



**Weatherford®**

**CALIPER LOG**

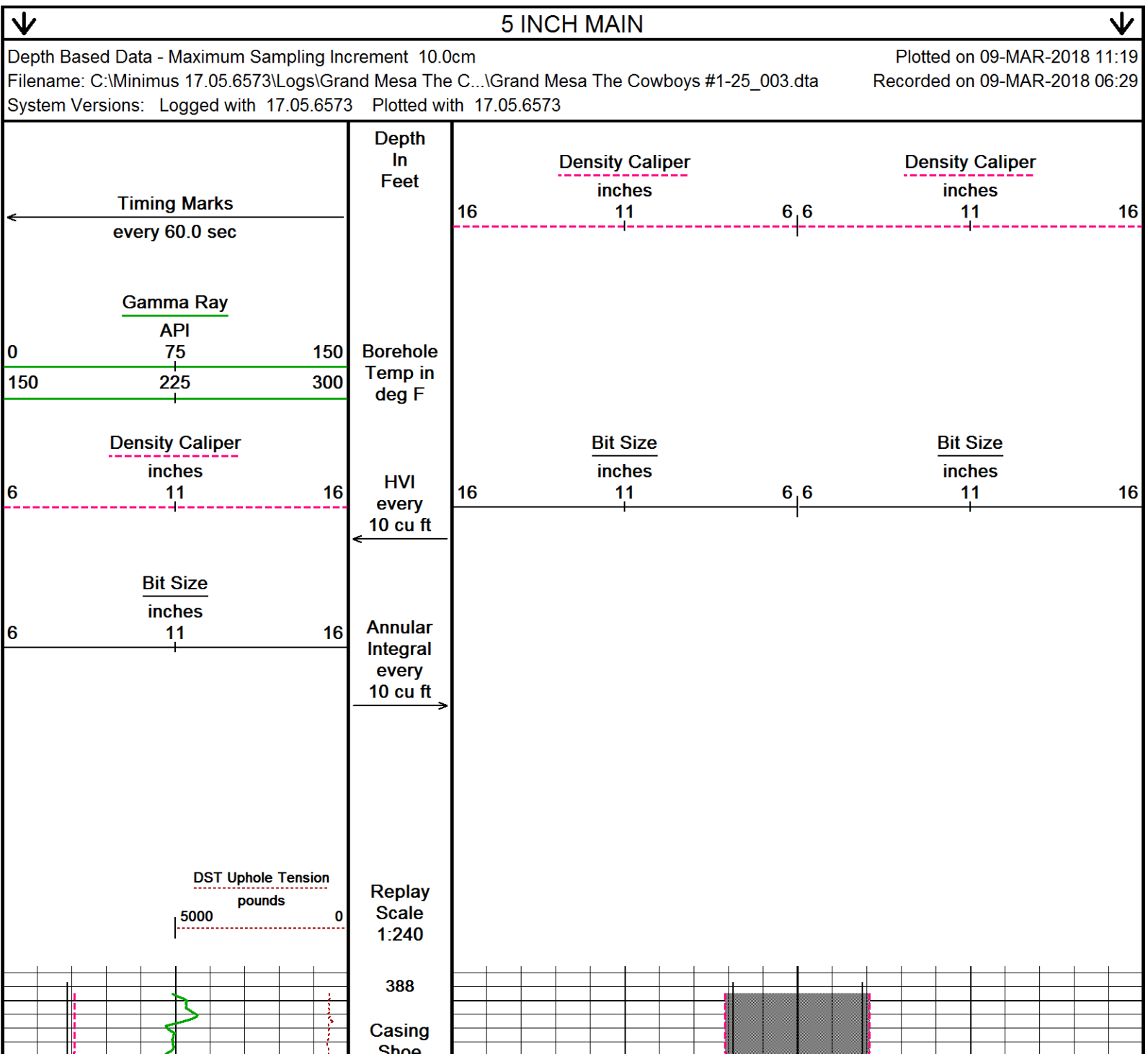
COMPANY			GRAND MESA OPERATING COMPANY		
WELL			THE COWBOYS #1-25		
FIELD			WILDCAT		
PROVINCE/COUNTY			WASHINGTON		
COUNTRY/STATE			U.S.A. / COLORADO		
LOCATION			1328' FNL & 1891' FEL		
SEC 25	TWP 5S	RGE 54W	Other Services		
Latitude		05-121-11072			
Longitude					
API Number					
Permanent Datum GL, Elevation 5150 feet				Elevations:	
Log Measured From KB, 19.00 feet above Permanent Datum				KB 5169.00	
Drilling Measured From KB				DF 5167.00	
				GL 5150.00	
Date	09-MAR-2018				
Run Number	ONE				
Service Order	4558-207732749				
Depth Driller	7545.00			feet	
Depth Logger	7546.00			feet	
First Reading	7512.00			feet	
Last Reading	399.00			feet	
Casing Driller	399.00			feet	
Casing Logger	399.00			feet	
Bit Size	7.875			inches	
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.20 lb/USg			87.00 CP	
PH / Fluid Loss	10.50			5.60 ml/30Min	
Sample Source	FLOWLINE				
Rm @ Measured Temp	1.09 @ 75.0			ohm-m	
Rmf @ Measured Temp	0.87 @ 75.0			ohm-m	
Rmc @ Measured Temp	1.31 @ 75.0			ohm-m	
Source Rmf / Rmc	CALC			CALC	
Rm @ BHT	0.49 @168.0			ohm-m	
Time Since Circulation	5 HOURS				
Max Recorded Temp	168.00			deg F	
Equipment / Base	13244			LIB	
Recorded By	ADAM SILL				
Witnessed By	KENT MATSON				

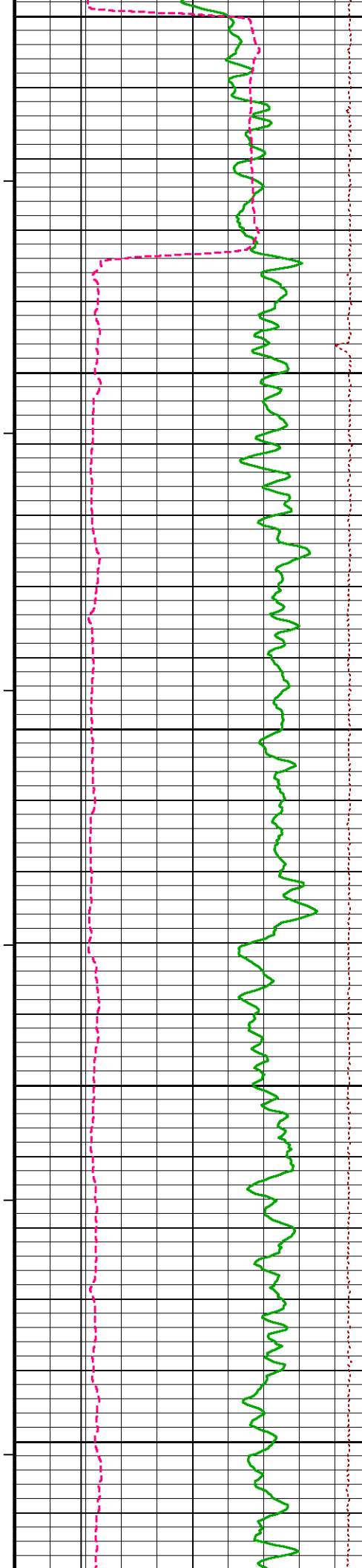
BOREHOLE RECORD					Last Edited: 09-MAR-2018 03:05
Bit Size inches		Depth From feet		Depth To feet	
7.875		399.00		7545.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	399.00	24.00	

REMARKS
- SOFTWARE ISSUE: WLS 17.05.6573.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 3301 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 2123 CU.FT.

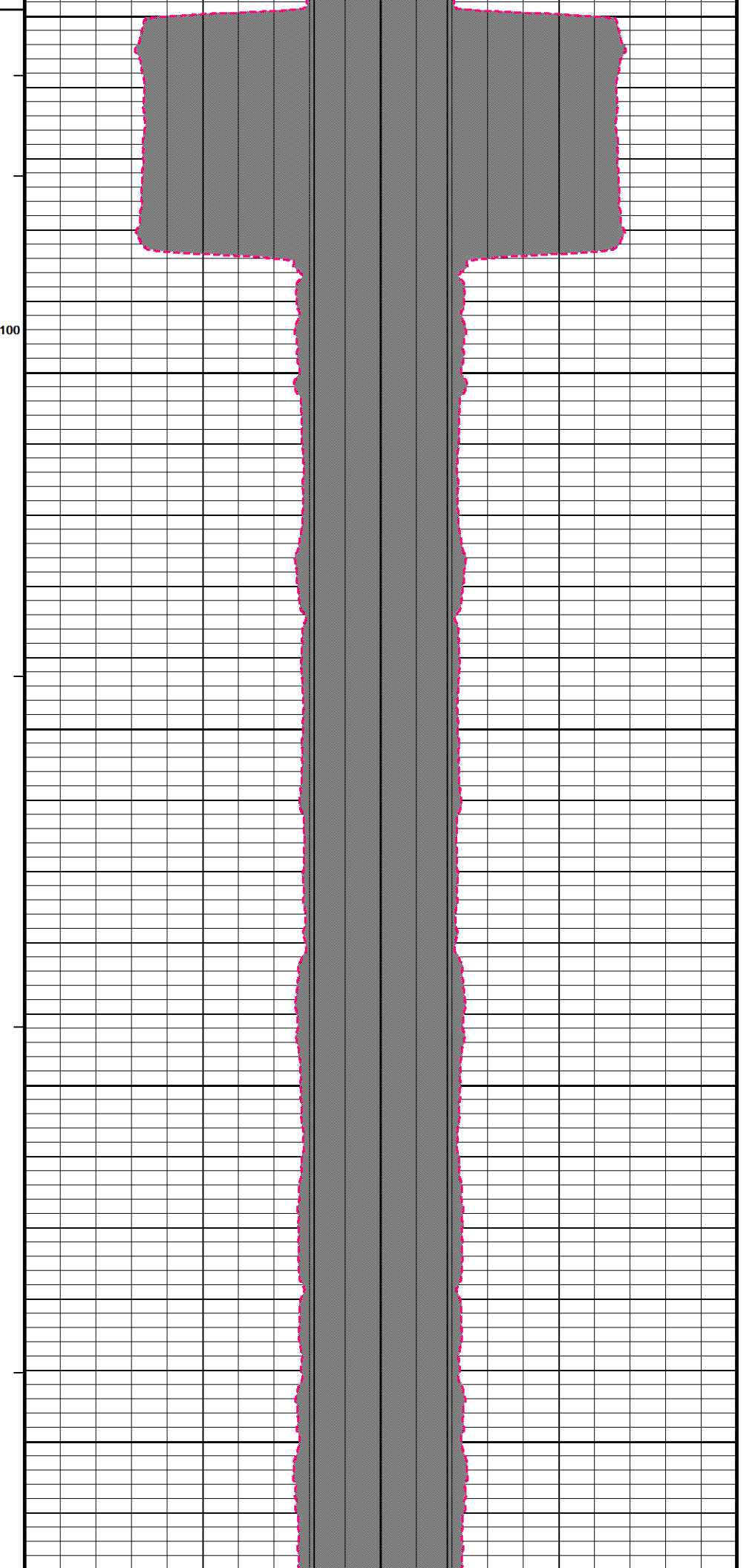
- OPERATOR: B. TOVAR, C. BAKER.

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

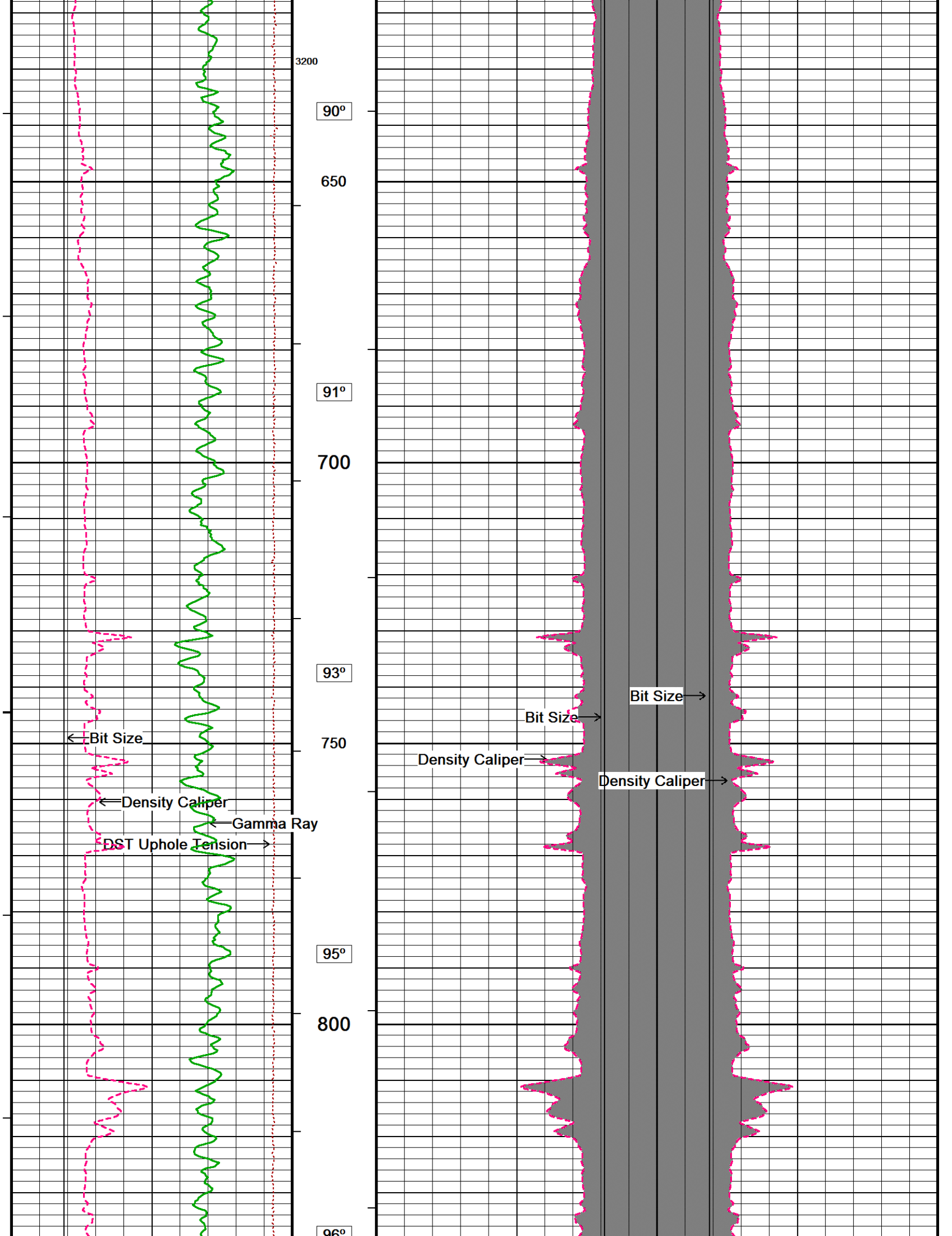


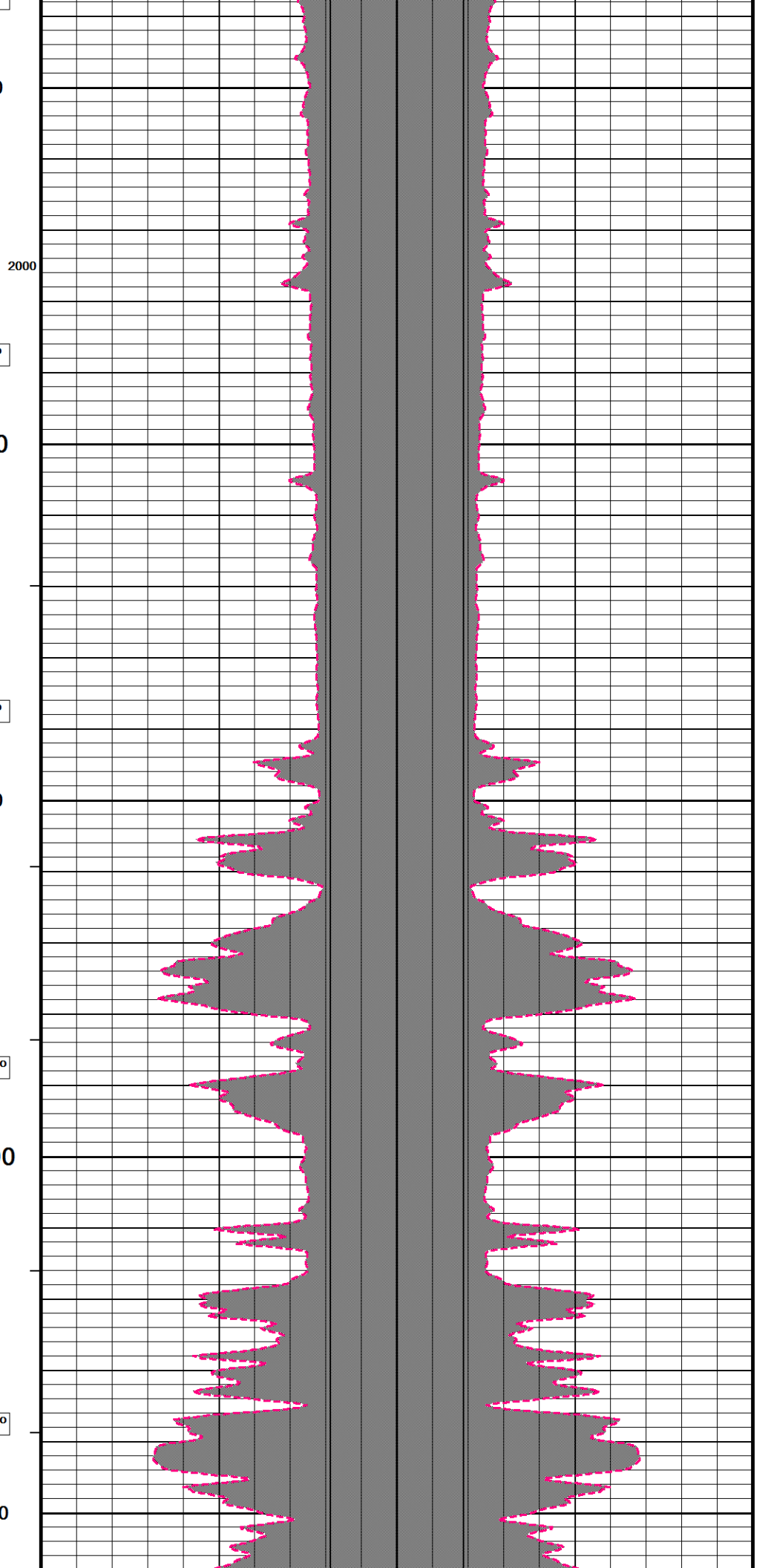
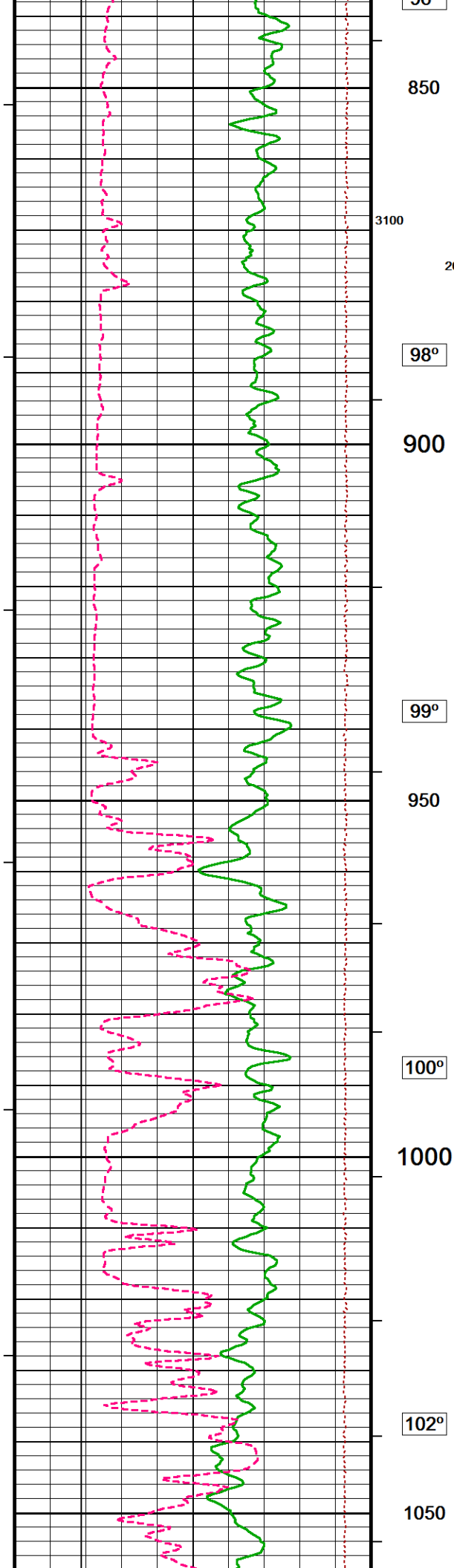


