



PIONEER

Pioneer Energy Services

DUAL INDUCTION LOG

Company MURFIN DRILLING COMPANY, INC.

Well ARGABRIGHT #1-24

Field WILDCAT

County RAWLINS

State KANSAS

Company MURFIN DRILLING COMPANY, INC.

Well ARGABRIGHT #1-24

Field WILDCAT

County RAWLINS State KANSAS

Location: API #: 15-153-21202-00-00

1980' FSL & 330' FWL

SEC 24 TWP 3S RGE 34W

Permanent Datum GROUND LEVEL Elevation 2892'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
MEL/BHCS
Elevation
K.B. 2897'
D.F. N/A
G.L. 2892'

Date 11/1/2017

Run Number ONE

Depth Driller 4520'

Depth Logger 4520'

Bottom Logged Interval 4519'

Top Log Interval 0'

Casing Driller 7.875" @ 218'

Casing Logger 219'

Bit Size 7.875"

Type Fluid in Hole CHEMICAL

Salinity, ppm CL 4000

Density / Viscosity 9.1 68

pH / Fluid Loss 11.0 6.4

Source of Sample FLOWLINE

Rm @ Meas. Temp 0.60 @ 55

Rmt @ Meas. Temp 0.45 @ 55

Rmc @ Meas. Temp 0.81 @ 55

Source of Rmt / Rmc CHARTS

Rm @ BHT 0.27 @ 121

Operating Rig Time 5 HOURS

Max Rec. Temp. F 121

Equipment Number 91

Location HAYS

Recorded By D. SCHMIDT

Witnessed By JEFF CHRISTIAN

<<< 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.

ATWOOD,
23 NORTH TO L RD, 1/2 WEST, 3 1/2 NORTH, 1/2 WEST,
NORTH INTO

Log Measured From: KELLY BUSHING 5 Ft. Above Permanent Datum

THANK YOU FOR USING PIONEER ENERGY SERVICES
www.pioneerenergy.com 785-625-3858

Your Pioneer Energy Services Crew

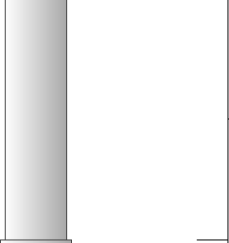
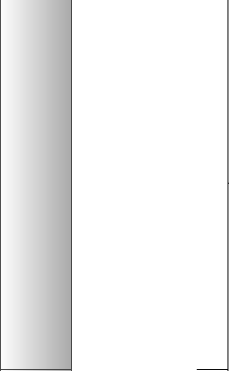
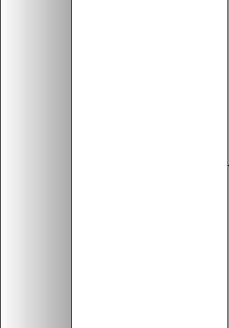
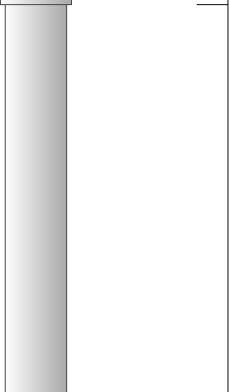
Engineer: D. SCHMIDT
Operator:
Operator:
Operator:

This Log Record Was Witnessed By

Primary Witness: JEFF CHRISTIAN
Secondary Witness:
Secondary Witness:
Secondary Witness:

Top - Bottom

M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	421	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	55	0	5.5	0	4520	121	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					

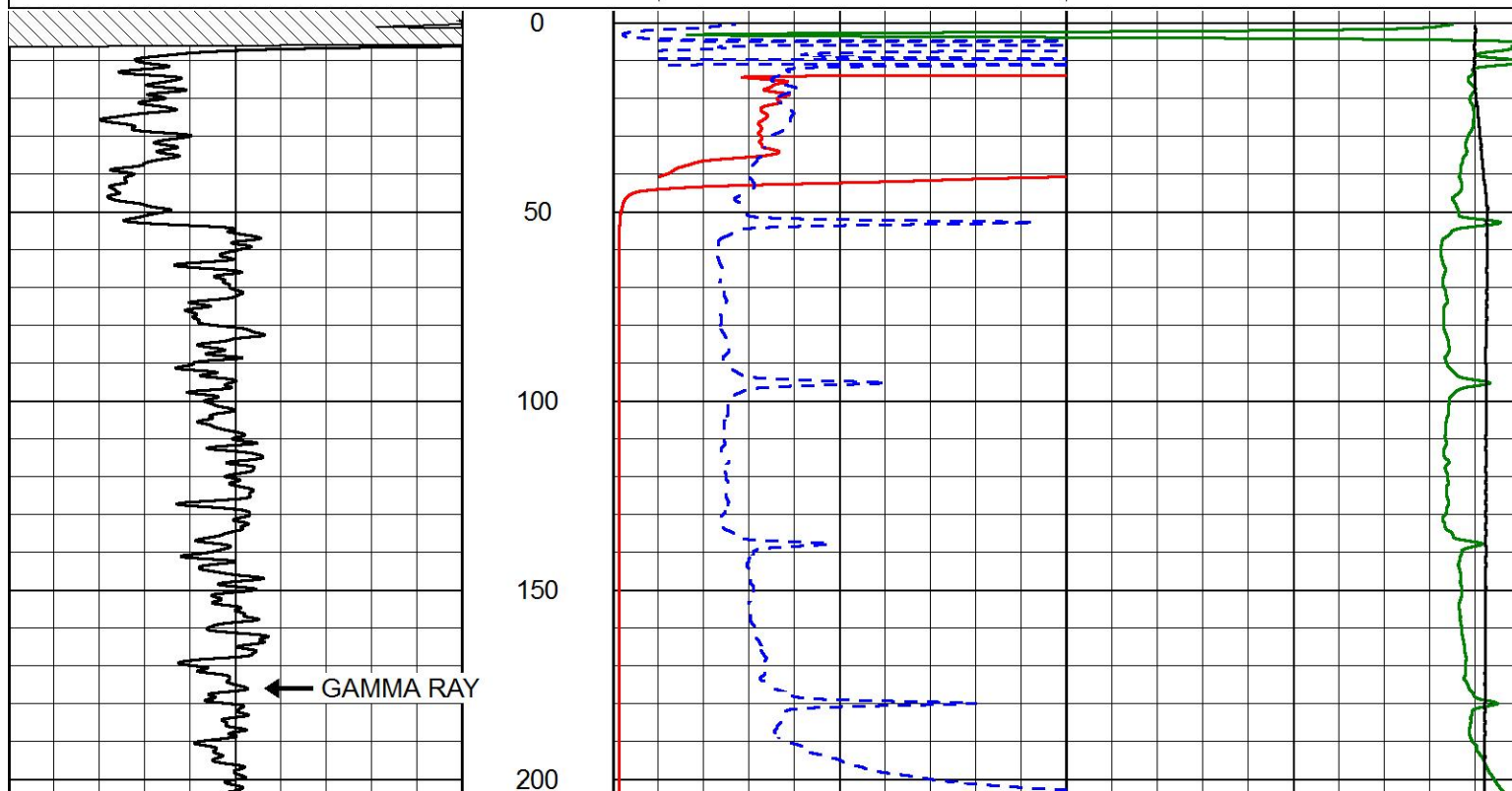
			DIL-M&W (PSI 91)	18.50	3.50	220.00
CILD	8.00					
CILM	4.70					
SP	0.20					
Dataset: murfin_argabright_1-24.db: field/well/STKML/pass3.3 Total length: 43.08 ft Total weight: 685.00 lb O.D.: 4.00 in						

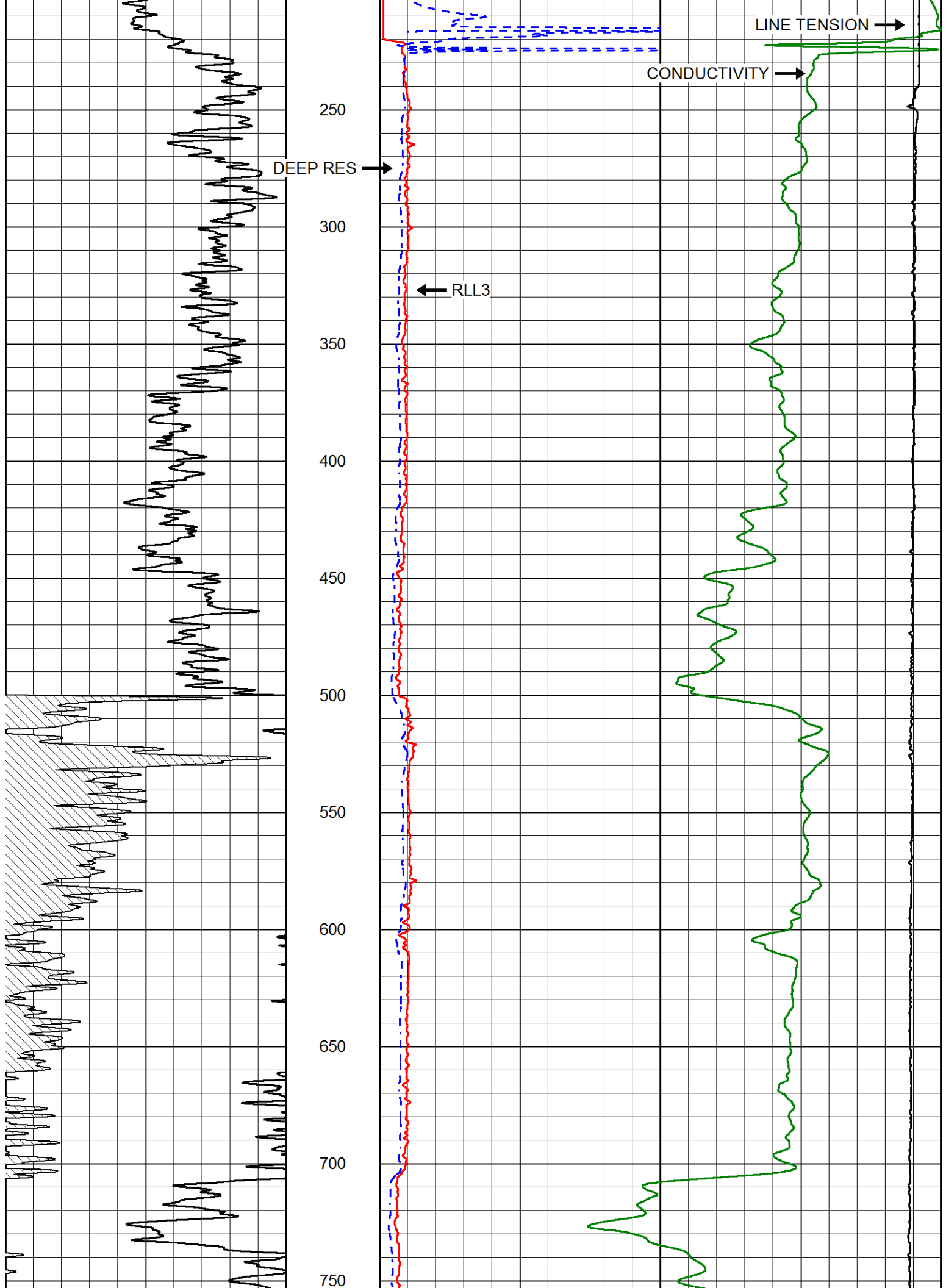


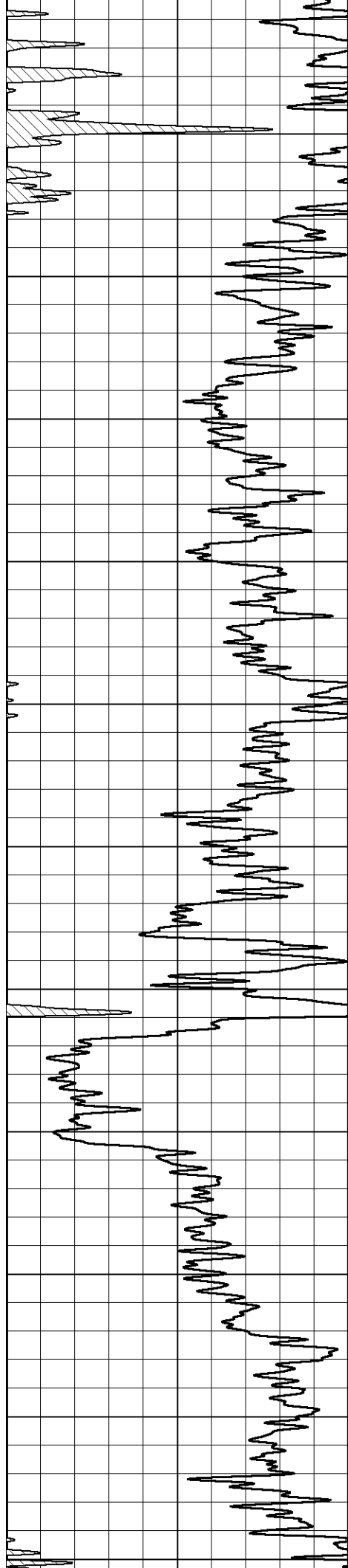
MAIN PASS

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Presentation Format	dil2in
Dataset Creation	Wed Nov 01 10:54:10 2017
Charted by	Depth in Feet scaled 1:600

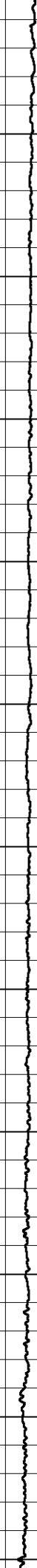
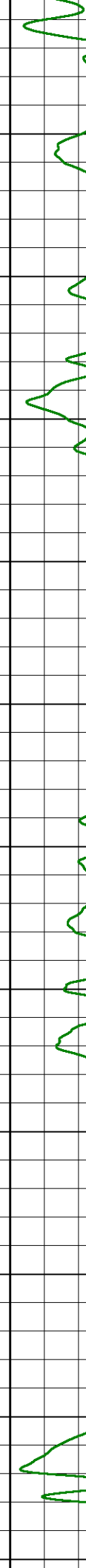
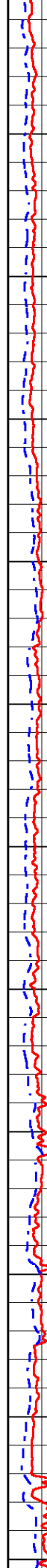
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			15000	Line Tension (lb)	0
			0	RLL3 (Ohm-m)	50
			0	Deep Resistivity (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
			50	Deep Resistivity (Ohm-m)	500

