Weatherford®

COMPENSATED SONIC WITH INTEGRATED TRANSIT TIME

COMPANY	GRAND MESA OPERATING COMPANY
WELL	BUZZ'S BOAT #14
FIELD	WILDCAT
PROVINCE/COUNTY	WASHINGTON
COUNTRY/STATE	U.S.A. / COLORADO
LOCATION	620' FSL & 2262' FWL

SEC	TWP	RGE
24	5S	54W

Other Services
MDN/MPD MAI/MFE
MML

Latitude
Longitude
API Number 05-121-11053

Permanent Datum GL, Elevation 5152 feet
Log Measured From KB
Drilling Measured From KB @ 19 FEET

Elevations:	feet
KB	5171.00
DF	5169.00
GL	5152.00

Date	09-NOV-2016			
Run Number	ONE			
Service Order	4558-165852107			
Depth Driller	8254.00	feet		
Depth Logger	8260.00	feet		
First Reading	8247.00	feet		
Last Reading	327.00	feet		
Casing Driller	330.00	feet		
Casing Logger	327.00	feet		
Bit Size	7.875	inches		
Hole Fluid Type	CHEMICAL			
Density / Viscosity	9.30 lb/USg		74.00 CP	
PH / Fluid Loss	10.00		7.20 ml/30Min	
Sample Source	FLOWLINE			
Rm @ Measured Temp	1.19 @ 75.0	ohm-m		
Rmf @ Measured Temp	0.95 @ 75.0	ohm-m		
Rmc @ Measured Temp	1.43 @ 75.0	ohm-m		
Source Rmf / Rmc	CALC		CALC	
Rm @ BHT	0.47 @191.0	ohm-m		
Time Since Circulation	5 HOURS			
Max Recorded Temp	191.00	deg F		
Equipment / Base	13096		OKC	
Recorded By	ADAM SILL			
Witnessed By	KENT MATSON			

BOREHOLE RECORD

Last Edited: 09-NOV-2016 05:42

Bit Size inches	Depth From feet	Depth To feet
7.875	330.00	8254.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	330.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 15.03.5939.
- 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 SURFACE CASING: 3310 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 2003 CU.FT.

- RIG: WW DRILLING #20.

- ENGINEER: A. SILL.

- OPERATOR: B. TOVAR.

5 INCH MAIN

Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 09-NOV-2016 14:58

Filename: C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Bo...\Grand Mesa Buzz's Boat #14_002.dta — Recorded on 09-NOV-2016 10:38

System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

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

316

Casing Shoe

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

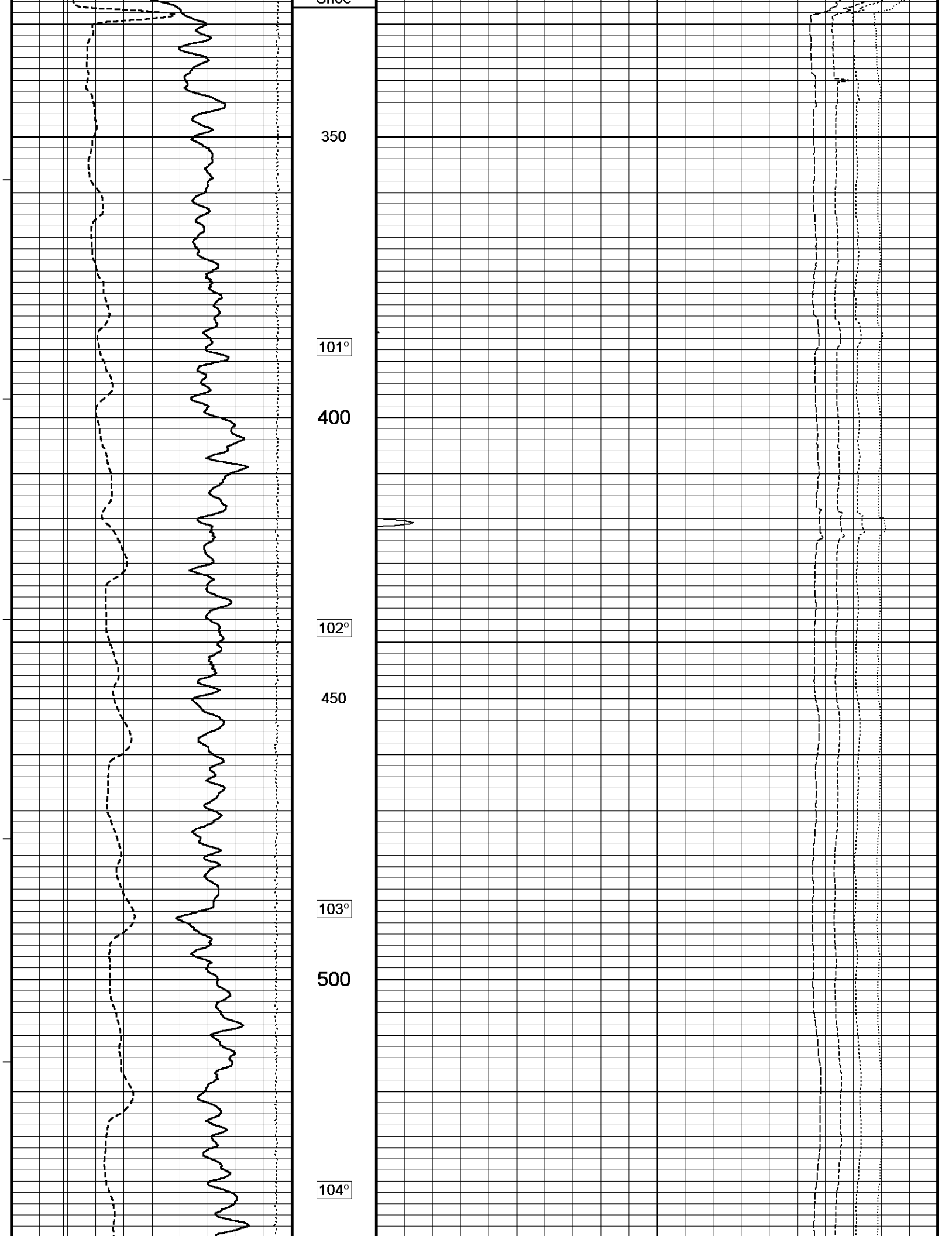
Wyllie Lime. Sonic Por.
percent
30 20 10 0 -10

