Weatherford®

COMPENSATED SONIC WITH INTEGRATED TRANSIT TIME

COMPANY	SHAKESPEARE OIL CO., INC
WELL	JANZEN 6-36
FIELD	PENCE EAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS
LOCATION	950' FNL & 450' FWL NE SW NW NW

SEC 36	TWP 16S	RGE 34W	Other Services
Latitude			MPD/MDN MML
Longitude			MAI/MFE
API Number	15-171-21043		MSS

Permanent Datum GL, Elevation 3104 feet
Log Measured From KB
Drilling Measured From KB @ 12 FEET

Elevations:	feet
KB	3116.00
DF	3114.00
GL	3104.00

Date	08-APRI-2014			
Run Number	ONE			
Service Order	5872-84189232			
Depth Driller	4850.00	feet		
Depth Logger	4849.00	feet		
First Reading	4836.00	feet		
Last Reading	267.00	feet		
Casing Driller	264.00	feet		
Casing Logger	267.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEM			
Density / Viscosity	9.30	lb/USg	45.00 CP	
PH / Fluid Loss	10.00		8.80 ml/30Min	
Sample Source	PIT			
Rm @ Measured Temp	0.40 @ 86.0	ohm-m		
Rmf @ Measured Temp	0.32 @ 86.0	ohm-m		
Rmc @ Measured Temp	0.48 @ 86.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.31 @109.0	ohm-m		
Time Since Circulation	4 HRS			
Max Recorded Temp	109.00	deg F		
Equipment / Base	13057		LIB	
Recorded By	D. COLE			
Witnessed By	M. HERNDON			
JOB #	LB 14-108			

BOREHOLE RECORD

Last Edited: 08-APR-2014 22:54

Bit Size inches	Depth From feet	Depth To feet
7.875	264.00	4850.00

CASING RECORD

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

REMARKS

- SOFTWARE ISSUE: WLS 13.08.211.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 0.5 INCH STANDOFF USED ON MFE.
 TWO 0.5 INCH STANDOFFS USED ON MSS.
 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.
- TOTAL HOLE VOLUME FROM TD TO 3850 FEET: 340 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3850 FEET: 180 CU.FT.

- RIG: SOUTHWIND 70

- ENGINEER: D. COLE.

- OPERATOR: J. DUNLAP

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, the Contractor will give the Company the benefit of the Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ. ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF THE COMPANY, AND THE CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. THE COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISIONS CONCERNING THE SERVICES.

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 09-APR-2014 04:33

Filename: C:\Minimus 13.08.2113\Logs\SHAKESPEARE JA...\SHAKESPEARE JANZEN 6-36 MAIN.dta — Recorded on 09-APR-2014 01:07

System Versions: Logged with 13.08.2113 Processed with 13.08.2113 Plotted with 13.08.2113

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
11 16 21

Bit Size
inches
11 16 21

DST Uphole Tension
pounds
5000 0

Depth in Feet

Borehole Temp in deg F

Replay Scale 1:240

258
Casing Shoe

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

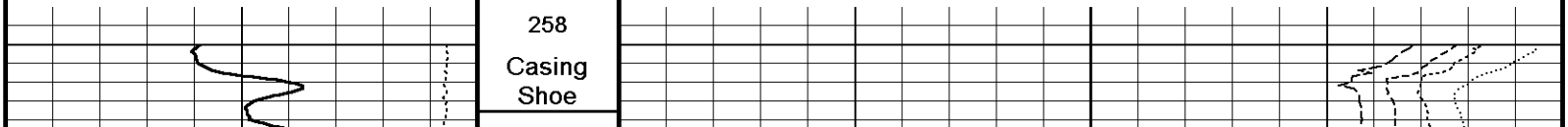
Wyllie Lime. Sonic Por.
percent
30 20 10 0 -10

