



PIONEER

Pioneer Energy Services

DUAL INDUCTION LOG

Company MURFIN DRILLING, INC.

Well RED POLL #10-21

Field WILDCAT

County LINCOLN State COLORADO

Location: API #: 05-073-06720

SEC 21 TWP 10S RGE 56W

Permanent Datum GROUND LEVEL Elevation 5492'

Log Measured From KELLY BUSHING

Drilling Measured From KELLY BUSHING

Other Services

CNL/CDL
MEL/BHCS

Elevation
K.B. 5505'
D.F. N/A
G.L. 5492'

Date 9/1/2017

Run Number ONE

Depth Driller 8500'

Depth Logger 8499'

Bottom Logged Interval 8498'

Top Log Interval 0'

Casing Driller 8.625" @ 476'

Casing Logger 470'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 500

Density / Viscosity 9.3 52

pH / Fluid Loss 9.3 6.2

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.90 @ 80

Rmt @ Meas. Temp 0.68 @ 80

Rmc @ Meas. Temp 1.22 @ 80

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.45 @ N/A

Operating Rig Time 7 HOURS

Max Rec. Temp. F N/A

Equipment Number 91

Location HAYS

Recorded By D. SCHMIDT

Witnessed By WES HANSEN

<<< 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.

LIMON, COLORADO,
SOUTH ON HWY 71 TO 2Z RD, 1 EAST, 1/2 SOUTH,
EAST INTO

NO REPEAT DUE TO HOLE CONDITIONS

Log Measured From: KELLY BUSHING

13 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: WES HANSEN


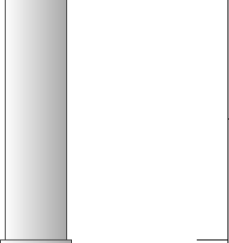
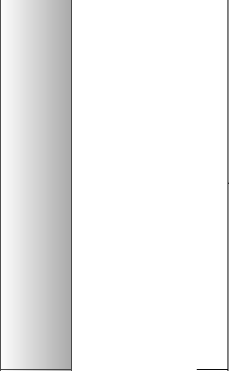
Secondary Witness:

Secondary Witness:

Secondary Witness:

Top - Bottom

A	BOREID	BOTTEMP	CASEOD	CASETHCK	FLUIDDEN	M	MATRXDEN
1	in 7.875	degF 100	in 5.5	in 0	g/cc 1	2	g/cc 2.71
NPORSEL	PERFS	SNDERR	SNDERRM	SPSHIFT	SRFTEMP	SZCOR	TDEPTH
Limestone	0	mmho/m 0	mmho/m 0	mV 0	degF 80	Off	ft 8499

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					

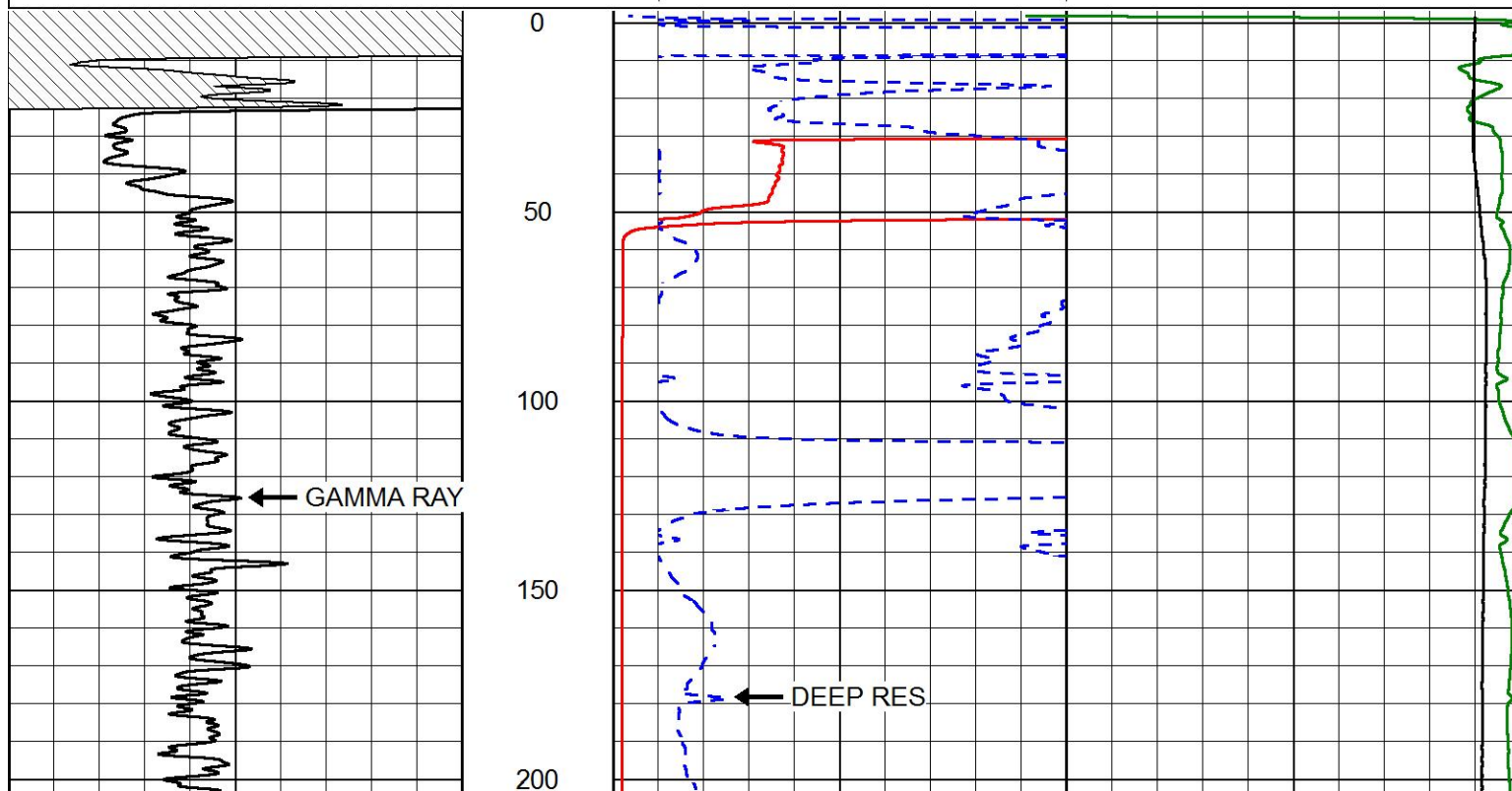
			DIL-M&W (PSI 91)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: murfin_red poll_10-21.db: field/well/STKML/pass6.1 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						

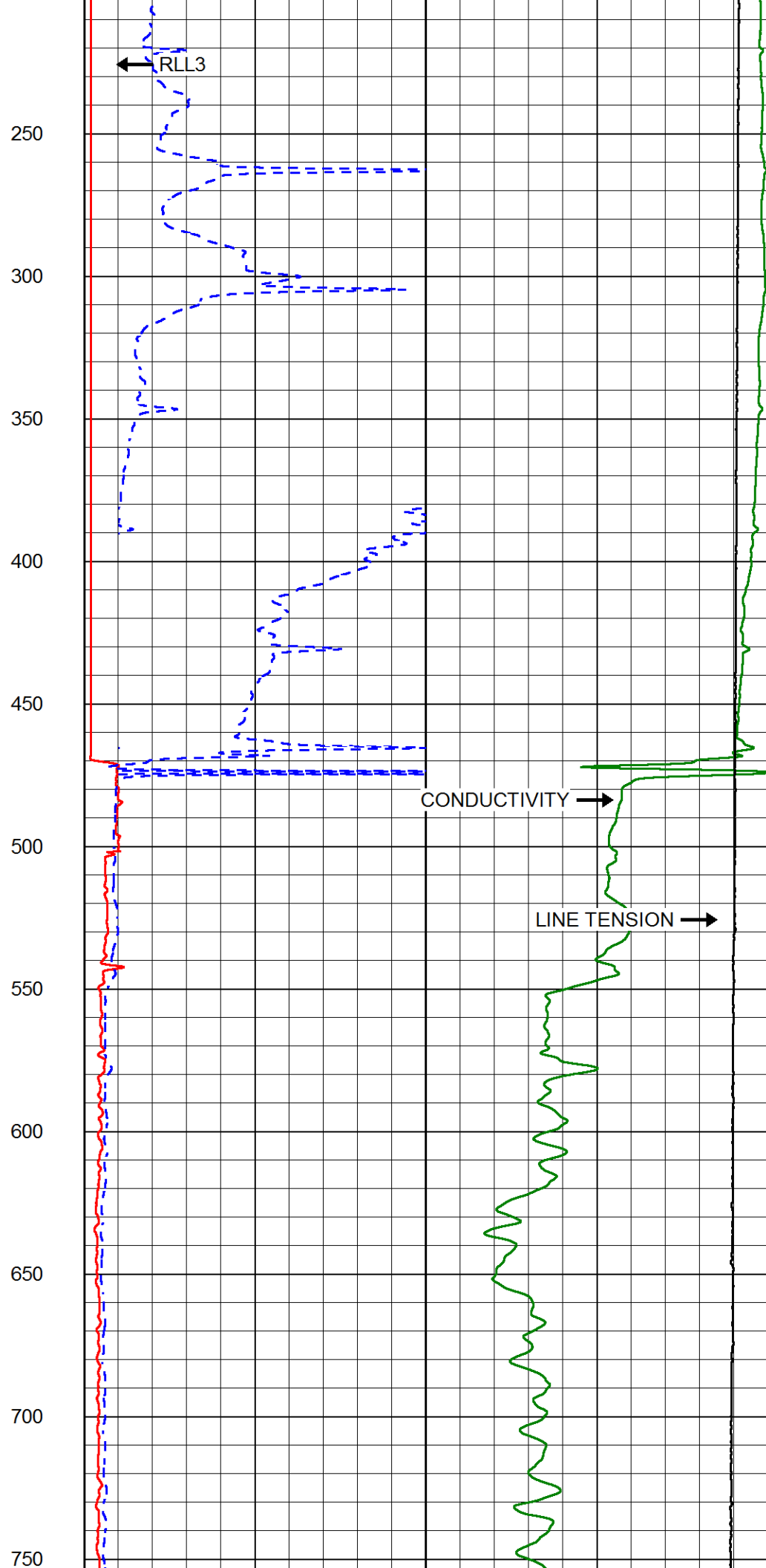
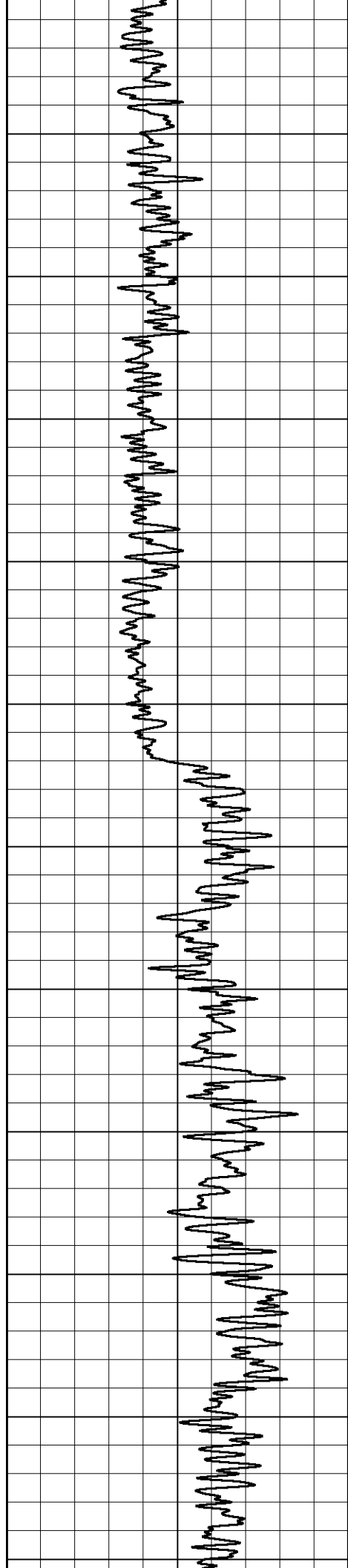


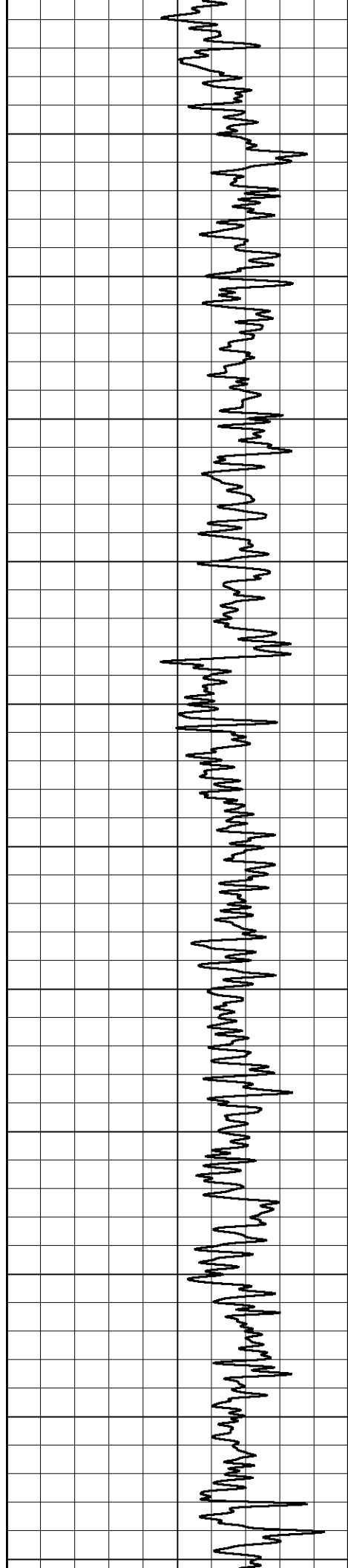
MAIN PASS

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Presentation Format	dil2in
Dataset Creation	Sat Sep 02 01:41:11 2017
Charted by	Depth in Feet scaled 1:600

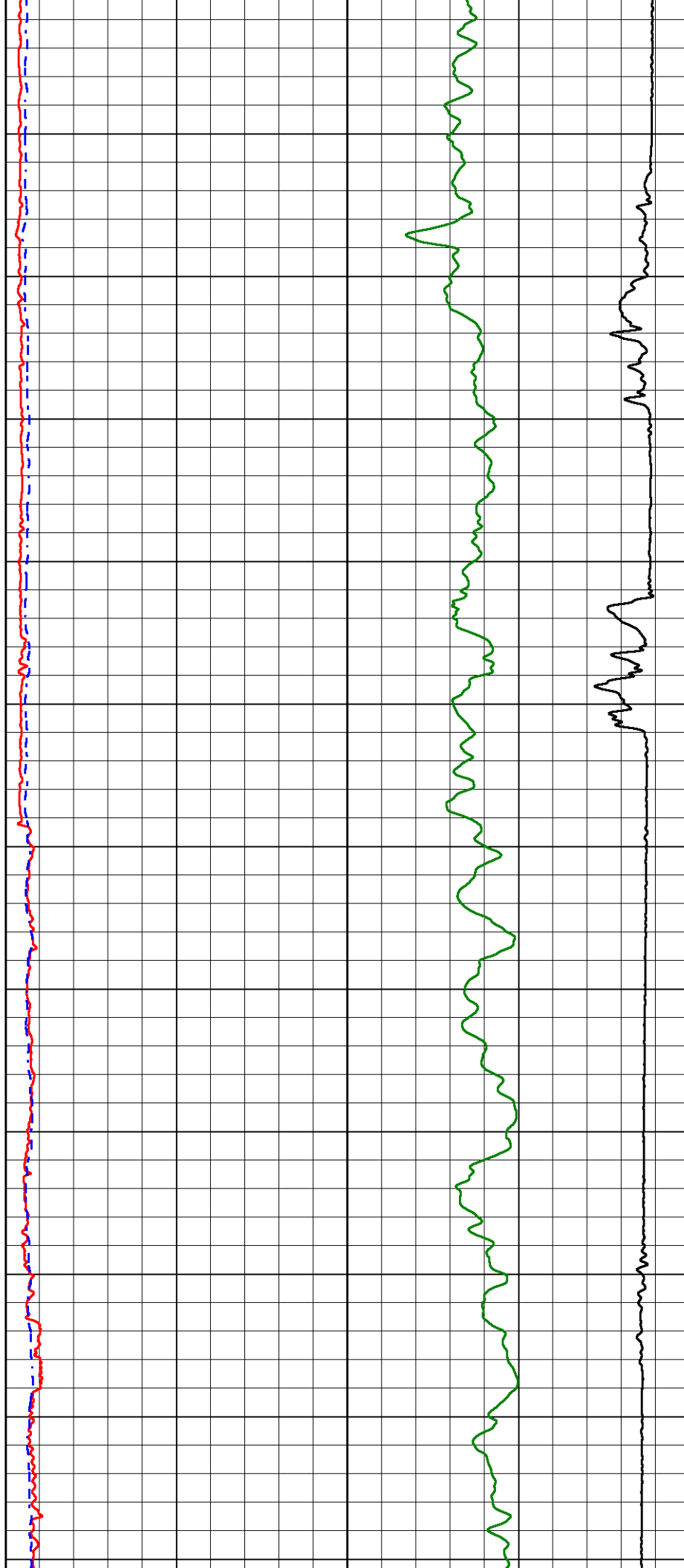
0	Gamma Ray (GAPI)	150	1000	Conductivity (mmho/m)	0
			15000	Line Tension (lb)	0
			0	RLL3 (Ohm-m)	50
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			50	Deep Resistivity (Ohm-m)	500

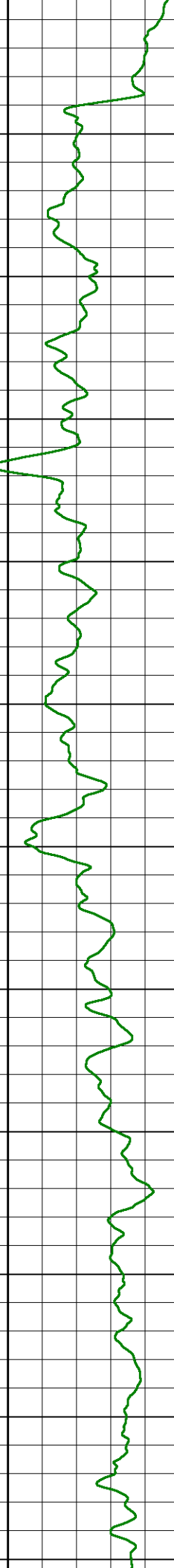
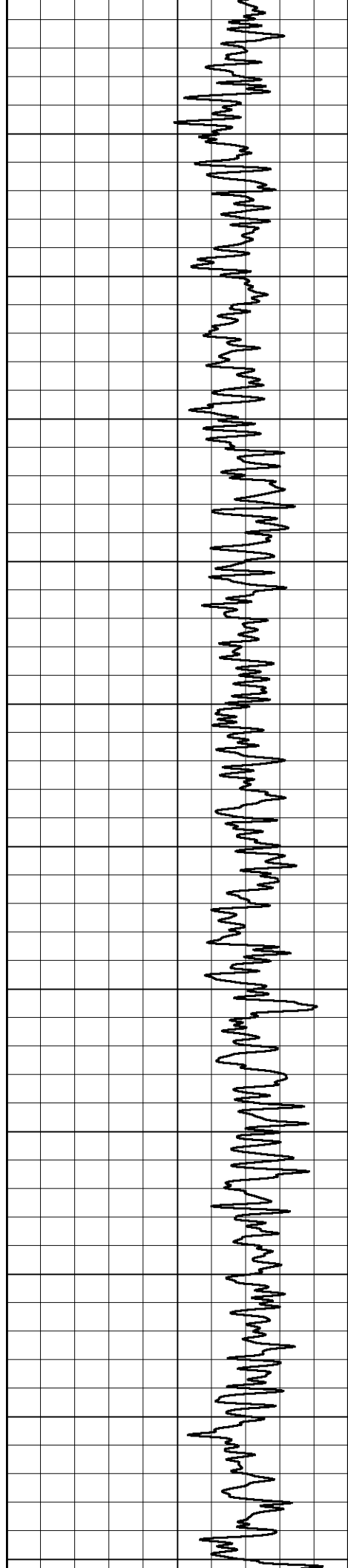


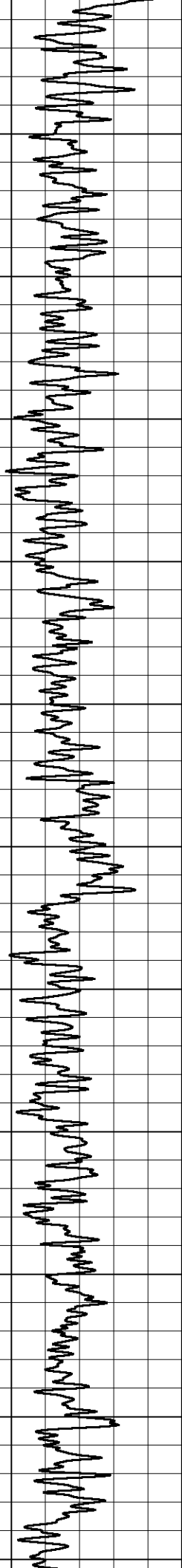




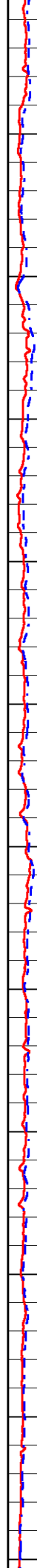
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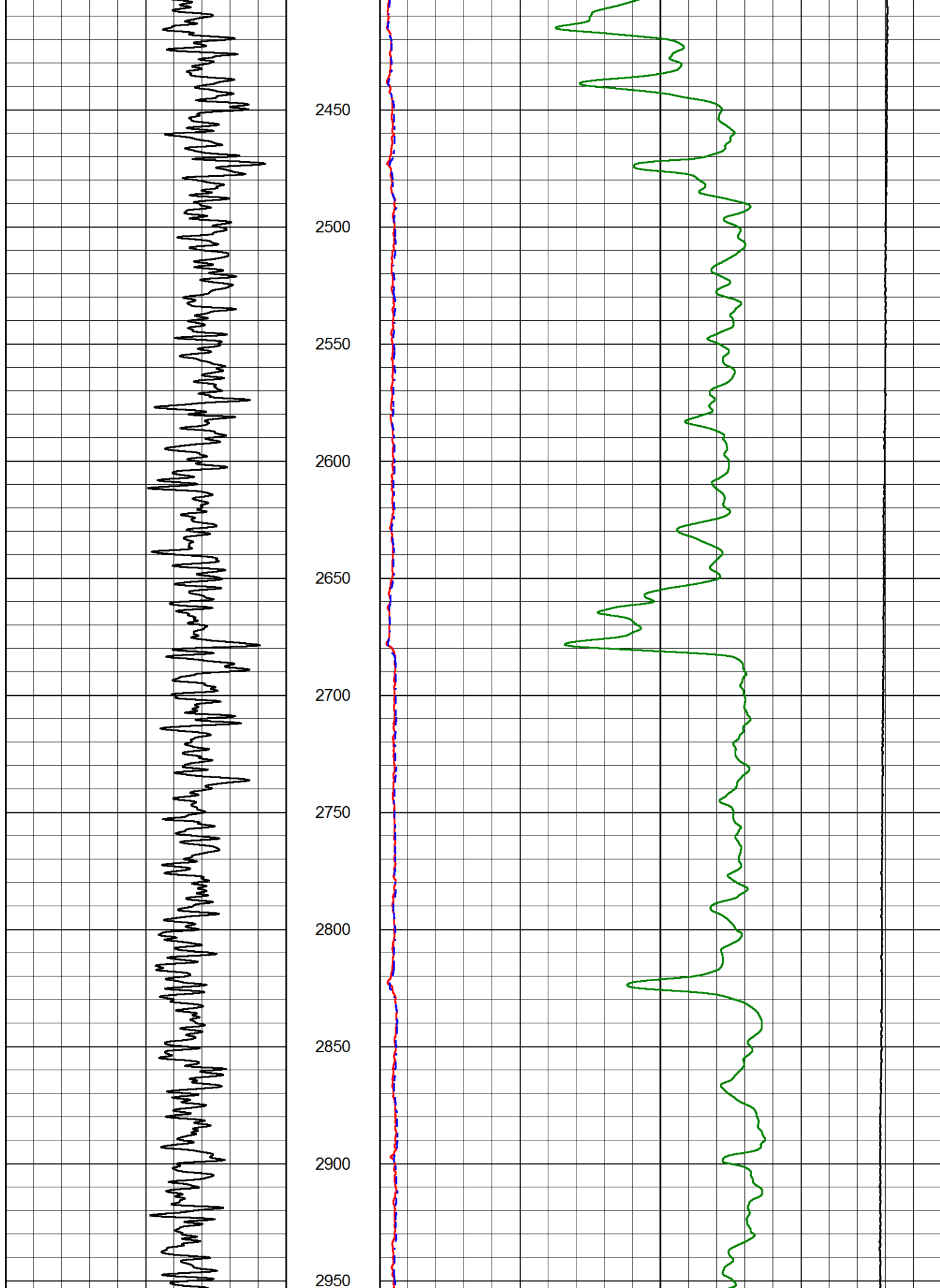


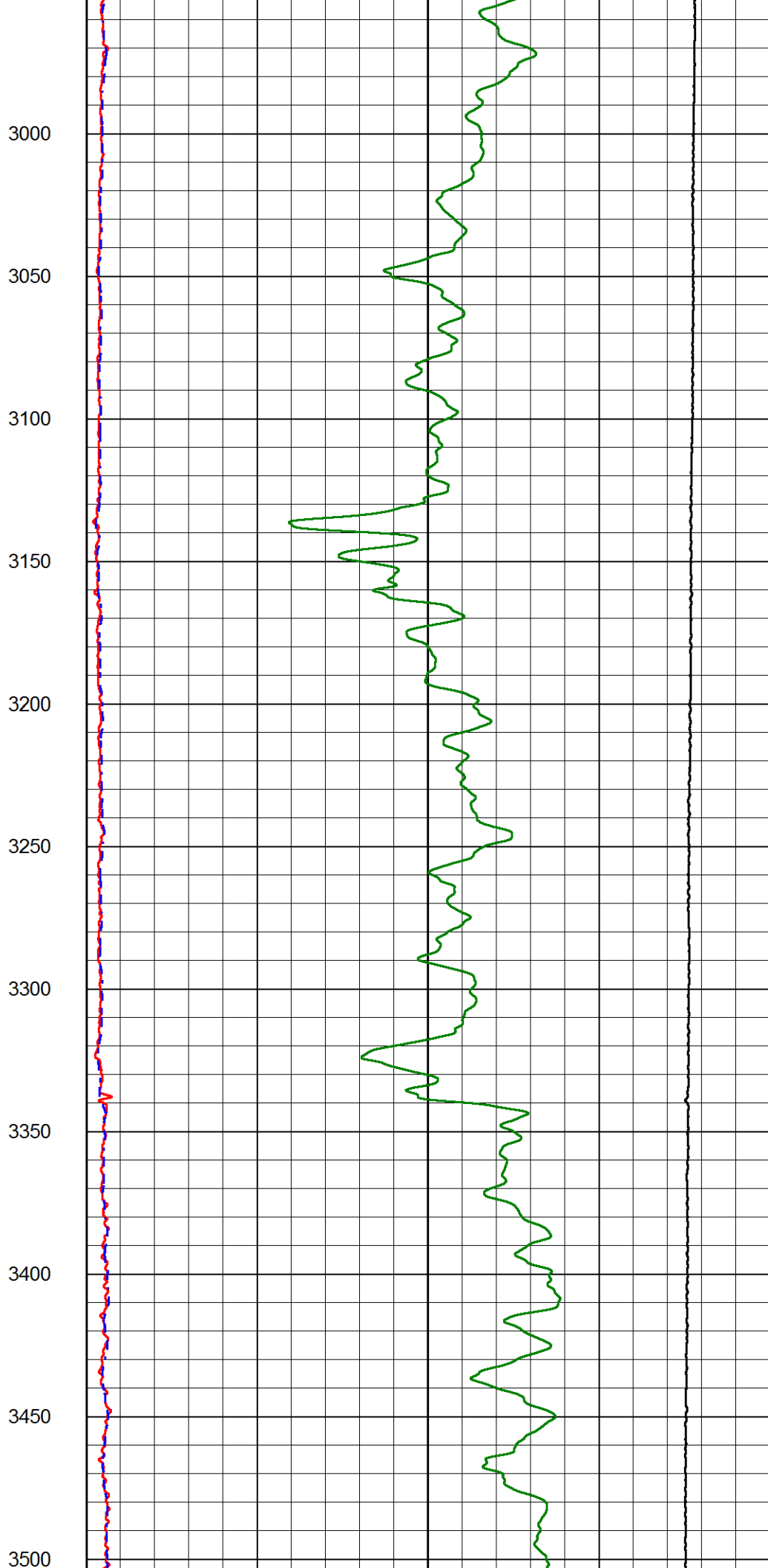
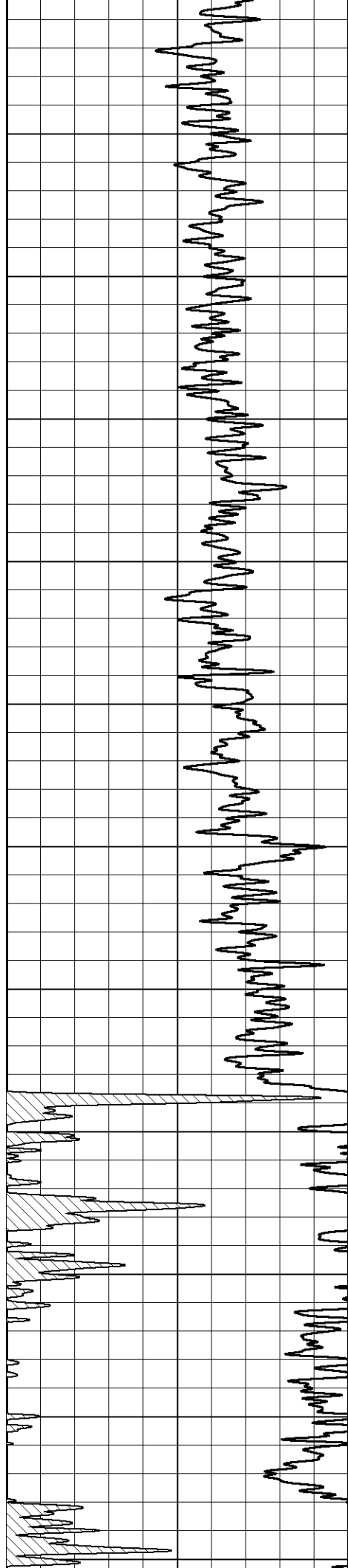


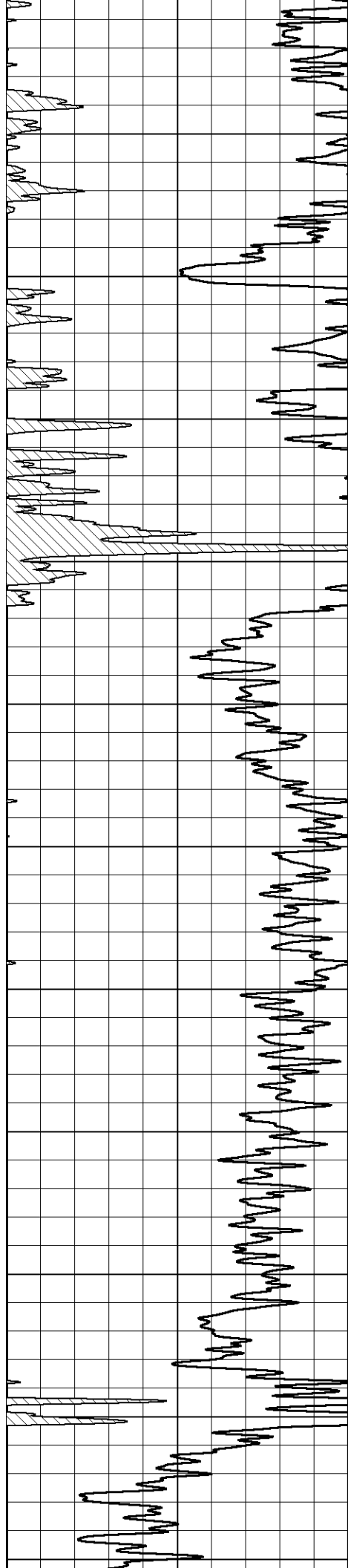


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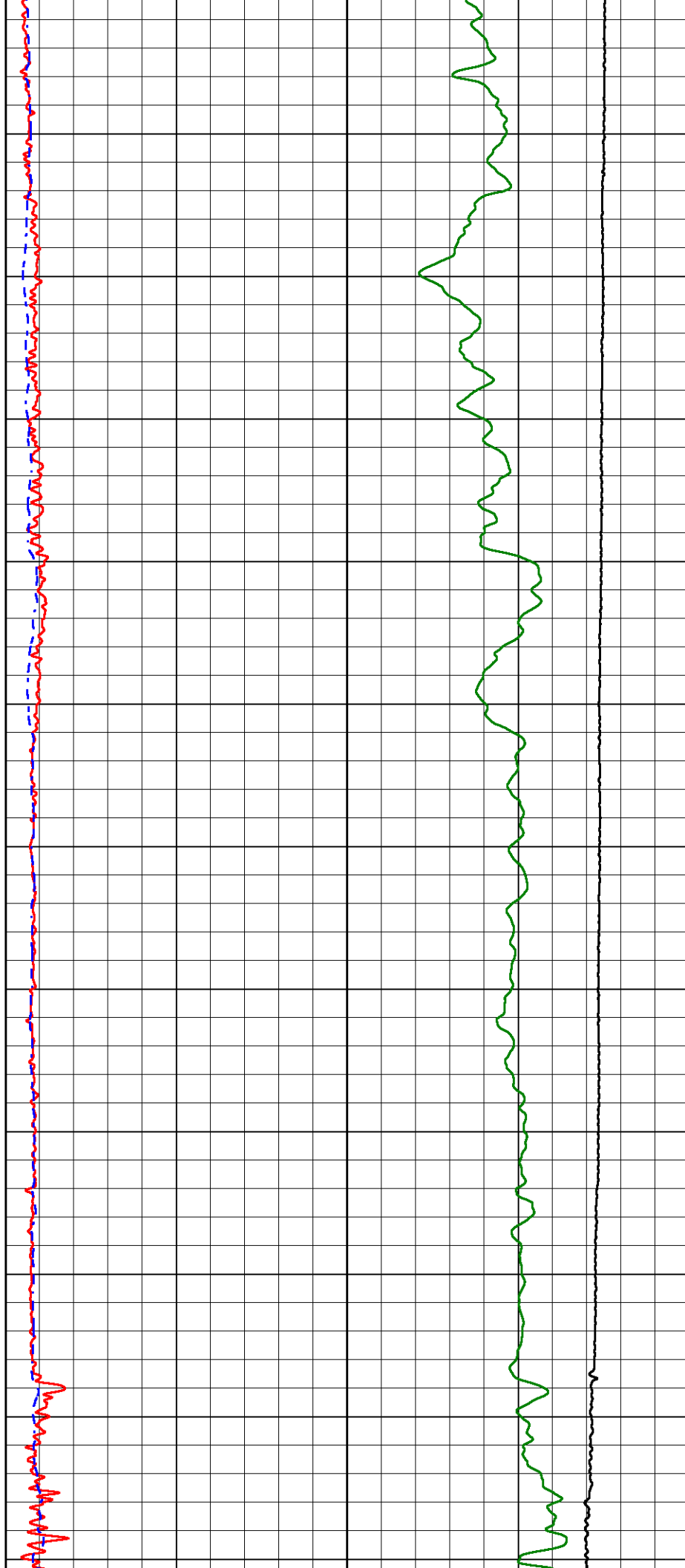


