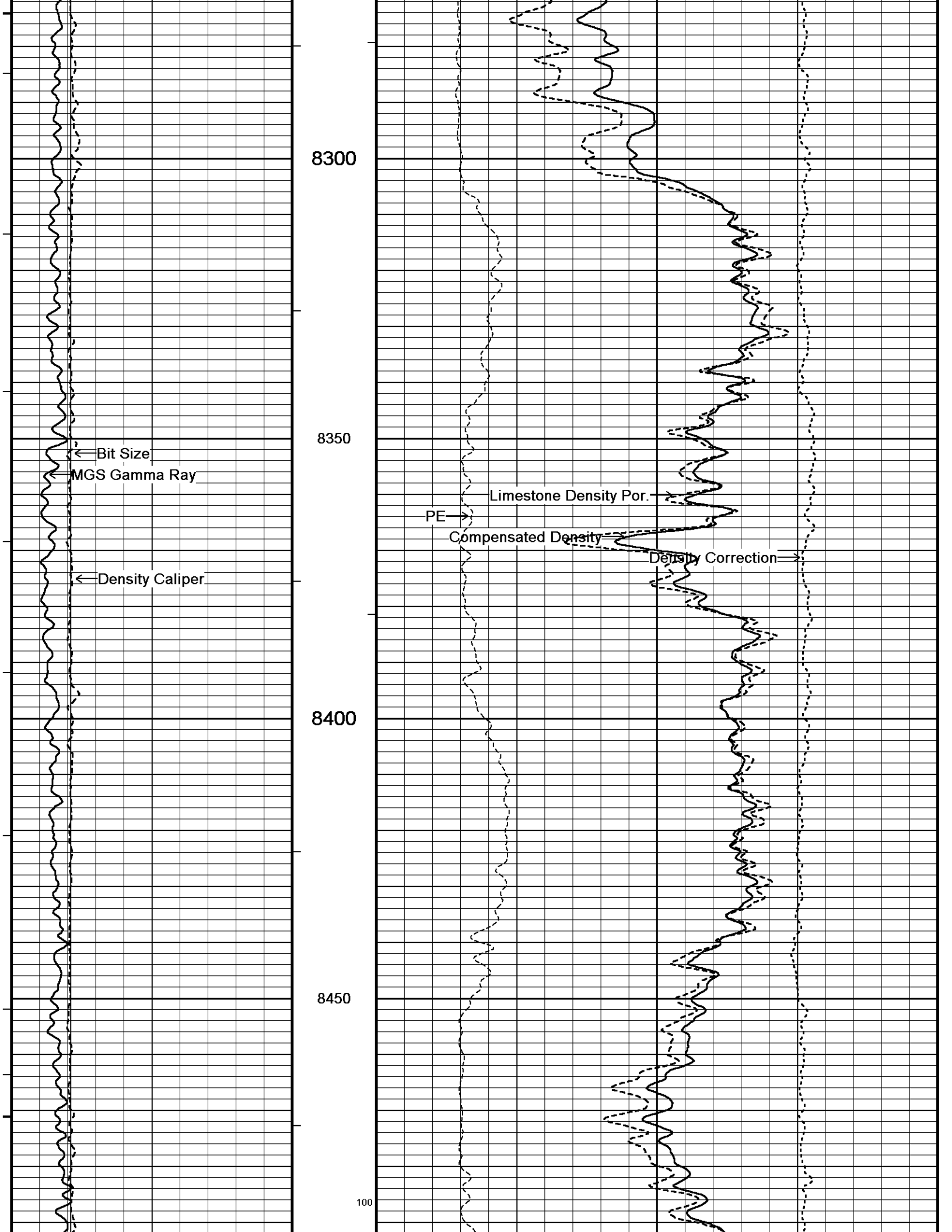
8150
8200
8250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8350
8400
8450
100
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