3300  
400  
87°  
2100  
450  
88°  
500  
89°  
550  
89°  
600

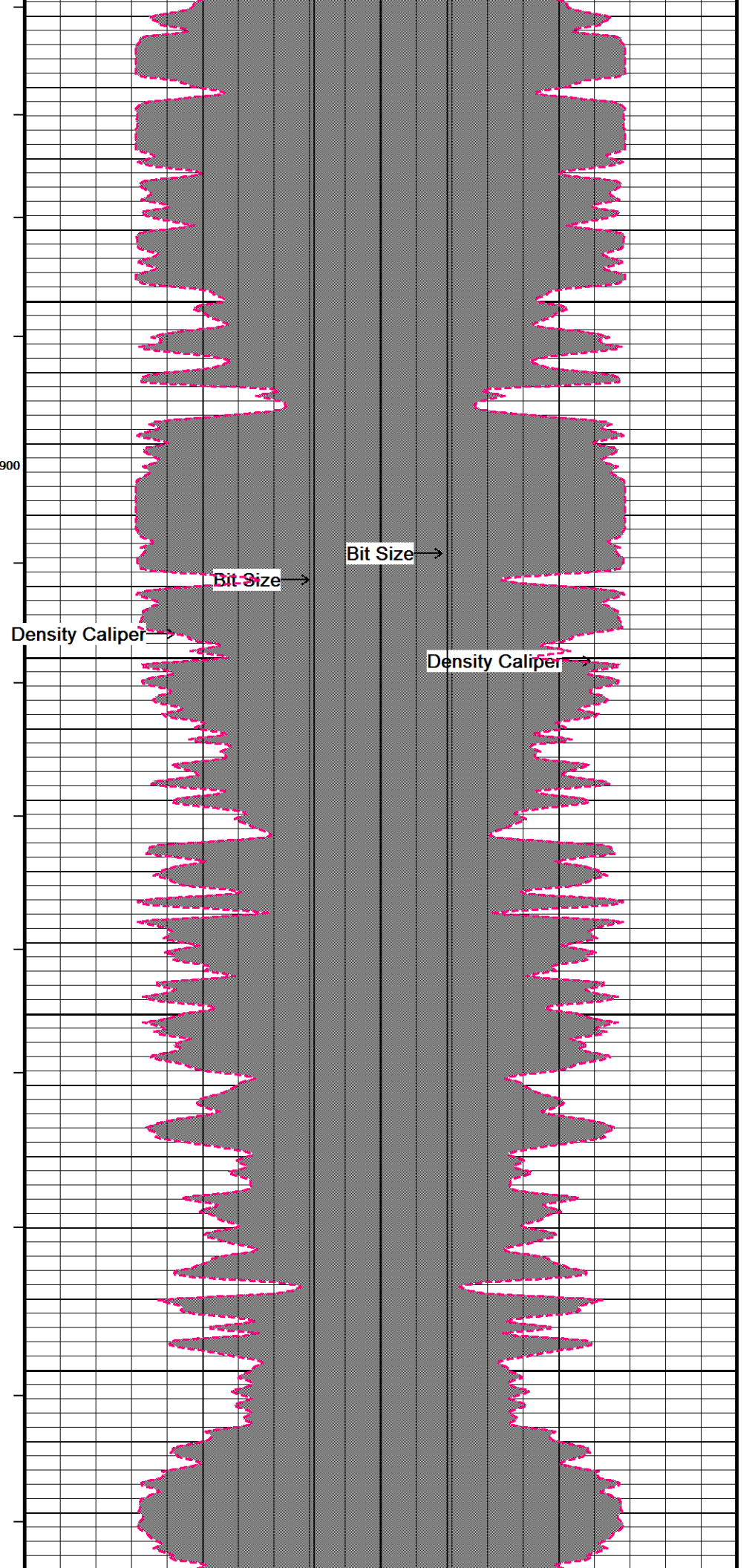
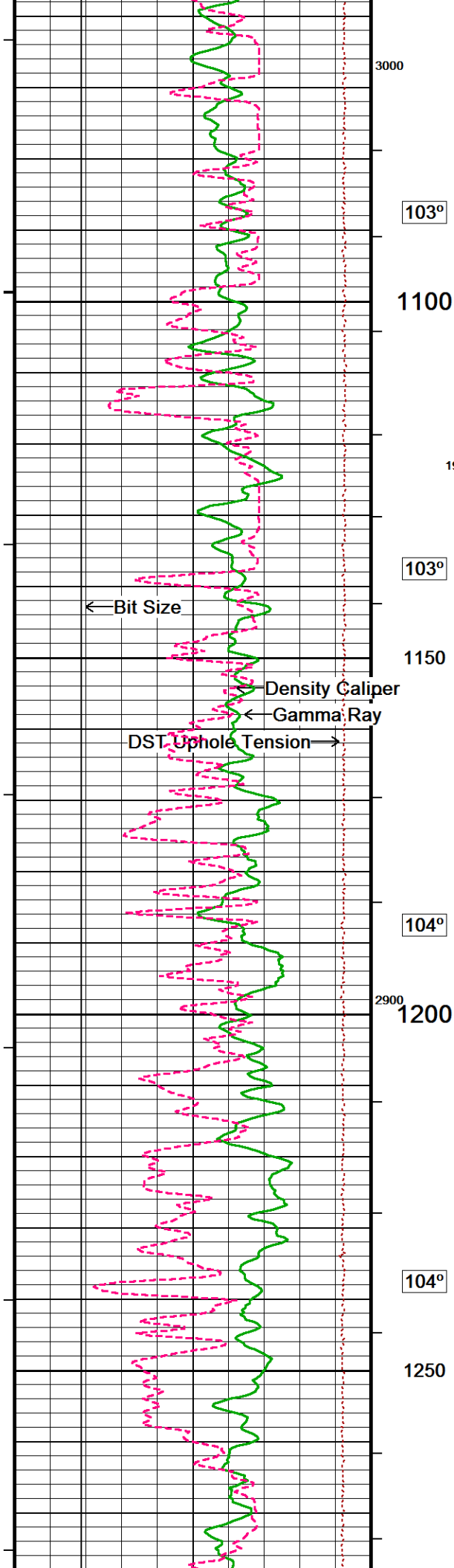




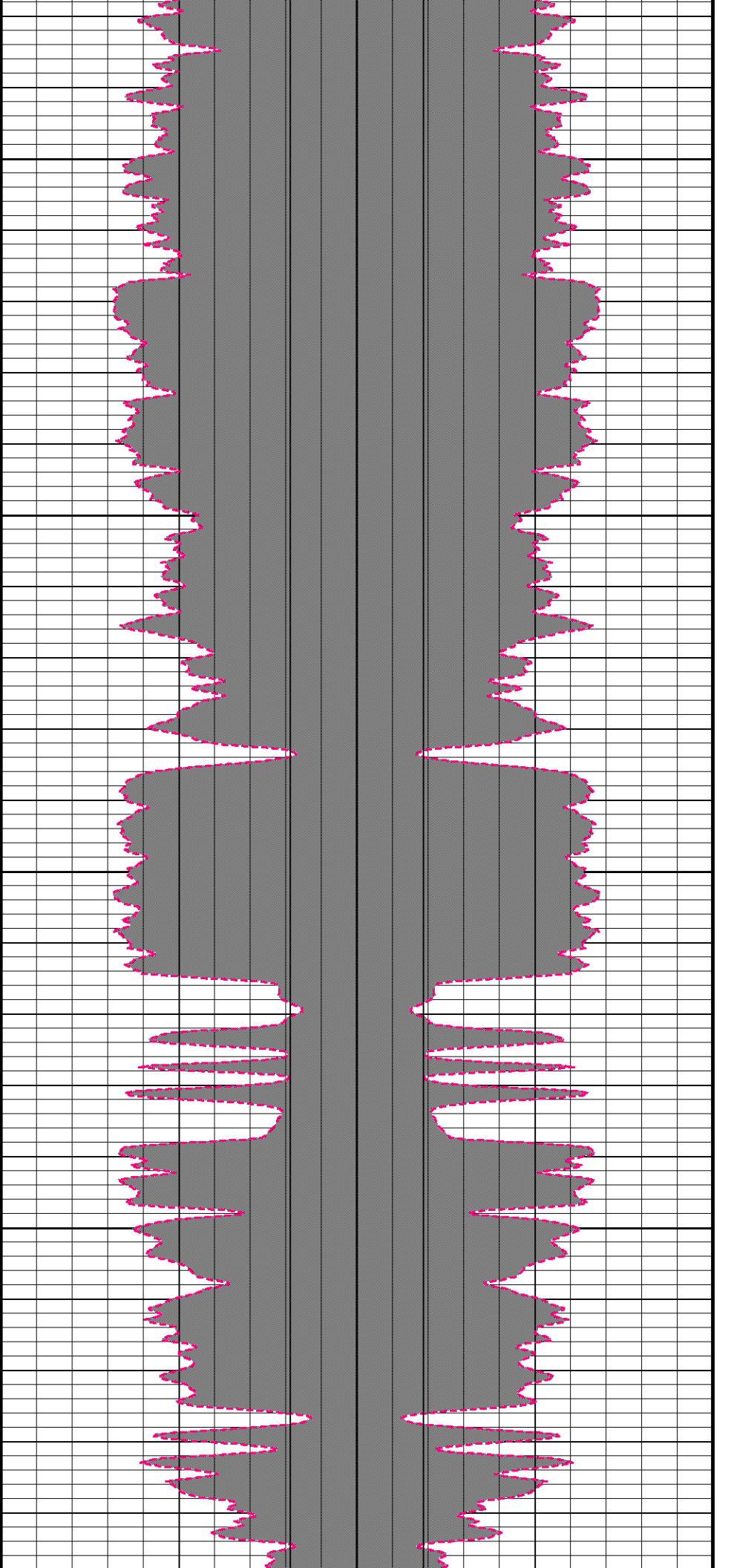
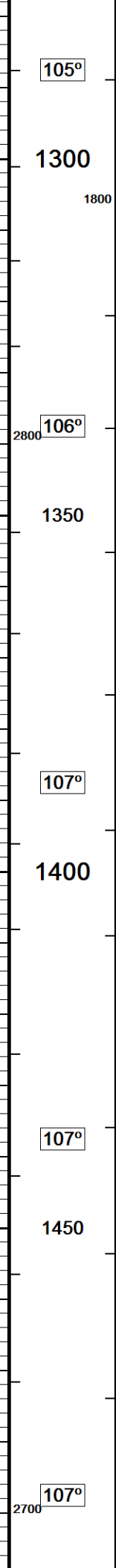
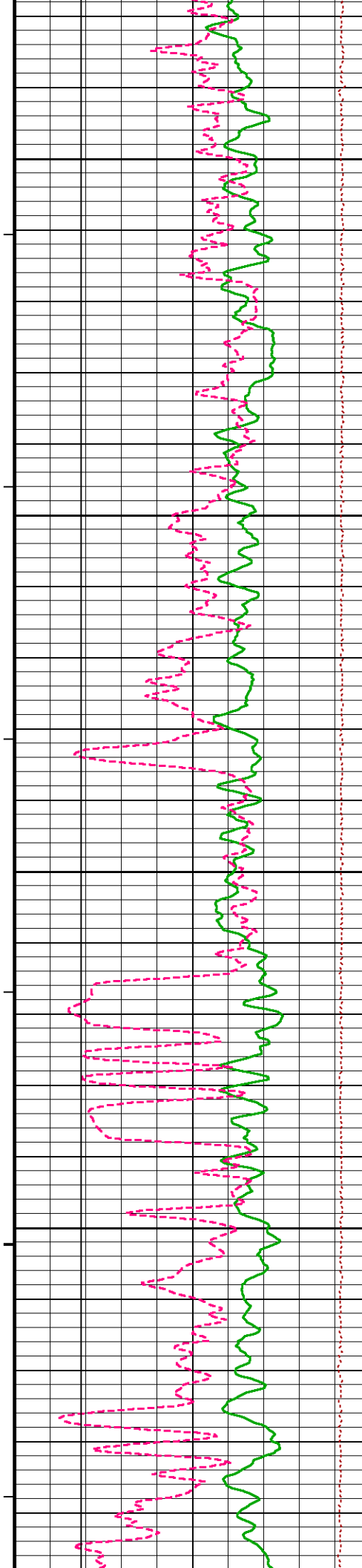


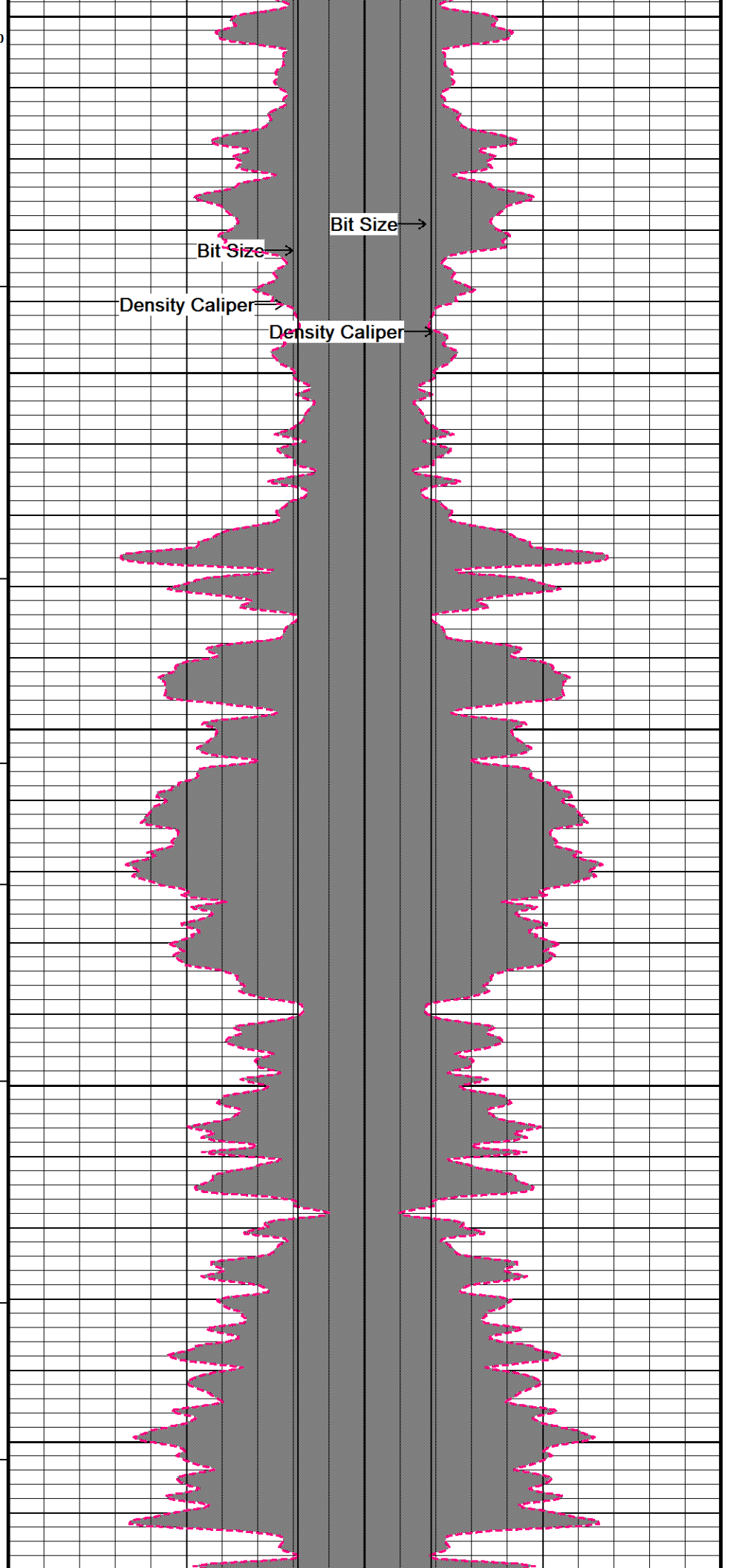
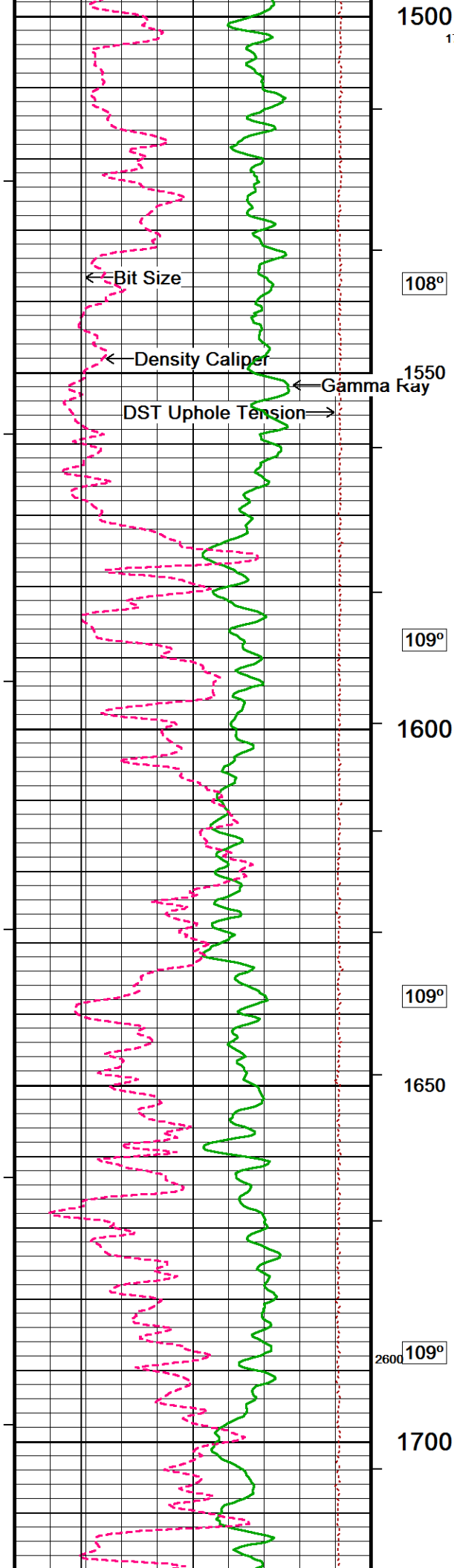




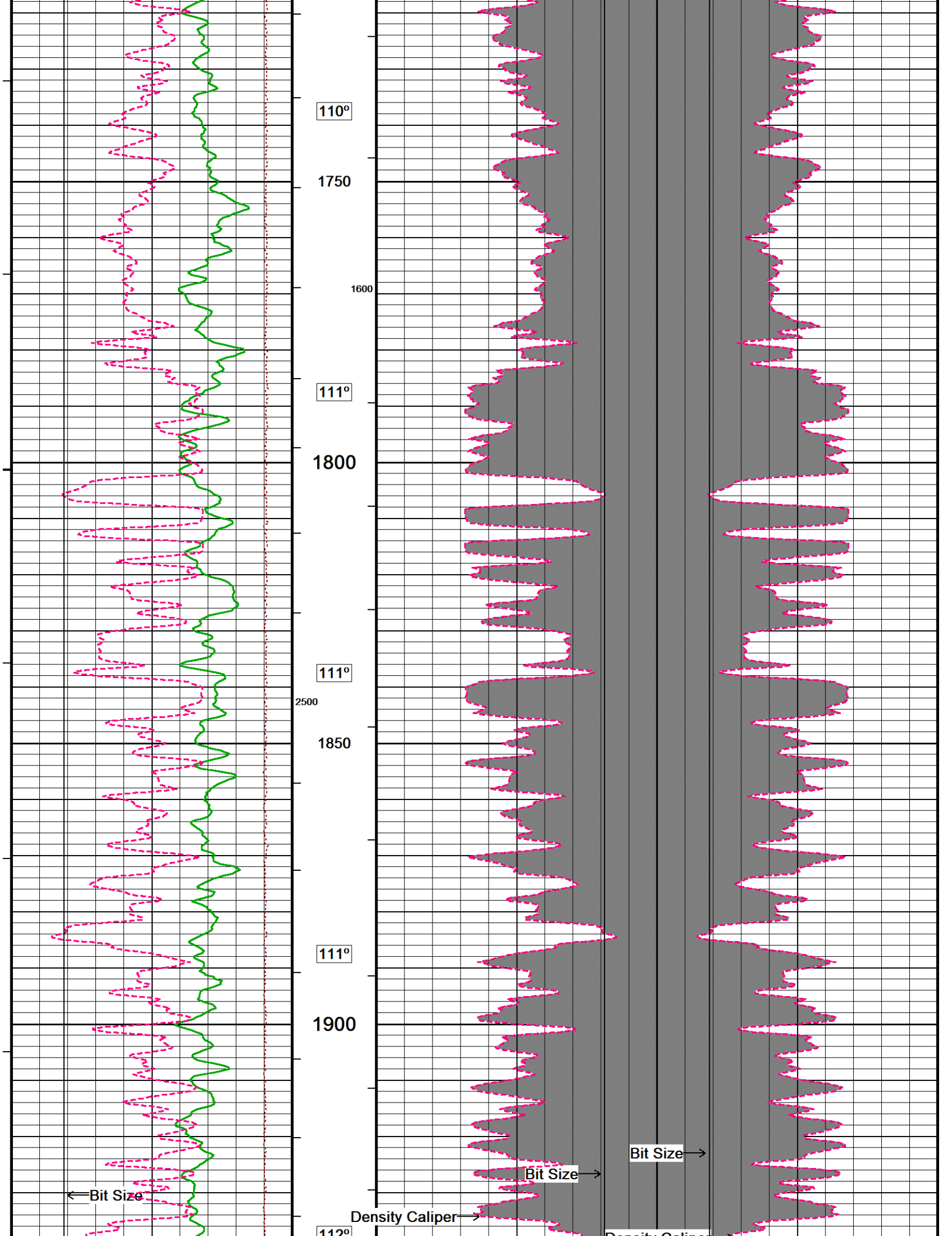




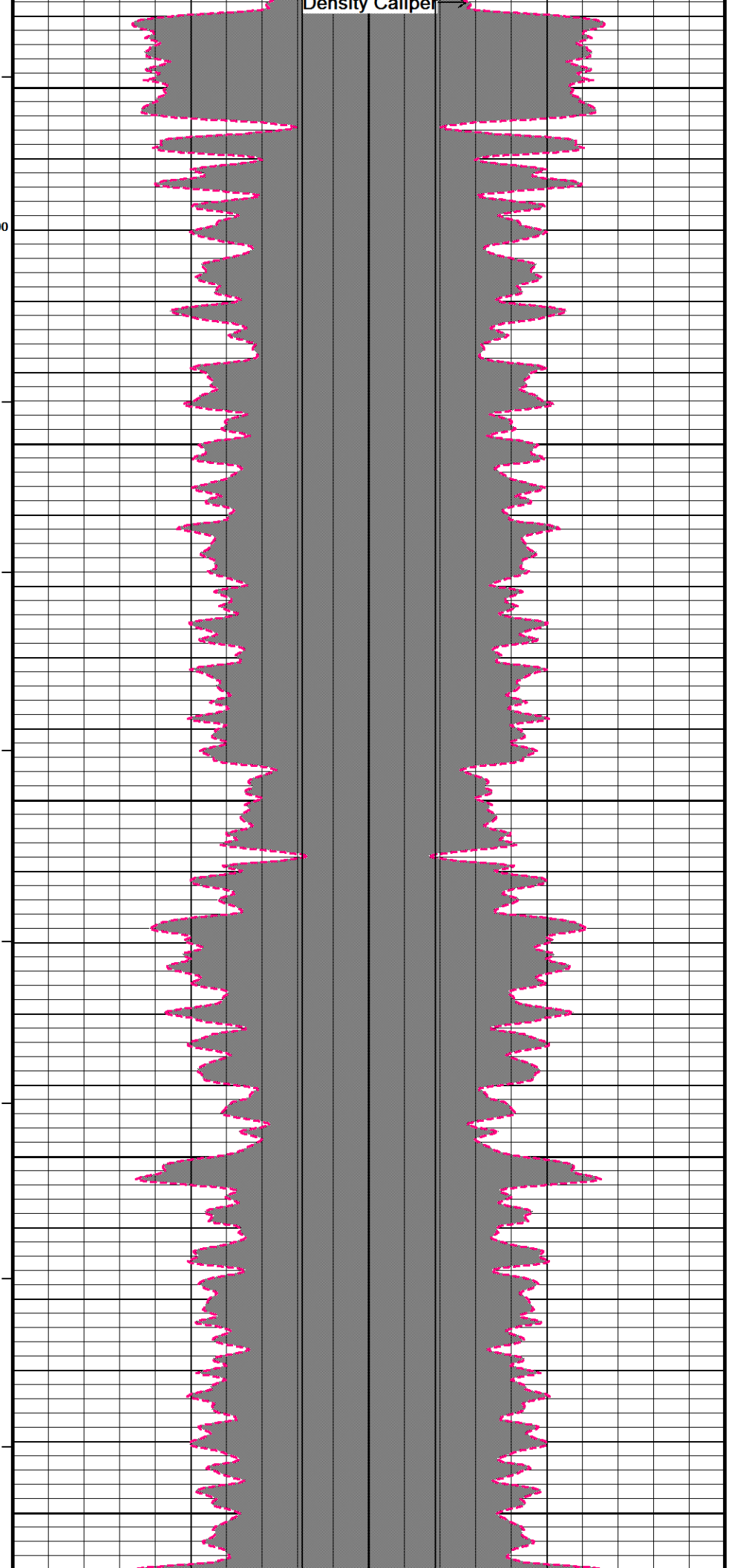
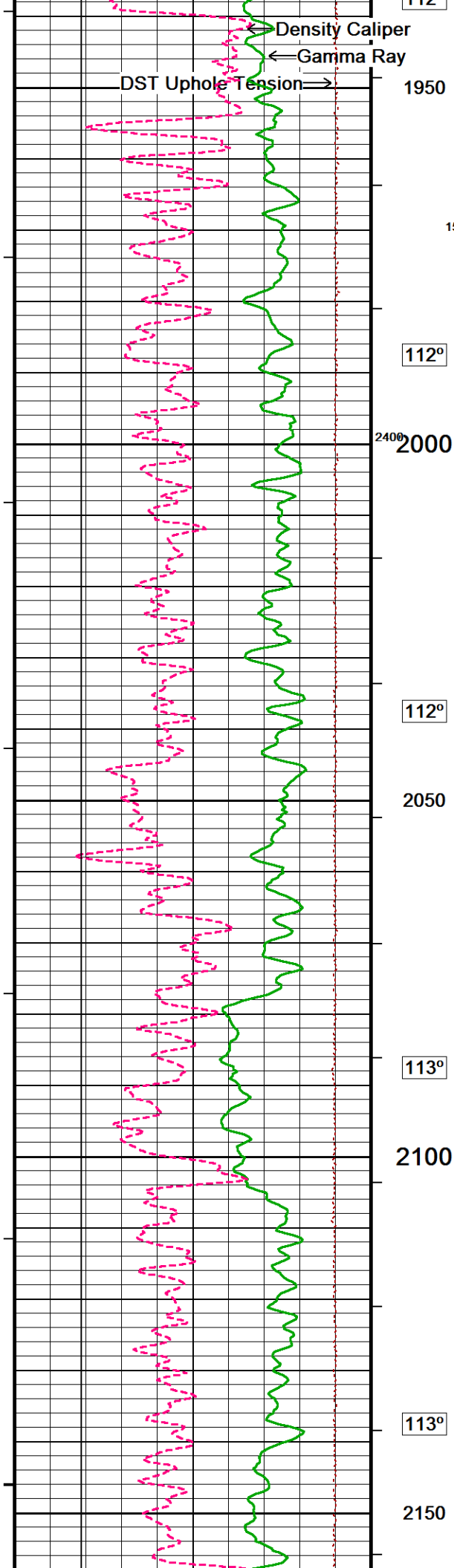




