

**COMPACT WELL SHUTTLE  
HOLE VOLUME  
LOG**

COMPANY **EXXON MOBIL CORPORATION**  
 WELL **FREEDOM RANCH UNIT 197-33B8**  
 FIELD **PICEANCE CREEK**  
 PROVINCE/COUNTY **RIO BLANCO**  
 COUNTRY/STATE **U.S.A. / COLORADO**  
 LOCATION **SHL: 2397' FNL & 1406' FEL**

LSD	SEC	TWP	RGE	Other Services
	33	1S	97W	MPD/MDN MAI/MFE MSS
API Number	05-103-1142100			
Permit Number	05-103-1142100			
Permanent Datum	G.L., Elevation 6446 feet			
Log Measured From	K.B. @ 30 FEET above Permanent Datum			
Drilling Measured From	K.B.			

Date	20-FEB-2010			Elevations:	KB	6476.00
Run Number	TWO			DF	6475.00	
Depth Driller	12830.00	feet		GL	6446.00	
Depth Logger	12796.00	feet				
First Reading	12748.00	feet				
Last Reading	8655.00	feet				
Casing Driller	8657.00	feet				
Casing Logger	8655.00	feet				
Bit Size	6.125	inches				
Hole Fluid Type	LSND					
Density / Viscosity	9.80	lb/USg	48.00	CP		
PH / Fluid Loss	9.40		7.50	ml/30Min		
Sample Source	FLOWLINE					
Rm @ Measured Temp	2.34 @ 78.0	ohm-m				
Rmf @ Measured Temp	1.87 @ 78.0	ohm-m				
Rmc @ Measured Temp	2.80 @ 78.0	ohm-m				
Source Rmf / Rmc	CALC	CALC				
Rm @ BHT	0.775 @ 242.0	ohm-m				
Time Since Circulation	.5 HOURS					
Max Recorded Temp	242.00	deg F				
Equipment Name	COMPACT					
Equipment / Base	13038	GDUCT				
Recorded By	C. PHILLIPS					
Witnessed By	C. JARVIS					
Last Title	Last Line					

BOREHOLE RECORD			Last Edited: 20-FEB-2010 17:56
Bit Size inches	Depth From feet	Depth To feet	
6.125	8657.00	12830.00	

CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
INTERMED	7.000	0.00	8657.00	26.00

**REMARKS**

TOOLS: COMPACT WELL SHUTTLE. GAMMA RAY, NEUTRON, DENSITY, FOCUSED ELECTRIC, SONIC, AND INDUCTION RAN IN COMBINATION.

HARDWARE: DENSITY: 4 INCH PROFILE PLATE USED.  
 FOCUSED ELECTRIC: INLINE CENTRALIZERS USED.  
 SONIC: INLINE CENTRALIZERS USED.  
 INDUCTION: INLINE CENTRALIZERS USED.  
 DUAL BOWSPRINGS USED FOR ECENTRALIZATION OF POROSITY TOOLS.

2.65 G/CC DENSITY MATRIX USED TO CALCULATE POROSITY.

ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

DEPTH CONTROL TAKEN FROM PIPE STRAP AND TIED INTO INTERMEDIATE LOG.

