Weatherford®

COMPENSATED SONIC WITH INTEGRATED TRANSIT TIME

COMPANY	SHAKESPEARE OIL COMPANY
WELL	JANZEN #2-26
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	2305' FSL & 1900' FWL
	SW/4

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

API Number 15-171-20929
Permit Number

Permanent Datum GL, Elevation 3115 feet
Log Measured From KB
Drilling Measured From KB

Elevations:	feet
KB	3125.00
DF	3124.00
GL	3115.00

Date	14-MAR-2013			
Run Number	ONE			
Service Order	3539874			
Depth Driller	4897.00	feet		
Depth Logger	4896.00	feet		
First Reading	4883.00	feet		
Last Reading	263.00	feet		
Casing Driller	264.00	feet		
Casing Logger	263.00	inches		
Bit Size	7.875			
Hole Fluid Type	CHEMICAL	lb/USg		
Density / Viscosity	9.00 lb/USg	57.00 CP		
PH / Fluid Loss	10.50	10.50		
Sample Source	MUDPIT			
Rm @ Measured Temp	0.51 @ 86.0	ohm-m		
Rmf @ Measured Temp	0.41 @ 86.0	ohm-m		
Rmc @ Measured Temp	0.61 @ 86.0	ohm-m		
Source Rmf / Rmc	CALC	CALC		
Rm @ BHT	0.41 @107.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	107.00	deg F		
Equipment / Base	13057	LIB		
Recorded By	ADAM SILL			
Witnessed By	TIM PRIEST			
JOB #	LB13-067			

BOREHOLE RECORD

Last Edited: 14-MAR-2013 13:20

Bit Size inches	Depth From feet	Depth To feet
7.875	264.00	4897.00

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 13.04.8492.
- MCG, MML, MDN, MPD, MFE, MSS, MAI RAN 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: 2376 CU. FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3850 FEET: 224 CU. FT.

- SERVICE ORDER # 3539874.

- RIG: H-D #2.

- ENGINEER: A. SILL.

- OPERATOR(S): N. ADAME.

**** SOFTWARE ISSUE CHANGED FLUID LOSS TO MATCH PH. FLUID LOSS SHOULD BE 7.6 ML/30MIN. ****

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-MAR-2013 17:36
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_002.dta — Recorded on 14-MAR-2013 14:59
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

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

Depth In Feet

Borehole Temp in deg F

Replay Scale 1:240

250

Casing Shoe

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

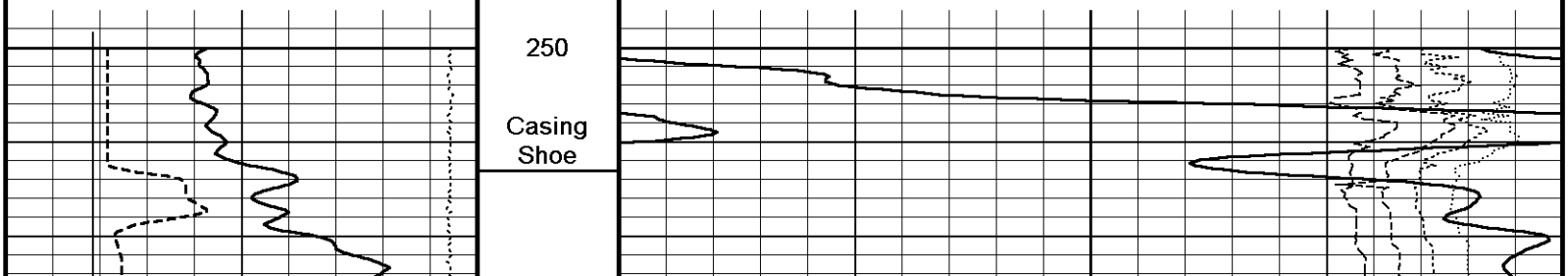
Wyllie Lime. Sonic Por.
percent
30 20 10 0 -10

