



Weatherford

CALIPER LOG

COMPANY

McCOY PETROLEUM CORPORATION

WELL

THOMAS & REED FARMS 'A' #1-21

FIELD

WILDCAT

PROVINCE/COUNTY

GRAY

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

660' FNL & 1980' FWL

SEC 21

TWP 29S

RGE 28W

Other Services

Latitude

Longitude

API Number

15-069-20499

Permanent Datum GL, Elevation 2728 feet

Log Measured From KB, 11.00 feet above Permanent Datum

Drilling Measured From KB

Date

18-MAR-2017

Run Number

ONE

Service Order

4558-177026132

Depth Driller

6500.00

Depth Logger

6495.00

First Reading

6463.00

Last Reading

1685.00

Casing Driller

1690.00

Casing Logger

1685.00

Bit Size

7.875

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.00 lb/USg

55.00 CP

PH / Fluid Loss

9.50

8.00 ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

1.03 @ 75.0

ohm-m

Rmf @ Measured Temp

0.82 @ 75.0

ohm-m

Rmc @ Measured Temp

1.24 @ 75.0

ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.63 @123.0

ohm-m

Time Since Circulation

5 HOURS

Max Recorded Temp

123.00

deg F

Equipment / Base

13096

OKC

Recorded By

ADAM SILL

Witnessed By

ZACH WIELE

Elevations:
KB 2739.00
DF 2737.00
GL 2728.00

BOREHOLE RECORD

Last Edited: 18-MAR-2017 10:18

Bit Size
inches

7.875

Depth From
feet

1695.00

Depth To
feet

6500.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

1695.00

Weight
pounds/ft

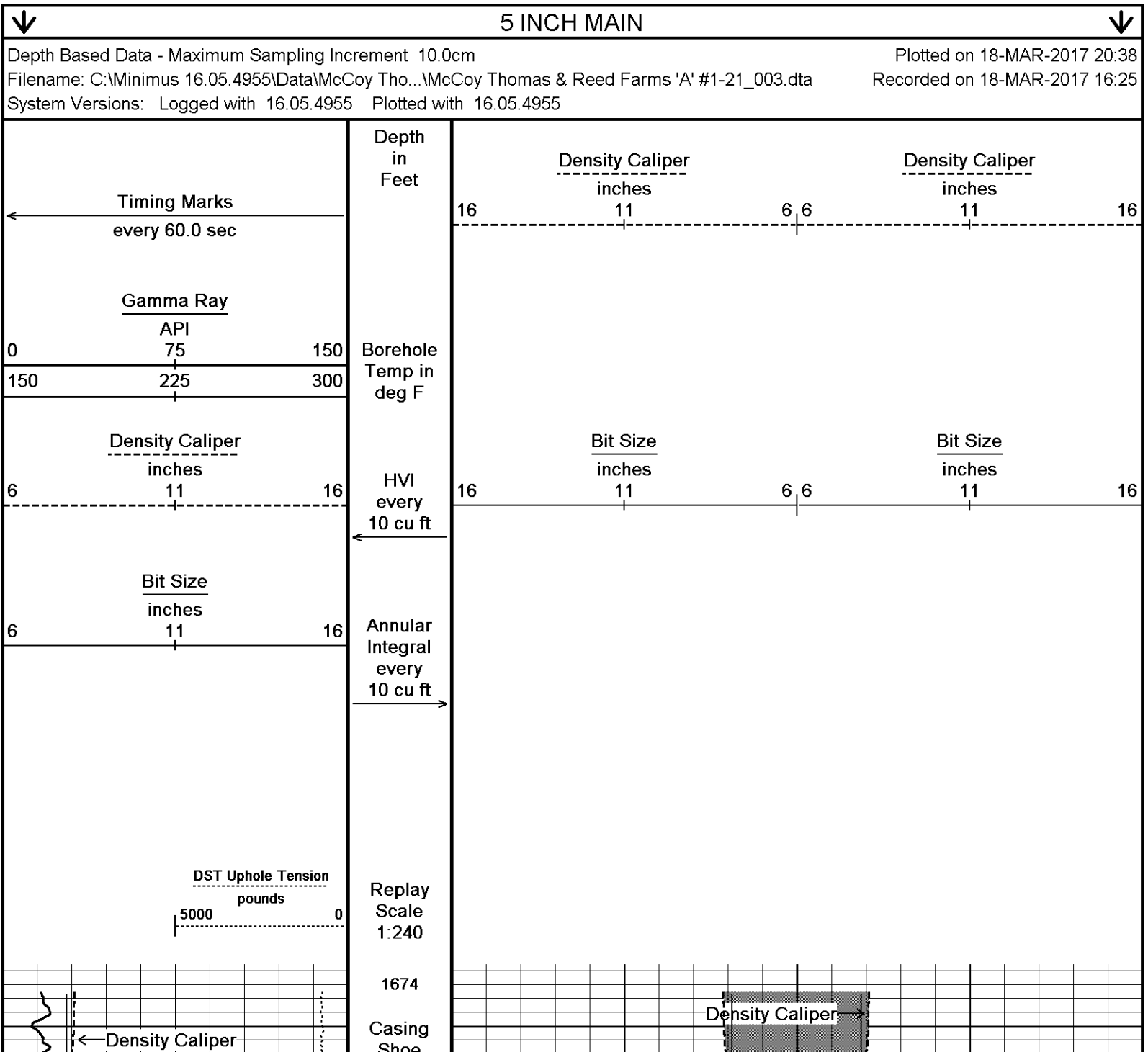
24.00

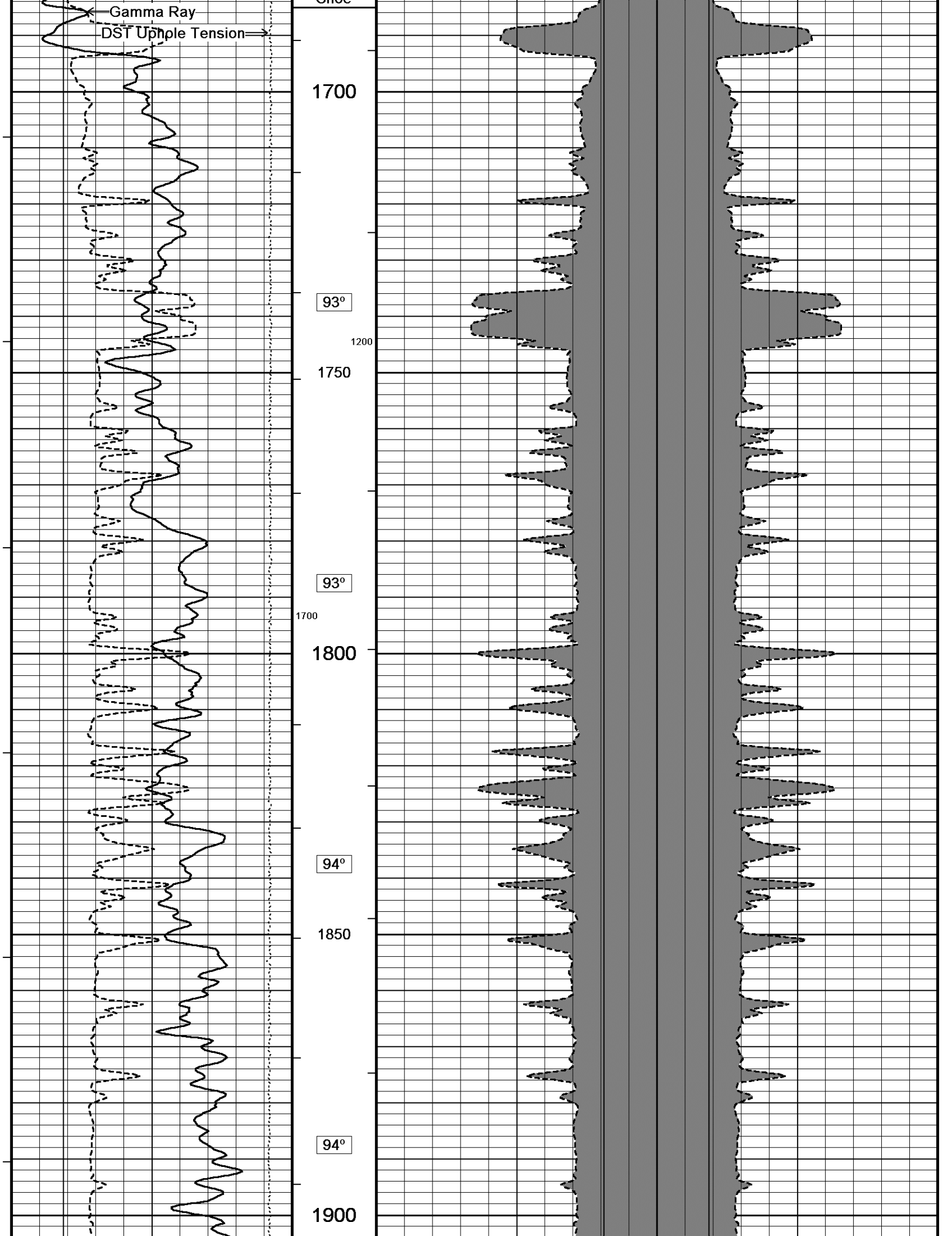
REMARKS

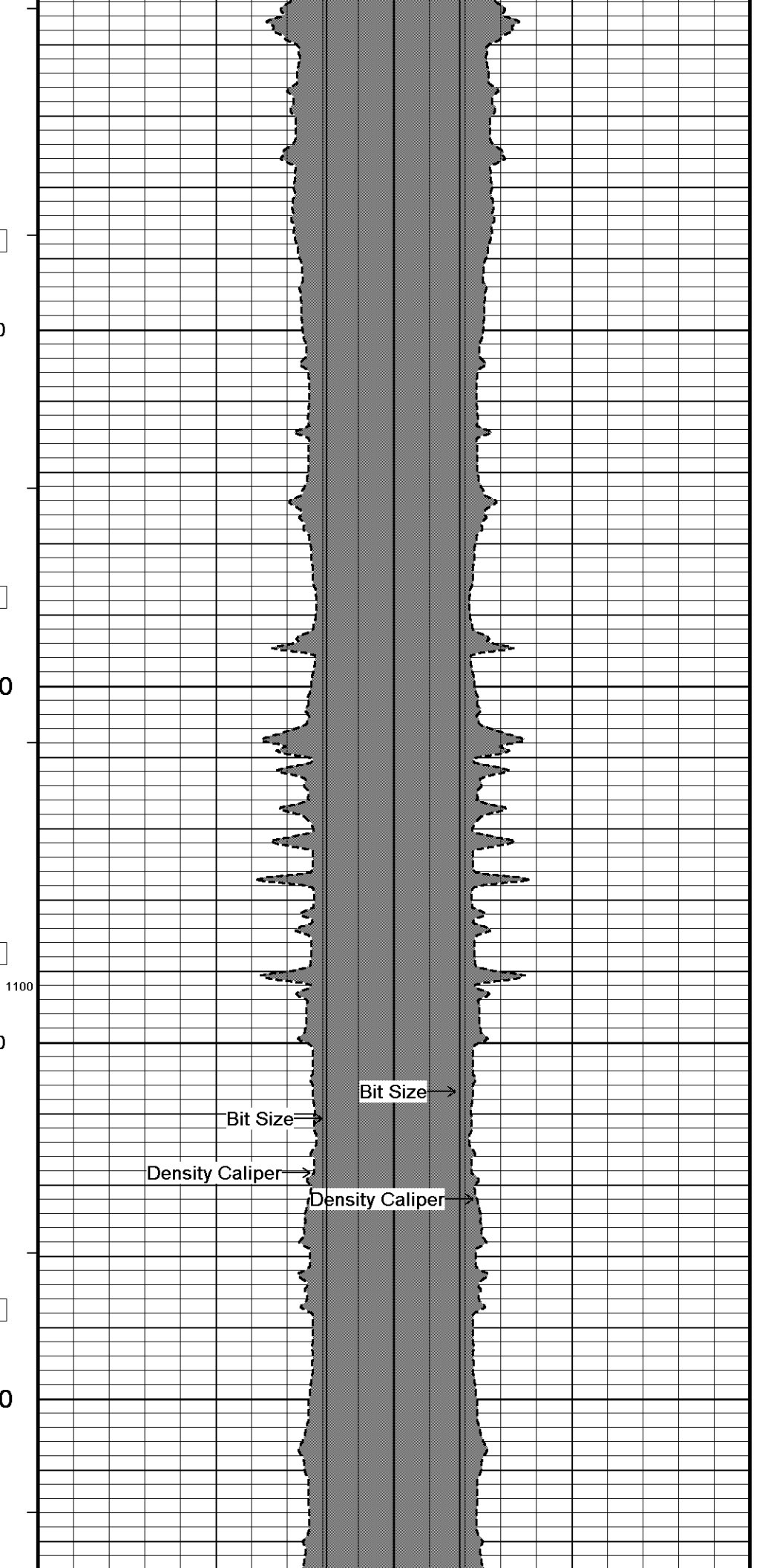
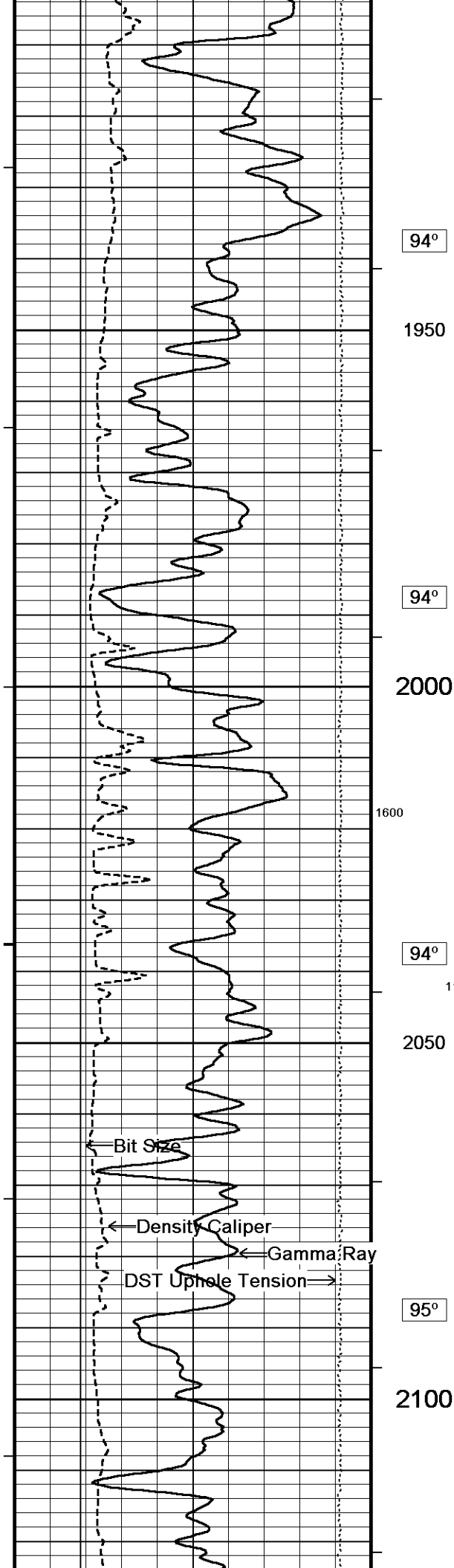
- SOFTWARE ISSUE: WLS 16.05.4955.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 - 0.5 INCH STANDOFF USED ON MFE.
 - TWO 0.5 INCH STANDOFFS USED ON MSS.
 - 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE 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: 1752 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 2700 FEET: 869 CU.FT.

