



**PIONEER**  
Pioneer Energy Services

## DUAL INDUCTION LOG

Company MURFIN DRILLING CO., INC.  
Well SOUCIE KRISS UNIT #1-14  
Field JIMMY NORTHEAST  
County THOMAS  
State KANSAS

Company MURFIN DRILLING CO., INC.  
Well SOUCIE KRISS UNIT #1-14  
Field JIMMY NORTHEAST  
County THOMAS State KANSAS

Location: API #: 15-193-21052-00-00

2275' FSL & 2860' FEL

SEC 14 TWP 10S RGE 34W

Permanent Datum GROUND LEVEL Elevation 3209'  
Log Measured From KELLY BUSHING  
Drilling Measured From KELLY BUSHING

Other Services  
CNL/CDL  
MEL/BHCS  
Elevation  
K.B. 3217'  
D.F. N/A  
G.L. 3209'

|                        |                |  |  |
|------------------------|----------------|--|--|
| Date                   | 8/28/2019      |  |  |
| Run Number             | ONE            |  |  |
| Depth Driller          | 4895'          |  |  |
| Depth Logger           | 4895'          |  |  |
| Bottom Logged Interval | 4894'          |  |  |
| Top Log Interval       | 0'             |  |  |
| Casing Driller         | 8.625" @ 307'  |  |  |
| Casing Logger          | 306'           |  |  |
| Bit Size               | 7.875"         |  |  |
| Type Fluid in Hole     | CHEMICAL       |  |  |
| Salinity, ppm CL       | 7000           |  |  |
| Density / Viscosity    | 9.3 84         |  |  |
| pH / Fluid Loss        | 10.0 8.8       |  |  |
| Source of Sample       | FLOWLINE       |  |  |
| Rm @ Meas. Temp        | 0.40 @ 73      |  |  |
| Rmt @ Meas. Temp       | 0.30 @ 73      |  |  |
| Rmc @ Meas. Temp       | 0.54 @ 73      |  |  |
| Source of Rmt / Rmc    | CHARTS         |  |  |
| Rm @ BHT               | 0.23 @ 125     |  |  |
| Operating Rig Time     | 5 HOURS        |  |  |
| Max Rec. Temp. F       | 125            |  |  |
| Equipment Number       | P-24           |  |  |
| Location               | HAYS           |  |  |
| Recorded By            | IAN MABB       |  |  |
| Witnessed By           | ROBERT HENDRIX |  |  |

<<< 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.

COLBY, KS.

HWY 25 SOUTH TO COUNTY RD D, WEST 2 MILE,  
1/2 NORTH, WEST INTO

Log Measured From: KELLY BUSHING 8' Ft. Above Permanent Datum

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

### Your Pioneer Energy Services Crew

Engineer: IAN MABB  
Operator:  
Operator:  
Operator:

### This Log Record Was Witnessed By

Primary Witness: ROBERT HENDRIX  
Secondary Witness:  
Secondary Witness:  
Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\murfir\_soucie\_kriss\_unit\_1\_14.db  
Dataset field/well/stackmel/pass3.1/\_vars\_

## Top - Bottom

|           |             |             |             |           |            |       |              |
|-----------|-------------|-------------|-------------|-----------|------------|-------|--------------|
| A         | BOREID      | BOTTEMP     | CASEOD      | CASETHCK  | FLUIDDEN   | M     | MATRXDEN     |
| 1         | in<br>7.875 | degF<br>125 | in<br>5.5   | in<br>0   | g/cc<br>1  | 2     | g/cc<br>2.71 |
| NPORSEL   | PERFS       | SNDERR      | SNDERRM     | SPSHIFT   | SRFTEMP    | SZCOR | TDEPTH       |
| Limestone | 0           | mmho/m<br>8 | mmho/m<br>6 | mV<br>166 | degF<br>73 | Off   | ft<br>4895   |

| 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             | 37.48       |    |    | CNT-M&W (207-MW)                                    | 5.50        | 3.50      | 100.00      |
| CNSSC             | 36.73       |    |                                                                                     |                                                     |             |           |             |
| LSD               | 28.43       |  |   | CDL-M&W (96-916)                                    | 8.50        | 4.00      | 250.00      |
| DCAL              | 28.42       |                                                                                     |                                                                                     |                                                     |             |           |             |
| SSD               | 27.93       |                                                                                     |                                                                                     |                                                     |             |           |             |
| ML-PSIML (PSI-01) |             |                                                                                     |  | GO Micro log tools converted to Simplec electronics | 7.58        | 4.00      | 65.00       |
| MCAL              | 19.83       |  |                                                                                     |                                                     |             |           |             |
| MI                | 19.83       |                                                                                     |                                                                                     |                                                     |             |           |             |
| MN                | 19.83       |                                                                                     |                                                                                     |                                                     |             |           |             |
| RLL3F             | 15.80       |  |  |                                                     |             |           |             |
| RLL3              | 15.80       |                                                                                     |                                                                                     |                                                     |             |           |             |
|                   |             |                                                                                     |                                                                                     |                                                     |             |           |             |
| CILD              | 8.00        |  |                                                                                     | DIL-PSI HIGH TEMP (1039)                            | 18.50       | 3.50      | 220.00      |

CILM

4.70

SP

0.20

Dataset: murfin\_soucie\_kriss\_unit\_1\_14.db: field/well/stackmel/pass3.1  
Total length: 43.08 ft  
Total weight: 685.00 lb  
O.D.: 4.00 in



# MAIN PASS

Database File murfin\_soucie\_kriss\_unit\_1\_14.db  
Dataset Pathname stackmel/pass3.1  
Presentation Format \_dil2in  
Dataset Creation Wed Aug 28 14:57:32 2019  
Charted by Depth in Feet scaled 1:600

GAMMA RAY

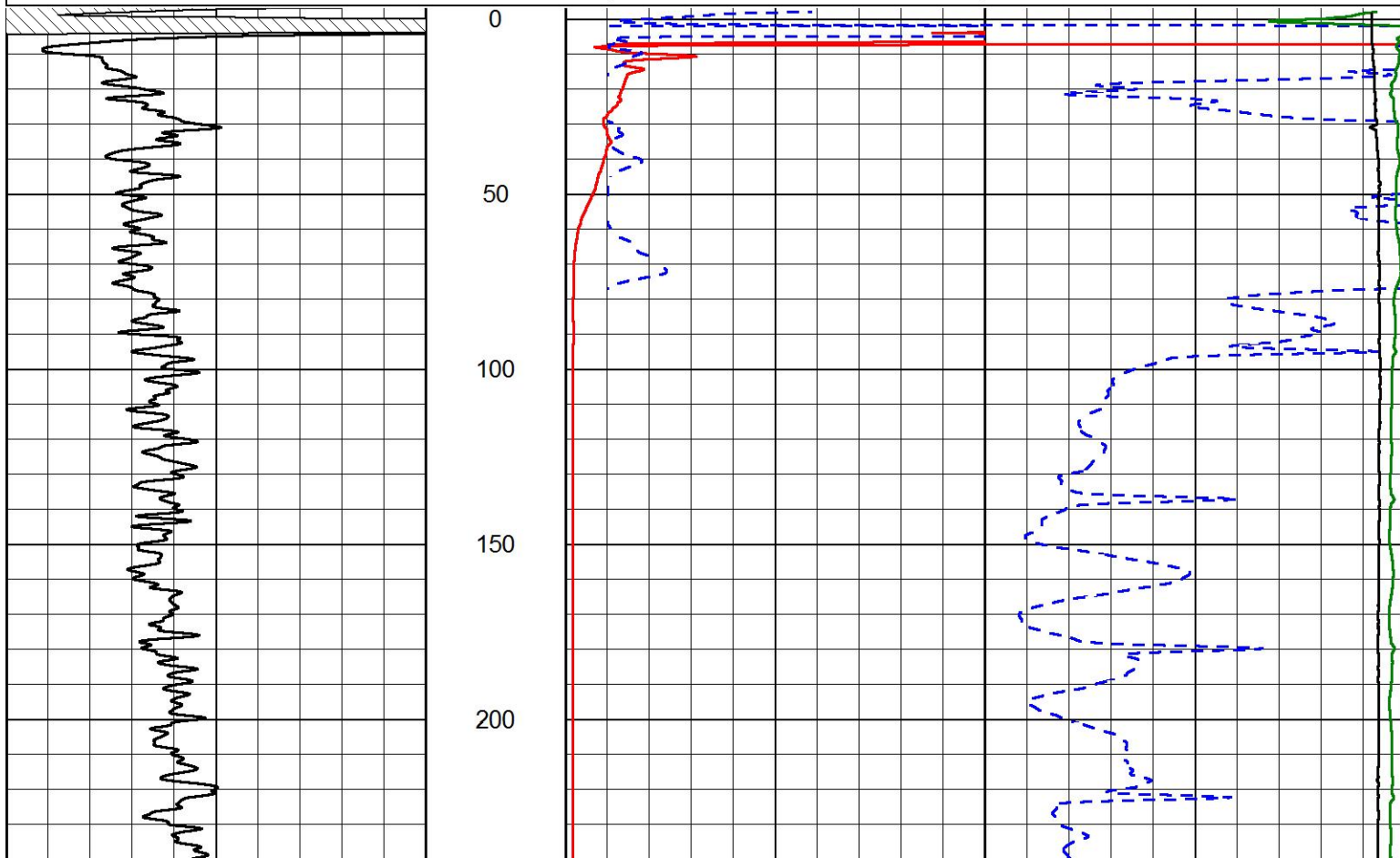
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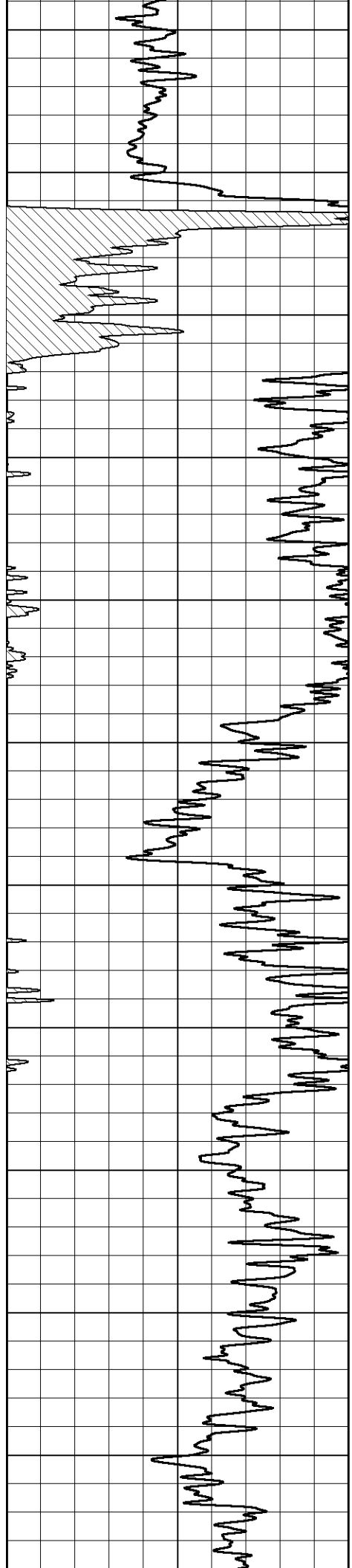
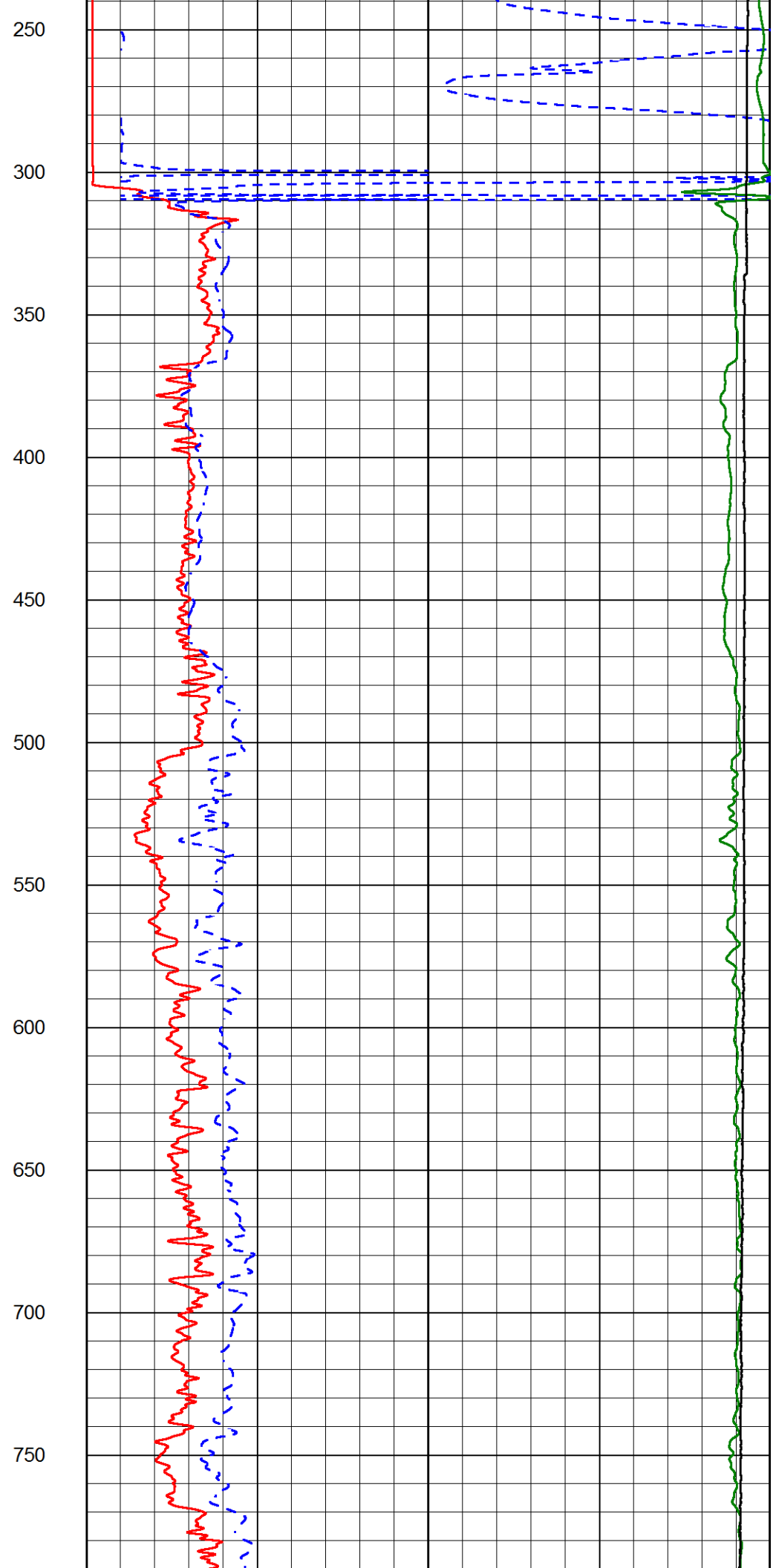
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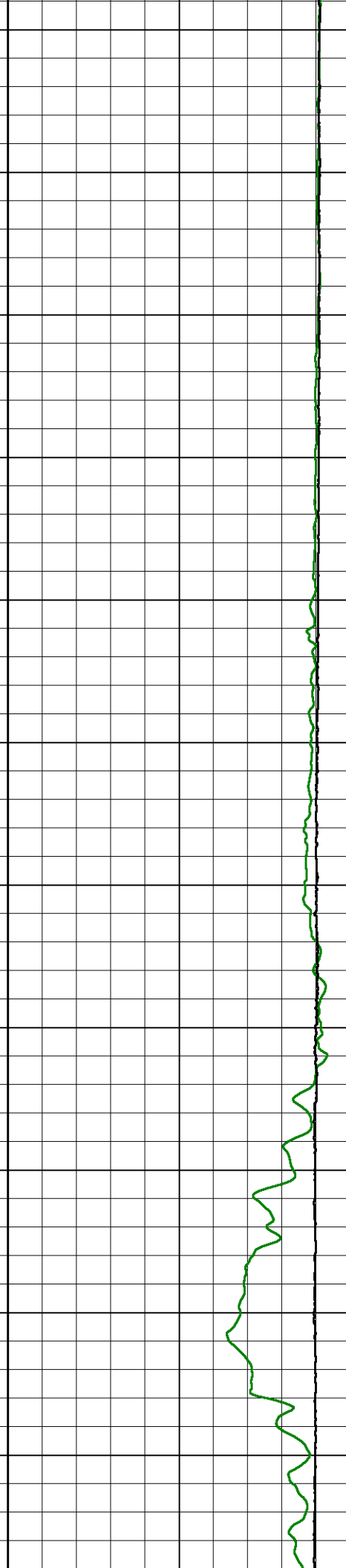
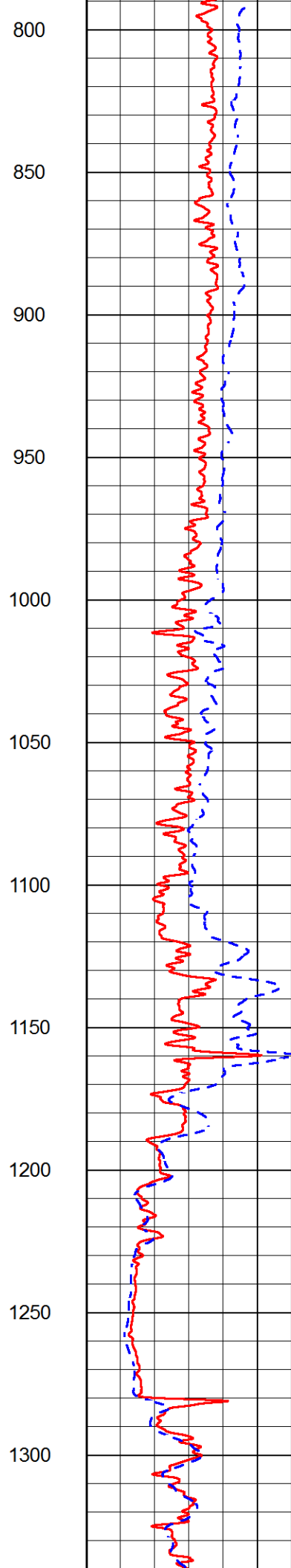
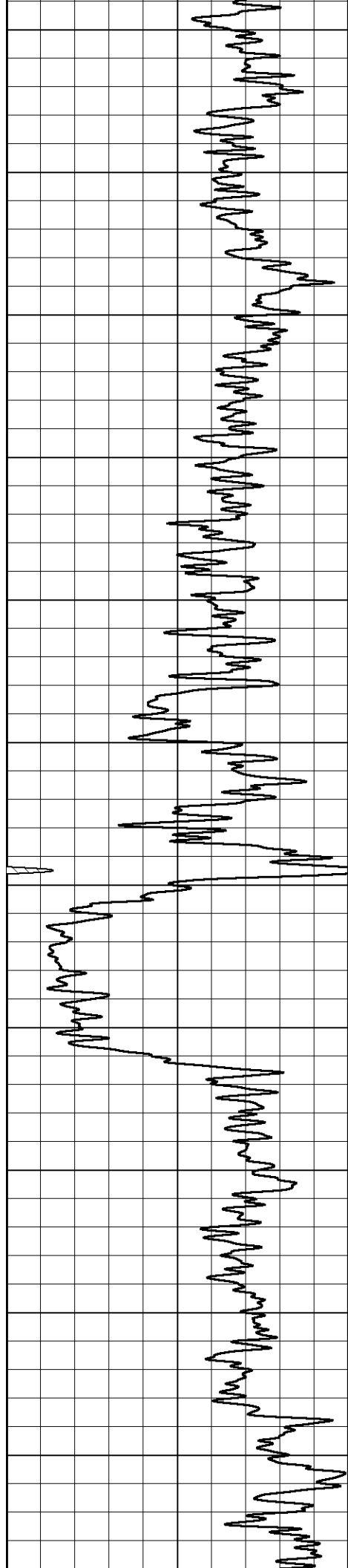
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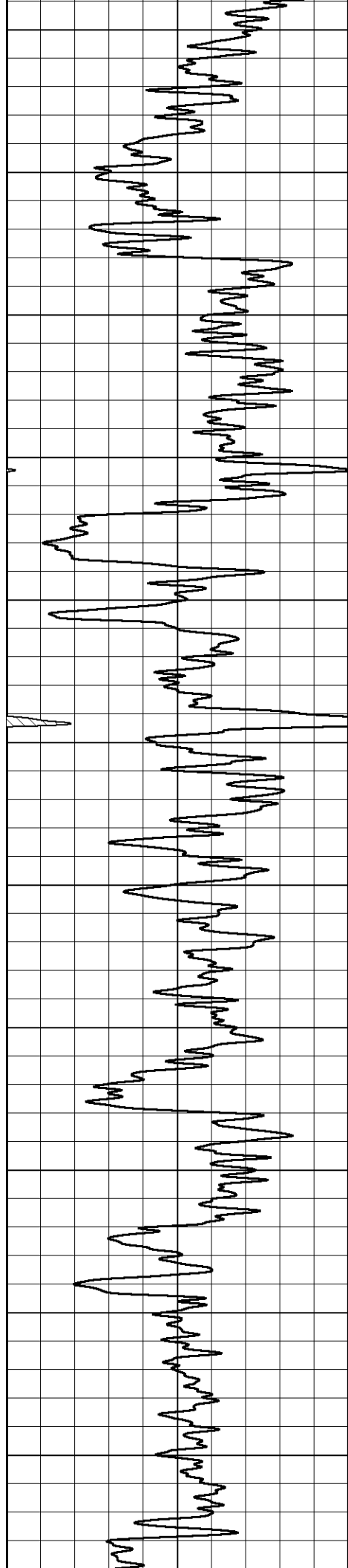
|       |                       |    |
|-------|-----------------------|----|
| 0     | RLL3 (Ohm-m)          | 50 |
| 0     | RILD (Ohm-m)          | 50 |
| 2000  | CONDUCTIVITY (mmho/m) | 0  |
| 15000 | Line Tension (lb)     | 0  |

|    |                          |     |
|----|--------------------------|-----|
| 50 | RLL3 (Ohm-m)             | 500 |
| 50 | Deep Resistivity (Ohm-m) | 500 |