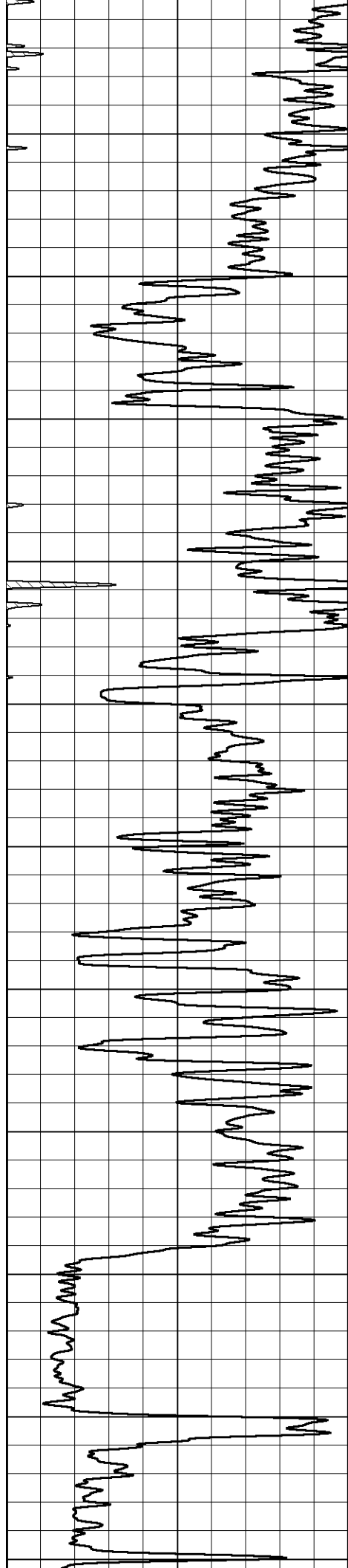




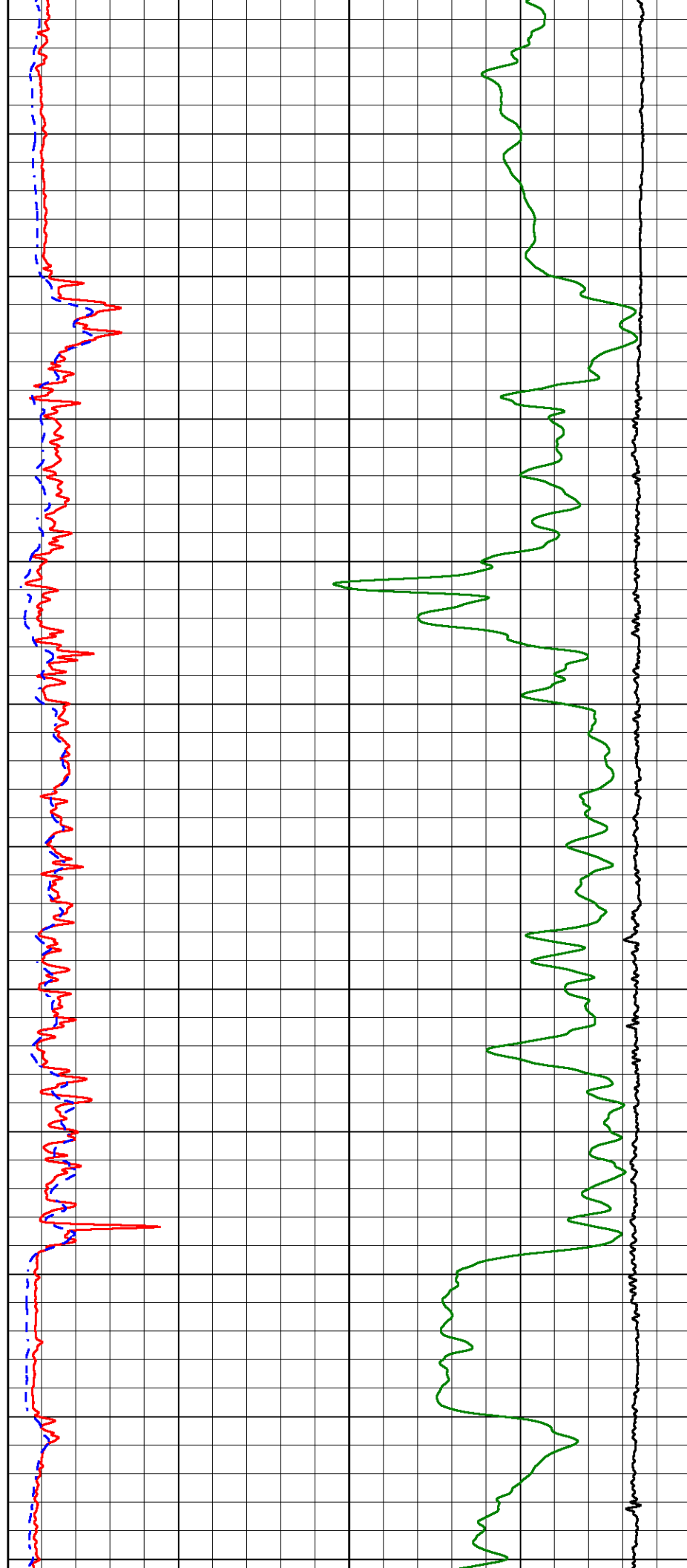


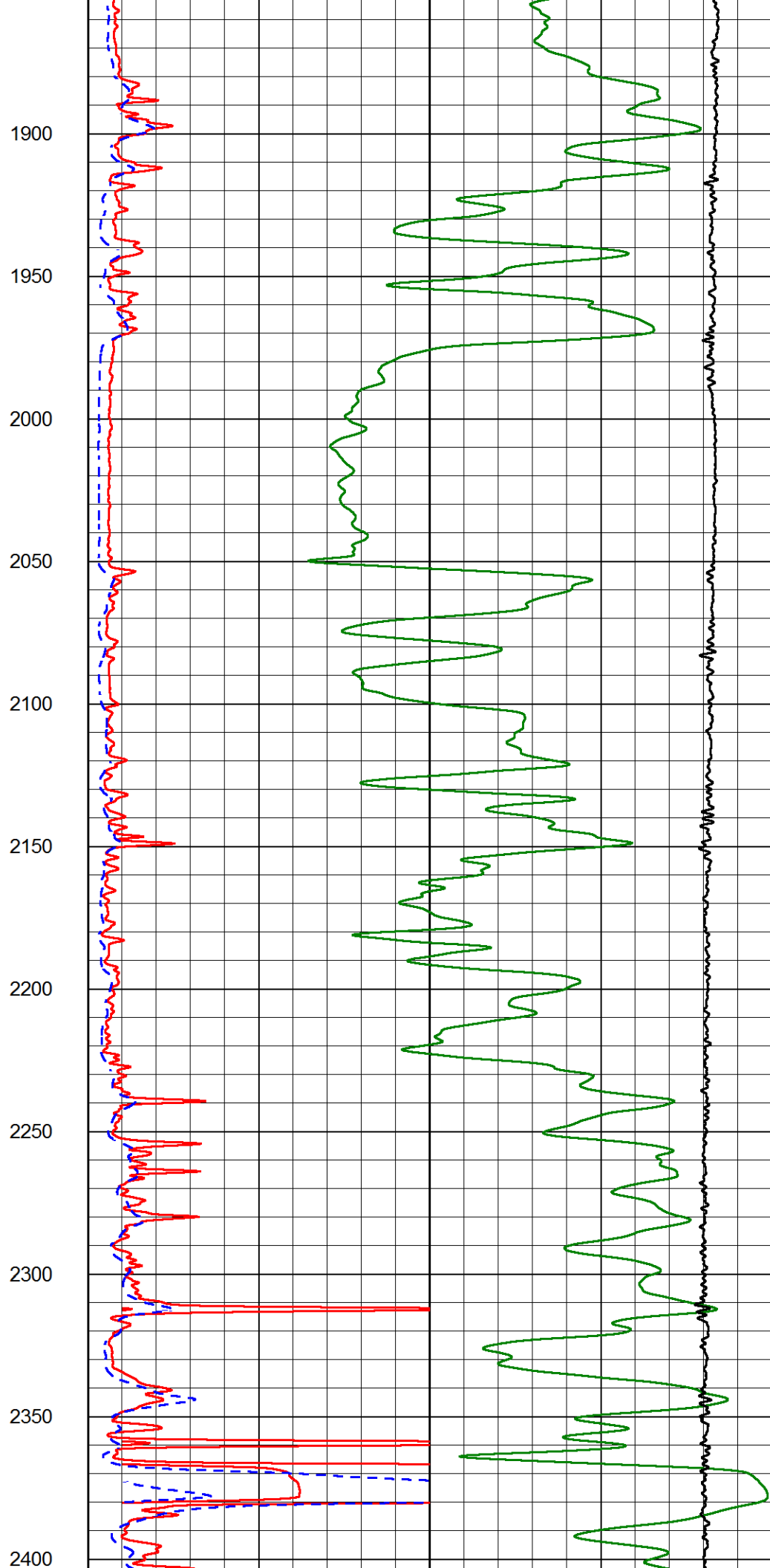
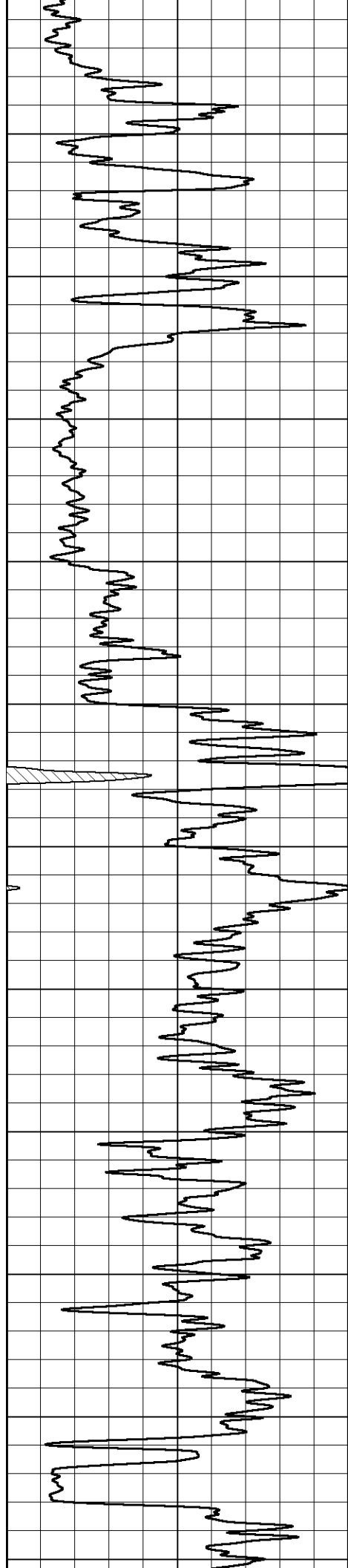
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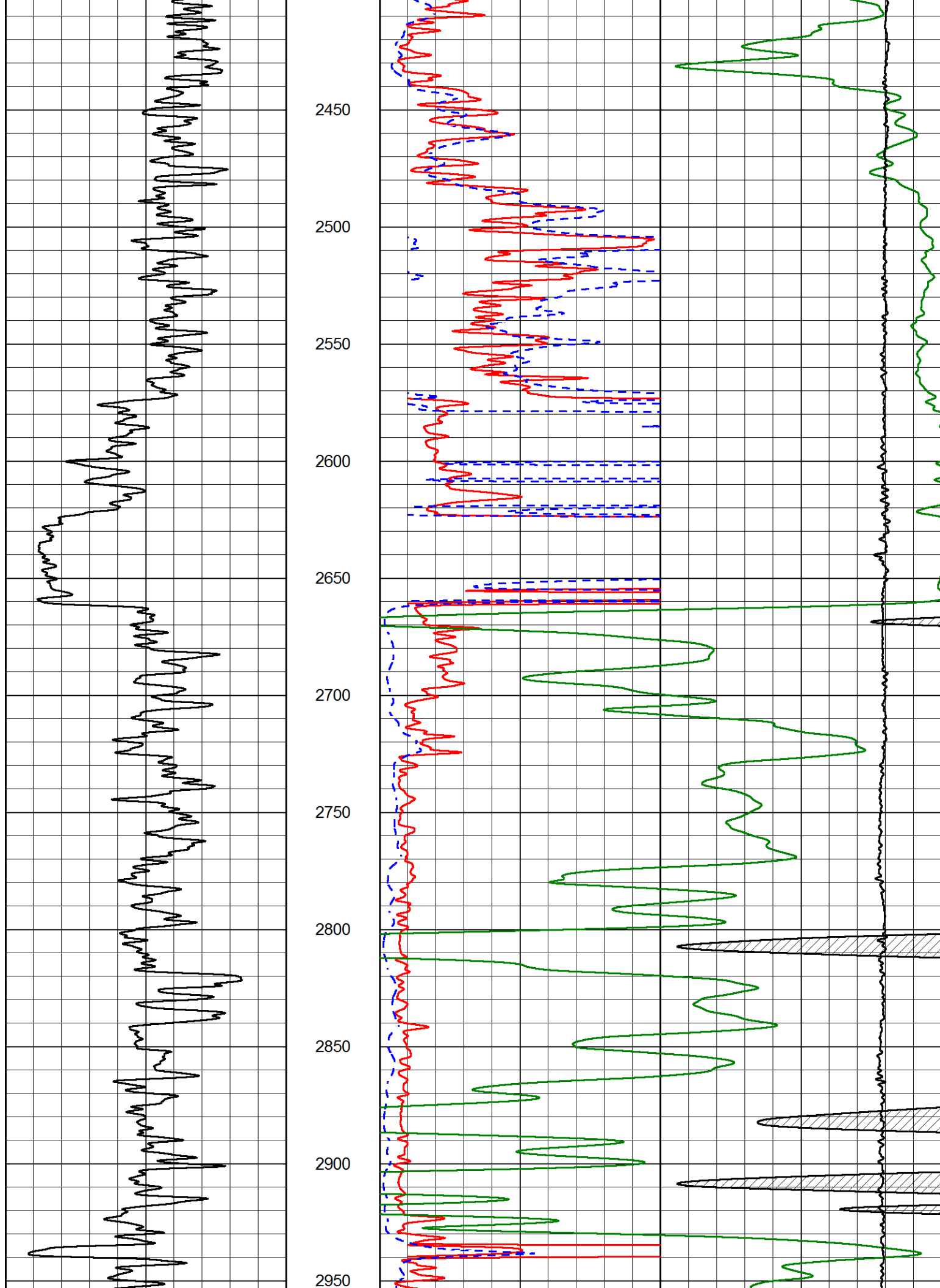


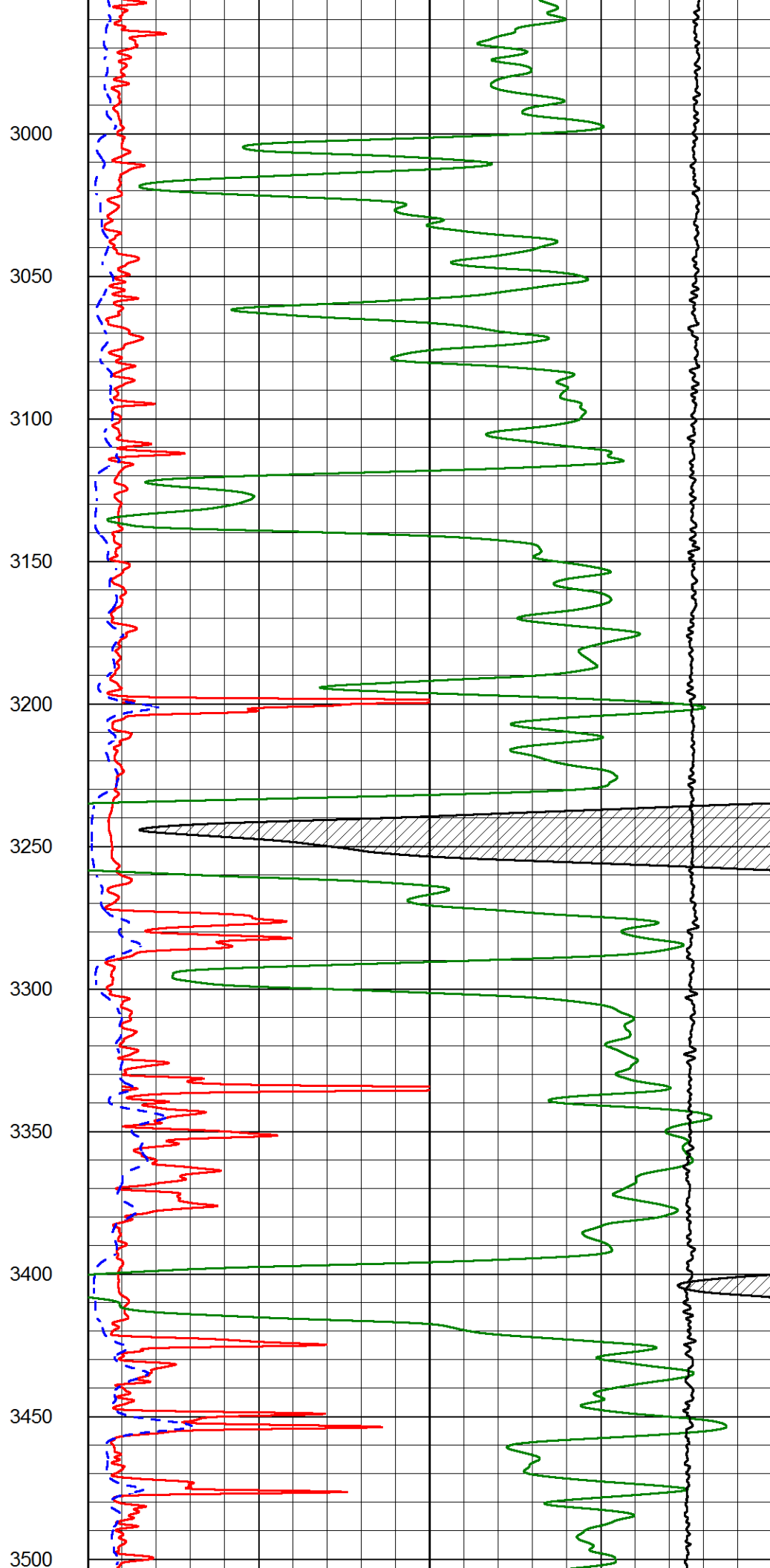
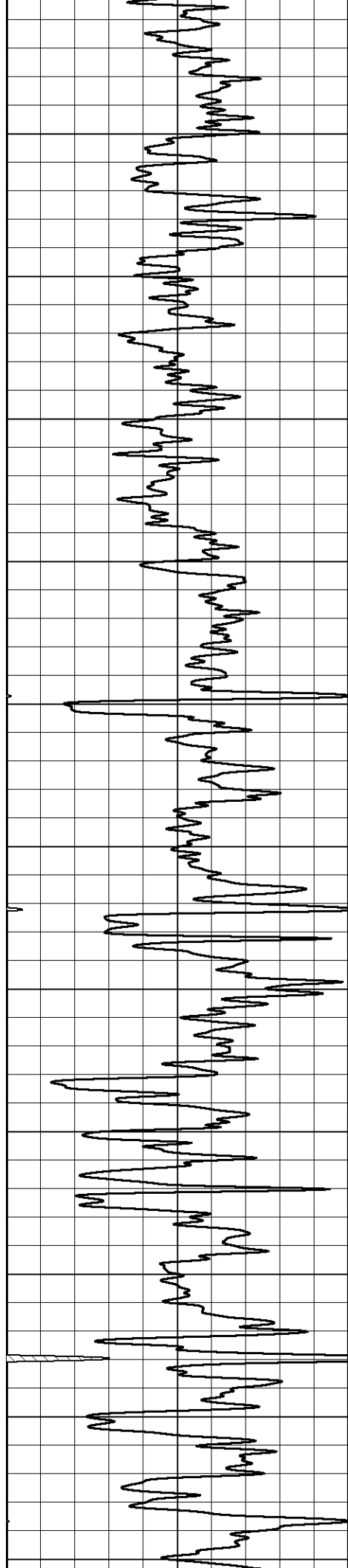


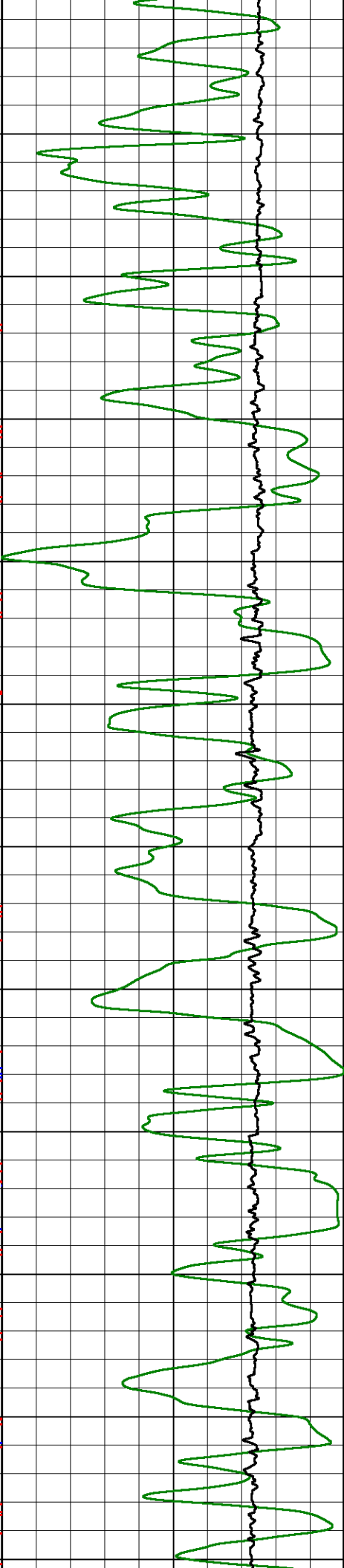
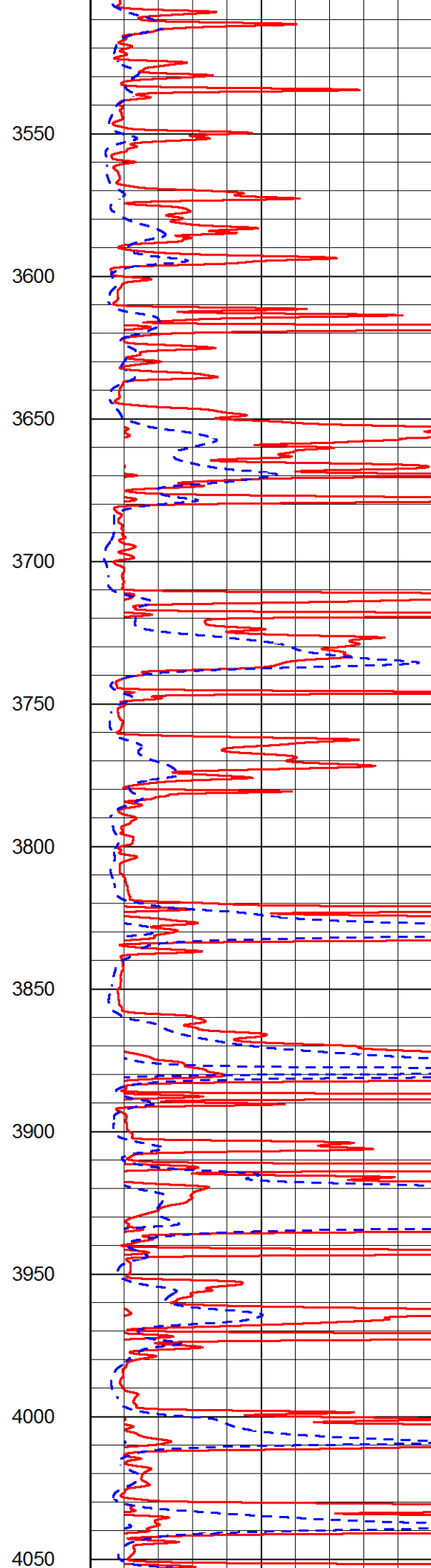
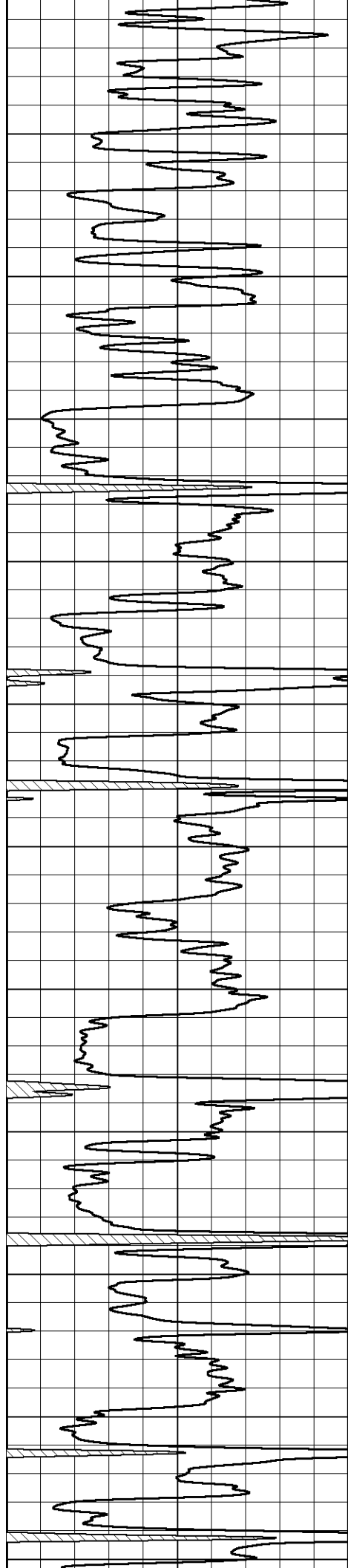
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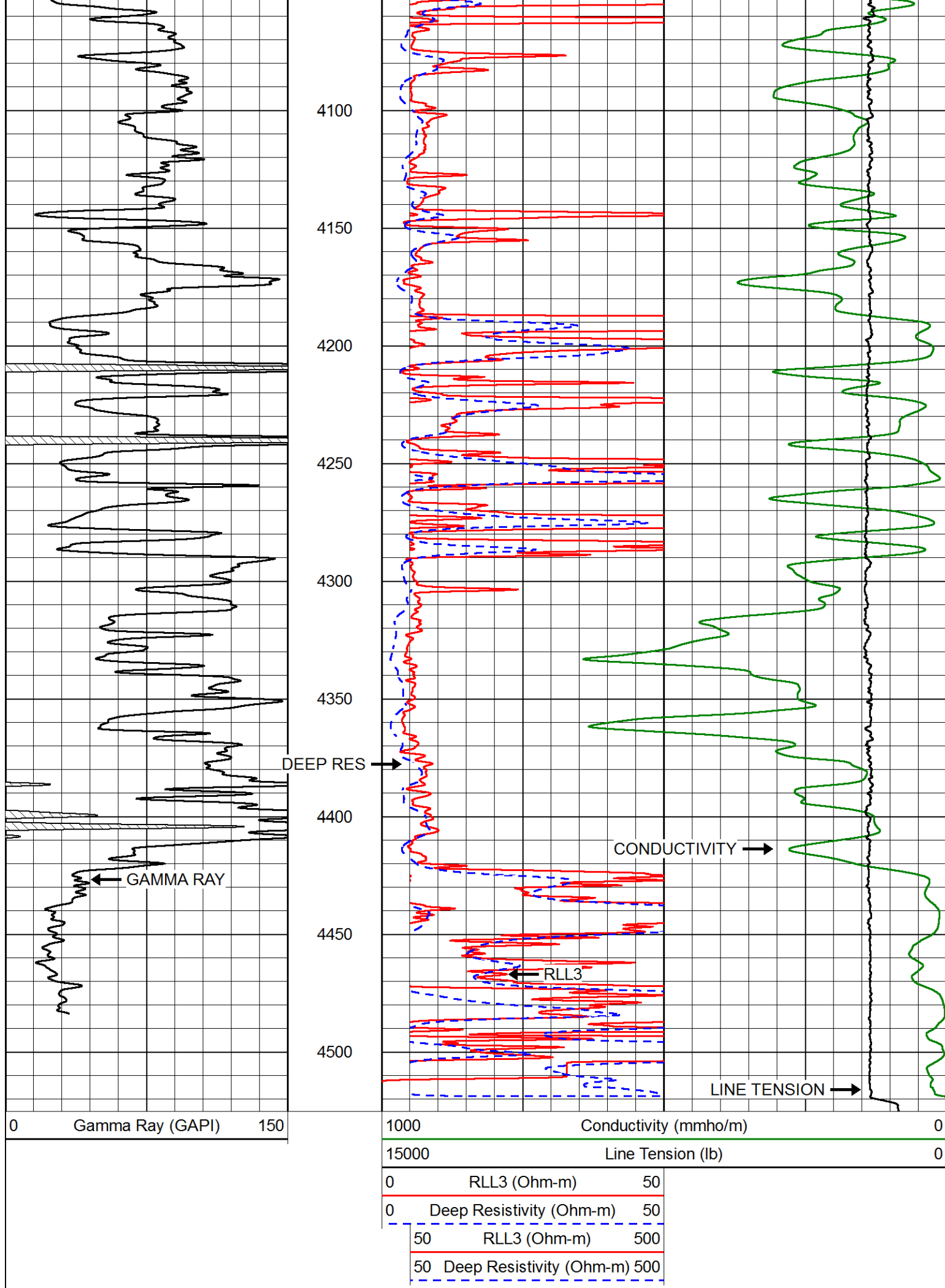










