



SUPERIOR
Hays,
Kansas

DUAL INDUCTION LOG

Company CORTEZ HEARTLAND, LLC.
Well SNODGRASS #1-30
Field WILDCAT
County PAWNEE
State KANSAS

Company CORTEZ HEARTLAND, LLC.
Well SNODGRASS #1-30
Field WILDCAT
County PAWNEE State KANSAS

Location: API # : 15-145-21592-0000

660' FSL & 660' FWL

SEC 12 TWP 21S RGE 20W

Permanent Datum GROUND LEVEL Elevation 2116
Log Measured From KELLY BUSHING 13' A.G.L.
Drilling Measured From KELLY BUSHING

Other Services
CDL/CNL
MEL
Elevation
K.B. 2129
D.F. 2127
G.L. 2116

Date	9/27/09		
Run Number	ONE		
Depth Driller	4364		
Depth Logger	4367		
Bottom Logged Interval	4365		
Top Log Interval	00		
Casing Driller	8 5/8"@408'		
Casing Logger	407		
Bit Size	7 7/8		
Type Fluid in Hole	CHEMICAL MUD	CHLORIDES 15,800PPM	
Density / Viscosity	9.6/45		
pH / Fluid Loss	7.0/10.8		
Source of Sample	FLOWLINE		
Rm @ Meas. Temp	.300@85F		
Rmf @ Meas. Temp	.225@85F		
Rmc @ Meas. Temp	.360@85F		
Source of Rmf / Rmc	MEASUREMENT		
Rm @ BHT	.214@119F		
Time Circulation Stopped	3 HOURS		
Time Logger on Bottom	9:45 P.M.		
Maximum Recorded Temperature	119F		
Equipment Number	0836		
Location	HAYS, KANSAS		
Recorded By	JEFF LUEBBERS		
Witnessed By	JAMES ROE	ROD ANDERSEN	

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

THANK YOU FOR USING SUPERIOR WELL SERVICE HAYS, KANSAS (785) 628-6395
DIRECTIONS
RUSH CENTER, KS. S. ON HWY 183 TO CURVE "RD. T", 9 W. TO RD. 320., 1 1/2 S., E. INTO



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MAIN SECTION

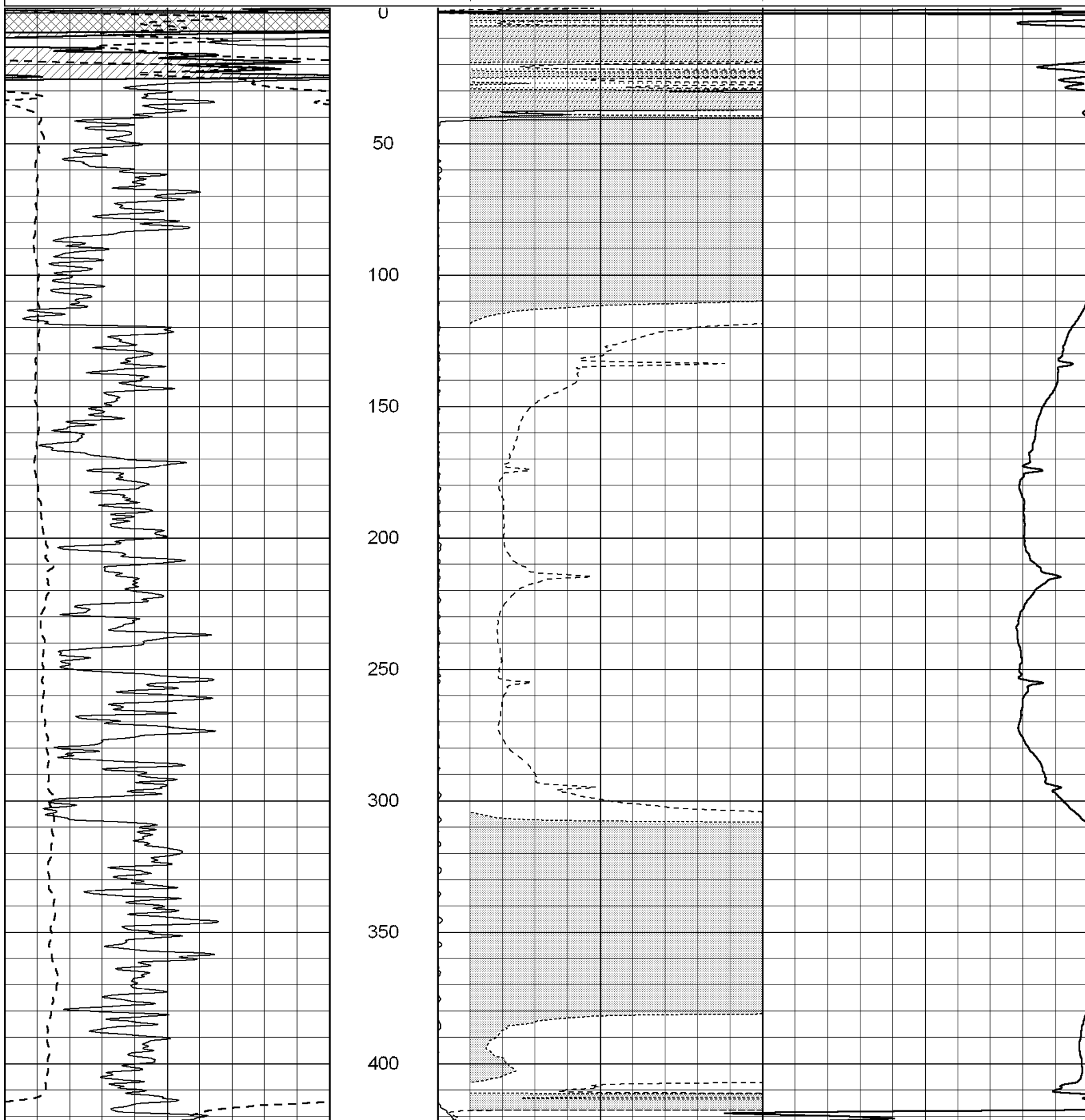
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Dataset Pathname: pass3.4
Presentation Format: dil2
Dataset Creation: Sun Sep 27 23:38:38 2009 by Calc Open-Cased 060407
Charted by: Depth in Feet scaled 1:600

0	Gamma Ray (GAPI)	150
-100	SP (mV)	100

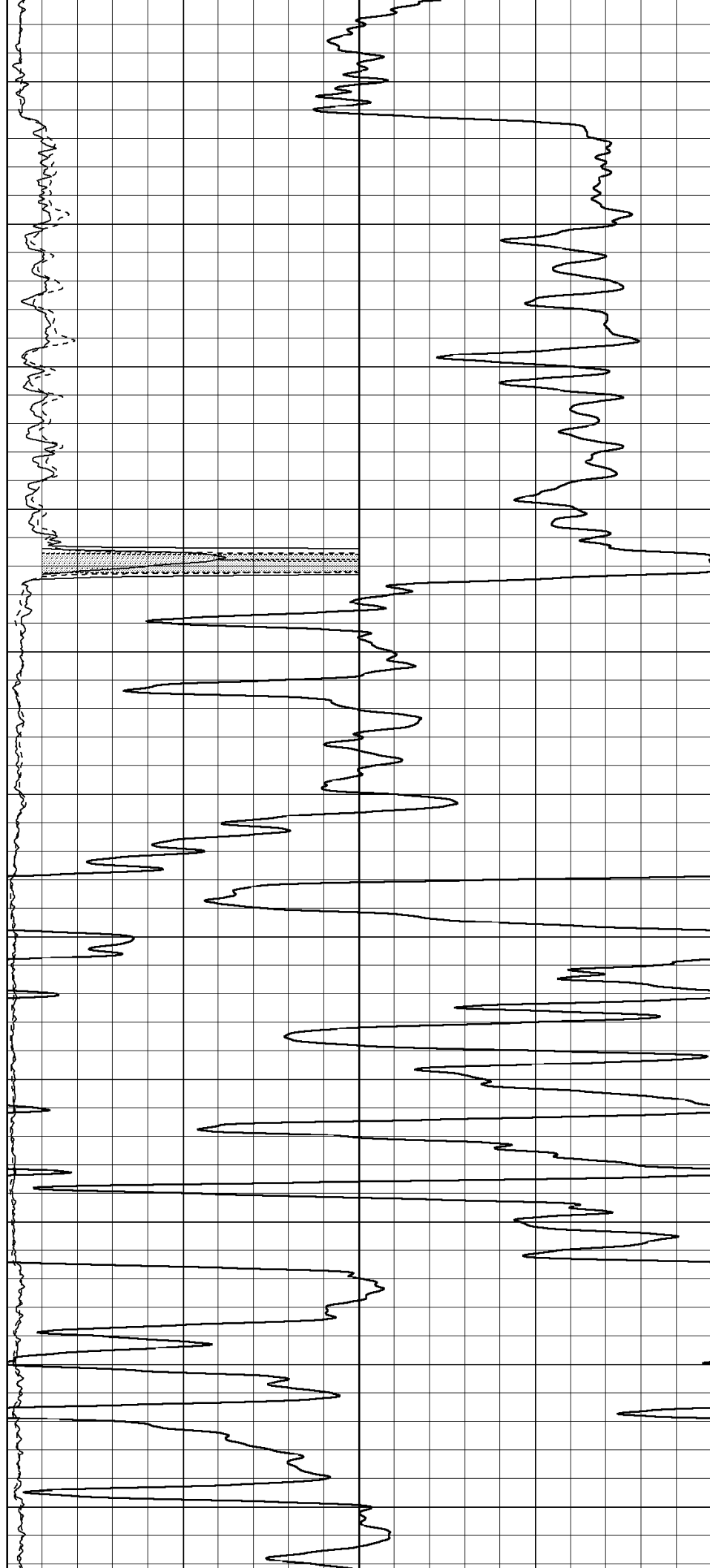
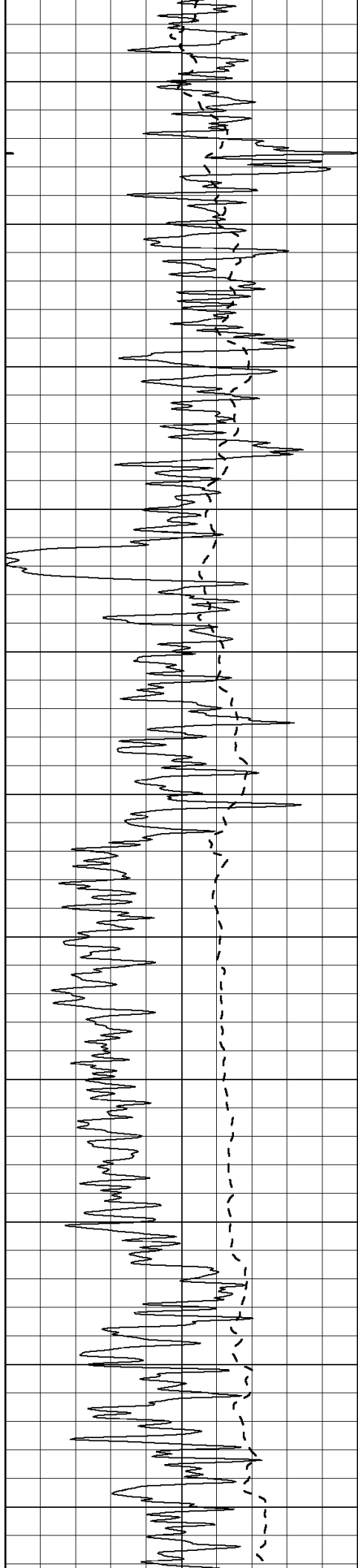
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0	RILD (Ohm-m)	50

