

**Weatherford****COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME
LOG**

COMPANY				SHAKESPEARE OIL COMPANY			
WELL				TUCKER #1-9			
FIELD				WILDCAT			
PROVINCE/COUNTY				SCOTT			
COUNTRY/STATE				UNITED STATES / KANSAS			
LOCATION				400' FSL & 600' FEL SE/4			
SEC	TWP	RGE	Other Services		Elevations:		
9	16S	34W	MPD/MDN		KB 3140.00		
API Number		15-171-20947	MAI/MFE		DF 3139.00		
Permit Number		MML		GL 3130.00			
Permanent Datum G.L., Elevation 3130 feet							
Log Measured From KB							
Drilling Measured From K.B. @ 10 FEET							
Date	12-JUN-2013						
Run Number	ONE						
Service Order	3537763						
Depth Driller	4864.00			feet			
Depth Logger	4863.00			feet			
First Reading	4850.00			feet			
Last Reading	264.00			feet			
Casing Driller	267.00			feet			
Casing Logger	264.00			feet			
Bit Size	7.880			inches			
Hole Fluid Type	CHEMICAL						
Density / Viscosity	9.40 lb/USg		56.00	CP			
PH / Fluid Loss	9.50		9.60	ml/30Min			
Sample Source	MUDPIT						
Rm @ Measured Temp	0.66 @ 85.0			ohm-m			
Rmf @ Measured Temp	0.53 @ 85.0			ohm-m			
Rmc @ Measured Temp	0.79 @ 85.0			ohm-m			
Source Rmf / Rmc	CALC		CALC				
Rm @ BHT	0.48 @ 116.0		ohm-m				
Time Since Circulation	4 HOURS						
Max Recorded Temp	116.00		deg F				
Equipment / Base	13096		LIB				
Recorded By	W. STAMBAUGH						
Witnessed By	TIM PRIEST						
IOB#	LB13-173						

BOREHOLE RECORD

Last Edited: 12-JUN-2013 21:41

Bit Size inches	Depth From feet	Depth To feet
7.875	264.00	4863.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	264.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583.
- 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: 2370 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO SURFACE CASING: 1610 CU. FT.

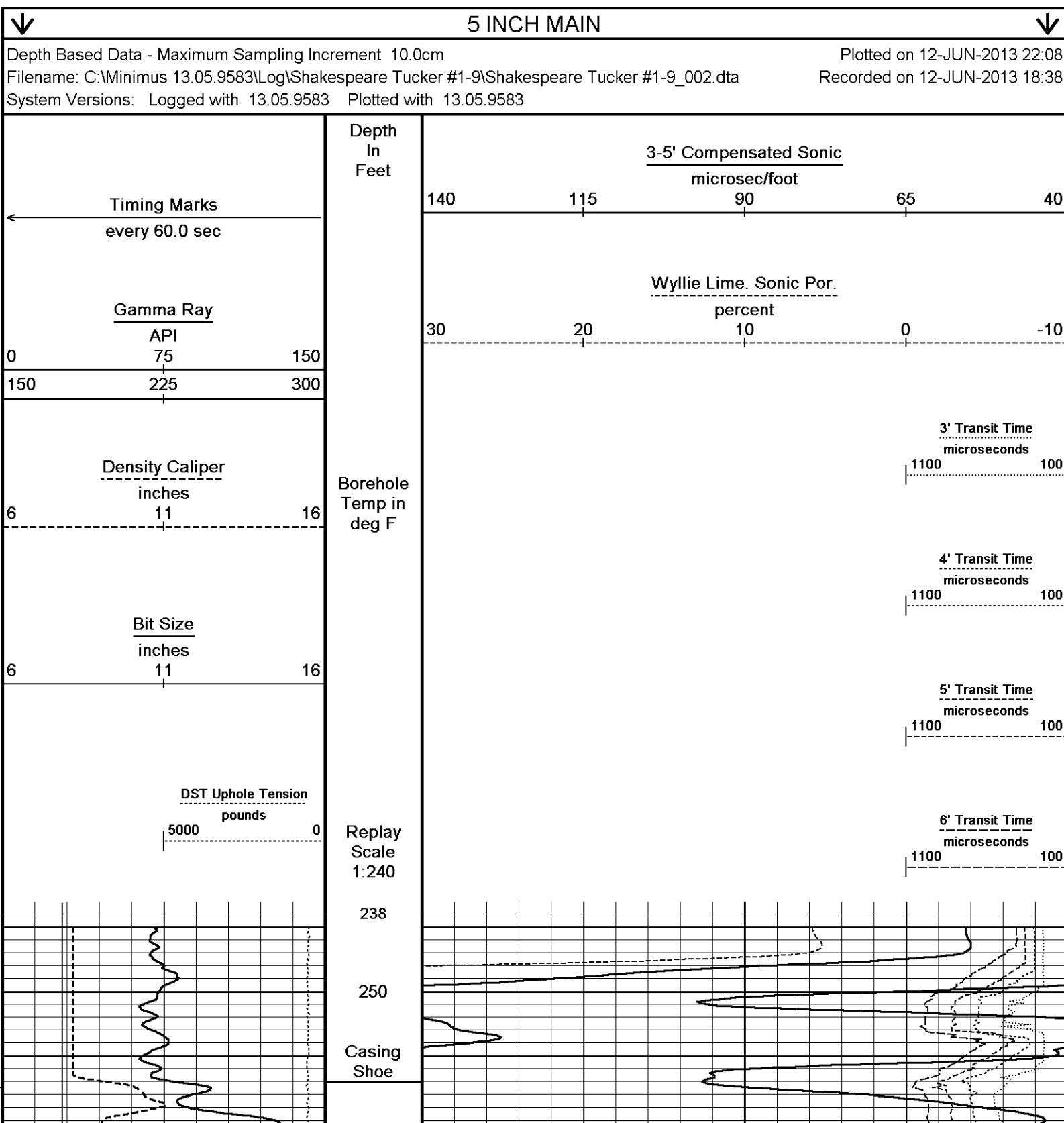
- SERVICE ORDER # 3537763.

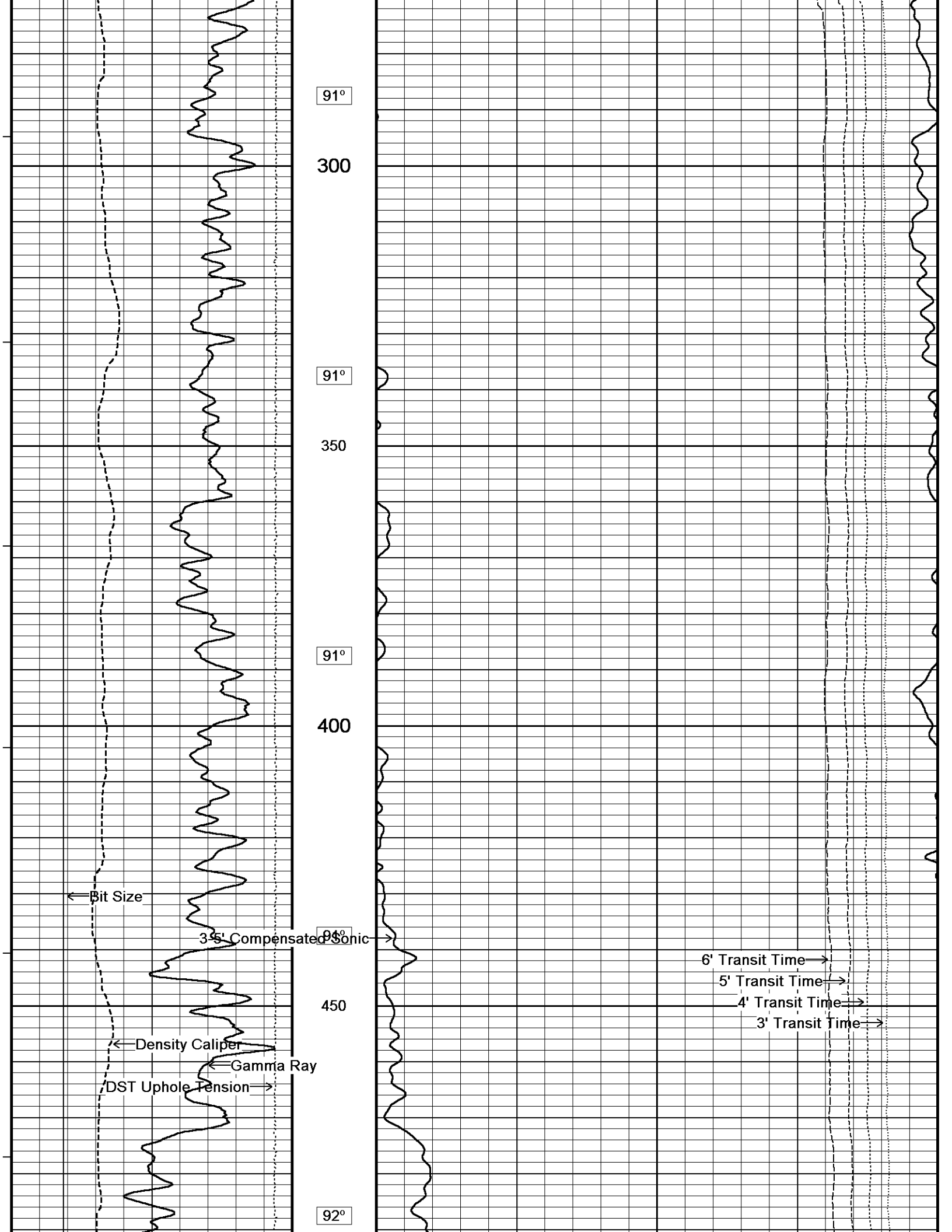
- RIG: HD DRILLING #2.

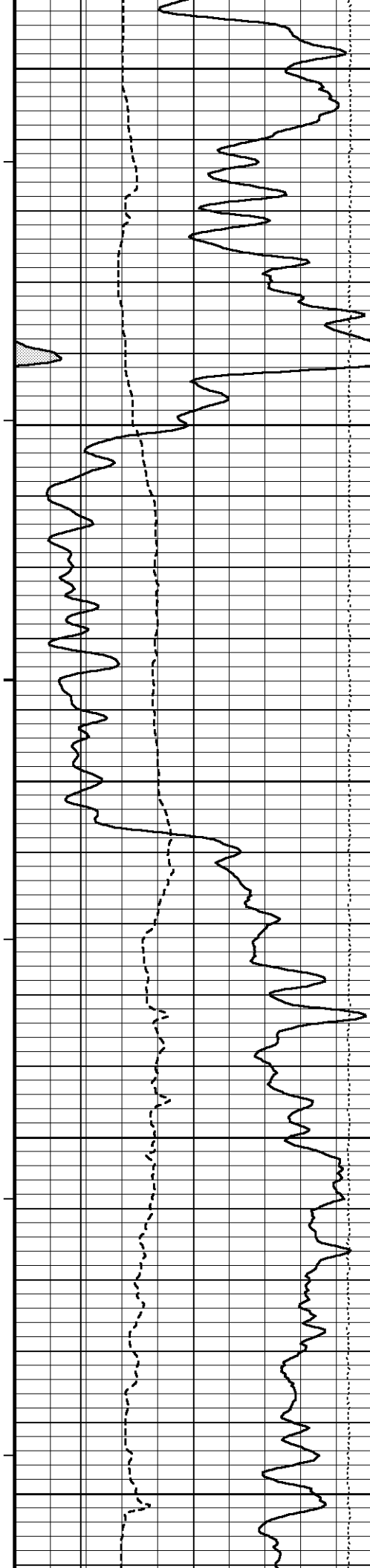
- ENGINEER: WILLIAM STAMBAUGH

- OPERATOR(S): K. RINEHART, M. HERNANDEZ

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.







