



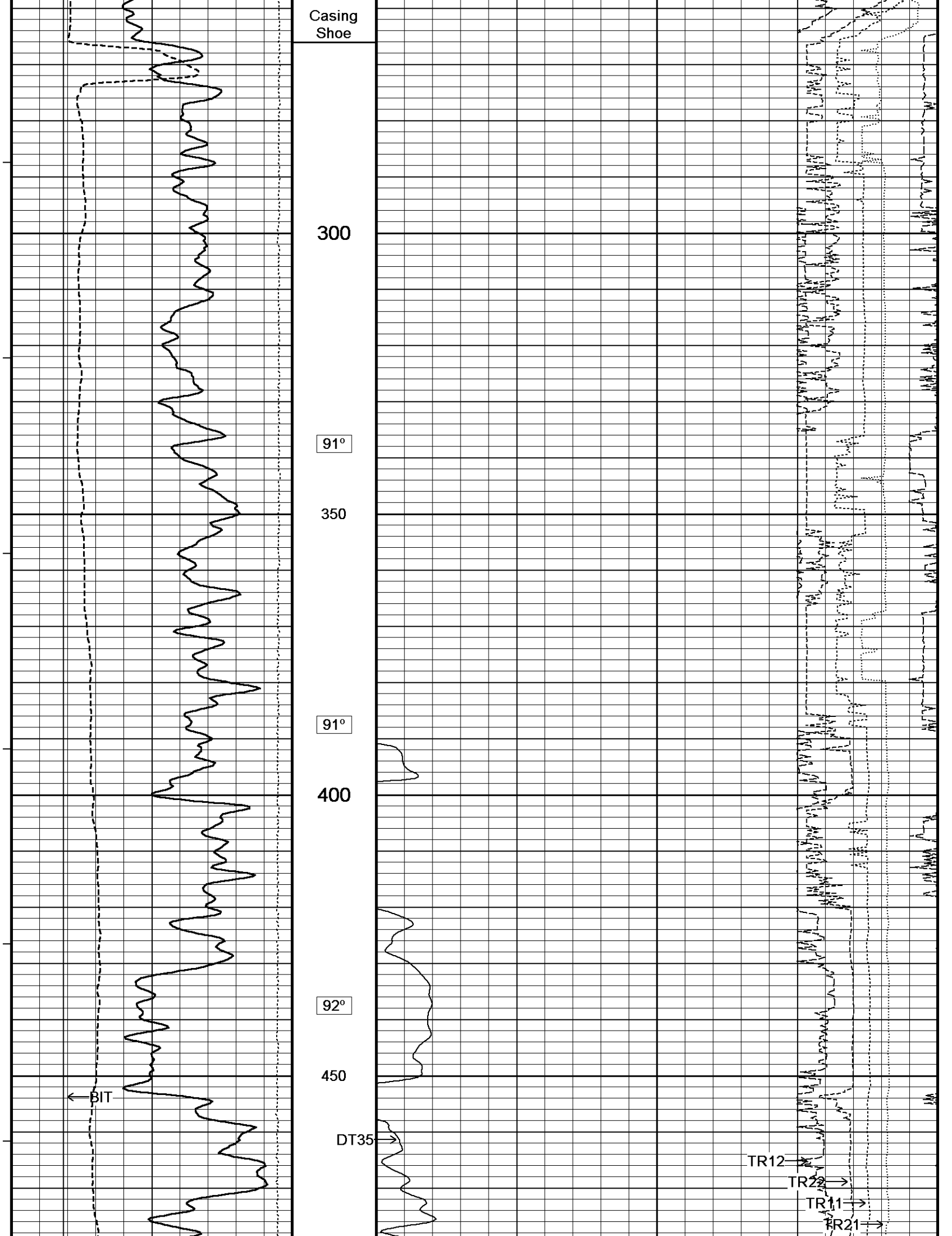
Weatherford

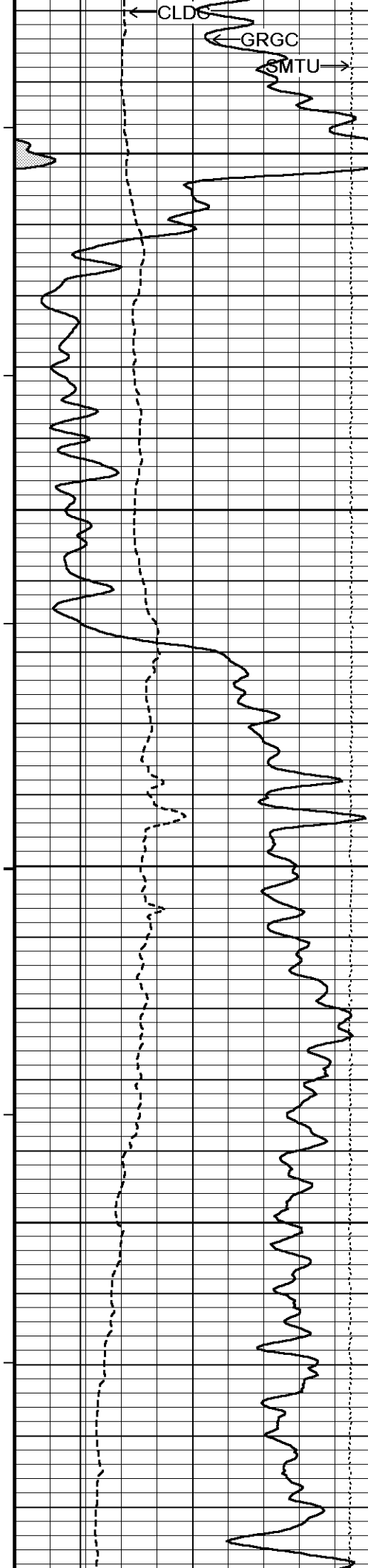
**COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME**

COMPANY		SHAKESPEARE OIL COMPANY, INC.			
WELL		JANZEN #3-26			
FIELD		PENCE EAST			
PROVINCE/COUNTY		SCOTT			
COUNTRY/STATE		U.S.A. / KANSAS			
LOCATION		1000' FSL & 1200' FEL			
SEC 26	TWP 16S	RGE 34W	Other Services		MAI/MFE
Latitude			MPD/MDN		
Longitude			MML		
API Number	15-171-21067				
Permanent Datum GL, Elevation 3107 feet					
Log Measured From KB					
Drilling Measured From KB @ 12 feet			Elevations: feet		
Date	23-JUN-2014		KB 3119.00		
Run Number	ONE		DF 3117.00		
Service Order	7577-90708978		GL 3107.00		
Depth Driller	4890.00		feet		
Depth Logger	4890.00		feet		
First Reading	4877.00		feet		
Last Reading	266.00		feet		
Casing Driller	266.00		feet		
Casing Logger	266.00		feet		
Bit Size	7.875		inches		
Hole Fluid Type	CHEMICAL				
Density / Viscosity	9.30 lb/USg		57.00 CP		
PH / Fluid Loss	10.50		9.60 ml/30Min		
Sample Source	MUD PIT				
Rm @ Measured Temp	0.44 @ 94.0		ohm-m		
Rmf @ Measured Temp	0.35 @ 94.0		ohm-m		
Rmc @ Measured Temp	0.53 @ 94.0		ohm-m		
Source Rmf / Rmc	CALC		CALC		
Rm @ BHT	0.36 @ 115.0		ohm-m		
Time Since Circulation	4 HOURS				
Max Recorded Temp	115.00		deg F		
Equipment / Base	13244		LIB		
Recorded By	JEFFREY RANDLE		ADAM SILL		
Witnessed By	WES HANSEN				
JOB #	LB14-187				

BOREHOLE RECORD					Last Edited: 23-JUN-2014 10:23
Bit Size inches		Depth From feet		Depth To feet	
7.875		266.00		4890.00	
CASING RECORD					
Type	Size inches	Depth From feet	Shoe Depth feet	Weight pounds/ft	
SURFACE	8.625	0.00	266.00	24.00	

REMARKS
- SOFTWARE ISSUE: WLS 13.08.2113.
- 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: 2072 CU.FT.
- ANNULAR HOLE VOLUME WITH 5.5 INCH PRODUCTION CASING FROM TD TO 3750 FEET: 196 CU.FT.





92°

500

92°

550

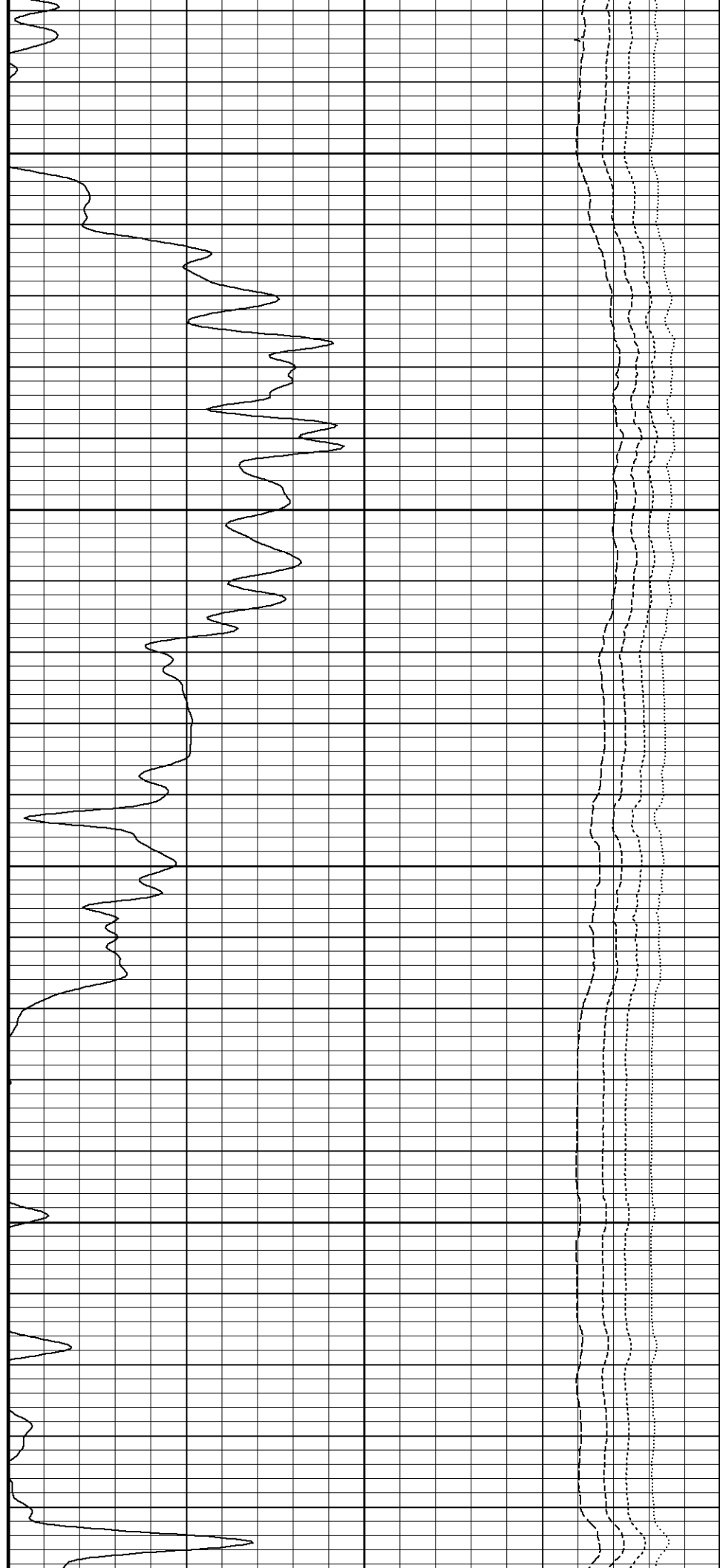
93°

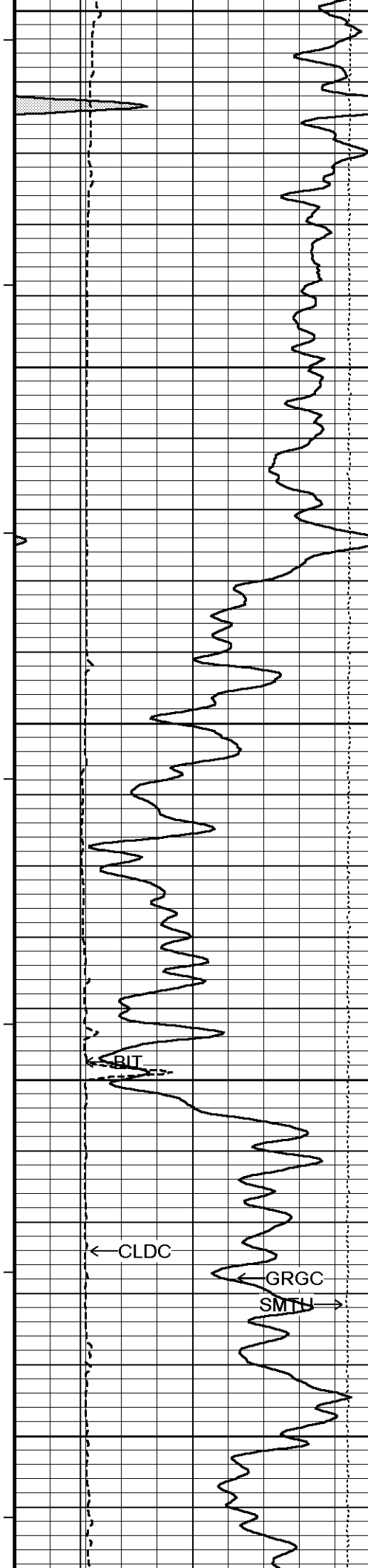
600

93°

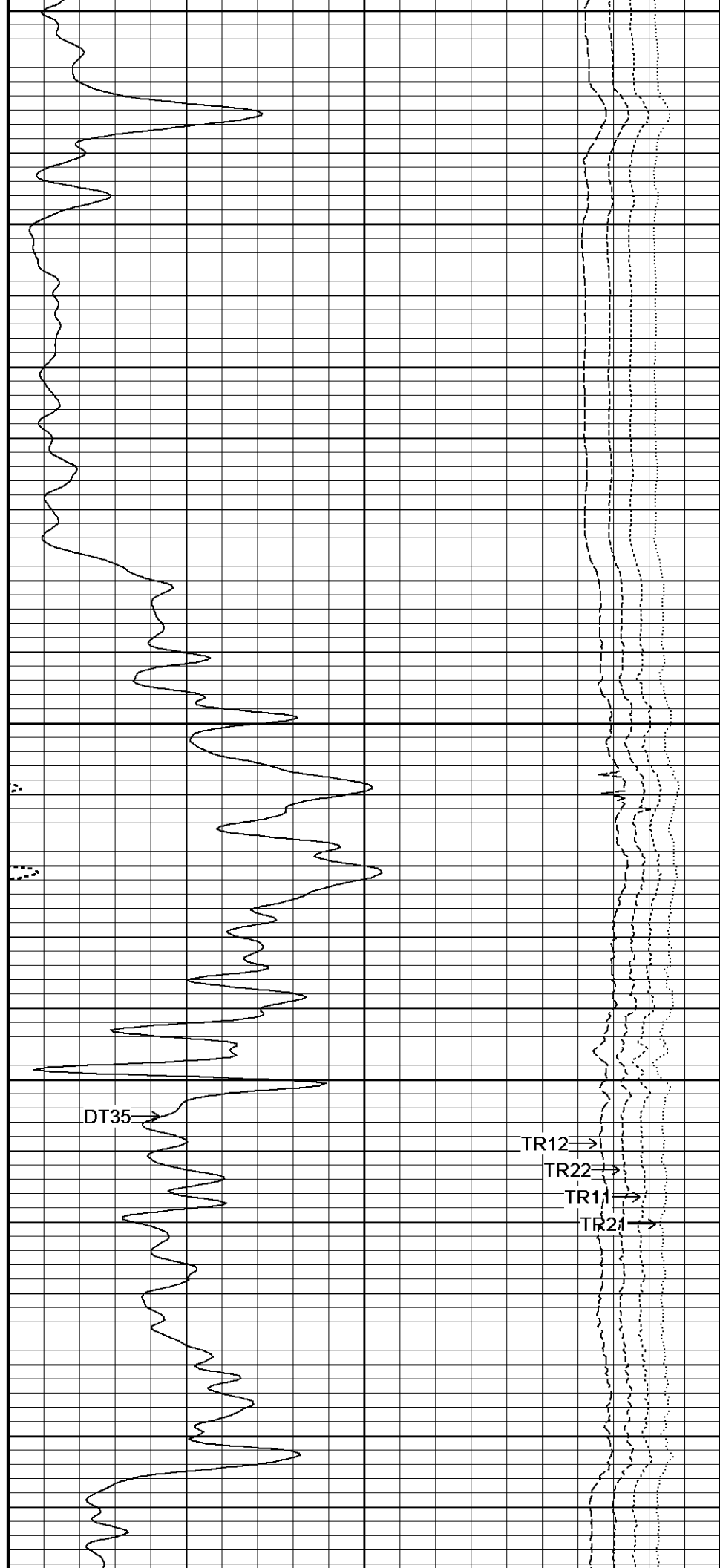
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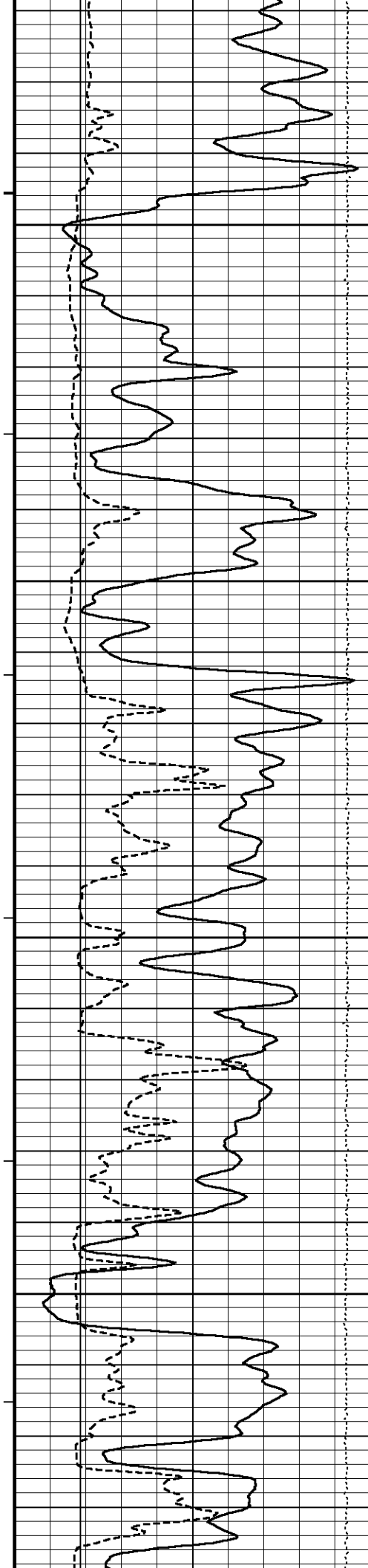
94°