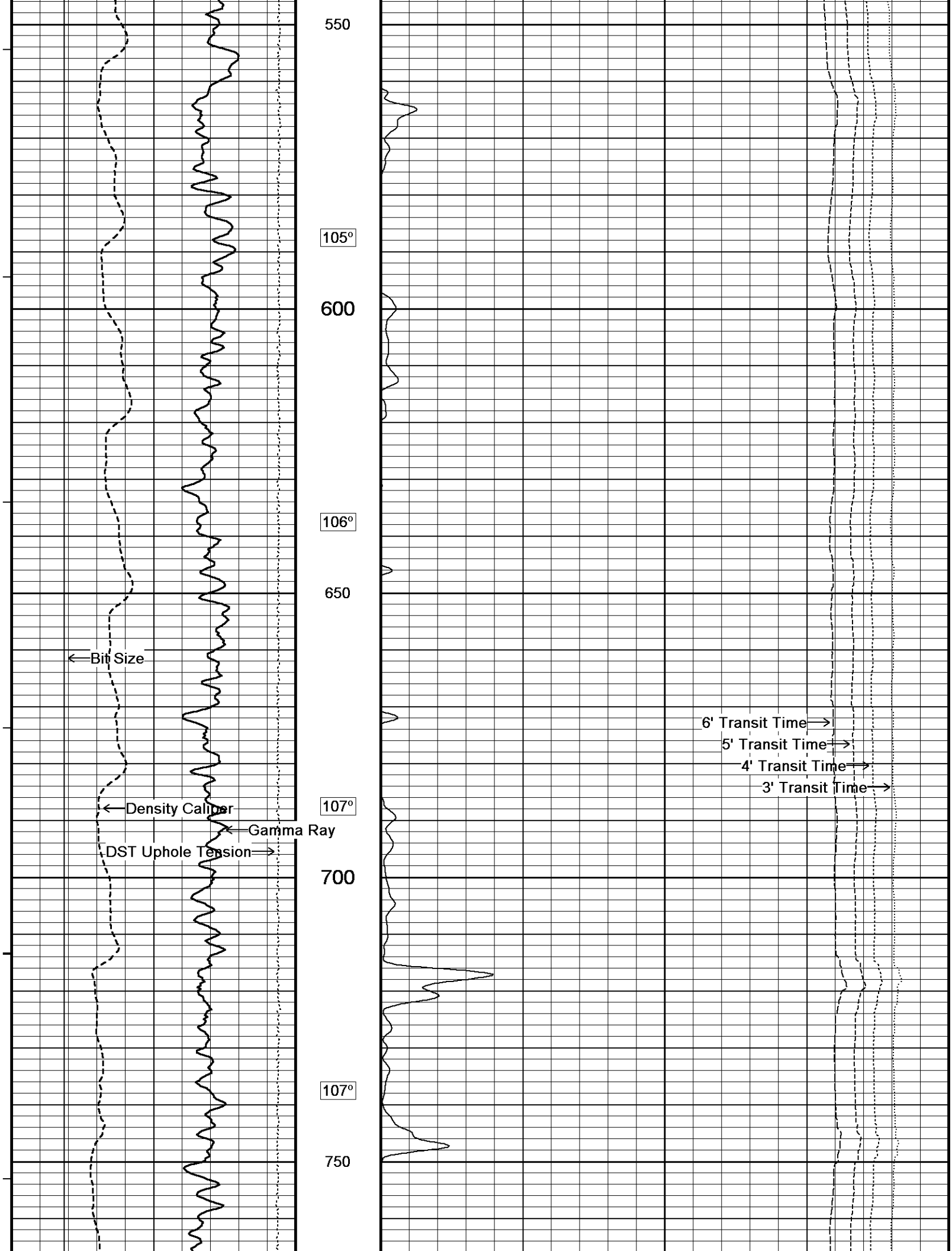
3' Transit Time
microseconds
1100 100

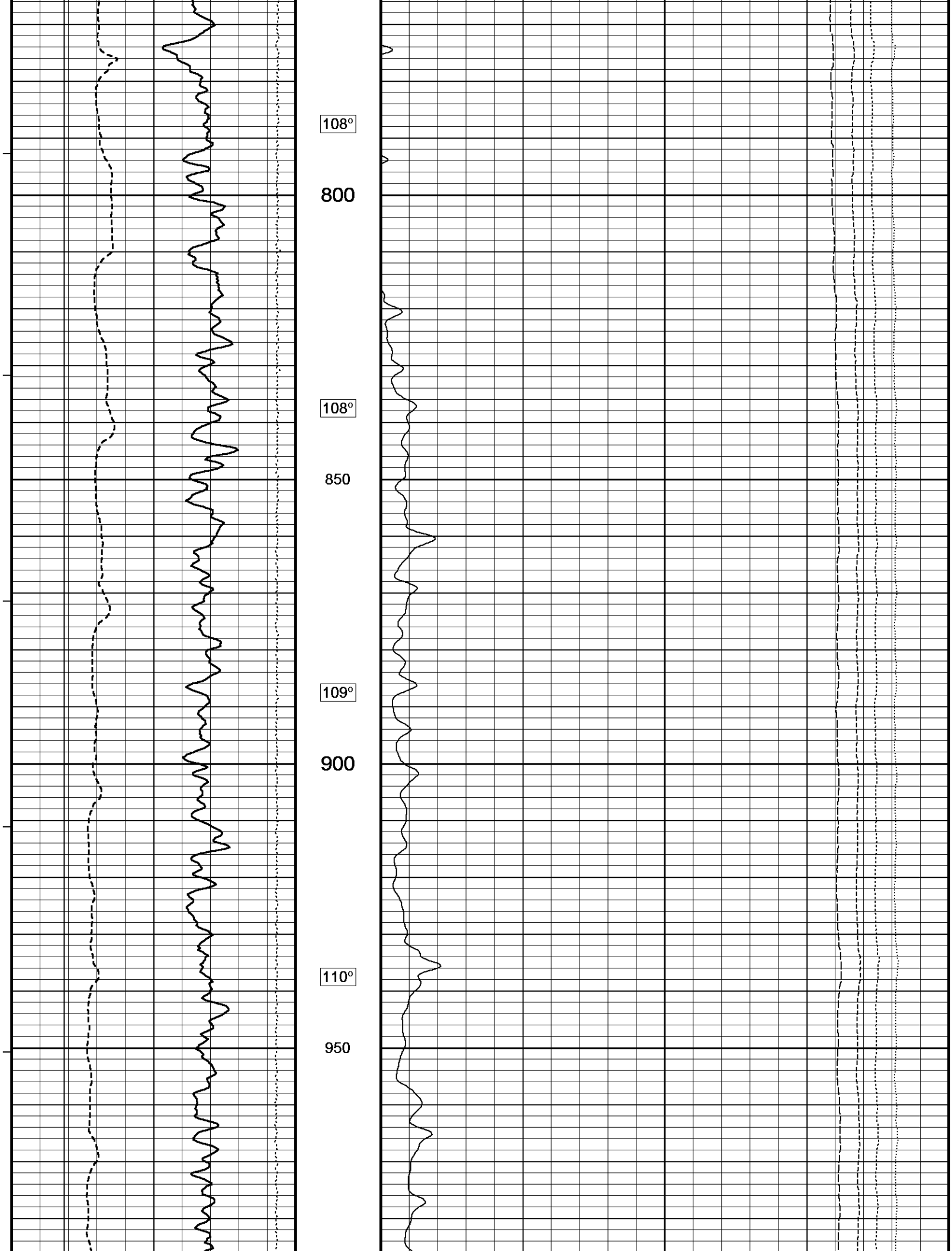
4' Transit Time
microseconds
1100 100

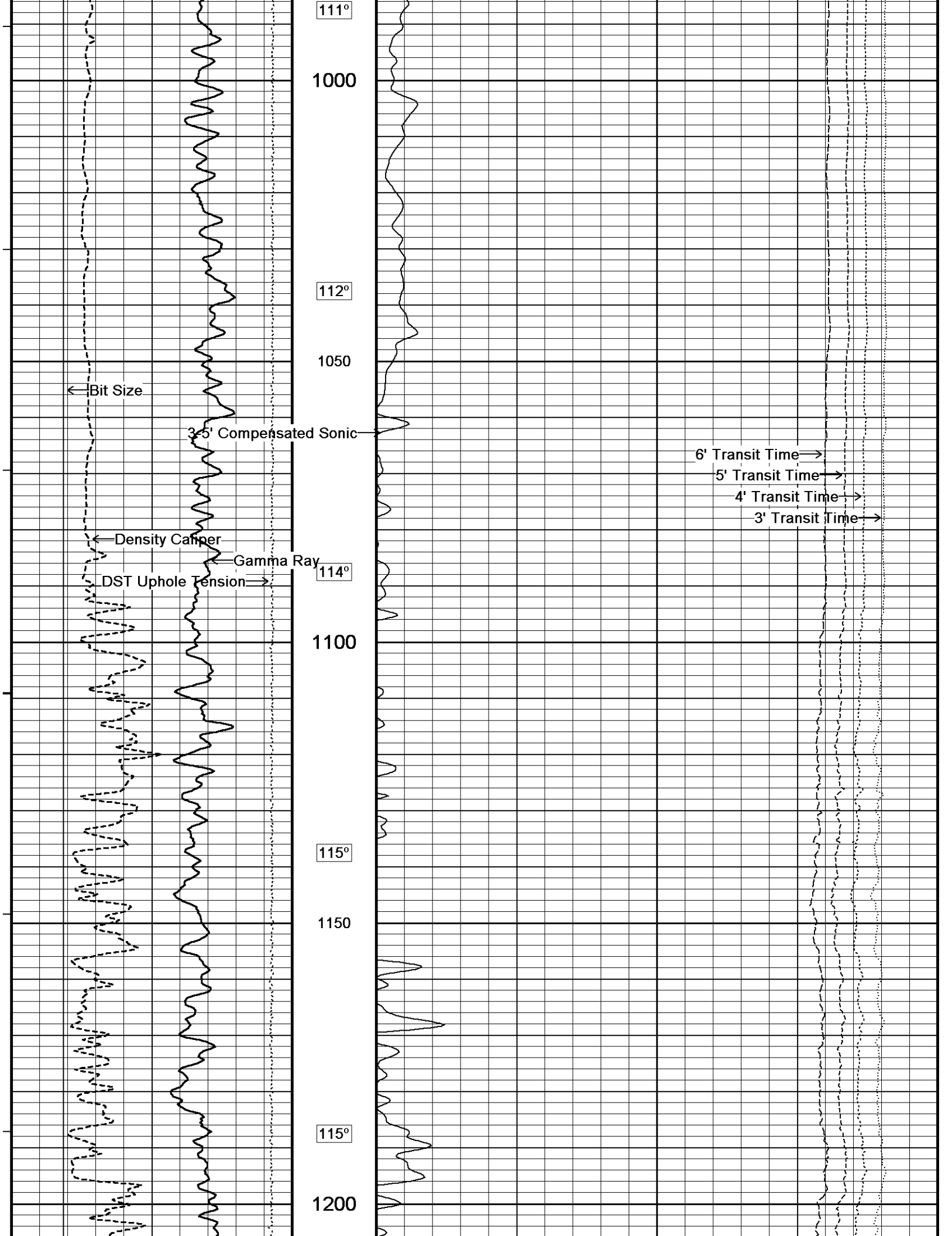
5' Transit Time
microseconds
1100 100

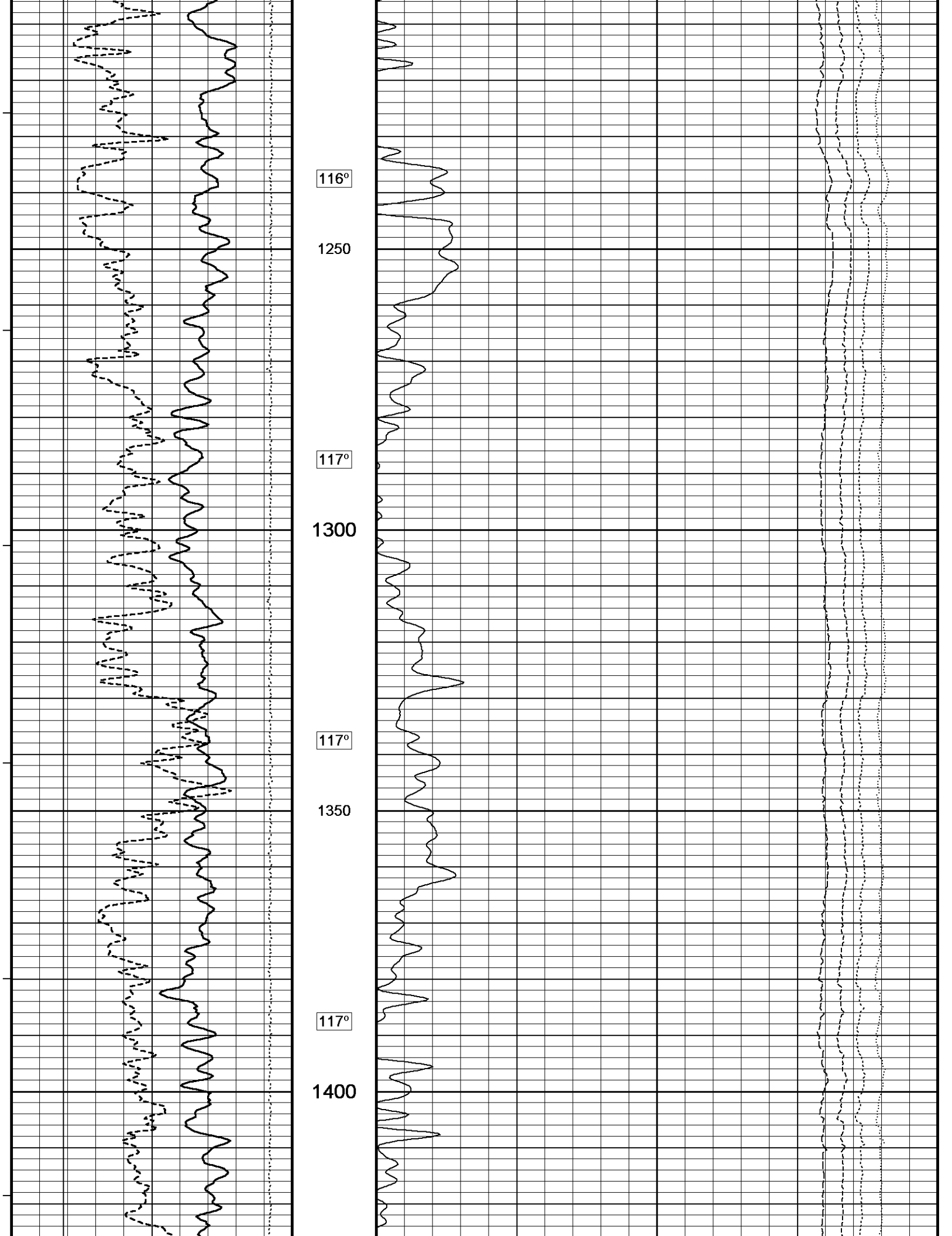
6' Transit Time
microseconds
1100 100

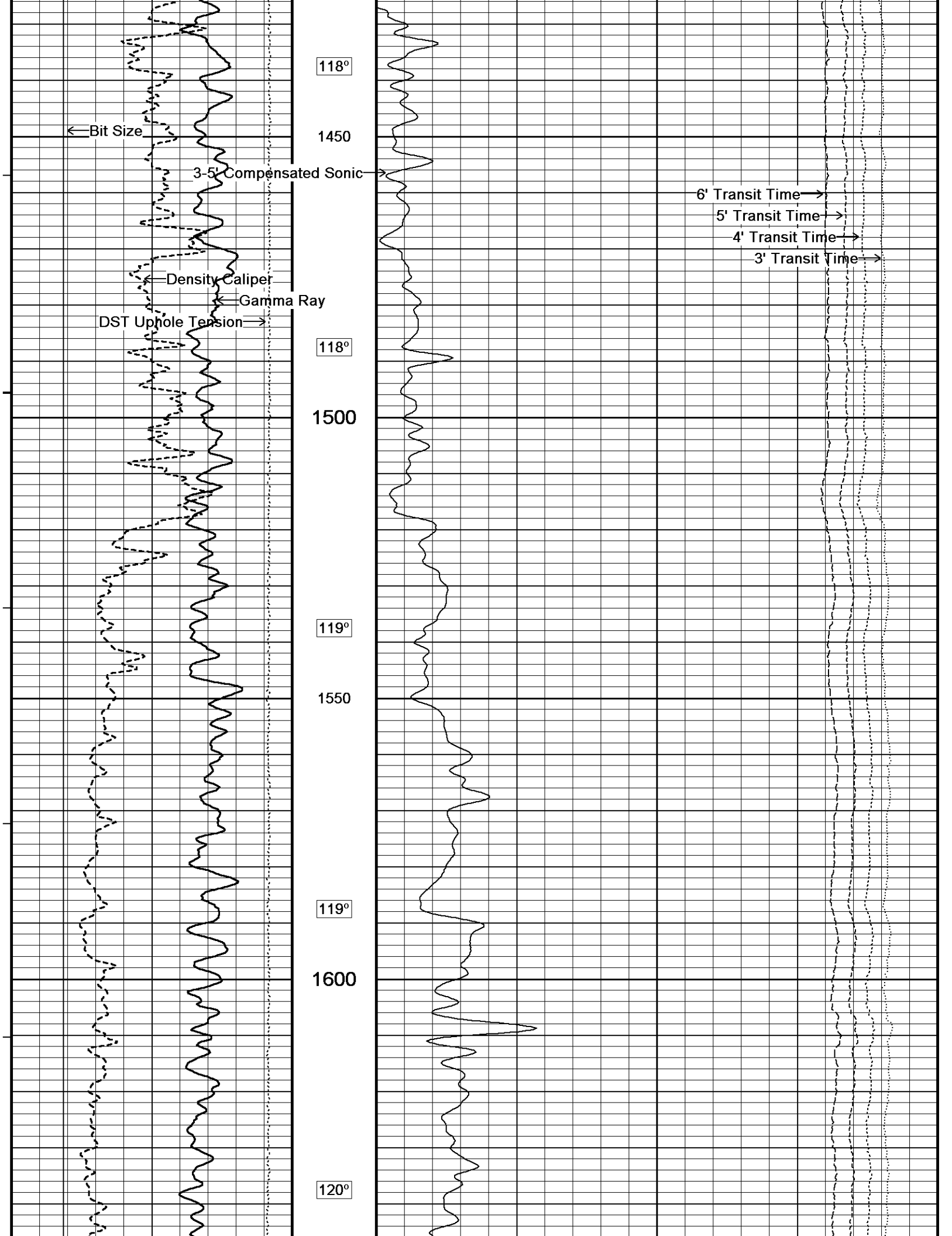

Shoe
350
101°
400
102°
450
103°
500
104°

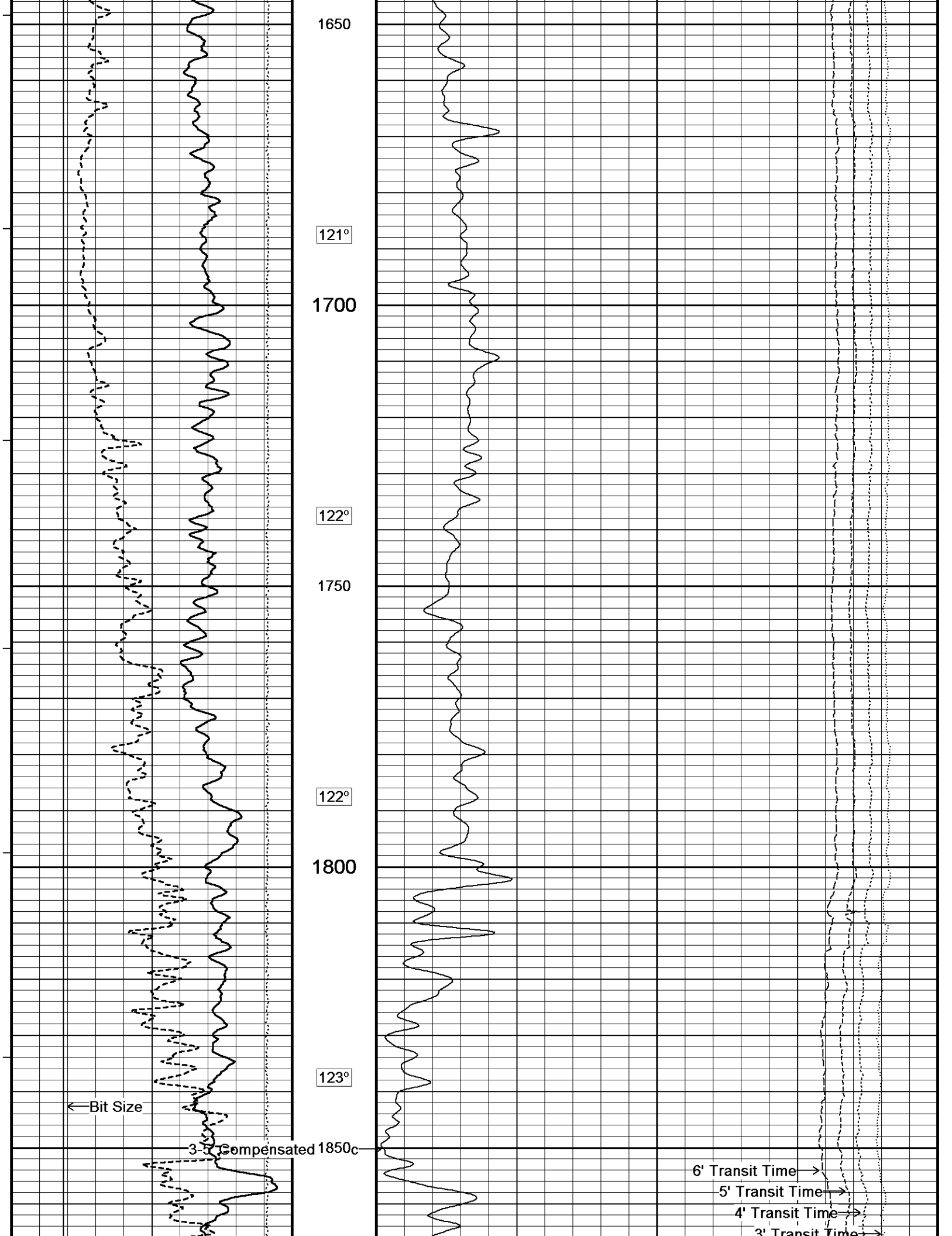

550
105°
600
106°
650
Bit Size
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
107°
Density Caliper
Gamma Ray
DST Uphole Tension
700
107°
750

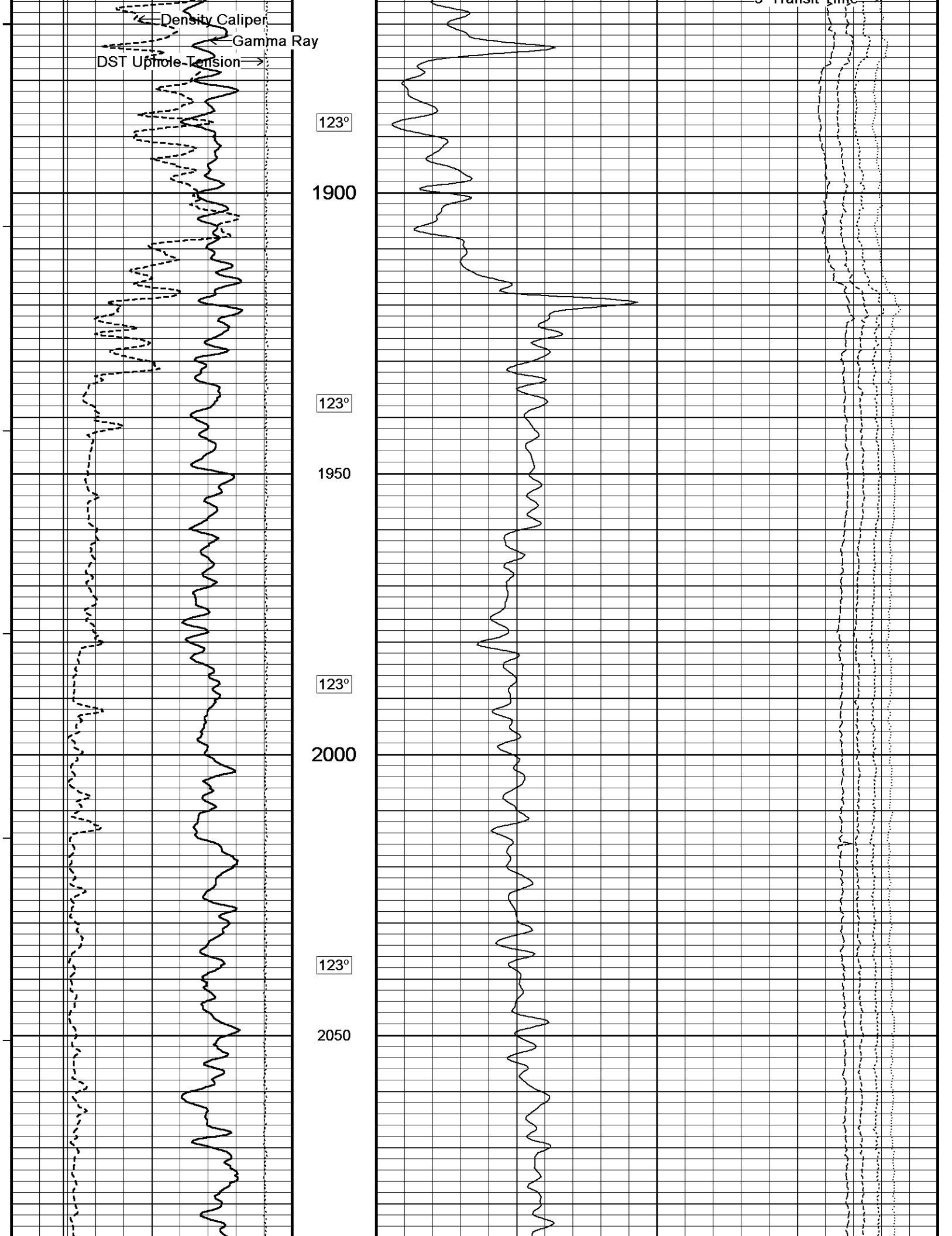

108°
800
108°
850
109°
900
110°
950

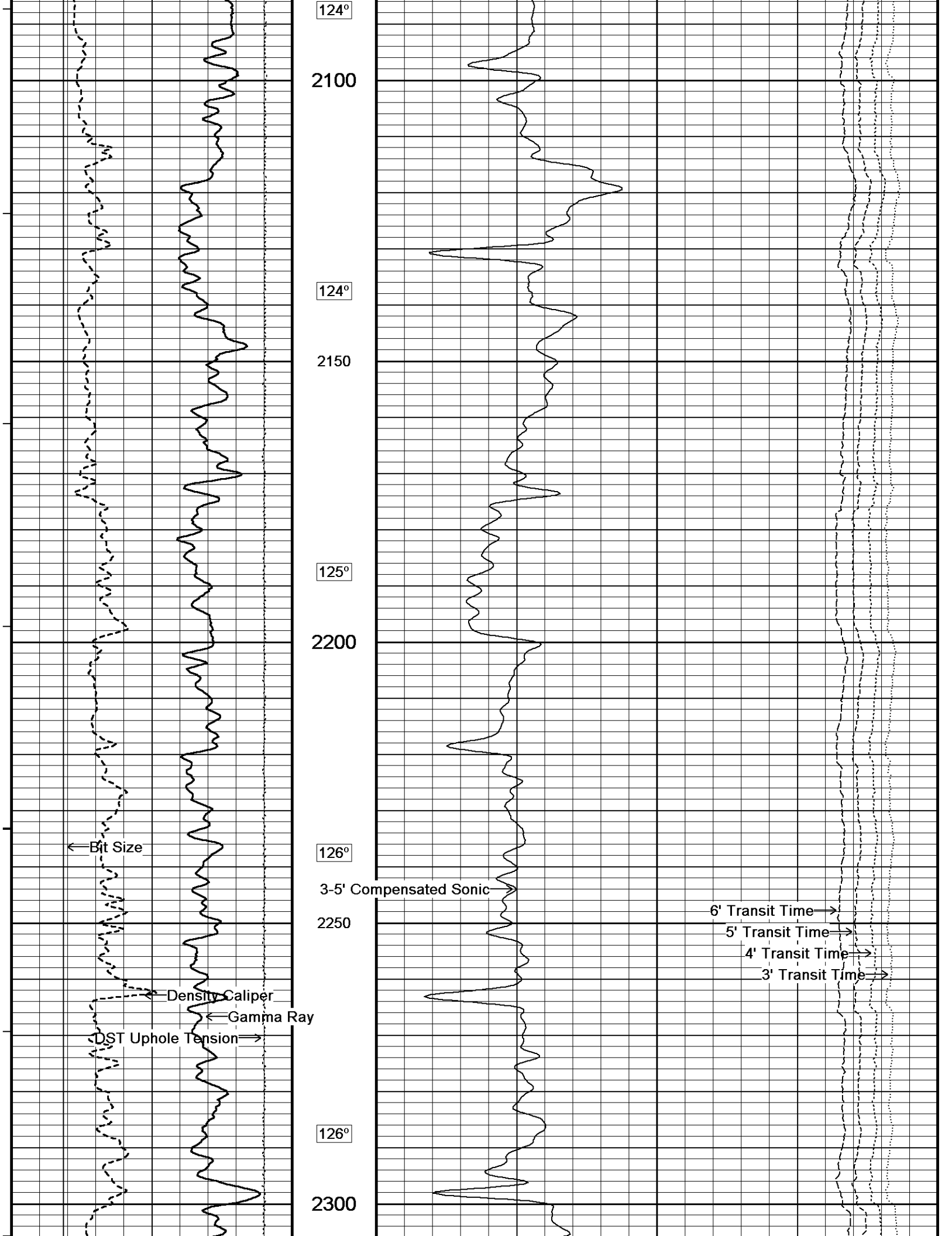

111°
1000
112°
1050
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
114°
1100
115°
1150
115°
1200

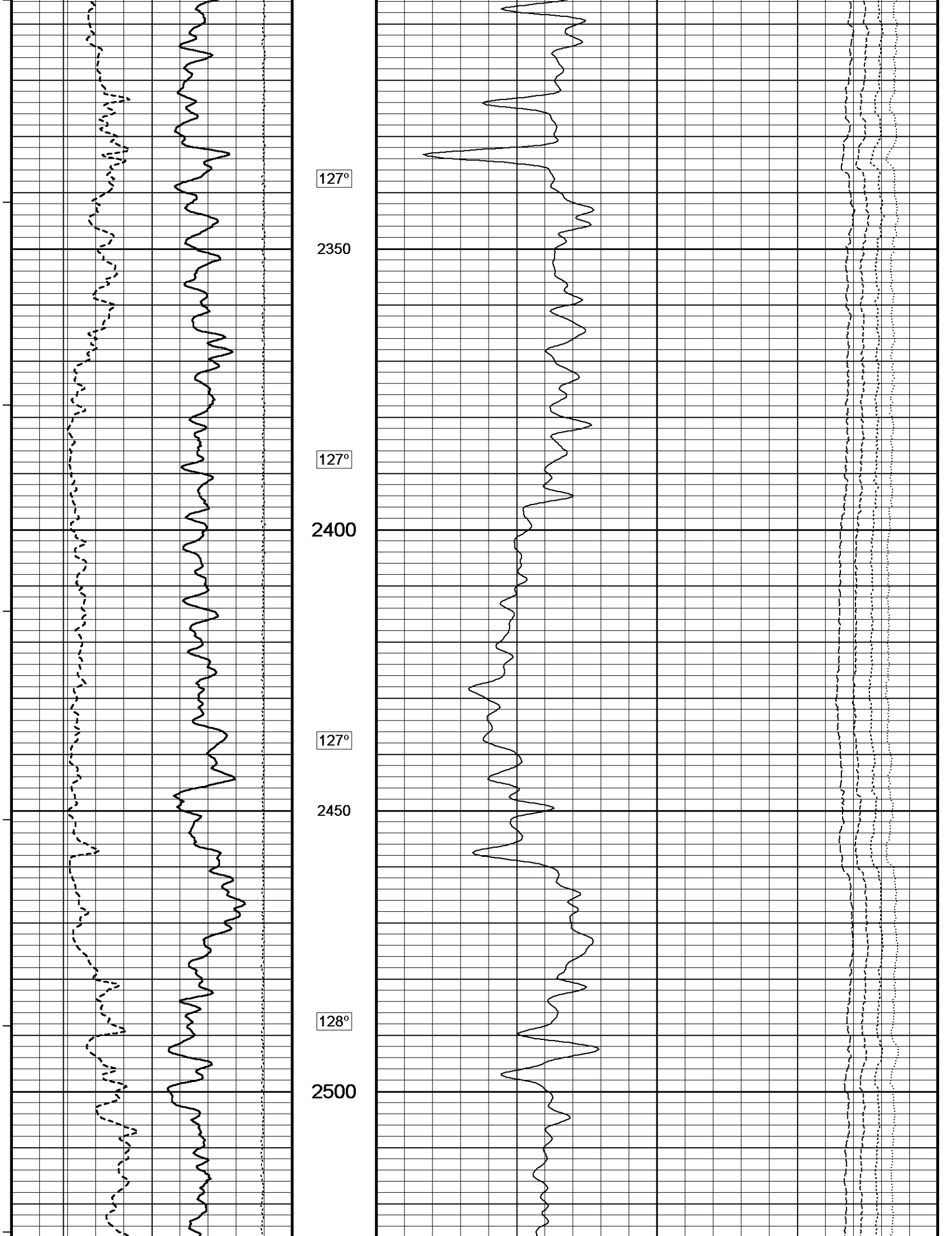

116°
1250
117°
1300
117°
1350
117°
1400

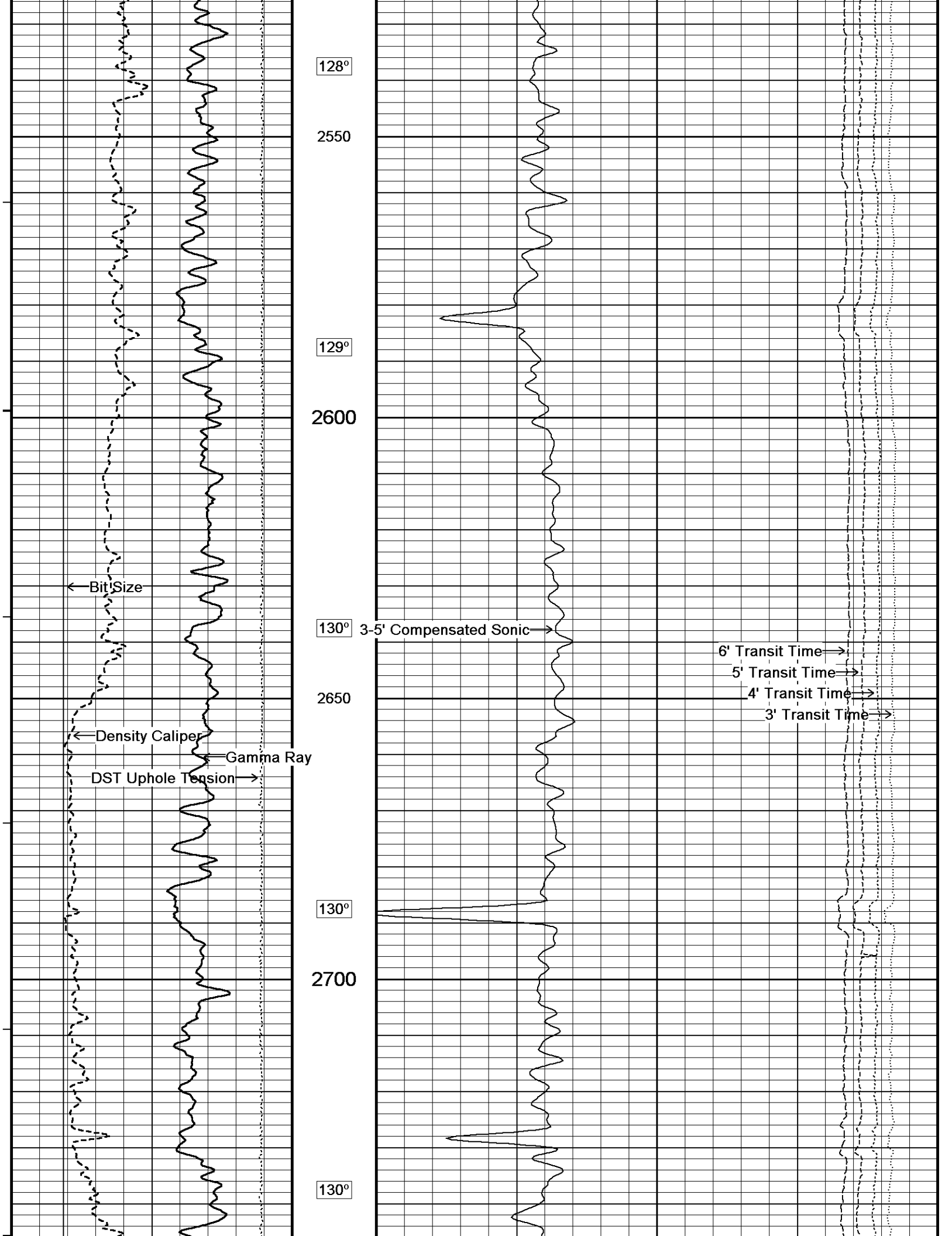

118°
Bit Size
1450
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
118°
1500
119°
1550
119°
1600
120°

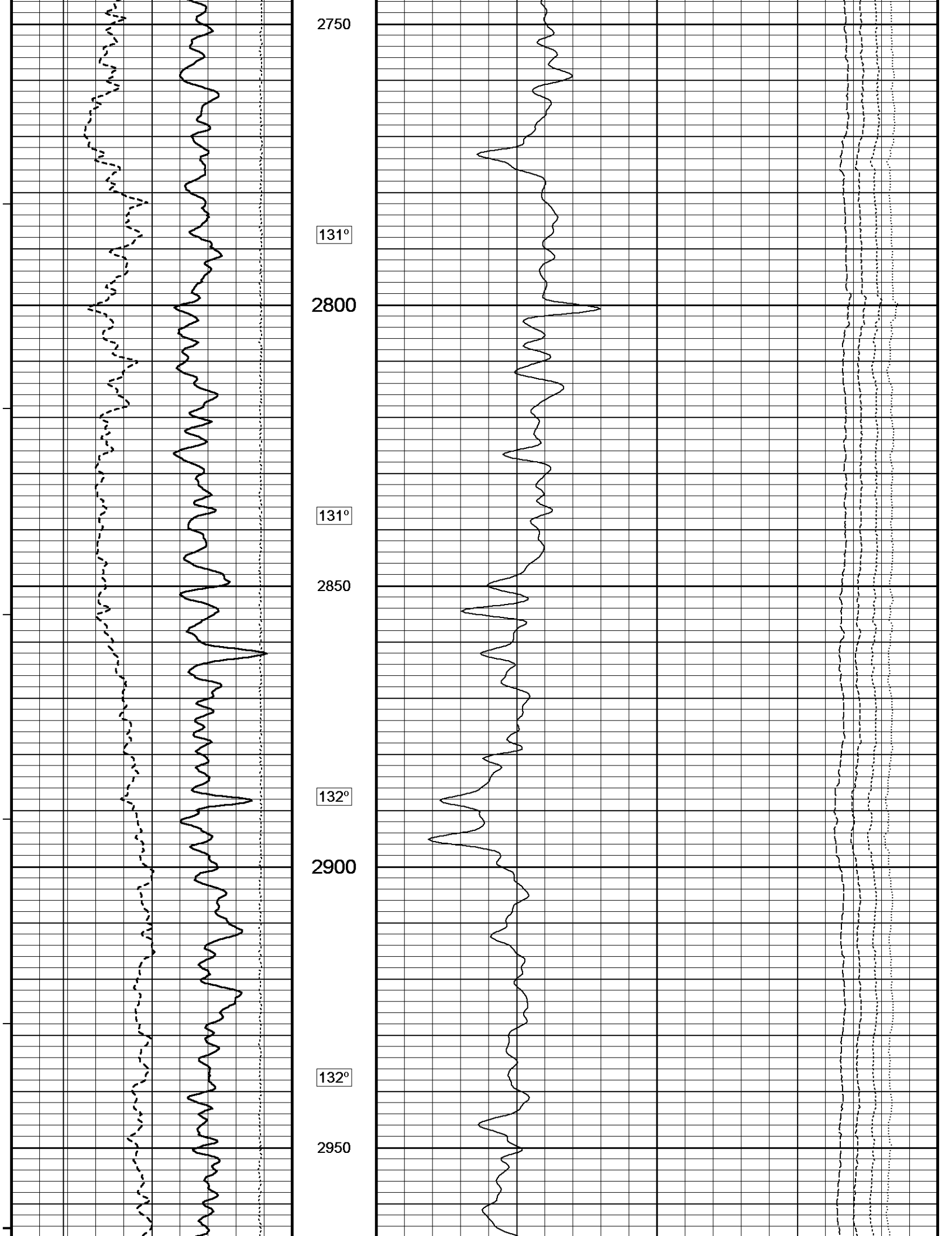

1650
121°
1700
122°
1750
122°
1800
123°
←Bit Size
3-5' Compensated
1850c
6' Transit Time→
5' Transit Time→
4' Transit Time→
3' Transit Time→