500

92°

550

93°

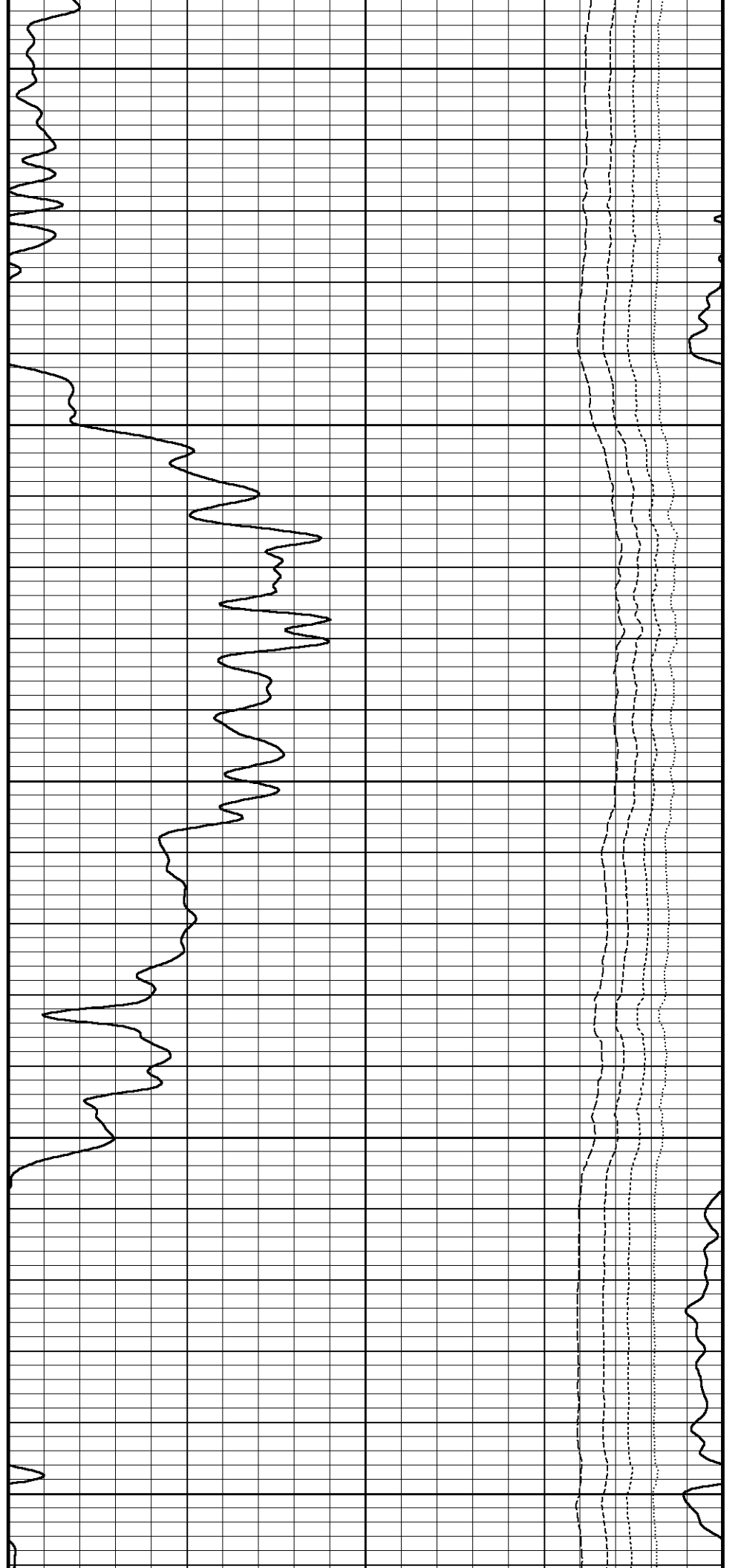
600

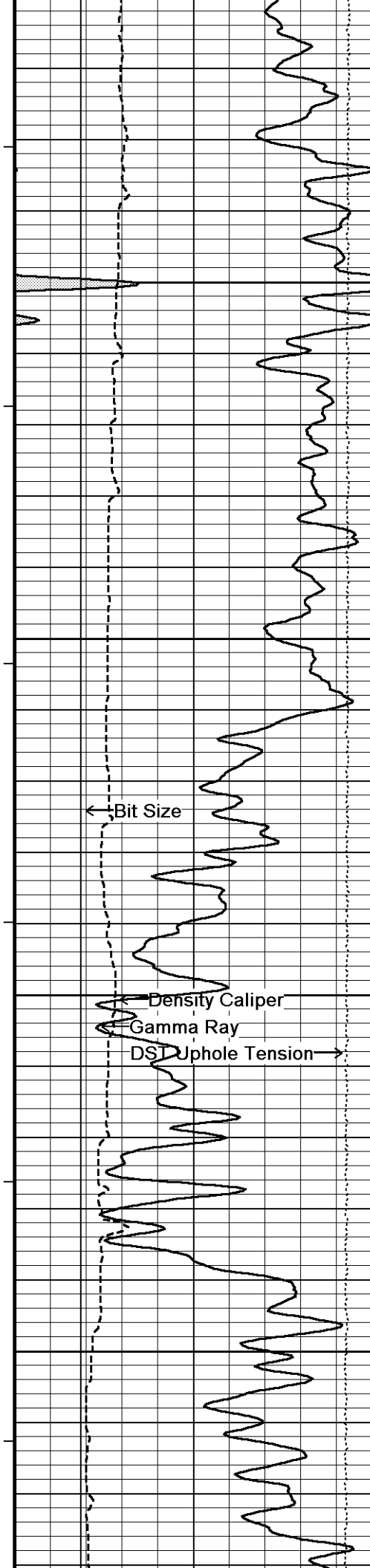
93°

650

94°

700





94°

750

94°

800

94°

850

95°

900

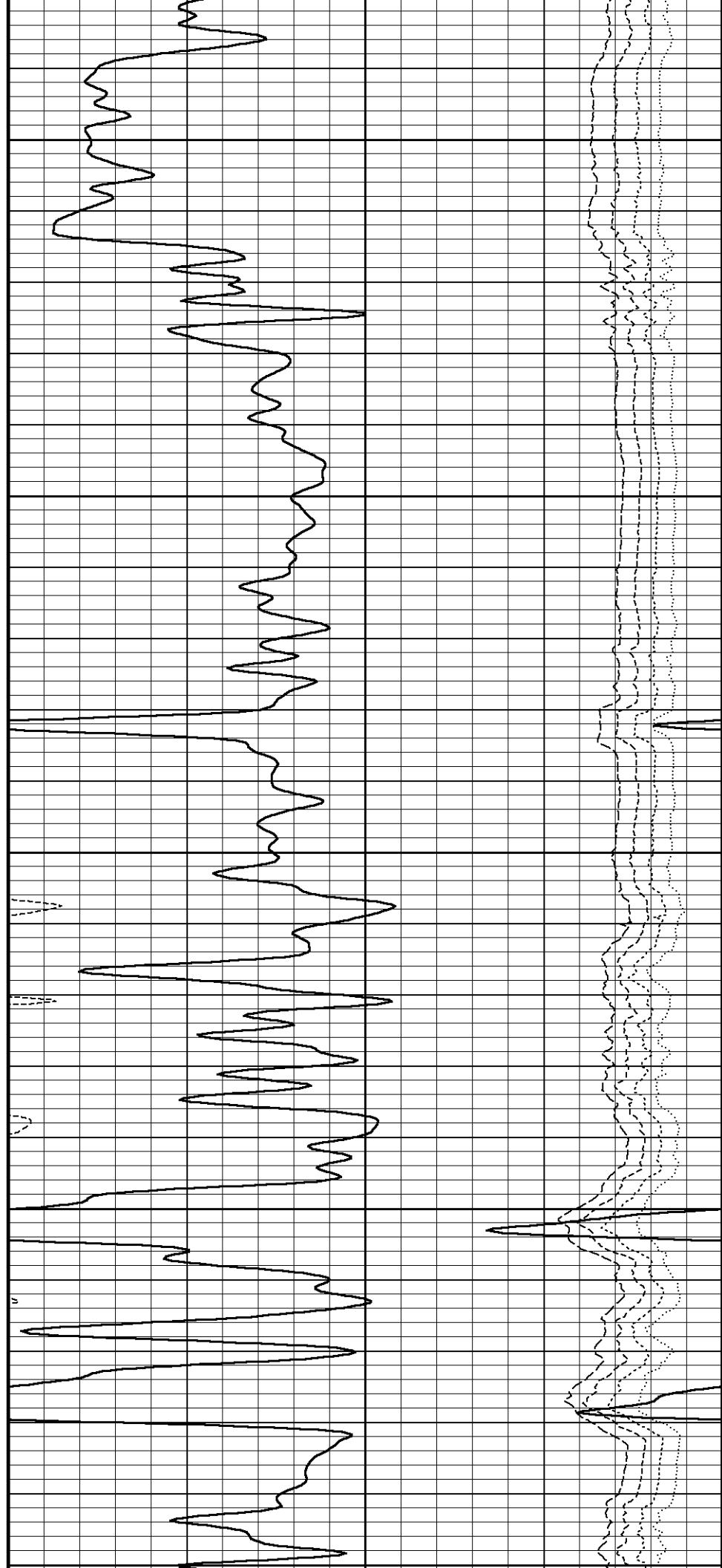
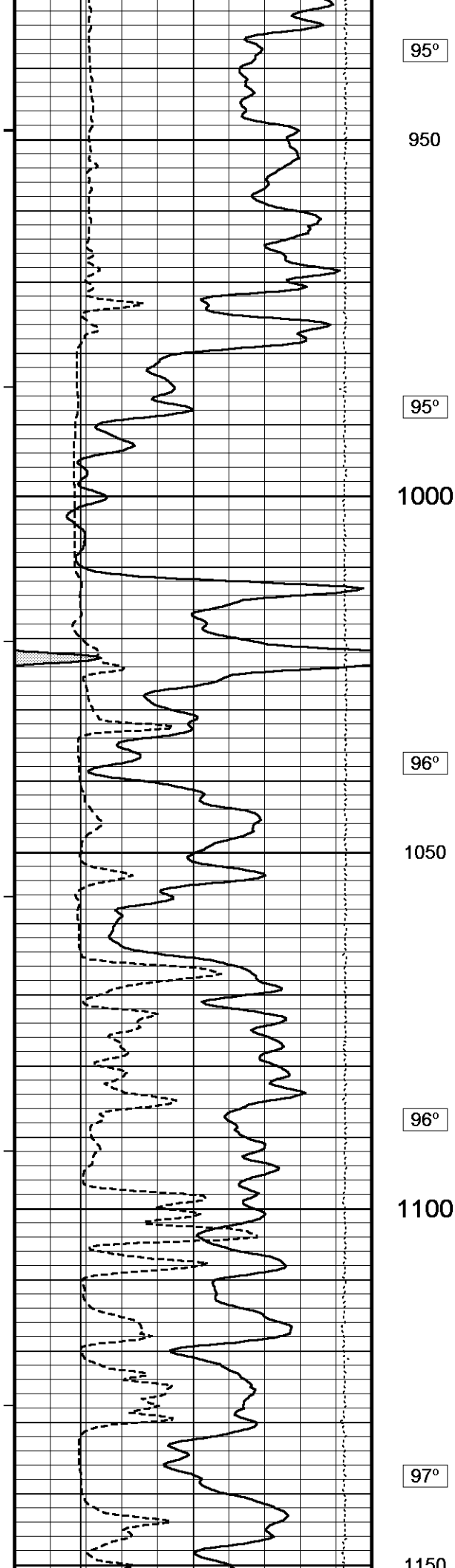
3-5' Compensated Sonic

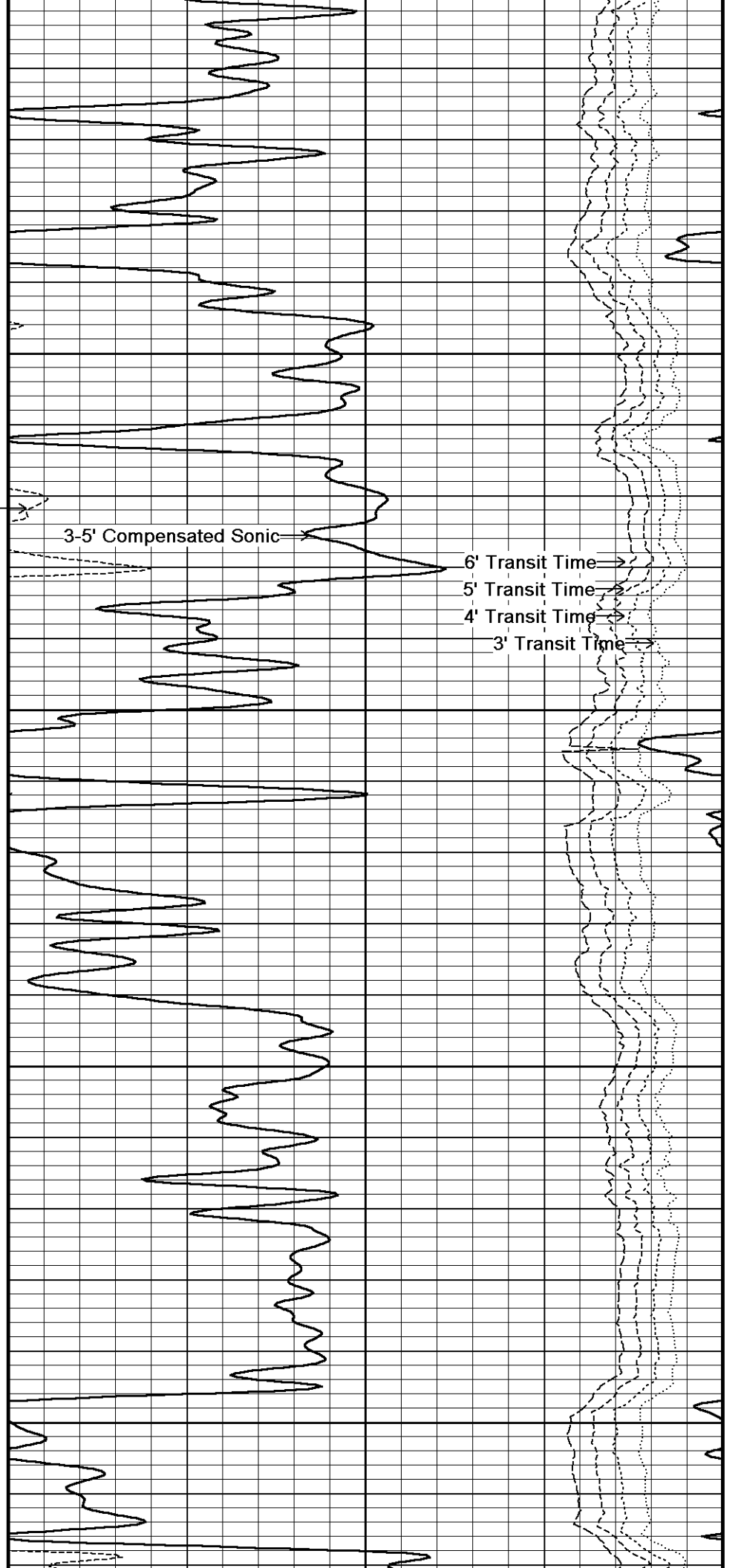
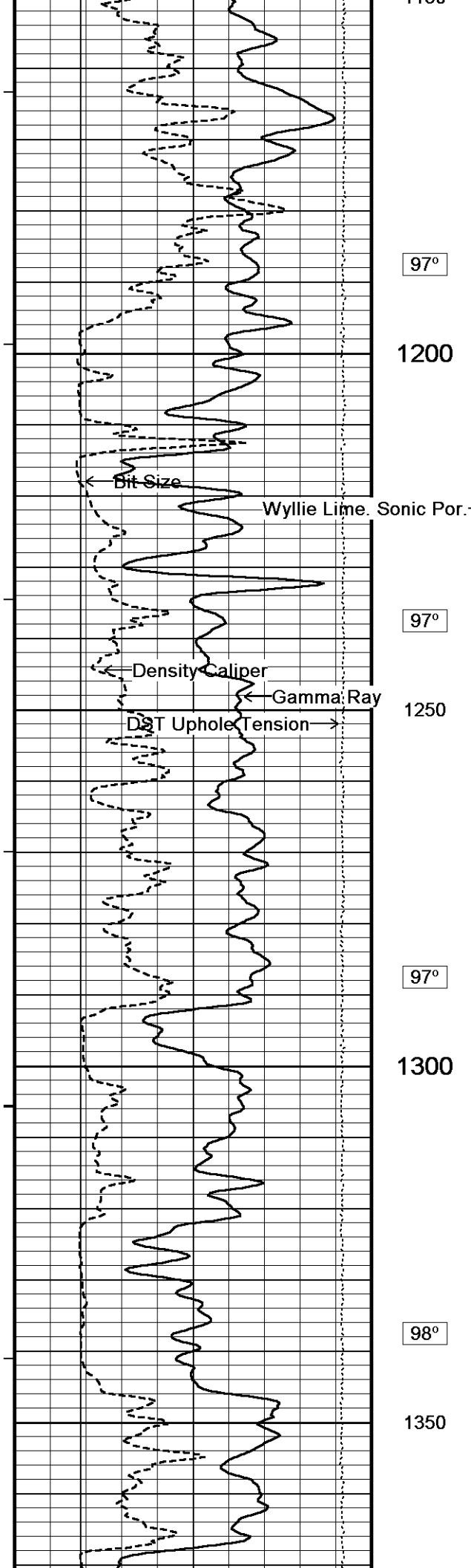
6' Transit Time

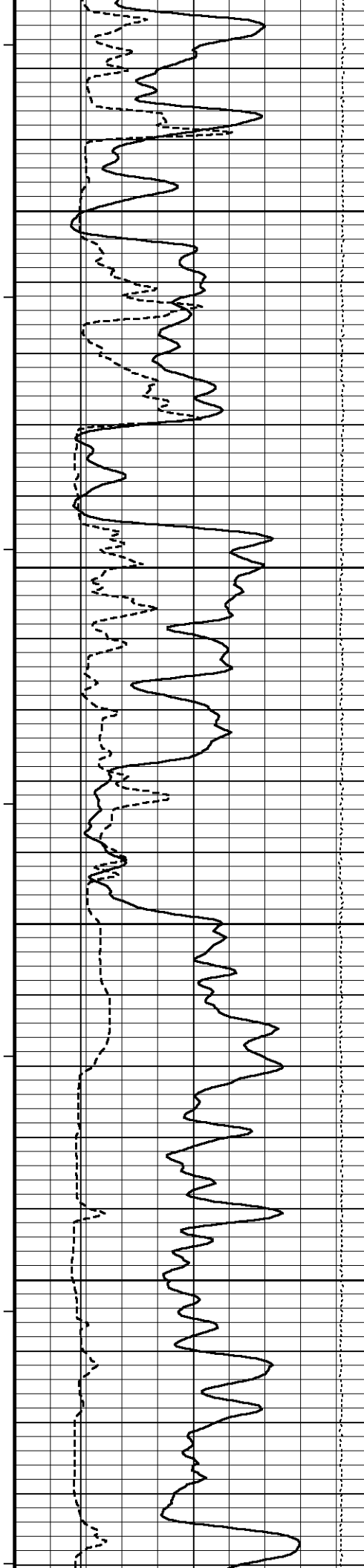
5' Transit Time

4' Transit Time

3' Transit Time







98°

1400

98°

1450

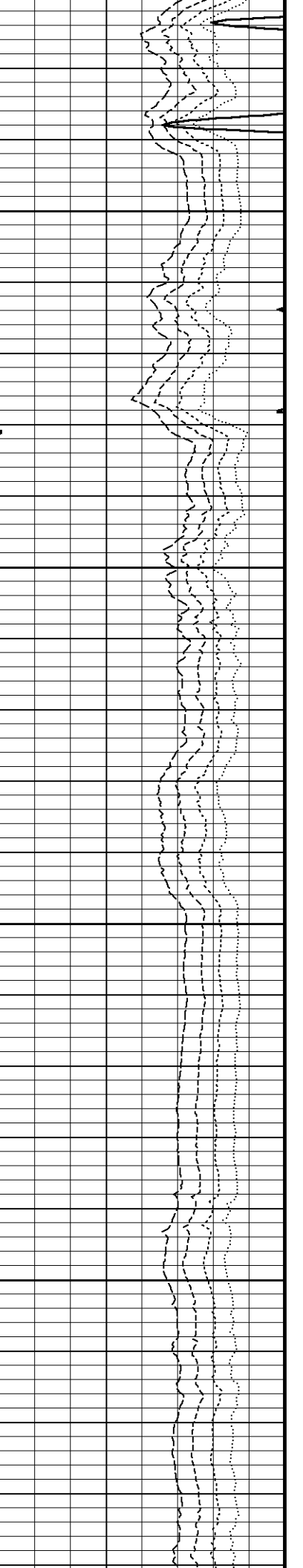
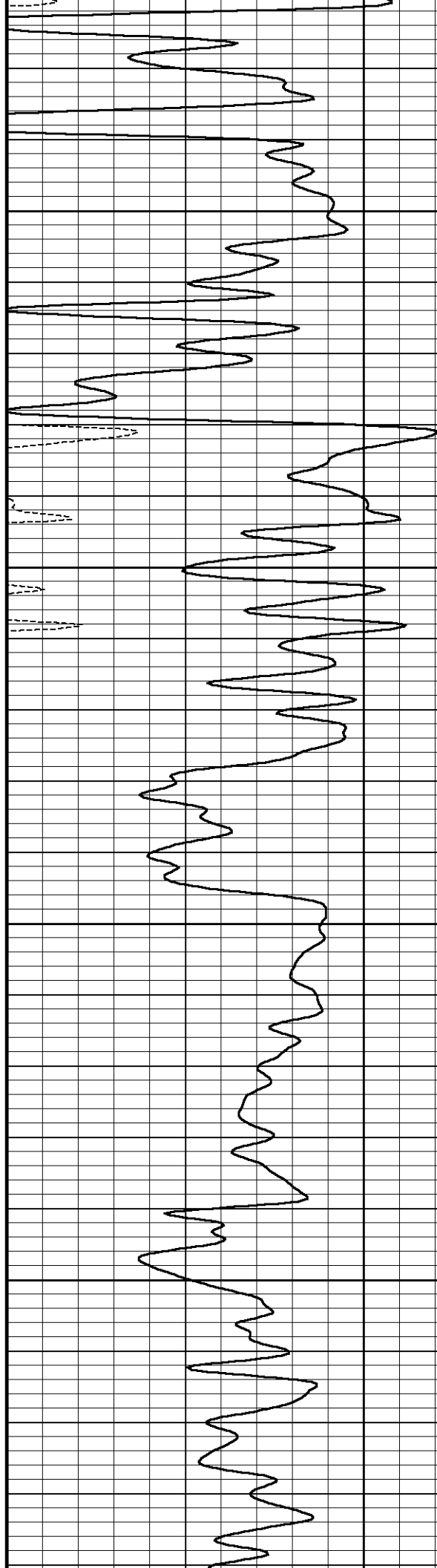
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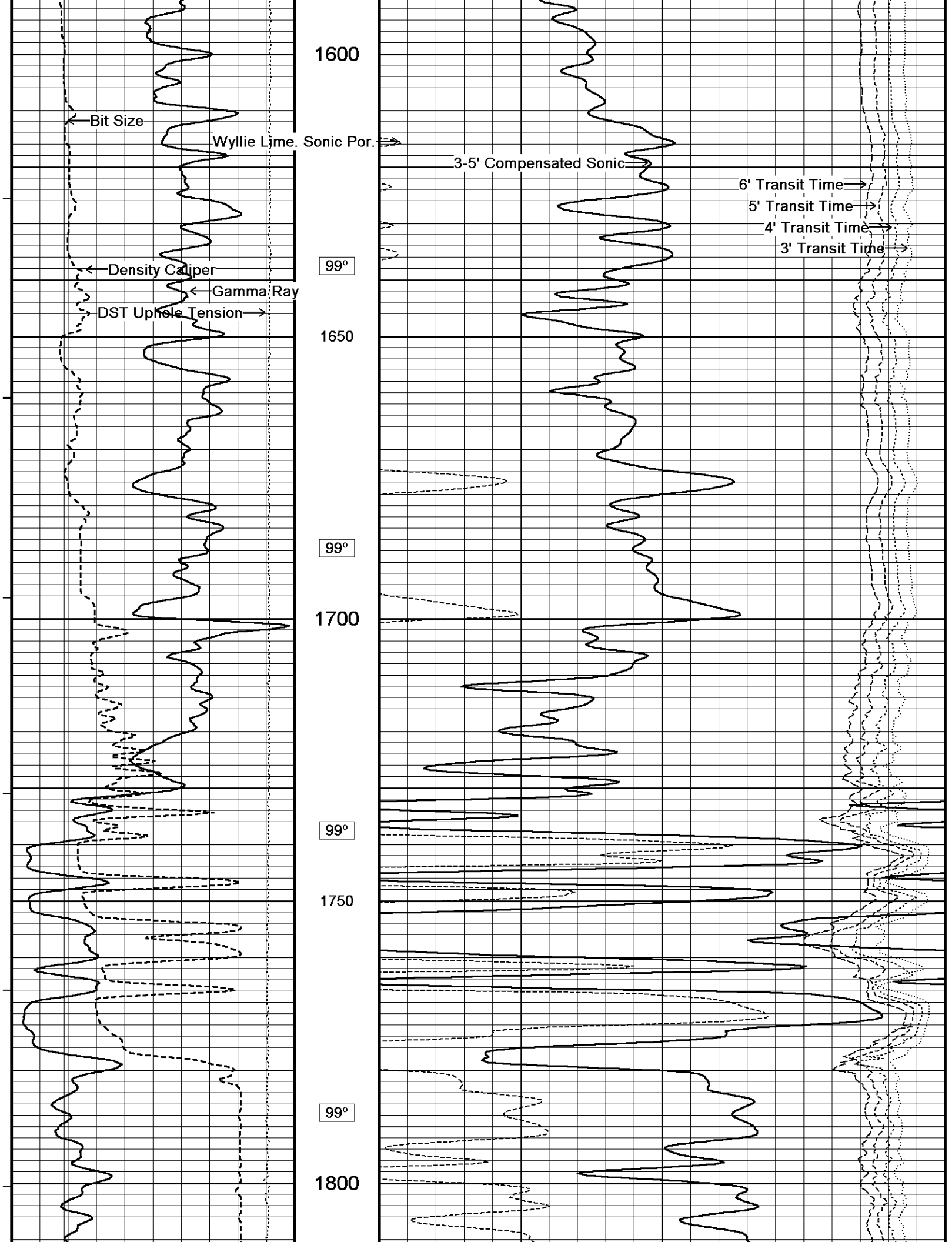
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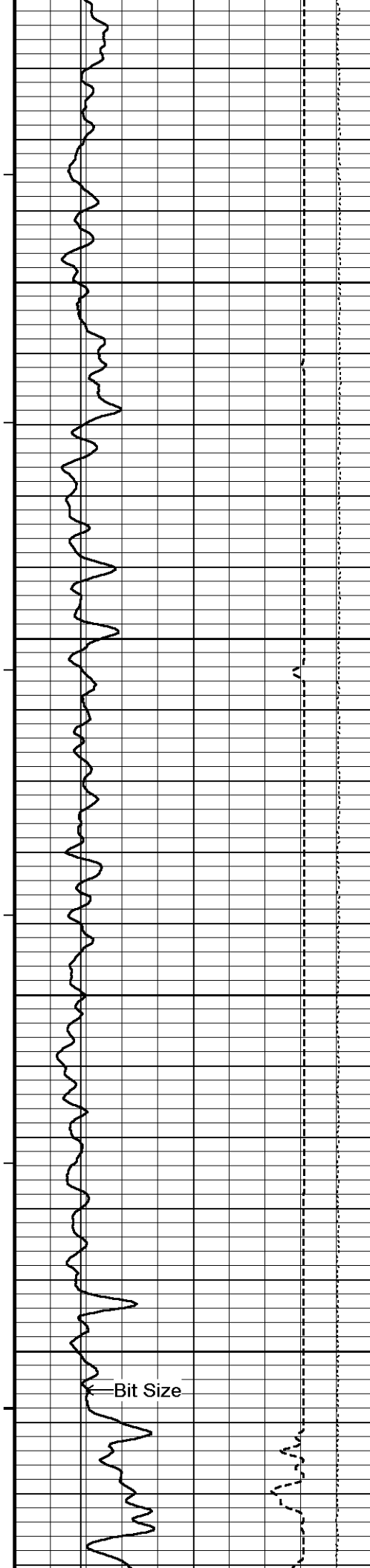
99°

