



Weatherford

**COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME**

COMPANY		SHAKESPEARE OIL CO., INC.	
WELL		ORTEGA #1-25	
FIELD		WILDCAT	
PROVINCE/COUNTY		SCOTT	
COUNTRY/STATE		U.S.A. / KANSAS	
LOCATION		2000' FNL & 2287' FEL	
SEC	TWP	RGE	Other Services
25	16S	34W	MPD/MDN
API Number	15-171-21017		MML
Permit Number			
Permanent Datum GL, Elevation 3095 feet			Elevations:
Log Measured From KB			KB 3105.00
Drilling Measured From KB			DF 3103.00
			GL 3095.00
Date	24-FEB-2014		
Run Number	ONE		
Service Order	4558-80419553		
Depth Driller	4870.00		
Depth Logger	4868.00		
First Reading	4855.00		
Last Reading	263.00		
Casing Driller	265.00		
Casing Logger	263.00		
Bit Size	7.875		
Hole Fluid Type	CHEMICAL		
Density / Viscosity	9.20 lb/USg		
PH / Fluid Loss	10.50		
Sample Source	FLOWLINE		
Rm @ Measured Temp	0.41 @ 76.0		
Rmf @ Measured Temp	0.33 @ 76.0		
Rmc @ Measured Temp	0.49 @ 76.0		
Source Rmf / Rmc	CALC		
Rm @ BHT	0.29 @109.0		
Time Since Circulation	5 HOURS		
Max Recorded Temp	109.00		
Equipment / Base	13057		
Recorded By	ADAM SILL		
Witnessed By	TIM PRIEST		
JOB #	LB14-053		

BOREHOLE RECORD				Last Edited: 24-FEB-2014 07:27
Bit Size inches		Depth From feet		Depth To feet
7.875		265.00		4870.00
CASING RECORD				
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	265.00	24.00

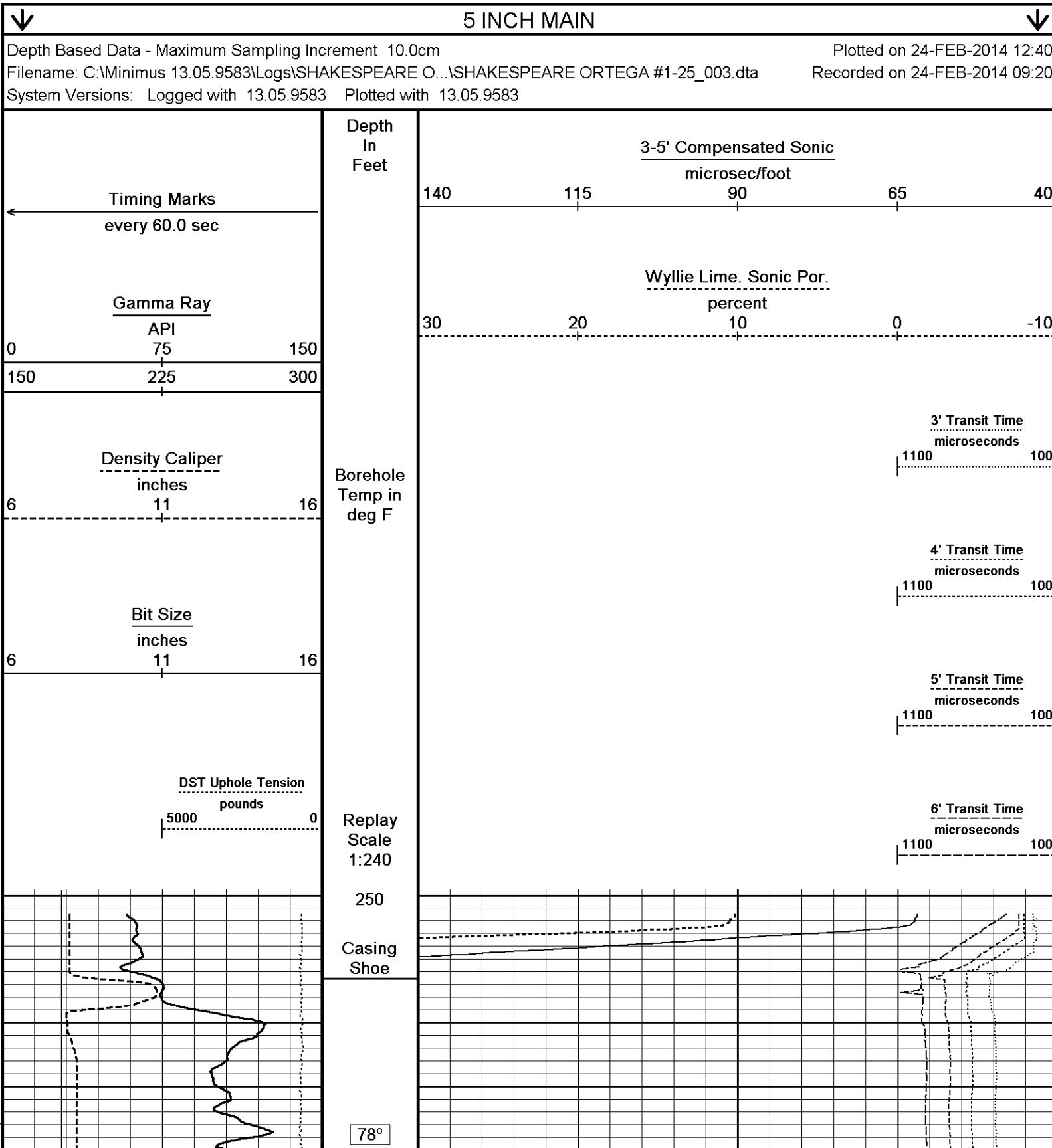
REMARKS
- SOFTWARE ISSUE: WLS 13.05.9583.
- RUN 1: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL ECCENTRALISER USED ON MDN 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE 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: 2253 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 212 CU. FT.

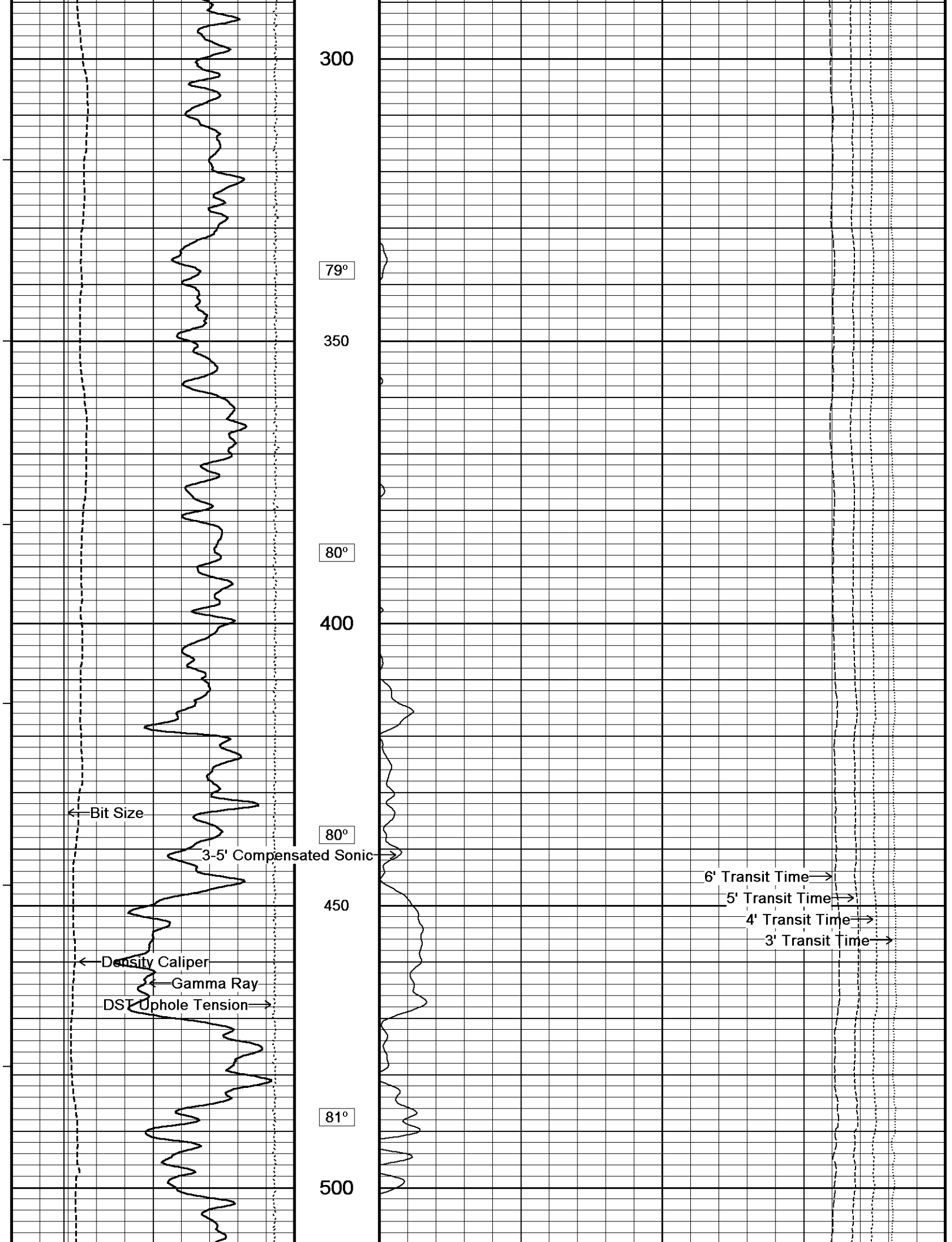
- RIG: HD DRILLING #2

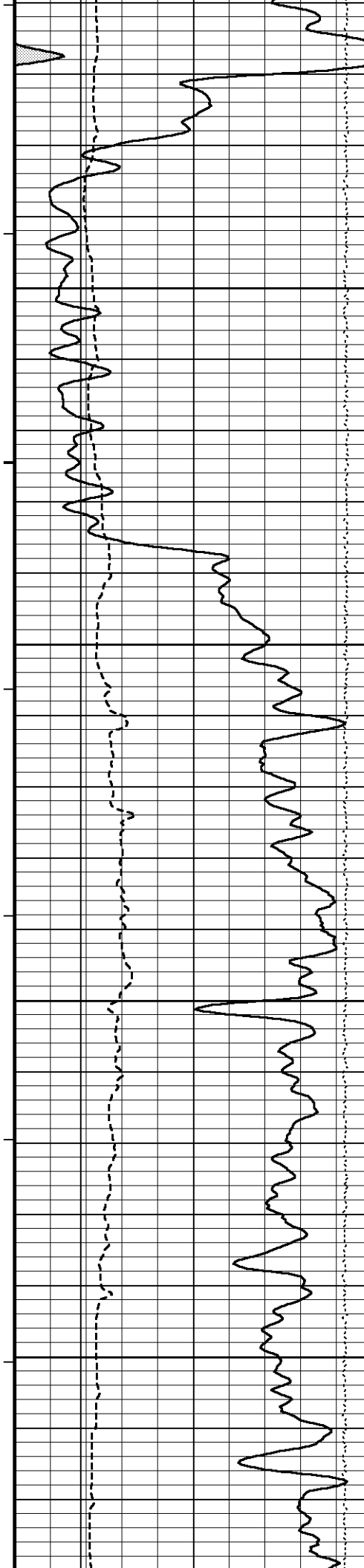
- ENGINEER: A. SILL, J. RANDLE.

- OPERATOR(S): K. RINEHART.

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.







82°

550

83°

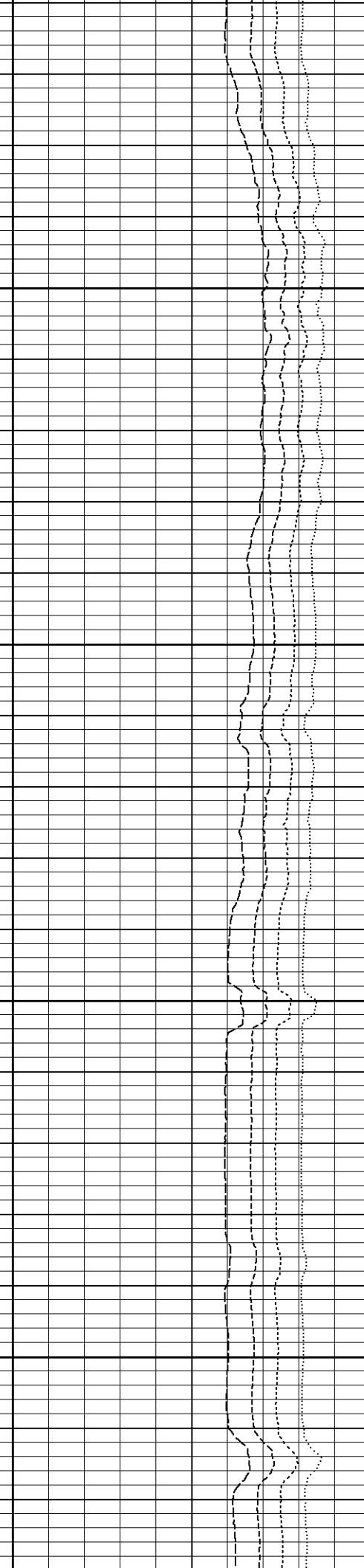
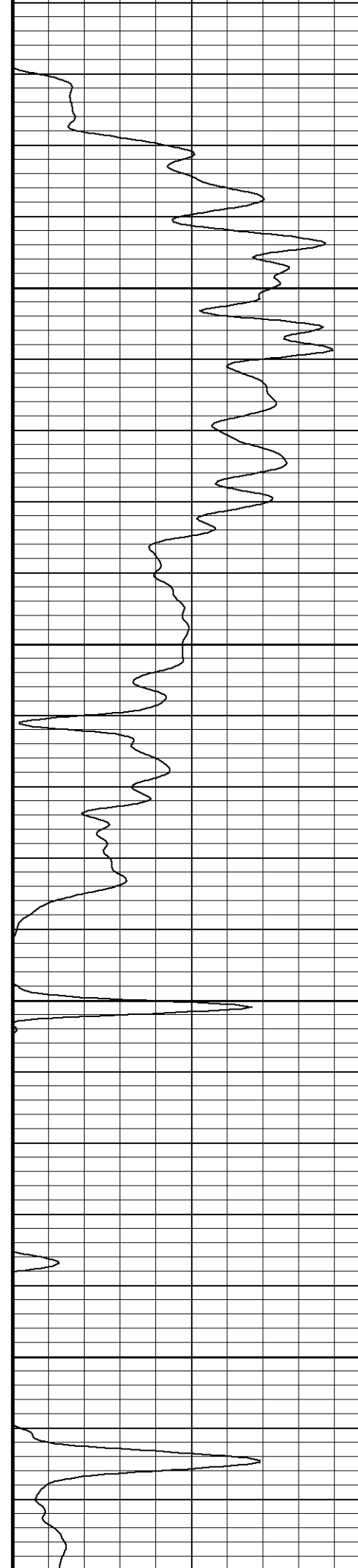
600

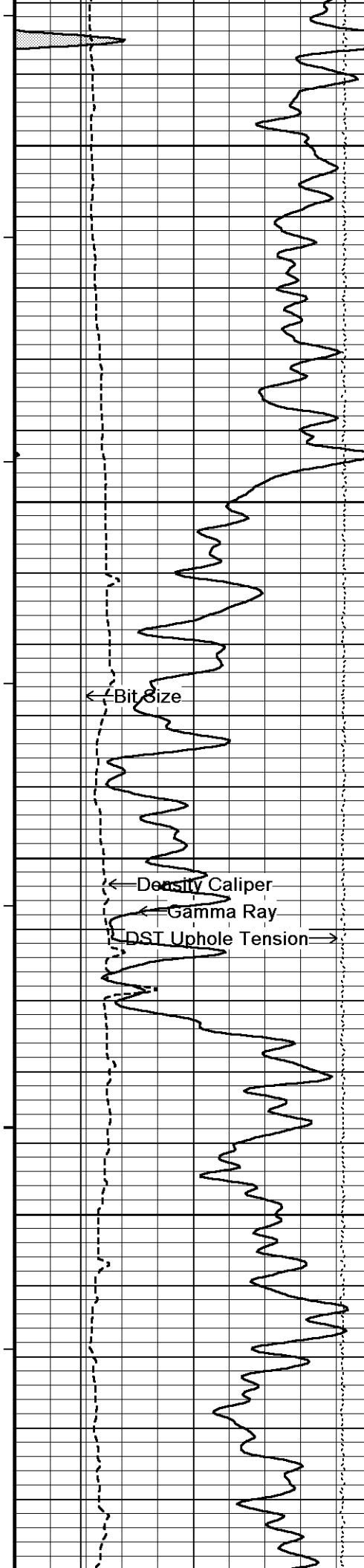
84°

650

84°

700





85°

750

85°

800

86°

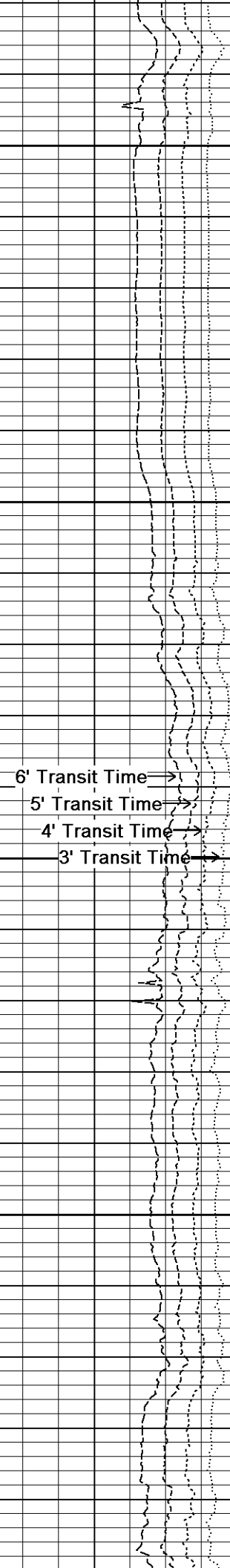
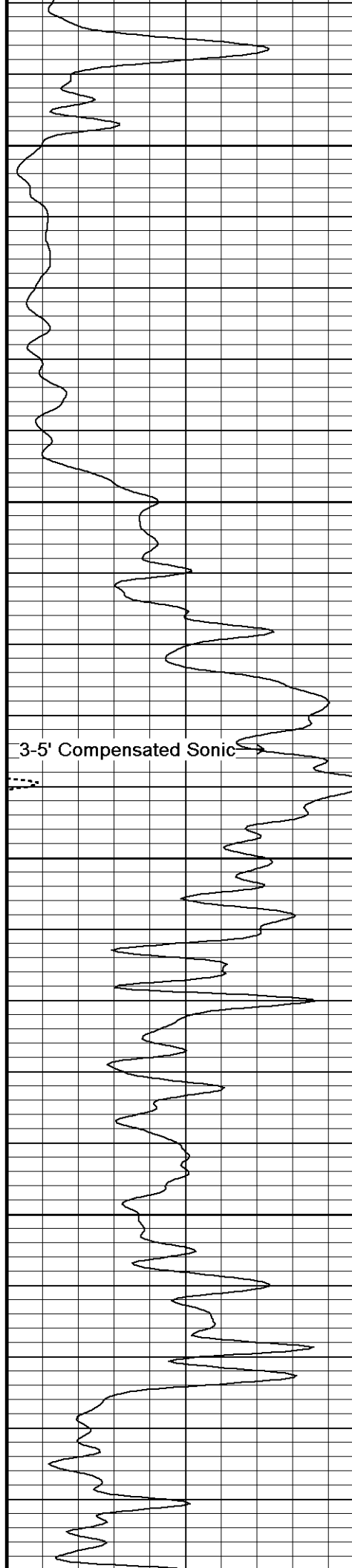
850

