



PIONEER
Pioneer Energy Services

DUAL INDUCTION LOG

Company **AMERICAN WARRIOR, INC.**

Well **GANO #4-17 TWIN**

Field **N/A**

County **KEARNY**

State **KANSAS**

Location: API #: 15-093-21946-00-00

2273' FSL & 1806' FWL

SEC 17 TWP 25S RGE 36W

Permanent Datum **GROUND LEVEL** Elevation **3025'**
Log Measured From **KELLY BUSHING**
Drilling Measured From **KELLY BUSHING**

Elevation
K.B. 3036'
D.F. N/A
G.L. 3025'

Date **11/30/2016**

Run Number **ONE**

Depth Driller **5050'**

Depth Logger **5055'**

Bottom Logged Interval **5054'**

Top Log Interval **1750'**

Casing Driller **8.625" @ 1772'**

Casing Logger **1770'**

Bit Size **7.875"**

Type Fluid in Hole **CHEMICAL**

Salinity, ppm CL **3900**

Density / Viscosity **9.3 56**

pH / Fluid Loss **9.5 8.0**

Source of Sample **FLOWLINE**

Rm @ Meas. Temp **0.65 @ 40**

Rmf @ Meas. Temp **0.49 @ 40**

Rmc @ Meas. Temp **0.88 @ 40**

Source of Rmf / Rmc **CHARTS**

Rm @ BHT **0.21 @ 127**

Operating Rig Time **4 HOURS**

Max Rec. Temp. F **127**

Equipment Number **91**

Location **COLBY**

Recorded By **D. SCHMIDT**

Witnessed By **LUKE THOMPSON**

<<< Fold Here >>>

All interpretations are opinions based on inferences from electrical or other measurements and Pioneer Wireline Services, LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Pioneer Wireline Services, LLC will not 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.

Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

**LAKIN,
3 SOUTH TO 120 RD,
3 WEST, 1 SOUTH, 1 1/2 WEST,
SOUTH INTO**

Log Measured From: KELLY BUSHING

11 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES

www.pioneerenergy.com

785-625-3858

Your Pioneer Energy Services Crew

Engineer: D. SCHMIDT

Operator:

Operator:

Operator:

This Log Record Was Witnessed By

Primary Witness: LUKE THOMPSON

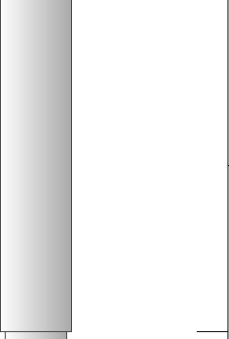
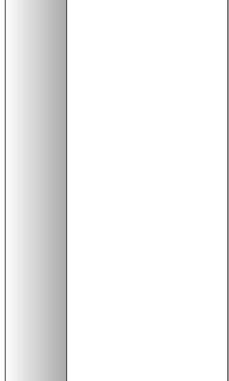
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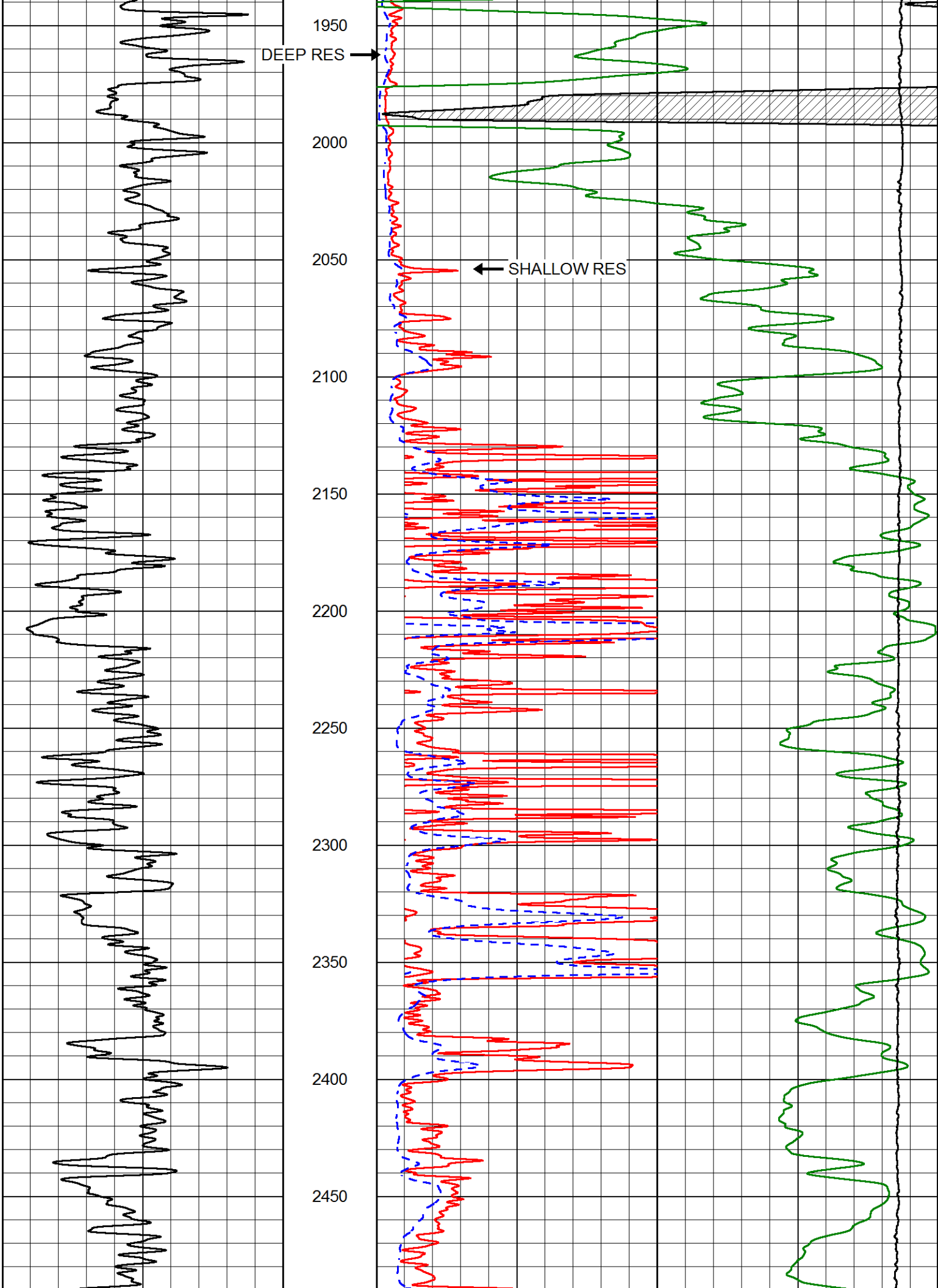
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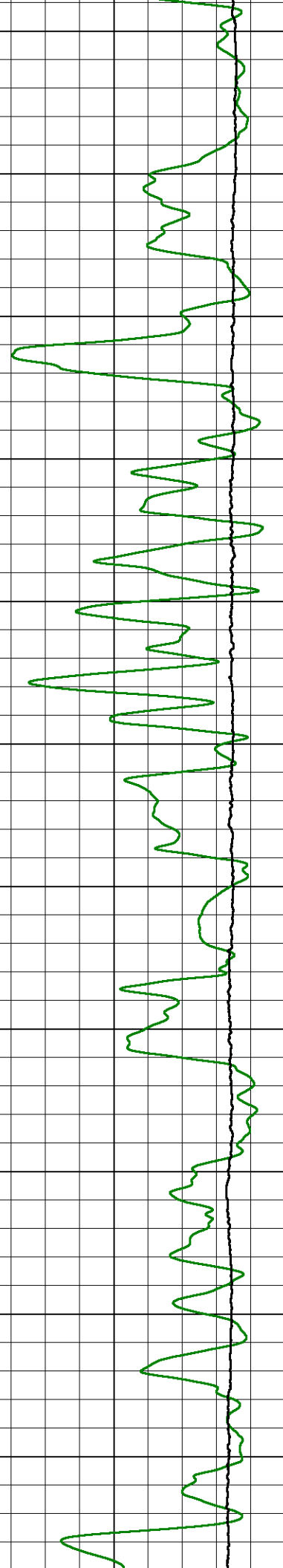
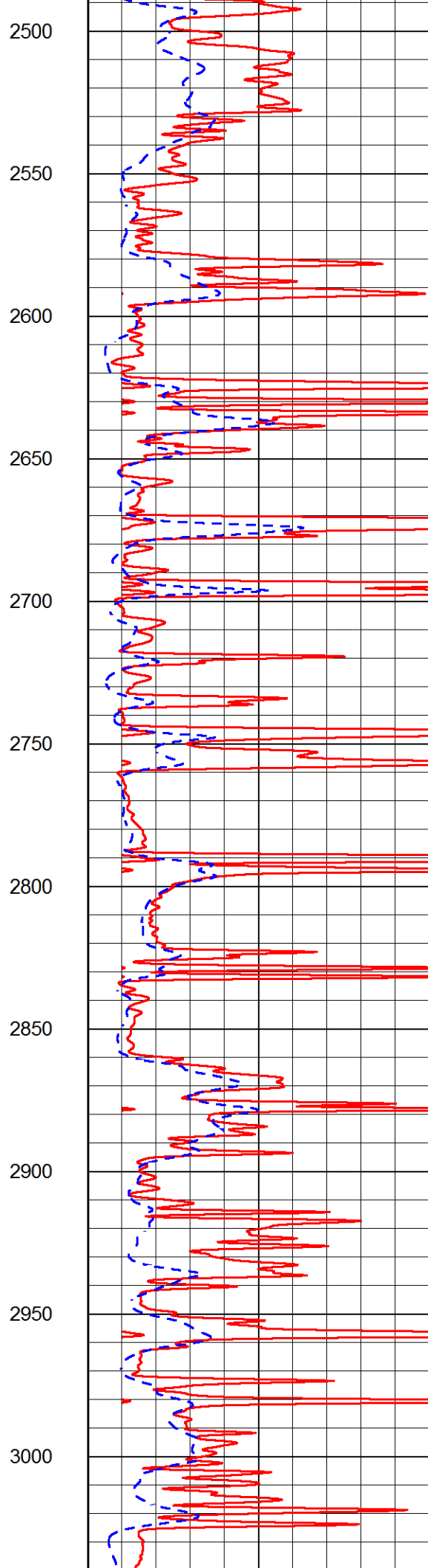
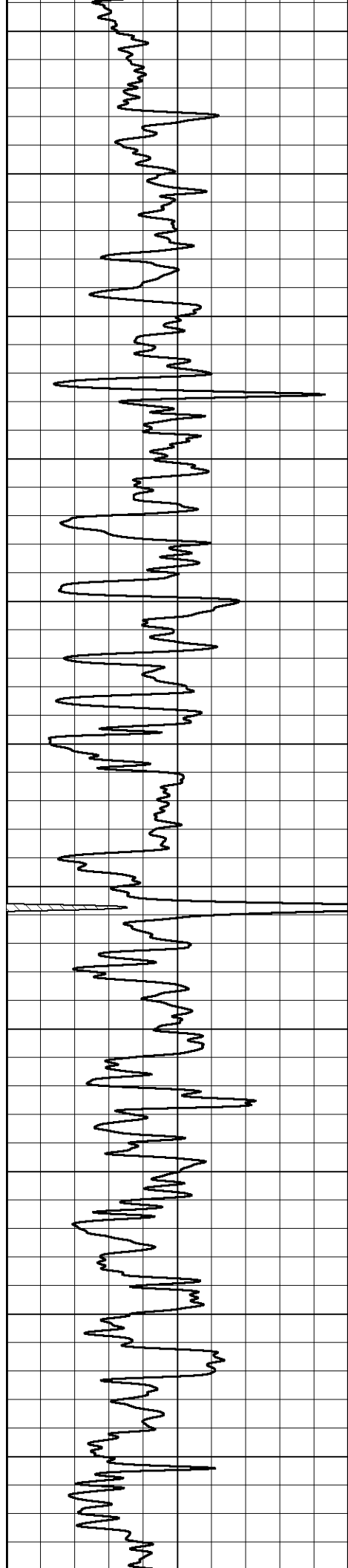
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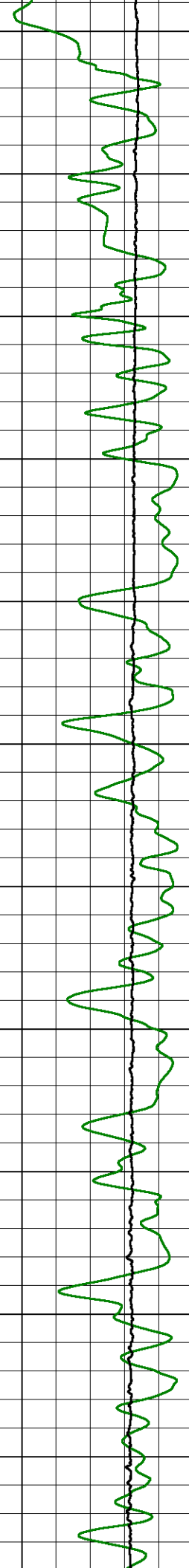
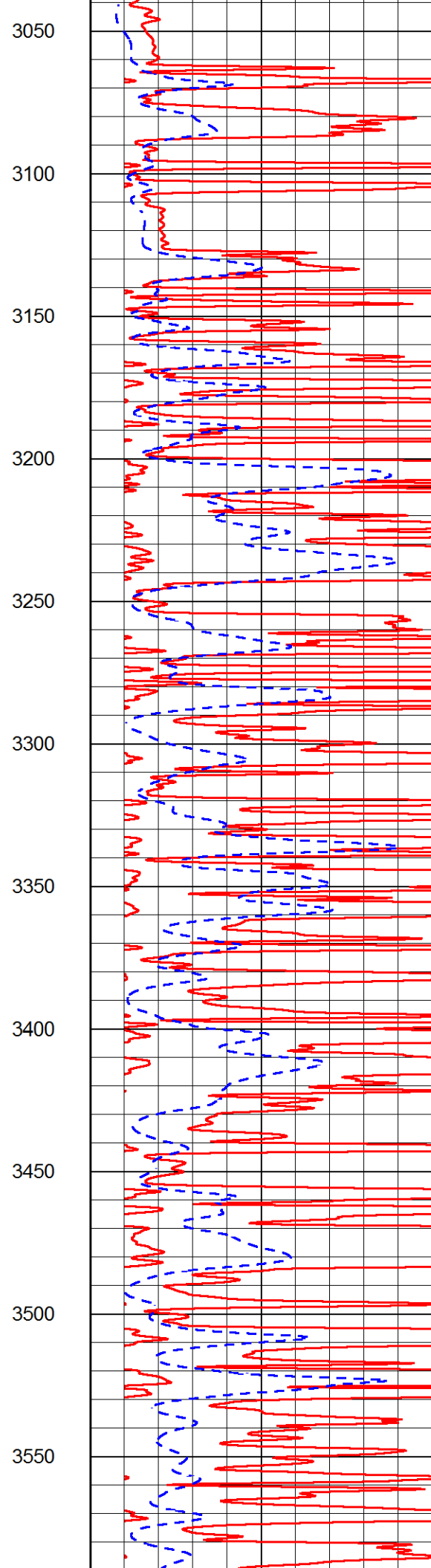
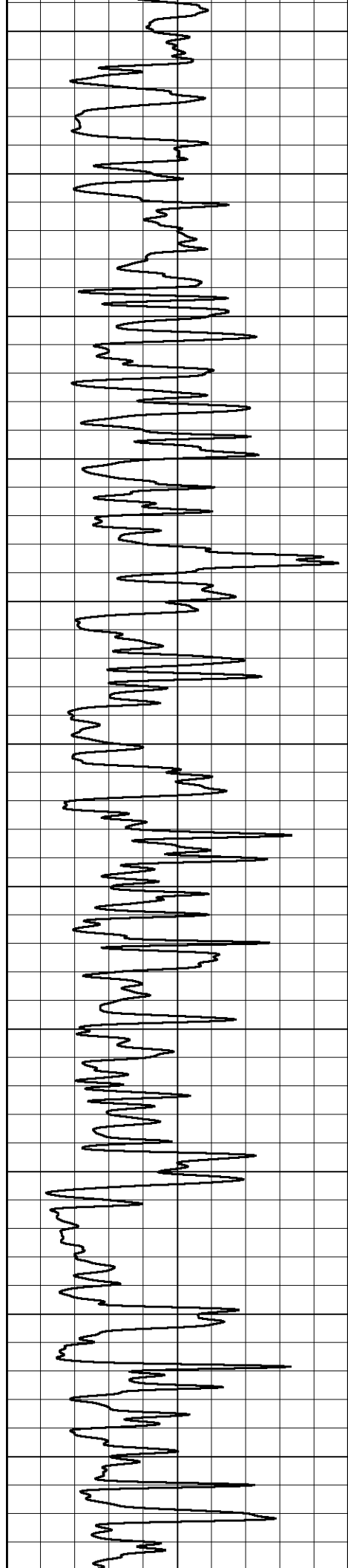
Top - Bottom

