



Weatherford

**COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME
LOG**

COMPANY PETROSANTANDER (USA) INC.
 WELL ODD WILLIAMS #6
 FIELD CHRISTABELLE
 PROVINCE/COUNTY KEARNY
 COUNTRY/STATE UNITED STATES / KANSAS
 LOCATION 140' FSL & 1120' FWL
 SE SE SW SW

SEC 12 TWP 21S RGE 35W Other Services MGD/MDN MA/MFE MML SGS
 API Number 15-093-21897
 Permit Number
 Permanent Datum G.L., Elevation 3092 feet
 Log Measured From KB
 Drilling Measured From K.B. @ 12 FEET

Date	26-SEP-2013	Elevations:	KB 4004.00 DF 4002.00 GL 3092.00
Run Number	ONE		
Service Order	3541089		
Depth Driller	5000.00	feet	
Depth Logger	5001.00	feet	
First Reading	4998.00	feet	
Last Reading	507.00	feet	
Casing Driller	504.00	feet	
Casing Logger	507.00	feet	
Bit Size	7.880	inches	
Hole Fluid Type	CHEMICAL		
Density / Viscosity	7.00 lb/USg	42.00 CP	
PH / Fluid Loss	42.00	10.60 ml/30Min	
Sample Source	MUDPIT		
Rm @ Measured Temp	1.24 @ 71.0	ohm-m	
Rmf @ Measured Temp	0.99 @ 71.0	ohm-m	
Rmc @ Measured Temp	1.49 @ 71.0	ohm-m	
Source Rmf / Rmc	CALC	CALC	
Rm @ BHT	0.80 @ 110.0	ohm-m	
Time Since Circulation	5 HOURS		
Max Recorded Temp	110.00	deg F	
Equipment / Base	13096	LIB	
Recorded By	W. STAMBAUGH		
Witnessed By			JEFF QUIMBY
IOB#	LB13-270		

BOREHOLE RECORD

Last Edited: 27-SEP-2013 00:50

Bit Size inches	Depth From feet	Depth To feet
7.880	507.00	5001.00

CASING RECORD

Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft
SURFACE	8.625	0.00	507.00	24.00

REMARKS

- SOFTWARE ISSUE: WLS 13.05.9583.

- MCG, MDN, MPD, MFE, MAI RUN IN COMBINATION.
 - HARDWARE: DUAL BOWSPRING USED ON MDN.
 0.5 INCH STANDOFF USED ON MFE.
 0.5 INCH STANDOFF USED ON MAI.

- 2.71 G/CC LIMESTONE DENSITY MATRIX USED TO CALCULATE POROSITY.

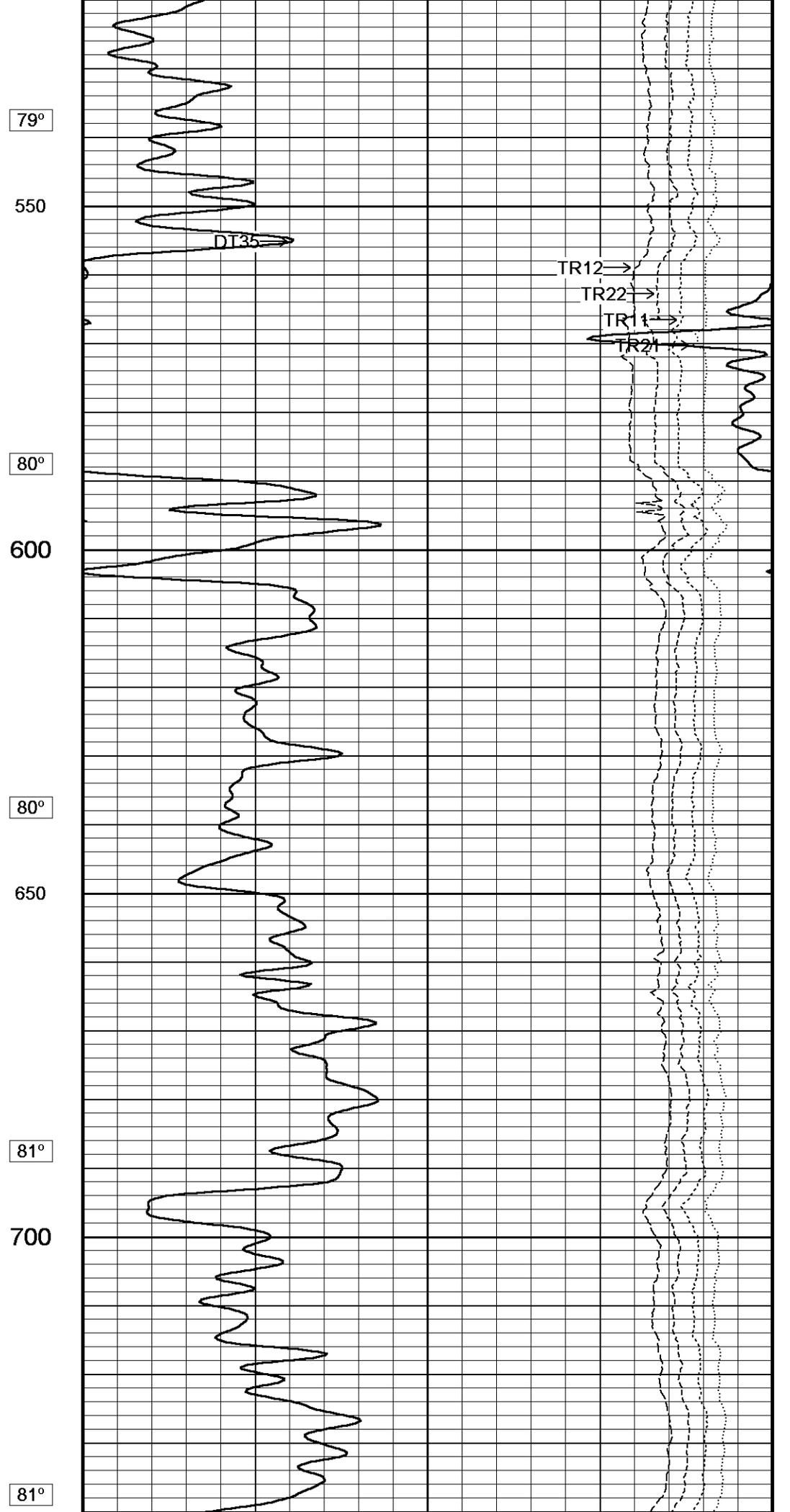
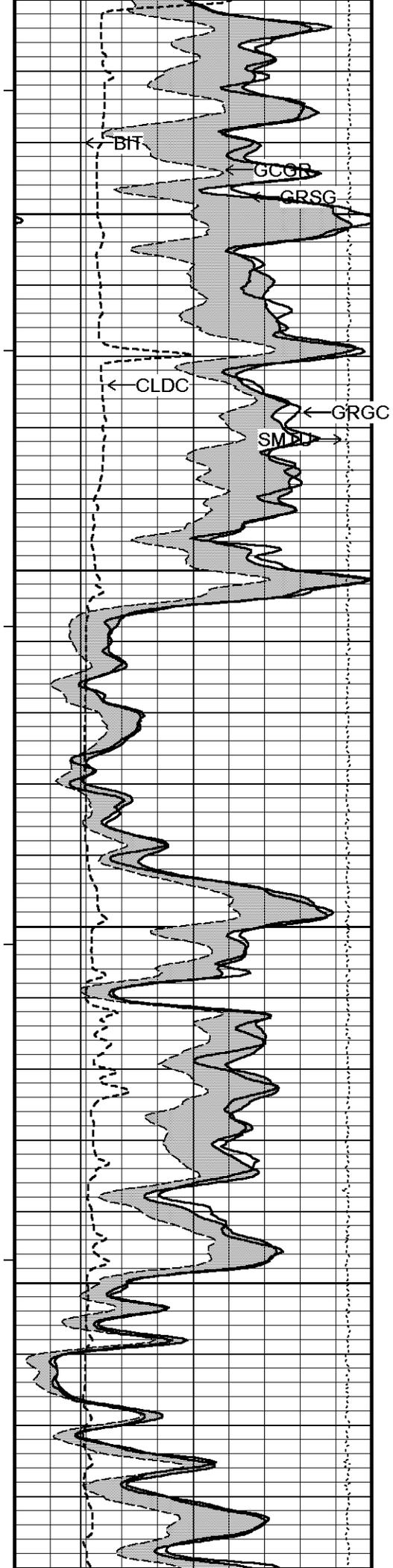
- BOREHOLE RUGOSITY, TIGHT PULLS, AND WASHOUTS WILL AFFECT DATA QUALITY.

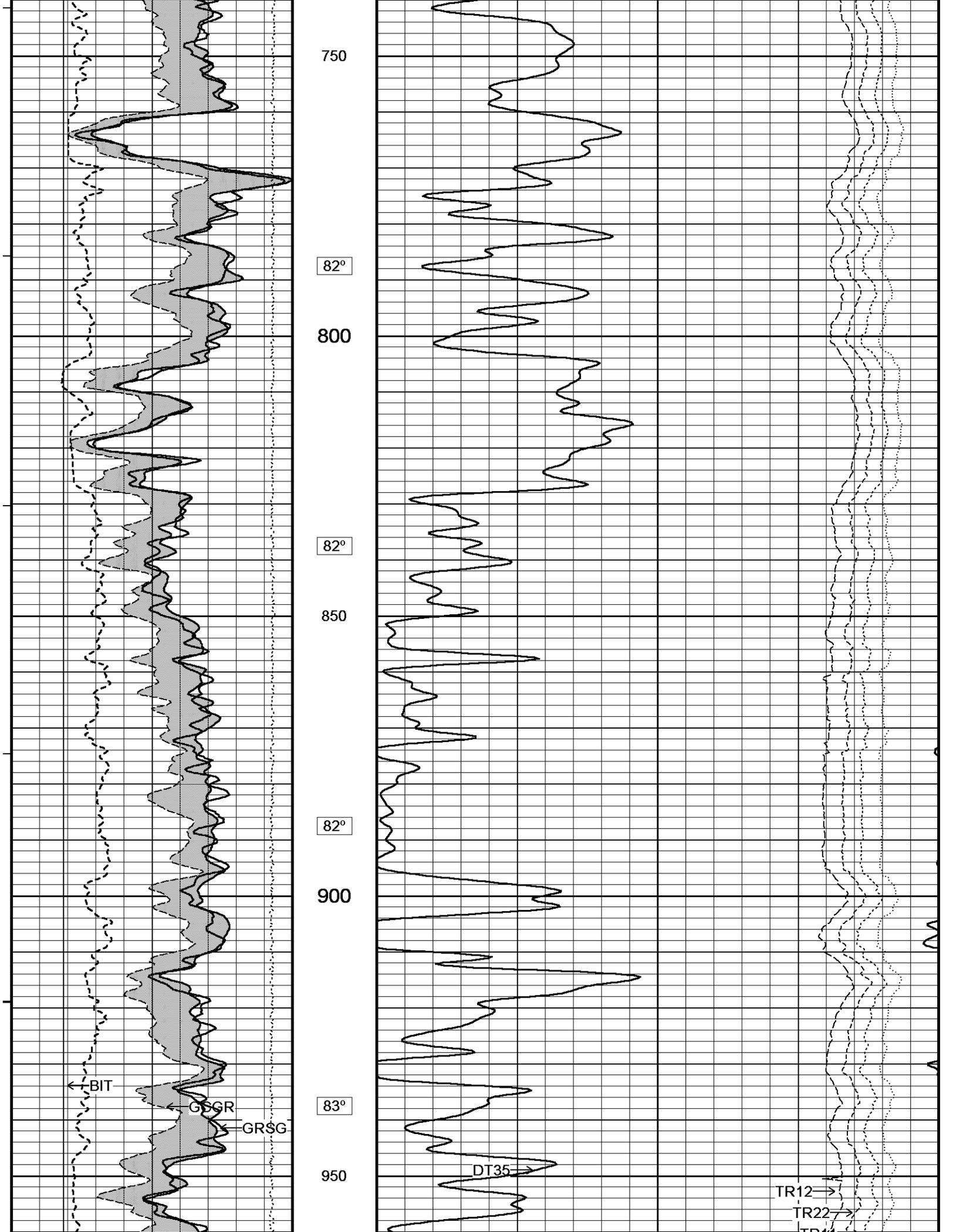
- ALL INTERVALS LOGGED AND SCALED PER CUSTOMER'S REQUEST.

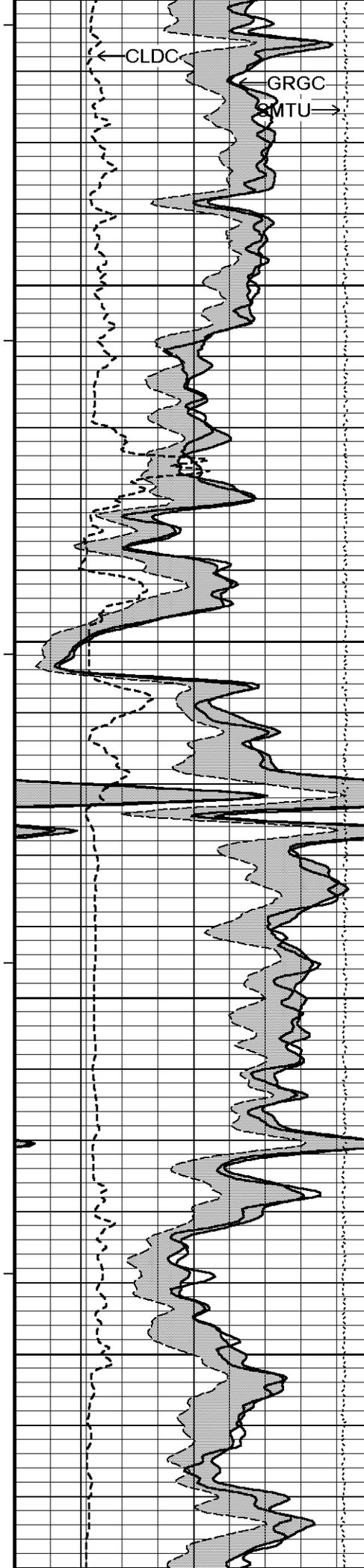
- TOTAL HOLE VOLUME FROM TD TO SURFACE CASING: 1840 CU. FT.

- ANNULAR HOLE VOLUME WITH 5.5 INCH CASING FROM TD TO 504 FEET: 1100 CU. FT.