1350

1400

1450

1500

1550

1600

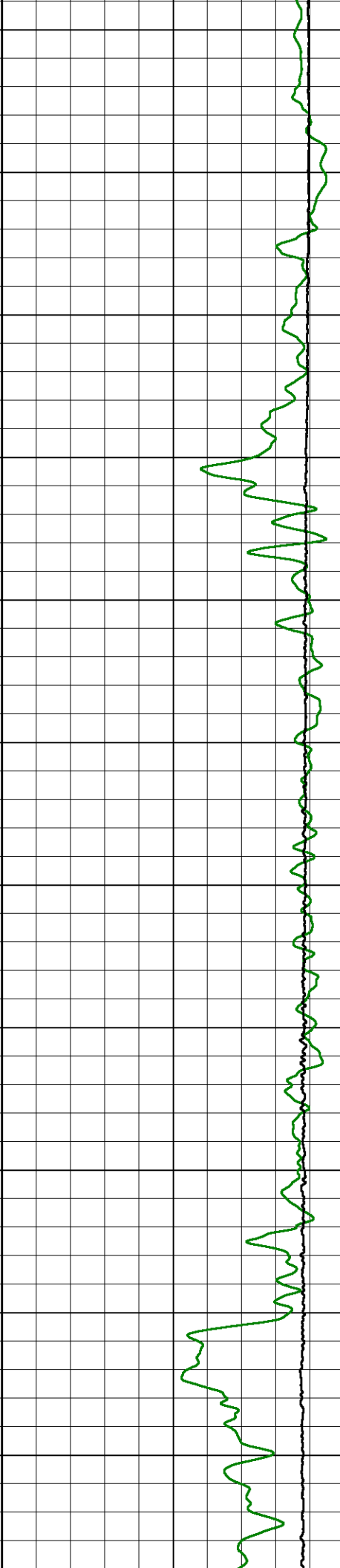
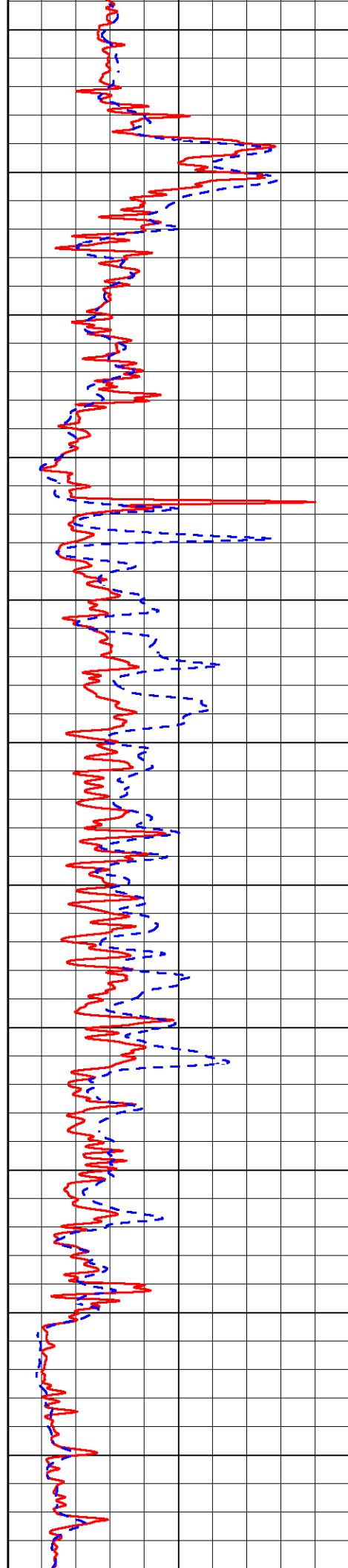
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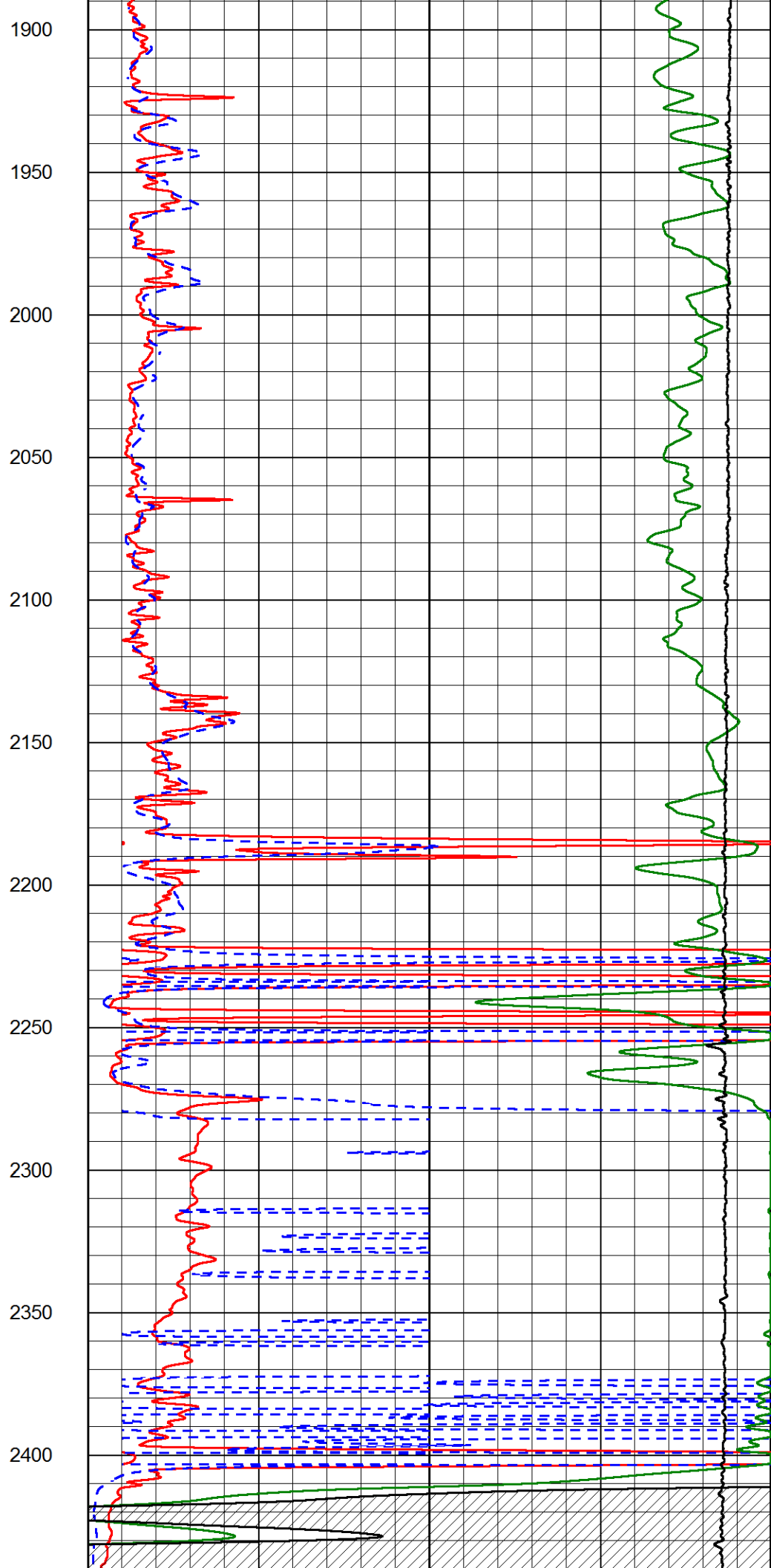
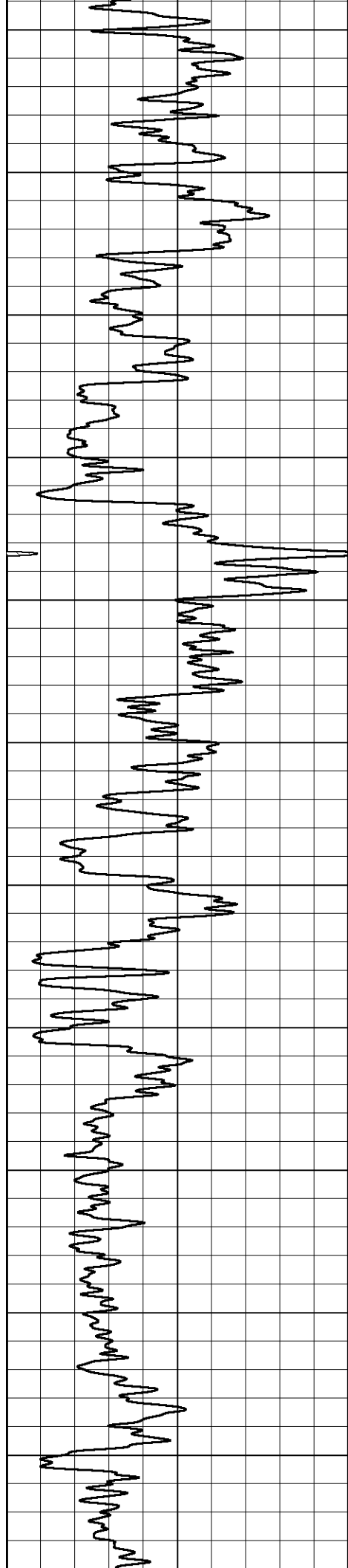
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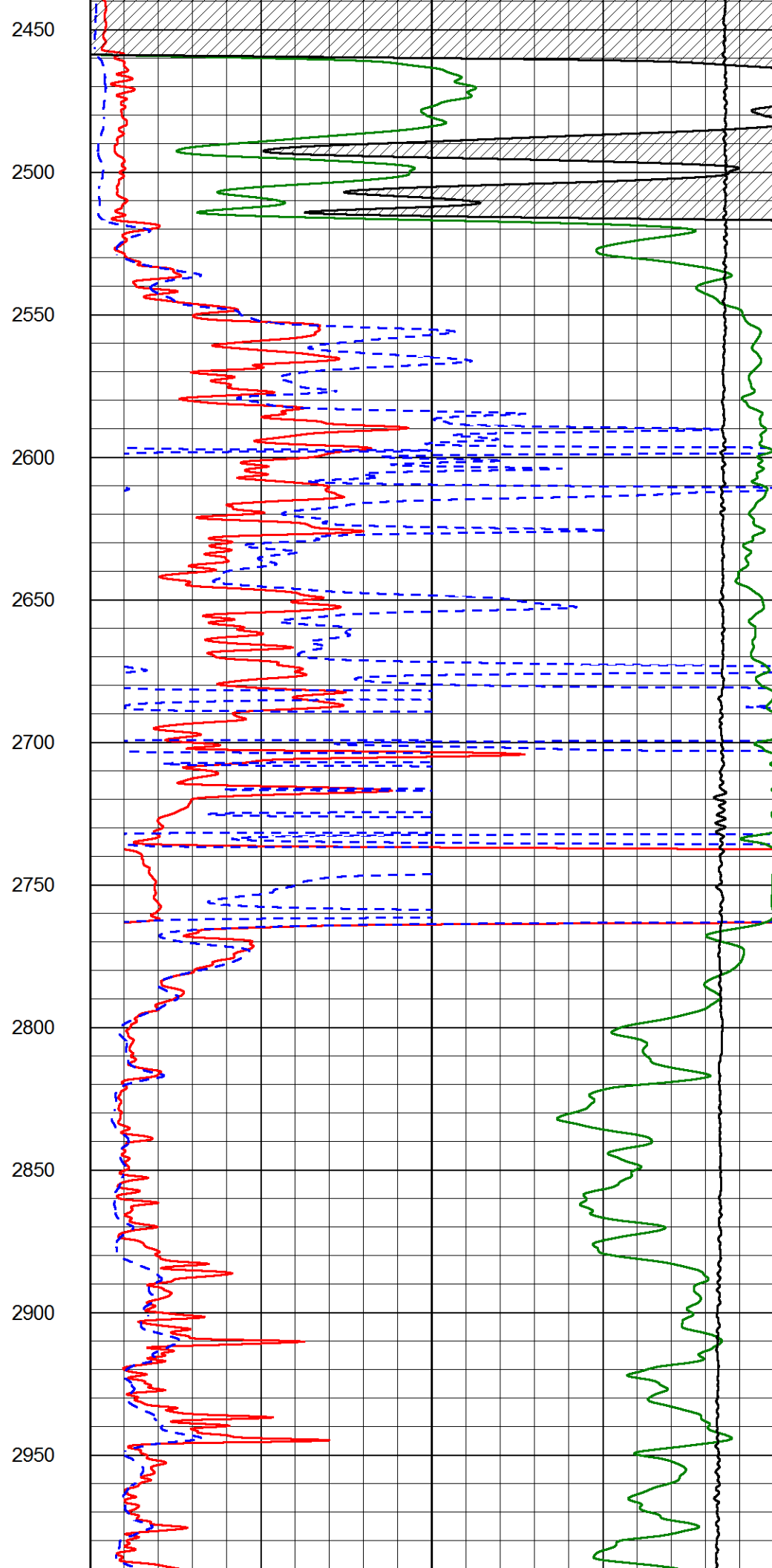
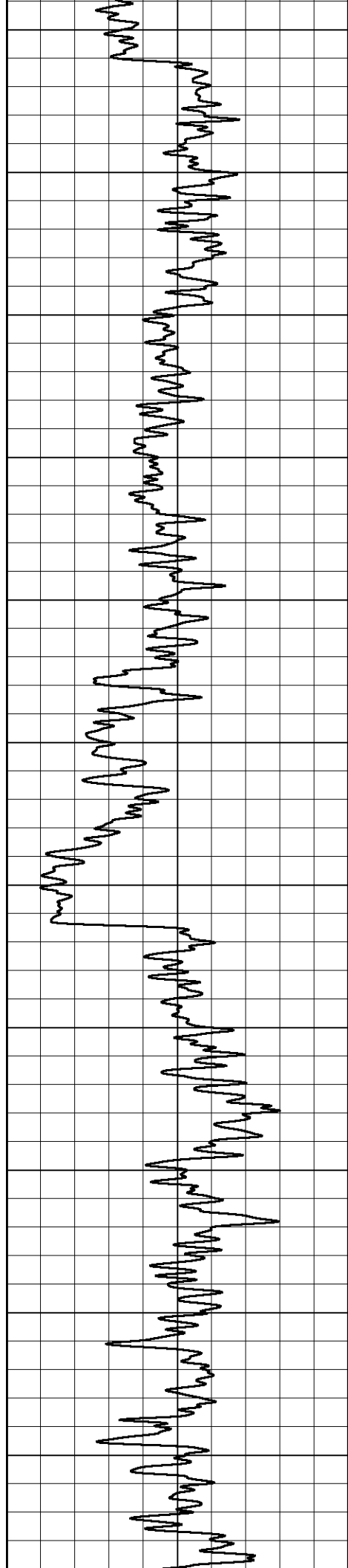
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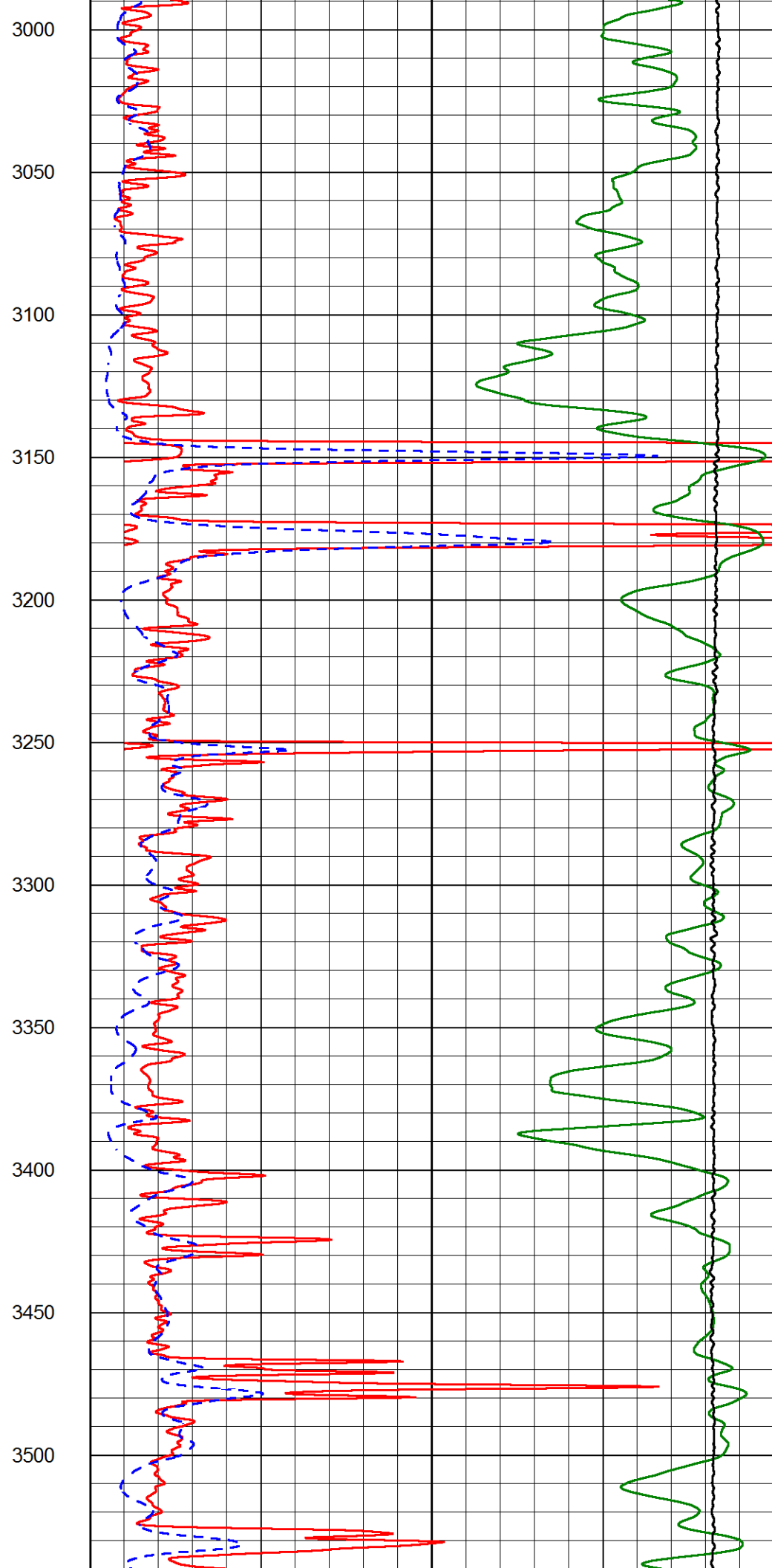
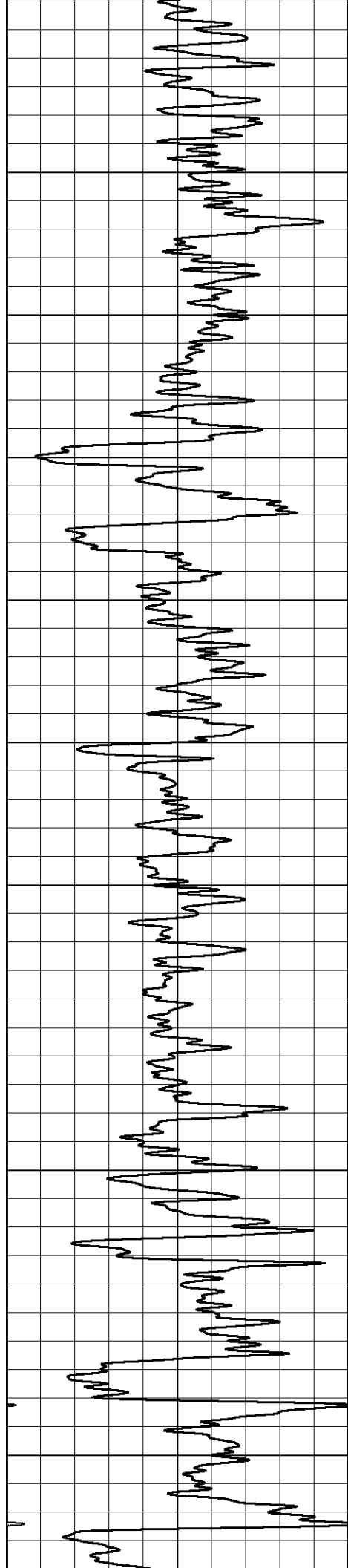
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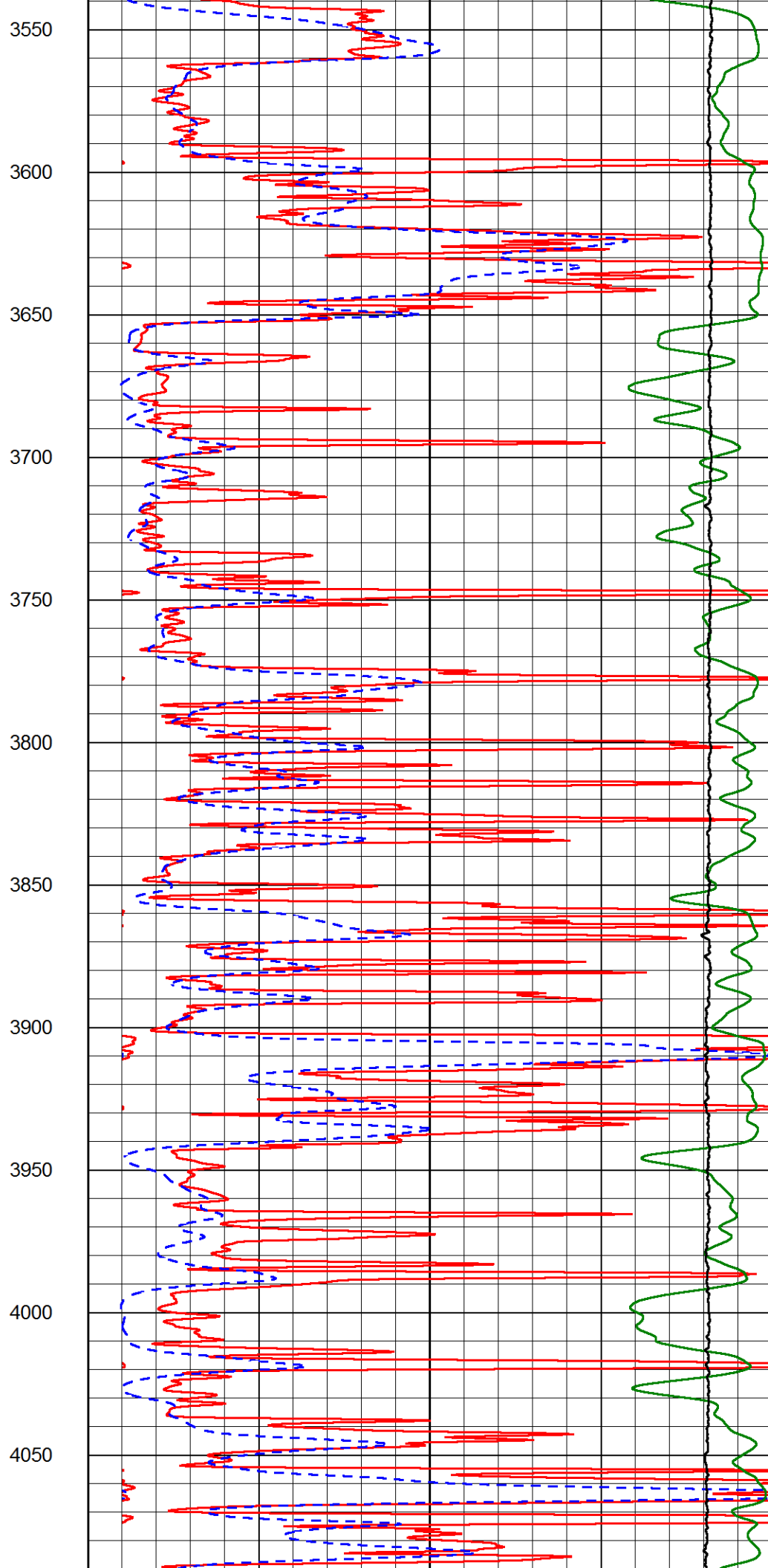
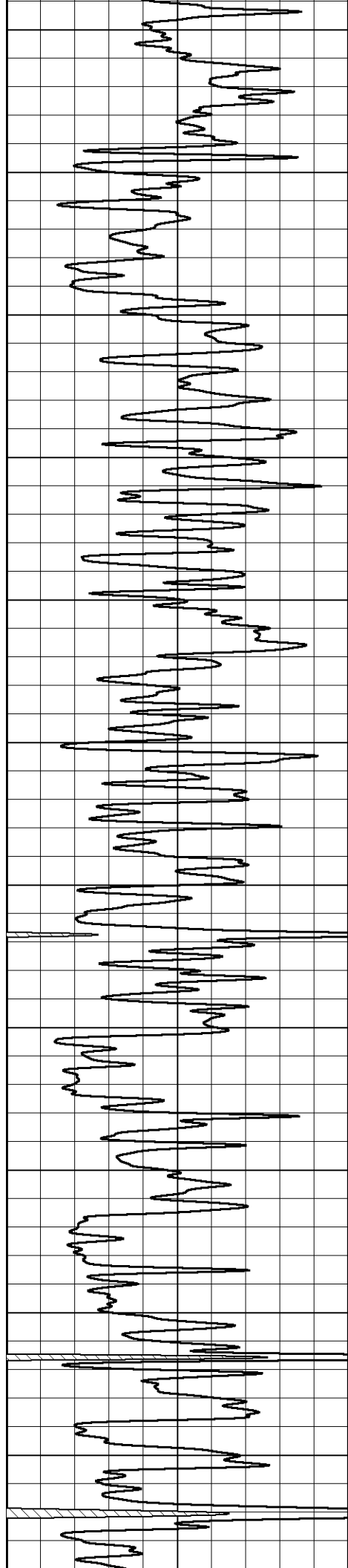
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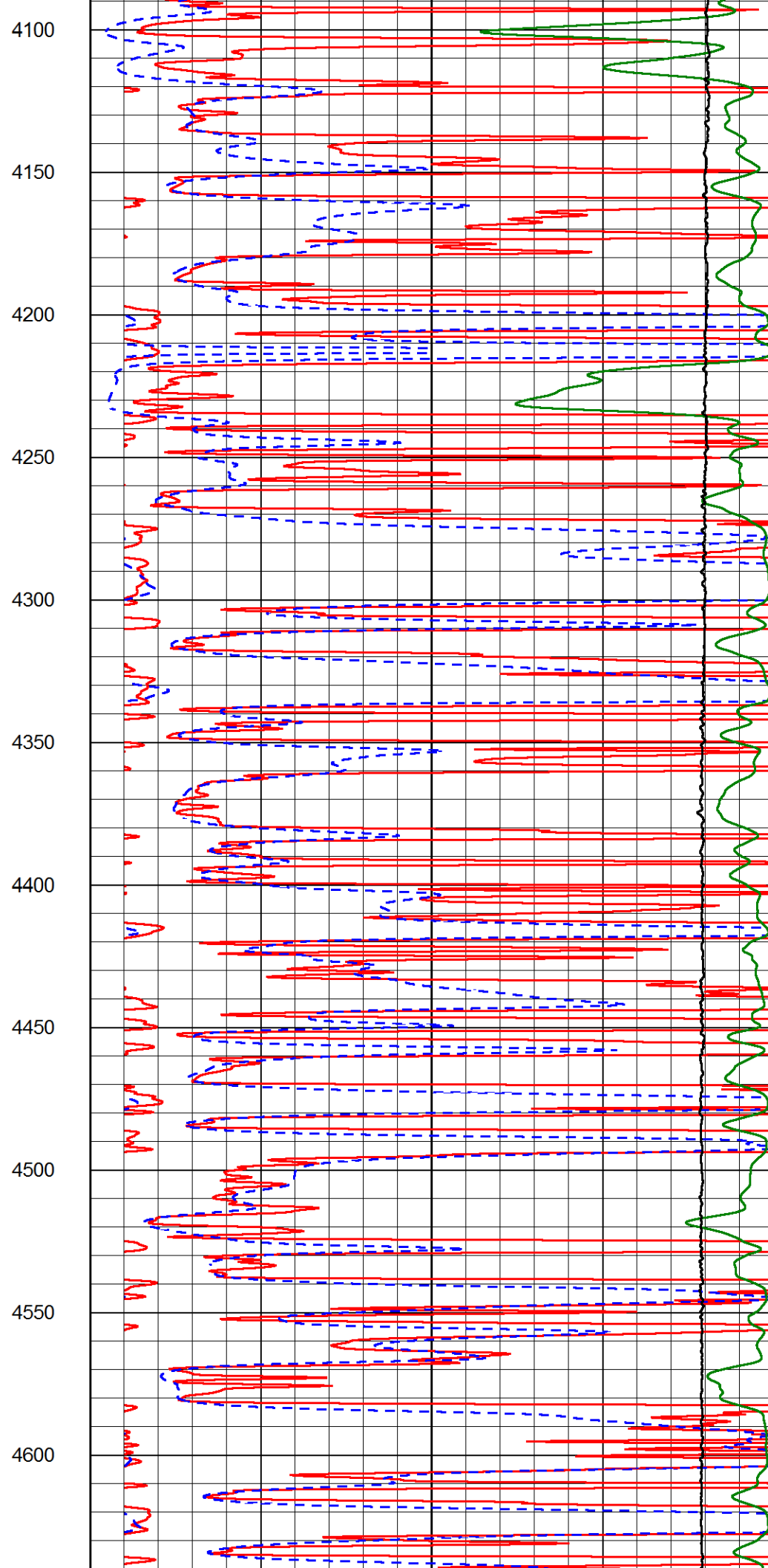
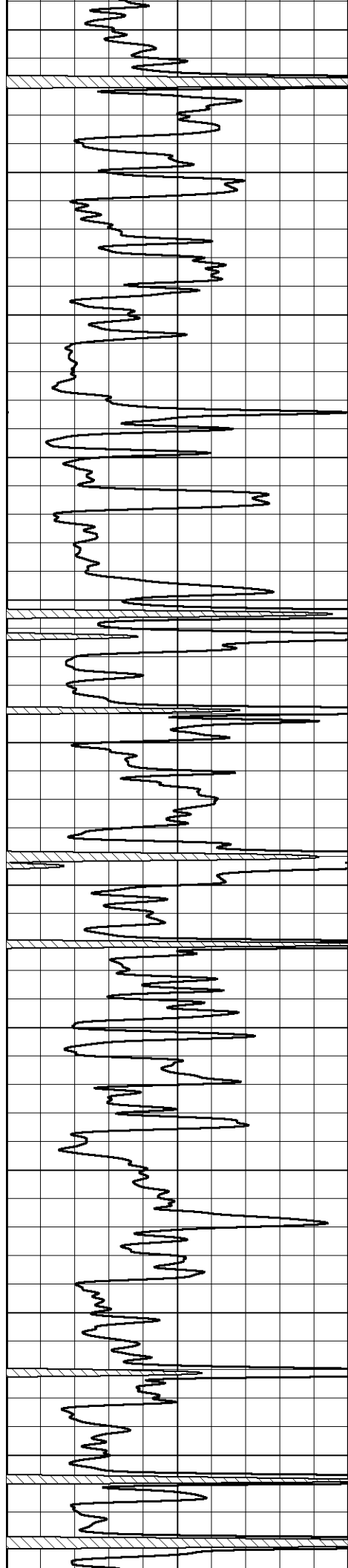


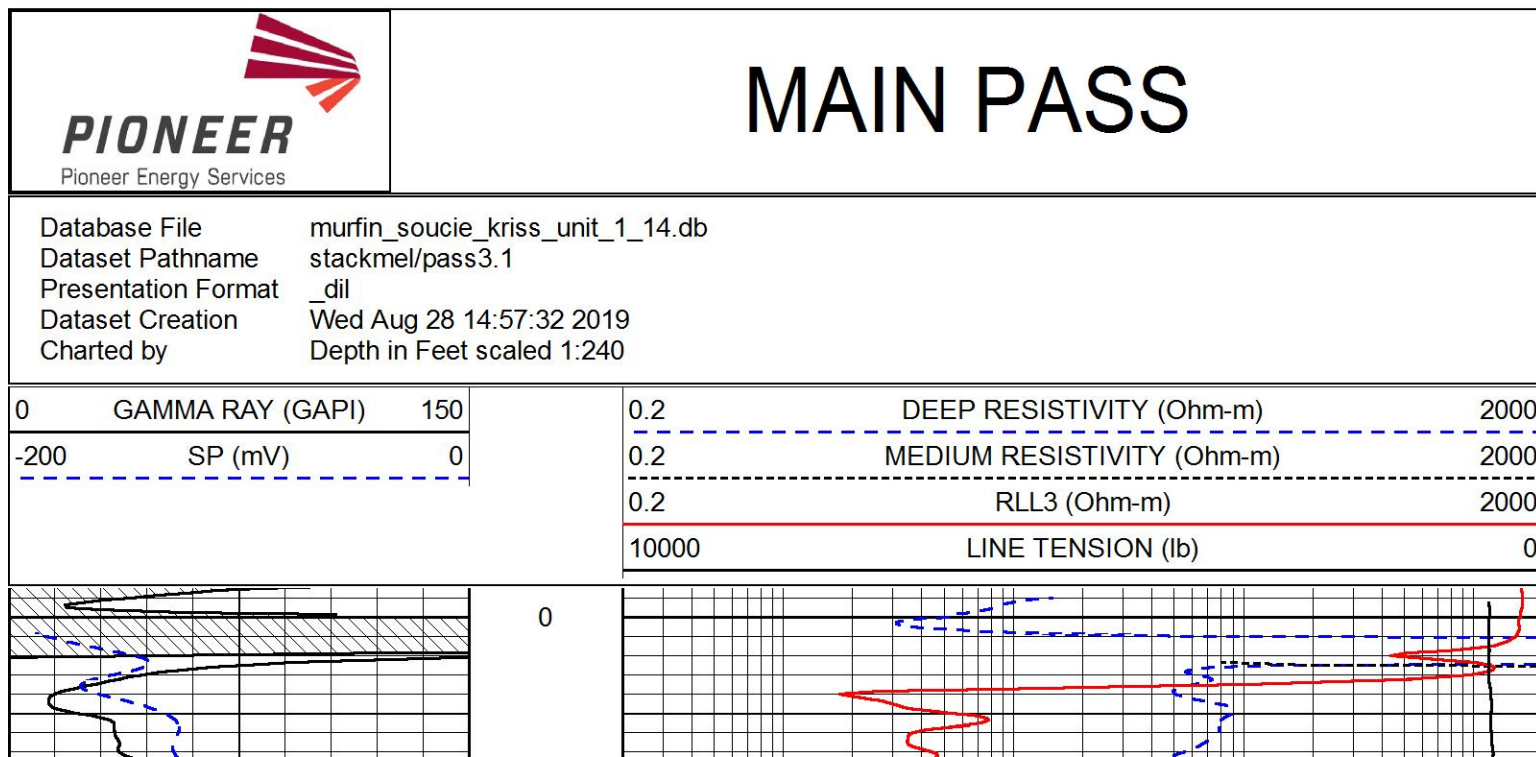
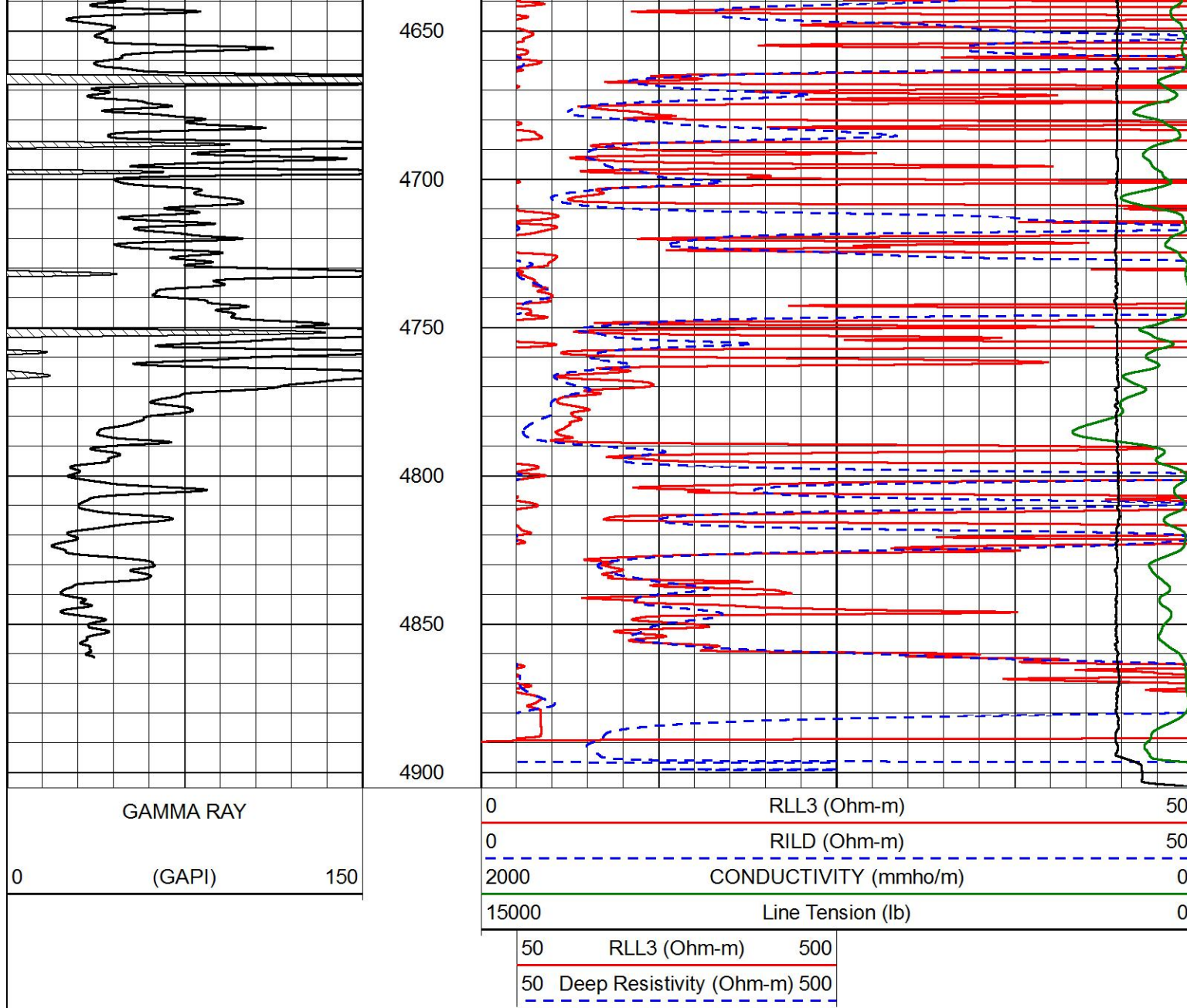


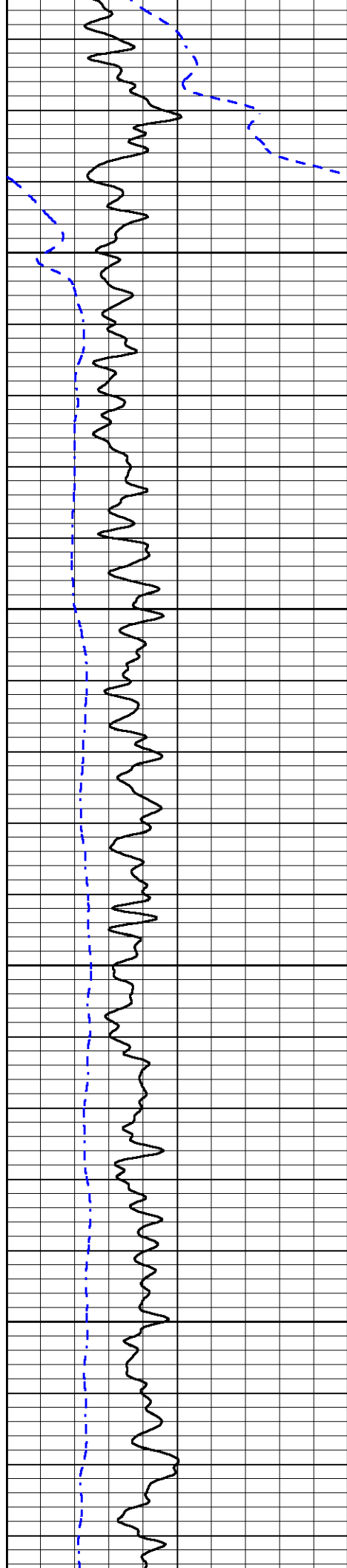










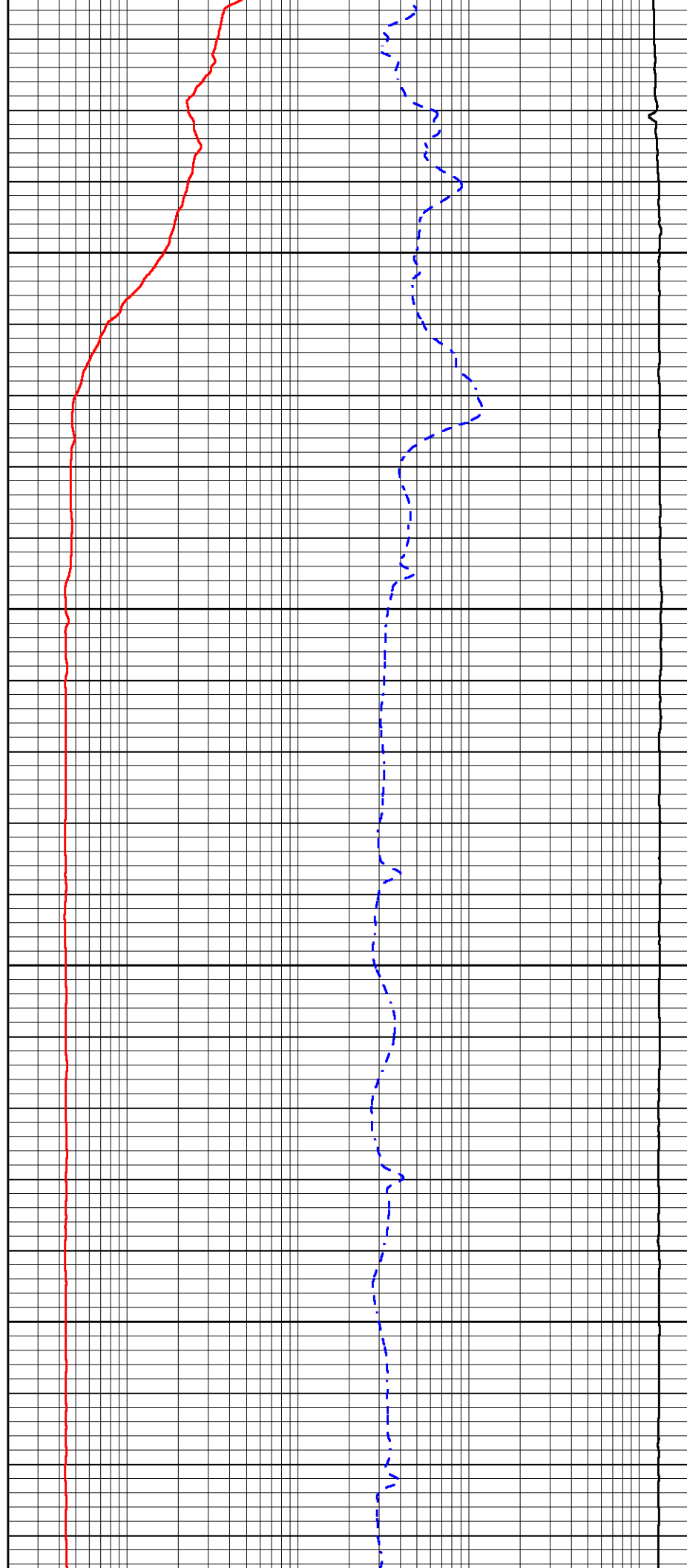


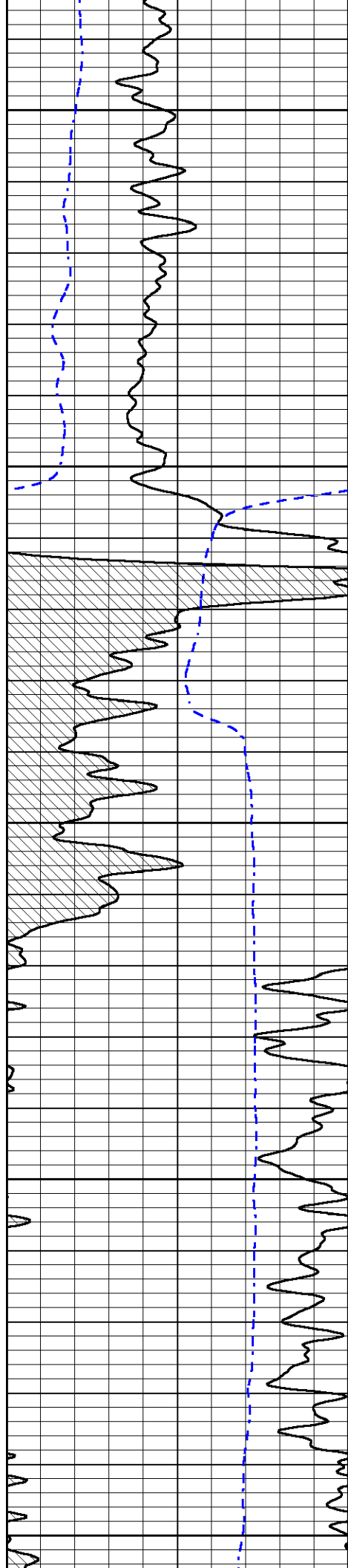
50

100

150

200





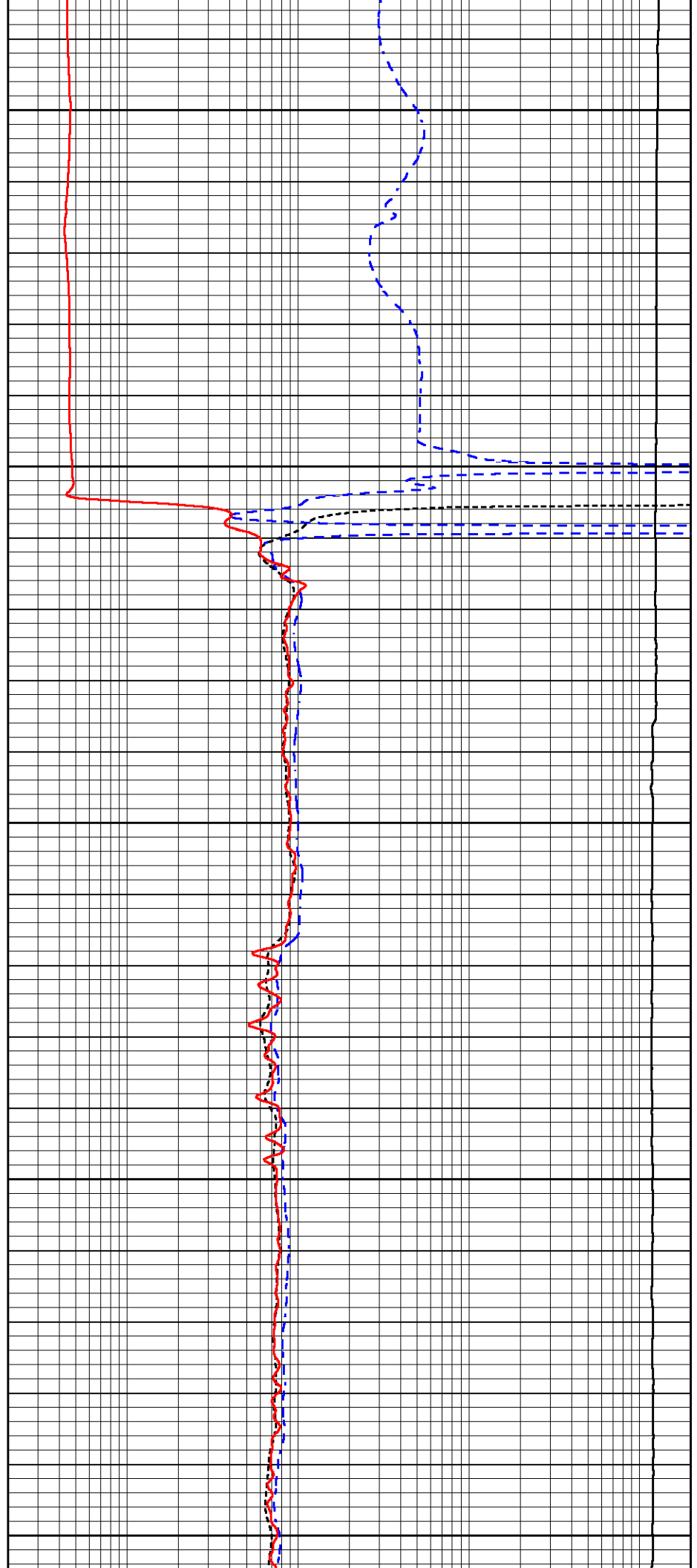
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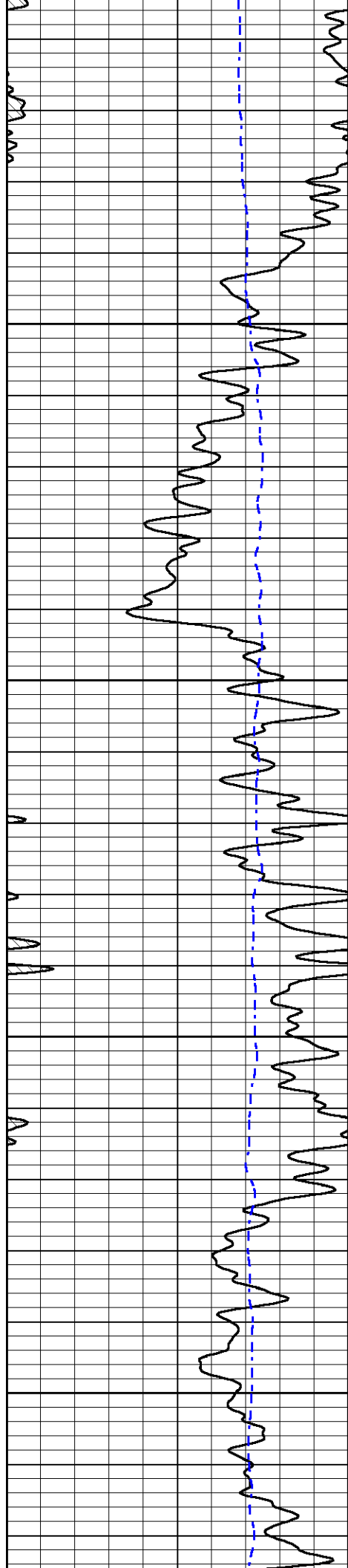
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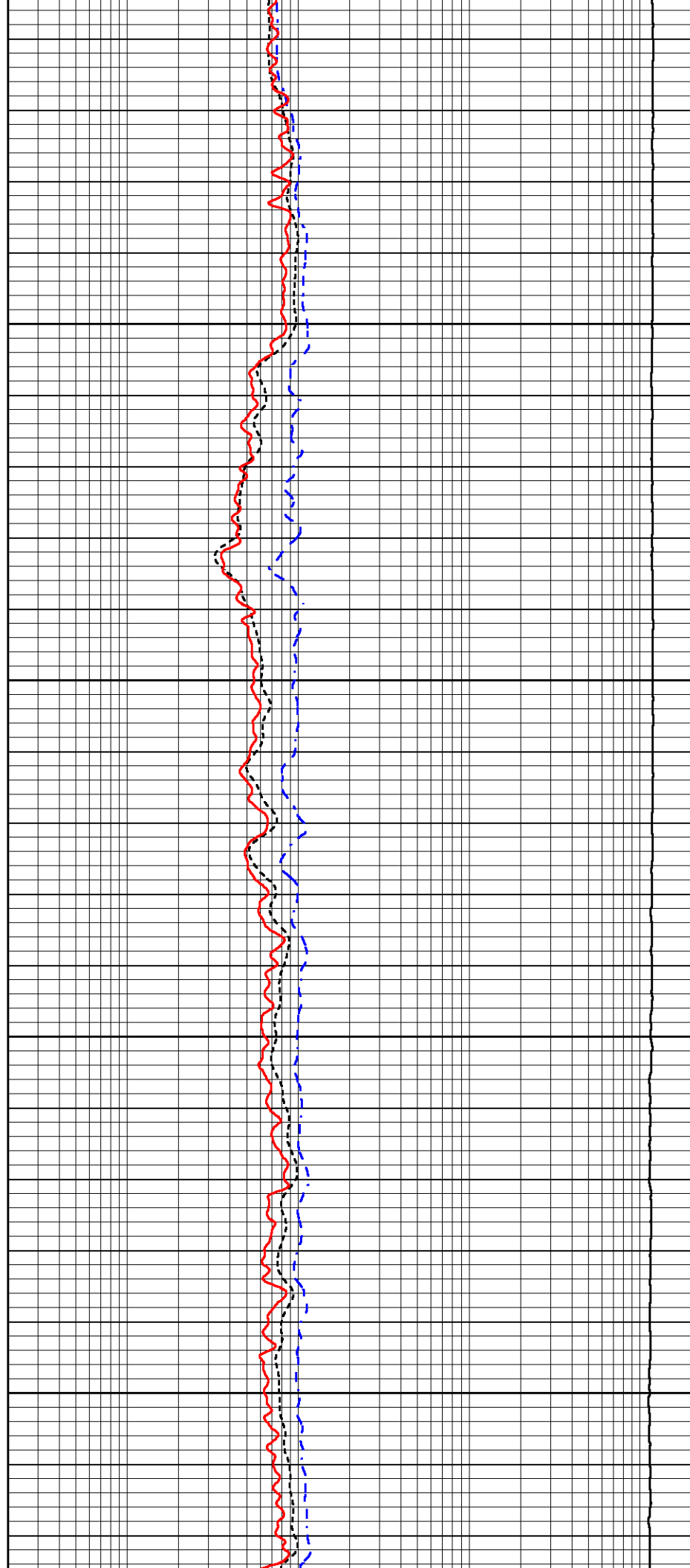


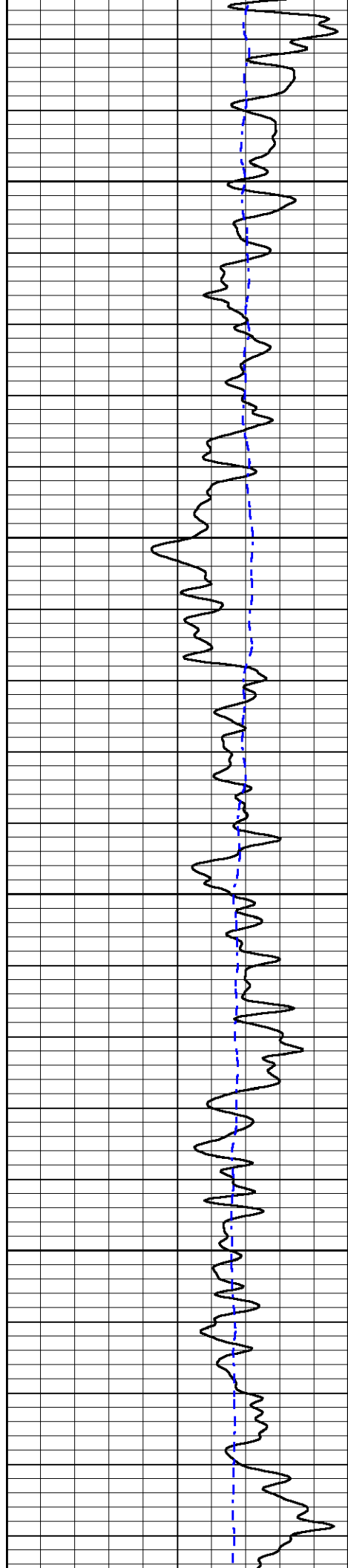
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550

600

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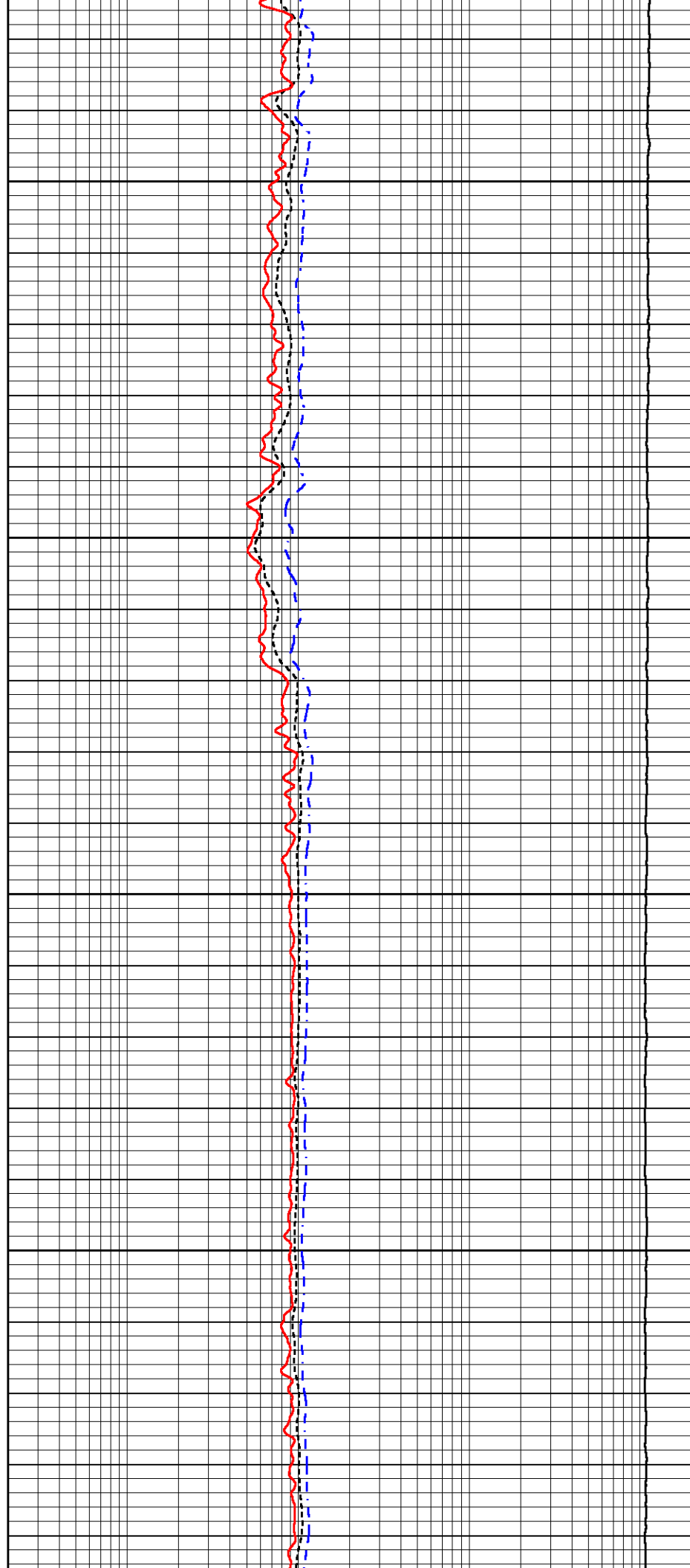


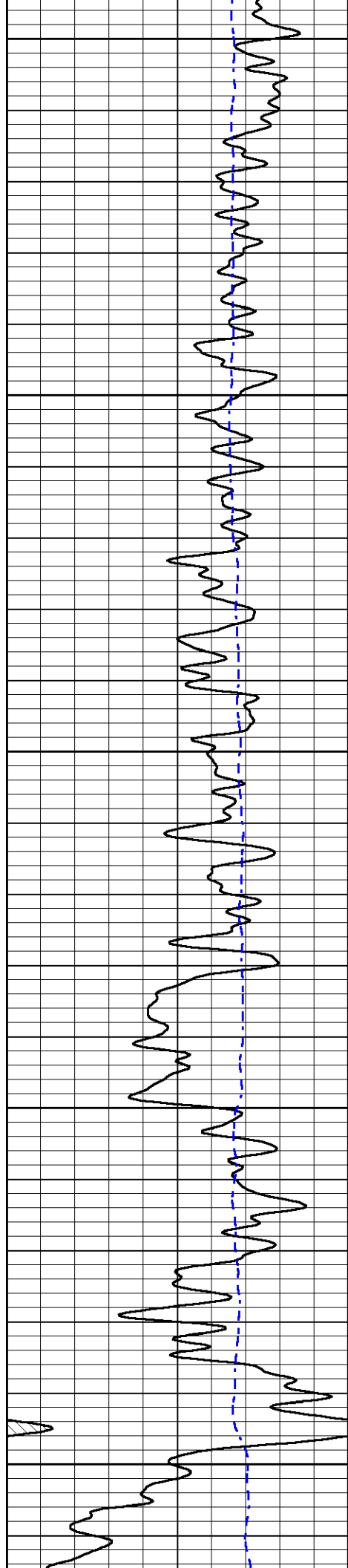
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800

850





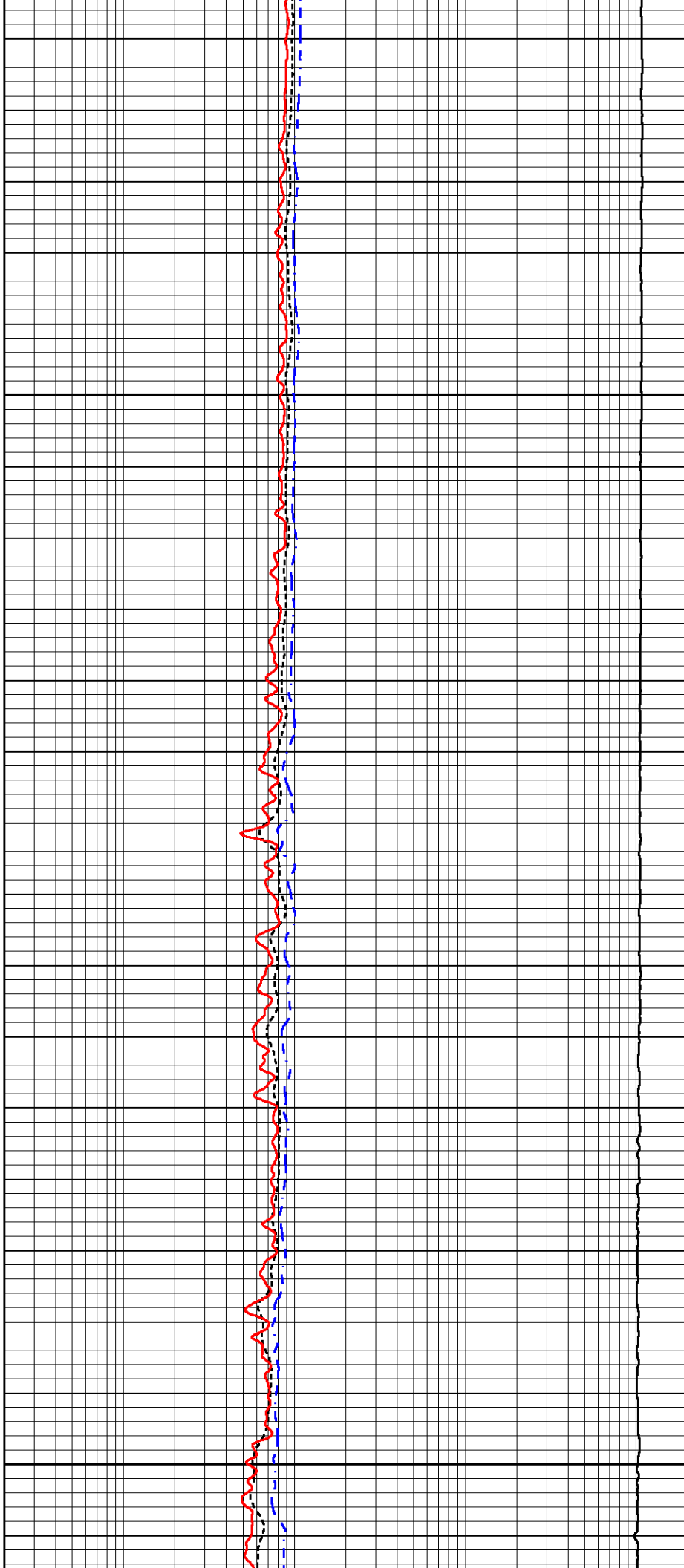
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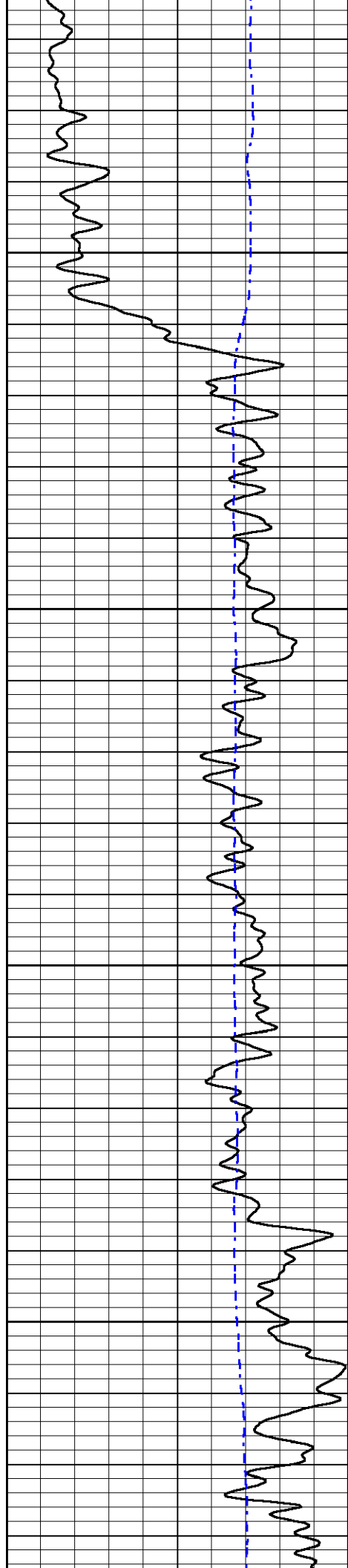
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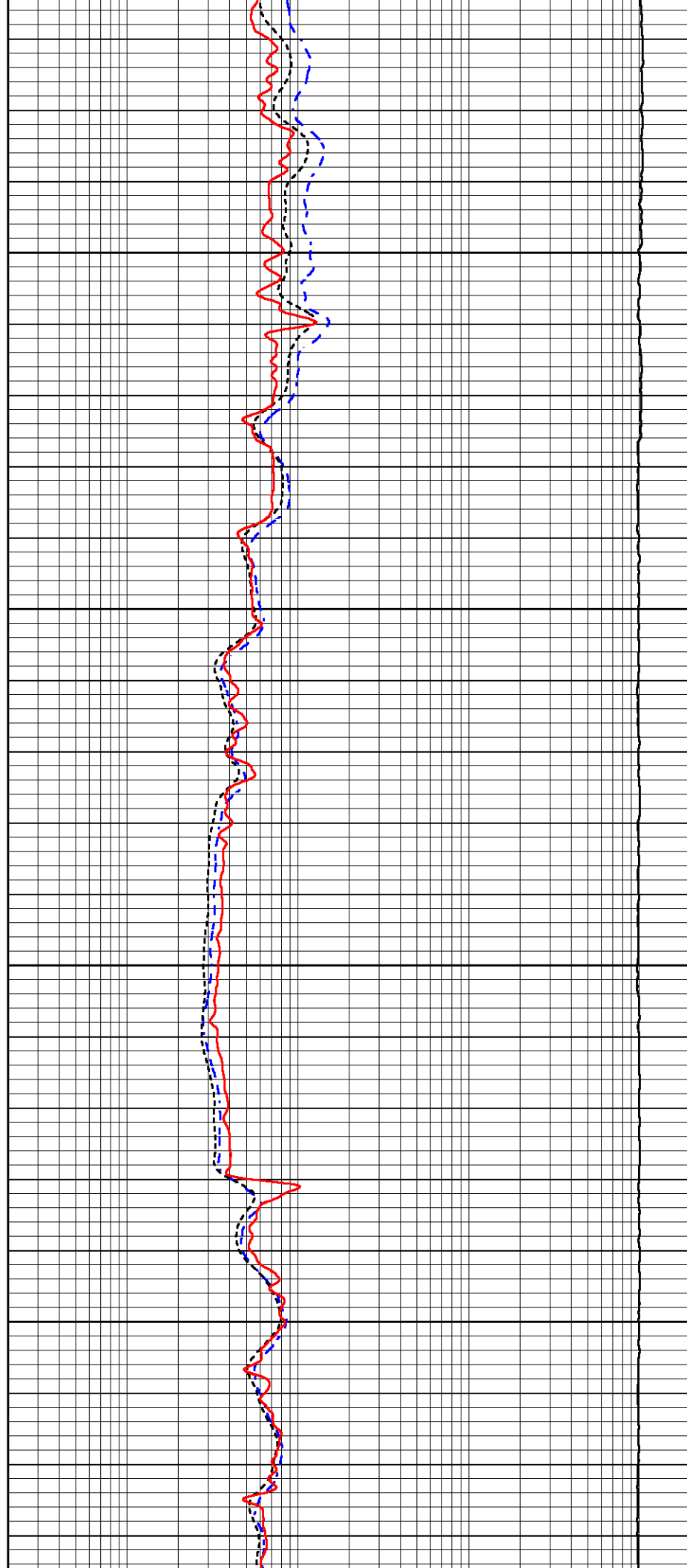


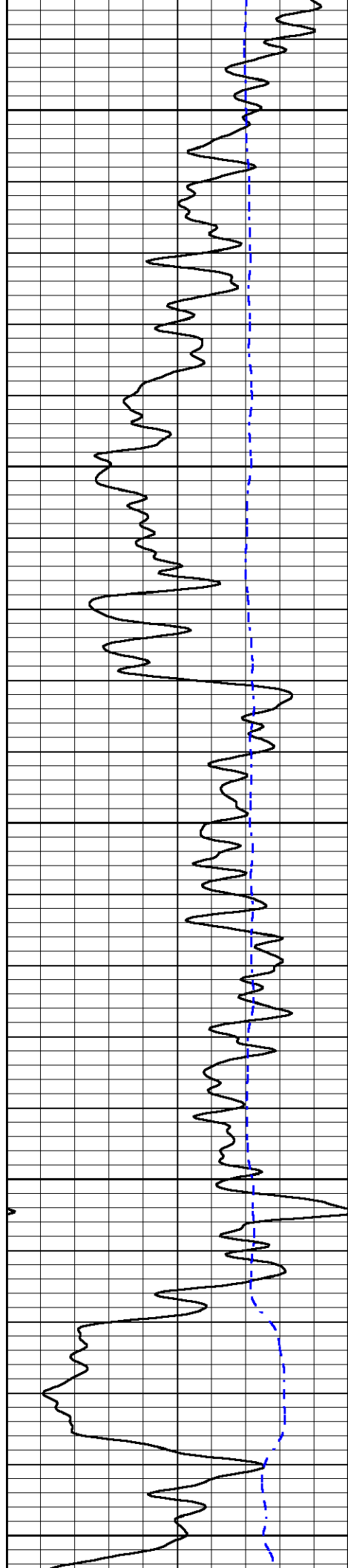
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1200

1250

1300





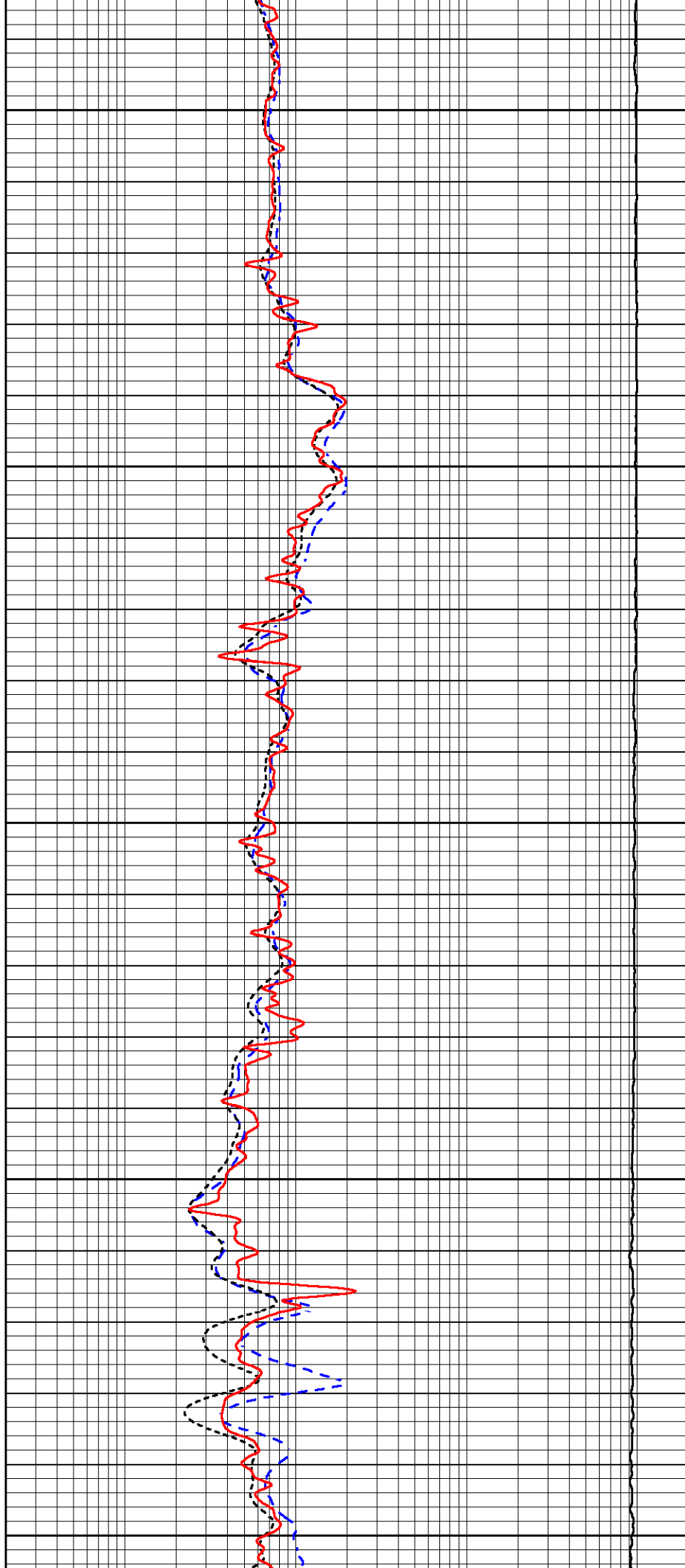
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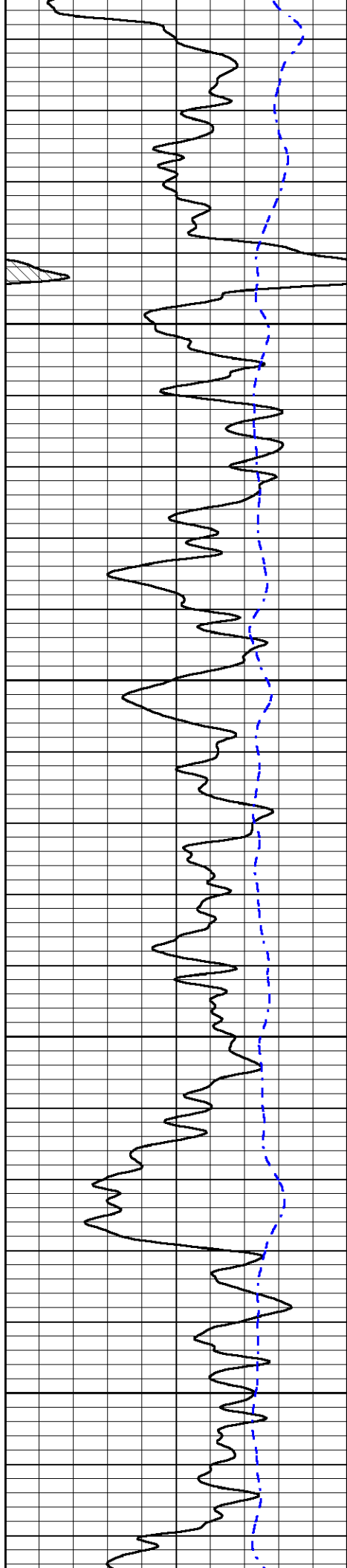
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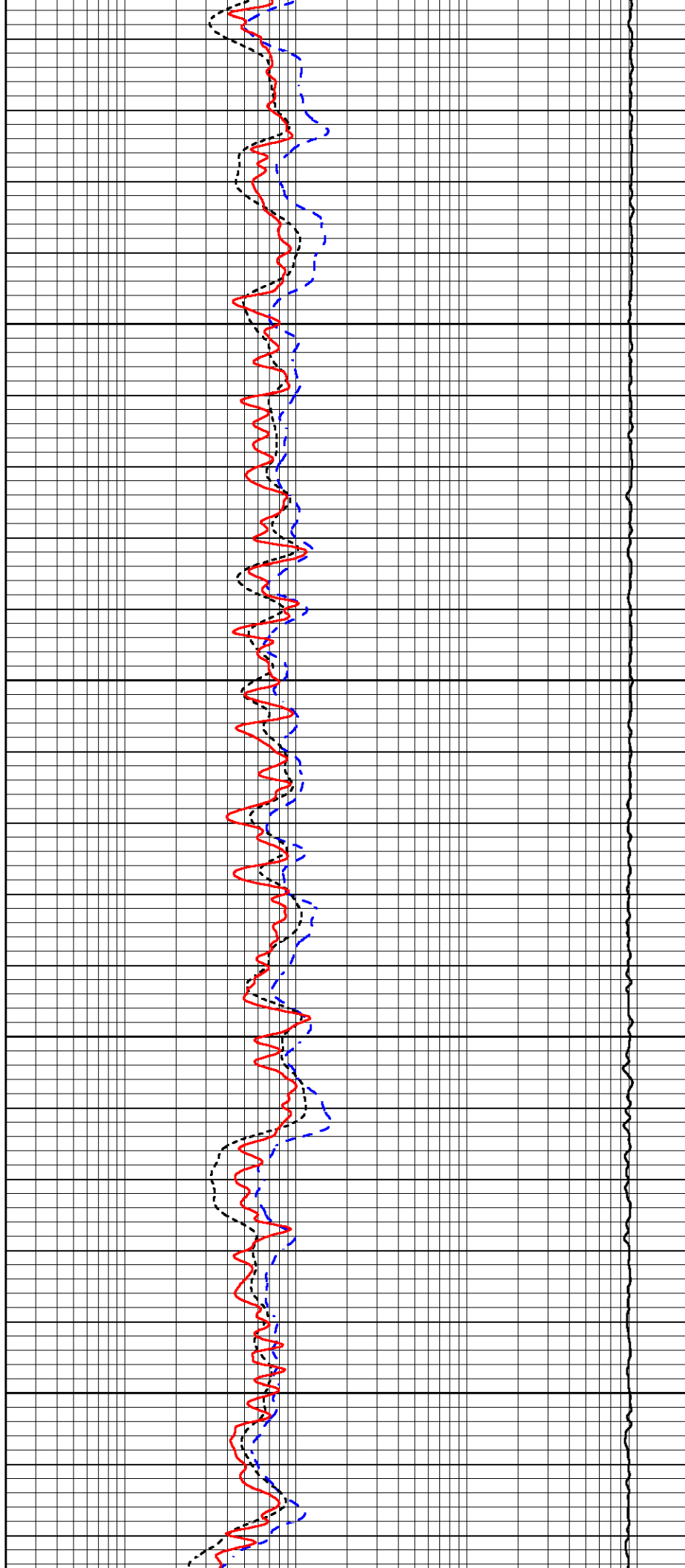


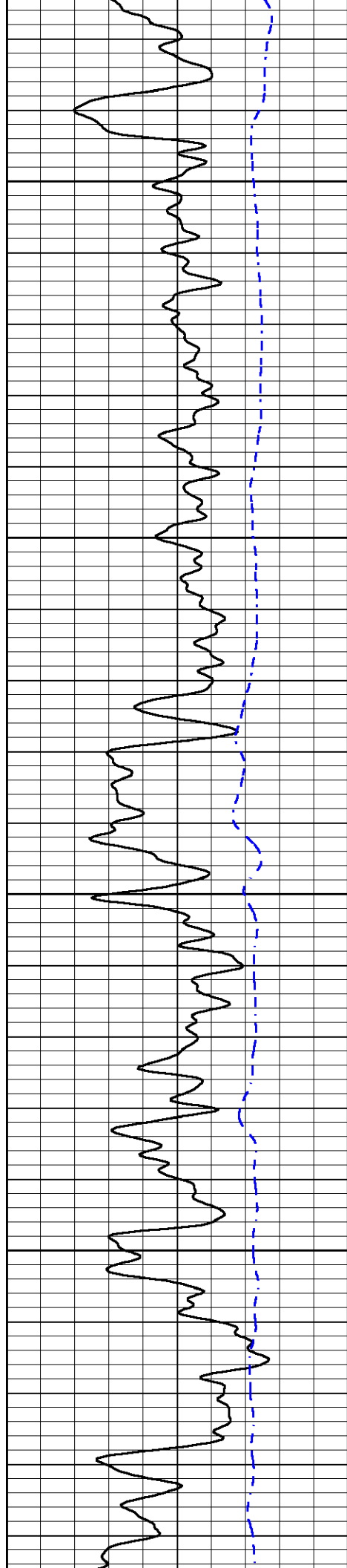
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1700

1750



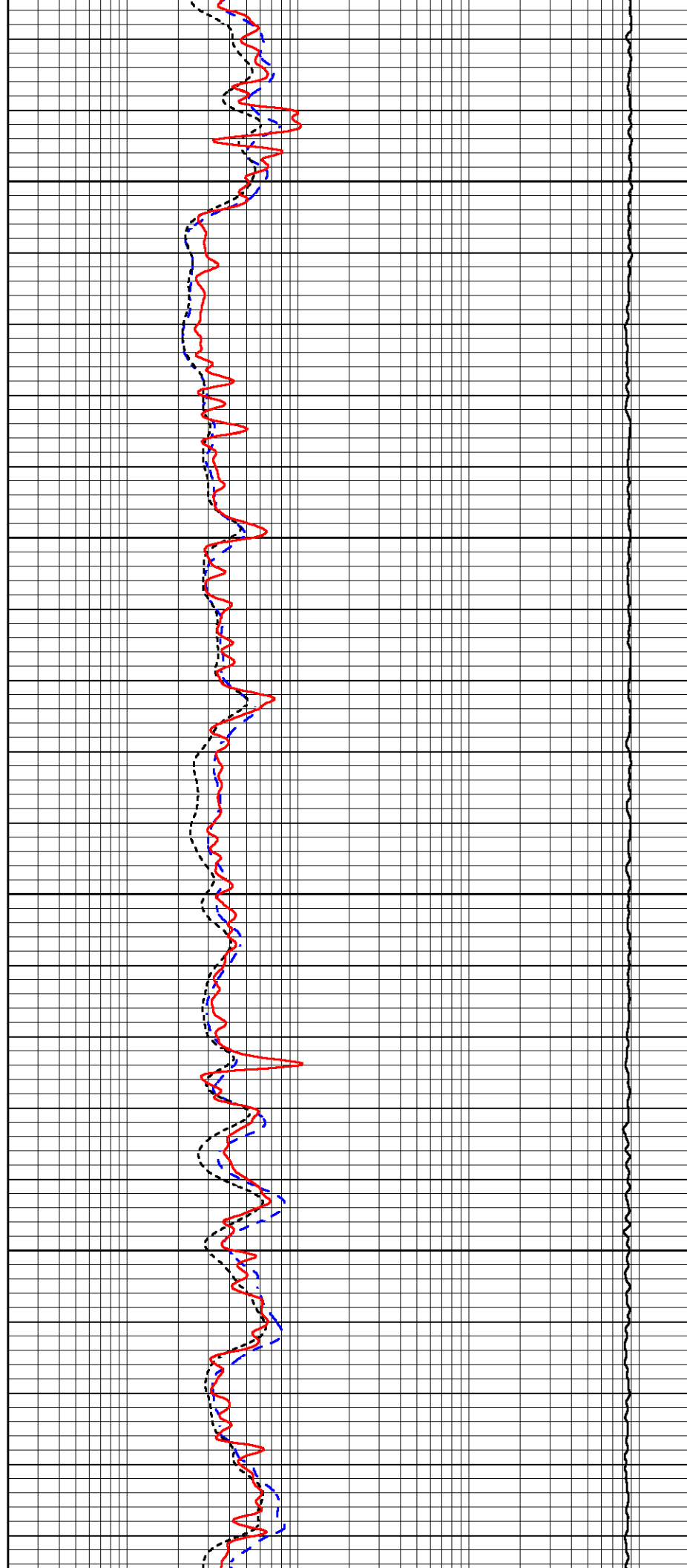


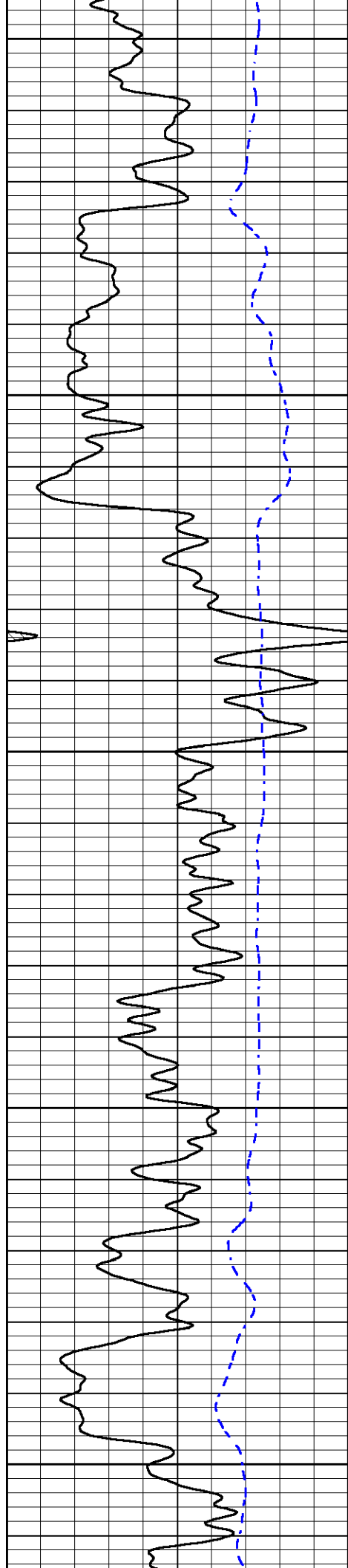
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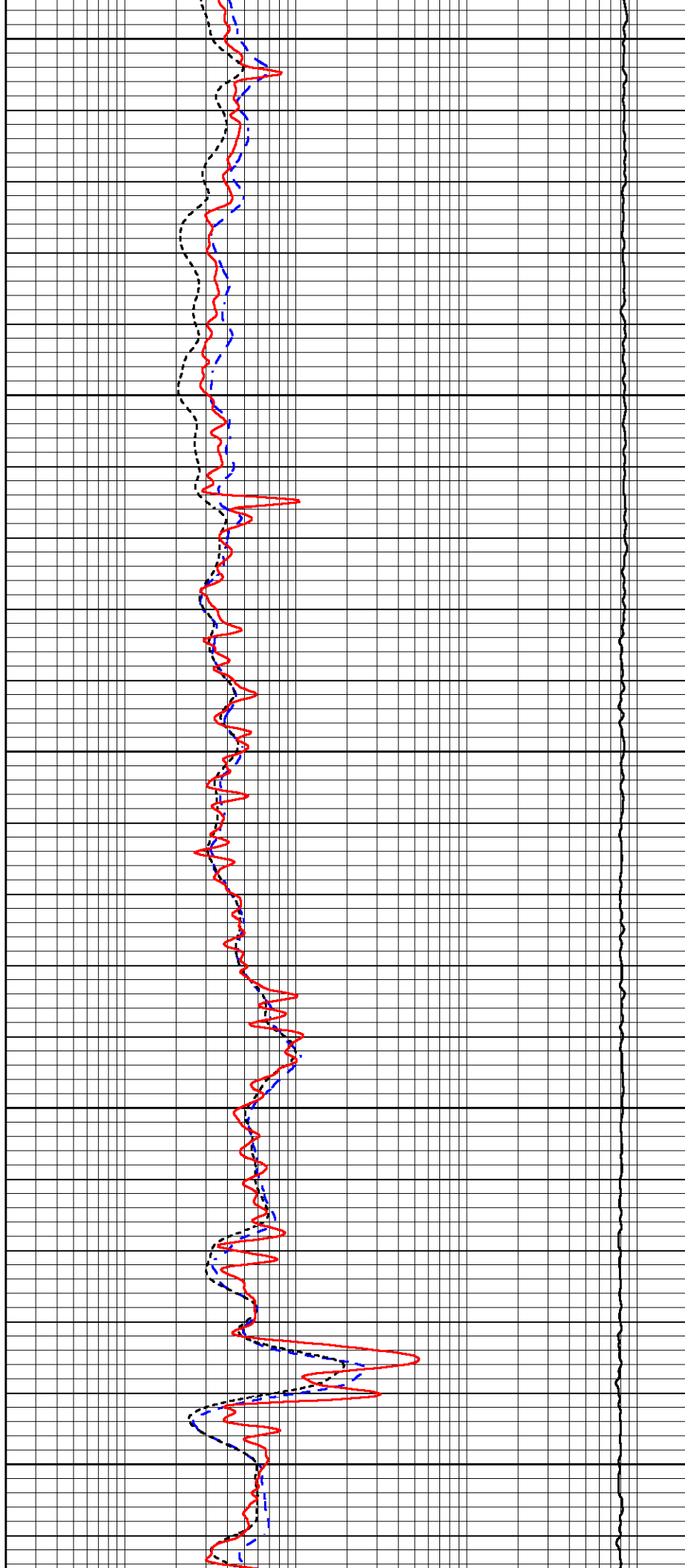
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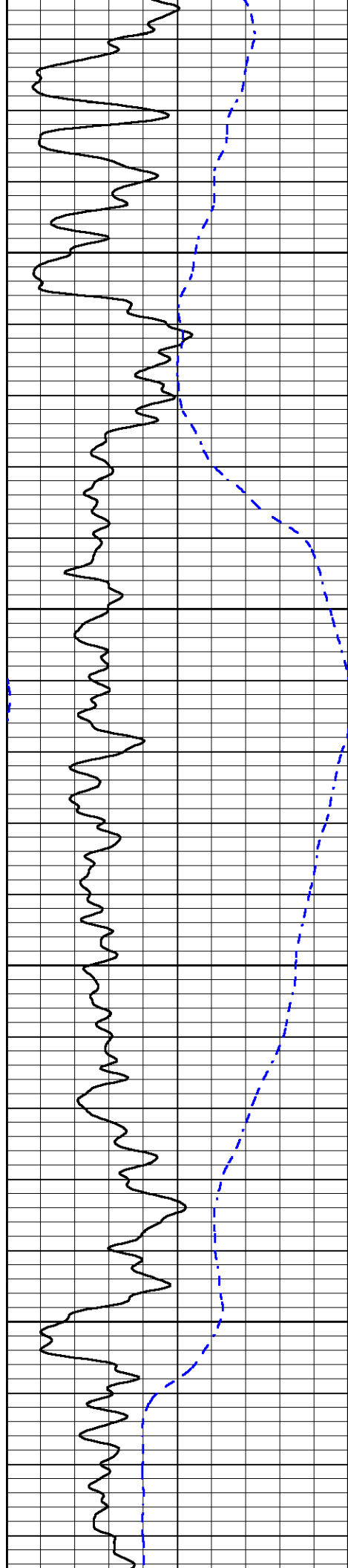
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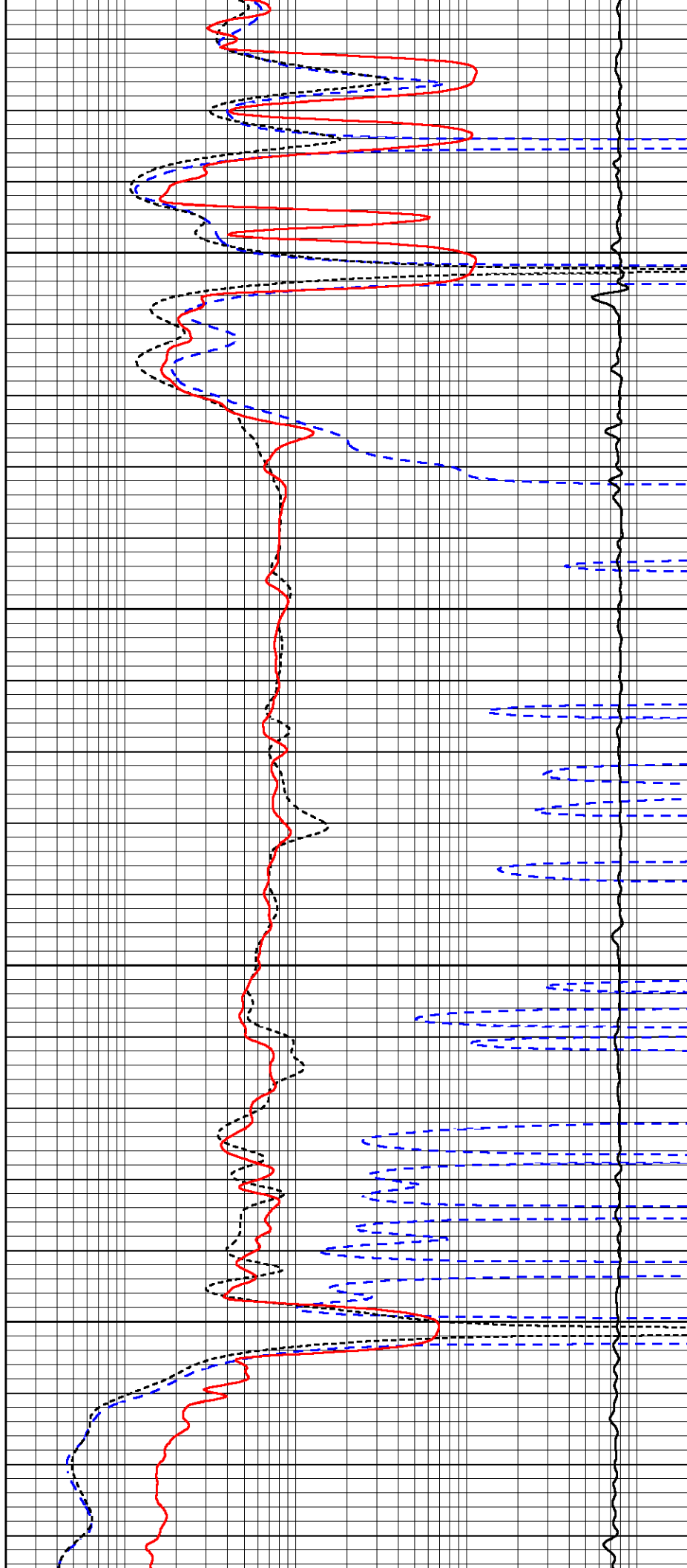


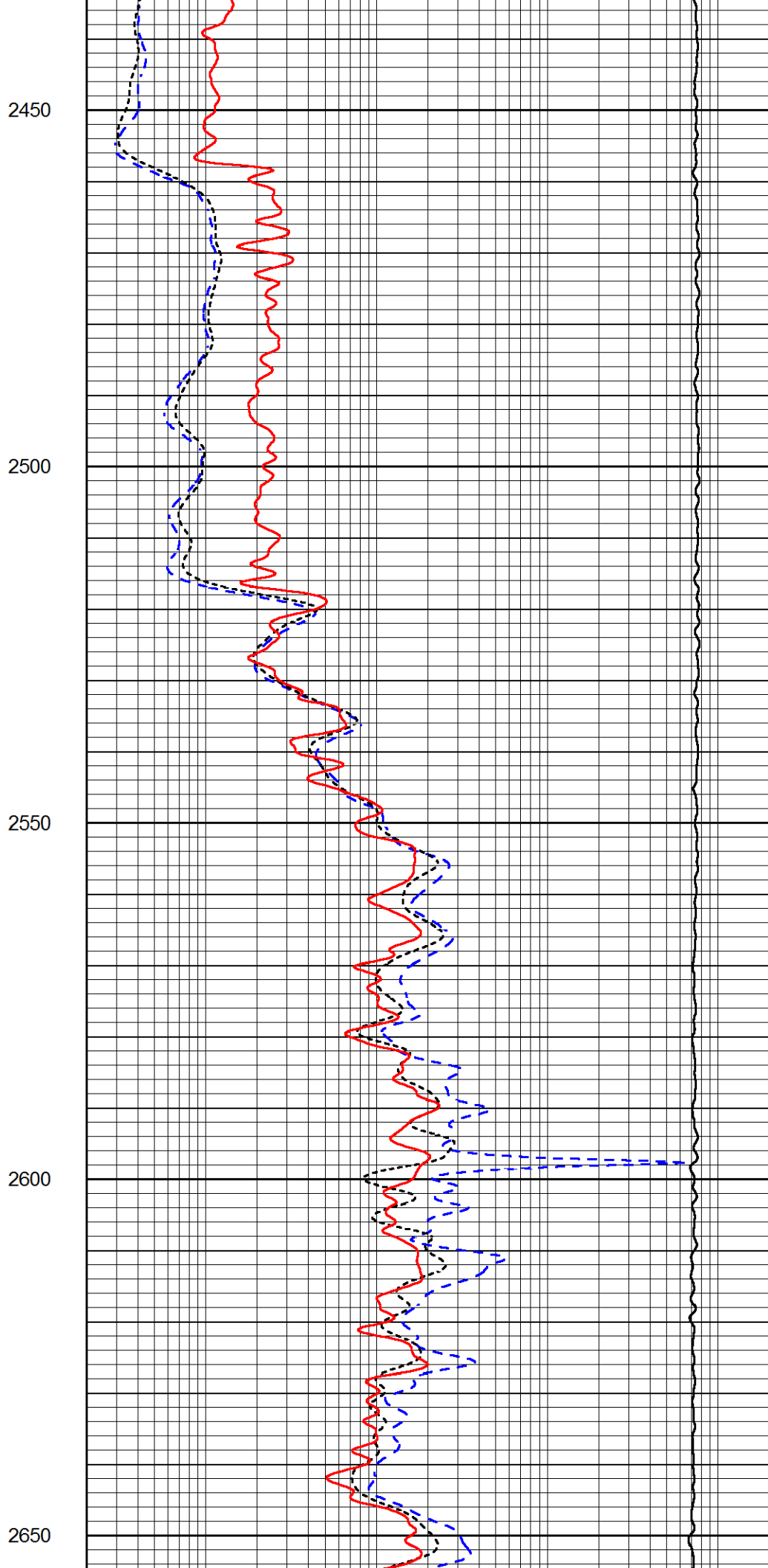
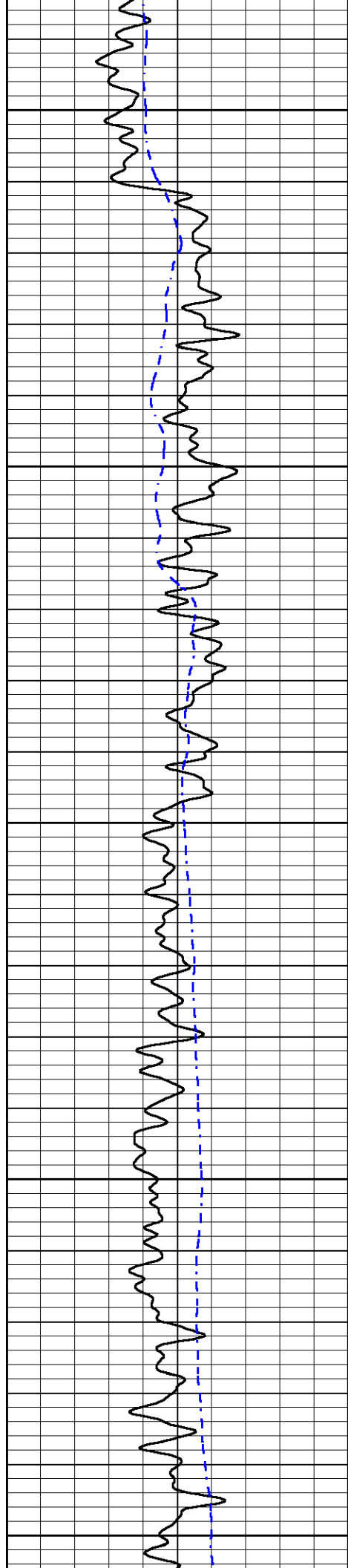
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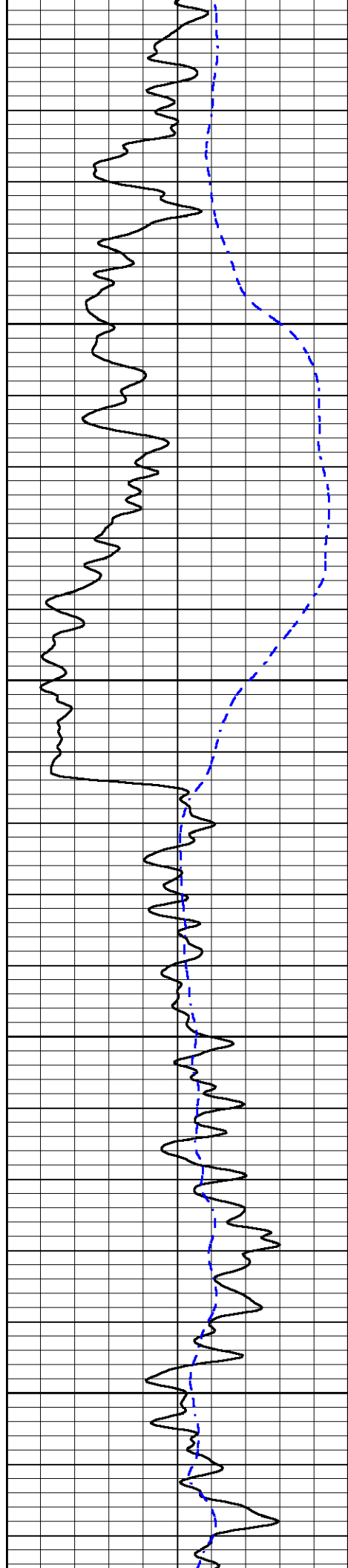
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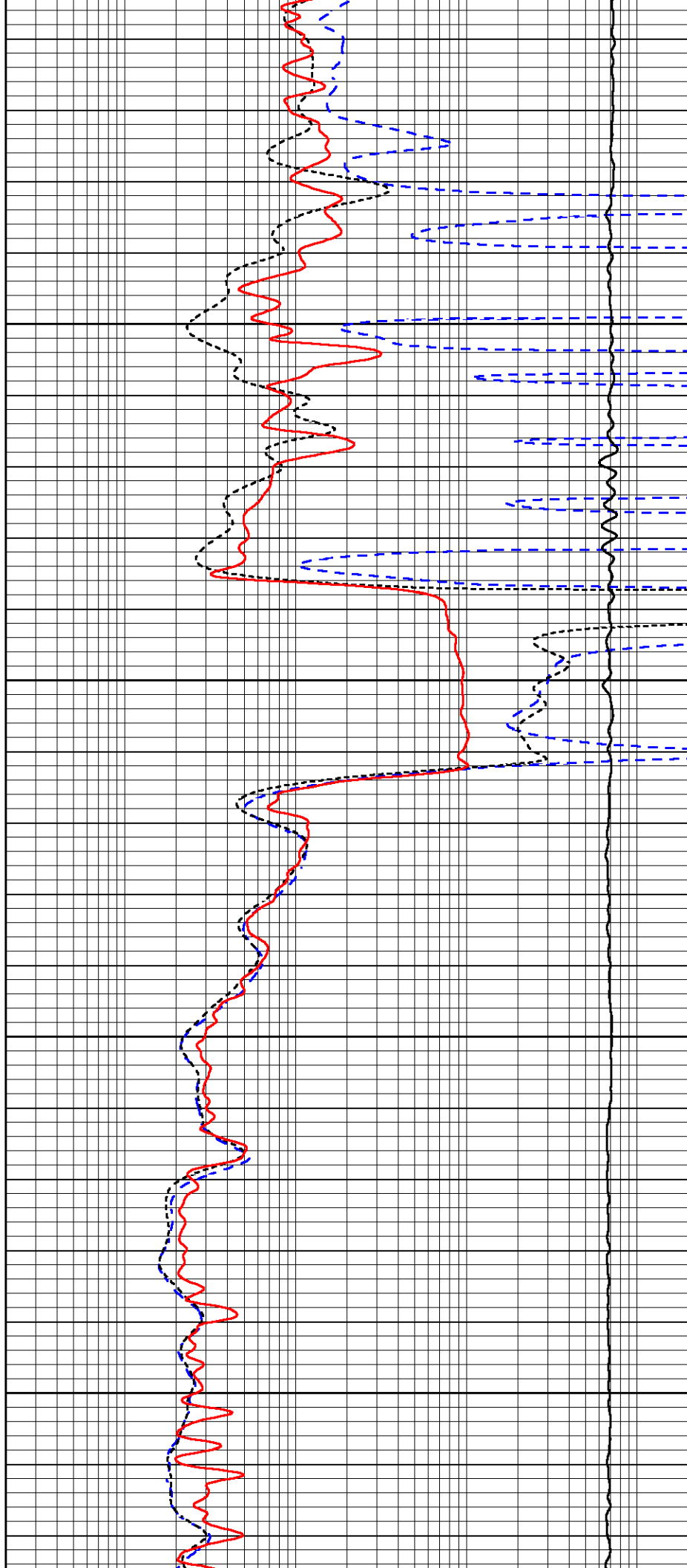


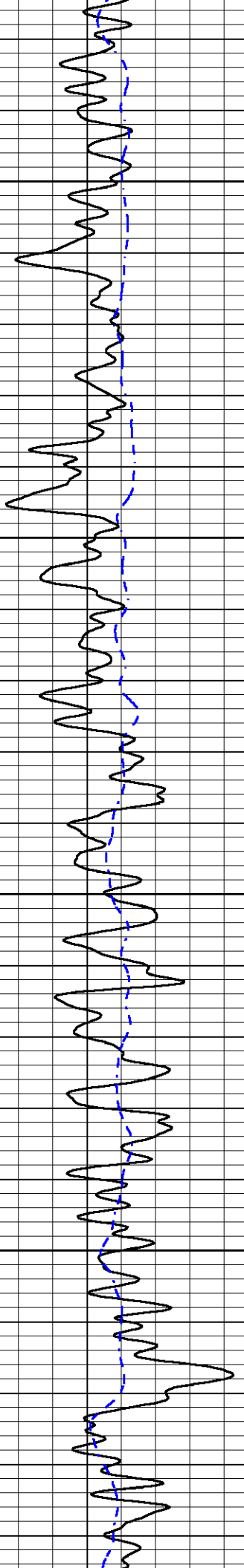
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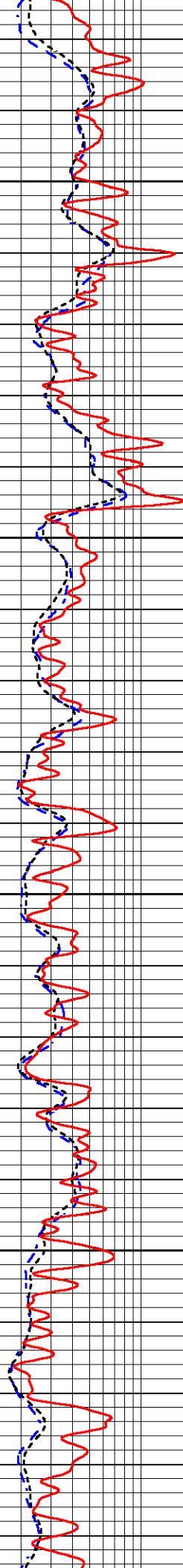


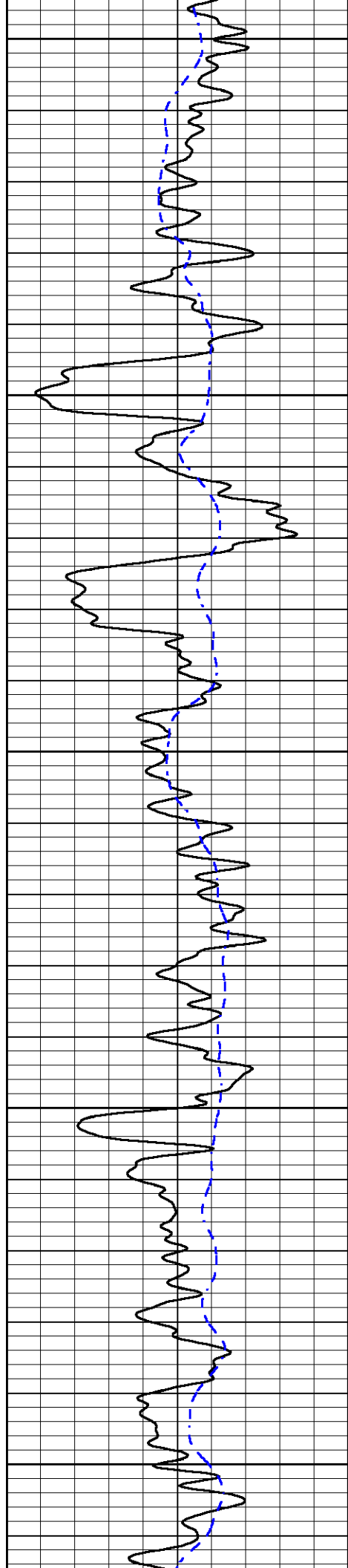
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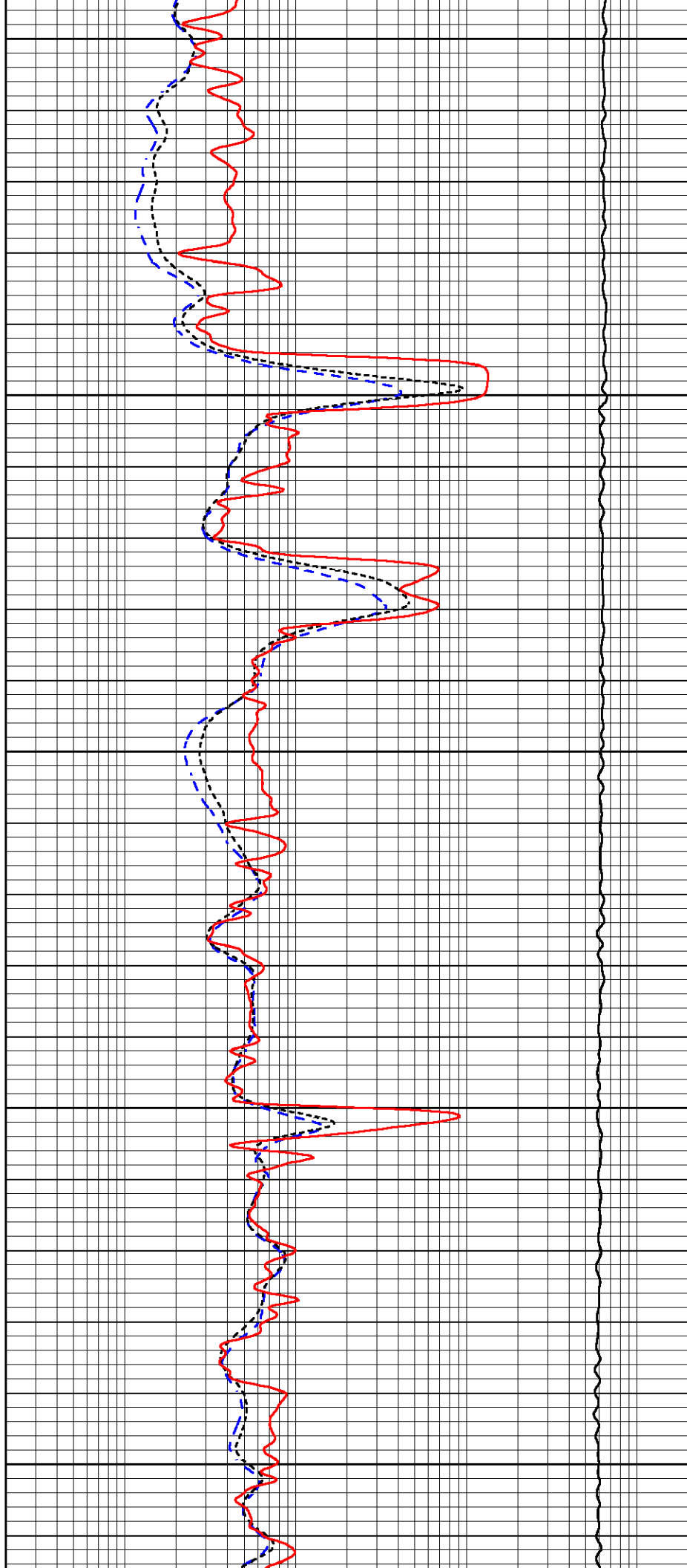
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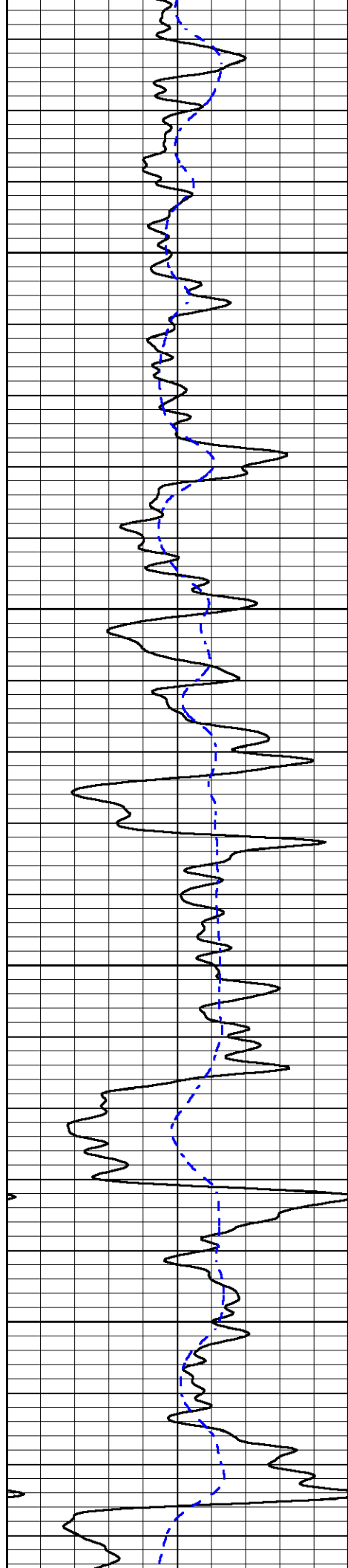
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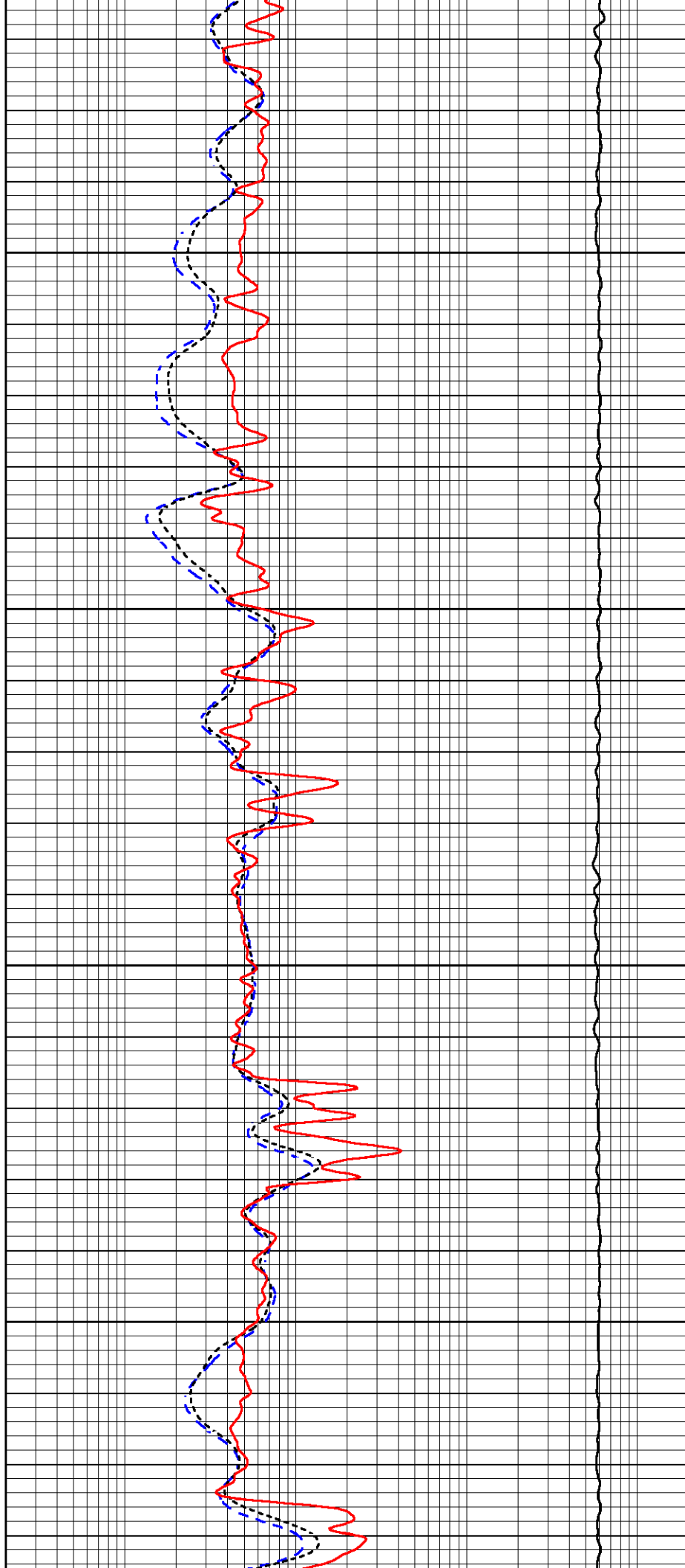


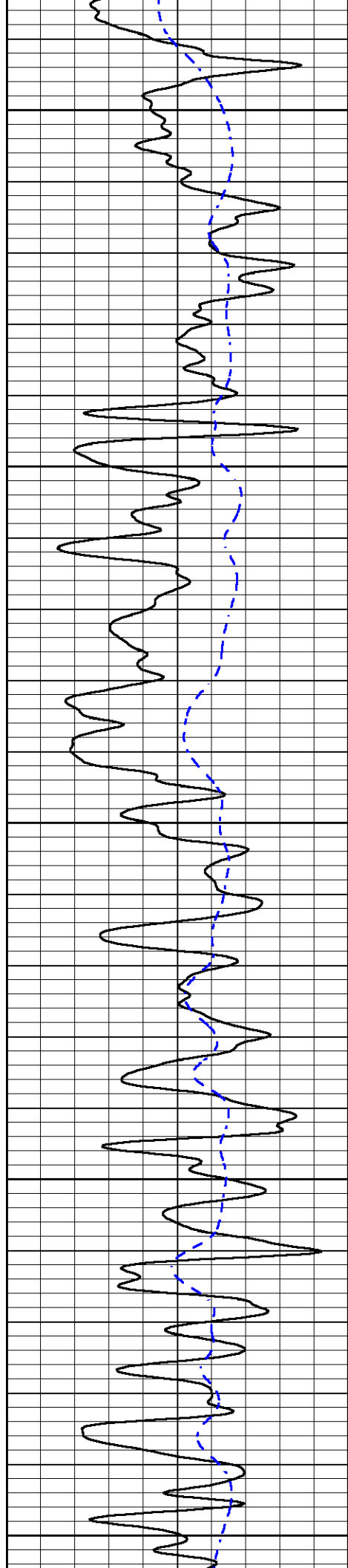
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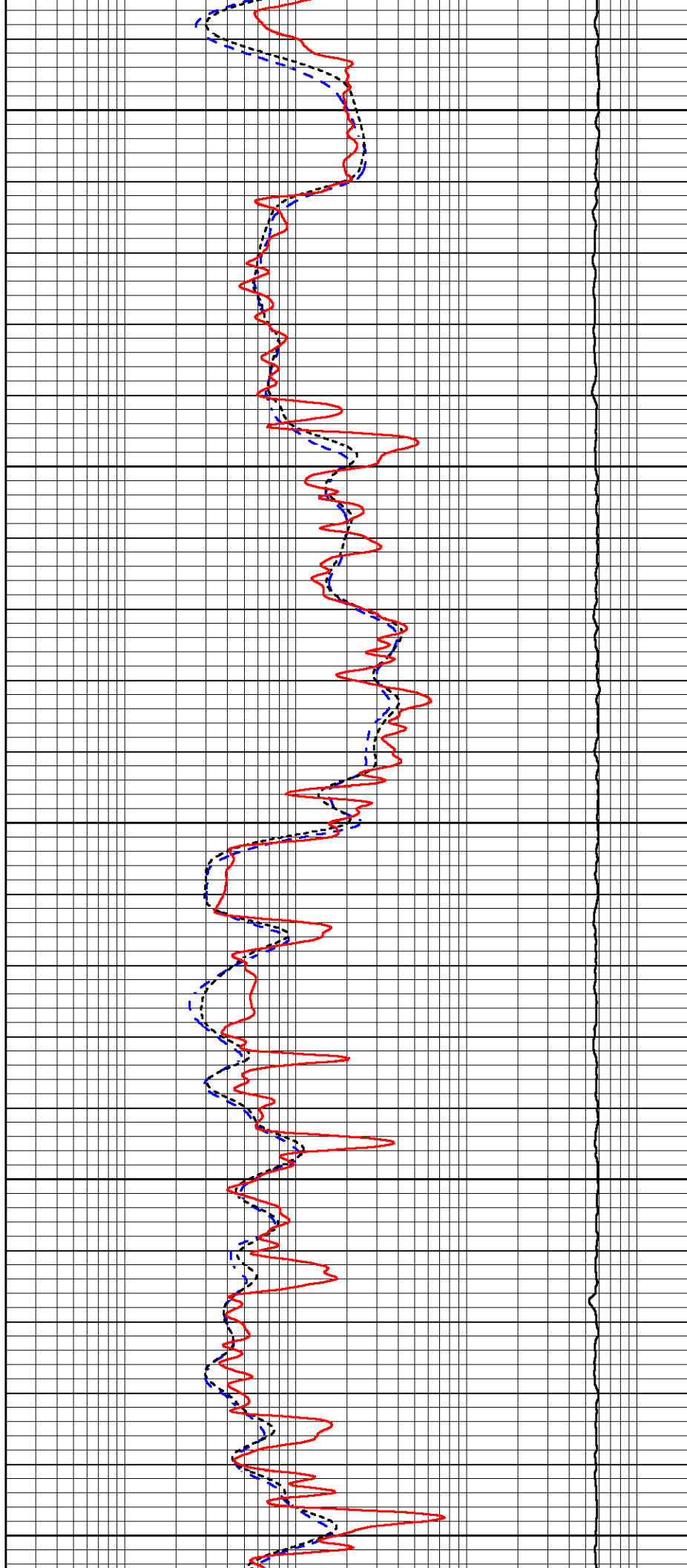
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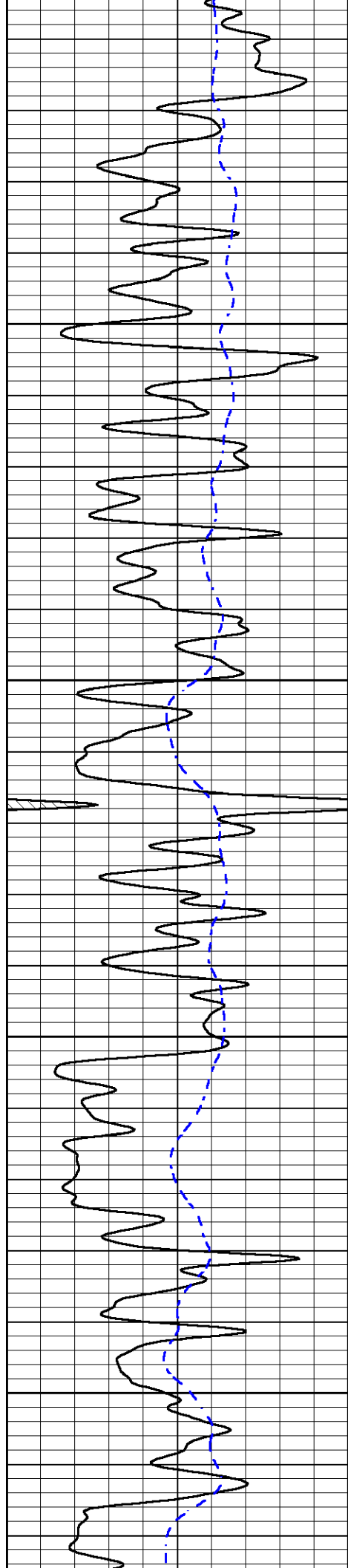
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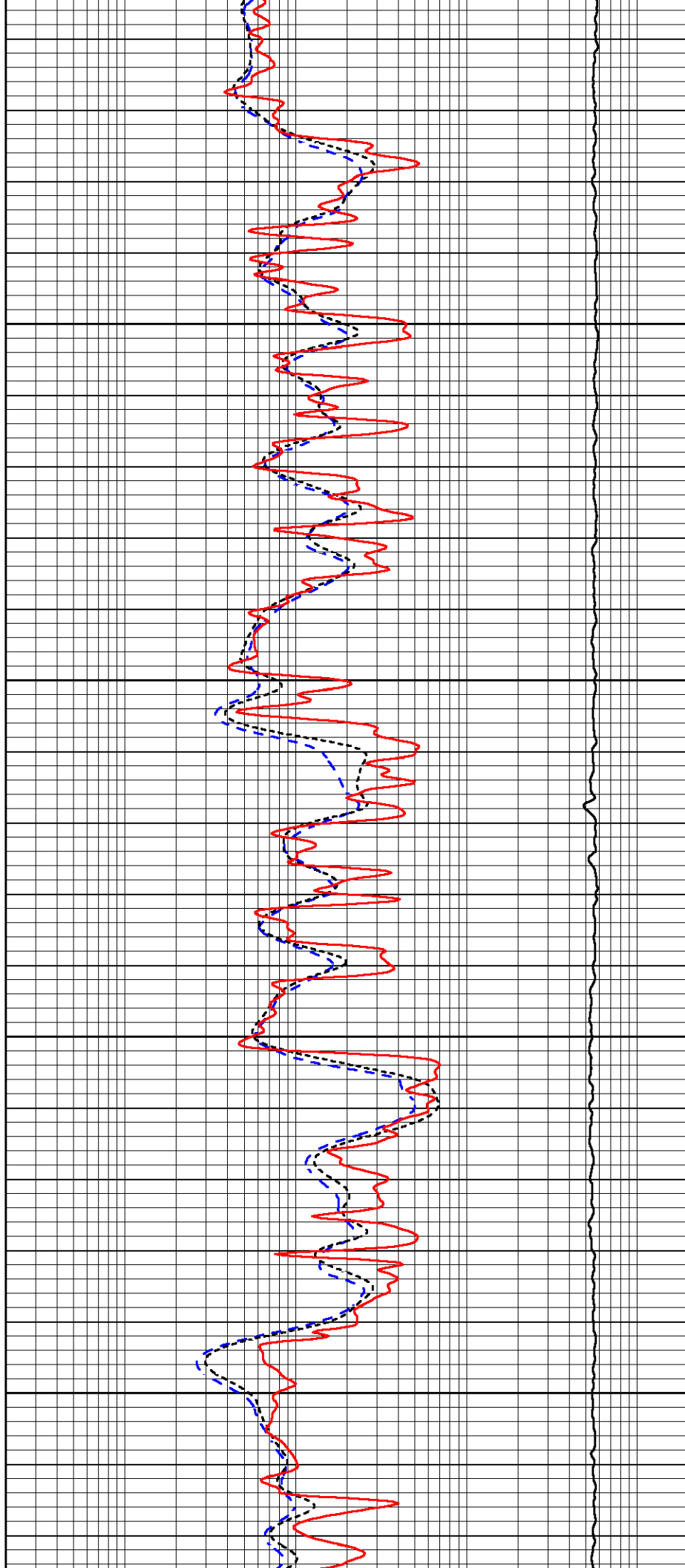


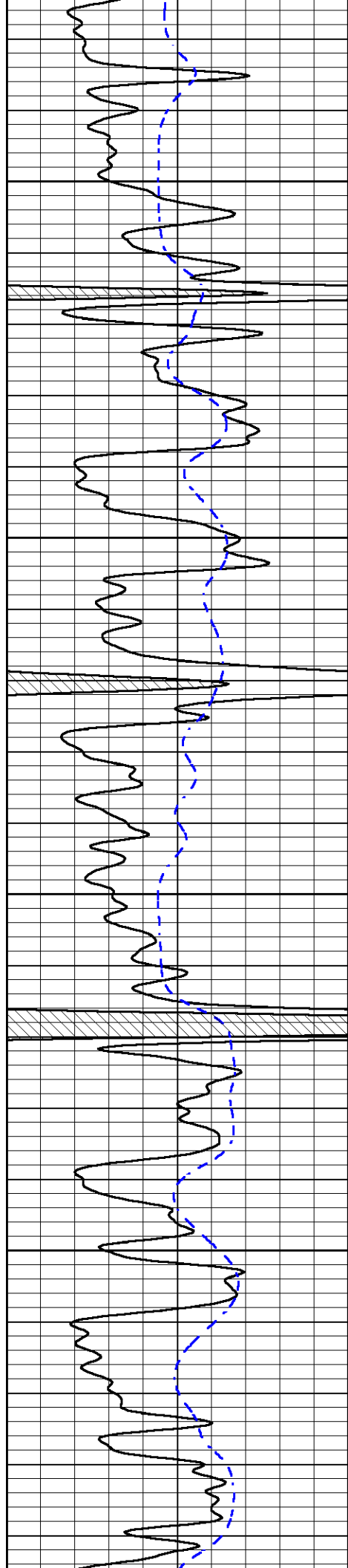
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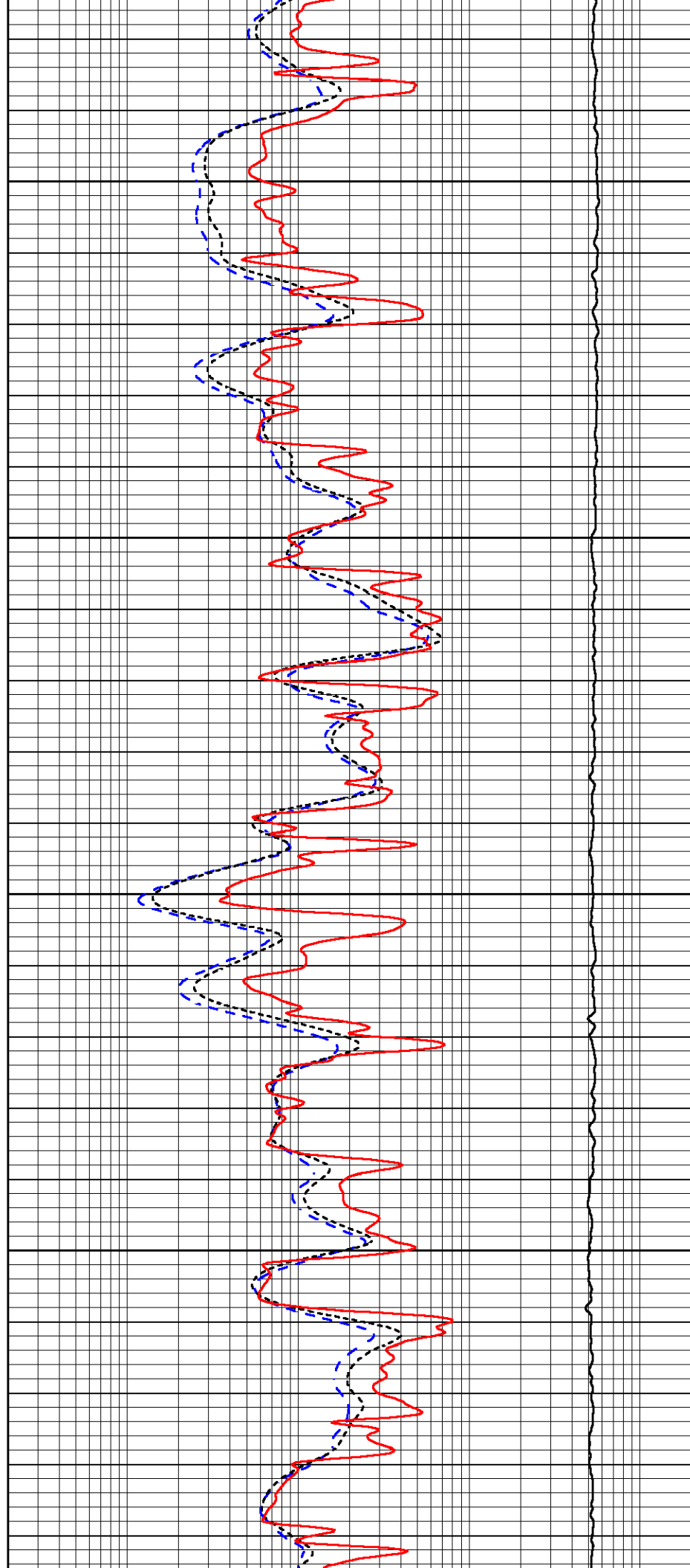


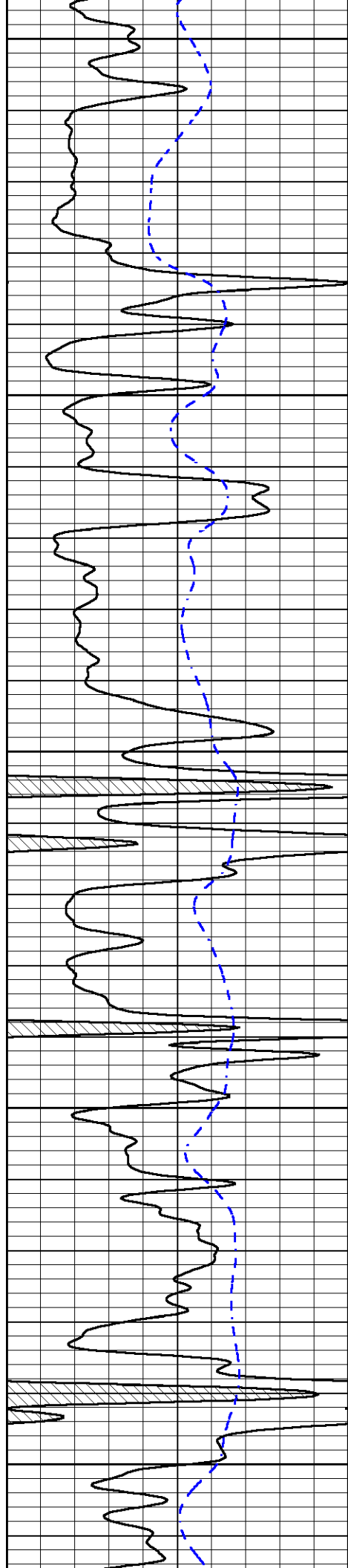
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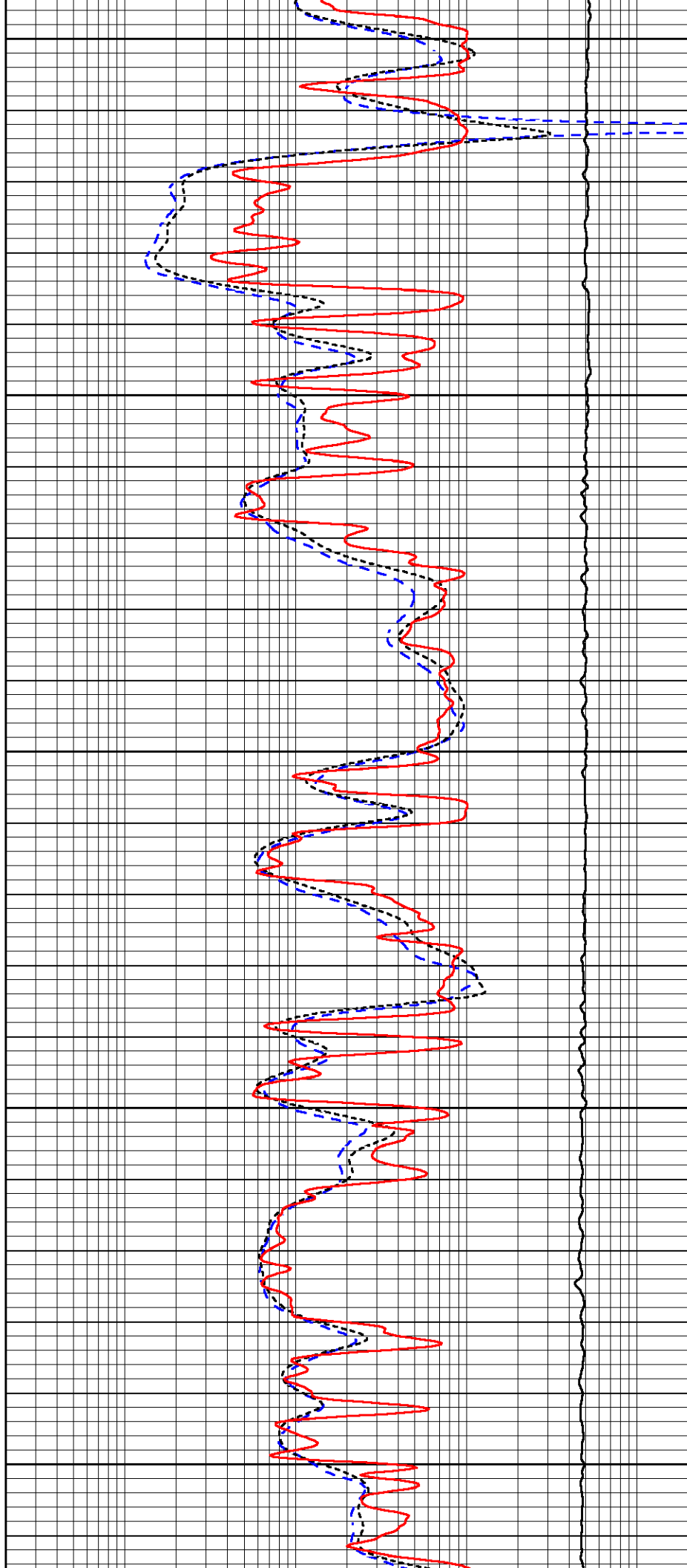
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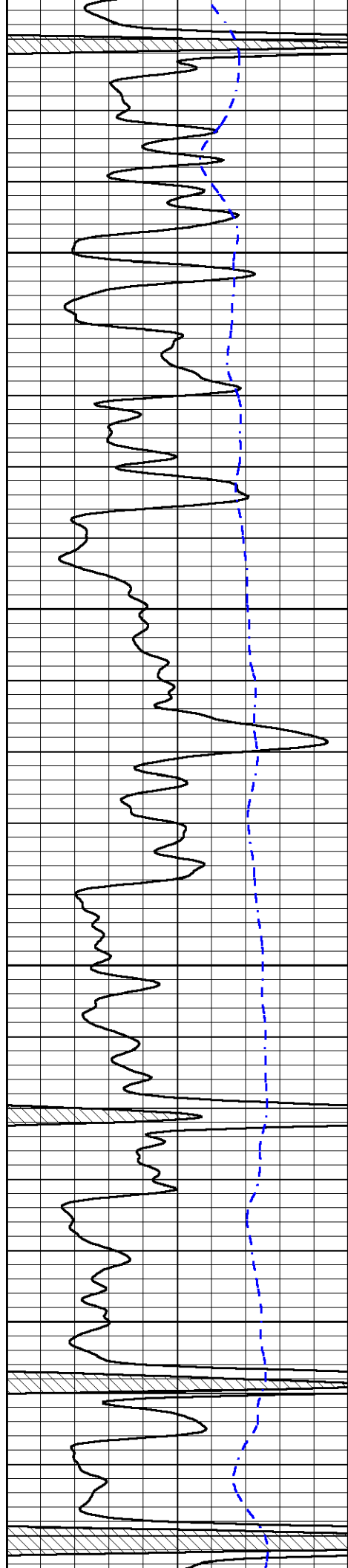
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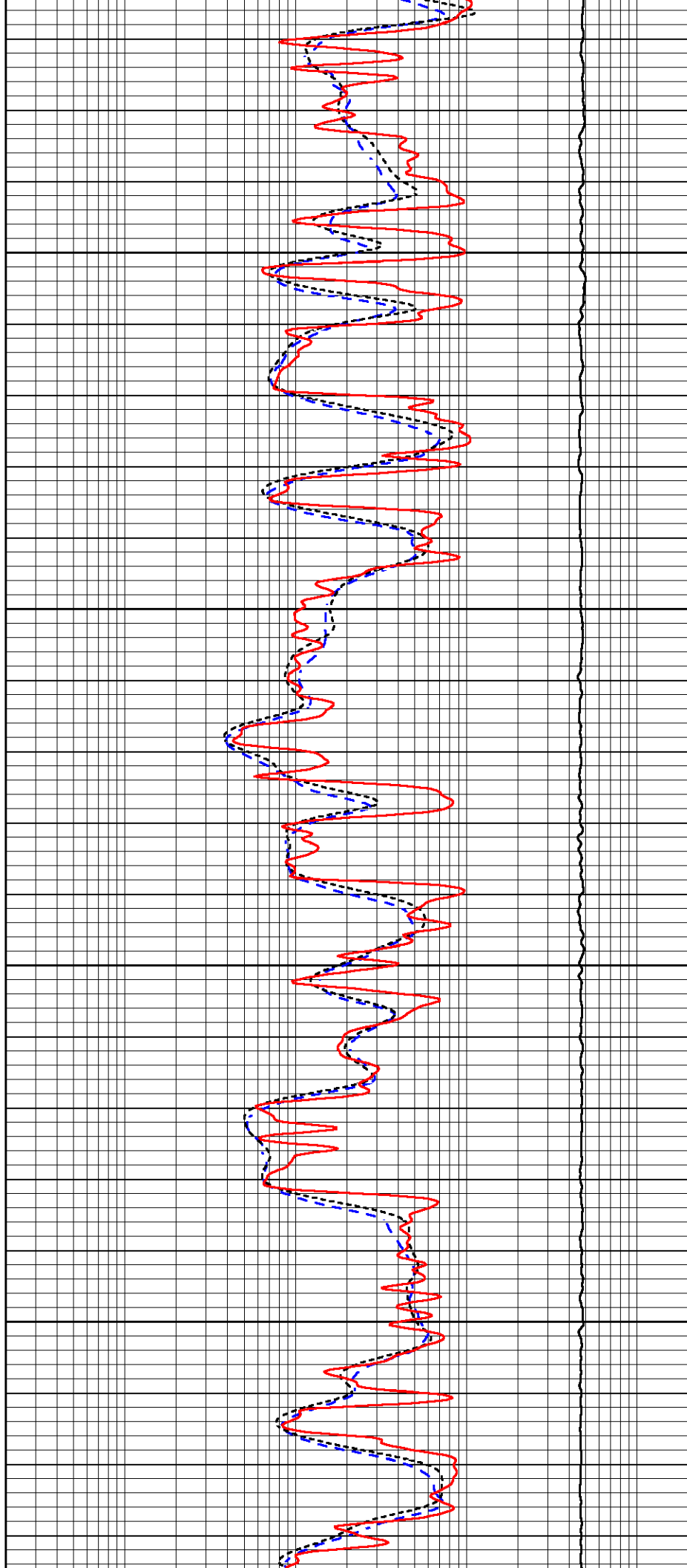


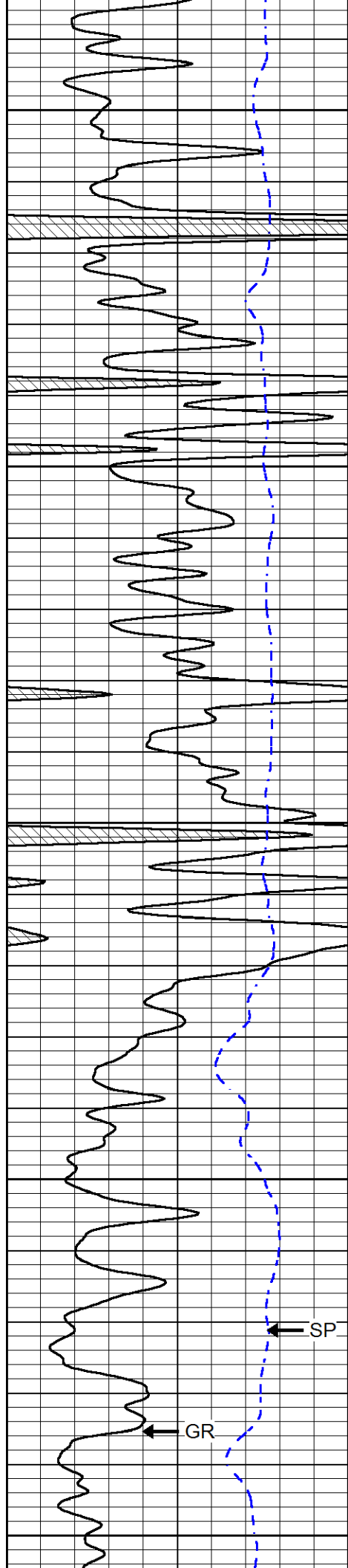
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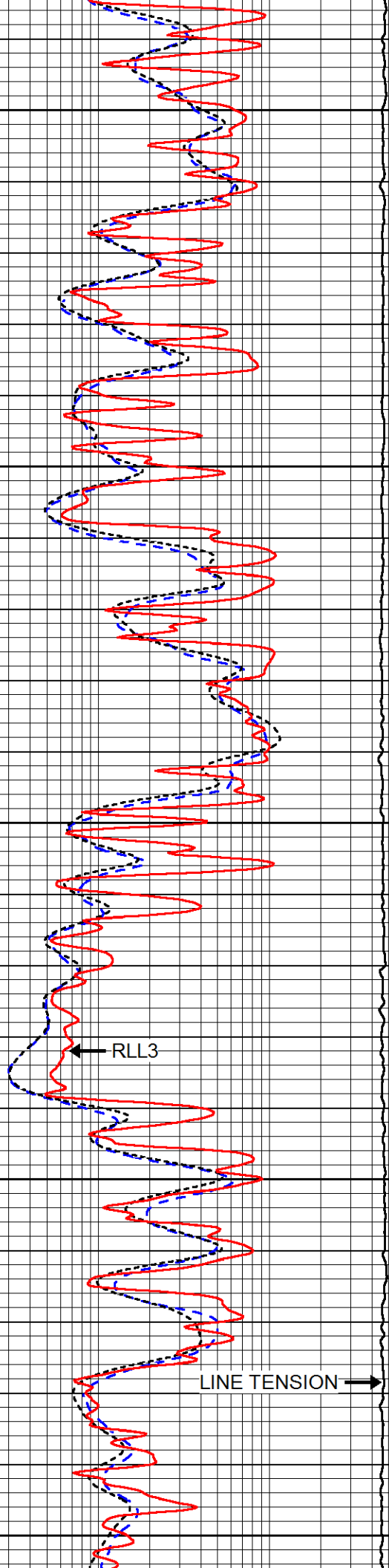
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4800

4850

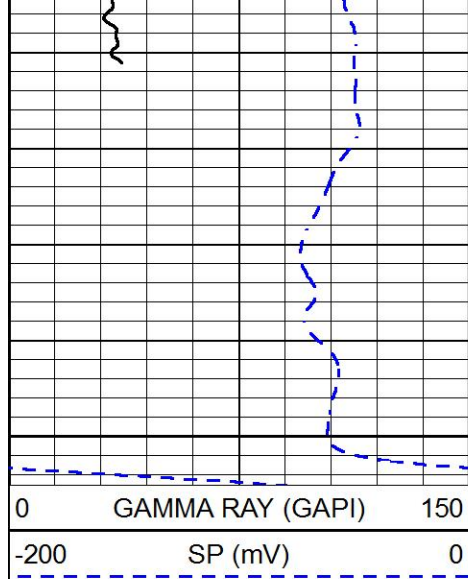
SP

GR

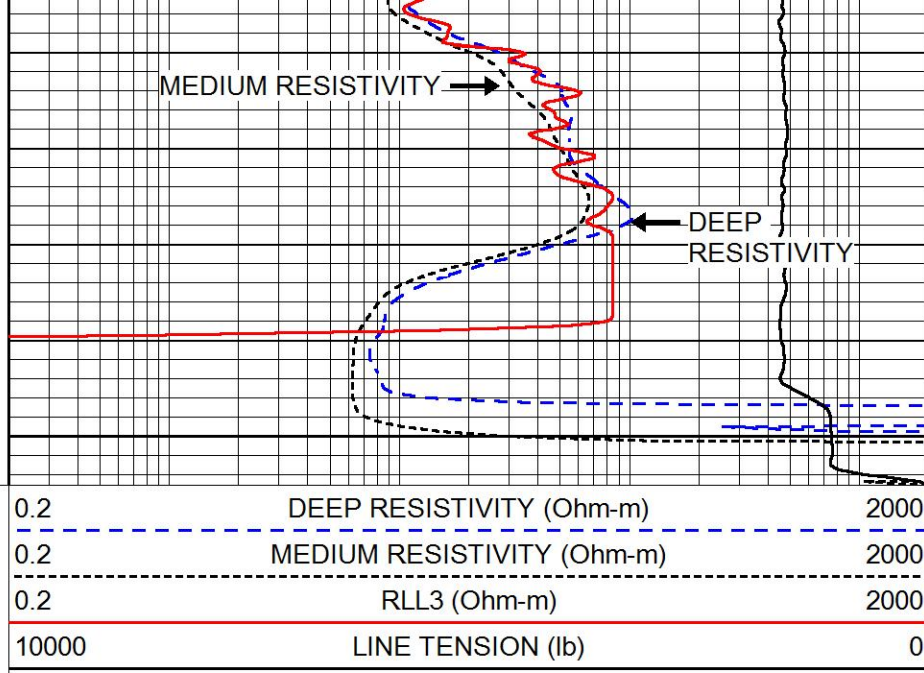


RLL3

LINE TENSION

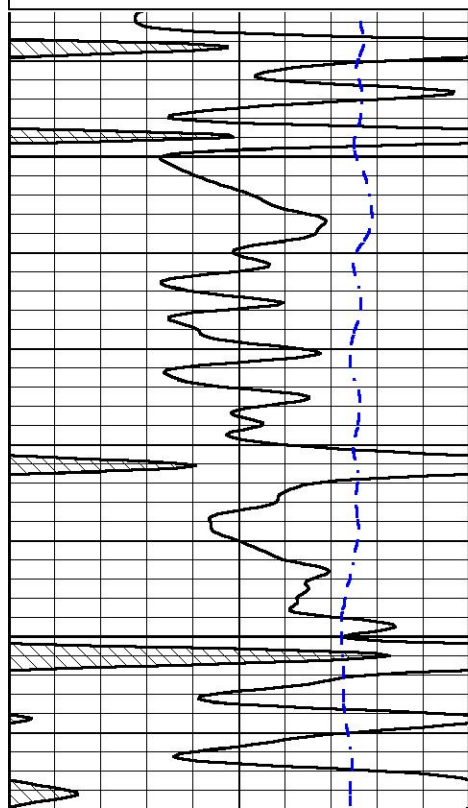
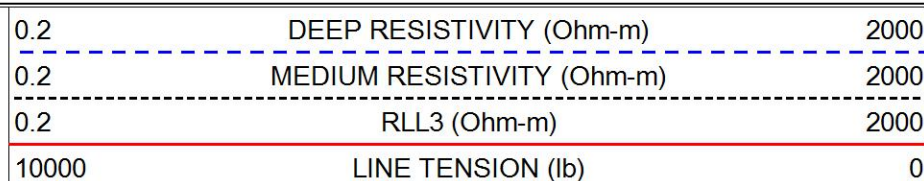
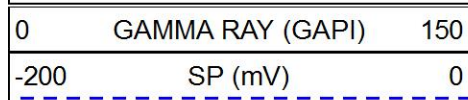


4900



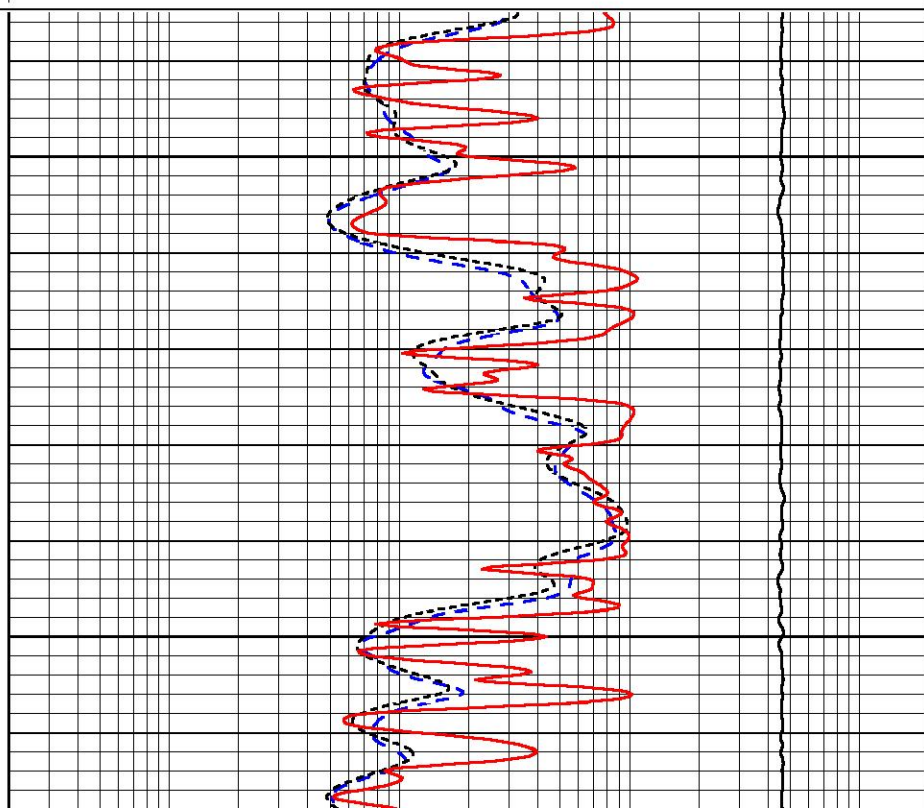
# REPEAT SECTION

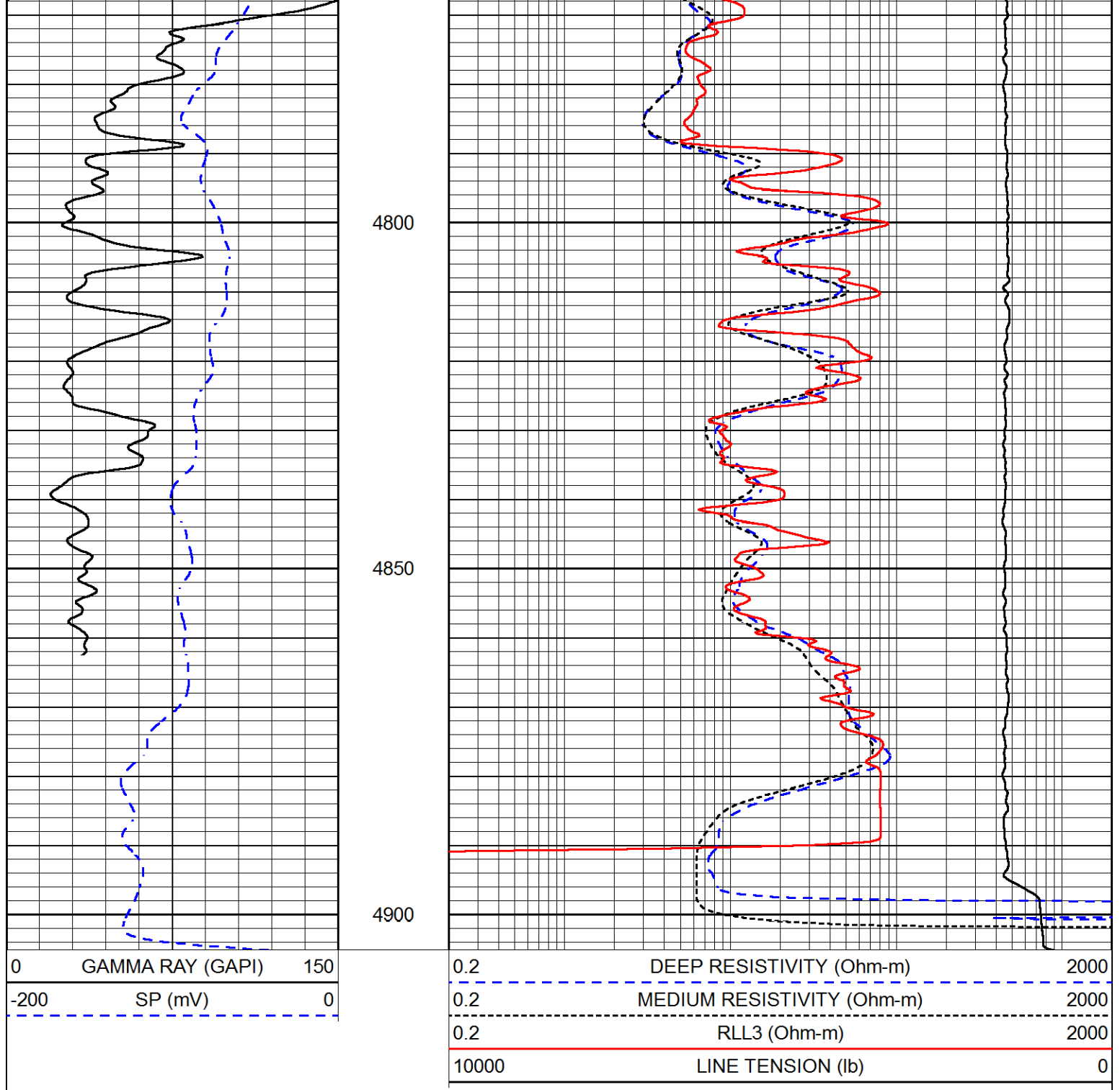
Database File: murfin\_soucie\_kriss\_unit\_1\_14.db  
 Dataset Pathname: stackmel/pass2.1  
 Presentation Format: \_dil  
 Dataset Creation: Wed Aug 28 13:24:16 2019  
 Charted by: Depth in Feet scaled 1:240



4700

4750





### Calibration Report

Database File murfin\_soucie\_kriss\_unit\_1\_14.db  
 Dataset Pathname stackmel/pass3.1  
 Dataset Creation Wed Aug 28 14:57:32 2019

### Dual Induction Calibration Report

Serial-Model: 1039-PSI HIGH TEMP  
 Calibration Performed: Tue Jul 09 07:46:05 2019

### Readings

### References

### Results

| Loop:  | Air     | Loop     | Air     | Loop    |        | Gain  | Offset  |
|--------|---------|----------|---------|---------|--------|-------|---------|
| Deep   | 167.000 | 835.000  | 0.000   | 255.800 | mmho/m | 0.430 | -51.000 |
| Medium | 0.000   | 1348.000 | 142.000 | 255.800 | mmho/m | 0.365 | -49.000 |

### Microlog Calibration Report

Serial-Model:  
Performed:

PSI-01-PSIML  
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    | -64.1500 |

### Compensated Density Calibration Report

Serial-Model:  
Source / Verifier:  
Master Calibration Performed:

96-916-M&W  
16955B / 2ci  
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          | 8.00    | in   |                             | 1.75         |               |     |
| Large Ring          | 29.00   | 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  
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



Company MURFIN DRILLING CO., INC.  
Well SQUICIE KRISS UNIT #1-14

**PIONEER**

Pioneer Energy Services



|        |                           |
|--------|---------------------------|
| Well   | 000012 KRISCH GRN #1 P 11 |
| Field  | JIMMY NORTHEAST           |
| County | THOMAS                    |
| State  | KANSAS                    |