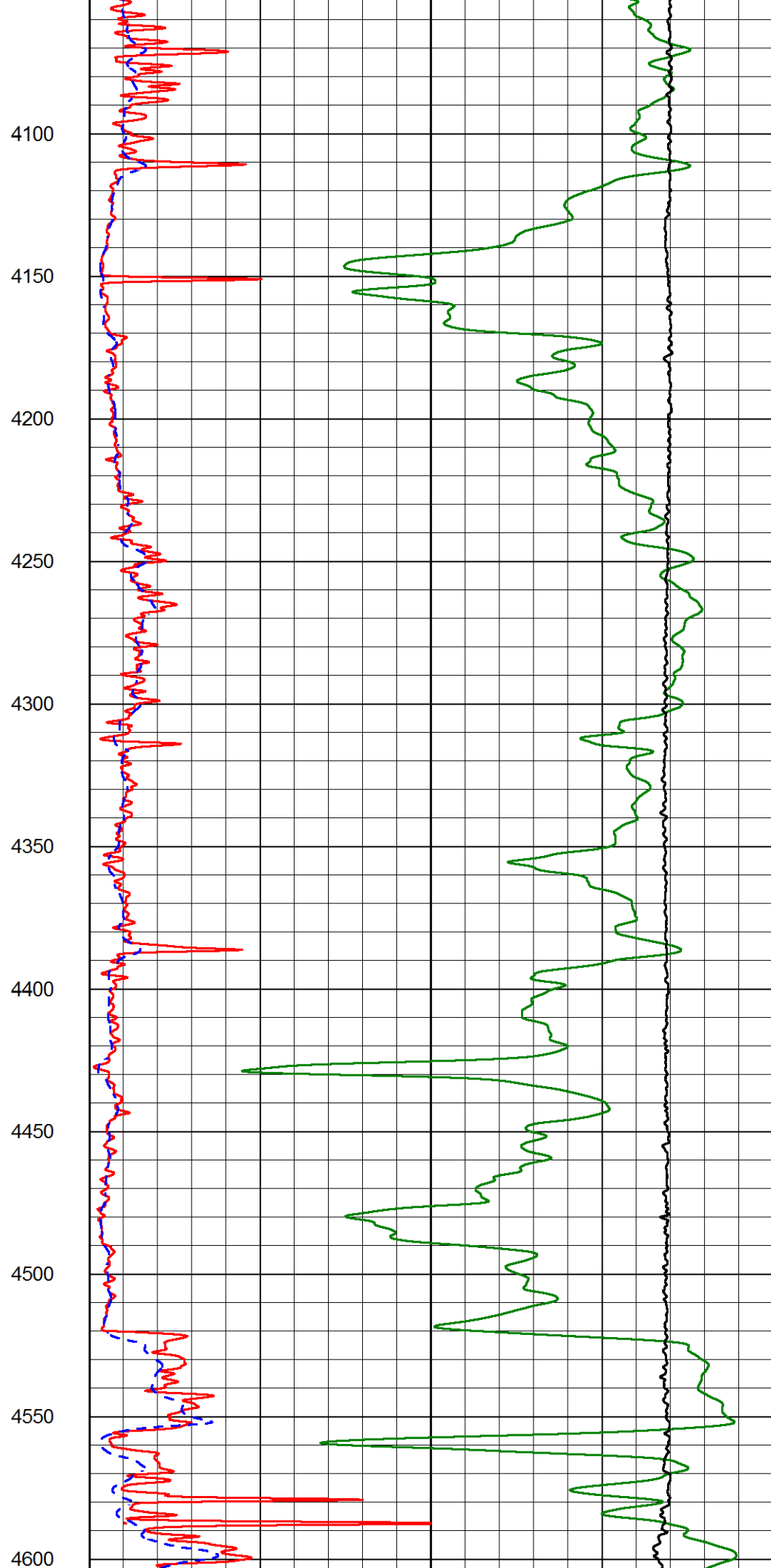
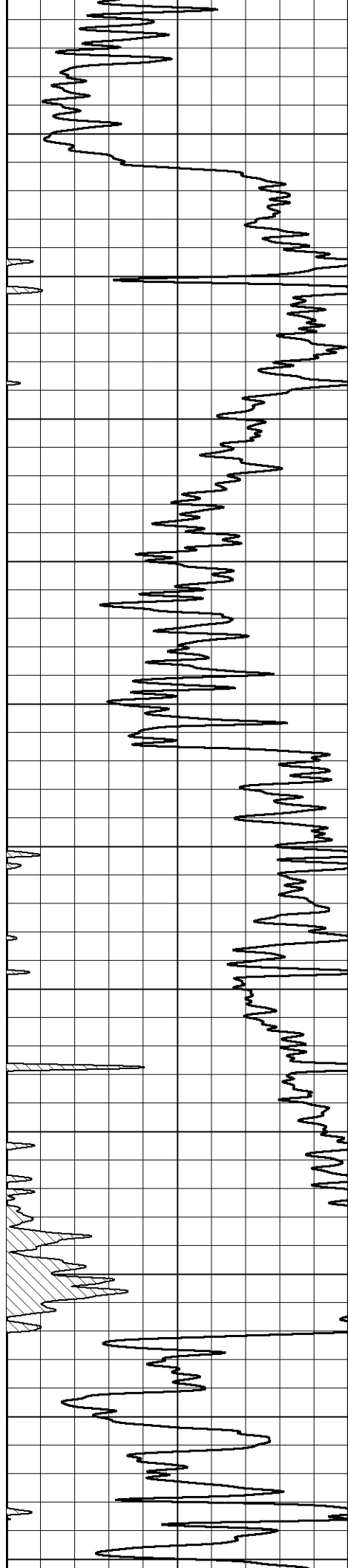


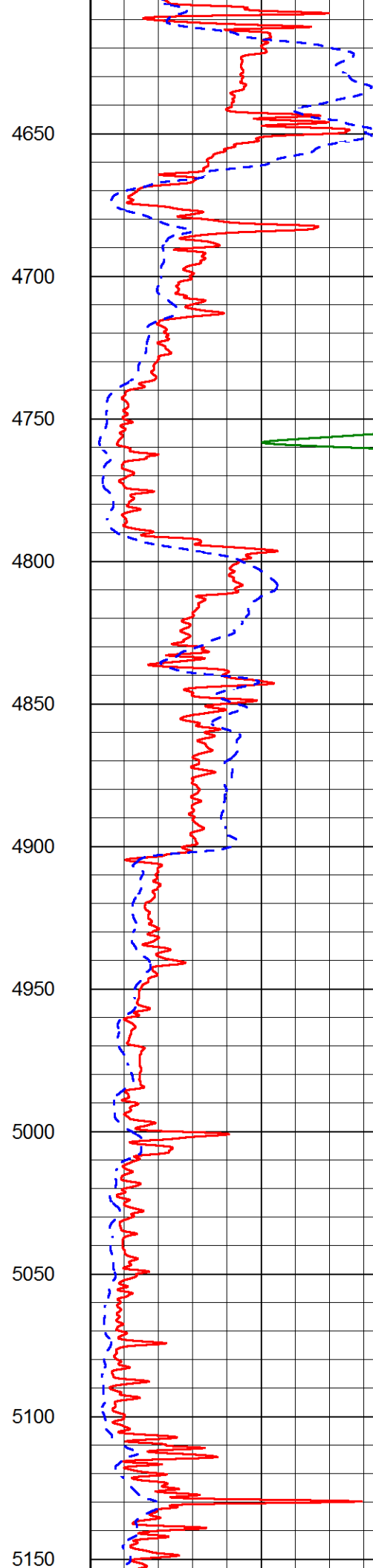
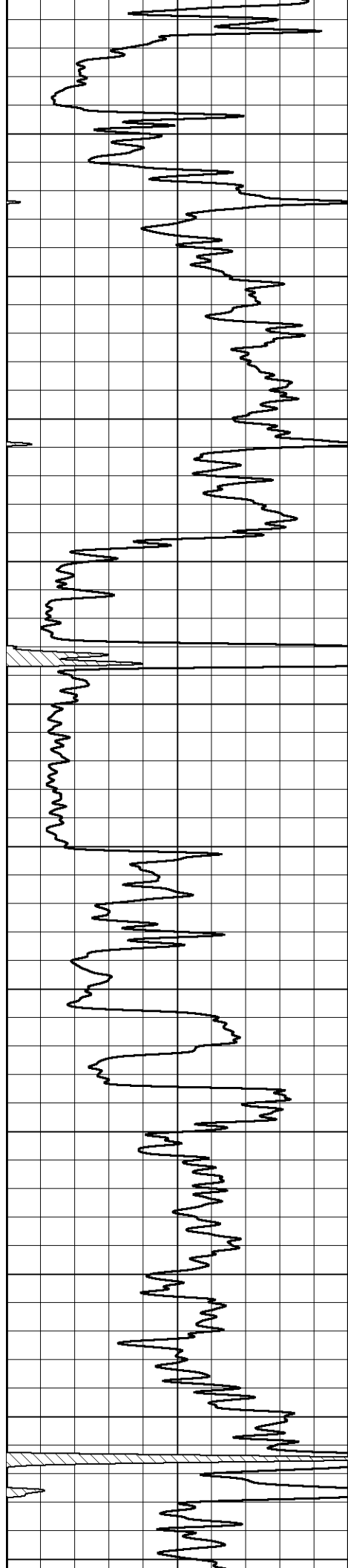


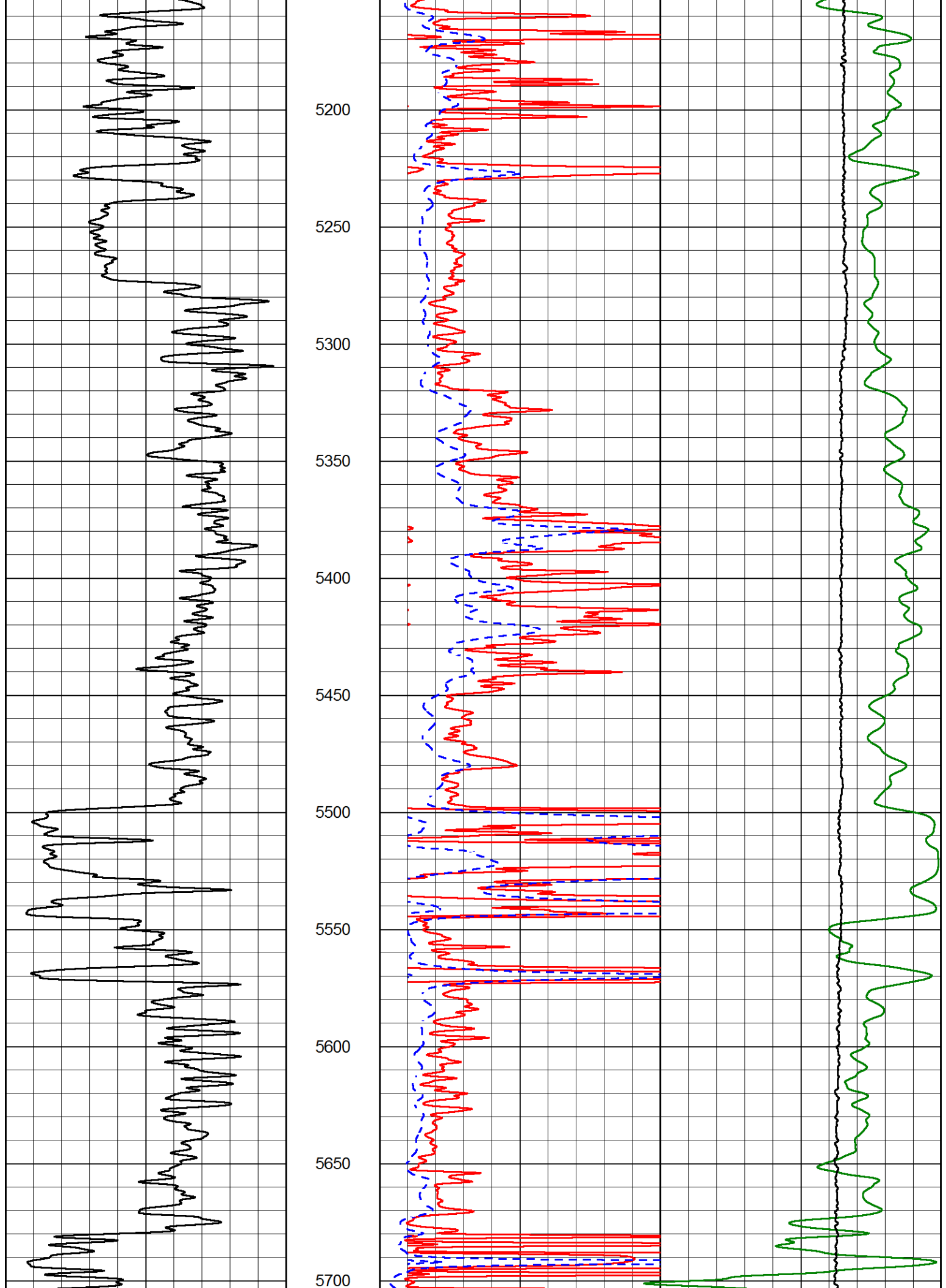


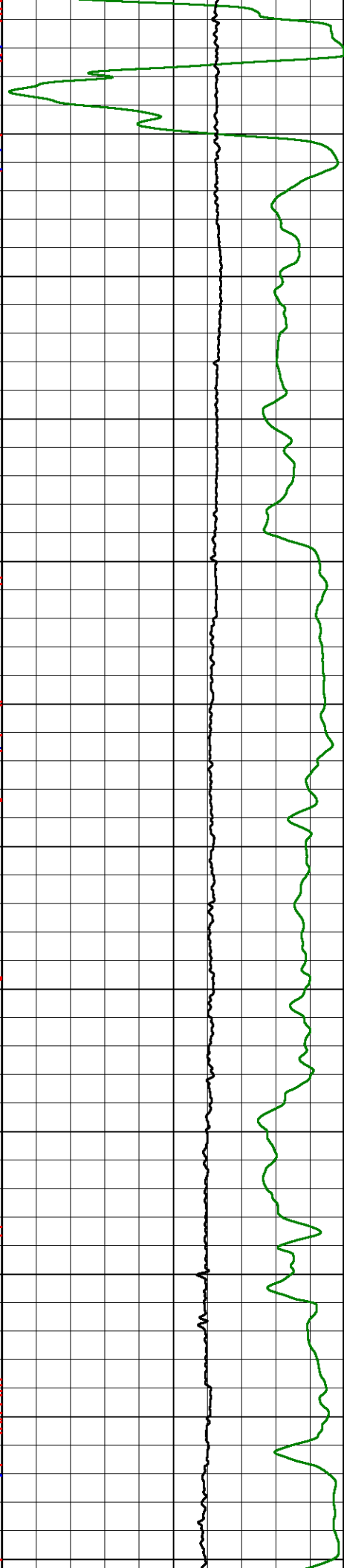
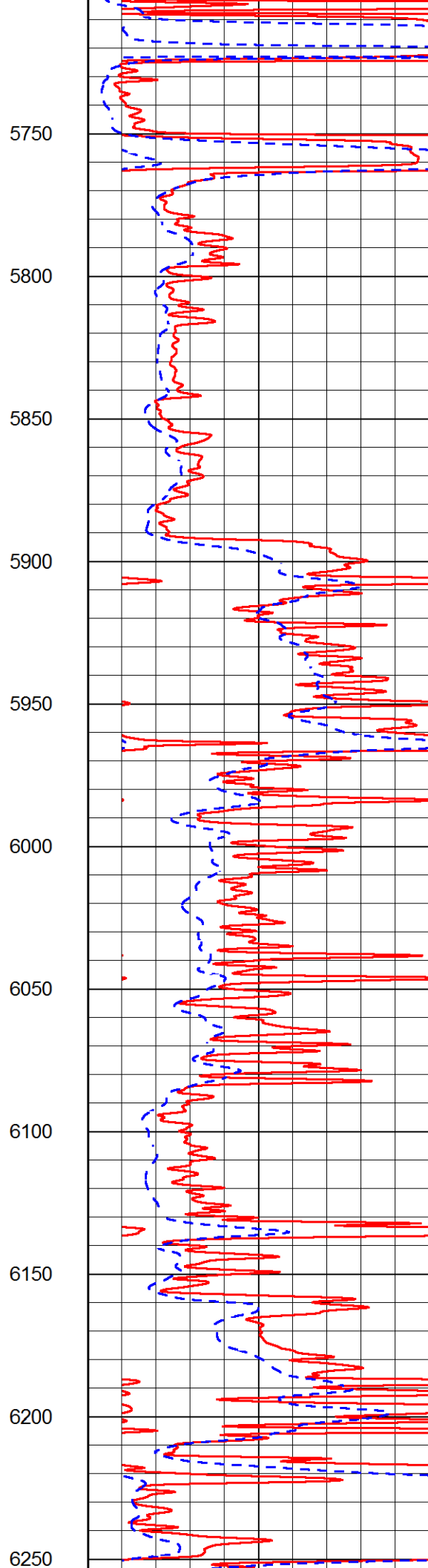
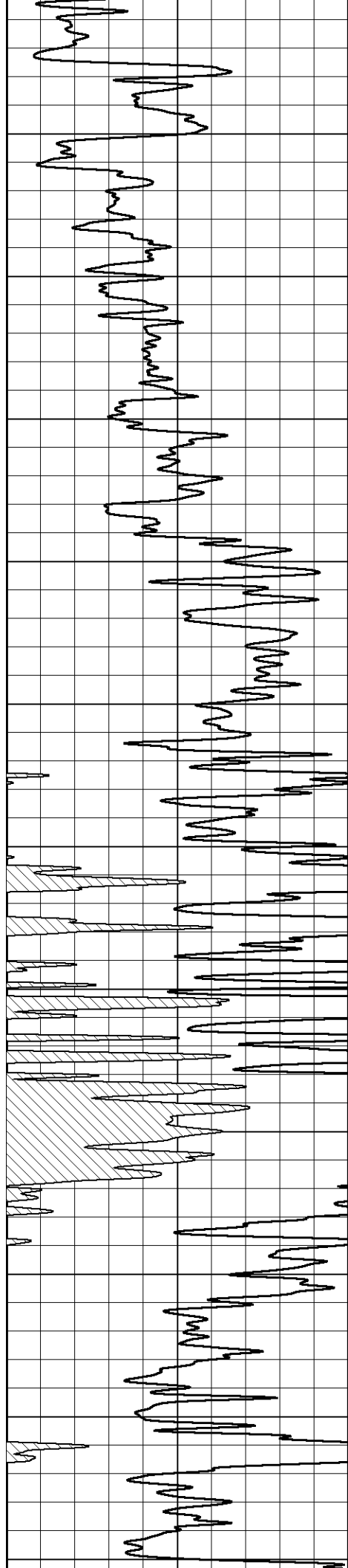
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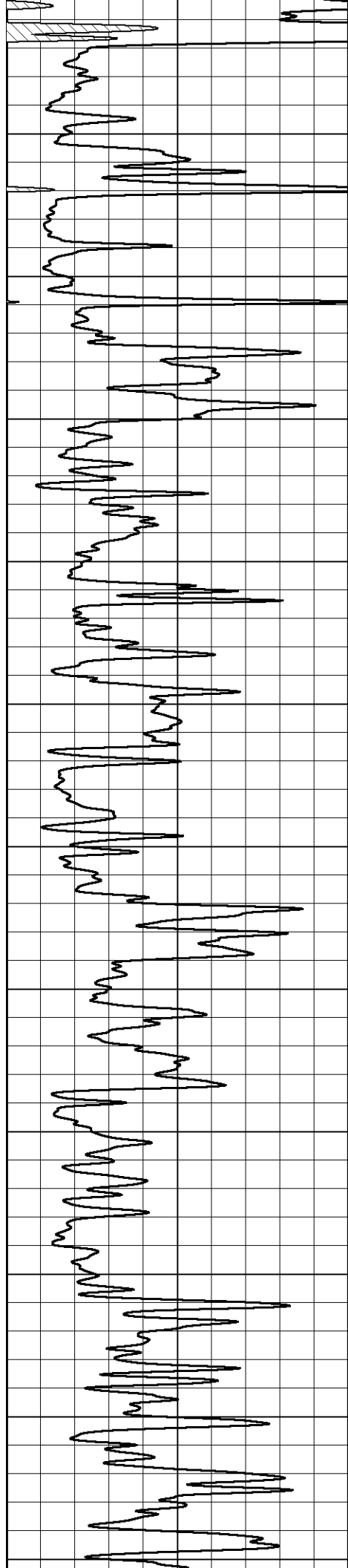