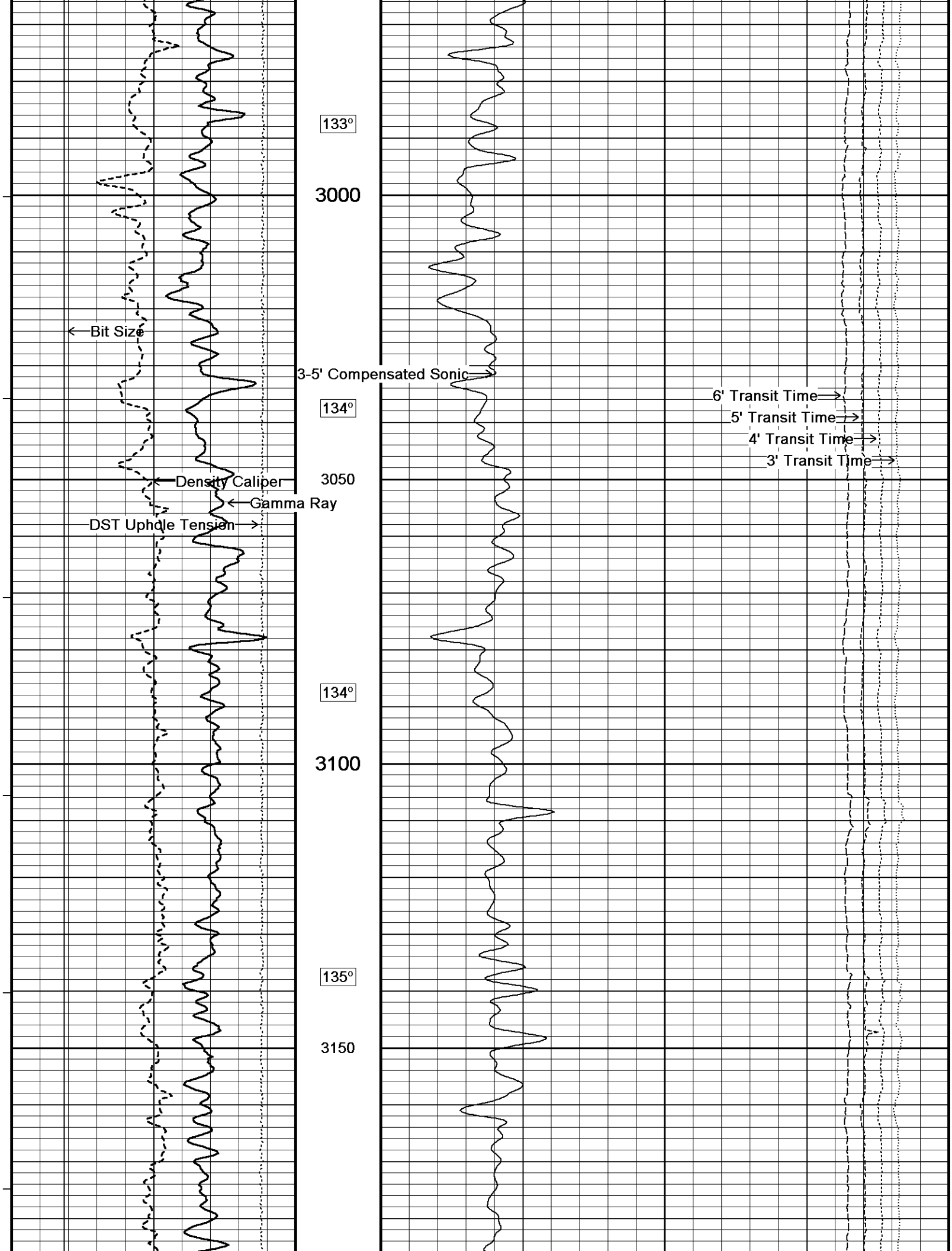

Density Caliper
Gamma Ray
DST Uphole Tension
123°
1900
123°
1950
123°
2000
123°
2050

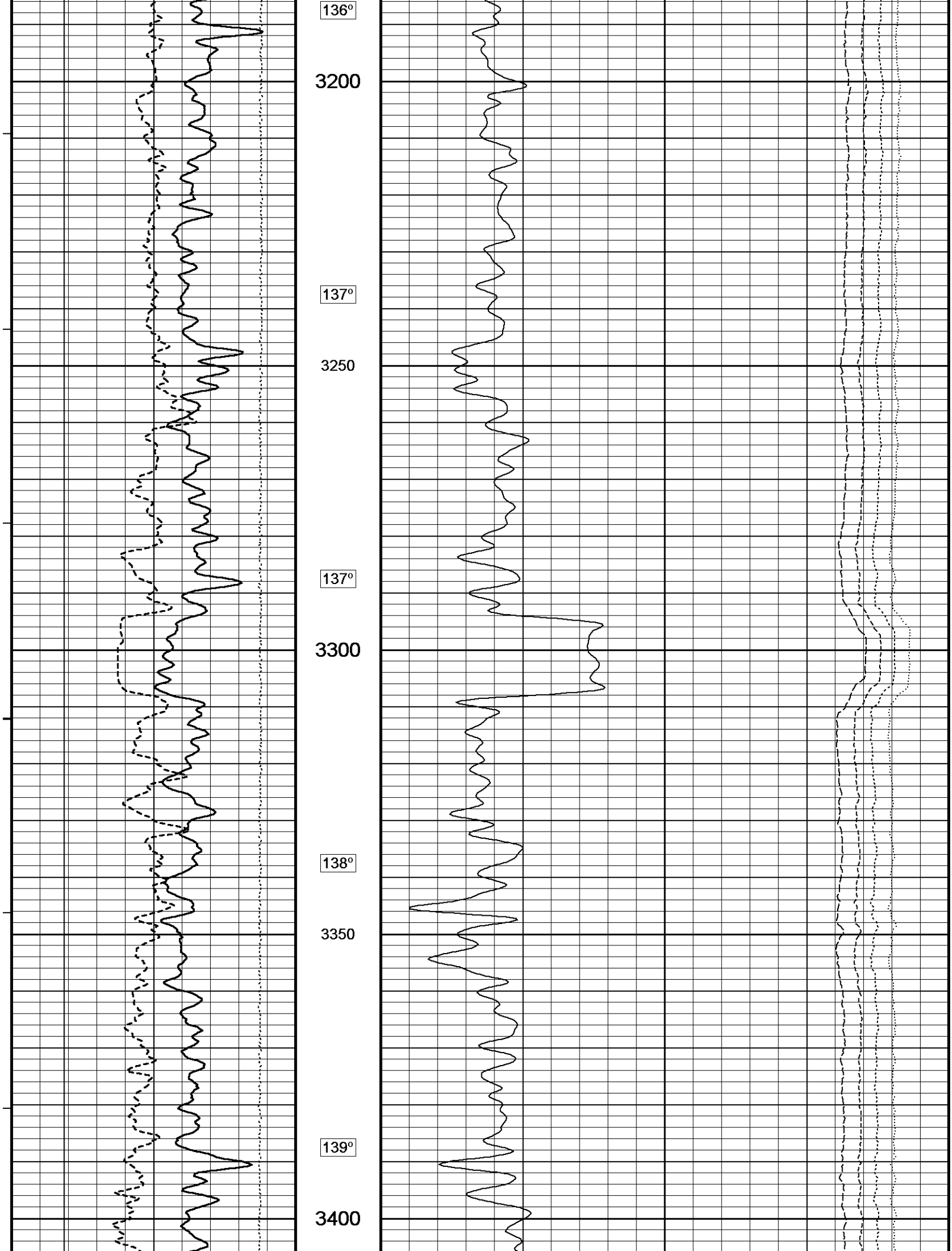

124°
2100
124°
2150
125°
2200
126°
2250
126°
2300
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension

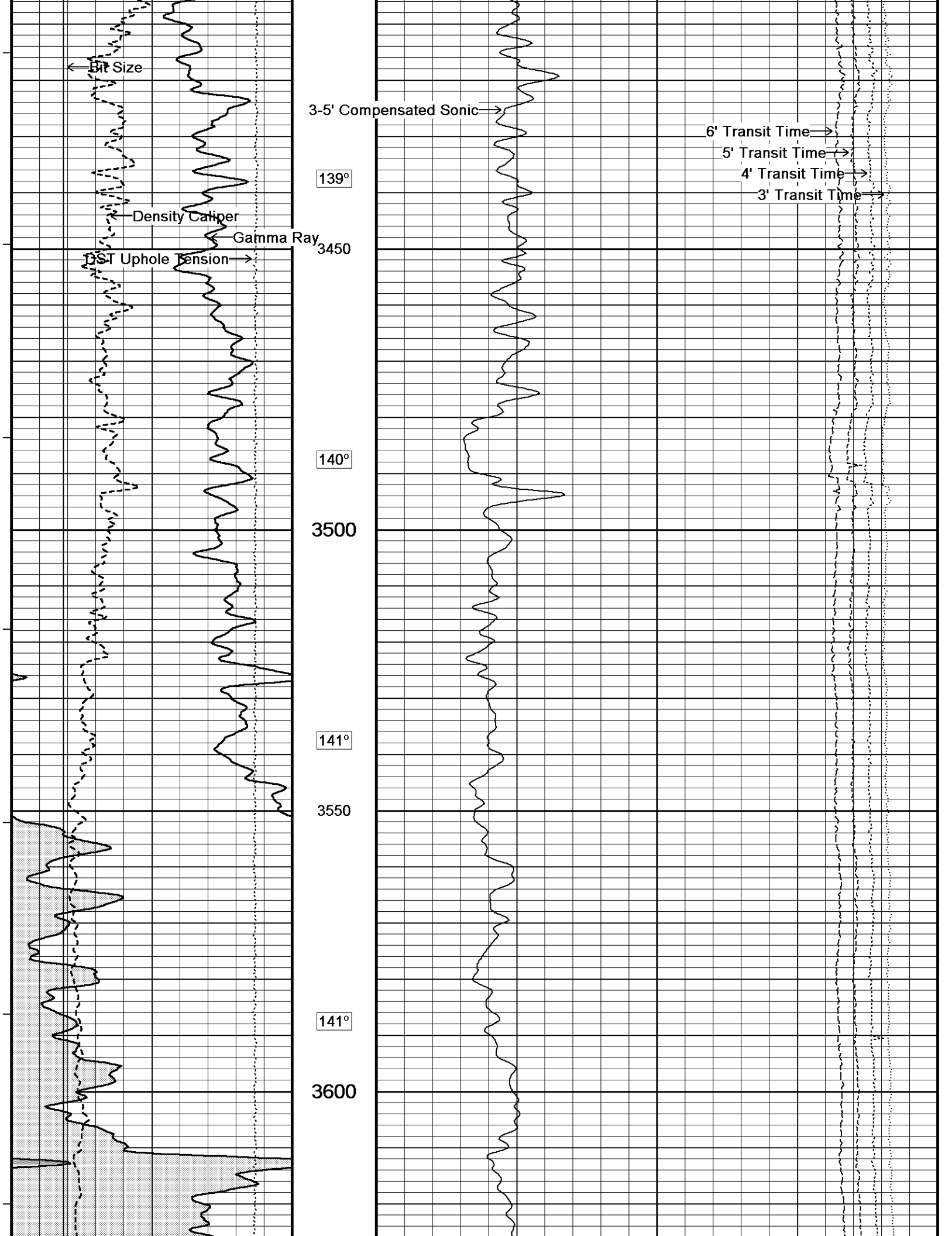

127°
2350
127°
2400
127°
2450
128°
2500

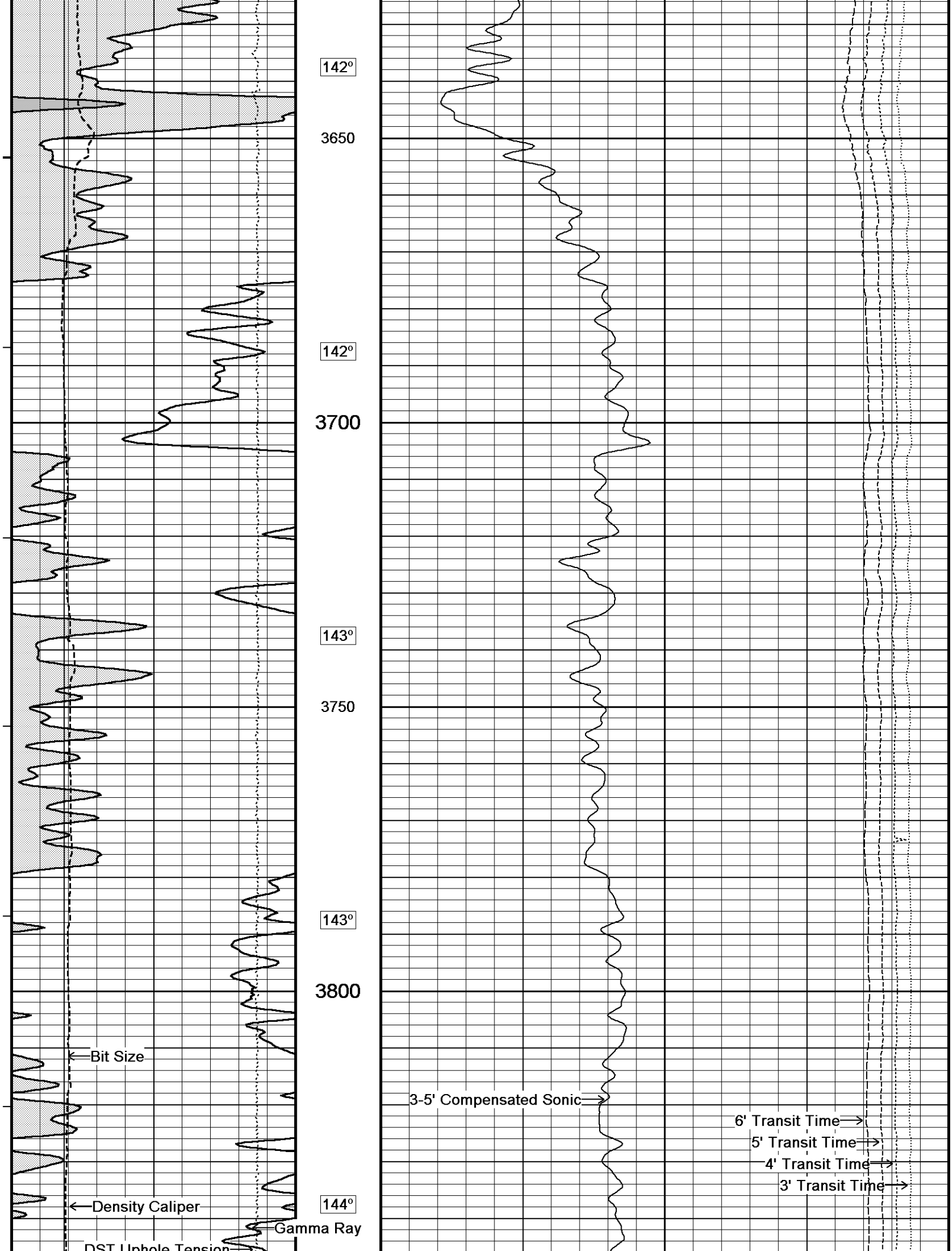

128°
2550
129°
2600
Bit Size
130°
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
2650
Density Caliper
Gamma Ray
DST Uphole Tension
130°
2700
130°

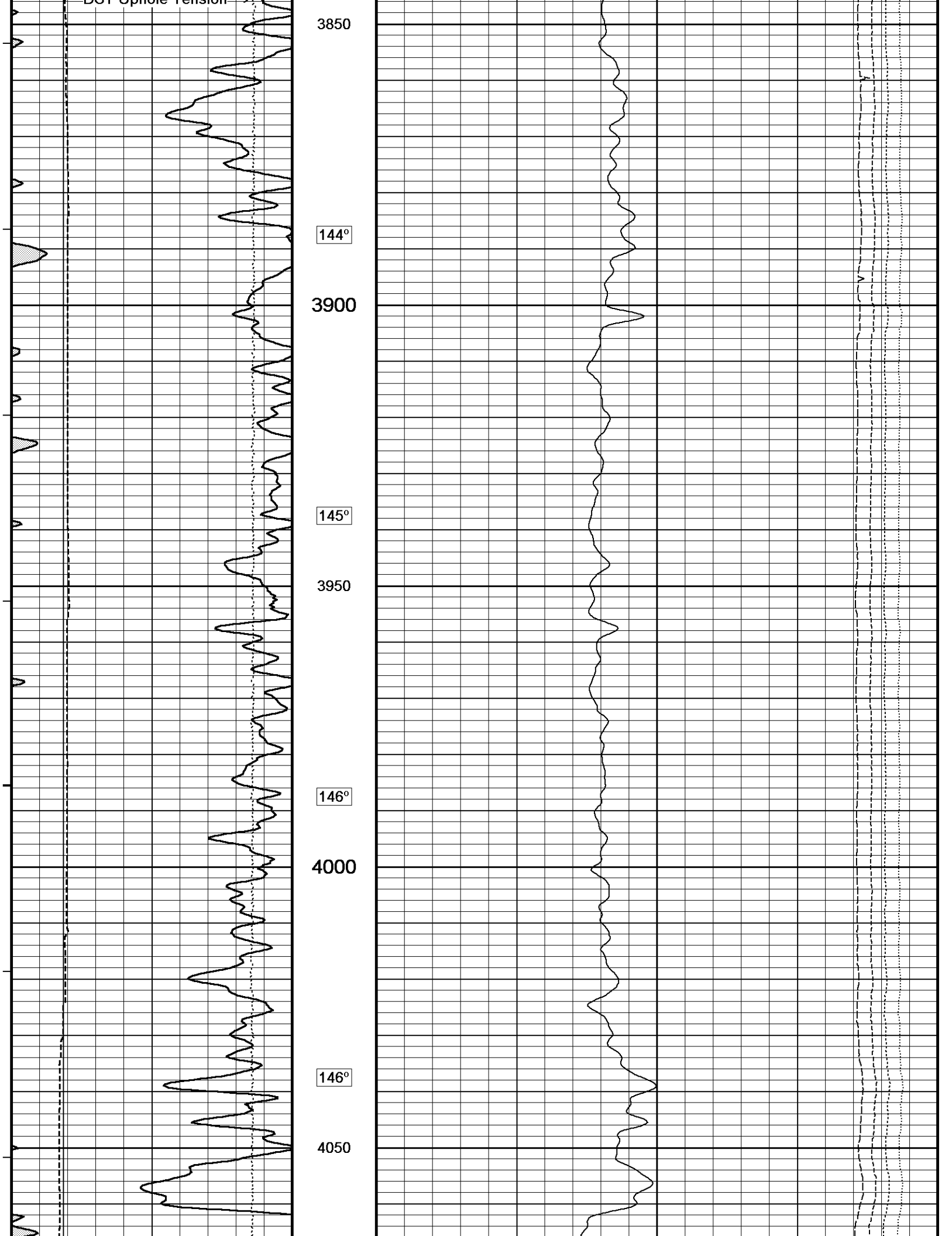

2750
131°
2800
131°
2850
132°
2900
132°
2950

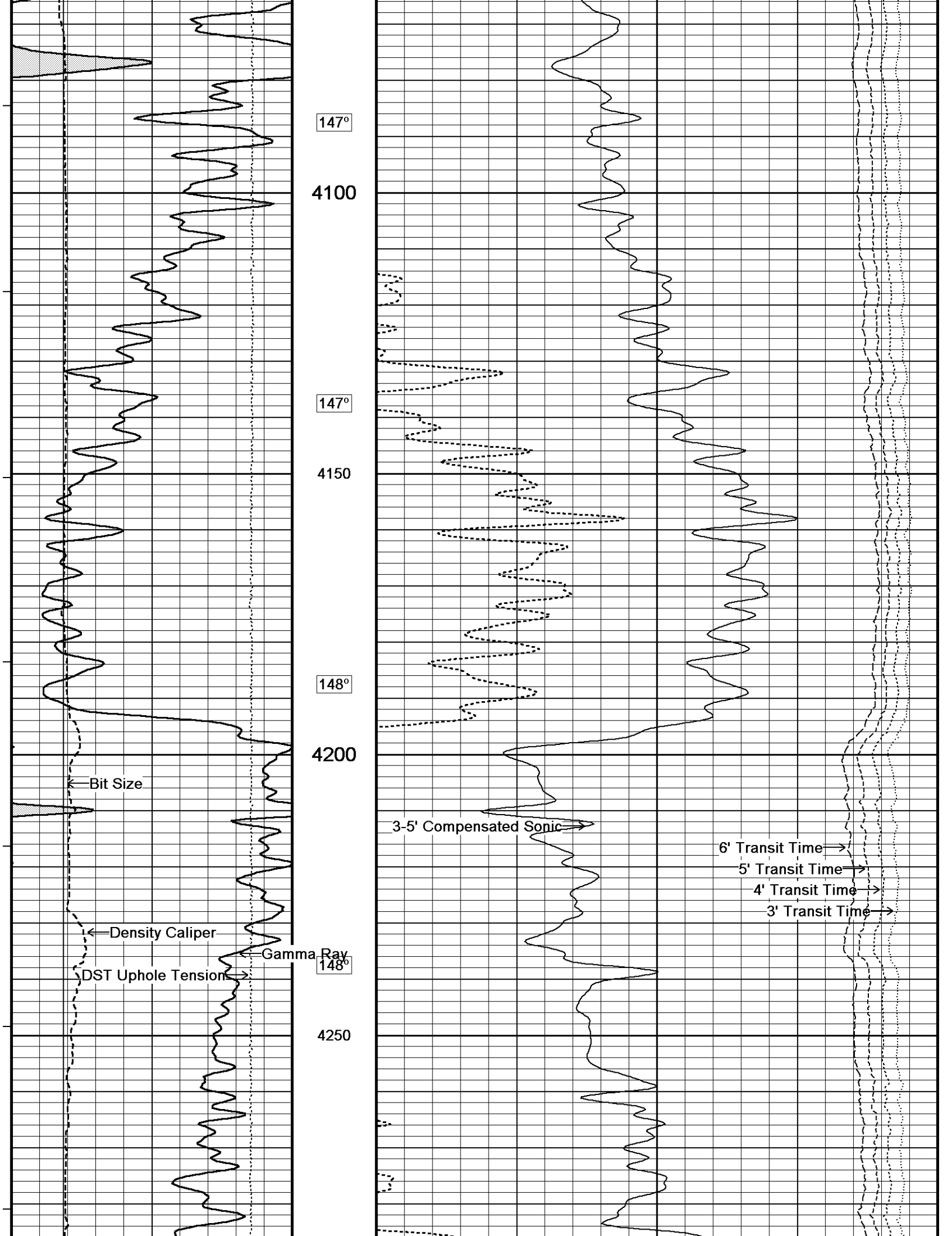

133°
3000
Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
134°
Density Caliper
3050
Gamma Ray
DST Uphole Tension
134°
3100
135°
3150

