



PIONEER
Pioneer Energy Services

**DUAL INDUCTION
LOG**

Company MURFIN DRILLING COMPANY, INC.
Well JEAN 'A' #1-7
Field WILDCAT
County KANSAS
State CHEYENNE

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Well JEAN 'A' #1-7
Field WILDCAT
County KANSAS
State CHEYENNE

Location: API #: 15-023-21509-00-00
1320' FSL & 330' FEL
SEC 7 TWP 1S RGE 37W
Permanent Datum GROUND LEVEL Elevation 3163'
Log Measured From KELLY BUSHING
Drilling Measured From KELLY BUSHING
Elevation
K.B. 3168'
D.F. N/A
G.L. 3163'

Date	5/6/2019
Run Number	ONE
Depth Driller	4700'
Depth Logger	4700'
Bottom Logged Interval	4699'
Top Log Interval	00'
Casing Driller	8.625" @ 330'
Casing Logger	329'
Bit Size	7.875"
Type Fluid in Hole	CHEMICAL
Salinity, ppm CL	900
Density / Viscosity	9.2 64
pH / Fluid Loss	10.5 6.0
Source of Sample	FLOWLINE
Rm @ Meas. Temp	.95 @ 71
Rmt @ Meas. Temp	.71 @ 71
Rmc @ Meas. Temp	1.28 @ 71
Source of Rmf / Rmc	CHARTS
Rm @ BHT	.55 @ 123
Operating Rig Time	5 HOURS
Max Rec. Temp. F	123 DEGF
Equipment Number	P-108
Location	HAYS
Recorded By	J. HENRICKSON
Witnessed By	ROBERT HENDRIX

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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 KANSAS
NORTH TO DD ROAD, 3 EAST TO THE T, 1 SOUTH, WEST INTO

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

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

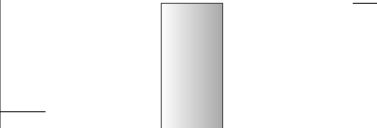
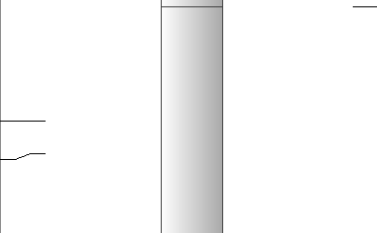
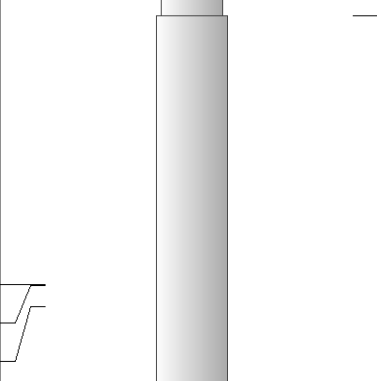
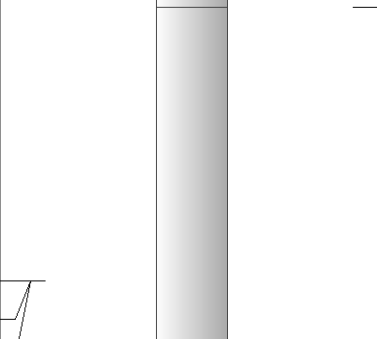
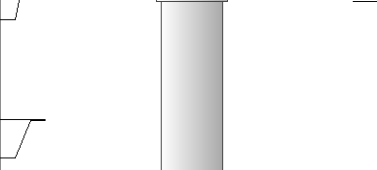
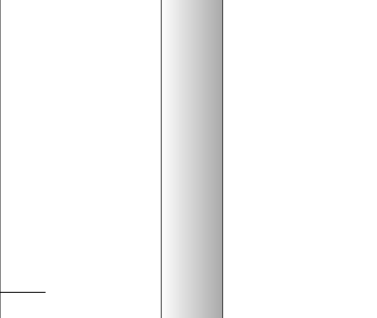
Your Pioneer Energy Services Crew	This Log Record Was Witnessed By
Engineer: J. HENRICKSON	Primary Witness: ROBERT HENDRIX
Operator:	Secondary Witness:
Operator:	Secondary Witness:
Operator:	Secondary Witness:

Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfin_jean_a_1_7.db
Dataset field/well/stackml/pass3.1/_vars_

Top - Bottom

A	BOREID in	BOTTEMP degF	CASEOD in	CASETHCK in	FLUIDDEN g/cc	M	MATRXDEN g/cc
1	7.875	123	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	46	Off	4700

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
GR	40.58		GR-M&W (89-M&W)	3.00	3.50	50.00
CNLSC CNSSC	37.48 36.73		CNT-M&W (tk10-MW)	5.50	3.50	100.00
LSD DCAL SSD	28.43 28.42 27.93		CDL-M&W (144-84)	8.50	4.00	250.00
MCAL MI MN	19.83 19.83 19.83		ML-PSI STKBL ML (PSI-01) Stackable Microlog Tools	7.58	4.00	65.00
RLL3 RLL3F	15.80 15.79					
CILD	8.00		DIL-M&W (PSI 988)	18.50	3.50	220.00

CILM 4.70

SP 0.20

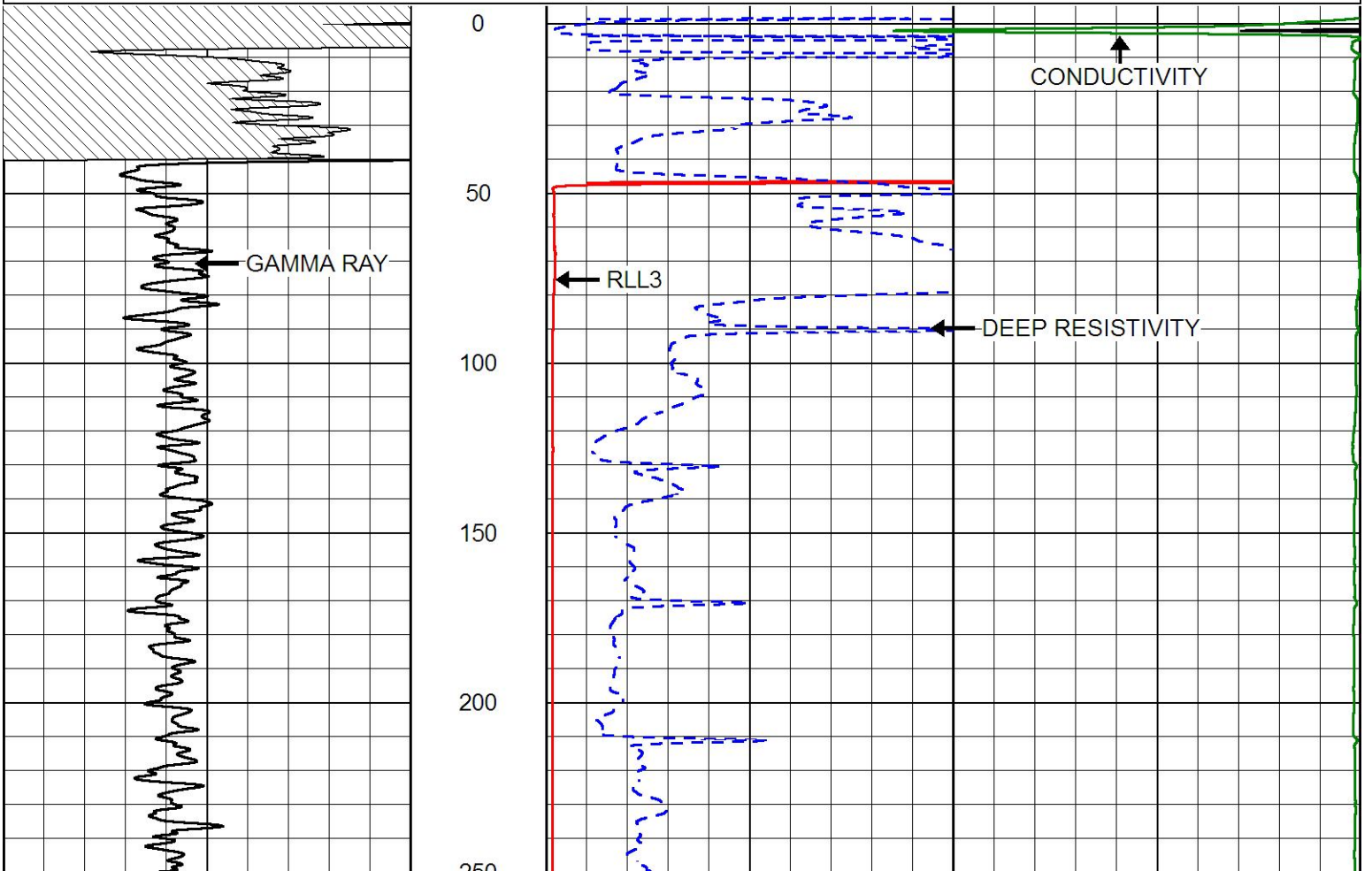
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 Total weight: 685.00 lb
 O.D.: 4.00 in

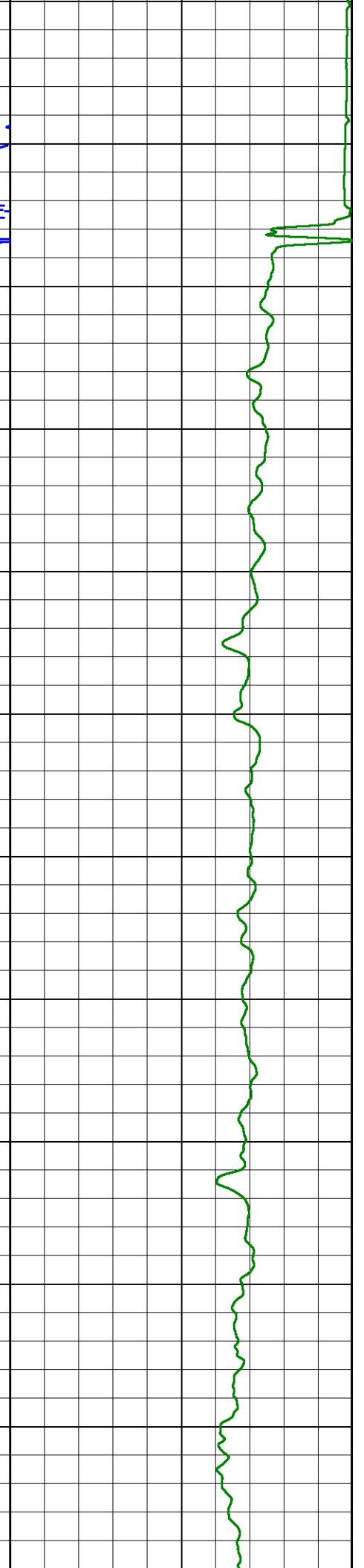
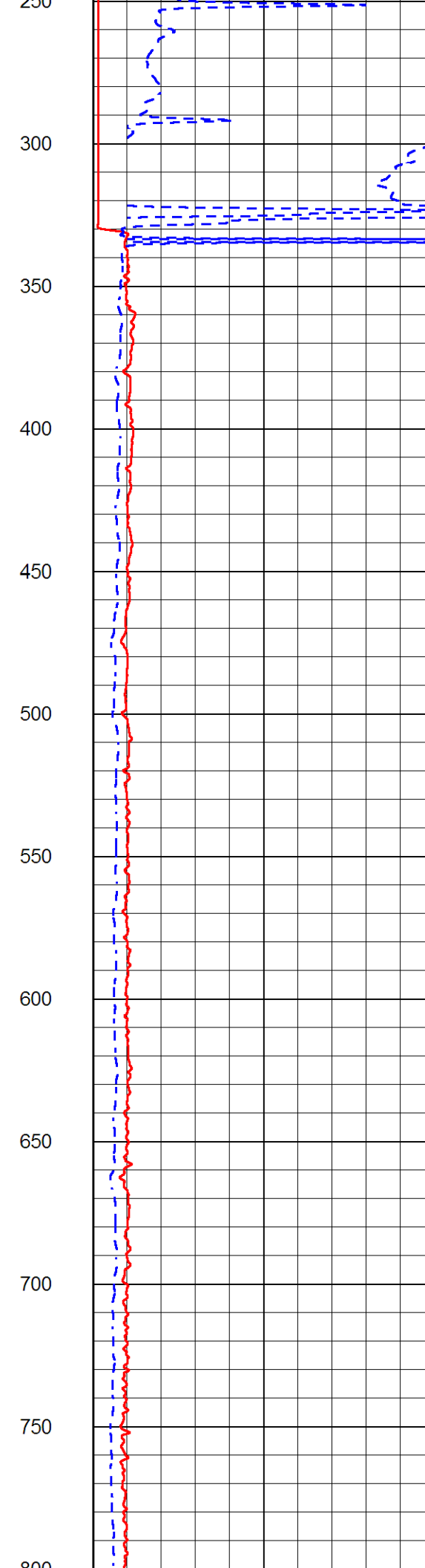
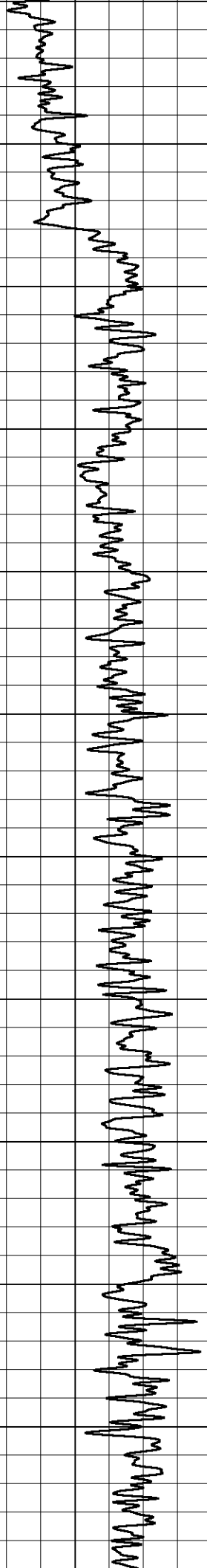


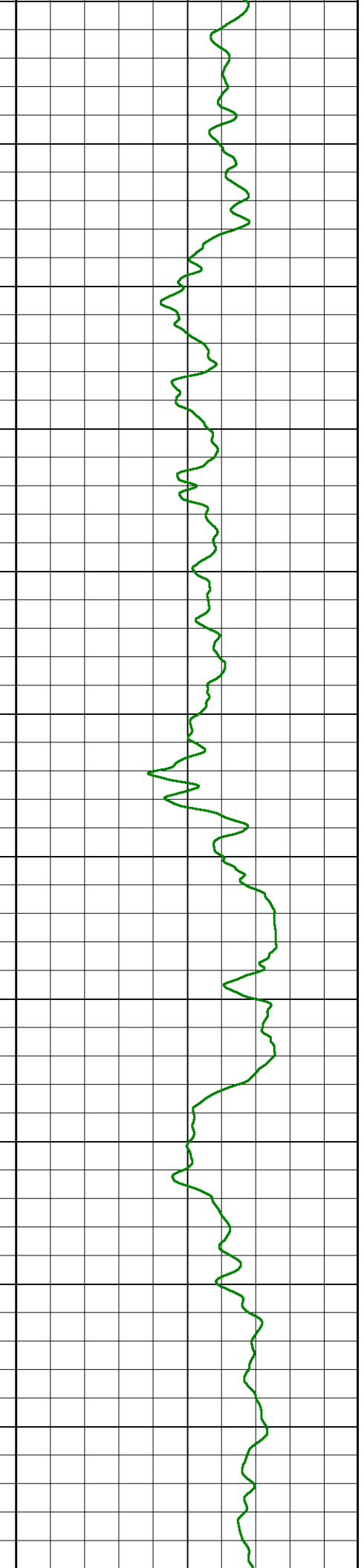
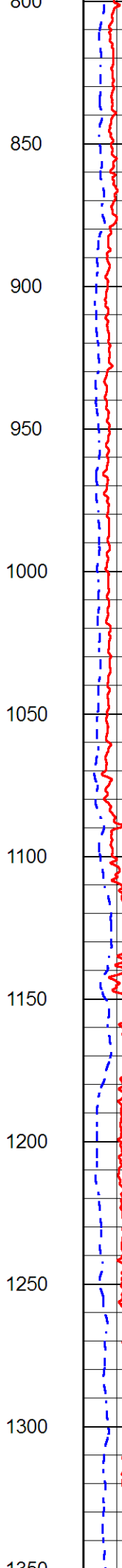
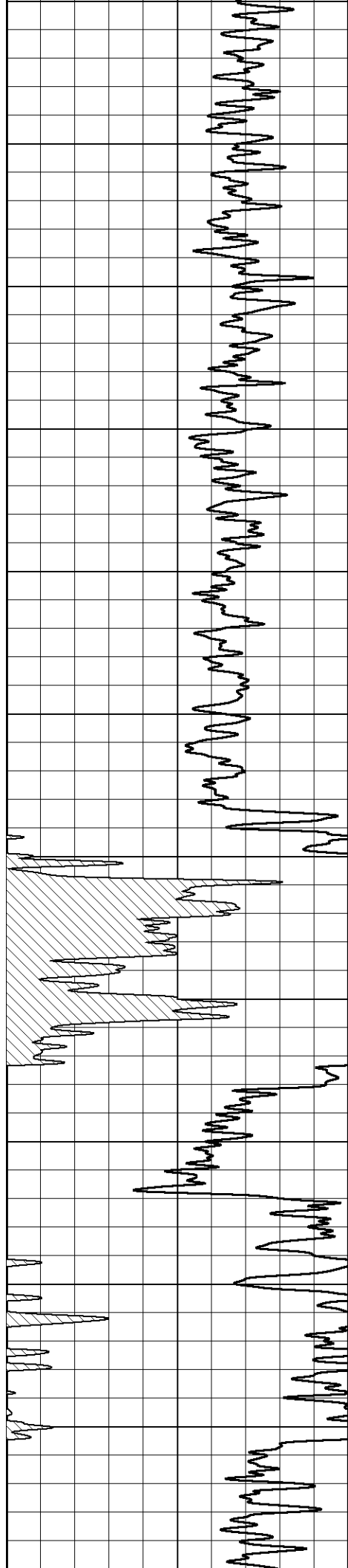
MAIN PASS

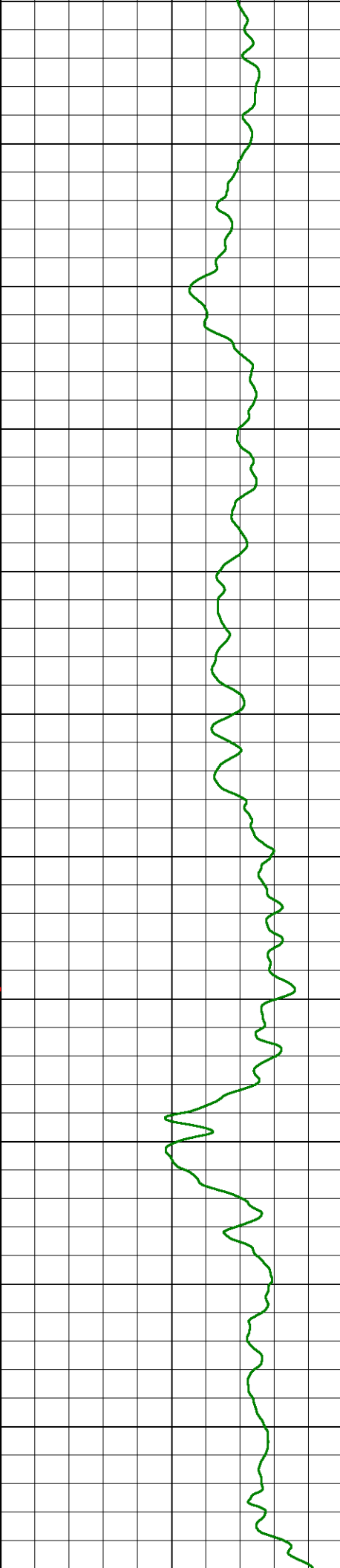
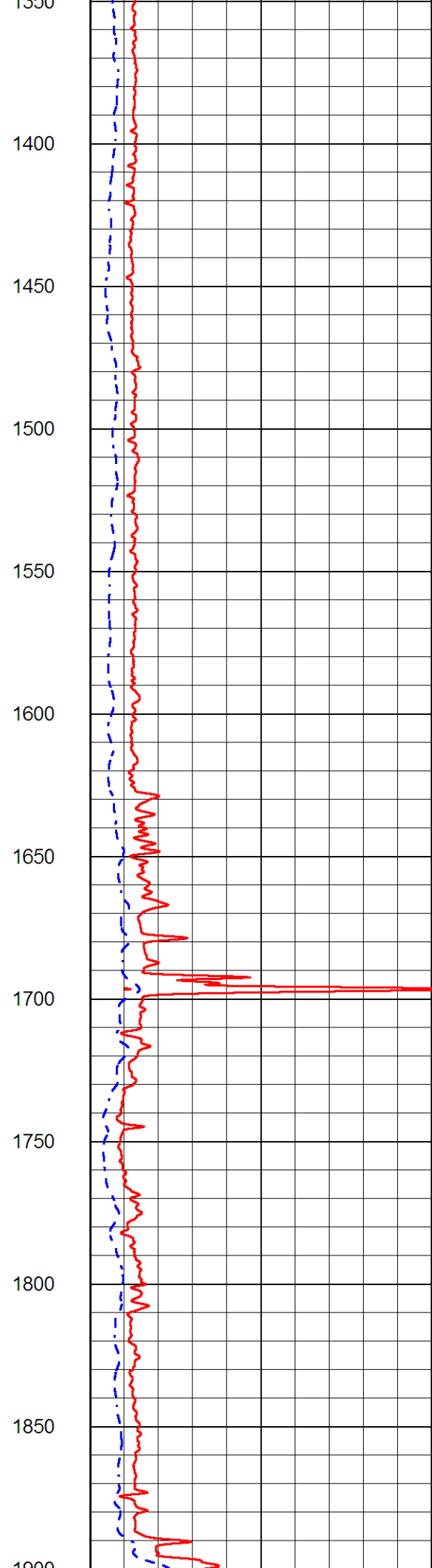
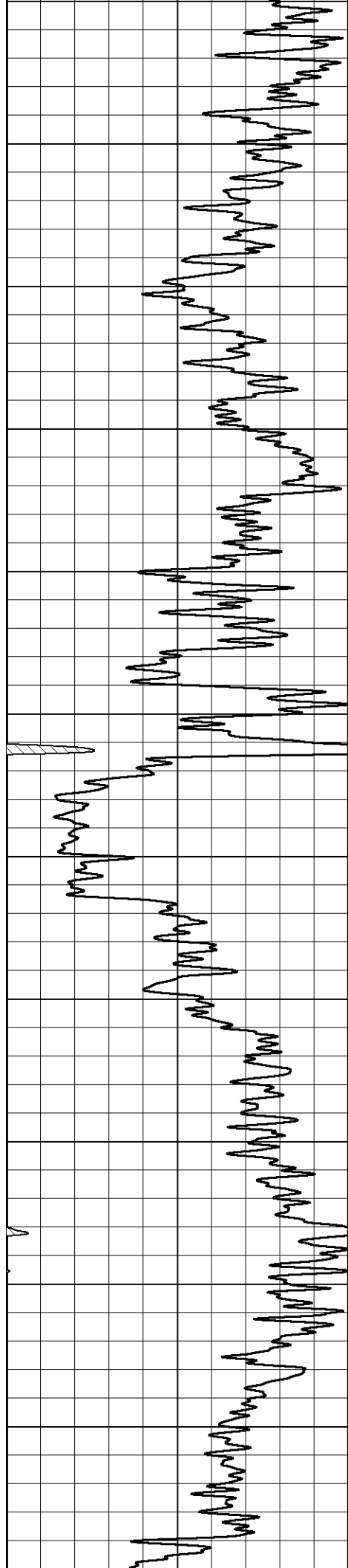
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 Dataset Pathname stackml/pass3.1
 Presentation Format dil2in
 Dataset Creation Mon May 06 21:28:50 2019
 Charted by Depth in Feet scaled 1:600