1550

99°







99°

1850

99°

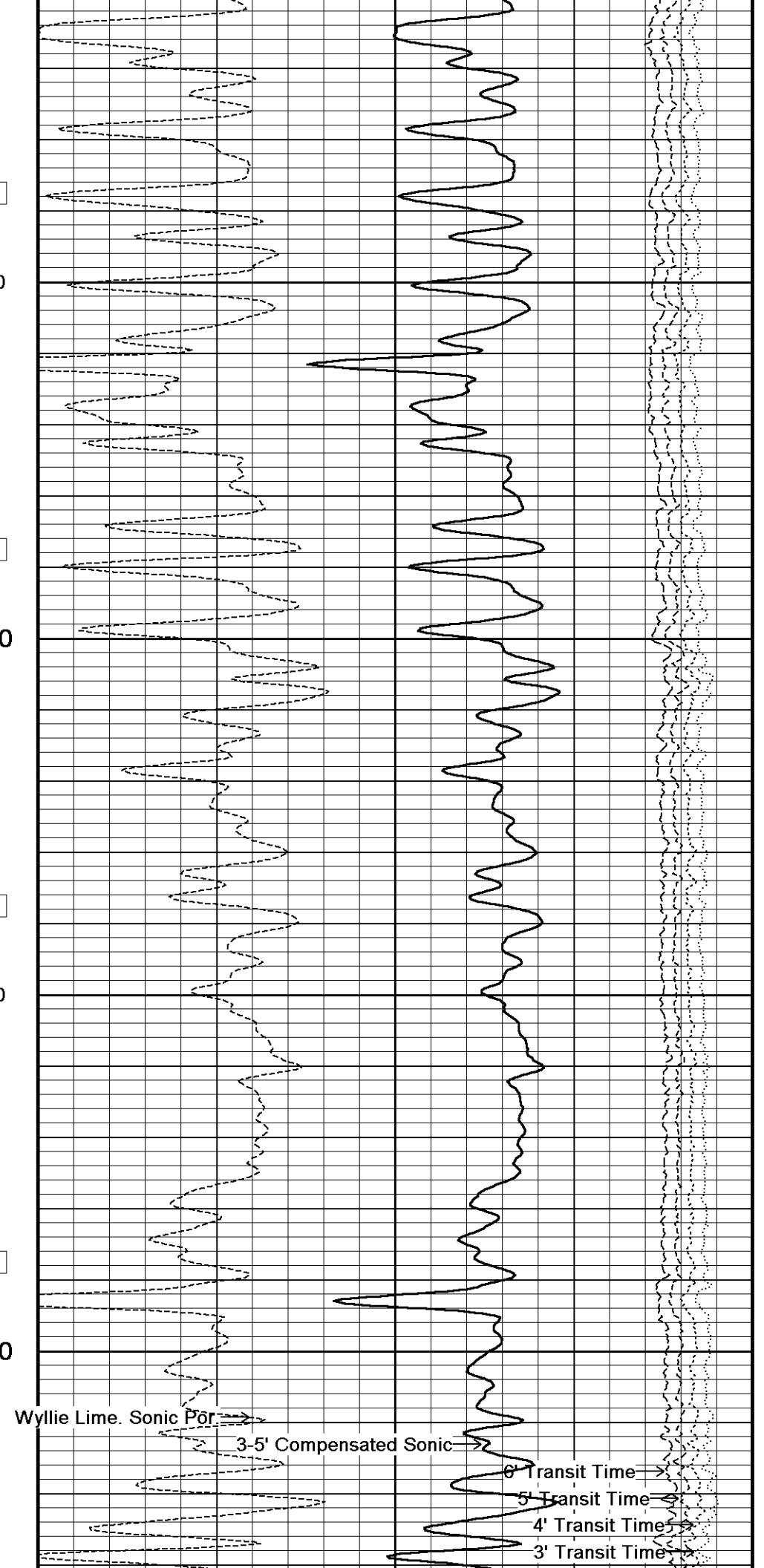
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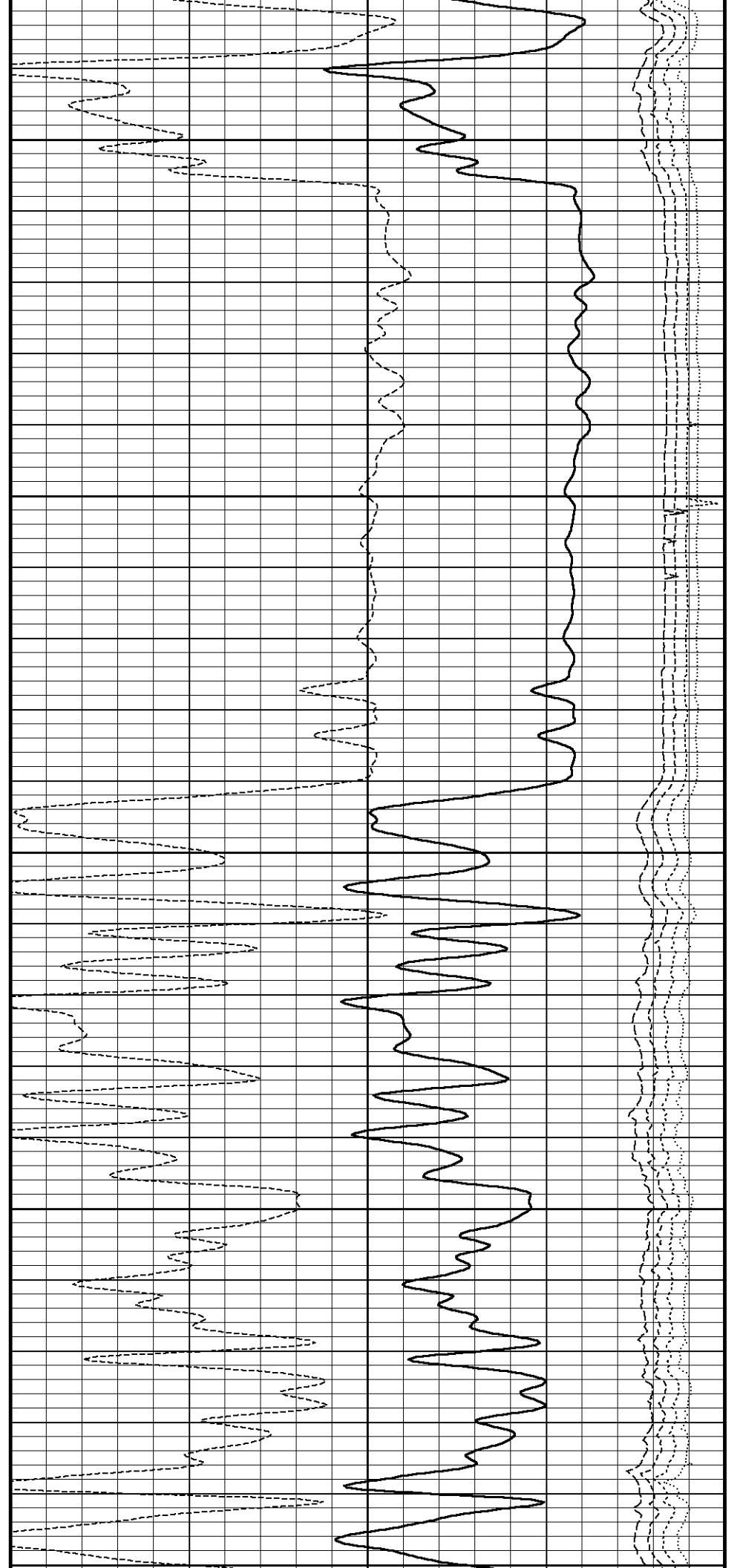
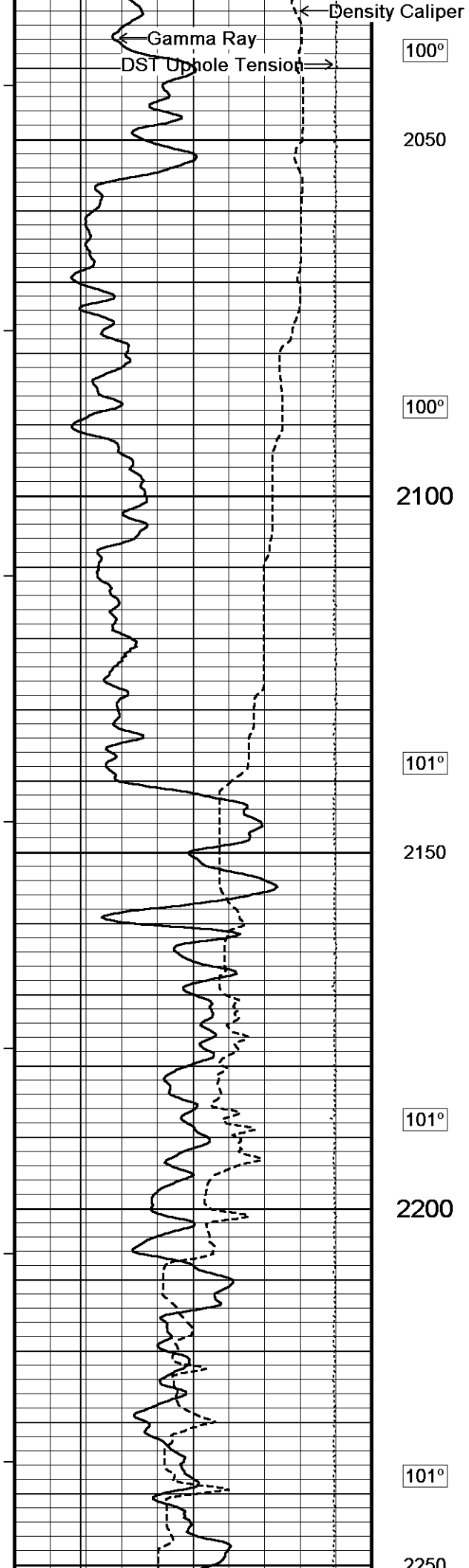
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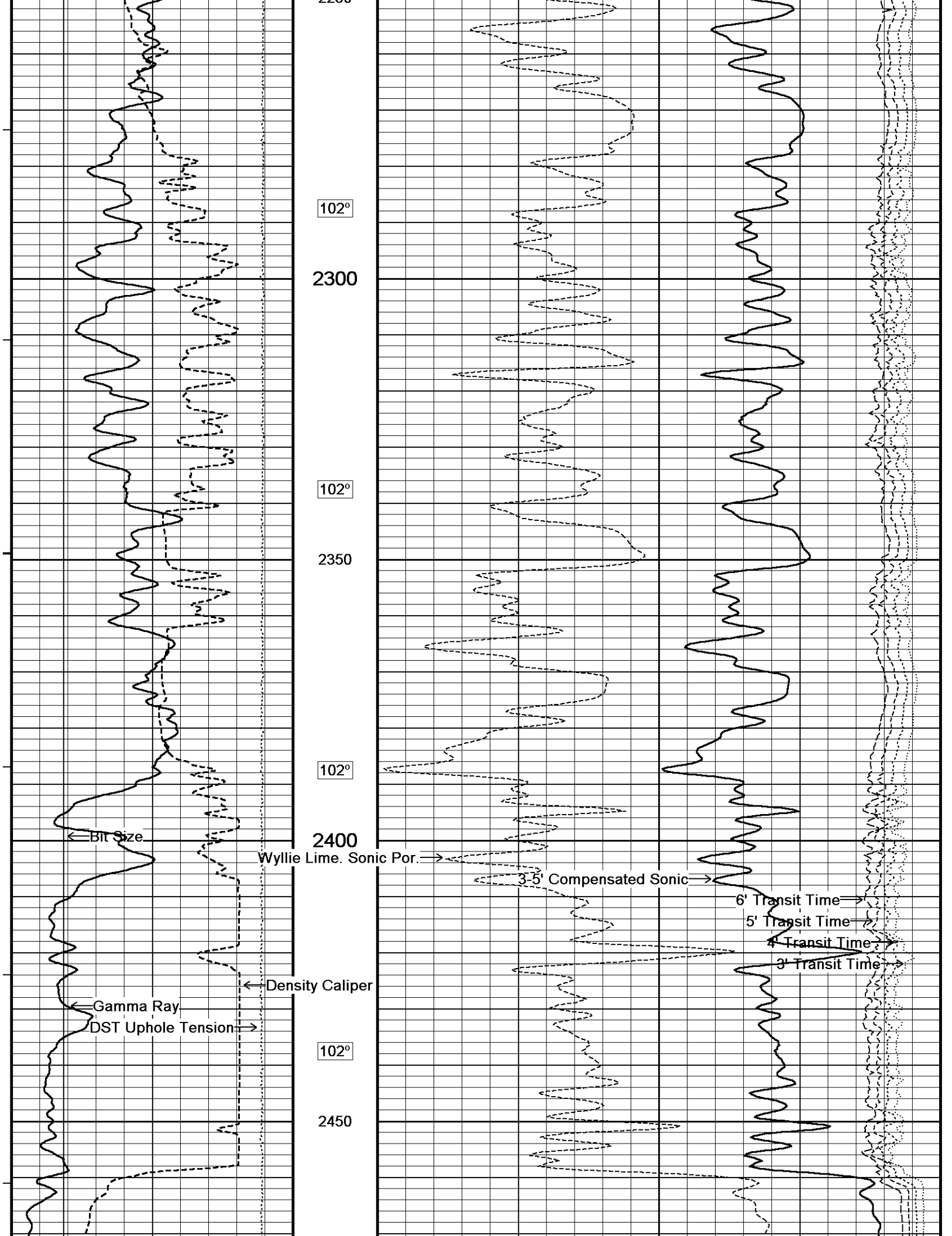
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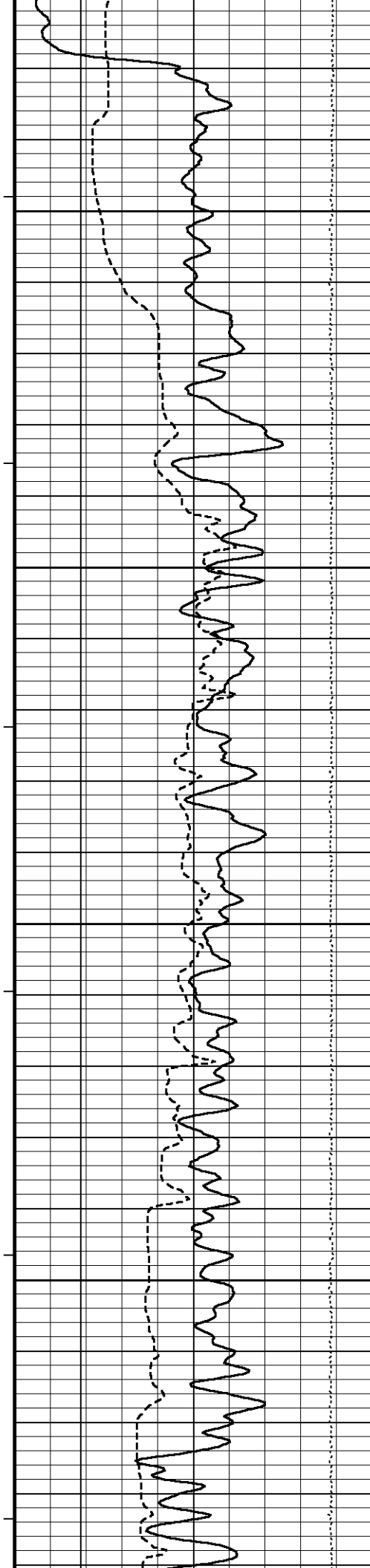
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2000









