



DUAL INDUCTION LOG

Company MURFIN DRILLING CO., INC.
 Well JONES A #4-17
 Field JONES CANYON SOUTH
 County CHEYENNE
 State KANSAS

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 Well JONES A #4-17
 Field JONES CANYON SOUTH
 County CHEYENNE State KANSAS

Location: API #: 15-023-21516-00-00
 1980' FSL & 1980' FEL
 SEC 17 TWP 1S RGE 37W
 Permanent Datum GROUND LEVEL Elevation 3225'
 Log Measured From KELLY BUSHING
 Drilling Measured From KELLY BUSHING
 Other Services
 CNL/CDL
 MEL/BHCS
 Elevation
 K.B. 3230'
 D.F. N/A
 G.L. 3225'

Date	9/21/2019
Run Number	ONE
Depth Driller	4770'
Depth Logger	4771'
Bottom Logged Interval	4770'
Top Log Interval	0'
Casing Driller	8.625" @ 295'
Casing Logger	294'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	1000
Density / Viscosity	9.1 75
pH / Fluid Loss	10.5 6.4
Source of Sample	FLOWLINE
Rm @ Meas. Temp	0.40 @ 72
Rmt @ Meas. Temp	0.30 @ 72
Rmc @ Meas. Temp	0.54 @ 72
Source of Rmf / Rmc	CHARTS
Rm @ BHT	0.23 @ 124
Operating Rig Time	5 HOURS
Max Rec. Temp. F	124
Equipment Number	P-24
Location	HAYS
Recorded By	IAN MABB
Witnessed By	WES HANSEN

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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.

 BIRD CITY, KS.
 NORTH TO DD RD,, EAST 2 MILES TO RD 30,
 SOUTH 1 1/2 MILES & EAST 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	This Log Record Was Witnessed By
Engineer: IAN MABB	Primary Witness: WES HANSEN
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_jones_a_4_17.db
Dataset field/well/stackmel/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	124	5.5	0	1	2	2.71
NPORSEL	PERFS	SNDERR mmho/m	SNDERRM mmho/m	SPSHIFT mV	SRFTEMP degF	SZCOR	TDEPTH ft
Limestone	0	0	0	340	72	Off	4771

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (233-M&W)	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 (96-916)	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					
CILD	8.00		DIL-PSI HIGH TEMP (1039)	18.50	3.50	220.00

CILM 4.70

SP 0.20

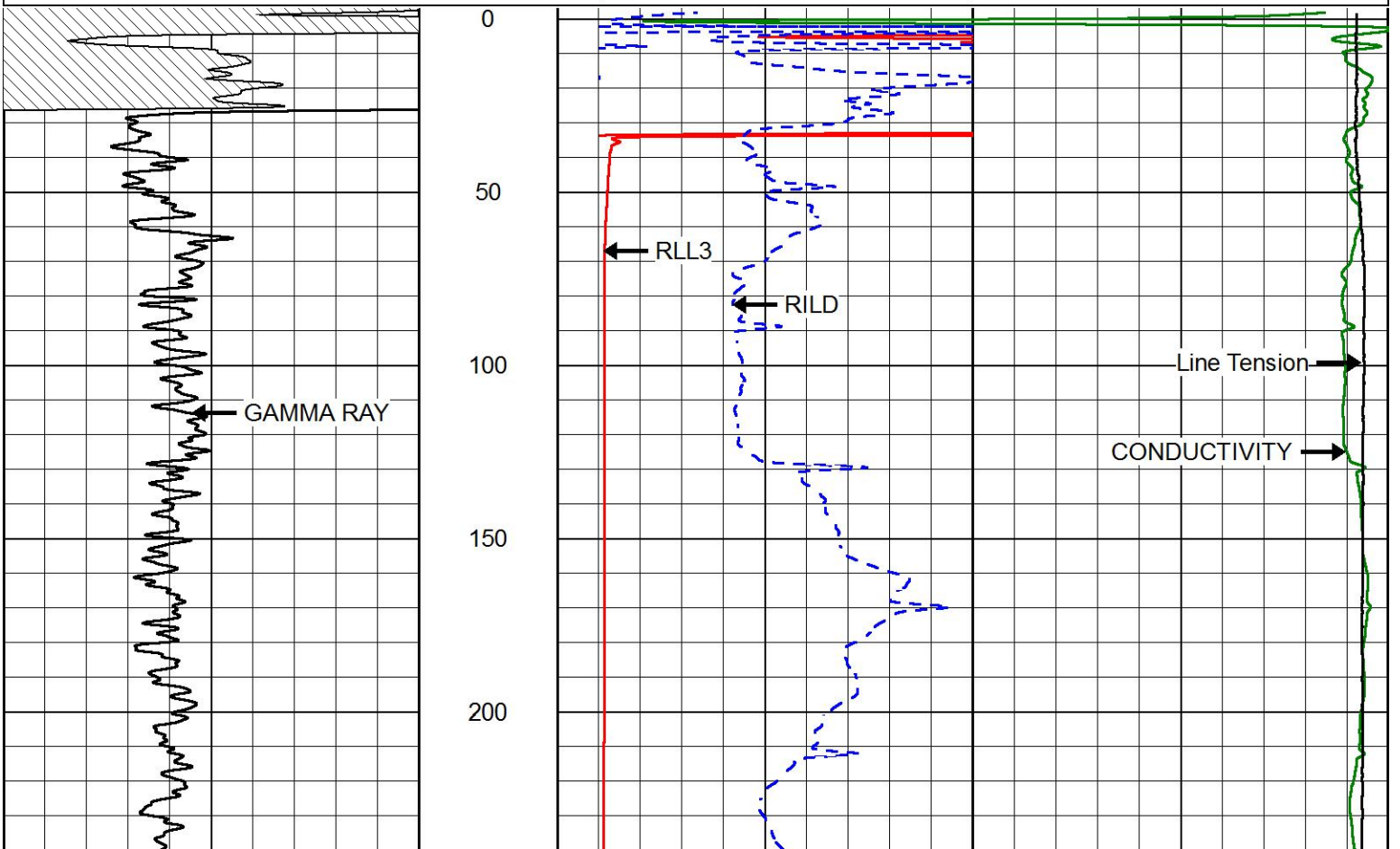
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 Total length: 43.08 ft
 Total weight: 685.00 lb
 O.D.: 4.00 in

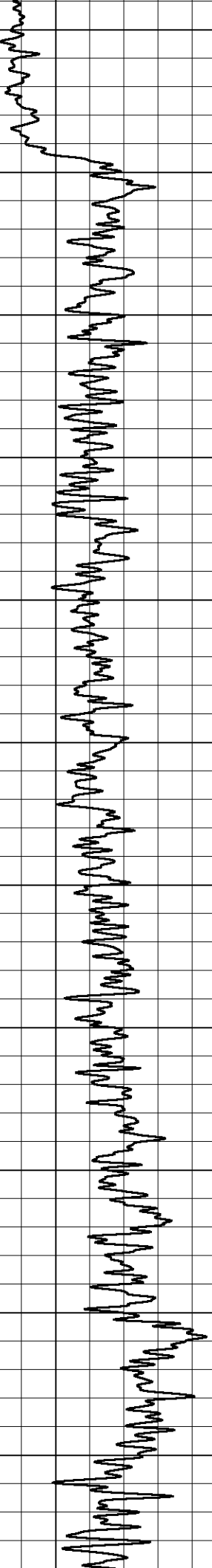


MAIN PASS

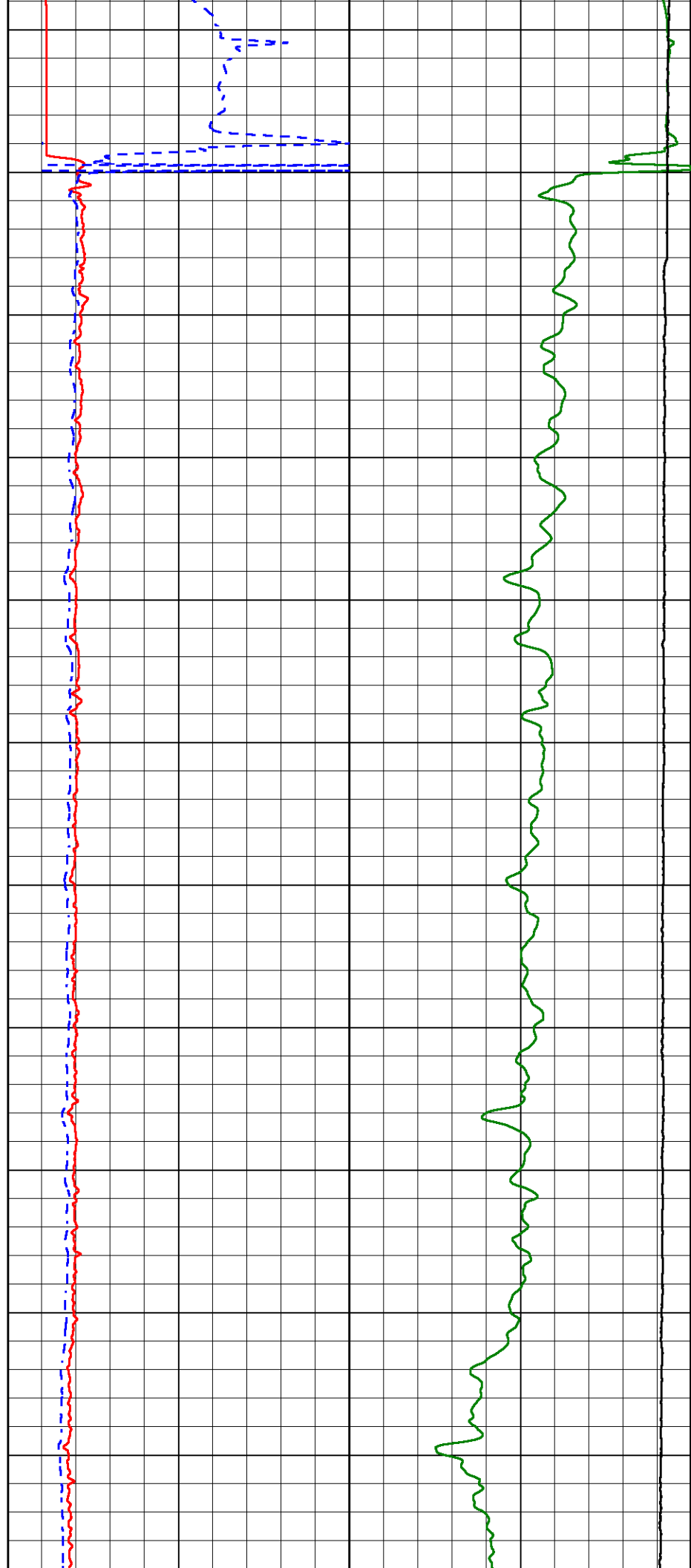
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 Charted by Depth in Feet scaled 1:600

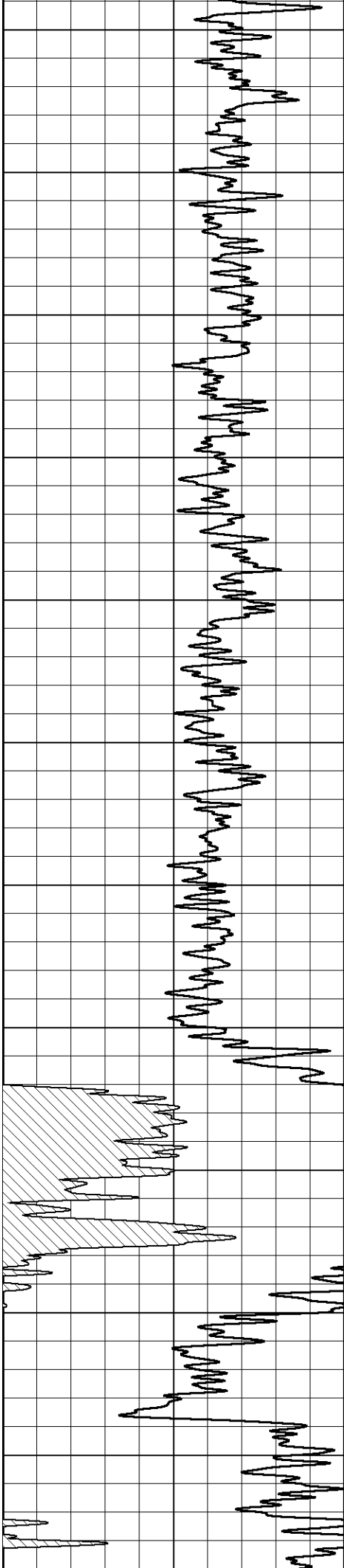
GAMMA RAY (GAPI)	0	150	1000	CONDUCTIVITY (mmho/m)	0
			15000	Line Tension (lb)	0
			0	RLL3 (Ohm-m)	50
			50	RLL3 (Ohm-m)	500
			0	RILD (Ohm-m)	50
			50	Deep Resistivity (Ohm-m)	500



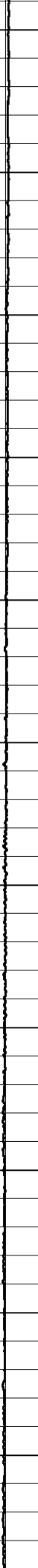
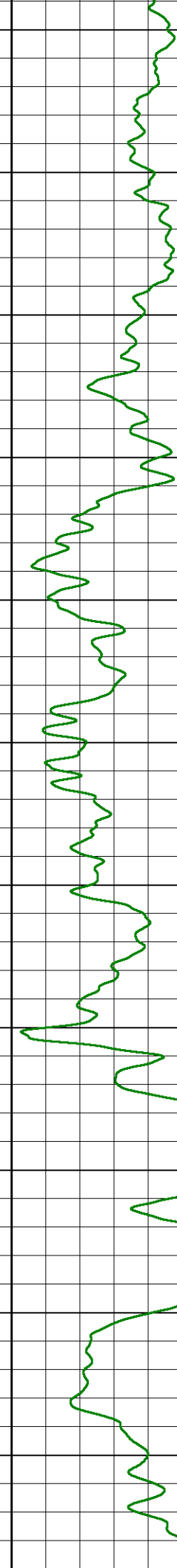
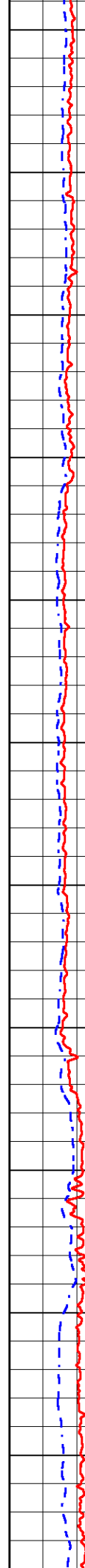


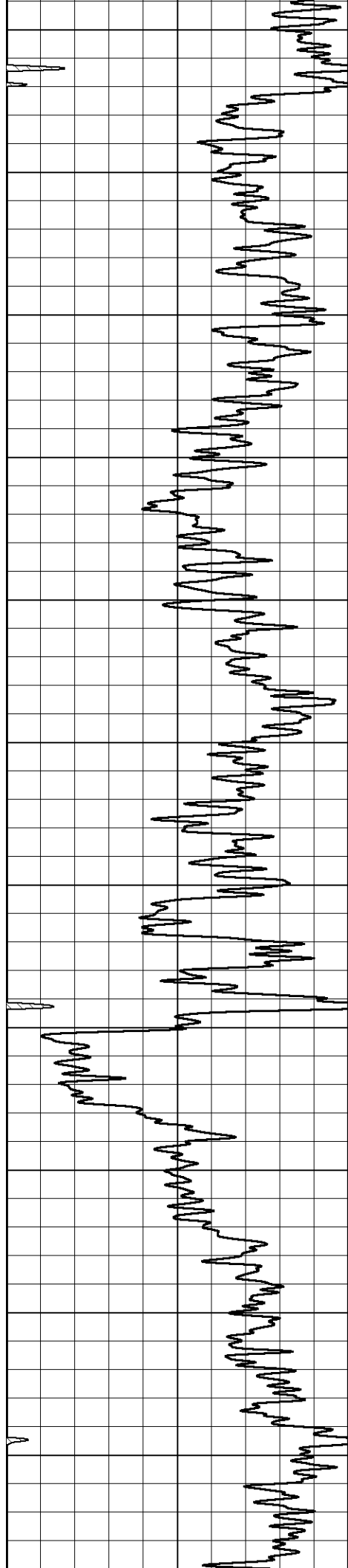
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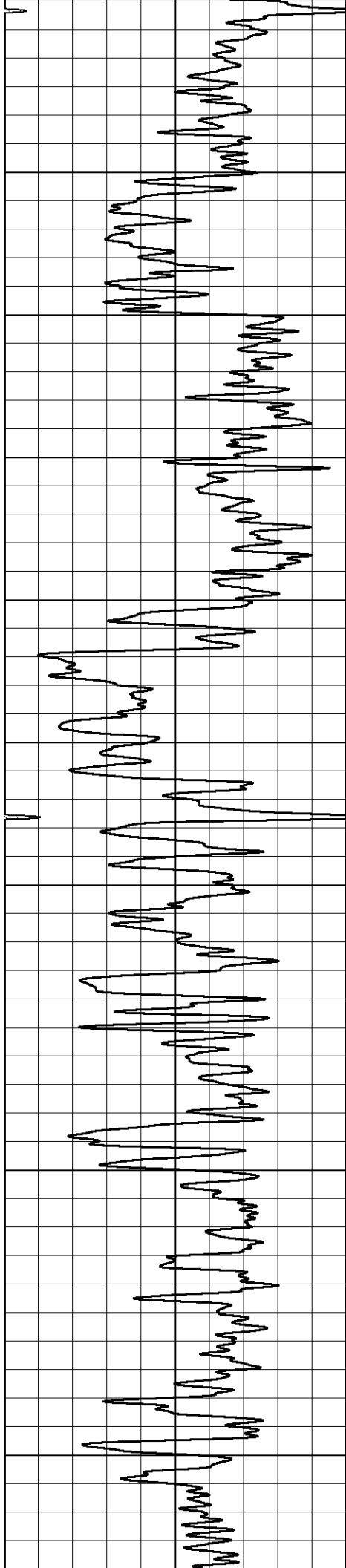
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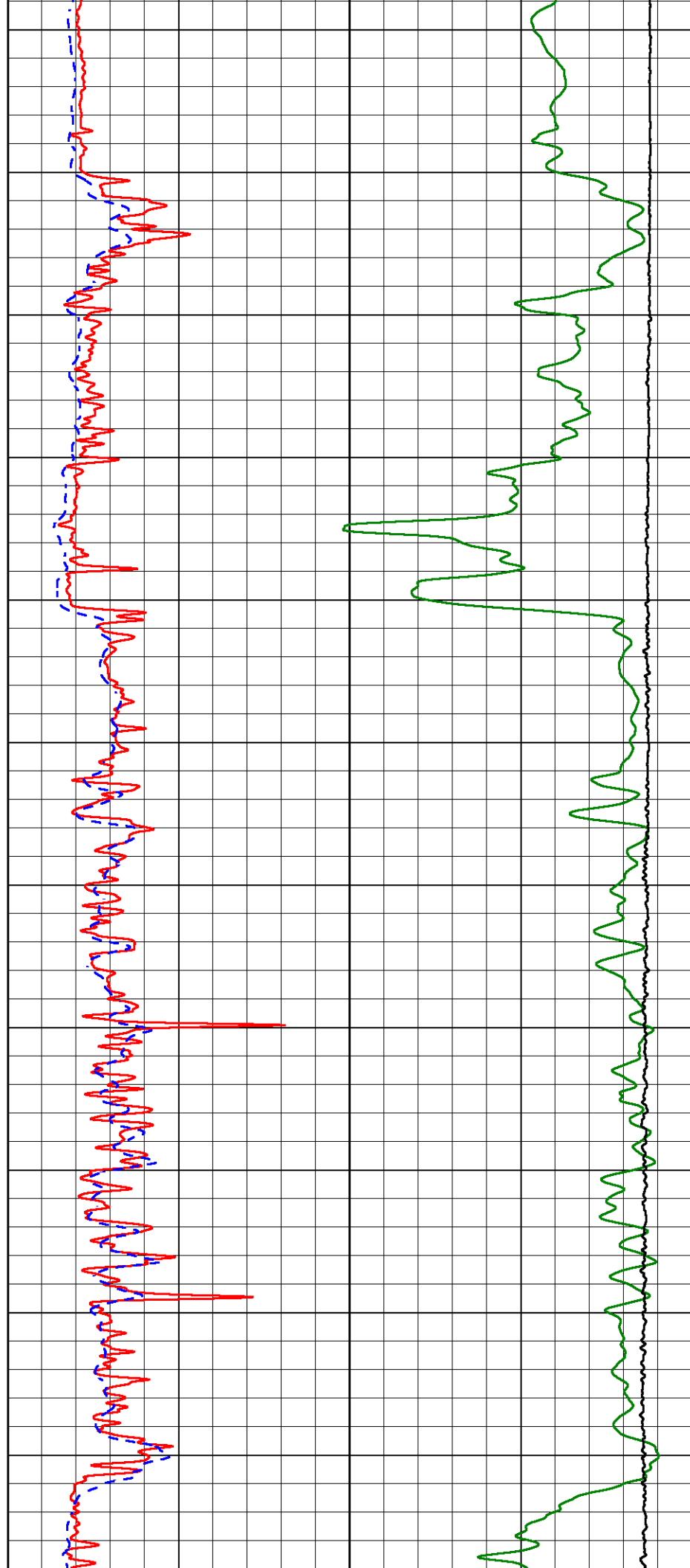