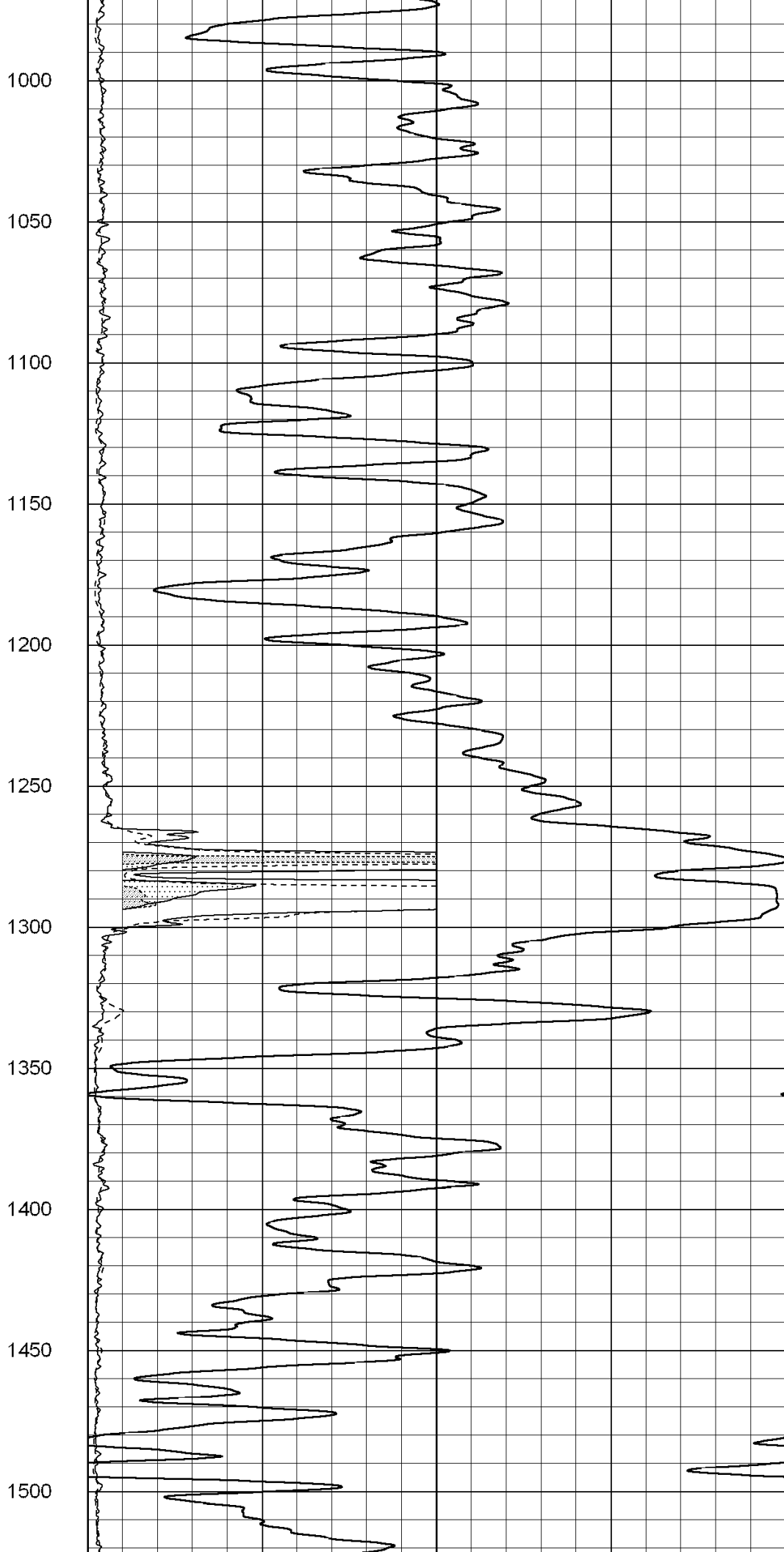
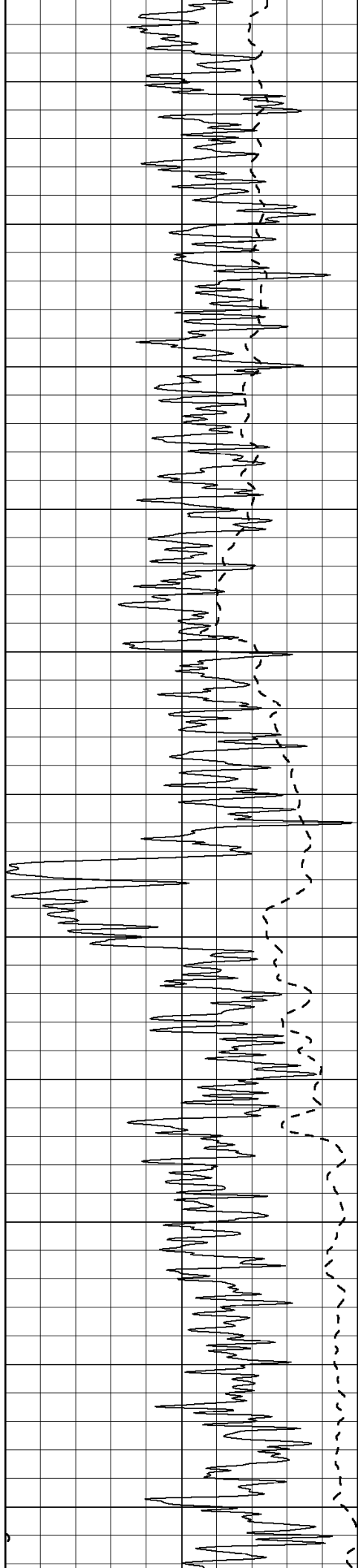
1000	CILD (mmho-m)	0
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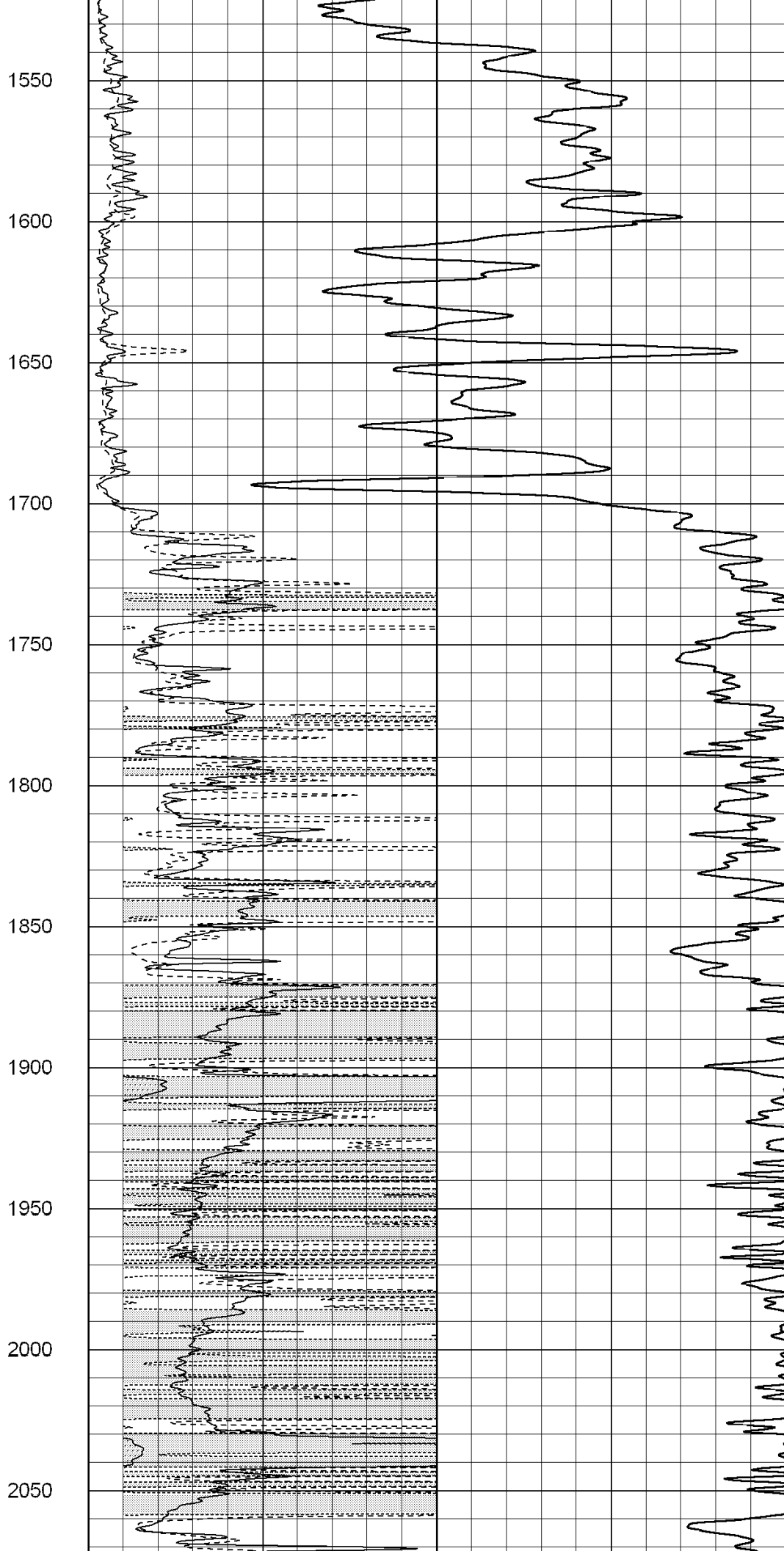
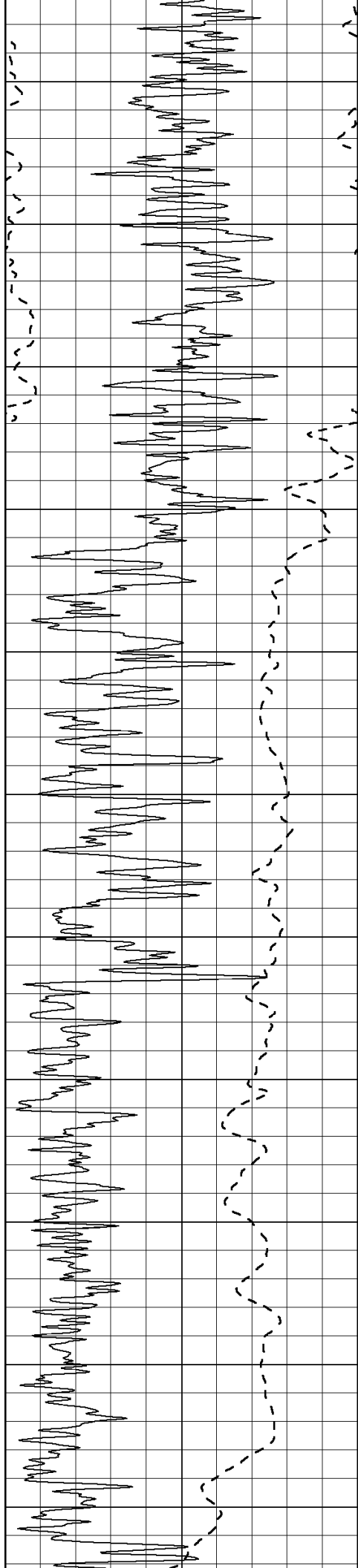
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50	RLL3 X10 (Ohm-m)	500

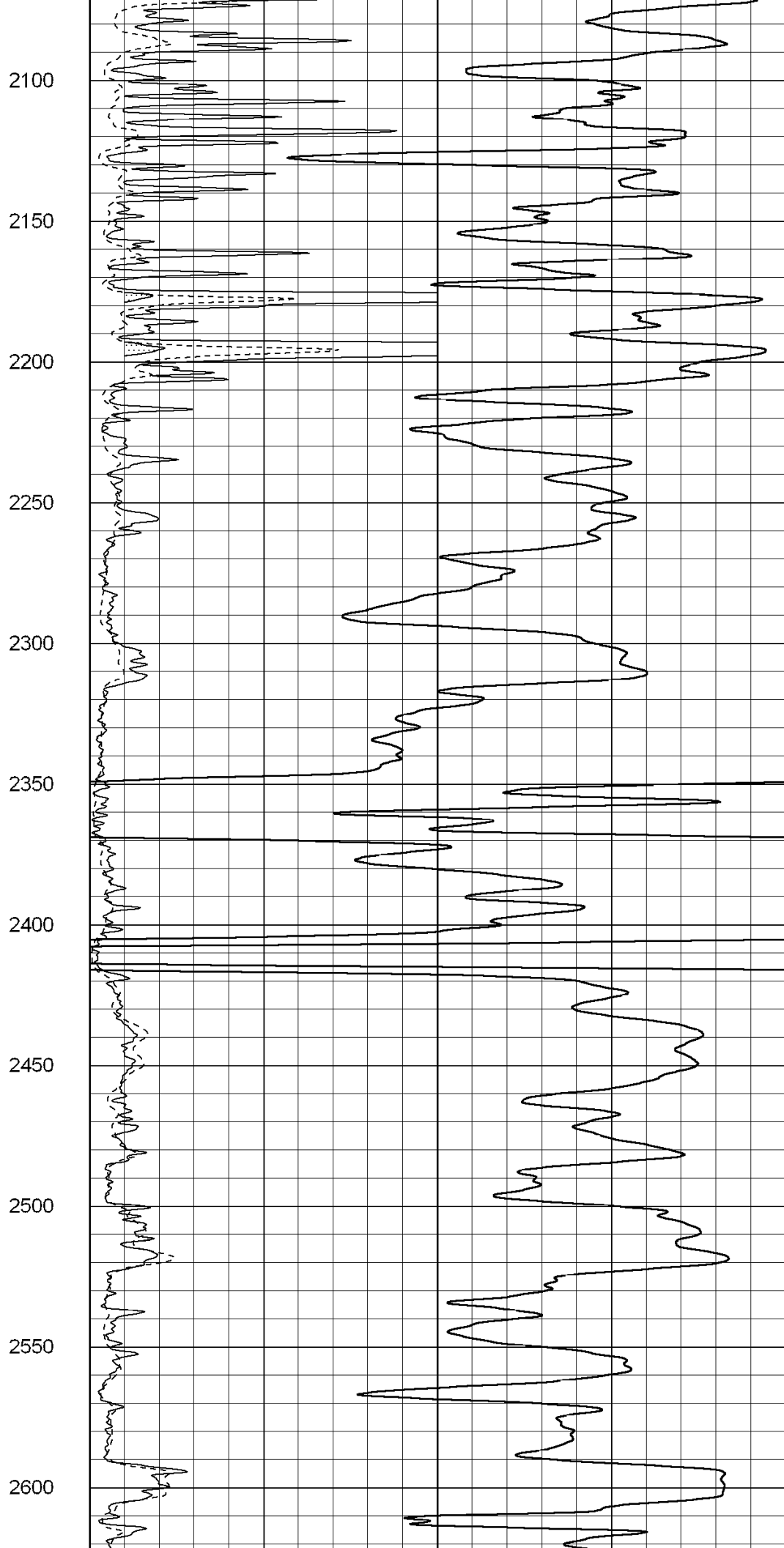
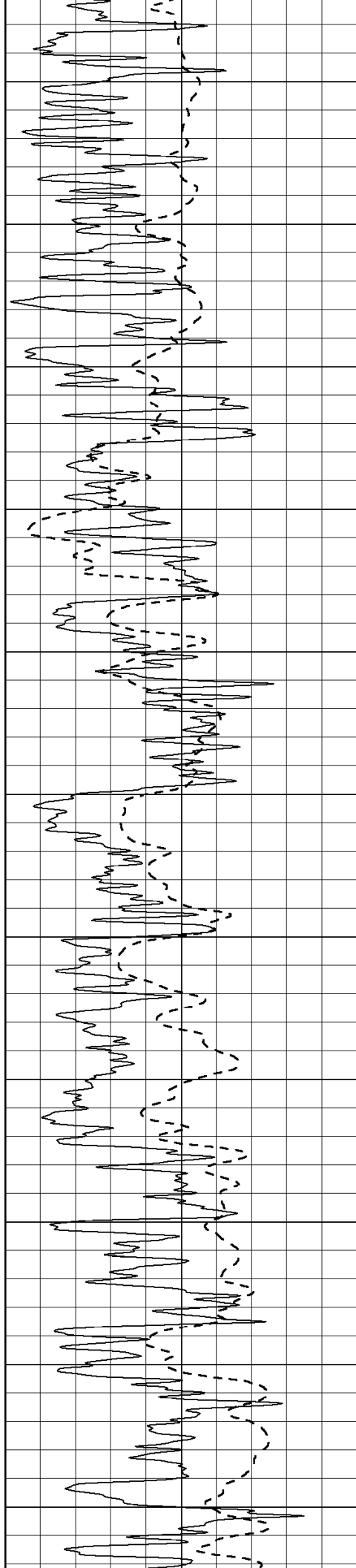