102°

2500

103°

2550

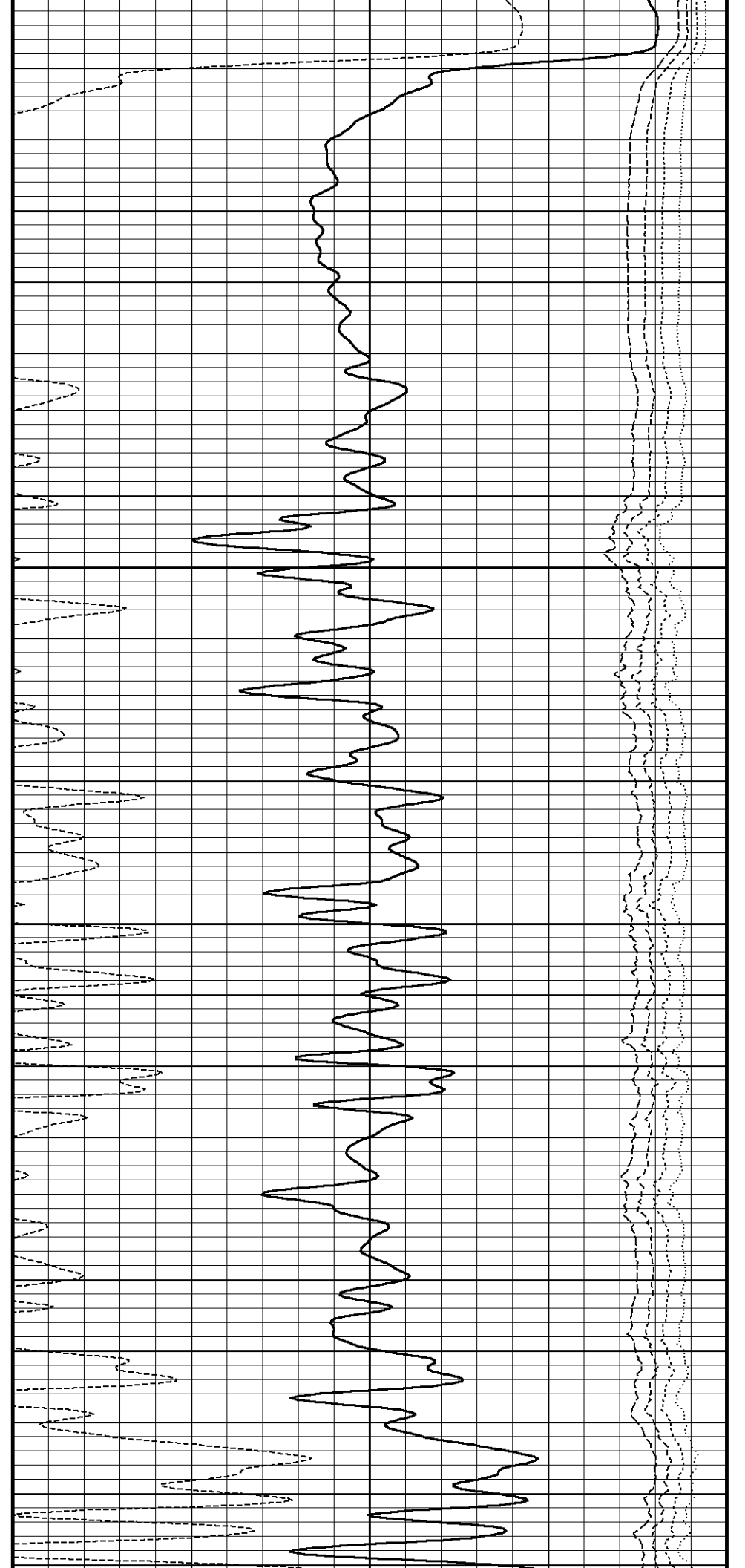
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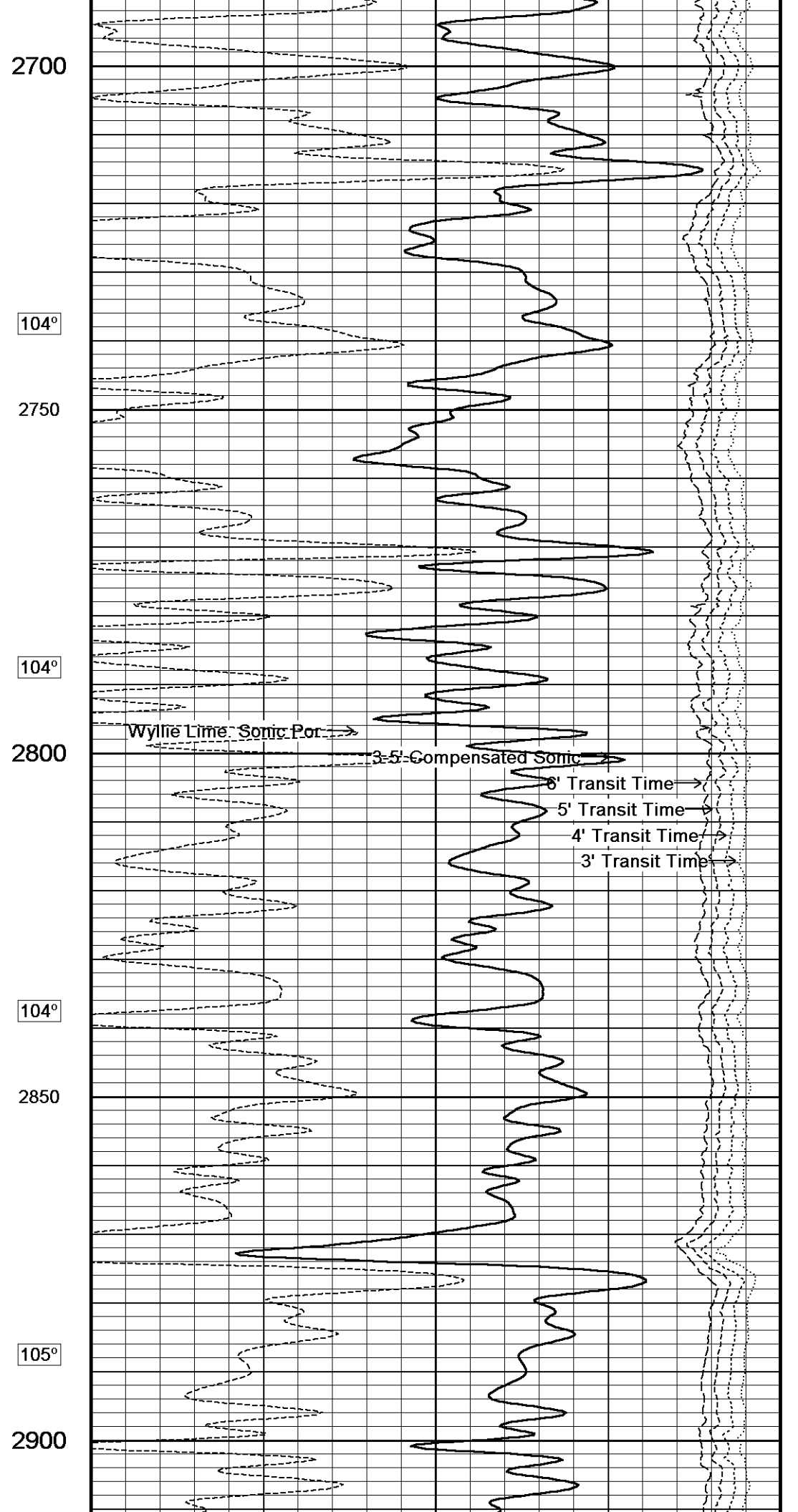
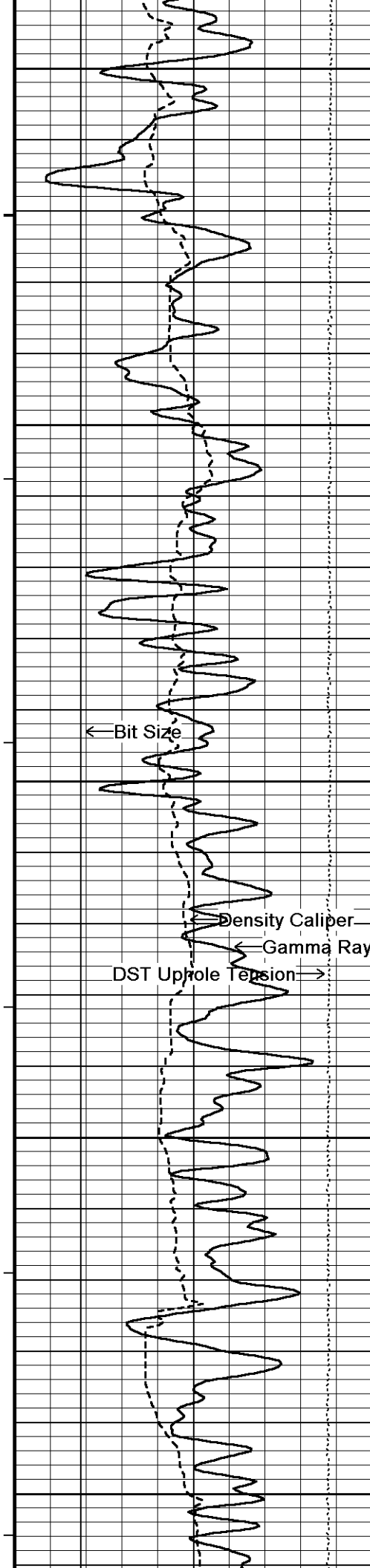
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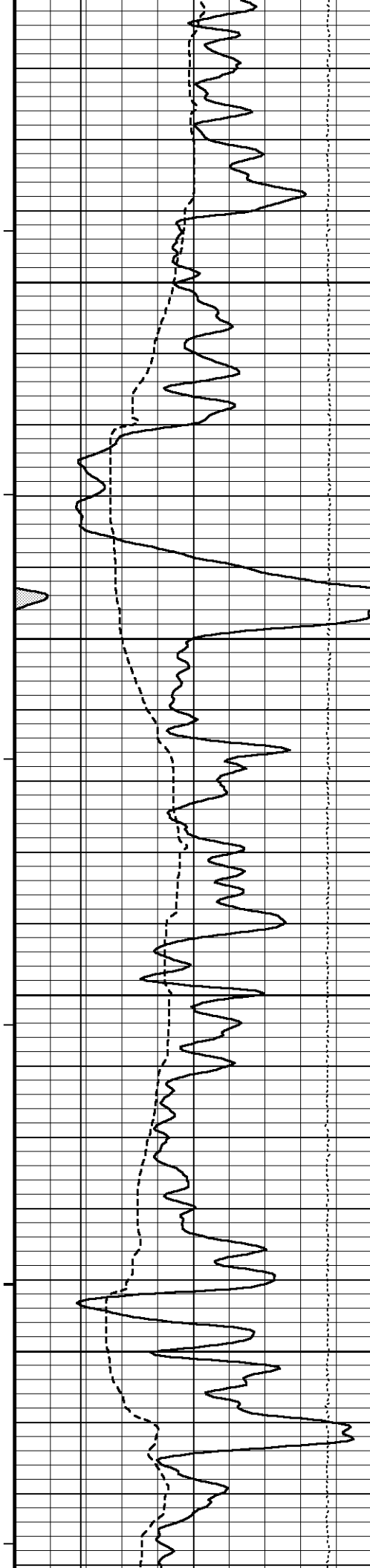
103°

2650

103°







105°

2950

105°

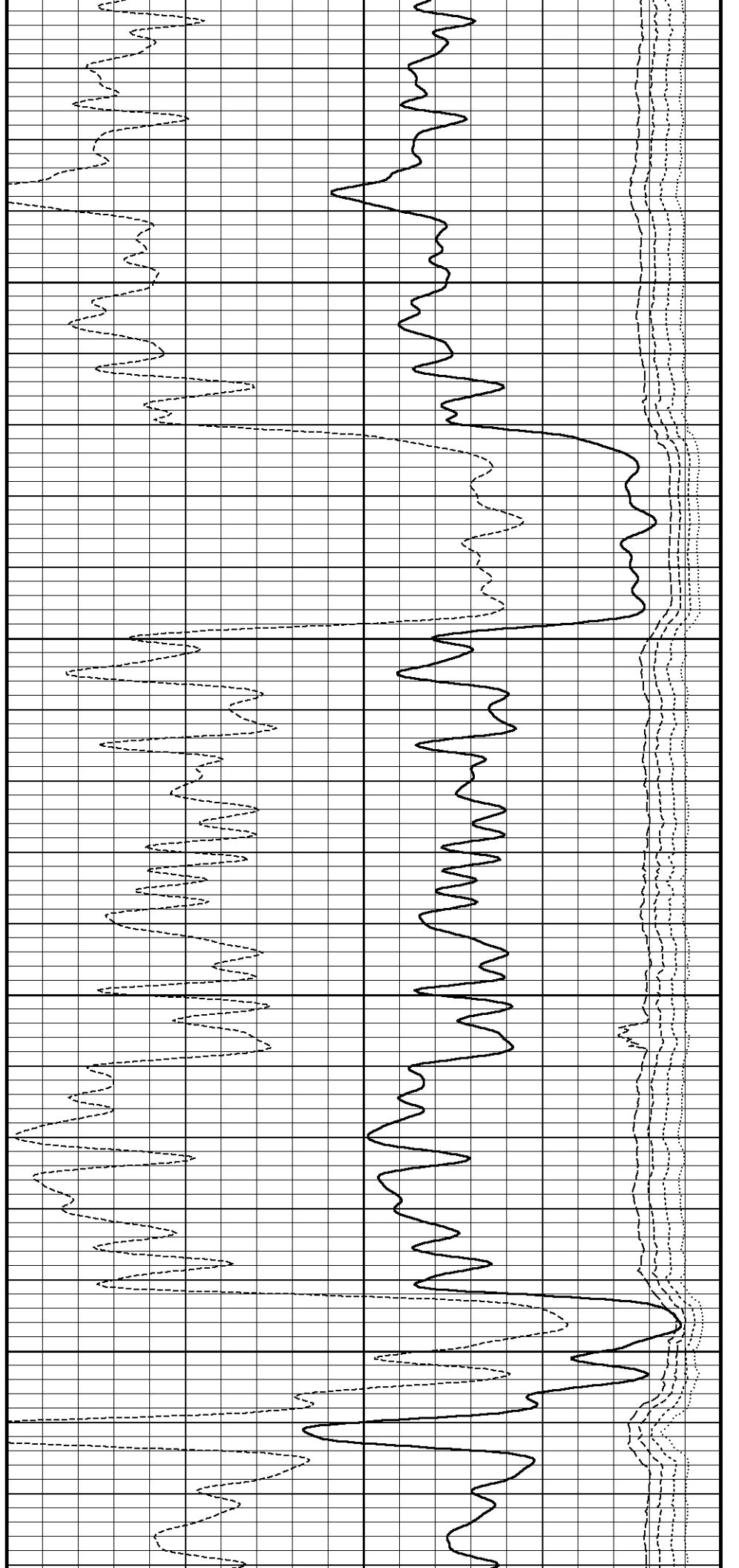
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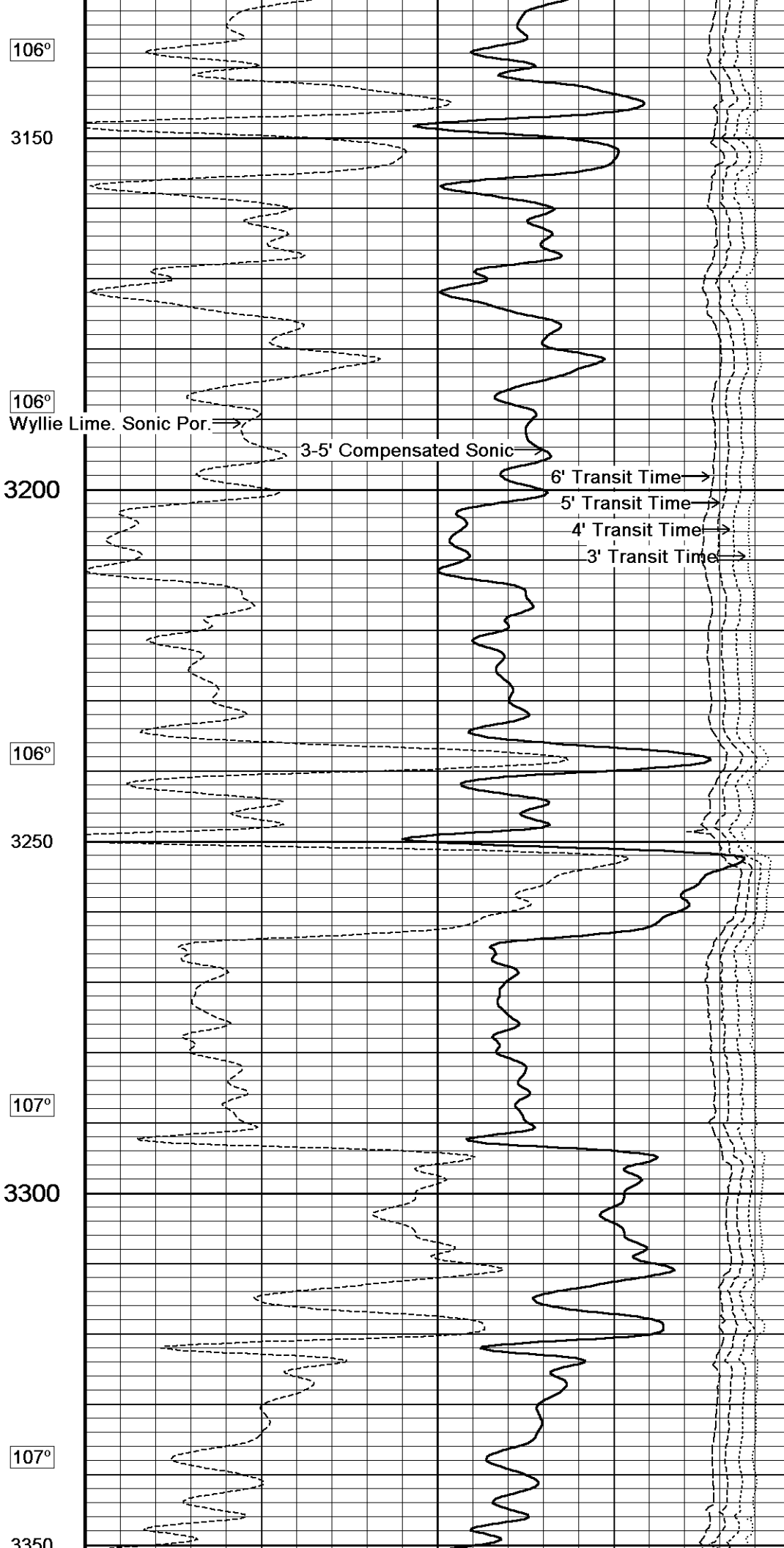
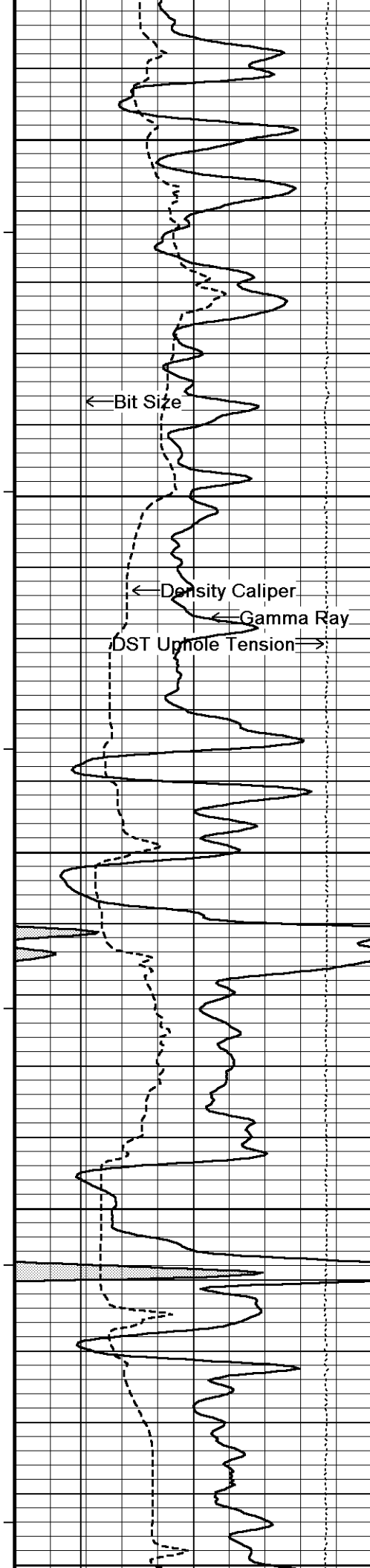
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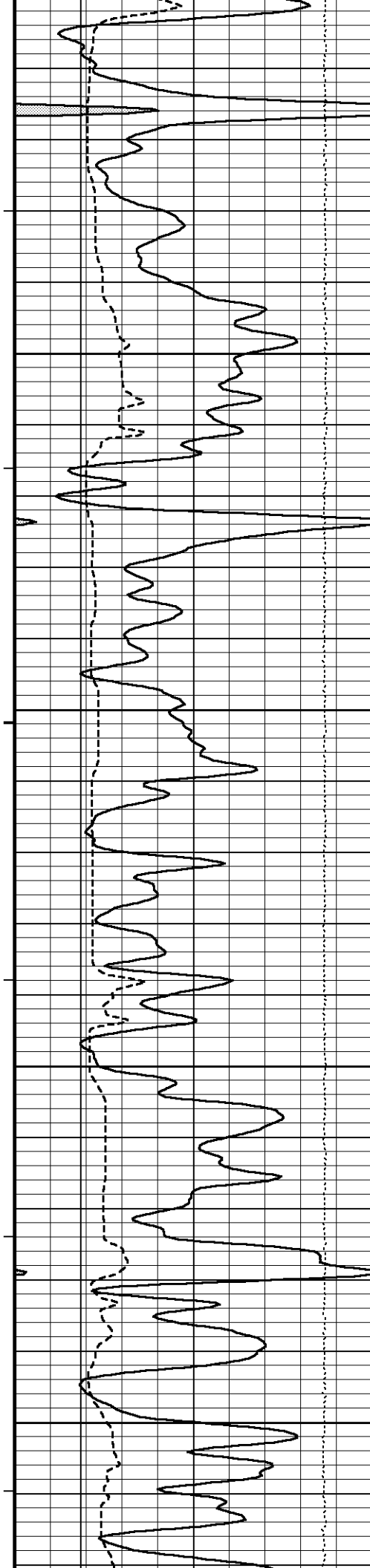
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106°