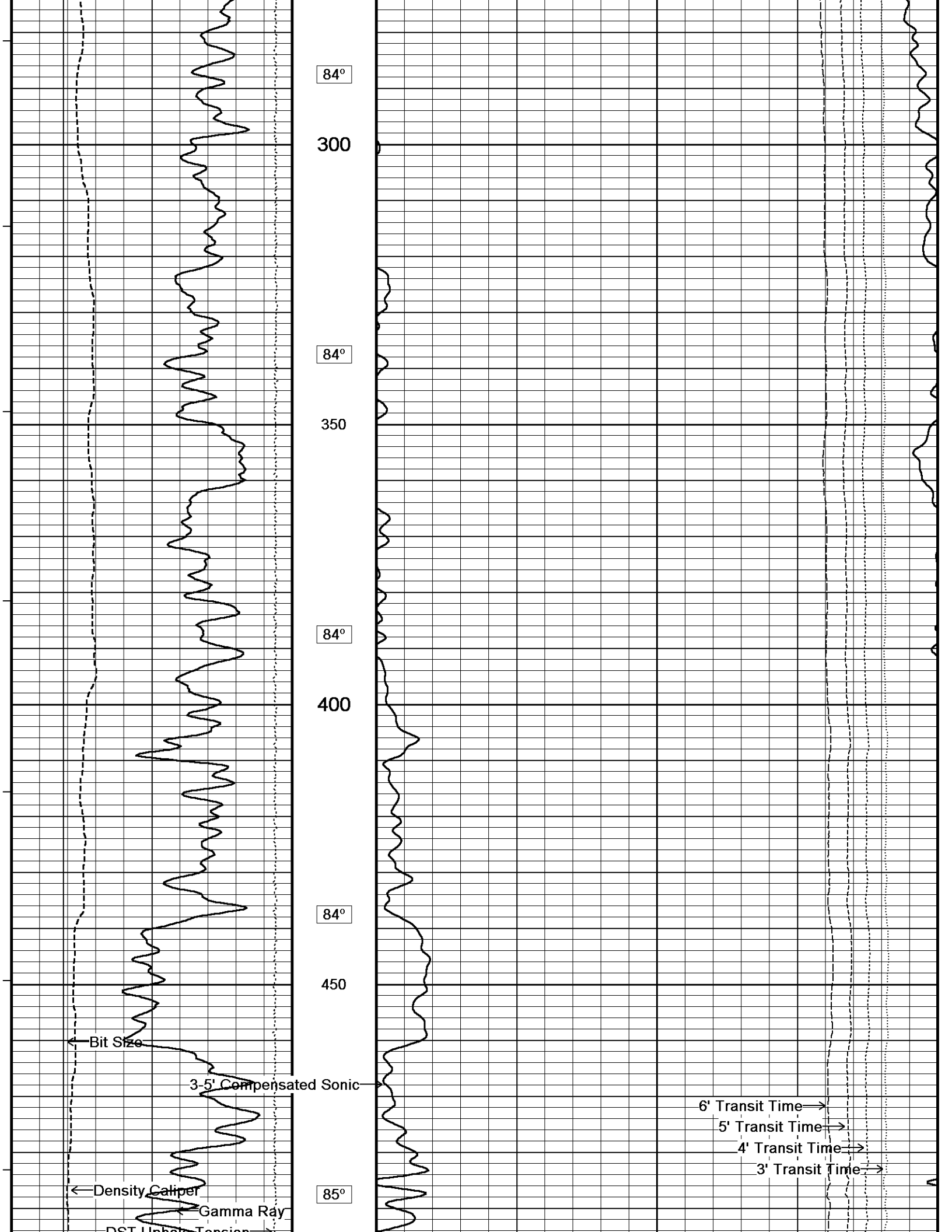
3' Transit Time
microseconds
1100 100

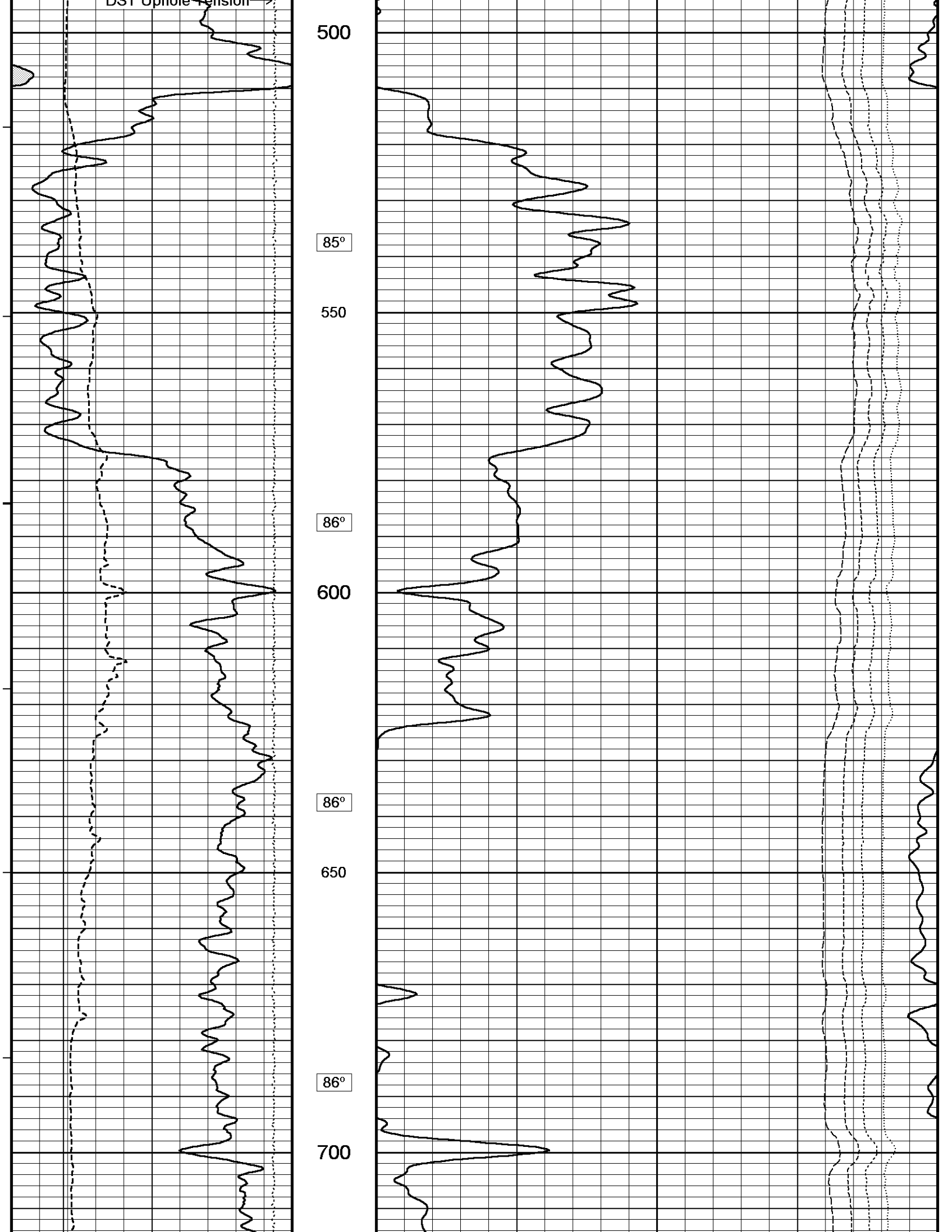
4' Transit Time
microseconds
1100 100

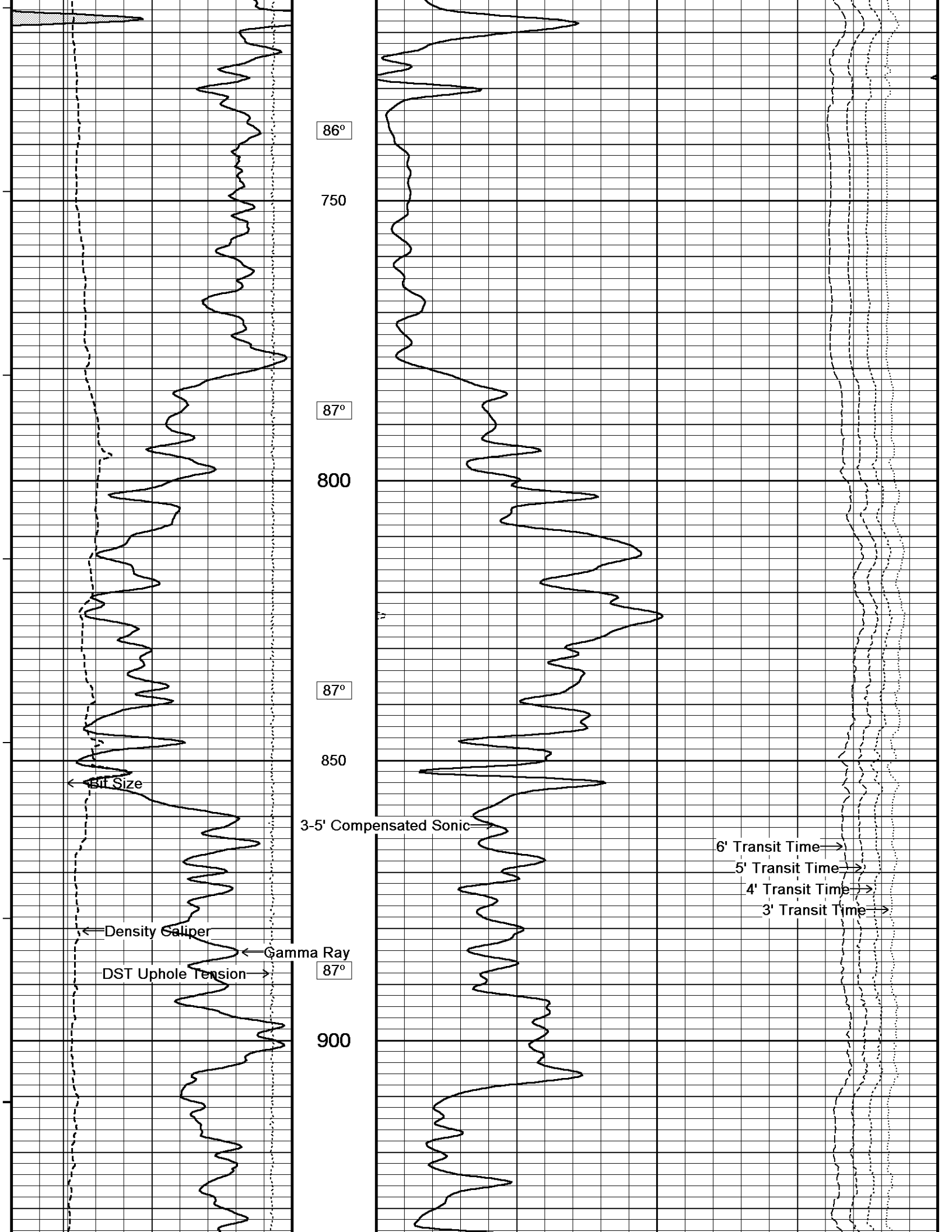
5' Transit Time
microseconds
1100 100

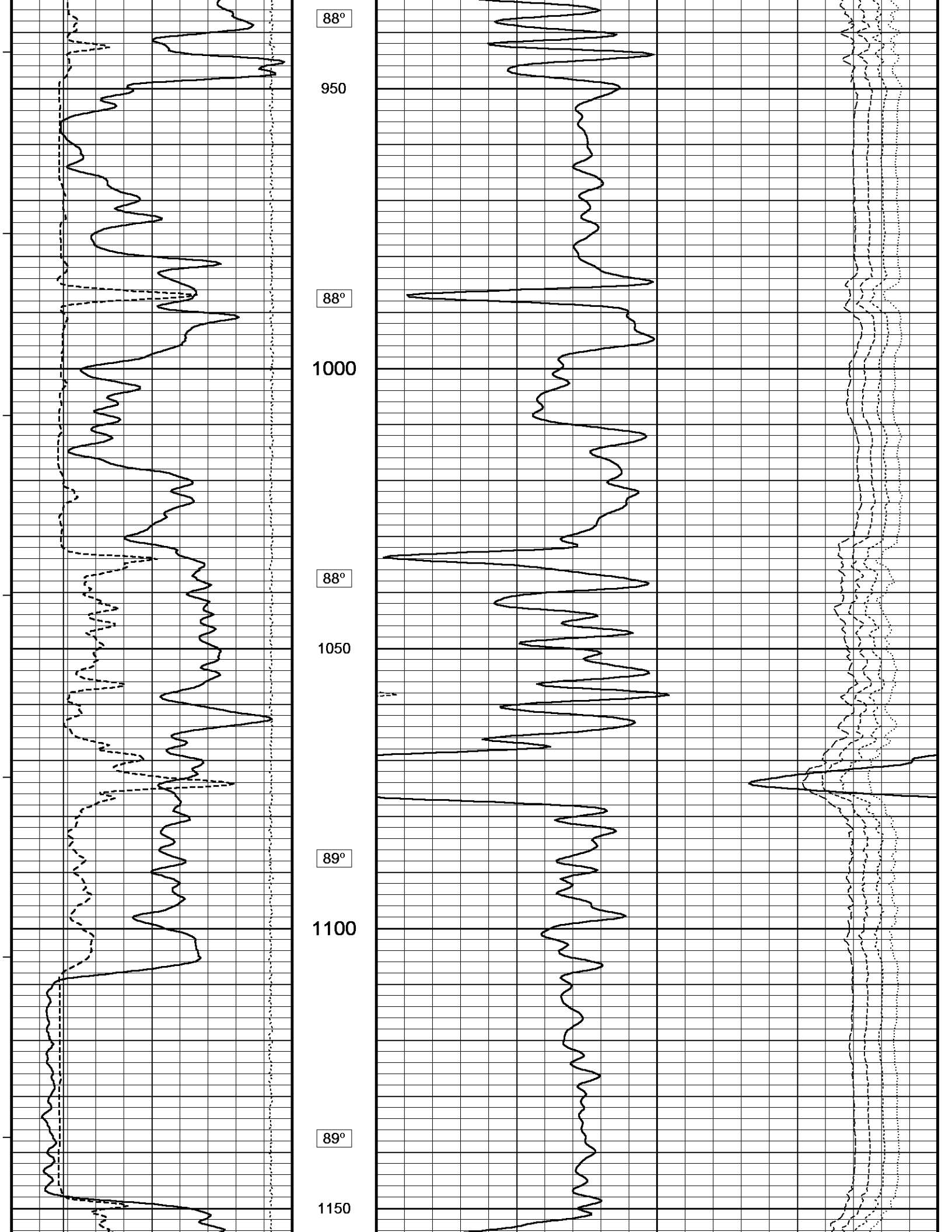
6' Transit Time
microseconds
1100 100

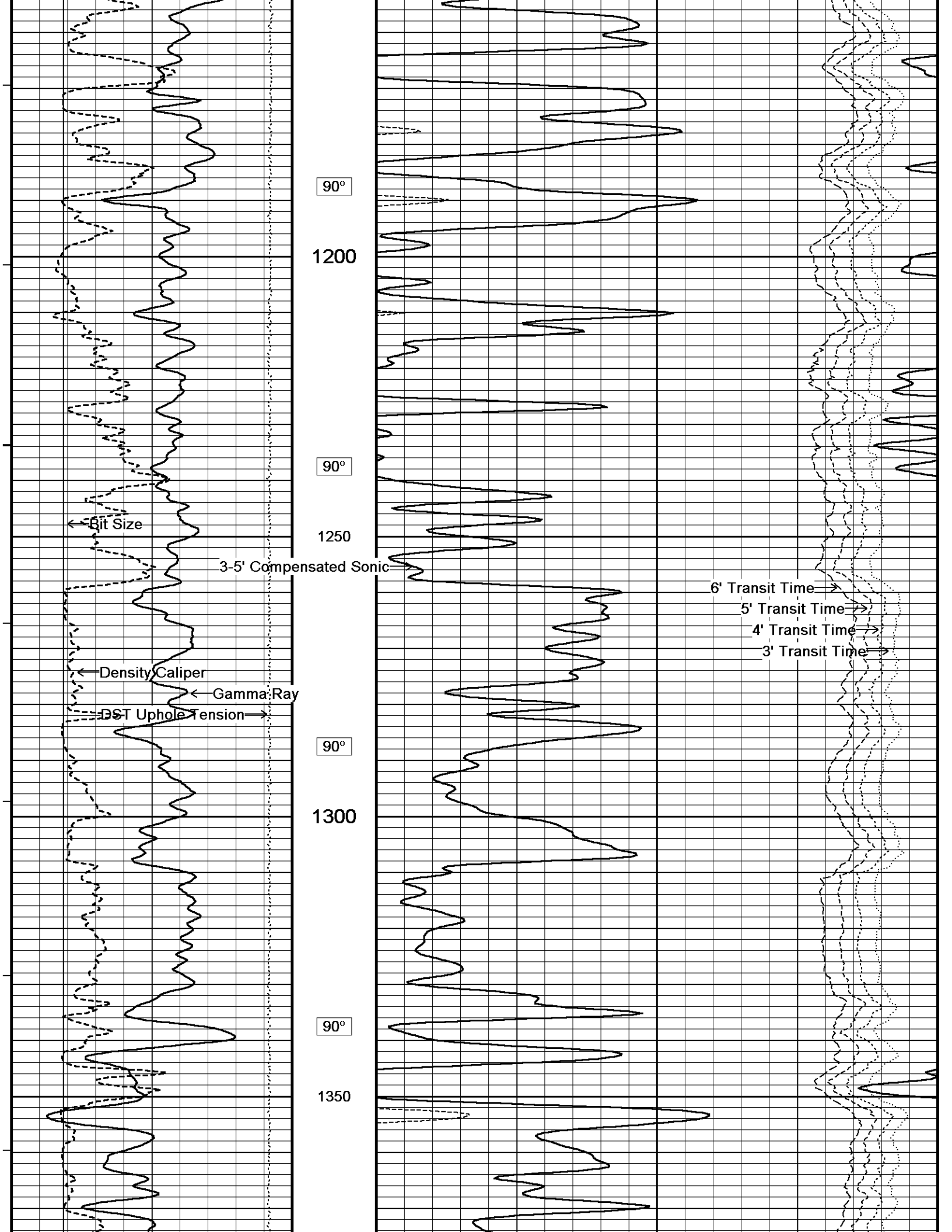


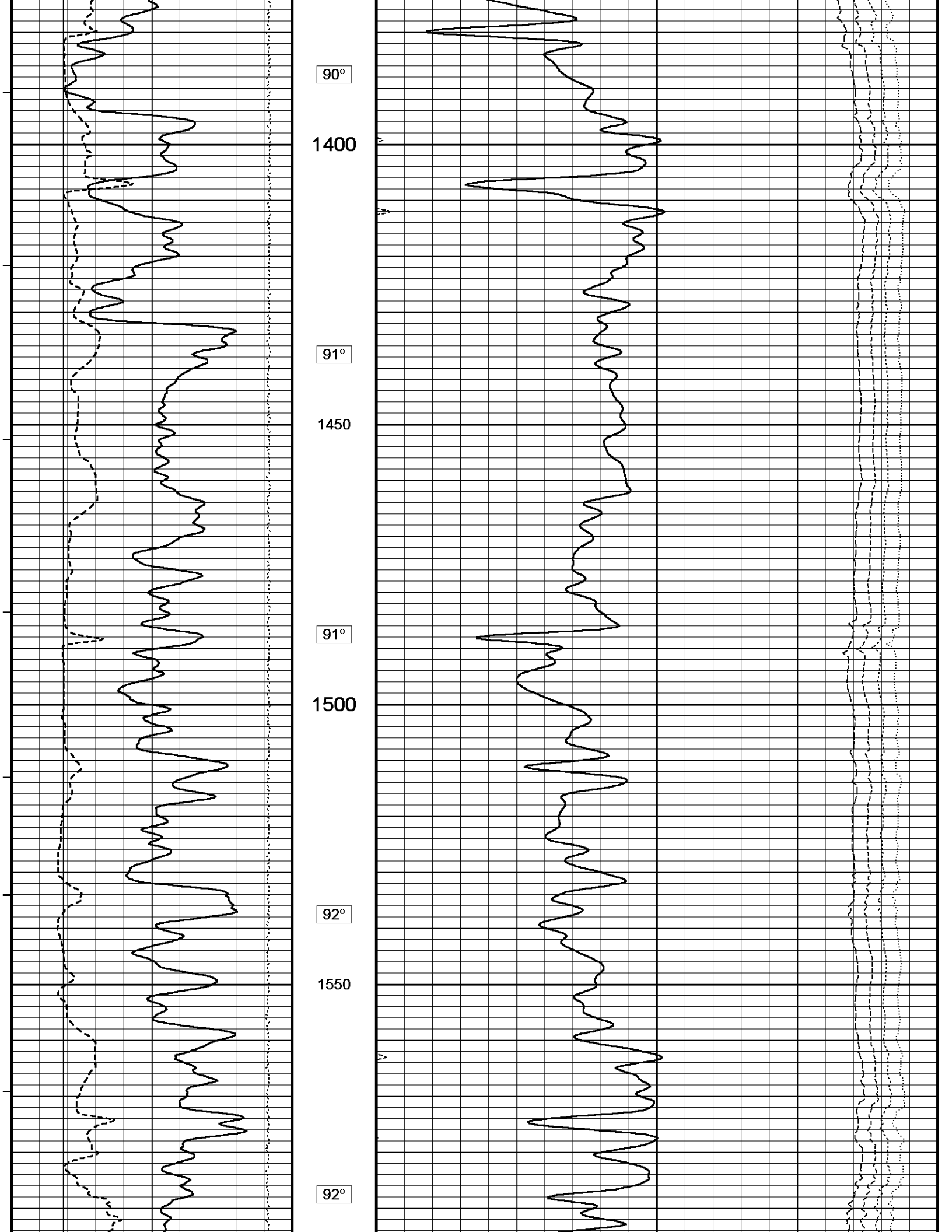

84°
300
84°
350
84°
400
84°
450
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
85°
Gamma Ray