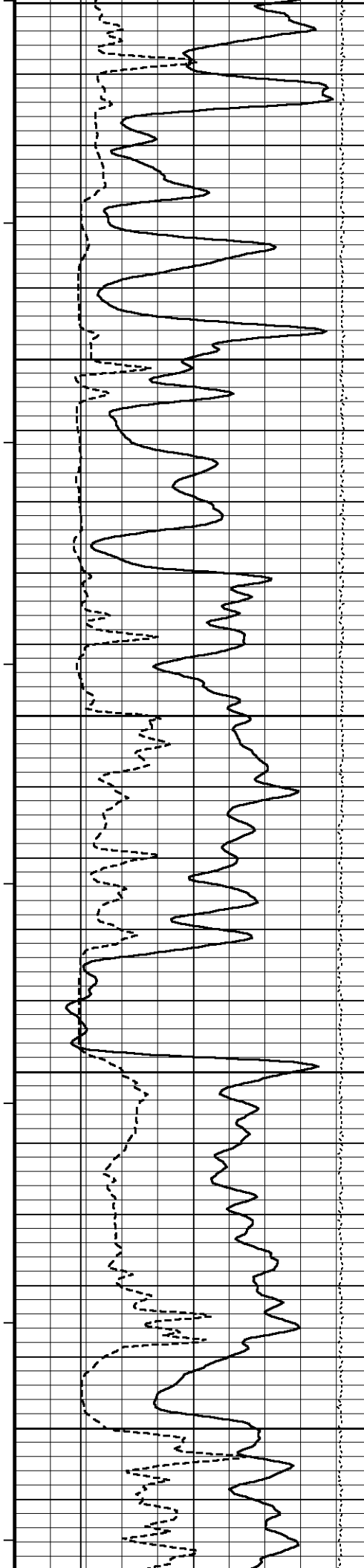
86°

900

86°

950





950

87°

1000

87°

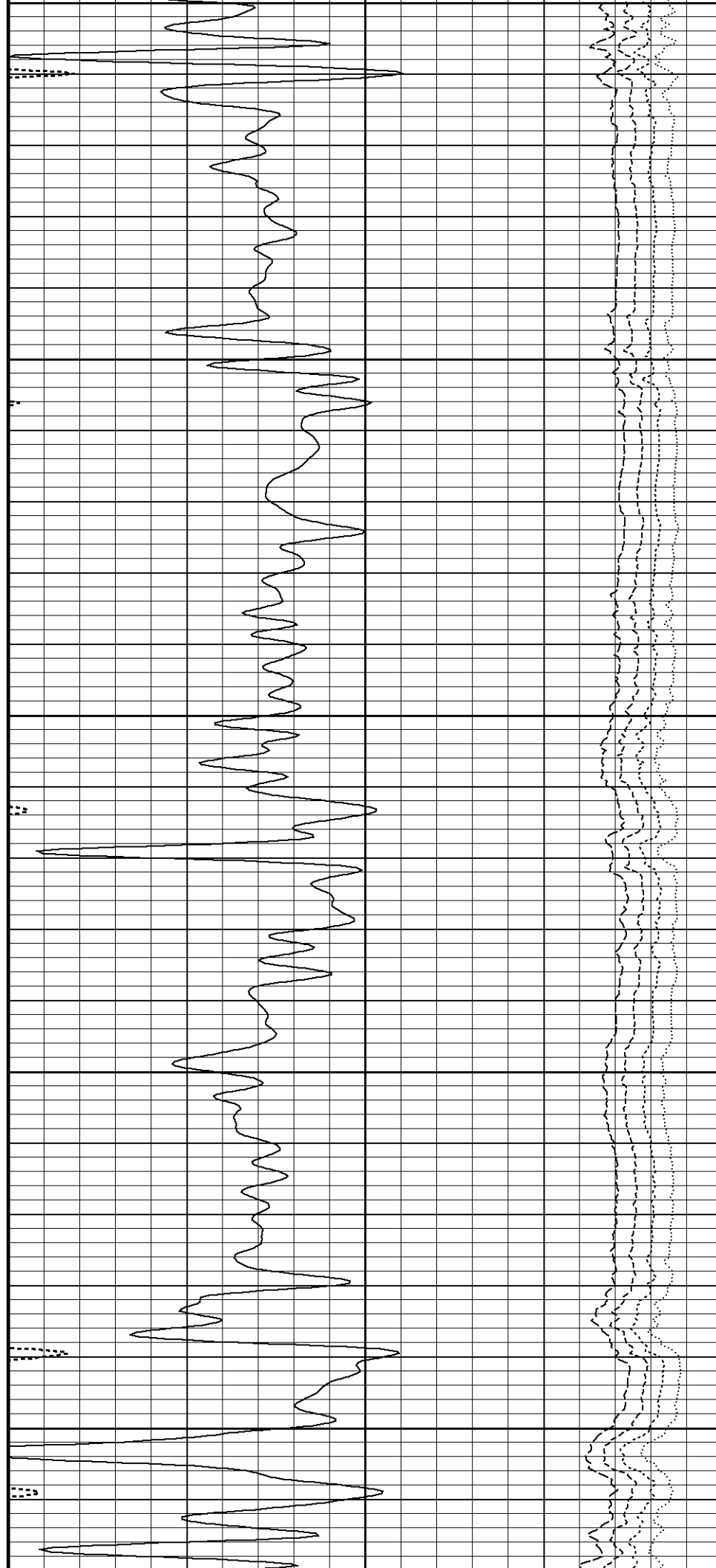
1050

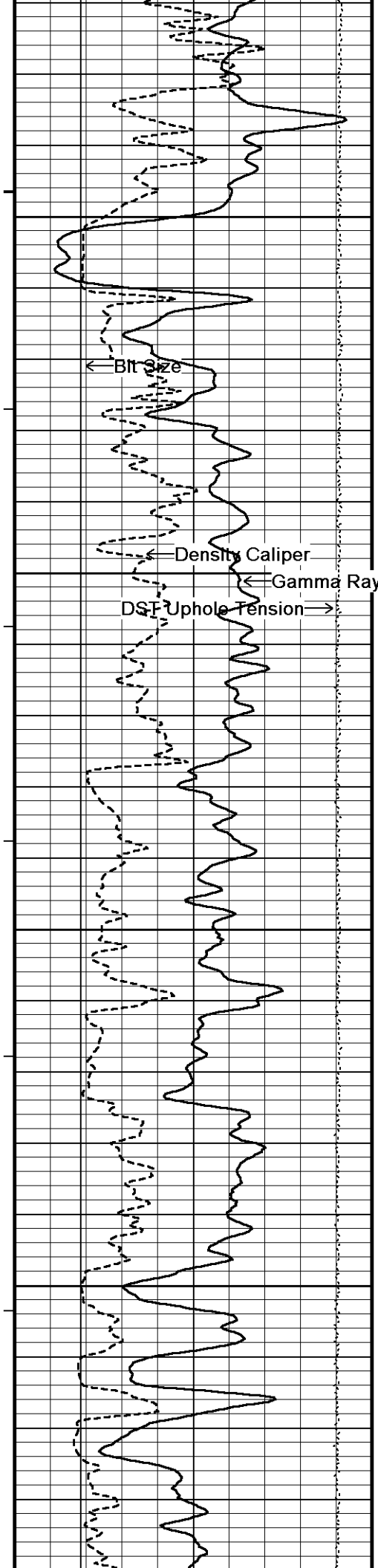
88°

1100

88°

1150





88°

1200

89°

1250

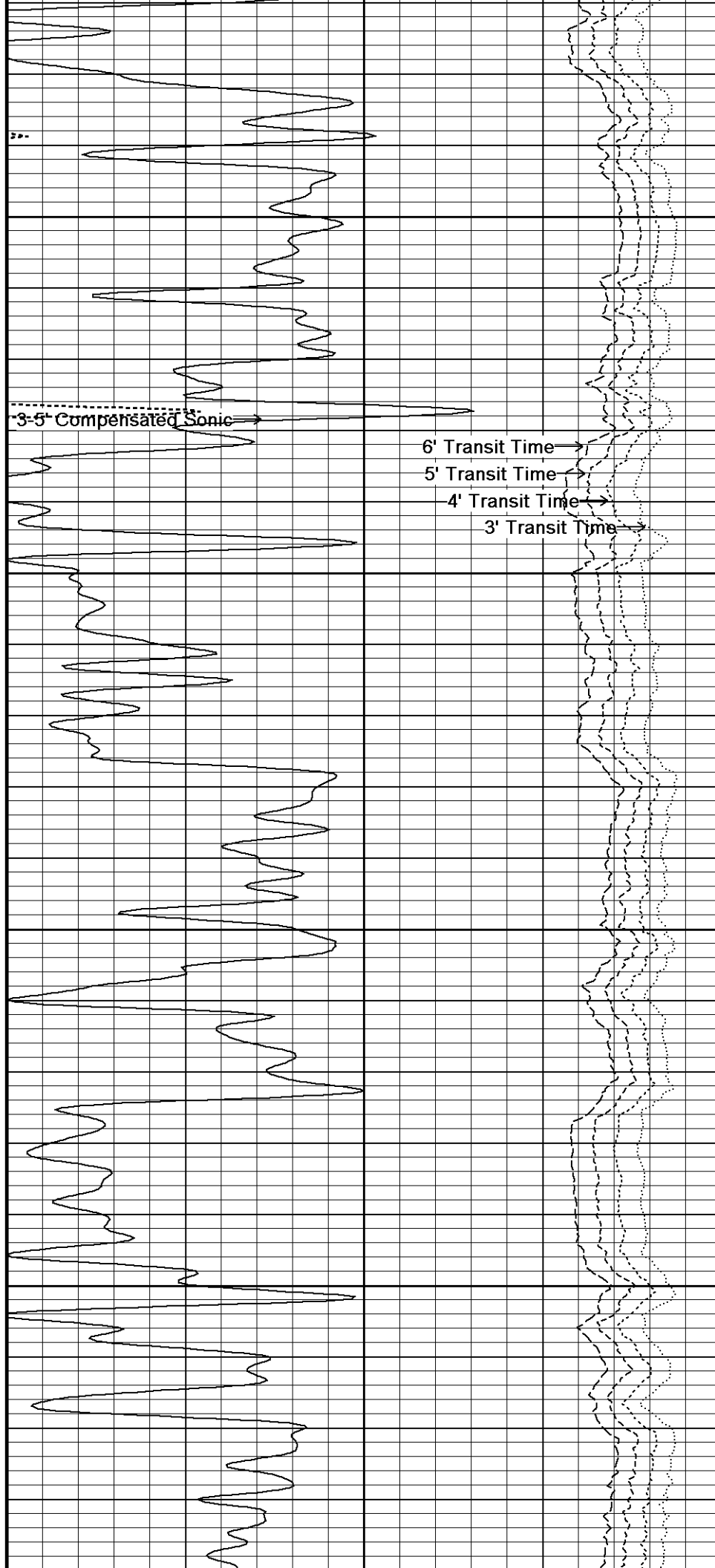
89°

1300

90°

1350

90°



88°

1200

89°

1250

89°

1300

90°

1350

90°

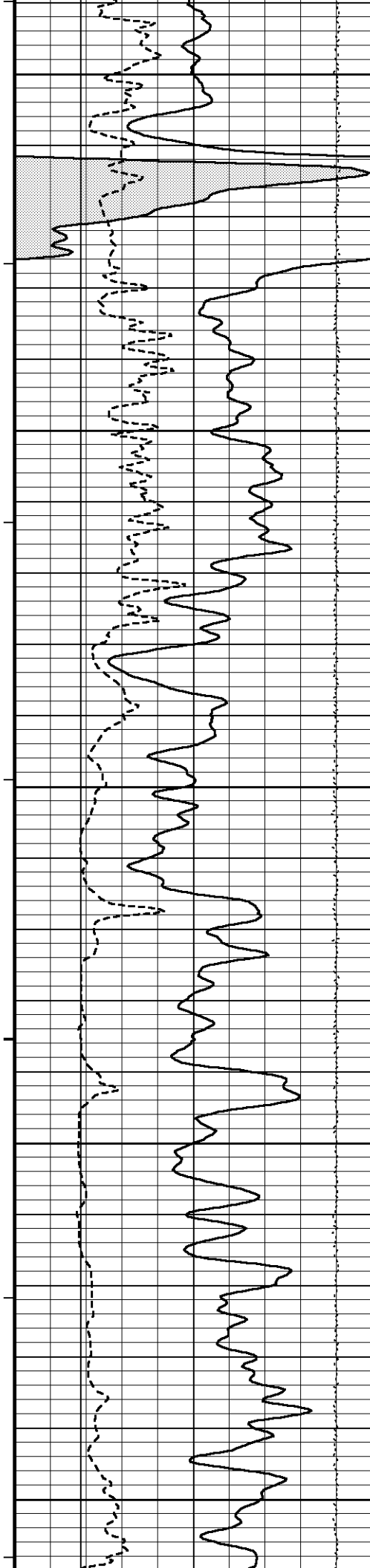
3-5' Compensated Sonic

6' Transit Time

5' Transit Time

4' Transit Time

3' Transit Time



1400

90°

1450

90°

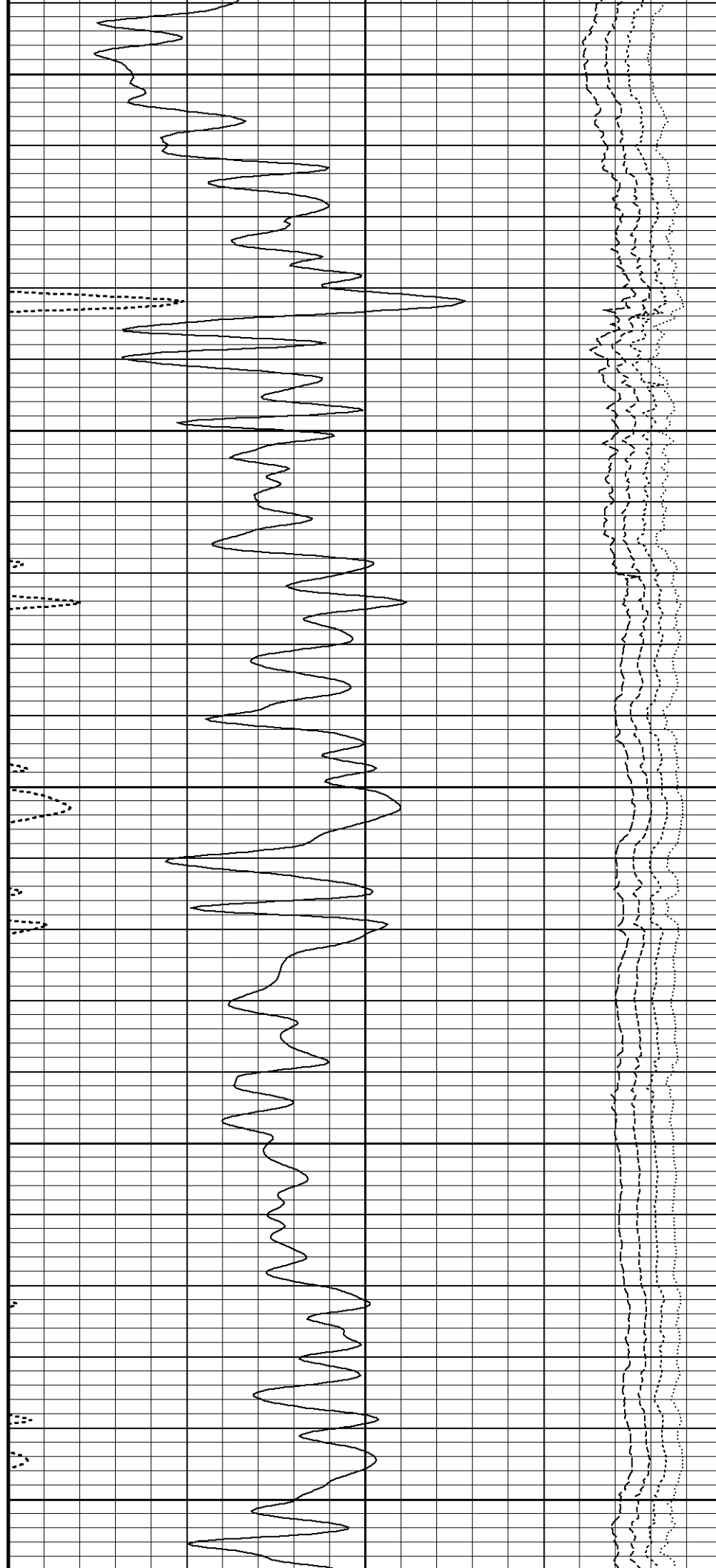