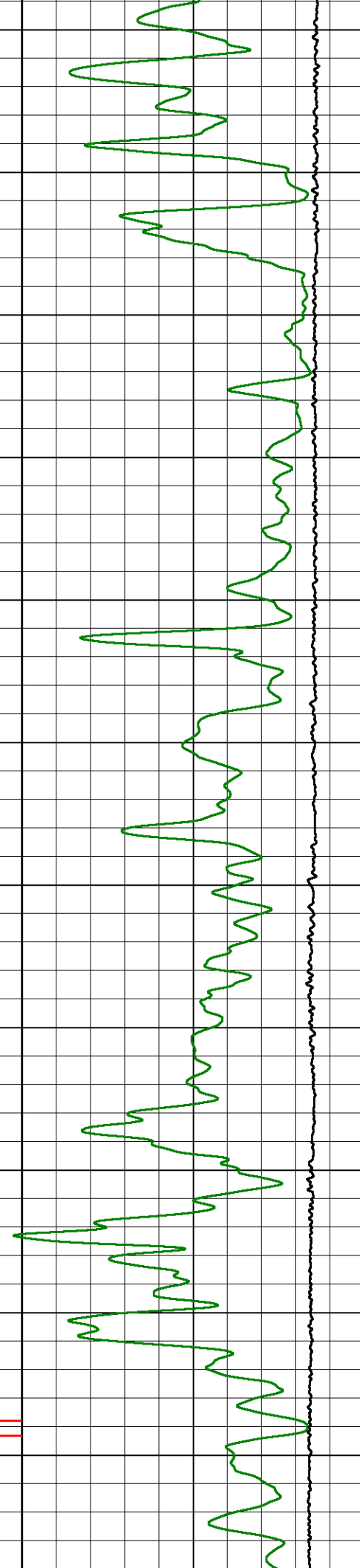
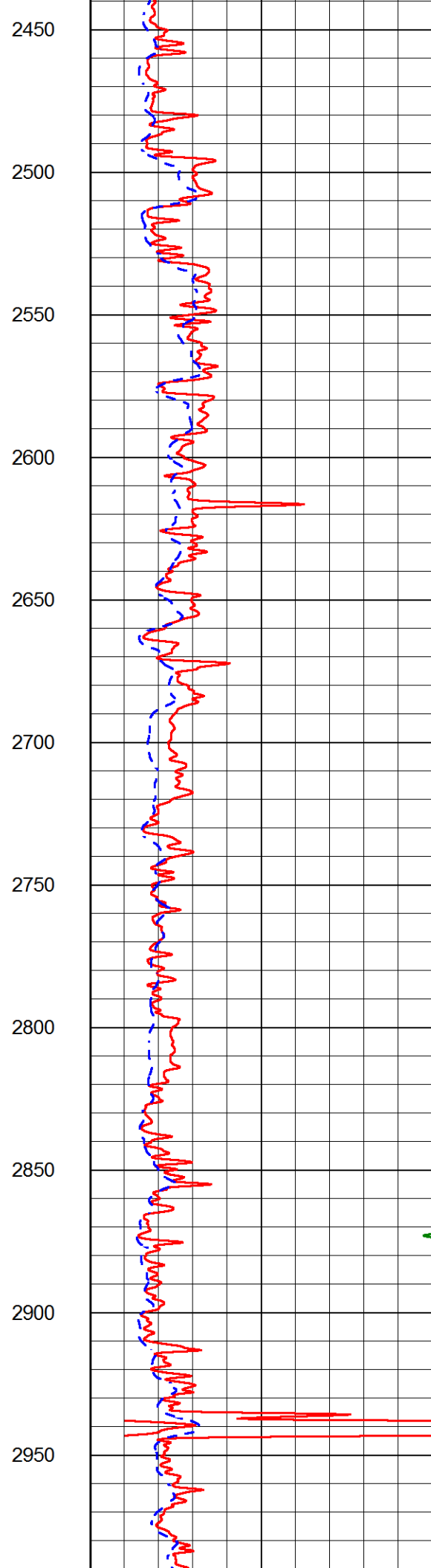
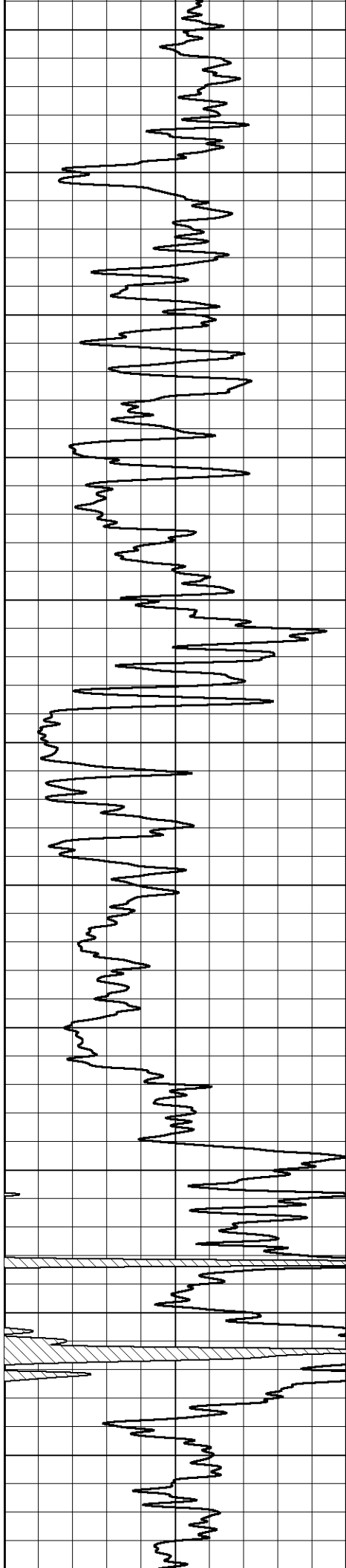
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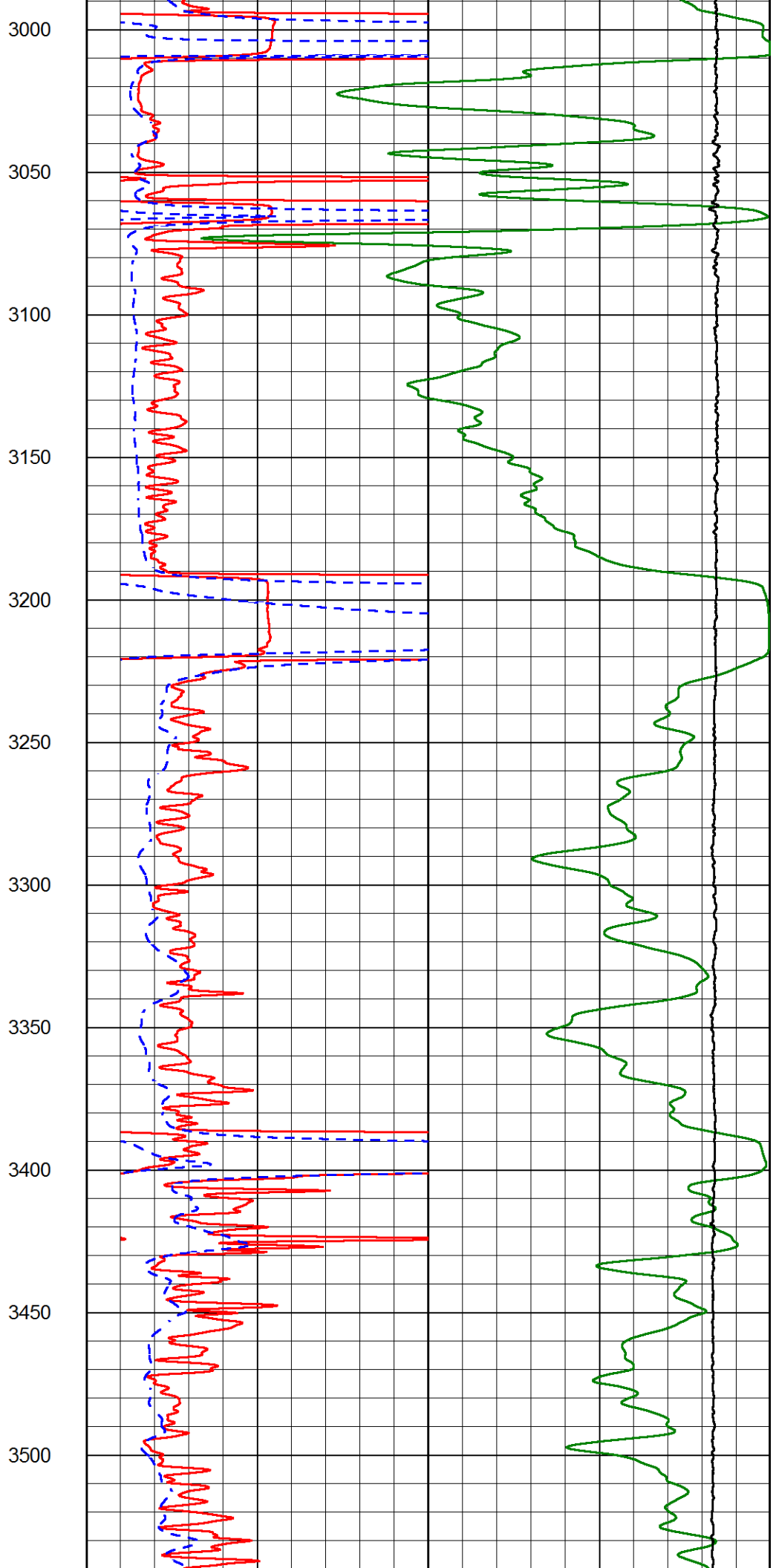
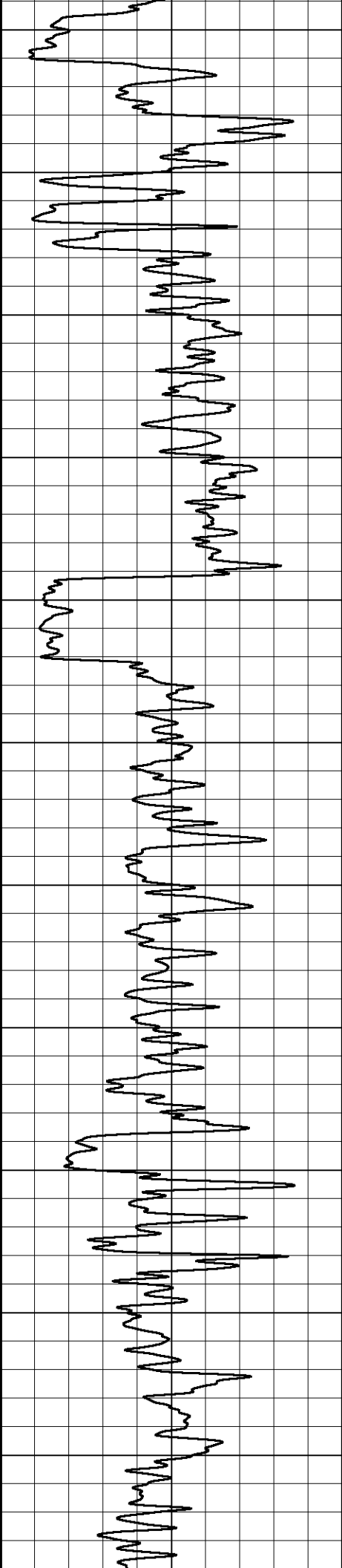


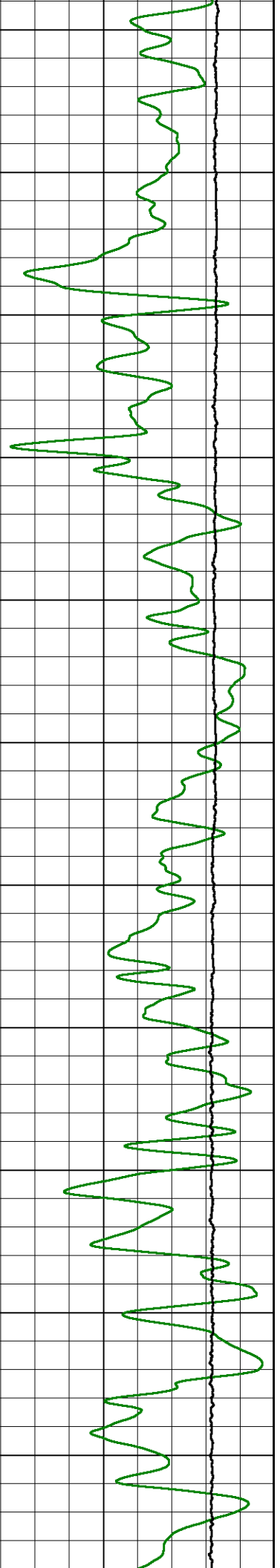
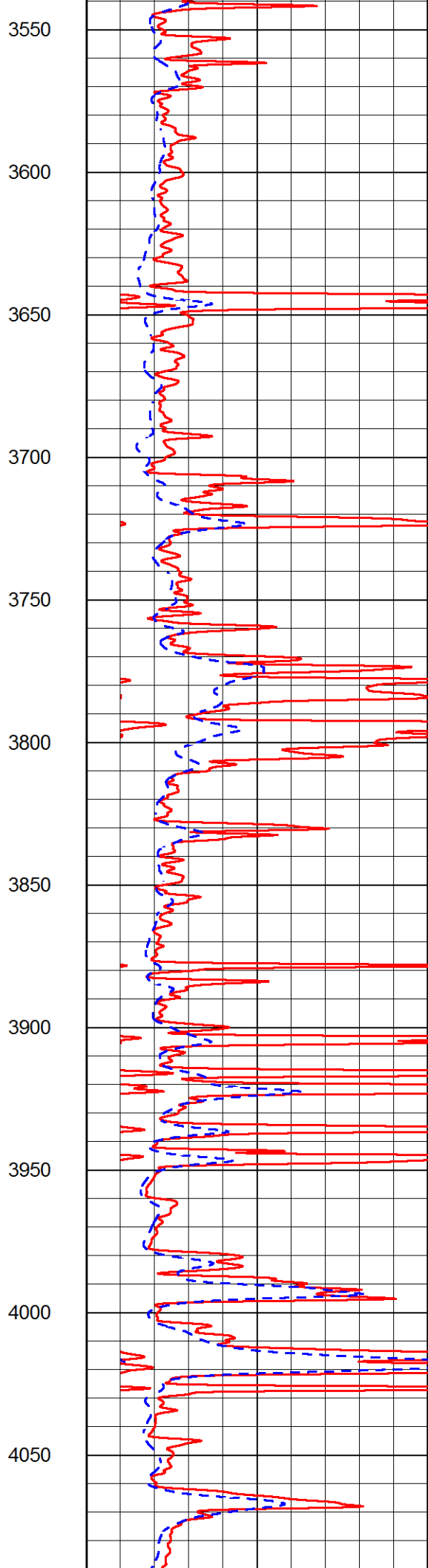
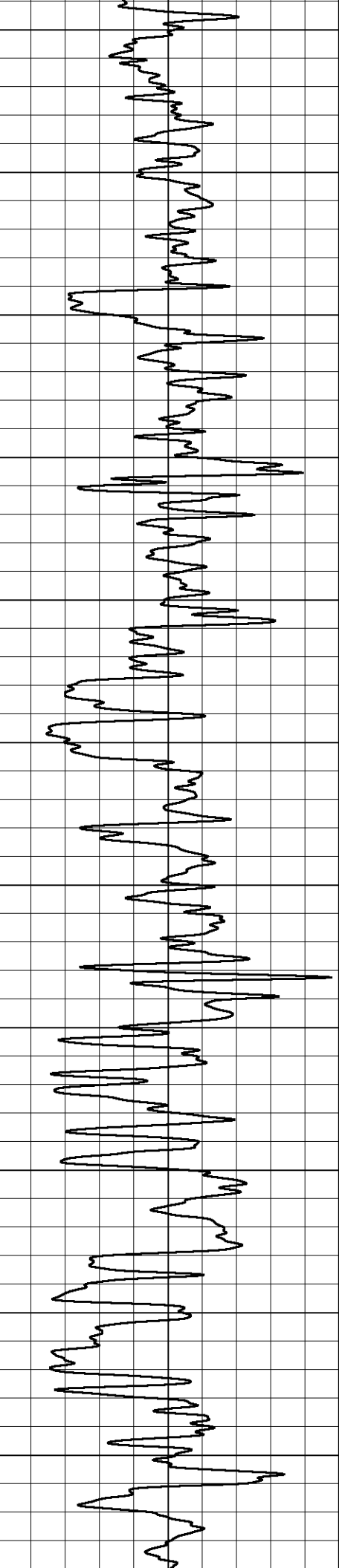


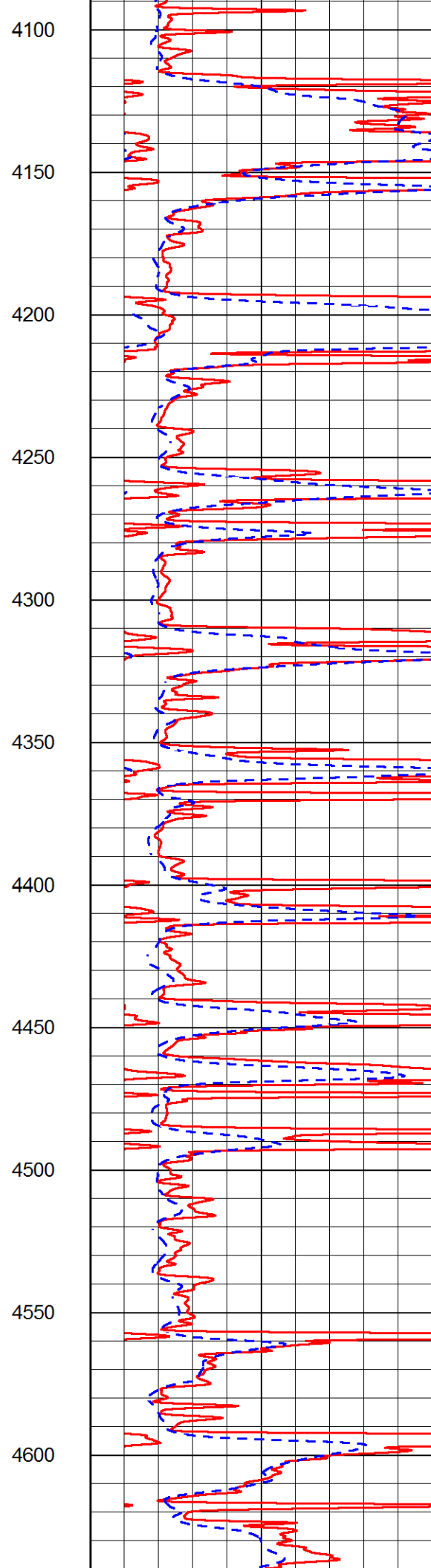
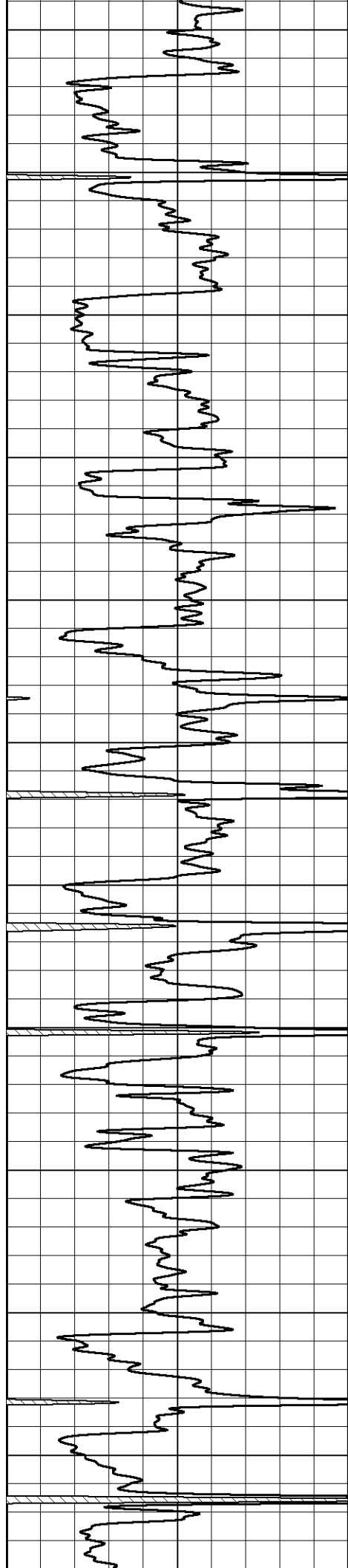
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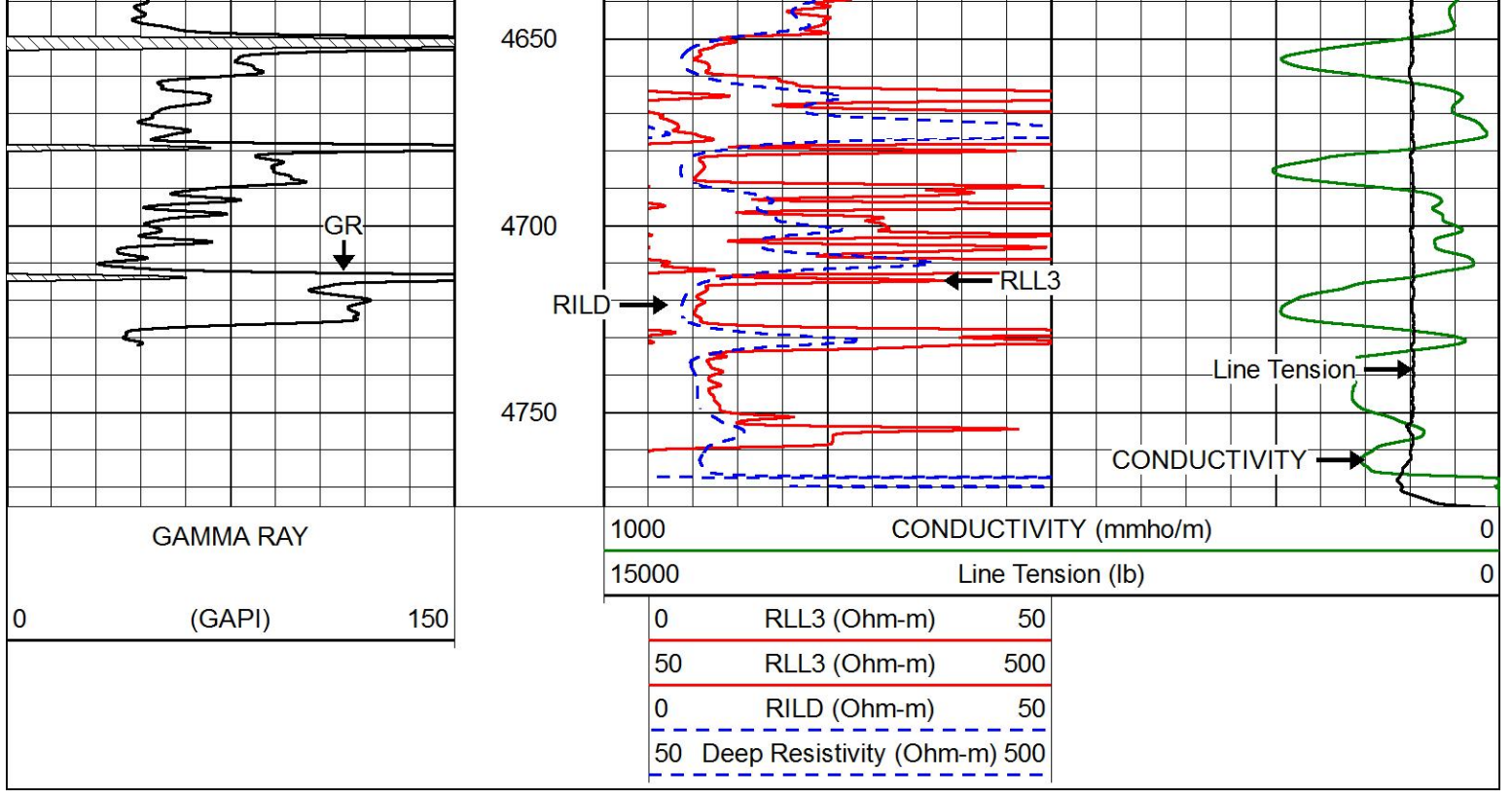