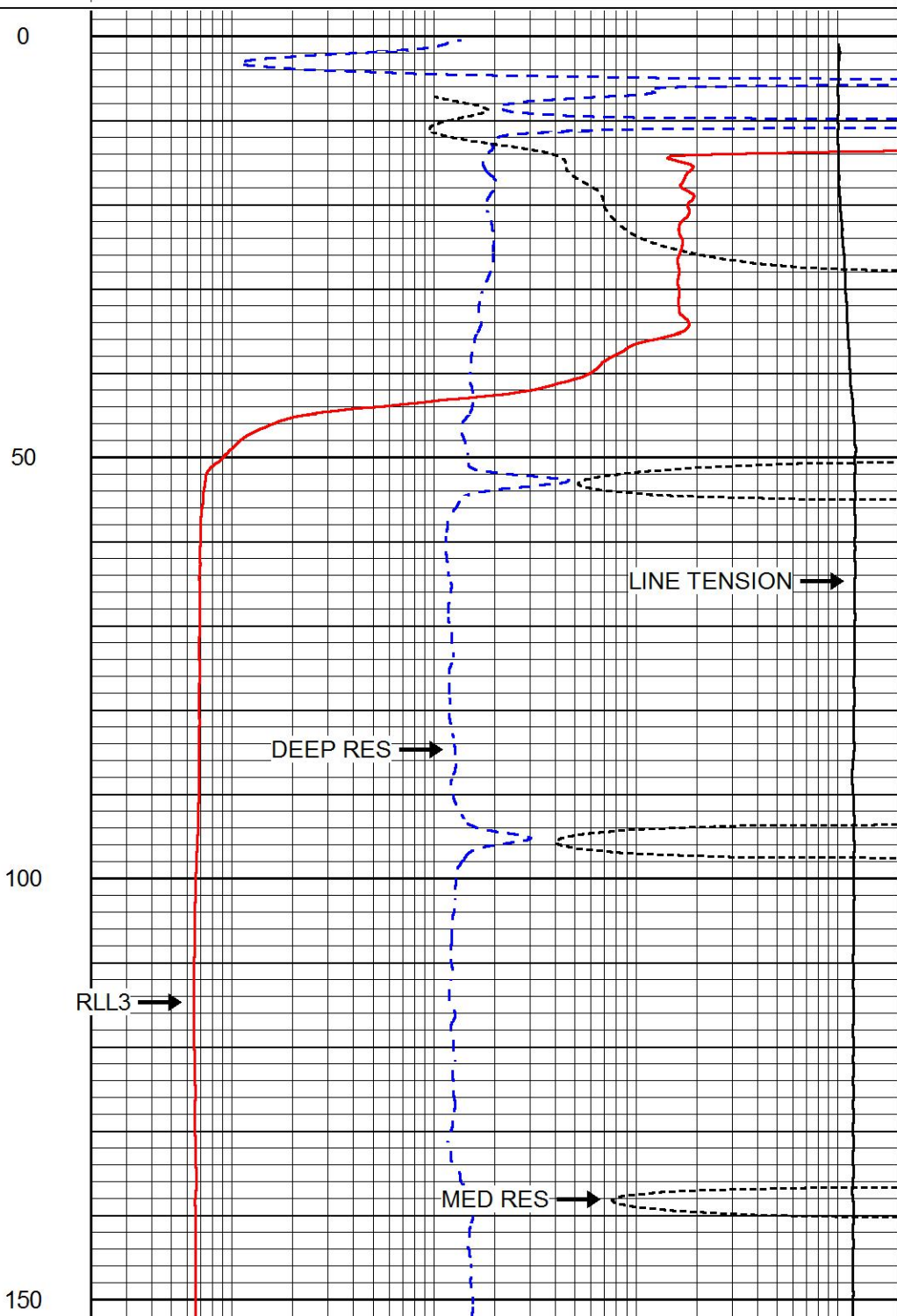
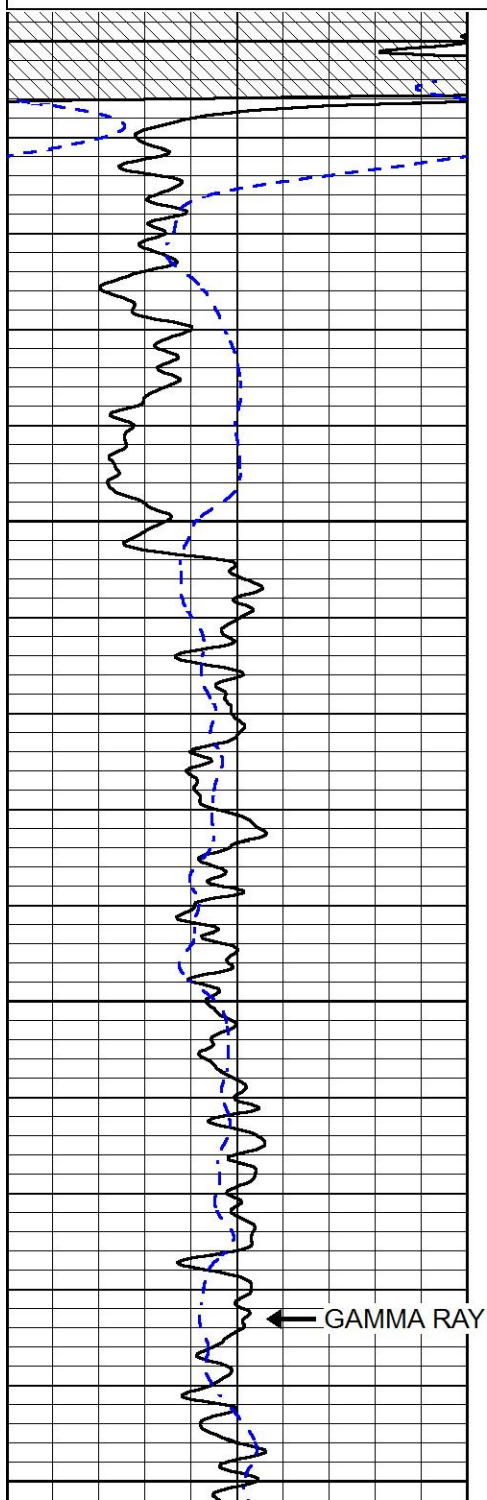


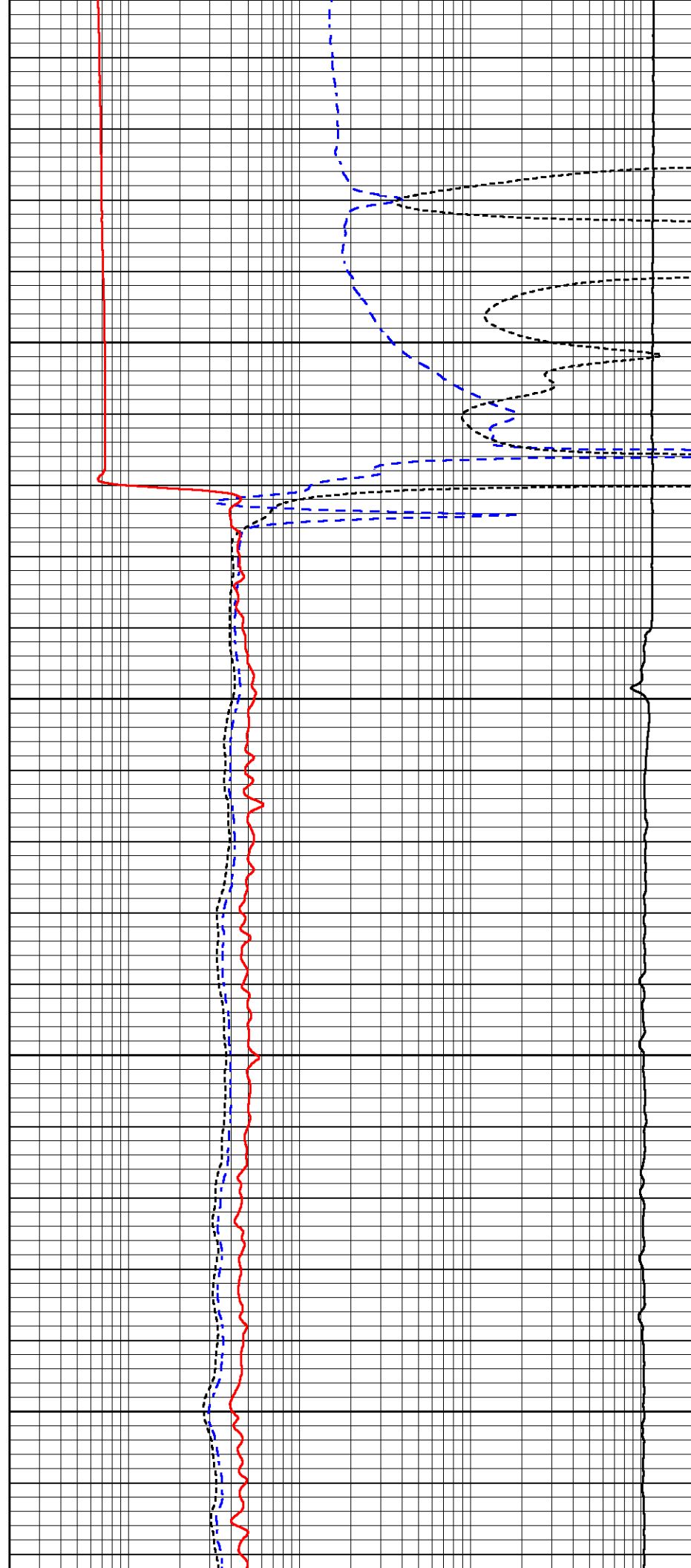
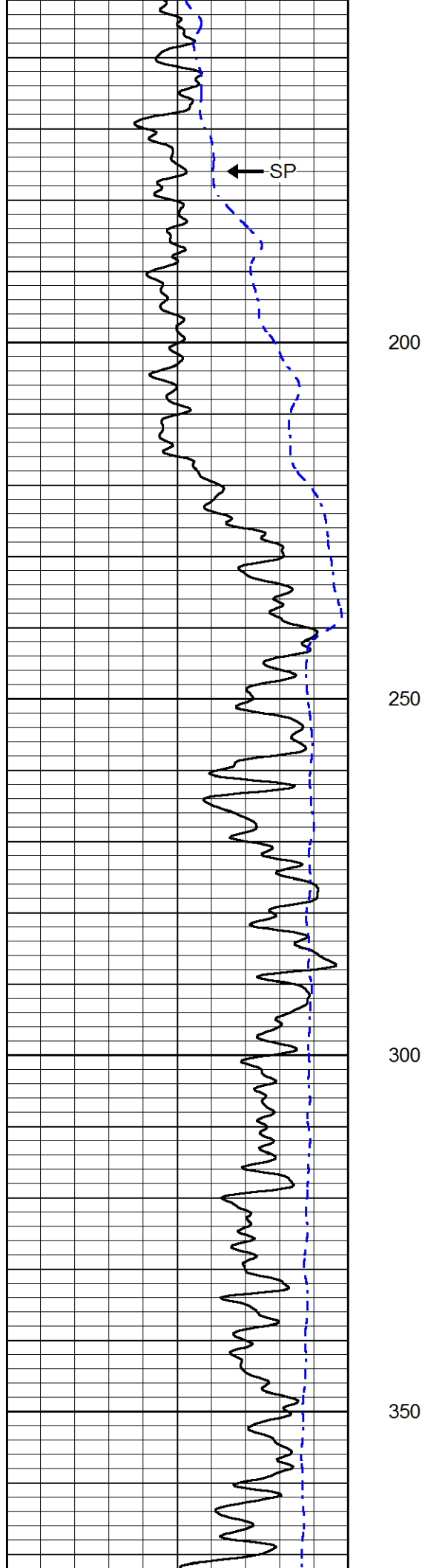
MAIN PASS

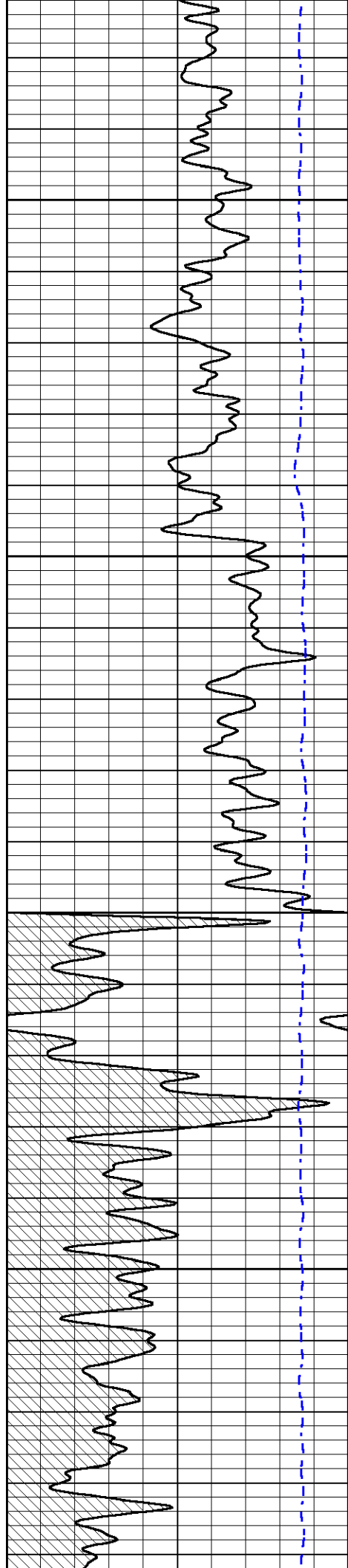
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Dataset Pathname STKML/pass4.1
Presentation Format dil
Dataset Creation Wed Nov 01 10:54:10 2017
Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0





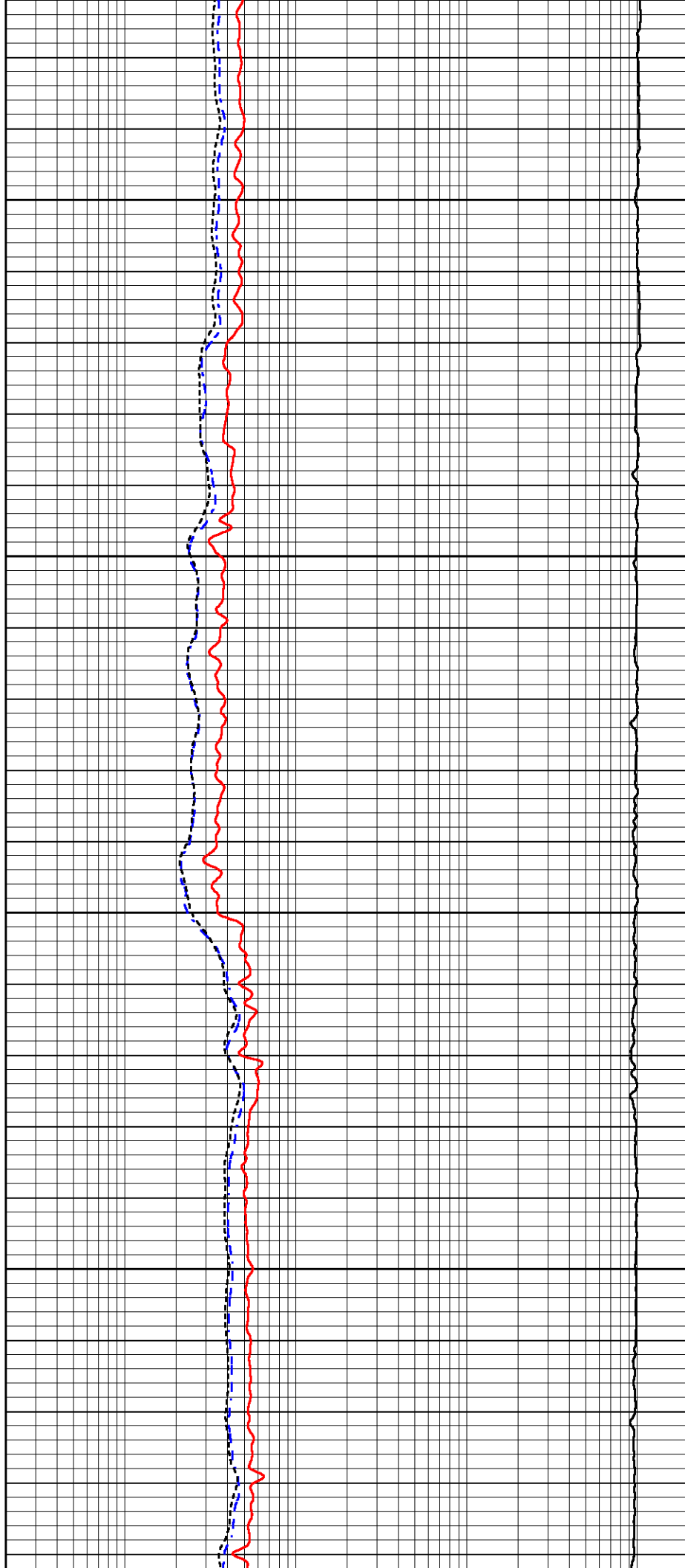


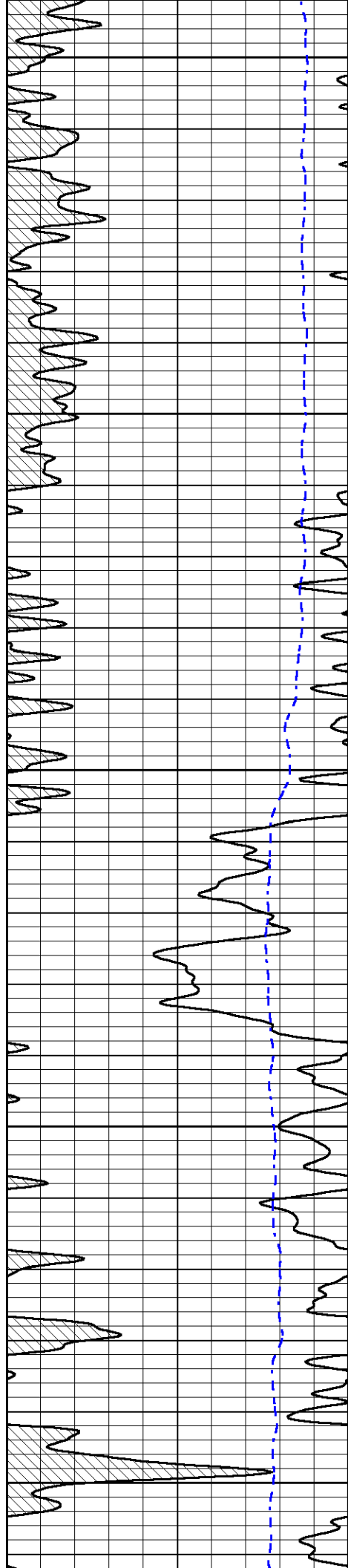
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450