1500

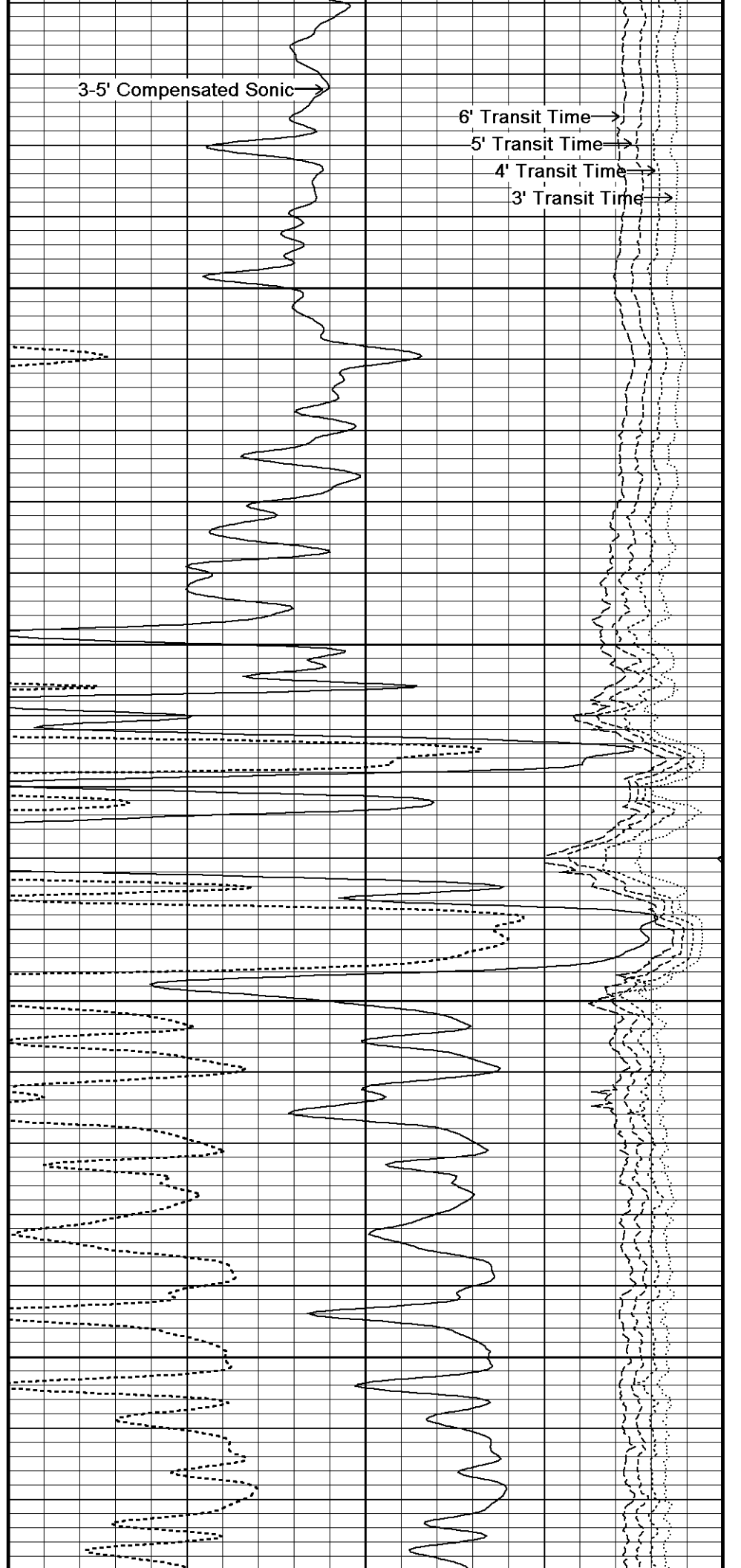
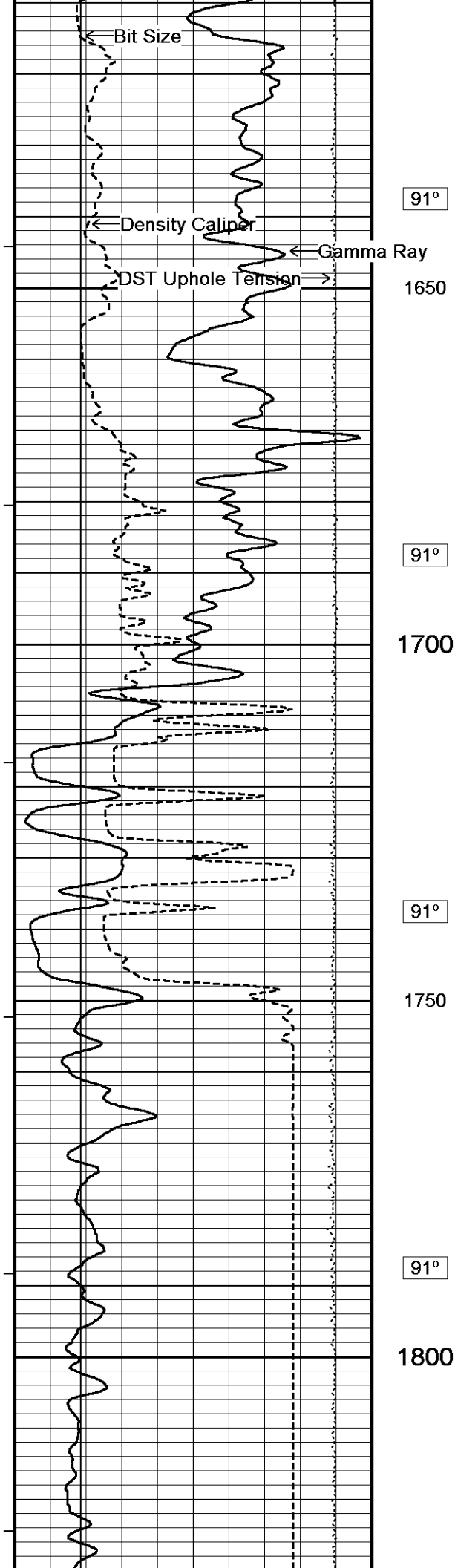
91°

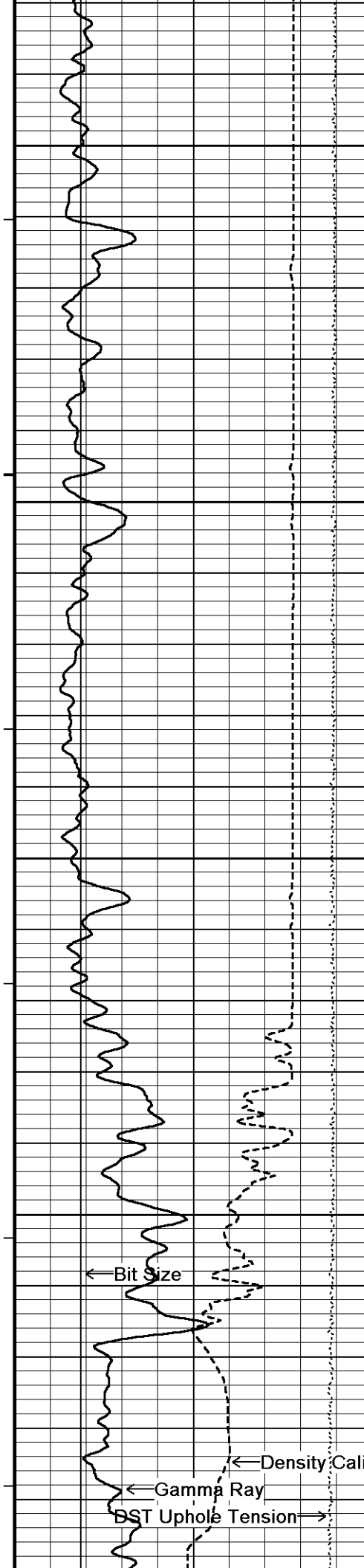
1550

91°

1600







92°

1850

91°

1900

91°

1950

91°

2000

Wyllie Lime. Sonic Por. →

2-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →

92°

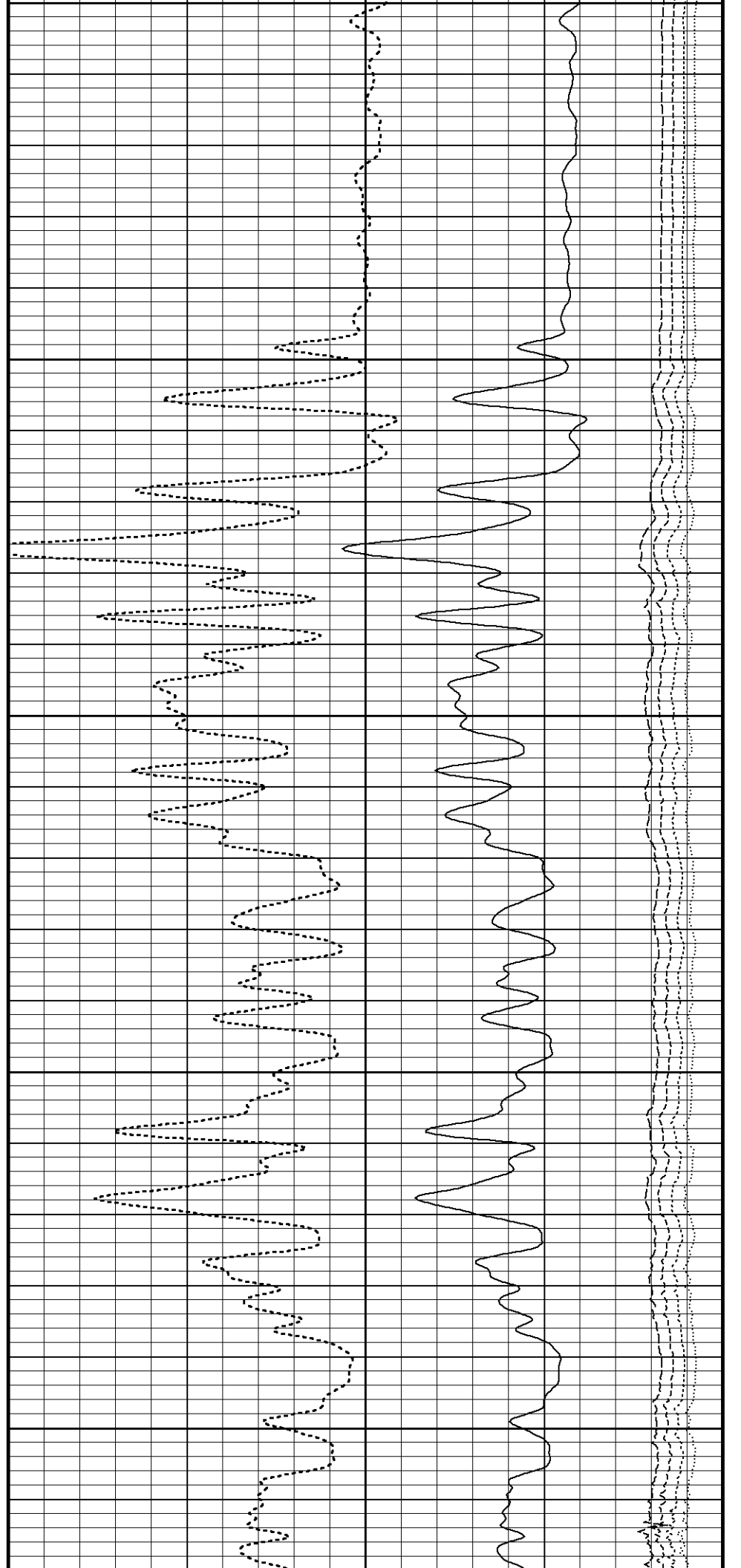
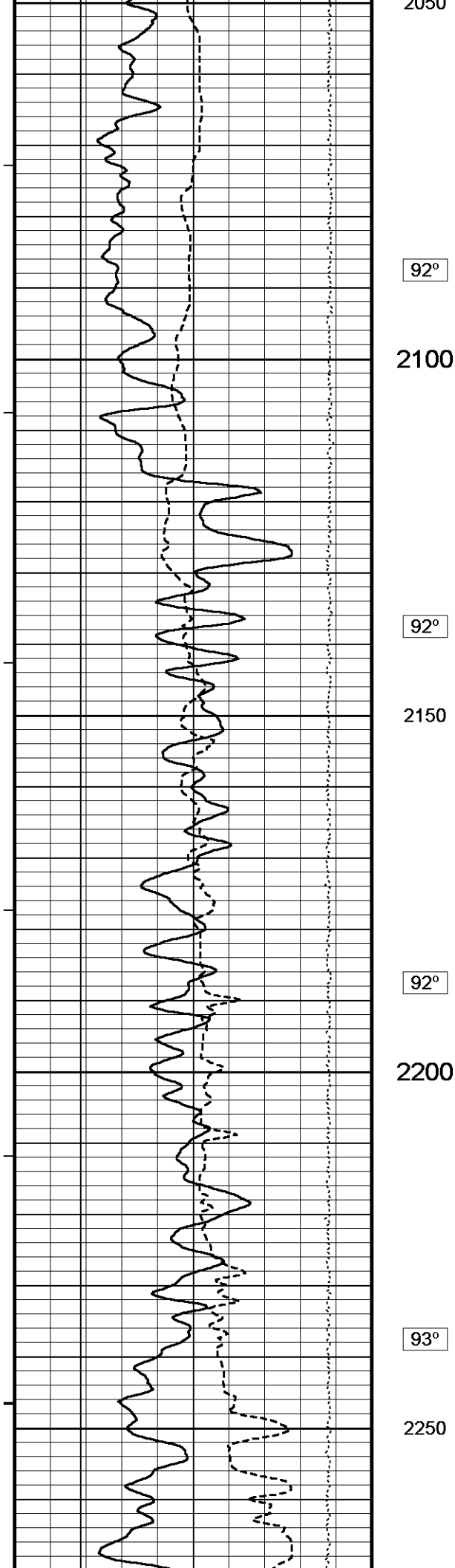
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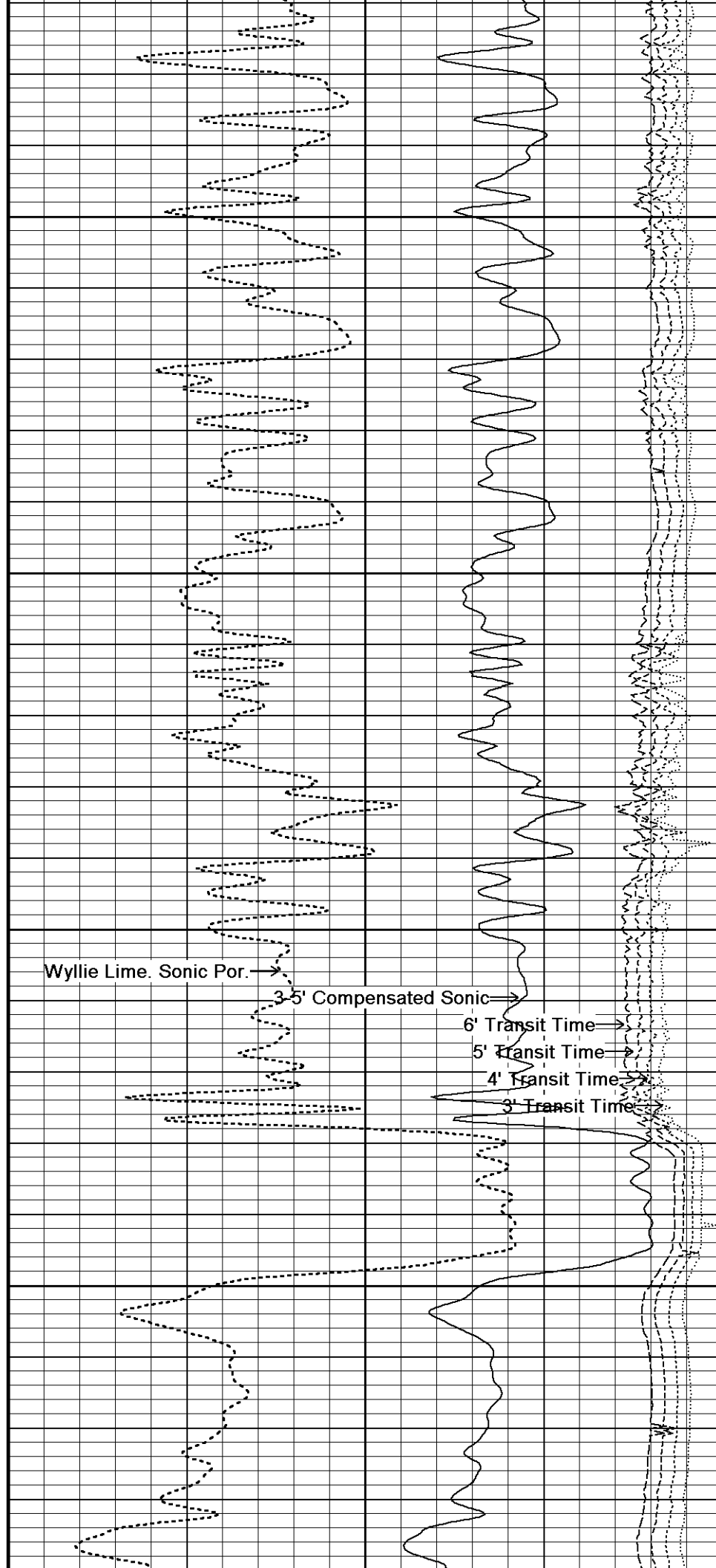
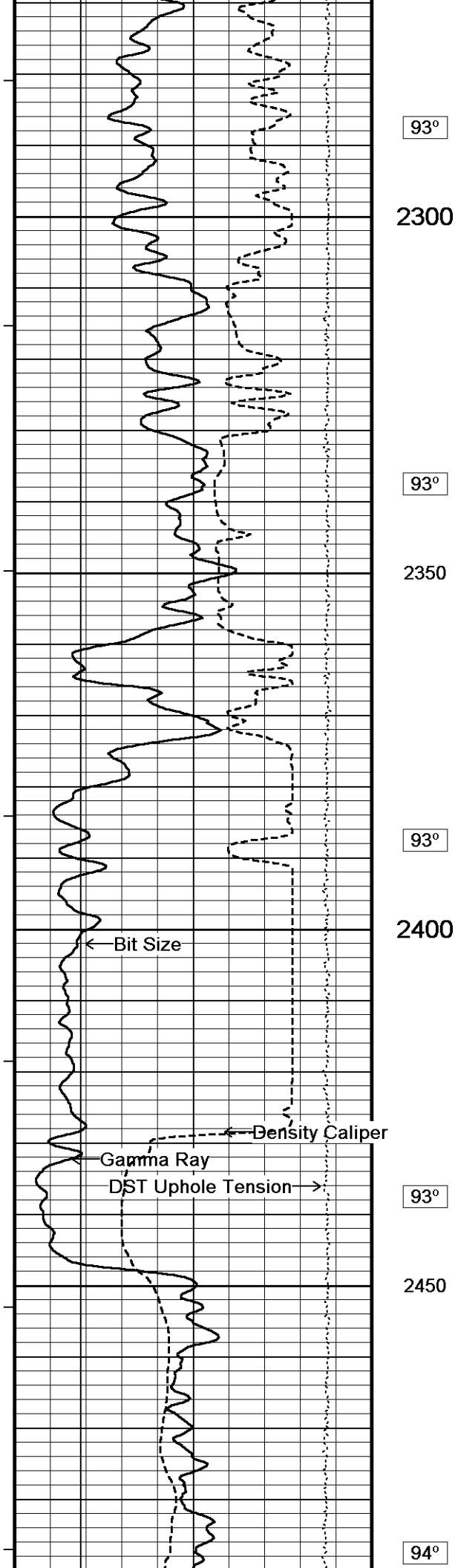
← Bit Size