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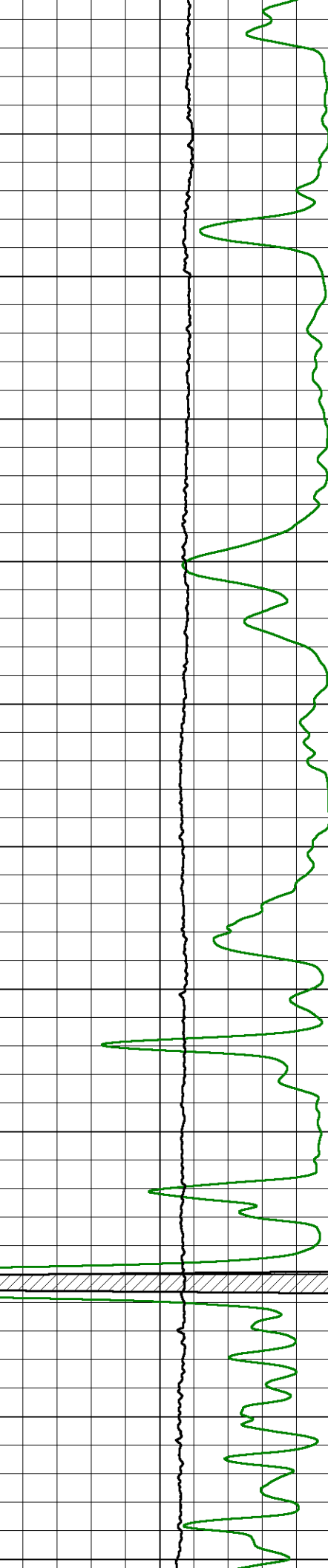
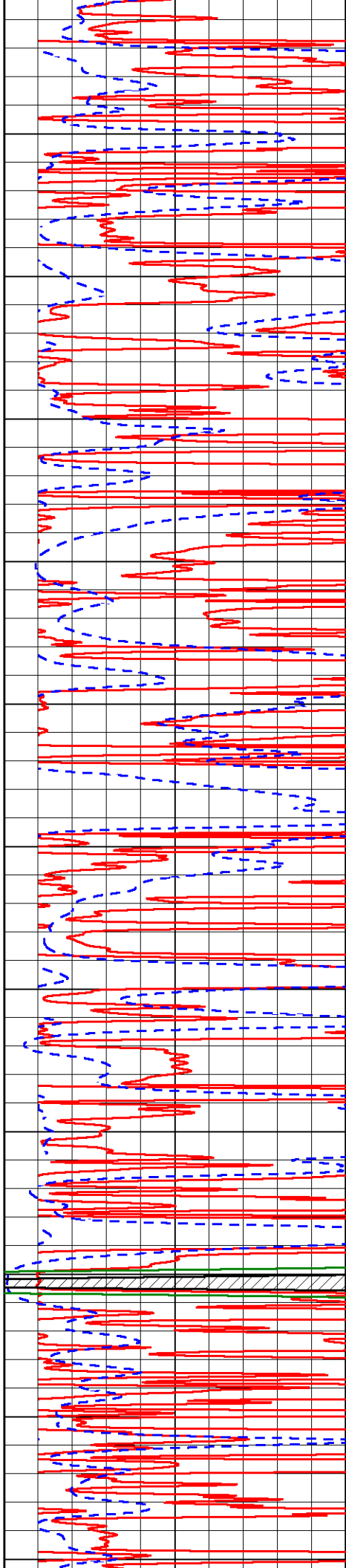
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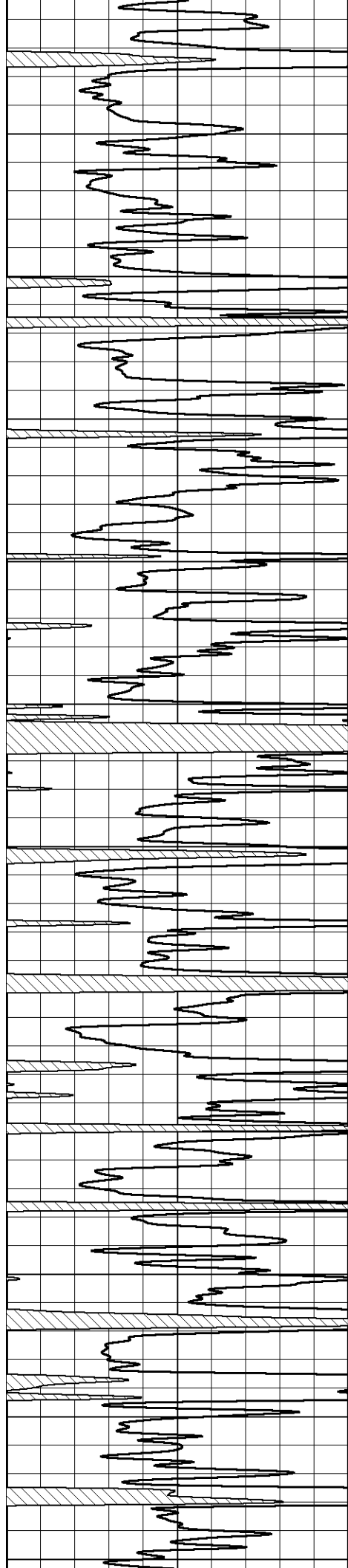
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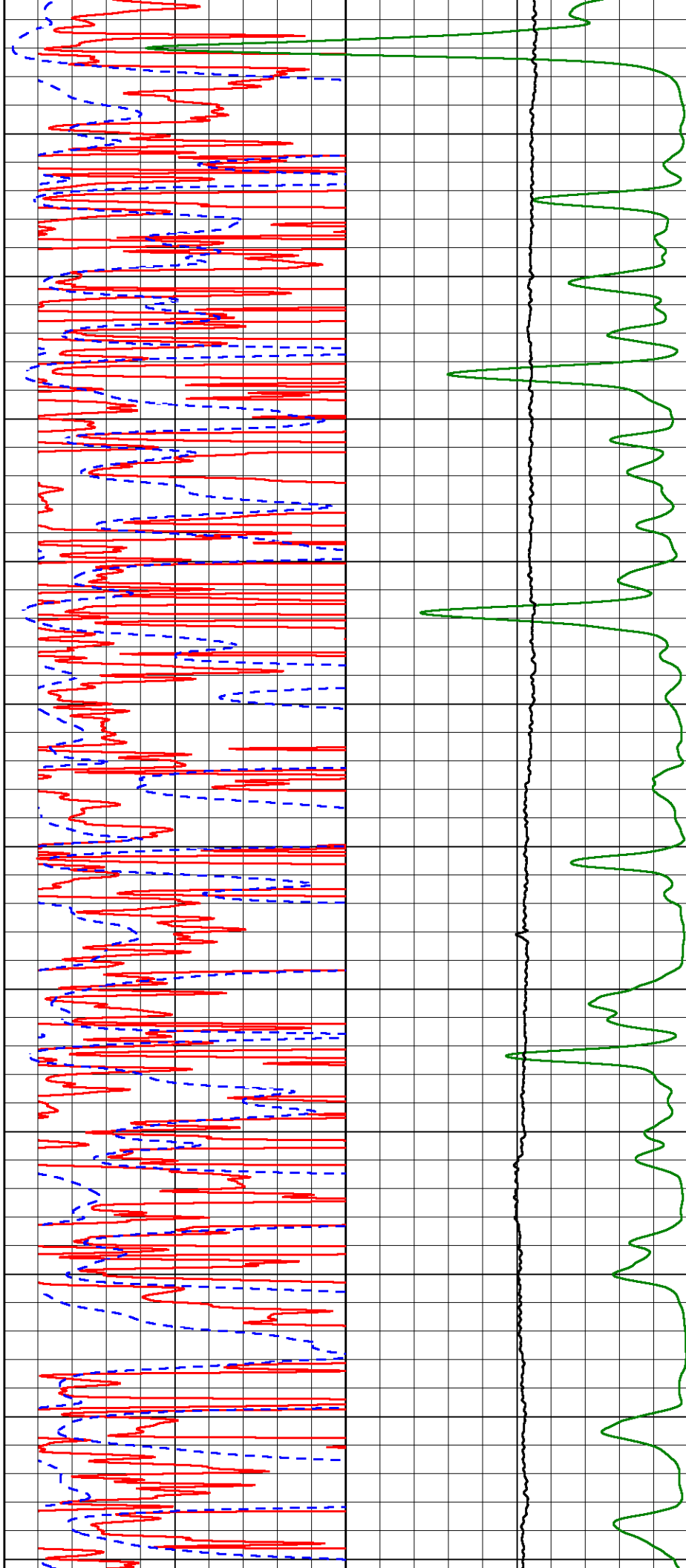
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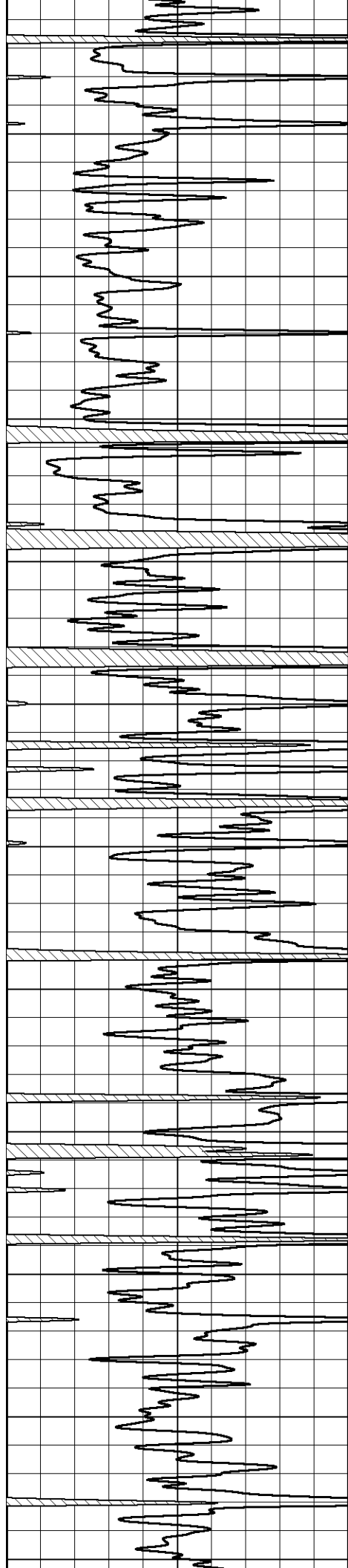
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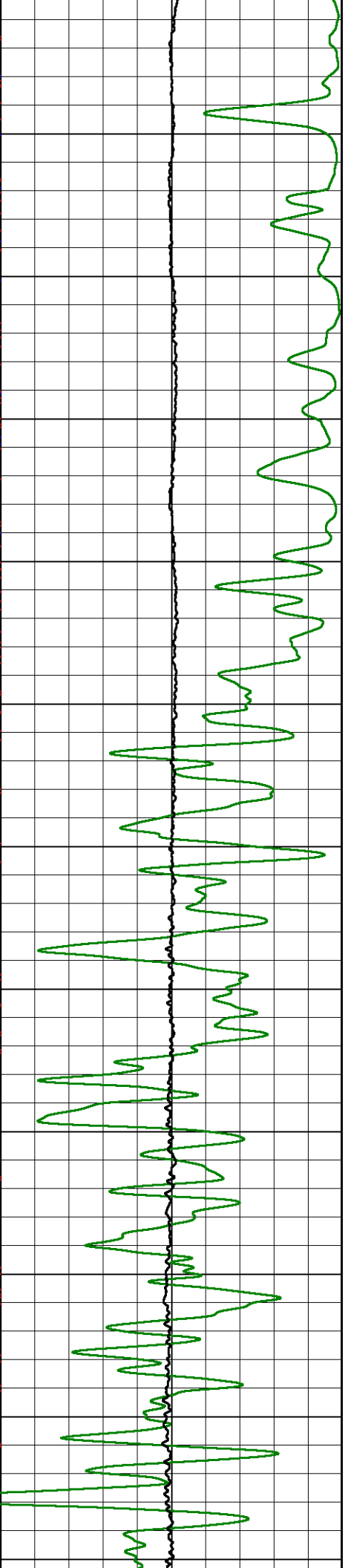
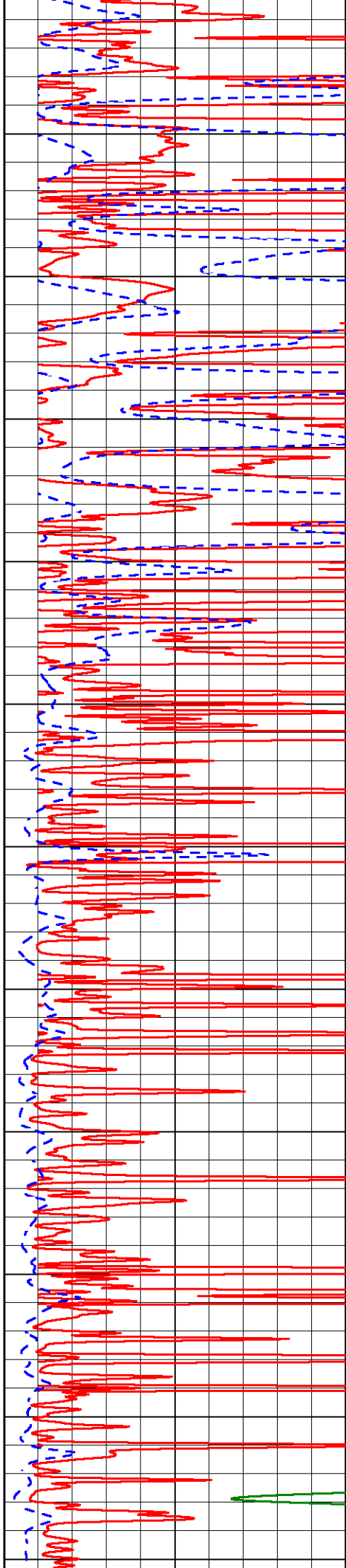
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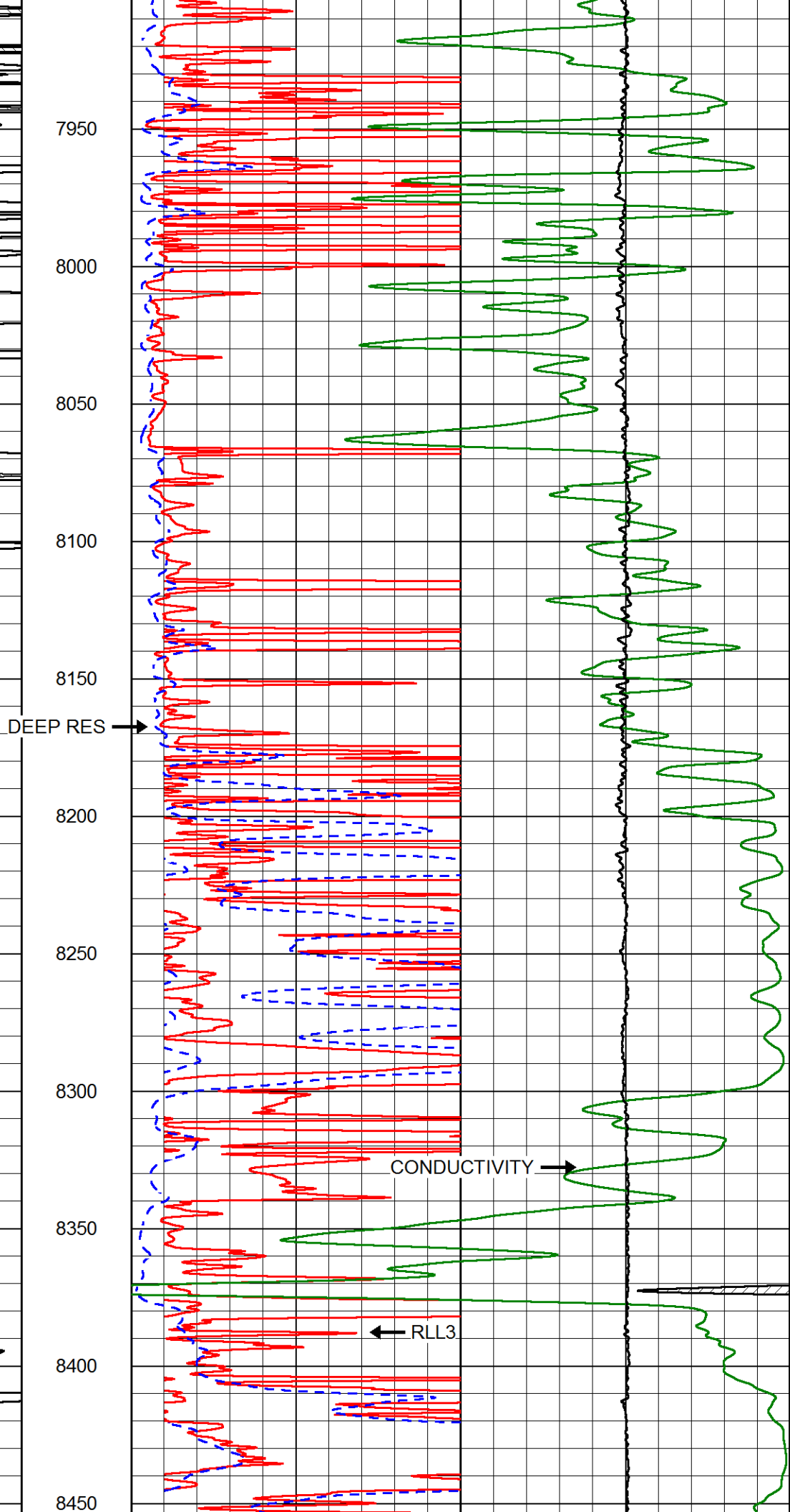
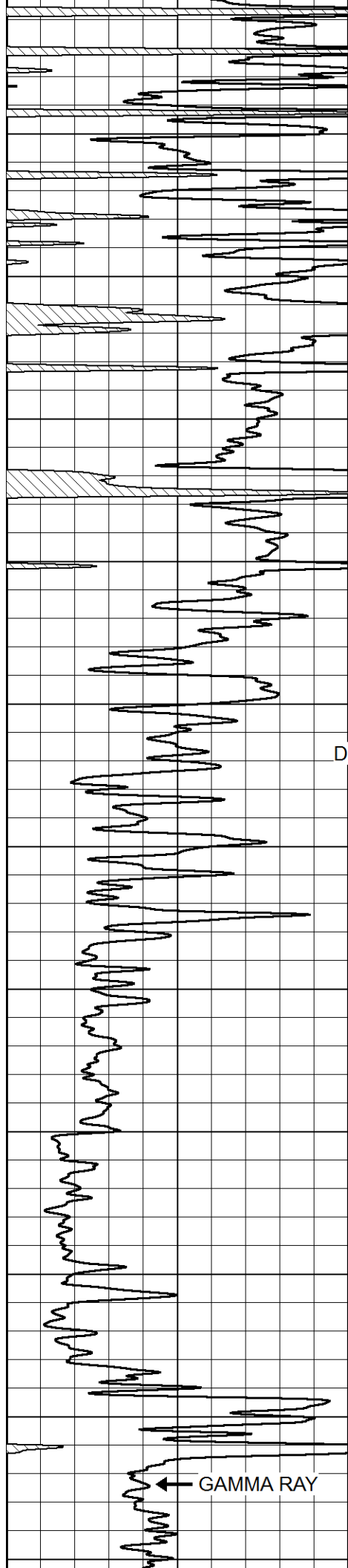
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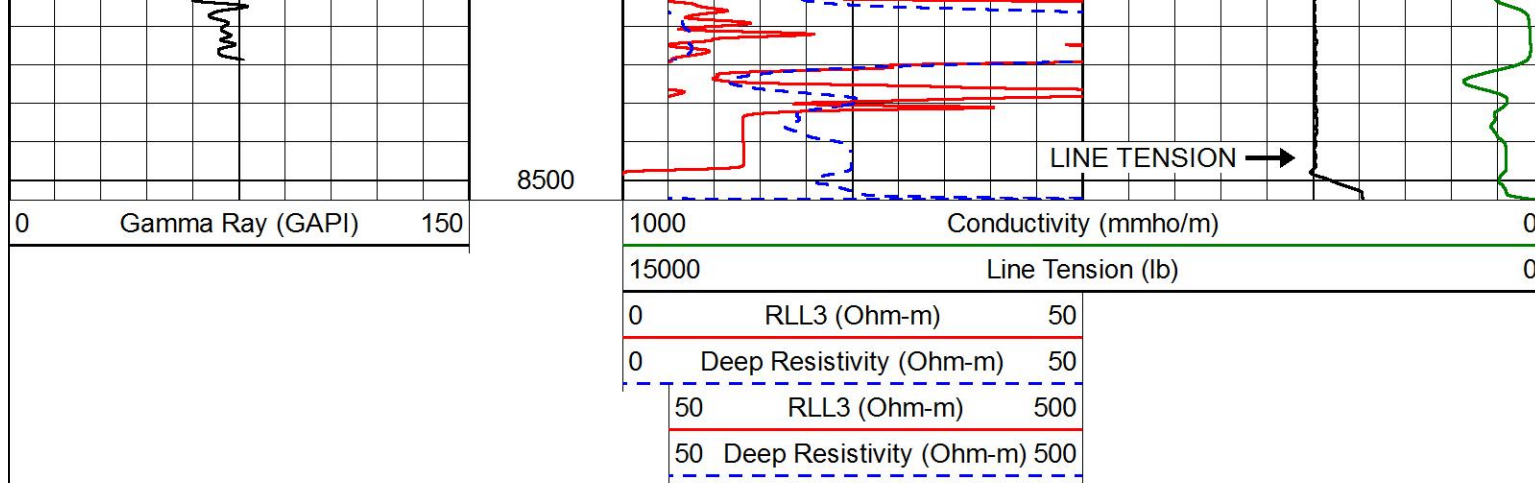
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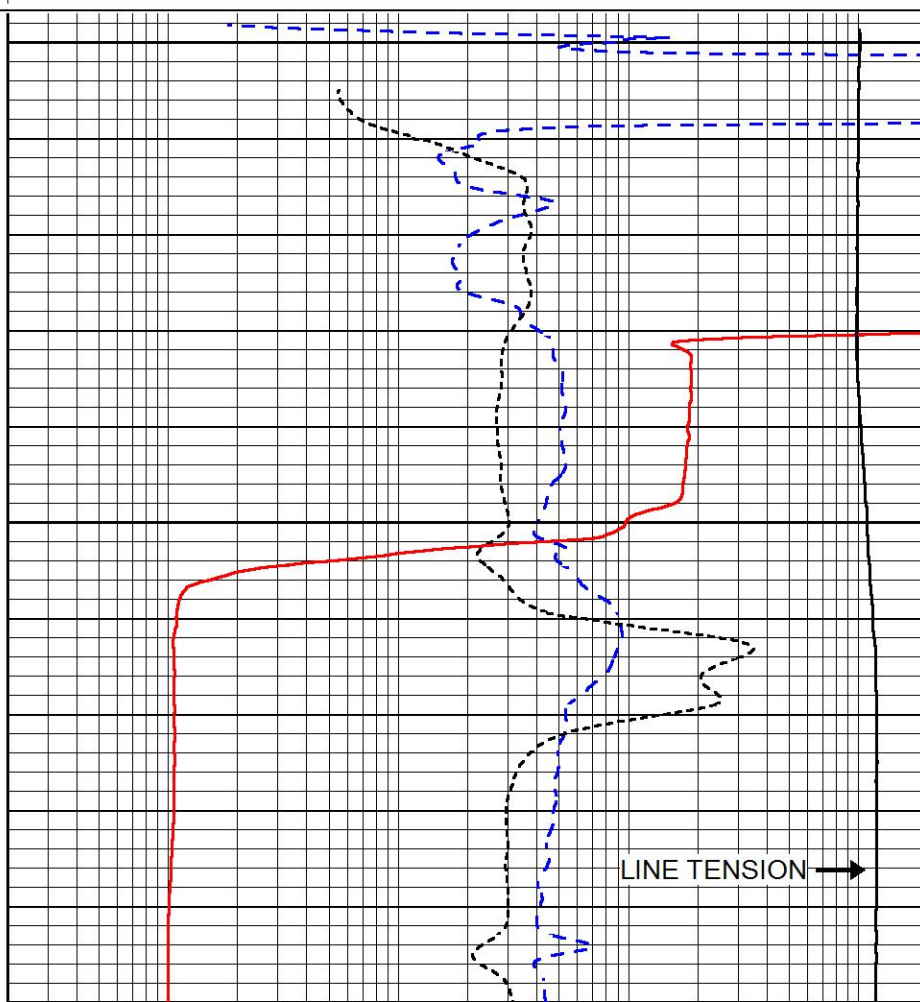
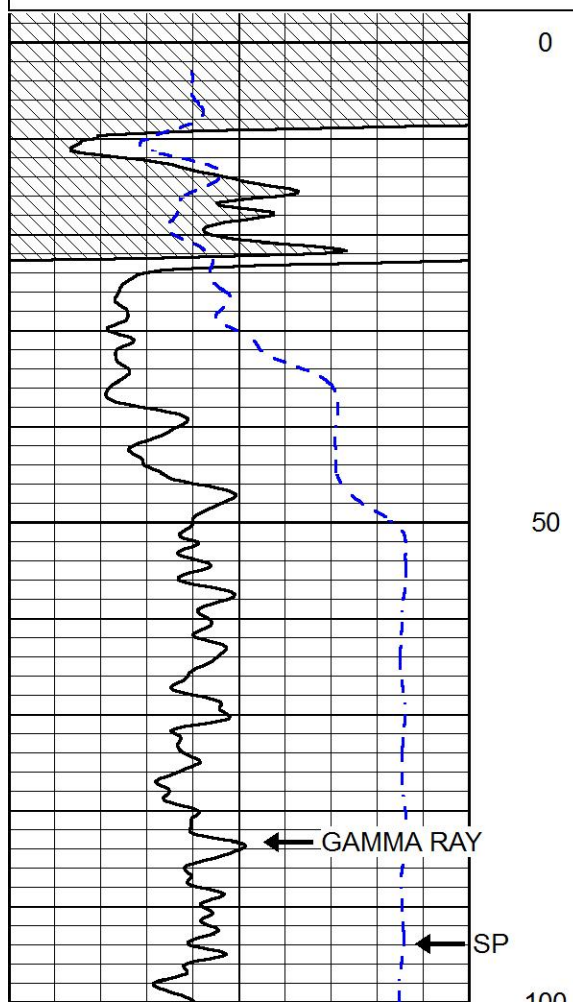
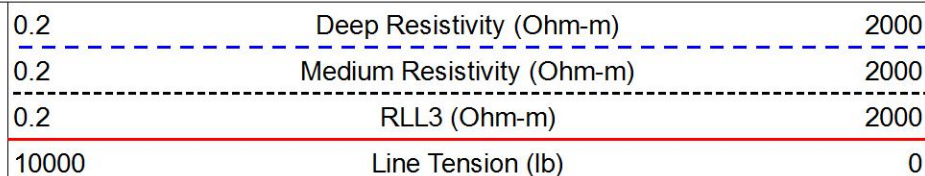
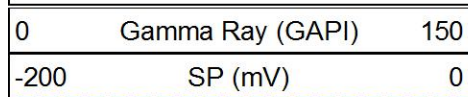


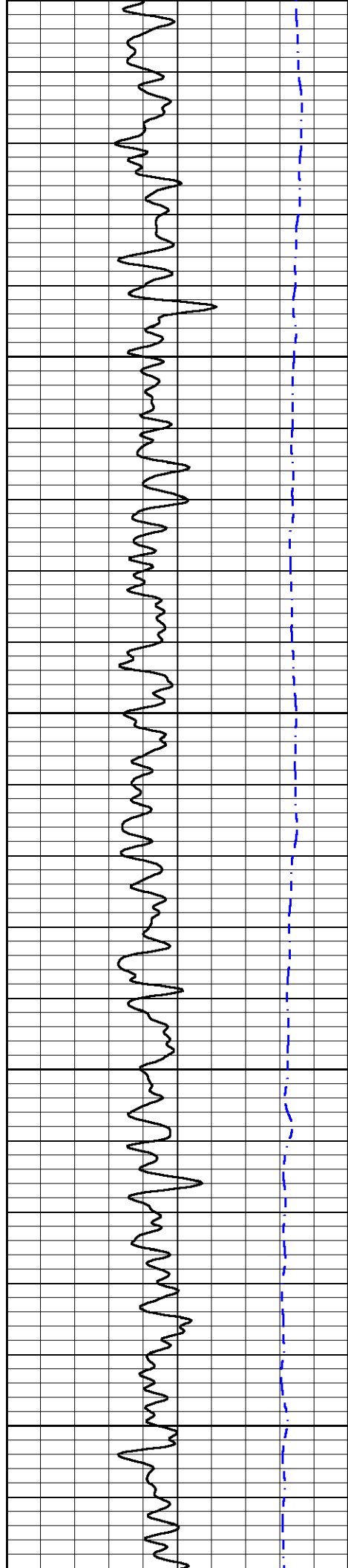




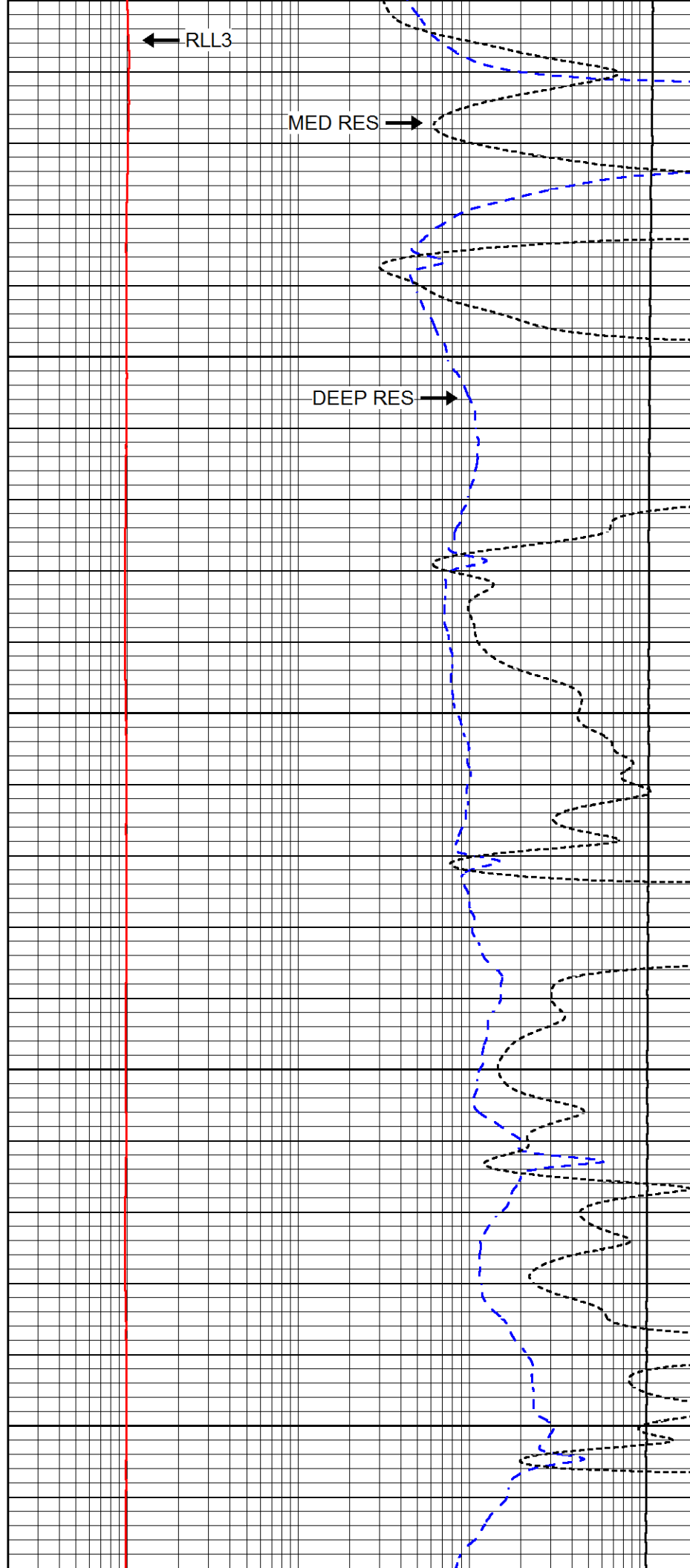
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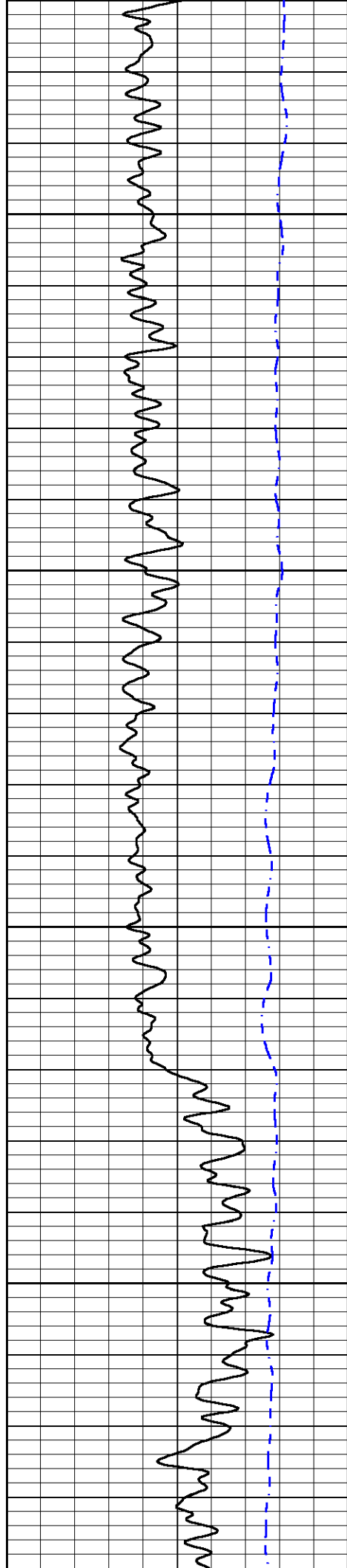
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 Dataset Pathname STKML/pass6.1
 Presentation Format dil
 Dataset Creation Sat Sep 02 01:41:11 2017
 Charted by Depth in Feet scaled 1:240





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250
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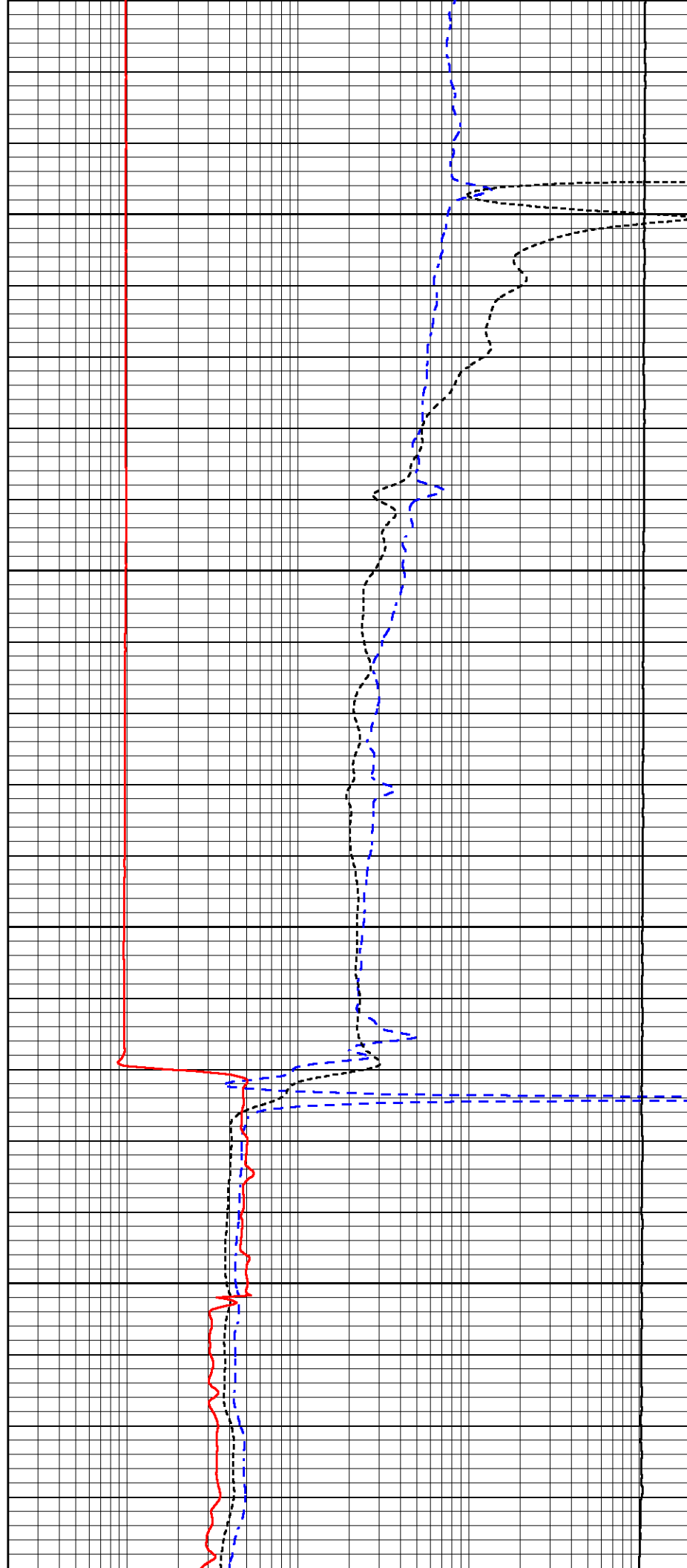


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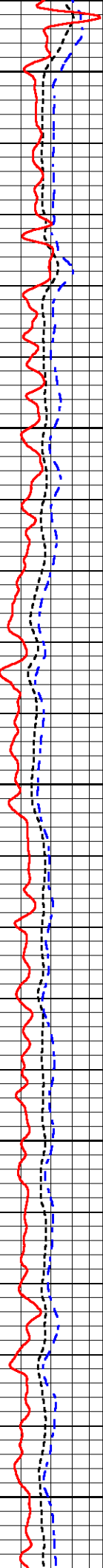
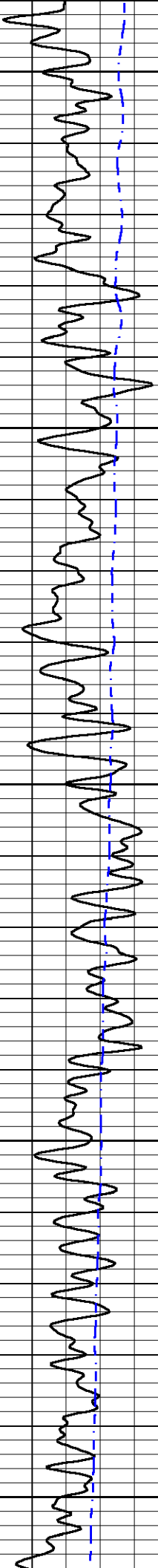
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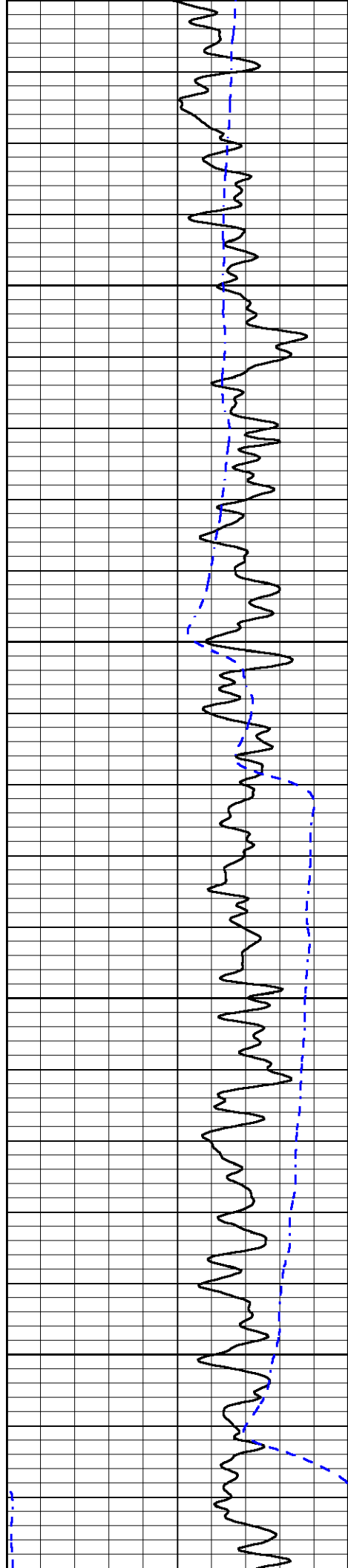
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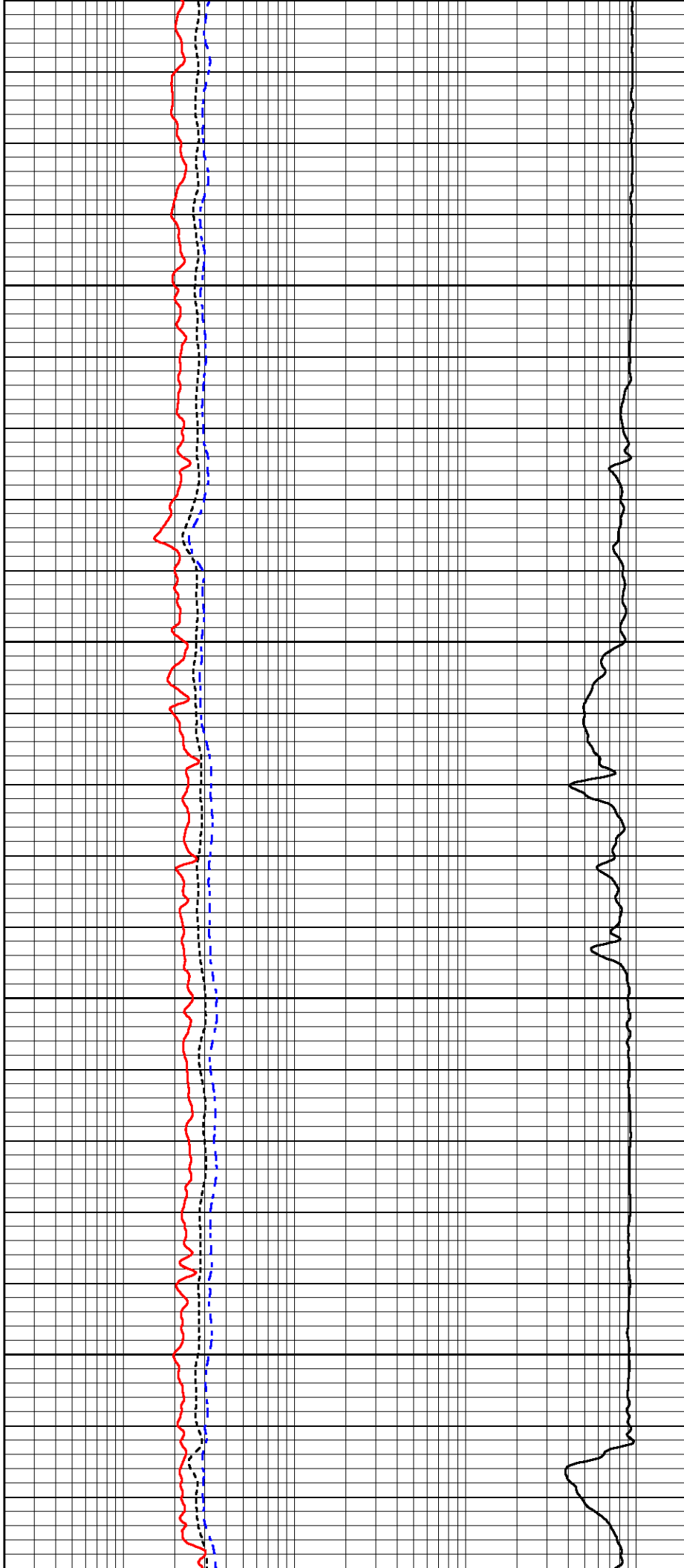