500

550





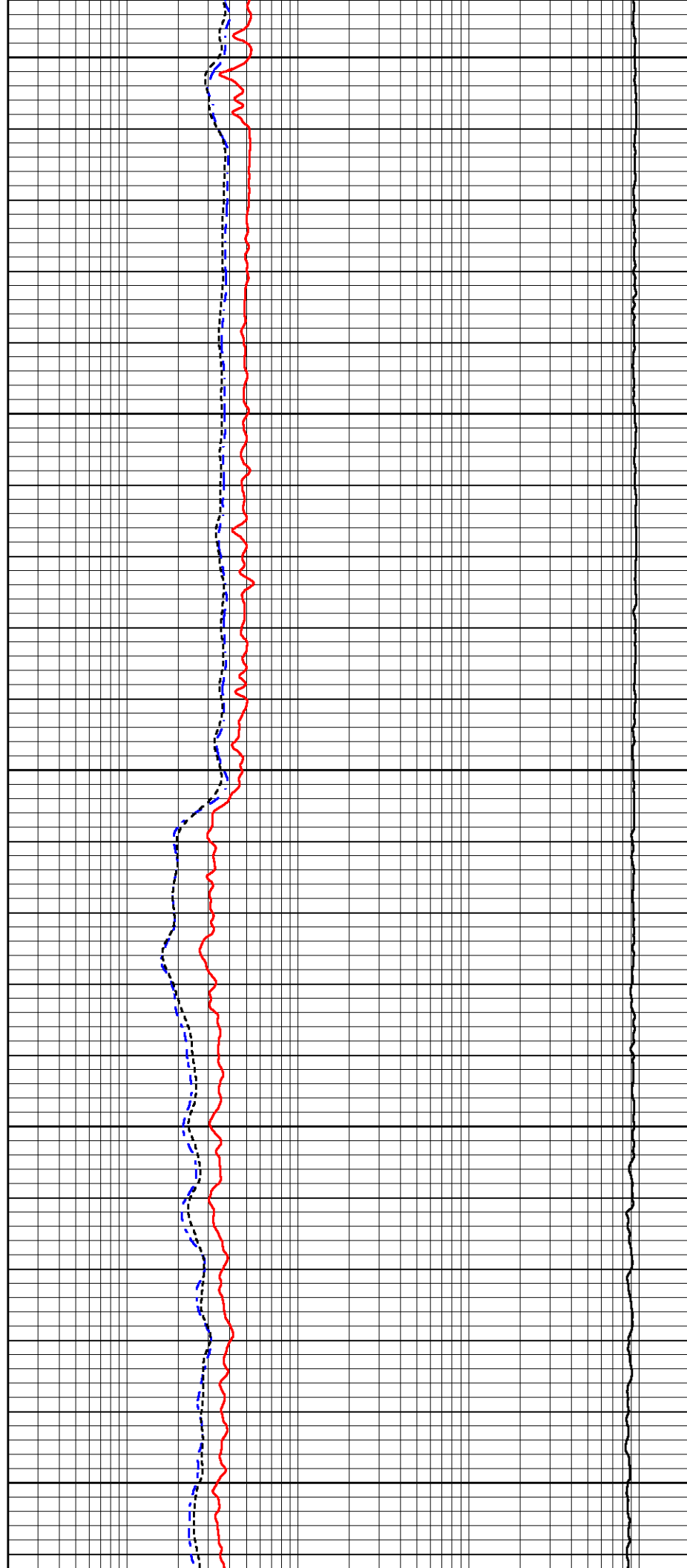
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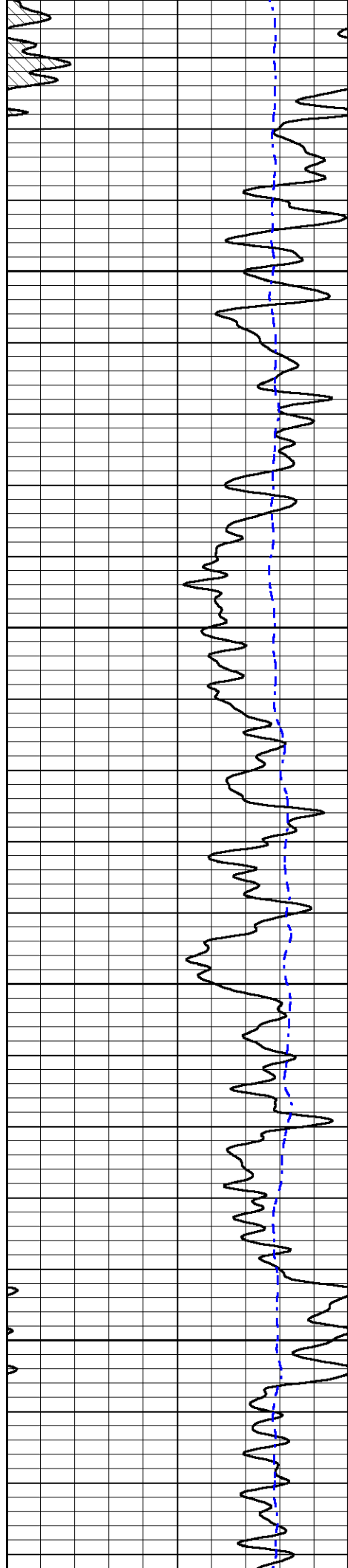
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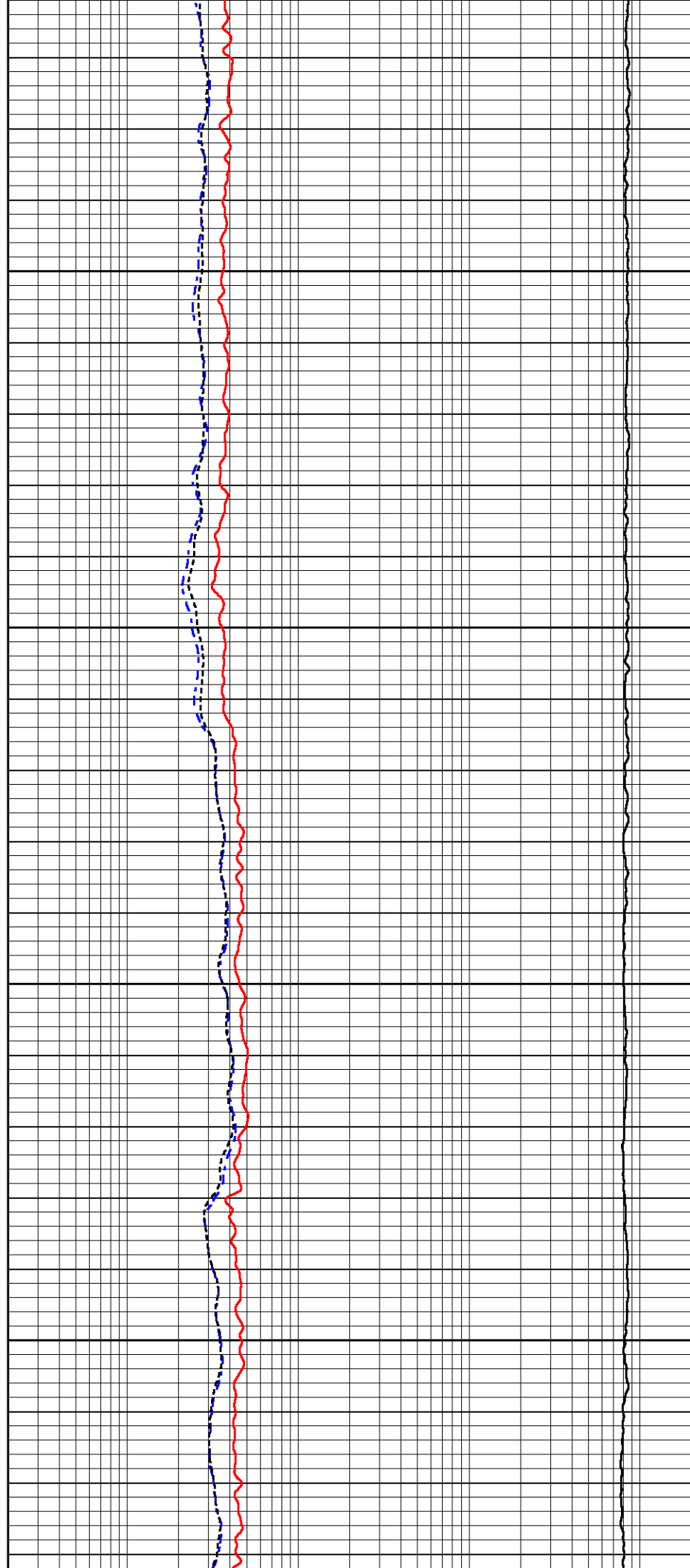


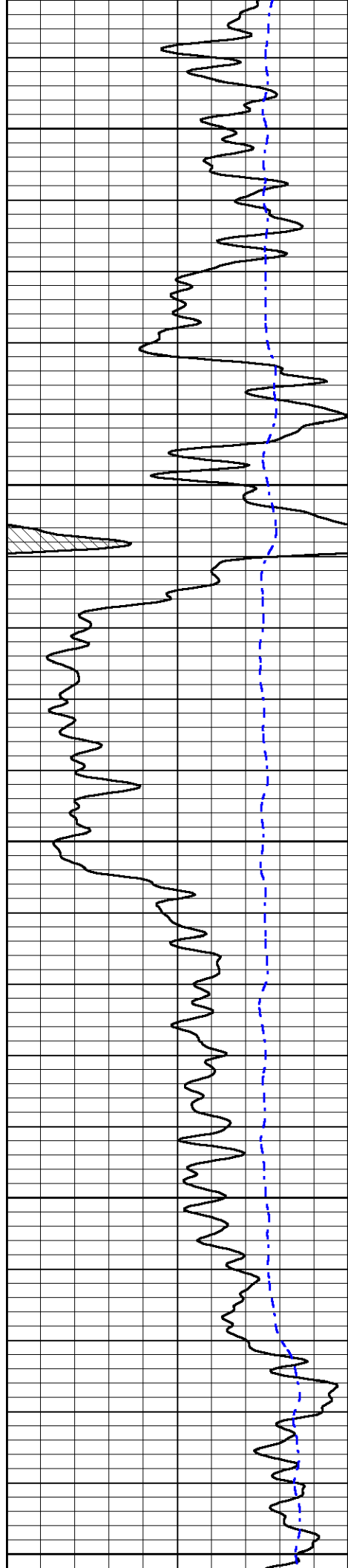
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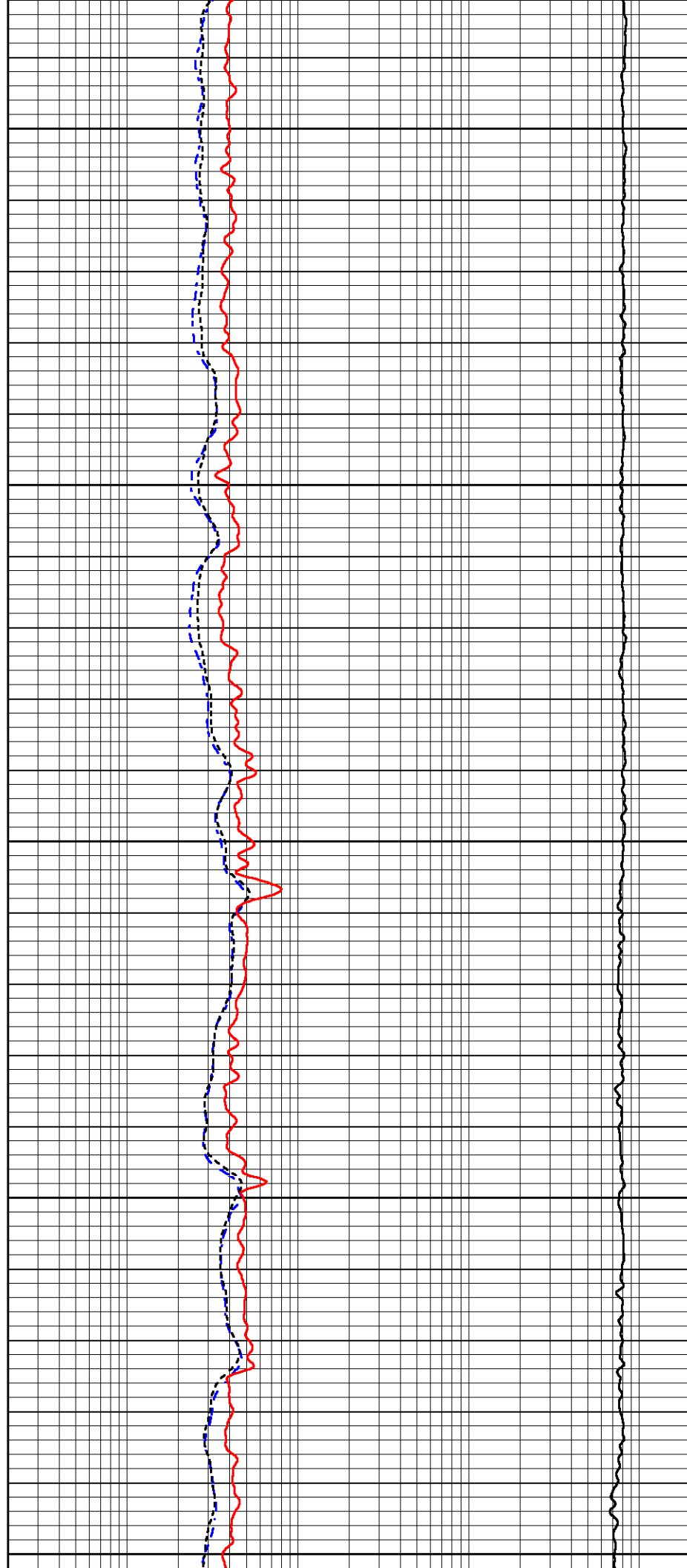
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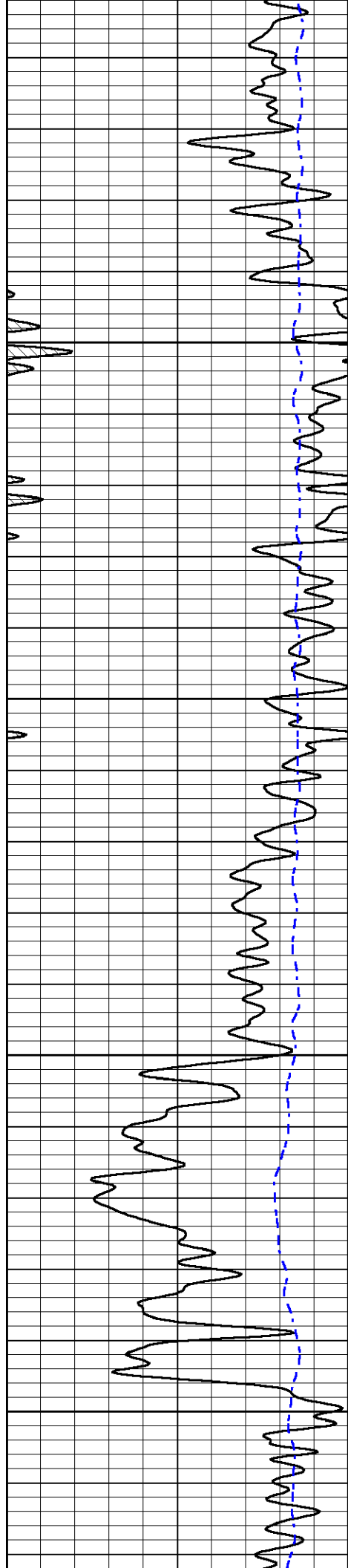
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1150

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1250



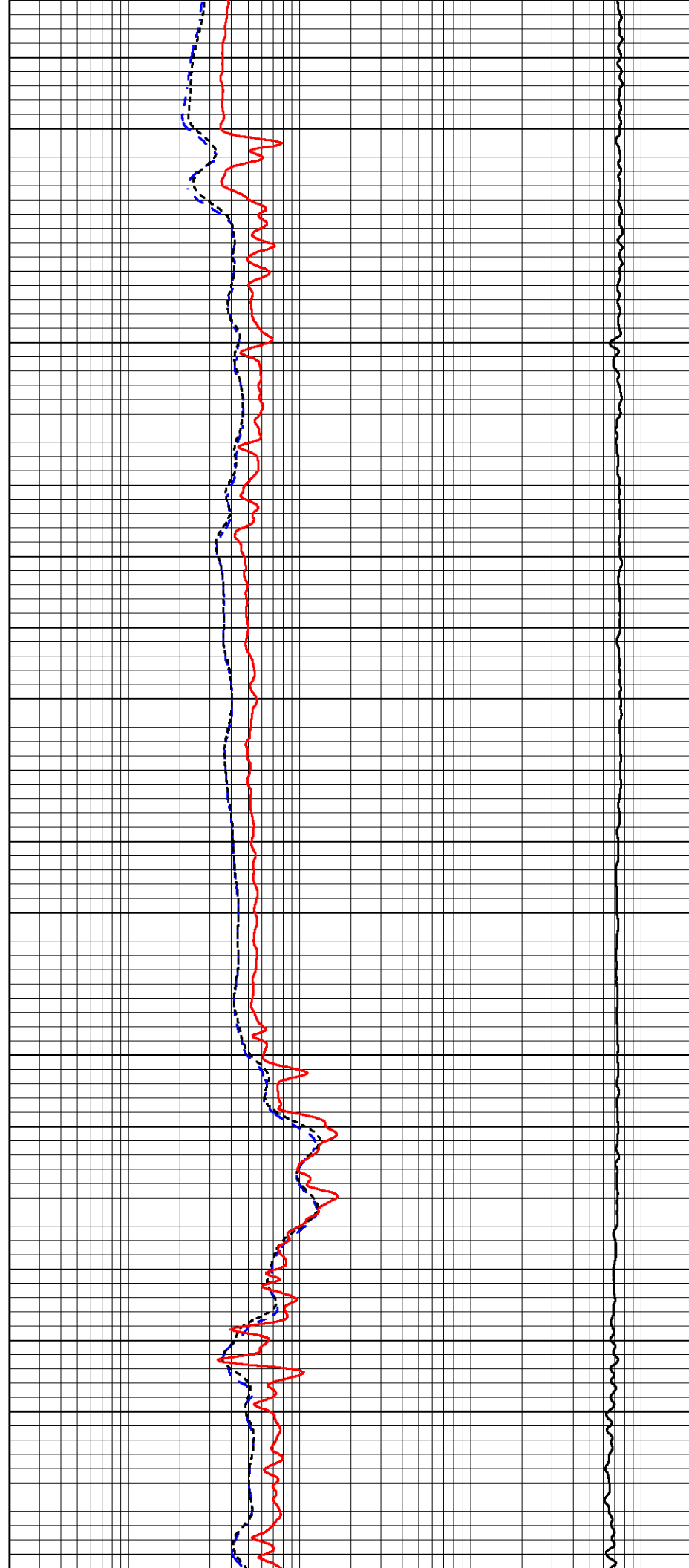


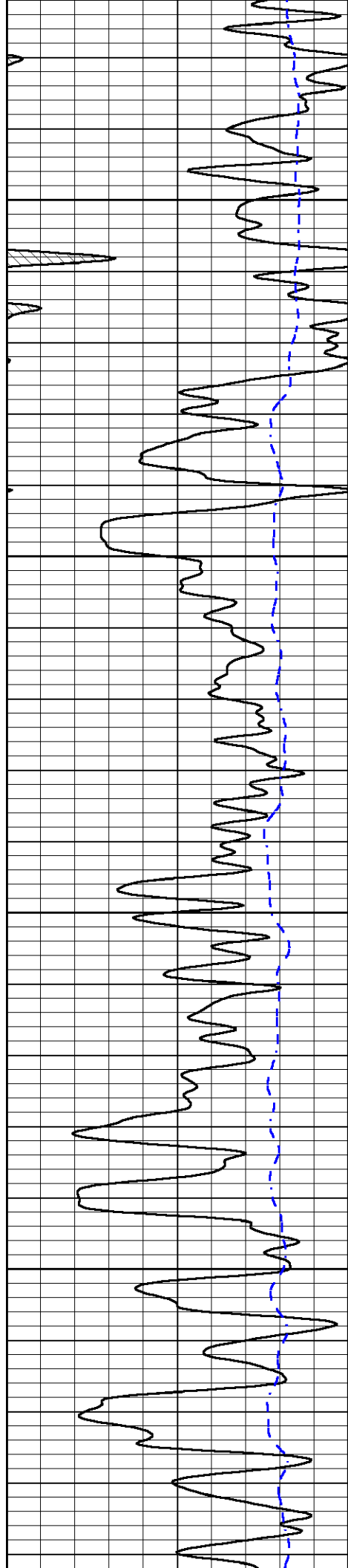
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1450



