



Weatherford

**COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME**

COMPANY	SHAKESPEARE OIL CO., INC.		
WELL	GOERING #1-5		
FIELD	WILDCAT		
PROVINCE/COUNTY LANE	U.S.A. / KANSAS		
COUNTRY/STATE	1580' FNL & 360' FEL		
LOCATION			
SEC 5	TWP 20S	RGE 30W	Other Services
Latitude			MAI/MFE
Longitude			MML
API Number	15-101-22596		MPD/MDN
Permanent Datum GL, Elevation	2940 feet		Elevations: feet
Log Measured From KB,	11.00 feet above Permanent Datum		KB 2951.00
Drilling Measured From KB			DF 2949.00
			GL 2940.00
Date	21-JUL-2017		
Run Number	ONE		
Service Order	4558-187851123		
Depth Driller	4800.00 feet		
Depth Logger	4802.00 feet		
First Reading	4789.00 feet		
Last Reading	266.00 feet		
Casing Driller	265.00 feet		
Casing Logger	266.00 feet		
Bit Size	7.875 inches		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.10 lb/USg	49.00 CP	
PH / Fluid Loss	10.50	7.20 ml/30Min	
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.96 @ 75.0 ohm-m		
Rmf @ Measured Temp	0.77 @ 75.0 ohm-m		
Rmc @ Measured Temp	1.15 @ 75.0 ohm-m		
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.57 @126.0 ohm-m		
Time Since Circulation	5 HOURS		
Max Recorded Temp	126.00	deg F	
Equipment / Base	13096	LIB	
Recorded By	ADAM SILL		
Witnessed By	TIM PRIEST		

BOREHOLE RECORD			Last Edited: 21-JUL-2017 20:12
Bit Size inches	Depth From feet	Depth To feet	
7.875	265.00	4800.00	

CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	265.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 17.01.7206.

- 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.

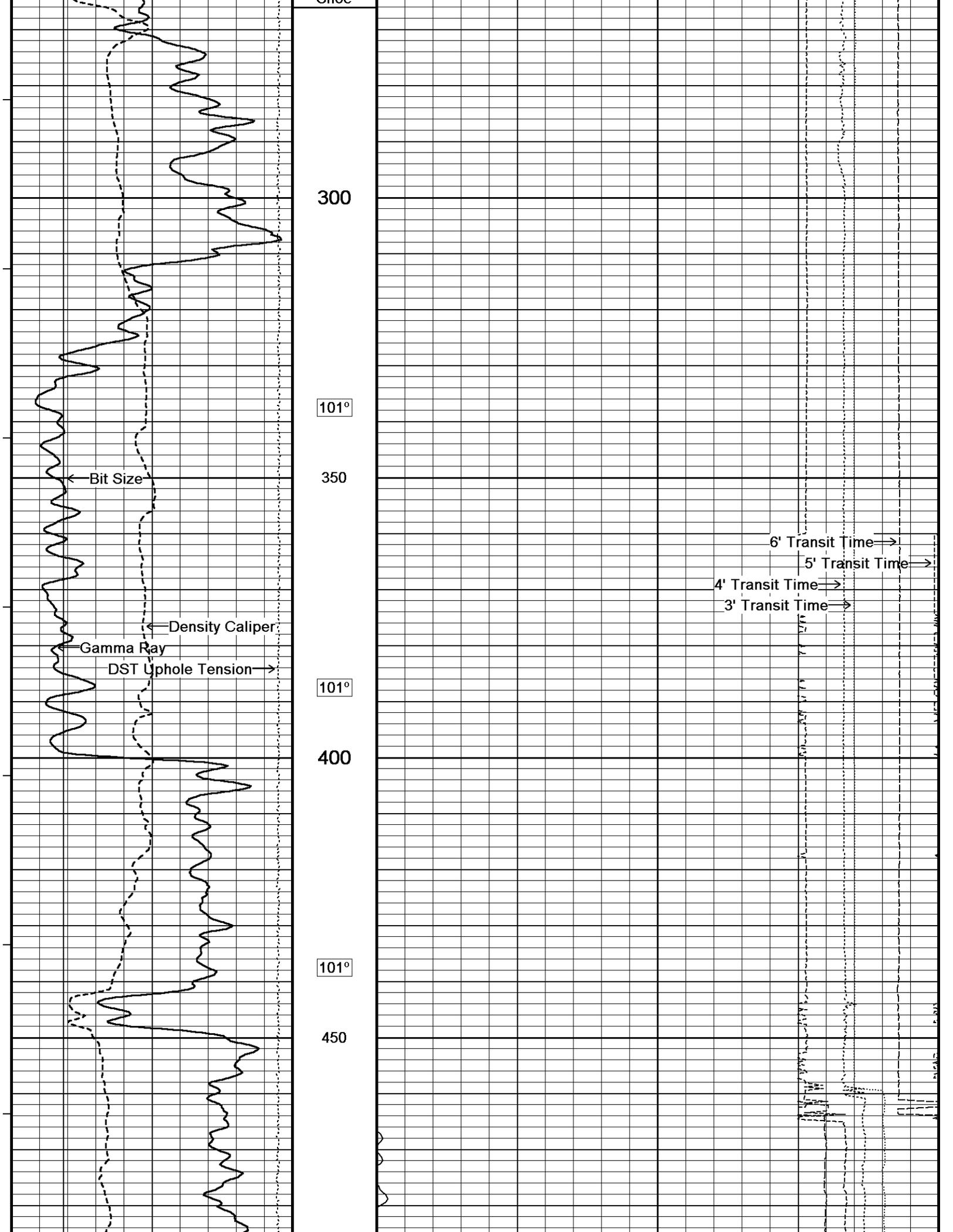
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.

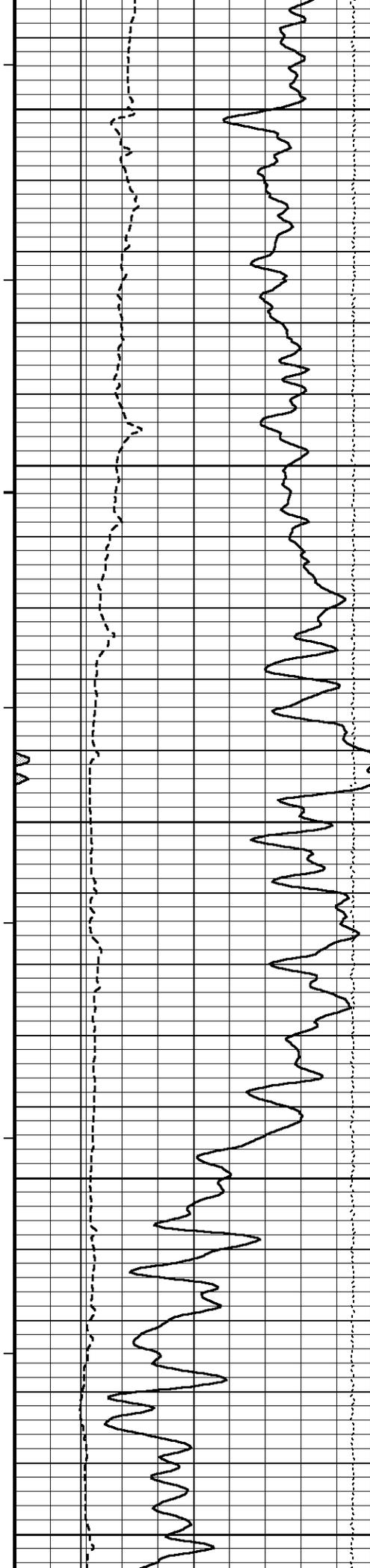
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.

- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

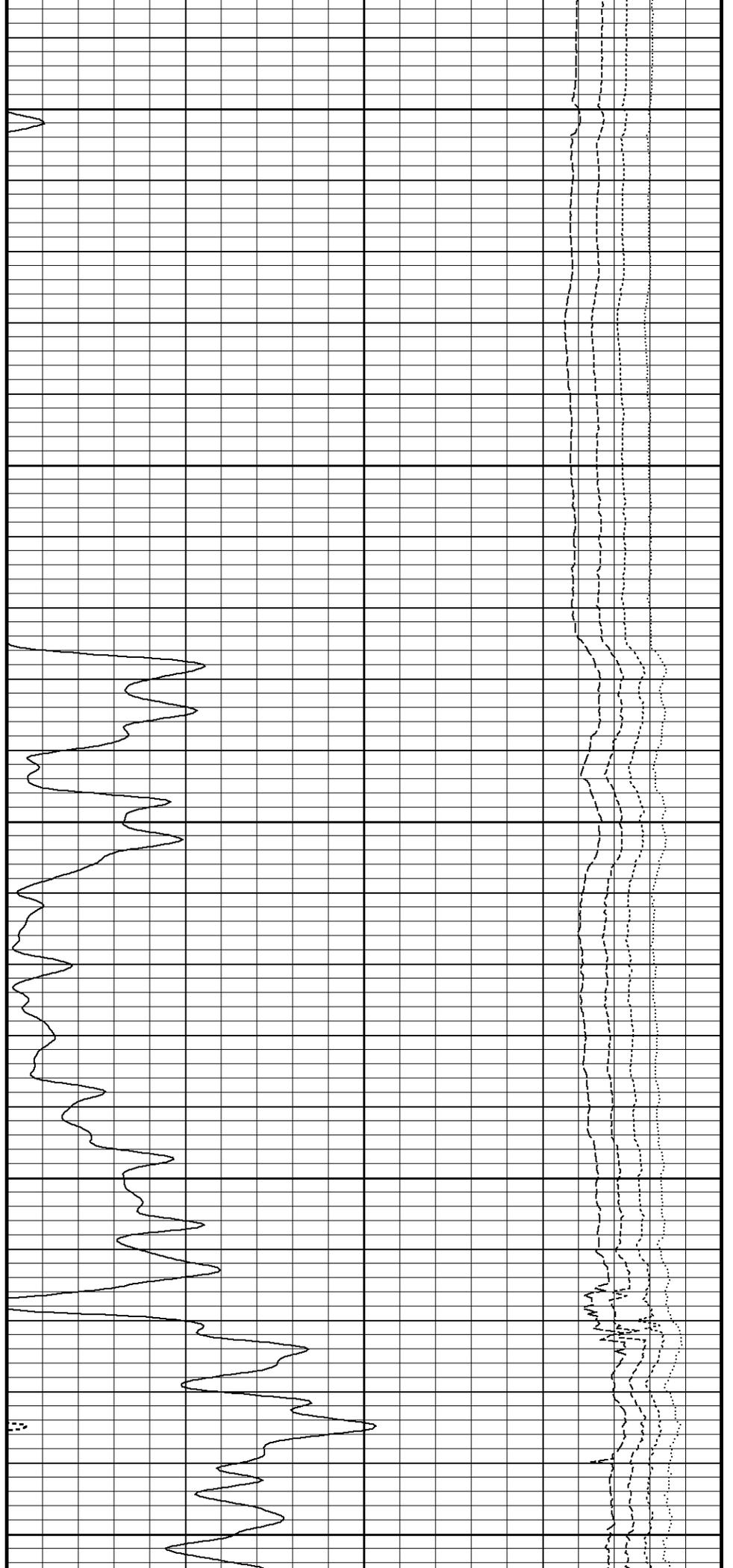
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1722 CU.FT.

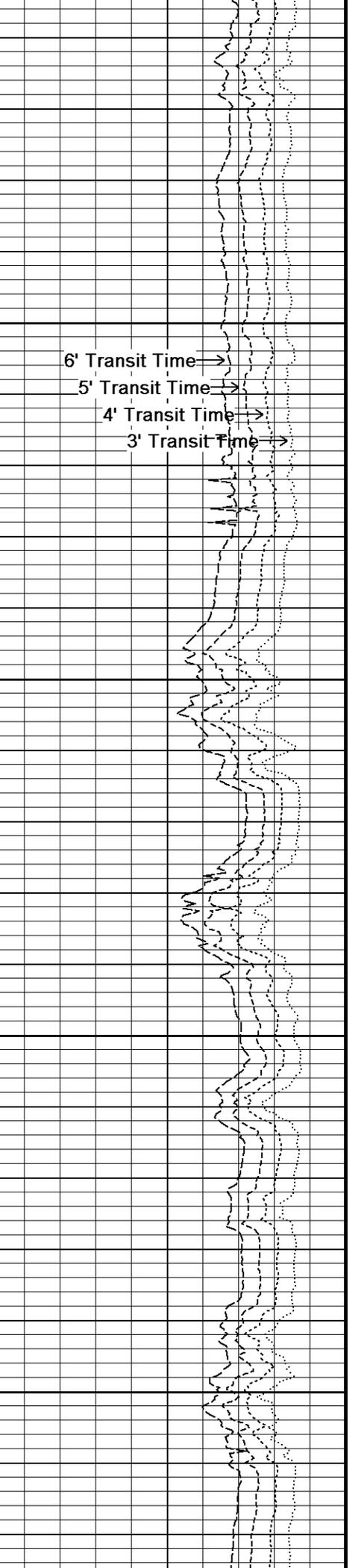
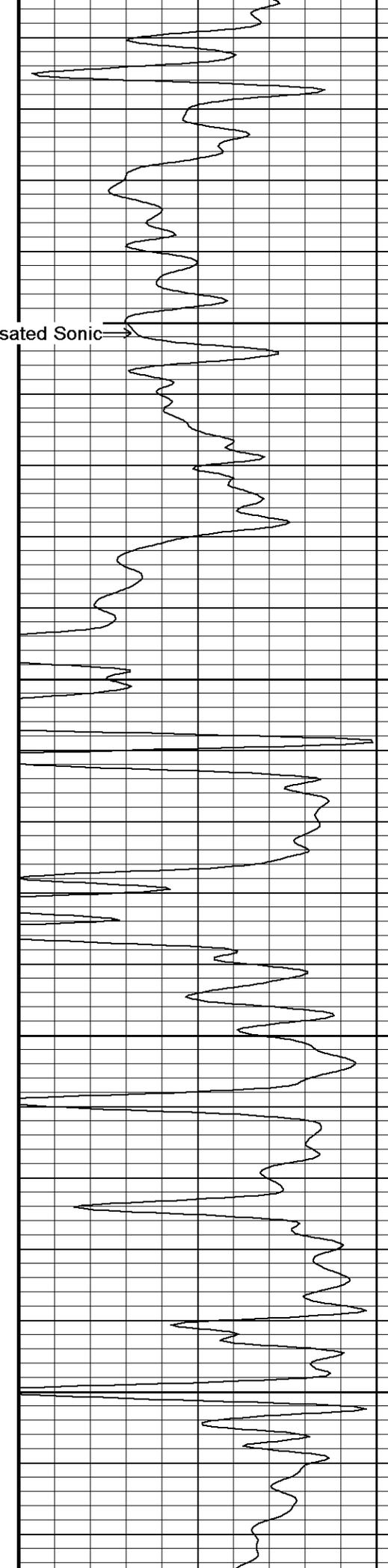
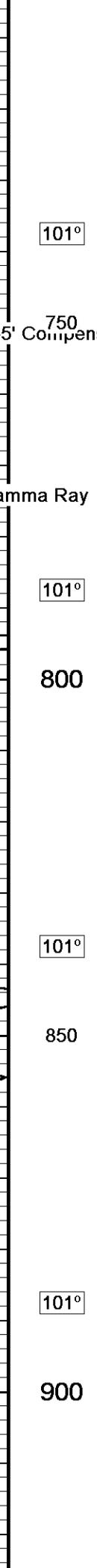
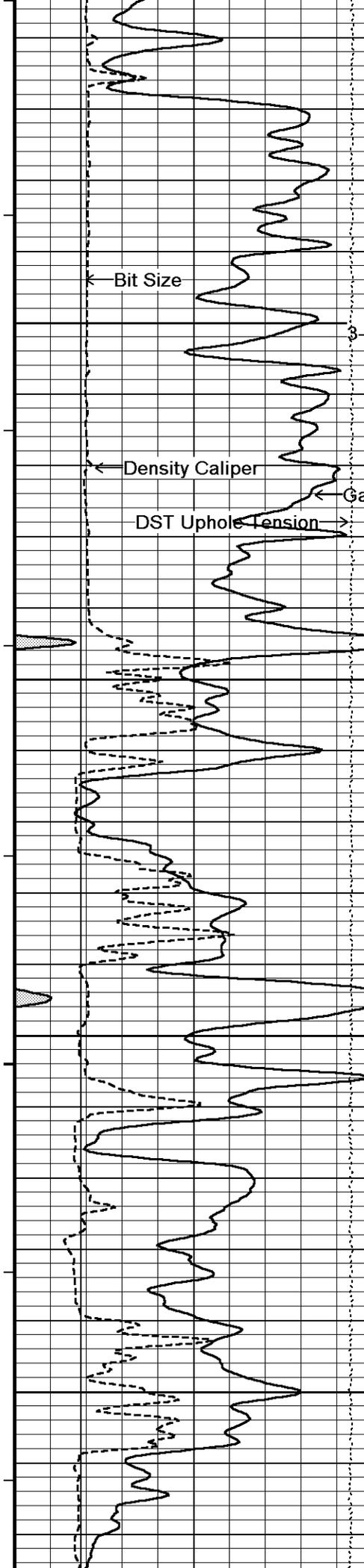
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 222 CU.FT.