3100







3550

107°

3400

107°

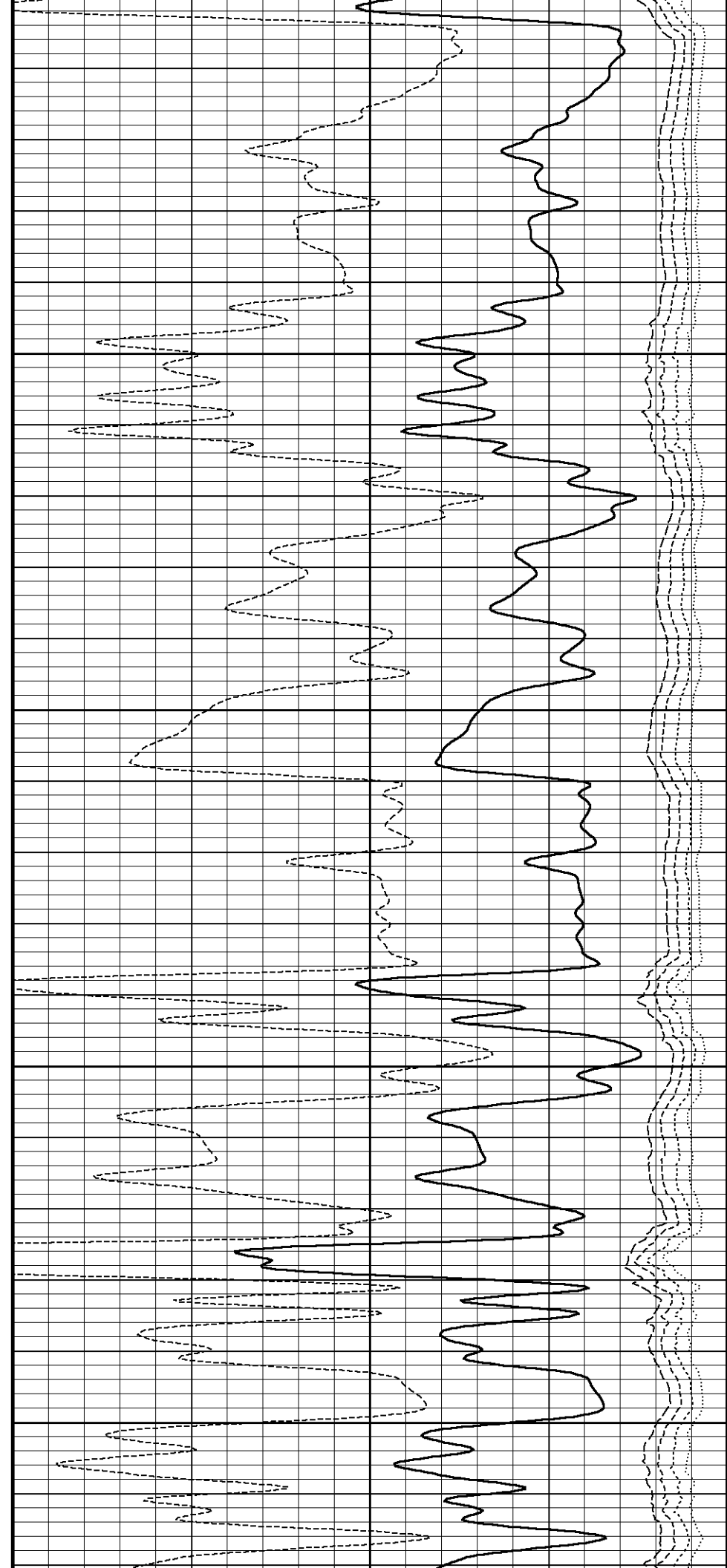
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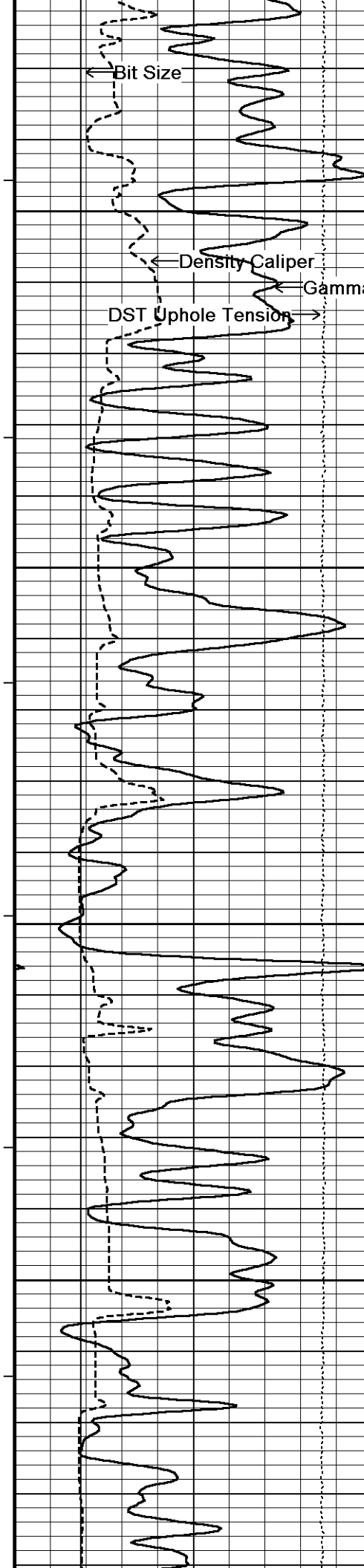
108°

3500

108°

3550





Wyllie Lime. Sonic Por. →

109°

3600

109°

3650

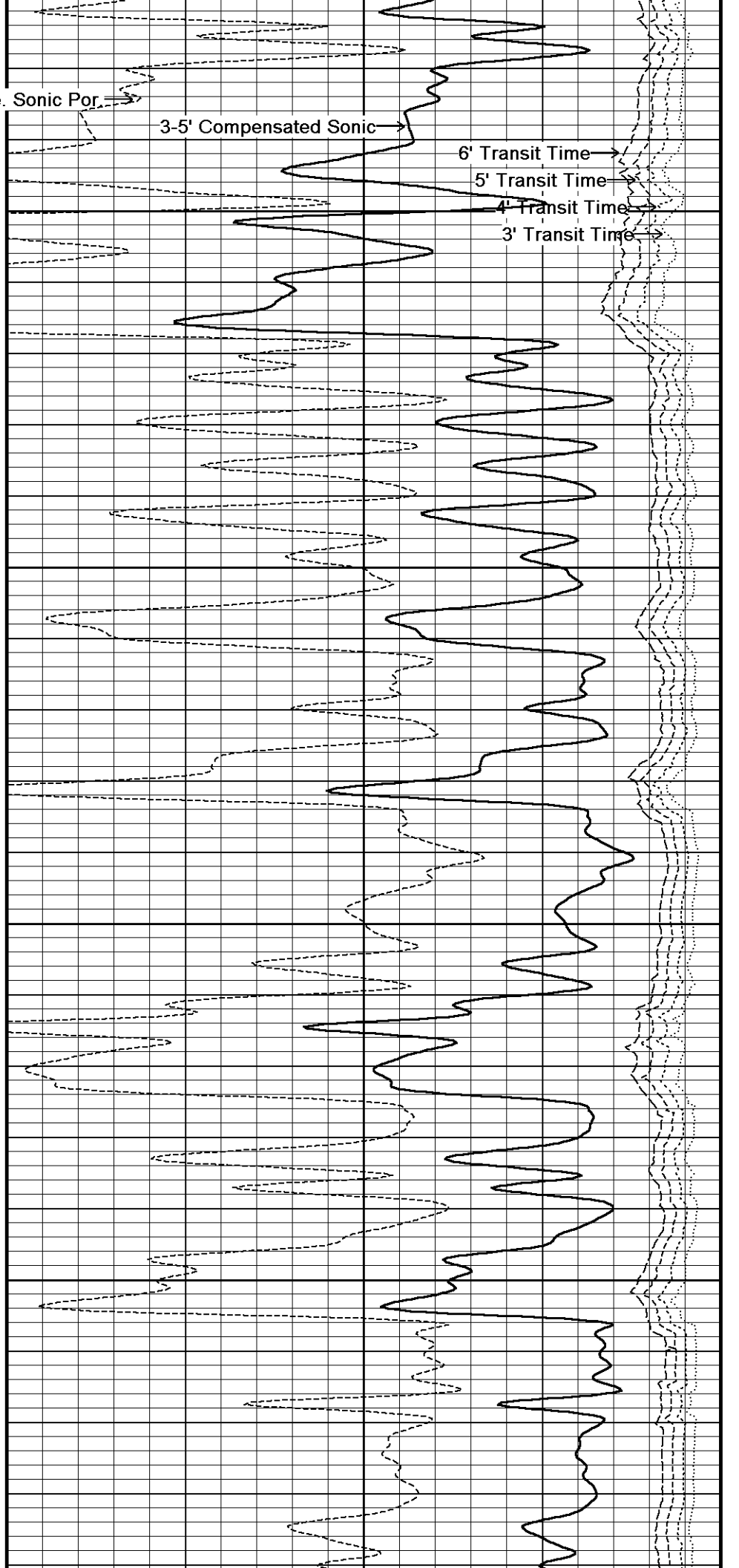
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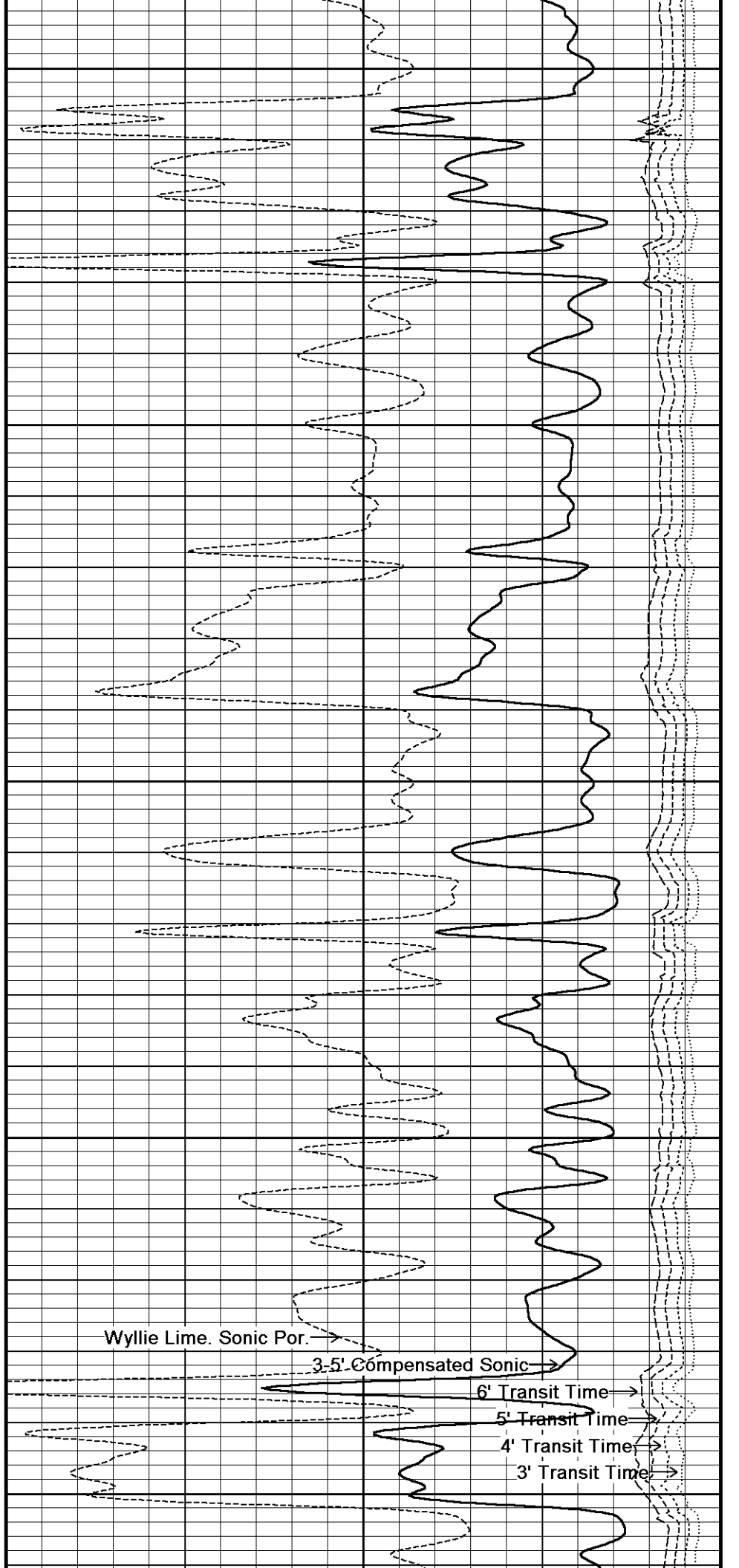
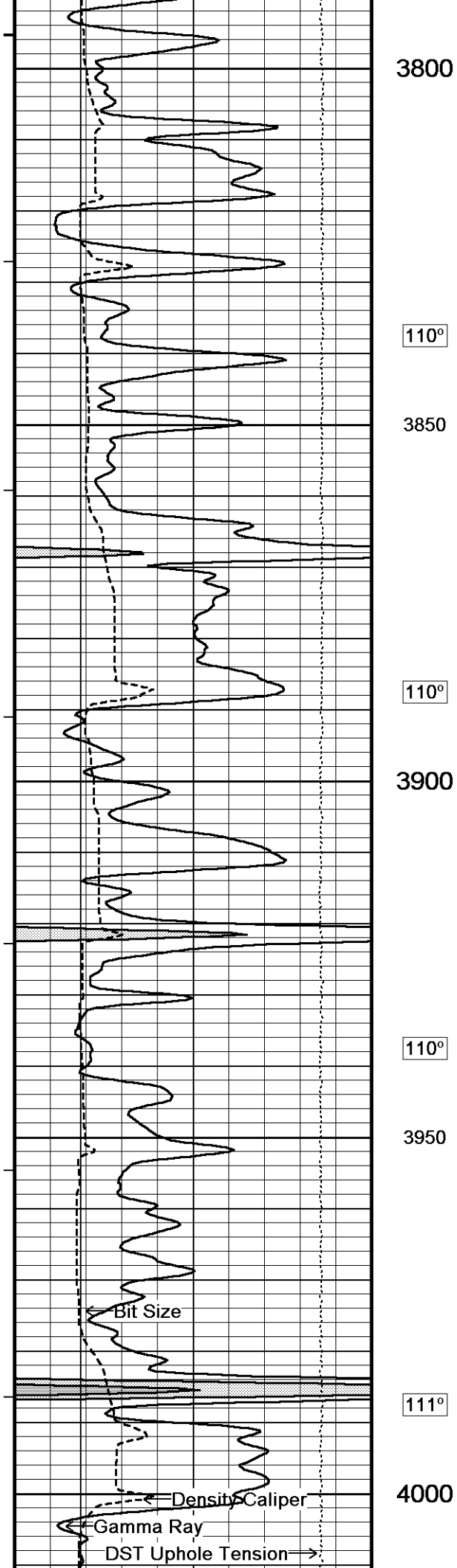
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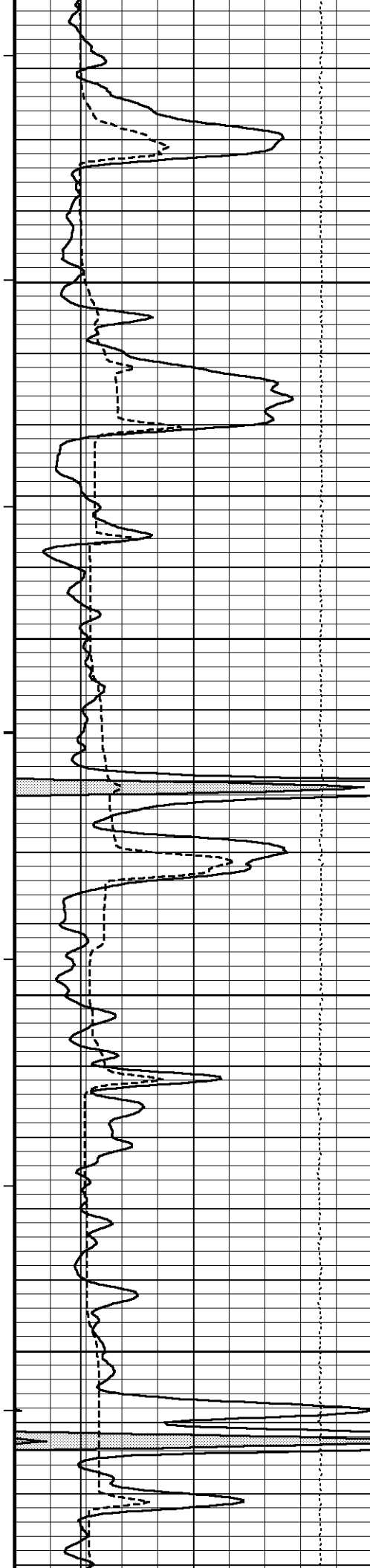
109°