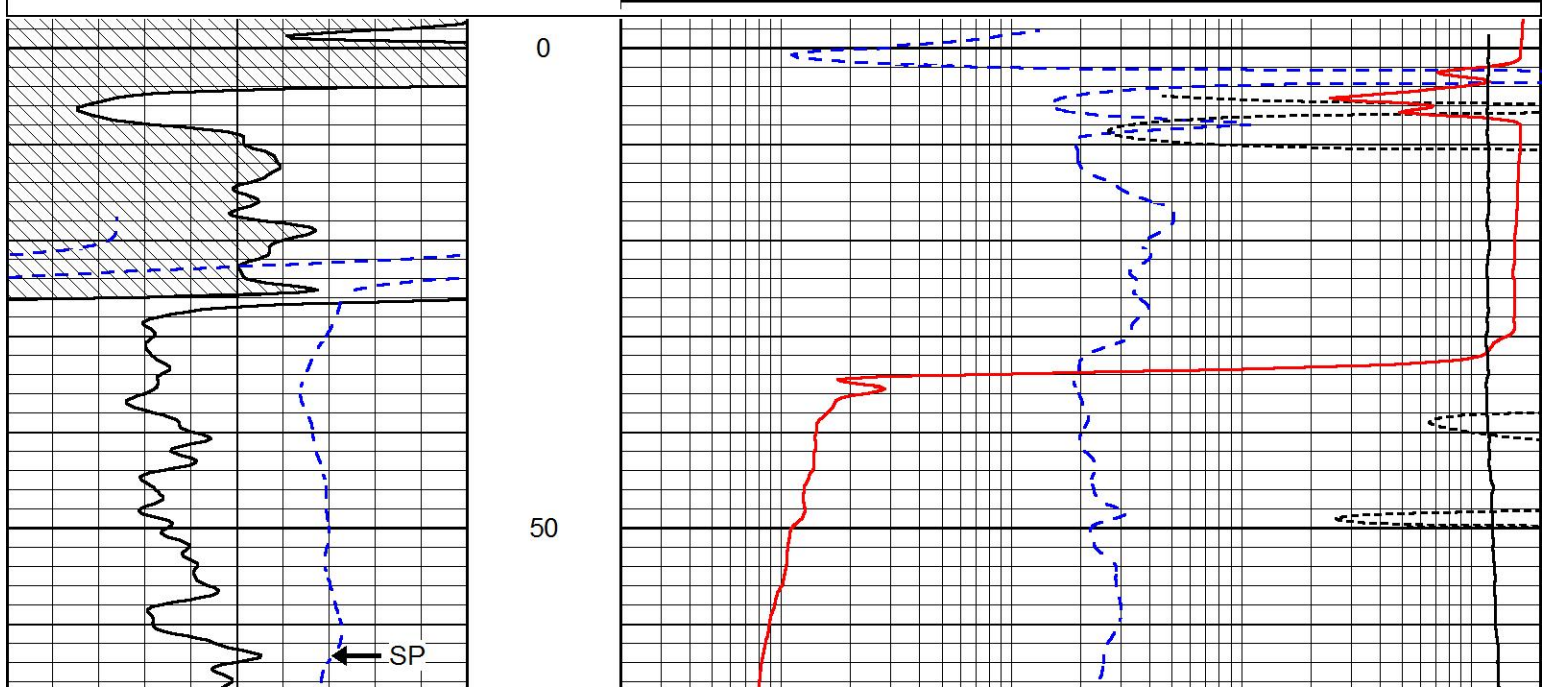


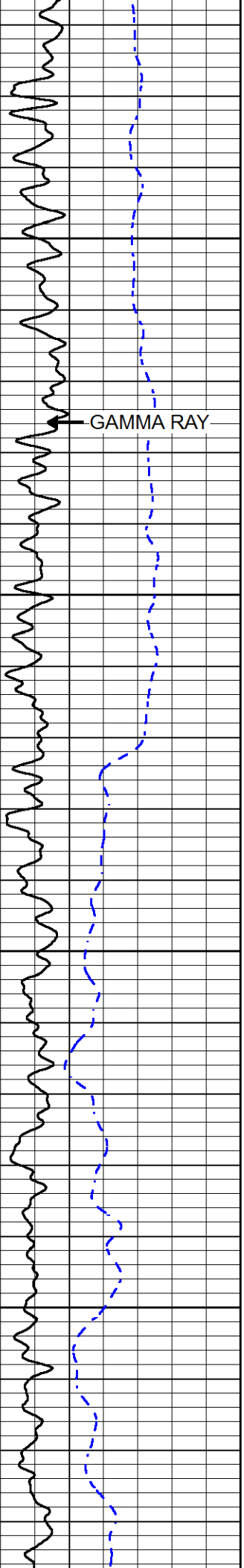



MAIN PASS

Database File murfin_jones_a_4_17.db
 Dataset Pathname stackmel/pass4.1
 Presentation Format _dil
 Dataset Creation Sat Sep 21 03:08:59 2019
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	150	0.2	DEEP RESISTIVITY (Ohm-m)	2000
-200	SP (mV)	0	0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
			0.2	RLL3 (Ohm-m)	2000
			10000	LINE TENSION (lb)	0





GAMMA RAY

100

150

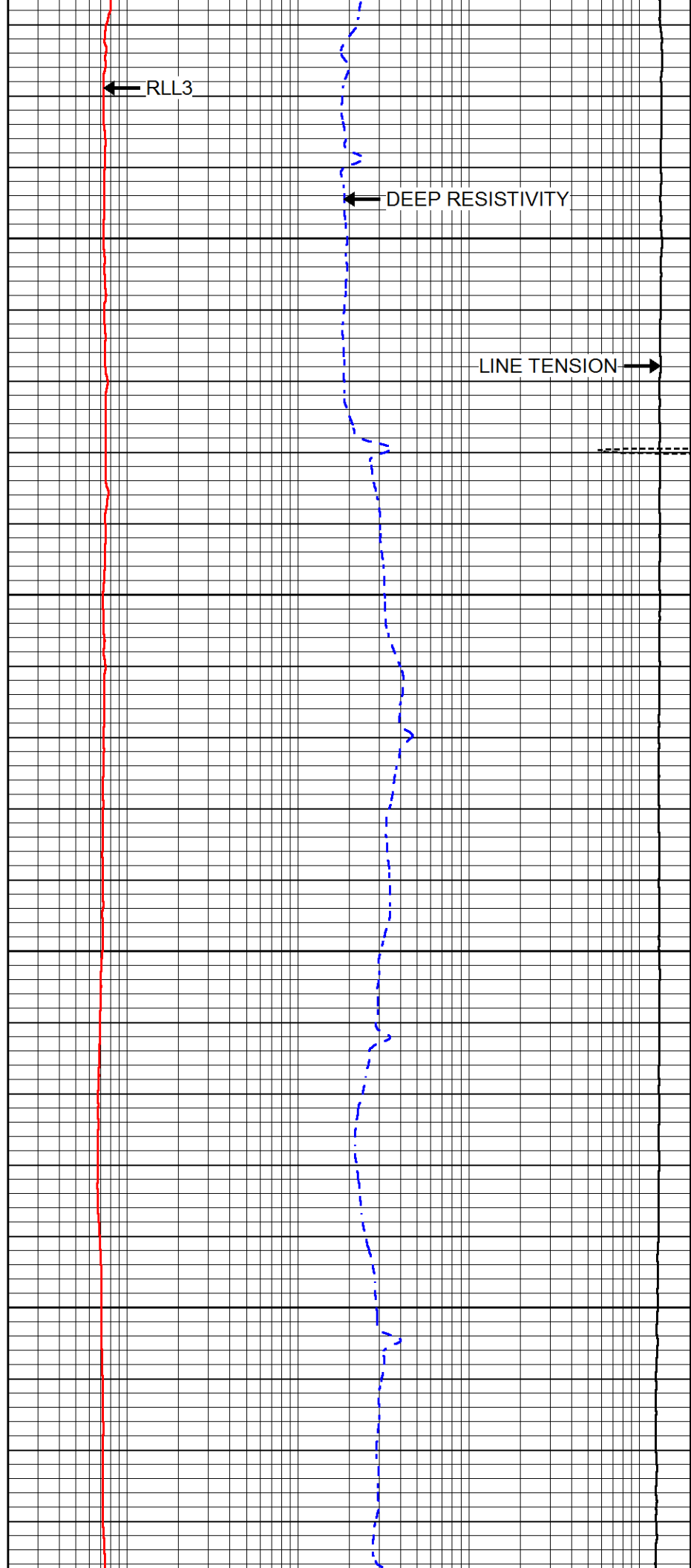
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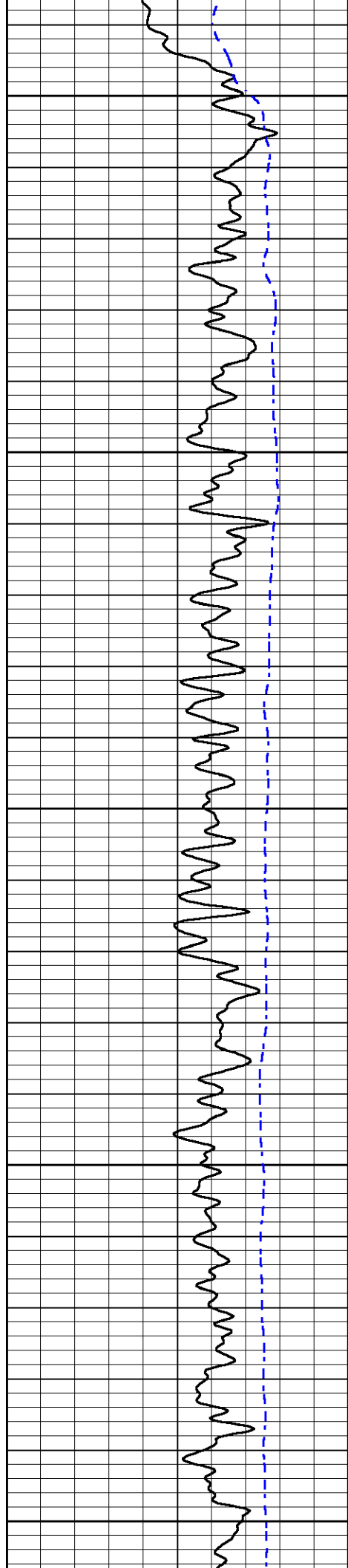
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RLL3

DEEP RESISTIVITY

LINE TENSION





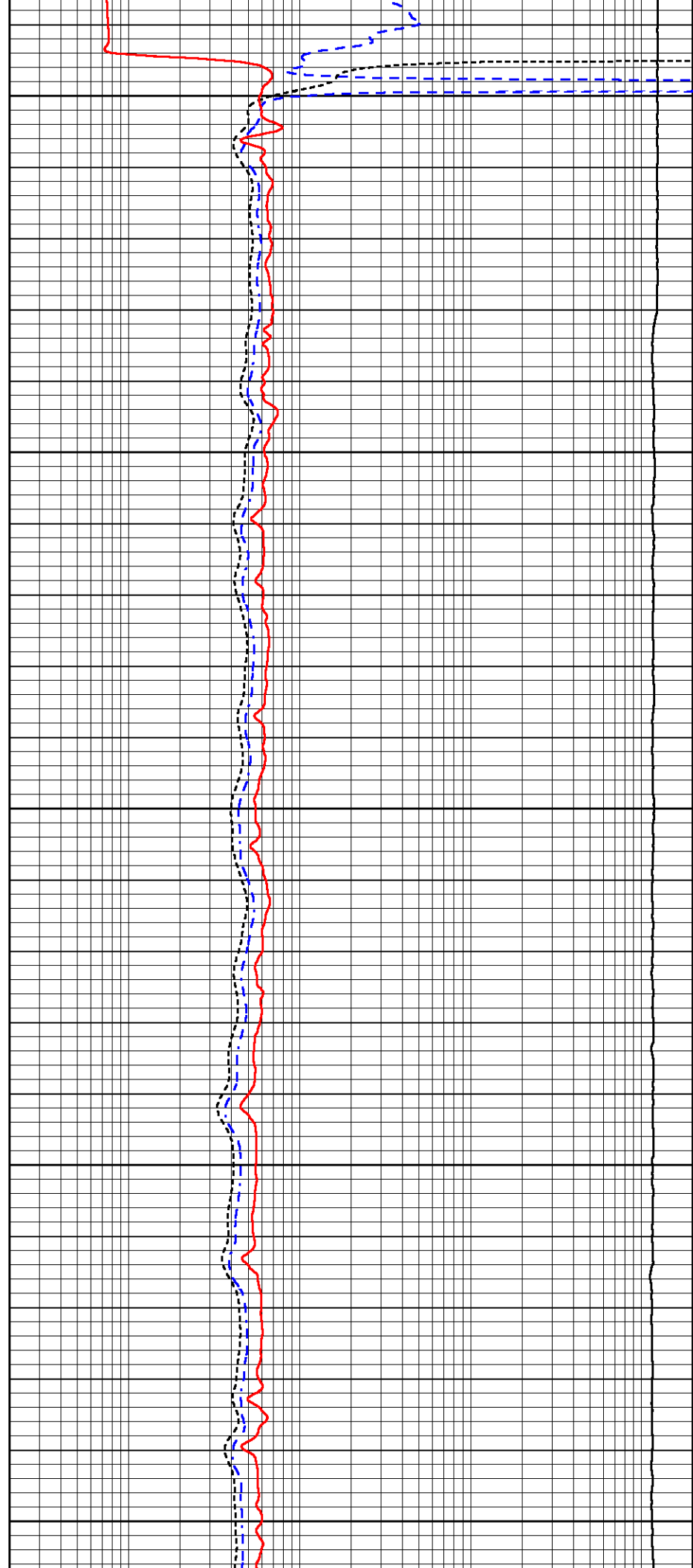
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350

400

450

500



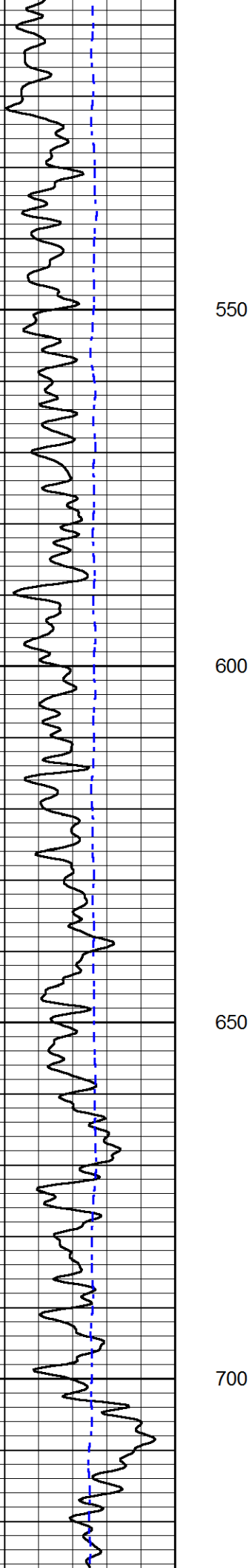
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450

500

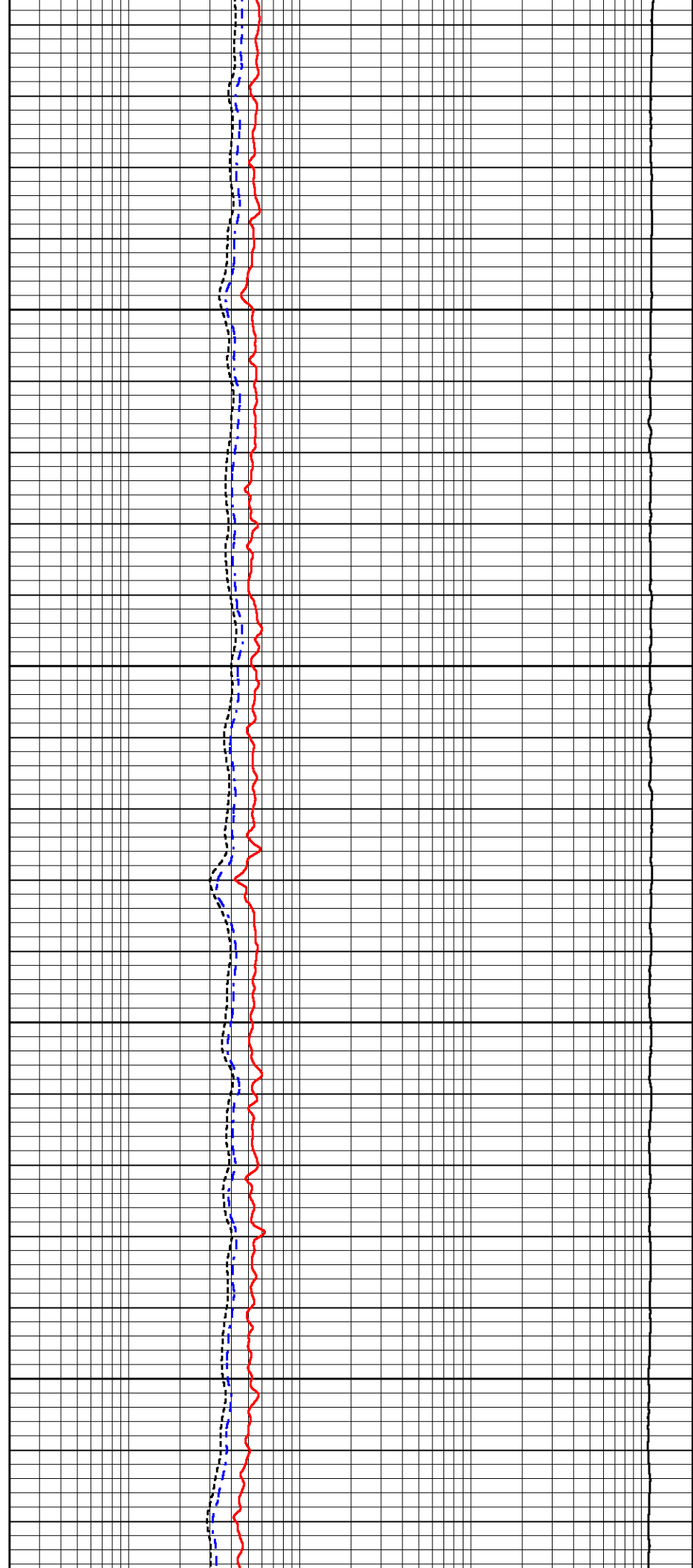


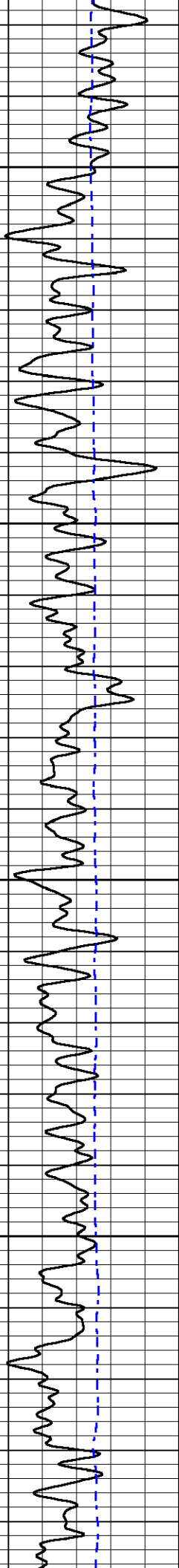
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600