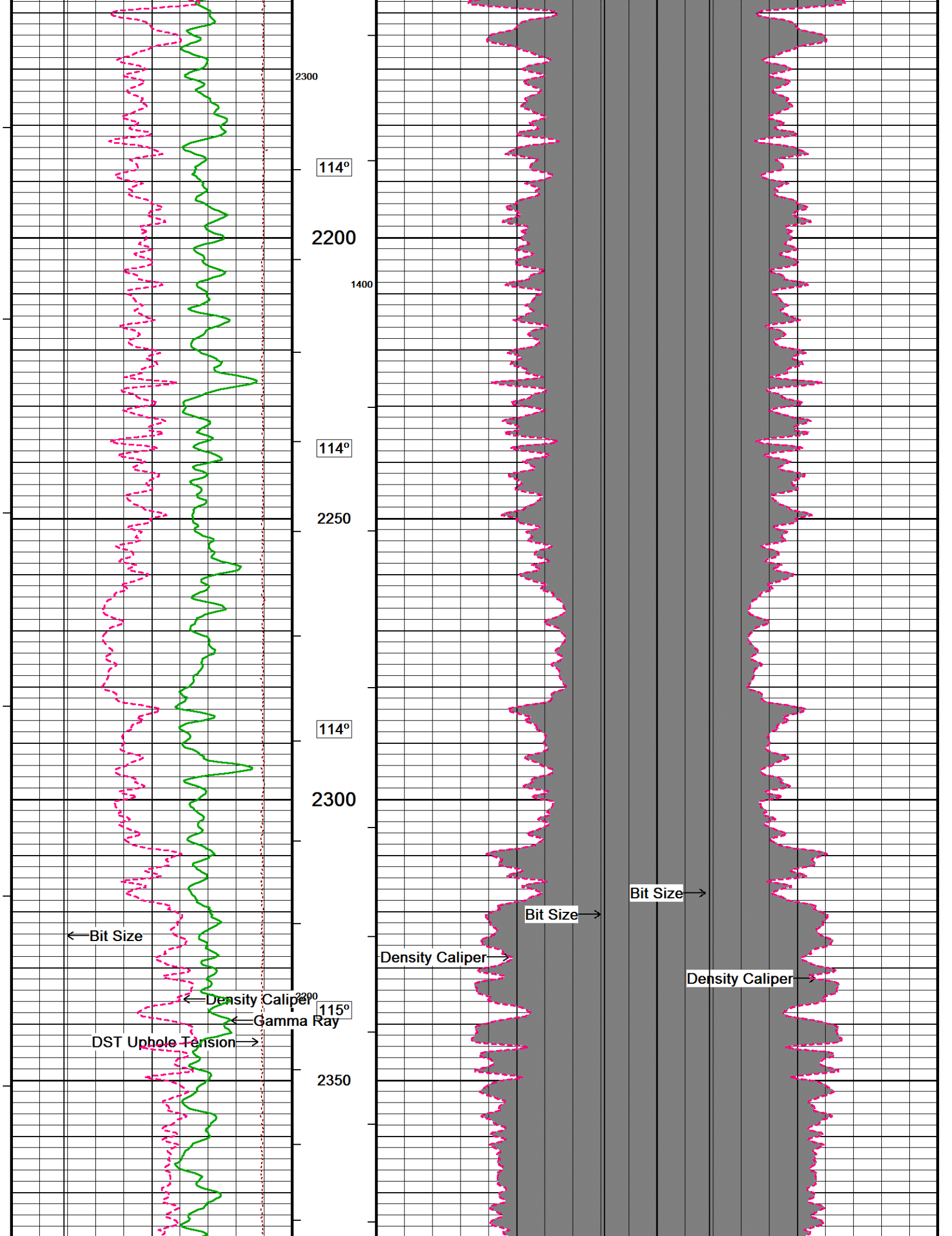


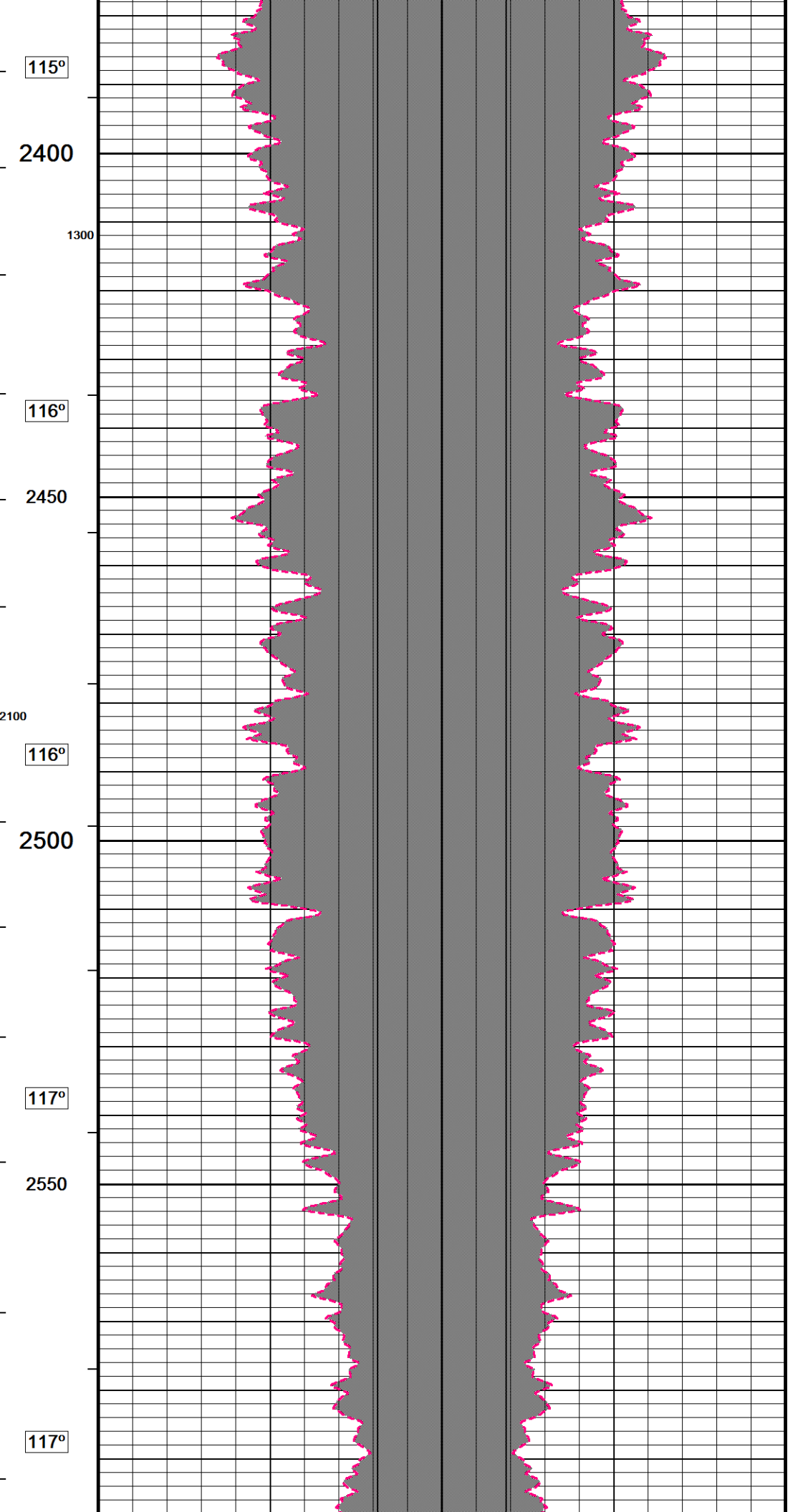
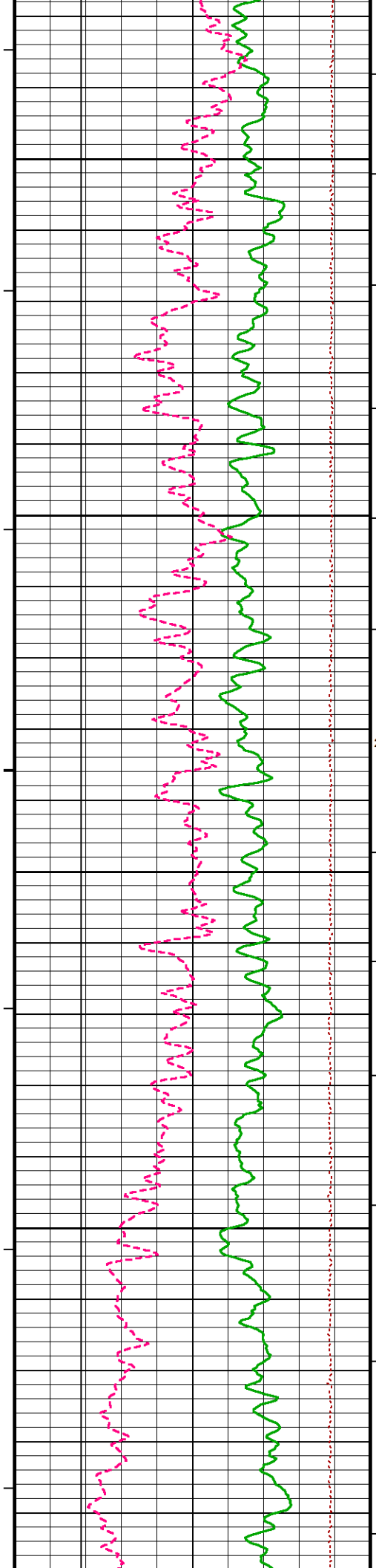




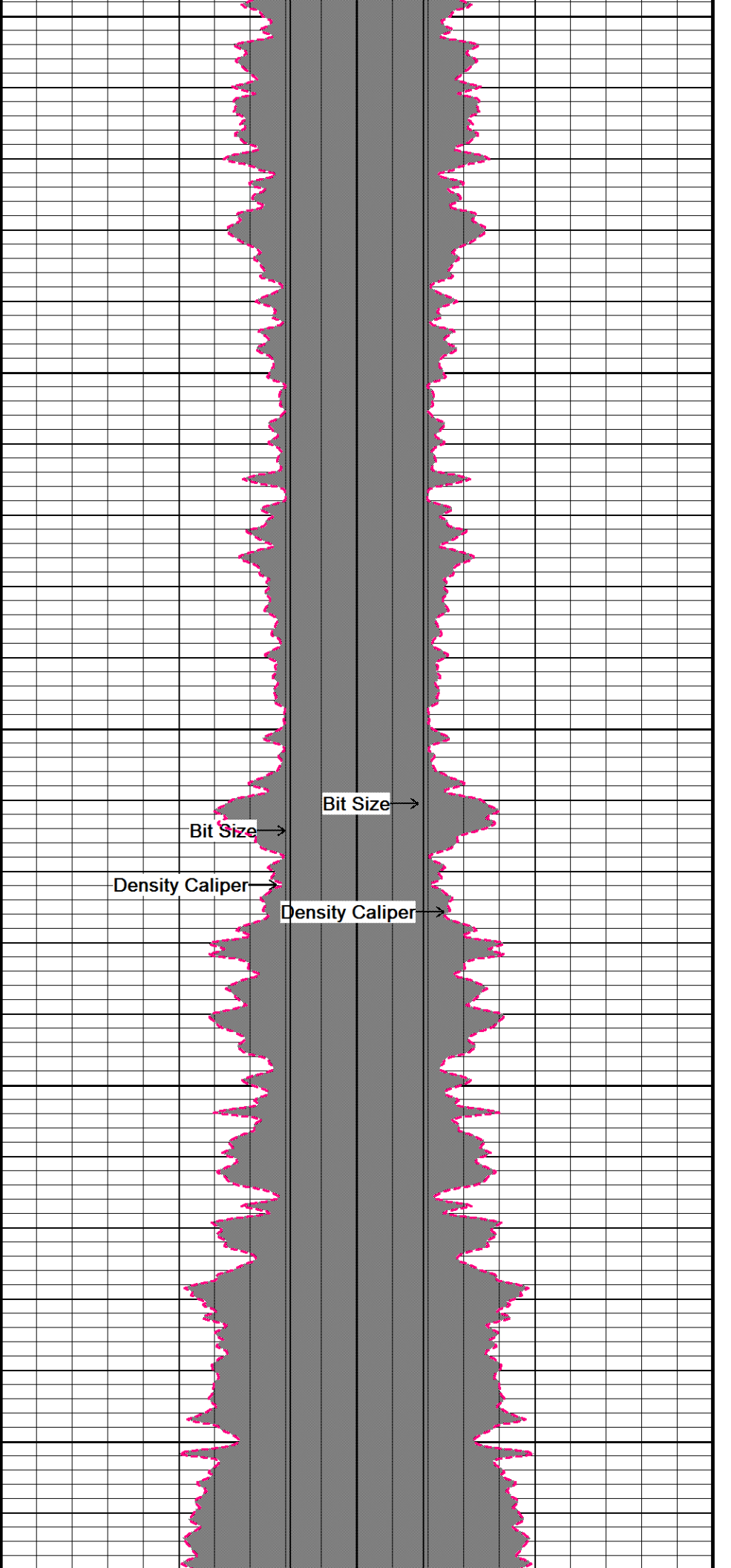
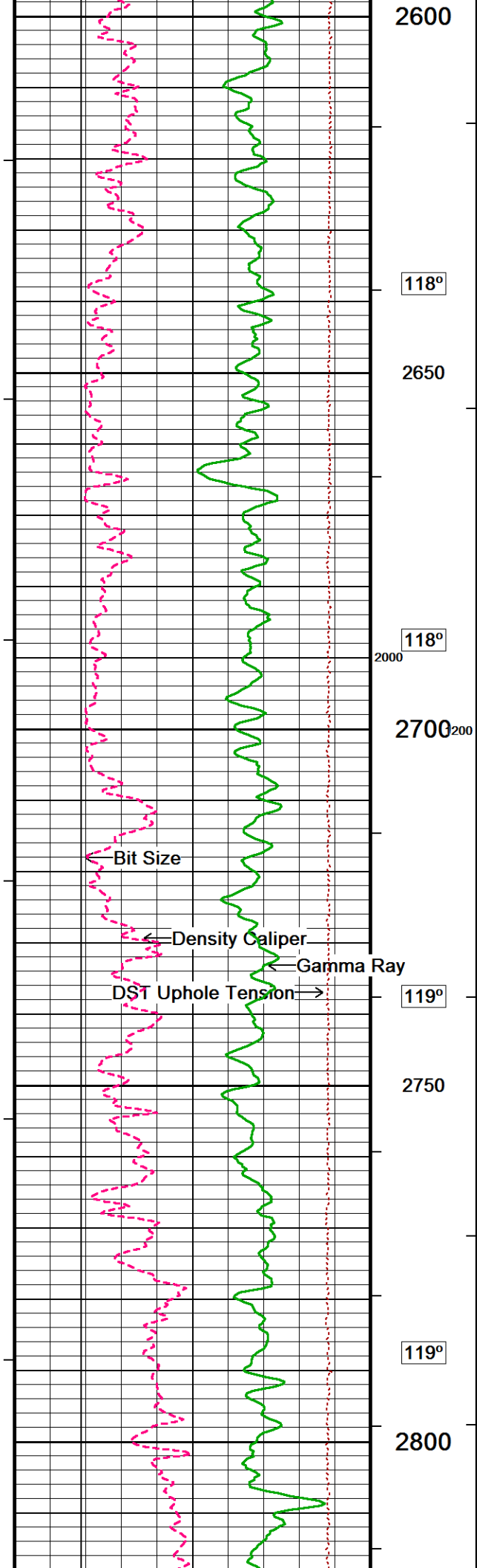