3750

110°







111°

4050

111°

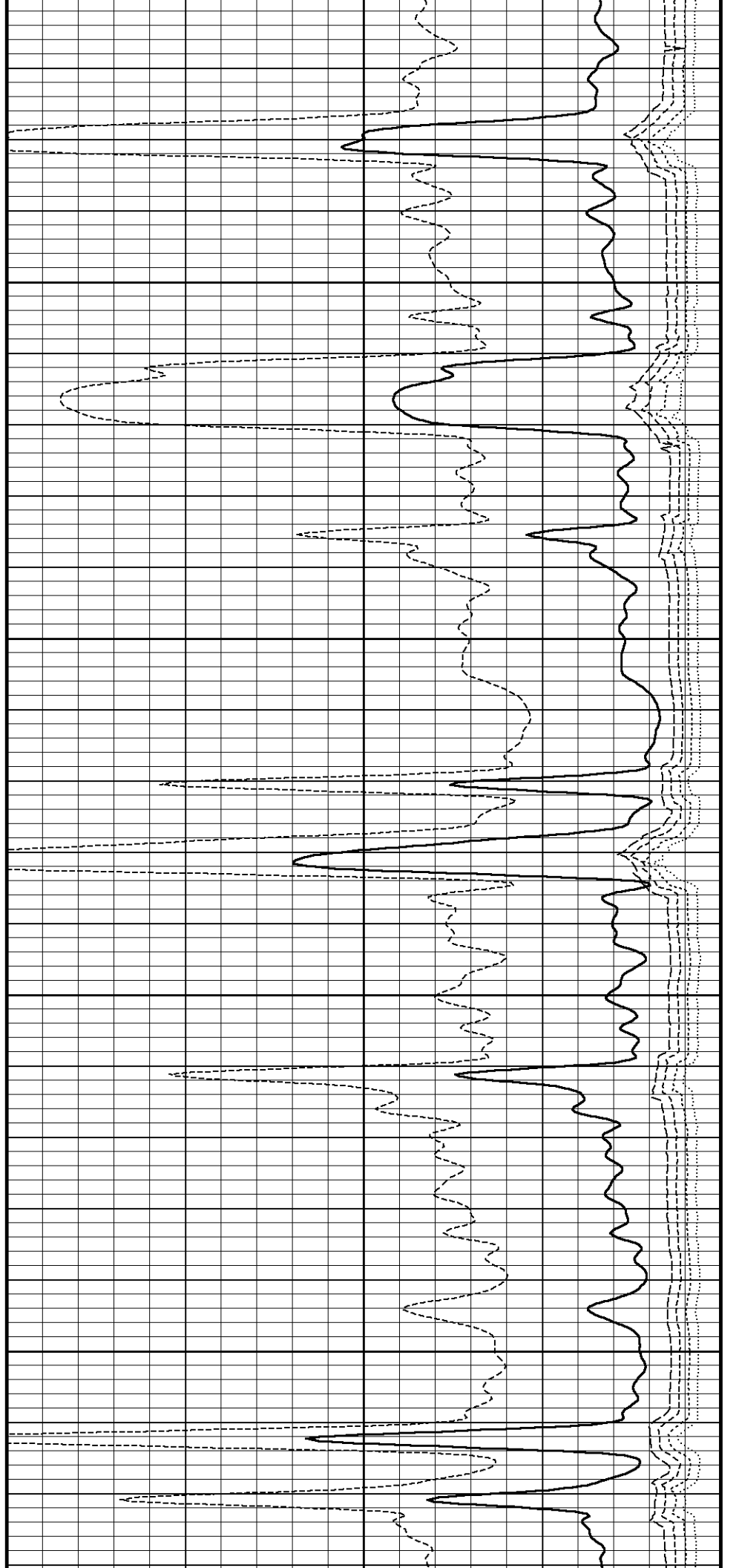
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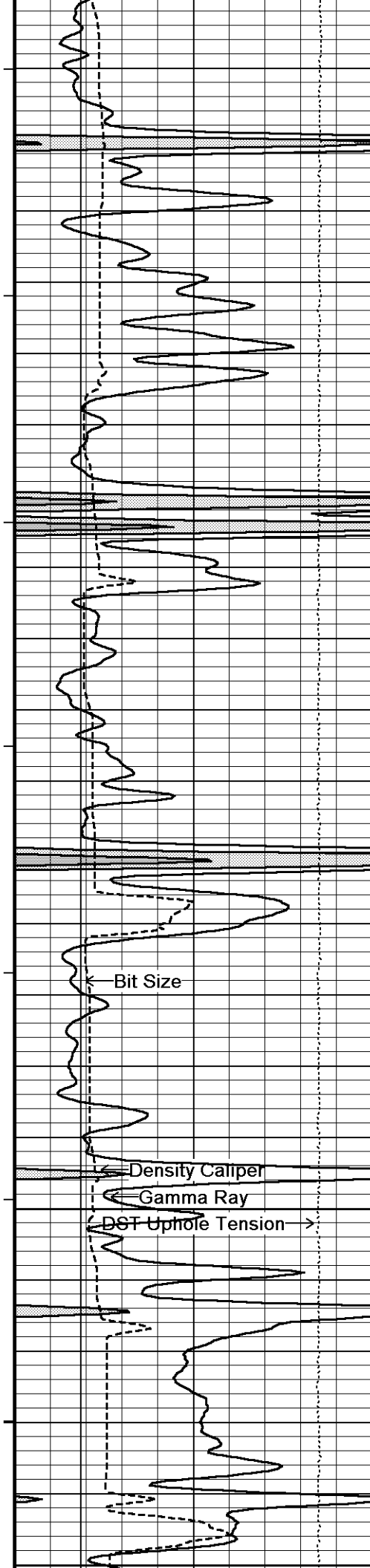
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4150

112°

4200





112°

4250

112°

4300

113°

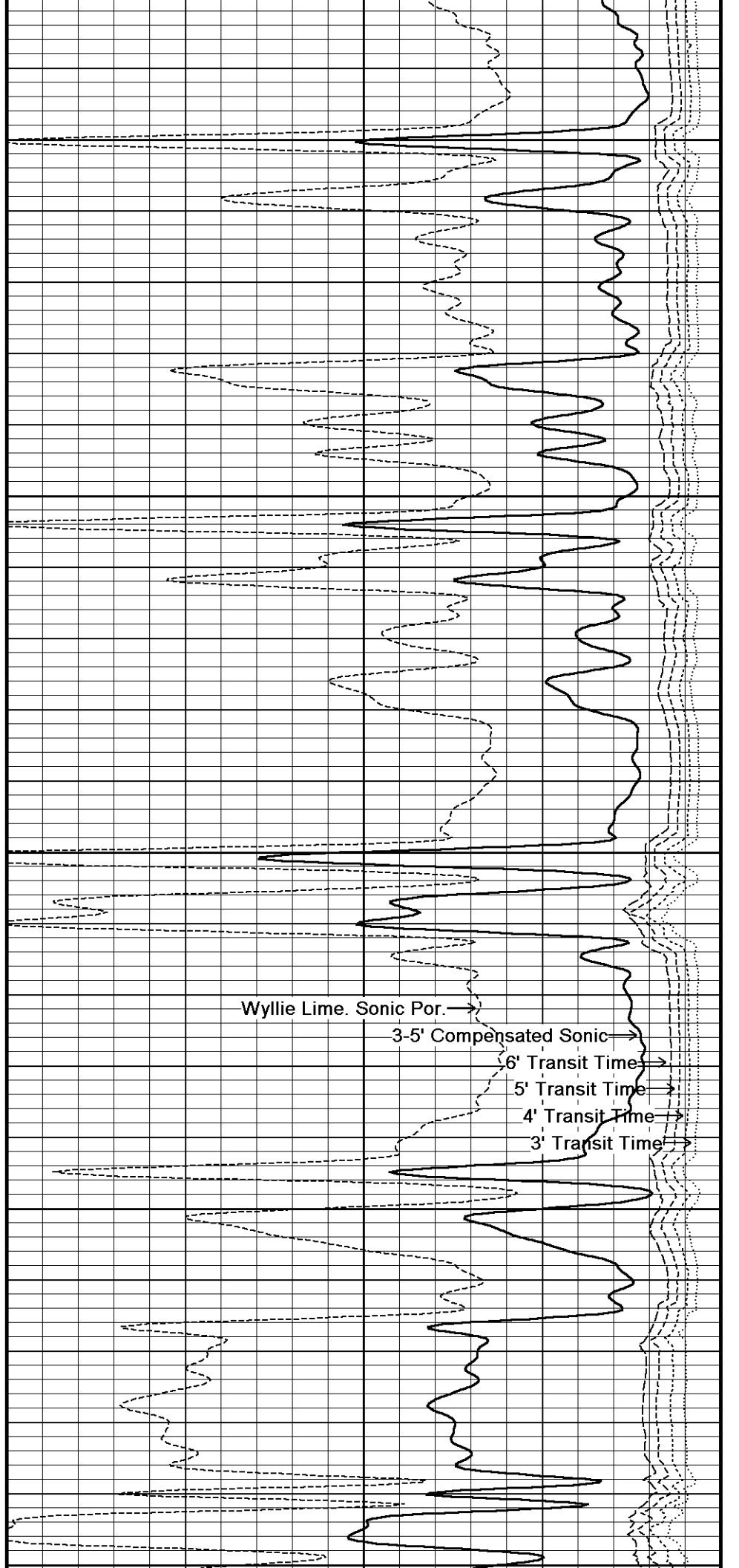
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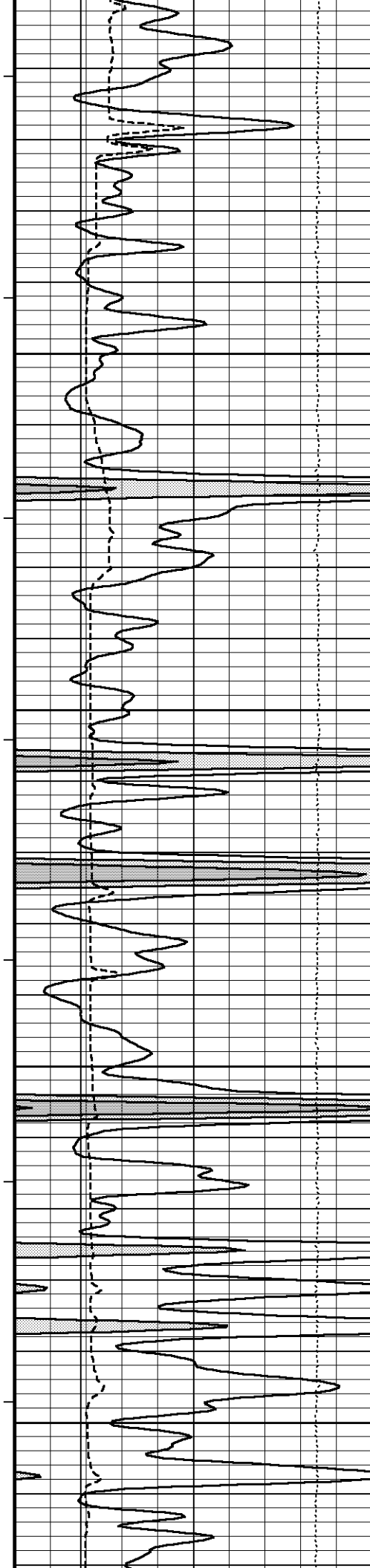
113°