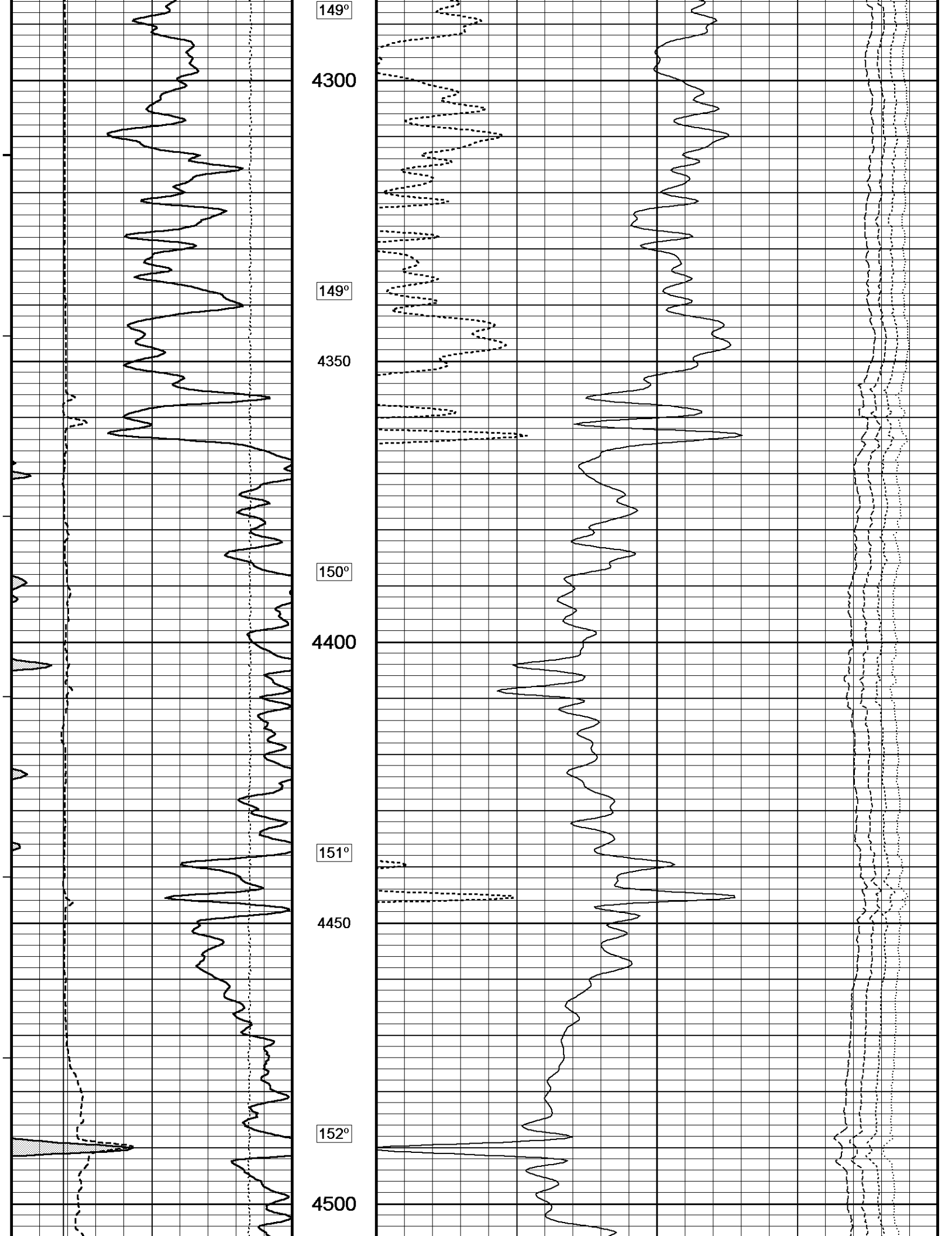

136°
3200
137°
3250
137°
3300
138°
3350
139°
3400

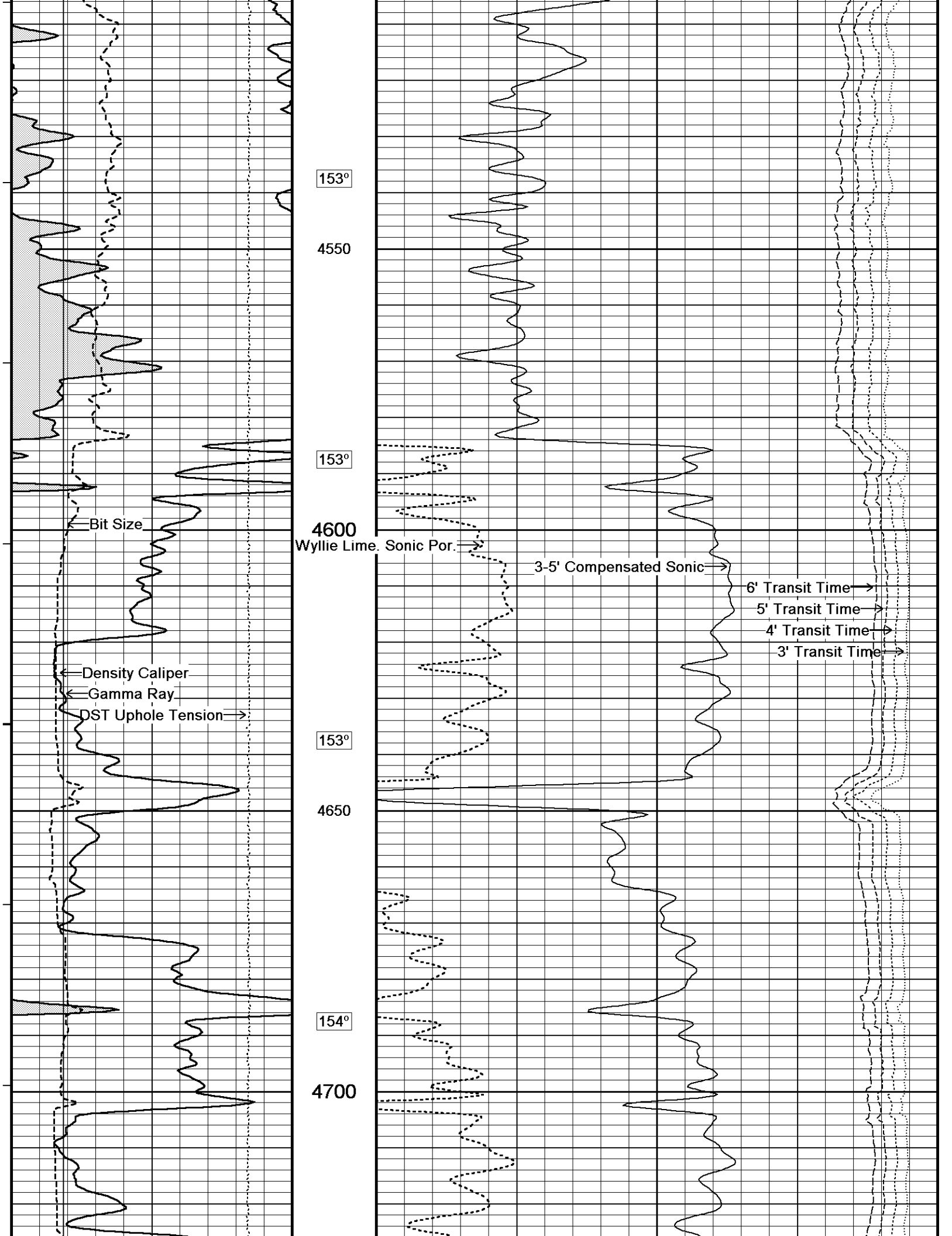

Bit Size
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
139°
Density Caliper
Gamma Ray
3450
DS-I Uphole Tension
140°
3500
141°
3550
141°
3600

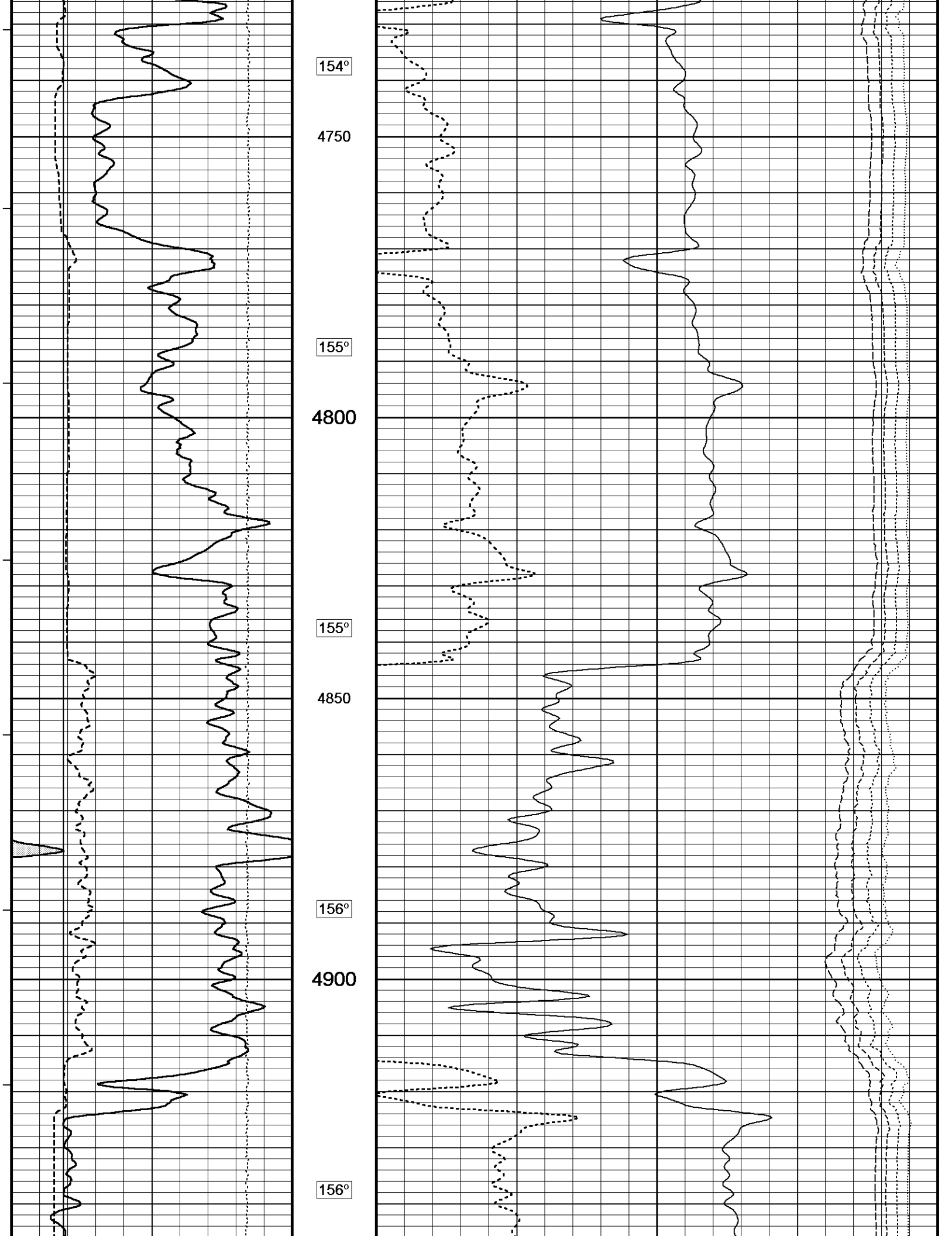

142°
3650
142°
3700
143°
3750
143°
3800
144°
Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

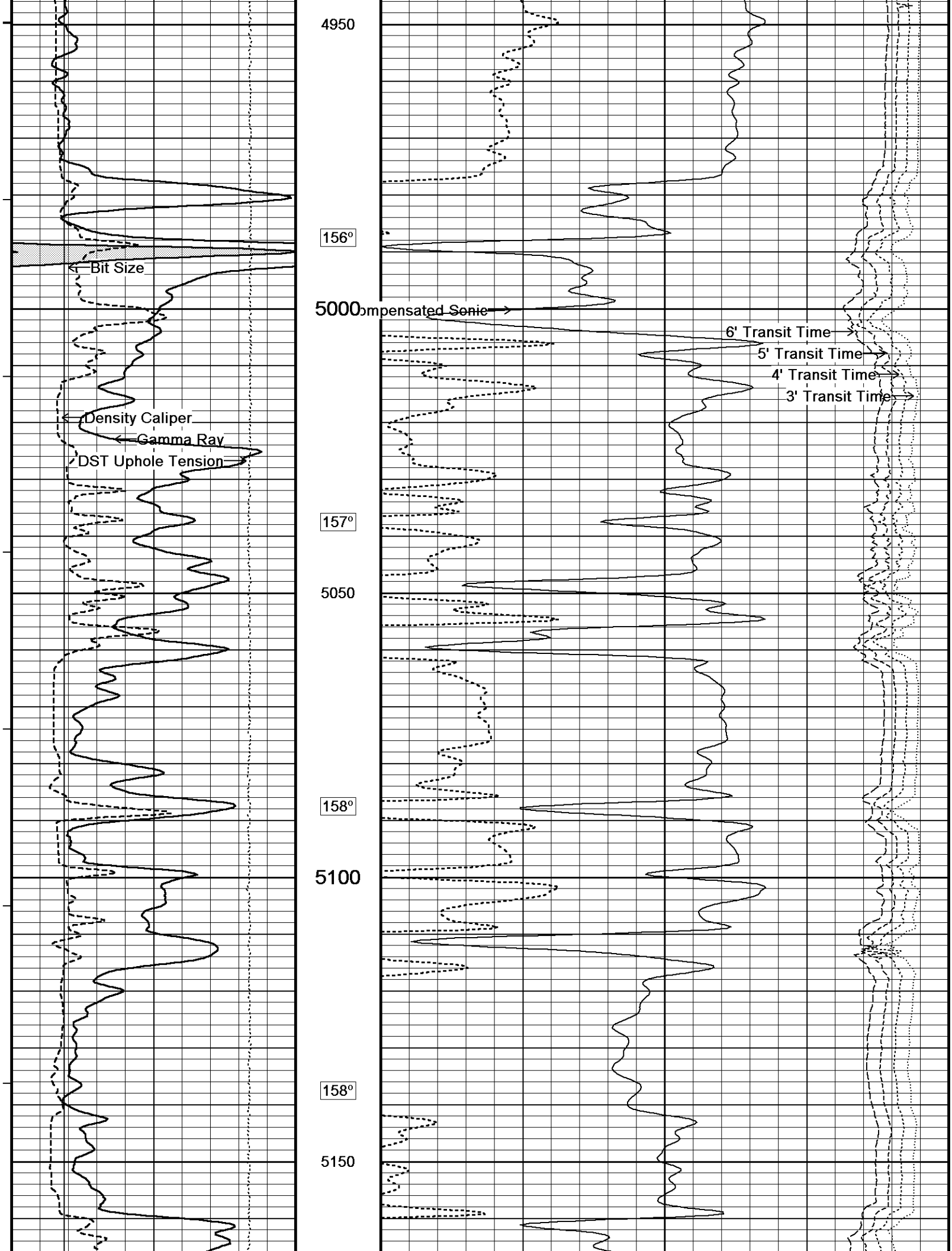

DST Uphole Tension
3850
144°
3900
145°
3950
146°
4000
146°
4050

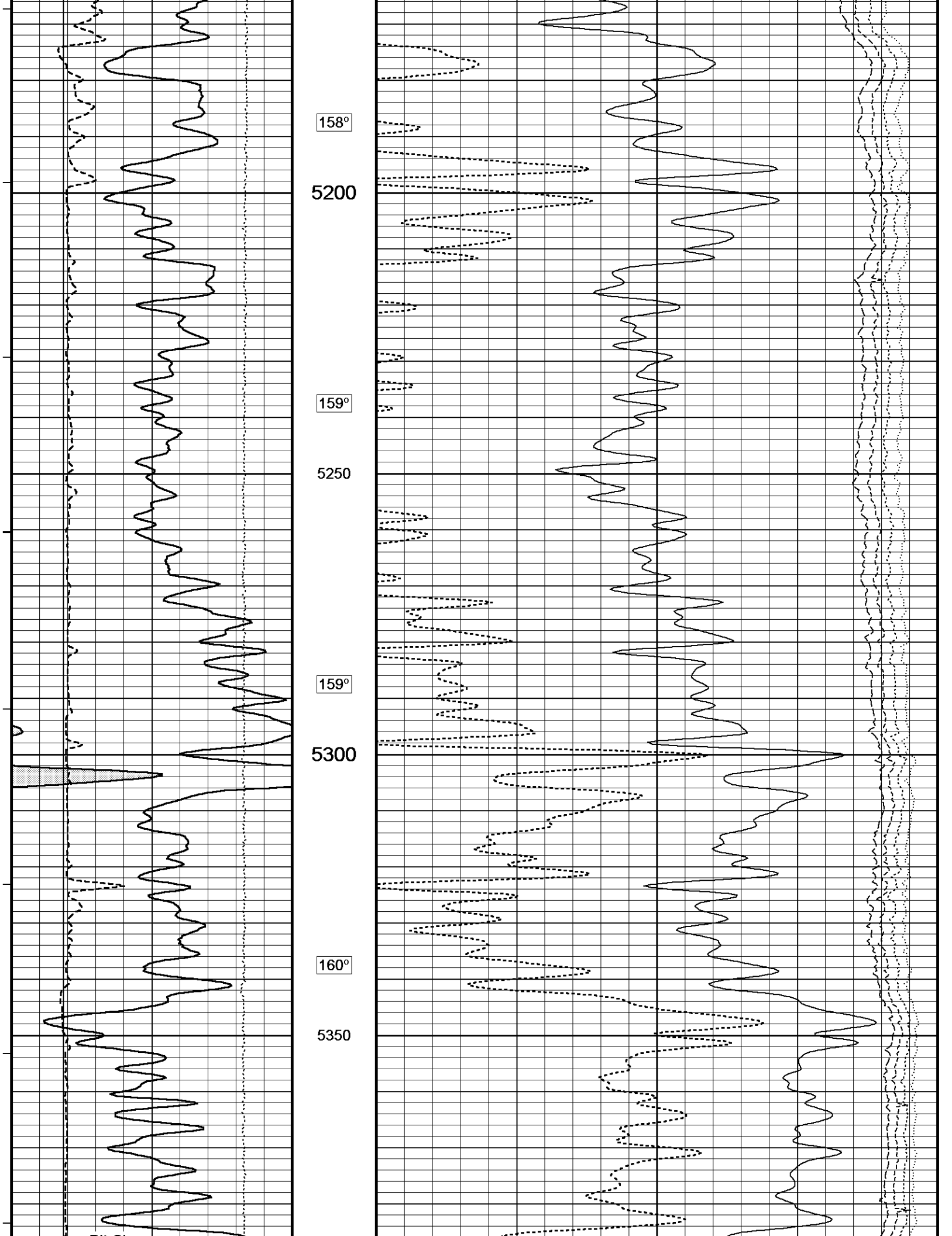

147°
4100
147°
4150
148°
4200
Bit Size
Density Caliper
Gamma Ray
148°
DST Uphole Tension
4250
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

