

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

COMPANY

SHAKESPEARE OIL COMPANY, INC.

WELL

JANZEN #1-26

FIELD

WILDCAT

PROVINCE/COUNTY

SCOTT

COUNTRY/STATE

U.S.A. / KANSAS

LOCATION

2000' FSL & 900' FEL

SE/4

SEC	TWP	RGE	Other Services	MPD/MDN
26	16S	34W	MAI/MFE	

API Number

15-171-20909

MML

Permit Number

Permanent Datum G.L., Elevation 3109 feet

Log Measured From KB

Drilling Measured From K.B.

Elevations:	feet
KB	3119.00
DF	3118.00
GL	3109.00

Date

15-OCT-2012

Run Number

ONE

Depth Driller

4870.00

feet

Depth Logger

4867.00

feet

First Reading

4854.00

feet

Last Reading

264.00

feet

Casing Driller

264.00

feet

Casing Logger

264.00

feet

Bit Size

7.875

inches

Hole Fluid Type

CHEMICAL

Density / Viscosity

9.30 lb/USg

58.00 CP

PH / Fluid Loss

10.00

9.60 ml/30Min

Sample Source

FLOWLINE

Rm @ Measured Temp

0.51 @ 87.0

ohm-m

Rmf @ Measured Temp

0.41 @ 87.0

ohm-m

Rmc @ Measured Temp

0.61 @ 87.0

ohm-m

Source Rmf / Rmc

CALC

CALC

Rm @ BHT

0.40 @ 111.0

ohm-m

Time Since Circulation

4 HOURS

Max Recorded Temp

111.00

deg F

Equipment Name

COMPACT

Equipment / Base

13096

LIB

Recorded By

LYNN SCOTT

Witnessed By

TIM PRIEST

S O # / JOB#

3537891

LB12-275

BOREHOLE RECORD

Last Edited: 15-OCT-2012 08:51

Bit Size
inches

7.875

Depth From
feet

264.00

Depth To
feet

4867.00

CASING RECORD

Type

Size
inches

8.625

Depth From
feet

0.00

Shoe Depth
feet

264.00

Weight
pounds/ft

24.00

REMARKS

Tools Used: MPD, MCG, MDN, MFE, MAI, MSS, MML

Hardware: MPD: 8 inch profile plate used. MAI, MFE, and MSS: 0.5 Inch standoffs used. MDN: Dual Bowspring used.

2.71 G/CC Limestone density matrix used to calculate porosity.

Sonic porosity calculated using 47.5 usec/ft Limestone scale.

Borehole rugosity, tight pulls, and washouts will affect data quality.

All intervals logged and scaled per customer's request.

Annular volume with 5.5 inch production casing from TD to the top of detail = 227 cubic feet

Total hole volume from TD to Surface casing= 2294 cubic feet

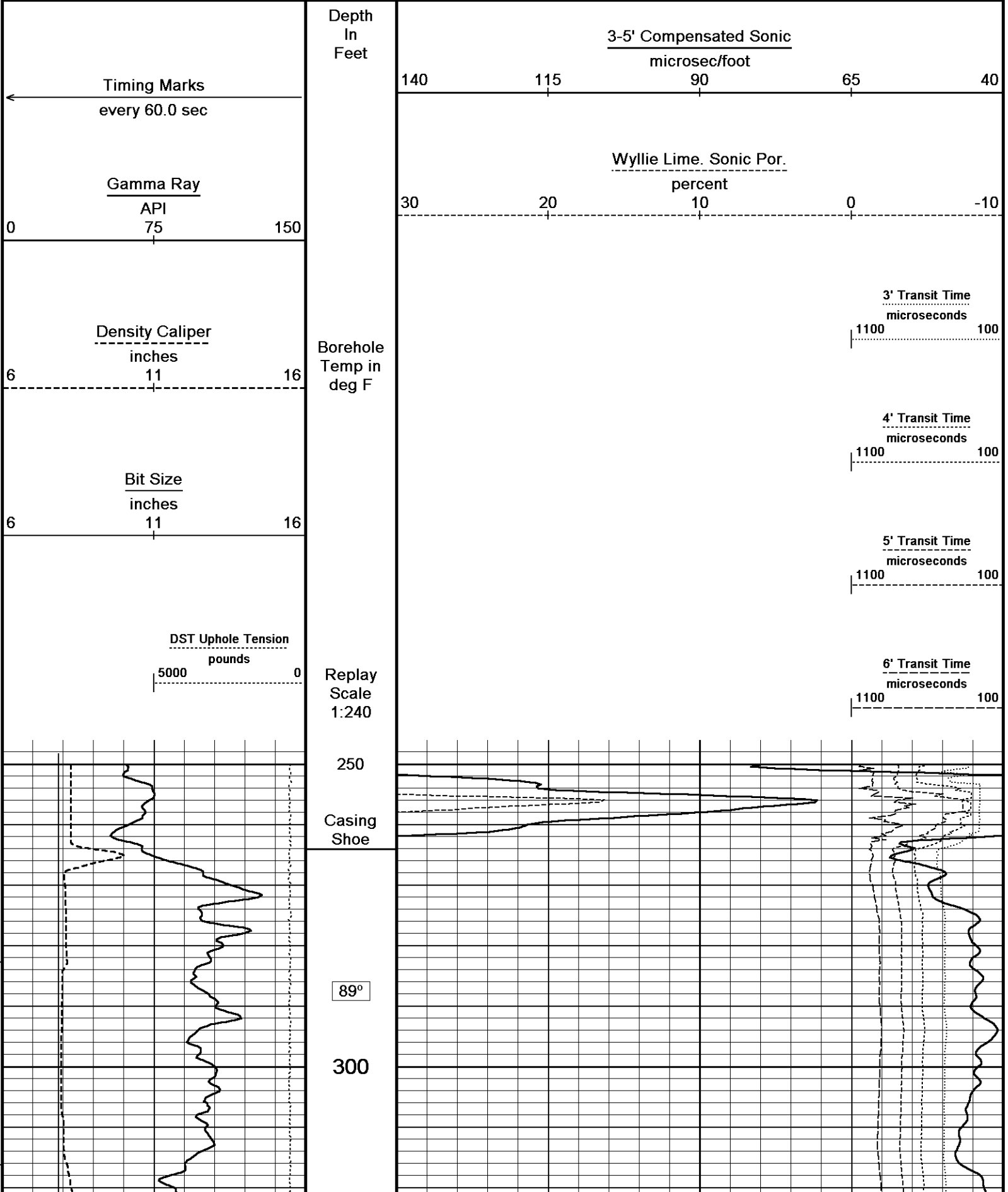
Service order #3537891

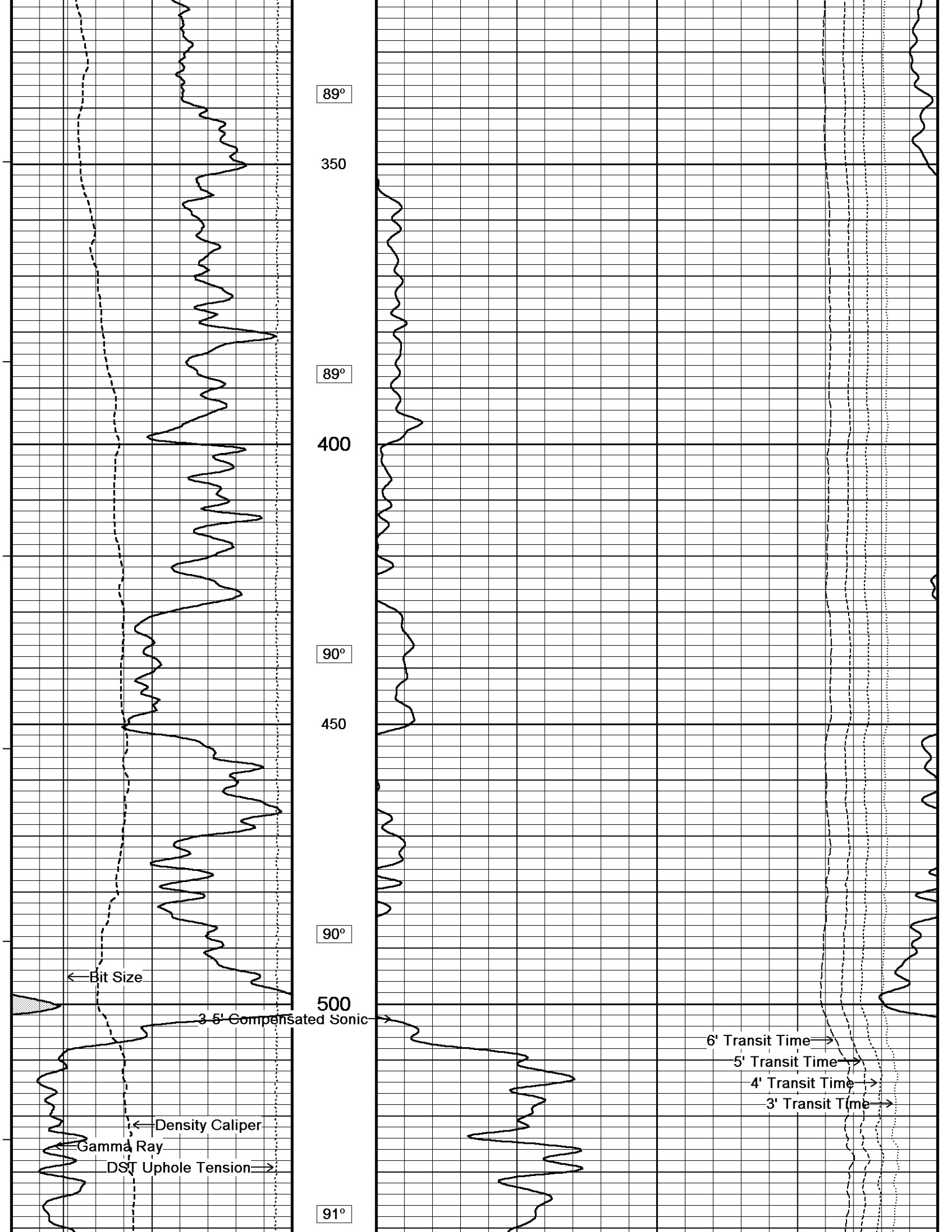
Rig: HD #2

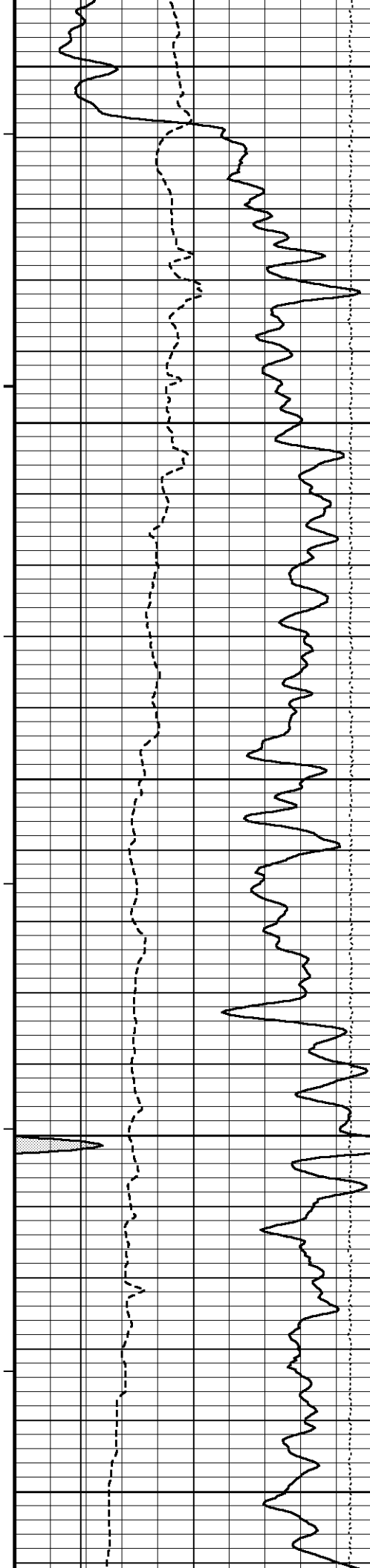
Engineer: L. Scott

Operator(s): B. Johnson

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.