650

700



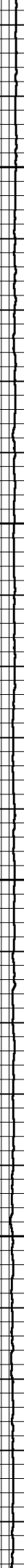
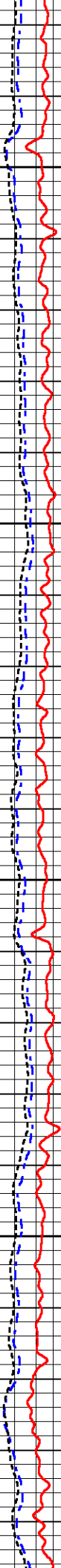


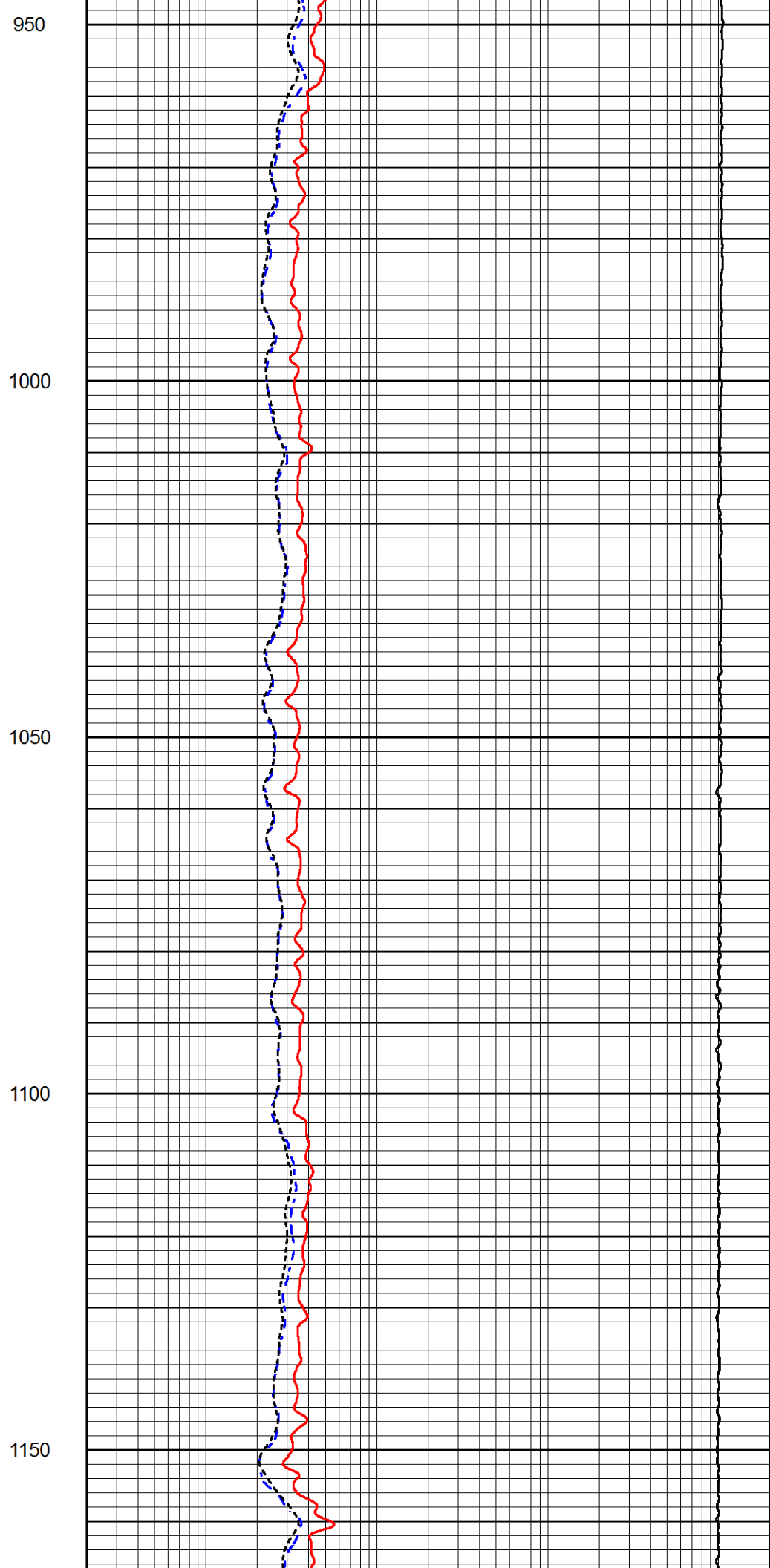
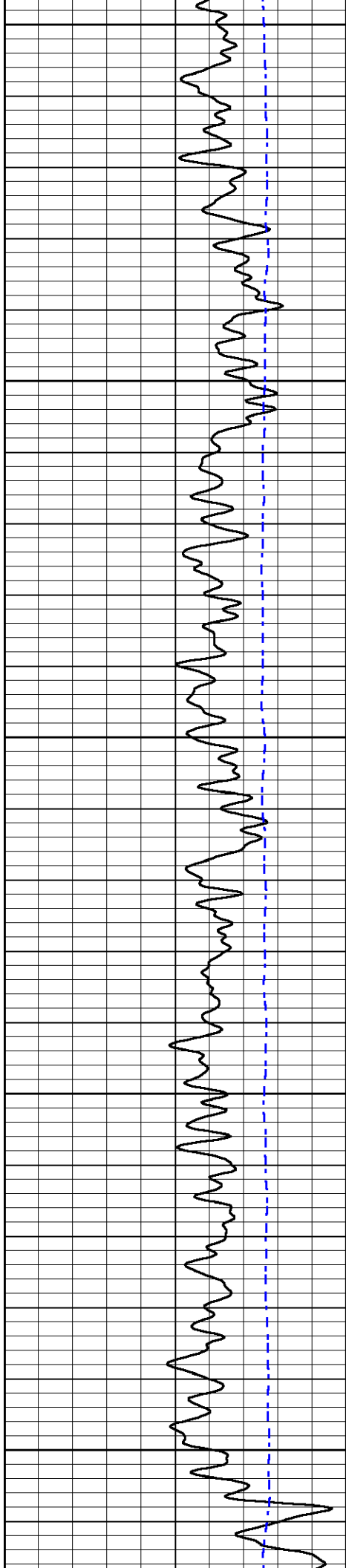
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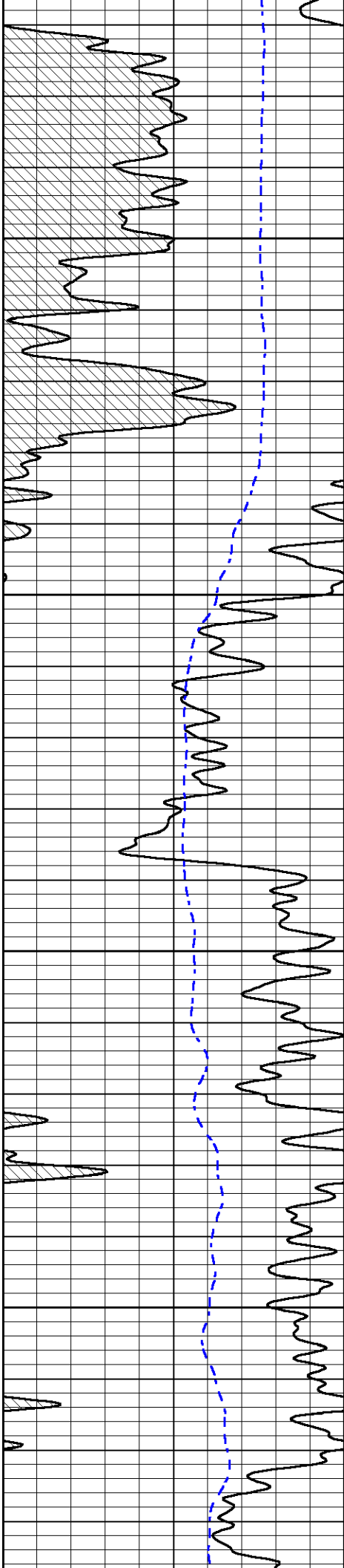
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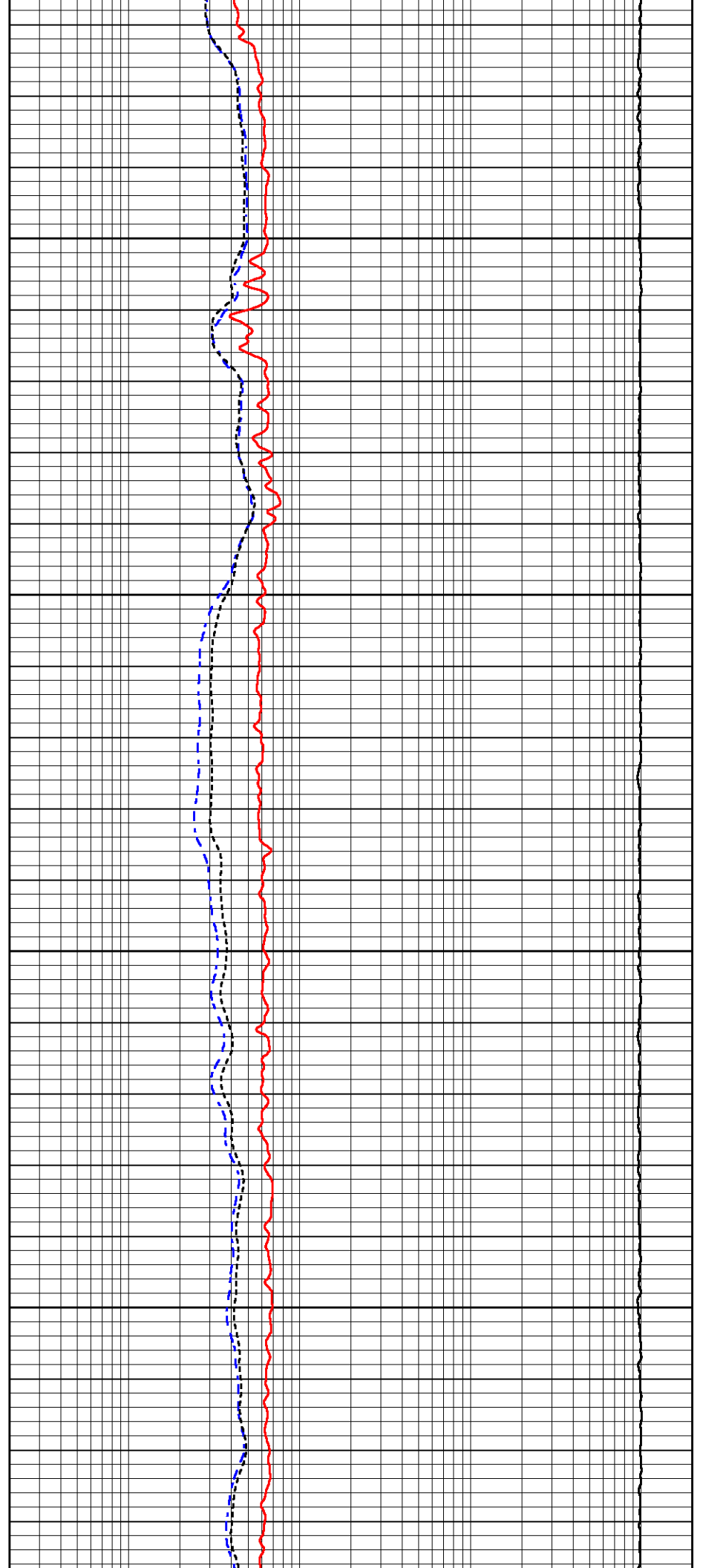


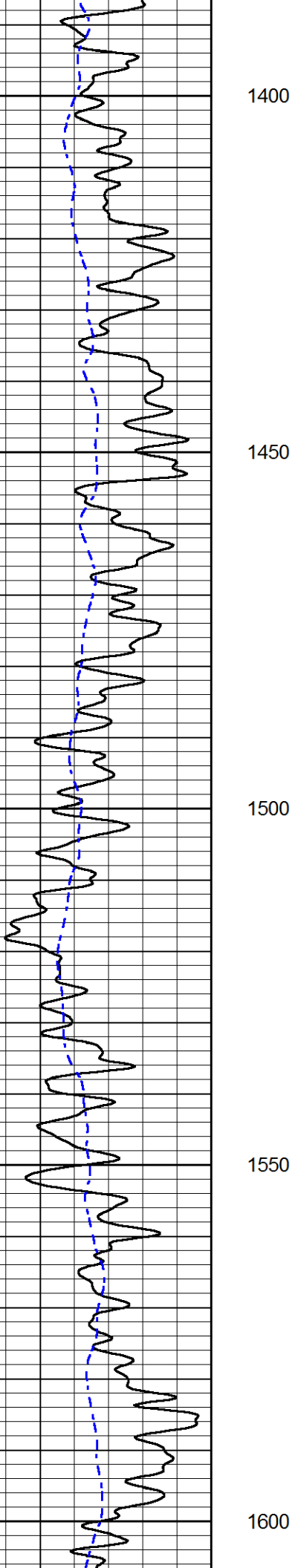
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1300

1350





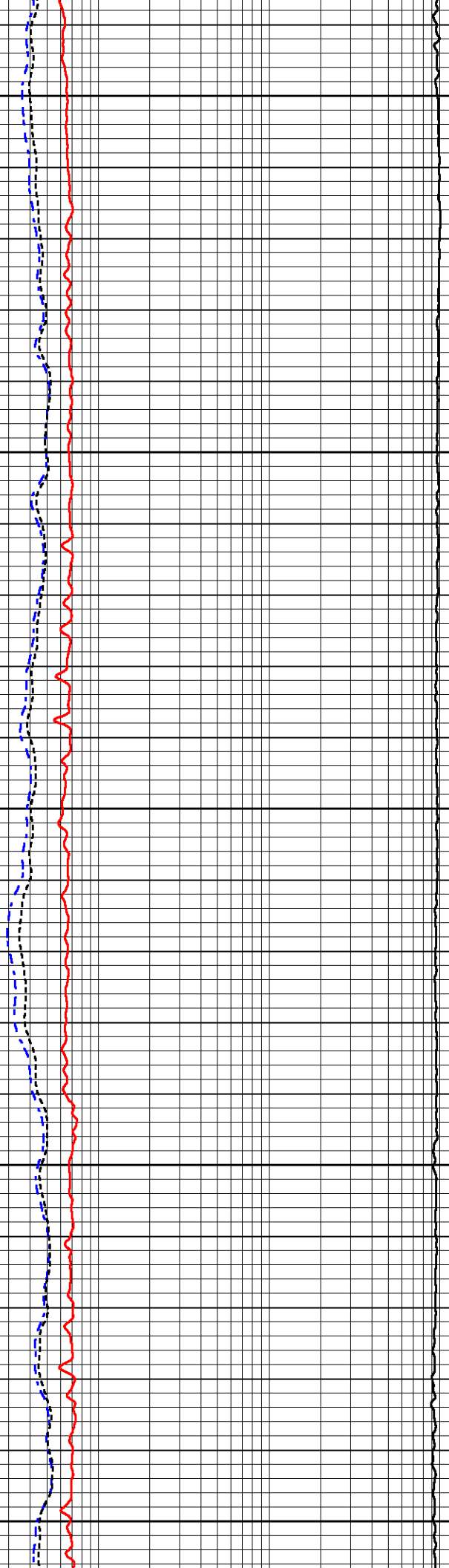
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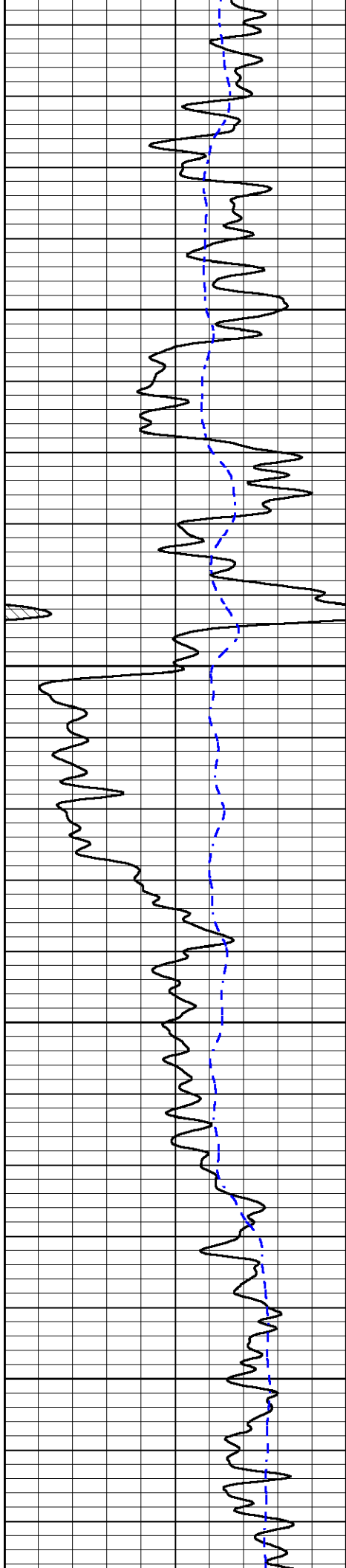
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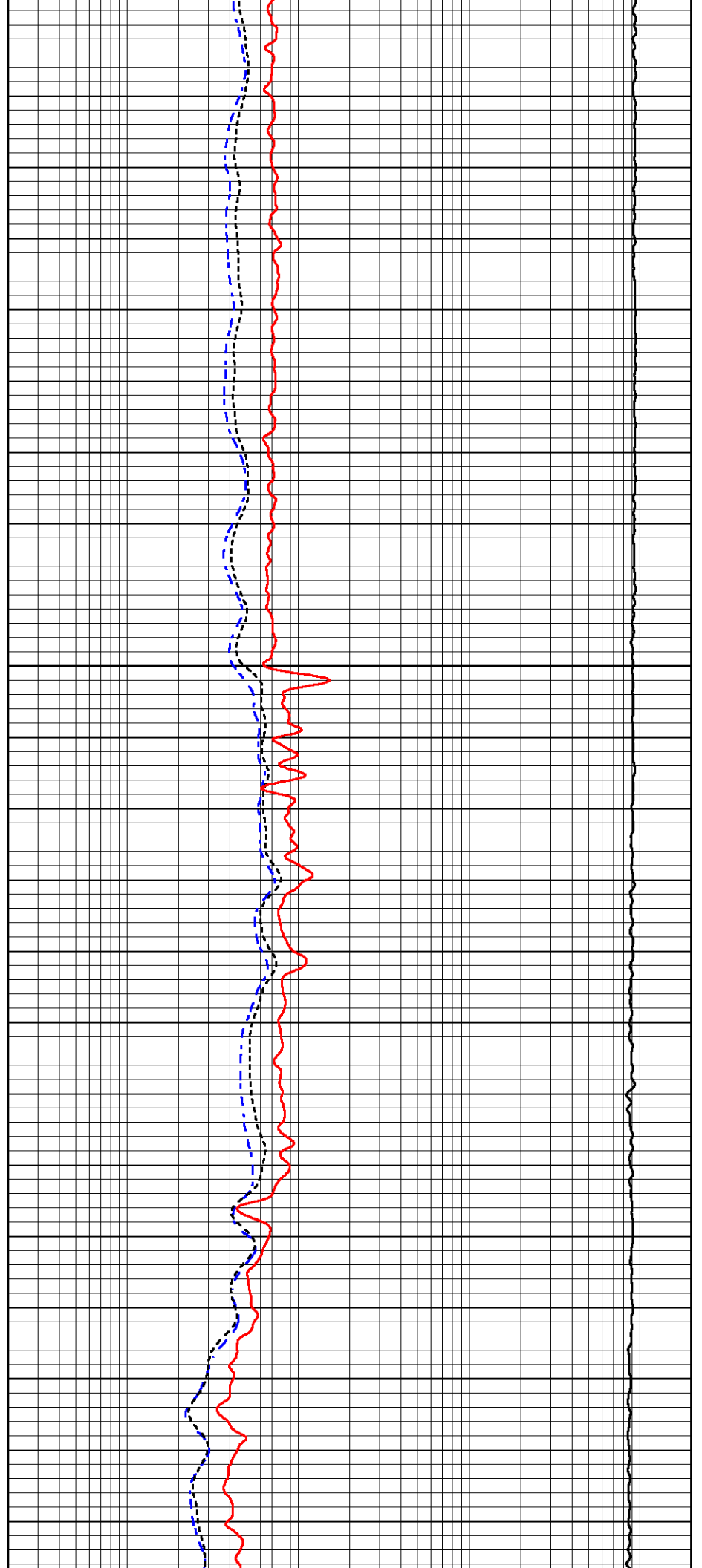