- RIG: TRINIDAD #216







83°

1000

83°

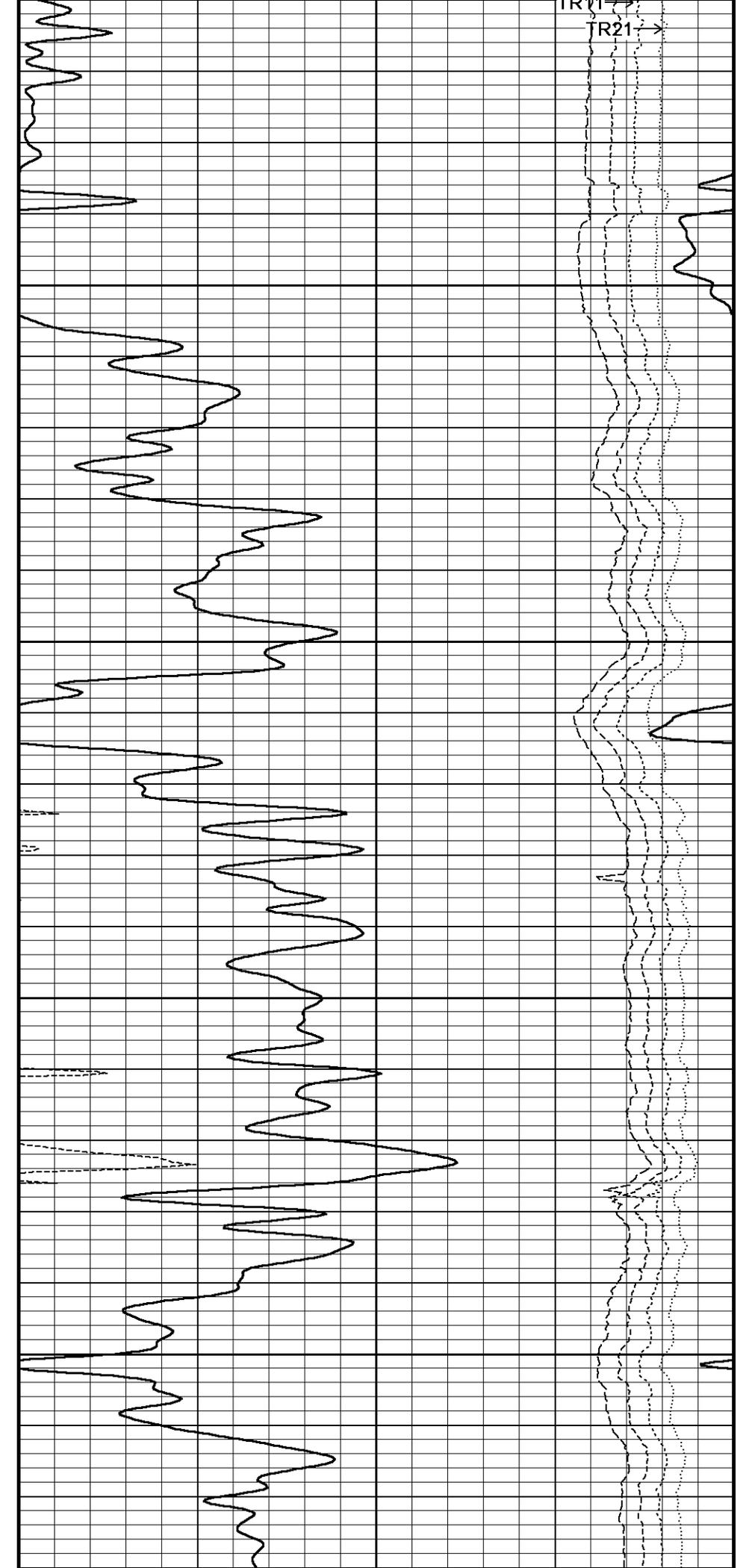
1050

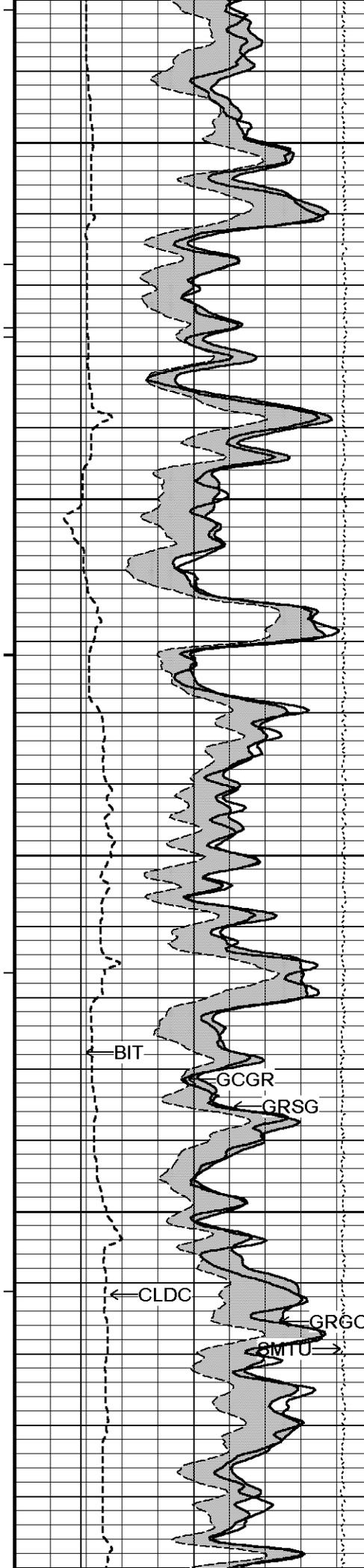
84°

1100

84°

1150





84°

1200

85°

1250

85°

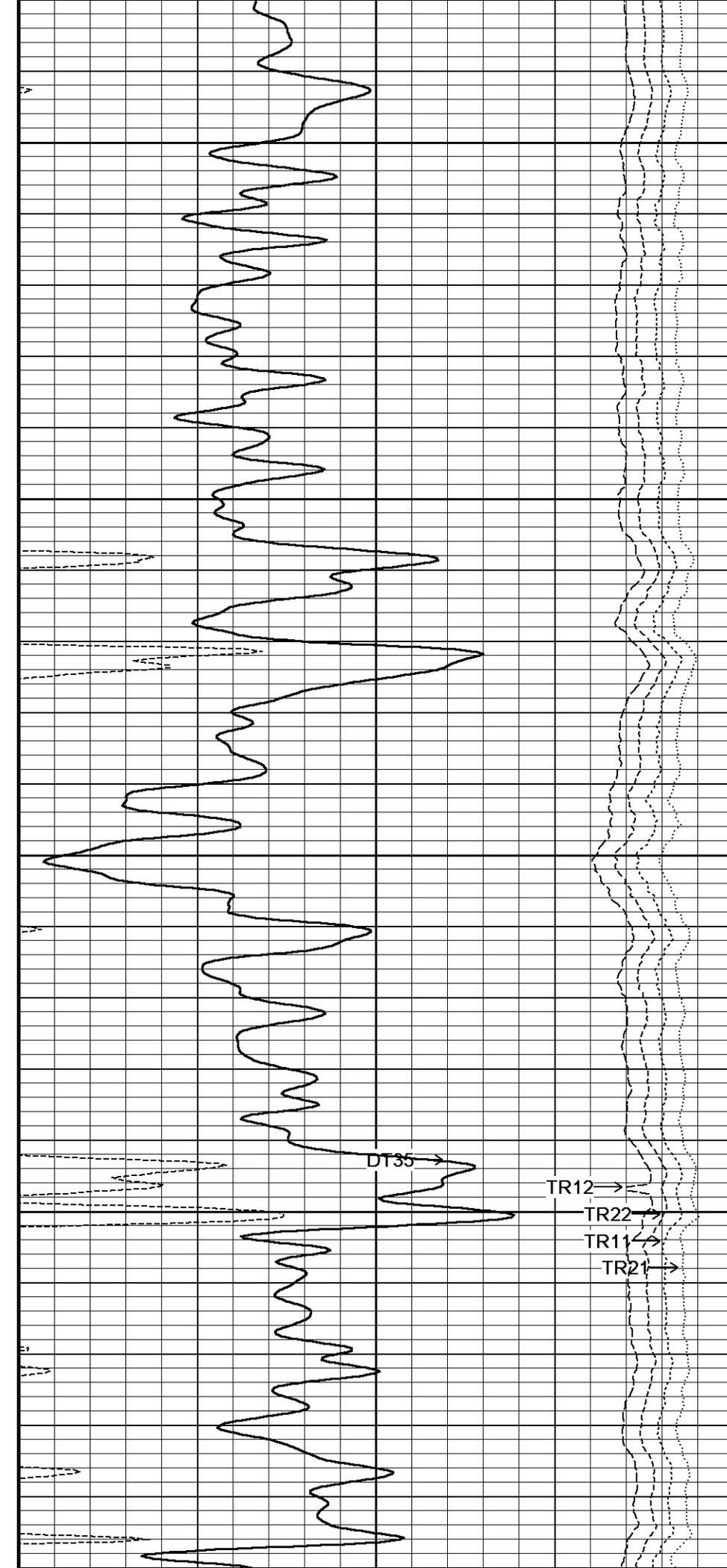
1300

85°

1350

85°

1400



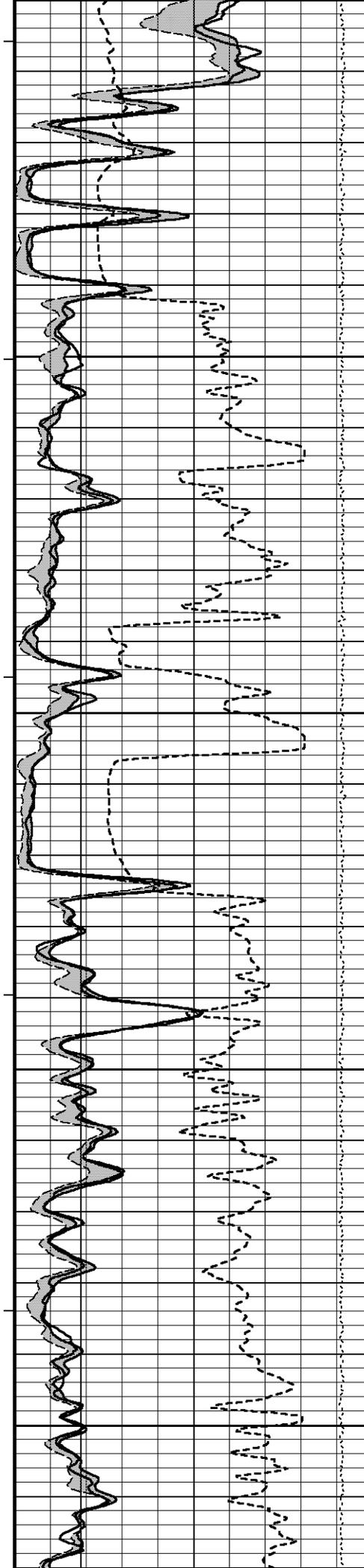
DT35

TR12

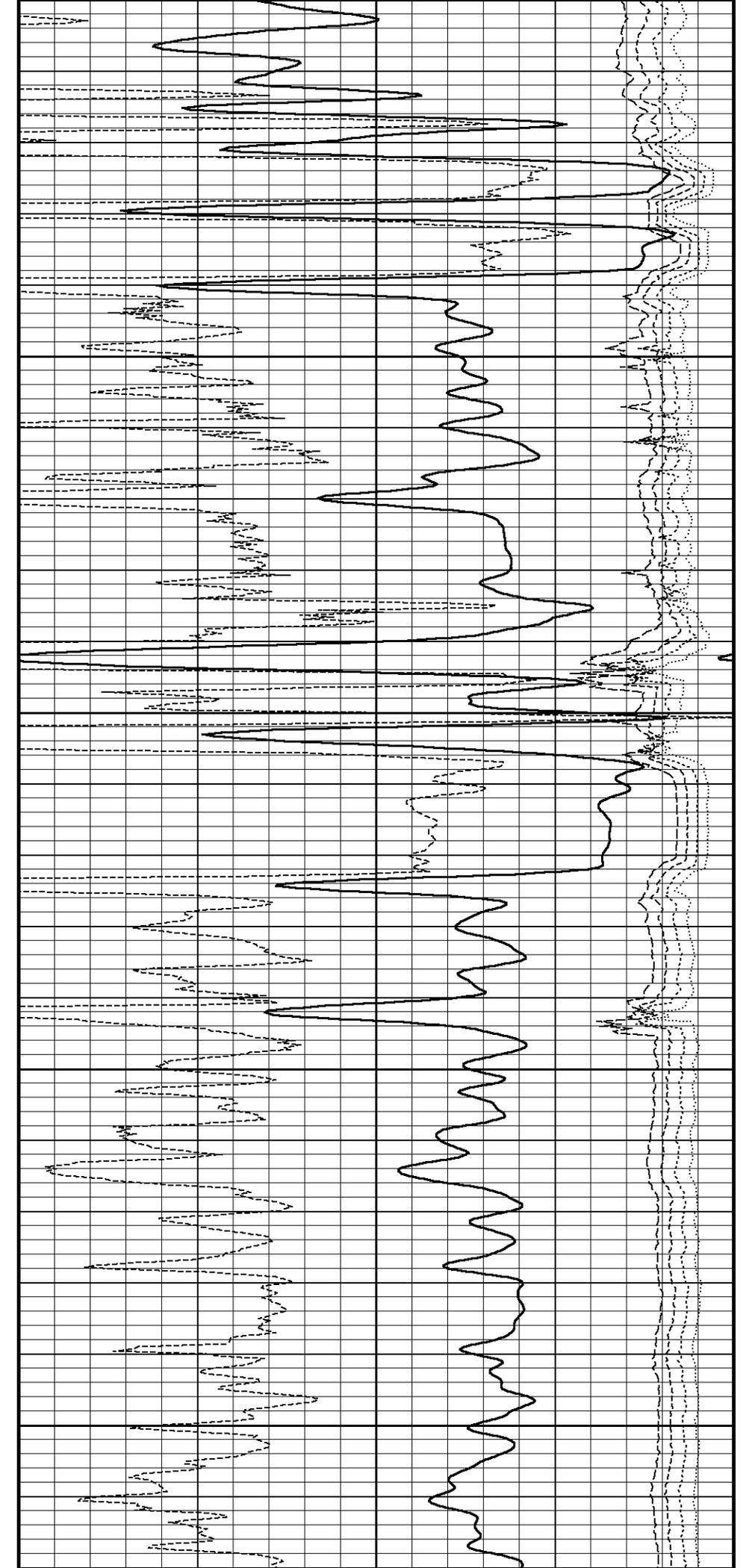
TR22

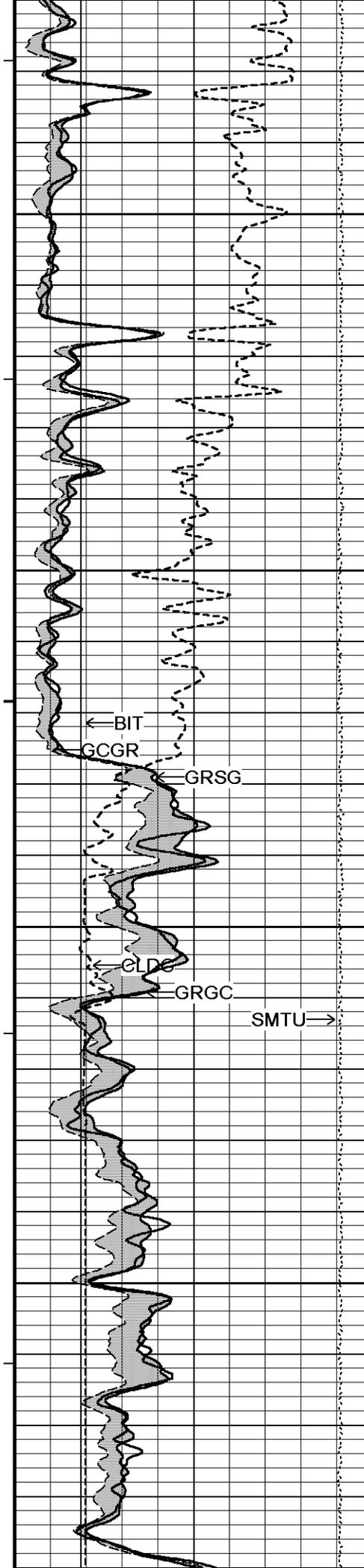
TR11

TR21



1400
85°
1450
85°
1500
86°
1550
86°
1600





86°

1650

87°

1700

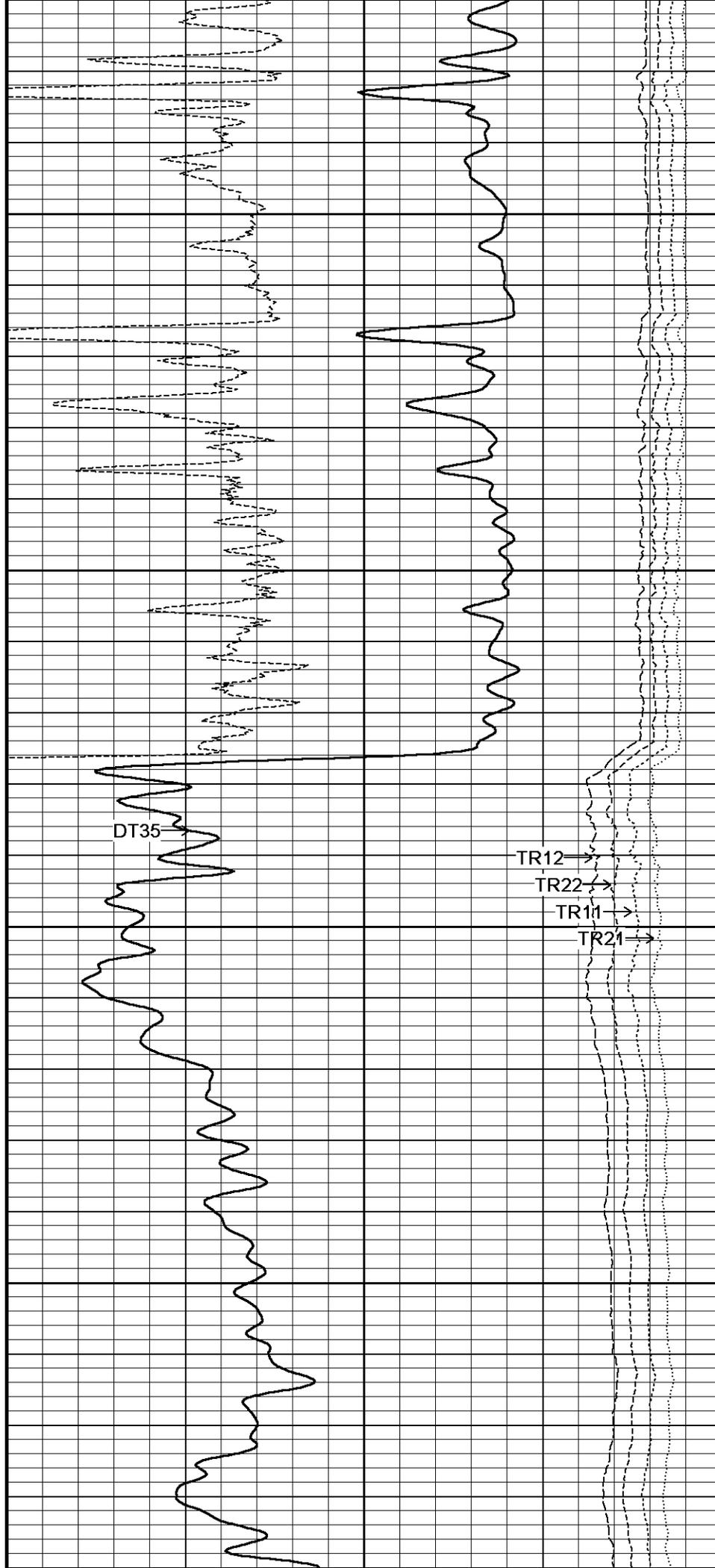
87°

1750

88°

1800

88°



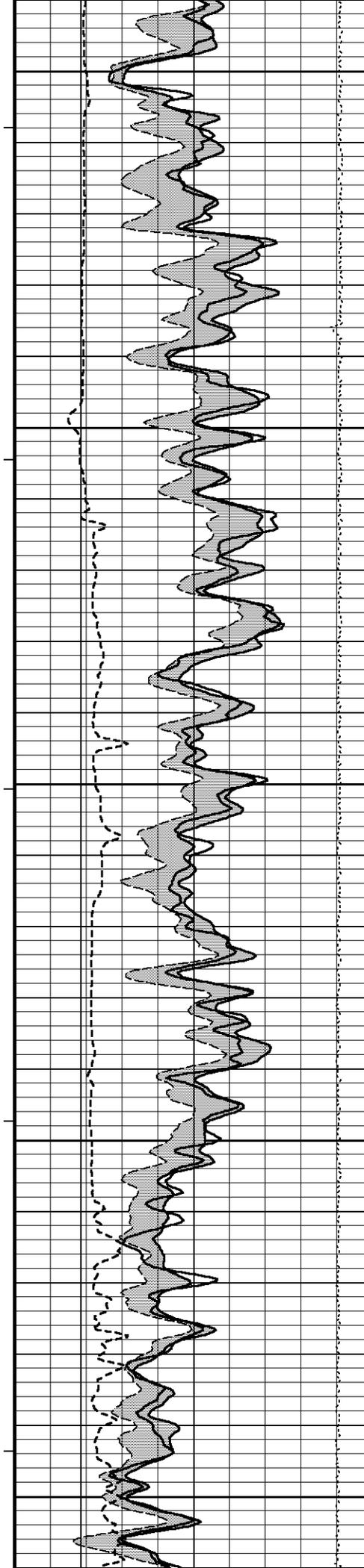