550

91°

600

91°

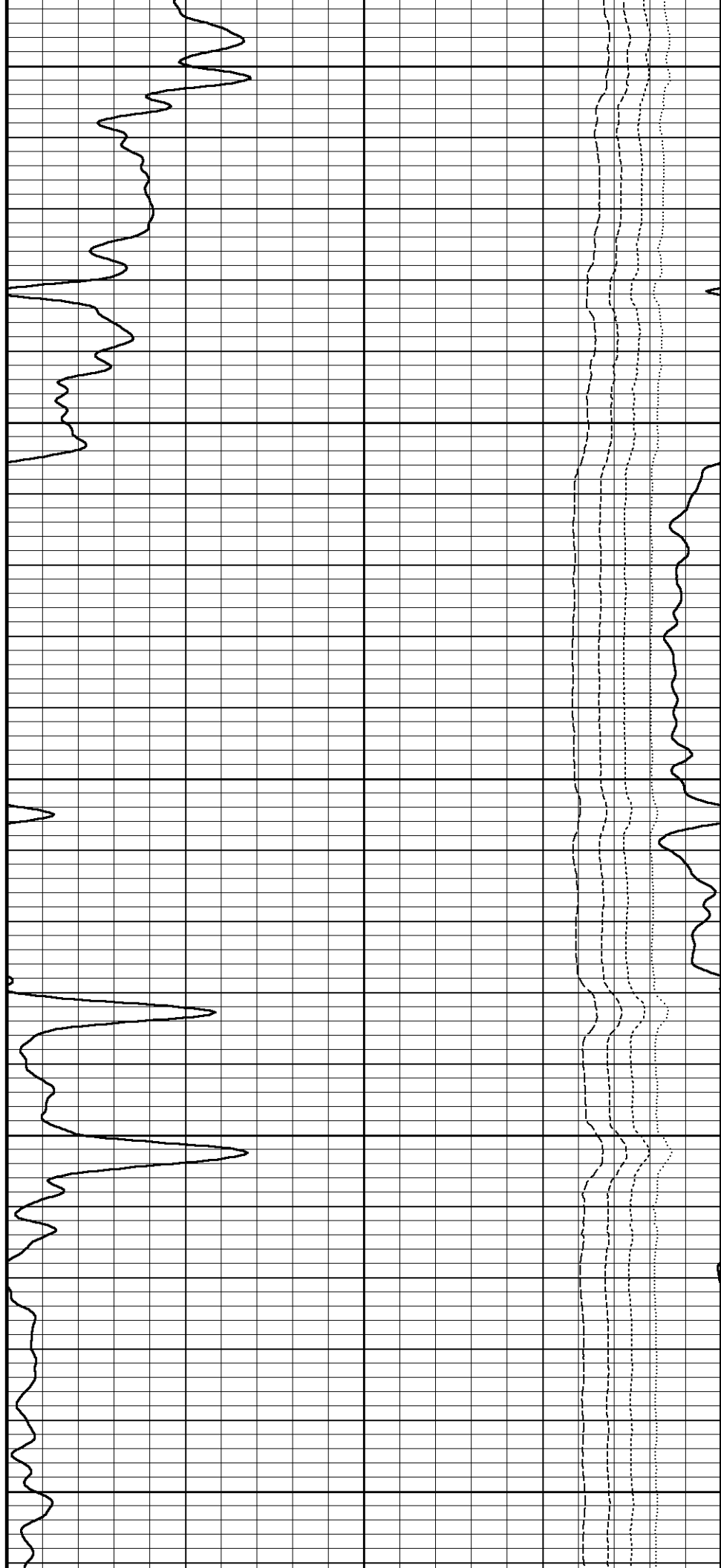
650

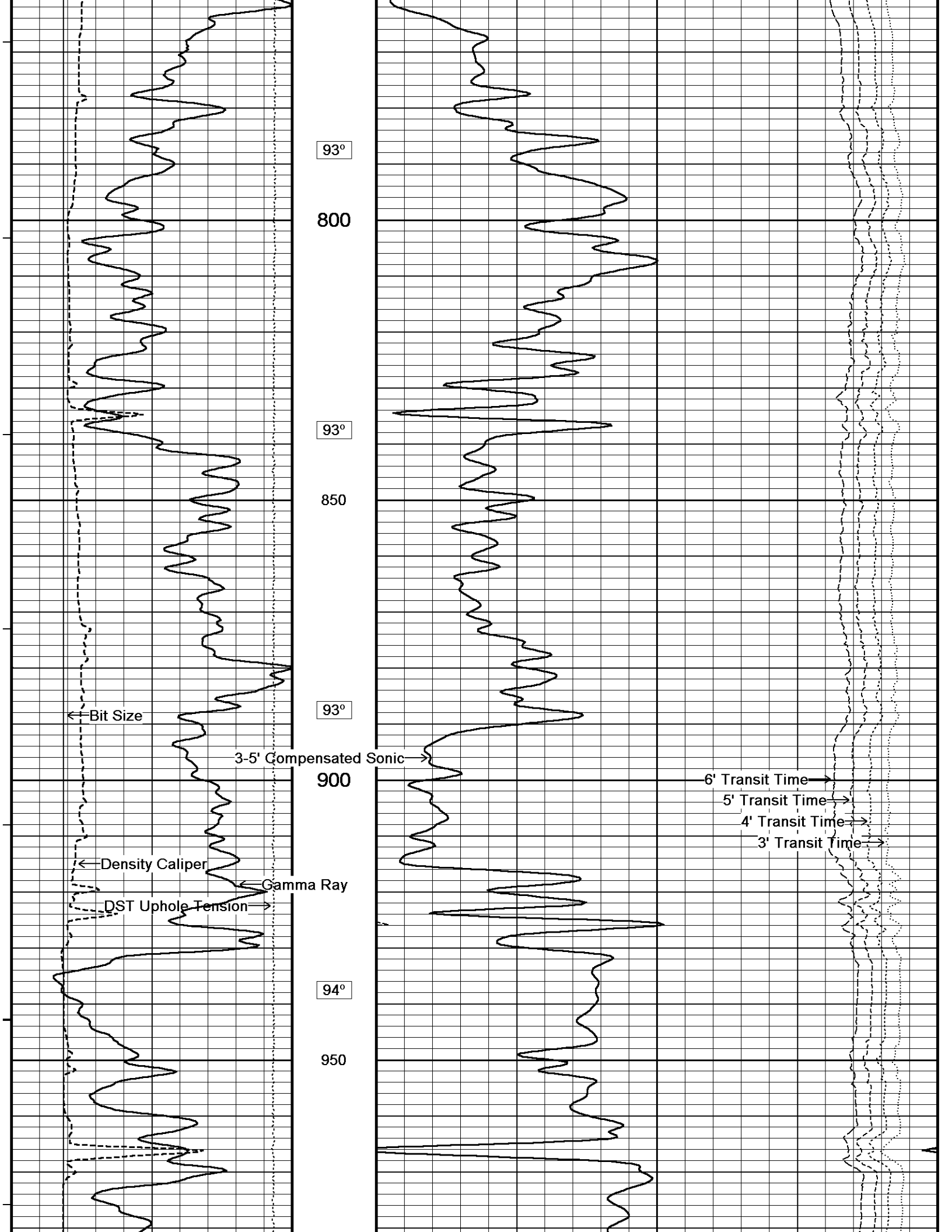
92°

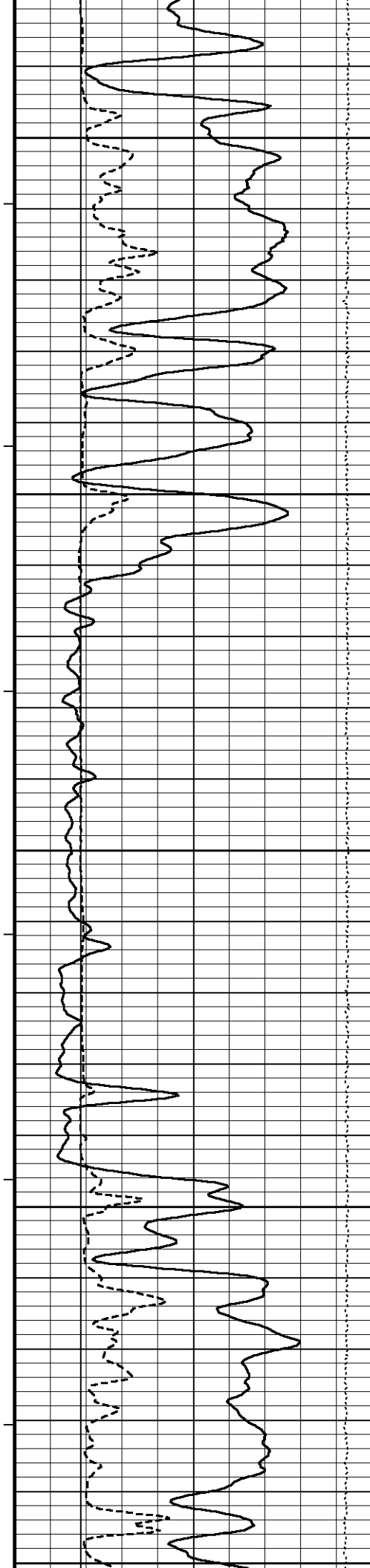
700

93°

750







94°

1000

94°

1050

94°

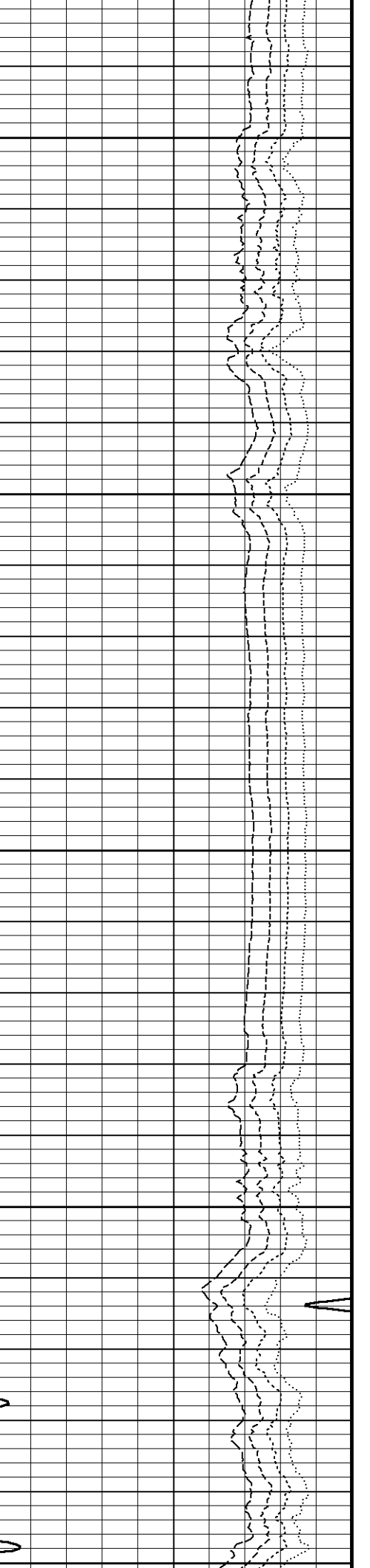
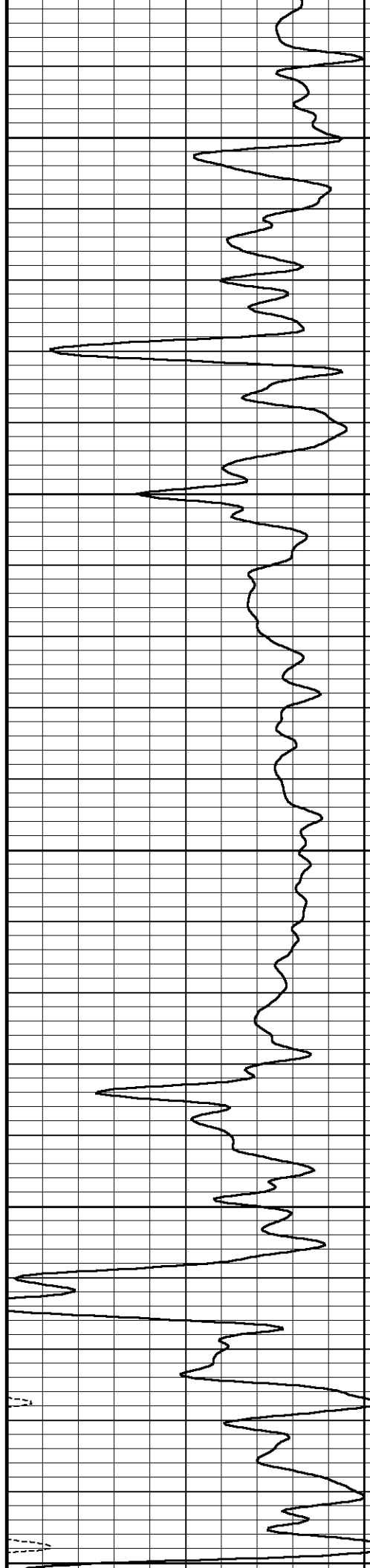
1100

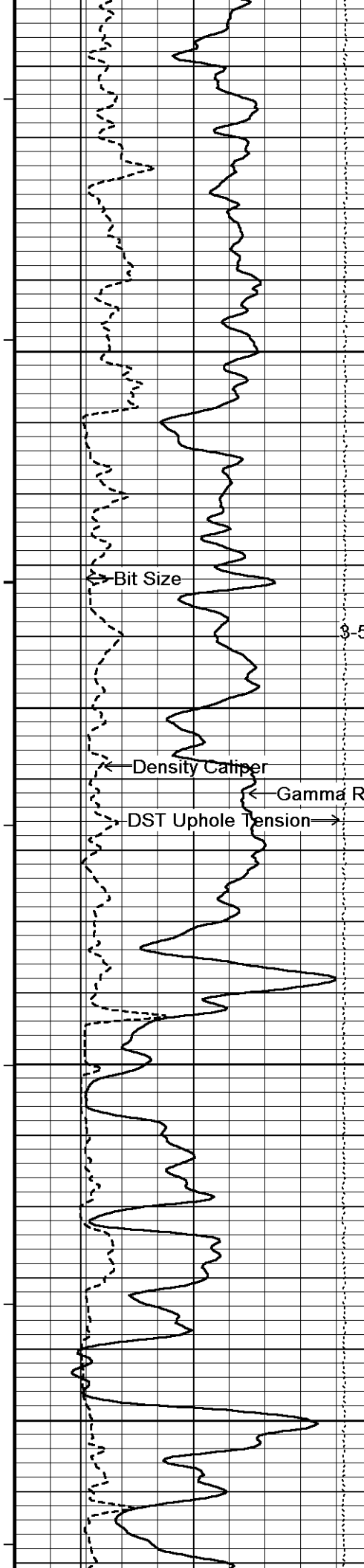
95°

1150

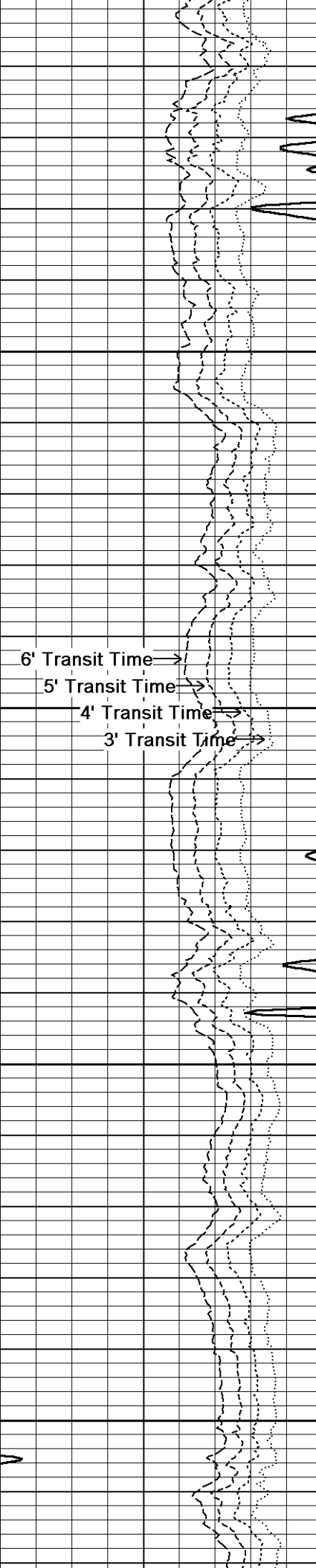
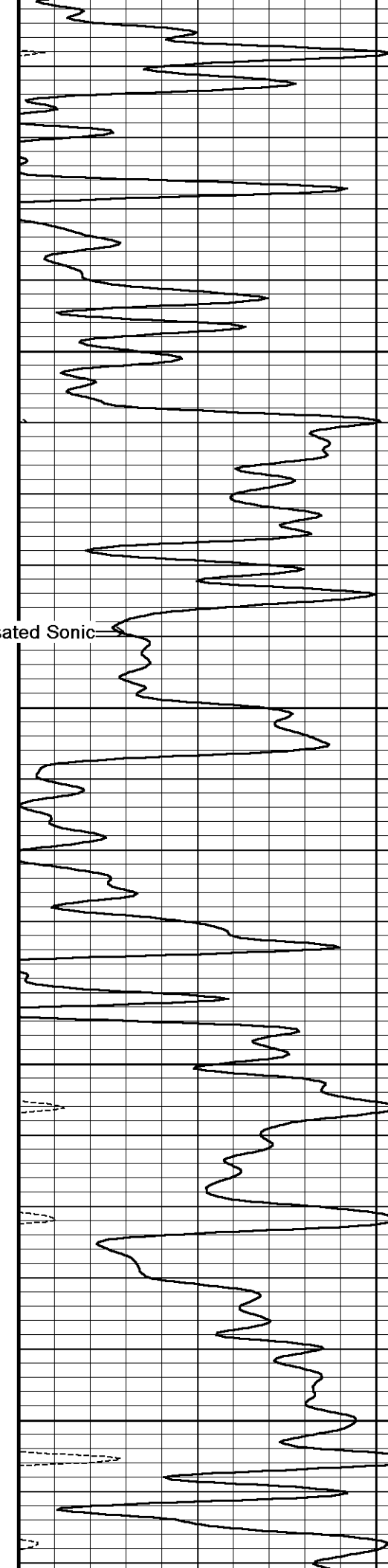
95°

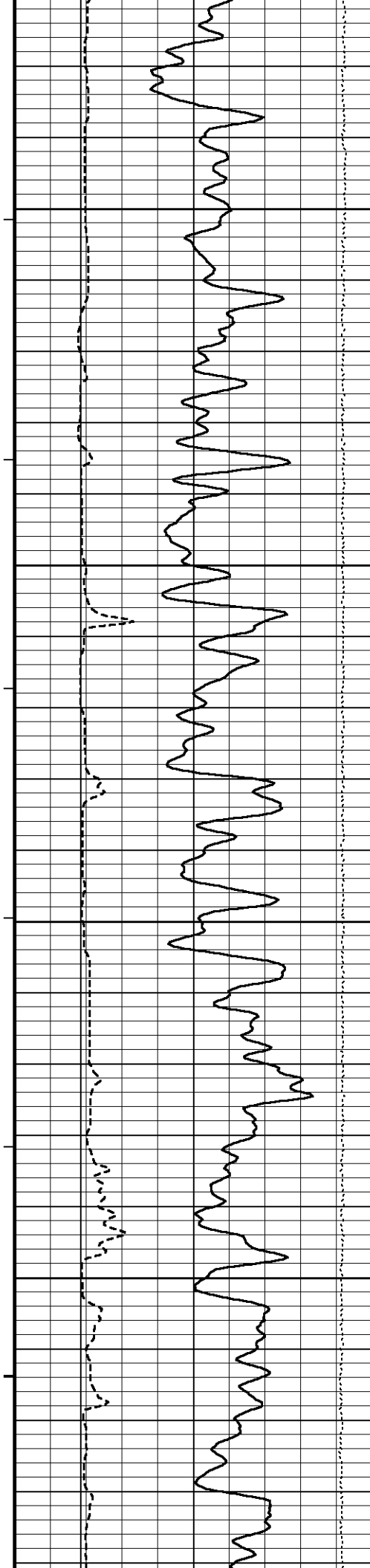
1200





1280
96°
1250
96°
1300
96°
1350
96°
1400





96°

1450

97°

1500

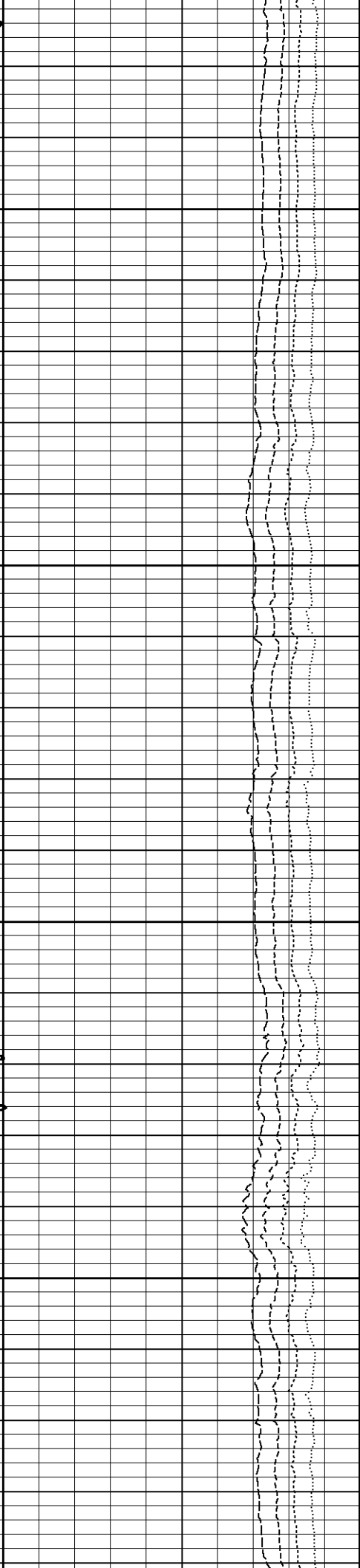
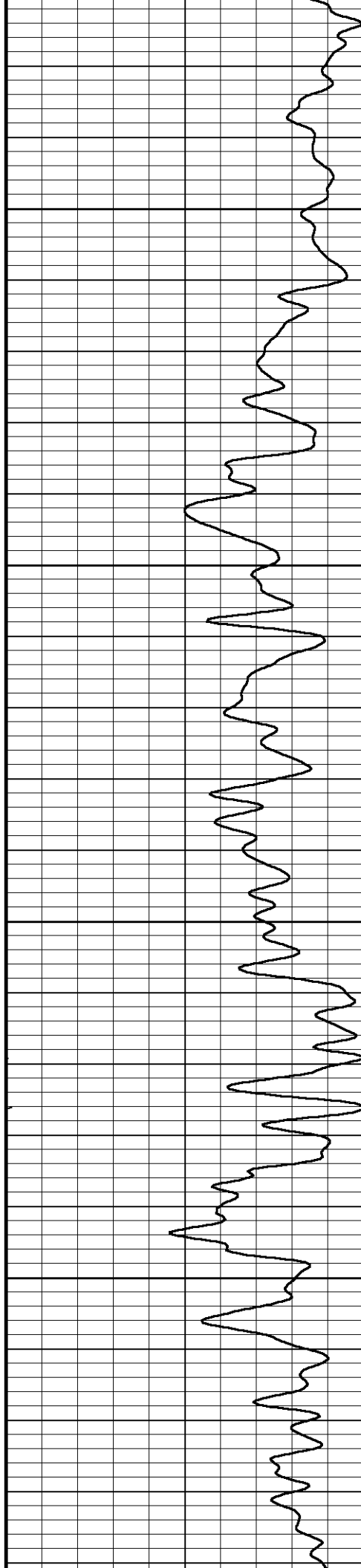
97°