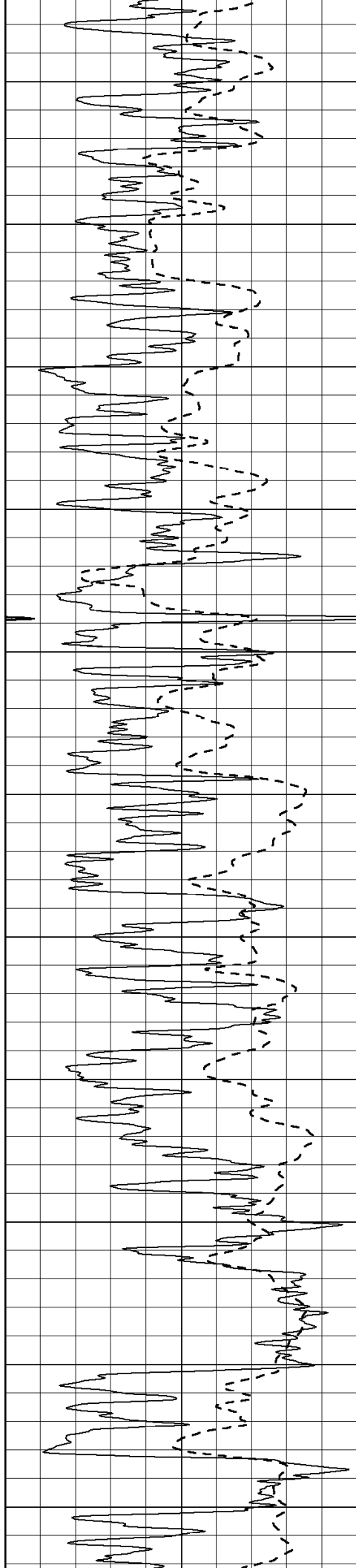
450 500 550 600 650 700 750 800 850 900 950











2650

2700

2750

2800

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2900

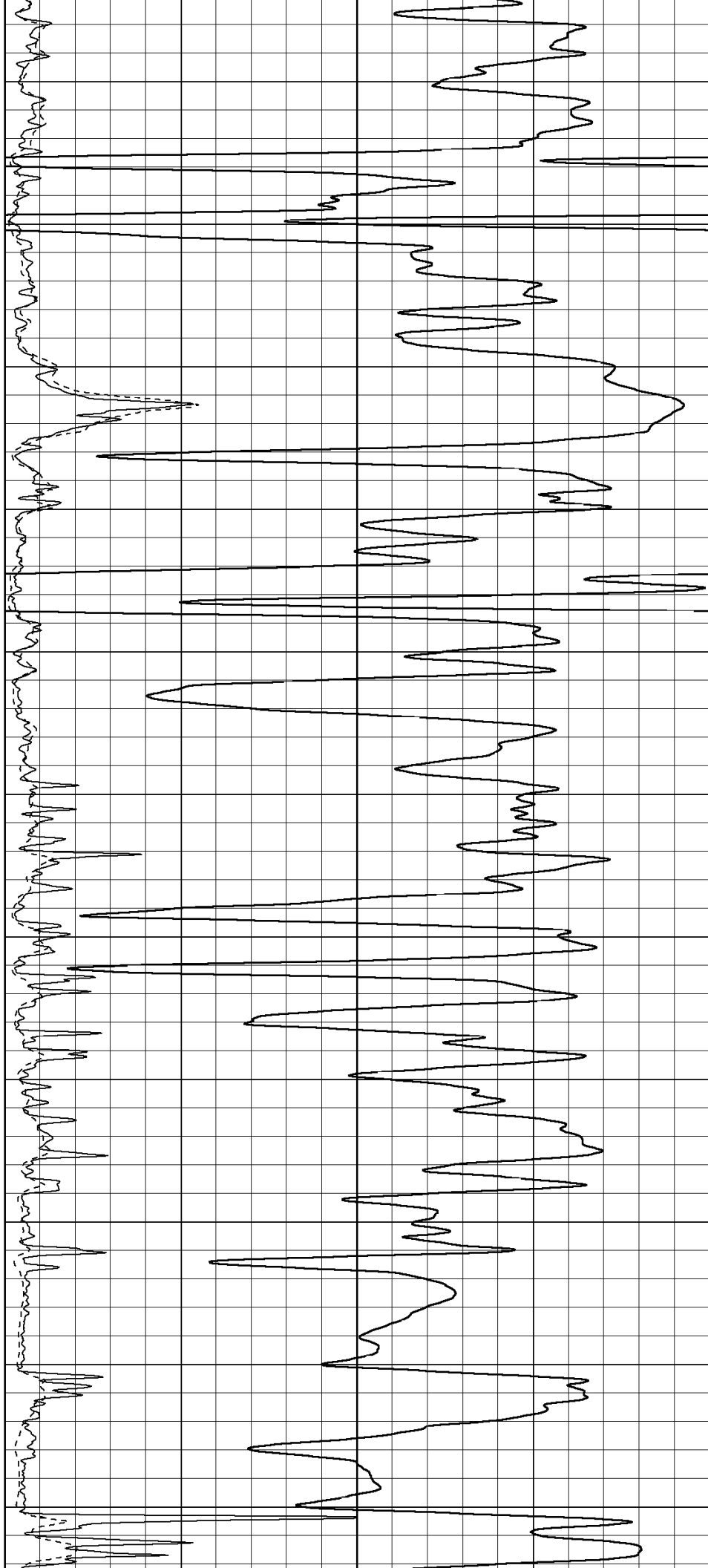
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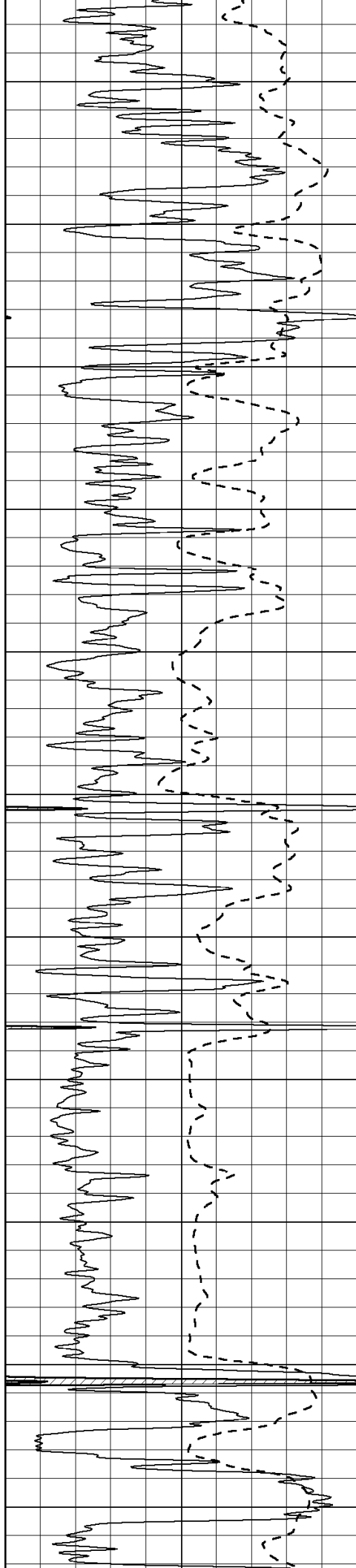
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3050

3100

3150





3200

3250

3300

3350

3400

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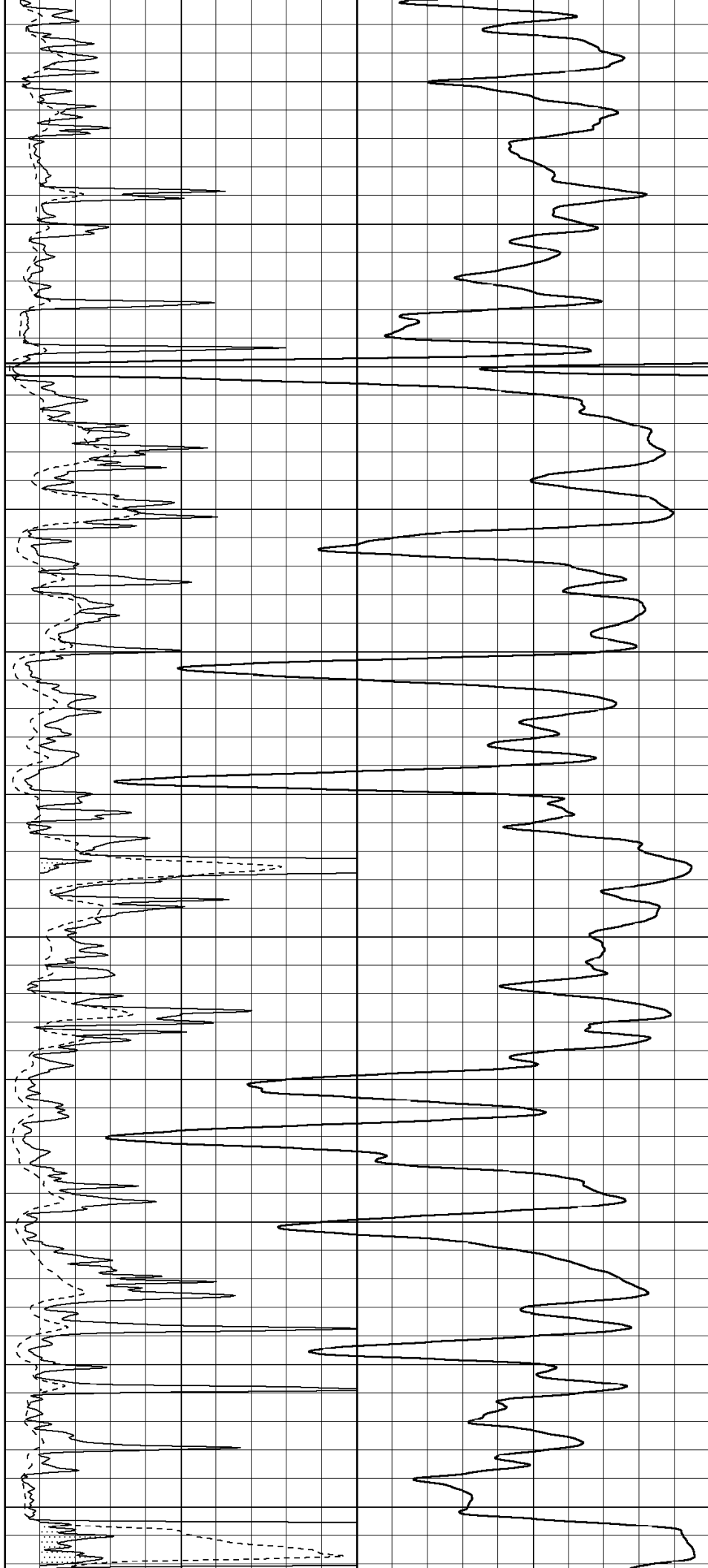
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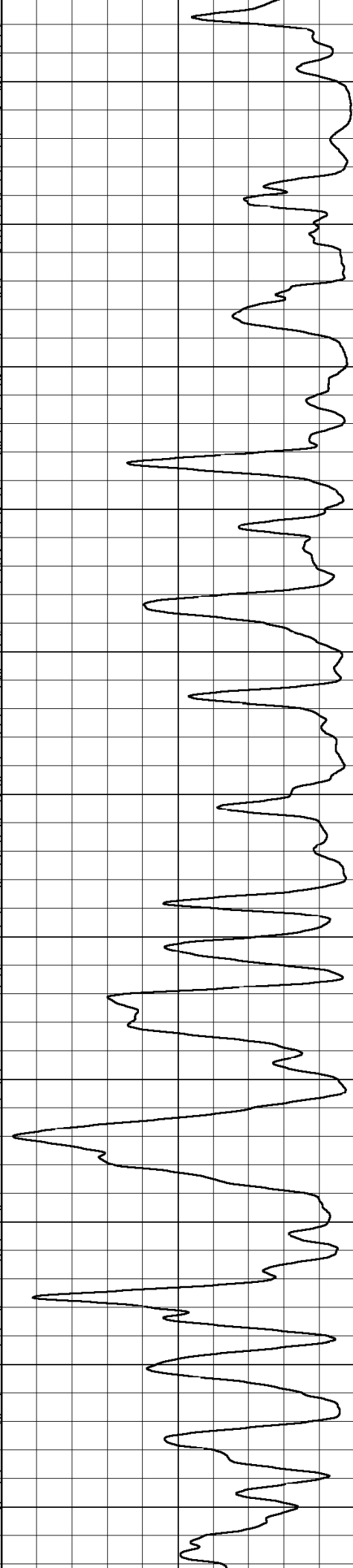
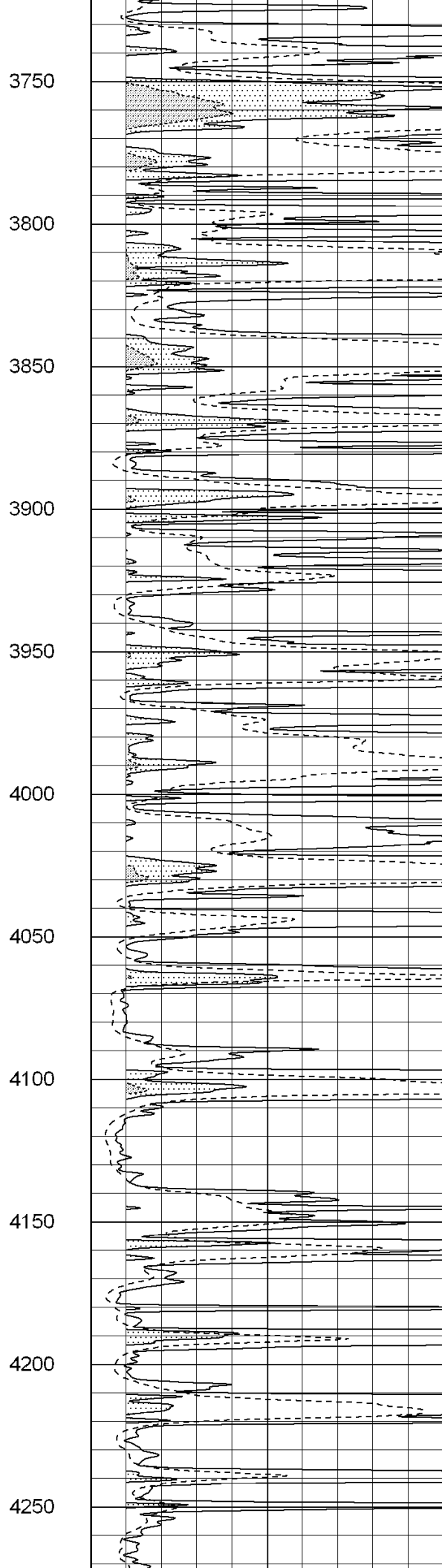
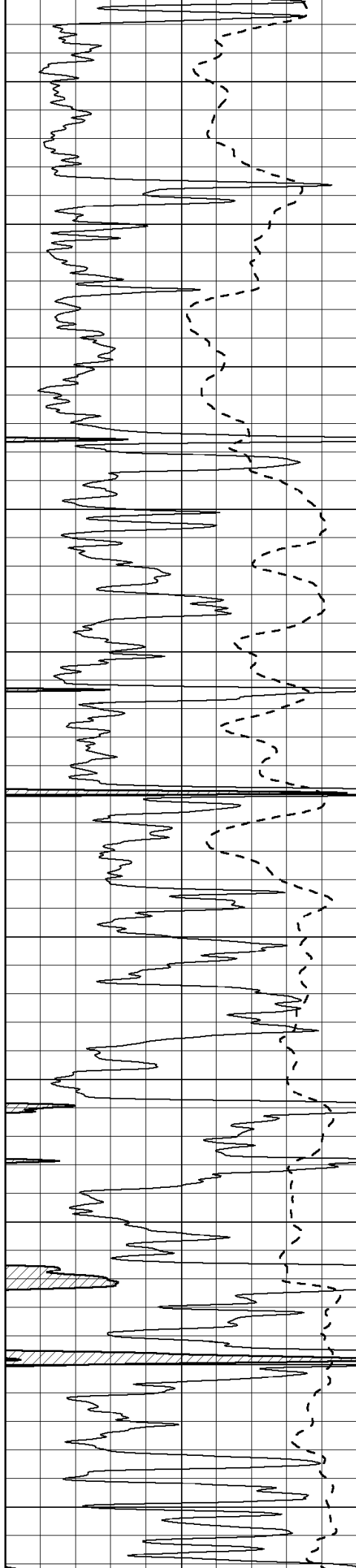
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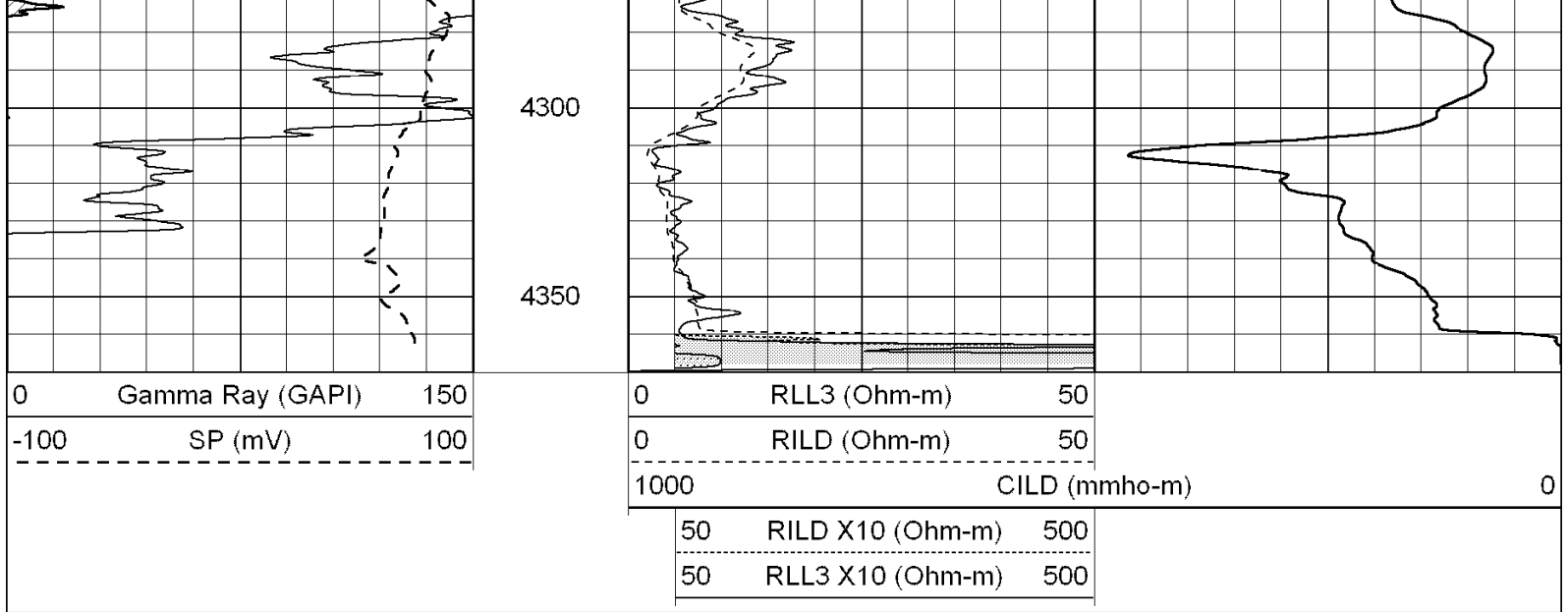
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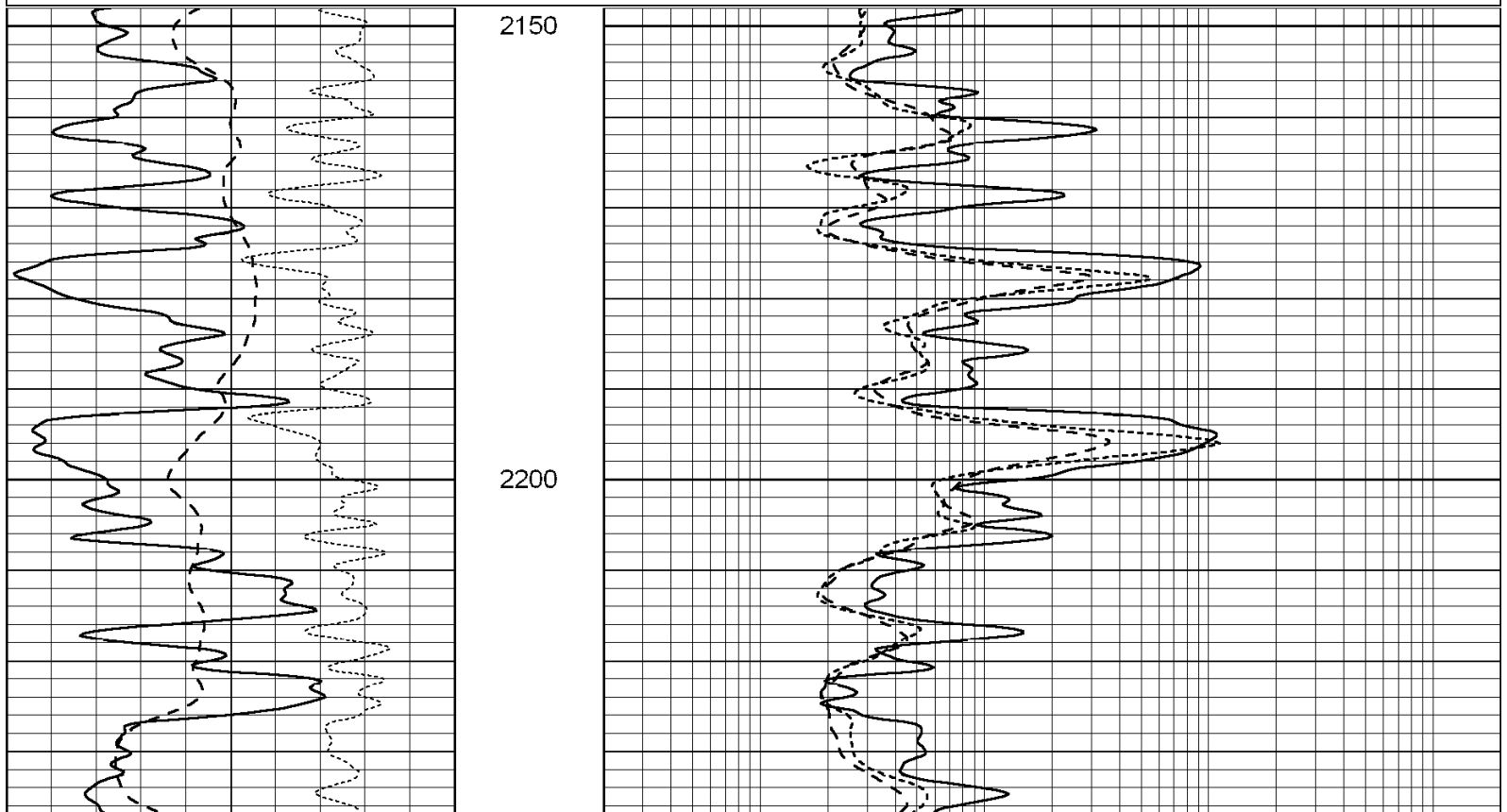


