



# DUAL INDUCTION LOG

MIDWEST WIRELINE

|                                     |               |                                    |         |
|-------------------------------------|---------------|------------------------------------|---------|
| Company Black Oak Exploration, LLC  |               | Company Black Oak Exploration, LLC |         |
| Well Argabright #1-4                |               | Well Argabright #1-4               |         |
| Field                               |               | Field                              |         |
| County                              | Rawlins       | County                             | Rawlins |
| State                               | Kansas        | State                              | Kansas  |
| Location: API #: 15-153-21271-00-00 |               | Other Services                     |         |
| 2125 FSL & 2100 FEL                 |               | CNL/CDL<br>MEL/BHCS                |         |
| Permanent Datum                     | Ground Level  | Elevation                          | 2898    |
| Log Measured From                   | Kelly Bushing | K.B.                               | 2903    |
| Drilling Measured From              | Kelly Bushing | D.F.                               | 2898    |
| SEC 4 TWP 3S RGE 34W                |               | Elevation                          |         |
| Date 10/28/2021                     |               | Run Number One                     |         |
| Depth Driller                       |               | 4540                               |         |
| Depth Logger                        |               | 4542                               |         |
| Bottom Logged Interval              |               | 4541                               |         |
| Top Log Interval                    |               | 0                                  |         |
| Casing Driller                      |               | 8.625 @ 248                        |         |
| Casing Logger                       |               | 246                                |         |
| Bit Size                            |               | 7.875                              |         |
| Type Fluid in Hole                  |               | Chemical                           |         |
| Salinity, ppm CL                    |               | 4400                               |         |
| Density / Viscosity                 |               | 9.4 65                             |         |
| pH / Fluid Loss                     |               | 11.0 8.4                           |         |
| Source of Sample                    |               | FLOWLINE                           |         |
| Rm @ Meas. Temp                     |               | 0.40 @ 60                          |         |
| Rmt @ Meas. Temp                    |               | 0.30 @ 60                          |         |
| Rmc @ Meas. Temp                    |               | 0.54 @ 60                          |         |
| Source of Rmt / Rmc                 |               | CHARTS                             |         |
| Rm @ BHT                            |               | 0.20 @ 121                         |         |
| Operating Rig Time                  |               | 6 Hours                            |         |
| Max Rec. Temp. F                    |               | 121                                |         |
| Equipment Number                    |               | P-24                               |         |
| Location                            |               | HAYS                               |         |
| Recorded By                         |               | D. Schmidt                         |         |
| Witnessed By                        |               | Tim Hedrick                        |         |

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All interpretations are opinions based on inferences from electrical or other measurements and Midwest Wireline LLC cannot and does not guarantee the accuracy or correctness of any interpretation, and Midwest Wireline LLC will not be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees.

## Comments

N/A DENOTES NOT AVAILABLE OR NON-APPLICABLE.

Atwood,  
West to Rd 16, 2 North, 1/2 West,  
North into

Log Measured From: Kelly Bushing 5 Ft. Above Permanent Datum

THANK YOU FOR USING MIDWEST WIRELINE LLC  
785-625-3858

## Your Midwest Wireline Crew

Engineer: D. Schmidt  
Operator:  
Operator:  
Operator:

## This Log Record Was Witnessed By

Primary Witness: Tim Hedrick  
Secondary Witness:  
Secondary Witness:  
Secondary Witness:

# Log Variables

DatabaseC:\ProgramData\Warrior\Data\black oak\_argabright 1-4.db  
Dataset field/well/stkml/pass4.1/\_vars\_

## Top - Bottom

| A         | BOREID<br>in | BOTTEMP<br>degF  | CASEOD<br>in      | CASETHCK<br>in | FLUIDDEN<br>g/cc | M     | MATRXDEN<br>g/cc |
|-----------|--------------|------------------|-------------------|----------------|------------------|-------|------------------|
| 1         | 7.875        | 121              | 5.5               | 0              | 1                | 2     | 2.71             |
| NPORSEL   | PERFS        | SNDERR<br>mmho/m | SNDERRM<br>mmho/m | SPSHIFT<br>mV  | SRFTEMP<br>degF  | SZCOR | TDEPTH<br>ft     |
| Limestone | 0            | 0                | 0                 | 580            | 60               | Off   | 4542             |

## Variable Description

A : Cement Factor (a)  
BOREID : Borehole I.D.  
BOTTEMP : Bottom Hole Temperature  
CASEOD : Casing O.D.  
CASETHCK : Casing Thickness  
FLUIDDEN : Fluid Density  
M : Cement Exp (m)  
MATRXDEN : Matrix Density

NPORSEL : Neutron Porosity Curve Select  
PERFS : Perforation Flag  
SNDERR : Deep Sonde Error Correction  
SNDERRM : Medium Sonde Error Correction  
SPSHIFT : S.P. Baseline Offset  
SRFTEMP : Surface Temperature  
SZCOR : CN Size Cor. ?  
TDEPTH : Total Depth

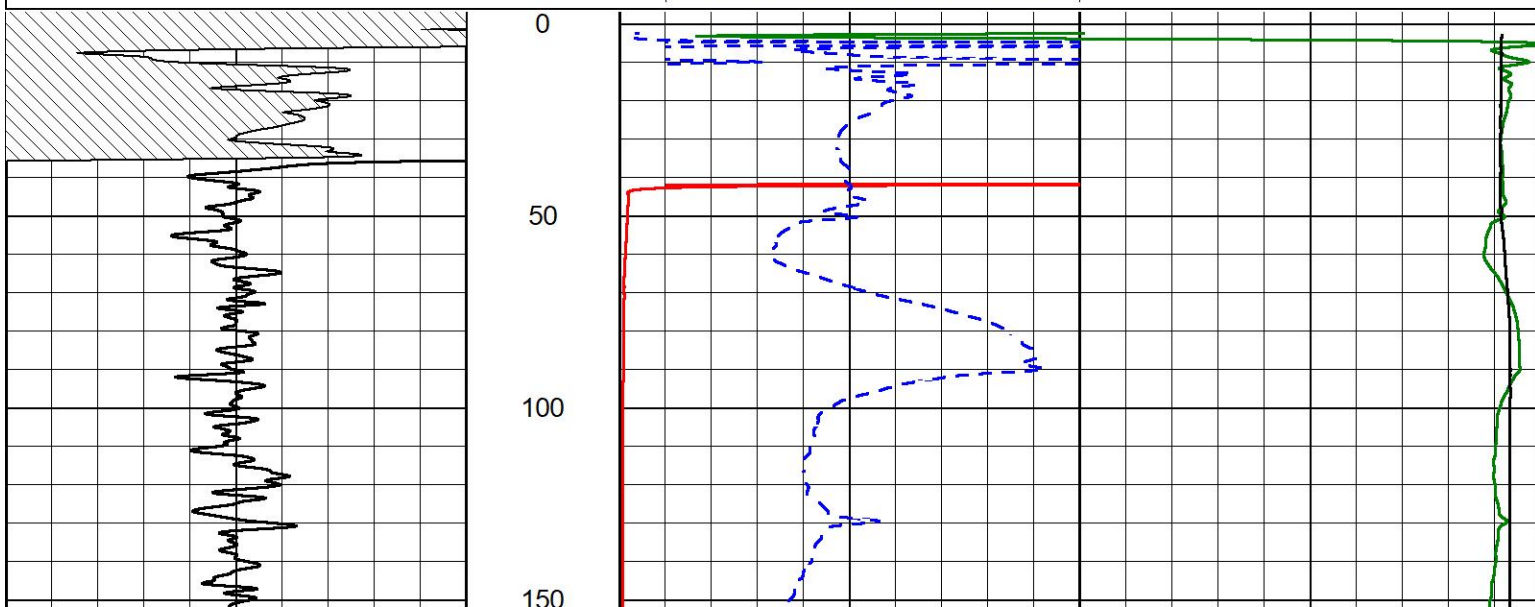


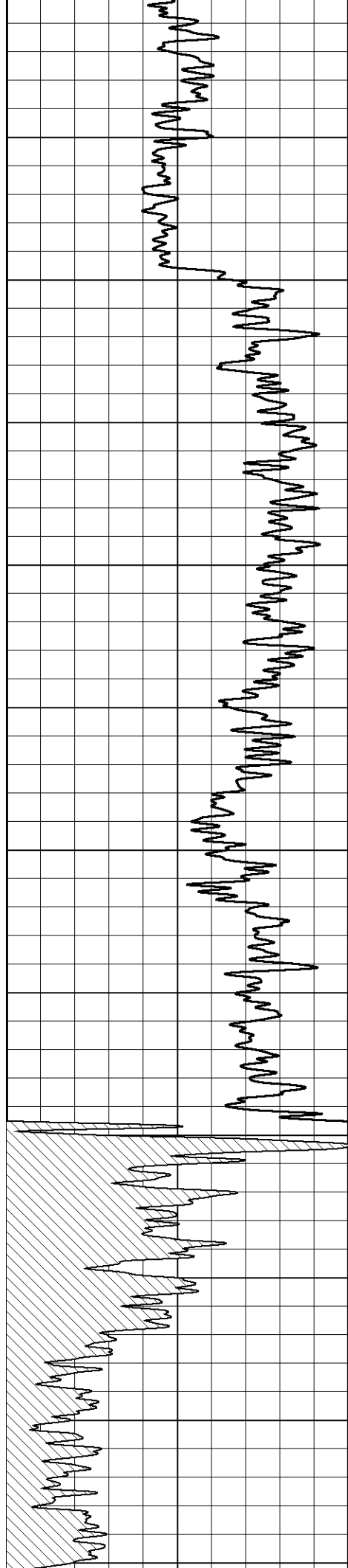
## 2" SCALE RESISTIVITY

### MAIN PASS

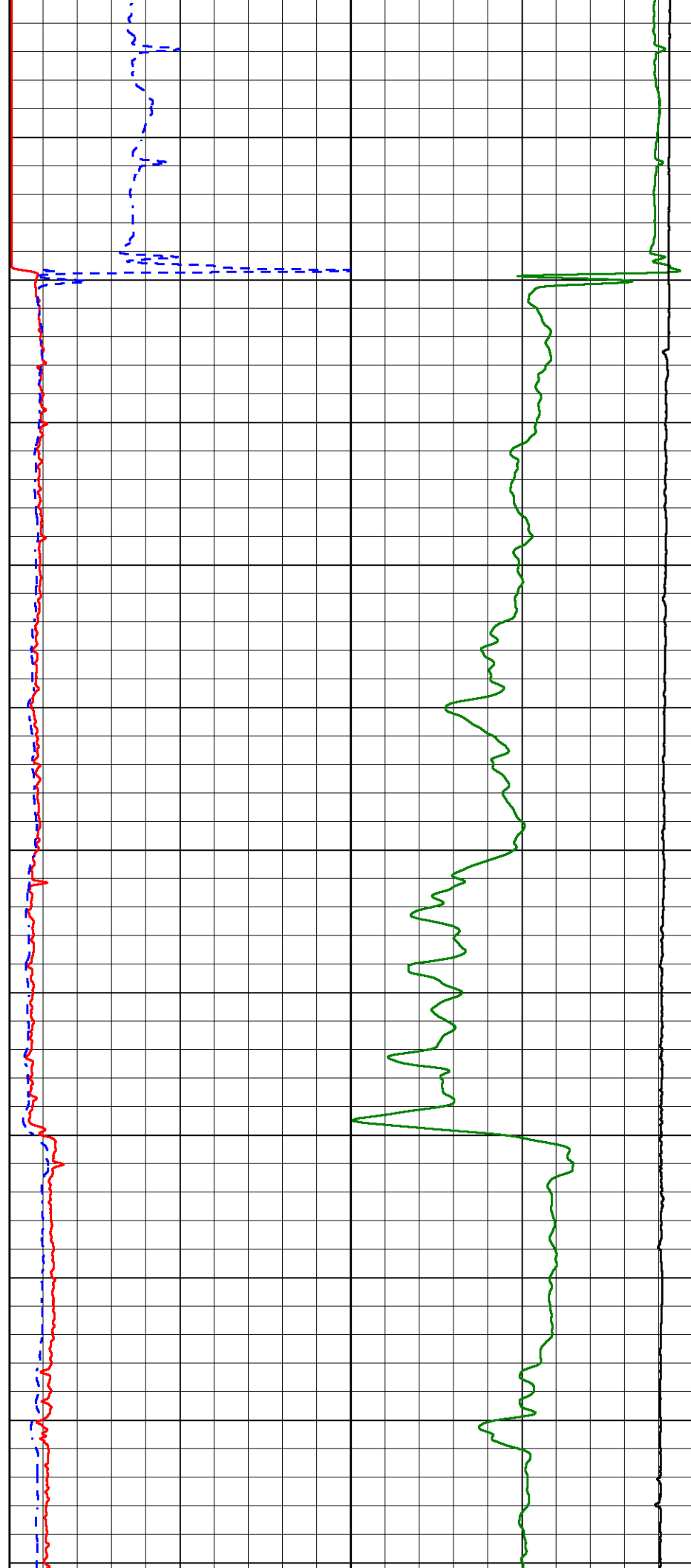
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Dataset Pathname stkml/pass7.1  
Presentation Format \_dil2in  
Dataset Creation Thu Oct 28 03:57:19 2021  
Charted by Depth in Feet scaled 1:600

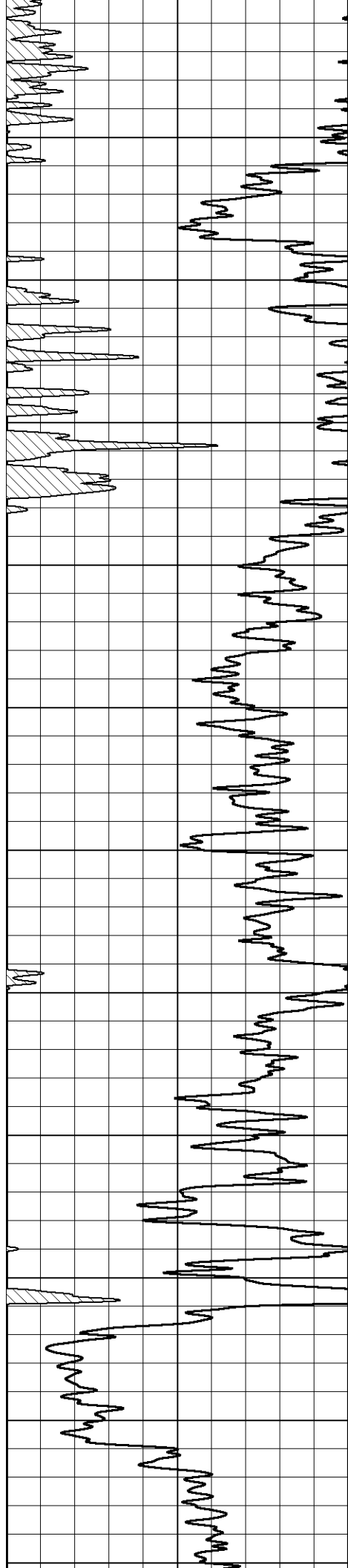
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|---|------------------|-----|-------|-----------------------------|-----|
| 0 | Gamma Ray (GAPI) | 150 | 1000  | Conductivity (mmho/m)       | 0   |
|   |                  |     | 15000 | Line Tension (lb)           | 0   |
|   |                  |     | 0     | Shallow Resistivity (Ohm-m) | 50  |
|   |                  |     | 0     | Deep Resistivity (Ohm-m)    | 50  |
|   |                  |     |       | Shallow Resistivity         |     |
|   |                  |     | 50    | (Ohm-m)                     | 200 |
|   |                  |     | 50    | Deep Resistivity (Ohm-m)    | 200 |