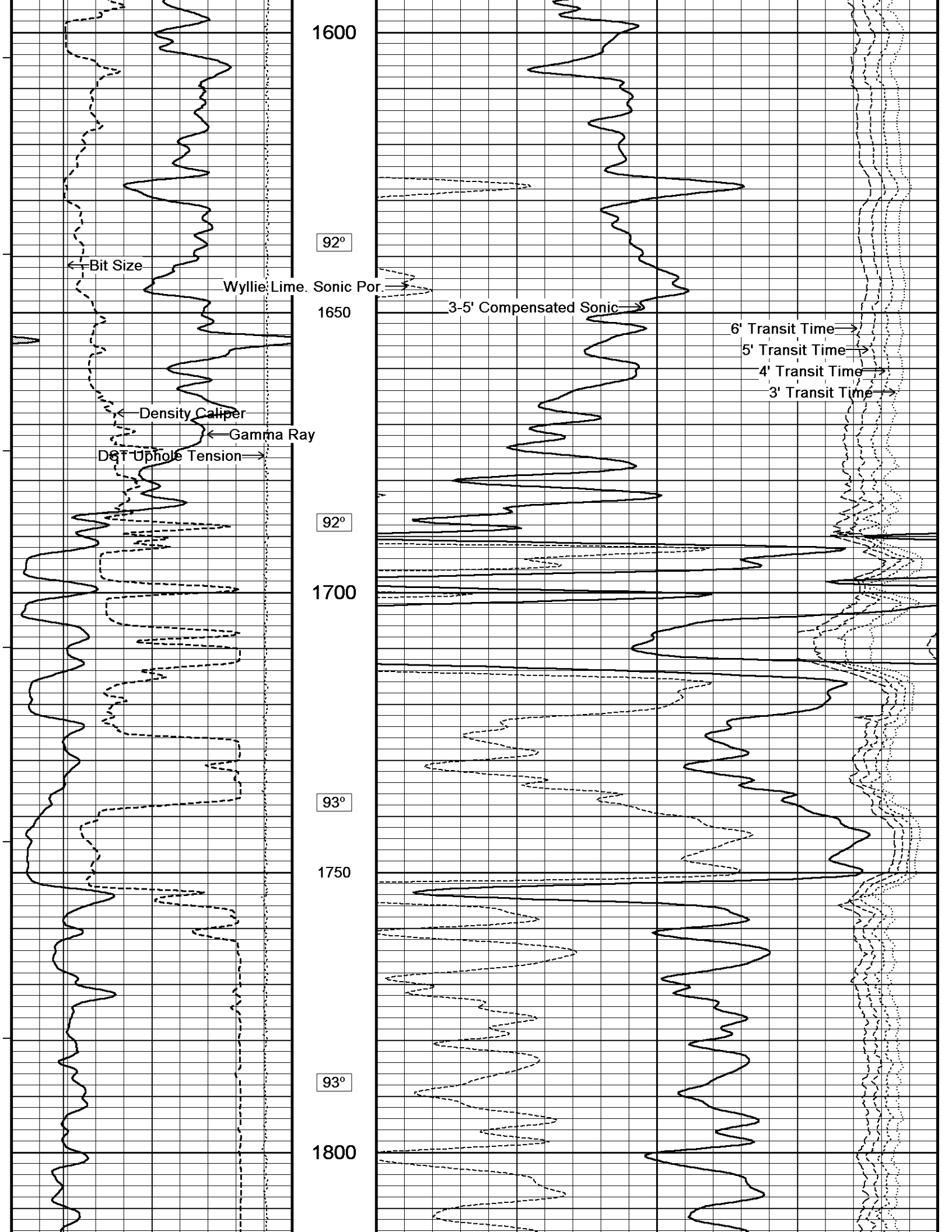

DST Uphole Tension
500
85°
550
86°
600
86°
650
86°
700

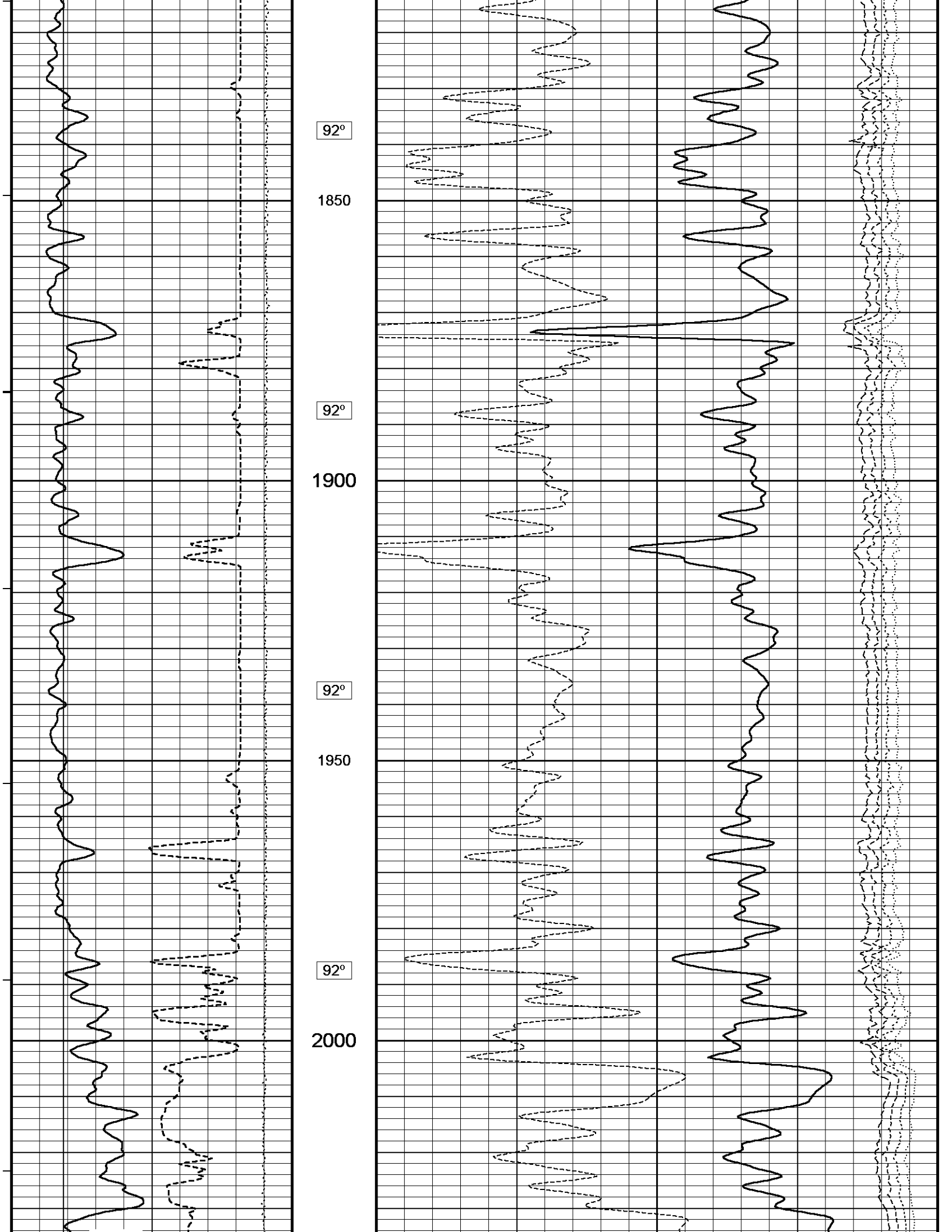

86°
750
87°
800
87°
850
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
87°
900

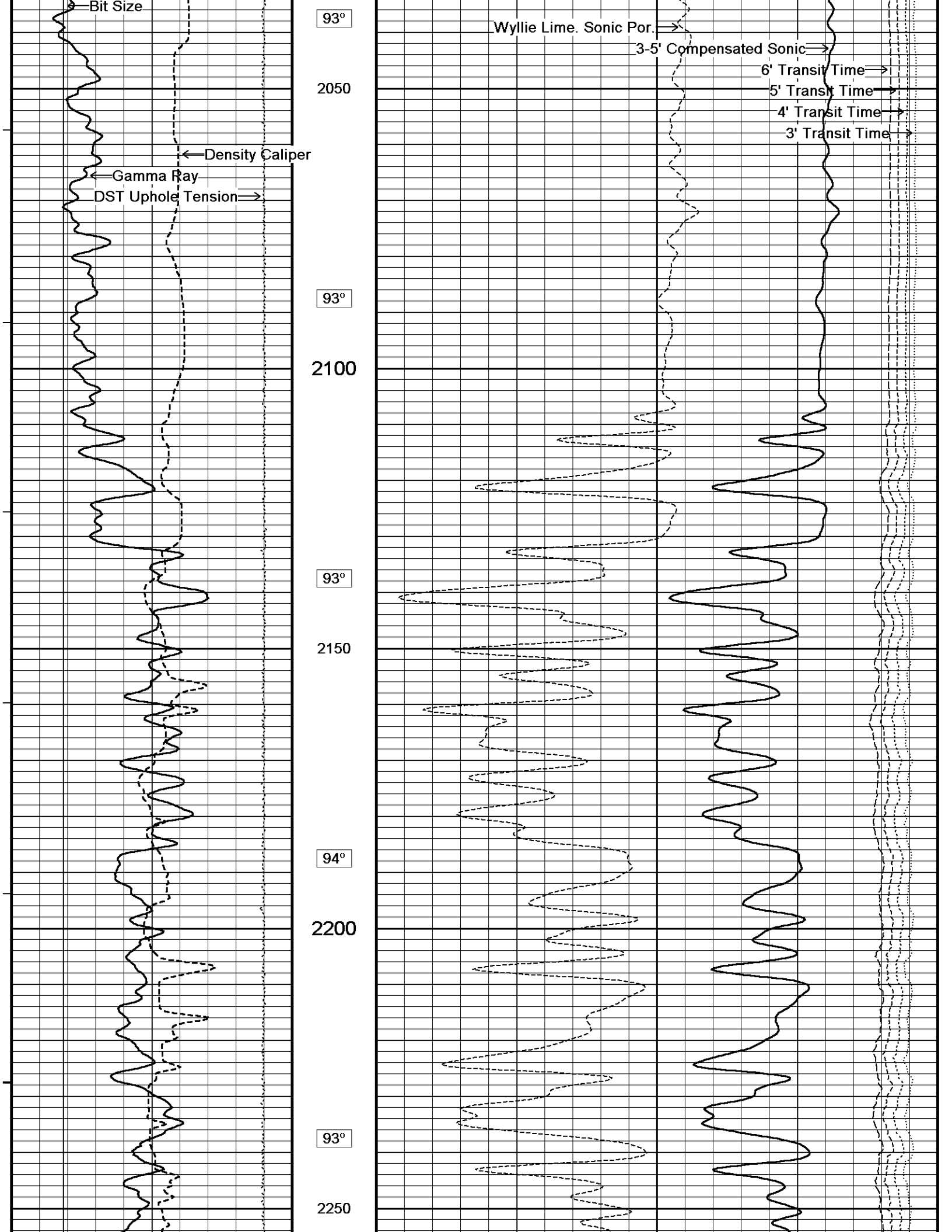

88°
950
88°
1000
88°
1050
89°
1100
89°
1150

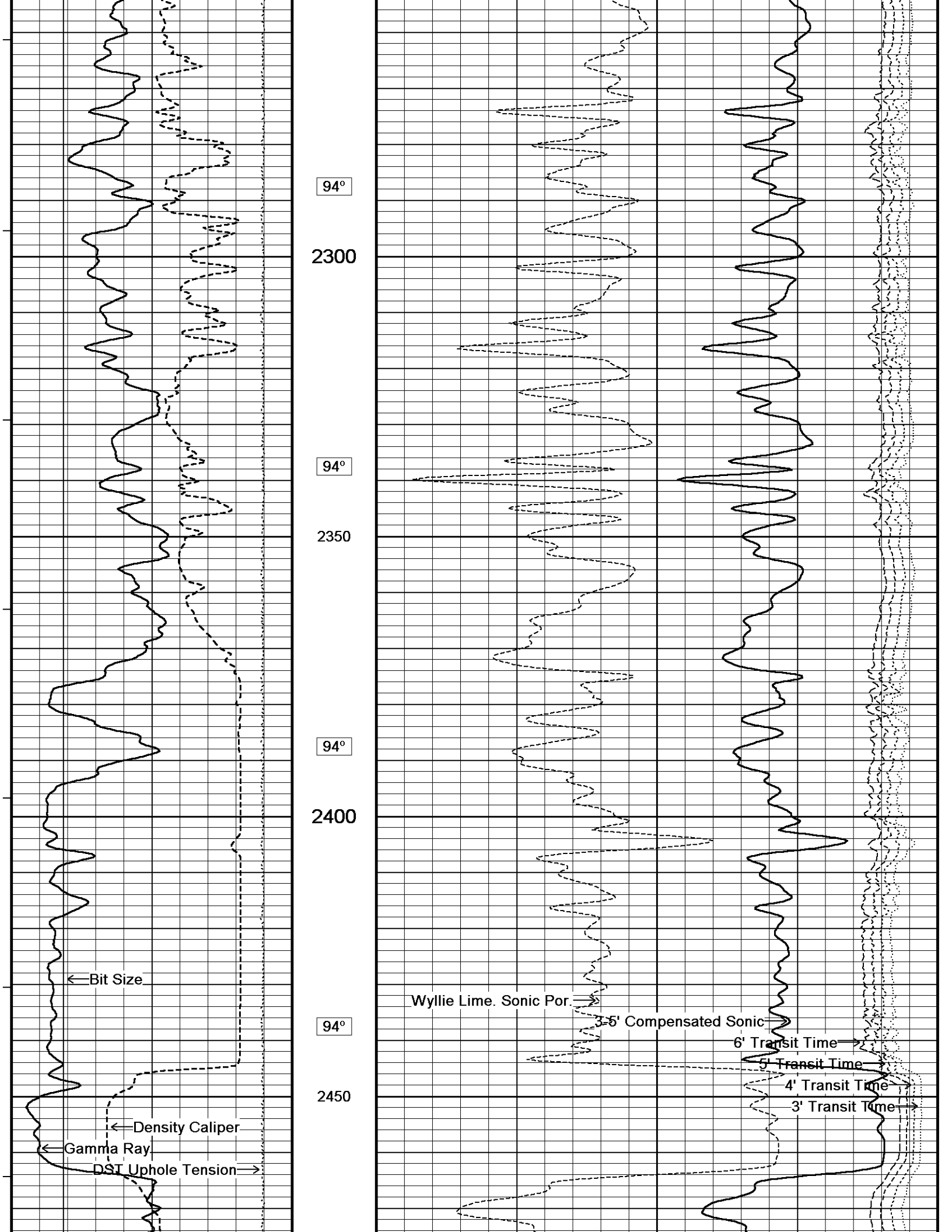

90°
1200
90°
Bit Size
1250
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
90°
1300
90°
1350