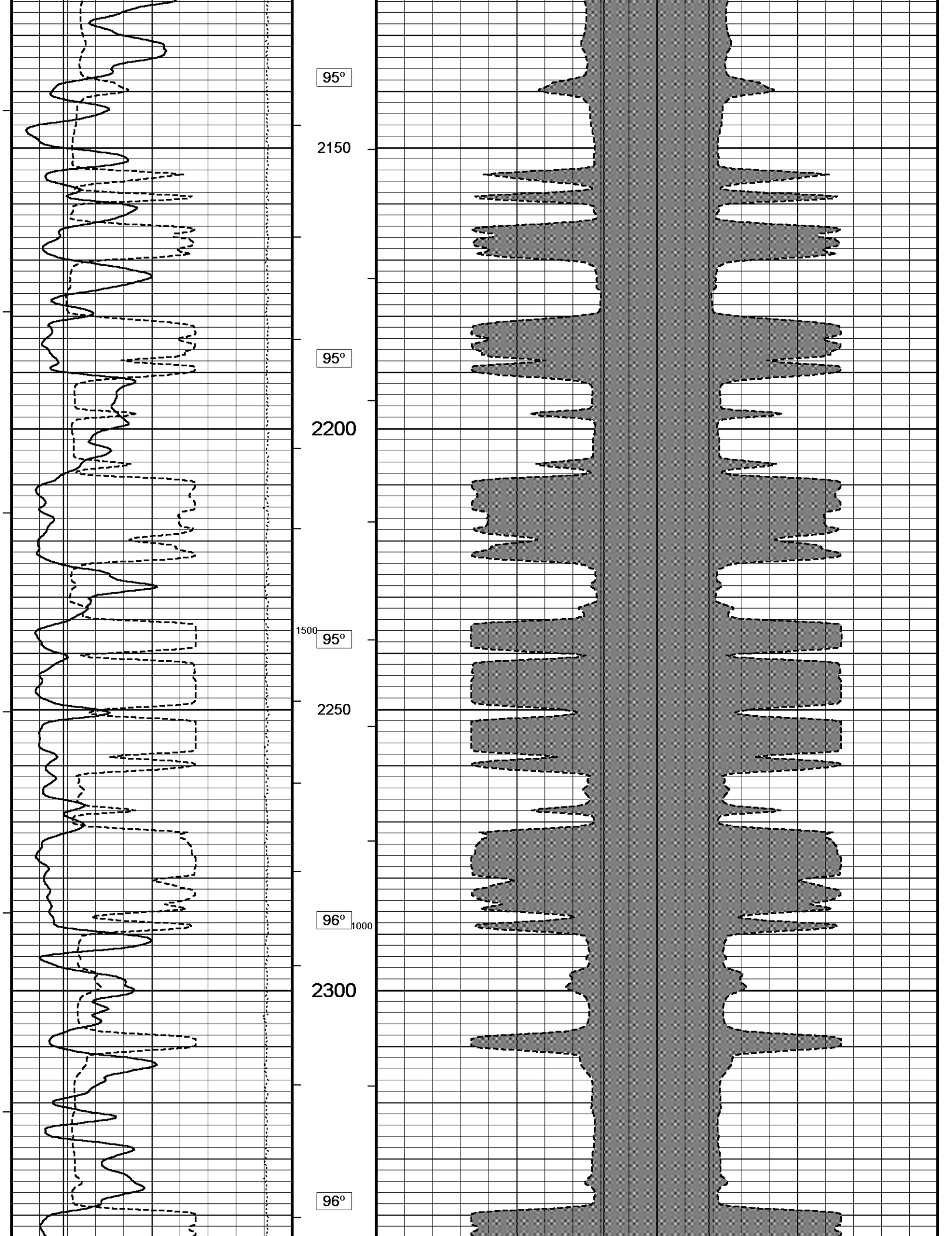
- RIG: STERLING #4.
- ENGINEER: A. SILL.
- OPERATOR: B. TOVAR.

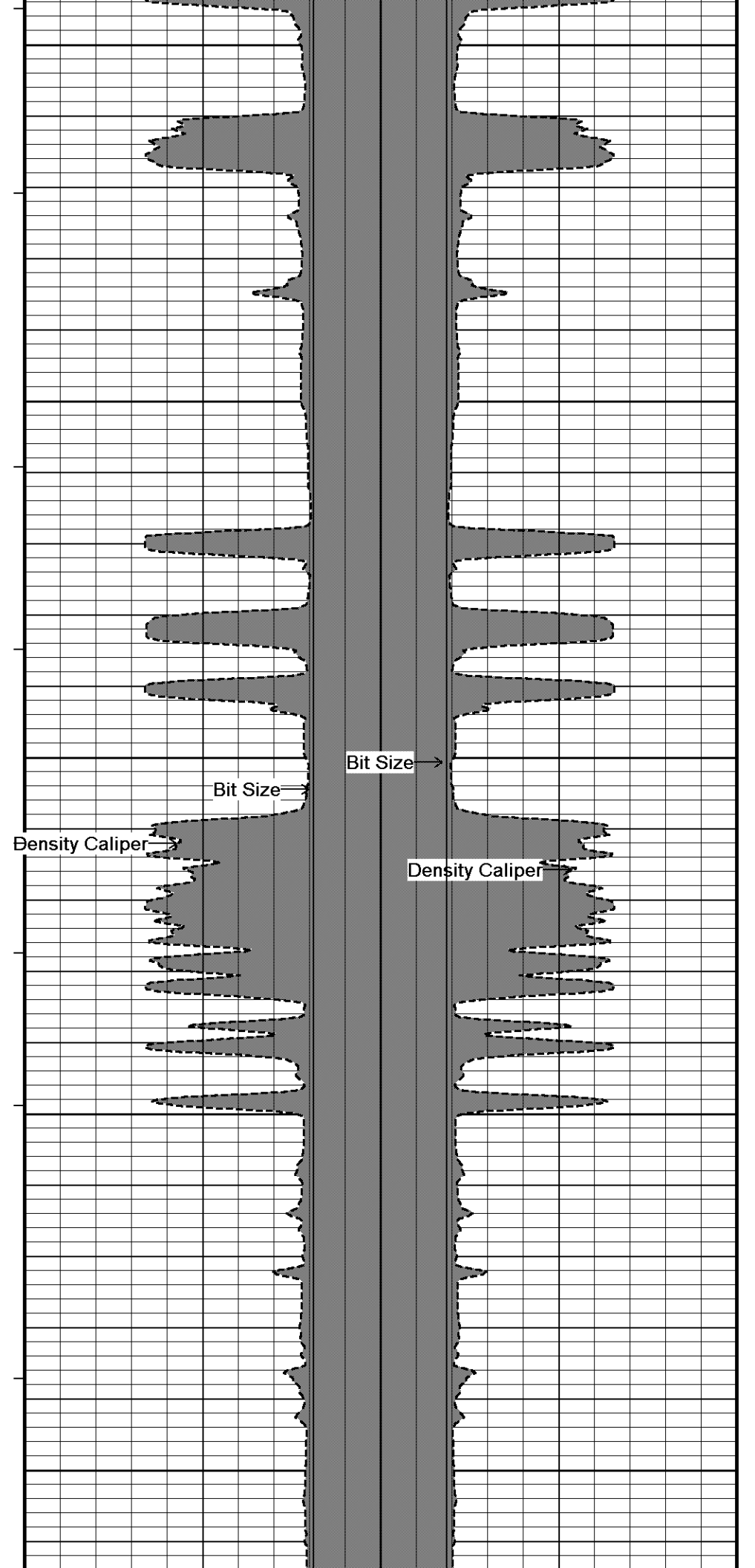
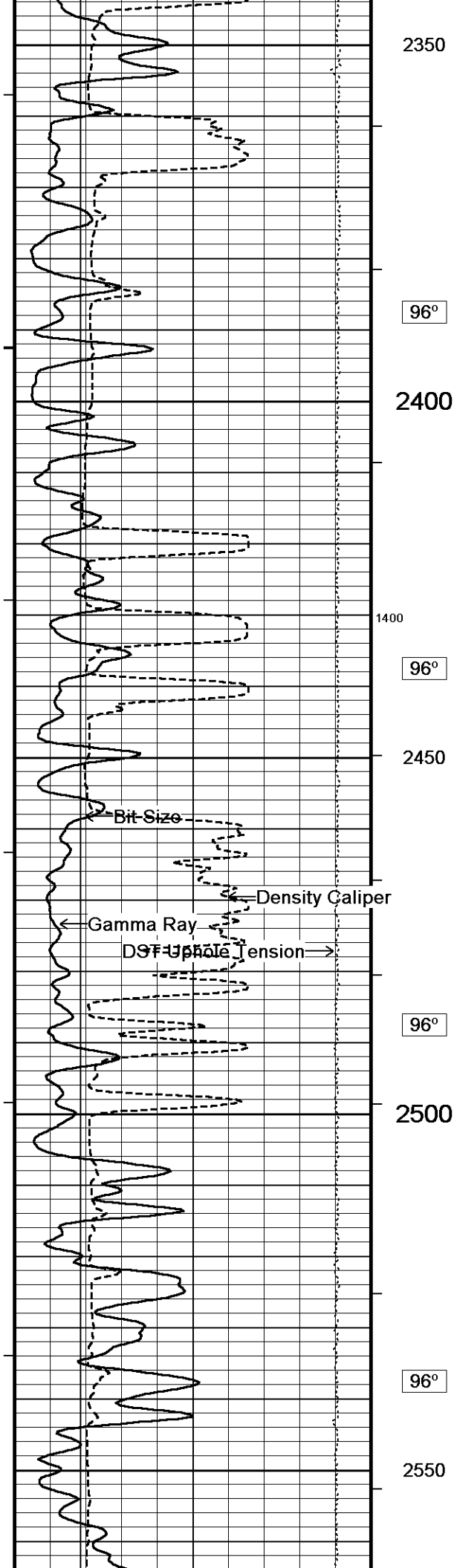
In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will 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.