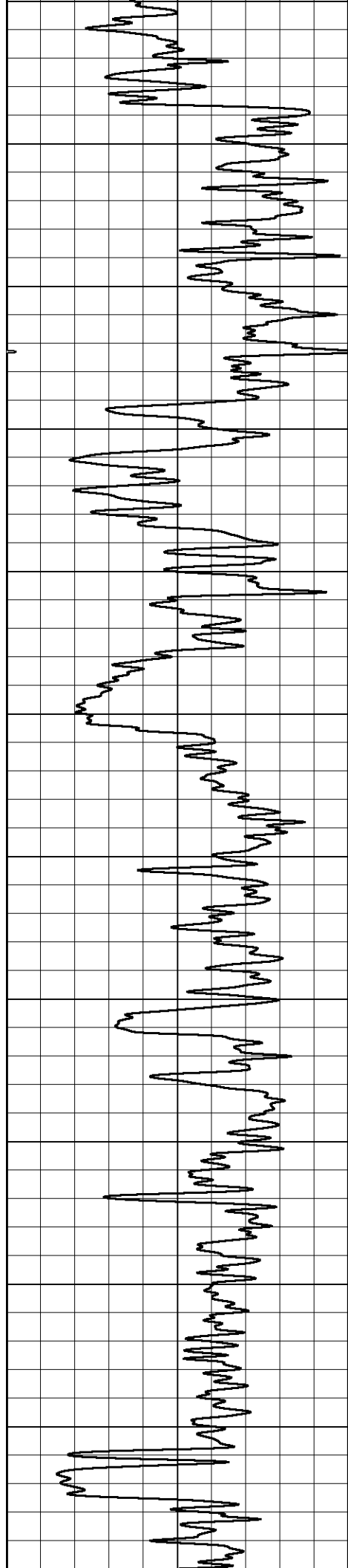
0	GAMMA RAY (GAPI)	150	2000	CILD (mmho/m)	0
			0	RLL3 (Ohm-m)	50
			0	DEEP RESISTIVITY (Ohm-m)	50
			50	RLL3 (Ohm-m)	200
			50	RILD (Ohm-m)	200



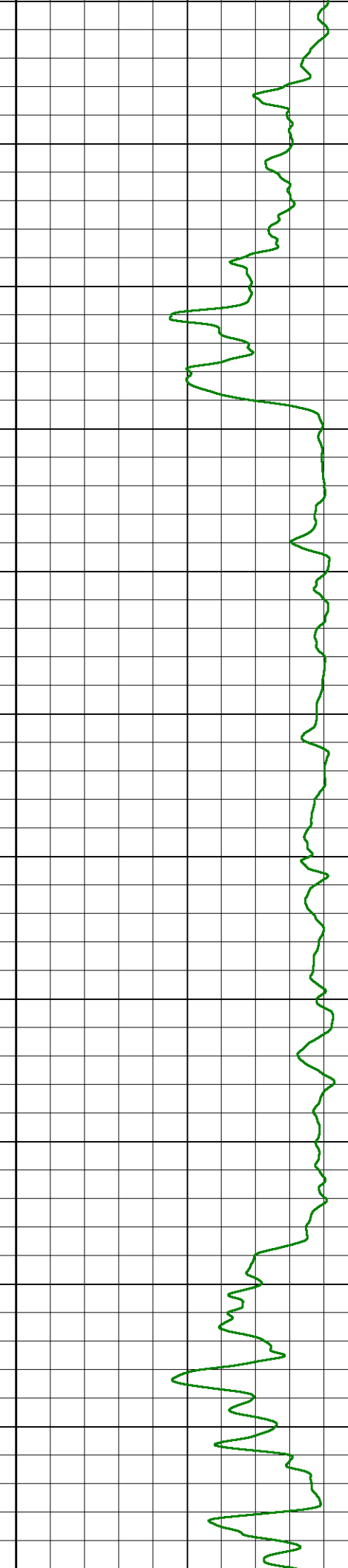
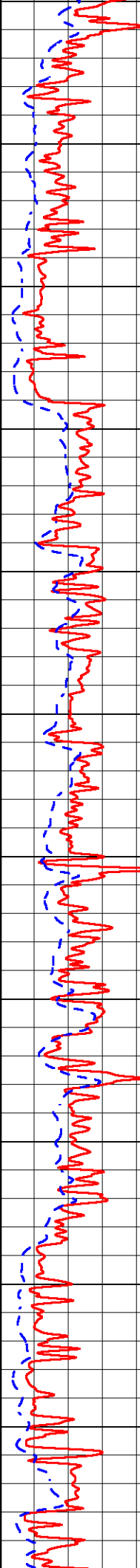


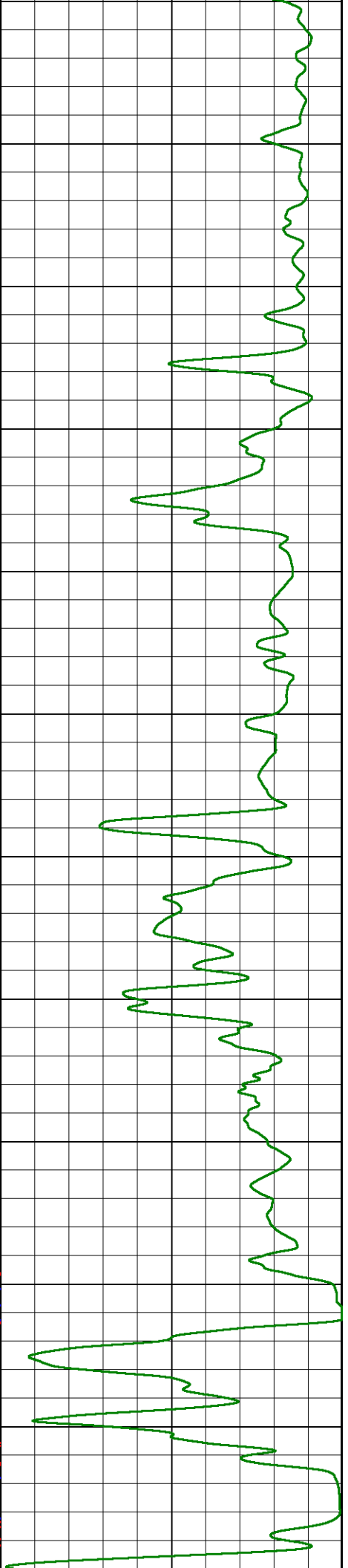
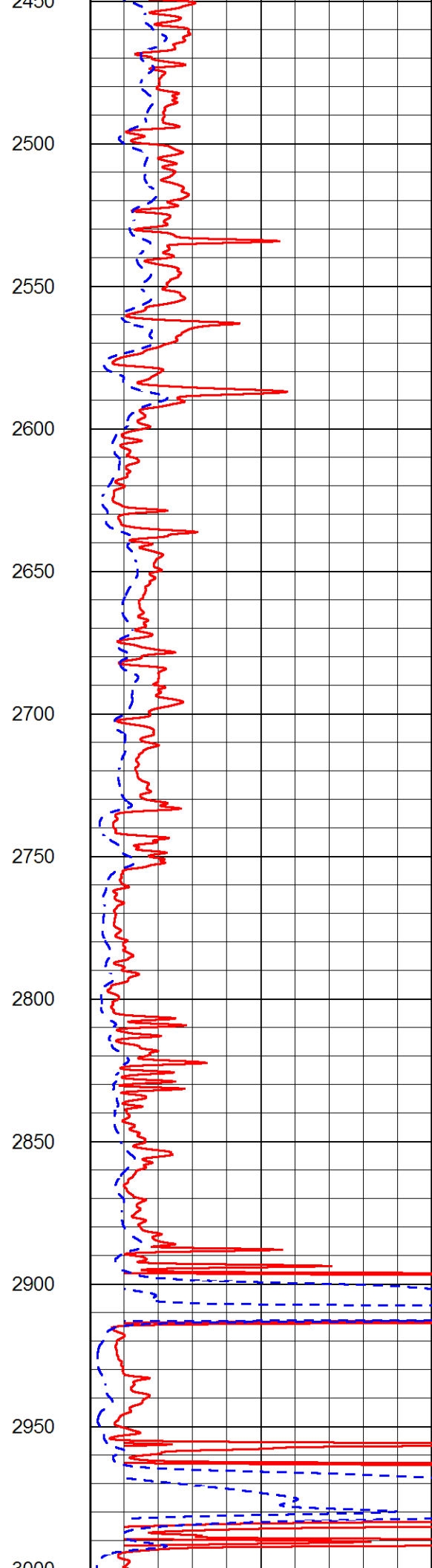
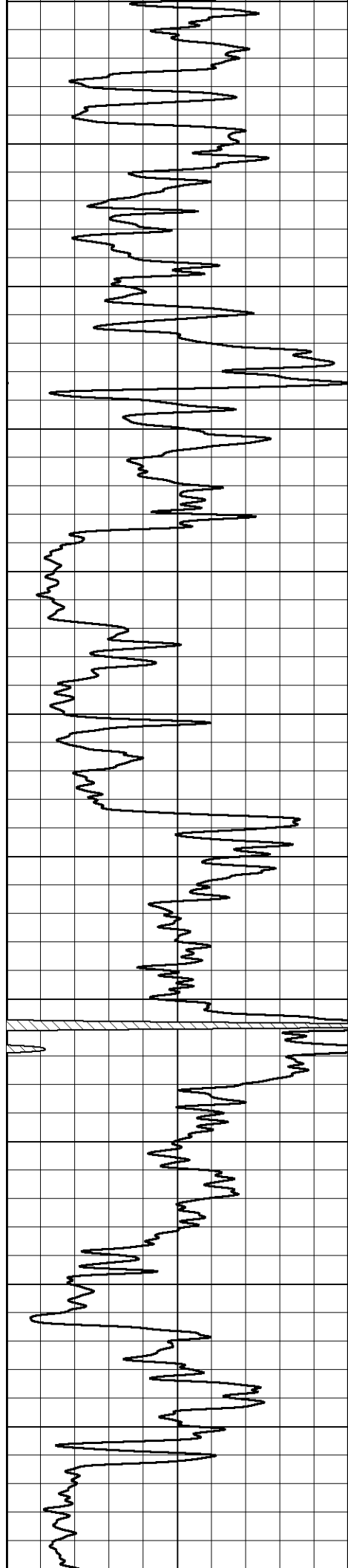


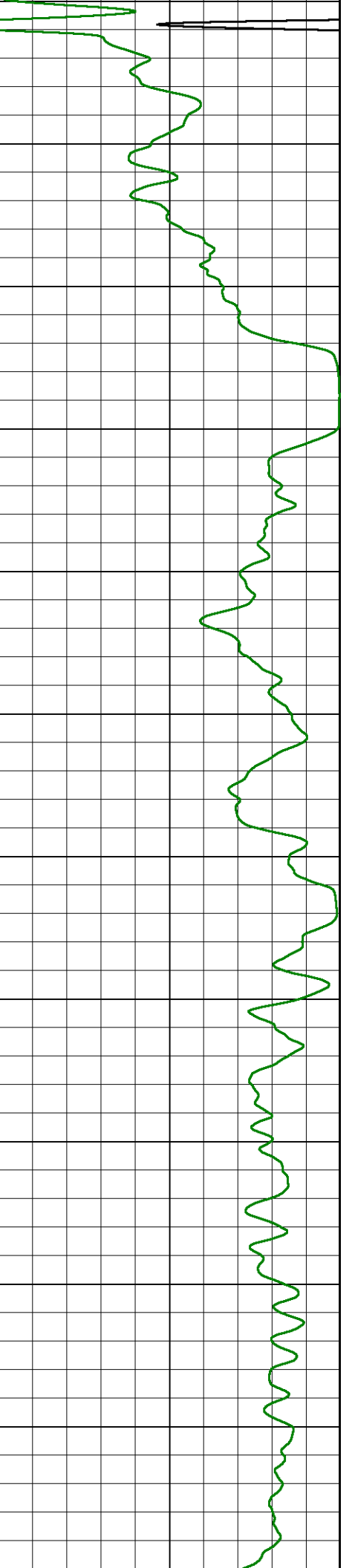
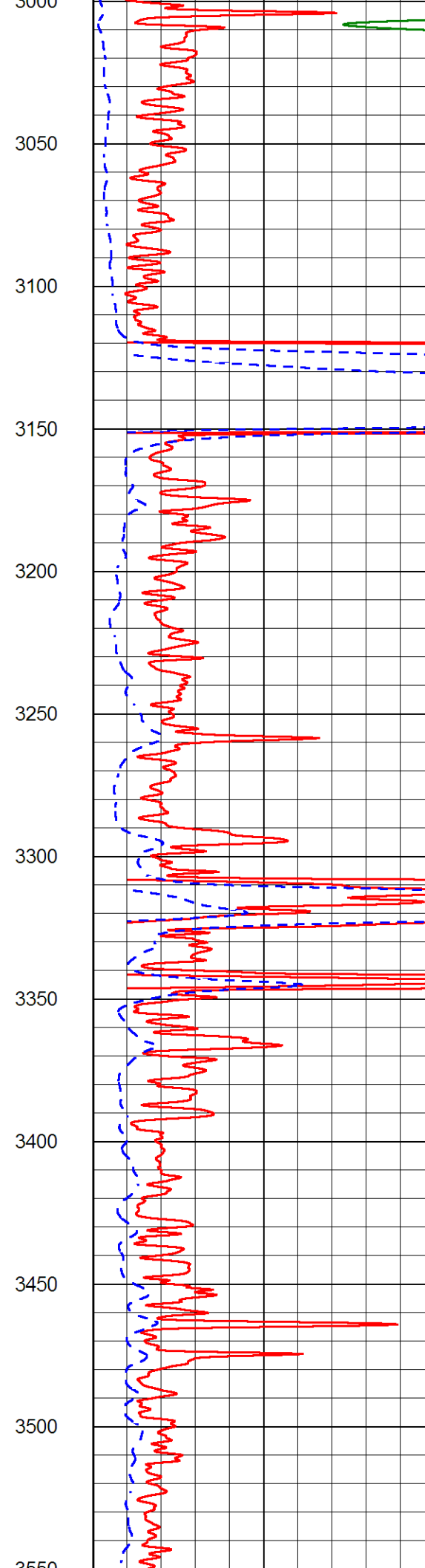
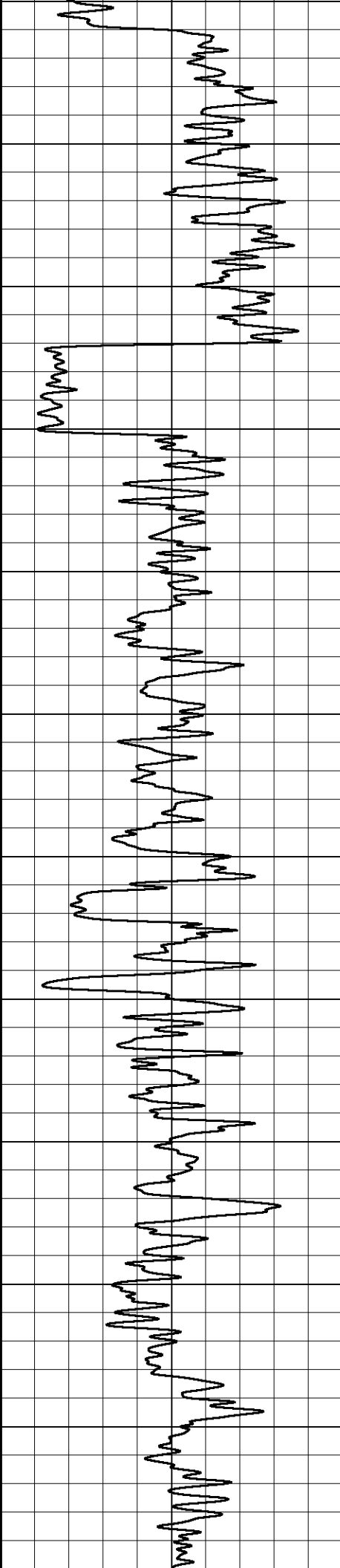


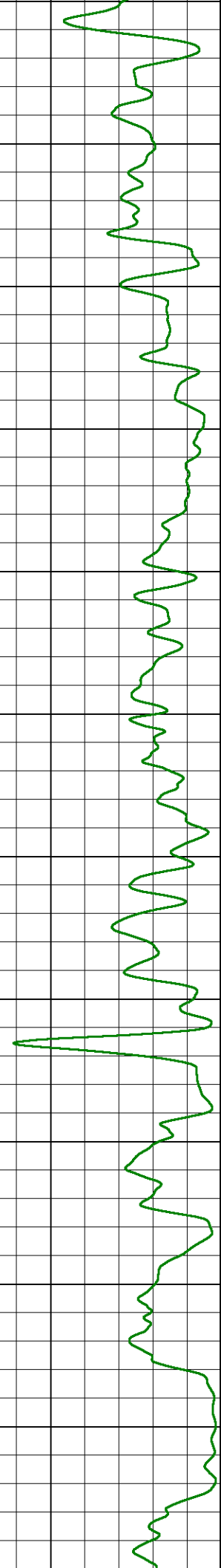
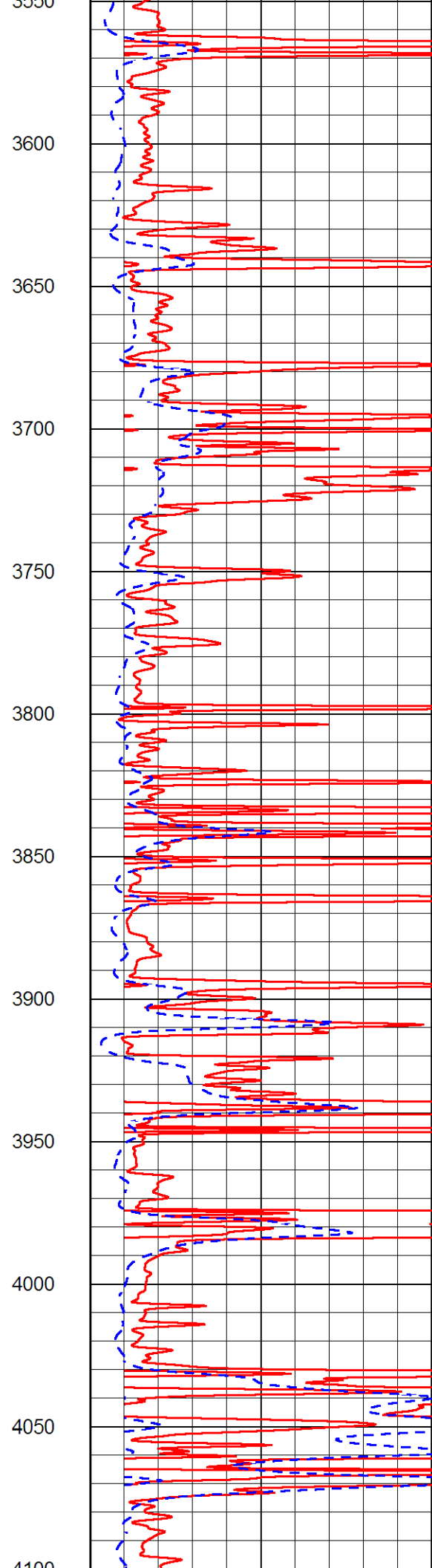
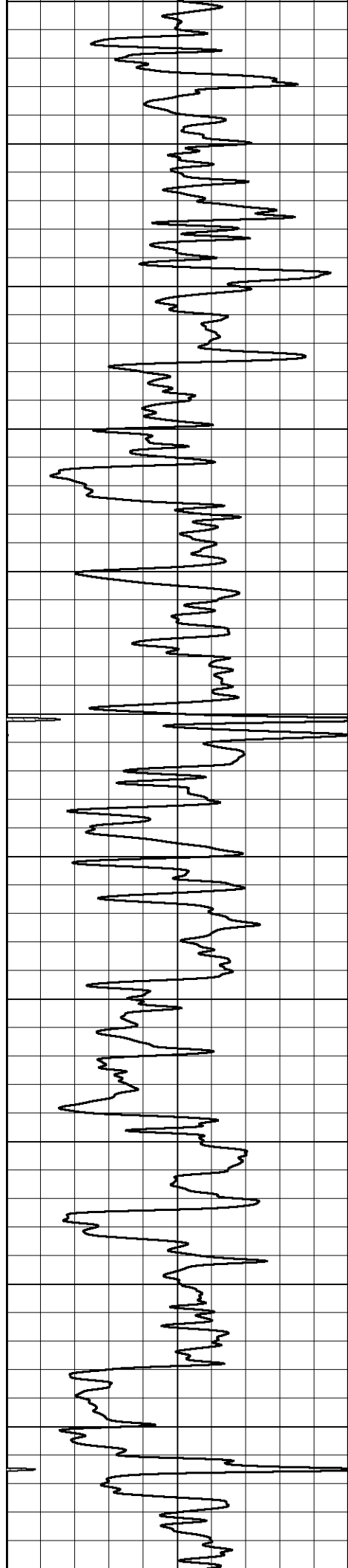