TOTAL HOLE VOLUME FROM T.D. TO SURFACE CASING = 955 CUBIC FEET

ANNULAR HOLE VOLUME FROM T.D. TO SURFACE CASING BASED ON 4.5" PRODUCTION CASING = 495 CUBIC FEET

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

ENGINEER(S): C. PHILLIPS, M. RICHINS

OPERATOR: D. GARVIN

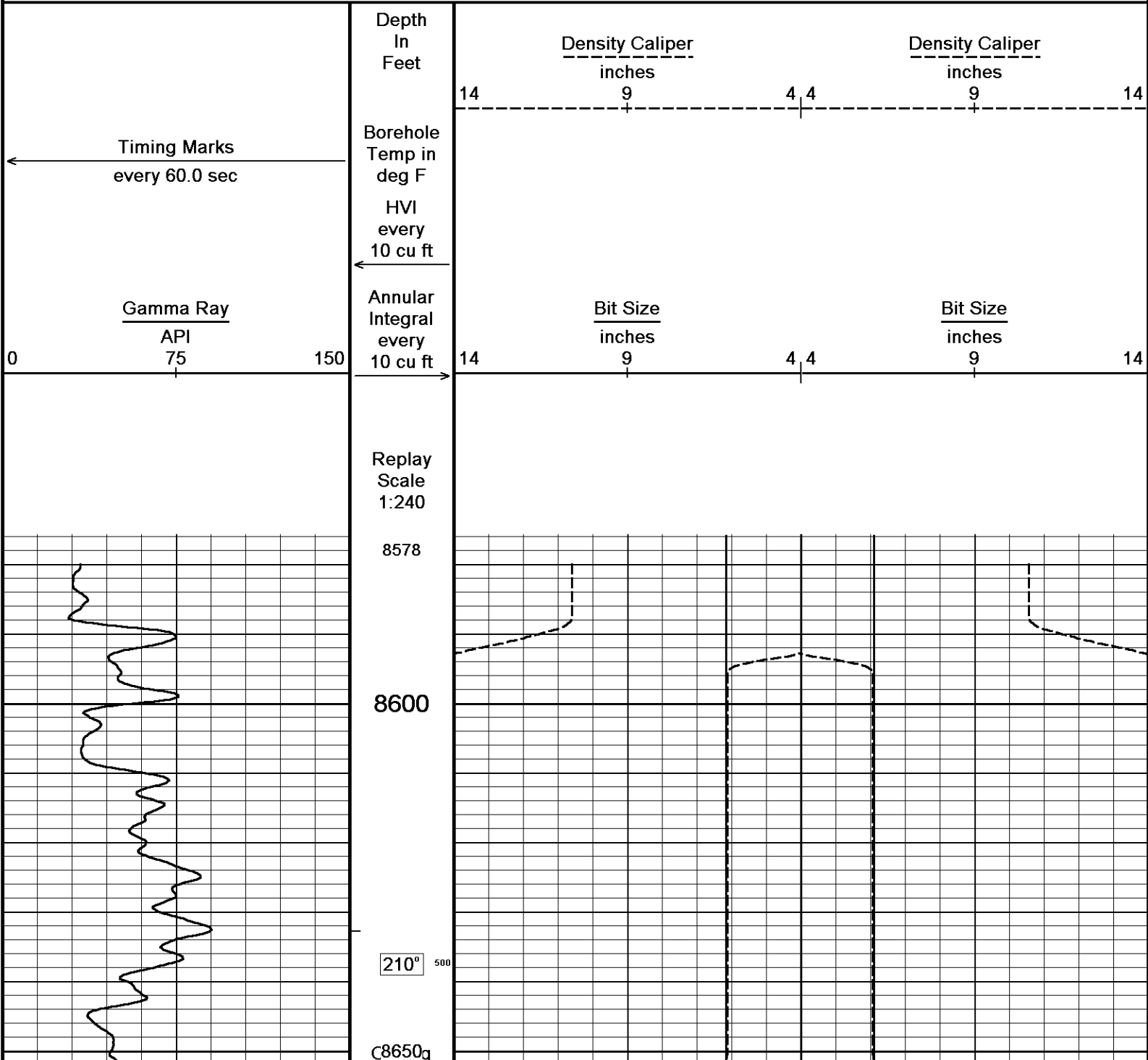
SERVICE ORDER: #3521370

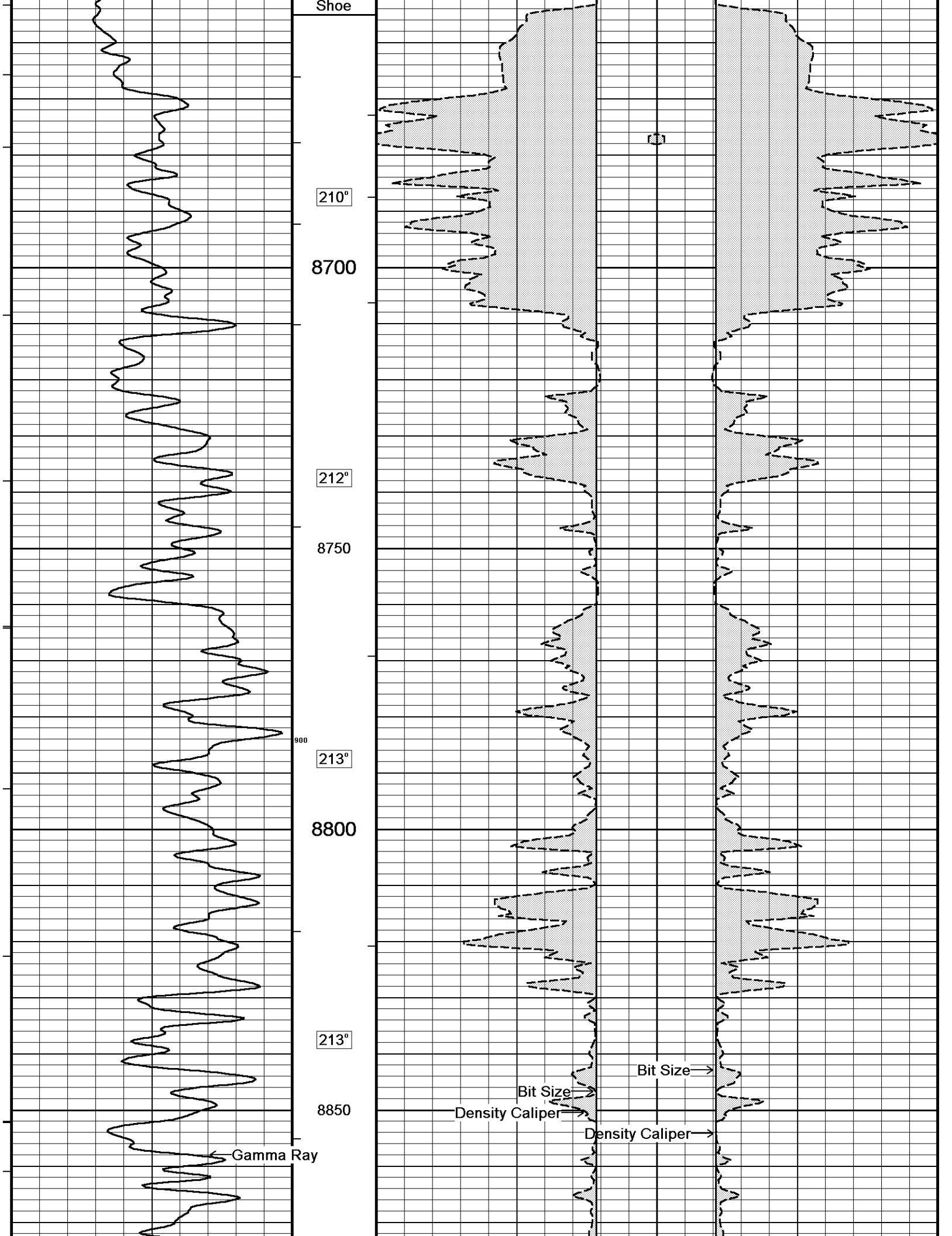
RIG: HP 321

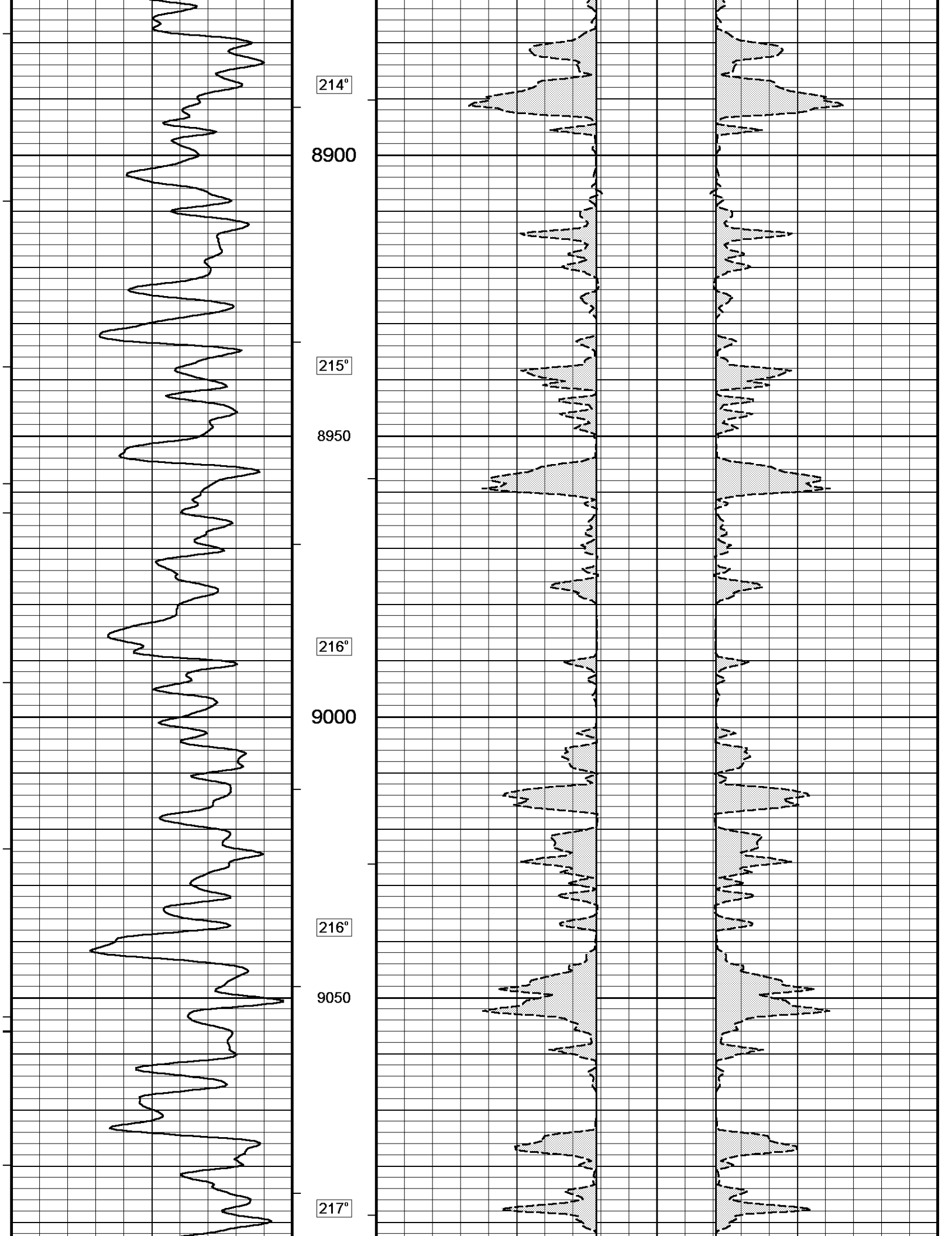
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not, guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or