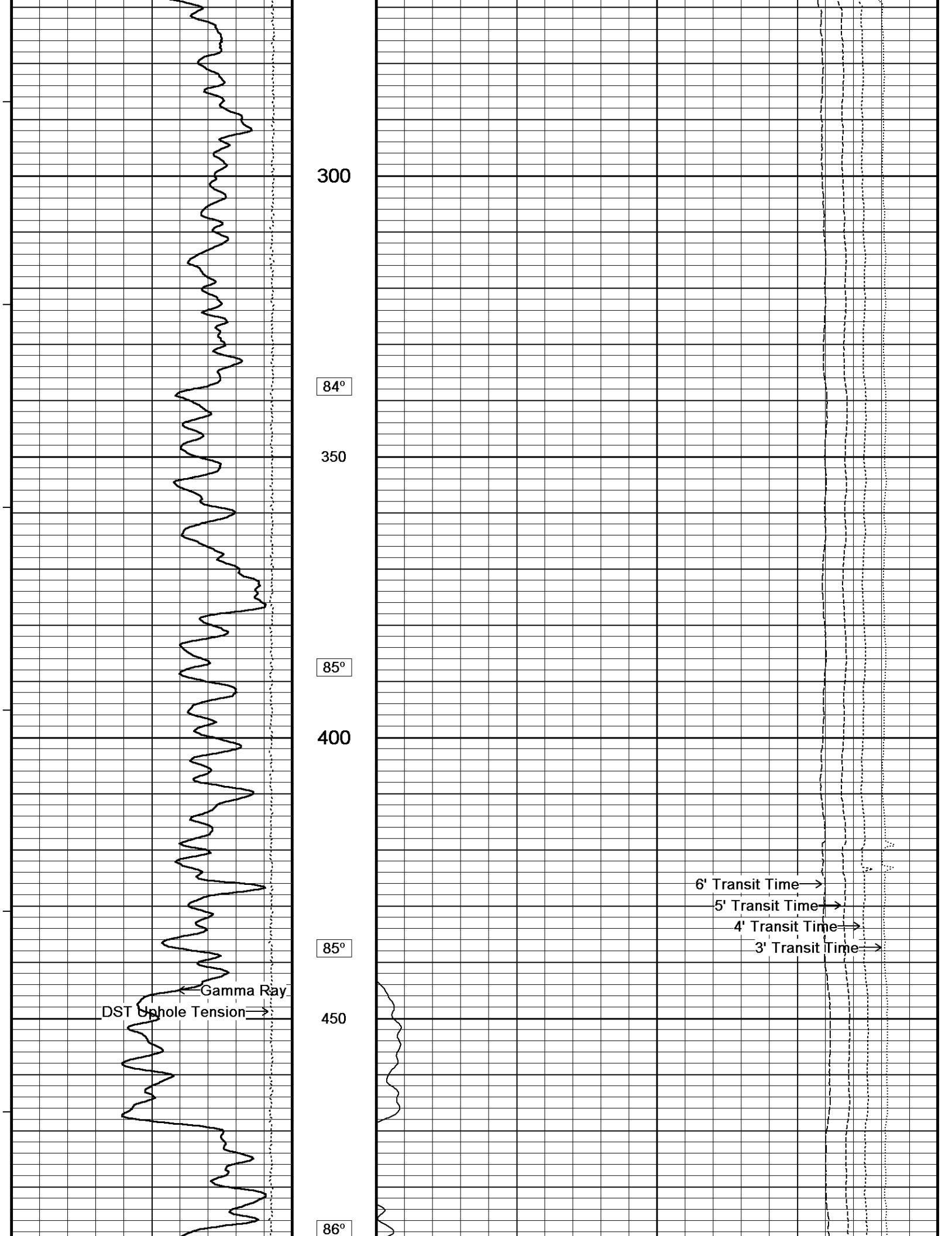
3' Transit Time
microseconds
1100 100

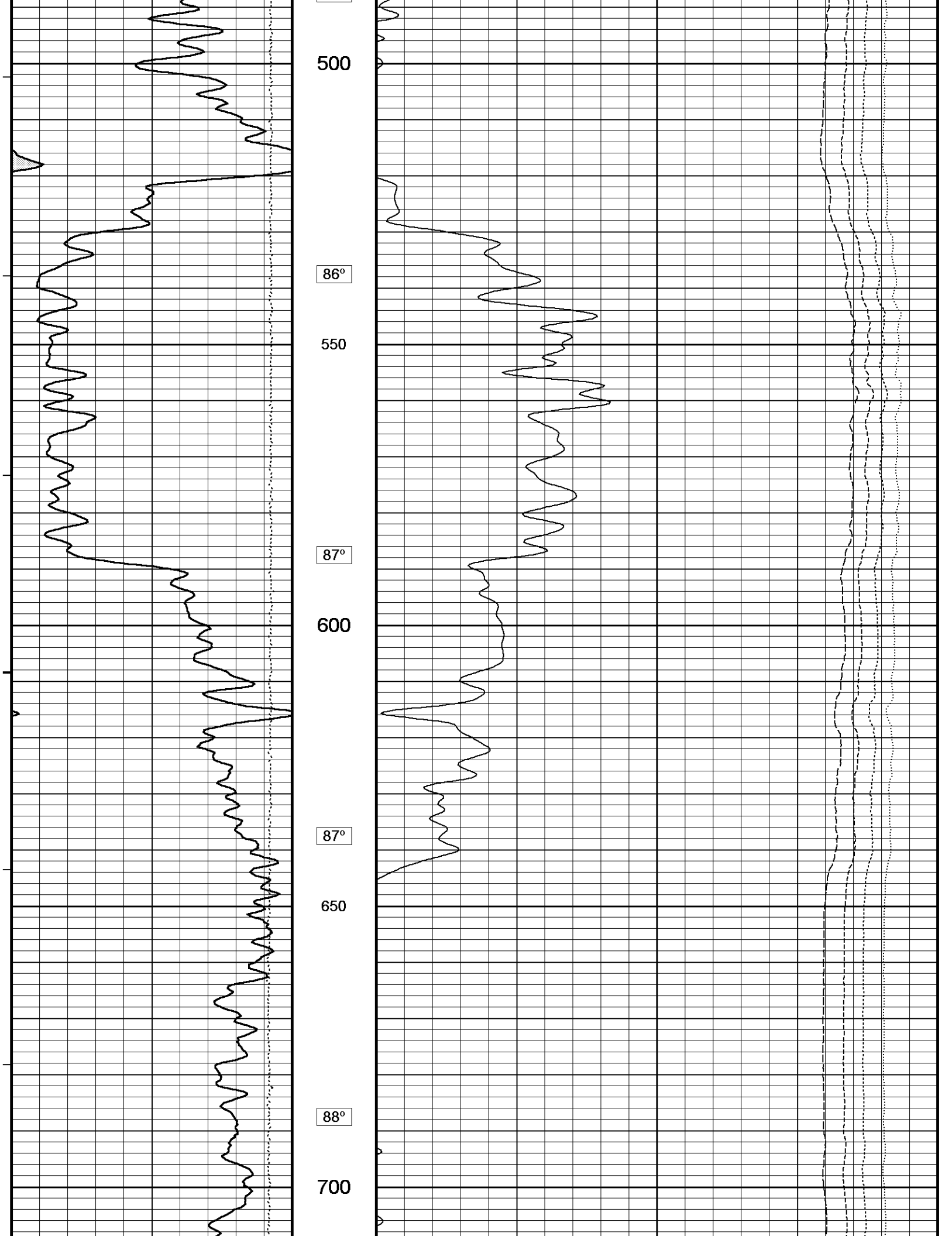
4' Transit Time
microseconds
1100 100

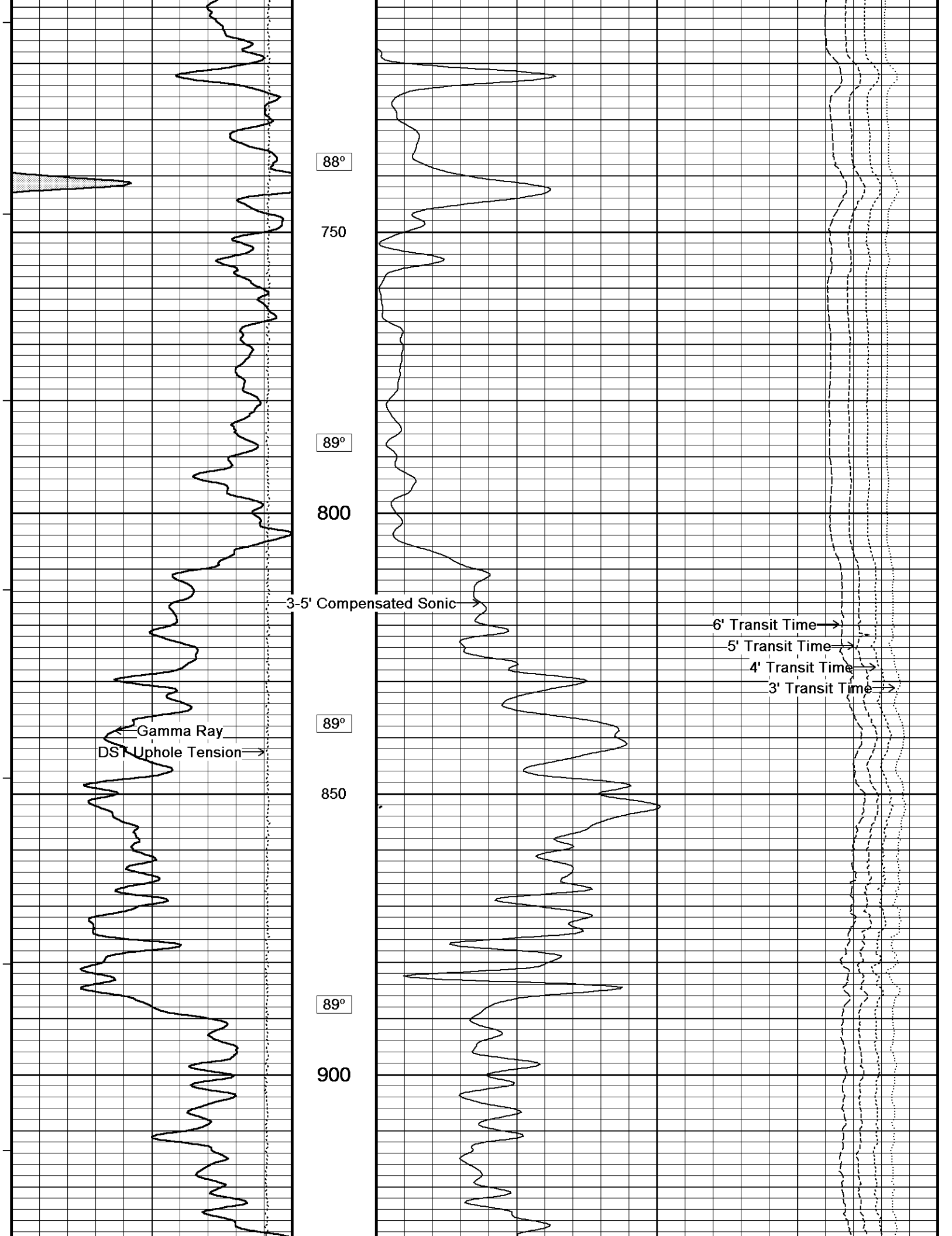
5' Transit Time
microseconds
1100 100

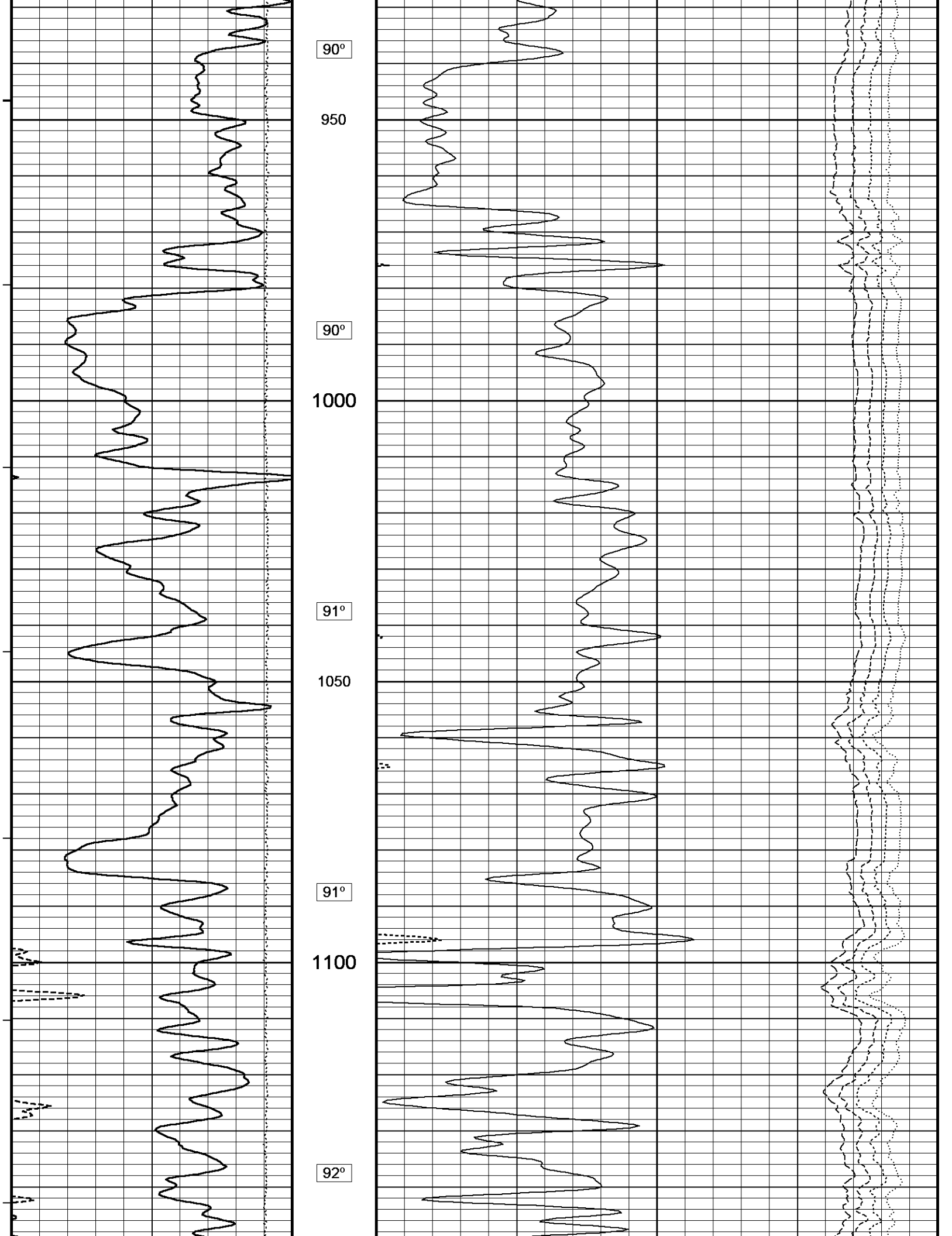
6' Transit Time
microseconds
1100 100

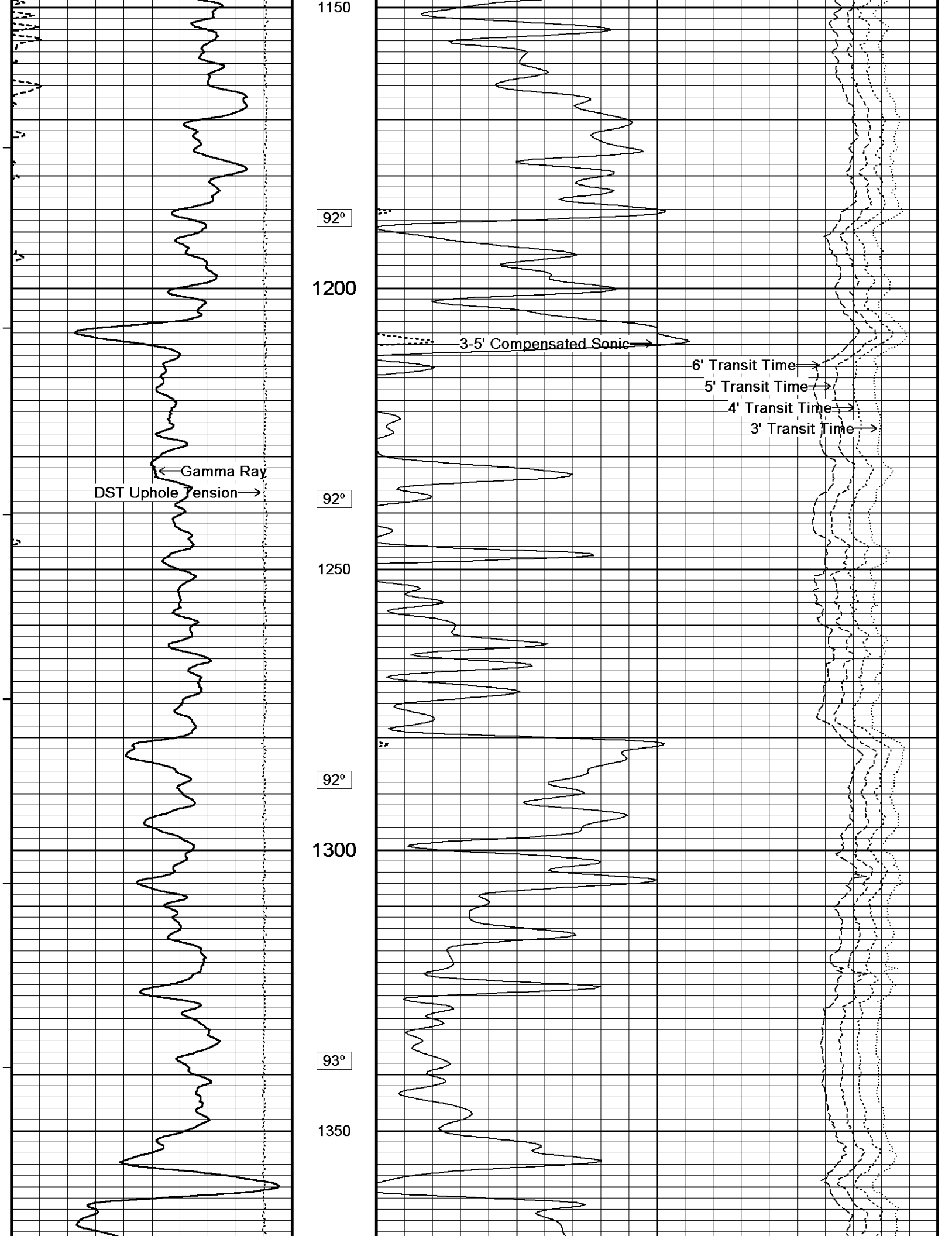


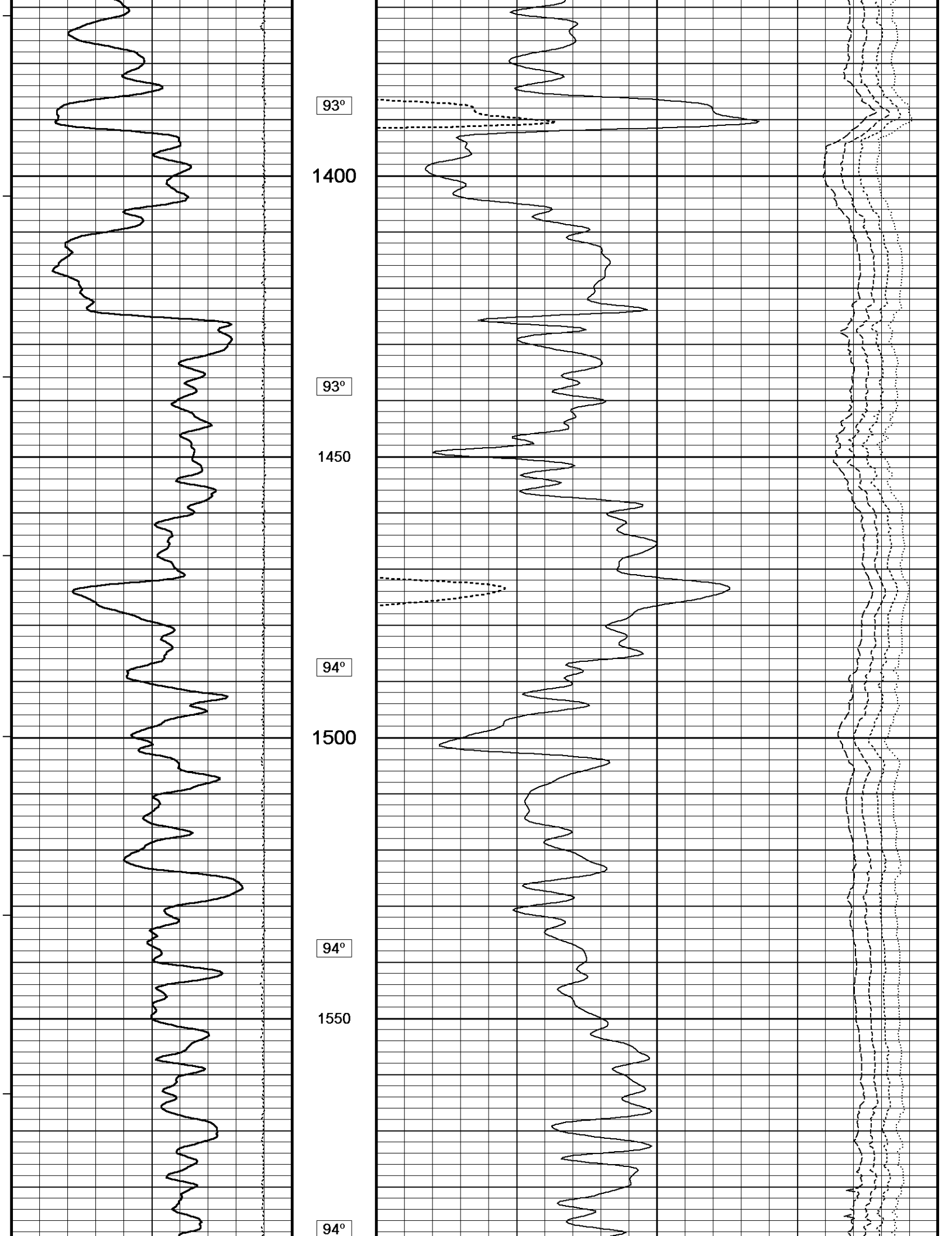

300
84°
350
85°
400
85°
450
86°
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension

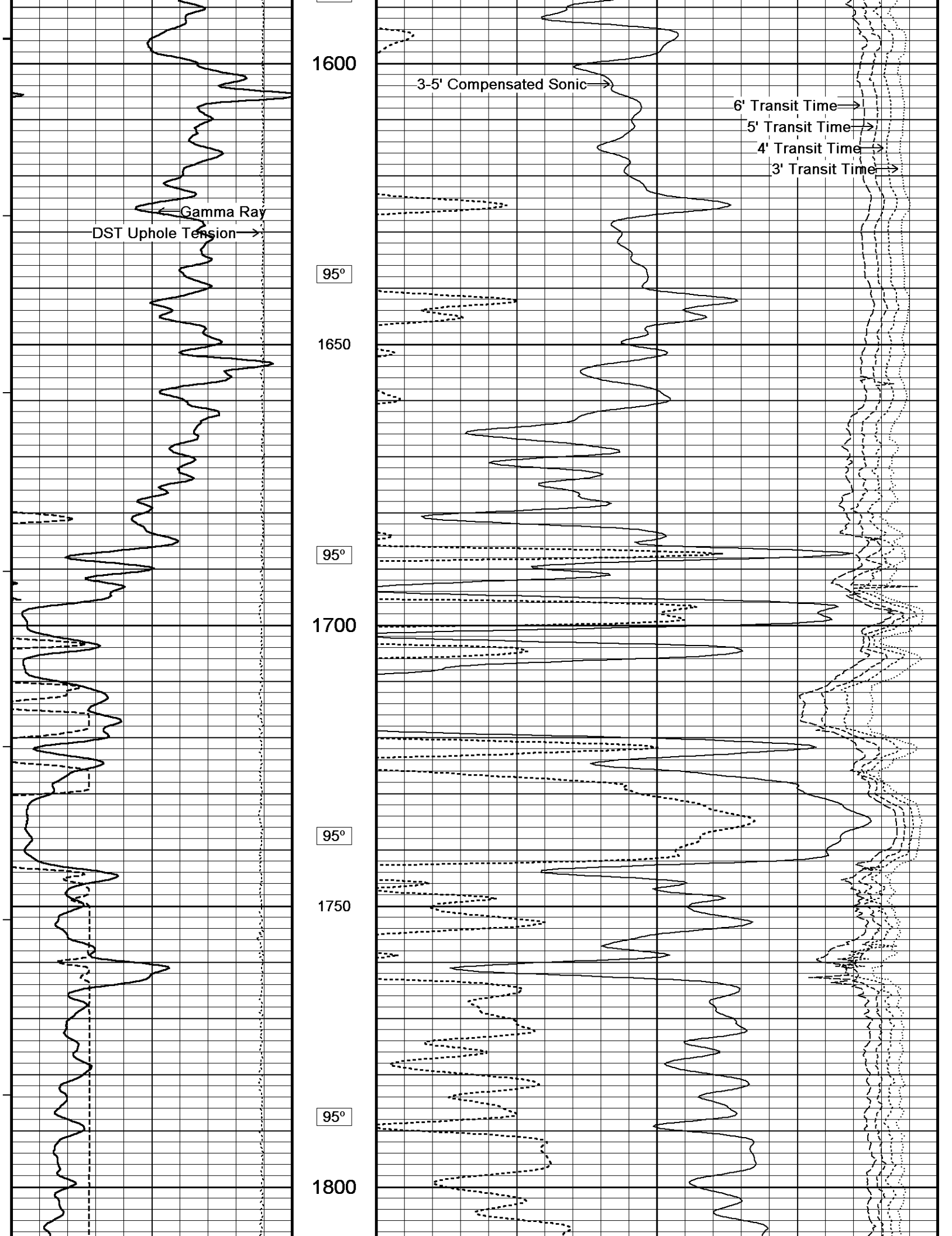

500
86°
550
87°
600
87°
650
88°
700

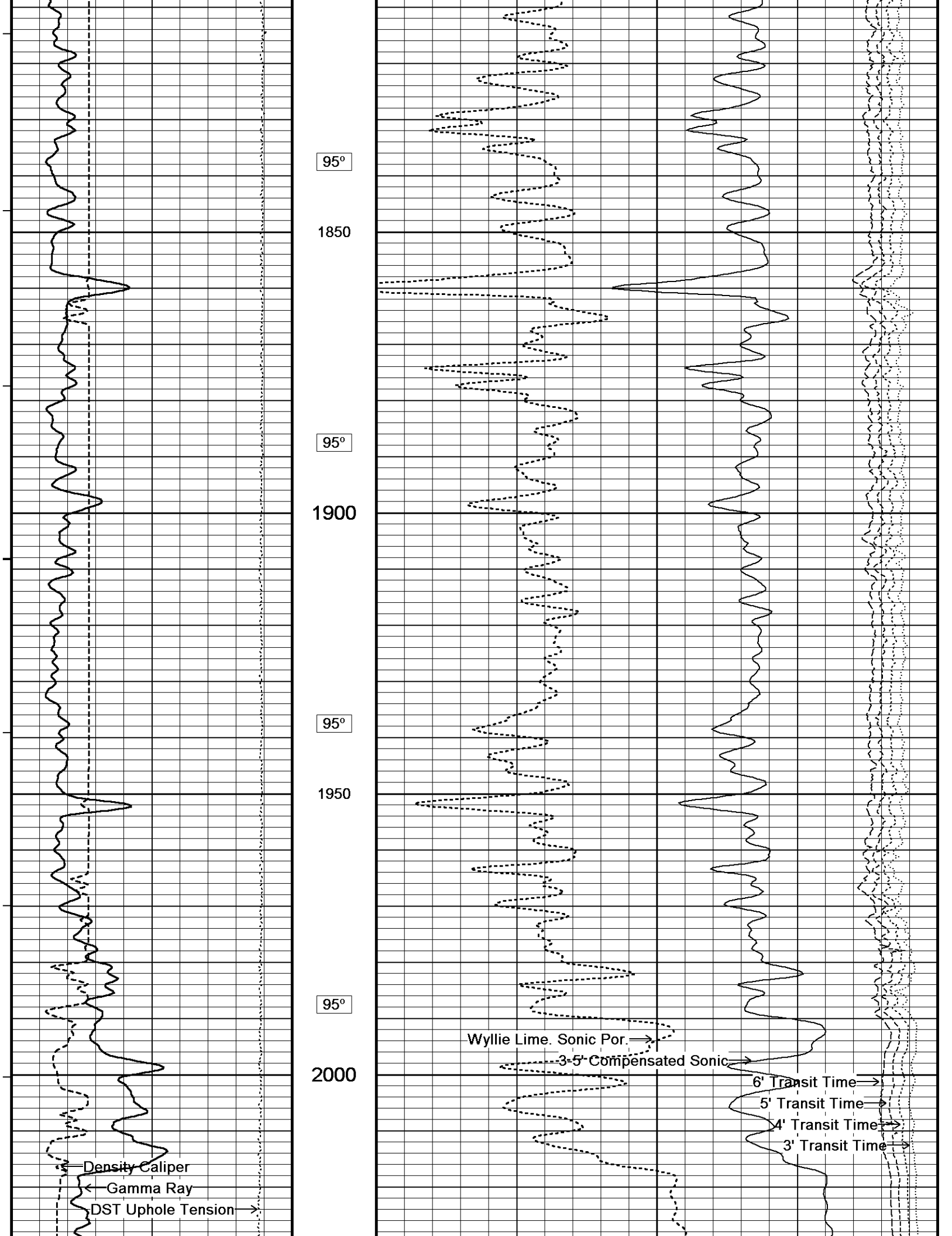

88°
750
89°
800
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
89°
Gamma Ray
DST Uphole Tension
850
89°
900