DT35

TR12

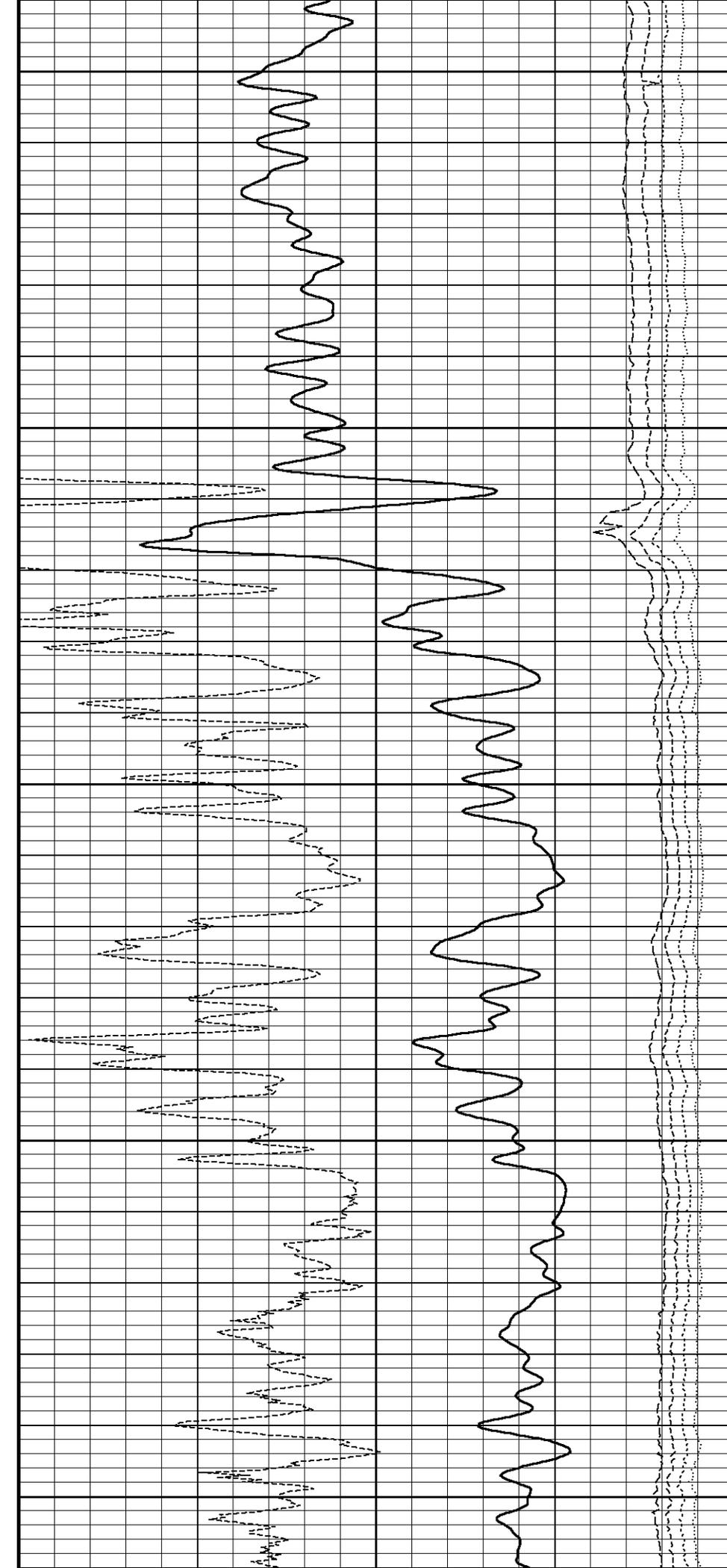
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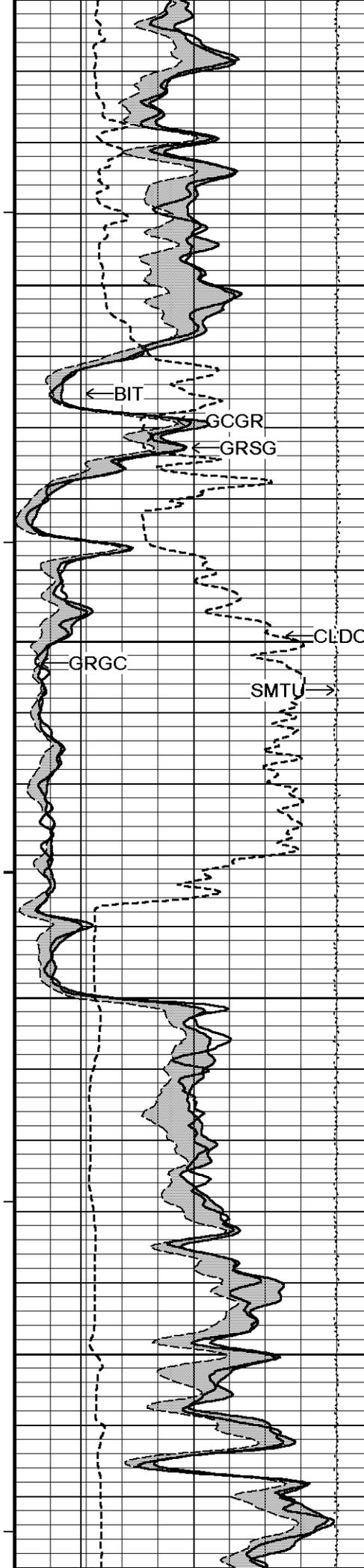
TR11

TR21



1850
88°
1900
88°
1950
89°
2000
88°
2050





89°

2100

89°

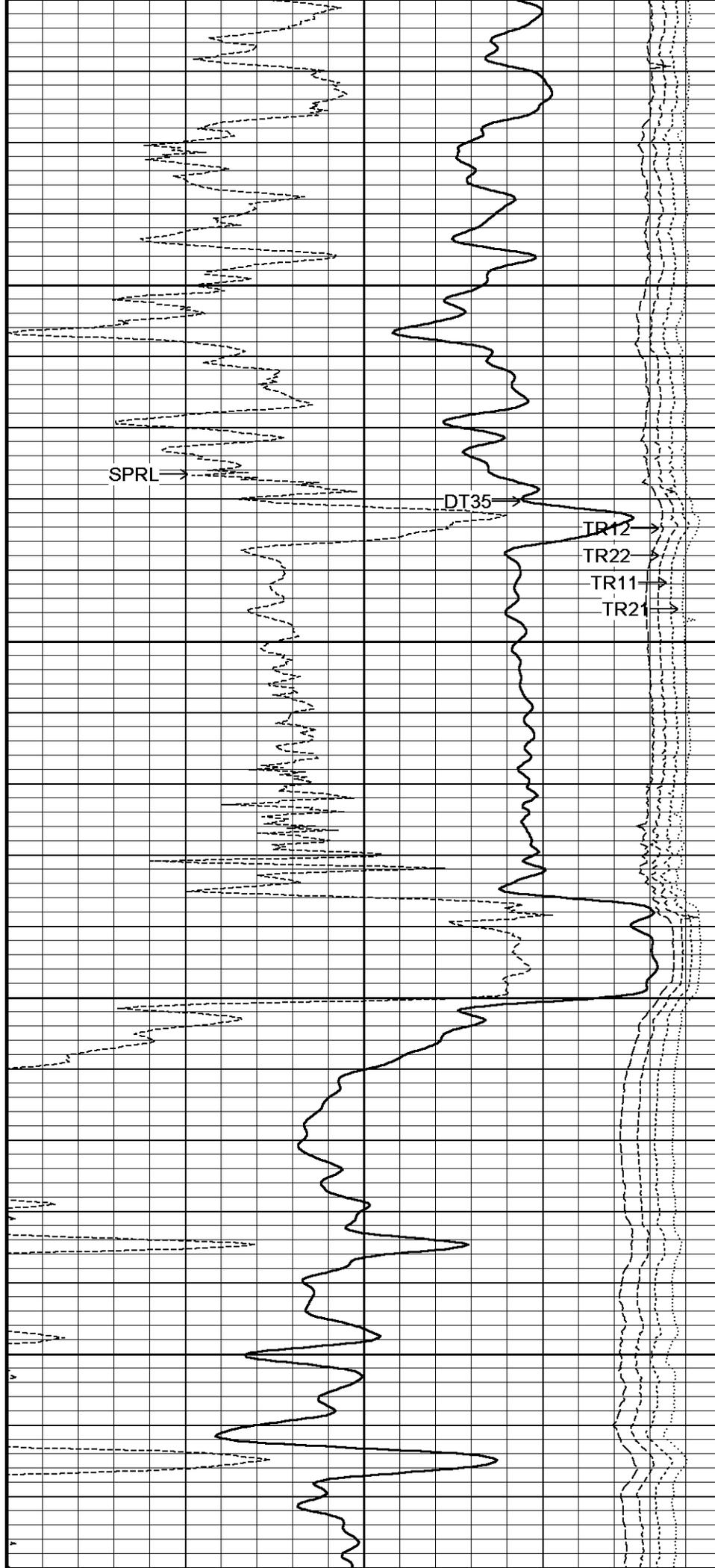
2150

89°

2200

90°

2250



SPRL

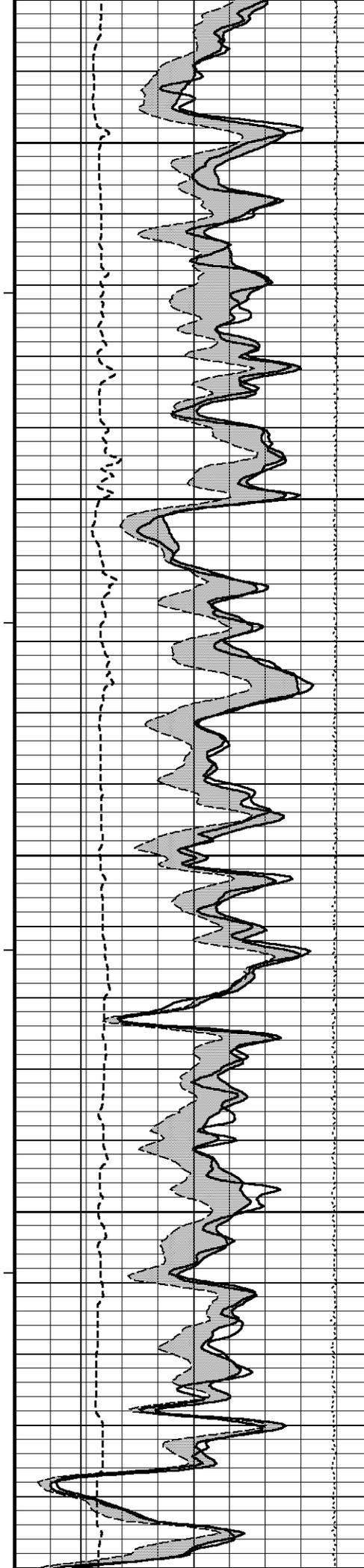
DT35

TR12

TR22

TR11

TR21



90°

2300

91°

2350

91°

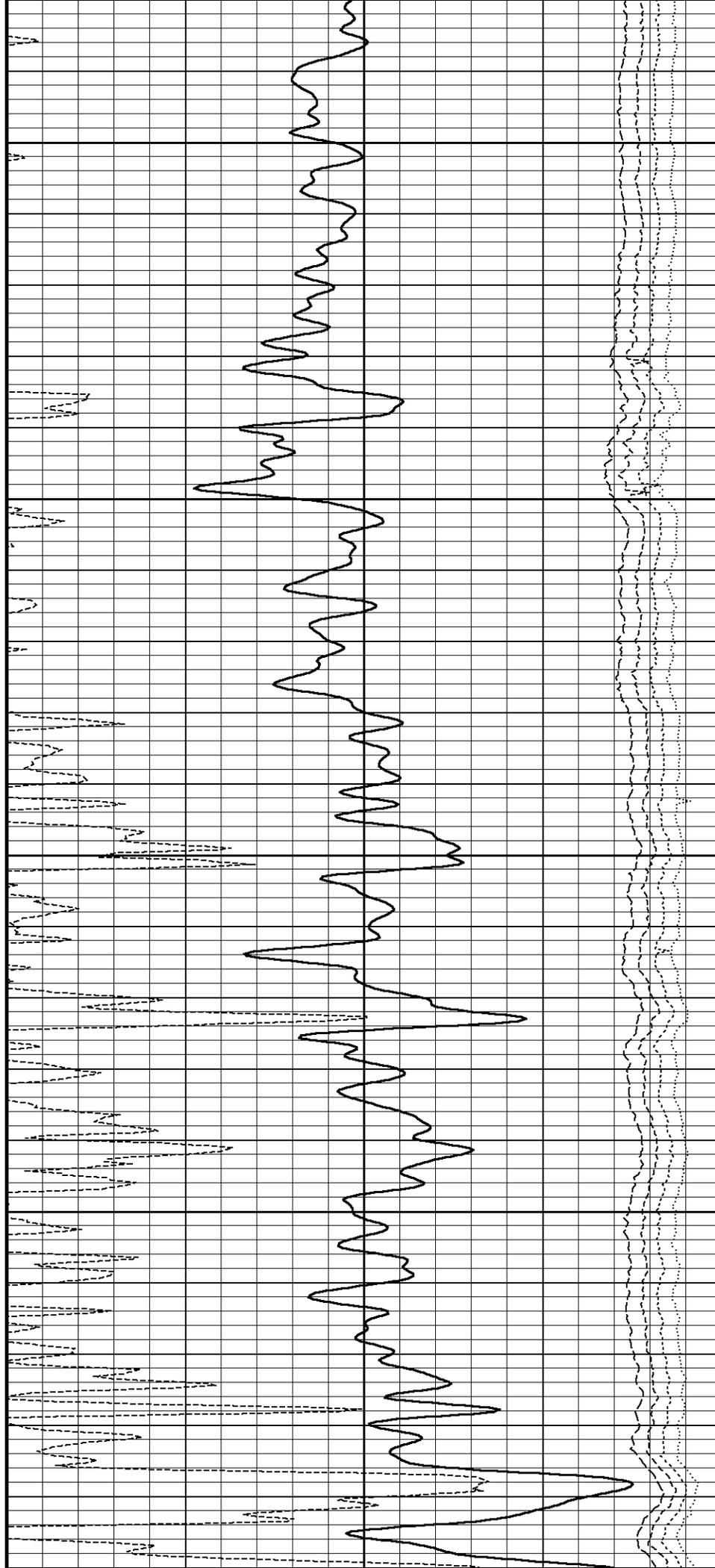
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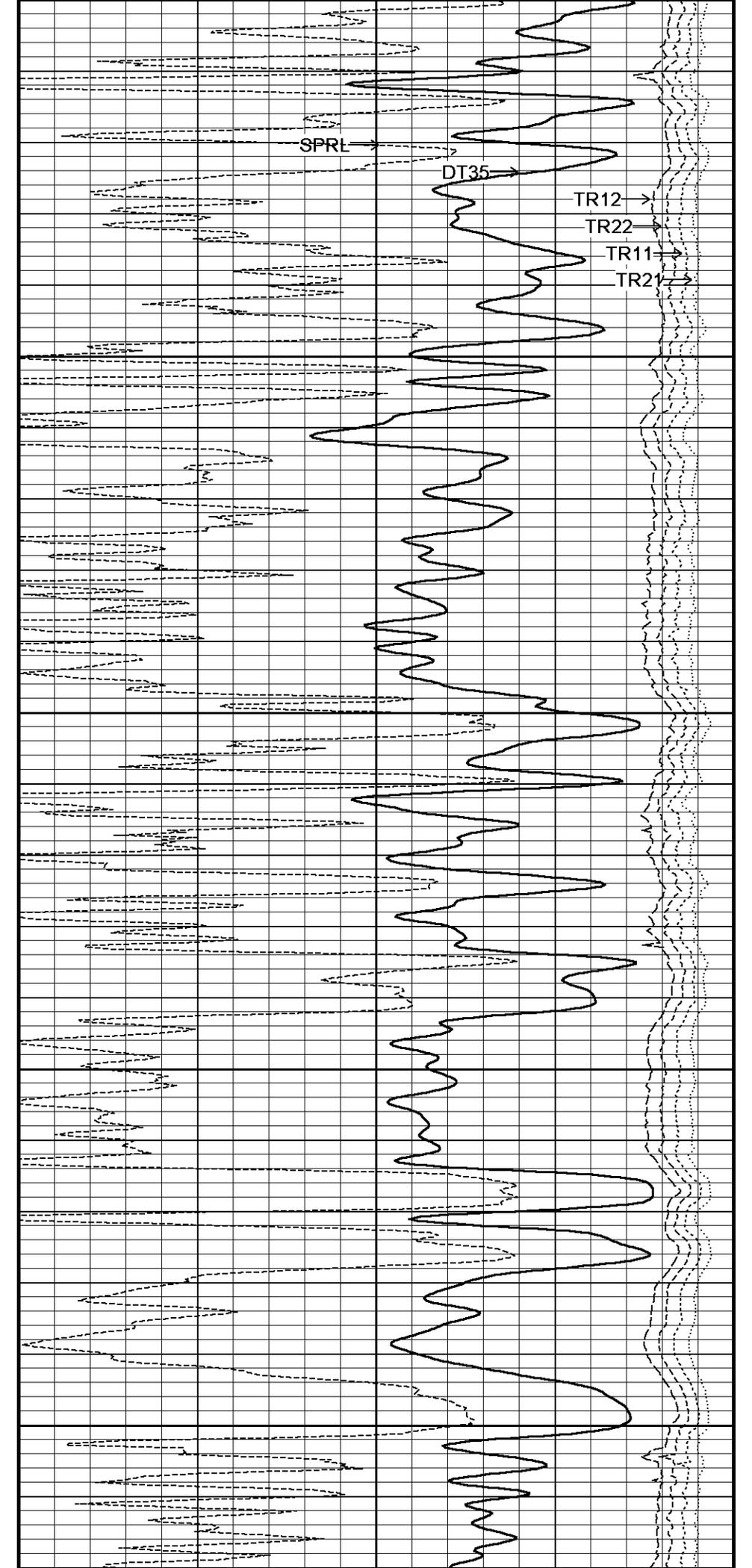
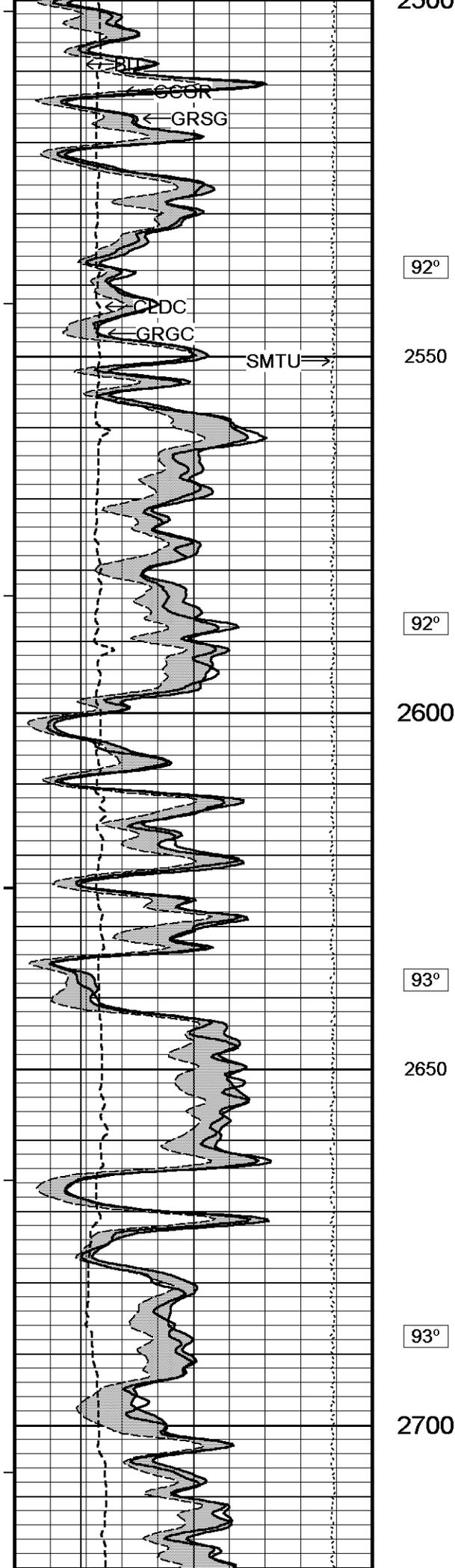
91°

