



DUAL INDUCTION LOG

PIONEER
Pioneer Energy Services

Company NGL WATER SOLUTIONS DJ, LLC
Well NGL C3B
Field HAMBERT
County WELD
State COLORADO

Company NGL WATER SOLUTIONS DJ, LLC
Well NGL C3B
Field HAMBERT
County WELD State COLORADO

Location: API #: 05-123-42811-00

1061' FNL & 322' FEL

SEC 29 TWP 4N RGE 65W

Permanent Datum GROUND LEVEL Elevation 4875'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING

Other Services
CNL/CDL
K.B. Elevation 4897.5'
D.F. N/A
G.L. 4875'

Date	3/11/2016		
Run Number	ONE		
Depth Driller	9025'		
Depth Logger	9023'		
Bottom Logged Interval	9022'		
Top Log Interval	700'		
Casing Driller	9.625" @ 750'		
Casing Logger	750'		
Bit Size	8.75"		
Type Fluid in Hole	CHEMICAL		
Salinity, ppm CL	1400		
Density / Viscosity	8.9 31		
pH / Fluid Loss	7.8 8.5		
Source of Sample	Flowline		
Rm @ Meas. Temp	0.76 @ 39		
Rmt @ Meas. Temp	0.57 @ 39		
Rmc @ Meas. Temp	1.03 @ 39		
Source of Rmt / Rmc	Charts		
Rm @ BHT	0.18 @ 166		
Operating Rig Time	5 HOURS		
Max Rec. Temp. F	166		
Equipment Number	108		
Location	Colby		
Recorded By	D. SCHMIDT		
Witnessed By	AARON PALMER		

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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.

BENNETT, COLORADO,
NORTH TO HWY 52, WEST TO 51 RD,
NORTH TO FRONTAGE RD, WEST TO 49 RD, 13 NORTH, 4 WEST, 1/3 SOUTH,
WEST INTO

Log Measured From: KELLY BUSHING 22.5Ft. 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: AARON PALMER
Secondary Witness:
Secondary Witness:
Secondary Witness:

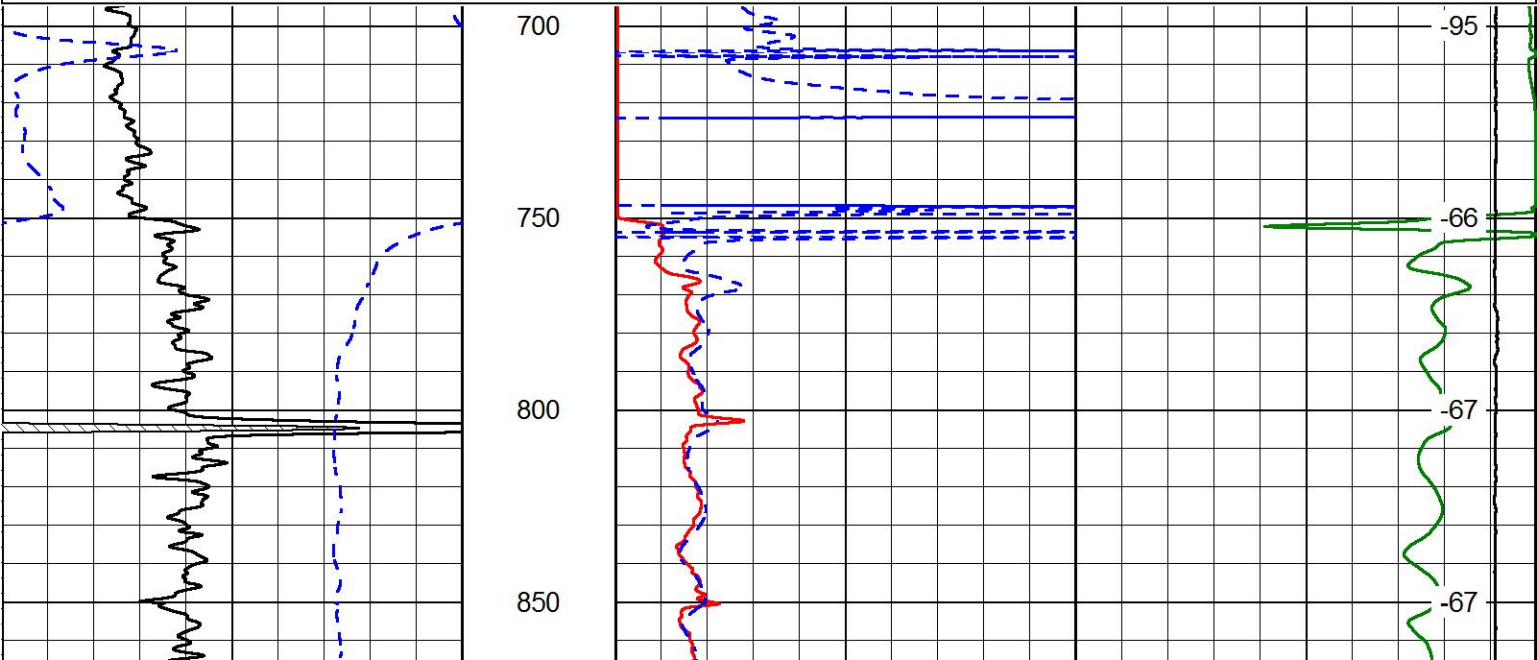
Top - Bottom

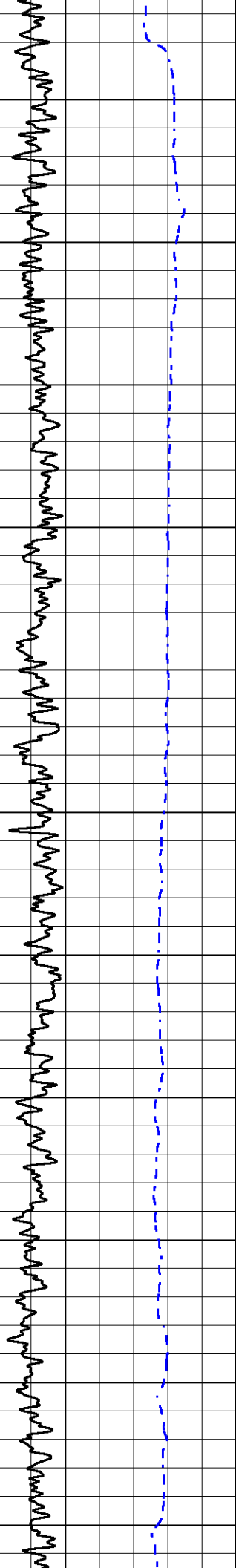
M	A	SZCOR	NPORSEL	FLUIDDEN g/cc	MATRXDEN g/cc	SPSHIFT mV	SNDERRM mmho/m
2	1	Off	Limestone	1	2.71	90	0
SNDERR mmho/m	SRFTEMP degF	CASETHCK in	CASEOD in	PERFS	TDEPTH ft	BOTTEMP degF	BOREID in
0	39	0	5.5	0	9023	242	8.75

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	33.00		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	29.90 29.15		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	20.85 20.83 20.35		CDL-M&W (71-914)	8.50	4.00	250.00
RLL3F RLL3	15.80 15.80		DIL-PSI HIGH TEMP (PSI 971 HT)	18.50	3.50	220.00
CILD	8.00					

CILM	4.70								
SP	0.20								
Dataset: ngl_ngl_c3b.db: field/well/STACK/pass5.1 Total length: 35.50 ft Total weight: 620.00 lb O.D.: 4.00 in									

		MAIN PASS	
2" SCALE RESISTIVITY			
Database File	ngl_ngl_c3b.db		
Dataset Pathname	STACK/pass6.1		
Presentation Format	dil2in		
Dataset Creation	Fri Mar 11 06:03:57 2016		
Charted by	Depth in Feet scaled 1:600		
0	GAMMA RAY (GAPI)	200	
-200	SP (mV)	0	
1000	CONDUCTIVITY (mmho/m)	0	
15000	LINE TENSION (lb)	0	
0	SHALLOW RESISTIVITY (Ohm-m)	50	LINE SPEED
0	DEEP RESISTIVITY (Ohm-m)	50	(ft/min)
50	SHALLOW RESISTIVITY (Ohm-m)	500	
50	DEEP RESISTIVITY (Ohm-m)	500	





900

950

1000

1050

1100

1150

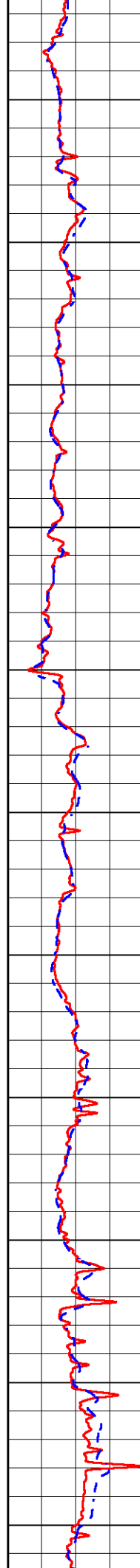
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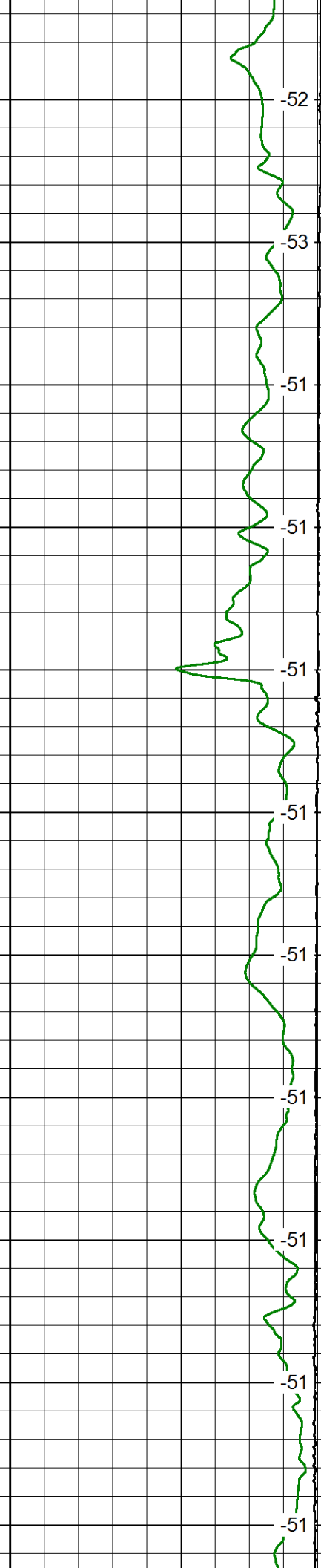
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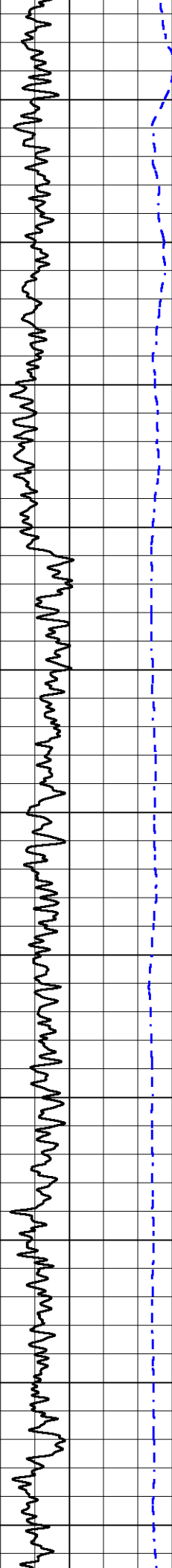
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1400



1400



1450

1500

1550

1600

1650

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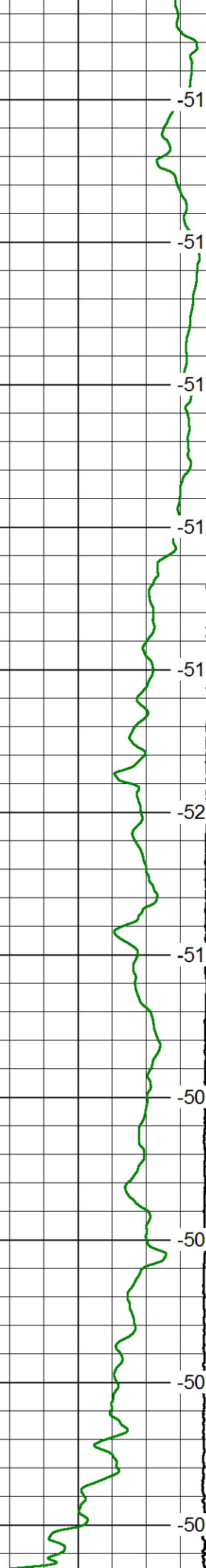
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1800

1850

1900

1950



-51

-51

-51

-51

-51

-52

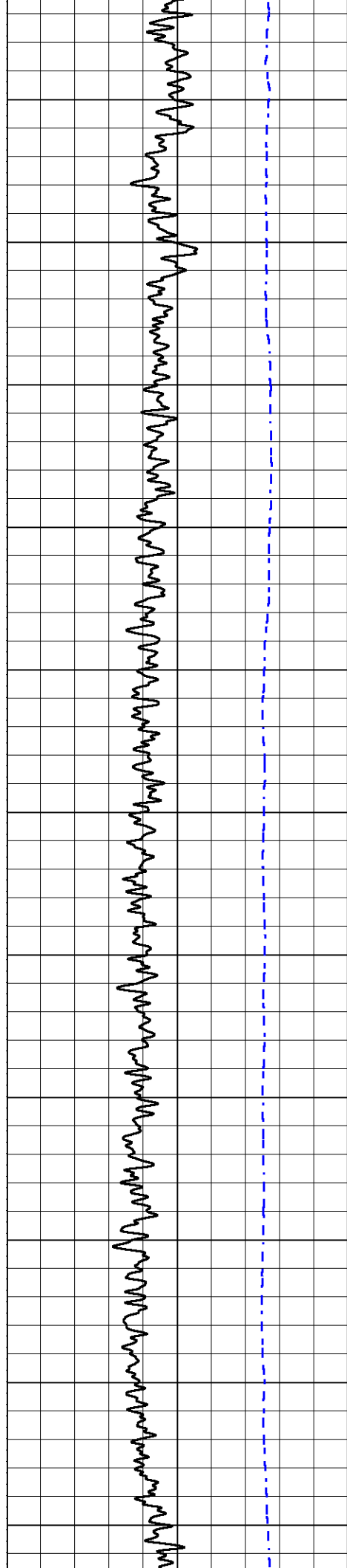
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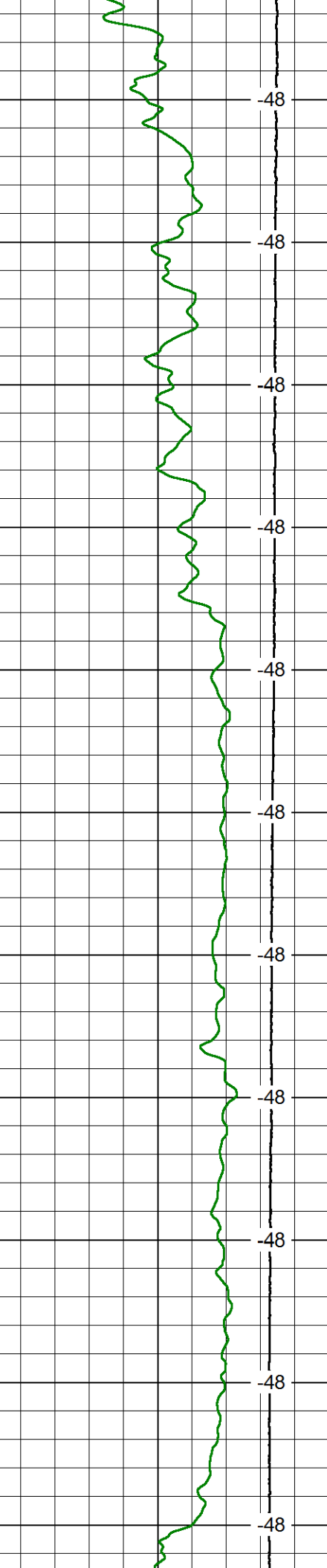
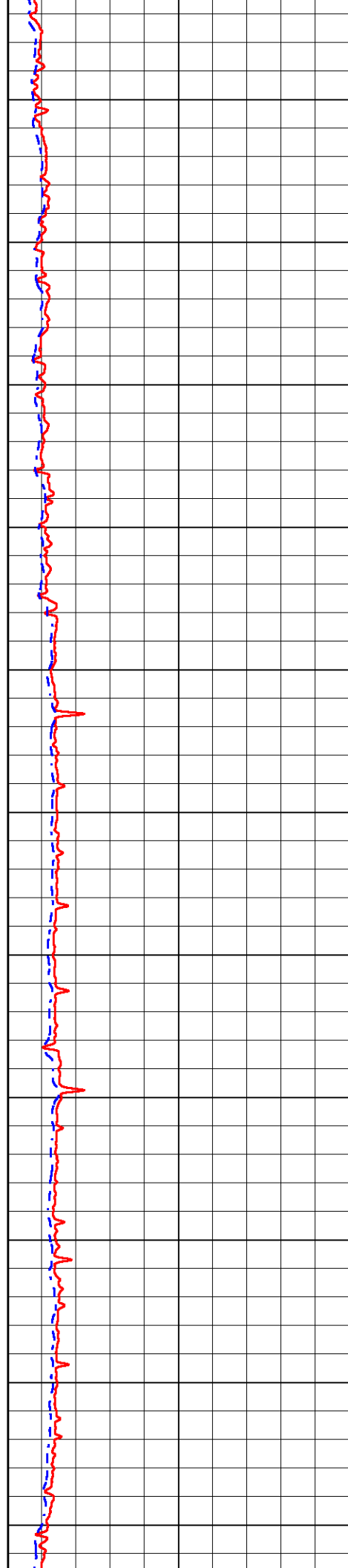
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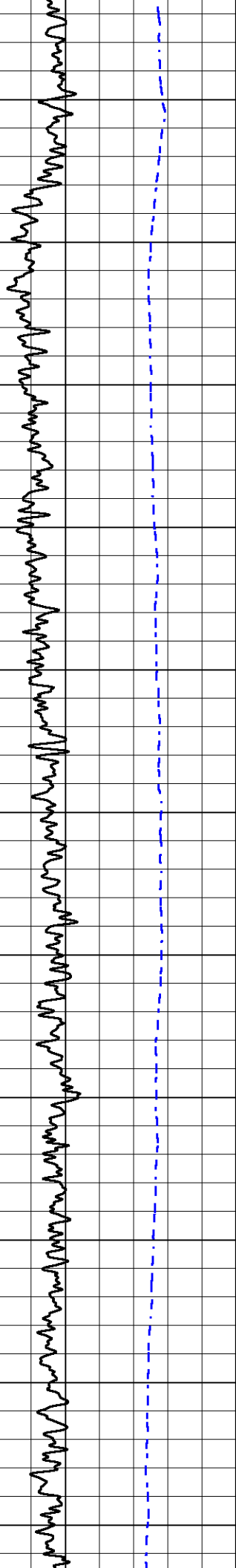
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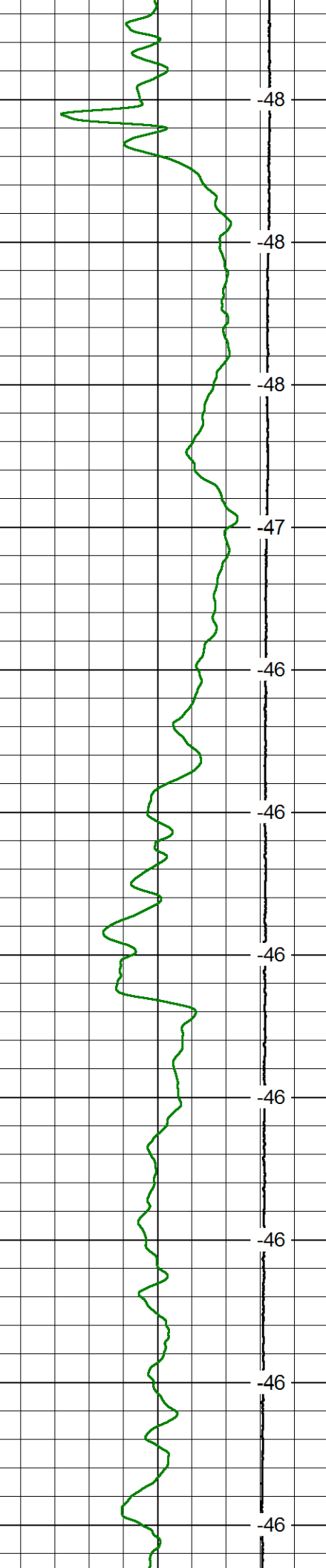
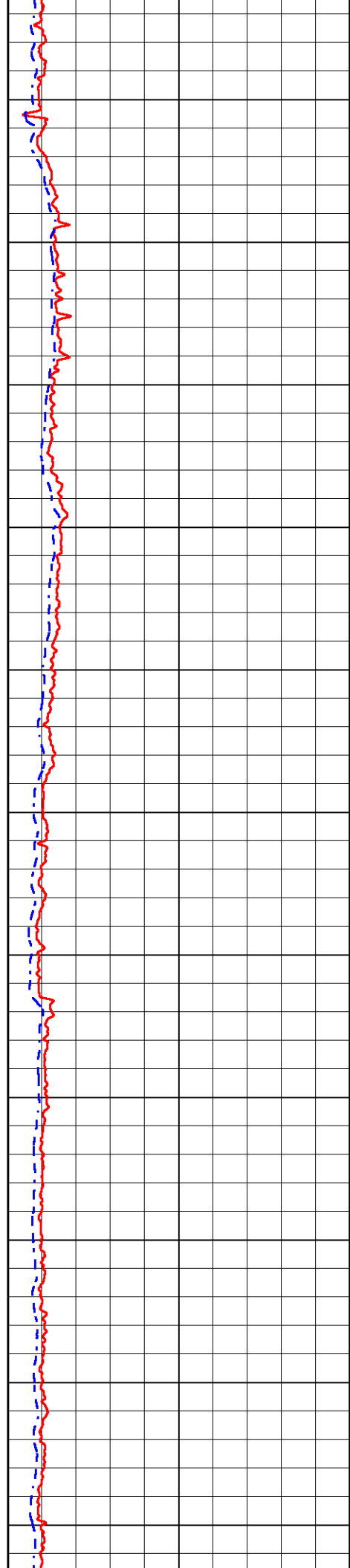
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3050

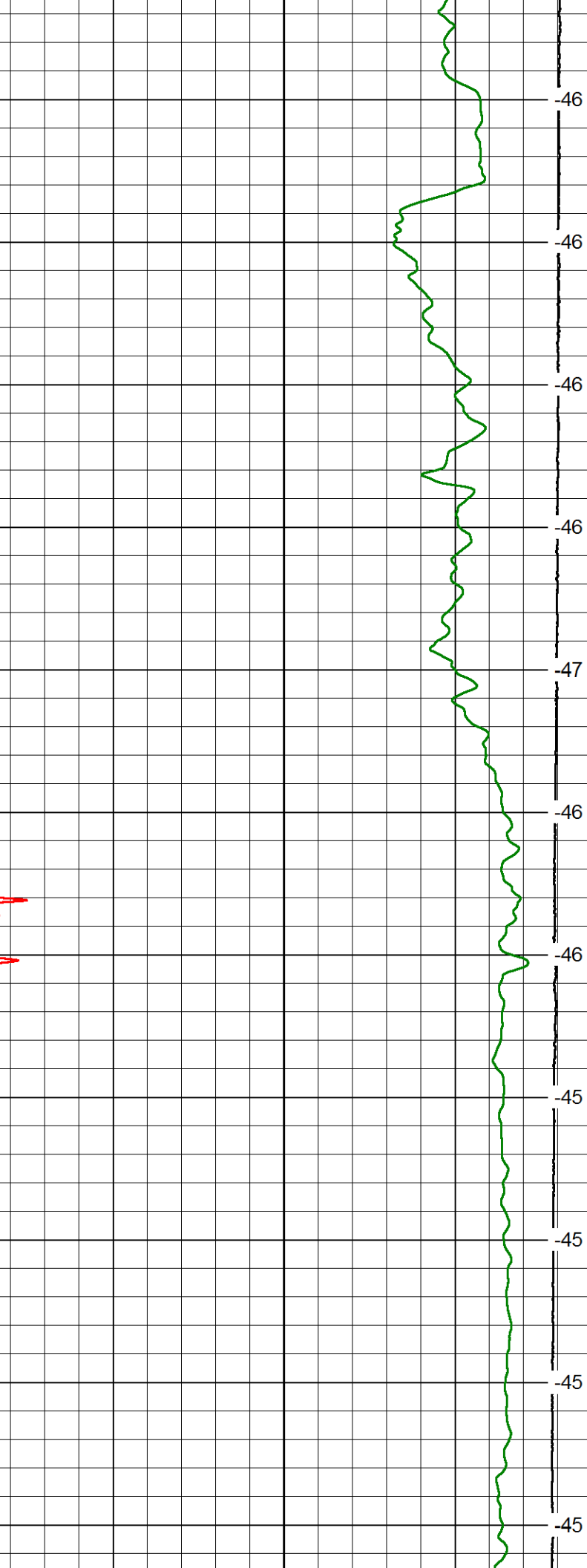
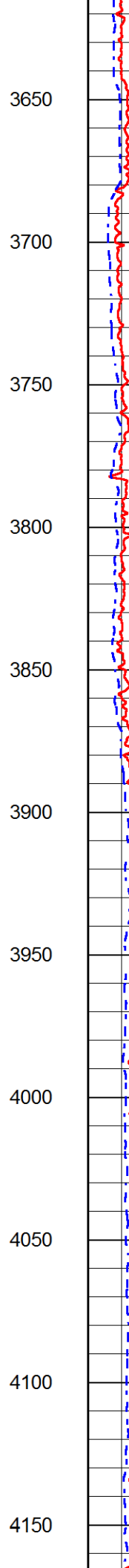
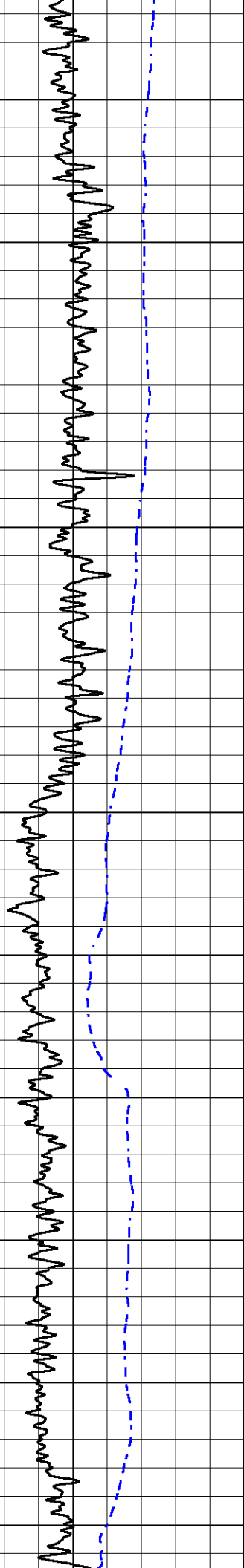


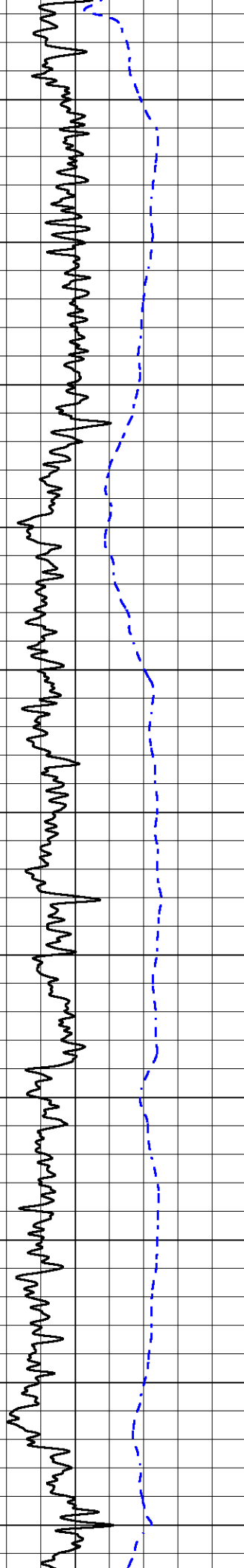
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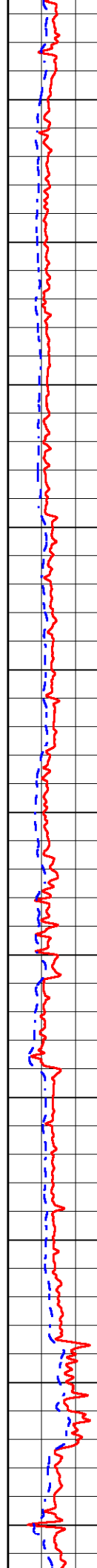
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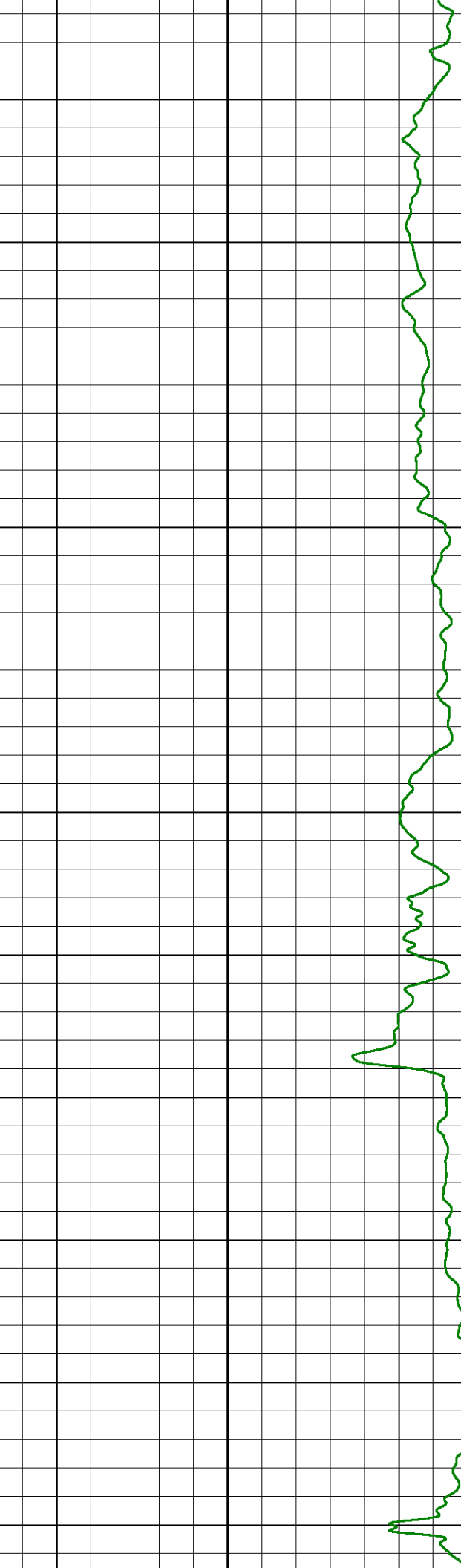


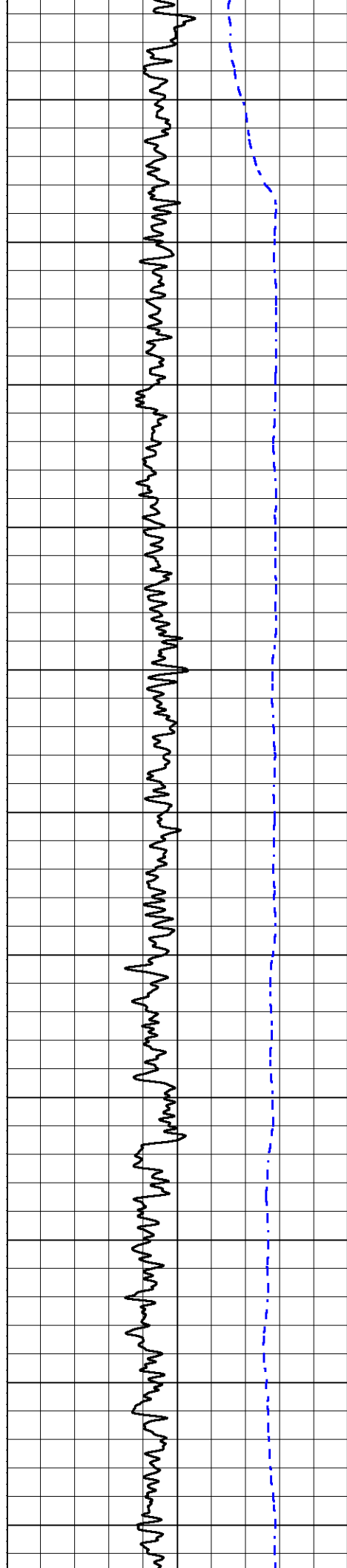


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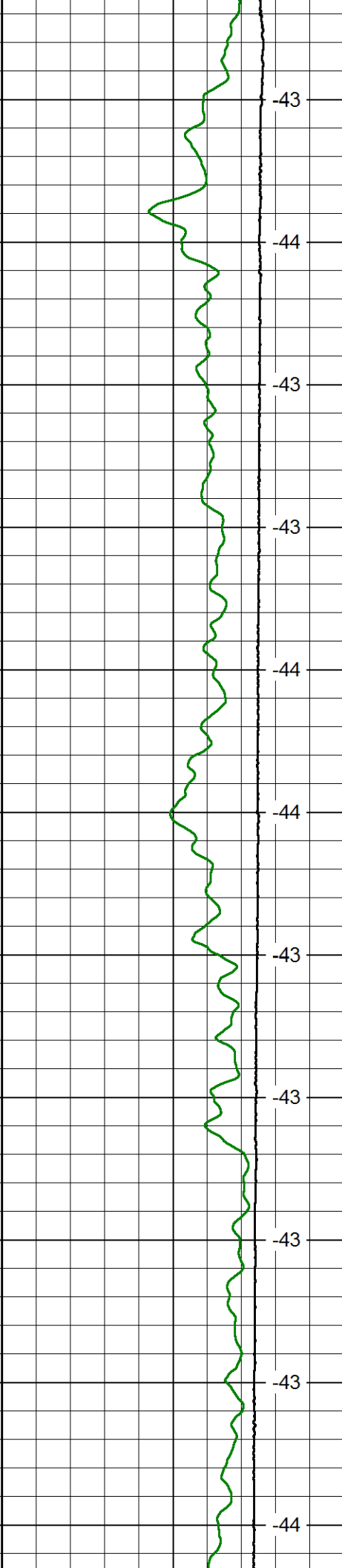