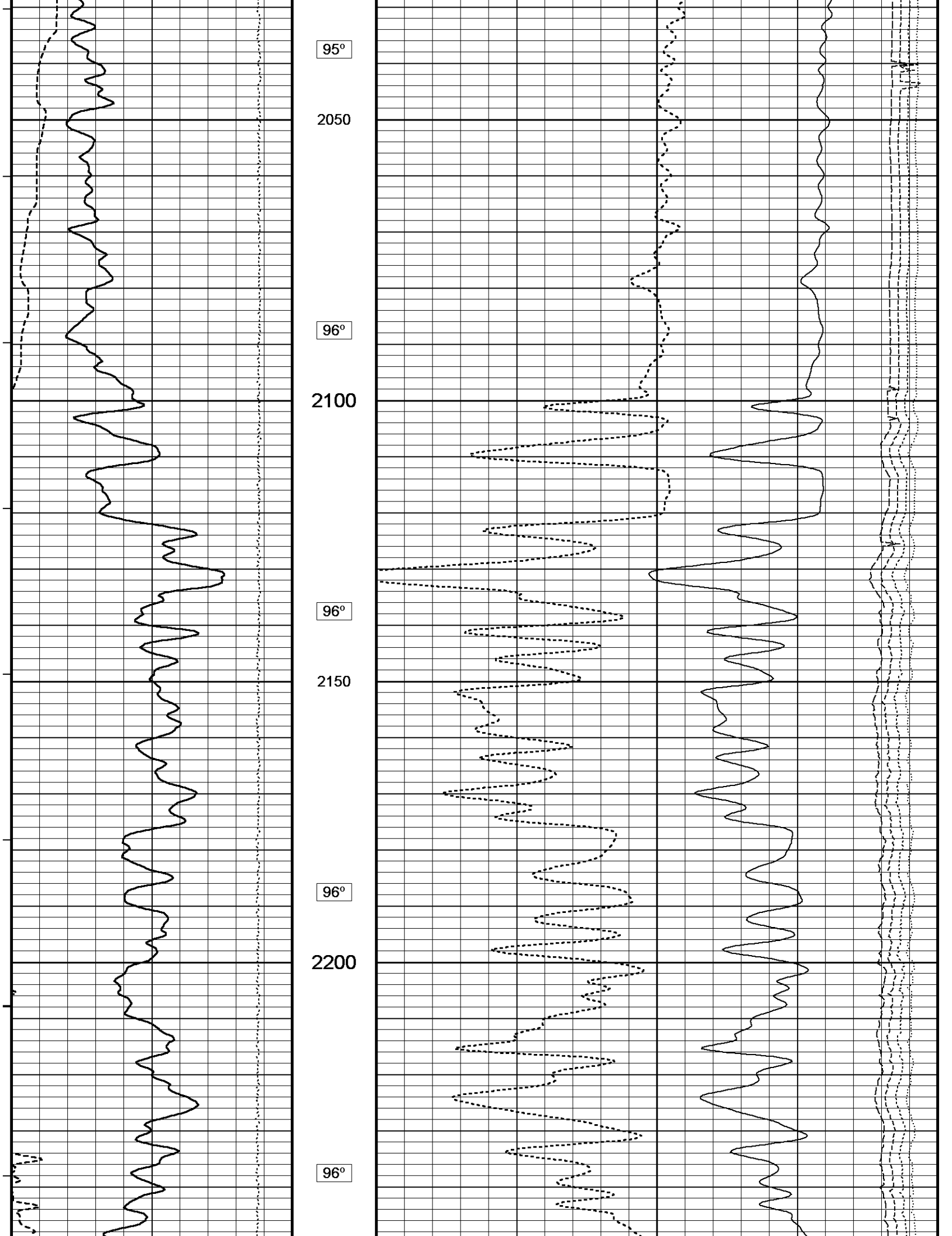

90°
950
90°
1000
91°
1050
91°
1100
92°

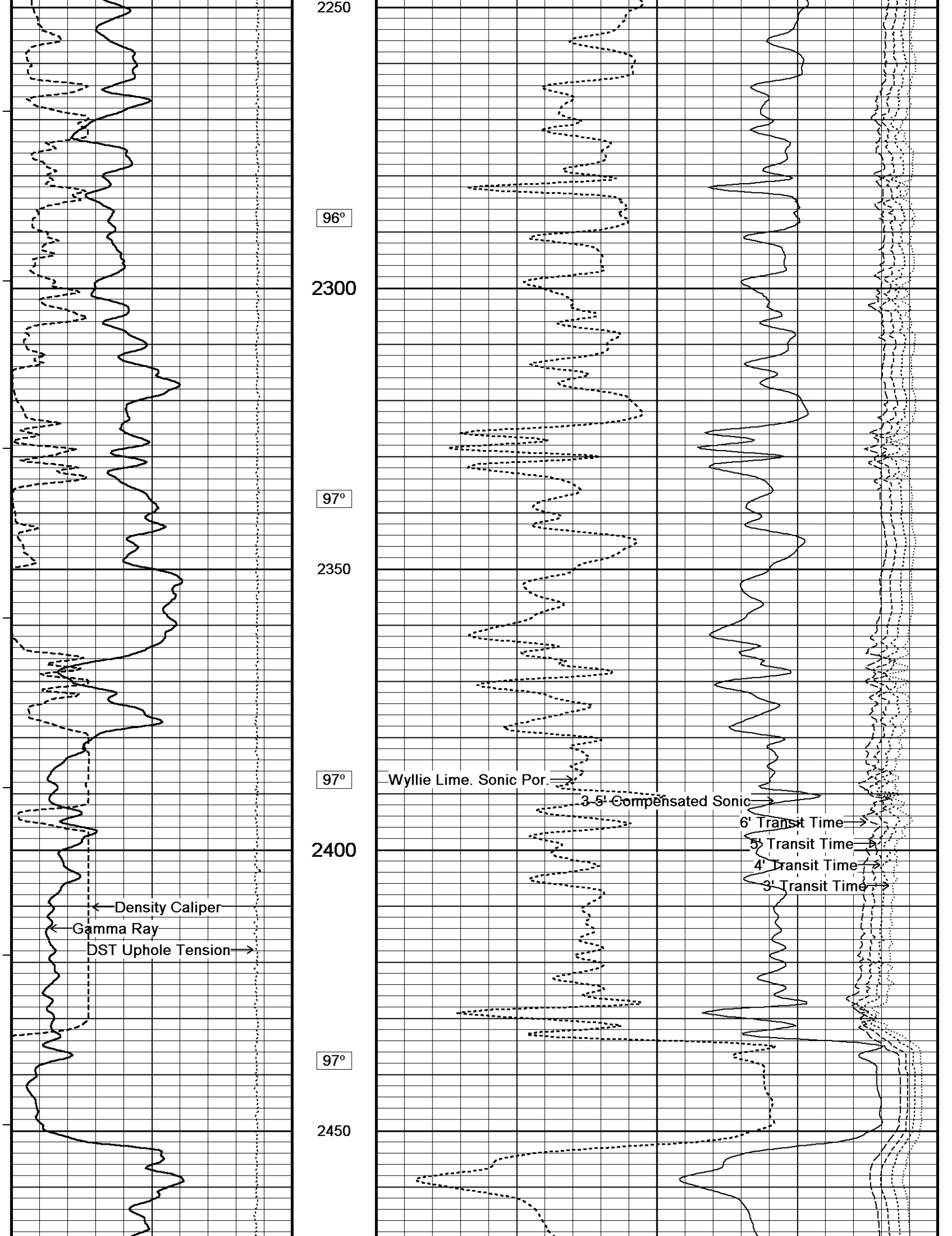

1150
92°
1200
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension
92°
1250
92°
1300
93°
1350

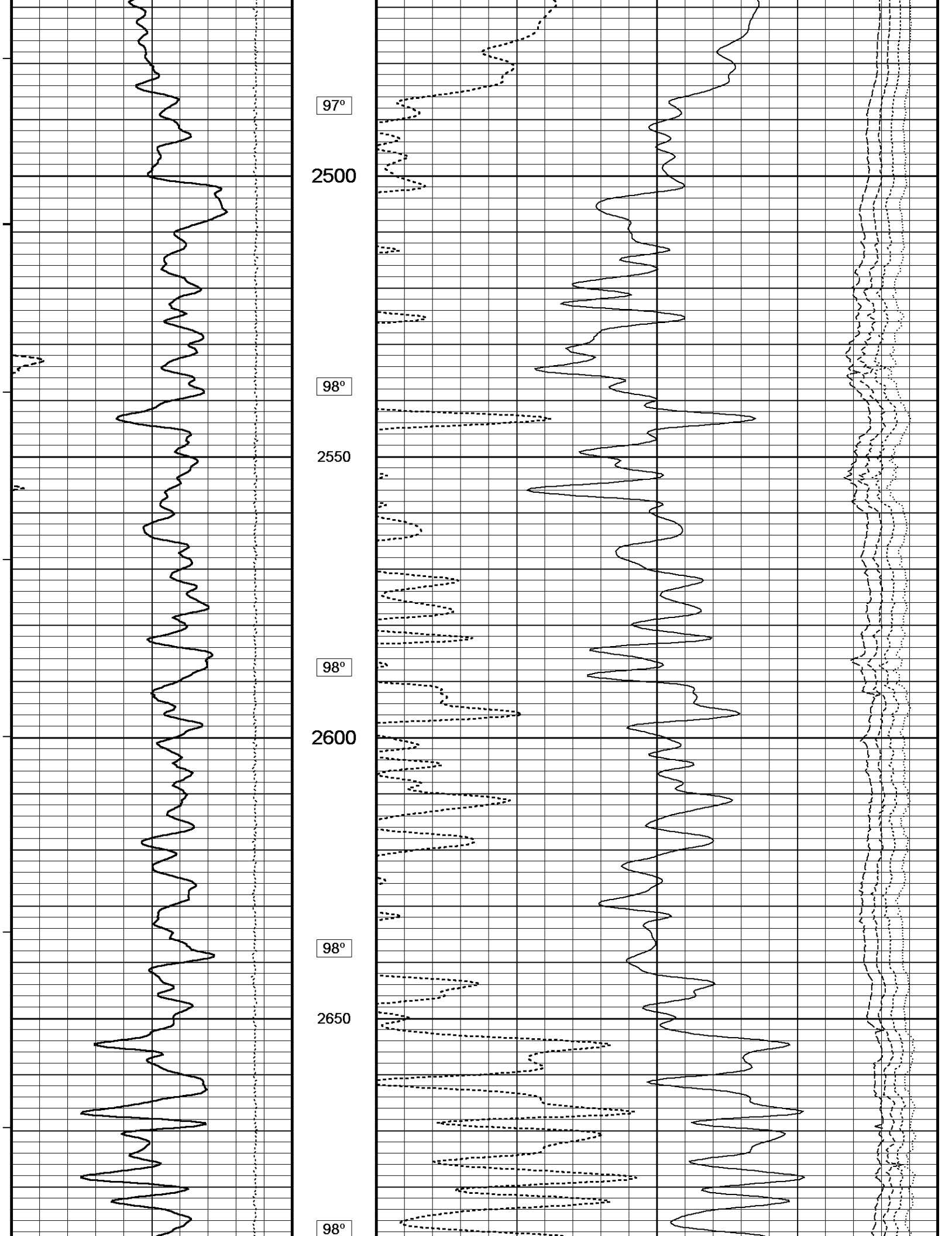

93°
1400
93°
1450
94°
1500
94°
1550
94°

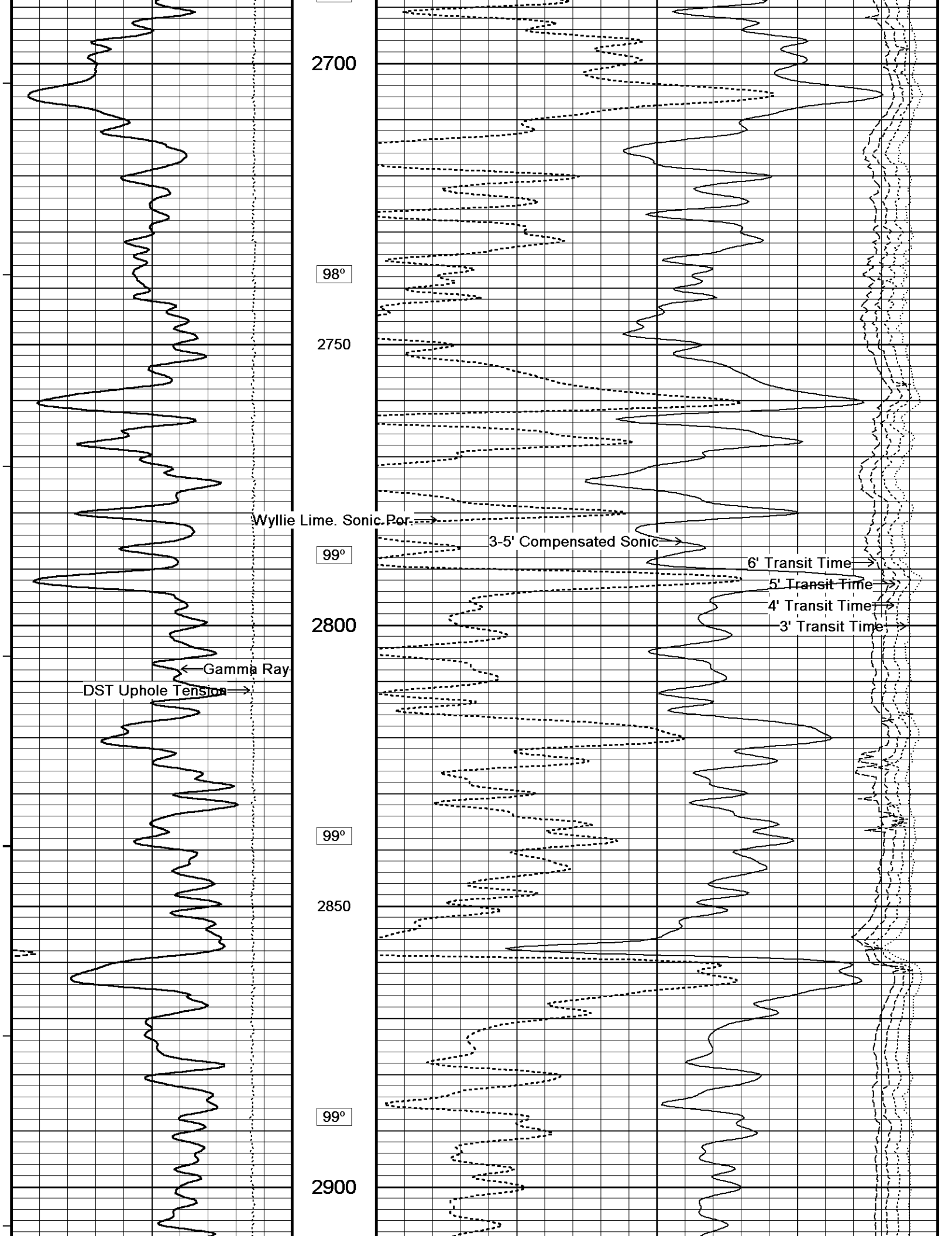

1600
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension
95°
1650
95°
1700
95°
1750
95°
1800

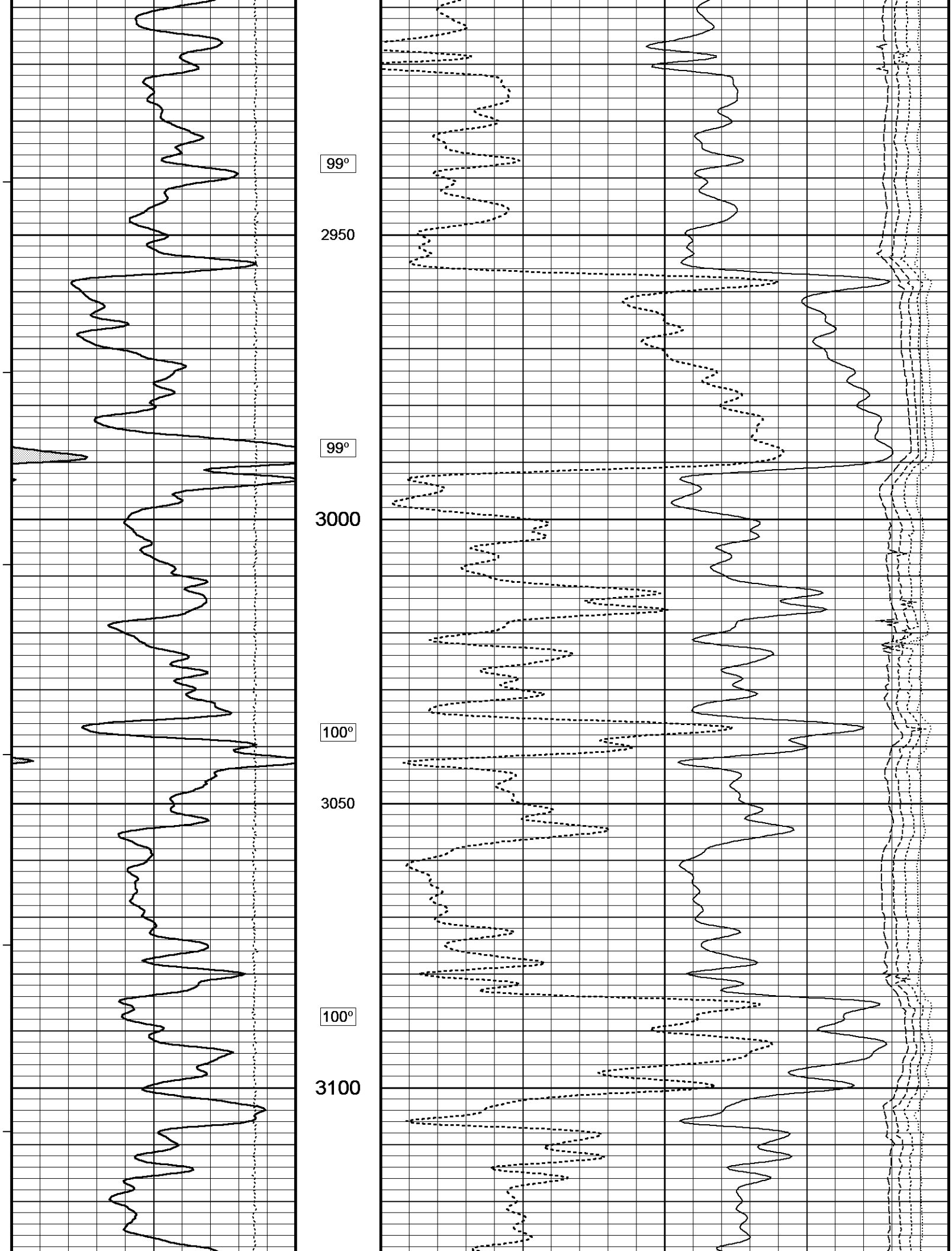

95°
1850
95°
1900
95°
1950
95°
2000
Density Caliper
Gamma Ray
DST Uphole Tension
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