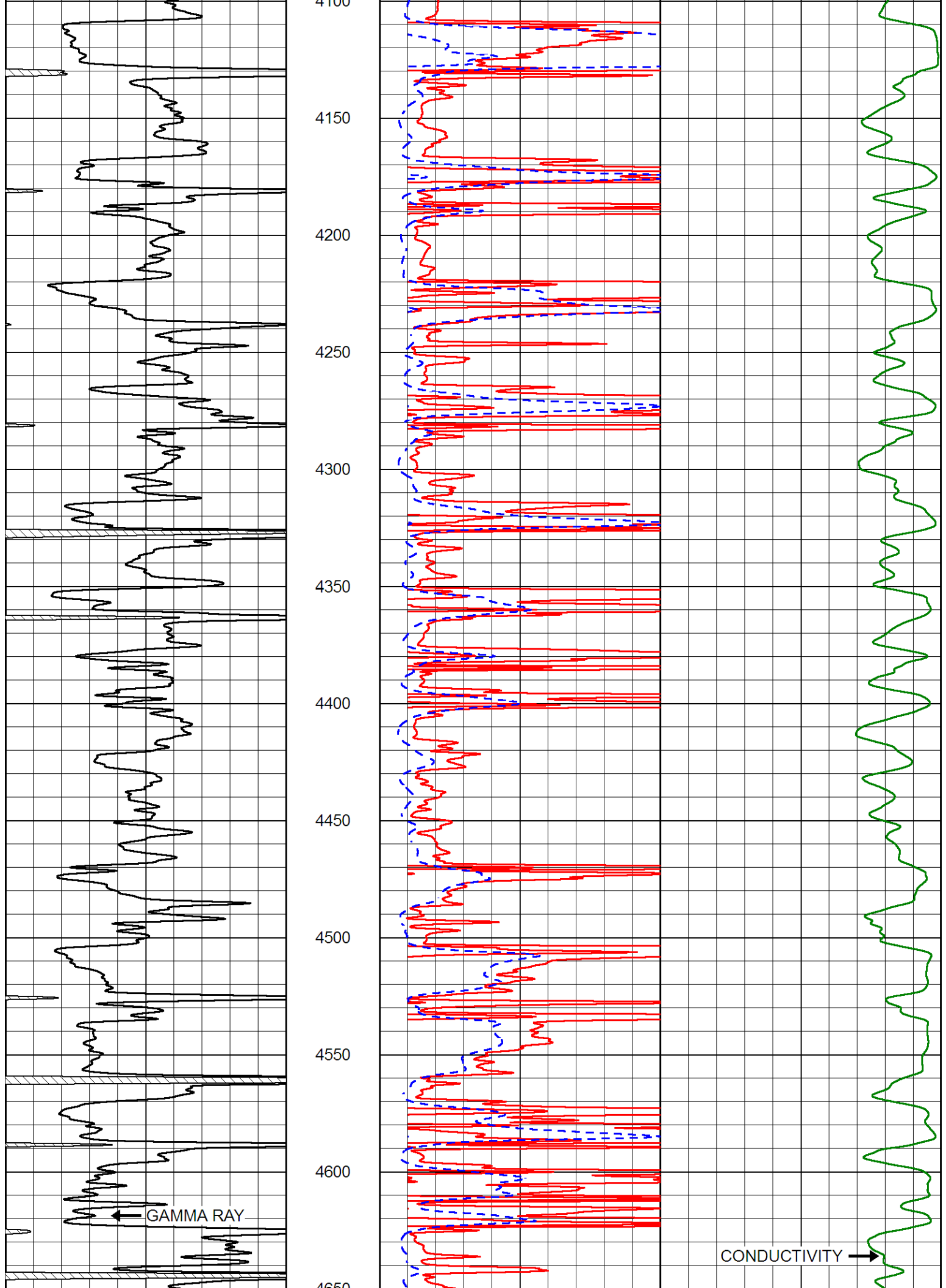
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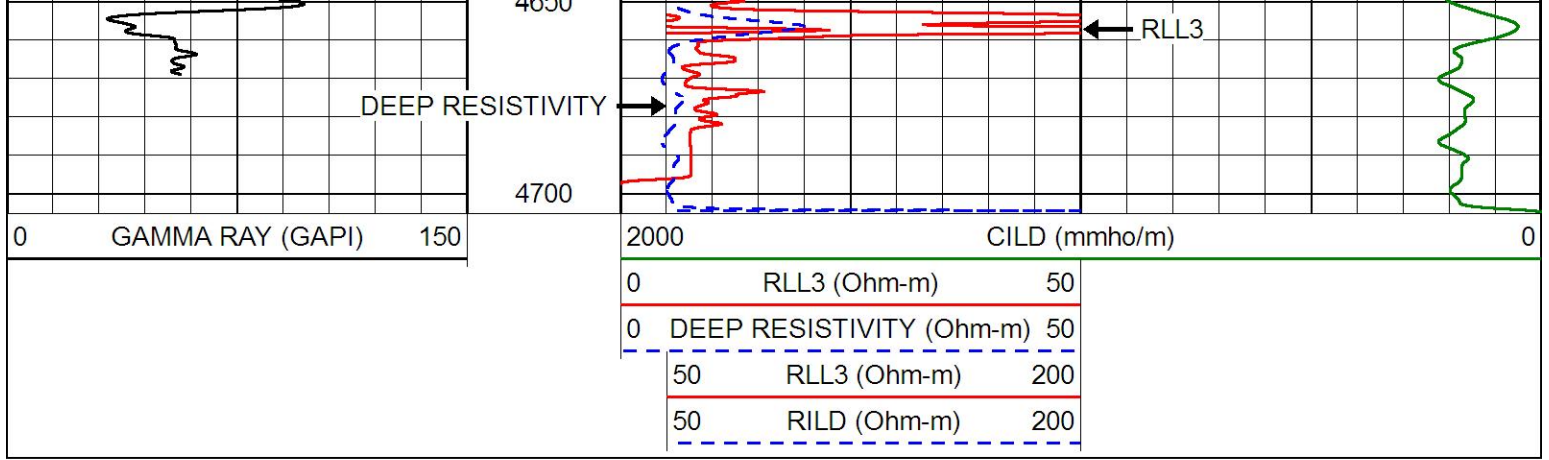








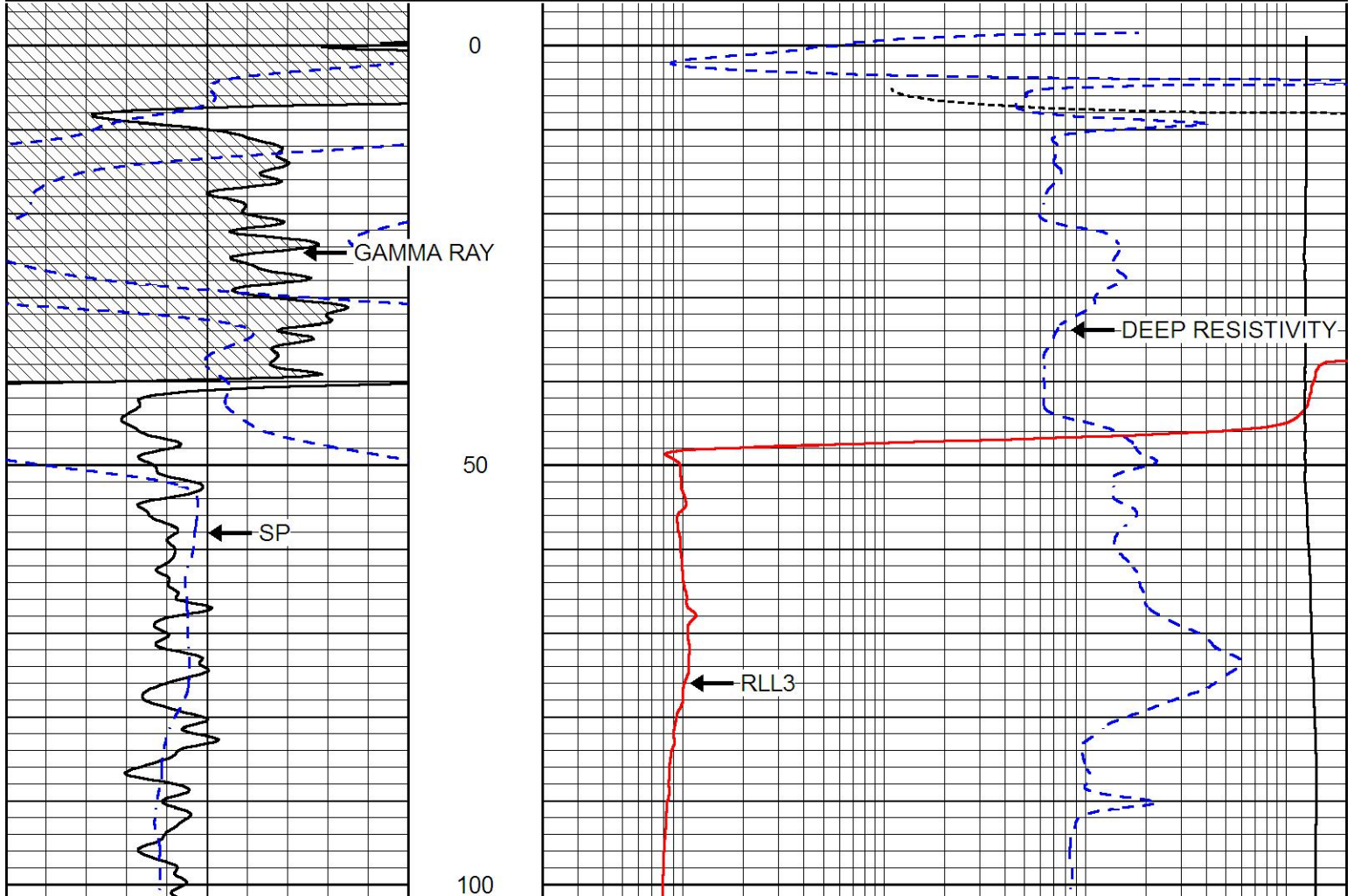


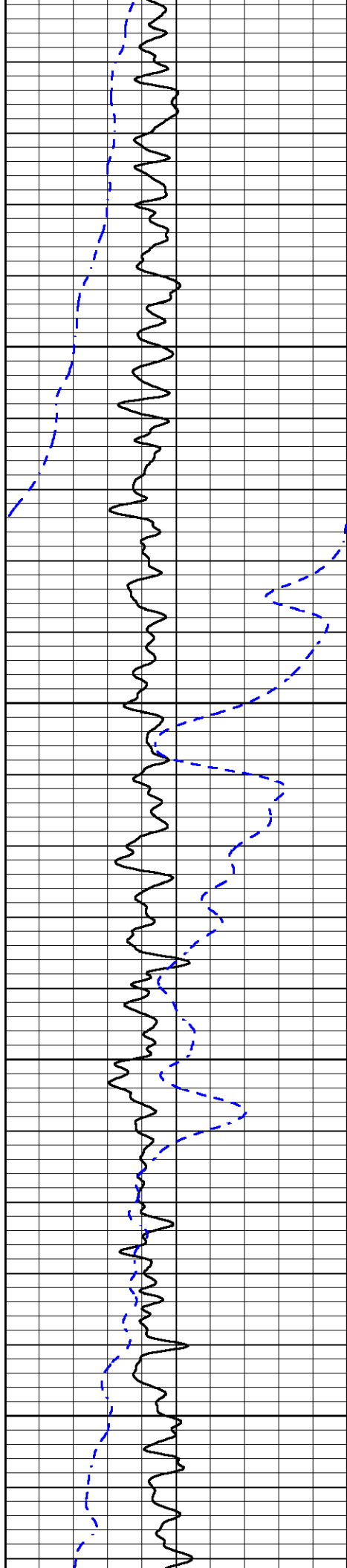


MAIN PASS

Database File murfin_jean_a_1_7.db
 Dataset Pathname stackml/pass3.1
 Presentation Format dil
 Dataset Creation Mon May 06 21:28:50 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
			15000	LINE TENSION (lb)	0



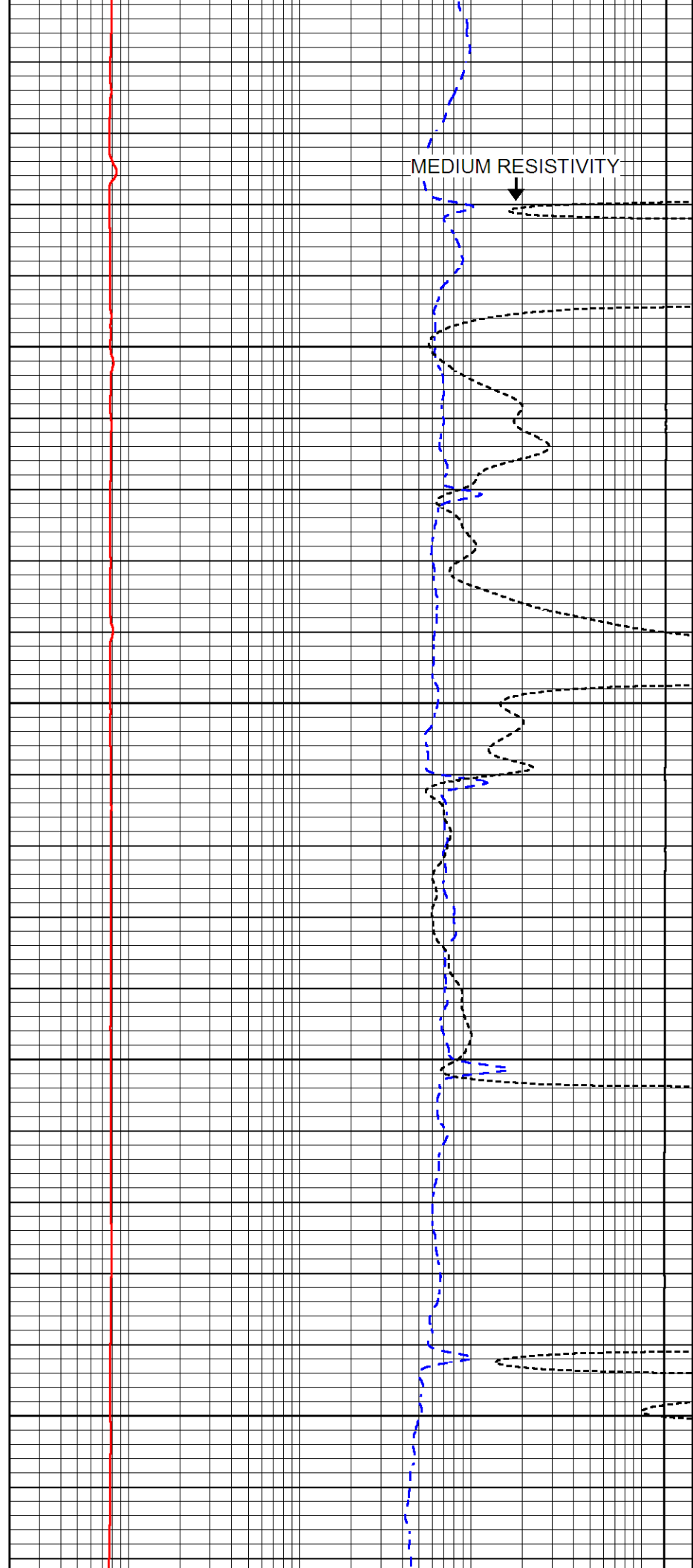


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200

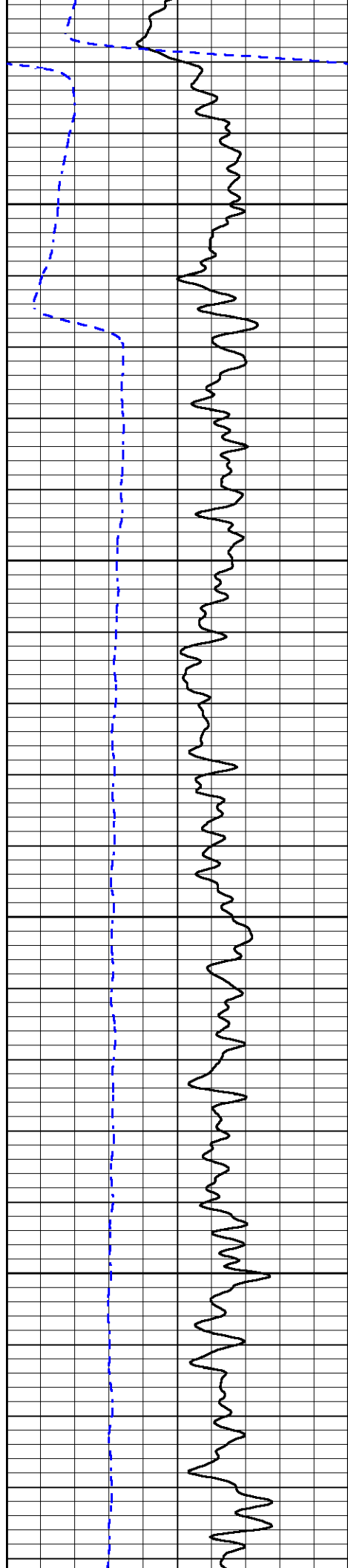
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300