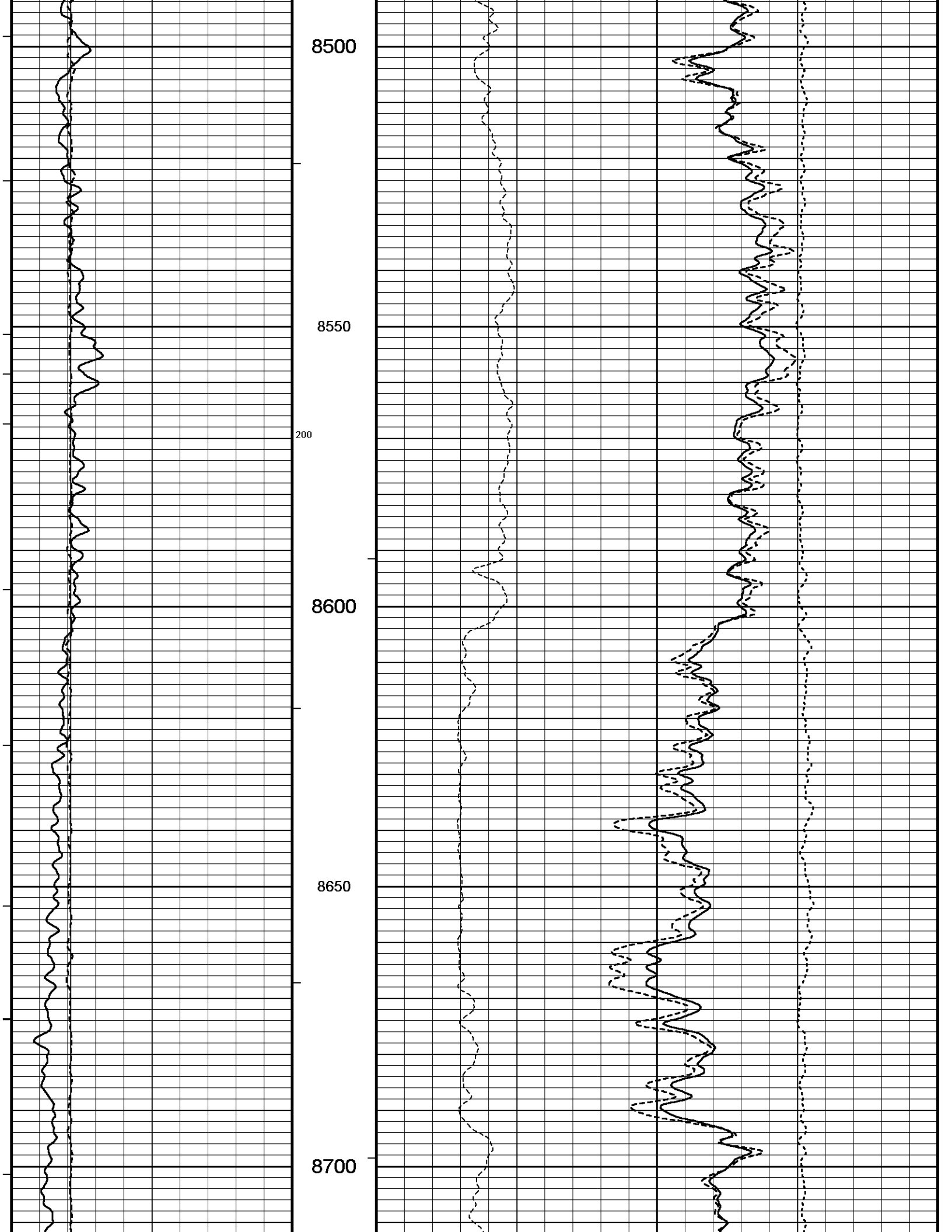
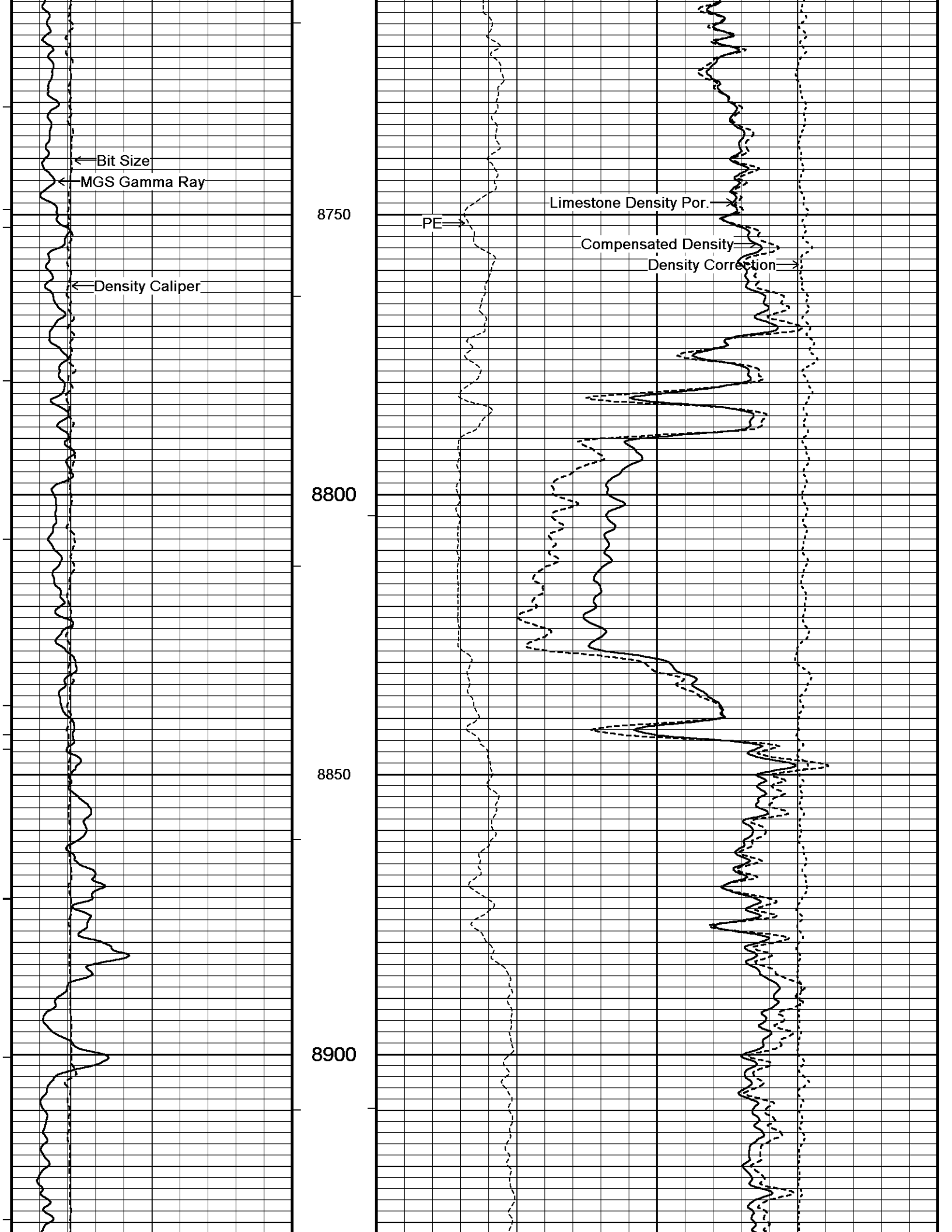
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Compensated Density
Density Correction