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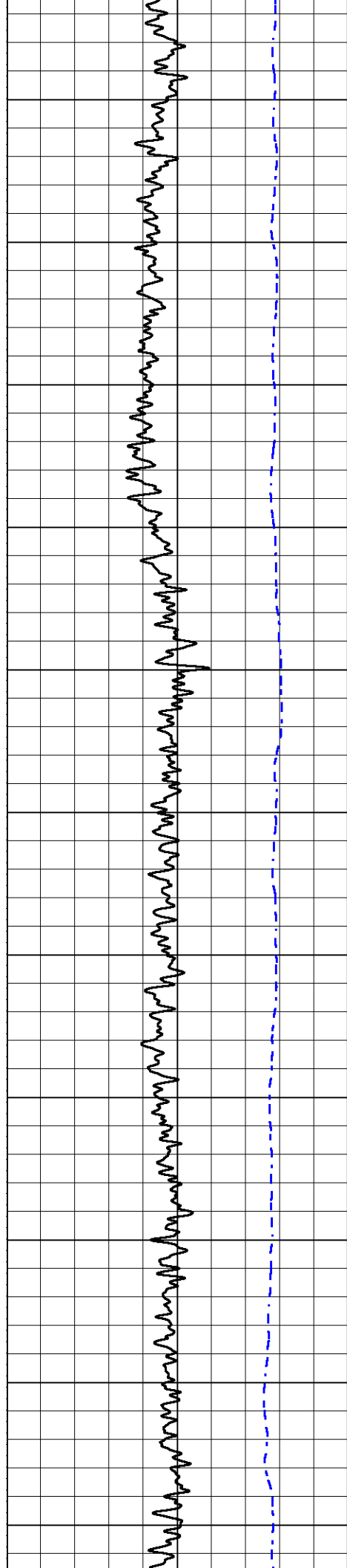




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5100
5150
5200
5250



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5400

5450

5500

5550

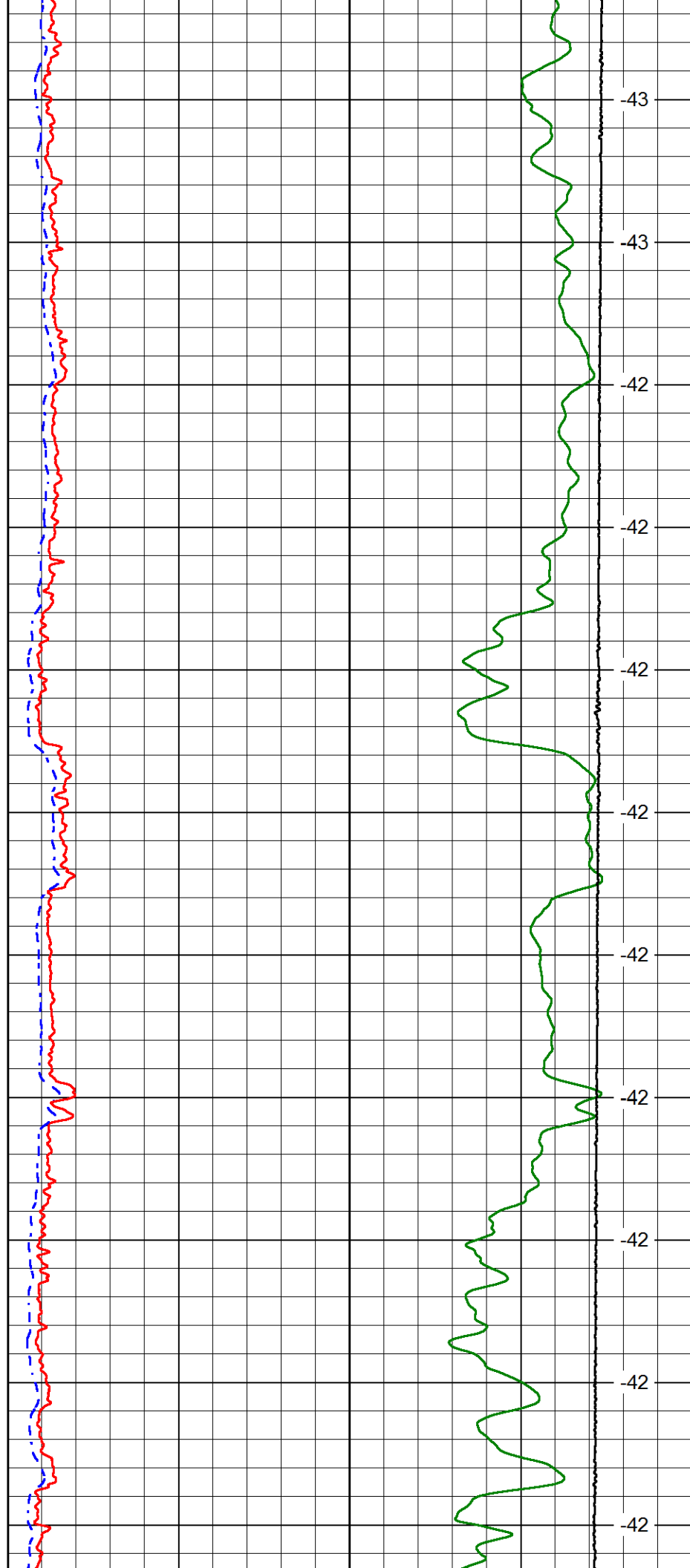
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5800



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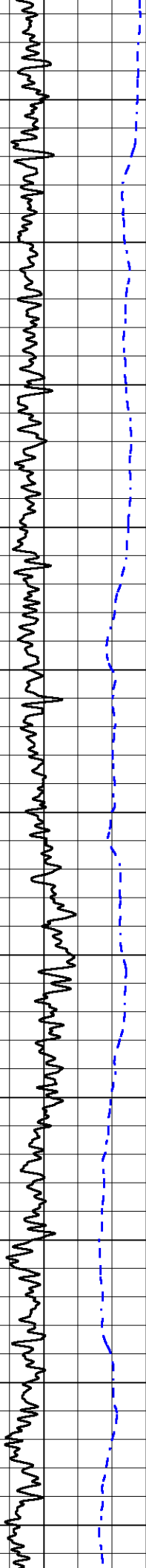
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-42

-42

-42

-42



5850

5900

5950

6000

6050

6100

6150

6200

6250

6300

6350



-42

-42

-42

-42

-41

-41

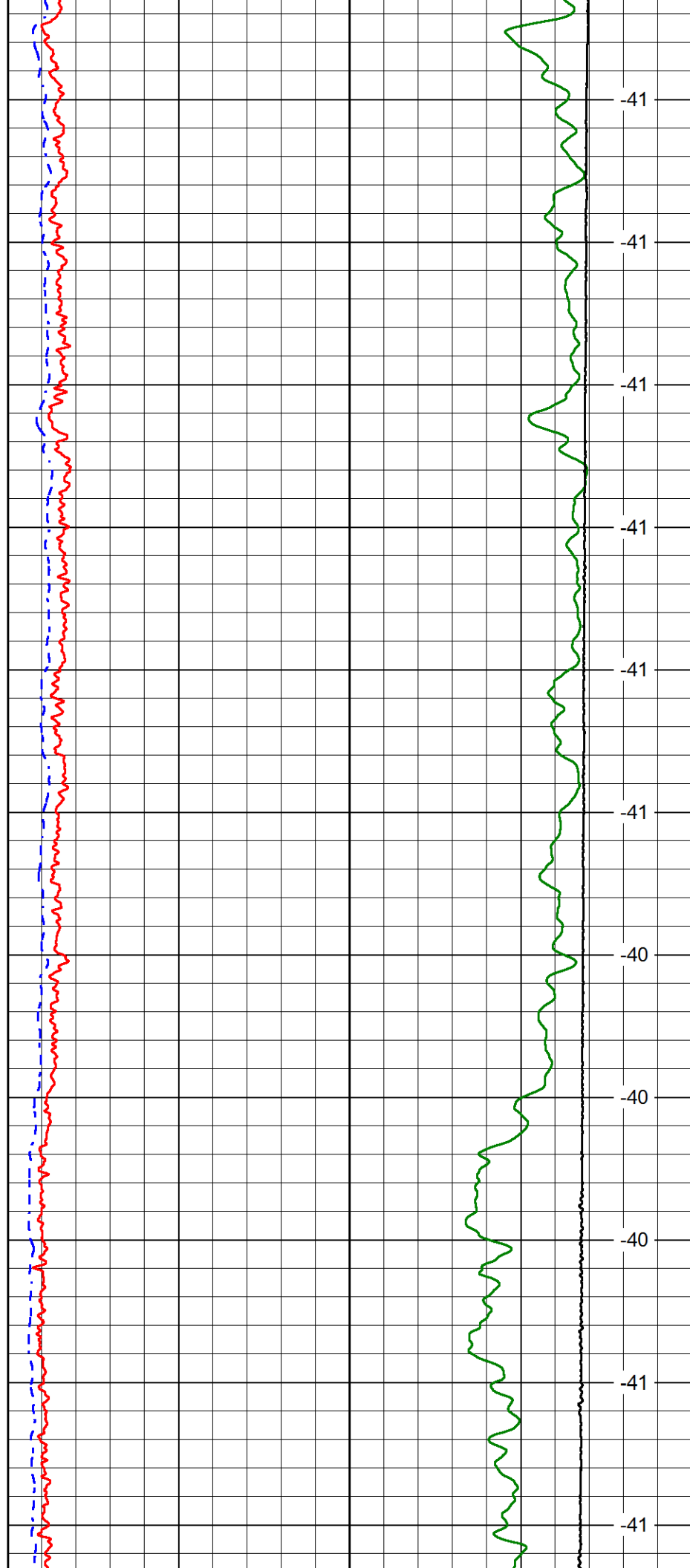
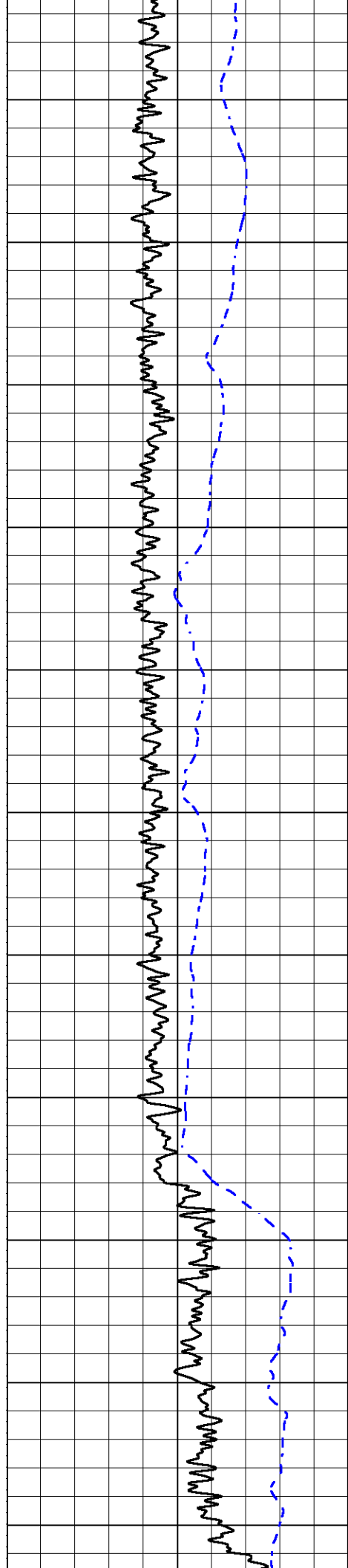
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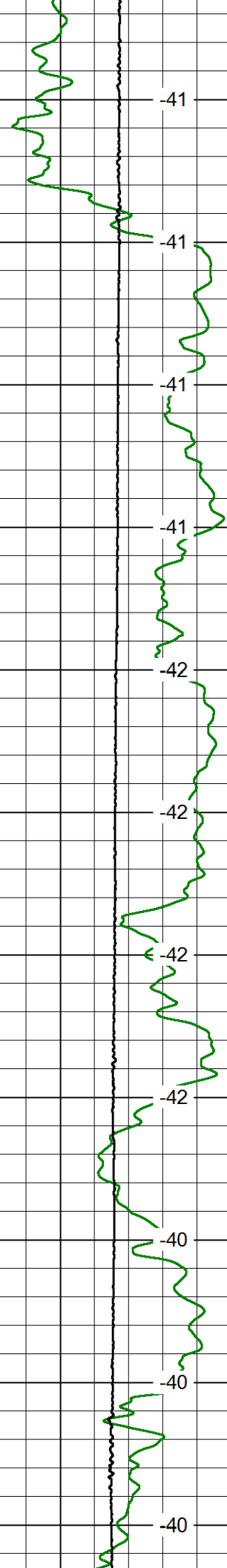
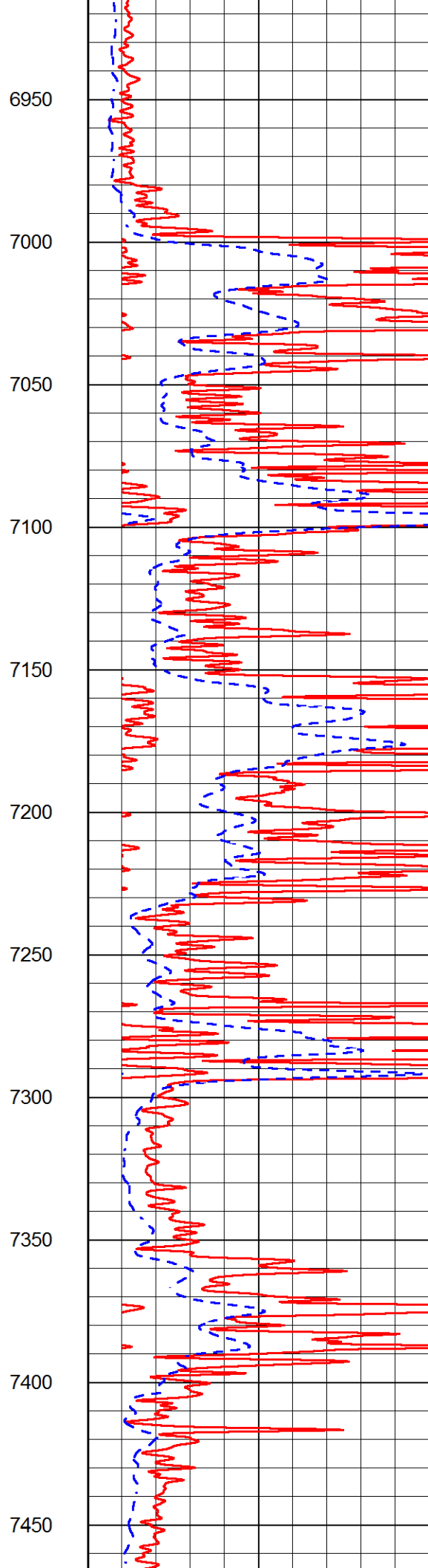
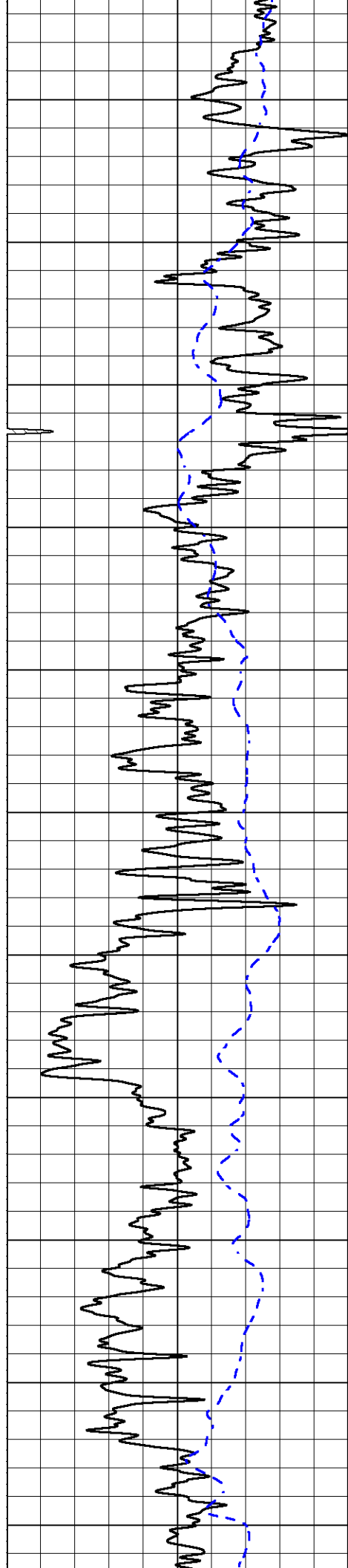
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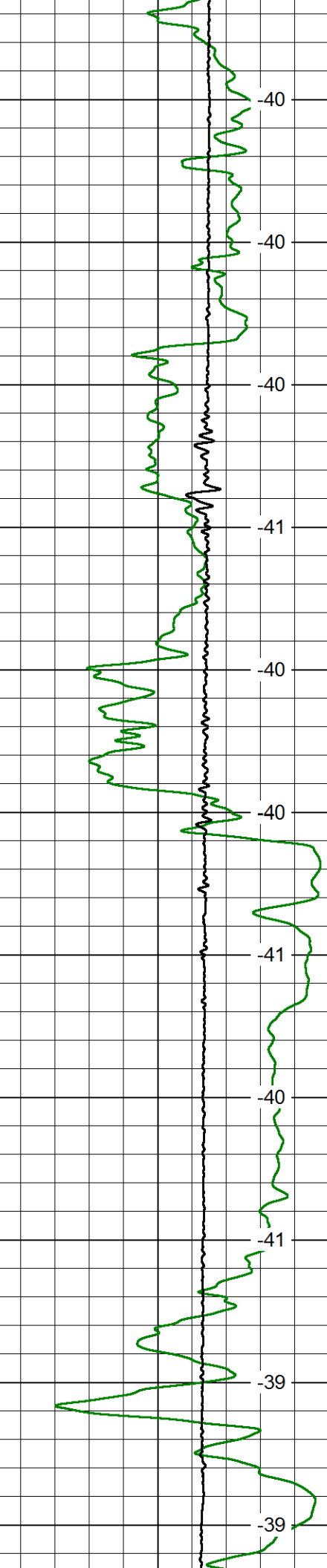
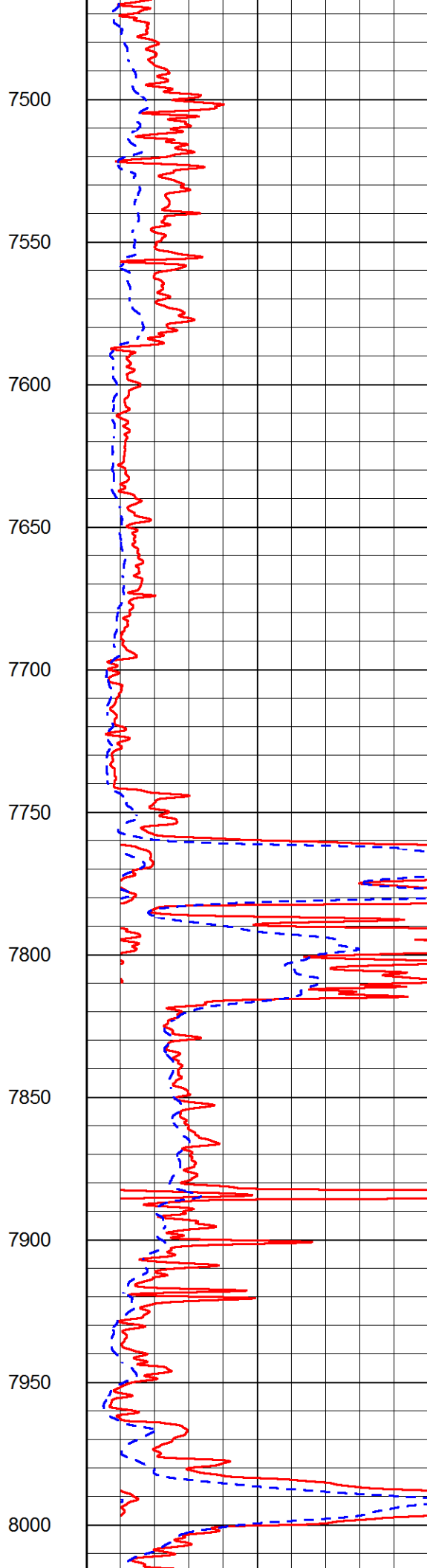
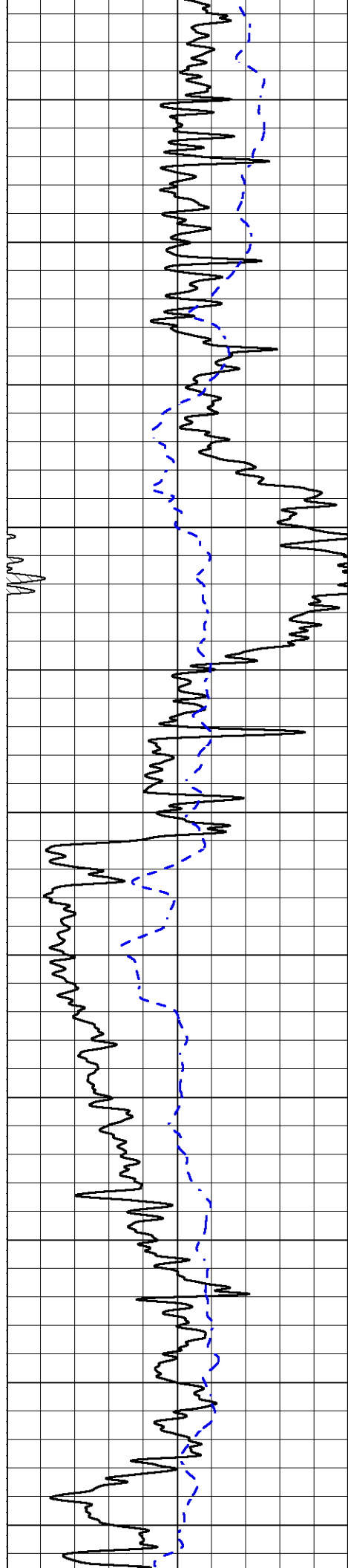
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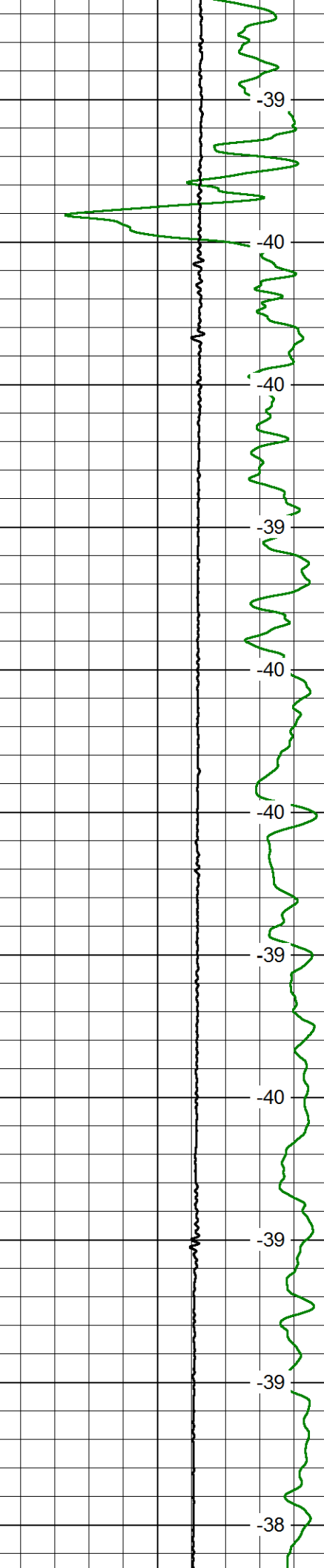
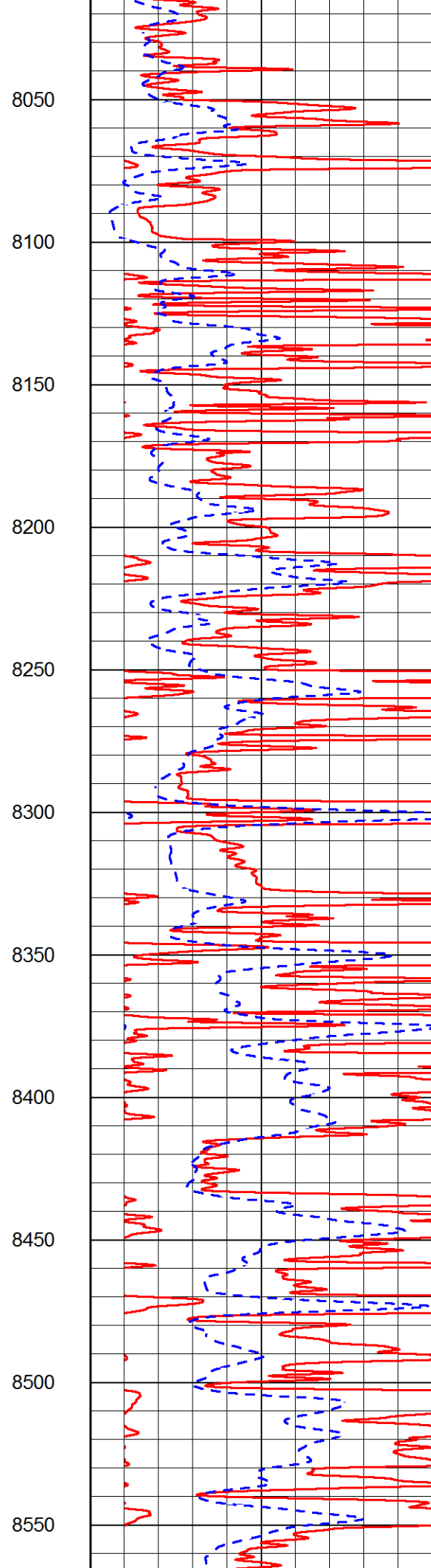
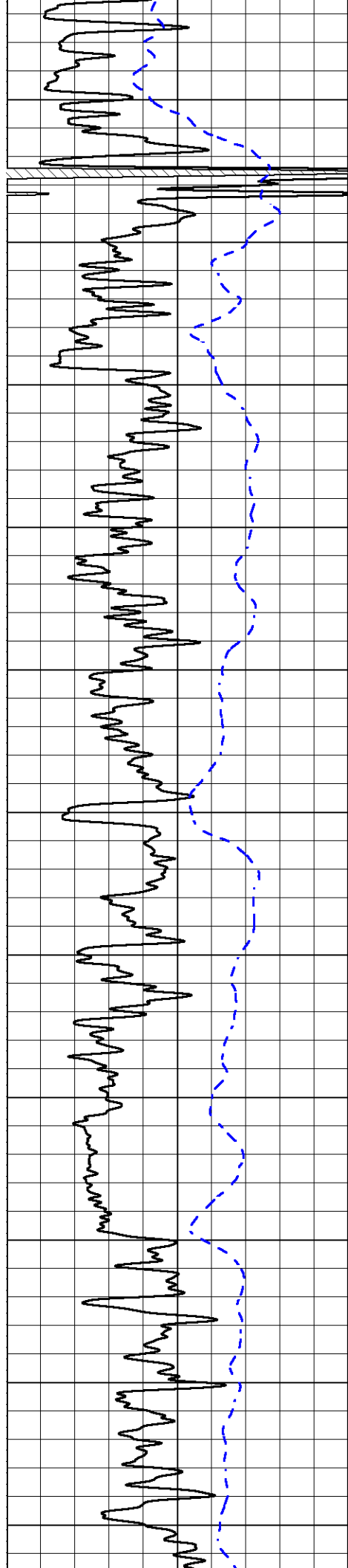
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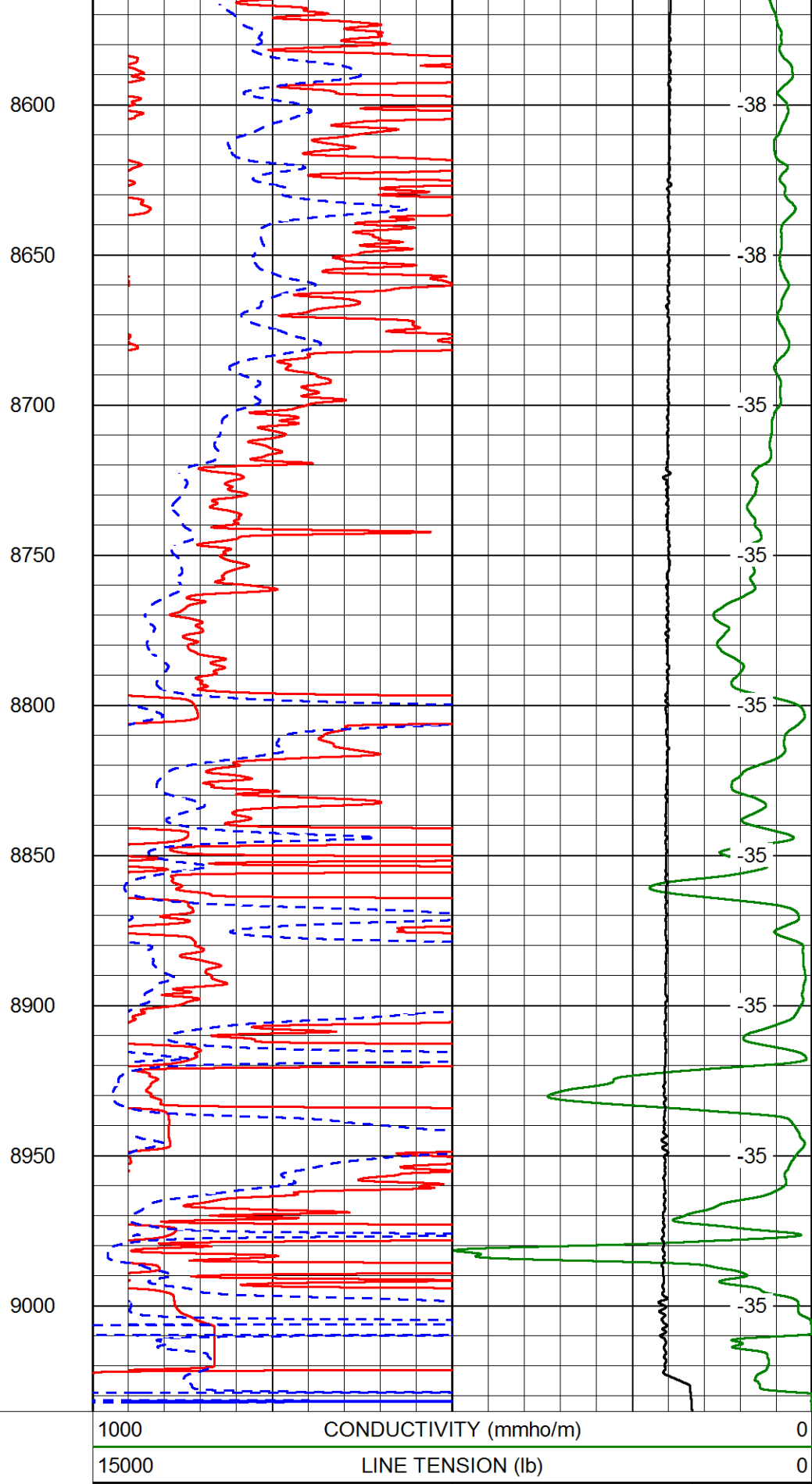
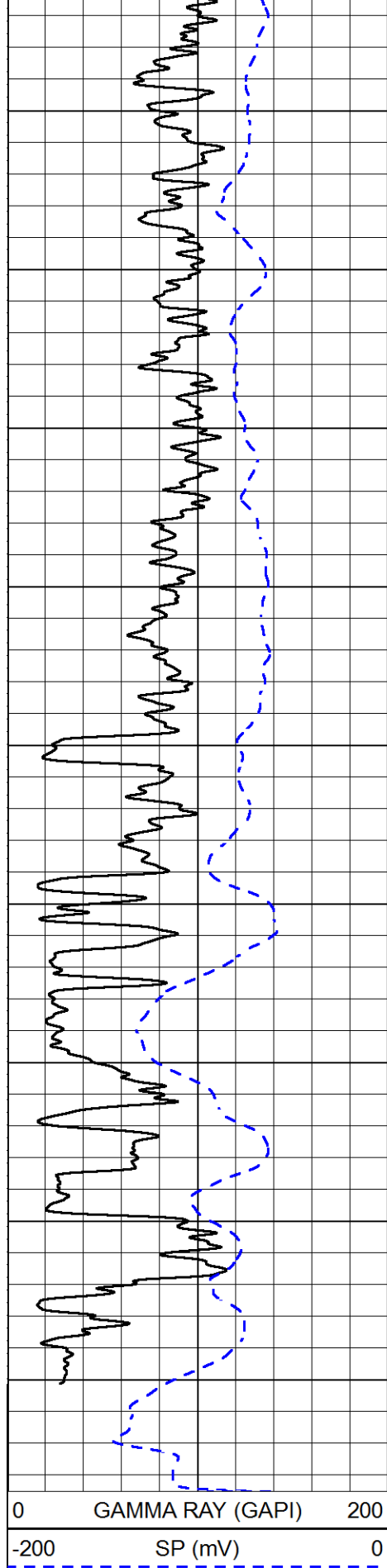
-41