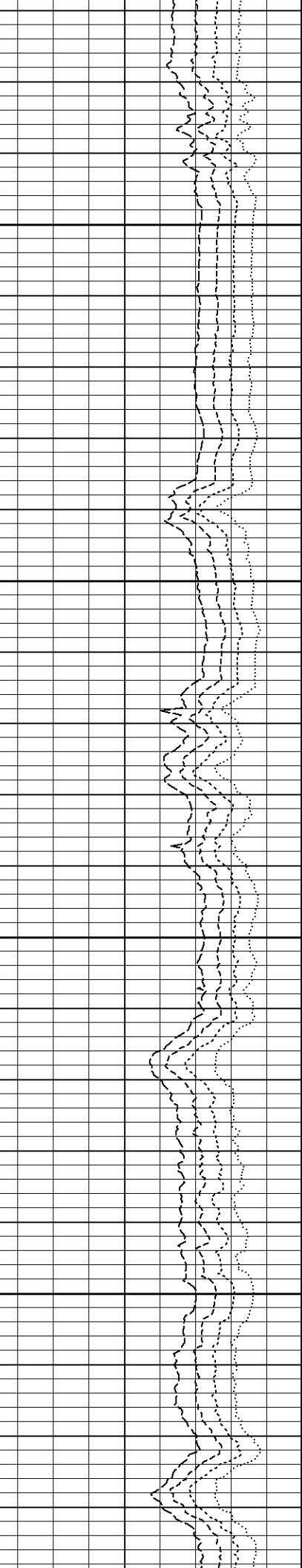
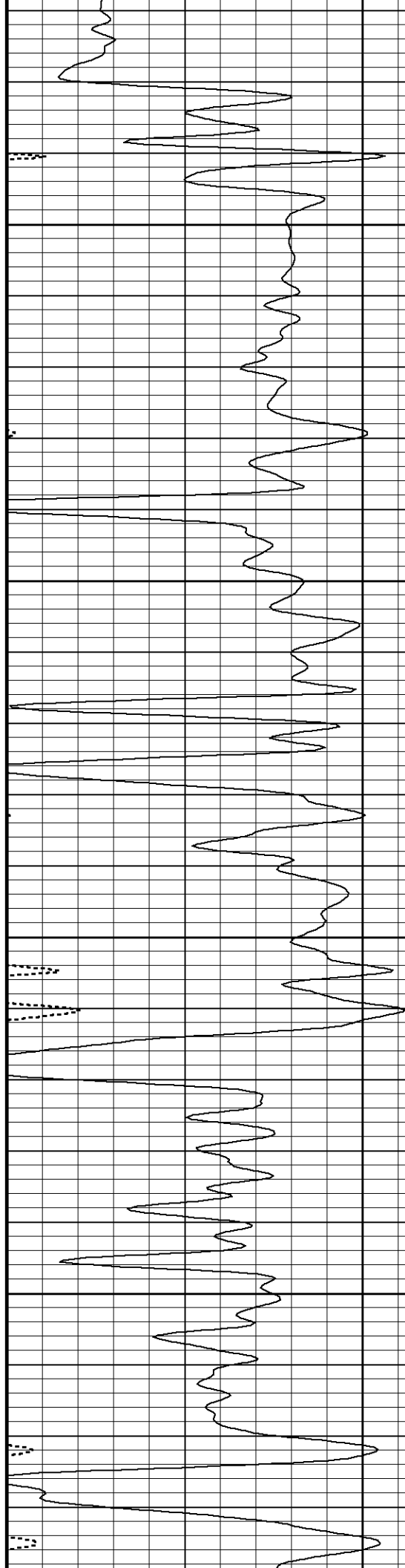


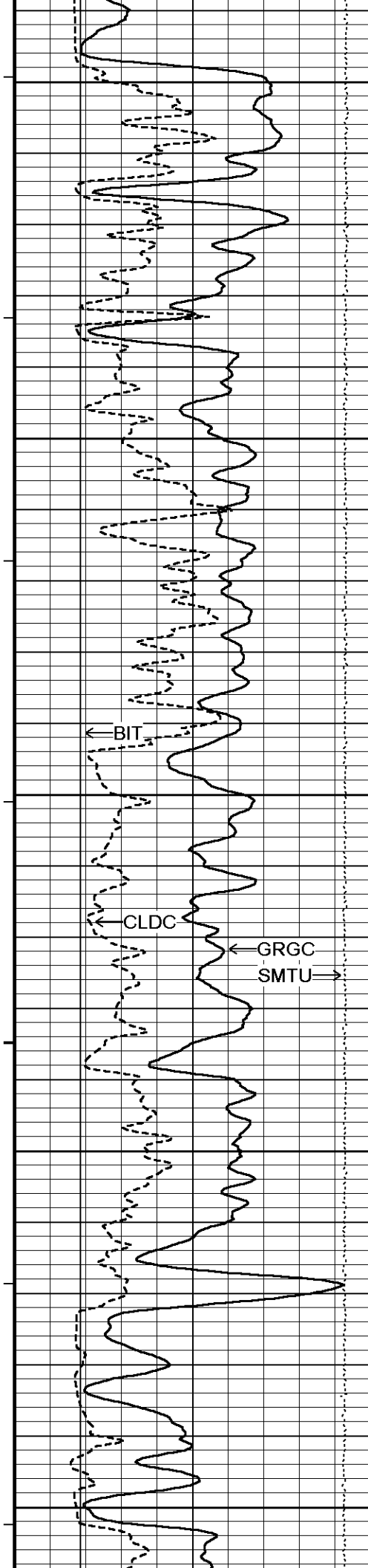
700
94°
750
94°
800
94°
850
94°
900



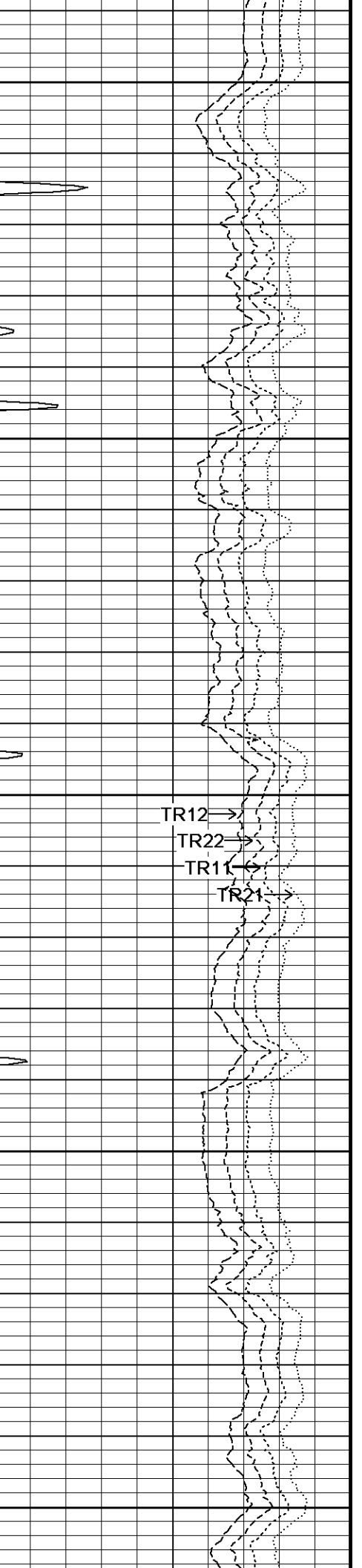
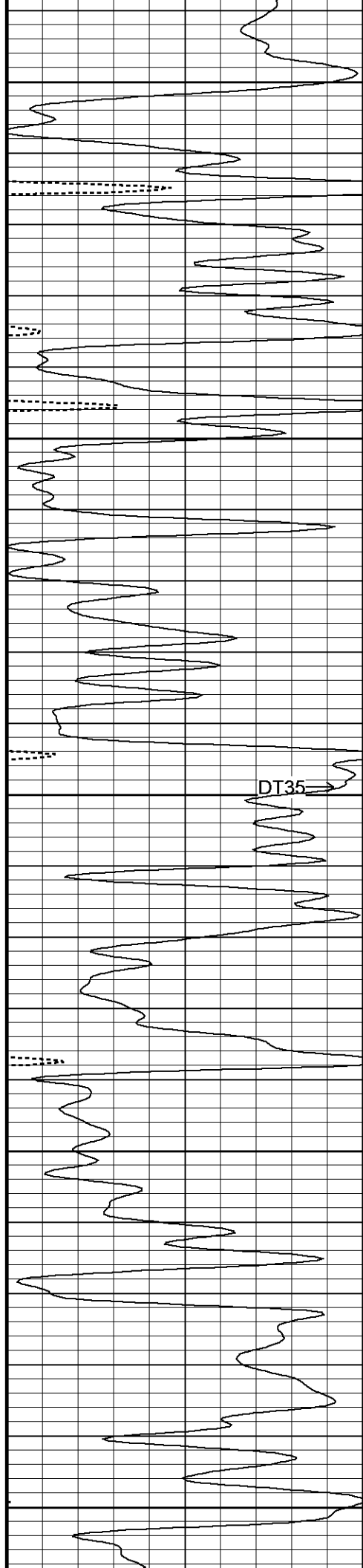


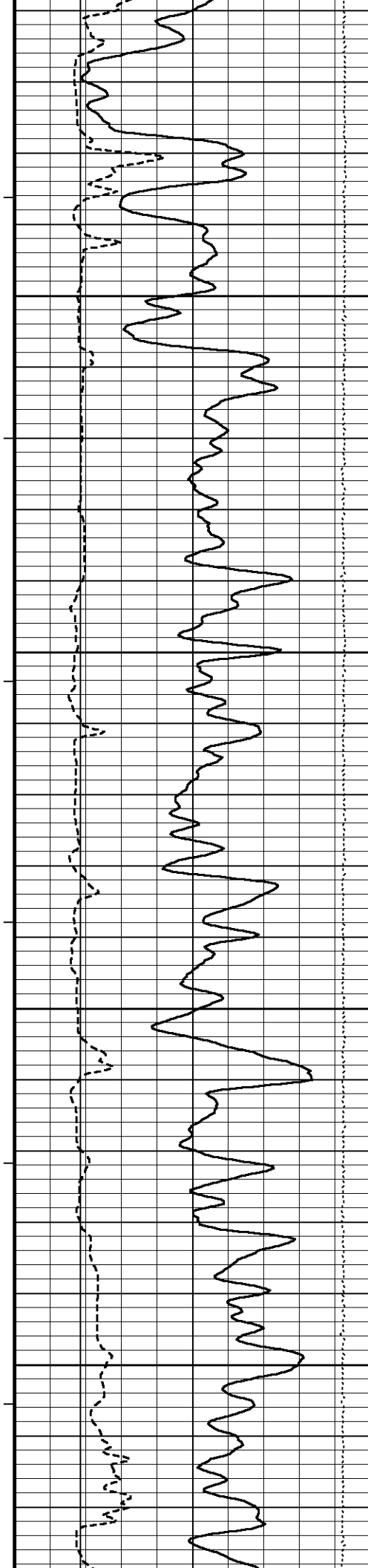
95°
950
95°
1000
96°
1050
96°
1100
96°





1150
97°
1200
97°
1250
97°
1300
97°
1350





98°

1400

98°

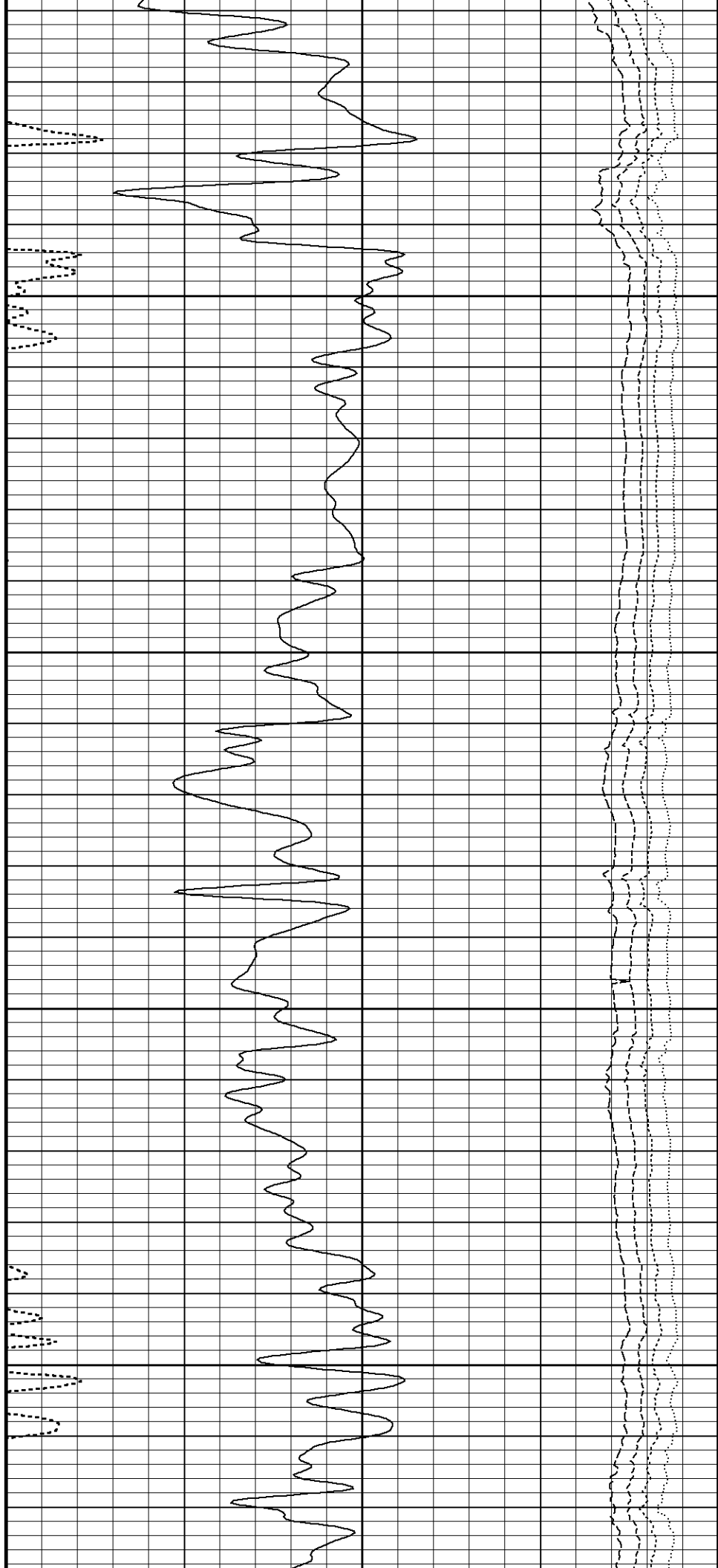
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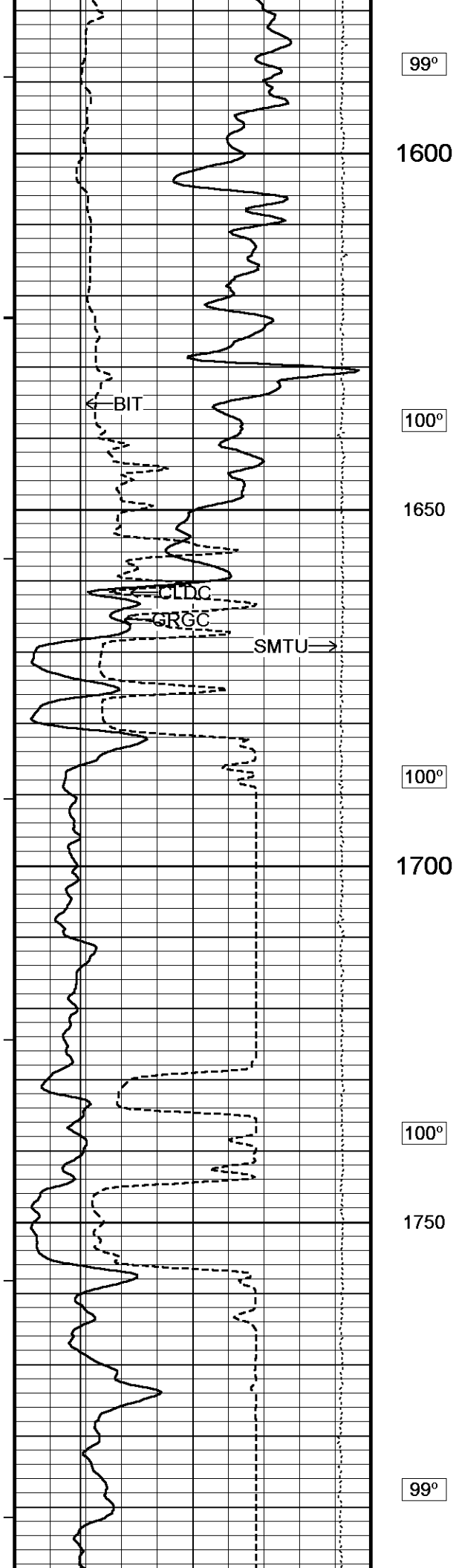
99°