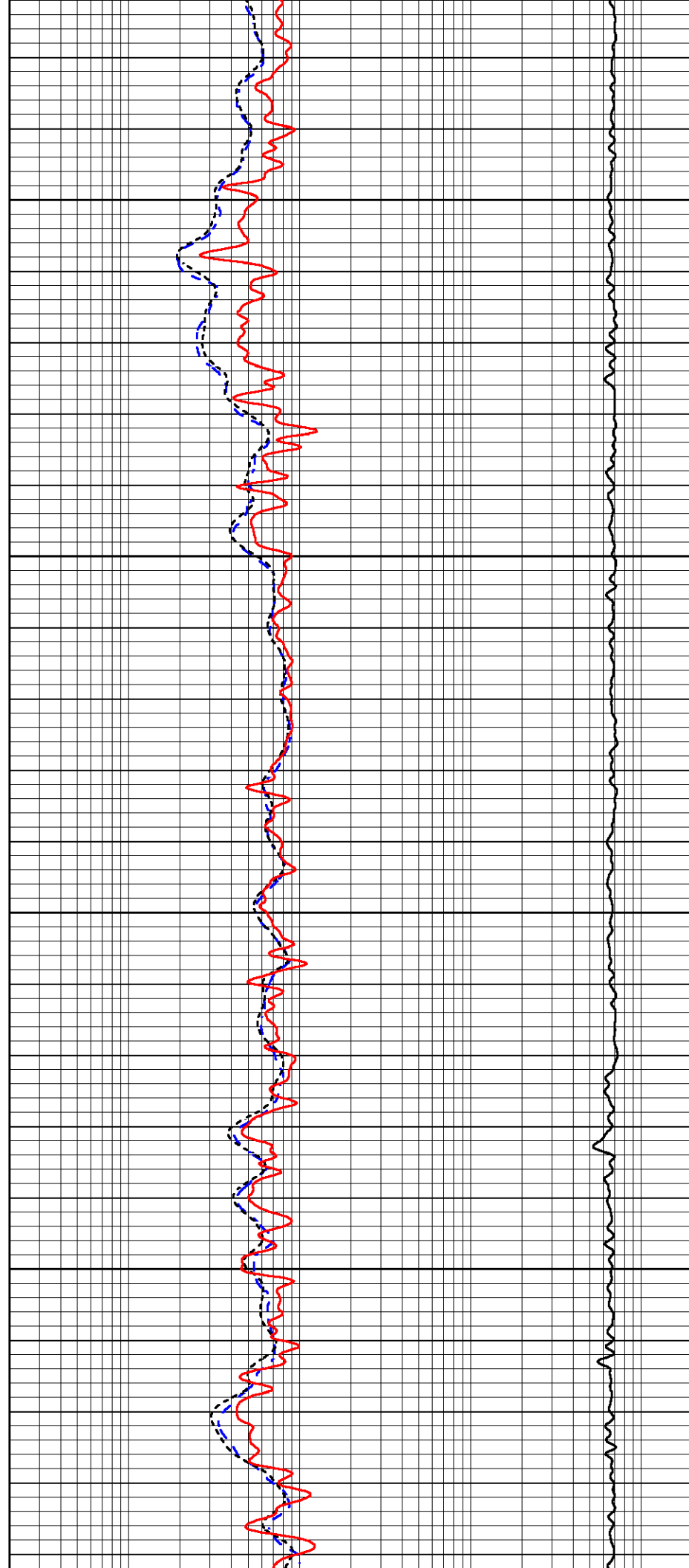


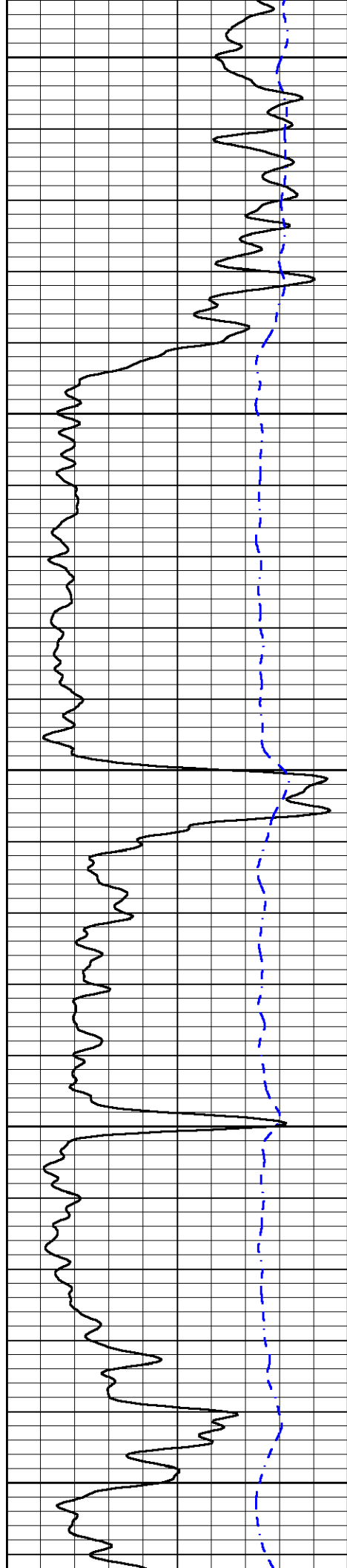
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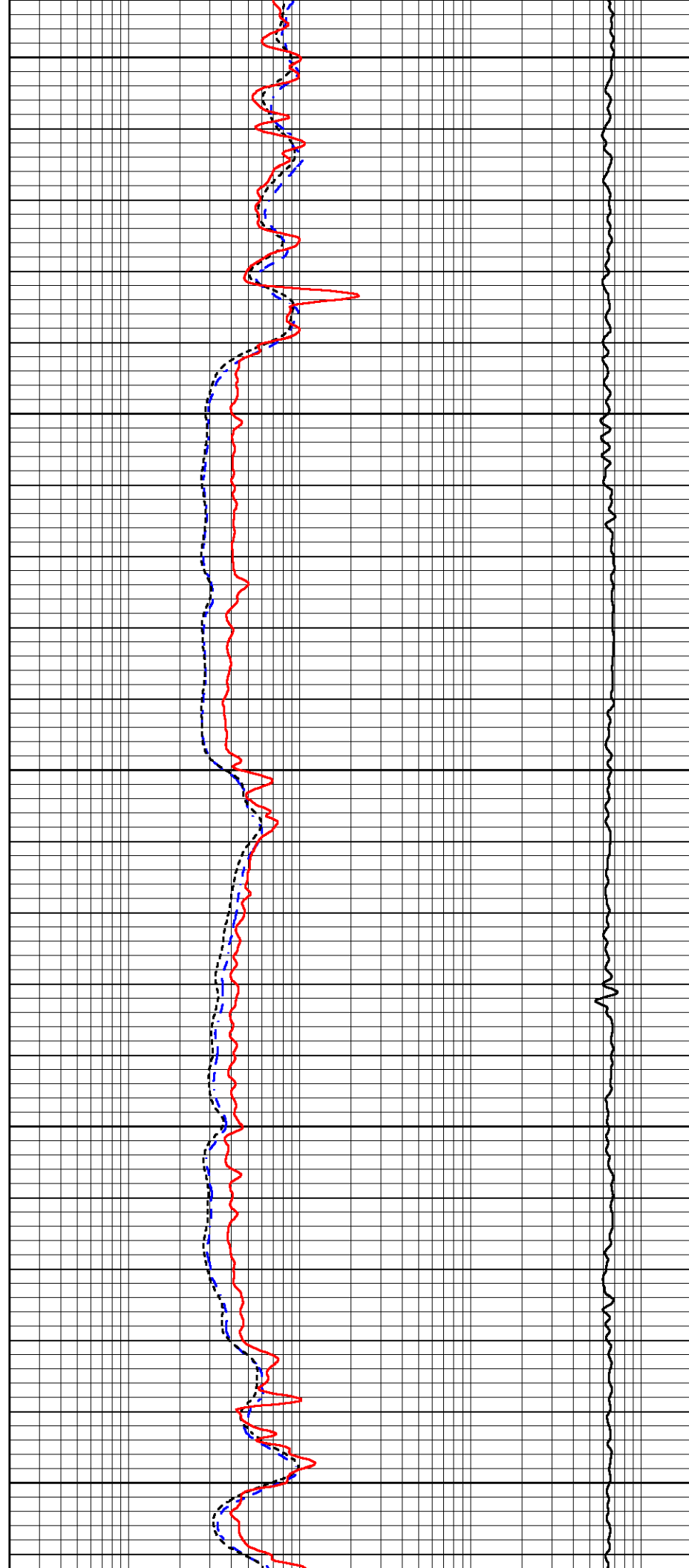
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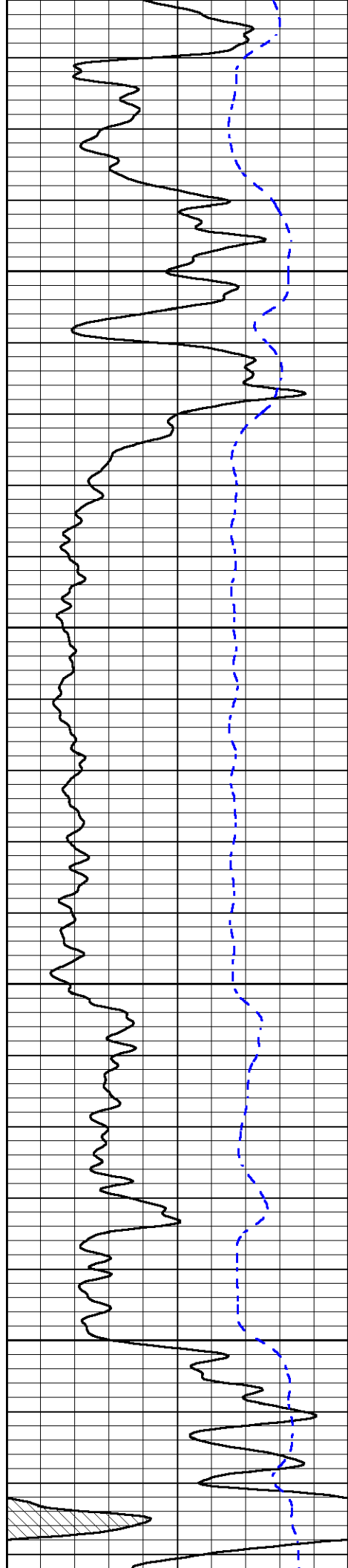
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1850

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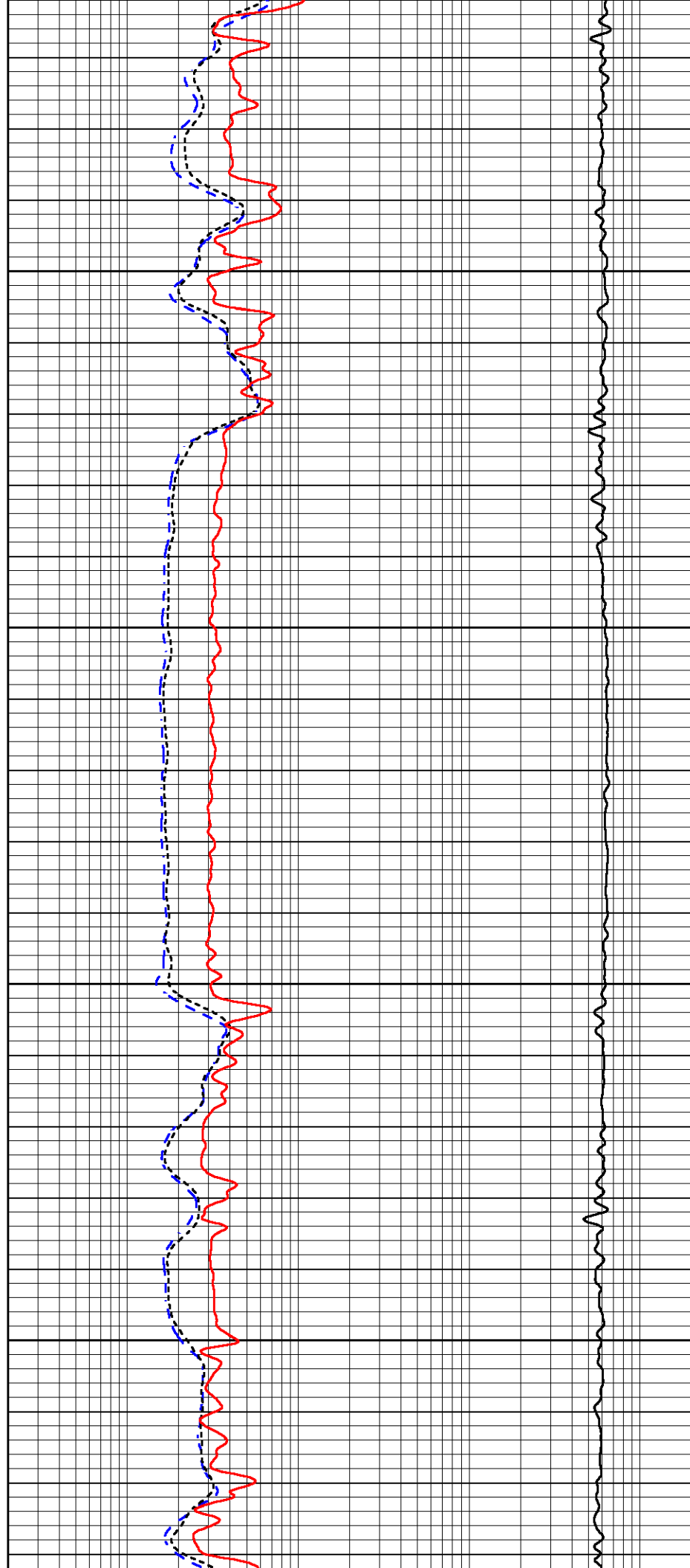


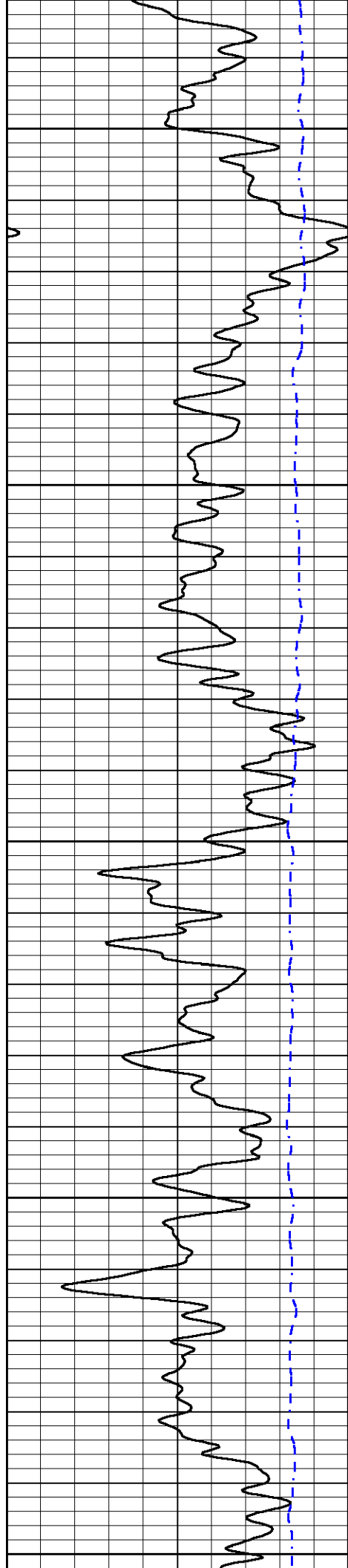
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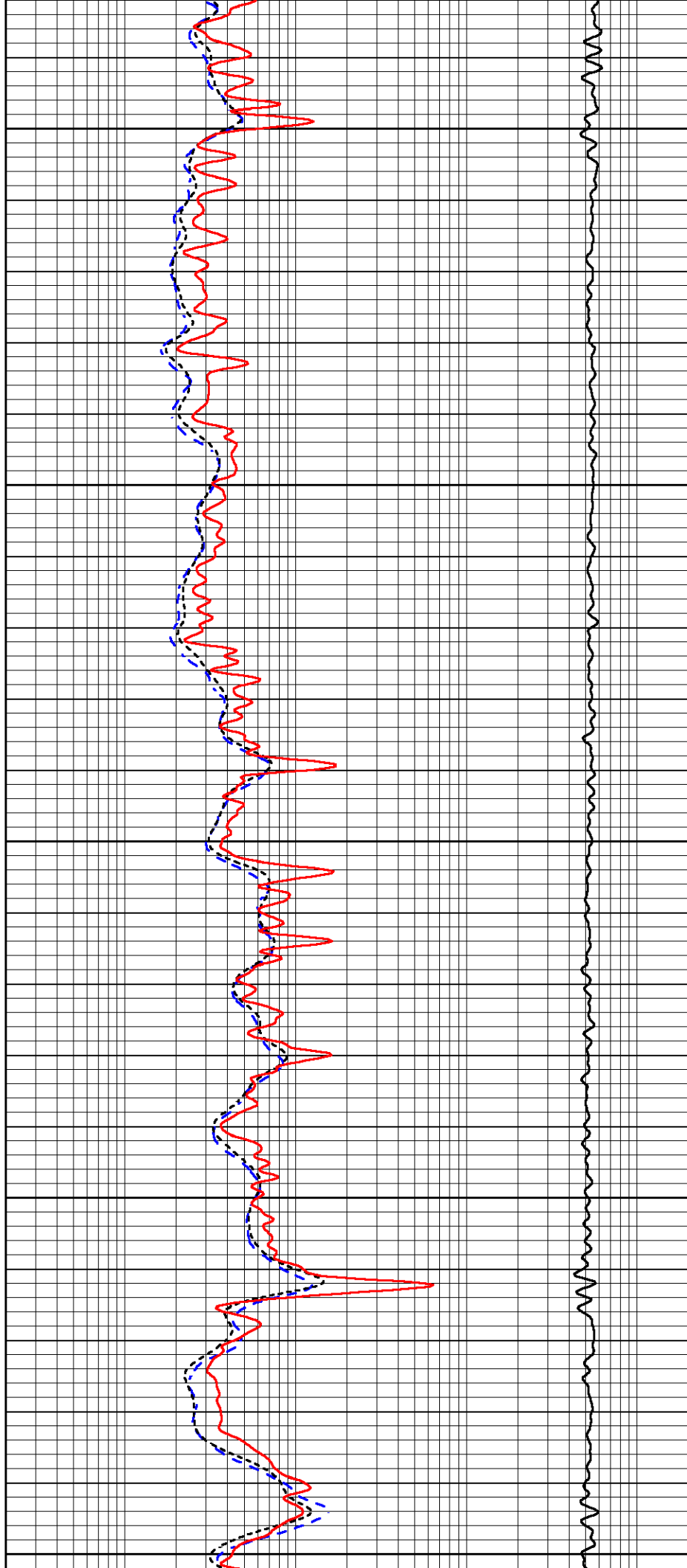
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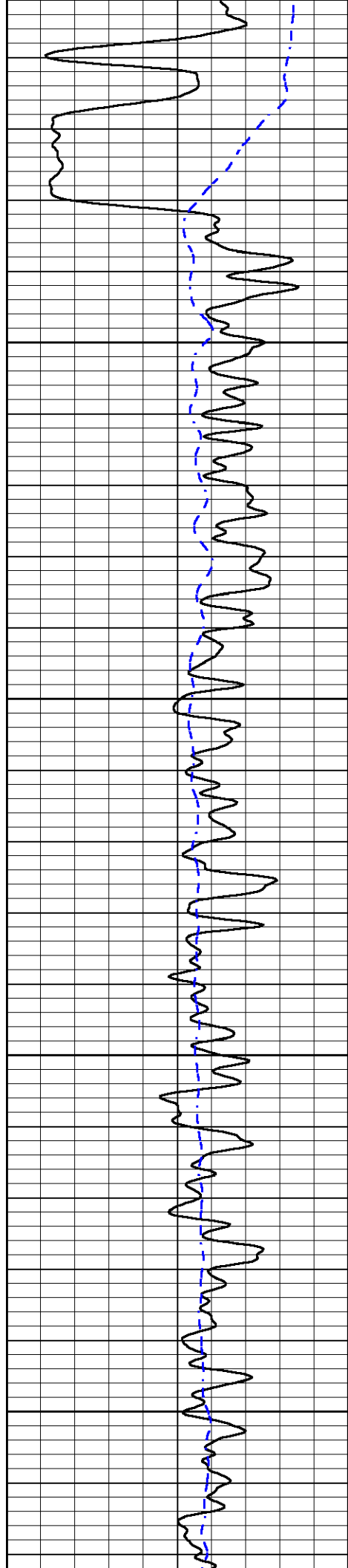
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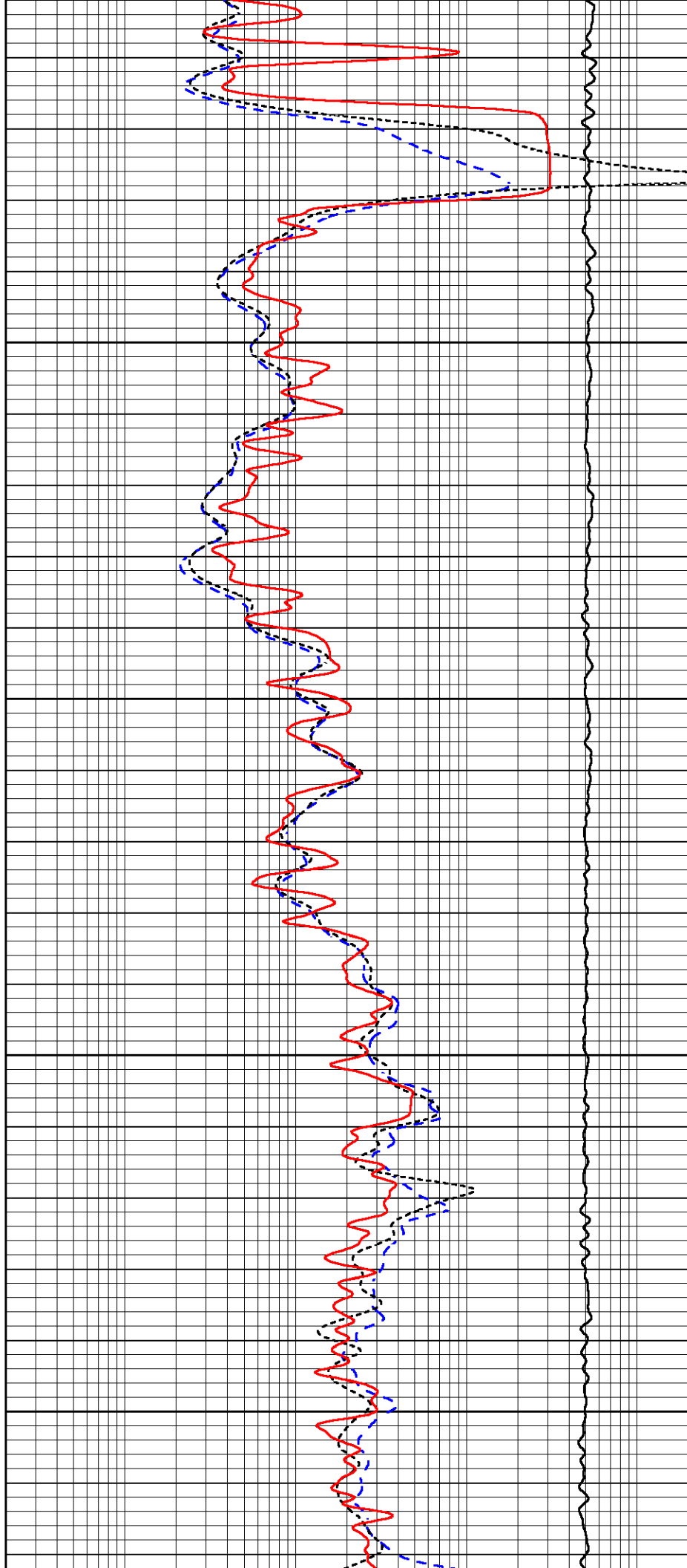