wilful negligence on our part, be liable or responsible for any loss, costs,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

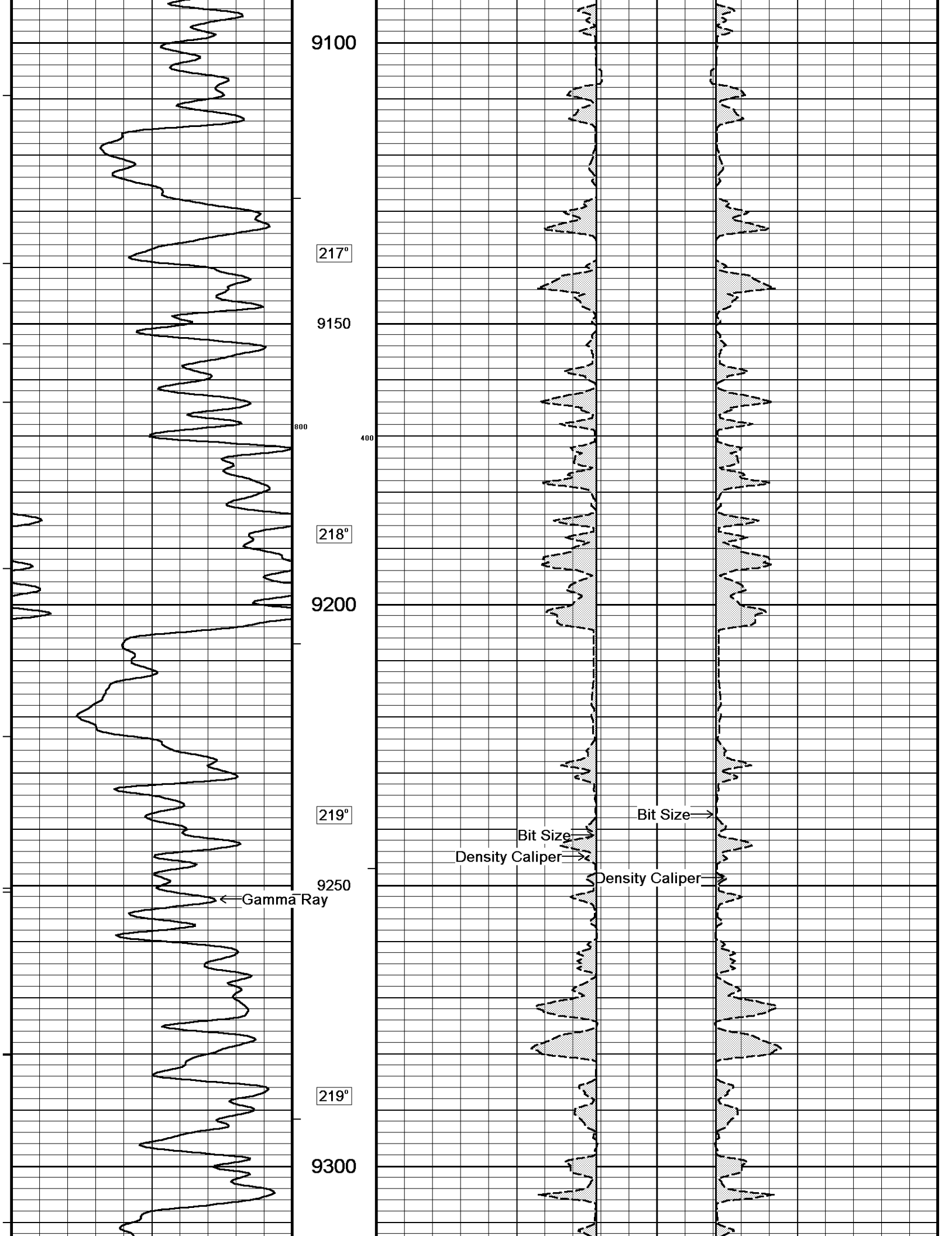
**5 INCH MAIN LOG**

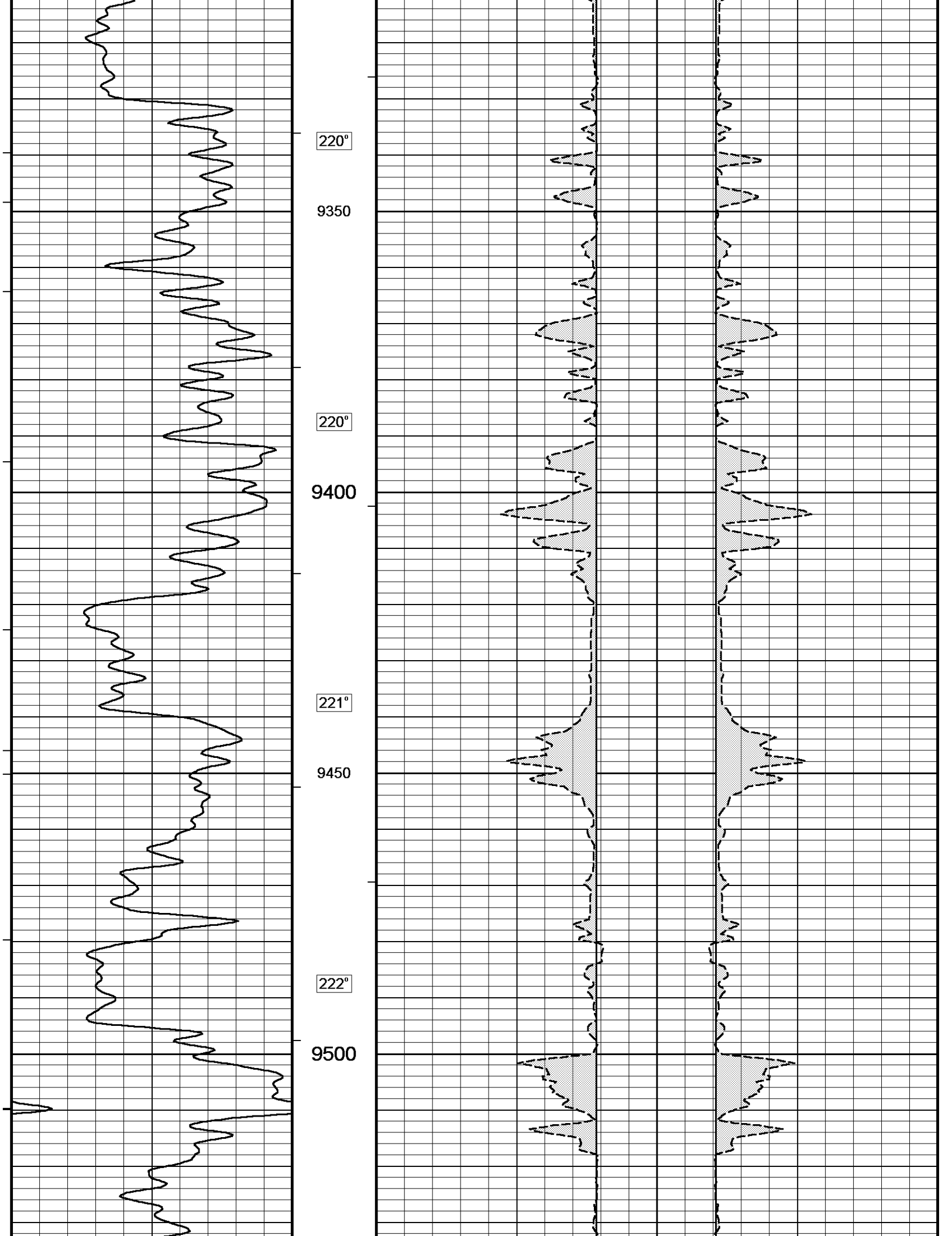
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 21-FEB-2010 13:33  
 Filename: C:\DOCUME~1\Hopkinjg\LOCALS~1\Temp\Weatherford PreView\0\depth.dta Recorded on 20-FEB-2010 23:10  
 System Versions: Logged with 10.06.0425 Processed with 10.06.0425 Plotted with 10.01.0765