4400

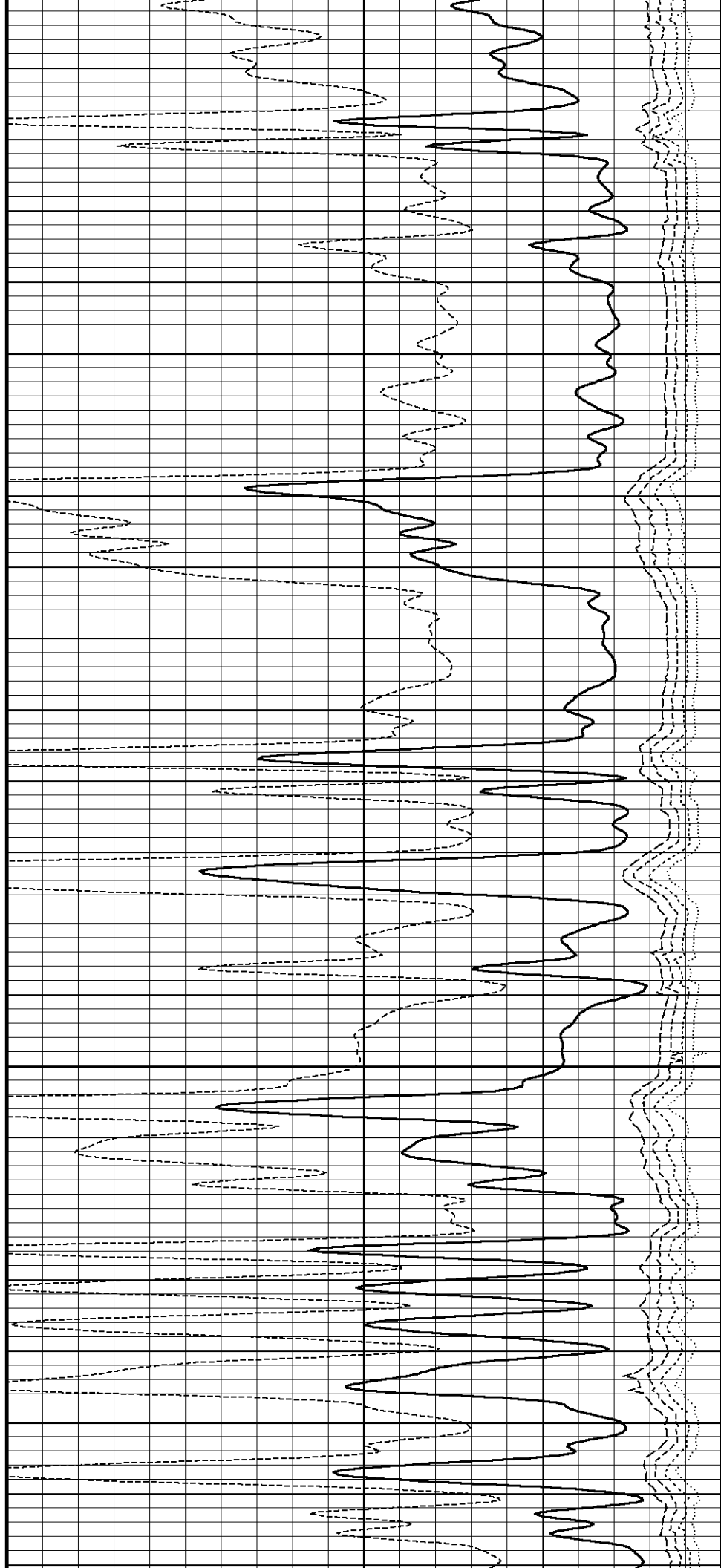
114°

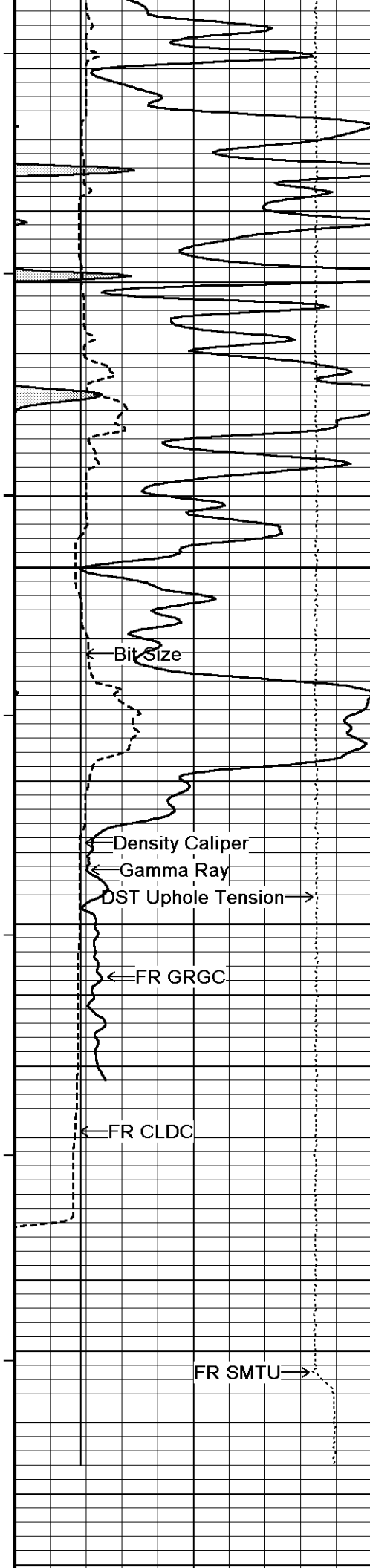
4450





4480
114°
4500
115°
4550
115°
4600
115°
4650





116°

4700

116°

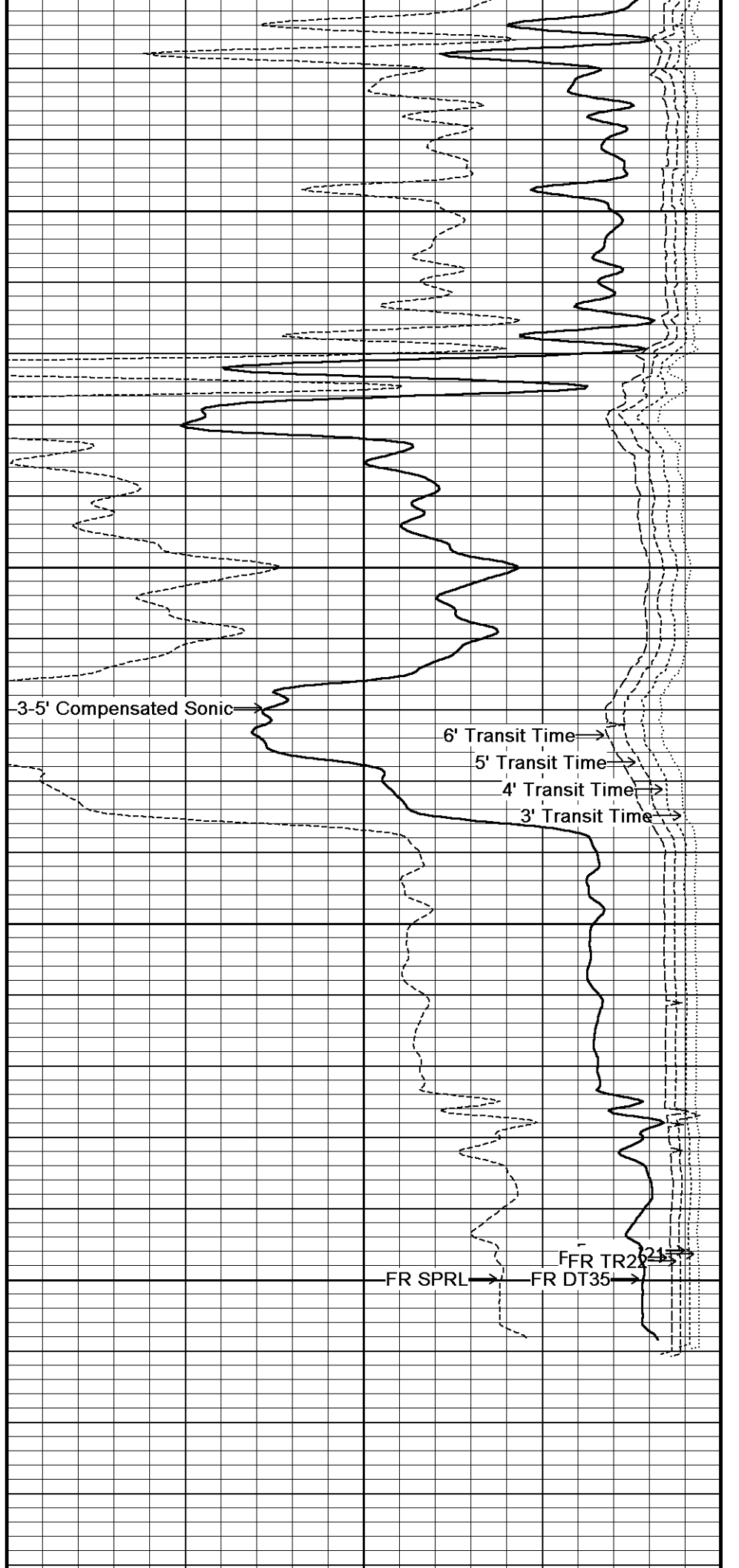
4750

116°

4800

4850

4890



3-5' Compensated Sonic

6' Transit Time

5' Transit Time

4' Transit Time

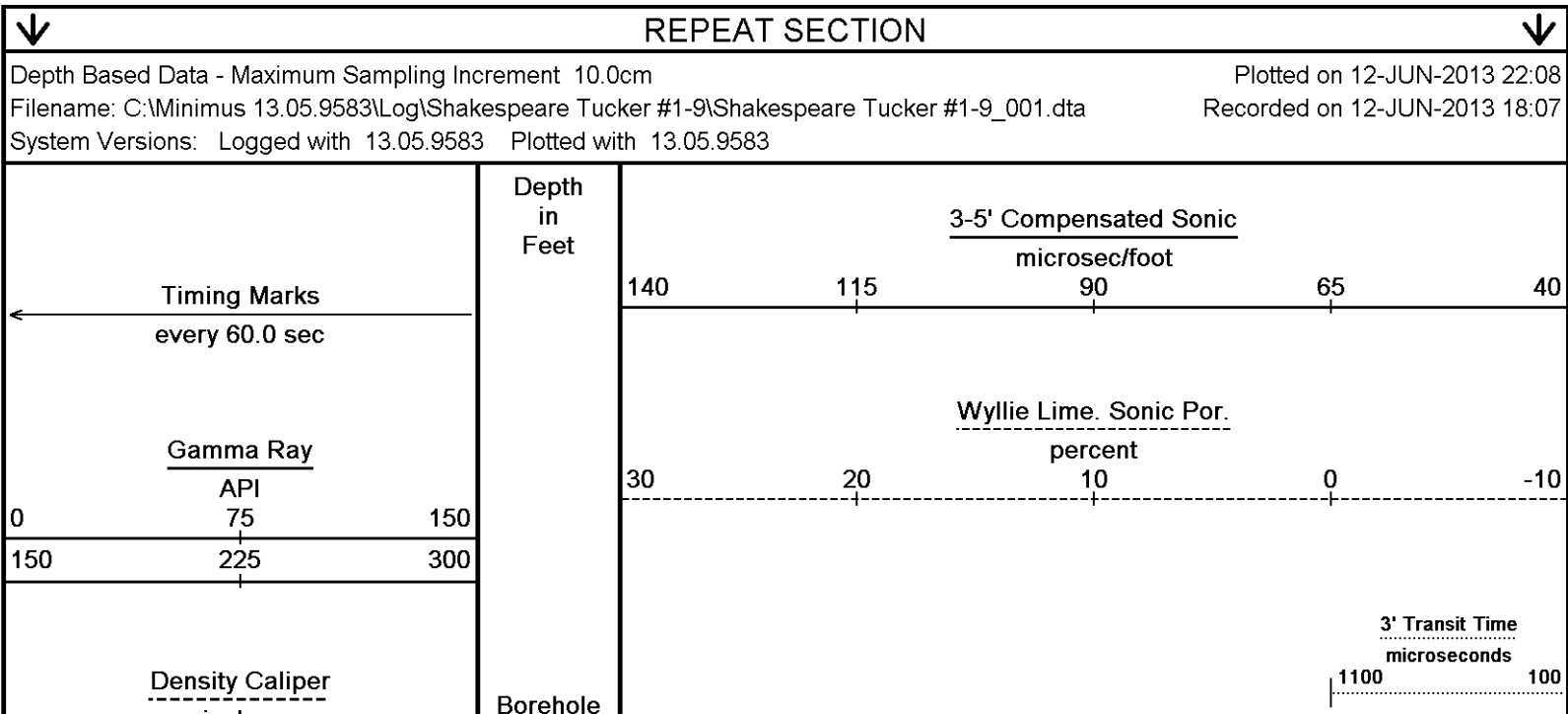
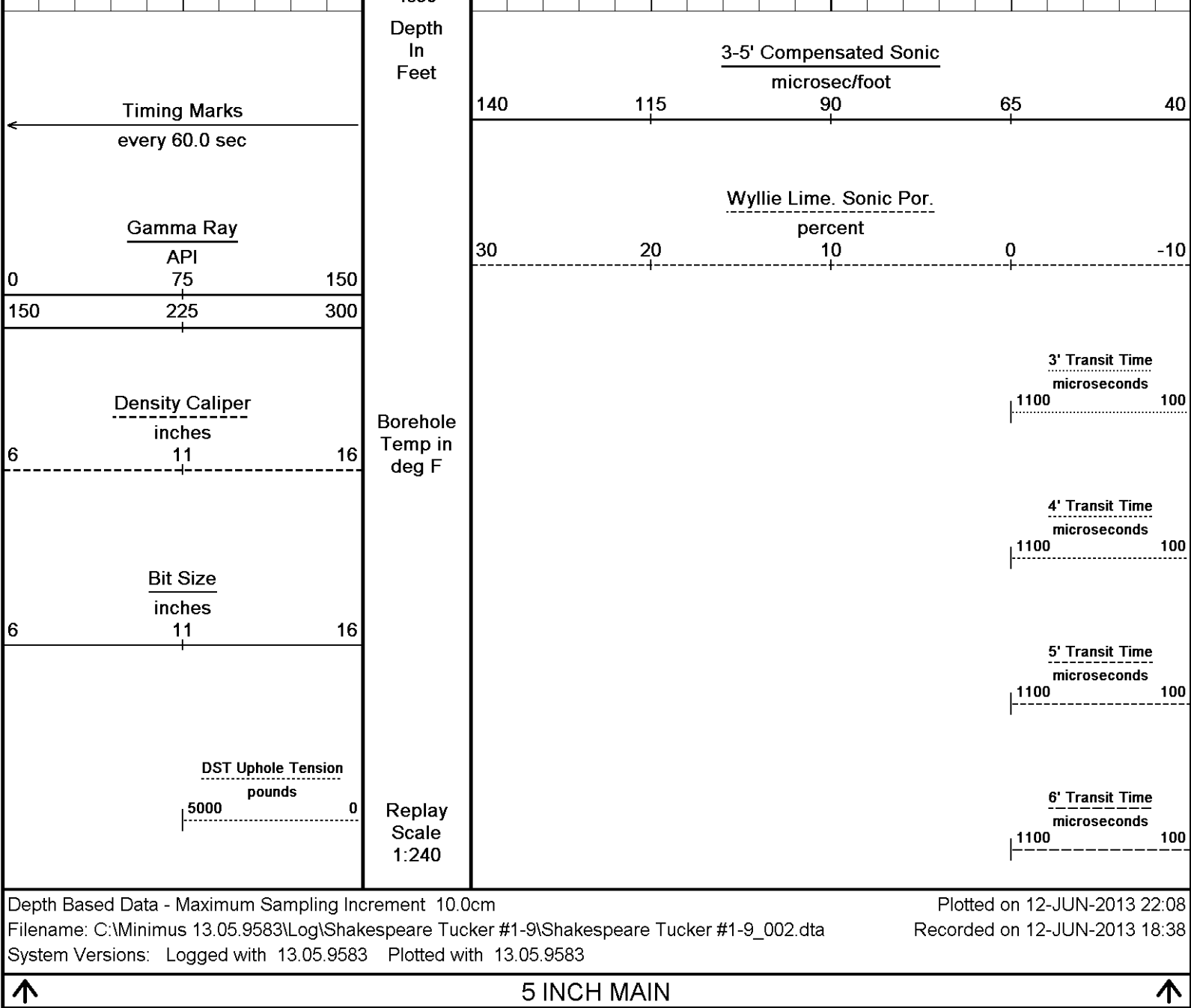
3' Transit Time

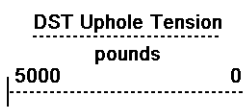
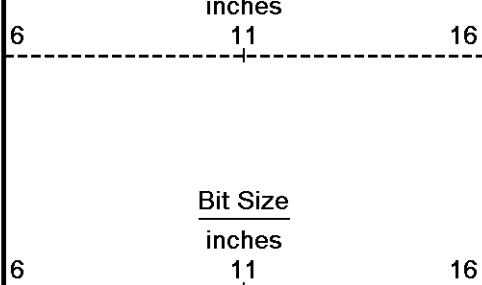
FR SPRL

FR TR2

FR DT35

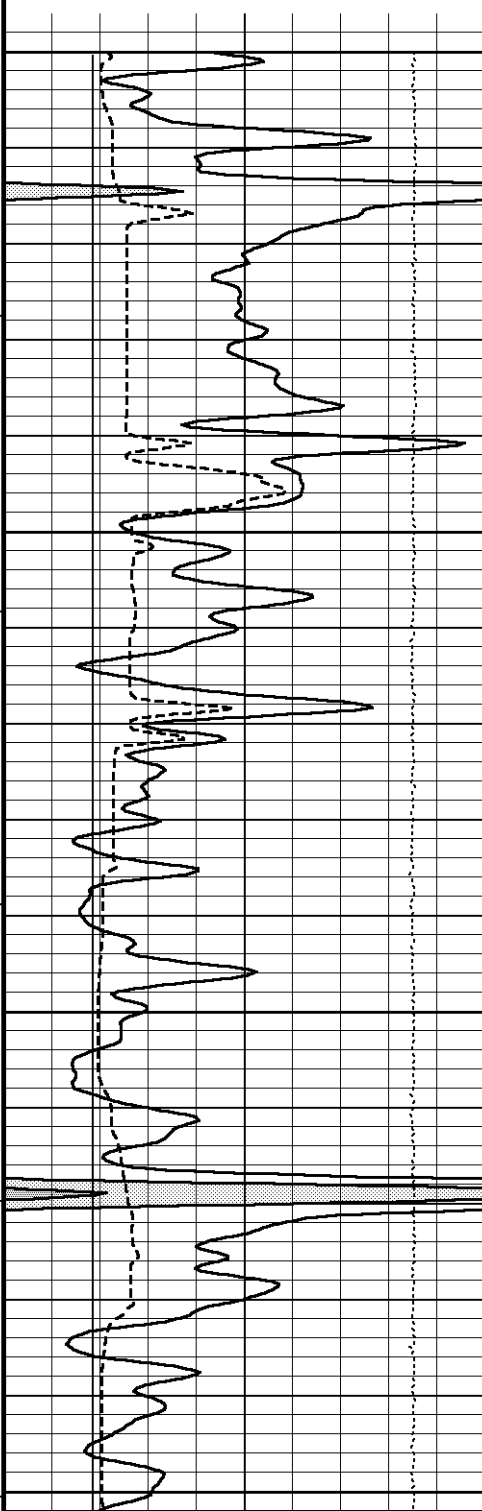
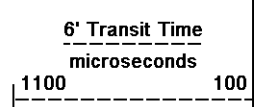
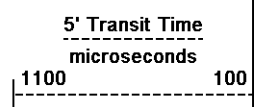
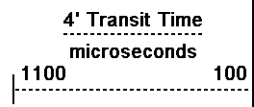
FFR TR2





Temp in
deg F

Replay
Scale
1:240



4400

113°

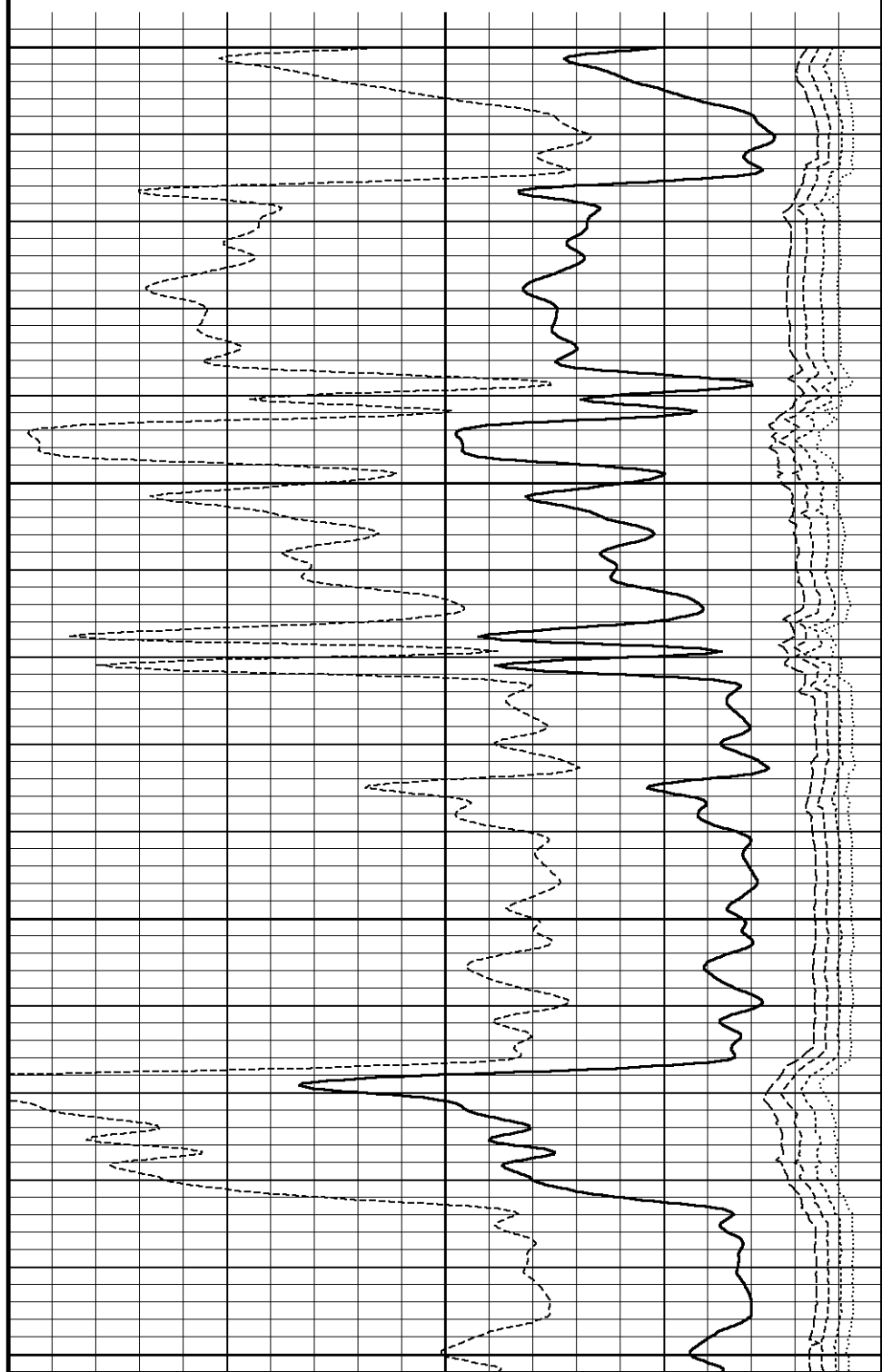
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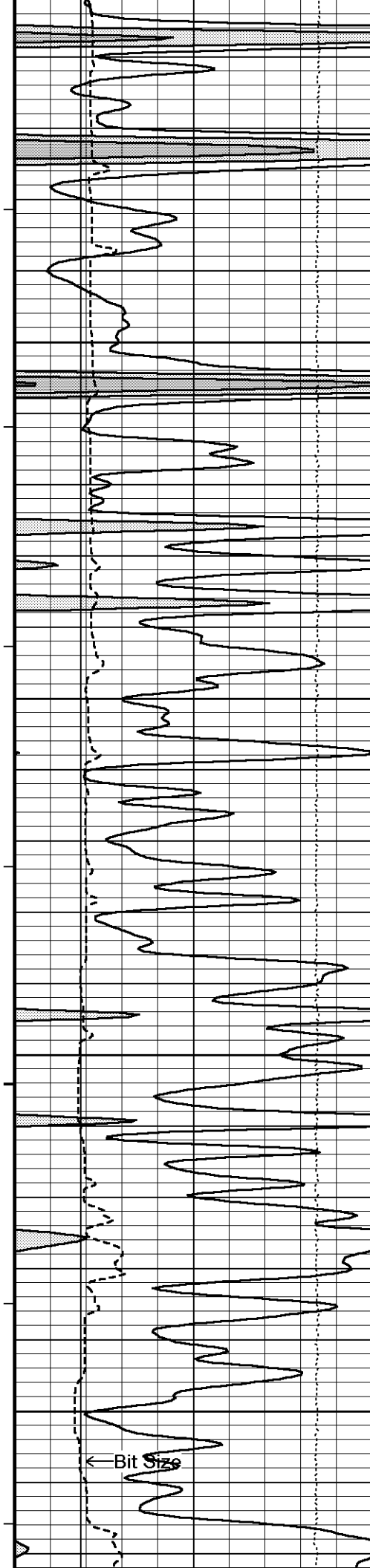
114°