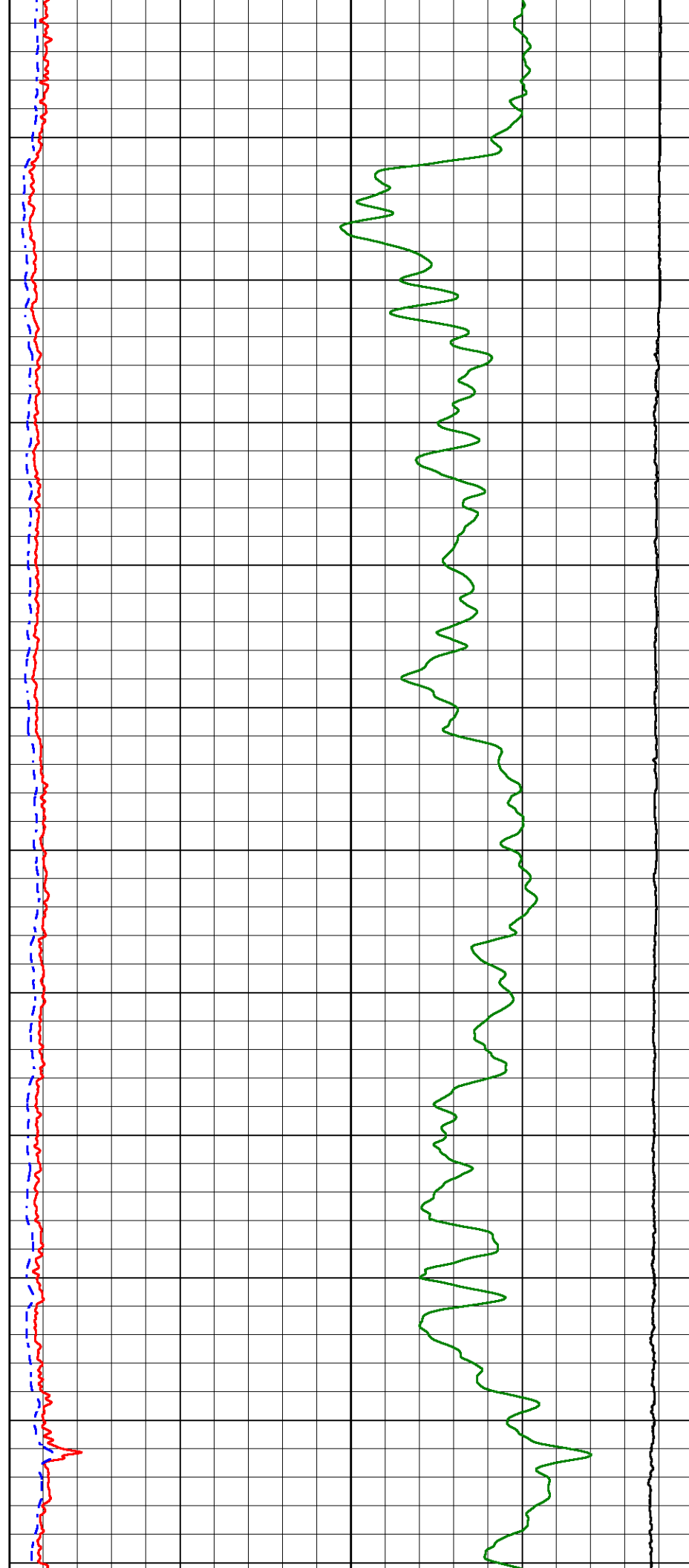


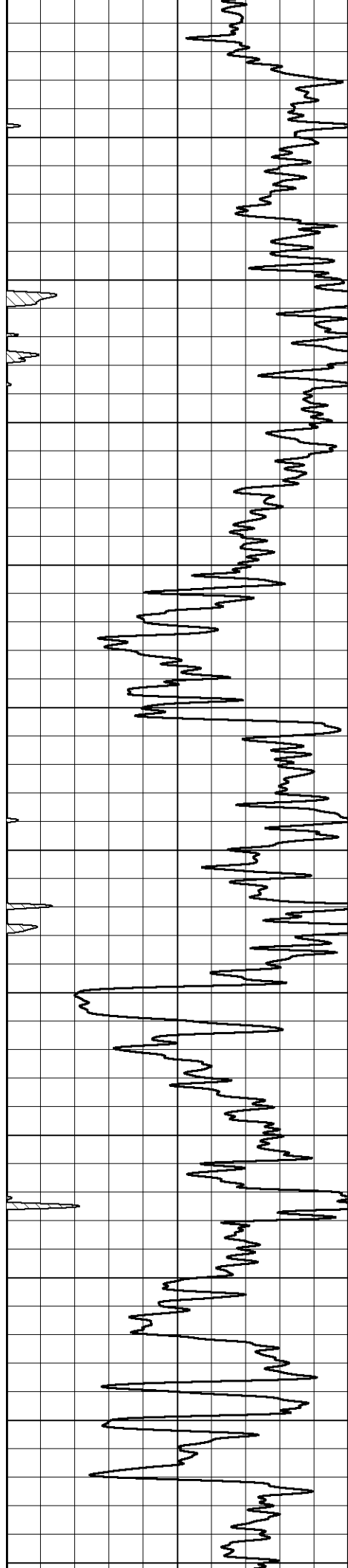
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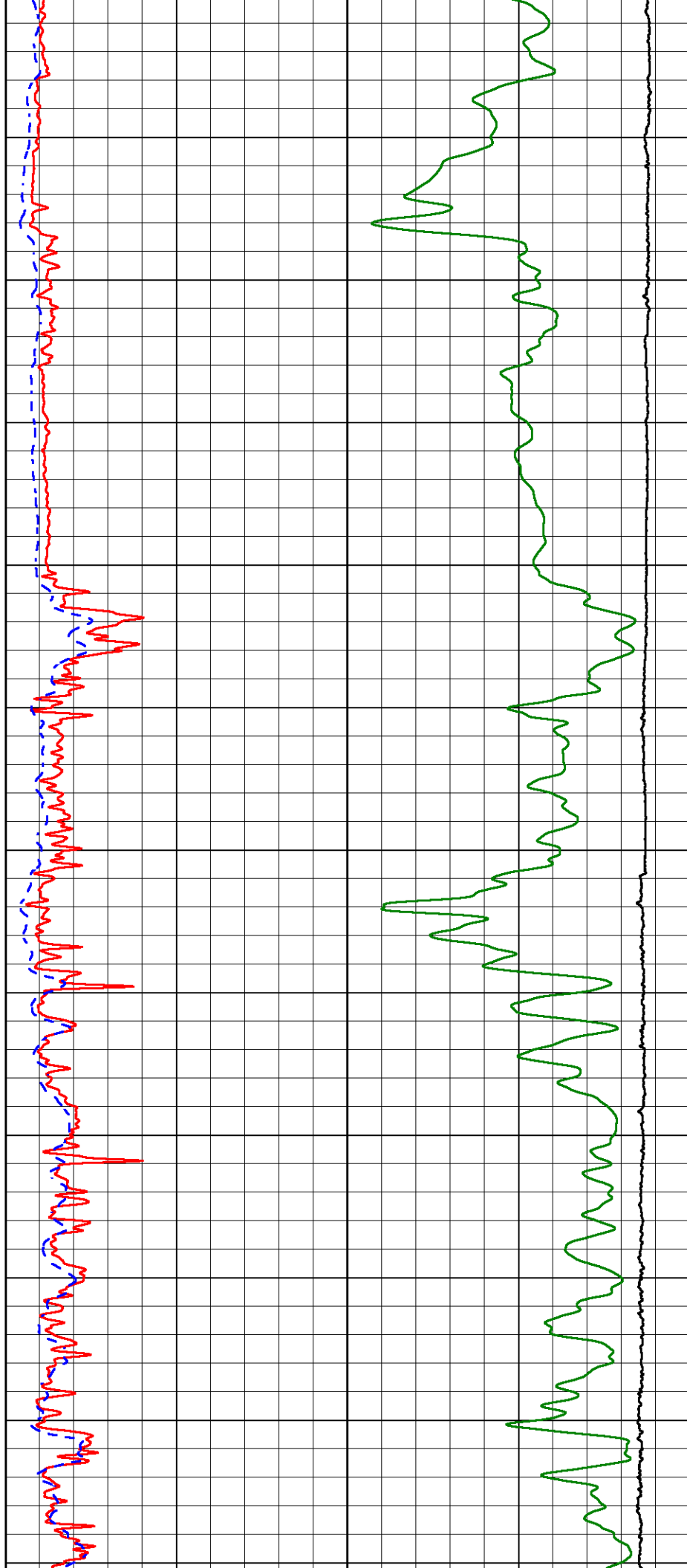


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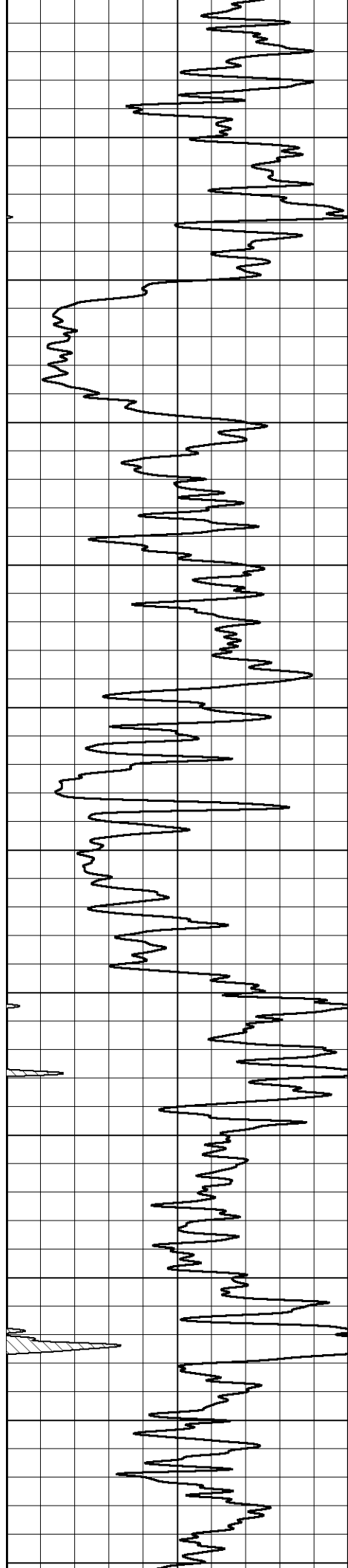




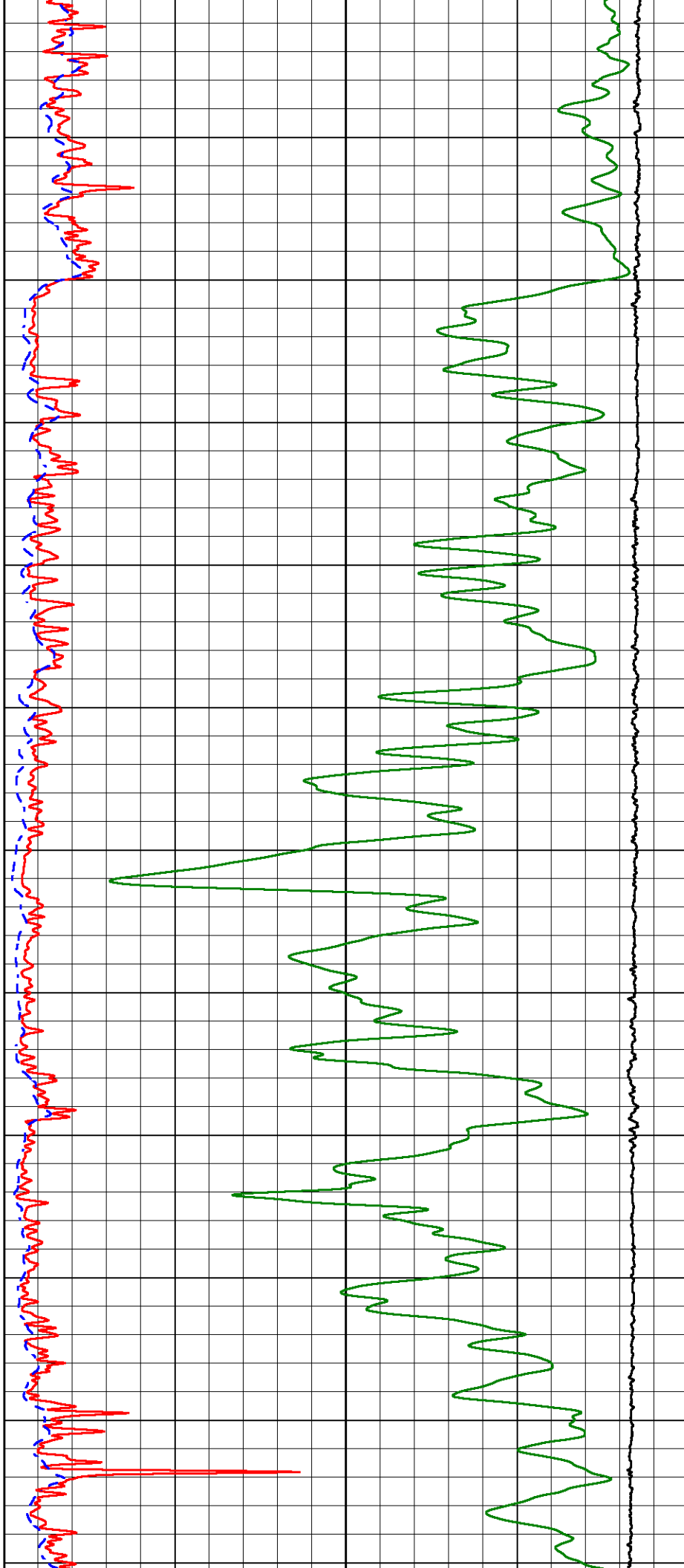
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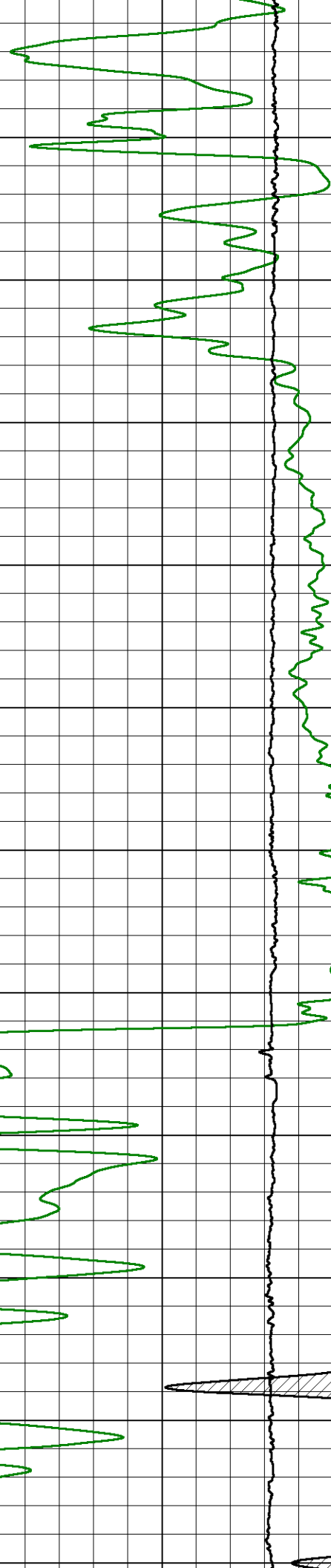
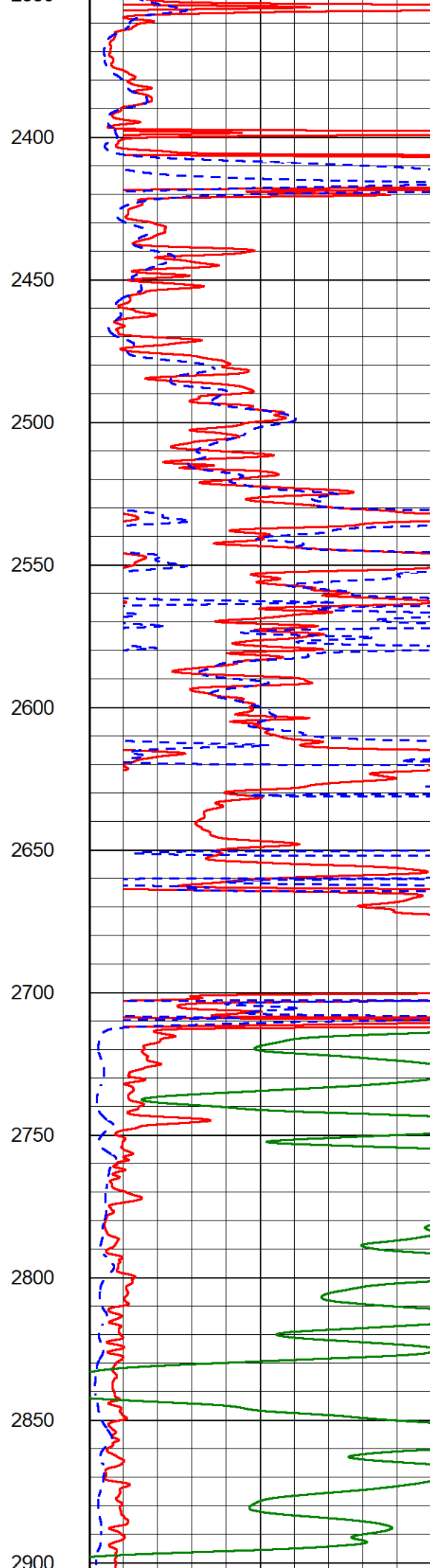
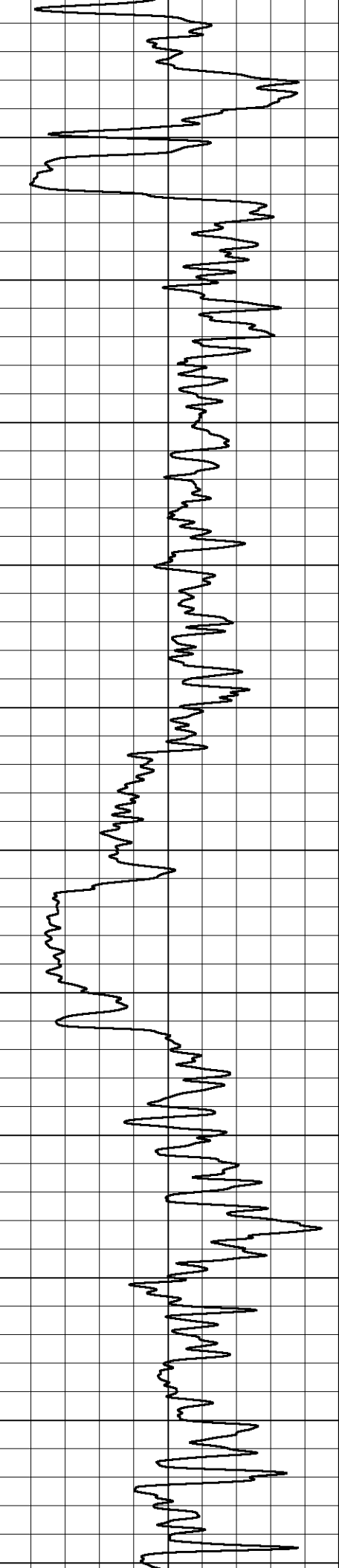