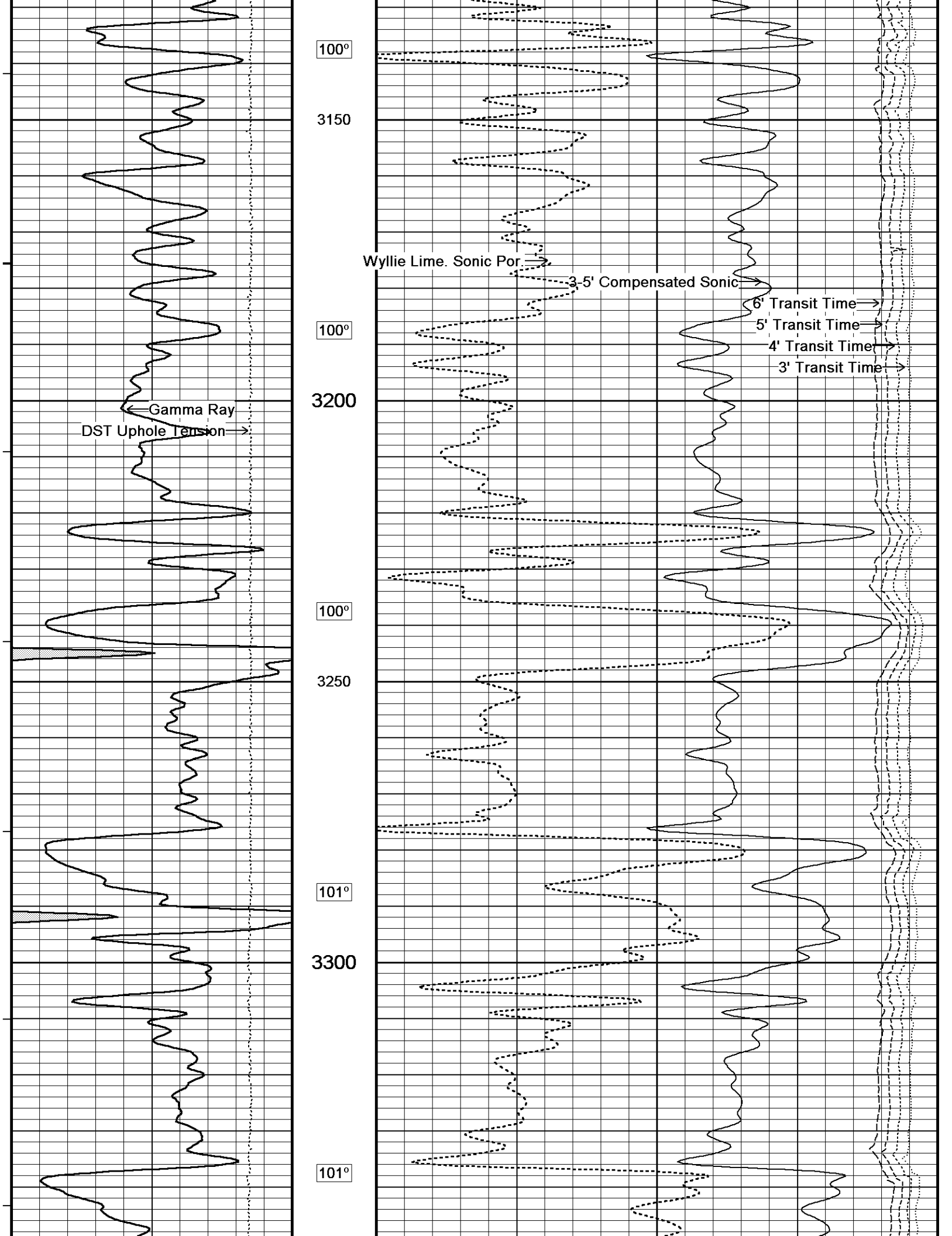

95°
2050
96°
2100
96°
2150
96°
2200
96°

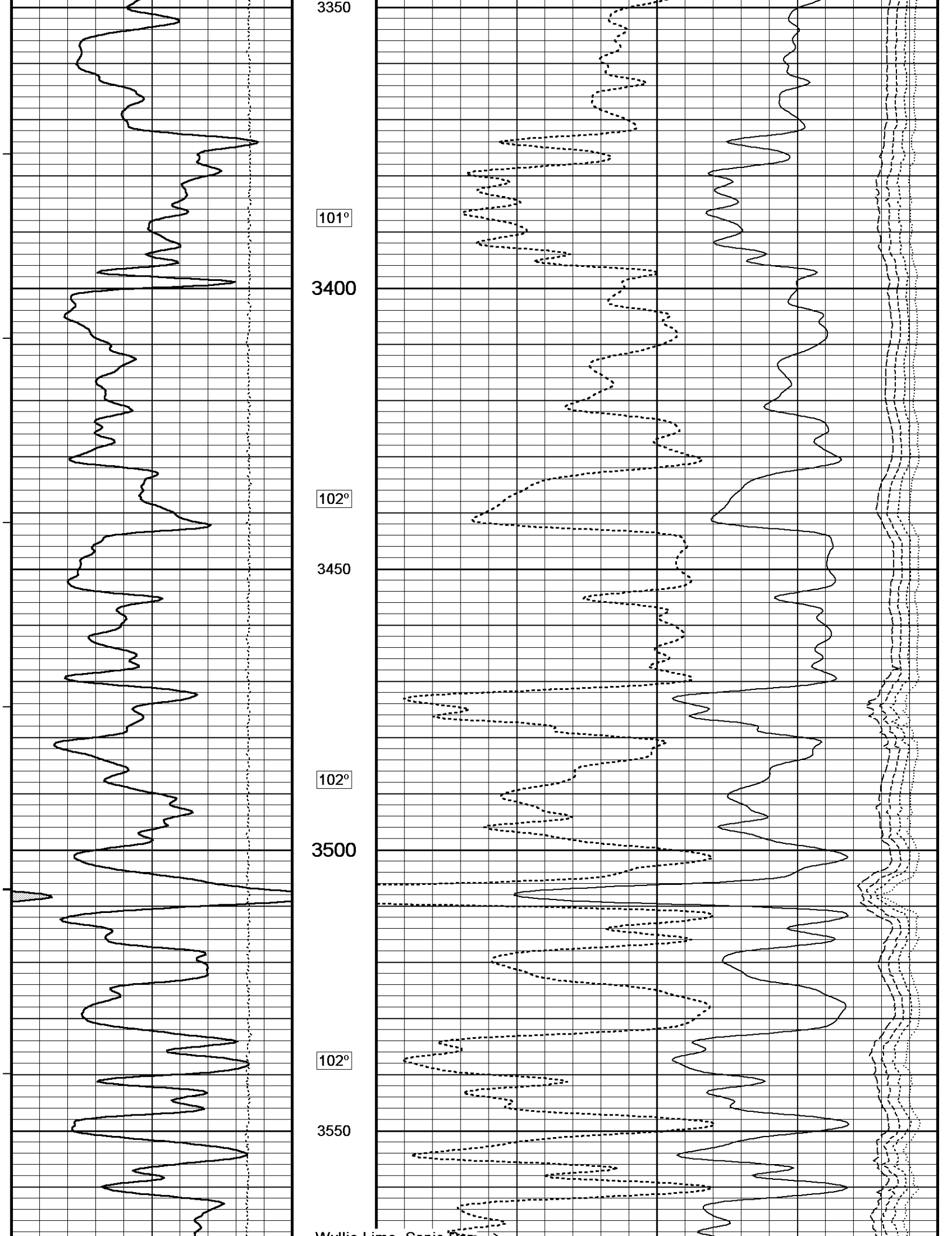

2250
96°
2300
97°
2350
97°
2400
97°
2450
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension

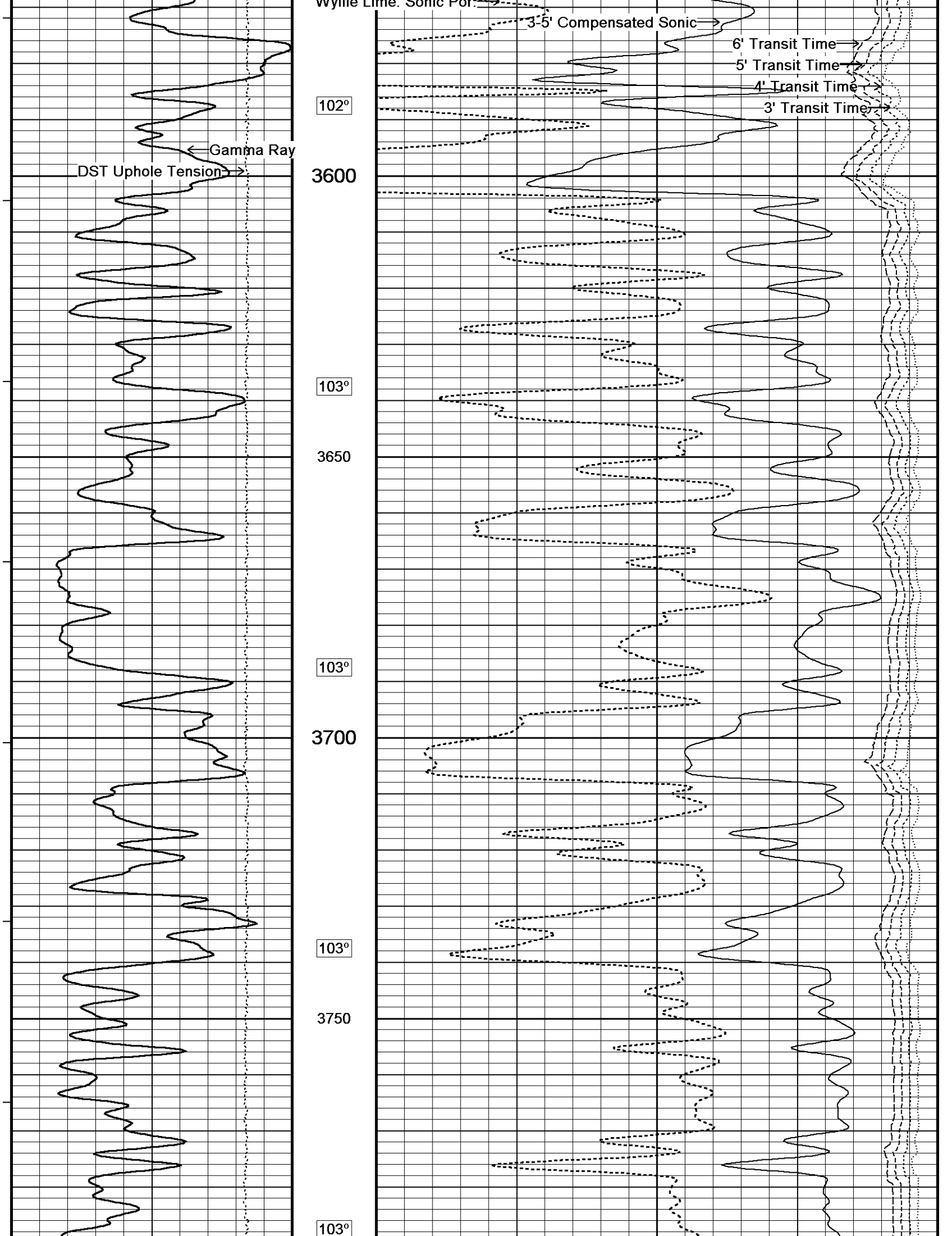

97°
2500
98°
2550
98°
2600
98°
2650
98°

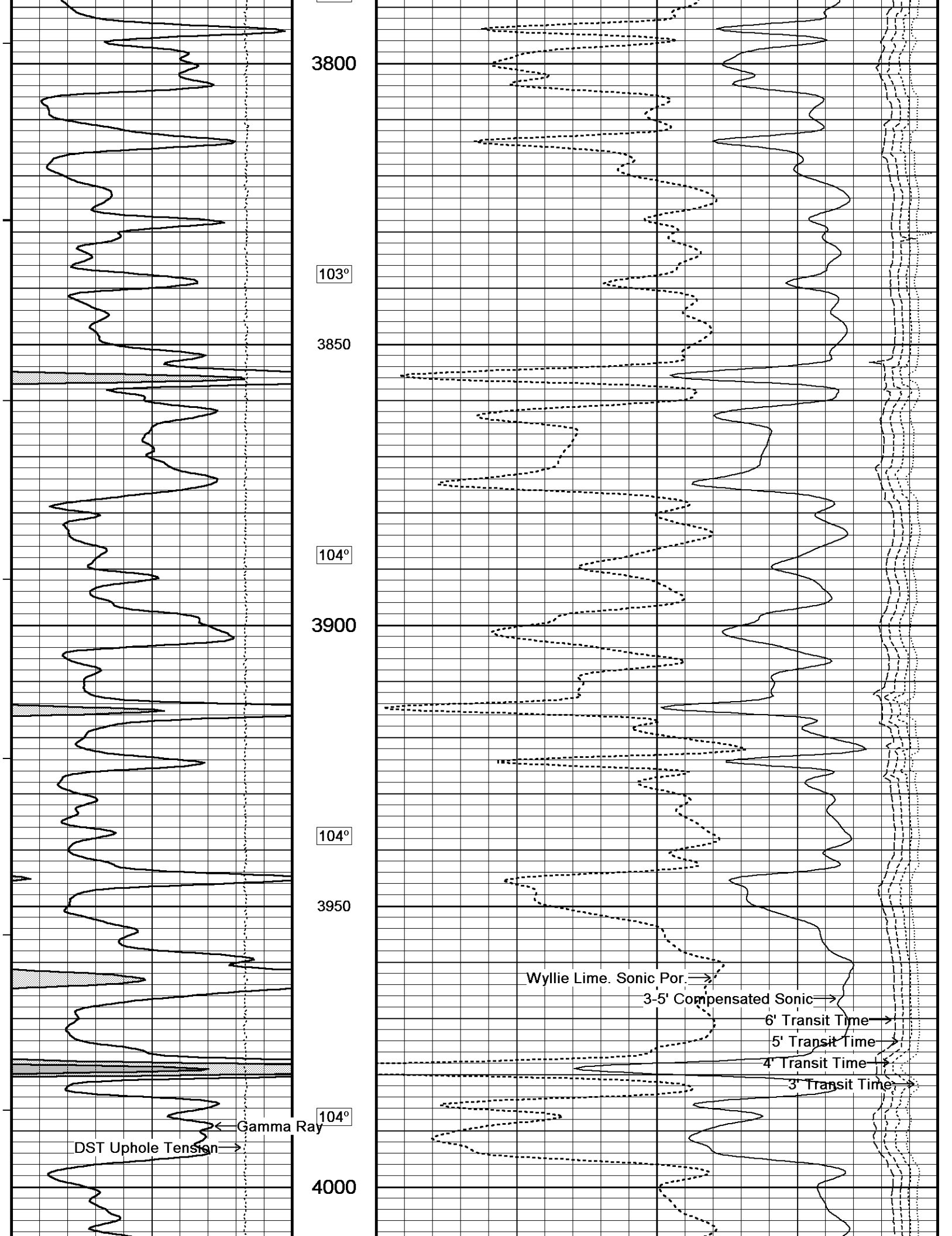

2700
98°
2750
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
99°
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
2800
Gamma Ray
DST Uphole Tension
99°
2850
99°
2900

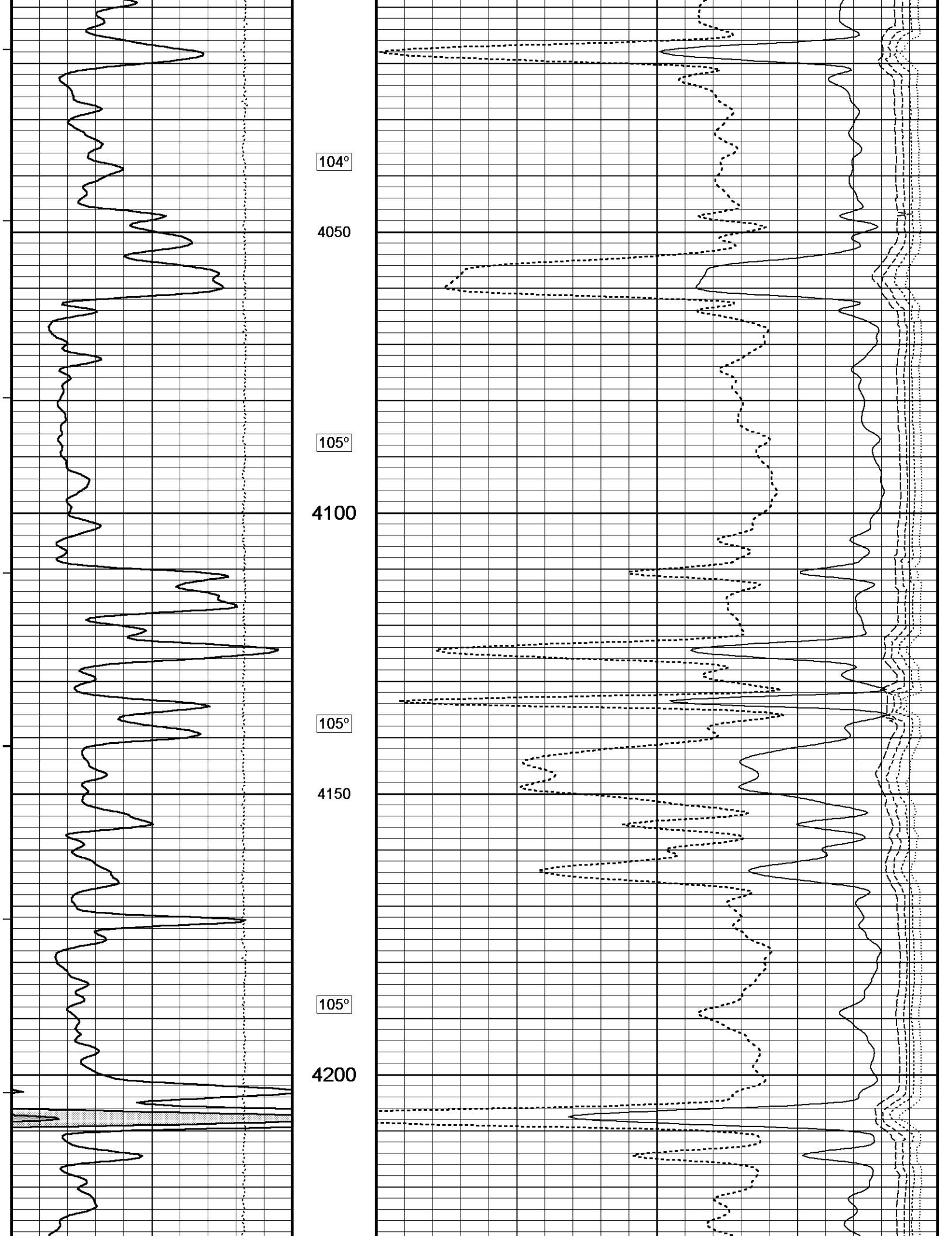

99°
2950
99°
3000
100°
3050
100°
3100

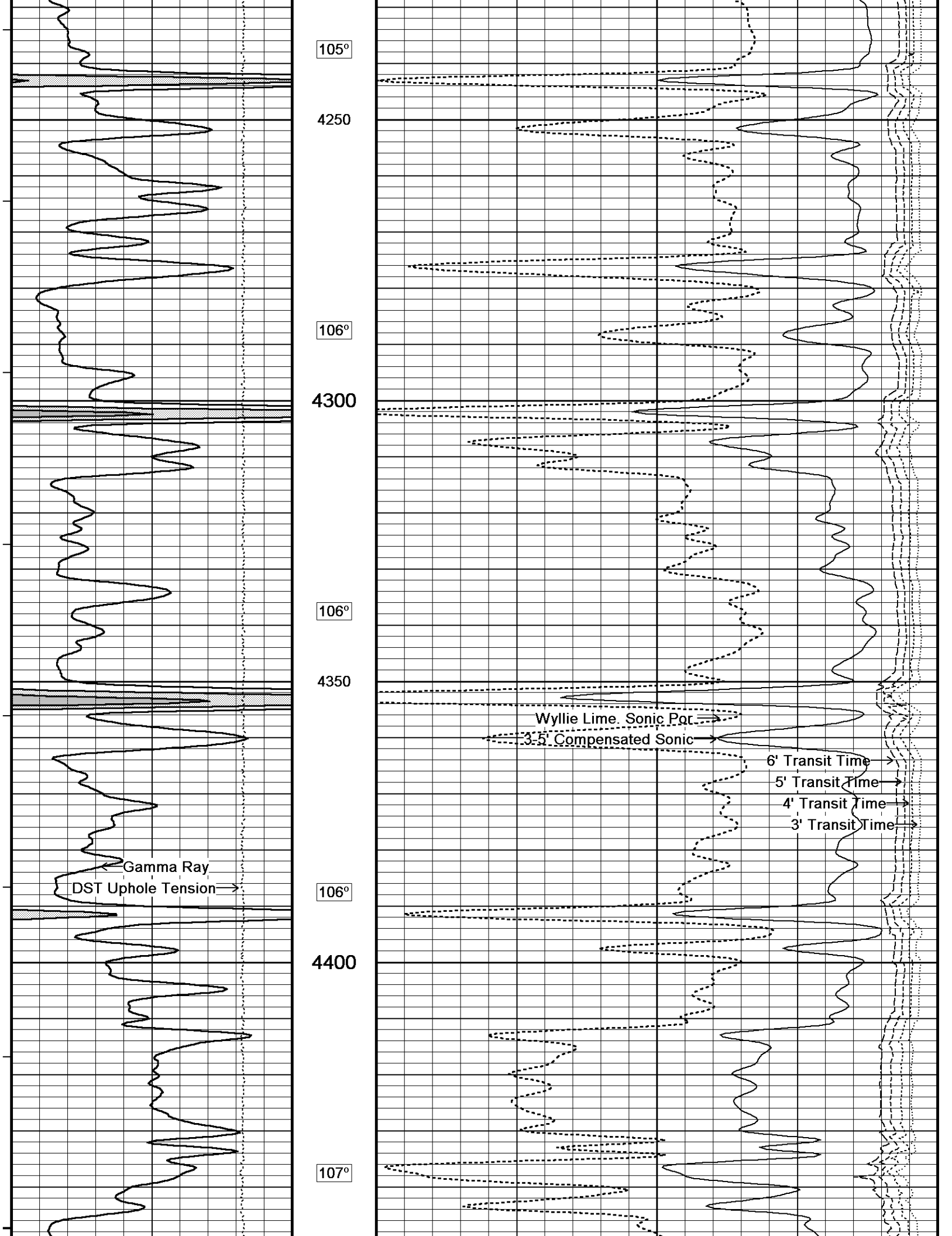

100°
3150
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
100°
3200
Gamma Ray
DST Uphole Tension
100°
3250
101°
3300
101°