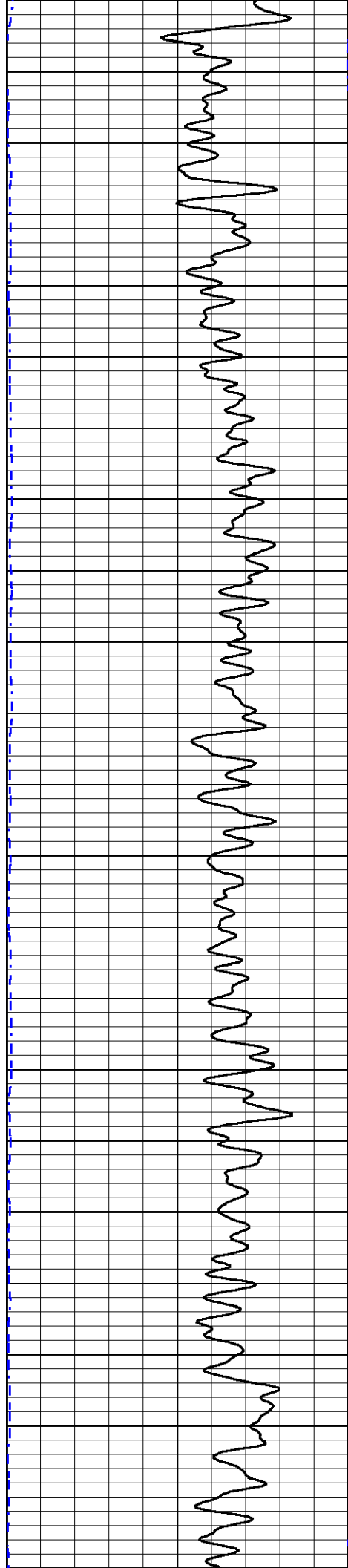
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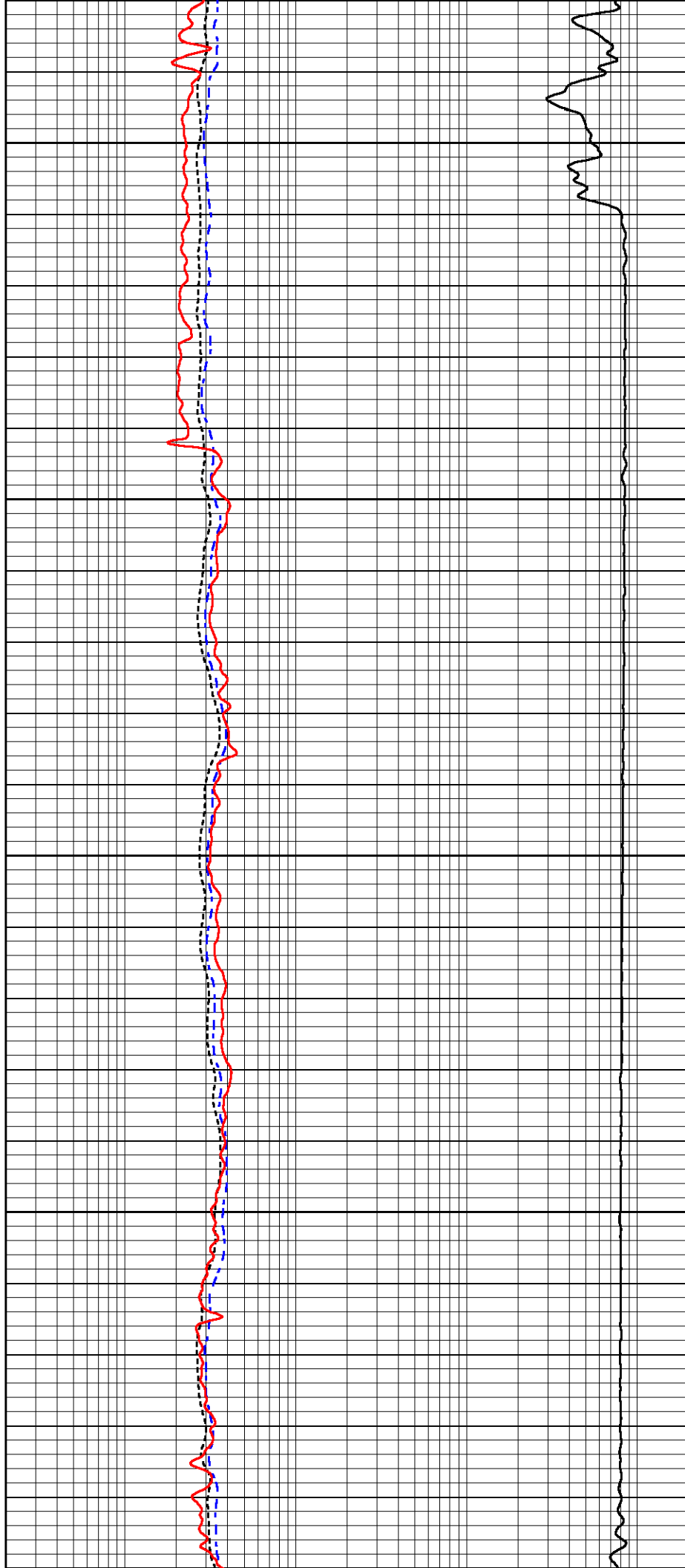
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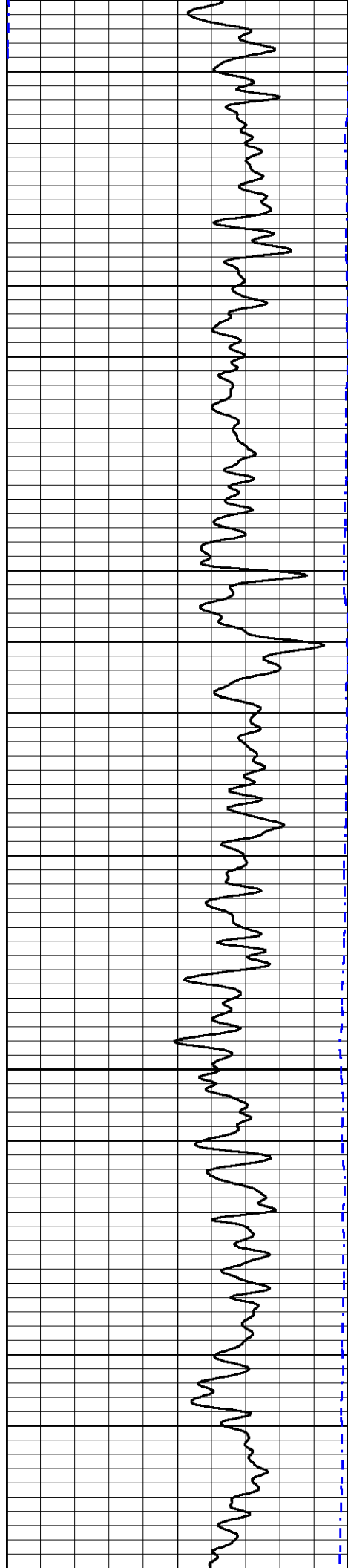
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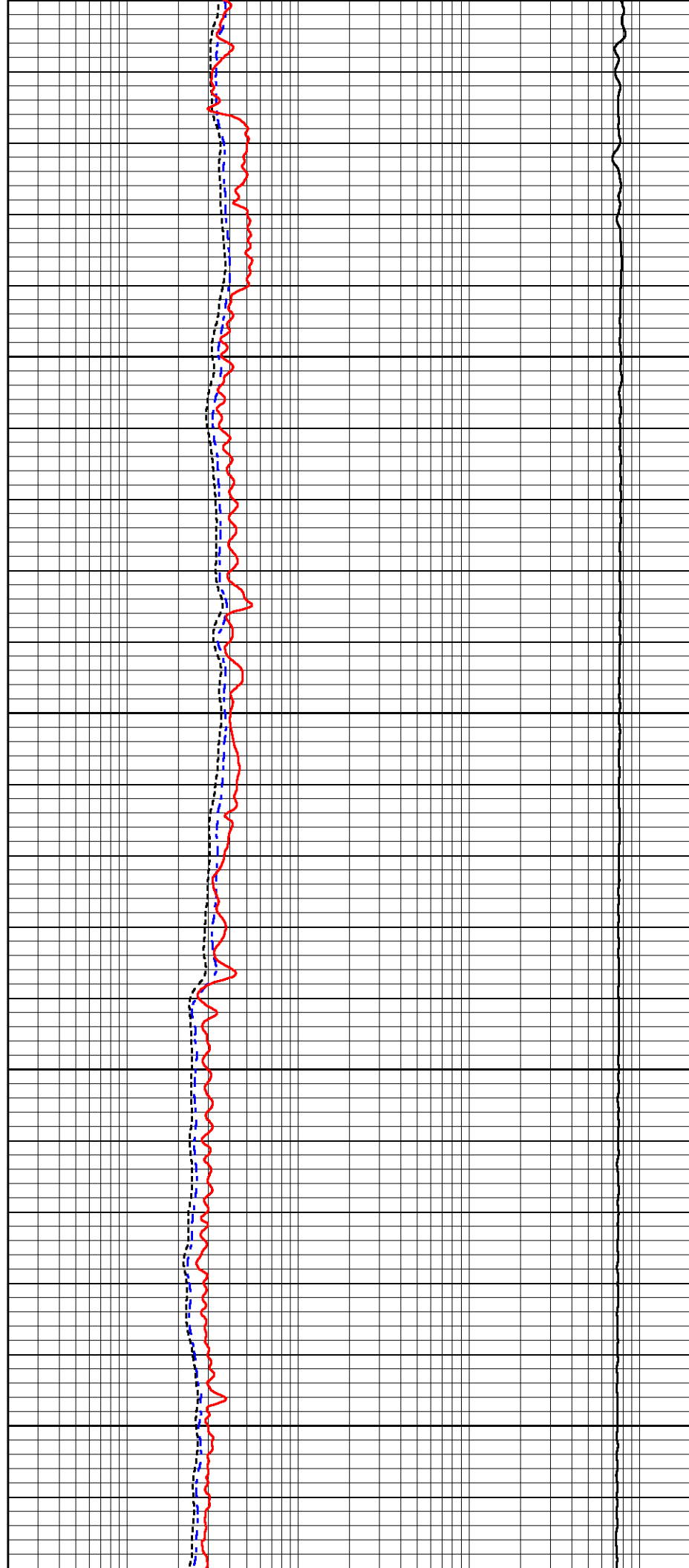
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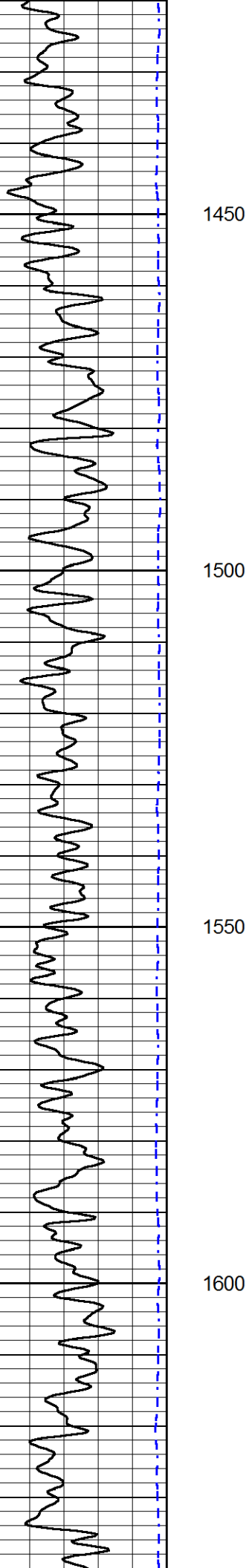
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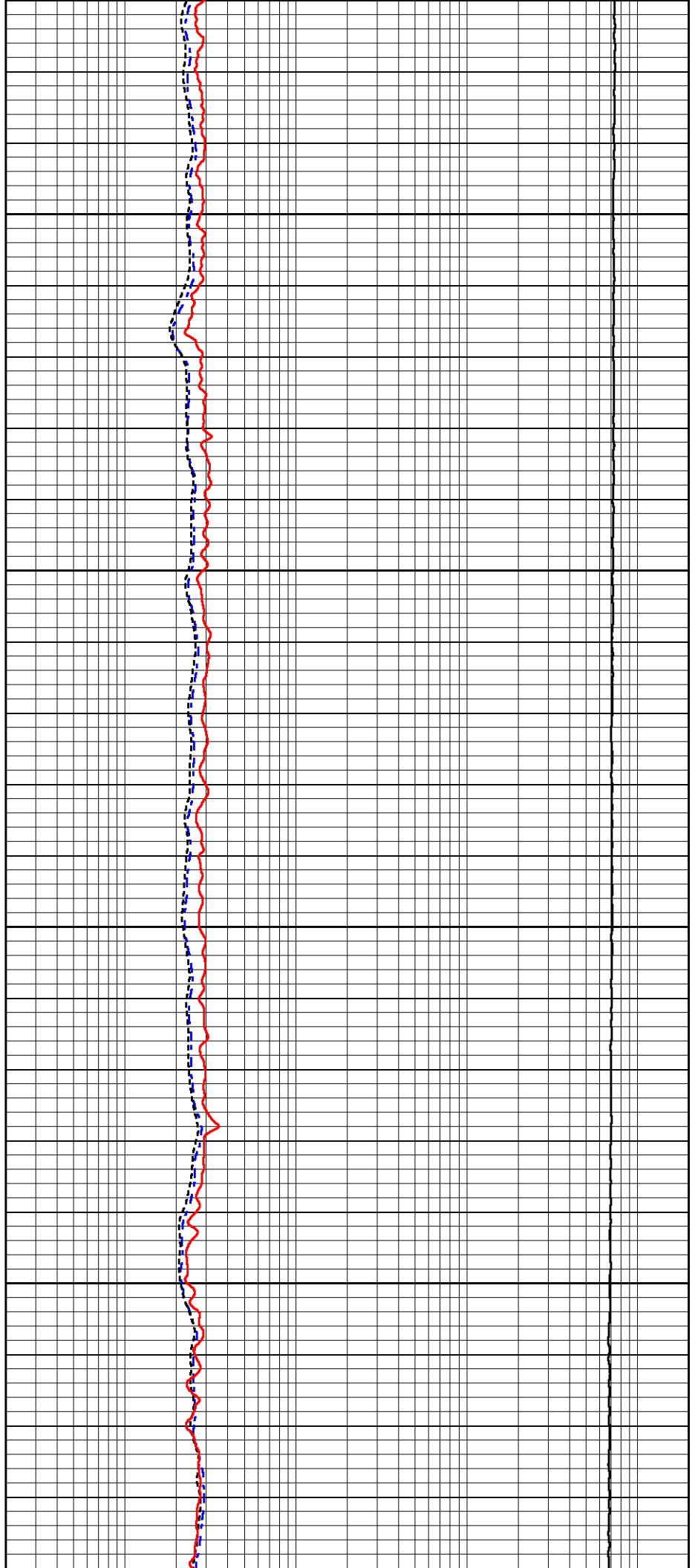


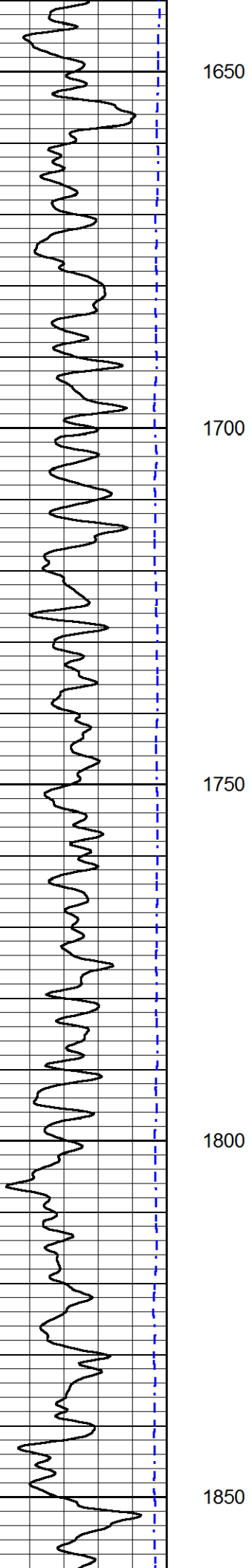
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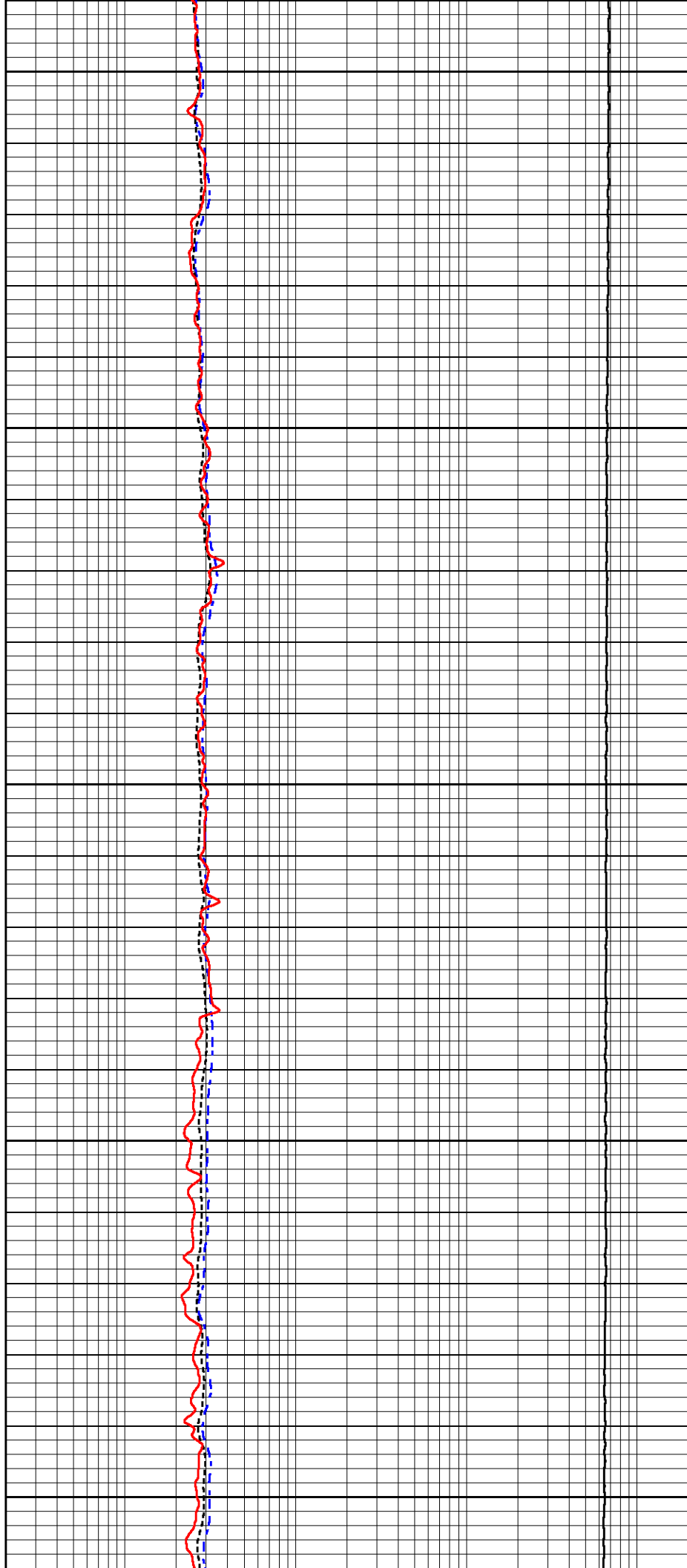
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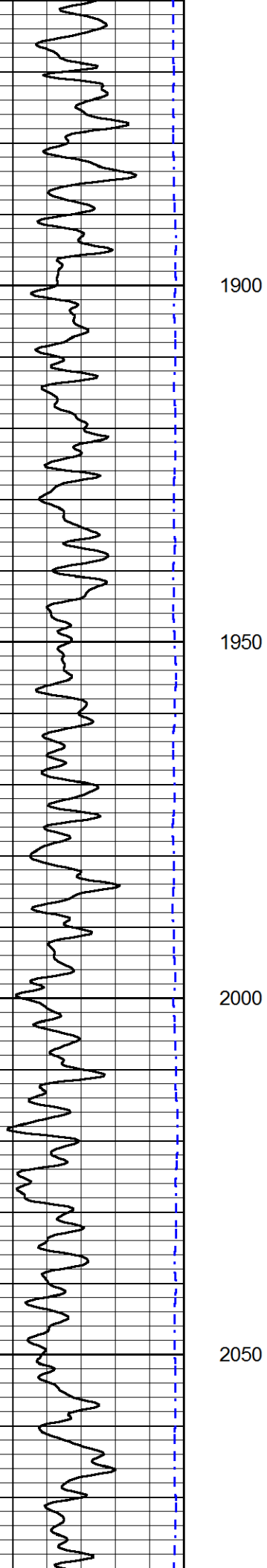
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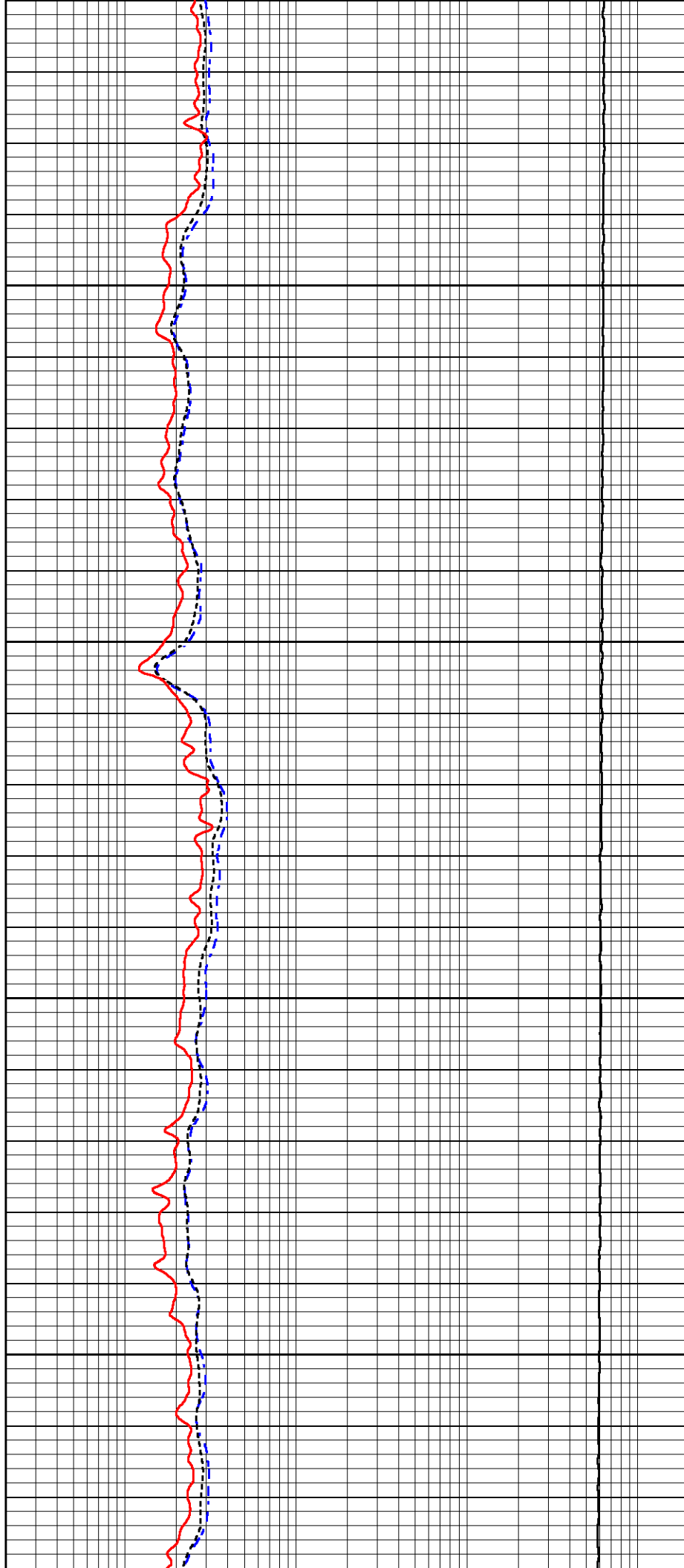


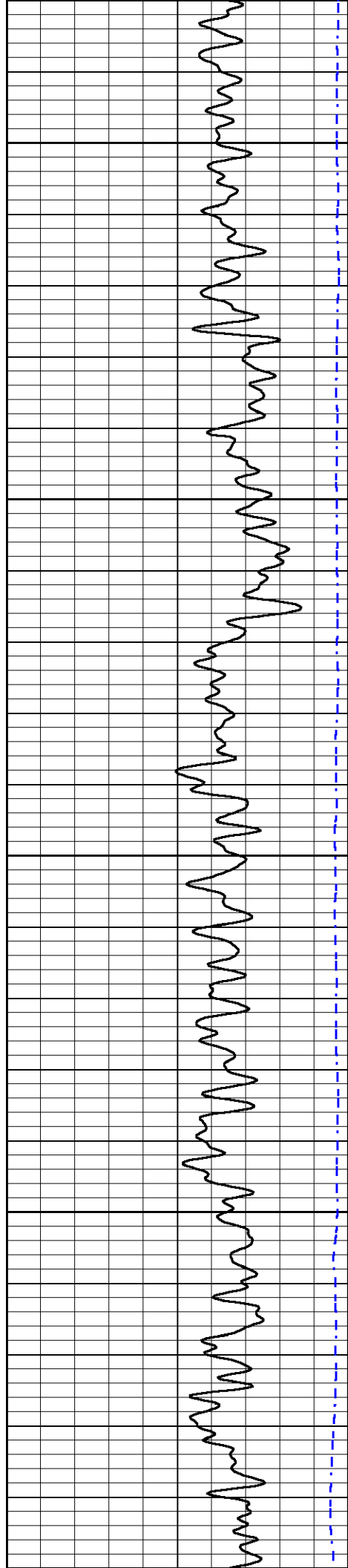
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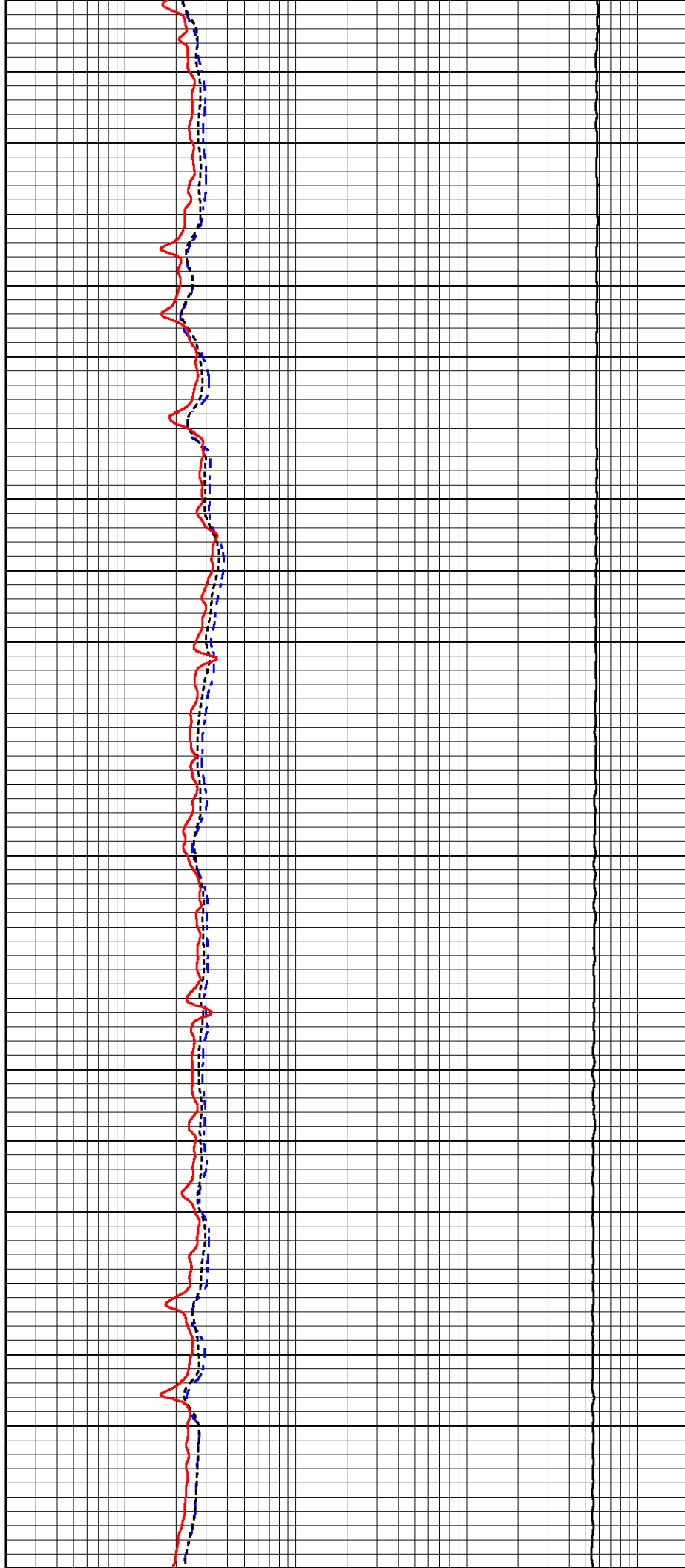
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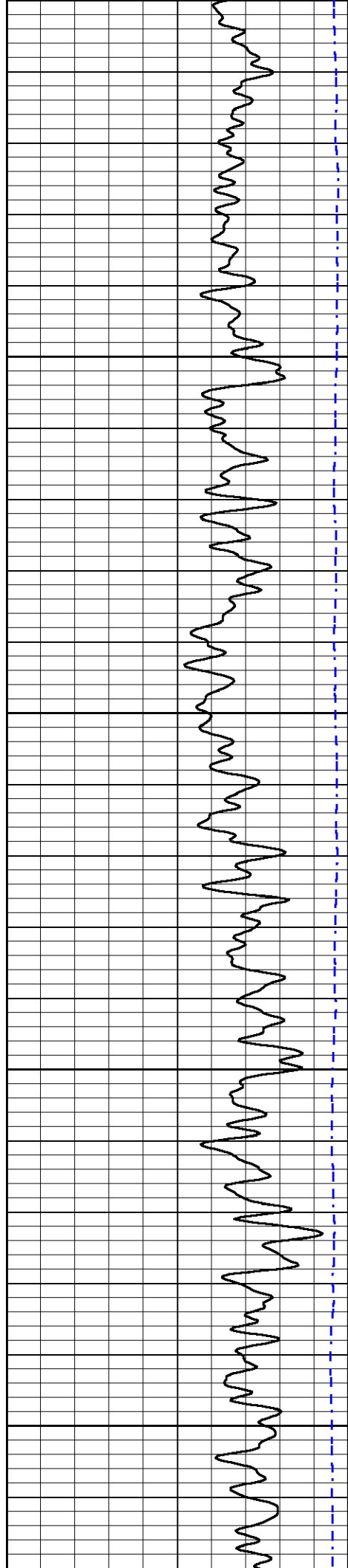
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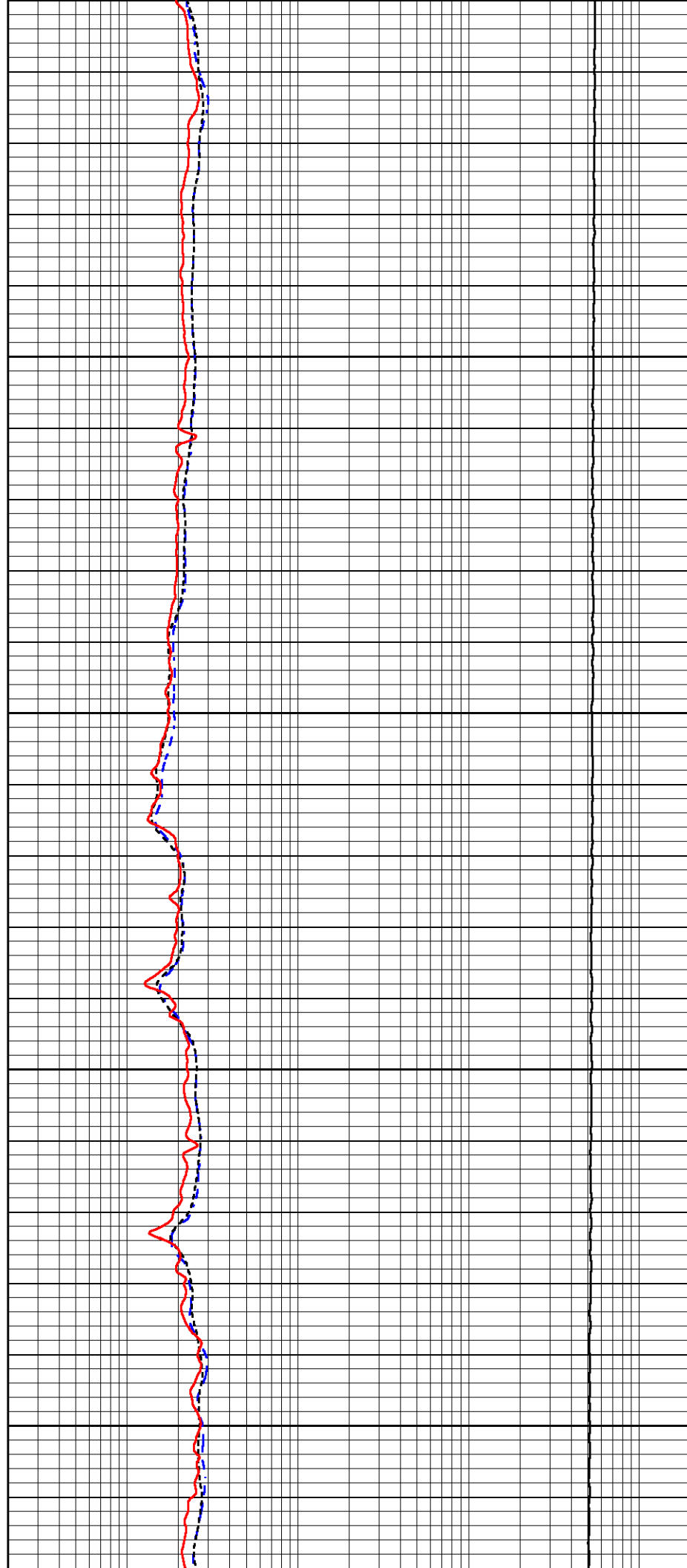
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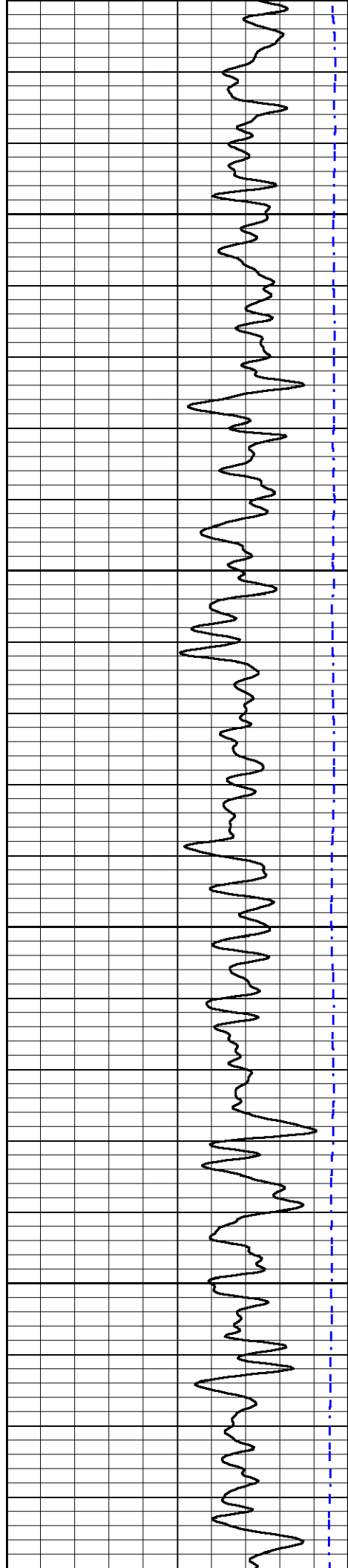
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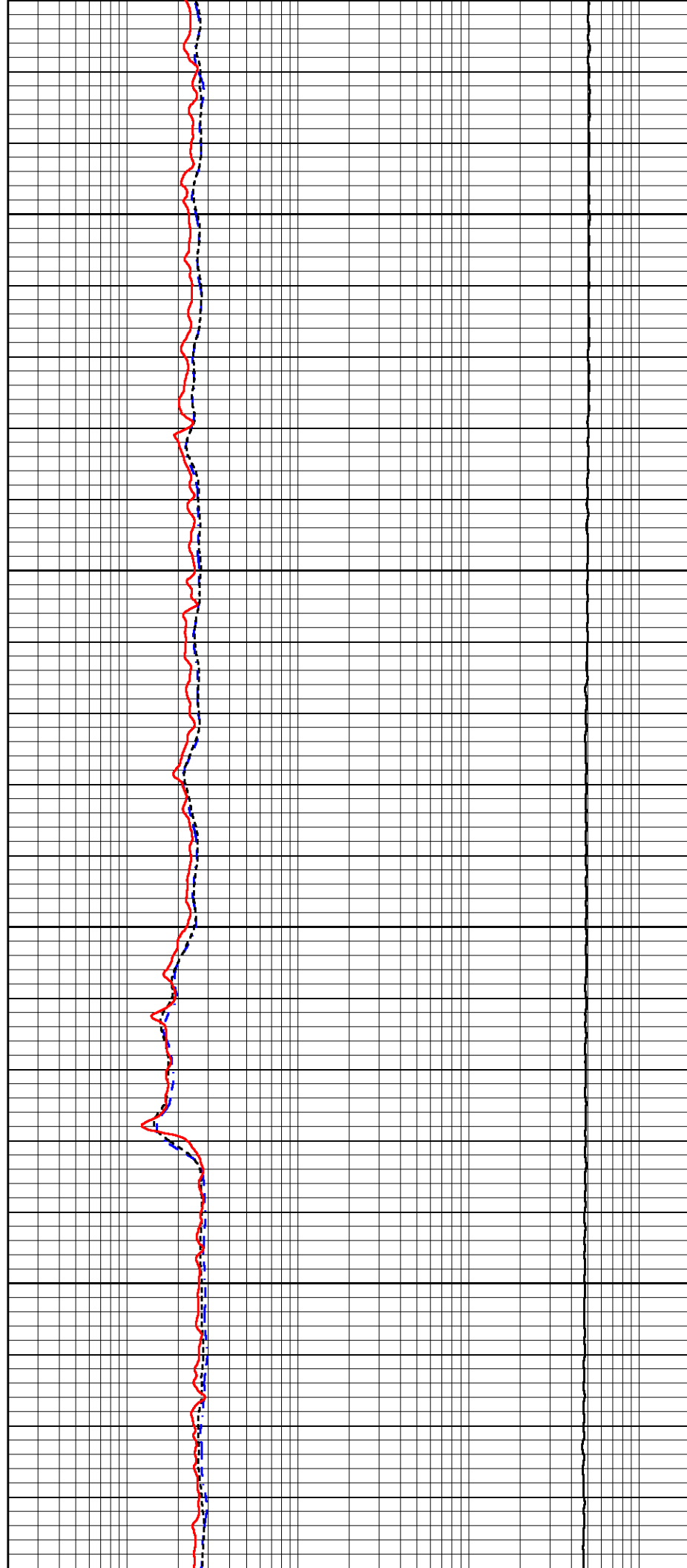