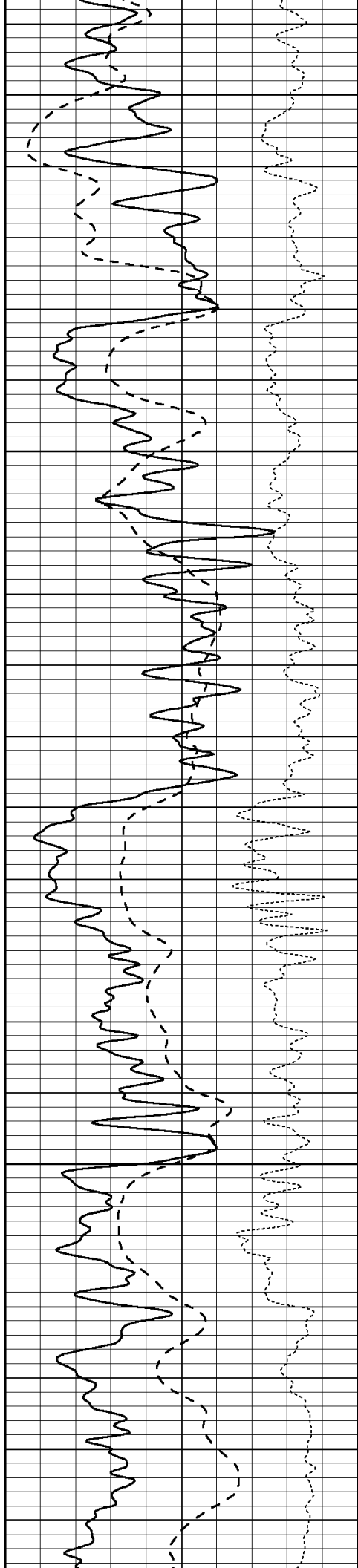
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MAIN SECTION

Database File: 004351ddn.db
 Dataset Pathname: pass3.4
 Presentation Format: dil
 Dataset Creation: Sun Sep 27 23:38:38 2009 by Calc Open-Cased 060407
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	SHALLOW GUARD (Ohm-m)	2000
-100	SP (mV)	100	0.2	DEEP INDUCTION (Ohm-m)	2000
-250	Rxo/Rt	50	0.2	MEDIUM INDUCTION (Ohm-m)	2000





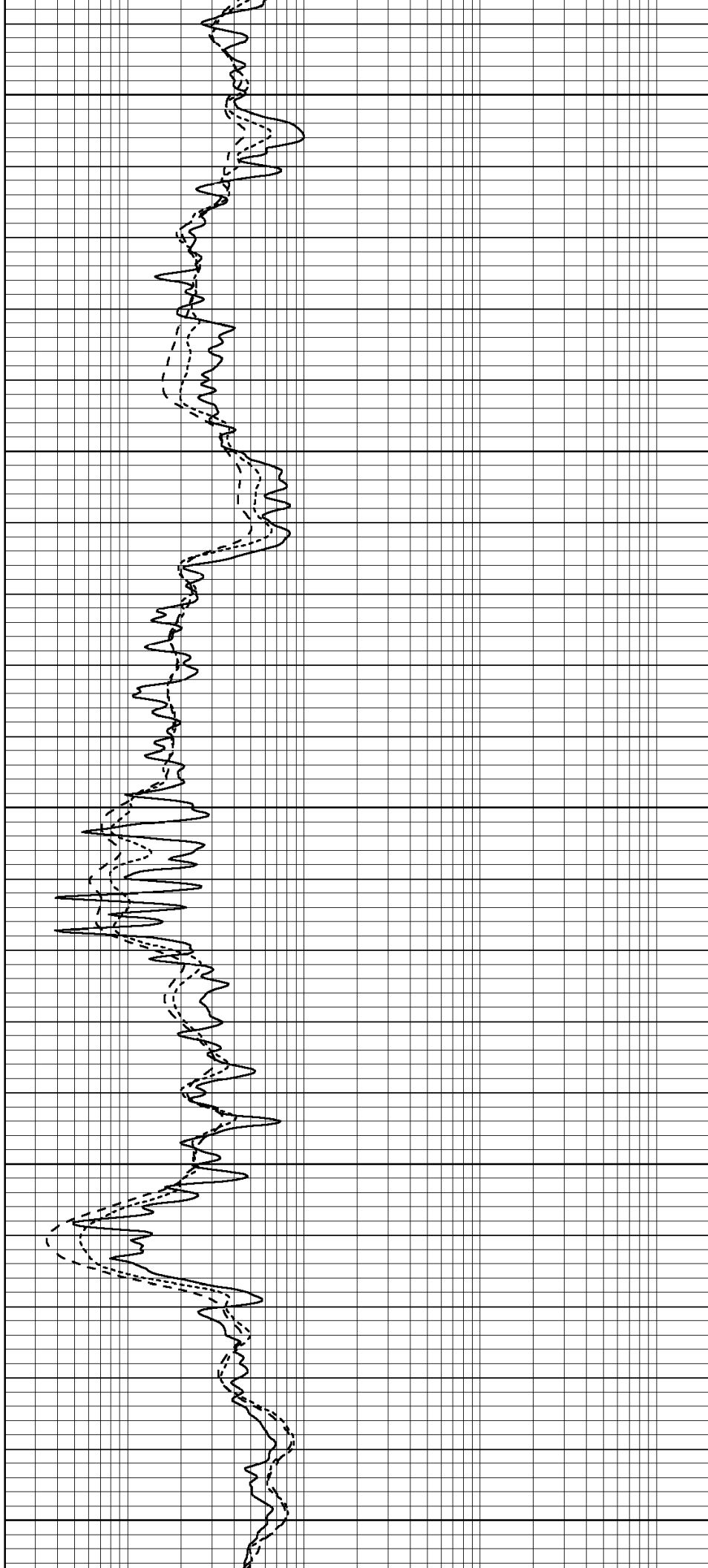
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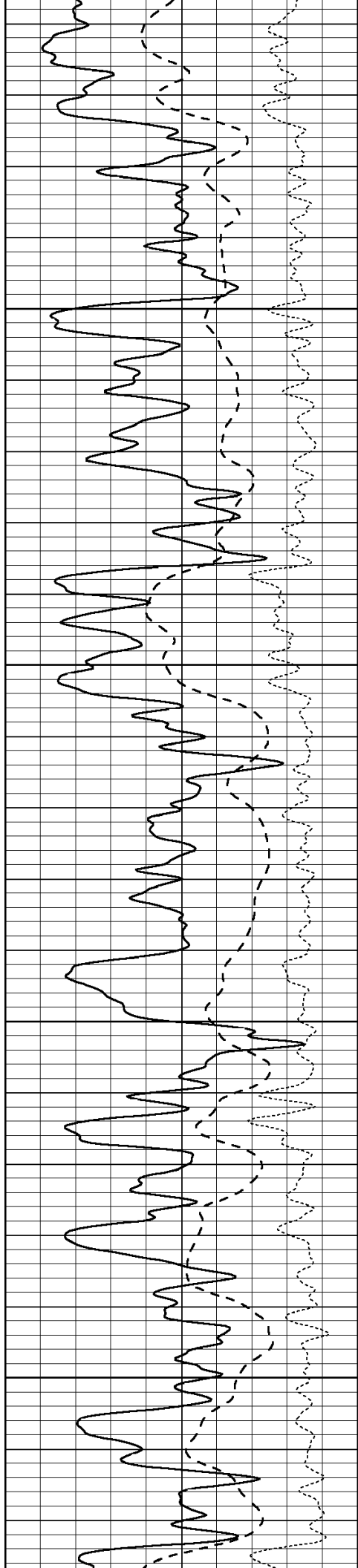
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2350