8500
8550
200
8600
8650
8700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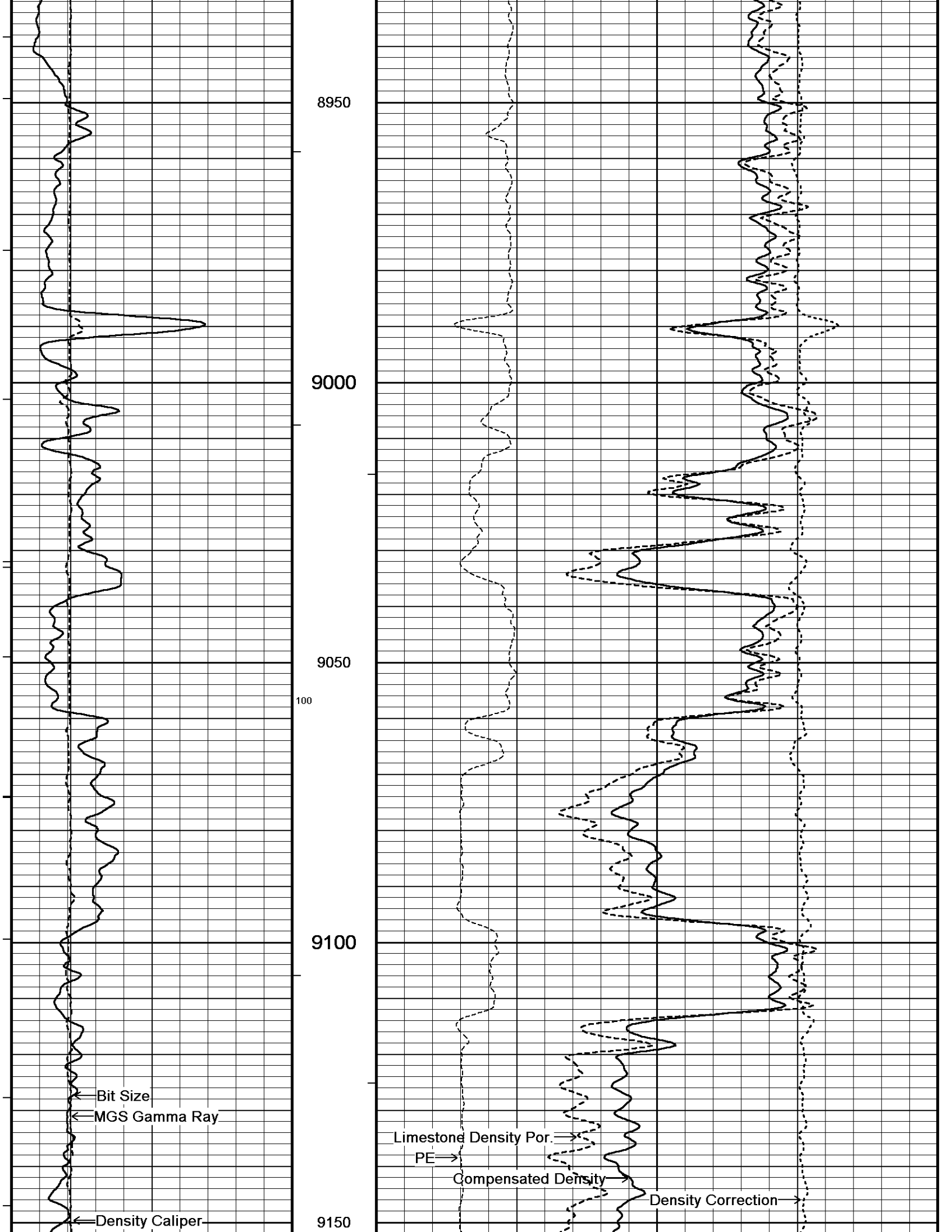