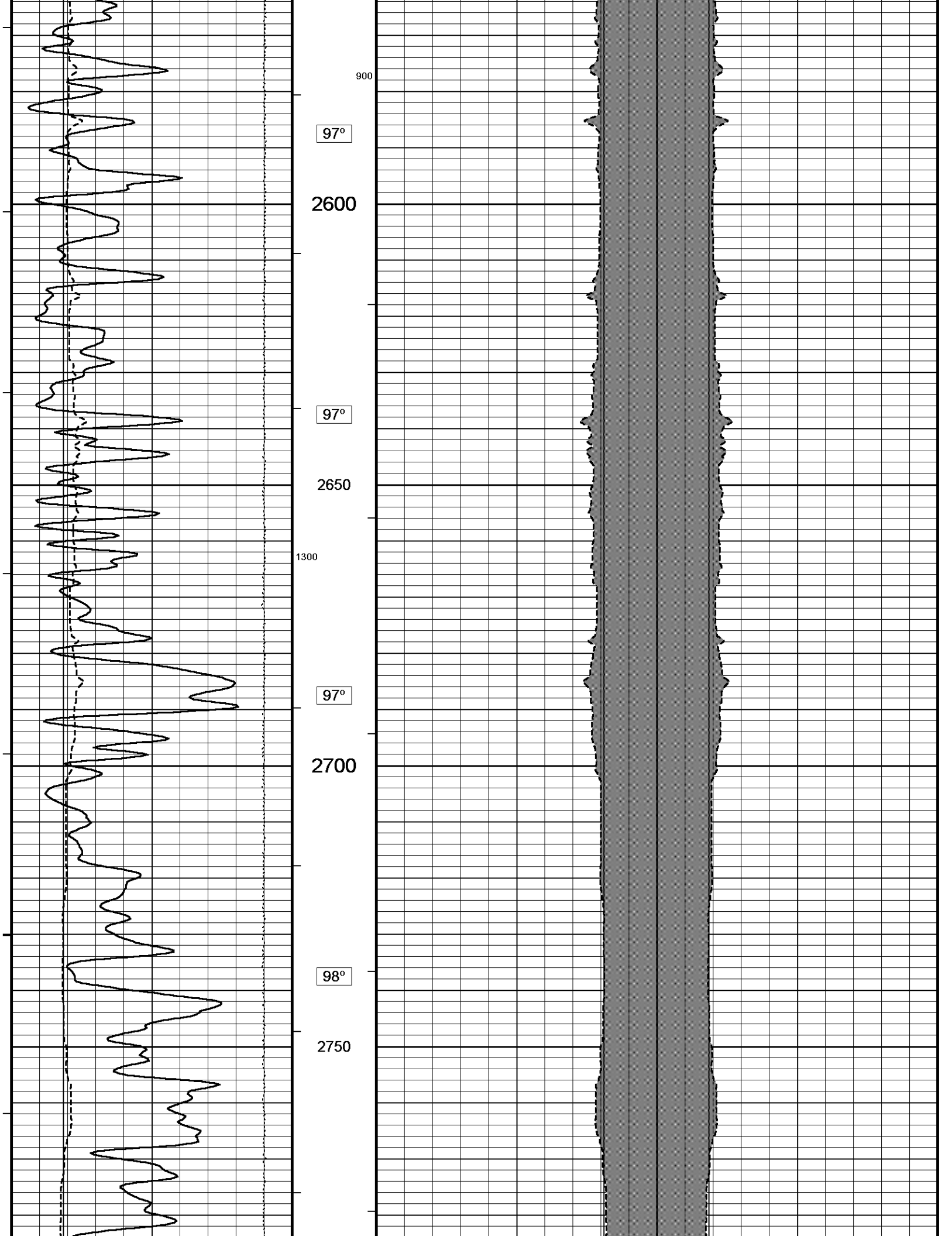


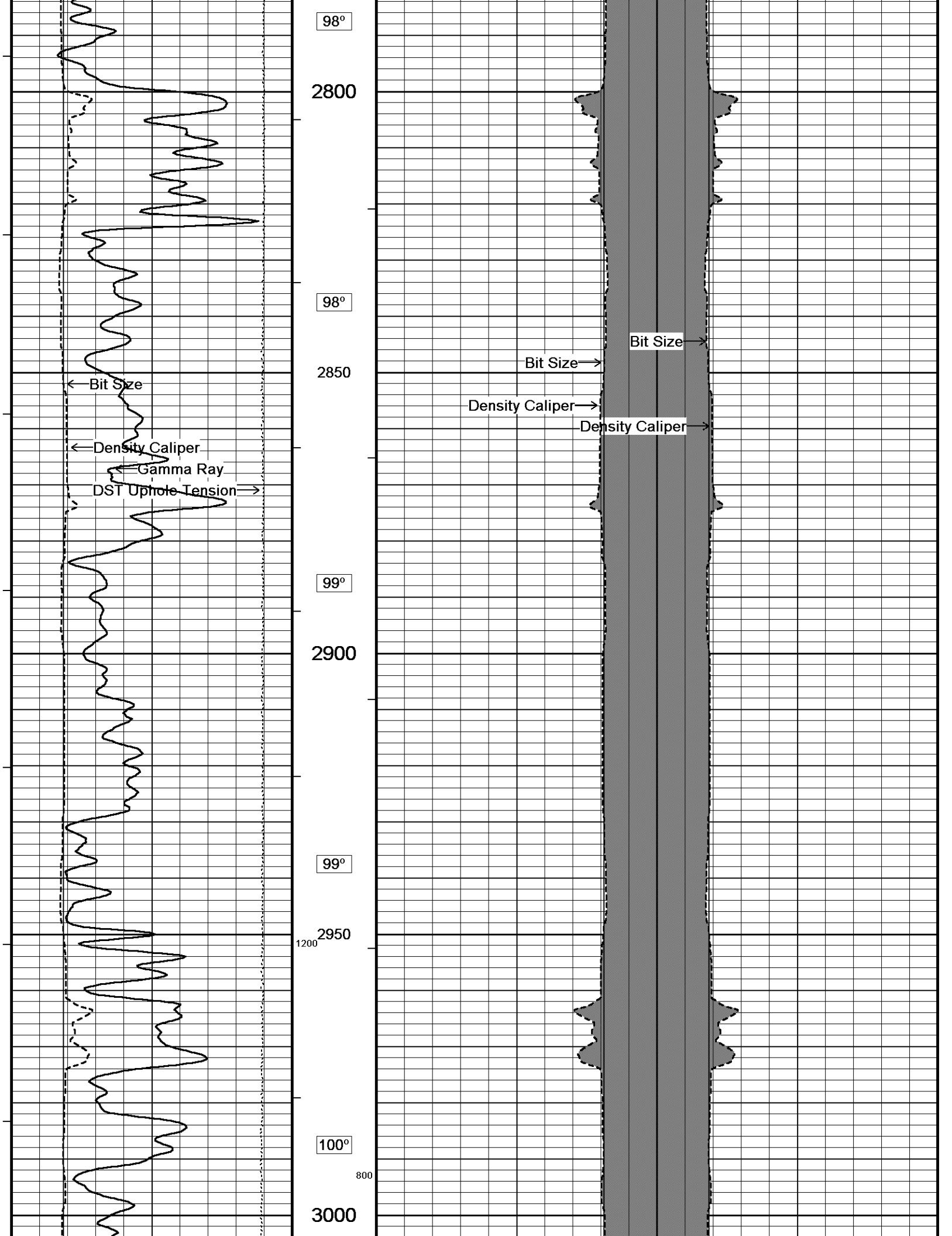


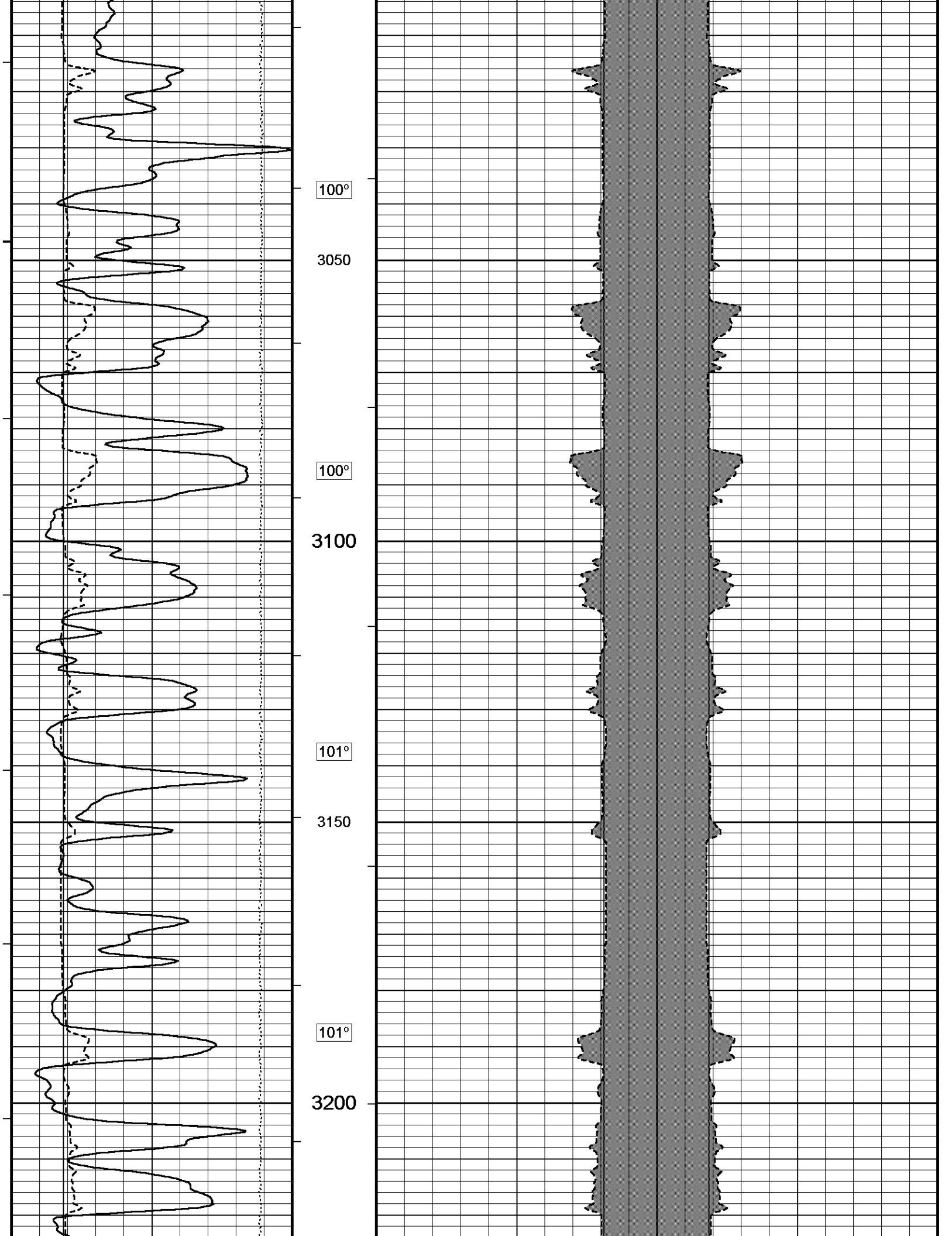


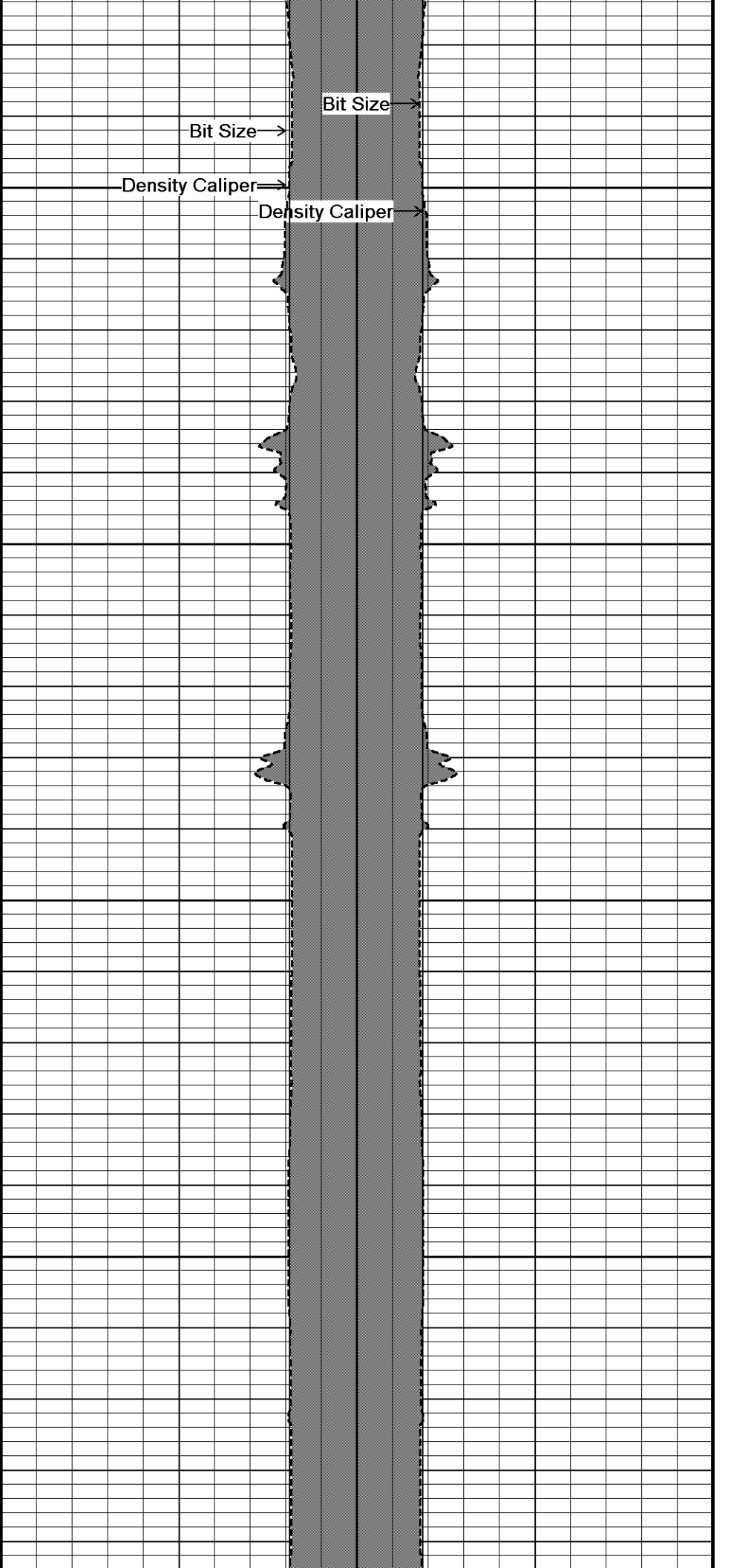
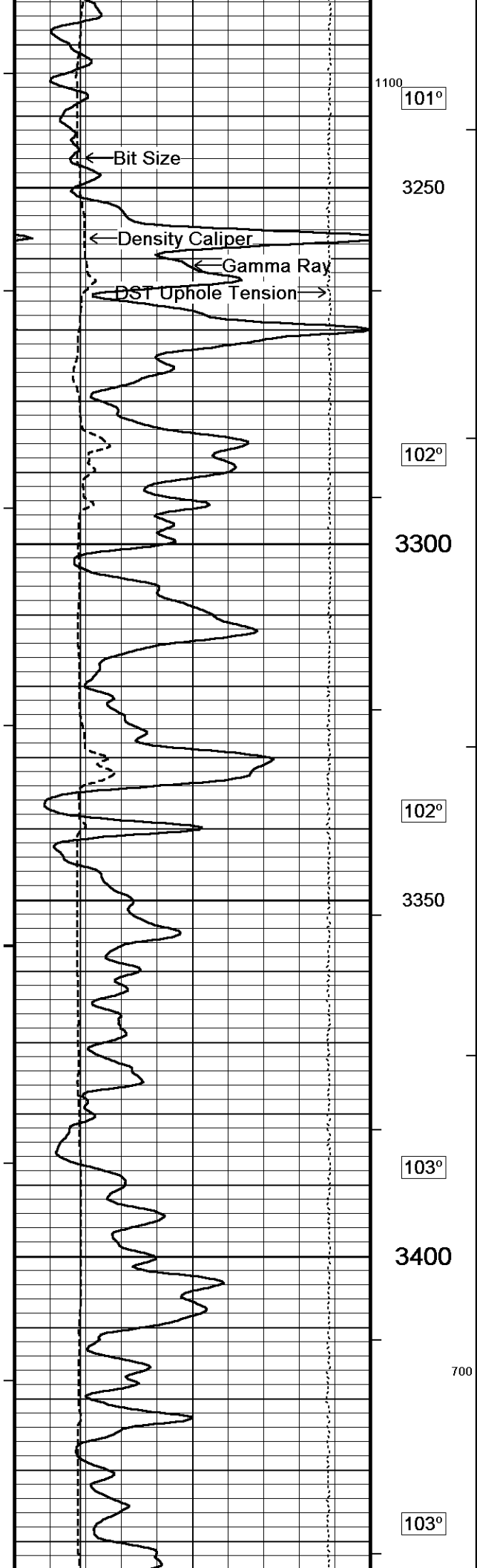


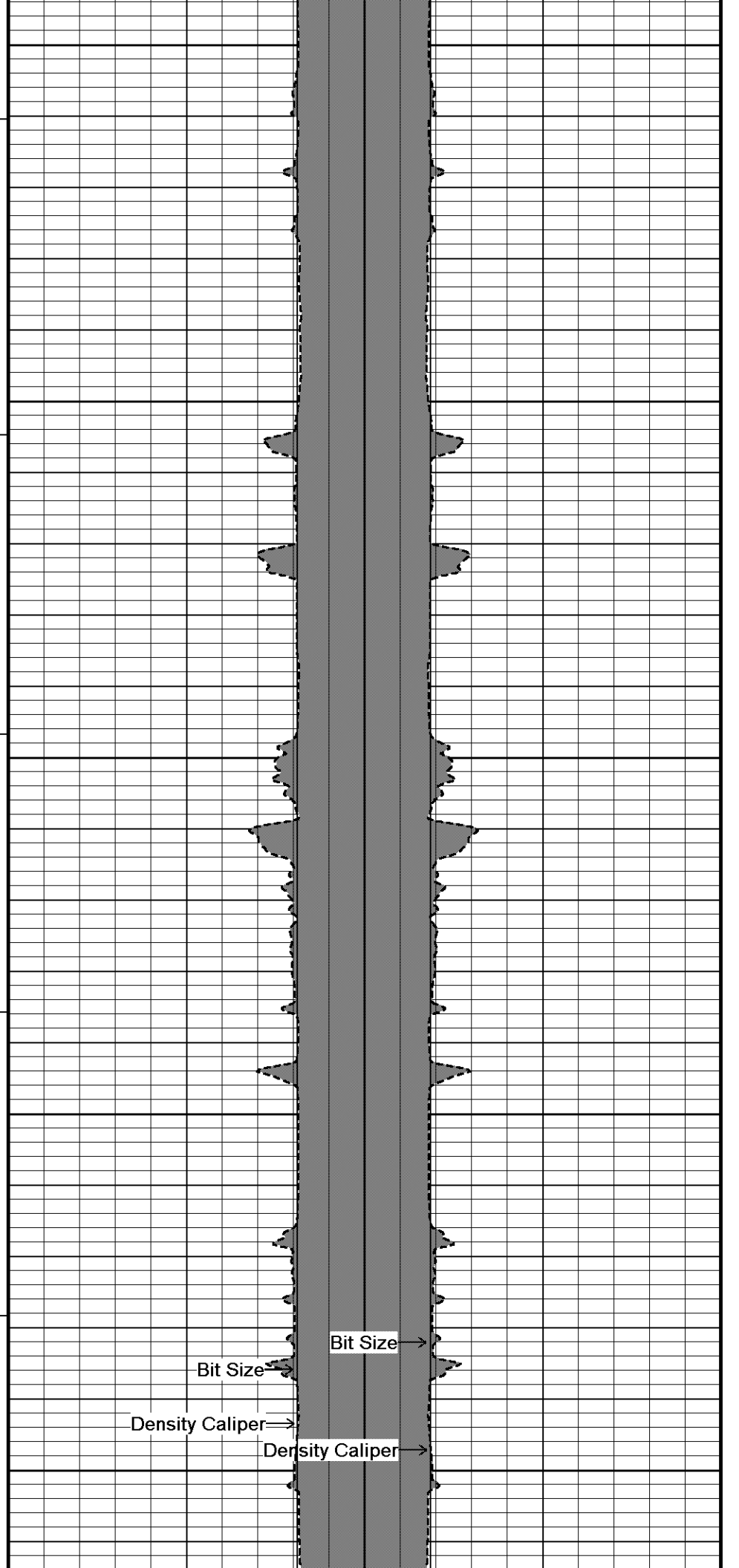
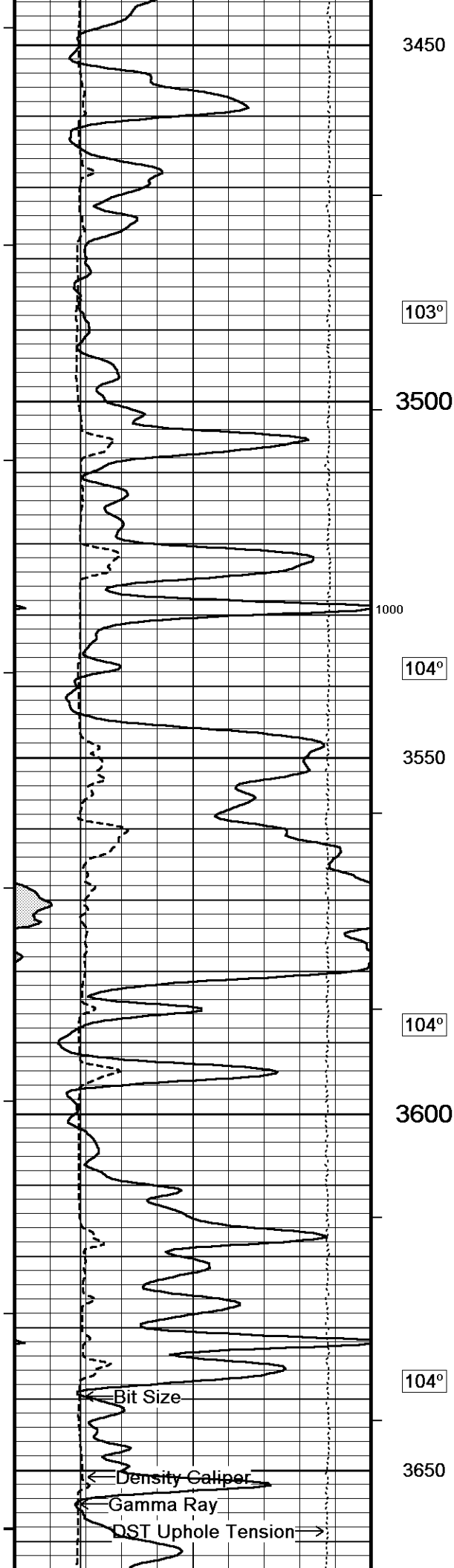