2400

2450



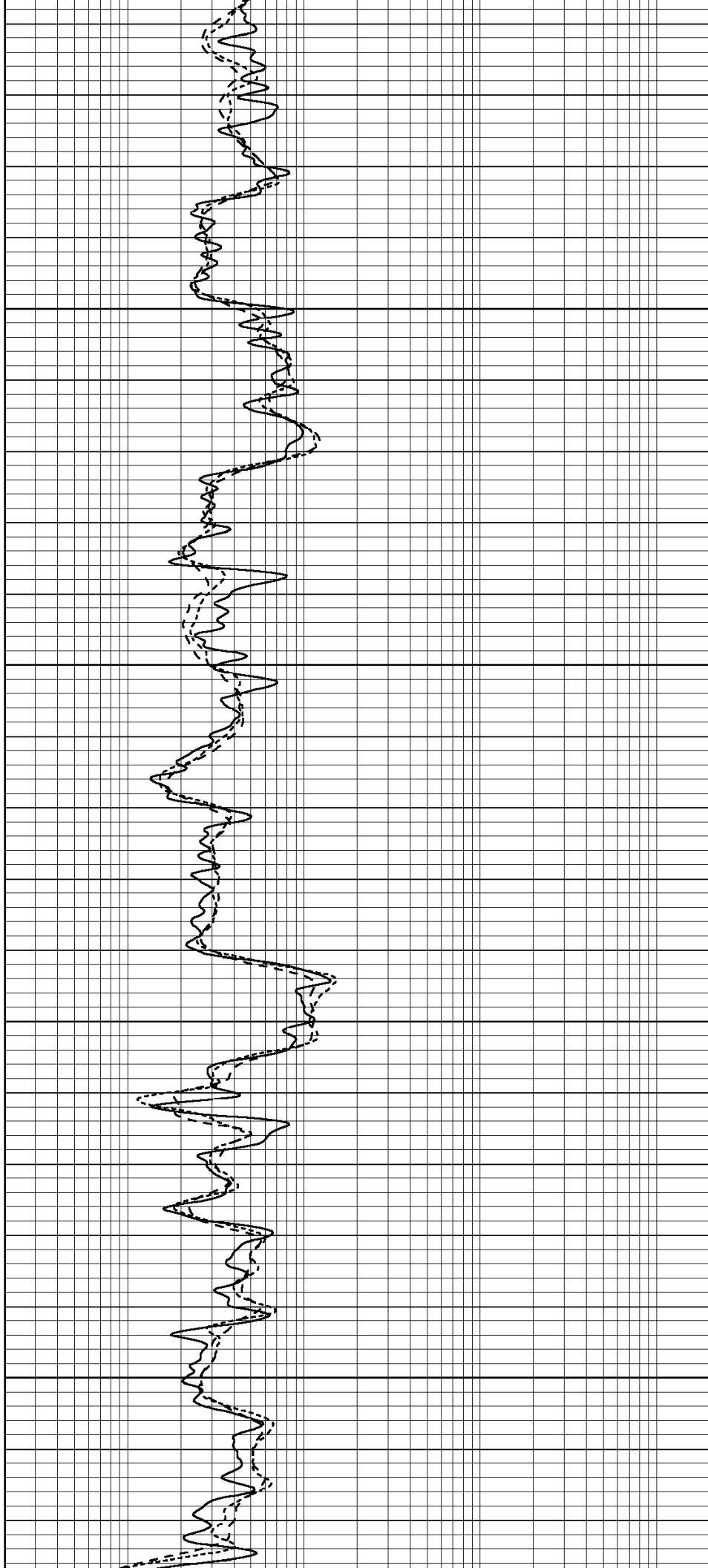


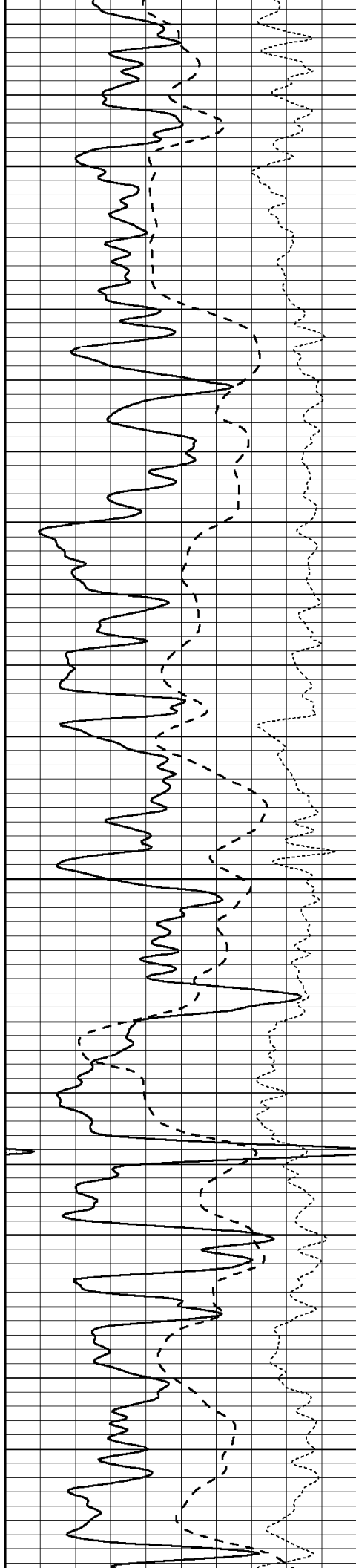
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2600