SHALLOW RESISTIVITY		LINE SPEED
0	(Ohm-m)	
50		
DEEP RESISTIVITY (Ohm-m)		(ft/min)
0		
50		
SHALLOW RESISTIVITY		
50	(Ohm-m)	
500		

50	DEEP RESISTIVITY	500
	(Ohm-m)	

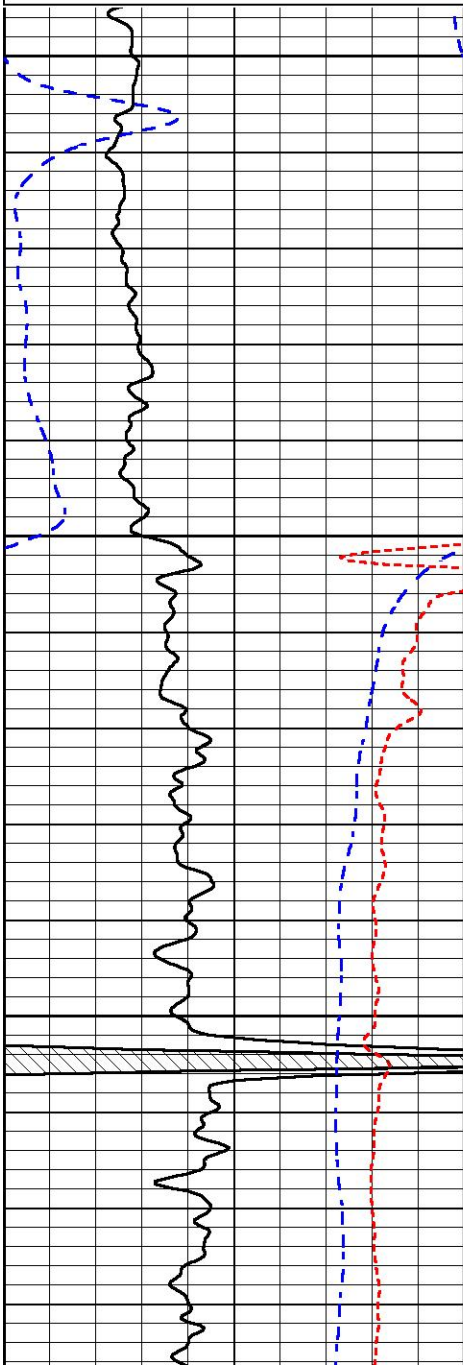


MAIN PASS

Database File ngl_ngl_c3b.db
 Dataset Pathname STACK/pass5.1
 Presentation Format dil
 Dataset Creation Fri Mar 11 05:56:26 2016
 Charted by Depth in Feet scaled 1:240

0	GAMMA RAY (GAPI)	200
-160	RXORT	40
-200	SP (mV)	0

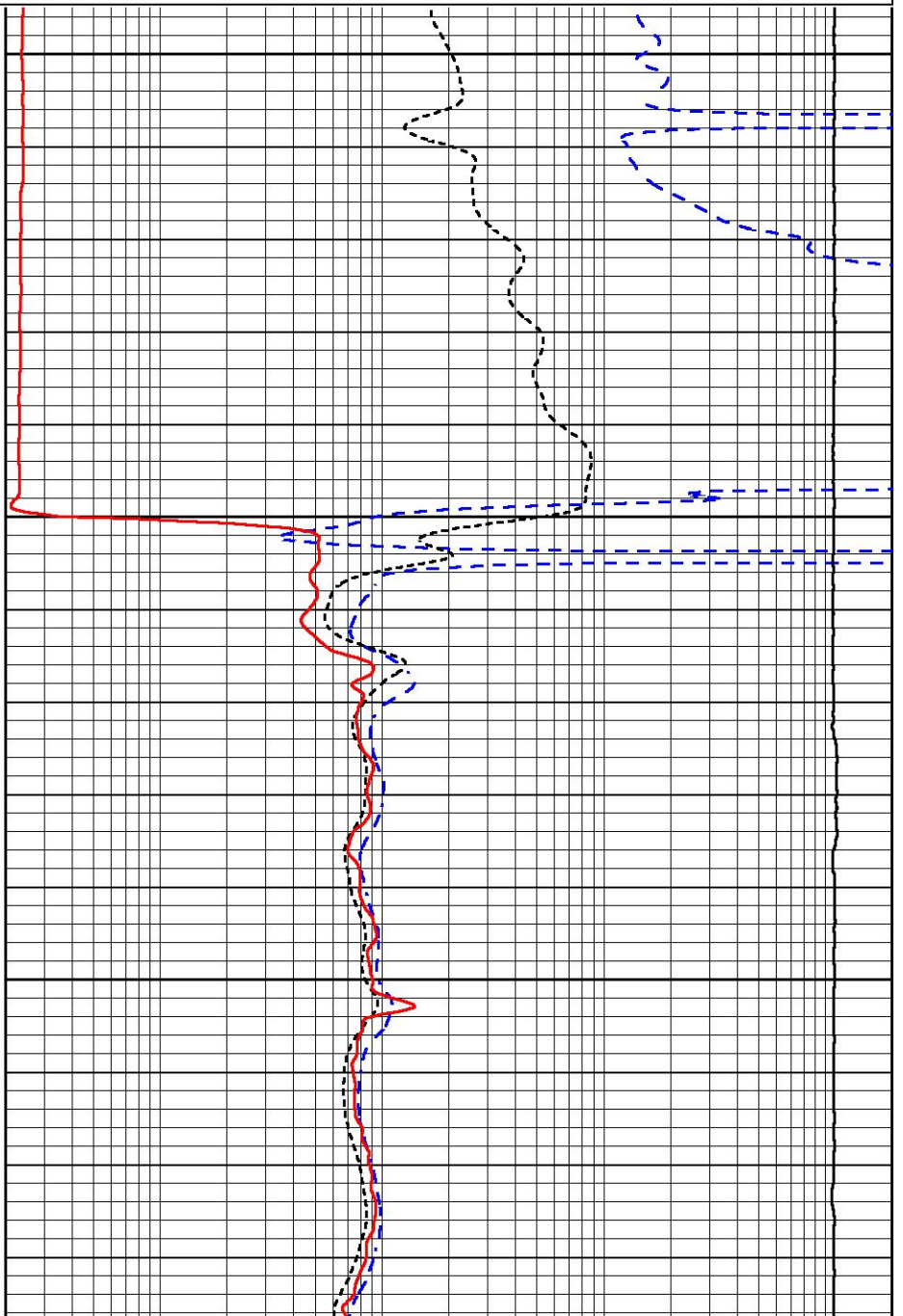
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	SHALLOW RESISTIVITY (Ohm-m)	2000
10000	LINE TENSION (lb)	0

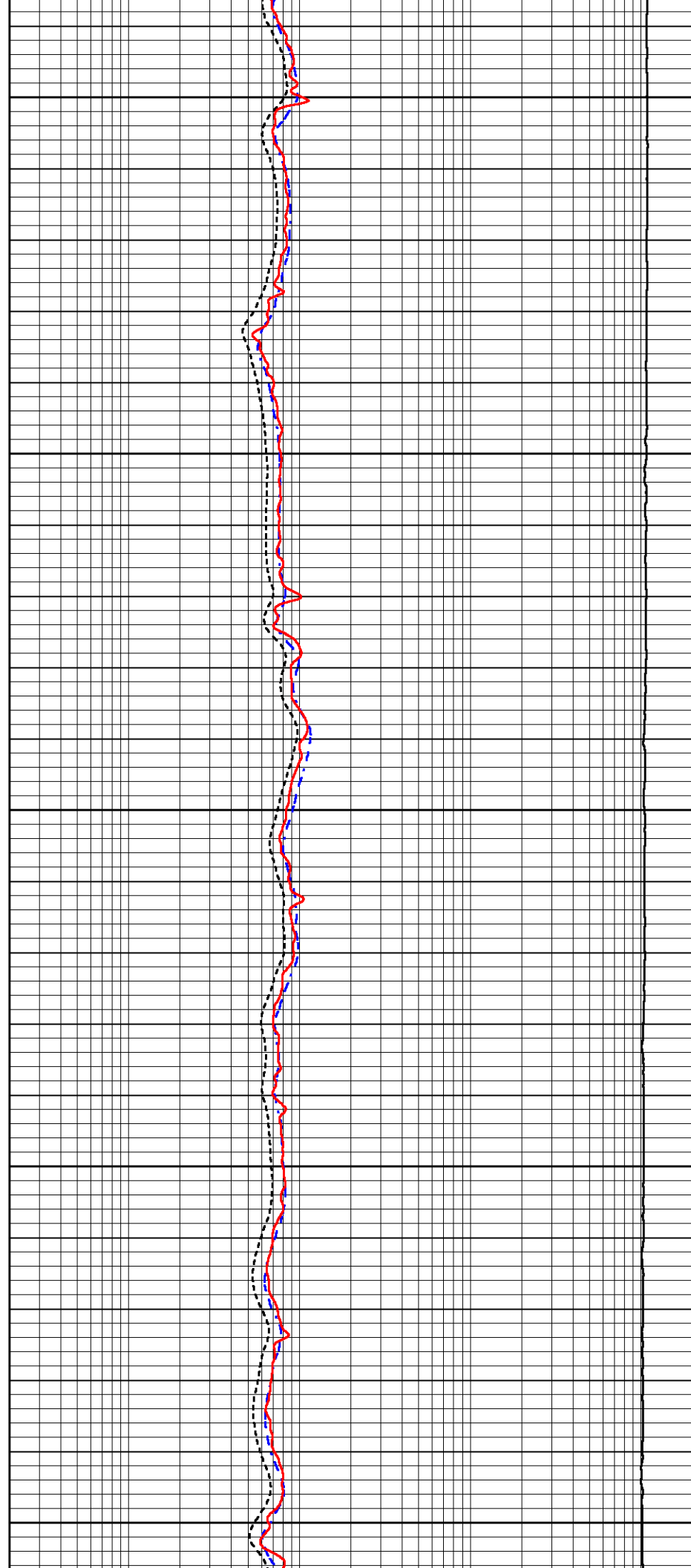
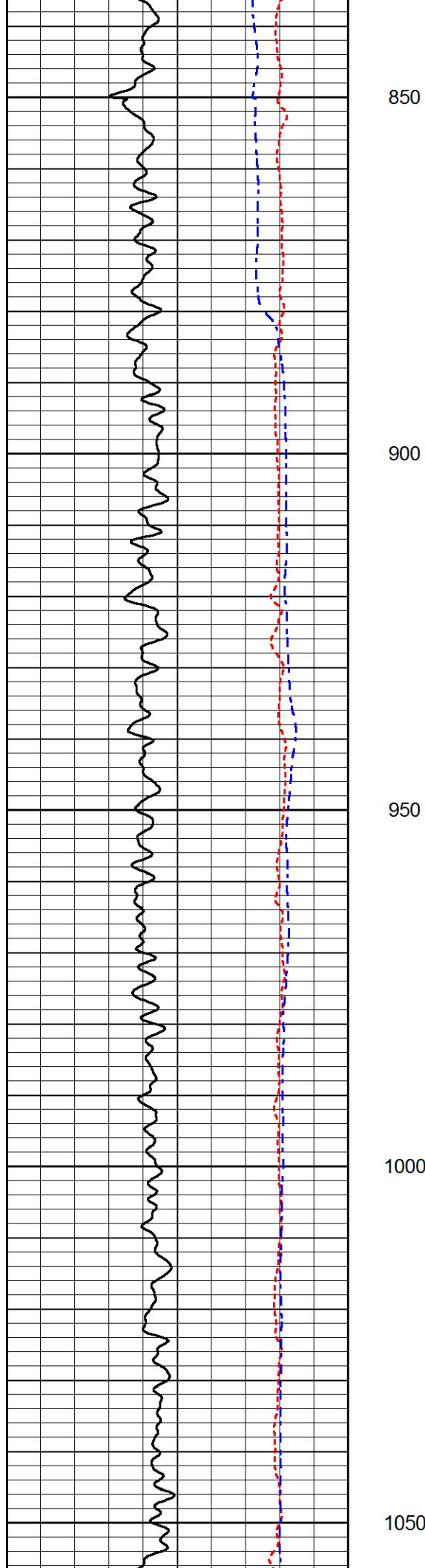


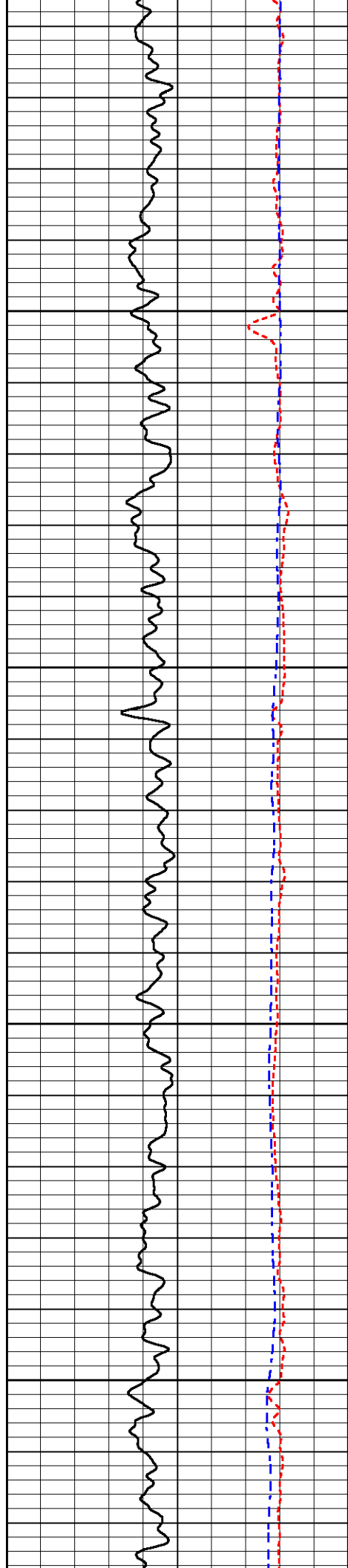
700

750

800





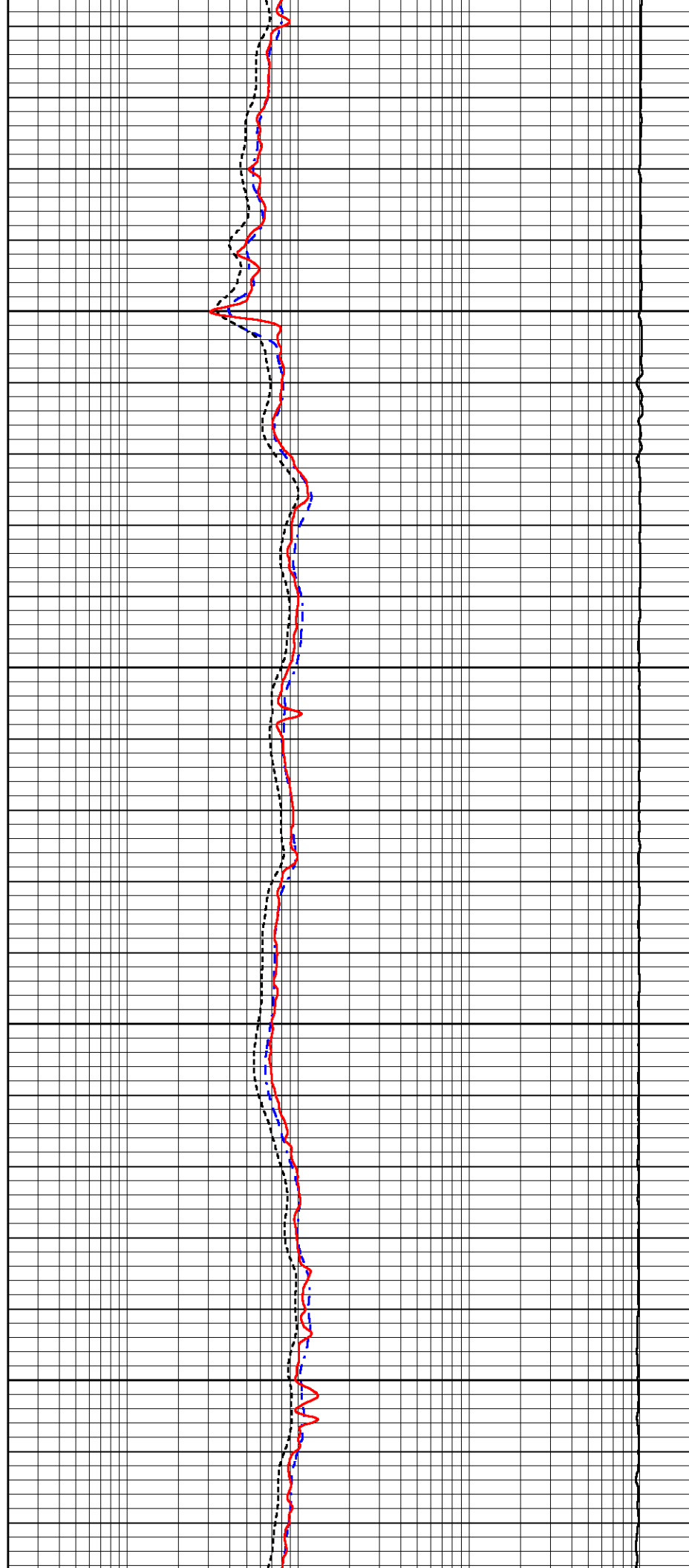


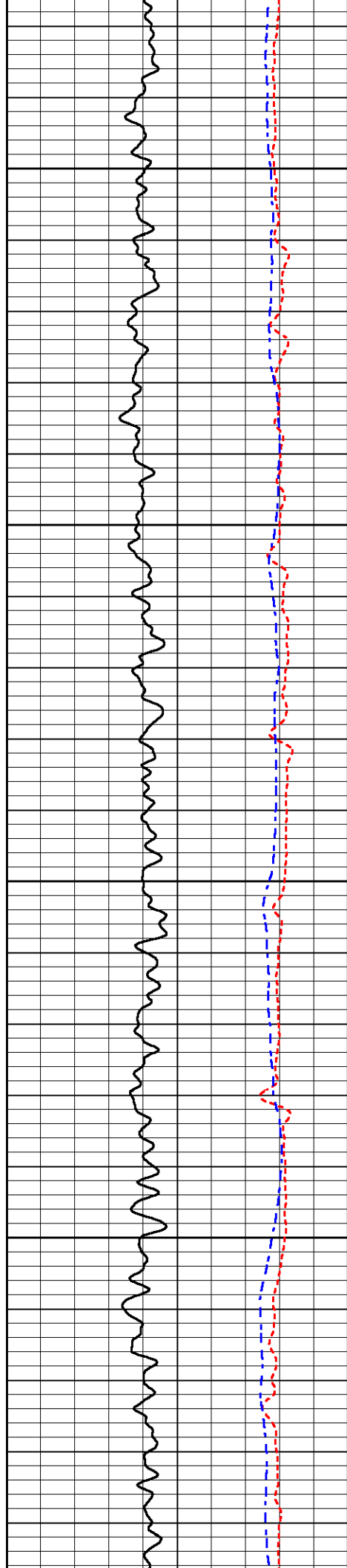
1100

1150

1200

1250



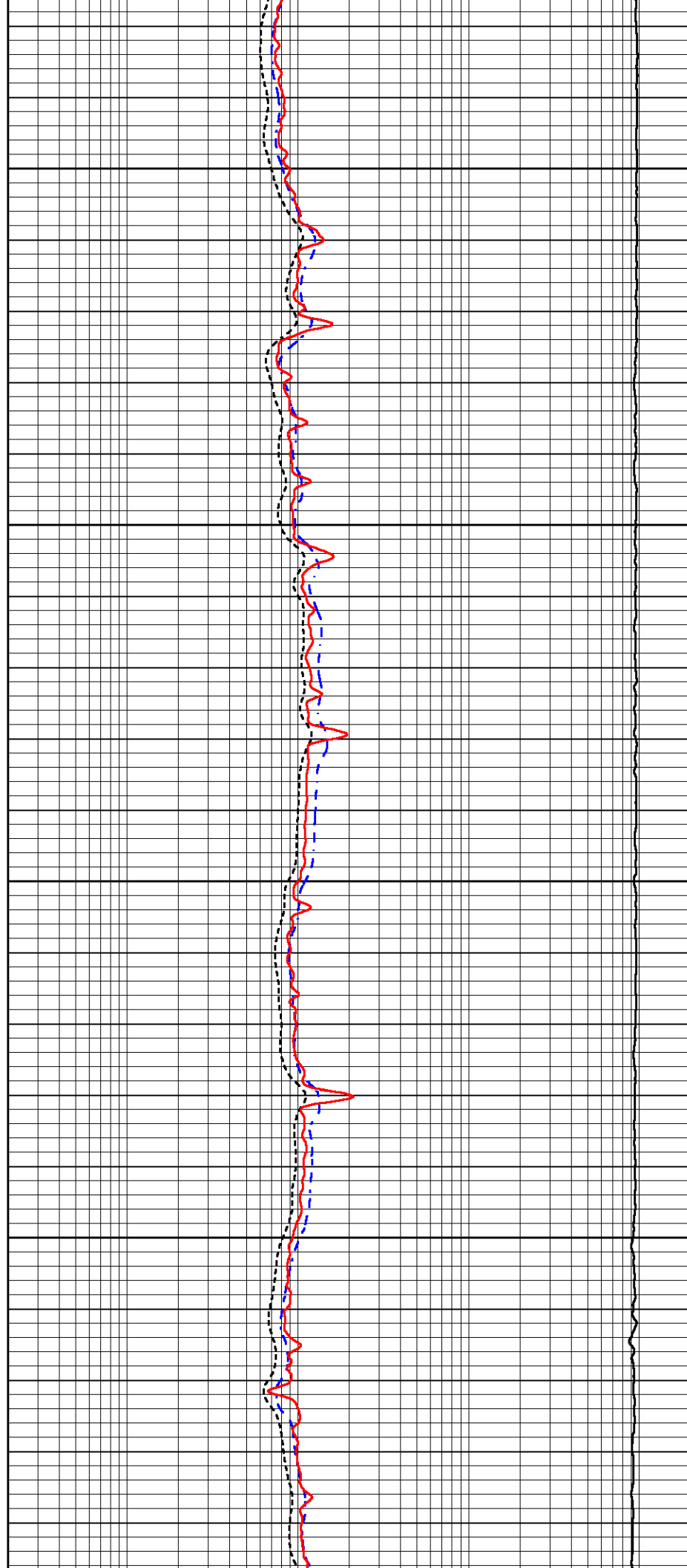


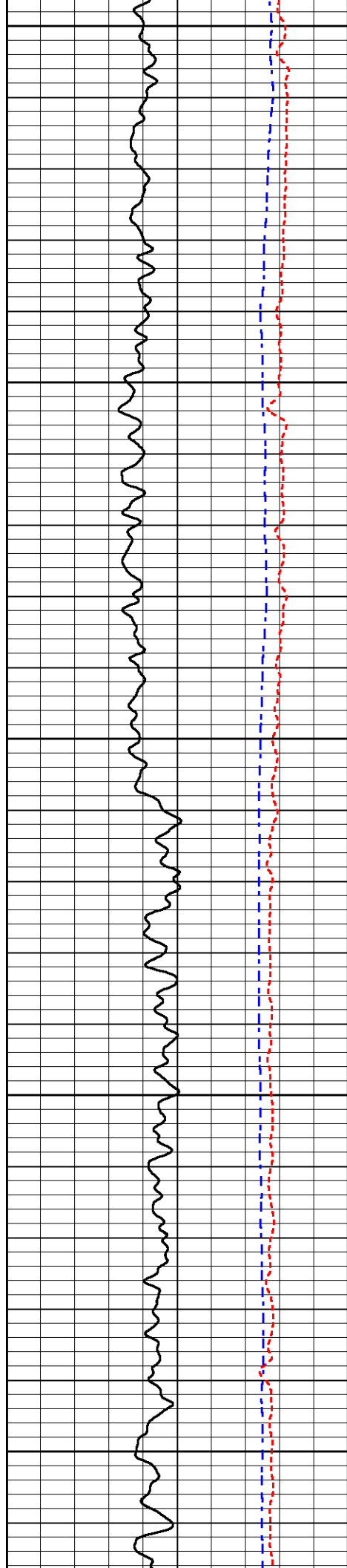
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1350

1400

1450





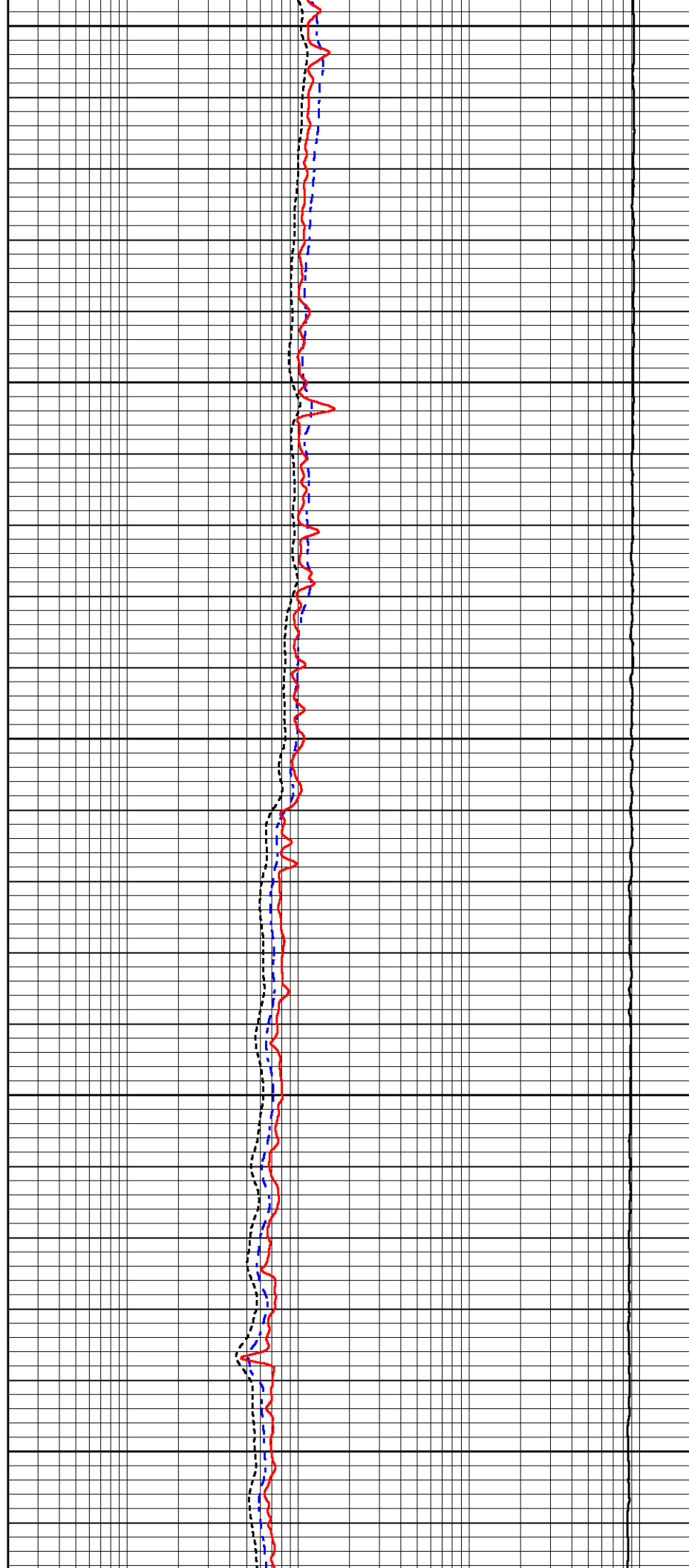
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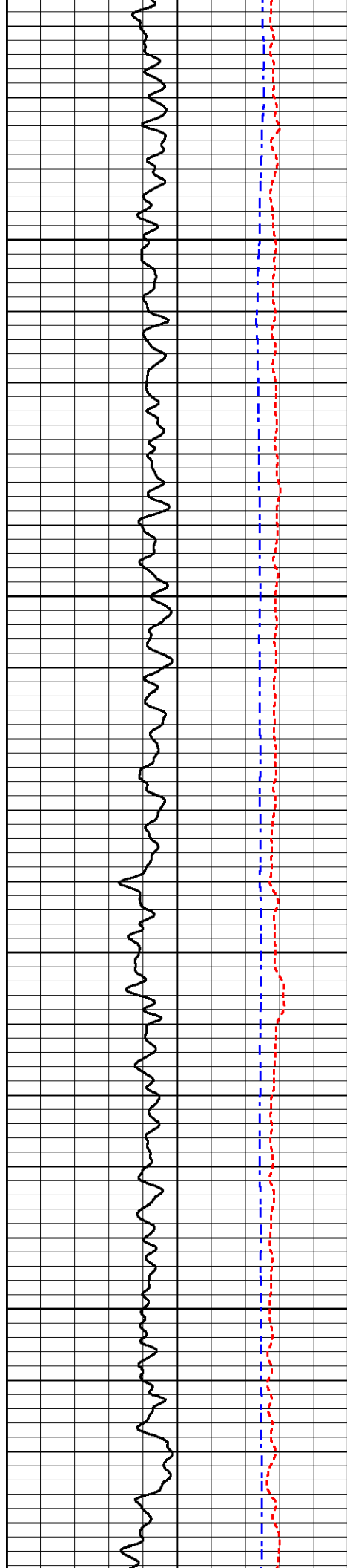
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1600

