

**Weatherford**<sup>180</sup>**COMPENSATED SONIC  
WITH INTEGRATED TRANSIT TIME**

|                                         |              |              |                |                                     |  |  |  |
|-----------------------------------------|--------------|--------------|----------------|-------------------------------------|--|--|--|
| COMPANY                                 |              |              |                | SHAKESPEARE OIL CO. INC             |  |  |  |
| WELL                                    |              |              |                | CARSON 1-26                         |  |  |  |
| FIELD                                   |              |              |                | PENCE EAST                          |  |  |  |
| PROVINCE/COUNTY                         |              |              |                | SCOTT                               |  |  |  |
| COUNTRY/STATE                           |              |              |                | U.S.A. / KANSAS                     |  |  |  |
| LOCATION                                |              |              |                | 649' FNL & 1371' FEL<br>SE NE NW NE |  |  |  |
| SEC                                     | TWP          | RGE          | Other Services |                                     |  |  |  |
| 26                                      | 16S          | 34W          | MPD/MDN        |                                     |  |  |  |
| API Number                              |              | 15-171-20969 | MAI/MFE        |                                     |  |  |  |
| Permit Number                           |              |              | MML            |                                     |  |  |  |
| Permanent Datum GL, Elevation 3114 feet |              |              |                |                                     |  |  |  |
| Log Measured From KB                    |              |              |                |                                     |  |  |  |
| Drilling Measured From KB AT 10 FEET    |              |              |                |                                     |  |  |  |
| Date                                    | 07-SEP-2013  |              | Elevations:    |                                     |  |  |  |
| Run Number                              | ONE          |              | KB             |                                     |  |  |  |
| Service Order                           | 3541037      |              | DF             |                                     |  |  |  |
| Depth Driller                           | 4890.00      |              | GL             |                                     |  |  |  |
| Depth Logger                            | 4889.00      |              | feet           |                                     |  |  |  |
| First Reading                           | 4876.00      |              | feet           |                                     |  |  |  |
| Last Reading                            | 267.00       |              | feet           |                                     |  |  |  |
| Casing Driller                          | 267.00       |              | feet           |                                     |  |  |  |
| Casing Logger                           | 267.00       |              | feet           |                                     |  |  |  |
| Bit Size                                | 7.875        |              | inches         |                                     |  |  |  |
| Hole Fluid Type                         | CHEM         |              |                |                                     |  |  |  |
| Density / Viscosity                     | 9.10         | lb/USg       | 60.00          | CP                                  |  |  |  |
| PH / Fluid Loss                         | 10.00        |              | 10.80          | ml/30Min                            |  |  |  |
| Sample Source                           | PIT          |              |                |                                     |  |  |  |
| Rm @ Measured Temp                      | 0.30 @ 91.0  |              | ohm-m          |                                     |  |  |  |
| Rmf @ Measured Temp                     | 0.24 @ 91.0  |              | ohm-m          |                                     |  |  |  |
| Rmc @ Measured Temp                     | 0.36 @ 91.0  |              | ohm-m          |                                     |  |  |  |
| Source Rmf / Rmc                        | CALC         |              | CALC           |                                     |  |  |  |
| Rm @ BHT                                | 0.24 @ 113.0 |              | ohm-m          |                                     |  |  |  |
| Time Since Circulation                  | 4 HRS        |              |                |                                     |  |  |  |
| Max Recorded Temp                       | 113.00       |              | deg F          |                                     |  |  |  |
| Equipment / Base                        | 13244        |              | KANSAS         |                                     |  |  |  |
| Recorded By                             | D. COLE      |              |                |                                     |  |  |  |
| Witnessed By                            | S. DAVIS     |              |                |                                     |  |  |  |
| IOB#                                    | LB 13 - 251  |              |                |                                     |  |  |  |

**BOREHOLE RECORD**

Last Edited: 07-SEP-2013 09:46

|                    |                    |                  |
|--------------------|--------------------|------------------|
| Bit Size<br>inches | Depth From<br>feet | Depth To<br>feet |
| 7.875              | 267.00             | 4890.00          |

**CASING RECORD**

|        |                |                    |                    |                     |
|--------|----------------|--------------------|--------------------|---------------------|
| Type   | Size<br>inches | Depth From<br>feet | Shoe Depth<br>feet | Weight<br>pounds/ft |
| CASING | 8.625          | 0.00               | 267.00             | 24.00               |

**REMARKS**

- SOFTWARE ISSUE: WLS 13.05.9583
- TOOLS: MCG, MML, MDN, MPD, MFE, MSS, MAI
- HARDWARE:
  - MDN: DUAL BOWSPRING ECCENTRALIZER
  - MFE: 1 X 0.5 INCH STANDOFF
  - MSS: 2 X 0.5 INCH STANDOFF
  - MAI: 2 X 0.5 INCH STANDOFF
- 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 3800 FEET: 410 CU.FT.

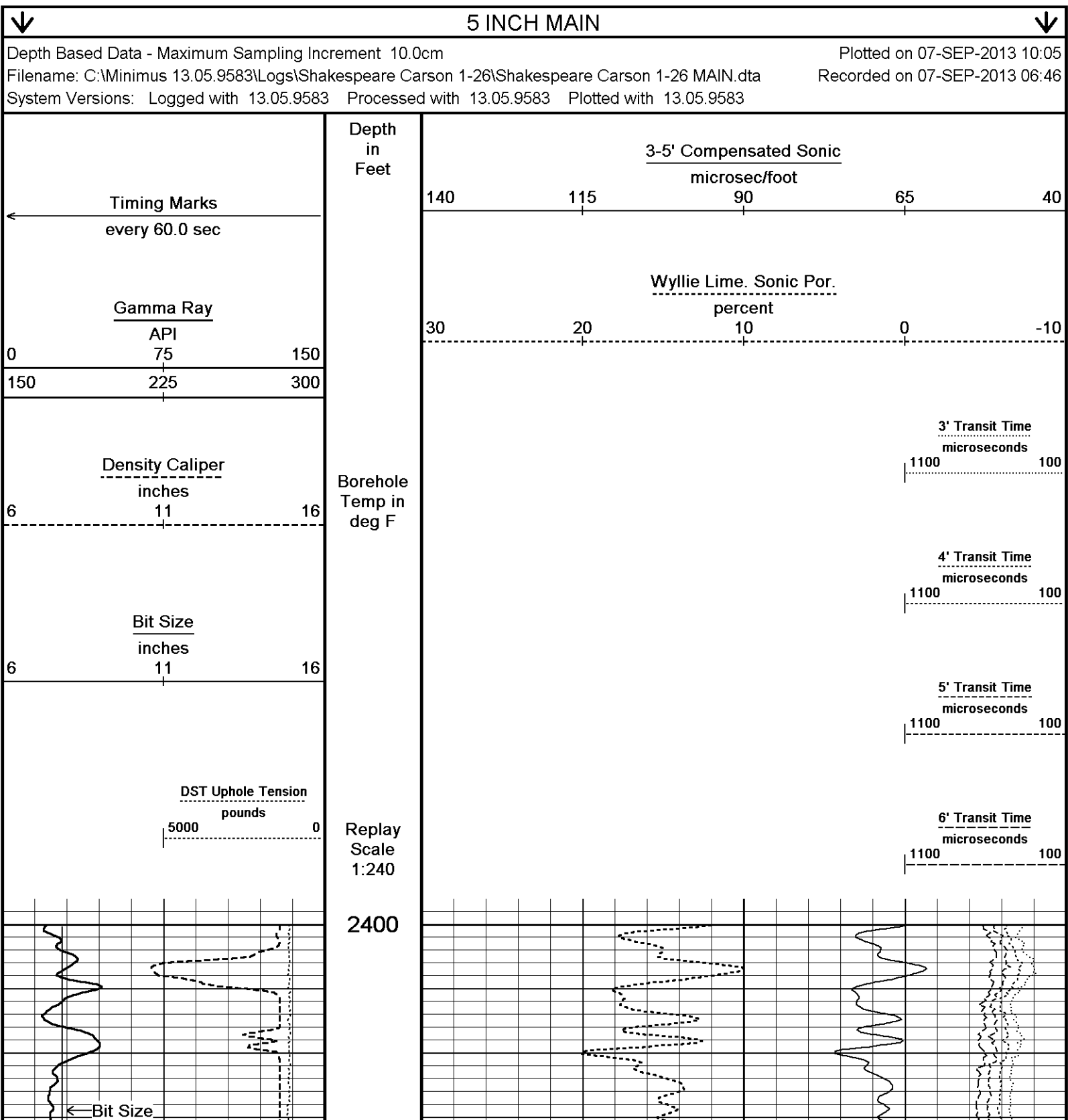
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3800 FEET: 230 CU.FT.

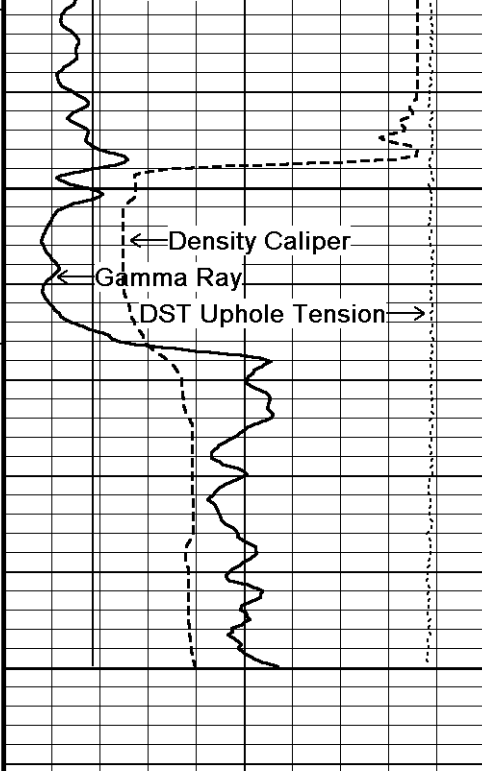
- RIG: HD #2

- ENGINEER: D. COLE

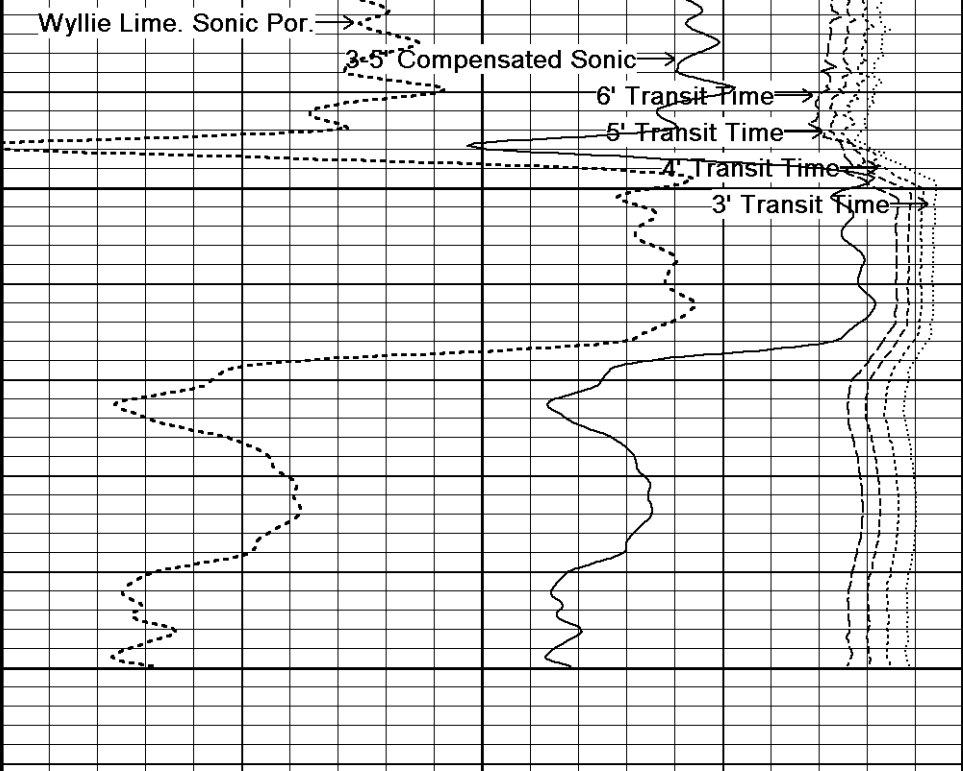
- OPERATOR: C. RAMIREZ

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.





100°  
 2450  
 100°  
 2500  
 2508  
 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  
 Scale  
 1:240

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

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

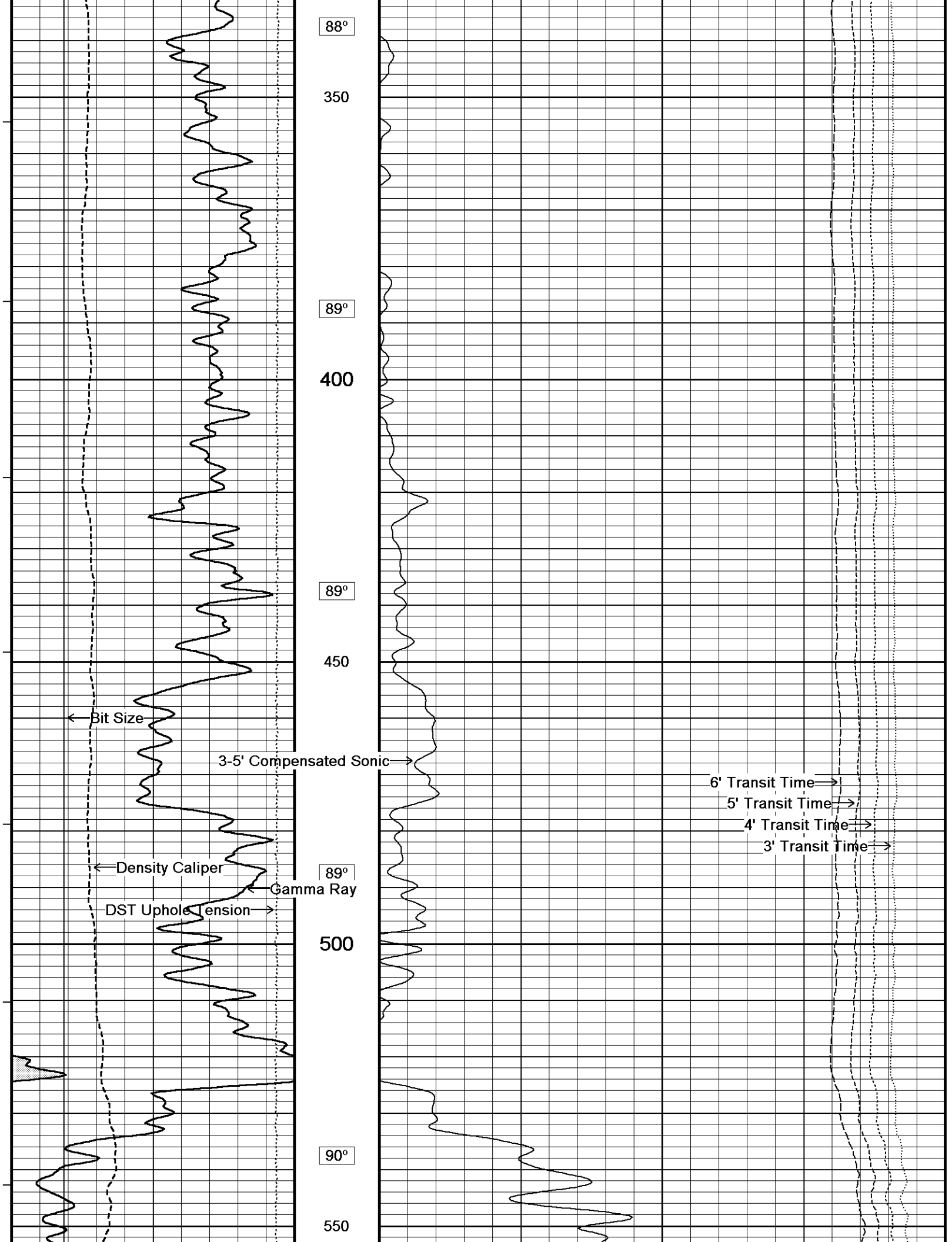
3' Transit Time  
 microseconds  
 1100 100

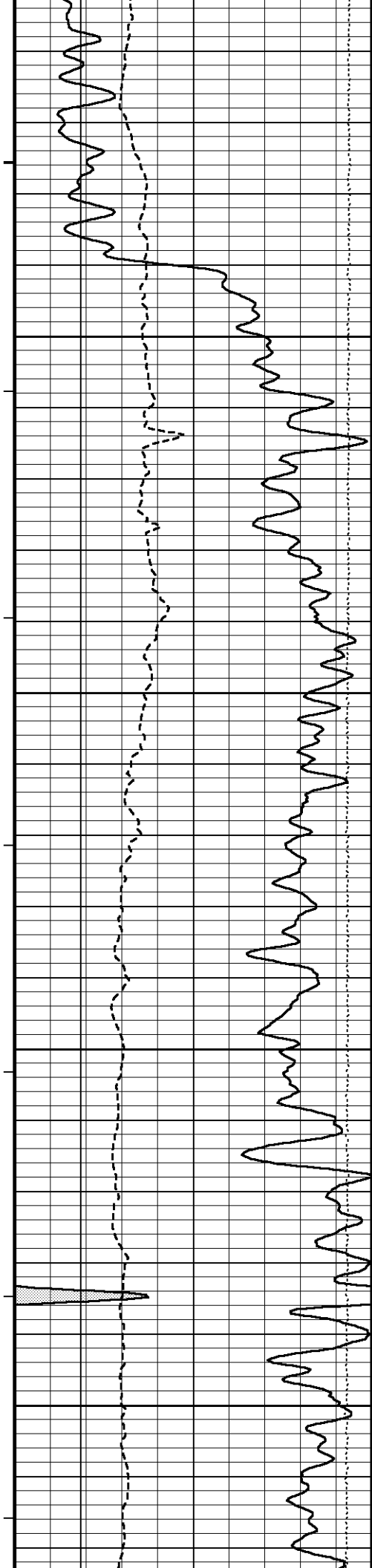
4' Transit Time  
 microseconds  
 1100 100