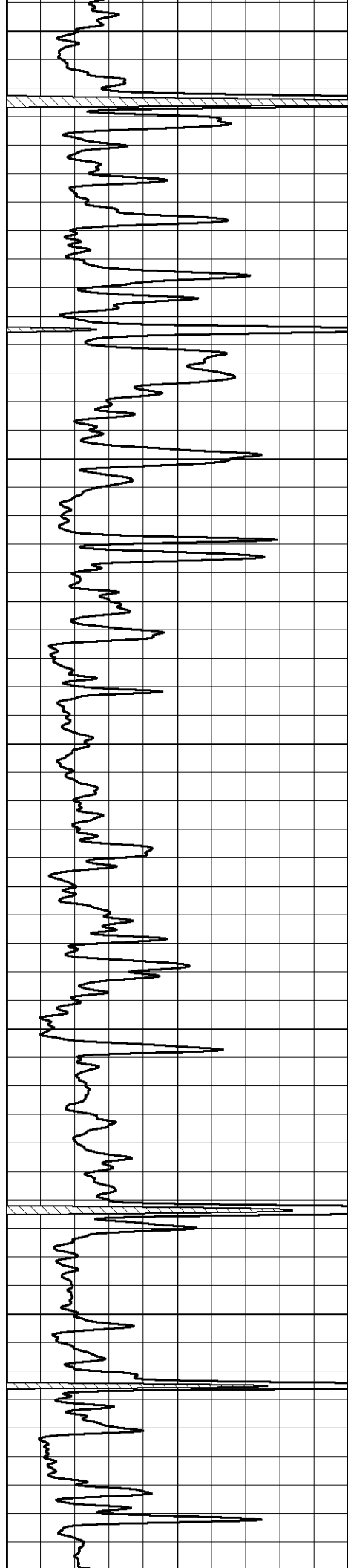
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	290	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	40	0	5.5	0	5055	127	7.875

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (207-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (90-1031)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSIML (PSI-01) GO Micro log tools converted to Simplec electronics	7.58	4.00	65.00
RLL3F RLL3	15.80 15.80					









3600

3650

3700

3750

3800

3850

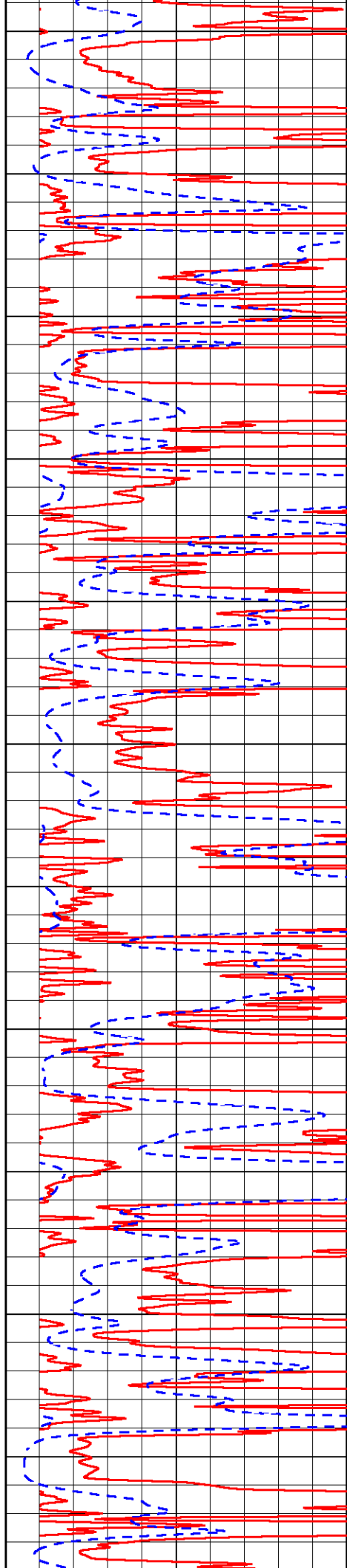
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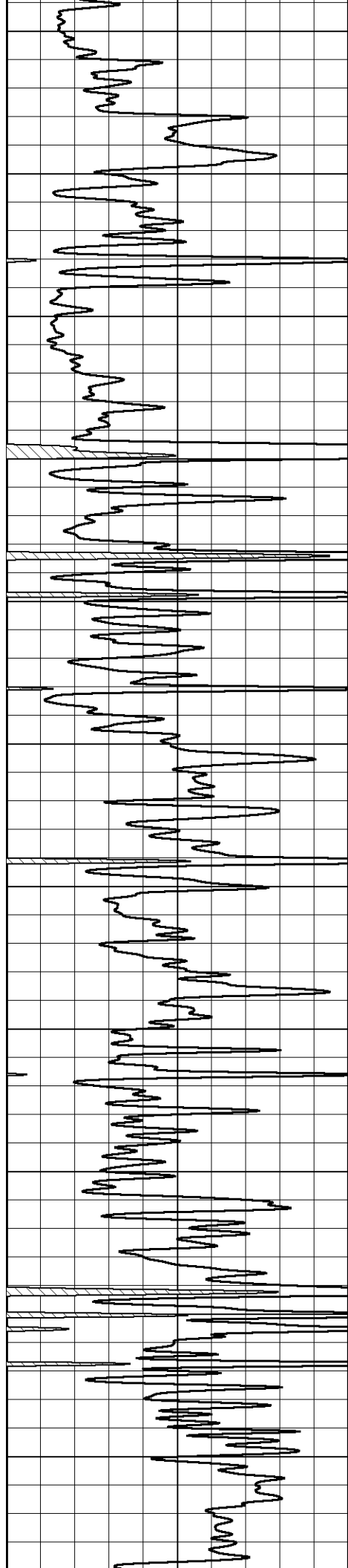
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4050

4100





4150

4200

4250

4300

4350

4400

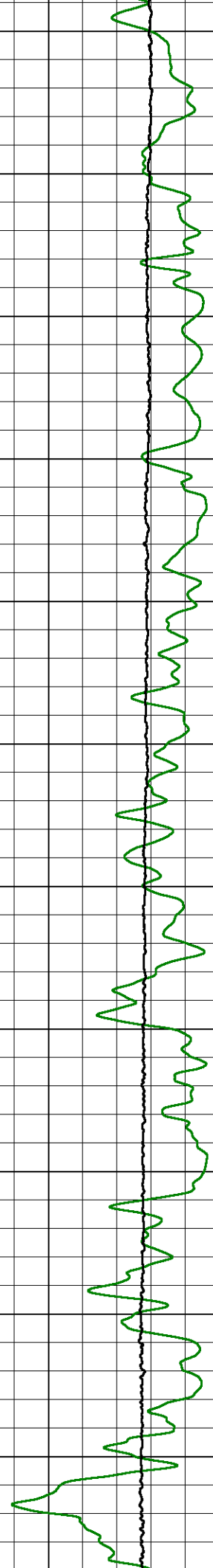
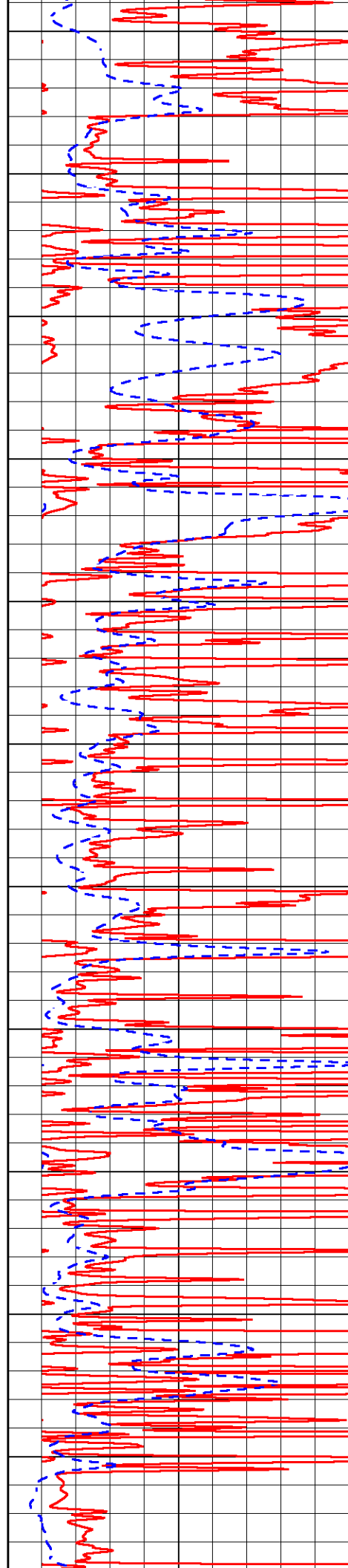
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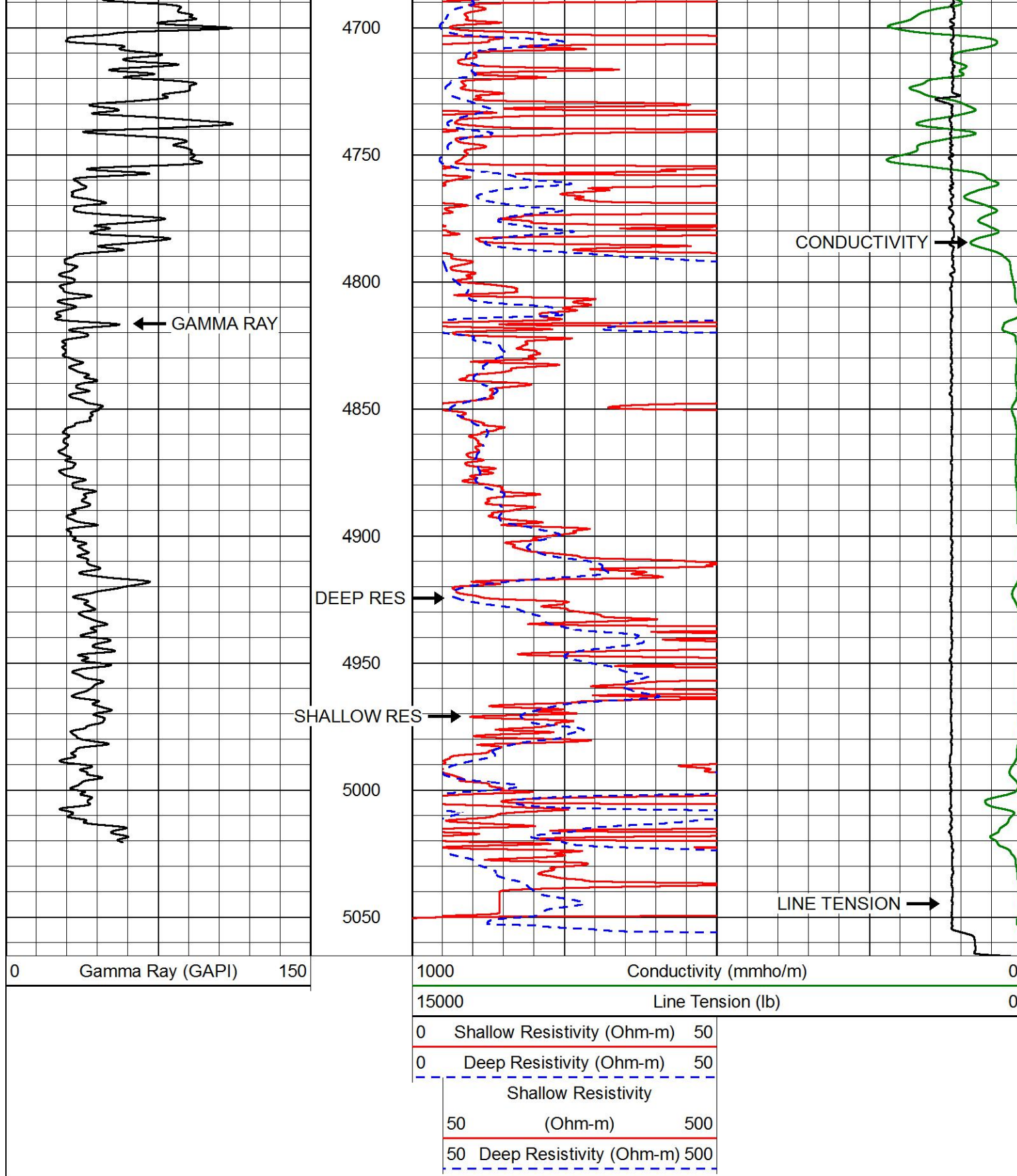
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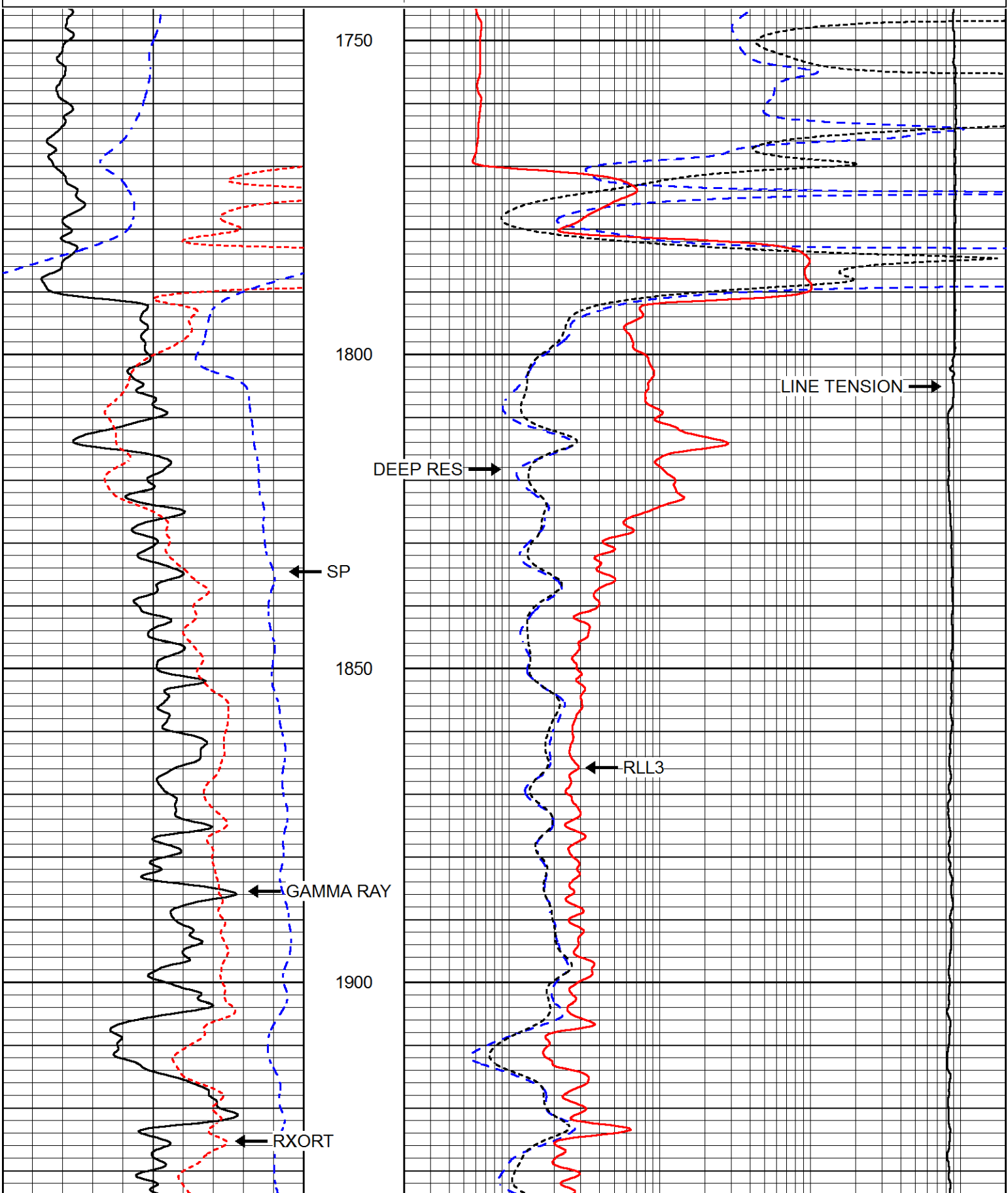
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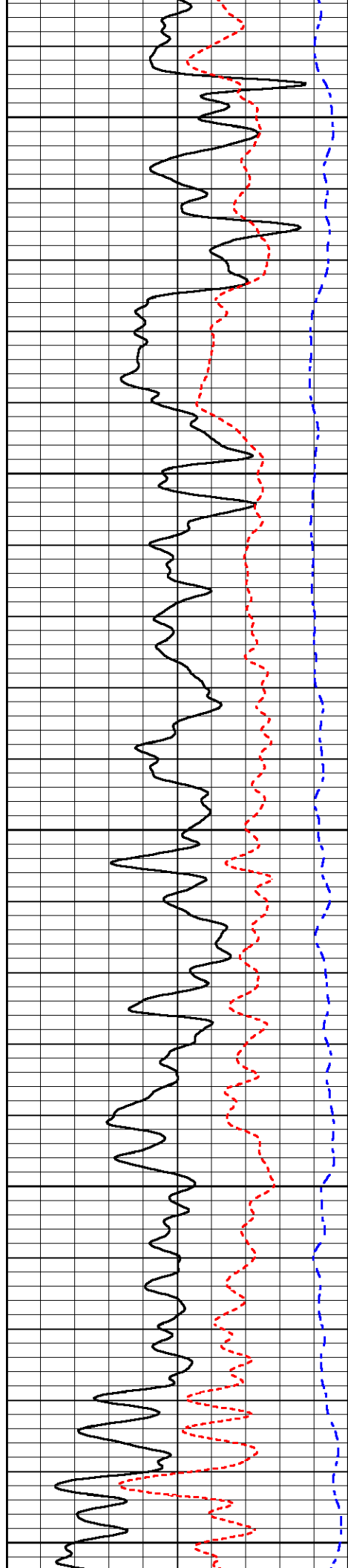