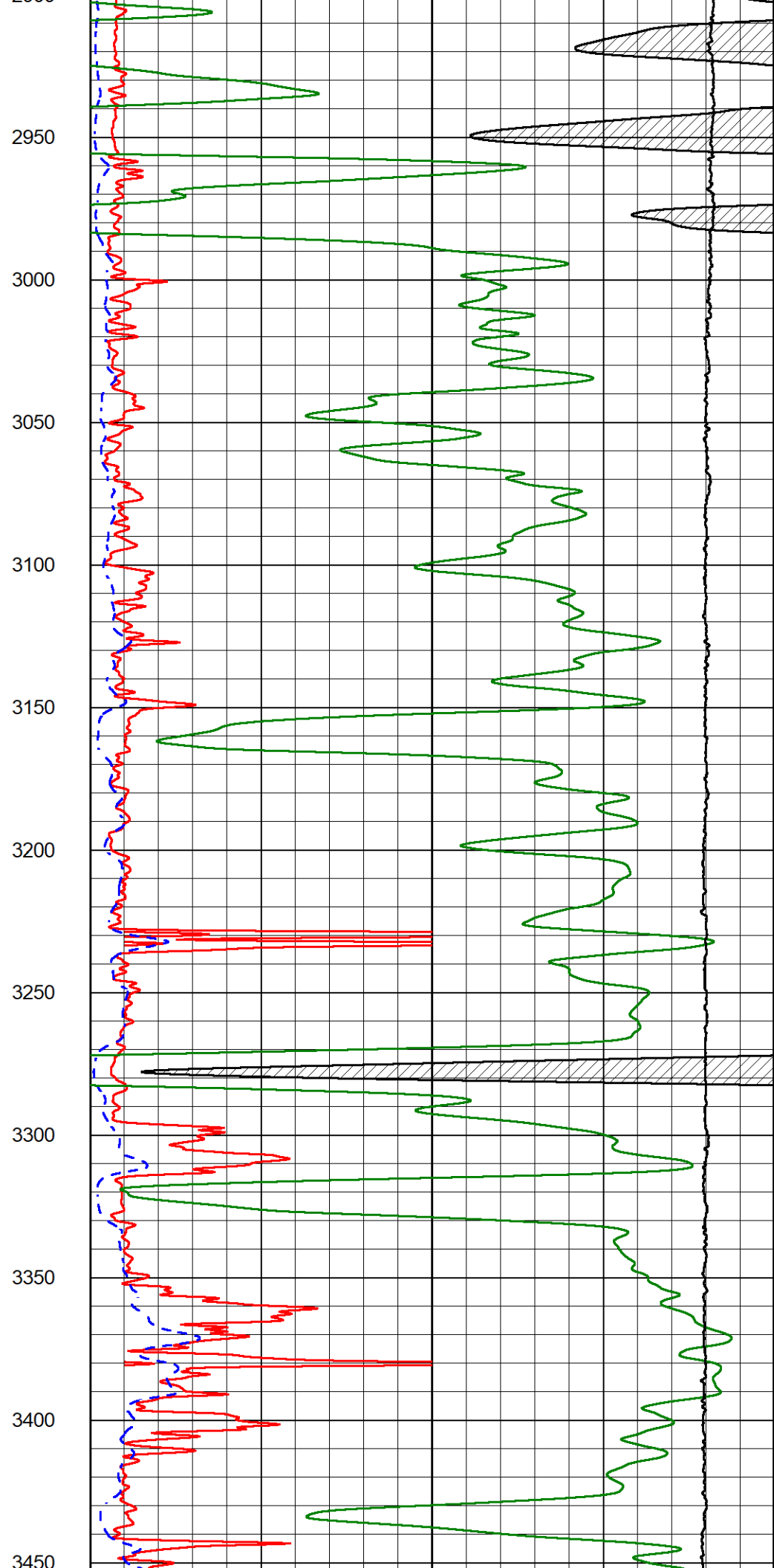
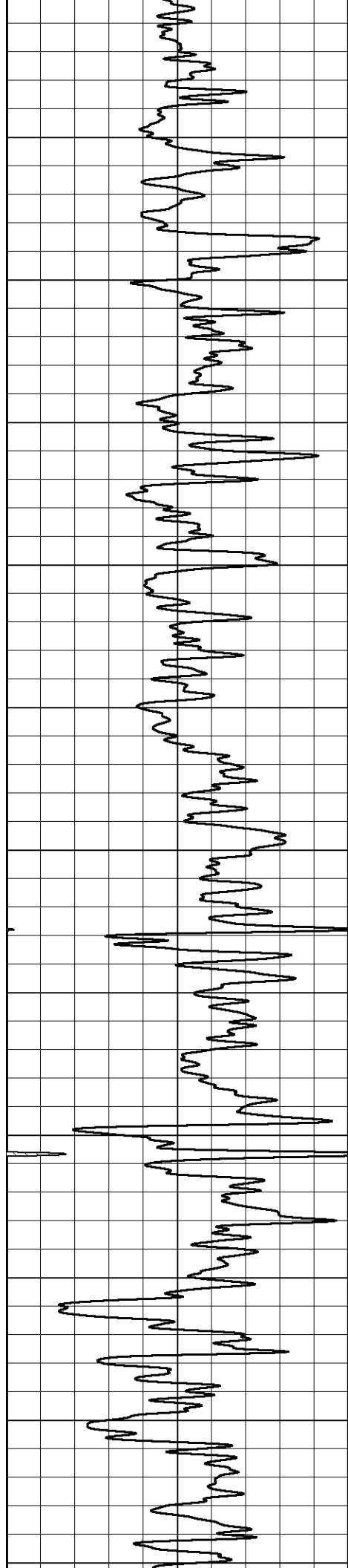




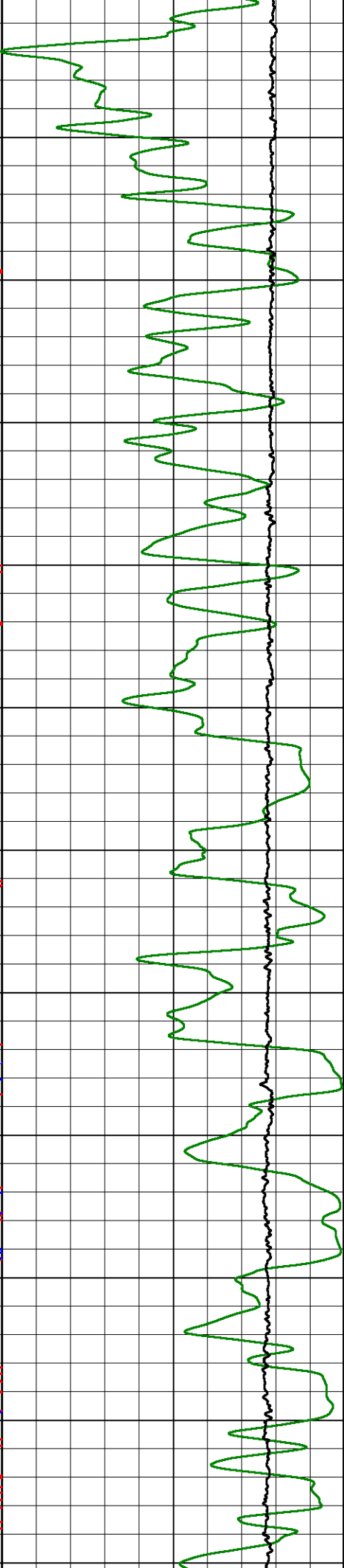
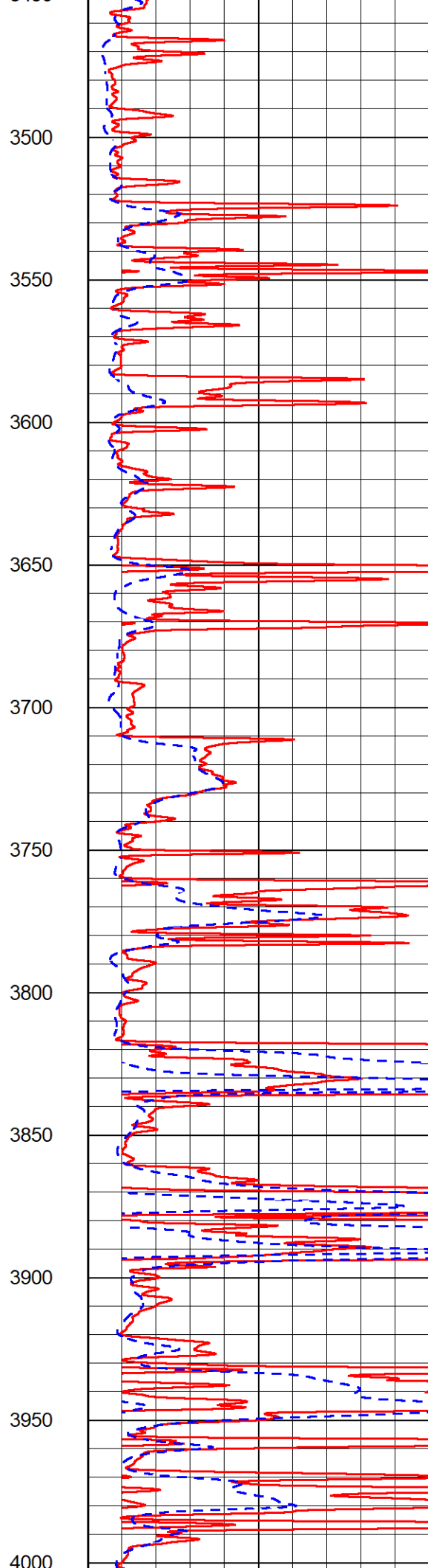
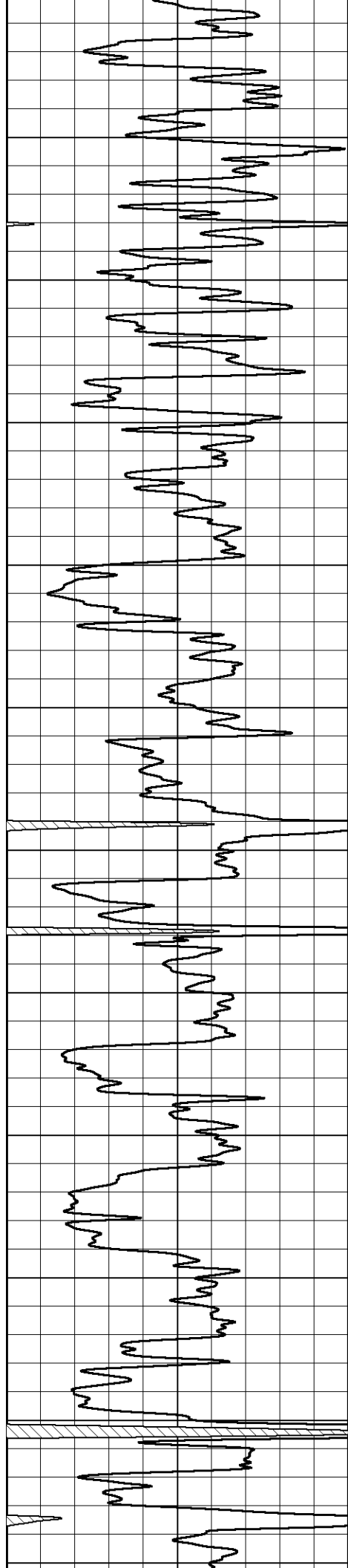
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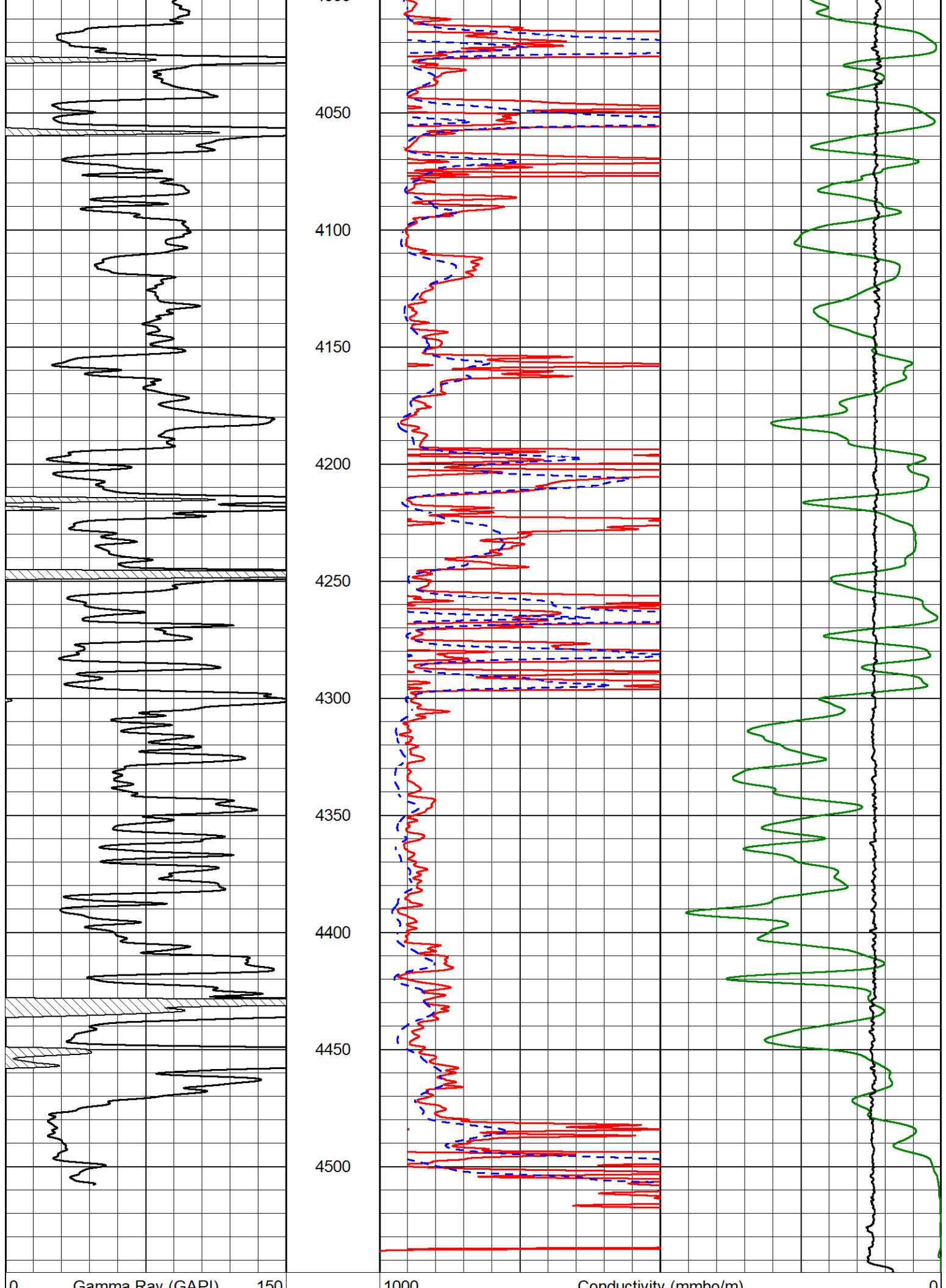












|                  |                             |       |                       |   |
|------------------|-----------------------------|-------|-----------------------|---|
| Gamma Ray (GAPI) | 150                         | 1000  | Conductivity (mmho/m) | 0 |
|                  |                             | 15000 | Line Tension (lb)     | 0 |
| 0                | Shallow Resistivity (Ohm-m) | 50    |                       |   |
| 0                | Deep Resistivity (Ohm-m)    | 50    |                       |   |
|                  | Shallow Resistivity         |       |                       |   |
| 50               | (Ohm-m)                     | 200   |                       |   |
| 50               | Deep Resistivity (Ohm-m)    | 200   |                       |   |



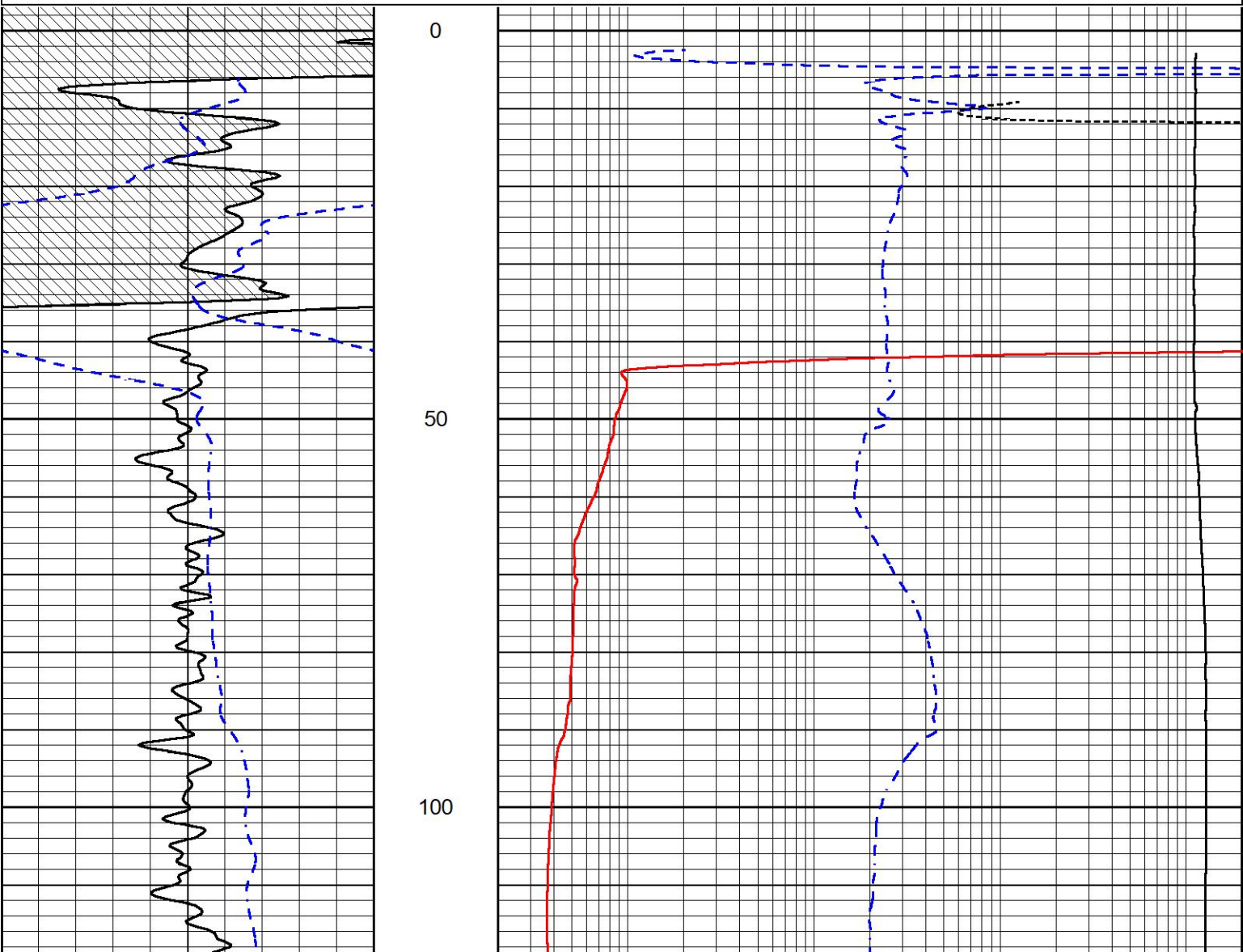
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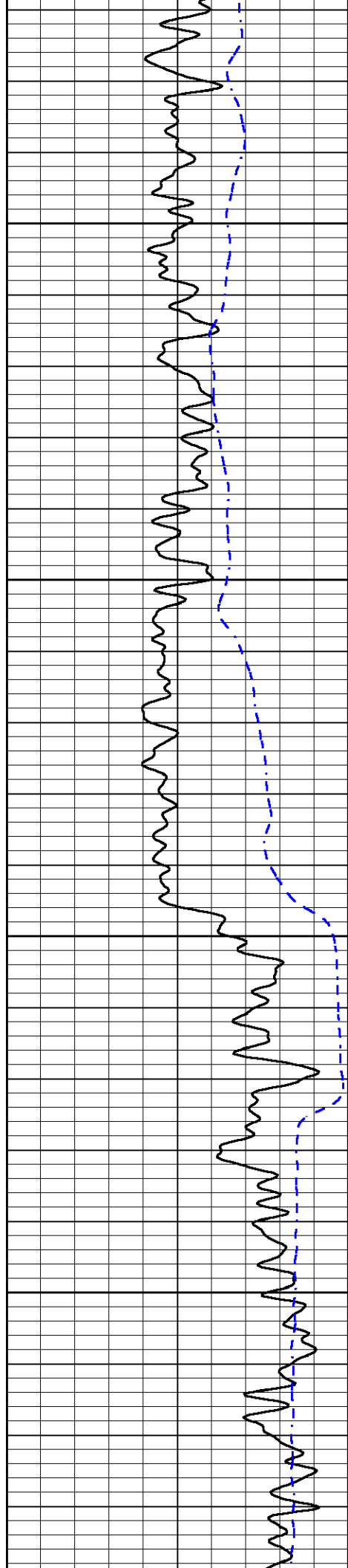
MAIN PASS