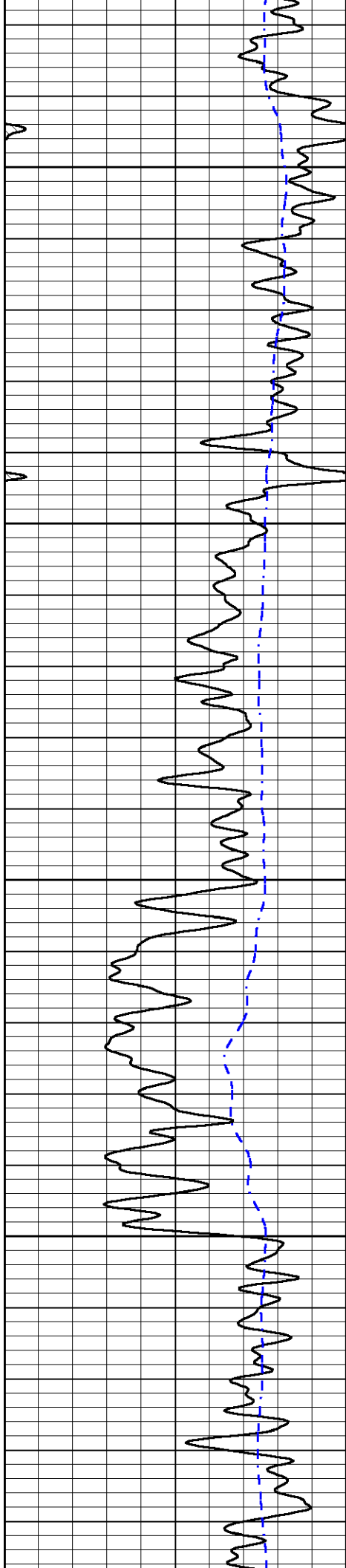
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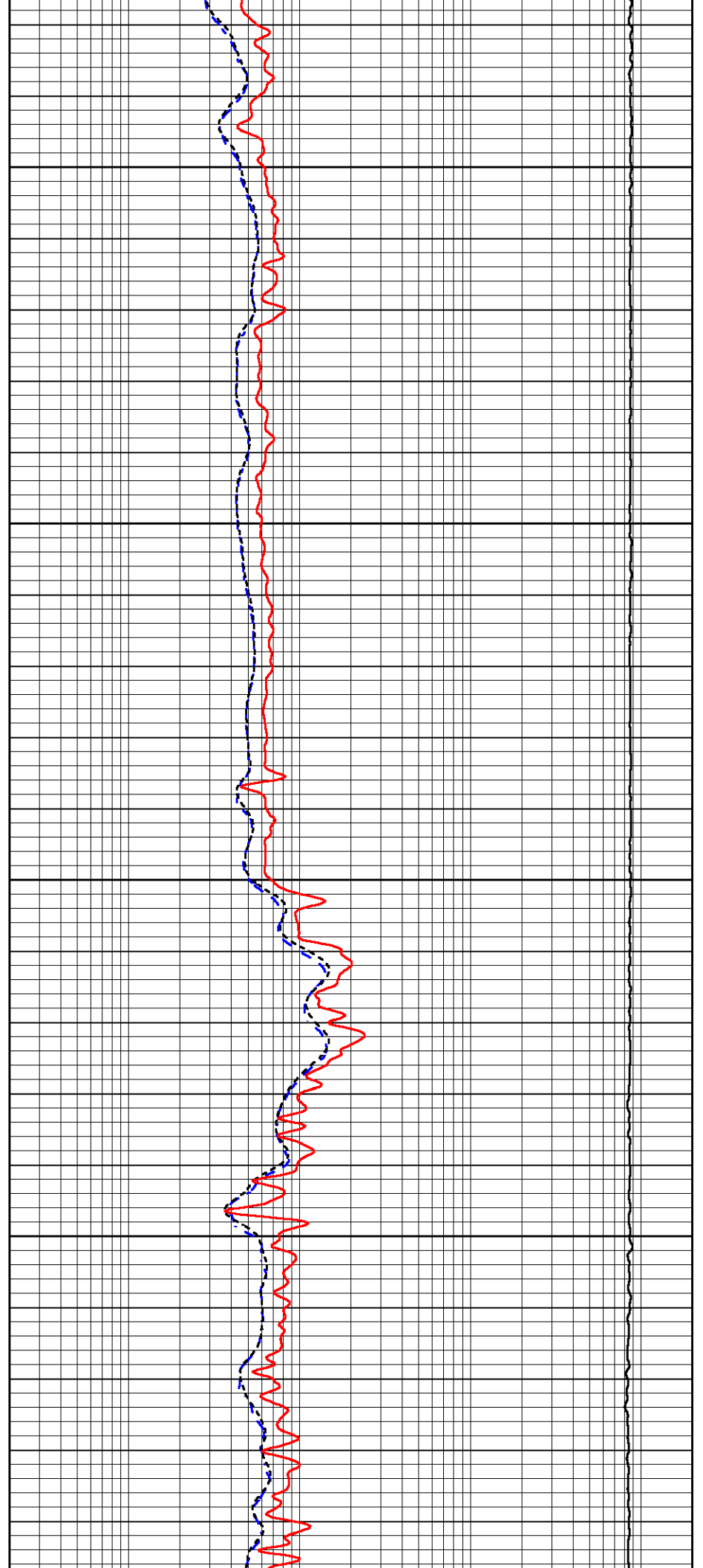


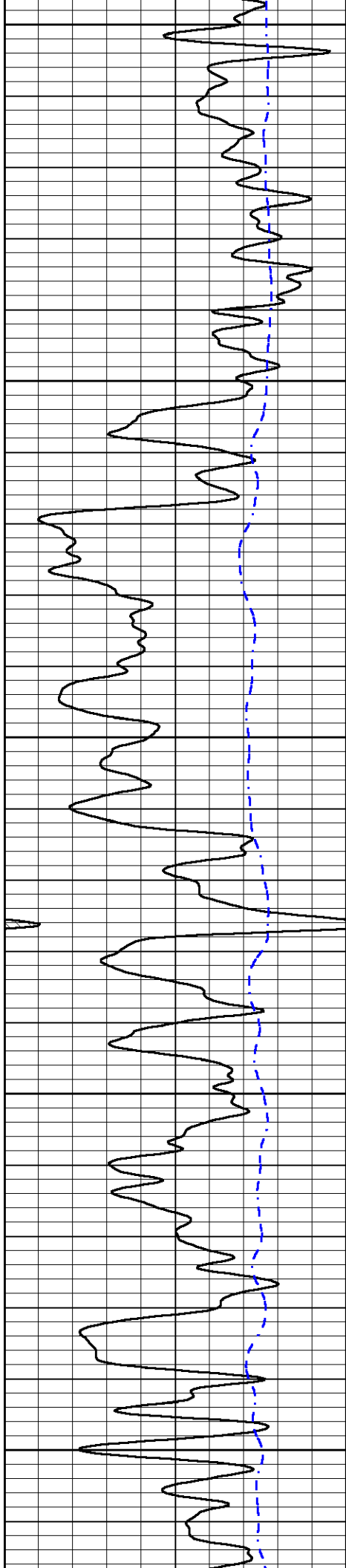
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2000





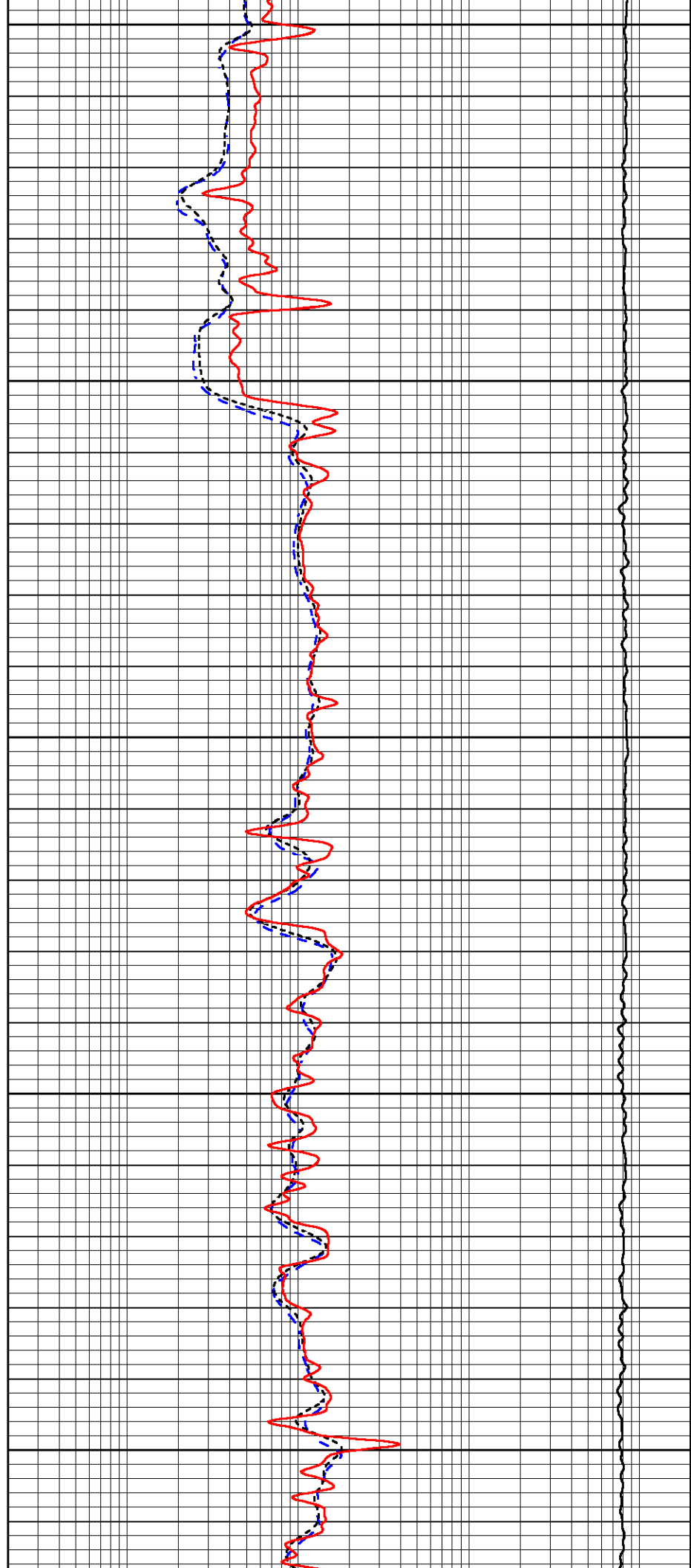
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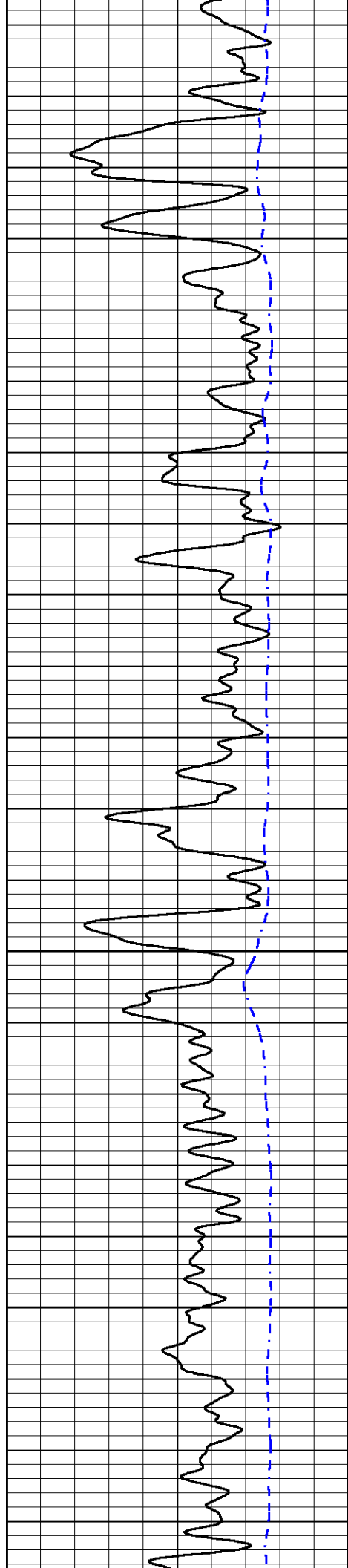
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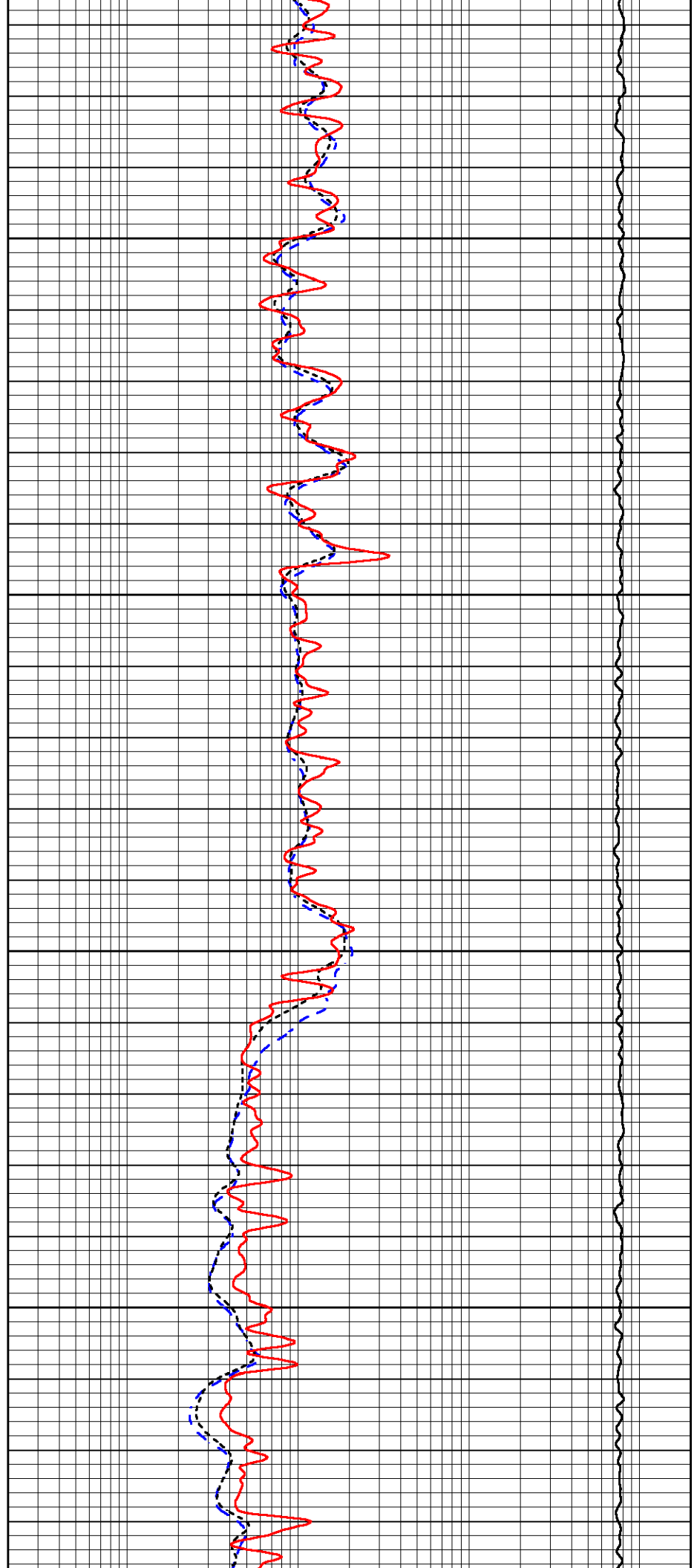