1650

1700



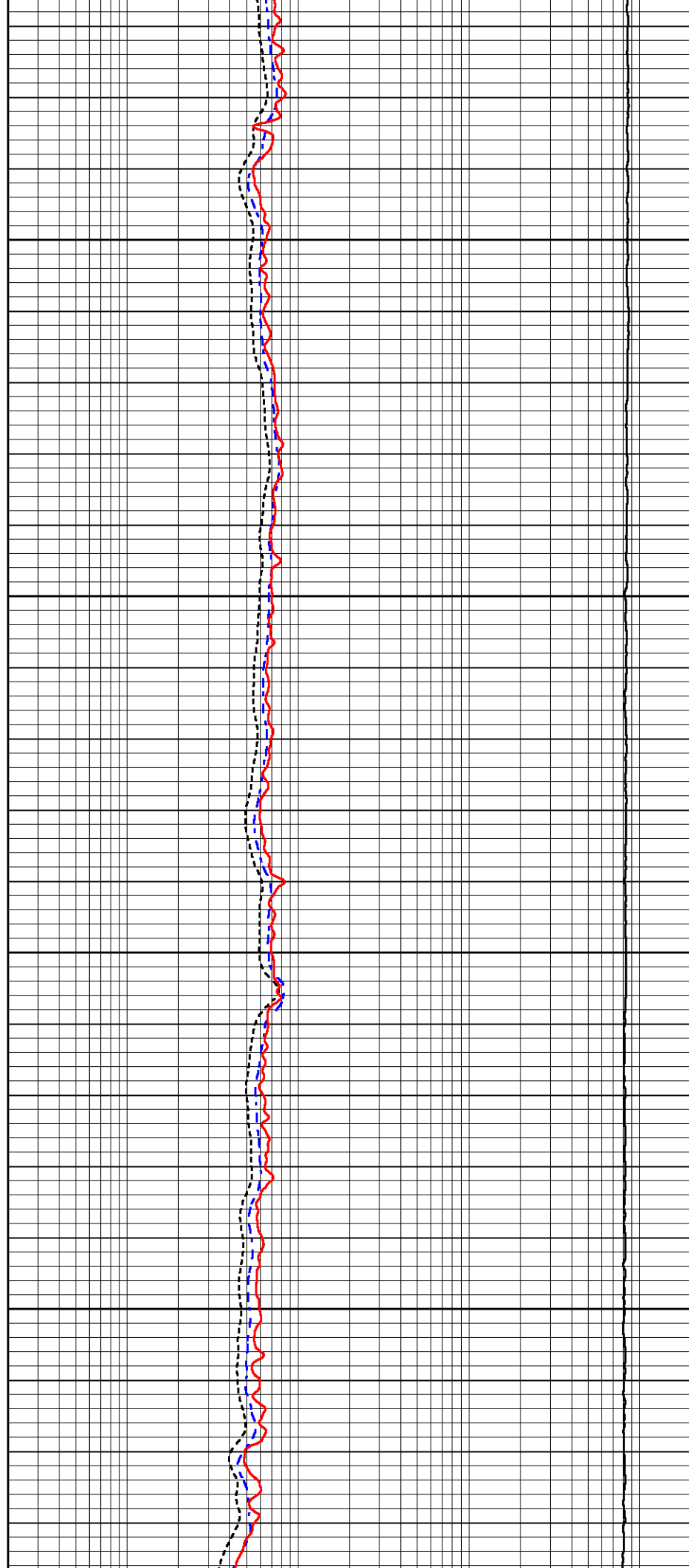


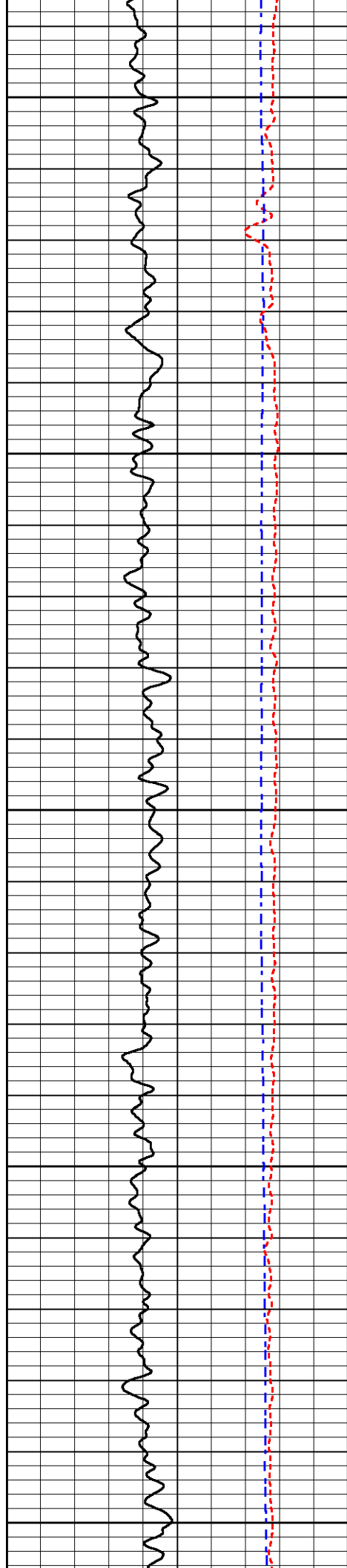
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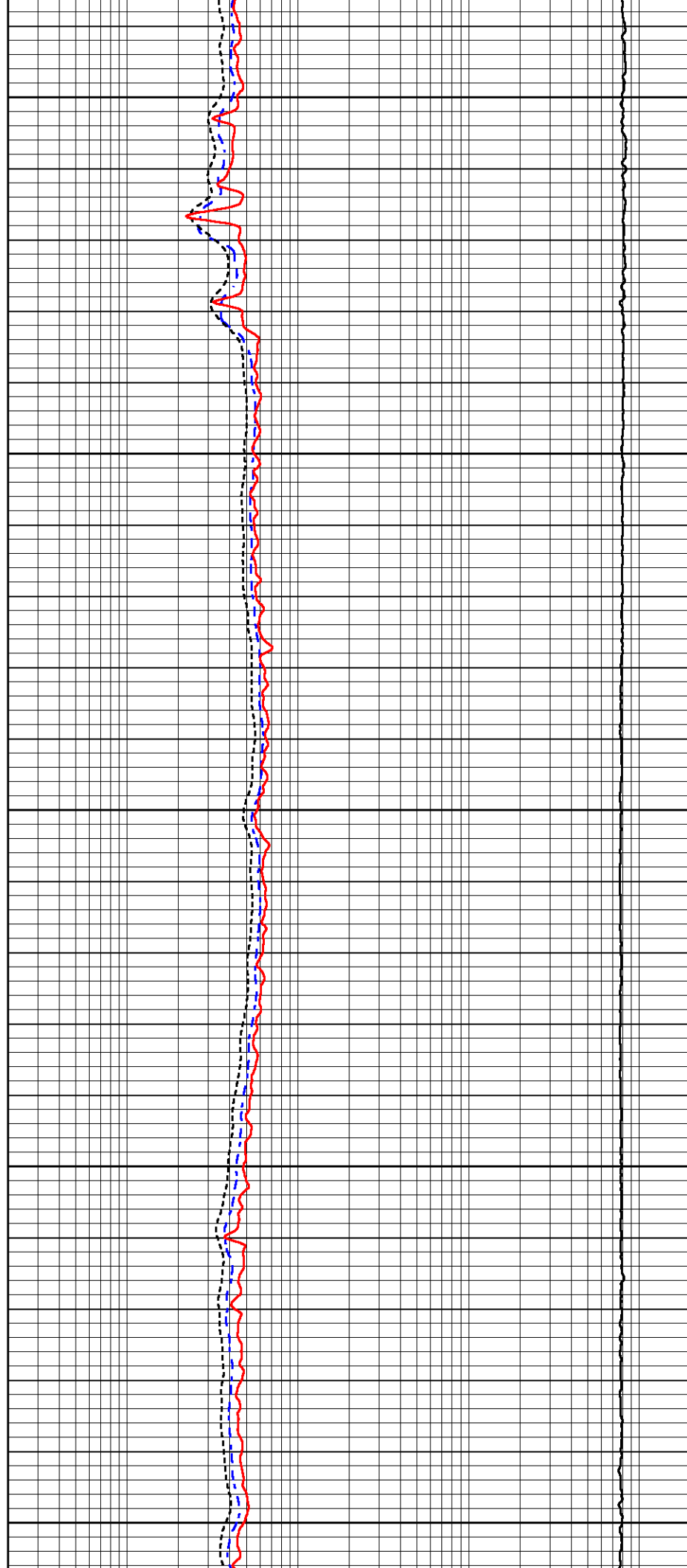
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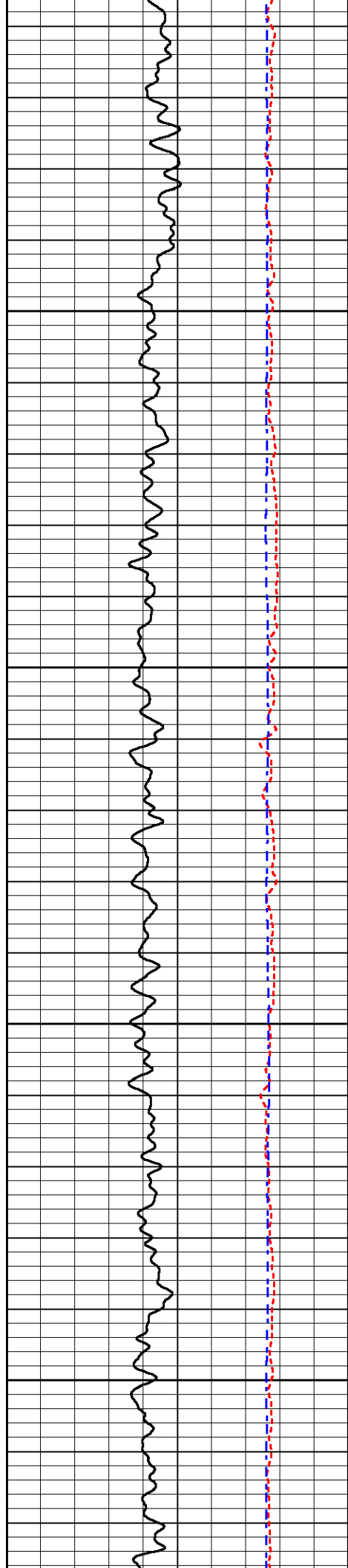
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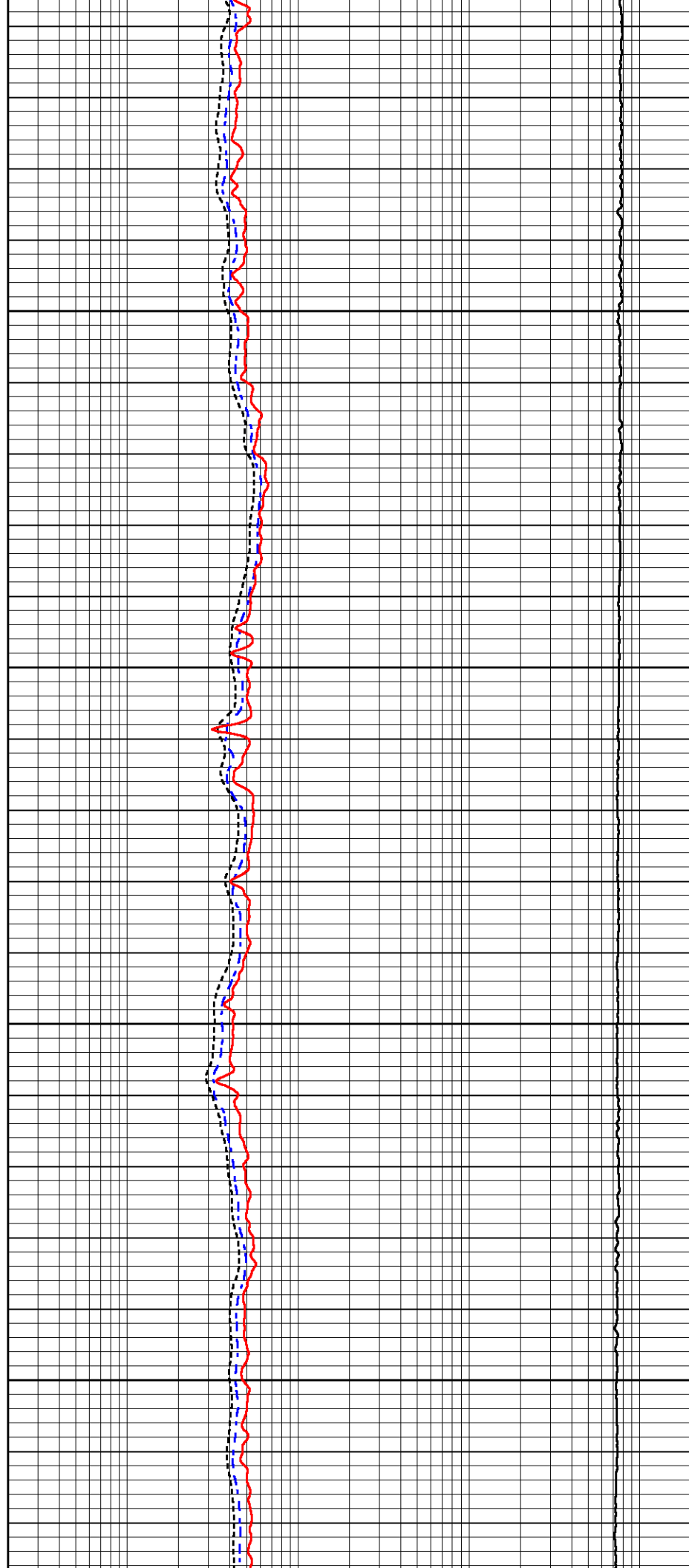


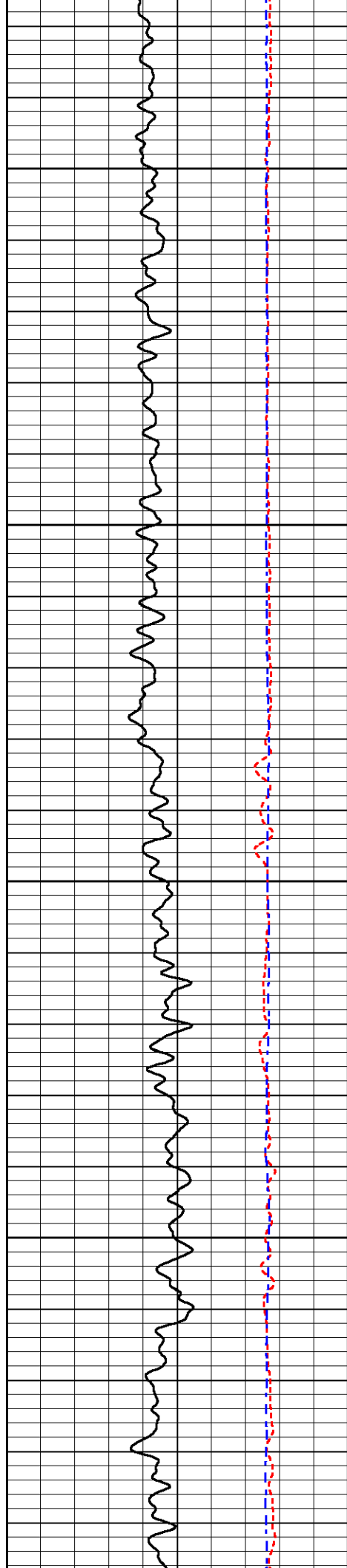
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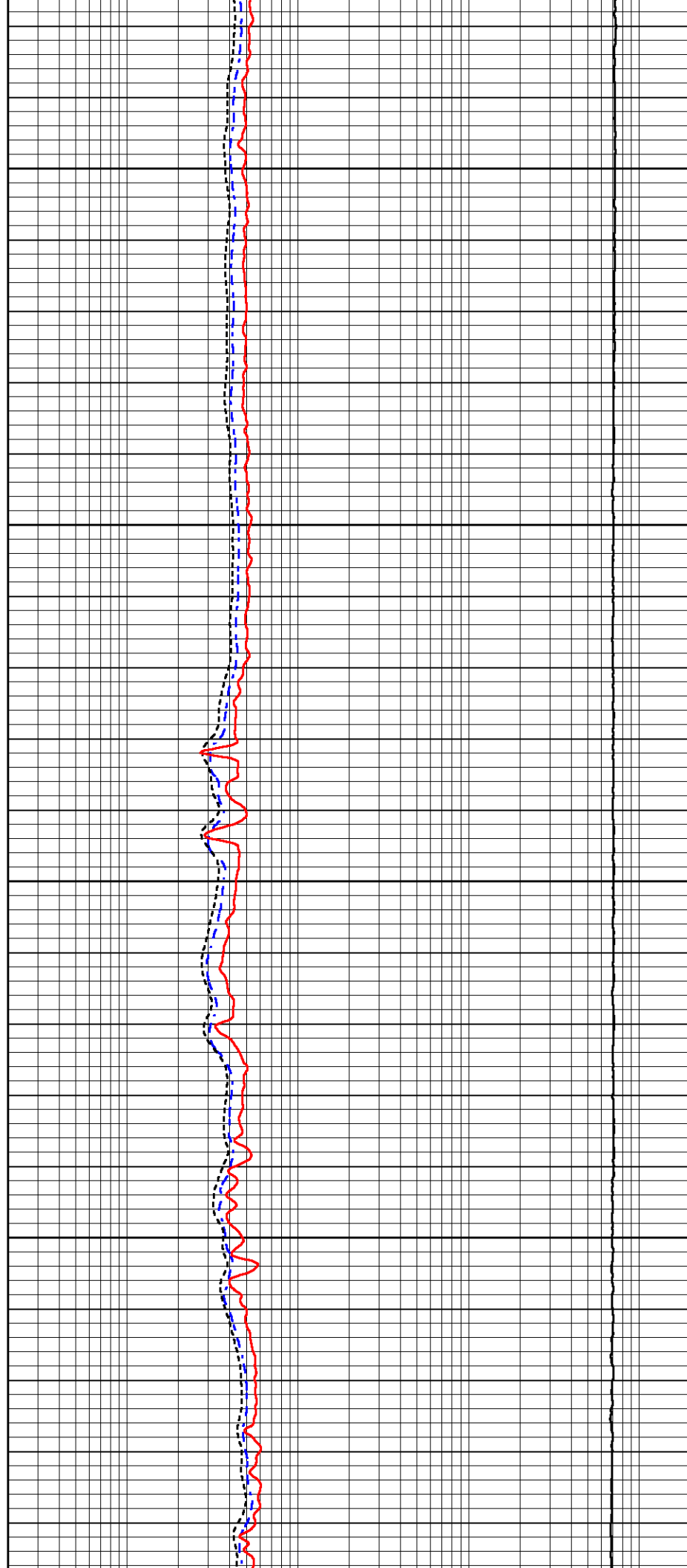


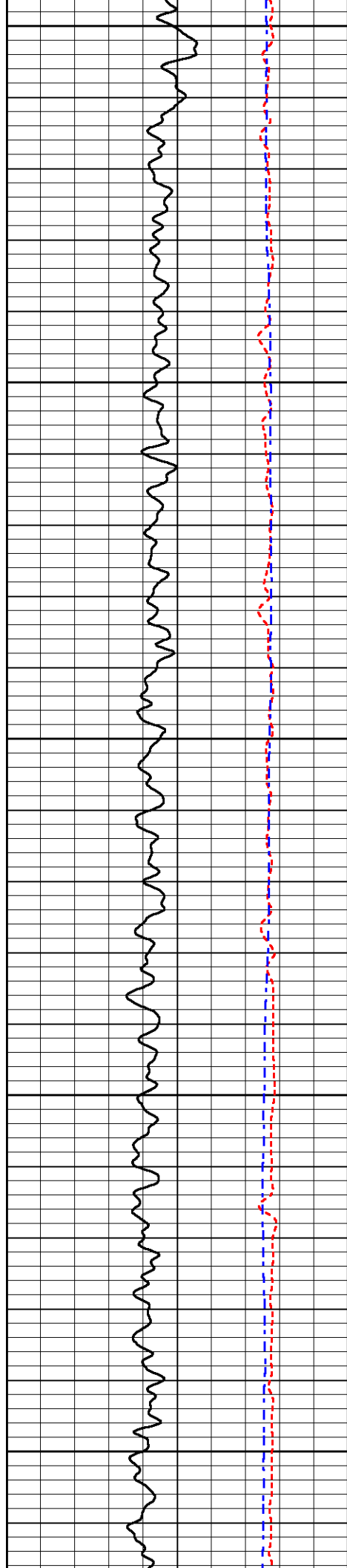
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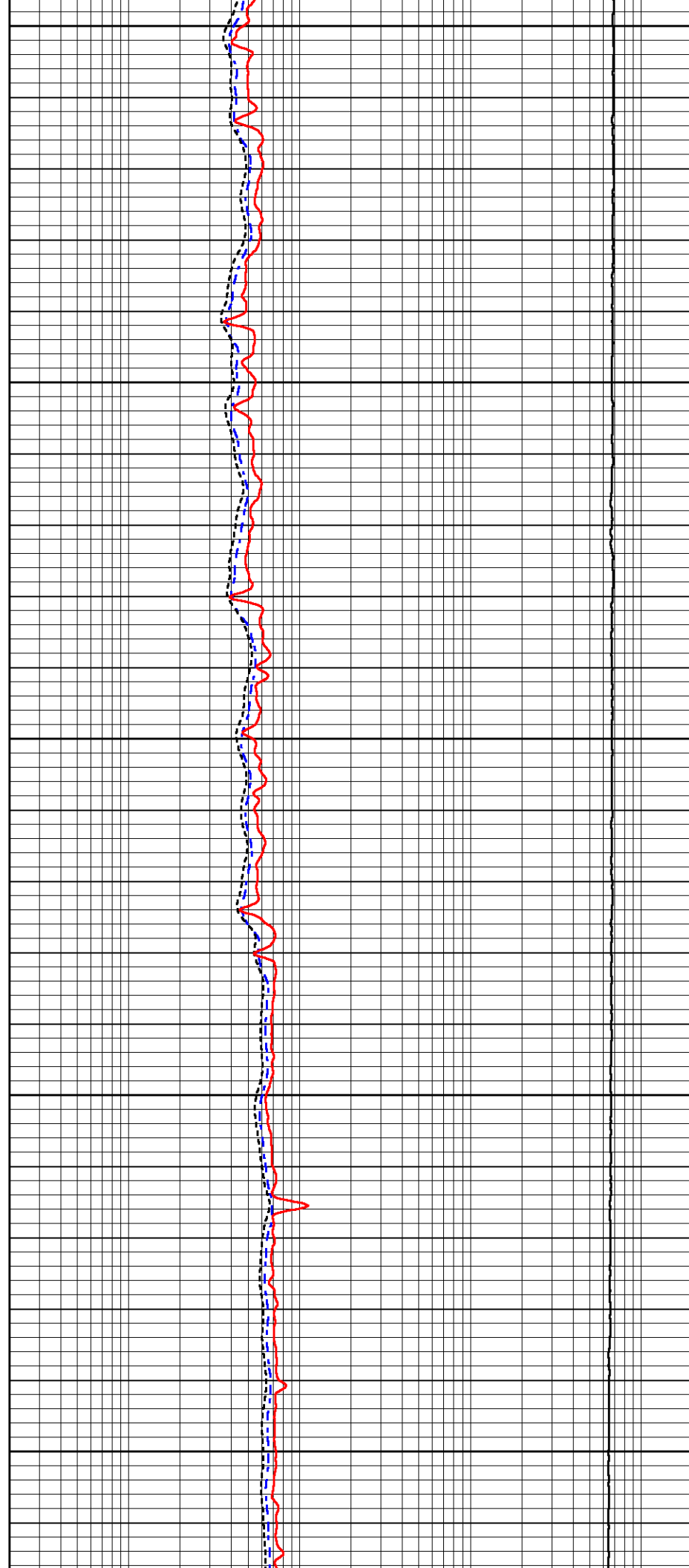
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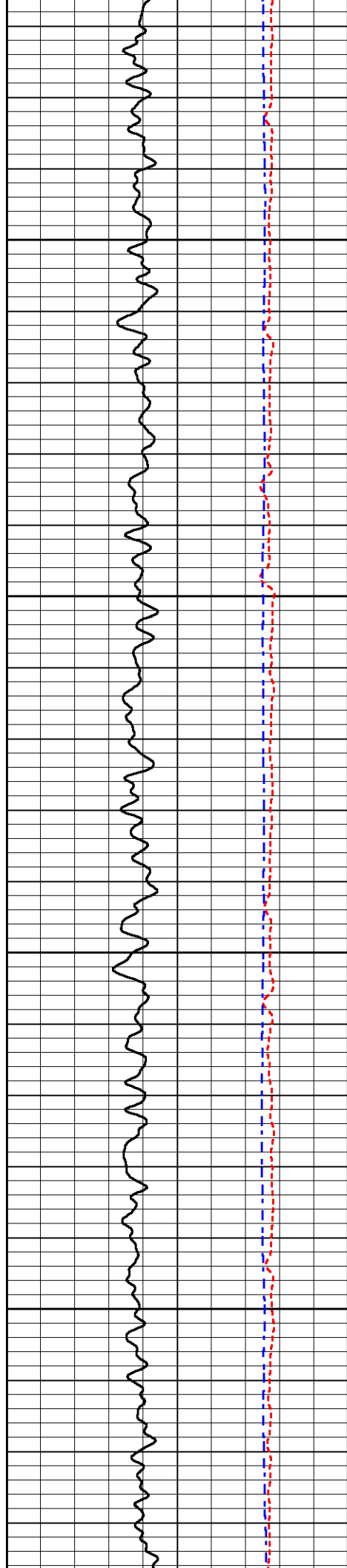
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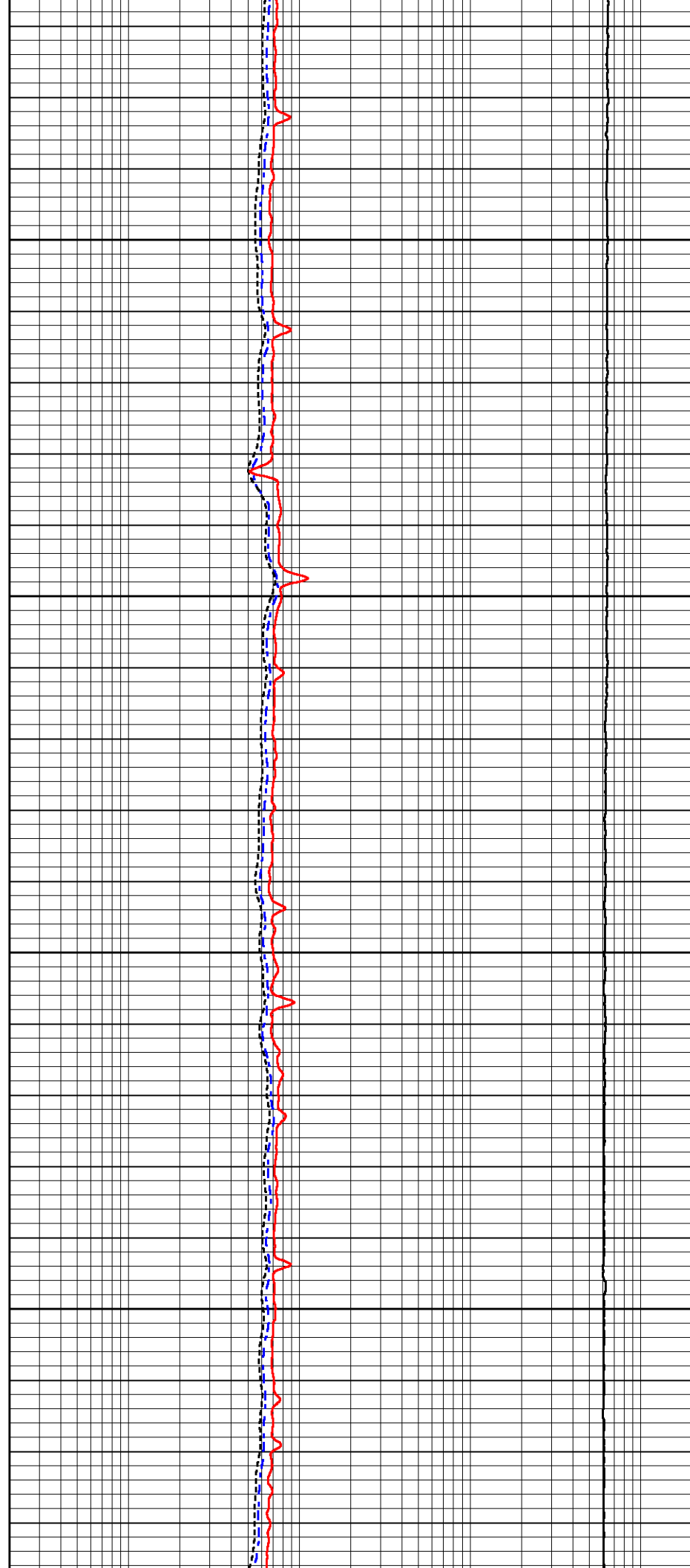


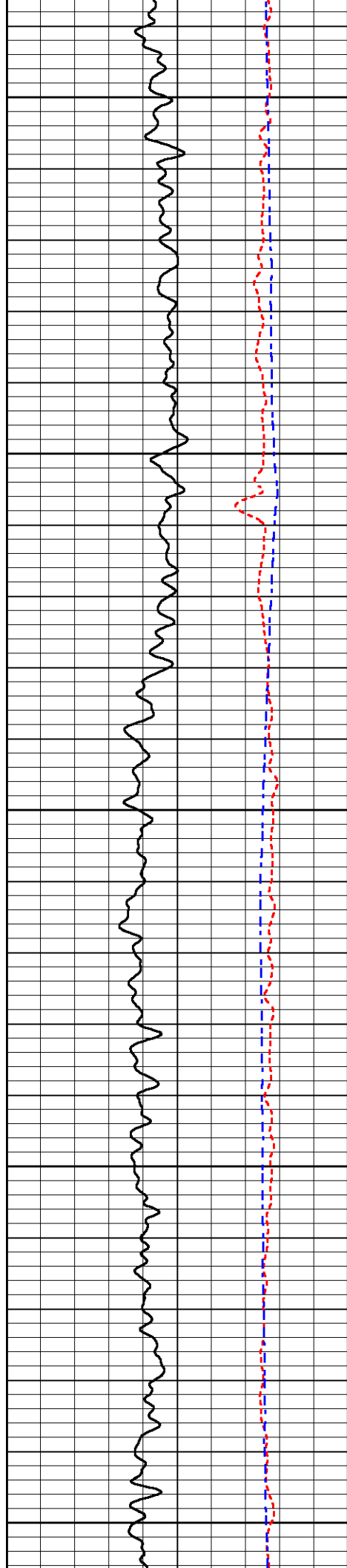
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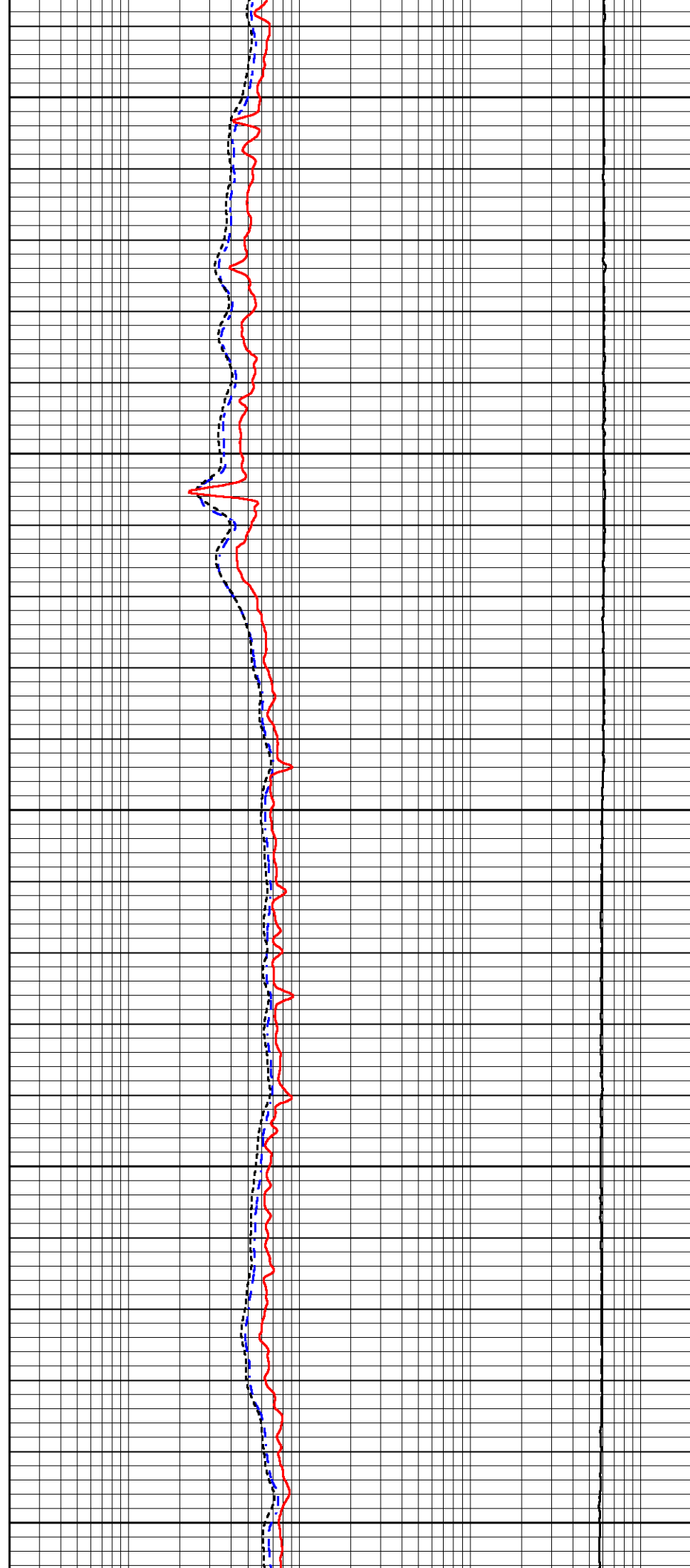
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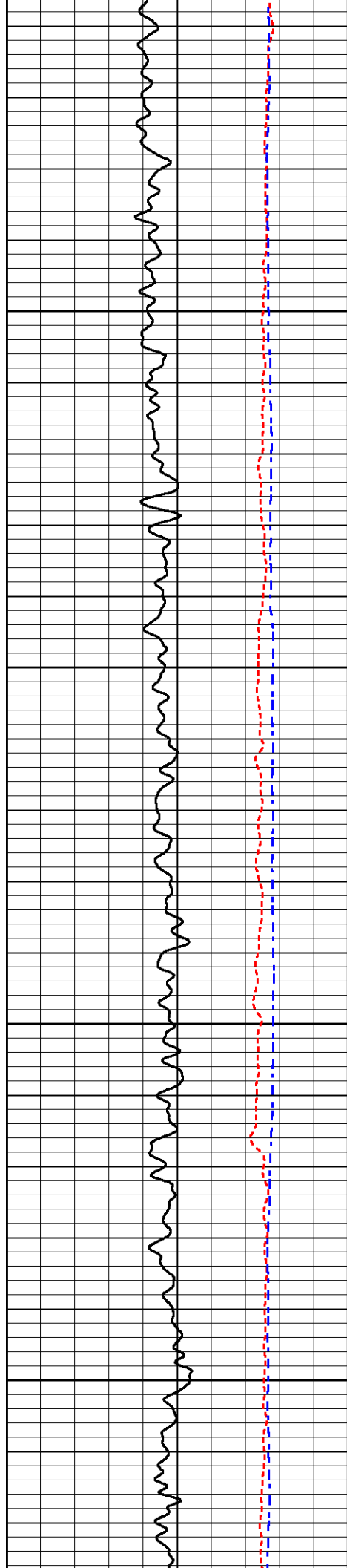
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3200