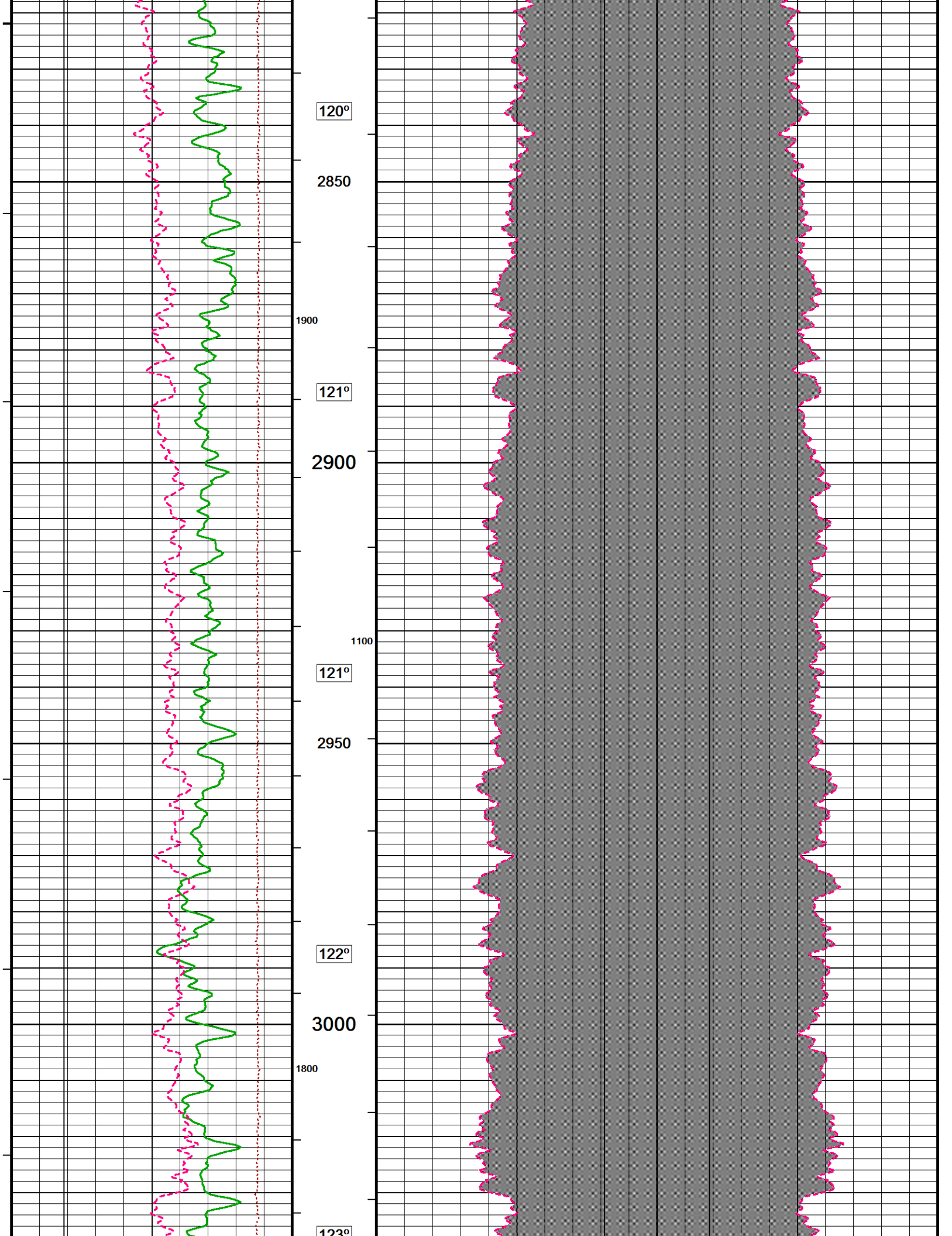




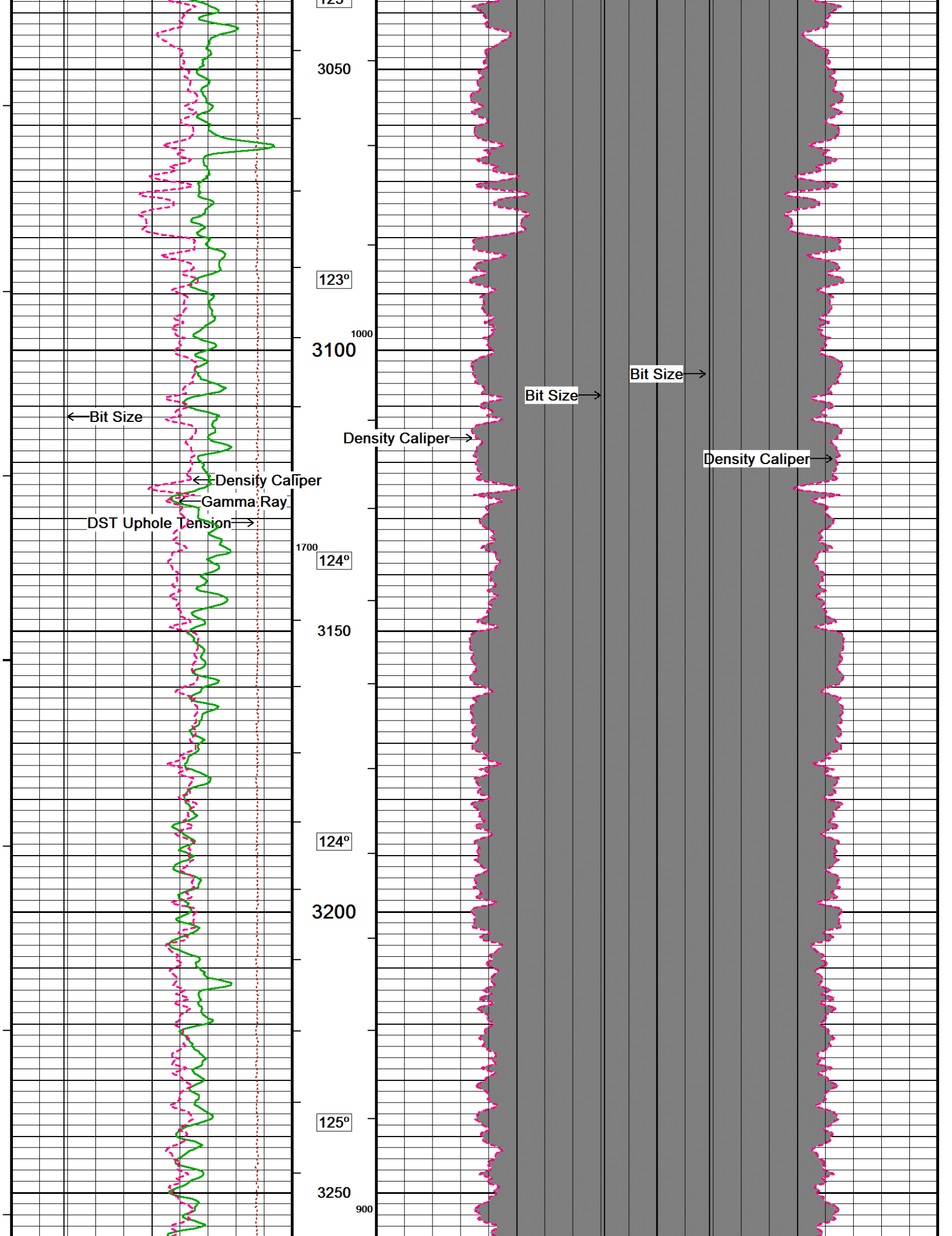




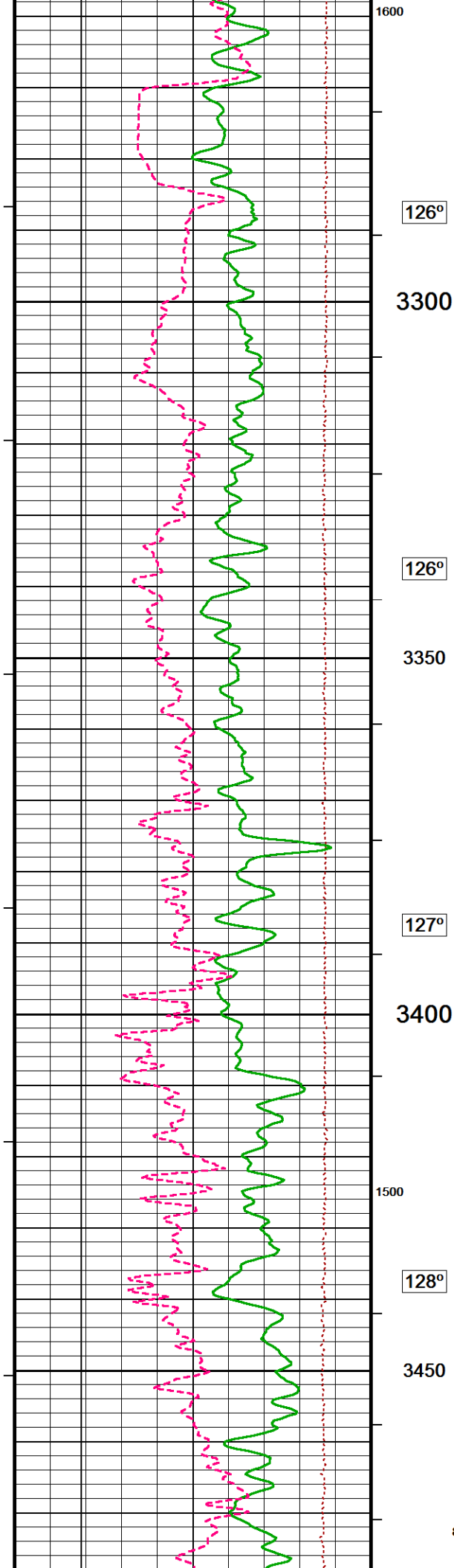










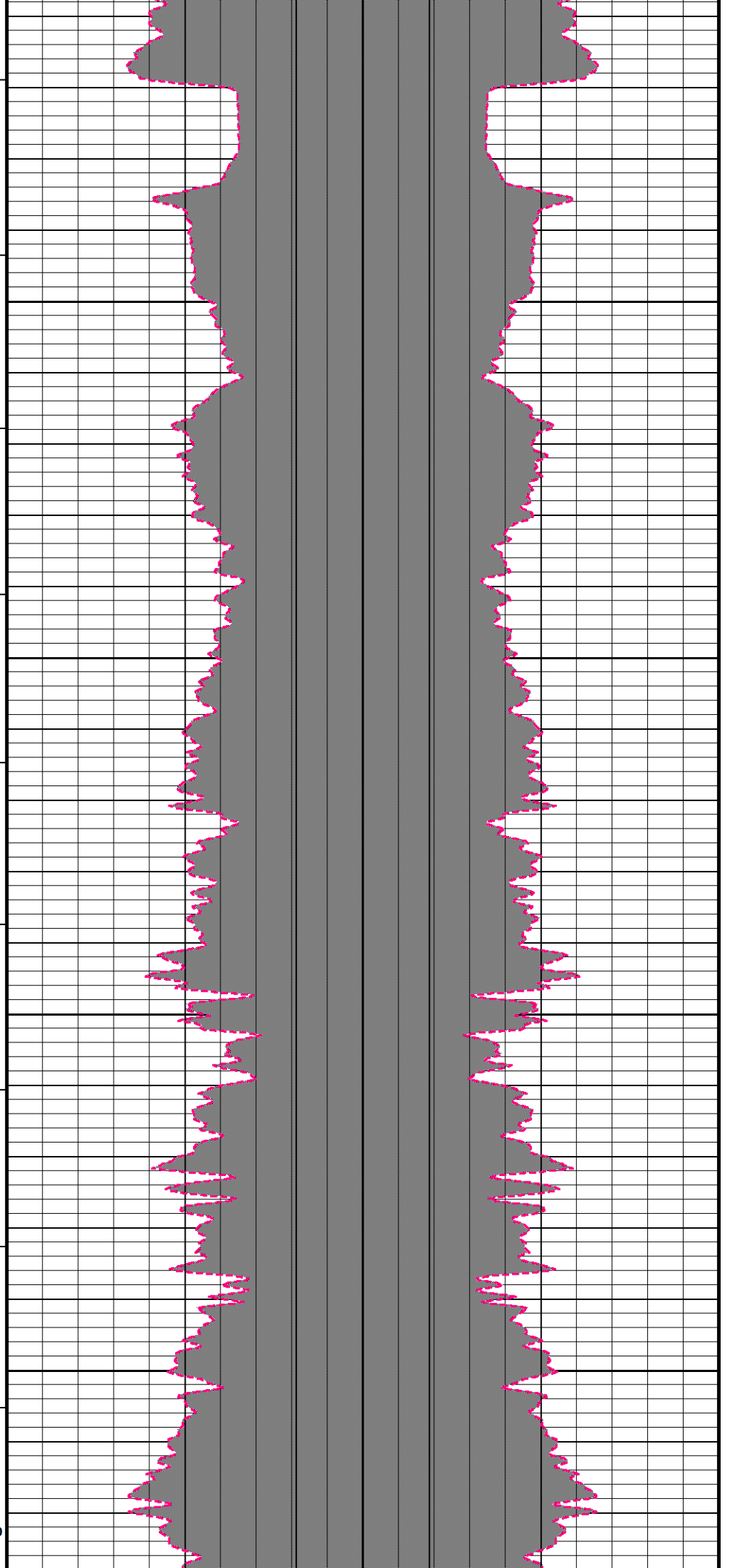


126°

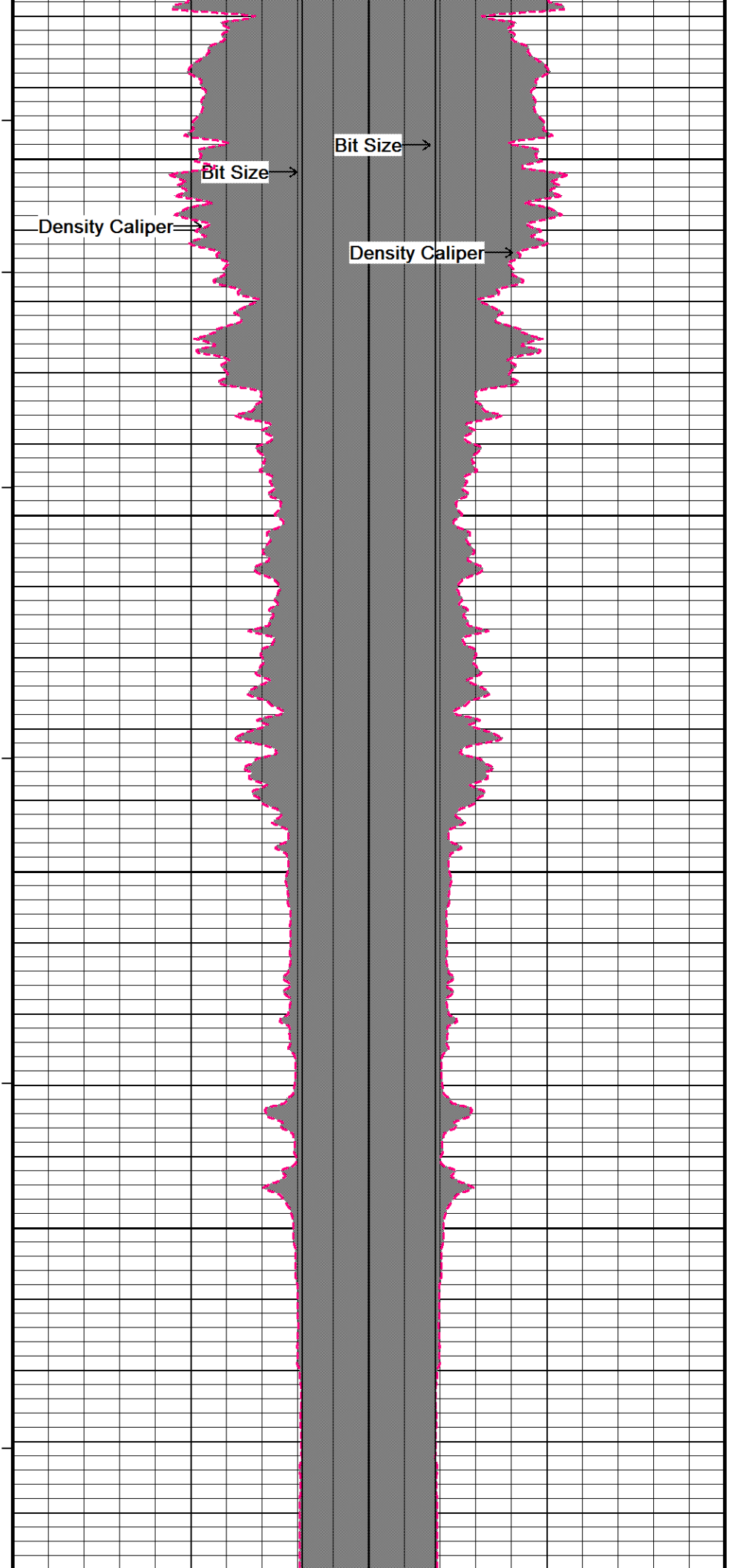
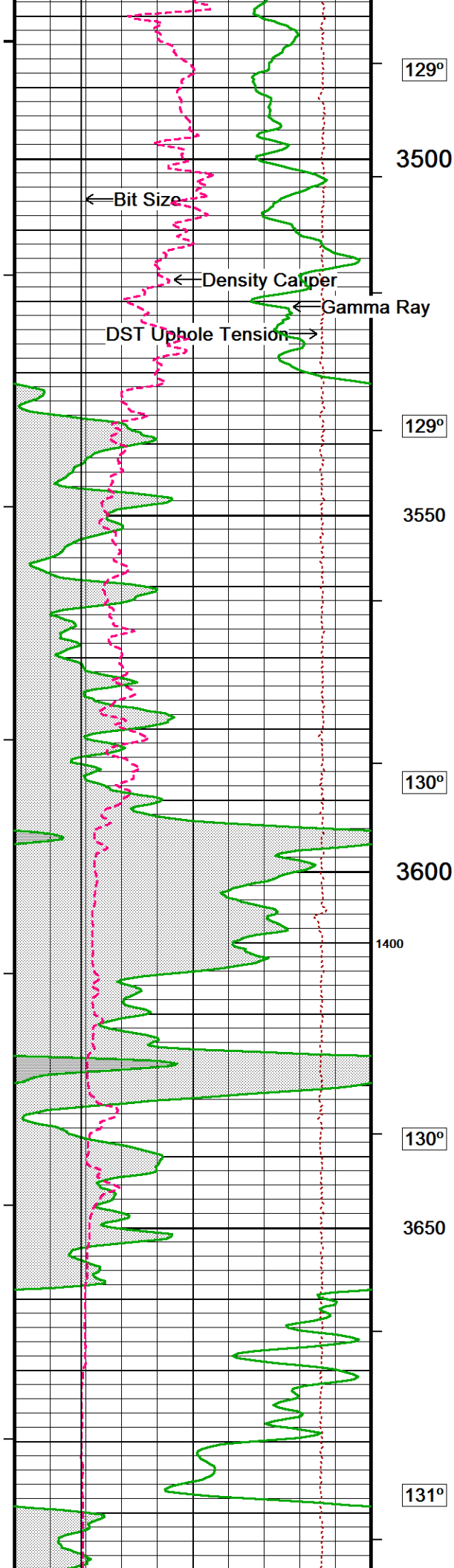
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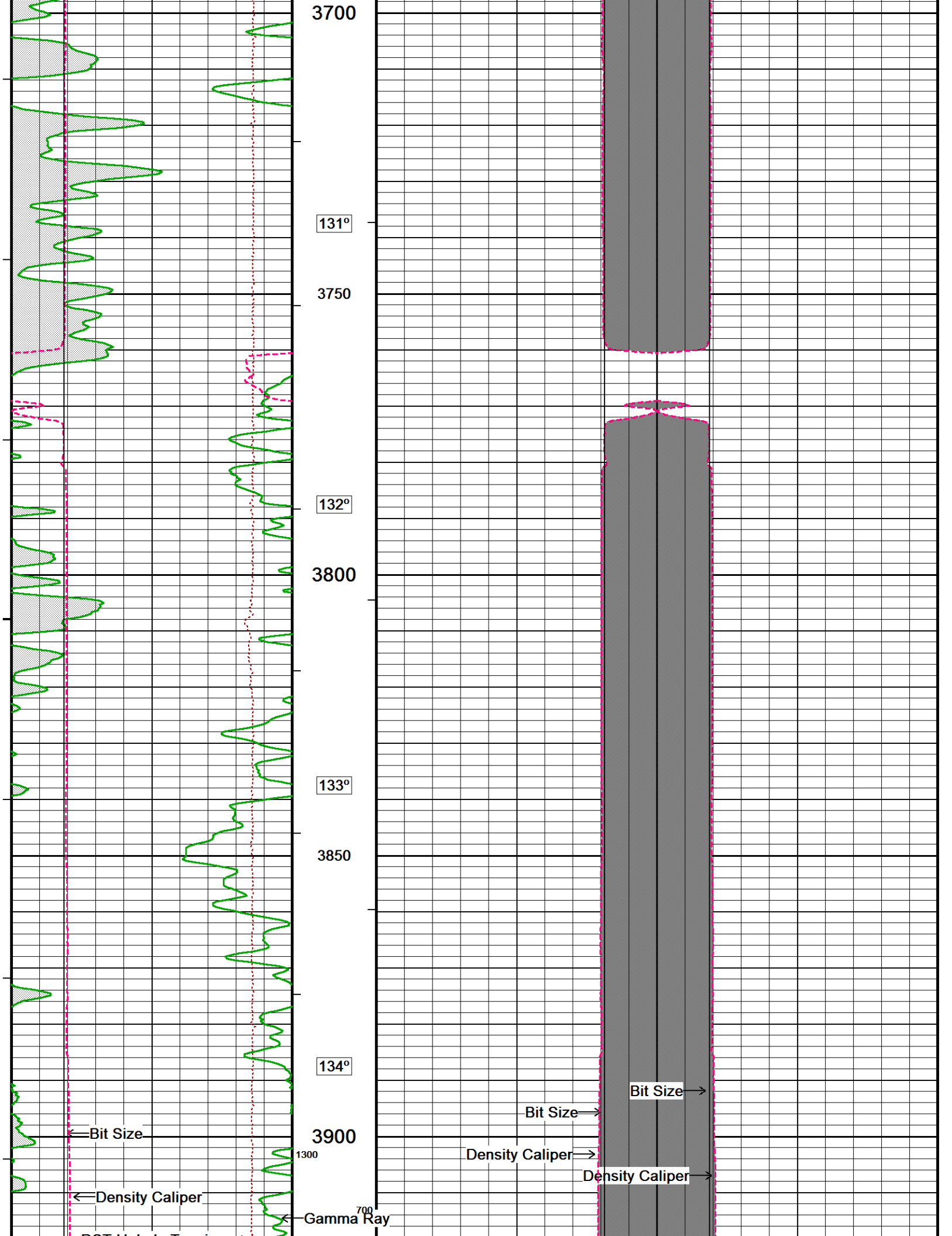
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128°

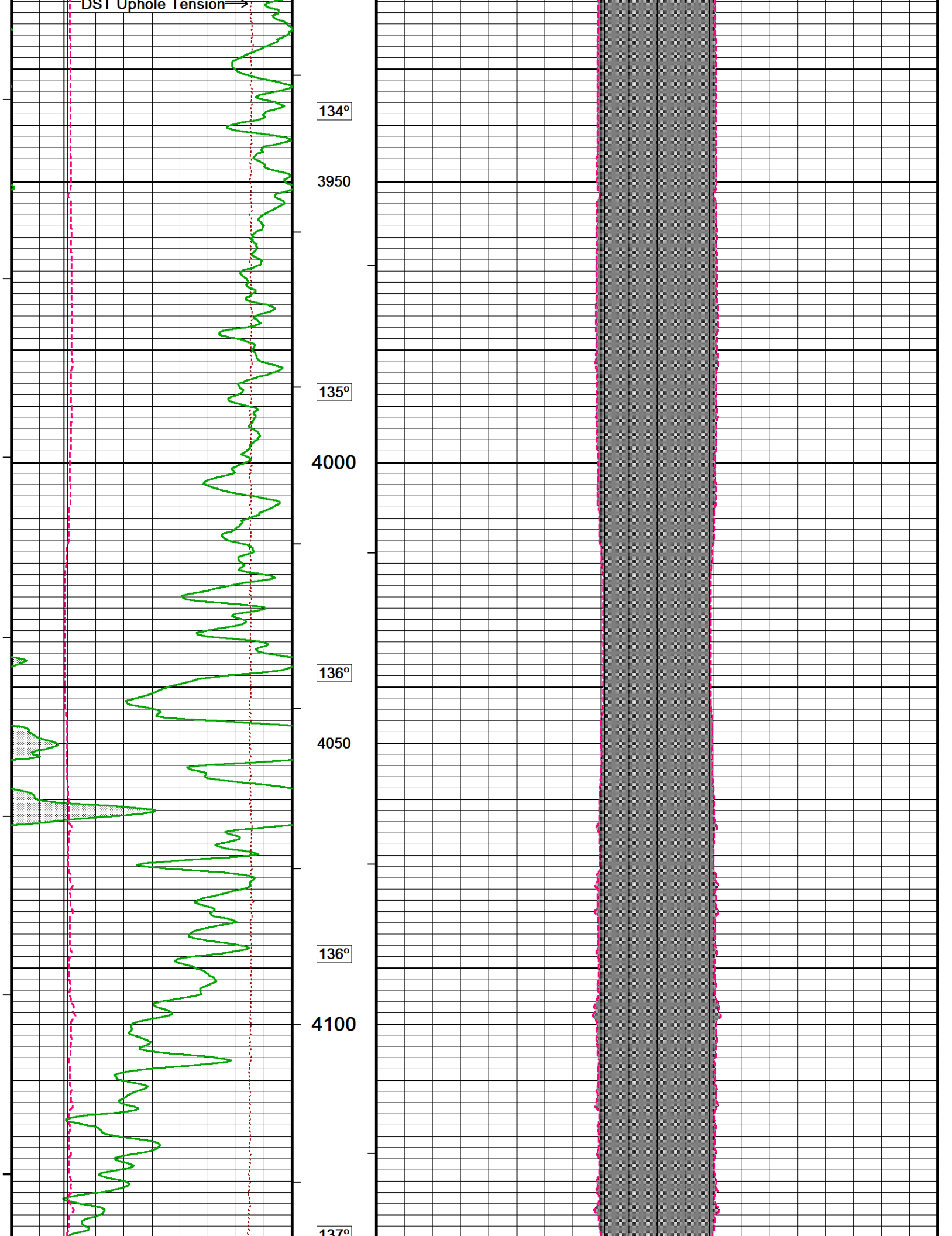


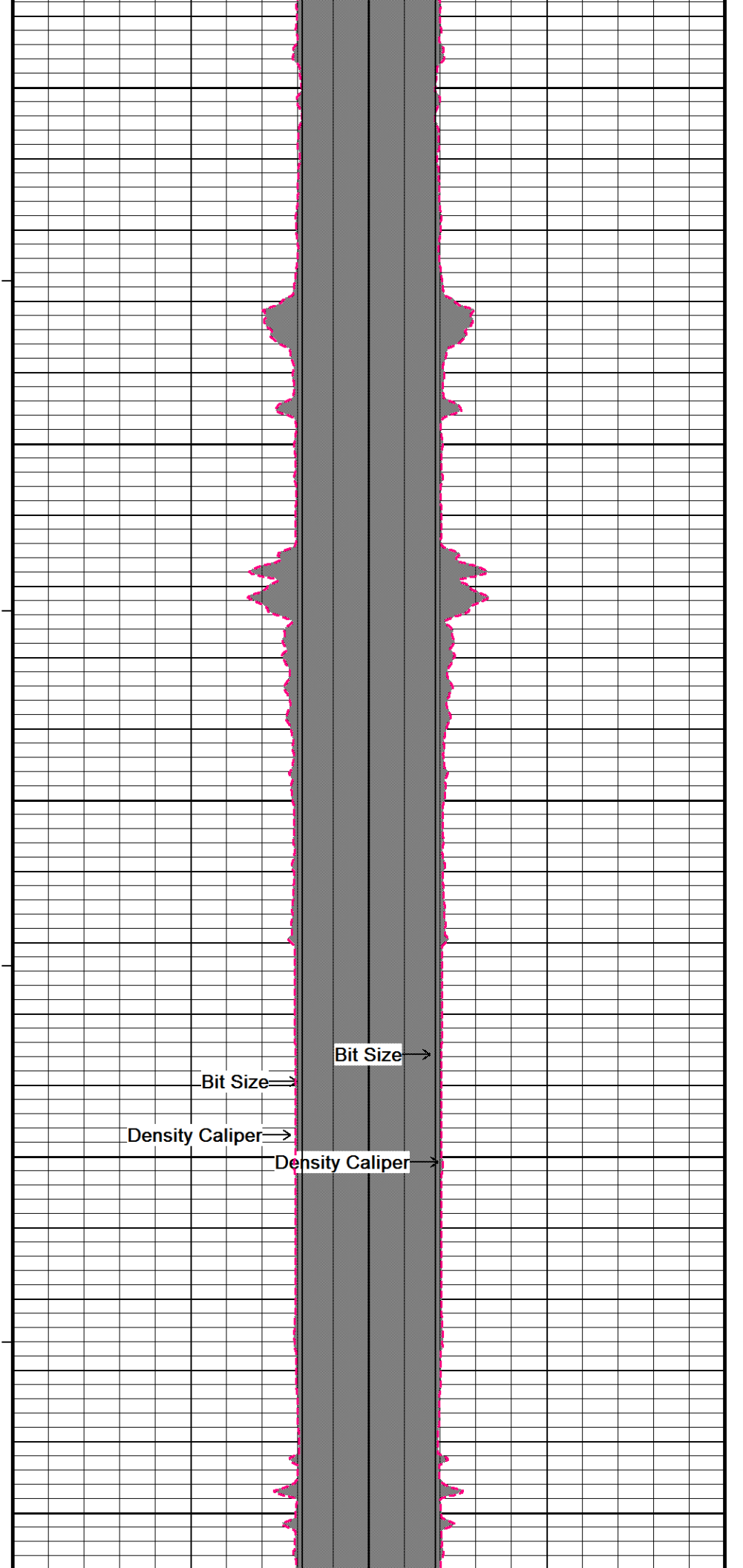
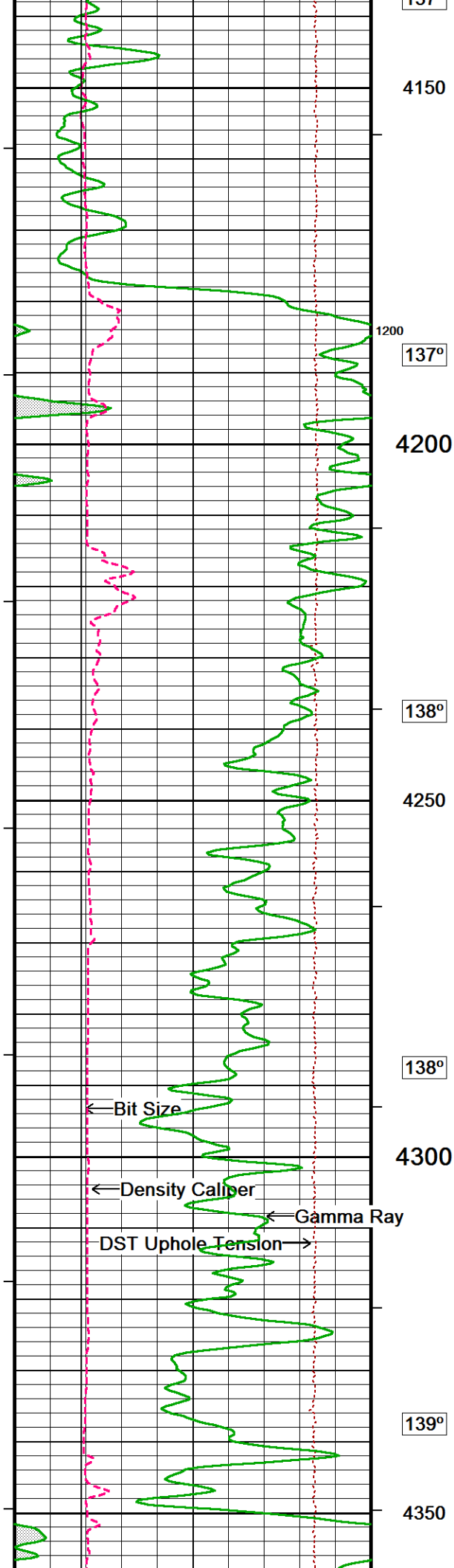