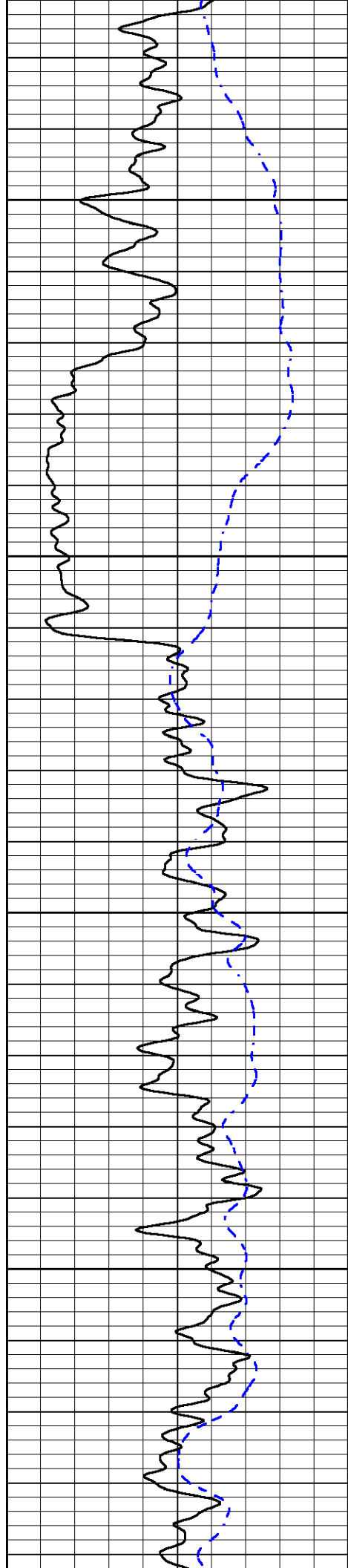
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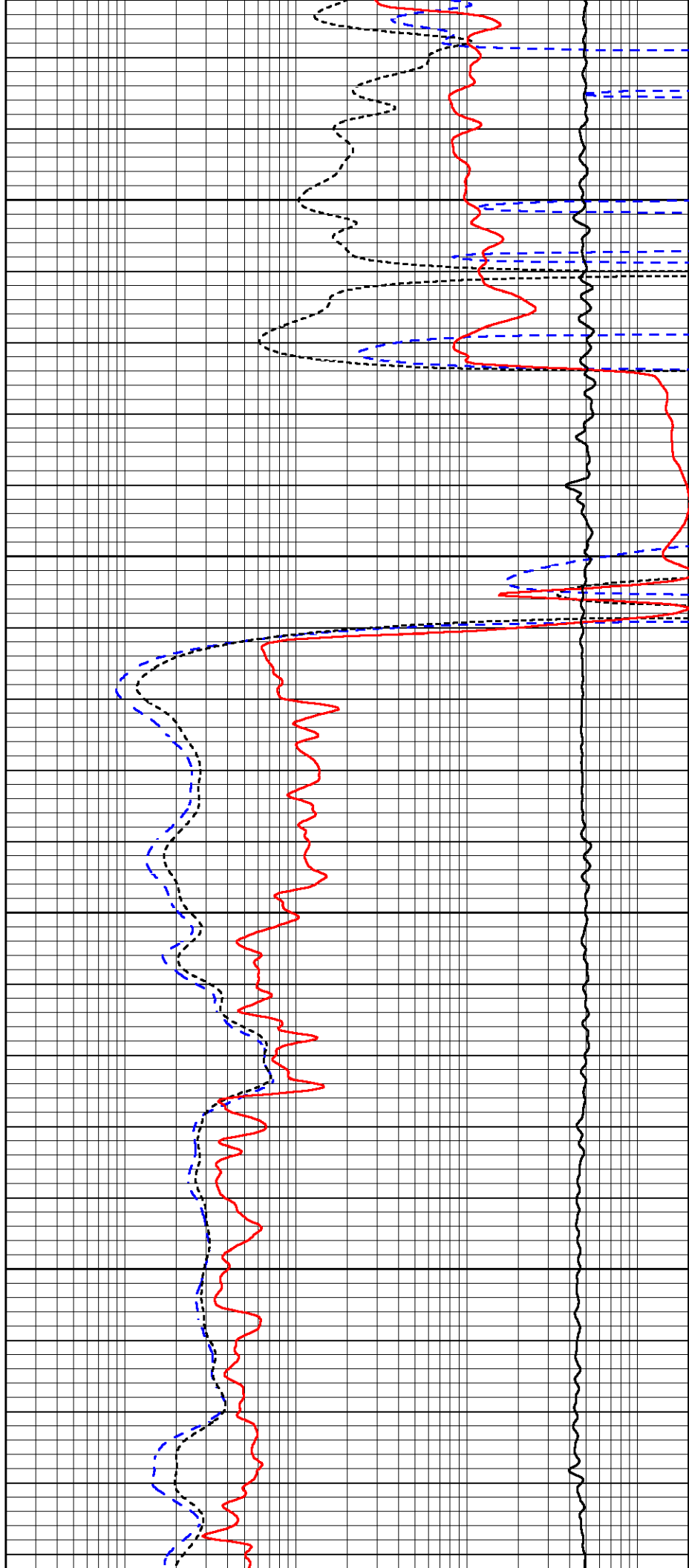


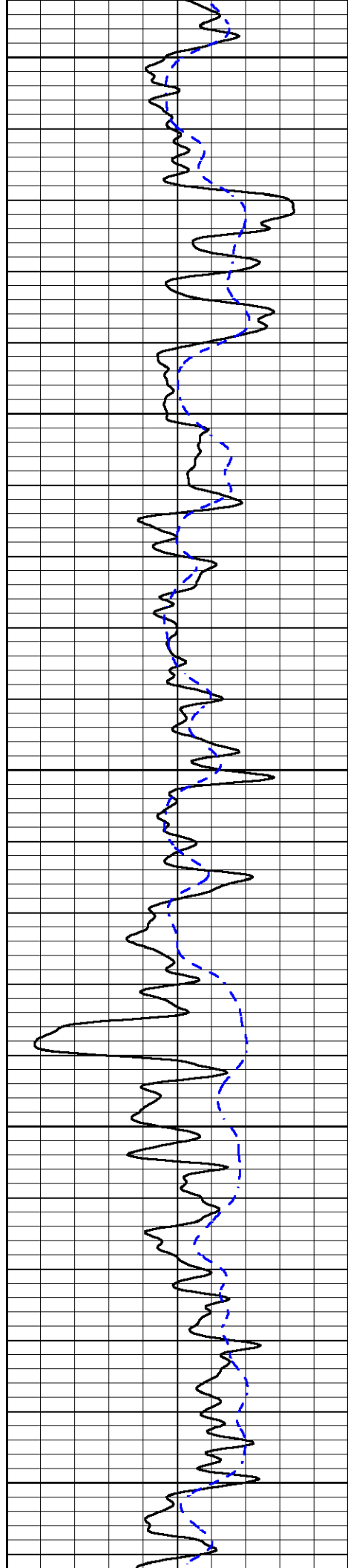
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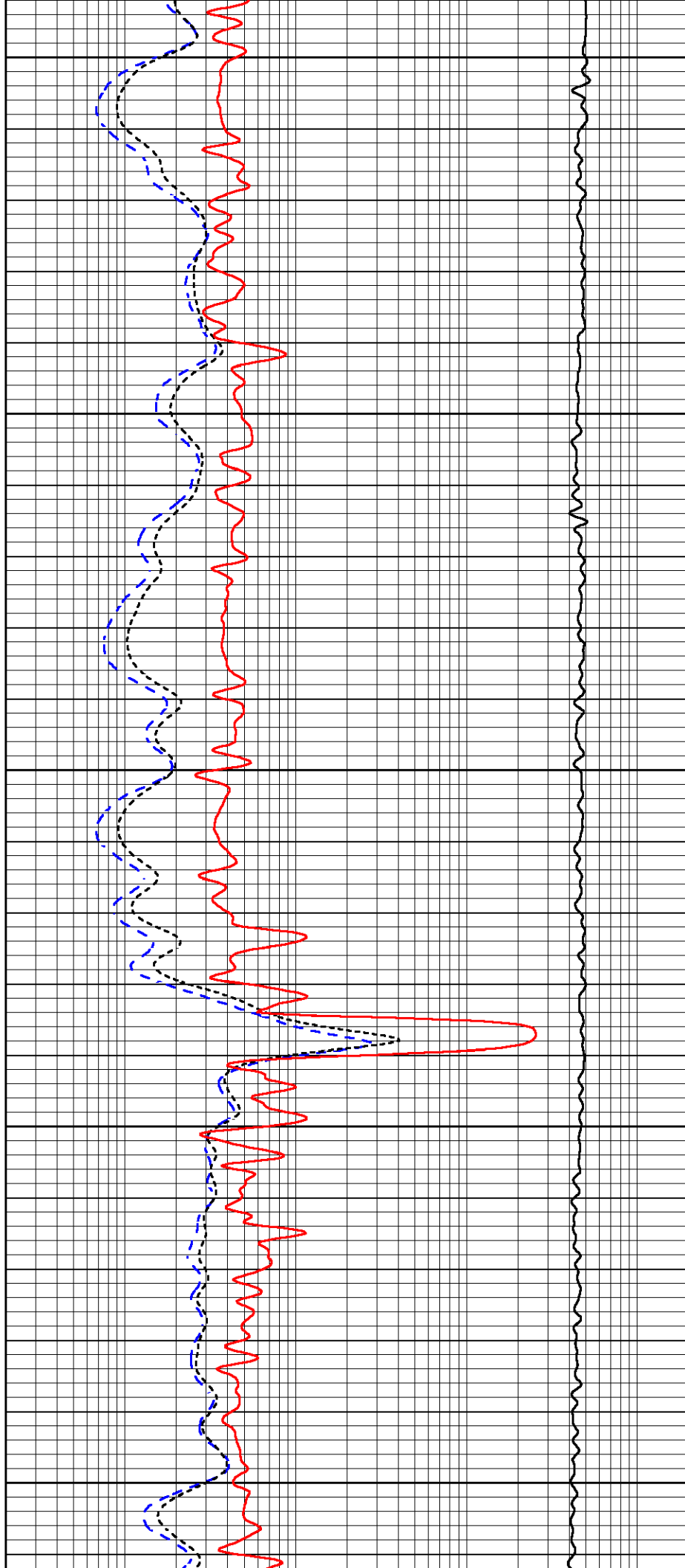
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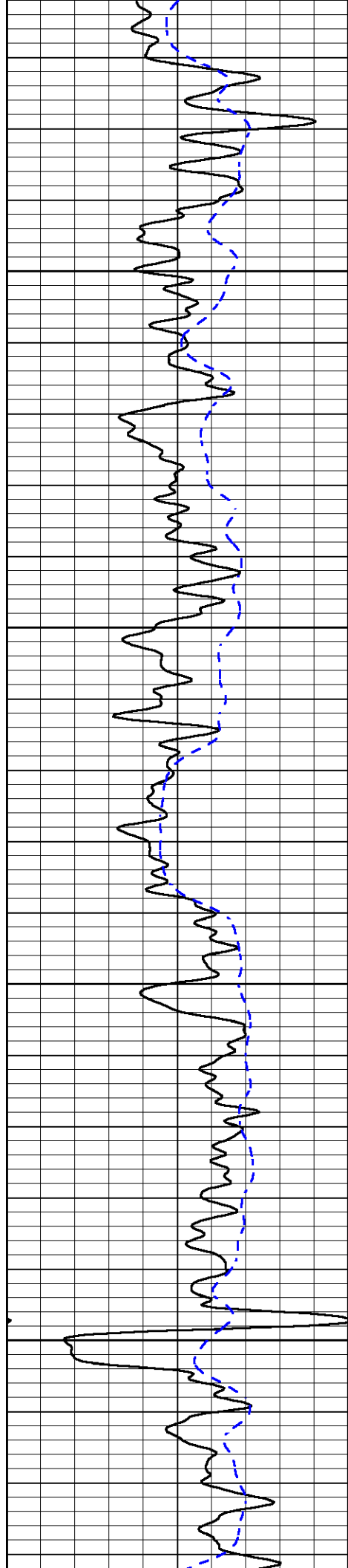
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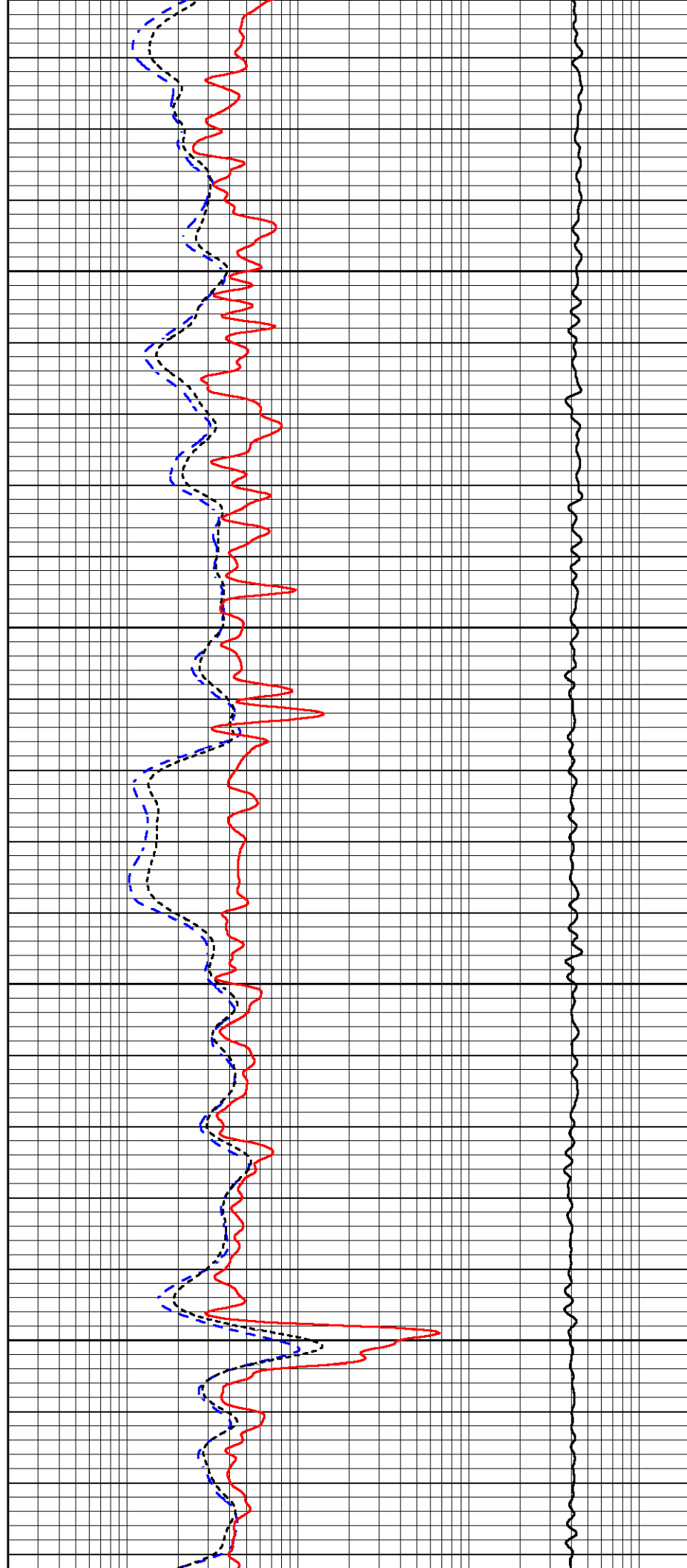