MIDWEST WIRELINE

|                     |                             |
|---------------------|-----------------------------|
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| Dataset Pathname    | stkml/pass4.1               |
| Presentation Format | _dil                        |
| Dataset Creation    | Thu Oct 28 03:51:44 2021    |
| 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   | Shallow Resistivity (Ohm-m) | 2000 |
|      |                  |     | 10000 | Line Tension (lb)           | 0    |



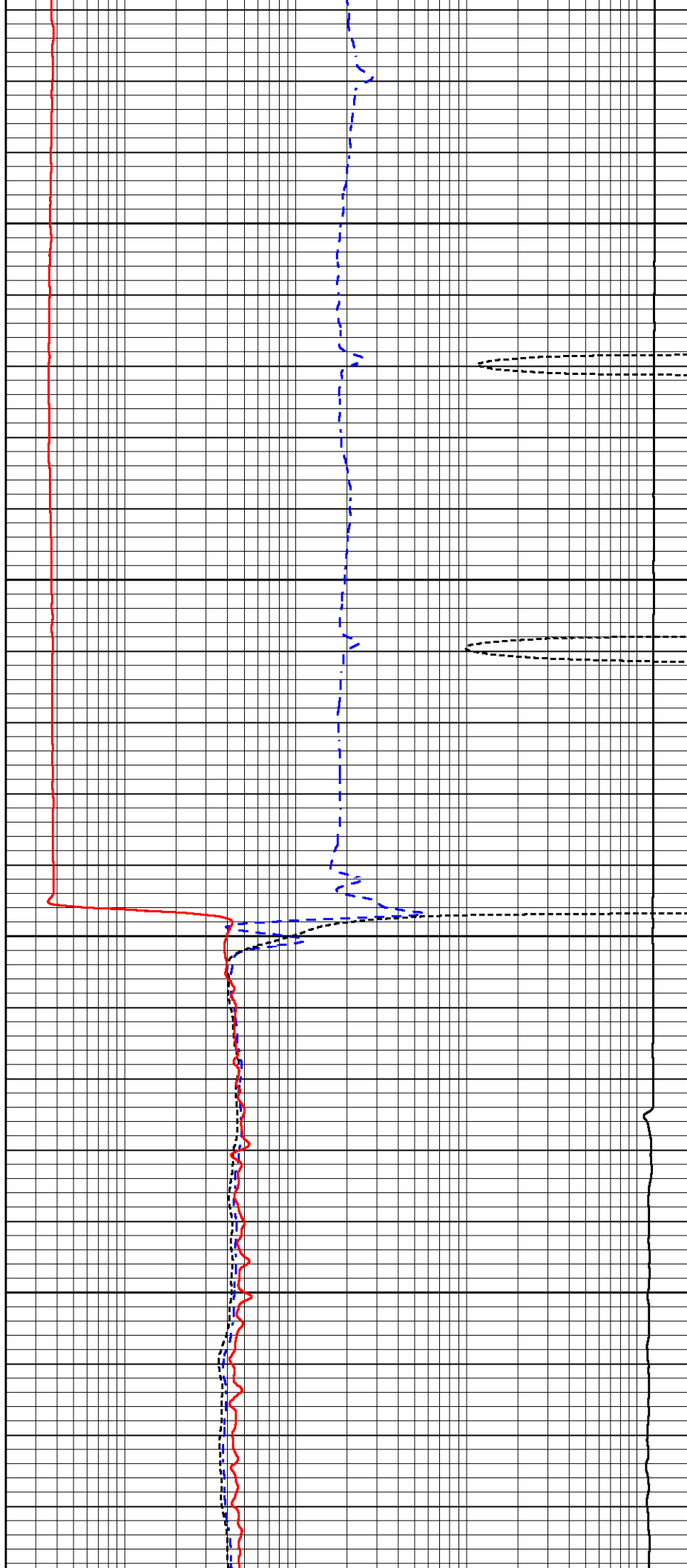


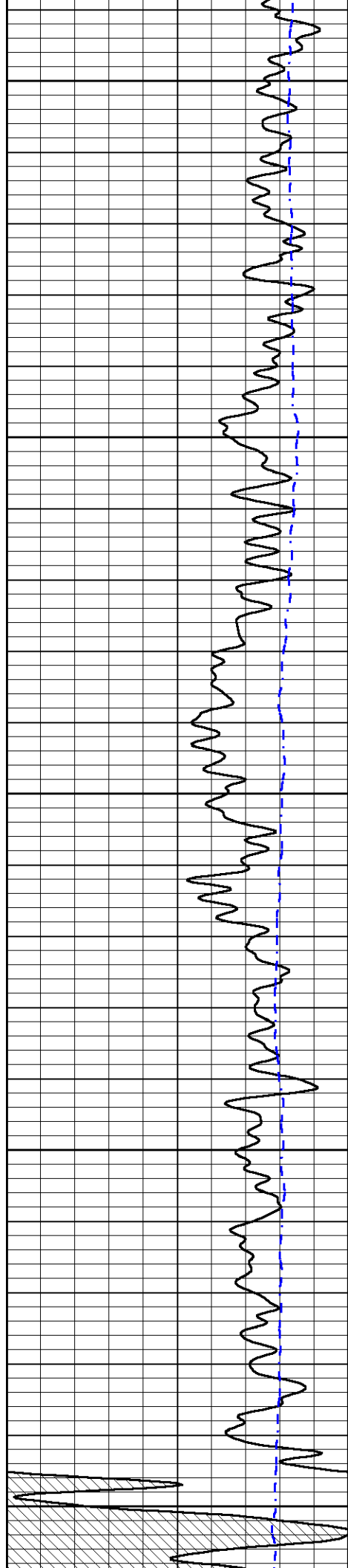
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250

300





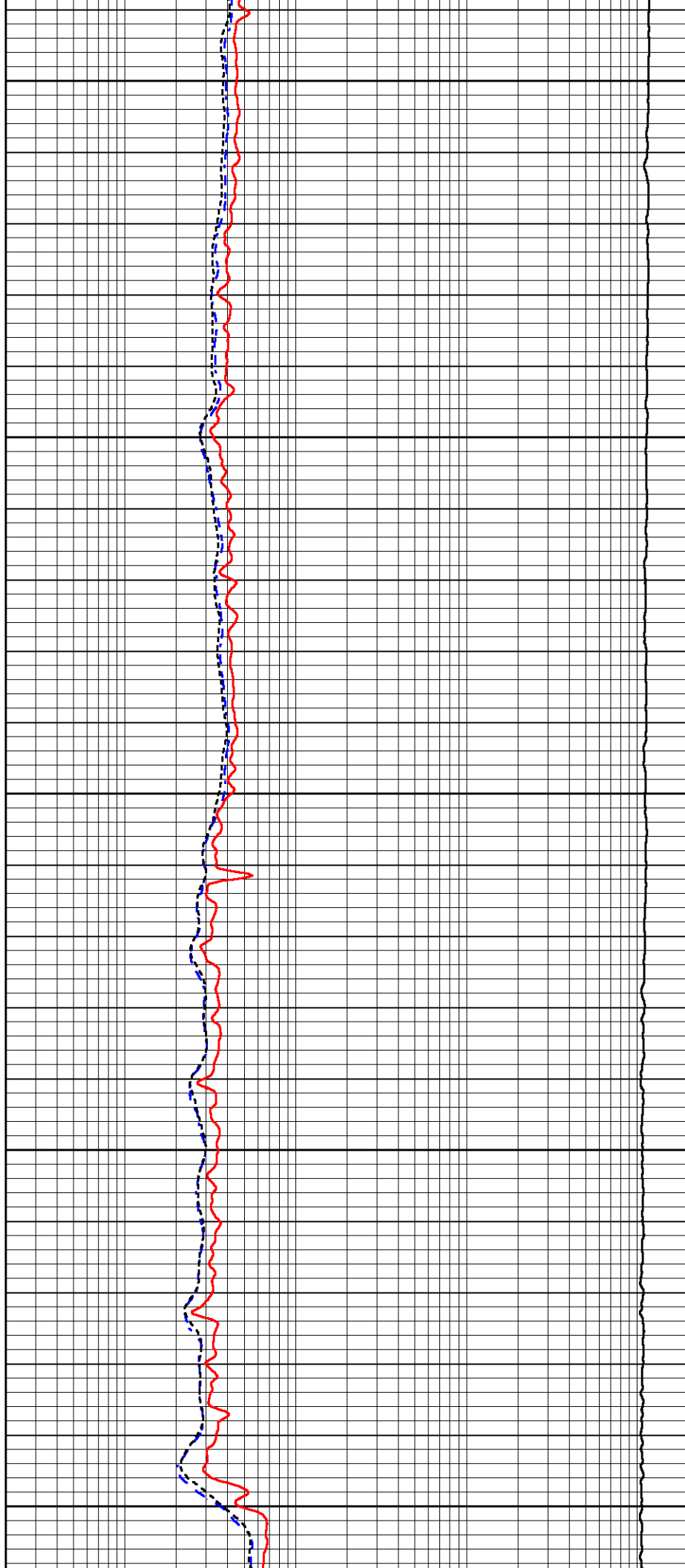
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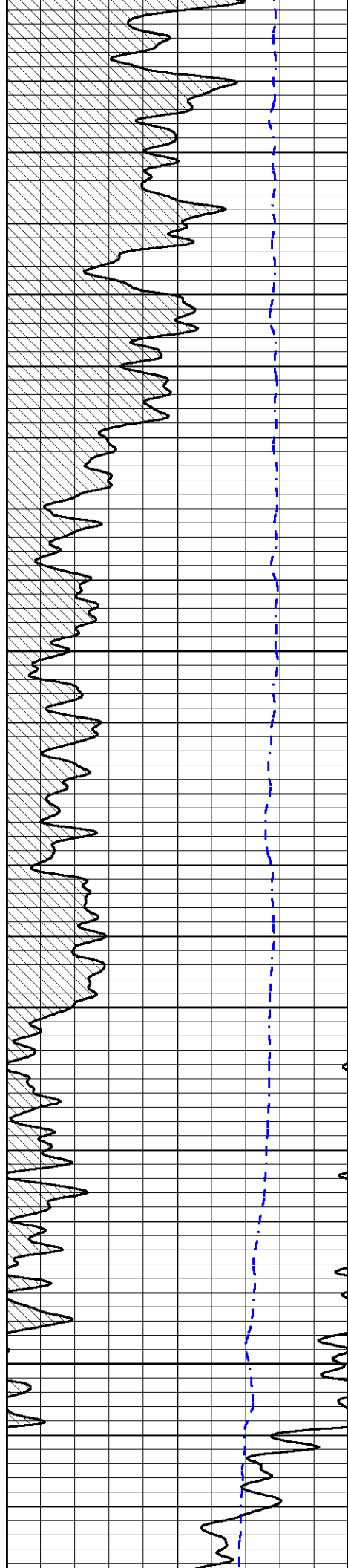
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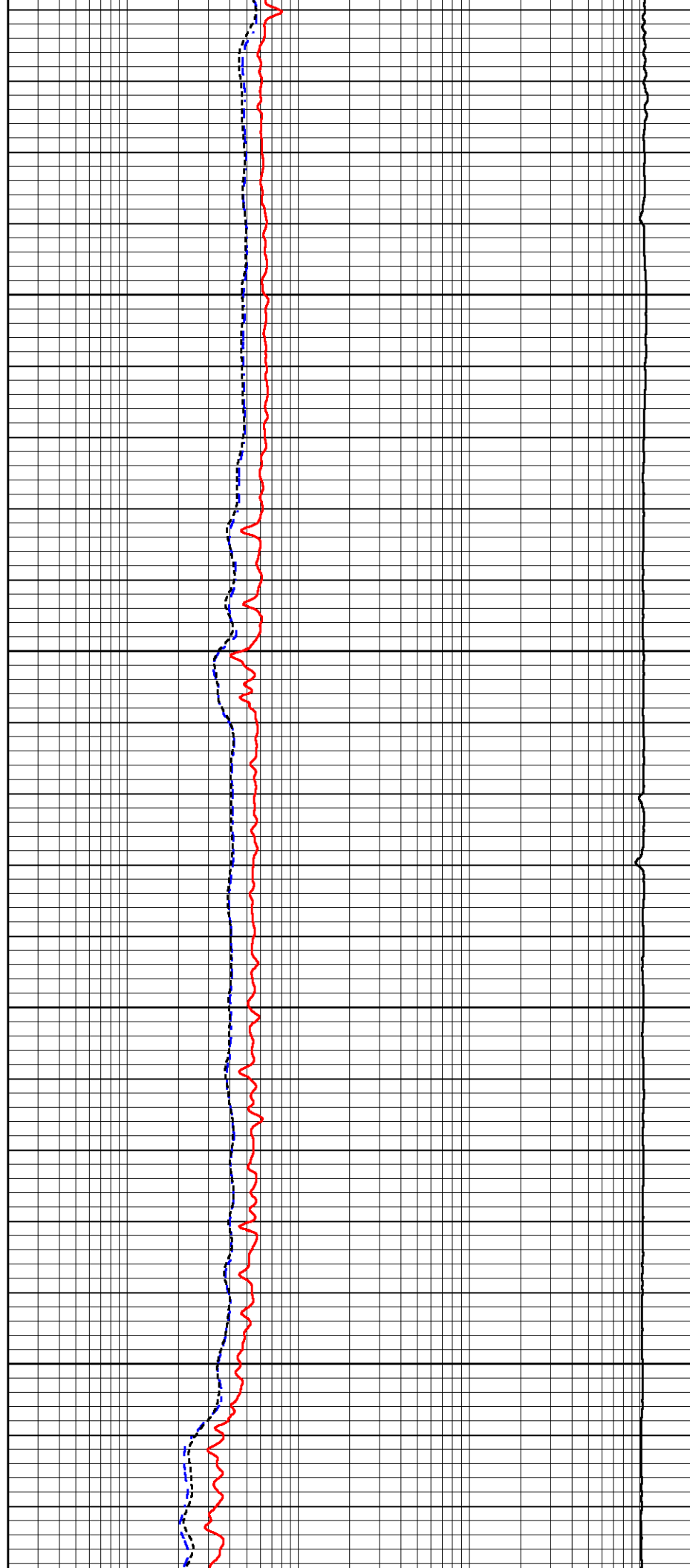