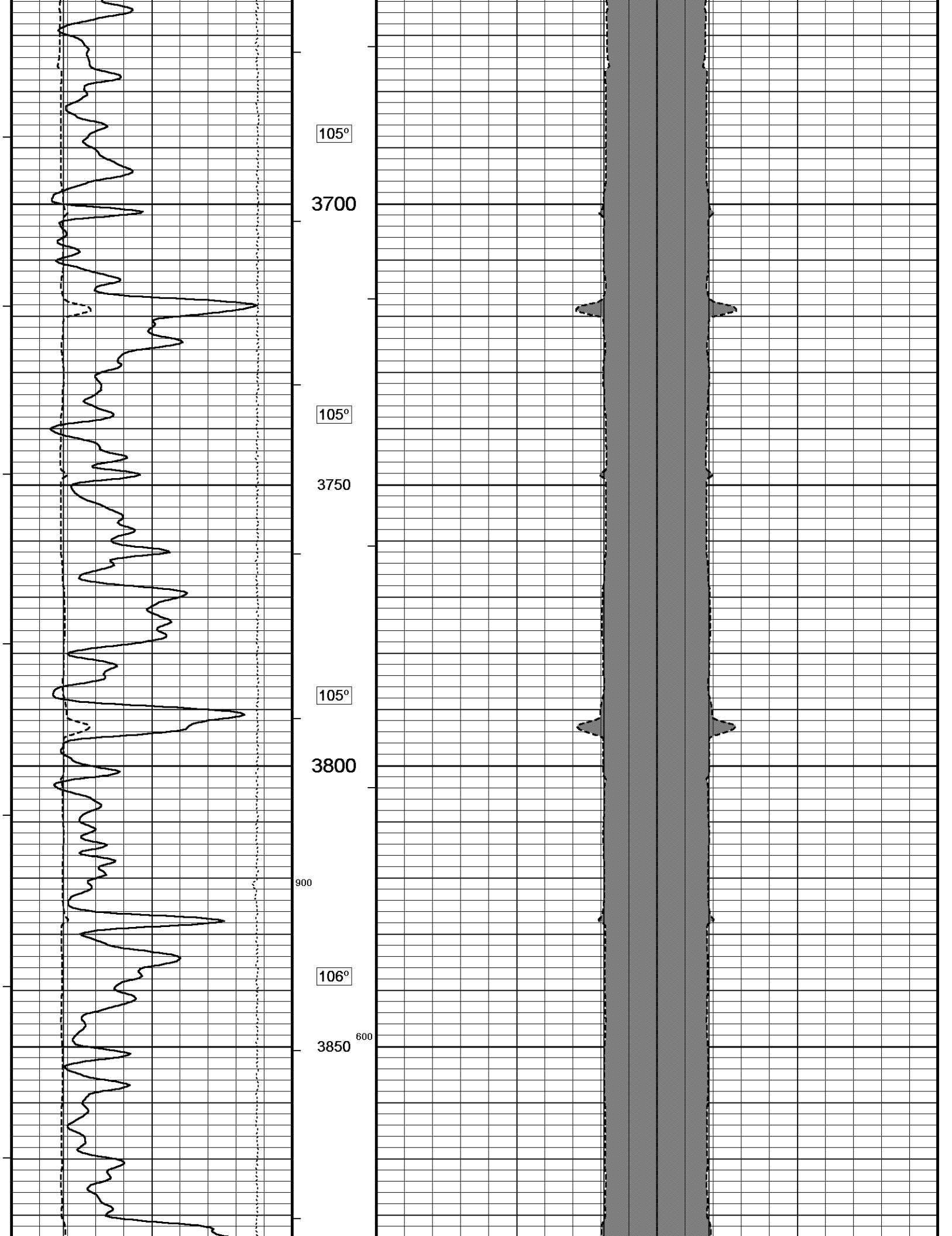


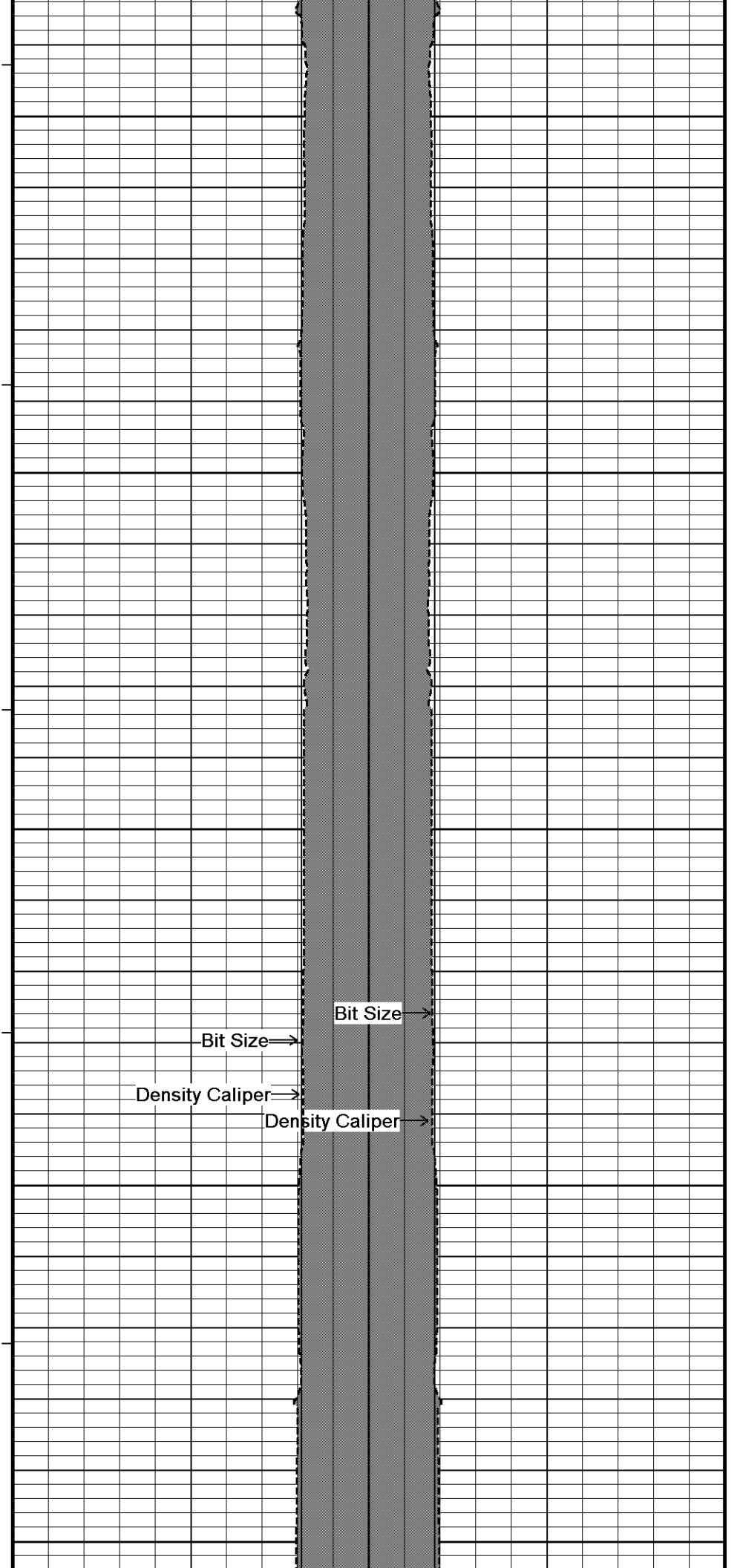
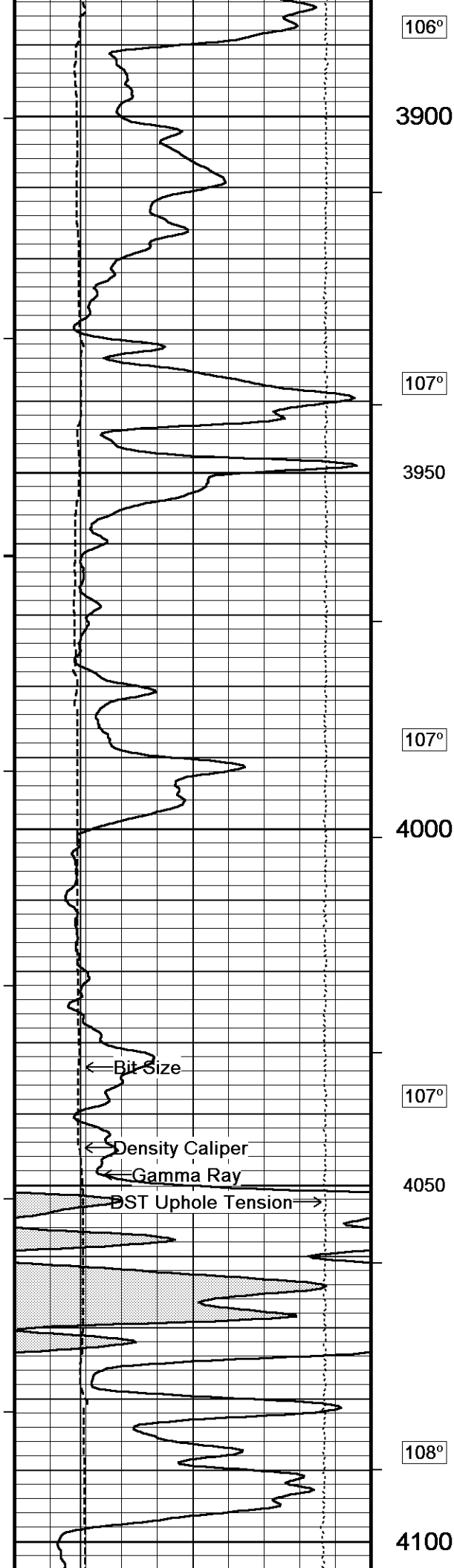