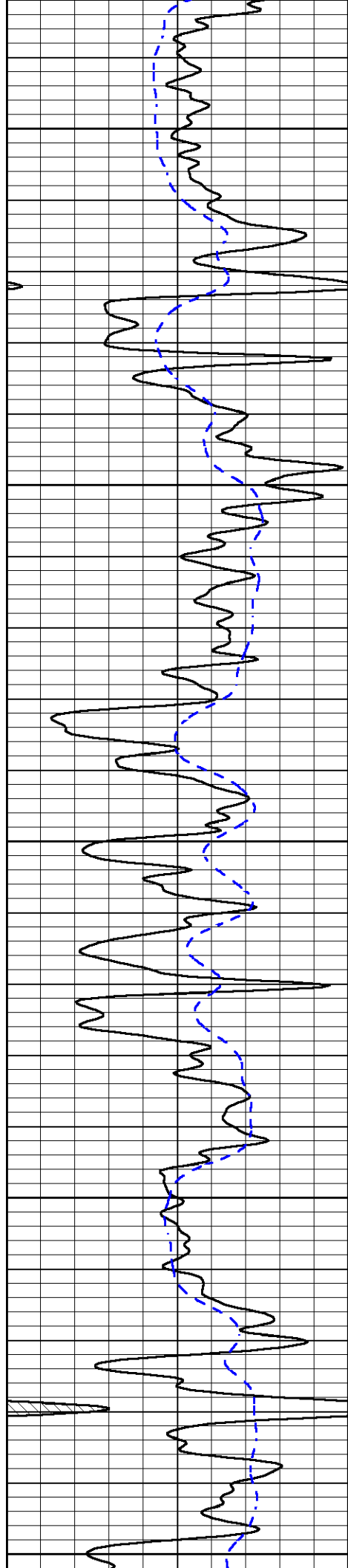
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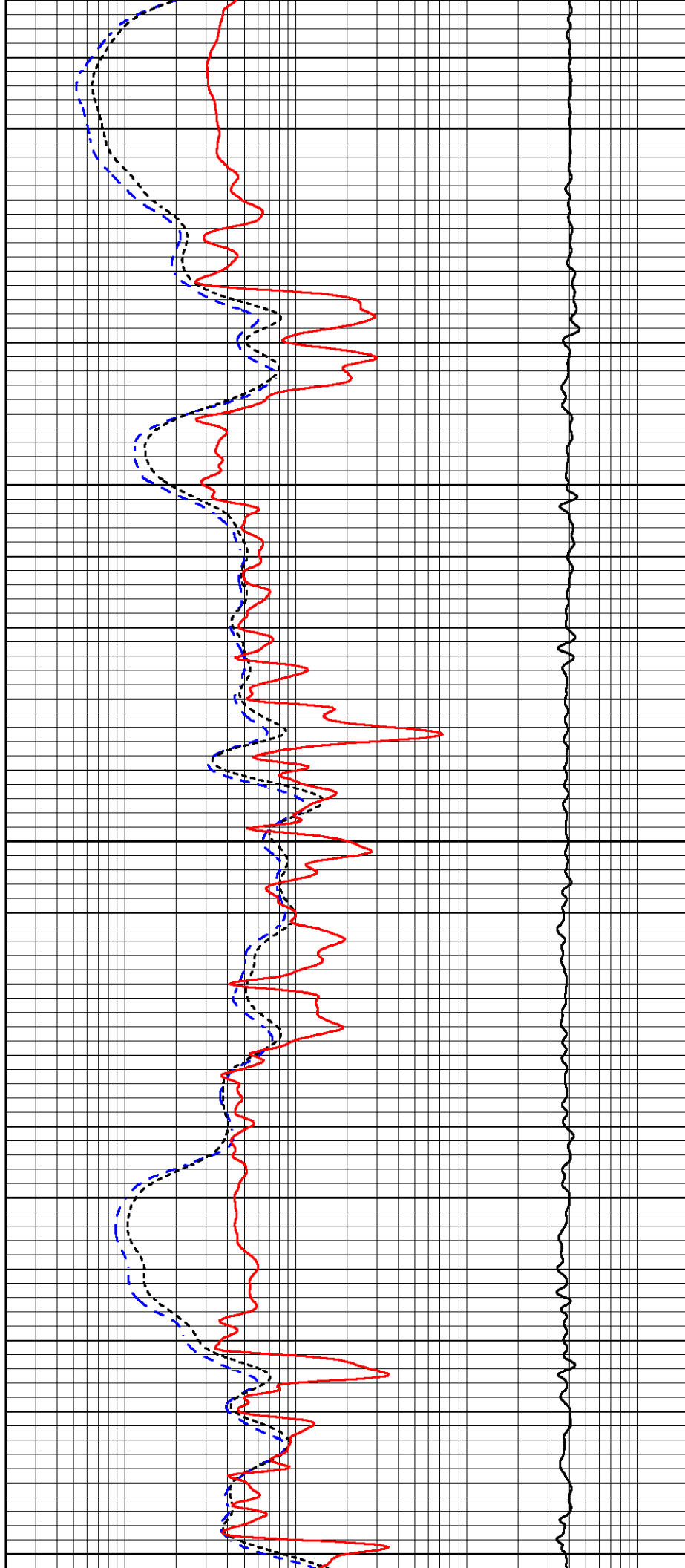
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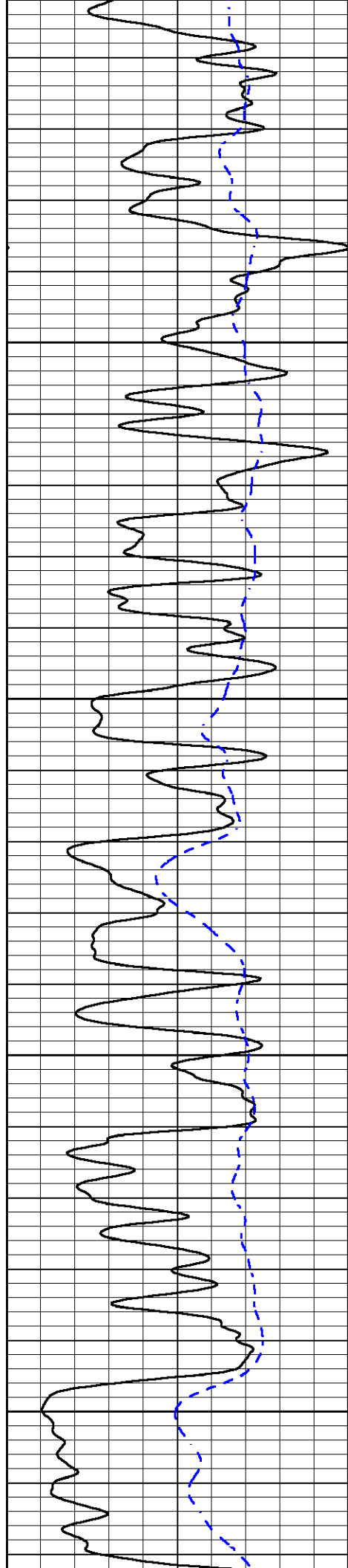
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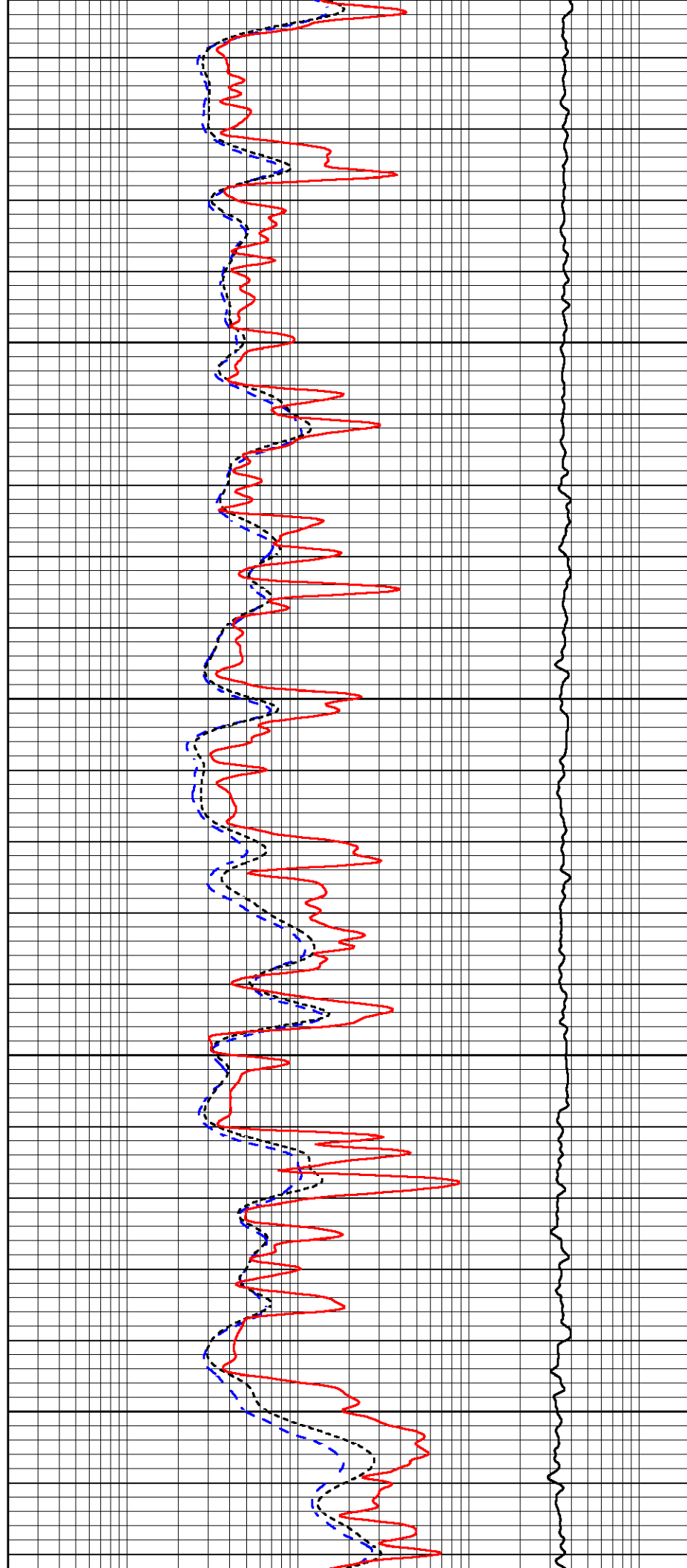


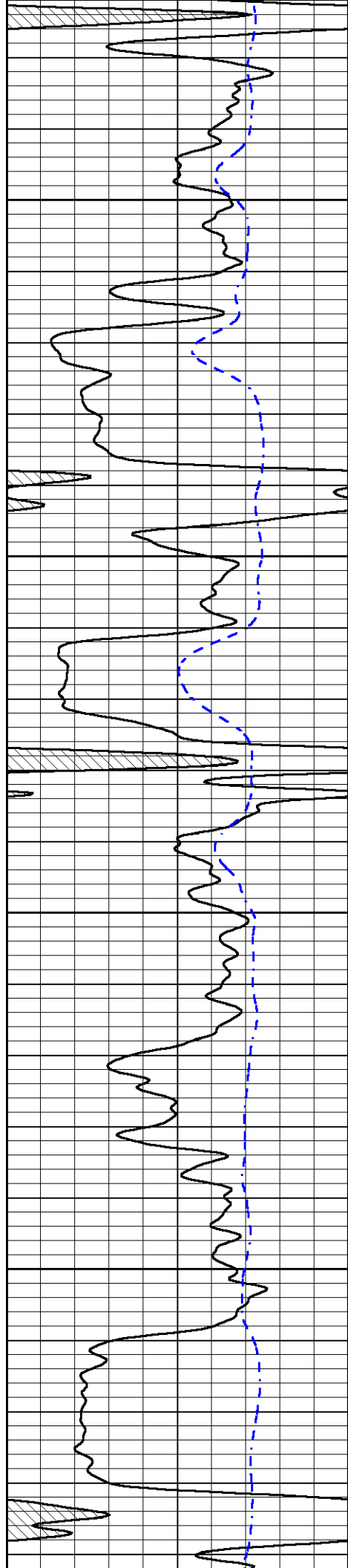
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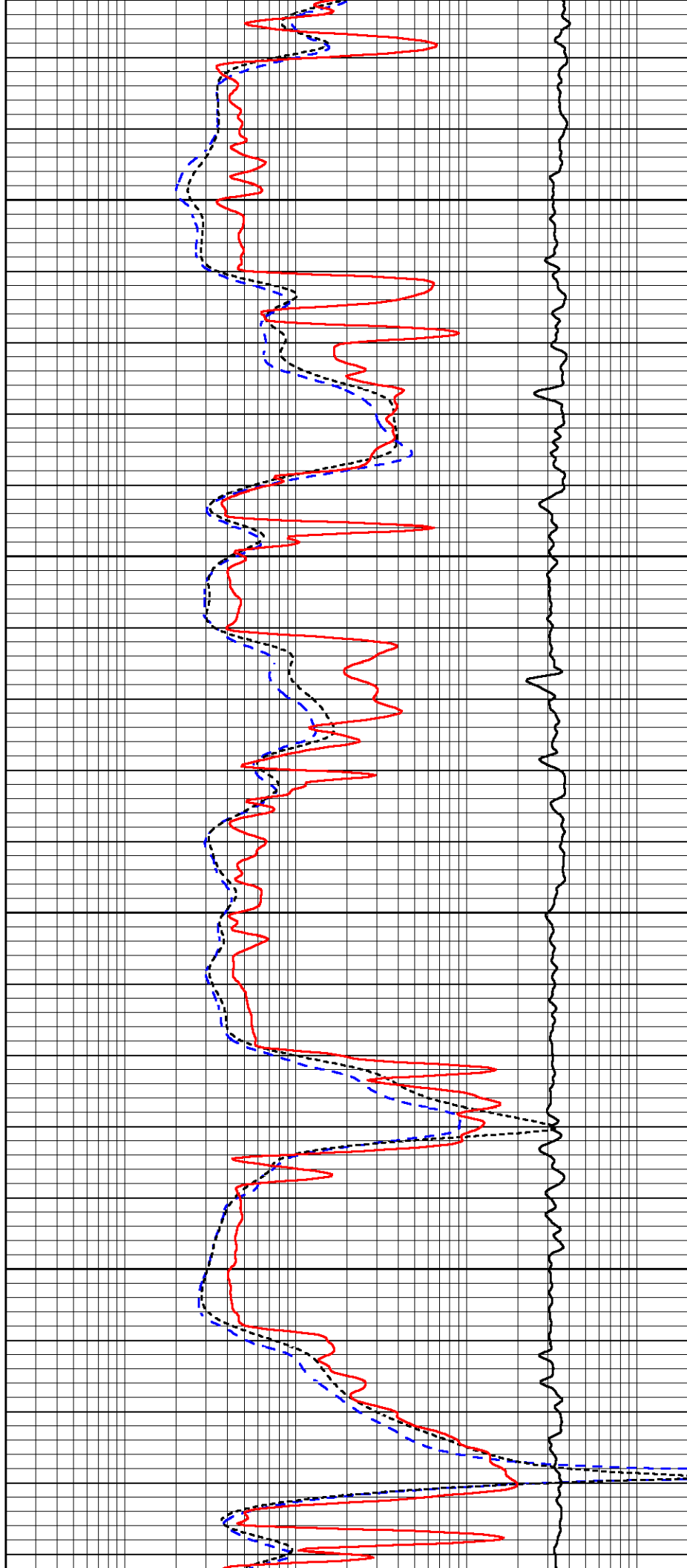


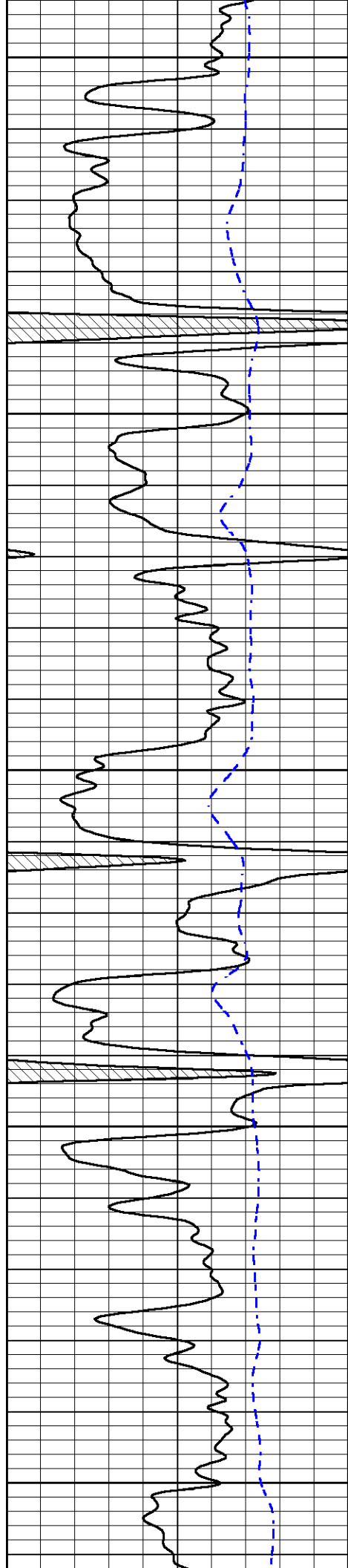
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3850





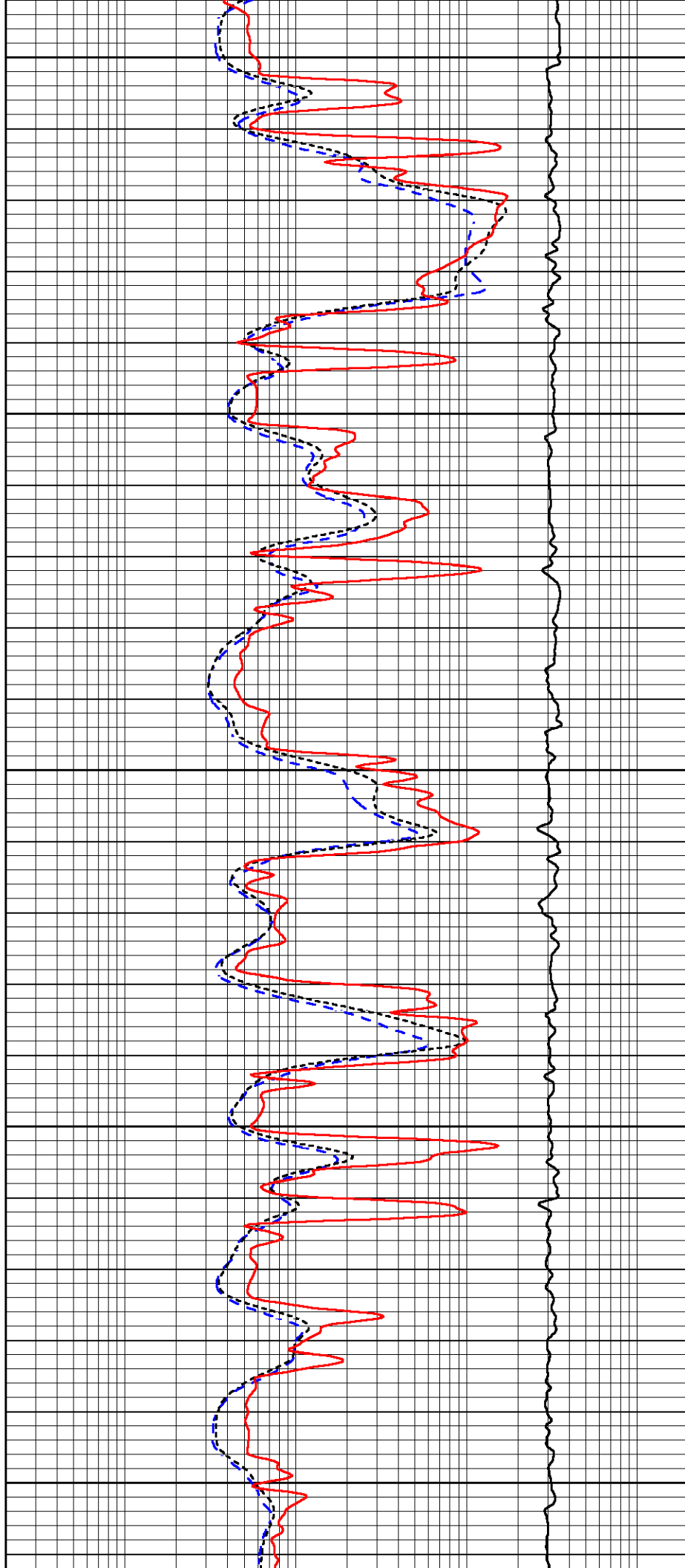
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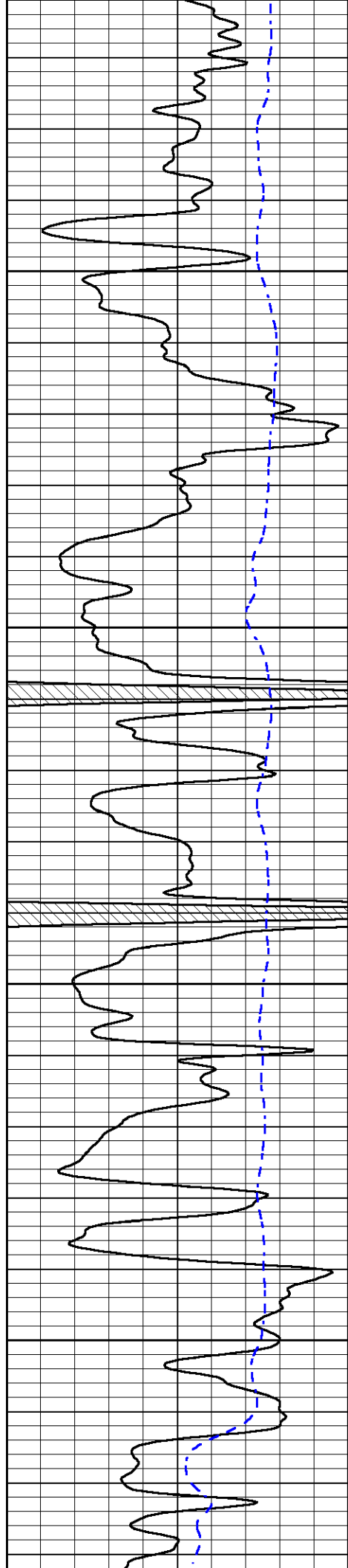
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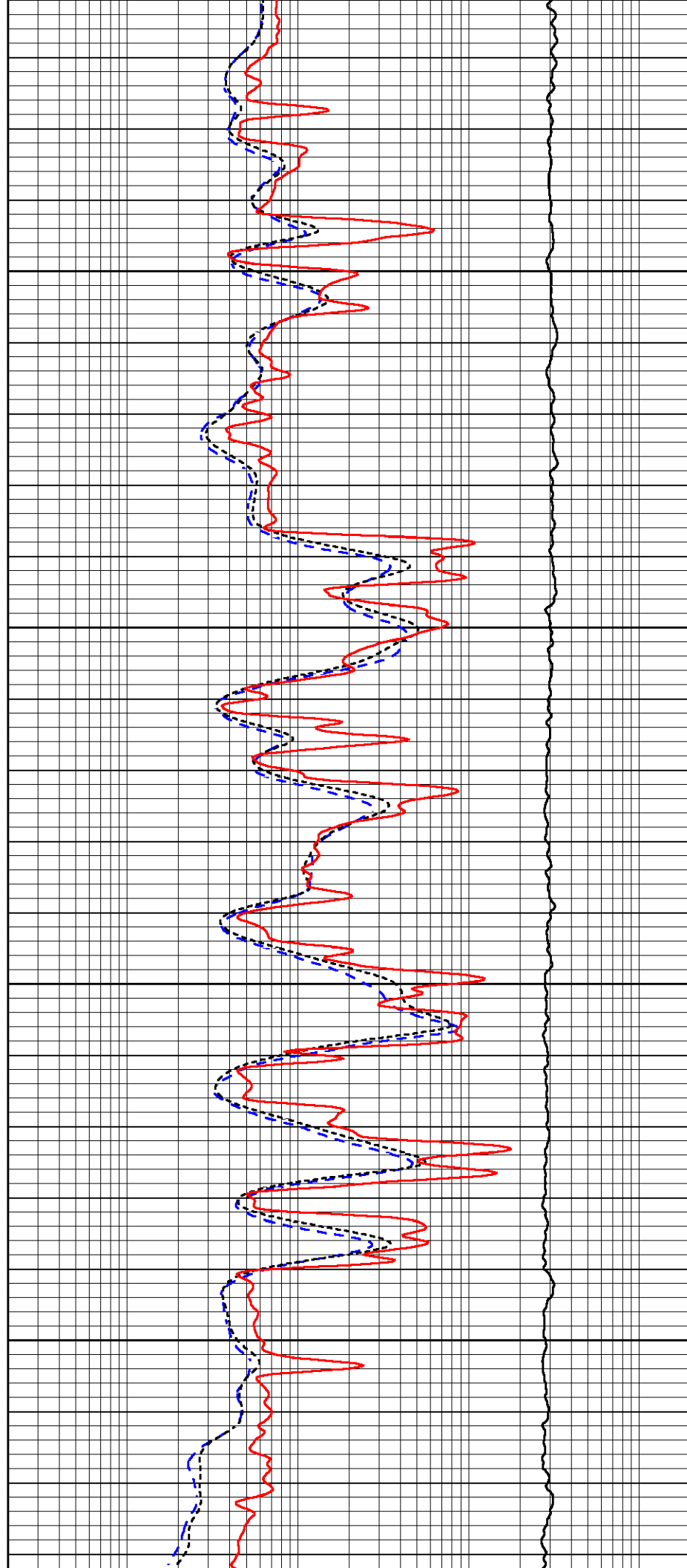