MAIN PASS

0	Gamma Ray (GAPI)	150	0.2	Deep Resistivity (Ohm-m)	2000
-160	RXORT	40	0.2	Medium Resistivity (Ohm-m)	2000
-200	SP (mV)	0	0.2	RLL3 (Ohm-m)	2000
			10000	Line Tension (lb)	0





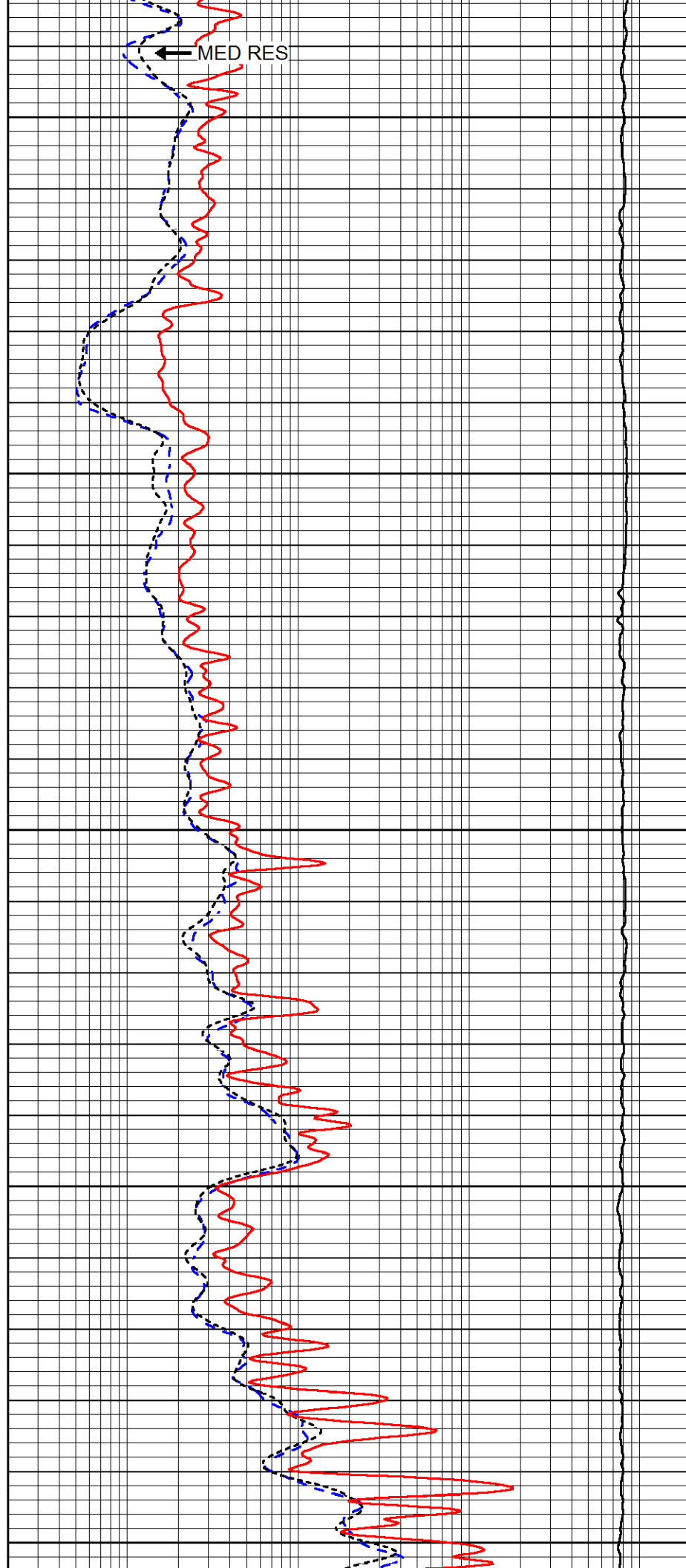
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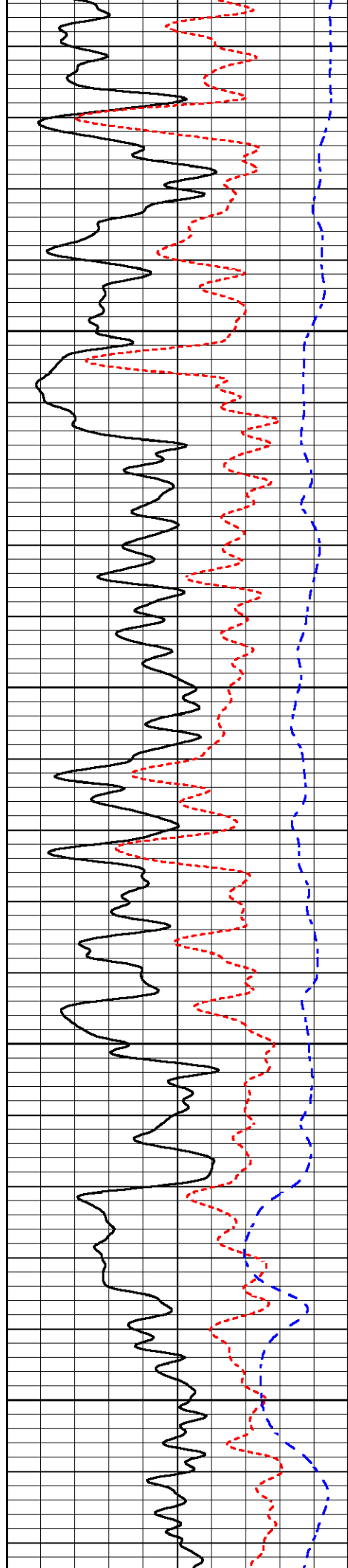
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2100

2150



← MED RES

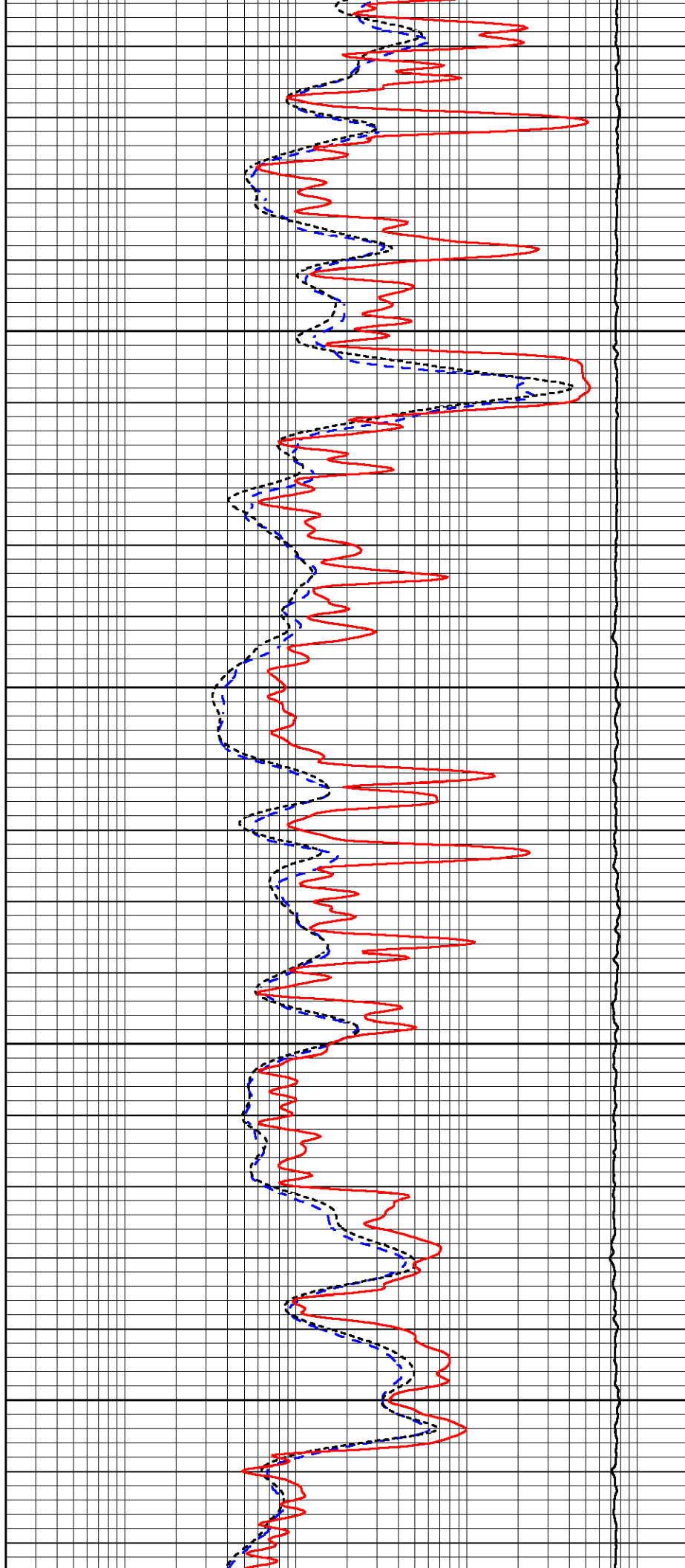


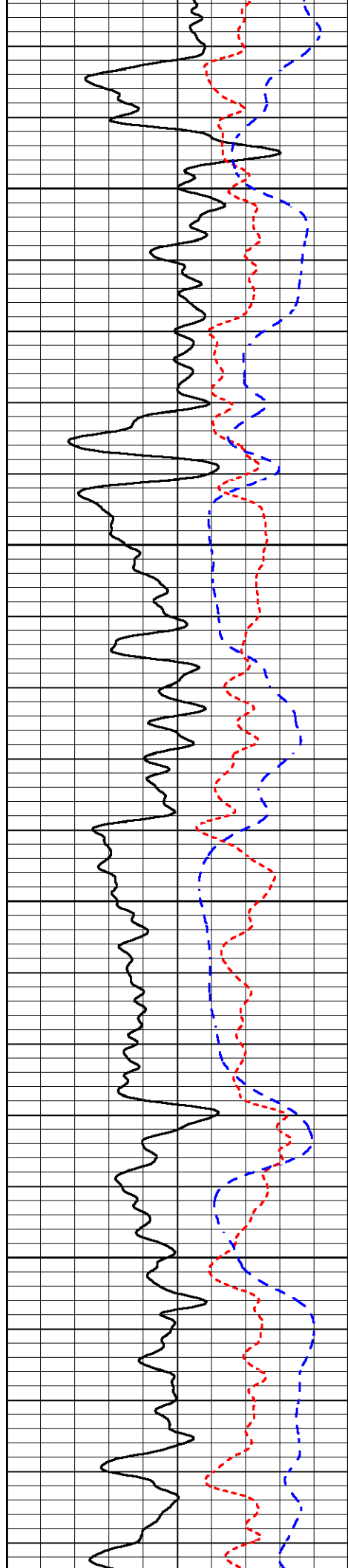
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2300