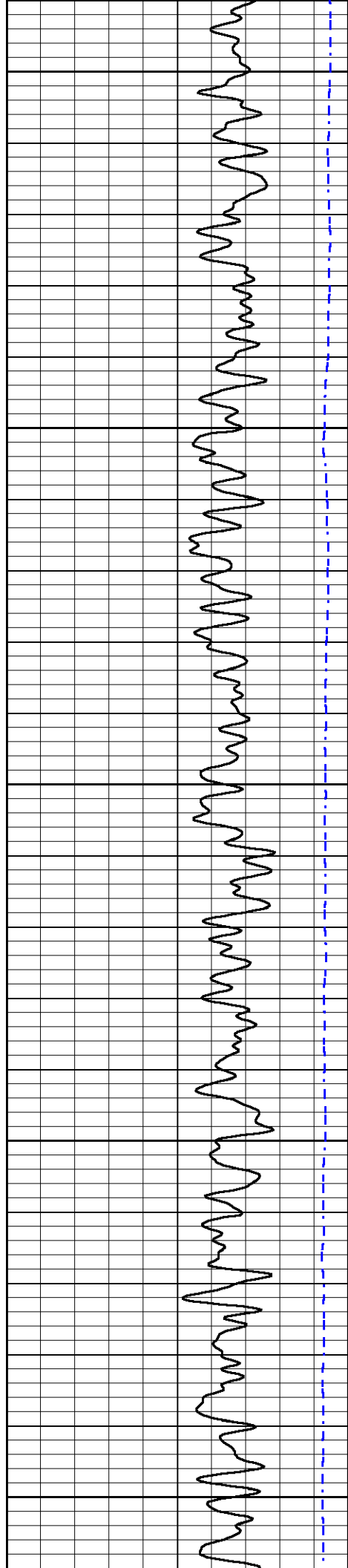
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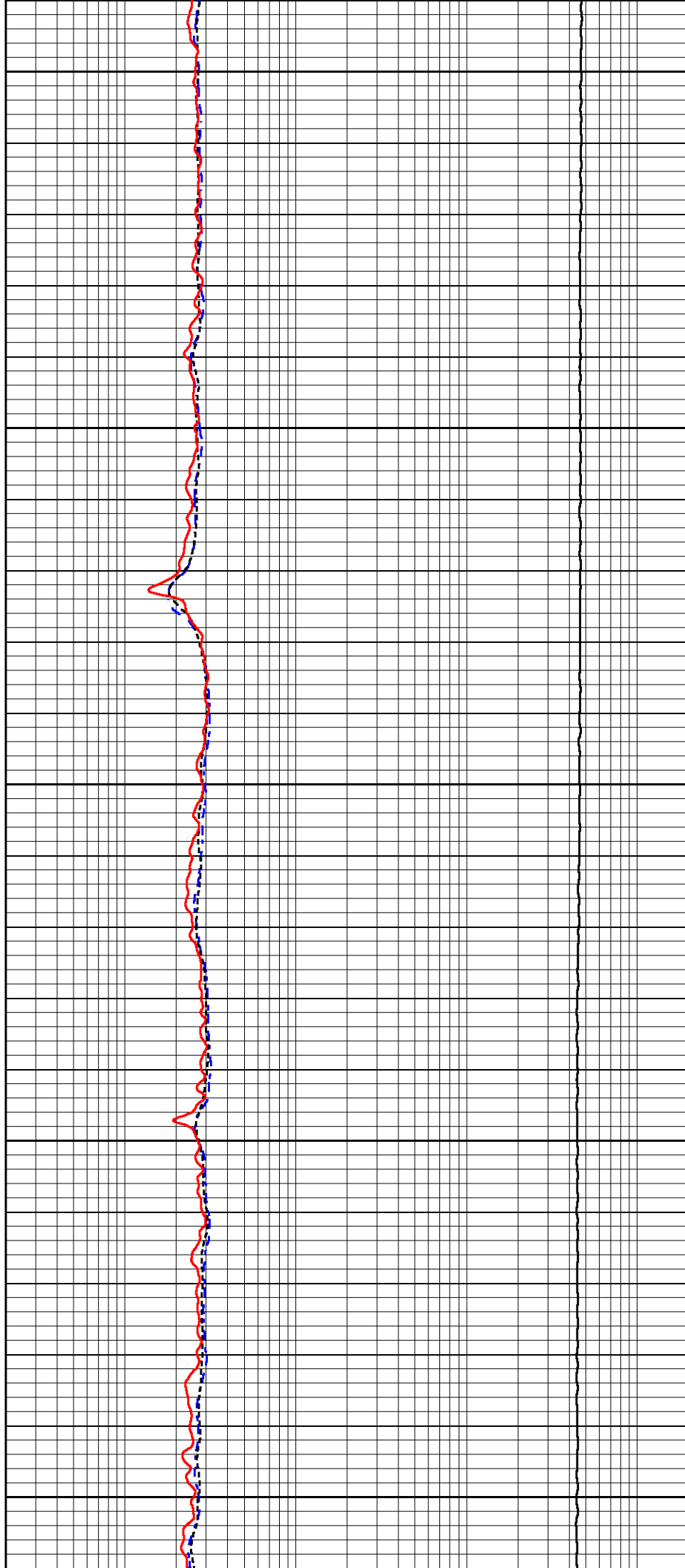
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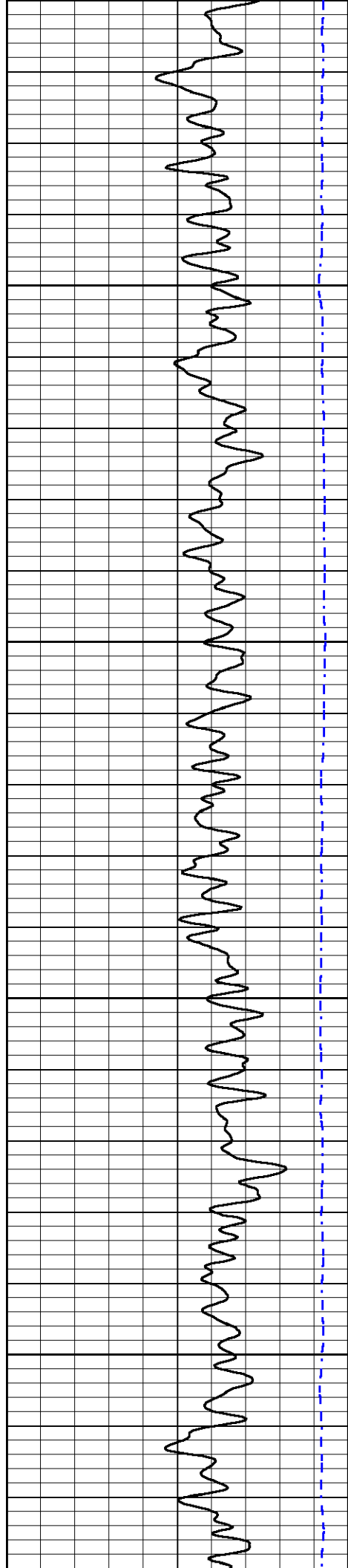
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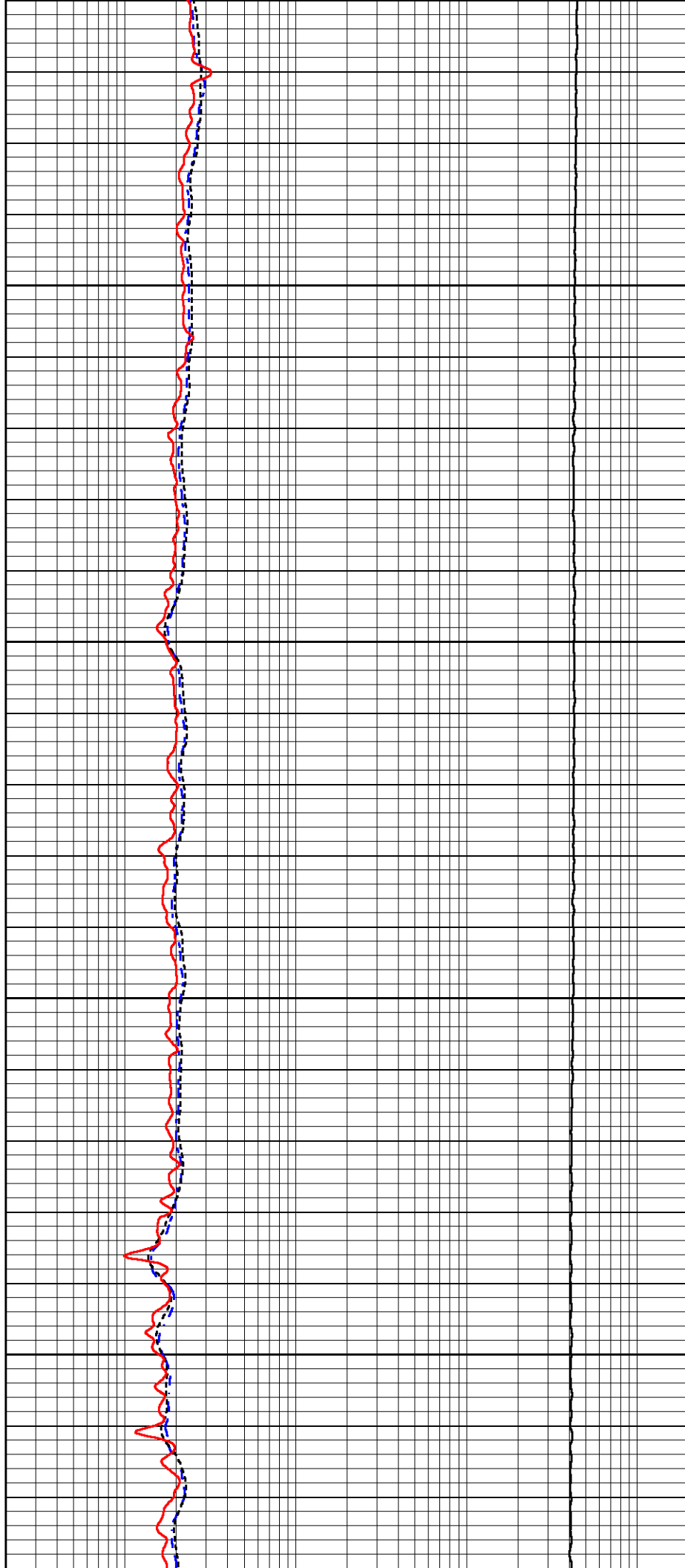


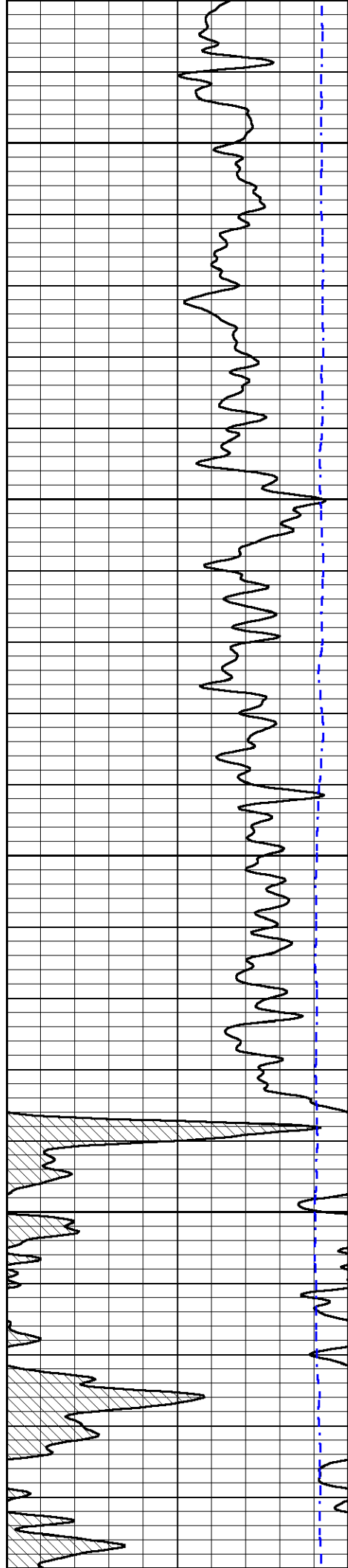
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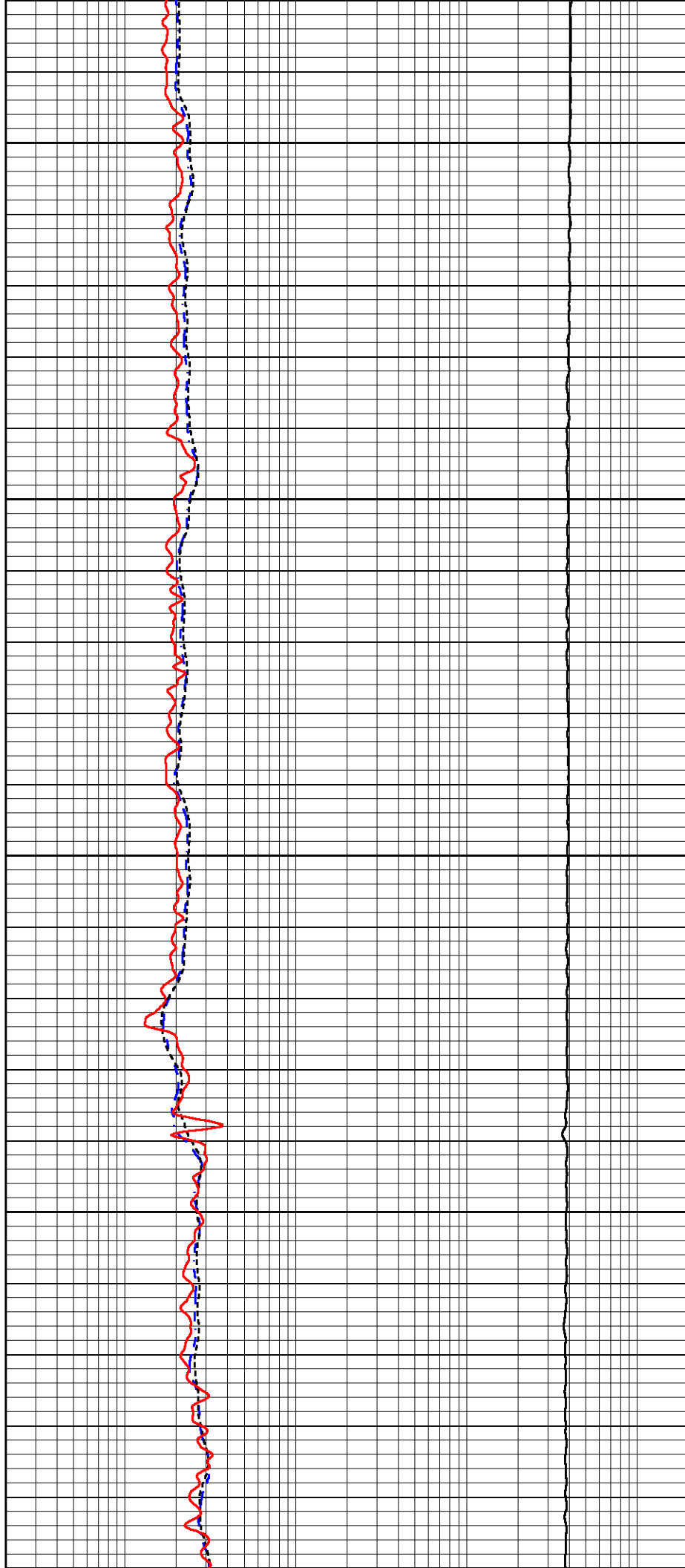
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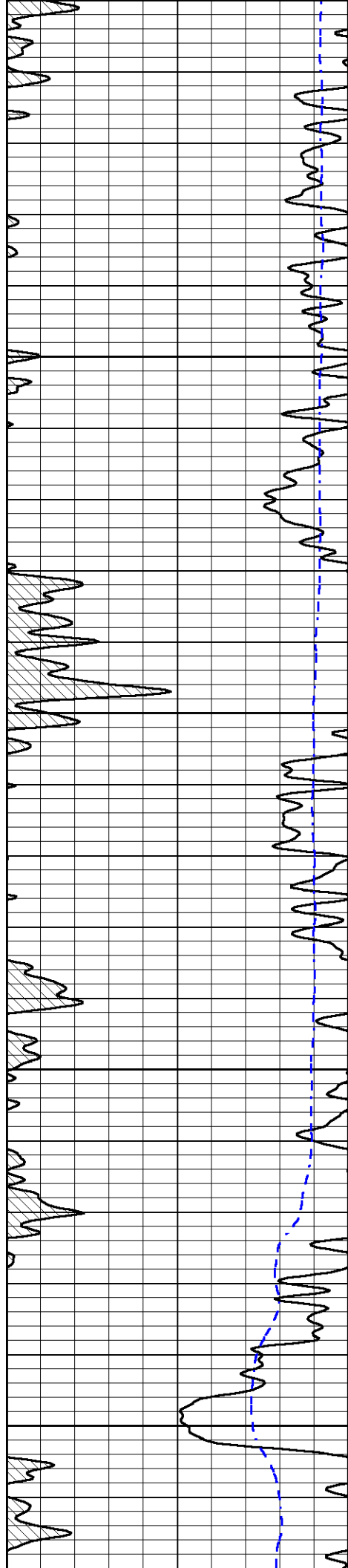
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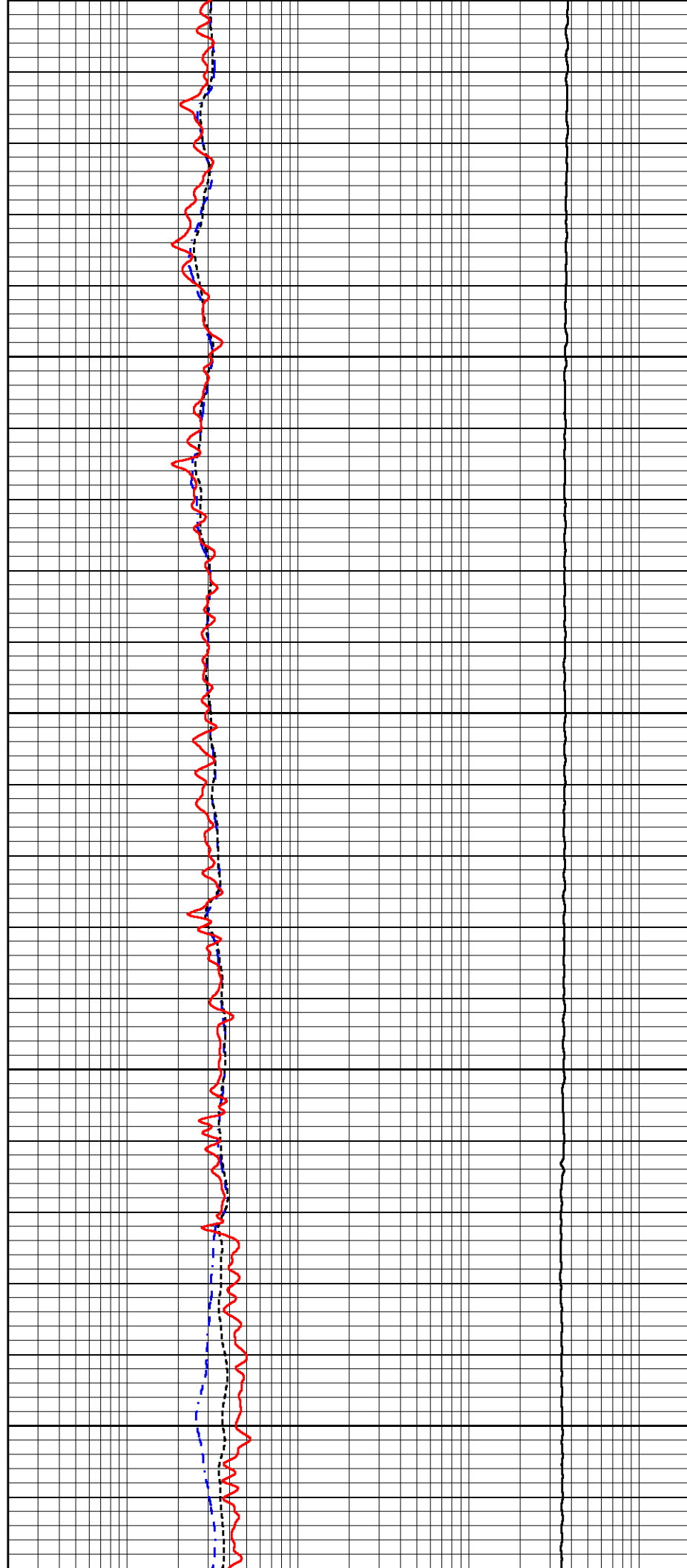
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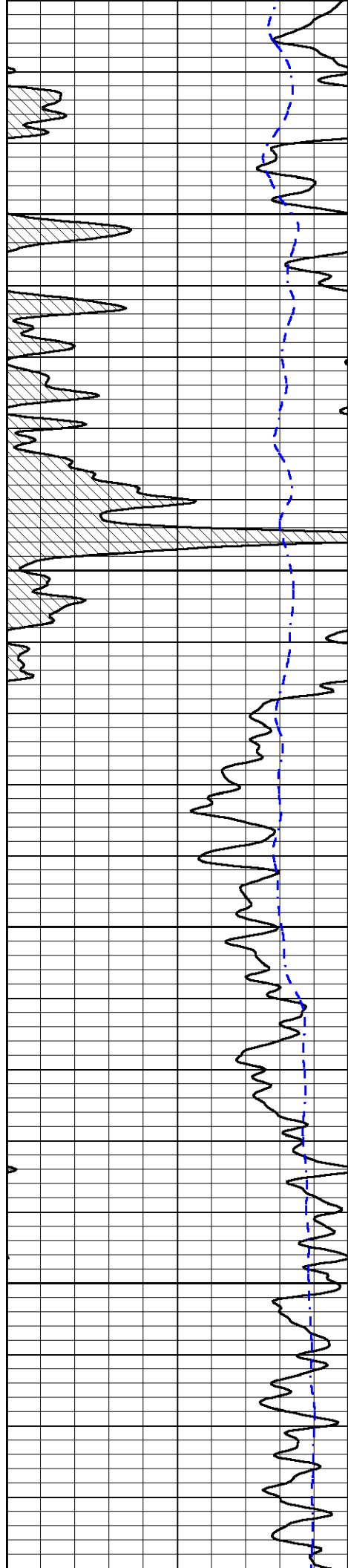
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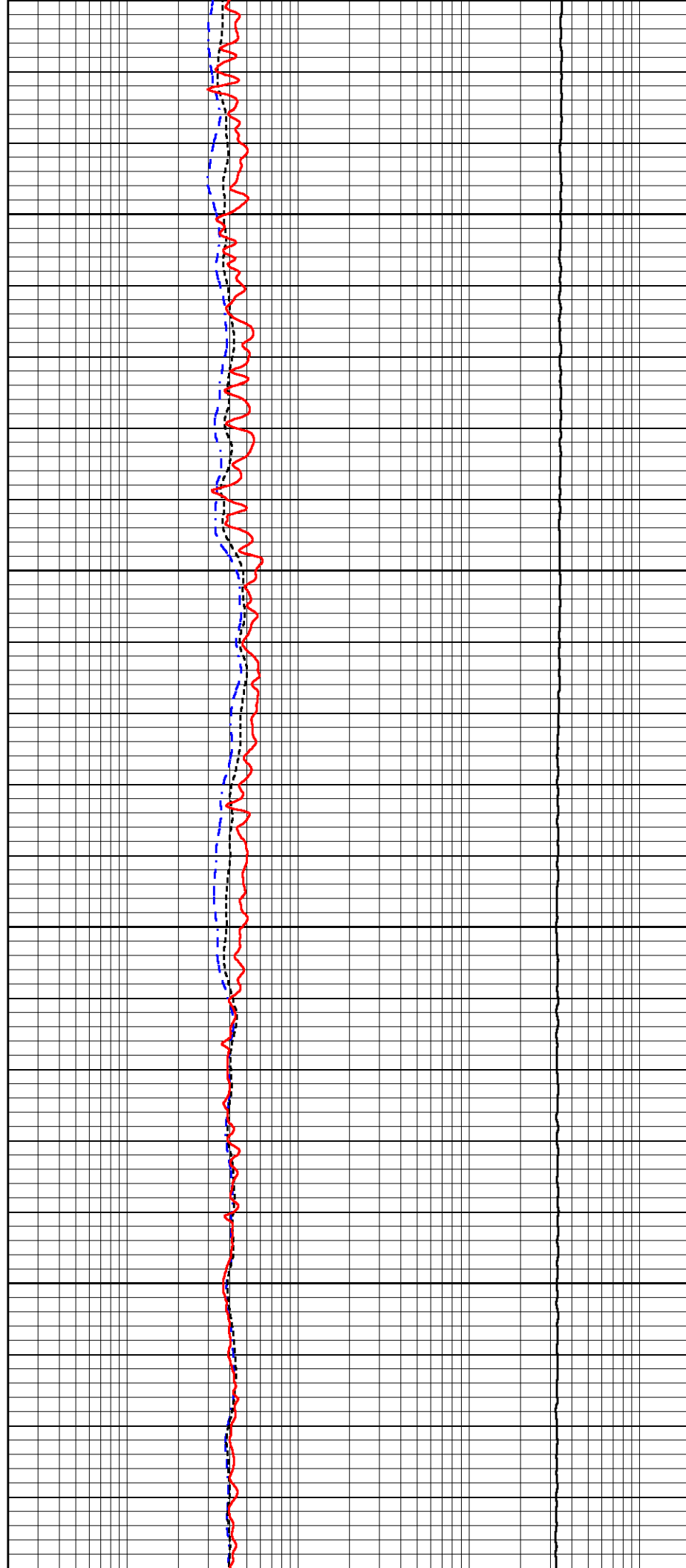


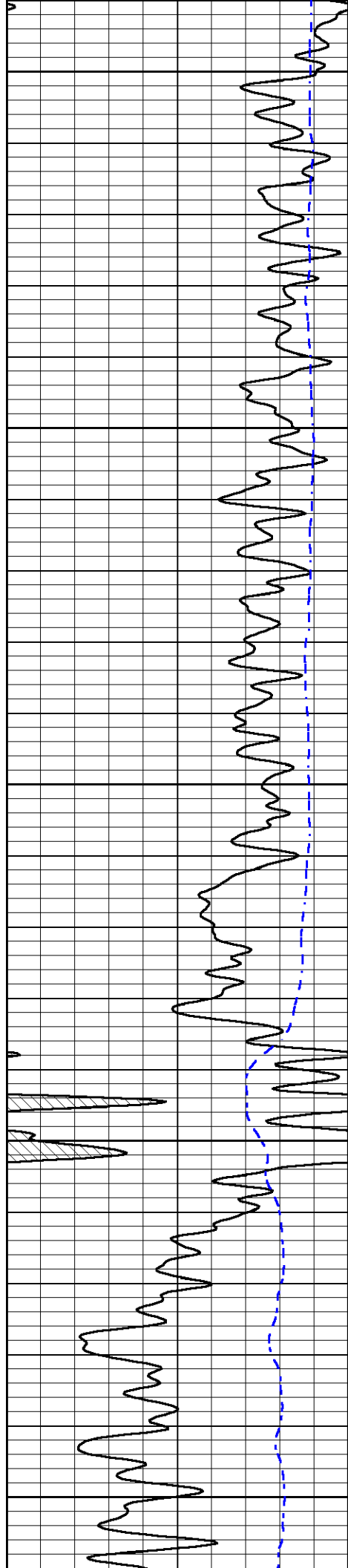
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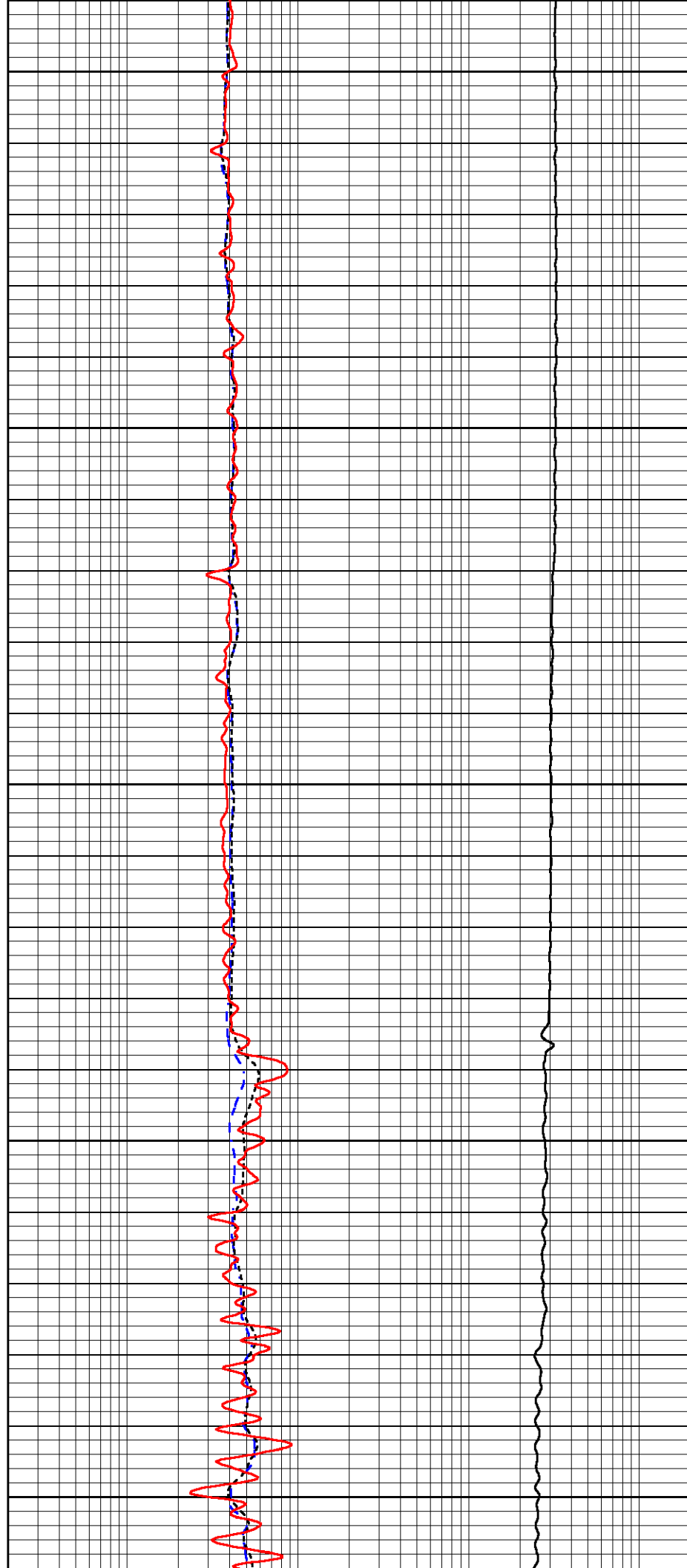
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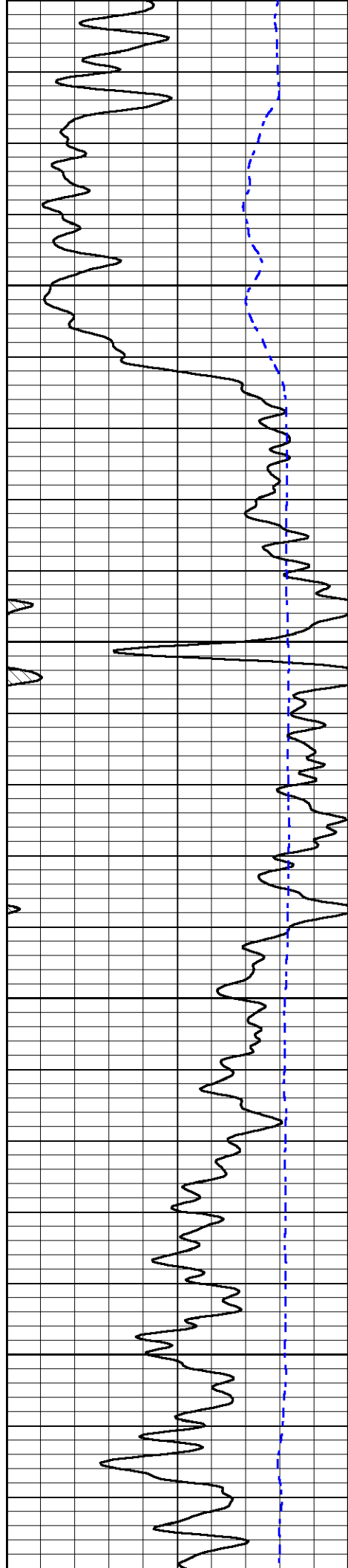
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4050