1500

99°

1550





99°

1600

100°

1650

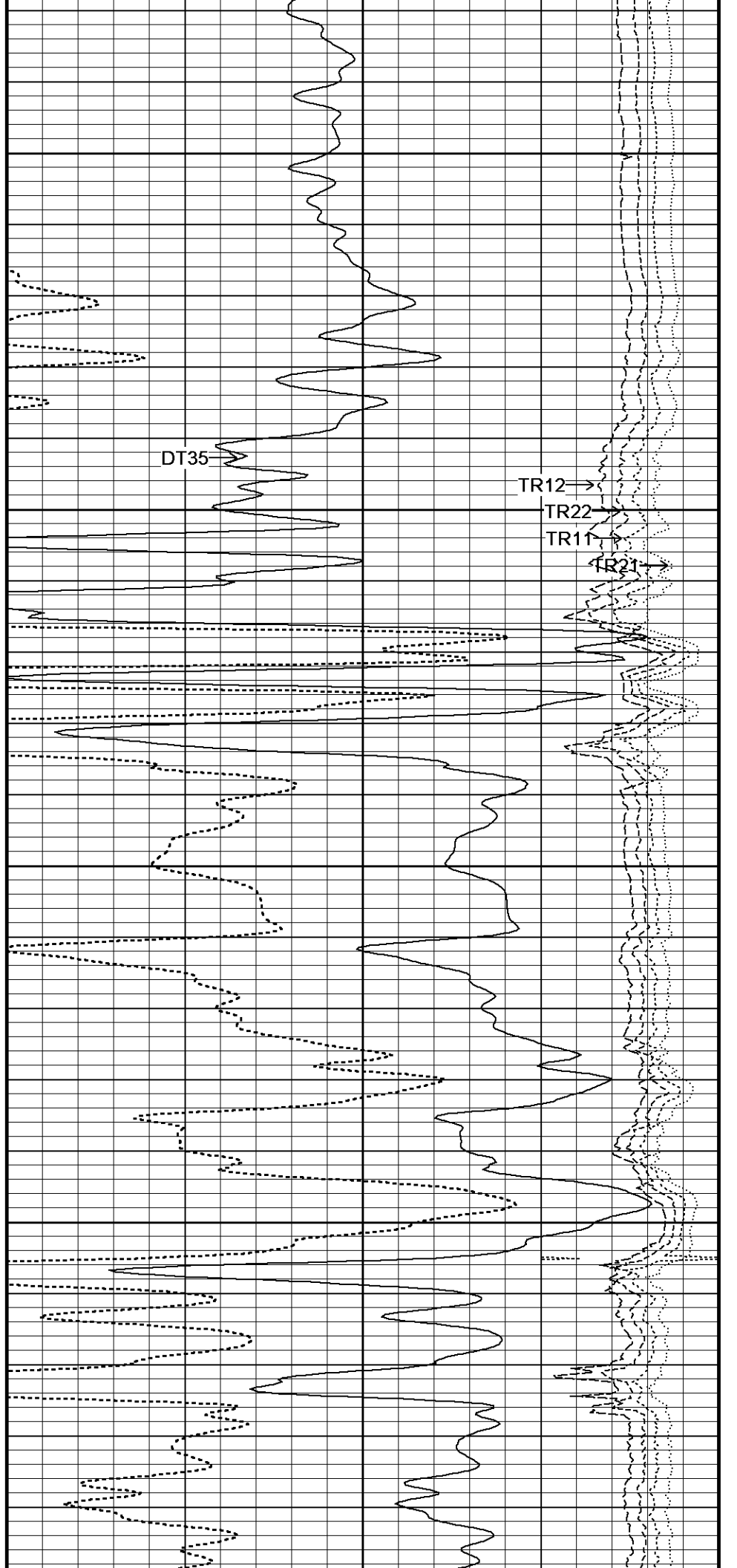
100°

1700

100°

1750

99°



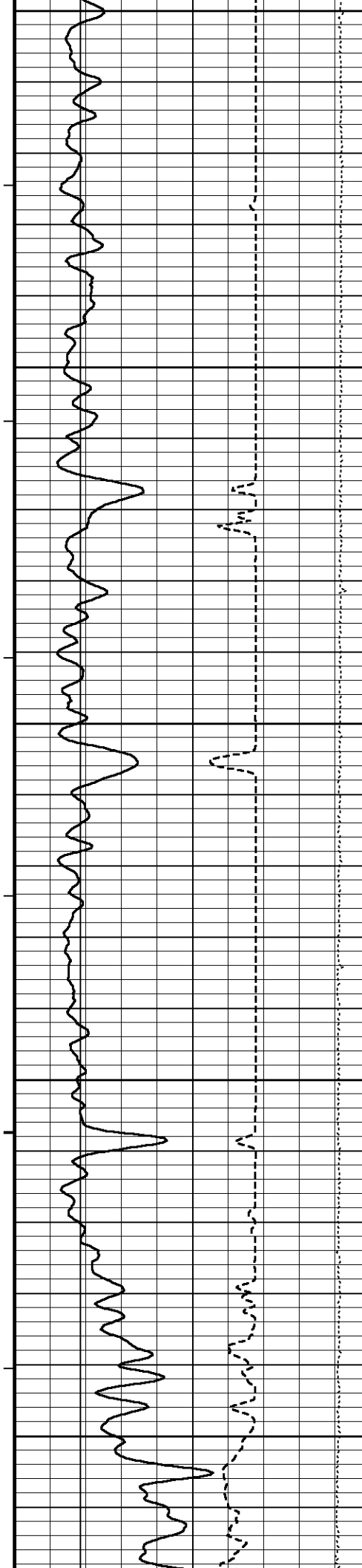
DT35

TR12

TR22

TR11

TR21



1800

99°

1850

99°

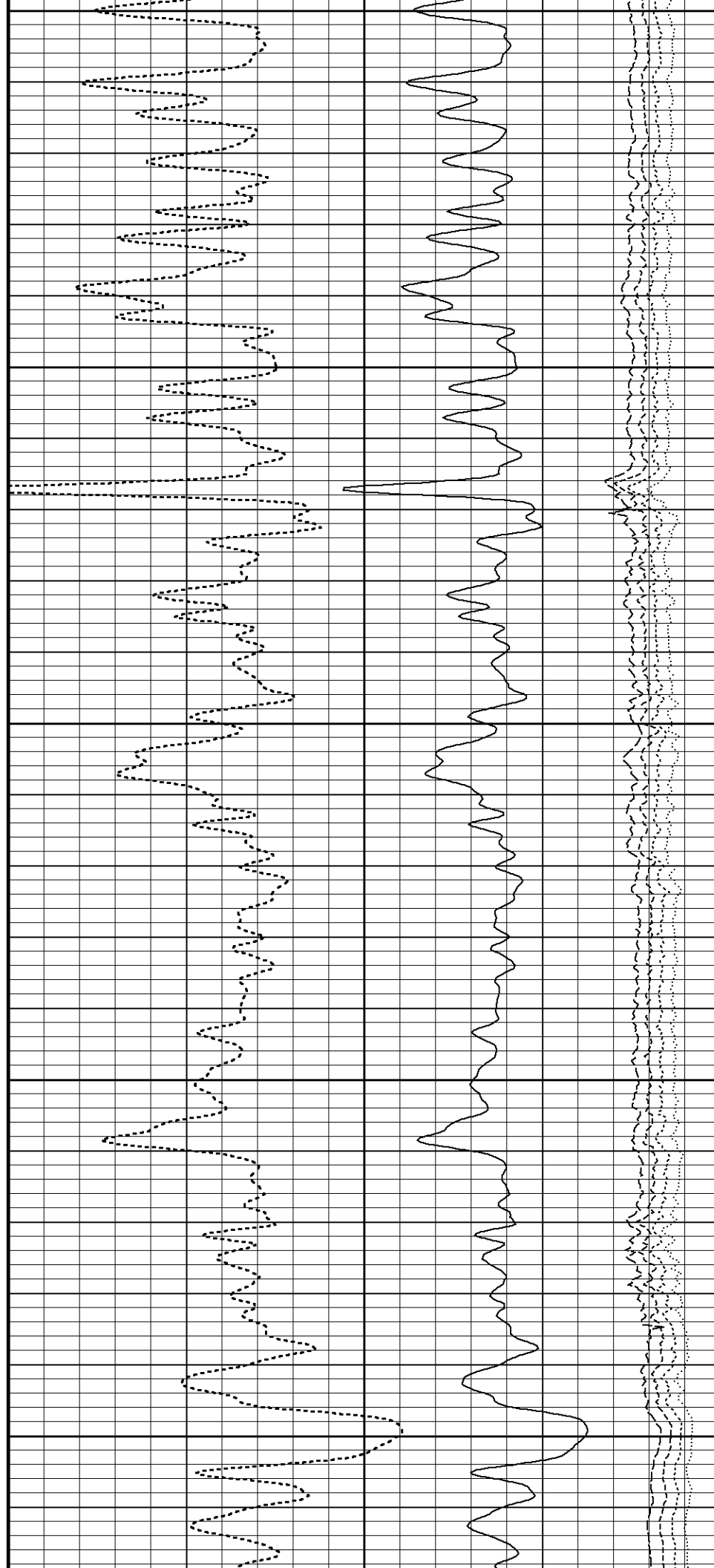
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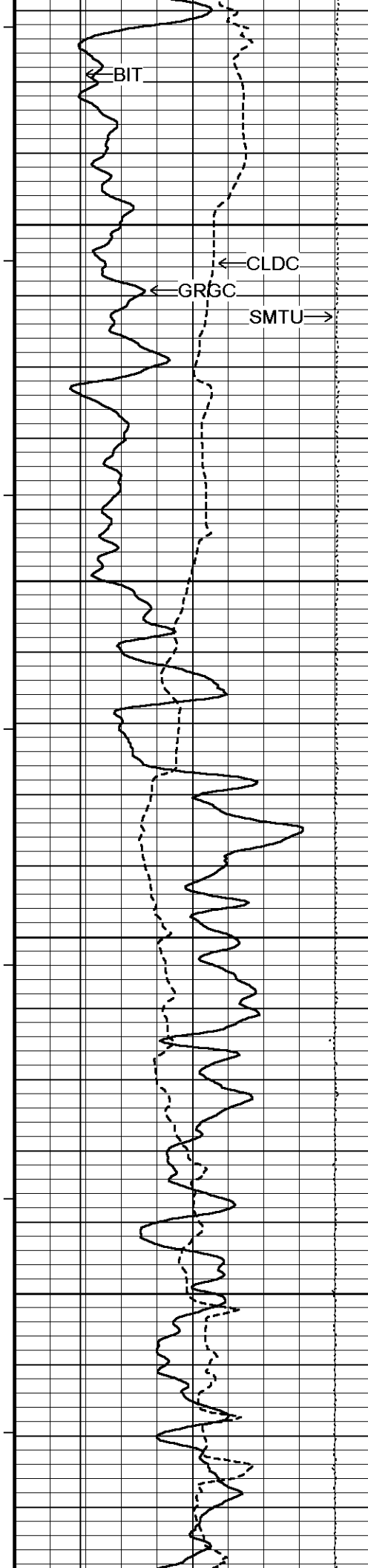
99°

1950

99°

2000





99°

2050

99°

2100

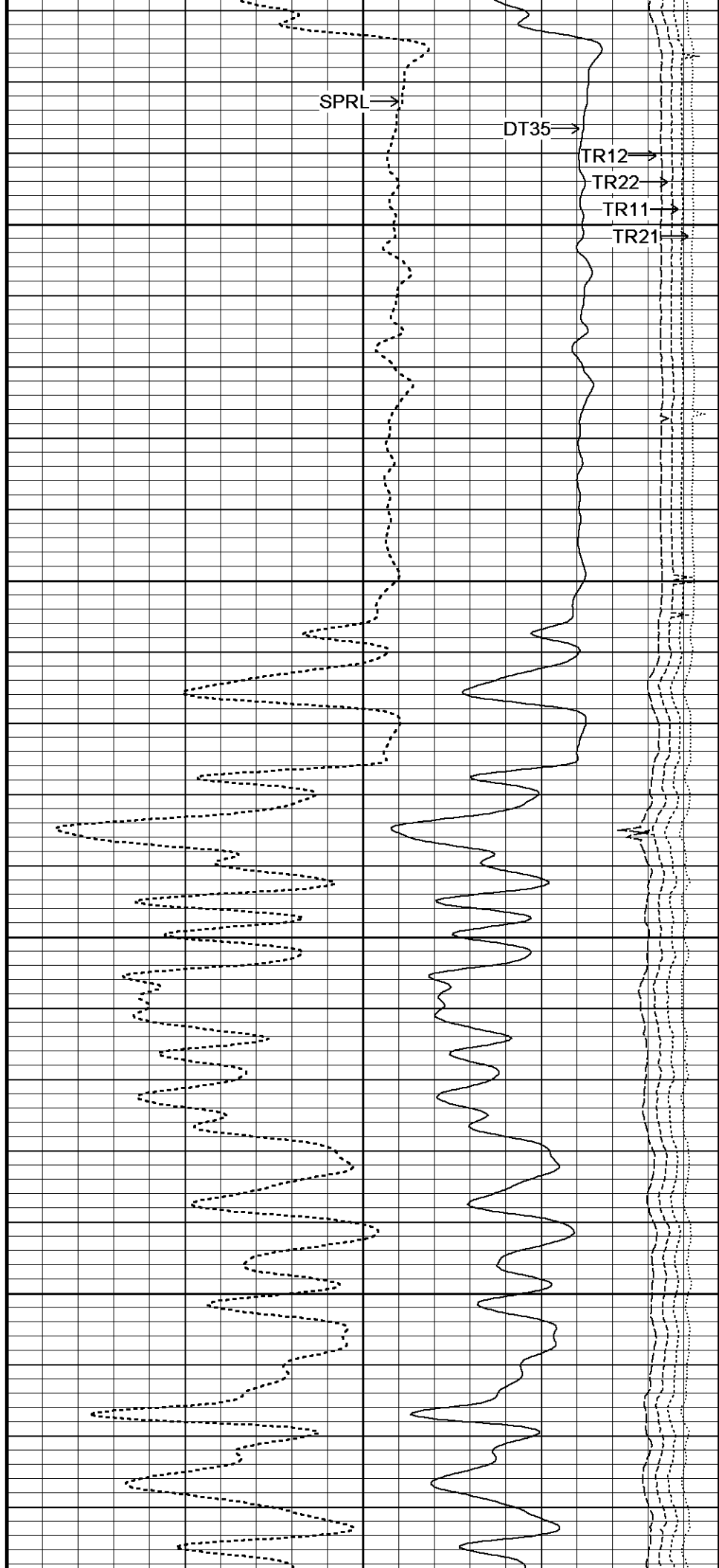
100°

2150

100°

2200

100°



SPRL

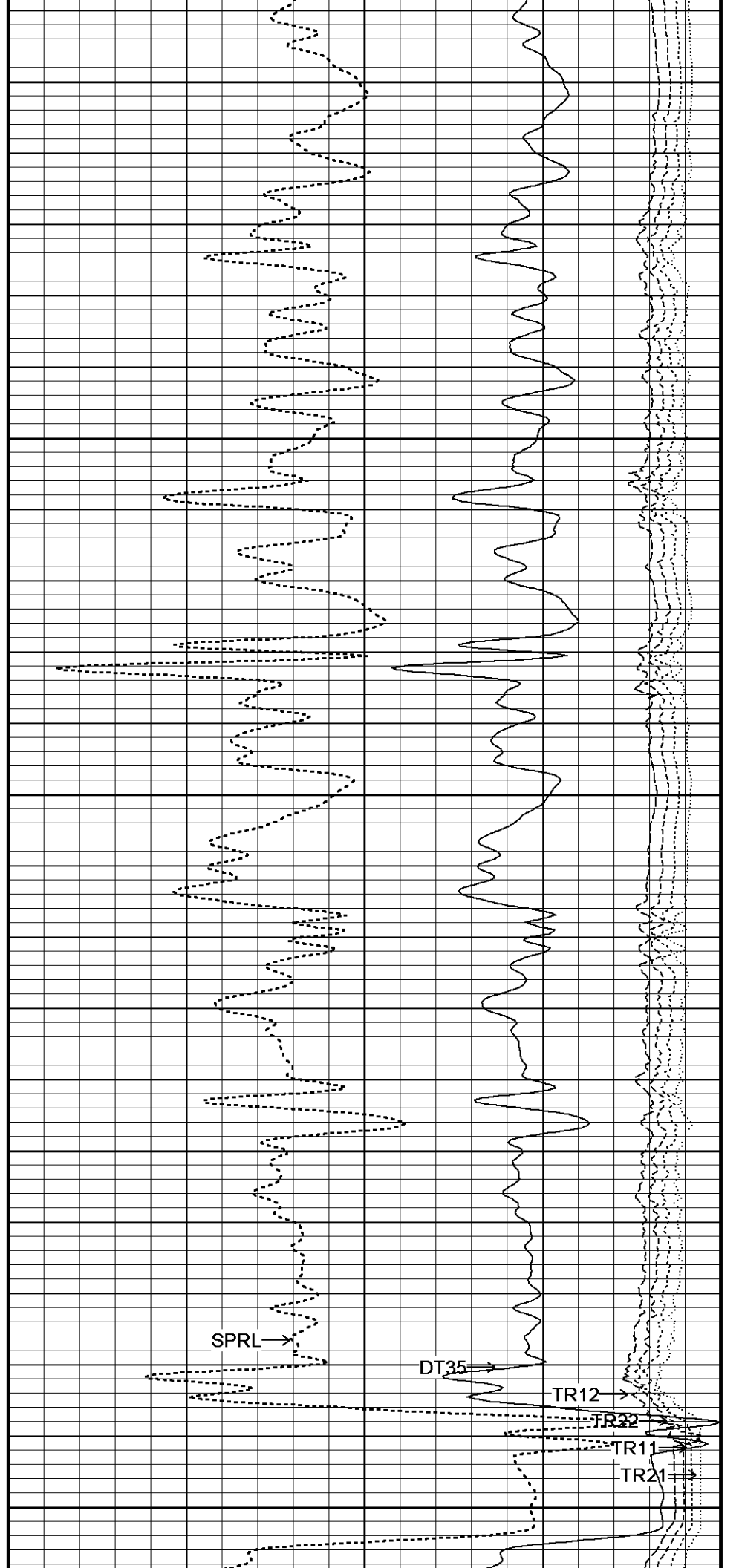
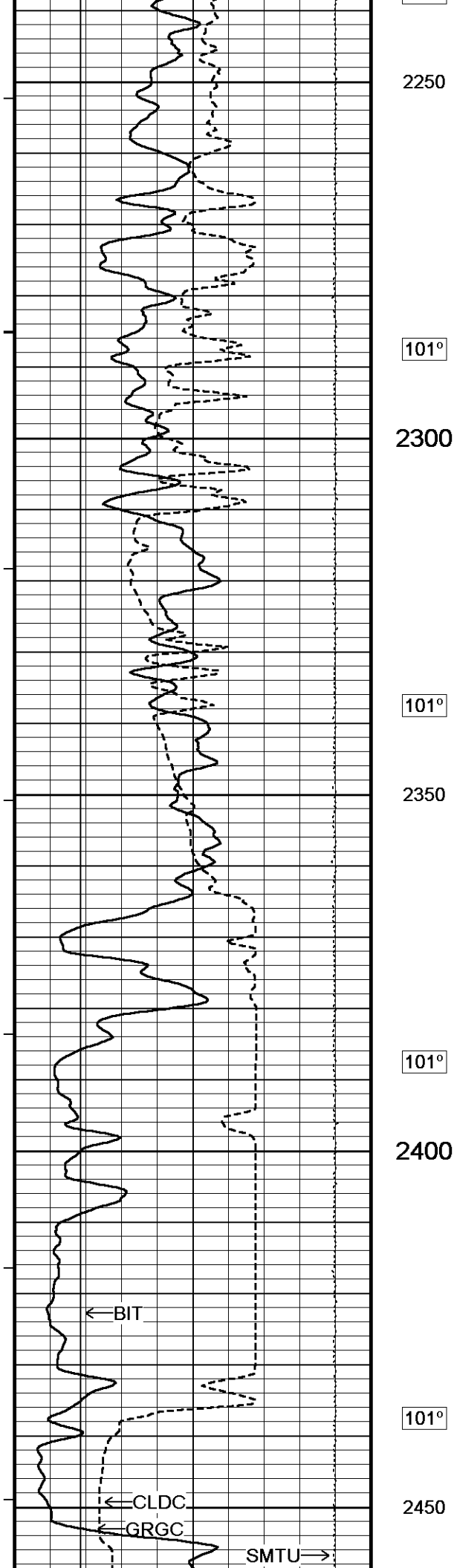
DT35