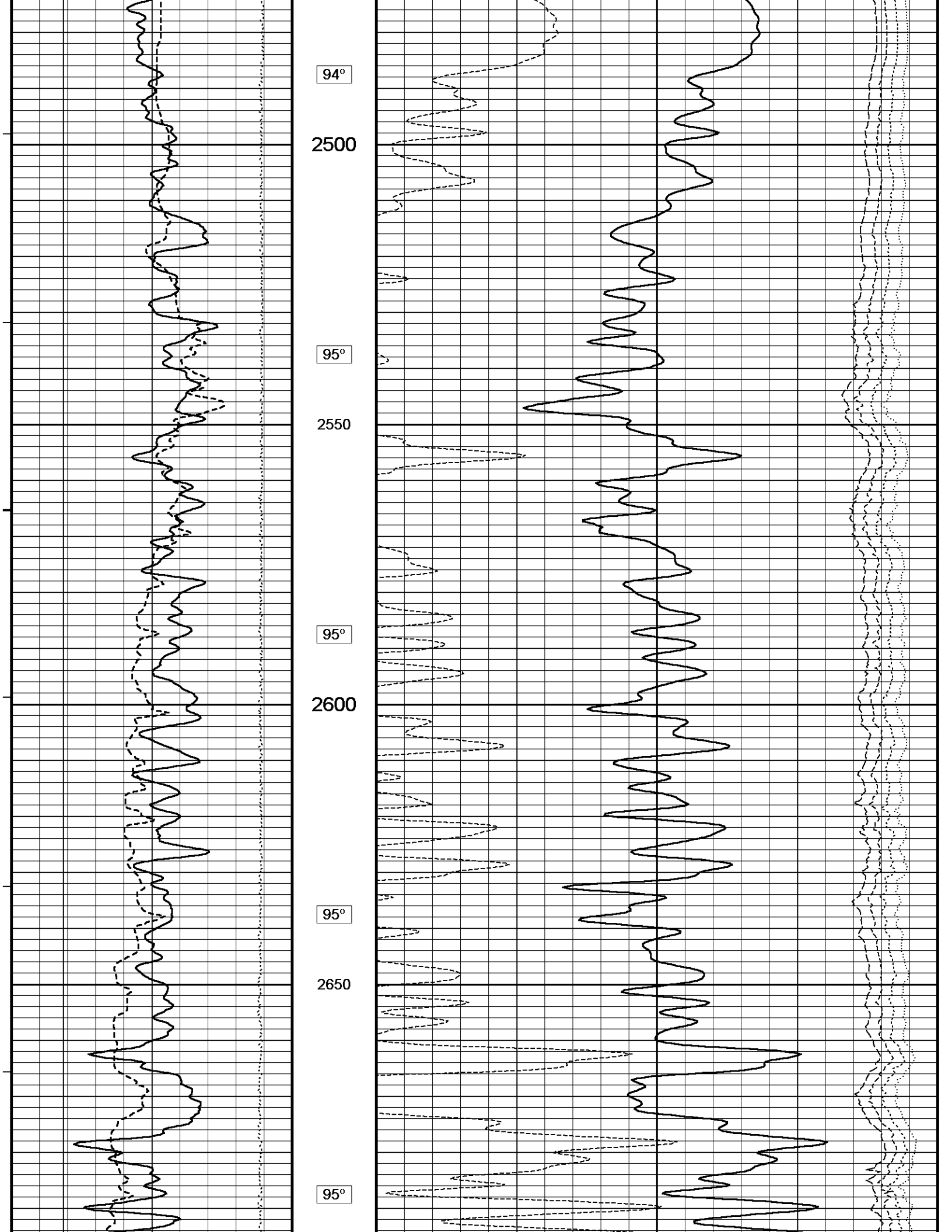

90°
1400
91°
1450
91°
1500
92°
1550
92°

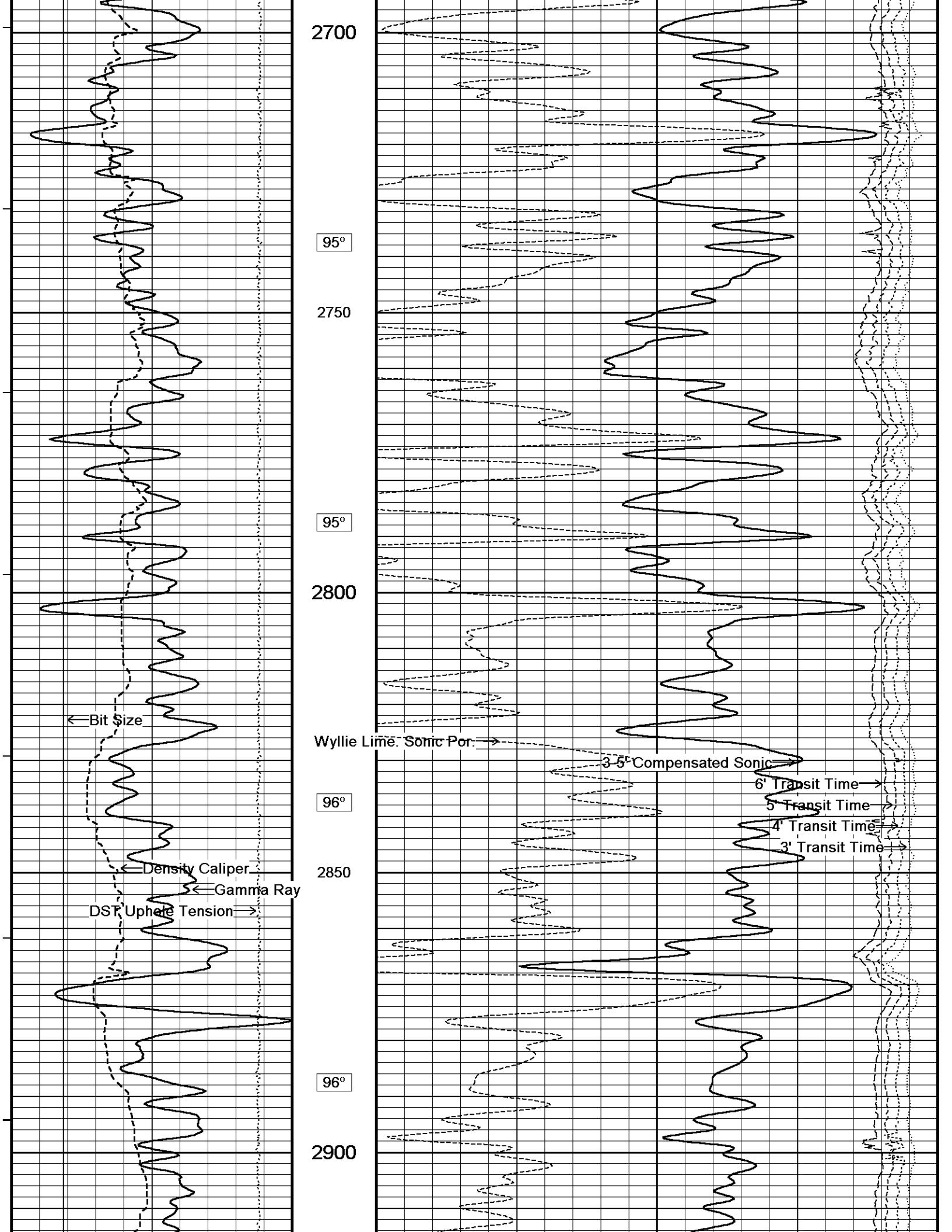

1600
92°
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
1650
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DGT Uphole Tension
92°
1700
93°
1750
93°
1800