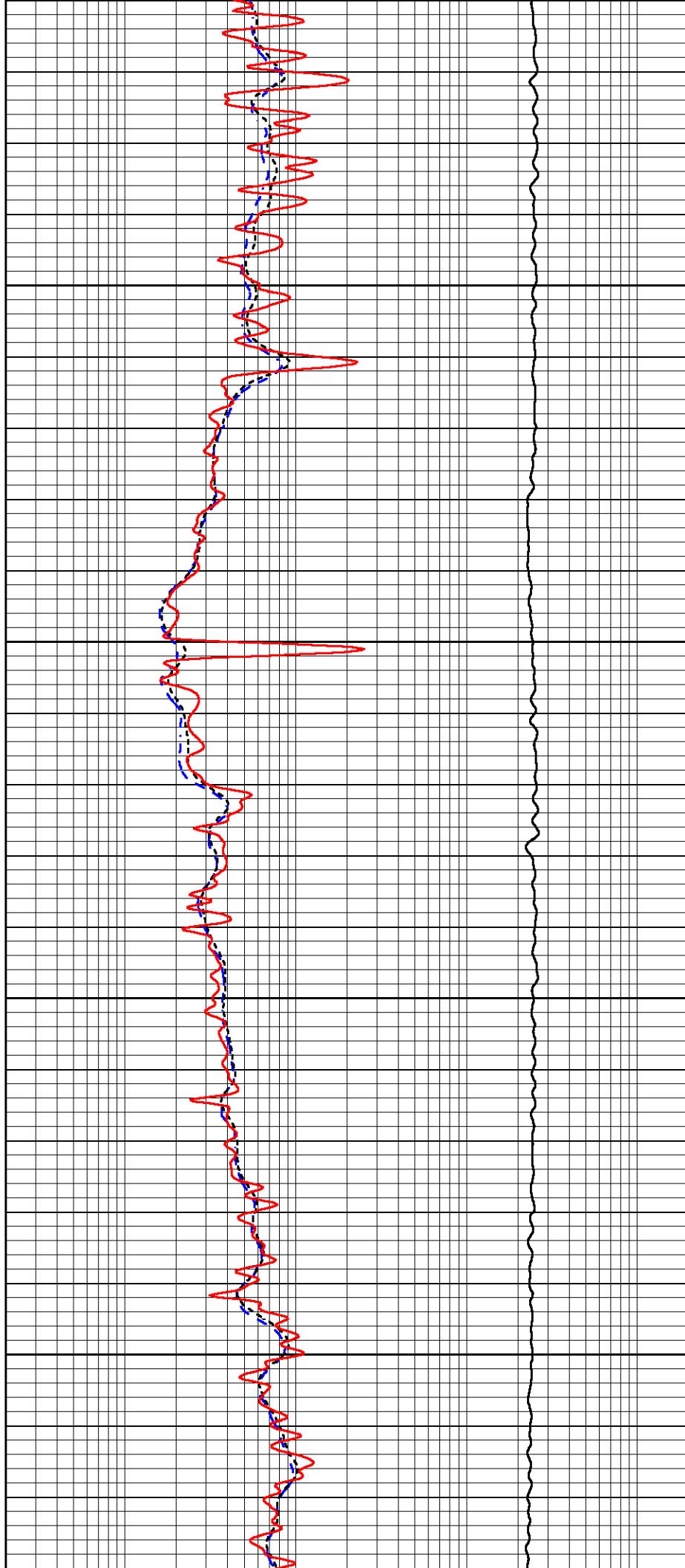


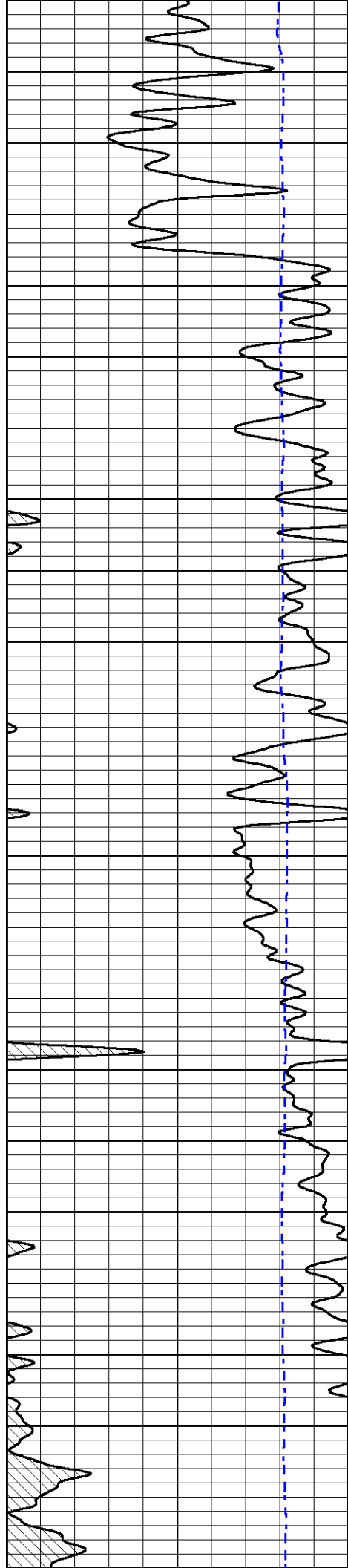
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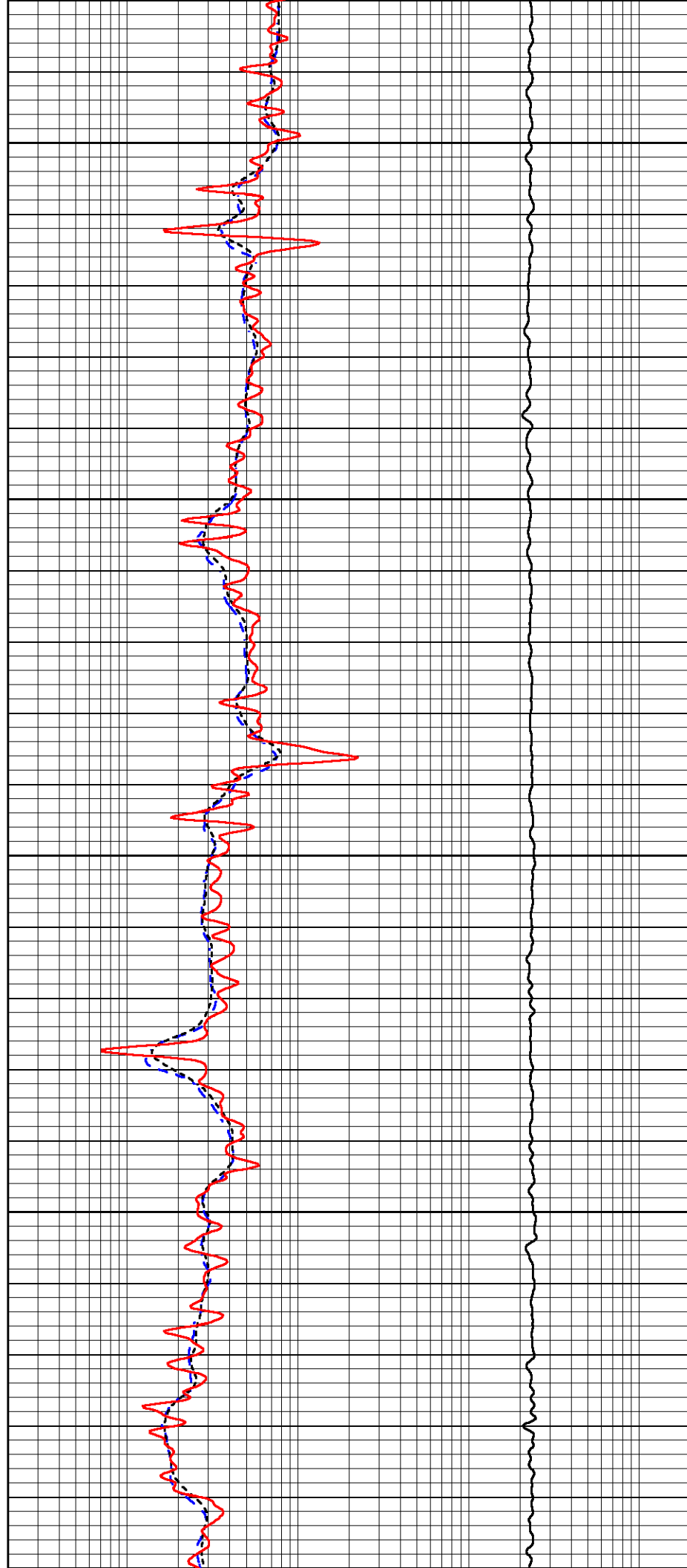
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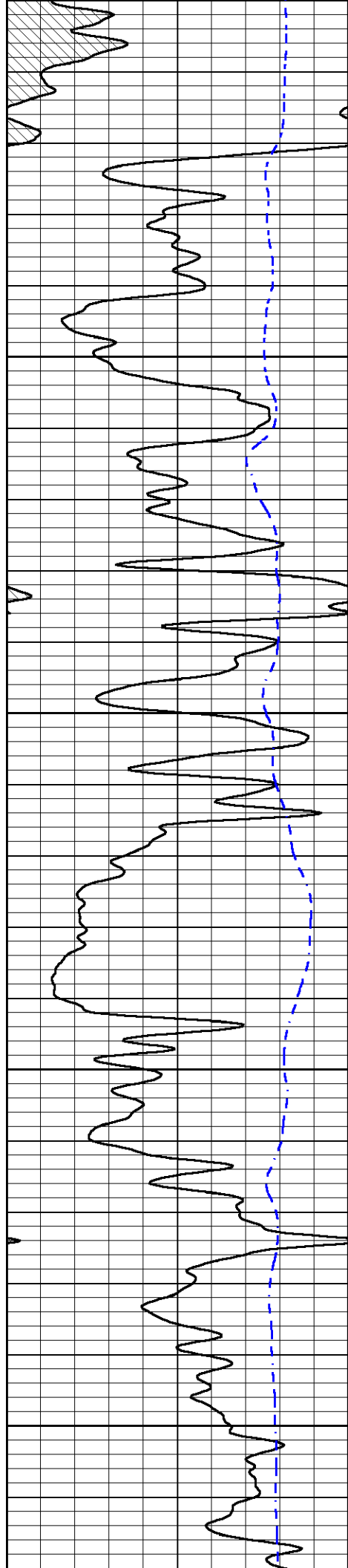
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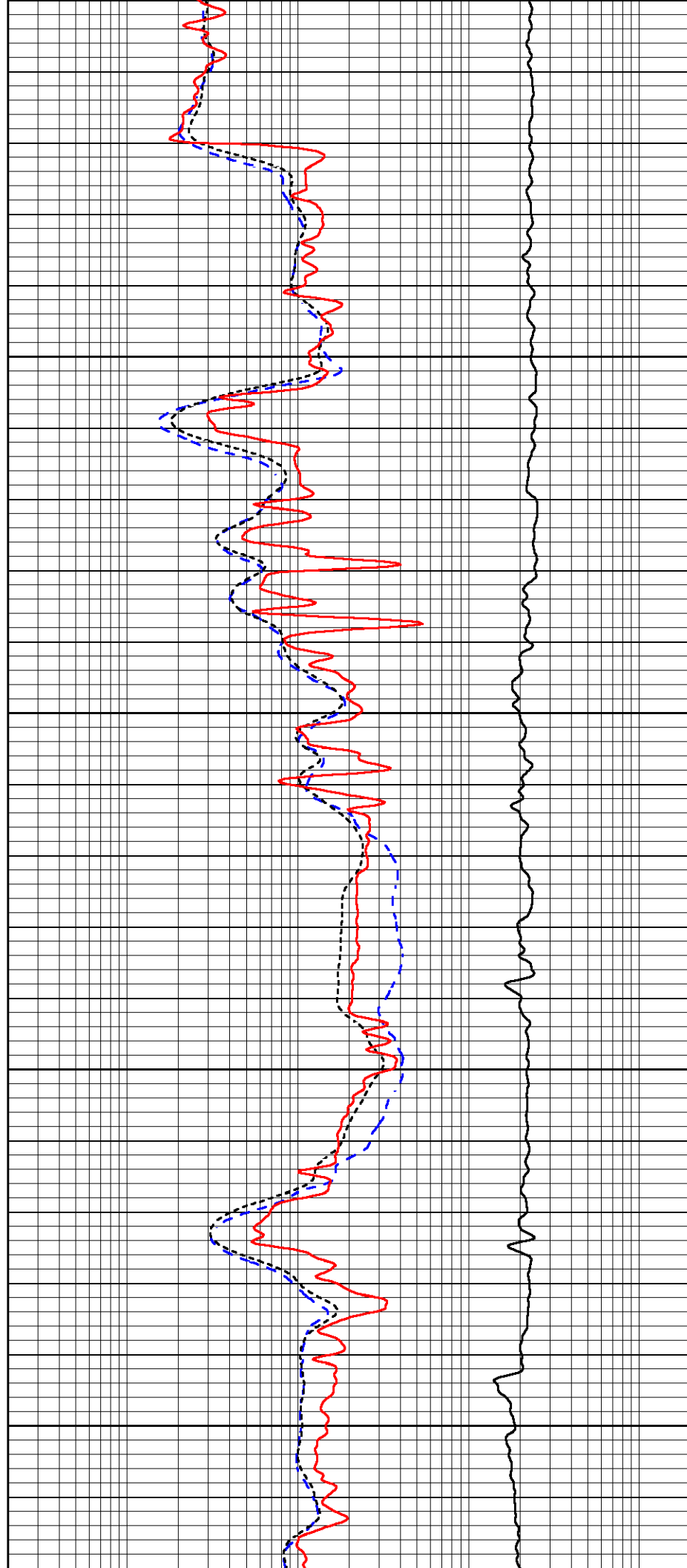
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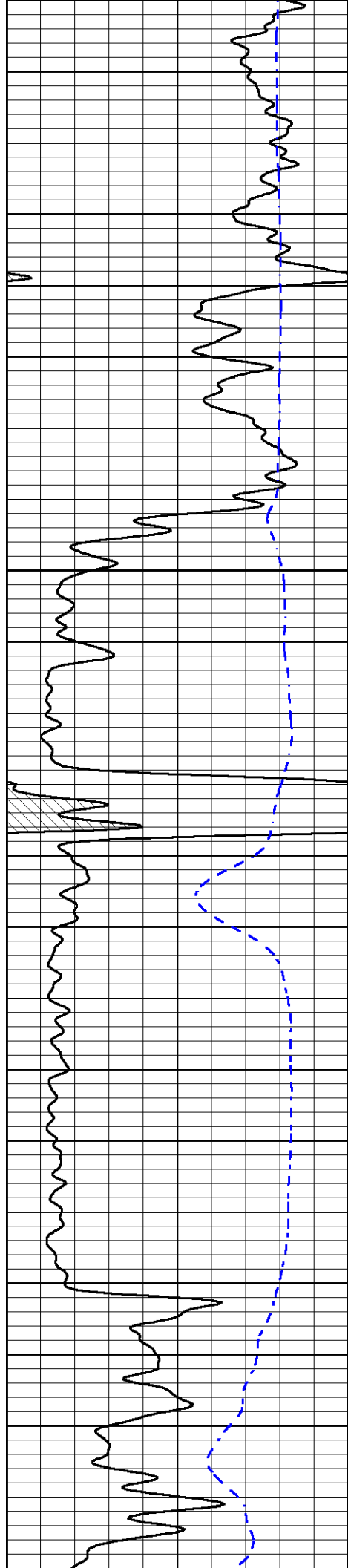
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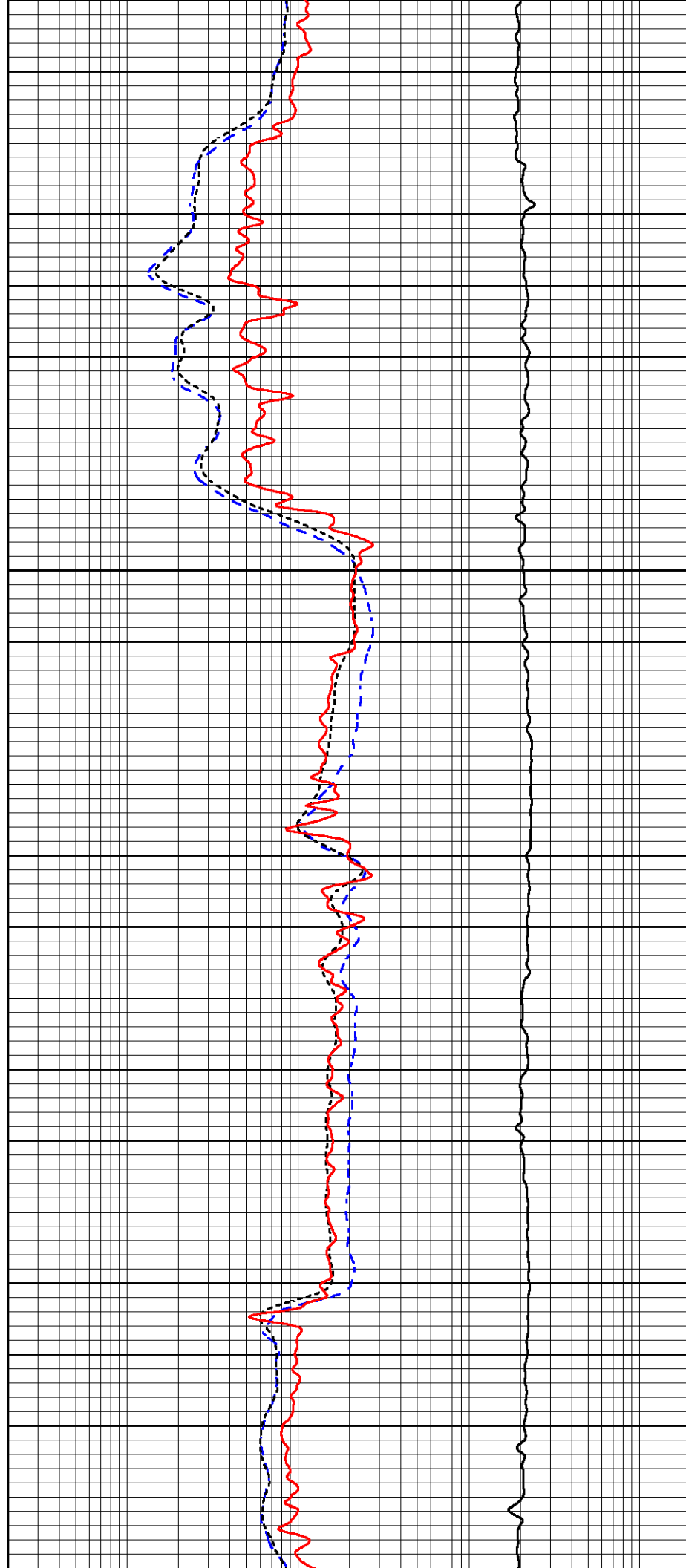


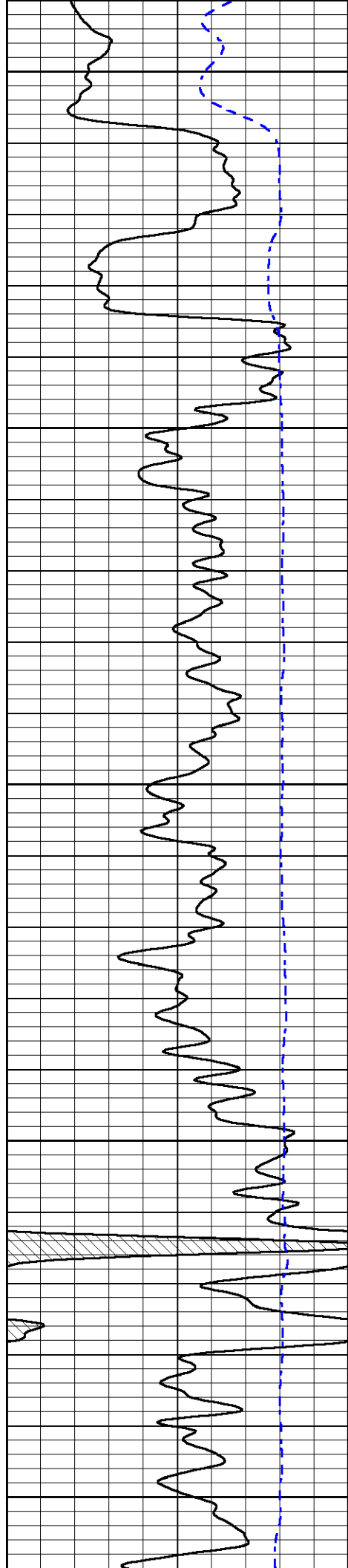
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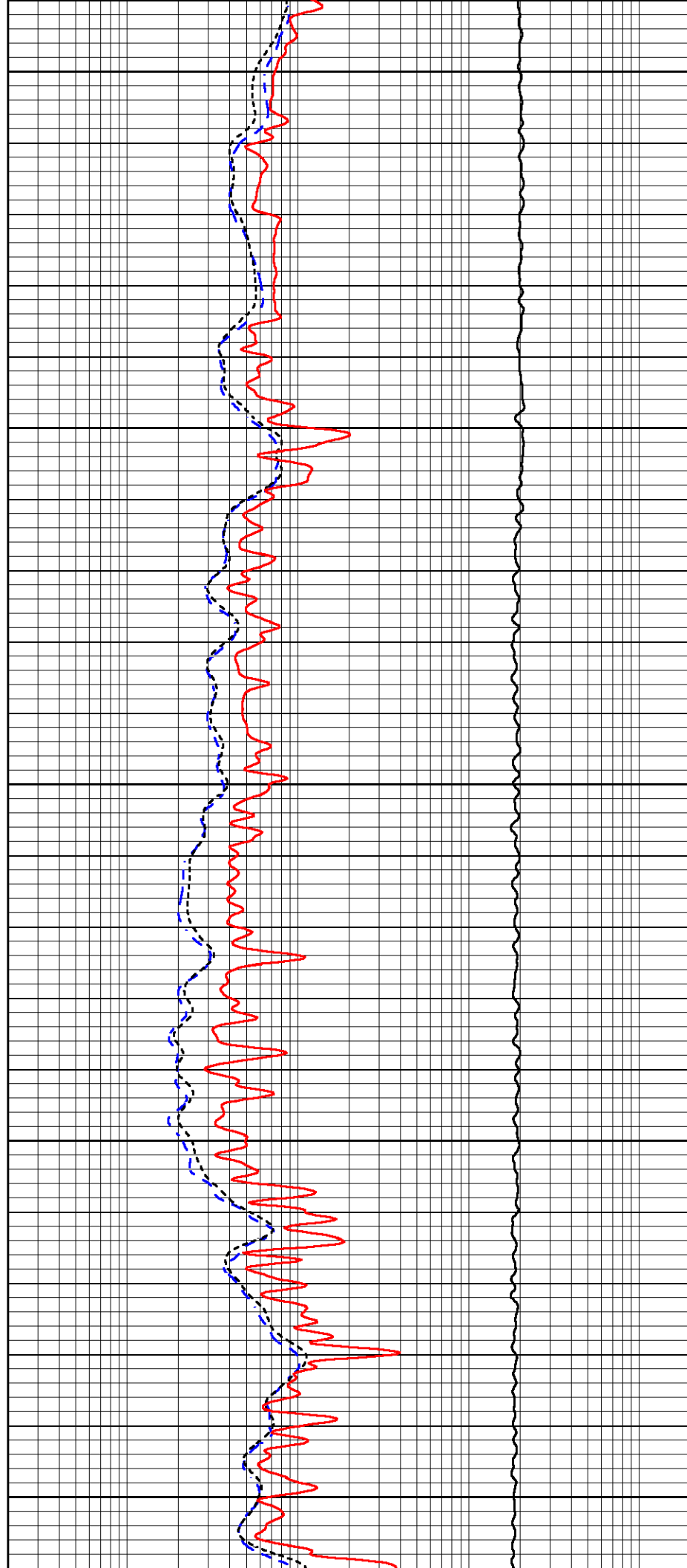
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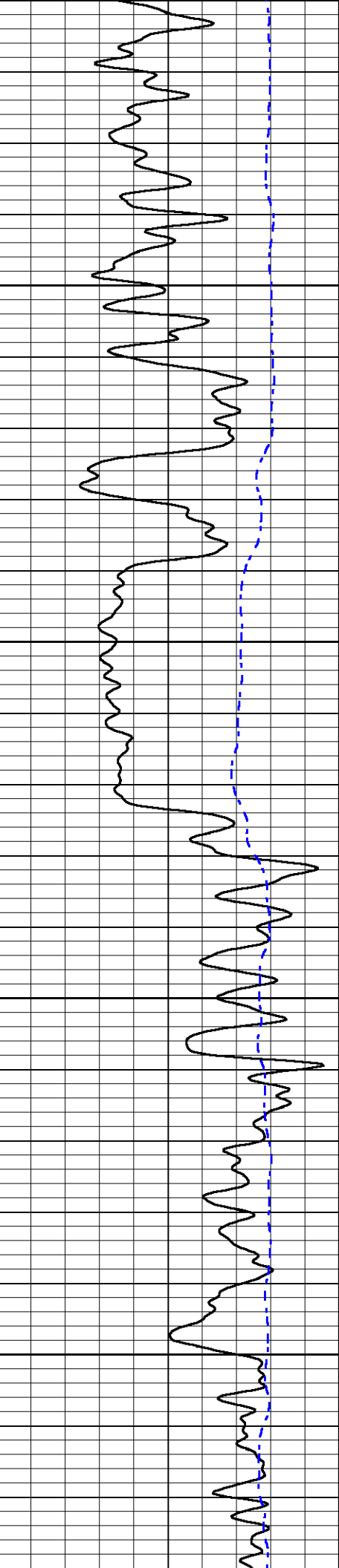
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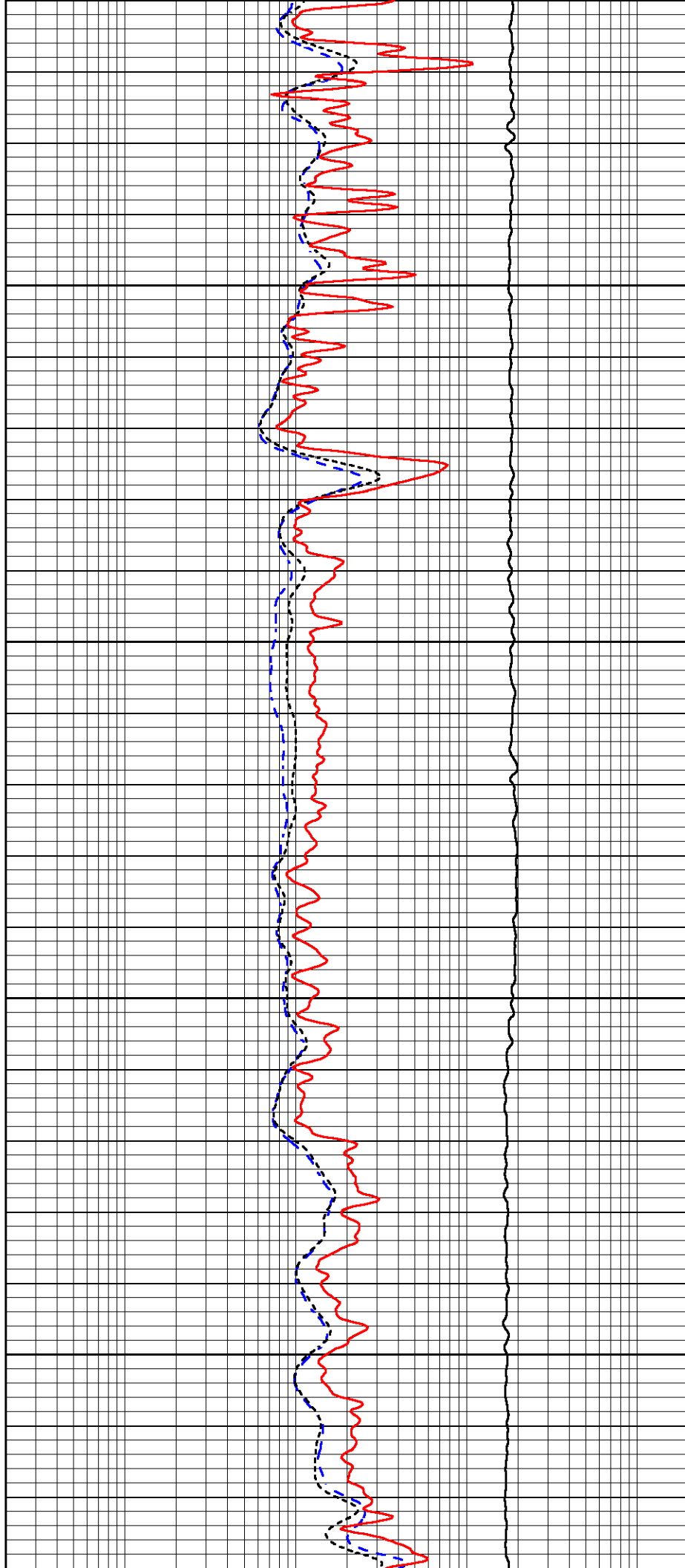