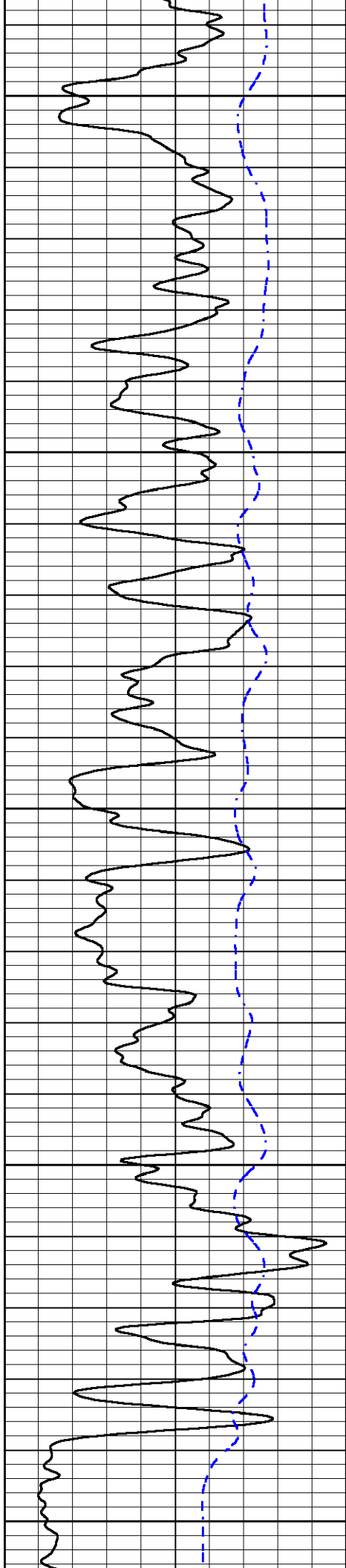
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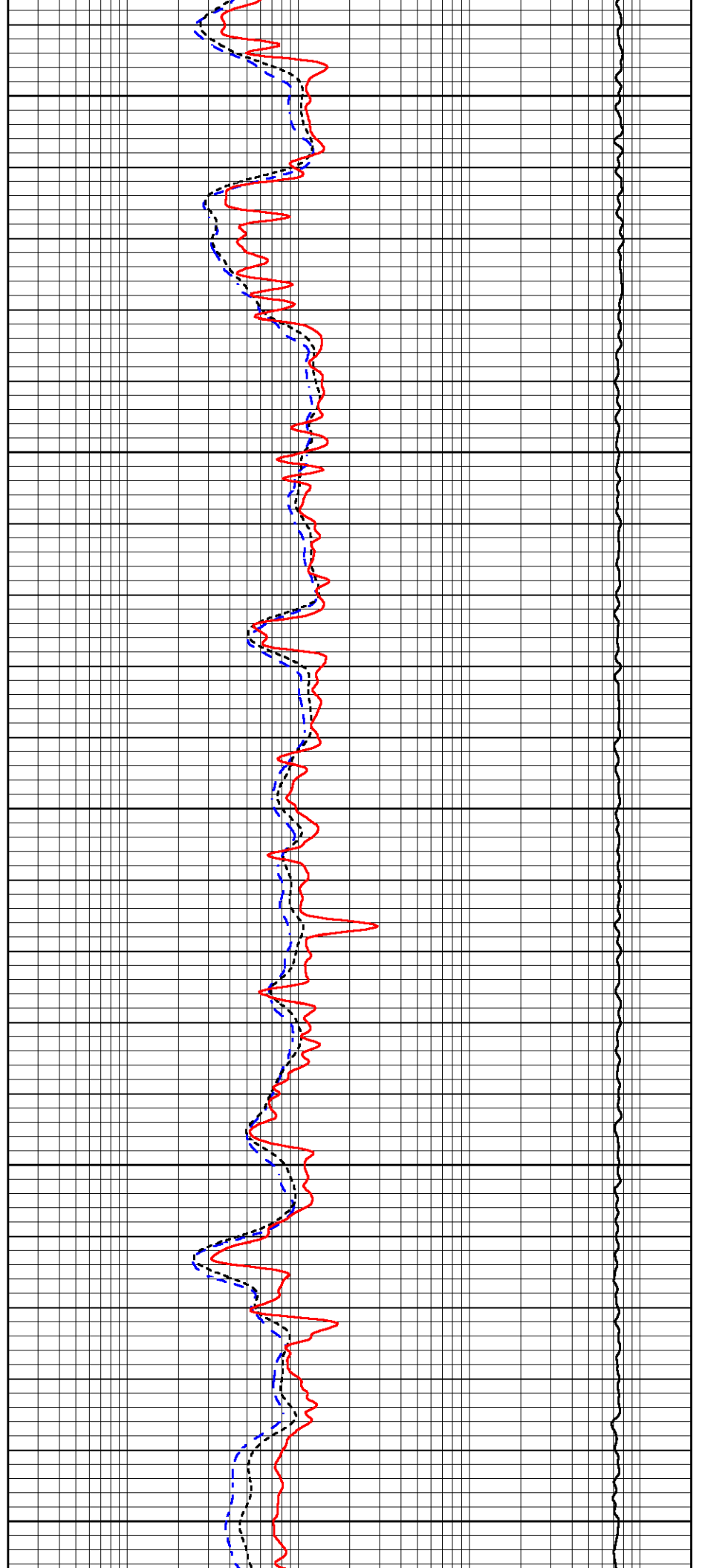
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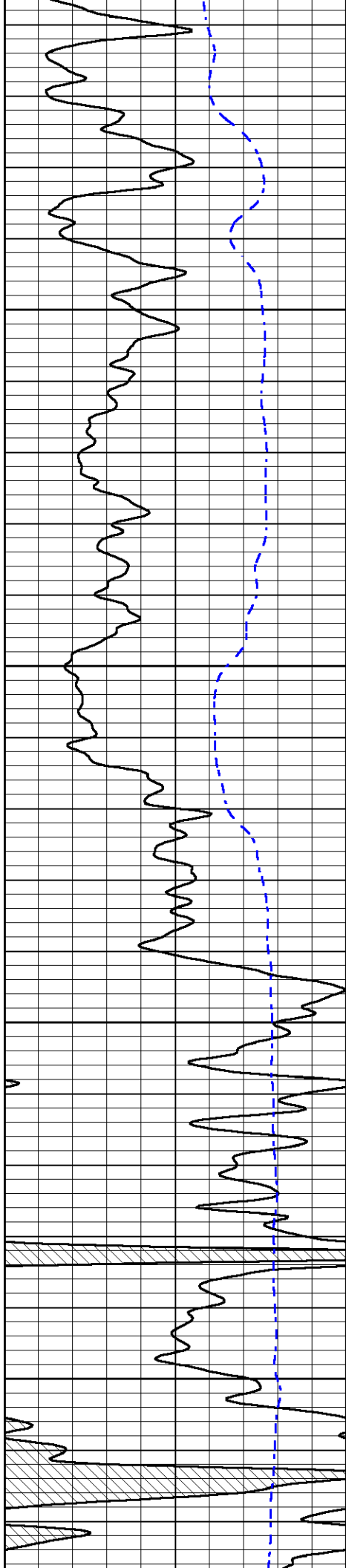
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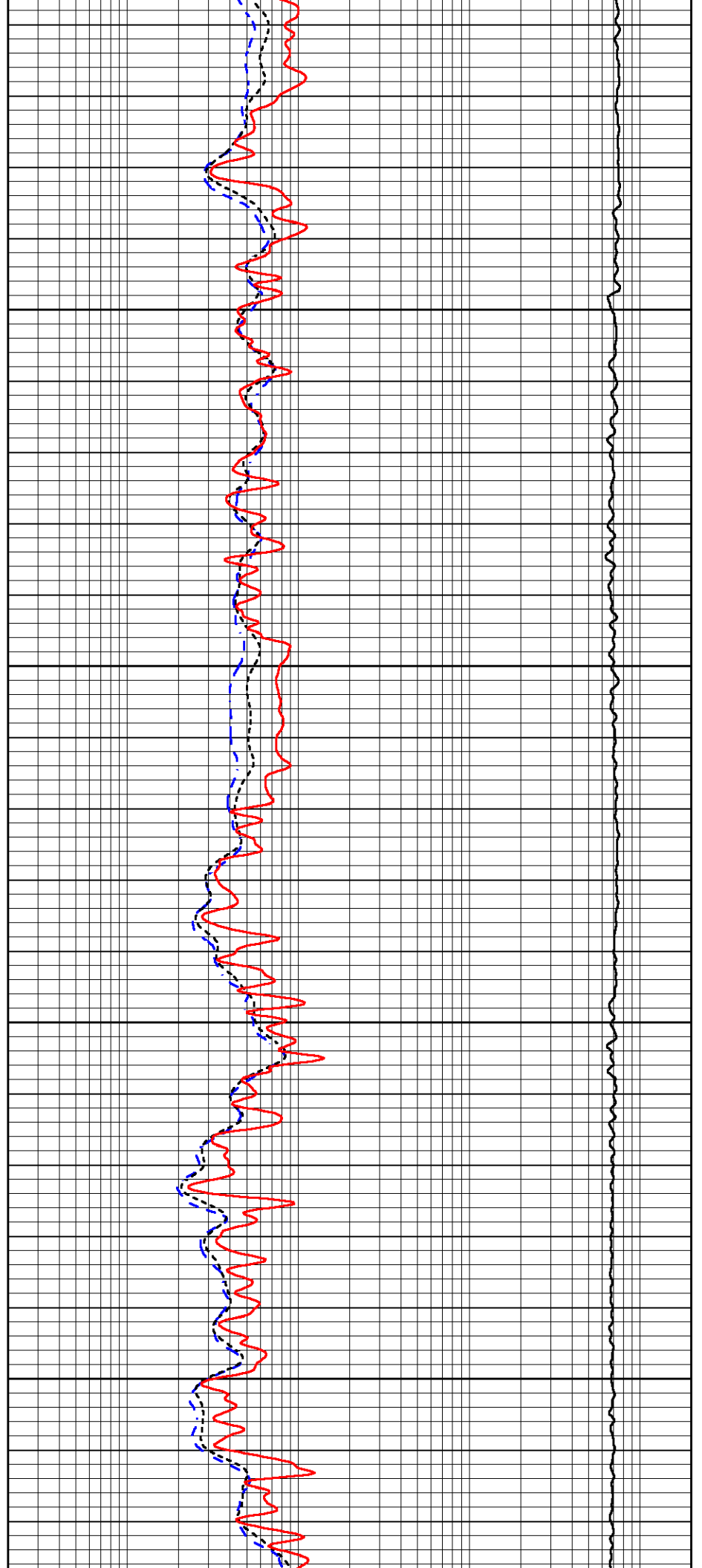


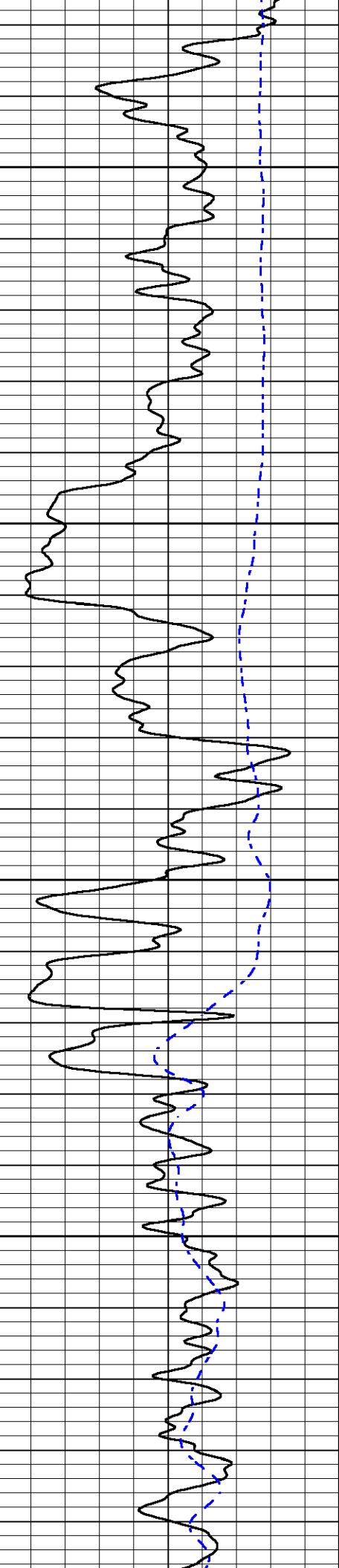
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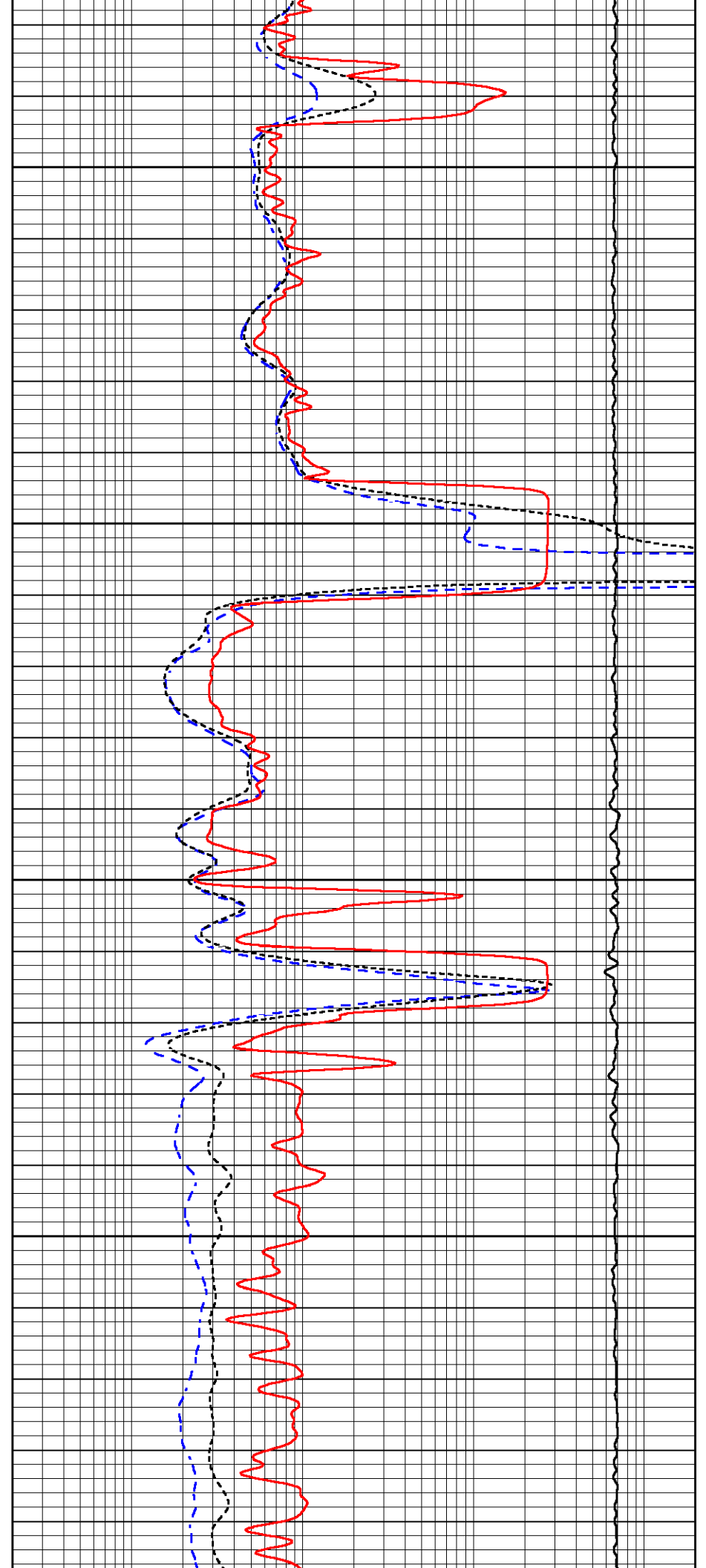


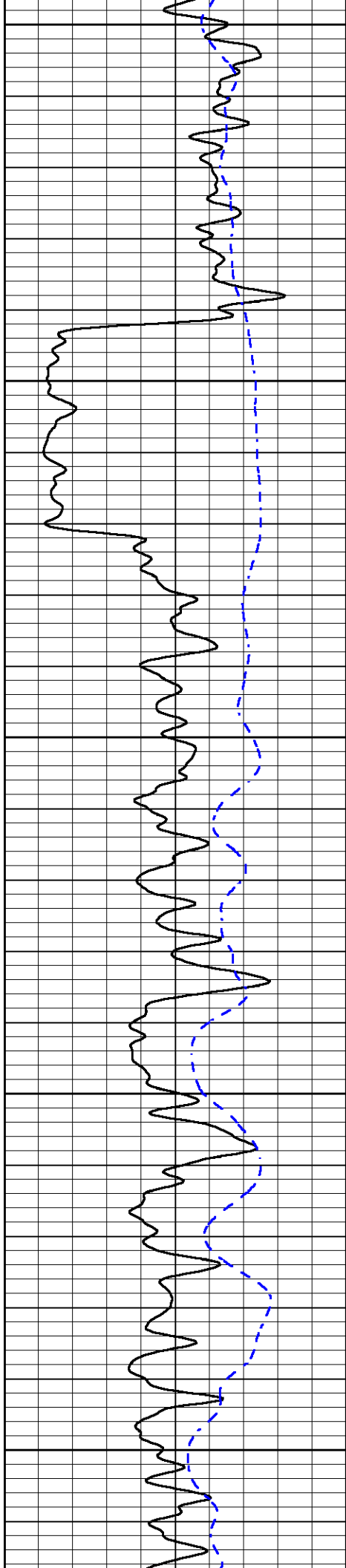
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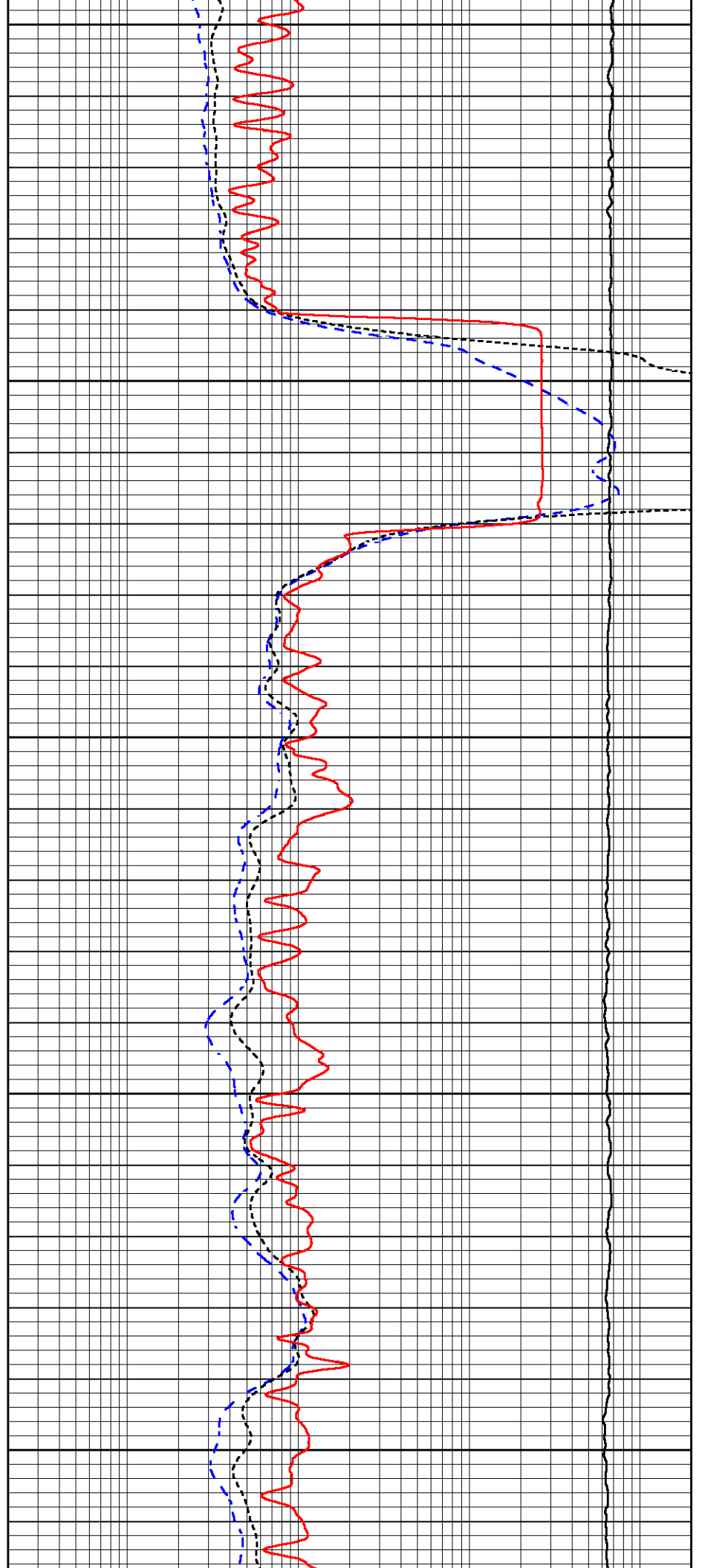
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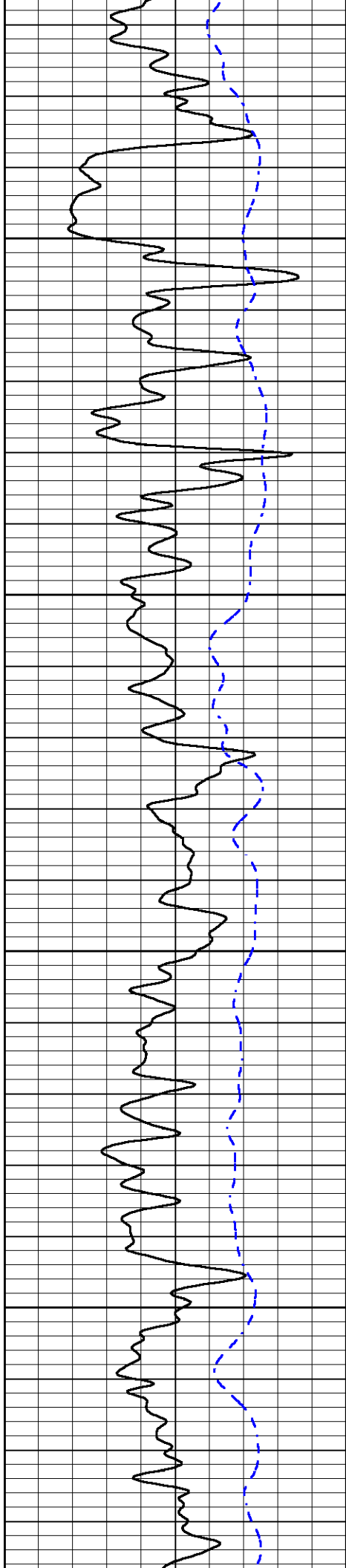
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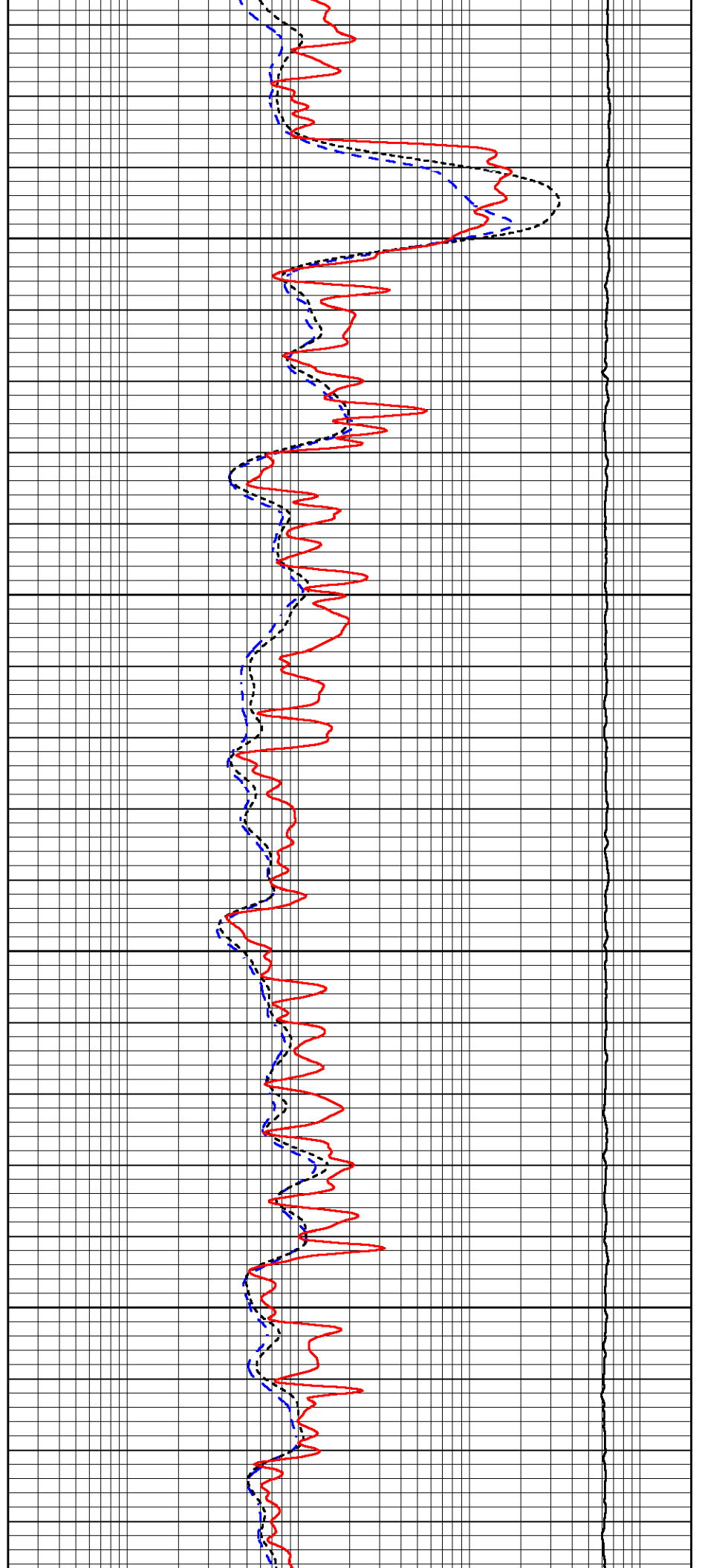