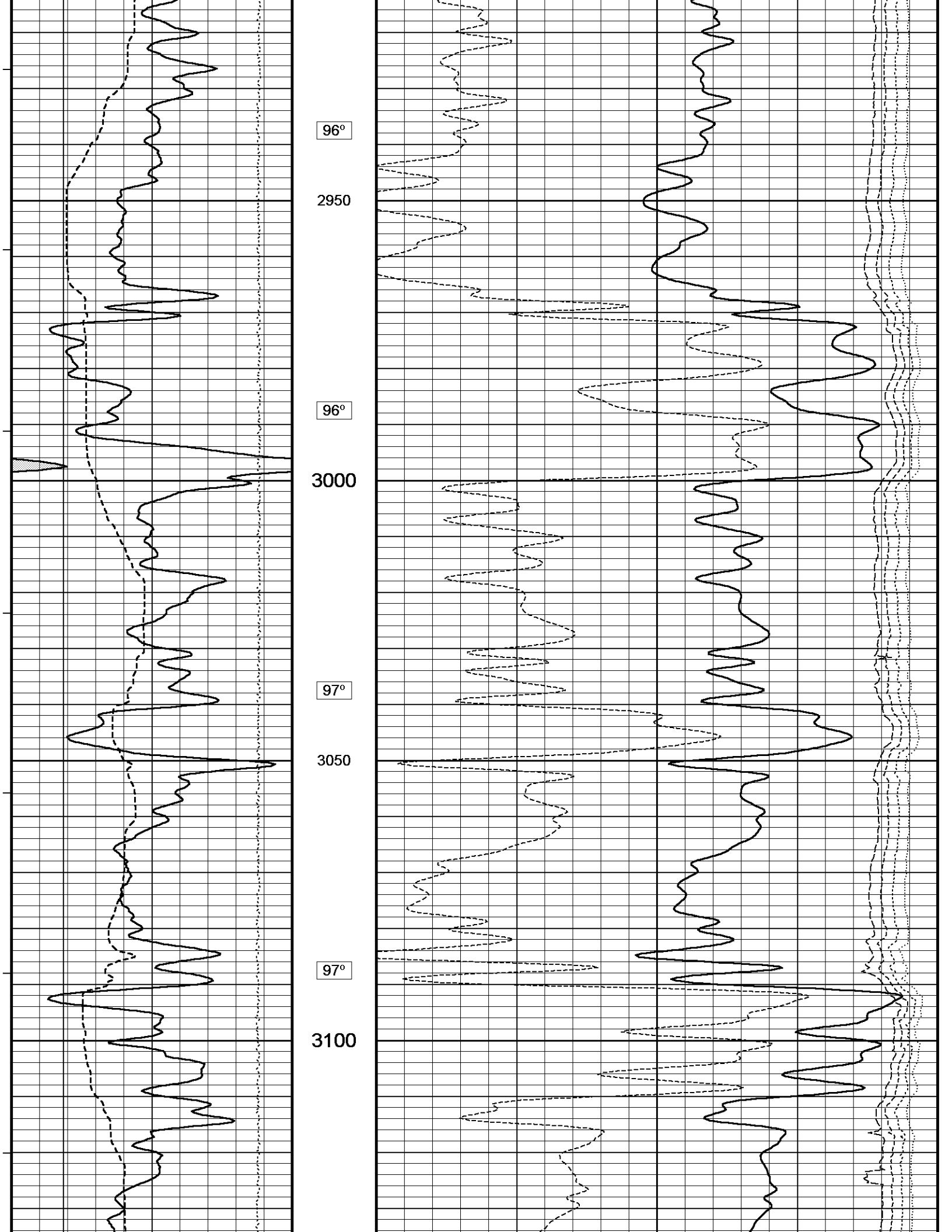

92°
1850
92°
1900
92°
1950
92°
2000

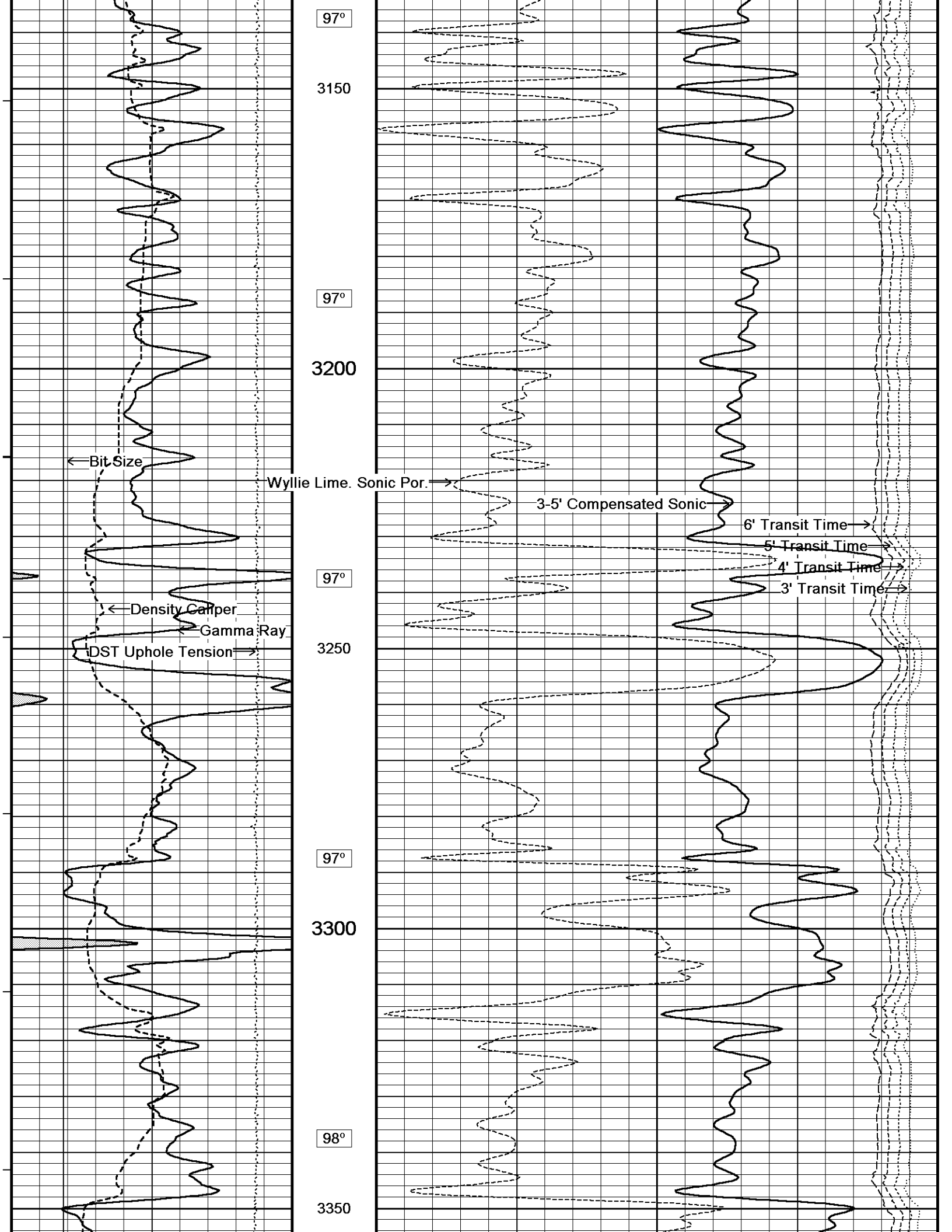

Bit Size
93°
2050
Density Caliper
Gamma Ray
DST Uphole Tension
93°
2100
93°
2150
94°
2200
93°
2250
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

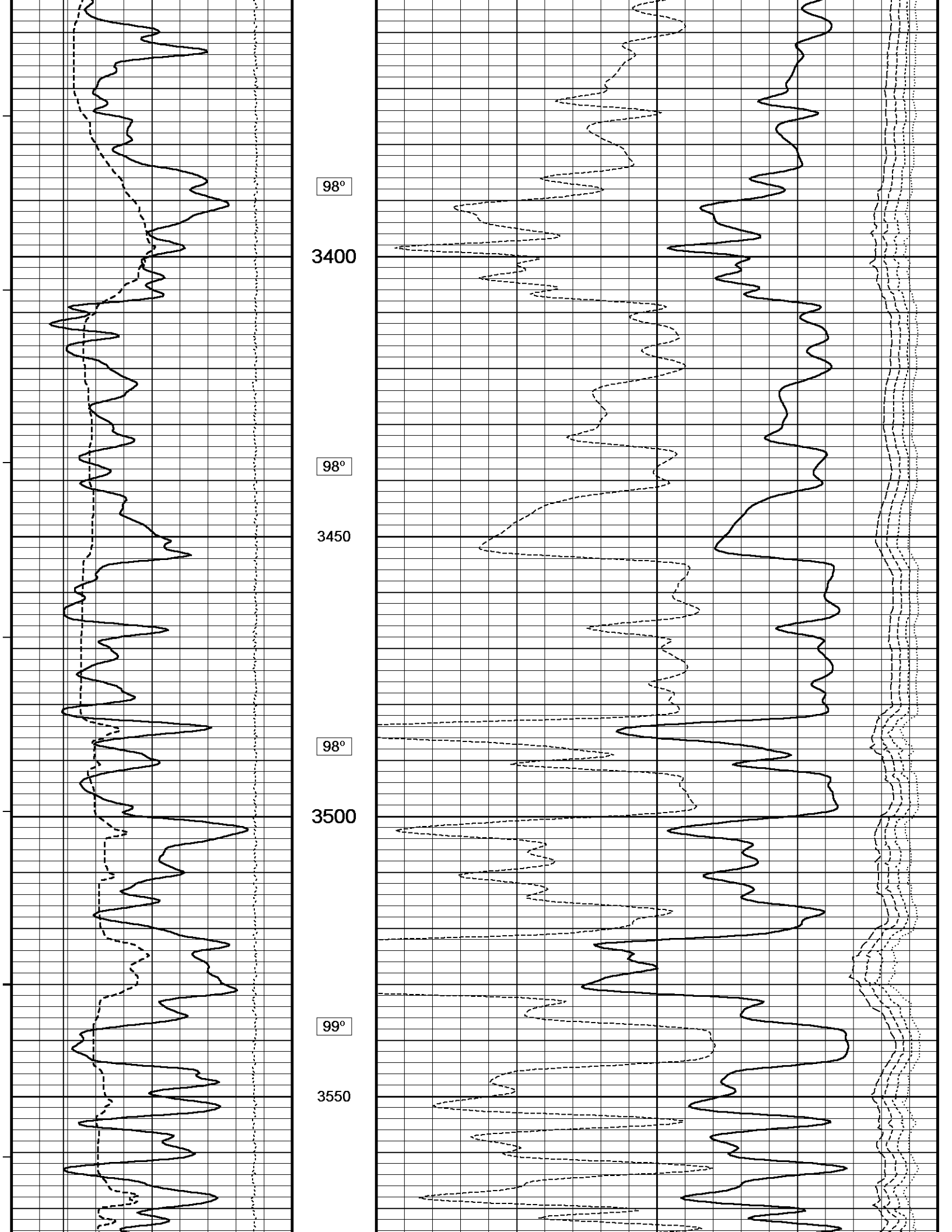

94°
2300
94°
2350
94°
2400
94°
2450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