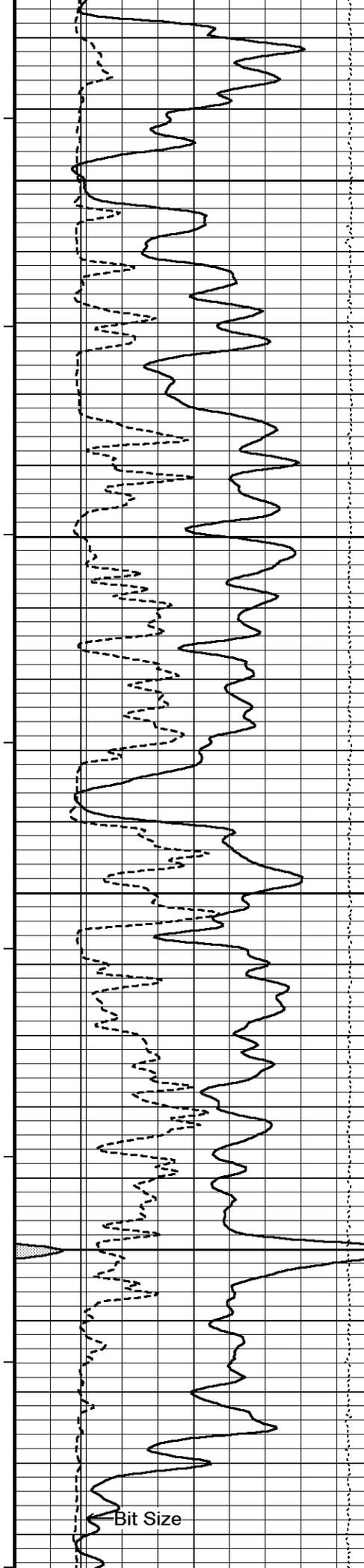




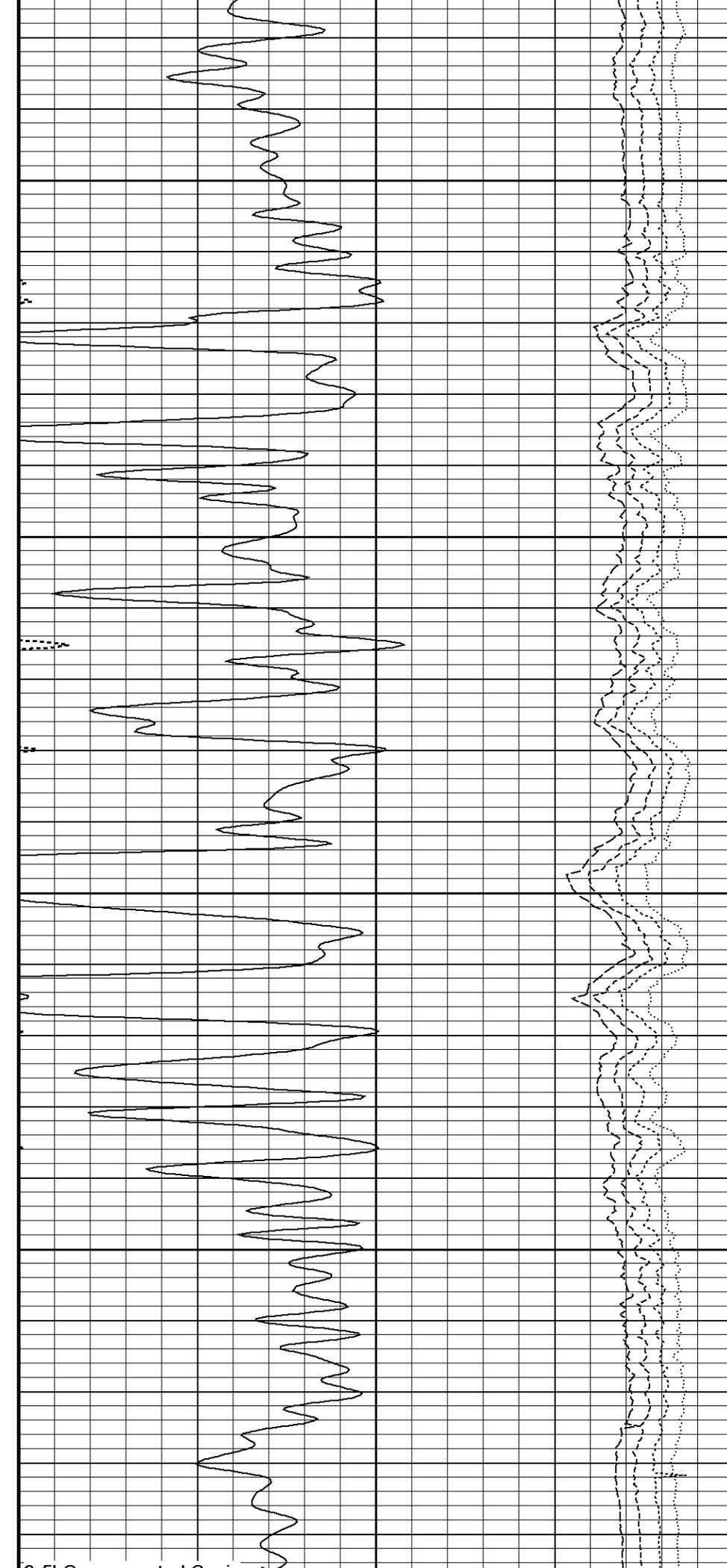
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500
100°
550
101°
600
100°
650
101°
700

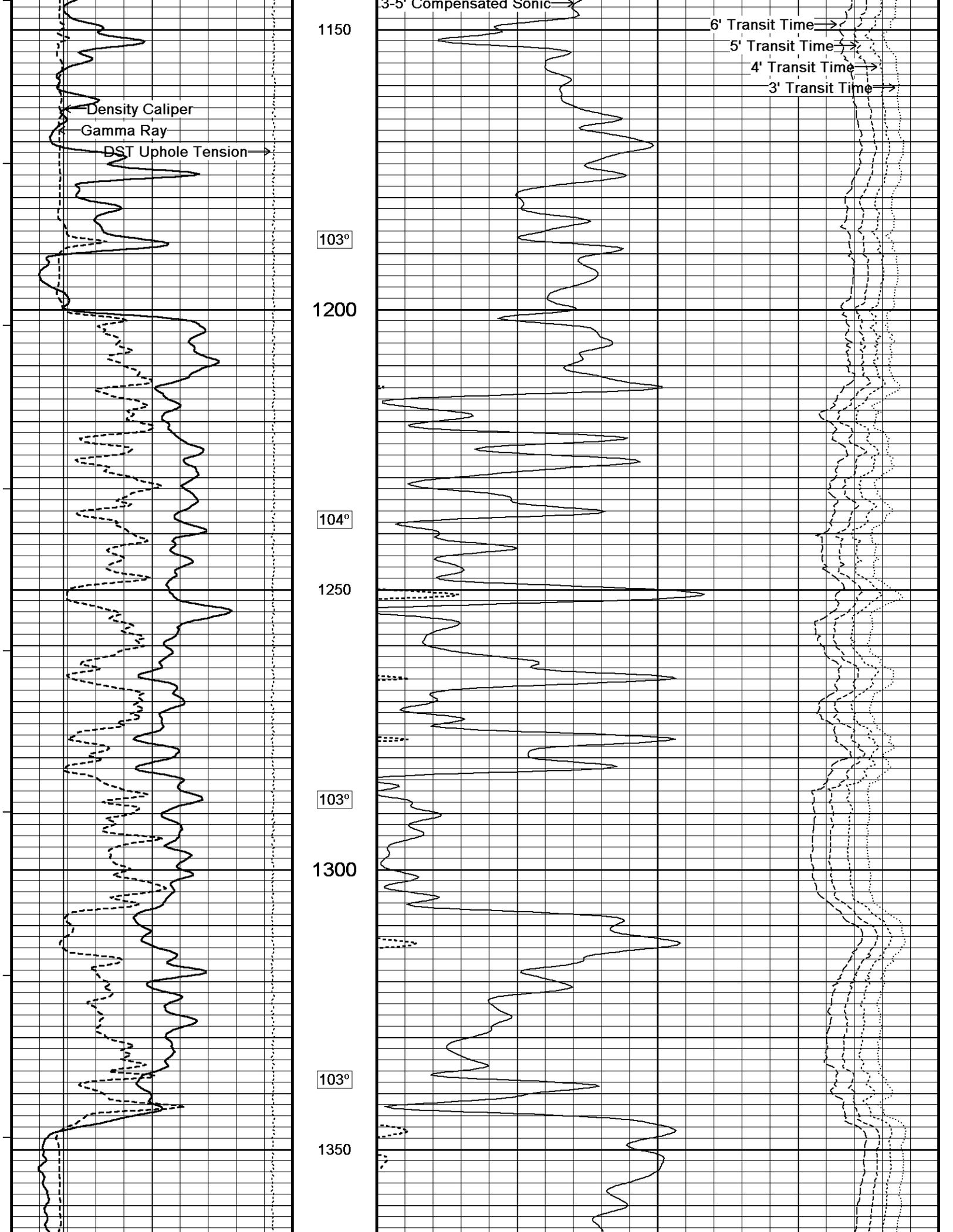


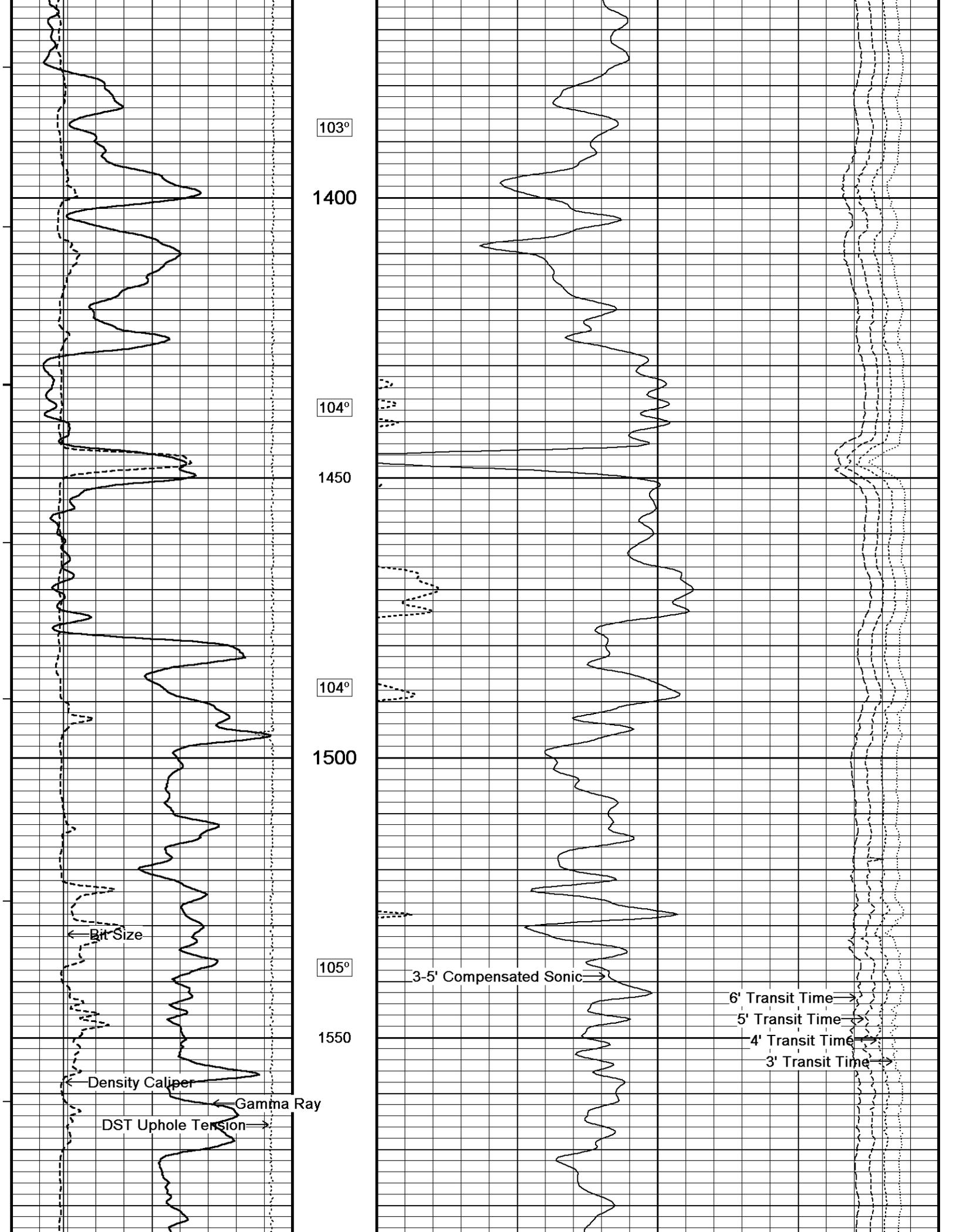


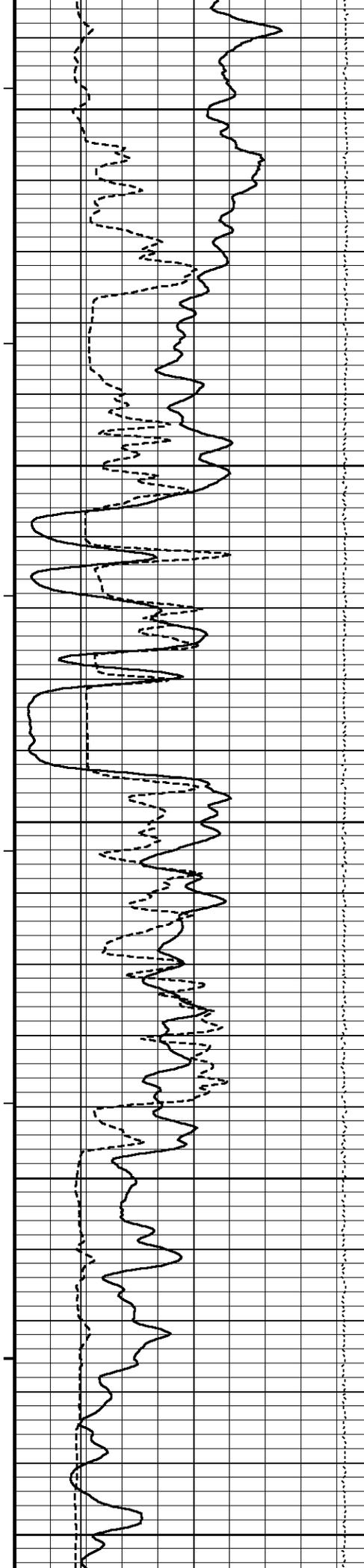


101°
950
102°
1000
103°
1050
103°
1100
102°









105°

1600

105°

1650

106°

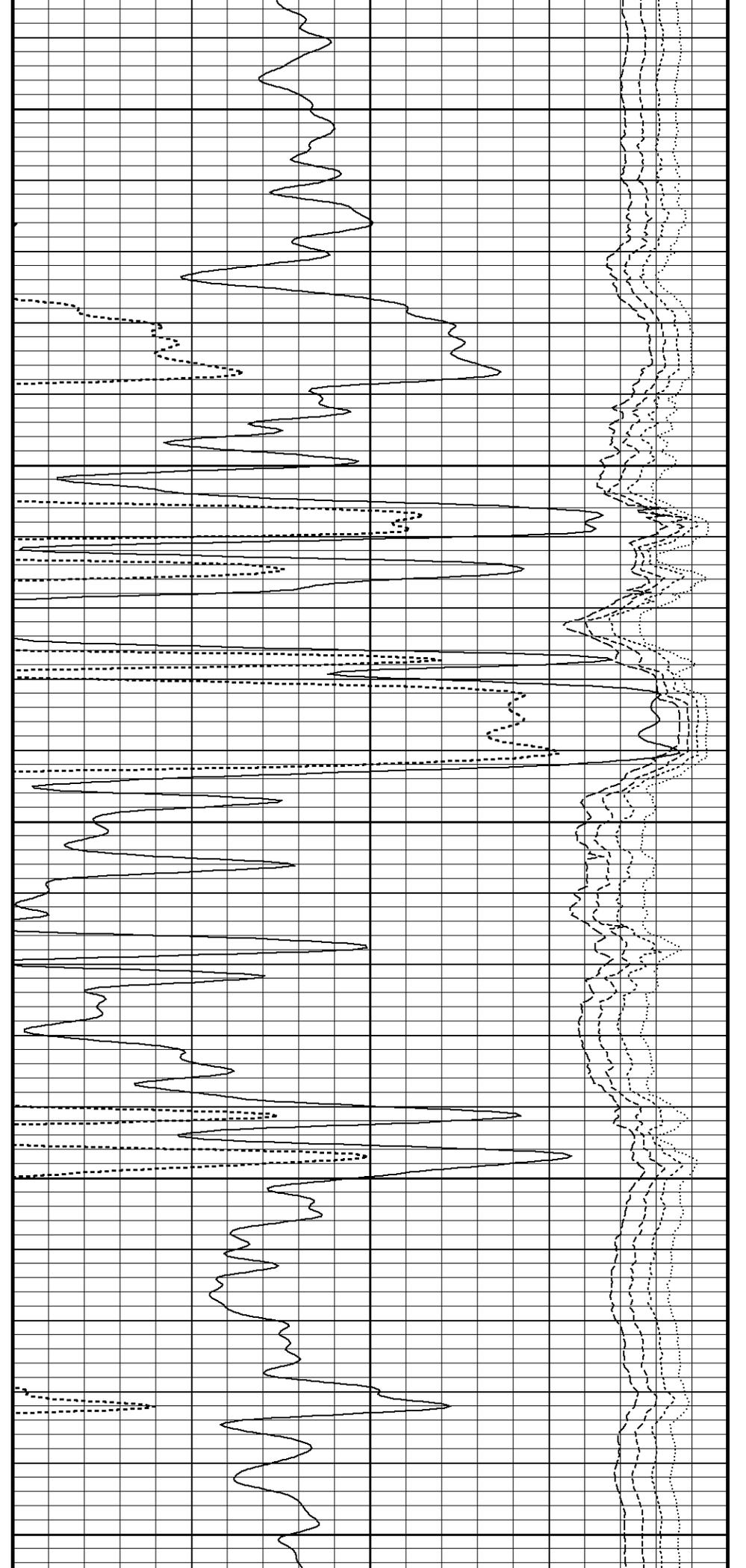
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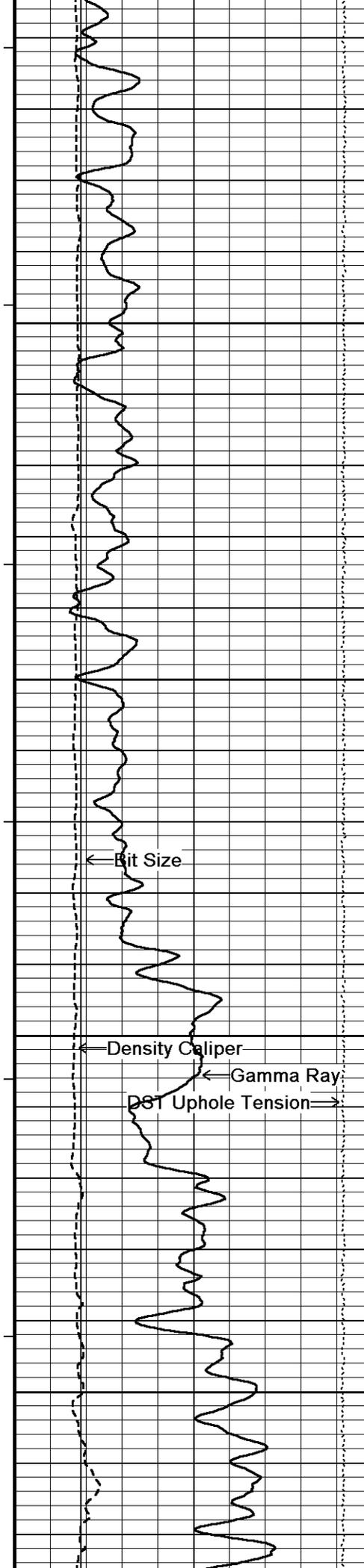
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1750