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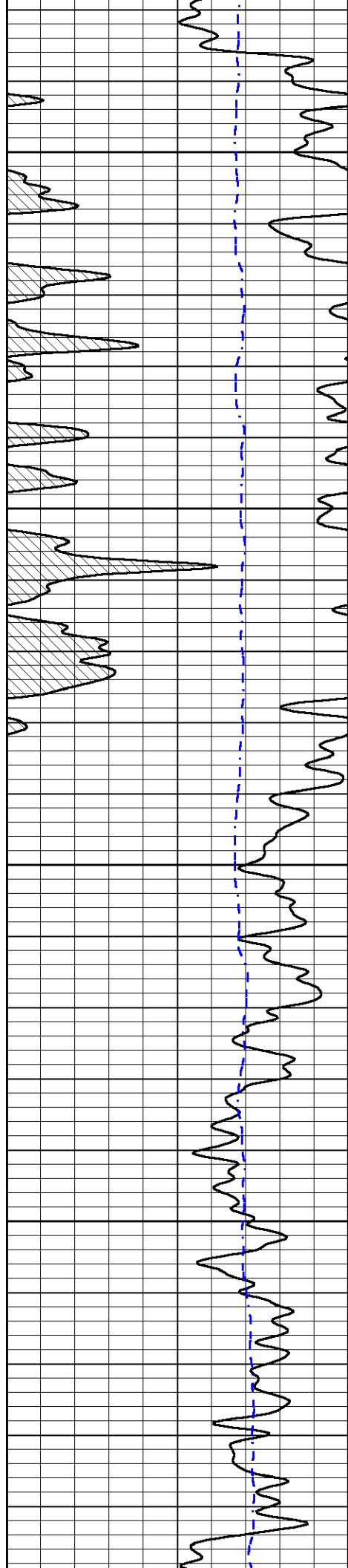
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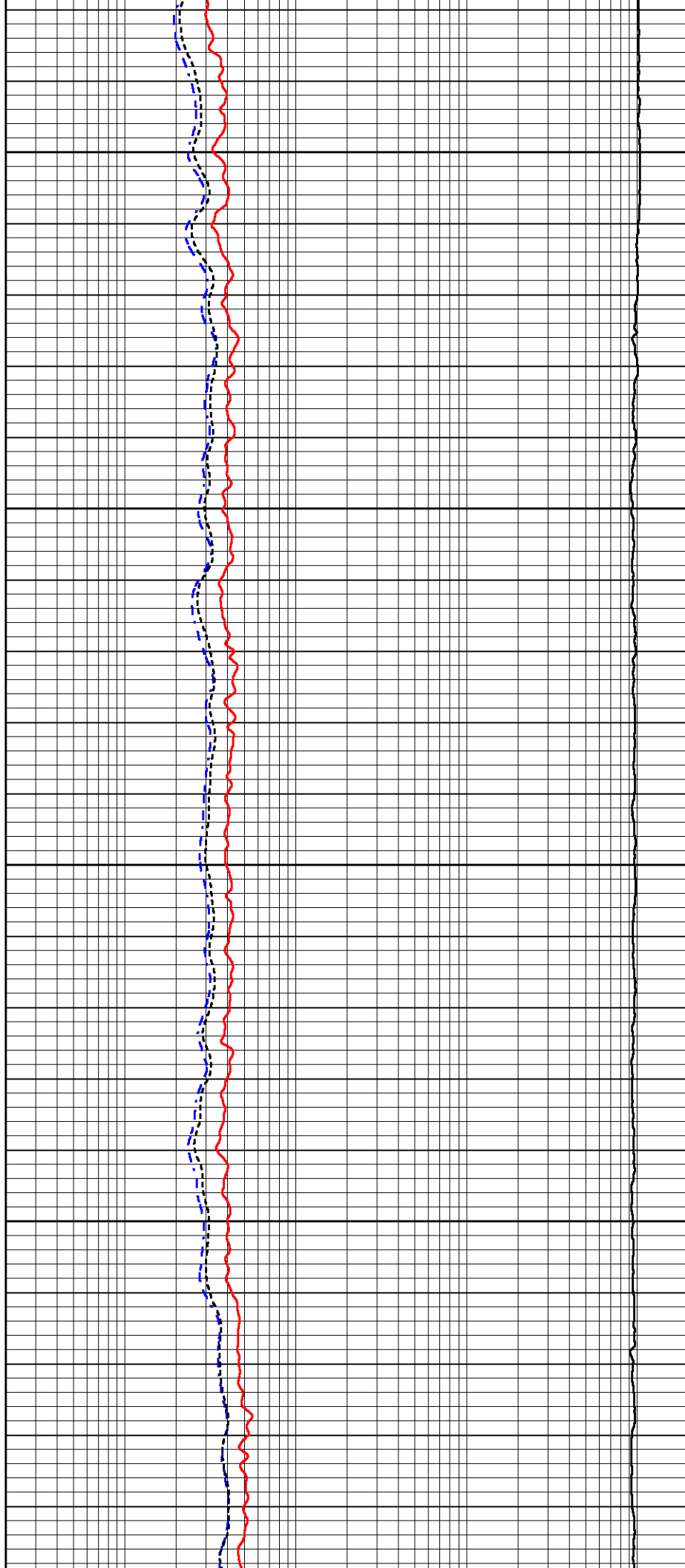


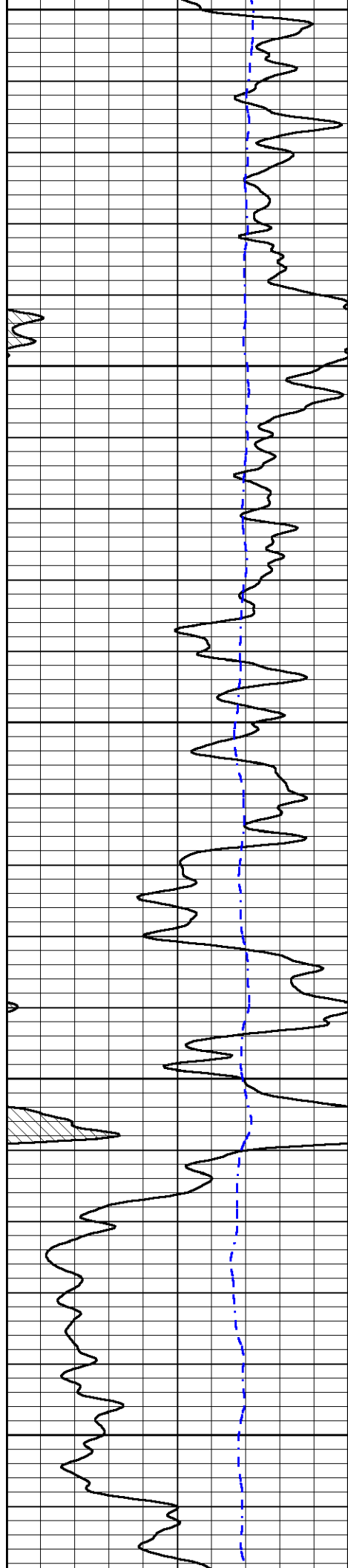
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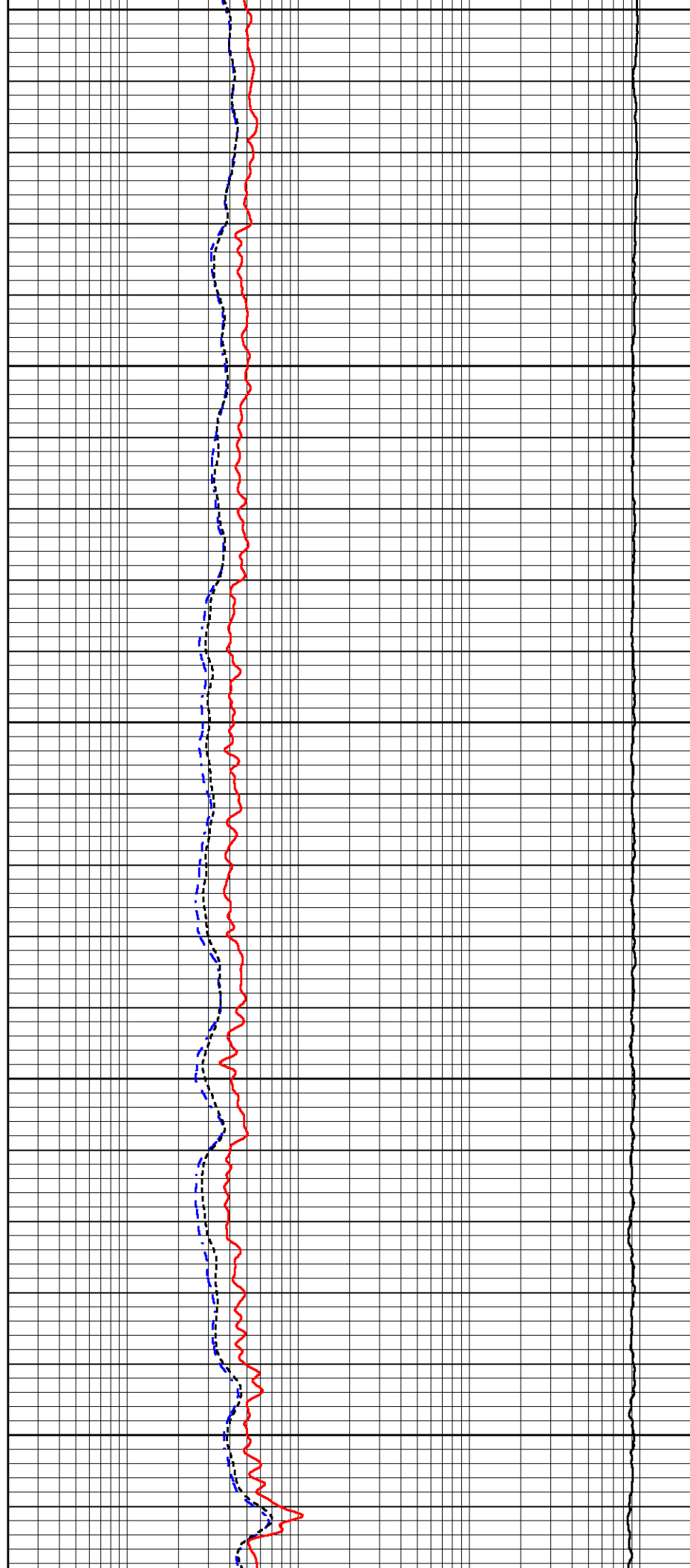
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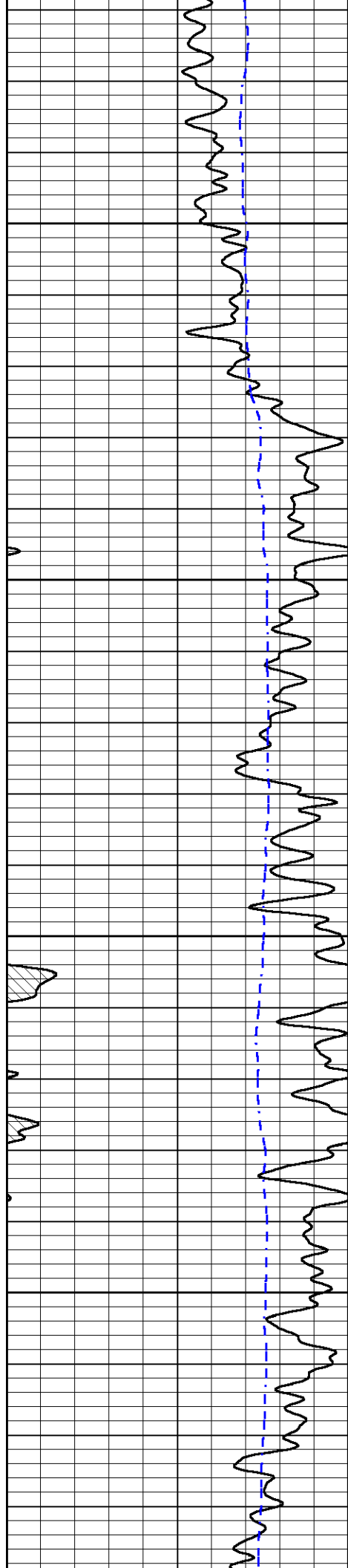
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1150

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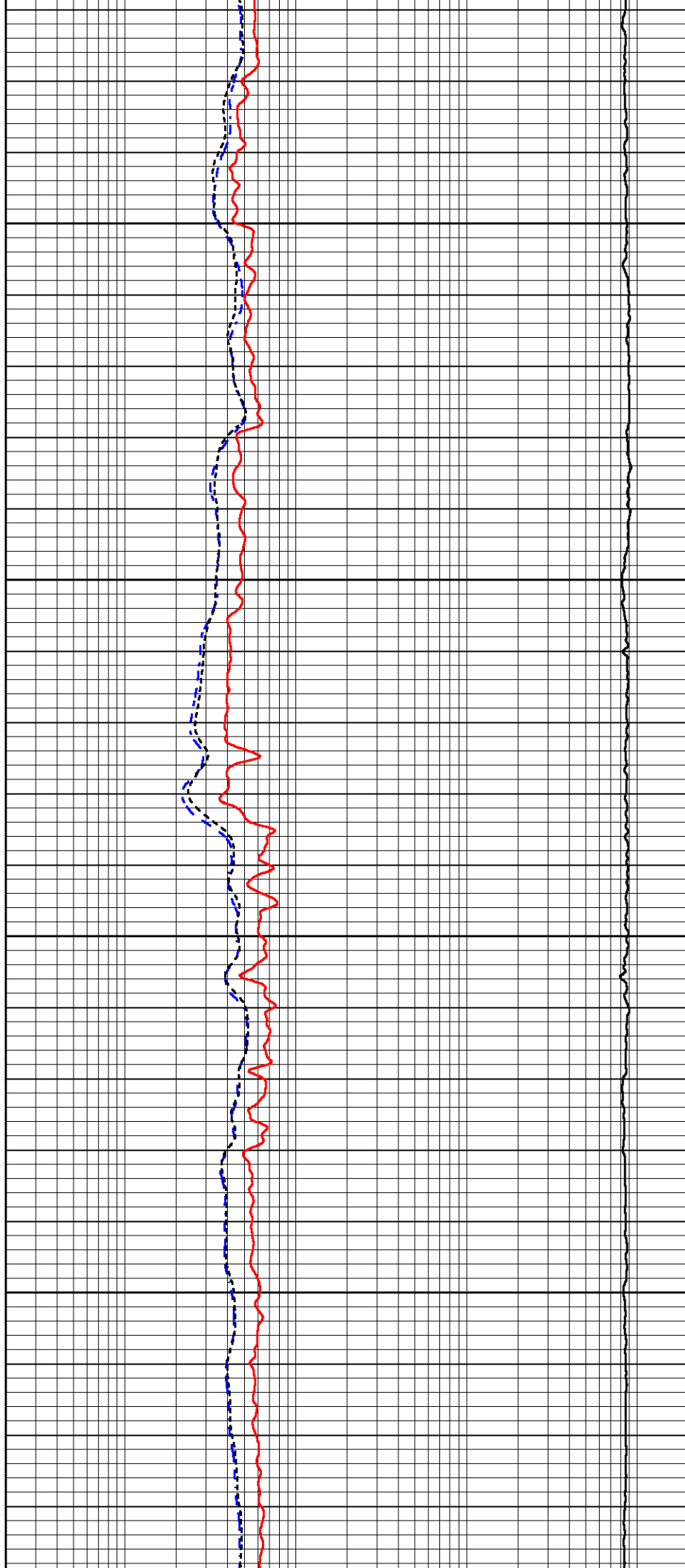