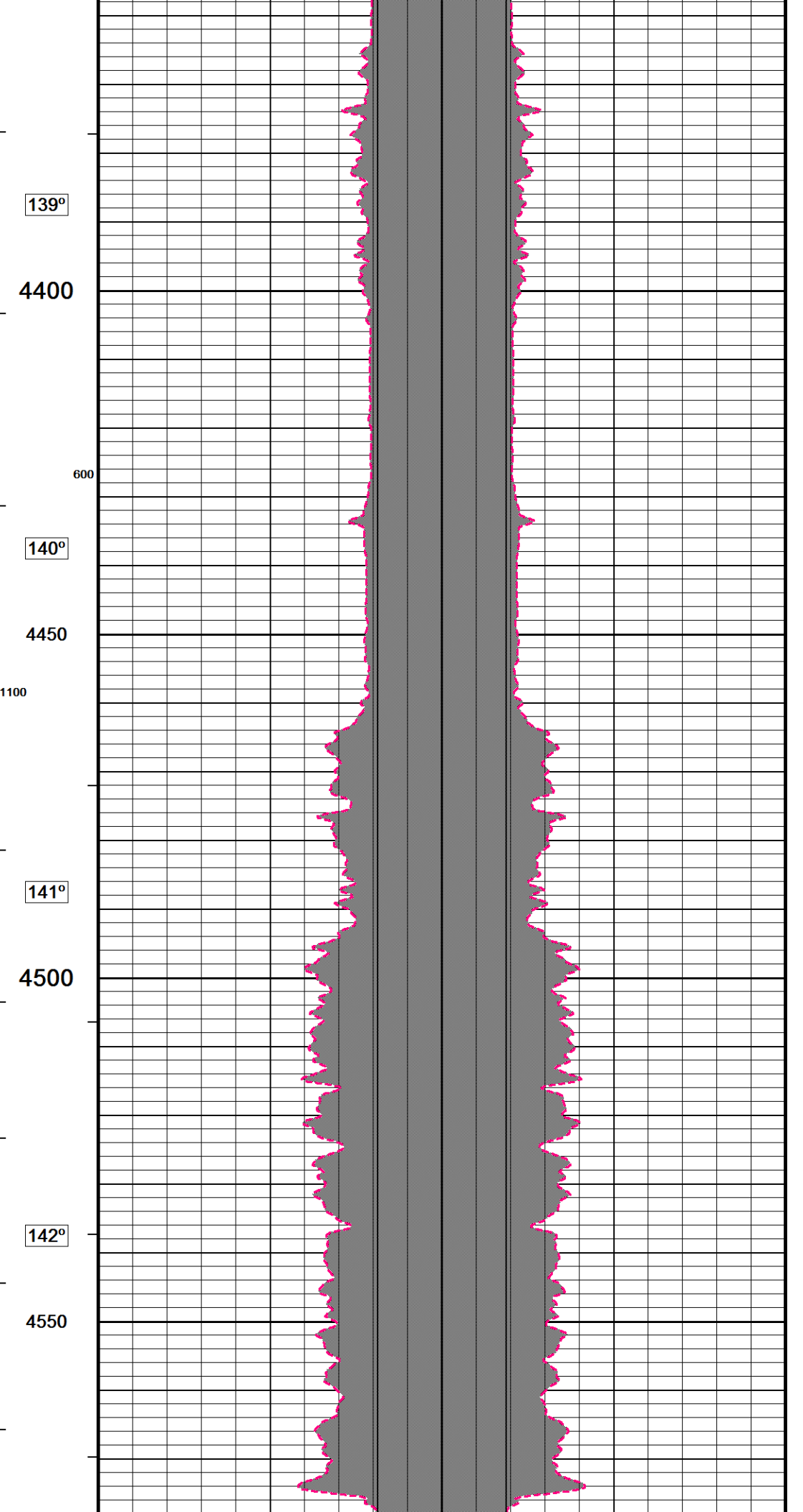
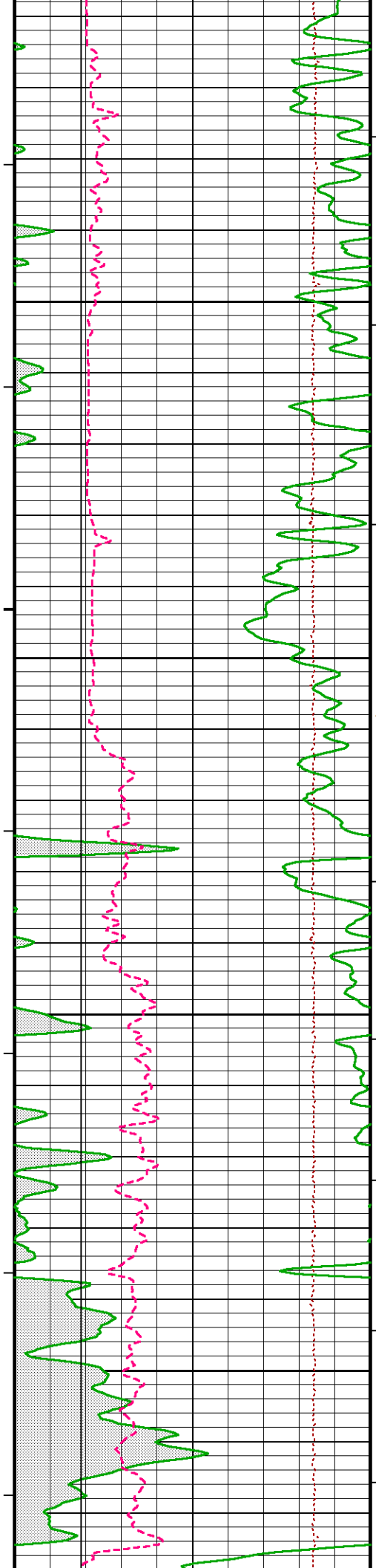


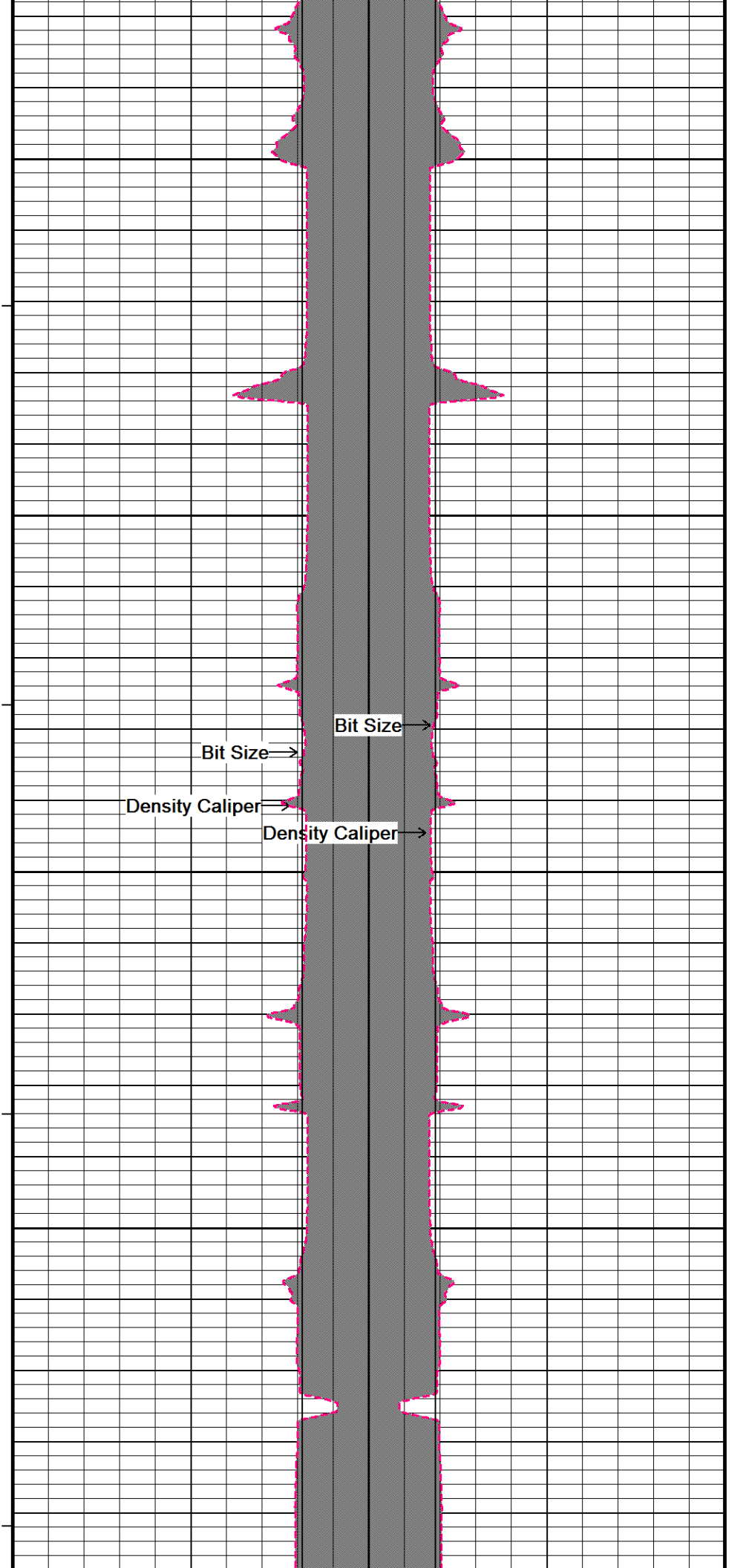
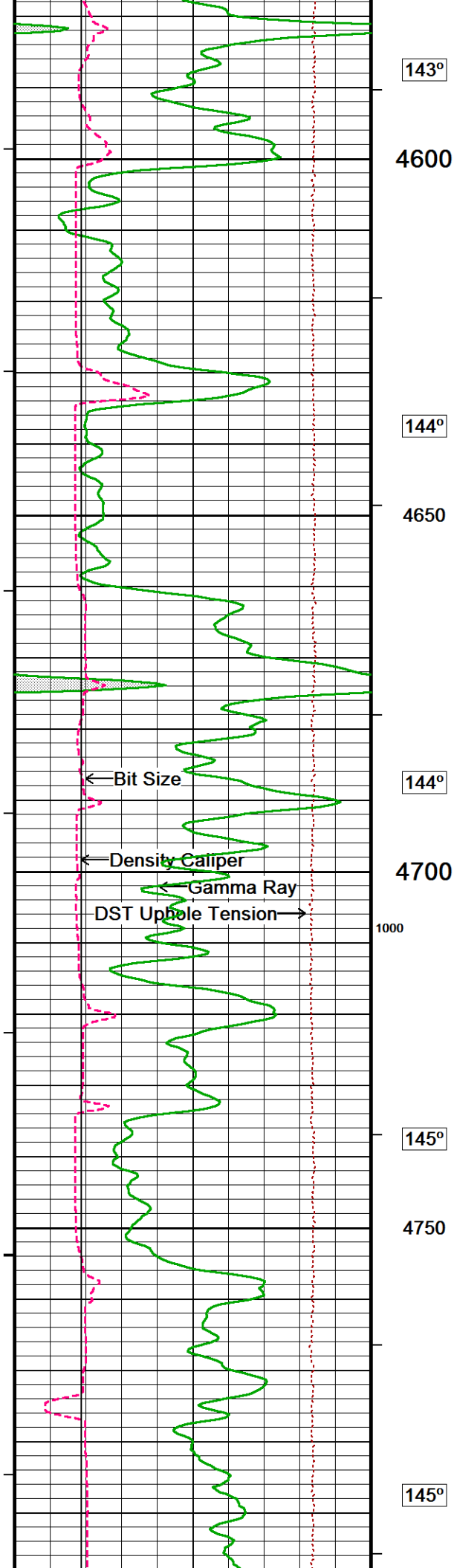




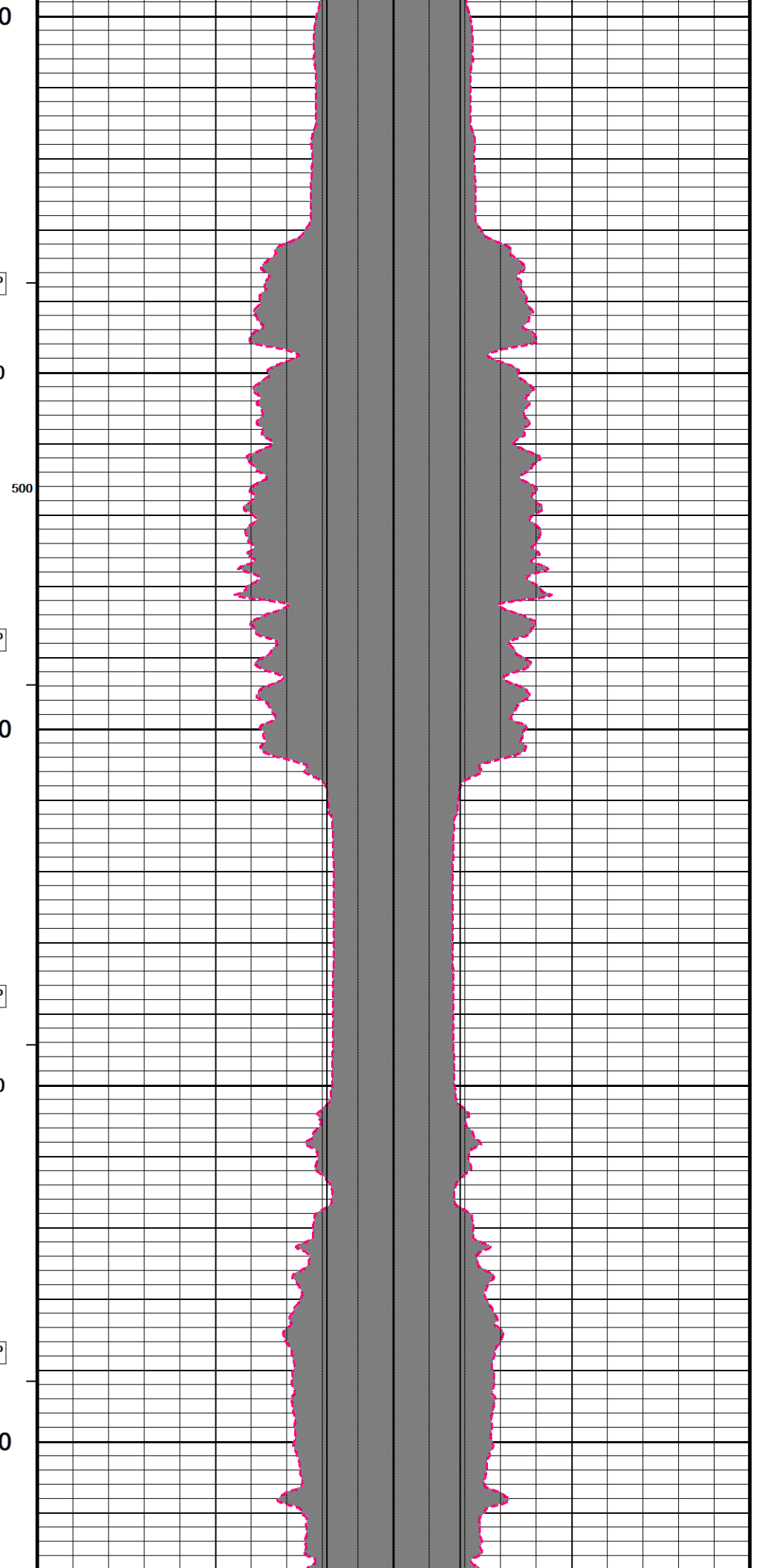
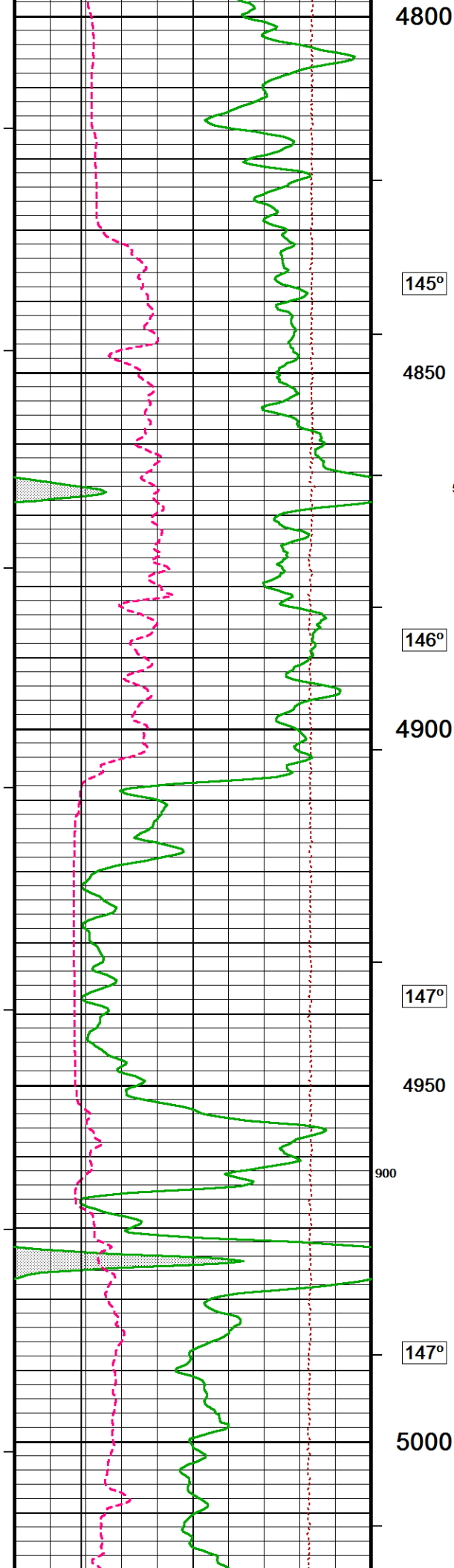


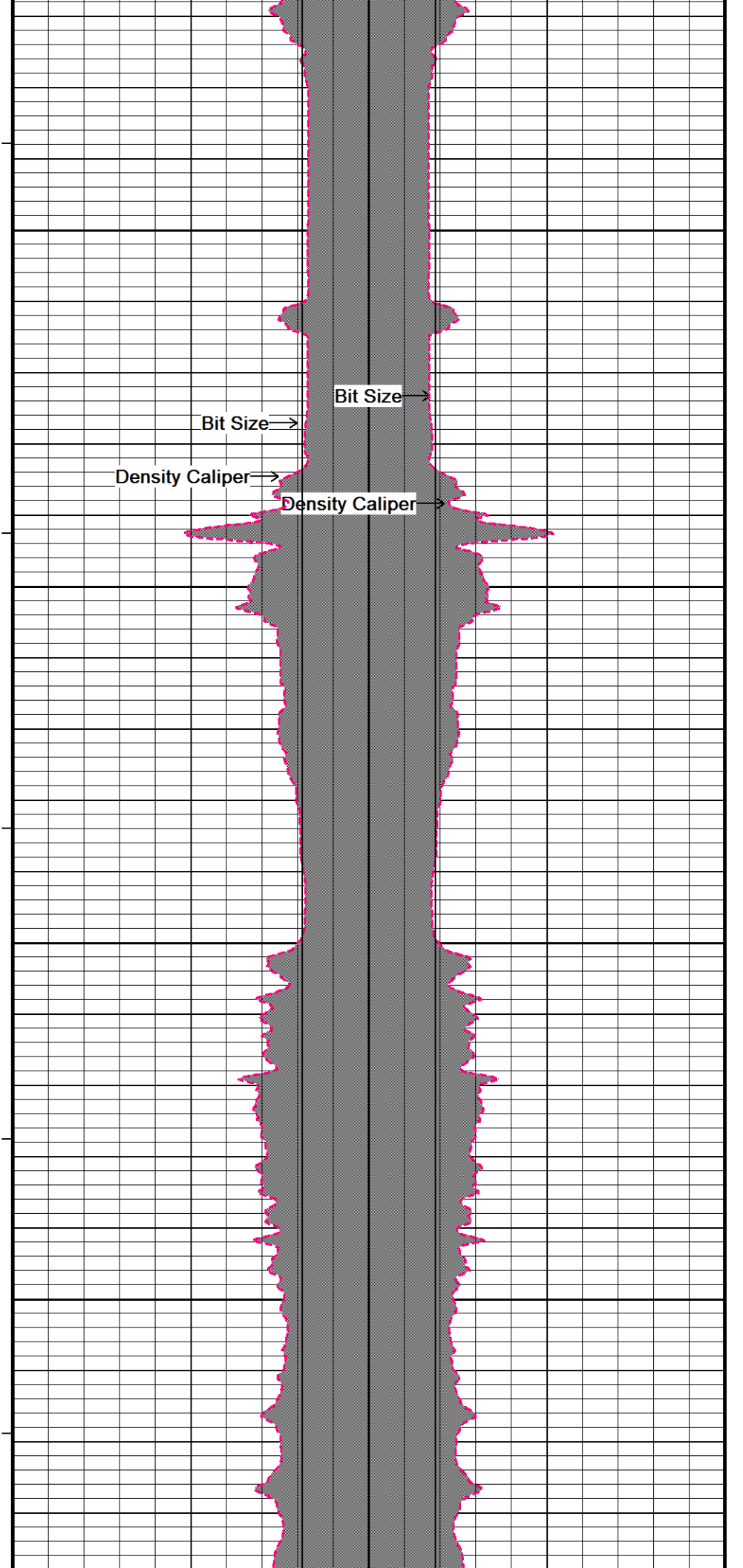
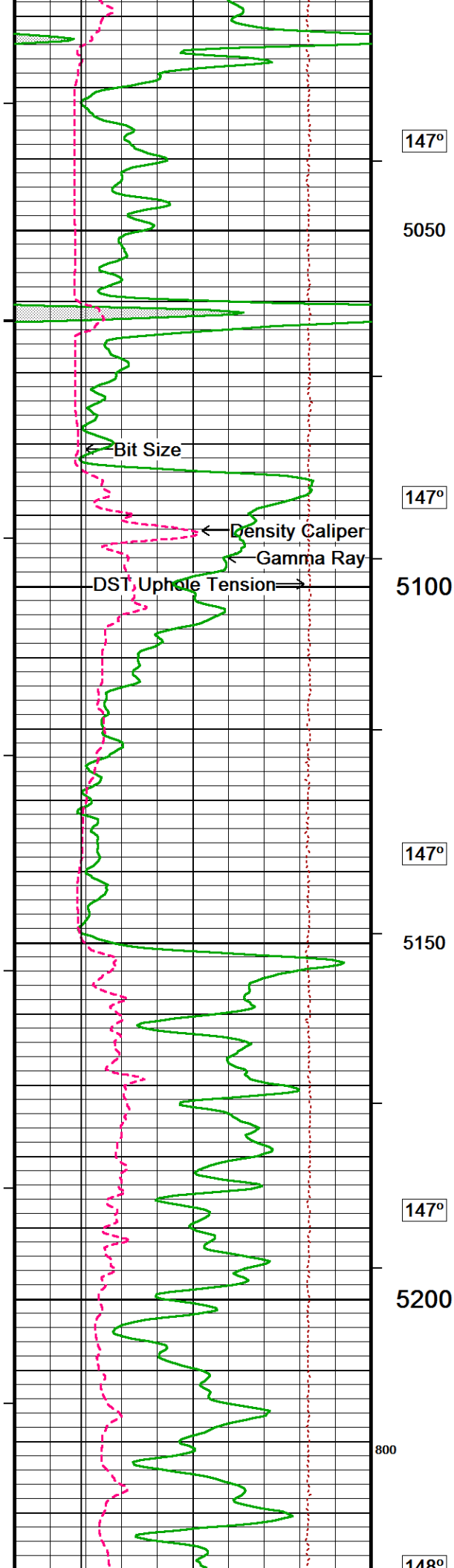