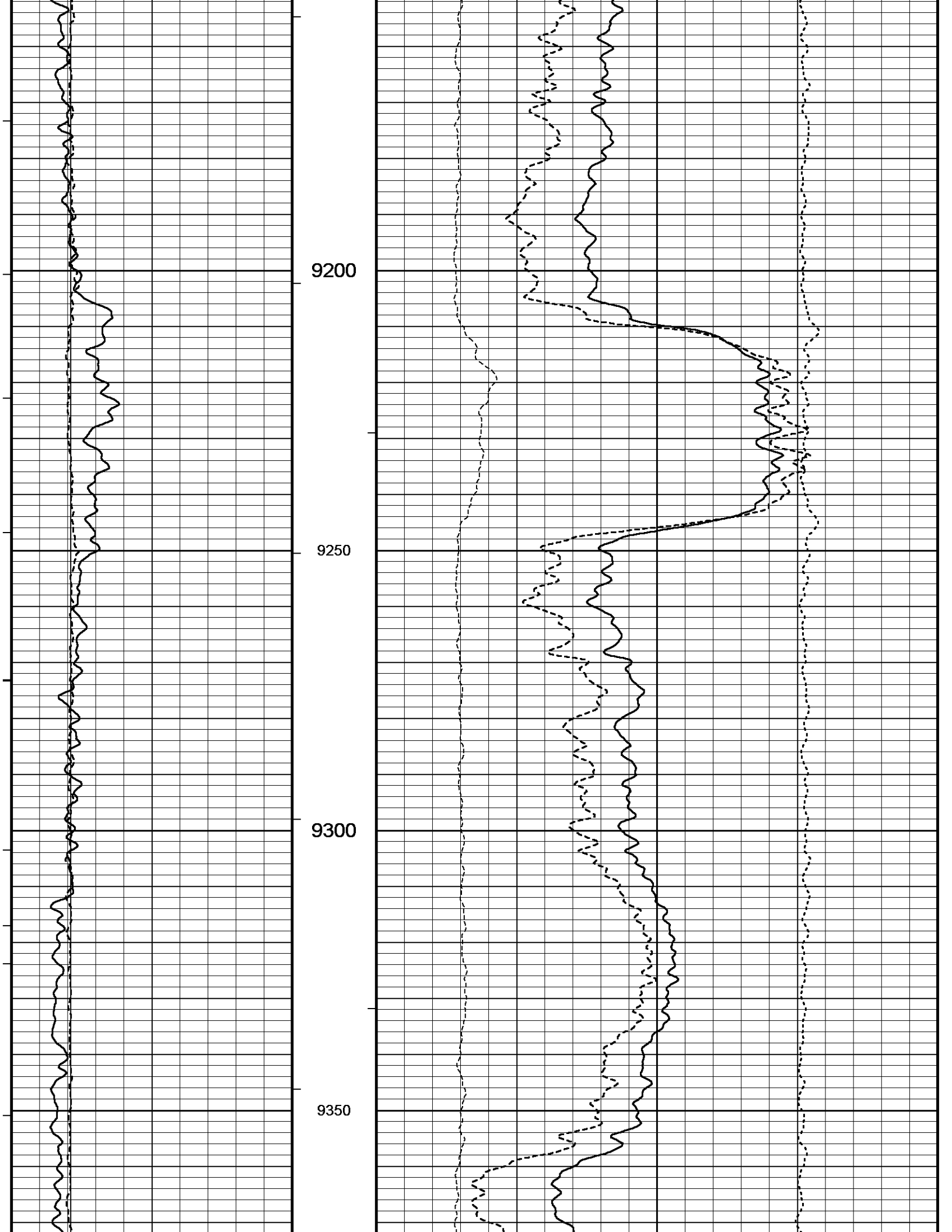
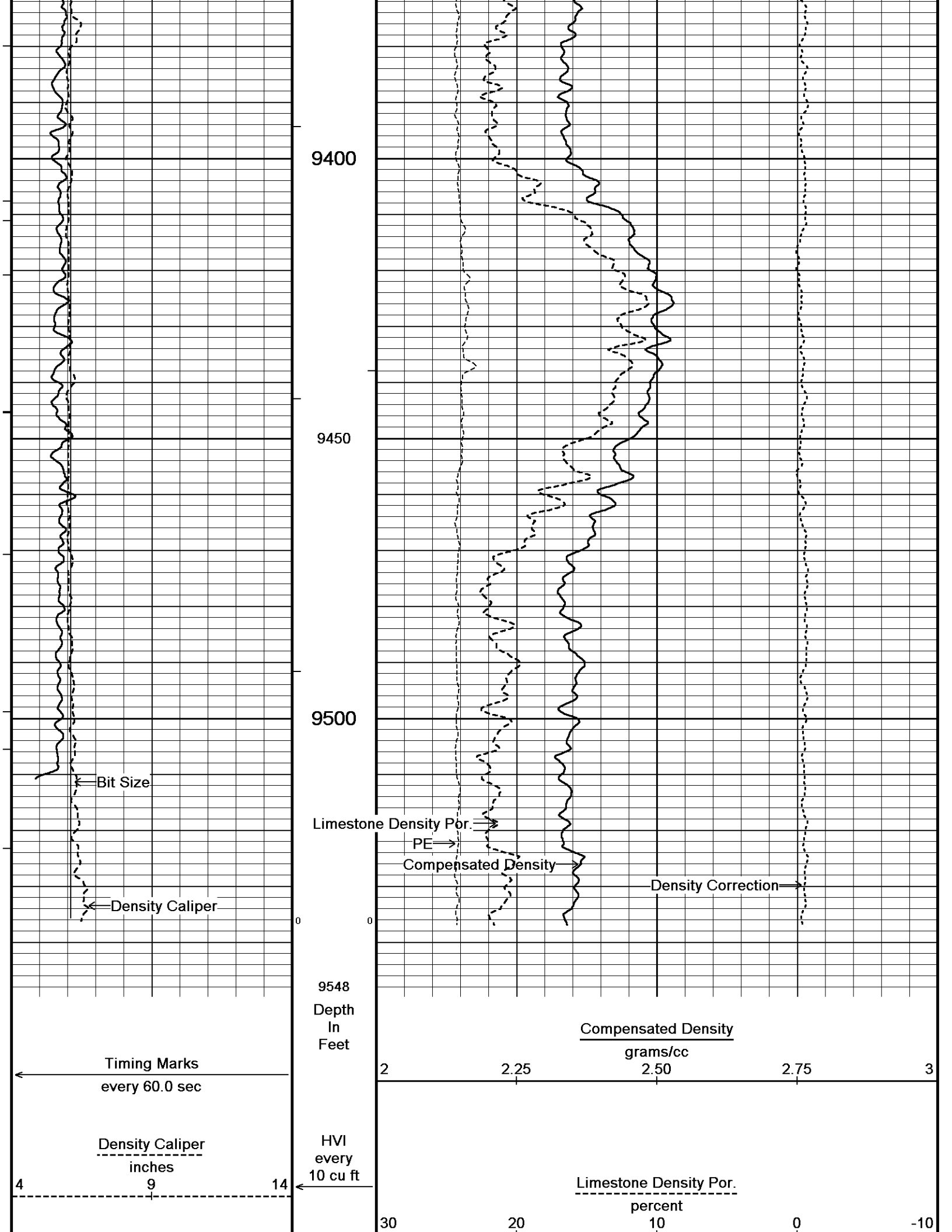
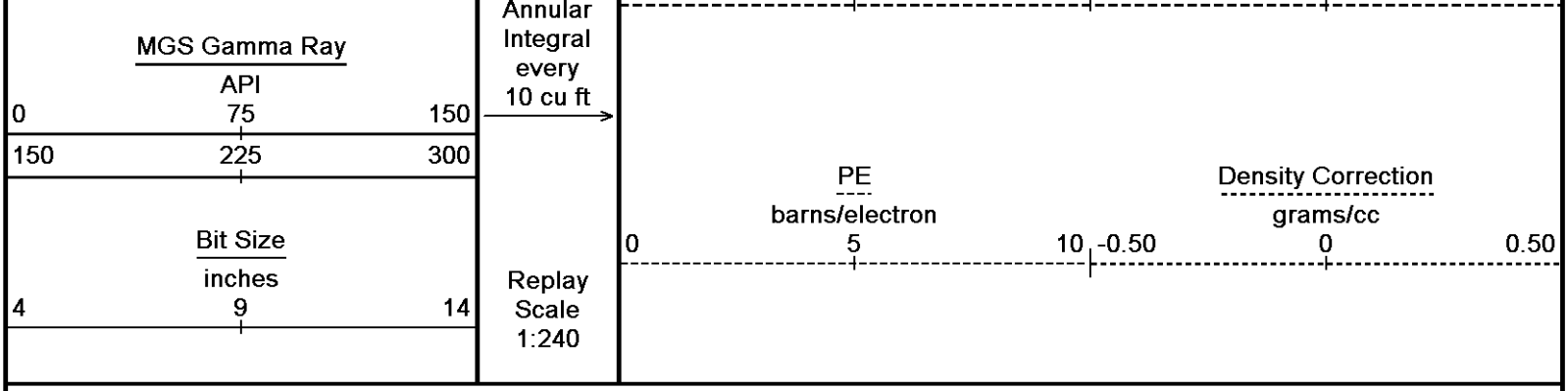
MGS Gamma Ray
Density Caliper
8750
8800
8850
8900
PE
Limestone Density Por.
Compensated Density
Density Correction