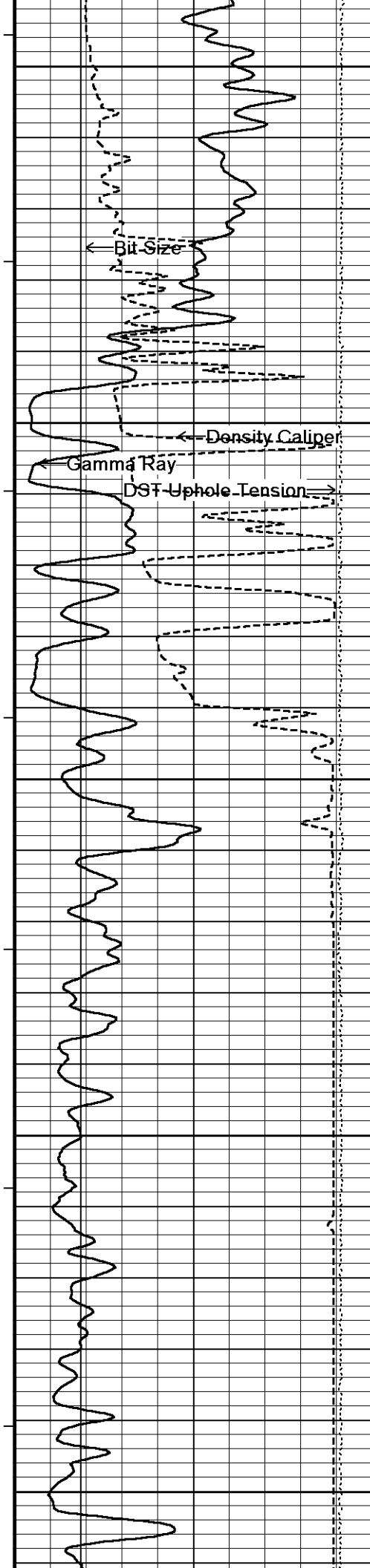
1550

97°

1600

97°





1650

96°

1700

96°

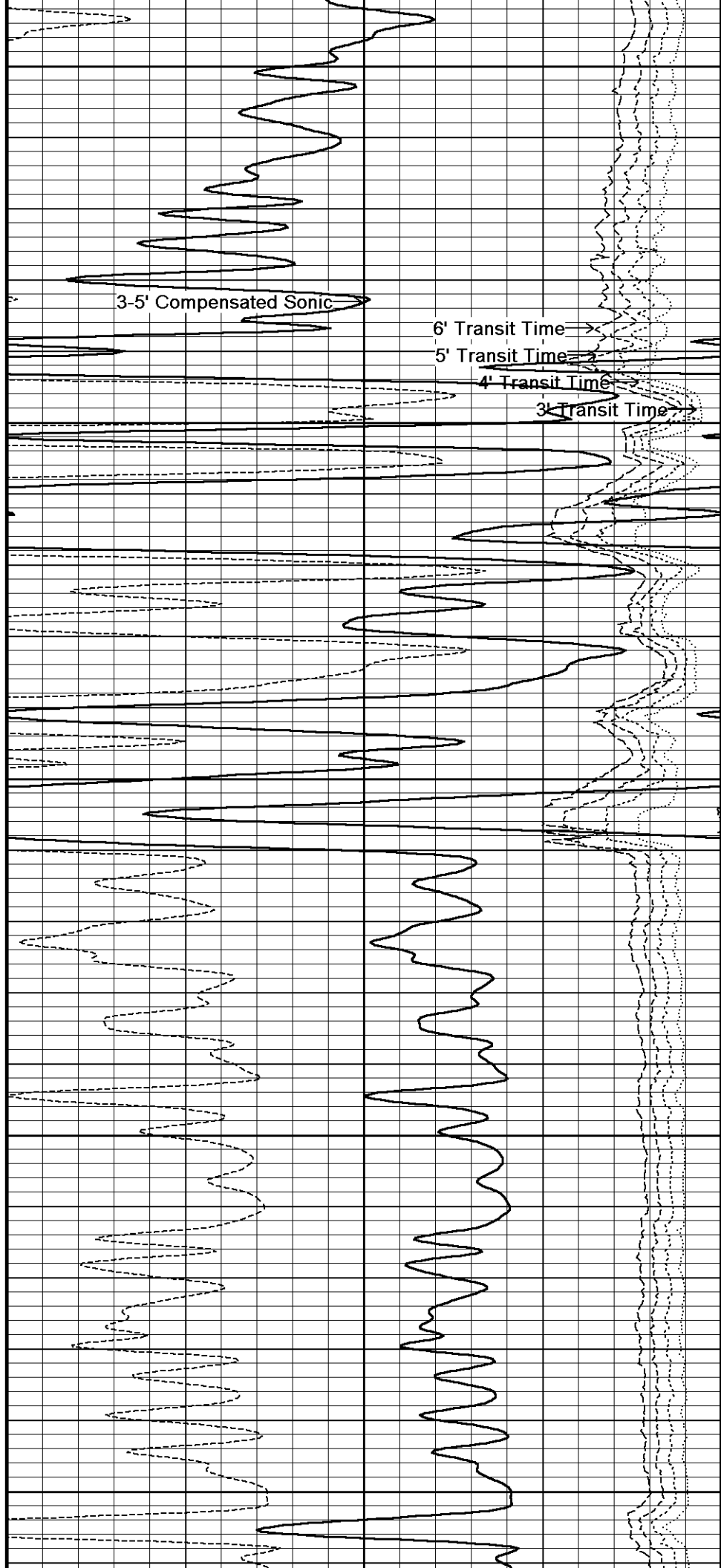
1750

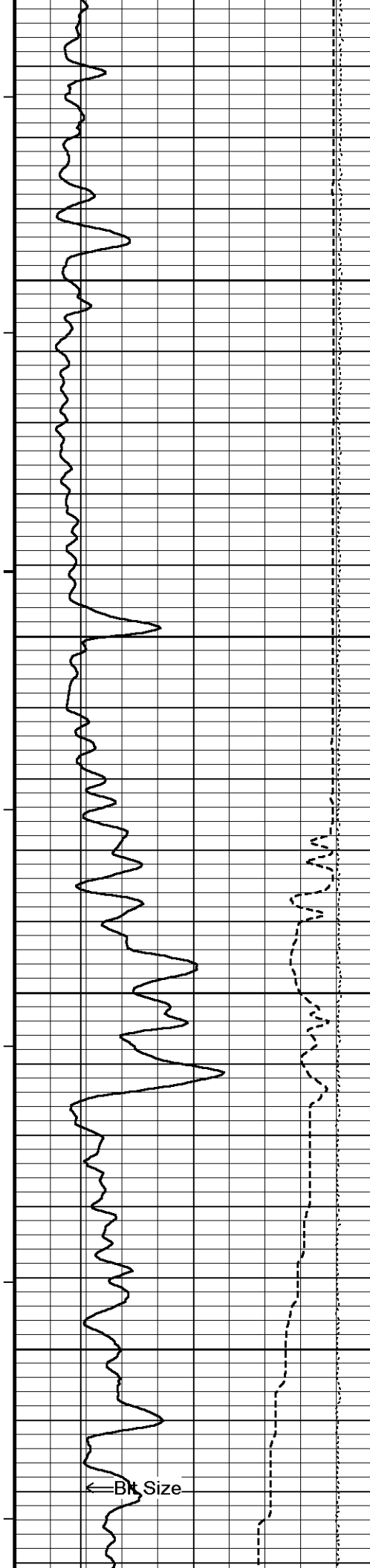
96°

1800

96°

1850





97°

1900

97°

1950

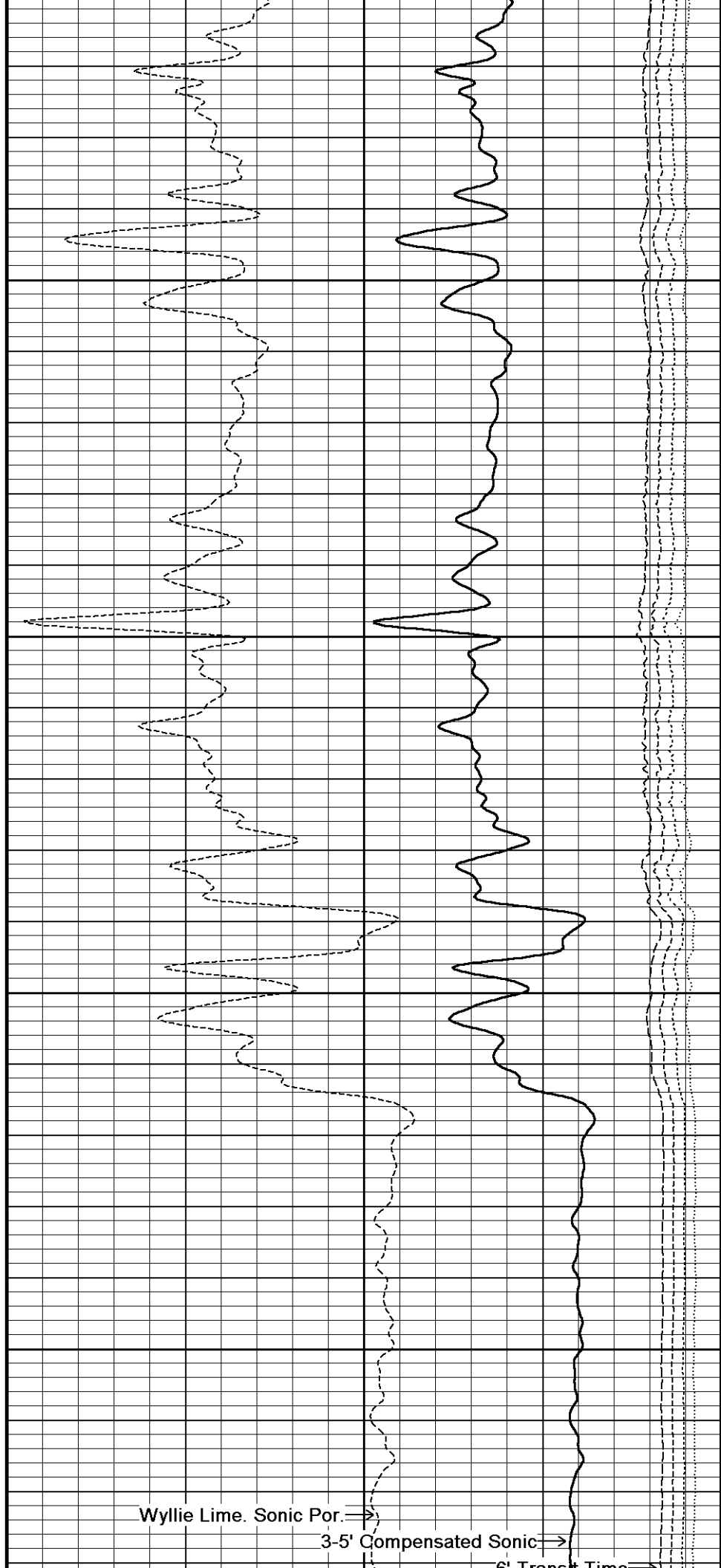
97°

2000

97°

2050

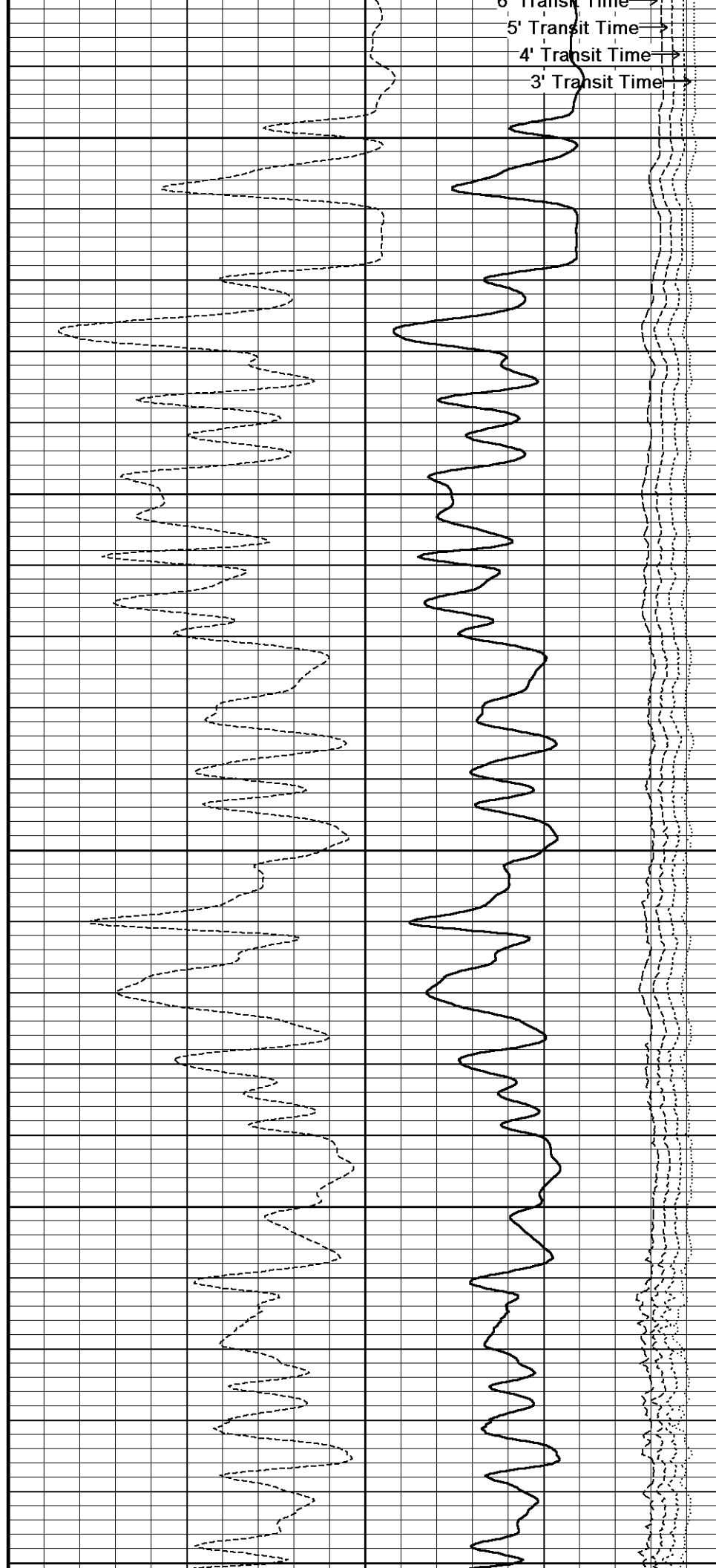
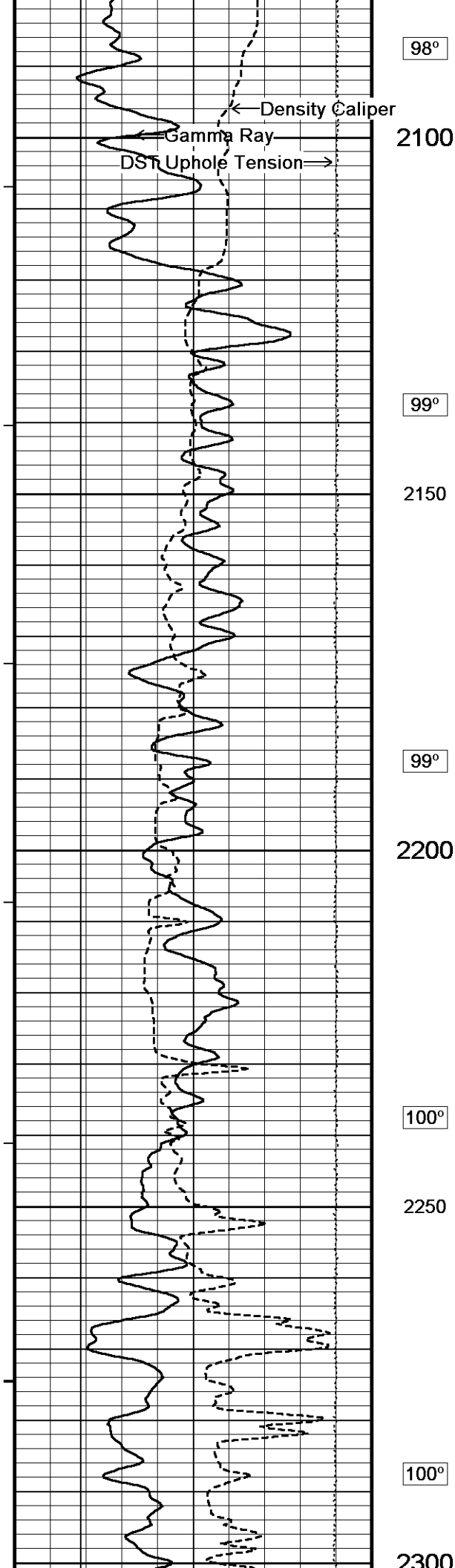
← Bit Size