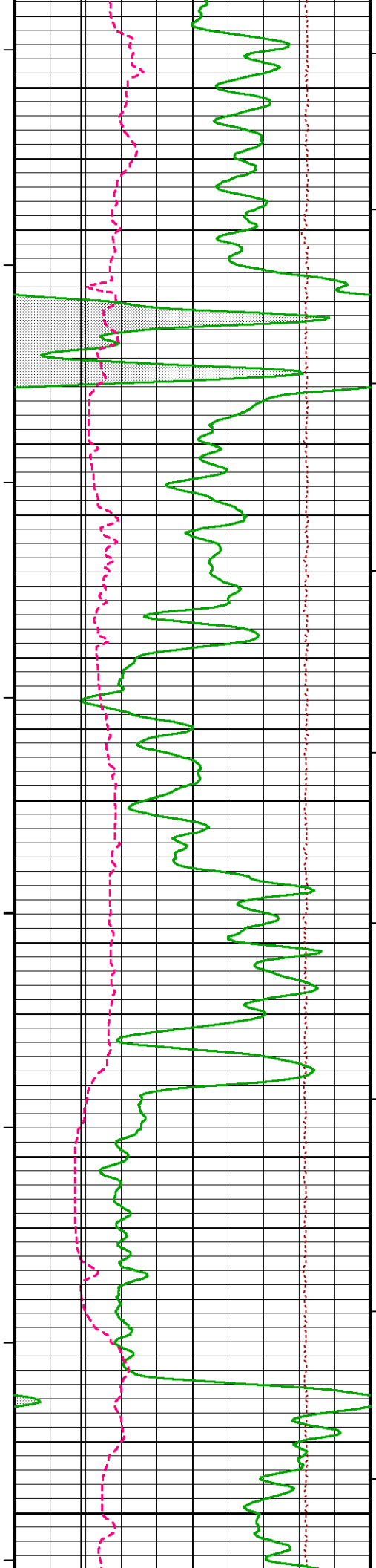




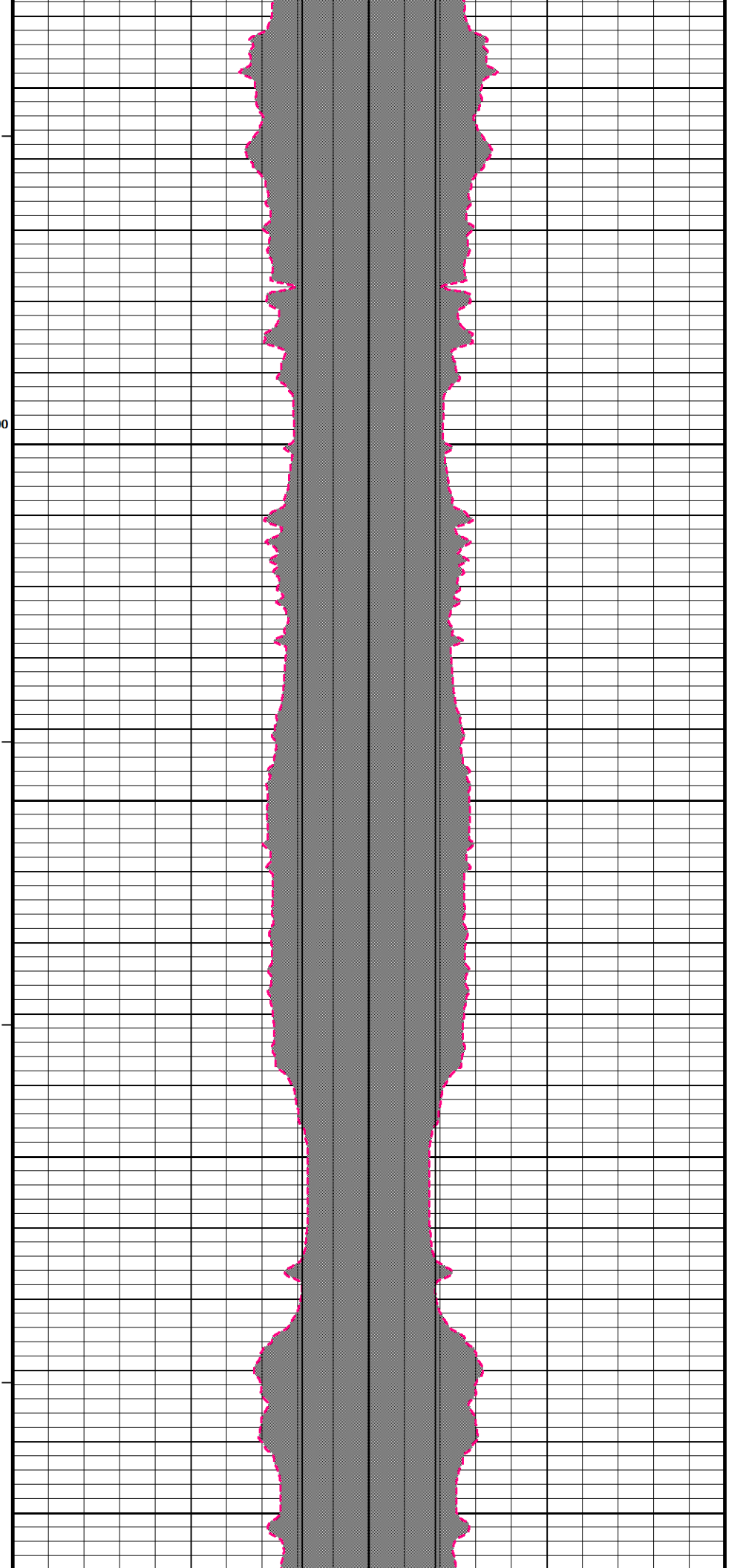


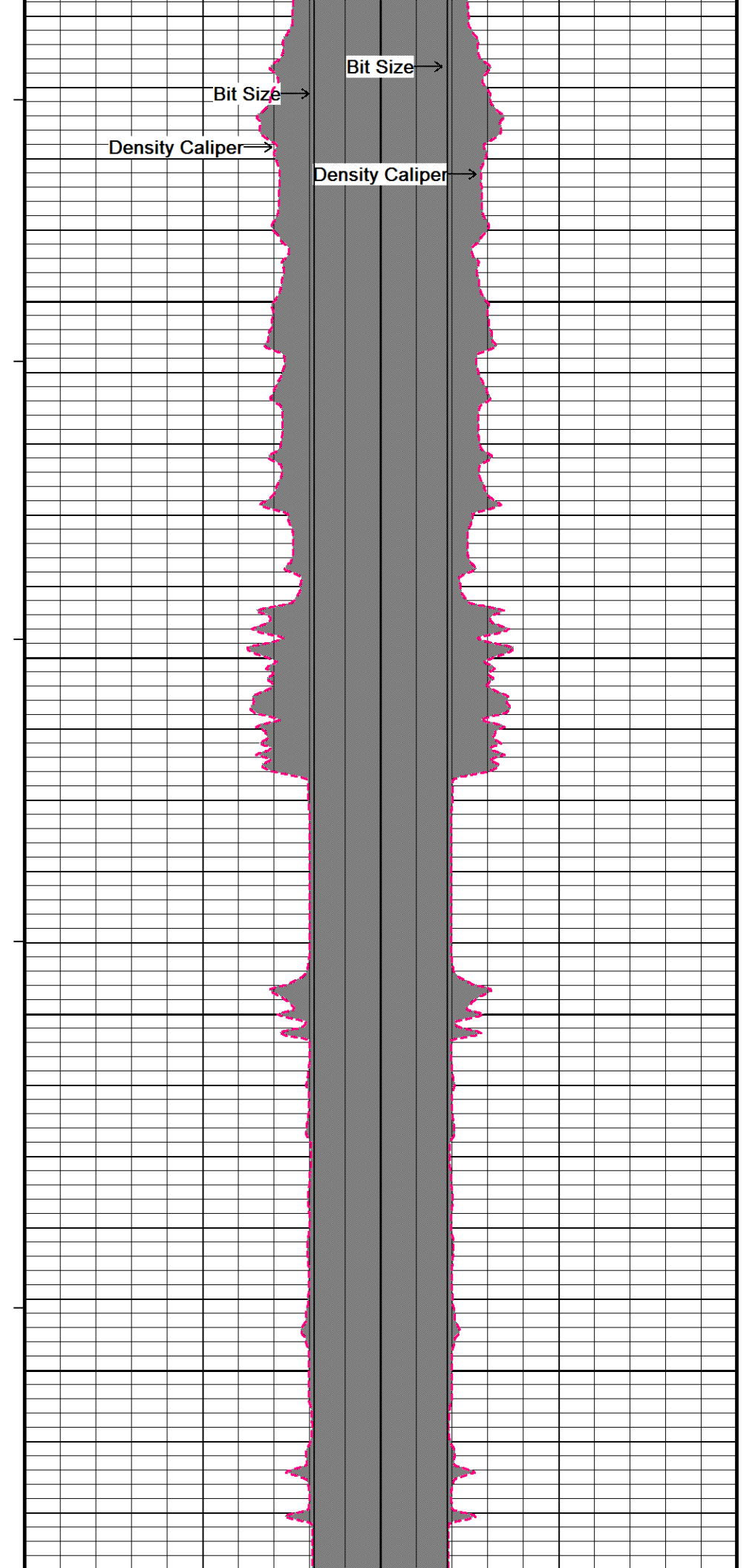
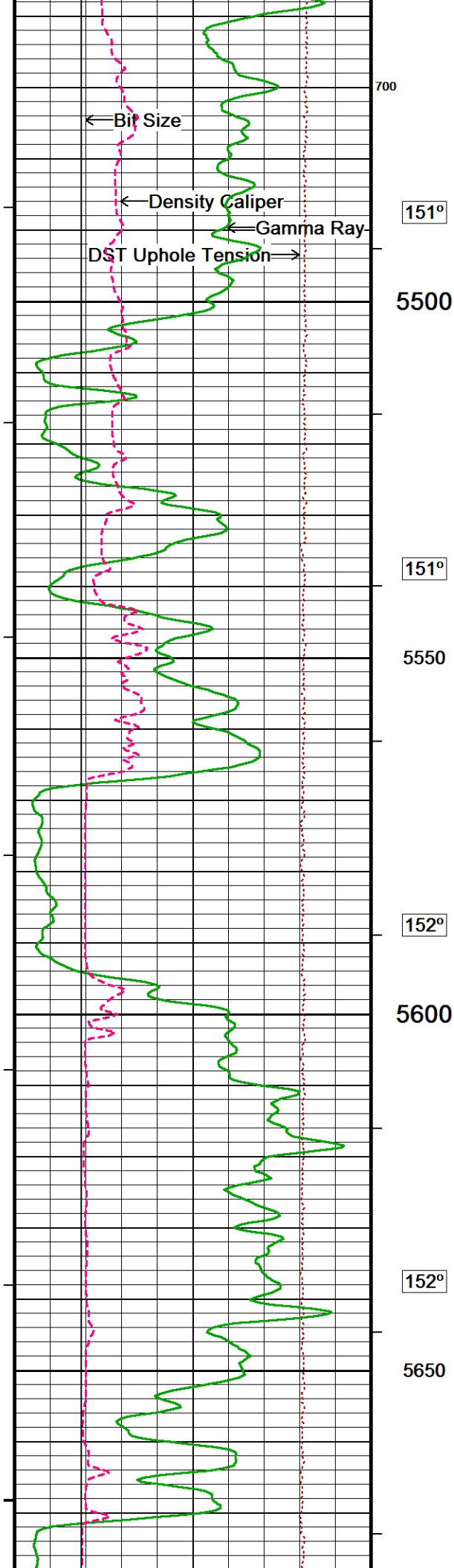




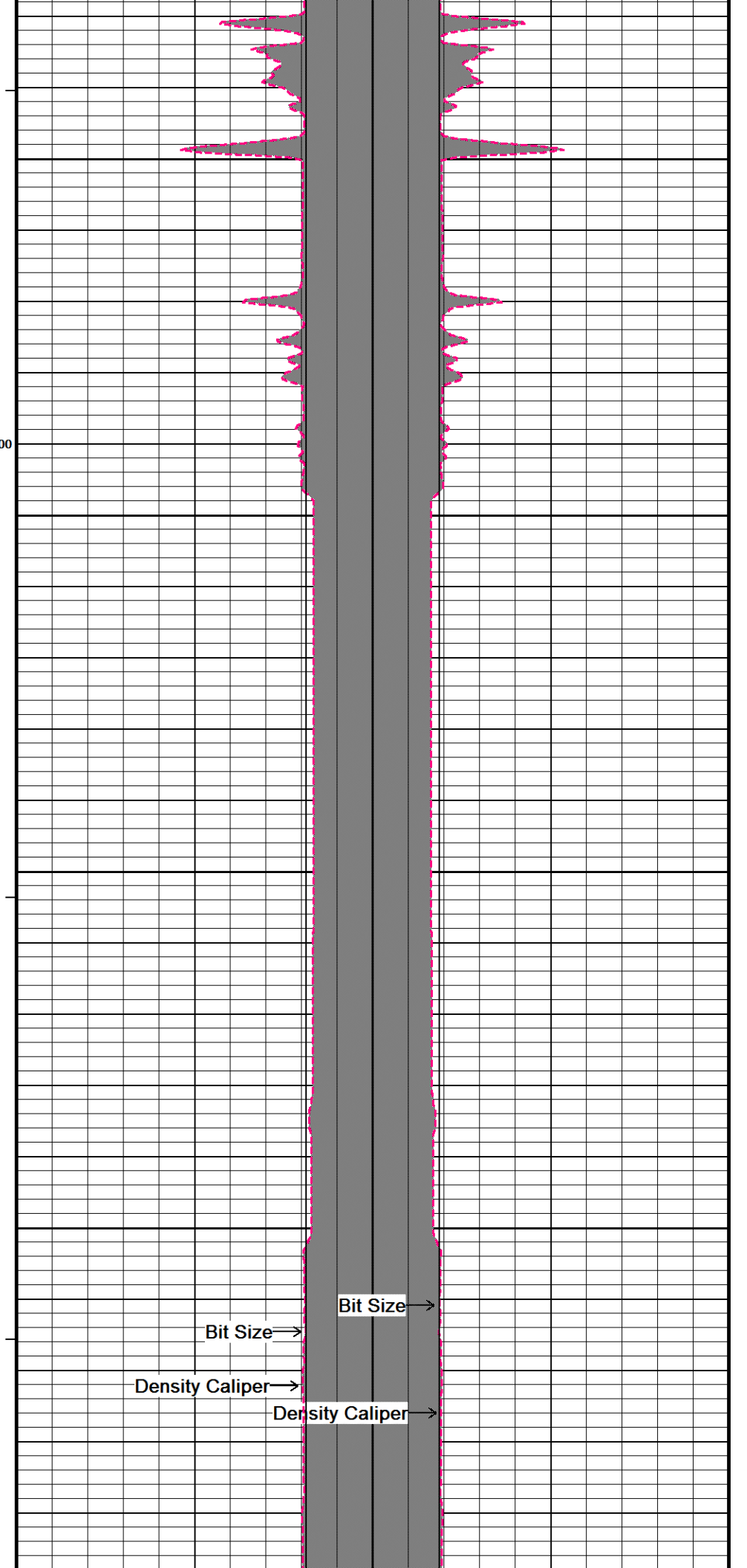
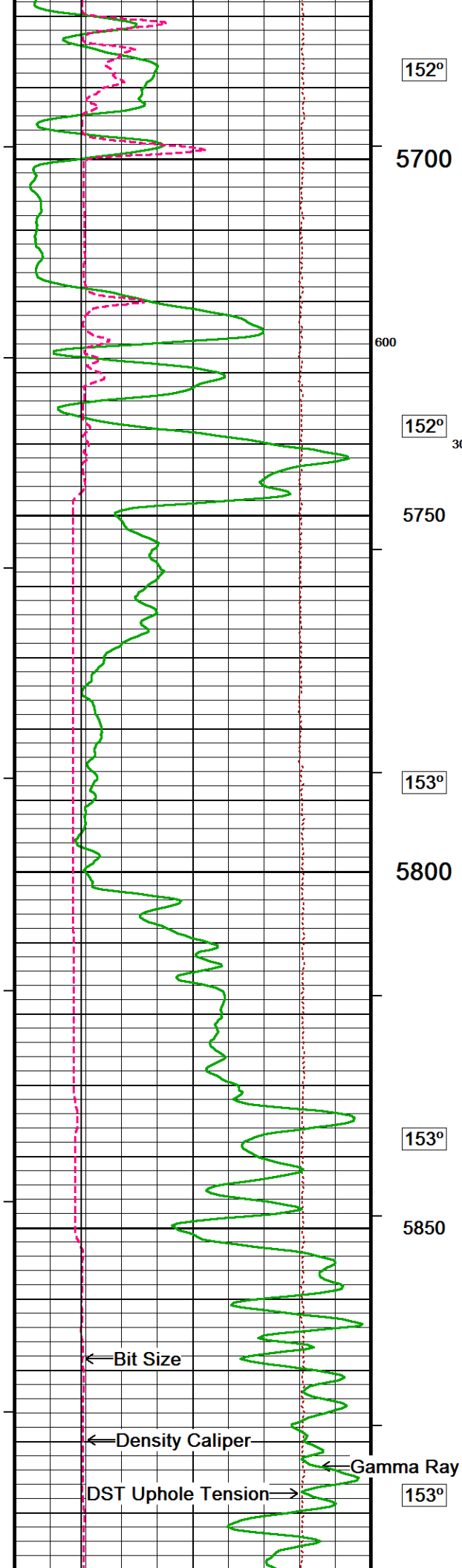


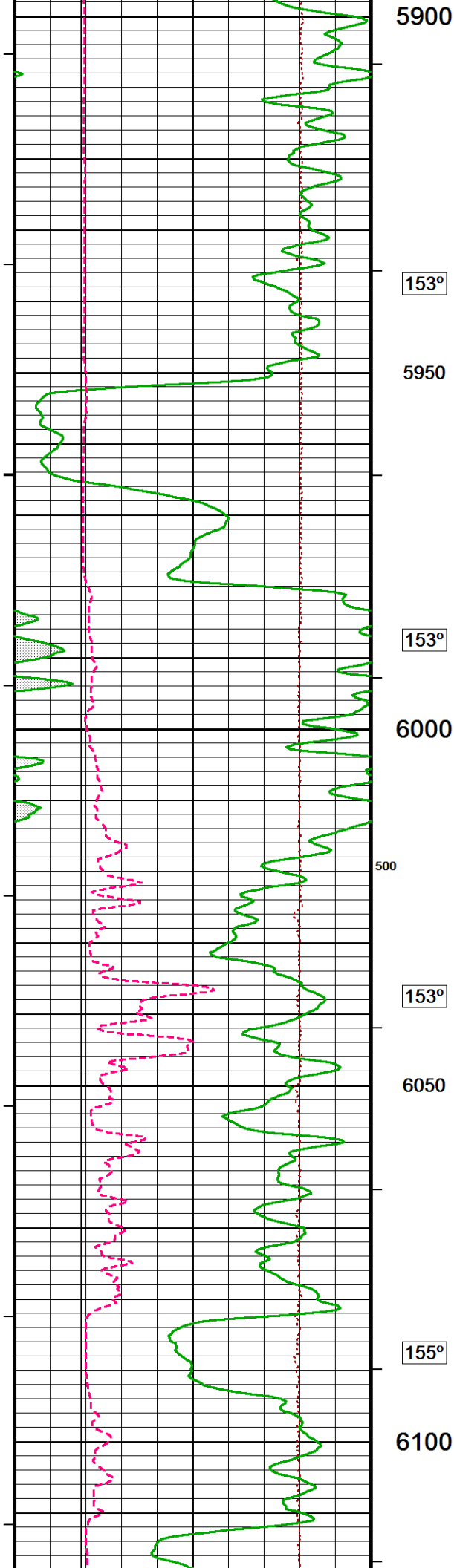
148  
5250  
149°  
5300  
400  
150°  
5350  
150°  
5400  
150°  
5450