MEDIUM RESISTIVITY



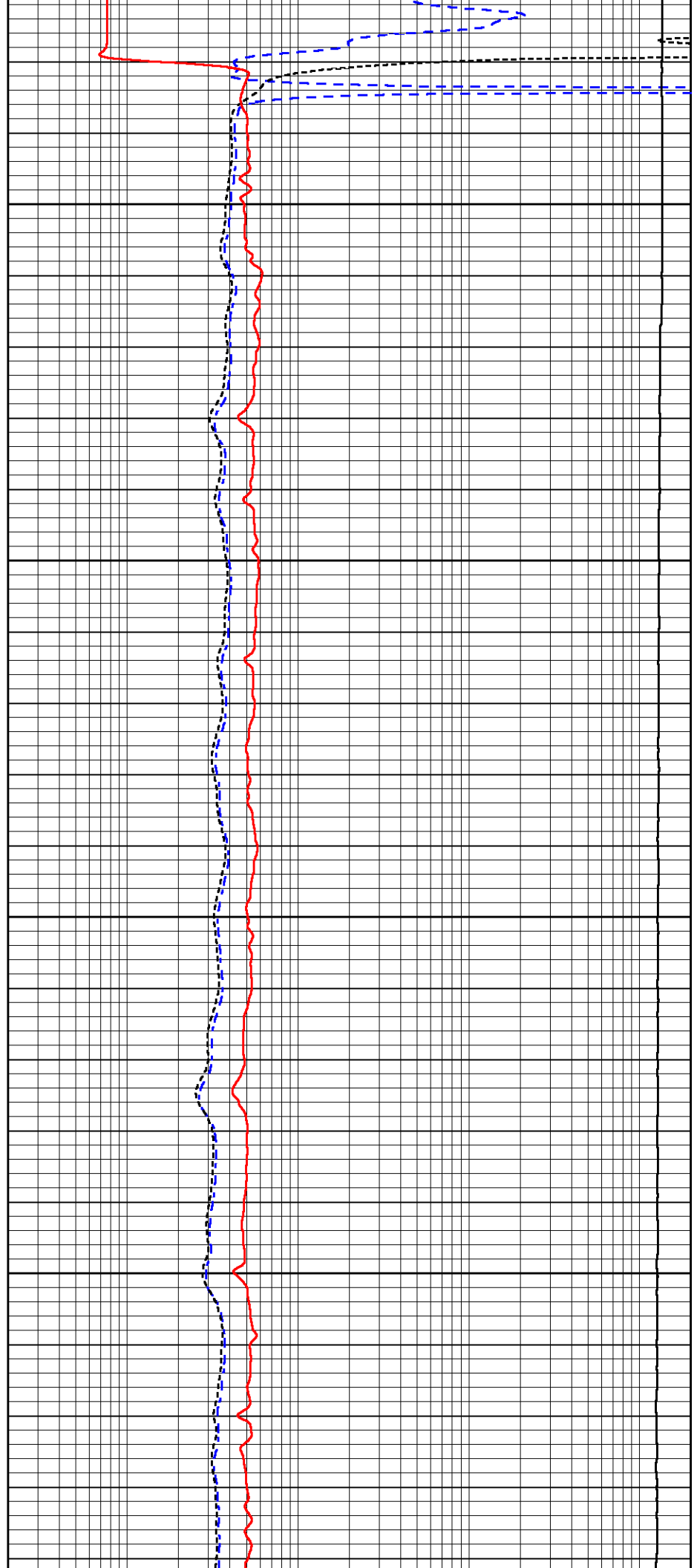


350

400

450

500

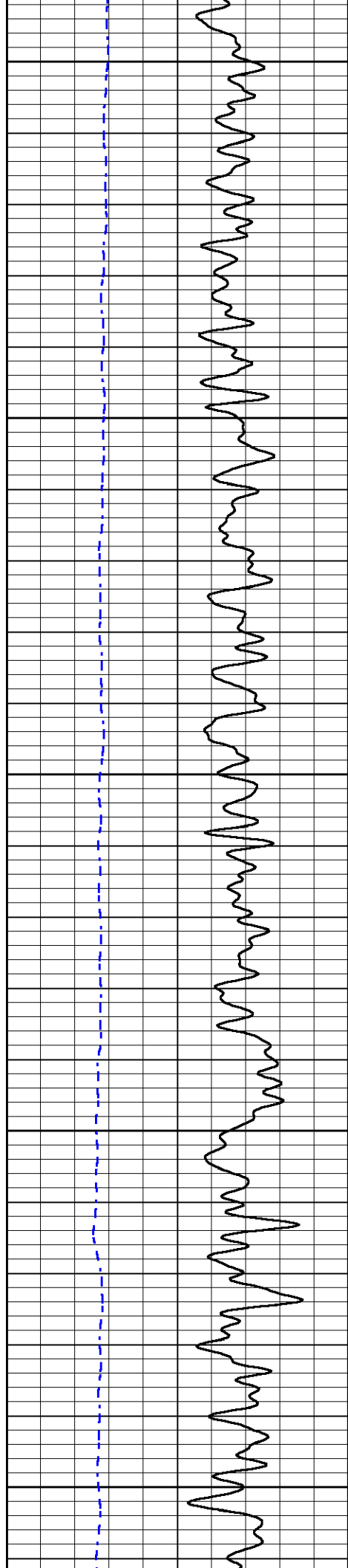


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400

450

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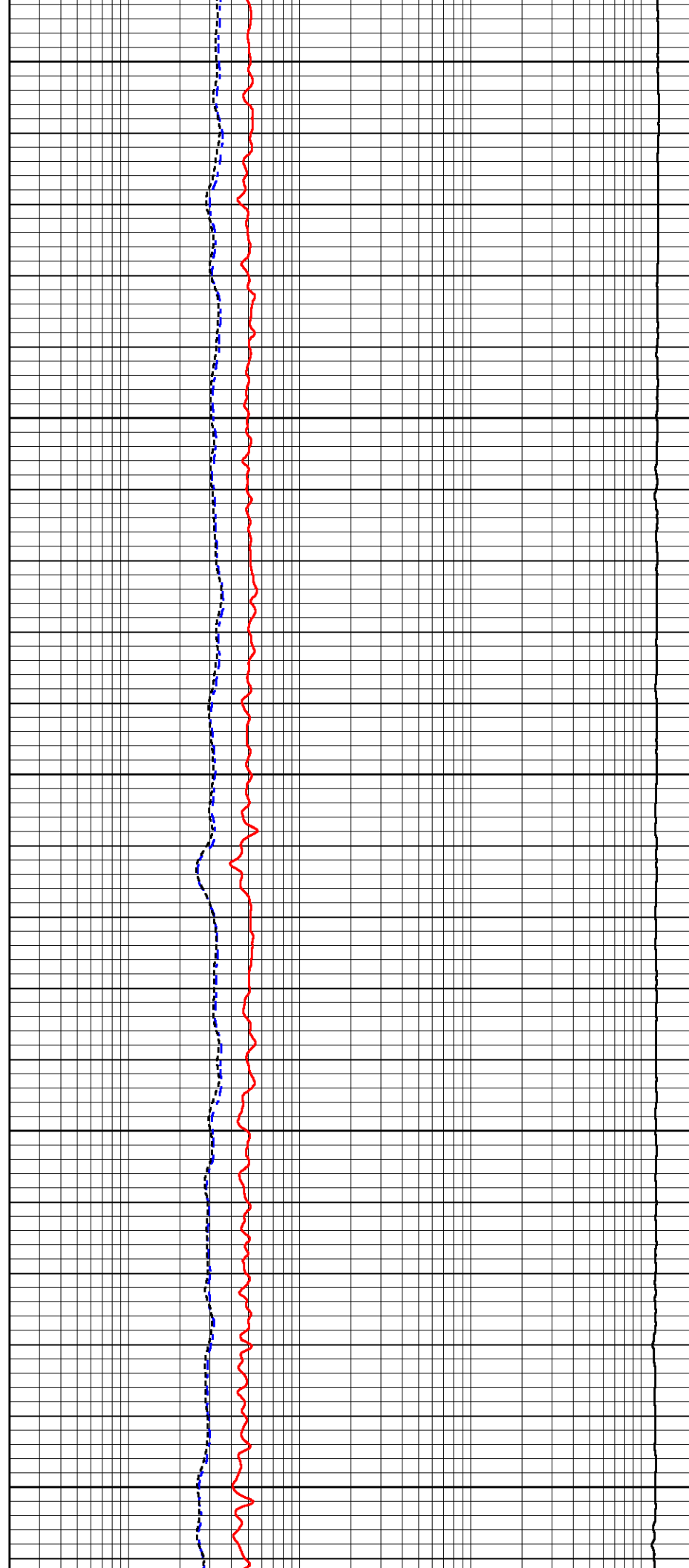
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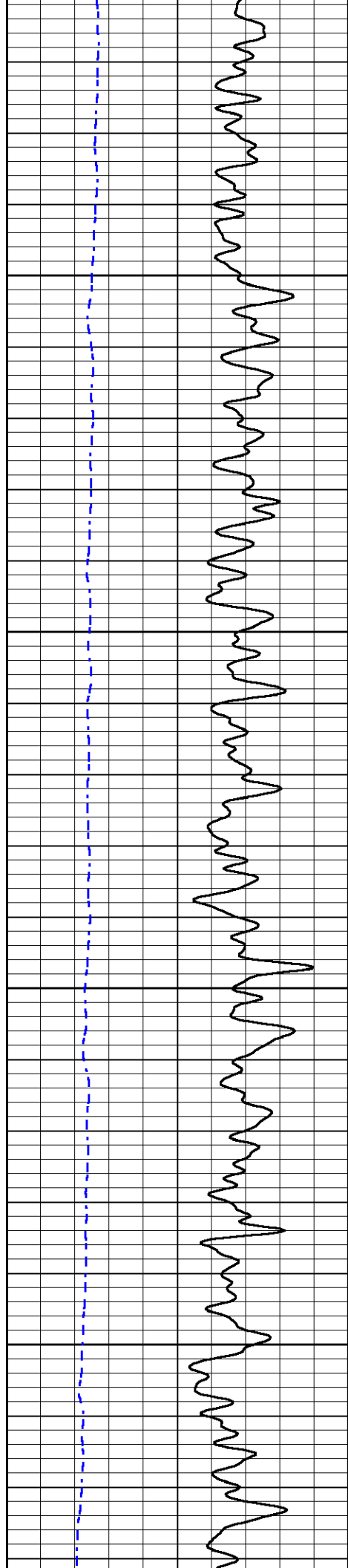
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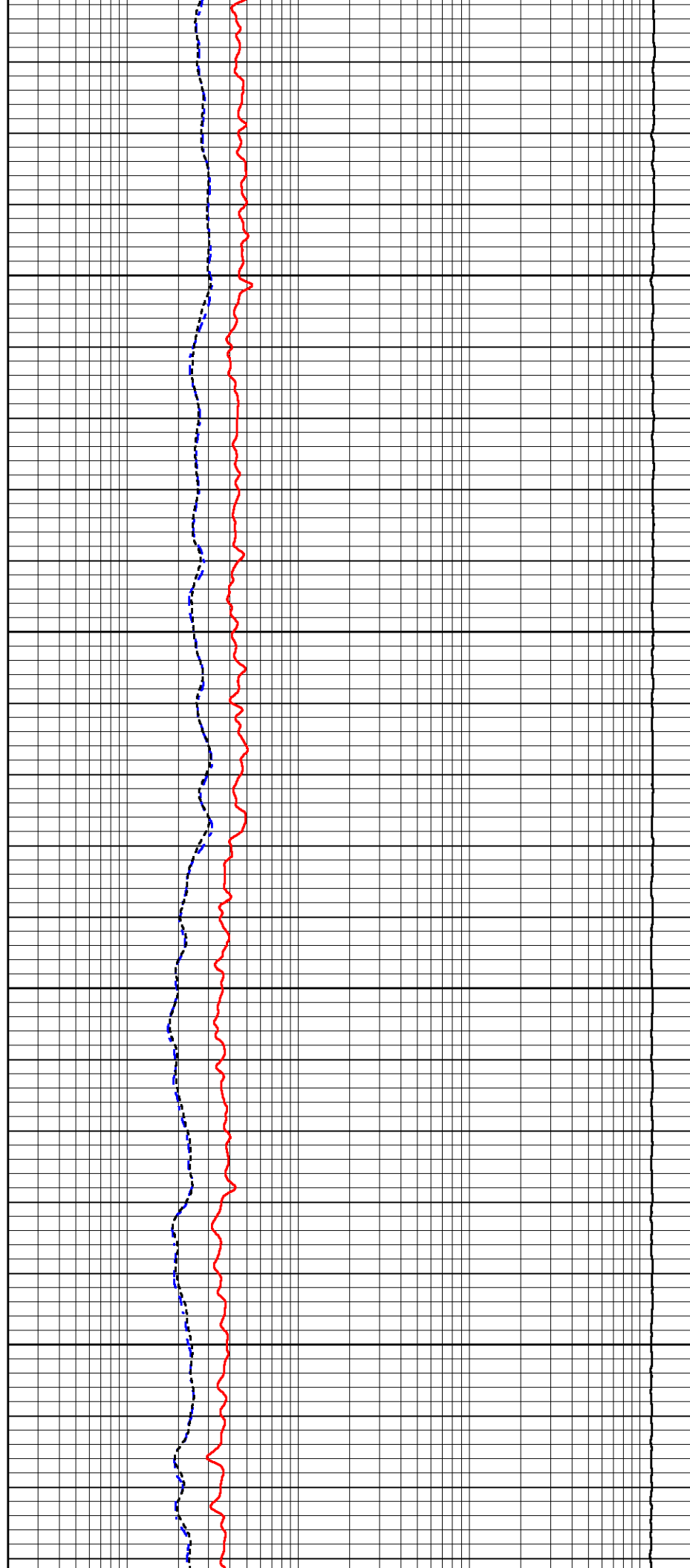


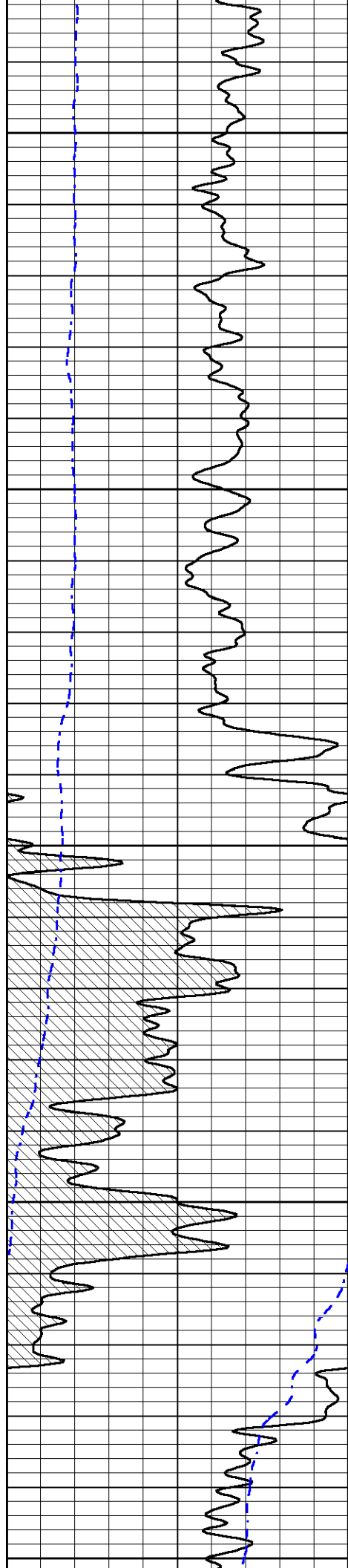
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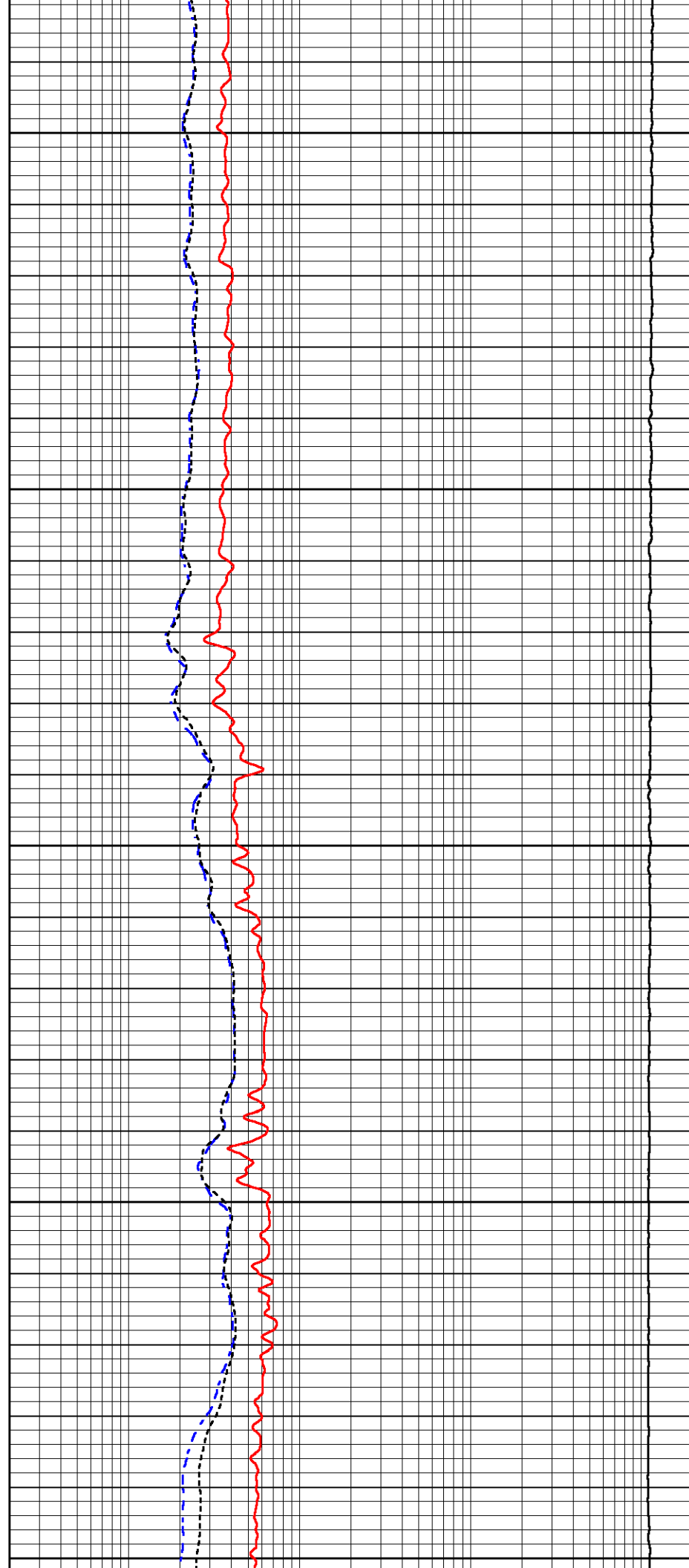
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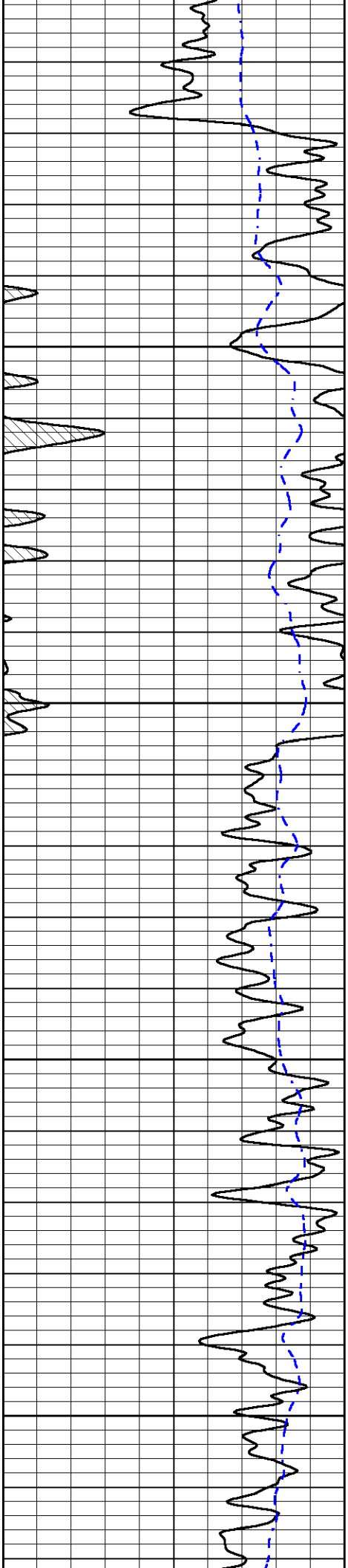
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1150

1200



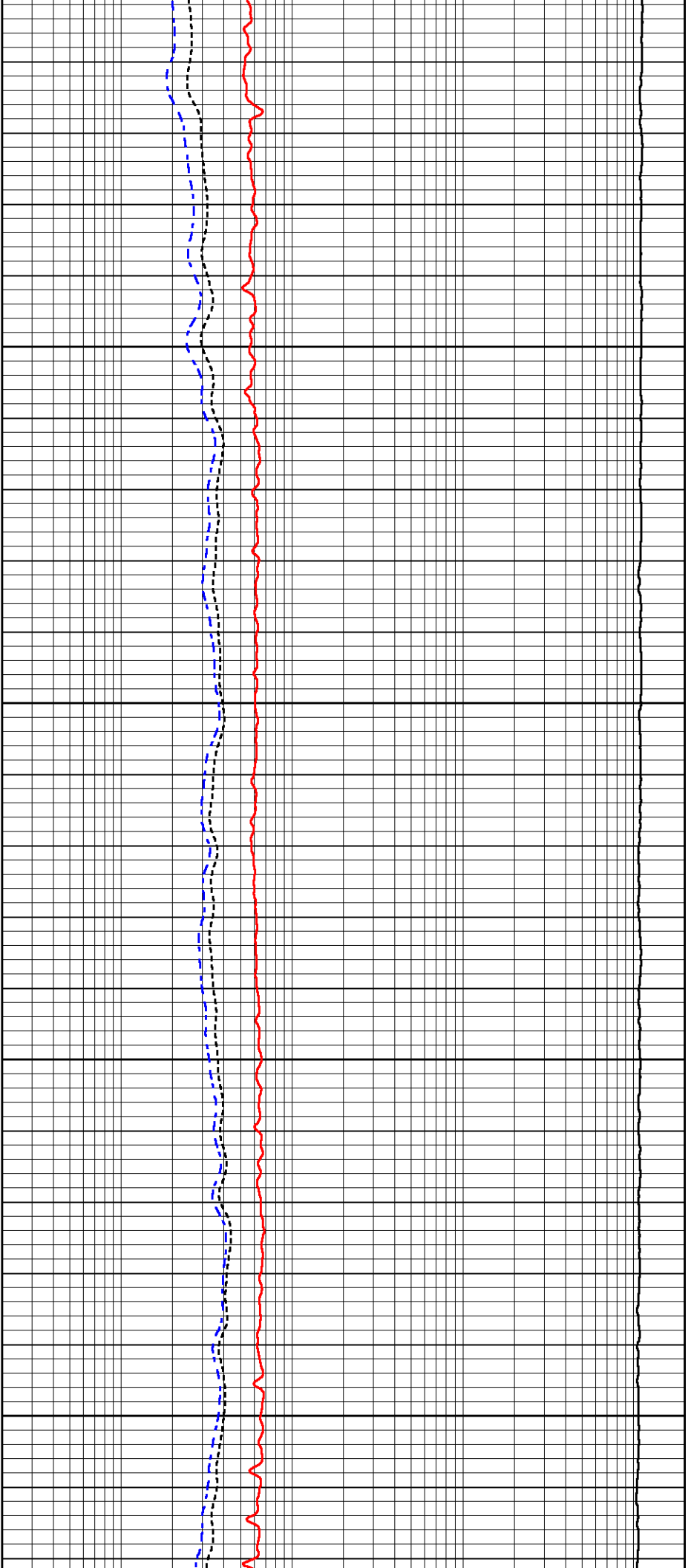


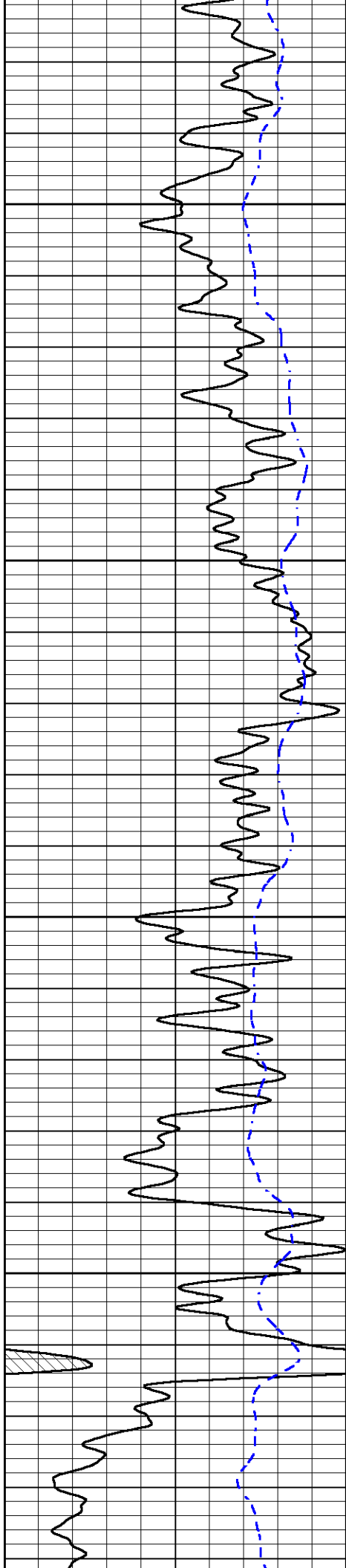
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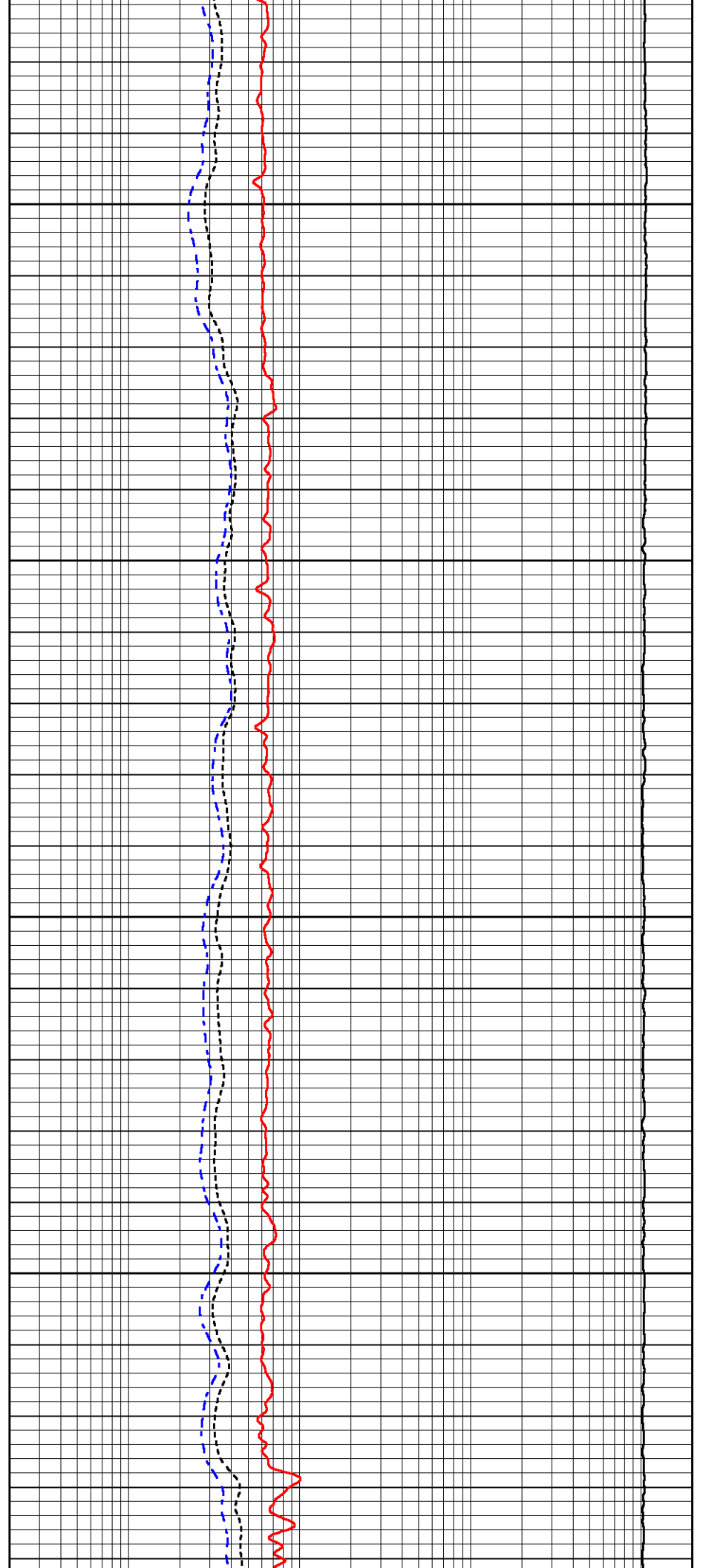