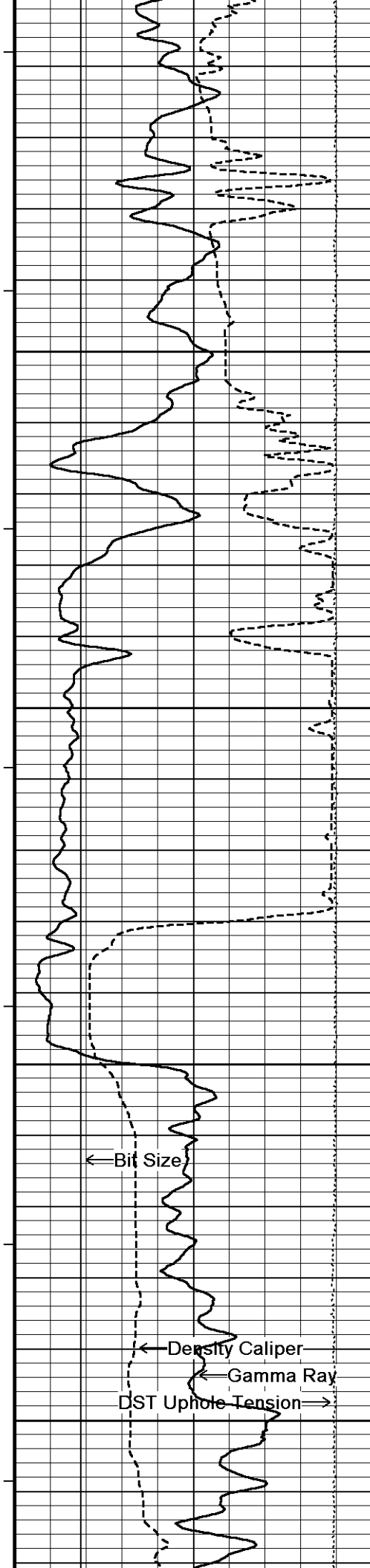


Wyllie Lime. Sonic Por. →

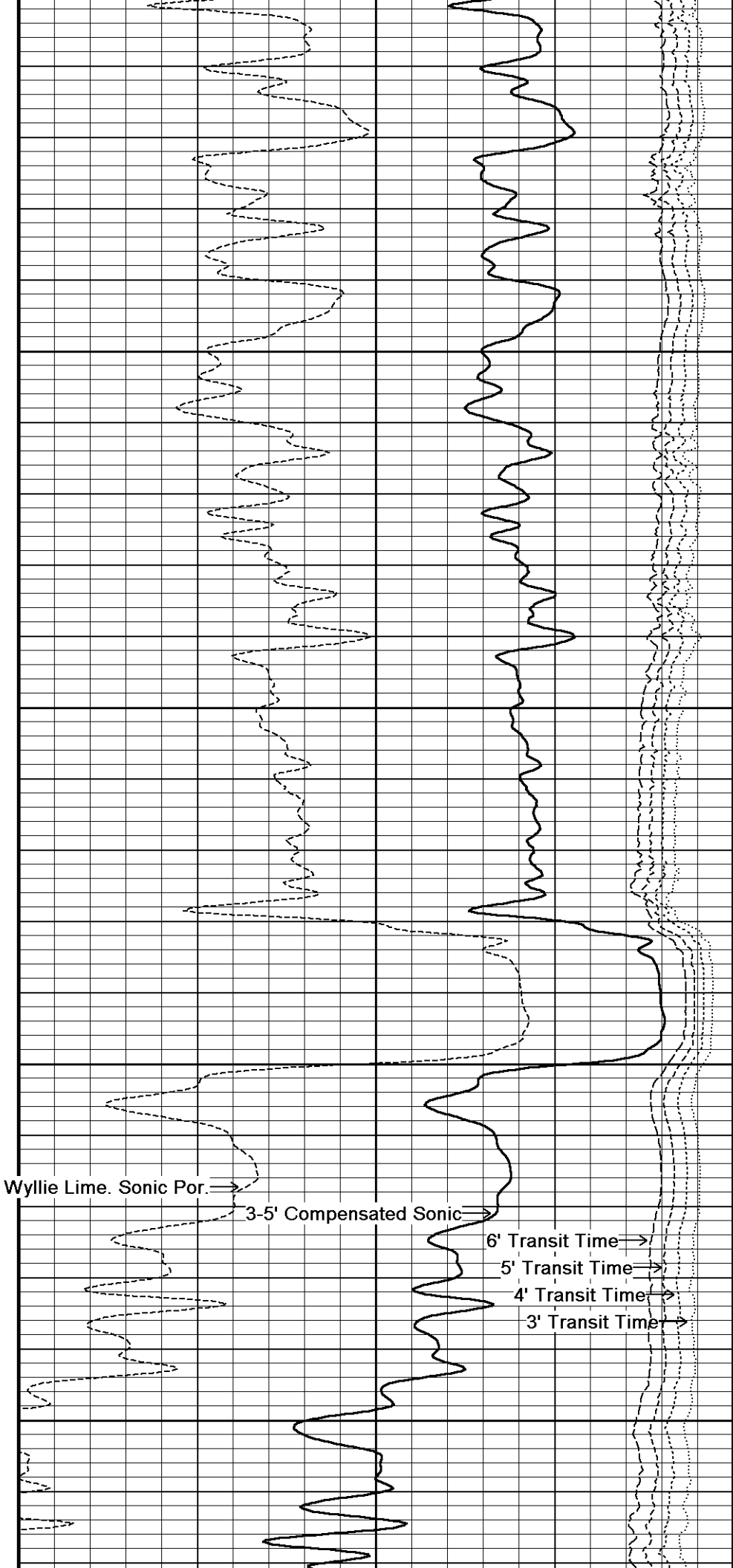
3-5' Compensated Sonic →

6' Transit Time →





2300
101°
2350
101°
2400
101°
2450
101°
2500



Wyllie Lime. Sonic Por. →

3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

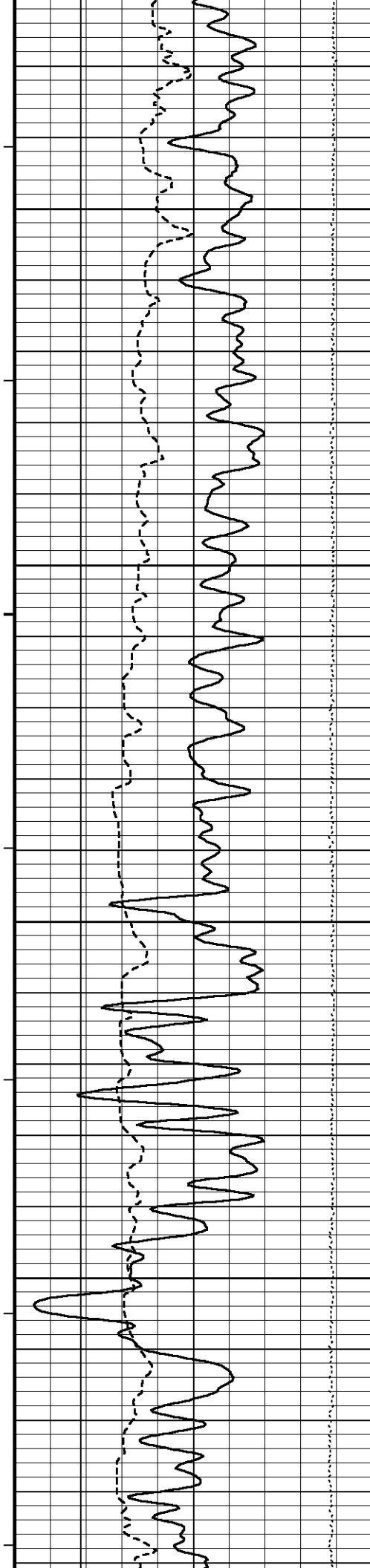
3' Transit Time →

← Bit Size

← Density Caliper

← Gamma Ray

DST Uphole Tension →



101°

2550

101°

2600

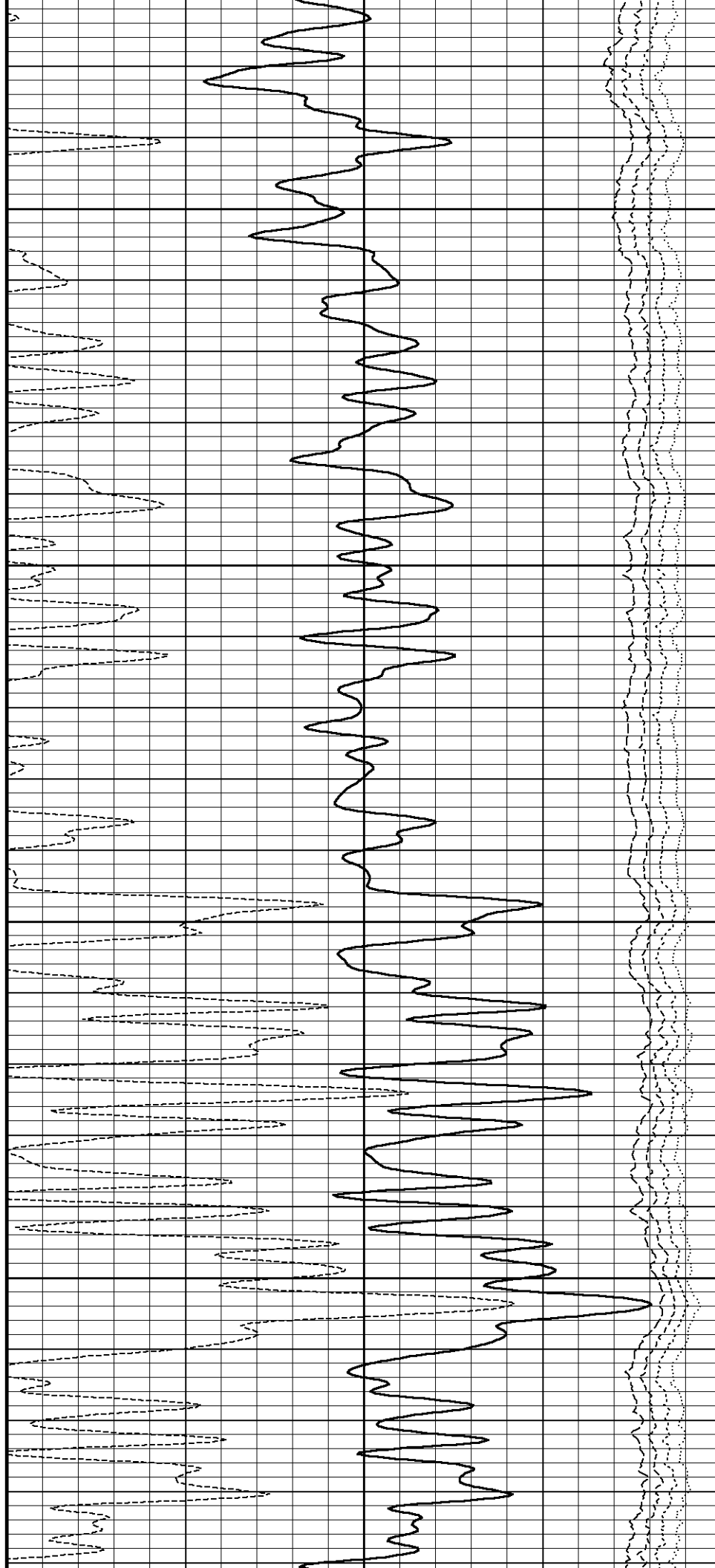
101°

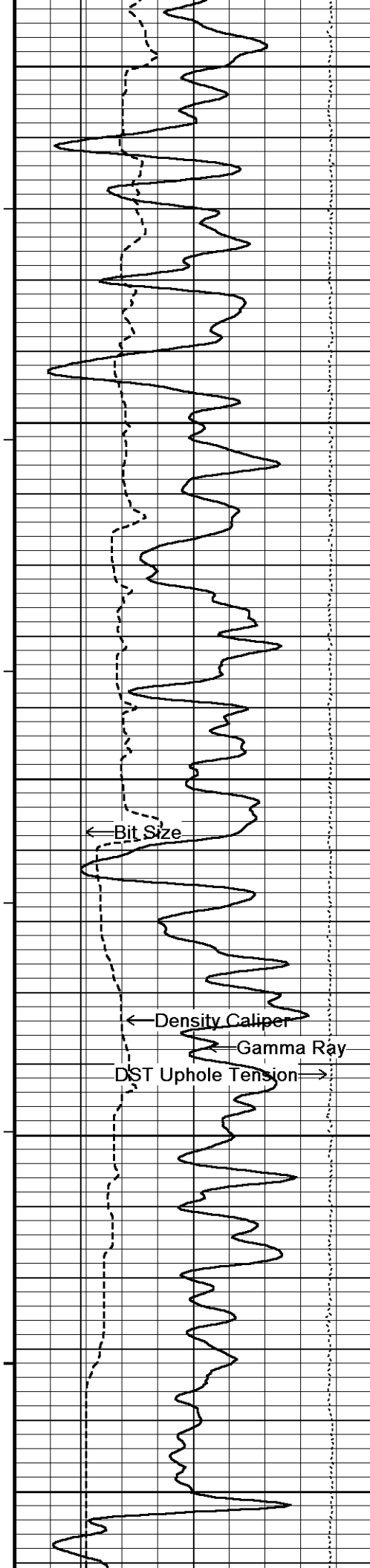
2650

102°

2700

102°





2750

102°

2800

102°

2850

← Bit Size

← Density Caliper

← Gamma Ray

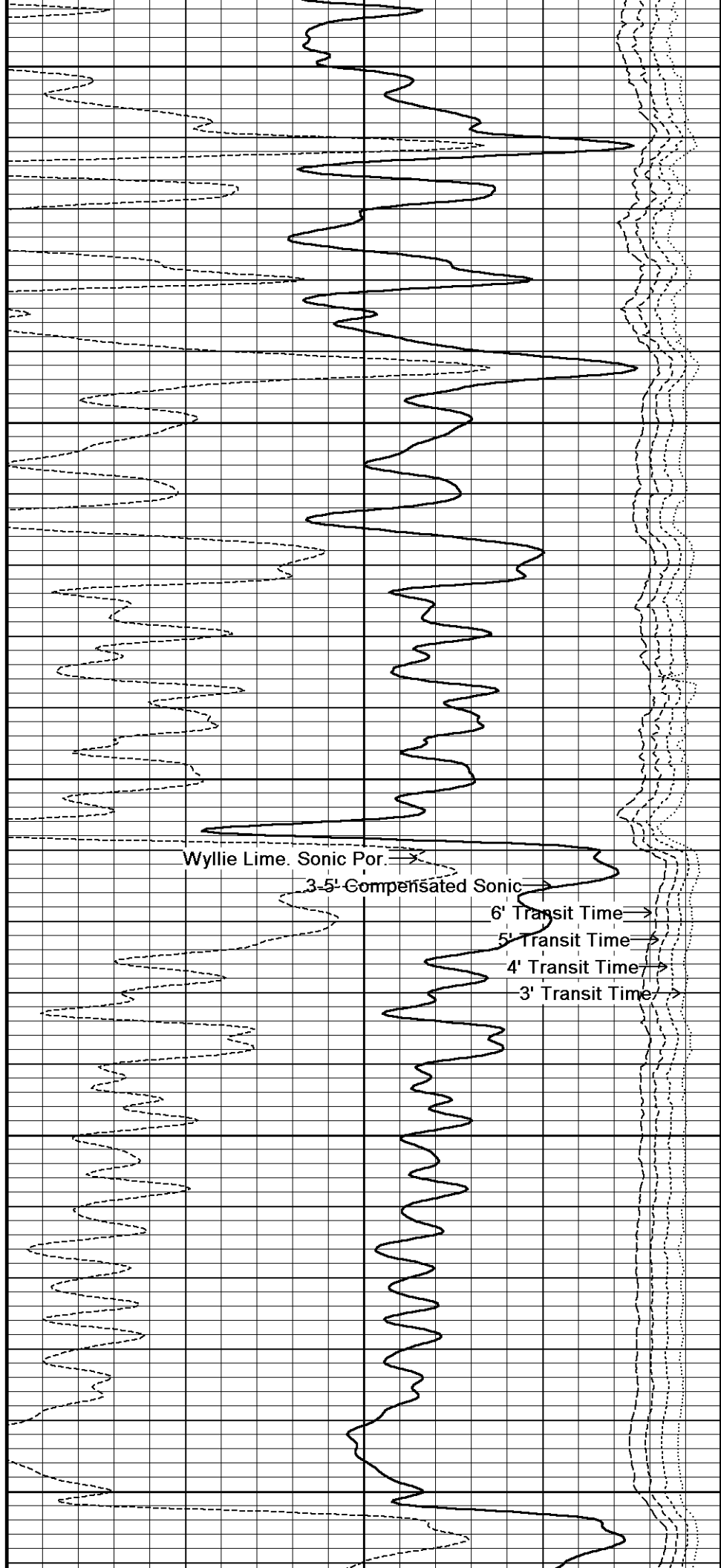
DST Uphole Tension →

102°

2900

102°

2950



Wyllie Lime. Sonic Por. →

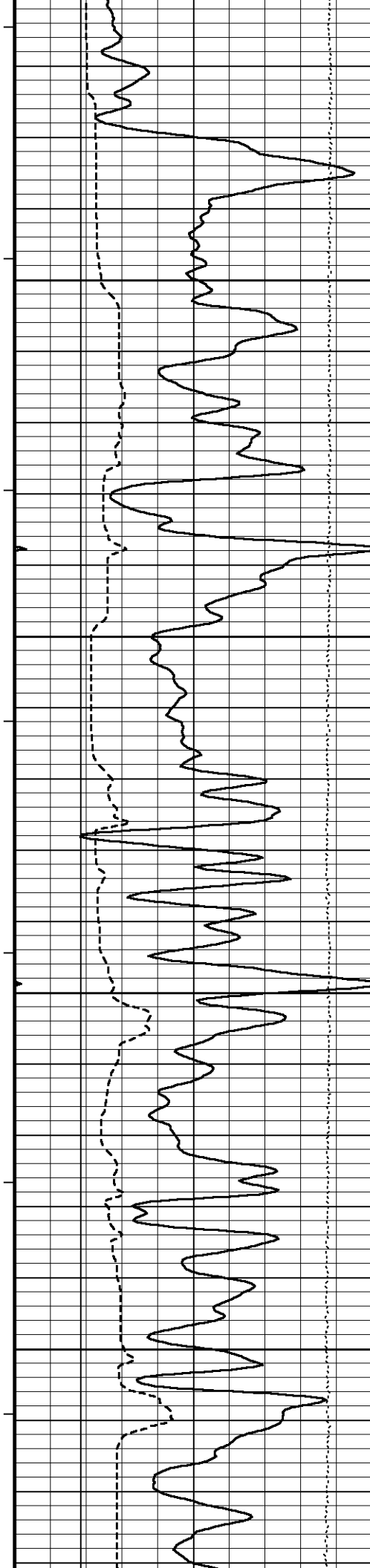
3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →



103°

3000

103°

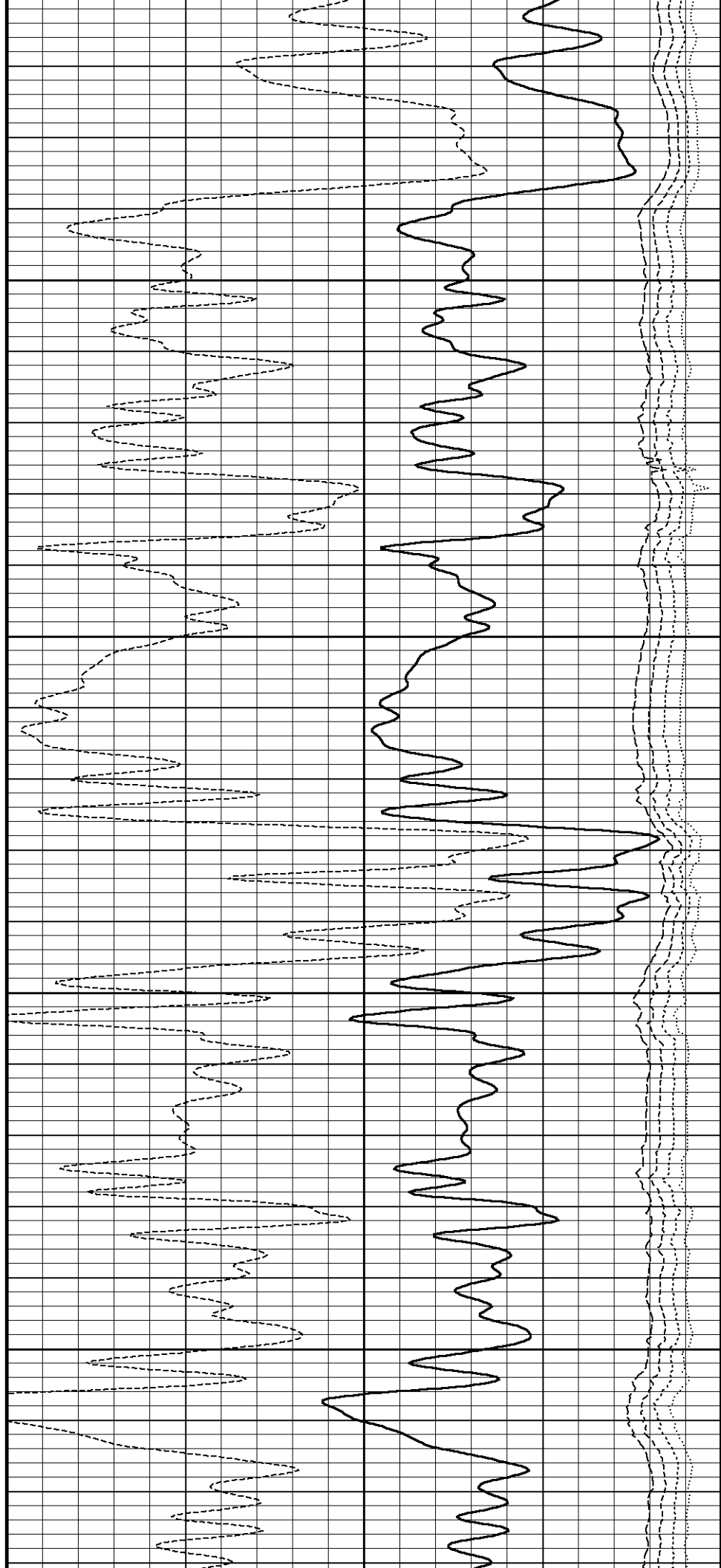
3050

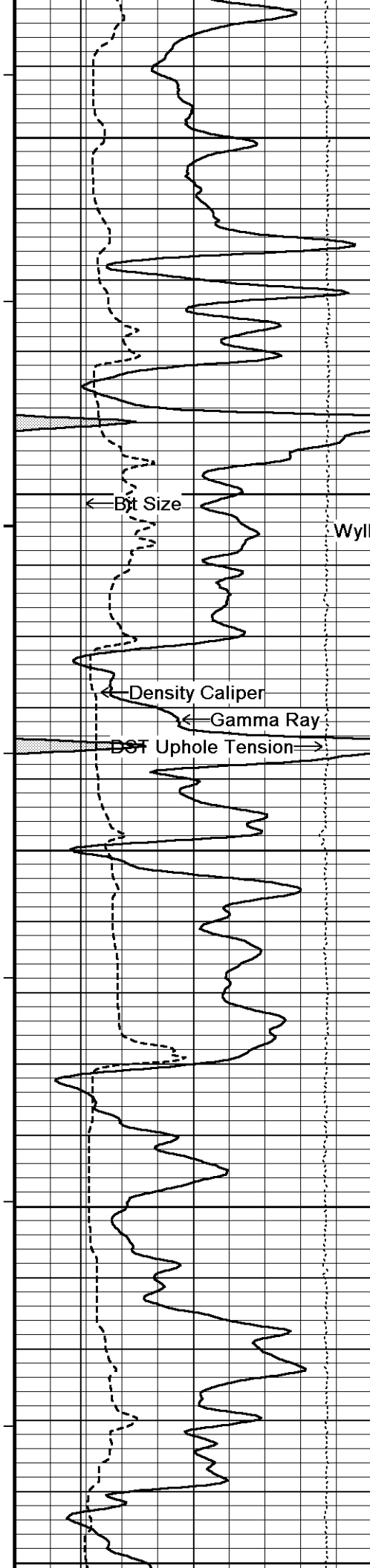
103°

3100

103°

3150





104°

3200

104°

3250

← Bit Size

Wyllie Lime. Sonic Por. →

← Density Caliper

← Gamma Ray

← DFT Uphole Tension →

104°

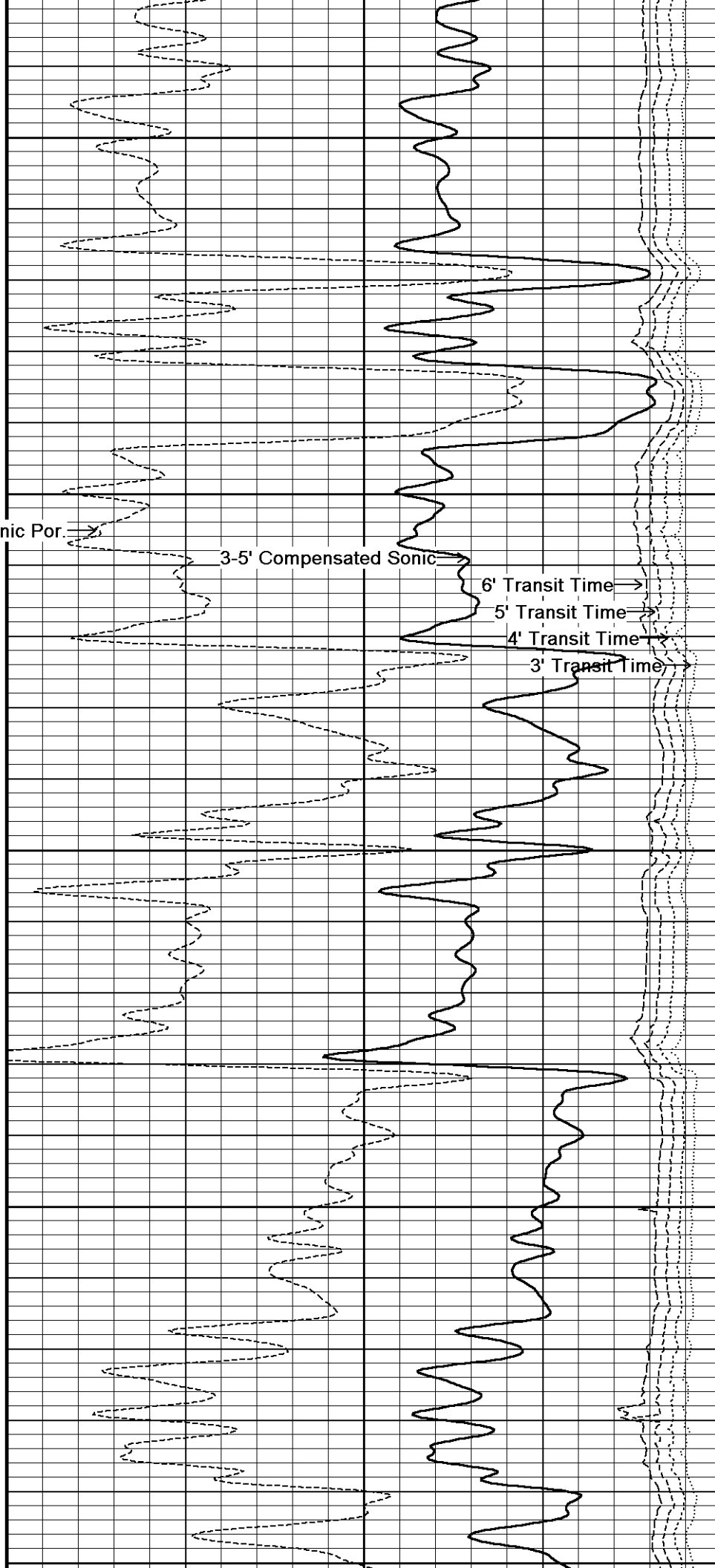
3300

104°

3350

105°

3400



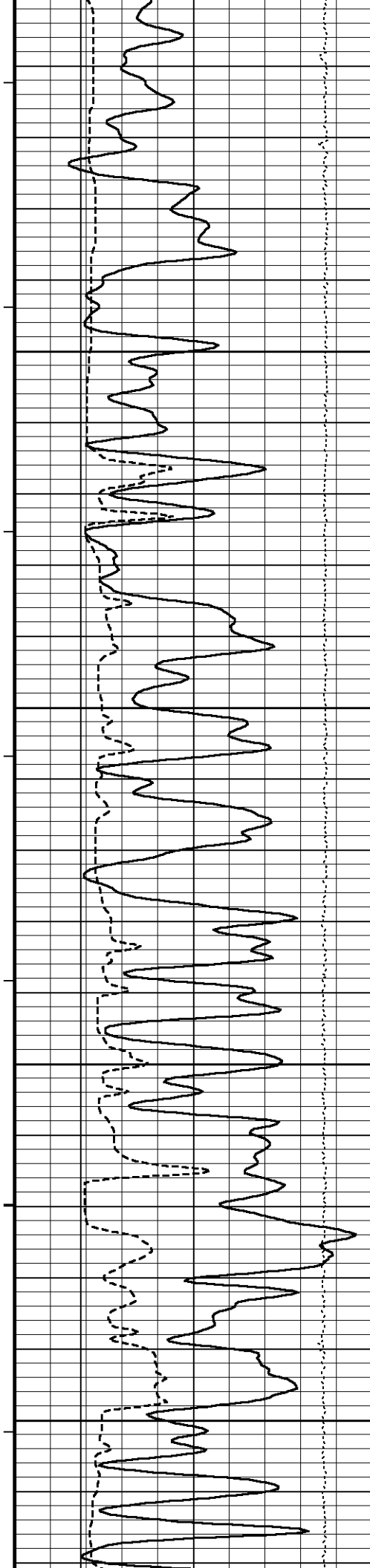
3-5' Compensated Sonic

6' Transit Time →

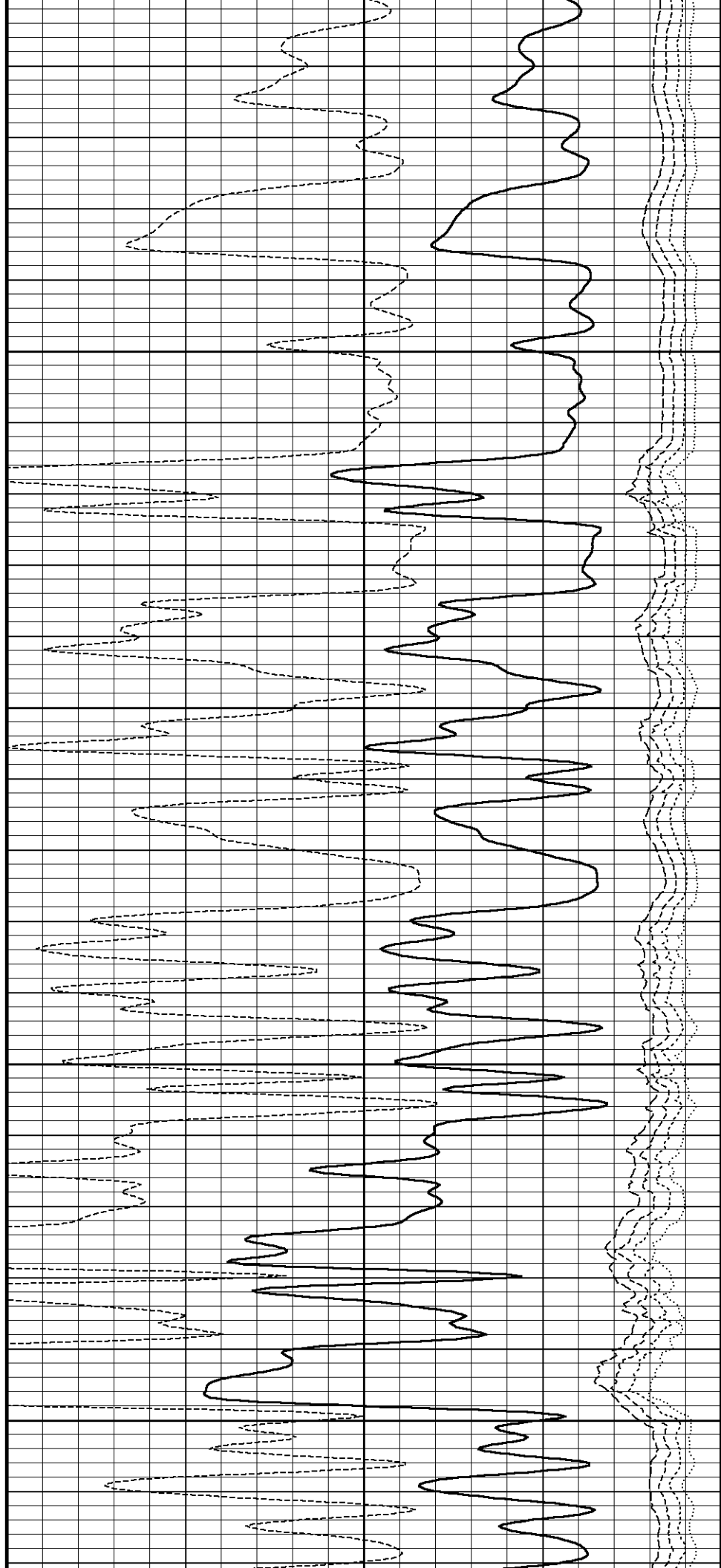
5' Transit Time →

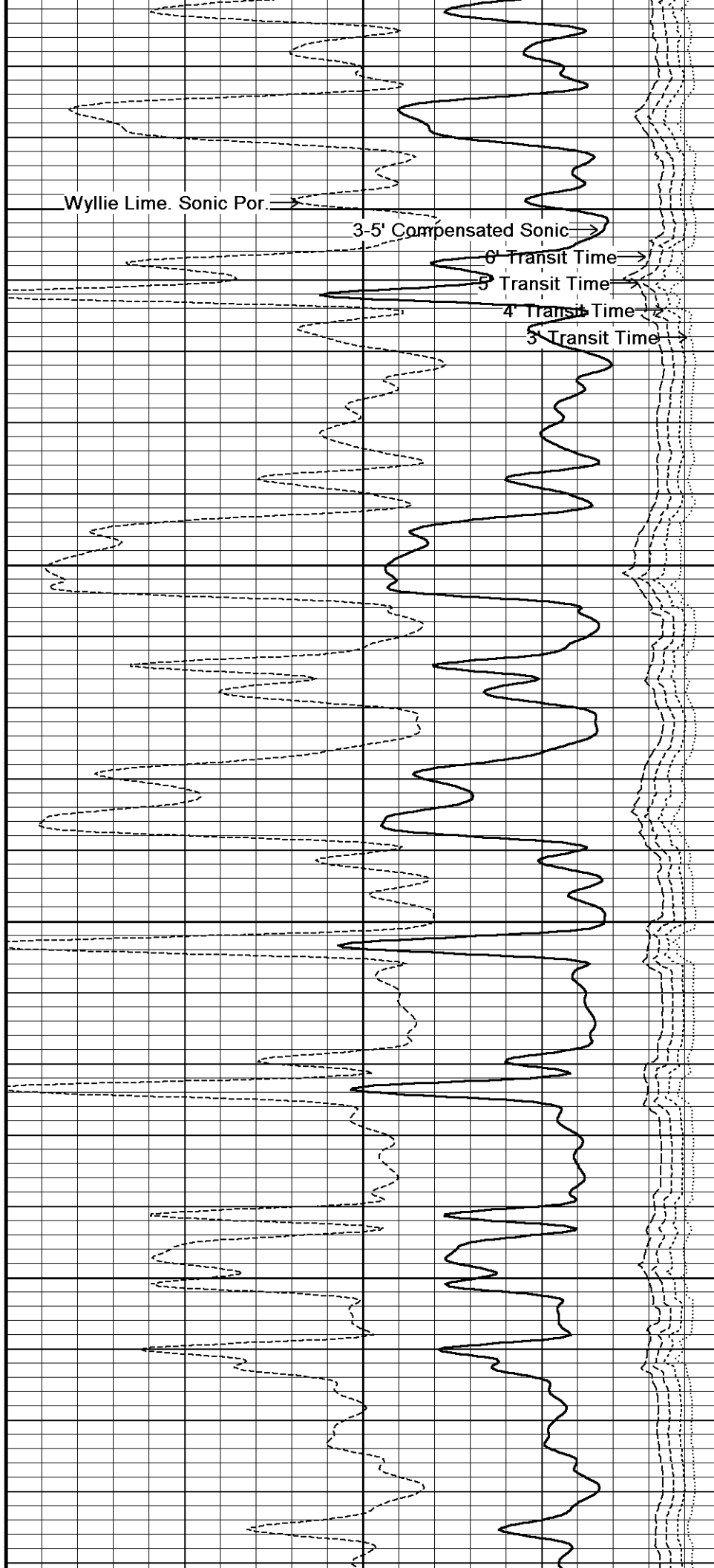
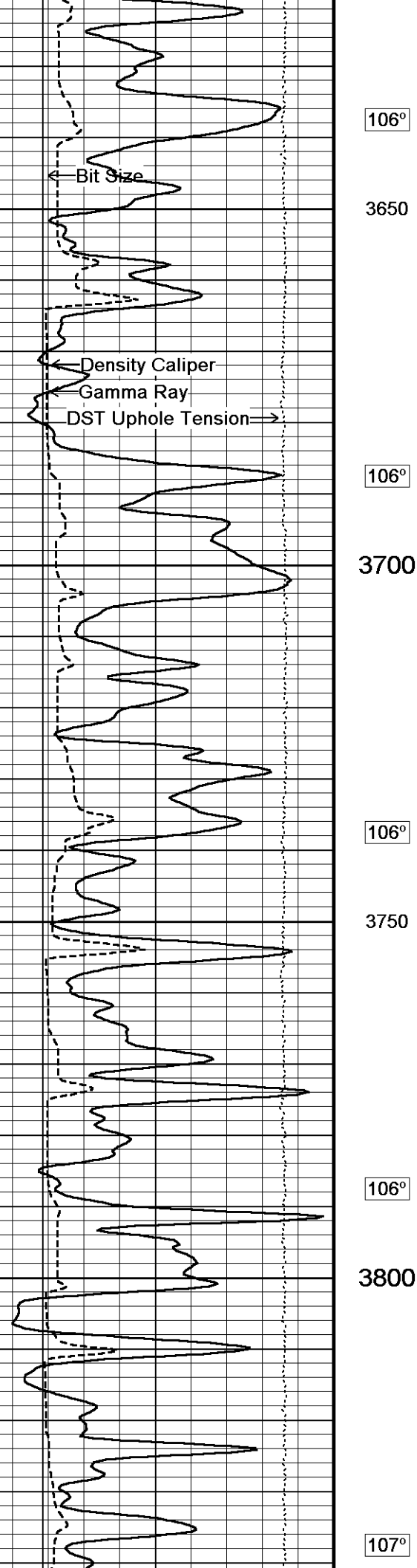
4' Transit Time →