2650



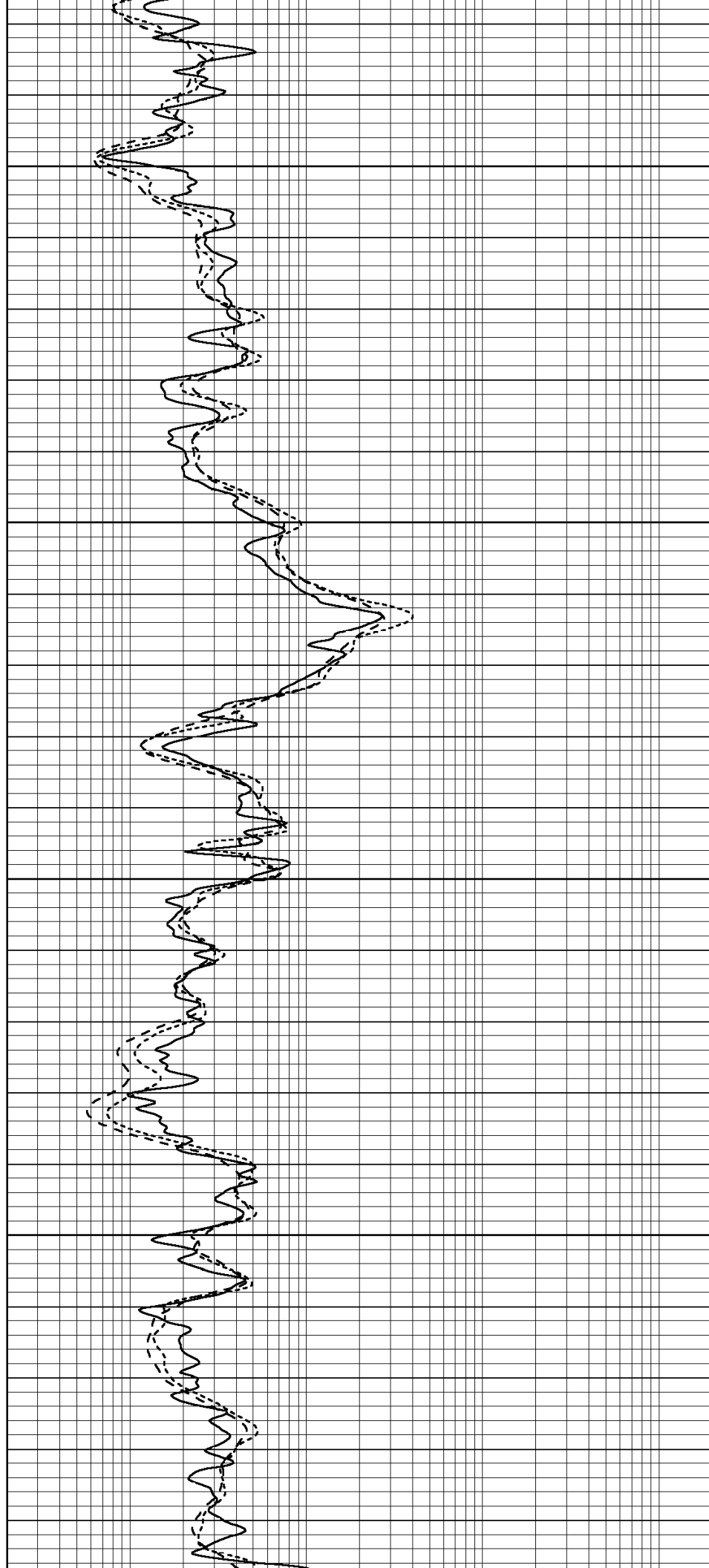


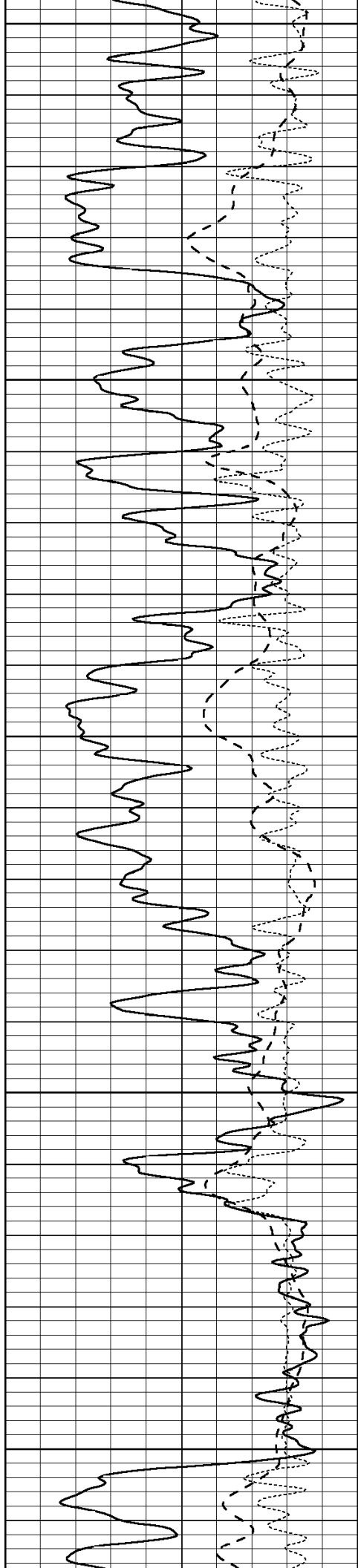
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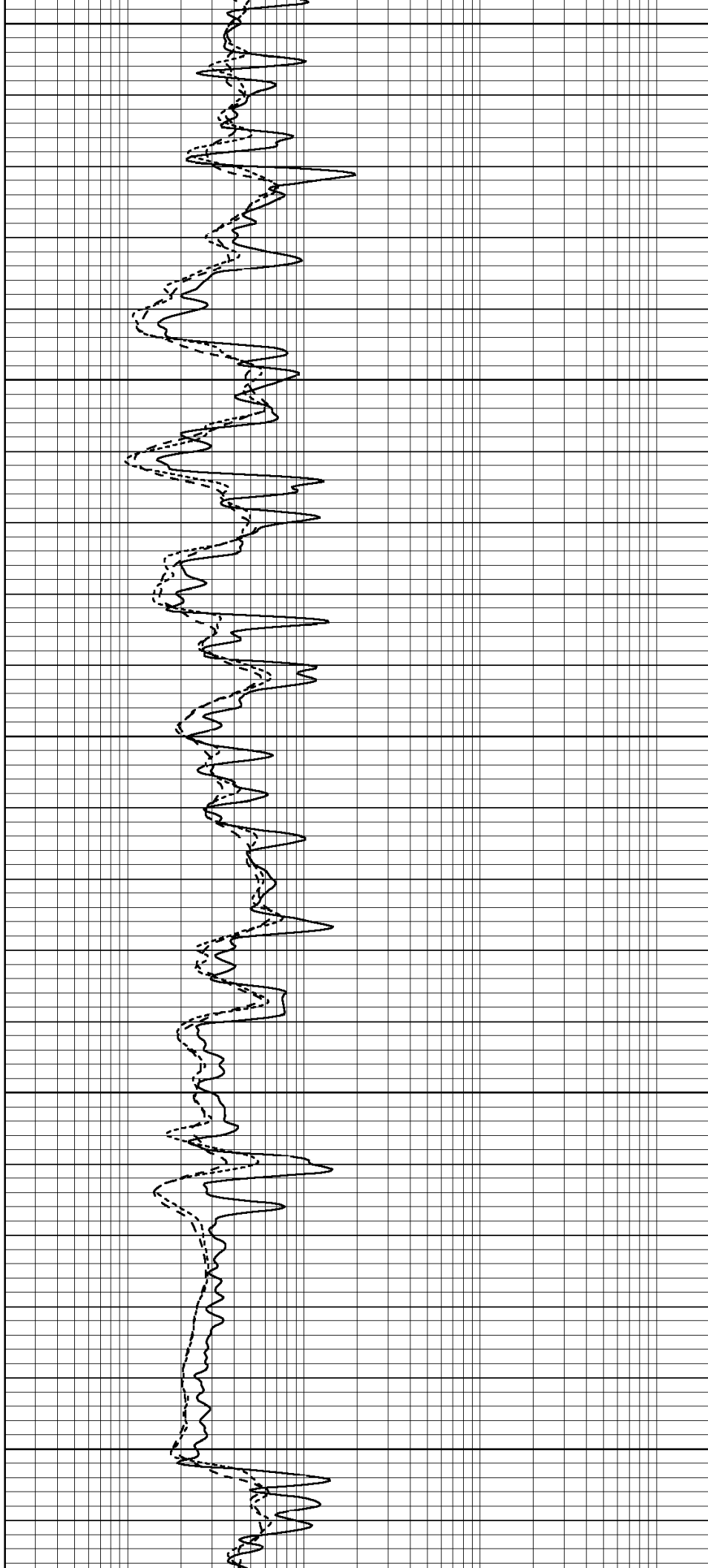
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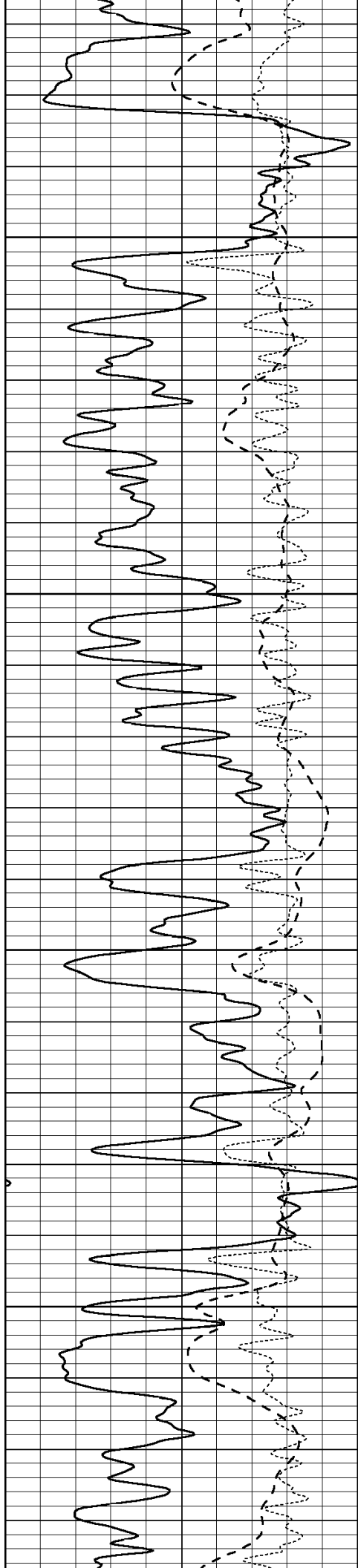
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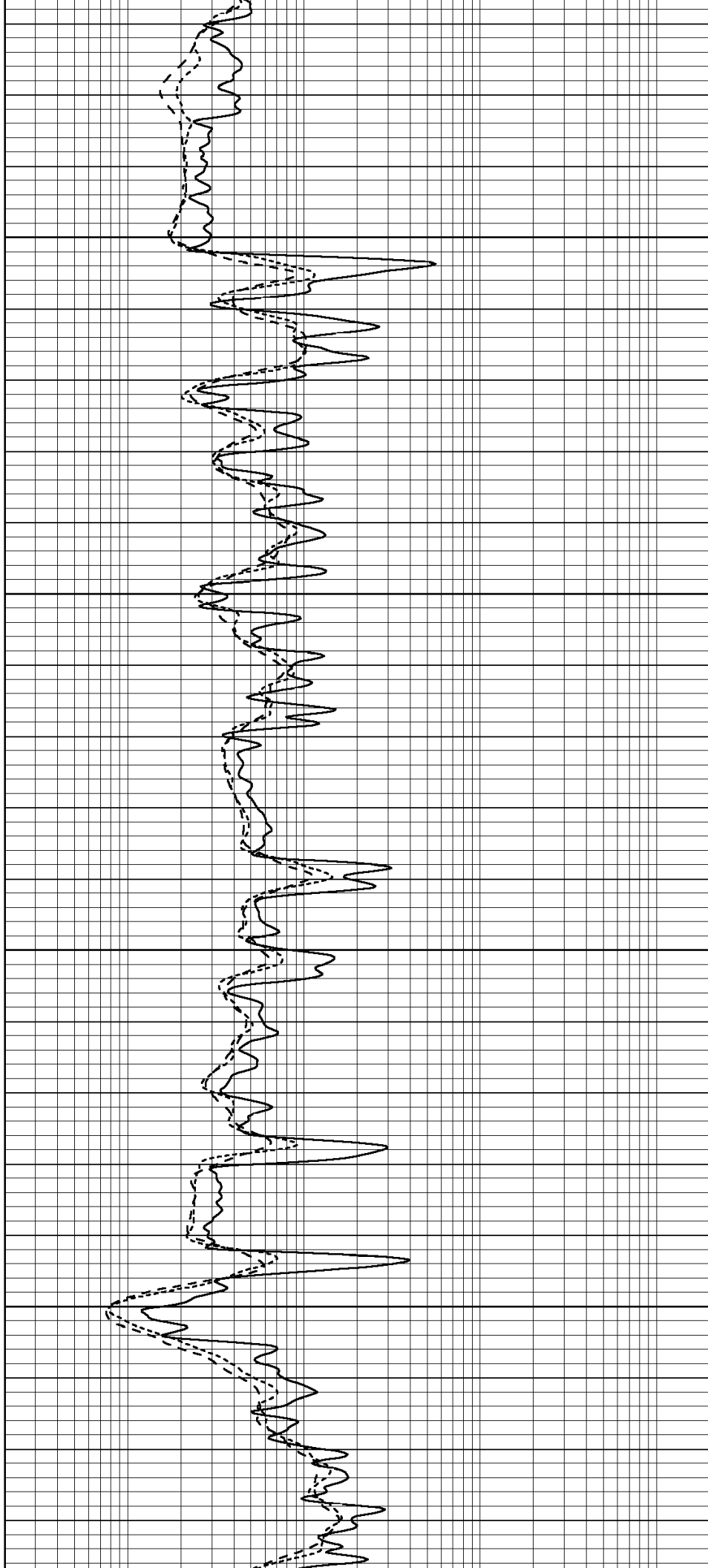


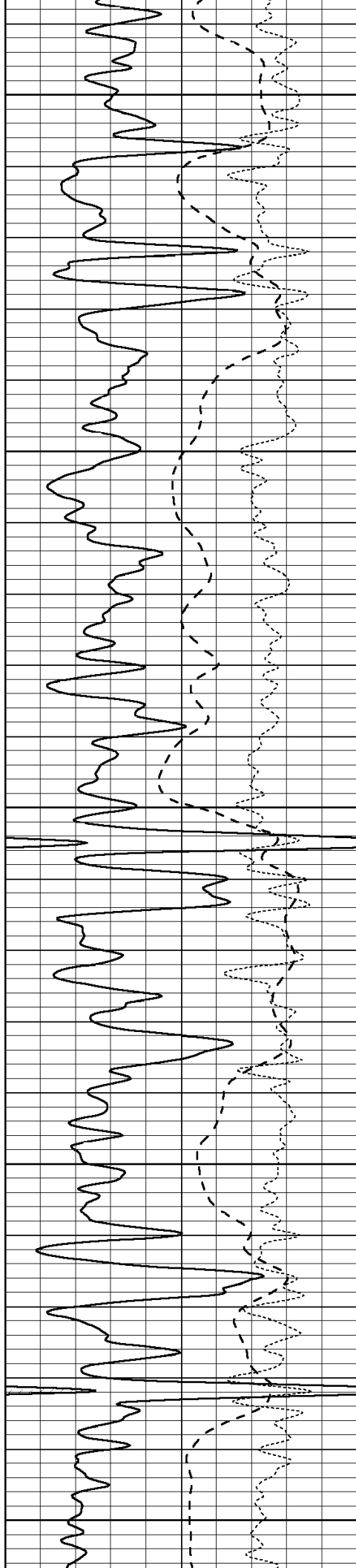
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3250

3300





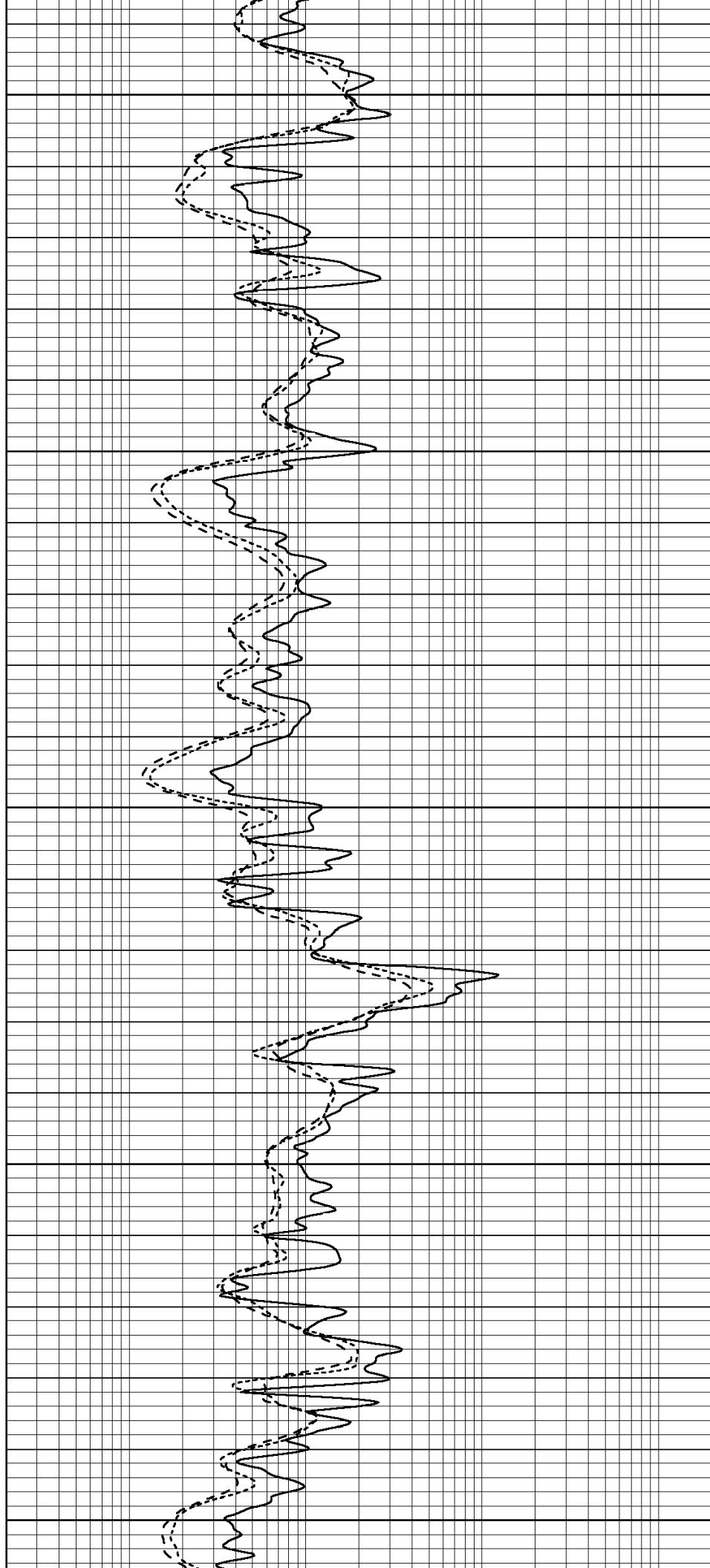
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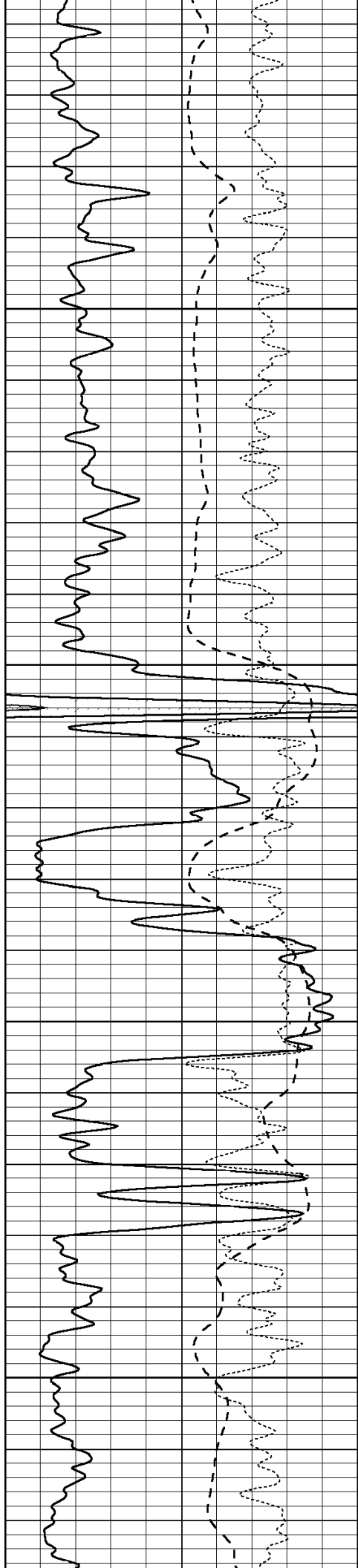
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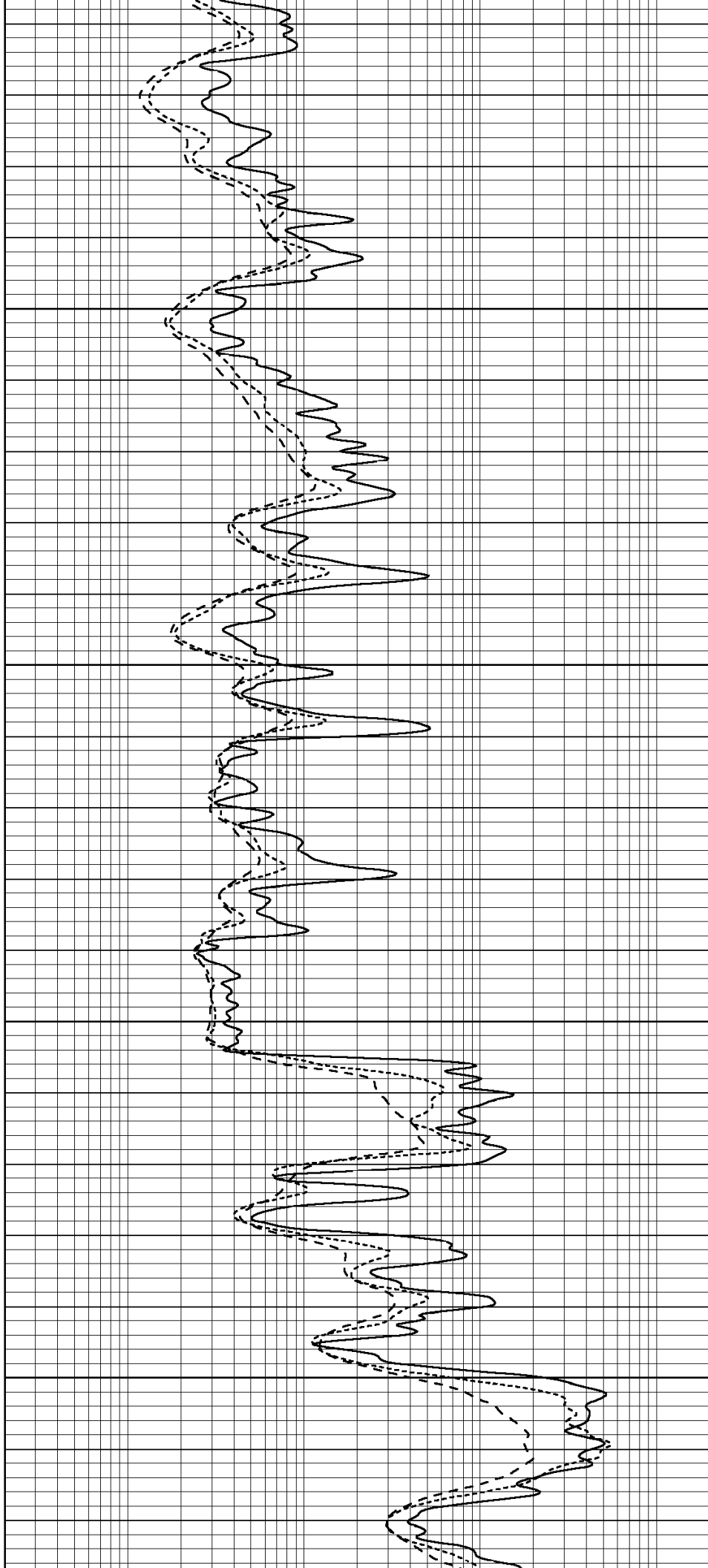


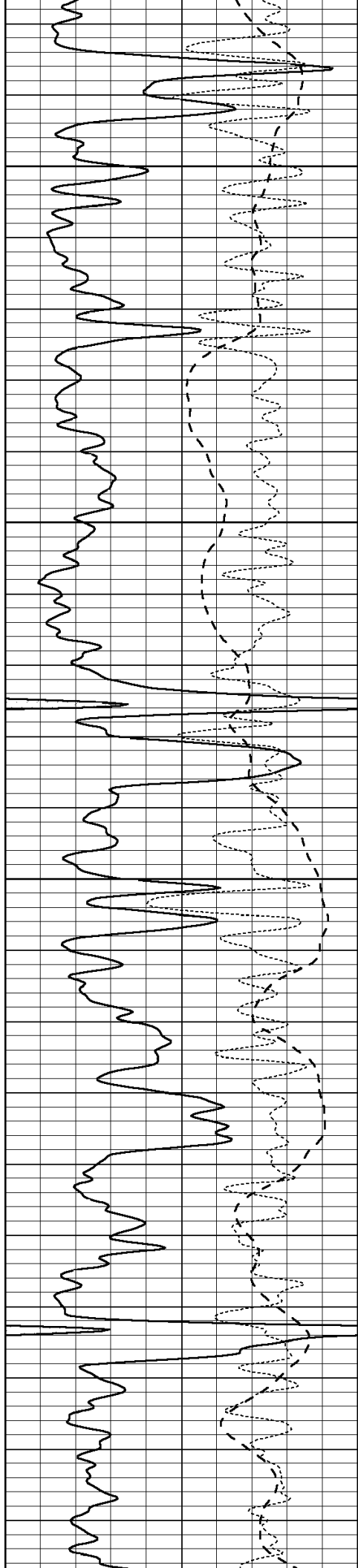
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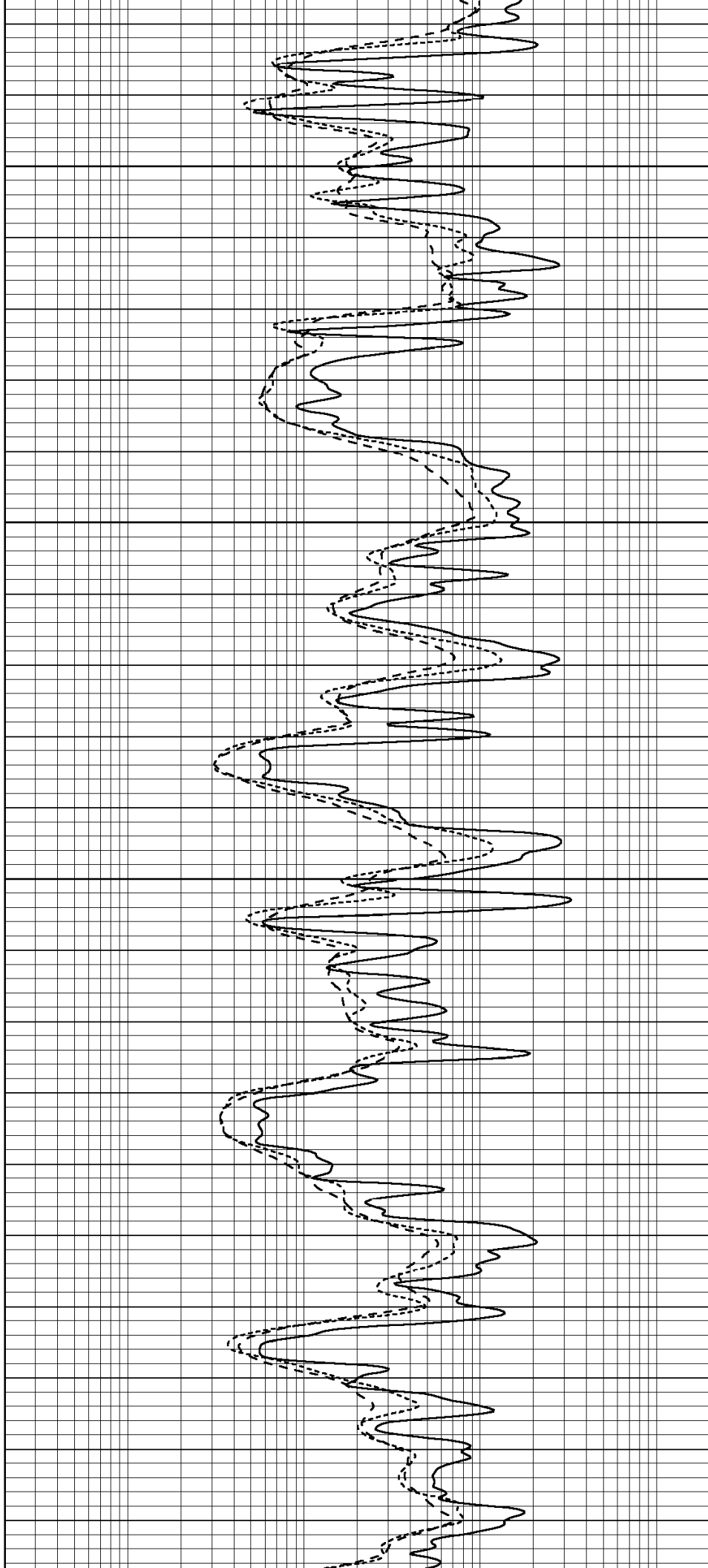


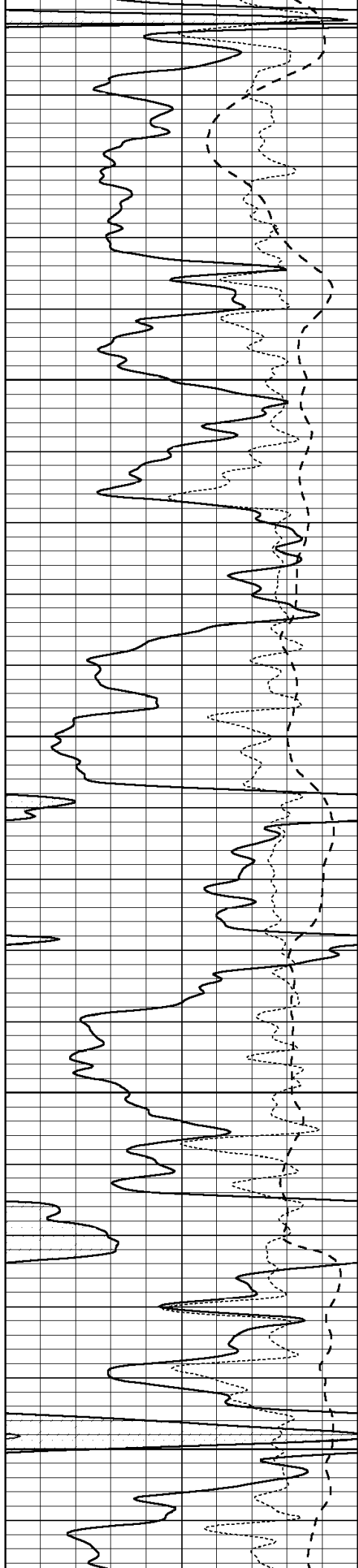
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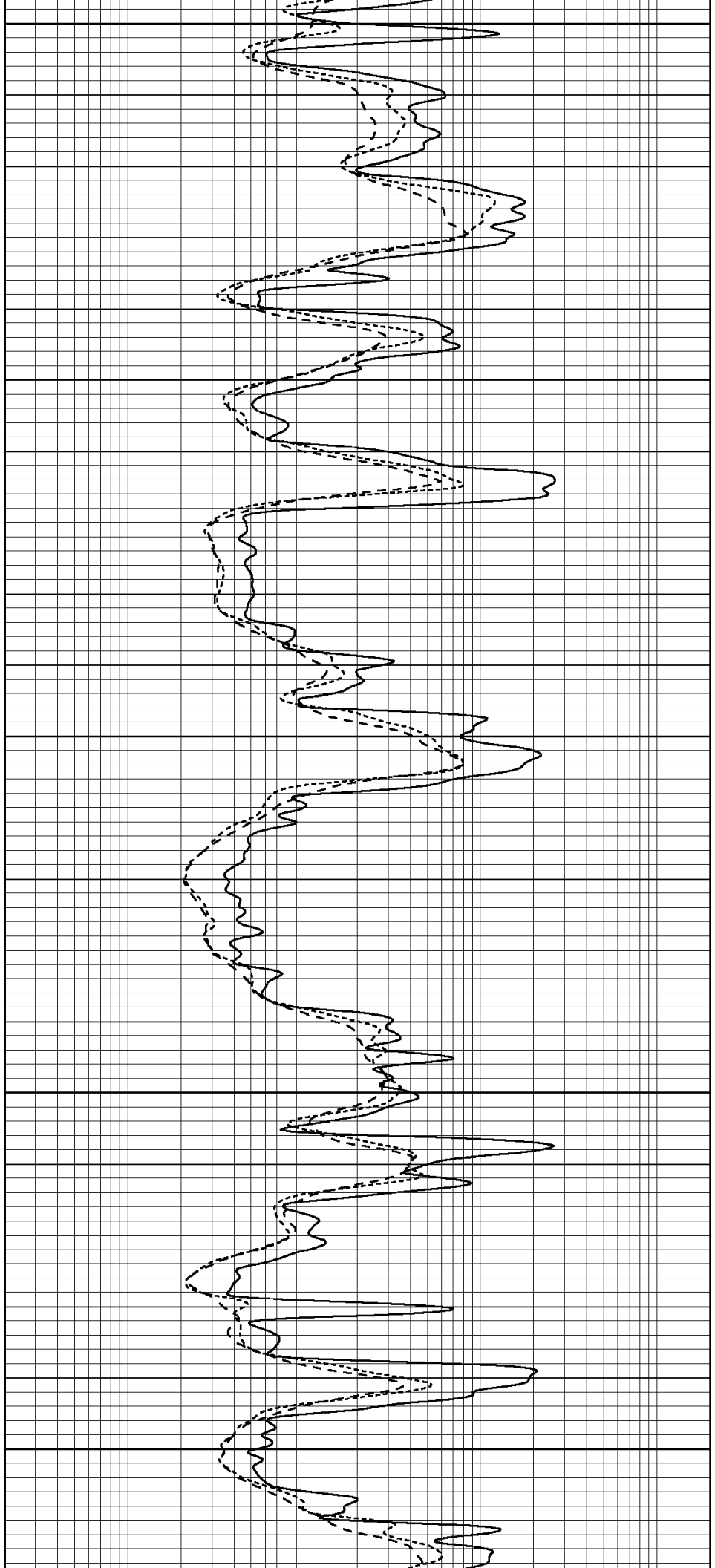
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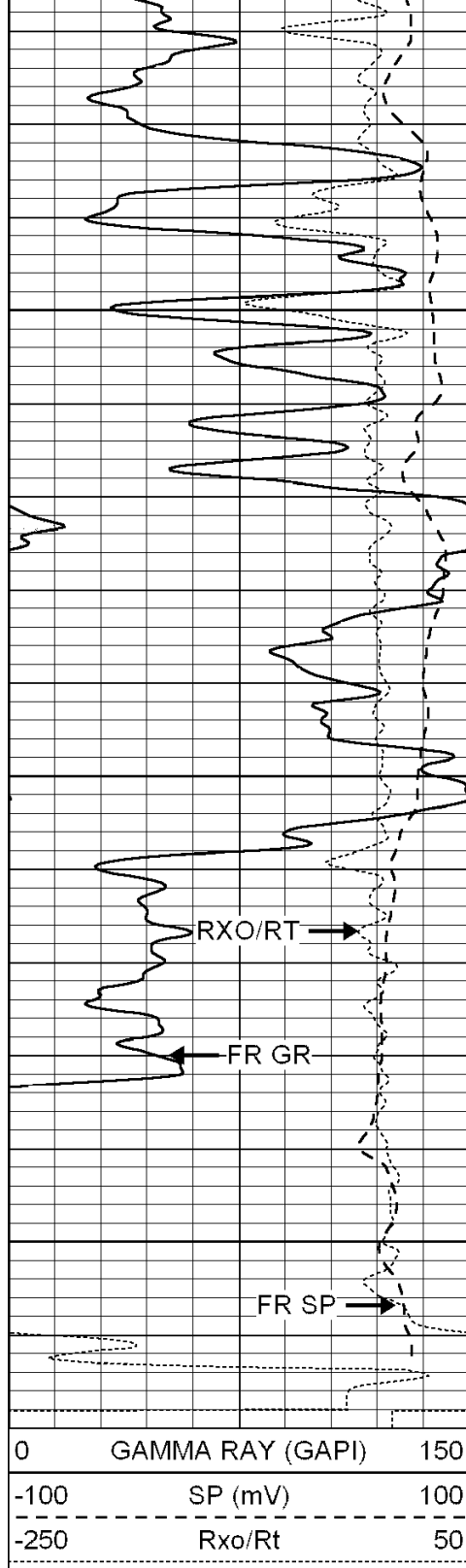
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4150

4200



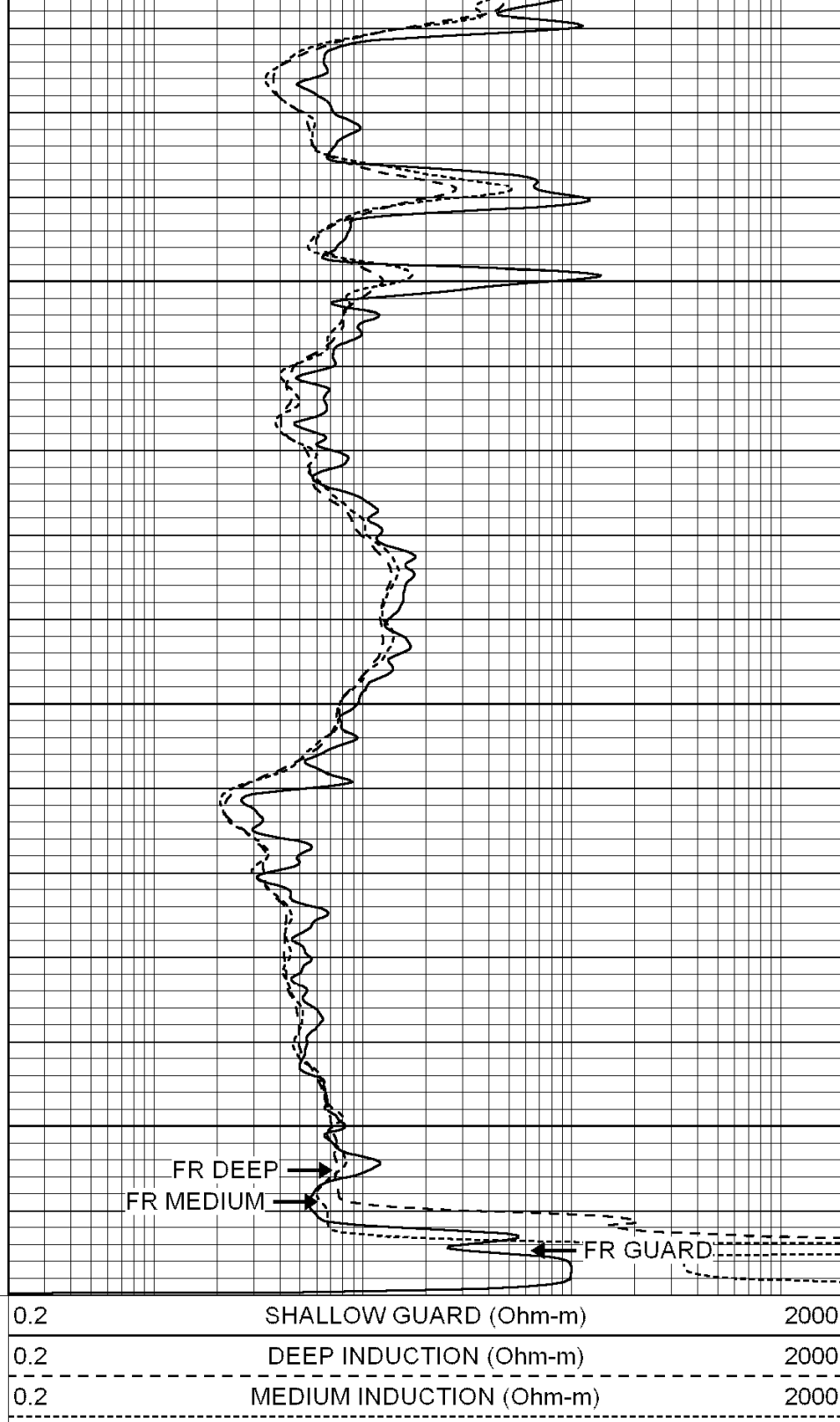


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4300

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LTD 4367

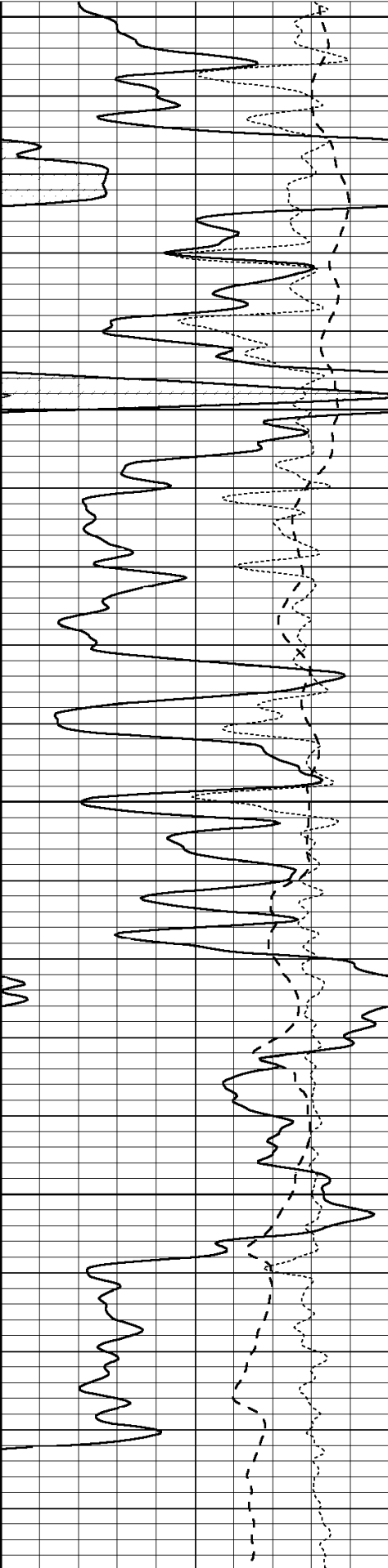


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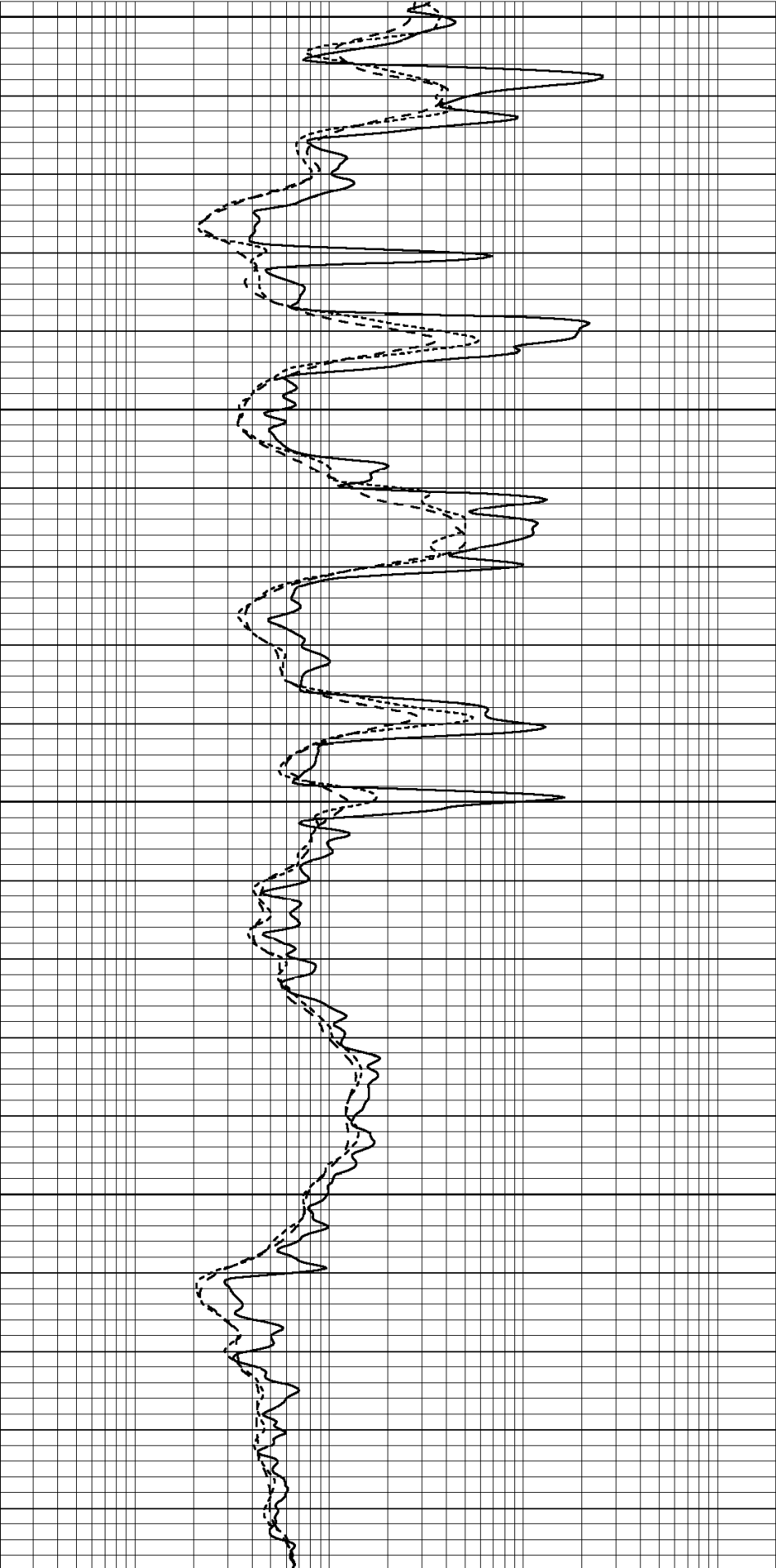
REPEAT SECTION

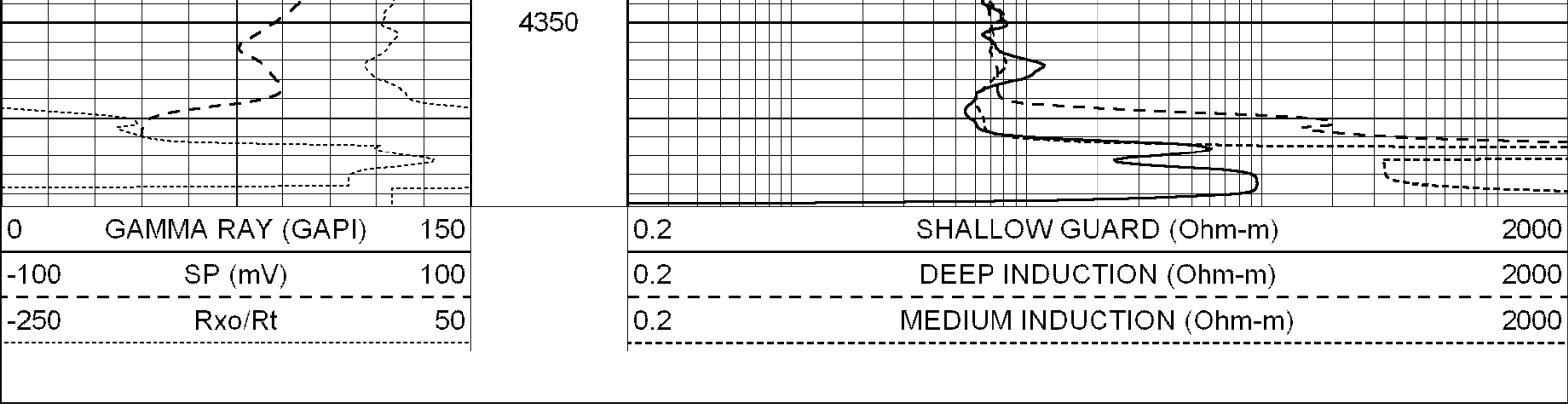
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 Presentation Format: dil
 Dataset Creation: Sun Sep 27 23:28:26 2009 by Calc Open-Cased 060407
 Charted by: Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150
-100	SP (mV)	100
-250	Rxo/Rt	50



0.2	SHALLOW GUARD (Ohm-m)	2000
0.2	DEEP INDUCTION (Ohm-m)	2000
0.2	MEDIUM INDUCTION (Ohm-m)	2000





Calibration Report									
Database File:		004351ddn.db							
Dataset Pathname:		pass3.4							
Dataset Creation:		Sun Sep 27 23:38:38 2009 by Calc Open-Cased 060407							
Dual Induction Calibration Report									
Serial-Model: Performed:					DIL3-GEAR Sun Sep 27 21:08:42 2009				
Readings				References			Results		
Loop:	Air	Loop		Air	Loop		m	b	
Deep	0.011	0.656	V	0.000	400.000	mmho-m	640.000	-2.000	
Medium	0.013	0.740	V	0.000	462.500	mmho-m	675.000	-11.000	
Internal:	Zero	Cal		Zero	Cal		m	b	
Deep	0.002	0.645	V	0.000	400.000	mmho-m	622.059	-1.071	
Medium	0.007	0.740	V	0.000	462.500	mmho-m	631.393	-4.555	
Litho Density Calibration Report									
Serial: 003N					Model: PRB				
Performed Tue Sep 08 14:14:44 2009									
Litho Density Calibration									
	Background		Magnesium		Aluminum		Sandstone		
Window 1	2042.6		12312.8		4225.8		13758.4		
Window 2	1855.8		10134.7		3624.2		11113.1		
Window 3	1639.4		6760.2		2716.3		7260.3		
Window 4	466.4		469.2		466.1		476.5		
Long Space	0.0		8278.9		1768.4		9257.4		
Short Space	2.2		2377.3		1544.1		2574.2		
Rho			1.7100		2.5900		1.3800		
Pe					2.5700		1.5500		
Rib Angle	: 44.4		Rib Slope	: 0.979		Density/Spine Ratio	: 0.549		
Spine Angle	: 74.4		Spine Slope	: 3.577		Spine Intercept	: -18.8		
Caliper									
	Readings		Reference						
Low Ref	1.8		6.9						
High Ref	4.2		14.0						
	Gain: 3.0				Offset: 1.5				

Compensated Neutron Calibration Report									
Serial Number:					NEU_3I				
Tool Model:					G				

CALIBRATION					
Detector		Readings		Target	Normalization
Short Space		997.00	cps	1000.00	cps 1.0000
Long Space		986.00	cps	1000.00	cps 1.0000
Gamma Ray Calibration Report					
Serial Number:		GR3			
Tool Model:		OPEN			
Performed:		Sun Sep 27 22:04:20 2009			
Calibrator Value:		200.0	GAPI		
Background Reading:		3.0	cps		
Calibrator Reading:		186.0	cps		
Sensitivity:		0.5500	GAPI/cps		