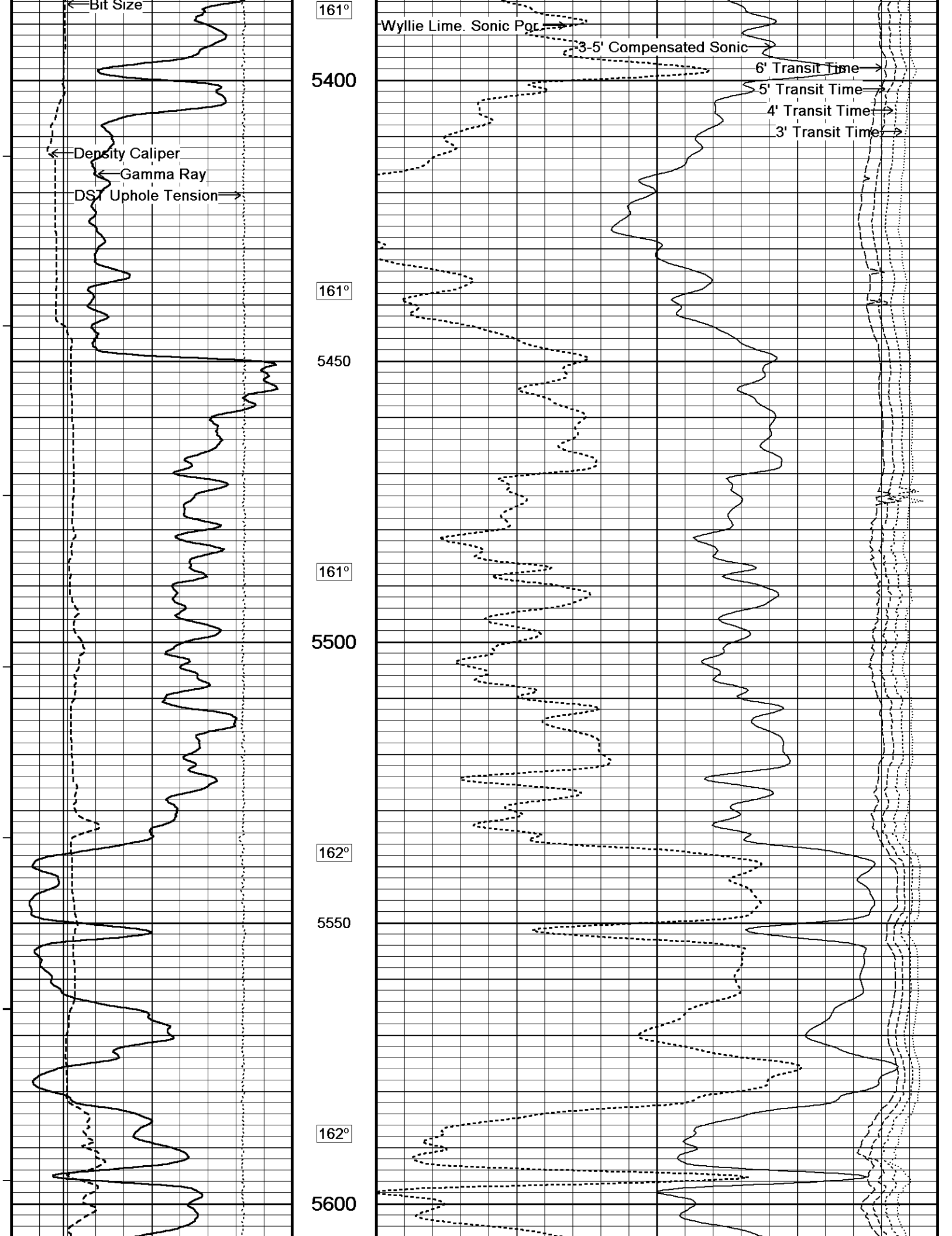

149°
4300
149°
4350
150°
4400
151°
4450
152°
4500

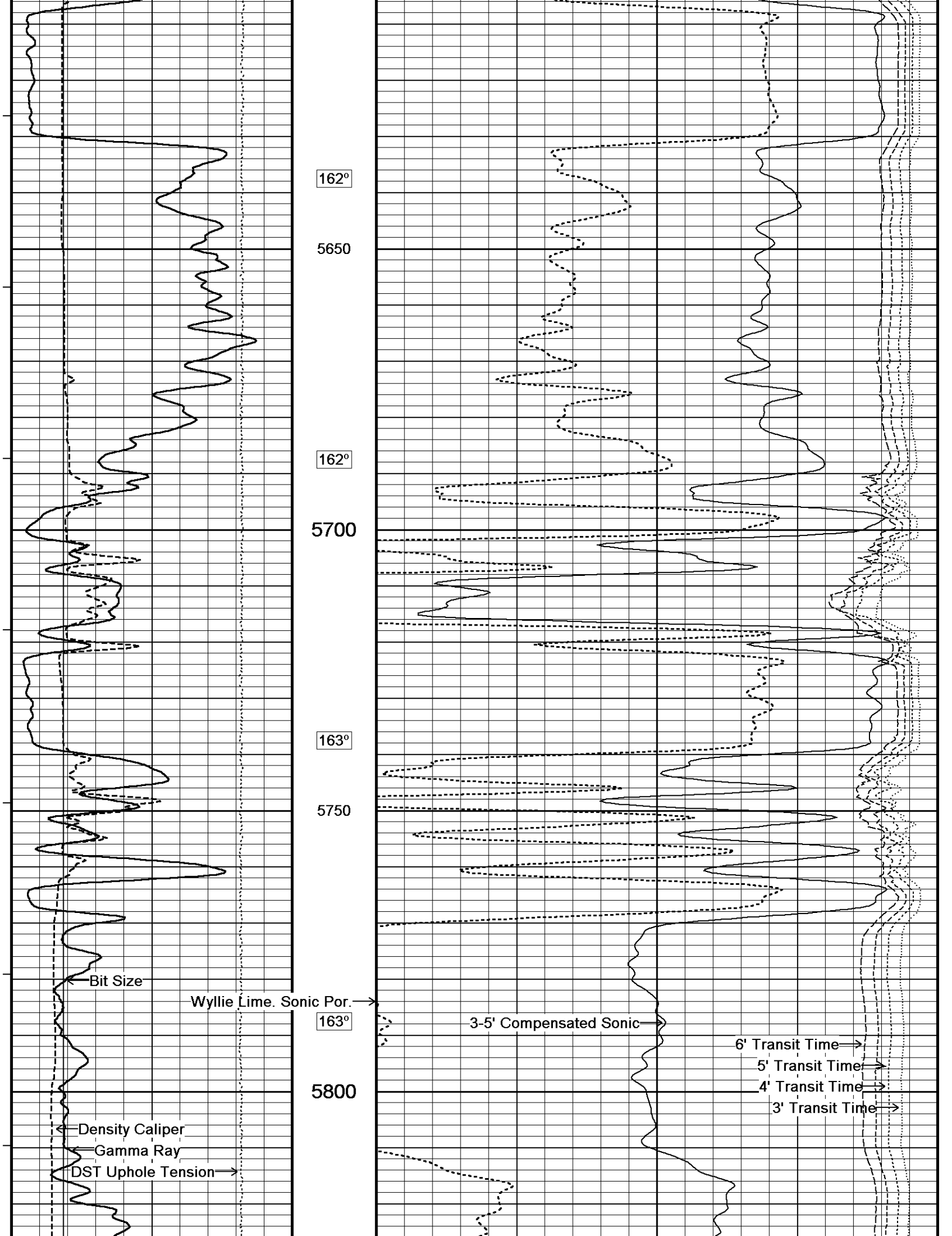

153°
4550
153°
Bit Size
4600
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
153°
4650
154°
4700

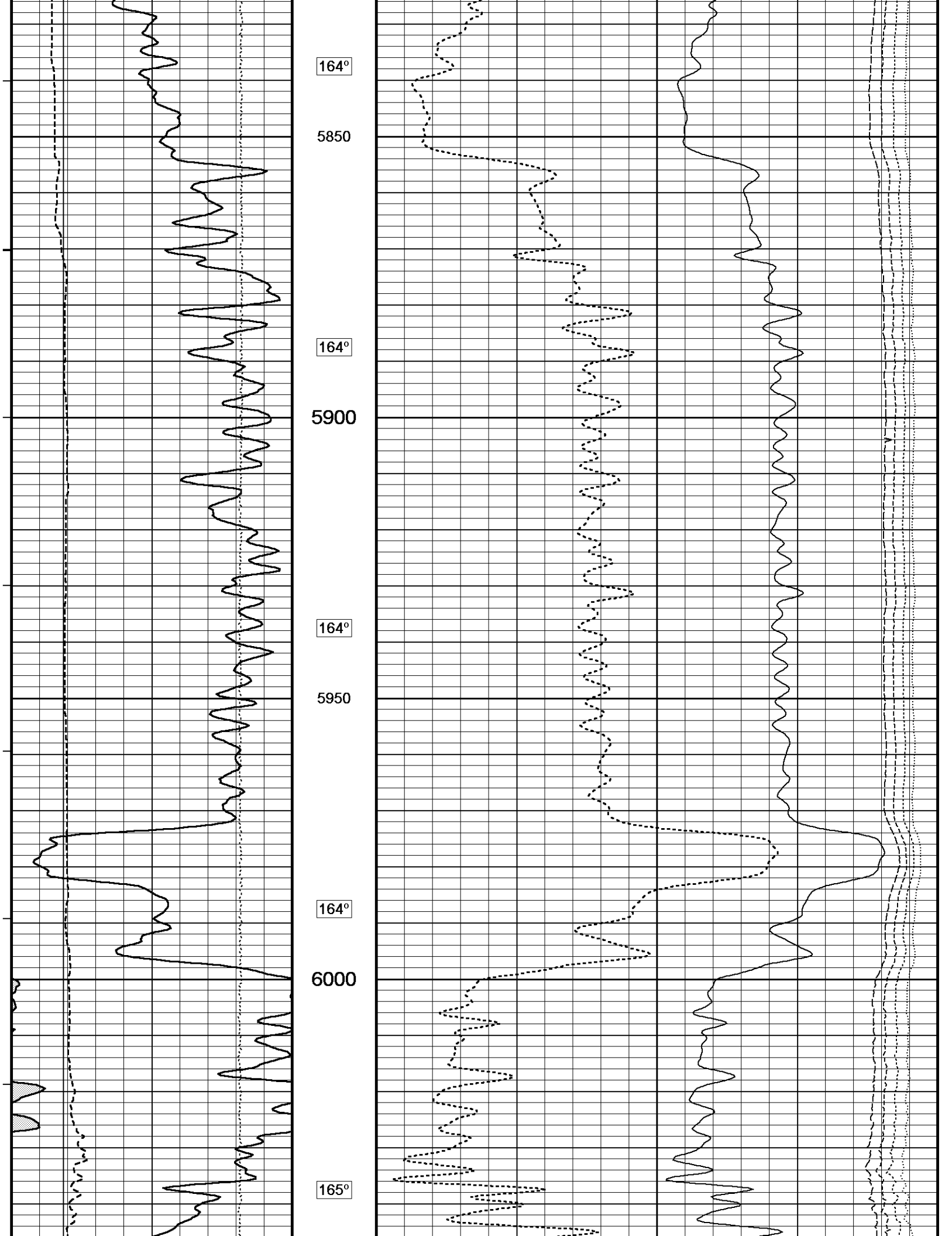

154°
4750
155°
4800
155°
4850
156°
4900
156°

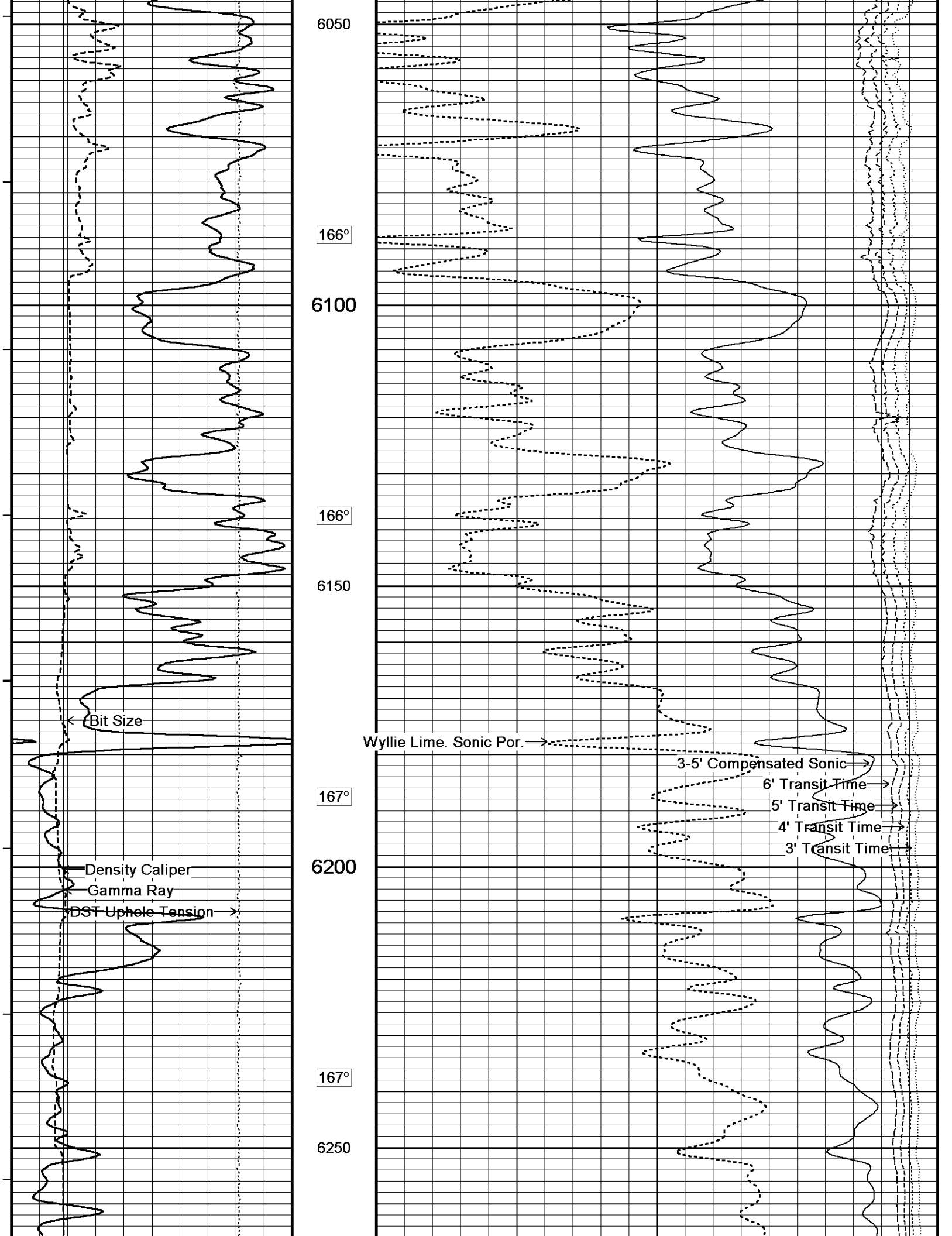

4950
156°
Bit Size
5000
Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Uphole Tension
157°
5050
158°
5100
158°
5150

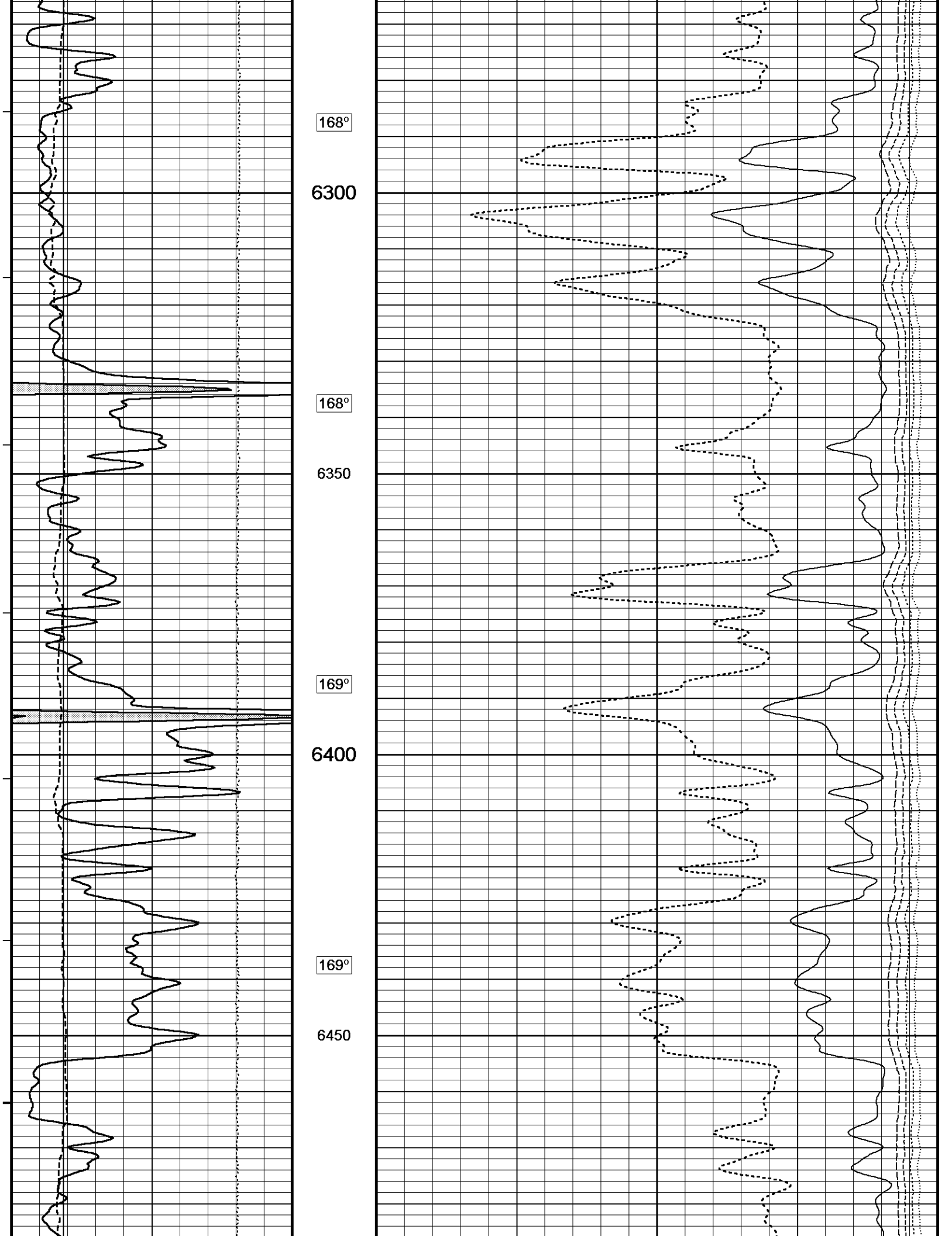

158°
5200
159°
5250
159°
5300
160°
5350

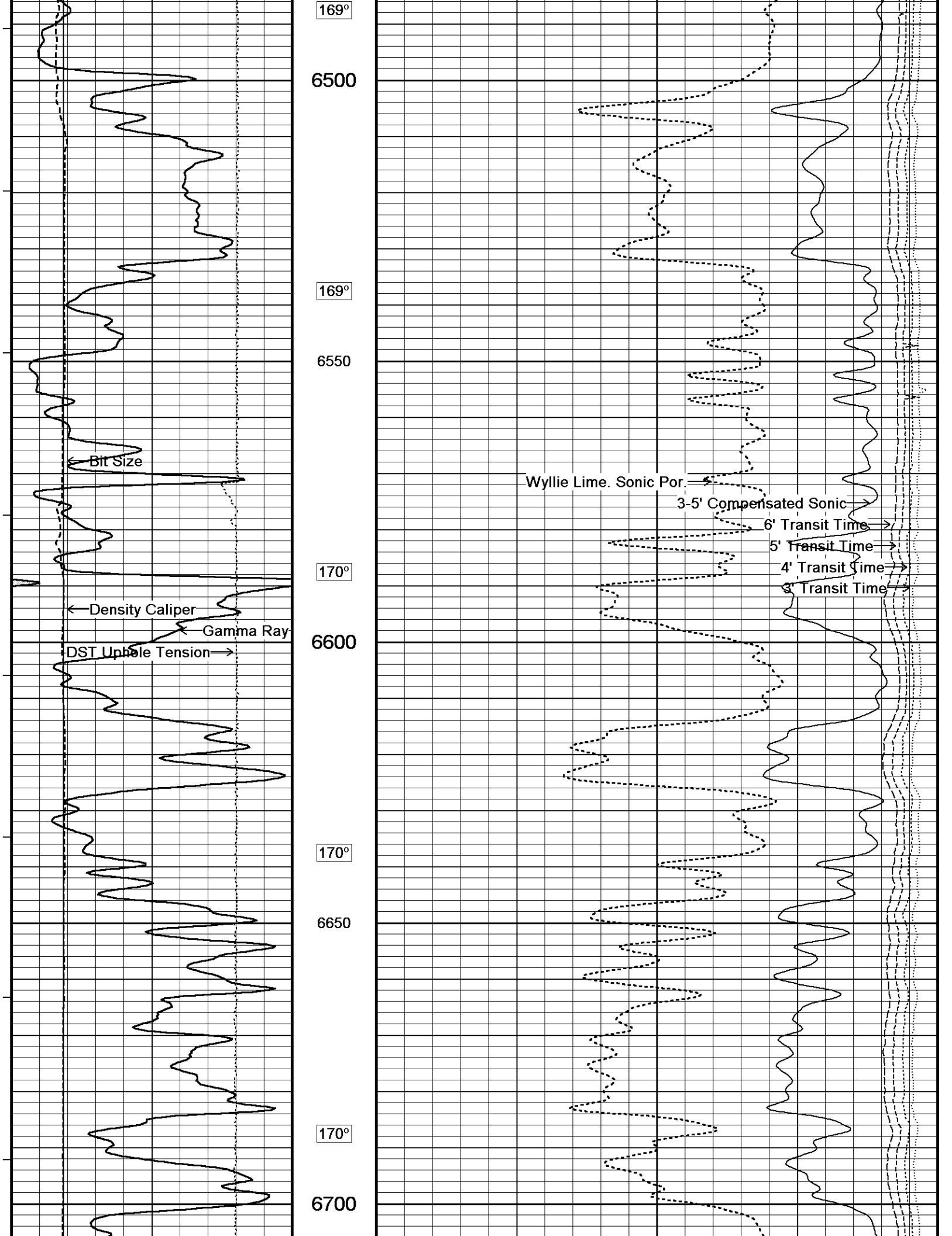

Bit Size
Density Caliper
Gamma Ray
DST Uphole Tension
161°
5400
161°
5450
161°
5500
162°
5550
162°
5600
Wyllie Lime. Sonic Por
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time

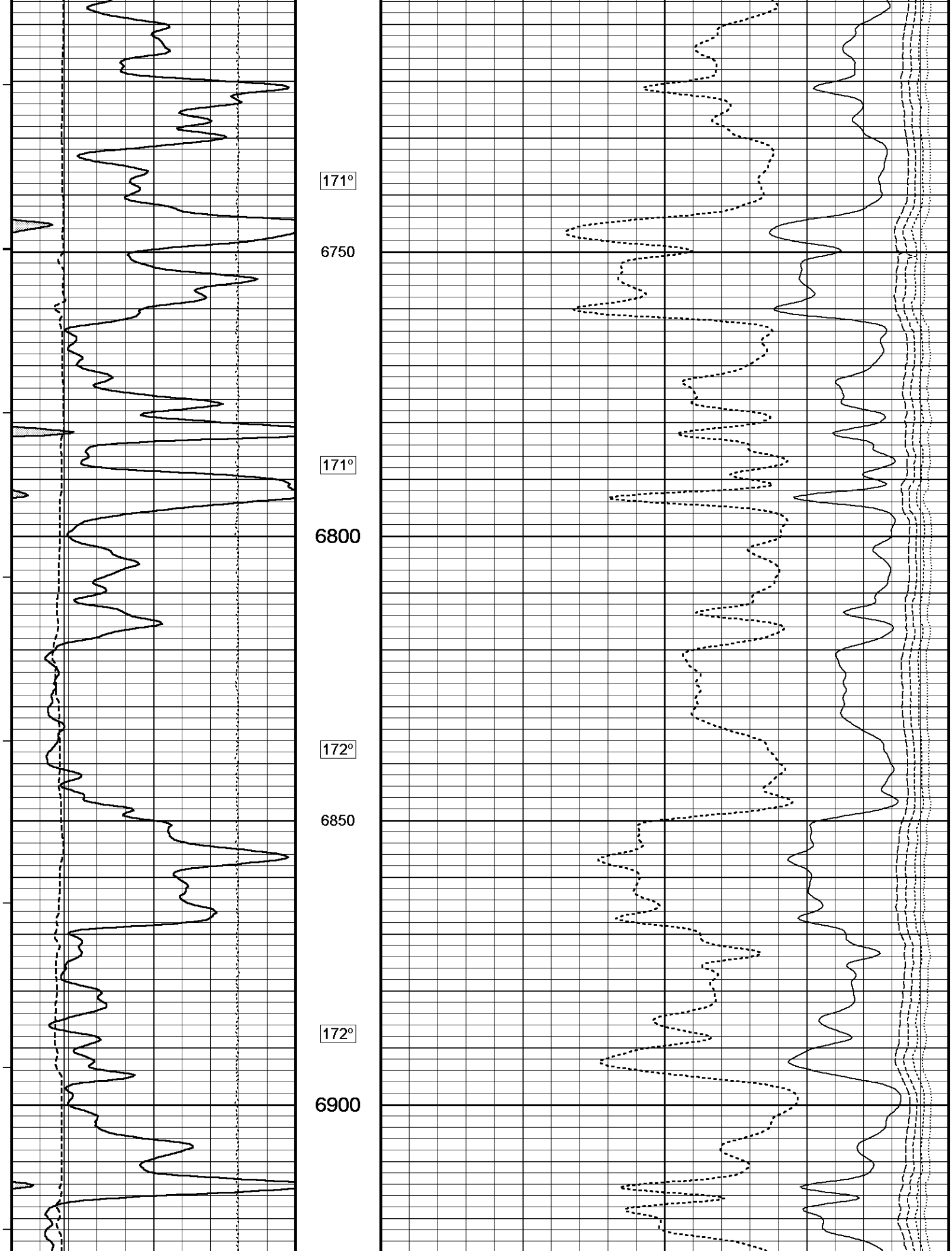

162°
5650
162°
5700
163°
5750
Bit Size
Wyllie Lime. Sonic Por.
163°
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
5800
Density Caliper
Gamma Ray
DST Uphole Tension