3250



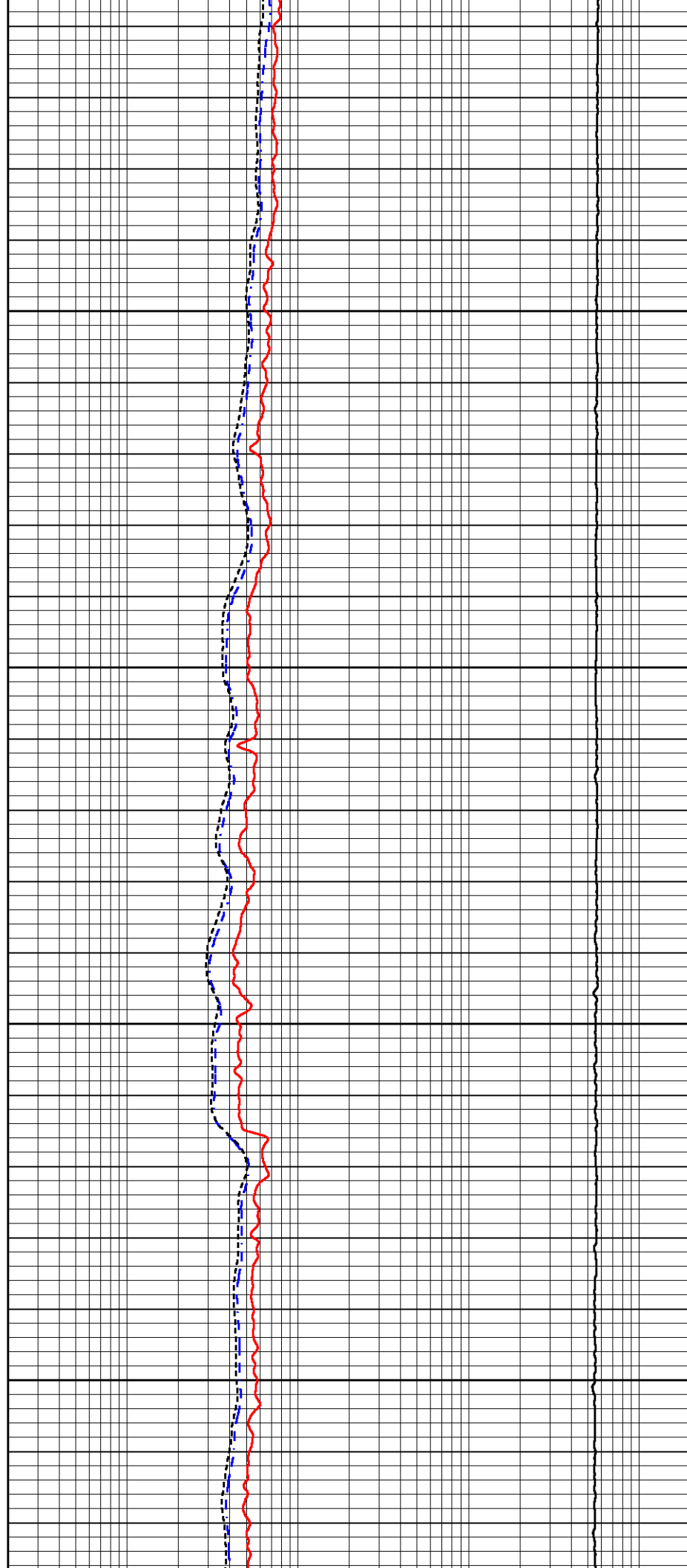


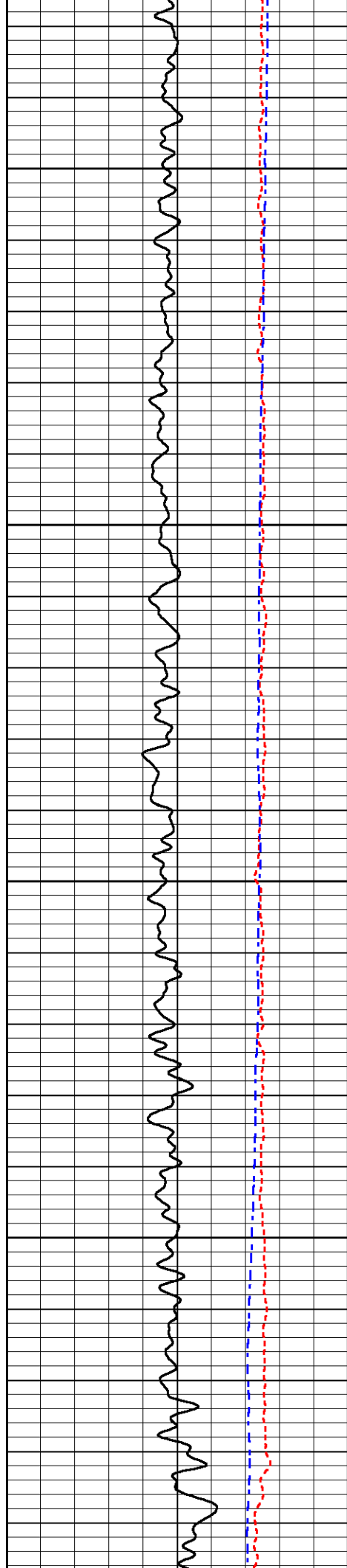
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3400

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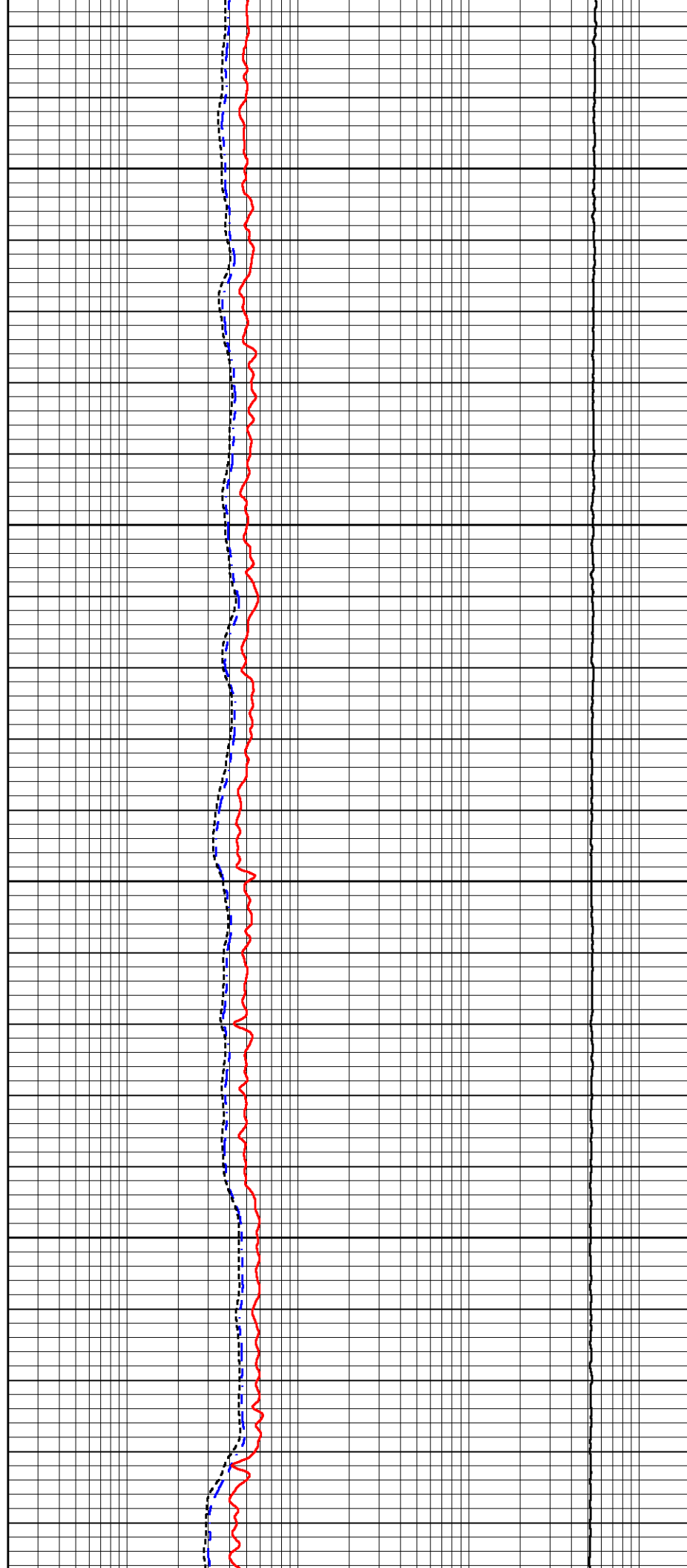


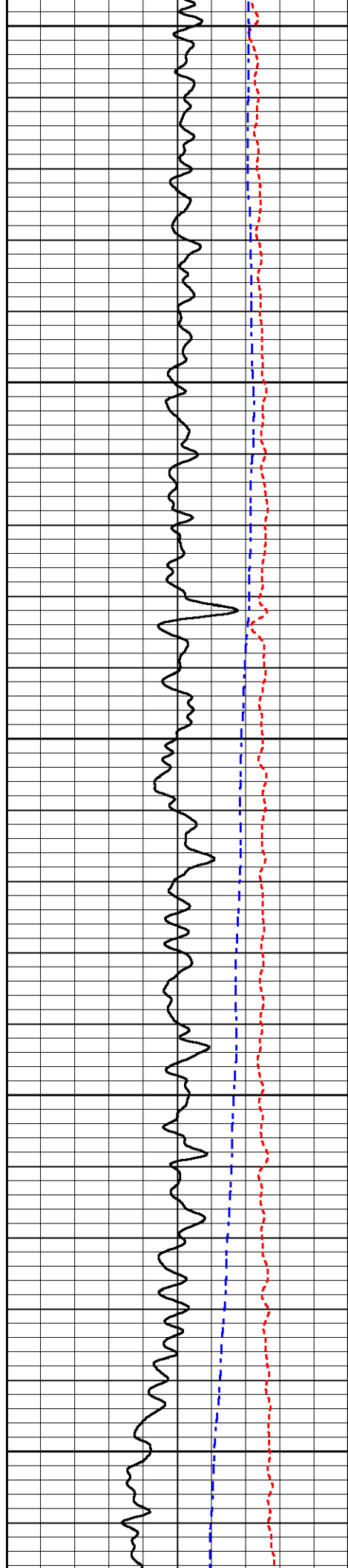
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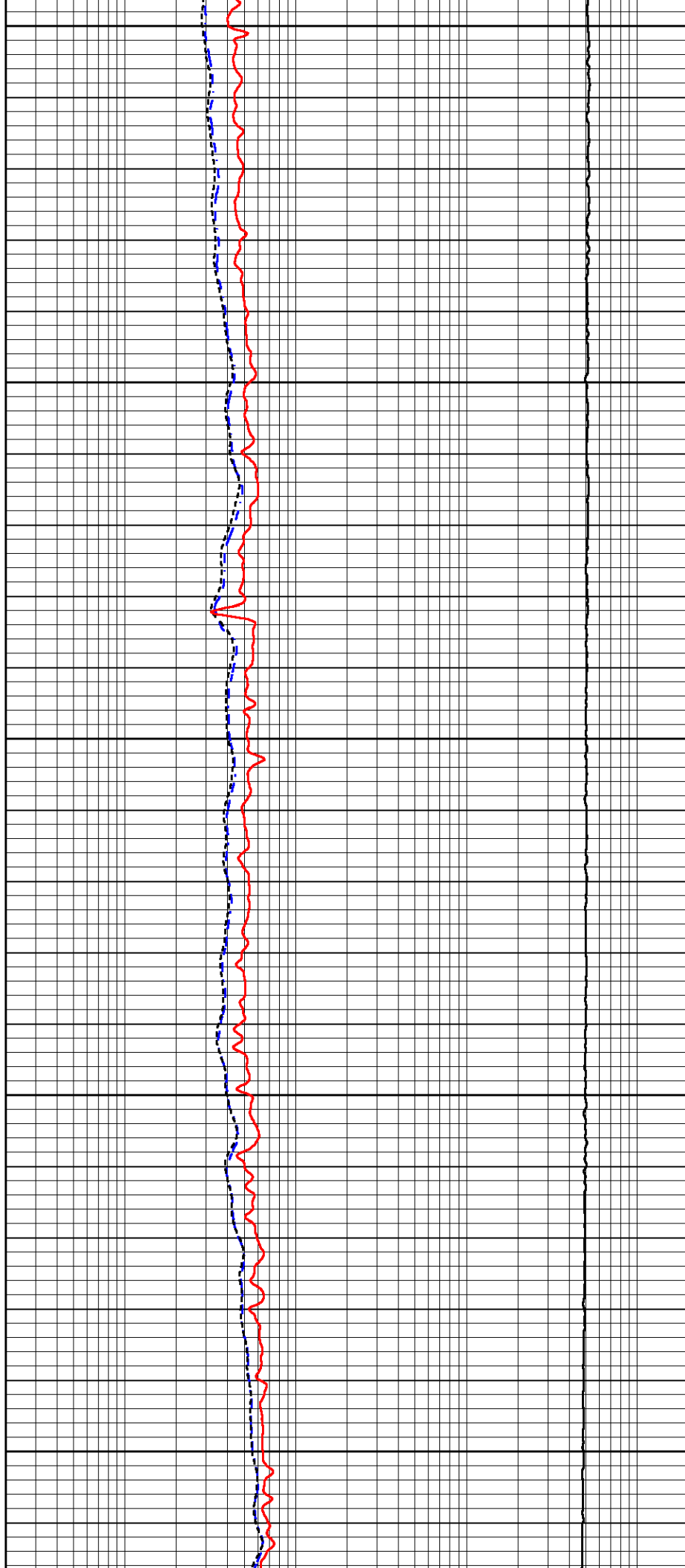
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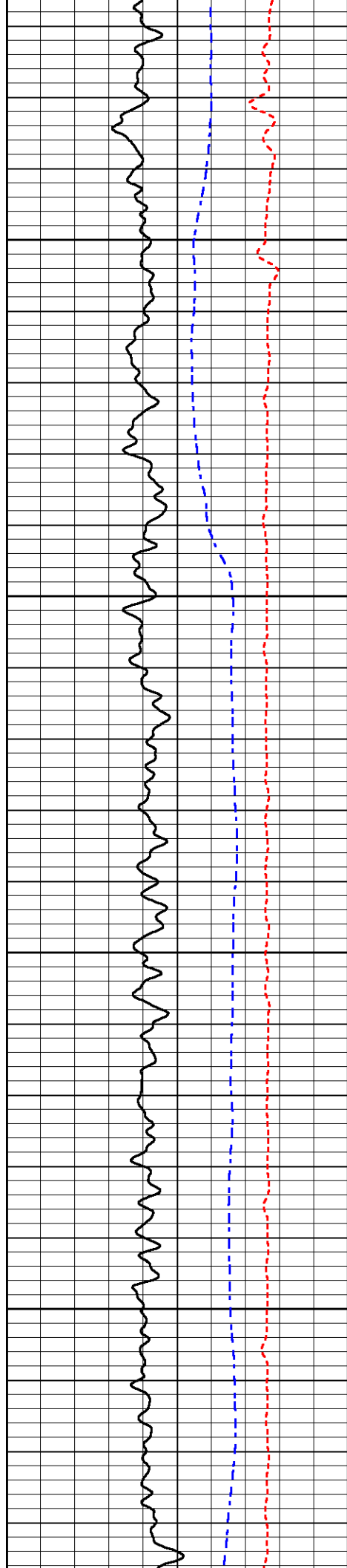
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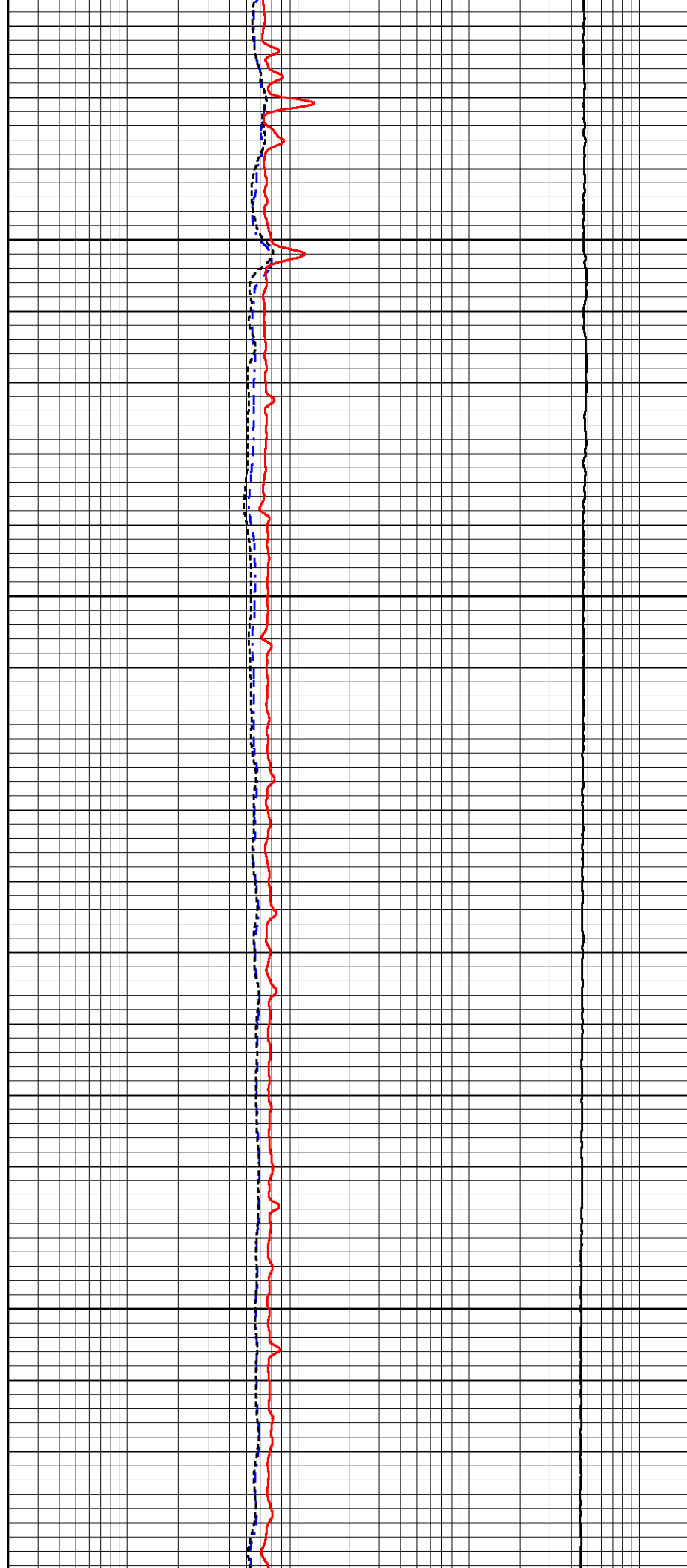


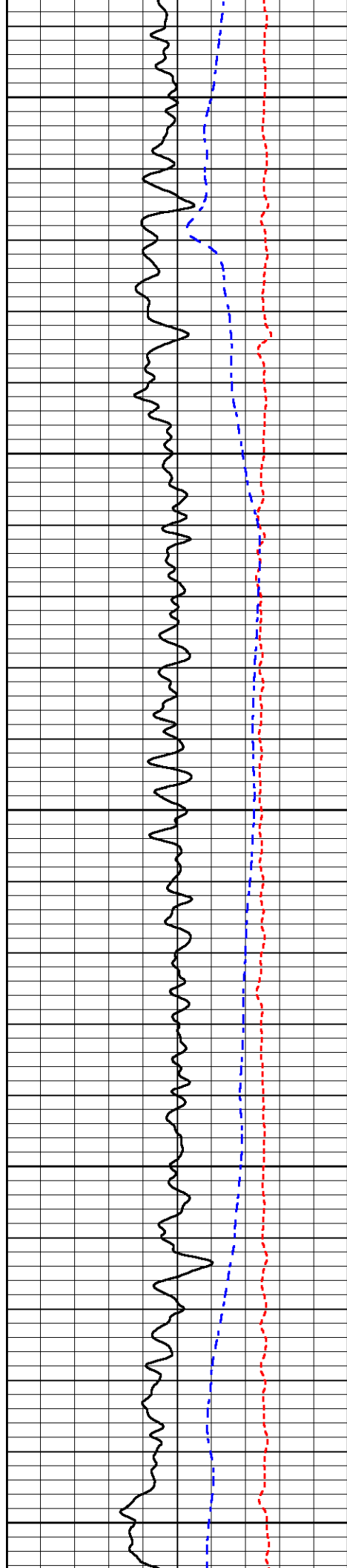
3950

4000

4050

4100





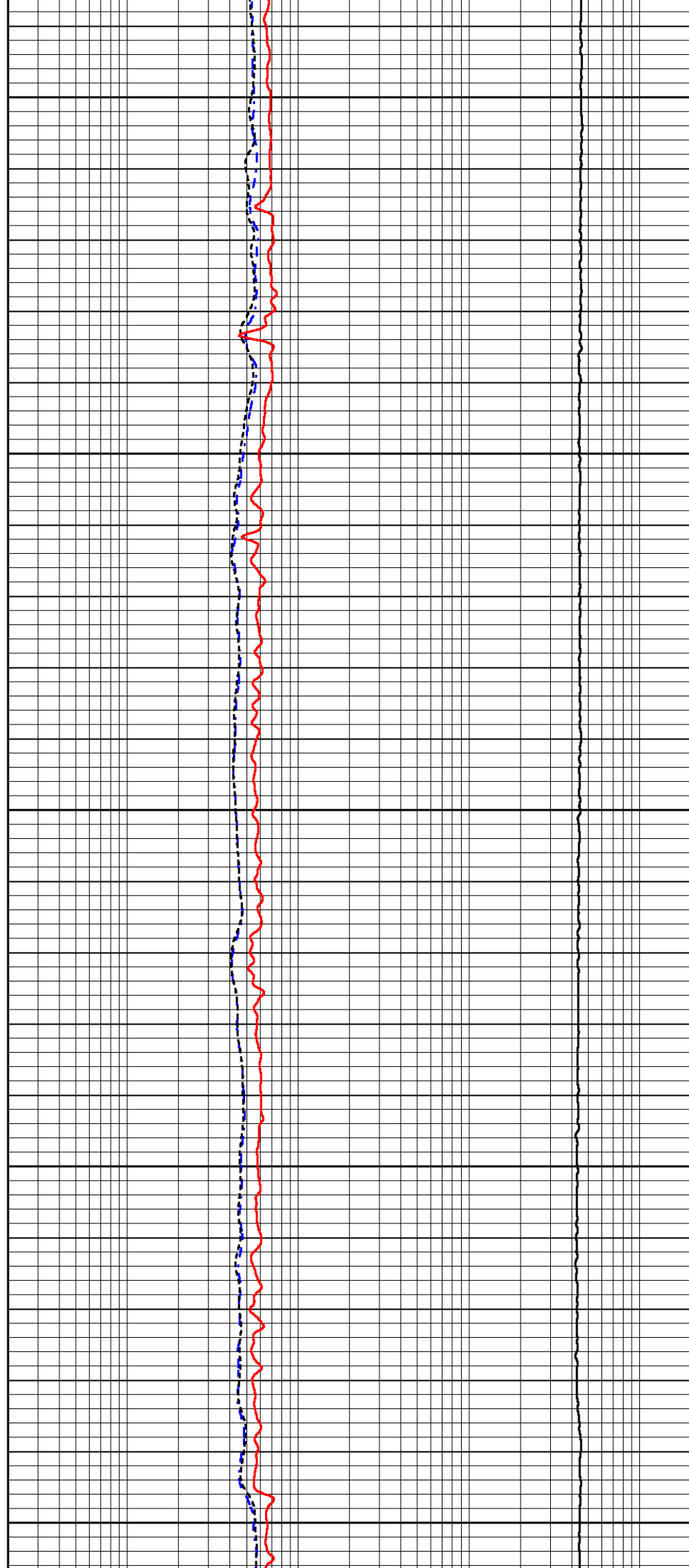
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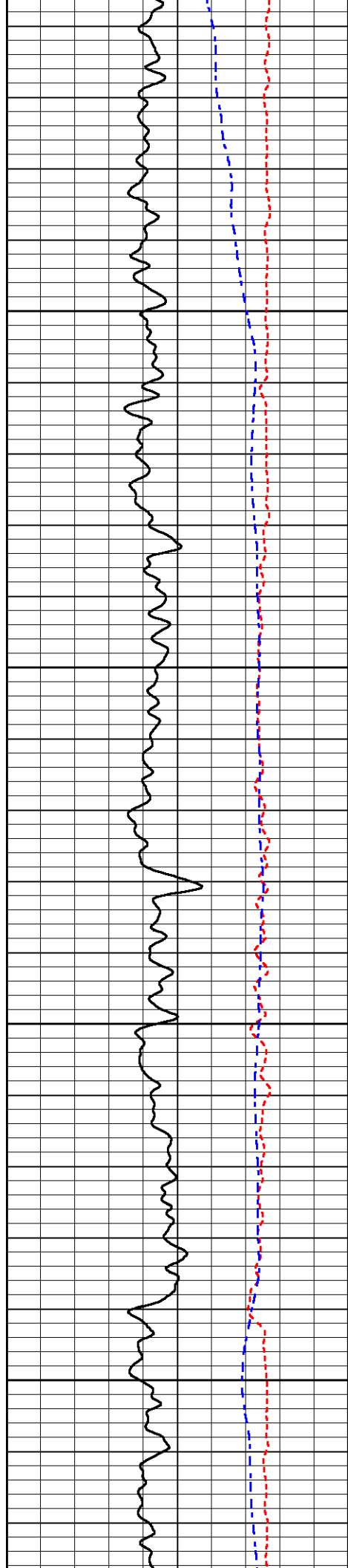
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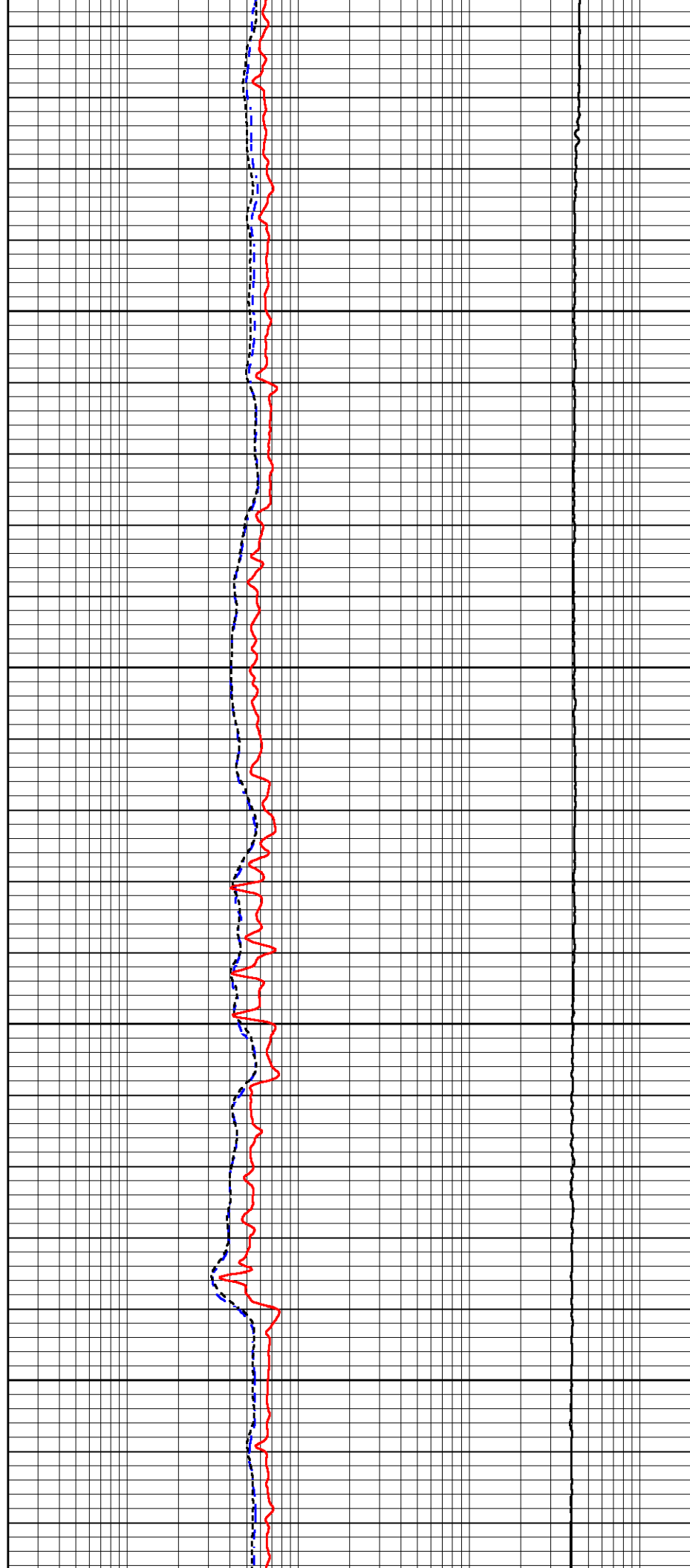


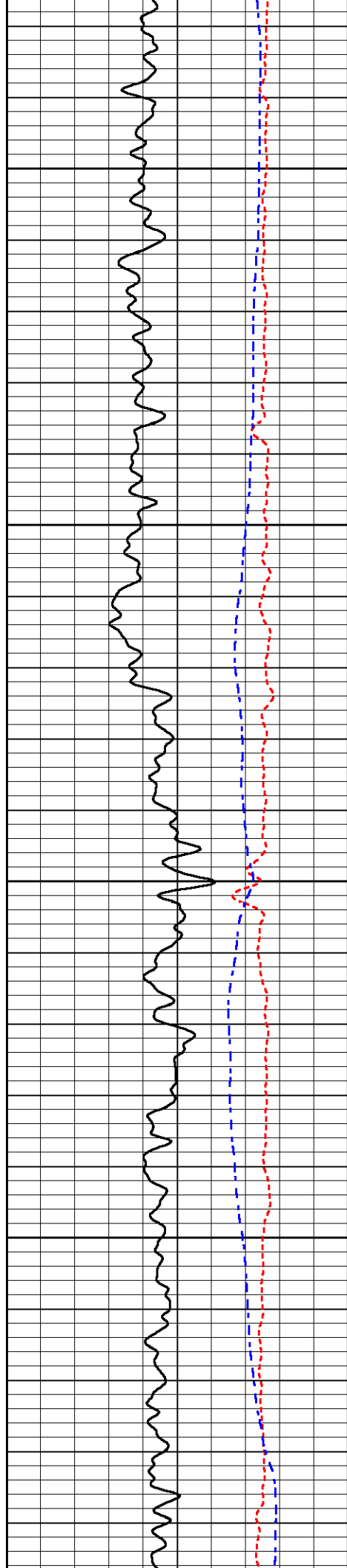
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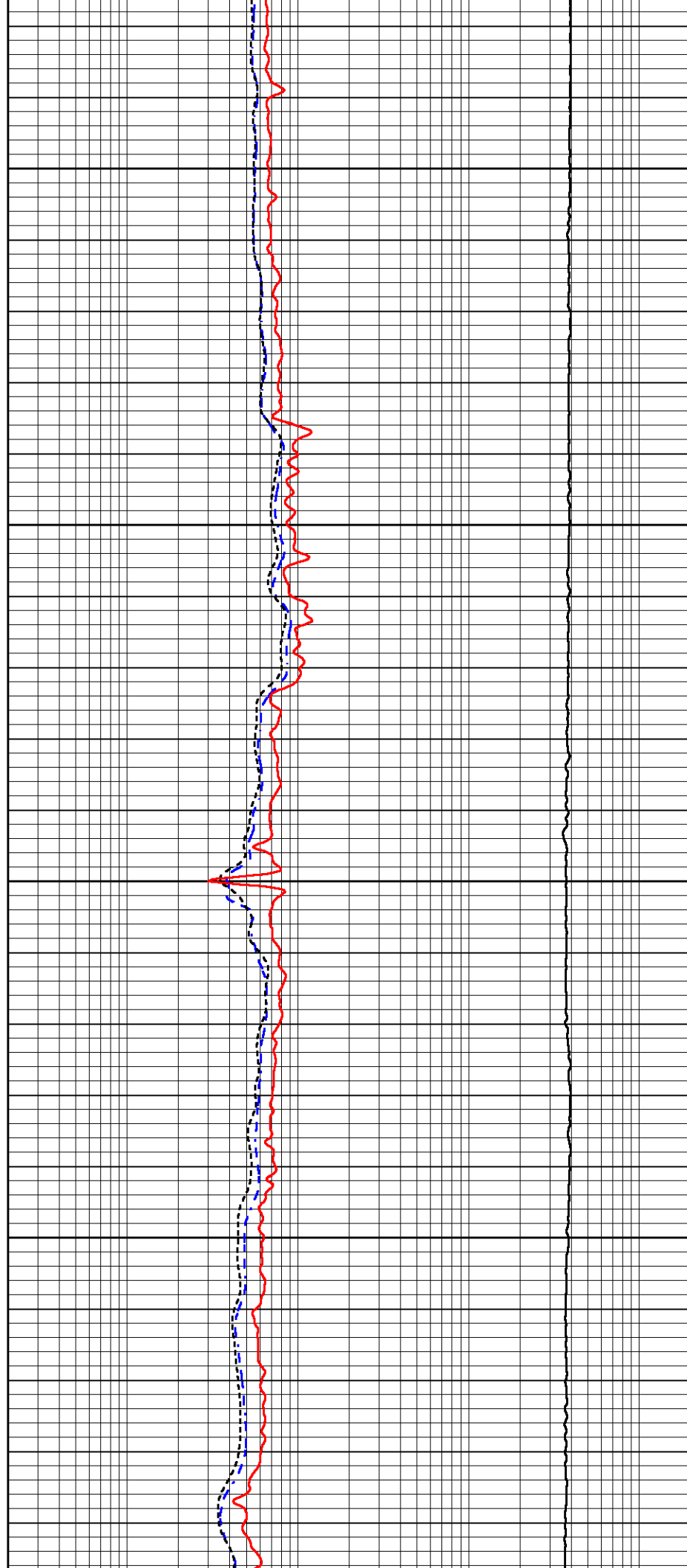