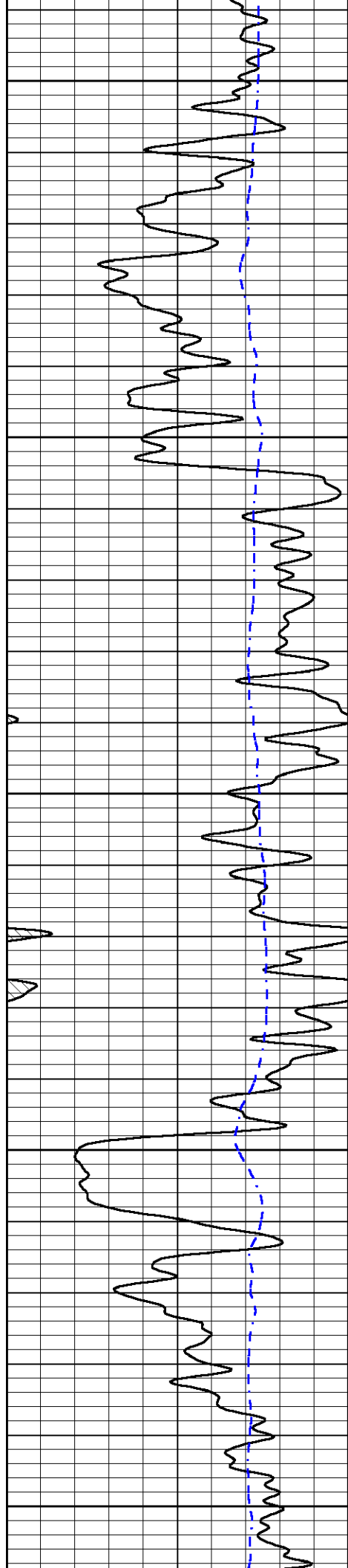
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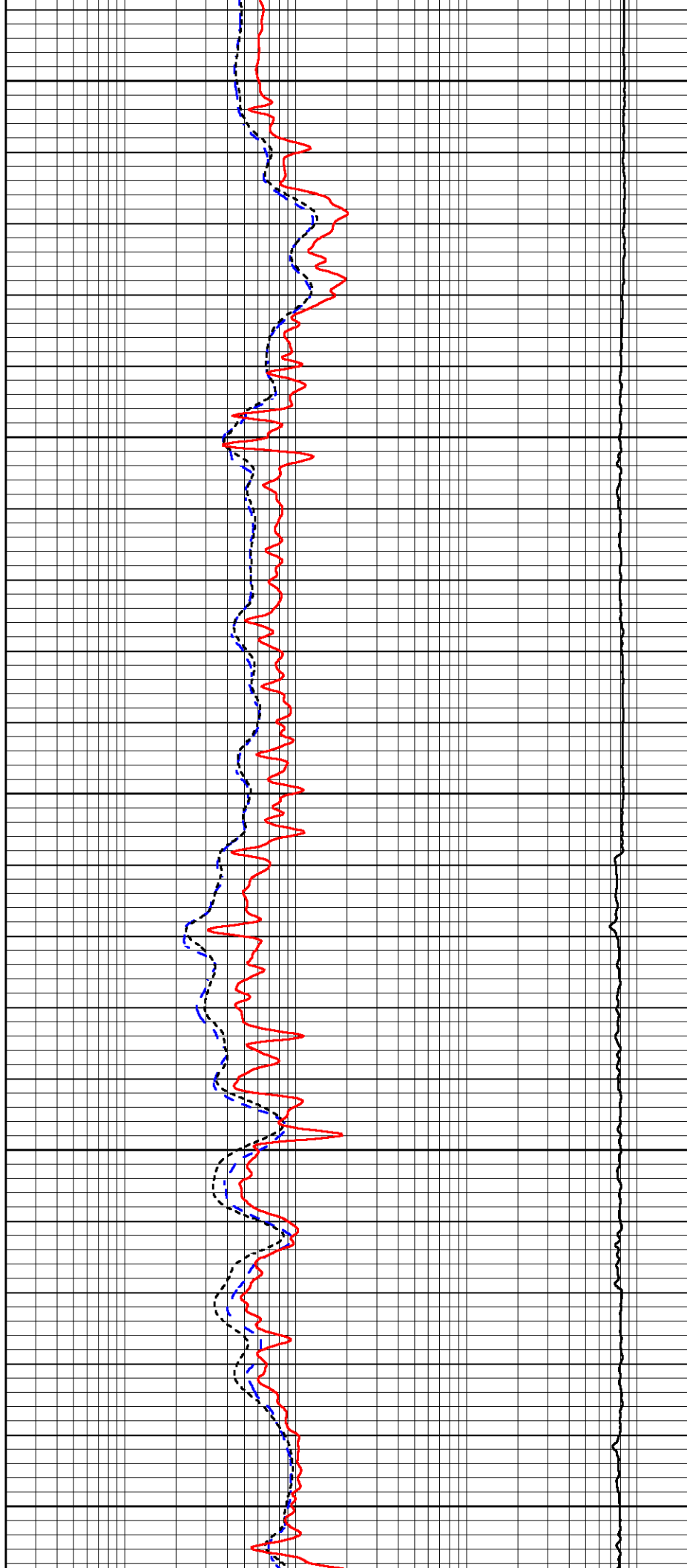
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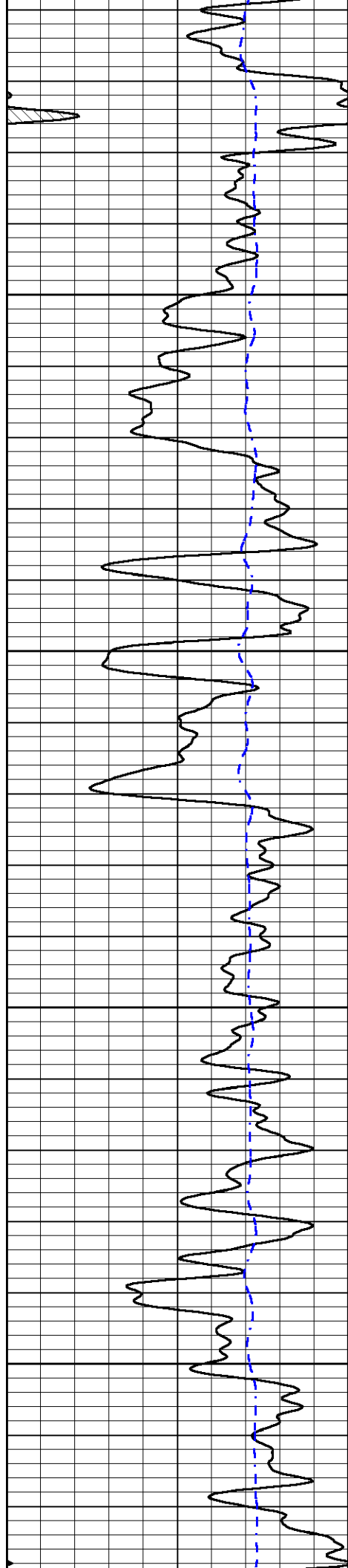
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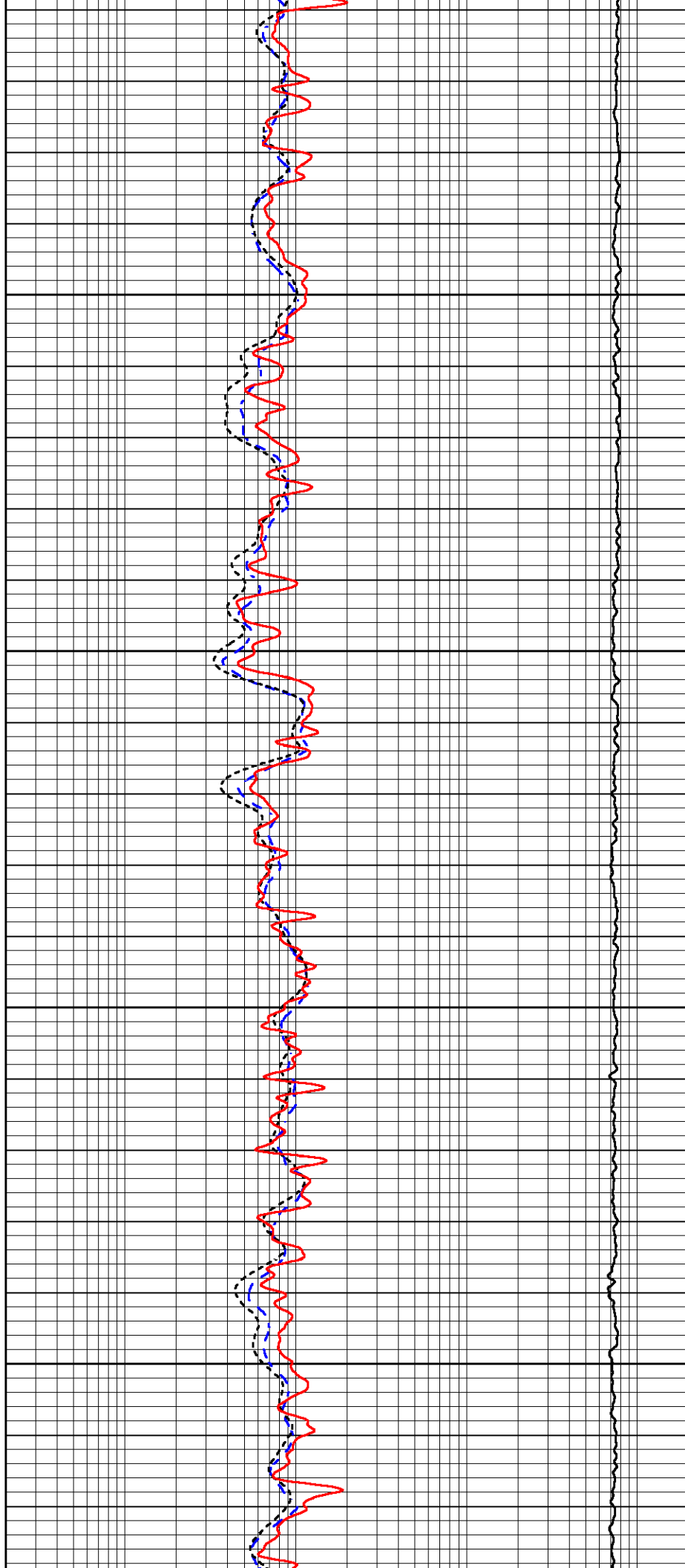


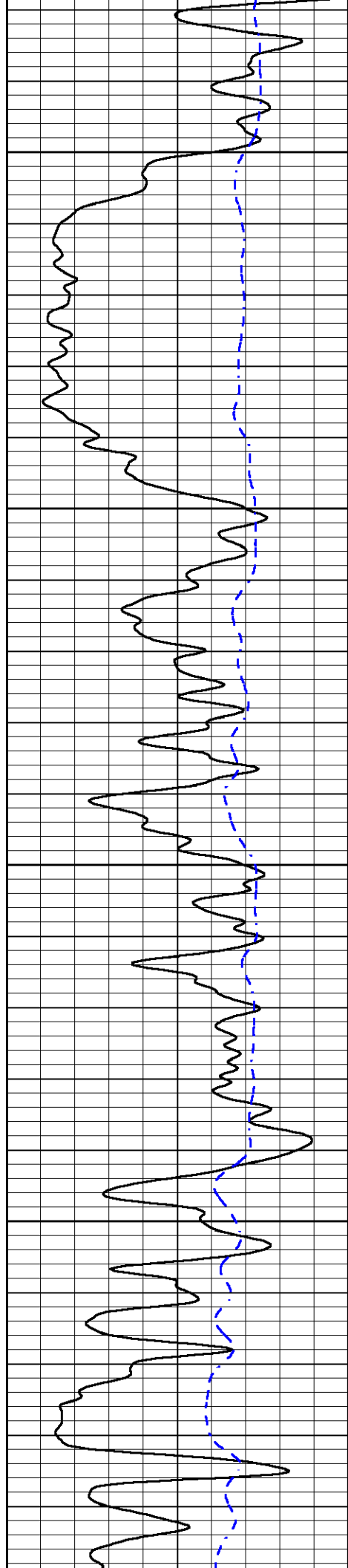
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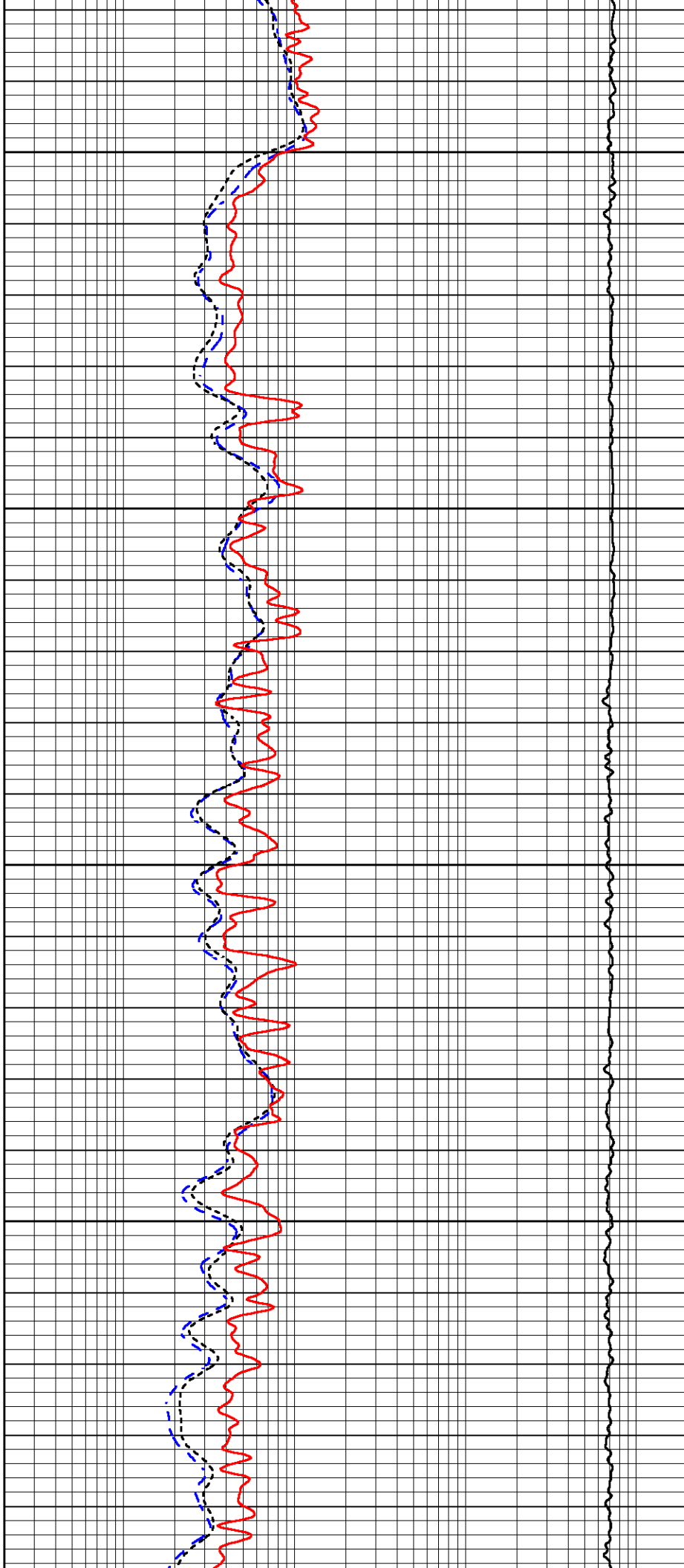


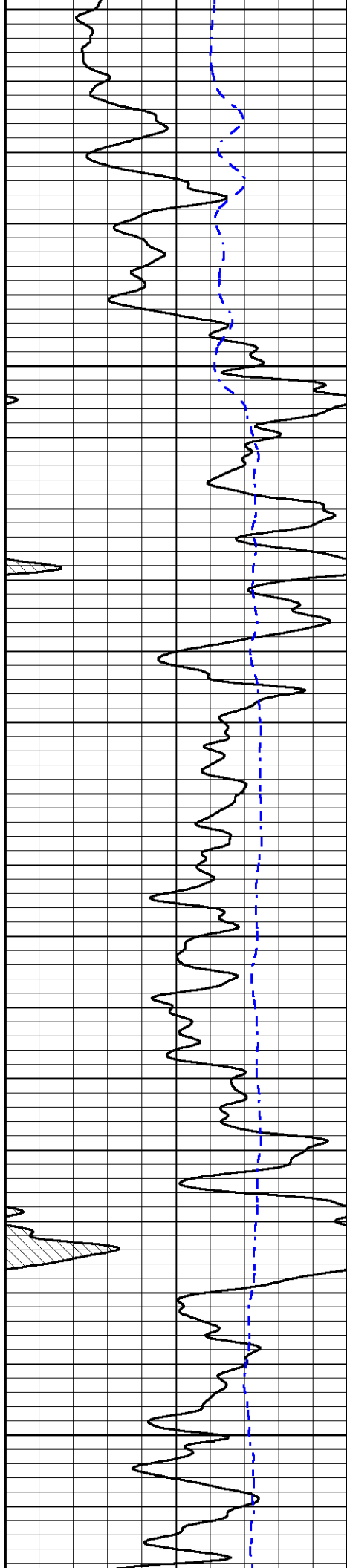
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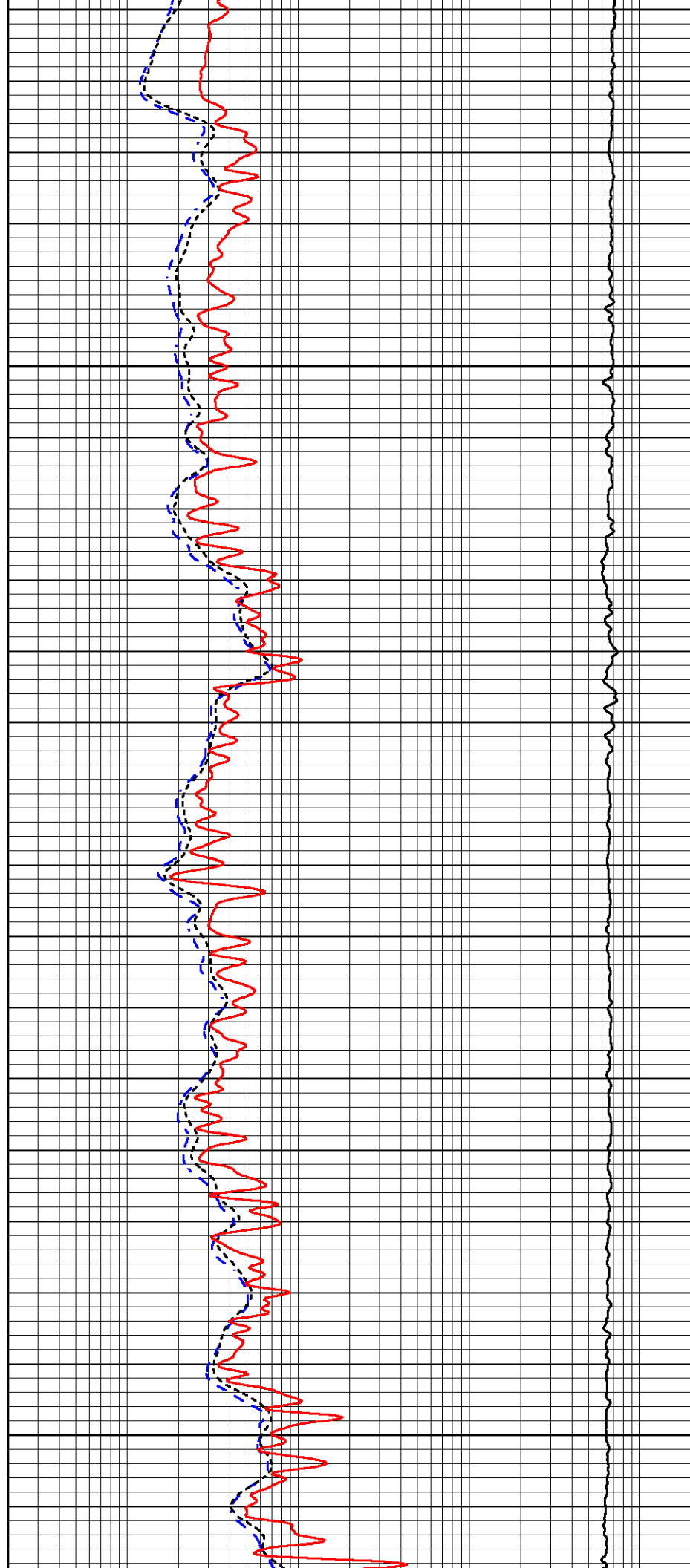
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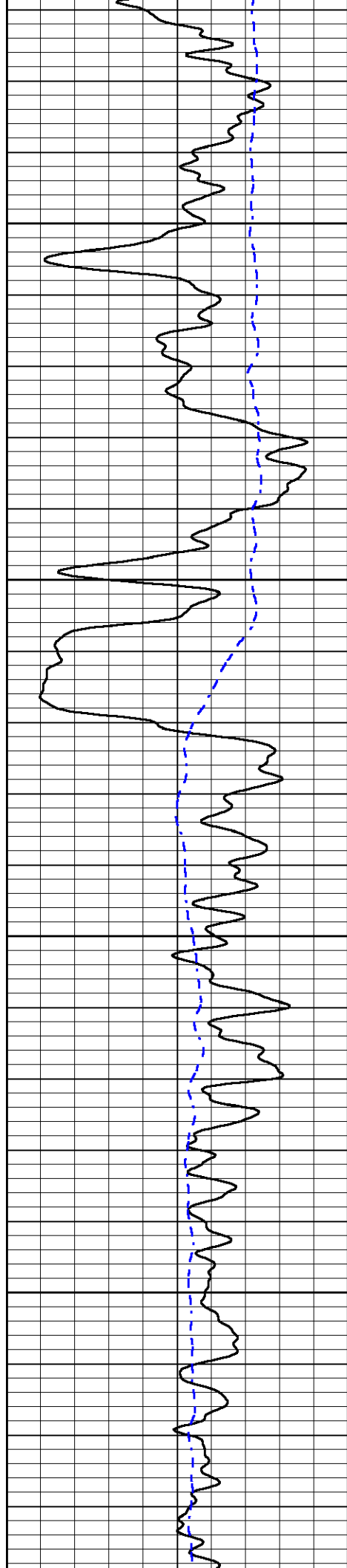
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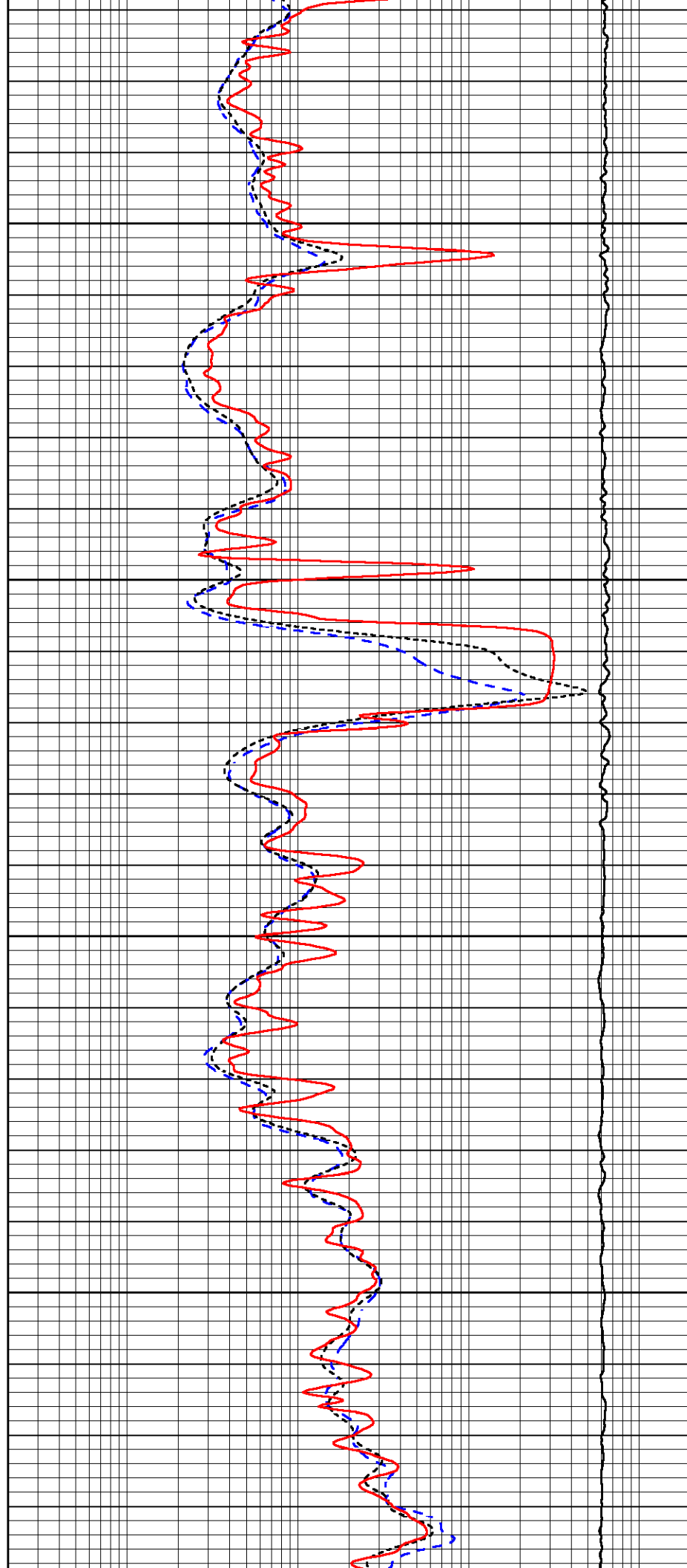