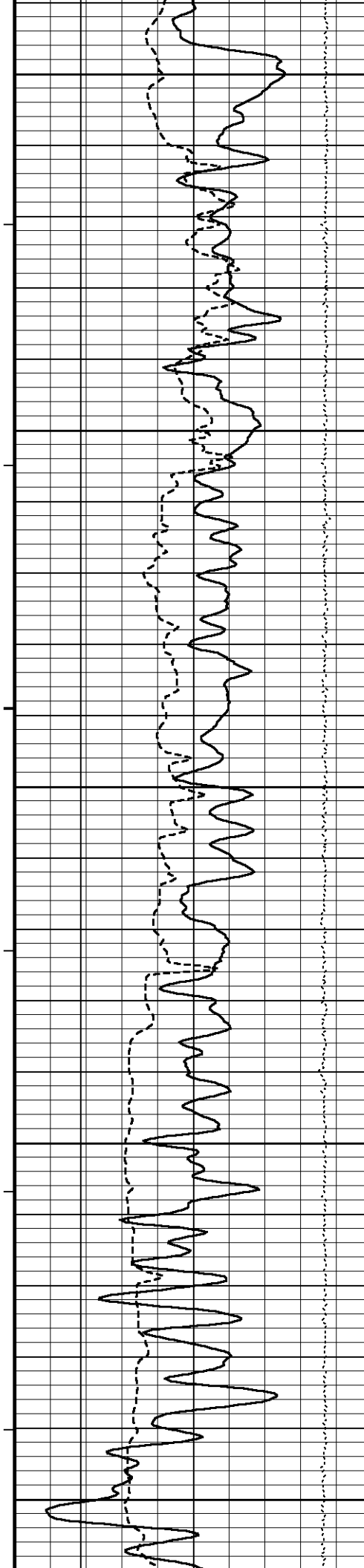
← Density Caliper

← Gamma Ray

DST Uphole Tension →







2500

94°

2550

94°

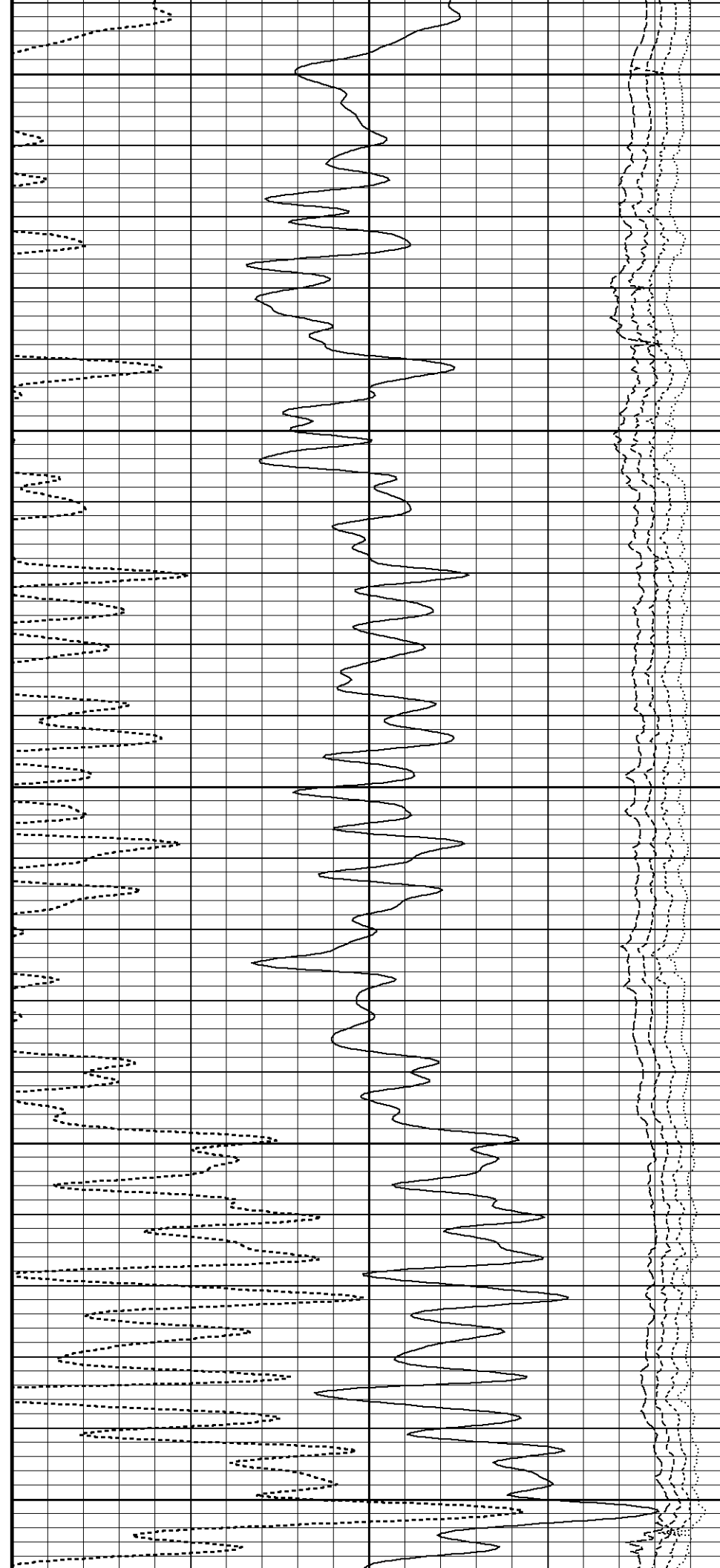
2600

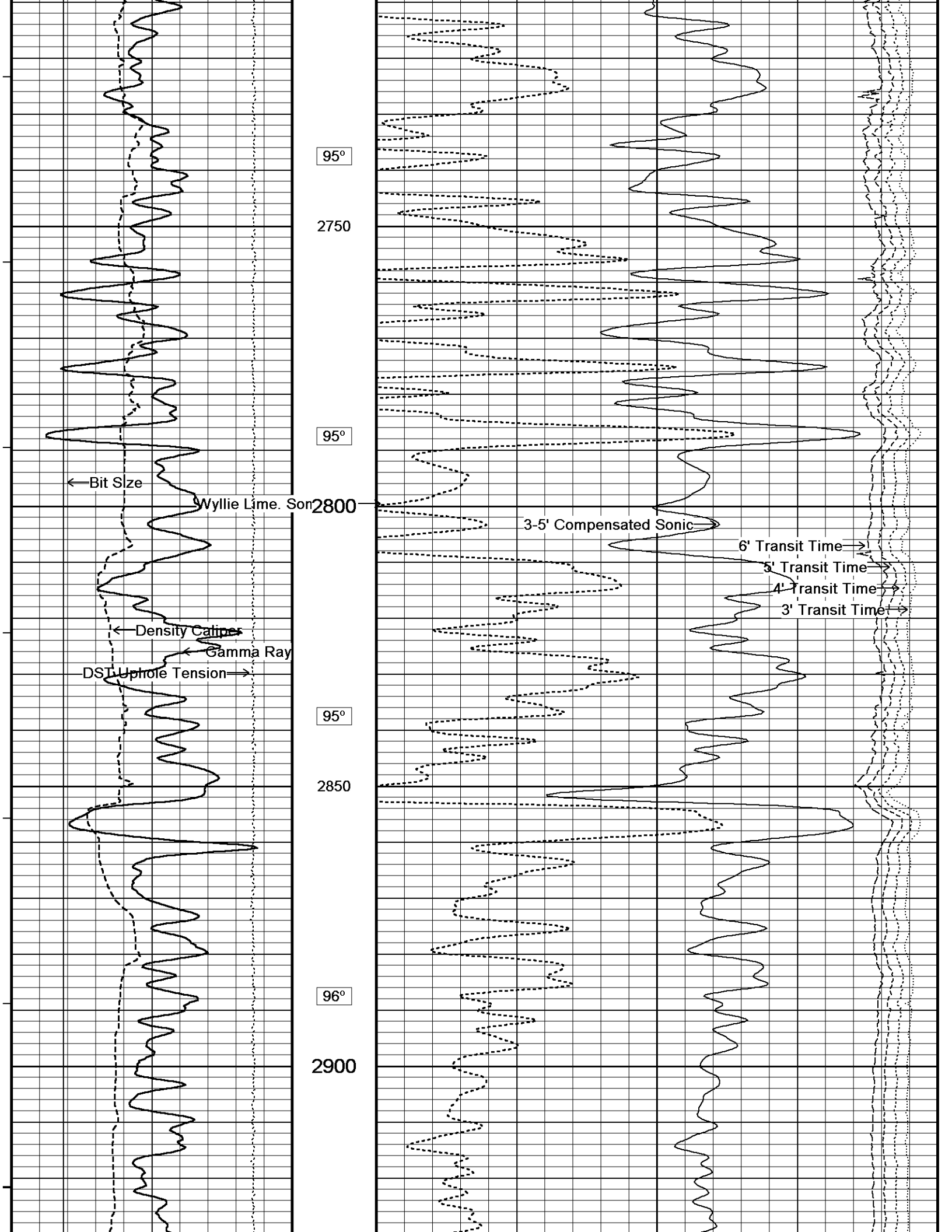
95°

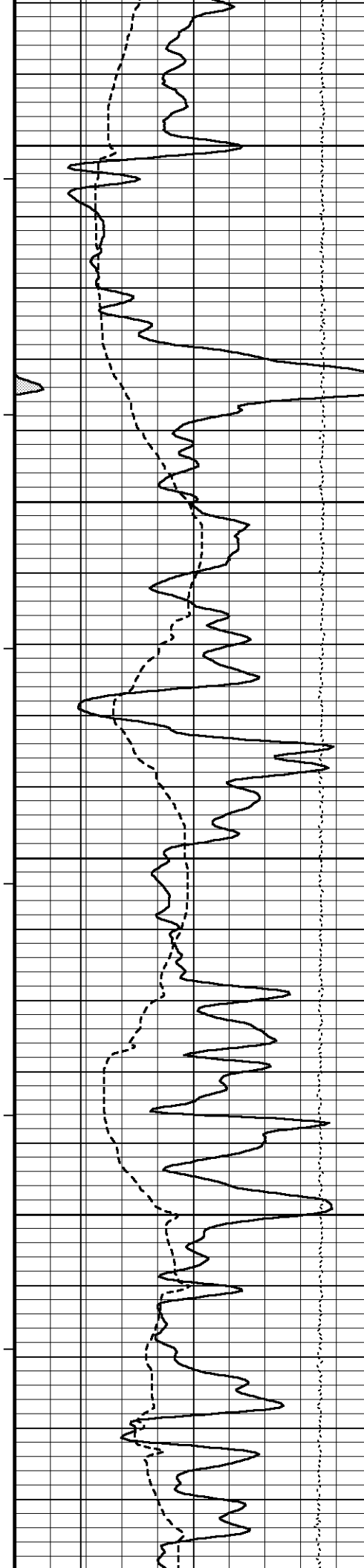
2650

95°

2700







96°

2950

96°

3000

96°

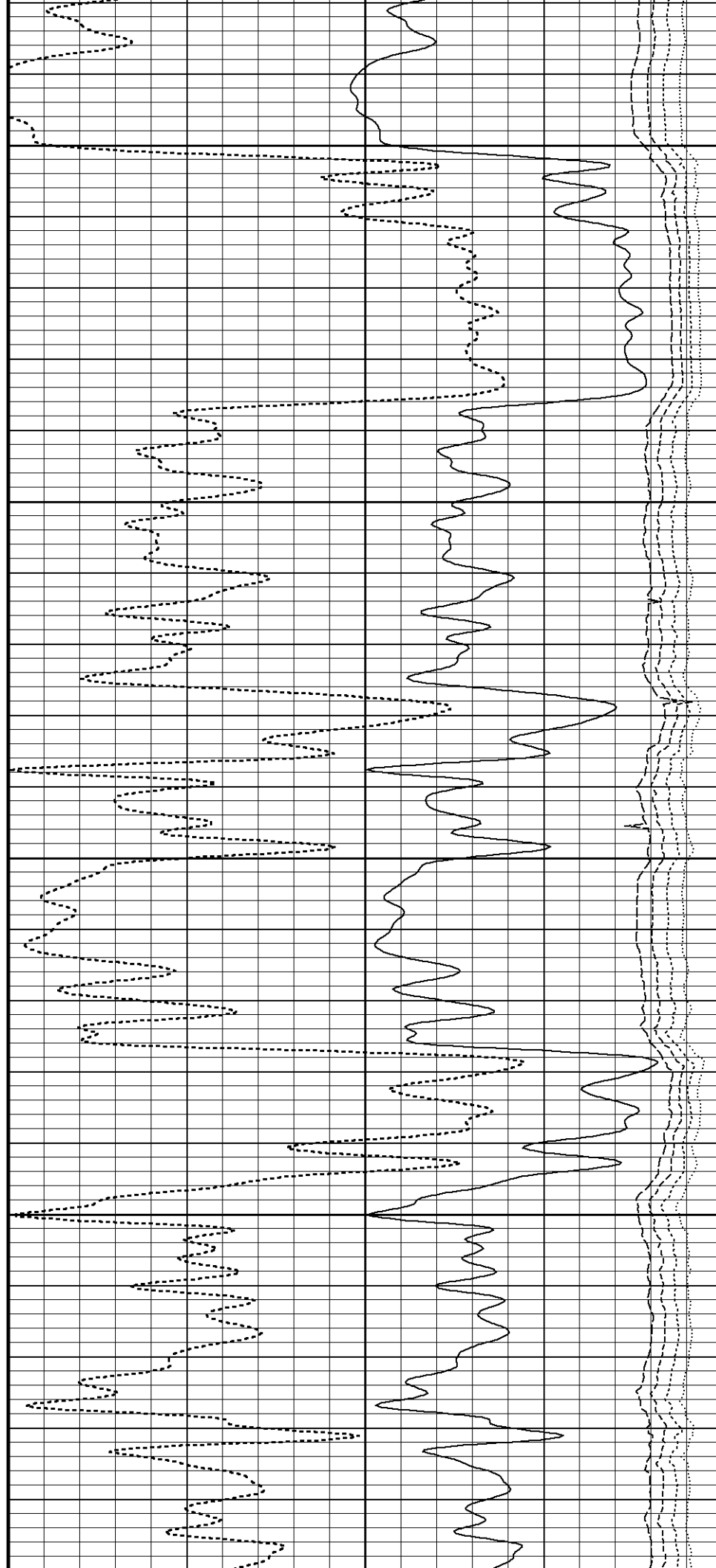
3050