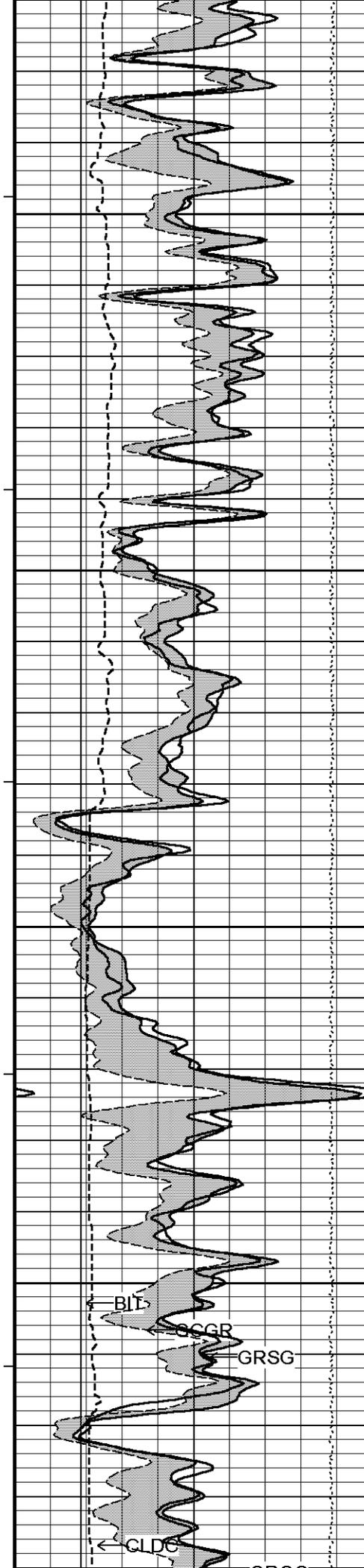
2450

92°

2500







93°

2750

94°

2800

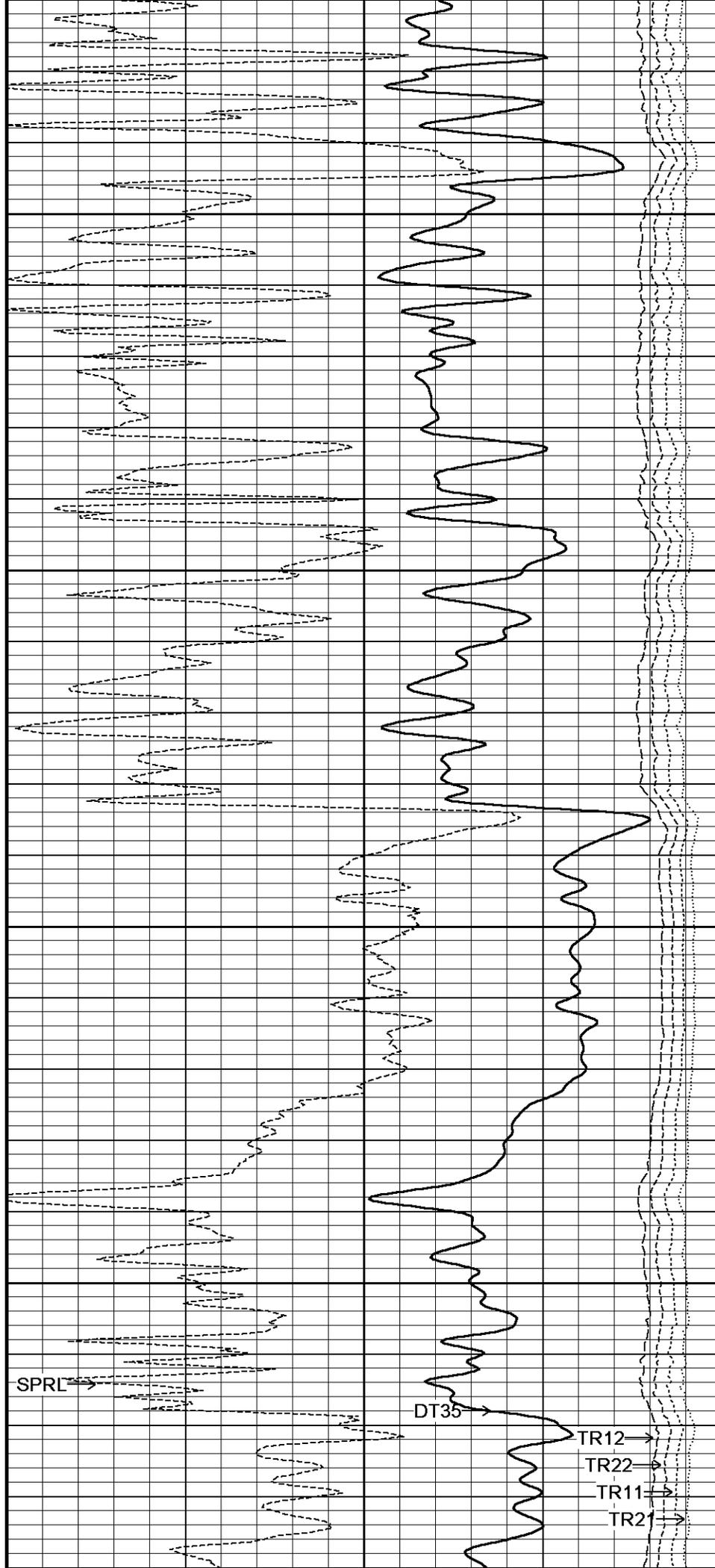
94°

2850

95°

2900

95°



SPRL

DT35

TR12

TR22

TR11

TR21

GRGC
SMTU →

2950

95°

3000

95°

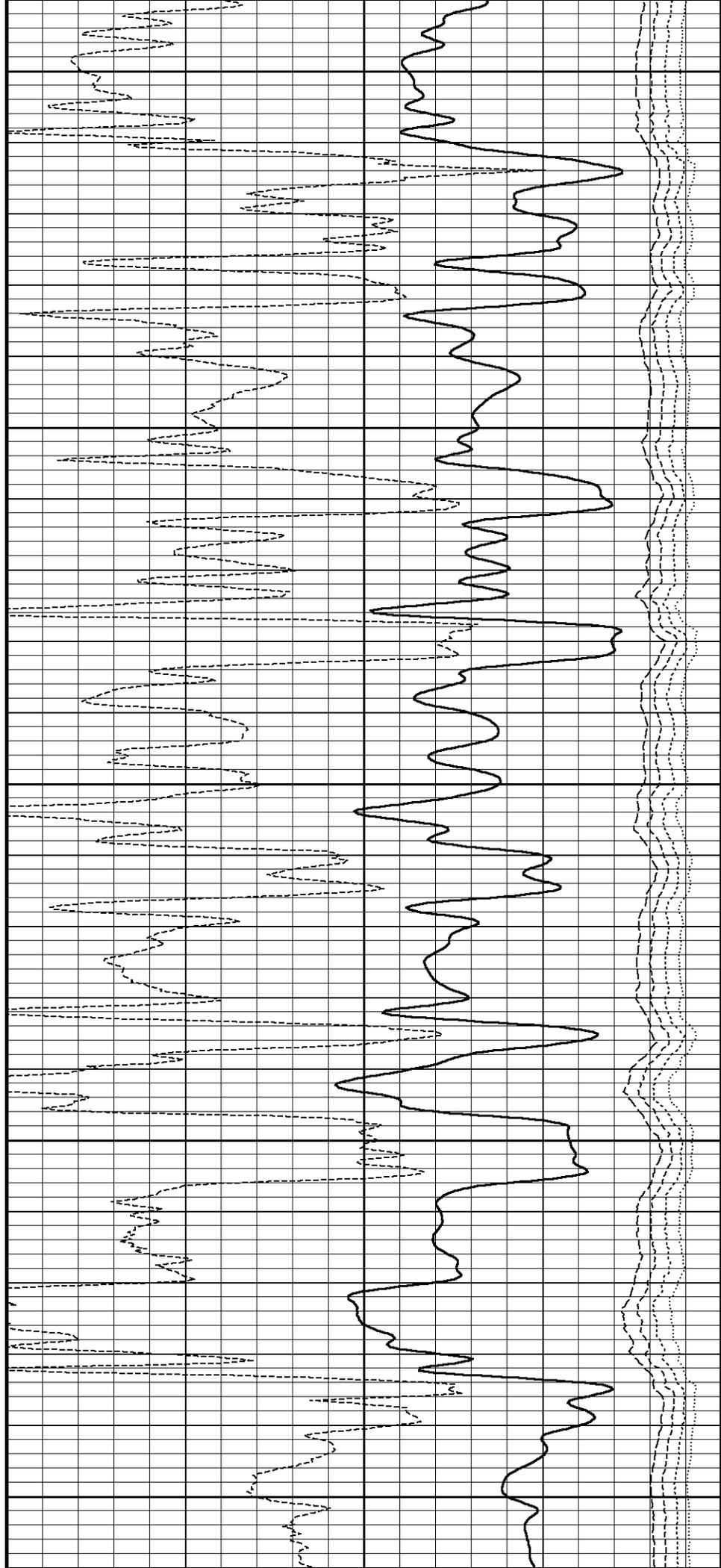
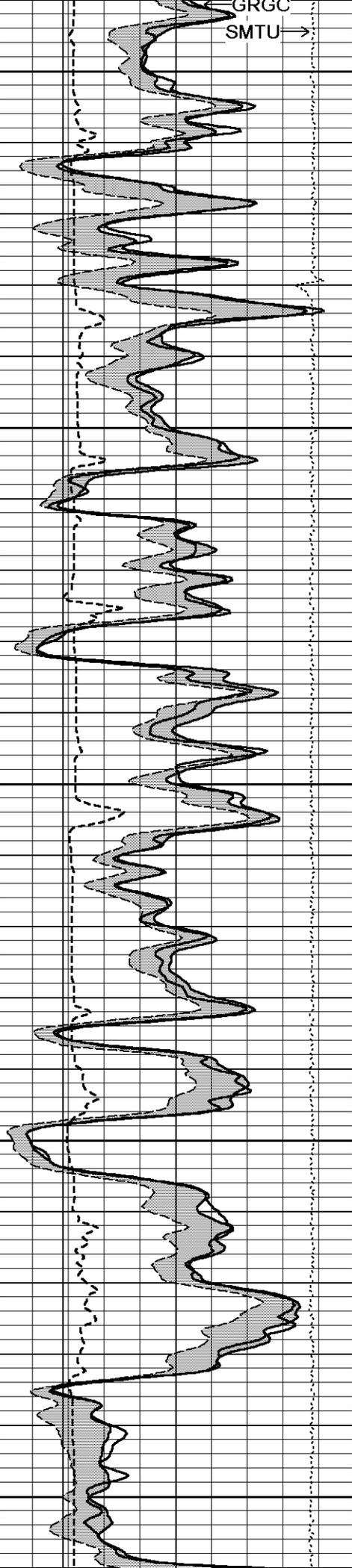
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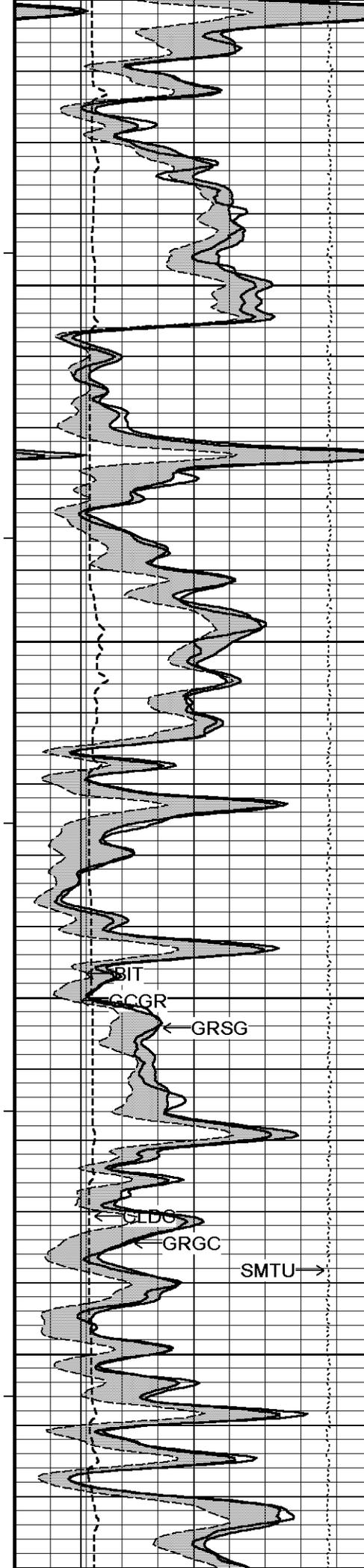
96°

3100

96°

3150





97°

3200

97°

3250

97°

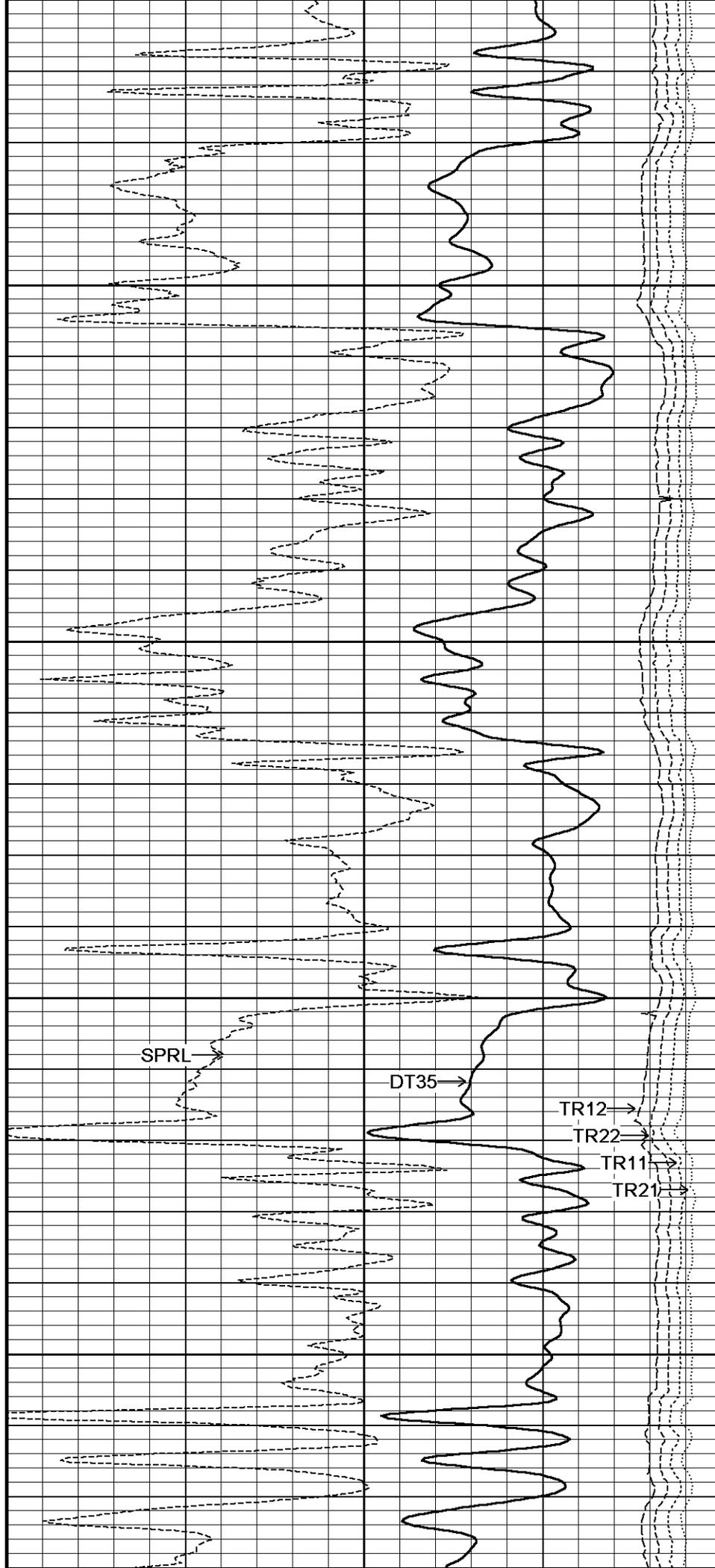
3300

98°

3350

BIT
CCGR
← GRSG

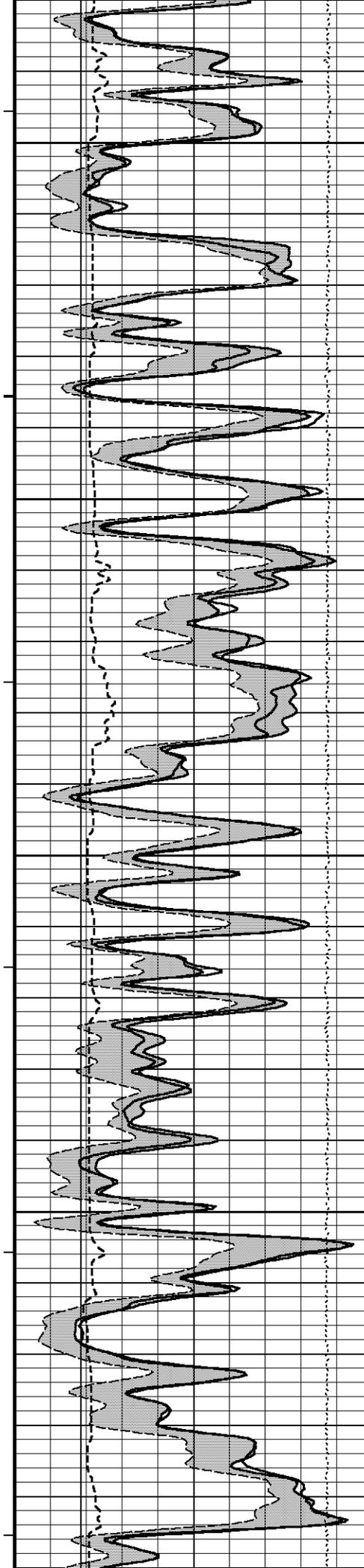
← GLDS
← GRGC
SMTU →



SPRL →

DT35 →

TR12 →
TR22 →
TR11 →
TR21 →



99°

3400

99°

3450

99°

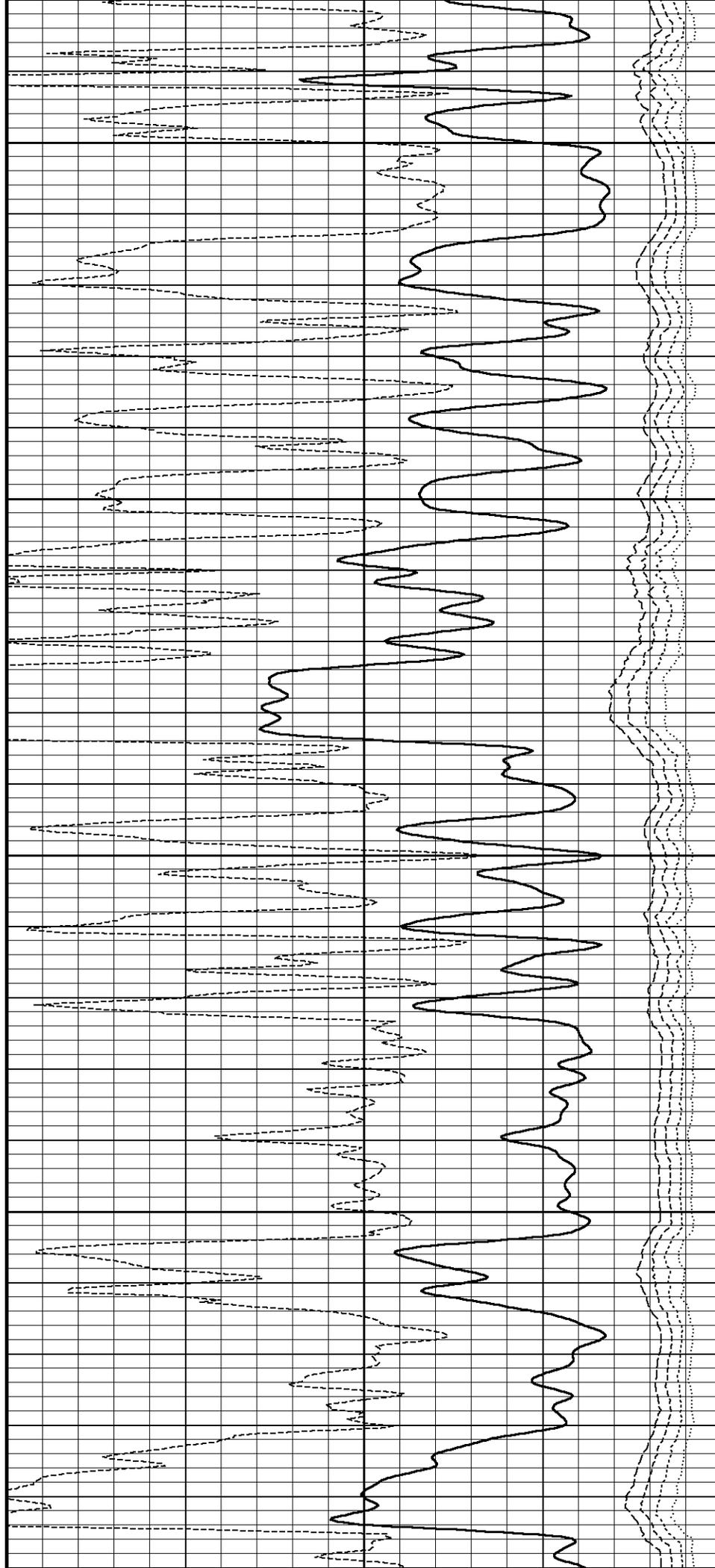
3500

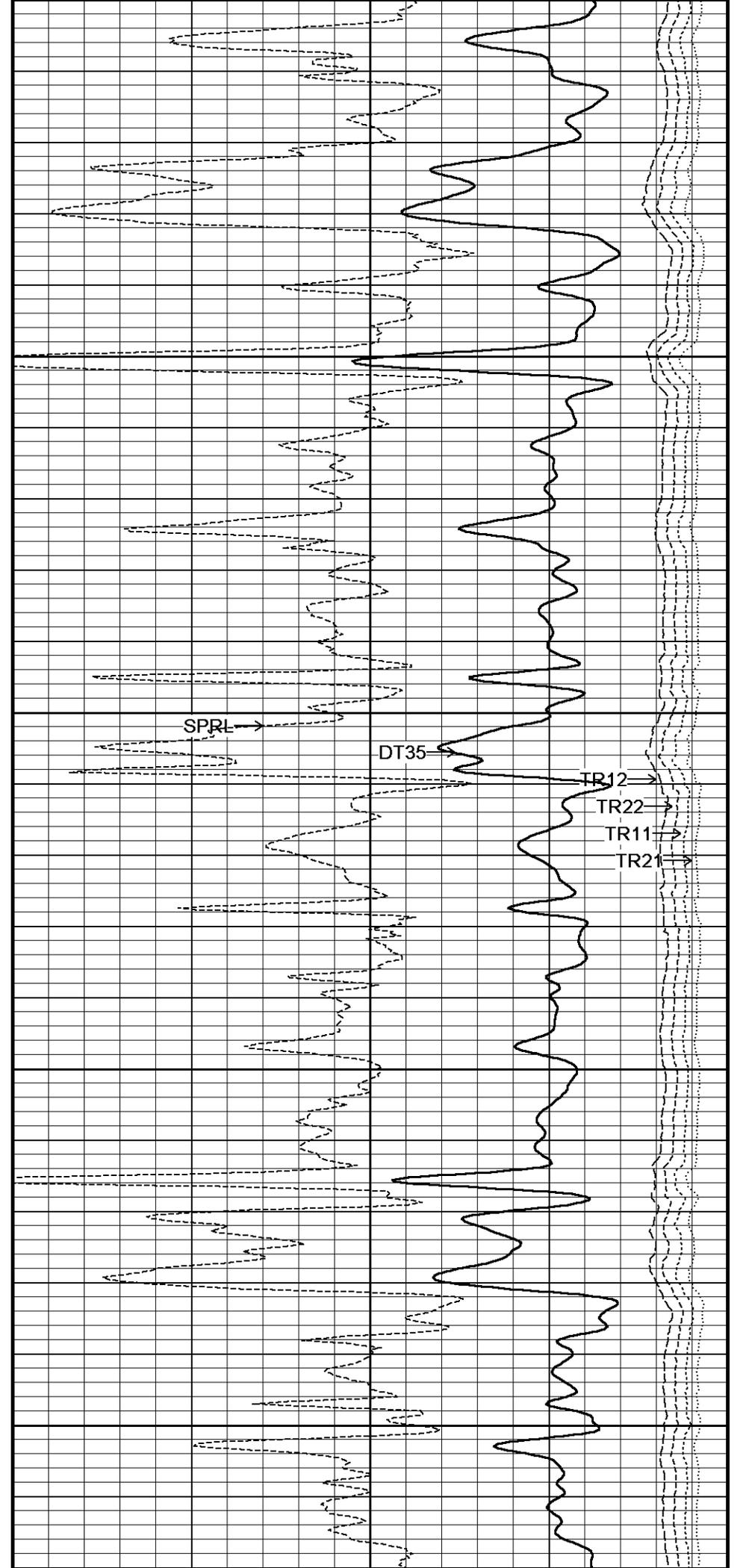
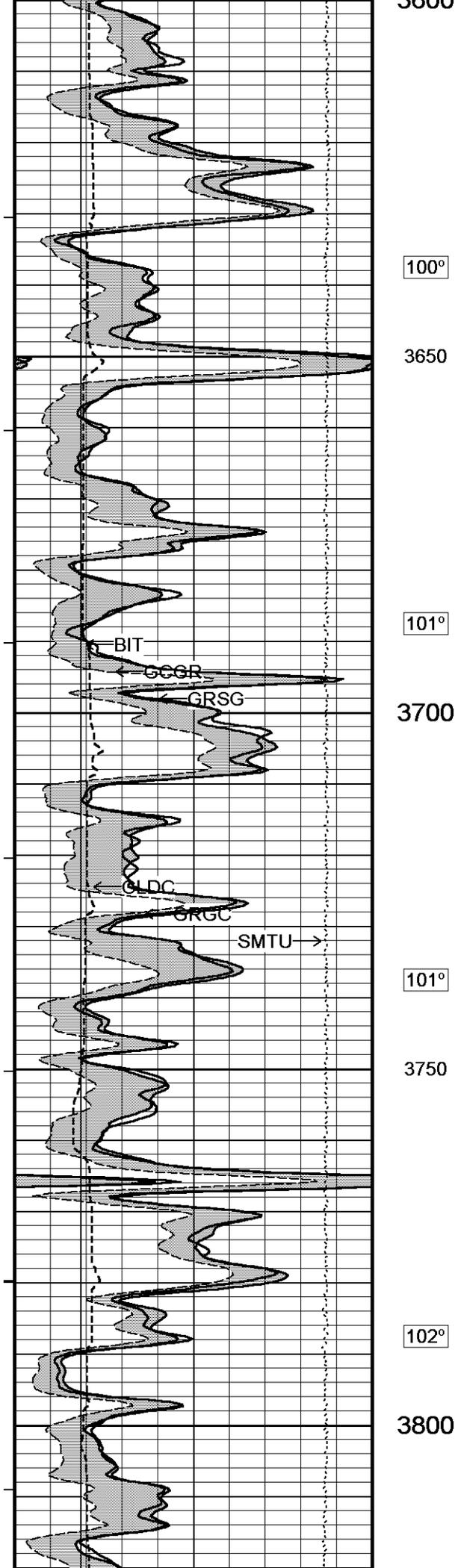
100°

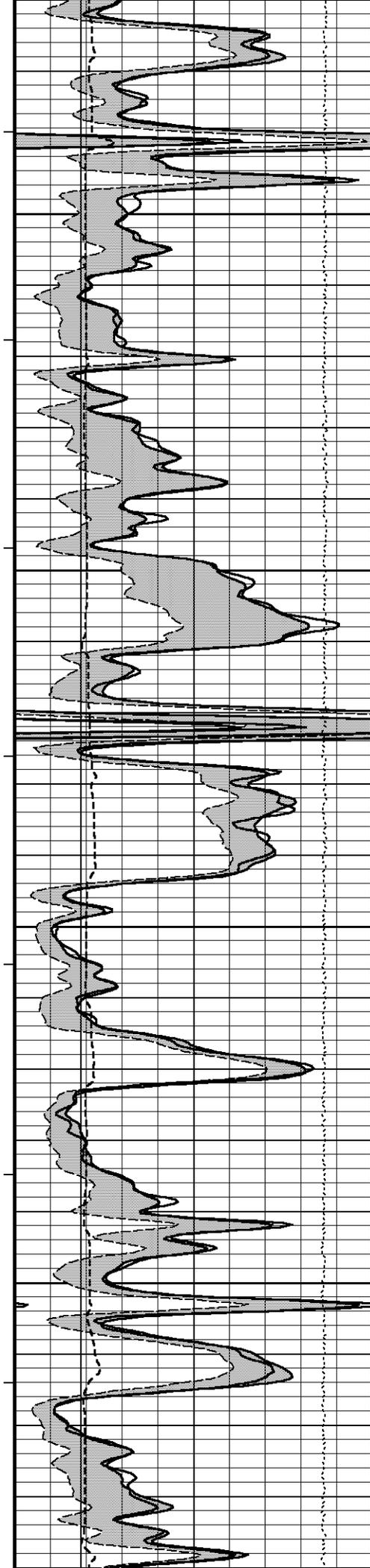
3550

100°

3600







102°

3850

102°

3900

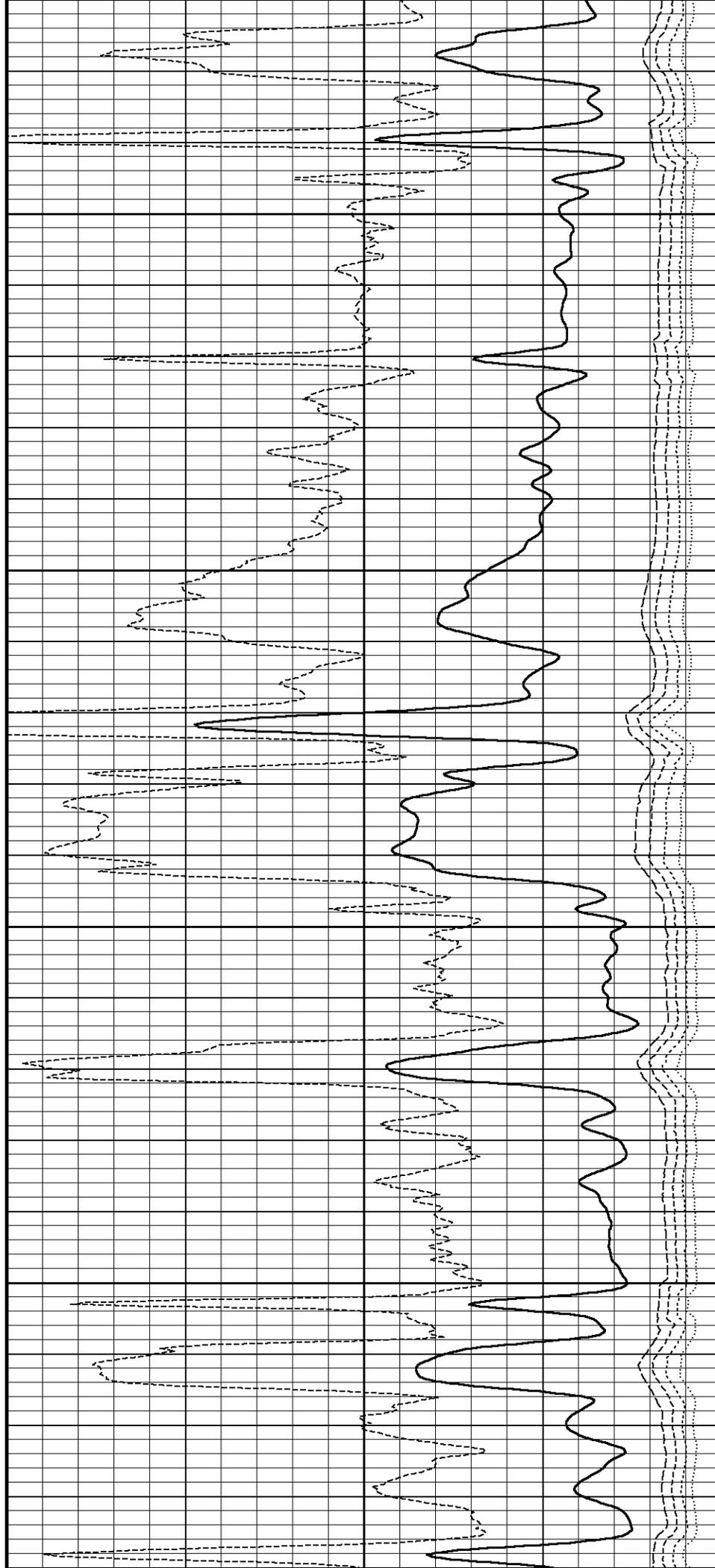
103°

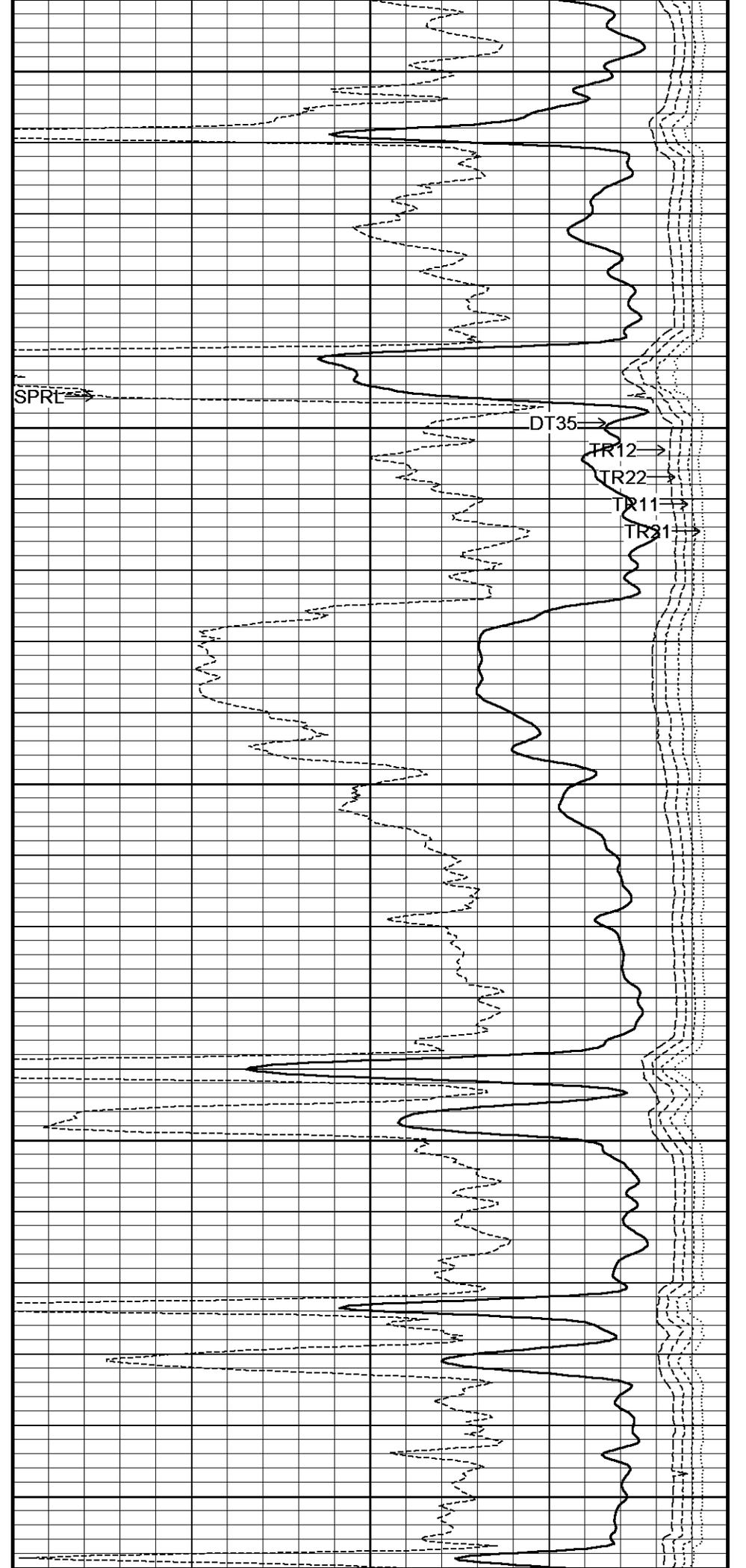
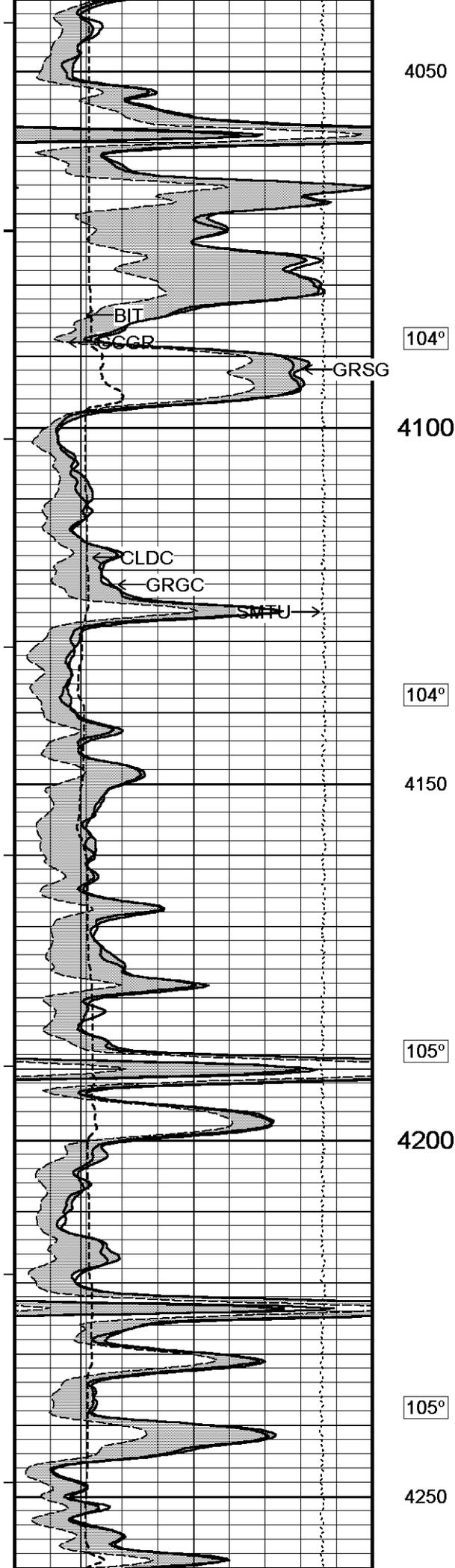
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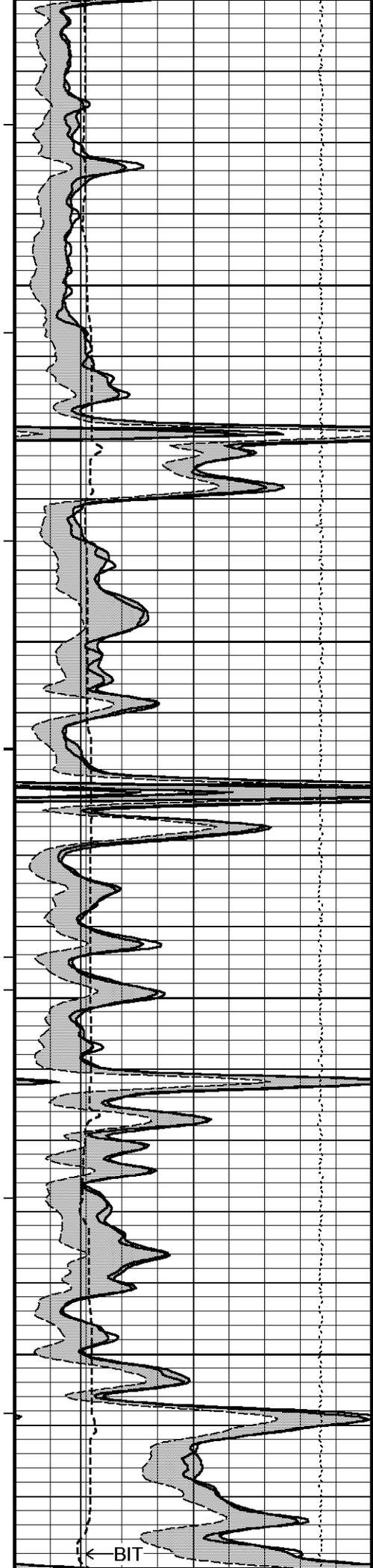
103°

4000

103°







105°

4300

106°

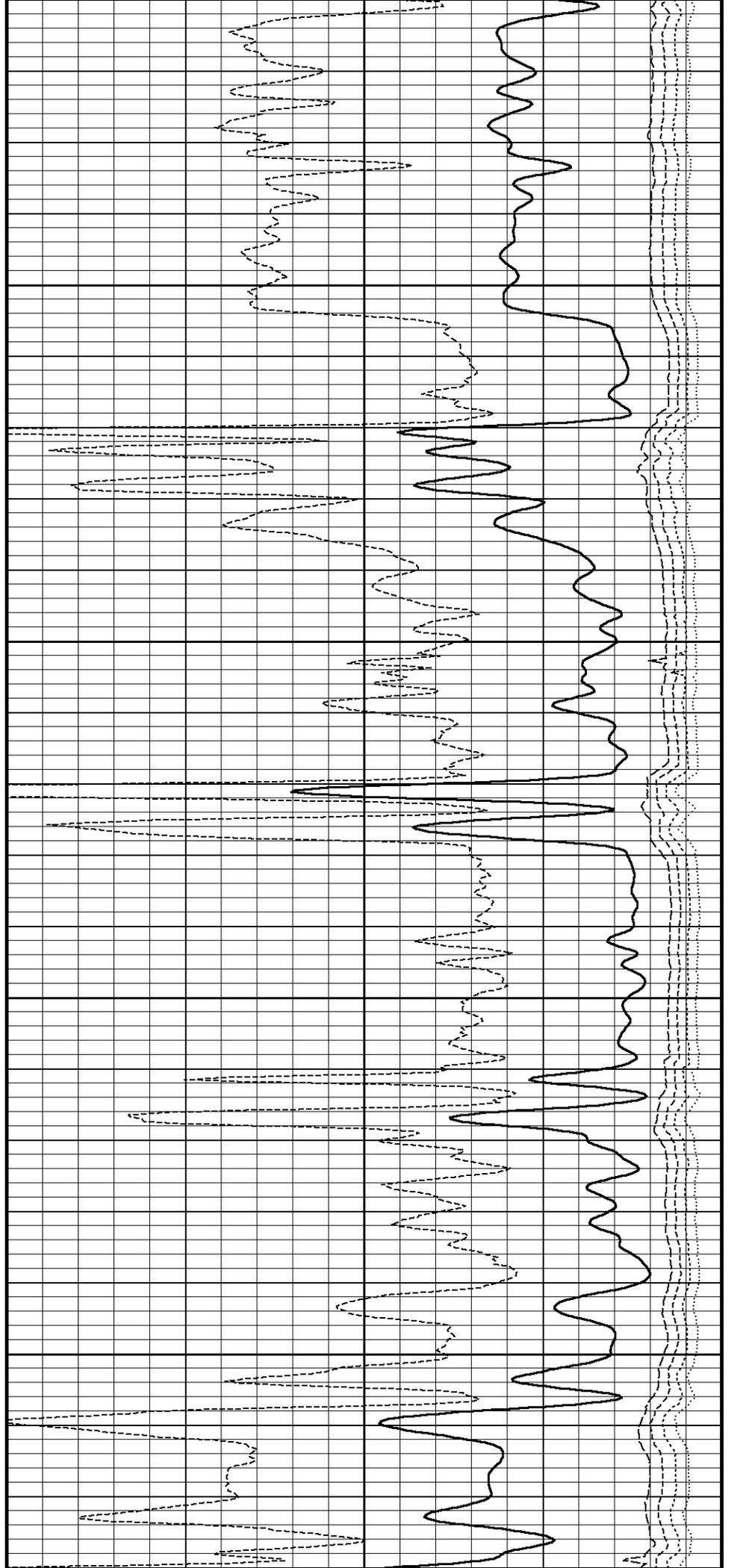
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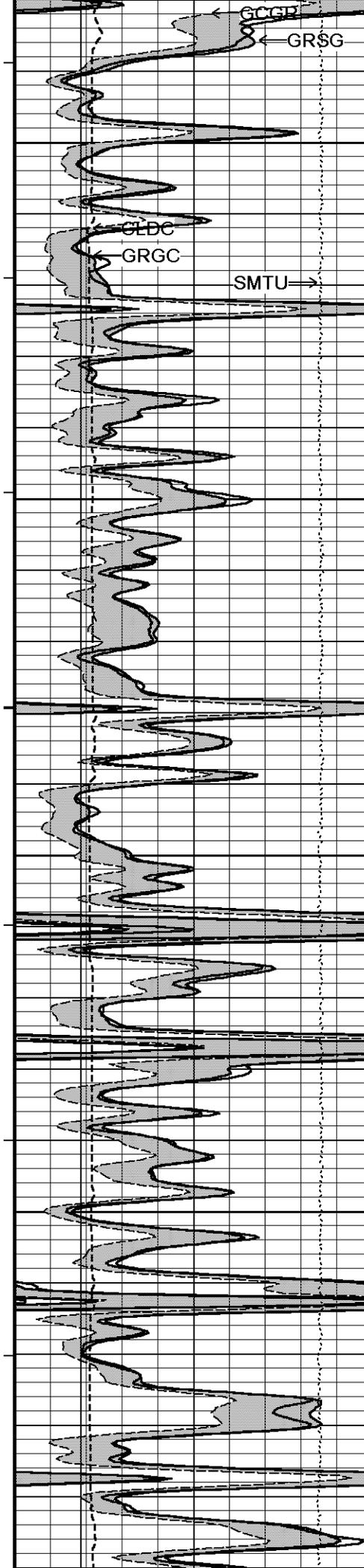
106°

4400

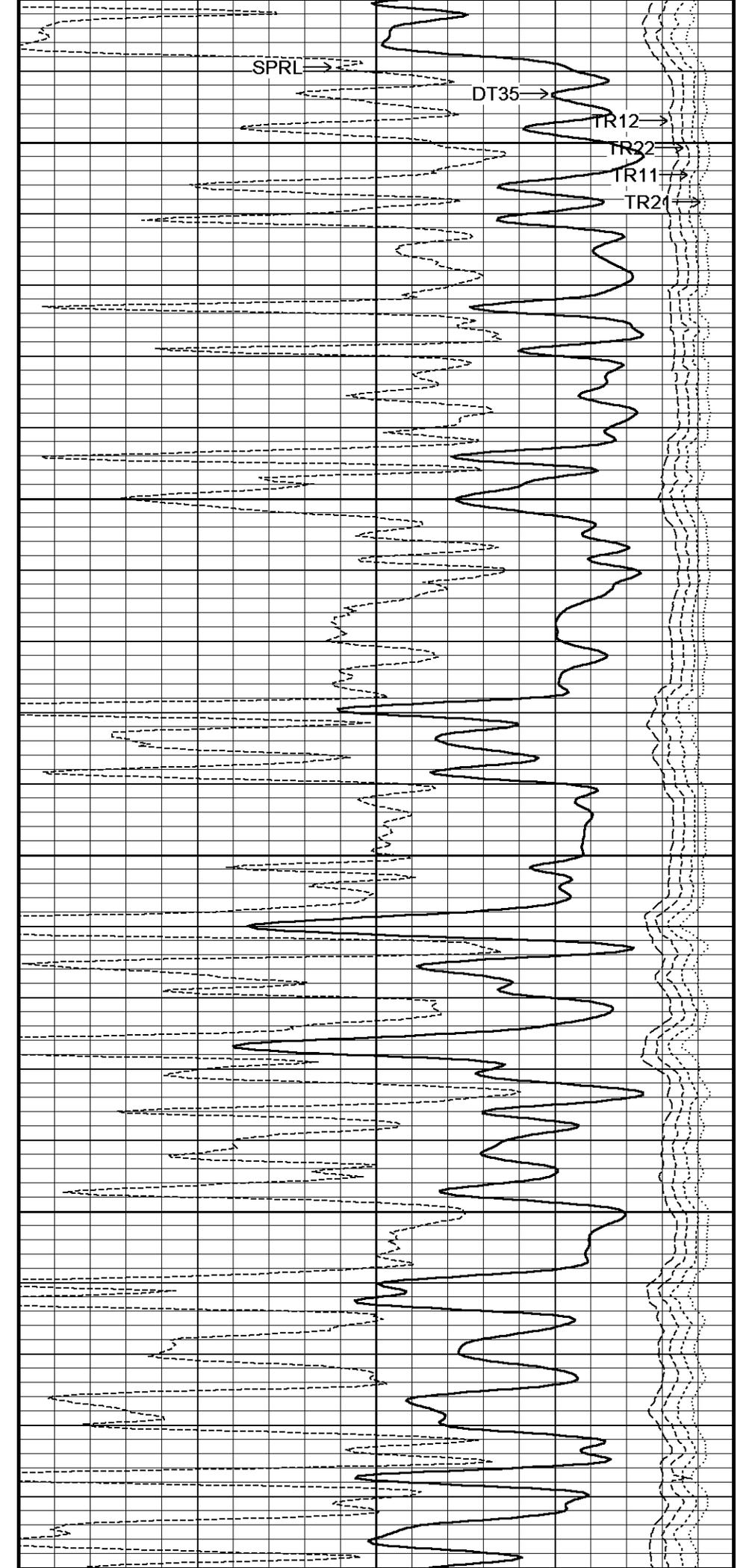
106°

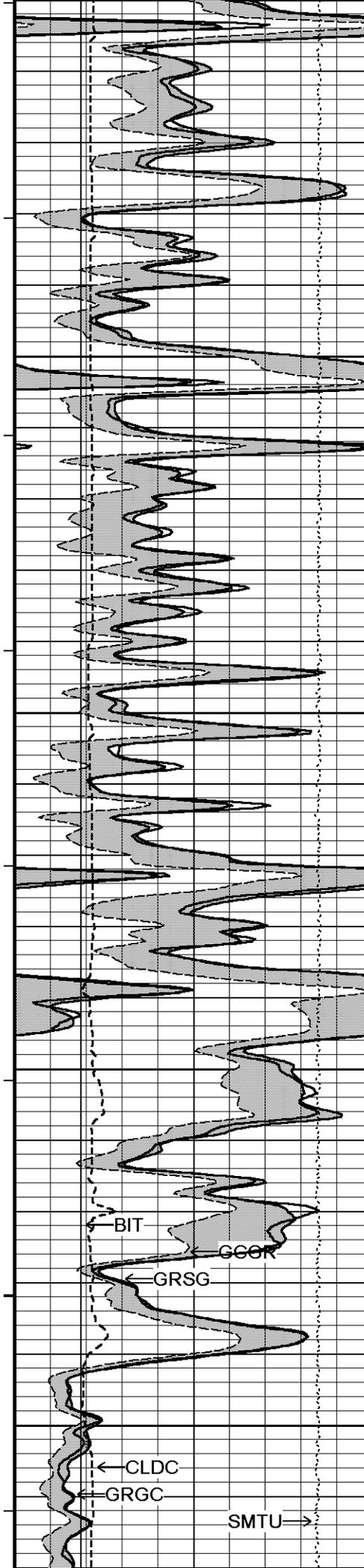
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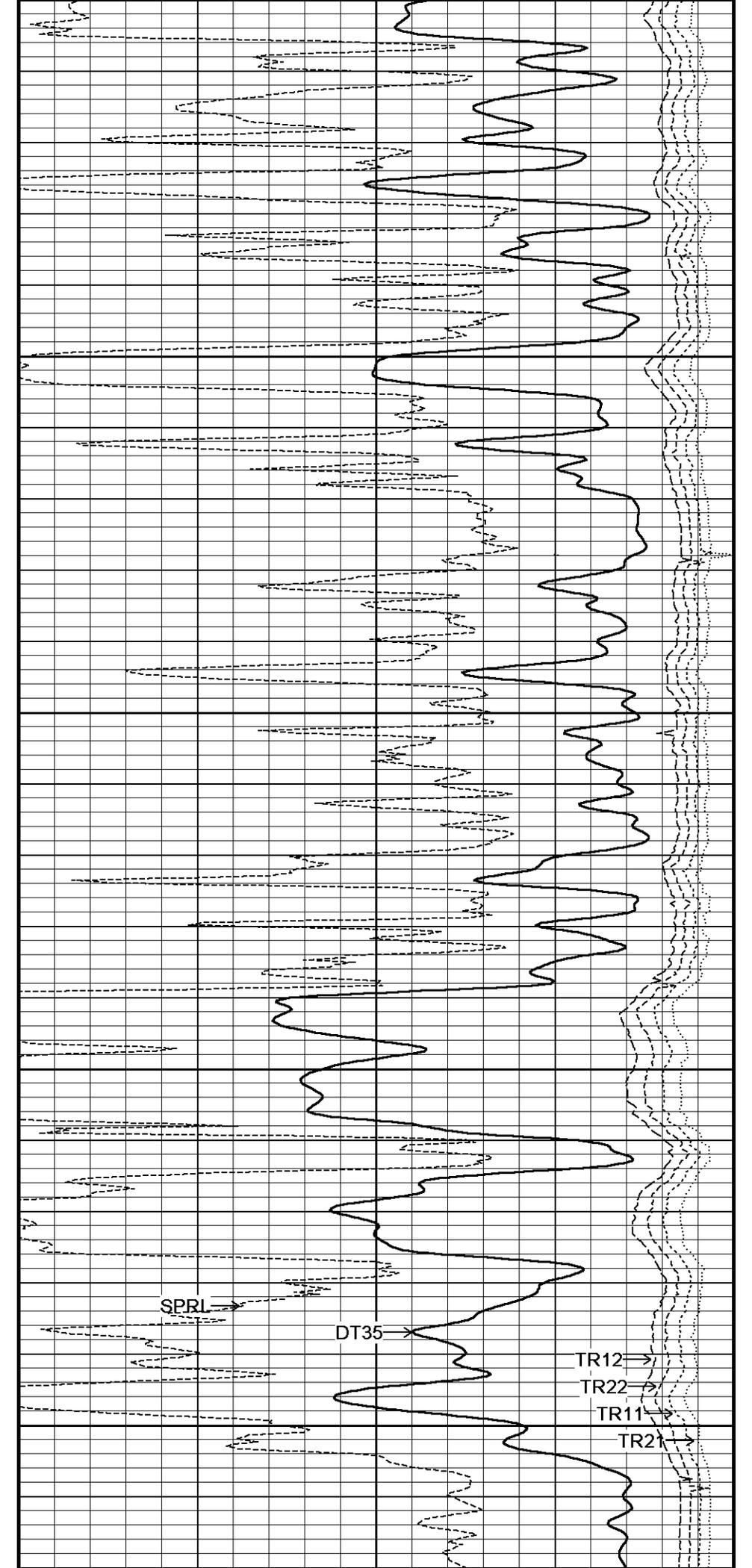


107°
4500
107°
4550
107°
4600
108°
4650
108°
4700





4700
109°
4750
109°
4800
109°
4850
110°
4900



SPRL →

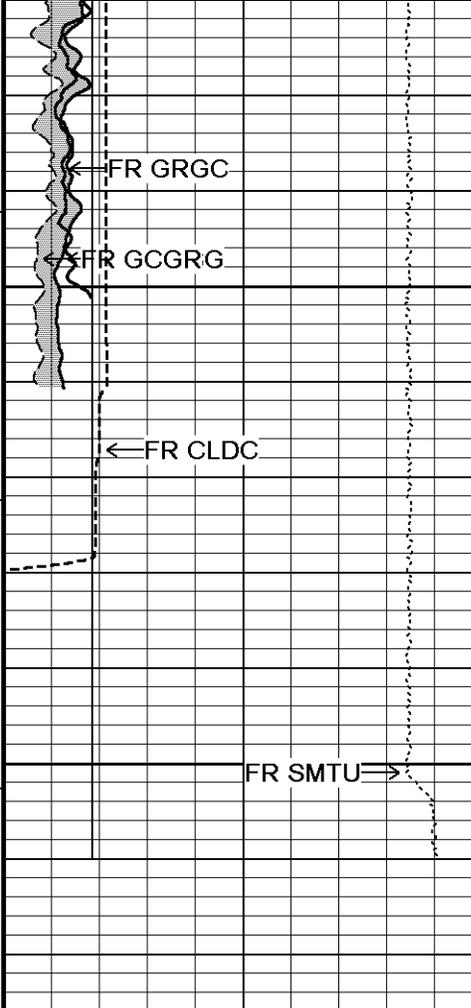
DT35 →

TR12 →

TR22 →

TR11 →

TR21 →



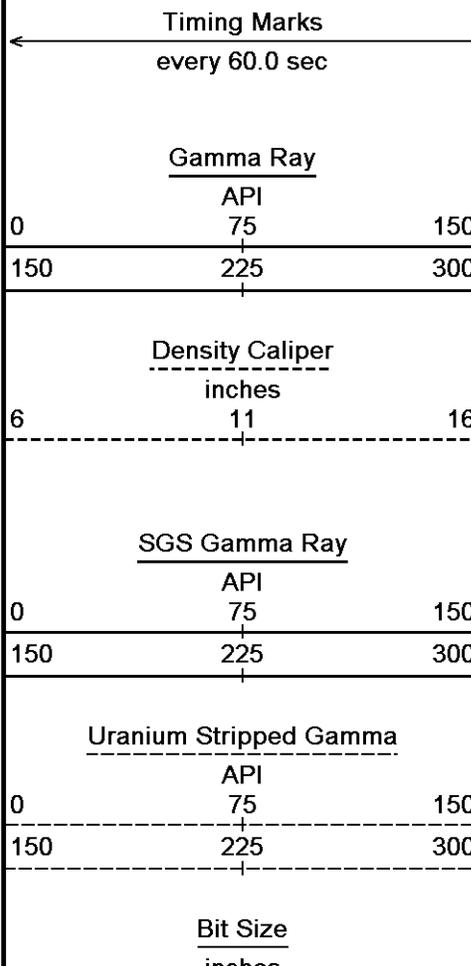
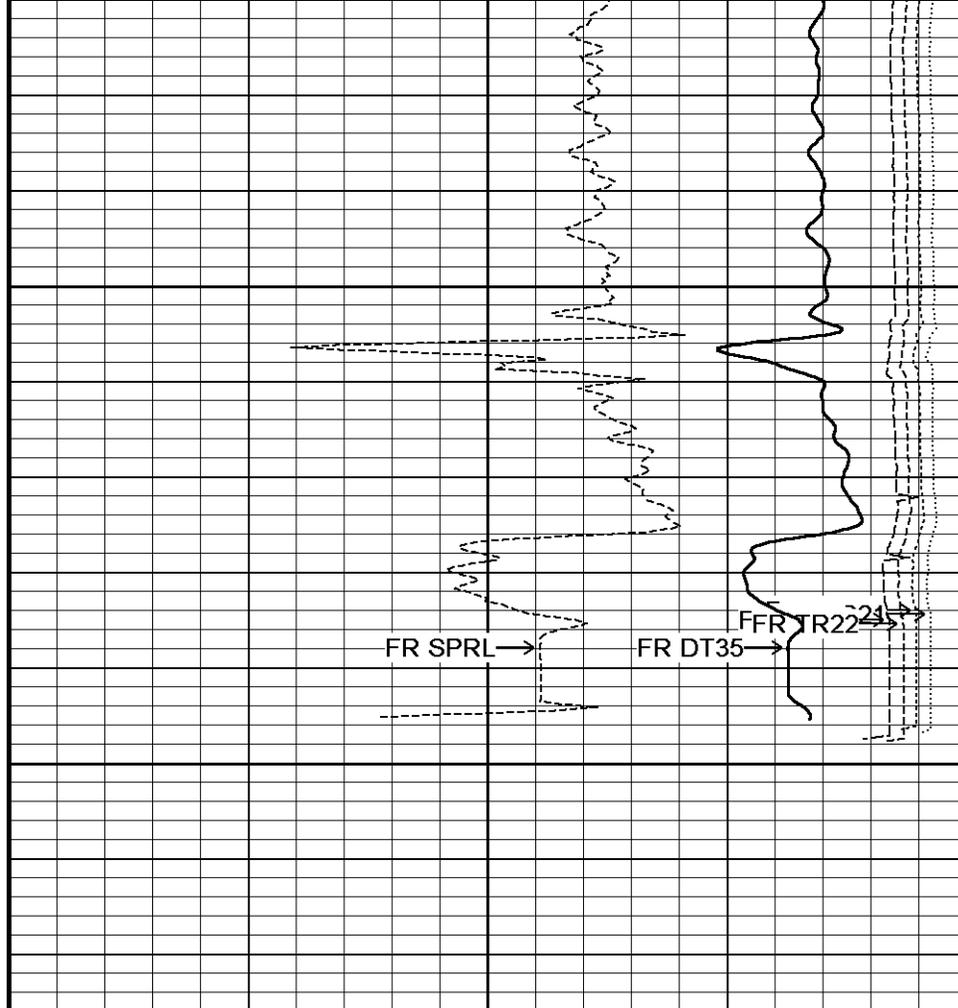
110°

4950

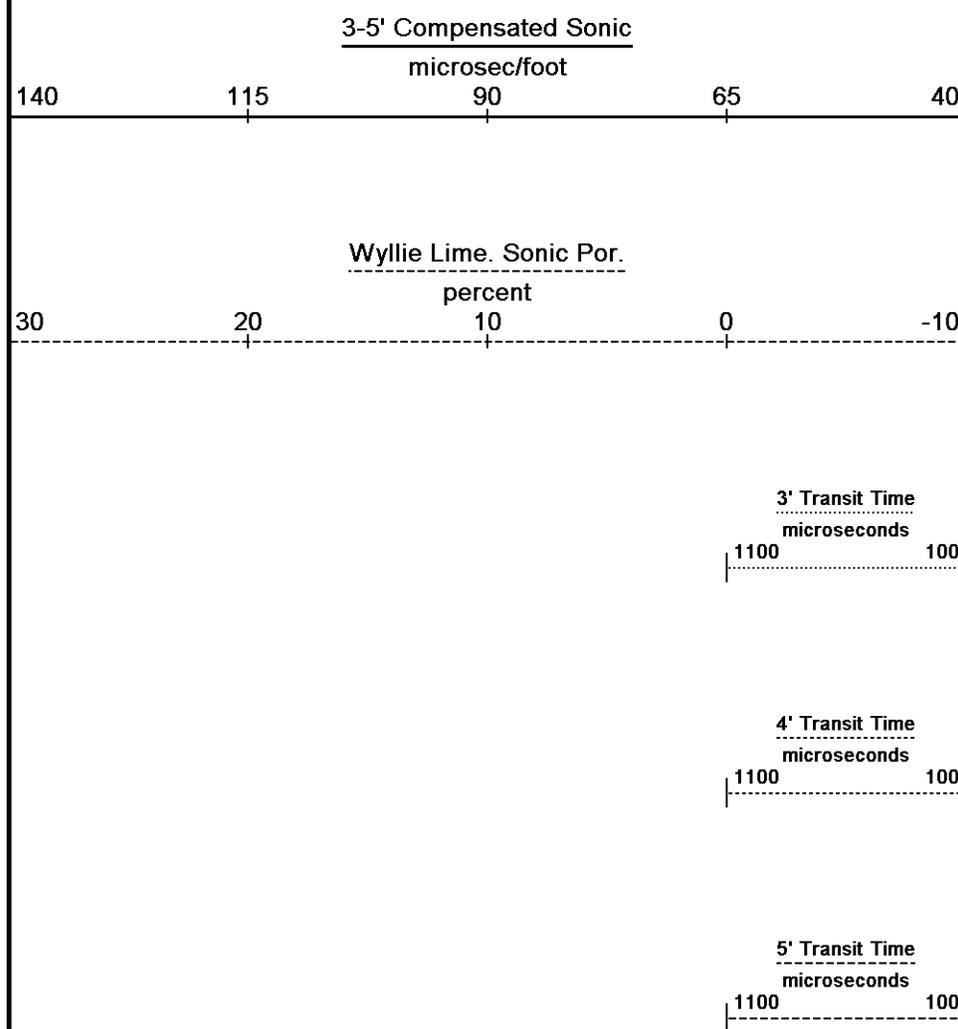
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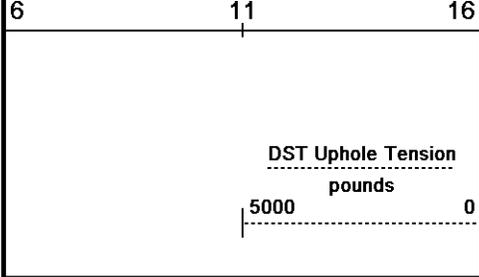
5024

Depth in Feet

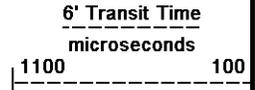


Borehole Temp in deg F





Replay
Scale
1:240

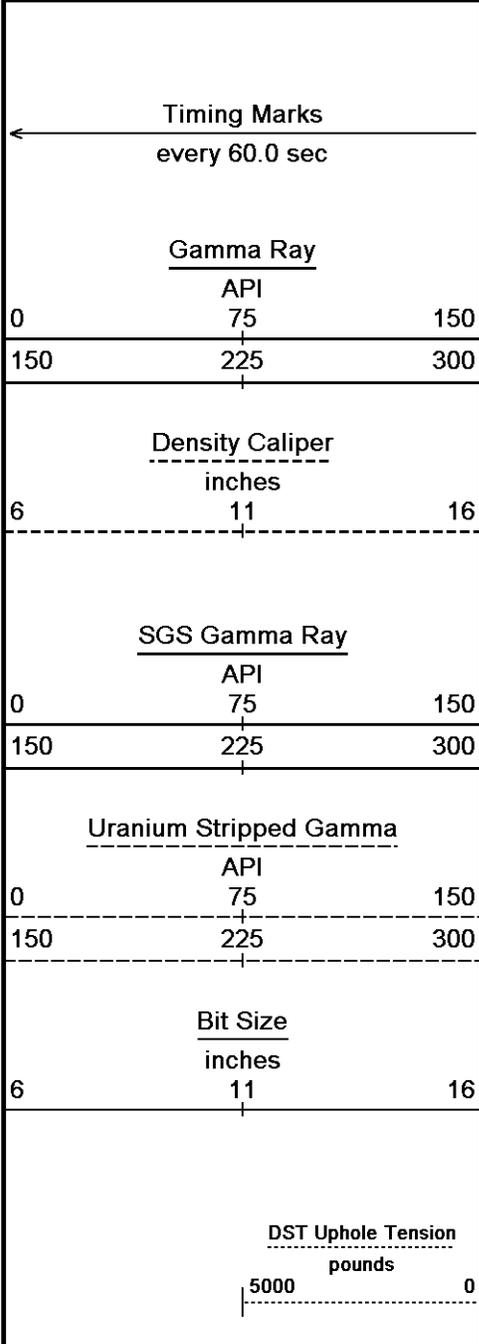


Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 27-SEP-2013 00:52
 Filename: C:\Minimus 13.05.9583\Log\PetroSantander Od...\PetroSantander Odd Williams #6 MAIN.dta Recorded on 26-SEP-2013 21:18
 System Versions: Logged with 13.05.9583 Processed with 13.05.9583 Plotted with 13.05.9583

↑ 5 INCH MAIN ↑

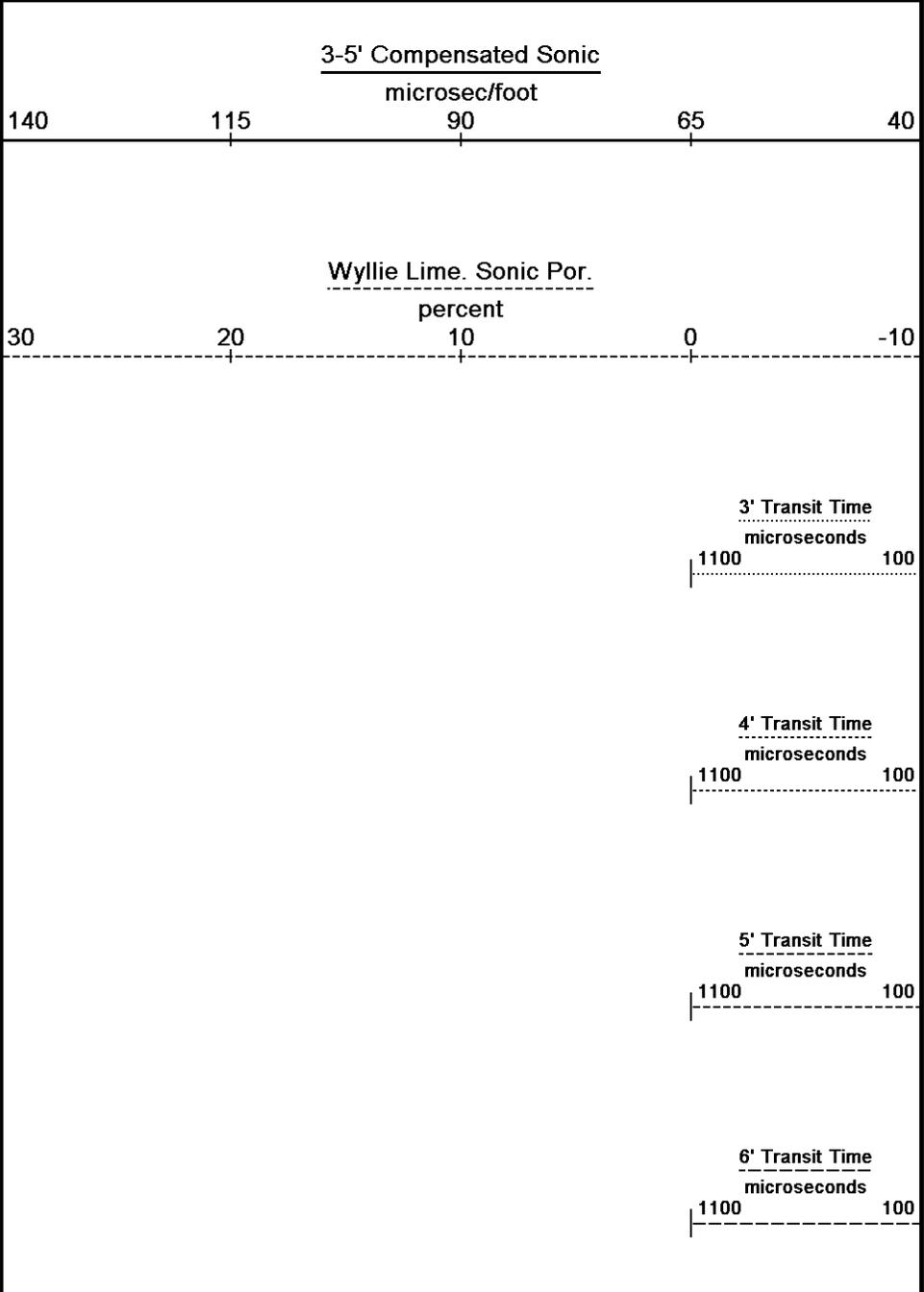
↓ REPEAT SECTION ↓

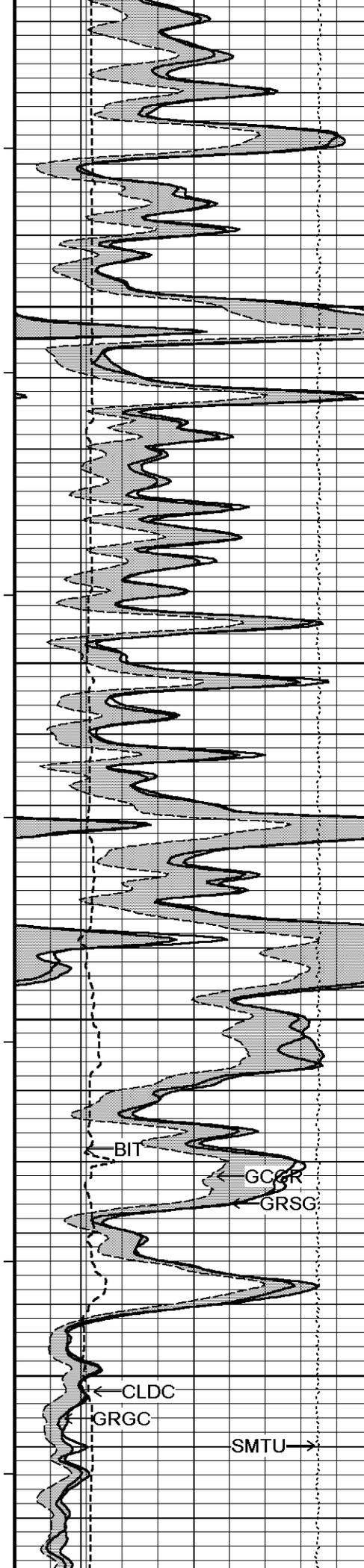
Depth Based Data - Maximum Sampling Increment 10.0cm Plotted on 27-SEP-2013 00:52
 Filename: C:\Minimus 13.05.9583\Log\PetroSantander...\PetroSantander Odd Williams #6 REPEAT.dta Recorded on 26-SEP-2013 20:48
 System Versions: Processed with 13.05.9583 Plotted with 13.05.9583



Depth
in
Feet

Borehole
Temp in
deg F





108°

4750

108°

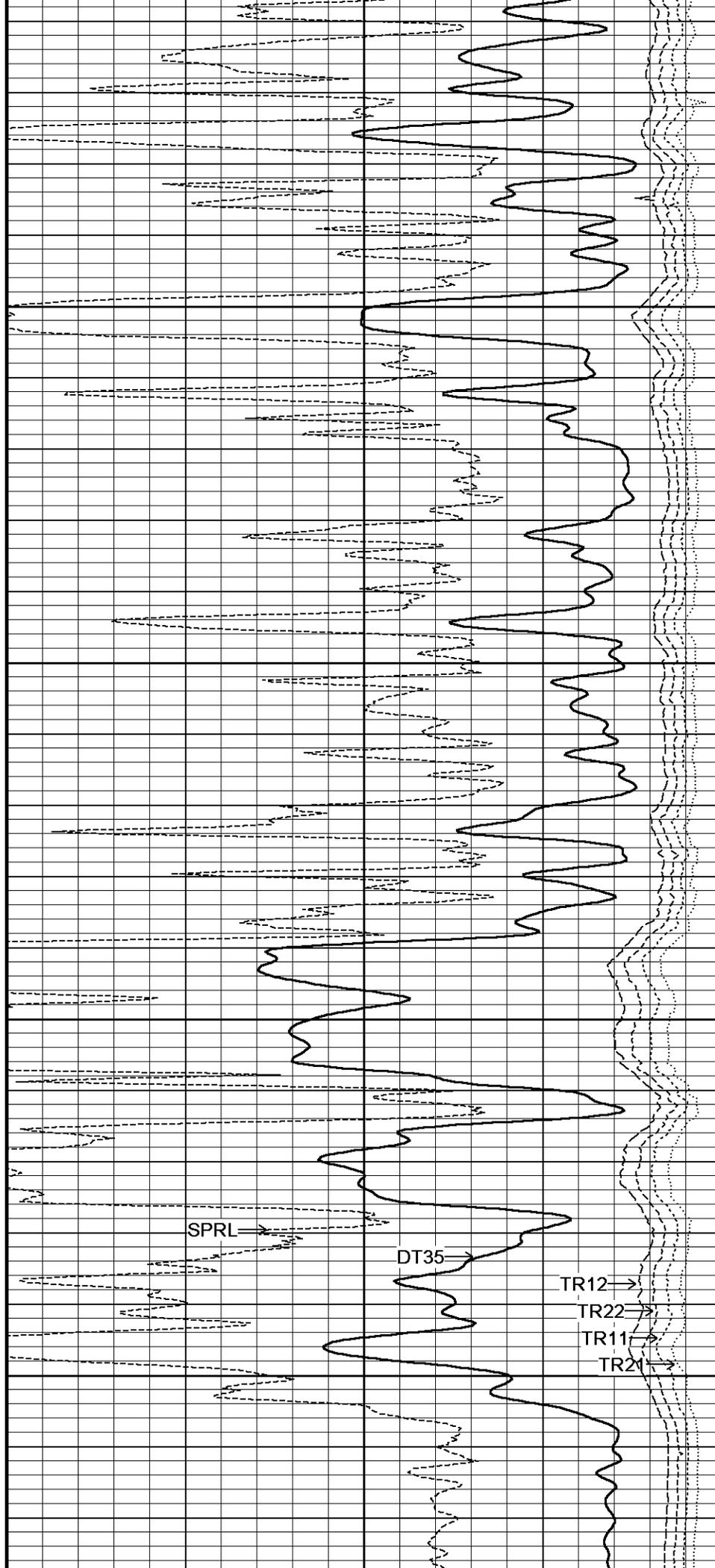
4800

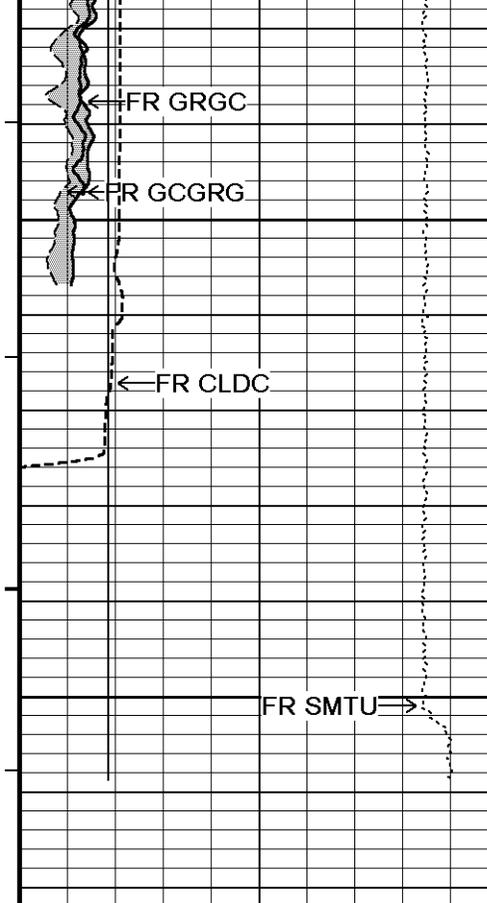
108°

4850

109°

4900





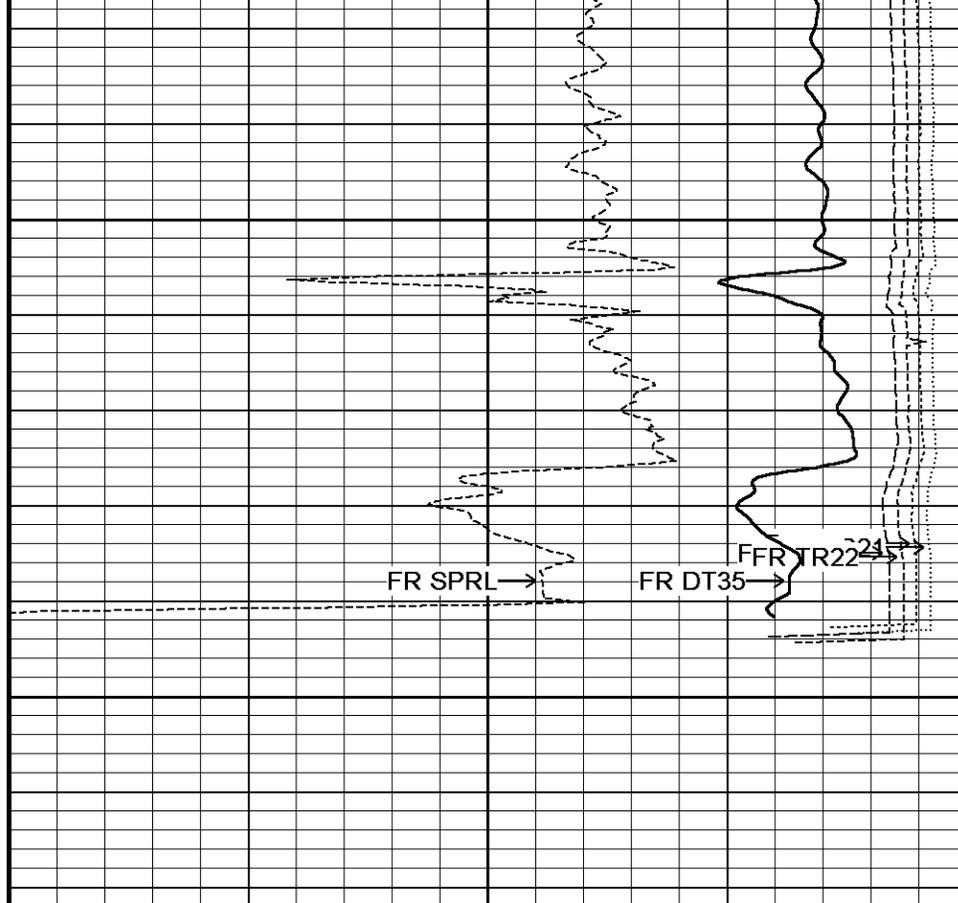
108°

4950

5000

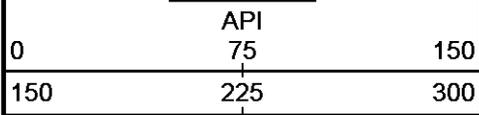
5020

Depth in Feet

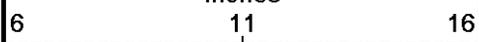


Timing Marks every 60.0 sec

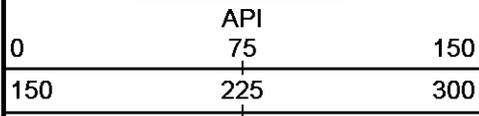
Gamma Ray



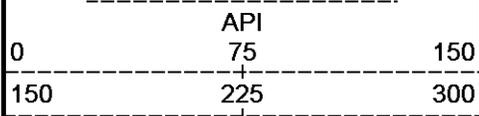
Density Caliper inches



SGS Gamma Ray



Uranium Stripped Gamma

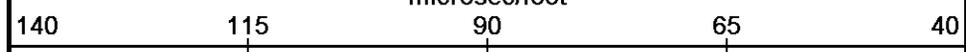


Bit Size inches

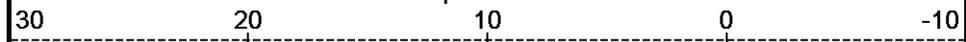


Borehole Temp in deg F

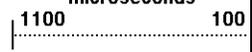
3-5' Compensated Sonic
microsec/foot



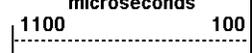
Wyllie Lime. Sonic Por.
percent



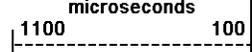
3' Transit Time
microseconds



4' Transit Time
microseconds



5' Transit Time
microseconds



DST Uphole Tension
pounds
5000 0

Replay
Scale
1:240

6' Transit Time
microseconds
1100 100

Depth Based Data - Maximum Sampling Increment 10.0cm

Plotted on 27-SEP-2013 00:52

Filename: C:\Minimus 13.05.9583\Log\PetroSantander...\PetroSantander Odd Williams #6 REPEAT.dta

Recorded on 26-SEP-2013 20:48

System Versions: Processed with 13.05.9583 Plotted with 13.05.9583



REPEAT SECTION



BEFORE SURVEY CALIBRATION

C:\Minimus 13.05.9583\Log\PetroSantander Odd Williams #6\PetroSantander Odd Williams #6 MAIN.dta

General Constants All 000

Last Edited on 26-SEP-2013,18:14

General Parameters

Mud Resistivity	0.620	ohm-metres
Mud Resistivity Temperature	91.000	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	Array Ind. Six Res Rt
RWA Constant A	1.000
RWA Constant M	2.000
SW/APOR Tool Source	0.000

Gamma Calibration MCG-D.K 469

Field Calibration on 24-SEP-2013 02:57

	Measured	Calibrated (API)
Background	68	45
Calibrator (Gross)	1162	770
Calibrator (Net)	1094	725

Gamma Constants MCG-D.K 469

Last Edited on 24-SEP-2013,08:11

Gamma Calibrator Number	GRC38	
Mud Density	1.07	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 469

Field Calibration on 18-AUG-2013,02:35

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

High Resolution Temperature Constants MCG-D.K 469

Last Edited on 18-AUG-2013,02:35

Pre-filter Length	11
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Sonic Constants MSS-C.K 330

Last Edited on 29-JUN-2013,19:32

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	3.4' Compensated Sonic	

Sonic used for Porosities	3-4 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	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 64

Base Calibration on 15-AUG-2013 14:54
Field Calibration on 24-SEP-2013 02:31

Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	16560	3.99
2	24992	5.98
3	32880	7.97
4	41184	9.86
5	50688	11.92
6	N/A	N/A

Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	5.83	5.98

Spectral Gamma Calibration SGS-E.J 150

Base Calibration on 19-APR-2013,17:21
Field Calibration on 19-APR-2013,17:21

Base Calibration					
Potassium Calibrator					
	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5

Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	204.7	109.8	22.0	0.9	1.3
Calibrator (Net)	124.8	86.7	19.7	0.2	-0.1

Concentrations	K %	U ppm	Th ppm
	5.8	0.0	0.0

Uranium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	480.7	164.8	14.5	7.2	4.1
Calibrator (Net)	400.8	141.7	12.3	6.5	2.7

Concentrations	K %	U ppm	Th ppm
	0.0	9.8	0.0

Thorium Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	397.7	137.8	11.3	6.3	15.0
Calibrator (Net)	317.8	114.7	9.0	5.6	13.6

Concentrations	K %	U ppm	Th ppm
	0.0	0.0	44.3

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	914.0	361.7	43.2	12.9	17.8
Calibrator (Net)	834.0	338.5	41.0	12.1	16.4

Field Calibration

Gamma Ray

	Measured	Calibrated (API)
Background	112	23
Calibrator (Gross)	1354	273
Calibrator (Net)	1242	250

Mixture Calibrator

	Gate 1	Gate 2	Gate 3	Gate 4	Gate 5
Background	79.9	23.1	2.2	0.8	1.4
Calibrator (Gross)	914.0	361.7	43.2	12.9	17.8
Calibrator (Net)	834.0	338.5	41.0	12.1	16.4

Spectral Gamma Constants SGS-E.J 150

Last Edited on 03-SEP-2013,10:47

Background Calibrator Number	0
Mixture Calibrator Number	147-1
Potassium Calibrator Number	148-1
Uranium Calibrator Number	150-1
Thorium Calibrator Number	149-1
Mud Density	1.09 gm/cc
Caliper Source for Processing	Density Caliper
Tool Position	Eccentred
Concentration of KCl	kppm
K Mud Type	Chloride
K Mud Concentration	0.00 %

DOWNHOLE EQUIPMENT

C:\Minimus 13.05.9583\Log\PetroSantander Odd Williams #6\PetroSantander Odd Williams #6 MAIN.dta

3/8" Triple Cone Cable Head (MCB C A)
MCB-C.A 5 LG: 1.58 ft WT: 15.4 lb OD: 2.24 in

Compact Comms Gamma
MCG-D.K 469 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in



63.17 ft GRGC - Gamma Ray
60.26 ft CGXT - MCG External Temperature

Spectral Gamma Ray Sub
 SGS-E.J 150 LG: 7.78 ft WT: 105.8 lb OD: 3.54 in

Compact Micro-log
 MML-A 3 LG: 7.97 ft WT: 81.6 lb OD: 2.24 in

Compact Neutron
 MDN-A.B 66 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

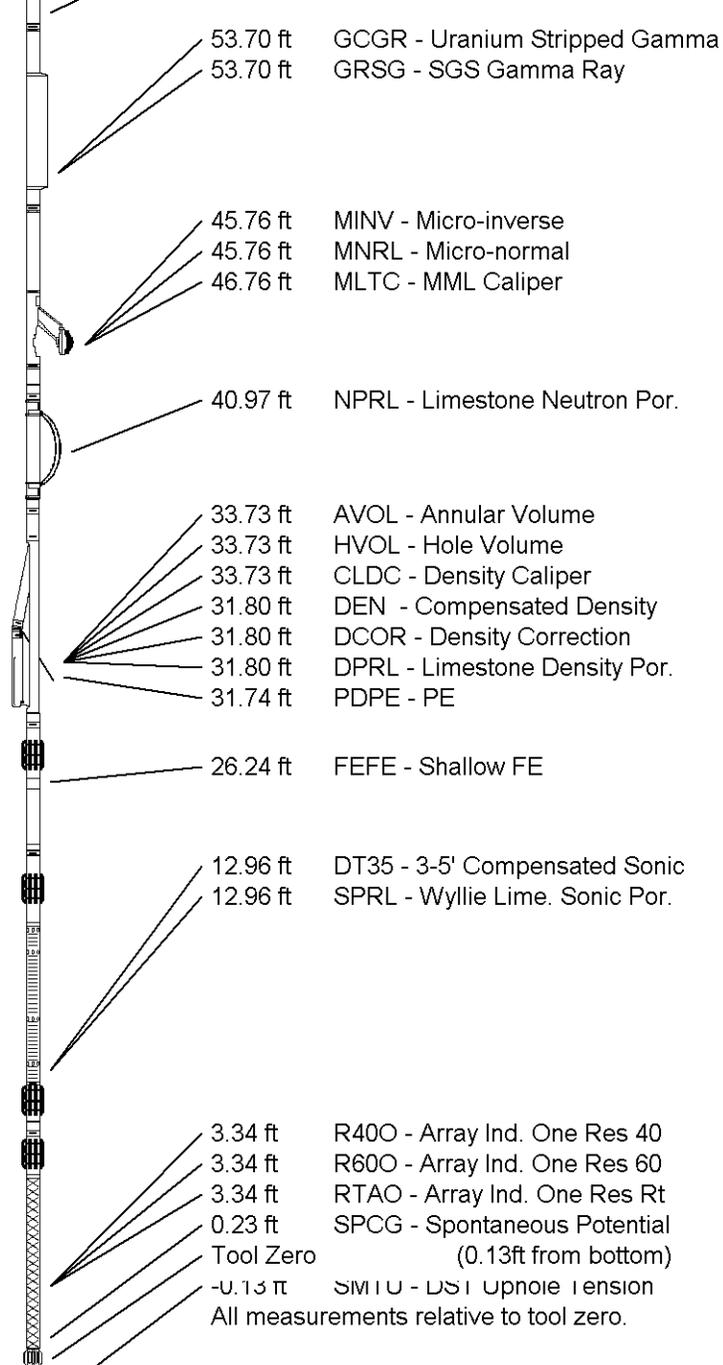
Compact Density/Caliper
 MPD-B 64 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Focussed Electric
 MFE-B.J 353 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 167 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 70.03 ft Weight: 577.6 lb



COMPANY PETROSANTANDER (USA) INC.
WELL ODD WILLIAMS #6
FIELD CHRISTABELLE
PROVINCE/COUNTY KEARNY
COUNTRY/STATE UNITED STATES / KANSAS

Elevation Kelly Bushing	4004.00	feet	First Reading	4998.00	feet
Elevation Drill Floor	4002.00	feet	Depth Driller	5000.00	feet
Elevation Ground Level	3092.00	feet	Depth Logger	5001.00	feet



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 WITH INTEGRATED TRANSIT TIME
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