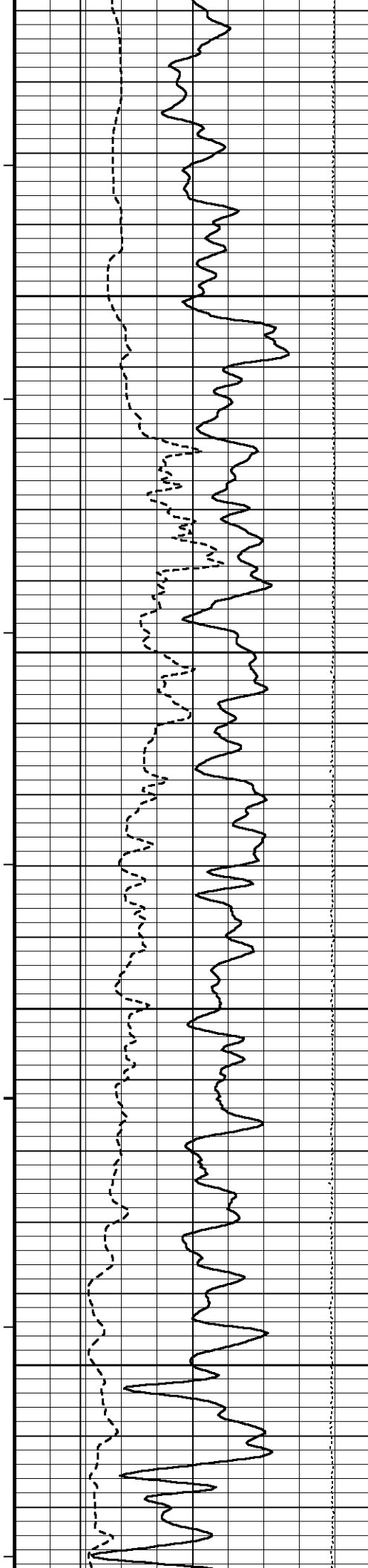
TR12

TR22

TR11

TR21





102°

2500

102°

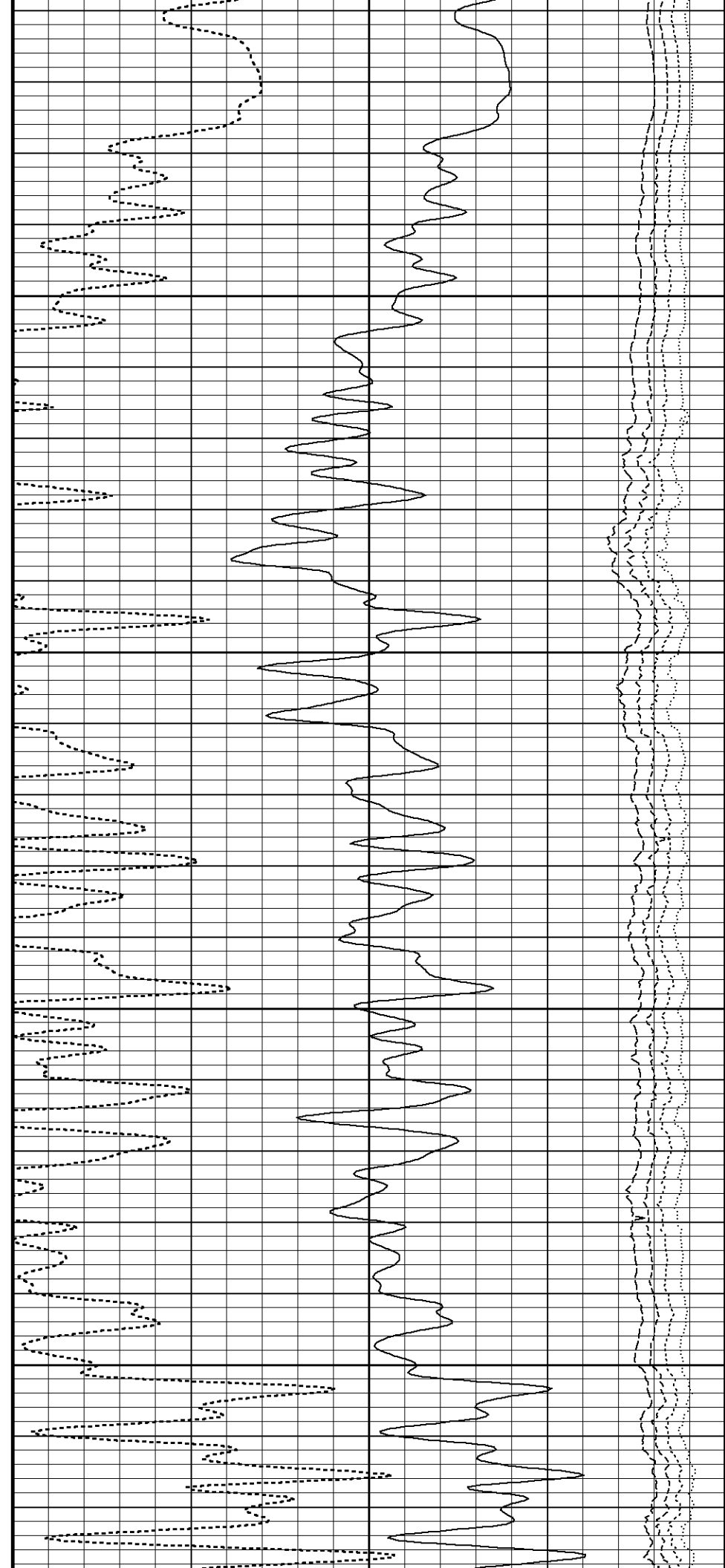
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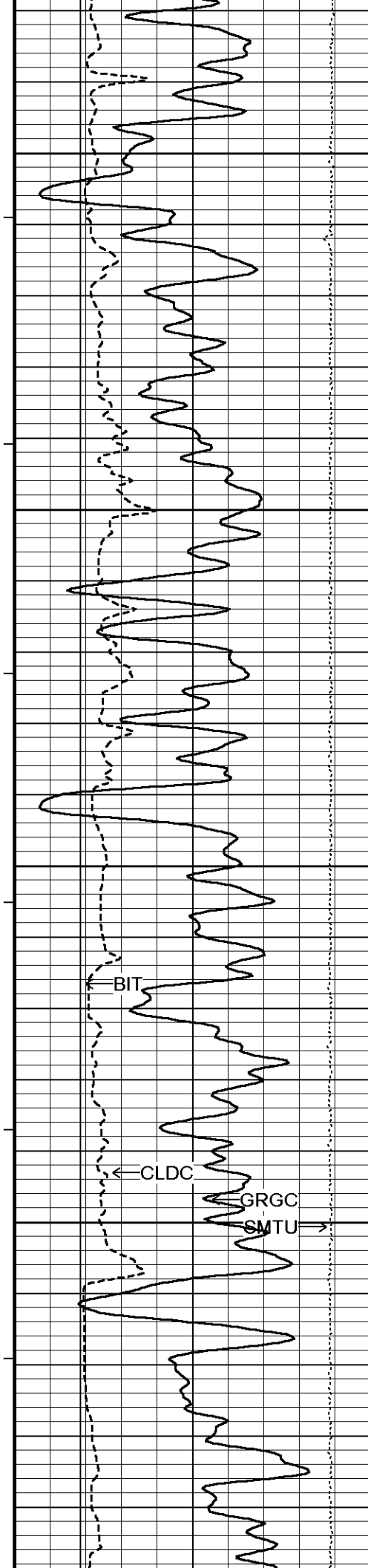
102°

2600

102°

2650





103°

2700

103°

2750

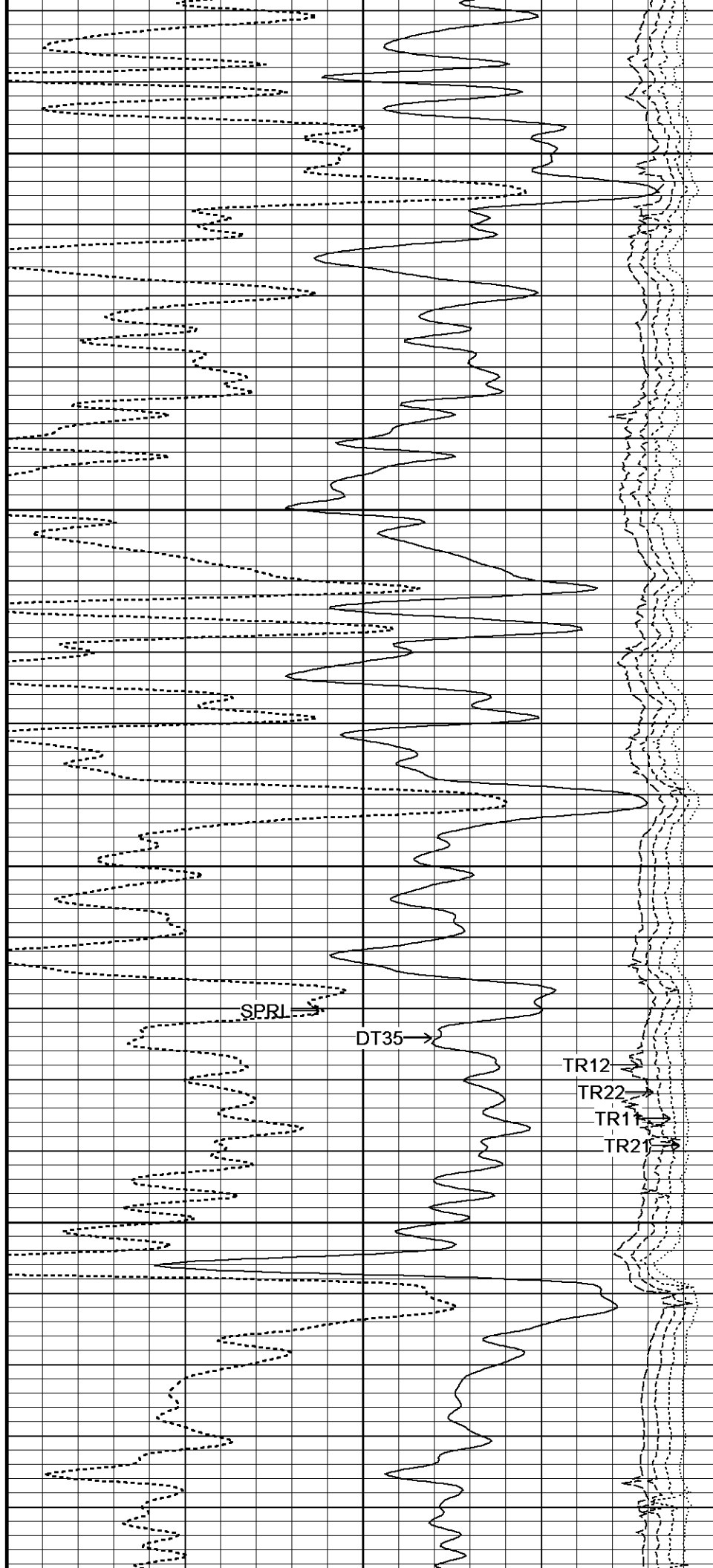
103°

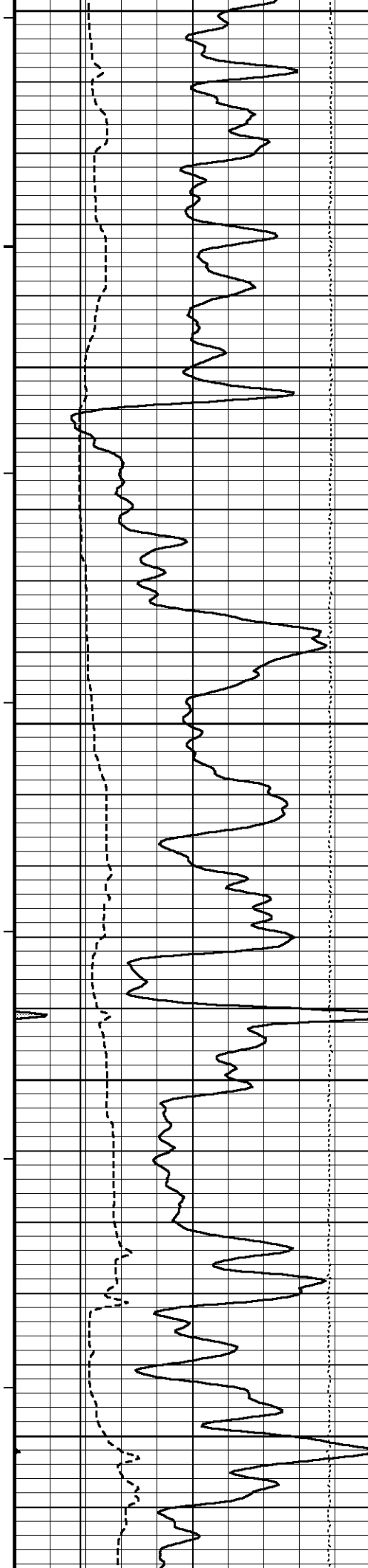
2800

103°

2850

104°





2900

104°

2950

104°

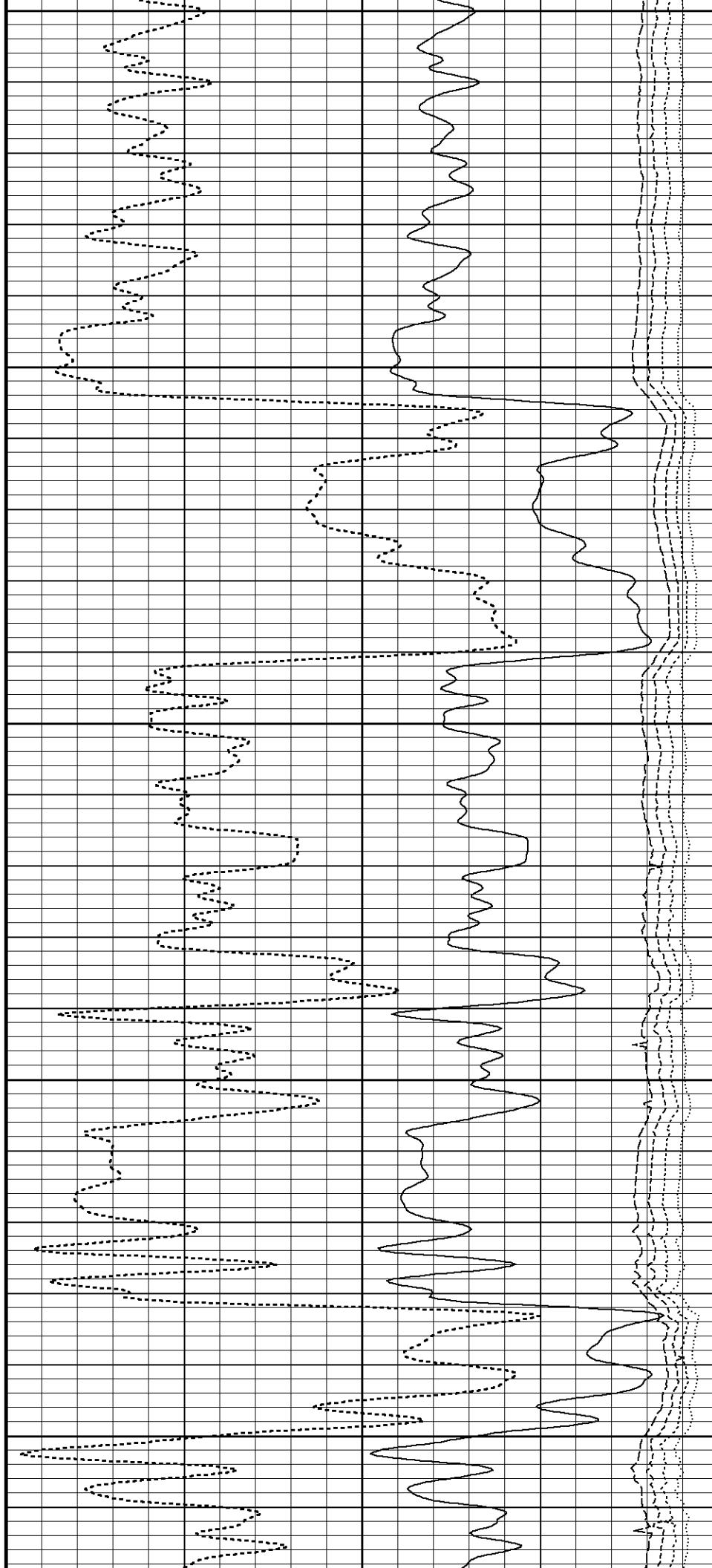
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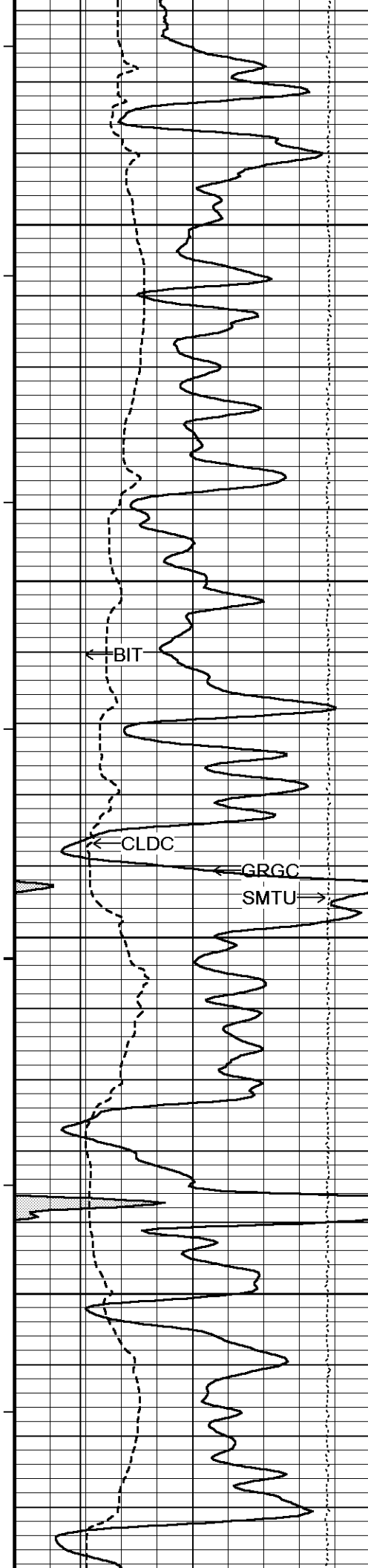
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3050

105°

3100





105°

3150

105°

3200

SPRL

DT35

TR12

TR22

TR11

TR21

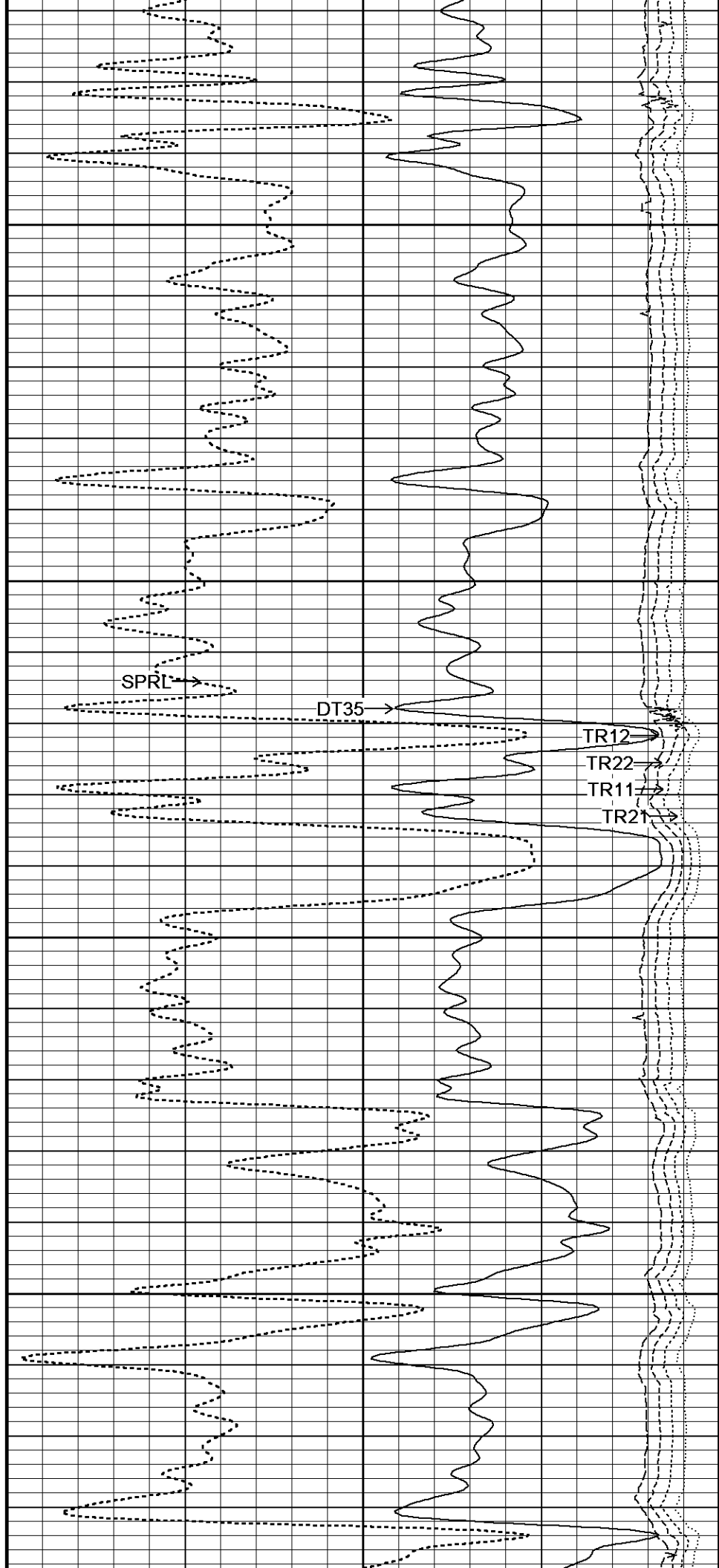
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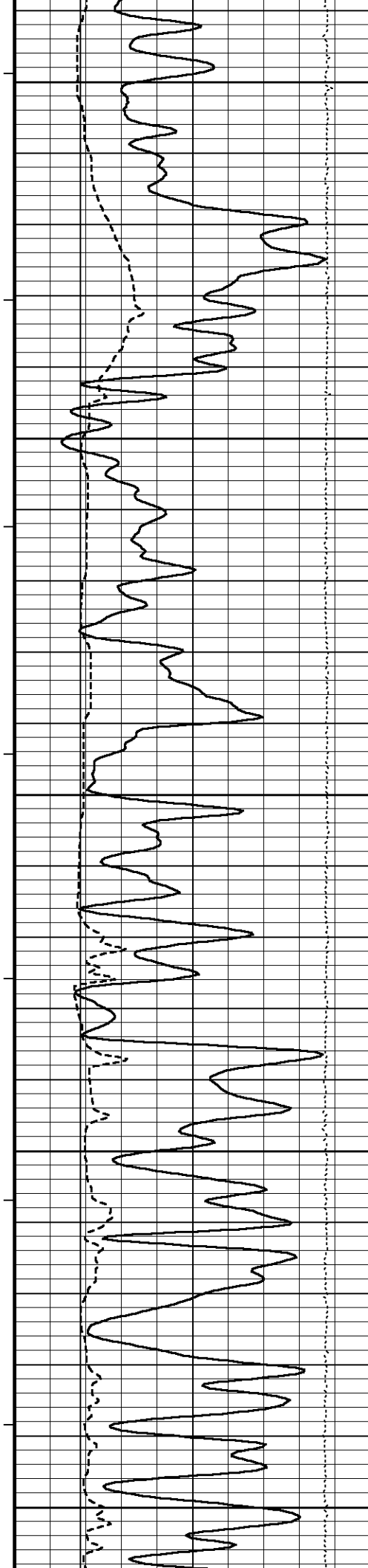
3250