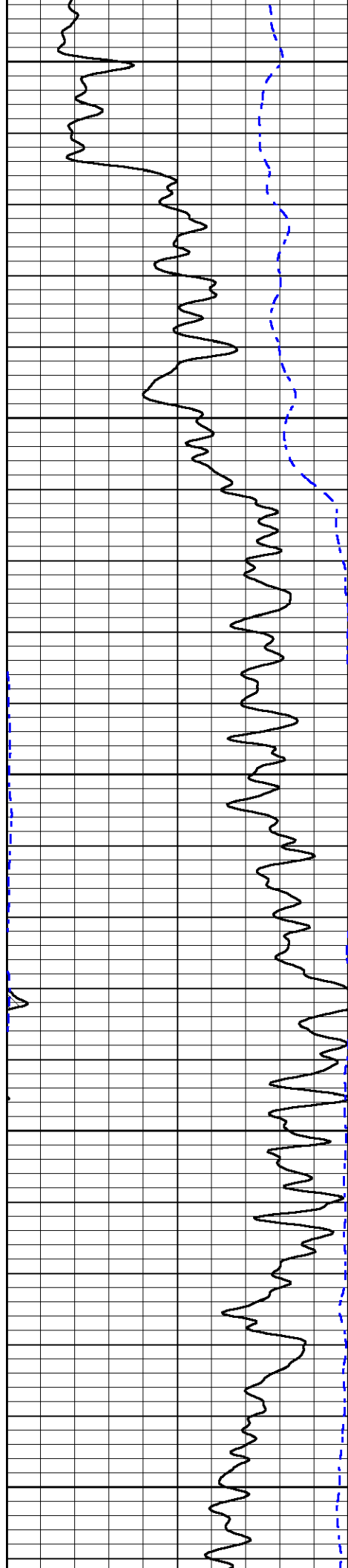
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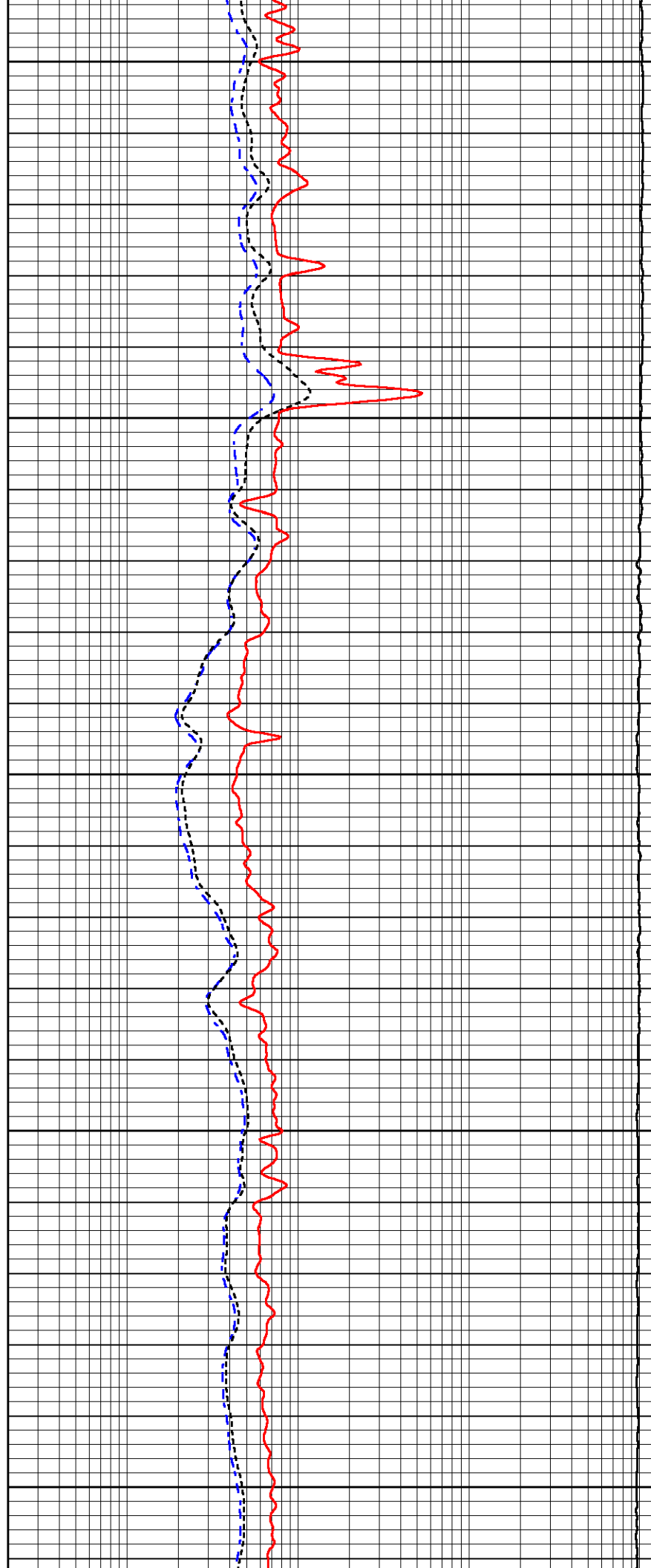
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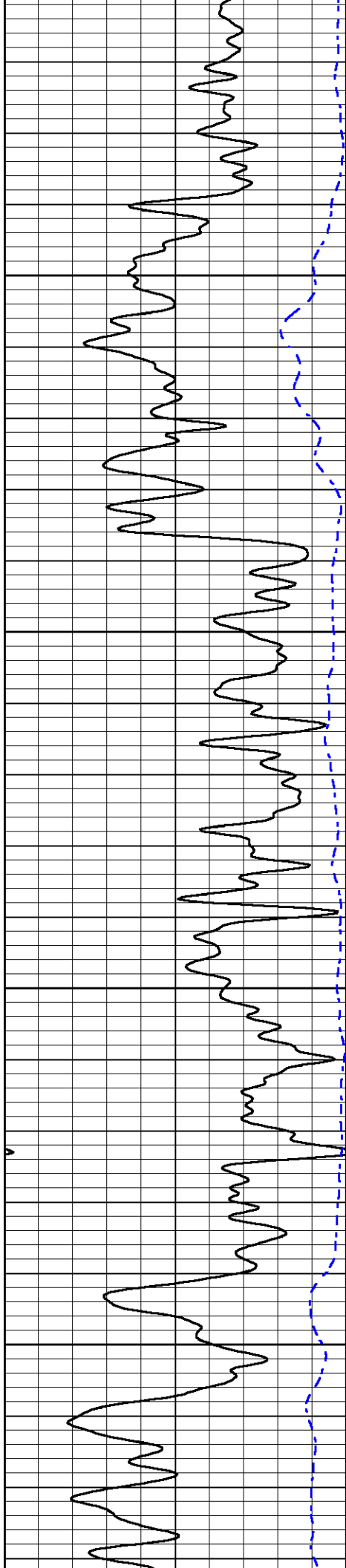
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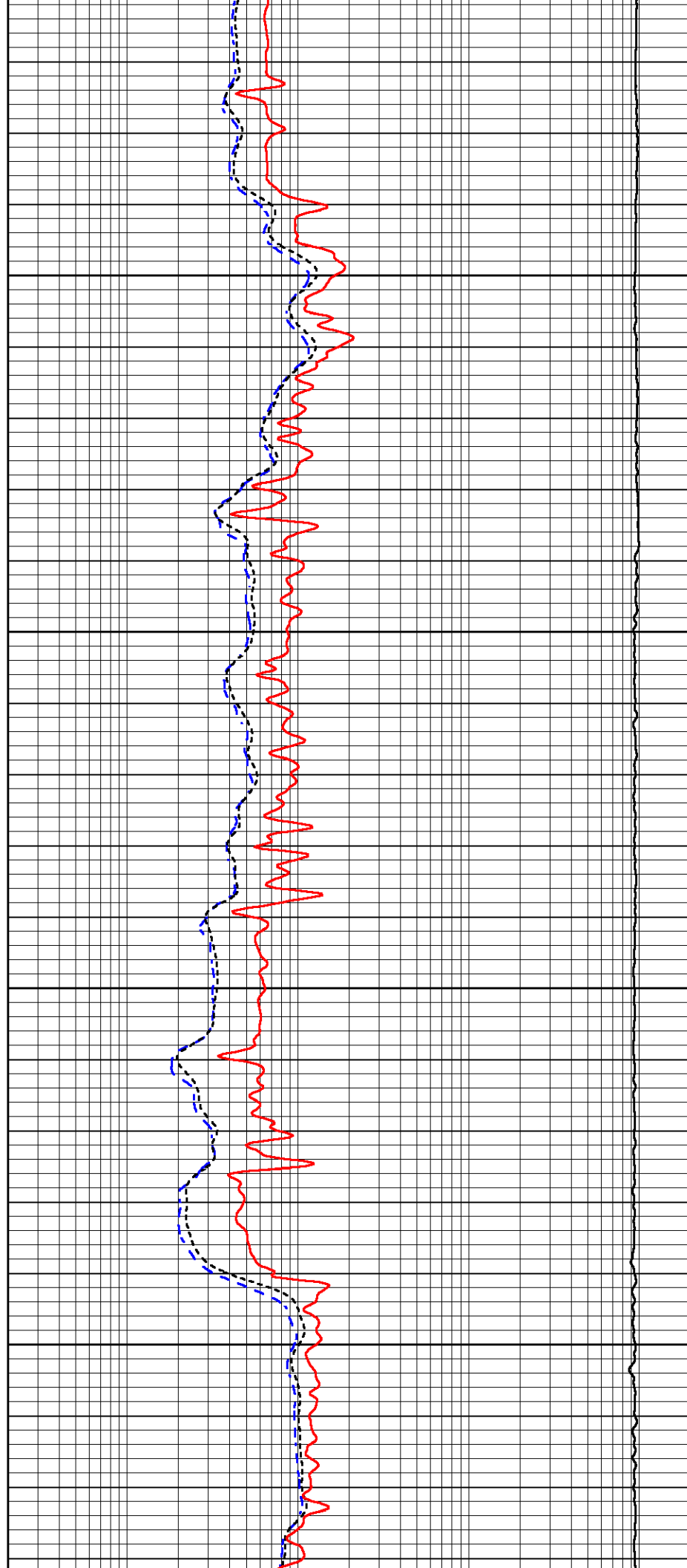


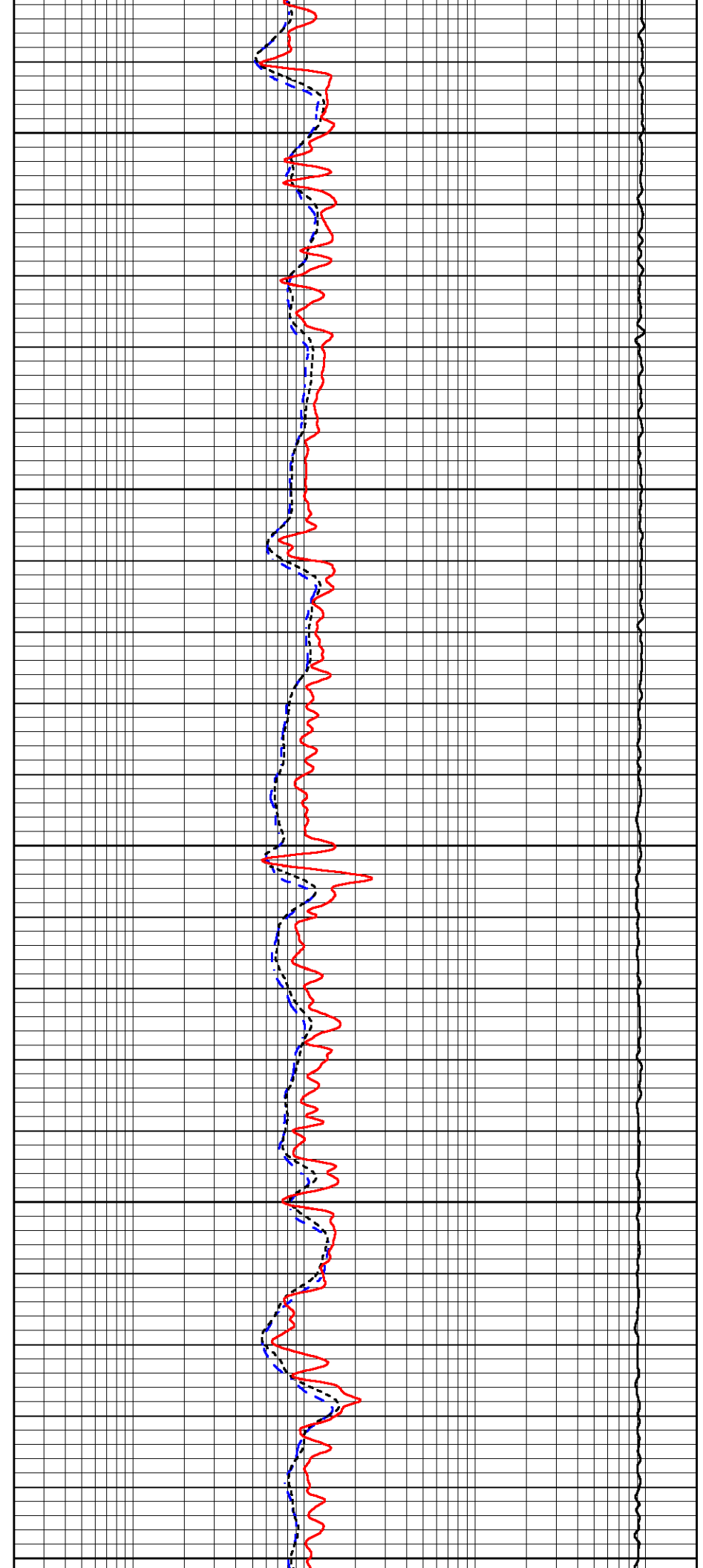
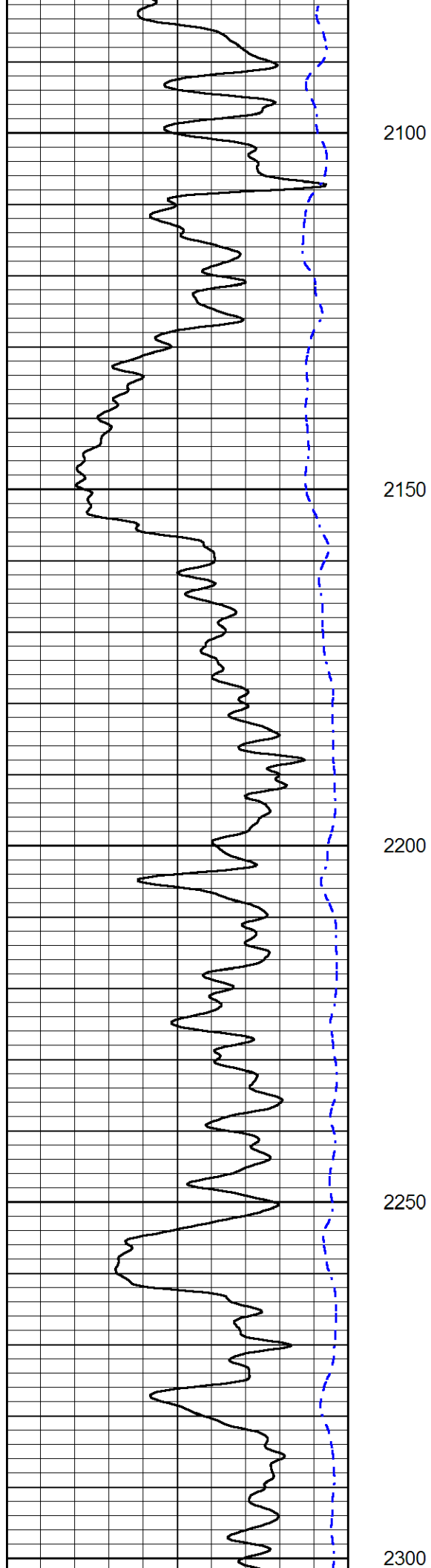
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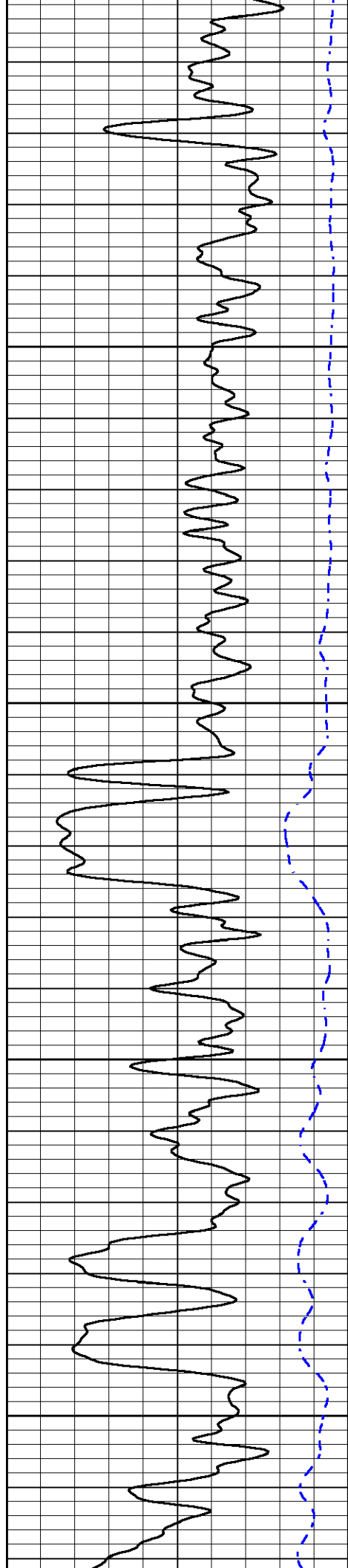
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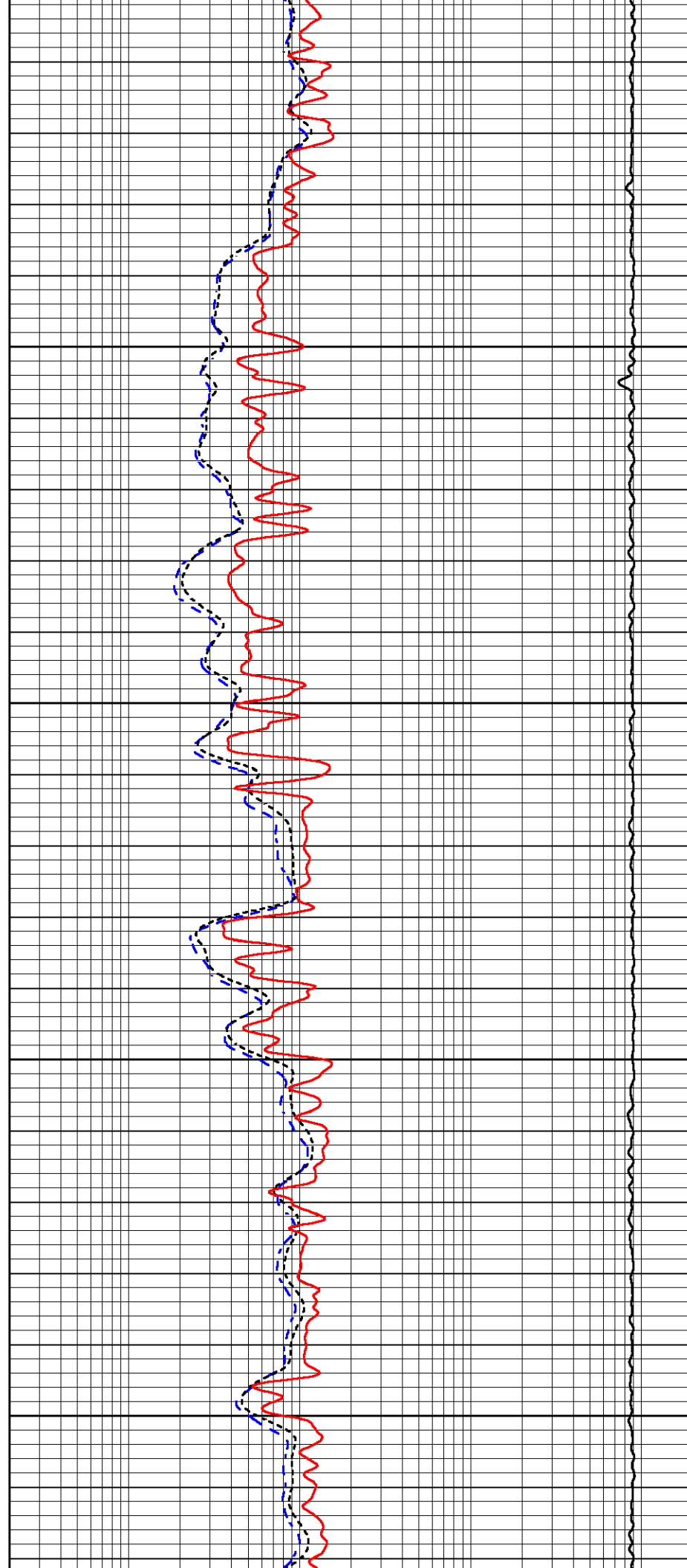