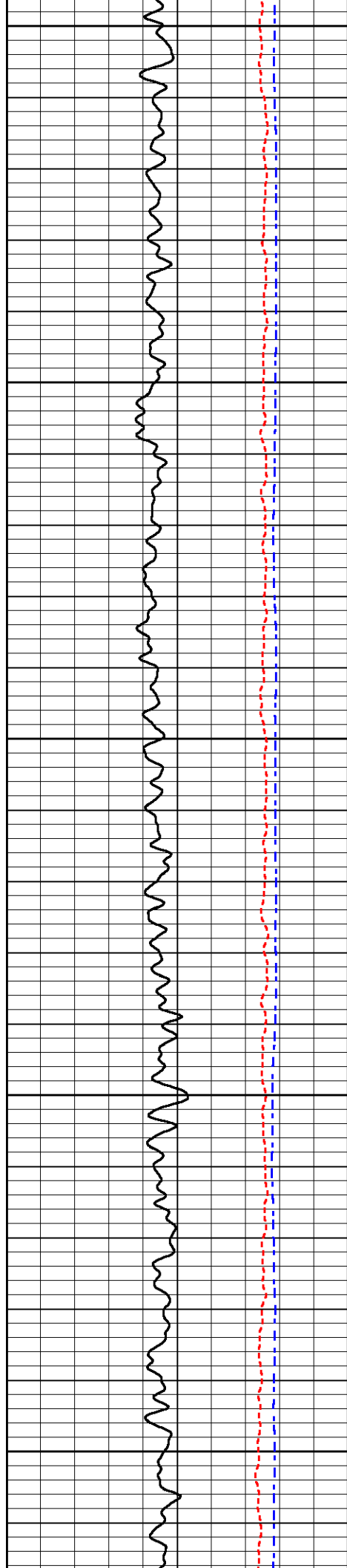
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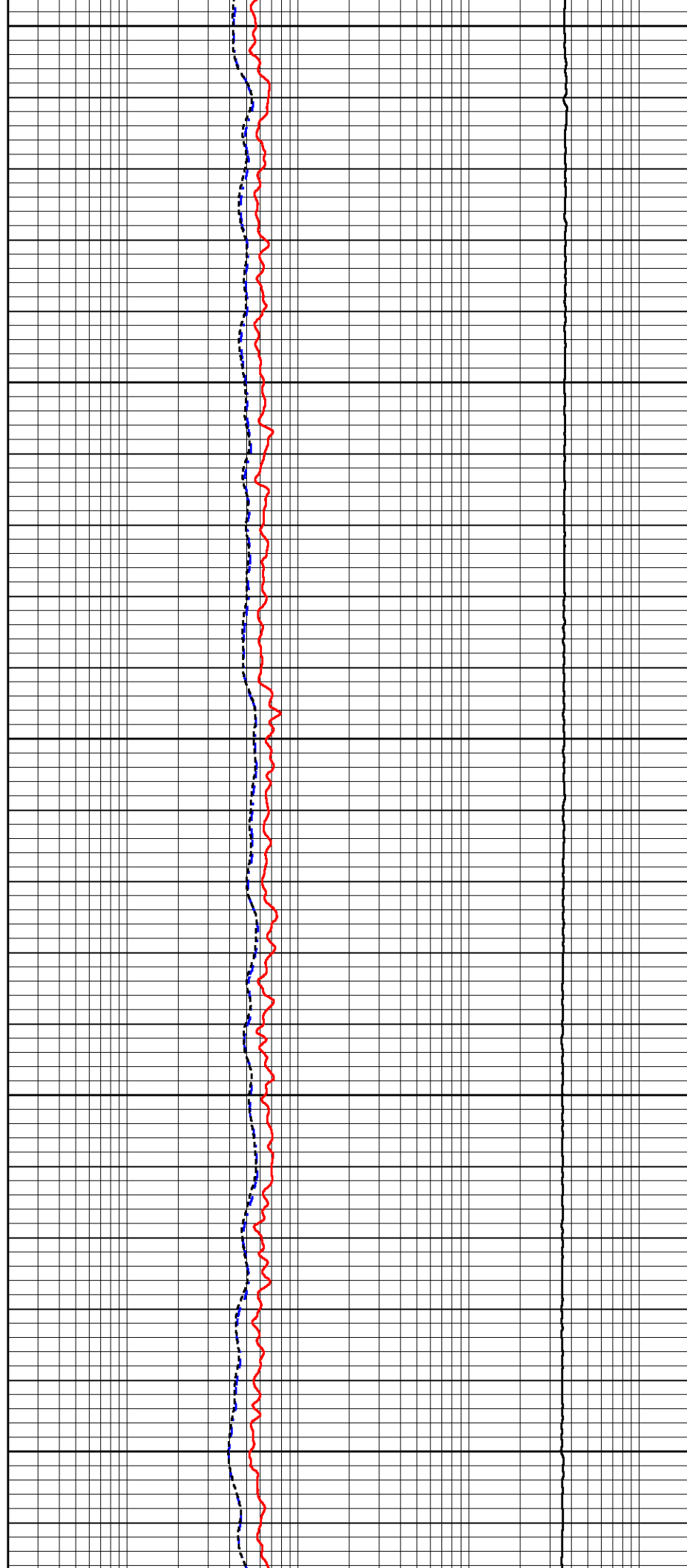
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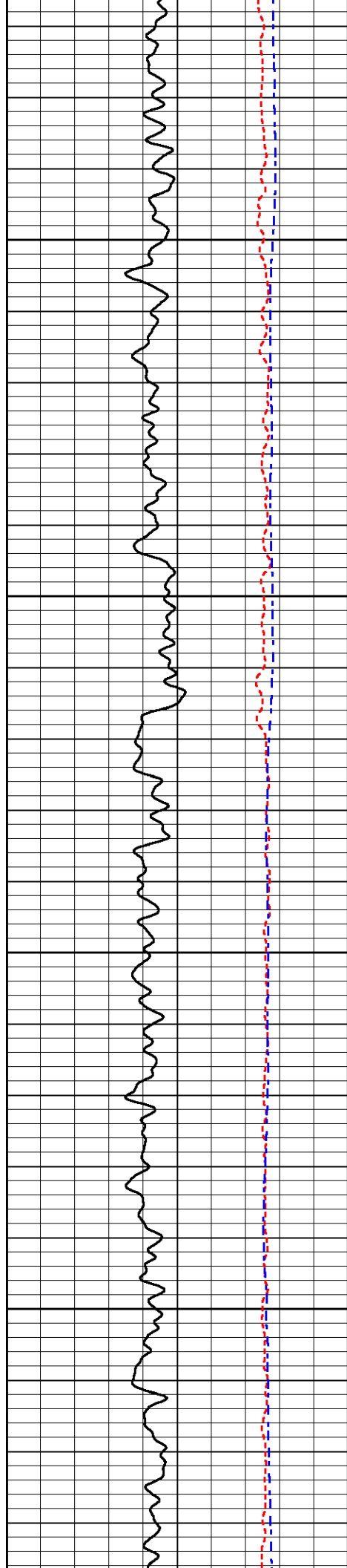
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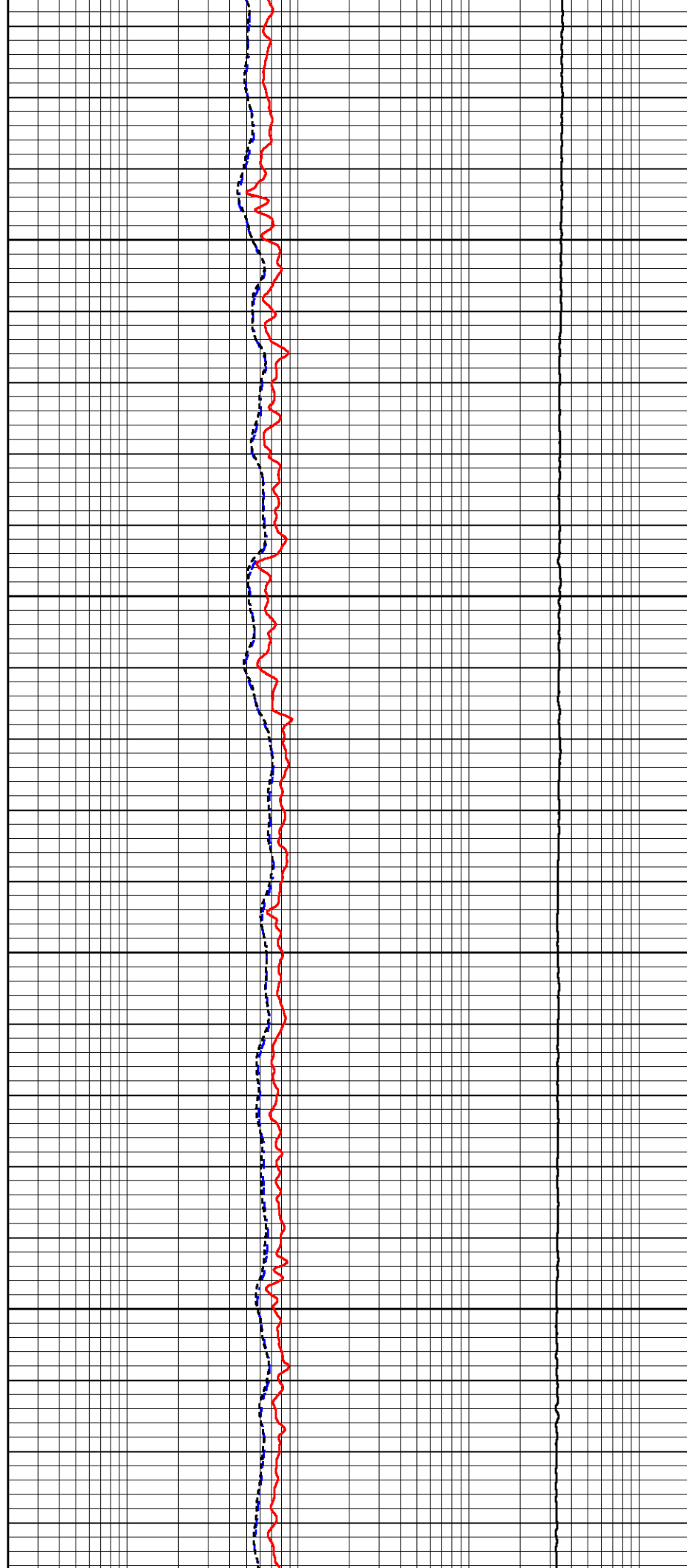


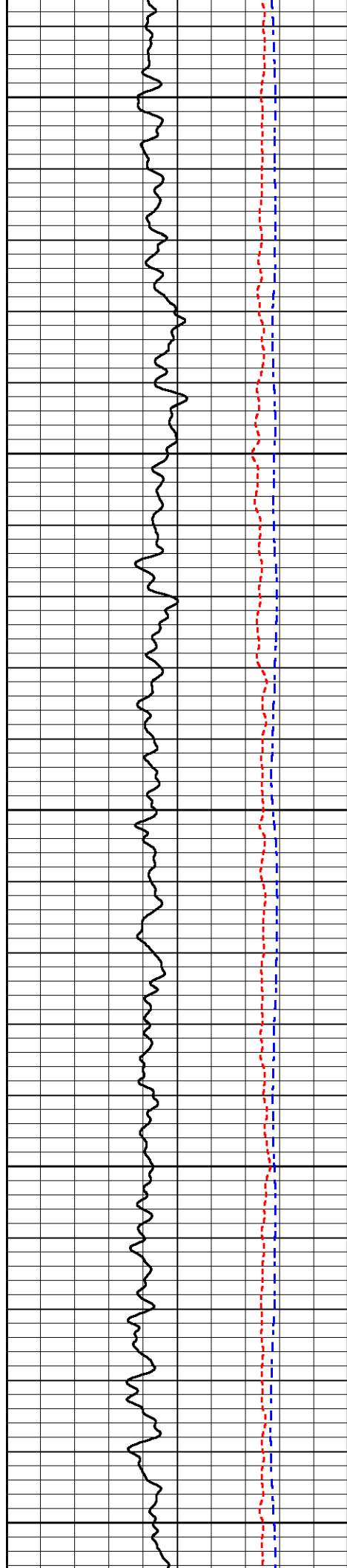
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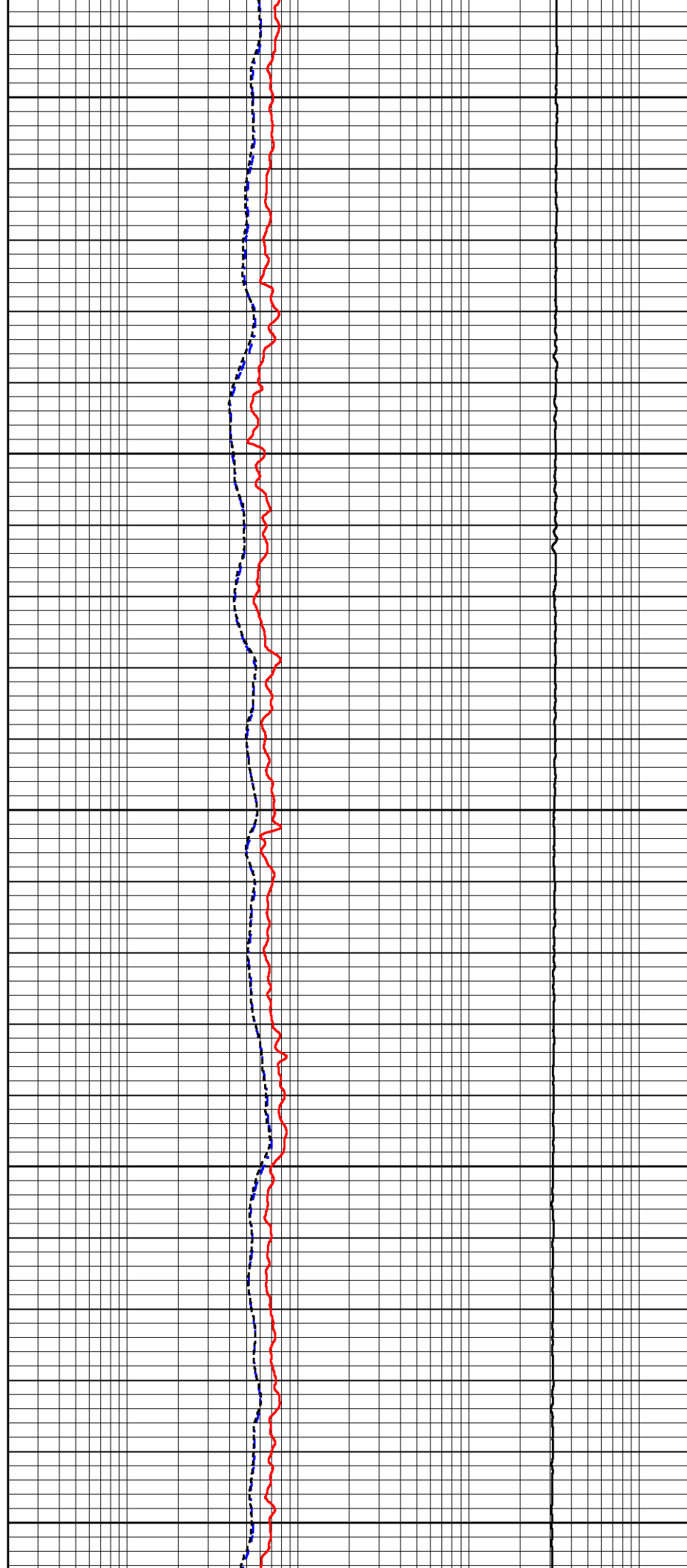
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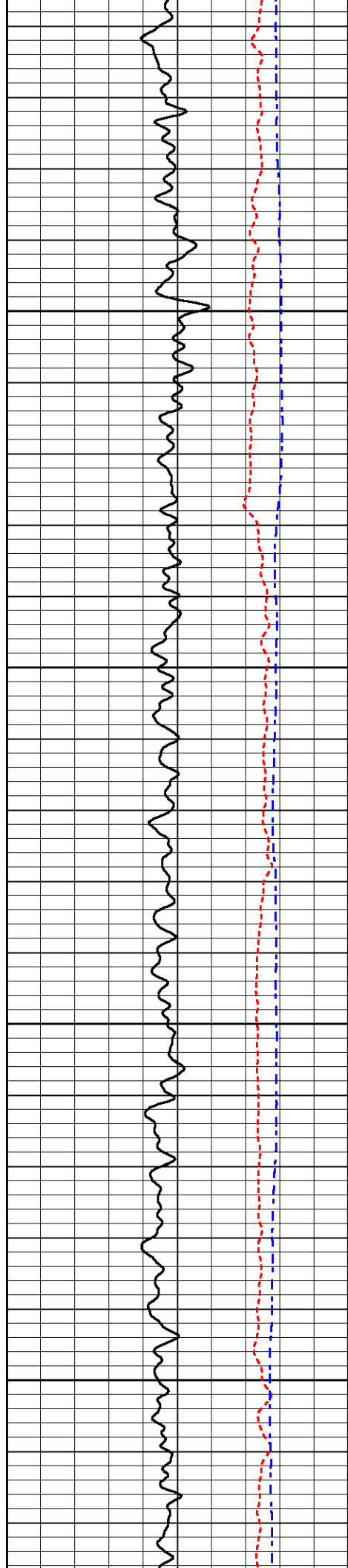
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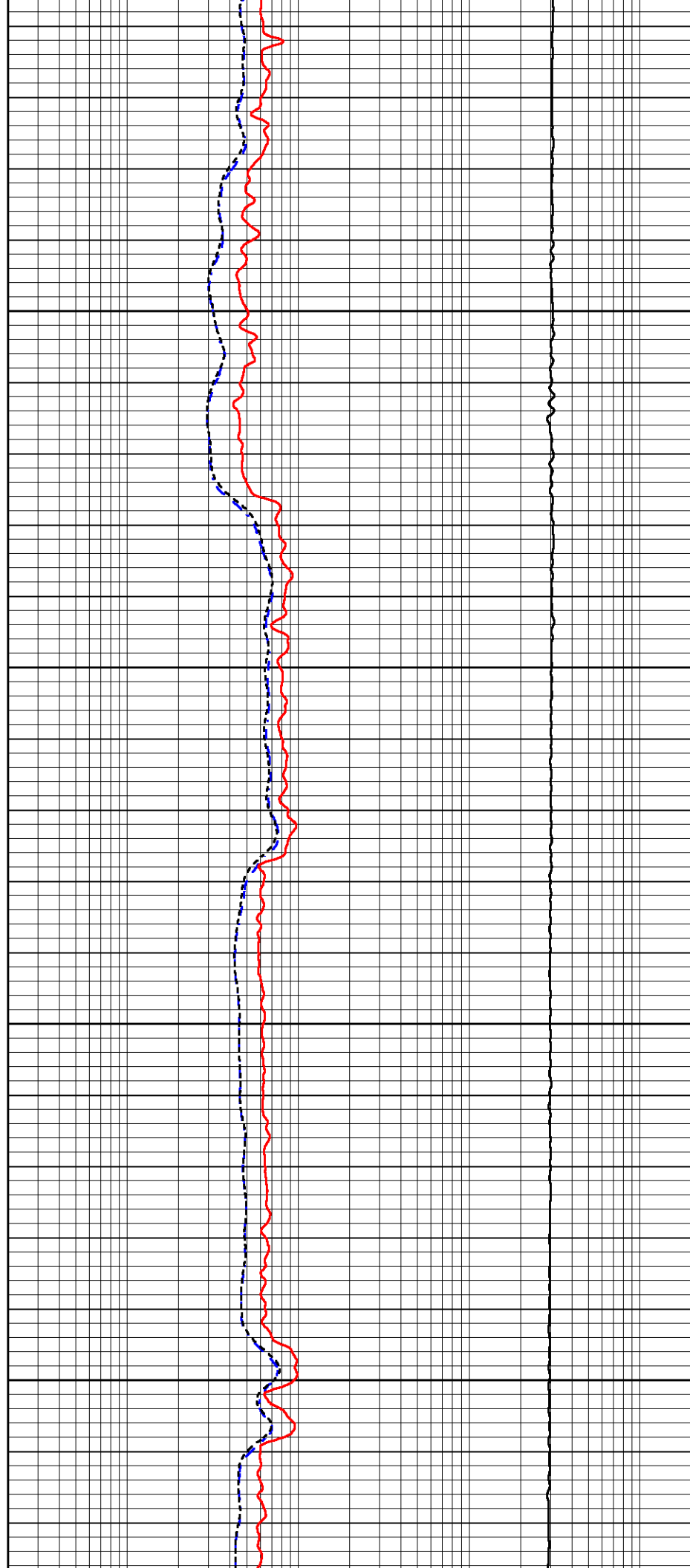


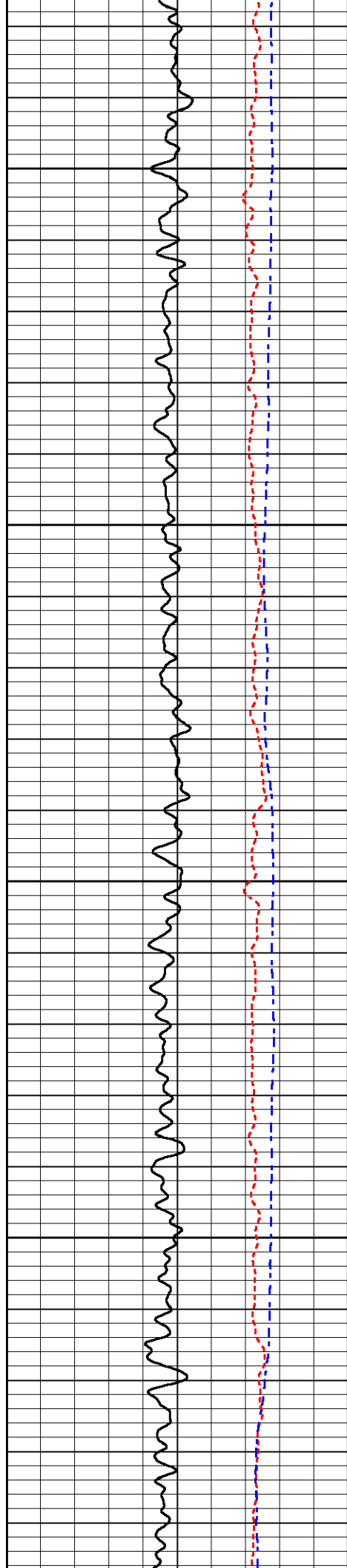
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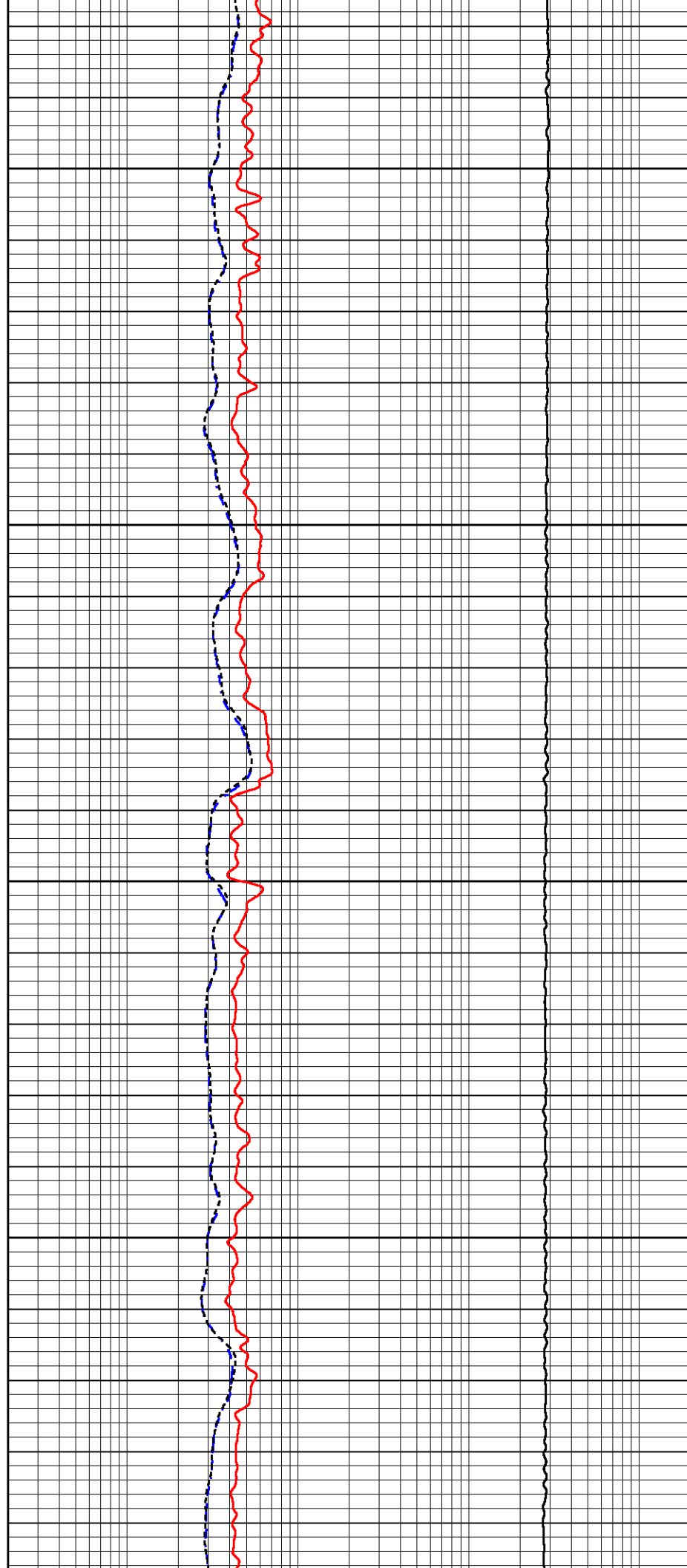


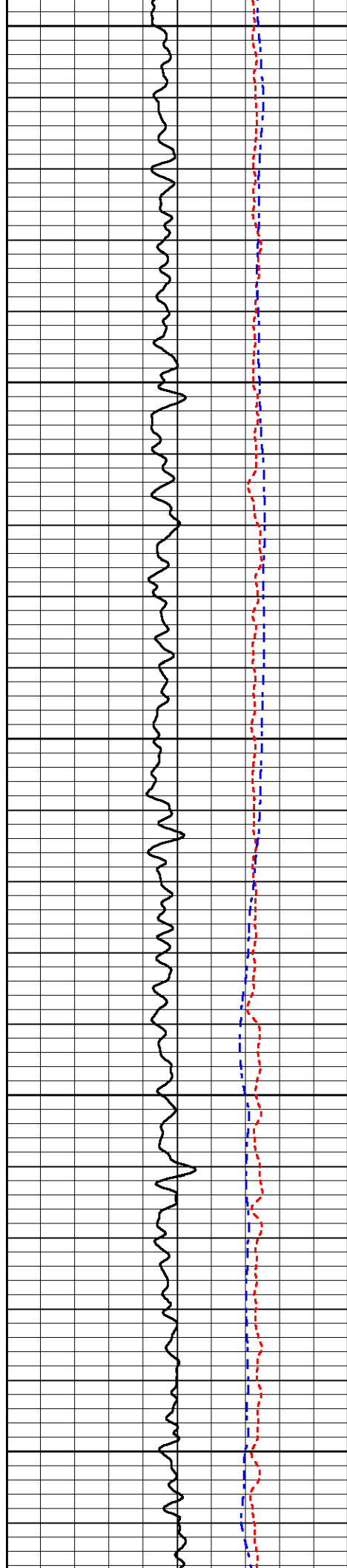
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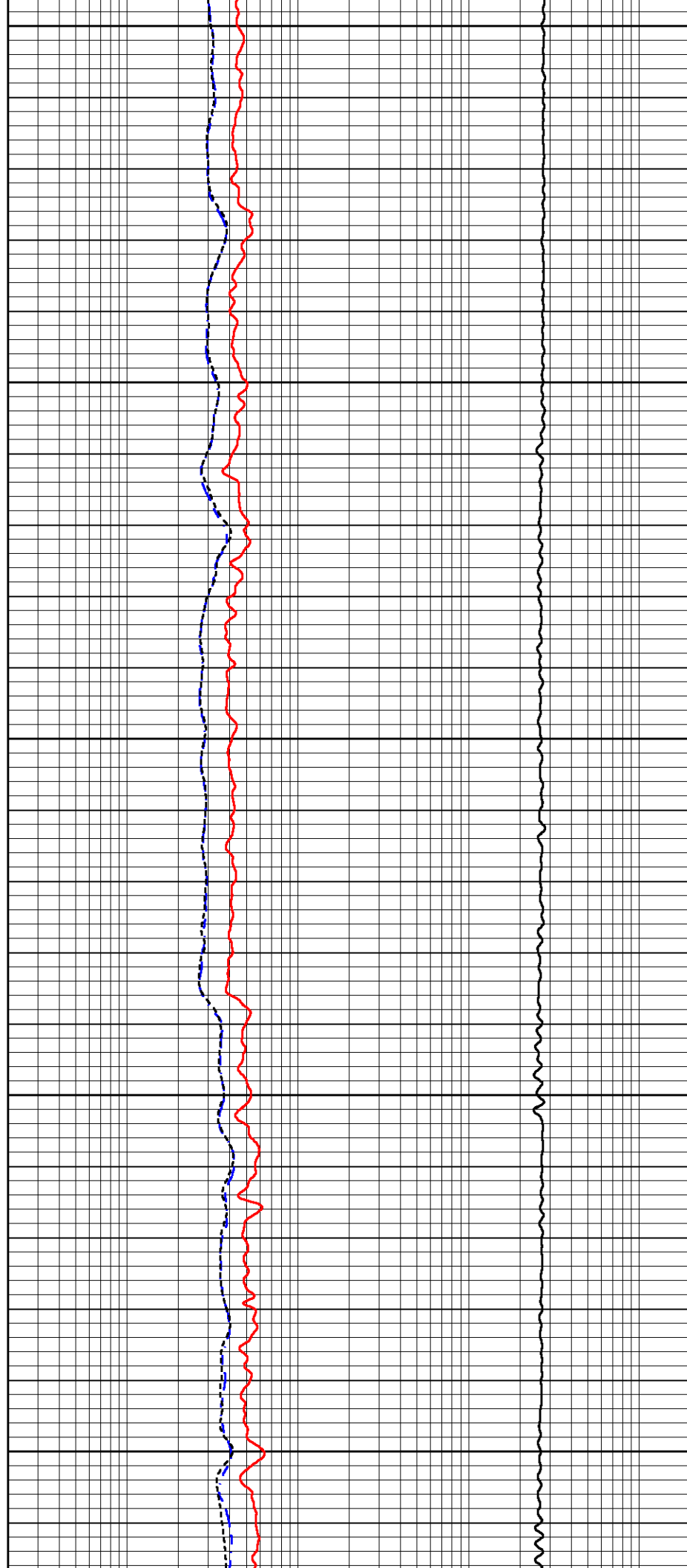
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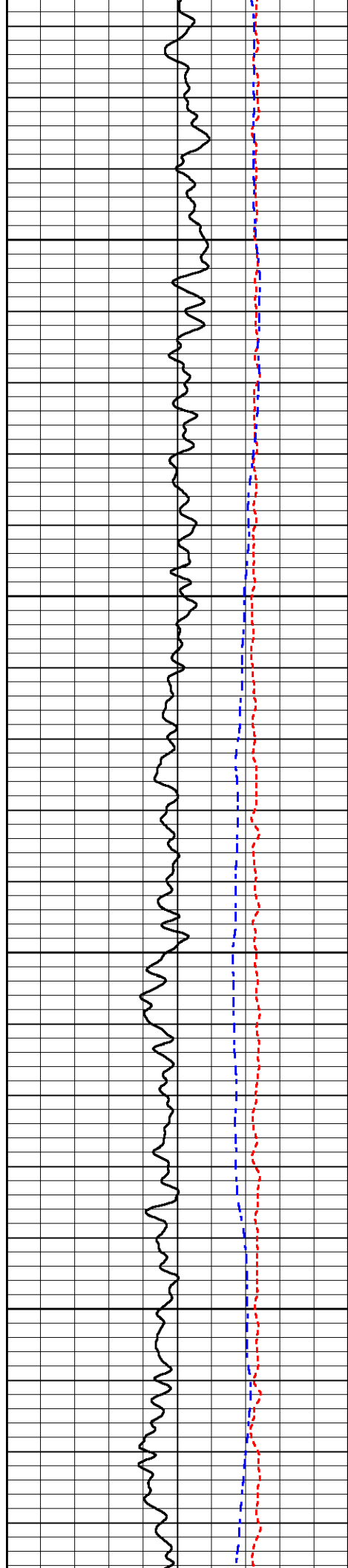
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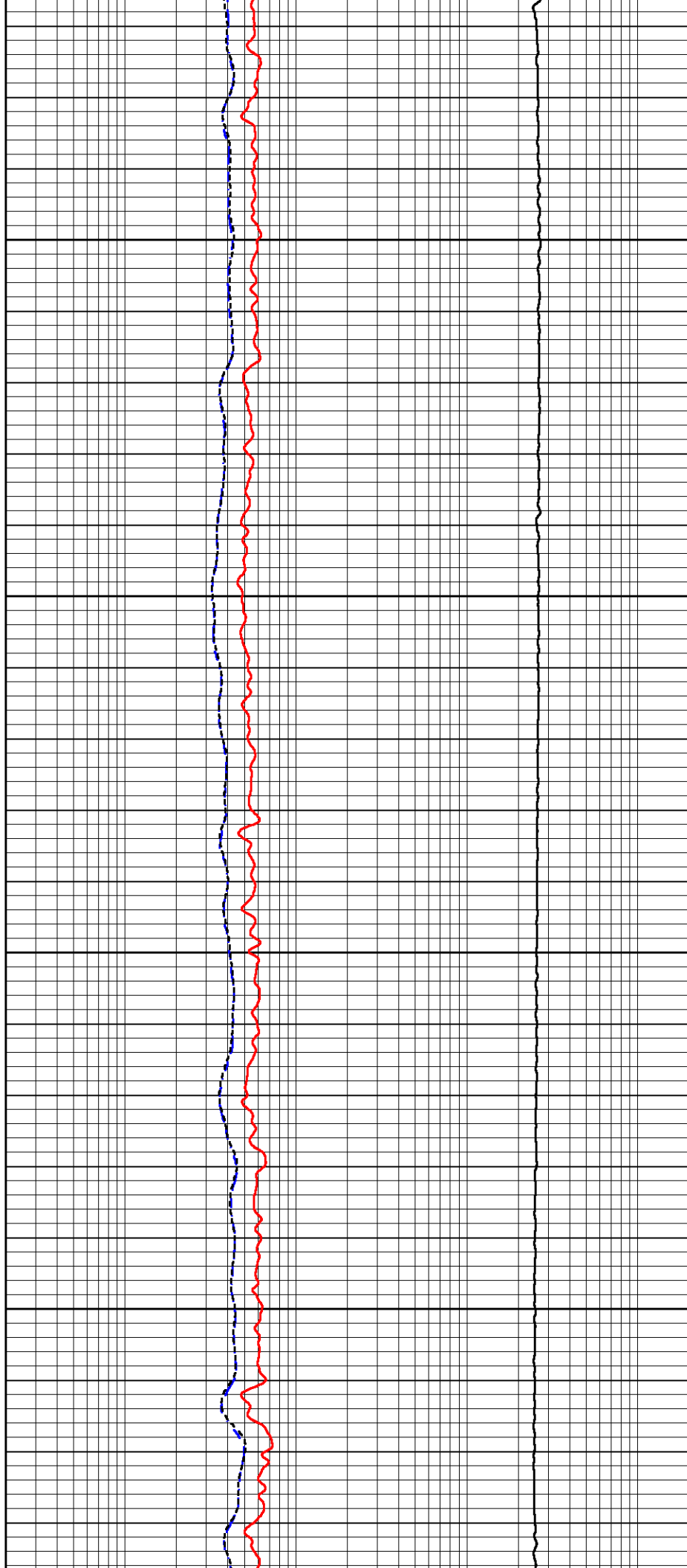