106°

3300

106°





3350

106°

3400

106°

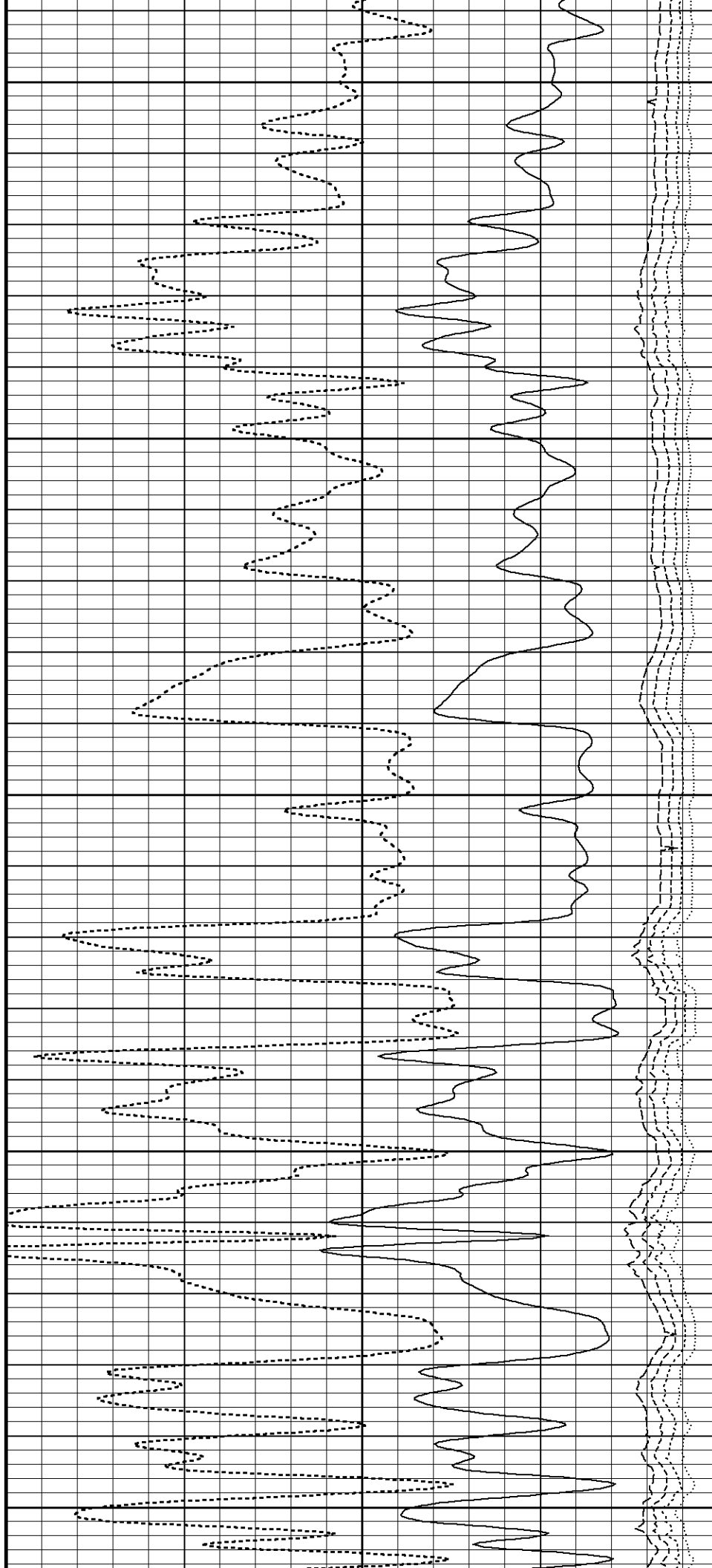
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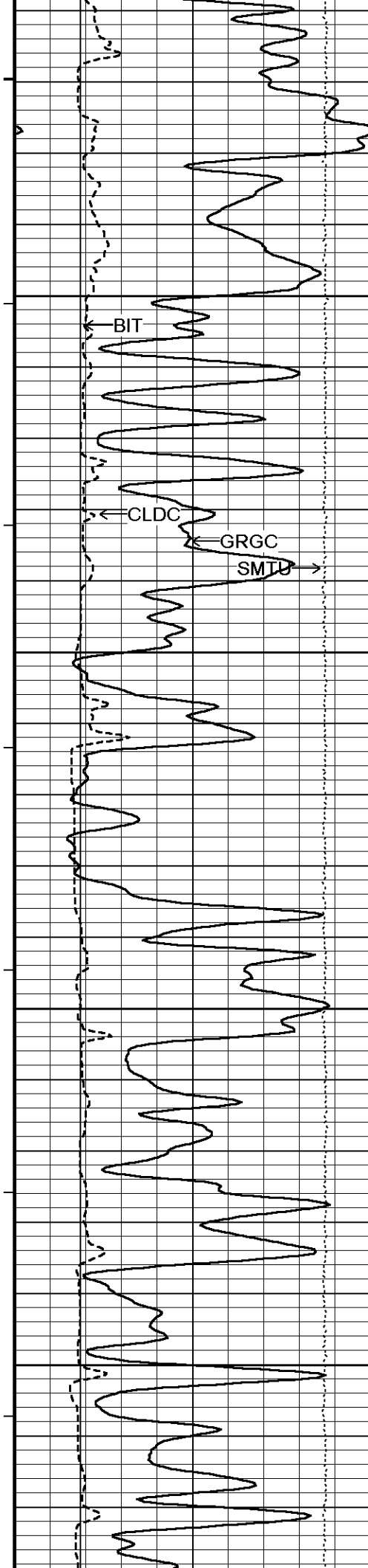
107°

3500

107°

3550





107°

3600

107°

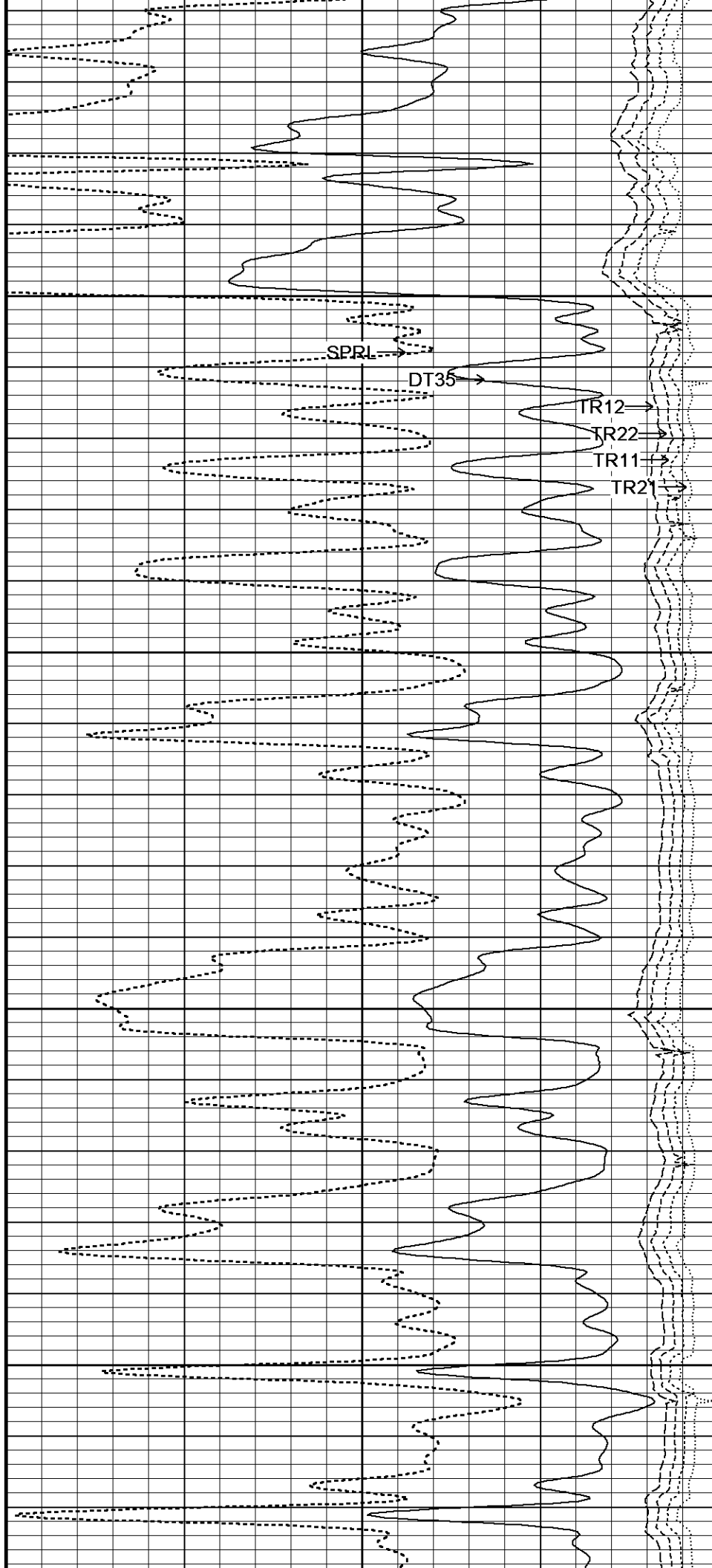
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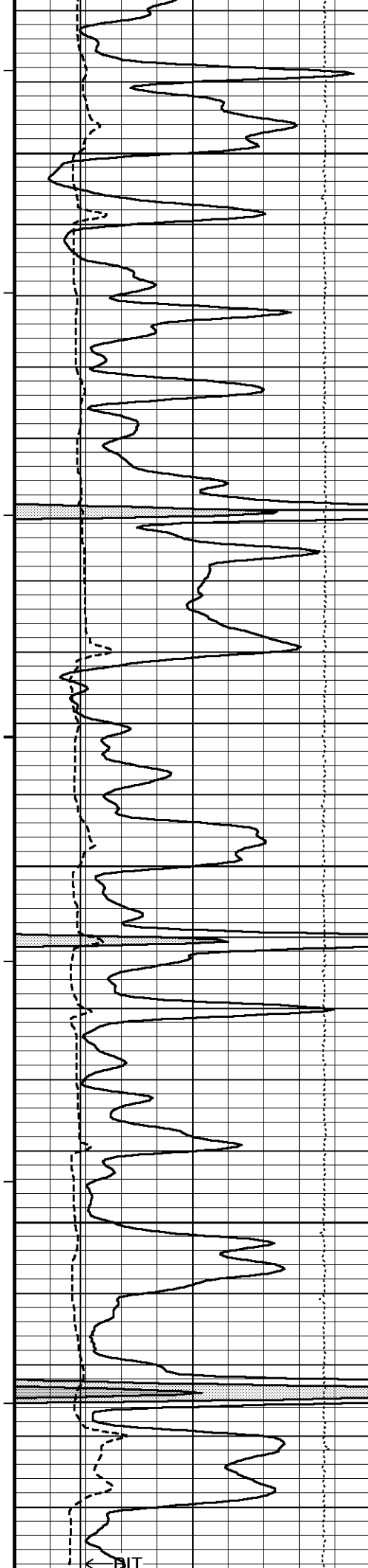
108°

3700

108°

3750





108°

3800

109°

3850

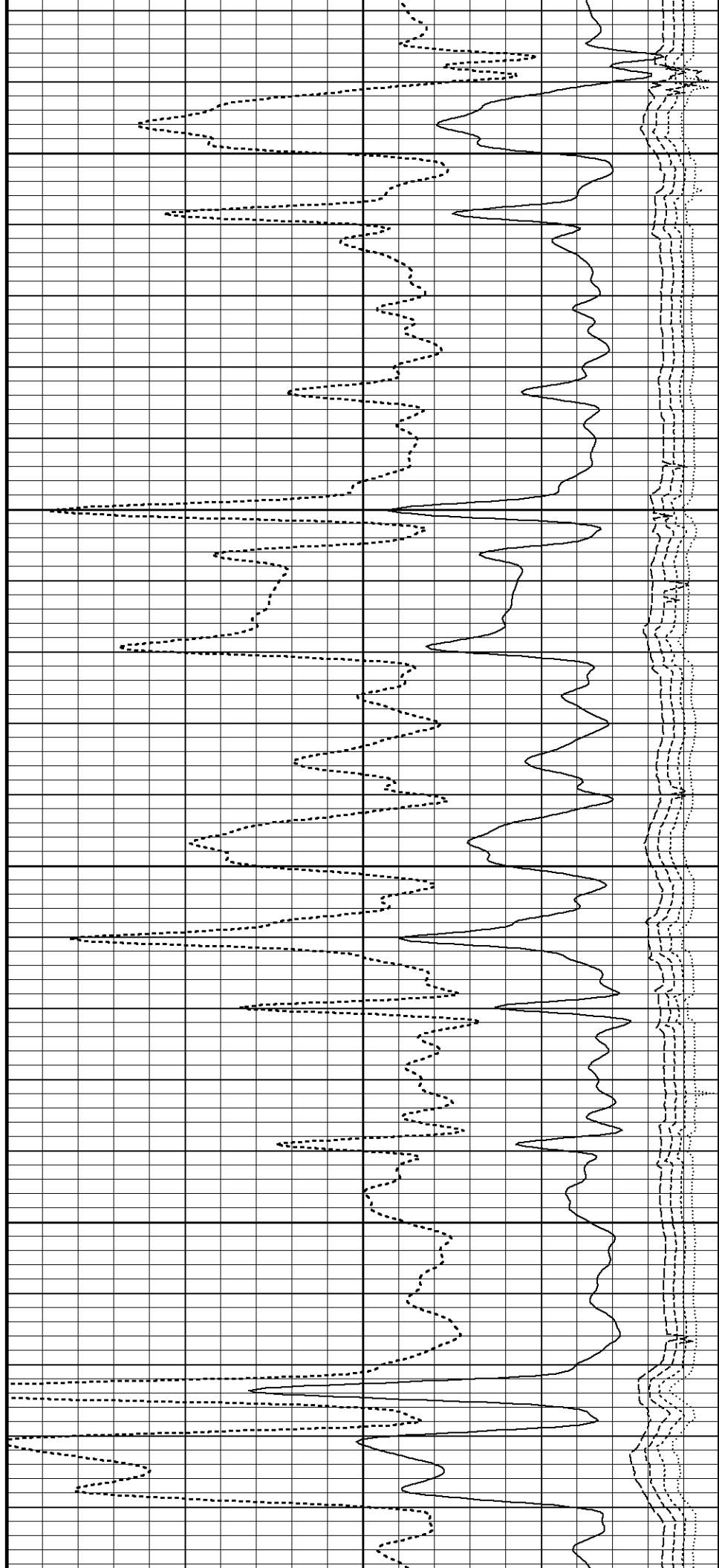
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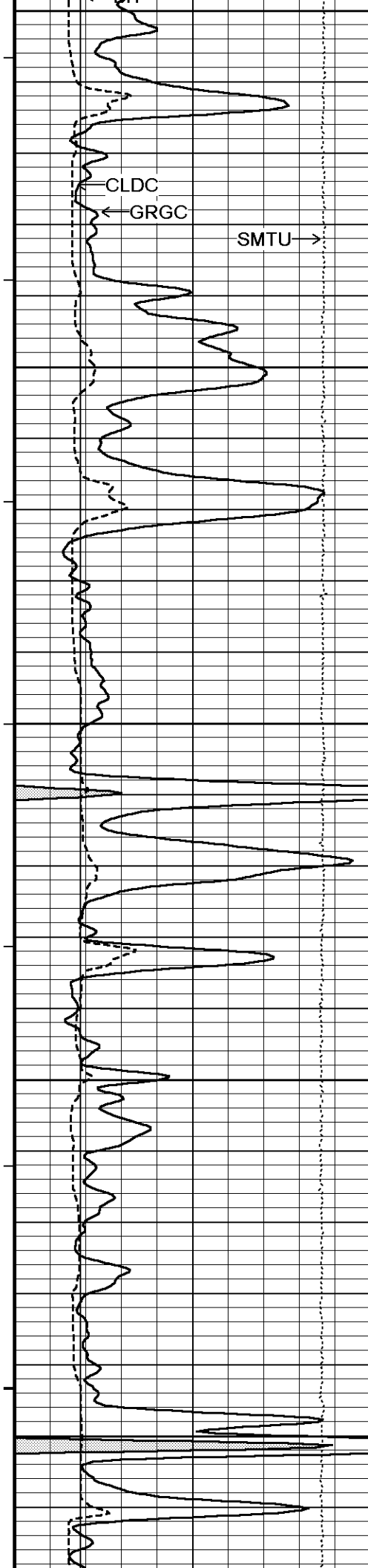
3900