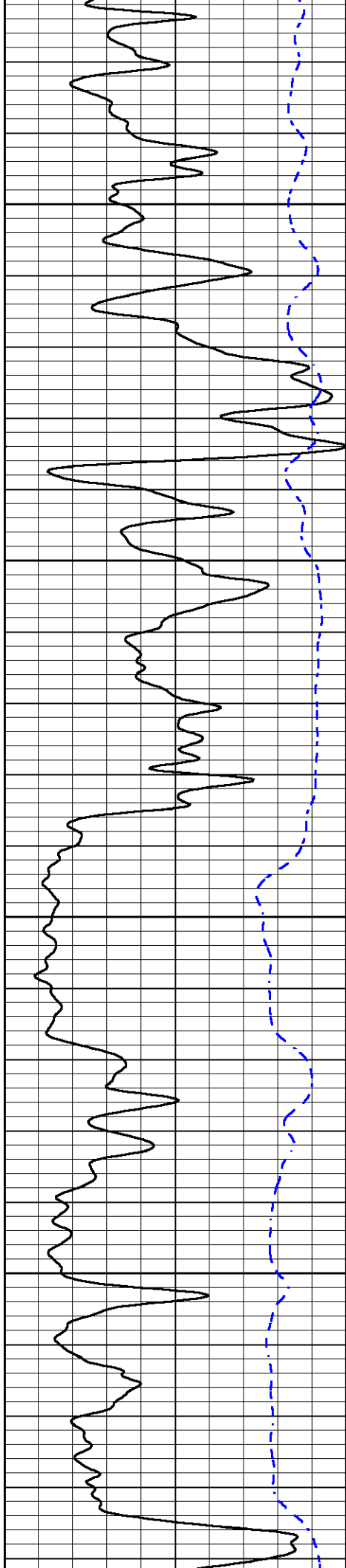
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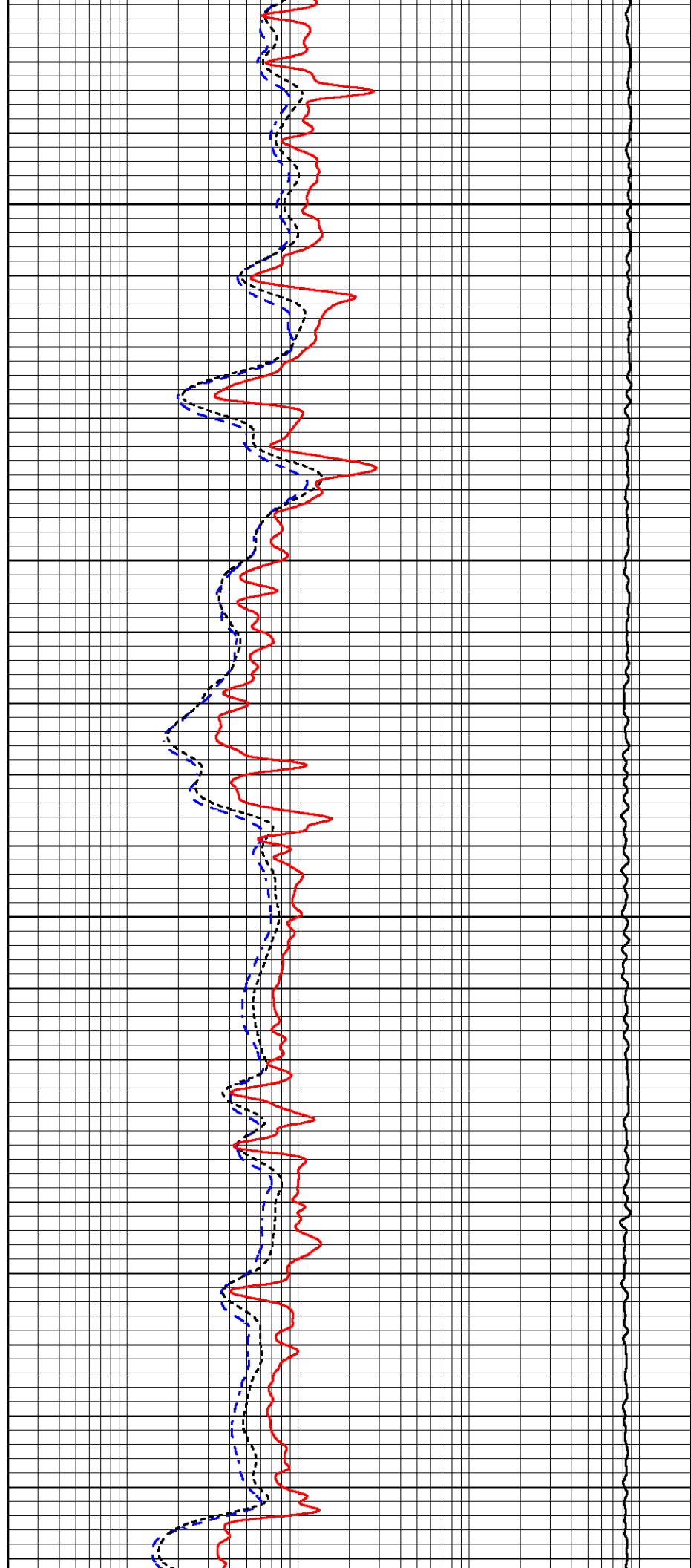


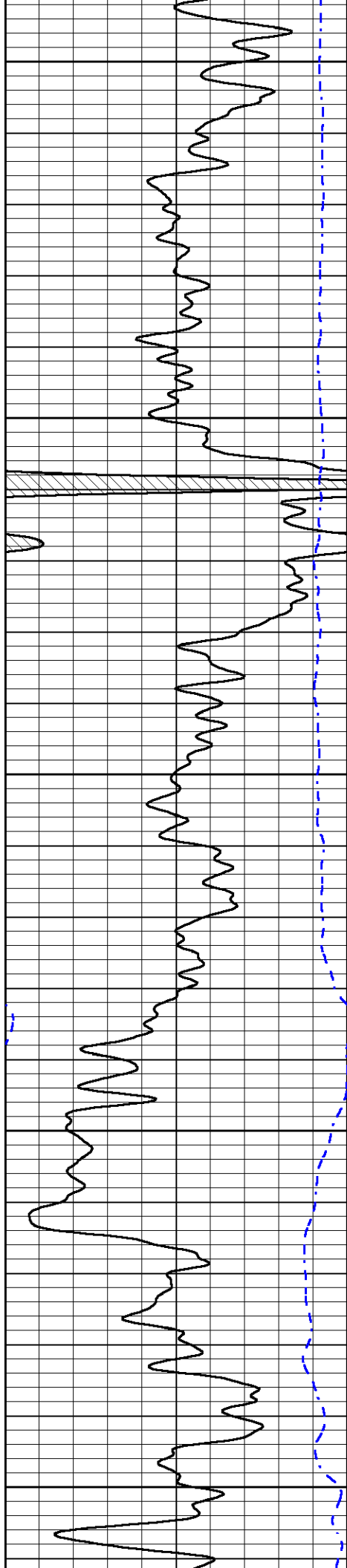
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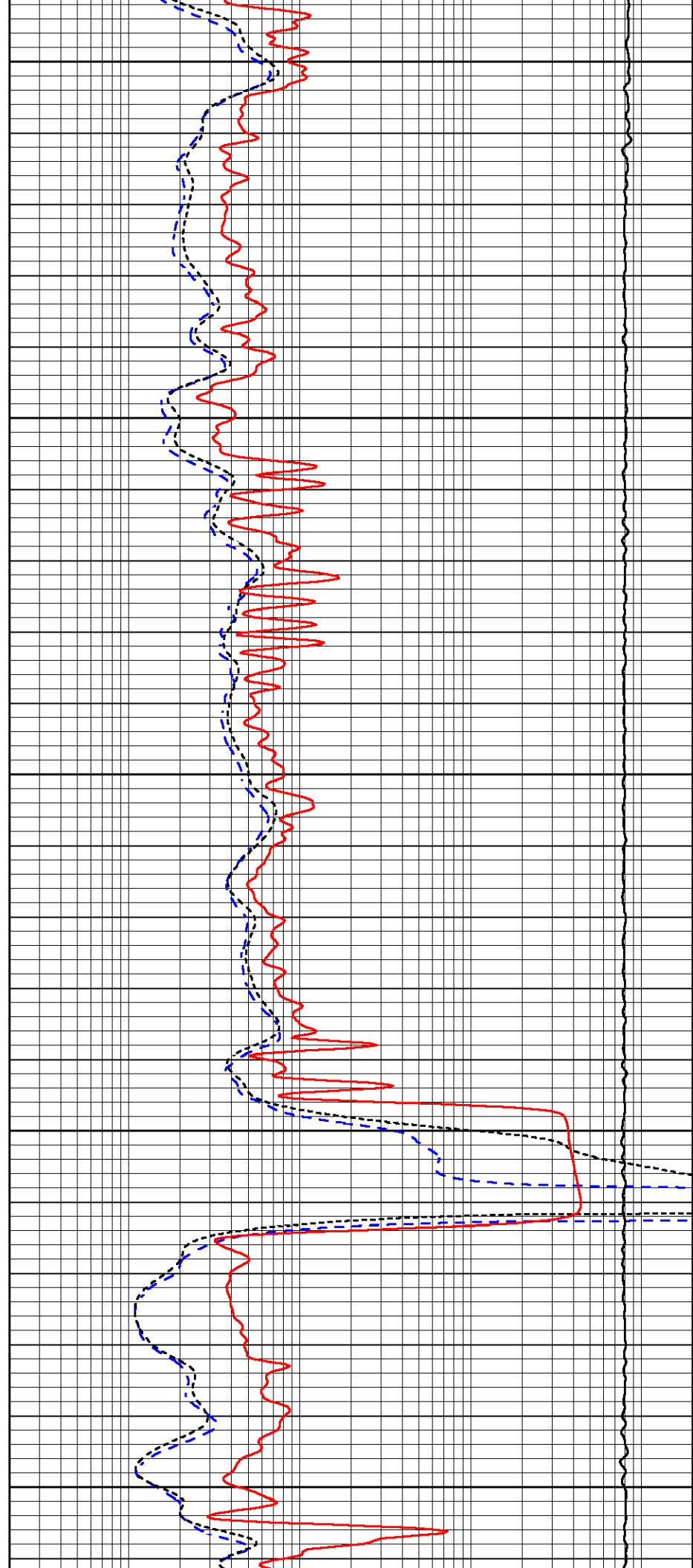
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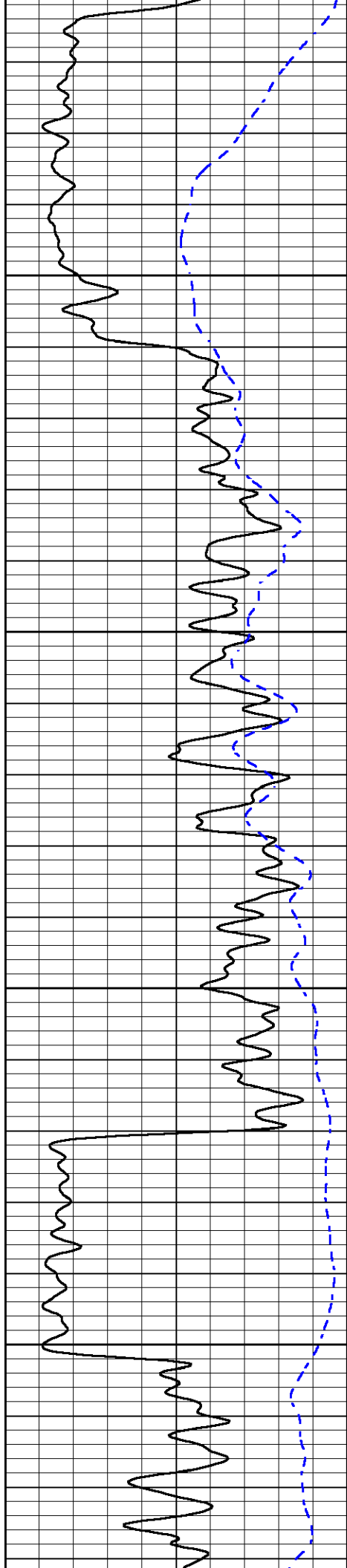
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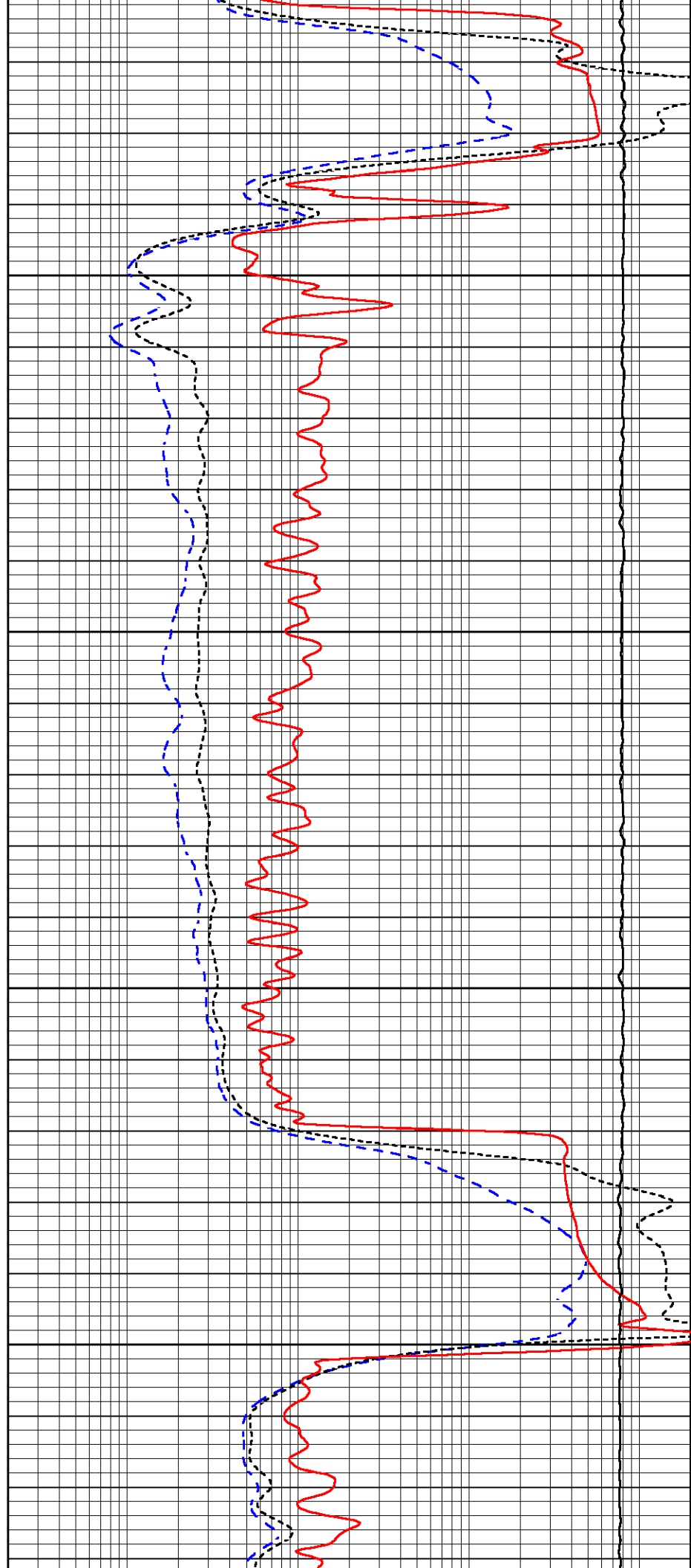