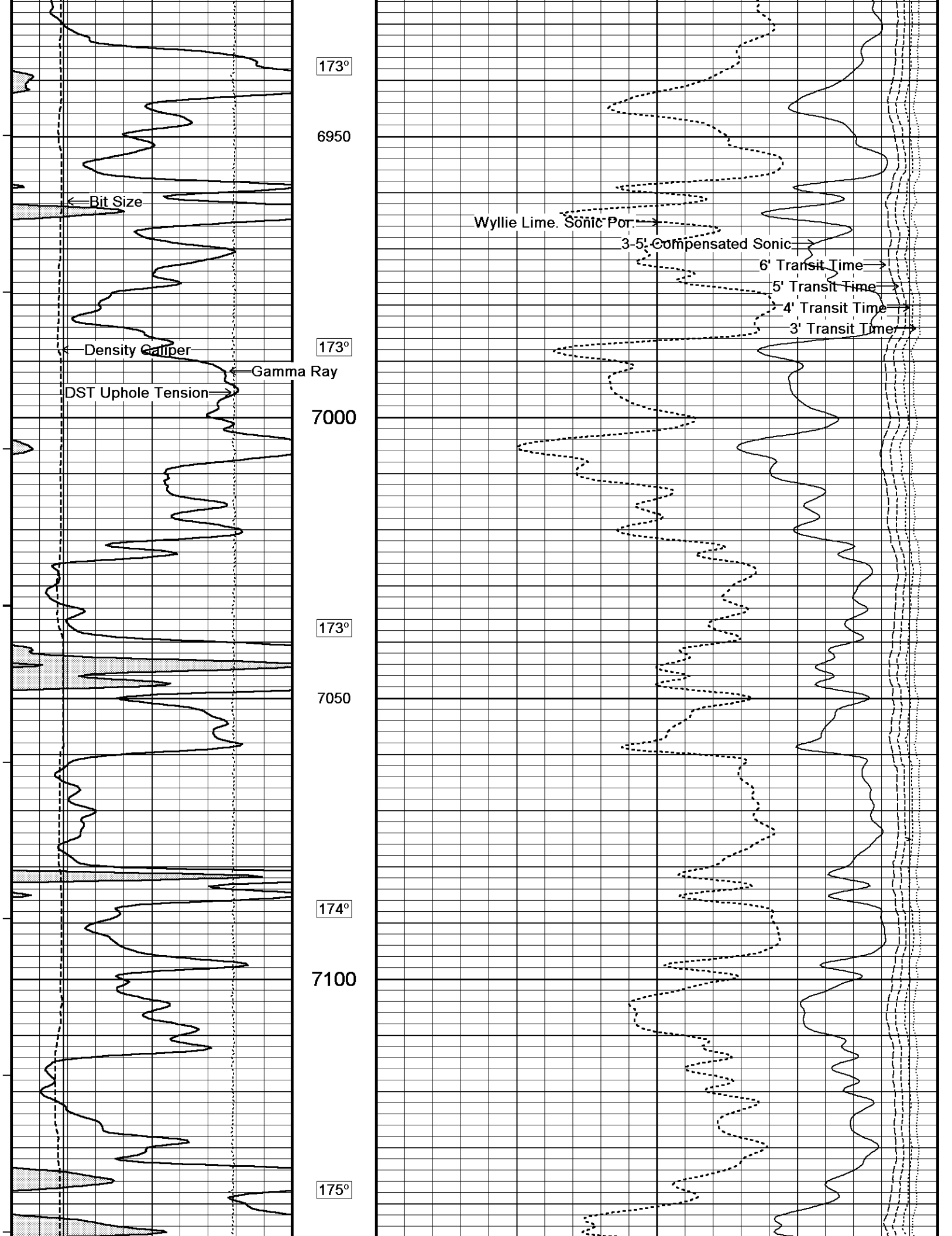

164°
5850
164°
5900
164°
5950
164°
6000
165°

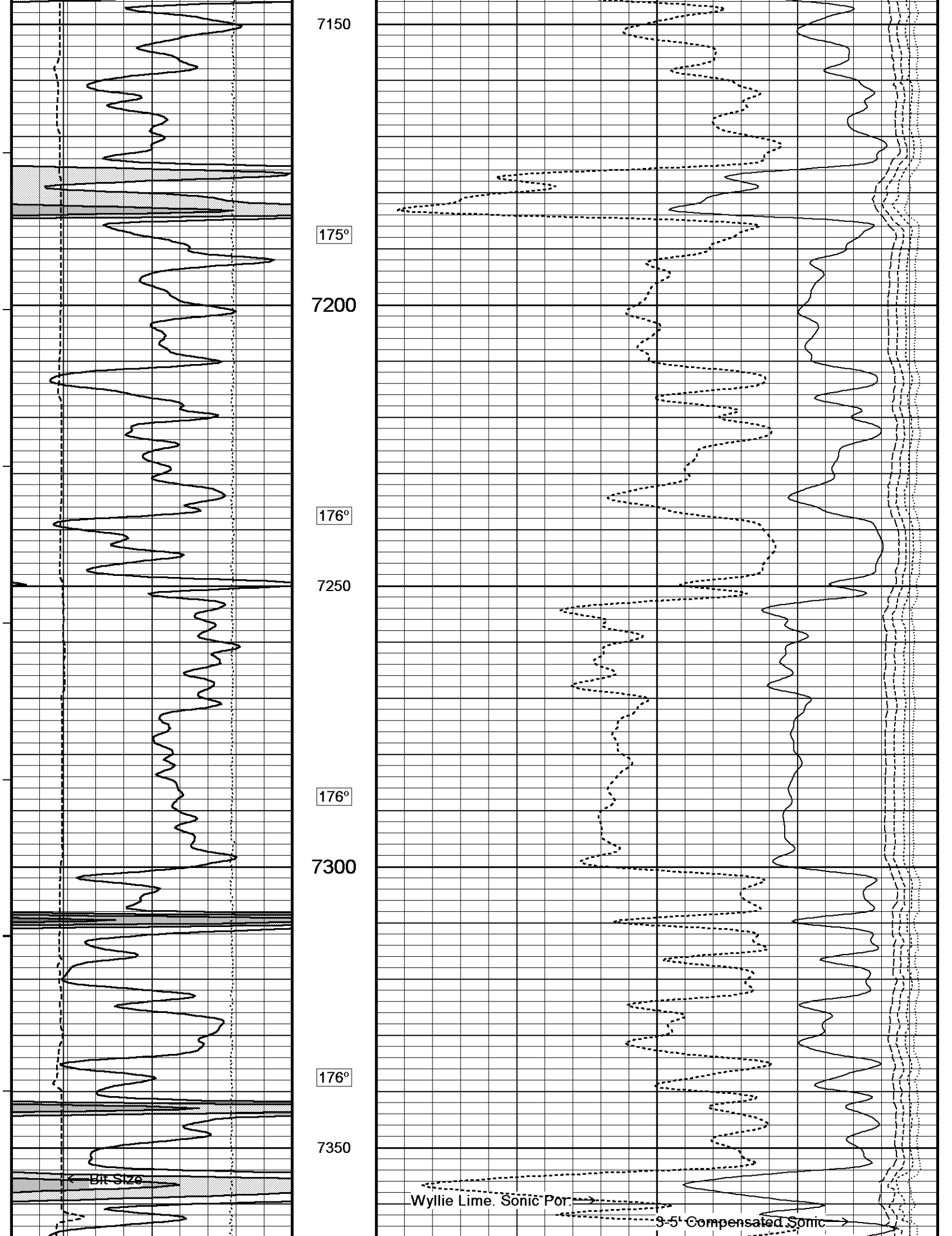

6050
166°
6100
166°
6150
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
167°
6200
Density Caliper
Gamma Ray
DST Uphole Tension
167°
6250

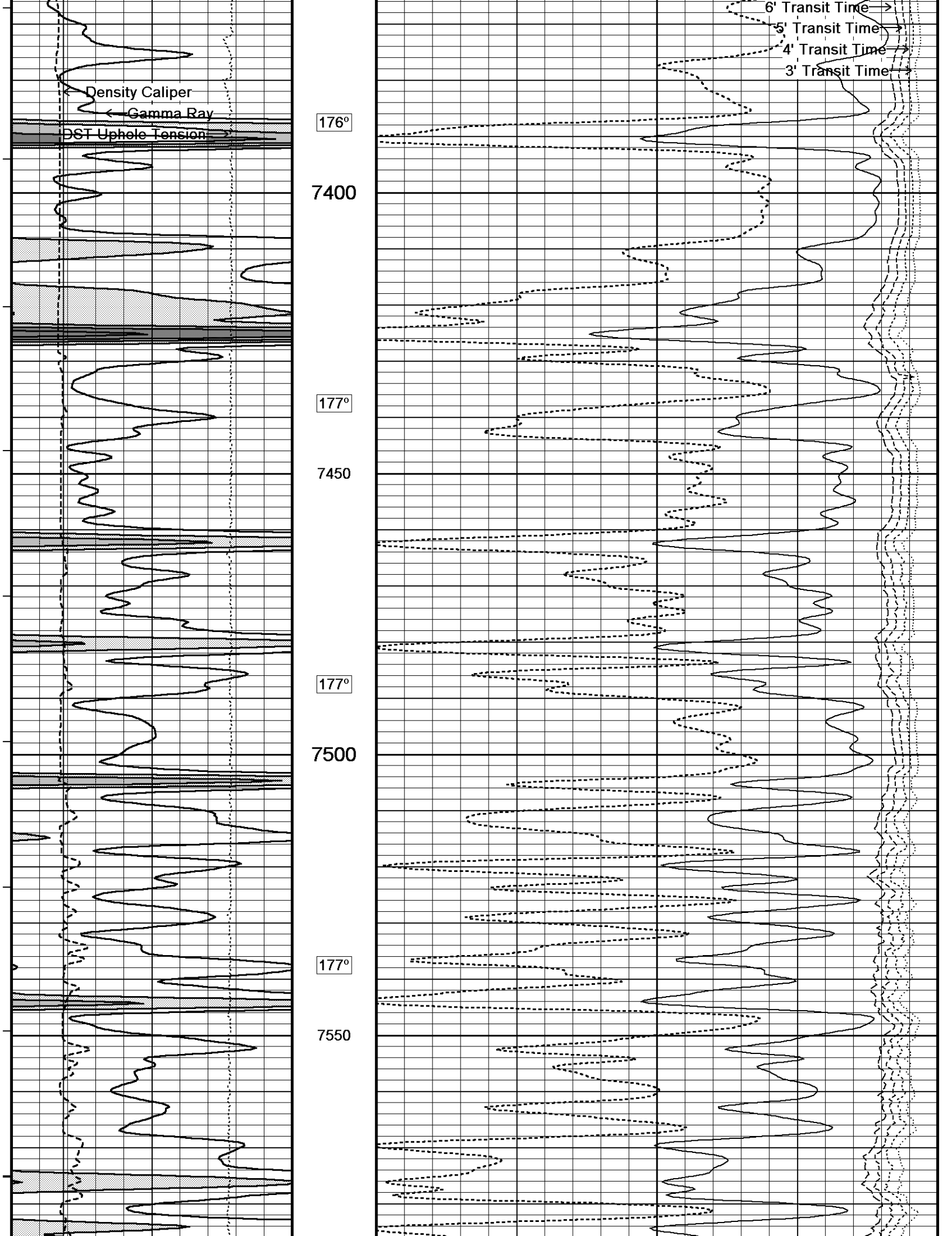

168°
6300
168°
6350
169°
6400
169°
6450

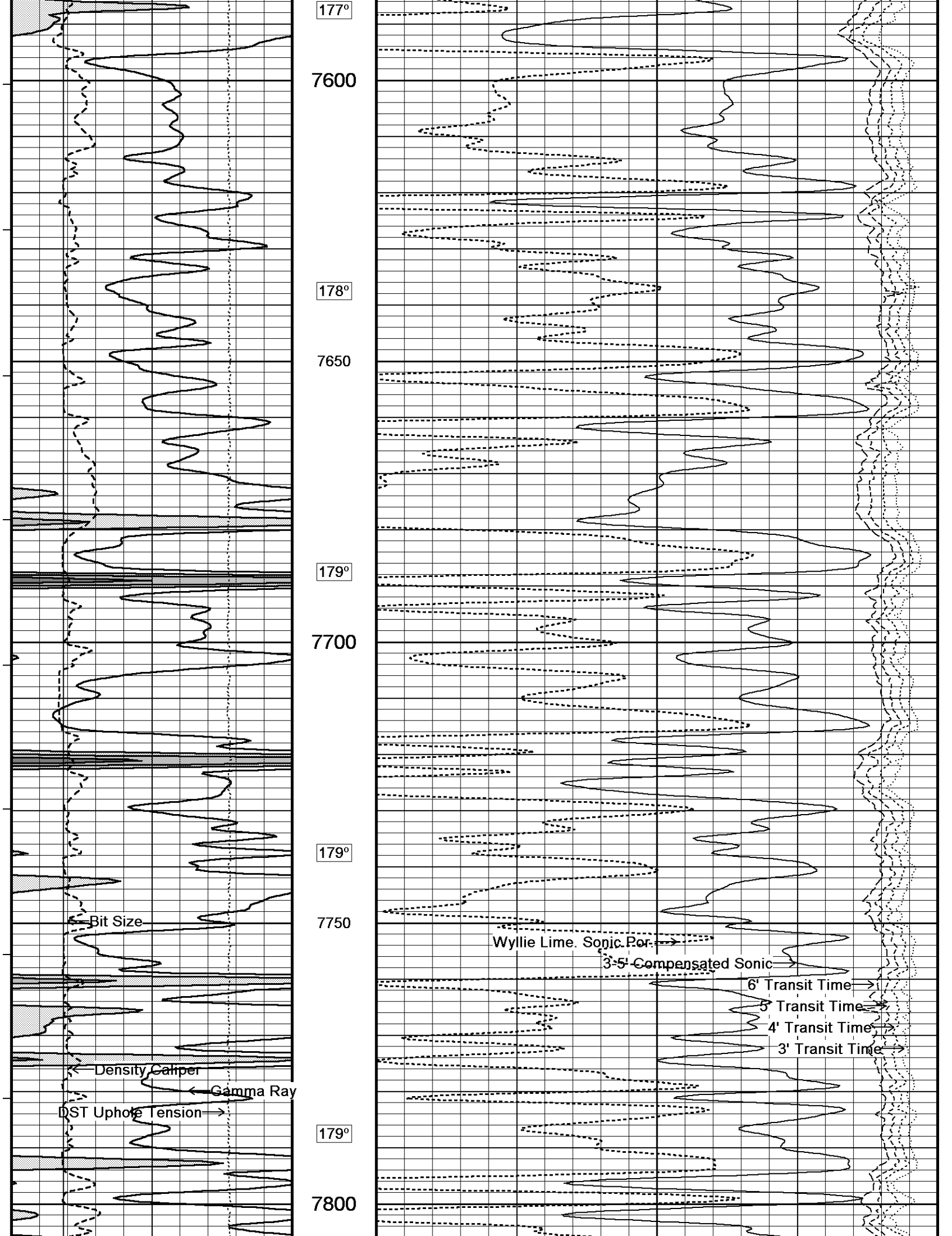

169°
6500
169°
6550
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
170°
Density Caliper
Gamma Ray
DST Uphole Tension
6600
170°
6650
170°
6700

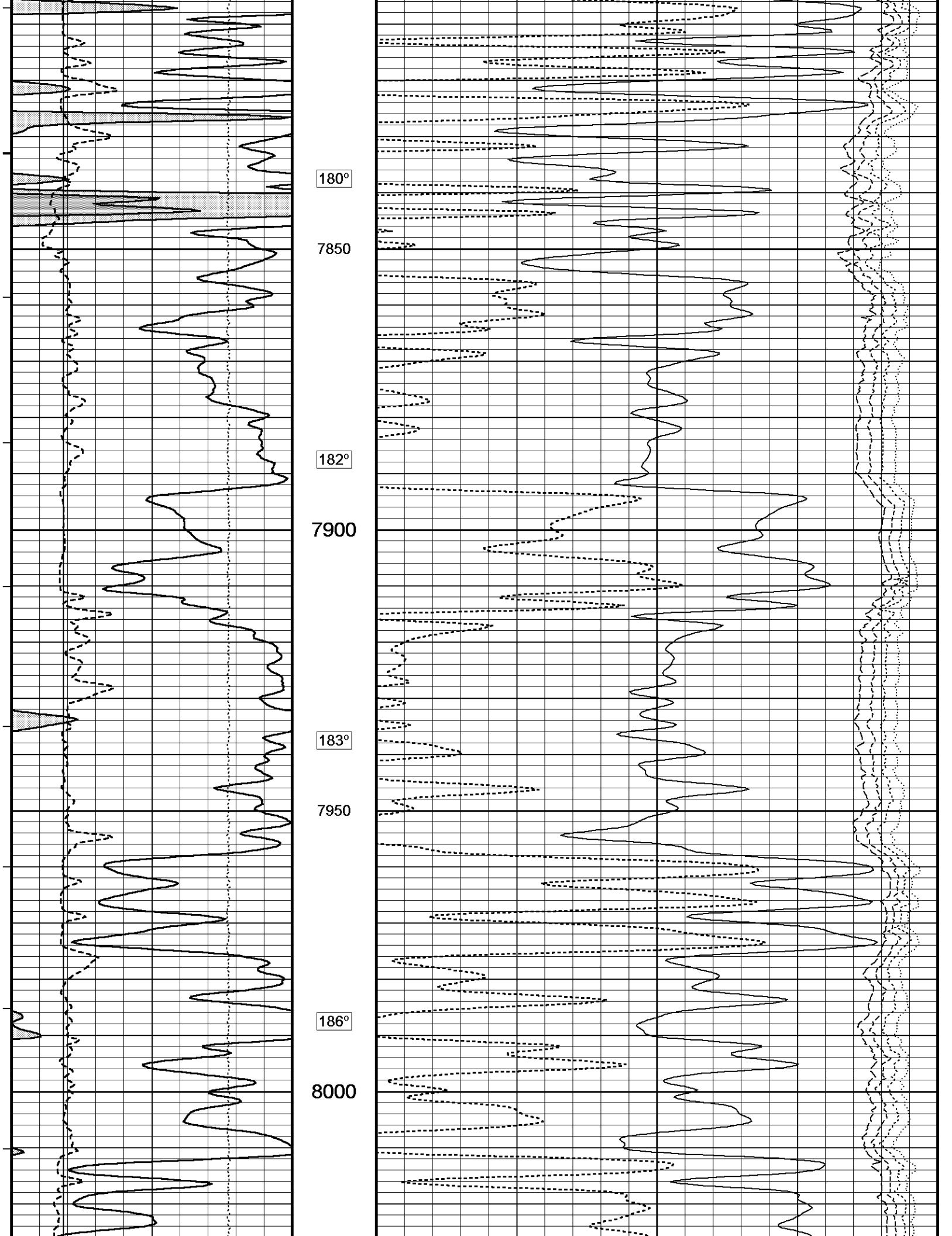

171°
6750
171°
6800
172°
6850
172°
6900

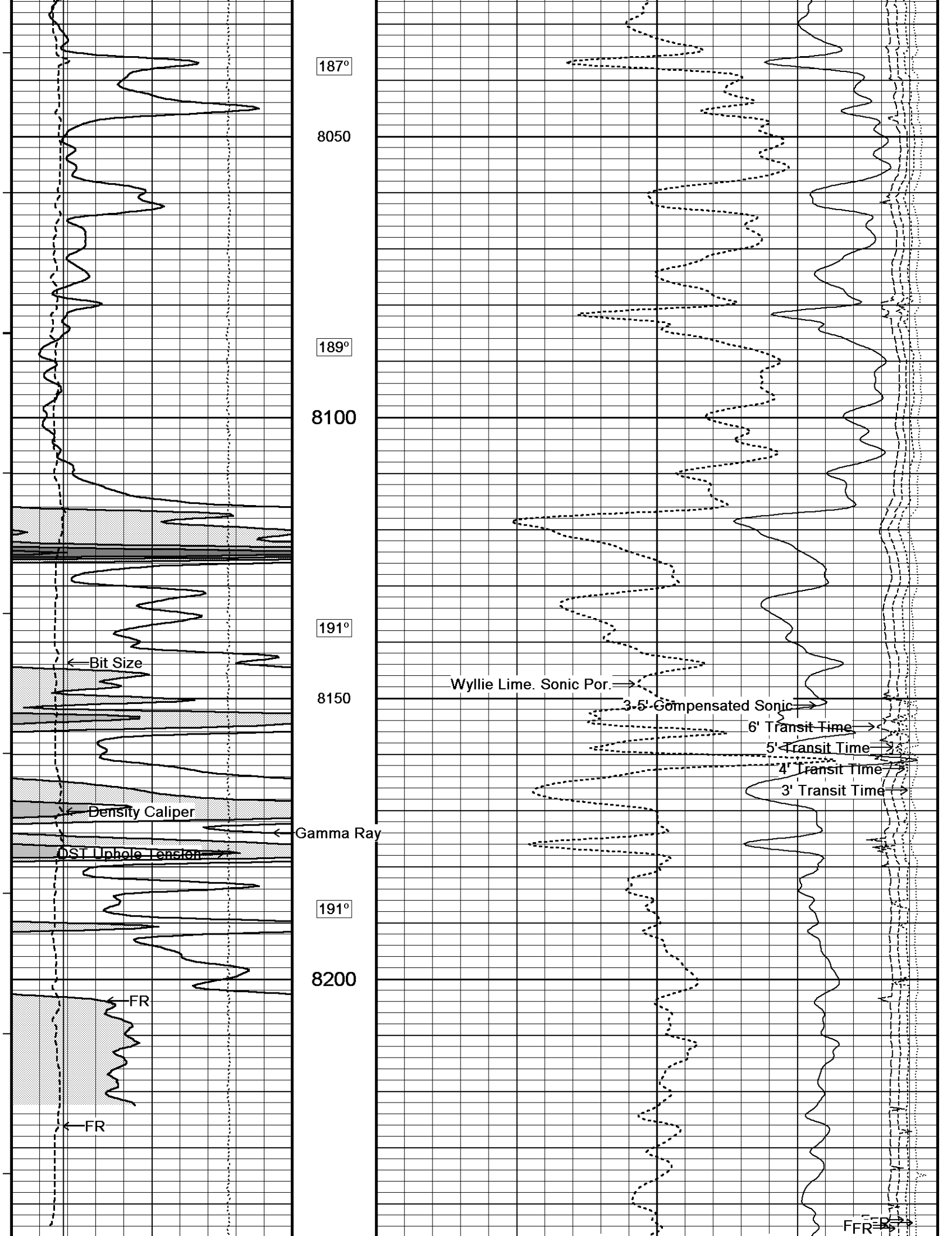

173°
6950
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
173°
Density Caliper
Gamma Ray
DST Uphole Tension
7000
173°
7050
174°
7100
175°