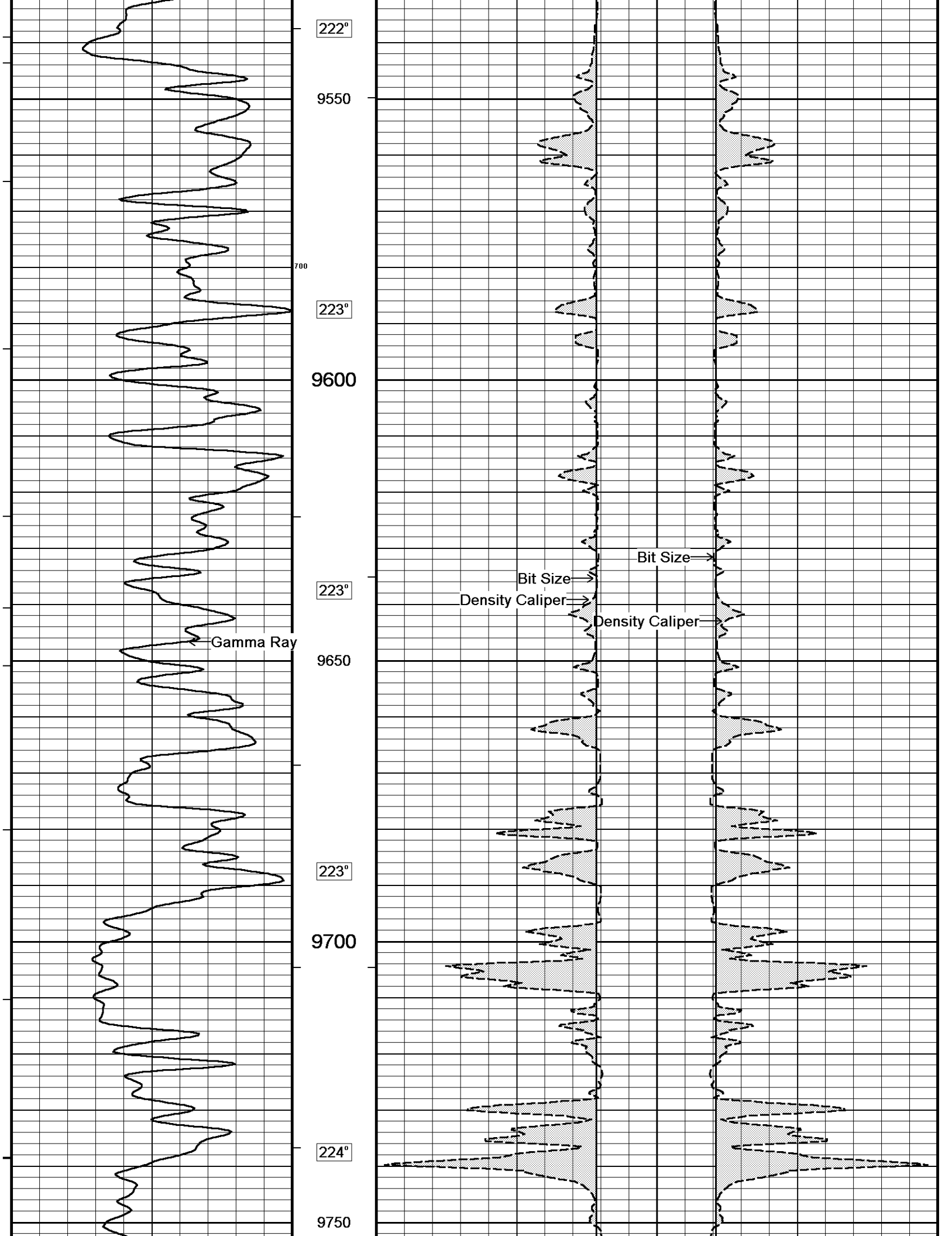


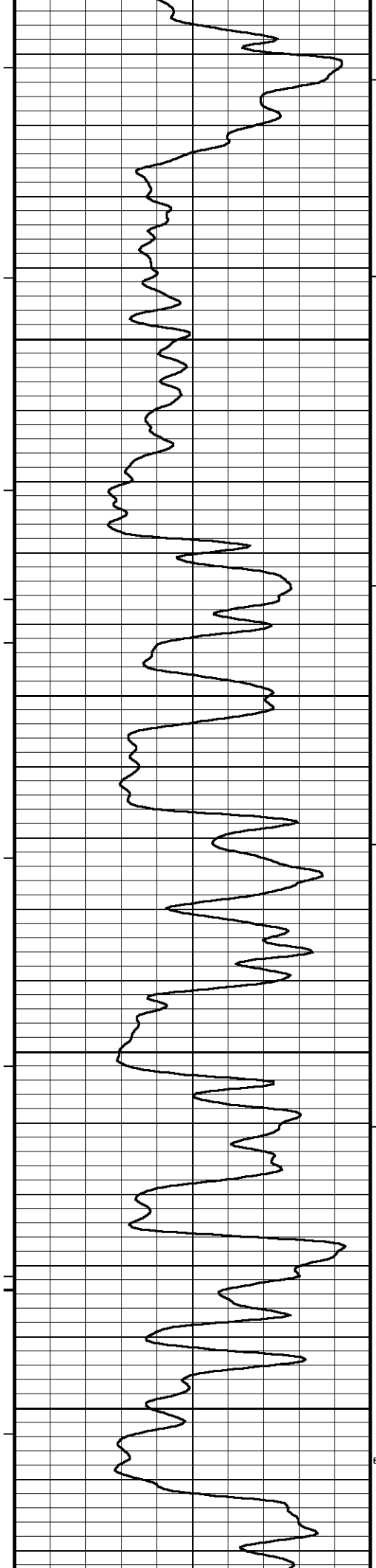












225°

9800

225°

9850

300

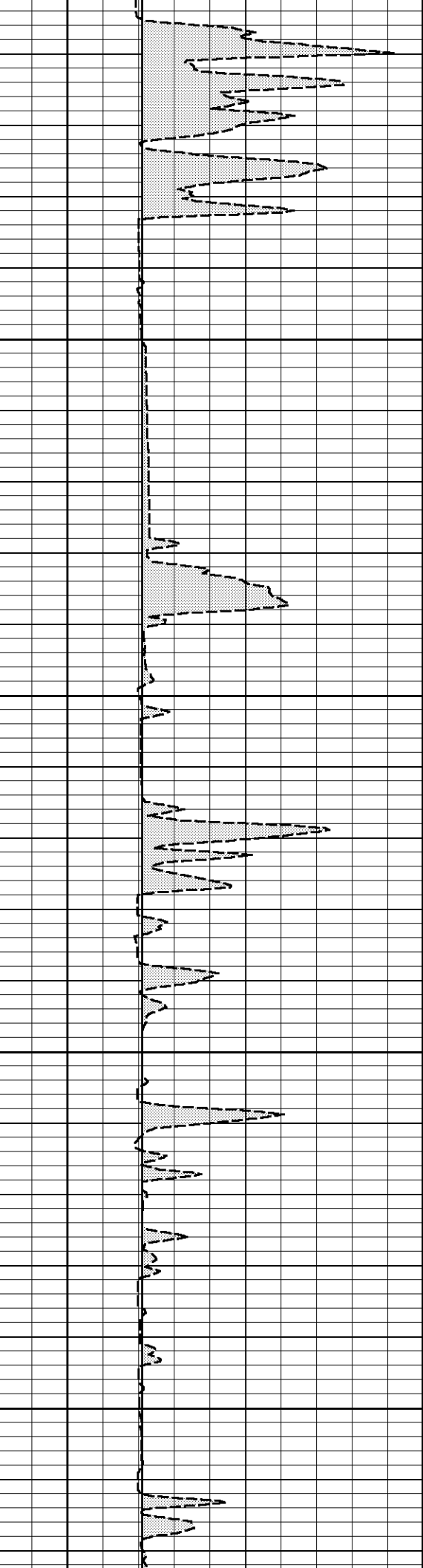
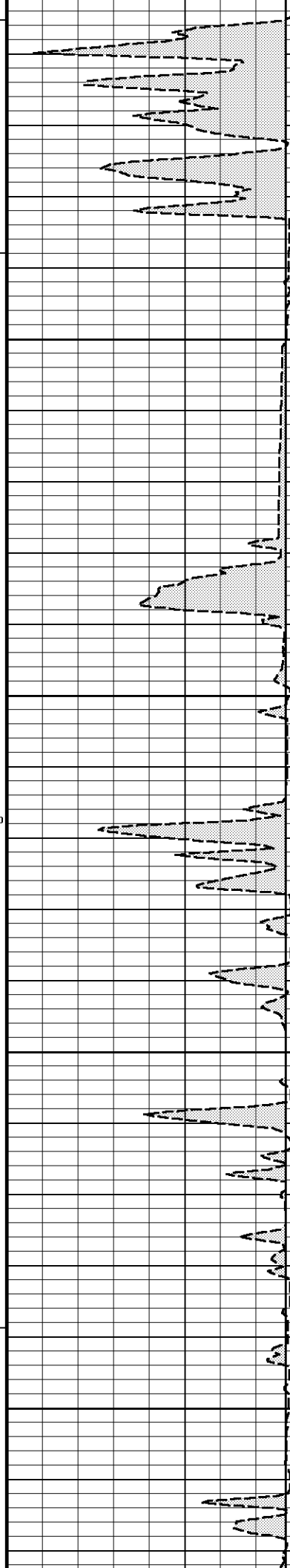
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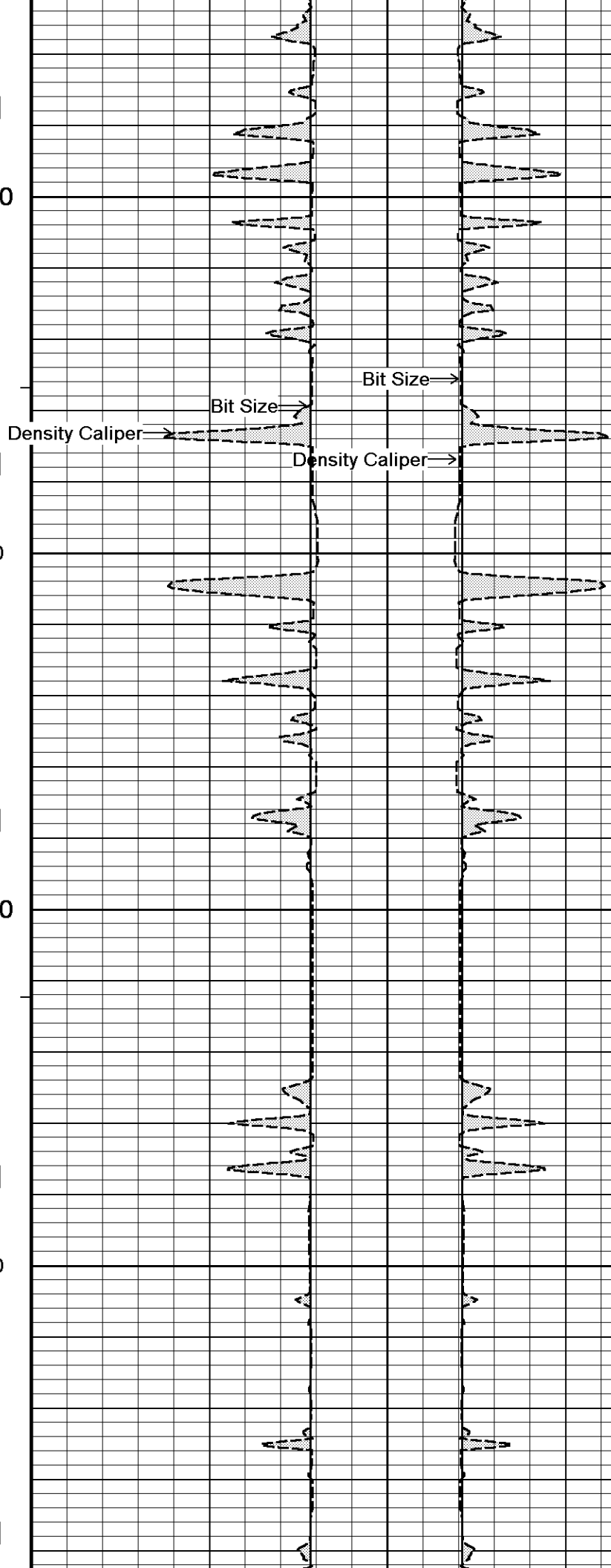
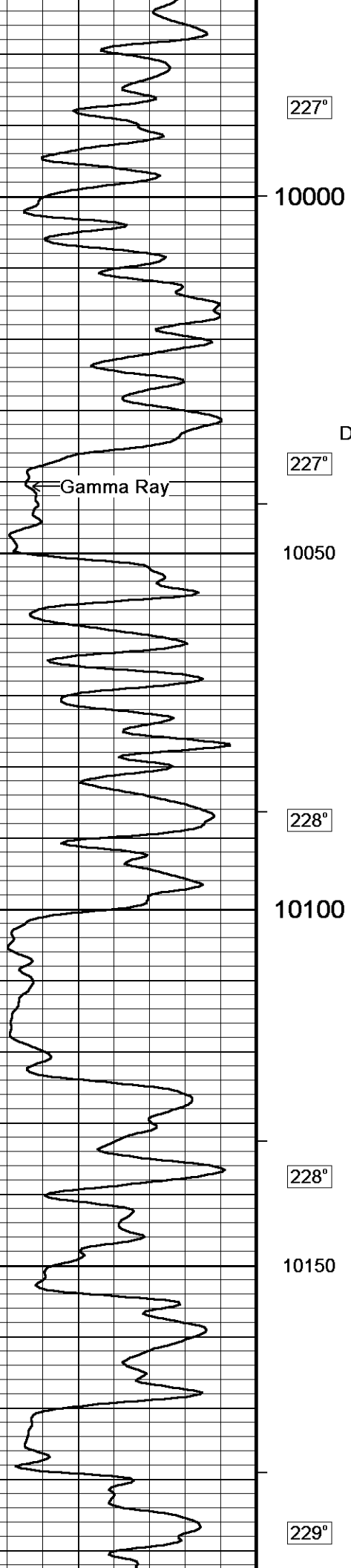