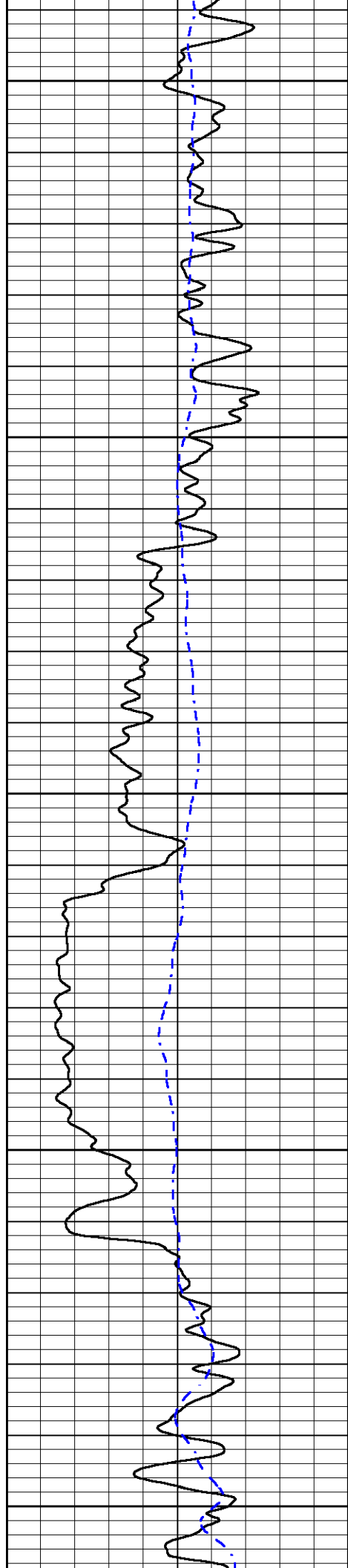
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2450

2500





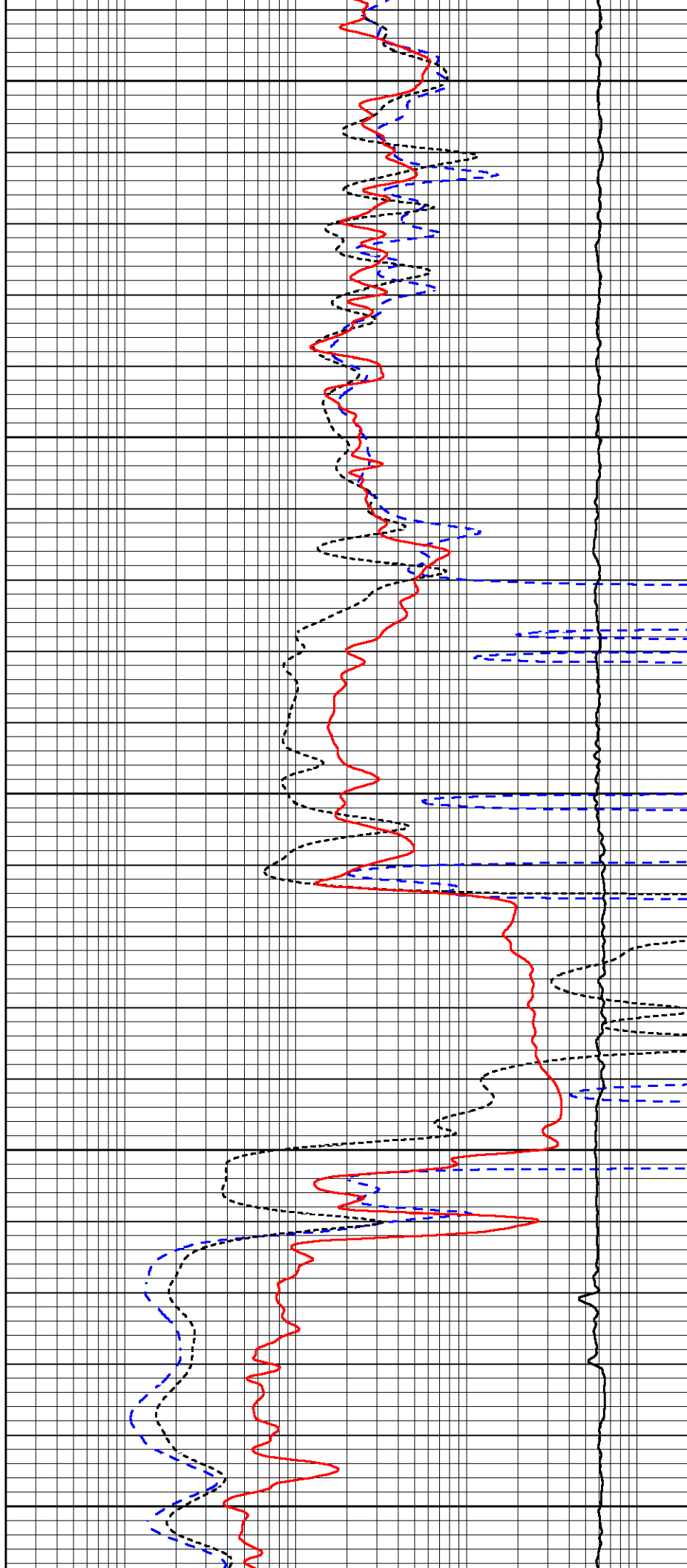
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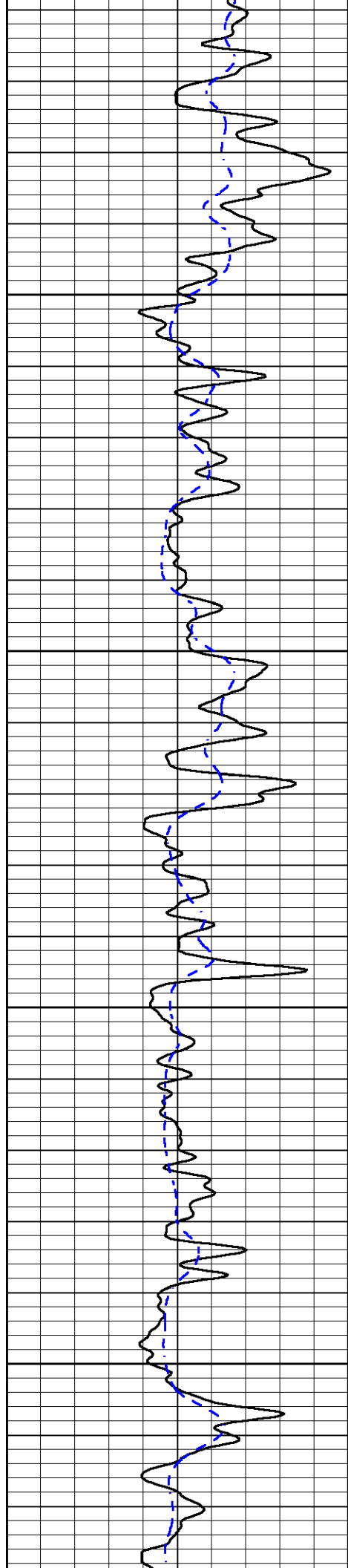
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2700

2750



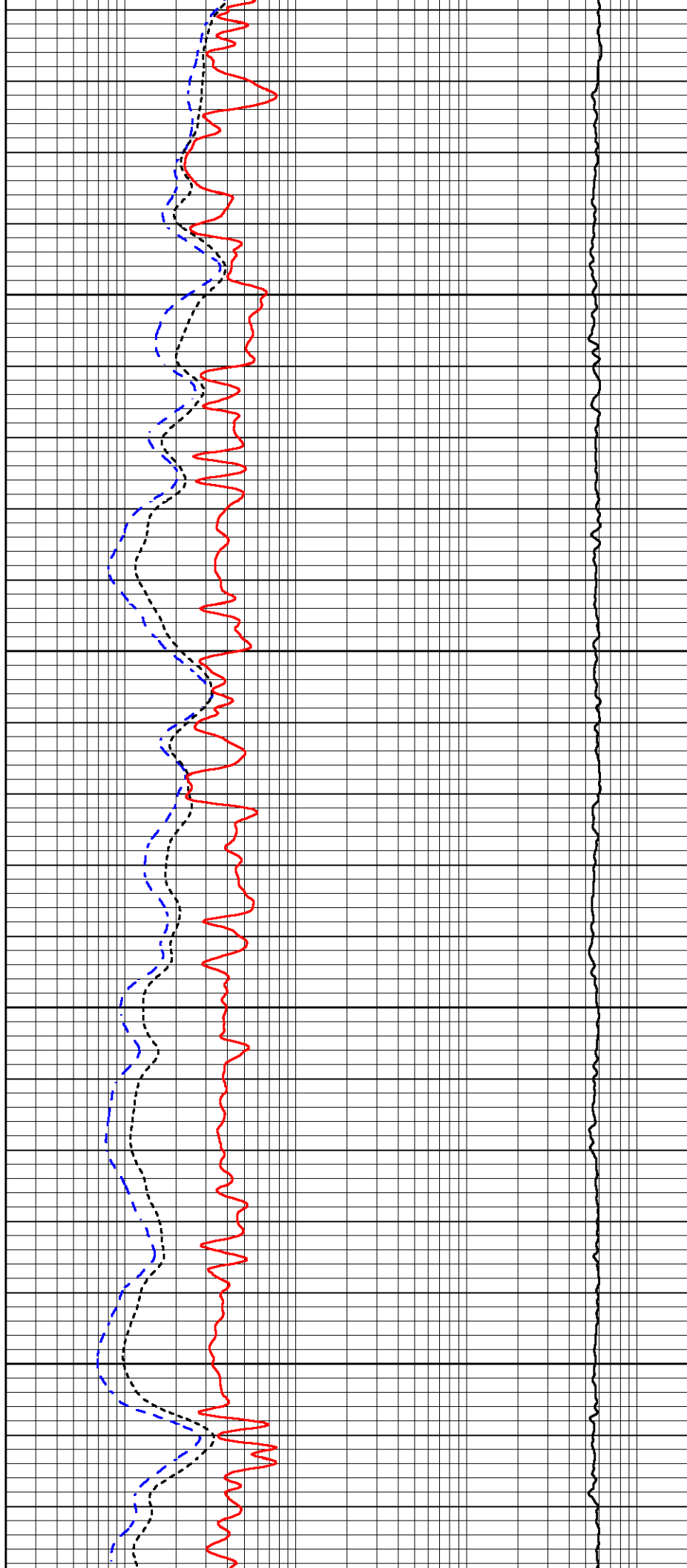


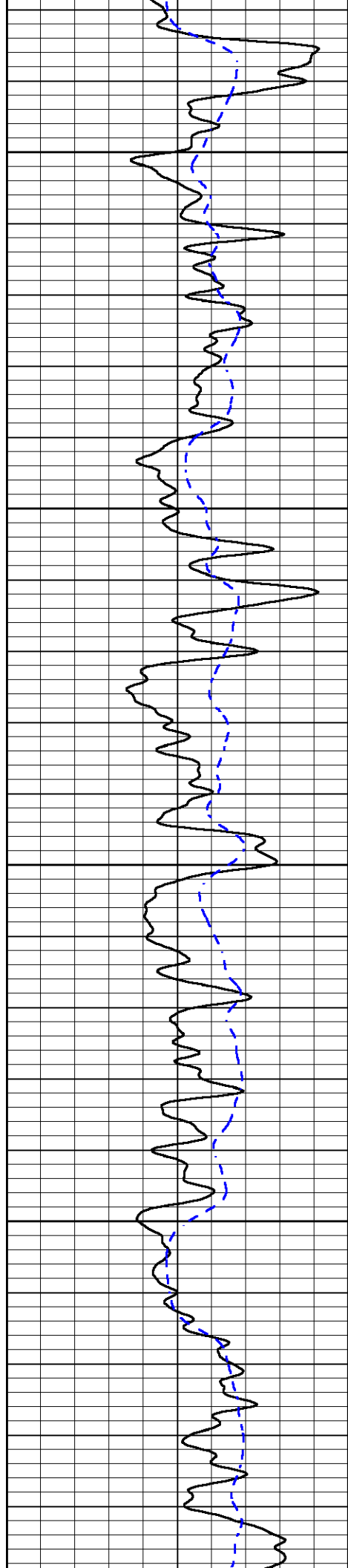
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2900