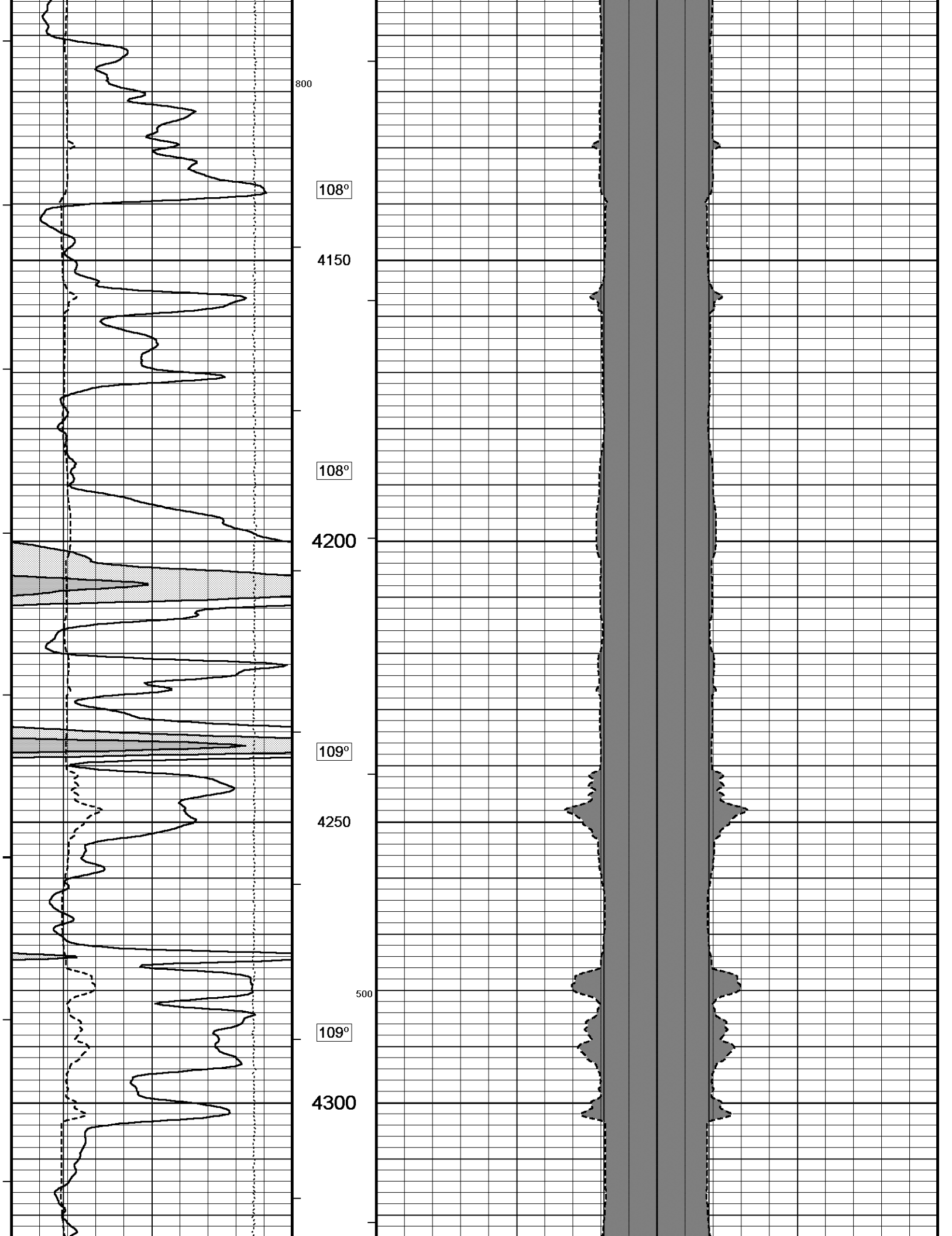


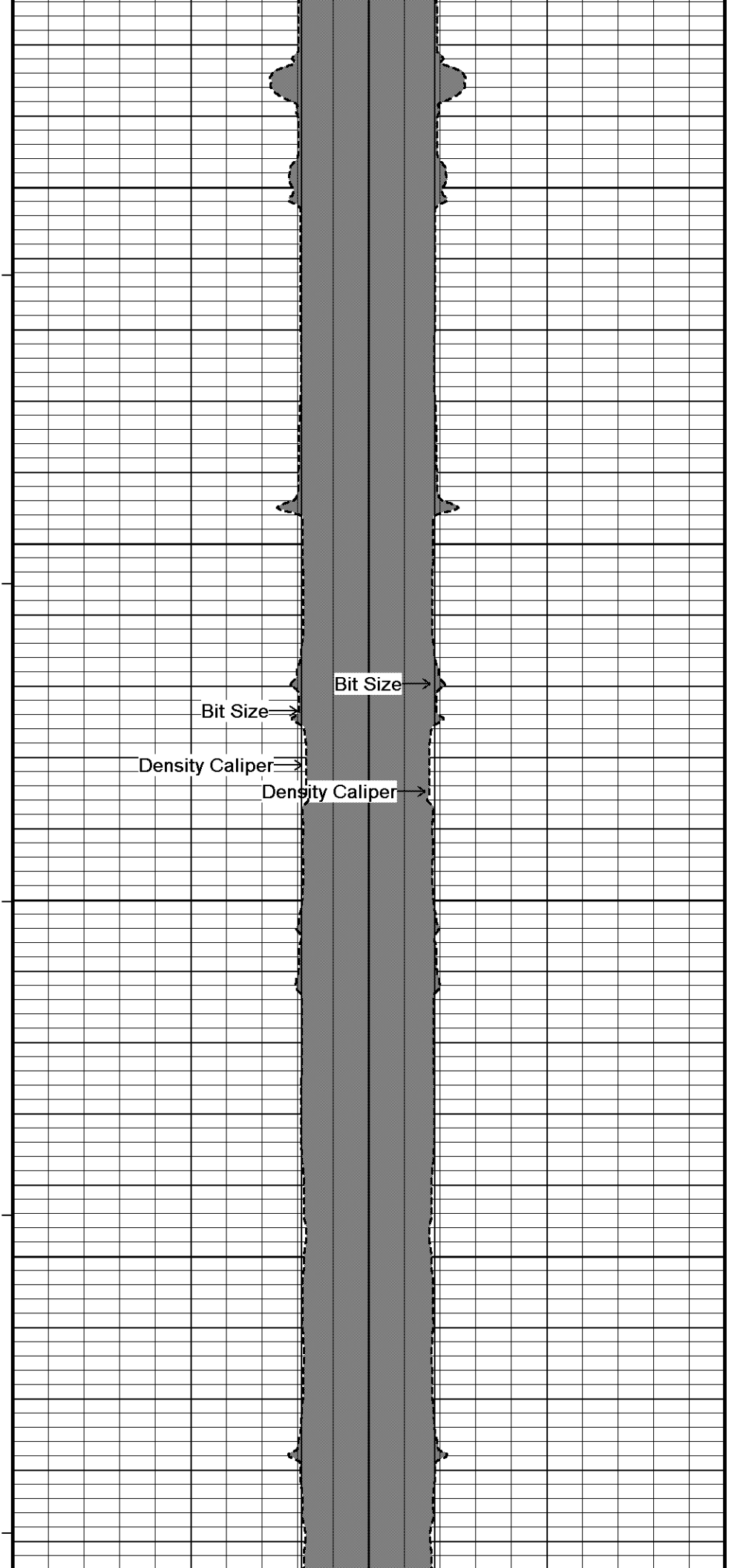
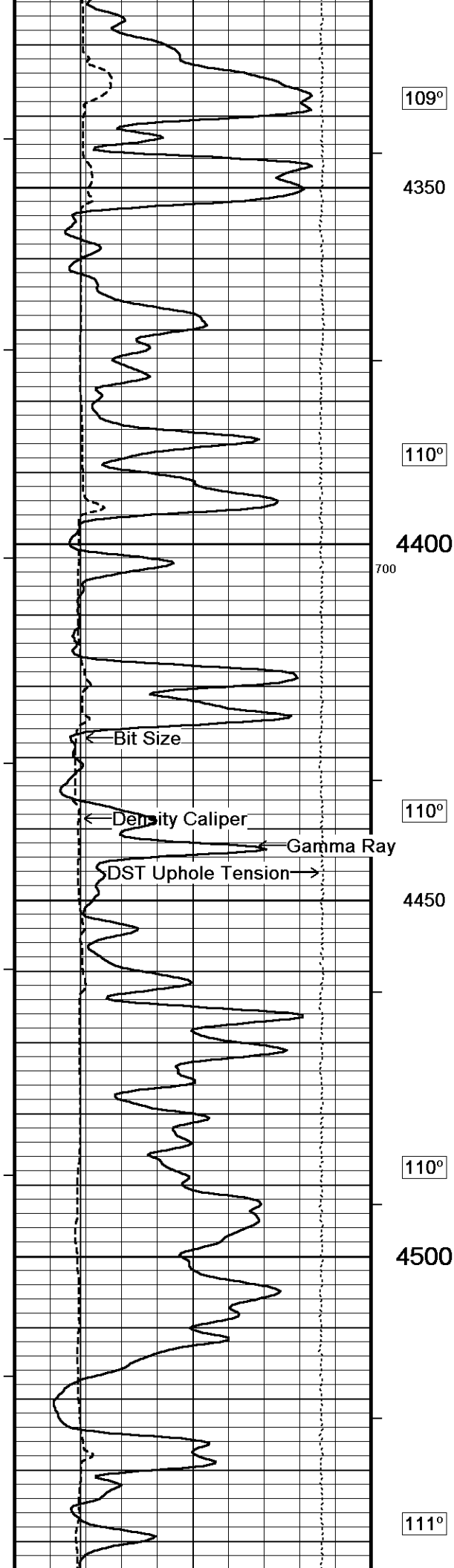