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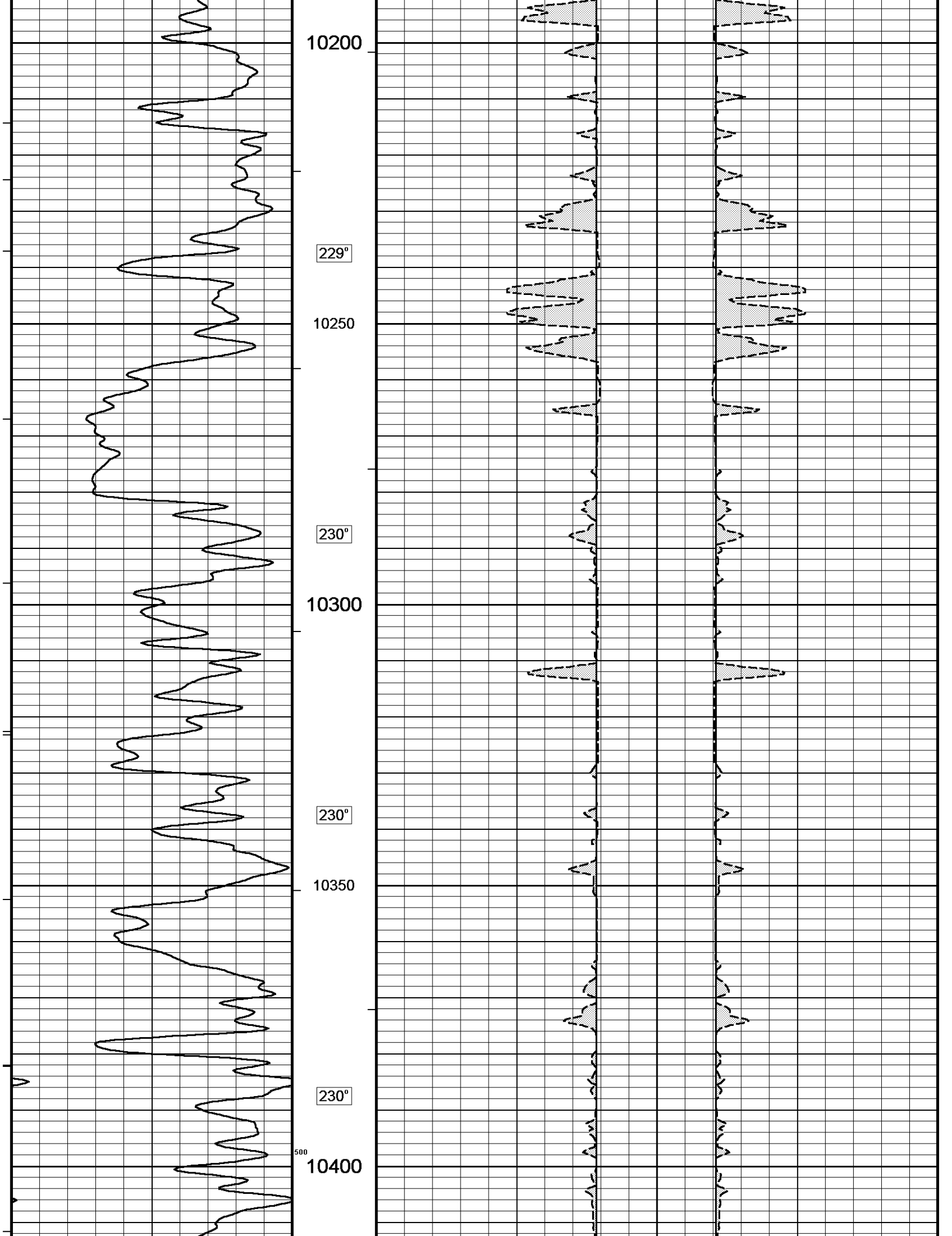
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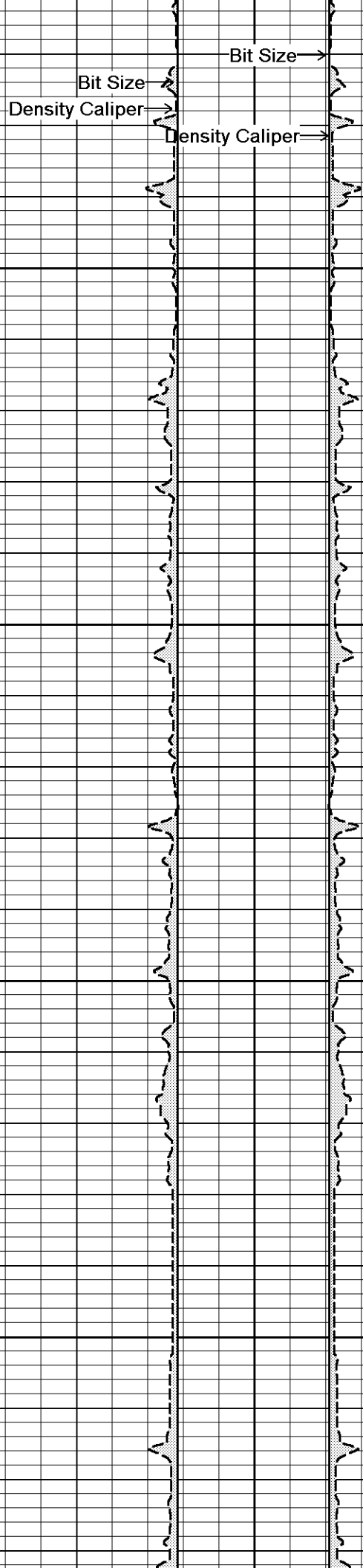
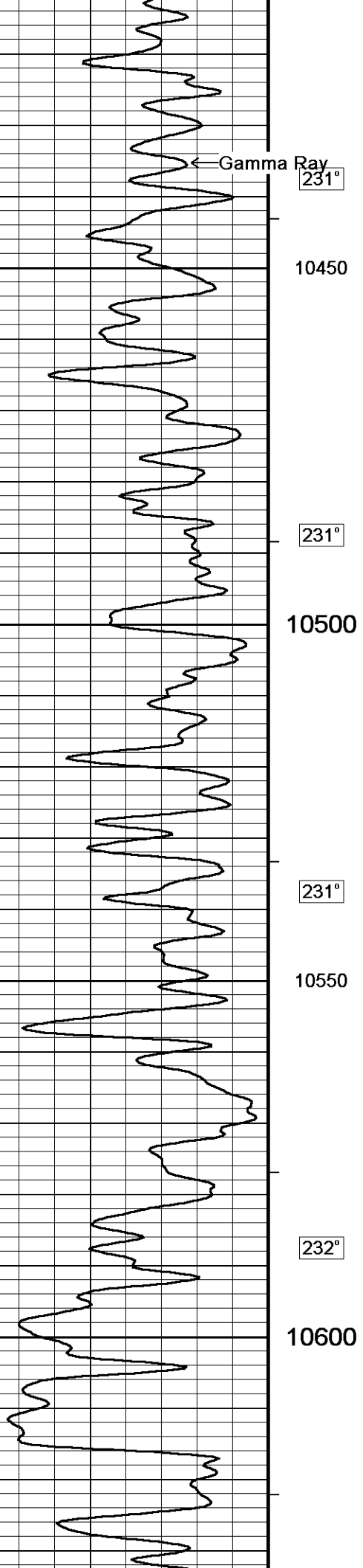
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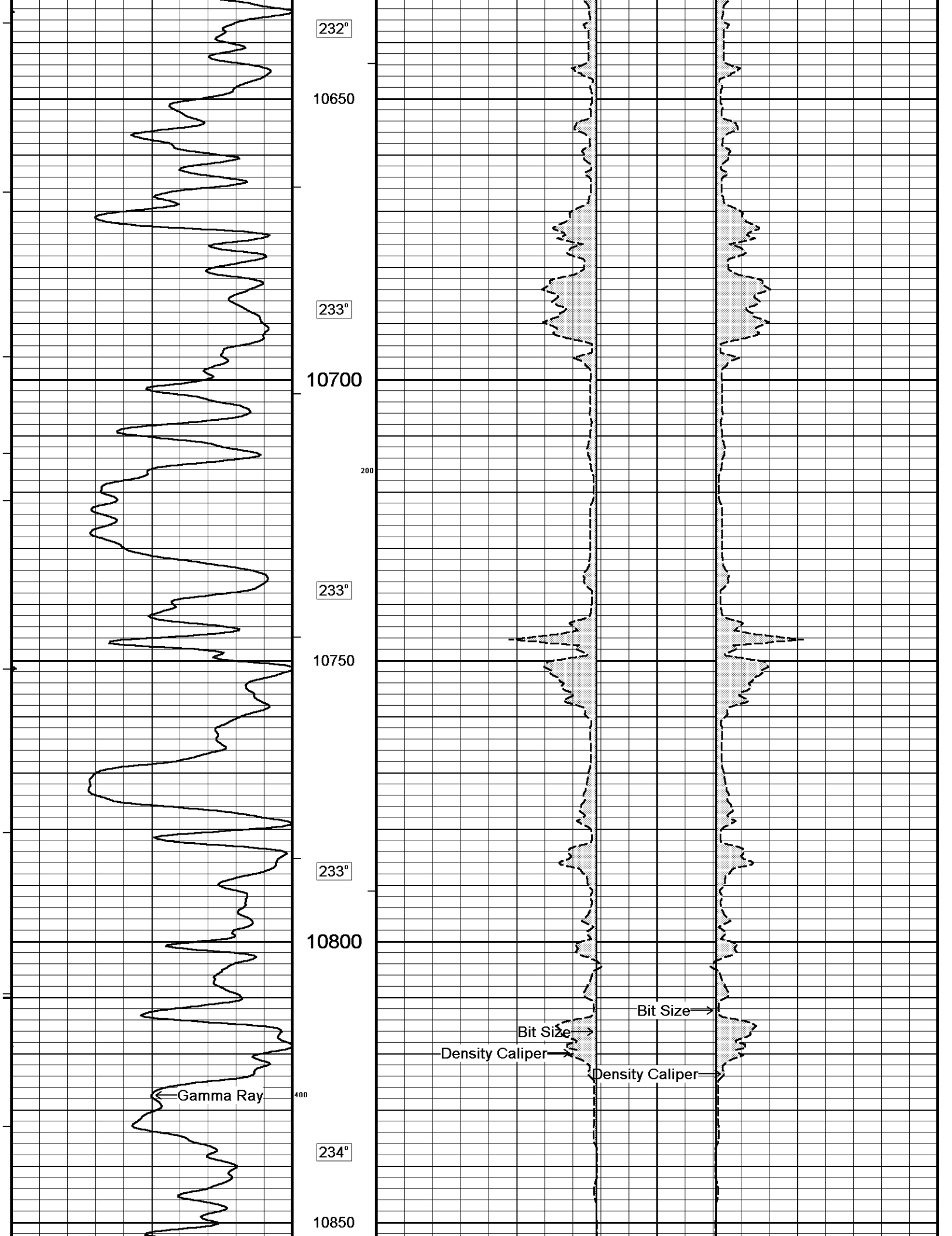
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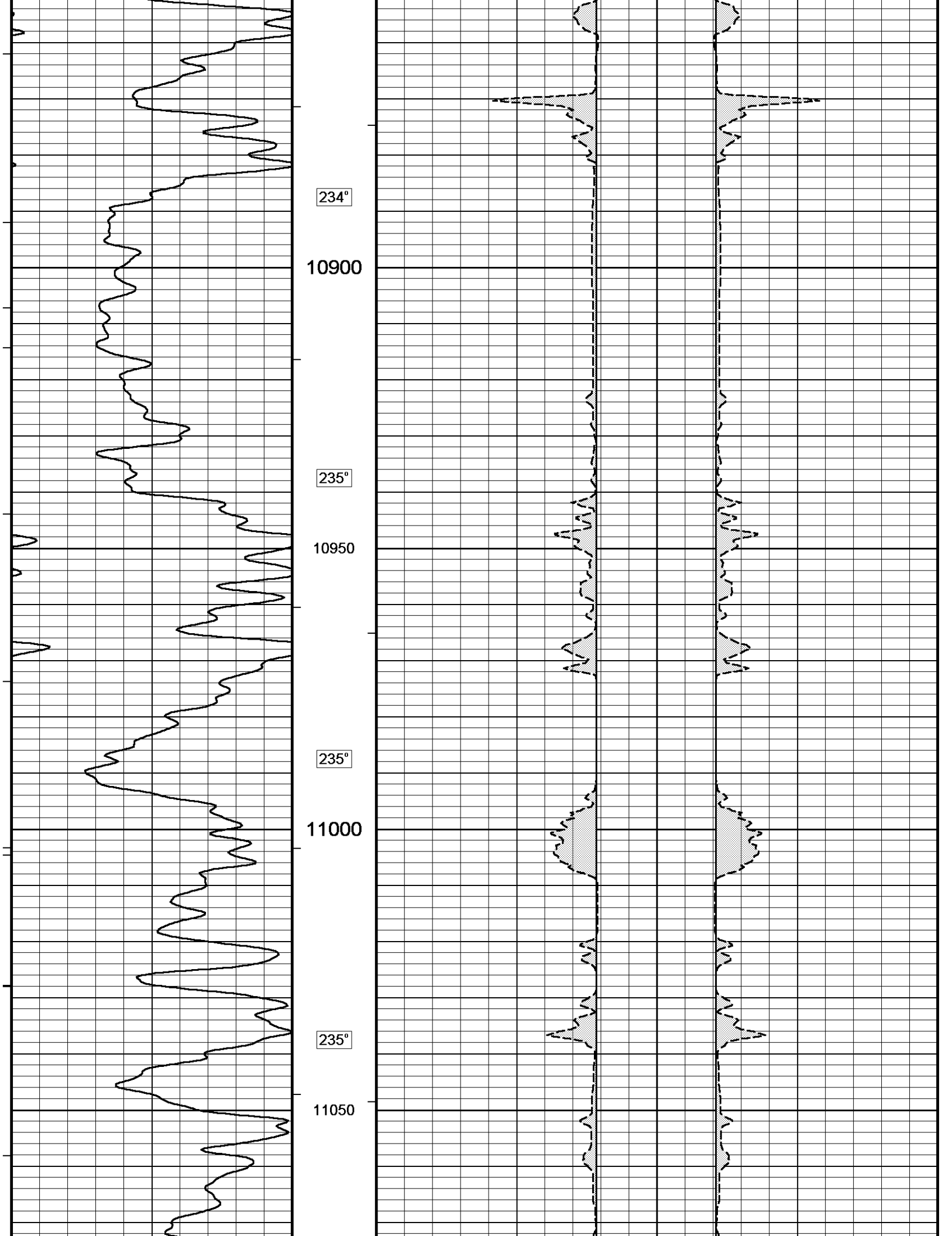