2350



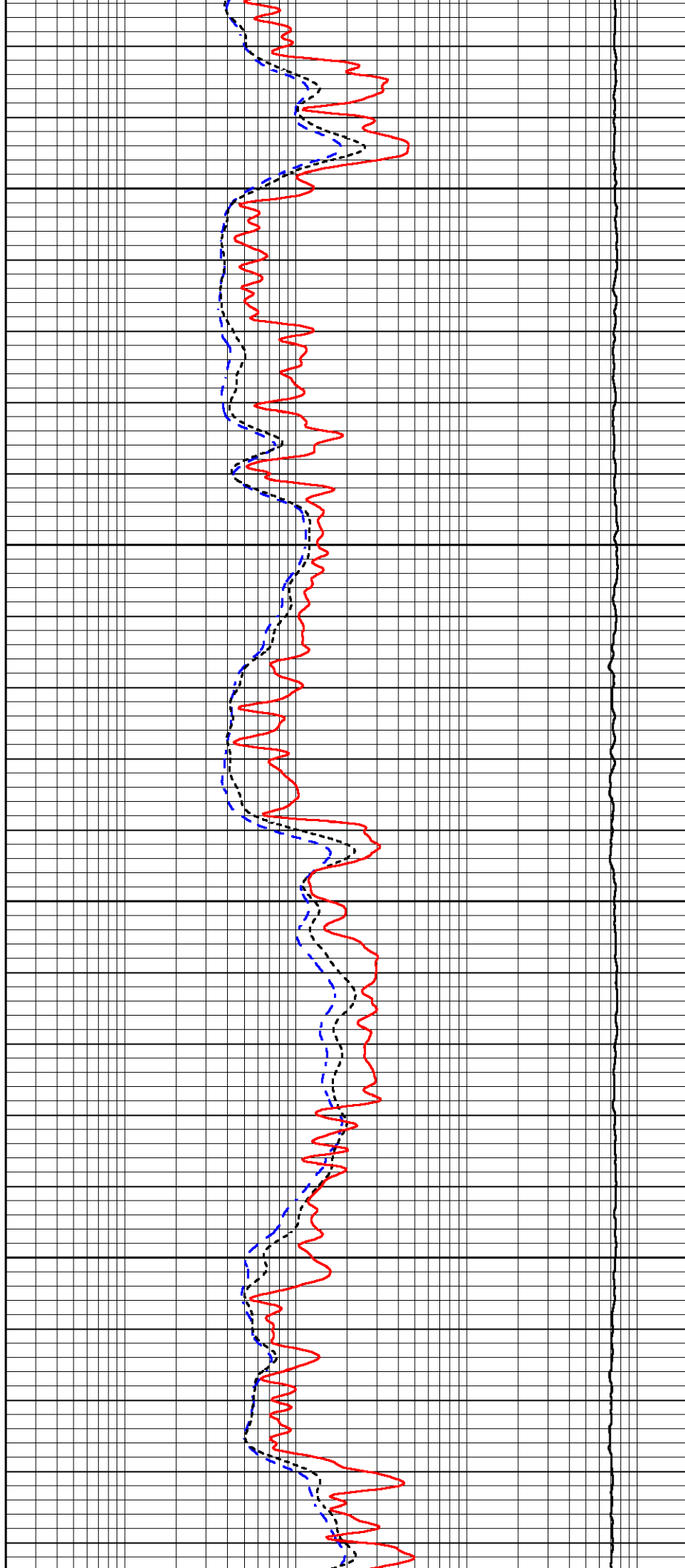


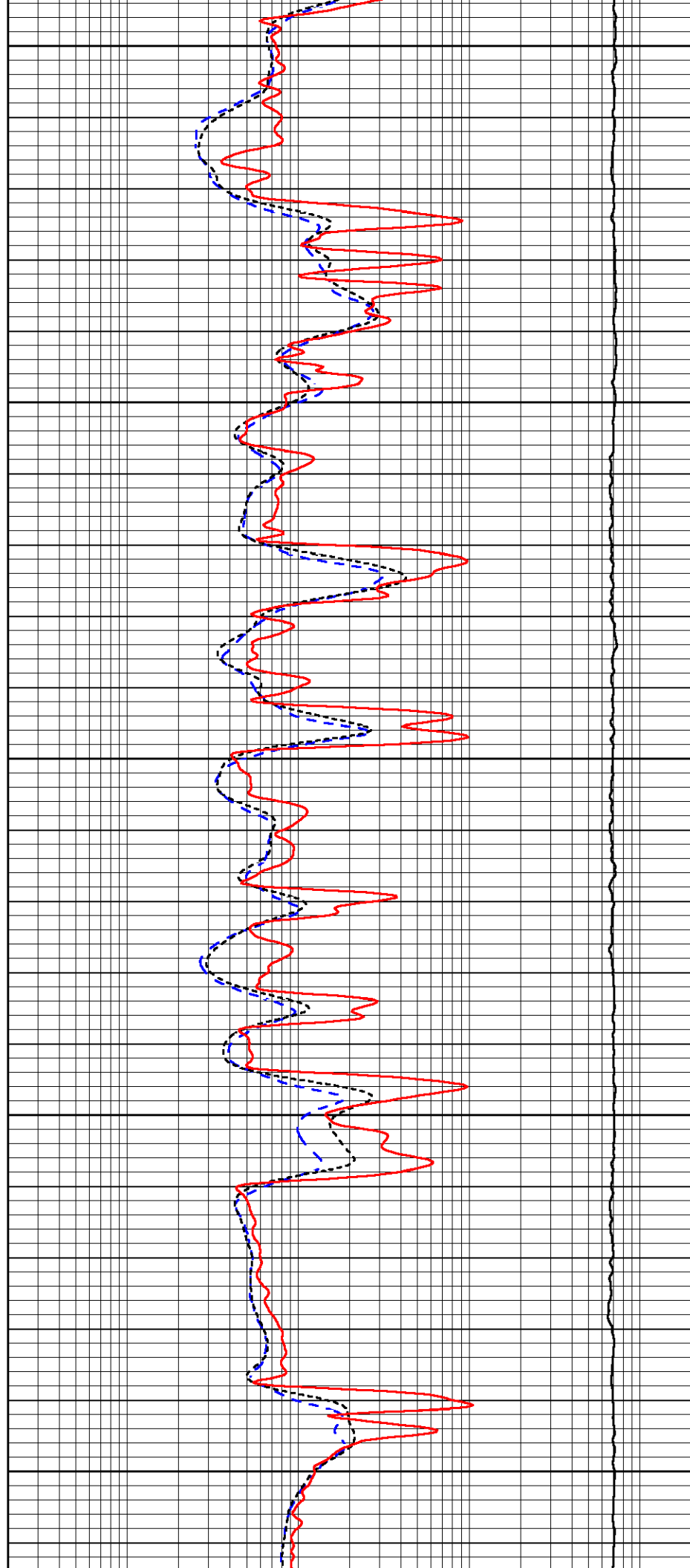
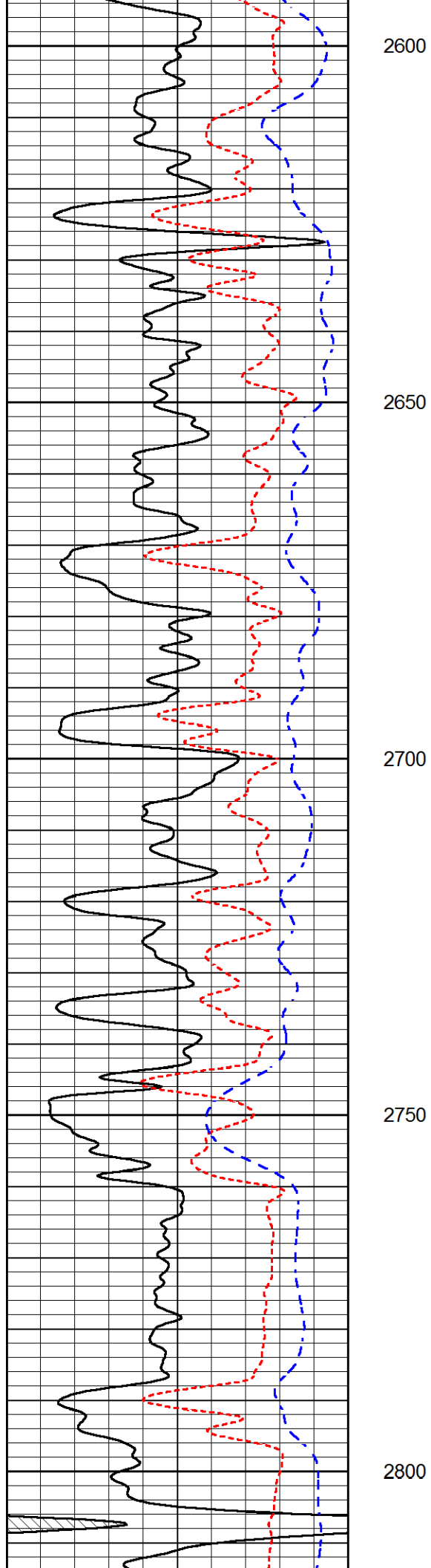
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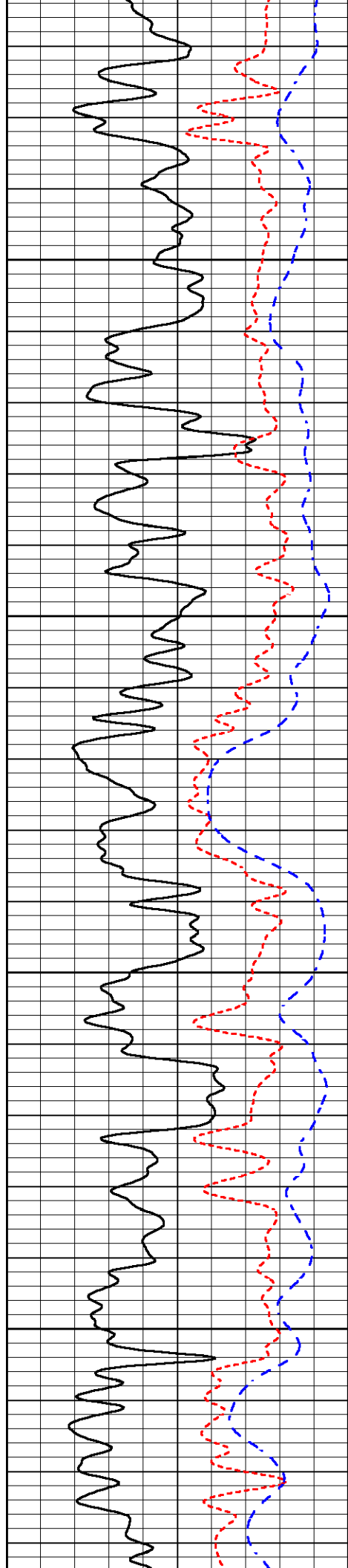
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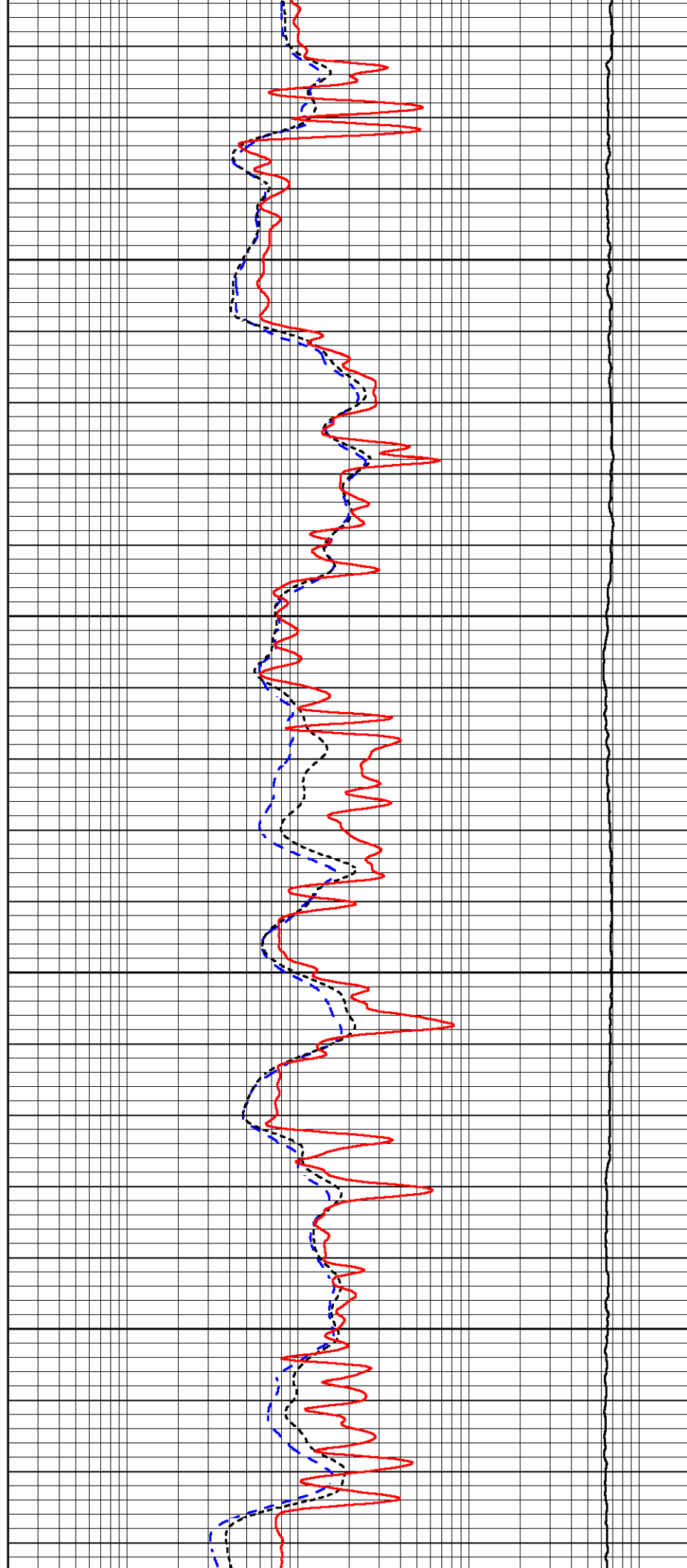