8950
9000
9050
100
9100
9150
Bit Size
MGS Gamma Ray
Density Caliper
Limestone Density Por.
PE
Compensated Density
Density Correction


9200
9250
9300
9350


9400
9450
9500
Bit Size
Density Caliper
Limestone Density Por.
PE
Compensated Density
Density Correction
0
0
9548
Depth
In
Feet
Timing Marks
every 60.0 sec
Density Caliper
inches
4
9
14
HVI
every
10 cu ft
Compensated Density
grams/cc
2
2.25
2.50
2.75
3
Limestone Density Por.
percent
30
20
10
0
-10



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 11-MAY-2013 02:44

Filename: C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta — Recorded on 11-MAY-2013 01:31

System Versions: Processed with 13.04.8492 Plotted with 13.04.8492

5 INCH BULK DENSITY DSC

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.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 11-MAY-2013,01:40

General Parameters		
Mud Resistivity	1.600	ohm-metres
Mud Resistivity Temperature	74.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Wet Hole	
Hole/Annular Volume and Differential Caliper Parameters		
HVOL Method	Single Caliper	
HVOL Caliper 1	Density Caliper	
HVOL Caliper 2	N/A	
Annular Volume Diameter	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 05-SEP-2012,13:01

Reading No	Measured	Calibrated (lbs)
1	15152.07	0.00
2	18386.74	2000.00

Strain Gauge Constants MMS-E.B 167

Last Edited on 07-APR-2013,21:02

Atmospheric Pressure	14.70	psi
Serial Number	262784	
Calibration Date	21-Jan-2011	
Base Check Date		
Dead Weight Serial Number	0	
Dead Weight Gravitational Correction	1.0	

Temperature	75.0		150.0		250.0		350.0	degrees F
Pressure psia	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.	Inc.	Dec.
0.0	0.038	0.038	0.049	0.049	0.063	0.063	0.077	0.078
3000.0	5.218	5.220	5.230	5.232	5.244	5.246	5.257	5.259
6000.0	10.409	10.412	10.422	10.425	10.436	10.440	10.447	10.452
9000.0	15.610	15.615	15.623	15.628	15.638	15.643	15.650	15.656
12000.0	20.823	20.826	20.837	20.841	20.853	20.857	20.866	20.869

15000.0	26.048		26.064		26.081		26.093	

High Resolution Temperature Calibration MGS-C.J 136

Field Calibration on 08-MAY-2013,00:52

	Measured	Calibrated(Deg F)
Lower	0.00	0.00
Upper	0.00	0.00

High Resolution Temperature Constants MGS-C.J 136

Last Edited on 08-MAY-2013,00:52

Pre-filter Length	11

SP Calibration MGS-C.J 136

Field Calibration on 08-MAY-2013,00:52

	Measured	Calibrated (mV)
Reference 1	102.2	98.7
Reference 2	-94.7	-98.3

Gamma Calibration MGS-C.J 136

Field Calibration on 10-MAY-2013 04:53

	Measured	Calibrated (API)
Background	47	33
Calibrator (Gross)	1850	1294
Calibrator (Net)	1804	1261

Gamma Constants MGS-C.J 136

Last Edited on 10-MAY-2013,16:25

Gamma Calibrator Number	BLUE	
Mud Density	1.08	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

Neutron Calibration MDN-B.J 390

Base Calibration on 08-MAY-2013 00:49
Field Check on 10-MAY-2013 03:59

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	2935	90	3714	110
Ratio	32.709		33.764	

Field Calibrator at Base

	Calibrated (cps)	
	1296	1890
Ratio	0.685	

Field Check

	Calibrated (cps)	
	1305	1902
Ratio	0.686	

Neutron Constants MDN-B.J 390

Last Edited on 10-MAY-2013,03:53

Neutron Source Id	p33312b	
Neutron Jig Number	blue	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
Temperature Source	None	
Temperature	N/A	degrees F
Mud Salinity	1.00	kppm
Salinity Correction	Not Applied	
Formation Fluid Salinity Source	None	
Formation Fluid Salinity	N/A	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-B.J 359