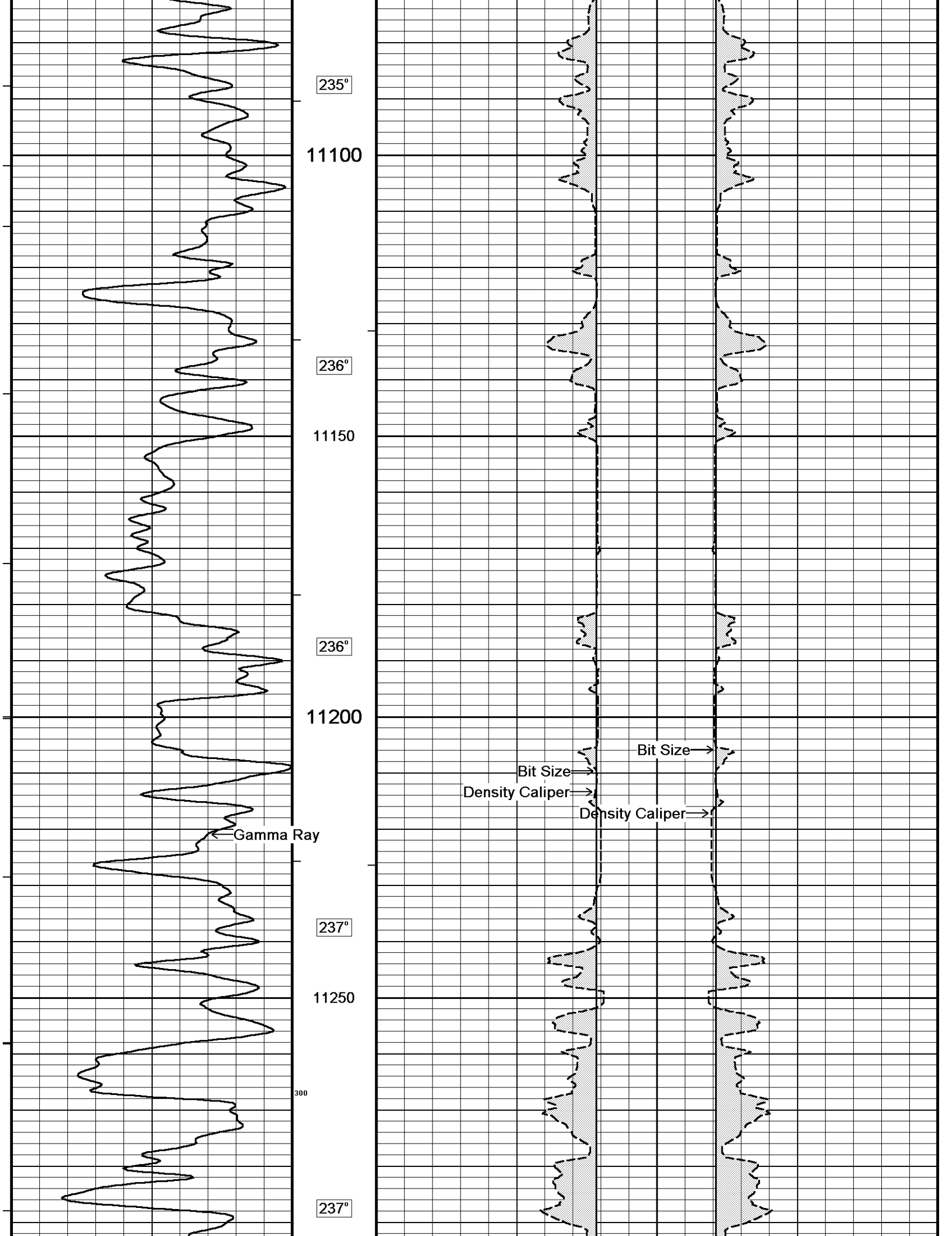


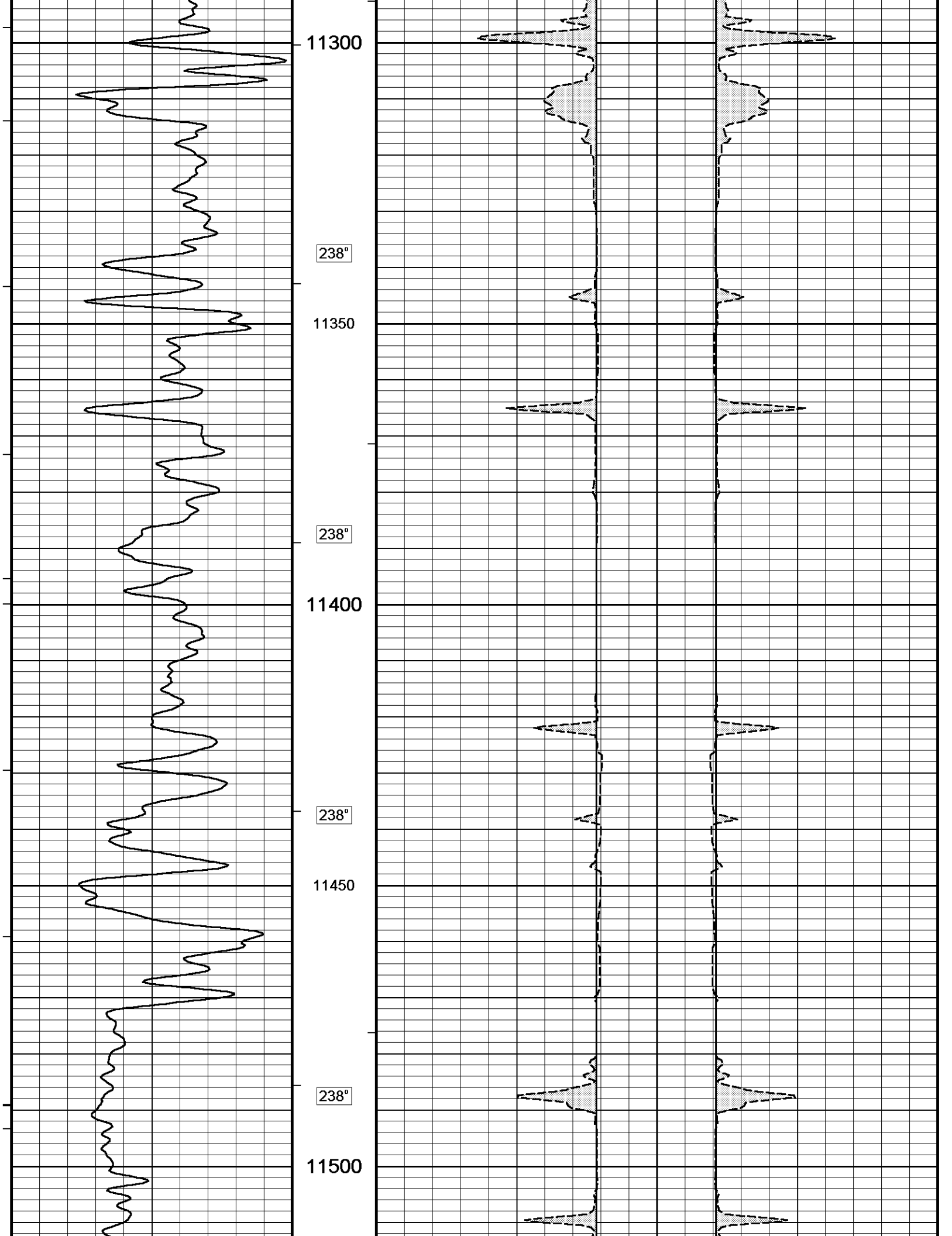


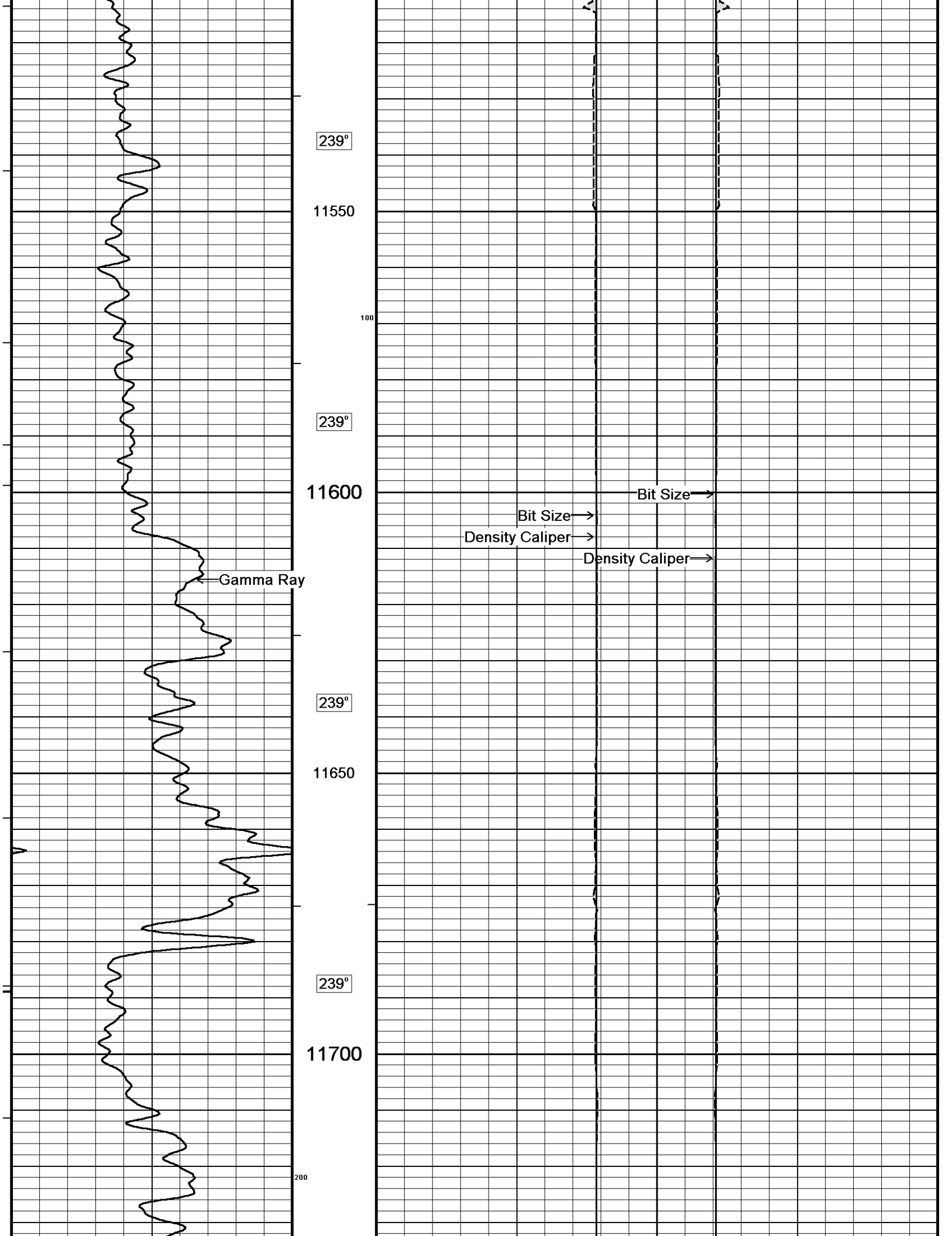


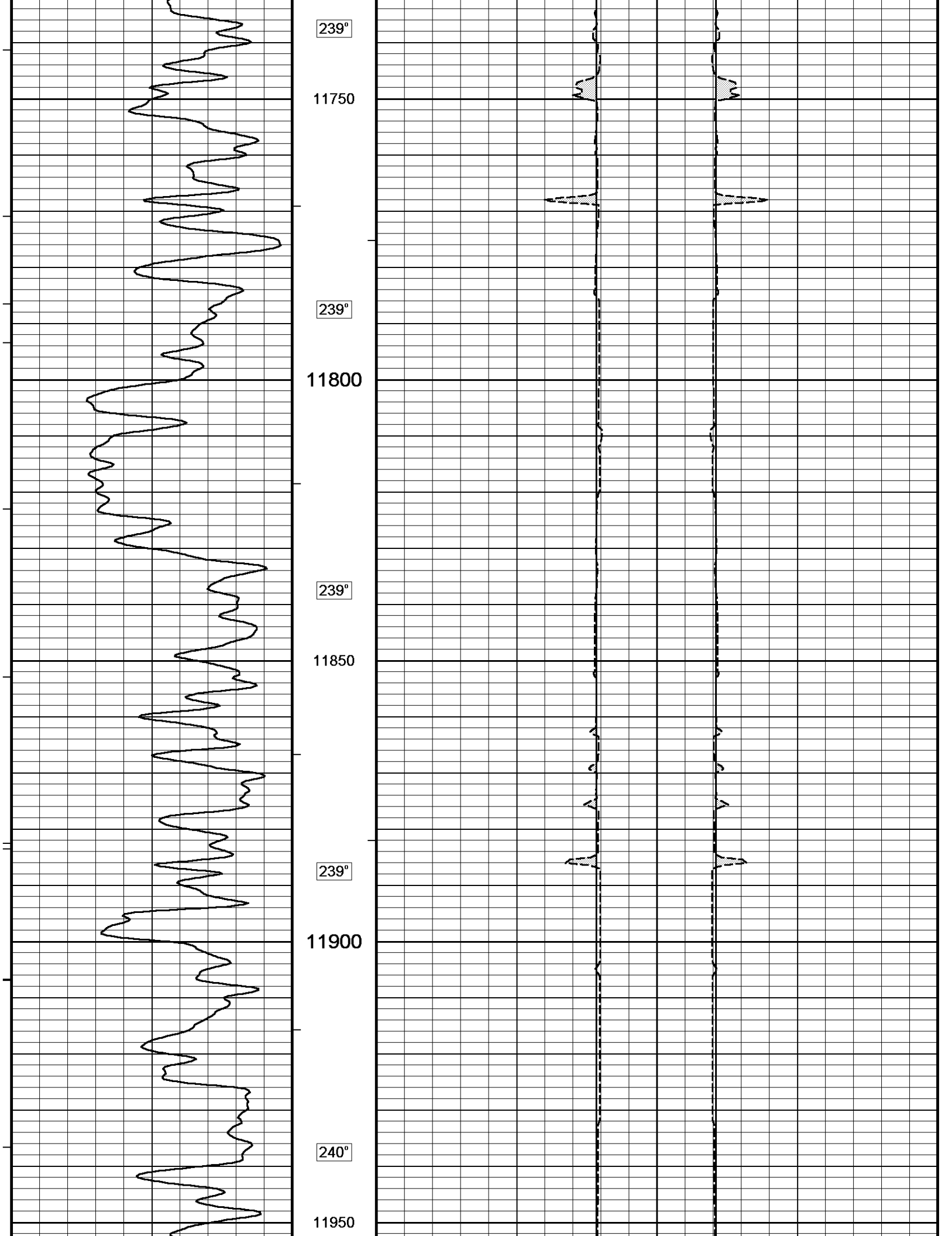


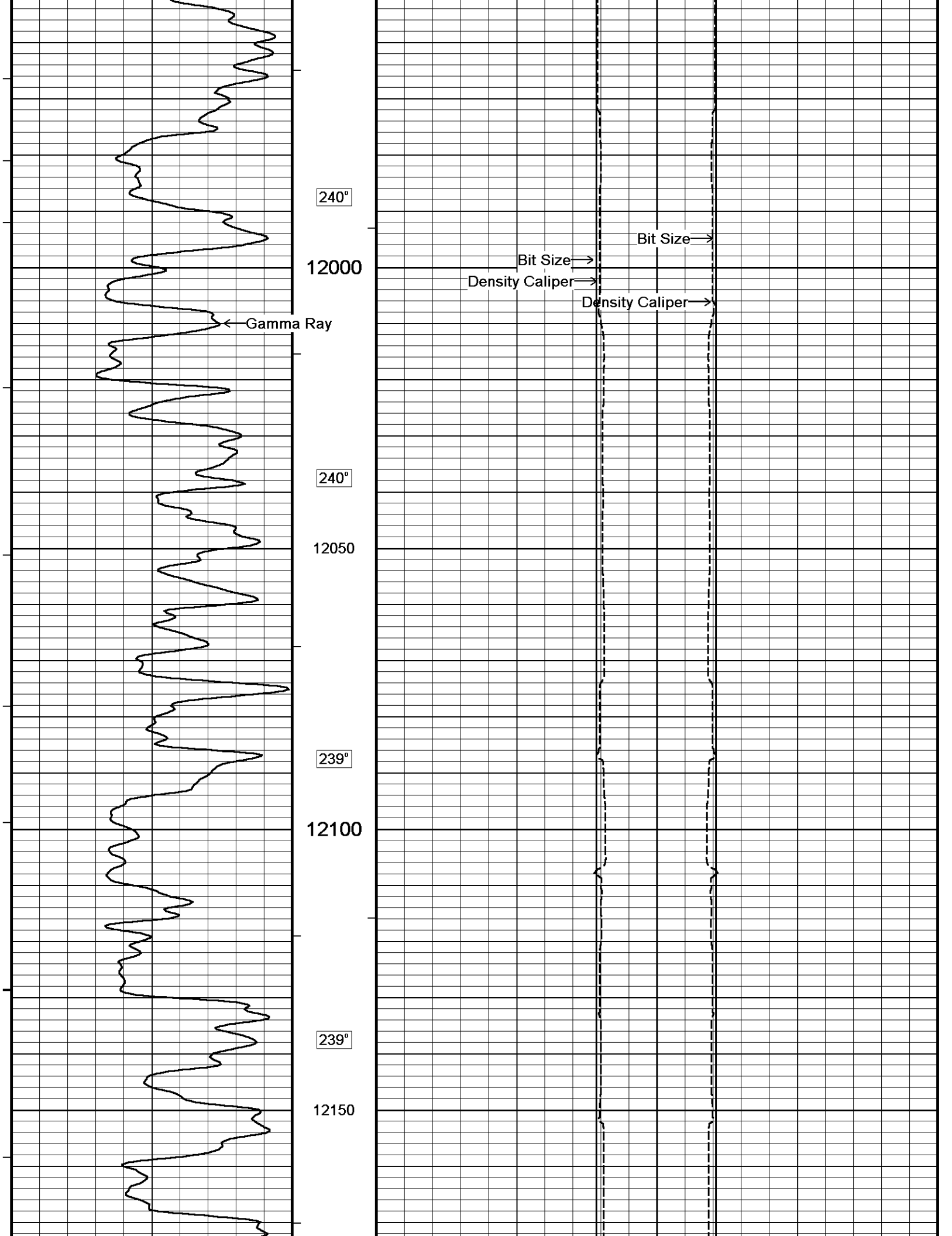


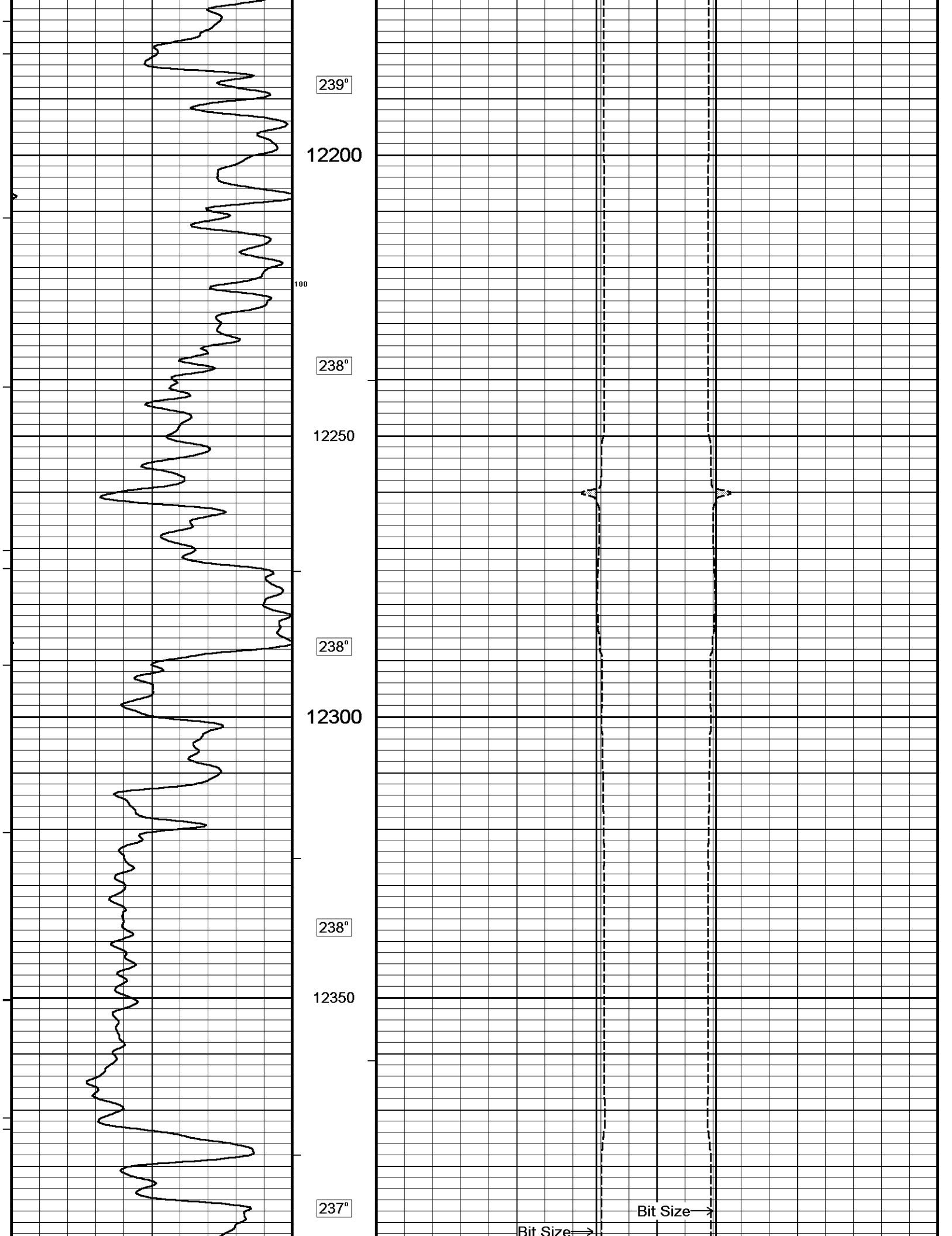


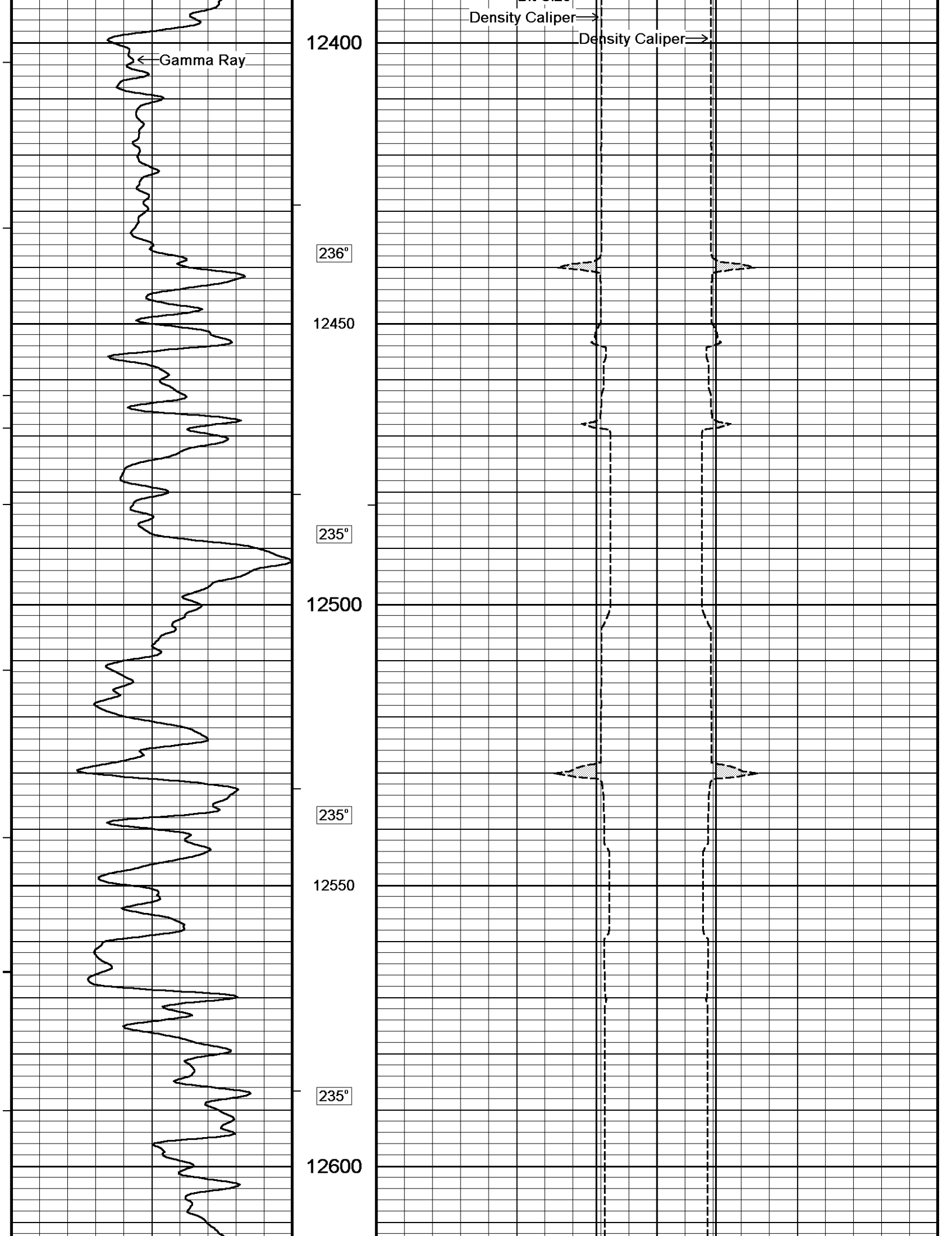


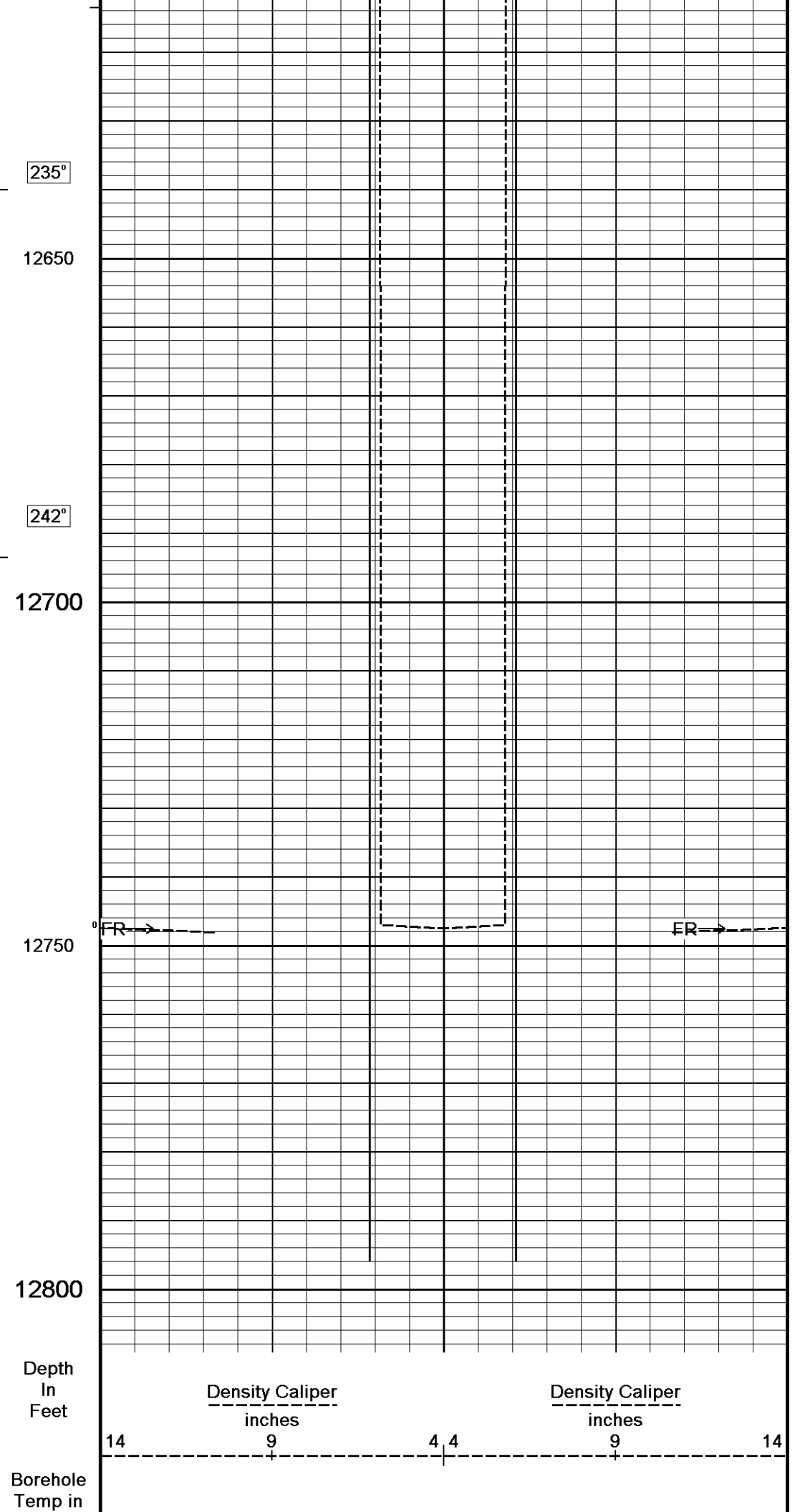
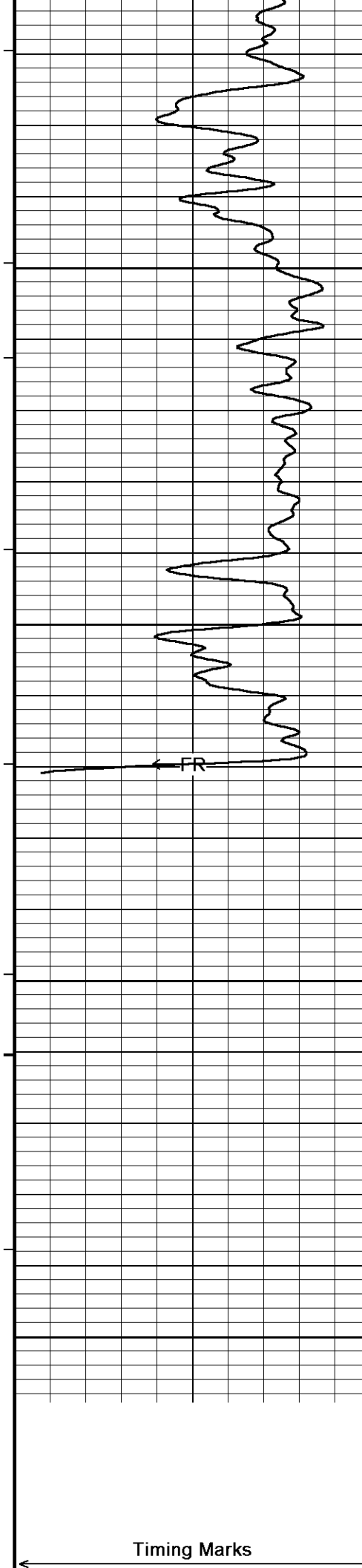












every 60.0 sec

deg F  
HVI  
every  
10 cu ft

Gamma Ray

API  
75

150

←  
Annular  
Integral  
every  
10 cu ft  
→

14

Bit Size  
inches

9

4, 4

Bit Size  
inches

9

14

Replay  
Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 21-FEB-2010 13:33

Filename: C:\DOCUME~1\Hopkinjg\LOCALS~1\Temp\Weatherford PreView0\depth.dta

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5 INCH MAIN LOG



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RIO BLANCO

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U.S.A. / COLORADO

Elevation Kelly Bushing 6476.00 feet

First Reading 12748.00 feet

Elevation Drill Floor 6475.00 feet

Depth Driller 12830.00 feet

Elevation Ground Level 6446.00 feet

Depth Logger 12796.00 feet



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HOLE VOLUME

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**Weatherford**<sup>®</sup>