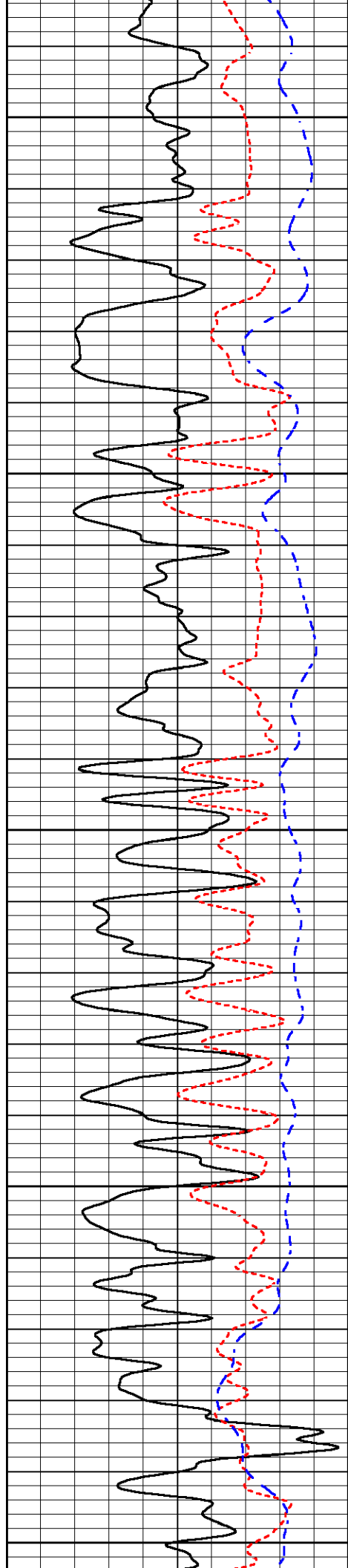
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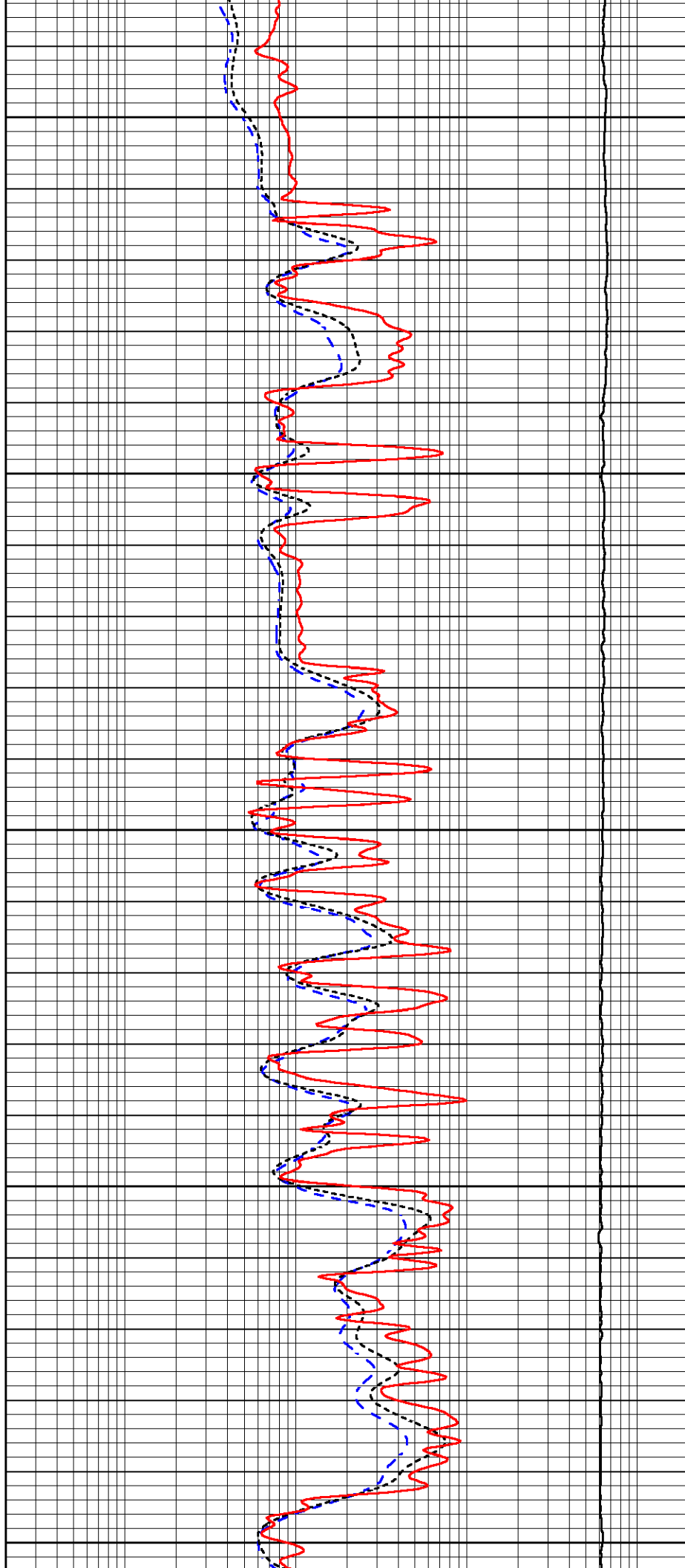
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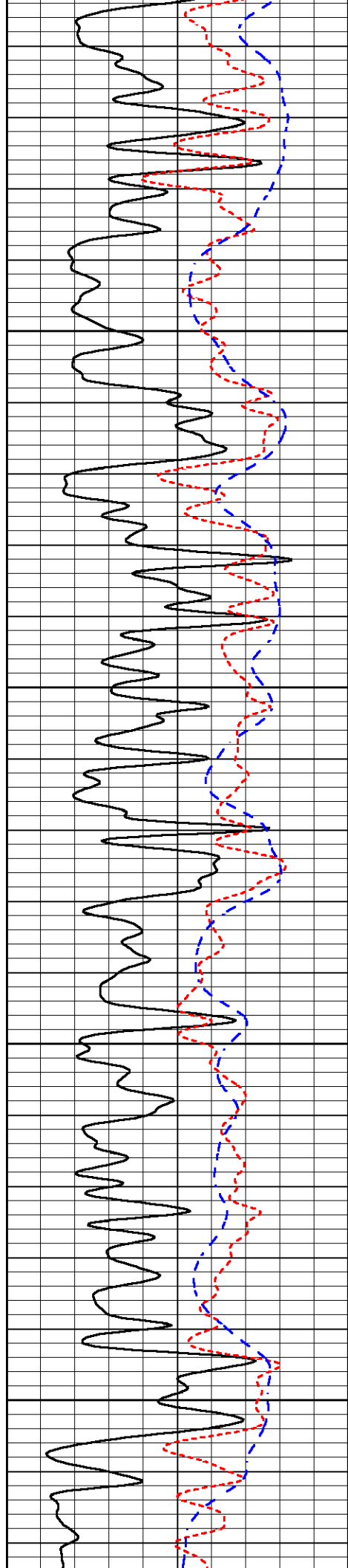
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3200

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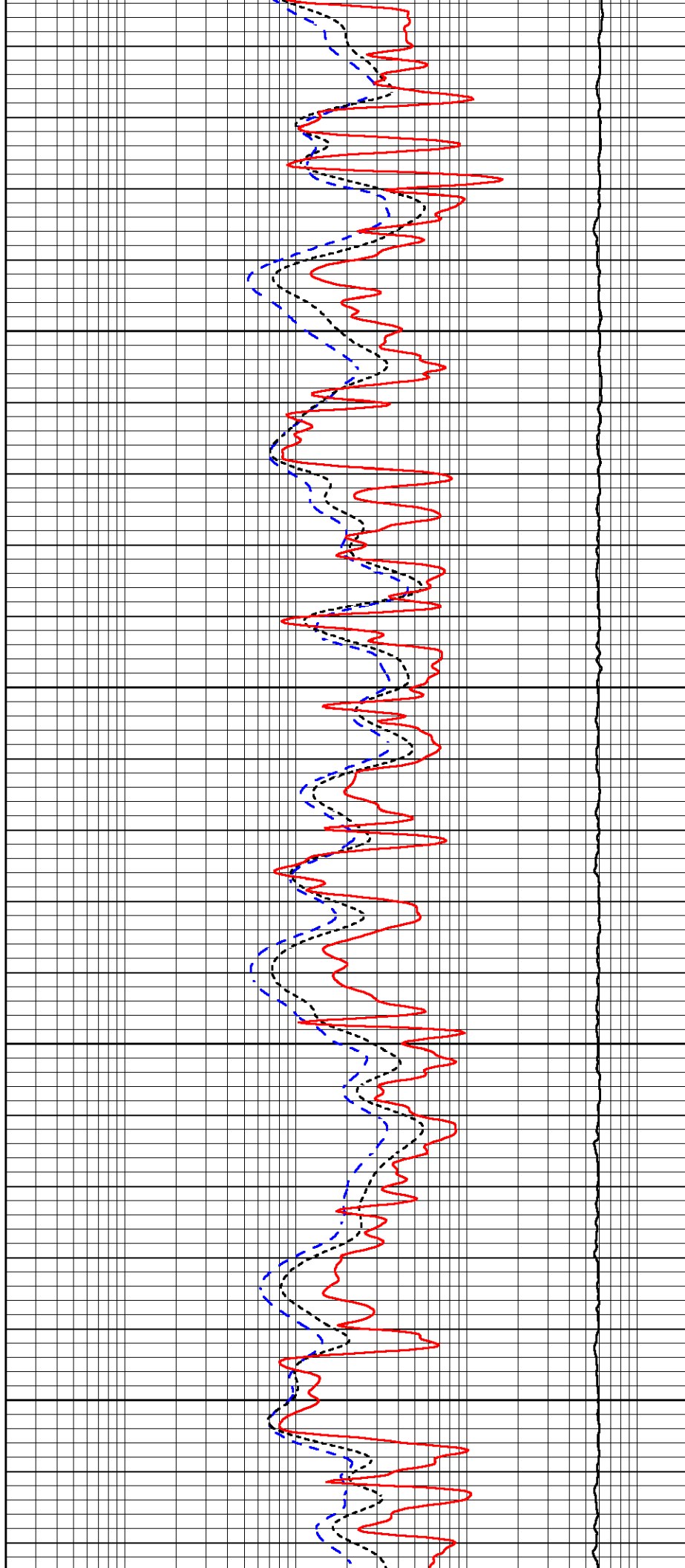


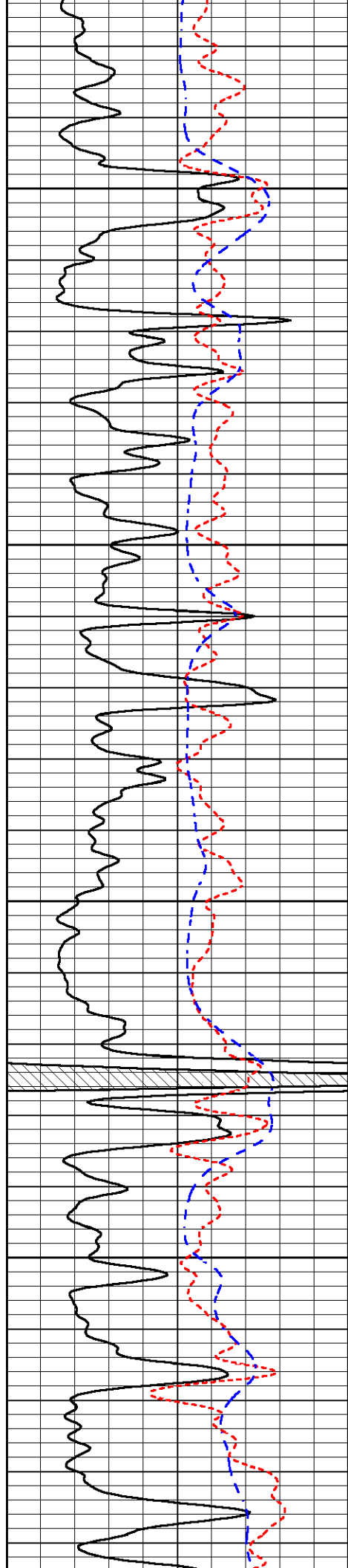
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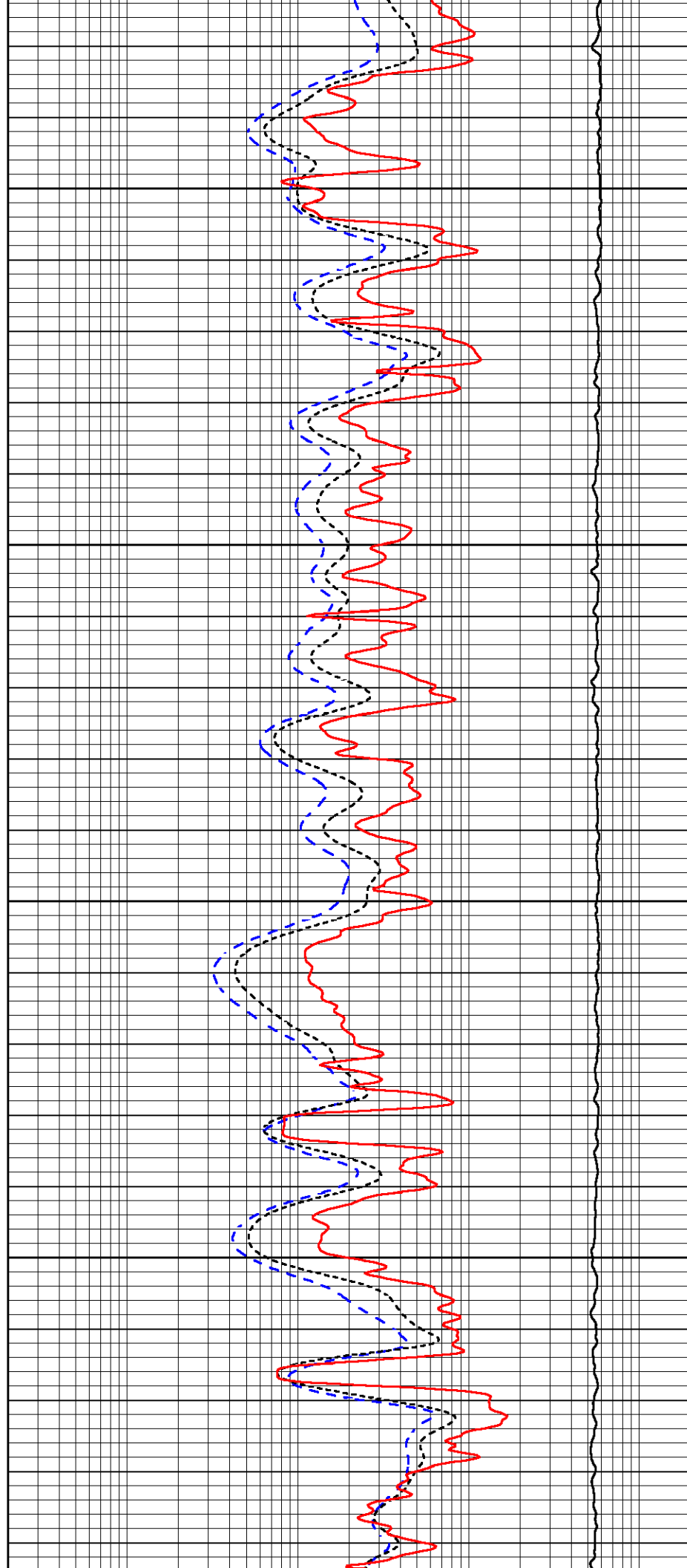