106°

1800





106°

1850

106°

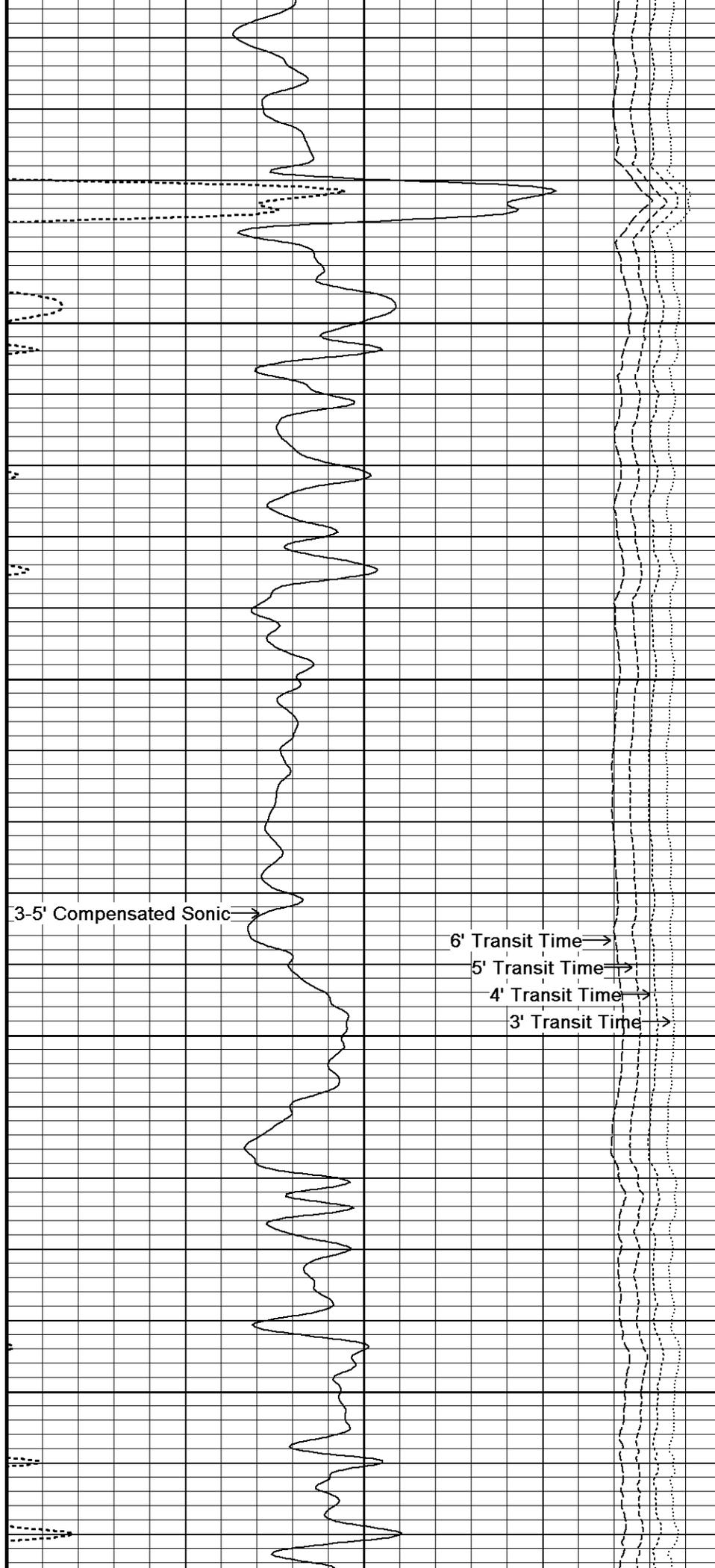
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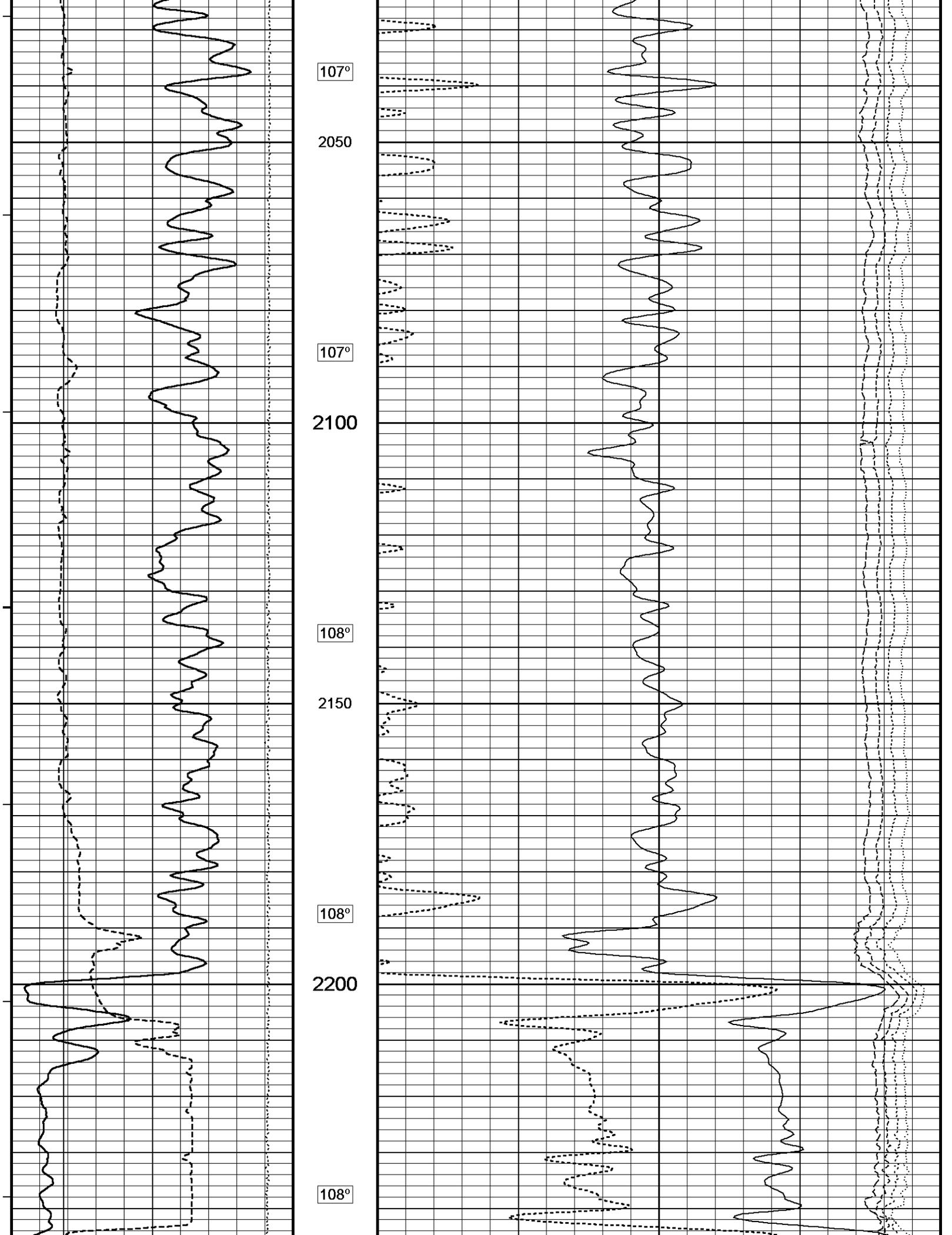
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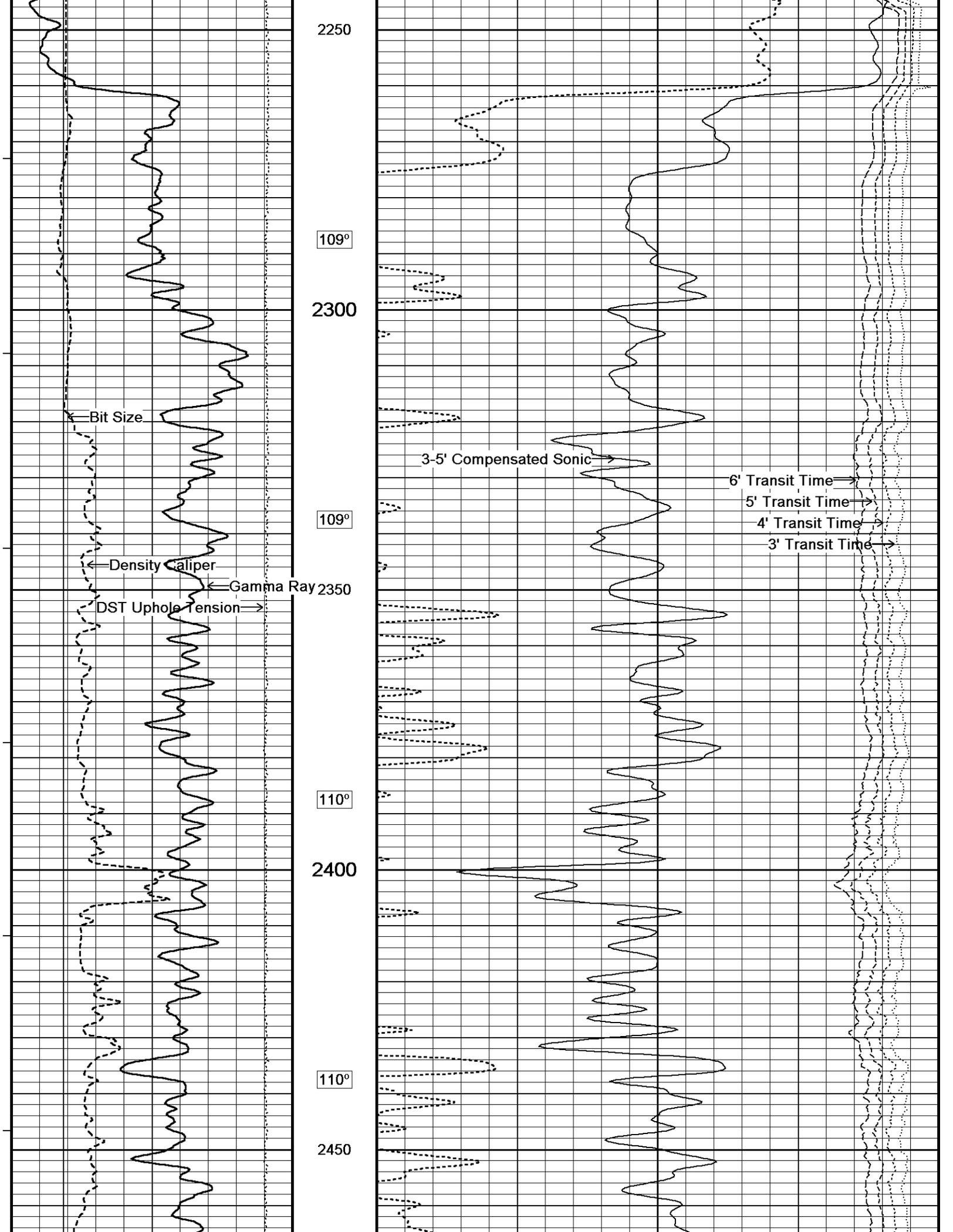
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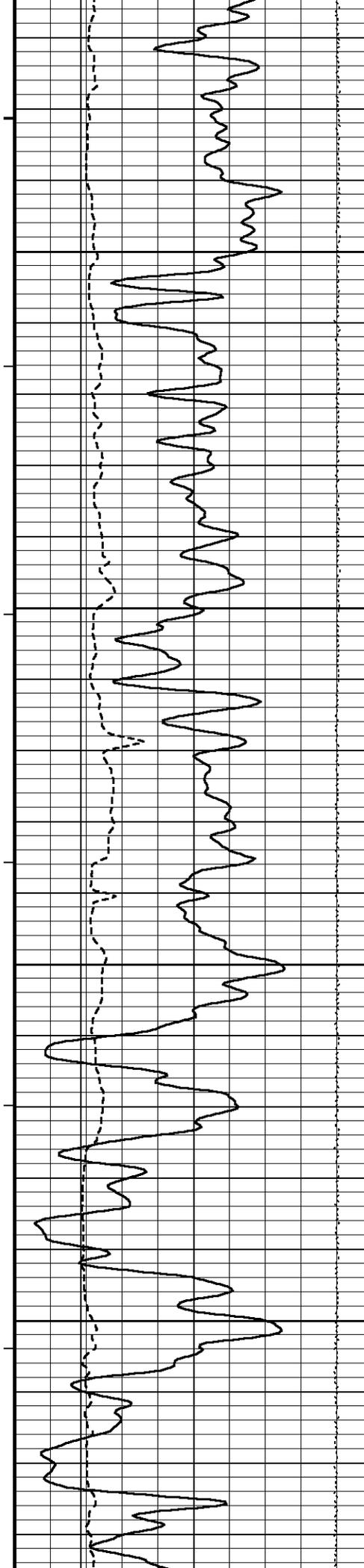
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2000