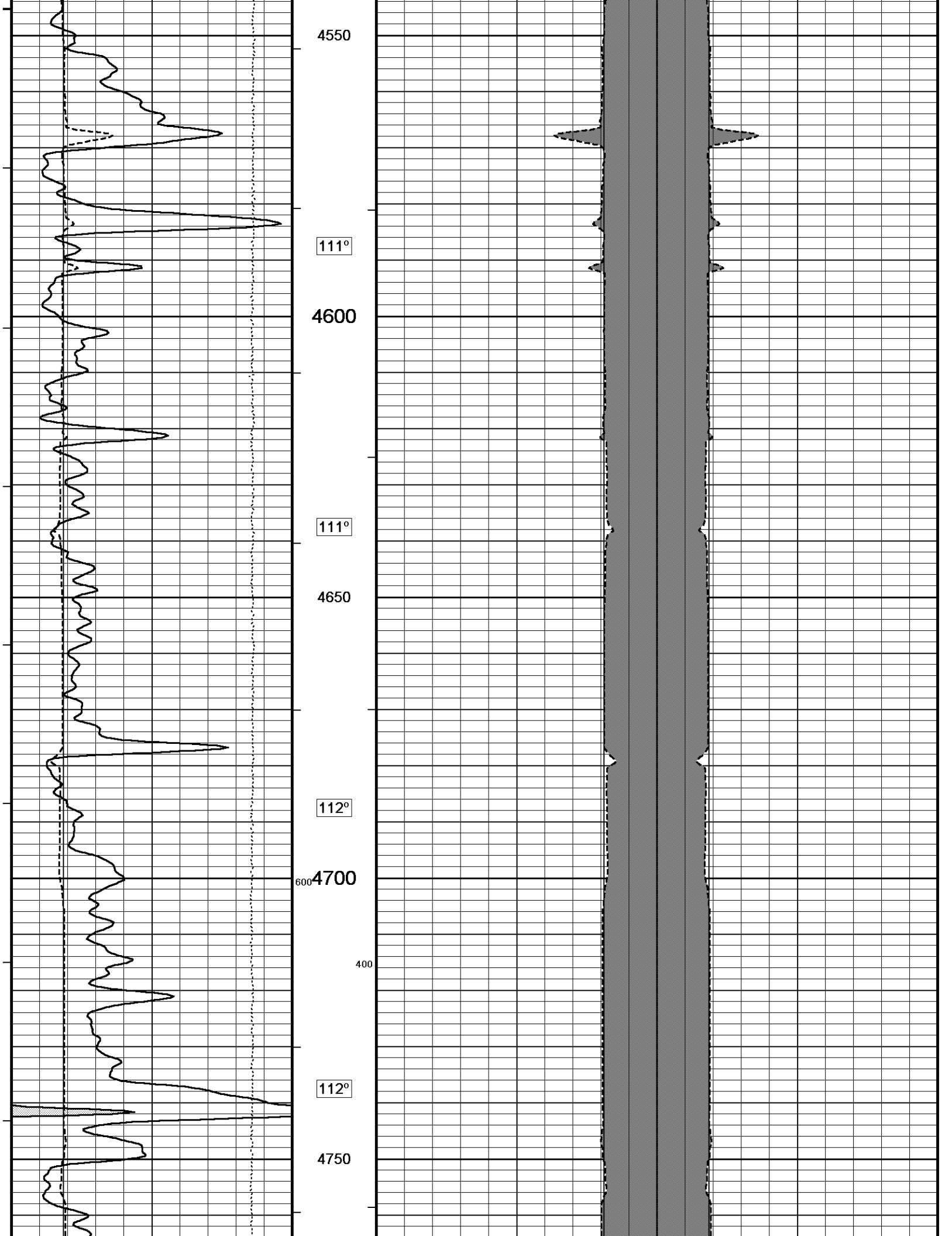


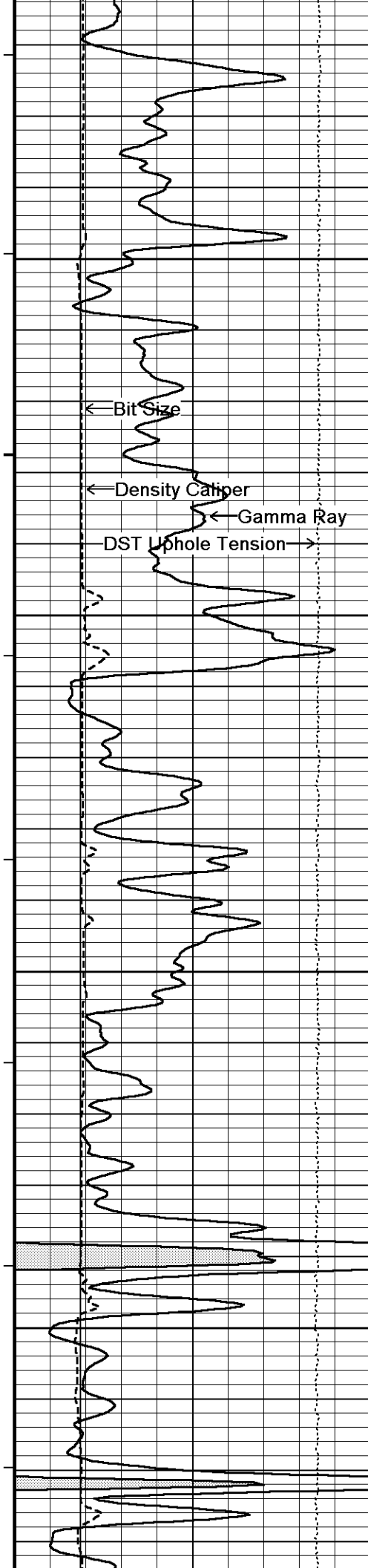












112°

4800

← Bit Size

← Density Caliper

← Gamma Ray

DST Up-hole Tension →

113°

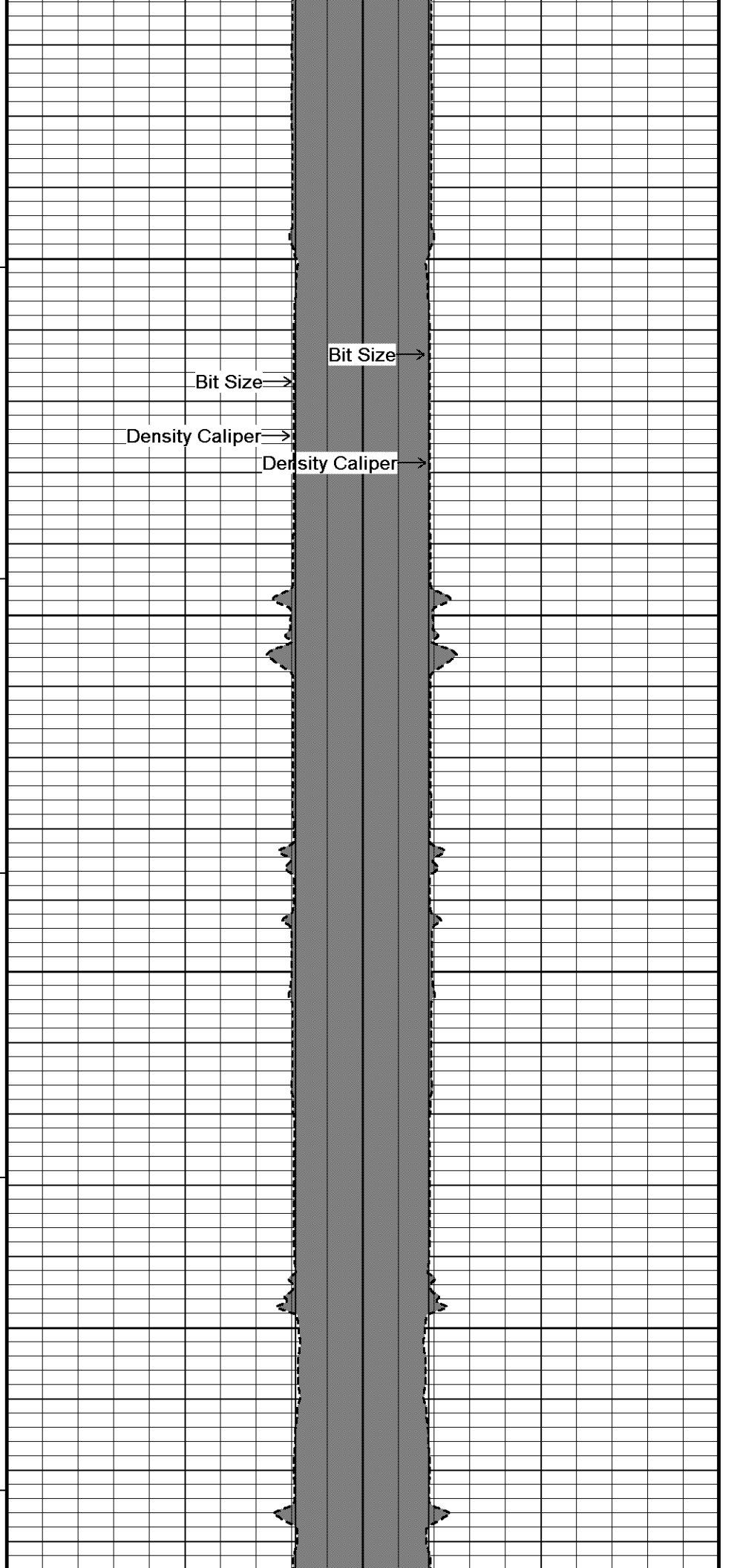
4850

113°

4900

113°

4950

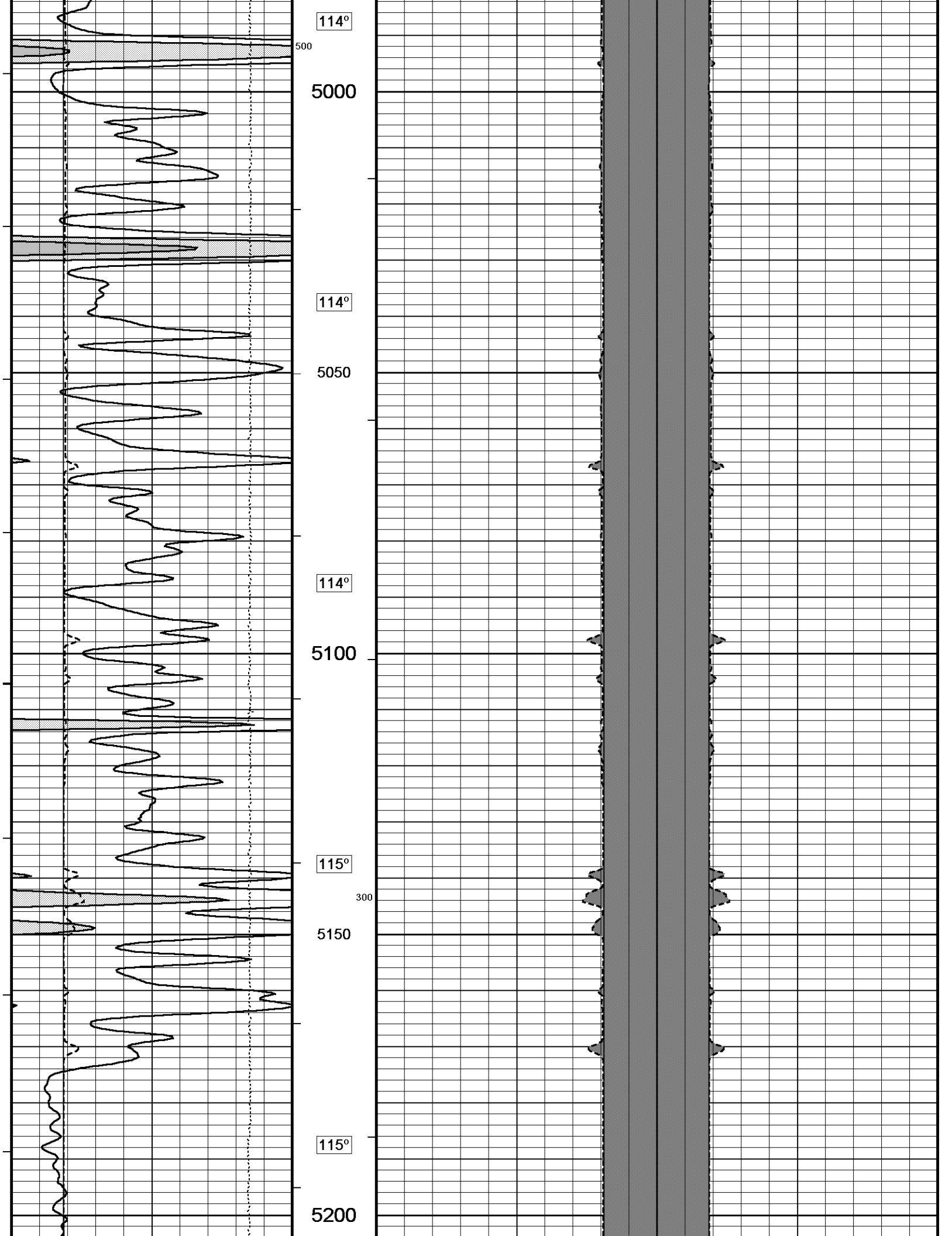


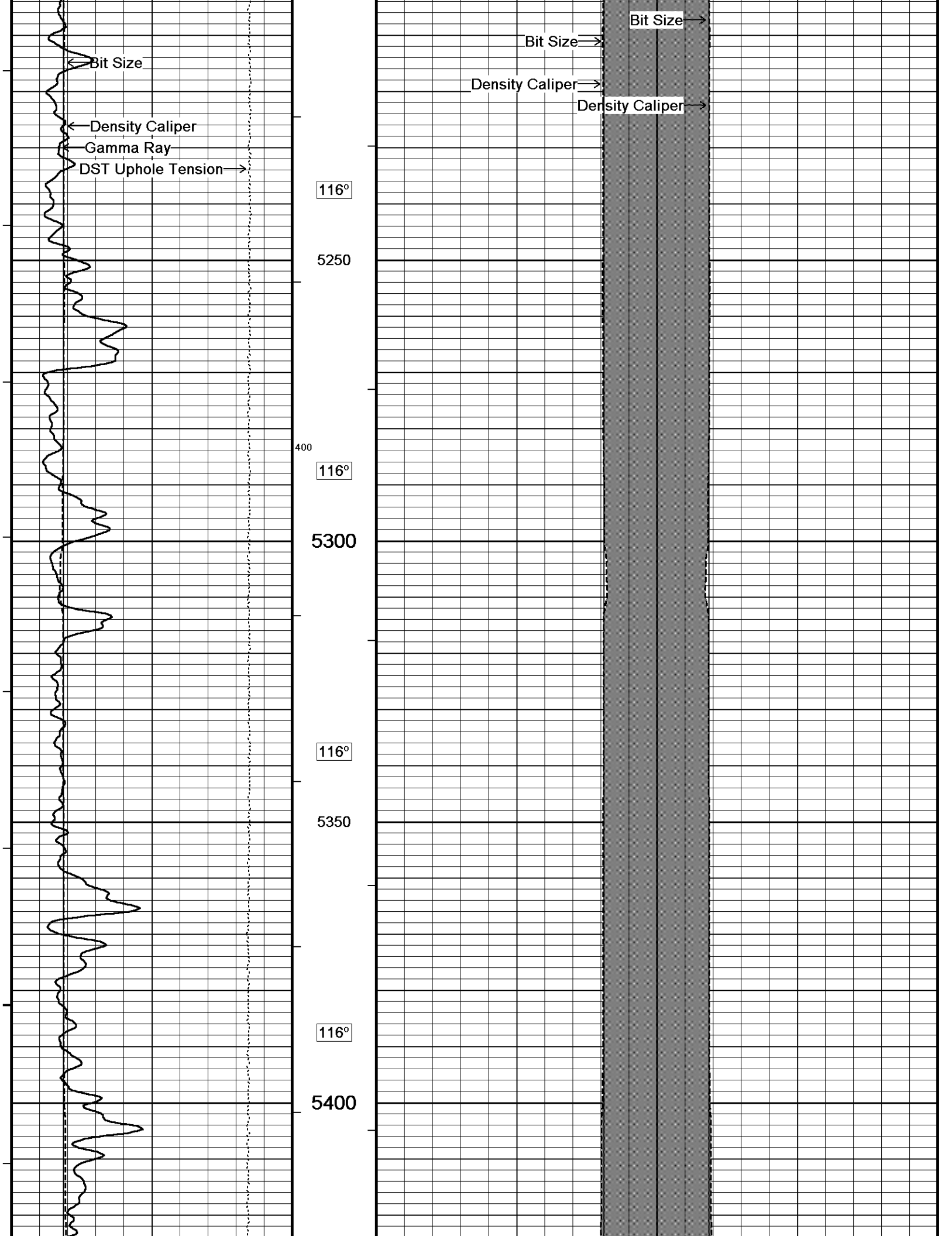
Bit Size →

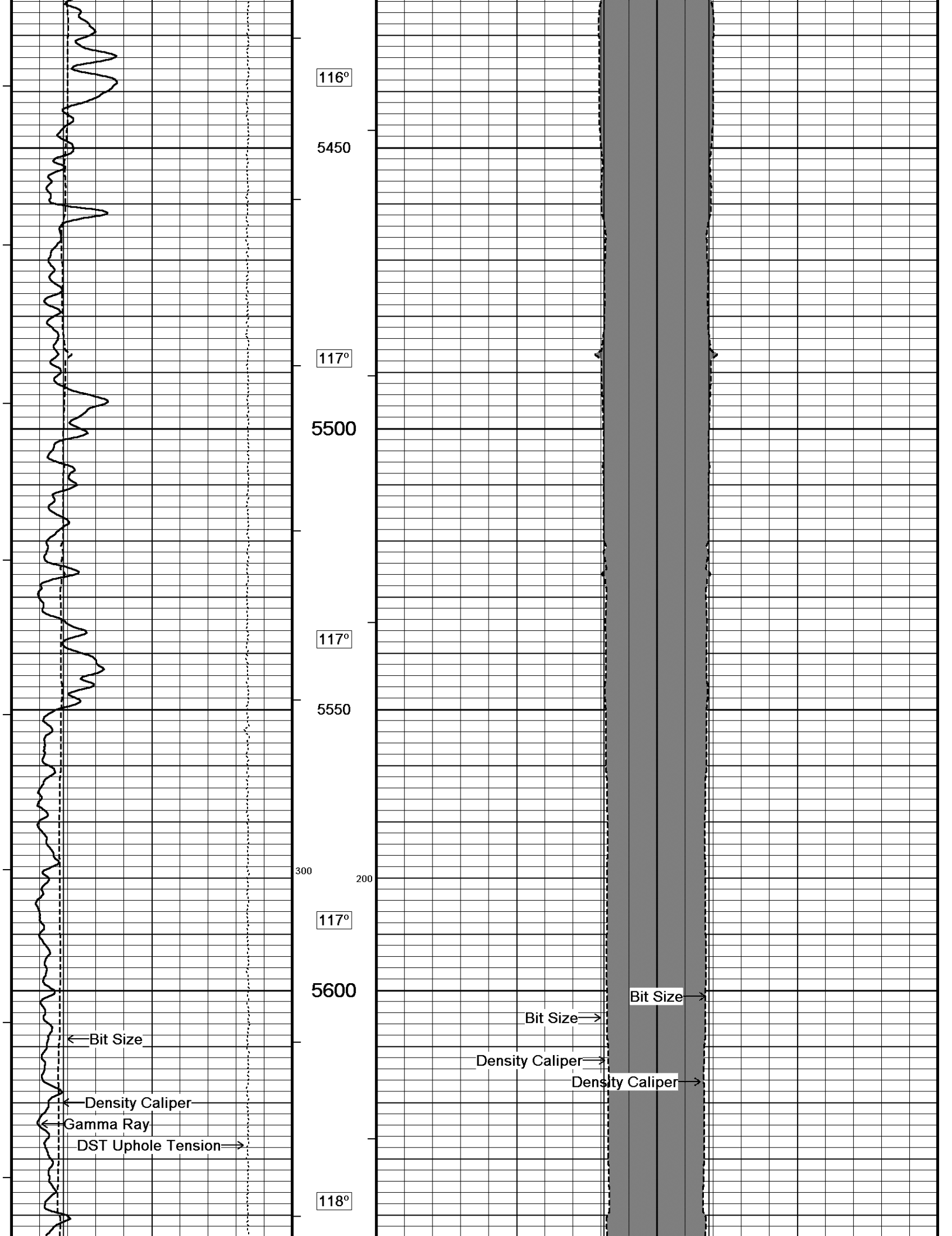
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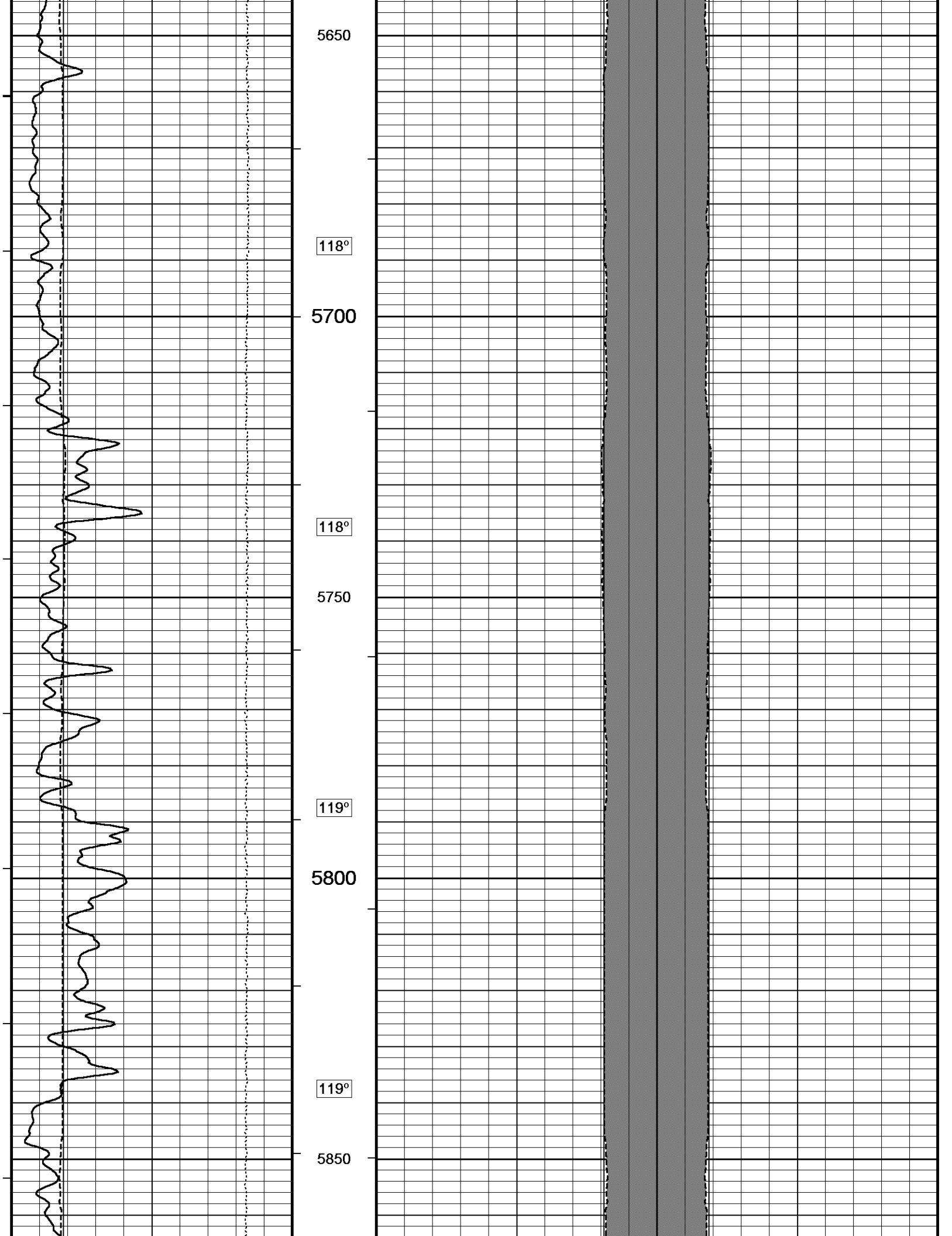
Density Caliper →