109°

3950

109°





4000

109°

4050

110°

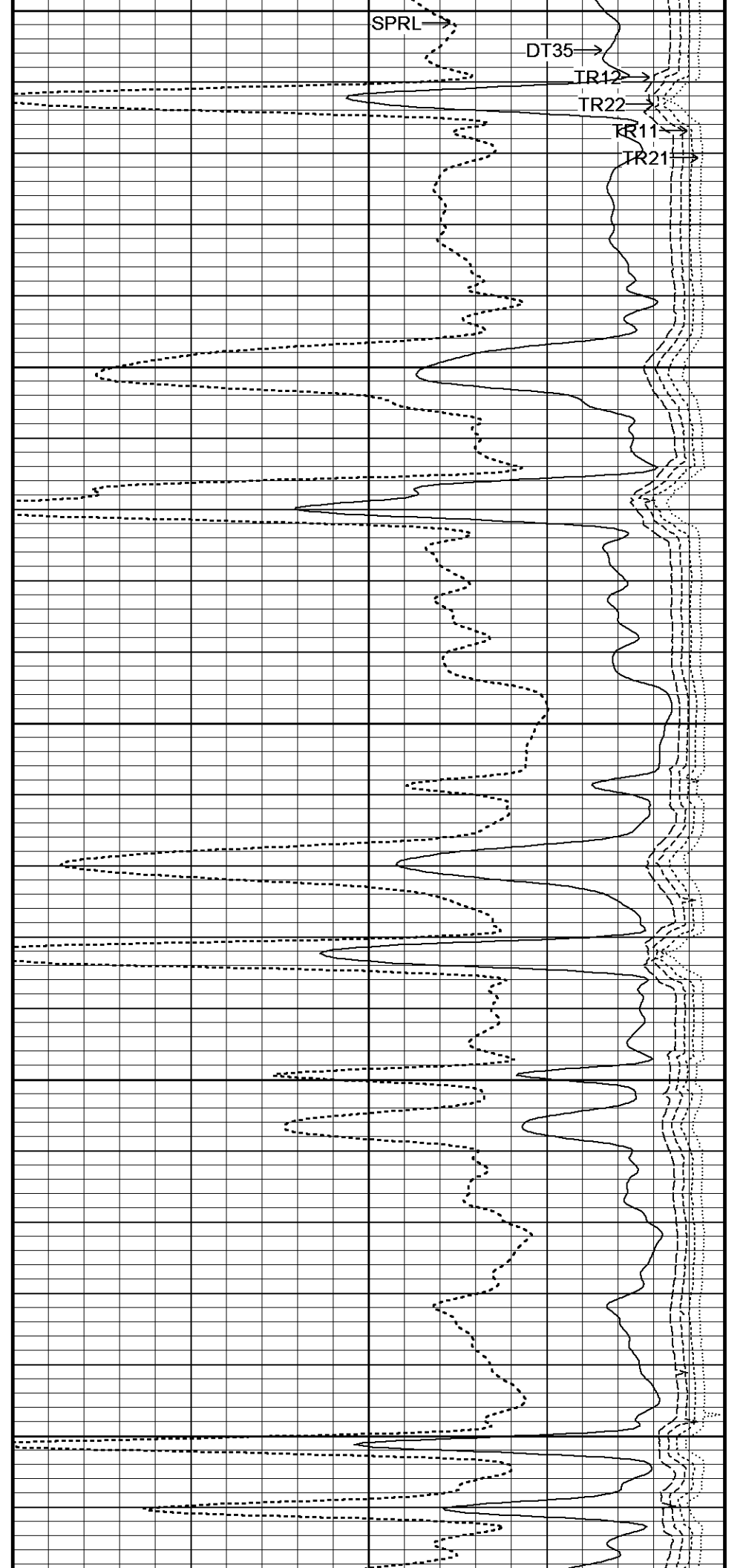
4100

110°

4150

111°

4200



SPRL

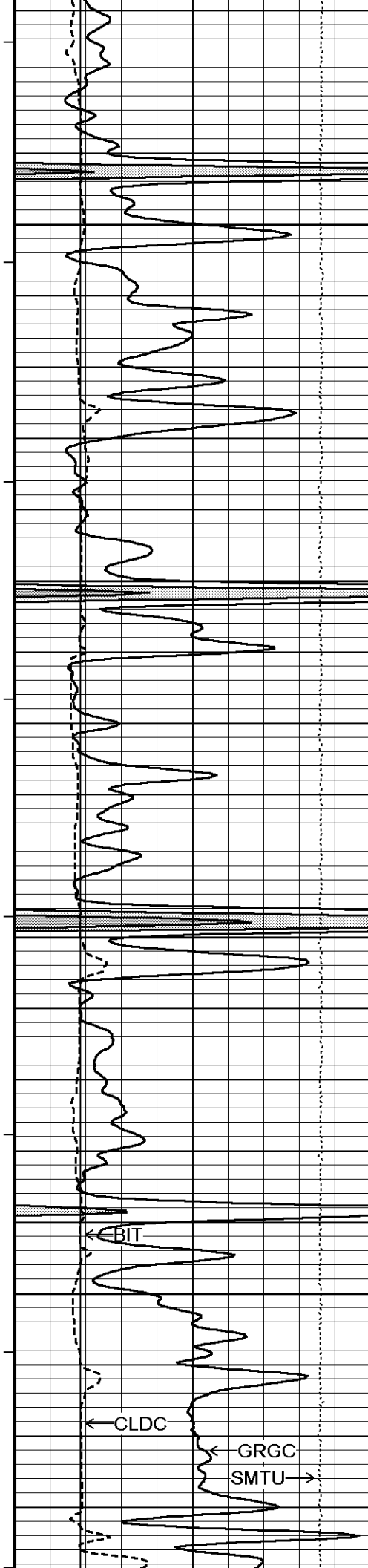
DT35

TR12

TR22

KR11

TR21



111°

4250

111°

4300

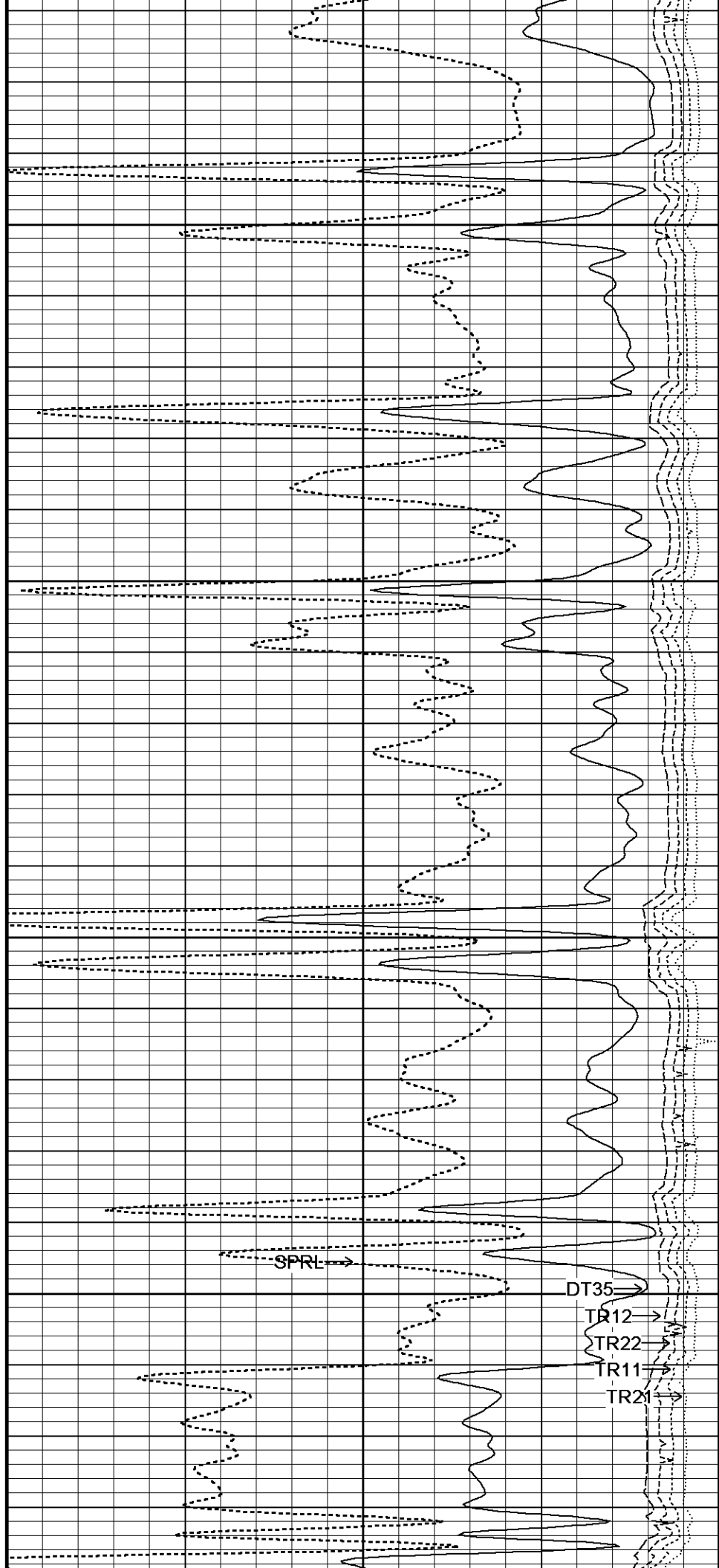
111°

4350

112°

4400

112°



SPRL

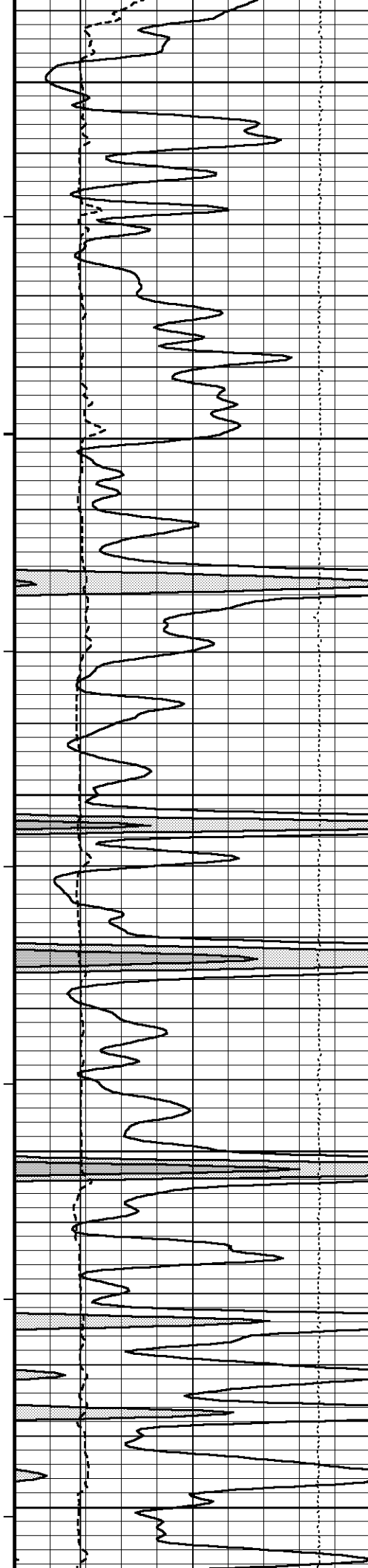
DT35

TR12

TR22

TR11

TR21



4450

112°

4500

113°

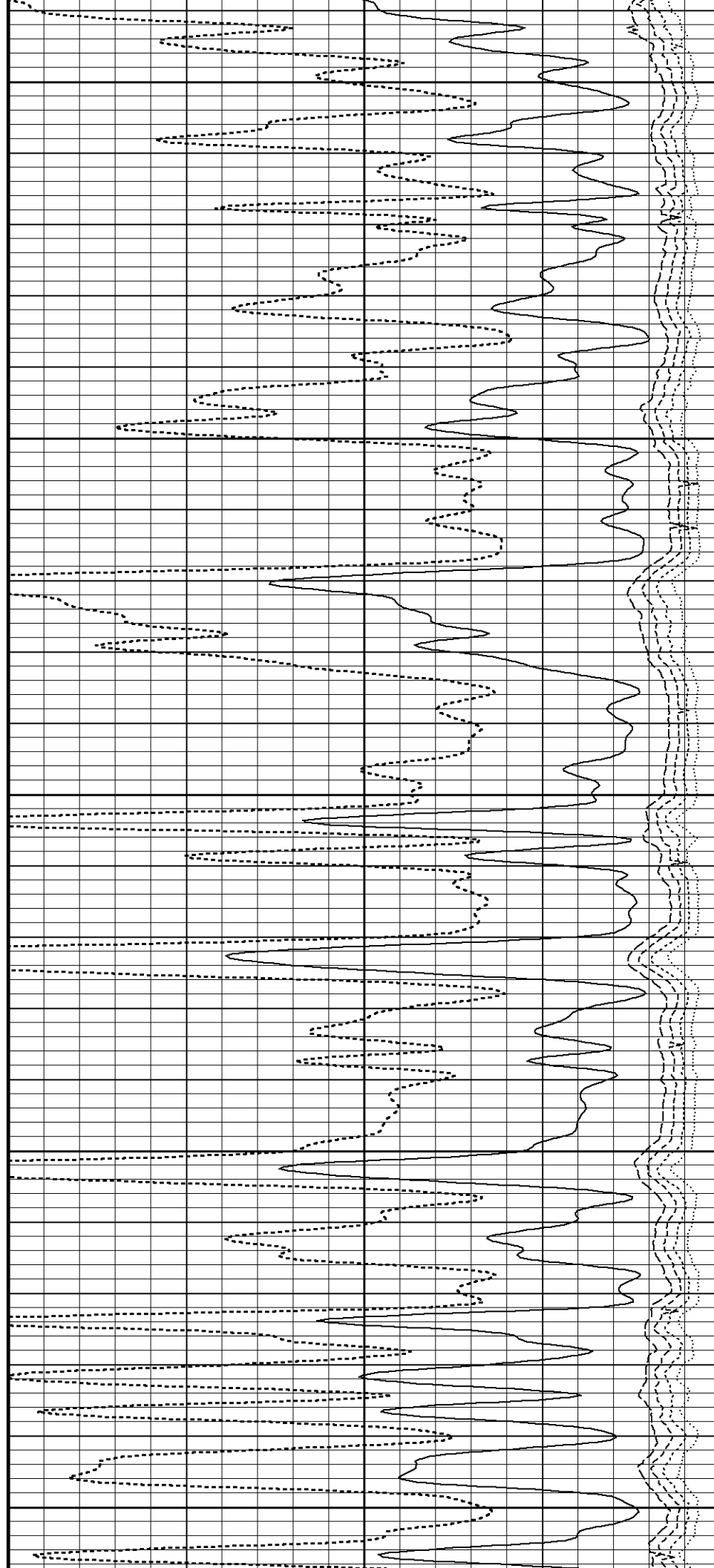
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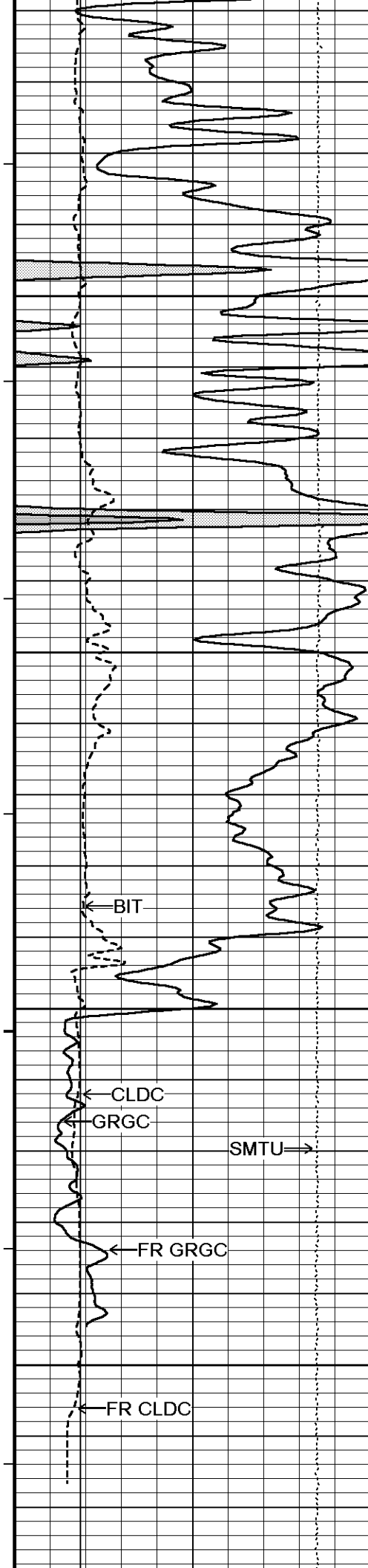
113°