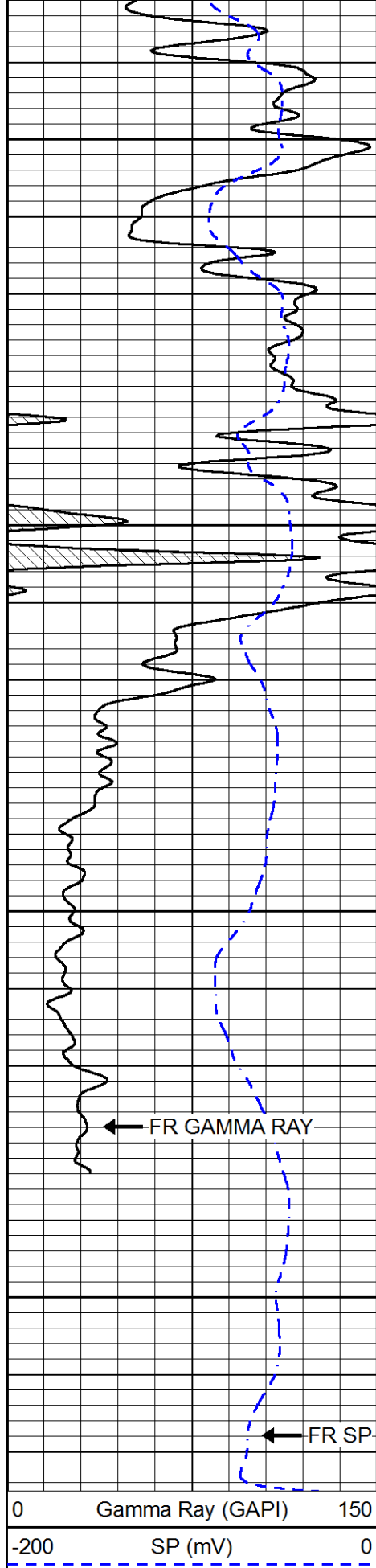
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4400

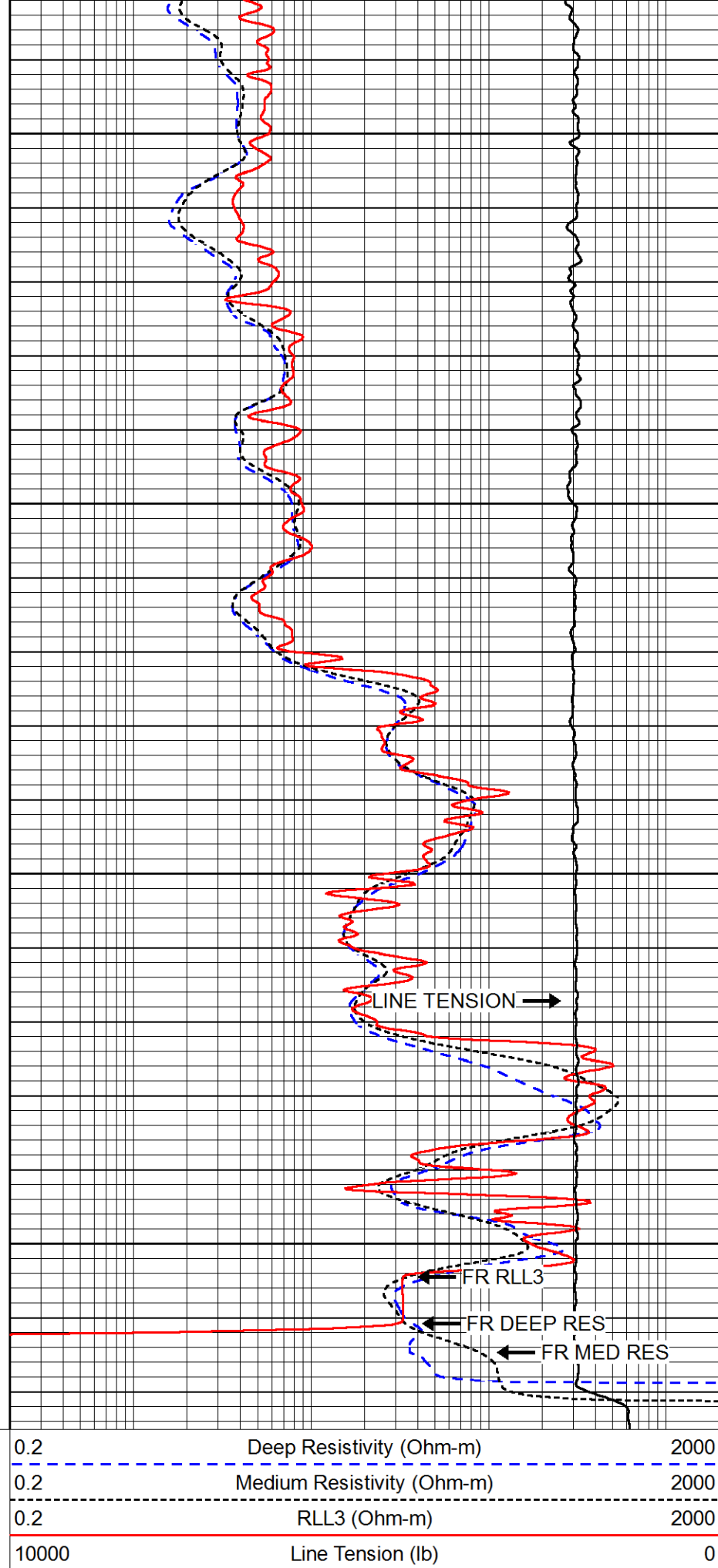
4450

4500

FR GAMMA RAY

FR SP

0 Gamma Ray (GAPI) 150
-200 SP (mV) 0



LINE TENSION →

FR RLL3

FR DEEP RES

FR MED RES

0.2 Deep Resistivity (Ohm-m) 2000
0.2 Medium Resistivity (Ohm-m) 2000
0.2 RLL3 (Ohm-m) 2000
10000 Line Tension (lb) 0

PIONEER

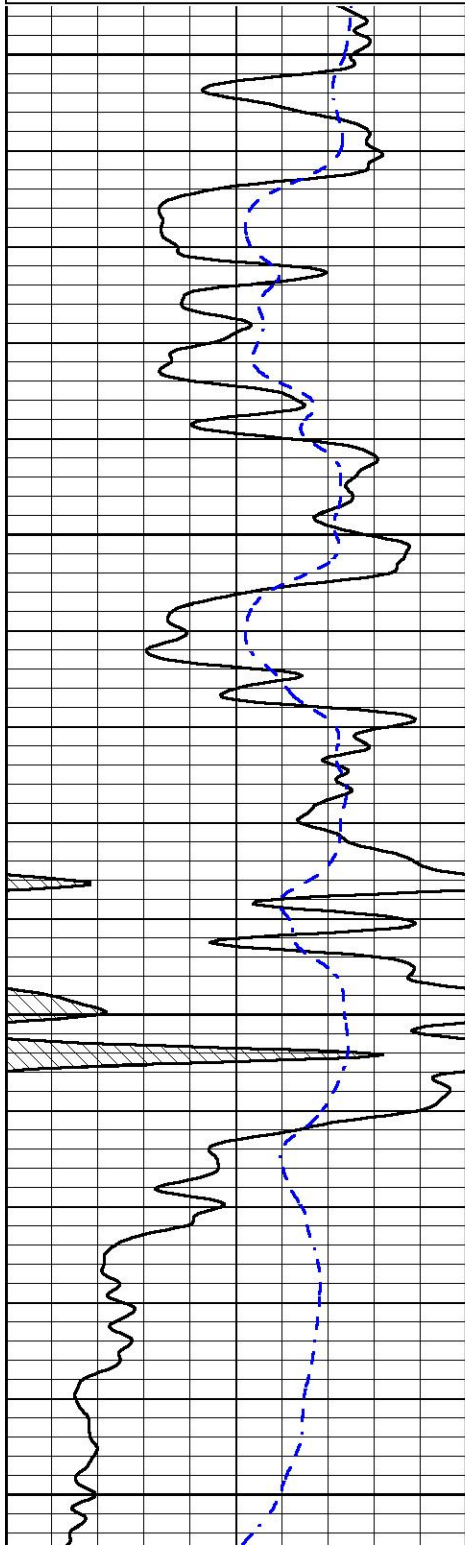
Pioneer Energy Services

REPEAT SECTION

Database File murfin_argabright_1-24.db
Dataset Pathname STKML/pass2.2
Presentation Format dil
Dataset Creation Wed Nov 01 09:34:25 2017
Charted by Depth in Feet scaled 1:240

0	Gamma Ray (GAPI)	150
-200	SP (mV)	0

0.2	Deep Resistivity (Ohm-m)	2000
0.2	Medium Resistivity (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
10000	Line Tension (lb)	0

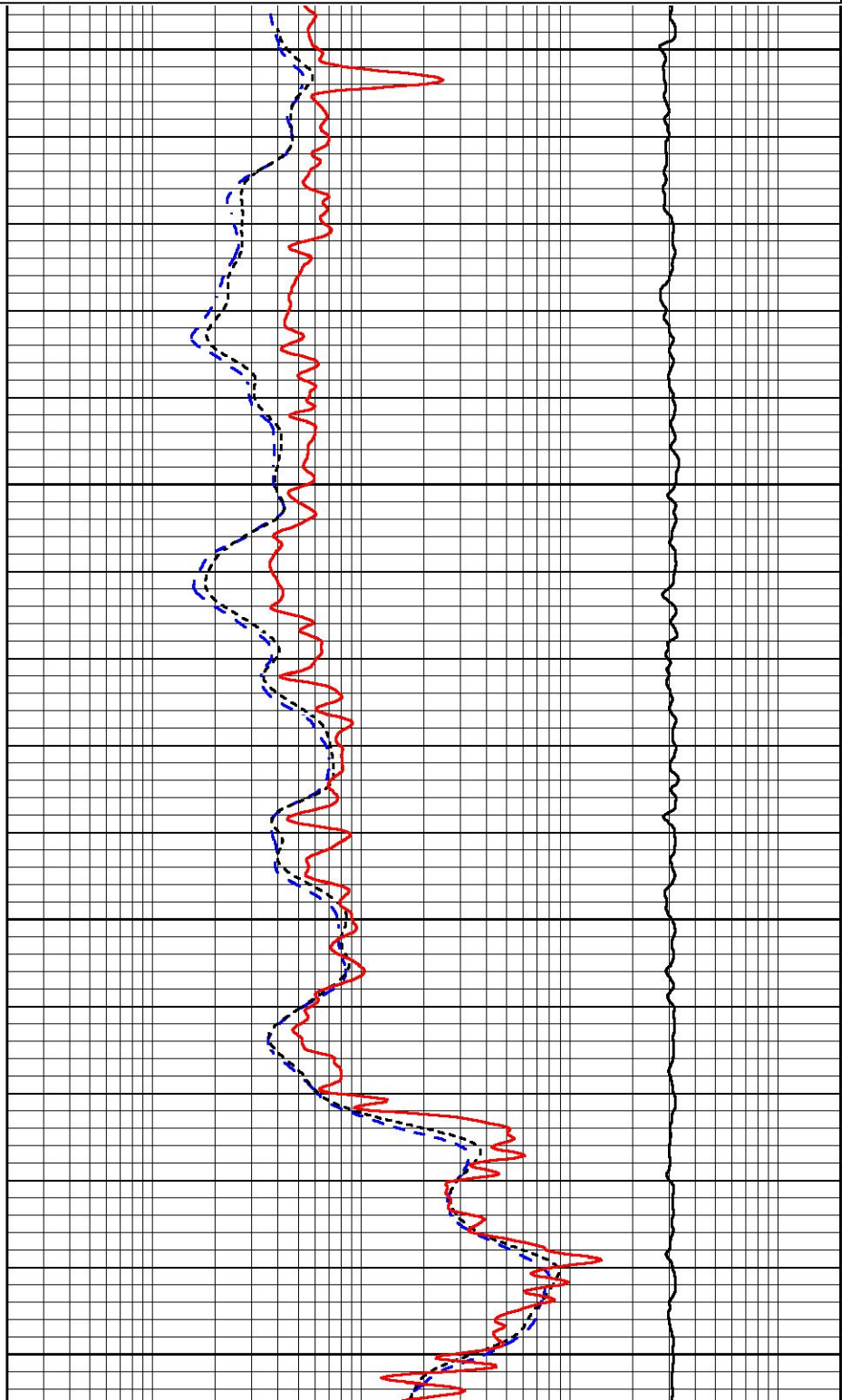


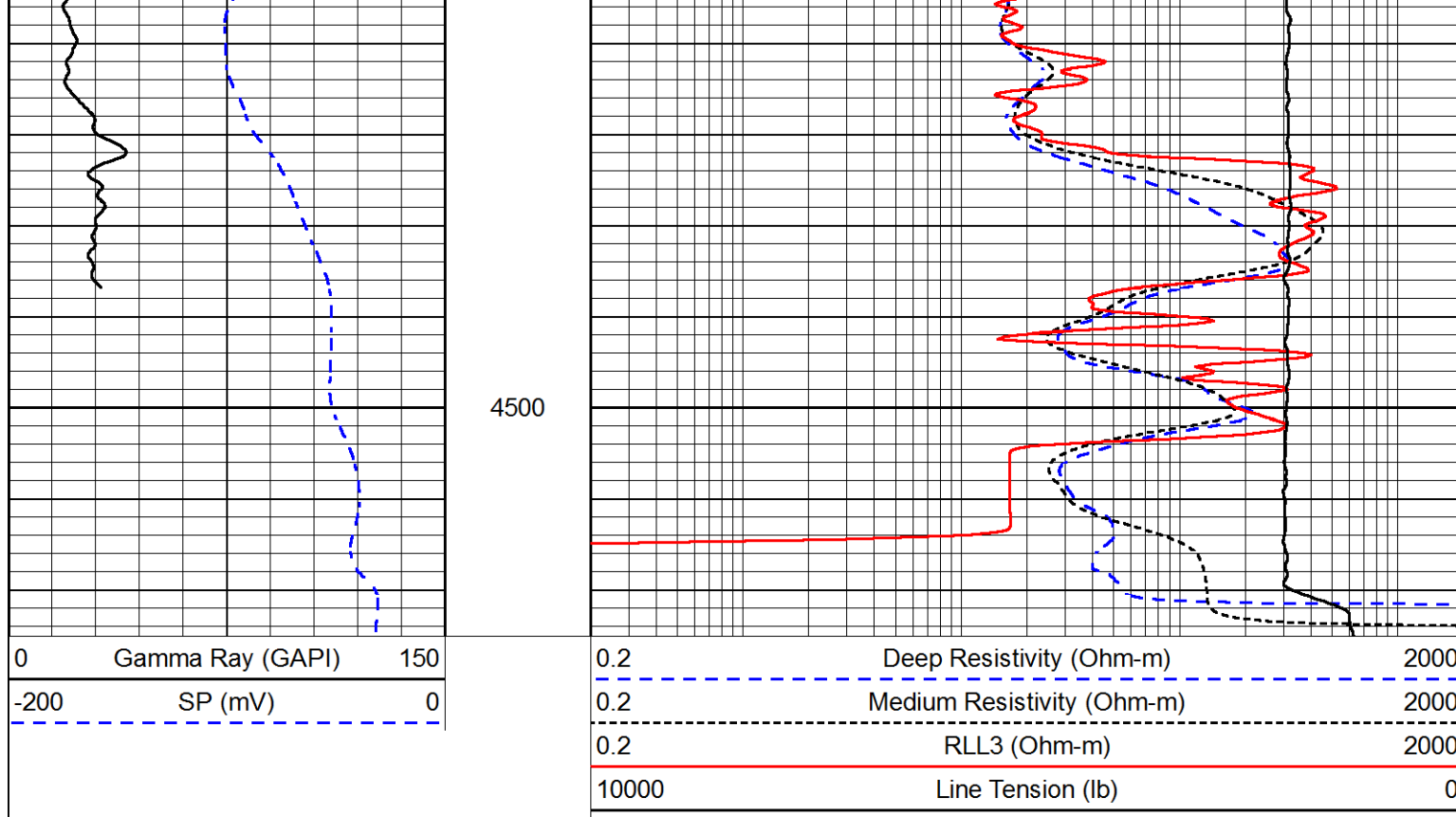
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4400

4450





Calibration Report

Database File murfin_argabright_1-24.db
 Dataset Pathname STKML/pass3.3
 Dataset Creation Wed Nov 01 10:04:03 2017

Dual Induction Calibration Report

Serial-Model: PSI 91-M&W
 Calibration Performed: Wed Sep 13 22:23:16 2017

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	166.796	835.089	0.000	255.800	mmho/m	0.430	-34.000
Medium	142.009	1348.560	0.000	255.800	mmho/m	0.360	-31.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Wed Nov 01 08:41:04 2017

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	47000.0000	-2.2000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	60000.0000	-1.5000
Caliper	1.0001	1.1397	6.5000	18.5000	in	100.0000	-97.2250

Compensated Density Calibration Report

Serial-Model: 90-1031-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Wed Sep 06 19:51:03 2017

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4903.44	6153.79	cps
Aluminum	2.640	g/cc	934.50	4021.31	cps
Spine Angle = 75.61			Density/Spine Ratio = 0.517		
	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: WED SEP 6 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 Sep 06 19:51:14 2017

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 1.0 cps

Sensitivity: 0.6000 GAPI/cps



Company MURFIN DRILLING COMPANY, INC.
Well ARGABRIGHT #1-24
Field WILDCAT
County RAWLINS
State KANSAS