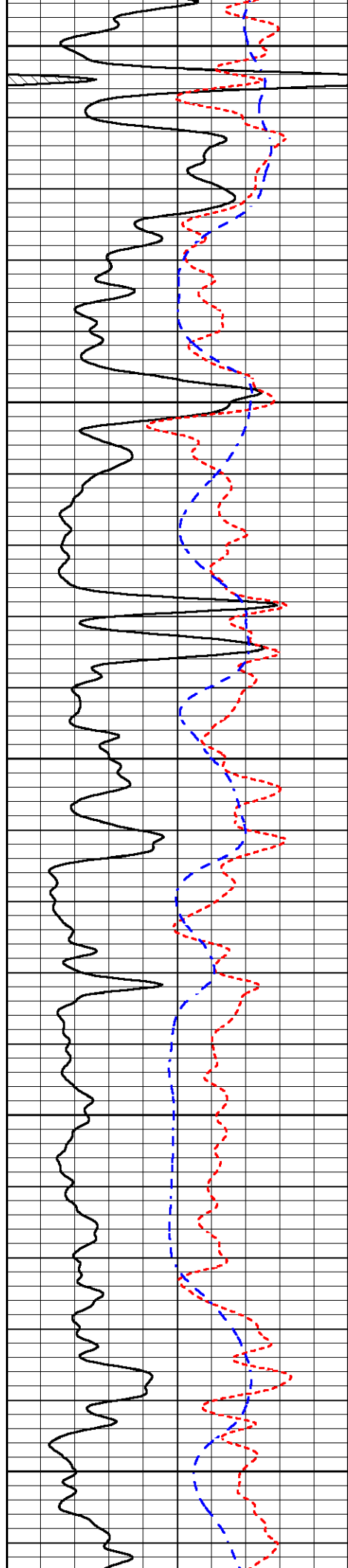
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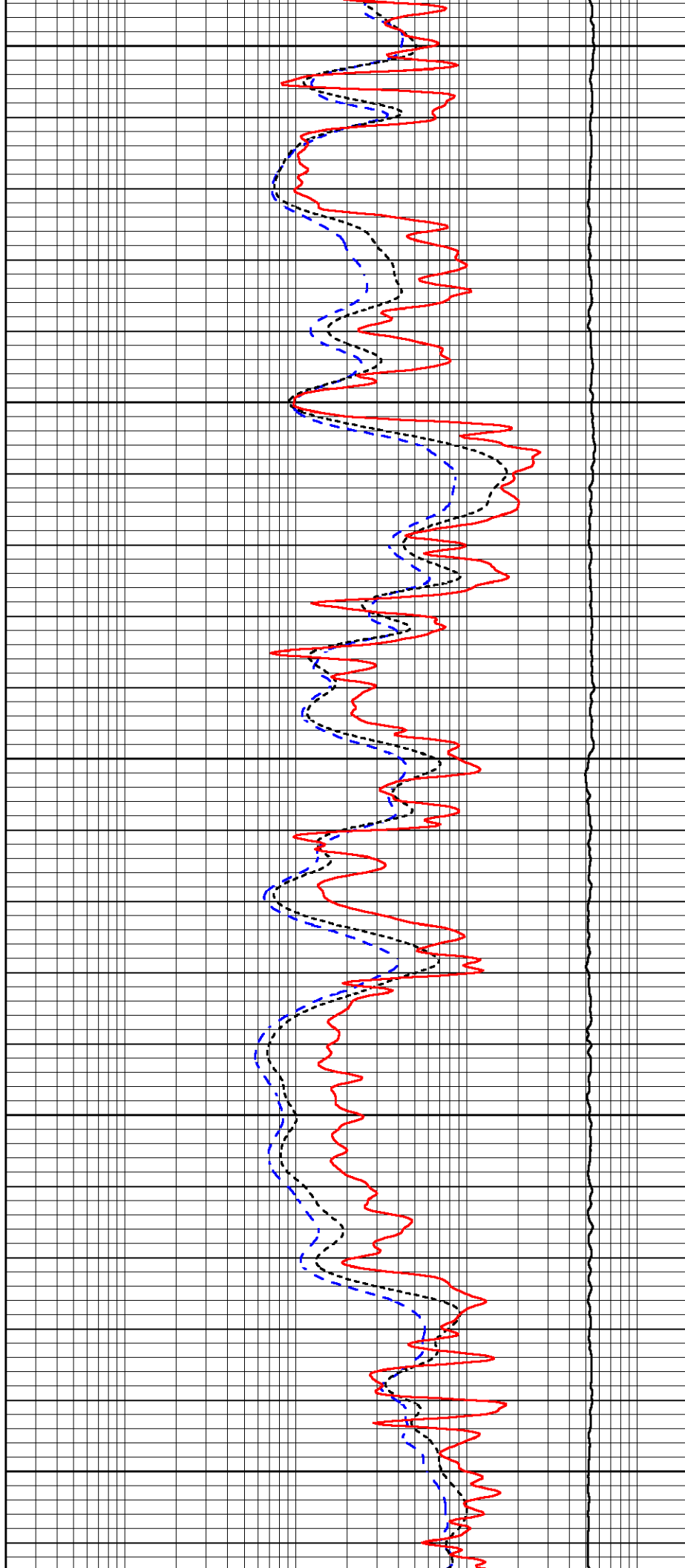
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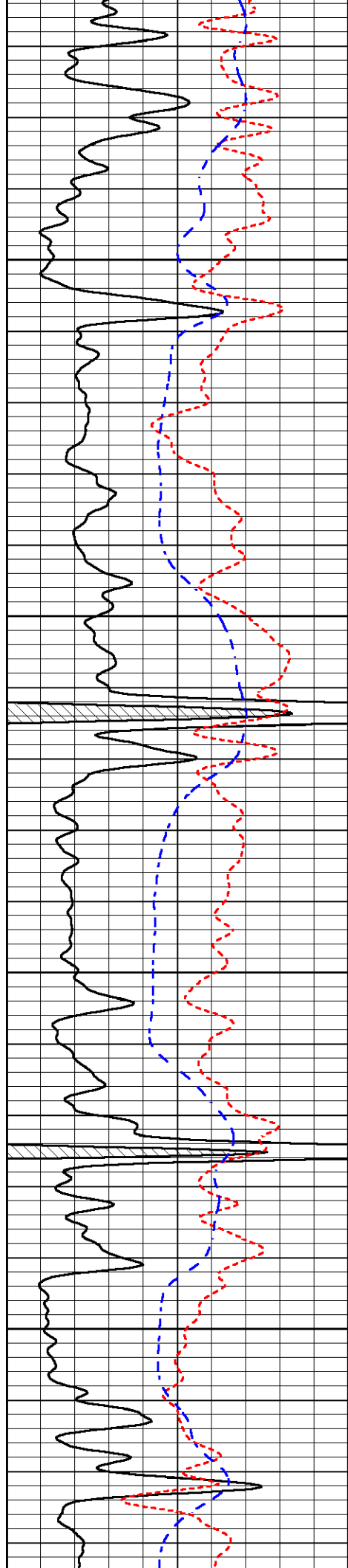
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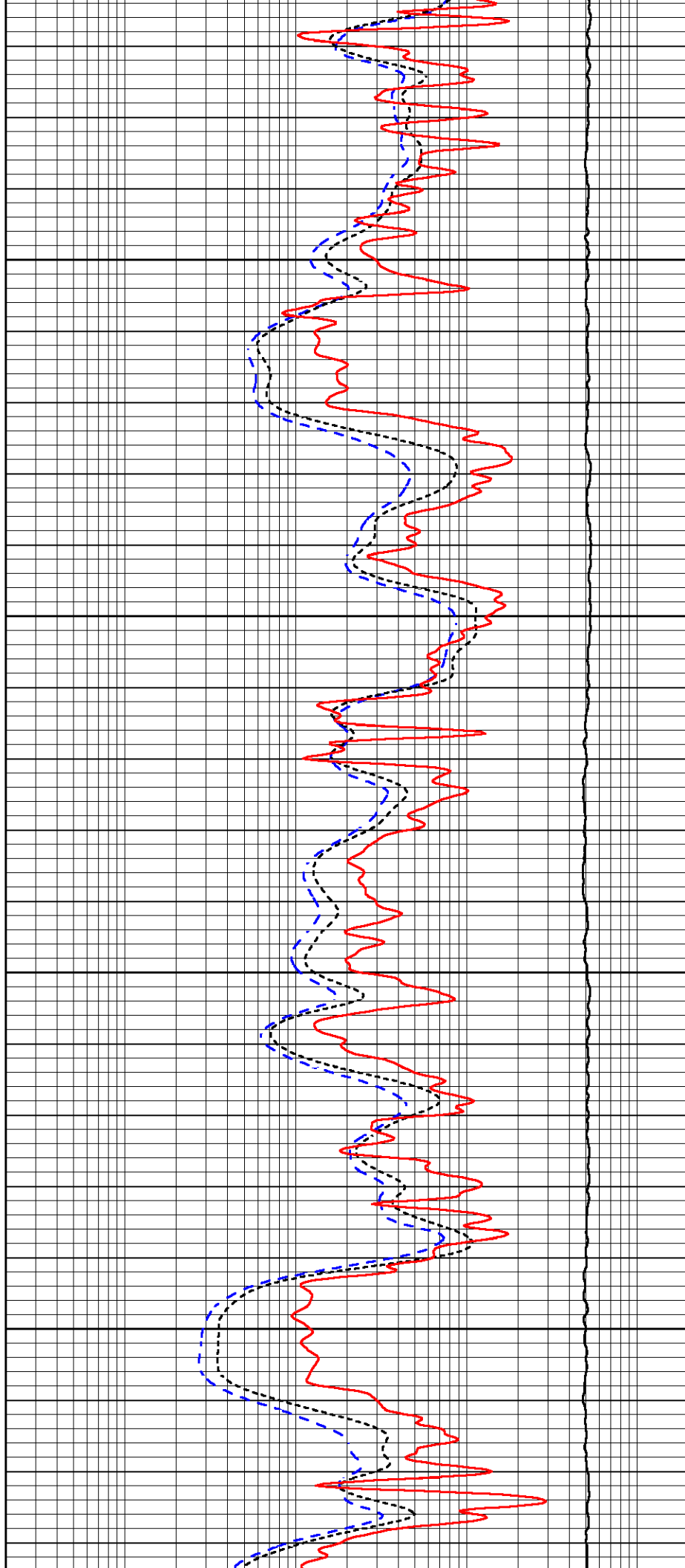


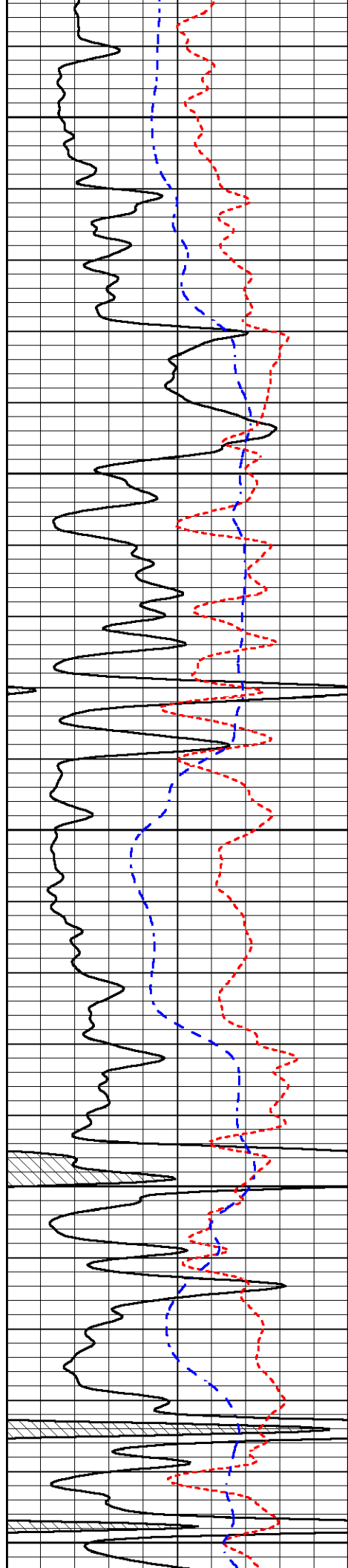
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4100