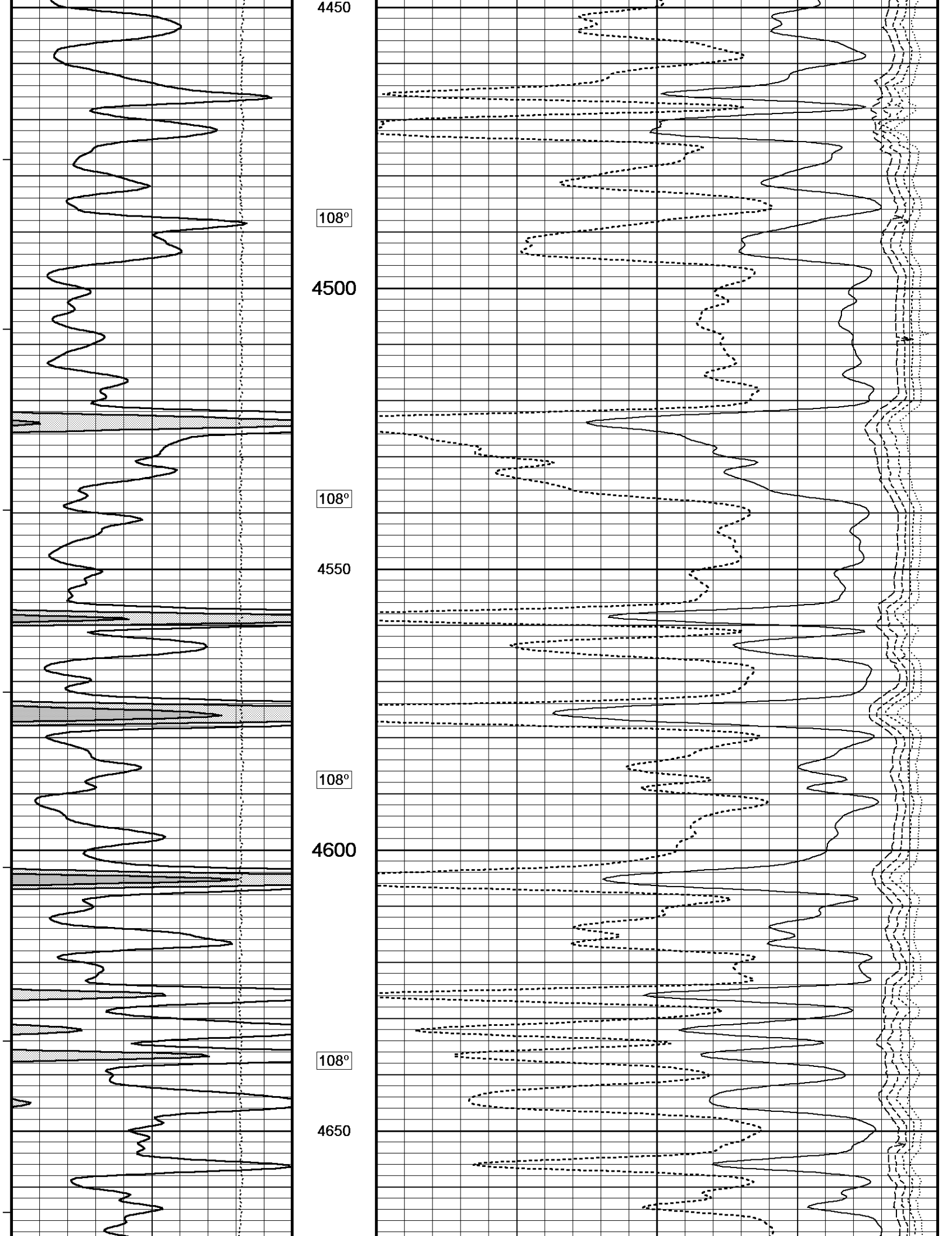

3350
101°
3400
102°
3450
102°
3500
102°
3550

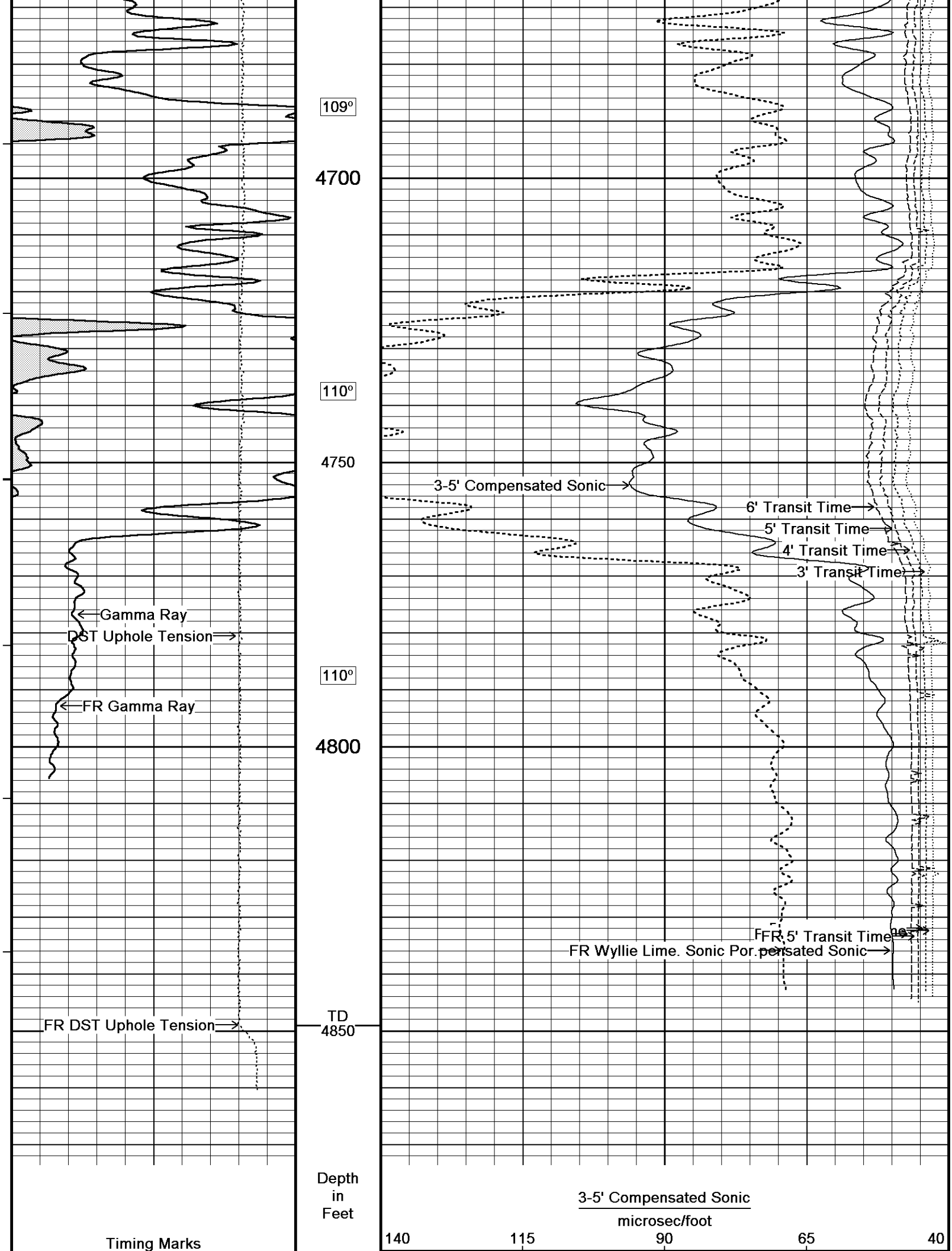

Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension
102°
3600
103°
3650
103°
3700
103°
3750
103°


3800
103°
3850
104°
3900
104°
3950
104°
4000
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


104°
4050
105°
4100
105°
4150
105°
4200


105°
4250
106°
4300
106°
4350
106°
4400
107°
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


4450
108°
4500
108°
4550
108°
4600
108°
4650


109°
4700
110°
4750
110°
4800
TD
4850
Gamma Ray
DST Uphole Tension
FR Gamma Ray
FR DST Uphole Tension
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
FR 5' Transit Time
FR Wyllie Lime. Sonic Por. Compensated Sonic
Timing Marks
Depth
in
Feet
3-5' Compensated Sonic
microsec/foot
140
115
90
65
40

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
11 16 21

Bit Size
inches
11 16 21

DST Uphole Tension
pounds
5000 0

Borehole Temp in deg F

Replay Scale 1:240

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

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 09-APR-2014 04:33
Filename: C:\Minimus 13.08.2113\Logs\SHAKESPEARE JA...\SHAKESPEARE JANZEN 6-36 MAIN.dta
Recorded on 09-APR-2014 01:07
System Versions: Logged with 13.08.2113 Processed with 13.08.2113 Plotted with 13.08.2113

5 INCH MAIN

REPEAT SECTION

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 09-APR-2014 04:33
Filename: C:\Minimus 13.08.2113\Logs\SHAKESPEARE...\SHAKESPEARE JANZEN 6-36 REPEAT.dta
Recorded on 09-APR-2014 00:37
System Versions: Logged with 13.08.2113 Processed with 13.08.2113 Plotted with 13.08.2113