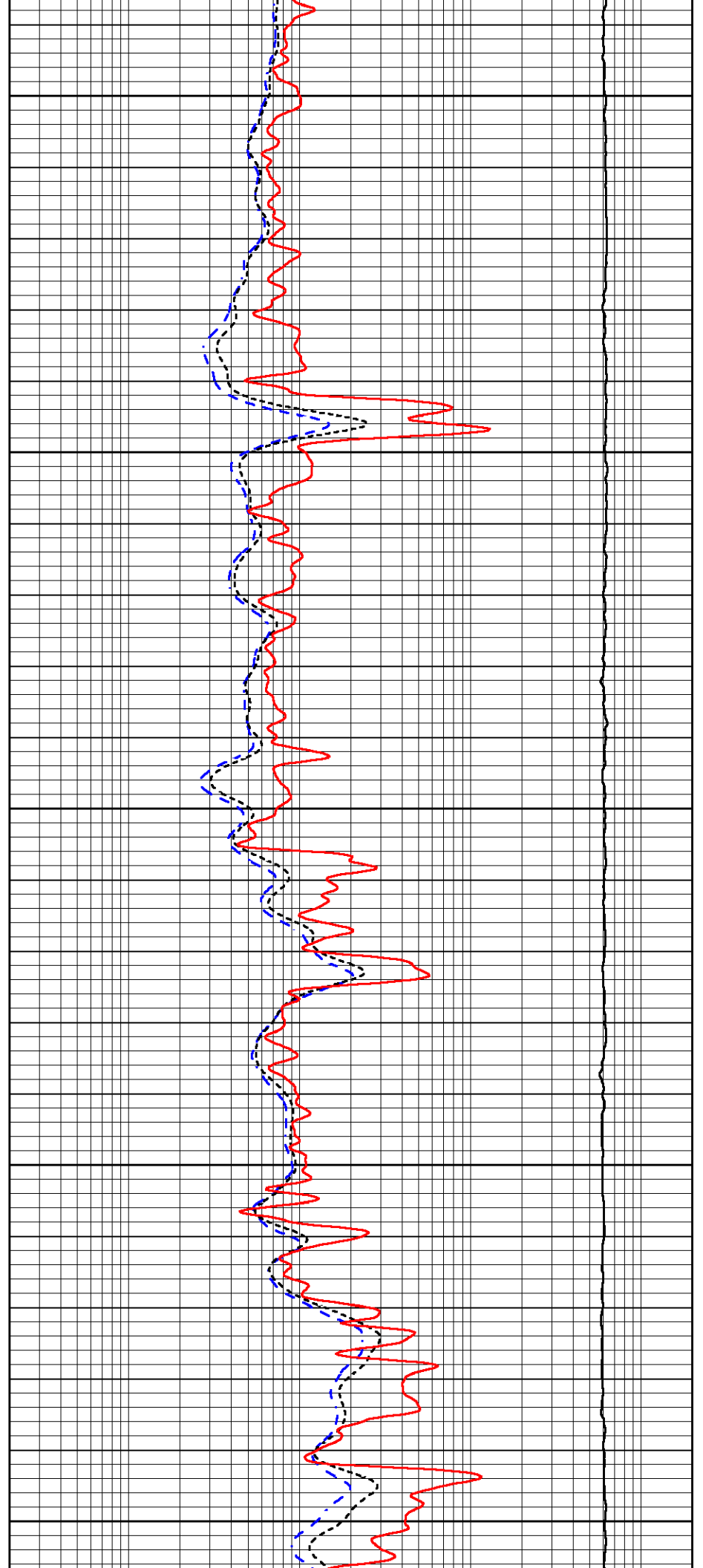
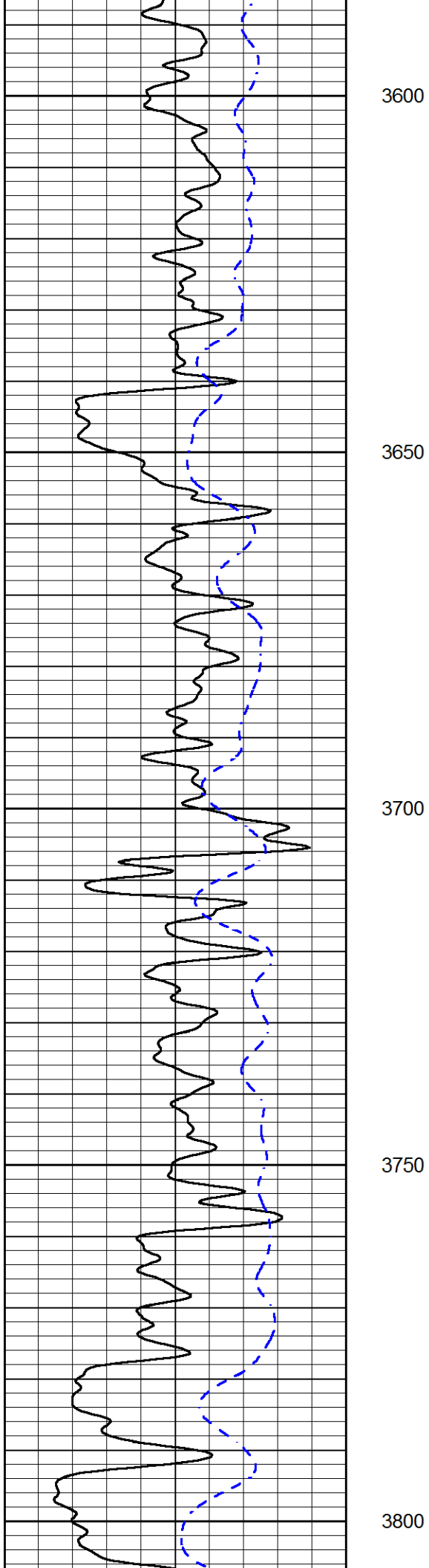
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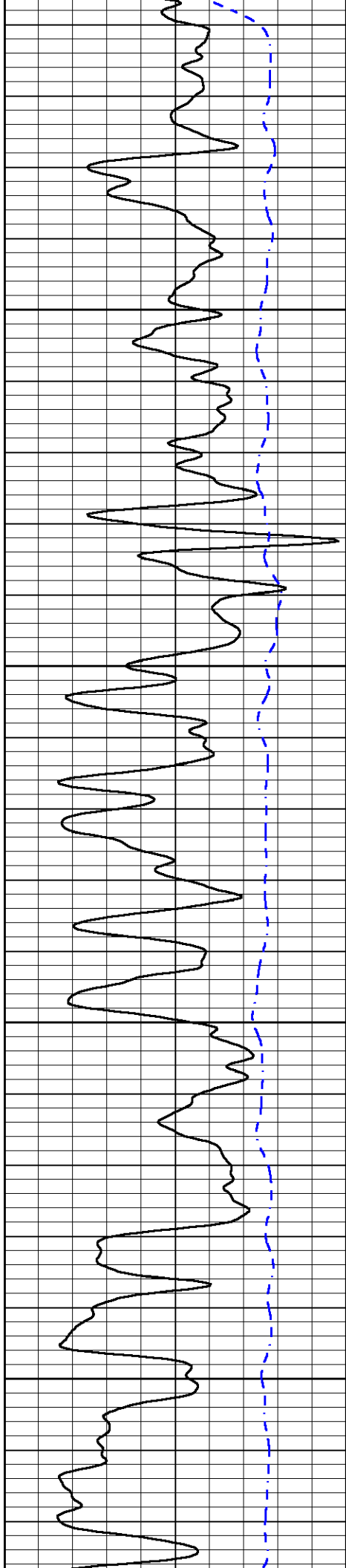
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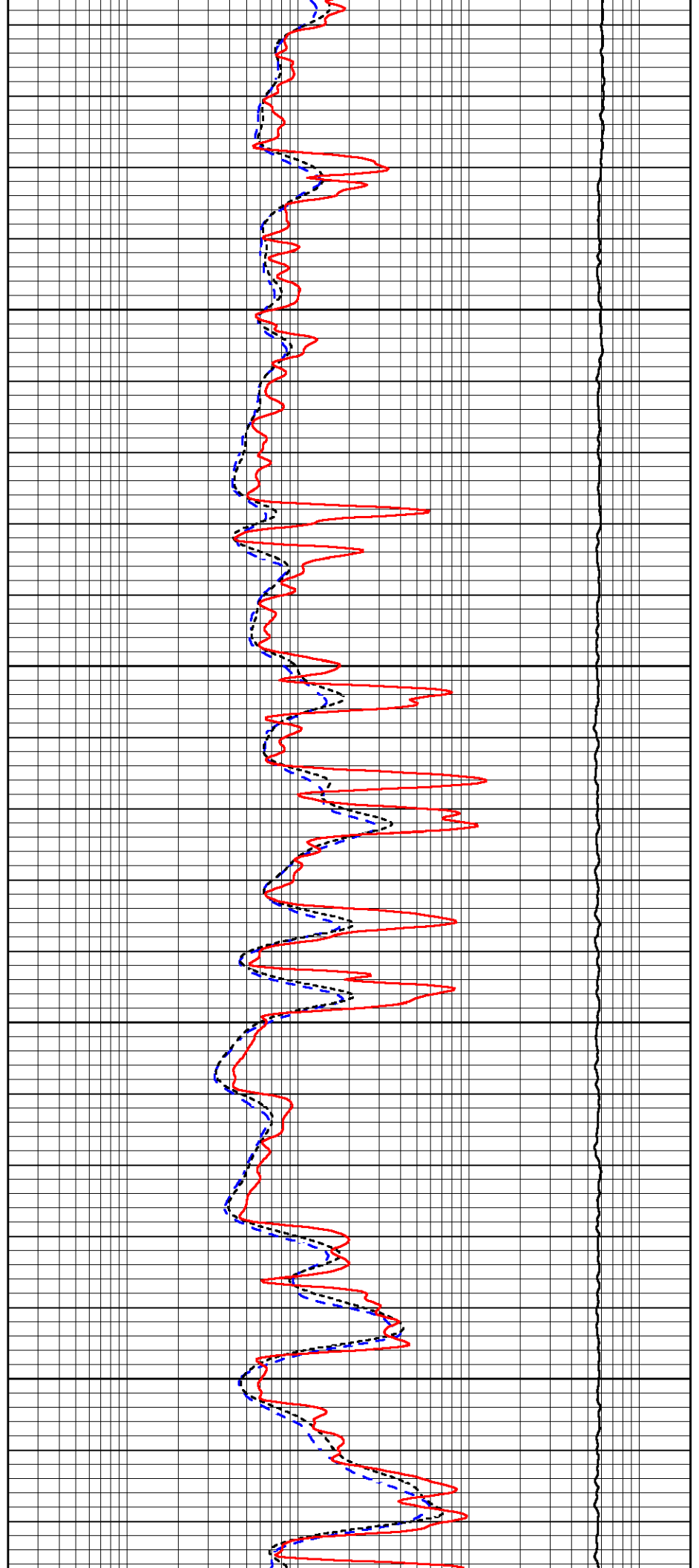


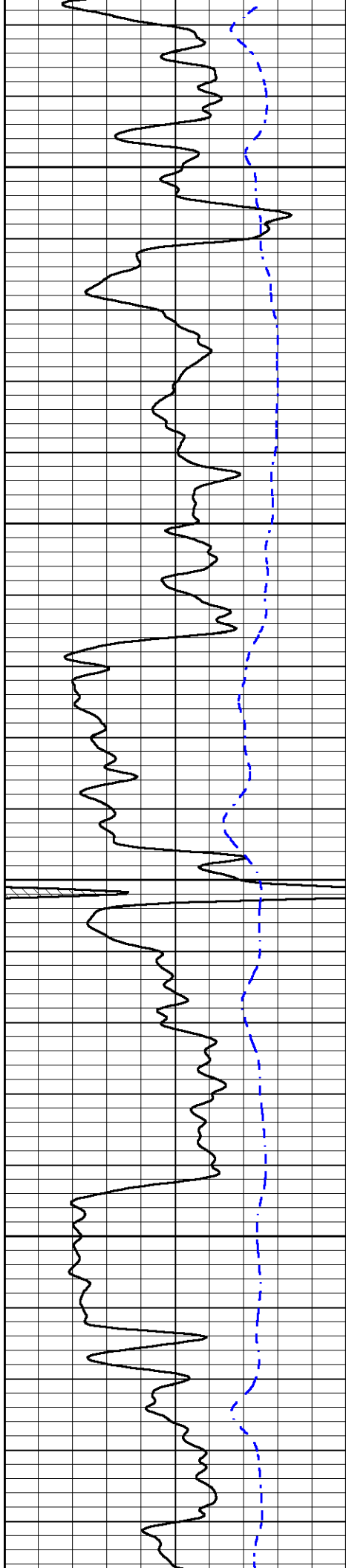
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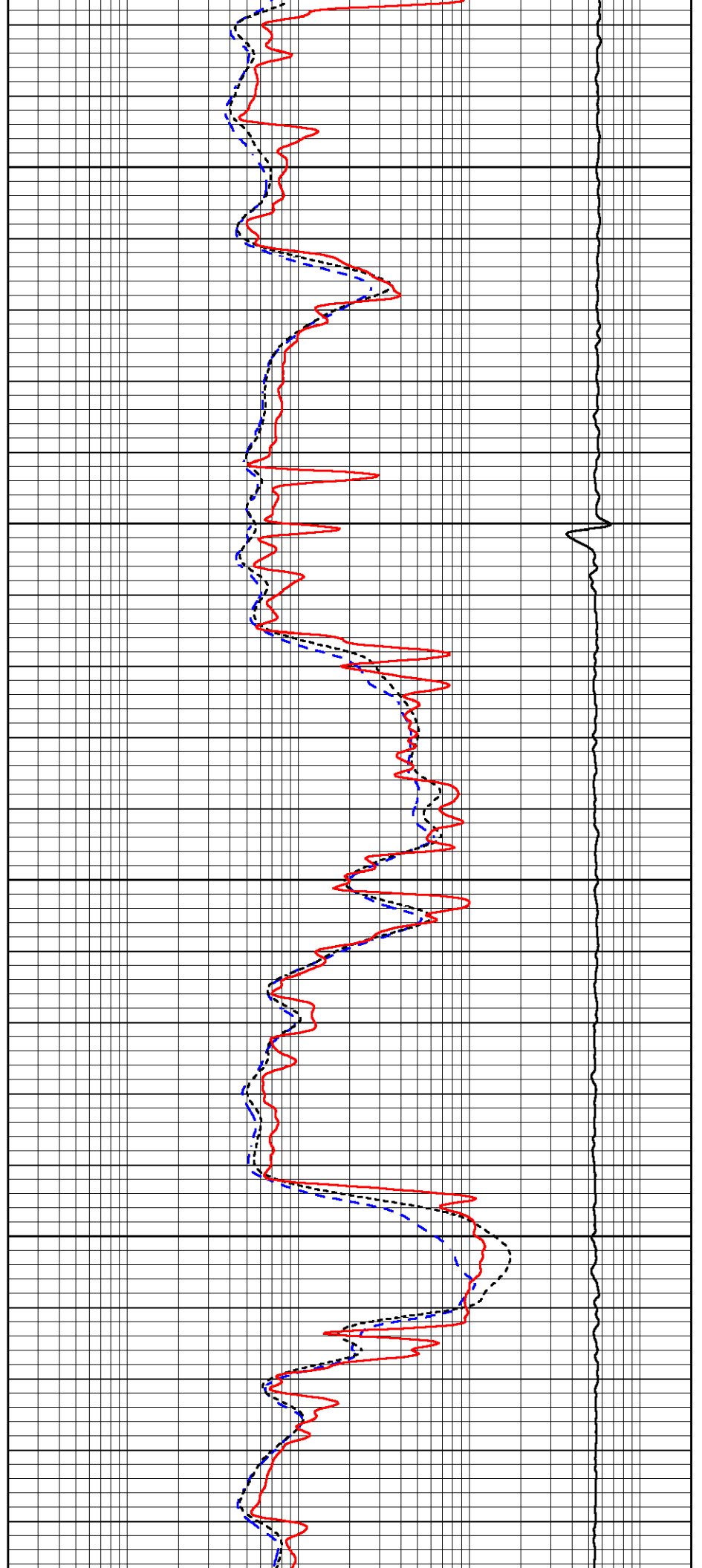