4600

113°

4650





114°

4700

114°

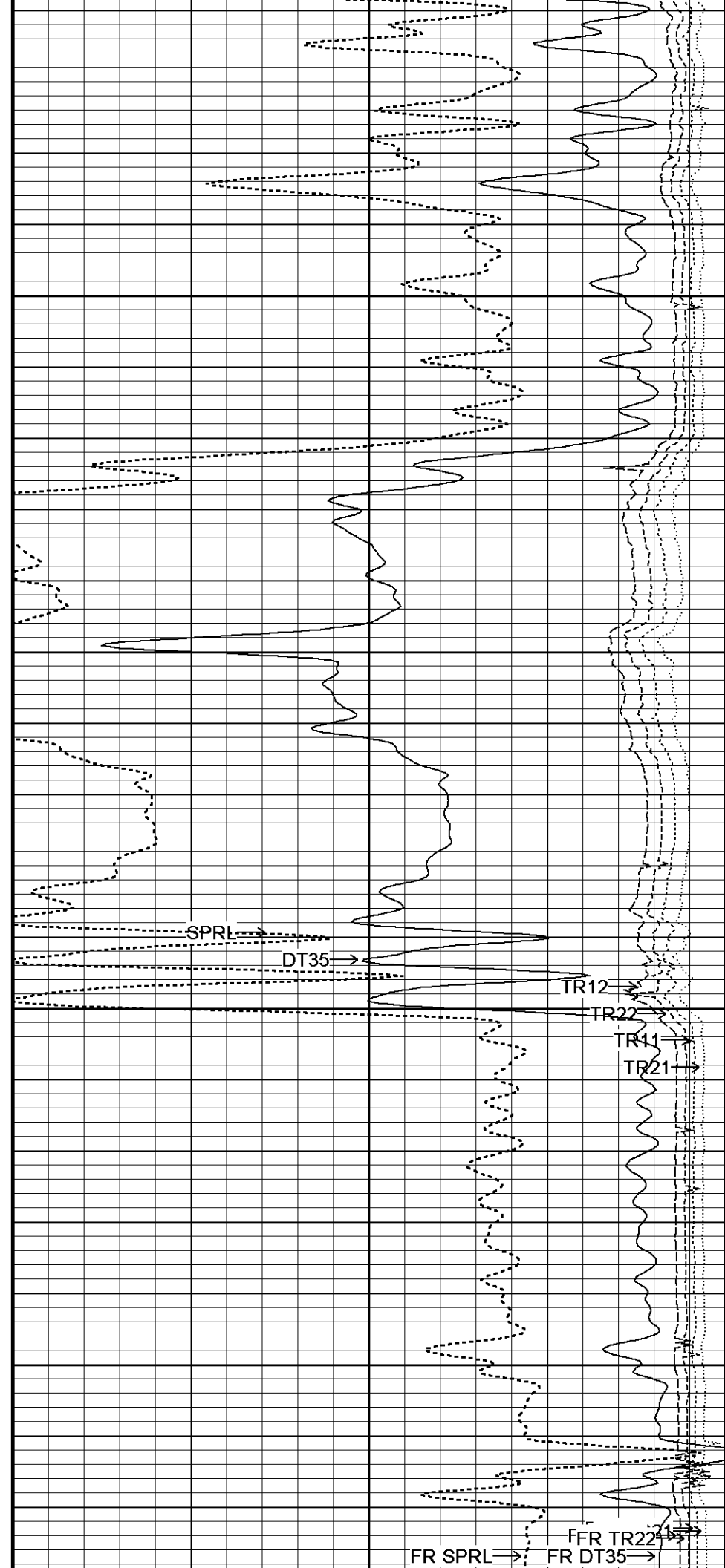
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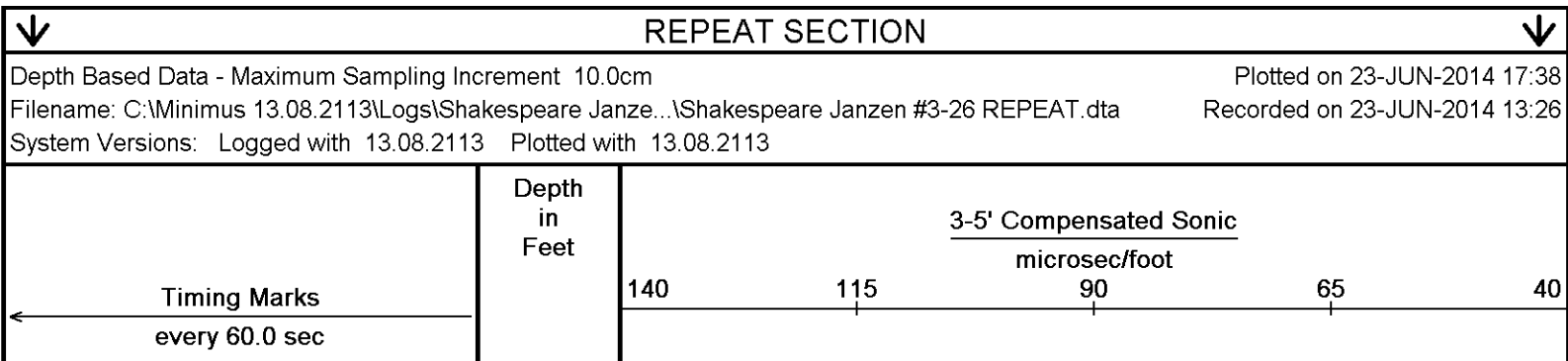
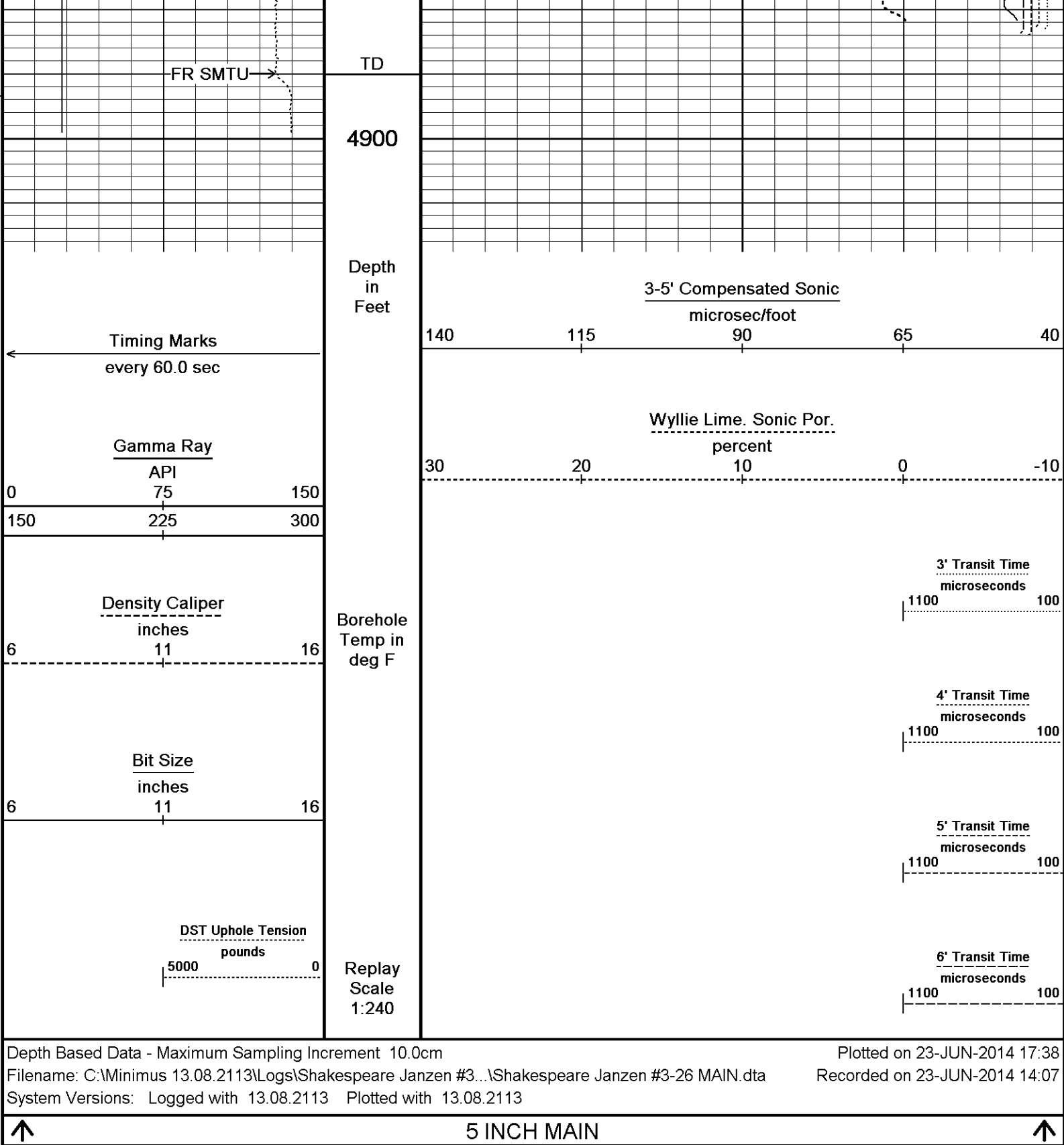
115°