Depth in Feet

Timing Marks
every 60.0 sec

Gamma Ray
API
0 75 150
150 225 300

Density Caliper
inches
11 16 21

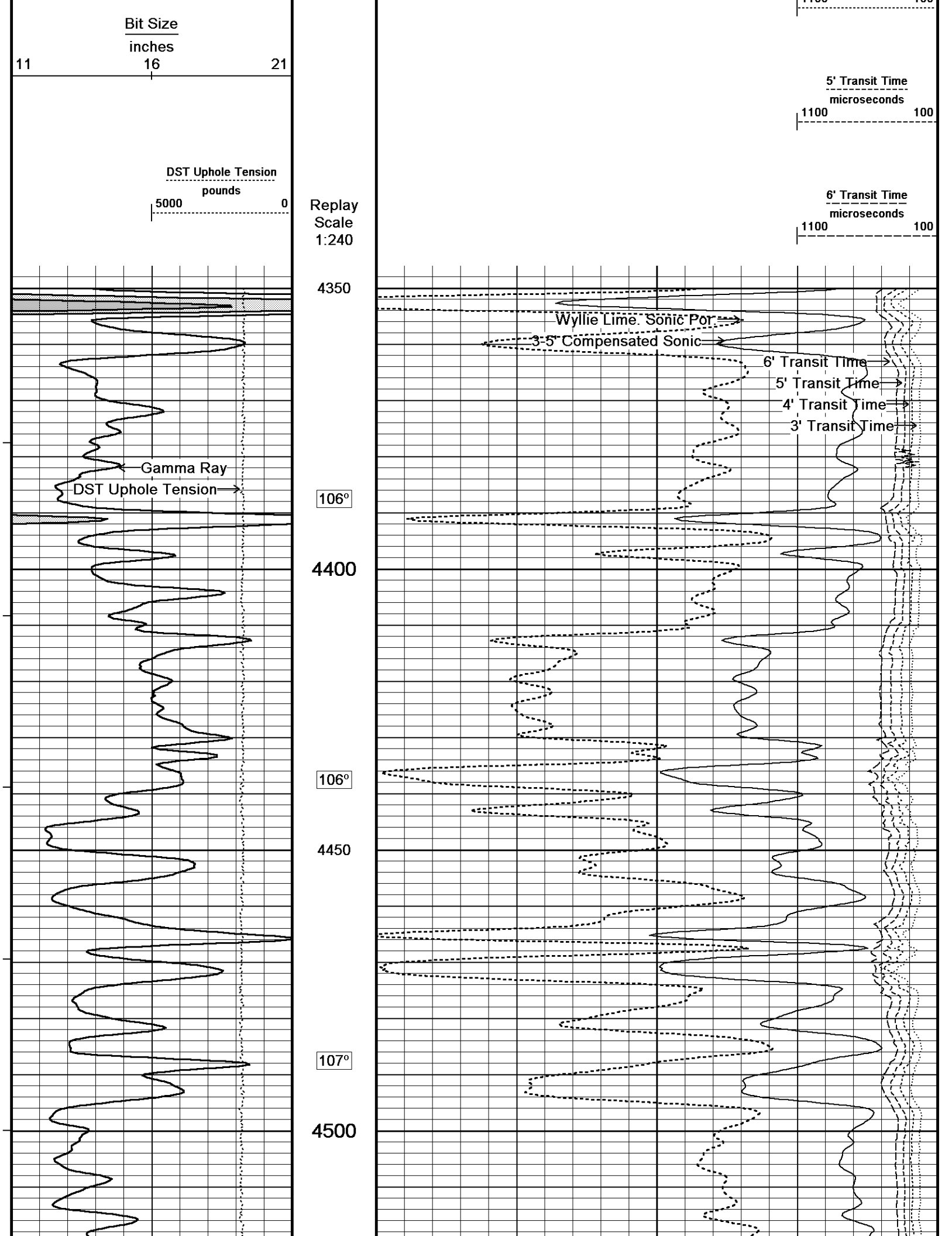
Borehole Temp in deg F

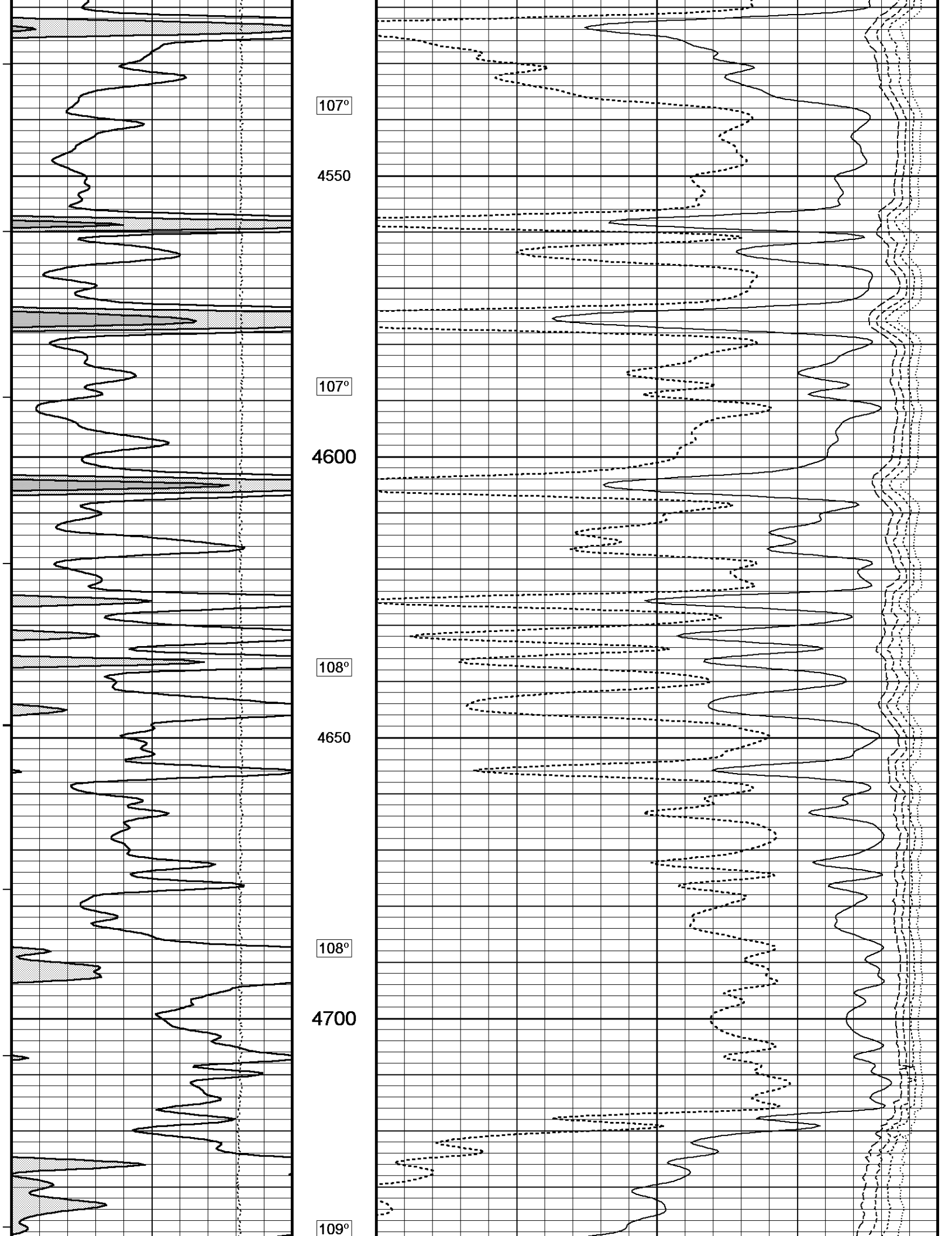
3-5' Compensated Sonic
microsec/foot
140 115 90 65 40

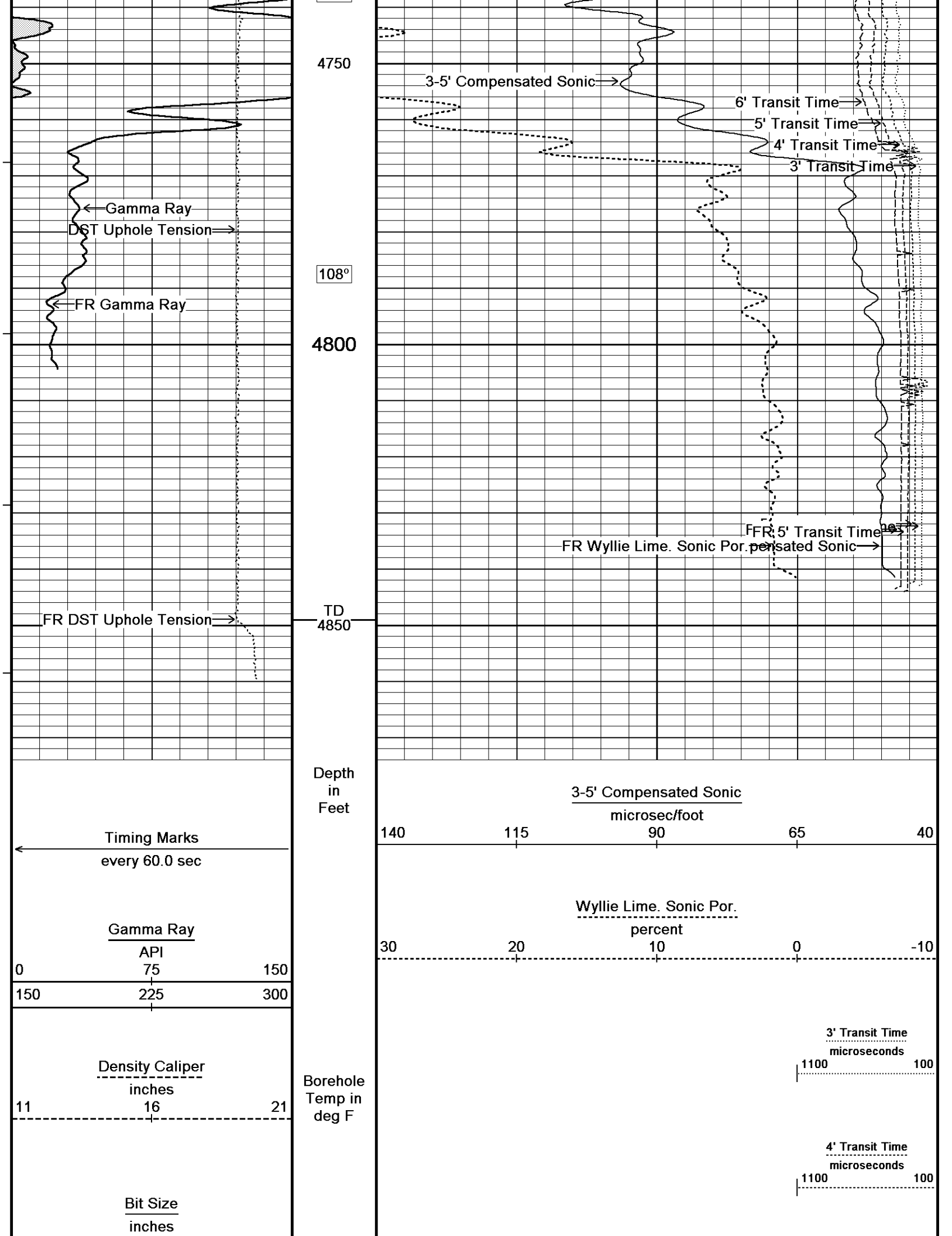
Wyllie Lime. Sonic Por.
percent
30 20 10 0 -10

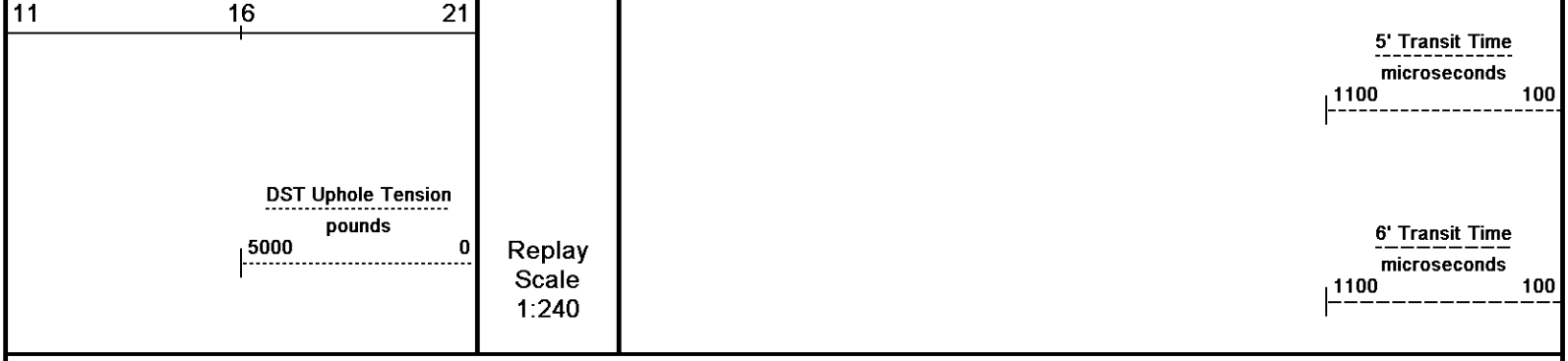
3' Transit Time
microseconds
1100 100

4' Transit Time
microseconds
1100 100


Bit Size
inches
11
16
21
DST Uphole Tension
pounds
5000
0
Replay
Scale
1:240
5' Transit Time
microseconds
1100
100
6' Transit Time
microseconds
1100
100
4350
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension
106°
4400
106°
4450
107°
4500


107°
4550
107°
4600
108°
4650
108°
4700
109°


4750
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Gamma Ray
DST Uphole Tension
108°
FR Gamma Ray
4800
FR 5' Transit Time
FR Wyllie Lime. Sonic Por.pensated Sonic
FR DST Uphole Tension
TD
4850
Depth
in
Feet
3-5' Compensated Sonic
microsec/foot
140
115
90
65
40
Timing Marks
every 60.0 sec
Wyllie Lime. Sonic Por.
percent
30
20
10
0
-10
Gamma Ray
API
0
75
150
150
225
300
3' Transit Time
microseconds
1100
100
Density Caliper
inches
11
16
21
Borehole
Temp in
deg F
4' Transit Time
microseconds
1100
100
Bit Size
inches



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 09-APR-2014 04:33
Filename: C:\Minimus 13.08.2113\Logs\SHAKESPEARE...\SHAKESPEARE JANZEN 6-36 REPEAT.dta — Recorded on 09-APR-2014 00:37
System Versions: Logged with 13.08.2113 Processed with 13.08.2113 Plotted with 13.08.2113

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 13.08.2113\Logs\SHAKESPEARE JANZEN 6-36\SHAKESPEARE JANZEN 6-36 REPEAT.dta

General Constants All 000

Last Edited on 09-APR-2014,00:05

General Parameters		
Mud Resistivity	0.400	ohm-metres
Mud Resistivity Temperature	86.000	degrees F
Water Level	0.000	feet
Borehole Fluid Processing	Water Level Switch	
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. Four Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

Gamma Calibration MCG-D.K 443

Field Calibration on 05-APR-2014 15:02

	Measured	Calibrated (API)
Background	73	49
Calibrator (Gross)	1158	774
Calibrator (Net)	1085	725

Gamma Constants MCG-D.K 443

Last Edited on 09-APR-2014,00:06

Gamma Calibrator Number	GRC38	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl		kppm
K Mud Type	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-D.K 443

Field Calibration on 05-MAR-2014,20:50

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

High Resolution Temperature Constants MCG-D.K 443

Last Edited on 05-MAR-2014,20:50

Pre-filter Length	11

Sonic Constants MSS-A.A 126

Last Edited on 19-MAR-2014,17:48

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 02-APR-2014 10:39
Field Calibration on 05-APR-2014 14:29

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	18192	3.99
2	27035	5.98
3	35696	7.97
4	44016	9.86
5	53216	11.92
6	N/A	N/A

Field Calibration

	Measured Caliper (in)	Actual Caliper (in)

7.94	7.97

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Logs\SHAKESPEARE JANZEN 6-36\SHAKESPEARE JANZEN 6-36 REPEAT.dta

Compact Comms Gamma
MCG-D.K 443 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-B.A 98 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

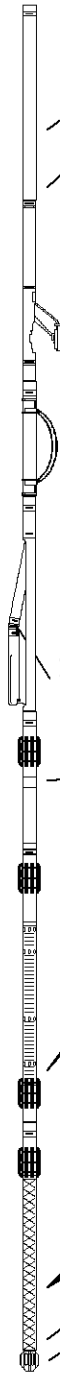
Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric
MFE-B.J 352 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

Compact Sonic
MSS-A.A 126 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 158 LG: 10.81 ft WT: 48.5 lb OD: 2.244 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	CLDC - Density Caliper
33.73 ft	AVOL - Annular Volume
33.73 ft	HVOL - Hole Volume
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 CO., INC
WELL	JANZEN 6-36
FIELD	PENCE EAST
PROVINCE/COUNTY	SCOTT
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	3116.00	feet	First Reading	4836.00	feet
Elevation Drill Floor	3114.00	feet	Depth Driller	4850.00	feet
Elevation Ground Level	3104.00	feet	Depth Logger	4849.00	feet

Weatherford®

COMPENSATED SONIC

WITH INTEGRATED TRANSIT TIME