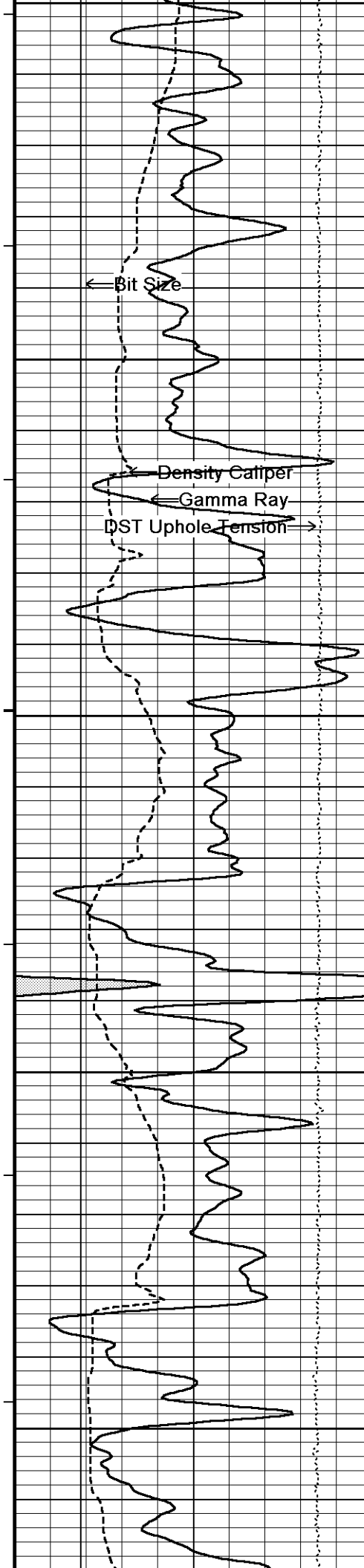
97°

3100

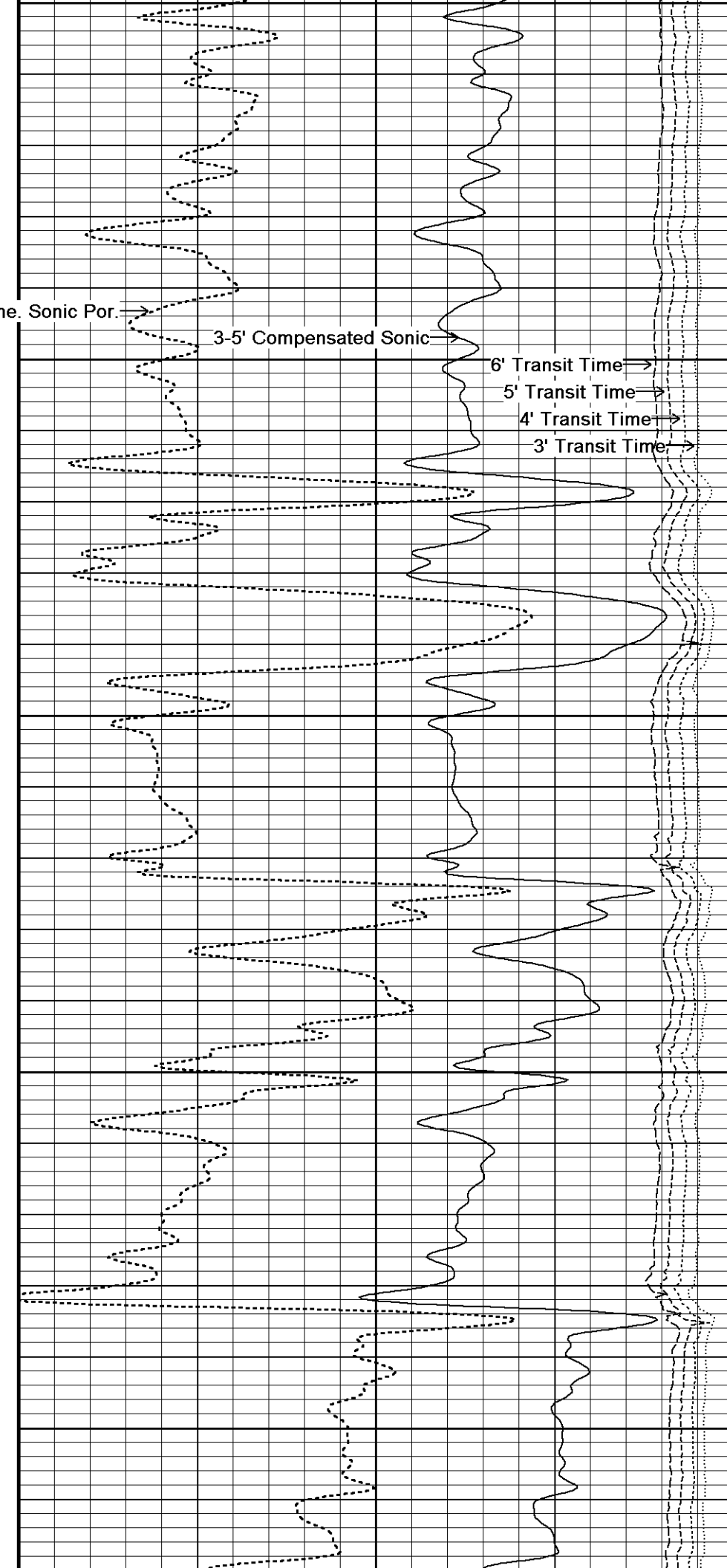
97°

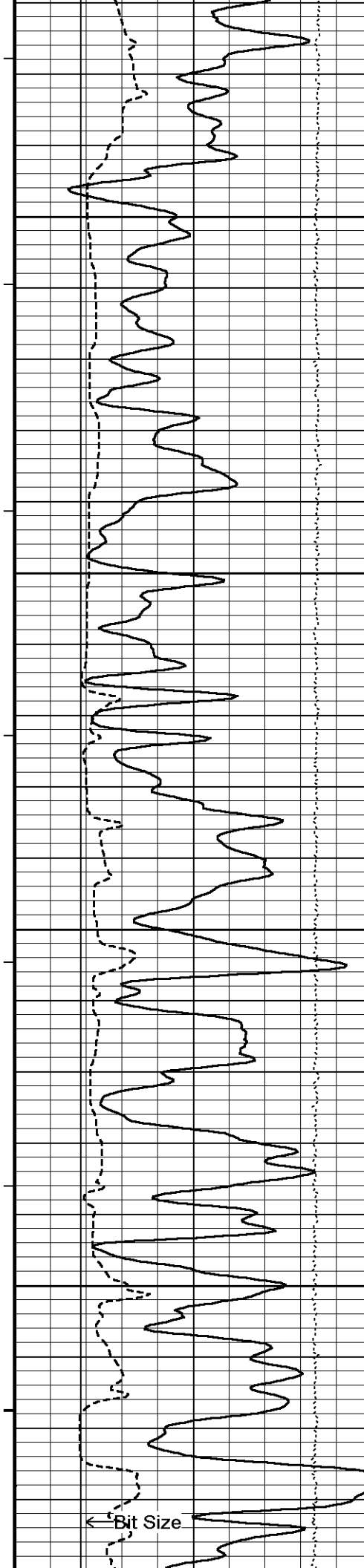
3150





3150
97°
Wyllie Lime. Sonic Por.
3200
97°
3250
97°
3300
98°
3350





98°

3400

98°

3450

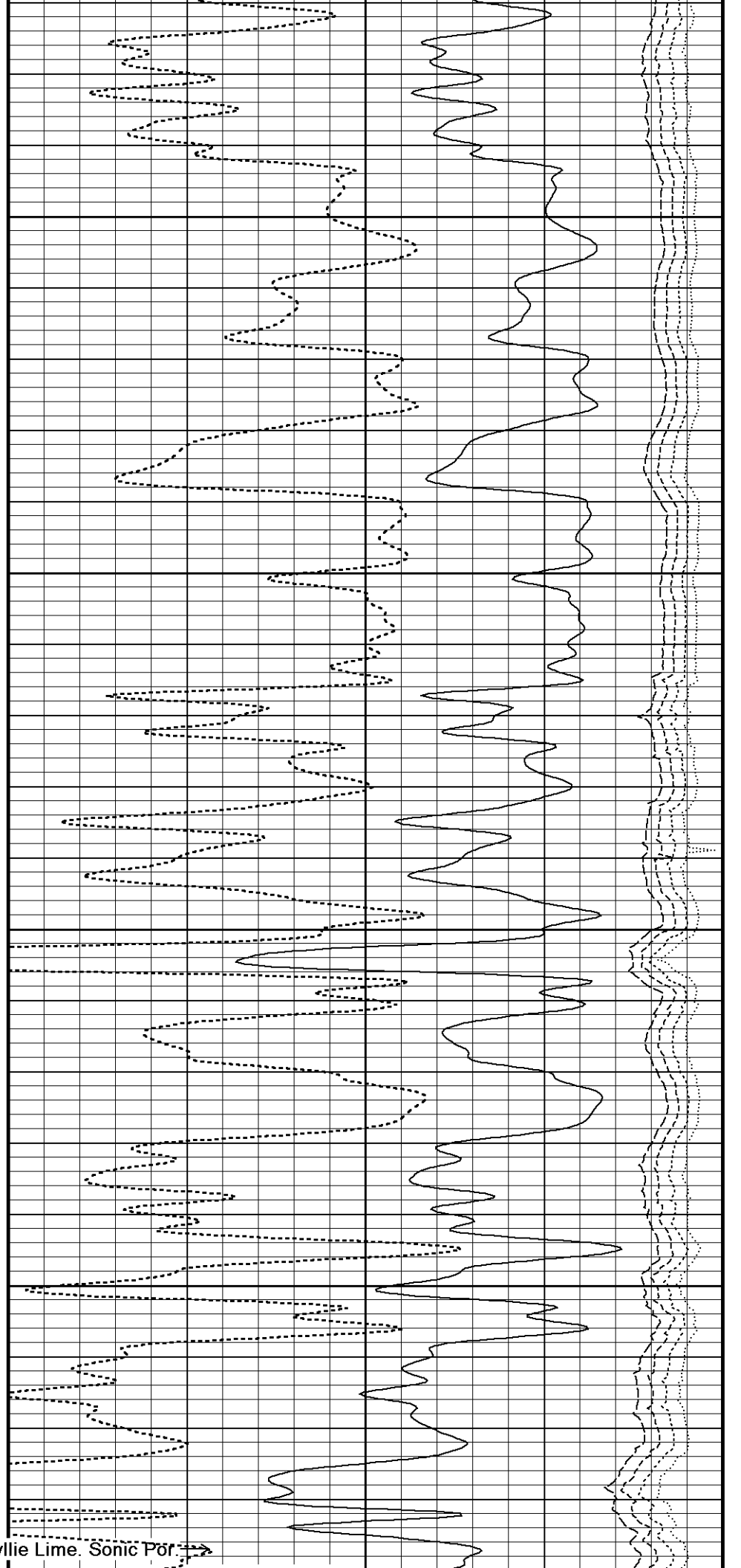
99°

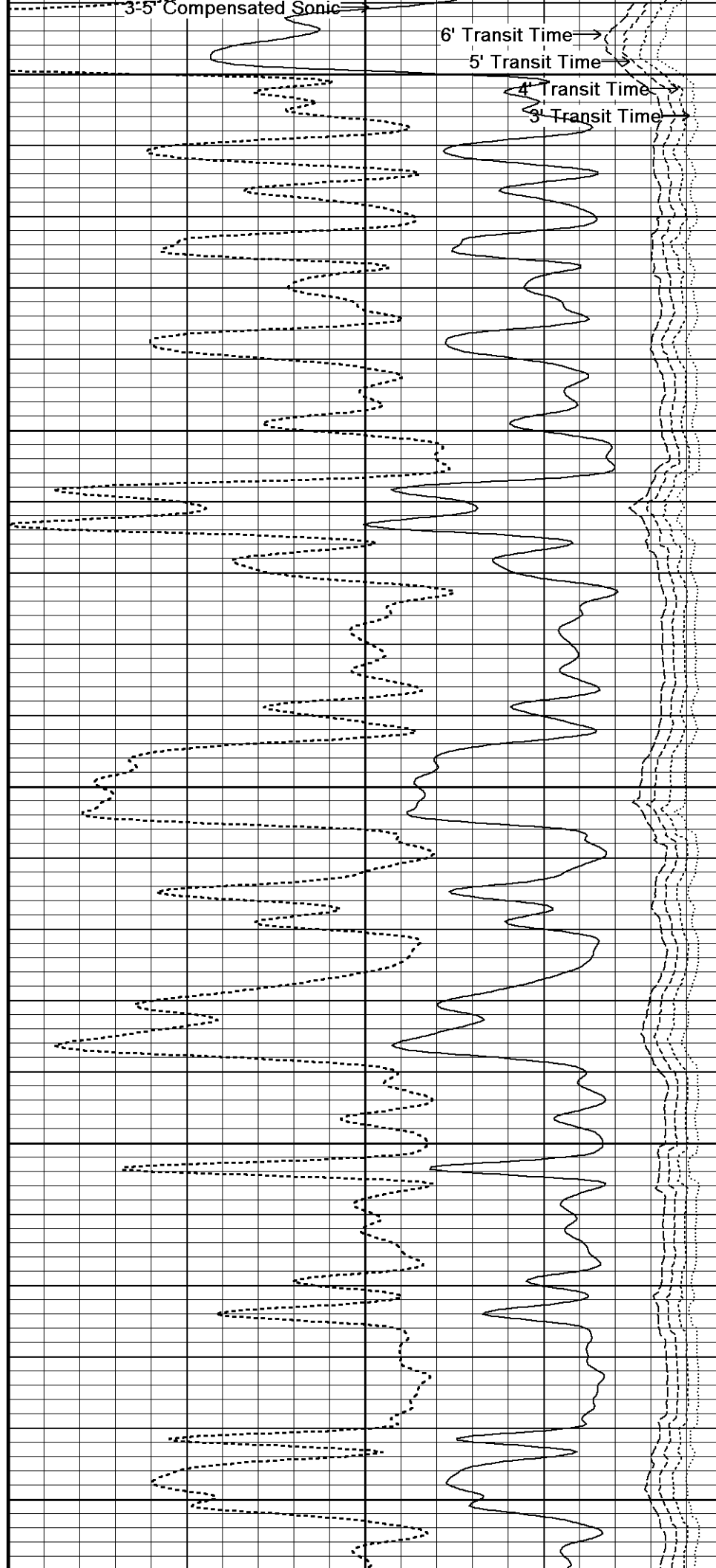
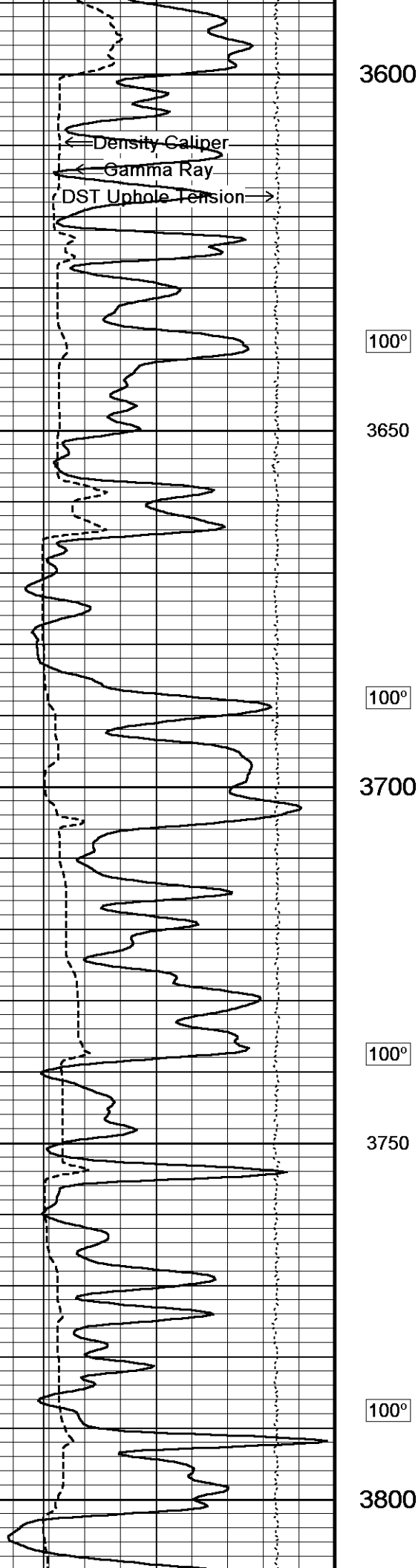
3500

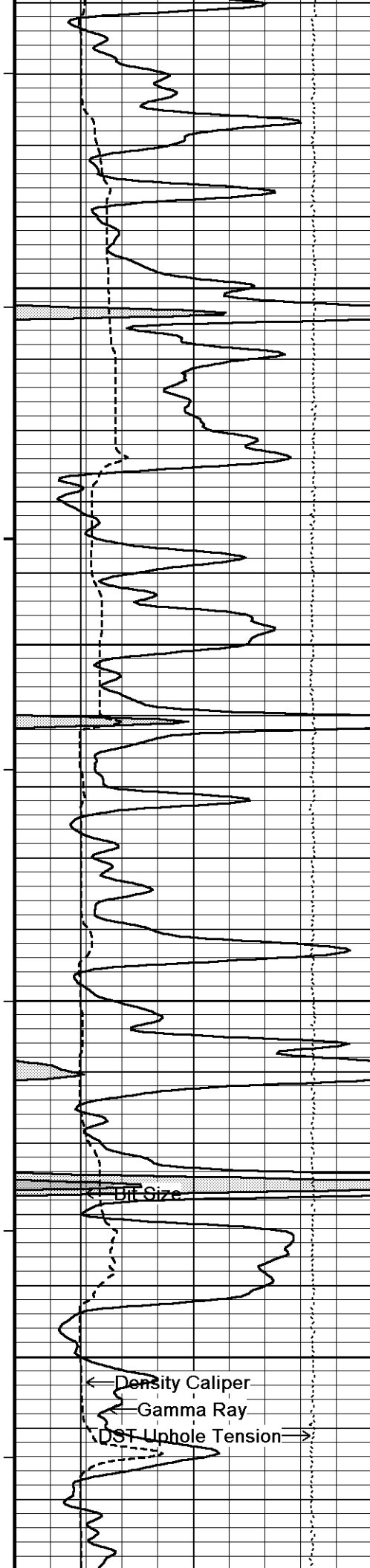
99°

3550

99° Wyllie Lime. Sonic Por. →







100°

3850

101°

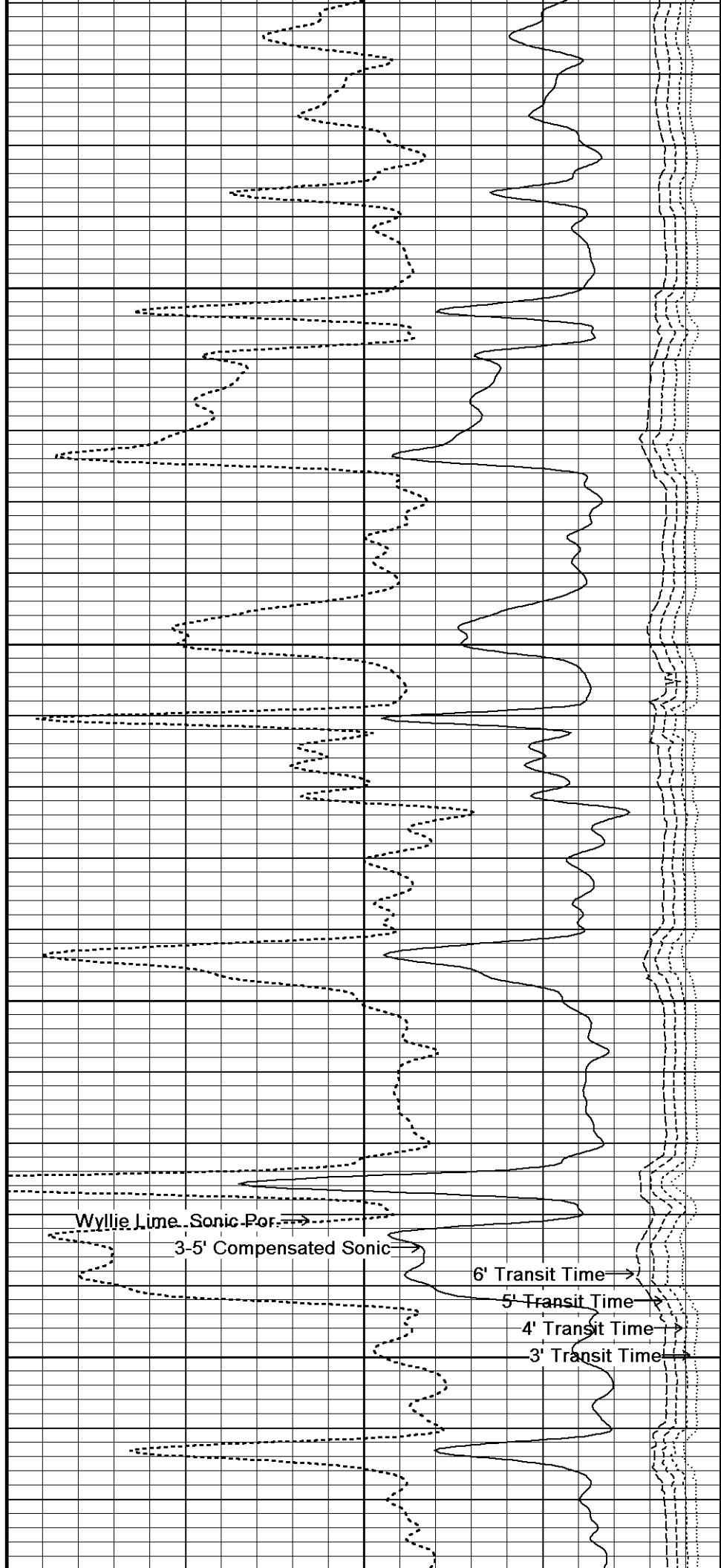
3900

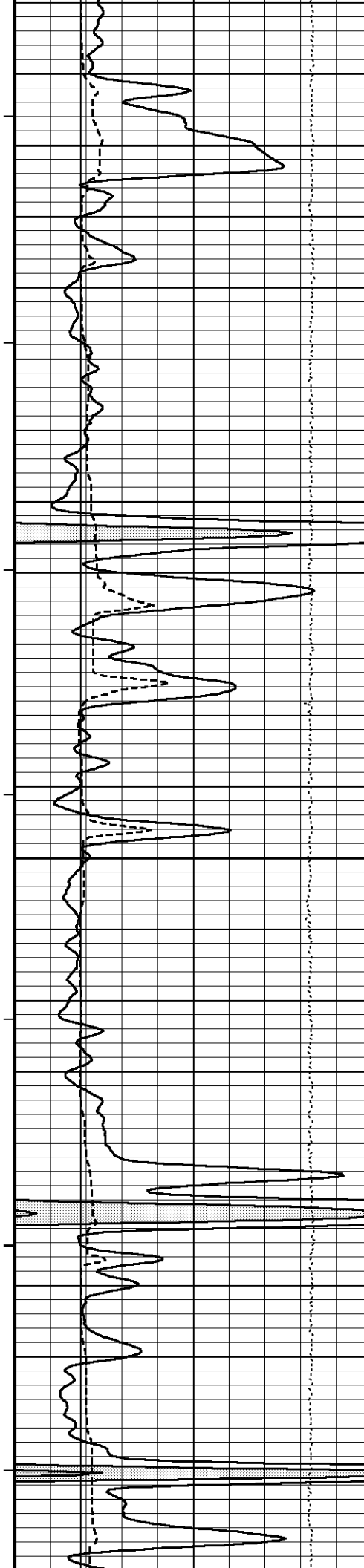
101°

3950

101°

4000





101°

4050

102°

4100

102°

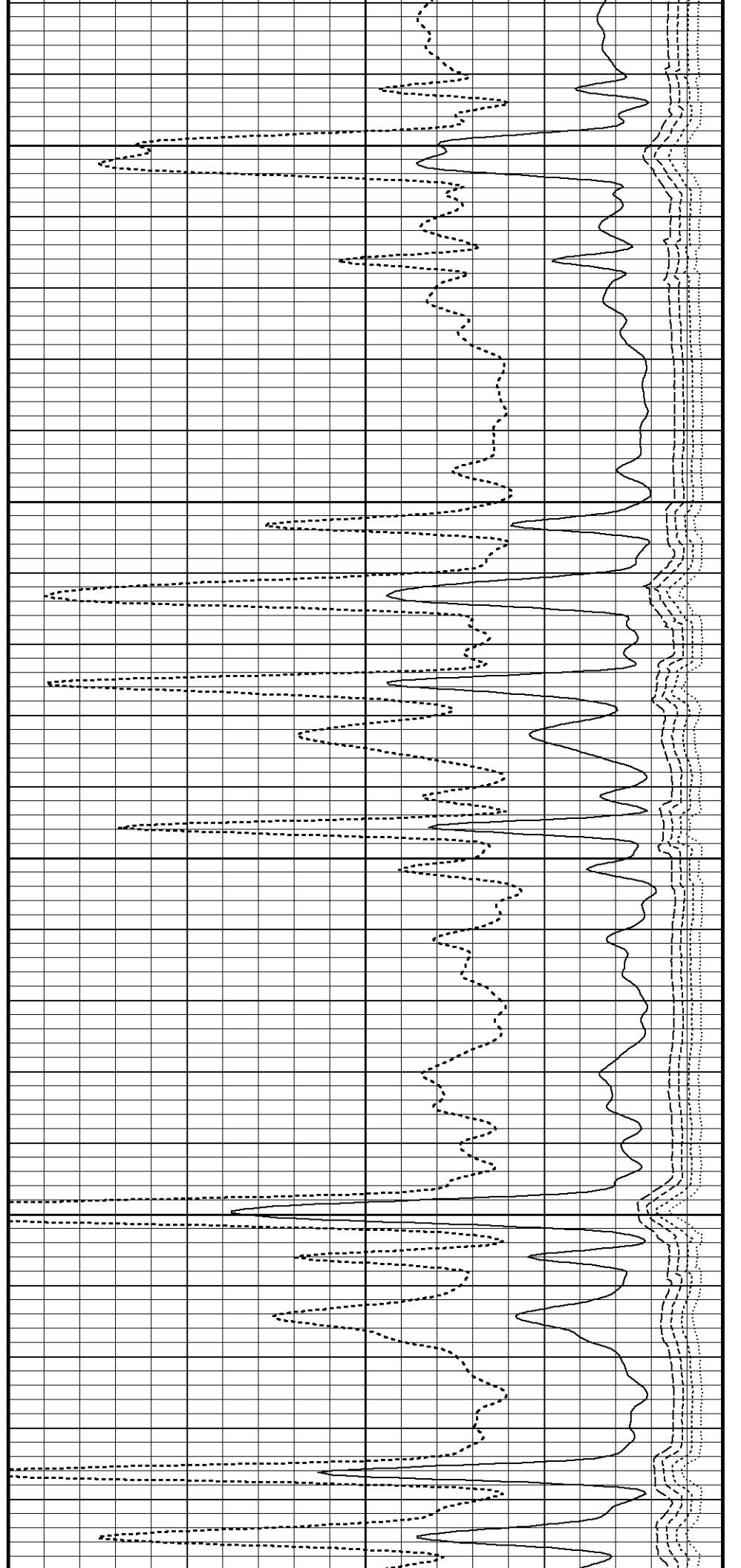
4150

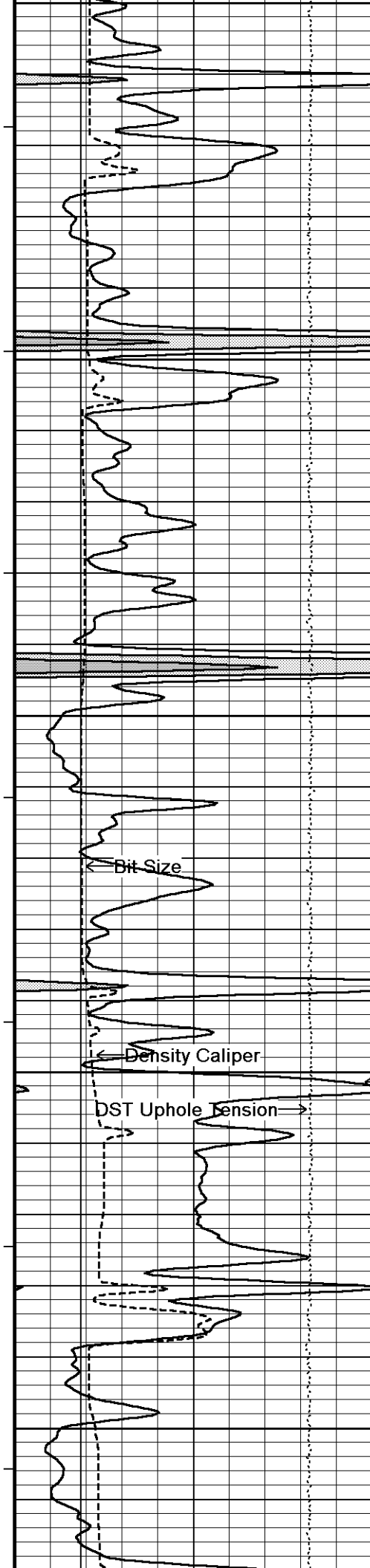
103°

4200

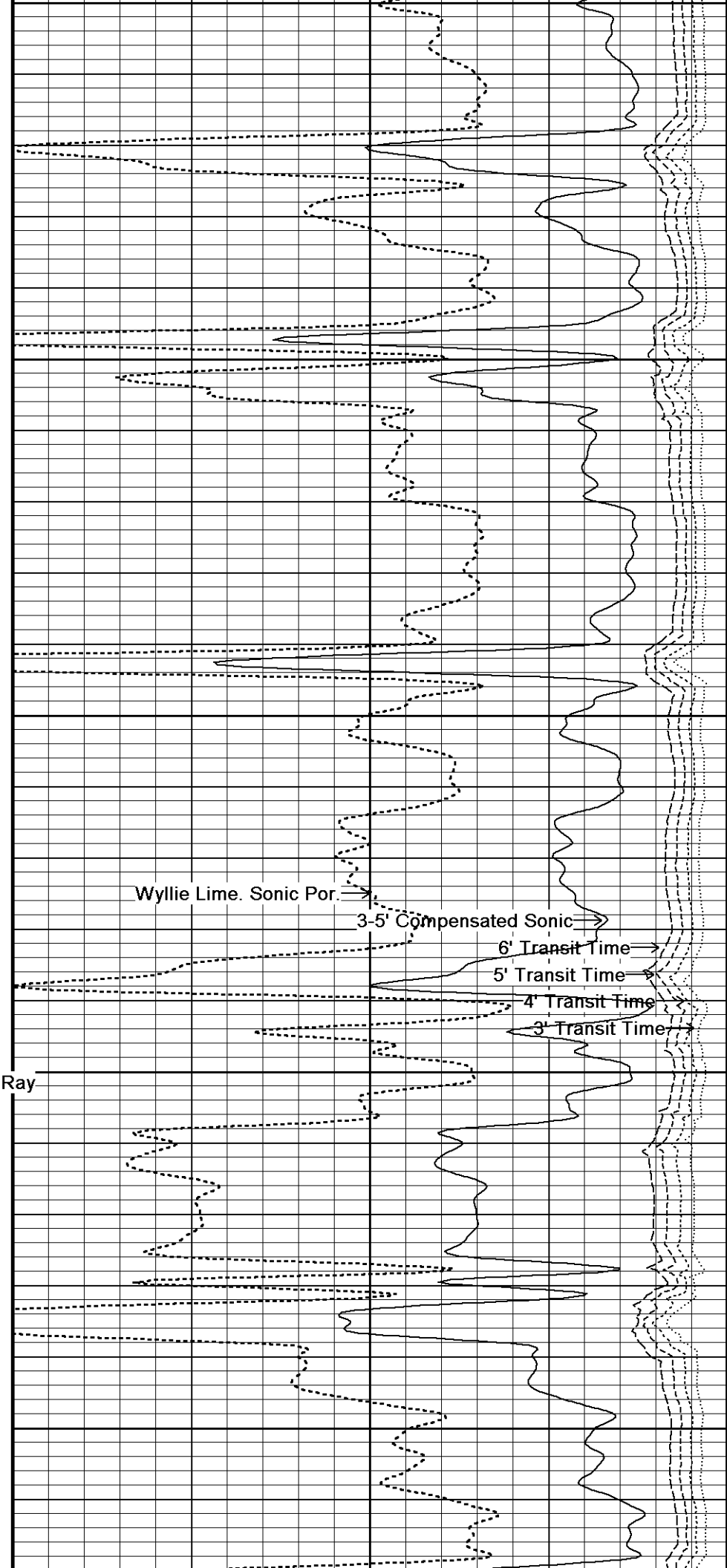
103°

4250





4250
103°
4300
104°
4350
104°
4400
104°
4450



Wyllie Lime. Sonic Por.

3-5' Compensated Sonic

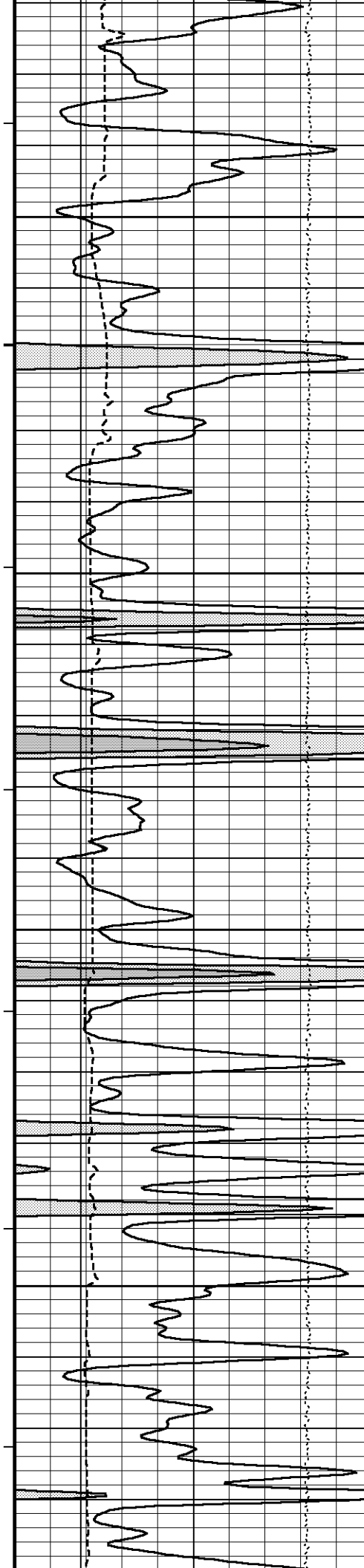
6' Transit Time

5' Transit Time

4' Transit Time

3' Transit Time

Curry Ray



105°

4500

105°

4550

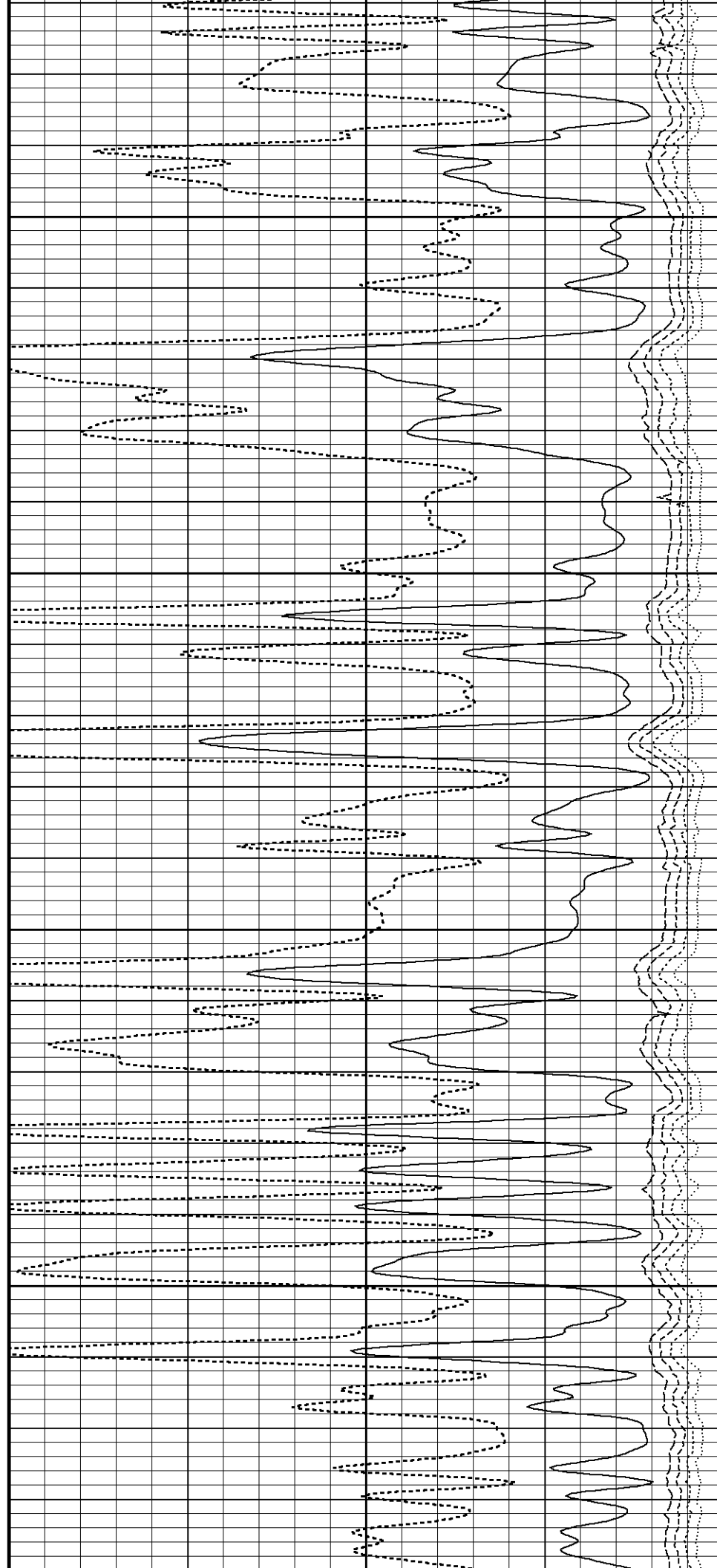
106°

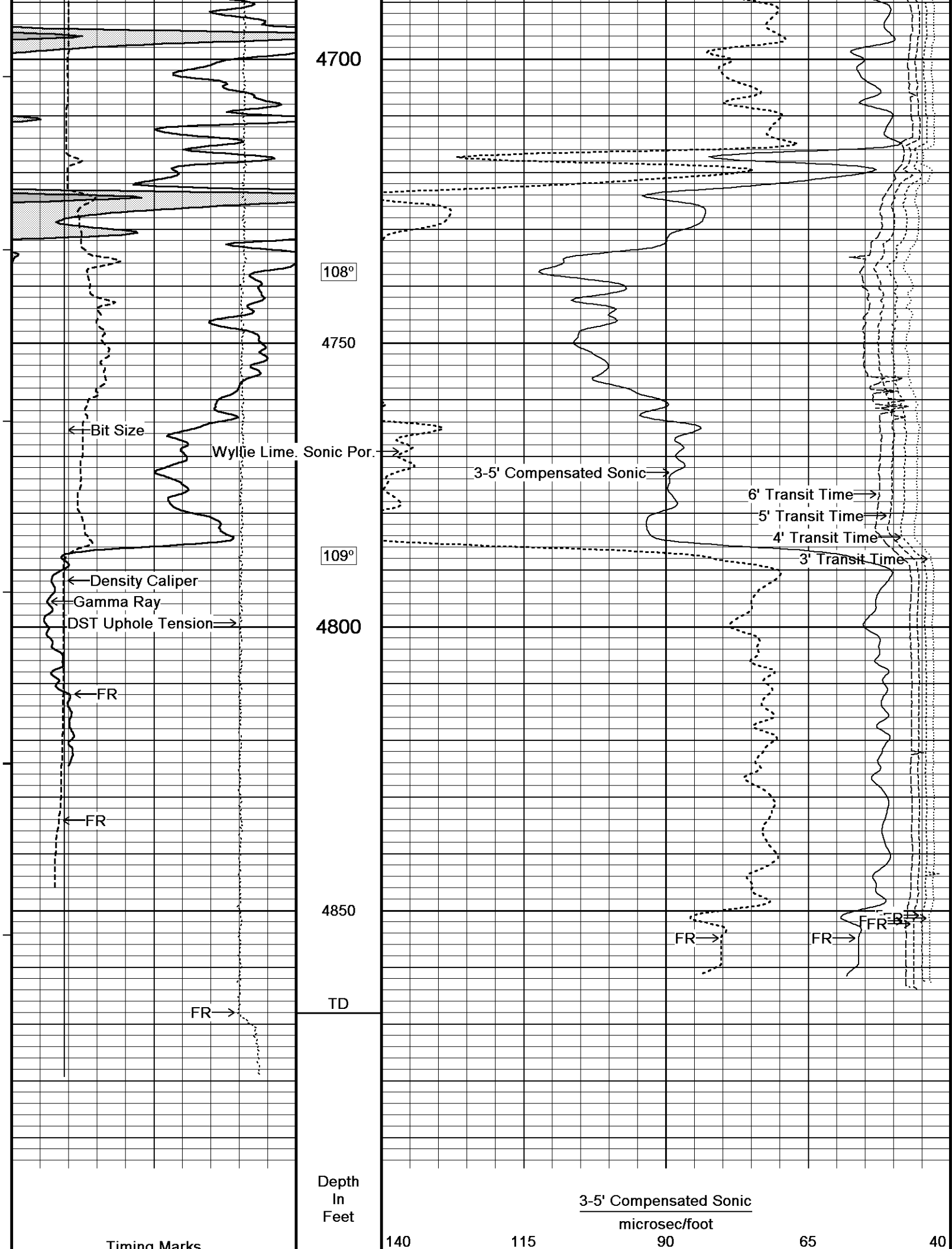
4600

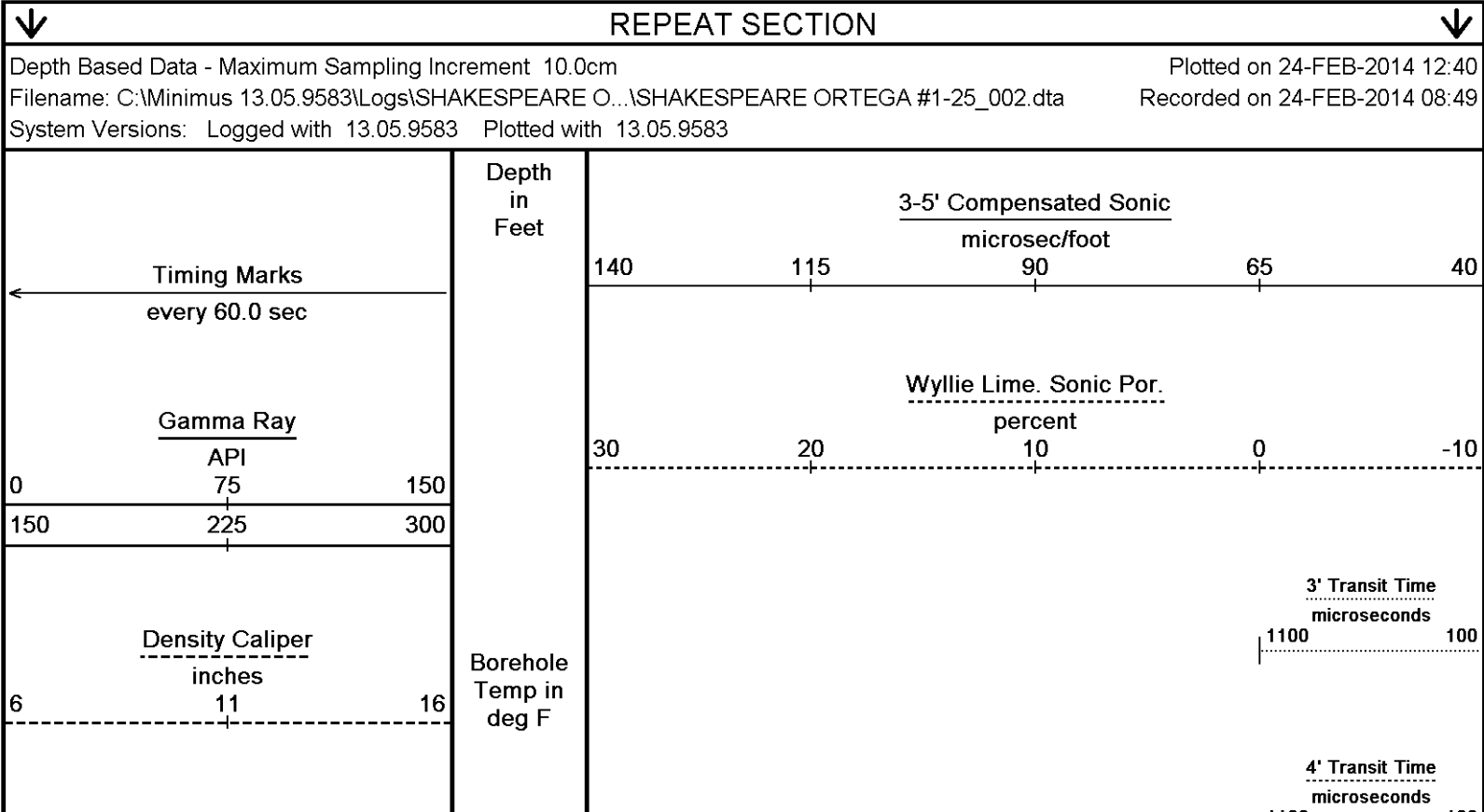
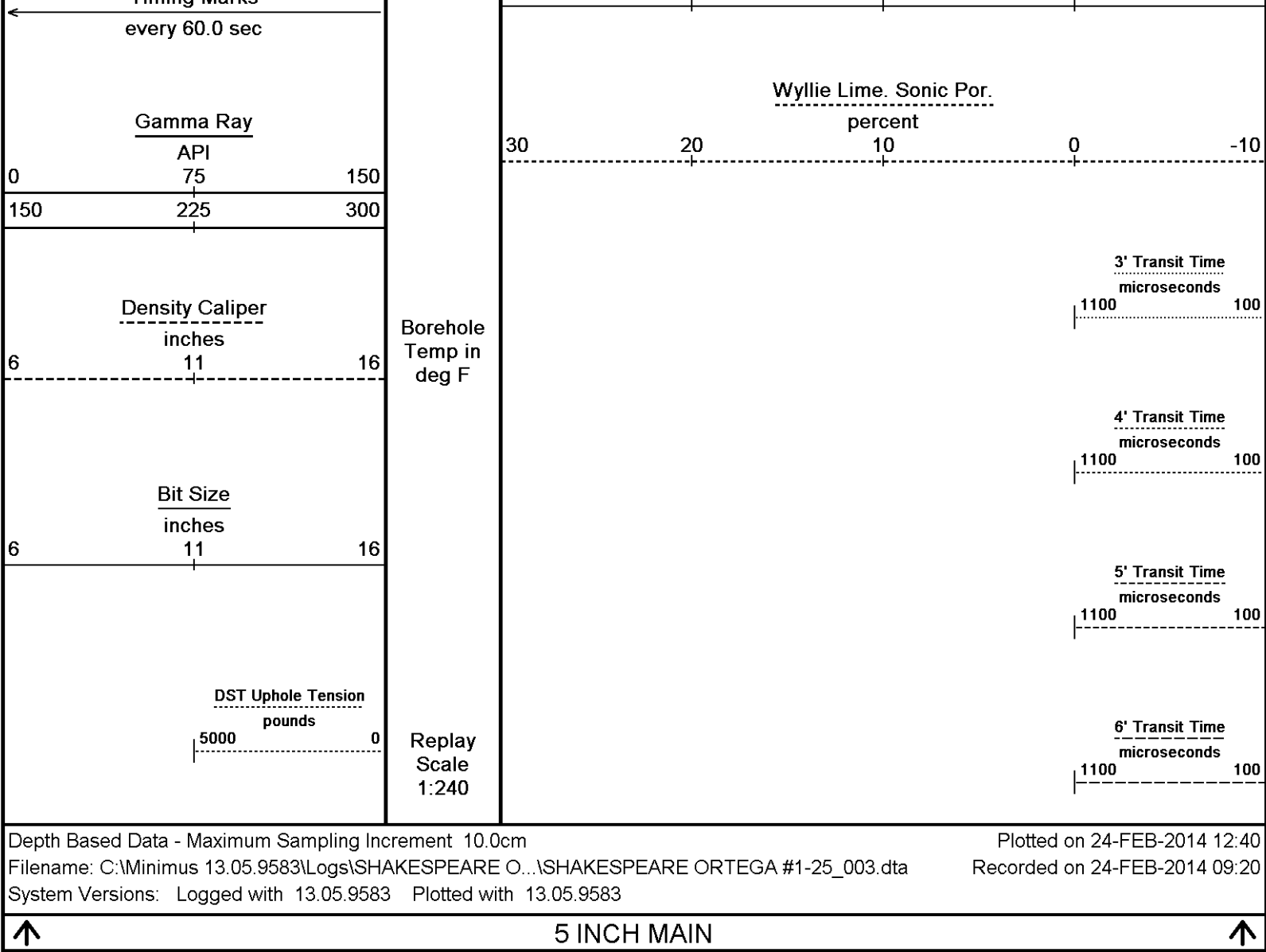
107°

4650

107°







Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

5' Transit Time
microseconds
1100 100

6' Transit Time
microseconds
1100 100



4400

103°

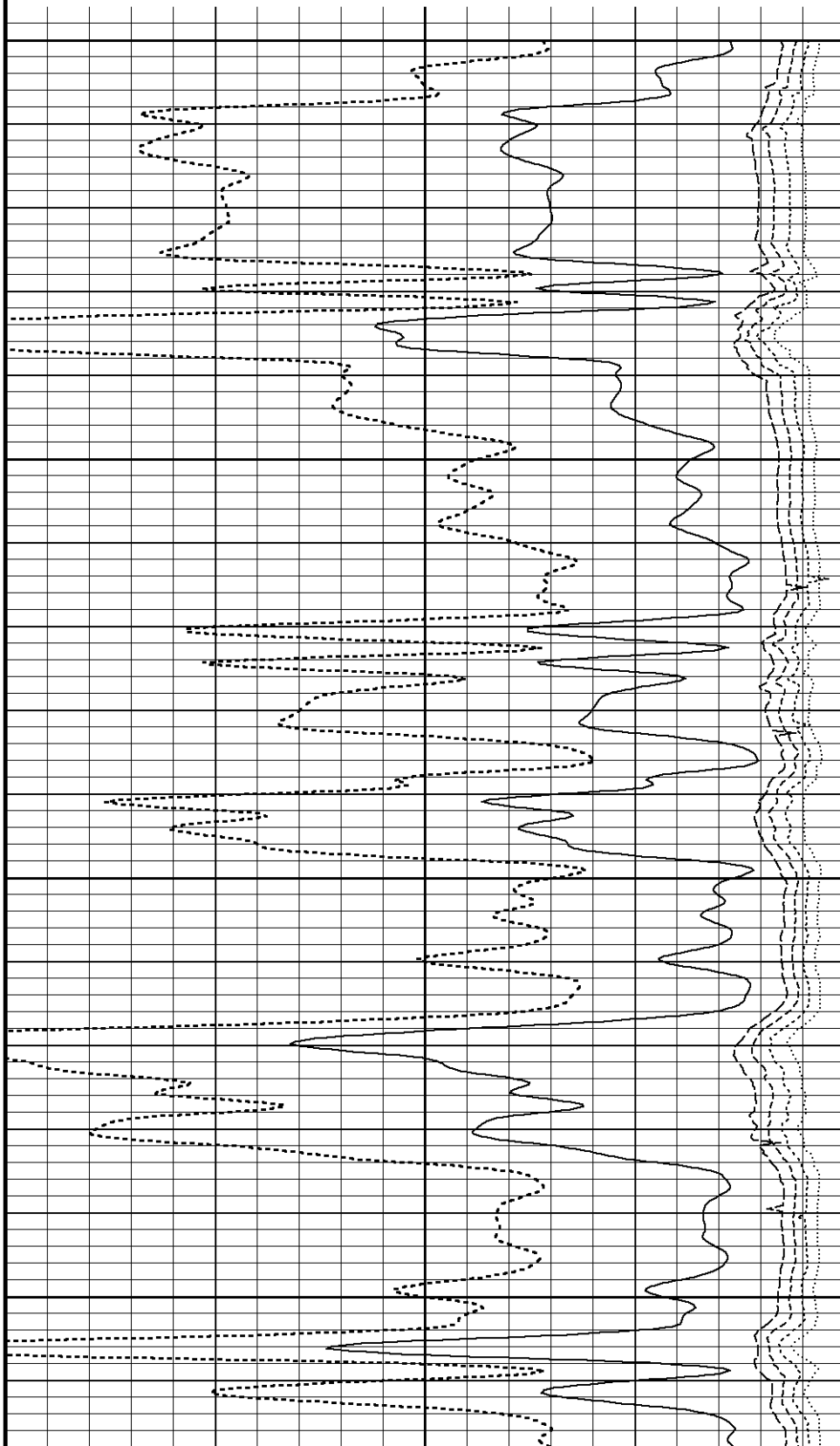
4450

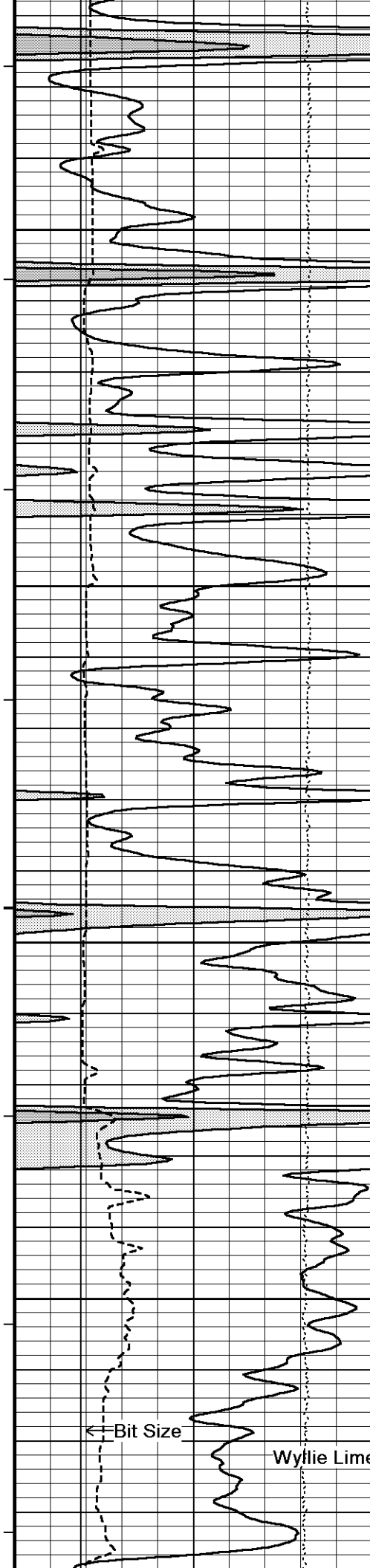
104°

4500

104°

4550





105°

4600

106°

4650

106°

4700

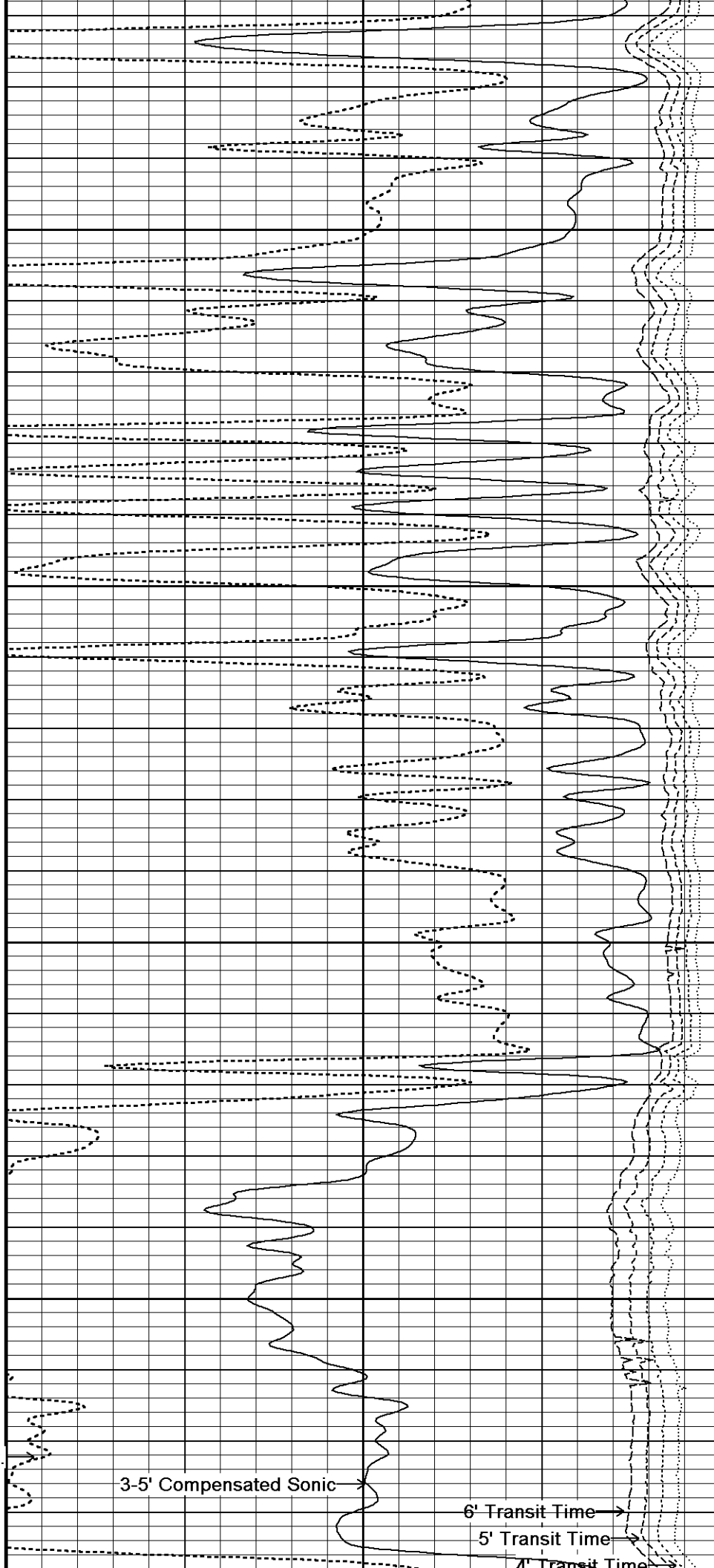
107°

4750

← Bit Size

Wyllie Lime. Sonic Por.