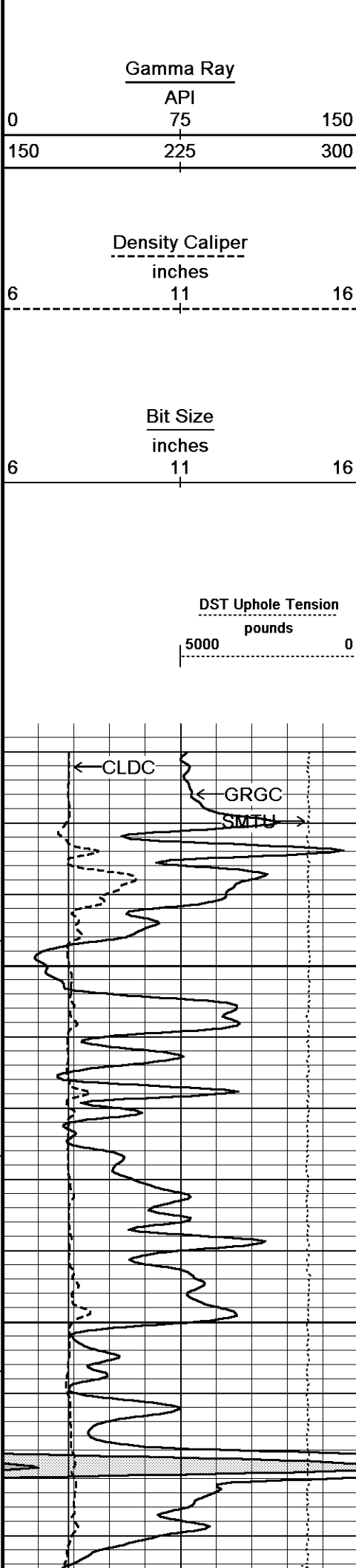
4800

114°

4850







Borehole
Temp in
deg F

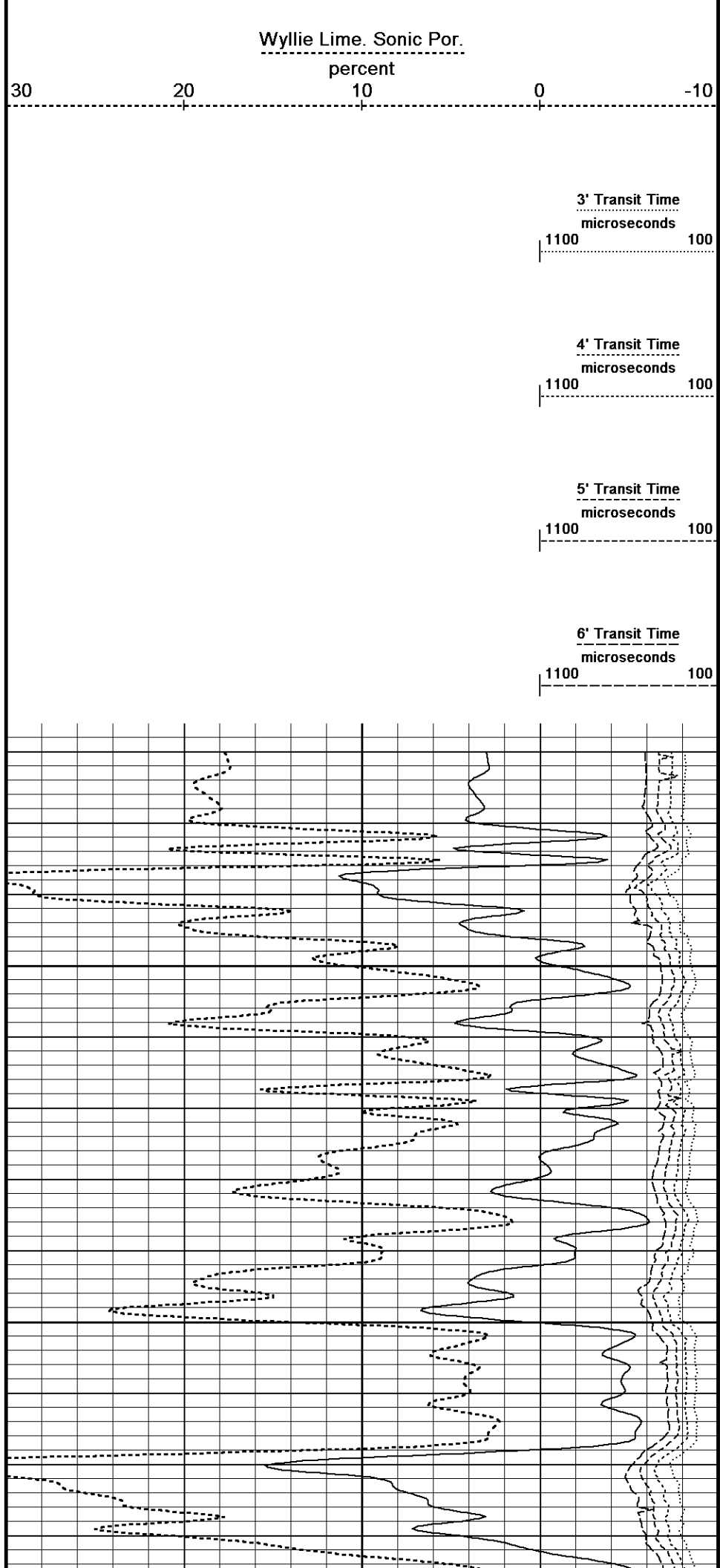
Replay
Scale
1:240

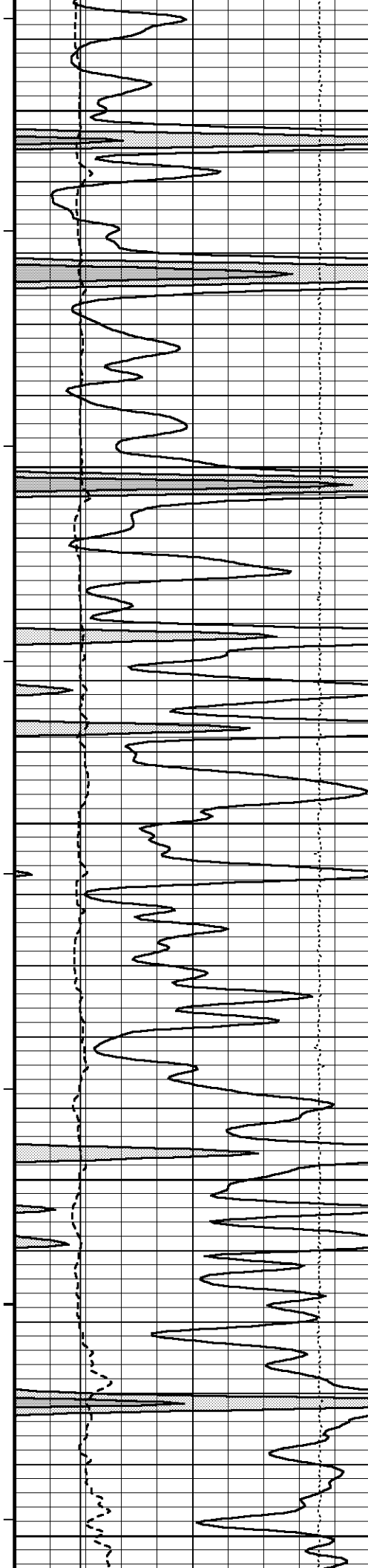
4418

4450

111°

4500





112°

4550

112°

4600

112°

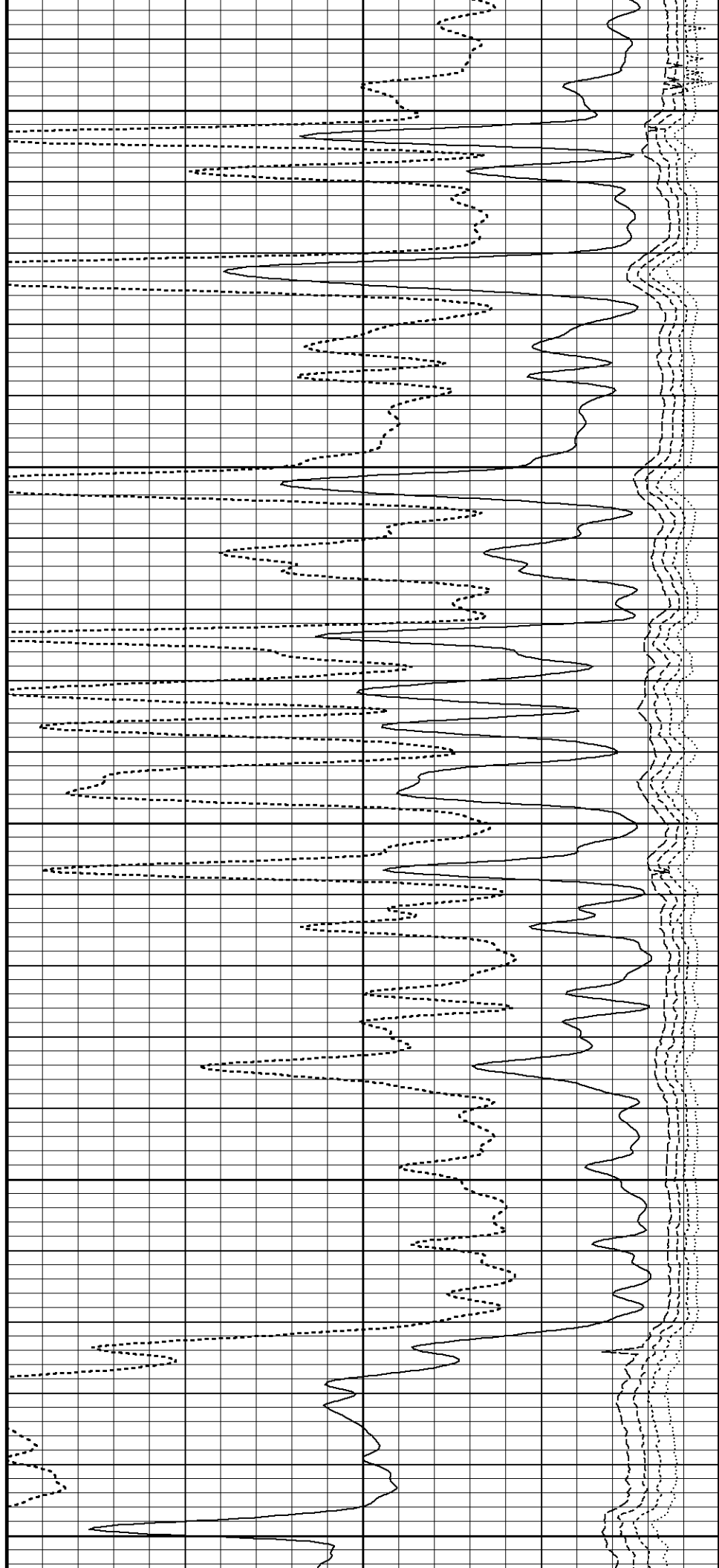
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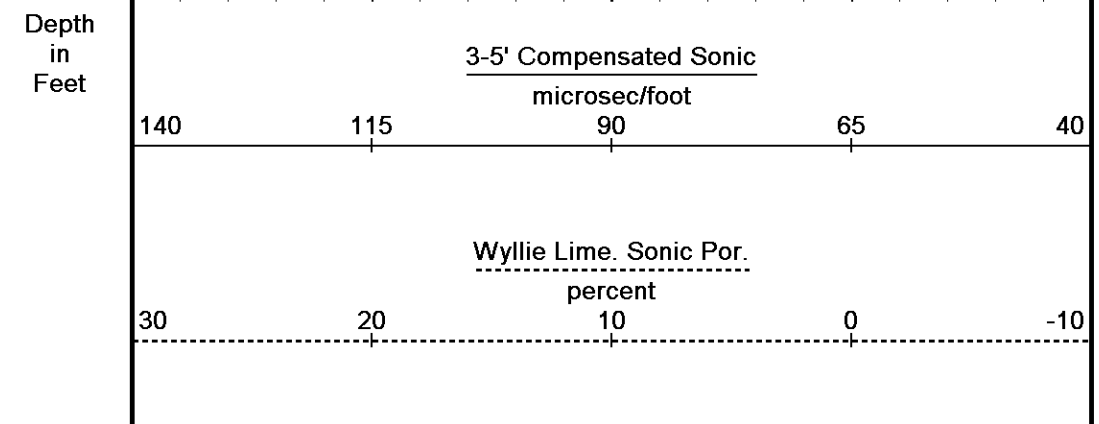
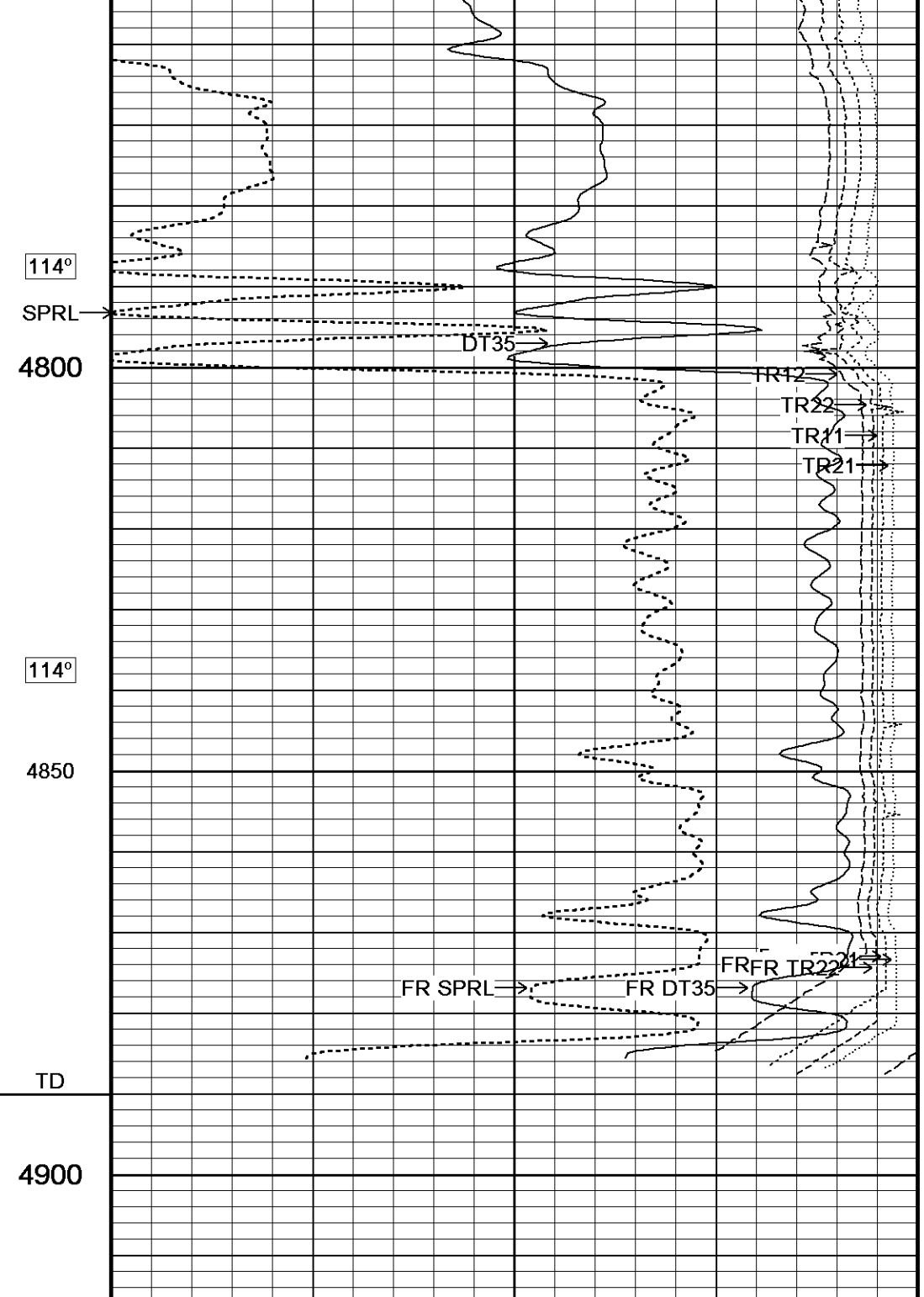
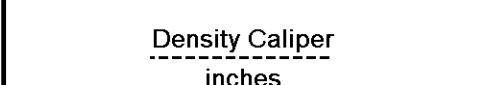
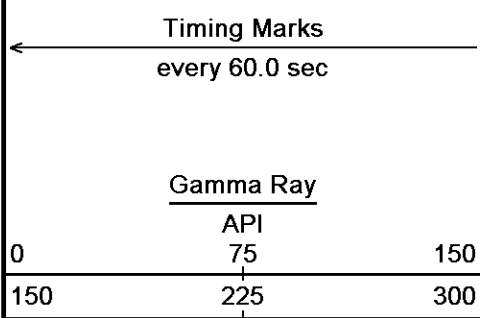
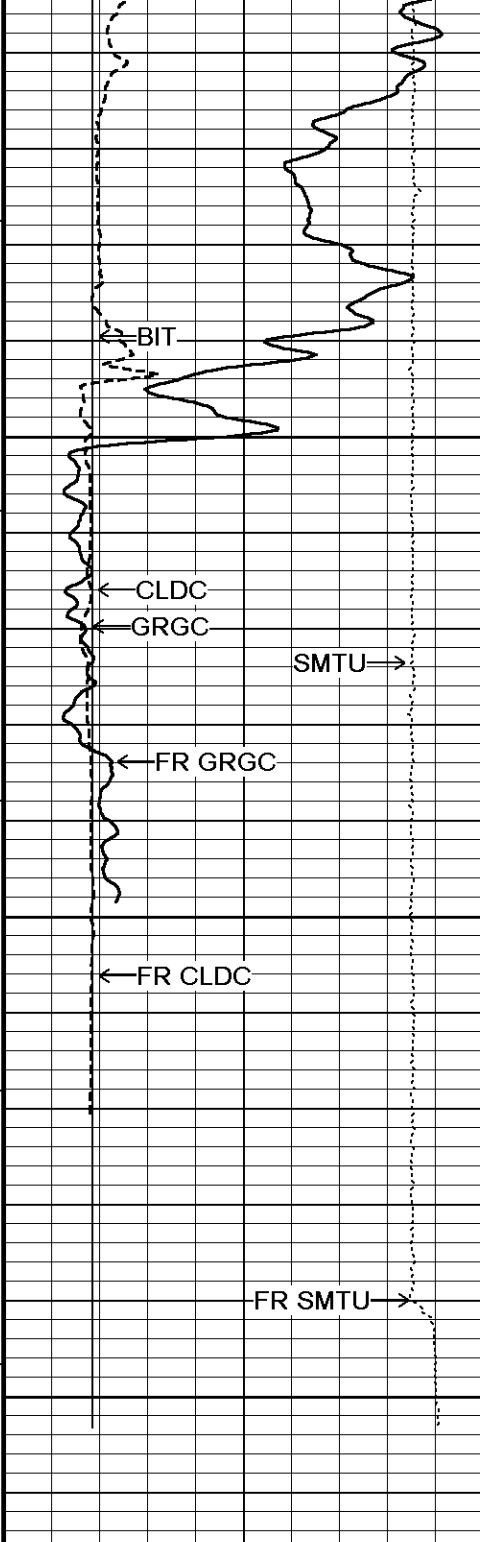
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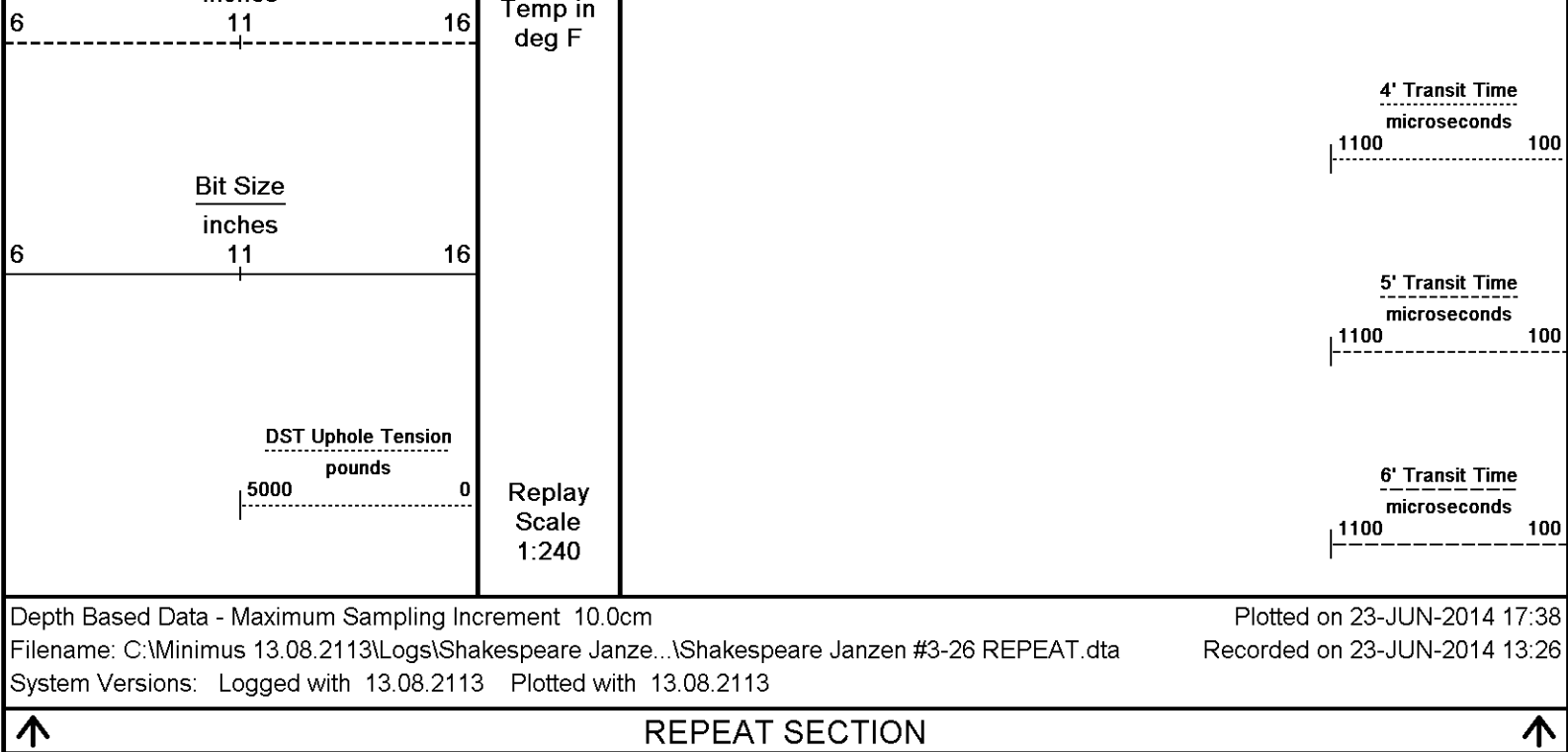
4700

113°

4750







BEFORE SURVEY CALIBRATION			
C:\Minimus 13.08.2113\Logs\Shakespeare Janzen #3-26\Shakespeare Janzen #3-26 REPEAT.dta			
General Constants All 000		Last Edited on 23-JUN-2014,11:26	
General Parameters			
Mud Resistivity	0.440	ohm-metres	
Mud Resistivity Temperature	94.000	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	Crossplot Porosity		
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 23-JUN-2014 12:33	
Reading No	Measured	Calibrated (lbs)	
1	15669.38	0.00	
2	16235.25	481.00	
Gamma Calibration MCG-D.K 442		Field Calibration on 23-JUN-2014 06:39	
	Measured	Calibrated (API)	
Background	71	48	
Calibrator (Gross)	1157	773	
Calibrator (Net)	1086	725	
Gamma Constants MCG-D.K 442		Last Edited on 23-JUN-2014,10:28	
Gamma Calibrator Number	GRC038		
Mud Density	1.11	gm/cc	
Caliper Source for Processing	Density Caliper		
Tool Position	Eccentred		

Concentration of KCl	Chloride	kppm
K Mud Type	0.00	%
K Mud Concentration		
High Resolution Temperature Calibration MCG-D.K 442		Field Calibration on 10-MAY-2014,10:22
	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00
High Resolution Temperature Constants MCG-D.K 442		Last Edited on 10-MAY-2014,10:22
Pre-filter Length	11	
SP Calibration MCG-D.K 442		Field Calibration on 10-MAY-2014 10:40
	Measured	Calibrated (mV)
Reference 1	98.8	99.0
Reference 2	-98.4	-98.8
Caliper Calibration MMR-C.A 248		Base Calibration on 20-JUN-2014 09:22 Field Calibration on 23-JUN-2014 06:23
Base Calibration		
Reading No	Measured	Calibrator Size (in)
1	13560	5.98
2	16725	7.97
3	19859	9.86
4	23840	11.92
5	0	0.00
6	N/A	N/A
Field Calibration		
	Measured Caliper (in)	Actual Caliper (in)
	7.98	7.97
Micro Normal and Micro Inverse Calibration MMR-C.A 248		Base Calibration on 20-JUN-2014 09:12 Field Check on 23-JUN-2014 06:22
Base Calibration		
	Measured	Calibrated (ohm-m)
Channel	Resistor 1 Resistor 2	Resistor 1 Resistor 2
Micro Normal	9.9 49.5	5.1 25.6
Micro Inverse	9.9 49.5	3.4 16.9
Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	93.9	93.9
Micro Inverse	62.2	62.2
Micro Normal and Micro Inverse Constants MMR-C.A 248		Last Edited on 23-JAN-2014,17:04
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
Neutron Calibration MDN-B.J 387		Base Calibration on 08-MAY-2014 14:03 Field Check on 23-JUN-2014 06:44
Base Calibration		
	Measured	Calibrated (cps)
	Near Far	Near Far
	2970 91	3714 110
Ratio	32.668	33.764
Field Calibrator at Base		Calibrated (cps)
		1688 2486
Ratio		0.679
Field Check		Calibrated (cps)
		1689 2475
Ratio		0.680
Neutron Constants MDN-B.J 387		Last Edited on 23-JUN-2014,11:27
Neutron Source Id	P58125B	
Neutron Jig Number	5824NE	

Epithermal Neutron		
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-A.A 55			Base Calibration on 20-JUN-2014 09:41 Field Check on 23-JUN-2014 06:14		
Base Calibration					
	Measured	Calibrated (ohm-m)			
Reference 1	0.0	0.0			
Reference 2	950.7	126.8			
Base Check		281.7			
Field Check		281.8			

FE Constants MFE-A.A 55			Last Edited on 23-JUN-2014,11:27		
Running Mode	No Sleeve				
MFE K Factor	0.1268				
Caliper Source for FE correction	Density Caliper				
Caliper Value for FE correction	N/A				inches
Rm Source for FE correction	Temperature Corr				
Temp. for Rm Corr.	MCG External Temperature				
Stand-off	0.5				inches

Sonic Constants MSS-A.A 73			Last Edited on 23-JUN-2014,11:28		
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

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

Induction Calibration MAI-A.A 5

Base Calibration on 21-JAN-2014,09:50

Field Check on 23-JUN-2014 06:13

Base Calibration

Test Loop Calibration

Channel	Measured		Calibrated (mmho/m)	
	Low	High	Low	High
1	16.3	470.8	9.3	966.2
2	5.6	376.1	7.6	821.4
3	2.6	266.1	5.2	566.0
4	1.6	130.0	2.6	279.2

Array Temperature 71.1 Deg F

Channel	Base Check (mmho/m)		Field Check (mmho/m)	
	Low	High	Low	High
1	0.0	0.0	15.1	3862.6
2	0.0	0.0	31.7	3591.0
3	0.0	0.0	29.8	2971.7
4	0.0	0.0	20.8	2126.4
Deep			18.4	1912.4
Medium			43.0	3861.7
Shallow			47.2	5372.9

Array Temperature 0.0 73.4 Deg F

Induction Constants MAI-A.A 5

Last Edited on 23-JUN-2014,11:28

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
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
Borehole Corr. Rm Source	Temperature Corr	
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

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 5

Field Calibration on 21-JAN-2014,15:43

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

High Resolution Temperature Constants MAI-A.A 5

Last Edited on 09-MAY-2014,12:22

Pre-filter Length	11
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Caliper Calibration MPD-D.A 480

Base Calibration on 08-MAY-2014 14:36

Field Calibration on 23-JUN-2014 06:16

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	17491	3.99
2	27463	5.98
3	37484	7.97
4	47415	9.86
5	58518	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
8.03	7.97

Photo Density Calibration MPD-D.A 480

Base Calibration on 08-MAY-2014 14:53

Field Check on 23-JUN-2014 06:21

Density Calibration

Base Calibration	Measured		Calibrated (sdu)	
	Near	Far	Near	Far
Background	1275	1464		
Reference 1	55908	26147	59556	30836
Reference 2	22982	2651	24941	2541

Field Check at Base

1274.5	1464.0
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Field Check

1270.4	1465.1
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PE Calibration

Base Calibration	Measured			Calibrated
	WS	WH	Ratio	Ratio
Background	241	1140		
Reference 1	23265	55701	0.422	0.371
Reference 2	6806	22836	0.303	0.272

Field Check at Base

240.7	1139.6
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Field Check

239.4	1136.0
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Density Constants MPD-D.A 480

Last Edited on 23-JUN-2014,10:28

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	1.11	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 (m)
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
0.00	0.00

DOWNHOLE EQUIPMENT

C:\Minimus 13.08.2113\Logs\Shakespeare Janzen #3-26\Shakespeare Janzen #3-26 REPEAT.dta

CBH-C, Cablehead, 11 pin
CBH-C 0 LG: 2.40 ft WT: 24.3 lb OD: 2.244 in

Compact Comms Gamma
MCG-D.K 442 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

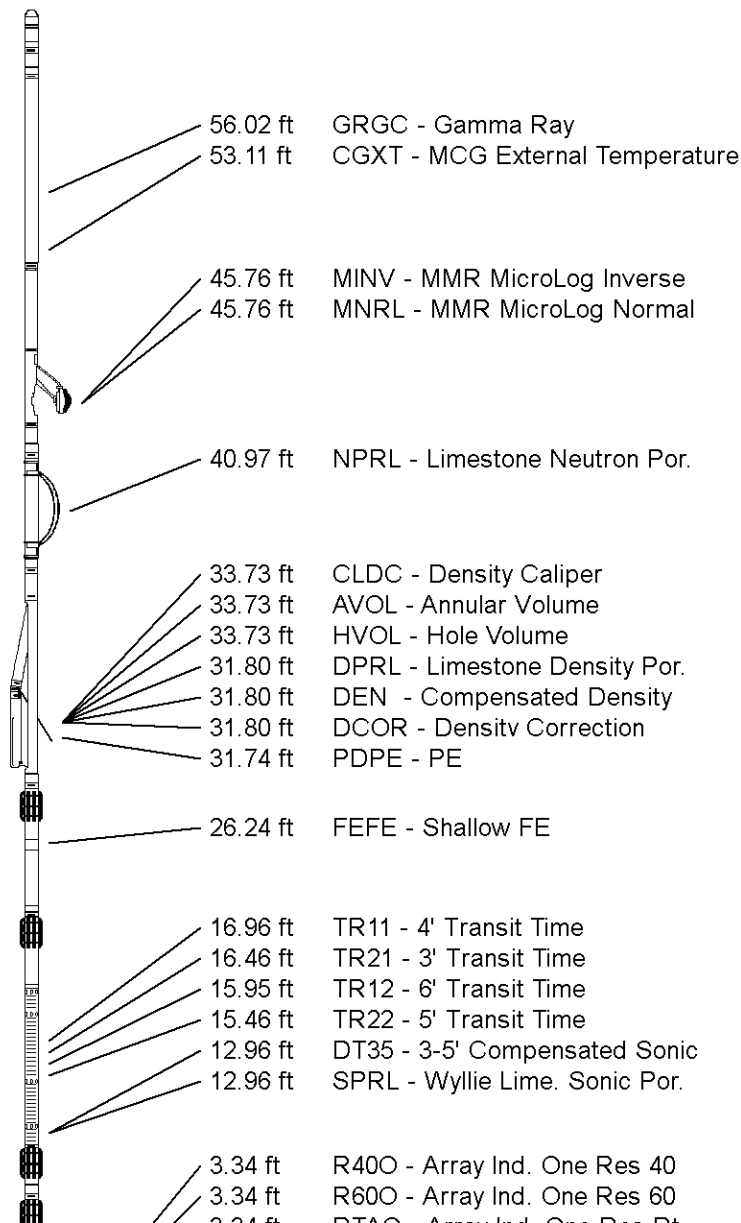
Compact Neutron
MDN-B.J 387 LG: 5.04 ft WT: 50.7 lb OD: 2.244 in

Compact Density/Caliper
MPD-D.A 480 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 73 LG: 12.52 ft WT: 72.8 lb OD: 2.244 in

Compact Induction
MAI-A.A 5 LG: 10.81 ft WT: 48.5 lb OD: 2.244 in



Total Length: 63.70 ft Weight: 480.6 lb



3.34 ft RTAO - Array Ind. One Res Rt
3.34 ft CTAO - Array Ind. One Cond Ct
0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.

COMPANY SHAKESPEARE OIL COMPANY, INC.
WELL JANZEN #3-26
FIELD PENCE EAST
PROVINCE/COUNTY SCOTT
COUNTRY/STATE U.S.A. / KANSAS

Elevation Kelly Bushing	3119.00	feet	First Reading	4877.00	feet
Elevation Drill Floor	3117.00	feet	Depth Driller	4890.00	feet
Elevation Ground Level	3107.00	feet	Depth Logger	4890.00	feet



COMPENSATED SONIC
WITH INTEGRATED TRANSIT TIME

Weatherford®