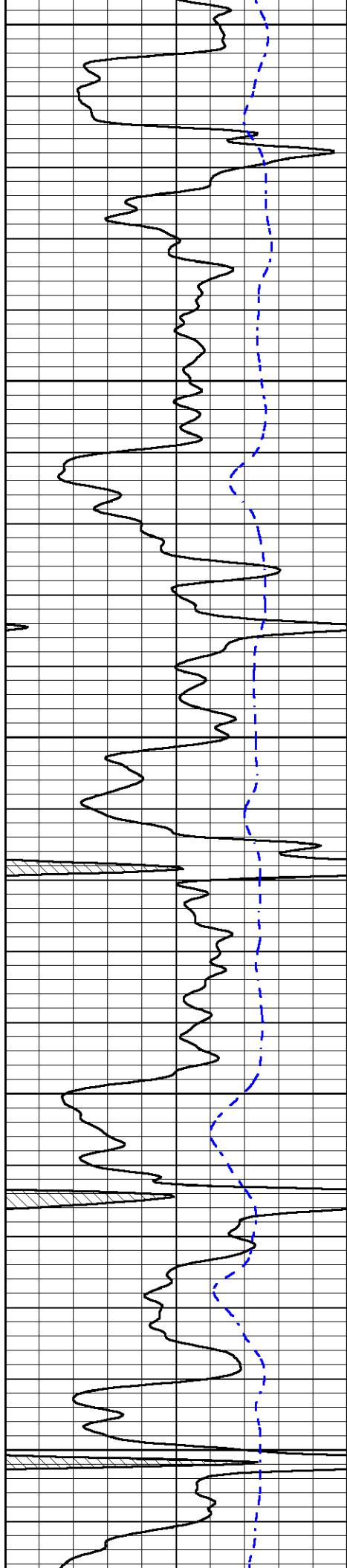
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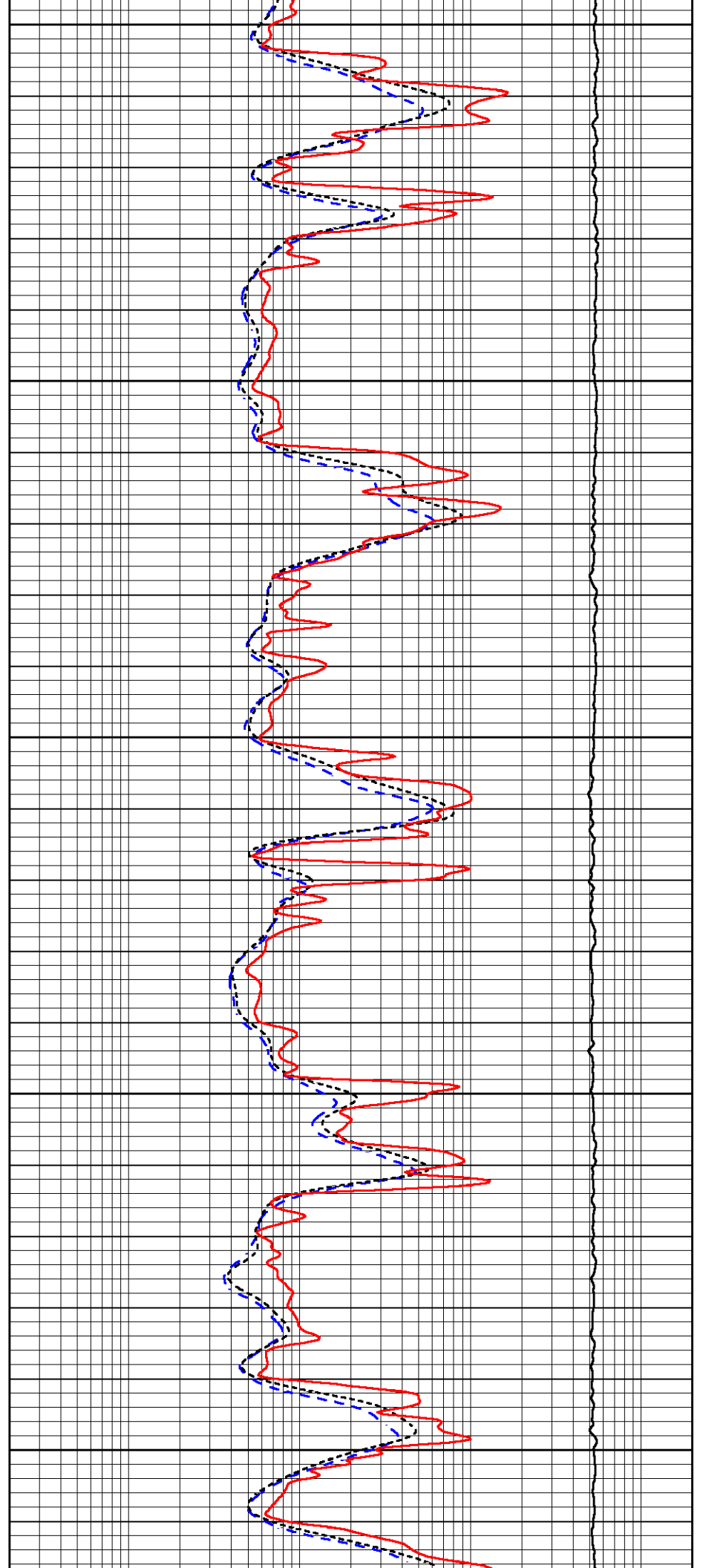
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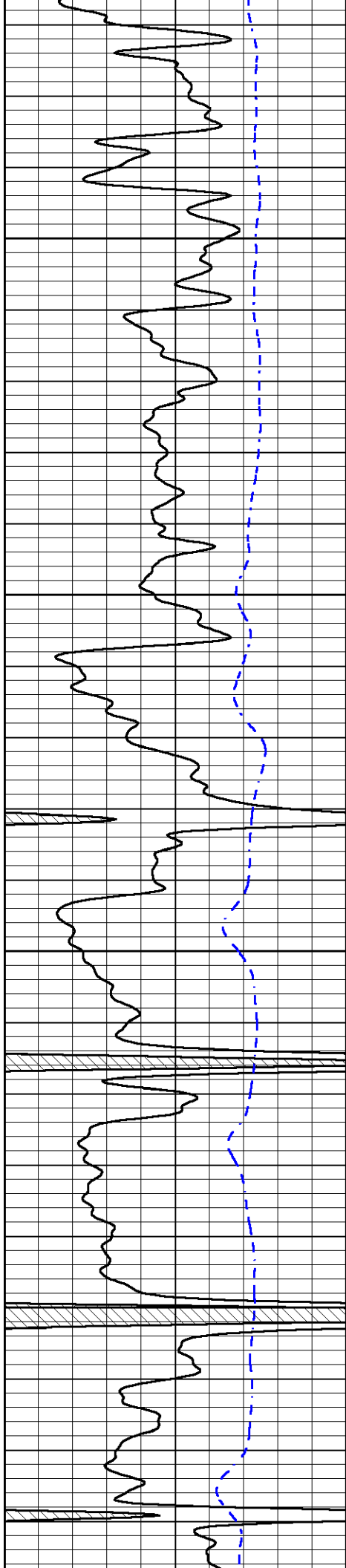
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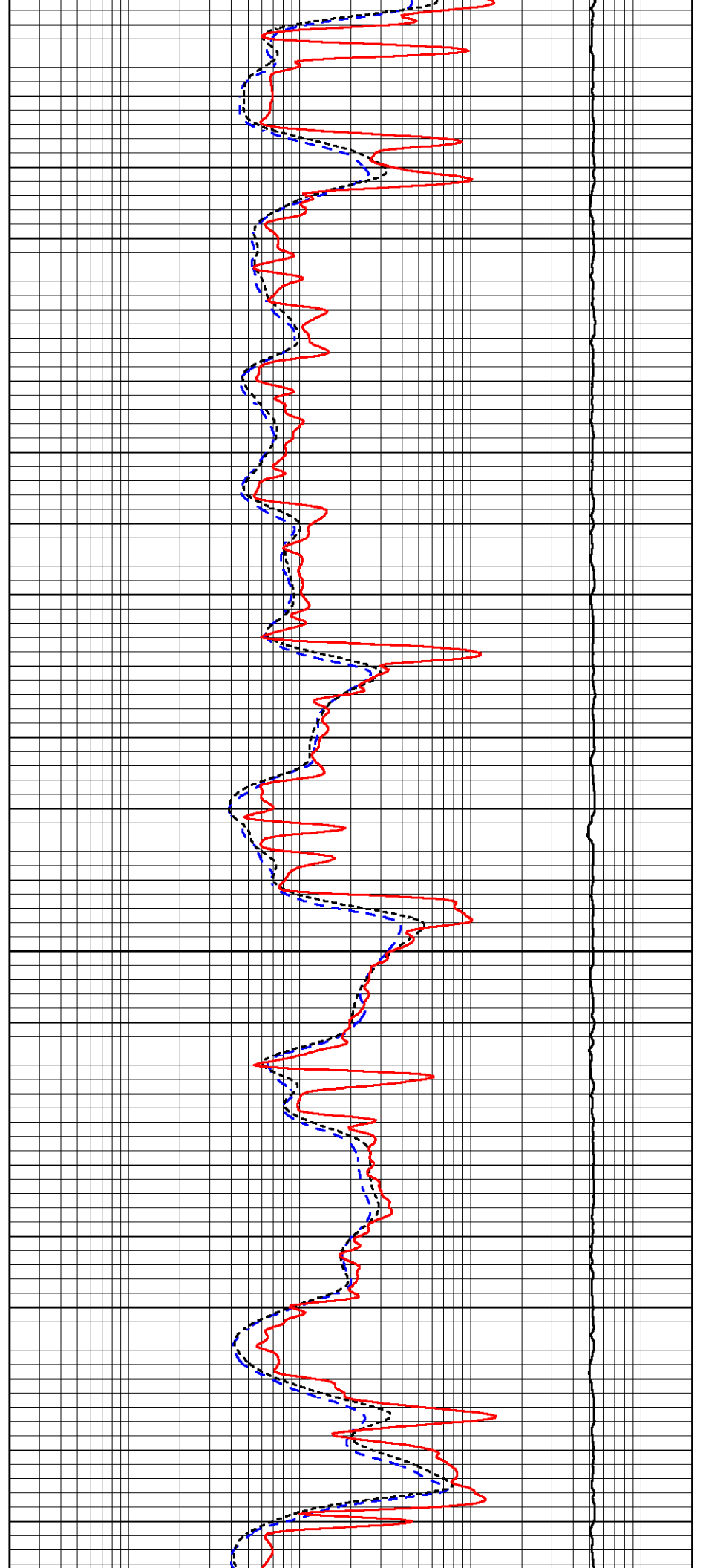


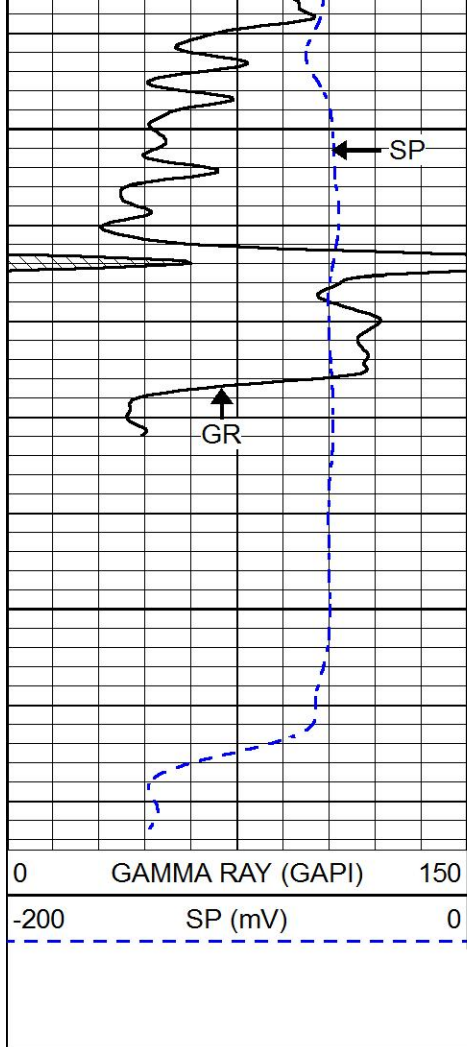
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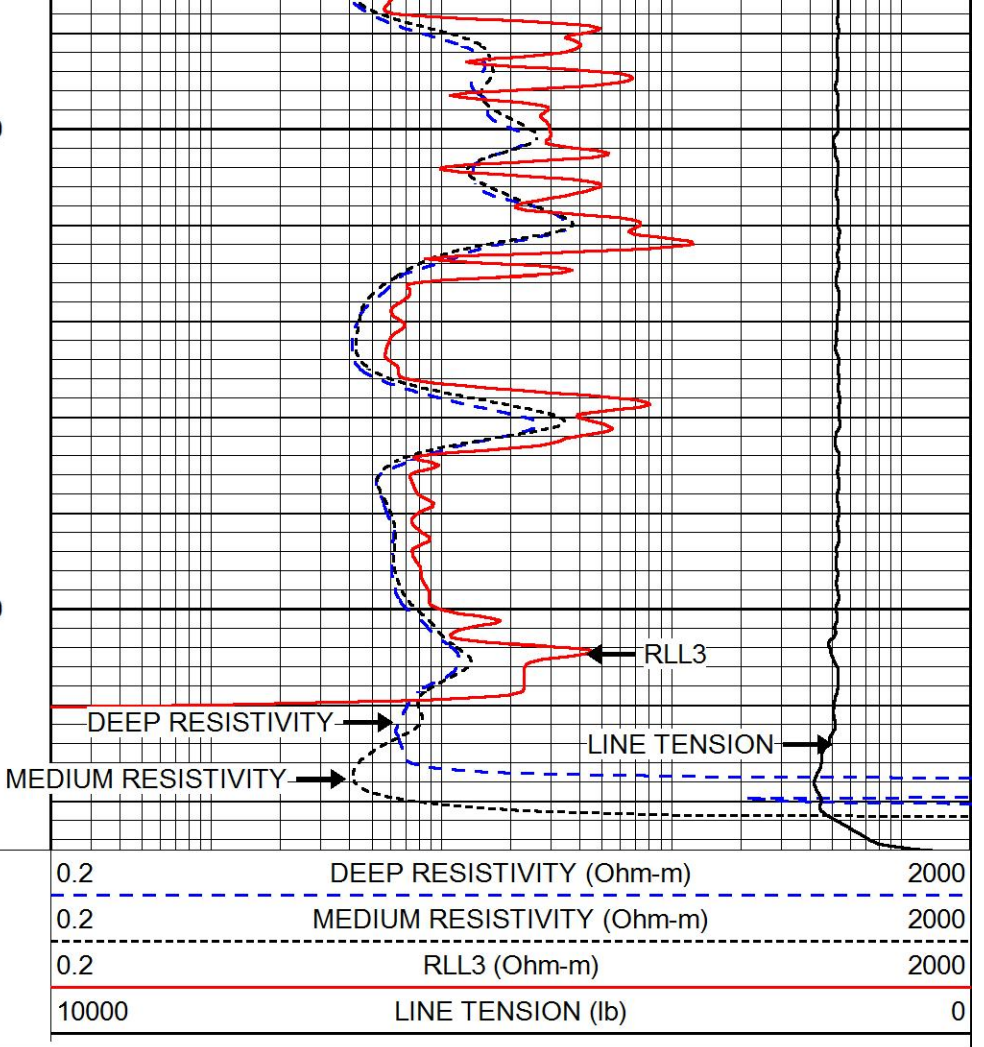
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4700

4750



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

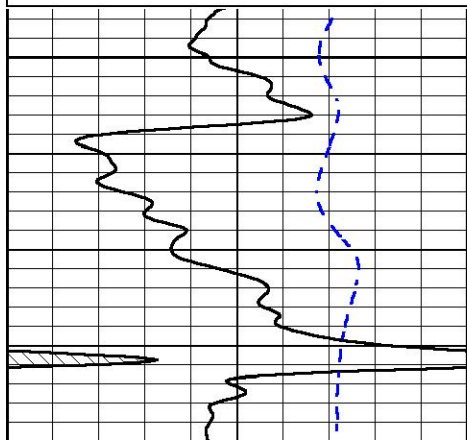


REPEAT SECTION

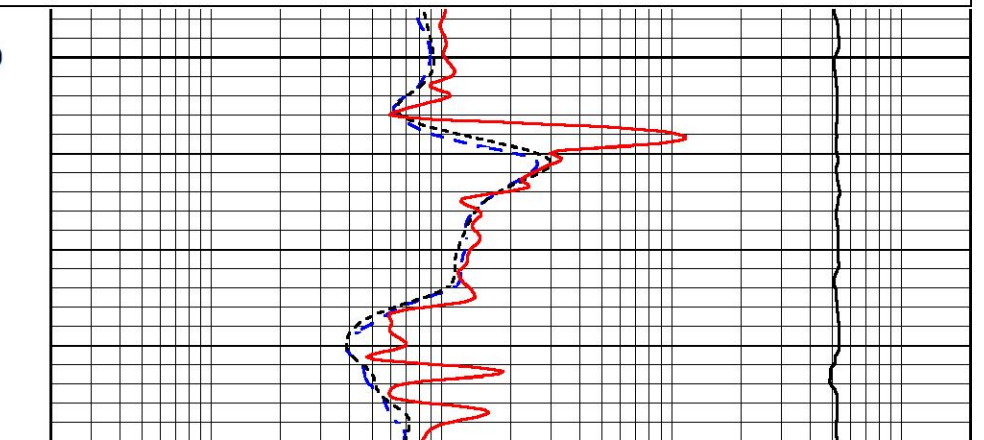
Database File murfin_jones_a_4_17.db
 Dataset Pathname stackmel/pass2.1
 Presentation Format _dil
 Dataset Creation Sat Sep 21 02:21:25 2019
 Charted by Depth in Feet scaled 1:240

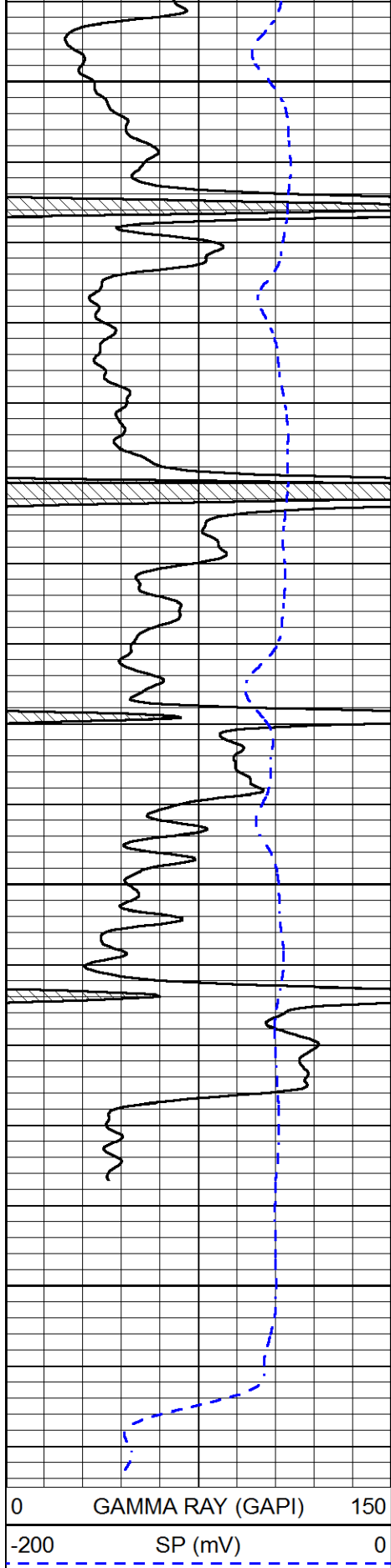
0	GAMMA RAY (GAPI)	150
-200	SP (mV)	0

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



4550





4600

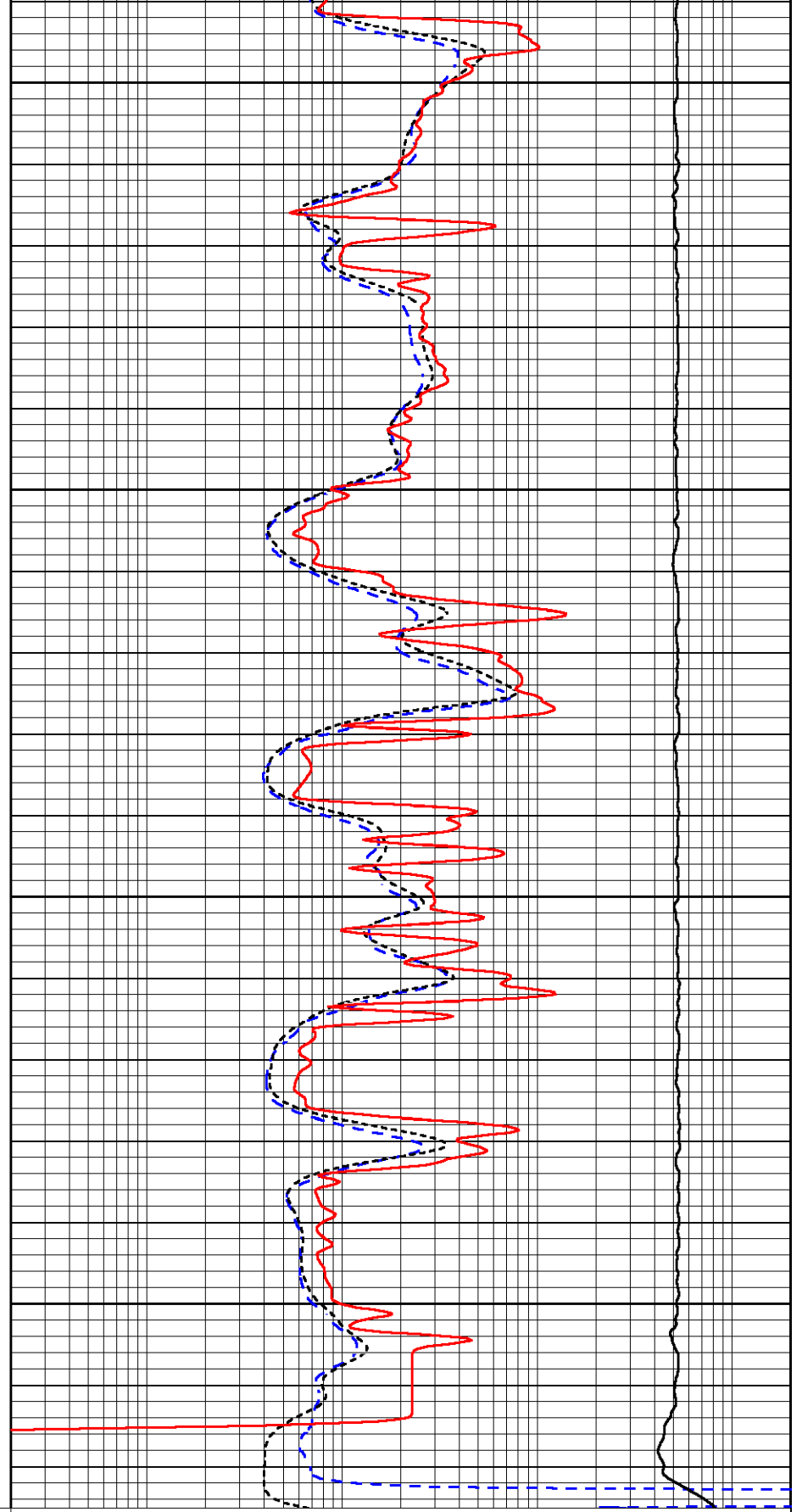
4650

4700

4750

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

Dual Induction Calibration Report

Serial-Model: 1039-PSI HIGH TEMP
 Calibration Performed: Tue Sep 10 08:34:01 2019

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	167.000	835.000	0.000	255.800	mmho/m	0.450	-51.000
Medium	0.000	1348.000	142.000	255.800	mmho/m	0.365	-49.000

Microlog Calibration Report

Serial-Model: PSI-01-PSIML
 Performed: Thu Aug 01 07:57:13 2019

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	17000.0000	-0.7000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	18000.0000	-0.6000
Caliper	1.0001	1.1397	6.5000	18.5000	in	70.0000	-64.2000

Compensated Density Calibration Report

Serial-Model: 96-916-M&W
 Source / Verifier: 16955B / 2ci
 Master Calibration Performed: Wed Mar 27 11:00:53 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	8943.64	10054.60	cps
Aluminum	2.655	g/cc	1595.61	6242.82	cps
Spine Angle = 74.54			Density/Spine Ratio = 0.503		
	Size		Reading		
Small Ring	4.00	in	1.74		
Large Ring	16.00	in	1.38		

Compensated Neutron Calibration Report

Serial Number: 207-MW
 Tool Model: M&W
 Calibration Performed: WED FEB 13 10:30:30 2019

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: 233 M&W

Serial Number: 255-M&W
Tool Model: M&W
Calibration Performed: Fri Feb 07 01:42:40 2014

Calibrator Value: 1.0 GAPI

Background Reading: 0.0 cps

Calibrator Reading: 1.0 cps

Sensitivity: 0.5500 GAPI/cps



PIONEER

Pioneer Energy Services

Company MURFIN DRILLING CO., INC.

Well JONES A #4-17

Field JONES CANYON SOUTH

County CHEYENNE

State KANSAS