107°

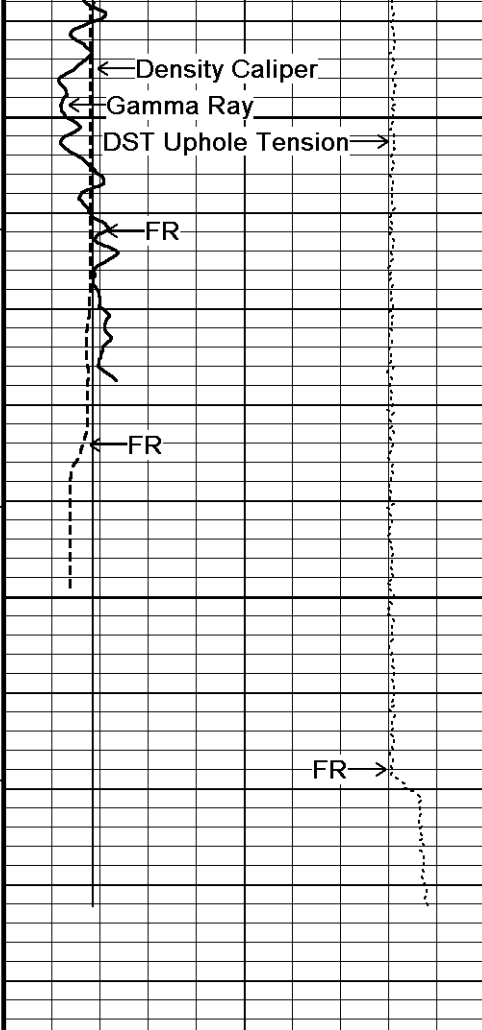


3-5' Compensated Sonic

6' Transit Time →

5' Transit Time →

4' Transit Time →



107

4800

4850

TD

Depth
in
Feet

← Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

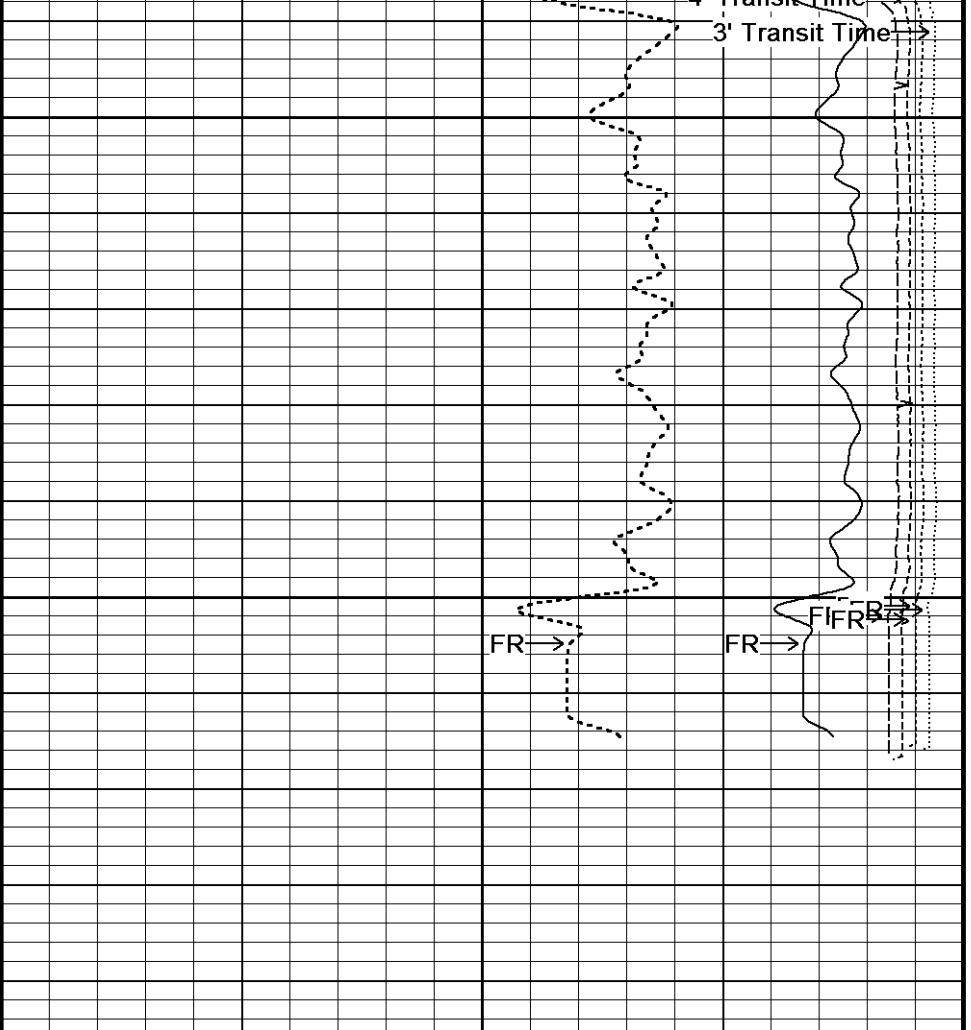
Density Caliper
inches
6 11 16

Bit Size
inches
6 11 16

DST Uphole Tension
pounds
5000 0

Borehole
Temp in
deg F

Replay



3-5' Compensated Sonic
microsec/foot
140 115 90 65 40

Wyllie Lime. Sonic Por.
percent
30 20 10 0 -10

3' Transit Time
microseconds
1100 100

4' Transit Time
microseconds
1100 100

5' Transit Time
microseconds
1100 100

6' Transit Time
microseconds

	Scale 1:240	microseconds 1100-----100
Depth Based Data - Maximum Sampling Increment 10.0cm		
Filename: C:\Minimus 13.05.9583\Logs\SHAKESPEARE O...\SHAKESPEARE ORTEGA #1-25_002.dta		Plotted on 24-FEB-2014 12:40
System Versions: Logged with 13.05.9583 Plotted with 13.05.9583		Recorded on 24-FEB-2014 08:49
↑	REPEAT SECTION	↑

BEFORE SURVEY CALIBRATION		
C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.dta		
General Constants All 000		Last Edited on 24-FEB-2014,08:20
General Parameters		
Mud Resistivity	0.410	ohm-metres
Mud Resistivity Temperature	76.000	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	MMR Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One 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 19-JAN-2014 09:34
Reading No	Measured	Calibrated (lbs)
1	15482.72	0.00
2	16610.36	408.00
High Resolution Temperature Calibration MCG-C 84		Field Calibration on 21-AUG-2013,11:52
	Measured	Calibrated(Deg F)
Lower	11.00	11.00
Upper	111.00	111.00
High Resolution Temperature Constants MCG-C 84		Last Edited on 21-AUG-2013,11:52
Pre-filter Length	11	
SP Calibration MCG-C 84		Field Calibration on 21-AUG-2013 12:25
	Measured	Calibrated (mV)
Reference 1	105.4	100.7
Reference 2	-96.3	-100.8
Gamma Calibration MCG-C 84		Field Calibration on 20-FEB-2014 09:39
	Measured	Calibrated (API)
Background	65	44
Calibrator (Gross)	1143	769
Calibrator (Net)	1078	725
Gamma Constants MCG-C 84		Last Edited on 24-FEB-2014,07:21
Gamma Calibrator Number	GRC38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

K Mud Concentration		0.00	%
Micro Laterolog Calibration MMR-A 11		Base Calibration on 31-DEC-1999 00:00 Field Check on 31-DEC-1999 00:00	
Base Calibration			
	Measured	Calibrated (ohm-m)	
Ref 1	Ref 2	Ref 1	Ref 2
0.0	0.0	0.0	0.0
Base Check (ohm-m)		Field Check (ohm-m)	
0.0		0.0	

Micro Laterolog Constants MMR-A 11			Last Edited on
Pad Type	6 in Solid Nylon B23059		
Micro Laterolog K Factor	0.0128		
Standoff Offset	0.0000	inches	
Mudcake Thickness Correction Constants			
Mud Cake Source	Constant Value		
Mud Cake Thickness	0.4000	inches	
Mud Cake Thickness Caliper			
Mud Cake Resistivity	0.1500	ohm-m	
Mud Cake Resistivity Temp.	68.00	Deg F	
Mud Cake Resistivity Source	Constant Value		
Temp. Source Rmc Correc.	MCG External Temperature		

Caliper Calibration MMR-A 11		Base Calibration on 20-JAN-2014 14:07 Field Calibration on 20-FEB-2014 09:23	
Base Calibration			
Reading No	Measured	Calibrator Size (in)	
1	14089	5.98	
2	17229	7.97	
3	20490	9.86	
4	24430	11.92	
5	0	0.00	
6	N/A	N/A	
Field Calibration			
	Measured Caliper (in)	Actual Caliper (in)	
	7.99	7.97	

Micro Normal and Micro Inverse Calibration MMR-A 11					Base Calibration on 20-JAN-2014 13:46	
					Field Check on 20-FEB-2014 09:28	
Base Calibration						
		Measured		Calibrated (ohm-m)		
Channel	Resistor 1	Resistor 2	Resistor 1	Resistor 2		
Micro Normal	12.2	59.7	5.0	25.0		
Micro Inverse	15.5	77.5	5.0	25.0		
Channel		Base Check (ohm-m)		Field Check (ohm-m)		
Micro Normal		76.5		76.5		
Micro Inverse		58.7		58.7		

Micro Normal and Micro Inverse Constants MMR-A 11			Last Edited on 18-APR-2013,13:52		
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			0.0000 inches		

Neutron Calibration MDN-A.B 65				Base Calibration on 20-JAN-2014 15:06	
				Field Check on 20-FEB-2014 09:43	
Base Calibration					
		Measured		Calibrated (cps)	
	Near	Far		Near	Far
	2981	92		3714	110
Ratio	32.404			33.764	
Field Calibrator at Base					
				Calibrated (cps)	
				1702	2459
Ratio				0.692	

Field Check	Calibrated (cps)		1709	2452
Ratio			0.689	
Neutron Constants MDN-A.B 65			Last Edited on 24-FEB-2014,07:20	
Neutron Source Id	PN-521			
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 352			Base Calibration on 17-JAN-2014 13:04 Field Check on 20-FEB-2014 09:16	
Base Calibration				
	Measured	Calibrated (ohm-m)		
Reference 1	9.9	1.3		
Reference 2	962.7	126.8		
Base Check			281.7	
Field Check			282.0	
FE Constants MFE-B.J 352			Last Edited on 24-FEB-2014,07:20	
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 24-FEB-2014,07:20	
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
3'	N/A	N/A	N/A	N/A
4'	N/A	N/A	N/A	N/A
				Discriminator (mV)
				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	
3' Waveform Filter	N/A		
4' Waveform Filter	N/A		
5' Waveform Filter	N/A		
6' Waveform Filter	N/A		
Semblance Level	N/A		
Semblance Window Width	N/A	micro-sec	
Sonic 1 Despiker	N/A	N/A	
Sonic 2 Despiker	N/A	N/A	

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 29-OCT-2013,14:20

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

High Resolution Temperature Constants MAI-A.A 45

Last Edited on 29-OCT-2013,14:20

Pre-filter Length	11
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Induction Calibration MAI-A.A 45

Base Calibration on 21-MAY-2013,16:47
Field Check on 20-FEB-2014 09:15

Base Calibration

Test Loop Calibration		Measured		Calibrated (mmho/m)	
Channel		Low	High	Low	High
1		14.4	472.6	9.3	966.2
2		5.7	374.0	7.6	821.4
3		3.4	261.2	5.2	566.0
4		2.5	133.9	2.6	279.2

Array Temperature	0.0	Deg F
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Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1			18.6	3850.3
2			31.8	3628.6
3			28.8	3048.7
4			18.4	2078.7
Deep			16.1	1910.7
Medium			42.7	4059.7
Shallow			49.8	5482.0

Array Temperature	60.1	Deg F
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Induction Constants MAI-A.A 45

Last Edited on 24-FEB-2014,07:24

Induction Model	RtAP-WBM
Caliper for Borehole Corr.	Density Caliper
Hole Size for Borehole Correction	N/A
Tool Centred	No
	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
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	

Photo Density Calibration MPD-B 31

Base Calibration on 20-JAN-2014 16:43
Field Check on 20-FEB-2014 09:22

Density Calibration		Measured		Calibrated (sdu)	
Base Calibration		Near	Far	Near	Far
Reference 1	43628	22294	59556	30836	
Reference 2	17956	1856	24941	2541	
Field Check at Base					
	665.1	818.8			
Field Check					
	664.6	820.3			

PE Calibration		Measured		Calibrated	
Base Calibration		WS	WH	Ratio	Ratio
Background	124	593			
Reference 1	17926	43516	0.415	0.371	
Reference 2	5248	17873	0.297	0.272	
Field Check at Base					
	123.9	593.3			
Field Check					
	121.9	588.3			

Density Constants MPD-B 31

Last Edited on 24-FEB-2014,07:20

Density Source Id	254	
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	1.10	gm/cc
Mud Density Z/A Multiplier	1.11	

Mud Density Z/A Multiplier	1.11	gm/cc
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 (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

Caliper Calibration MPD-B 31

Base Calibration on 24-FEB-2014 03:42

Field Calibration on 24-FEB-2014 03:43

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18272	3.99
2	26496	5.98
3	35155	7.97
4	43472	9.86
5	52816	11.92
6	N/A	N/A

Field Calibration

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

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\SHAKESPEARE ORTEGA #1-25\SHAKESPEARE ORTEGA #1-25_002.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-C 84 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

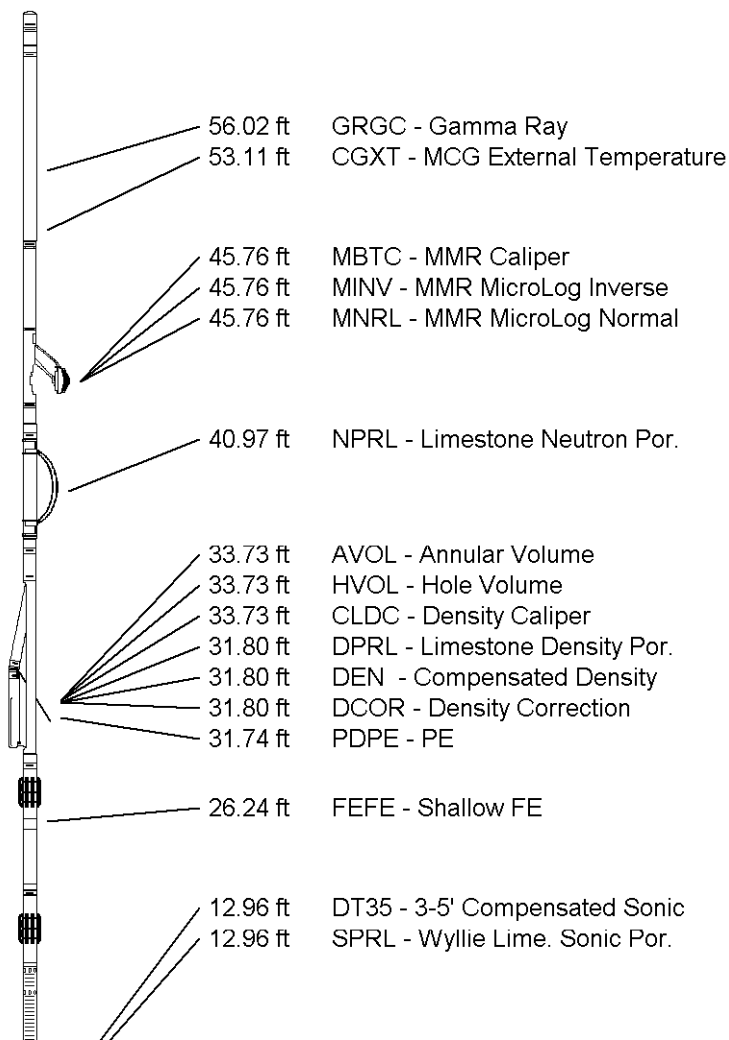
Compact Micro-Resistivity
MMR-A 11 LG: 8.59 ft WT: 81.6 lb OD: 4.88 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

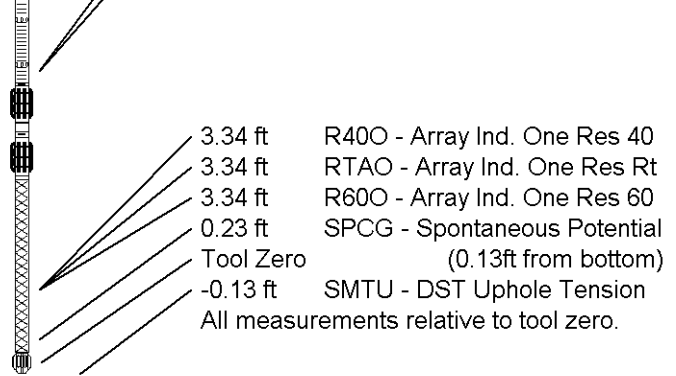
Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in



Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 62.88 ft Weight: 471.8 lb



COMPANY	SHAKESPEARE OIL CO., INC.
WELL	ORTEGA #1-25
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3105.00	feet	First Reading	4855.00	feet
Elevation Drill Floor	3103.00	feet	Depth Driller	4870.00	feet
Elevation Ground Level	3095.00	feet	Depth Logger	4868.00	feet



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