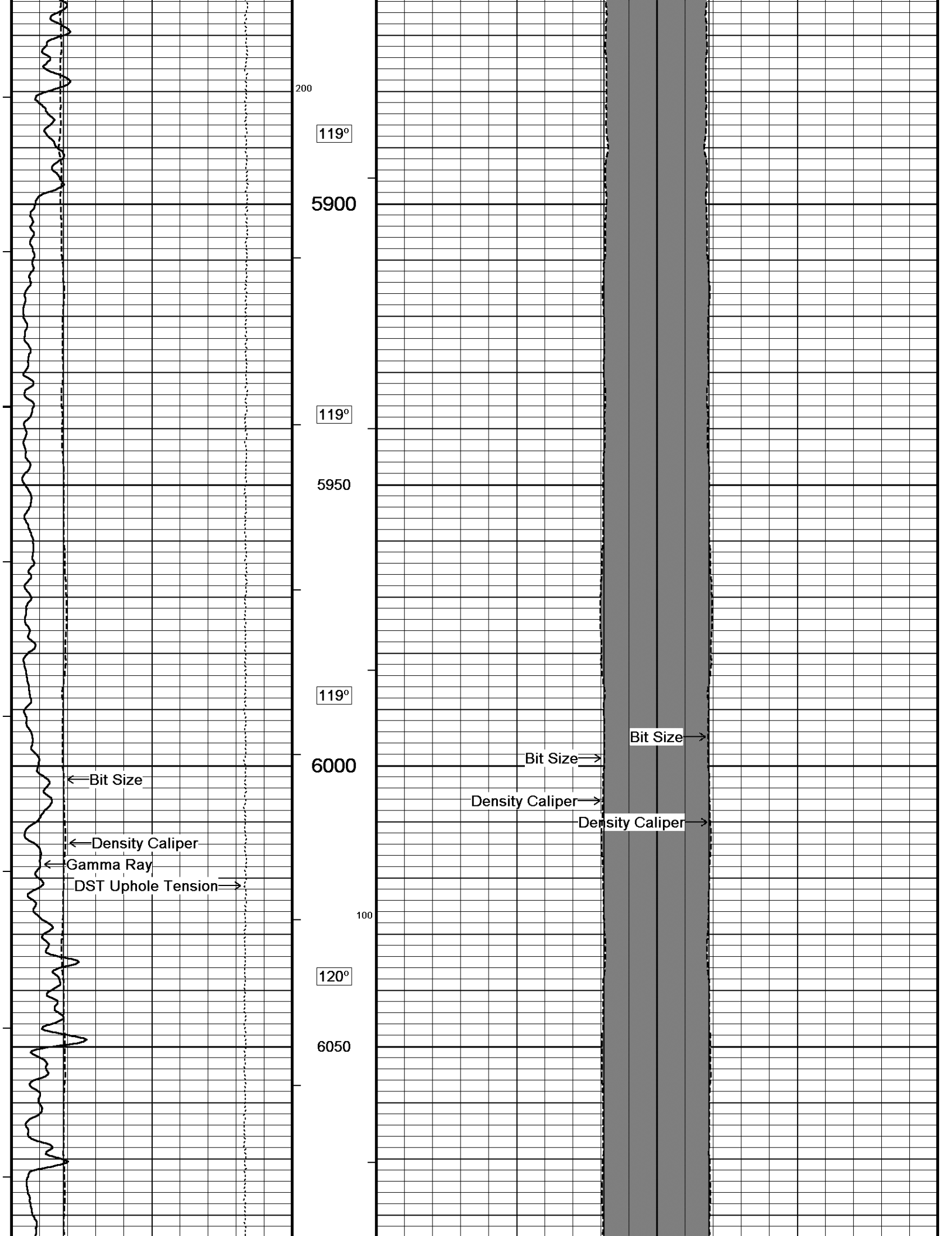
Density Caliper →

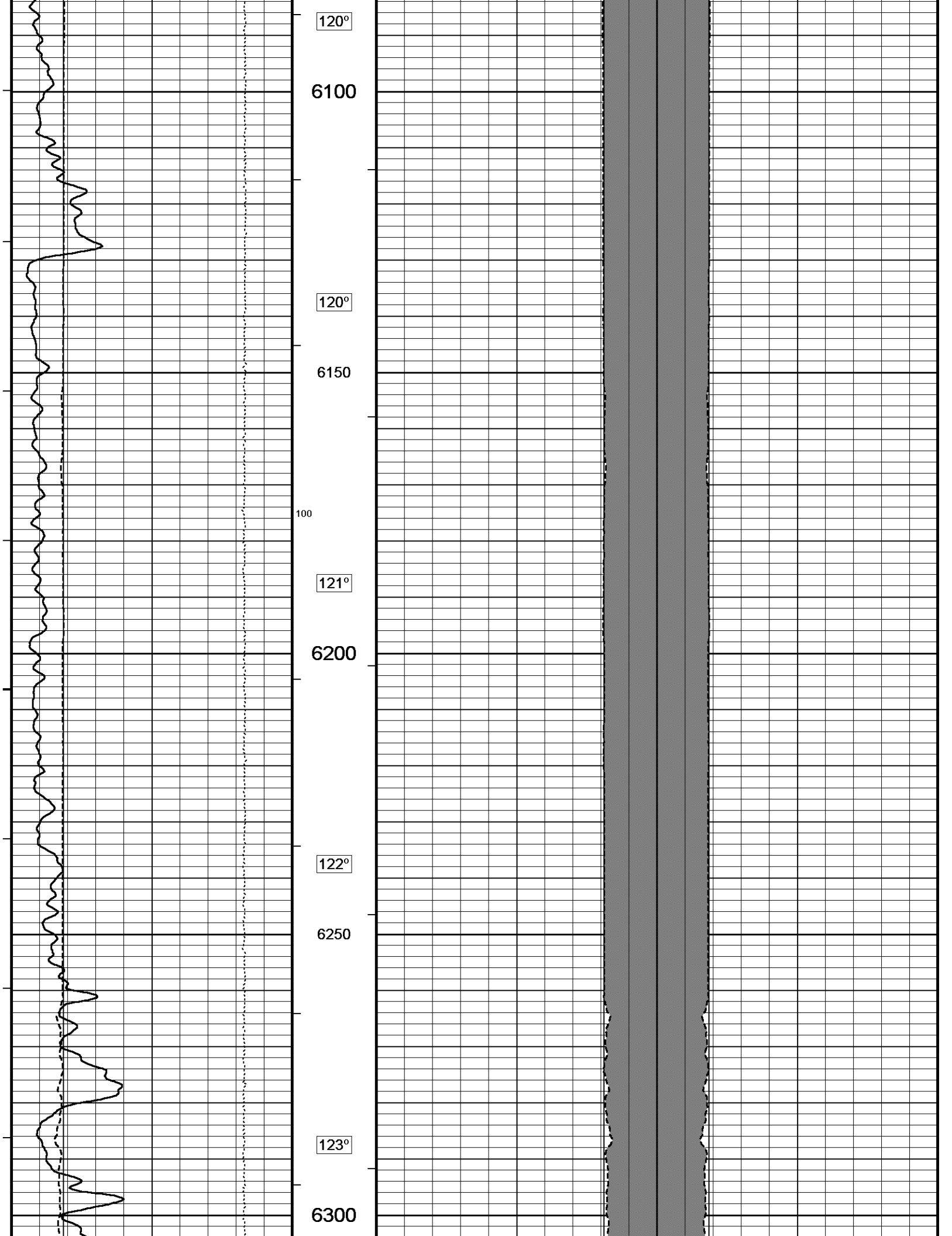


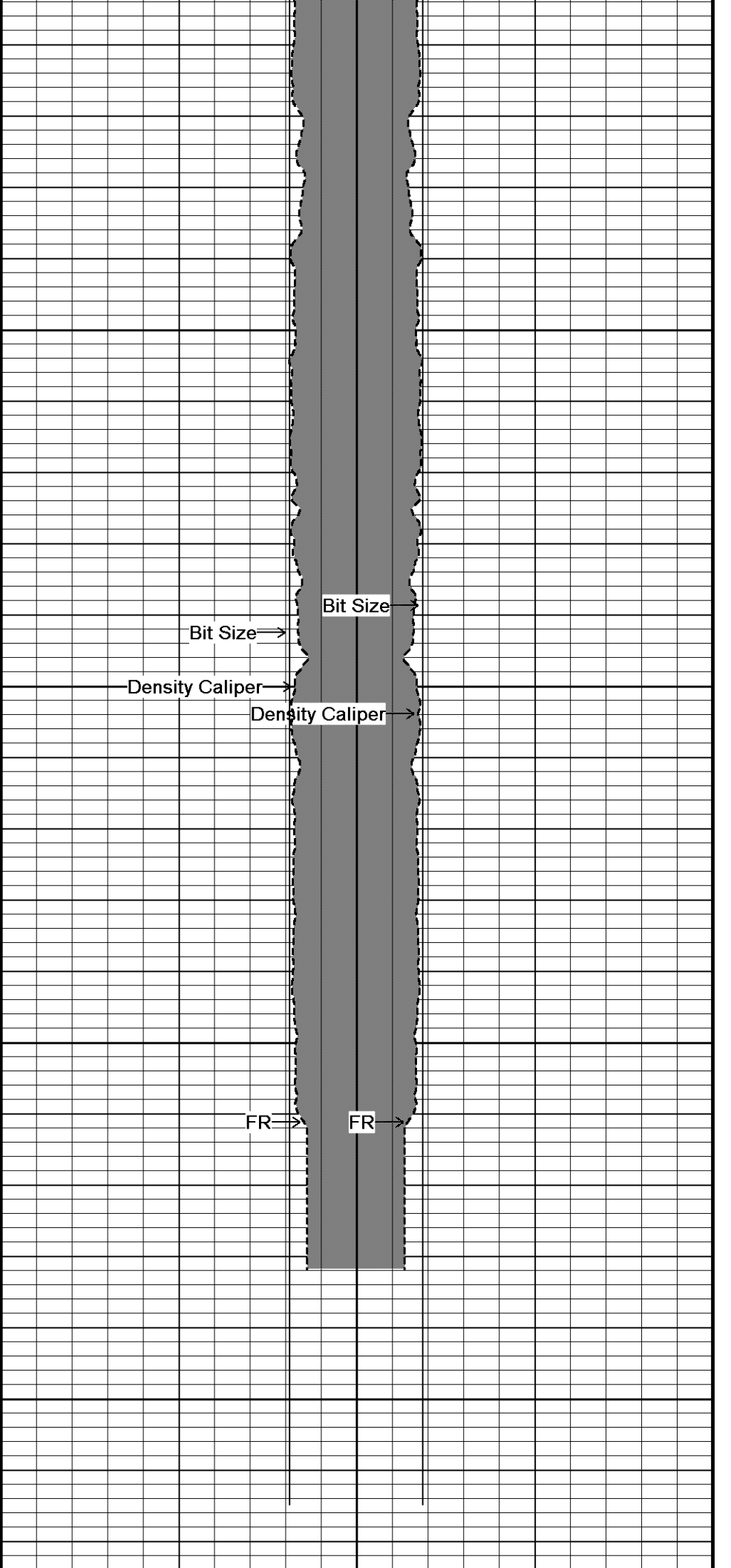
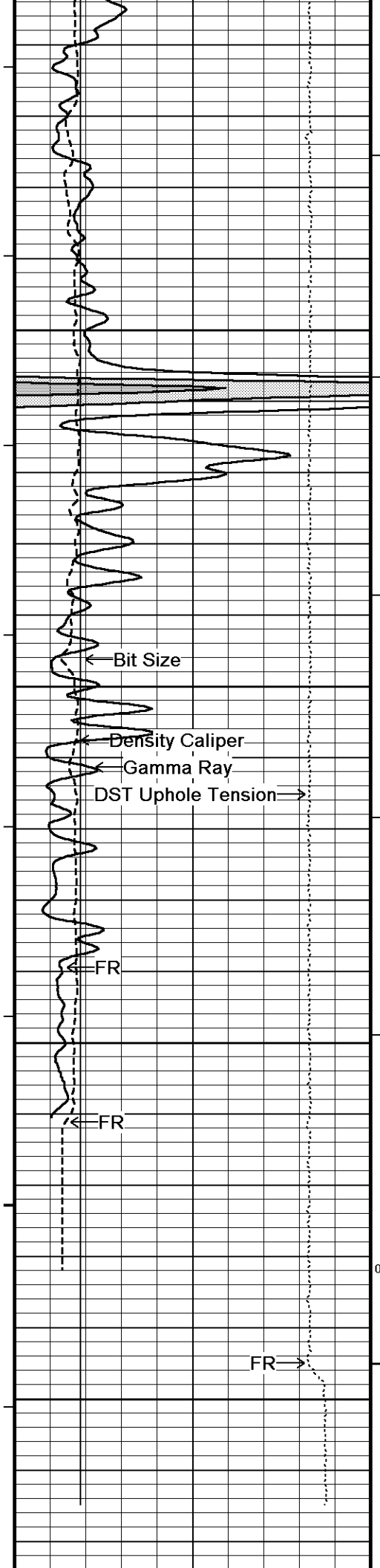


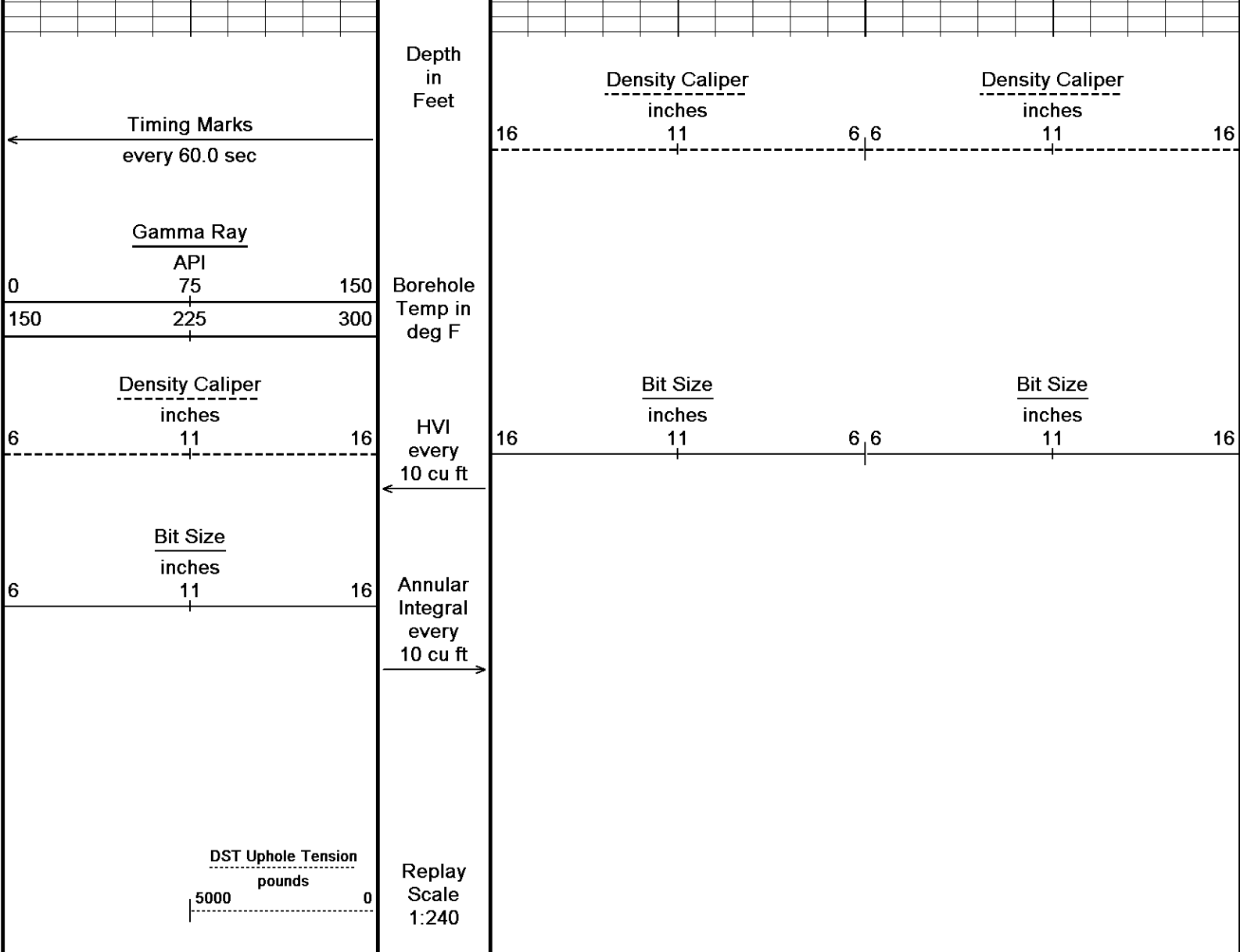












BEFORE SURVEY CALIBRATION		
C:\Minimus 16.05.4955\Data\McCoy Thomas & Reed Farms 'A' #1-21\McCoy Thomas & Reed Farms 'A' #1-21_002.dta		
General Constants All 000		Last Edited on 18-MAR-2017,15:11
General Parameters		
Mud Resistivity	1.030	ohm-metres
Mud Resistivity Temperature	75.000	degrees F
Water 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	4.500	inches
Caliper for Differential Caliper	None	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.620	
RWA Constant B	0.175	

RWA Constant M 2.150
SW/APOR Tool Source 0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 12-MAR-2017 14:30

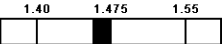
Reading No	Measured	Calibrated (lbs)
1	16170.41	0.00
2	17035.71	470.00

Gamma Calibration MCG-C 84

Field Calibration on 18-MAR-2017 07:26

	Measured	Calibrated (API)
Background	113	78
Calibrator (Gross)	777	534
Calibrator (Net)	664	456

Gamma Calibration Tolerances MCG-C 84

Ratio 1.456  Counts/API

The bar chart shows three segments: a white segment from 1.40 to 1.475, a black segment from 1.475 to 1.55, and a white segment from 1.55 to 1.60. The value 1.456 is indicated on the first white segment.