Base Calibration on 06-MAY-2013,03:37
Field Check on 10-MAY-2013 03:38

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	960.4	126.8
Base Check		280.9
Field Check		280.9

FE Constants MFE-B.J 359

Last Edited on 10-MAY-2013,03:37

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.	MGS External Temperature	
Stand-off	0.5	inches

Induction Calibration MAI-A.A 158

Base Calibration on 06-APR-2013,15:50
Field Check on 10-MAY-2013 03:31

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.2	475.3	9.3	966.2
2	6.1	381.2	7.6	821.4
3	3.8	265.2	5.2	566.0
4	2.7	132.2	2.6	279.2

Array Temperature 22.3 Deg F

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	0.0	0.0	11.1	3813.3
2	0.0	0.0	28.6	3529.3
3	0.0	0.0	26.0	2980.2
4	0.0	0.0	17.2	2096.5
Deep			14.2	1942.7
Medium			39.5	3886.1
Shallow			45.1	5234.9
Array Temperature	0.0		68.0	Deg F

Induction Constants MAI-A.A 158

Last Edited on 11-MAY-2013,01:40

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	0.0000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MGS External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	N/A	mhos/metre

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt	0.00	
Source for Rxo	0.00	

High Resolution Temperature Calibration MAI-A.A 158

Field Calibration on 08-MAY-2013,00:40

	Measured	Calibrated(Deg F)
Lower	0.00	0.00
Upper	0.00	0.00

High Resolution Temperature Constants MAI-A.A 158

Last Edited on 08-MAY-2013,00:40

Pre-filter Length	11

Caliper Calibration MPD-C.J 395

Base Calibration on 12-APR-2013 12:45
Field Calibration on 10-MAY-2013 03:52

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16915	4.01
2	26128	5.96
3	36016	7.98
4	45536	9.86
5	56240	11.88
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.95	5.96

Photo Density Calibration MPD-C.J 395

Base Calibration on 12-APR-2013 13:04
Field Check on 10-MAY-2013 03:49

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	54898	25312	59494	30754
Reference 2	23577	2623	26390	2598

Field Check at Base

1252.9	1430.5

Field Check

1247.2	1428.2

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	225	1122		
Reference 1	23031	54699	0.426	0.367
Reference 2	6699	23434	0.290	0.270

Field Check at Base

225.3	1121.8

Field Check

225.2	1116.6

Density Constants MPD-C.J 395

Last Edited on 10-MAY-2013,16:25

Density Source Id	p21137b	
Nylon Calibrator Number	766	
Aluminium Calibrator Number	856	
Density Shoe Profile	4 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.08	gm/cc
Mud Density Z/A Multiplier	1.11	

Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	

Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\SANDRIDGE (SALLY 34202-12H)\RTAP 28529.dta

Shuttle Running Tool 3.5")
SRT-A.A 70 LG: 6.62 ft WT: 37.5 lb OD: 2.52 in

MBS-F.A 200v Compact Battery Sub
MBS-F.A 112 LG: 10.61 ft WT: 70.5 lb OD: 2.24 in

Compact Memory Sub E.B
MMS-E.B 167 LG: 5.20 ft WT: 37.5 lb OD: 2.24 in

Compact Tool Isolator sub.
MTI-B.A 67 LG: 1.54 ft WT: 13.2 lb OD: 2.24 in

Compact Short Gamma
MGS-C.J 136 LG: 3.41 ft WT: 24.3 lb OD: 2.24 in

Compact Collar Locator
MCL-B.J 68 LG: 3.17 ft WT: 26.5 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 456 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 454 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

MIS-A.A Compact Inline Bowspring sub
MIS-A.A 260 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