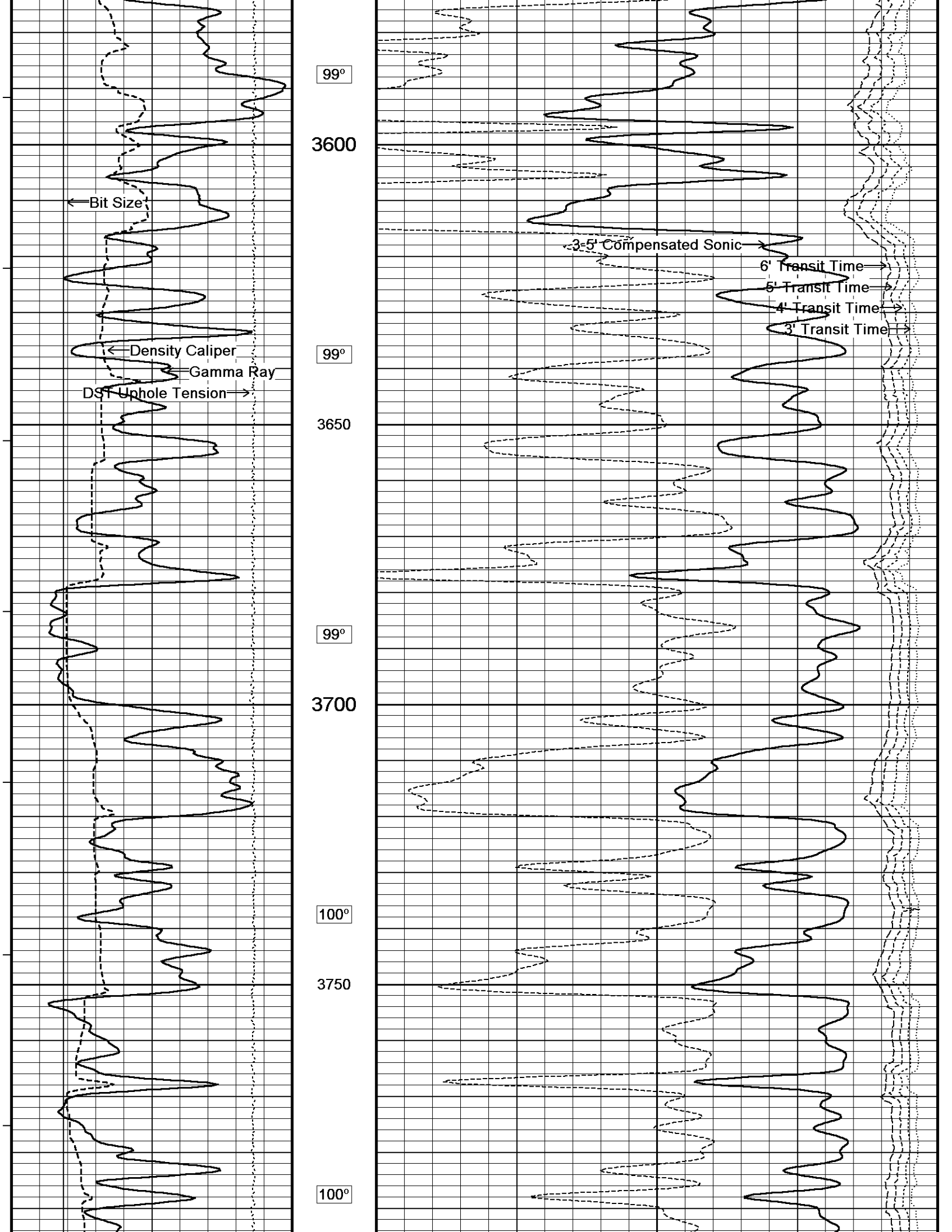

94°
2500
95°
2550
95°
2600
95°
2650
95°

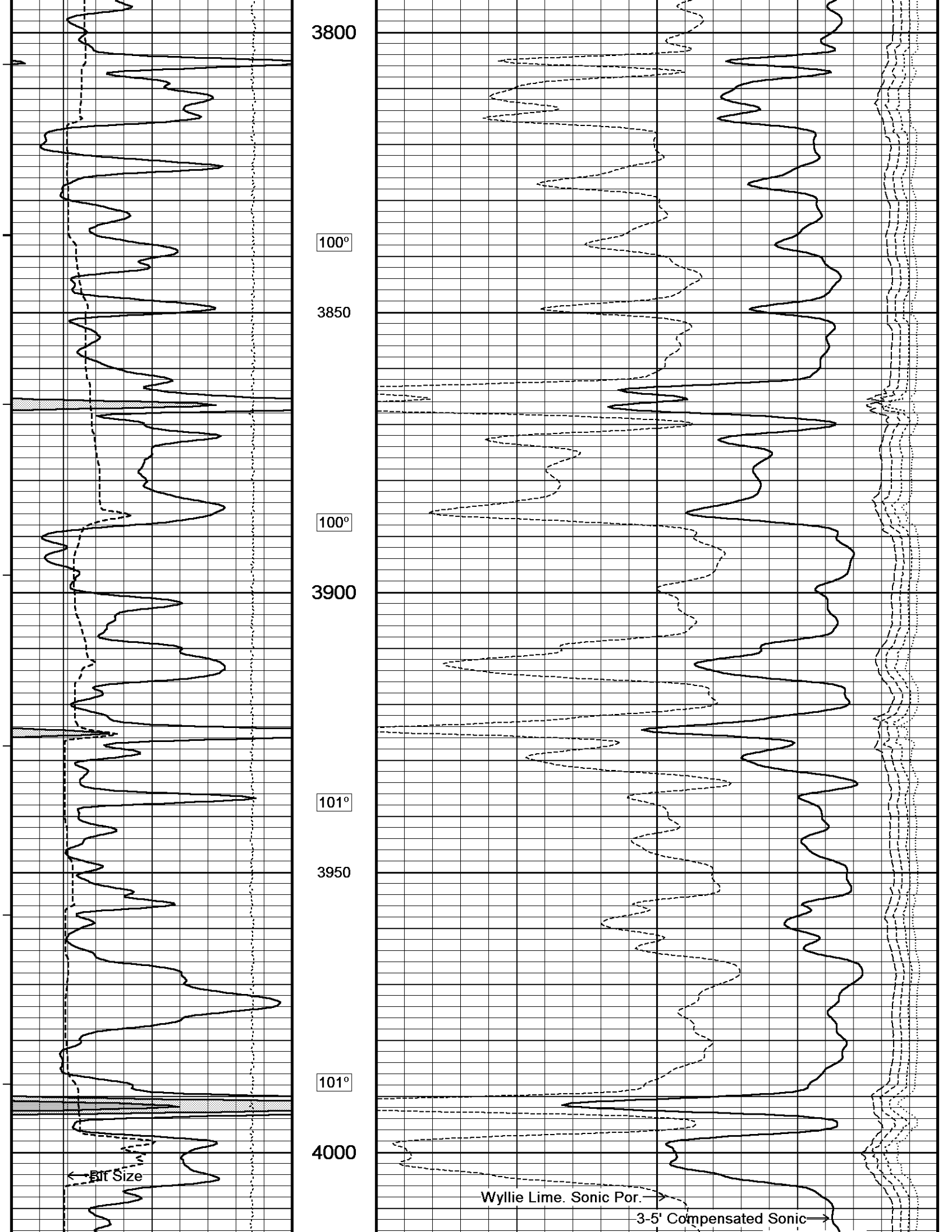

2700
95°
2750
95°
2800
←Bit Size
Wyllie Lime. Sonic Por.→
3-5' Compensated Sonic→
6' Transit Time→
5' Transit Time→
4' Transit Time→
3' Transit Time→
96°
←Density Caliper
2850
←Gamma Ray
DST Uphole Tension→
96°
2900

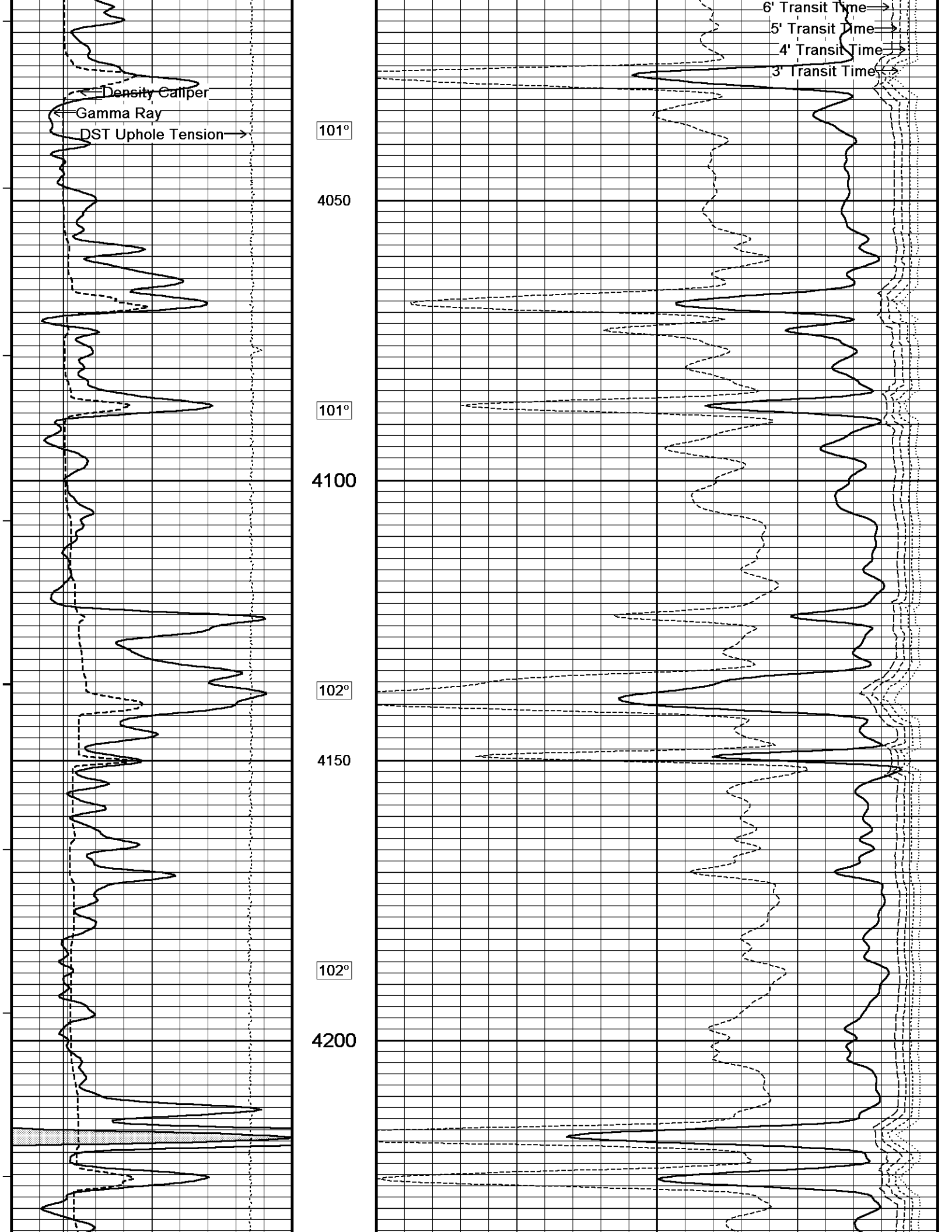

96°
2950
96°
3000
97°
3050
97°
3100

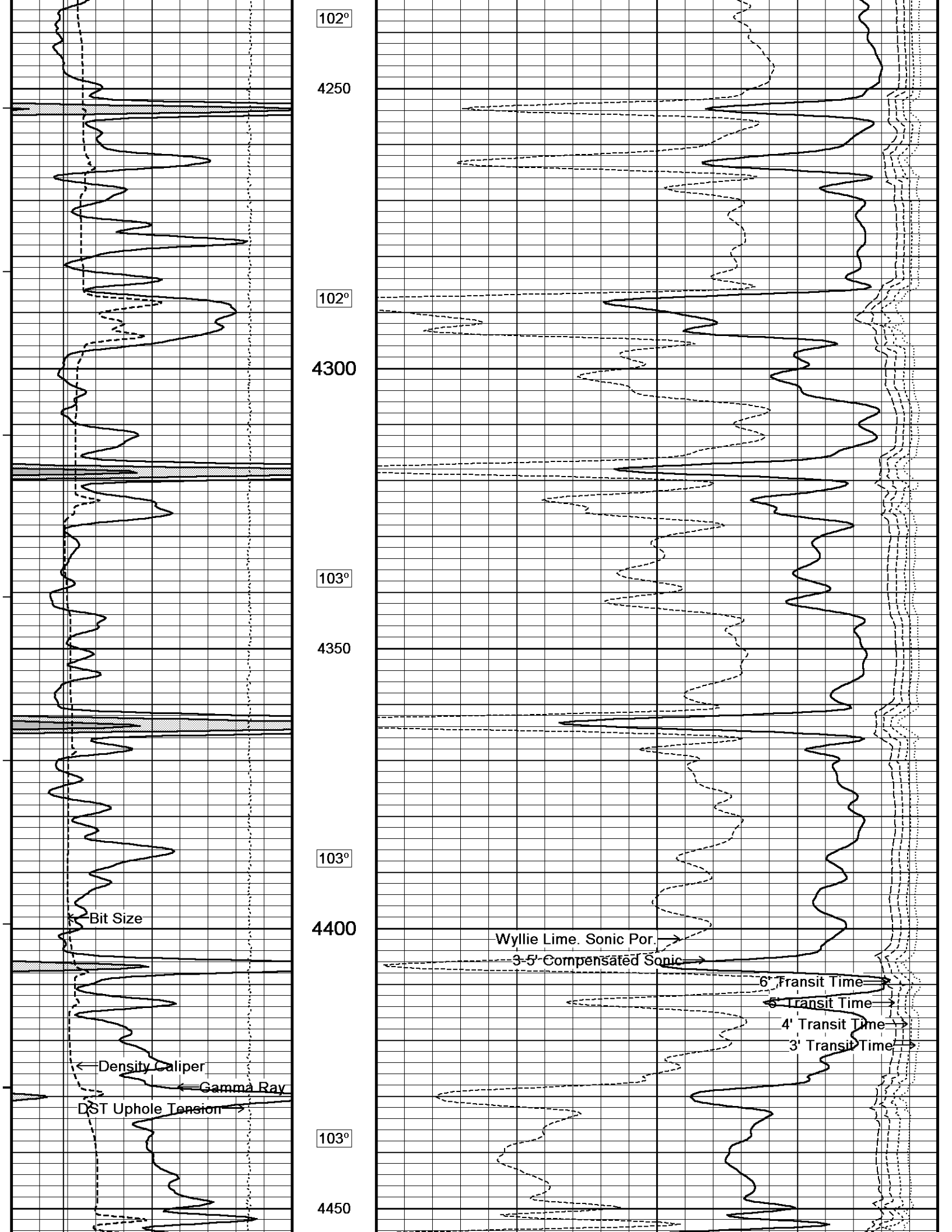

97°
3150
97°
3200
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
97°
Density Caliper
Gamma Ray
DST Uphole Tension
3250
97°
3300
98°
3350

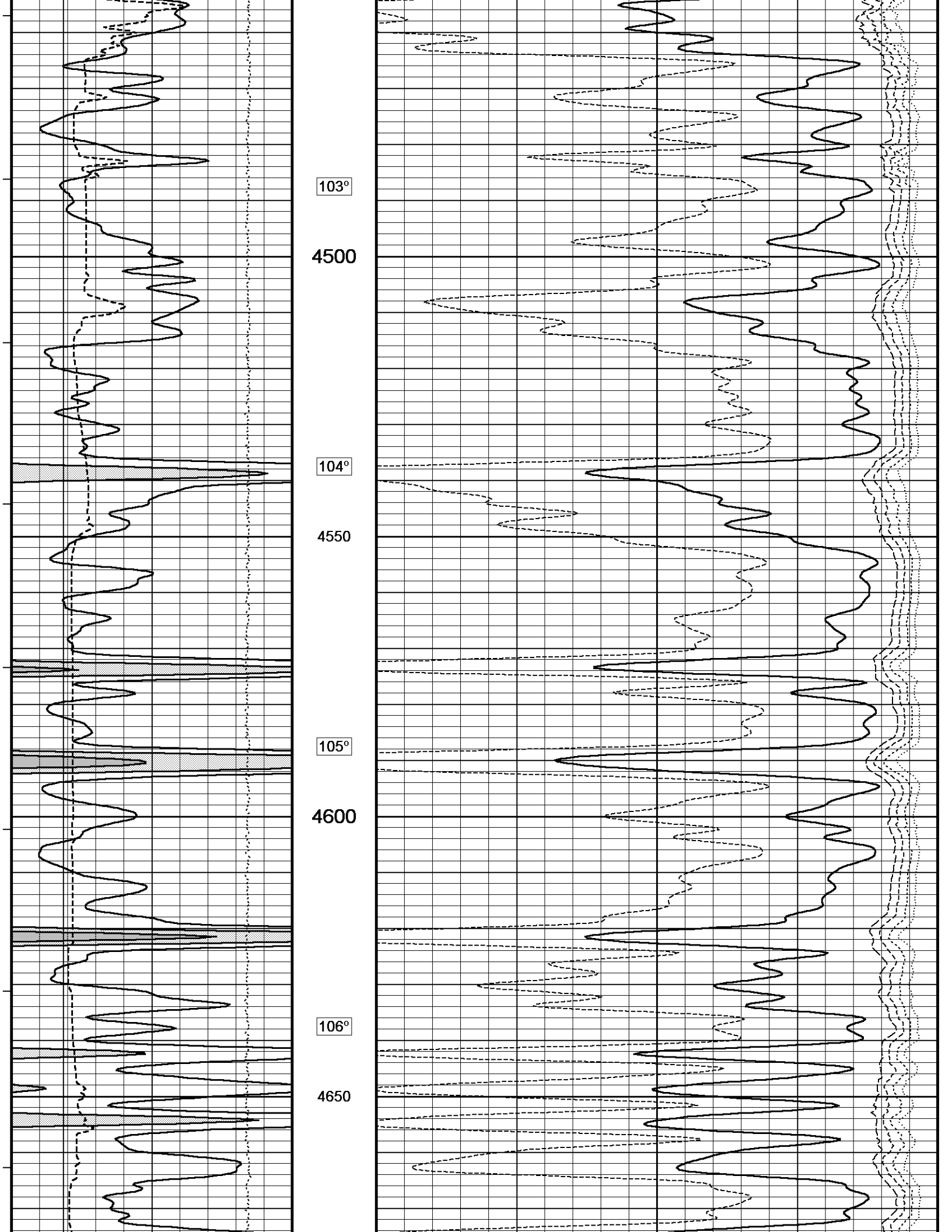

98°
3400
98°
3450
98°
3500
99°
3550

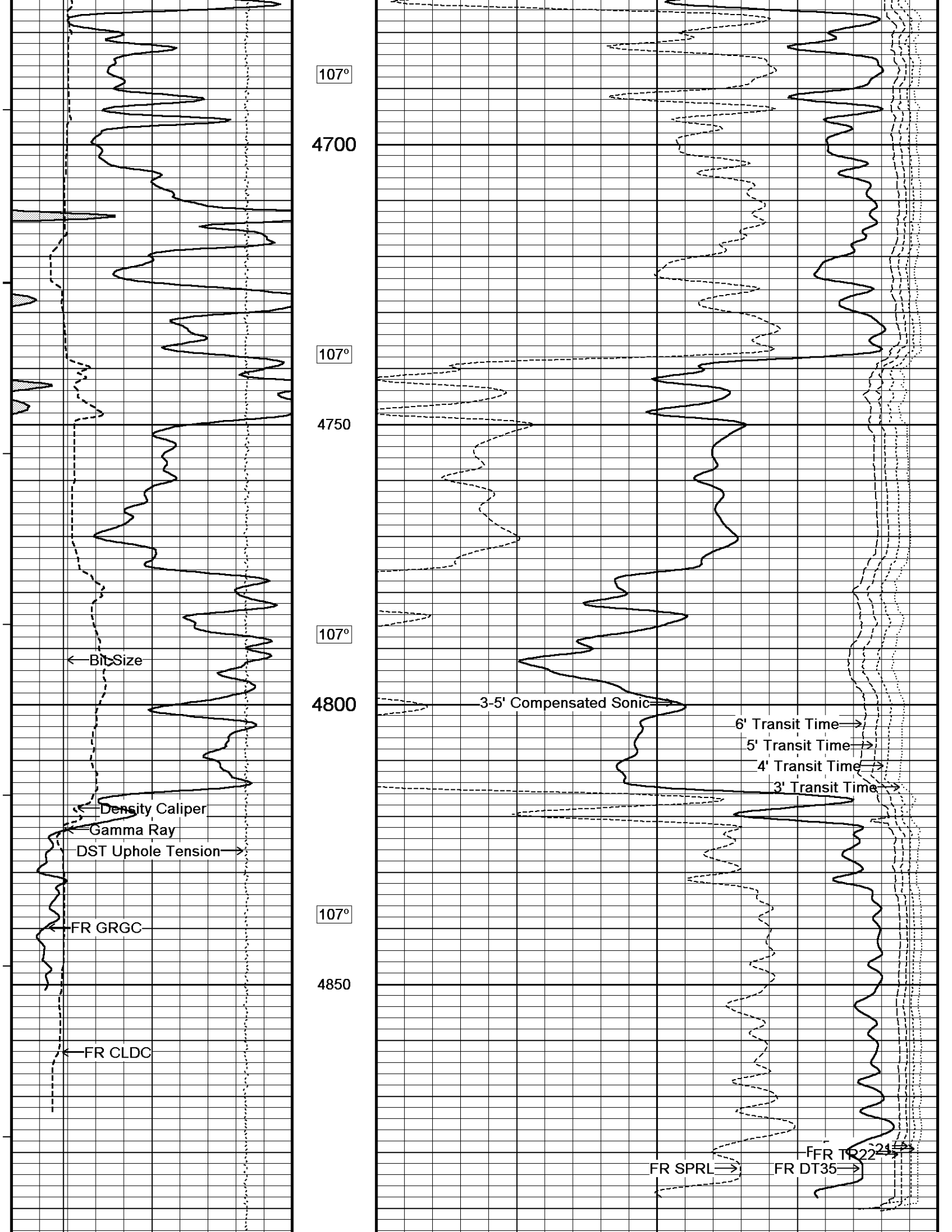

99°
3600
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
99°
3650
99°
3700
100°
3750
100°

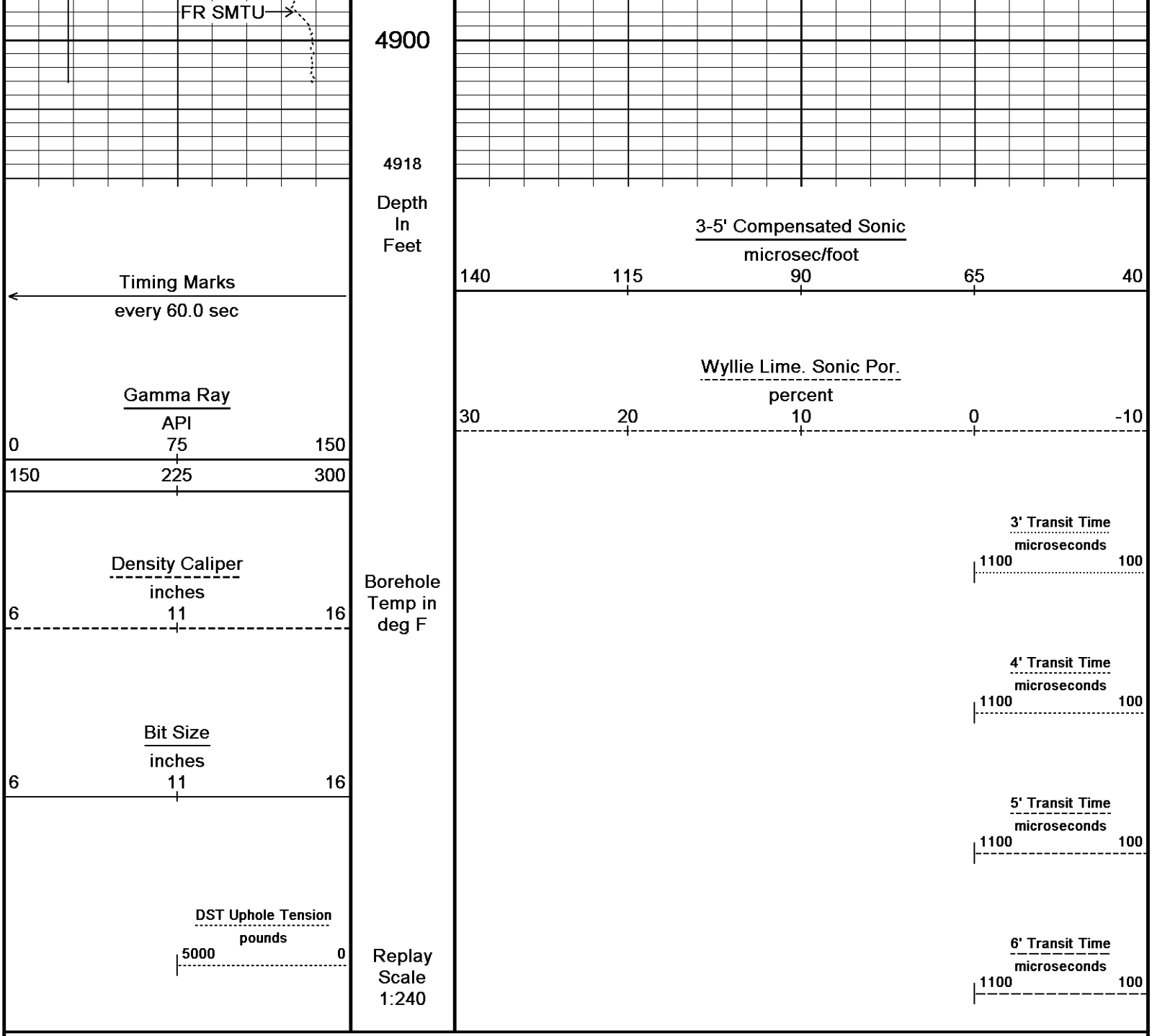

3800
100°
3850
100°
3900
101°
3950
101°
4000
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic


Density Caliper
Gamma Ray
DST Uphole Tension
101°
4050
101°
4100
102°
4150
102°
4200
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time


102°
4250
102°
4300
103°
4350
103°
4400
103°
4450
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time


103°
4500
104°
4550
105°
4600
106°
4650


107°
4700
107°
4750
107°
Bit Size
4800
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
107°
FR GRGC
4850
FR CLDC
FR SPRL
FR DT35
FR TR22

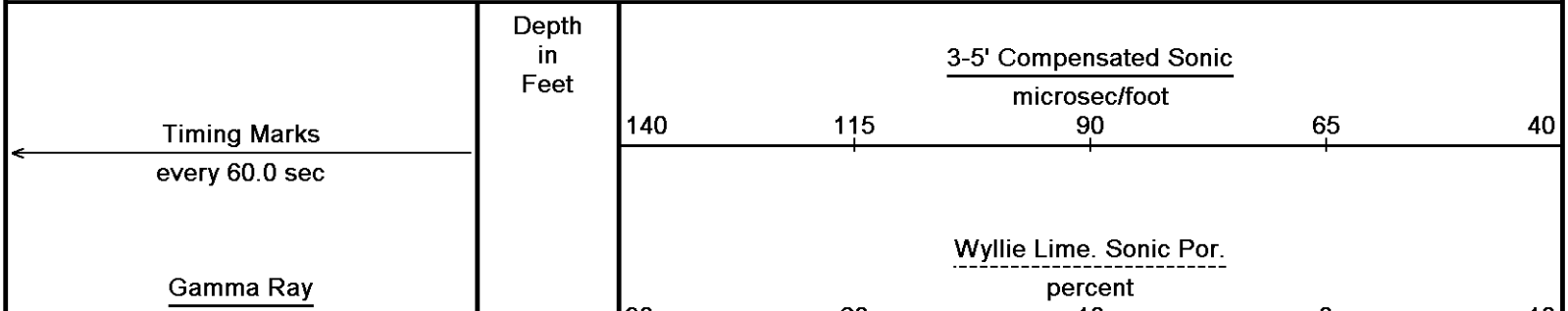


Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-MAR-2013 17:37
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_002.dta — Recorded on 14-MAR-2013 14:59
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-MAR-2013 17:37
Filename: C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_001.dta — Recorded on 14-MAR-2013 14:37
System Versions: Logged with 13.04.8492 Plotted with 13.04.8492