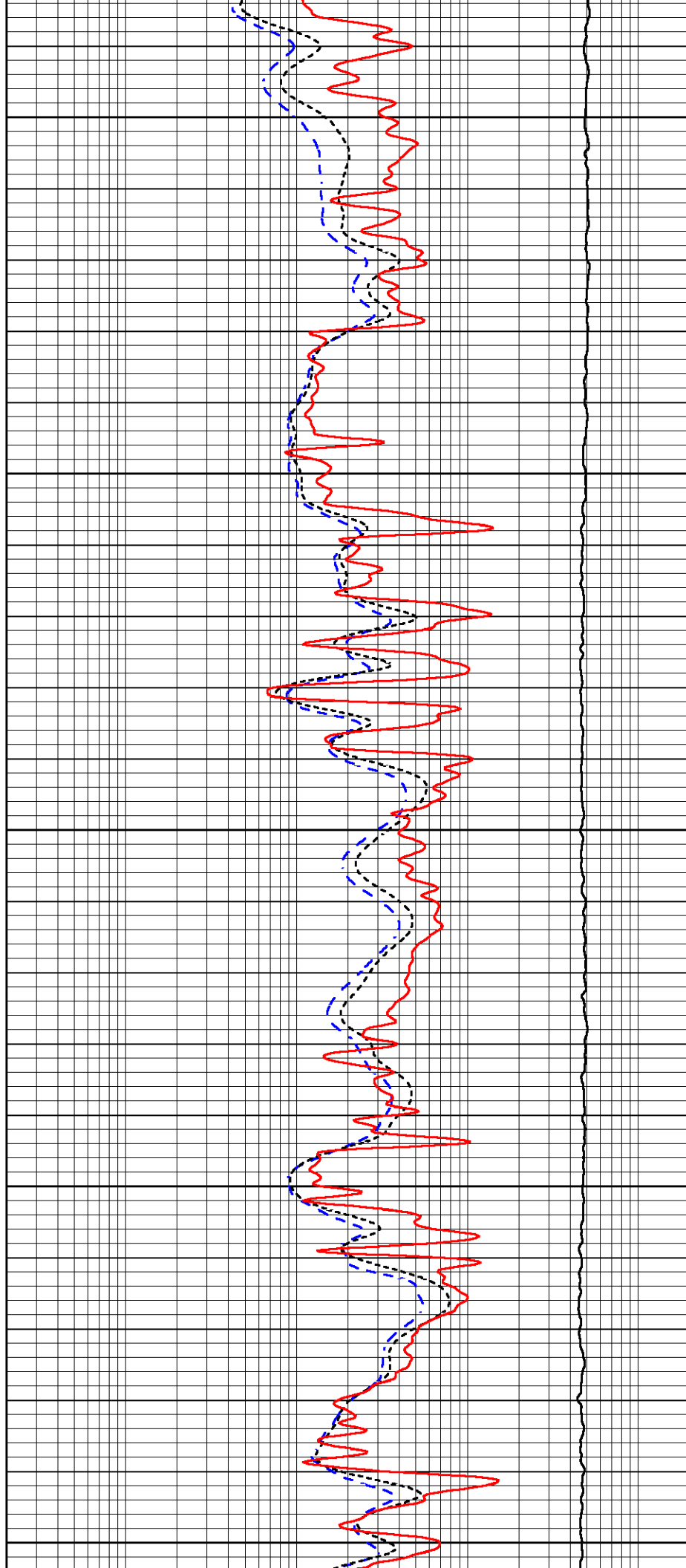
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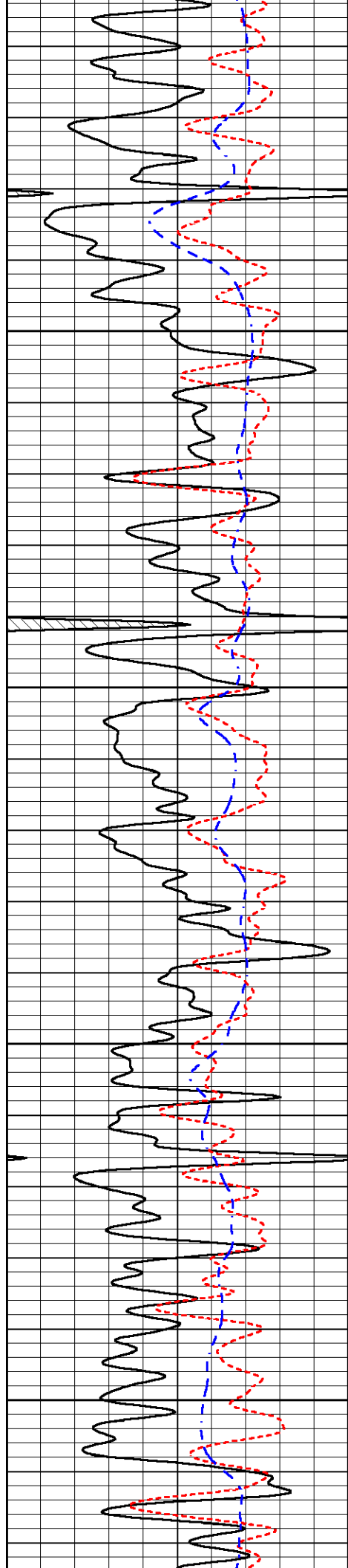
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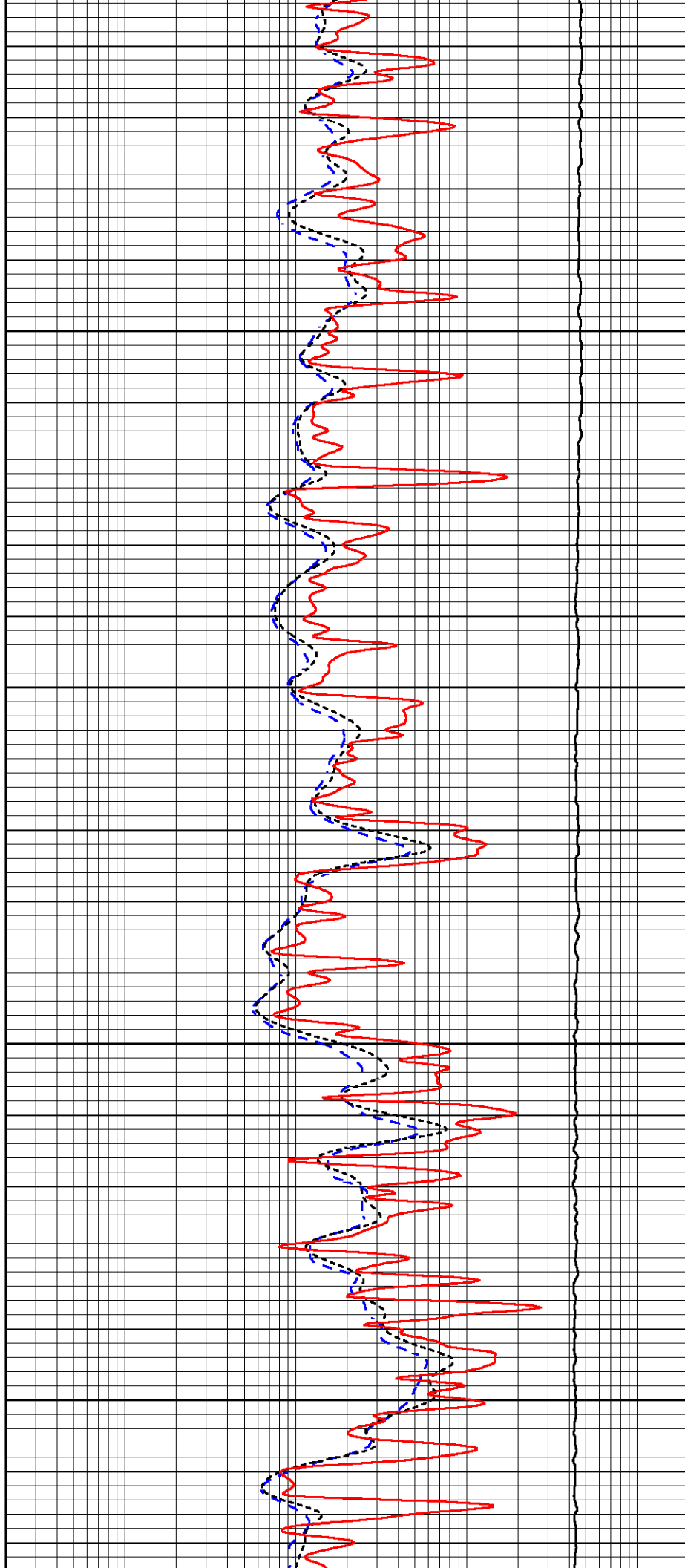


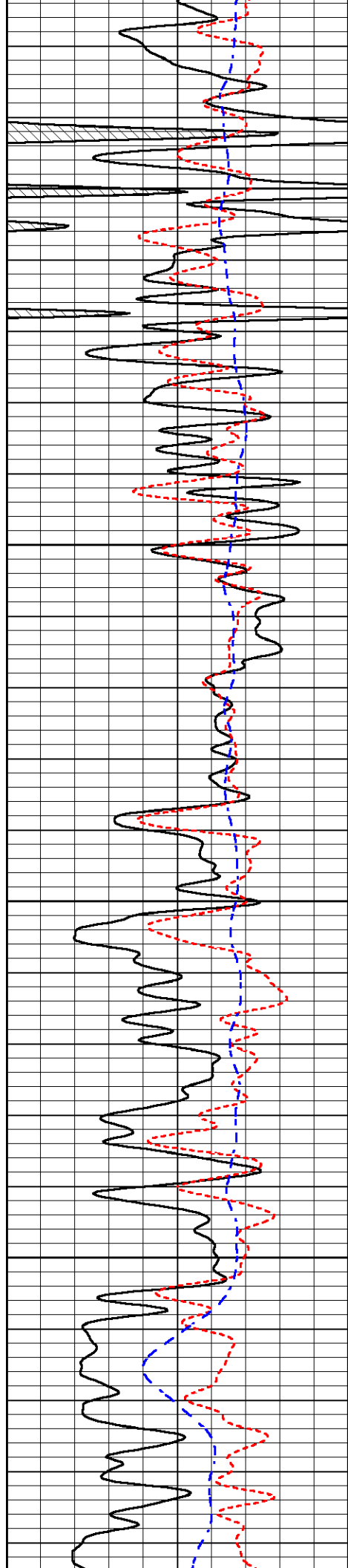
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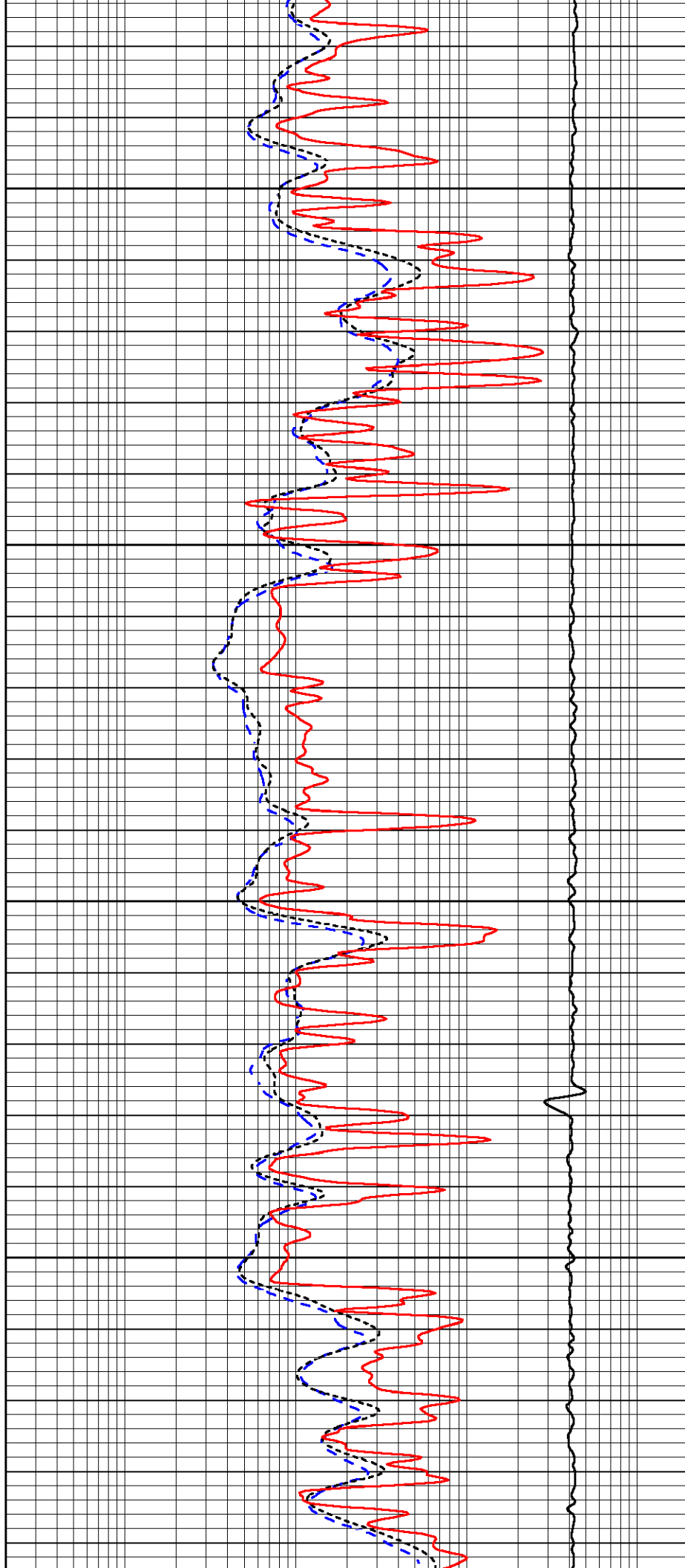


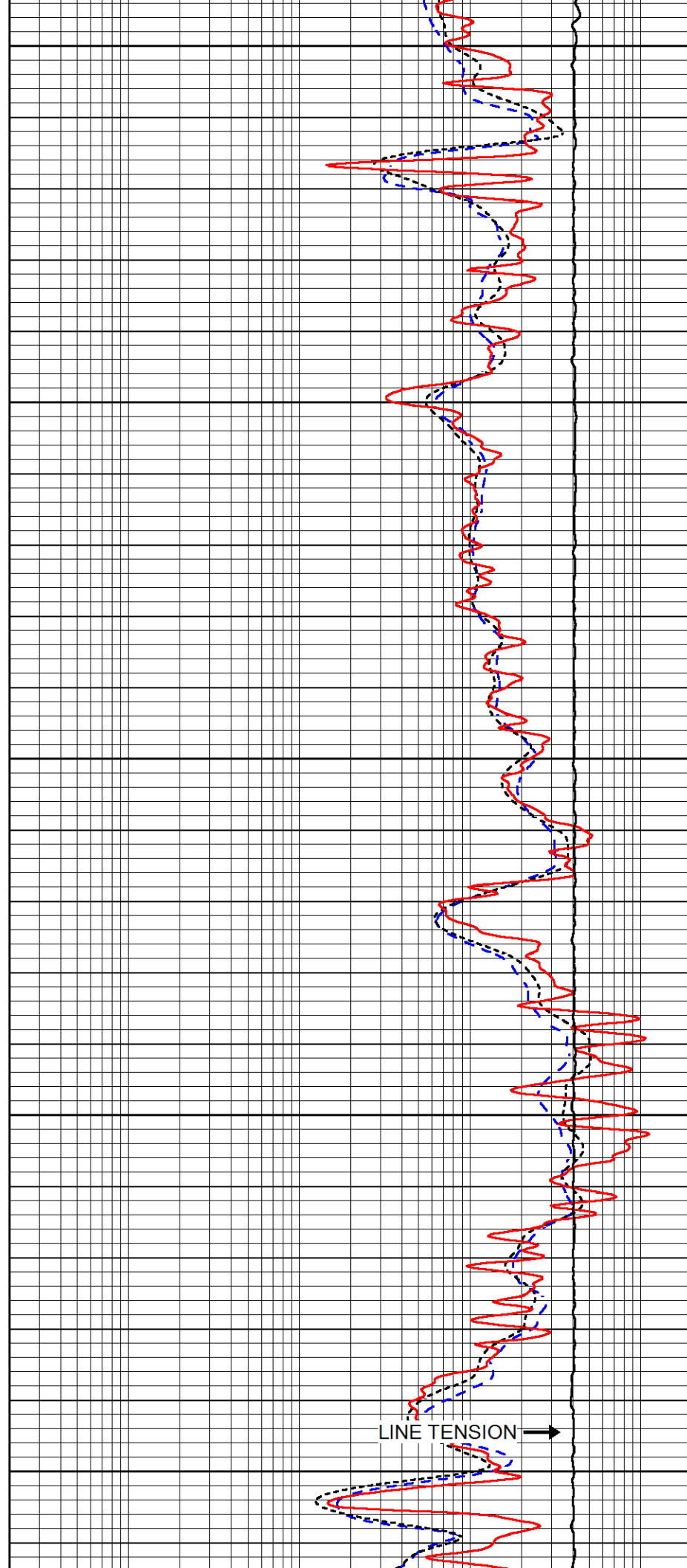
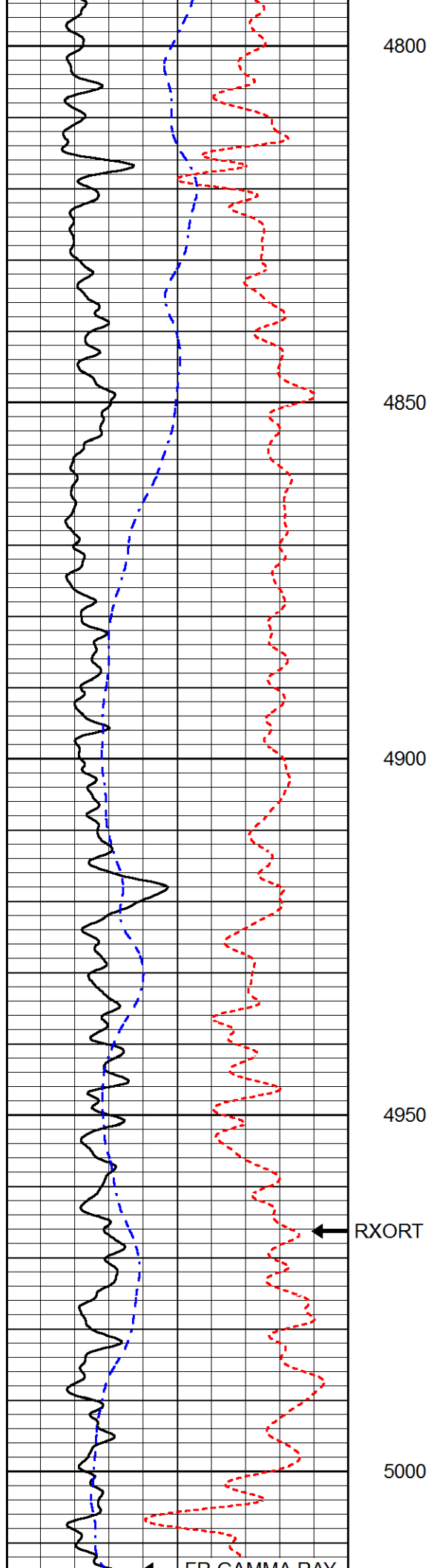
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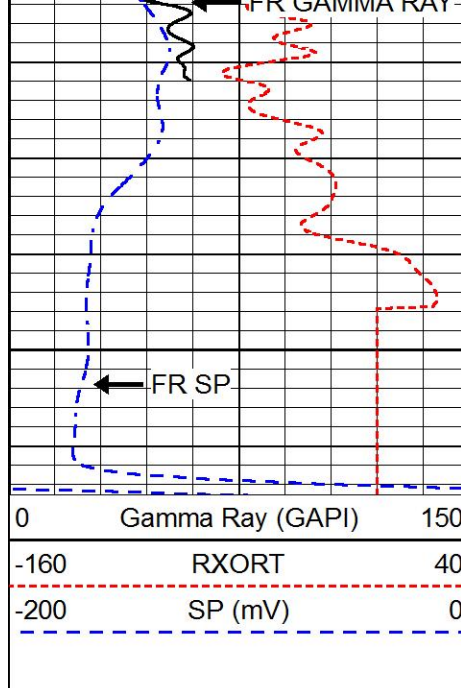
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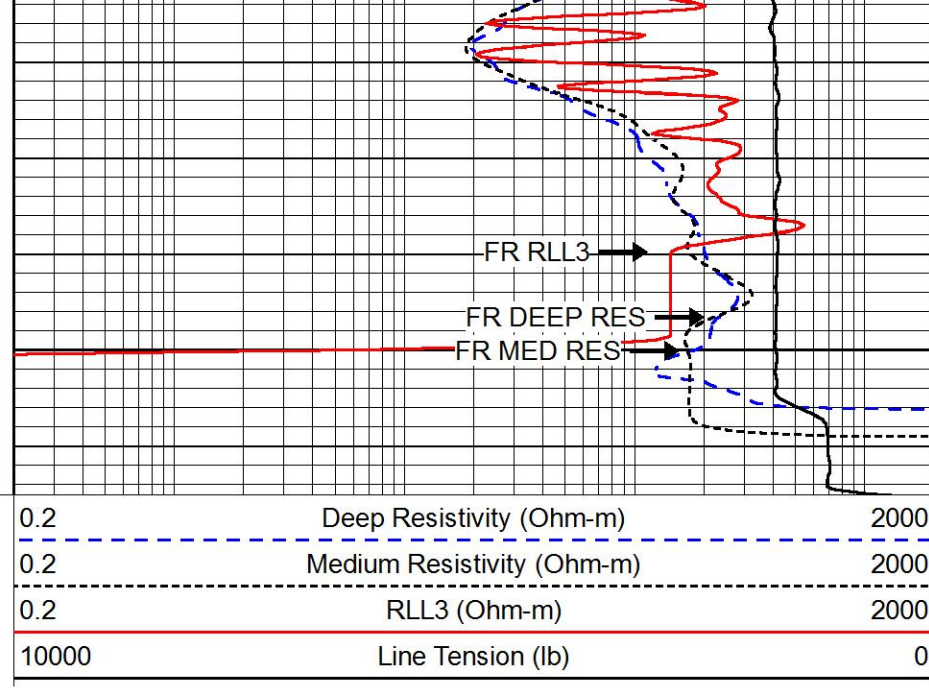
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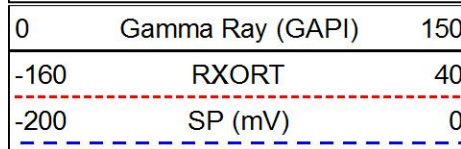


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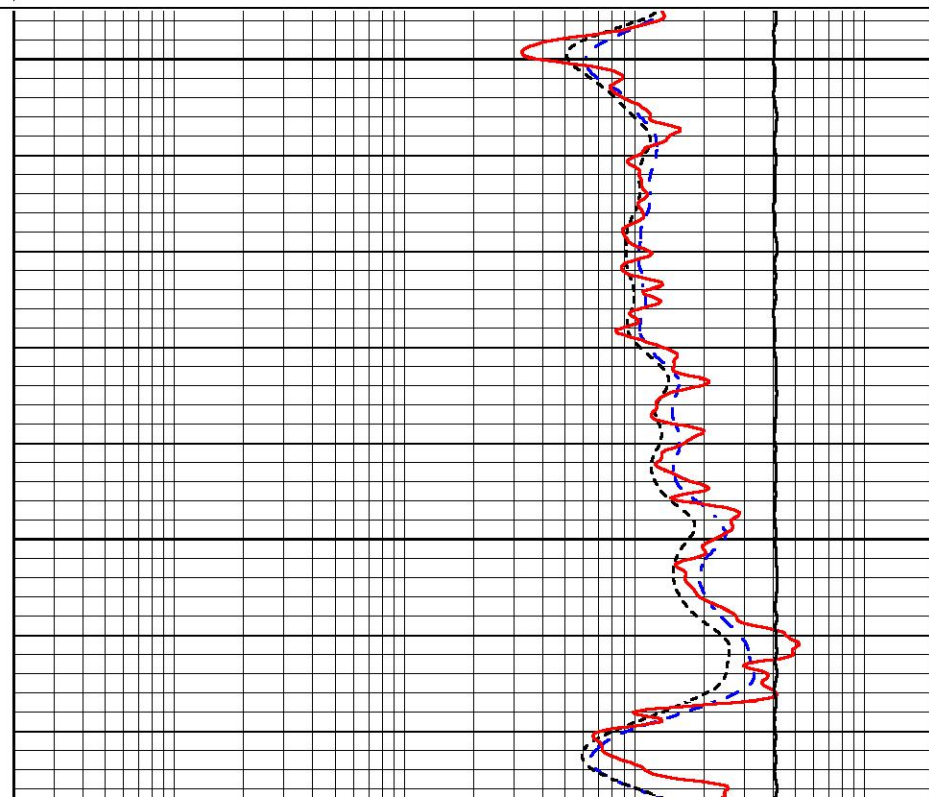
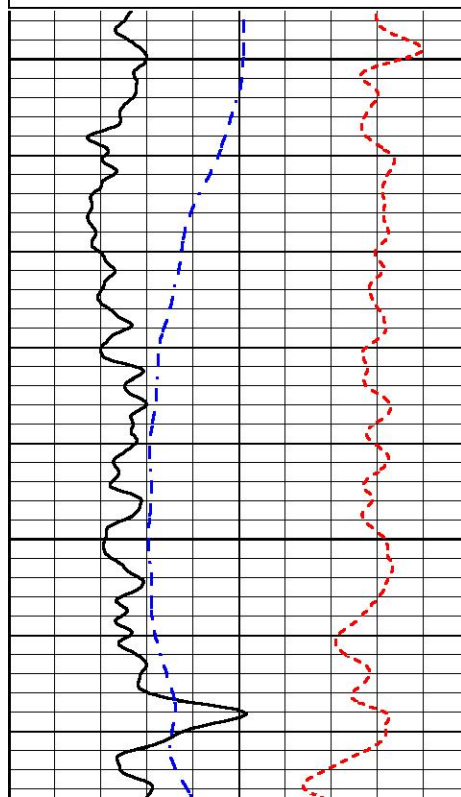
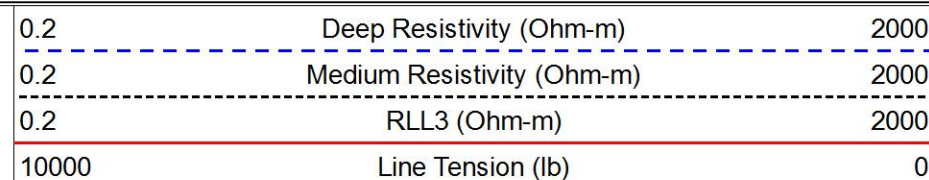
REPEAT SECTION

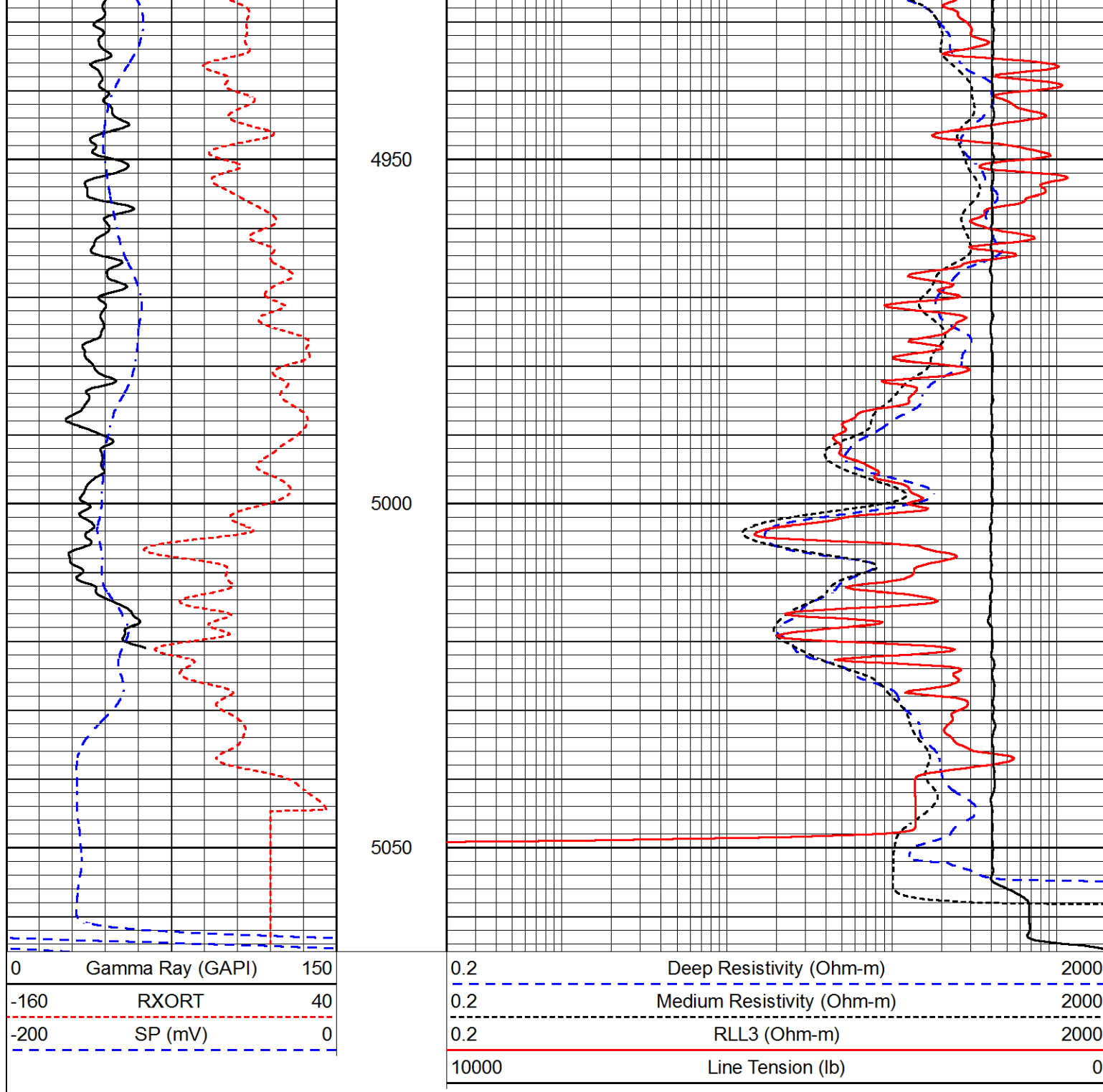
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 Dataset Pathname STKML/pass2.1
 Presentation Format dil
 Dataset Creation Wed Nov 30 21:00:23 2016
 Charted by Depth in Feet scaled 1:240



4850

4900





Calibration Report							
Database File	american warrior_gano_4-27_twin.db						
Dataset Pathname	STKML/pass3.14						
Dataset Creation	Wed Nov 30 21:14:34 2016						
Dual Induction Calibration Report							
Serial-Model:				PSI 13-M&W			
Calibration Performed:				Thu Nov 17 12:38:24 2016			
Readings		References			Results		
Loop:	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.820	-28.500
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.700	-28.000

Microlog Calibration Report

Serial-Model:
Performed:

PSI-01-PSIML
Sat Nov 12 11:19:33 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	16500.0000	-0.5000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	19500.0000	-0.3000
Caliper	1.0001	1.1397	6.5000	18.5000	in	90.0000	-86.7000

Compensated Density Calibration Report

Serial-Model:
Source / Verifier:
Master Calibration Performed:

90-1031-M&W
16955B / 2ci
Thu Nov 17 12:39:05 2016

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	5174.18	6425.27	cps
Aluminum	2.670	g/cc	963.17	4037.42	cps
Spine Angle = 74.55			Density/Spine Ratio = 0.525		
	Size		Reading		
Small Ring	6.00	in	1.83		
Large Ring	16.00	in	1.48		

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: Sat Nov 12 10:30:30 2016

Detector	Readings		Target	Normalization
Short Space	6240.00	cps	1000.00 cps	1.6025
Long Space	460.00	cps	1000.00 cps	1.9500

Gamma Ray Calibration Report

Serial Number: 89
Tool Model: M&W
Calibration Performed: Sat Nov 12 11:20:06 2016

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company AMERICAN WARRIOR, INC.

Well CANO #1, 17 TWIN

PIONEER

Pioneer Energy Services

Well	GANO #4-17 TWIN
Field	N/A
County	KEARNY
State	KANSAS