5' Transit Time  
 microseconds  
 1100 100

6' Transit Time  
 microseconds  
 1100 100







90°

600

91°

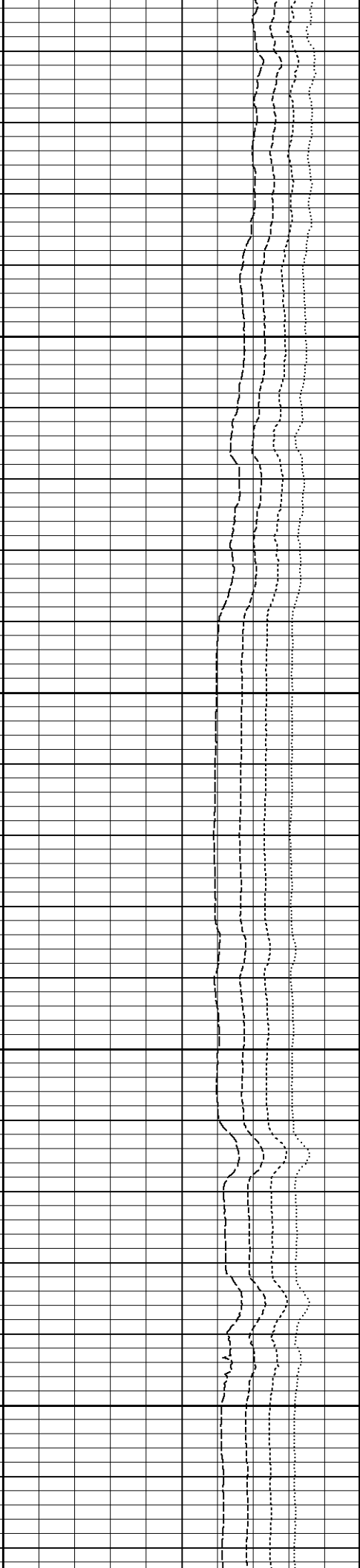
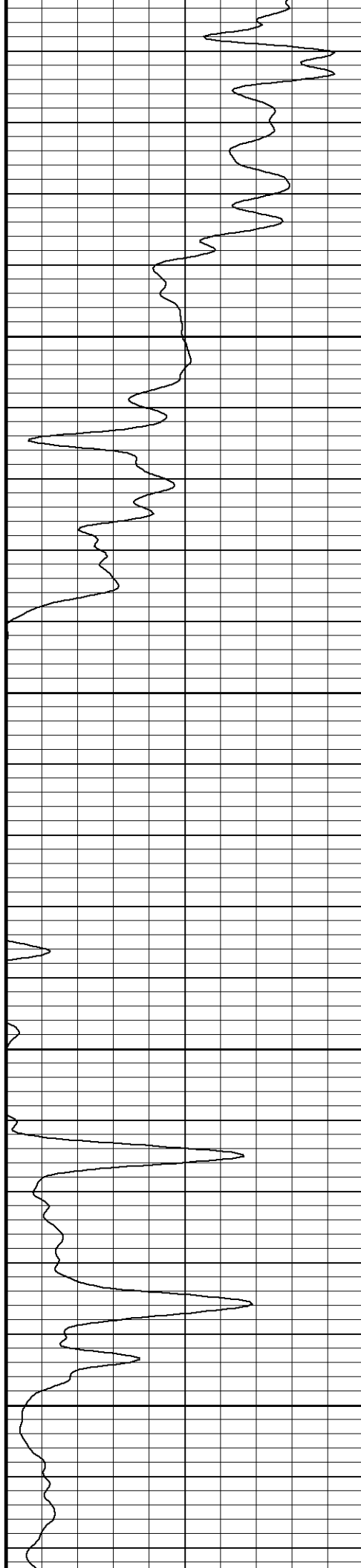
650

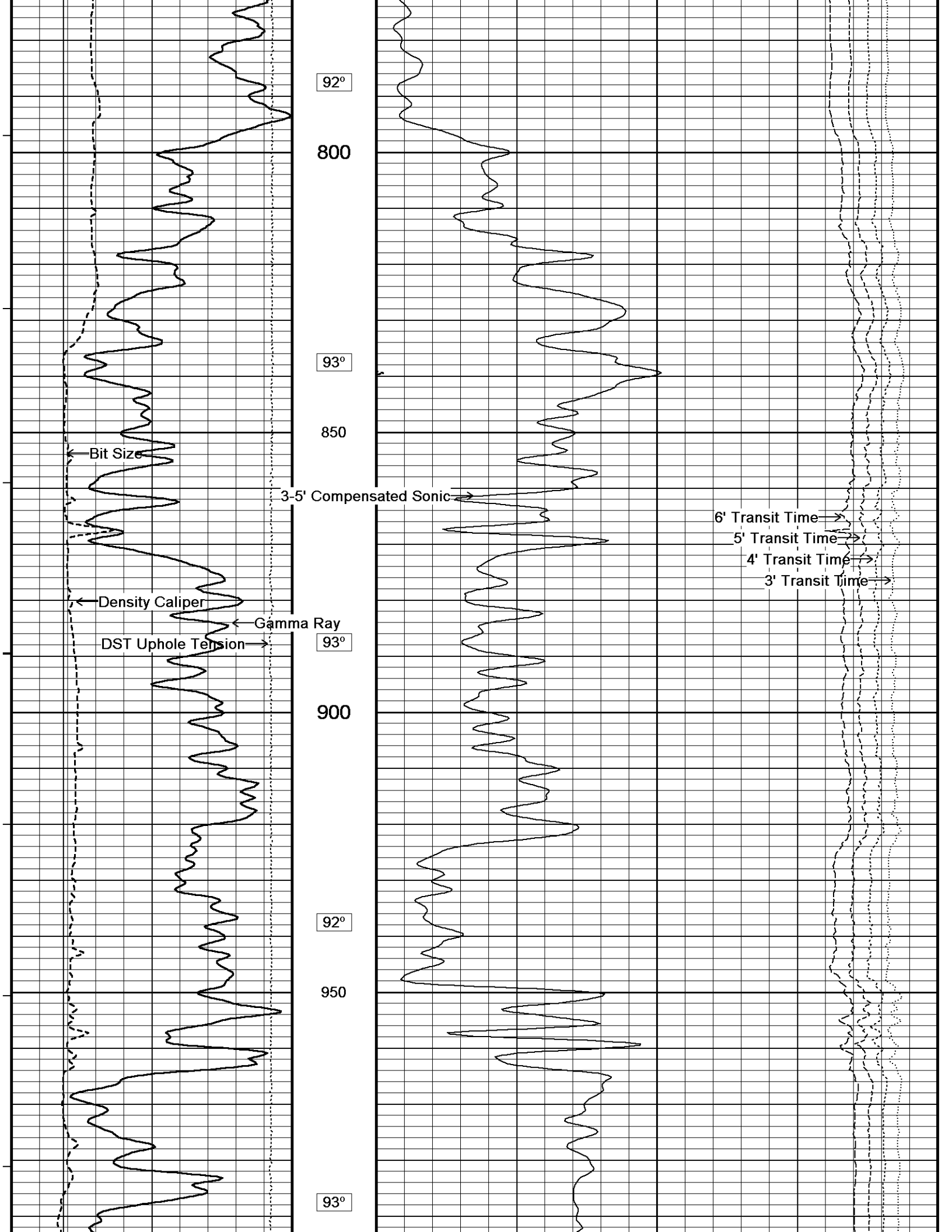
91°

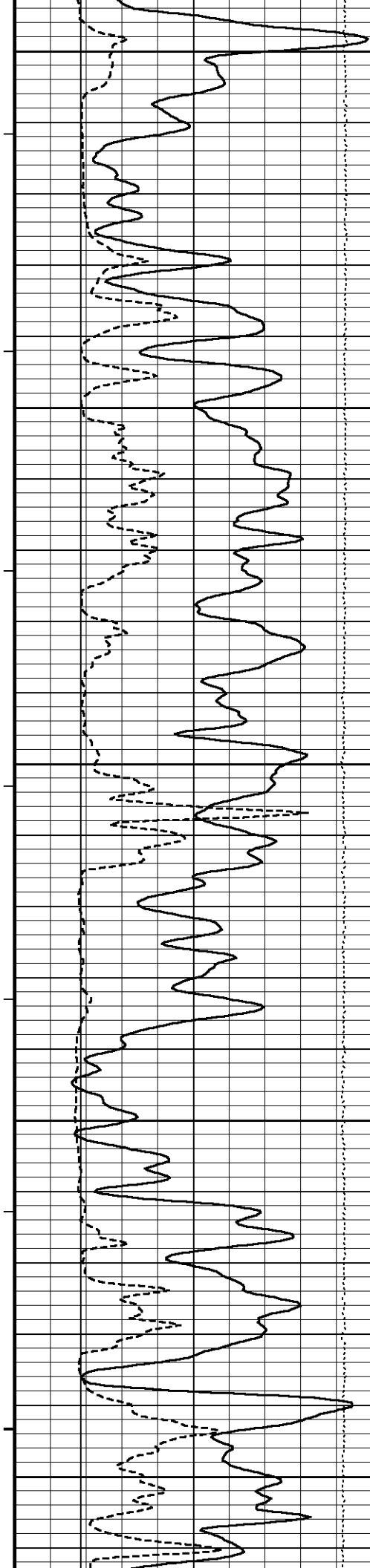
700

91°

750







1000

93°

1050

94°

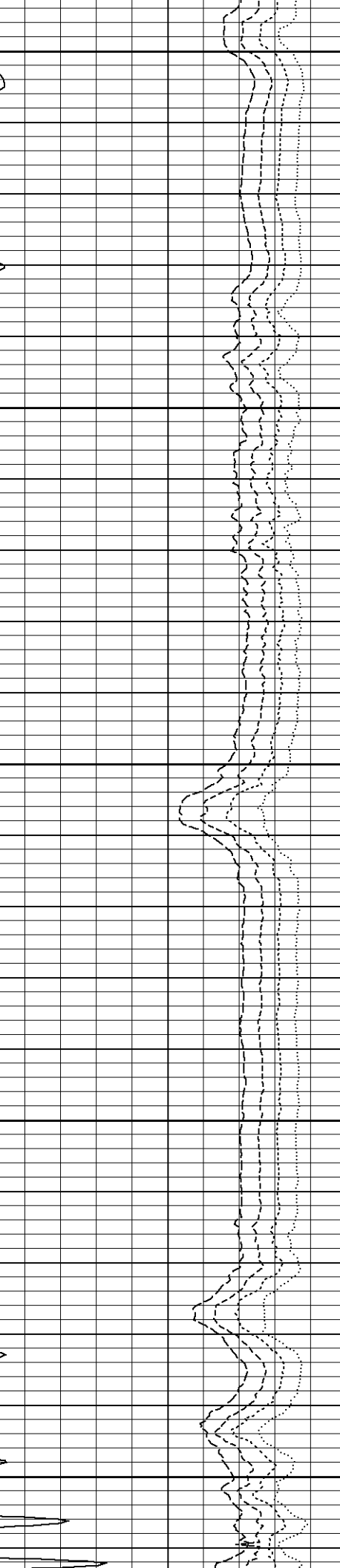
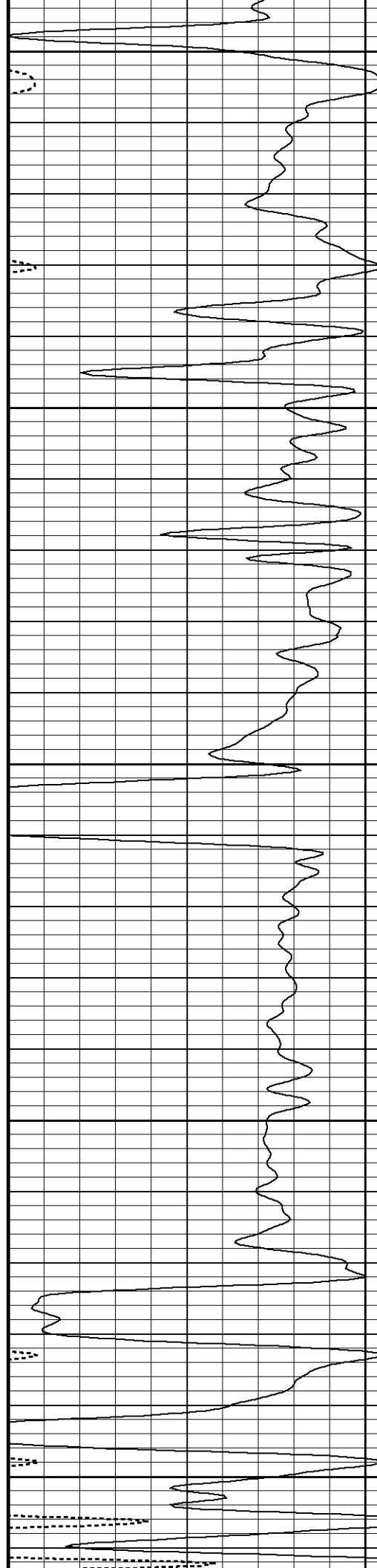
1100