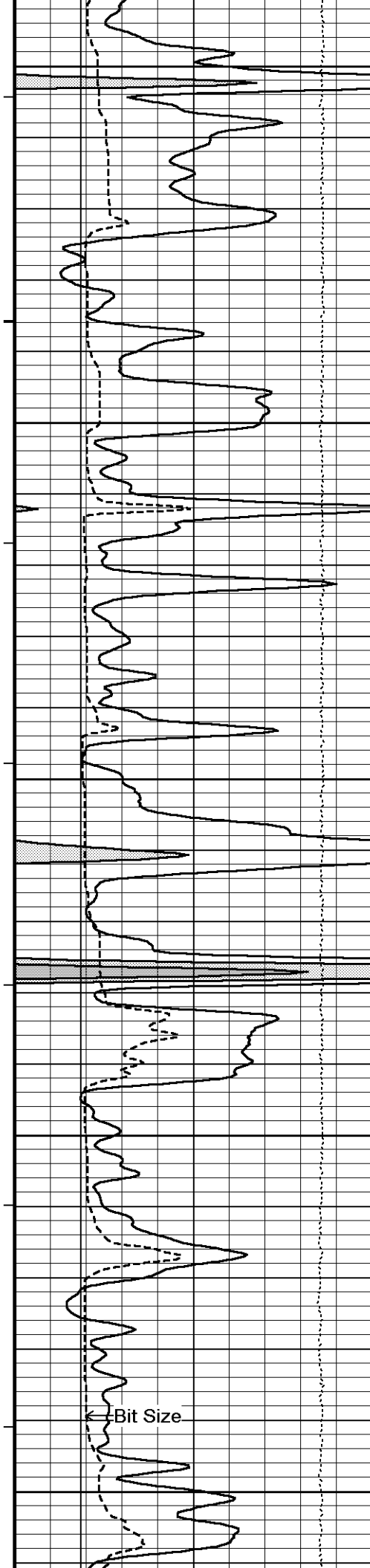
3' Transit Time →



3450
105°
3500
105°
3550
106°
3600







3850

107°

3900

107°

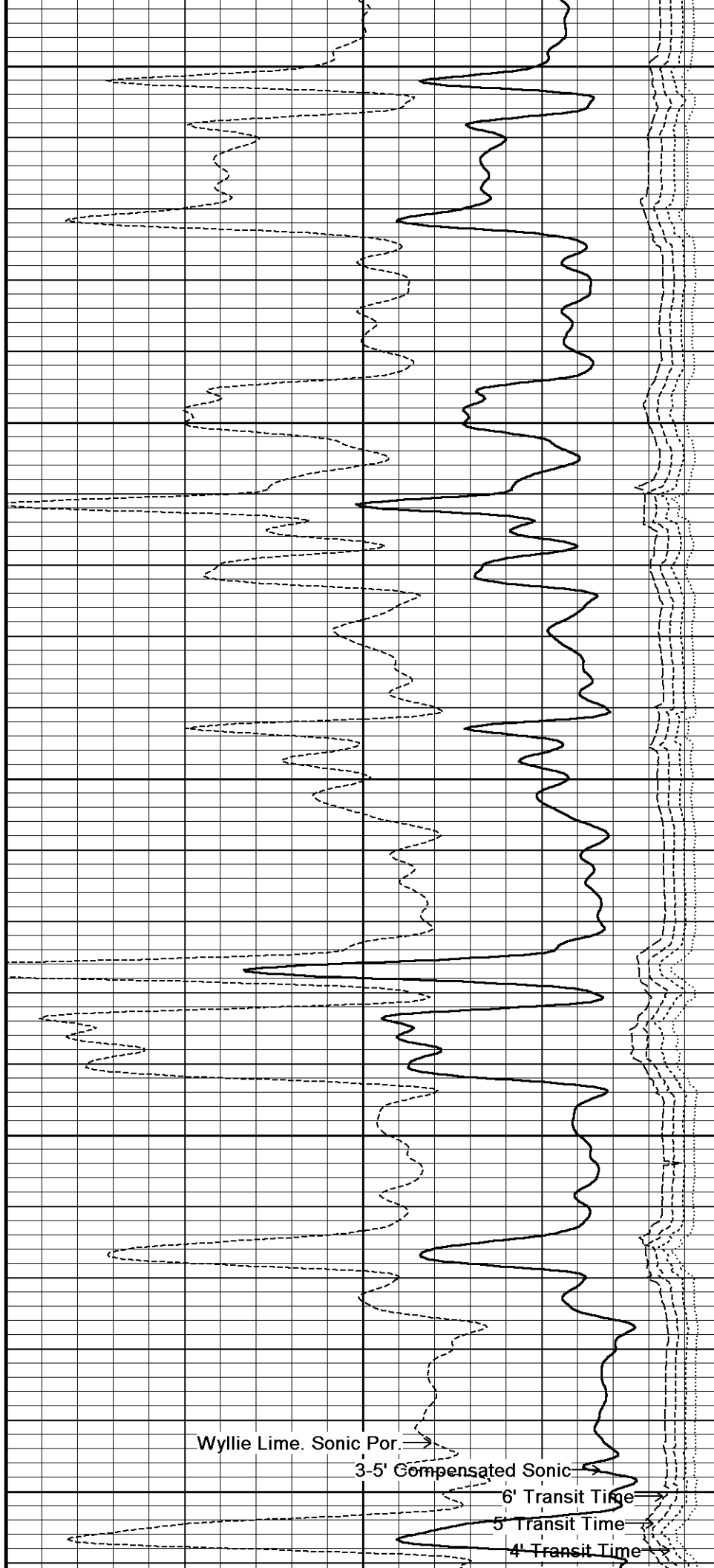
3950

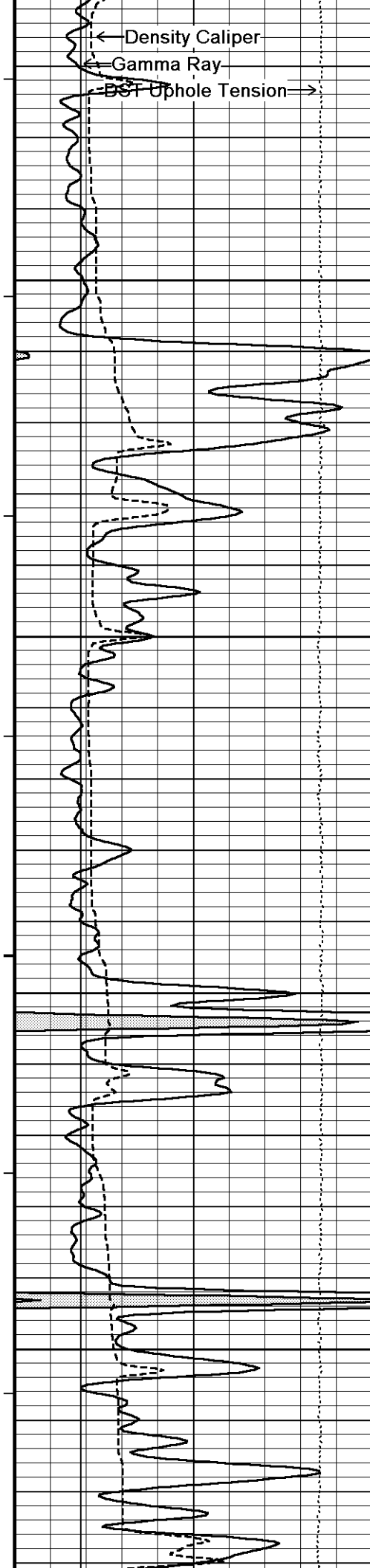
108°

4000

108°

4050





108°

4100

108°

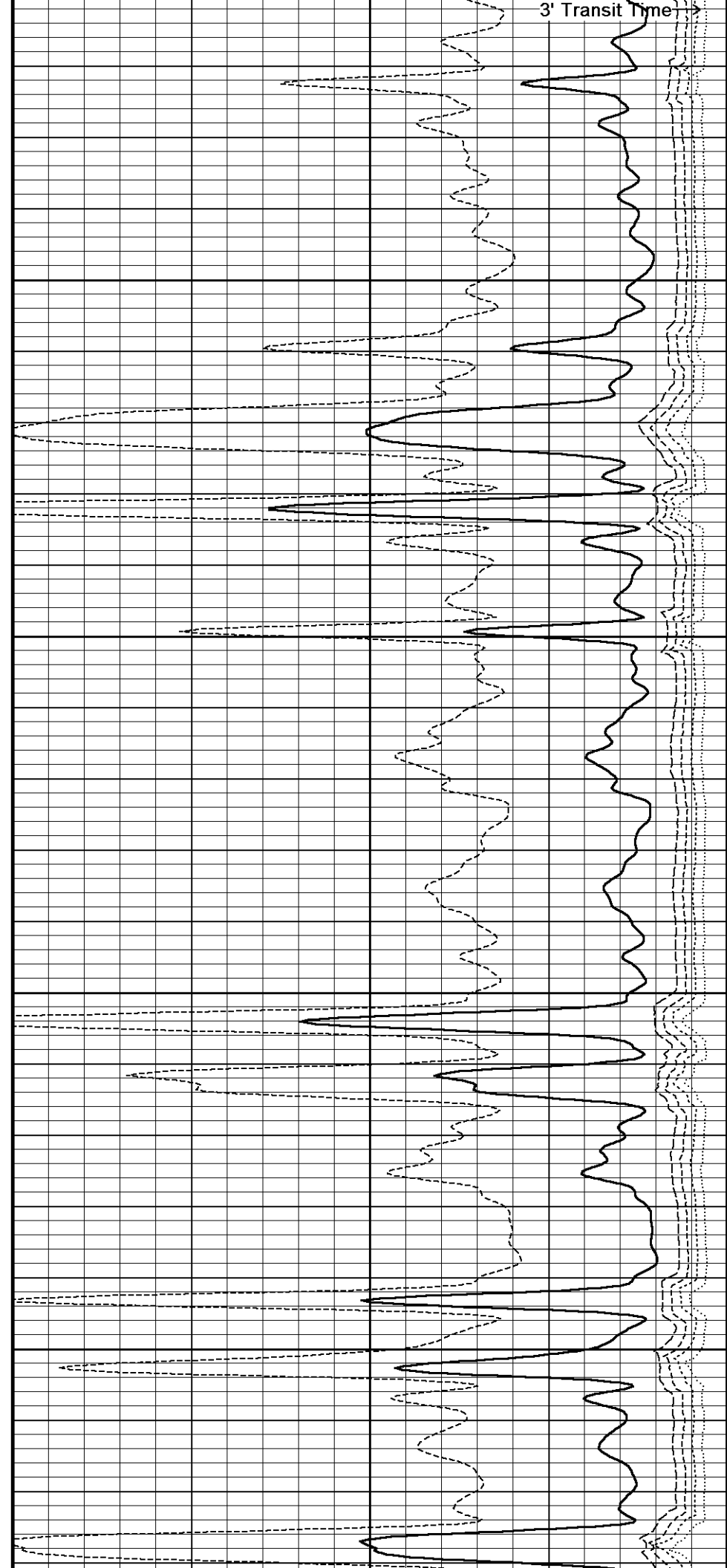
4150

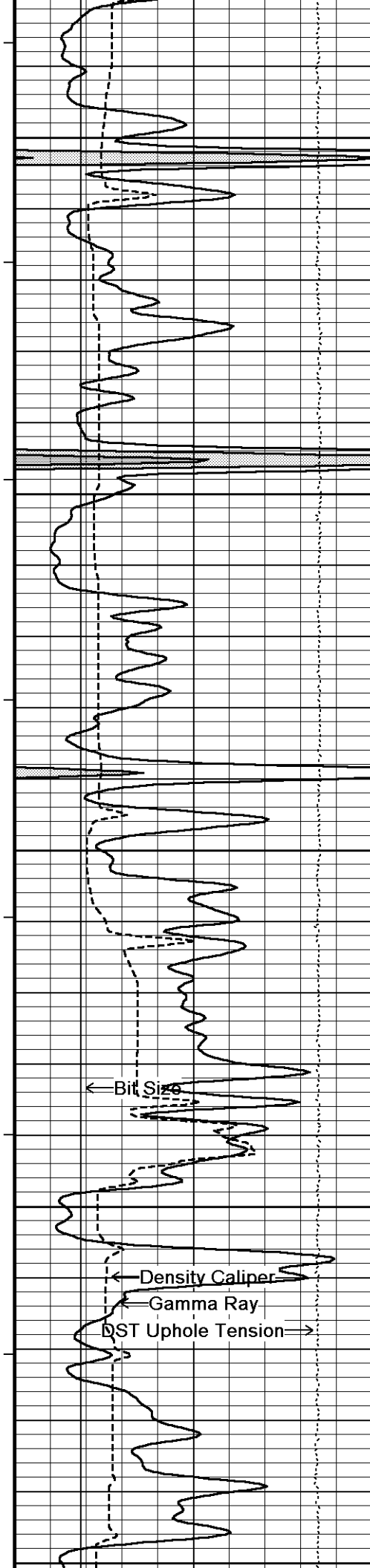
108°

4200

109°

4250





109°

4300

109°

4350

110°

4400

110°

4450

110°

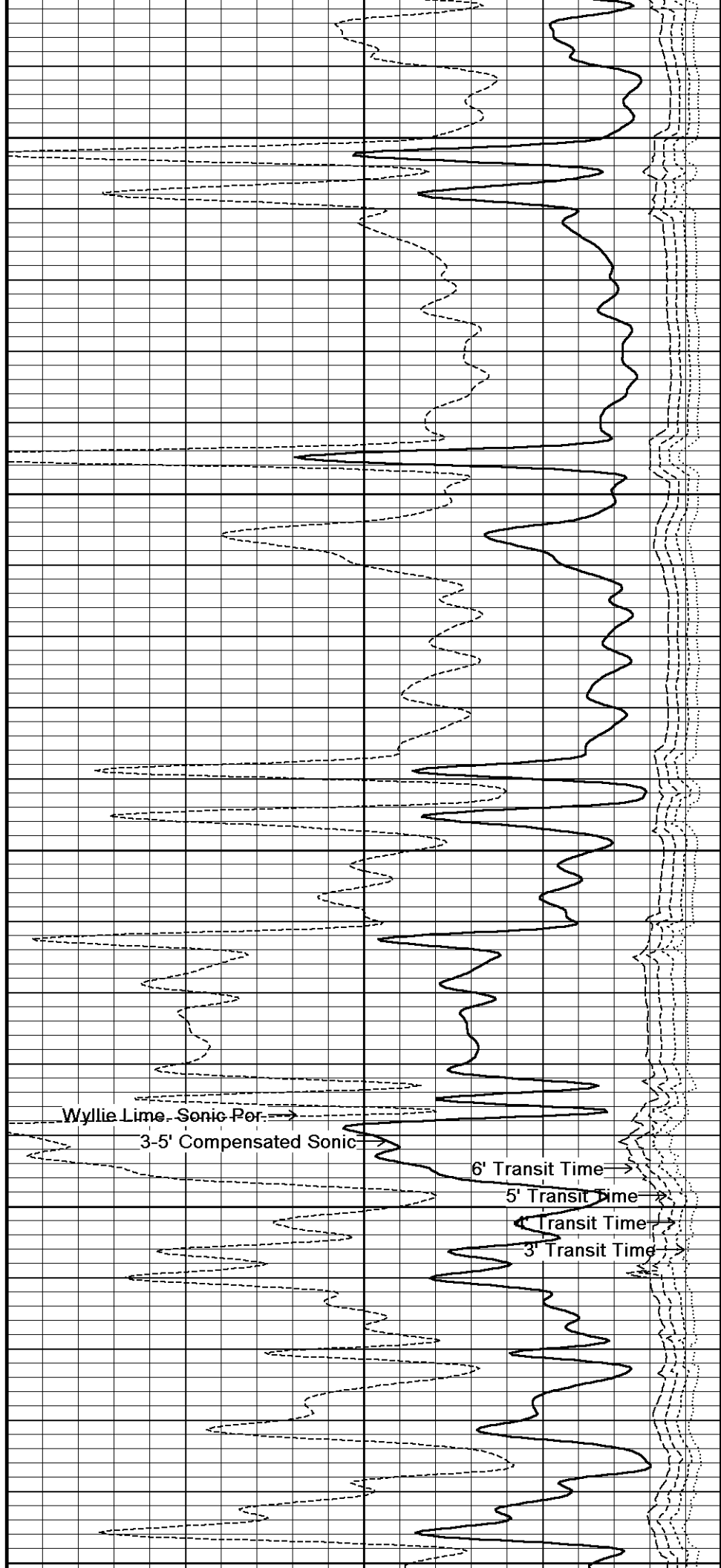
4500

← Bit Size

← Density Caliper

← Gamma Ray

→ DST Uphole Tension



Wyllie Lime. Sonic Per. →

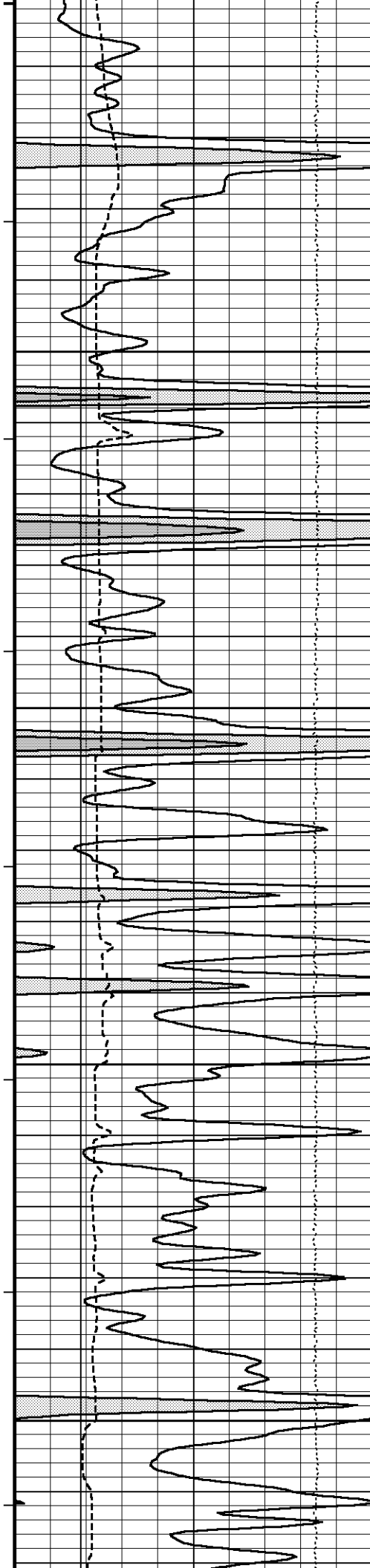
3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →



111°

4550

111°

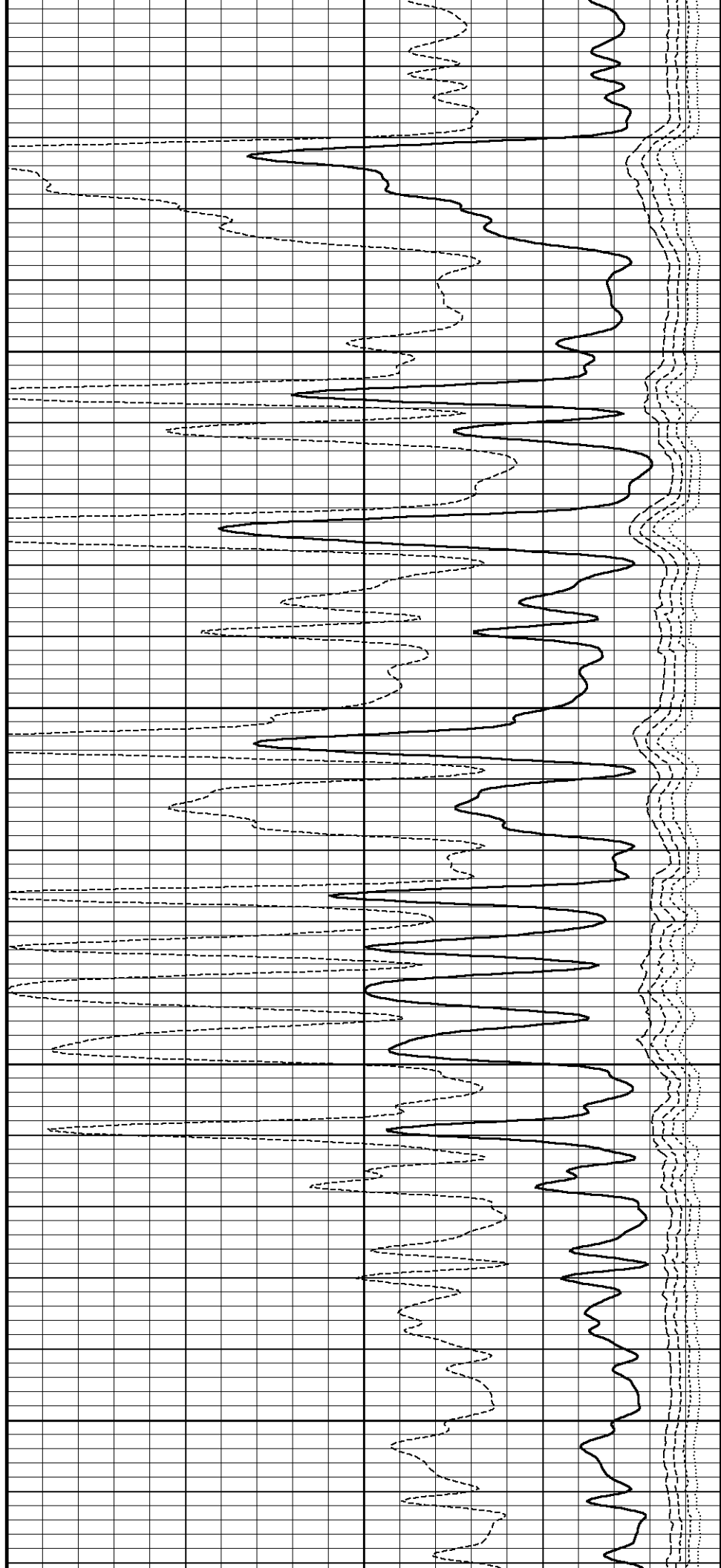
4600

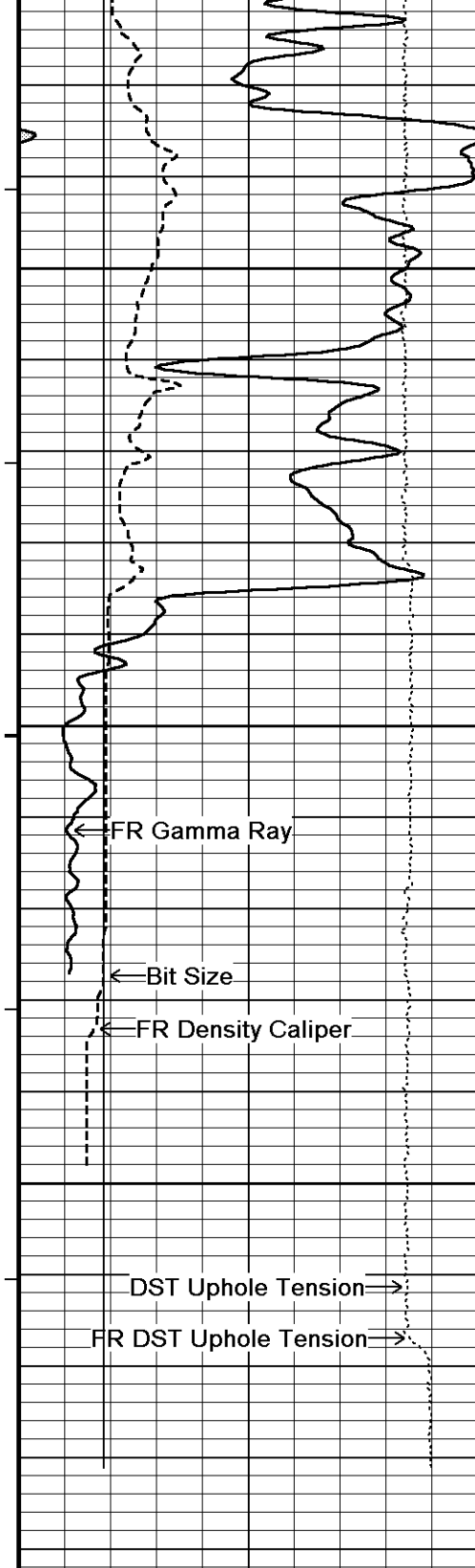
111°

4650

112°

4700





112°

4750

111°

4800

4850

4890

Depth
In
Feet

← FR Gamma Ray

← Bit Size

← FR Density Caliper

DST Uphole Tension →

FR DST Uphole Tension →

Timing Marks
every 60.0 sec

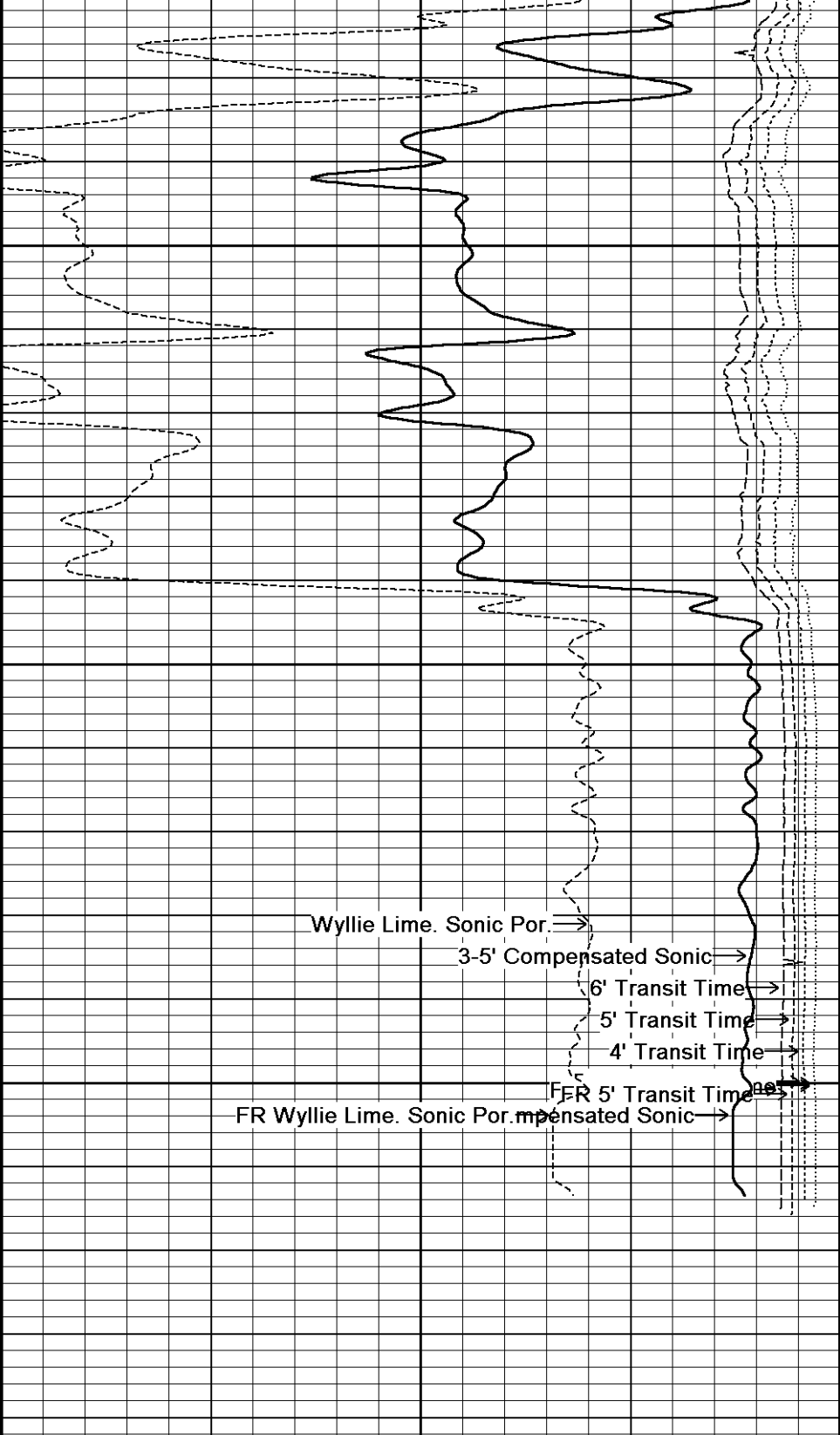
Gamma Ray

API

75

0

150



Wyllie Lime. Sonic Por. →

3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

FR 5' Transit Time →

FR Wyllie Lime. Sonic Por. →

3-5' Compensated Sonic

microsec/foot

140

115

90

65

40

Wyllie Lime. Sonic Por.

percent

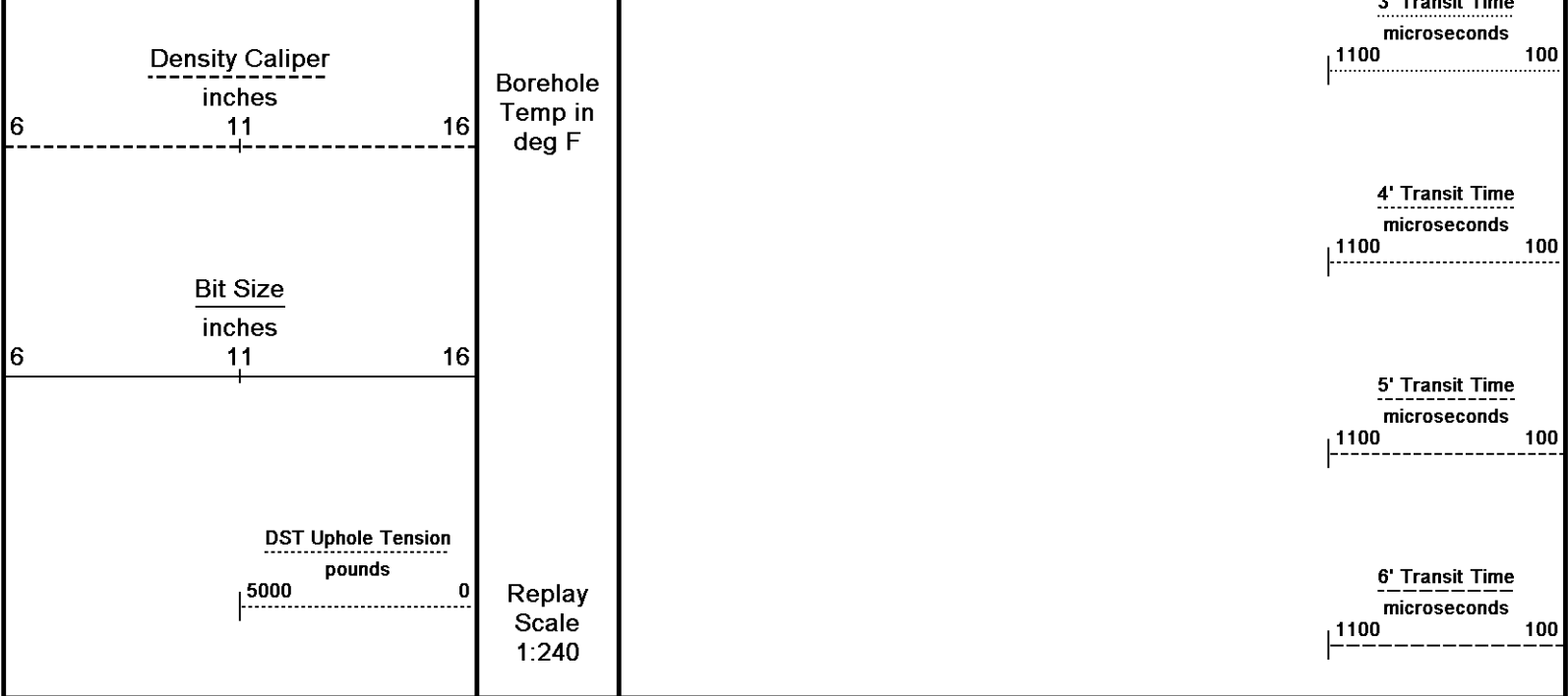
30

20

10

0

-10

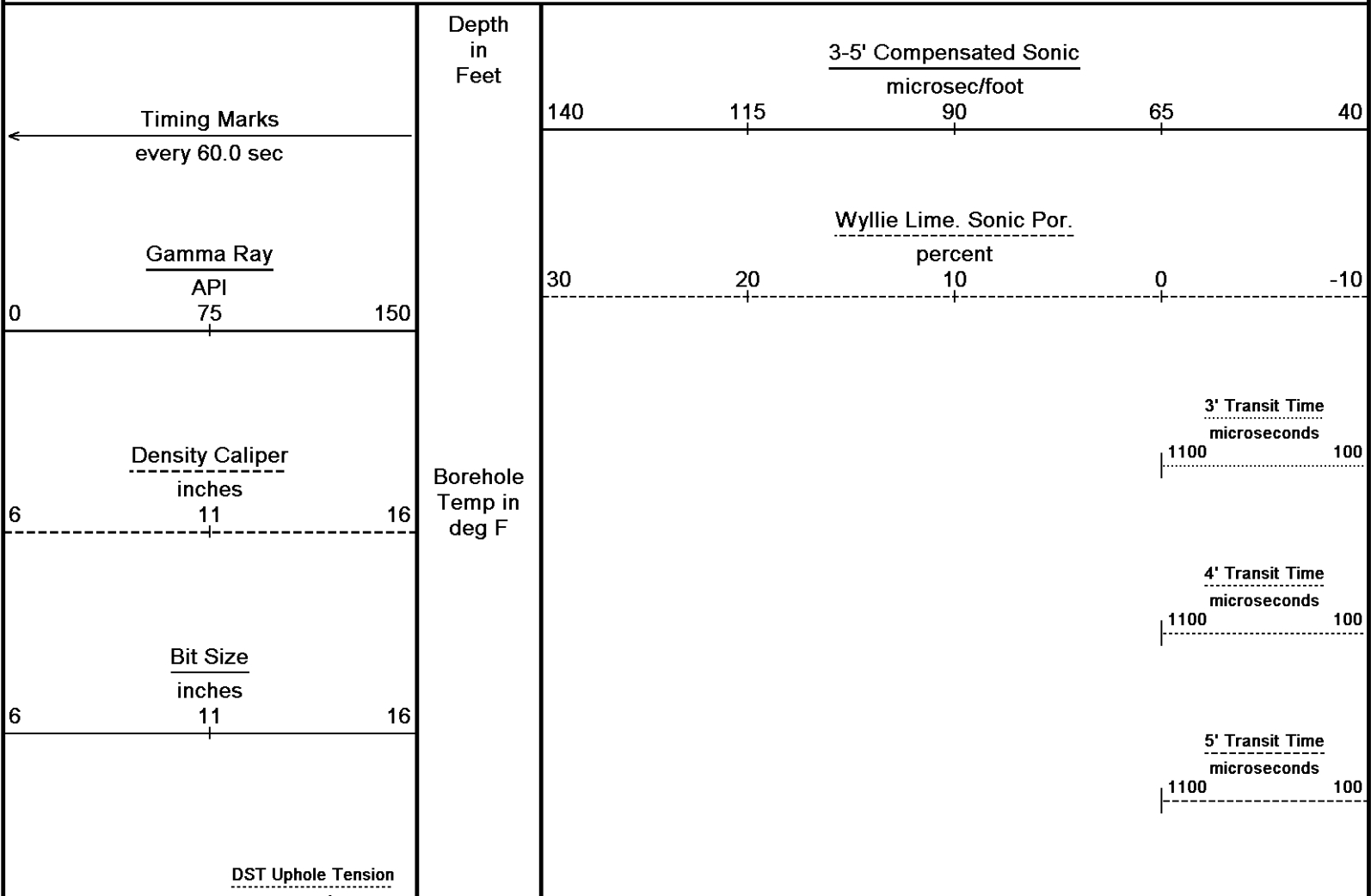


Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 15-OCT-2012 11:37
Filename: C:\Minimus 13.02.6600\Data\Shakespeare...\Shakespeare Oil Company Janzen 1-26_002.dta	Recorded on 15-OCT-2012 09:05
System Versions: Logged with 13.02.6600 Plotted with 13.02.6600	

↑	5 INCH MAIN	↑
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↓	REPEAT SECTION	↓
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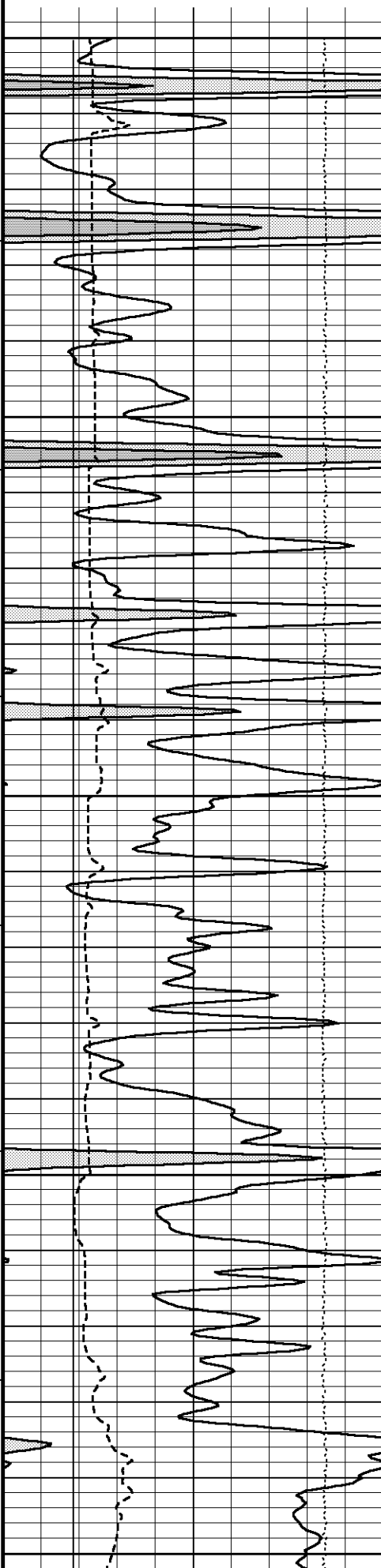
Depth Based Data - Maximum Sampling Increment 10.0cm	Plotted on 15-OCT-2012 11:37
Filename: C:\Minimus 13.02.6600\Data\Shakespeare...\Shakespeare Oil Company Janzen 1-26_001.dta	Recorded on 15-OCT-2012 08:45
System Versions: Logged with 13.02.6600 Plotted with 13.02.6600	



5000 pounds 0

Replay
Scale
1:240

6' Transit Time
microseconds
1100 100



4550

109°

4600

110°

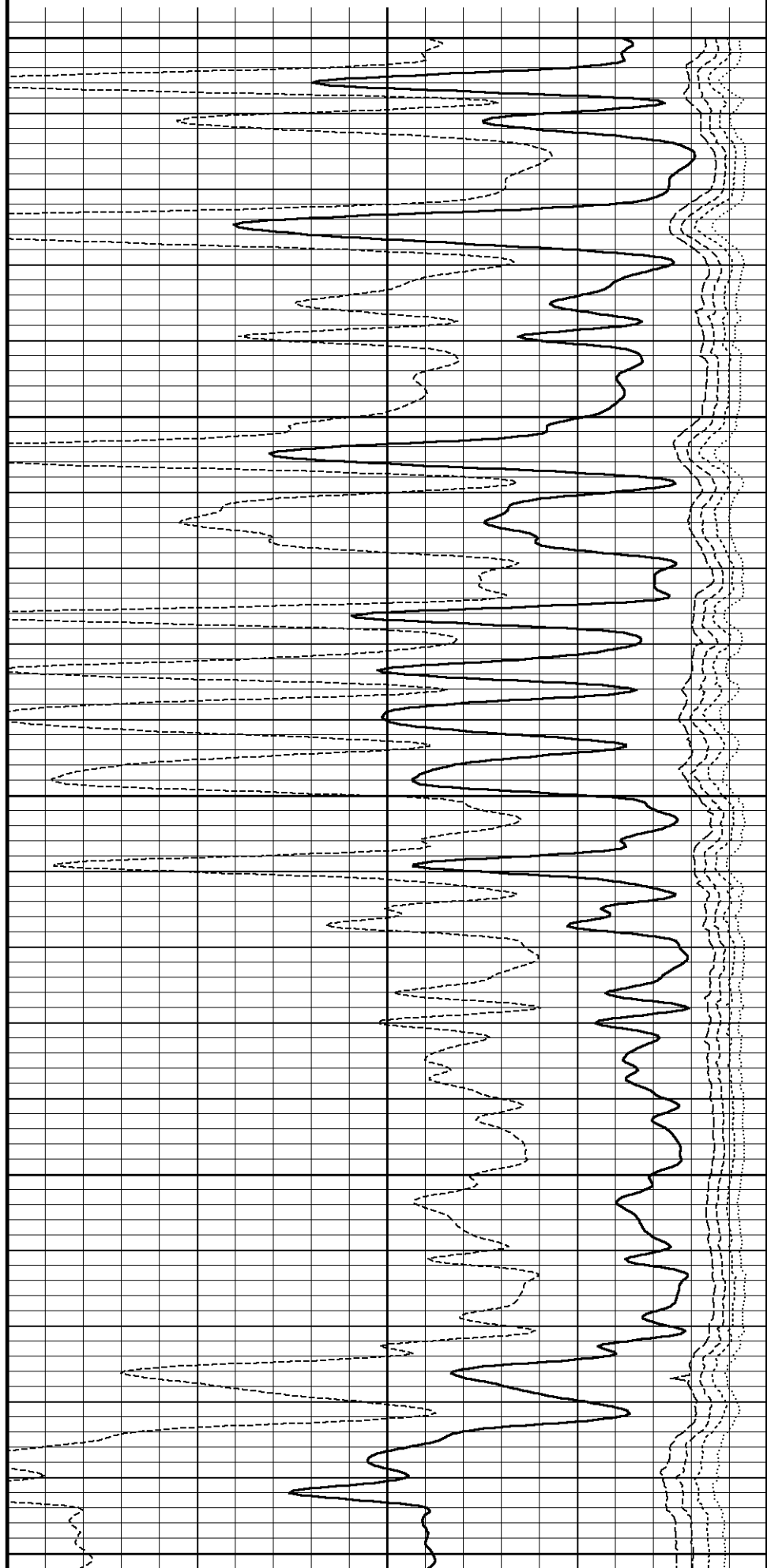
4650

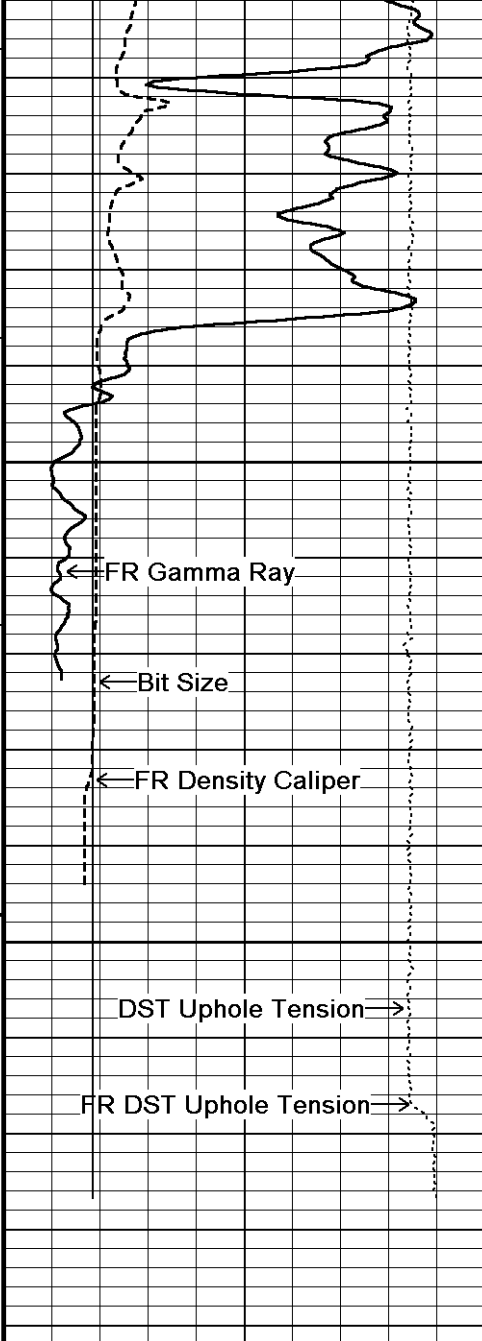
110°

4700

110°

4750





109°

4800

4850

4890

Depth
in
Feet

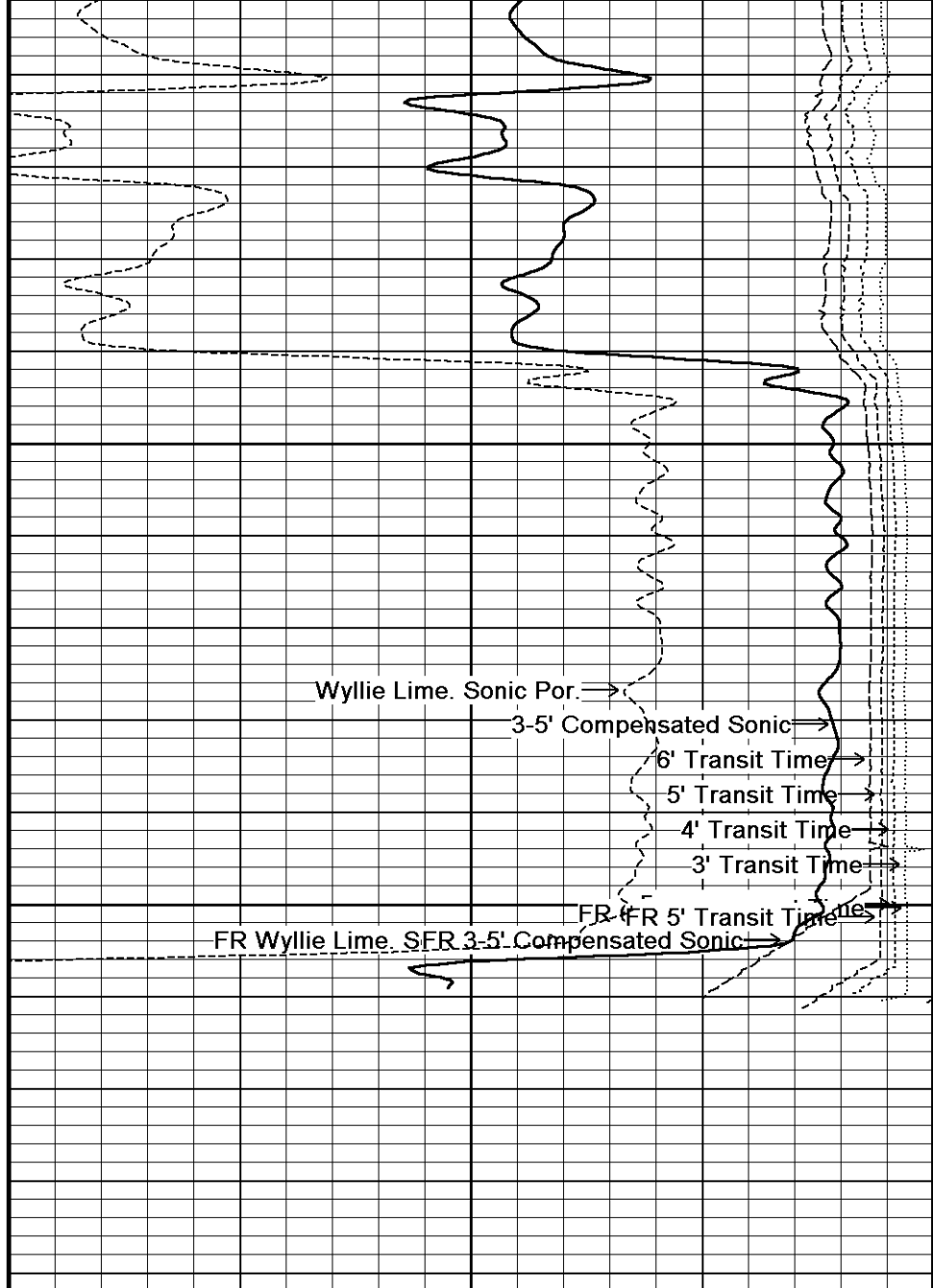
Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150

Density Caliper
inches
6 11 16

Bit Size

Borehole
Temp in
deg F



Wyllie Lime. Sonic Por. →

3-5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →

FR 5' Transit Time →

FR Wyllie Lime. SFR 3-5' Compensated Sonic →

3-5' Compensated Sonic
microsec/foot

140 115 90 65 40

Wyllie Lime. Sonic Por.
percent

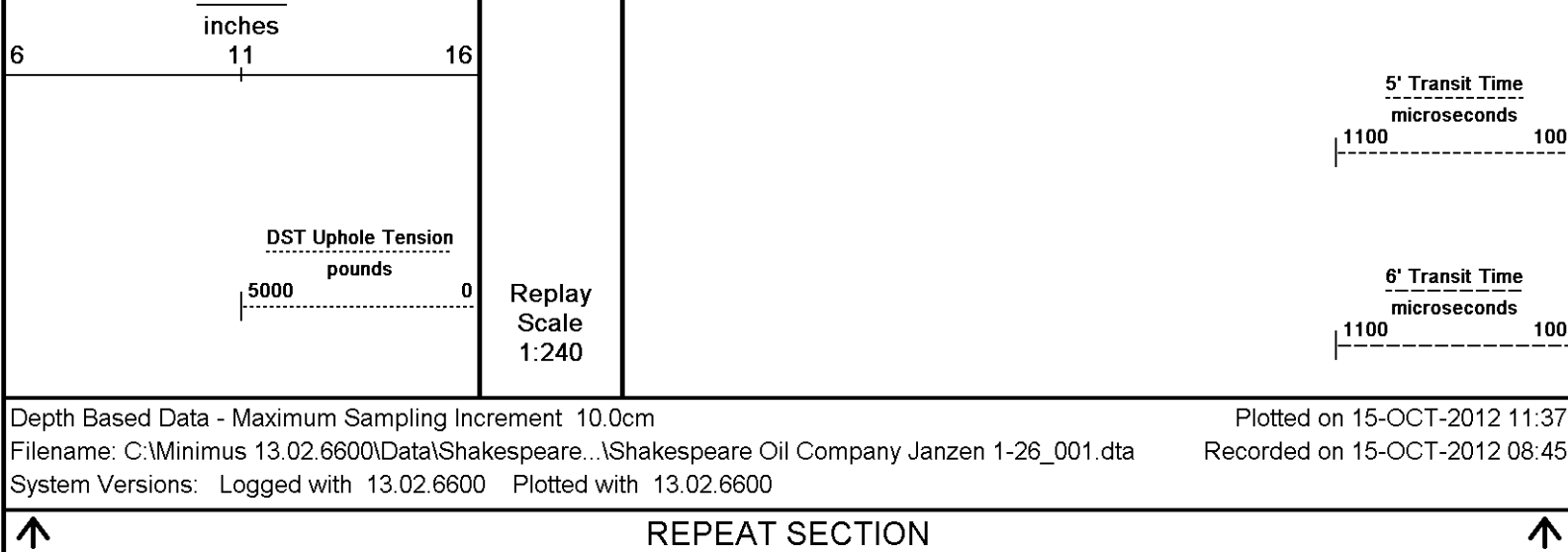
30 20 10 0 -10

3' Transit Time
microseconds

1100 100

4' Transit Time
microseconds

1100 100



BEFORE SURVEY CALIBRATION			
C:\Minimus 13.02.6600\Data\Shakespeare Oil Company Janzen 1-26\Shakespeare Oil Company Janzen 1-26_001.dta			
General Constants All 000		Last Edited on 15-OCT-2012,06:35	
General Parameters			
Mud Resistivity	0.510	ohm-metres	
Mud Resistivity Temperature	87.000	degrees F	
Water Level	0.000	feet	
Density/Neutron 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		
Down-hole Tension Calibration SMS 0		Field Calibration on 10-SEP-2012 04:28	
Reading No	Measured	Calibrated (lbs)	
1	15456.86	0.00	
2	16071.78	384.00	
Gamma Calibration MCG-D.K 442		Field Calibration on 14-OCT-2012 02:07	
	Measured	Calibrated (API)	
Background	69	46	
Calibrator (Gross)	1152	771	
Calibrator (Net)	1083	725	
Gamma Constants MCG-D.K 442		Last Edited on 14-OCT-2012,08:31	
Gamma Calibrator Number GRC38			
Mud Density	1.12	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		
Concentration of KCl	0.00	kppm	
SP Calibration MCG-D.K 442		Field Calibration on 17-JUL-2012 16:34	
	Measured	Calibrated (mV)	
Reference 1	100.2	100.0	
Reference 2	-99.9	-100.0	

High Resolution Temperature Calibration MCG-D.K 442			Field Calibration on 17-JUL-2012,16:35	
Lower	Measured	Calibrated(Deg F)		
Upper	50.00	50.00		
	100.00	100.00		
High Resolution Temperature Constants MCG-D.K 442			Last Edited on	
Pre-filter Length	11			
Caliper Calibration MML-A 16			Base Calibration on 30-SEP-2012 19:38 Field Calibration on 14-OCT-2012 02:01	
Base Calibration				
Reading No	Measured	Calibrator Size (in)		
1	13888	5.98		
2	16946	7.97		
3	20169	9.86		
4	23996	11.92		
5	0	0.00		
6	N/A	N/A		
Field Calibration				
	Measured Caliper (in)	Actual Caliper (in)		
	6.03	5.98		
Micro Normal and Micro Inverse Calibration MML-A 16			Base Calibration on 30-SEP-2012 19:42 Field Check on 14-OCT-2012 02:02	
Base Calibration				
Channel	Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1 Resistor 2	
Micro Normal	12.2	60.2	5.0 25.0	
Micro Inverse	15.6	78.4	5.0 25.0	
Channel	Base Check (ohm-m)		Field Check (ohm-m)	
Micro Normal	62.9		62.9	
Micro Inverse	48.2		48.2	
Micro Normal and Micro Inverse Constants MML-A 16			Last Edited on 14-OCT-2012,02:01	
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 10-OCT-2012 14:12 Field Check on 14-OCT-2012 02:13	
Base Calibration				
	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3058	95	3714	110
Ratio	32.033		33.764	
Field Calibrator at Base			Calibrated (cps)	
			1673	2395
Ratio	0.698			
Field Check			Calibrated (cps)	
			1678	2400
Ratio	0.699			
Neutron Constants MDN-A.B 66			Last Edited on 14-OCT-2012,08:31	
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	Constant Value			
Formation Pressure	0.00	kpsi		
Temperature Source	Constant Value			

FE Calibration MFE-B.J 353	Base Calibration on 01-OCT-2012 09:16
Base Calibration	Field Check on 14-OCT-2012 01:52

Base Calibration	
	Measured
Reference 1	0.0
Reference 2	965.2
Base Check	280.7
Field Check	280.9

FE Constants MEE-B.J.353 Last Edited on 14-OCT-2012 08:30

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 55 Last Edited on 15-OCT-2012 06:36

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
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 167			Field Calibration on 17-JUL-2012,13:53
	Measured	Calibrated(Deg F)	
Lower	1.00	33.80	
Upper	11.00	51.80	

High Resolution Temperature Constants MAI-A.A 167		Last Edited on 17-JUL-2012,13:49
Pre-filter Length	11	

Induction Calibration MAI-A.A 167				Base Calibration on 17-JUL-2012,13:55	
				Field Check on 14-OCT-2012 01:51	
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	0.0	0.0	12.3	3841.0	
2	0.0	0.0	29.3	3478.5	
3	0.0	0.0	28.9	3054.3	
4	0.0	0.0	19.7	2082.6	
Deep	0.0	0.0	18.5	2049.7	
Medium	0.0	0.0	42.1	3992.9	
Shallow	0.0	0.0	42.5	5056.6	
Array Temperature		0.0	64.3	Deg F	

Induction Constants MAI-A.A 167			Last Edited on 14-OCT-2012,08:30
Induction Model	RtAP-WBM		
Caliper for Borehole Corr.	Density Caliper		
Hole Size for Borehole Correction	N/A	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	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

SRM2 0.0000 SR02 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	

Caliper Calibration MPD-B 64

Base Calibration on 10-OCT-2012 12:35
Field Calibration on 14-OCT-2012 01:53

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	12128	3.99
2	20753	5.98
3	29254	7.97
4	37705	9.86
5	46896	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.95	5.98

Photo Density Calibration MPD-B 64

Base Calibration on 10-OCT-2012 12:54
Field Check on 14-OCT-2012 02:00

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Reference 1	58951	32645	59556	30836
Reference 2	24760	2893	24941	2541

Field Check at Base

1181.6 1375.1

Field Check

1187.9 1371.9

PE Calibration

Base Calibration	Measured		Calibrated
	WS	WH	Ratio
Background	215	1053	
Reference 1	22216	58751	0.381
Reference 2	6718	24623	0.276

Field Check at Base

215.0 1052.6

Field Check

215.0 1059.8

Density Constants MPD-B 64

Last Edited on 14-OCT-2012,08:30

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	1.12	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 (ft)	
2.87	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 13.02.6600\Data\Shakespeare Oil Company Janzen 1-26\Shakespeare Oil Company Janzen 1-26_001.dta

Compact Comms Gamma
MCG-D.K 442 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 16 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

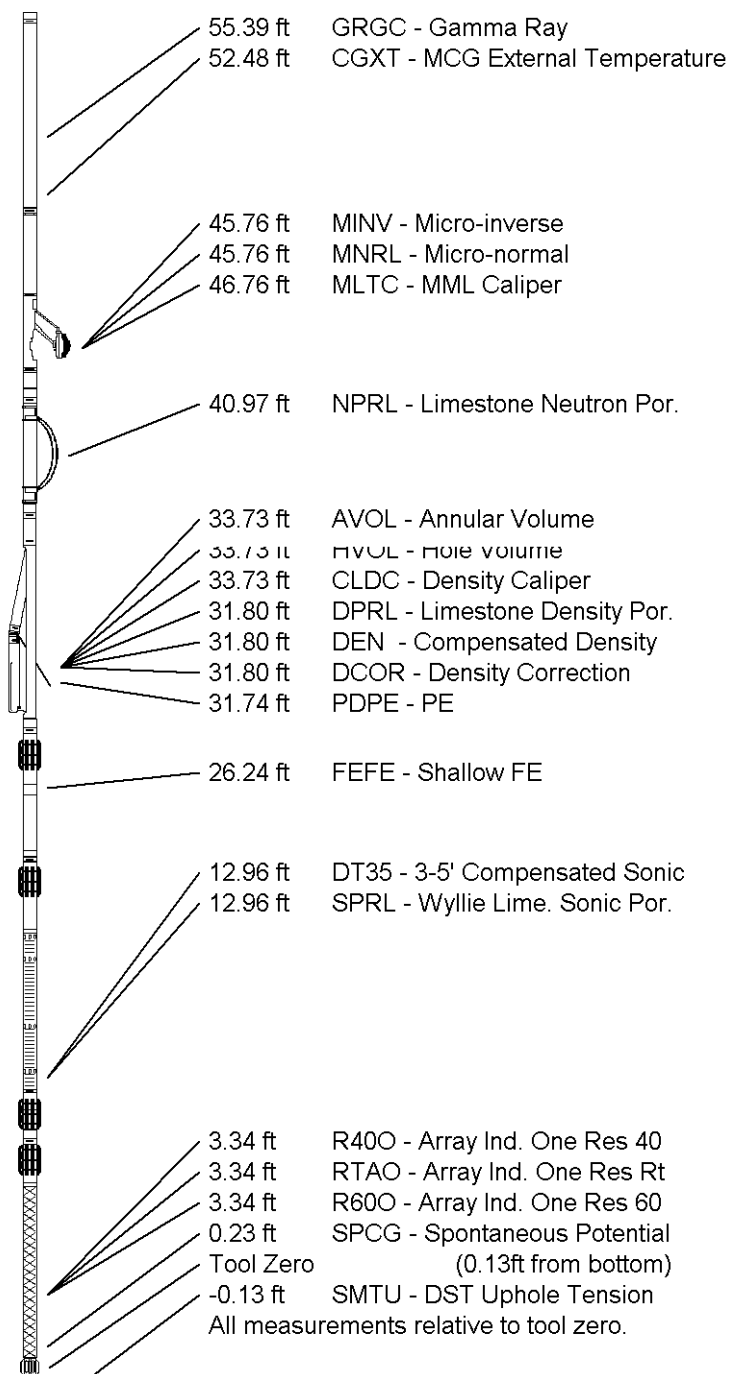
Compact Density/Caliper
MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
MFE-B.J 353 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.24 in

Compact Induction
MAI-A.A 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 60.68 ft Weight: 456.4 lb



COMPANY

SHAKESPEARE OIL COMPANY, INC.

WELL

JANZEN #1-26

WELL	SANZEN #1-20
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3119.00	feet	First Reading	4854.00	feet
Elevation Drill Floor	3118.00	feet	Depth Driller	4870.00	feet
Elevation Ground Level	3109.00	feet	Depth Logger	4867.00	feet



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