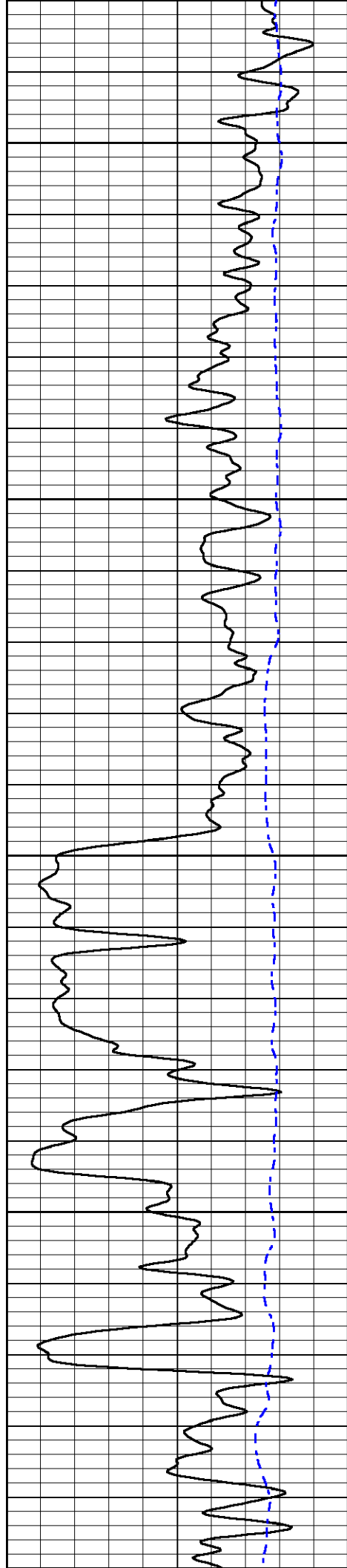
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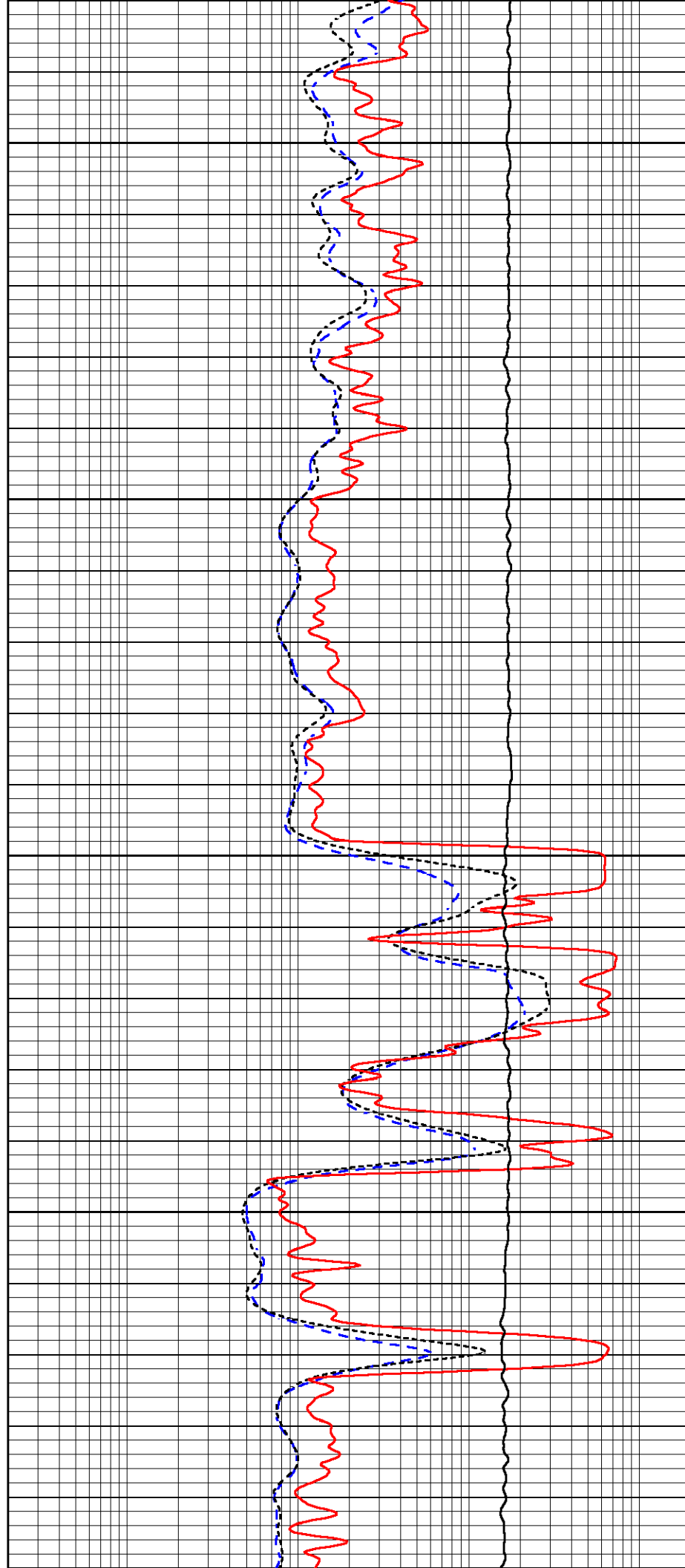
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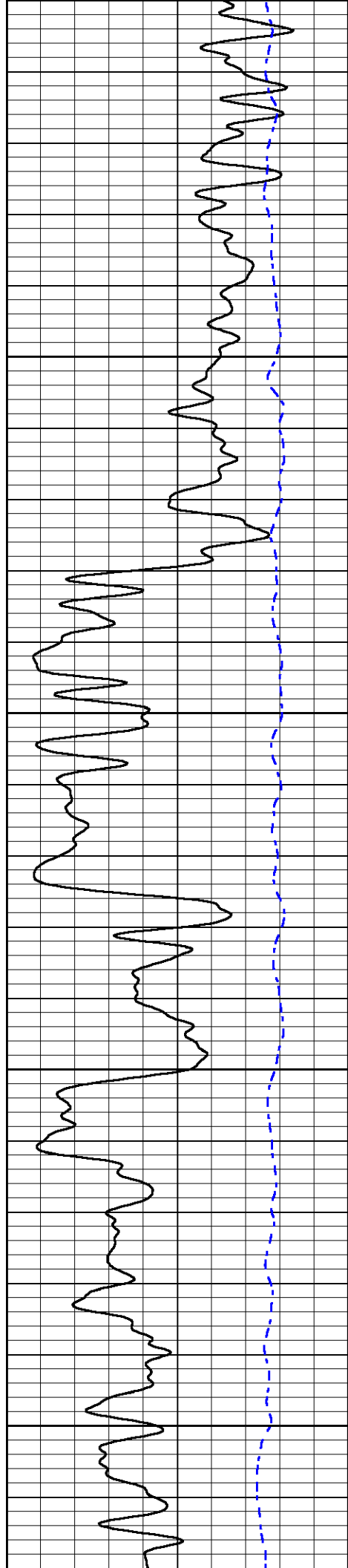
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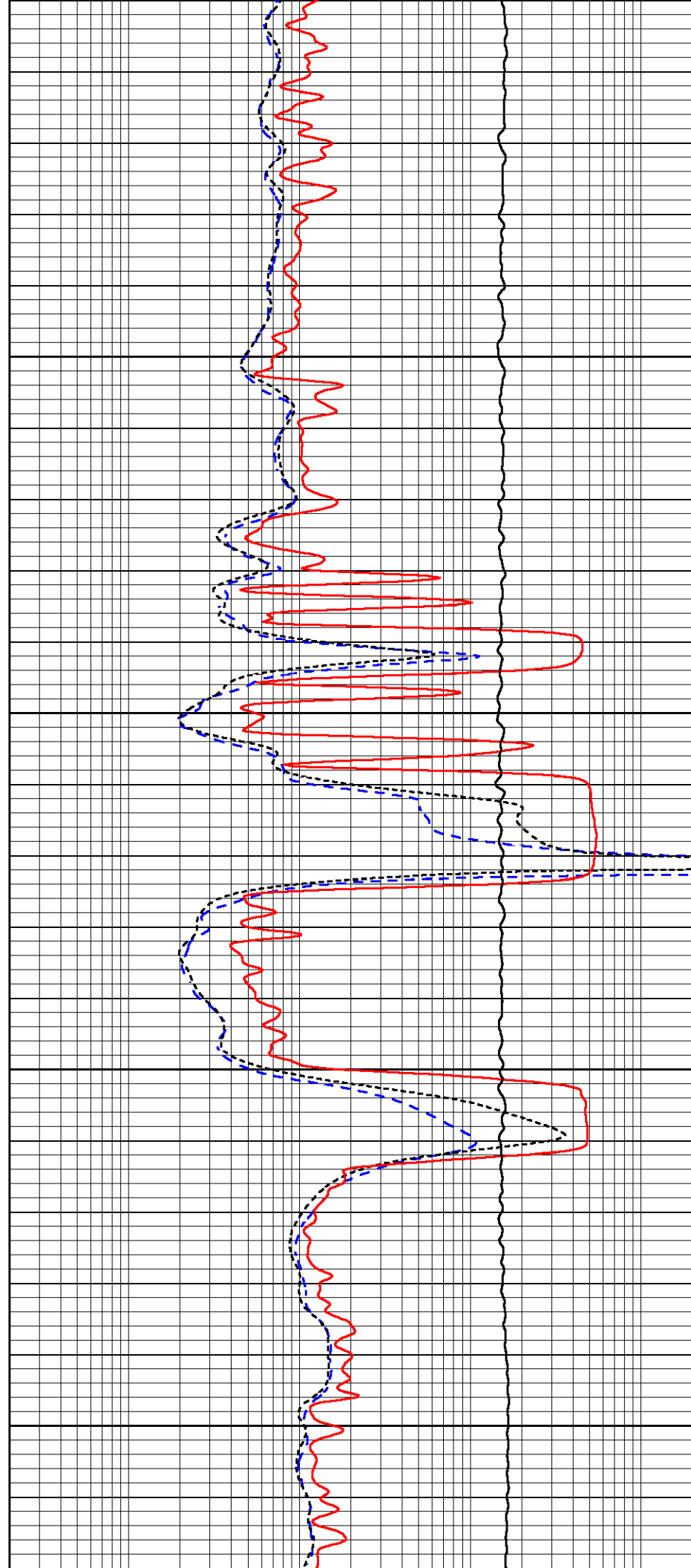
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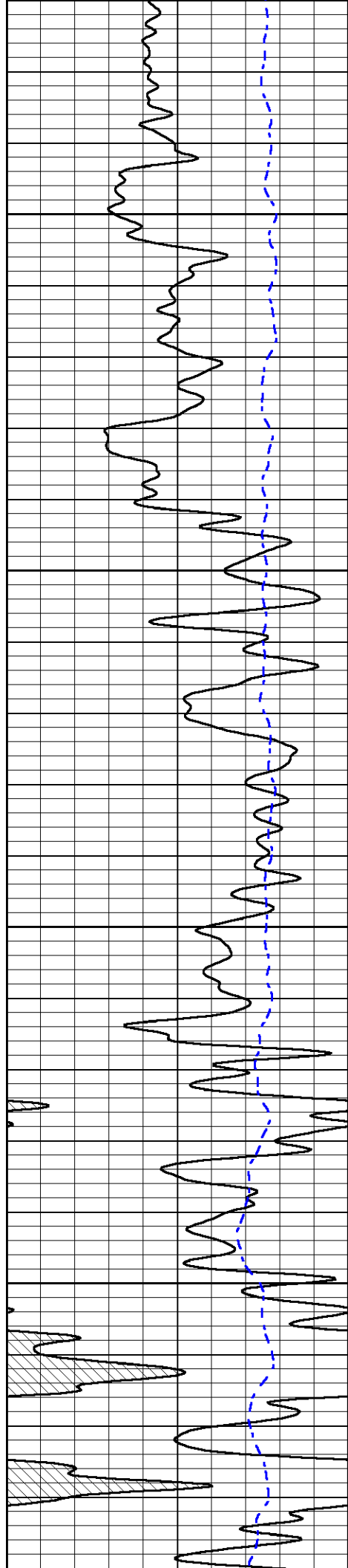
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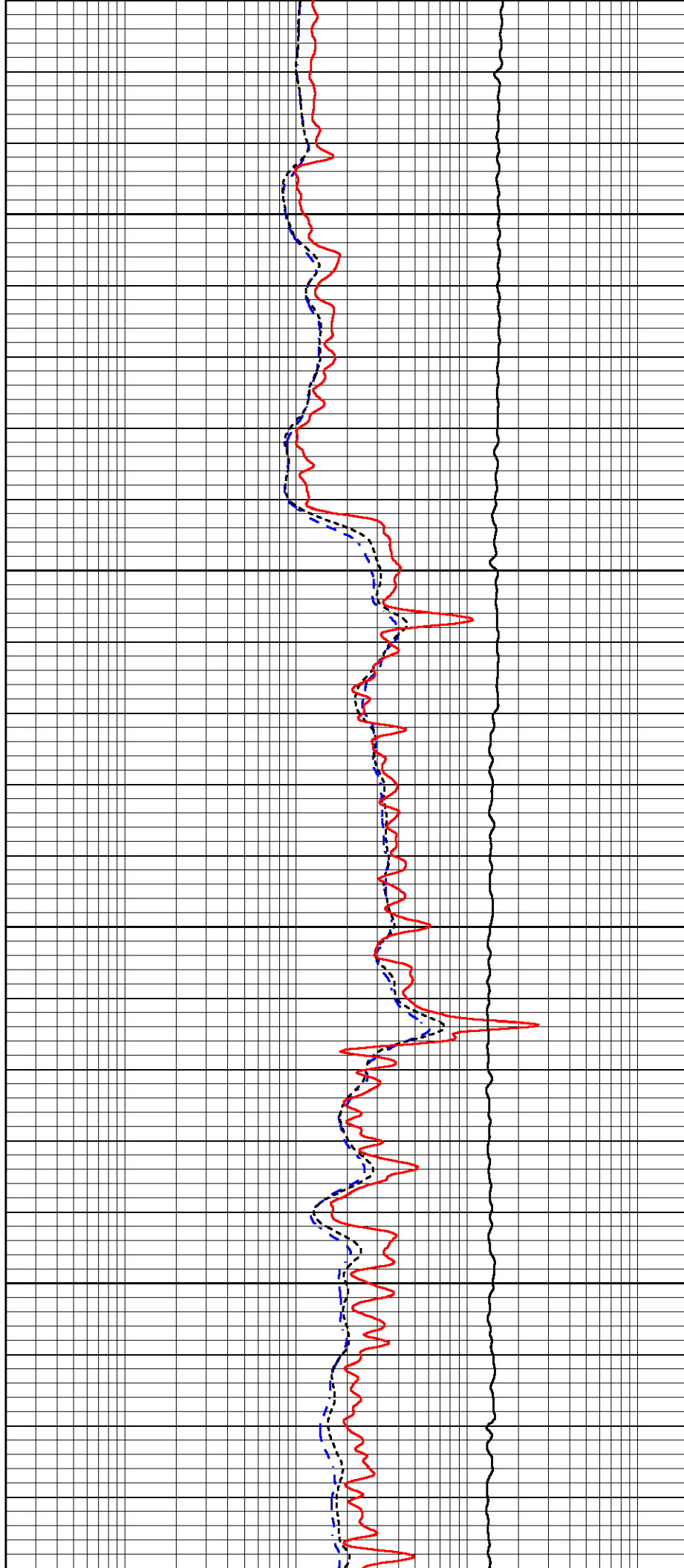


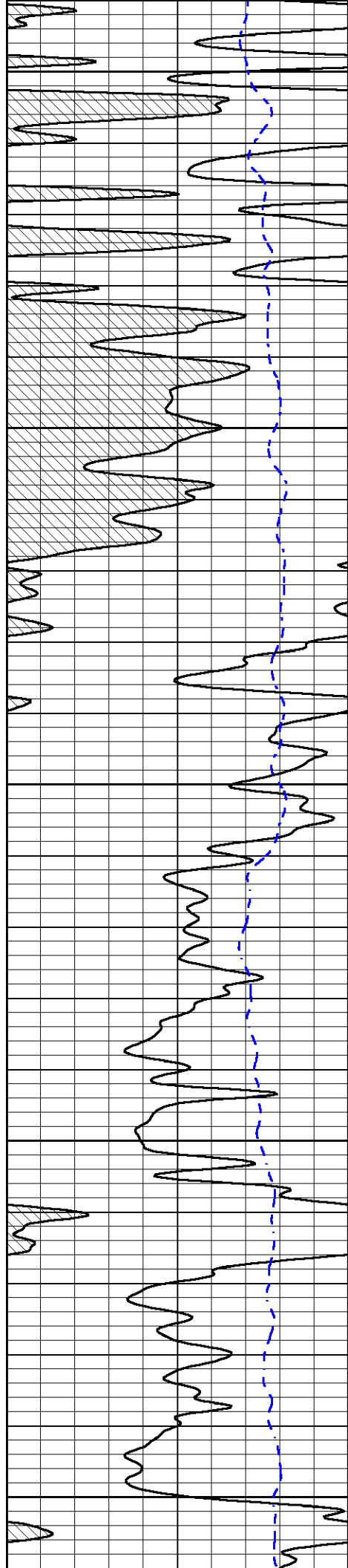
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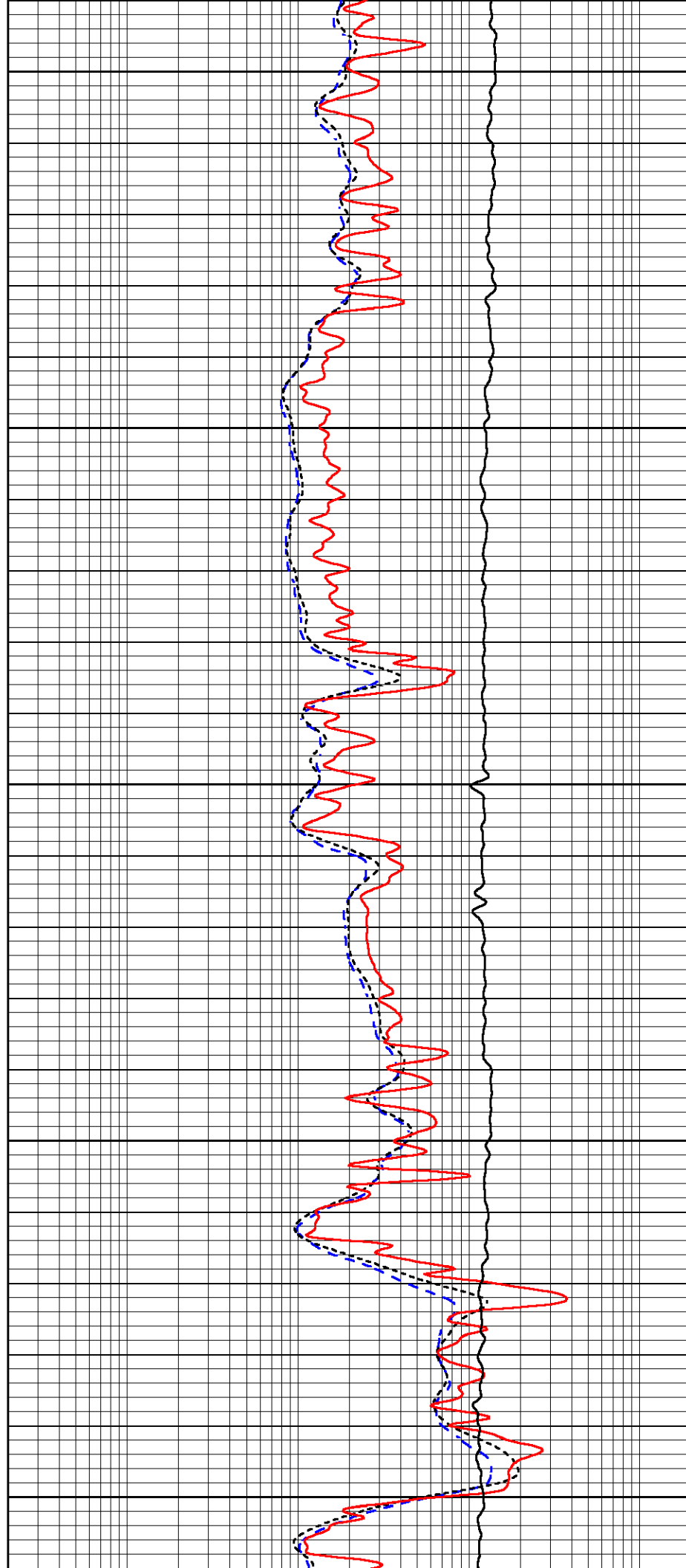
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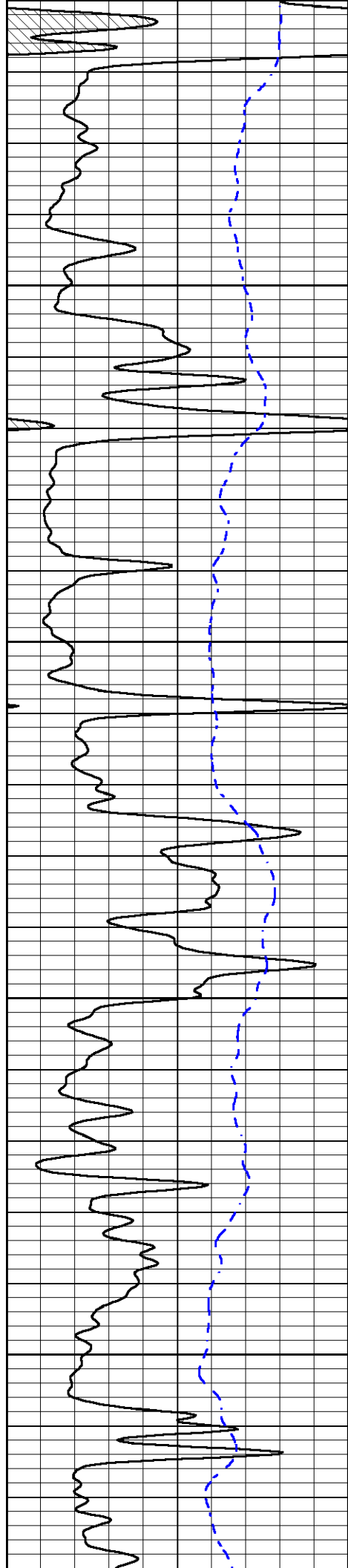
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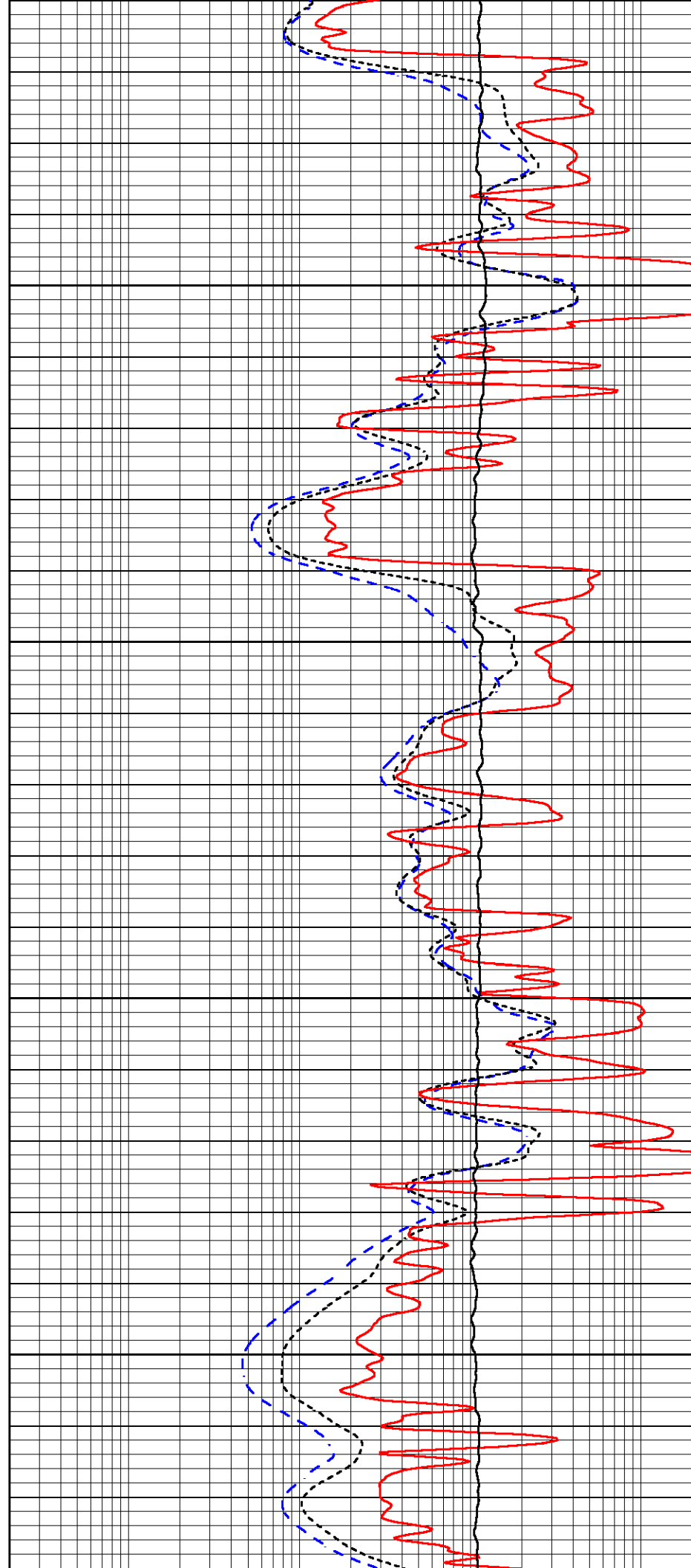


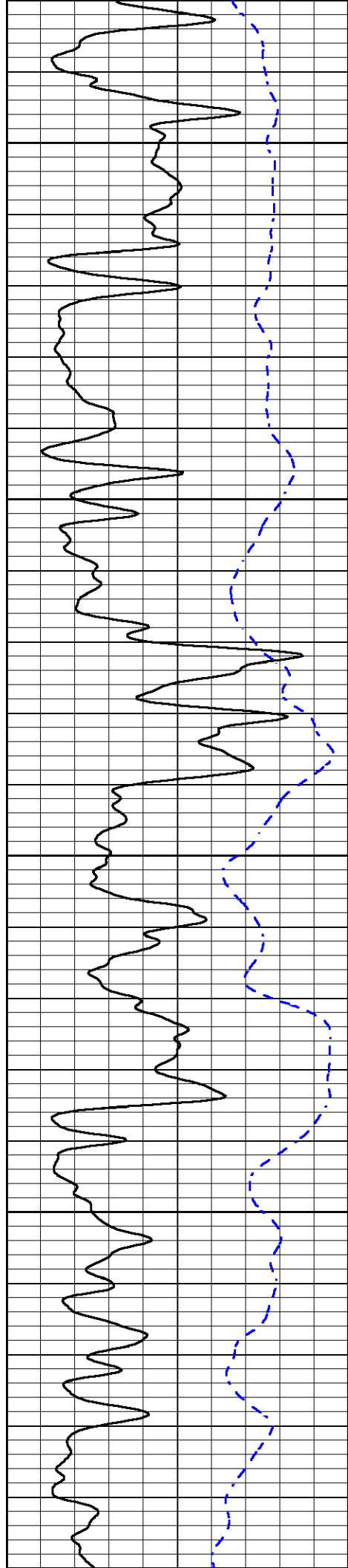
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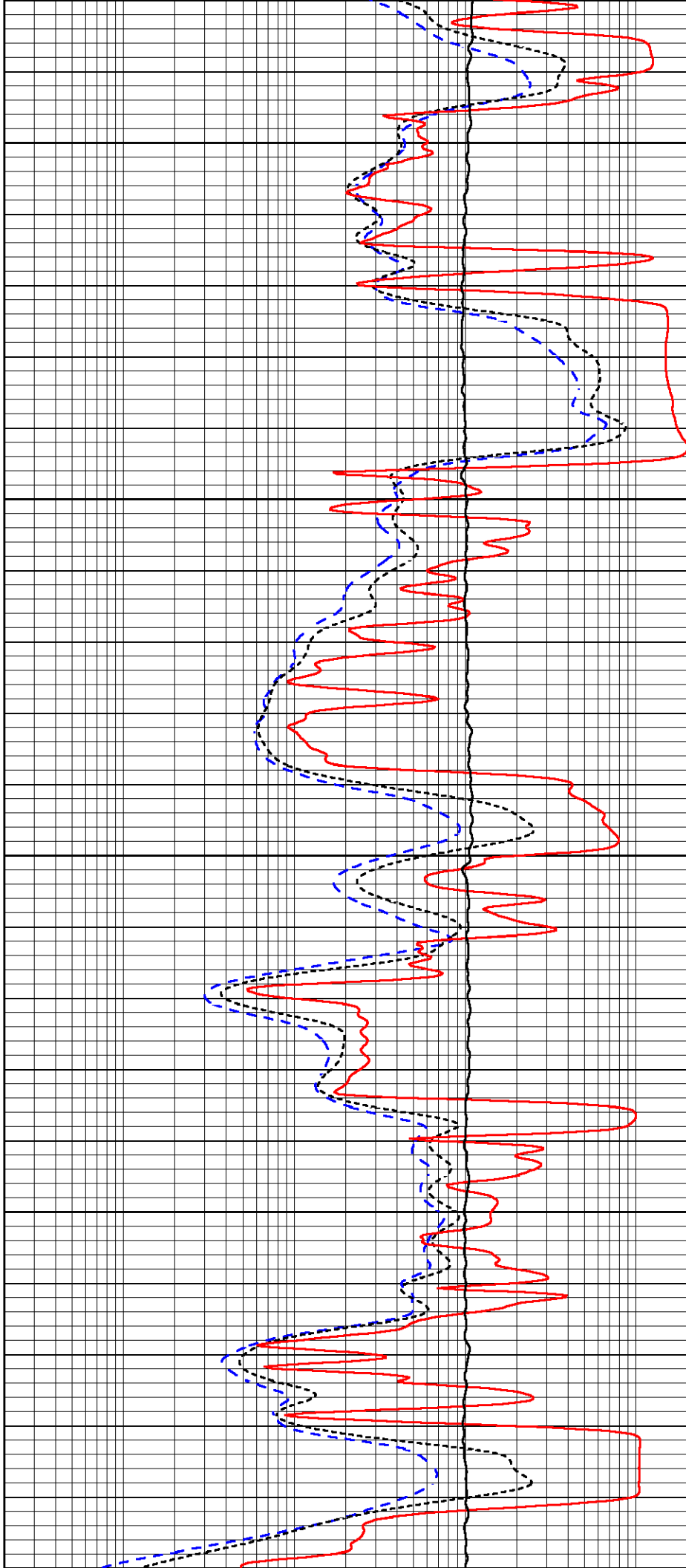
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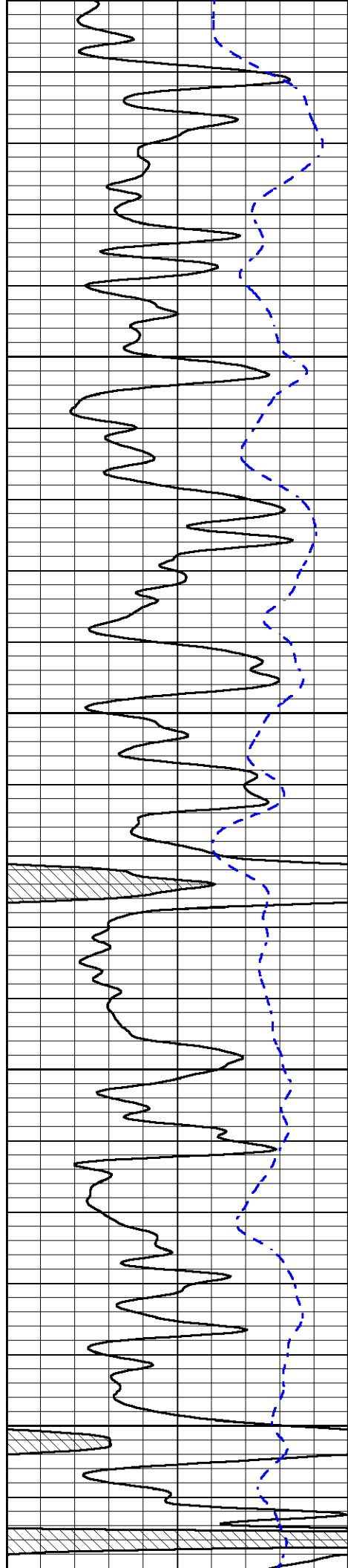
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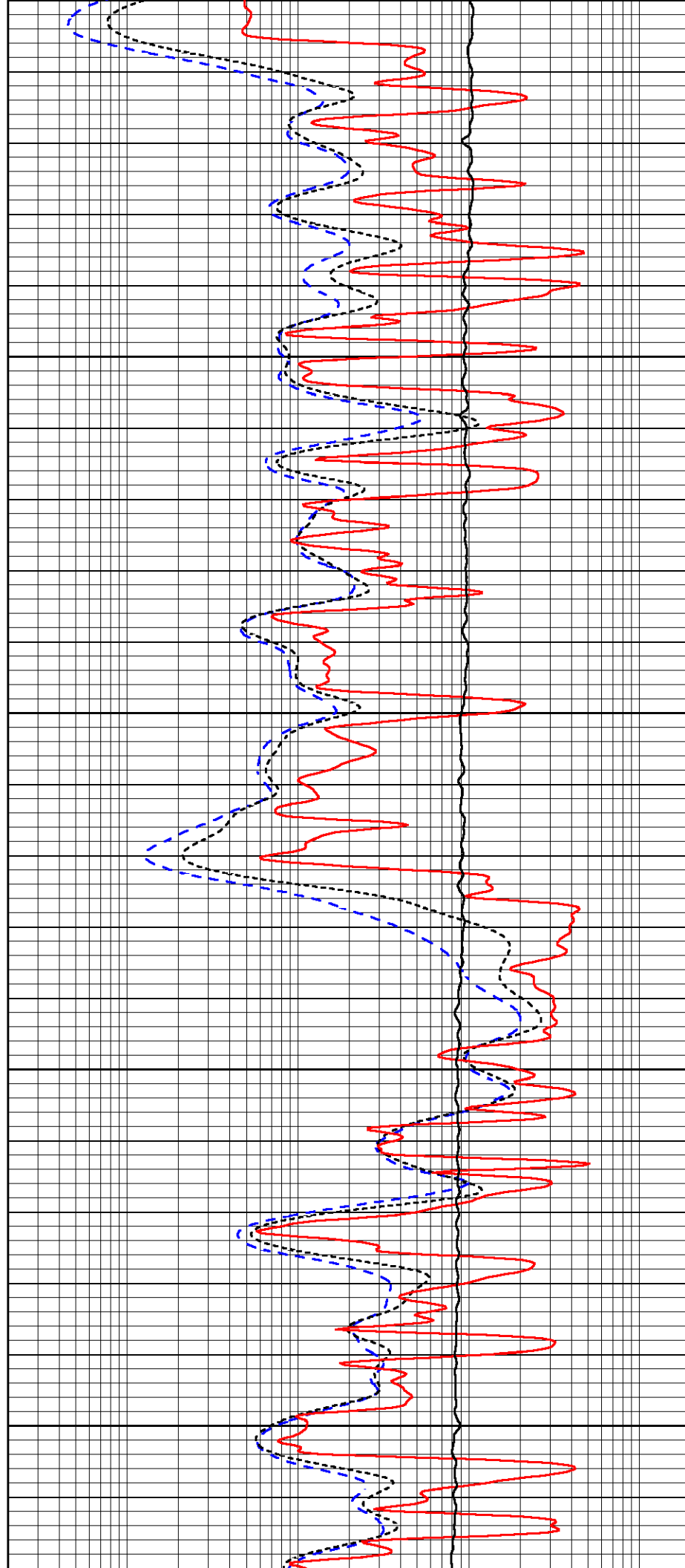
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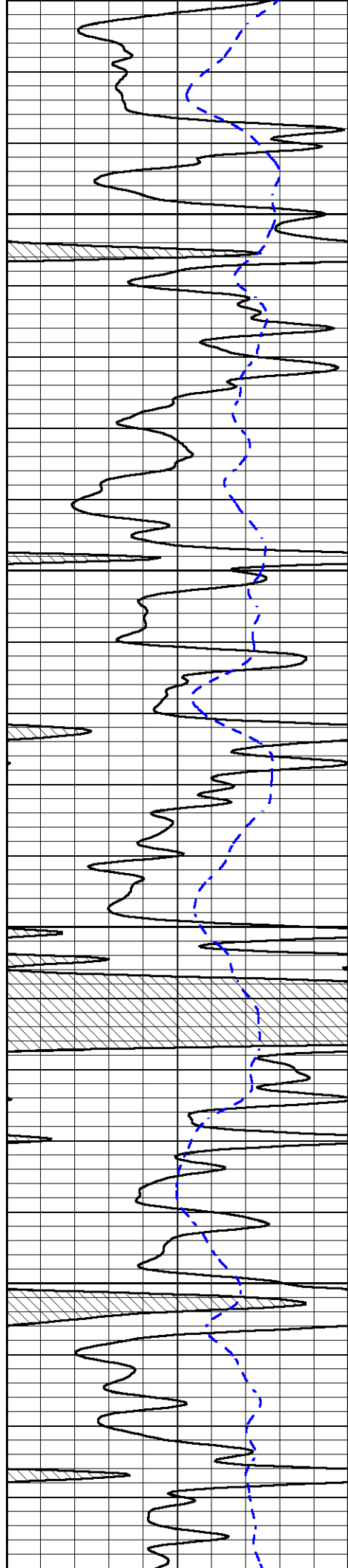
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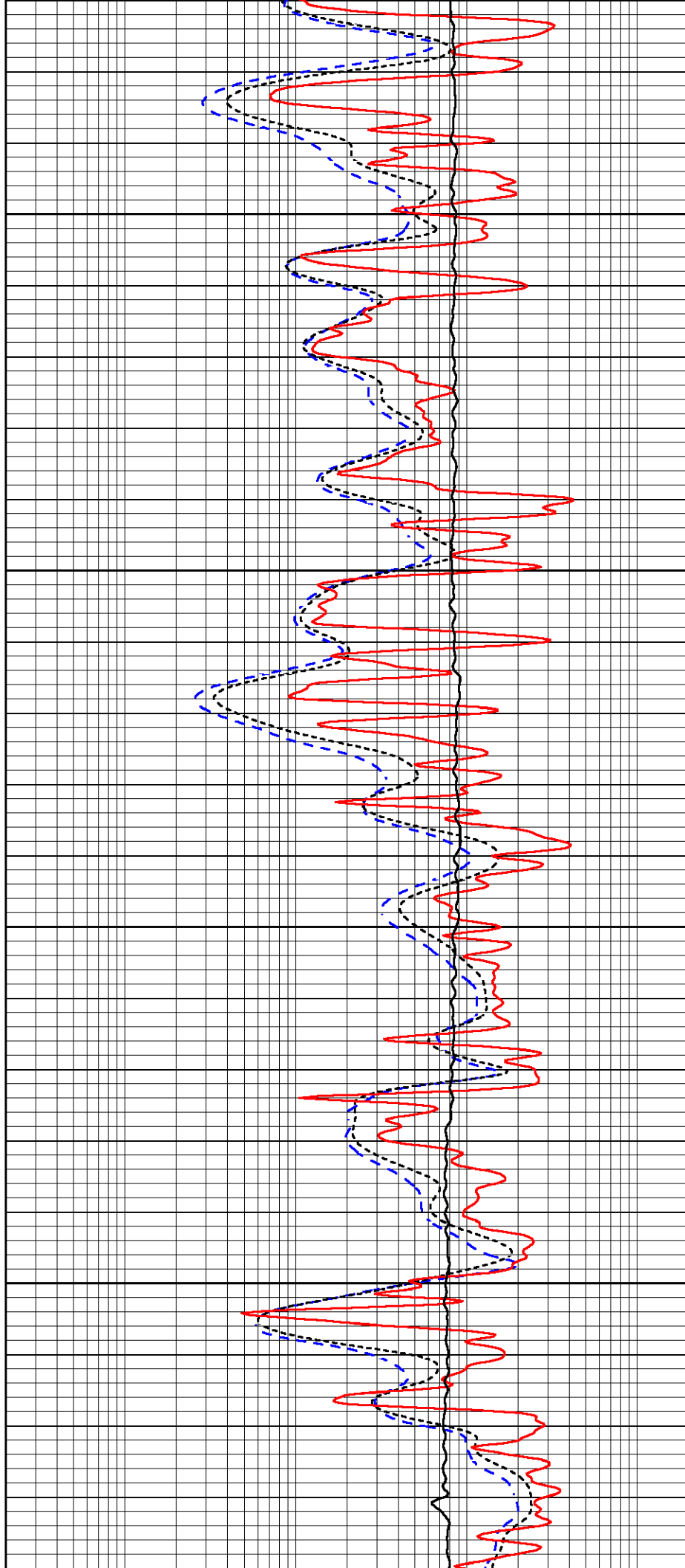