5900

153°

5950

153°

6000

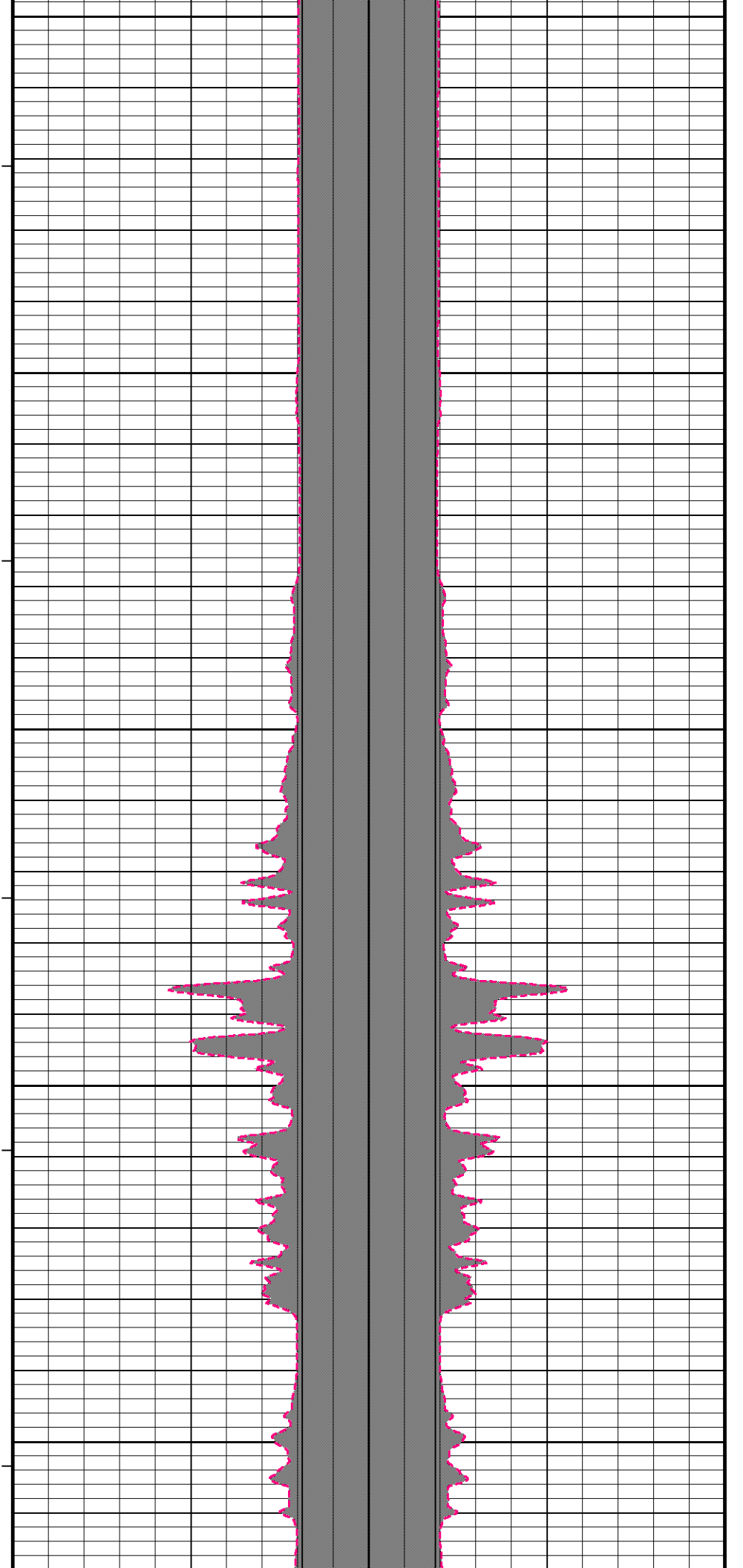
500

153°

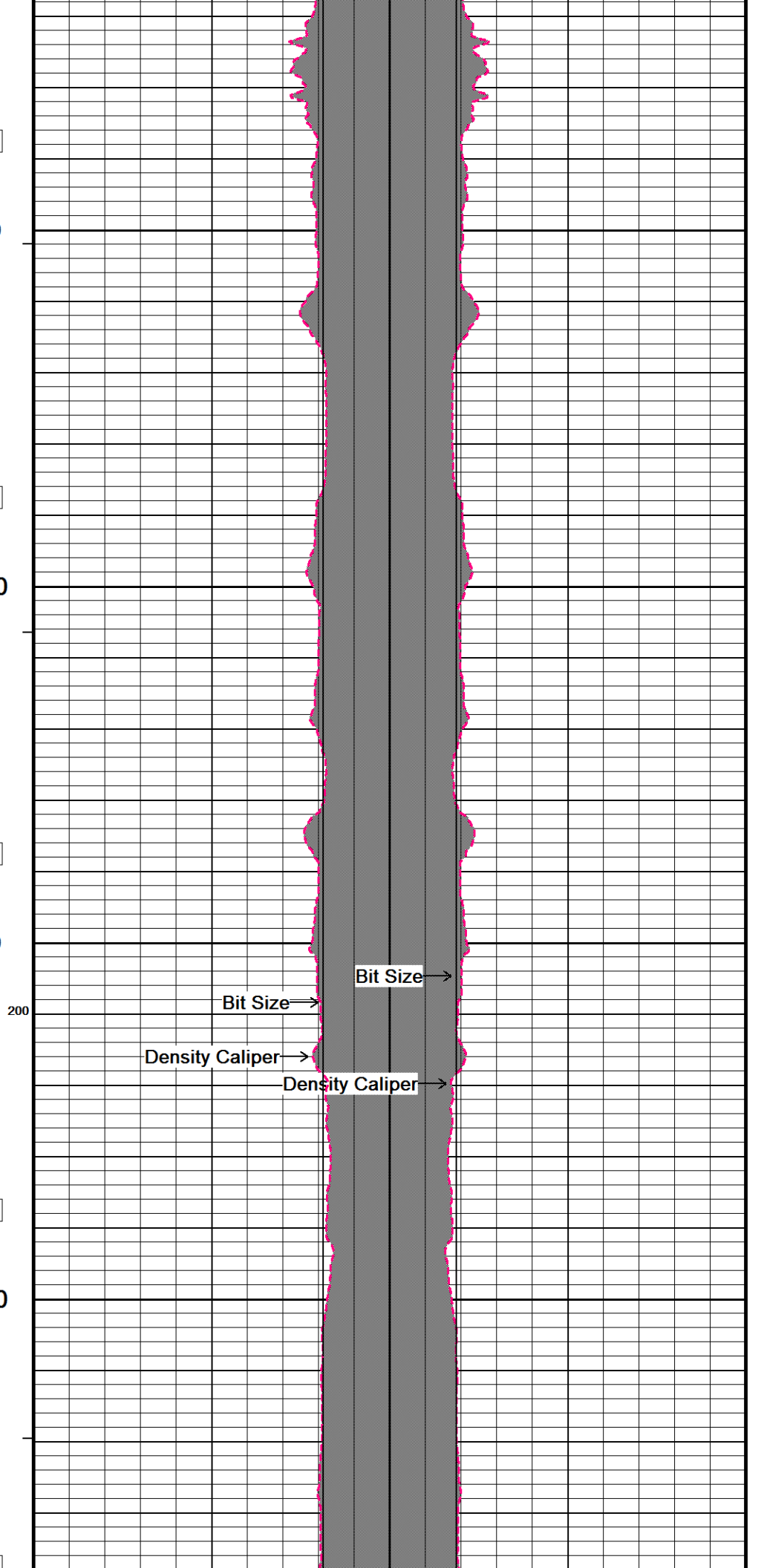
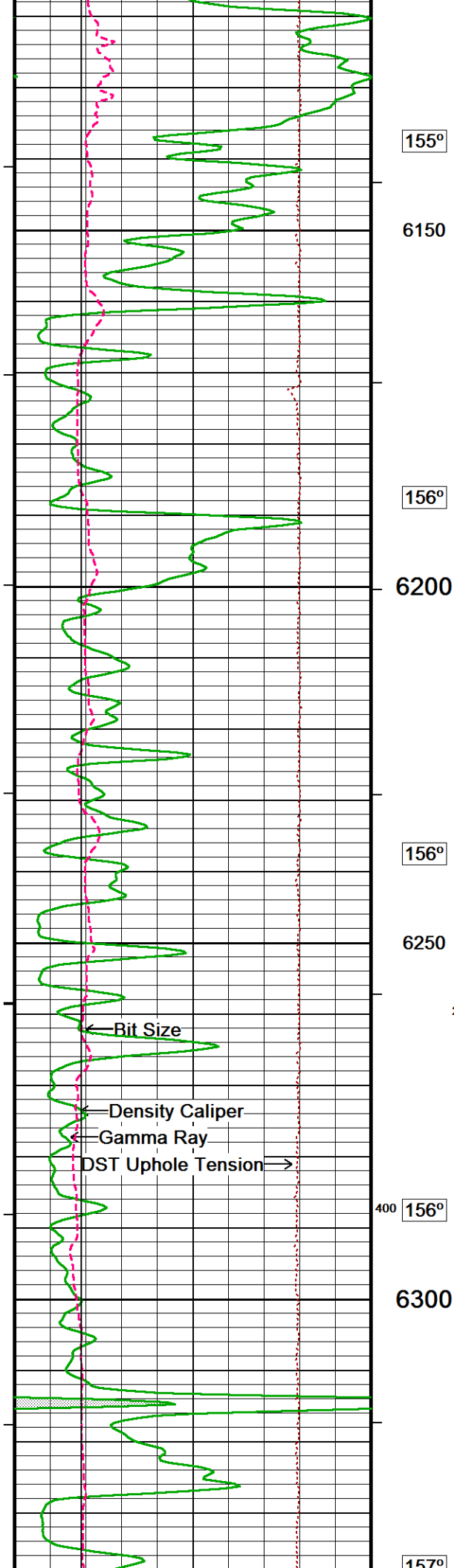
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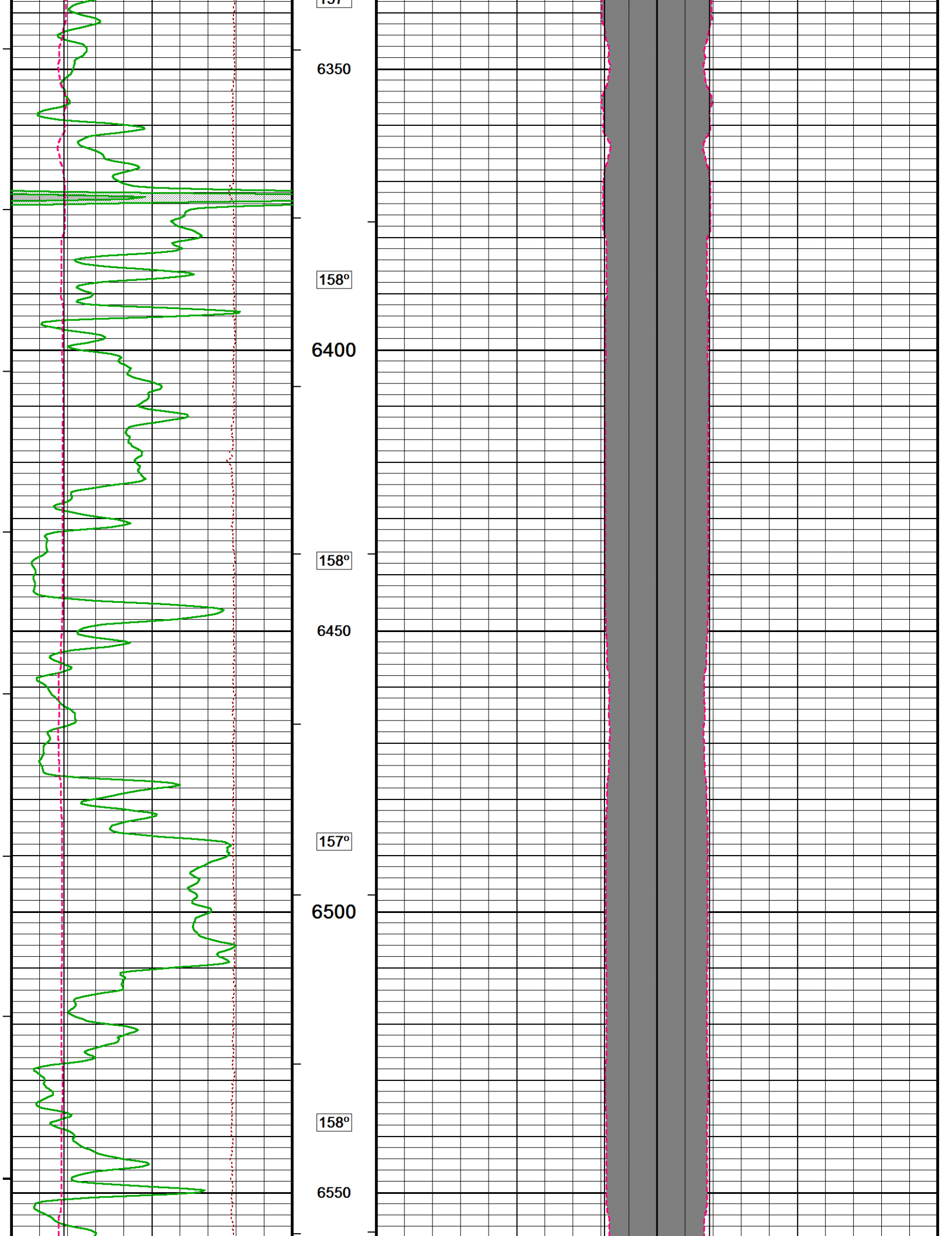
155°

6100

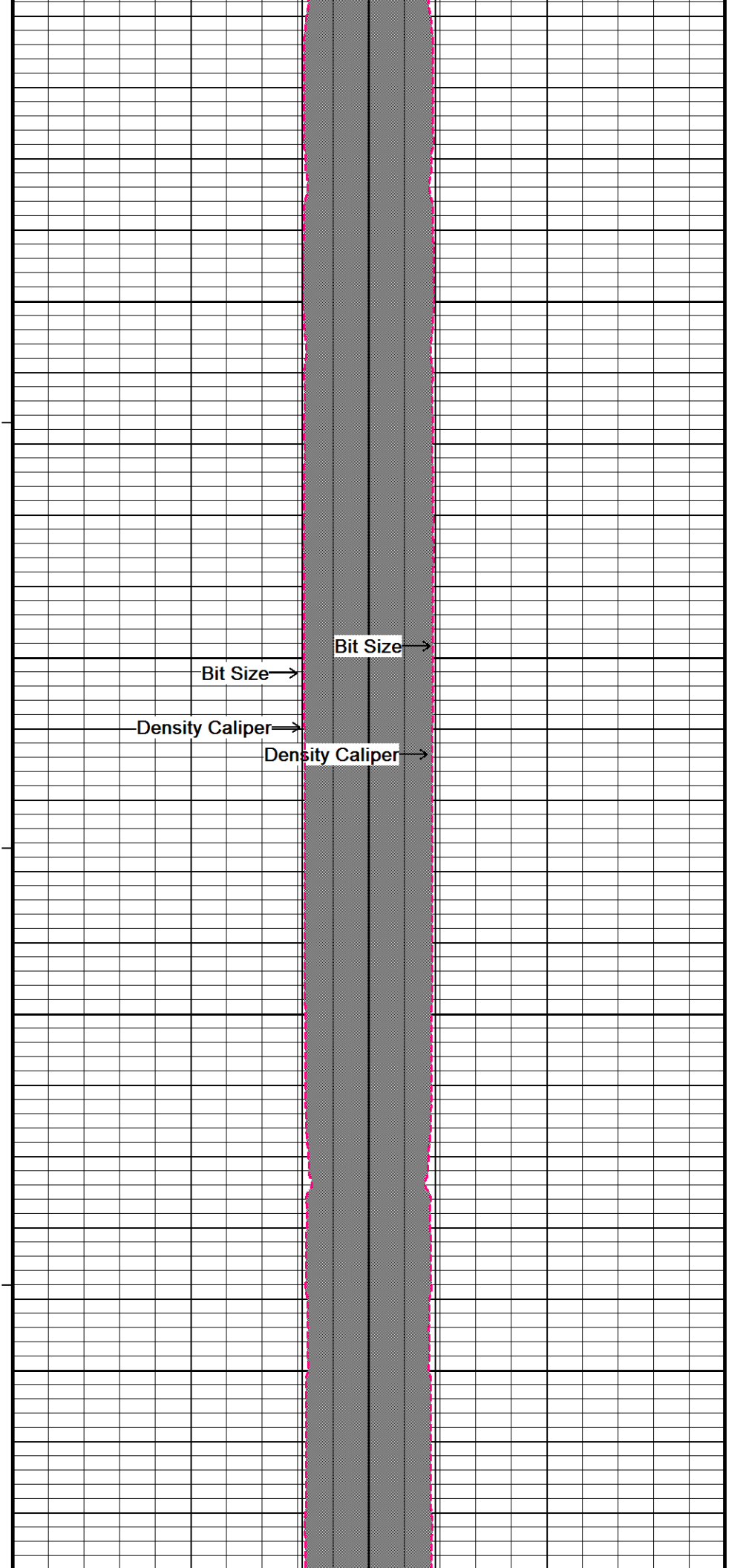
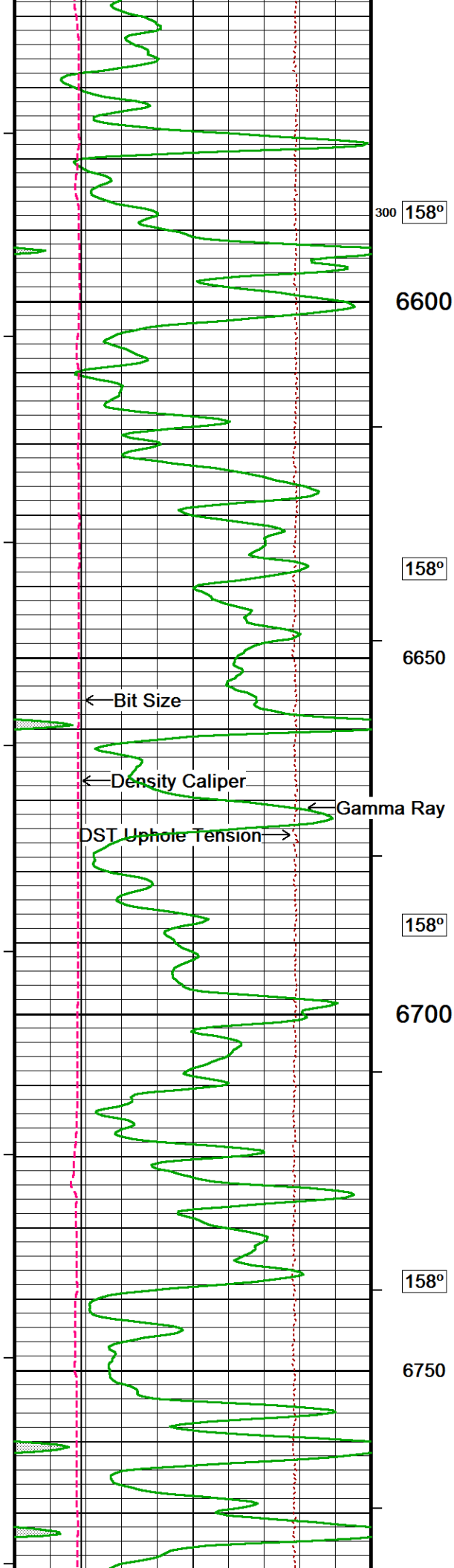