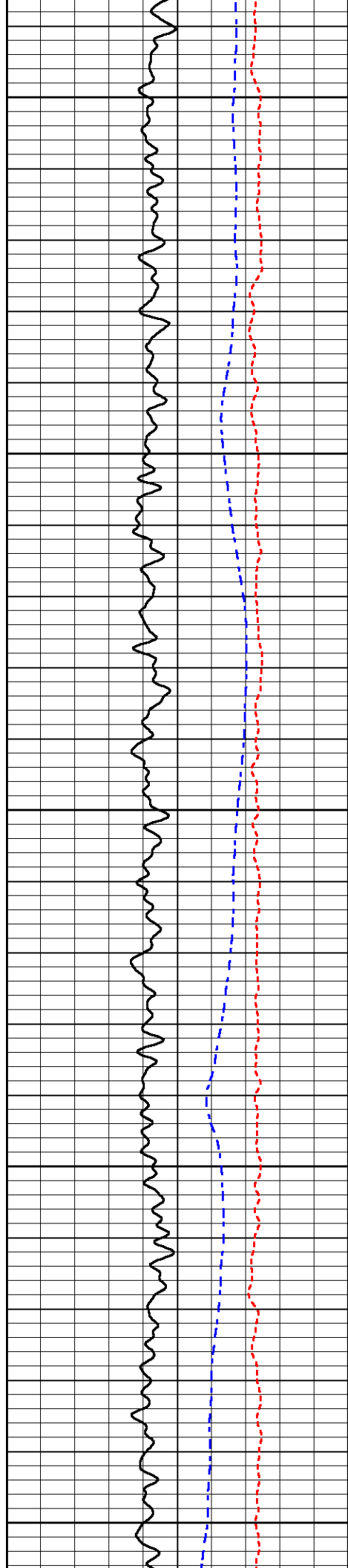
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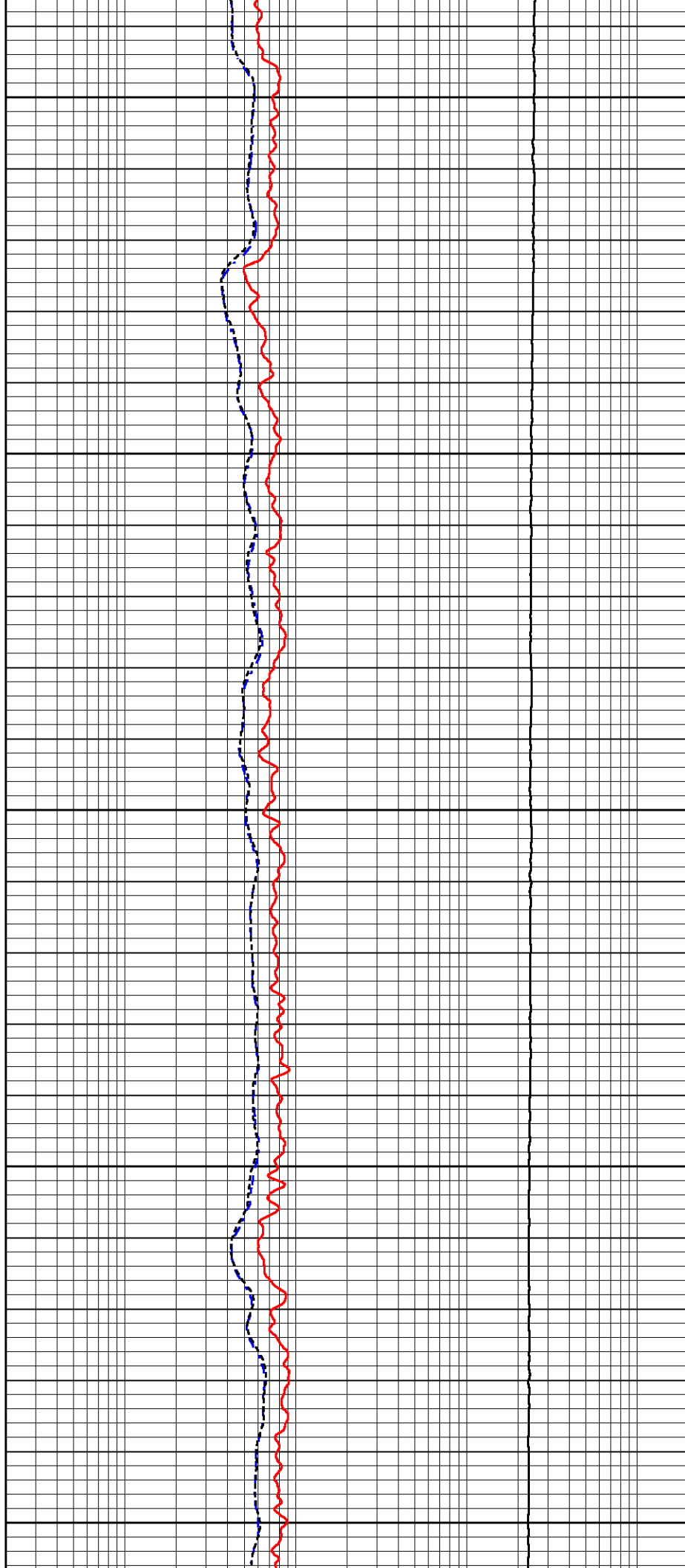
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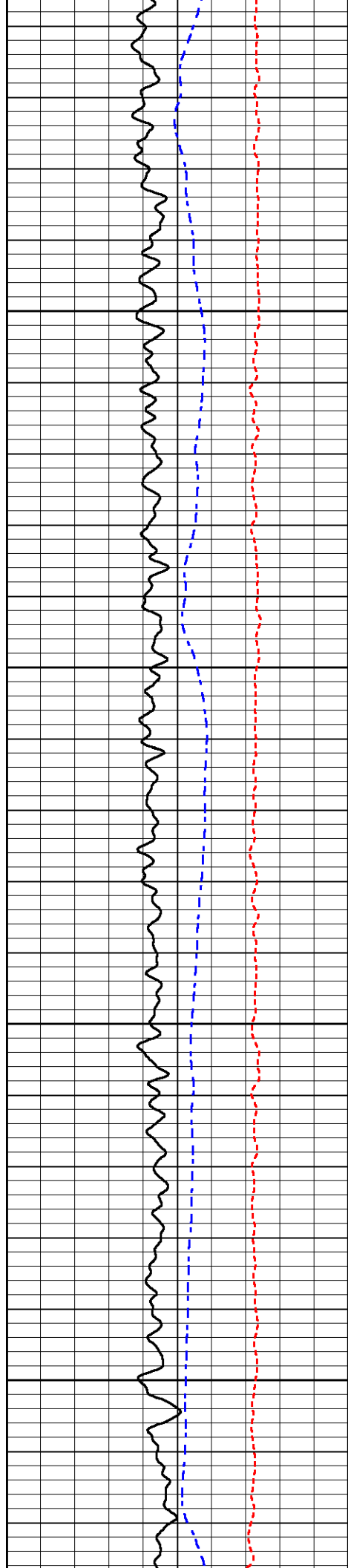
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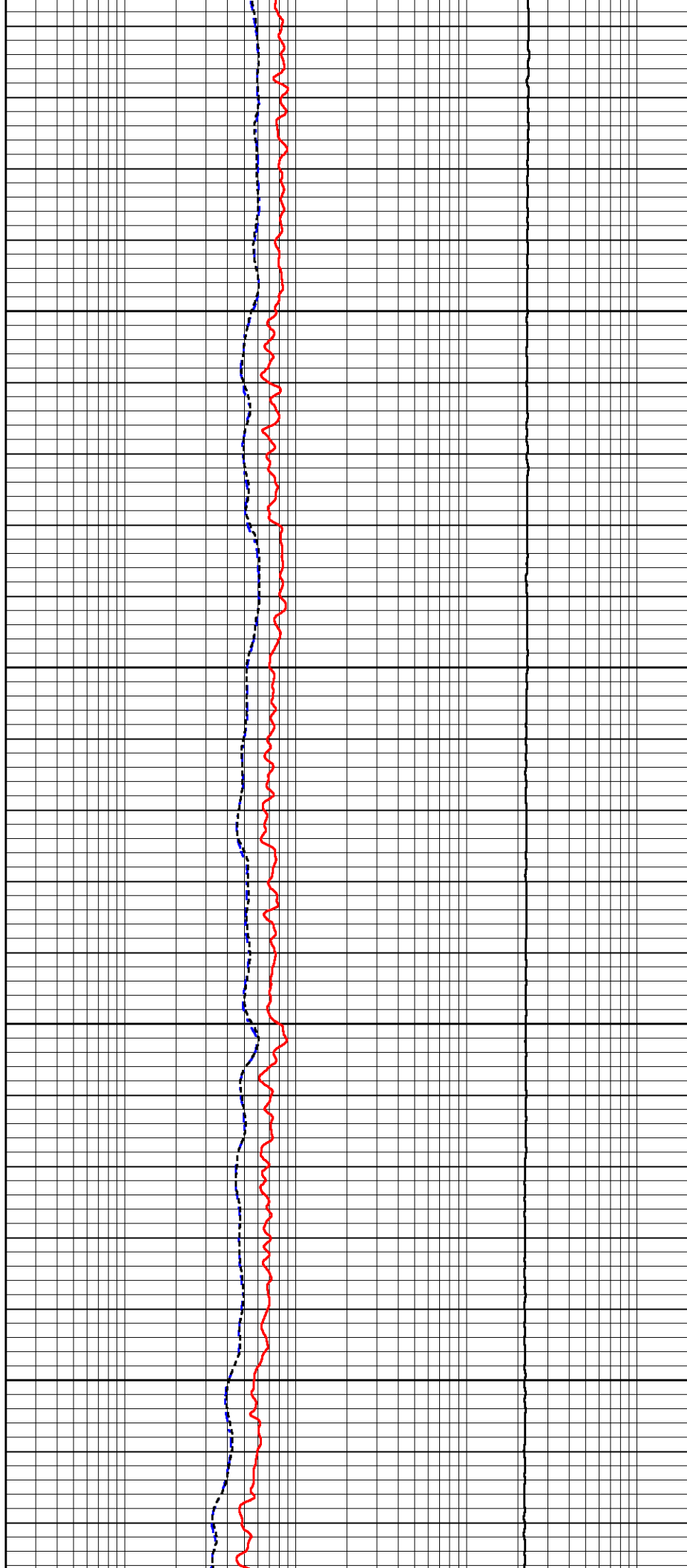


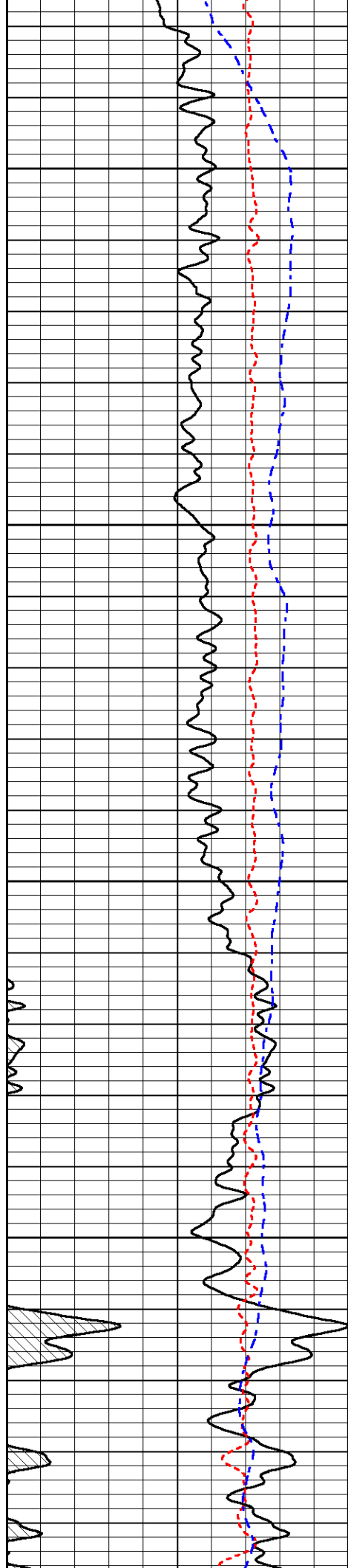
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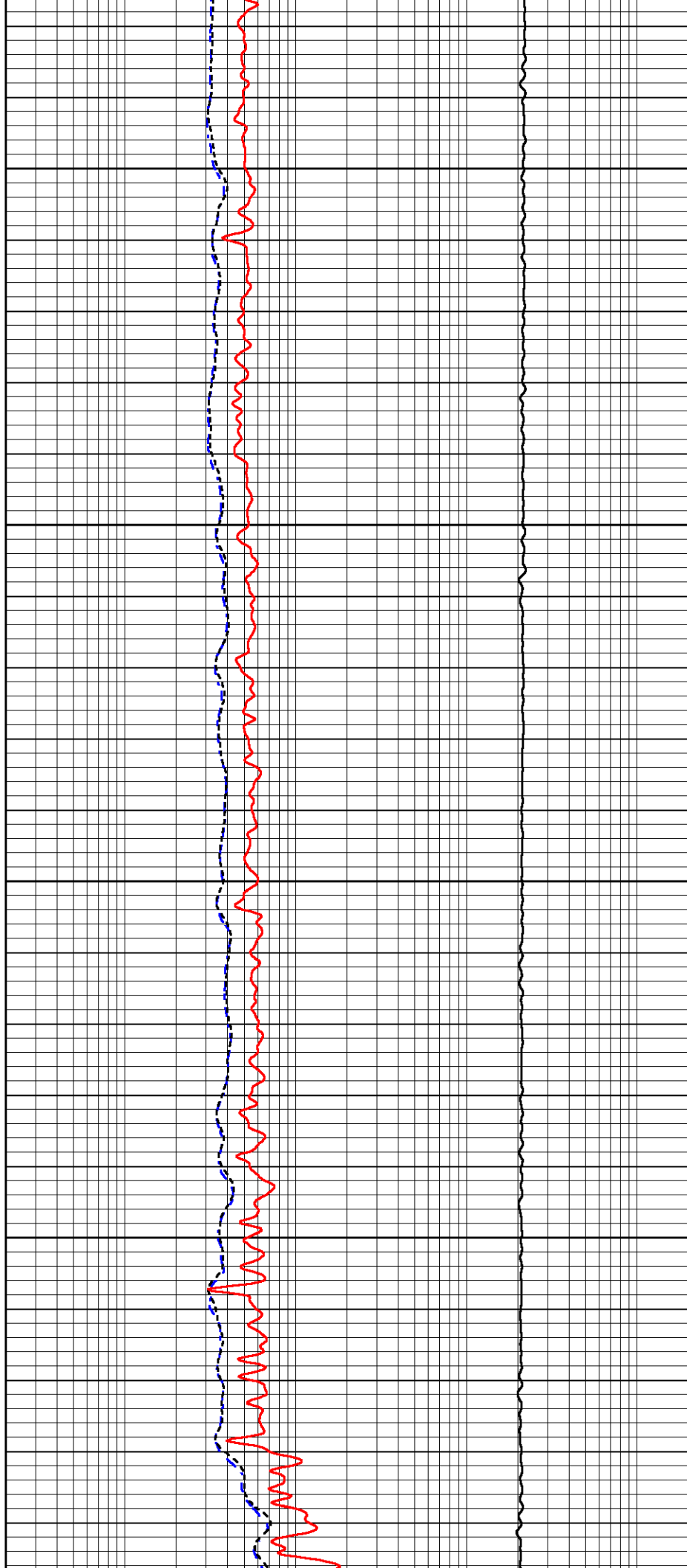


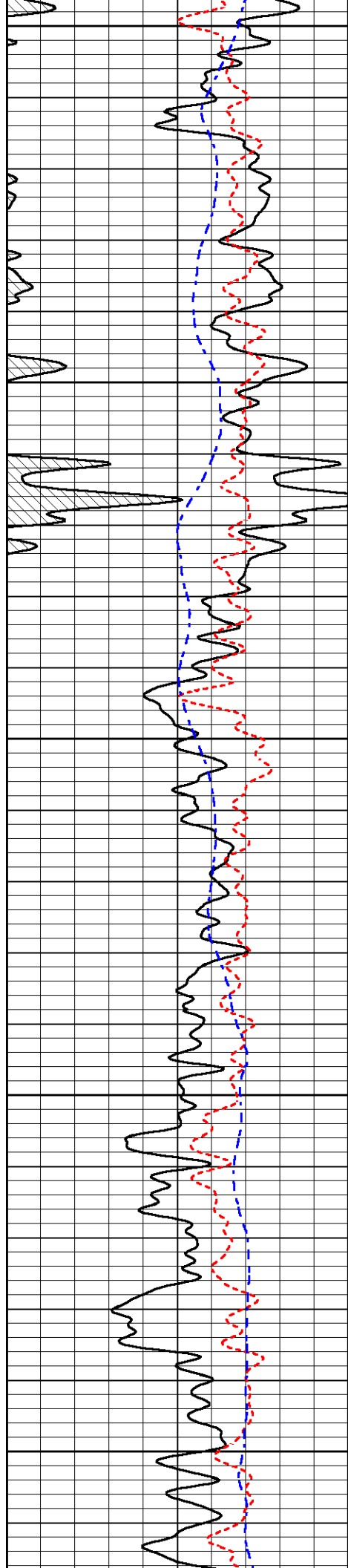
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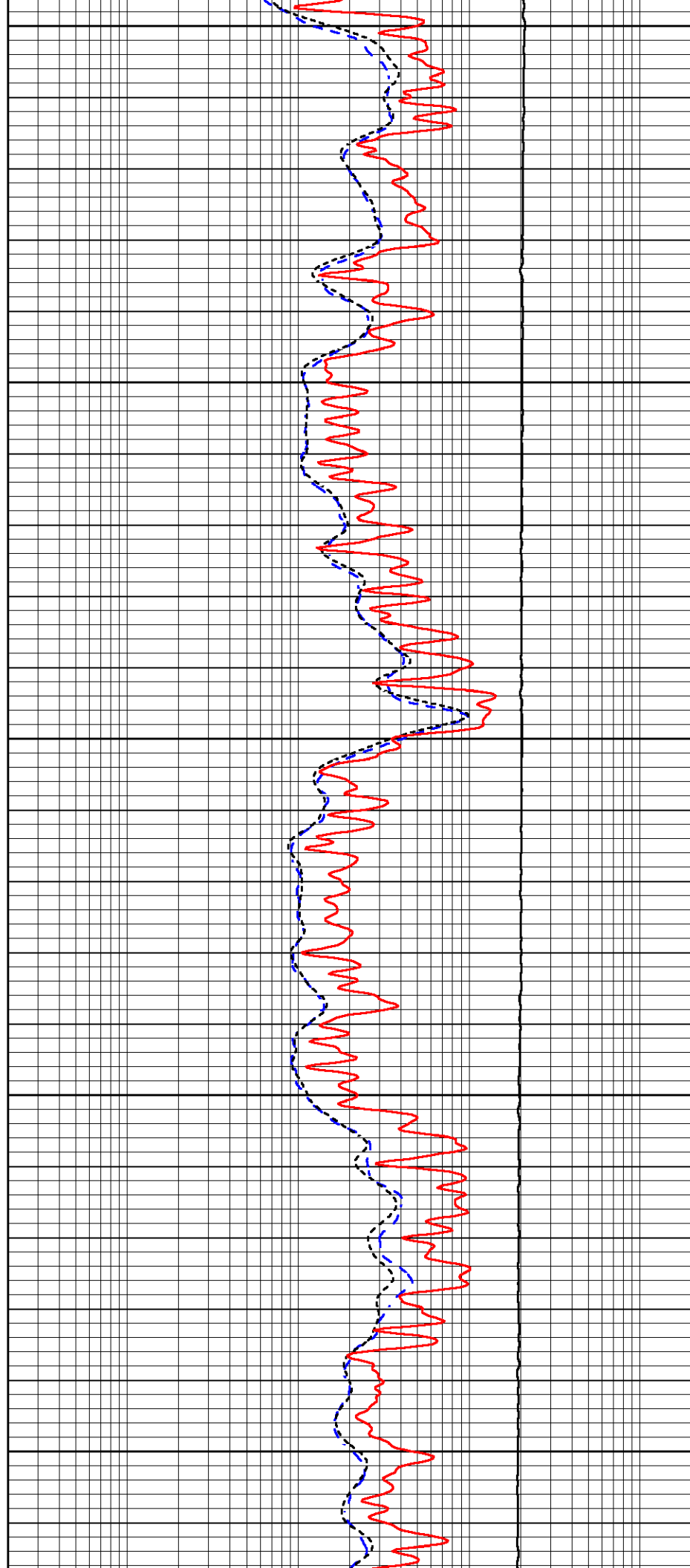
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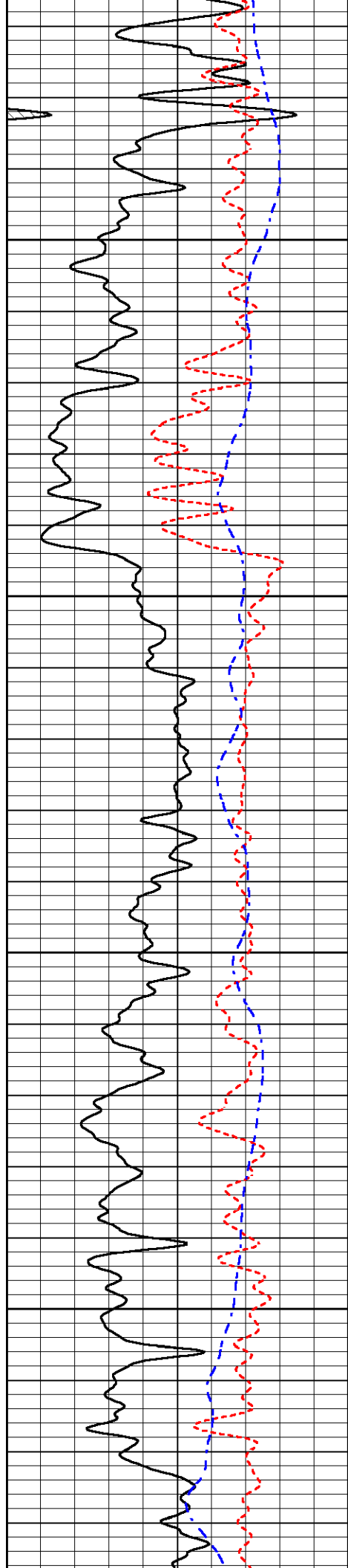
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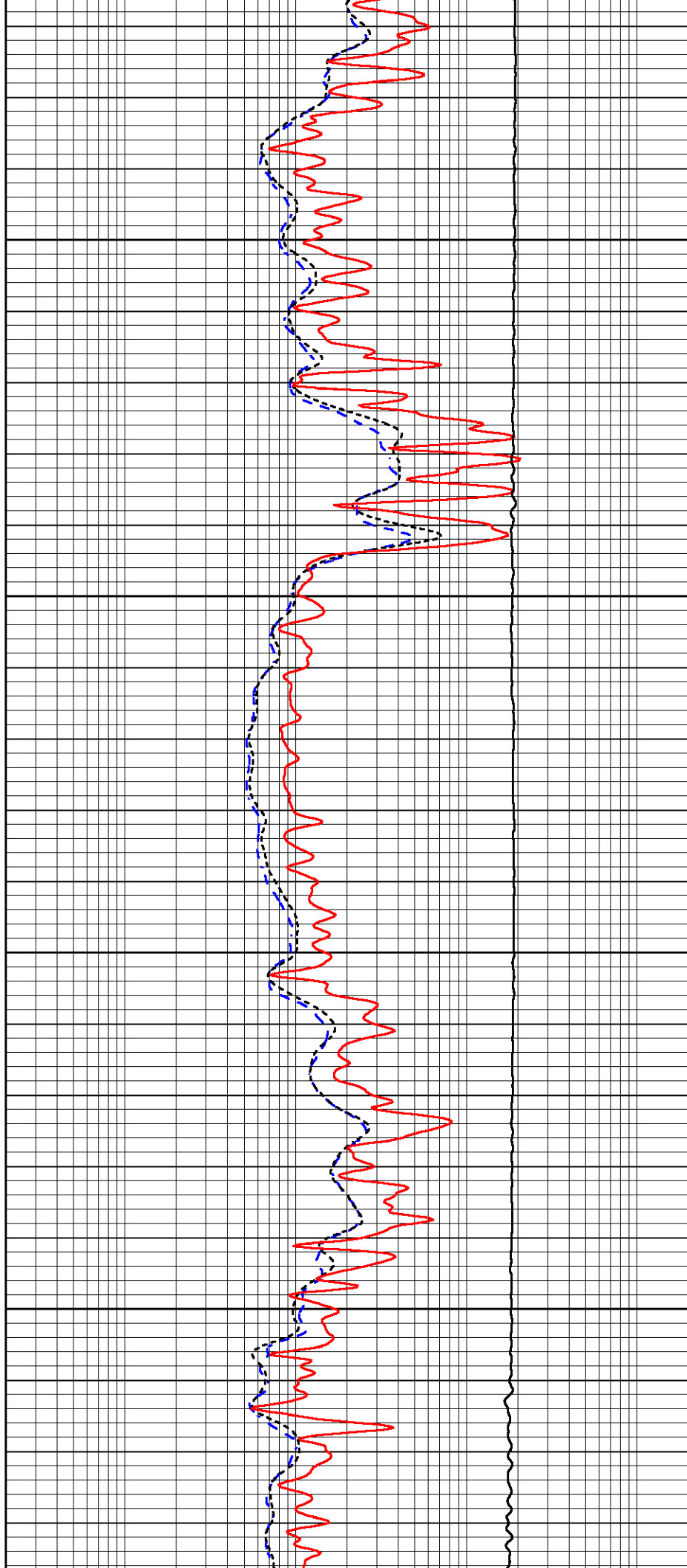


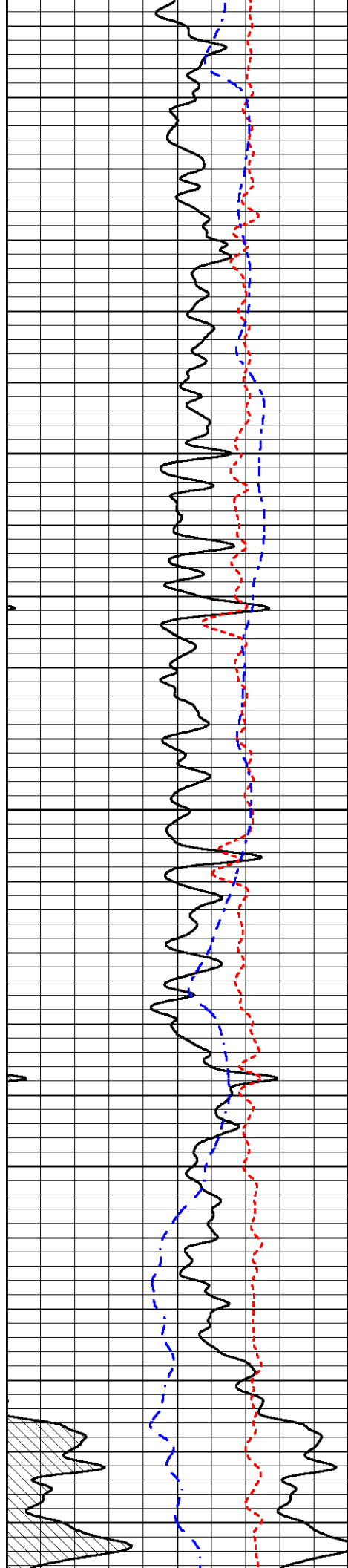
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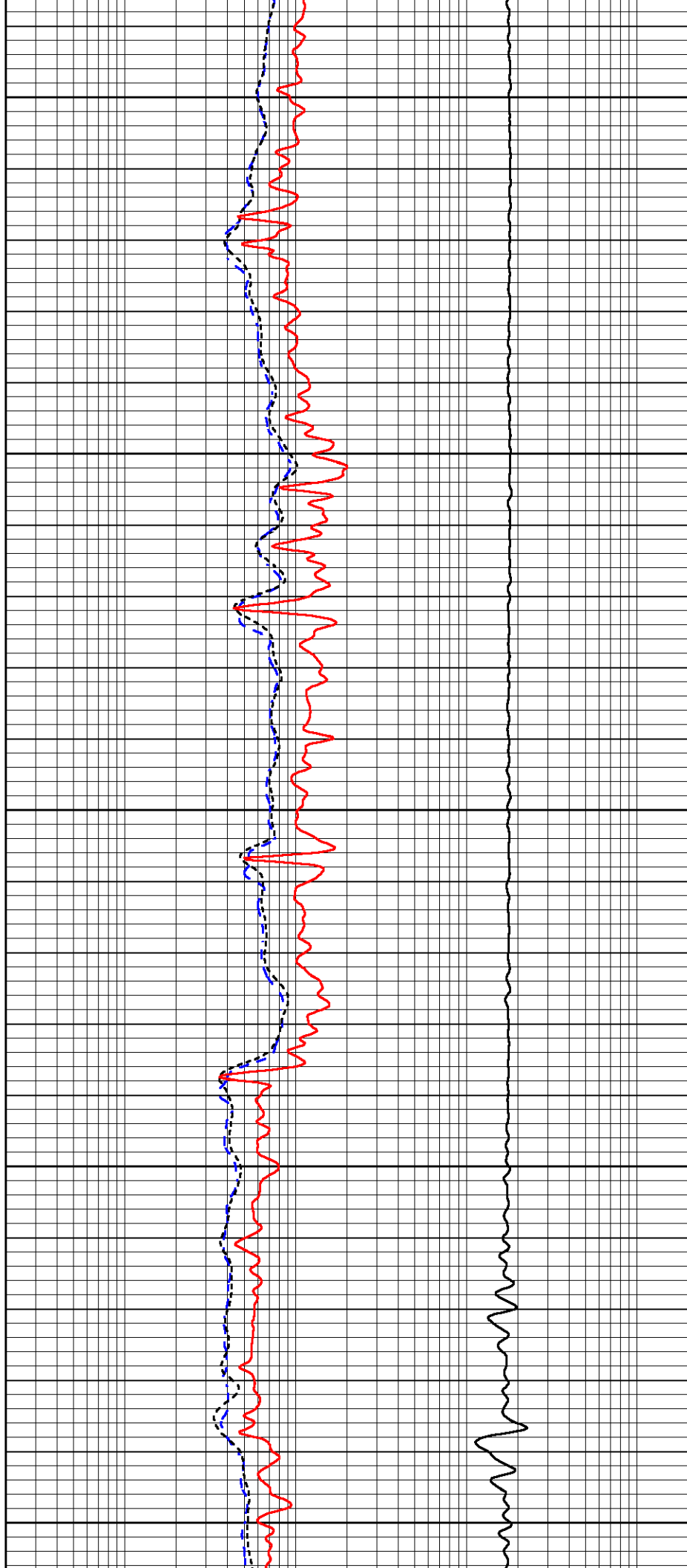
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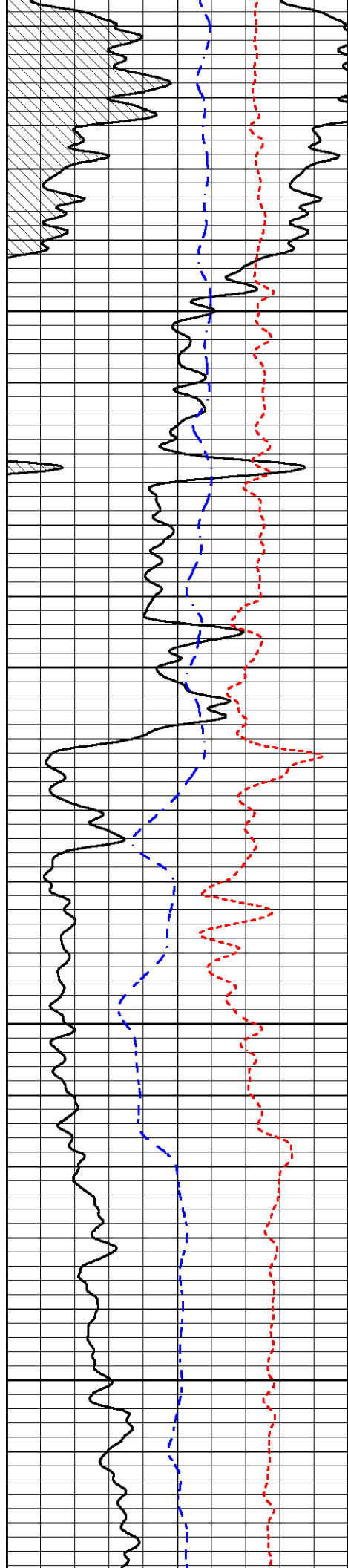
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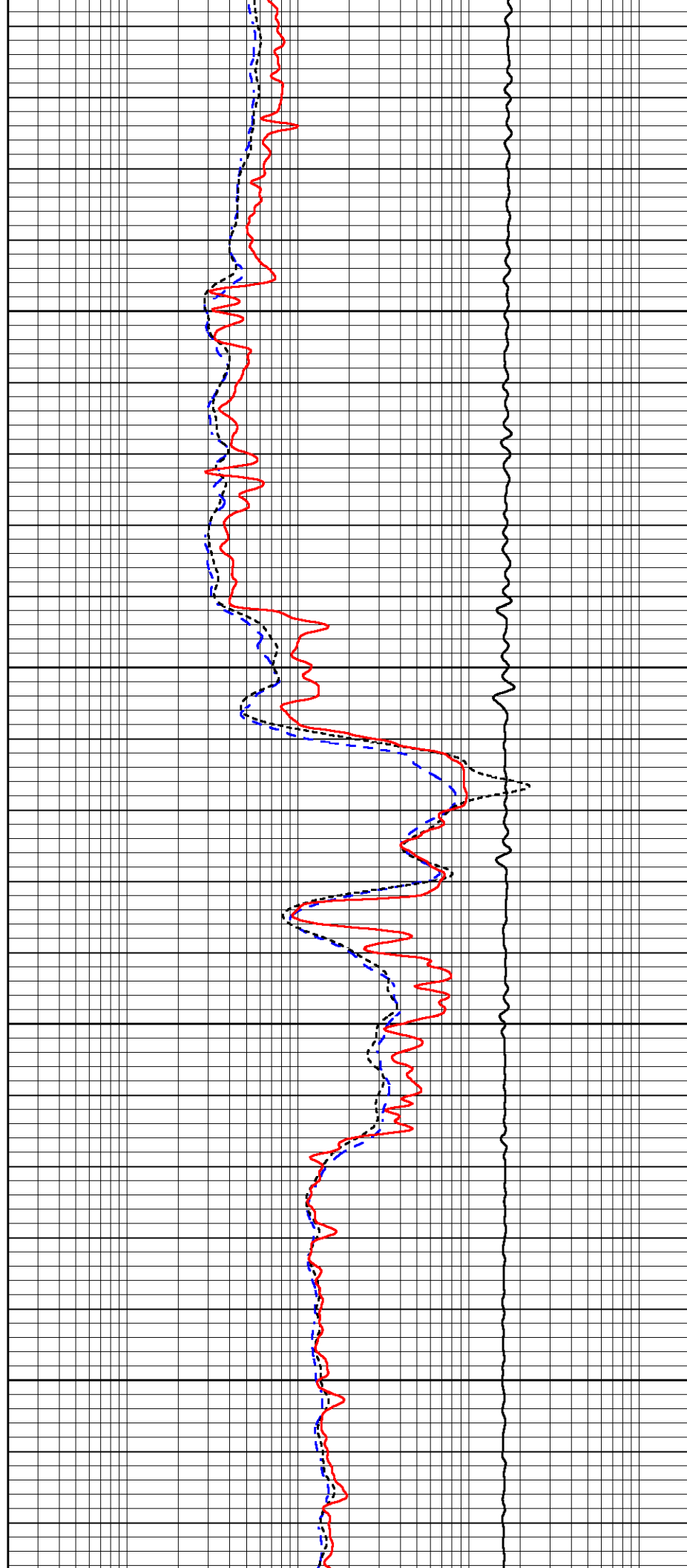