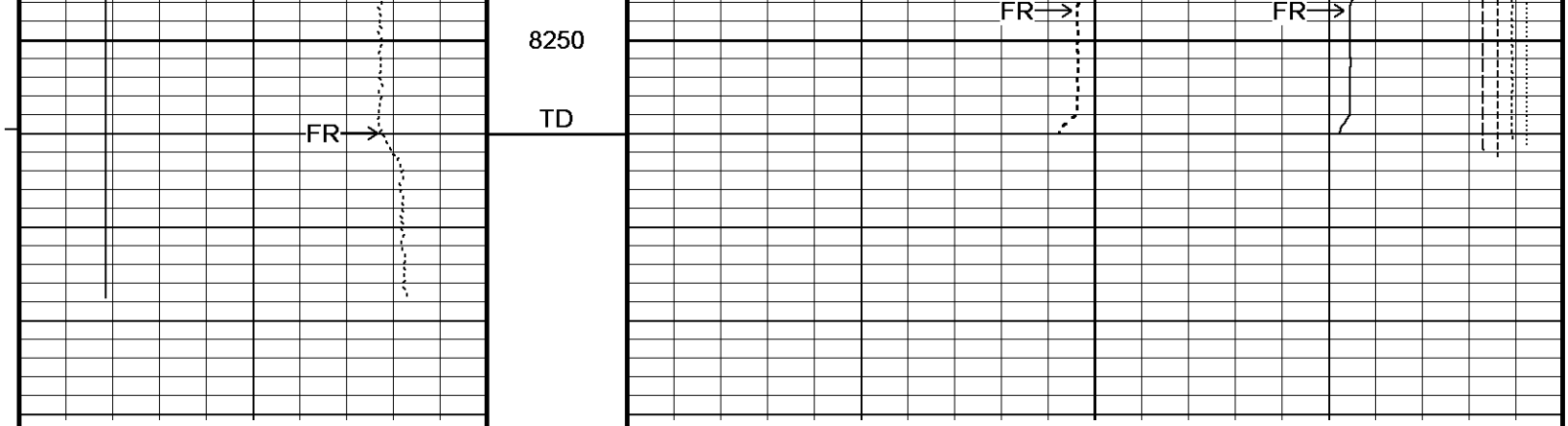

7150
175°
7200
176°
7250
176°
7300
176°
7350
← Bit Size
Wyllie Lime. Sonic Por. →
3-5' Compensated Sonic →


Density Caliper
Gamma Ray
DST Uphole Tension
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
176°
7400
177°
7450
177°
7500
177°
7550


177°
7600
178°
7650
179°
7700
179°
7750
179°
7800
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


180°
7850
182°
7900
183°
7950
186°
8000


187°
8050
189°
8100
191°
Bit Size
8150
Density Caliper
Gamma Ray
DST Uphole Tension
191°
8200
FR
FR
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
FR
FR



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

Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 09-NOV-2016 14:58
Filename: C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Bo...\Grand Mesa Buzz's Boat #14_002.dta
Recorded on 09-NOV-2016 10:38
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

5 INCH MAIN

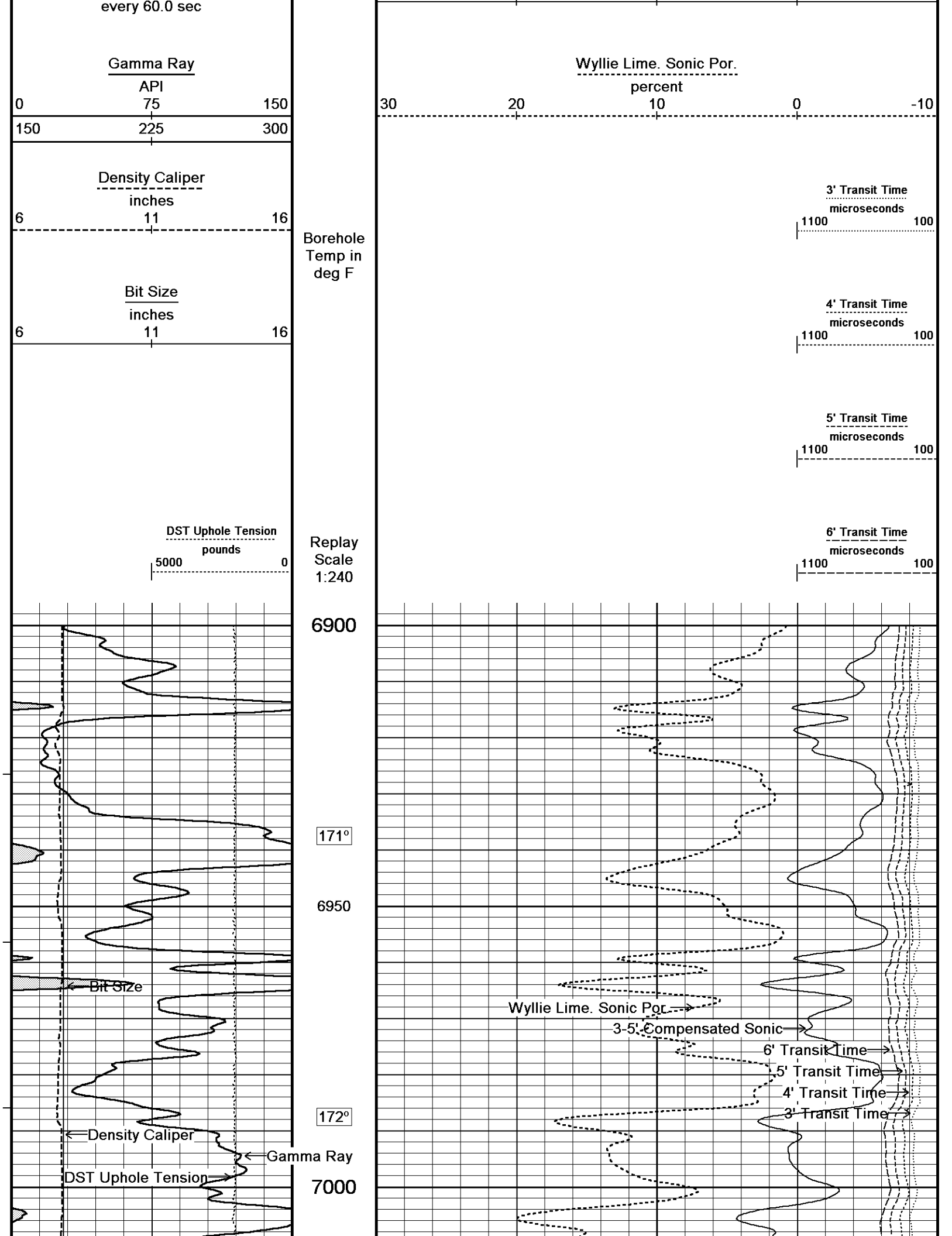
REPEAT SECTION

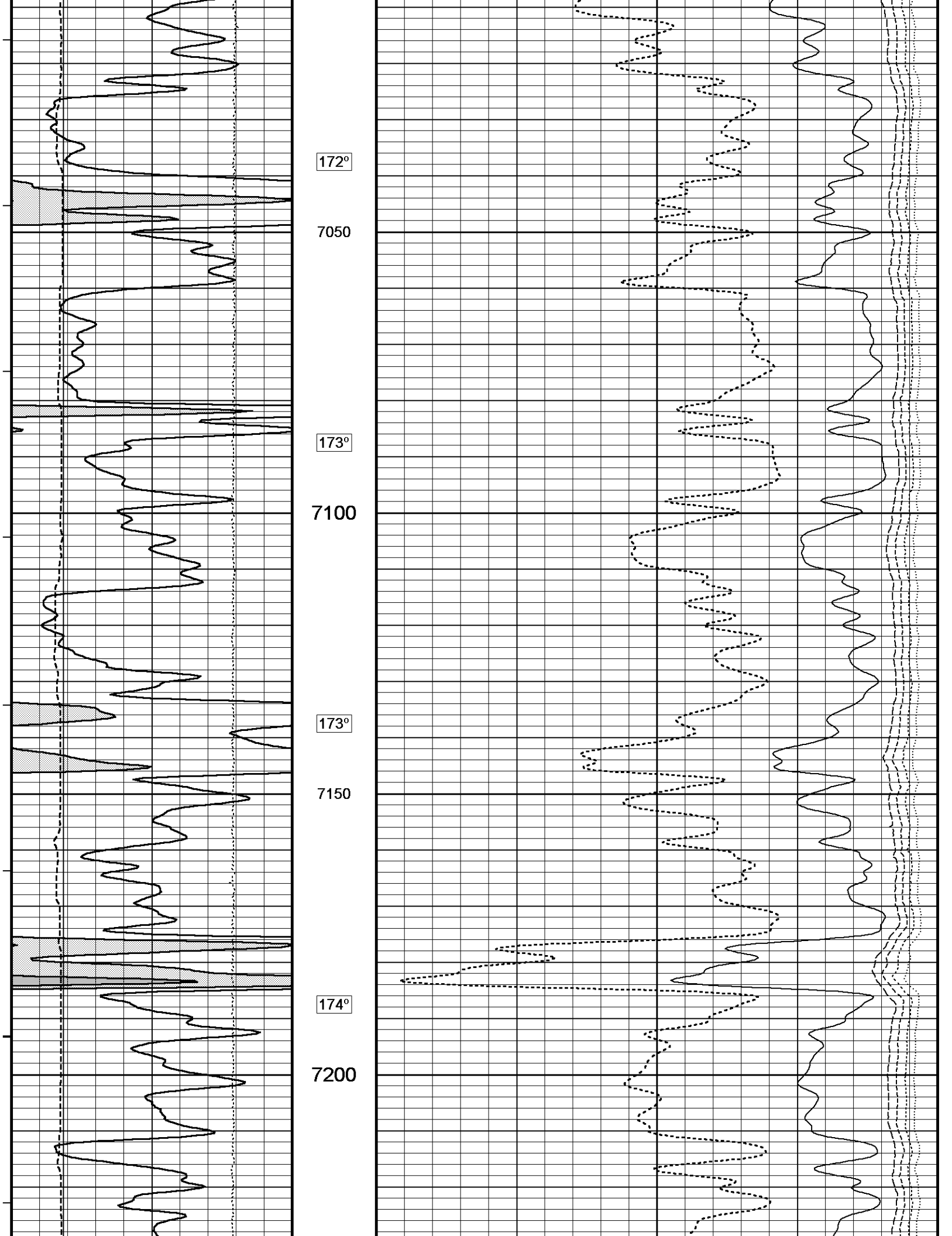
Depth Based Data - Maximum Sampling Increment 10.0cm
Plotted on 09-NOV-2016 14:58
Filename: C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Bo...\Grand Mesa Buzz's Boat #14_001.dta
Recorded on 09-NOV-2016 09:14
System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

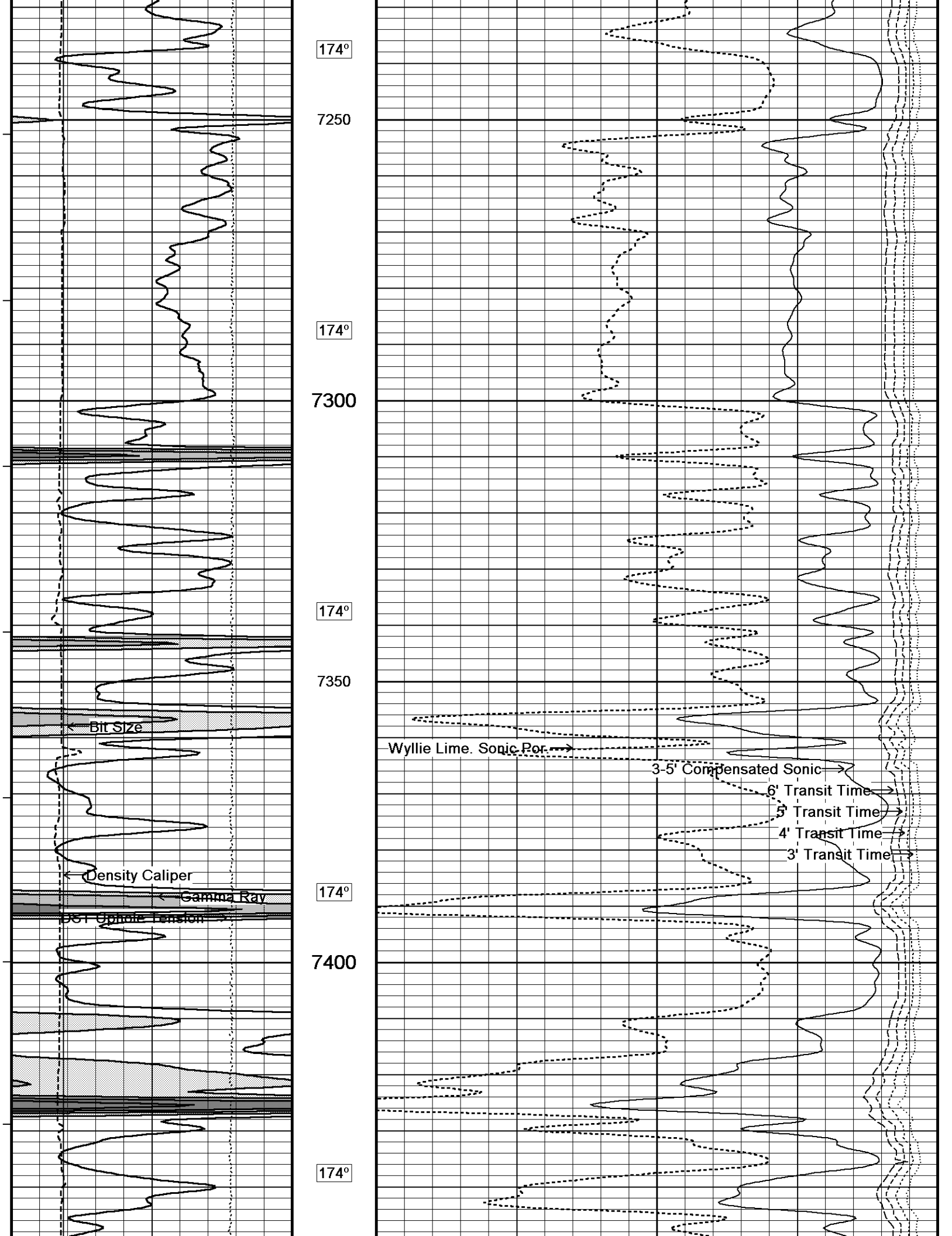
Depth in Feet

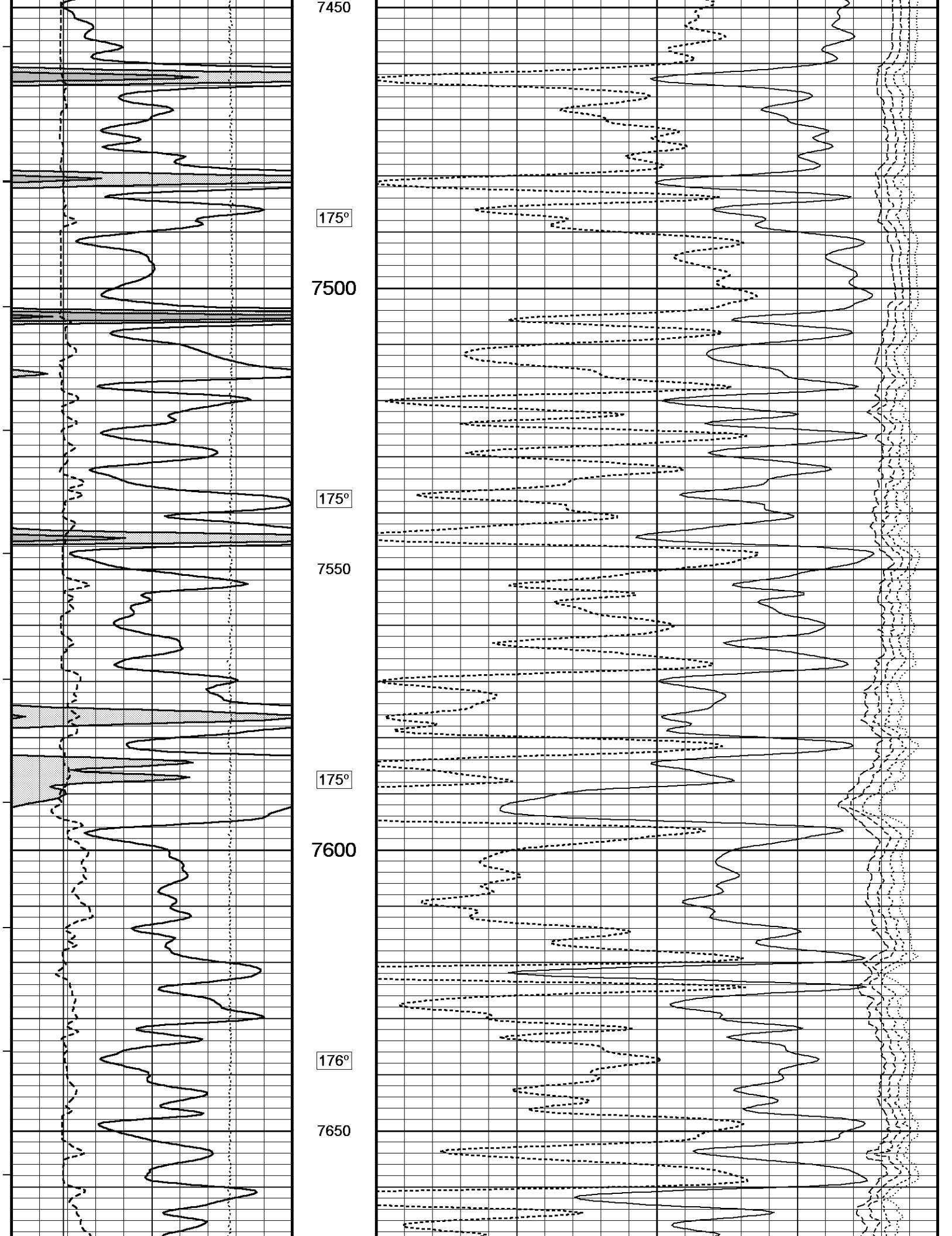
Timing Marks

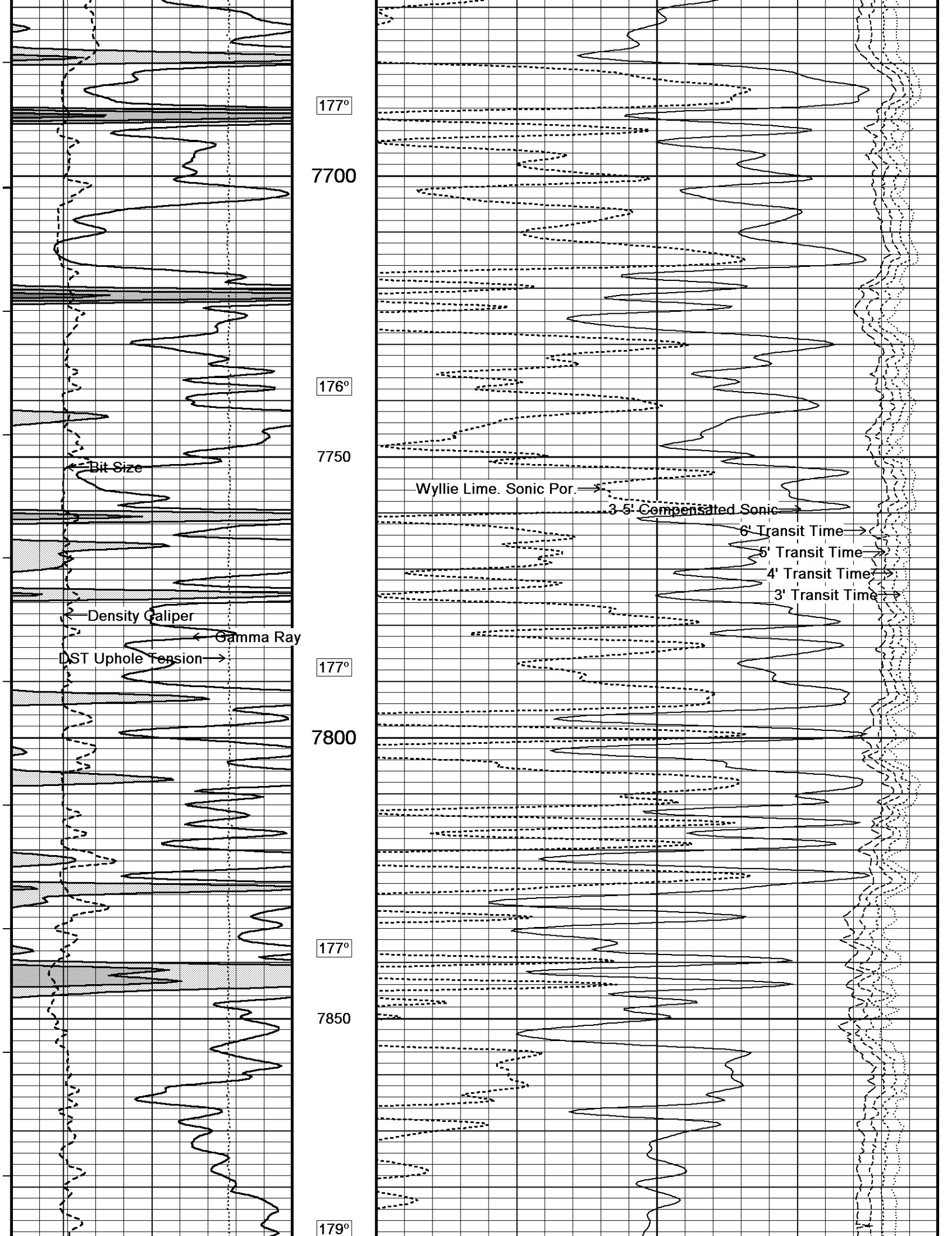
3-5' Compensated Sonic
microsec/foot
140 115 90 65 40