4500

114°

4550





114°

4600

115°

4650

115°

4700

116°

4750

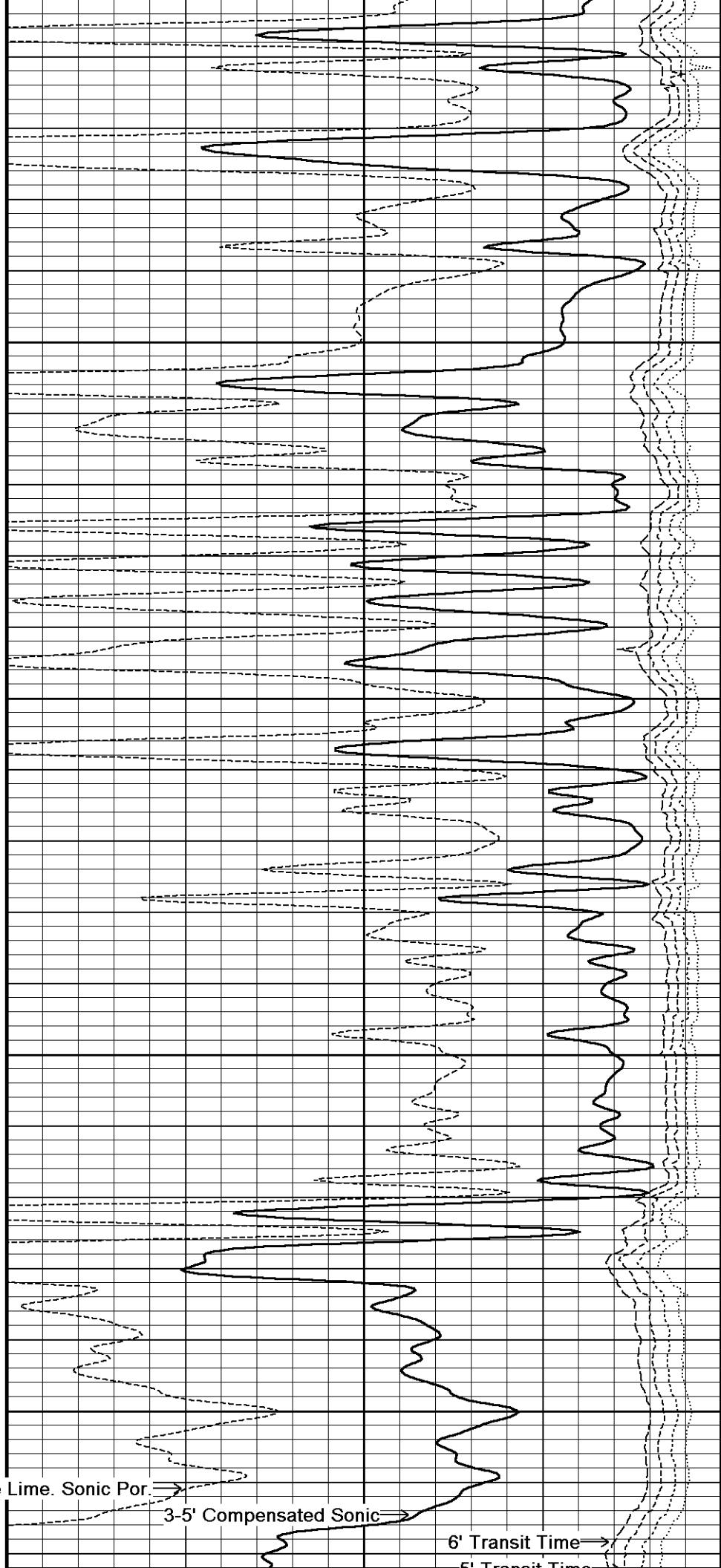
← Bit Size

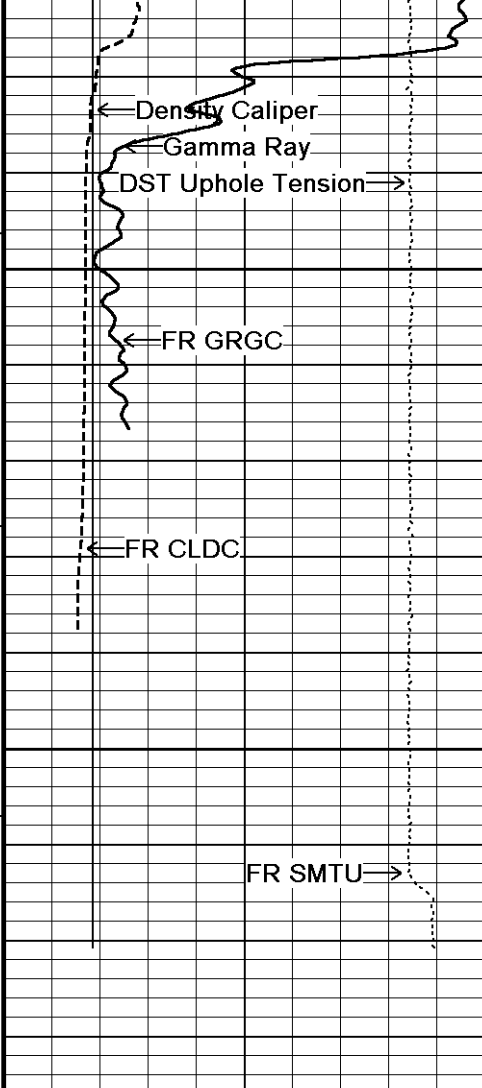
Wyllie Lime. Sonic Por. →

3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time



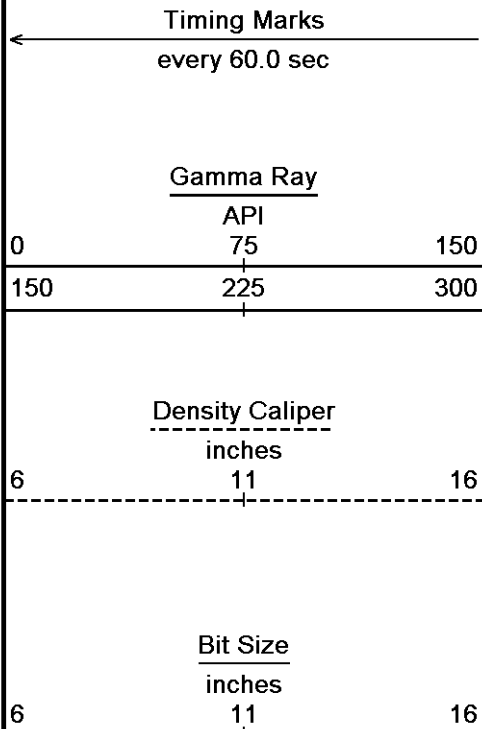


116°

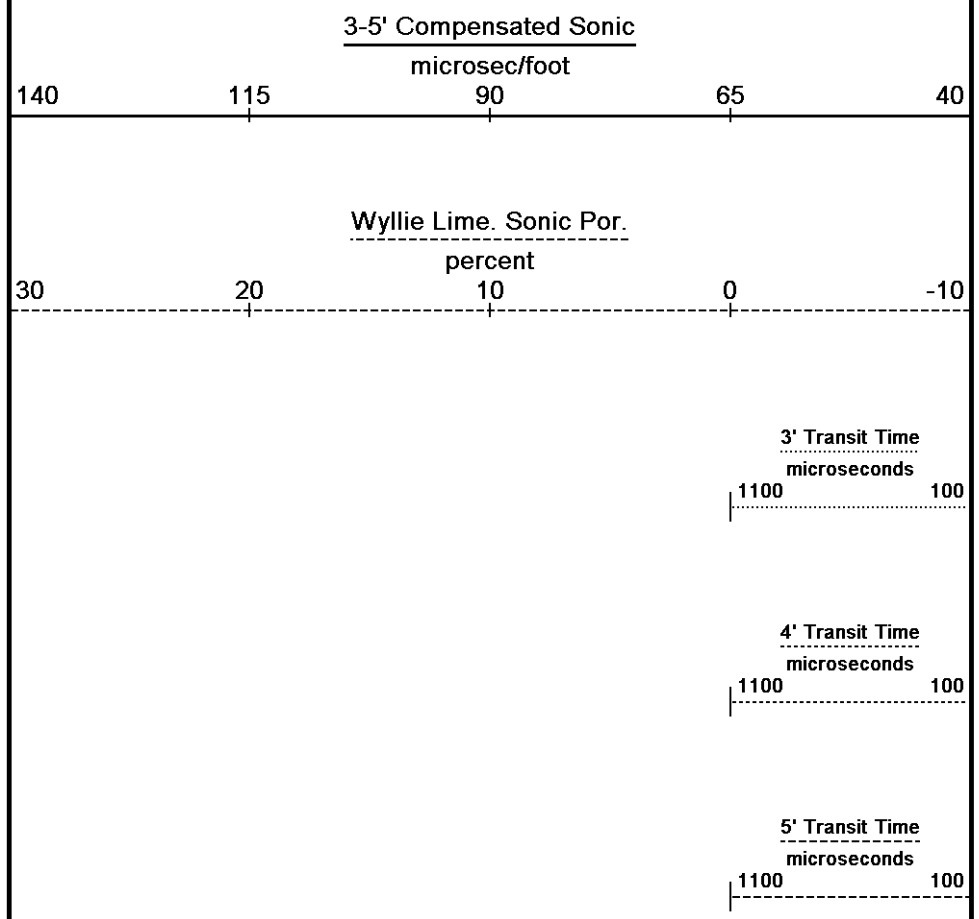
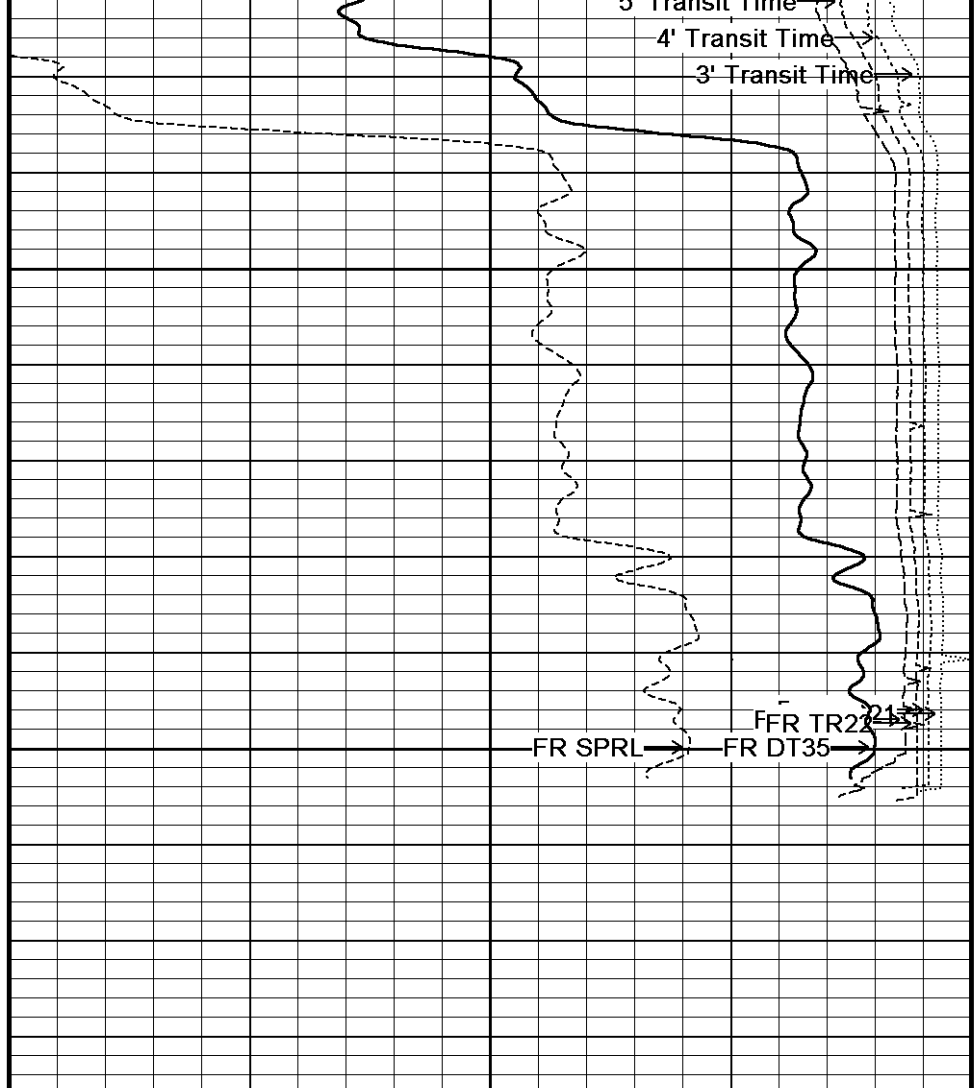
4800

4850

4884
Depth
in
Feet



DST Uphole Tension



5000 pounds 0

Replay
Scale
1:240

6' Transit Time
microseconds
1100 100

Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 12-JUN-2013 22:08
 Filename: C:\Minimus 13.05.9583\Log\Shakespeare Tucker #1-9\Shakespeare Tucker #1-9_001.dta Recorded on 12-JUN-2013 18:07
 System Versions: Logged with 13.05.9583 Plotted with 13.05.9583

↑ REPEAT SECTION ↑

BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Log\Shakespeare Tucker #1-9\Shakespeare Tucker #1-9.dta

General Constants All 000

Last Edited on 12-JUN-2013,17:30

General Parameters

Mud Resistivity	0.660	ohm-metres
Mud Resistivity Temperature	85.000	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	Base Density Porosity
Resistivity used	Array Ind. Four Res Rt
RWA Constant A	0.610
RWA Constant M	2.150
SW/APOR Tool Source	0.000

Down-hole Tension Calibration SMS 0

Field Calibration on 12-JUN-2013 16:56

Reading No	Measured	Calibrated (lbs)
1	13838.82	0.00
2	15058.89	471.80

Gamma Calibration MCG-B 39

Field Calibration on 11-JUN-2013 10:19

	Measured	Calibrated (API)
Background	64	43
Calibrator (Gross)	1144	768
Calibrator (Net)	1080	725

Gamma Constants MCG-B 39

Last Edited on 12-JUN-2013,00:38

Gamma Calibrator Number	GRC38	
Mud Density	1.13	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

SP Calibration MCG-B 39

Field Calibration on 11-JUN-2013,10:13

	Measured	Calibrated (mV)
Reference 1	105.8	100.0
Reference 2	-94.3	-100.0

High Resolution Temperature Calibration MCG-B 39

Field Calibration on 11-JUN-2013,10:13

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

High Resolution Temperature Calibration MCG-B 39

Last Edited on 11-JUN-2013 10:13

Pre-filter Length		11	
Caliper Calibration MML-A 3		Base Calibration on 05-JUN-2013 15:43 Field Calibration on 11-JUN-2013 10:13	
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14624	5.98	
2	17958	7.97	
3	21263	9.86	
4	25213	11.92	
5	0	0.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	6.11	5.98	

Micro Normal and Micro Inverse Calibration MML-A 3					Base Calibration on 05-JUN-2013 15:36	
					Field Check on 11-JUN-2013 10:11	
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2		
Micro Normal	12.2	60.2	5.0	25.0		
Micro Inverse	15.7	78.3	5.0	25.0		
Channel	Base Check (ohm-m)			Field Check (ohm-m)		
Micro Normal	63.0			63.0		
Micro Inverse	48.2			48.2		

Micro Normal and Micro Inverse Constants MML-A 3			Last Edited on 11-JUN-2013,10:06		
Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159				
Micro Normal K Factor	1.0000				
Micro Inverse K Factor	1.0000				
Standoff Offset	N/A		inches		

Neutron Calibration MDN-A.B 66				Base Calibration on 22-MAY-2013 15:00	
				Field Check on 11-JUN-2013 10:25	
Base Calibration					
		Measured		Calibrated (cps)	
		Near	Far	Near	Far
		3145	98	3714	110
Ratio		32.215		33.764	
Field Calibrator at Base				Calibrated (cps)	
				1654	2365
Ratio				0.699	
Field Check				Calibrated (cps)	
				1626	2372
Ratio				0.696	

Neutron Constants MDN-A.B 66		Last Edited on 11-JUN-2013,10:19	
Neutron Source Id	P0204NN		
Neutron Jig Number	5824NE		
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	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 353		Base Calibration on 22-MAY-2013 08:22 Field Check on 11-JUN-2013 09:59	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Reference 1	0.0	0.0	
Reference 2	964.9	126.8	
Base Check		280.9	
Field Check		280.7	

FE Constants MFE-B.J 353		Last Edited on 11-JUN-2013,09:56	
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.		MCG External Temperature	
Stand-off		0.5	inches

Sonic Constants MSS-A.A 126			Last Edited on 27-MAY-2013,04:34		
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				
Correction for Sonde Skew	Applied				
Cycle Stretch Algorithm	Applied				
MN3FT	0.00	micro-sec			
MX3FT	1500.00	micro-sec			
Hunt-Raymer Constant	83.13	micro-sec/ft			
Sonde Mode	Compensated				
Hole Type	Open Hole				
Sonde Parameters					
	Measured	Calibrated			
Offset	0.0000	0.0000			
Free Pipe	0.0000				
Peak Amplitude Source					
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)	Depth (ft)		
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	0.00	0.00	0.00		

Full Waveform Parameters			
Use 3' Waveform to derive TR		No	
Use 4' Waveform to derive TR		No	
Use 5' Waveform to derive TR		No	
Use 6' Waveform to derive TR		No	
3' Waveform Discriminator Level		0.30	mV
4' Waveform Discriminator Level		0.30	mV
5' Waveform Discriminator Level		0.15	mV
6' Waveform Discriminator Level		0.15	mV

0' Waveform Discriminator Level	0.15	mV
3' Waveform Filter		
4' Waveform Filter		
5' Waveform Filter		
6' Waveform Filter		
Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec
Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

Induction Calibration MAI-A.A 167

Base Calibration on 19-APR-2013,13:41
Field Check on 11-JUN-2013 09:55

Base Calibration

Test Loop Calibration	Measured		Calibrated (mmho/m)	
Channel	Low	High	Low	High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2
Array Temperature	76.8		Deg F	

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			13.6	3837.4
2			29.7	3475.1
3			29.2	3051.7
4			19.8	2081.0
Deep			18.7	2048.5
Medium			42.2	3989.1
Shallow			43.1	5050.7
Array Temperature			83.1	Deg F

Induction Constants MAI-A.A 167

Last Edited on 11-JUN-2013,09:53

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	2.500	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	60.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
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

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 167		Field Calibration on 28-MAY-2013,04:23
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00
High Resolution Temperature Constants MAI-A.A 167		Last Edited on 28-MAY-2013,04:23
Pre-filter Length	11	
Caliper Calibration MPD-B 64		Base Calibration on 21-MAY-2013 17:34 Field Calibration on 11-JUN-2013 10:02
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	14464	3.99
2	23406	5.98
3	32206	7.97
4	40368	9.86
5	50018	11.92
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.97	5.98
Photo Density Calibration MPD-B 64		Base Calibration on 21-MAY-2013 17:55 Field Check on 11-JUN-2013 10:06
Density Calibration		
Base Calibration		
	Near	Far
Reference 1	60105	33685
Reference 2	25286	2917
	Near	Far
Reference 1	59556	30836
Reference 2	24941	2541
Field Check at Base		
	1165.8	1353.6
Field Check		
	1164.4	1354.5
PE Calibration		
Base Calibration		
	WS	WH
Background	210	1037
Reference 1	22619	59903
Reference 2	6846	25146
Field Check at Base		
	210.2	1037.2
Field Check		
	211.3	1036.2
Density Constants MPD-B 64		Last Edited on 12-JUN-2013,00:37
Density Source Id	18235B	
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	1.13	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 (m)	
2.71		

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 13.05.9583\Log\Shakespeare Tucker #1-9\Shakespeare Tucker #1-9.dta		
3/8" Triple Cone Cable Head (MCB C A) MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in		
Compact Comms Gamma MCG-B 39 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in	55.39 ft 52.48 ft	GRGC - Gamma Ray CGXT - MCG External Temperature
Compact Micro-log MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in	45.76 ft 45.76 ft 46.76 ft	MINV - Micro-inverse MNRL - Micro-normal MLTC - MML Caliper
Compact Neutron MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in	40.97 ft	NPRL - Limestone Neutron Por.
Compact Density/Caliper MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in	33.73 ft 33.73 ft 33.73 ft 31.80 ft 31.80 ft 31.80 ft 31.74 ft	AVOL - Annular Volume HVOL - Hole Volume CLDC - Density Caliper DPRL - Limestone Density Por. DEN - Compensated Density DCOR - Density Correction PDPE - PE
Compact Focussed Electric MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in	26.24 ft	FEFE - Shallow FE
Compact Sonic MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in	12.96 ft 12.96 ft	DT35 - 3-5' Compensated Sonic SPRL - Wyllie Lime. Sonic Por.
Compact Induction MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in	3.34 ft 3.34 ft 3.34 ft 0.23 ft Tool Zero -0.13 ft	R40O - Array Ind. One Res 40 RTAO - Array Ind. One Res Rt R60O - Array Ind. One Res 60 SPCG - Spontaneous Potential (0.13ft from bottom) SMTU - DST Uphole Tension
Total Length: 62.25 ft Weight: 471.8 lb	All measurements relative to tool zero.	

COMPANY	SHAKESPEARE OIL COMPANY
WELL	TUCKER #1-9
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT

COUNTRY/STATE			UNITED STATES / KANSAS		
Elevation Kelly Bushing	3140.00	feet	First Reading	4850.00	feet
Elevation Drill Floor	3139.00	feet	Depth Driller	4864.00	feet
Elevation Ground Level	3130.00	feet	Depth Logger	4863.00	feet


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