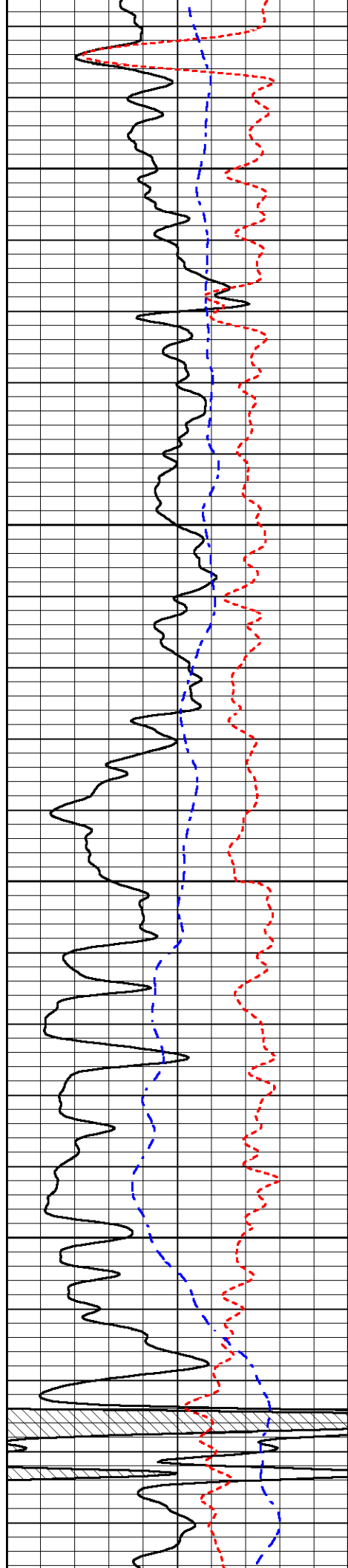
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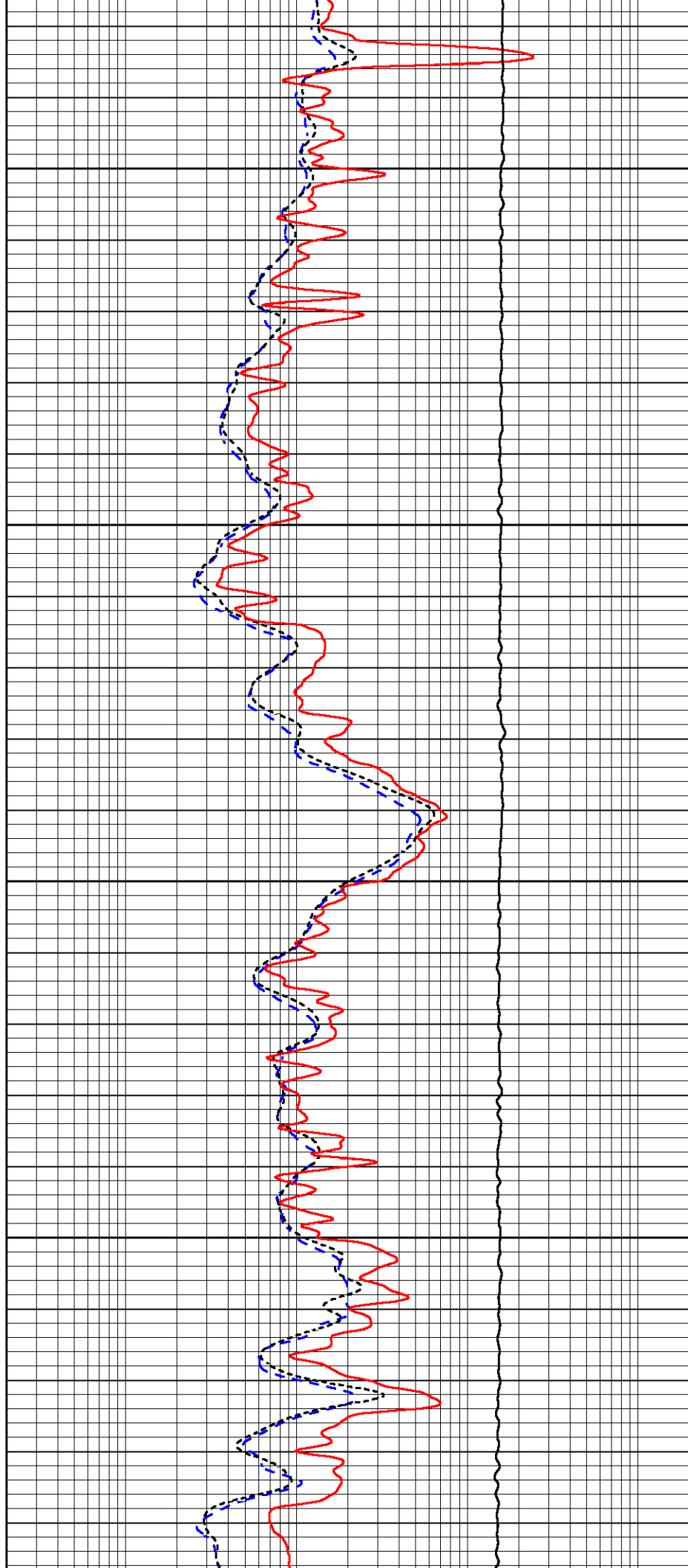


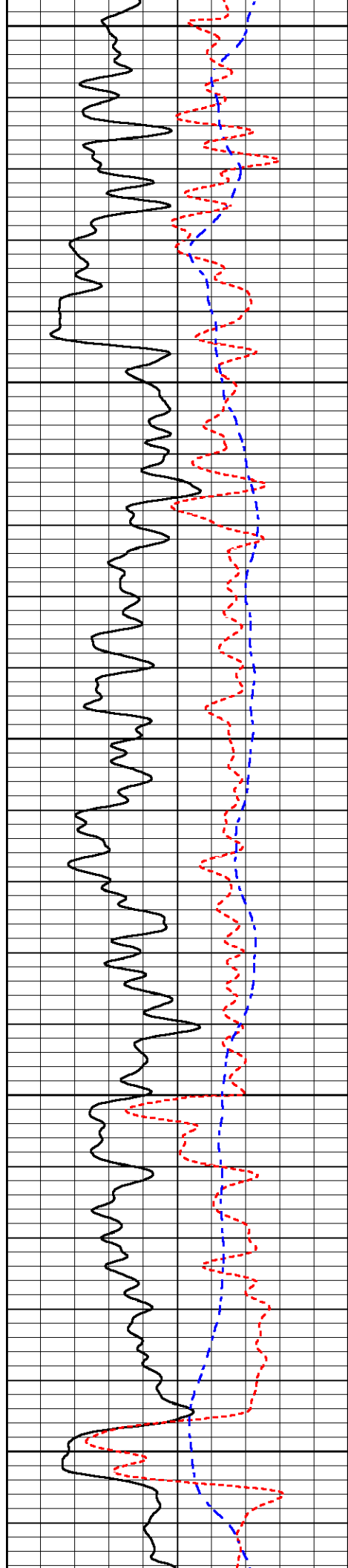
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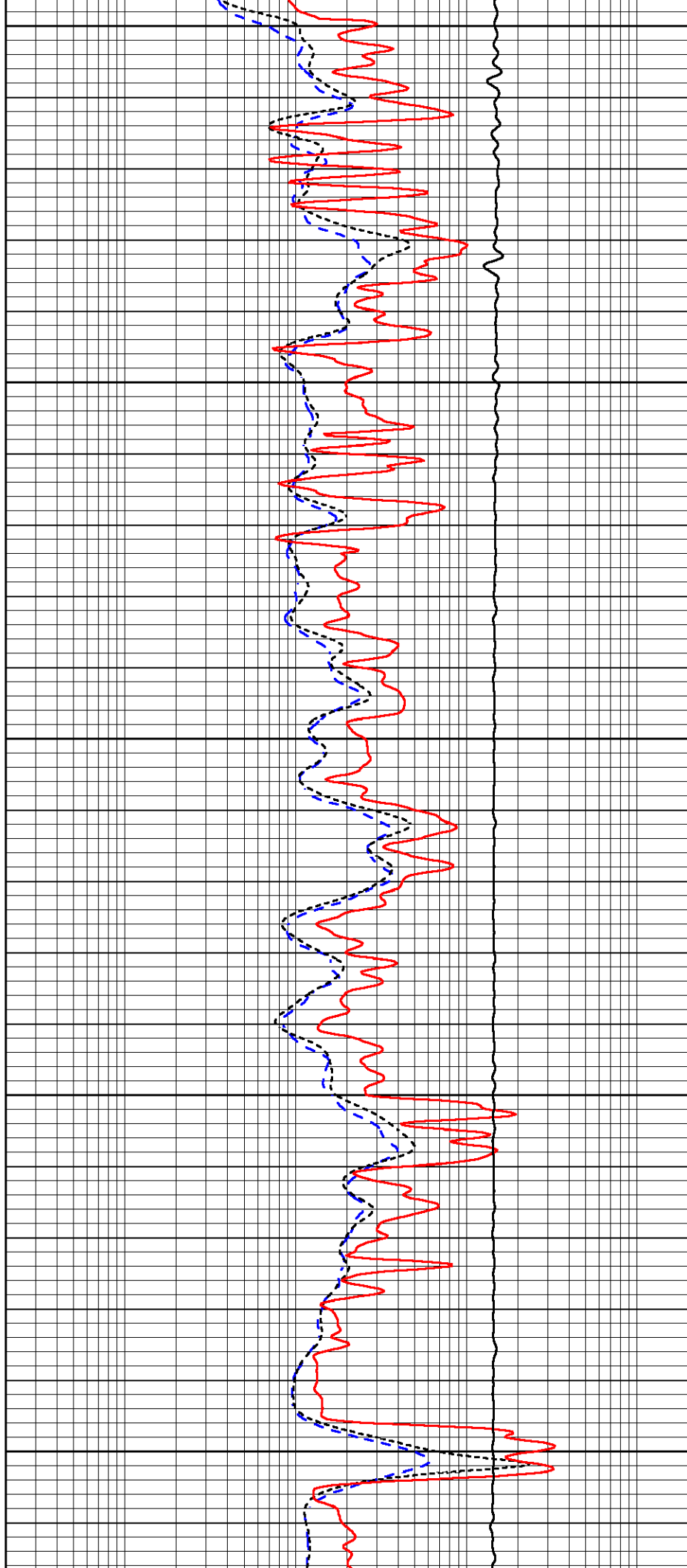
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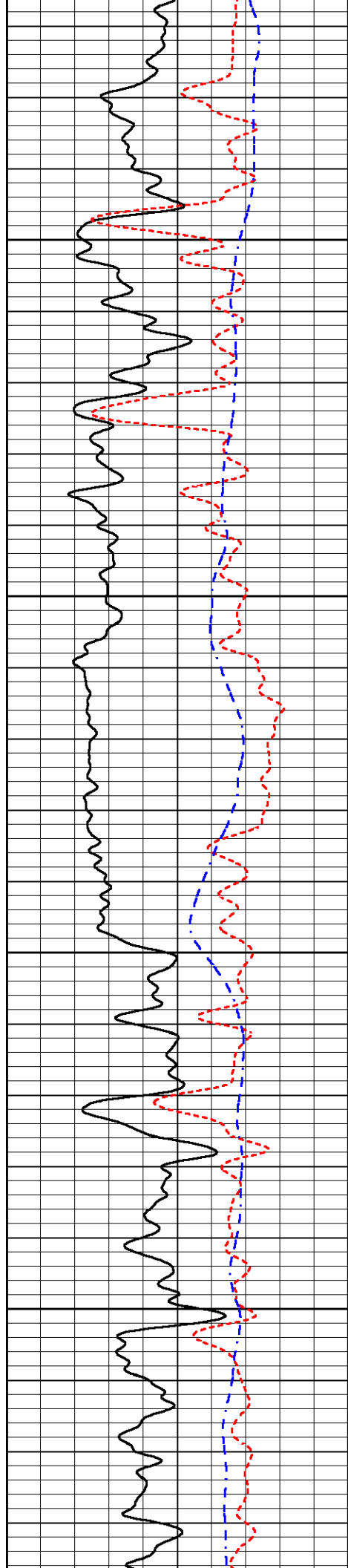
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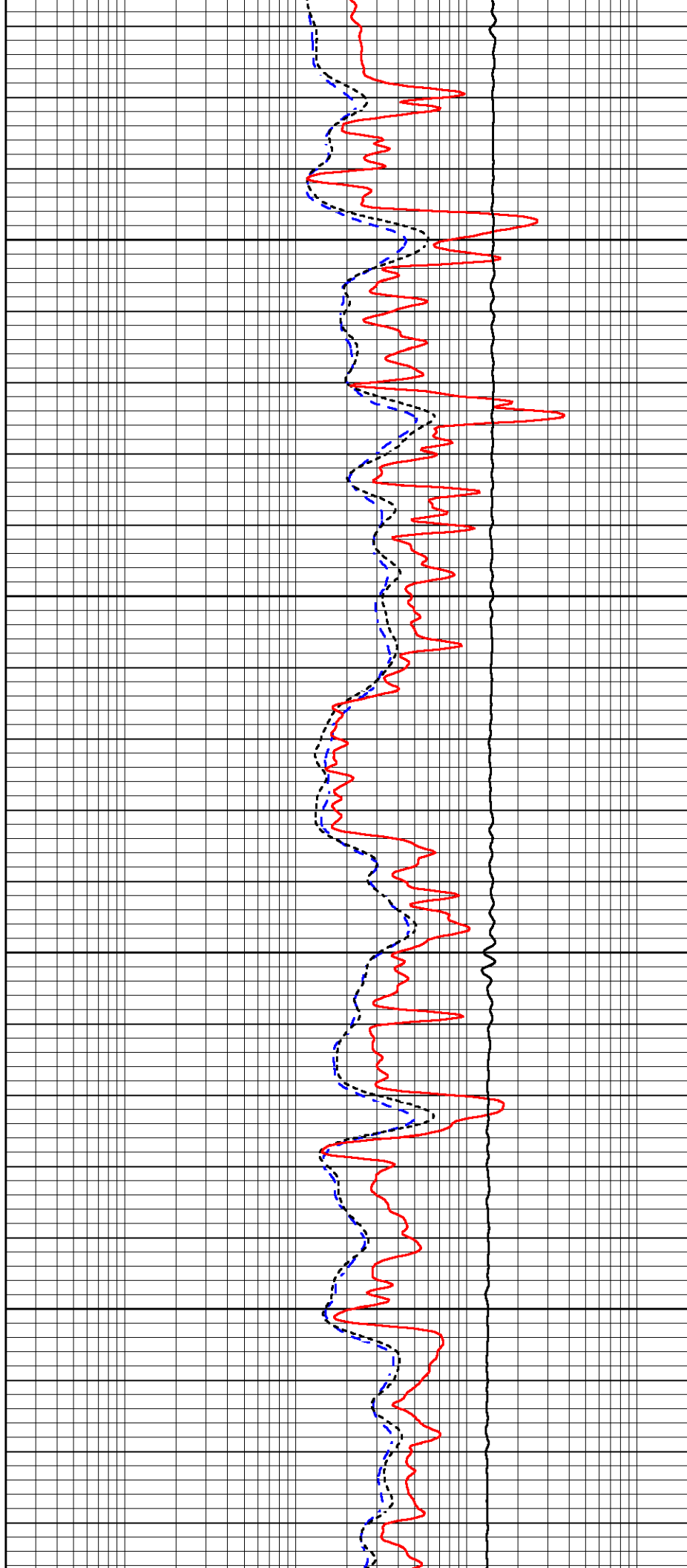


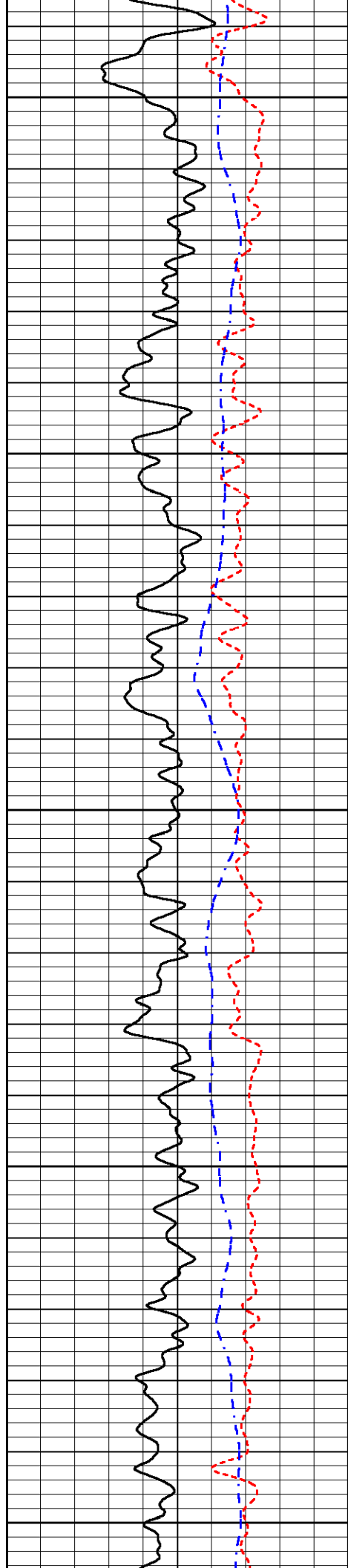
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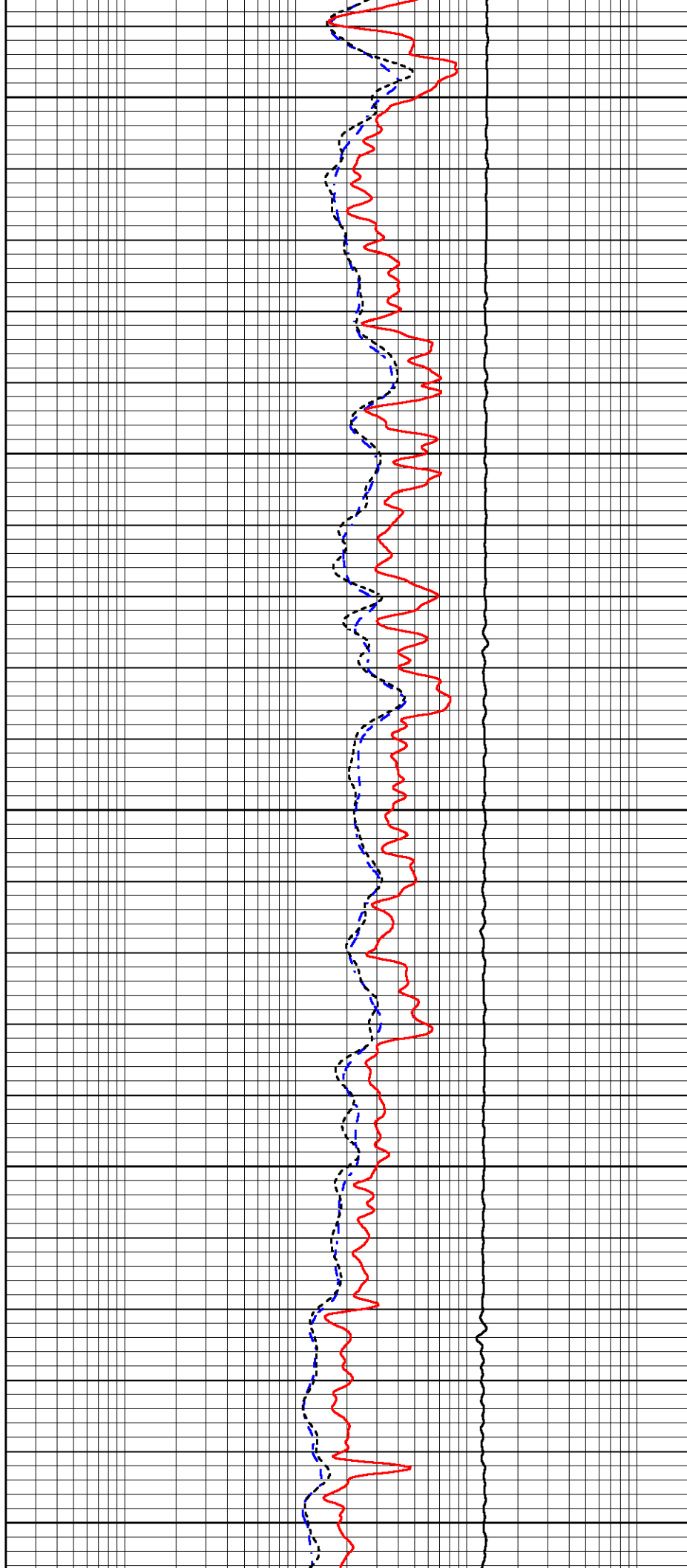
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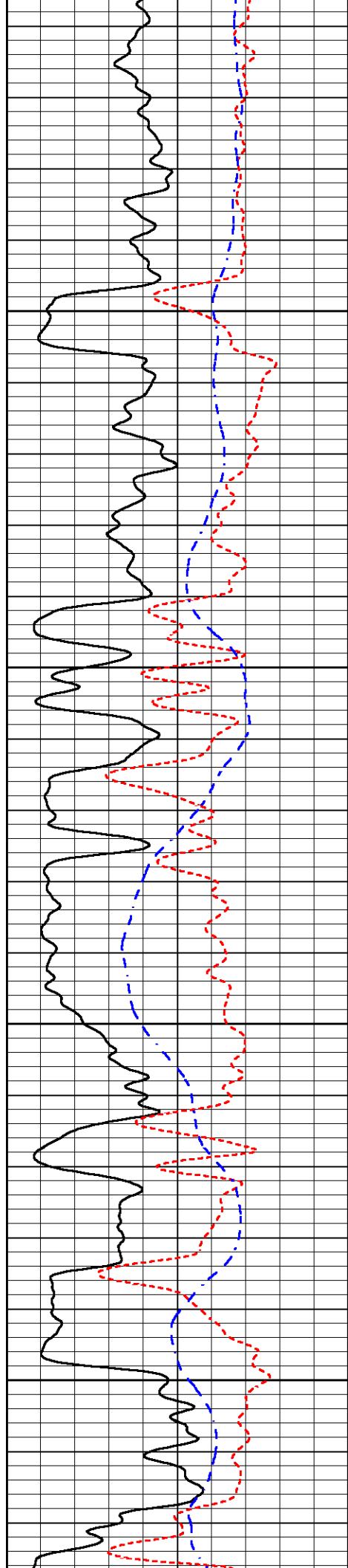
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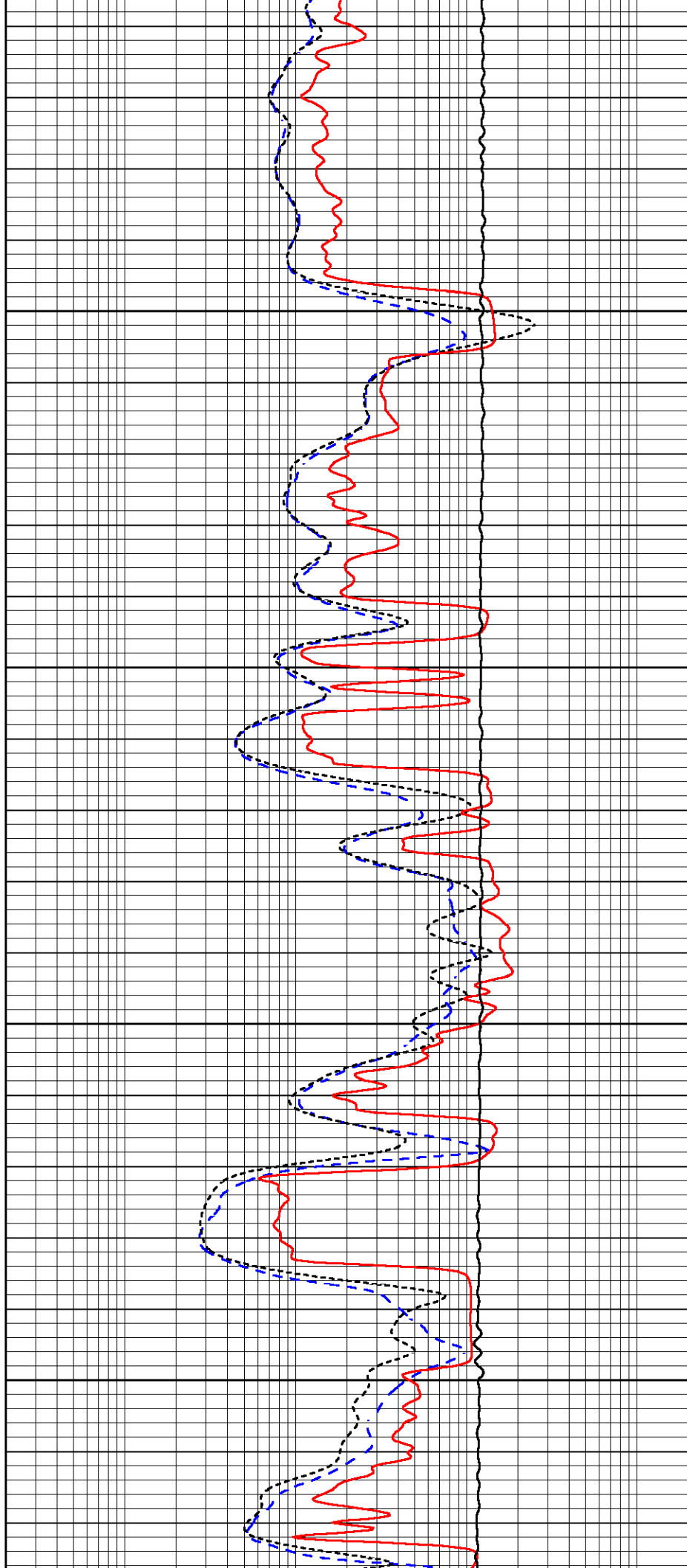


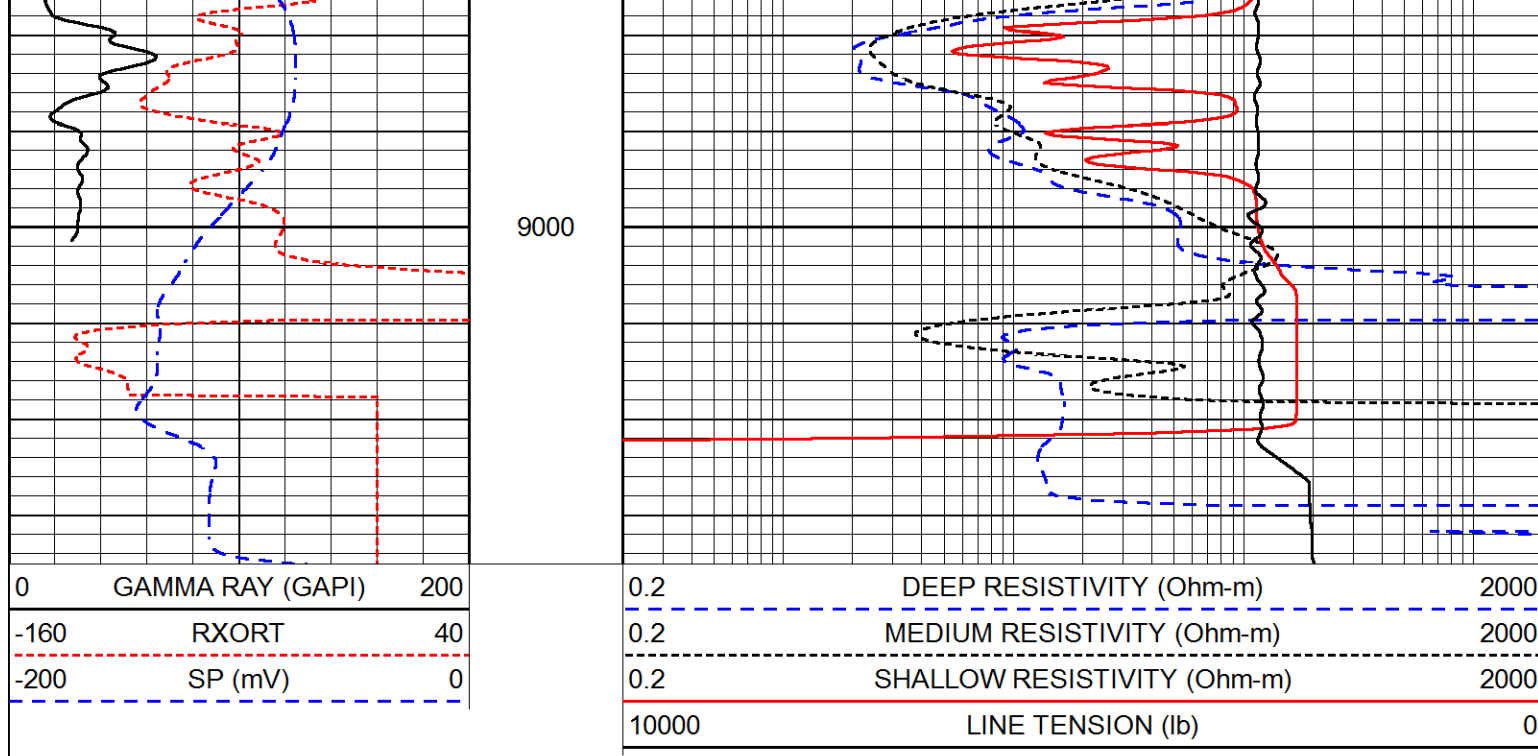
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Calibration Report		
Database File	ngl_ngl_c3b.db	
Dataset Pathname	STACK/pass5.1	
Dataset Creation	Fri Mar 11 05:56:26 2016	

Dual Induction Calibration Report

Serial-Model:	PSI 971 HT-PSI HIGH TEMP
Calibration Performed:	Wed Sep 10 13:12:59 2014

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	0.000	1.000	0.000	1.000	mmho/m	0.475	-32.500
Medium	0.000	1.000	0.000	1.000	mmho/m	0.410	-33.000

Compensated Density Calibration Report

Serial-Model:	71-914-M&W
Source / Verifier:	/
Master Calibration Performed:	Thu Feb 18 12:17:08 2016

Master Calibration							
	Density			Far Detector		Near Detector	
Magnesium	1.755	g/cc		4314.49		5307.52	cps
Aluminum	2.670	g/cc		822.19		3456.36	cps
Spine Angle = 75.49				Density/Spine Ratio = 0.534			
	Size			Reading			
Small Ring	4.00	in		1.16			
Large Ring	14.00	in		1.57			

Compensated Neutron Calibration Report

Serial Number: tk10-MW
Tool Model: M&W
Calibration Performed: Thu Feb 18 10:04:05 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-M&W
Tool Model: M&W
Calibration Performed: Thu Feb 18 15:24:24 2016

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



Company NGL WATER SOLUTIONS DJ, LLC
Well NGL C3B
Field HAMBERT
County WELD
State COLORADO