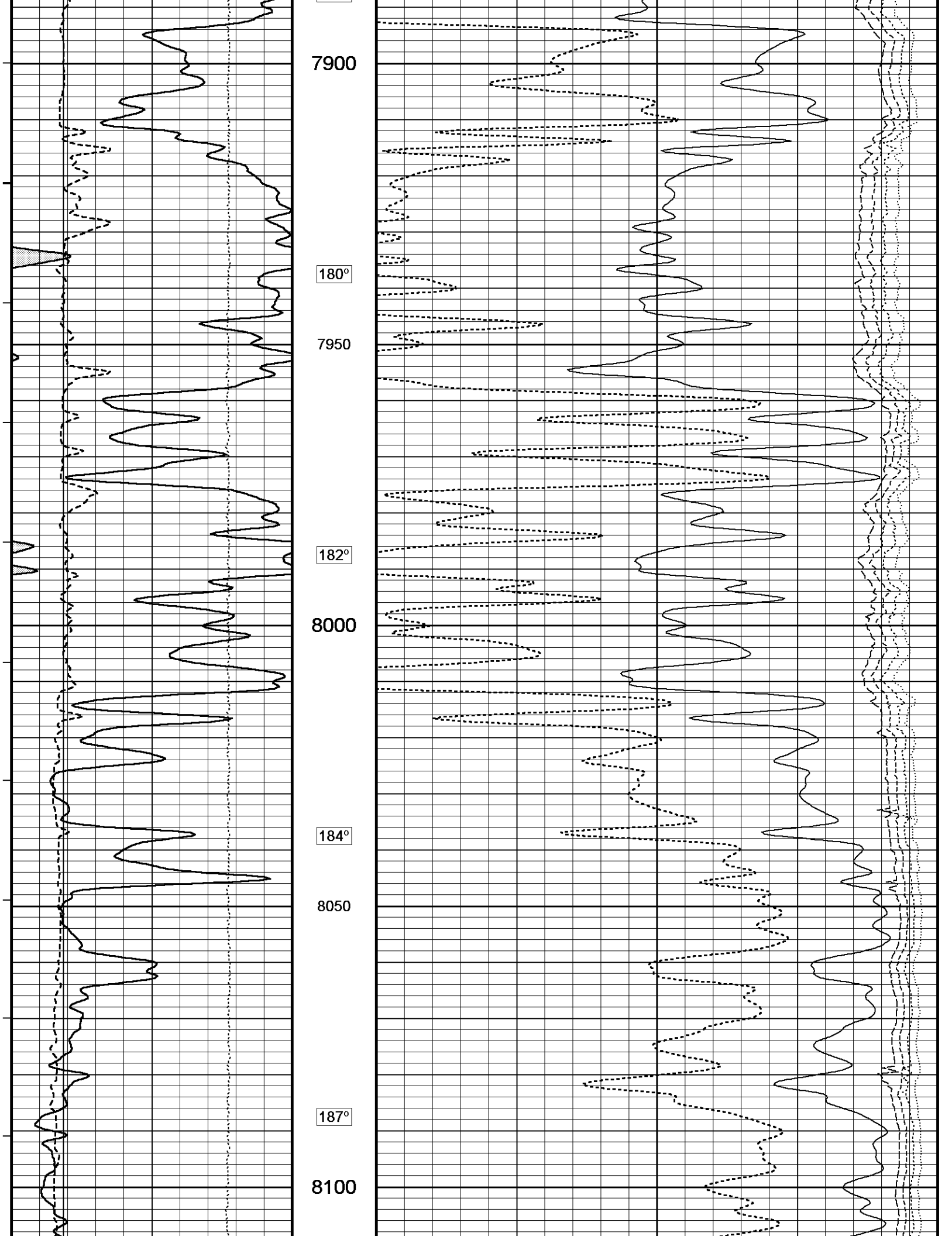

every 60.0 sec
Gamma Ray
API
0
75
150
150
225
300
Density Caliper
inches
6
11
16
Bit Size
inches
6
11
16
Borehole Temp in deg F
DST Uphole Tension
pounds
5000
0
Replay Scale 1:240
Wyllie Lime. Sonic Por.
percent
30
20
10
0
-10
3' Transit Time
microseconds
1100
100
4' Transit Time
microseconds
1100
100
5' Transit Time
microseconds
1100
100
6' Transit Time
microseconds
1100
100
6900
171°
6950
172°
7000
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

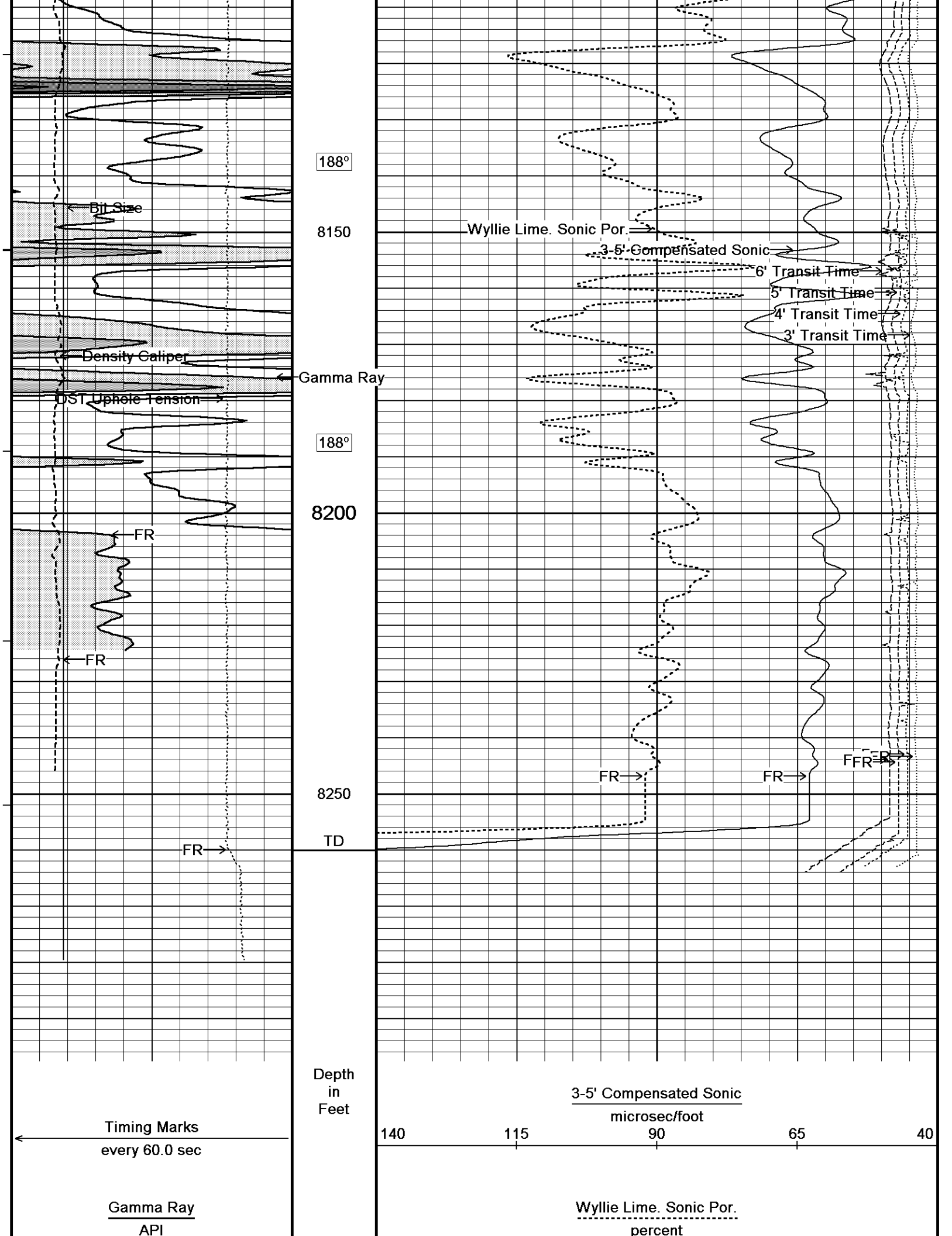

172°
7050
173°
7100
173°
7150
174°
7200

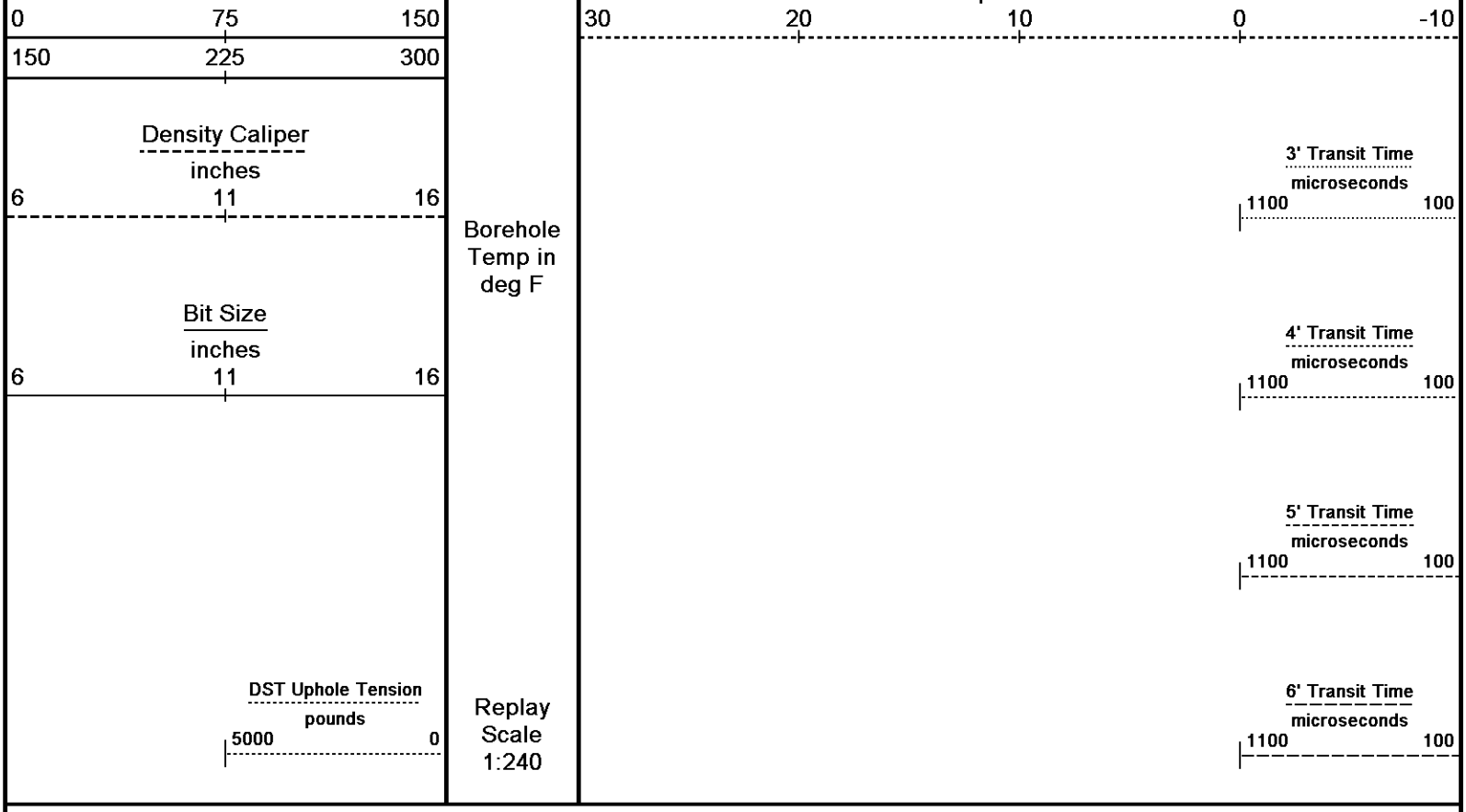

174°
7250
174°
7300
174°
7350
Bit Size
Wyllie Lime. Sonic Por.
3-5' Compensated Sonic
6' Transit Time
5' Transit Time
4' Transit Time
3' Transit Time
Density Caliper
Gamma Ray
DST Ophole Tension
174°
7400
174°


7450
175°
7500
175°
7550
175°
7600
176°
7650


177°
7700
176°
7750
Bit Size
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
177°
7800
177°
7850
179°


7900
180°
7950
182°
8000
184°
8050
187°
8100


188°
Bit Size
8150
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
188°
8200
FR
FR
FR
FR
FR
FR
8250
TD
FR
Depth
in
Feet
Timing Marks
every 60.0 sec
3-5' Compensated Sonic
microsec/foot
140
115
90
65
40
Gamma Ray
API
Wyllie Lime. Sonic Por.
percent



Depth Based Data - Maximum Sampling Increment 10.0cm — Plotted on 09-NOV-2016 14:58

Filename: C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Bo...\Grand Mesa Buzz's Boat #14_001.dta — Recorded on 09-NOV-2016 09:14

System Versions: Logged with 15.03.5939 Plotted with 15.03.5939

REPEAT SECTION

BEFORE SURVEY CALIBRATION

C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Boat #14\Grand Mesa Buzz's Boat #14_001.dta

General Constants All 000

Last Edited on 09-NOV-2016,08:22

General Parameters		
Mud Resistivity	1.190	ohm-metres
Mud Resistivity Temperature	75.000	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	None	
Rwa Parameters		
Porosity used	Limestone Density Por.	
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 24-JUL-2016 15:20

Reading No	Measured	Calibrated (lbs)
1	15235.81	0.00
2	16026.61	481.00

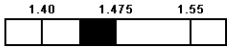
Gamma Calibration MCG-C 123

Field Calibration on 08-NOV-2016 22:41

	Measured	Calibrated (API)
Background	73	51

Background	70	91
Calibrator (Gross)	728	507
Calibrator (Net)	656	456

Gamma Calibration Tolerances MCG-C 123

Ratio	1.438		Counts/API

Gamma Constants MCG-C 123

Last Edited on 09-NOV-2016,05:46

Gamma Calibrator Number	MCGGRCC141	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.12	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

High Resolution Temperature Calibration MCG-C 123

Field Calibration on 31-OCT-2015,17:05

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MCG-C 123

Last Edited on 22-SEP-2015,11:43

Pre-filter Length	11

SP Calibration MCG-C 123

Field Calibration on 14-JUL-2016 12:06

	Measured	Calibrated (mV)
Reference 1	101.2	100.6
Reference 2	-99.1	-99.9

Micro Normal and Micro Inverse Calibration MMR-C.A 247

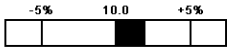
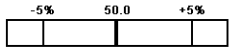
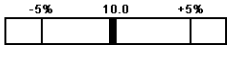
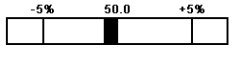
Base Calibration on 28-AUG-2016 19:13
Field Check on 08-NOV-2016 22:26

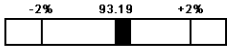
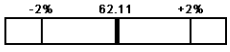
Base Calibration

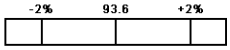
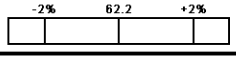
Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	10.2	49.9	5.1	25.6
Micro Inverse	10.0	49.5	3.4	16.9

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.6	93.6
Micro Inverse	62.2	62.2

Micro Normal & Micro Inverse Calibration Tolerance MMR-C.A 247

Micro Normal Res. 1	10.2		ohm	Micro Normal Res. 2	49.9		ohm
Micro Inverse Res. 1	10.0		ohm	Micro Inverse Res. 2	49.5		ohm

Micro Normal Base Check	93.6		ohm-m
Micro Inverse Base Check	62.2		ohm-m

Micro Normal Field Check	93.6		ohm-m
Micro Inverse Field Check	62.2		ohm-m

Micro Normal and Micro Inverse Constants MMR-C.A 247

Last Edited on 26-JUN-2016,15:44

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	0.0000	inches

Caliper Calibration MMR-C.A 247

Base Calibration on 28-AUG-2016 19:08
Field Calibration on 08-NOV-2016 22:25

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14869	5.98
2	18207	7.97

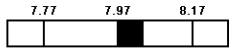
3	21411	9.86
4	25389	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.04	7.97

Caliper Calibration Tolerances MMR-C.A 247

Short Arm Field Cal. 8.04 in



Micro-Resistivity Caliper Constants MMR-C.A 247

Last Edited on

Sonde Configuration Resistivity Mode

Neutron Calibration MDN-A.B 66

Base Calibration on 22-MAY-2016,18:15
Field Check on 08-NOV-2016 22:46

Base Calibration

	Measured		Calibrated (cps)	
	Near	Far	Near	Far
	3116	97	3714	110
Ratio	32.277		33.764	

Field Calibrator at Base

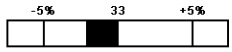
	Calibrated (cps)	
	2061	3028
Ratio	0.681	

Field Check

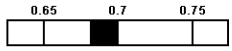
	Calibrated (cps)	
	2161	3088
Ratio	0.700	

Neutron Calibration Tolerances MDN-A.B 66

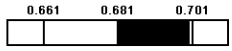
Ratio 32.277



Base Check 0.681



Field Check 0.700



Neutron Constants MDN-A.B 66

Last Edited on 09-NOV-2016,05:46

Neutron Source Id	P0204NN	
Neutron Jig Number	NJ5736	
Air Hole Processing	Legacy	
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 28-AUG-2016 18:58
Field Check on 08-NOV-2016 22:14

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	963.3	126.8
Base Check		281.3

Field Check	281.6

FE Calibration Tolerances MFE-B.J 352

Reference 2	963.3	-3% 980.0 +3%	ohm
Base Check	281.3	-2% 277.0 +2%	ohm-m
Field Check	281.6	-2% 281.3 +2%	ohm-m

FE Constants MFE-B.J 352

Last Edited on 09-NOV-2016,05:46

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Borehole Correction Constants		
Sonde Position	0.5	inches
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	inches
Rm Source	Global Value: Temperature Corrected	
Temp. for Rm Corr.	MCG External Temperature	

Sonic Constants MSS-A.A 55

Last Edited on 09-NOV-2016,05:46

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

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

Induction Calibration MAI-A.A 111

Base Calibration on 05-AUG-2014,09:34
Field Check on 08-NOV-2016 22:13

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.6	473.6	9.3	966.2
2	6.4	385.9	7.6	821.4
3	3.2	264.0	5.2	566.0
4	2.1	135.5	2.6	279.2

Array Temperature 23.0 Deg F

Test Loop Calibration Verified 22-MAY-2016,17:59

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	12.1	3873.0	10.7	3868.1
2	29.8	3528.1	28.6	3523.9
3	29.1	3021.3	28.1	3017.8
4	19.1	2058.5	18.5	2056.2
Deep	17.7	1962.1	17.1	1959.8
Medium	43.1	3976.4	41.8	3971.7
Shallow	44.4	5232.7	42.6	5226.4
Array Temperature	65.8		62.1	Deg F

Induction Calibration Tolerances MAI-A.A 111

Low Conductivity 1	17.6	13.0 17.0 21.0	mmho/m	High Conductivity 1	473.6	430.0 475.0 520.0 mmho/m
Low Conductivity 2	6.4	4.5 6.0 7.5	mmho/m	High Conductivity 2	385.9	345.0 385.0 425.0 mmho/m
Low Conductivity 3	3.2	1.0 3.5 6.0	mmho/m	High Conductivity 3	264.0	240.0 260.0 280.0 mmho/m
Low Conductivity 4	2.1	0.0 2.0 4.0	mmho/m	High Conductivity 4	135.5	120.0 135.0 150.0 mmho/m
Background Vx 1	0.0	-110.0 -32.5 45.0	mmho/m	Phase Check Loop 1	0.0	-2.0 0.0 2.0 %
Background Vx 2	0.0	-35.0 20.0 75.0	mmho/m	Phase Check Loop 2	0.0	-2.0 0.0 2.0 %
Background Vx 3	0.0	-60.0 2.5 65.0	mmho/m	Phase Check Loop 3	0.0	-2.0 0.0 2.0 %
Background Vx 4	0.0	-50.0 -17.5 15.0	mmho/m	Phase Check Loop 4	0.0	-2.0 0.0 2.0 %

Induction Constants MAI-A.A 111

Last Edited on 09-NOV-2016,05:45

Induction Model	RtAP-WBM	
Borehole Correction Constants		
Tool Centred	No	
Hole Size Source	Density Caliper	
Hole Size Constant Value	N/A	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
Rm Source	Global Value: Temperature Corrected	
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

Symmetrised Receiver Gains

Receiver 1	1.00
Receiver 2	1.00
Receiver 3	1.00
Receiver 4	1.00

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	

High Resolution Temperature Calibration MAI-A.A 111

Field Calibration on 24-NOV-2014,10:23

	Measured	Calibrated(Deg F)
Lower	10.00	10.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 111

Last Edited on 26-JUN-2014,15:06

Pre-filter Length	11

Photo Density Calibration MPD-B 104

Base Calibration on 28-AUG-2016 20:24
Field Check on 08-NOV-2016 22:23

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1145	1339		
Reference 1	49665	24007	59556	30836
Reference 2	20032	2442	24941	2541

Field Check at Base

1144.9	1338.6

Field Check

1139.6	1323.0

PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	211	1021		
Reference 1	20773	49486	0.424	0.371
Reference 2	5807	19899	0.296	0.272

Field Check at Base

211.3	1021.2

Field Check

207.9	1017.4

Photo Density Calibration Tolerances MPD-B 104

Near Density Ratio 2.57 (-5% 2.52 +5%)

Far Density Ratio 20.54 (-5% 21.00 +5%)

PE Calibration 0.119 (0.089 0.110 0.131)

Near Den. Field Check	1139.6	-3% 1144.9 +3%	Far Den. Field Check	1323.0	-3% 1338.6 +3%
PE WS Field Check	207.9	-6% 211.3 +6%	PE WH Field Check	1017.4	-6% 1021.2 +6%

Density Constants MPD-B 104

Last Edited on 09-NOV-2016,05:46

Density Source Id	P50557B	
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)
2.71	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 104

Base Calibration on 28-AUG-2016 19:51
Field Calibration on 08-NOV-2016 22:17

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	13646	3.99
2	22688	5.98
3	31297	7.97
4	39521	9.86
5	48608	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.01	7.97

Caliper Calibration Tolerances MPD-B 104

Short Arm Field Cal. 8.01 (7.77 7.97 8.17) in

DOWNHOLE EQUIPMENT

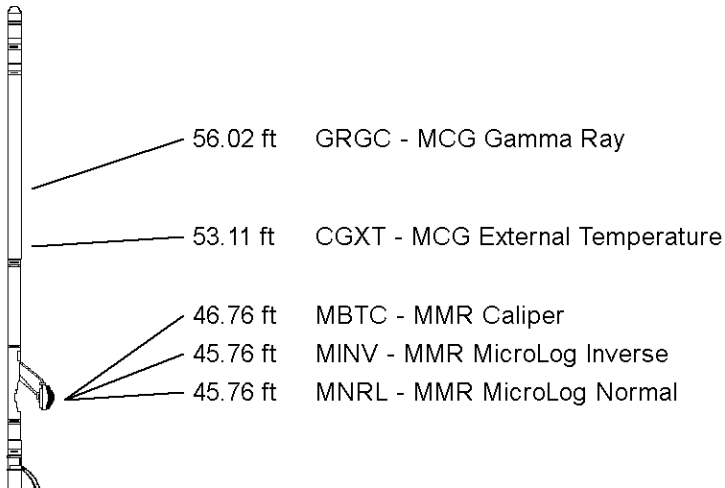
C:\Minimus 15.03.5939\Logs\Grand Mesa Buzz's Boat #14\Grand Mesa Buzz's Boat #14_001.dta

Cablehead, 11 pin
CBH-CA 176 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-C 123 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity
MMR-C.A 247 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron
MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in



MDN-A.B 66 LG: 5.04 ft WT: 30.7 lb OD: 2.244 in

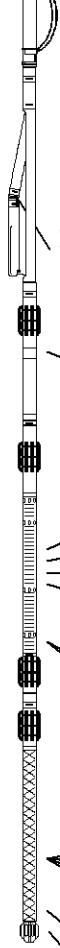
Compact Density/Caliper
MPD-B 104 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

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

Compact Sonic
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 111 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb



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
16.96 ft	TR11 - 4' Transit Time
16.46 ft	TR21 - 3' Transit Time
15.95 ft	TR12 - 6' Transit Time
15.46 ft	TR22 - 5' Transit Time
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	CTAO - Array Ind. One Cond Ct
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	GRAND MESA OPERATING COMPANY
WELL	BUZZ'S BOAT #14
FIELD	WILDCAT
PROVINCE/COUNTY	WASHINGTON
COUNTRY/STATE	U.S.A. / COLORADO

Elevation Kelly Bushing	5171.00	feet	First Reading	8247.00	feet
Elevation Drill Floor	5169.00	feet	Depth Driller	8254.00	feet
Elevation Ground Level	5152.00	feet	Depth Logger	8260.00	feet

Weatherford®

COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME