



Weatherford

**COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME**

COMPANY		GRAND MESA OPERATING COMPANY			
WELL		FULSOM 1-34			
FIELD		WILDCAT			
PROVINCE/COUNTY		MARION			
COUNTRY/STATE		U.S.A. / KANSAS			
LOCATION		664' FNL & 1980' FWL			
SEC 34	TWP 22S	RGE 05E	Other Services		MAI/MFE
Latitude	38.098411		MPD/MDN		
Longitude	-96.870502		MML		
API Number	15-115-21495				
Permanent Datum GL, Elevation 1487 feet					
Log Measured From KB					
Drilling Measured From KB @ 12 feet			Elevations: KB 1499.00 DF 1497.00 GL 1487.00		
Date	10-JUL-2015				
Run Number	ONE				
Service Order	7577-123648841				
Depth Driller	2570.00		feet		
Depth Logger	2571.00		feet		
First Reading	2558.00		feet		
Last Reading	223.00		feet		
Casing Driller	222.00		feet		
Casing Logger	223.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	WBM				
Density / Viscosity	9.30	lb/USg	50.00	CP	
PH / Fluid Loss	9.00		0.00	ml/30Min	
Sample Source	MUD TANK				
Rm @ Measured Temp	2.30 @ 75.0		ohm-m		
Rmf @ Measured Temp	1.84 @ 75.0		ohm-m		
Rmc @ Measured Temp	2.75 @ 75.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	1.85 @ 94.0		ohm-m		
Time Since Circulation	4 HOURS				
Max Recorded Temp	94.00		deg F		
Equipment / Base	13244		LIB		
Recorded By	JEFFREY RANDLE				
Witnessed By	STEVE CARL				
JOB #	LB15-099				

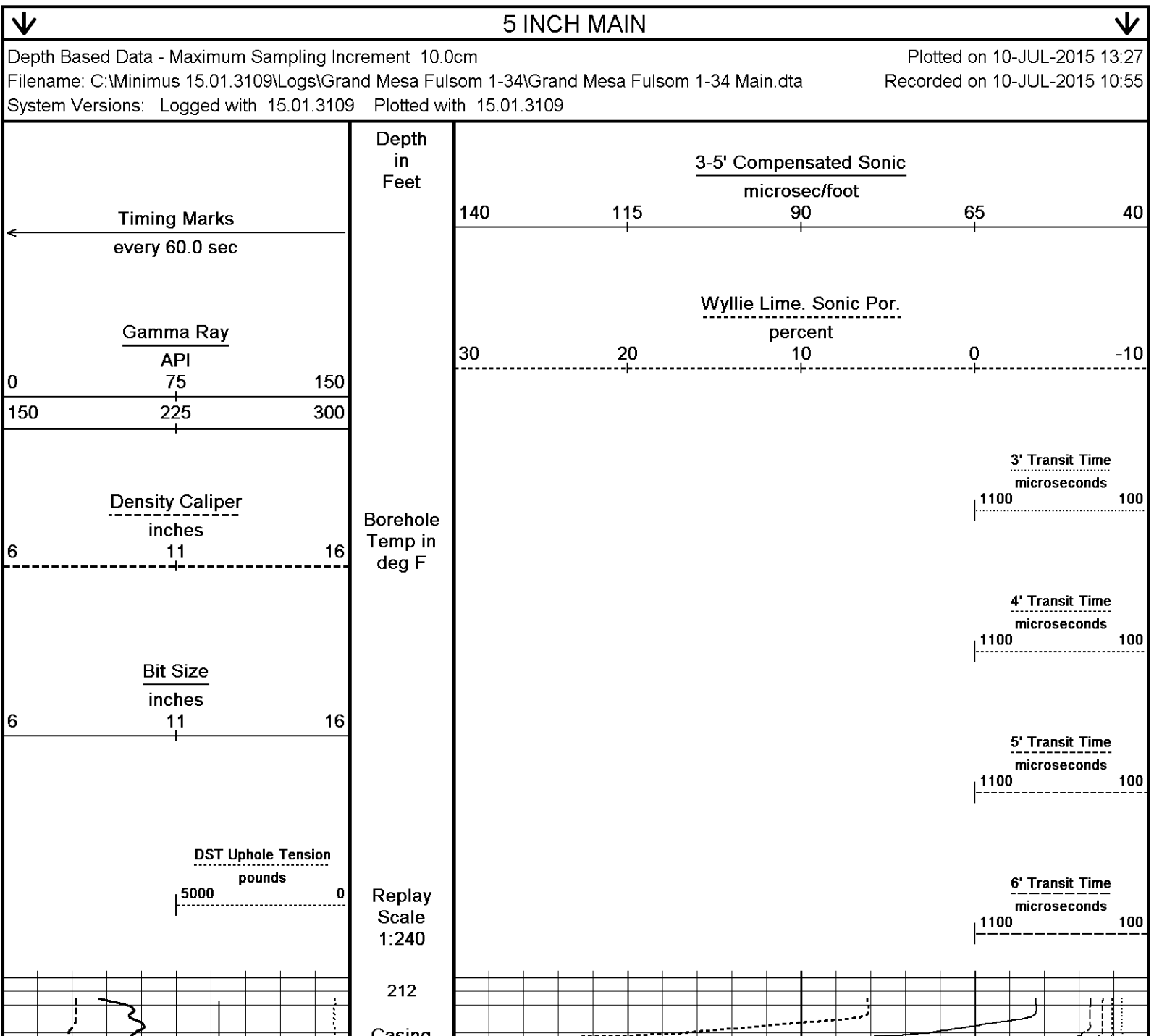
BOREHOLE RECORD					Last Edited: 10-JUL-2015 10:21
Bit Size inches		Depth From feet		Depth To feet	
12.250		0.00		228.00	
7.875		228.00		2570.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	222.00	24.00	

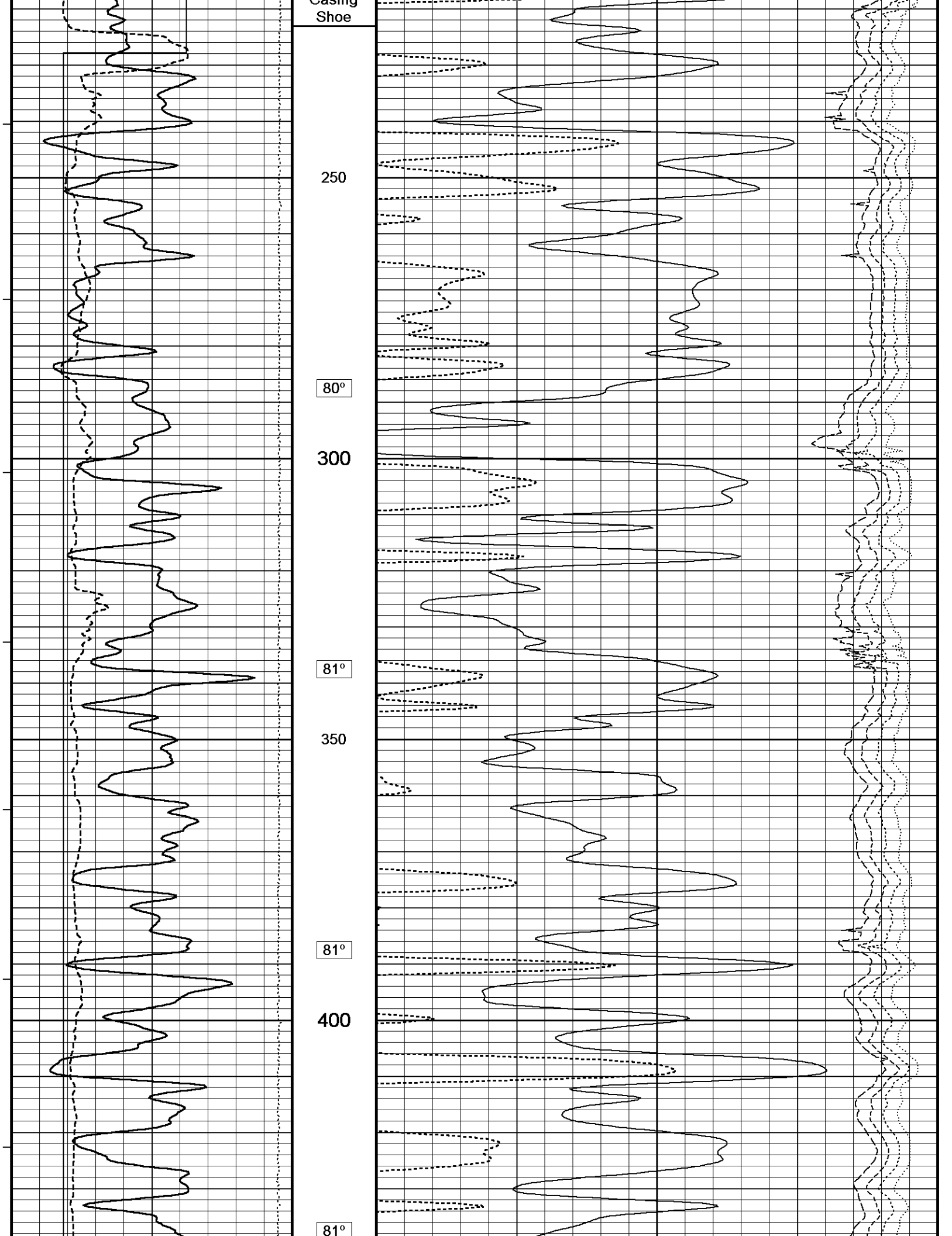
REMARKS
- SOFTWARE ISSUE: WLS 15.01.3109.
- RUN ONE: MCG, MML, MDN, MPD, MFE, MSS, MAI RUN IN COMBINATION. - HARDWARE: DUAL BOWSPRING USED ON MDN. 0.5 INCH STANDOFF USED ON MFE. TWO 0.5 INCH STANDOFFS USED ON MSS. 0.5 INCH STANDOFF USED ON MAI.
- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.
- 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: 809 CU.FT.
- ANNULAR HOLE VOLUME WITH 4.5 INCH PRODUCTION CASING FROM TD TO SURFACE CASING: 552 CU.FT.

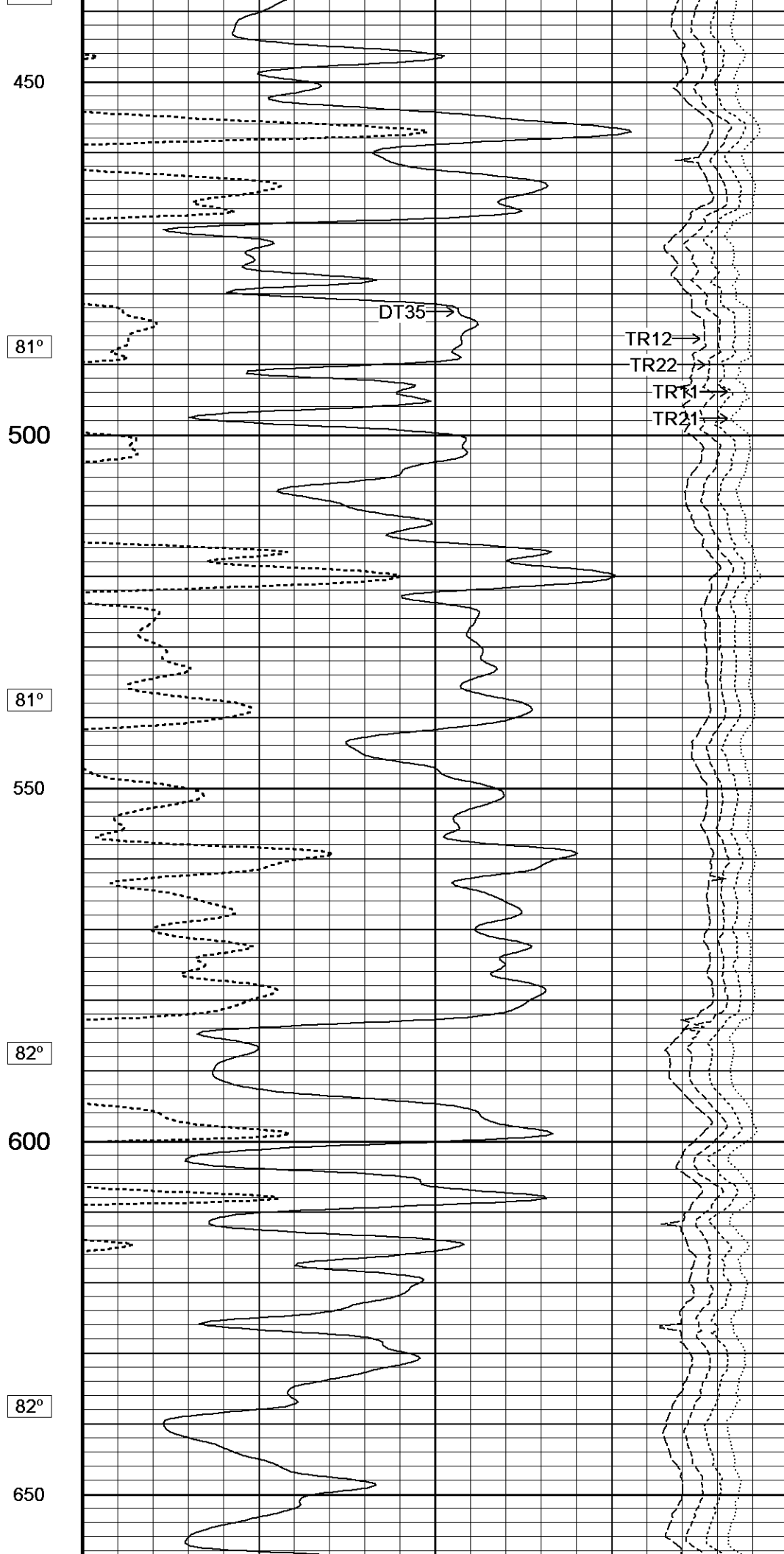
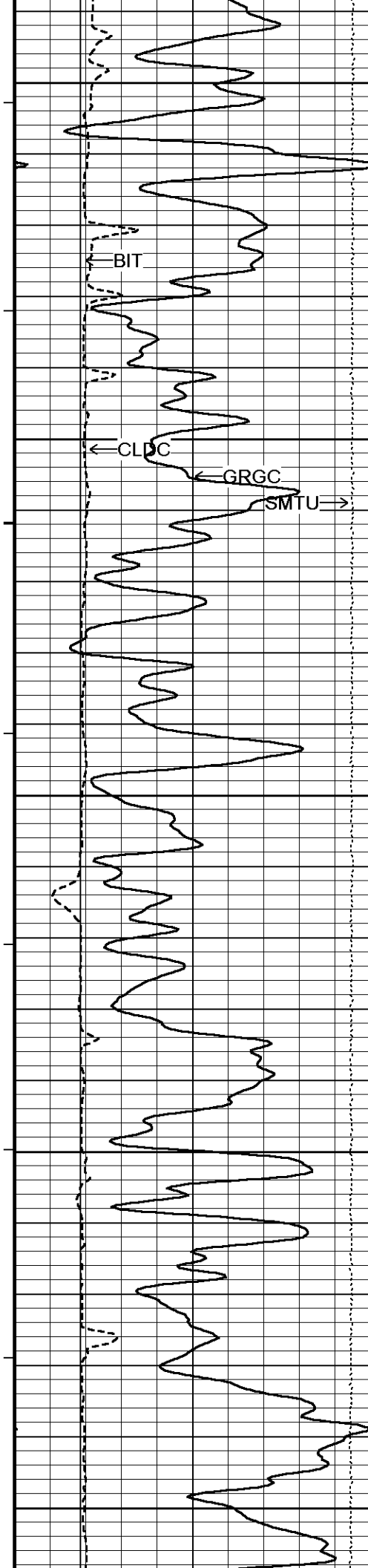
ANNULAR HOLE VOLUME WITH 5 INCH MAIN CASING FROM TD TO CASING CASE CASING: 552 CC.F.T.

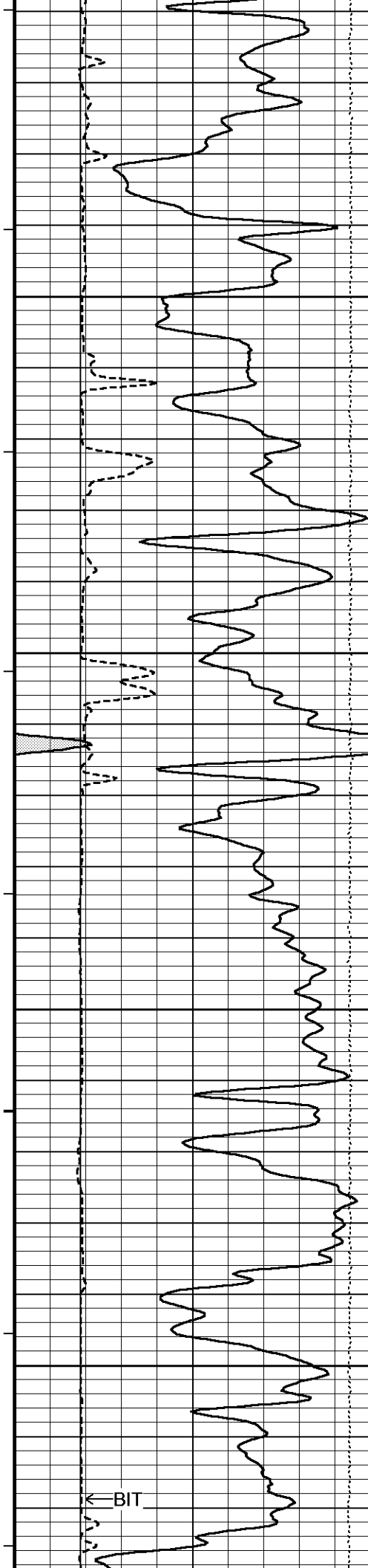
- RIG: SUMMIT DRILLING #1.
- ENGINEER: JEFFREY RANDLE.
- OPERATOR: NICHOLAS ADAME.

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.









83°

700

83°

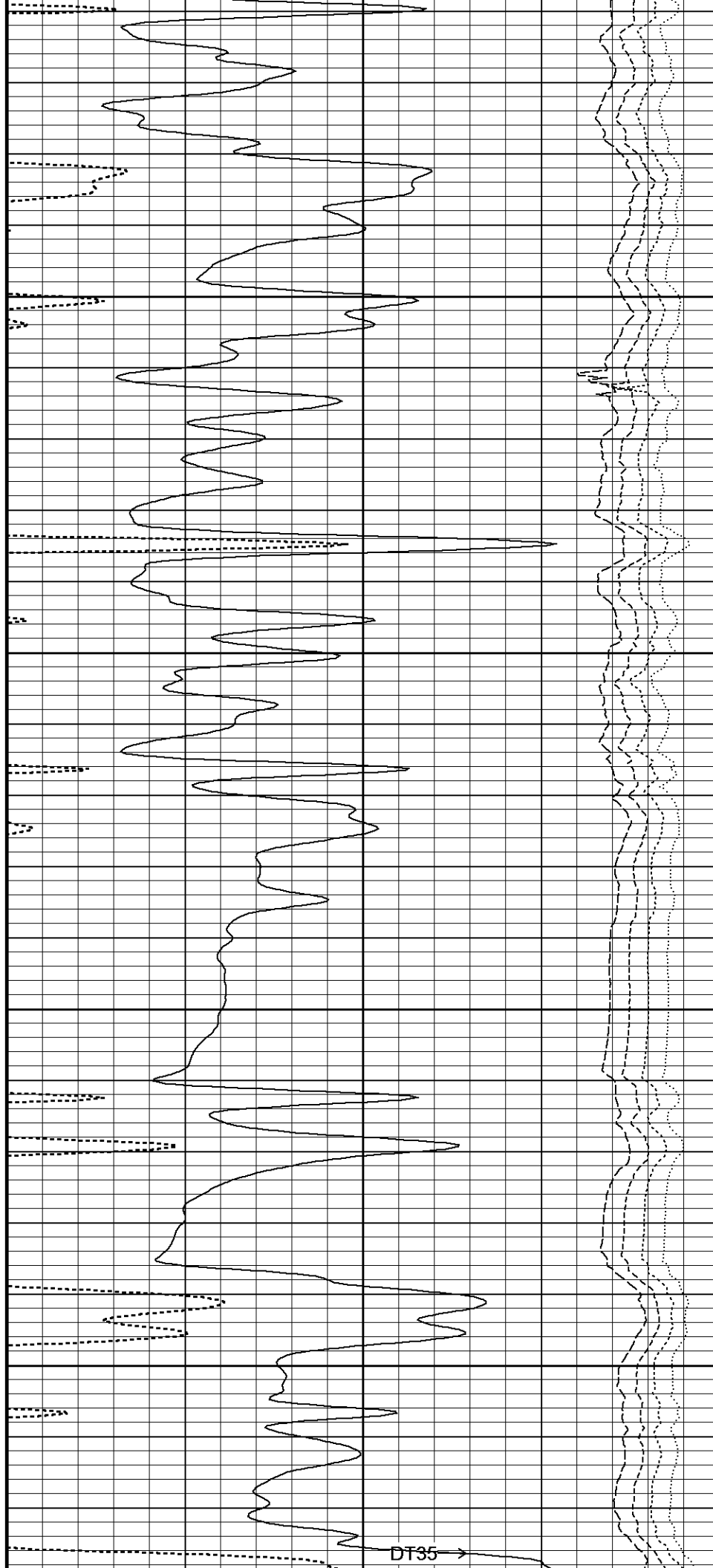
750

83°

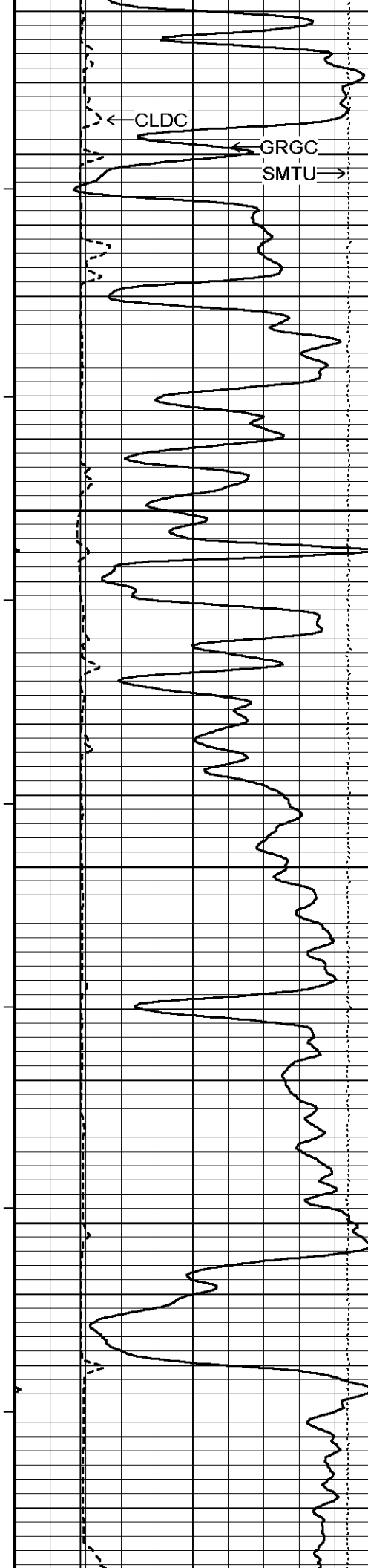
800

84°

850



DT35 →



84°

900

84°

950

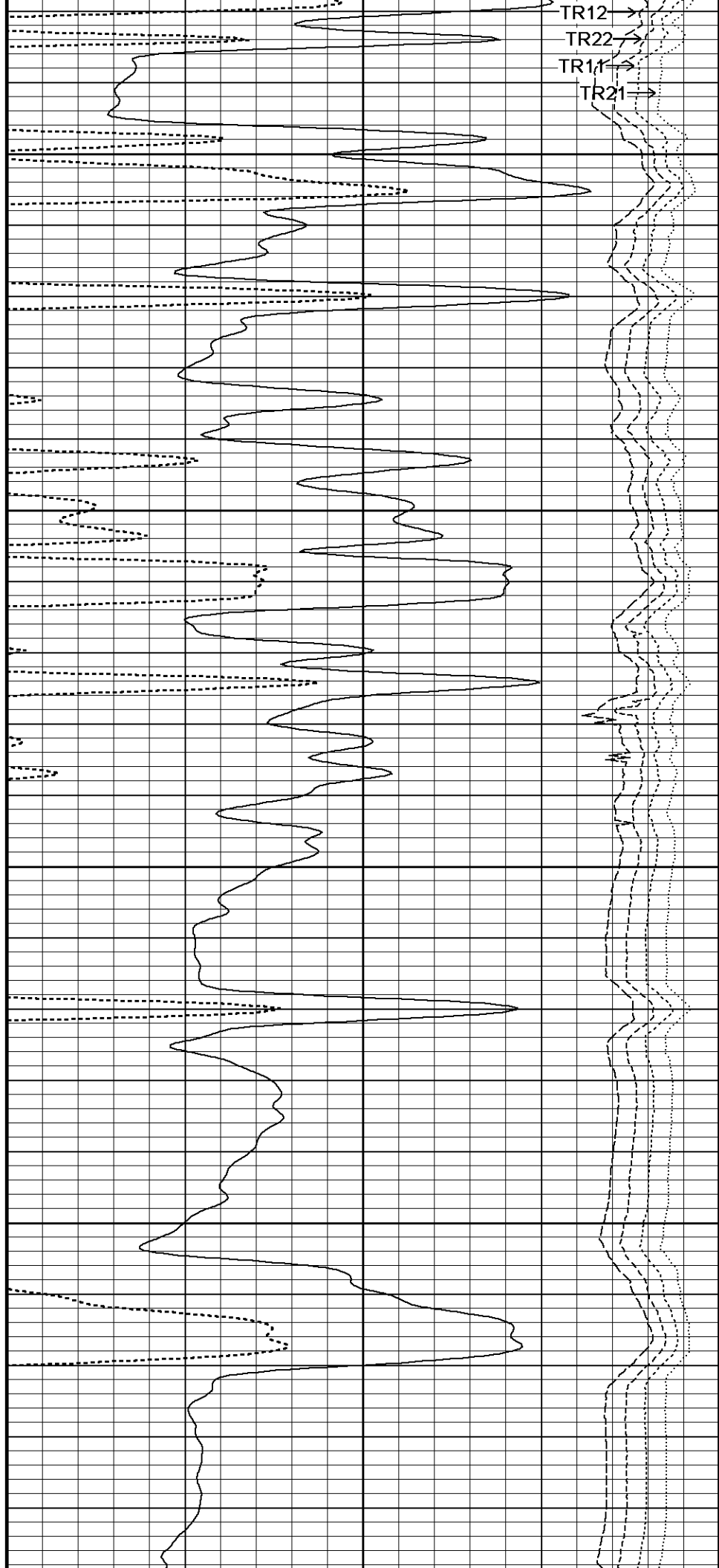
84°

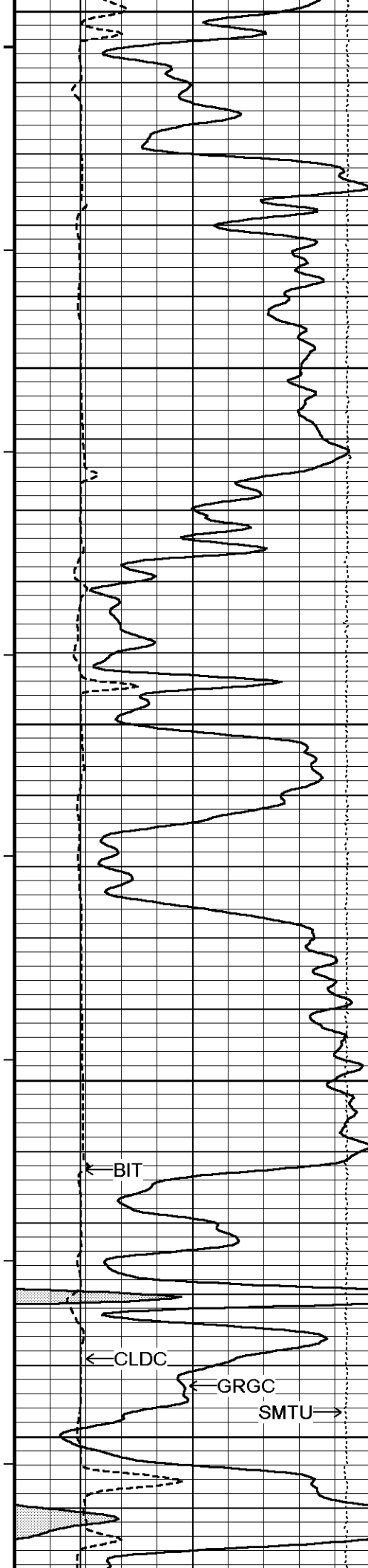
1000

85°

1050

85°





1100

86°

1150

86°

1200

86°

1250

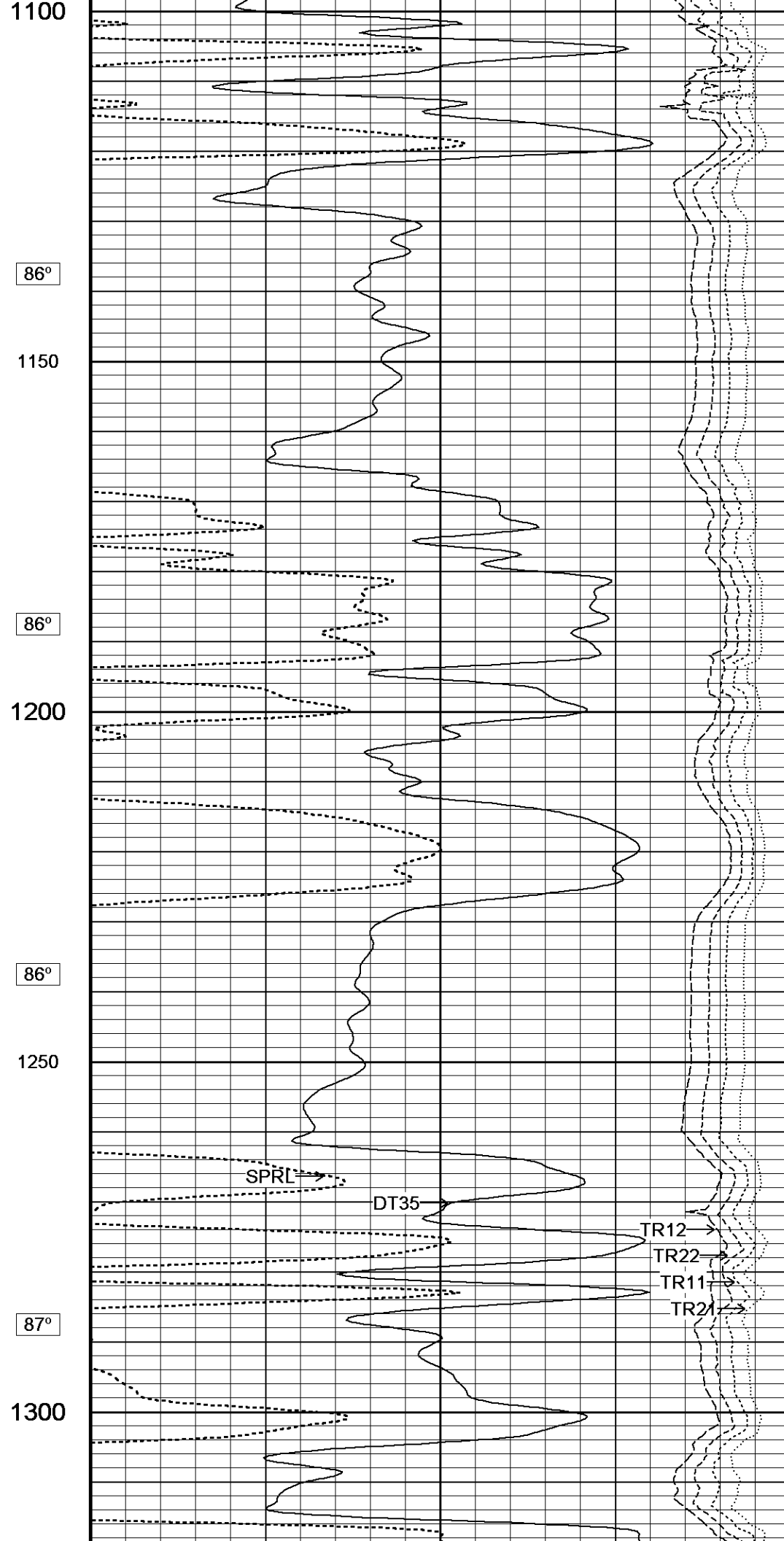
BIT

CLDC

GRGC

SMTU

1300



SPRL

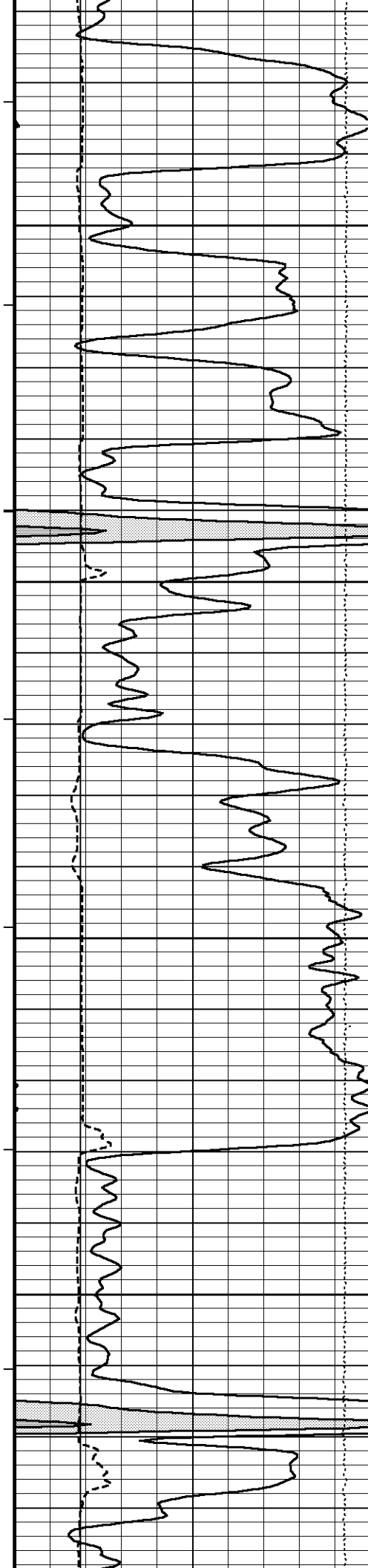
DT35

TR12

TR22

TR11

TR21



87°

1350

87°

1400

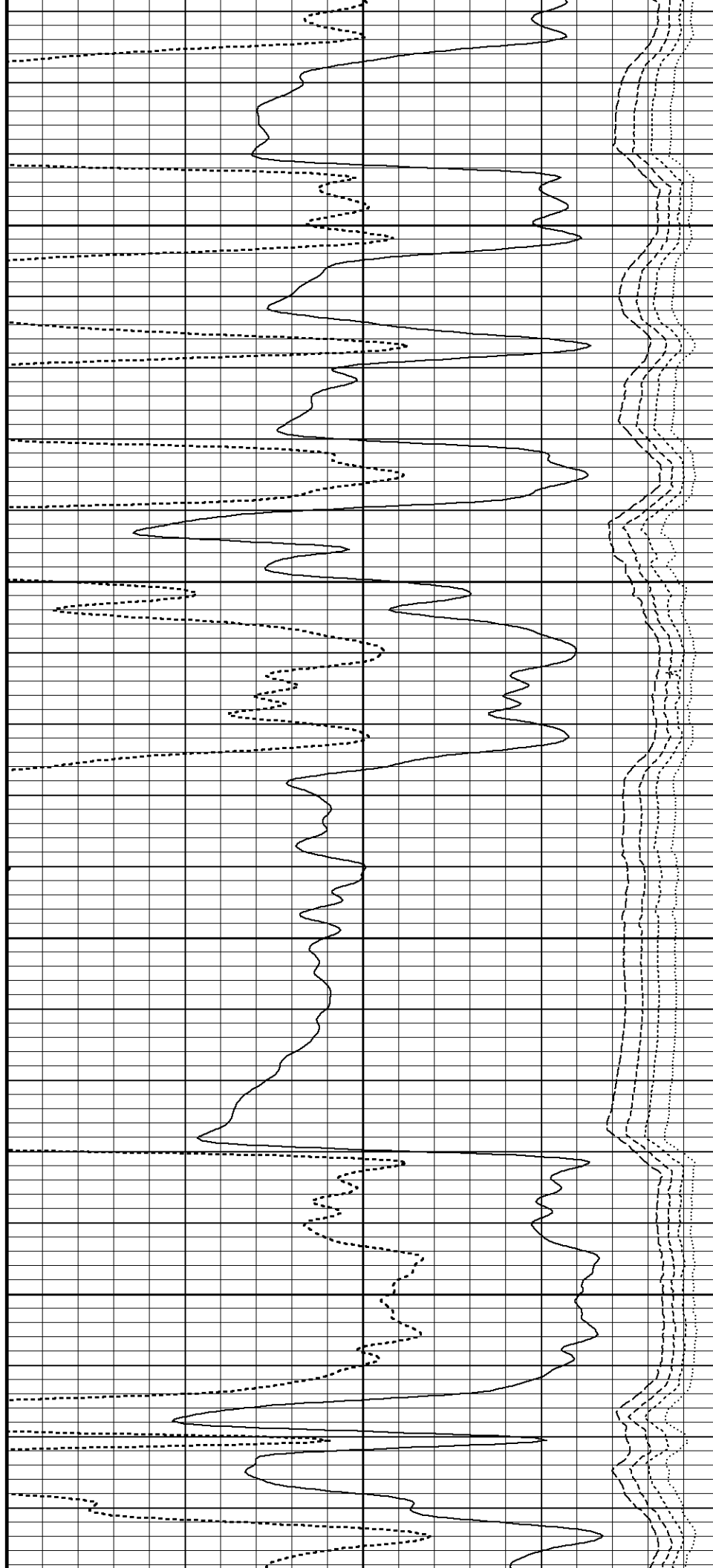
88°

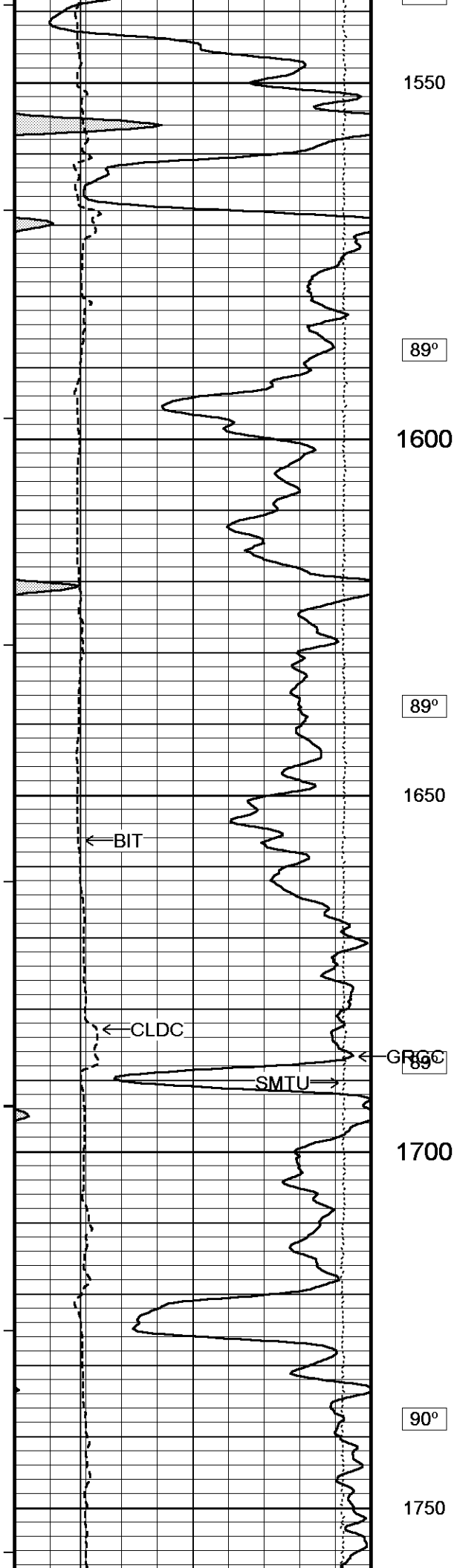
1450

88°

1500

88°





1550

89°

1600

89°

1650

DT35

TR12

TR22

TR11

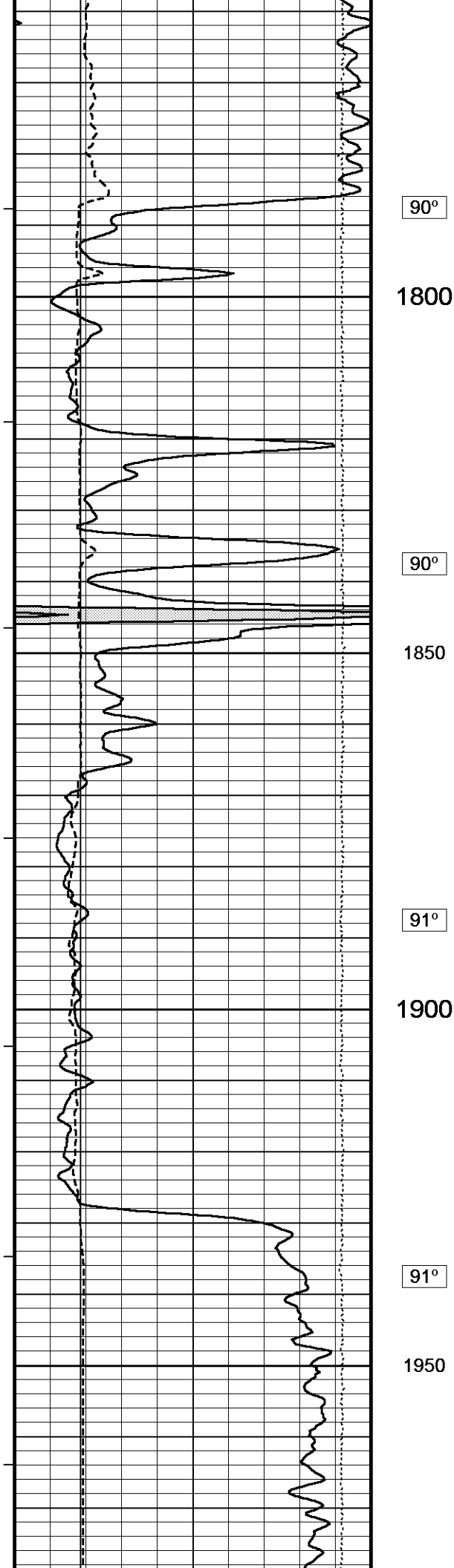
TR21

89°

1700

90°

1750



90°

1800

90°

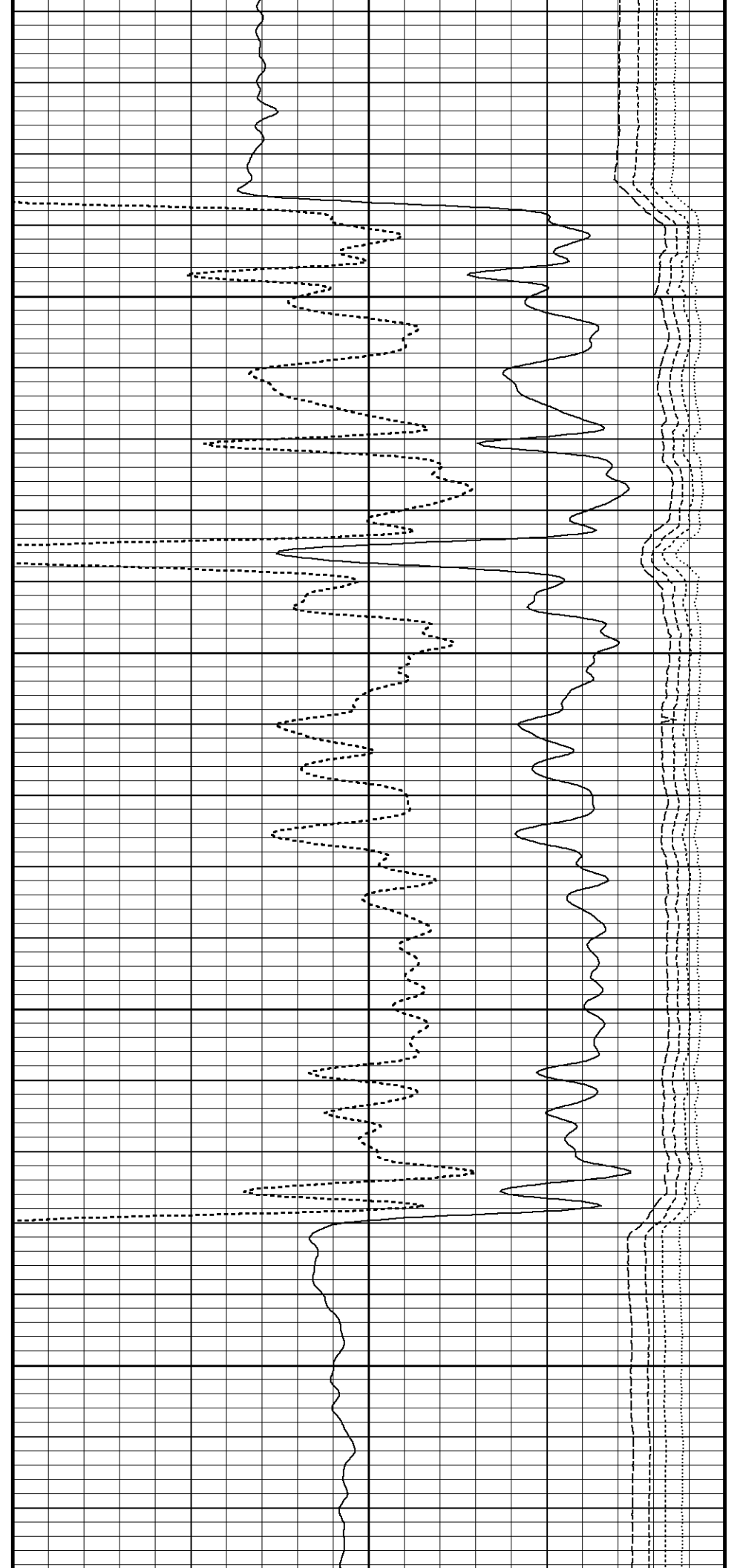
1850

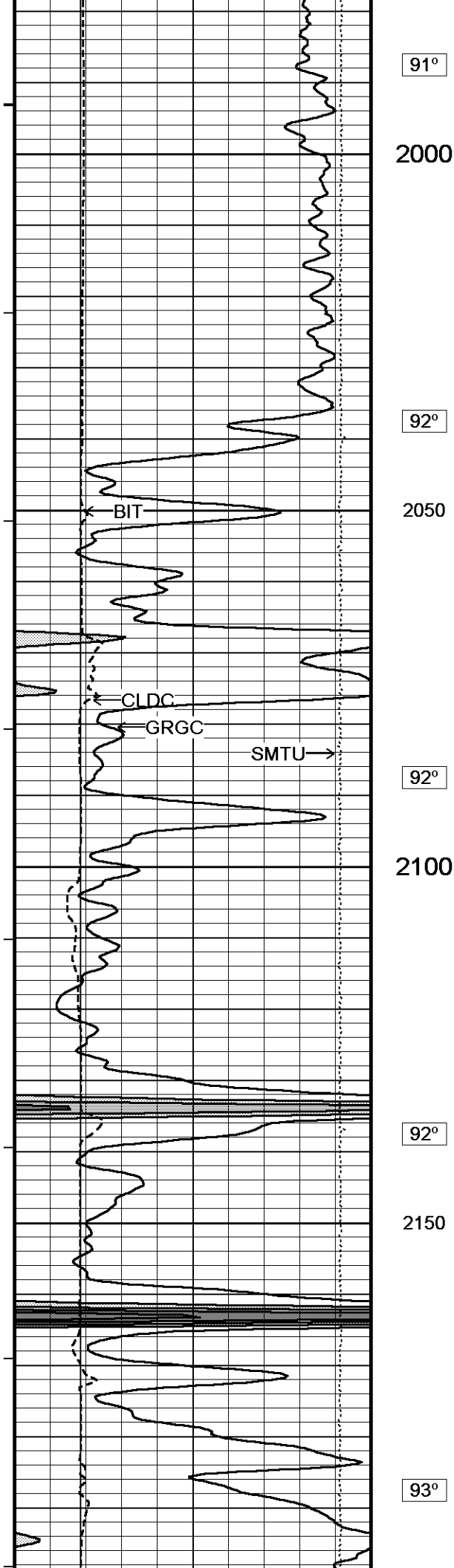
91°

1900

91°

1950





91°

2000

92°

2050

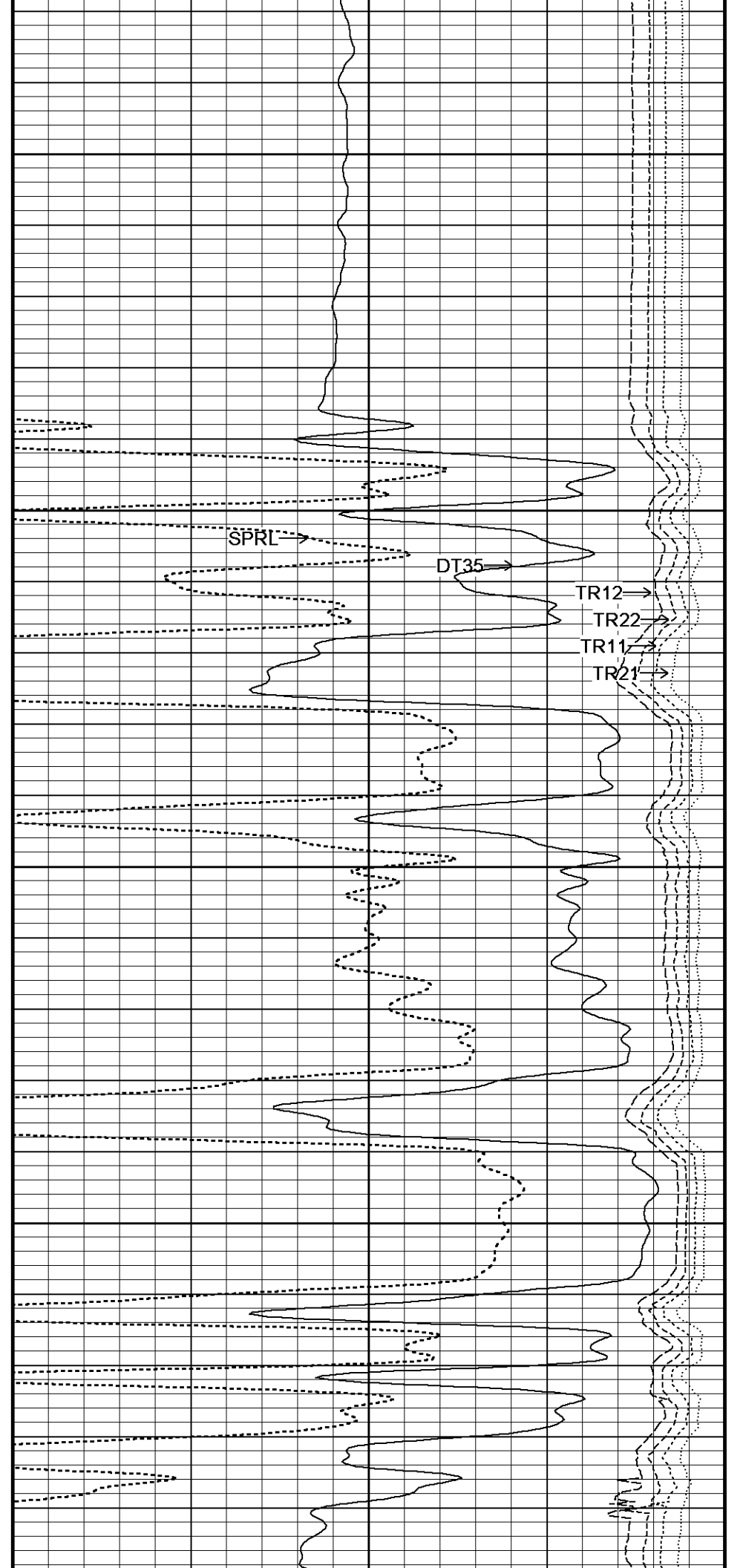
92°

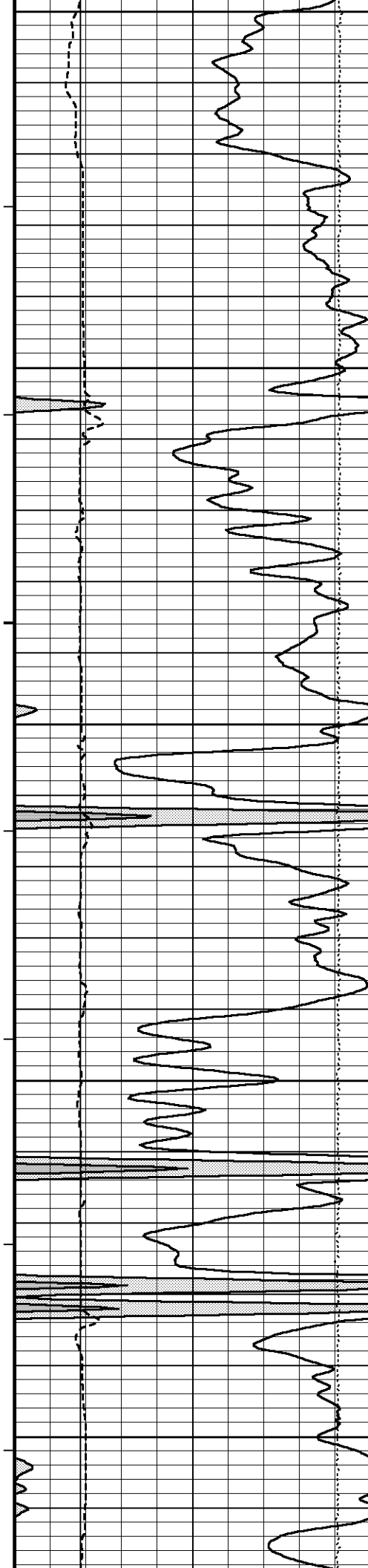
2100

92°

2150

93°





2200

93°

2250

93°

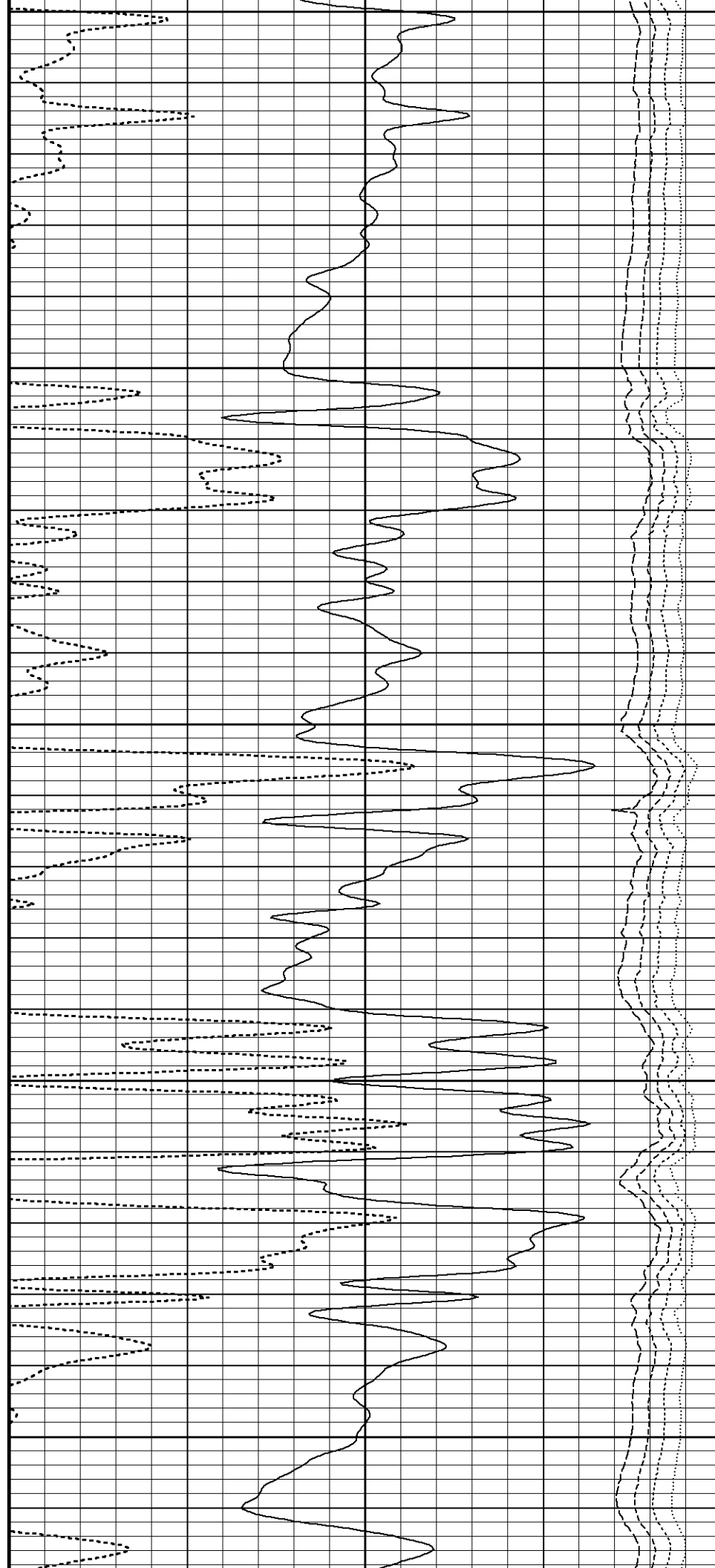
2300

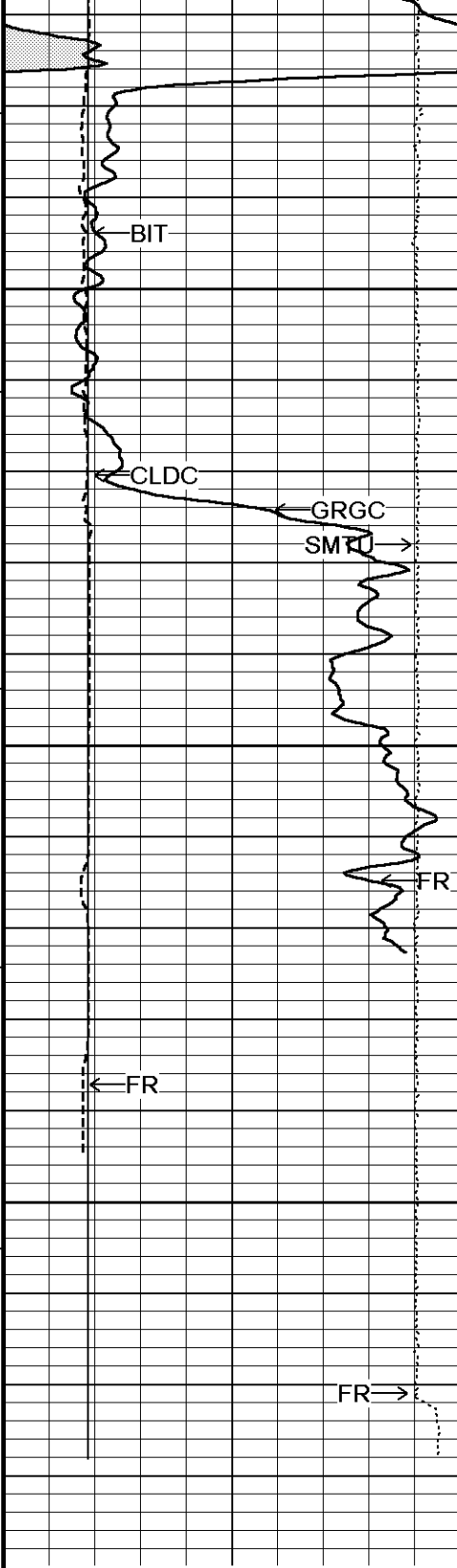
94°

2350

94°

2400





94°

2450

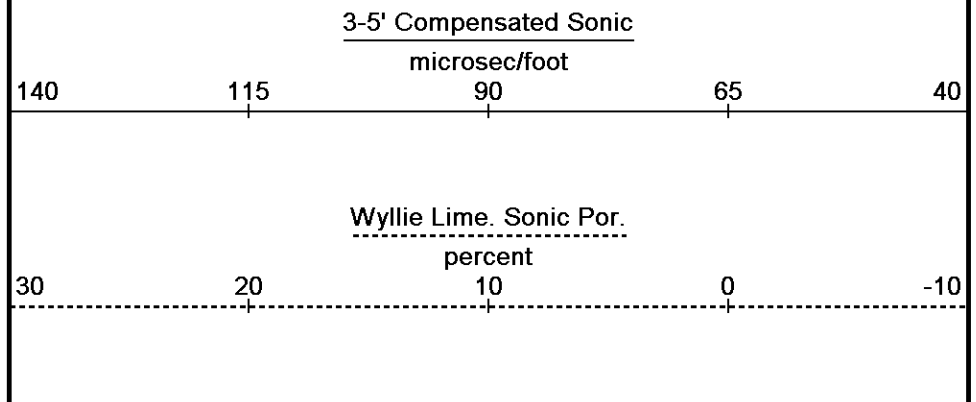
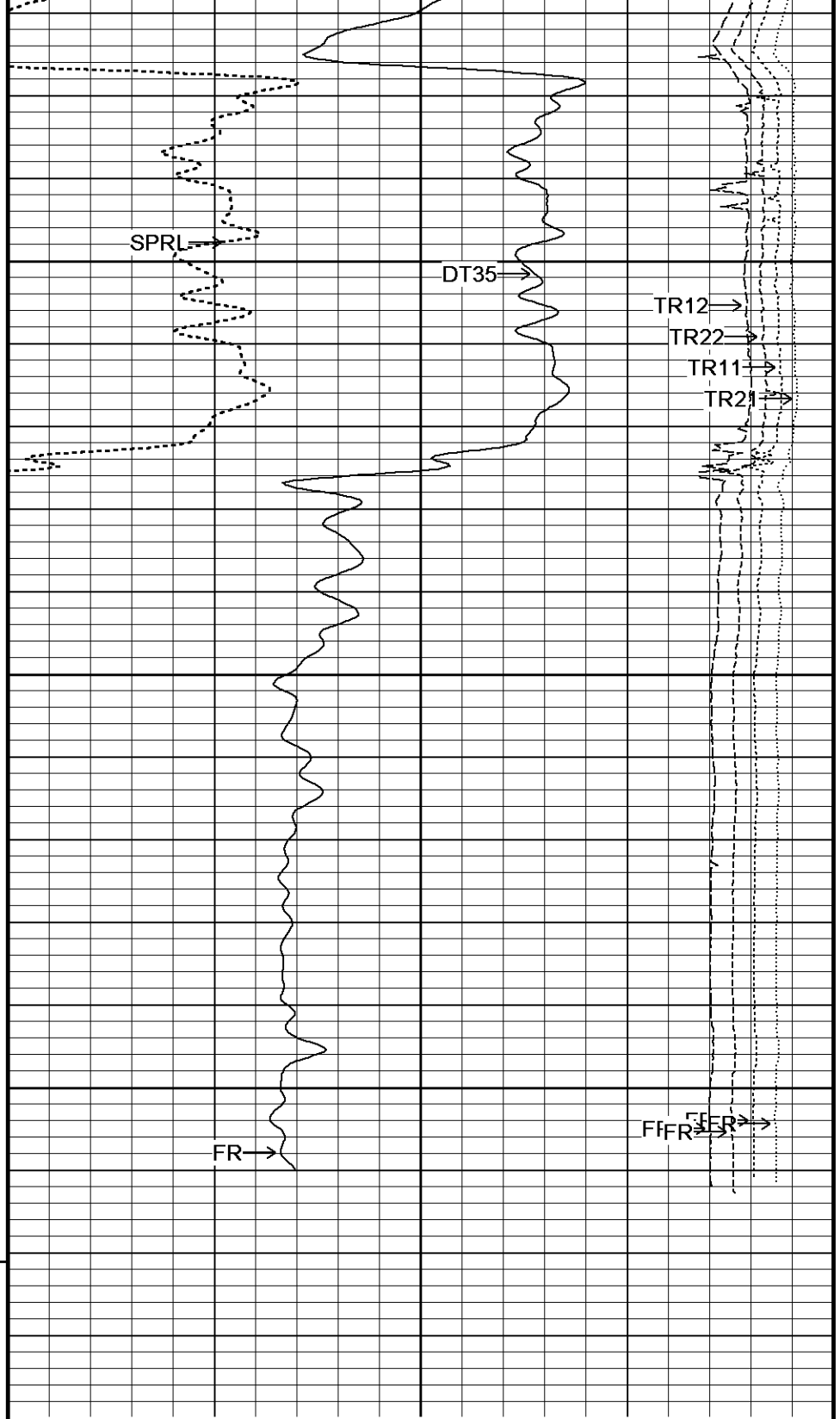
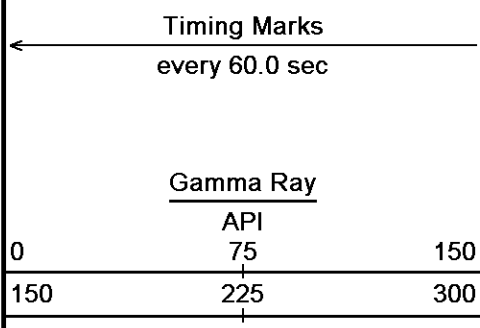
94°

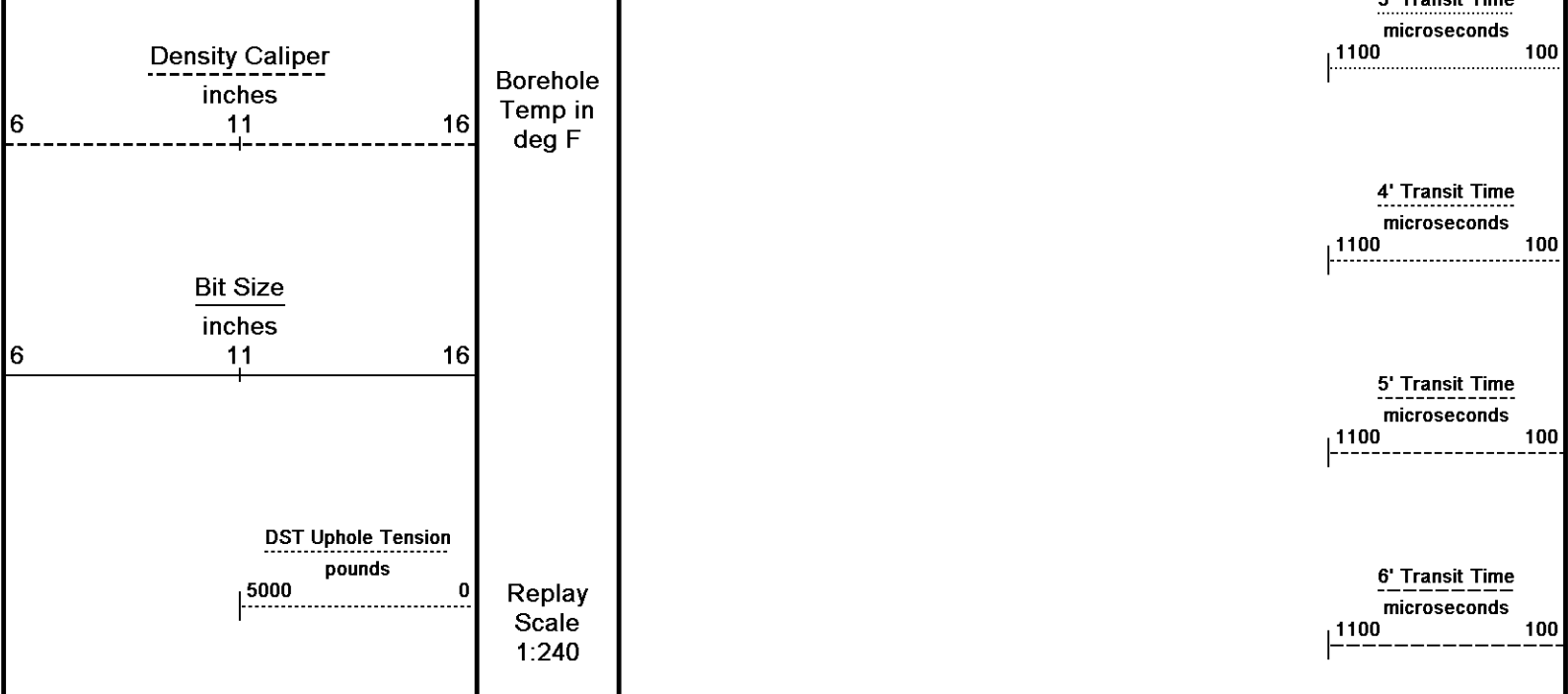
2500

2550

TD

Depth
in
Feet





Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 15.01.3109\Logs\Grand Mesa Fulsom 1-34\Grand Mesa Fulsom 1-34 Main.dta
System Versions: Logged with 15.01.3109 Plotted with 15.01.3109

Plotted on 10-JUL-2015 13:27
Recorded on 10-JUL-2015 10:55

↑

5 INCH MAIN

↑

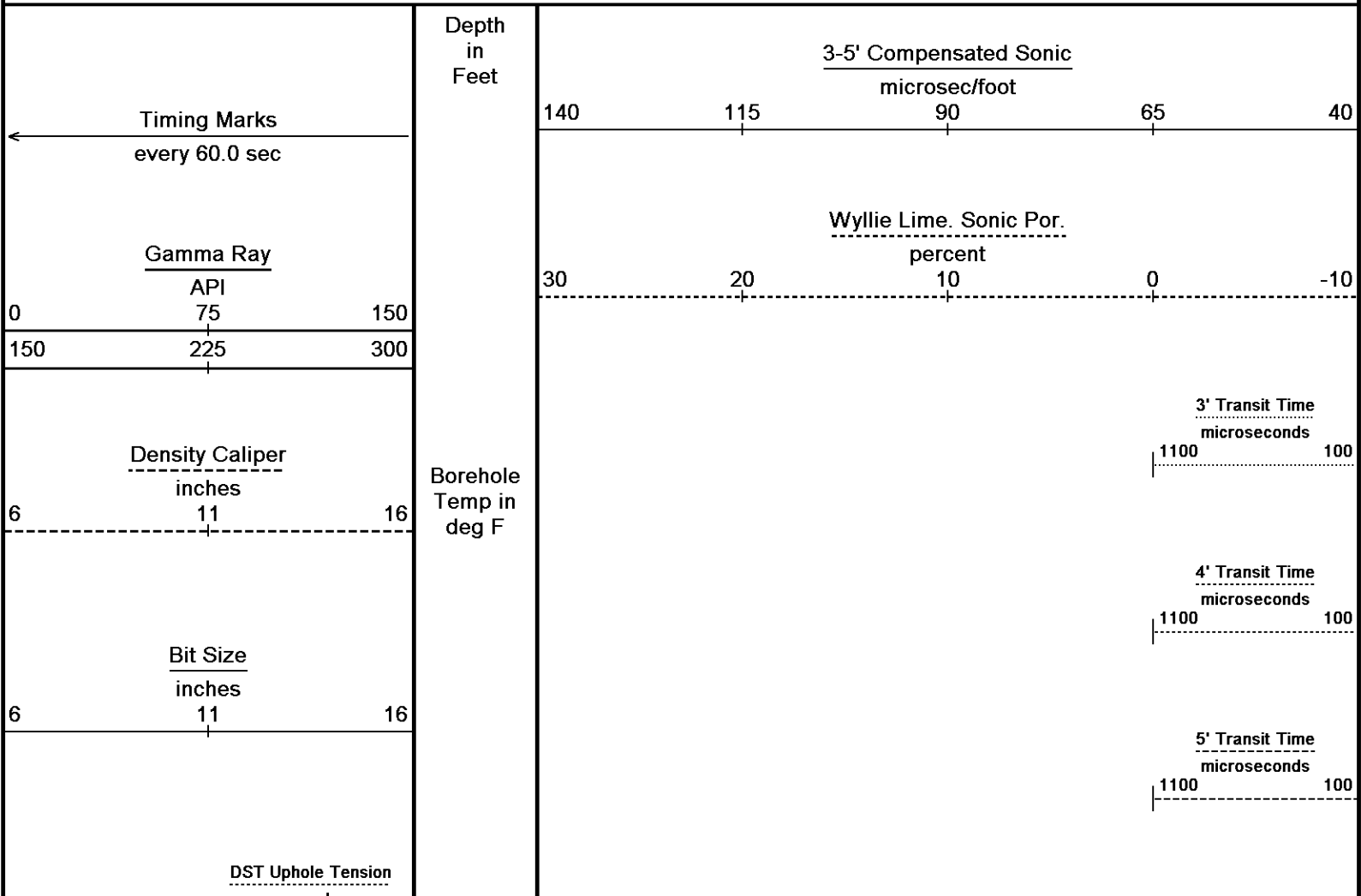
↓

REPEAT SECTION

↓

Depth Based Data - Maximum Sampling Increment 10.0cm
Filename: C:\Minimus 15.01.3109\Logs\Grand Mesa Fulsom 1-34\Grand Mesa Fulsom 1-34 Repeat.dta
System Versions: Logged with 15.01.3109 Plotted with 15.01.3109

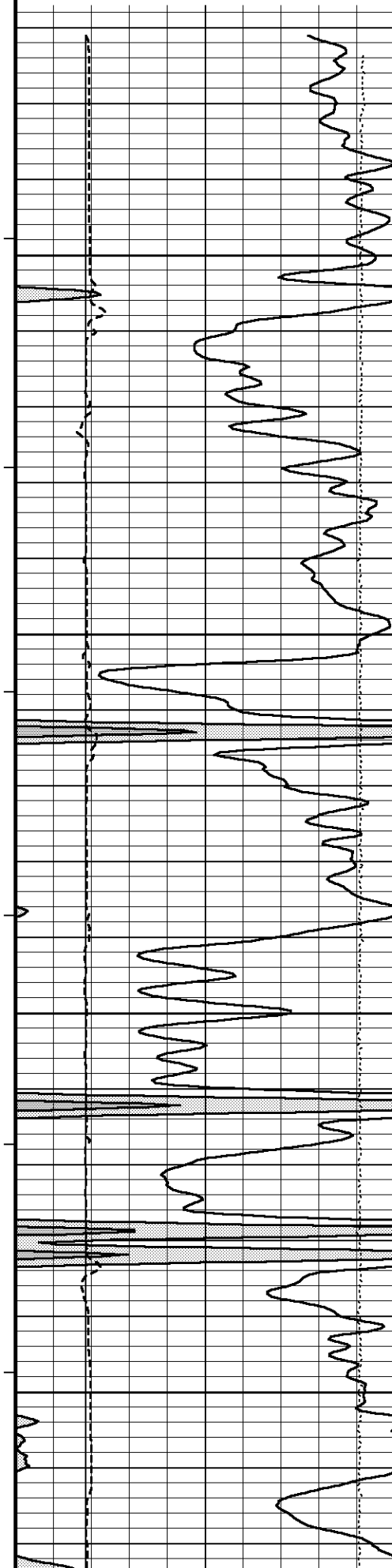
Plotted on 10-JUL-2015 13:27
Recorded on 10-JUL-2015 10:36



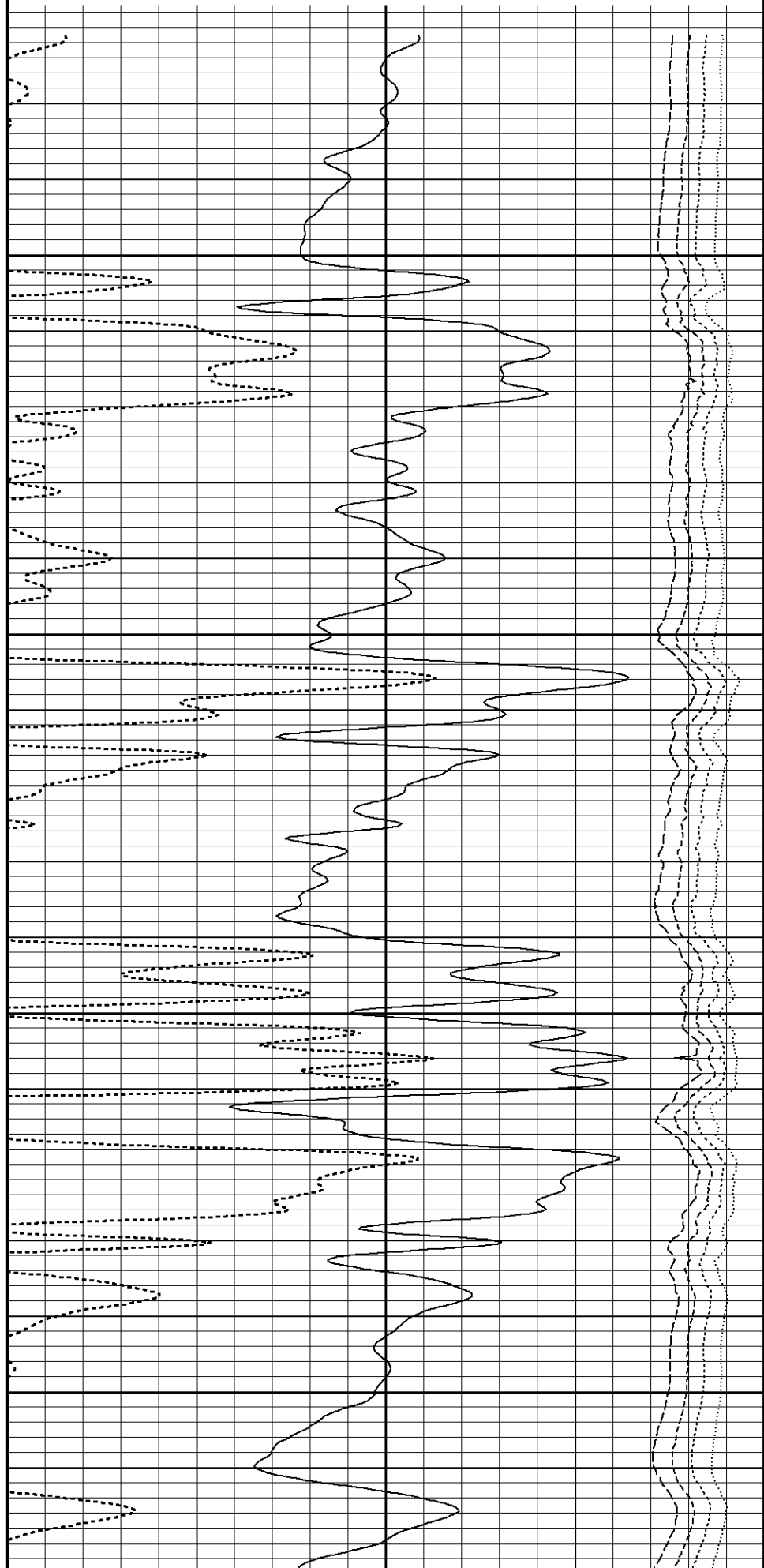
5000 pounds 0

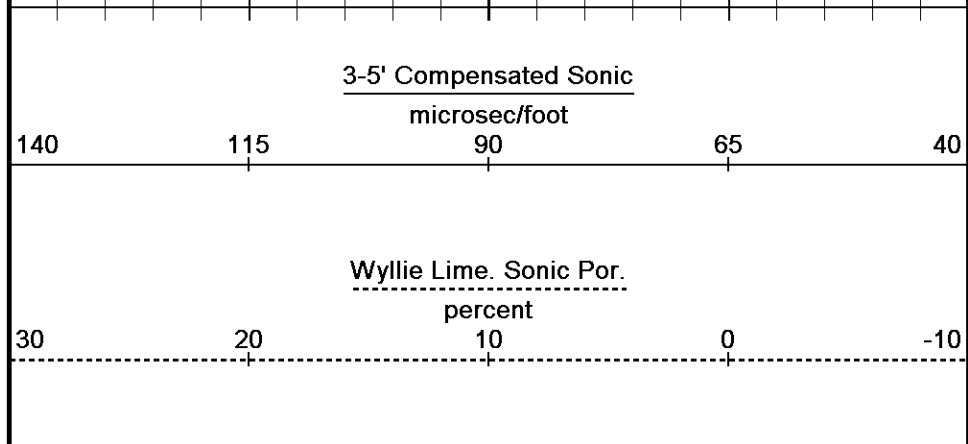
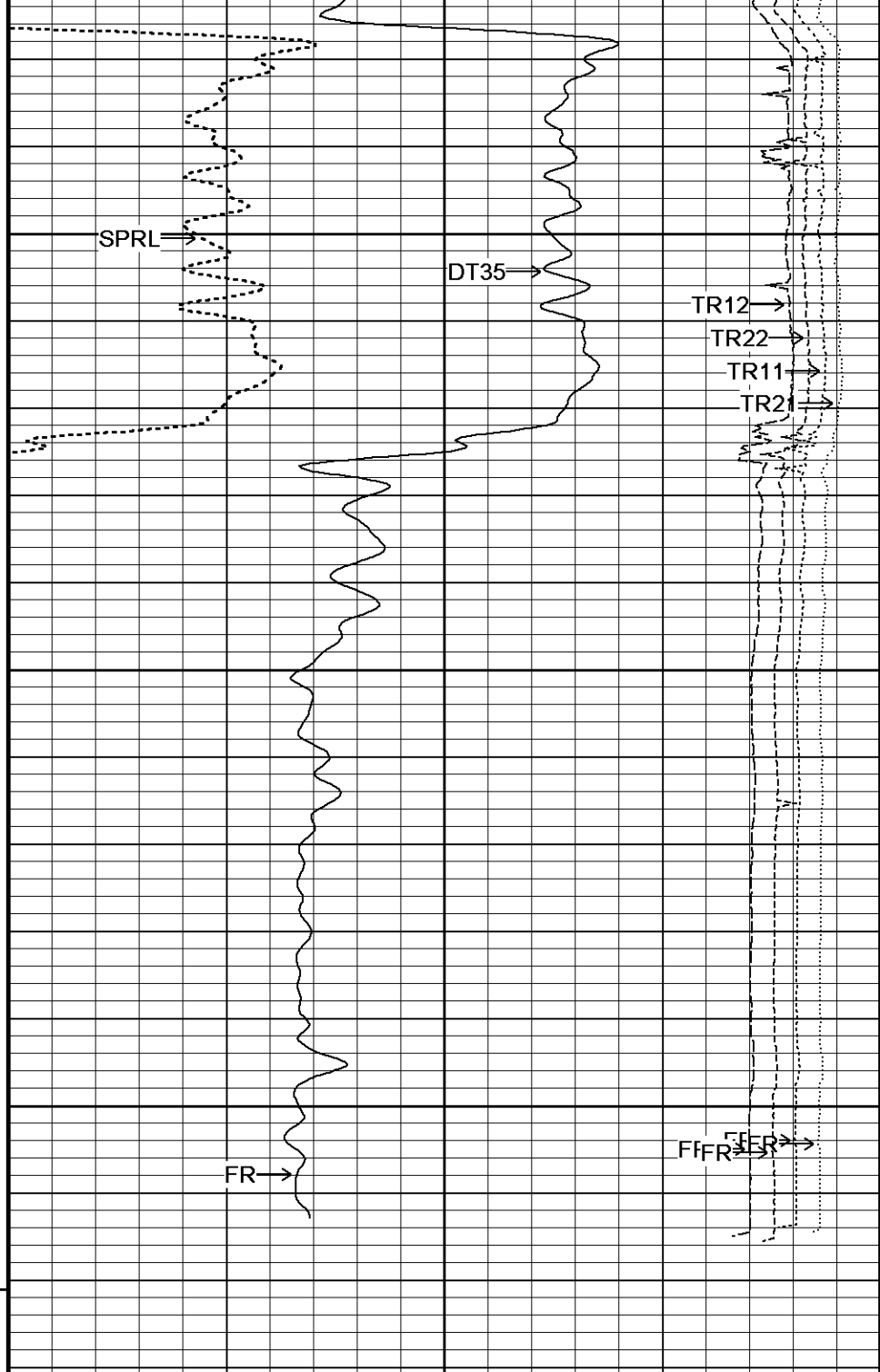
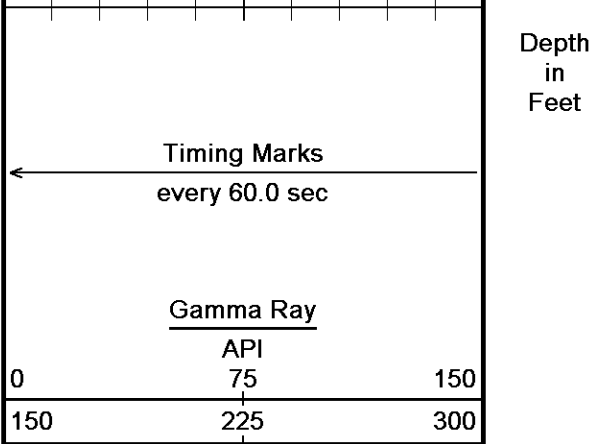
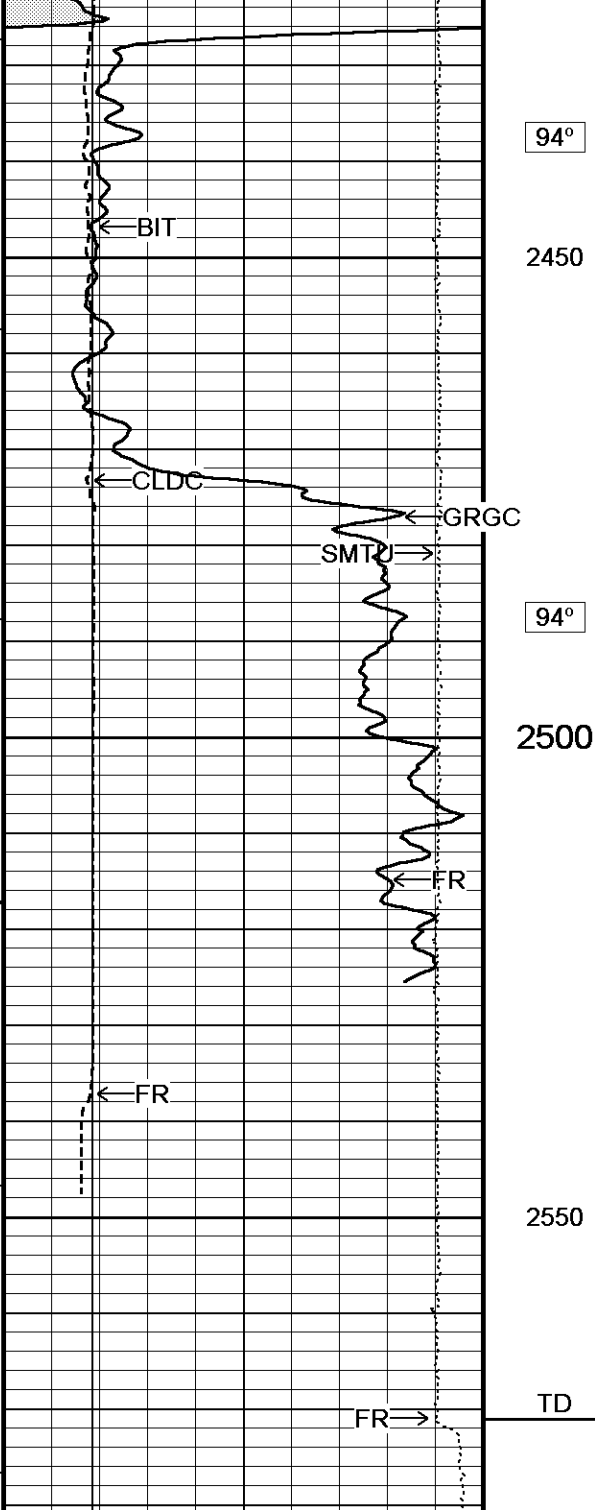
Replay
Scale
1:240

6' Transit Time
microseconds
1100 100



2220
2250
93°
2300
93°
2350
94°
2400





3' Transit Time
microseconds



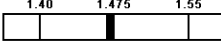
BEFORE SURVEY CALIBRATION
C:\Minimus 15.01.3109\Logs\Grand Mesa Fulsom 1-34\Grand Mesa Fulsom 1-34 Repeat.dta

General Parameters		
Mud Resistivity	2.300	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	4.500	inches
Caliper for Differential Caliper	MMR Caliper	
Rwa Parameters		
Porosity used	Base Density Porosity	
Resistivity used	Array Ind. One Res Rt	
RWA Constant A	0.610	
RWA Constant M	2.150	
SW/APOR Tool Source	0.000	

High Resolution Temperature Constants MCG-C 208		Last Edited on 07-JUL-2015,01:05
Pre-filter Length	11	

Gamma Calibration MCG-C 208		Field Calibration on 09-JUL-2015 10:38
	Measured	Calibrated (API)
Background	66	45
Calibrator (Gross)	1129	770
Calibrator (Net)	1063	725

Gamma Calibration Tolerances MCG-C 208

Ratio 1.467  Counts/API

Gamma Constants MCG-C 208

Last Edited on 10-JUL-2015,02:35

Gamma Calibrator Number	GRC038	
GRC-M Calibrator Jig in Use?	NO	
Inactive Background Jig in Use?	NO	
Mud Density	1.11	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Potassium Equivalence	Chloride	
K Mud Concentration	0.00	%

Sonic Constants MSS-A.A 55

Last Edited on

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	
Correction for Sonde Skew	Applied	
Cycle Stretch Algorithm	Applied	
MN3FT	0.00	micro-sec
MX3FT	1500.00	micro-sec
Hunt-Raymer Constant	83.13	micro-sec/ft

Sonde Mode	Compensated
Hole Type	Open Hole

Sonde Parameters

	Measured	Calibrated
Offset	0.0000	0.0000
Free Pipe	0.0000	

Peak Amplitude Source

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)	Depth (m)
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	0.00
0.00	0.00	0.00	0.00

Full Waveform Parameters

Use 3' Waveform to derive TR	No	
Use 4' Waveform to derive TR	No	
Use 5' Waveform to derive TR	No	
Use 6' Waveform to derive TR	No	
3' Waveform Discriminator Level	0.30	mV
4' Waveform Discriminator Level	0.30	mV
5' Waveform Discriminator Level	0.15	mV
6' Waveform Discriminator Level	0.15	mV
3' Waveform Filter		
4' Waveform Filter		
5' Waveform Filter		
6' Waveform Filter		

Semblance Level	0.50	
Semblance Window Width	120.00	micro-sec

Sonic 1 Despiker	100.00	micro-sec/ft
Sonic 2 Despiker	100.00	micro-sec/ft

Caliper Calibration MPD-B 103

Base Calibration on 29-JUN-2015 11:07
Field Calibration on 09-JUL-2015 10:08

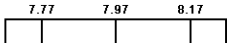
Base Calibration

Reading No	Measured	Calibrator Size (in)
1	14970	3.99
2	25053	5.98
3	34976	7.97
4	44960	9.86
5	56128	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
7.96	7.97

Caliper Calibration Tolerances MPD-B 103

Short Arm Field Cal. 7.96  in

DOWNHOLE EQUIPMENT

C:\Minimus 15.01.3109\Logs\Grand Mesa Fulsom 1-34\Grand Mesa Fulsom 1-34 Repeat.dta

CBH-C, Cablehead, 11 pin

CBH-CB 265 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma

MCG-C 208 LG: 8.70 ft WT: 63.9 lb OD: 2.244 in

Compact Micro-Resistivity

MMR-C.A 248 LG: 8.59 ft WT: 81.6 lb OD: 4.882 in

Compact Neutron

MDN-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper

MPD-B 103 LG: 9.59 ft WT: 90.4 lb OD: 2.449 in

Compact Focussed Electric

MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.244 in

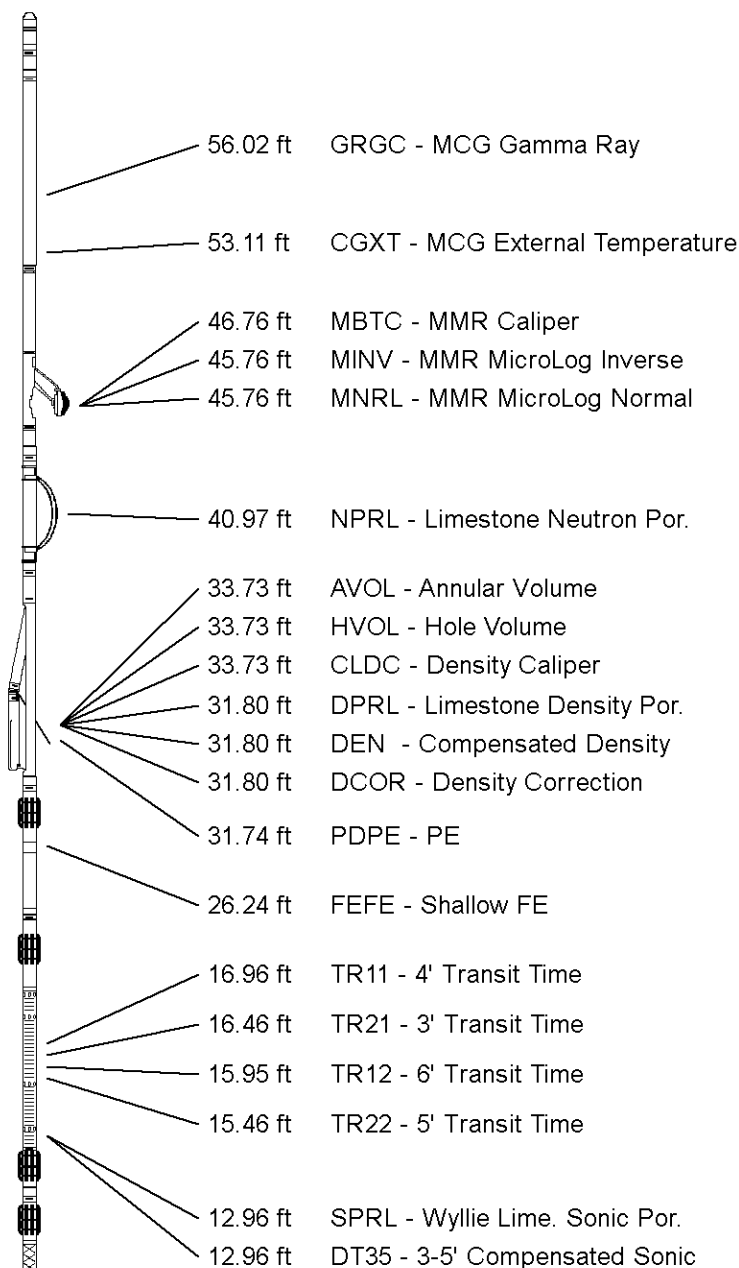
Compact Sonic

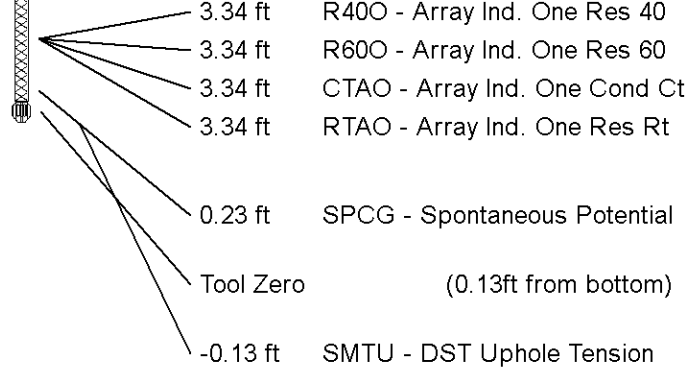
MSS-A.A 55 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction

MAI-A.A 157 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in

Total Length: 63.70 ft Weight: 480.6 lb





All measurements relative to tool zero.

COMPANY	GRAND MESA OPERATING COMPANY
WELL	FULSOM 1-34
FIELD	WILDCAT
PROVINCE/COUNTY	MARION
COUNTRY/STATE	U.S.A. / KANSAS

Elevation Kelly Bushing	1499.00	feet	First Reading	2558.00	feet
Elevation Drill Floor	1497.00	feet	Depth Driller	2570.00	feet
Elevation Ground Level	1487.00	feet	Depth Logger	2571.00	feet



COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME

Weatherford®