110°

2500

110°

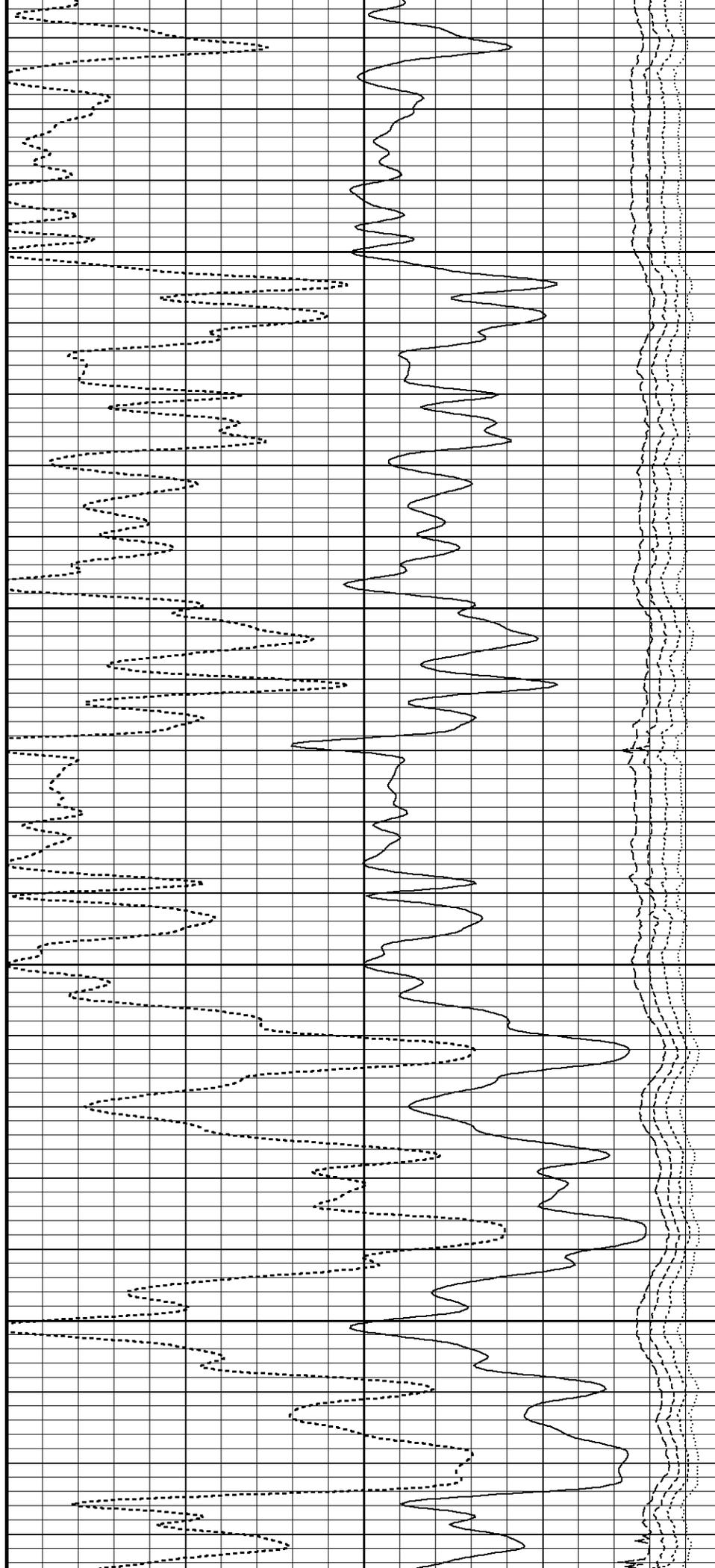
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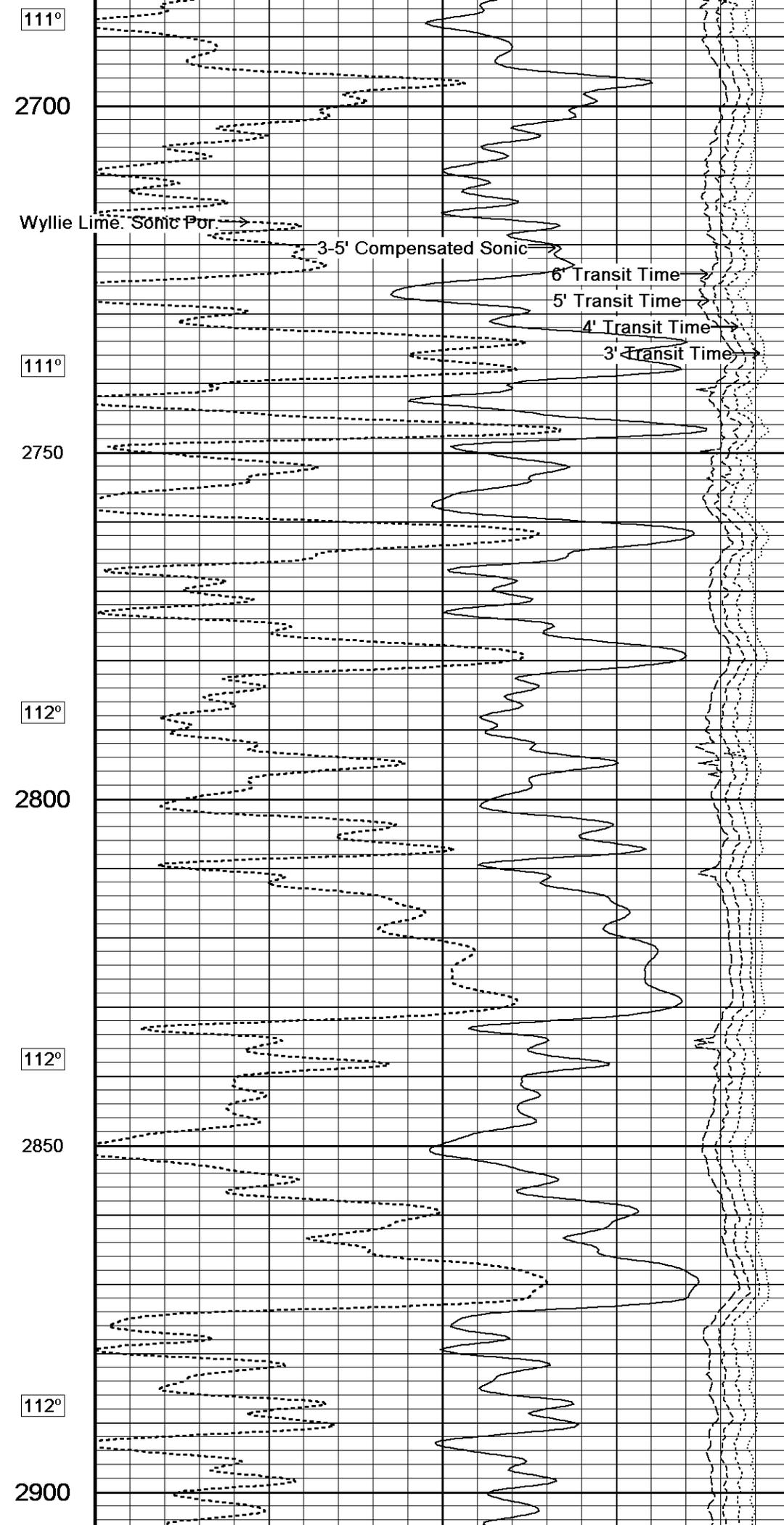
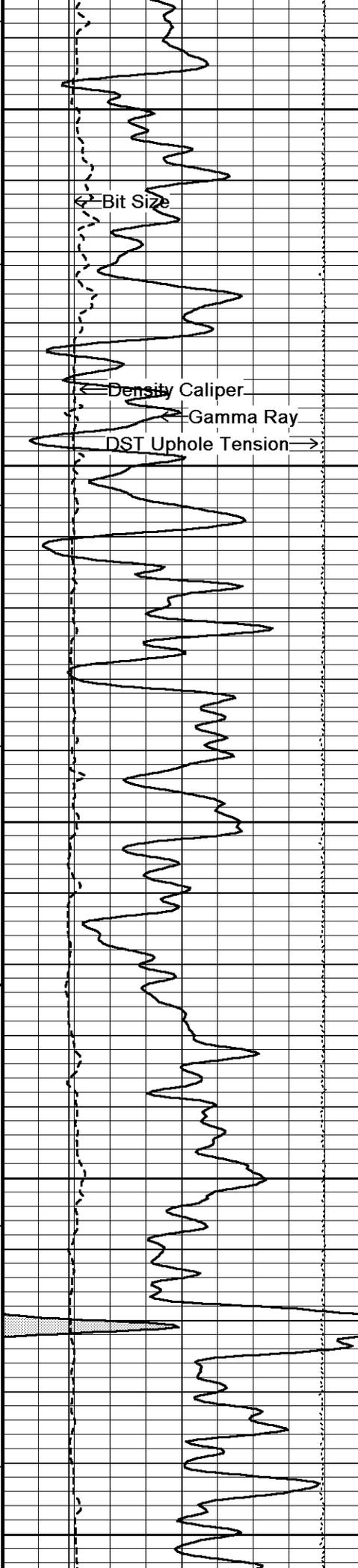
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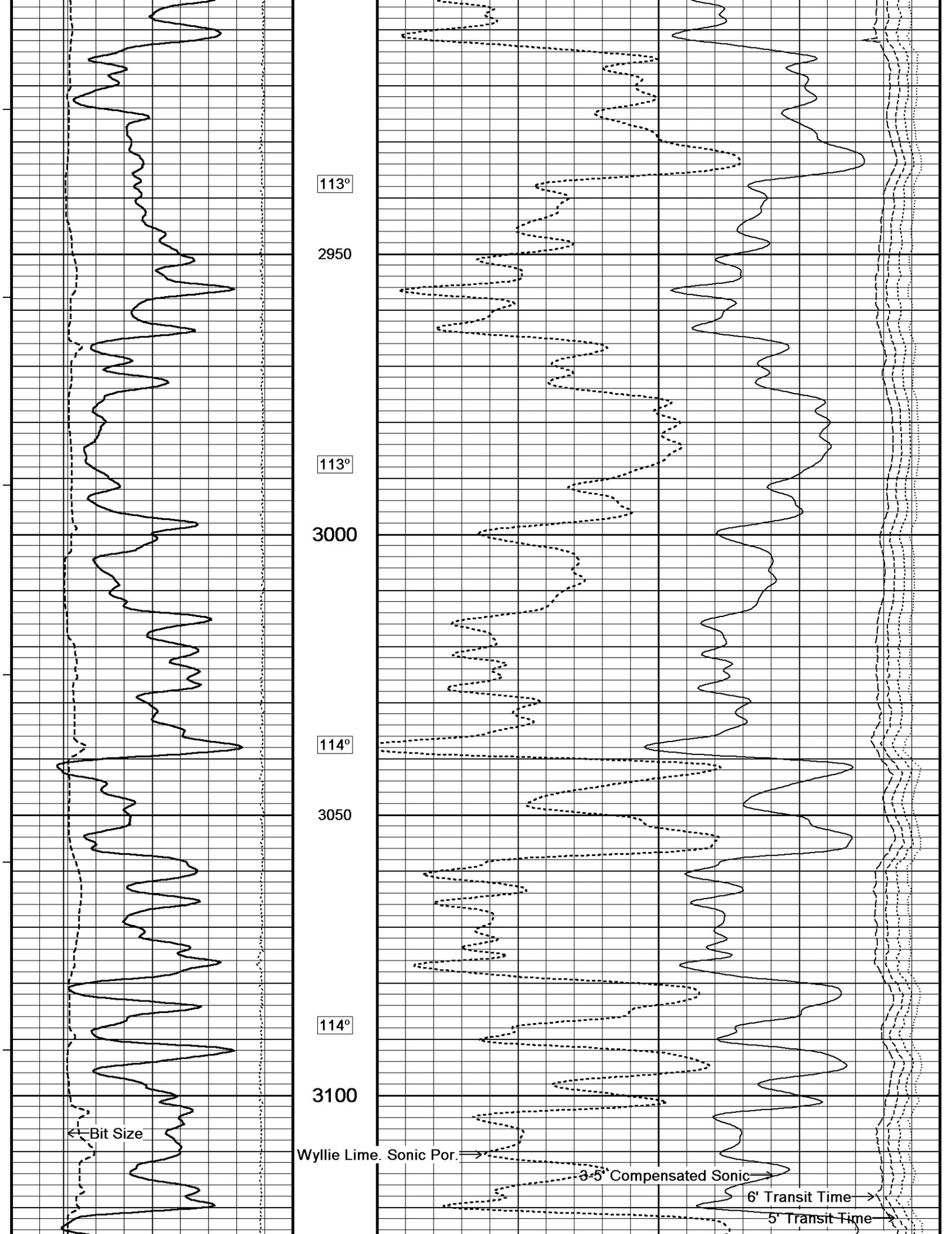
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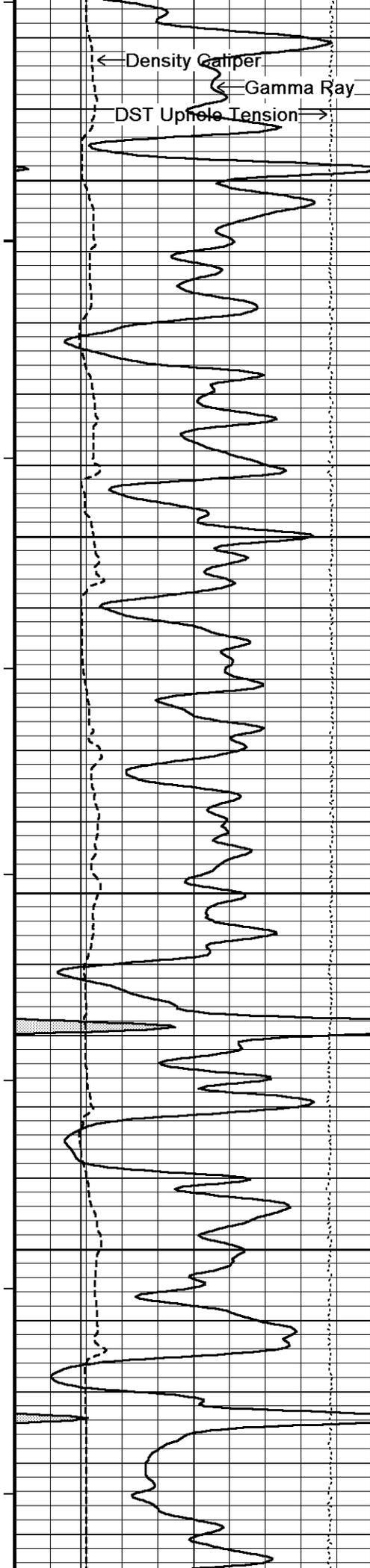
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2650









114°

3150

115°

3200

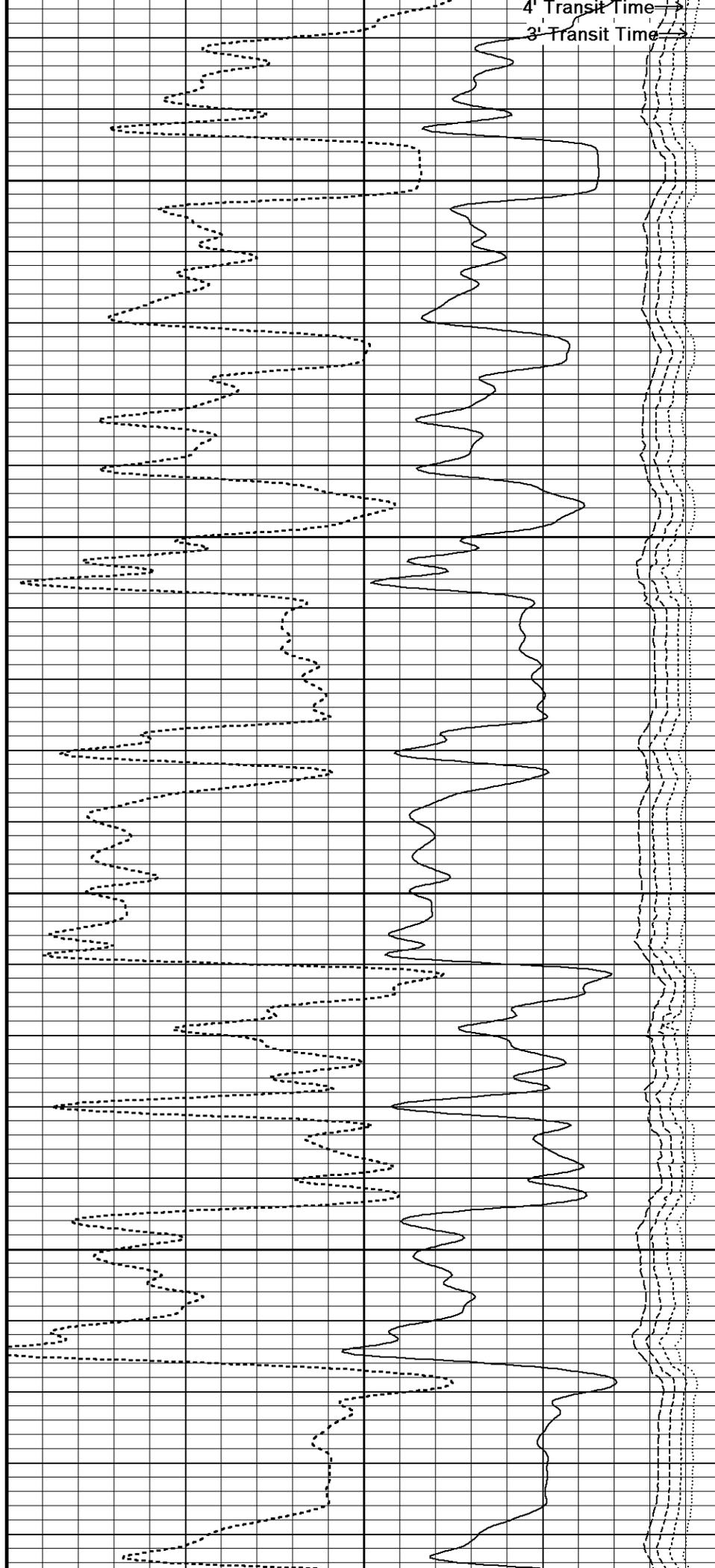
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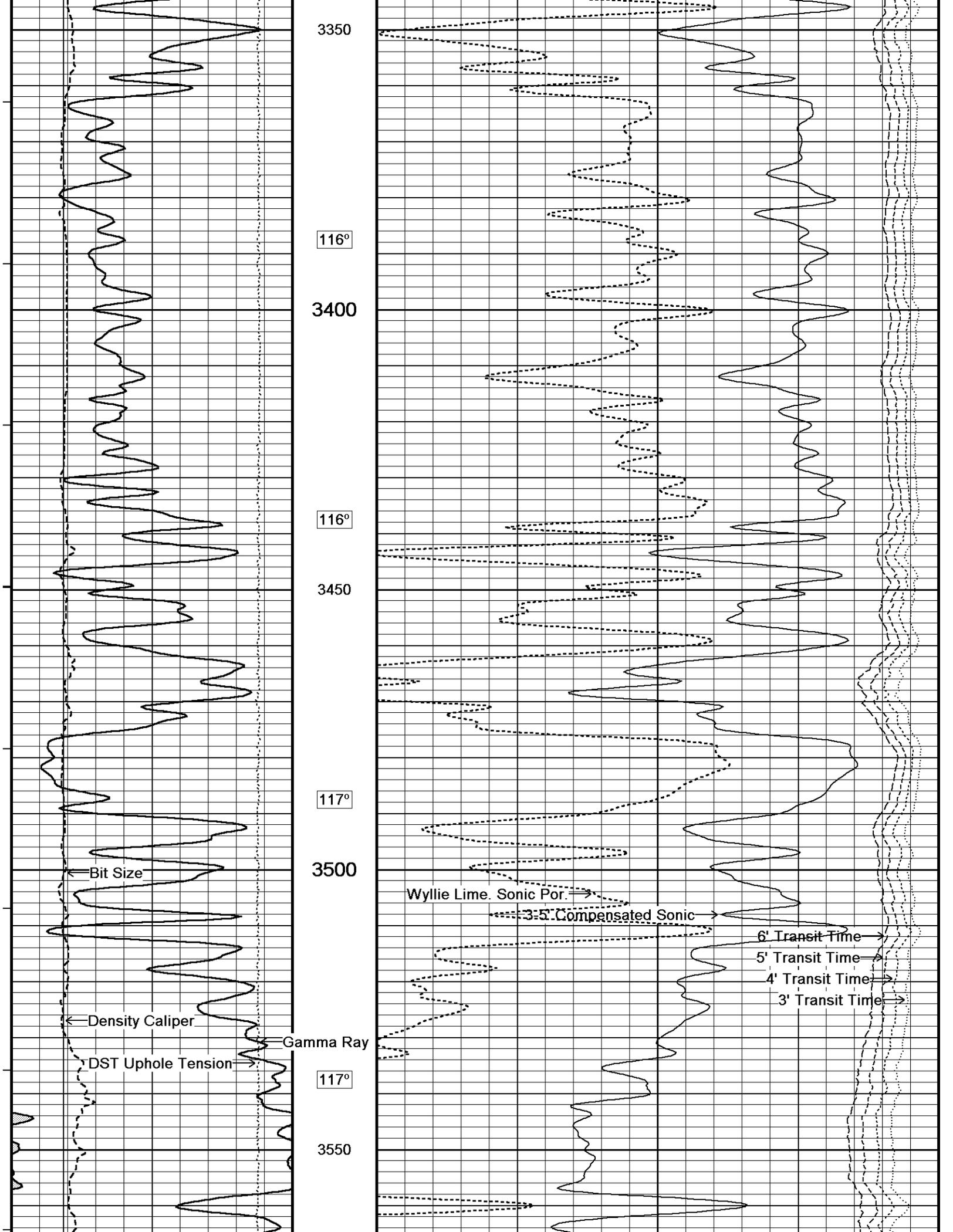
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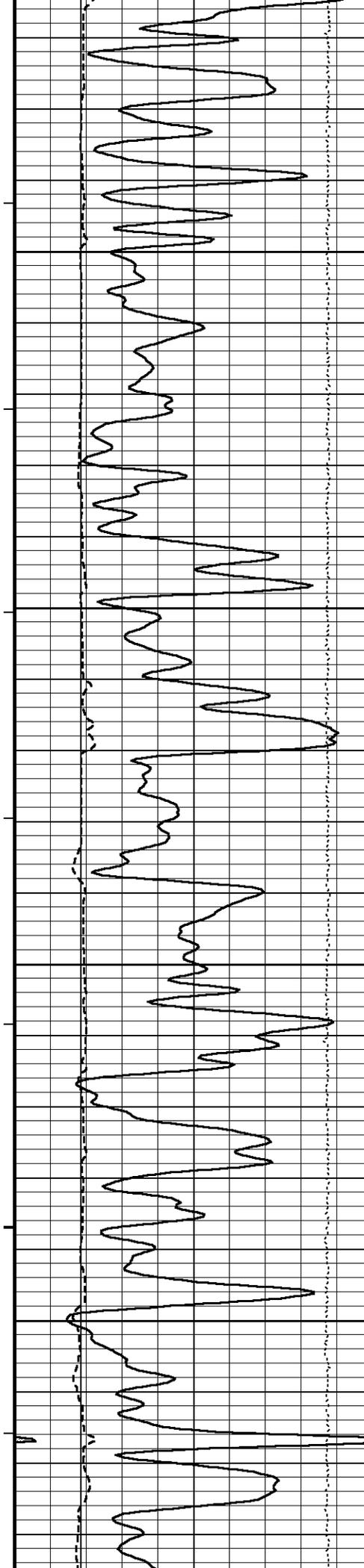
115°

3300

116°







117°

3600

118°

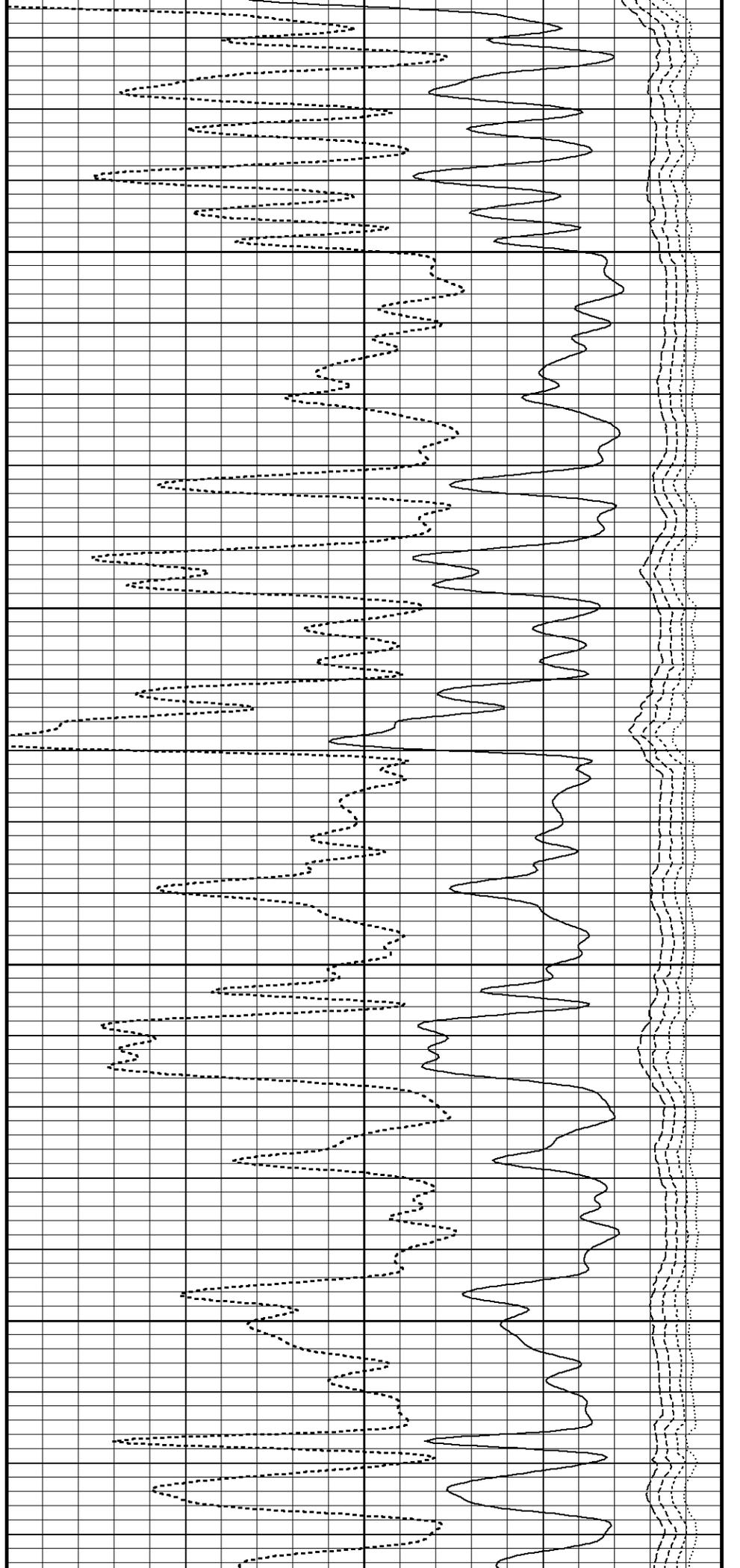
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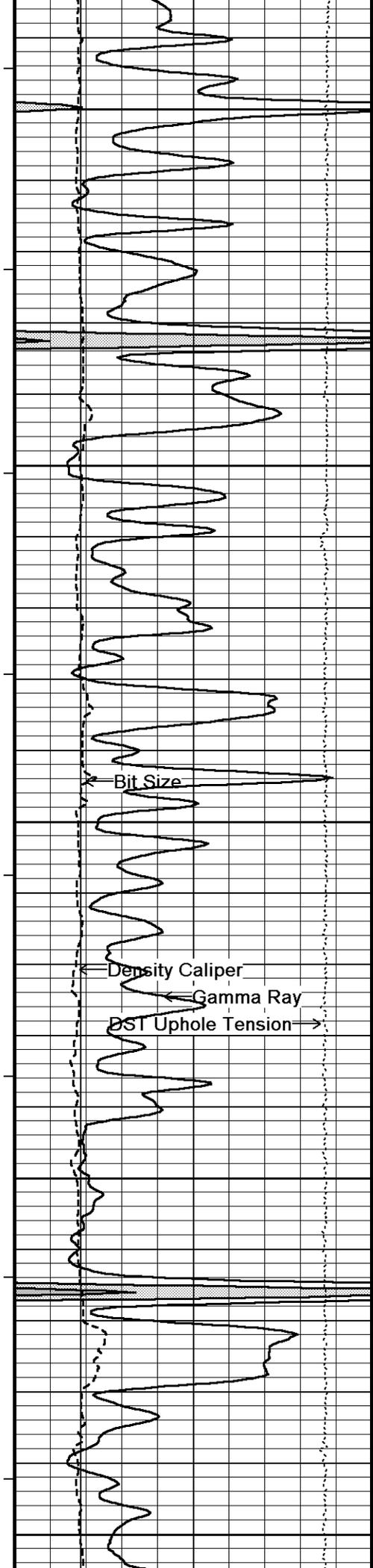
118°

3700

119°

3750





119°

3800

119°

3850

120°

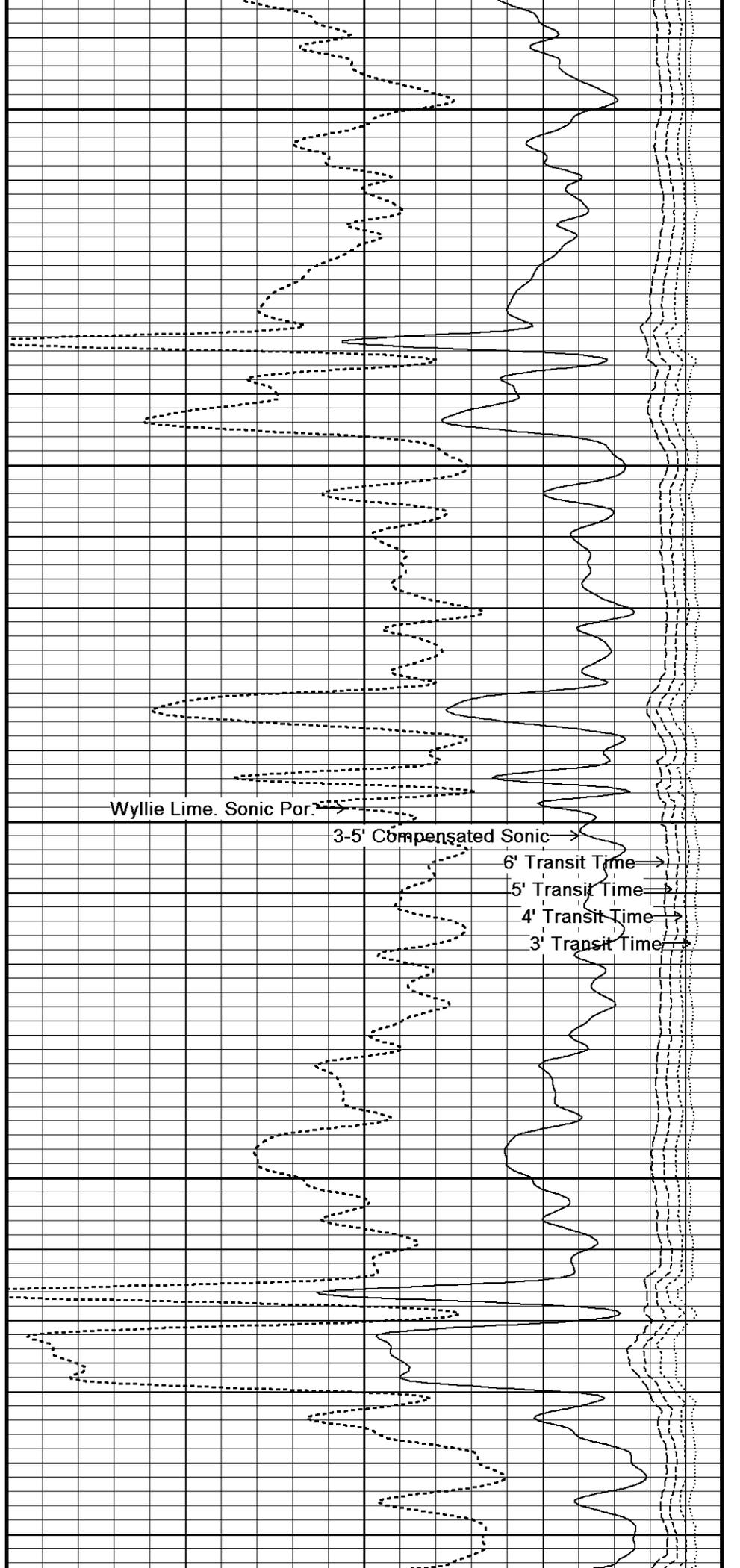
3900

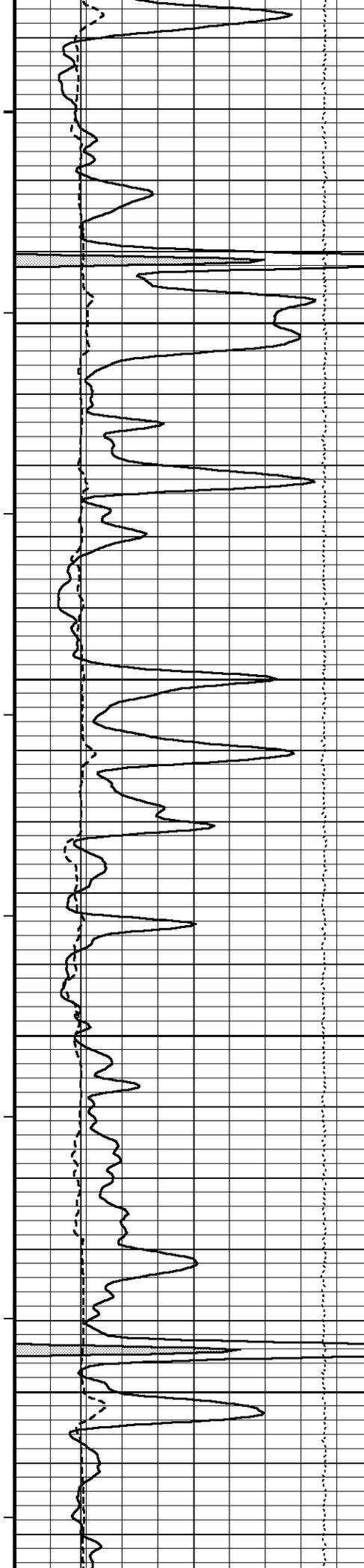
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3950

120°

4000





120°

4050

121°

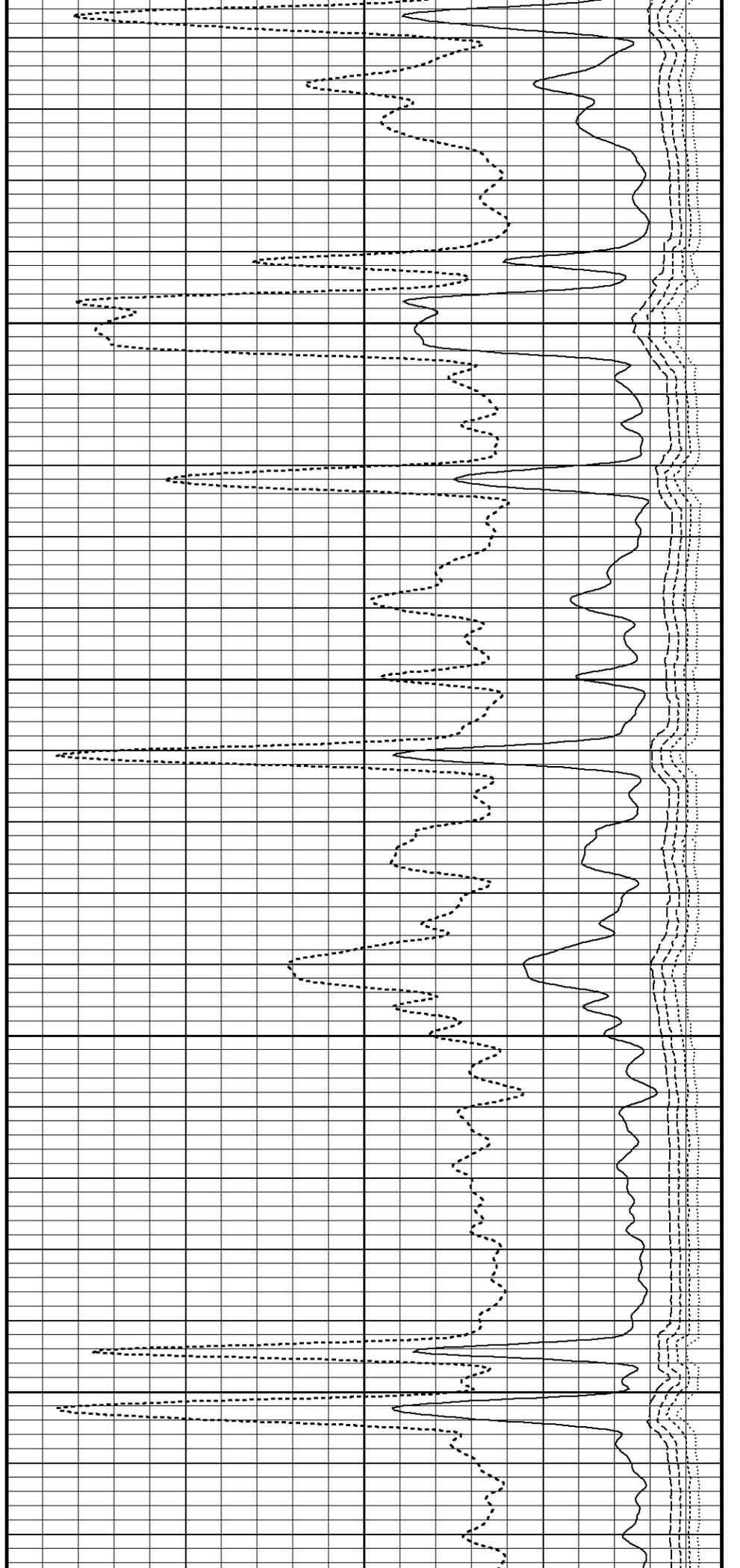
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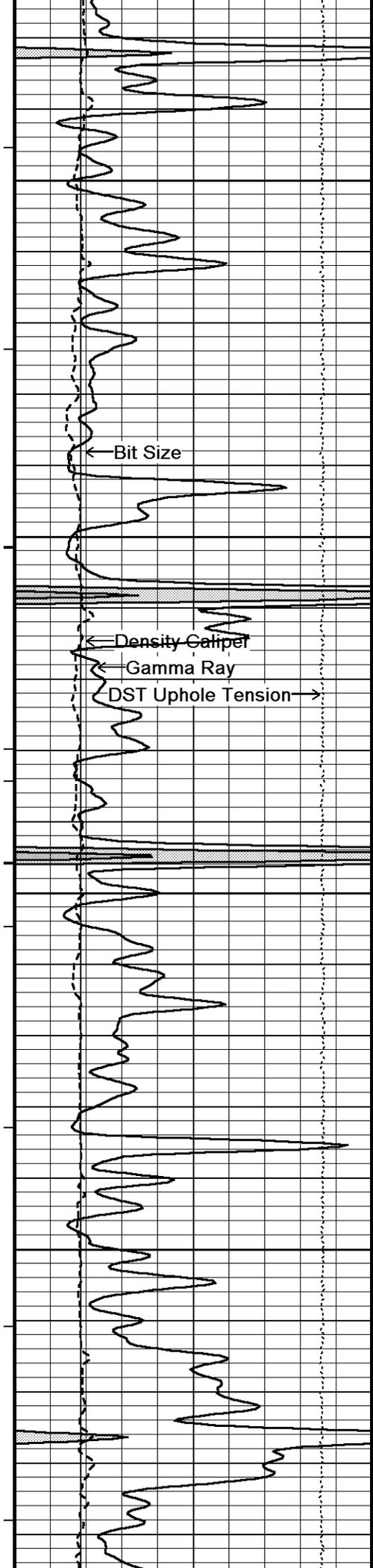
121°

4150

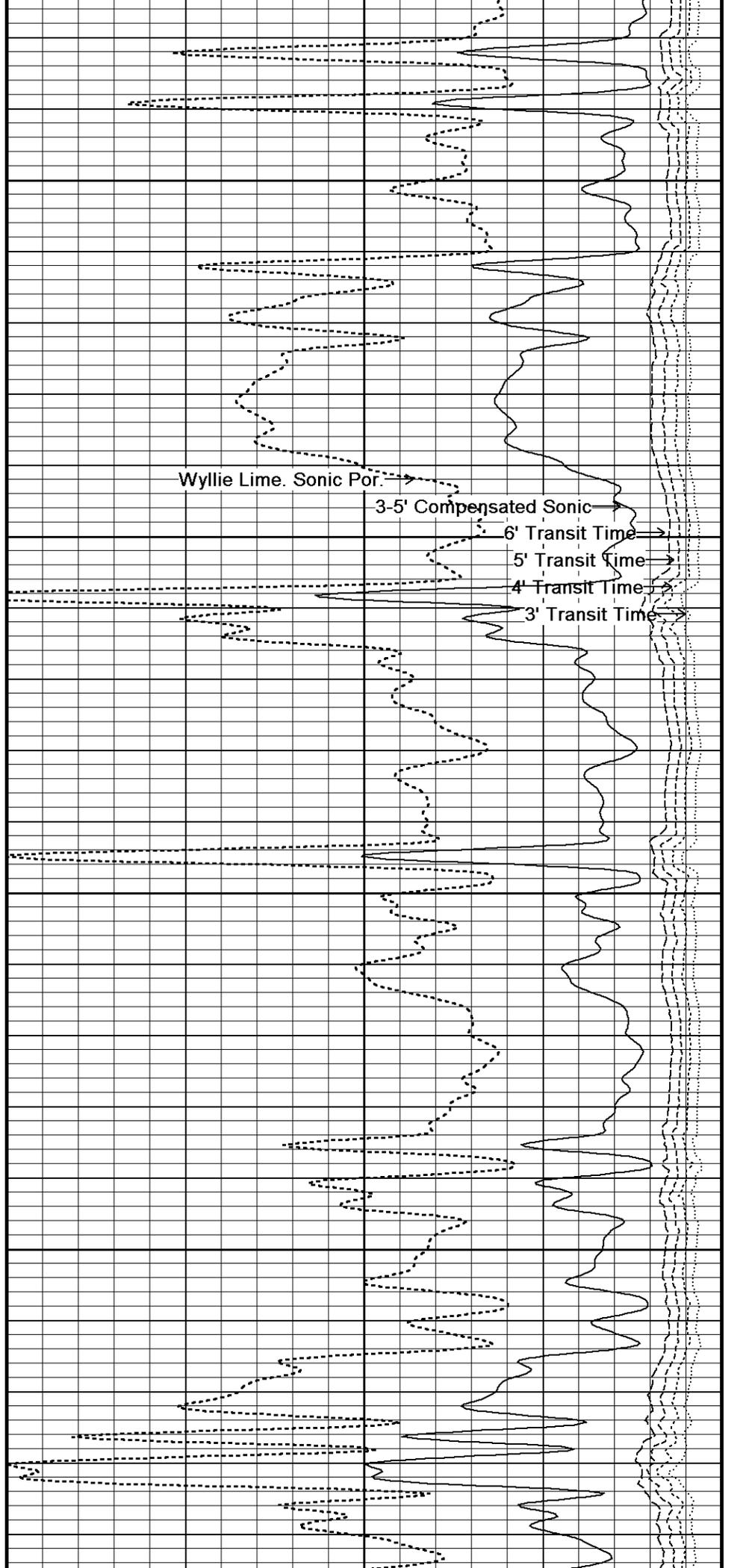
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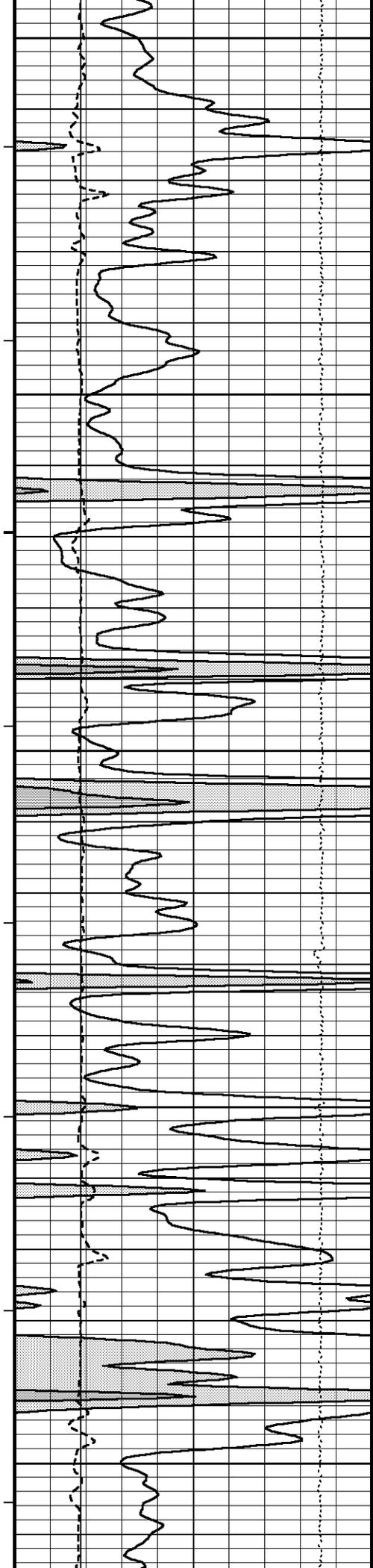
4200





122°
4250
122°
4300
122°
4350
123°
4400
123°





4450

124°

4500

124°

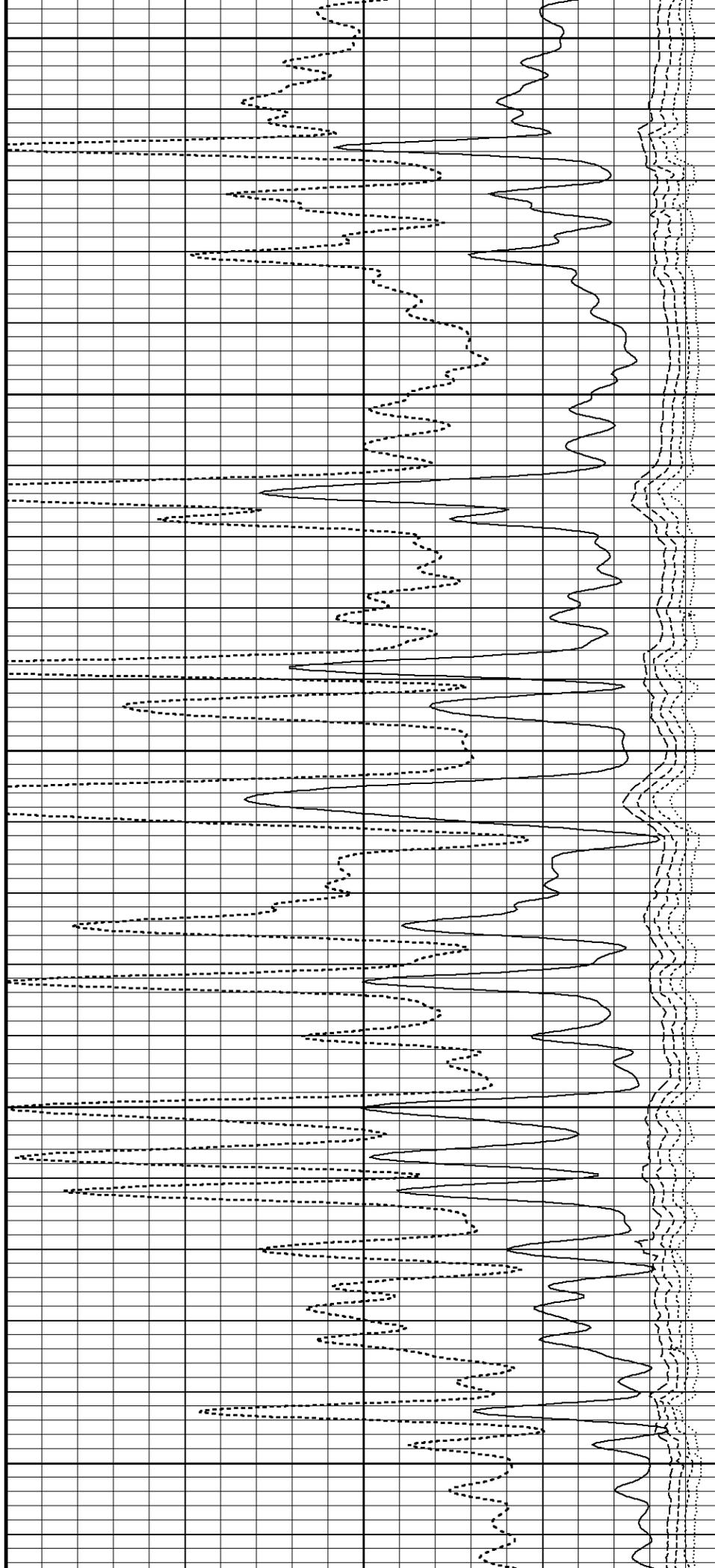
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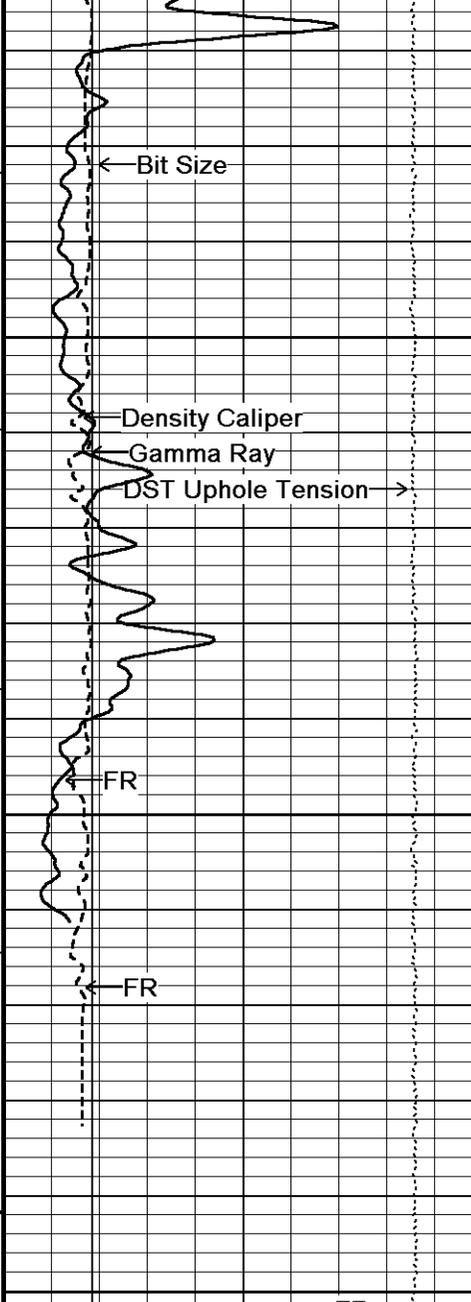
125°

4600

126°

4650





126°

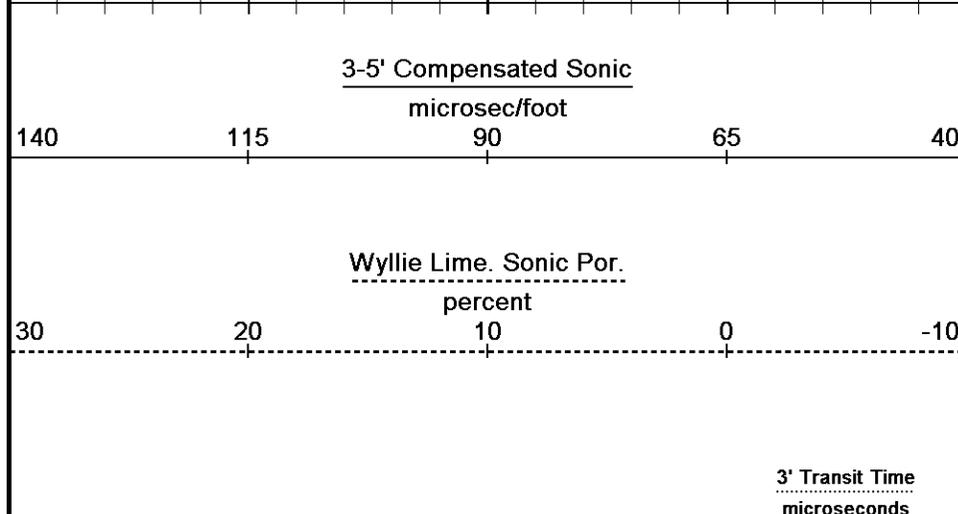
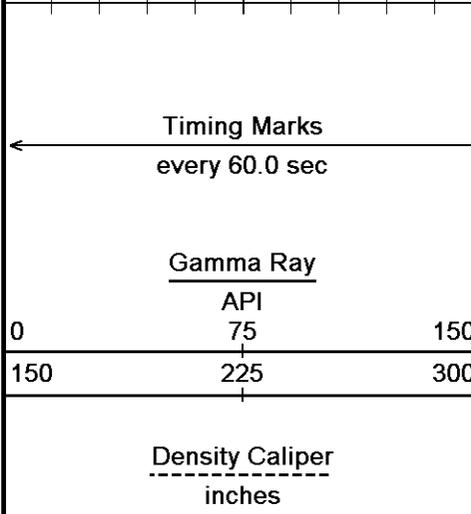
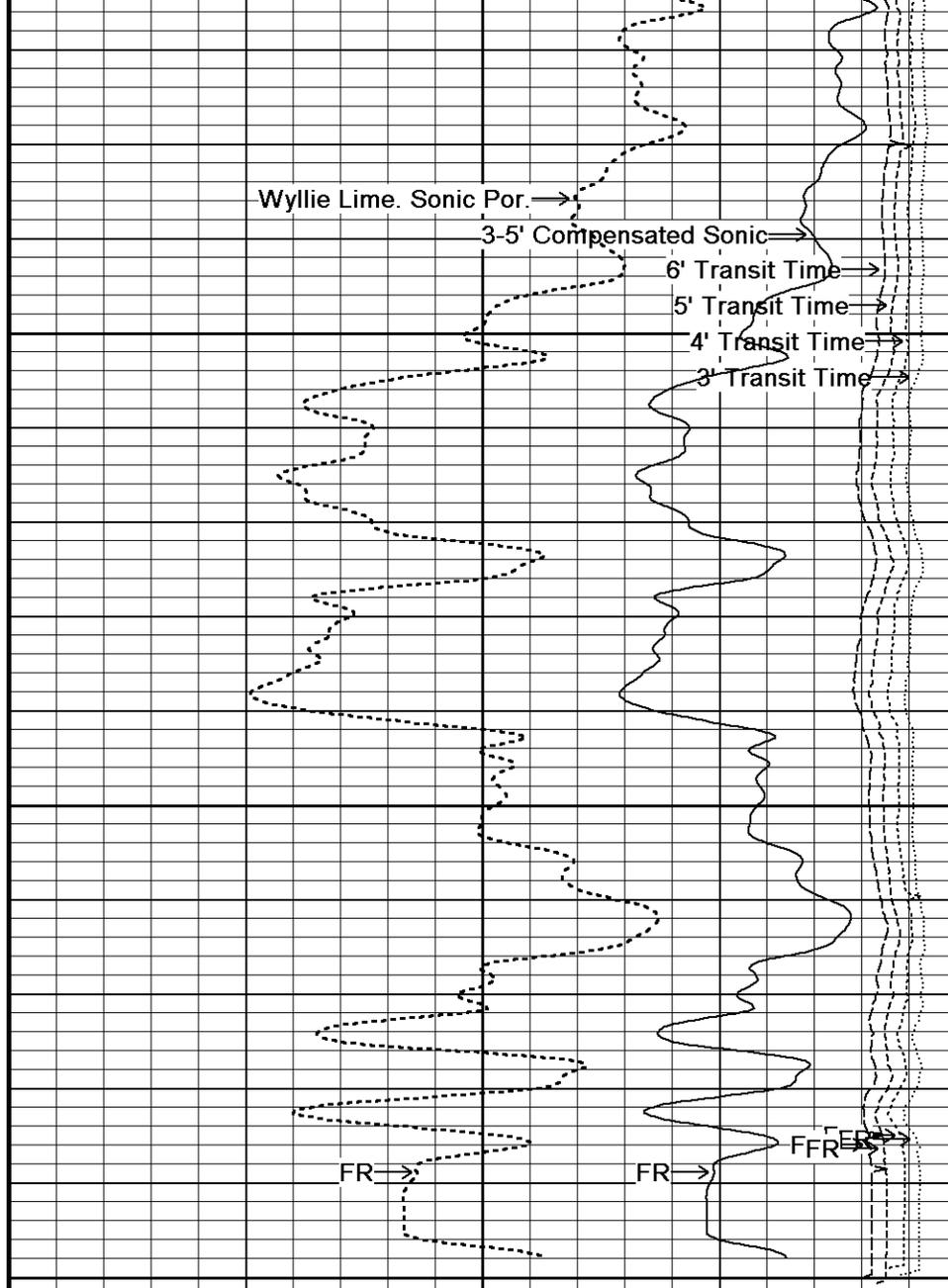
4700

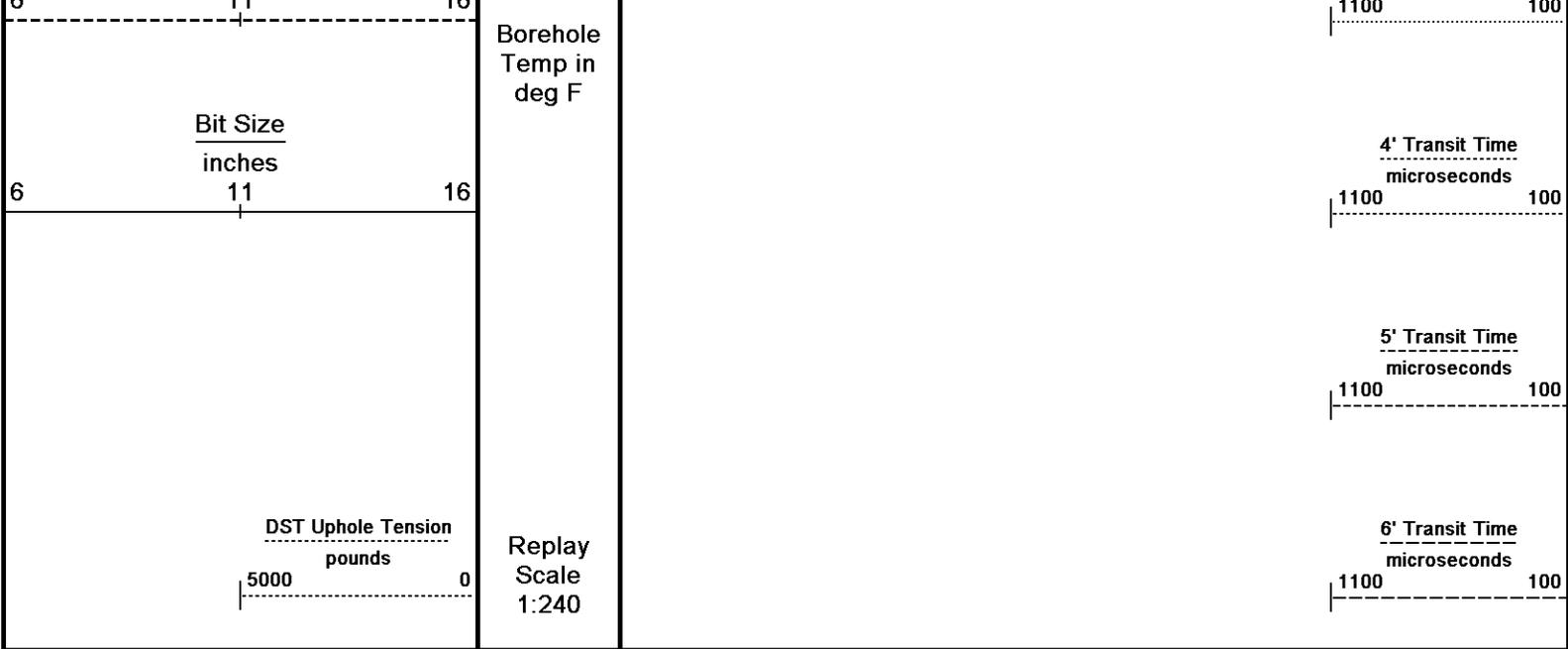
126°

4750

4800

Depth in Feet



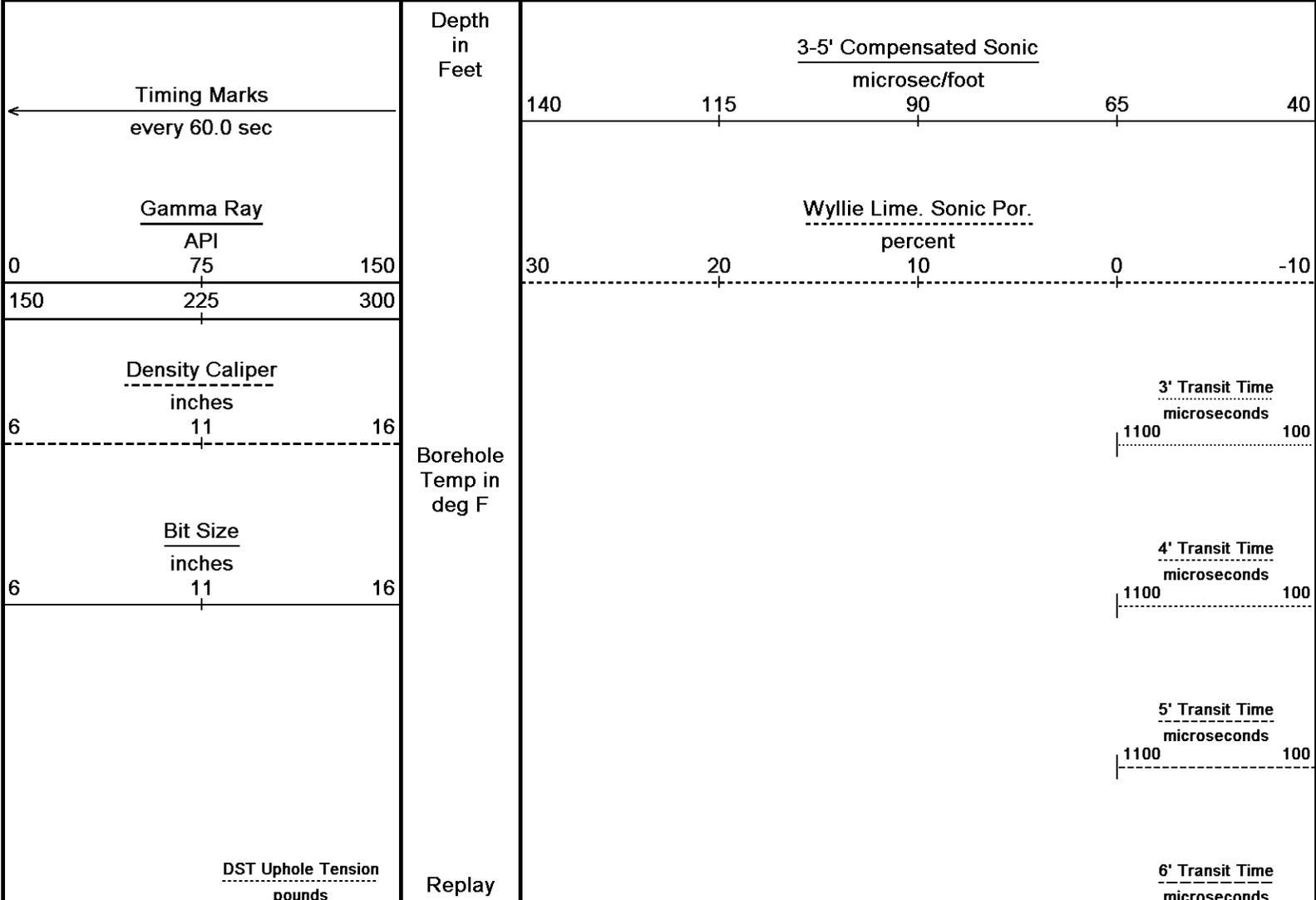


Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:34
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5_002.dta Recorded on 21-JUL-2017 23:39
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

↑ **5 INCH MAIN** ↑

↓ **REPEAT SECTION** ↓

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:34
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5_001.dta Recorded on 21-JUL-2017 23:12
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206



5000 0

Scale
1:240

1100 100

4500

124°

4550

124°

4600

125°

4650

125°

4700

← Bit Size

Wyllie Lime. Sonic Por. →

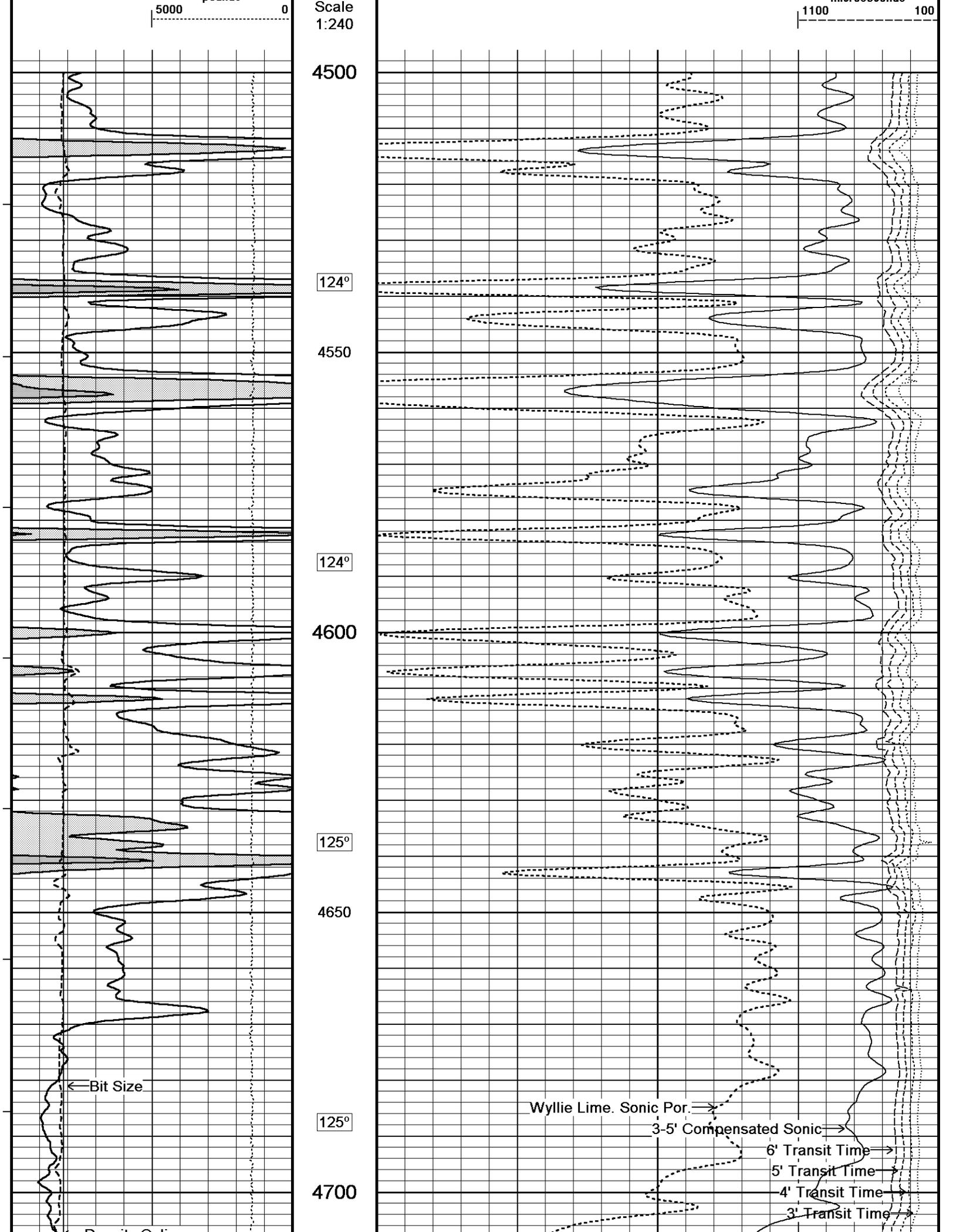
3-5' Compensated Sonic →

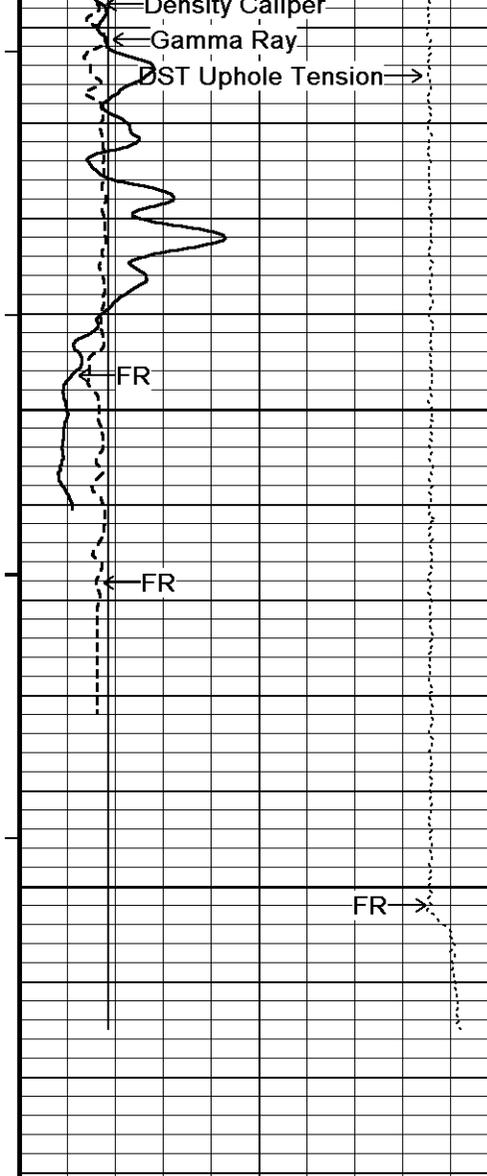
6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →

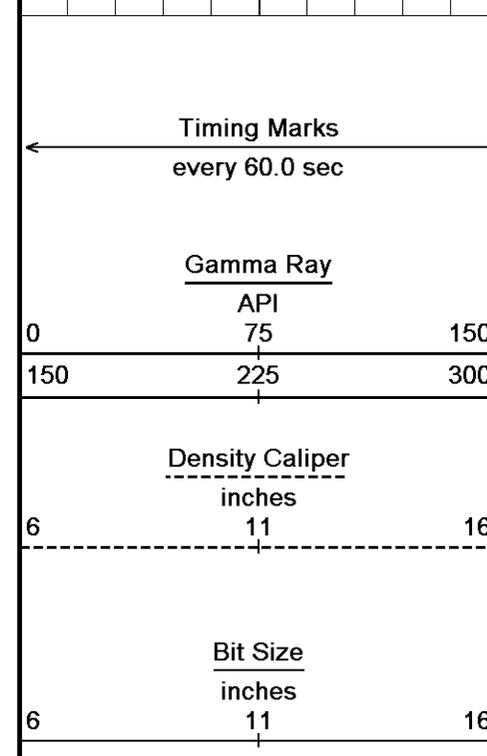
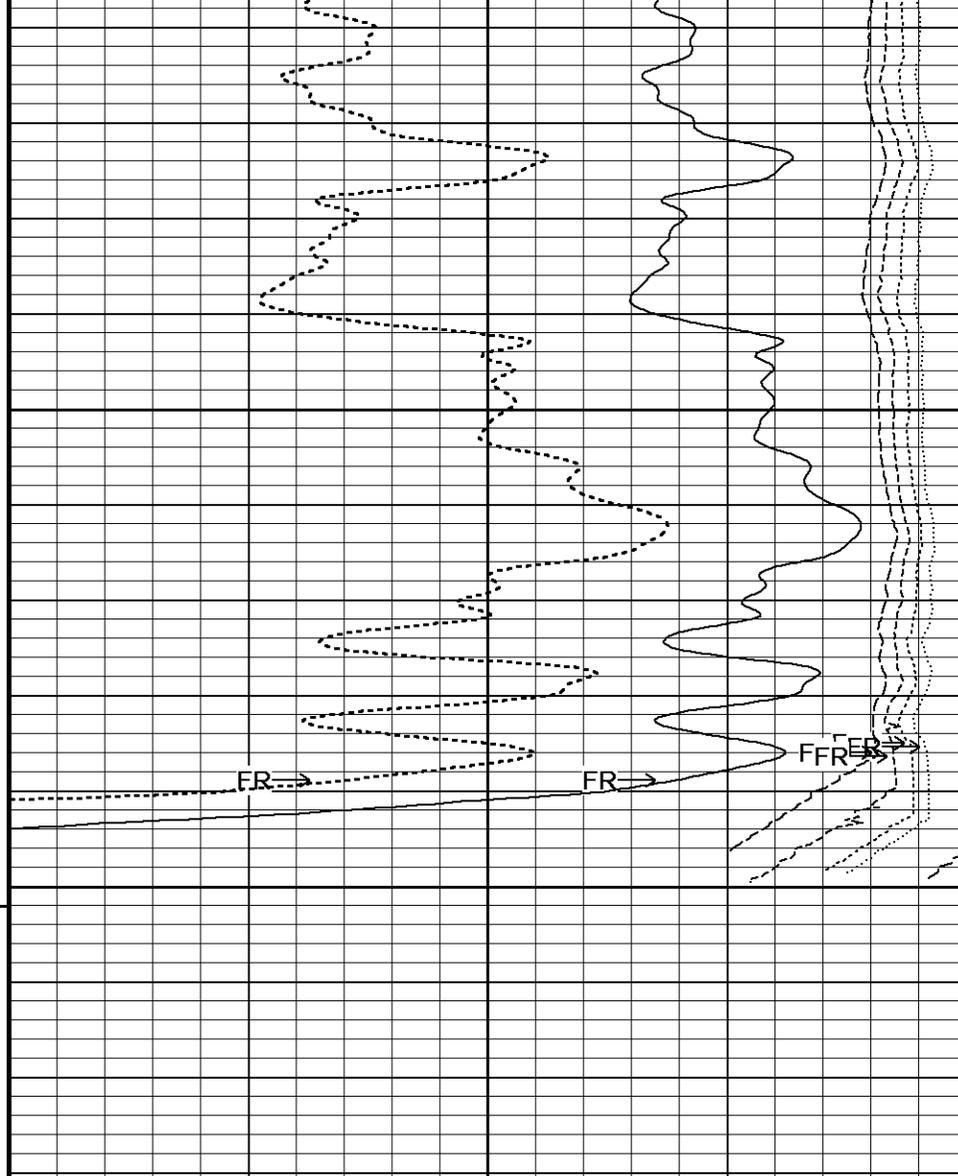




125°

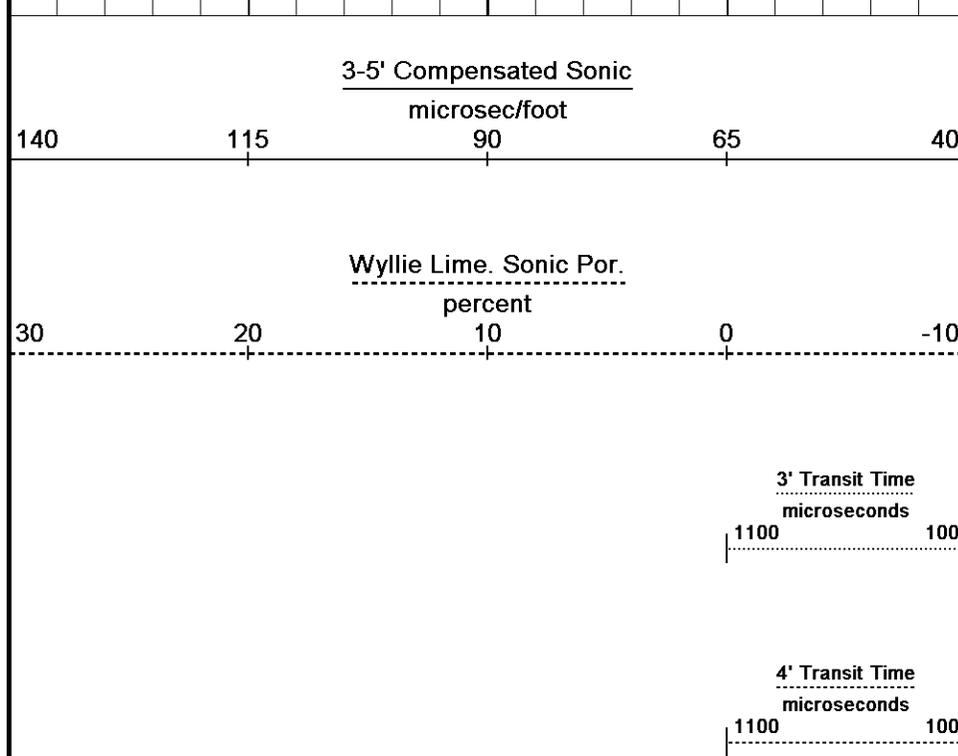
4750

4800



Depth in Feet

Borehole Temp in deg F



DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

6' Transit Time
microseconds
1100 100

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 22-JUL-2017 02:34
 Filename: C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5_001.dta Recorded on 21-JUL-2017 23:12
 System Versions: Logged with 17.01.7206 Plotted with 17.01.7206

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5_001.dta

General Constants All 000 Last Edited on 21-JUL-2017,22:39

General Parameters

Mud Resistivity 0.960 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 M 2.150
 SW/APOR Tool Source 0.000

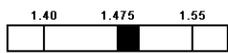
Down-hole Tension Calibration SMS 0 Field Calibration on 21-JUL-2017 22:14

Reading No	Measured	Calibrated (lbs)
1	14039.09	0.00
2	14869.52	481.00

Gamma Calibration MCG-C 84 Field Calibration on 21-JUL-2017 17:00

	Measured	Calibrated (API)
Background	142	95
Calibrator (Gross)	825	551
Calibrator (Net)	683	456

Gamma Calibration Tolerances MCG-C 84

Ratio 1.498  Counts/API

Gamma Constants MCG-C 84 Last Edited on 21-JUL-2017,20:15

Gamma Calibrator Number MCGGRCC141
 GRC-M Calibrator Jig in Use? NO
 Inactive Background Jig in Use? NO
 Mud Density 1.09 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 03-JUL-2017,10:23

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 03-JUL-2017,10:23

	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

Micro Normal and Micro Inverse Calibration MML-A 7

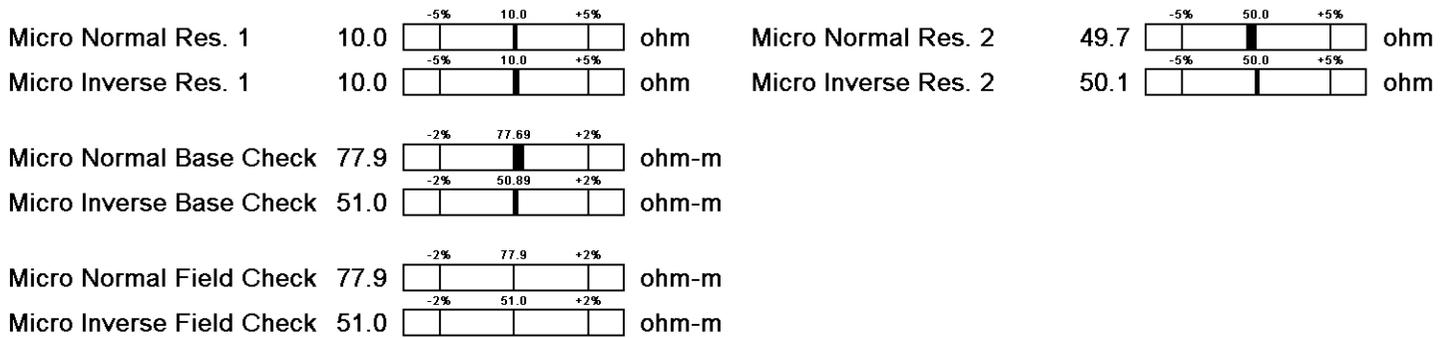
Base Calibration on 21-JUL-2017,09:26
Field Check on 21-JUL-2017 16:43

Base Calibration

Channel	Measured		Calibrated (ohm-m)	
	Resistor 1	Resistor 2	Resistor 1	Resistor 2
Micro Normal	10.0	49.7	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	77.9	77.9
Micro Inverse	51.0	51.0

Micro Normal & Micro Inverse Calibration Tolerance MML-A 7



Micro Normal and Micro Inverse Constants MML-A 7

Last Edited on 21-JUL-2017,20:15

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

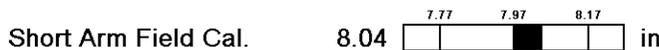
Caliper Calibration MML-A 7

Base Calibration on 21-JUL-2017,09:17
Field Calibration on 21-JUL-2017 16:41

Reading No	Measured	Calibrator Size (in)
1	13752	5.98
2	16863	7.97
3	19899	9.86
4	23808	11.92
5	0	0.00
6	N/A	N/A

Field Calibration	Measured Caliper (in)	Actual Caliper (in)
	8.04	7.97

Caliper Calibration Tolerances MML-A 7



Neutron Calibration MDN-A.B 114

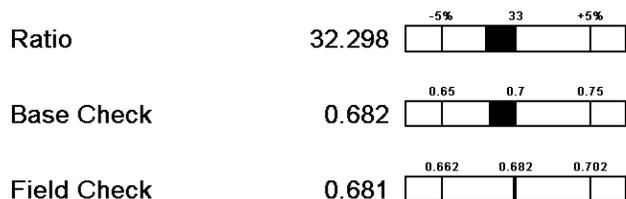
Base Calibration on 21-JUL-2017,14:44
Field Check on 21-JUL-2017 17:05

Base Calibration

Ratio	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3156	98	3714	110
	32.298		33.764	

Field Calibrator at Base	Calibrated (cps)	2073	3042
Ratio		0.682	
Field Check	Calibrated (cps)	2082	3059
Ratio		0.681	

Neutron Calibration Tolerances MDN-A.B 114



Neutron Constants MDN-A.B 114

Last Edited on 21-JUL-2017,20:15

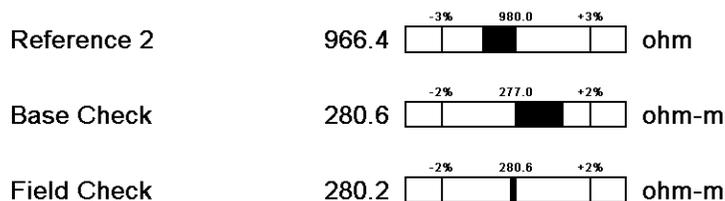
Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	None	
Formation Pressure	N/A	kpsi
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-B.J 352

Base Calibration on 21-JUL-2017,09:08
Field Check on 21-JUL-2017 16:32

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	966.4	126.8
Base Check		280.6
Field Check		280.2

FE Calibration Tolerances MFE-B.J 352



FE Constants MFE-B.J 352

Last Edited on 21-JUL-2017,20:15

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: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

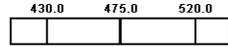
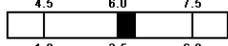
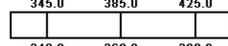
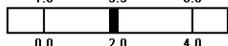
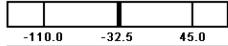
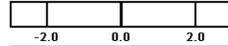
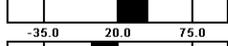
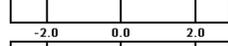
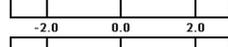
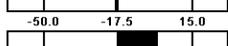
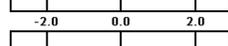
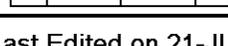
Sonic Constants MSS-A.A 55

Last Edited on 21-JUL-2017,20:14

Test Loop Calibration Verified

Channel	Base Check (mmho/m)		Field Check (mmho/m)		
	Low	High	Low	High	
1	13.7	3869.0	14.0	3870.2	
2	30.1	3523.0	30.4	3523.7	
3	29.2	3017.0	29.4	3017.1	
4	19.2	2055.4	19.3	2055.2	
Deep	17.8	1959.3	18.0	1959.0	
Medium	43.1	3970.5	43.4	3971.0	
Shallow	44.9	5225.2	45.3	5226.9	
Array Temperature	95.2		94.1		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 21-JUL-2017,20:15

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

Caliper Calibration MPD-C.A 216

Base Calibration on 21-JUL-2017,11:21
Field Calibration on 21-JUL-2017 16:35

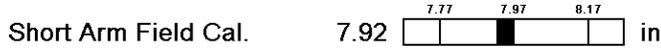
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18416	3.99
2	28544	5.98
3	38624	7.97
4	48448	9.86
5	59555	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.92	7.97

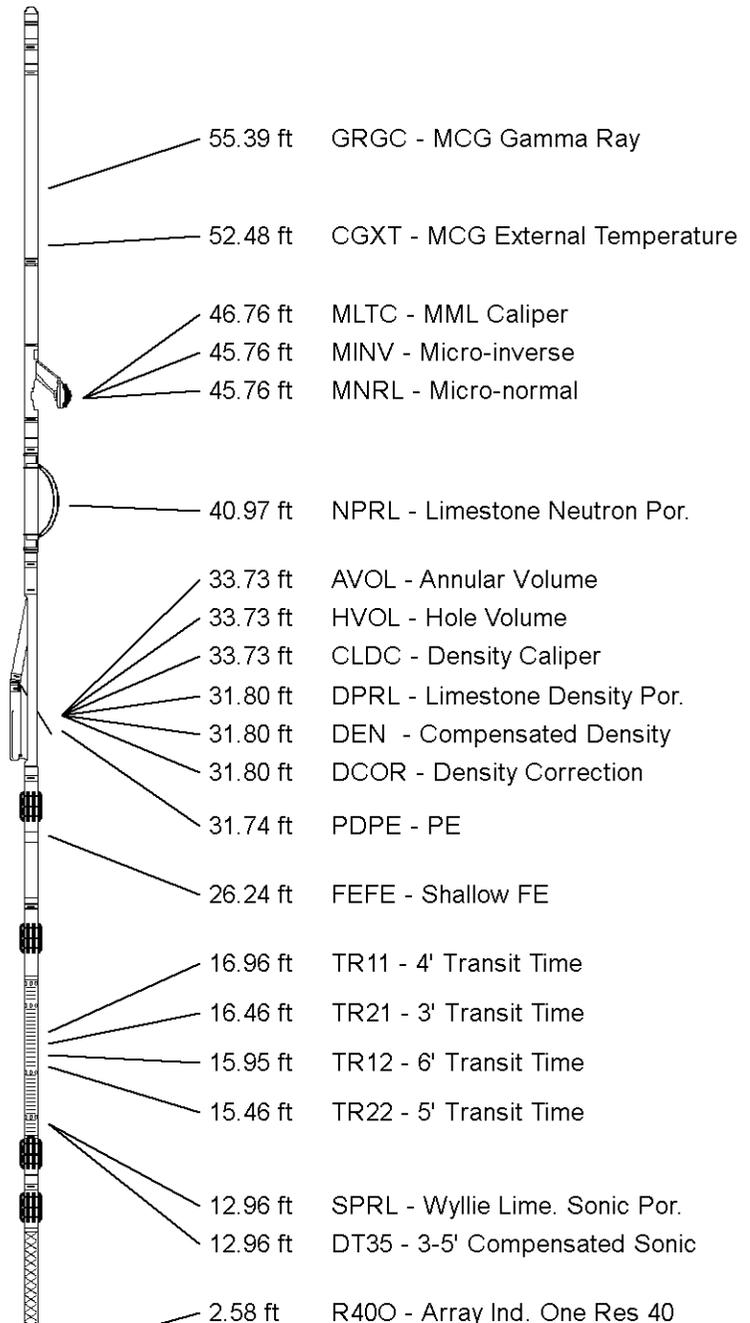
Caliper Calibration Tolerances MPD-C.A 216

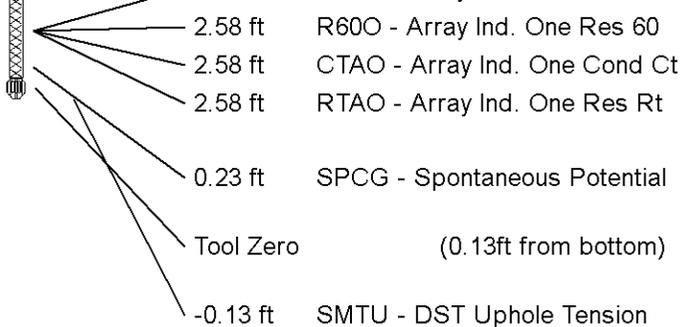


DOWNHOLE EQUIPMENT

C:\Minimus 17.01.7206\Data\Shakespeare Goering #1-5\Shakespeare Goering #1-5_001.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-B.J 352 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 SHAKESPEARE OIL CO., INC.
 WELL GOERING #1-5
 FIELD WILDCAT
 PROVINCE/COUNTY LANE
 COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	2951	feet	First Reading	4789.00	feet
Elevation Drill Floor	2949	feet	Depth Driller	4800.00	feet
Elevation Ground Level	2940	feet	Depth Logger	4802.00	feet



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