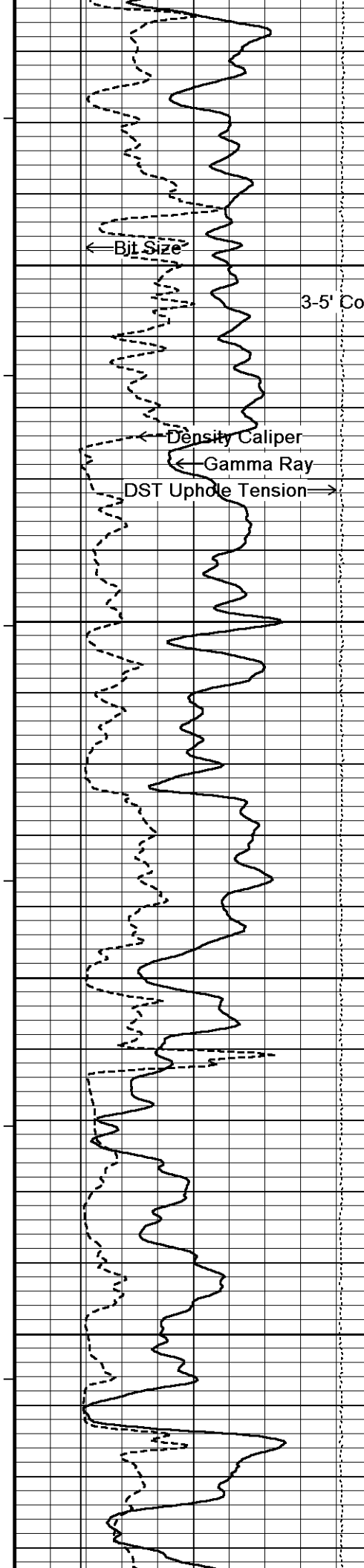
94°

1150

95°

1200





95°

1250

3-5' Compensated Sonic

95°

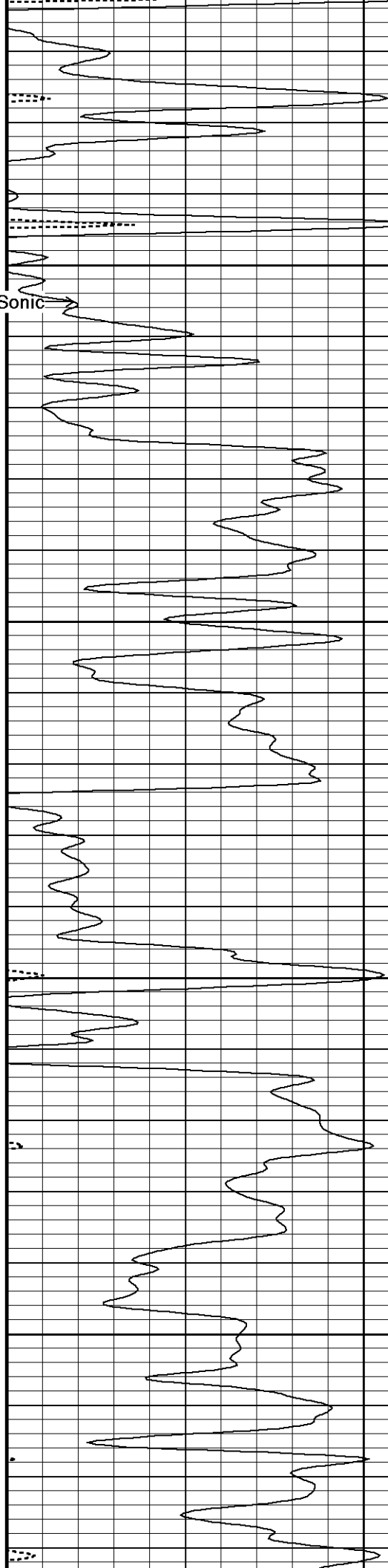
1300

95°

1350

95°

1400

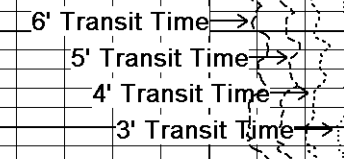


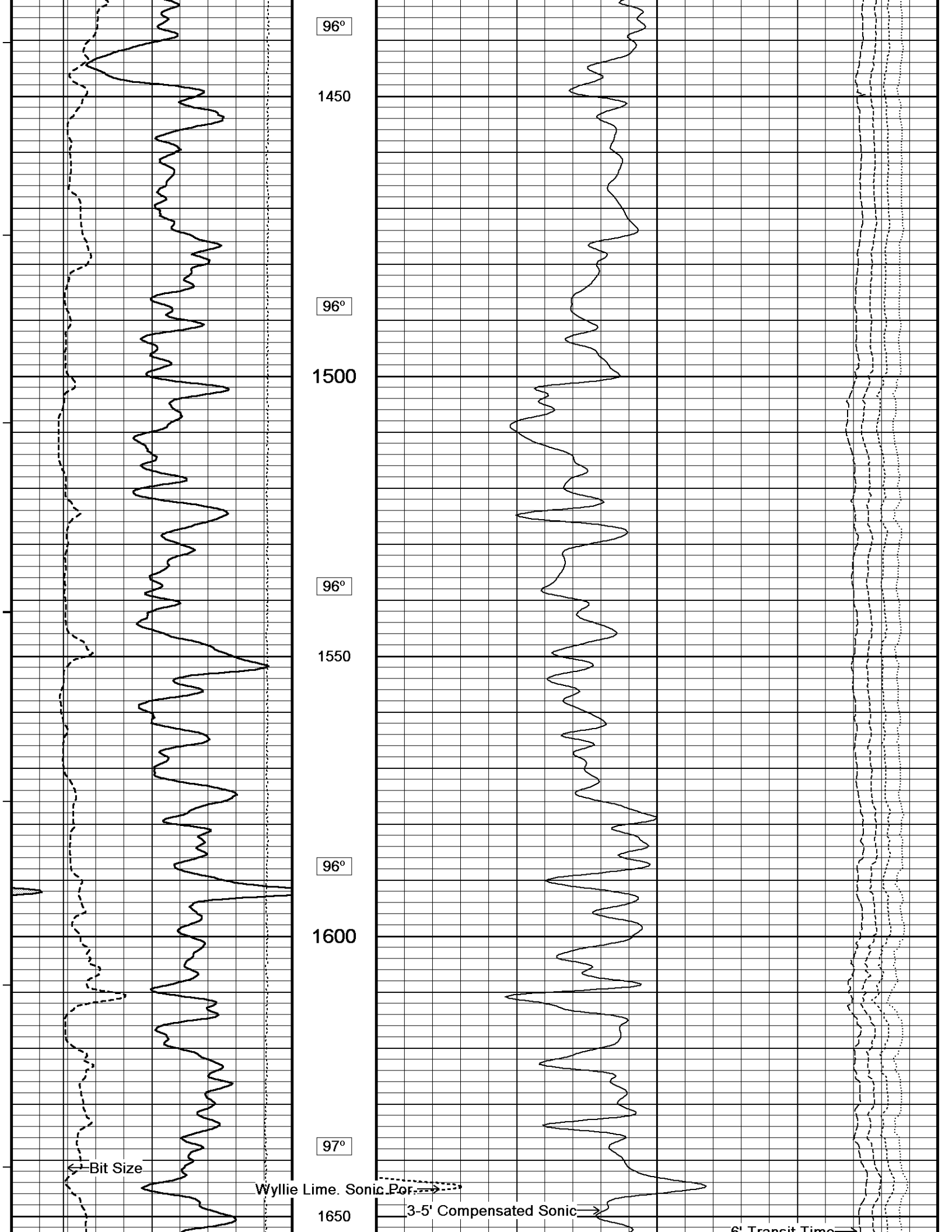
6' Transit Time

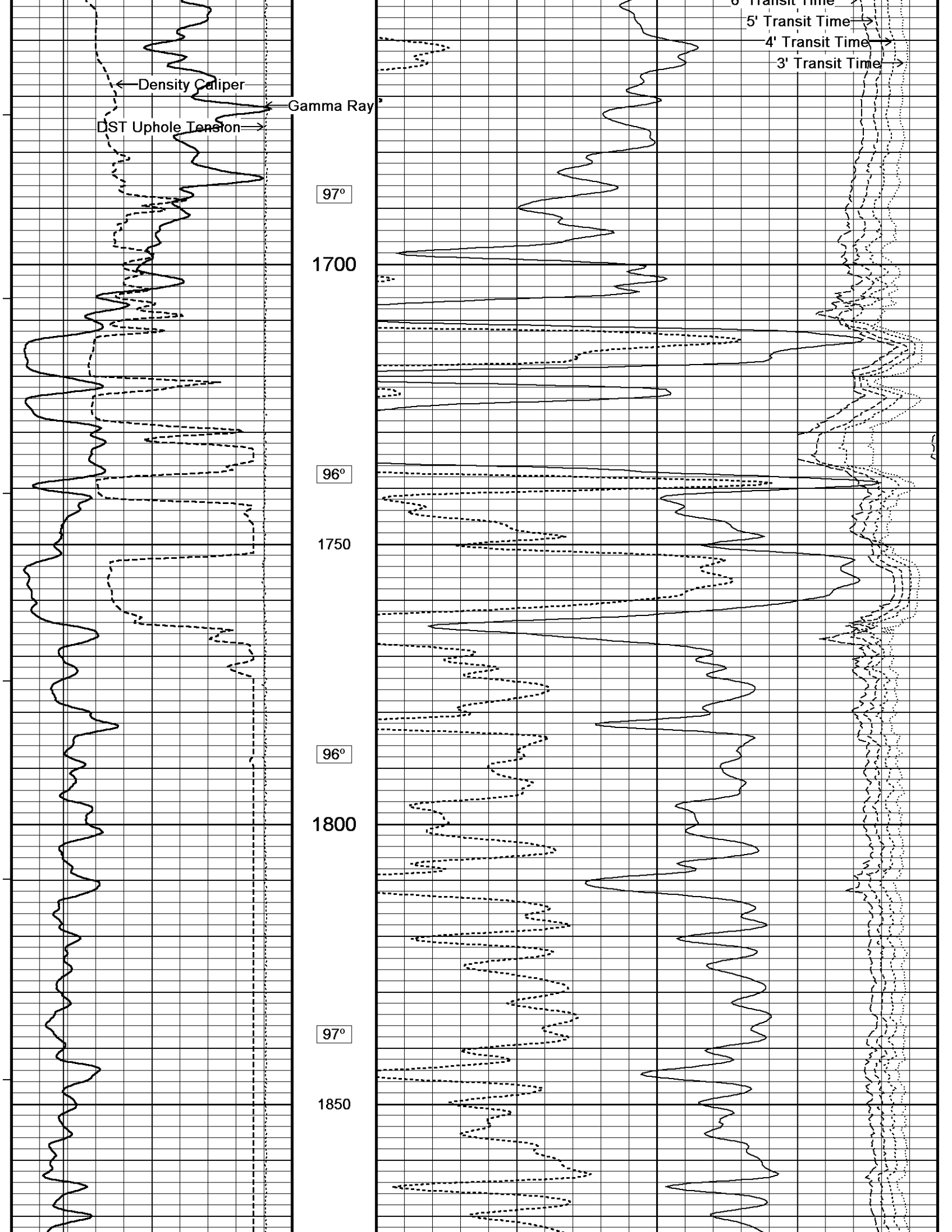
5' Transit Time

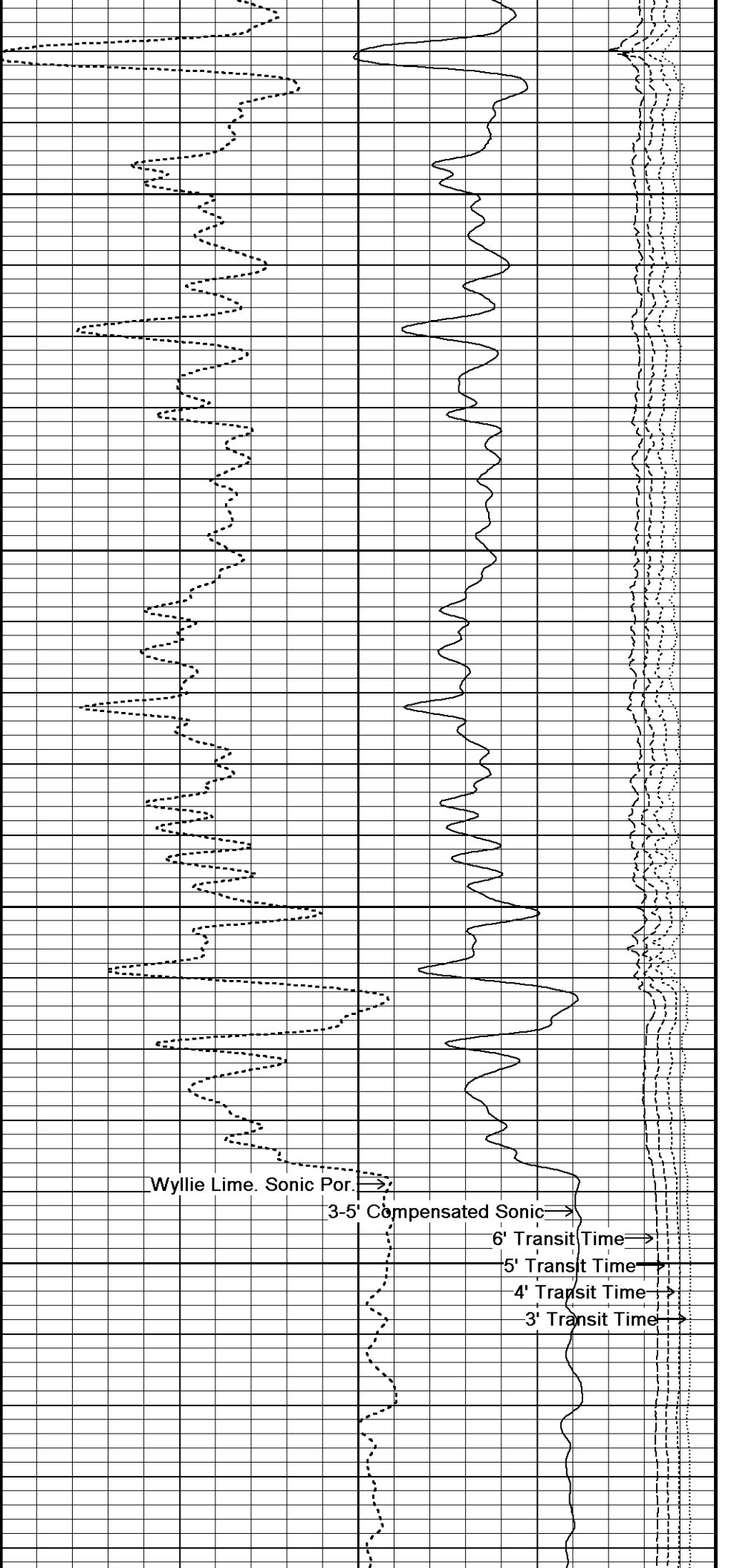
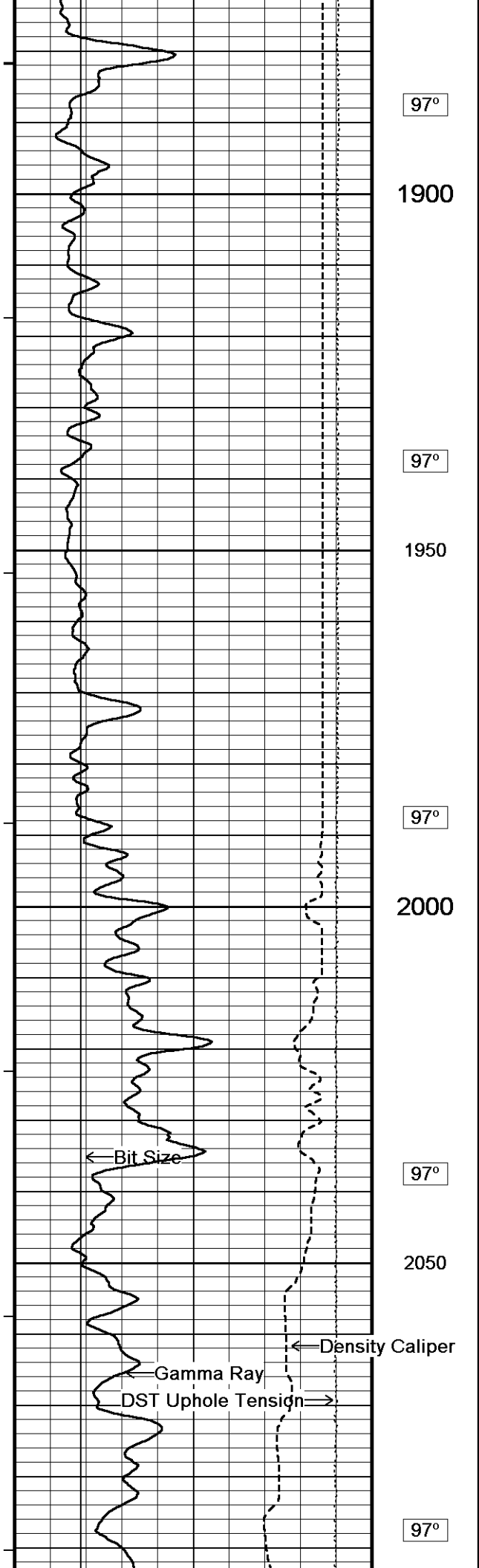
4' Transit Time

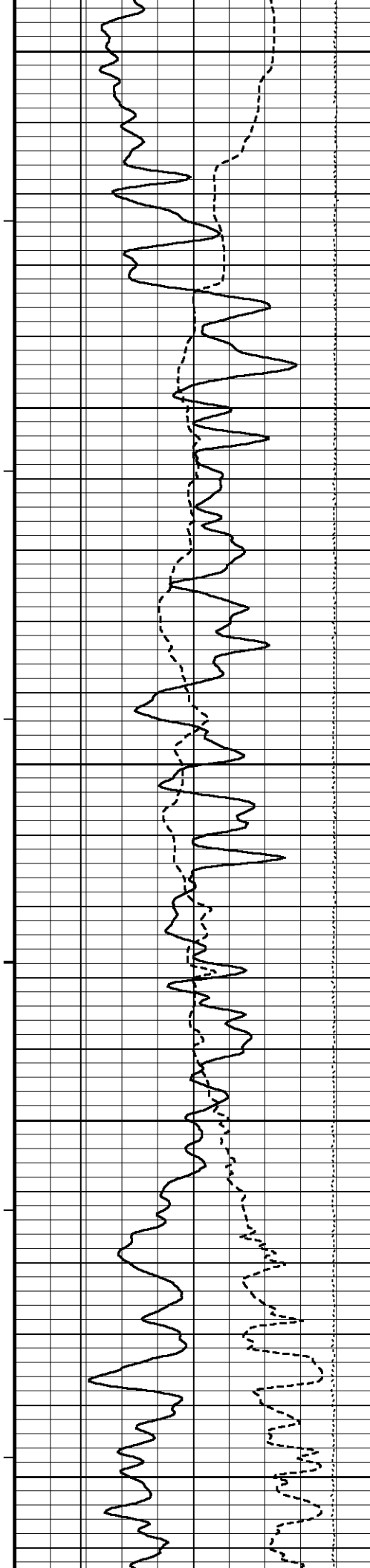
3' Transit Time











2100

98°

2150

98°

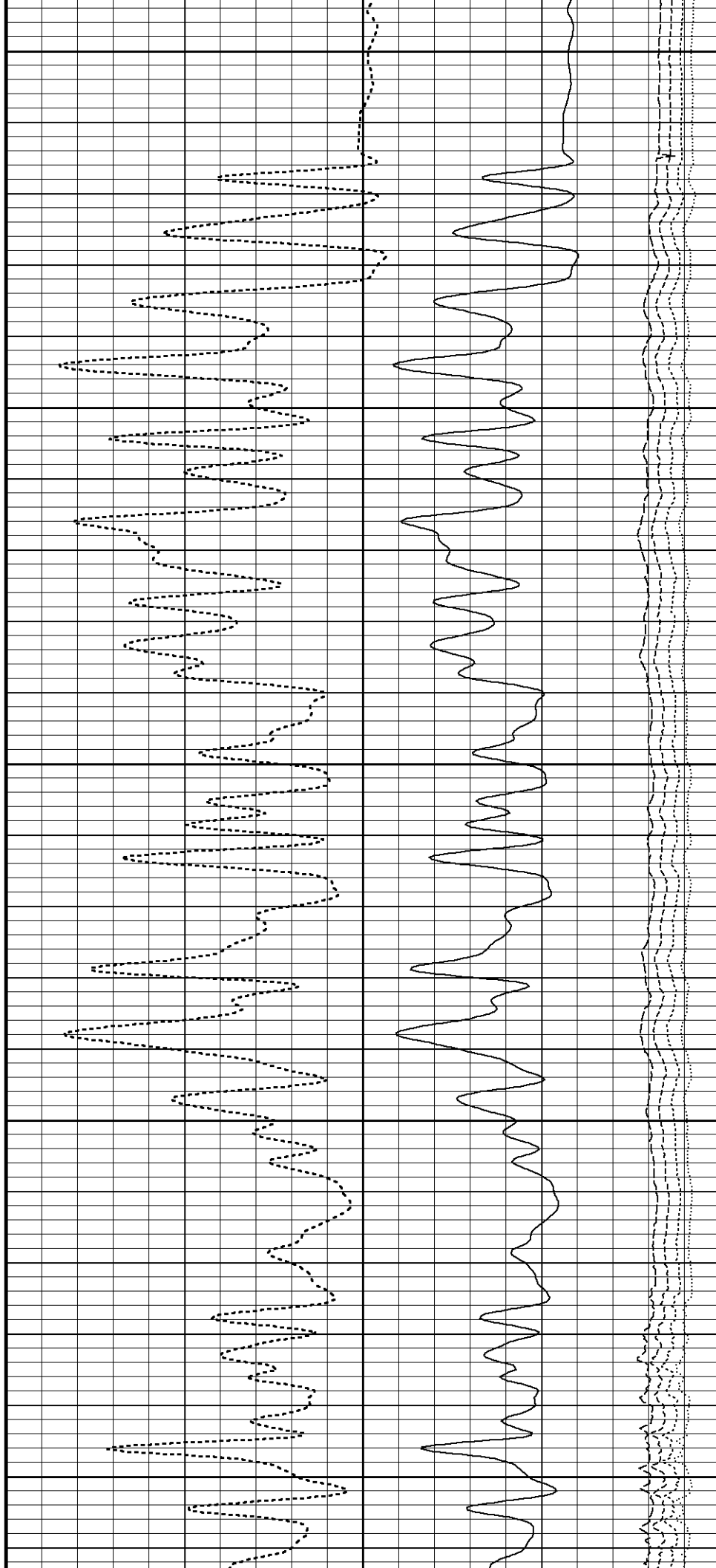
2200

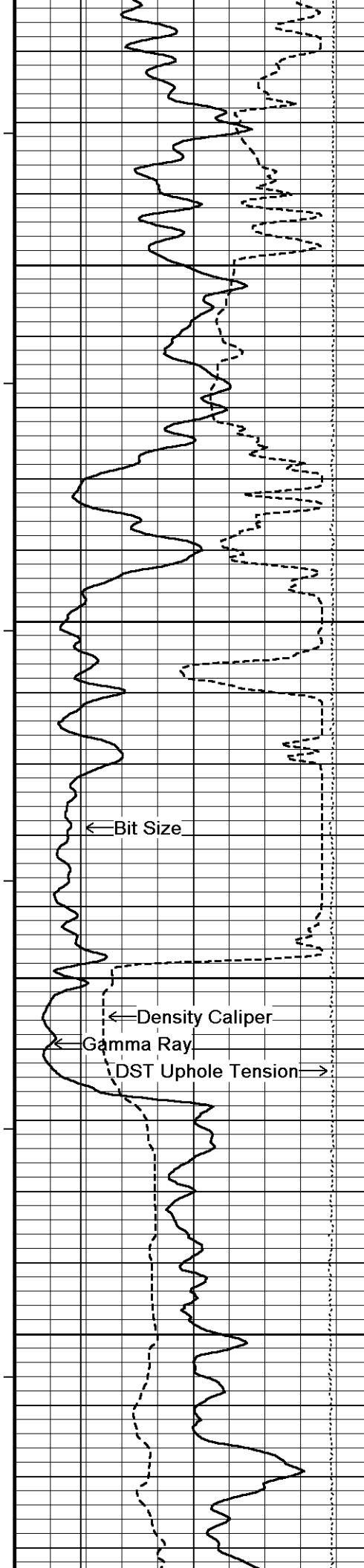
98°

2250

99°

2300





100°

2350

100°

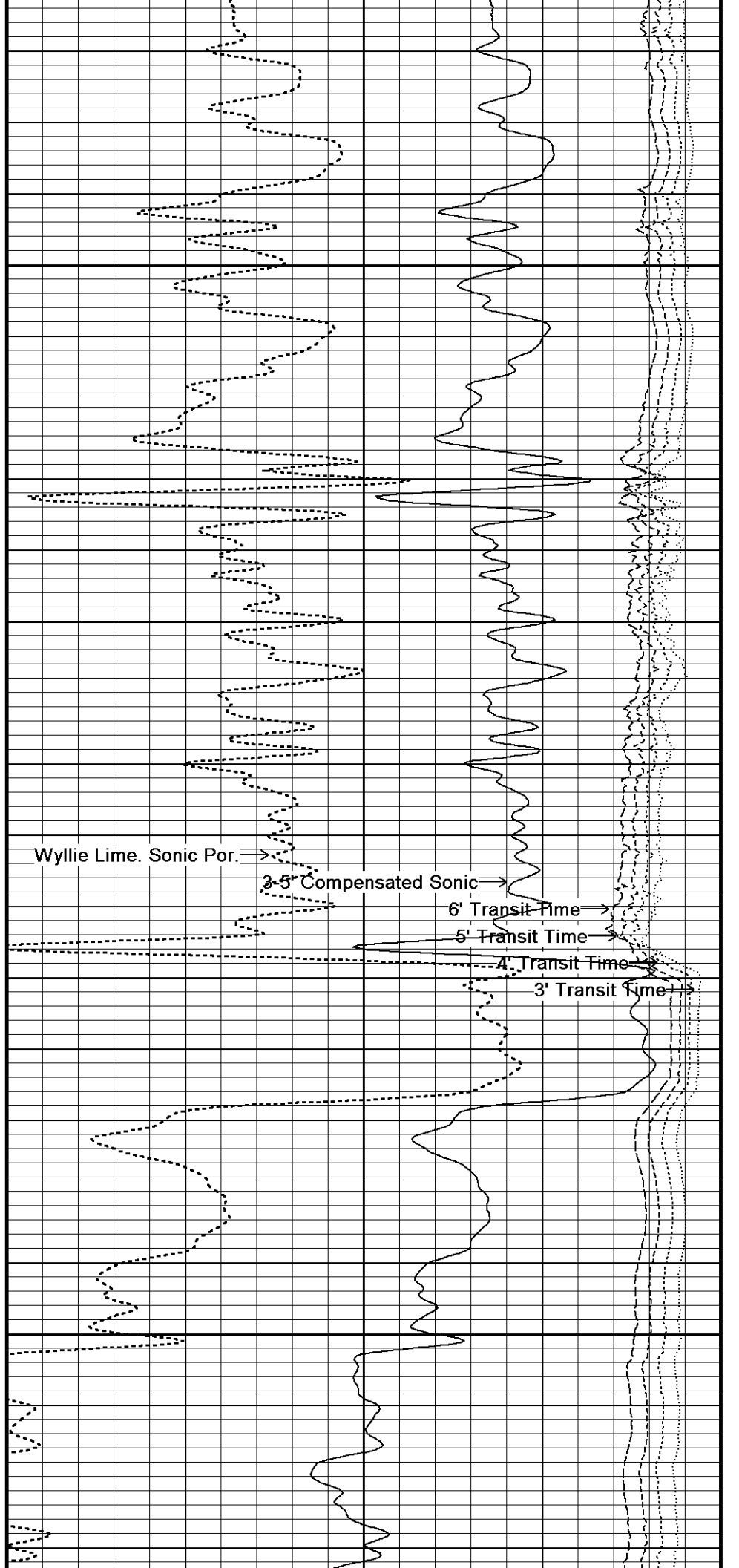
2400

100°

2450

100°

2500



Wyllie Lime. Sonic Por.

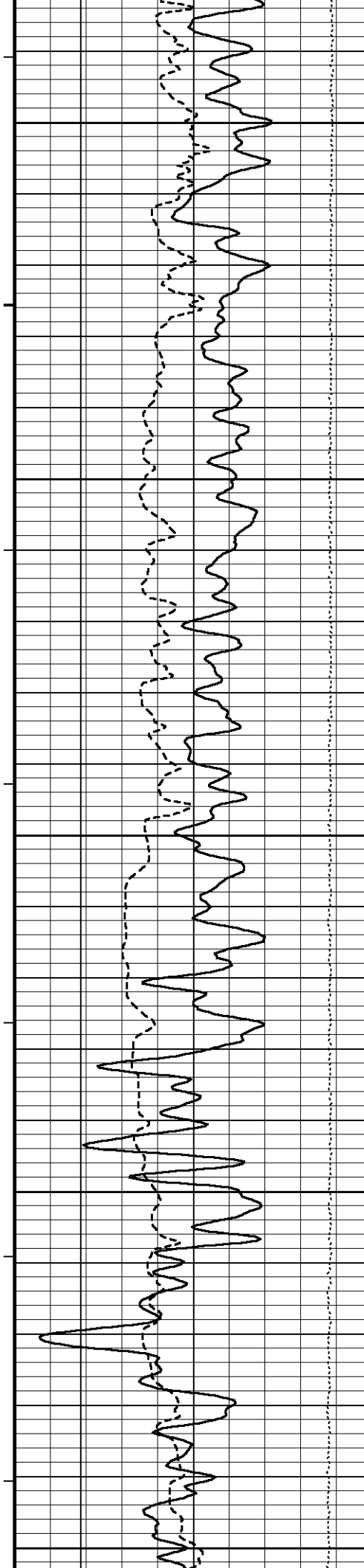
3-5' Compensated Sonic

6' Transit Time

5' Transit Time

4' Transit Time

3' Transit Time



101°

2550

101°

2600

101°

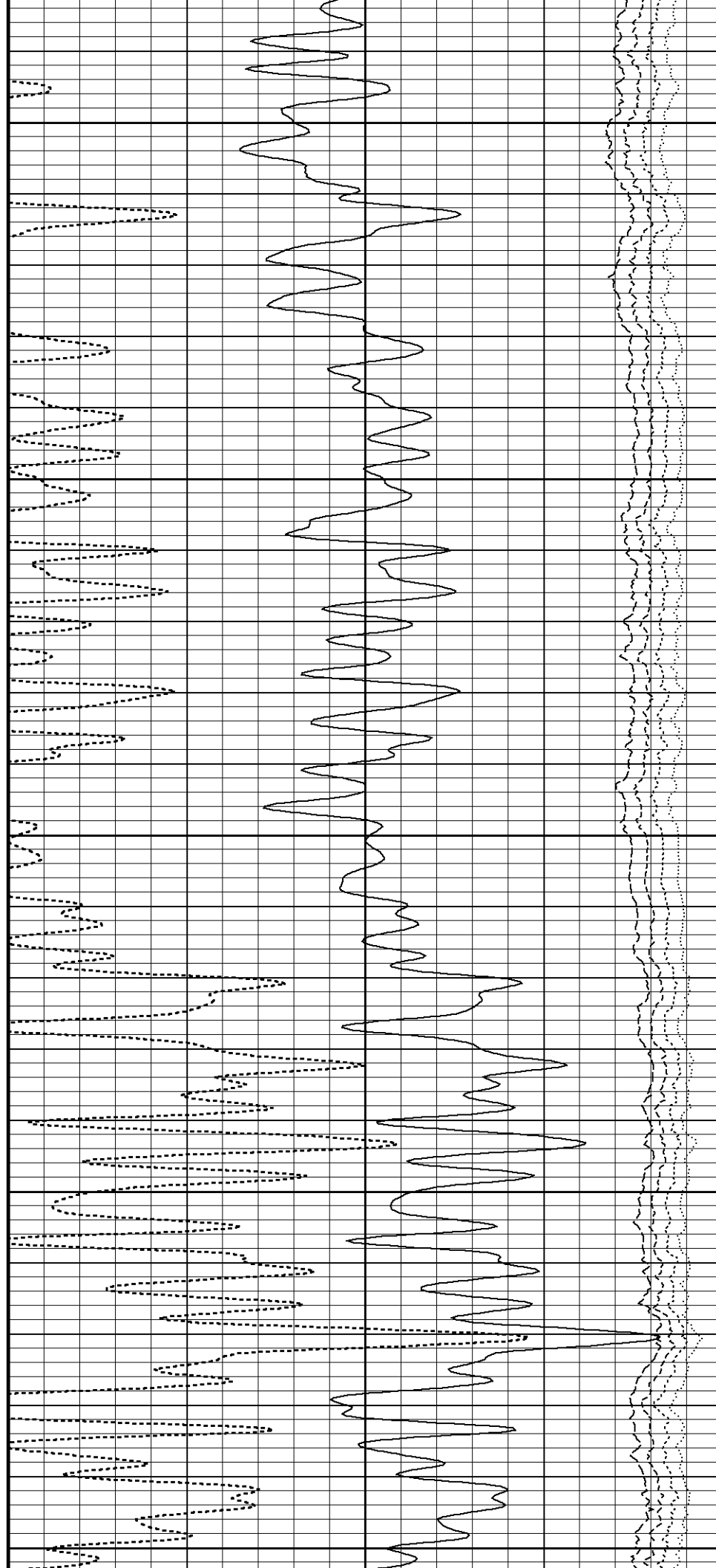
2650

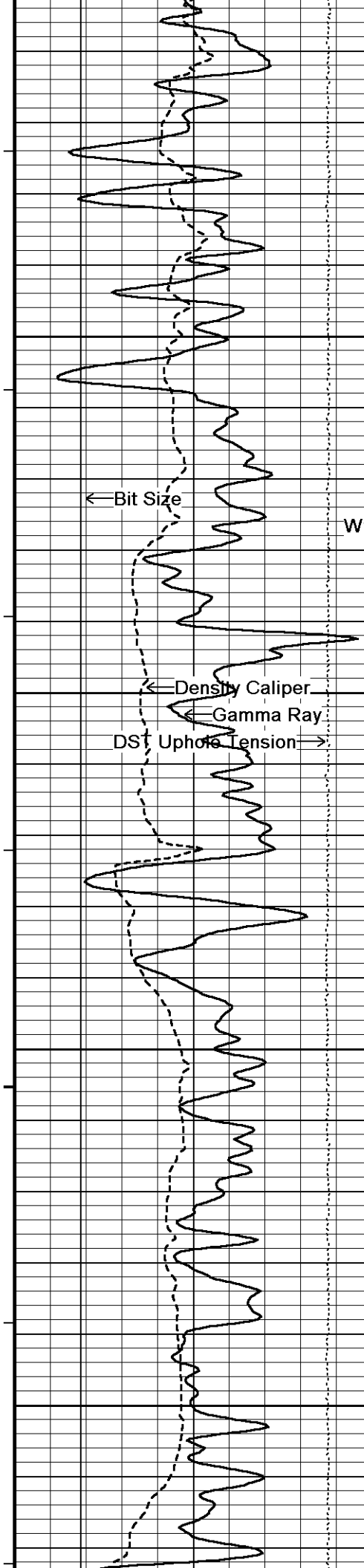
101°

2700

102°

2750





102°

2800

← Bit Size

Wyllie Lime. Sonic Por. →

102°

2850

← Density Caliper

← Gamma Ray

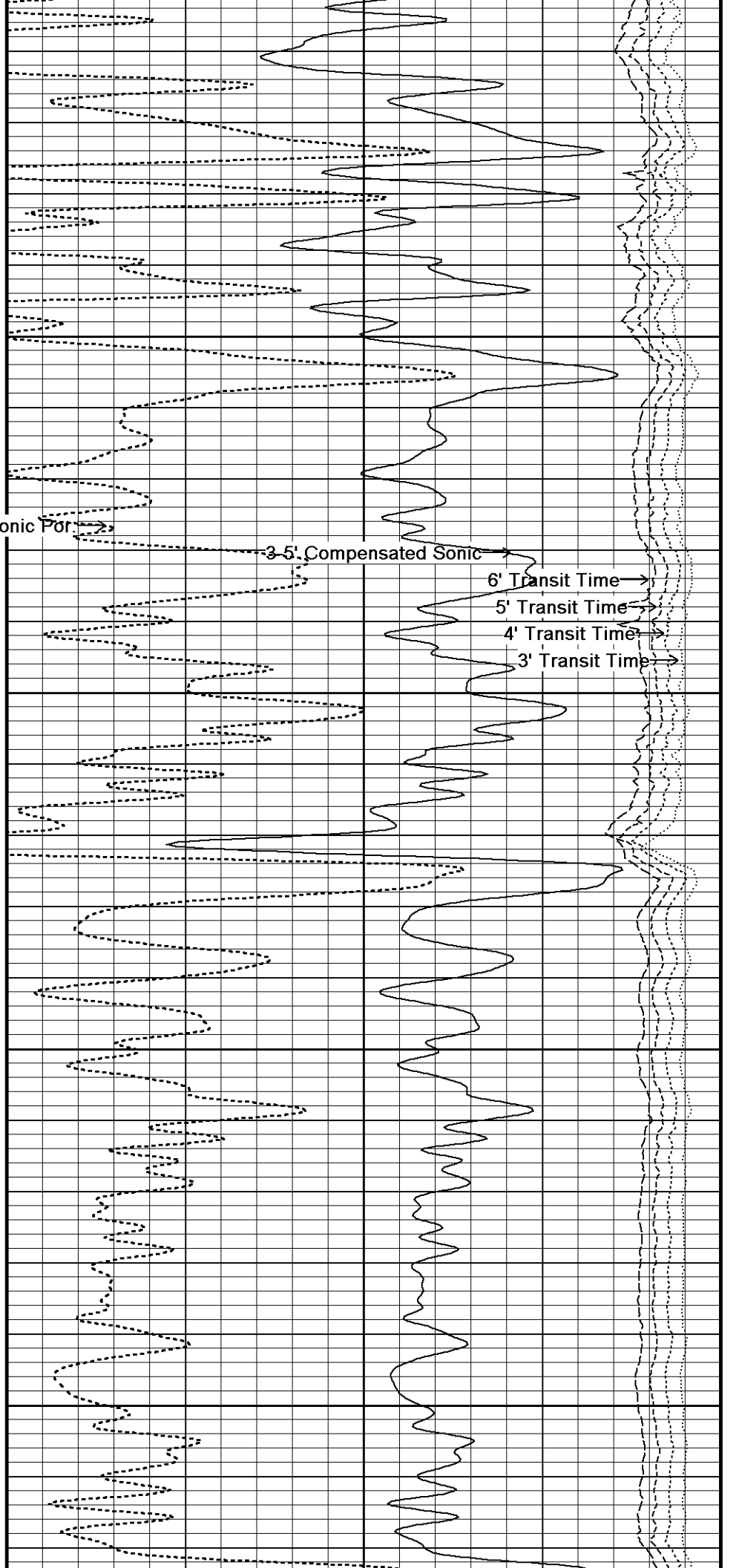
DST Uphole Tension →

103°

2900

103°

2950



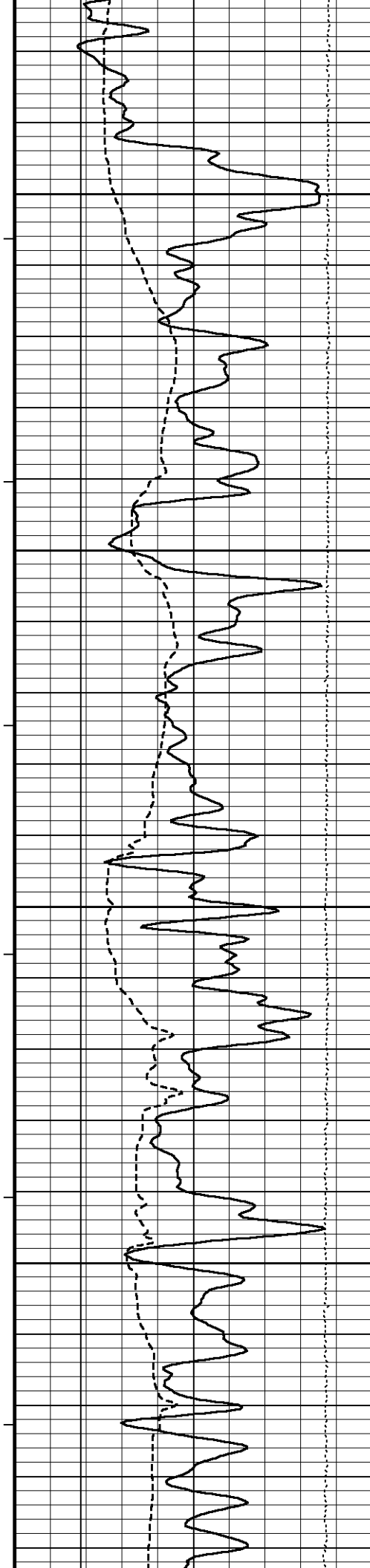
3' 5' Compensated Sonic →

6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →



103°

3000

103°

3050

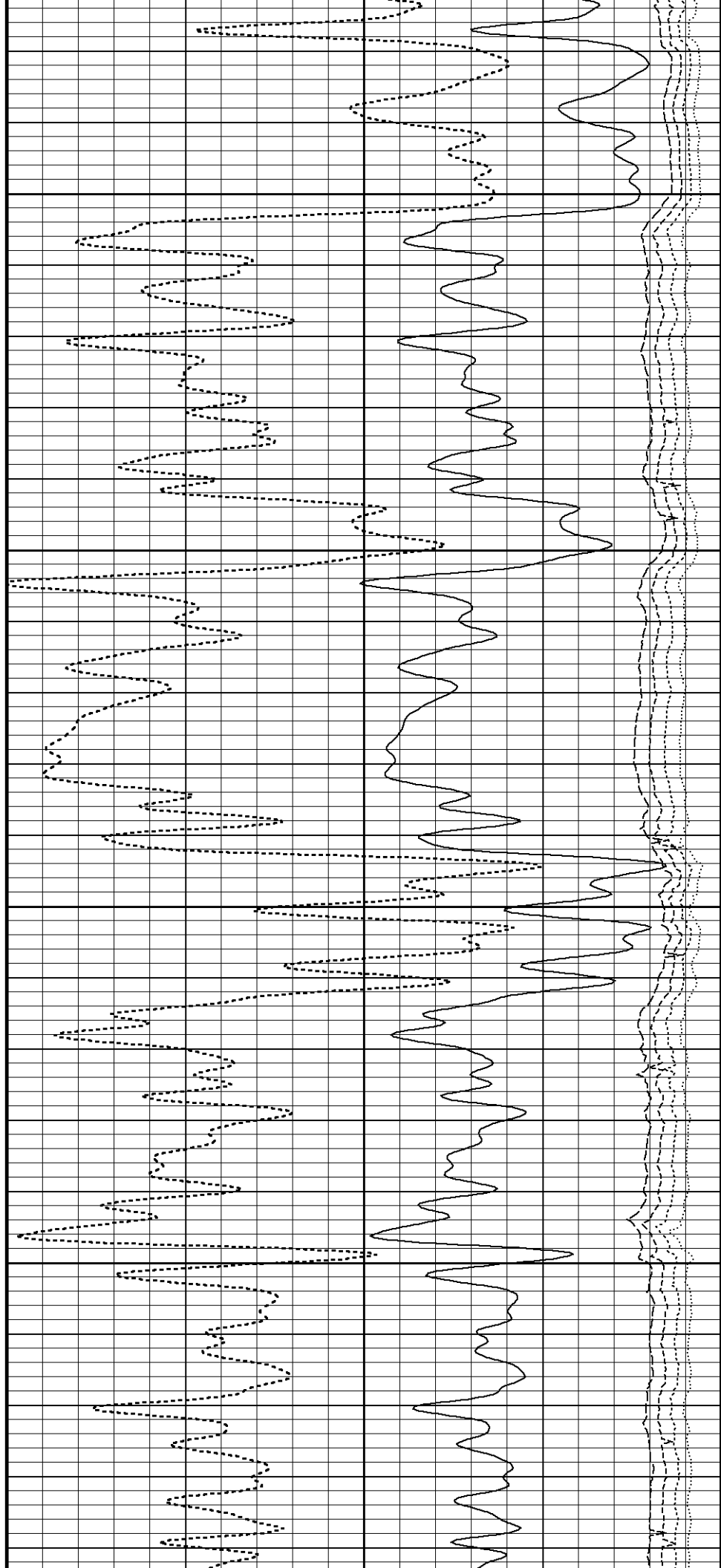
103°

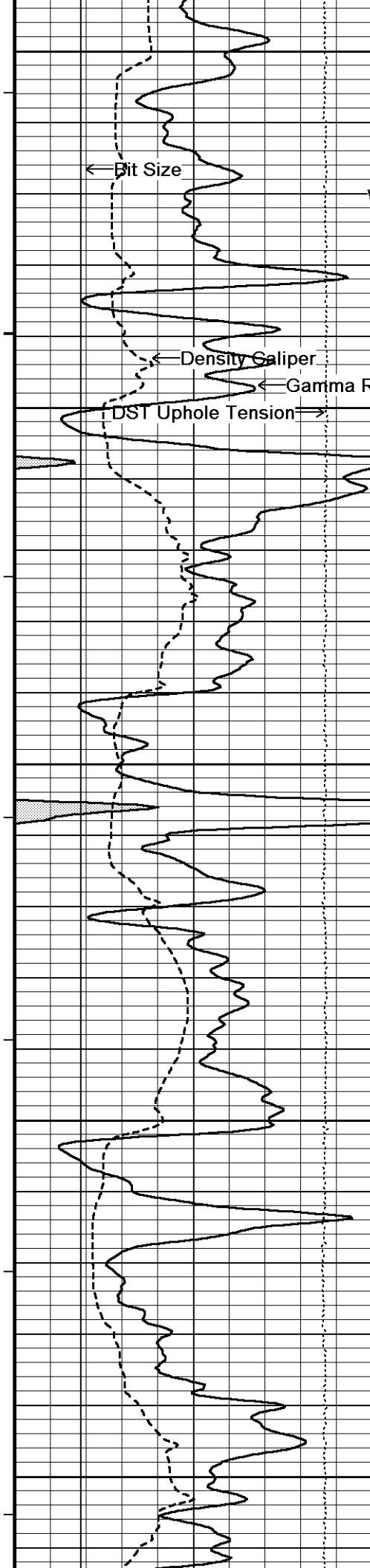
3100

103°

3150

104°





3200

104°

3250

104°

3300

104°

3350

105°

3400

Wyllie Lime. Sonic Por. →

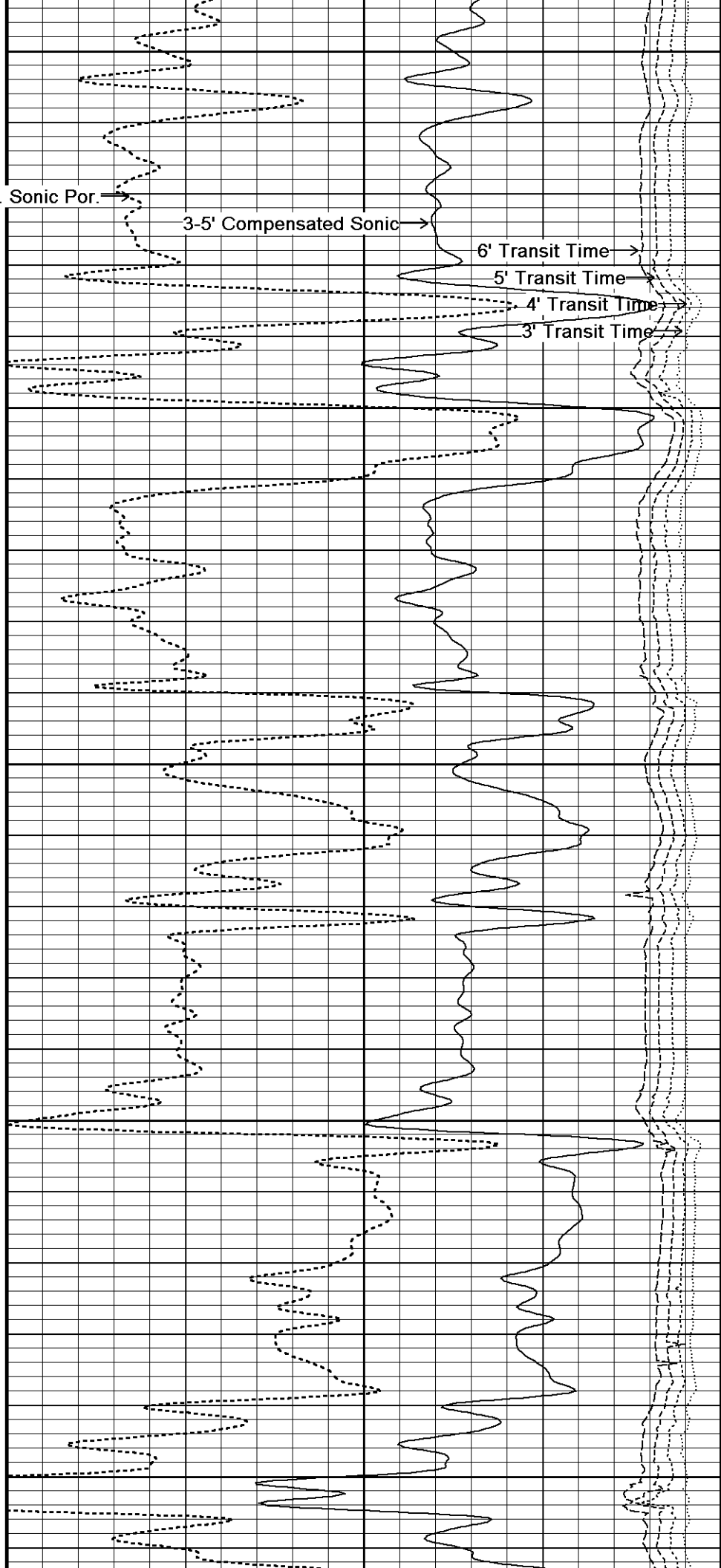
3-5' Compensated Sonic →

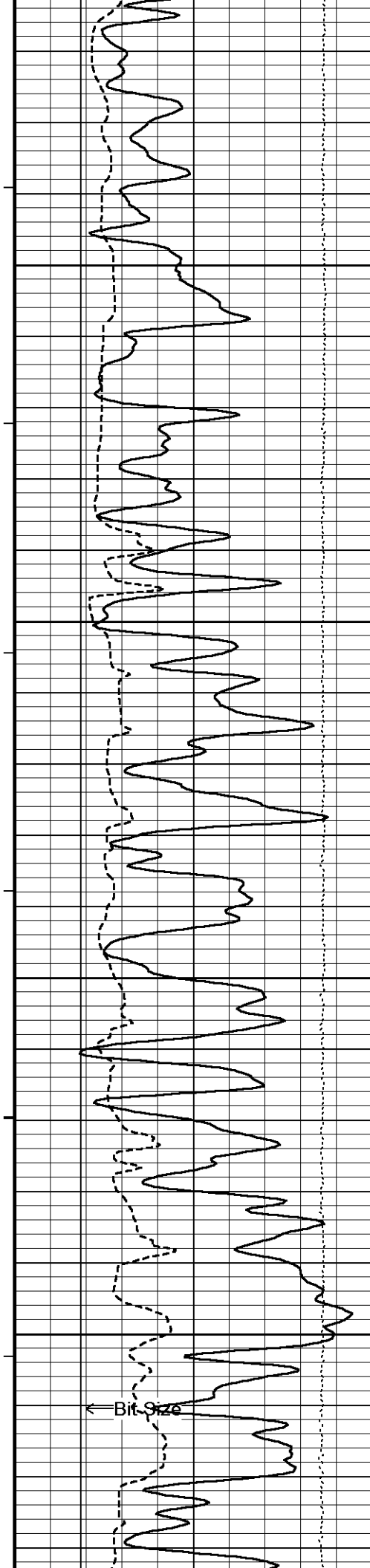
6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →





105°

3450

105°

3500

105°

3550

106°

3600

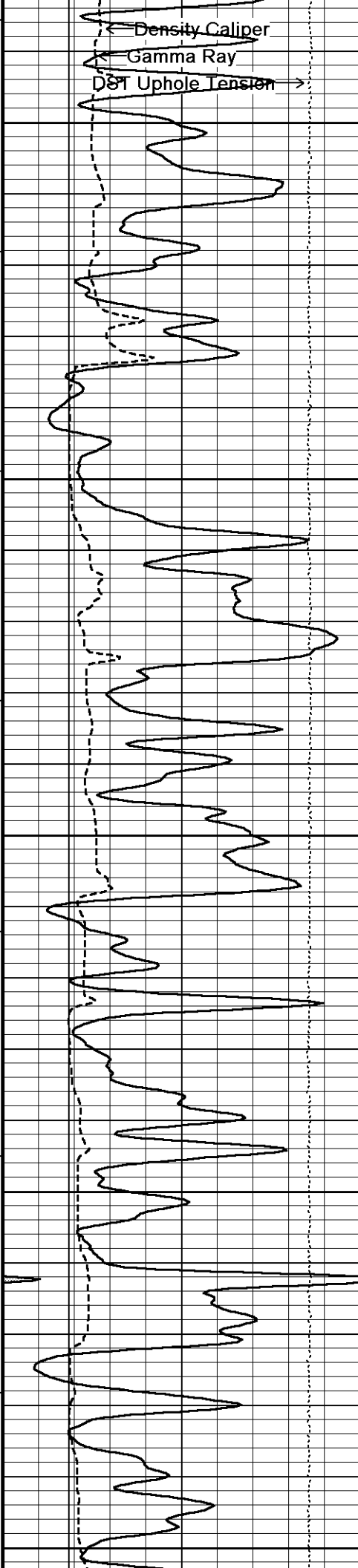
3-5' Compensated Sonic →

6' Transit Time →

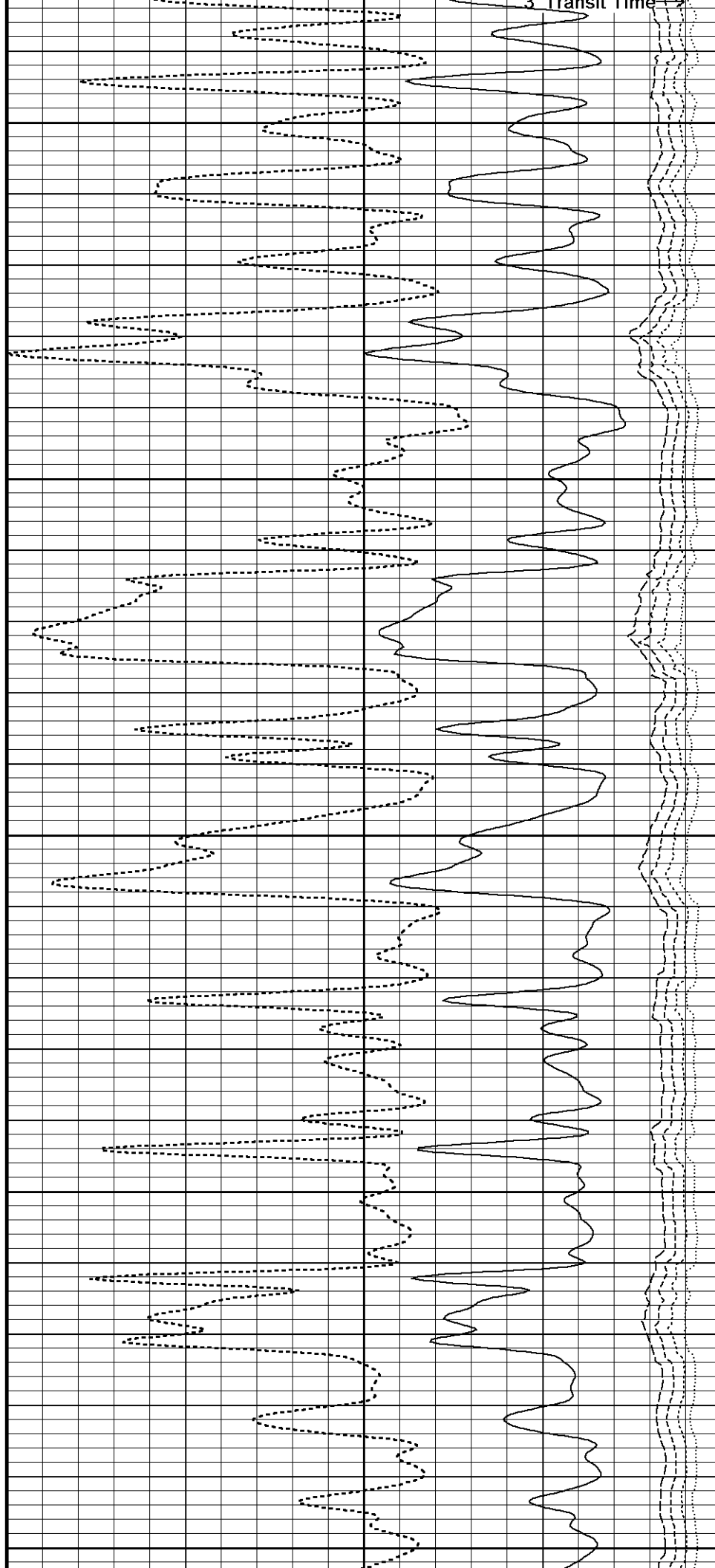
5' Transit Time →

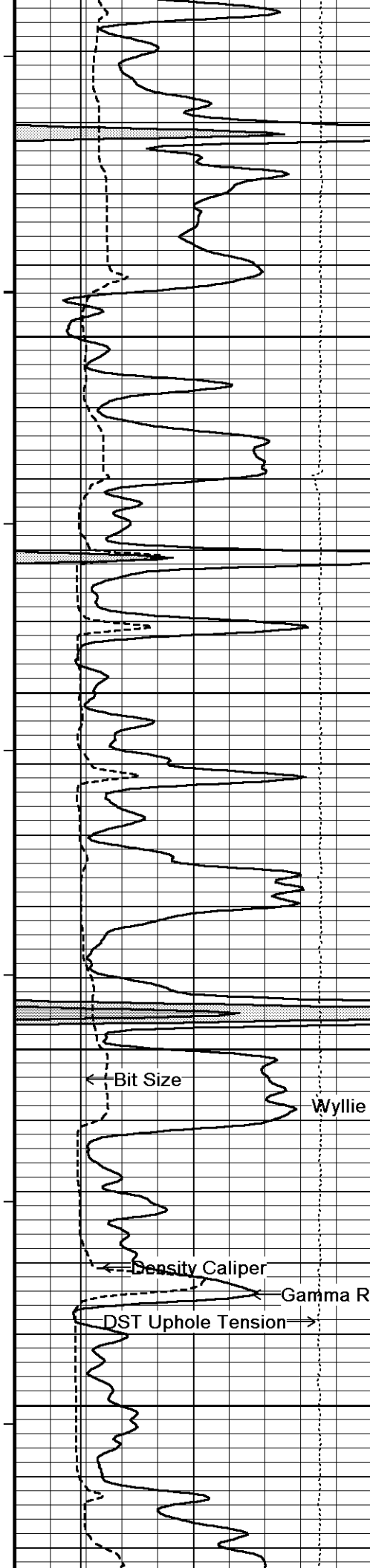
4' Transit Time →

3' Transit Time →



106°  
3650  
106°  
3700  
107°  
3750  
107°  
3800  
107°  
3850





107°

3900

107°

3950

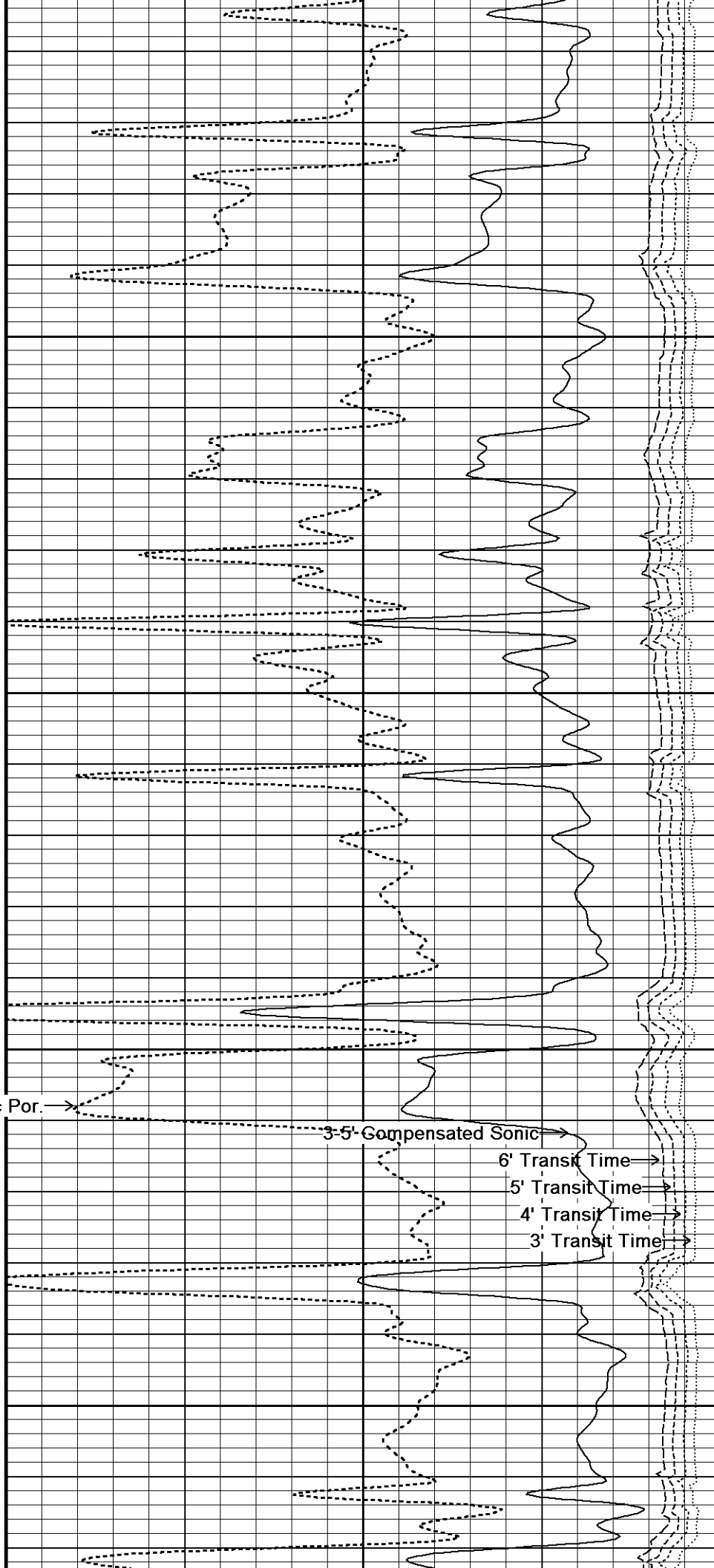
108°

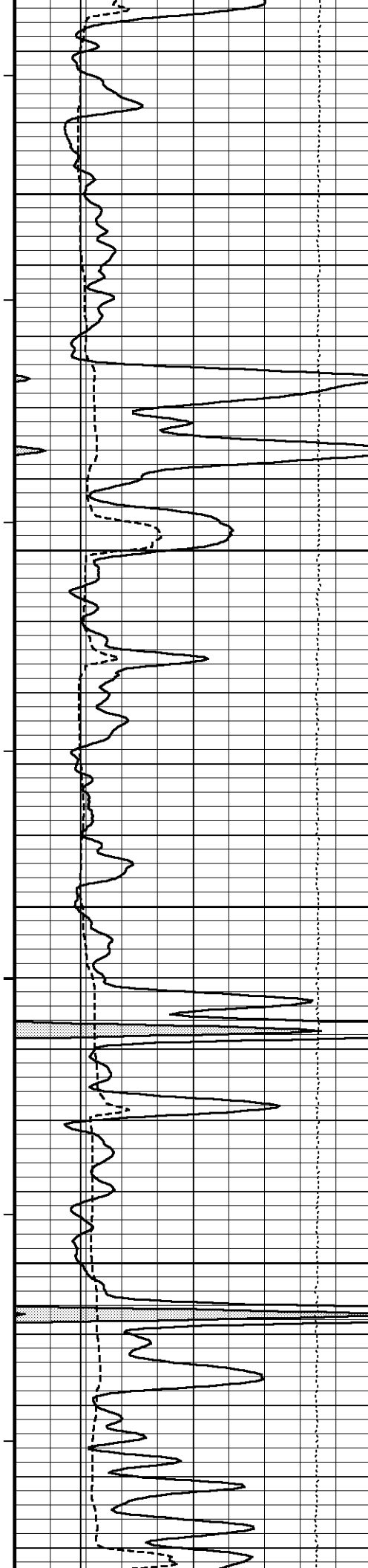
4000

Wyllie Lime. Sonic Por. →

108°

4050





108°

4100

108°

4150

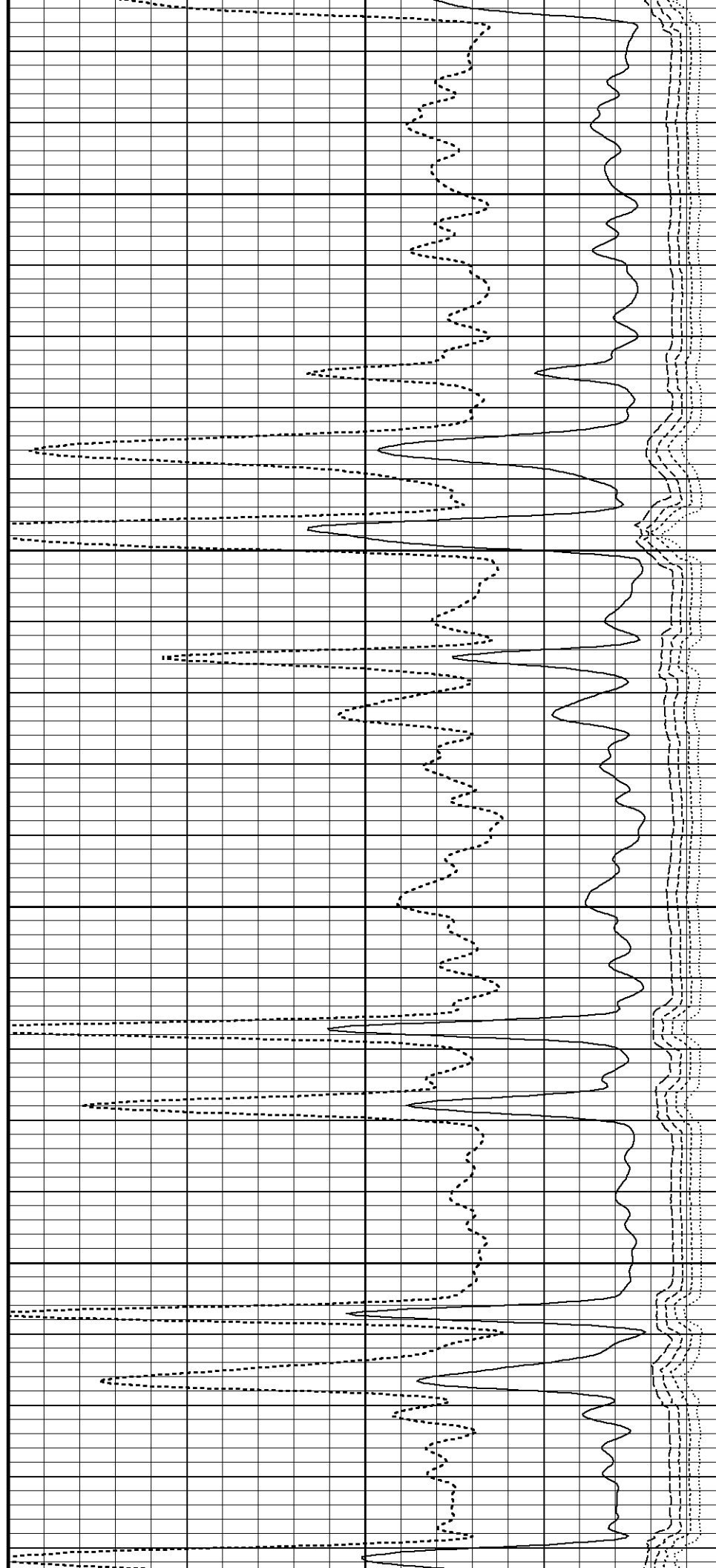
109°

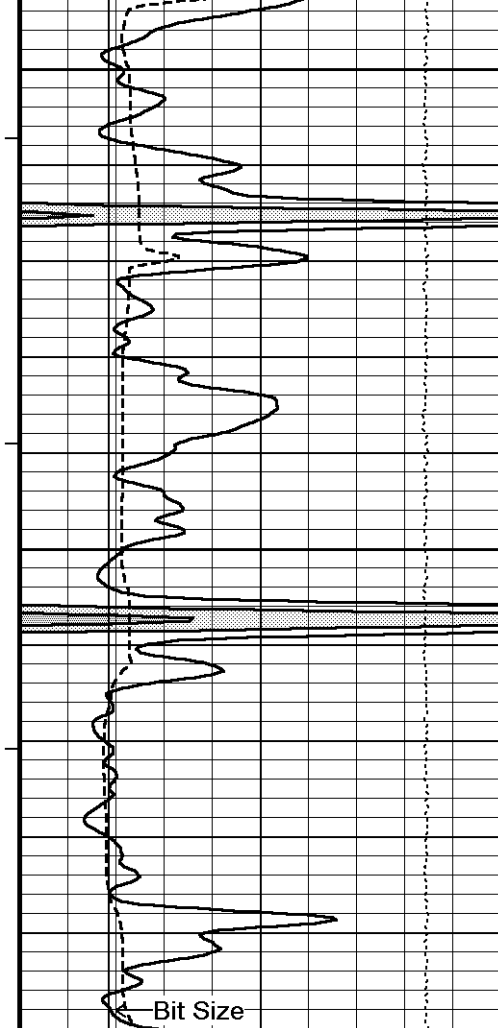
4200

109°

4250

109°





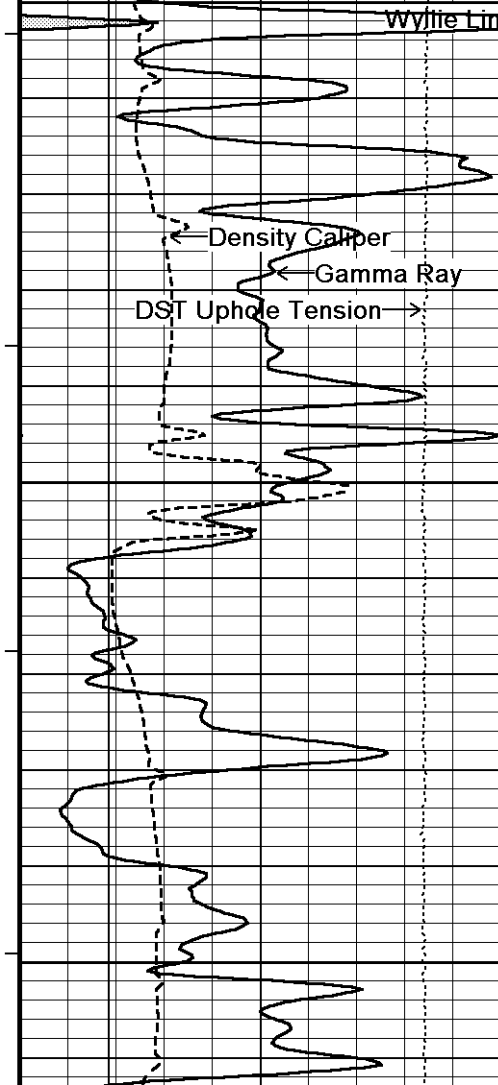
4300

109°

4350

110°

4400



Wyllie Time, Sonic Por. →

Density Caliper

Gamma Ray

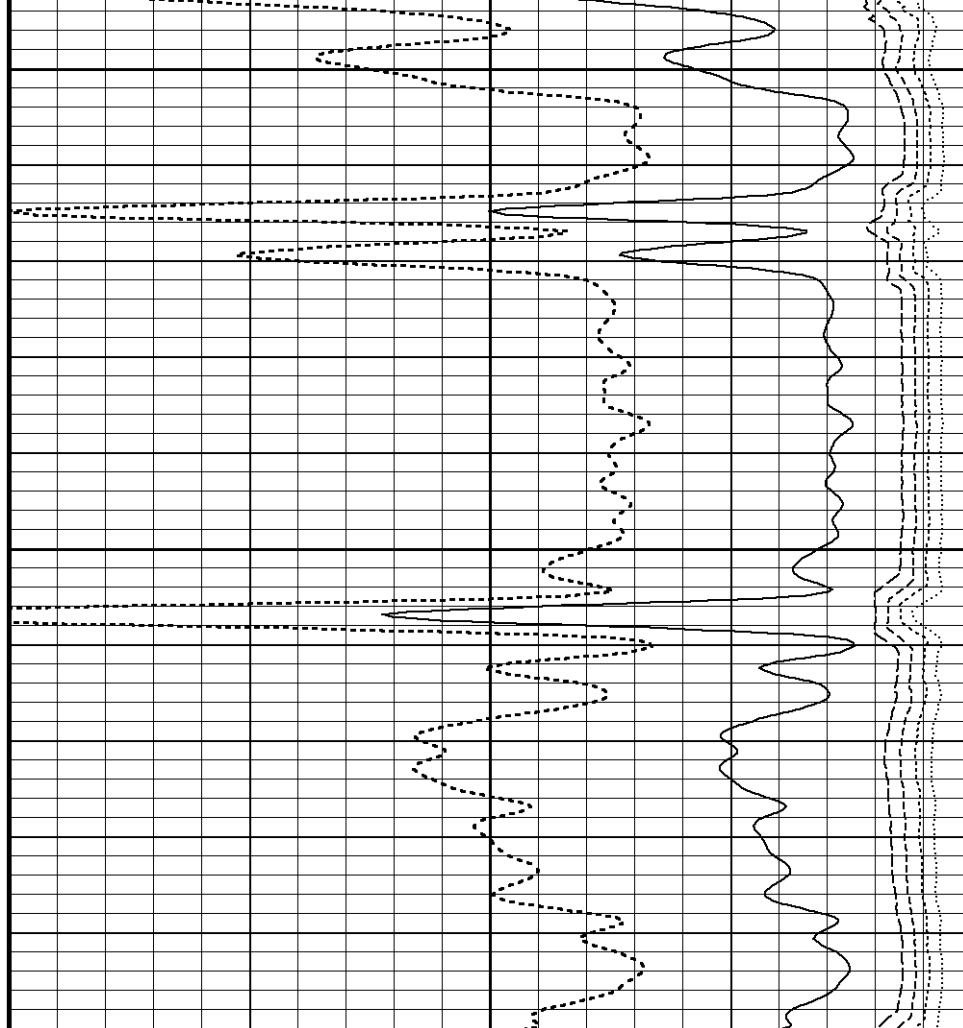
DST Uphole Tension →

110°

4450

111°

4500



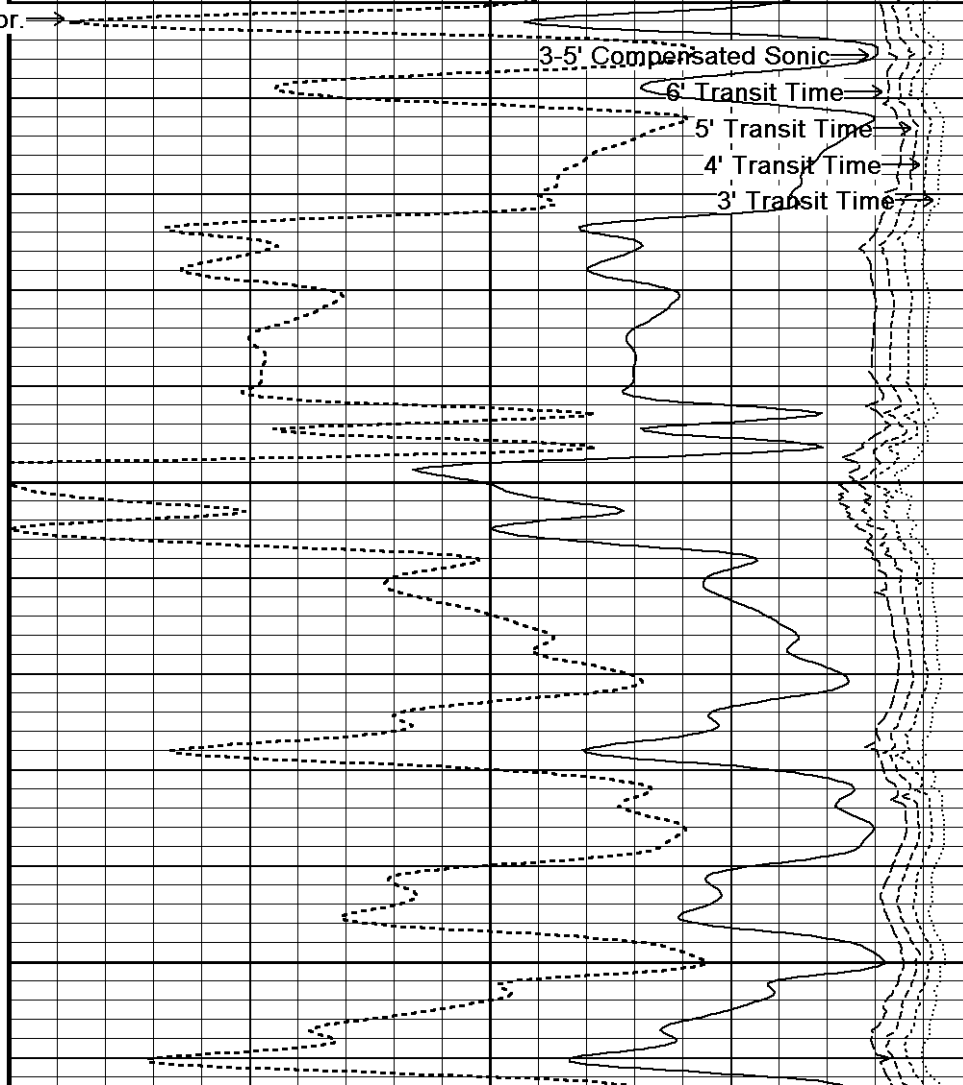
3-5' Compensated Sonic →

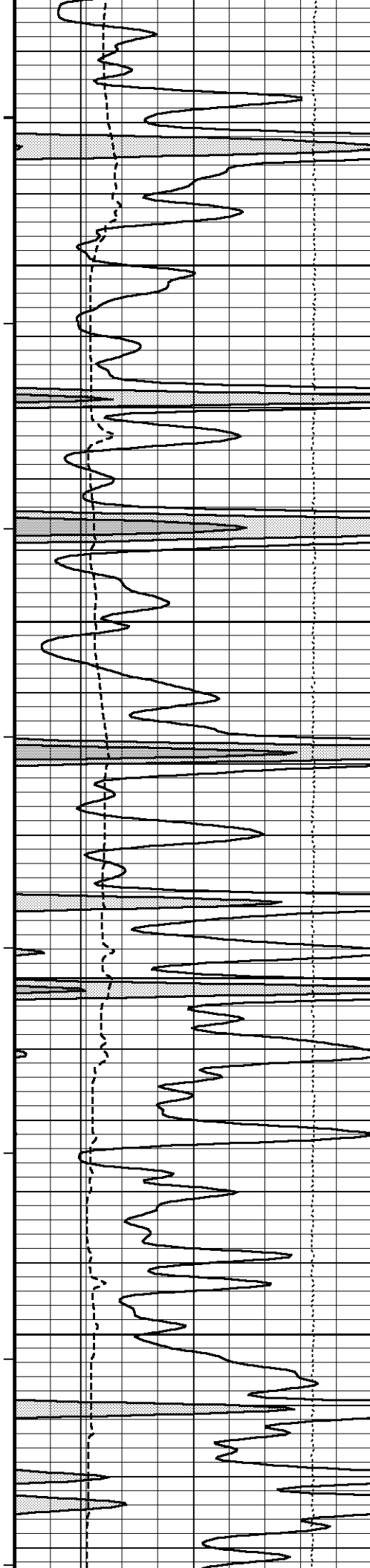
6' Transit Time →

5' Transit Time →

4' Transit Time →

3' Transit Time →





111°

4550

112°

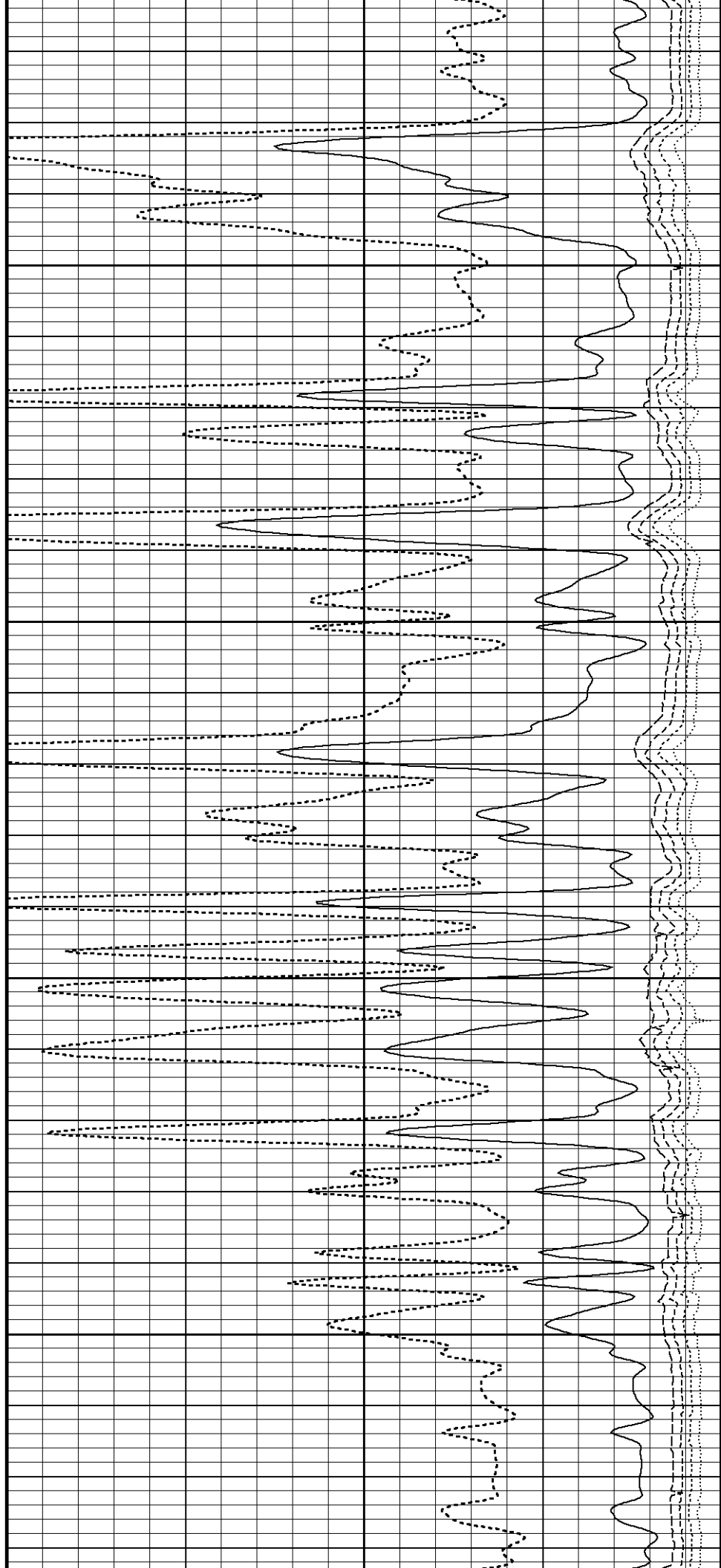
4600

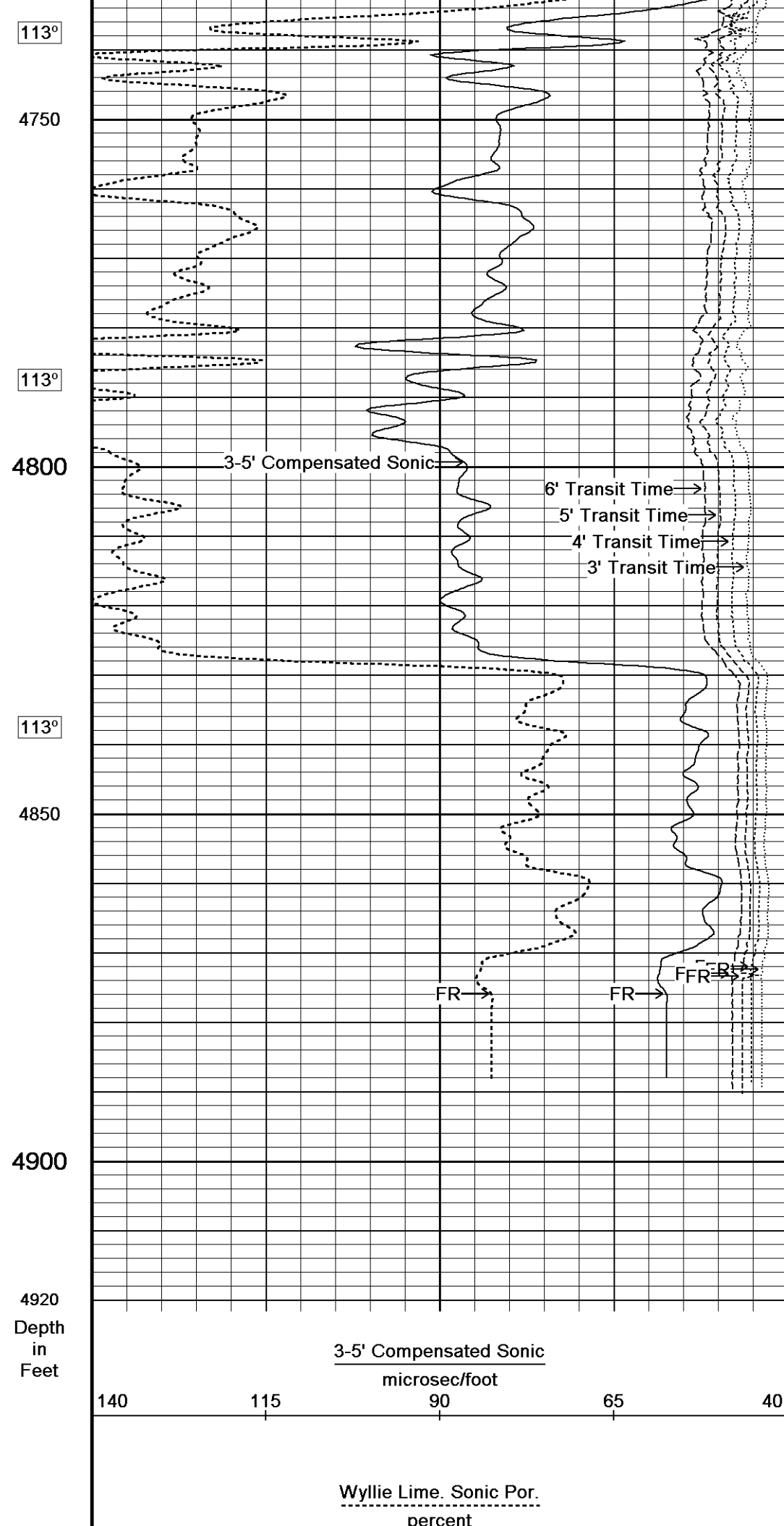
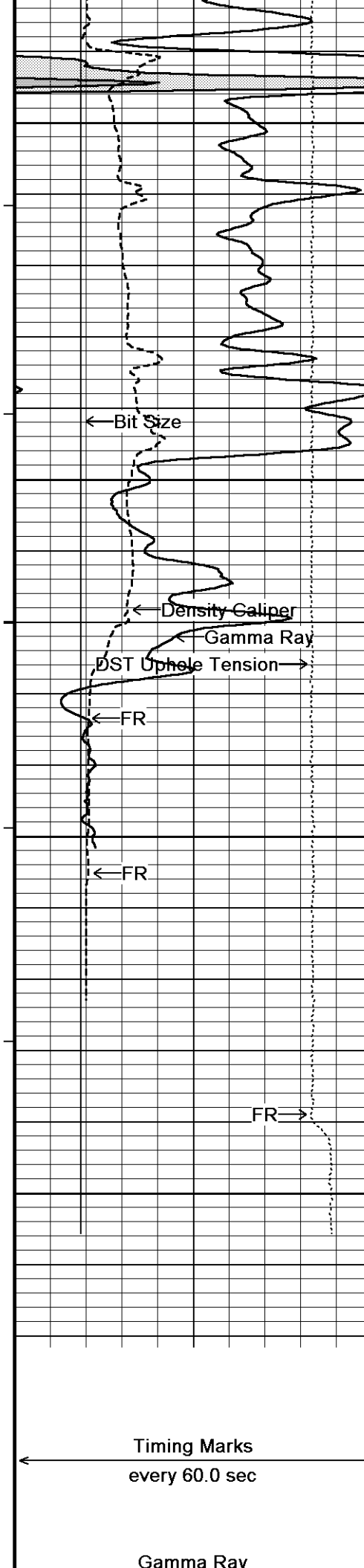
112°

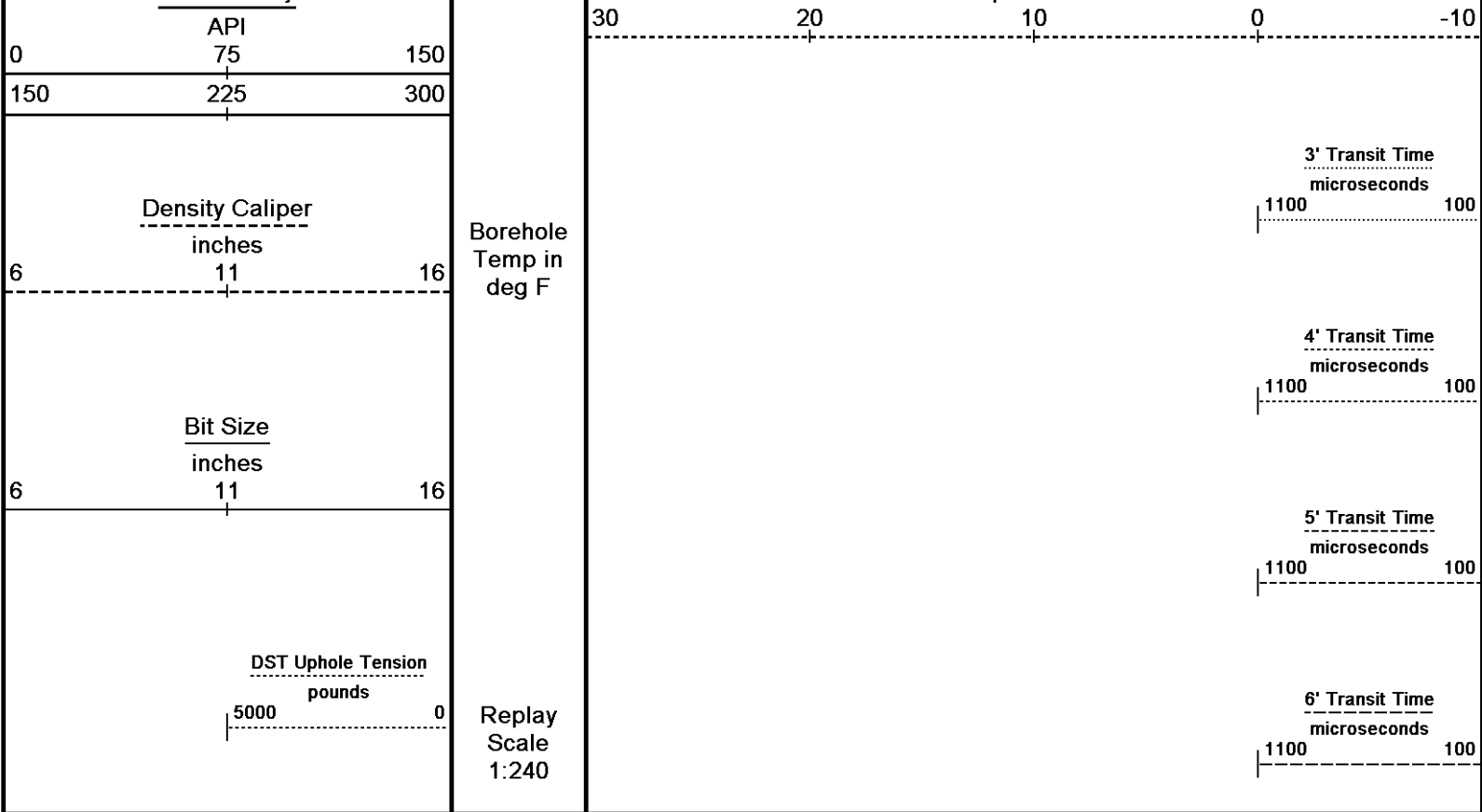
4650

113°

4700







Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 07-SEP-2013 10:05

Filename: C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 MAIN.dta

Recorded on 07-SEP-2013 06:46

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

↑

5 INCH MAIN

↑

↓

REPEAT SECTION

↓

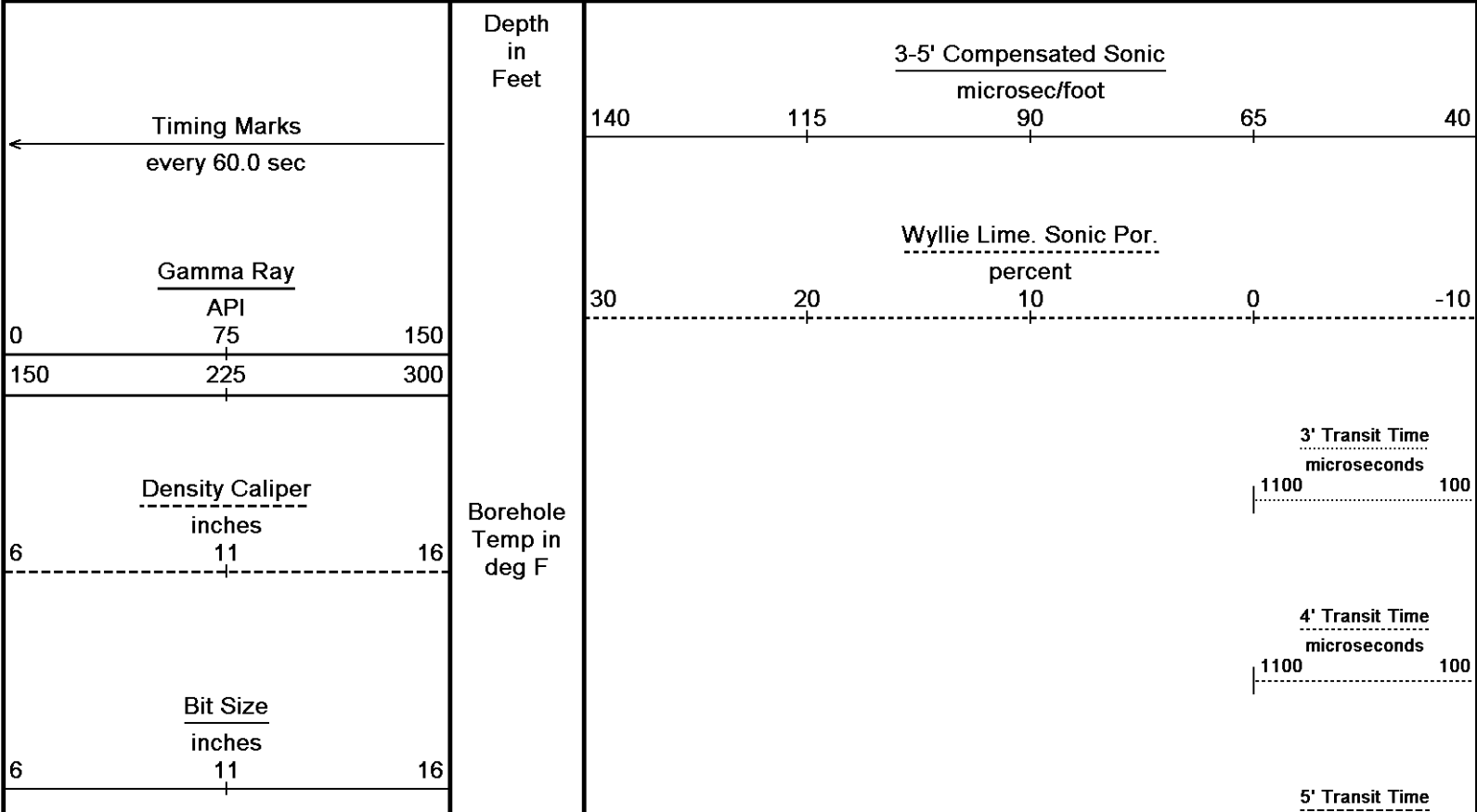
Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 07-SEP-2013 10:05

Filename: C:\Minimus 13.05.9583\Logs\Shakespeare Carson ...\Shakespeare Carson 1-26 REPEAT.dta

Recorded on 07-SEP-2013 06:26

System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583



DST Uphole Tension  
pounds  
5000 0

Replay  
Scale  
1:240

microseconds  
1100 100  
6' Transit Time  
microseconds  
1100 100

4600

112°

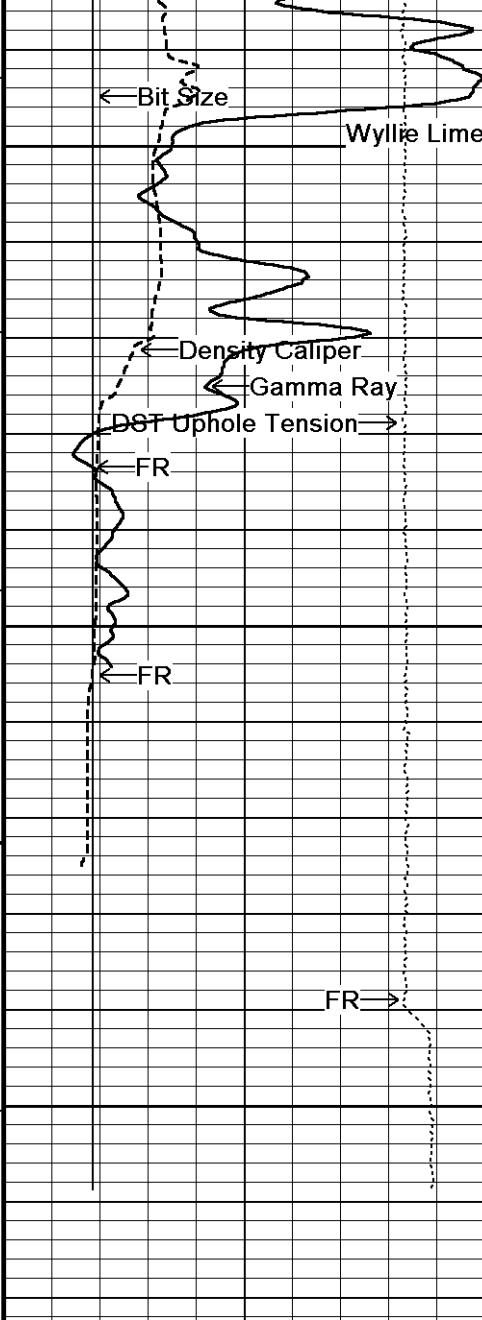
4650

112°

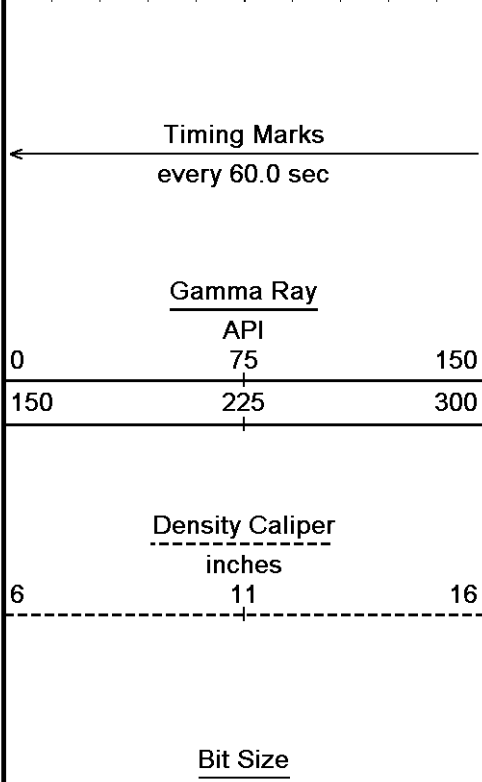
4700

112°

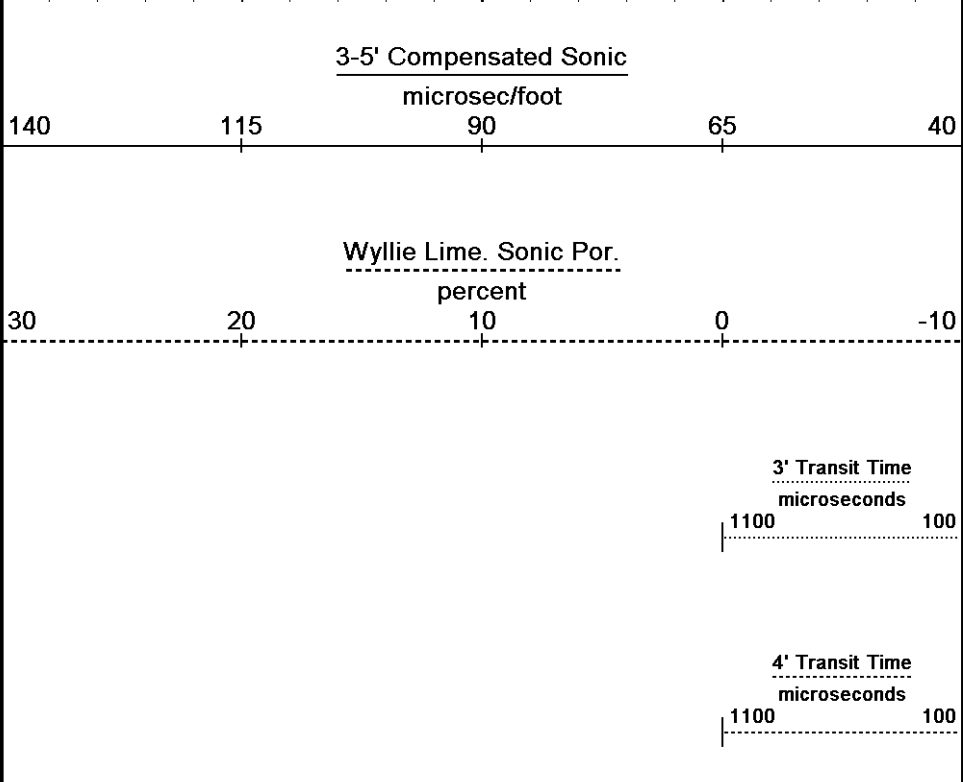
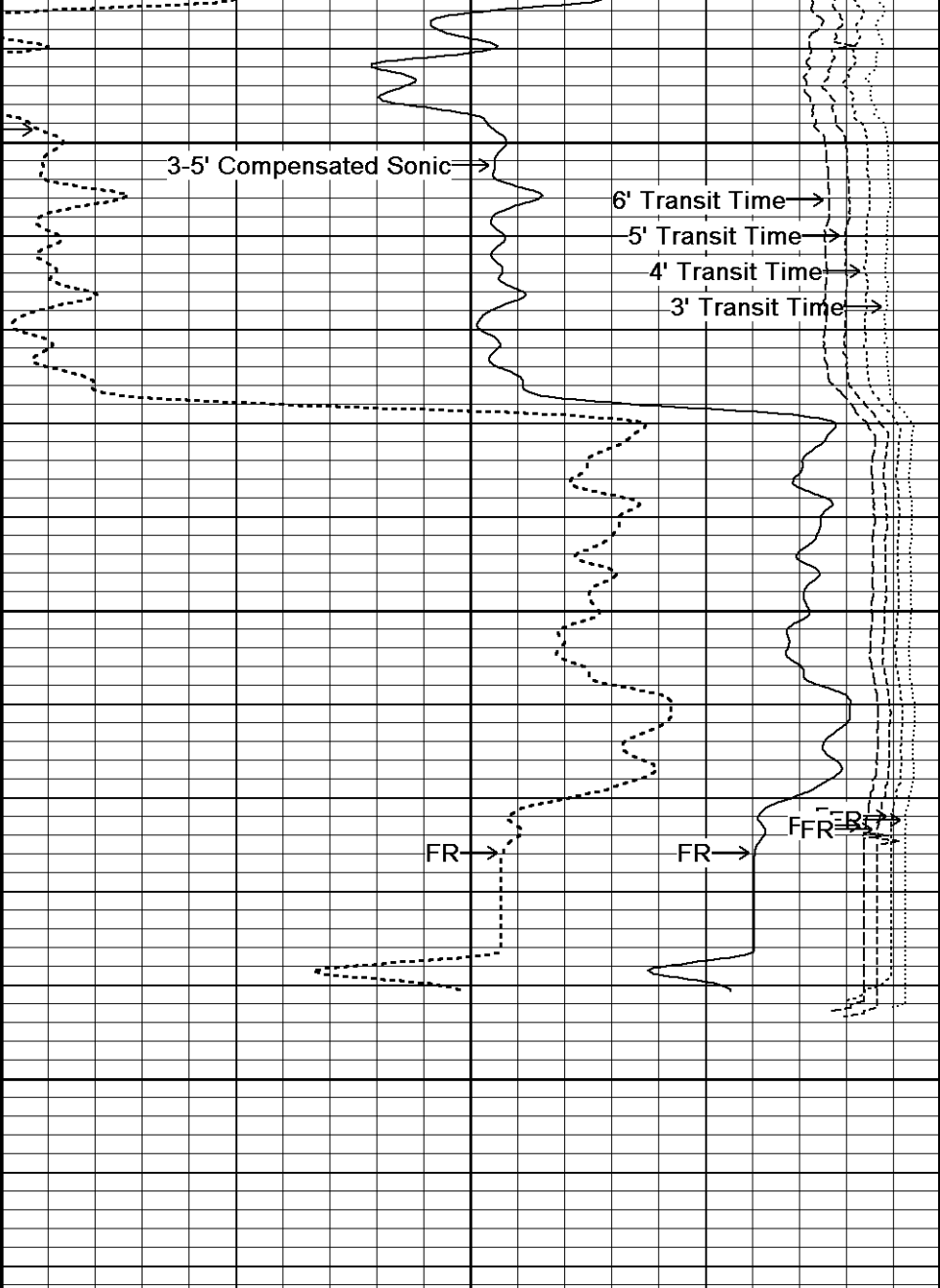
4750

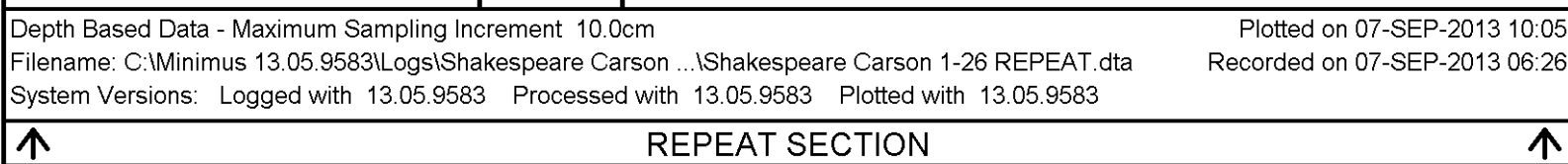


112°  
Wyllie Lime. Sonic Por.  
4800  
112°  
4850  
4900  
4920  
Depth in Feet



Borehole Temp in deg F





C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 REPEAT.dta

Last Edited on 07-SEP-2013,05:52

|                                                         |                 |        |
|---------------------------------------------------------|-----------------|--------|
| 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                        | MML Caliper     |        |

|                     |                       |
|---------------------|-----------------------|
| Rwa Parameters      |                       |
| Porosity used       | Crossplot Porosity    |
| Resistivity used    | Array Ind. One Res Rt |
| RWA Constant A      | 1.000                 |
| RWA Constant M      | 2.000                 |
| SW/APOR Tool Source | 0.000                 |

Field Calibration on 28-AUG-2013 04:17

|                    | Measured | Calibrated (API) |
|--------------------|----------|------------------|
| Background         | 53       | 36               |
| Calibrator (Gross) | 1112     | 761              |
| Calibrator (Net)   | 1059     | 725              |

Last Edited on 07-SEP-2013.05:52

|                               |                 |       |
|-------------------------------|-----------------|-------|
| Gamma Calibrator Number       | GRC38           |       |
| Mud Density                   | 1.09            | gm/cc |
| Caliper Source for Processing | Density Caliper |       |
| Tool Position                 | Eccentred       |       |
| Concentration of KCl          |                 | kppm  |
| K Mud Type                    | Chloride        |       |
| K Mud Concentration           | 0.00            | %     |

Field Calibration on 28-AUG-2013,04:08

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

Last Edited on 28-AUG-2013.04:08

|                   |    |
|-------------------|----|
| Pre-filter Length | 11 |
|-------------------|----|



Measured Caliper (in)  
7.93

Actual Caliper (in)  
7.77

## DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Logs\Shakespeare Carson 1-26\Shakespeare Carson 1-26 REPEAT.dta

CBH-C, Cablehead, 11 pin

CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.24 in

Compact Comms Gamma

MCG-D.K 443 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-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper

MPD-B 59 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric

MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

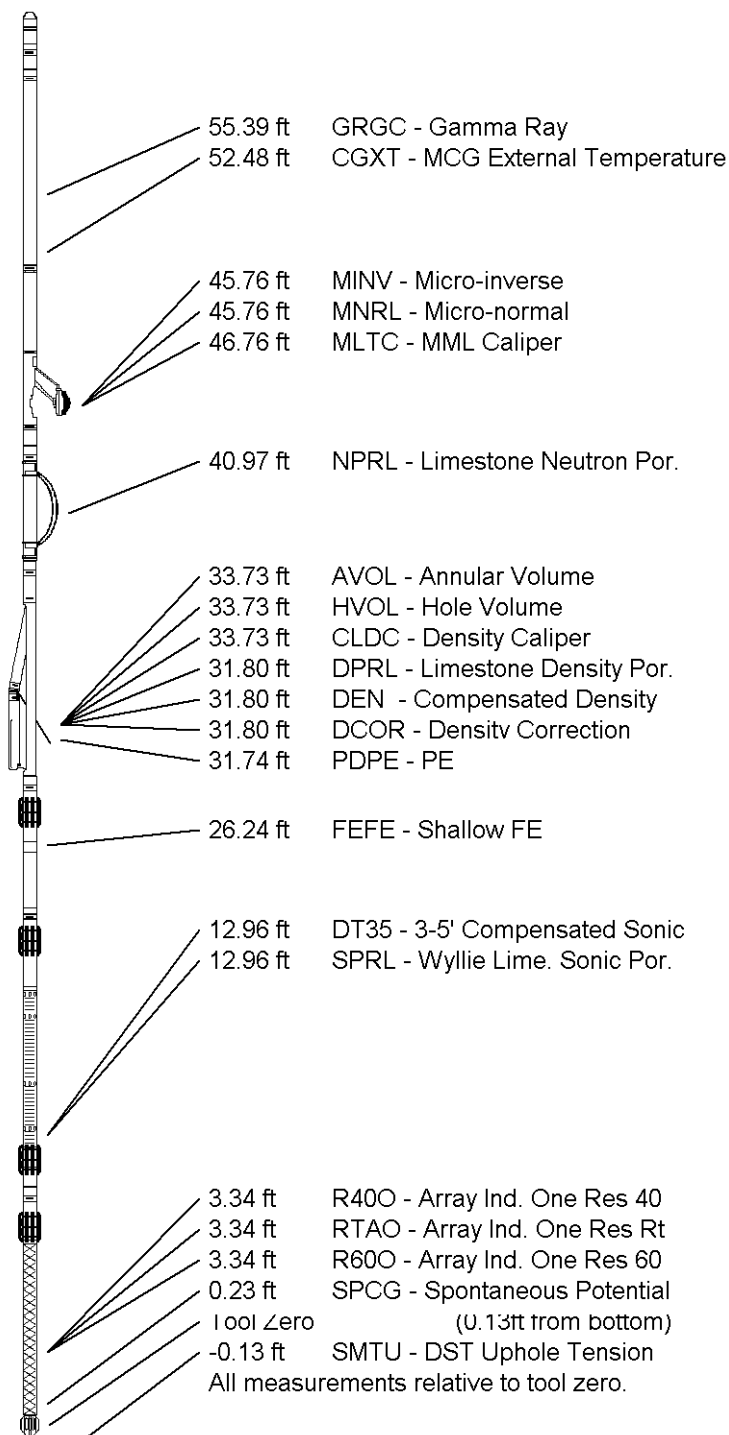
Compact Sonic

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

Compact Induction

MAI-A.A 178 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 63.07 ft Weight: 480.6 lb



COMPANY

SHAKESPEARE OIL CO. INC

WELL

CARSON 1-26

FIELD

PENCE EAST

PROVINCE/COUNTY

SCOTT

COUNTRY/STATE

U.S.A. / KANSAS

Elevation Kelly Bushing 3124.00 feet

Elevation Drill Floor 3122.00 feet

Elevation Ground Level 3114.00 feet

First Reading 4876.00 feet

Depth Driller 4890.00 feet

Depth Logger 4889.00 feet

Elevation Ground Level: 677.100 1000

Depth Logger: 1000.000 1000



**Weatherford®**

COMPENSATED SONIC

WITH INTEGRATED TRANSIT TIME