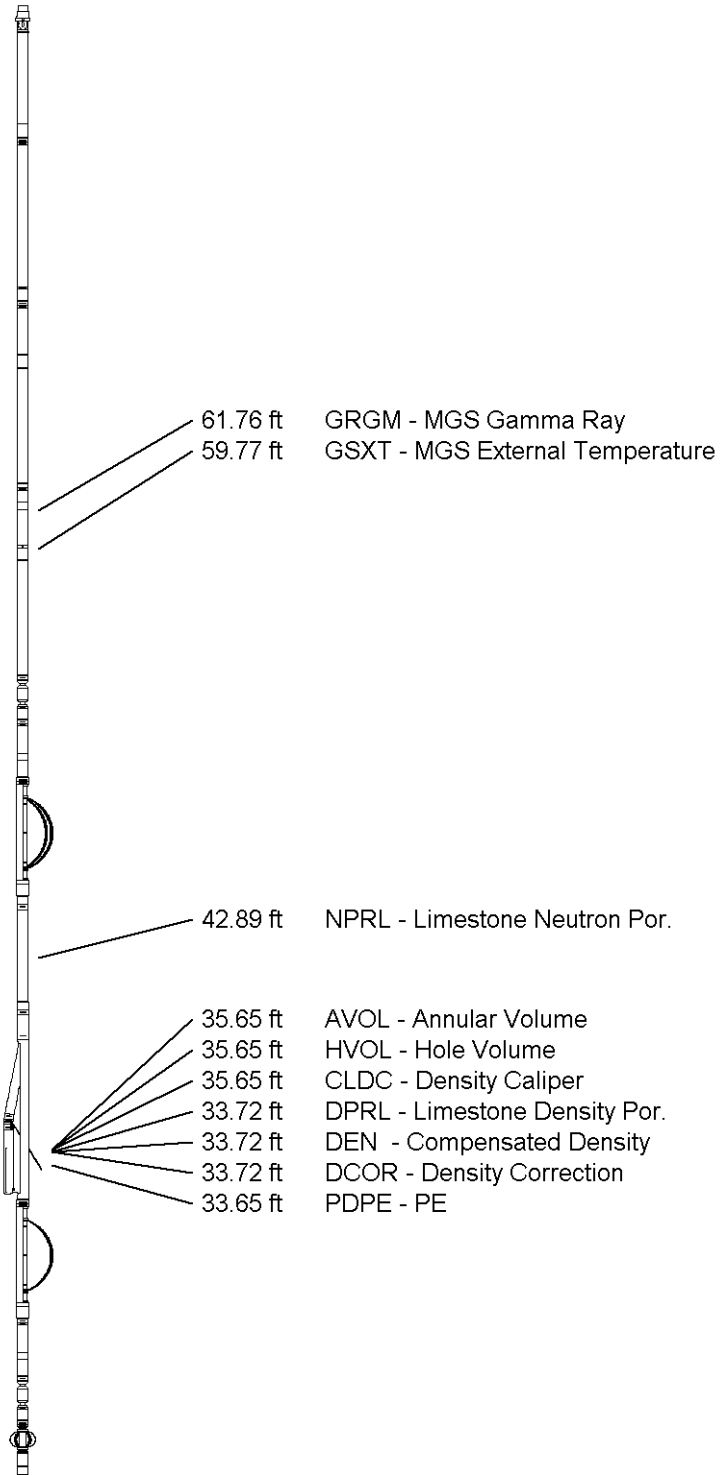
Compact Density/Caliper
MPD-C.J 395 LG: 9.59 ft WT: 90.4 lb OD: 2.24 in

MIS-D.B Compact Inline Bowspring sub
MIS-D.B 591 LG: 5.70 ft WT: 33.1 lb OD: 2.24 in

SHA-J.A Compact Swivel Head Adaptor
SHA-J.A 435 LG: 2.30 ft WT: 22.0 lb OD: 2.24 in

SKJ-E.B Compact Knuckle Joint
SKJ-E.B 469 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

MIS-E.B Compact Inline Standoff sub
MIS-E.B 576 LG: 2.14 ft WT: 15.4 lb OD: 2.24 in

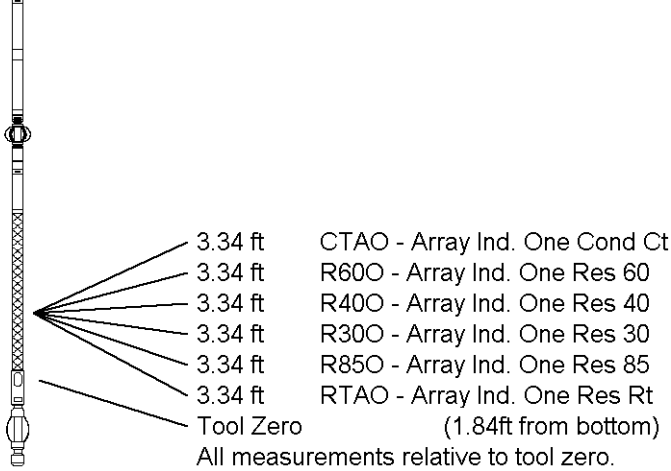


Compact Focussed Electric
MFE-B.J 359 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

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

Compact Induction
MAI-A.A 158 LG: 12.52 ft WT: 48.5 lb OD: 2.24 in

Total Length: 88.36 ft Weight: 637.1 lb



All measurements relative to tool zero.

COMPANY	SANDRIDGE ENERGY
WELL	SALLY 3420 2-12H
FIELD	COMANCHE PROSPECT
PROVINCE/COUNTY	COMANCHE
COUNTRY/STATE	USA / KANSAS

Elevation Kelly Bushing	1809.00	feet	First Reading	9537.00	feet
Elevation Drill Floor	1809.00	feet	Depth Driller	9599.00	feet
Elevation Ground Level	1791.00	feet	Depth Logger	9599.00	feet

Weatherford®

CML MESSENGER SHUTTLE
COMPACT PHOTO DENSITY
COMPENSATED NEUTRON LOG