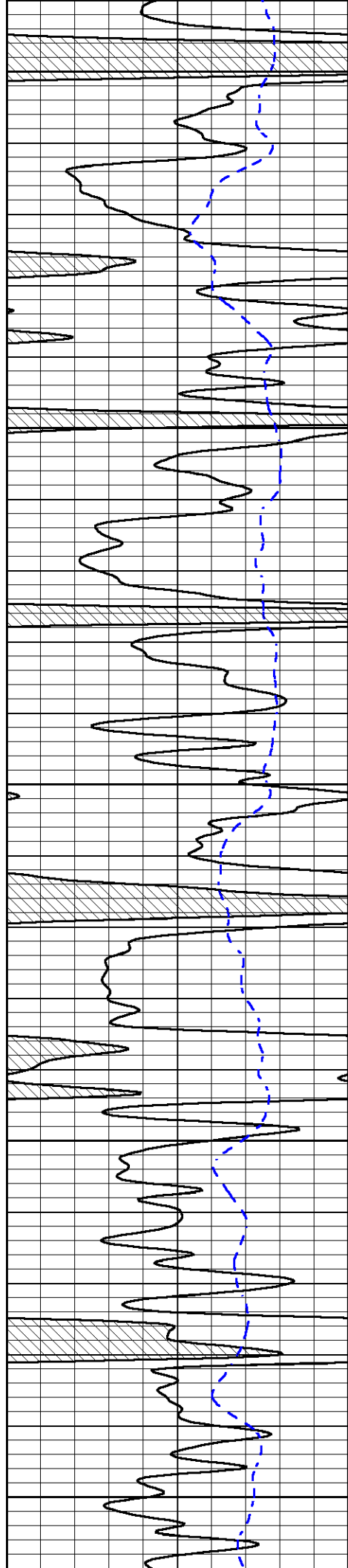
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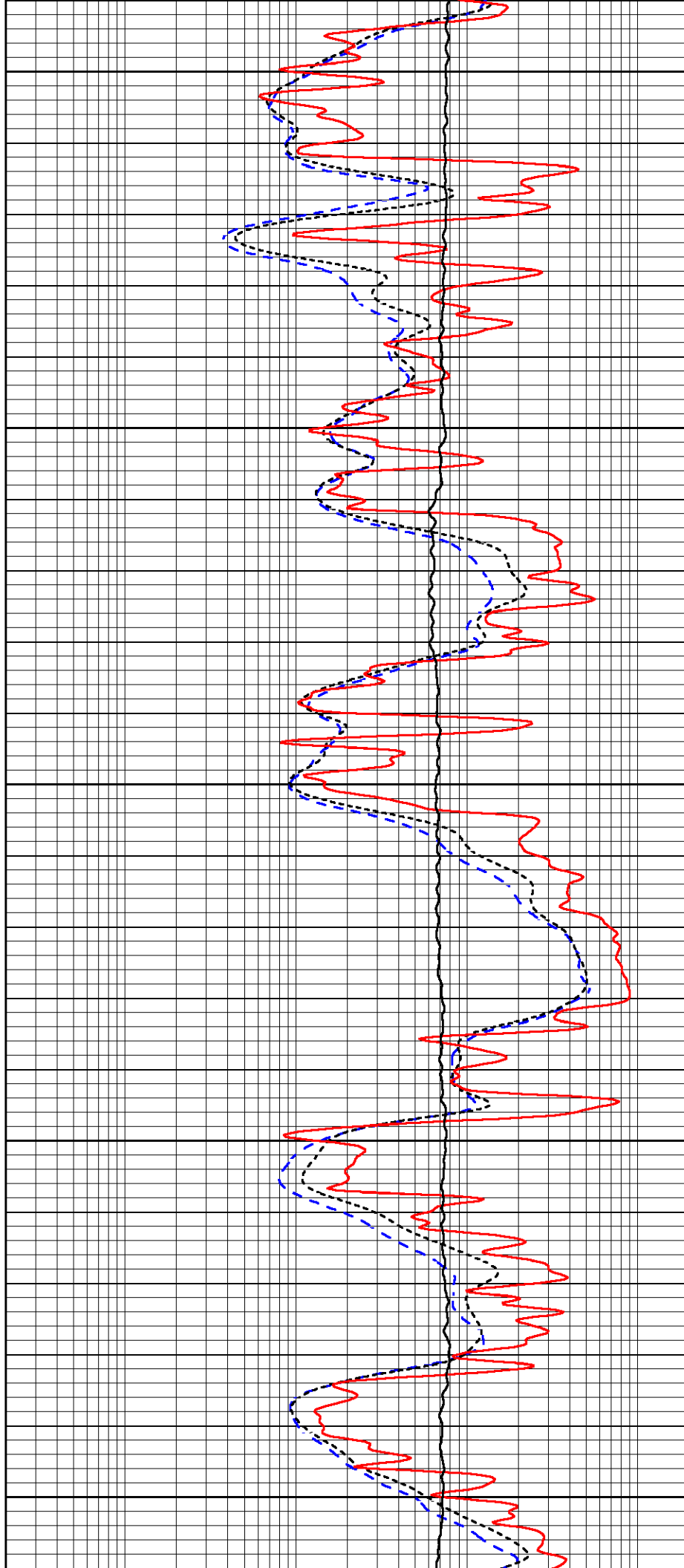
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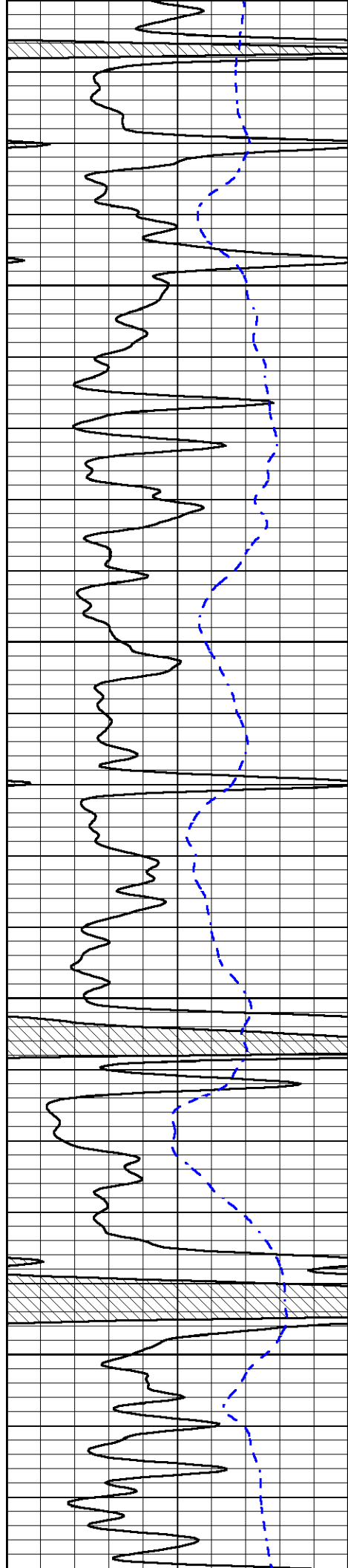
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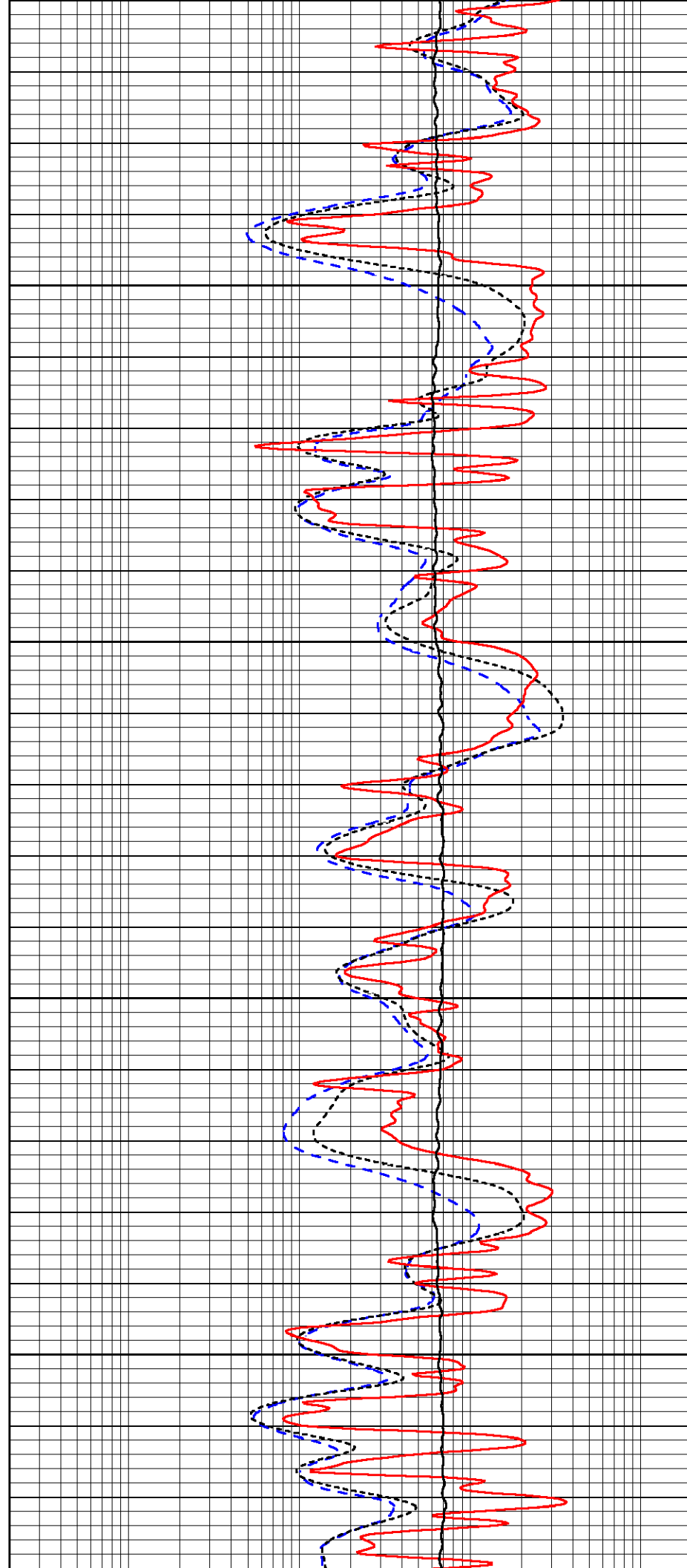


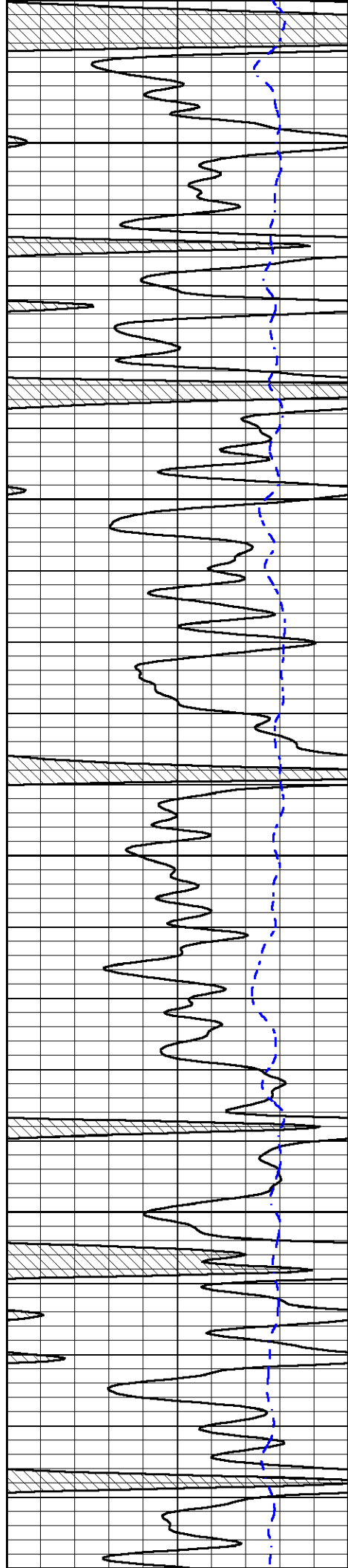
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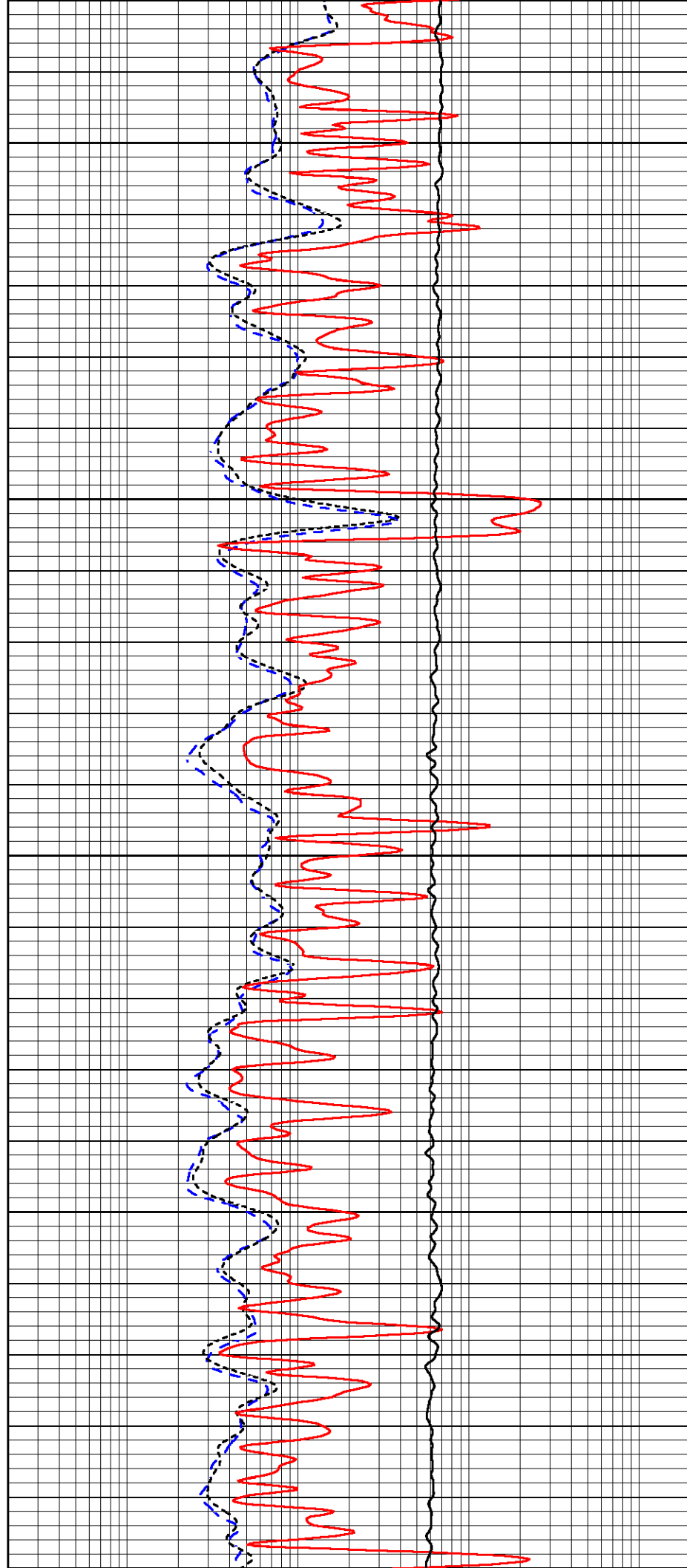
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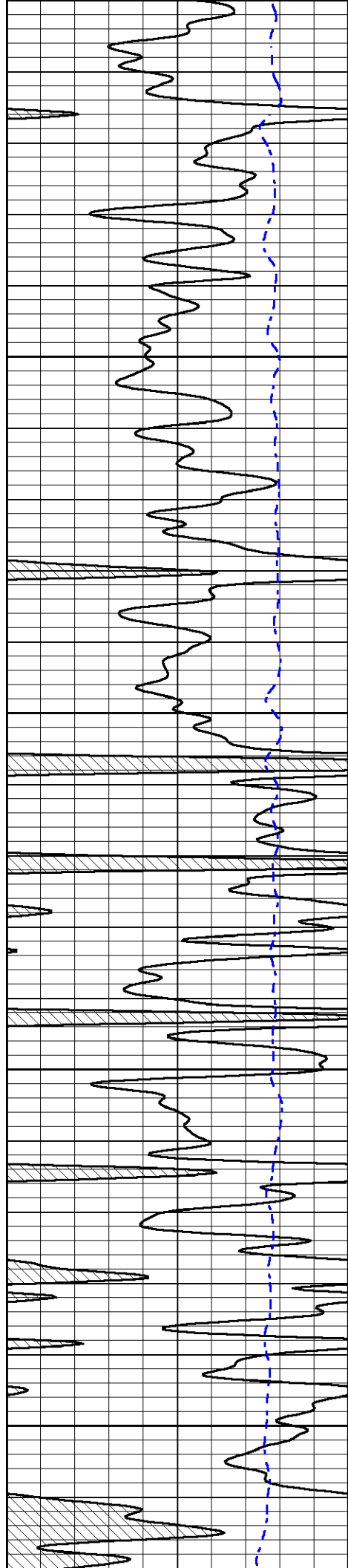
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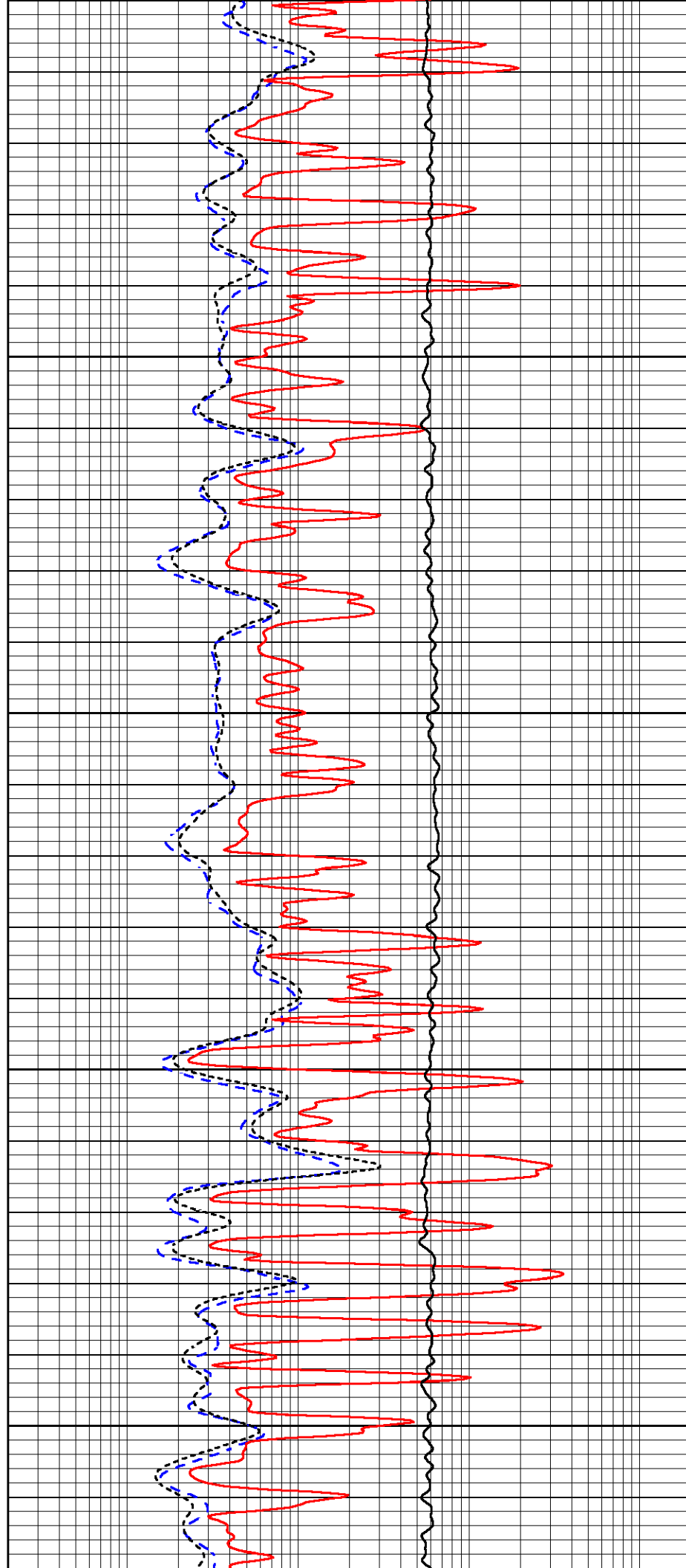
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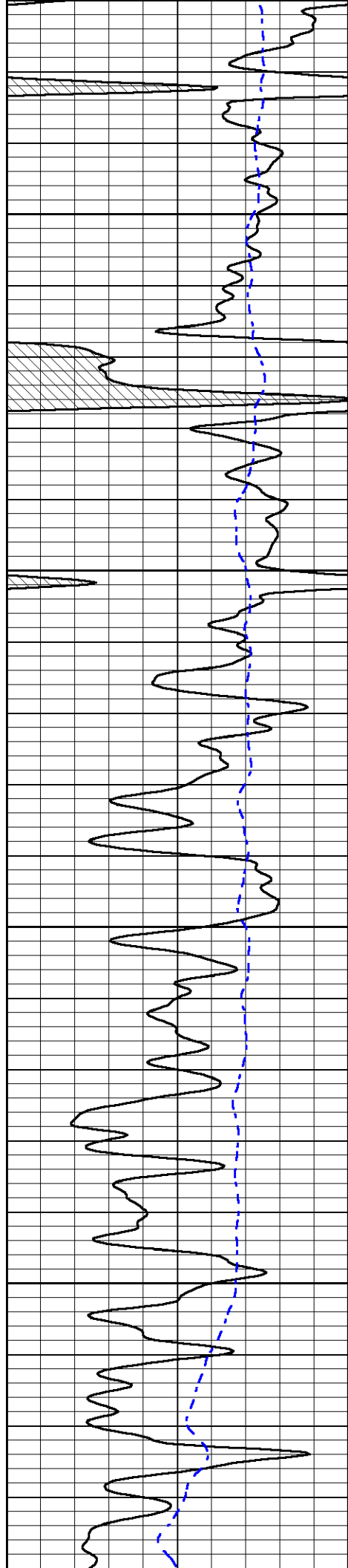
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7800
7850
7900
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8000



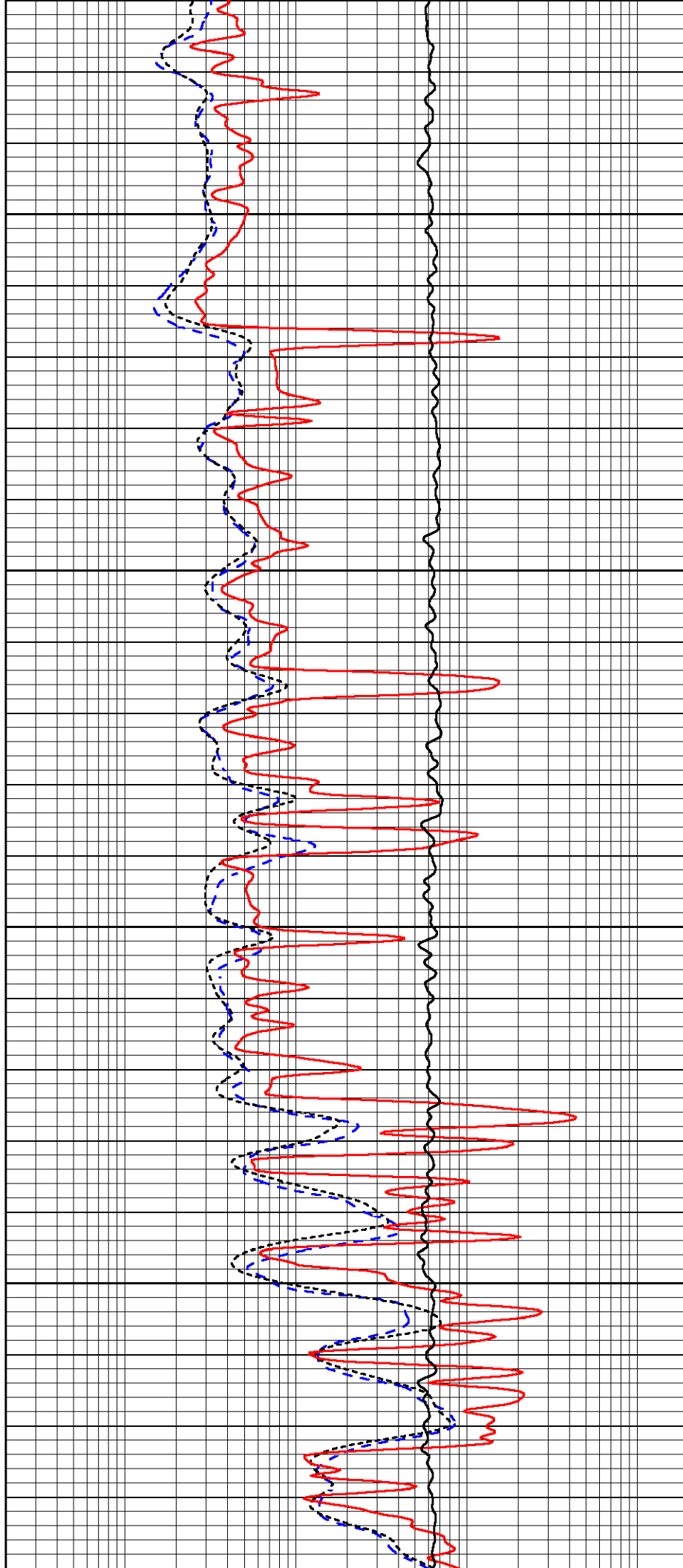


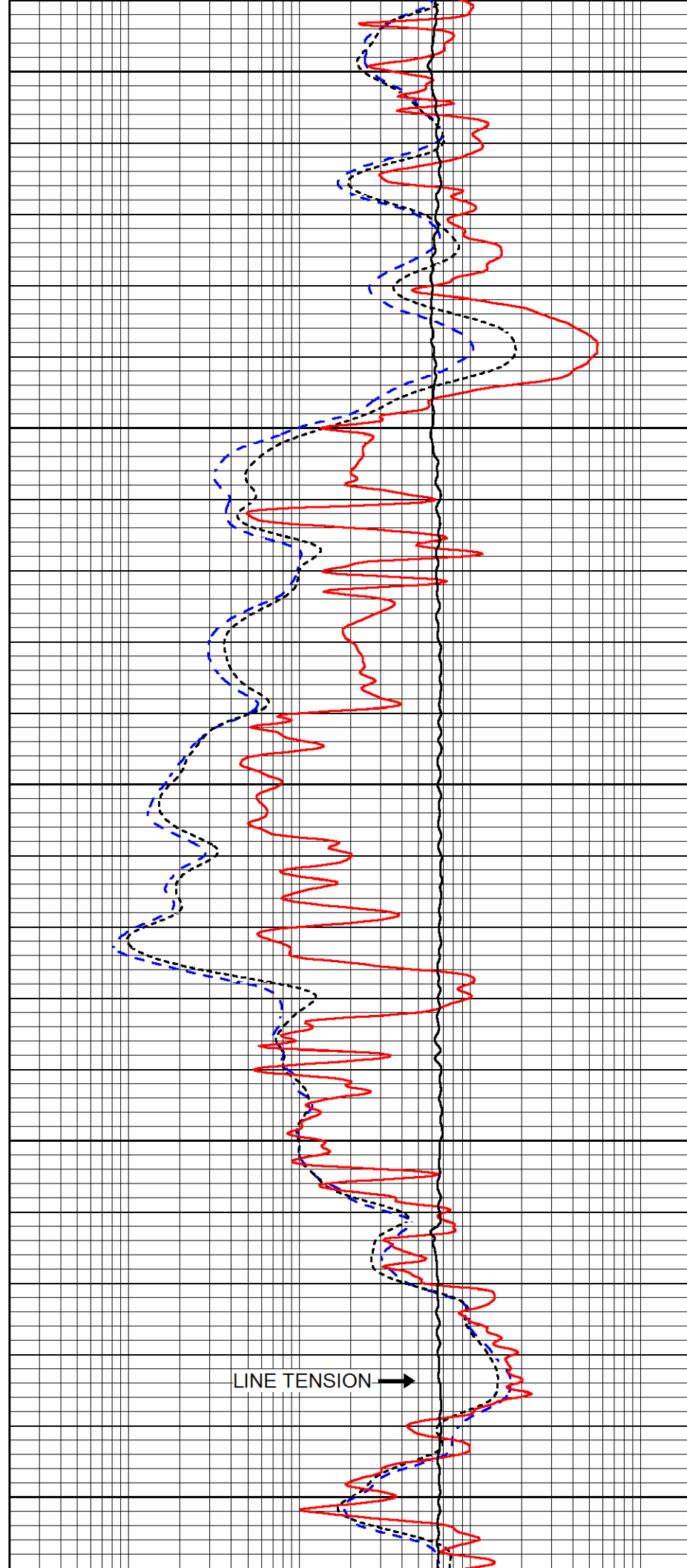
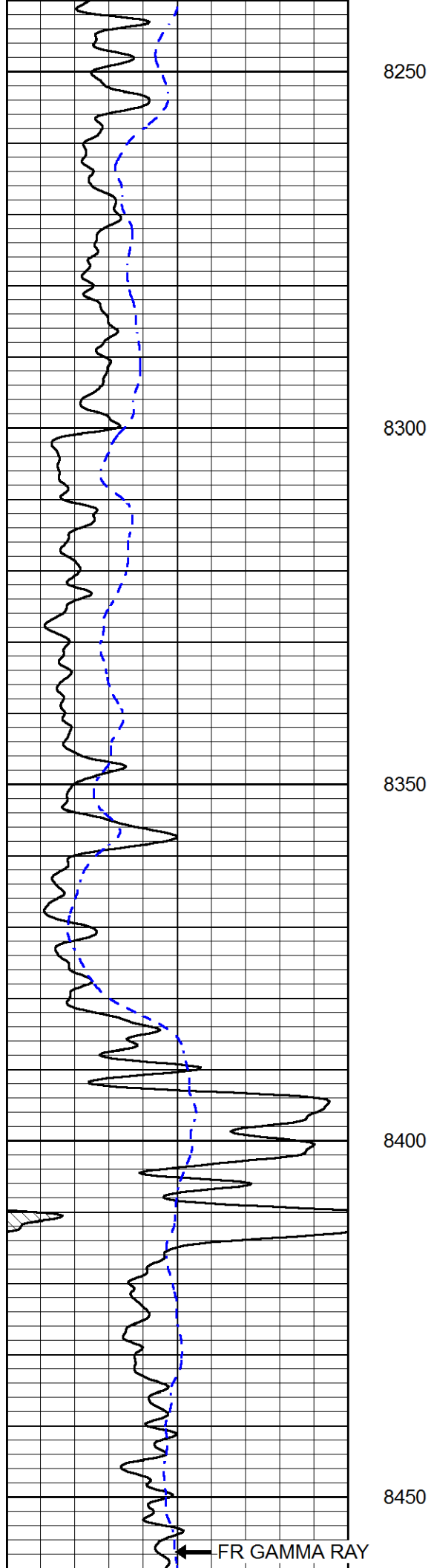
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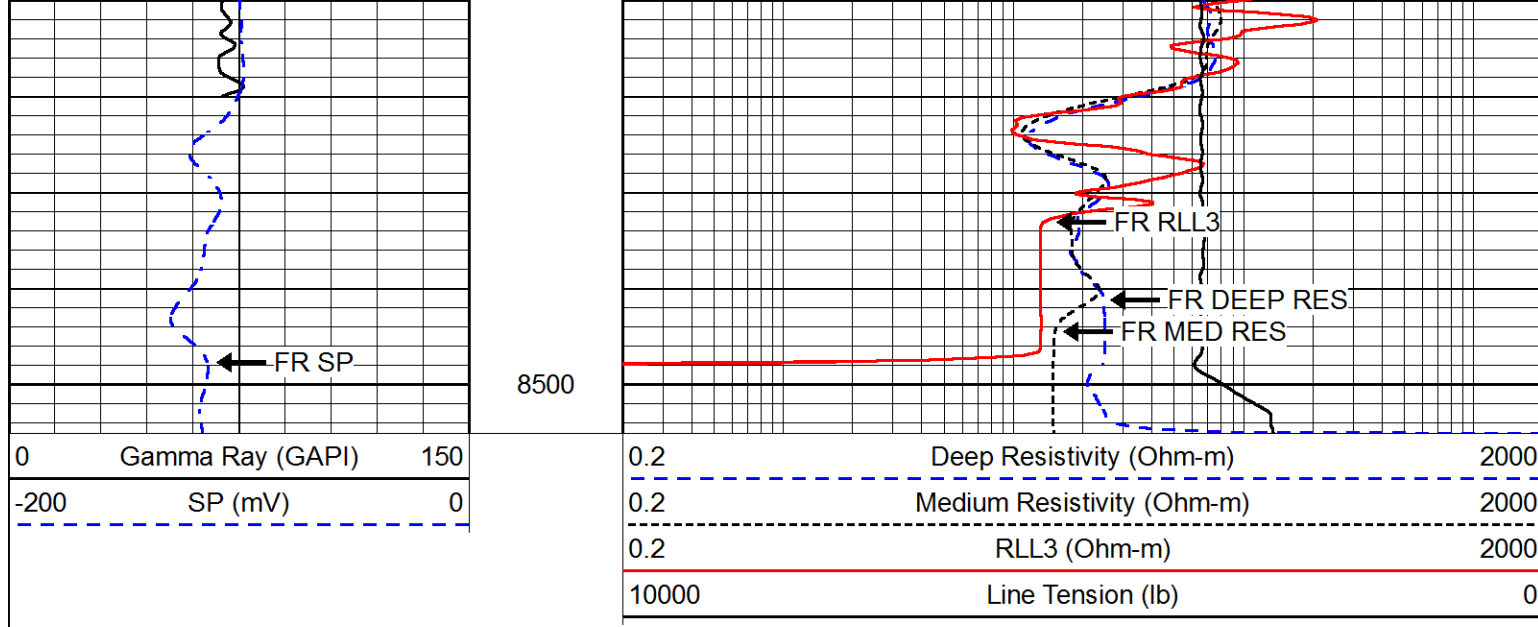
8100

8150

8200







Calibration Report

Database File murfin_red poll_10-21.db
 Dataset Pathname STKML/pass6.1
 Dataset Creation Sat Sep 02 01:41:11 2017

Dual Induction Calibration Report

Serial-Model: PSI 91-M&W
 Calibration Performed: Thu Aug 10 08:41:25 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.430	-32.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-27.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Fri Aug 11 11:41:38 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	35000.0000	-0.8000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	35000.0000	-0.4000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.1750

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Wed Aug 02 00:28:57 2017

Master Calibration

	Density		Far Detector	Near Detector
Magnesium	1.755	g/cc	4903.44	6153.79 cps

Magnesium	1.745	g/cc	1000.00	0.0000	cps
Aluminum	2.685	g/cc	934.50	4021.31	cps

Spine Angle = 75.61

Density/Spine Ratio = 0.543

	Size		Reading
Small Ring	8.00	in	1.84
Large Ring	22.00	in	1.46

Compensated Neutron Calibration Report

Serial Number: 207-MW
Tool Model: M&W
Calibration Performed: Tues Aug 1 10:30:30 2017

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: Wed Aug 02 00:29:15 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company MURFIN DRILLING, INC.
Well RED POLL #10-21
Field WILDCAT
County LINCOLN
State COLORADO