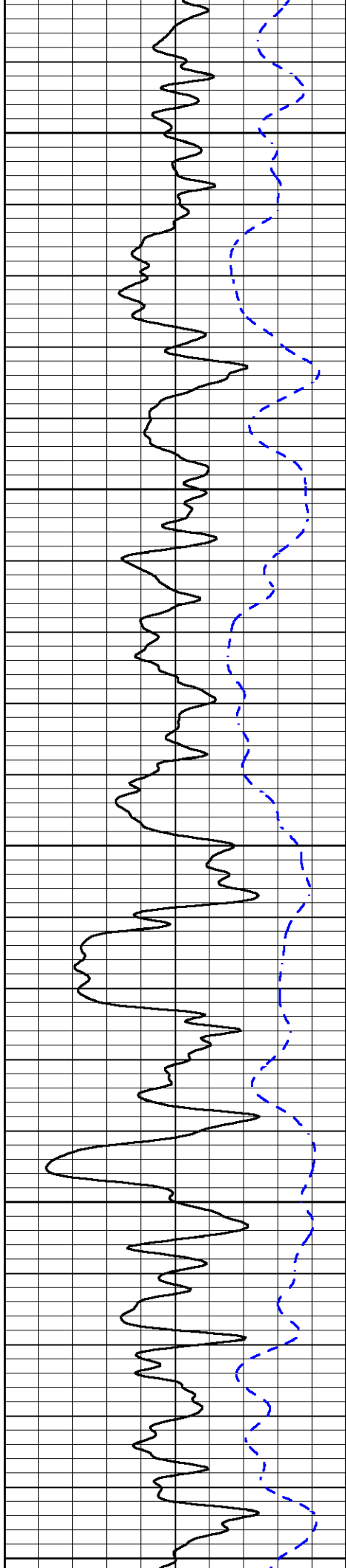
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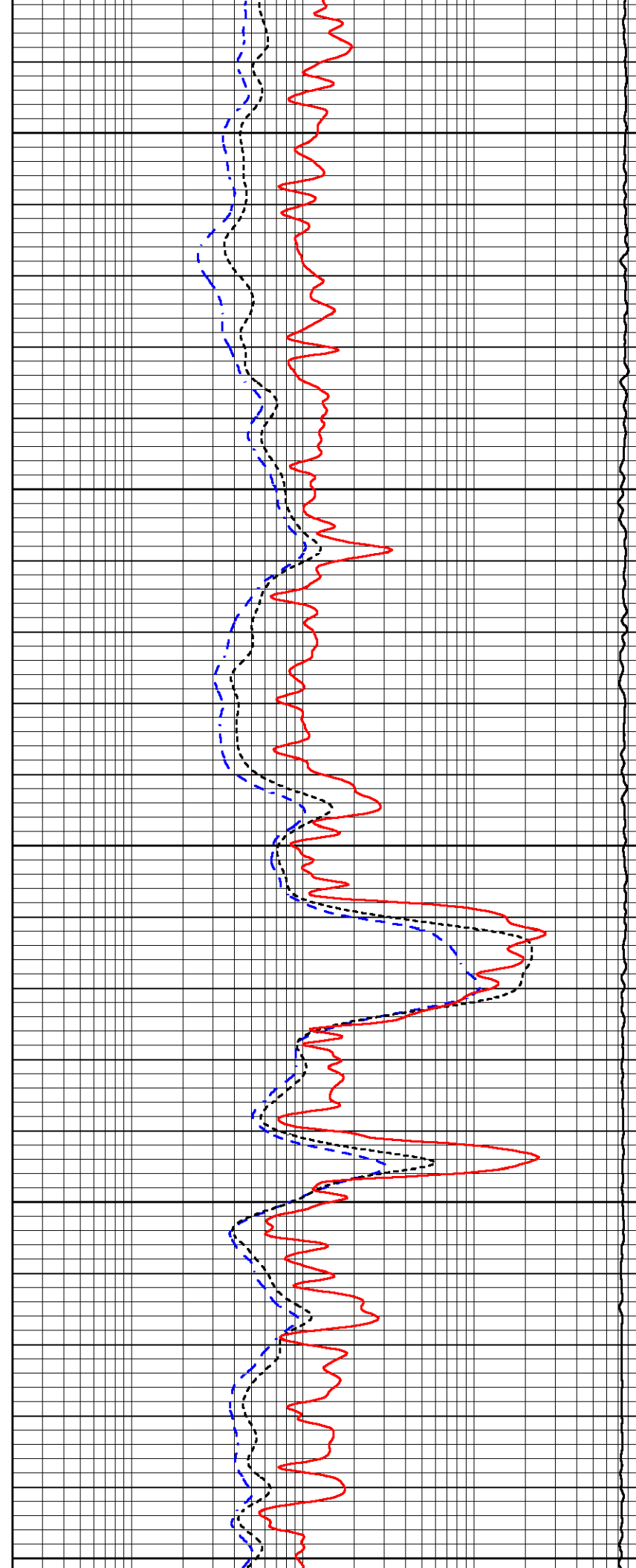
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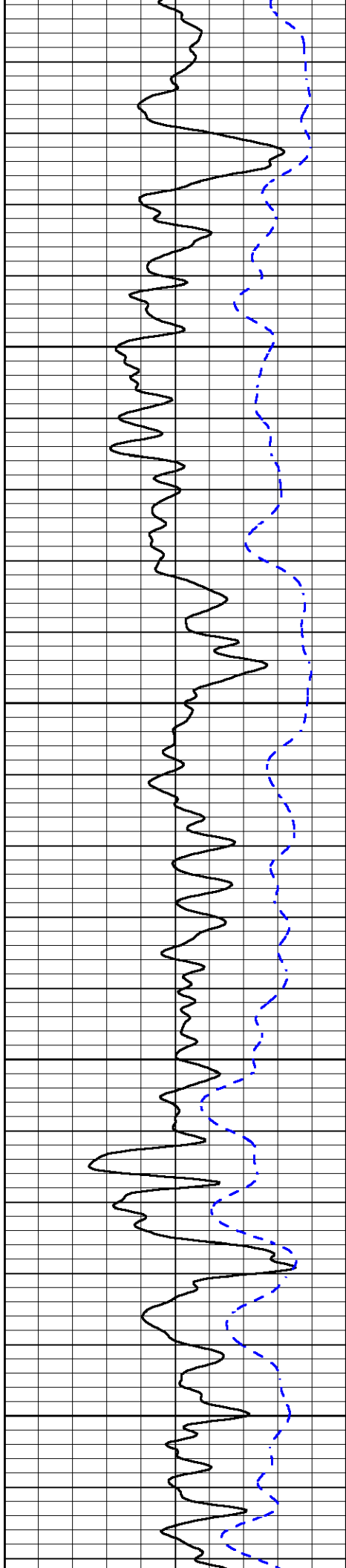
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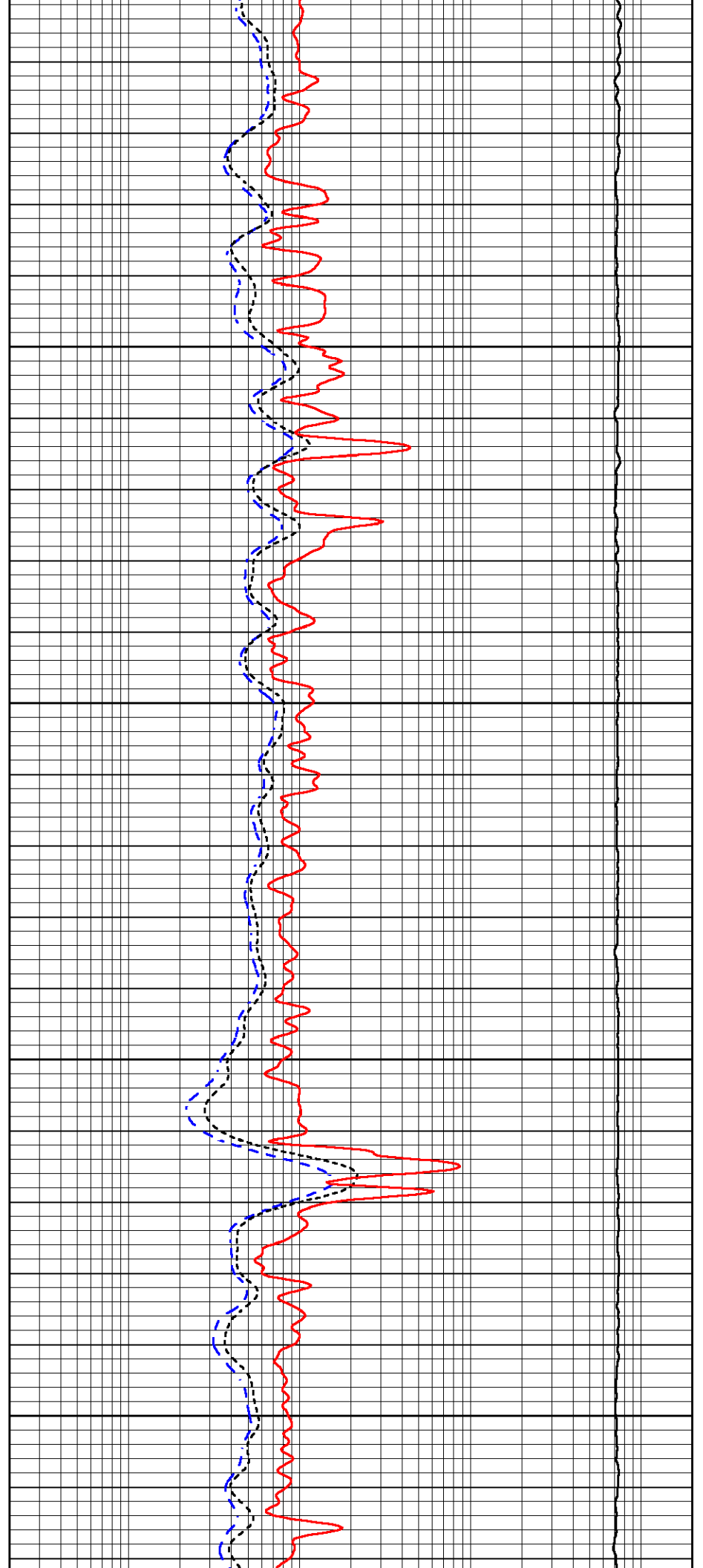


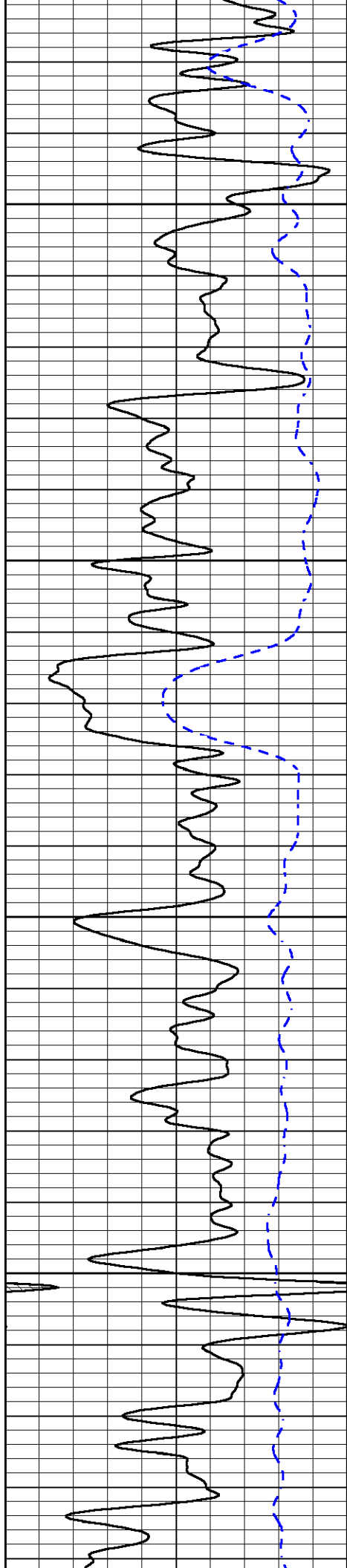
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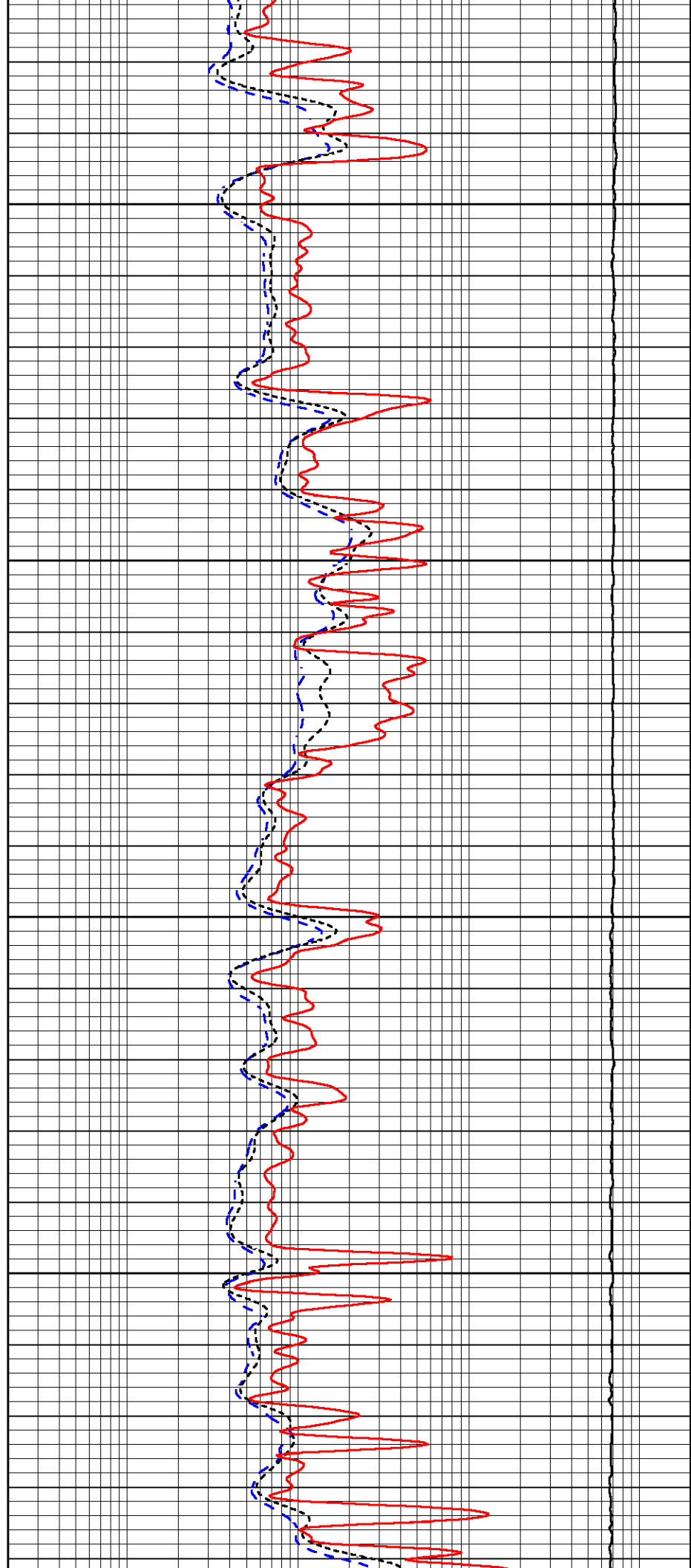


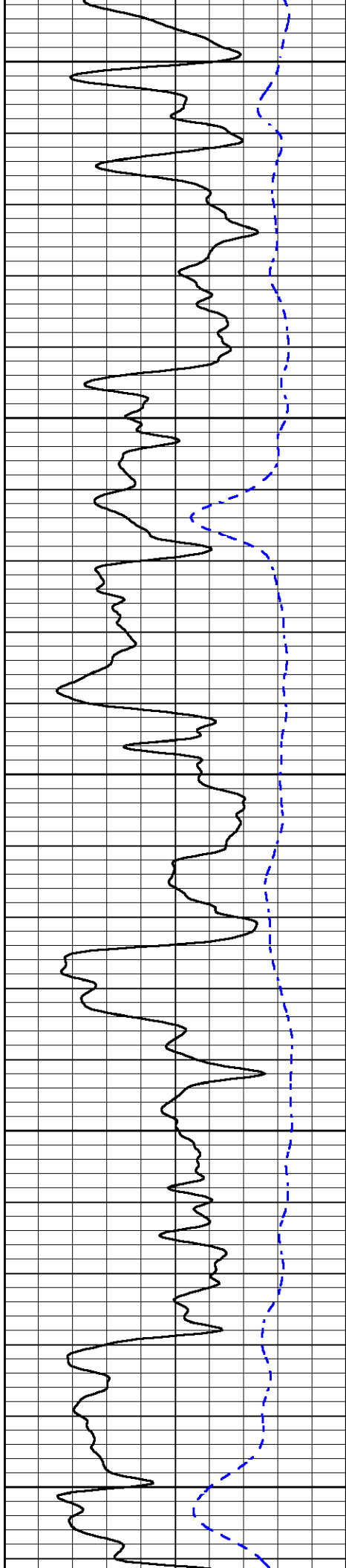
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3750

3800





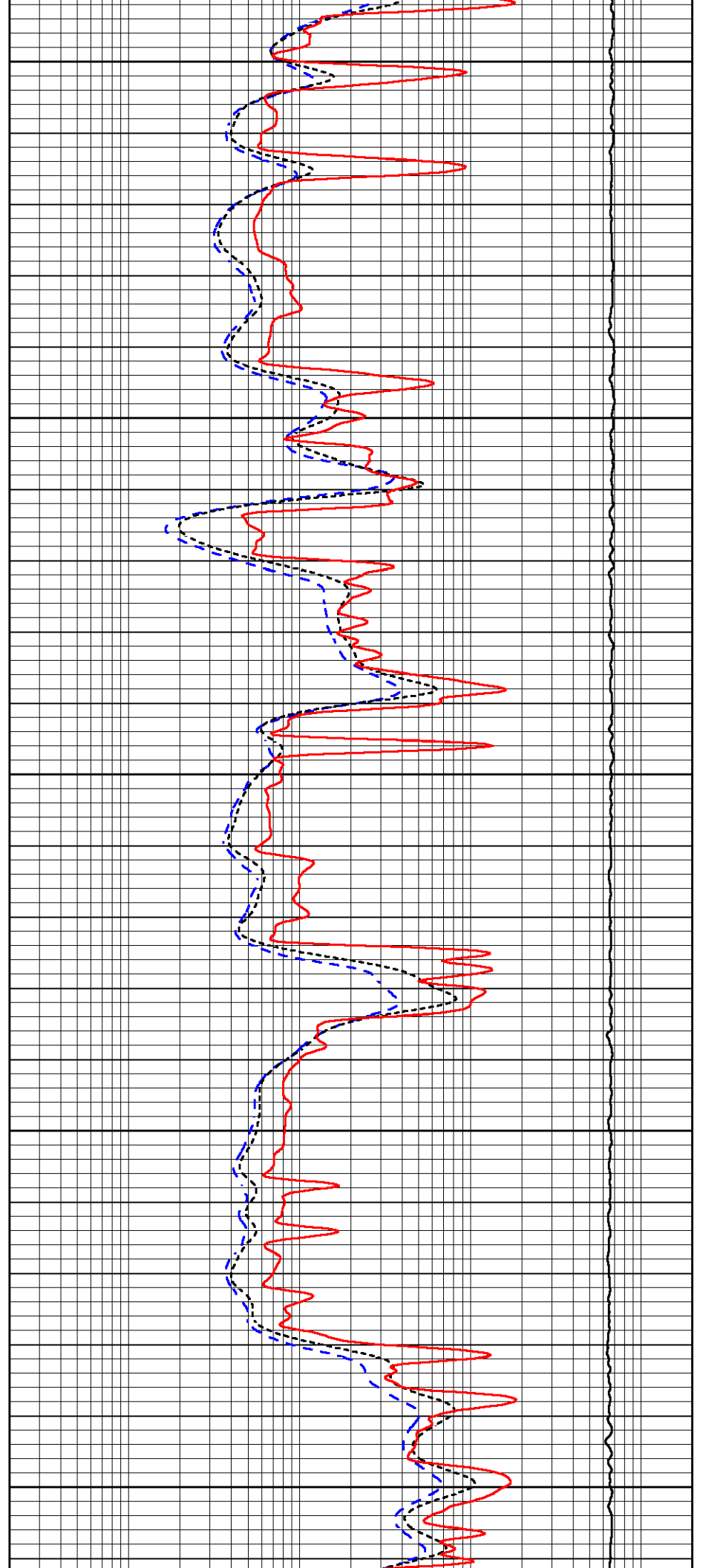
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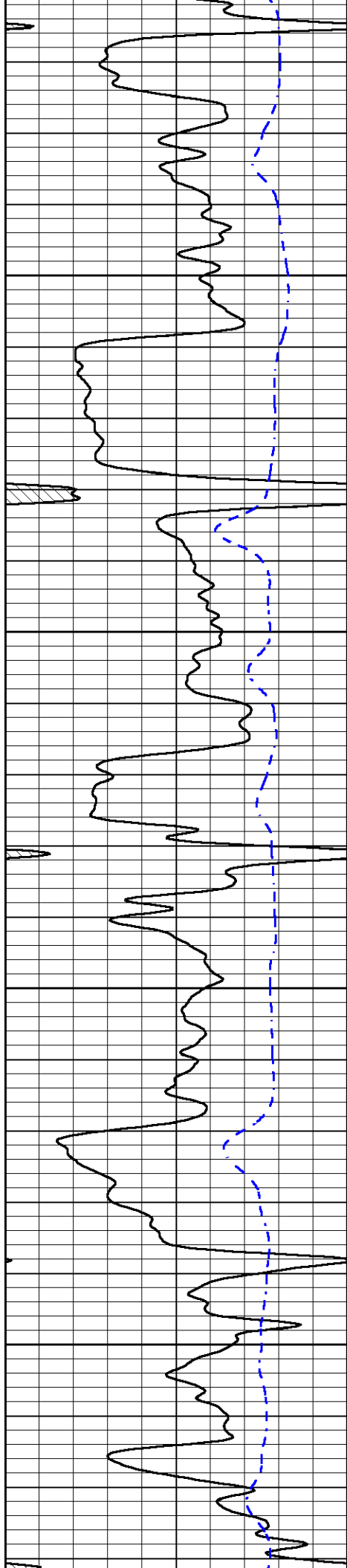
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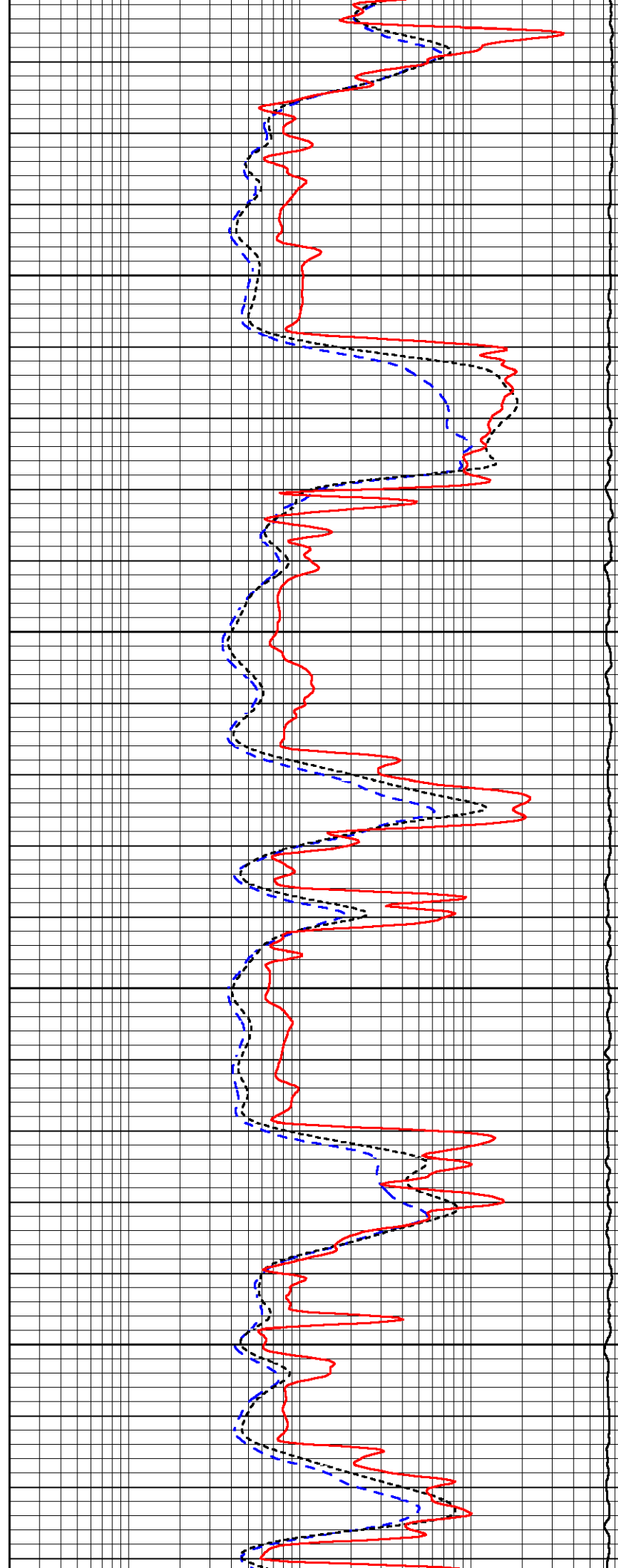