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

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

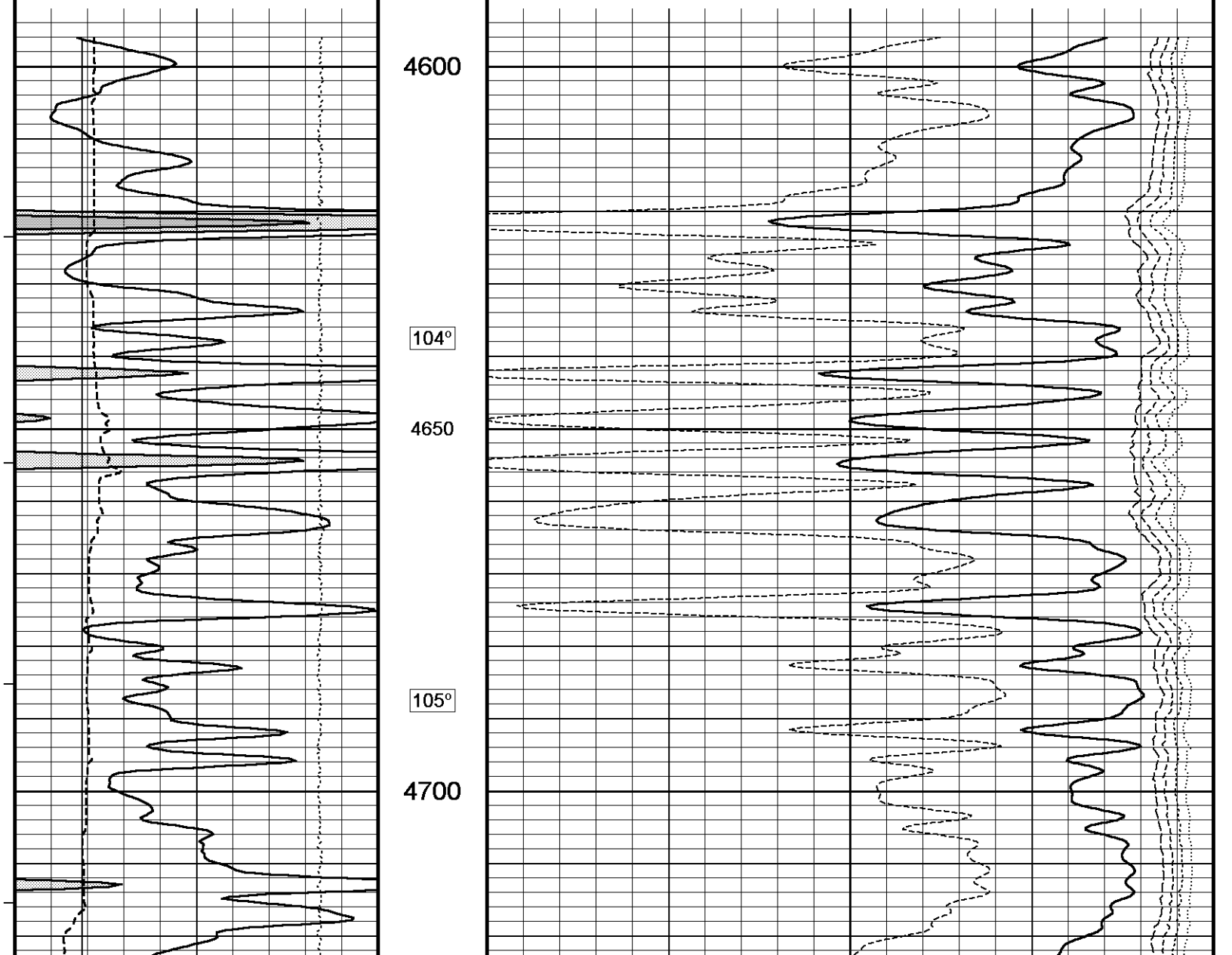
4600

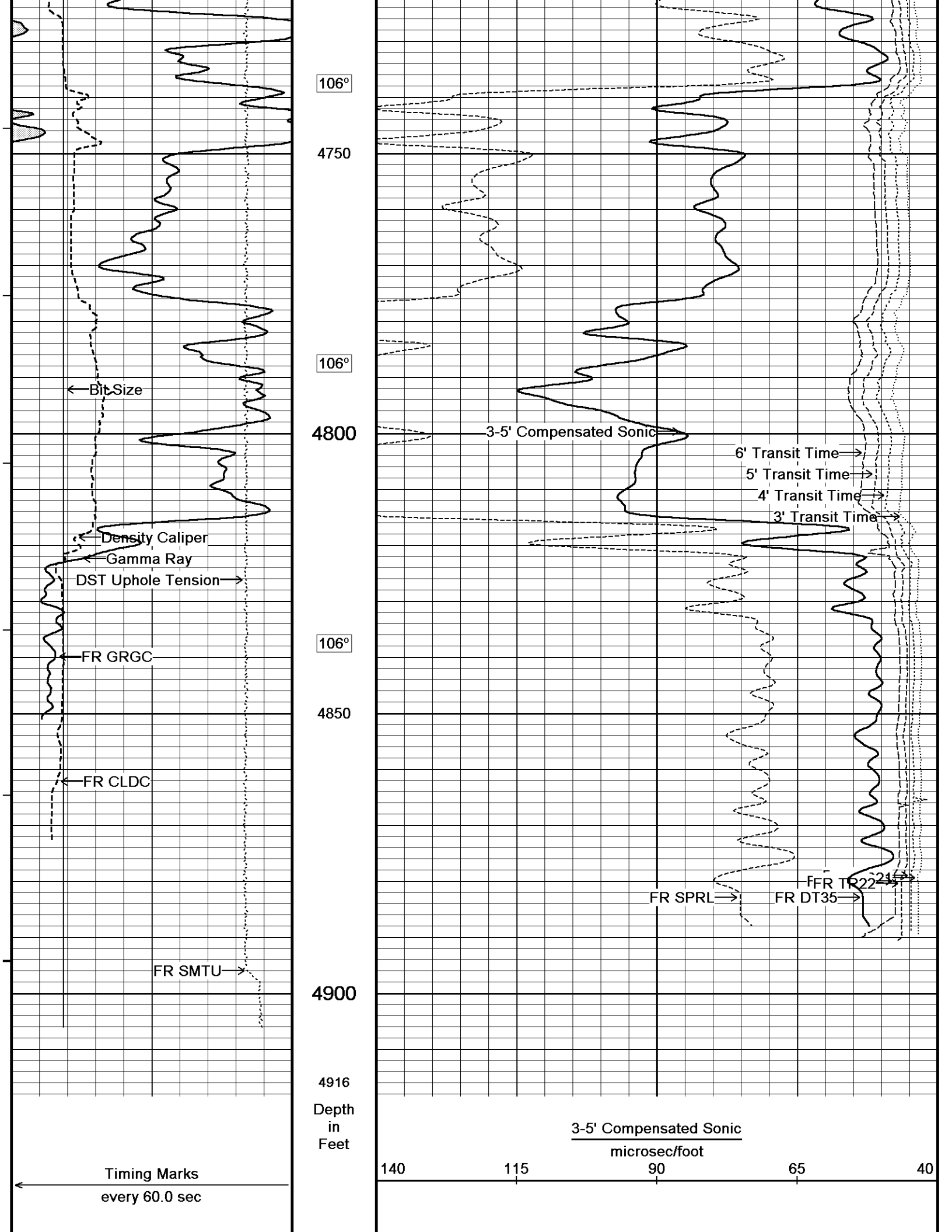
104°

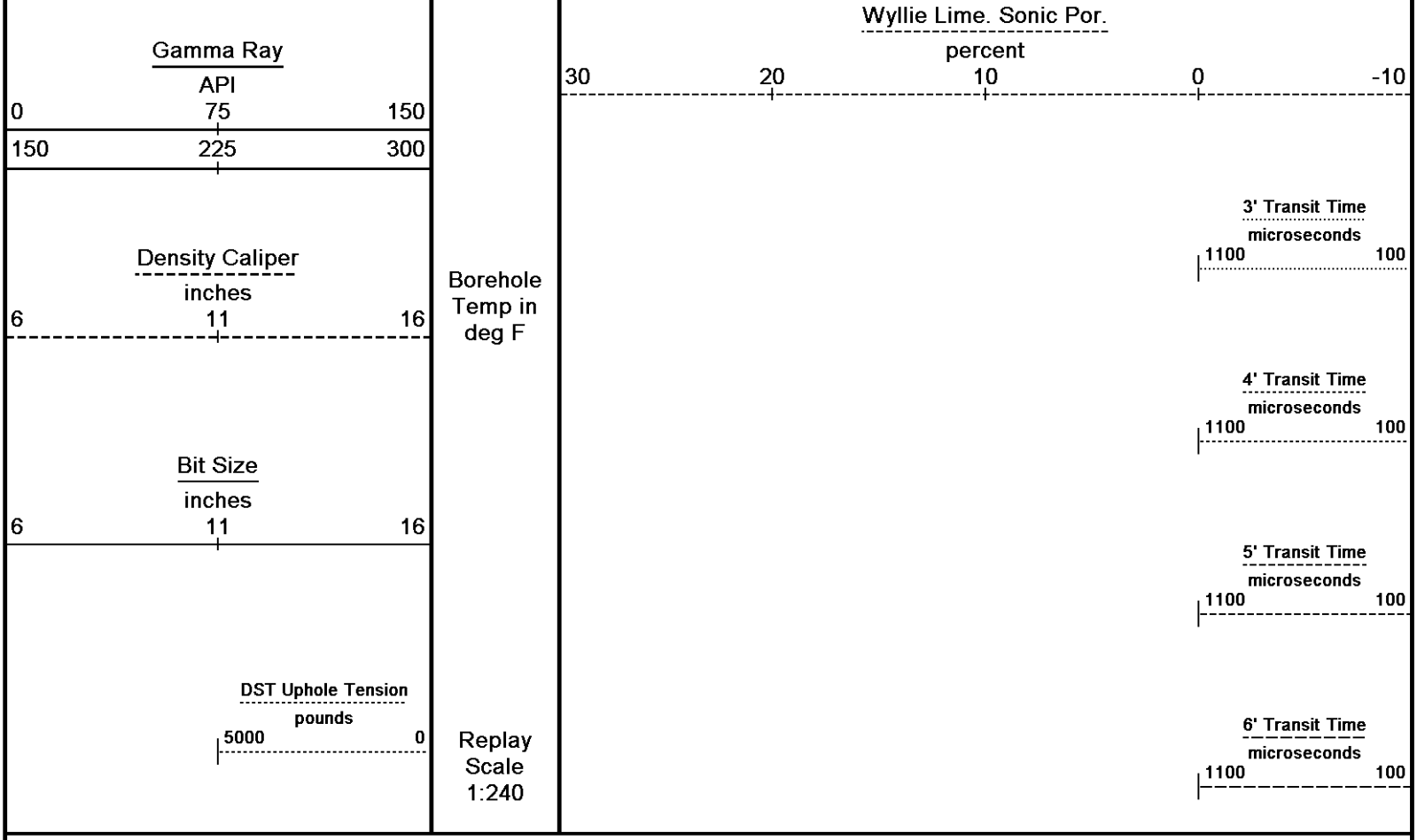
4650

105°

4700




106°
4750
106°
Bit Size
4800
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
106°
FR GRGC
4850
FR CLDC
FR TR22
FR SPRL
FR DT35
FR SMTU
4900
4916
Depth
in
Feet
3-5' Compensated Sonic
microsec/foot
140
115
90
65
40
Timing Marks
every 60.0 sec



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 14-MAR-2013 17:37

Filename: C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_001.dta — Recorded on 14-MAR-2013 14:37

System Versions: Logged with 13.04.8492 Plotted with 13.04.8492

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_001.dta

General Constants All 000

Last Edited on 14-MAR-2013,13:50

General Parameters		
Mud Resistivity	0.510	ohm-metres
Mud Resistivity Temperature	86.000	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	Deep Induction	
RWA Constant A	1.000	
RWA Constant M	2.000	

Gamma Calibration MCG-D.K 469

Field Calibration on 08-MAR-2013 17:05

	Measured	Calibrated (API)
Background	74	49
Calibrator (Gross)	1167	774
Calibrator (Net)	1093	725

Gamma Constants MCG-D.K 469

Last Edited on 14-MAR-2013,13:49

Gamma Calibrator Number	GR38	
Mud Density	1.08	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

High Resolution Temperature Calibration MCG-D.K 469

Field Calibration on 07-NOV-2012,10:25

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

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 16-FEB-2013,15:17

Pre-filter Length	11

Sonic Constants MSS-C.K 330

Last Edited on 14-MAR-2013,13:21

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	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

Caliper Calibration MPD-B 31

Base Calibration on 13-MAR-2013 15:27
Field Calibration on 13-MAR-2013 15:28

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16480	3.99
2	25040	5.98
3	33712	7.97
4	42000	9.86
5	51360	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.98

DOWNHOLE EQUIPMENT

C:\Minimus 13.04.8492\Data\Shakespeare Janzen #2-26\Shakespeare Janzen #2-26_001.dta

Compact Comms Gamma
MCG-D.K 469 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

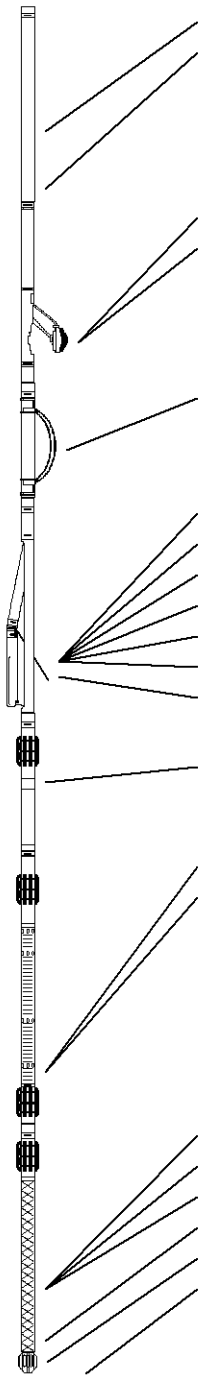
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

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

Compact Sonic
MSS-C.K 330 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: 61.30 ft Weight: 456.4 lb



56.02 ft	GRGC - Gamma Ray
53.11 ft	CGXT - MCG External Temperature
45.76 ft	MINV - MMR MicroLog Inverse
45.76 ft	MNRL - MMR MicroLog Normal
40.97 ft	NPRL - Limestone Neutron Por.
33.73 ft	AVOL - Annular Volume
33.73 ft	HVOL - Hole Volume
33.73 ft	CLDC - Density Caliper
31.80 ft	DPRL - Limestone Density Por.
31.80 ft	DEN - Compensated Density
31.80 ft	DCOR - Density Correction
31.74 ft	PDPE - PE
26.24 ft	FEFE - Shallow FE
12.96 ft	SPRL - Wyllie Lime. Sonic Por.
12.96 ft	DT35 - 3-5' Compensated Sonic
3.34 ft	R40O - Array Ind. One Res 40
3.34 ft	R60O - Array Ind. One Res 60
3.34 ft	RTAO - Array Ind. One Res Rt
0.23 ft	SPCG - Spontaneous Potential
Tool Zero	(0.13ft from bottom)
-0.13 ft	SMTU - DST Uphole Tension

All measurements relative to tool zero.

COMPANY	SHAKESPEARE OIL COMPANY
WELL	JANZEN #2-26
FIELD	WILDCAT
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3125.00	feet	First Reading	4883.00	feet
Elevation Drill Floor	3124.00	feet	Depth Driller	4897.00	feet
Elevation Ground Level	3115.00	feet	Depth Logger	4896.00	feet

Weatherford®

COMPENSATED SONIC

WITH INTEGRATED TRANSIT TIME