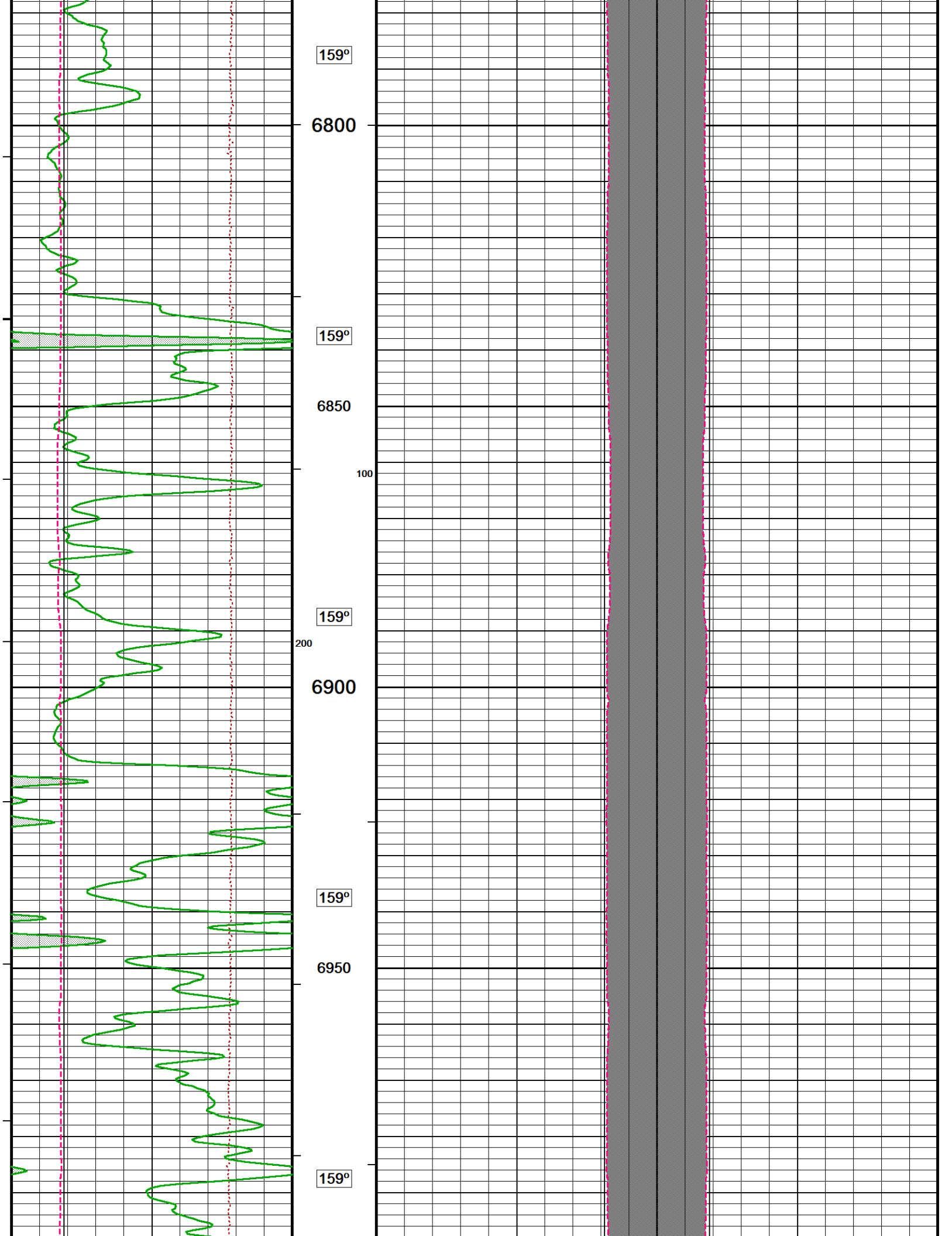




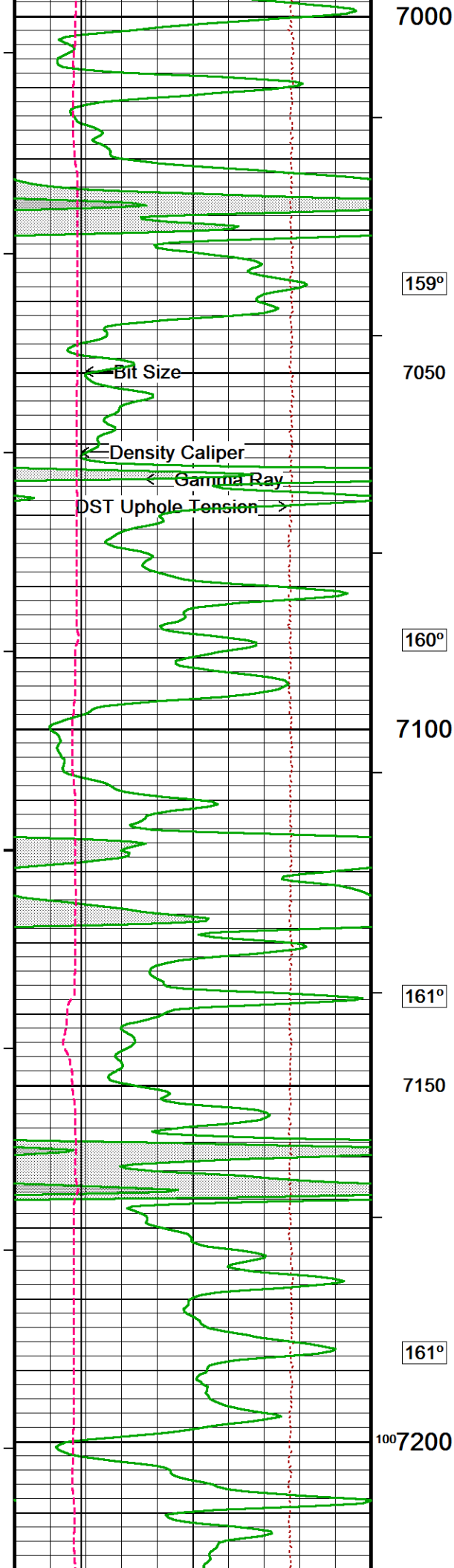












7000

159°

7050

160°

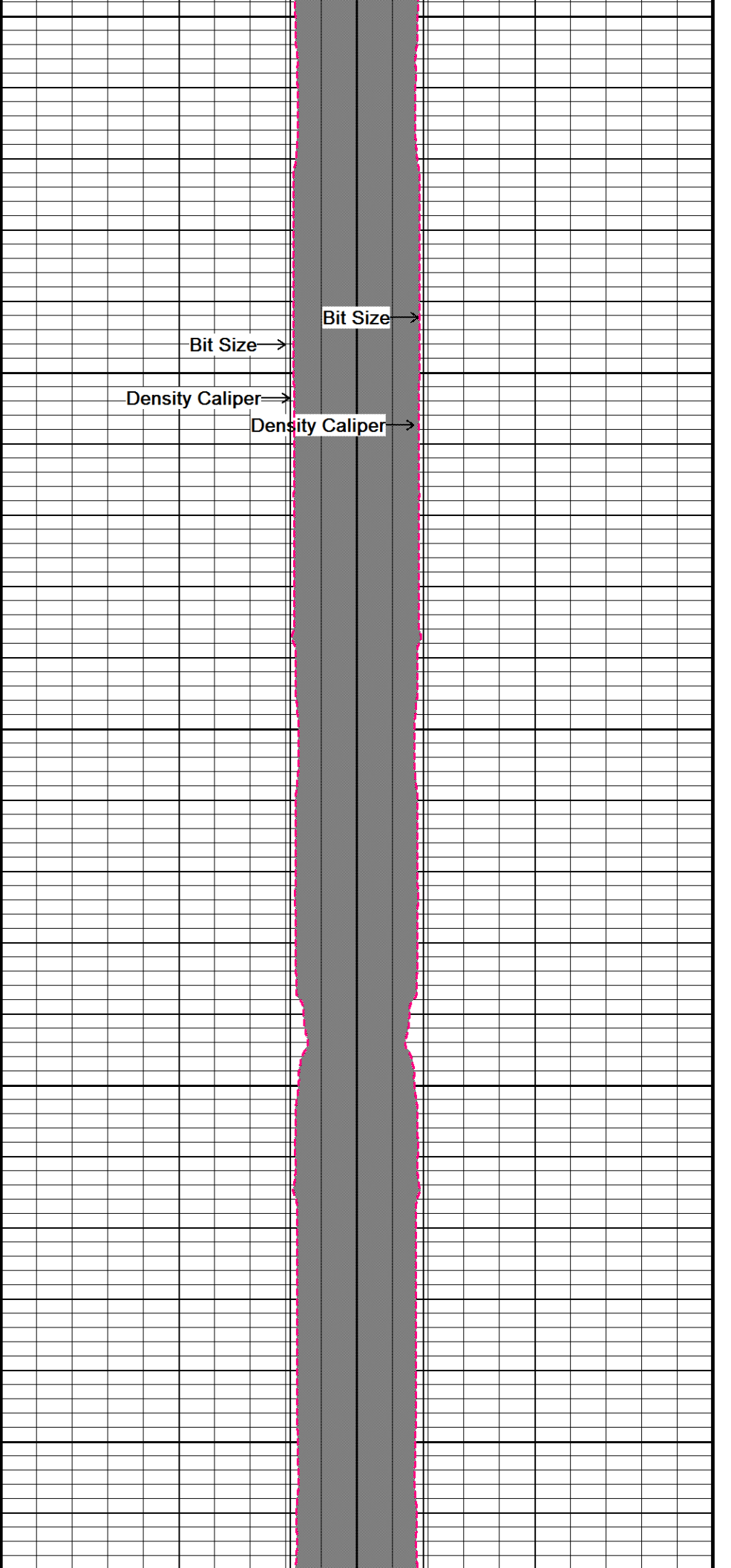
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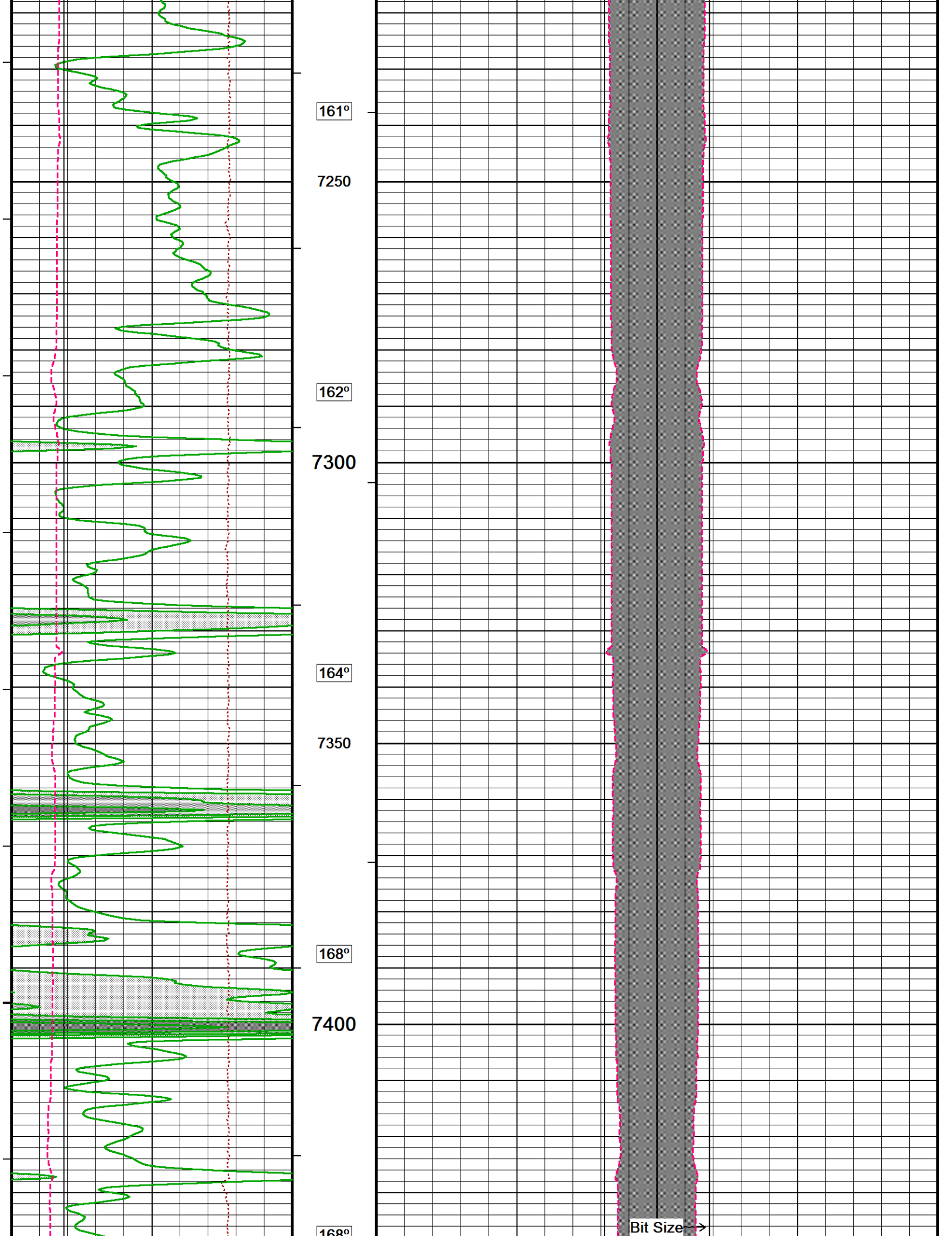
161°

7150

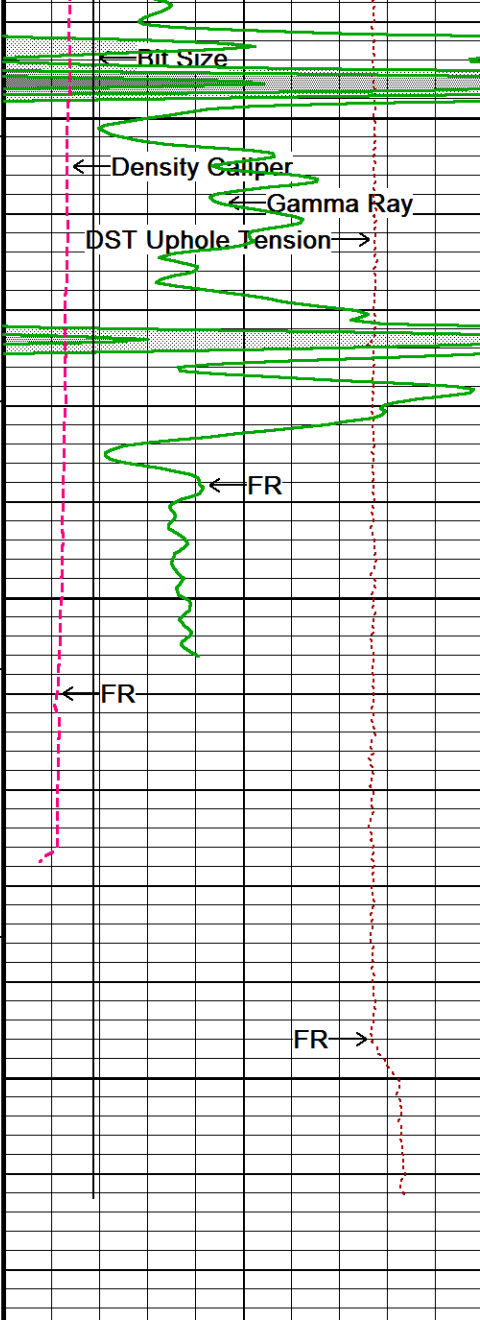
161°

7200

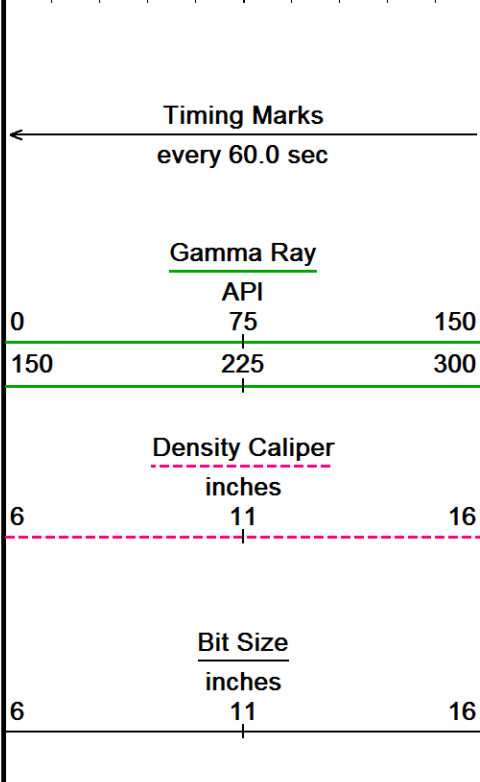




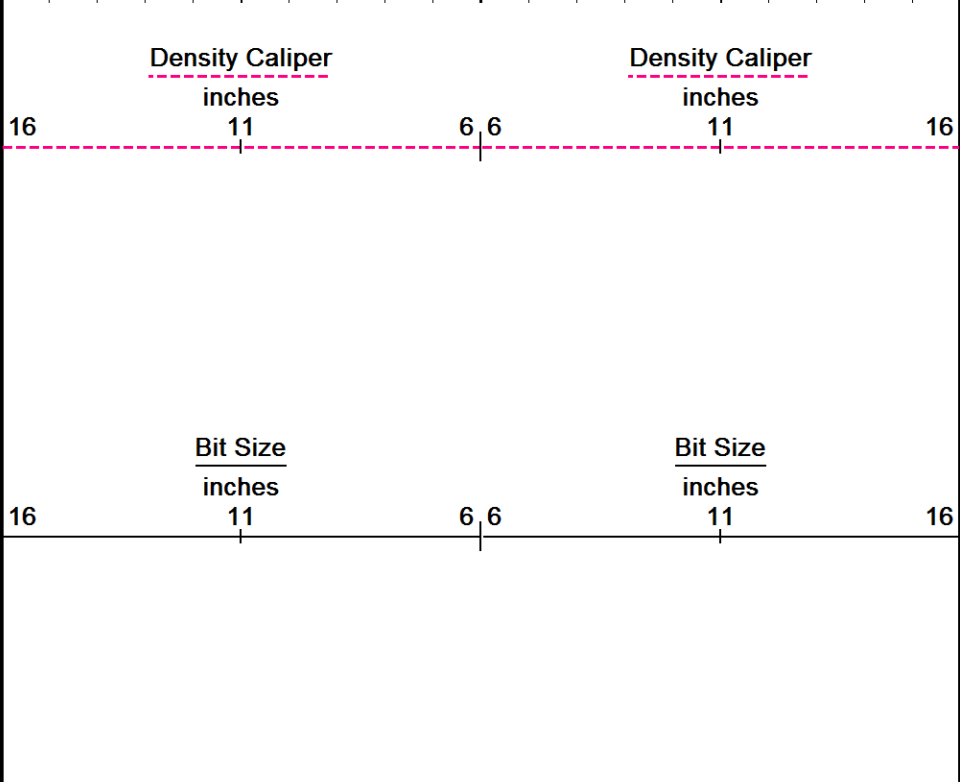
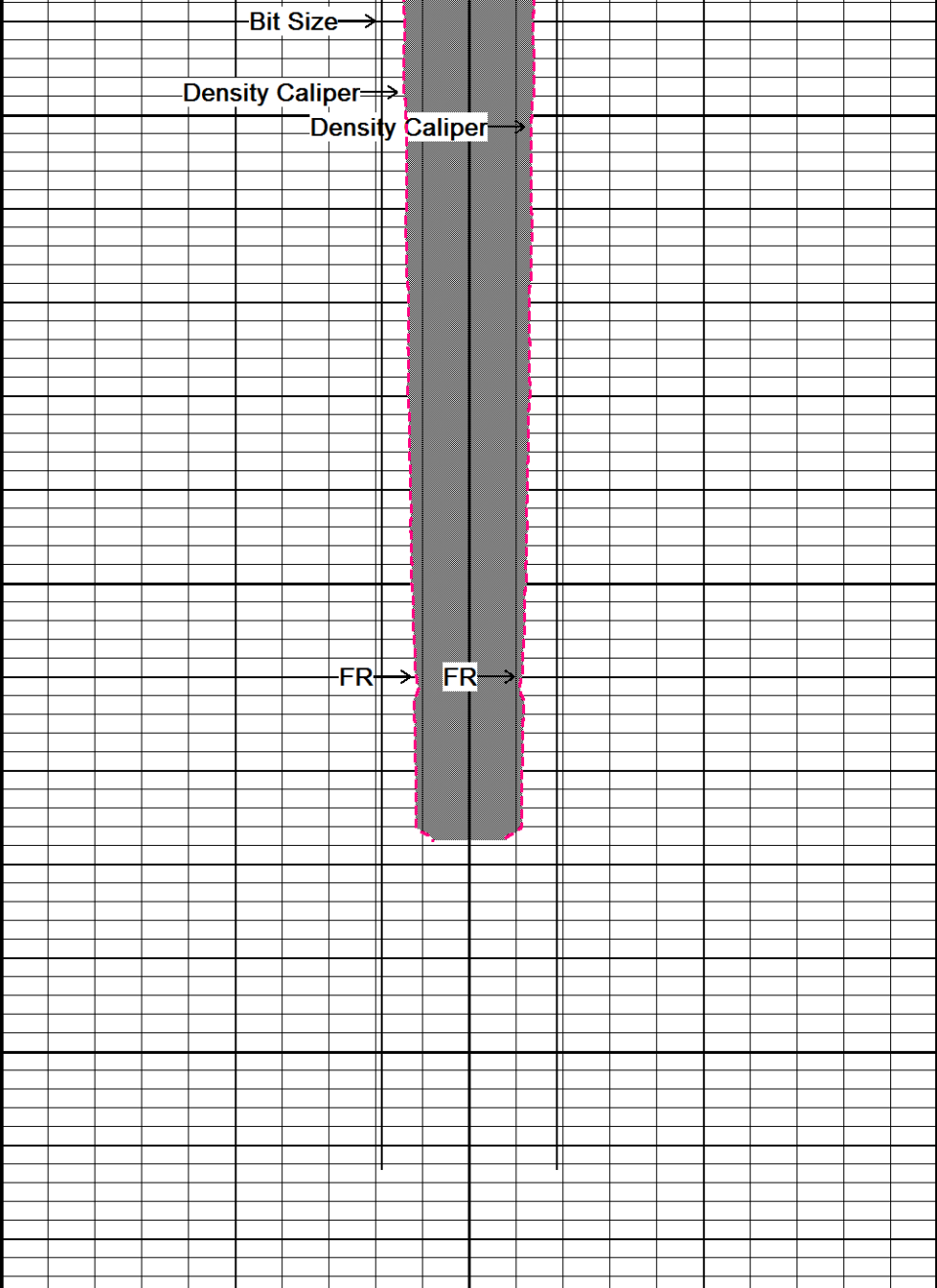


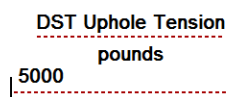


7450  
7500  
7550  
TD  
Depth  
In  
Feet



Timing Marks  
every 60.0 sec  
Gamma Ray  
API  
0 75 150  
150 225 300  
Borehole  
Temp in  
deg F  
Density Caliper  
inches  
6 11 16  
HVI  
every  
10 cu ft  
Bit Size  
inches  
6 11 16  
Annular  
Integral  
every  
10 cu ft





10 cu ft  
Replay  
Scale  
1:240

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 09-MAR-2018 11:19

Filename: C:\Minimus 17.05.6573\Logs\Grand Mesa The C...\Grand Mesa The Cowboys #1-25\_003.dta

Recorded on 09-MAR-2018 06:29

System Versions: Logged with 17.05.6573 Plotted with 17.05.6573



5 INCH MAIN



## BEFORE SURVEY CALIBRATION

C:\Minimus 17.05.6573\Logs\Grand Mesa The Cowboys #1-25\Grand Mesa The Cowboys #1-25\_001.dta

General Constants All 000

Last Edited on 09-MAR-2018,04:45

### General Parameters

Mud Resistivity	1.090	ohm-metres
Mud Resistivity Temperature	75.000	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	5.500	inches
Caliper for Differential Caliper	Density Caliper	

### Rwa Parameters

Porosity used	Crossplot Porosity
Resistivity used	Array Ind. Two Res Rt
RWA Constant A	0.620
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Gamma Calibration MCG-C 123

Field Calibration on 08-MAR-2018 14:48

	Measured	Calibrated (API)
Background	73	52
Calibrator (Gross)	714	508
Calibrator (Net)	641	456

Gamma Calibration Tolerances MCG-C 123

Ratio	1.406	<div><div>1.40</div><div>1.475</div><div>1.55</div></div>	Counts/API
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Gamma Constants MCG-C 123

Last Edited on 09-MAR-2018,03:10

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-C 123

Field Calibration on 23-FEB-2018,11:39

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

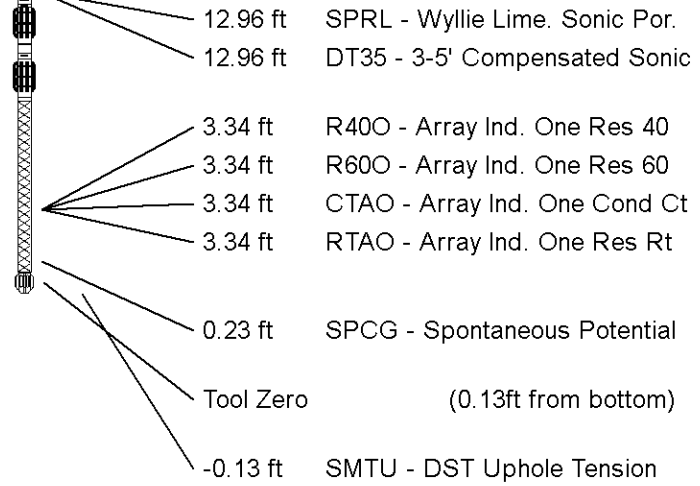


Upper		100.00	100.00
High Resolution Temperature Constants MCG-C 123			Last Edited on 22-SEP-2015,11:43
Pre-filter Length		11	
Caliper Calibration MPD-C.A 271			Base Calibration on 05-MAR-2018 13:46 Field Calibration on 08-MAR-2018 14:30
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14064	3.99	
2	24097	5.98	
3	34109	7.97	
4	43728	9.86	
5	54752	11.92	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	7.95	7.97	
Caliper Calibration Tolerances MPD-C.A 271			
Short Arm Field Cal.	7.95	<div><div><div>7.77</div><div>7.97</div><div>8.17</div></div></div>	in

DOWNHOLE EQUIPMENT			
C:\Minimus 17.05.6573\Logs\Grand Mesa The Cowboys #1-25\Grand Mesa The Cowboys #1-25_001.dta			
Cablehead, 11 pin CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in			
Compact Swivel Head Adaptor SHA-F 48 LG: 2.74 ft WT: 26.5 lb OD: 2.244 in			
Compact Comms Gamma MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in			
Compact Micro-log MML-A 2 LG: 7.97 ft WT: 81.6 lb OD: 2.244 in			
Compact Neutron MDN-A.B 114 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in			
Compact Density/Caliper MPD-C.A 271 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in			
Compact Knuckle Joint SKJ-E.B 732 LG: 2.17 ft WT: 24.3 lb OD: 2.244 in			
Compact Focussed Electric MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in			
Compact Sonic MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in			
	57.56 ft	GRGC - MCG Gamma Ray	
	54.65 ft	CGXT - MCG External Temperature	
	48.92 ft	MLTC - MML Caliper	
	47.93 ft	MINV - Micro-inverse	
	47.93 ft	MNRL - Micro-normal	
	43.13 ft	NPRL - Limestone Neutron Por.	
	35.89 ft	AVOL - Annular Volume	
	35.89 ft	HVOL - Hole Volume	
	35.89 ft	CLDC - Density Caliper	
	33.96 ft	DPRL - Limestone Density Por.	
	33.96 ft	DEN - Compensated Density	
	33.96 ft	DCOR - Density Correction	
	33.90 ft	PDPE - PE	
	26.24 ft	FEFE - Shallow FE	
	16.96 ft	TR11 - 4' Transit Time	
	16.46 ft	TR21 - 3' Transit Time	
	15.95 ft	TR12 - 6' Transit Time	
	15.46 ft	TR22 - 5' Transit Time	

Compact Induction  
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 67.98 ft Weight: 531.3 lb



All measurements relative to tool zero.

COMPANY	GRAND MESA OPERATING COMPANY
WELL	THE COWBOYS #1-25
FIELD	WILDCAT
PROVINCE/COUNTY	WASHINGTON
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	5169	feet	First Reading	7512.00	feet
Elevation Drill Floor	5167	feet	Depth Driller	7545.00	feet
Elevation Ground Level	5150	feet	Depth Logger	7546.00	feet



**Weatherford®**

CALIPER LOG