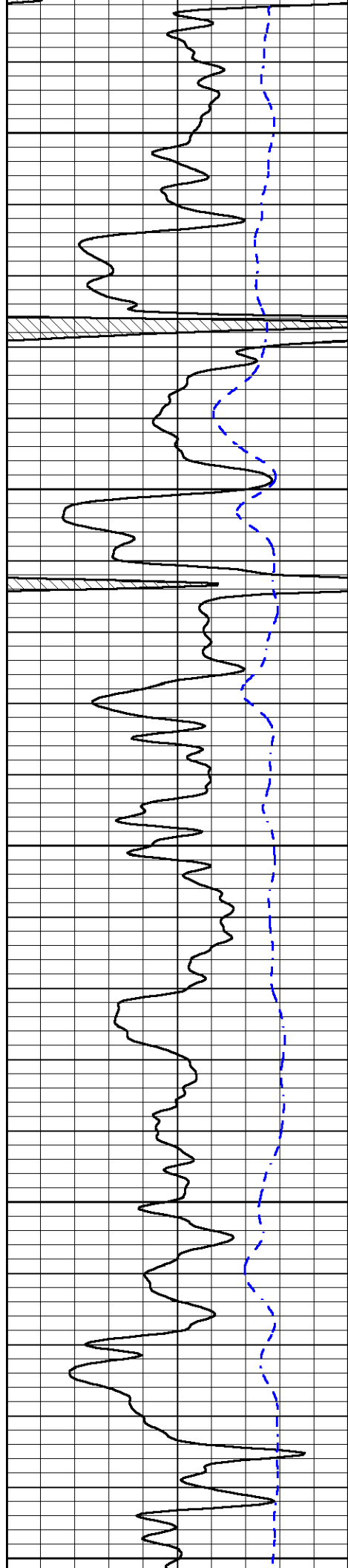
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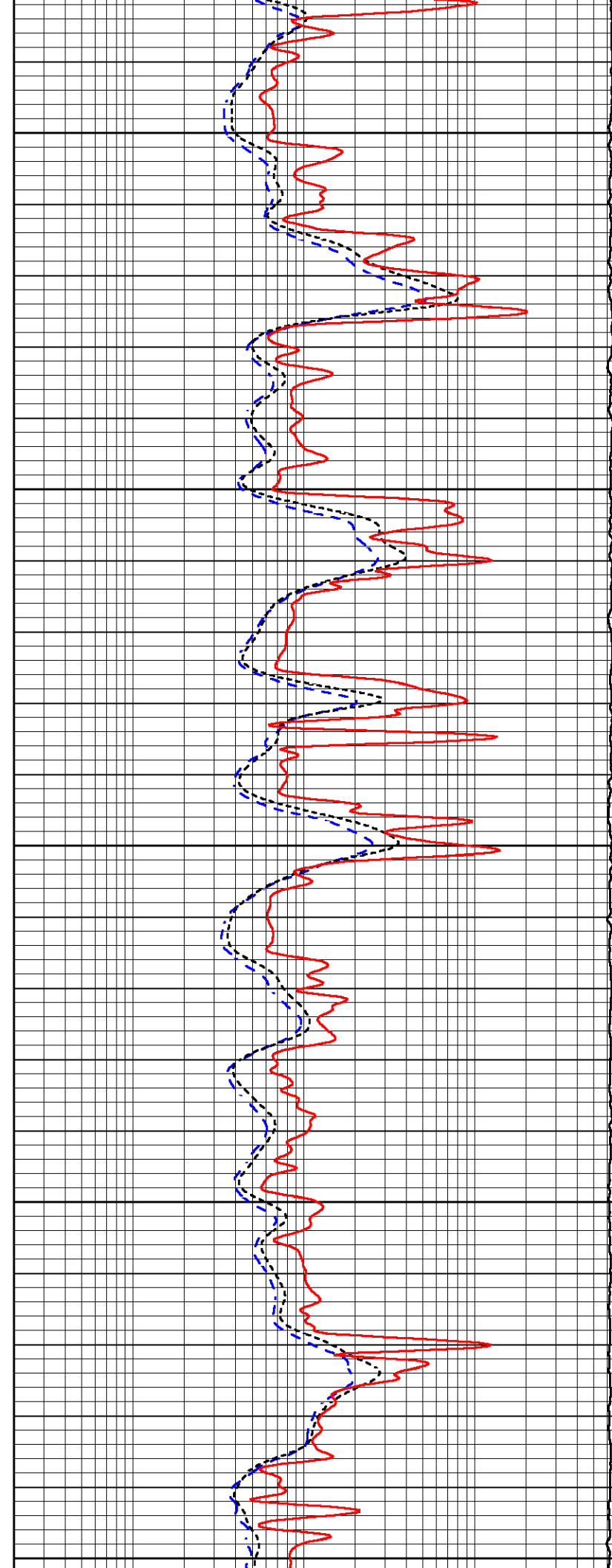
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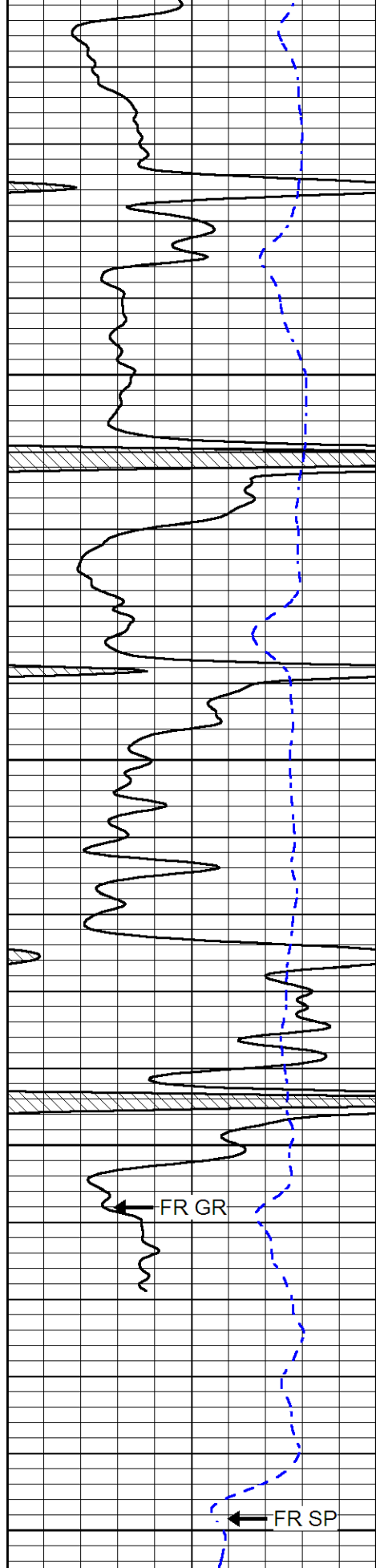
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4400

4450

4500





4550

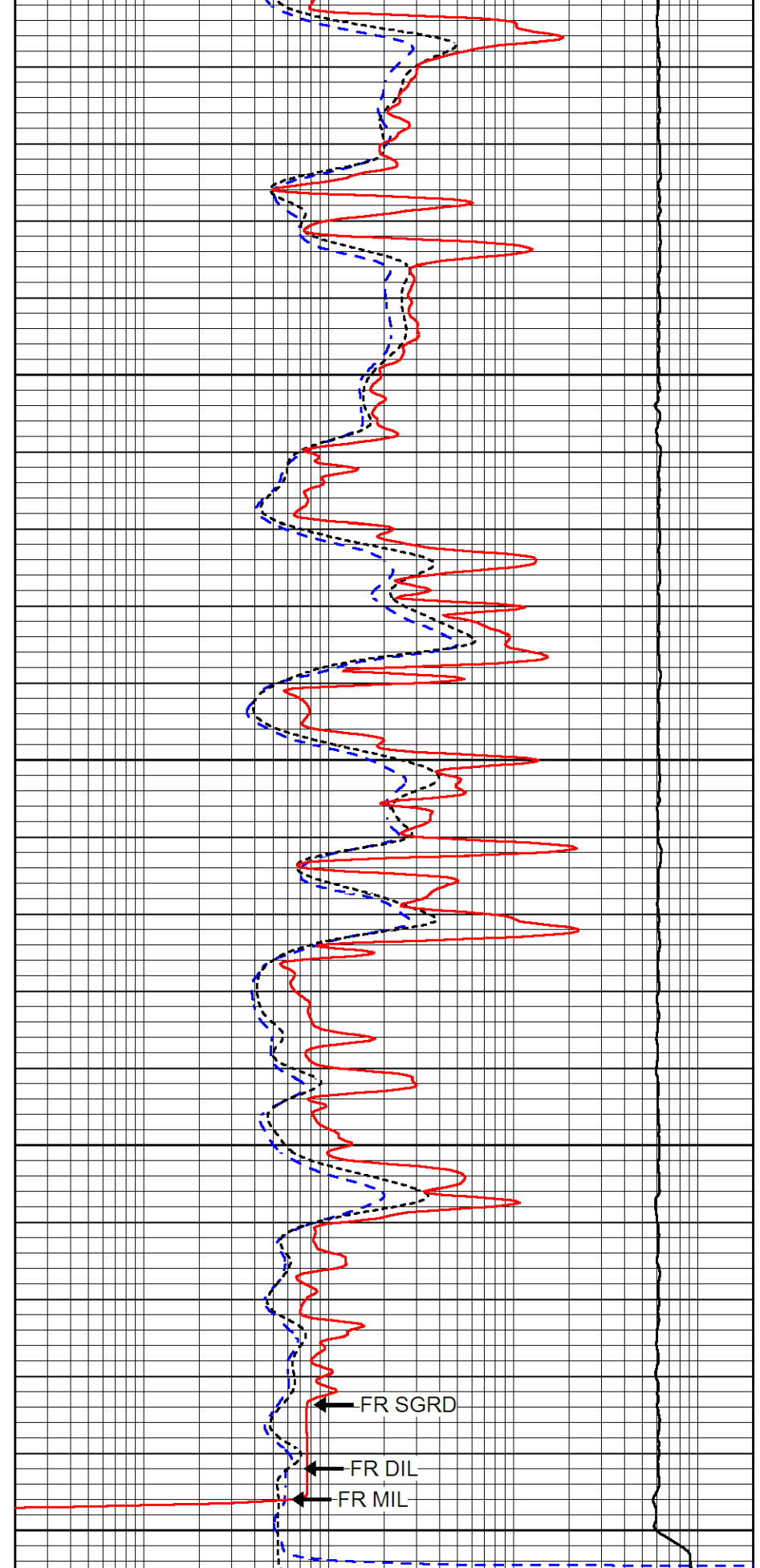
4600

4650

4700

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

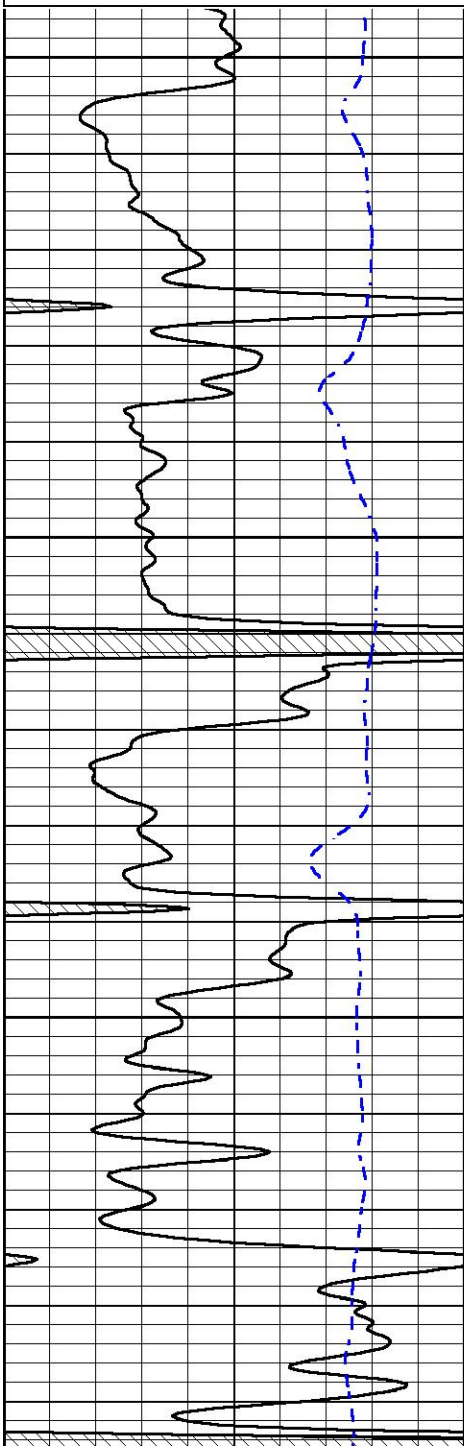


REPEAT SECTION

Database File murfin_jean_a_1_7.db
 Dataset Pathname stackml/pass2.1
 Presentation Format dil
 Dataset Creation Mon May 06 21:22:06 2019
 Charted by Depth in Feet scaled 1:240

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

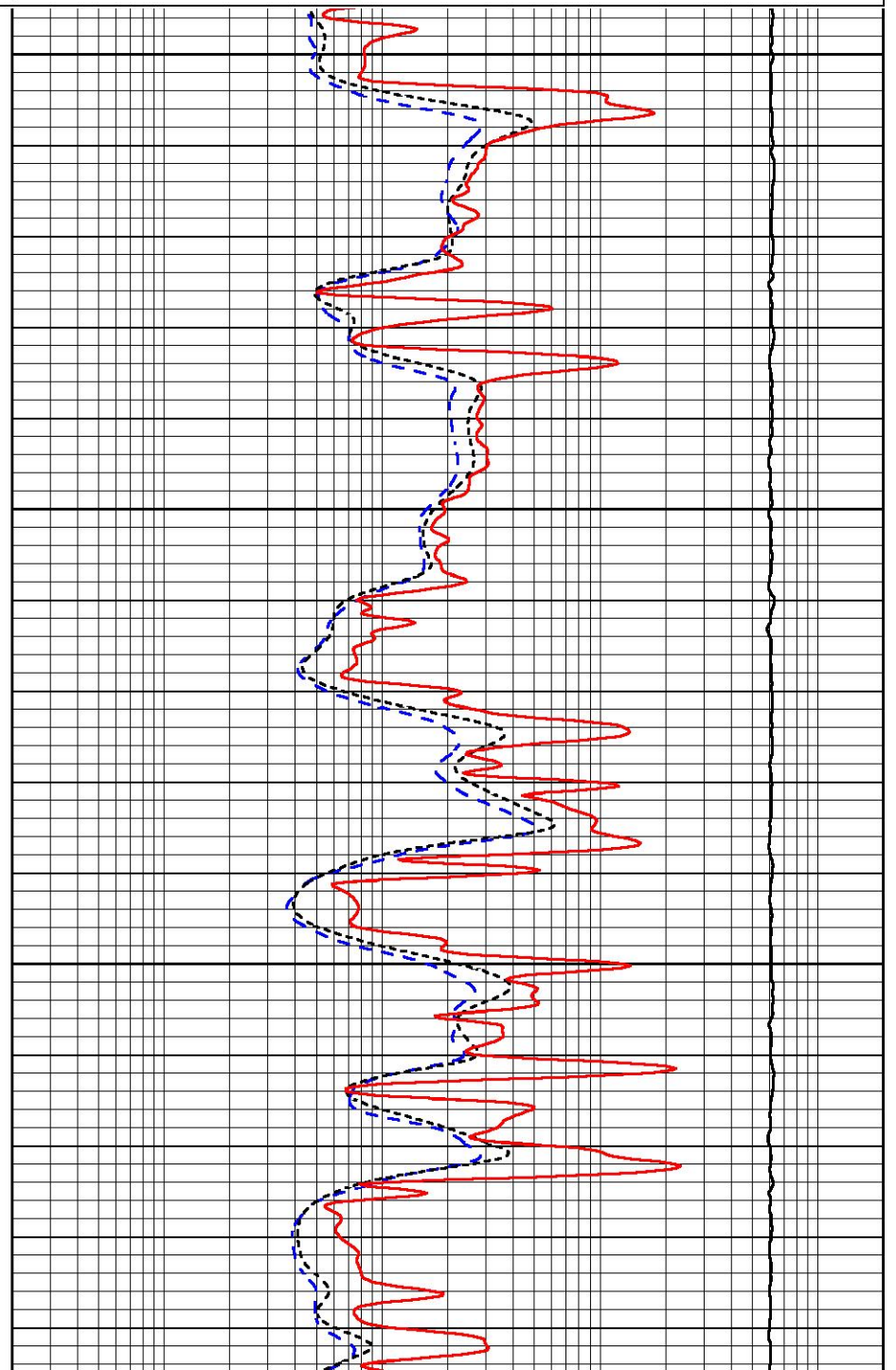
0.2	DEEP RESISTIVITY (Ohm-m)	2000
0.2	MEDIUM RESISTIVITY (Ohm-m)	2000
0.2	RLL3 (Ohm-m)	2000
15000	LINE TENSION (lb)	0

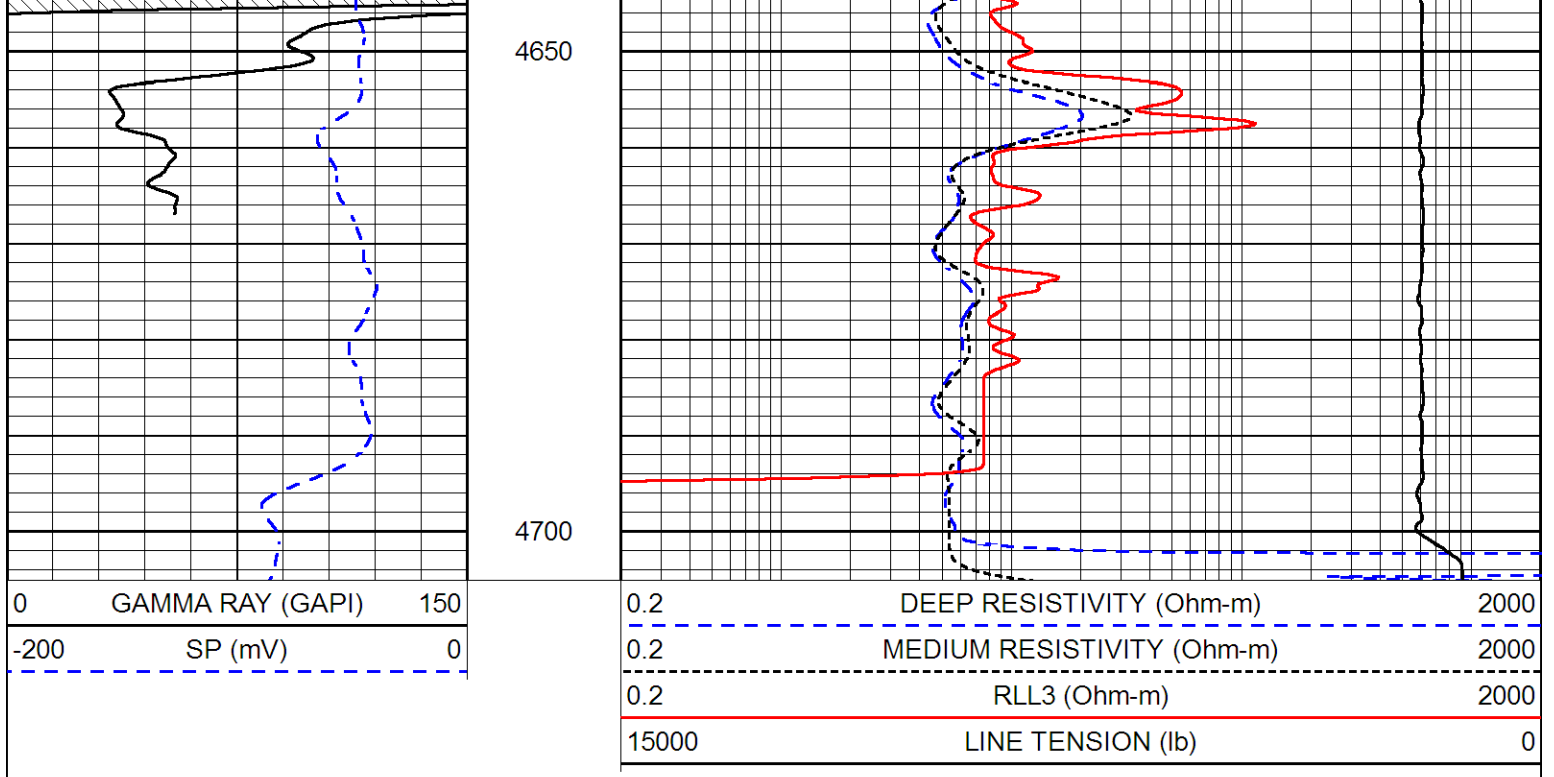


4500

4550

4600





Calibration Report

Database File murfin_jean_a_1_7.db
 Dataset Pathname stackml/pass3.1
 Dataset Creation Mon May 06 21:28:50 2019

Dual Induction Calibration Report

Serial-Model: PSI 988-M&W
 Calibration Performed: Tue Nov 20 10:50:19 2018

Loop:	Readings		References			Results	
	Air	Loop	Air	Loop		Gain	Offset
Deep	178.615	710.235	0.000	255.800	mmho/m	0.525	-44.000
Medium	161.982	1441.110	0.000	255.800	mmho/m	0.380	-17.000

Microlog Calibration Report

Serial-Model: PSI-01-PSI STKBL ML
 Performed: Thu Mar 31 18:14:32 2016

	Readings		References			Results	
	Zero	Cal	Zero	Cal		m	b
Normal	0.0000	1.0000	0.0000	1.0000	Ohm-m	44500.0000	-1.0000
Inverse	0.0000	1.0000	0.0000	1.0000	Ohm-m	51500.0000	-1.0000
Caliper	1.0001	1.1397	6.5000	18.5000	in	86.0000	-82.4800

Compensated Density Calibration Report

Serial-Model: 144-84-M&W
 Source / Verifier: /
 Master Calibration Performed: Mon Jan 07 15:00:31 2019

Master Calibration

	Density		Far Detector	Near Detector	
Magnesium	1.755	g/cc	4315.49	5309.89	cps
Aluminum	2.685	g/cc	825.26	3443.46	cps
Spine Angle = 75.33			Density/Spine Ratio = 0.544		
	Size		Reading		
Small Ring	4.00	in	0.69		
Large Ring	14.00	in	0.04		

Compensated Neutron Calibration Report

Serial Number: tk10-MW
 Tool Model: M&W
 Calibration Performed: Wed Nov 16 11:21:36 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: Tue Apr 11 17:08:01 2017

Calibrator Value: 1000.0 GAPI

Background Reading: 0.0 cps
 Calibrator Reading: 6.2 cps

Sensitivity: 0.5200 GAPI/cps



PIONEER
 Pioneer Energy Services

Company MURFIN DRILLING COMPANY, INC.
 Well JEAN 'A' #1-7
 Field WILDCAT
 County KANSAS
 State CHEYENNE