Gamma Constants MCG-C 84

Last Edited on 18-MAR-2017,10:21

Gamma Calibrator Number	MCGGRCC141
GRC-M Calibrator Jig in Use?	NO
Inactive Background Jig in Use?	NO
Mud Density	1.08 gm/cc
Caliper Source for Processing	Density Caliper
Tool Position	Eccentred
Potassium Equivalence	Chloride
K Mud Concentration	0.00 %

SP Calibration MCG-C 84

Field Calibration on 09-MAR-2017 17:03

	Measured	Calibrated (mV)
Reference 1	104.4	100.1
Reference 2	-95.8	-100.1

High Resolution Temperature Calibration MCG-C 84

Field Calibration on 09-MAR-2017,16:16

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-C 84

Last Edited on 09-SEP-2014,02:23

Pre-filter Length 11

Caliper Calibration MML-A 7

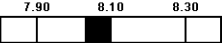
Base Calibration on 06-MAR-2017 15:09

Field Calibration on 18-MAR-2017 14:37

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14079	5.98
2	17378	7.97
3	20596	9.86
4	24537	11.92
5	0	0.00
6	N/A	N/A

Field Calibration	Measured Caliper (in)	Actual Caliper (in)
	8.02	8.10

Caliper Calibration Tolerances MML-A 7

Short Arm Field Cal. 8.02  in

The bar chart shows three segments: a white segment from 7.90 to 8.10, a black segment from 8.10 to 8.30, and a white segment from 8.30 to 8.50. The value 8.02 is indicated on the first white segment.

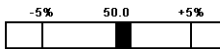
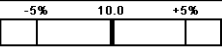
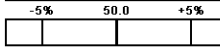
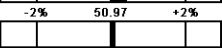
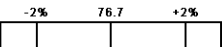
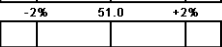
Micro Normal and Micro Inverse Calibration MML-A 7

Base Calibration on 06-MAR-2017 15:18

Field Check on 18-MAR-2017 14:40

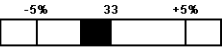
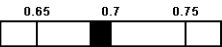
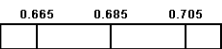
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Resistor 2
Micro Normal	10.3	50.5	5.1	25.6
Micro Inverse	10.0	50.1	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	76.7	76.7
Micro Inverse	51.0	51.0

Micro Normal & Micro Inverse Calibration Tolerance MML-A 7					
Micro Normal Res. 1	10.3		ohm	Micro Normal Res. 2	50.5  ohm
Micro Inverse Res. 1	10.0		ohm	Micro Inverse Res. 2	50.1  ohm
Micro Normal Base Check	76.7		ohm-m		
Micro Inverse Base Check	51.0		ohm-m		
Micro Normal Field Check	76.7		ohm-m		
Micro Inverse Field Check	51.0		ohm-m		

Micro Normal and Micro Inverse Constants MML-A 7				Last Edited on 18-MAR-2017,14:38	
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159				
Micro Normal K Factor	0.5110				
Micro Inverse K Factor	0.3380				
Standoff Offset	N/A		inches		

Neutron Calibration MDN-A.B 114				Base Calibration on 07-MAR-2017 19:13	
				Field Check on 18-MAR-2017 07:31	
Base Calibration					
		Measured		Calibrated (cps)	
	Near	Far		Near	Far
	3042	94		3714	110
Ratio	32.298			33.764	
Field Calibrator at Base					
				Calibrated (cps)	
				2149	3135
Ratio				0.685	
Field Check					
				Calibrated (cps)	
				2144	3130
Ratio				0.685	

Neutron Calibration Tolerances MDN-A.B 114					
Ratio	32.298				
Base Check	0.685				
Field Check	0.685				

Neutron Constants MDN-A.B 114			Last Edited on 18-MAR-2017,14:40		
Neutron Source Id	P0204NN				
Neutron Jig Number	NJ5736				
Air Hole Processing	Legacy				
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	Constant Value				
Temperature	68.00	degrees F			
Mud Salinity	0.00	kppm			
Salinity Correction	Not Applied				
Formation Fluid Salinity Source	None				
Formation Fluid Salinity	N/A	kppm			
Barite Mud Correction	Not Applied				

FE Calibration MFE-A.A 135	Base Calibration on 06-MAR-2017 14:24				
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Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.7	126.8
Base Check		281.0
Field Check		280.9

FE Calibration Tolerances MFE-A.A 135

Reference 2	963.7		ohm
Base Check	281.0		ohm-m
Field Check	280.9		ohm-m

FE Constants MFE-A.A 135

Last Edited on 18-MAR-2017,14:21

Running Mode	No Sleeve
MFE K Factor	0.1268
Borehole Correction Constants	
Sonde Position	0.5 inches
Hole Size Source	Density Caliper
Hole Size Constant Value	N/A inches
Rm Source	Global Value: Constant Temperature
Temp. for Rm Corr.	N/A

Sonic Constants MSS-A.A 55

Last Edited on 18-MAR-2017,10:20

Maximum Boundary Contrast	100.00	micro-sec/ft
Fluid Transit Time	189.00	micro-sec/ft
Limestone Transit Time	47.50	micro-sec/ft
Sandstone Transit Time	55.50	micro-sec/ft
Dolomite Transit Time	43.50	micro-sec/ft
Sonic used for Porosities	3-5' Compensated Sonic	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	N/A	micro-sec
MX3FT	N/A	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	N/A	0.0000
Free Pipe	N/A	N/A
Peak Amplitude Source		N/A

Waveform	Start Time (micro-sec)	Width (micro-sec)	Pre Gain	Start Gain	Discriminator (mV)
3'	N/A	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A	N/A
5'	N/A	N/A	N/A	N/A	N/A
6'	N/A	N/A	N/A	N/A	N/A

Processed Fixed Gate Parameters

Waveform Used For Processing	N/A			
Start Time (micro-sec)	End Time (micro-sec)	Discriminator (mV)	N/A	
N/A	N/A	N/A		N/A
N/A	N/A	N/A		N/A
N/A	N/A	N/A		N/A
N/A	N/A	N/A		N/A
N/A	N/A	N/A		N/A

Full Waveform Parameters

Use 3' Waveform to derive TR	N/A	
Use 4' Waveform to derive TR	N/A	
Use 5' Waveform to derive TR	N/A	
Use 6' Waveform to derive TR	N/A	
3' Waveform Discriminator Level	N/A	mV
4' Waveform Discriminator Level	N/A	mV
5' Waveform Discriminator Level	N/A	mV
6' Waveform Discriminator Level	N/A	mV
Waveform Discriminator Filter	N/A	
Semblance Window Width	N/A	micro-sec
Sonic Despiker	N/A	N/A

Induction Calibration MAI-A.A 111

Base Calibration on 07-MAR-2017 11:32
Field Check on 18-MAR-2017 14:36

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		17.6	473.6	9.3	966.2
2		6.4	385.9	7.6	821.4
3		3.2	264.0	5.2	566.0
4		2.1	135.5	2.6	279.2
Array Temperature		23.0		Deg F	

Test Loop Calibration Verified

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	12.0	3868.2	16.1	3871.1	
2	29.7	3524.8	32.3	3525.1	
3	29.0	3018.9	31.1	3018.6	
4	19.1	2056.7	20.4	2056.5	
Deep	17.6	1960.5	19.1	1960.2	
Medium	43.0	3973.6	45.5	3972.7	
Shallow	44.3	5227.8	48.0	5228.5	
Array Temperature		64.6	91.6		Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6		mmho/m	High Conductivity 1	473.6		mmho/m
Low Conductivity 2	6.4		mmho/m	High Conductivity 2	385.9		mmho/m
Low Conductivity 3	3.2		mmho/m	High Conductivity 3	264.0		mmho/m
Low Conductivity 4	2.1		mmho/m	High Conductivity 4	135.5		mmho/m
Background Vx 1	0.0		mmho/m	Phase Check Loop 1	0.0		%
Background Vx 2	0.0		mmho/m	Phase Check Loop 2	0.0		%
Background Vx 3	0.0		mmho/m	Phase Check Loop 3	0.0		%
Background Vx 4	0.0		mmho/m	Phase Check Loop 4	0.0		%

Induction Constants MAI-A.A 111

Last Edited on 18-MAR-2017,14:34

Induction Model	RtAP-WBM	
Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Rm Source	Global Value: Temperature Corrected	
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

Symmetrised Receiver Gains

Receiver 1	1.00
Receiver 2	1.00
Receiver 3	1.00
Receiver 4	1.00

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 111

Field Calibration on 09-MAR-2017,23:45

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

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length 11

Caliper Calibration MPD-C.A 216

Base Calibration on 05-MAR-2017 15:58

Field Calibration on 18-MAR-2017 14:33

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17457	3.99
2	27664	5.98
3	37745	7.97
4	47504	9.86
5	58688	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.06	8.10

Caliper Calibration Tolerances MPD-C.A 216

Short Arm Field Cal. 8.06  in

Photo Density Calibration MPD-C.A 216

Base Calibration on 05-MAR-2017 16:29

Field Check on 18-MAR-2017 14:21

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1036	1224		
Reference 1	51866	24752	59556	30836
Reference 2	20639	2335	24941	2541

Field Check at Base

1035.7 1223.7

Field Check

1037.3 1227.7

PE Calibration

Base Calibration

	WS	Measured WH	Ratio	Calibrated Ratio
Background	191	930		
Reference 1	21544	51698	0.421	0.371
Reference 2	5964	20523	0.295	0.272

Field Check at Base

190.5 930.0

Field Check

189.8 933.1

Photo Density Calibration Tolerances MPD-C.A 216

Near Density Ratio	2.59	
PE Calibration	0.117	

Far Density Ratio	21.17	
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Near Den. Field Check	1037.3	
PE WS Field Check	189.8	

Far Den. Field Check	1227.7	
PE WH Field Check	933.1	

Density Constants MPD-C.A 216

Last Edited on 18-MAR-2017,14:21

Density Source Id	P50557B	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 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	
Precision Enhanced Density Processing	Not Applied	
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	

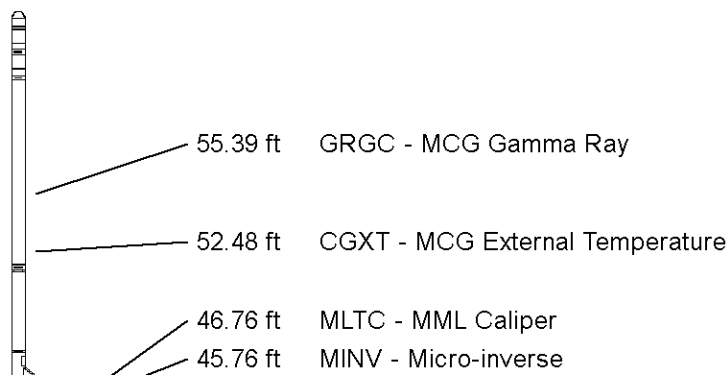
DOWNHOLE EQUIPMENT

C:\Minimus 16.05.4955\Data\McCoy Thomas & Reed Farms 'A' #1-21\McCoy Thomas & Reed Farms 'A' #1-21_002.dta

Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-log
MML-A 7 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

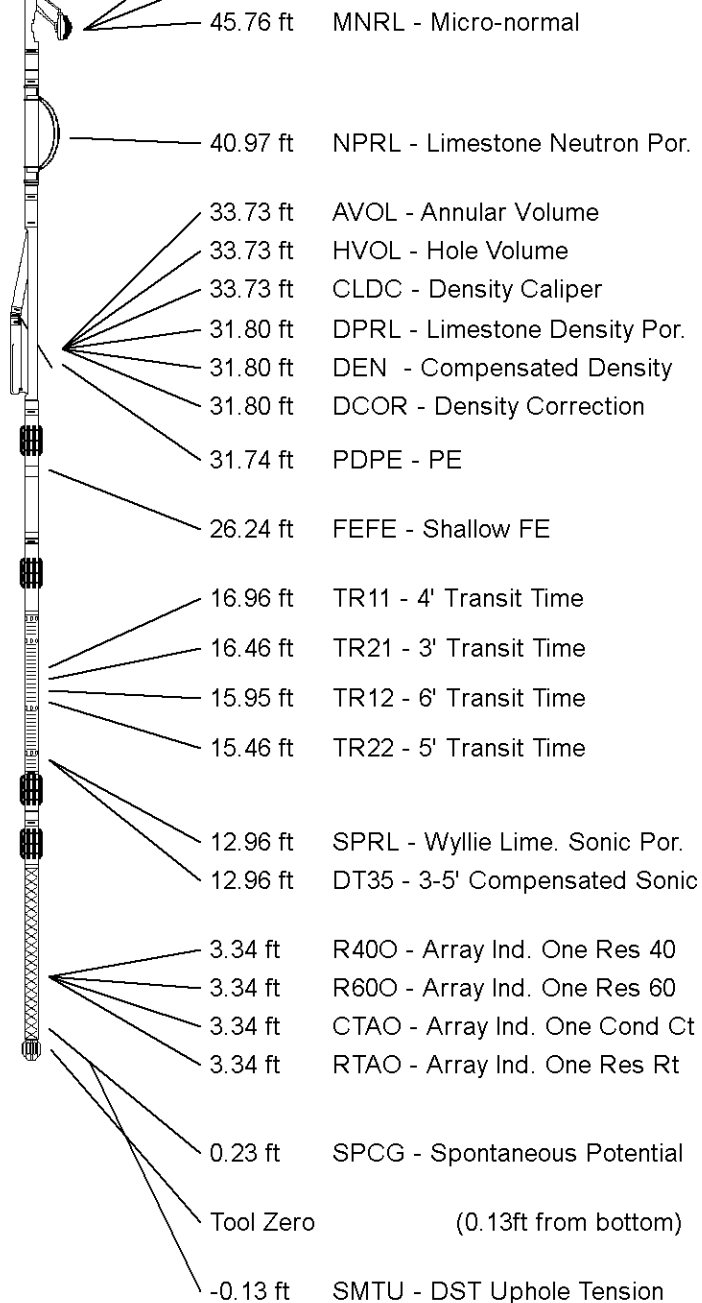
Compact Density/Caliper
MPD-C.A 216 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-A.A 135 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

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

Total Length: 63.07 ft Weight: 480.6 lb



All measurements relative to tool zero.

COMPANY	McCOY PETROLEUM CORPORATION
WELL	THOMAS & REED FARMS 'A' #1-21
FIELD	WILDCAT
PROVINCE/COUNTY	GRAY
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	2739	feet	First Reading	6463.00	feet
Elevation Drill Floor	2737	feet	Depth Driller	6500.00	feet
Elevation Ground Level	2728	feet	Depth Logger	6495.00	feet



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CALIPER LOG