2950



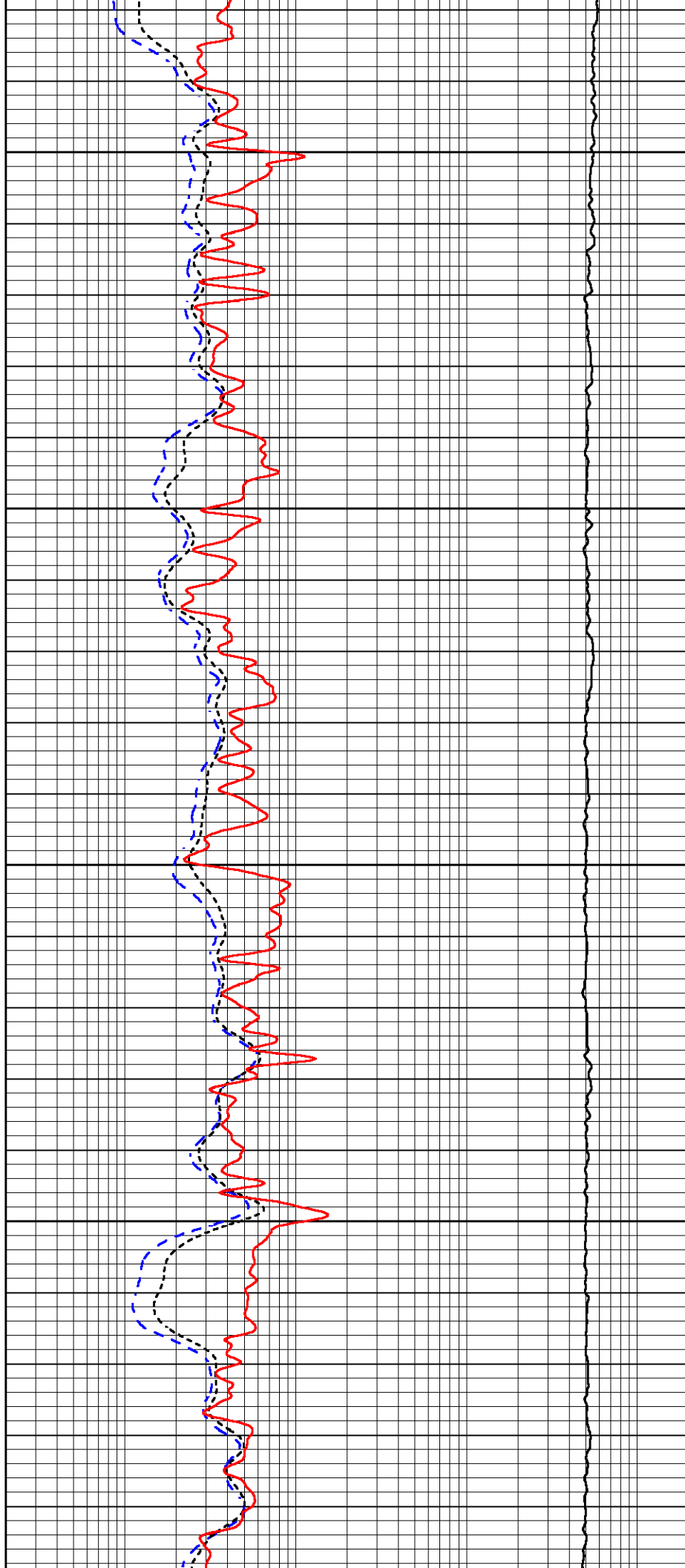


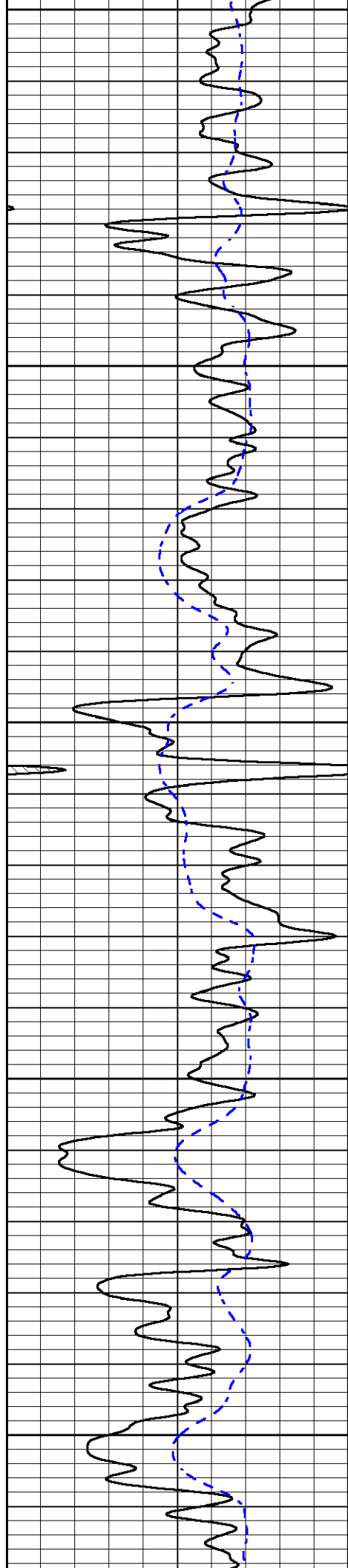
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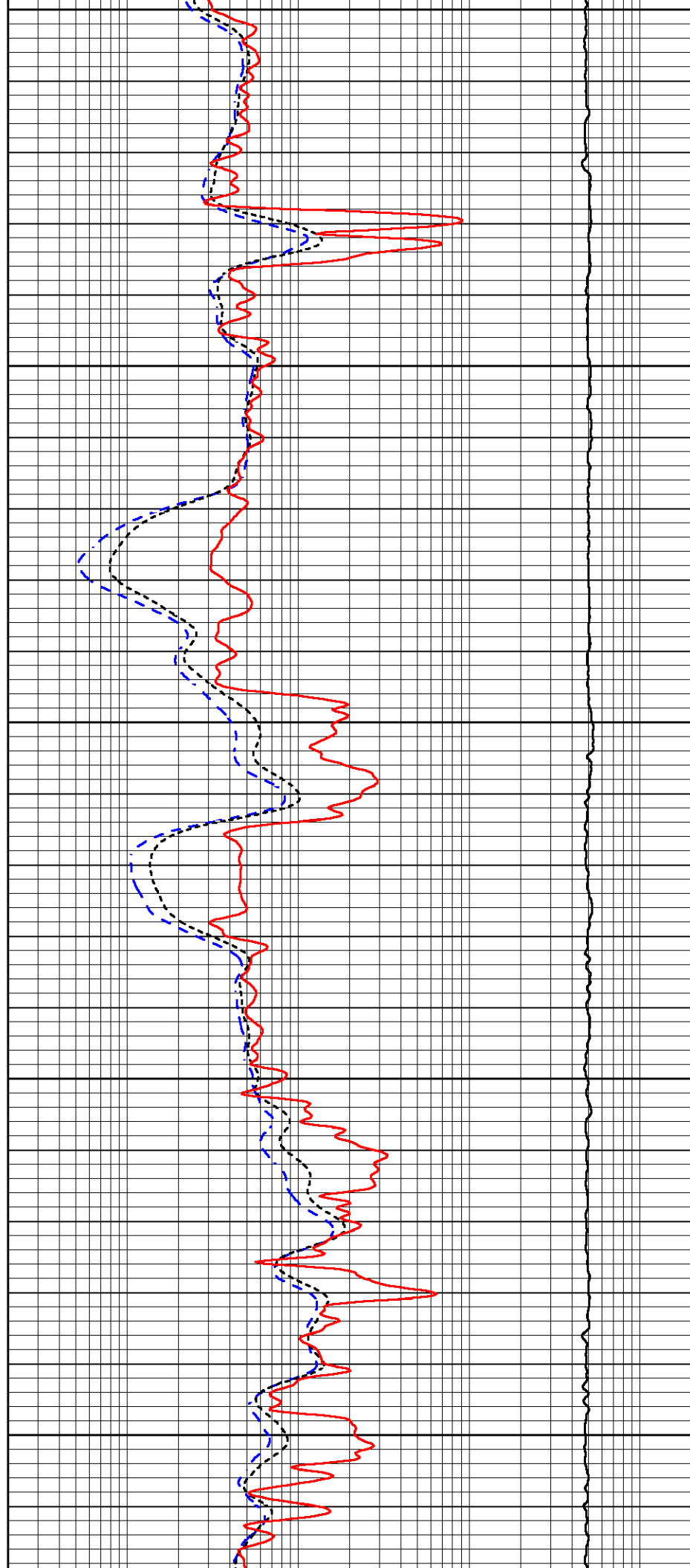
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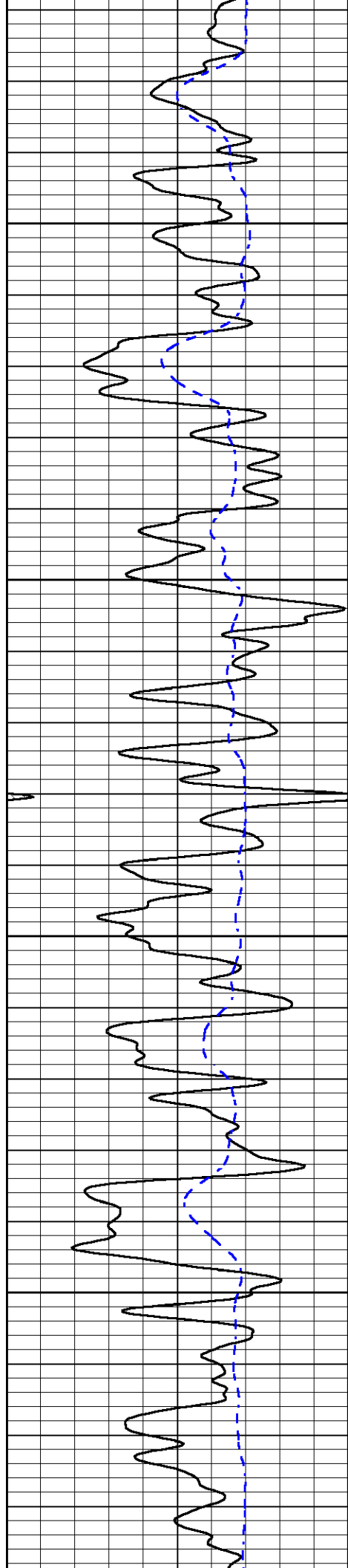
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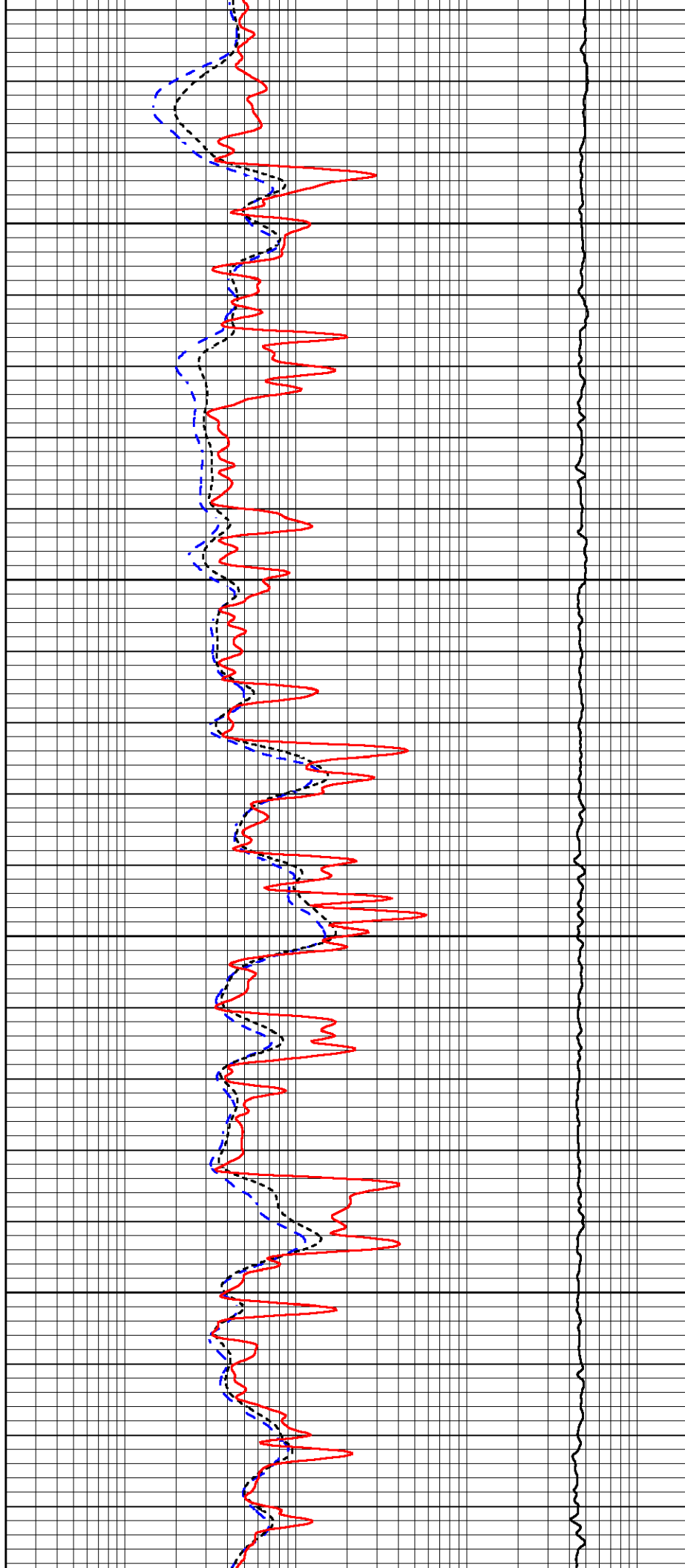


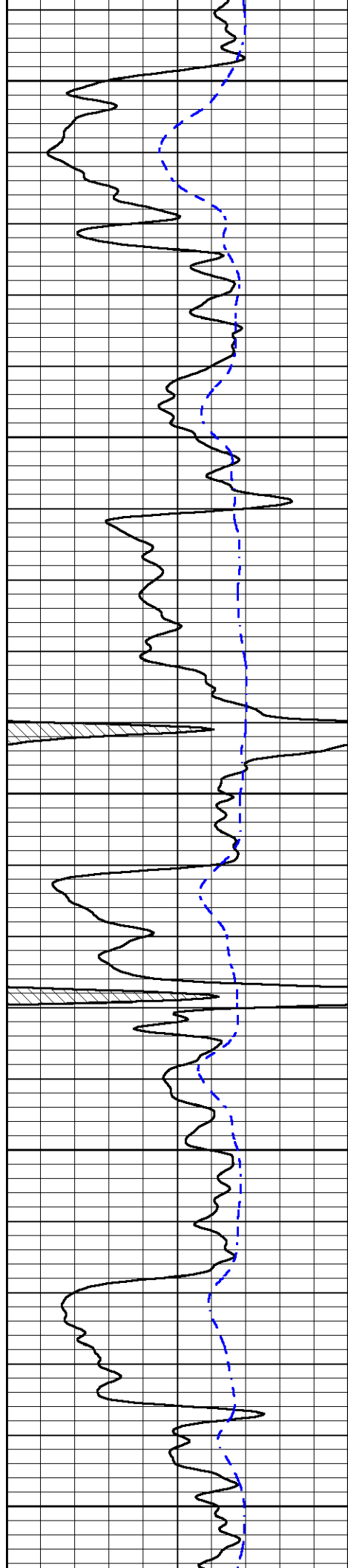
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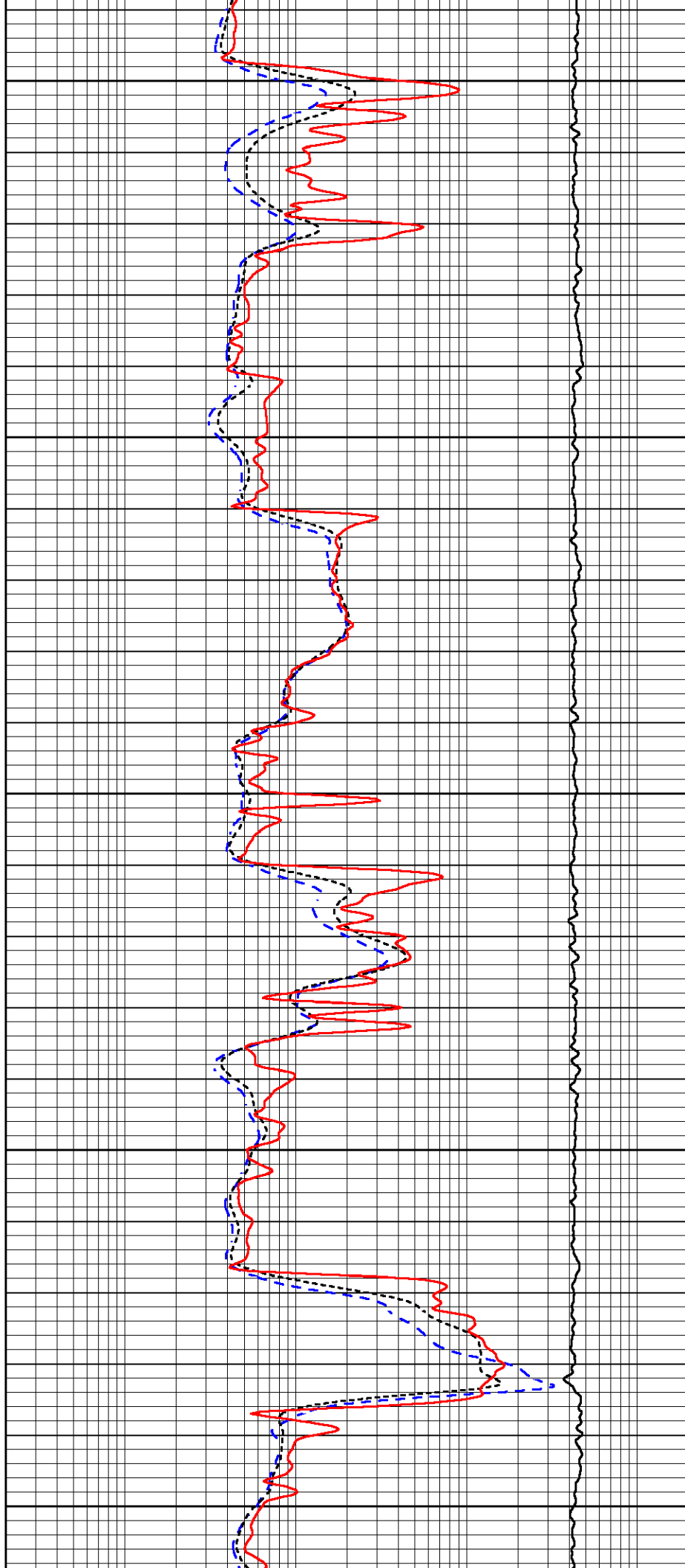
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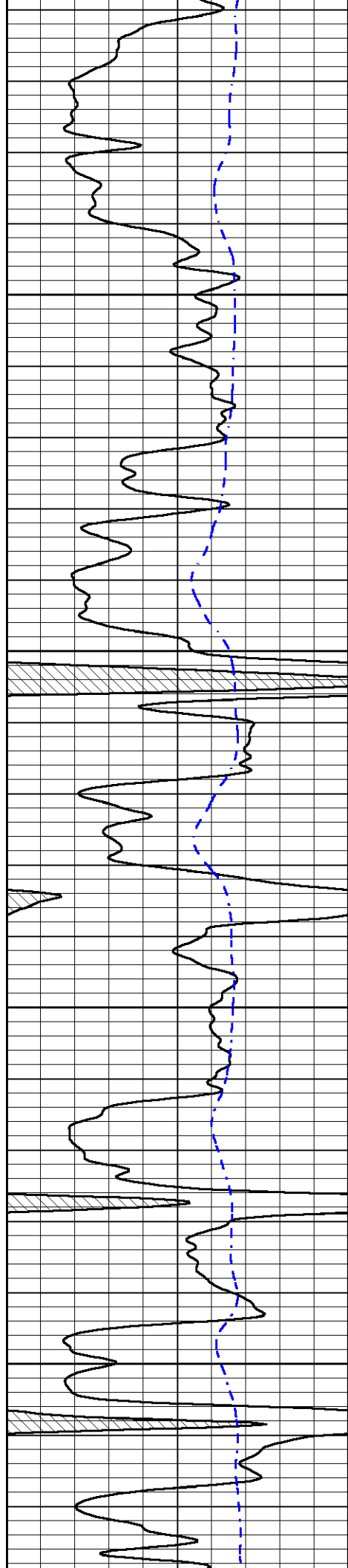
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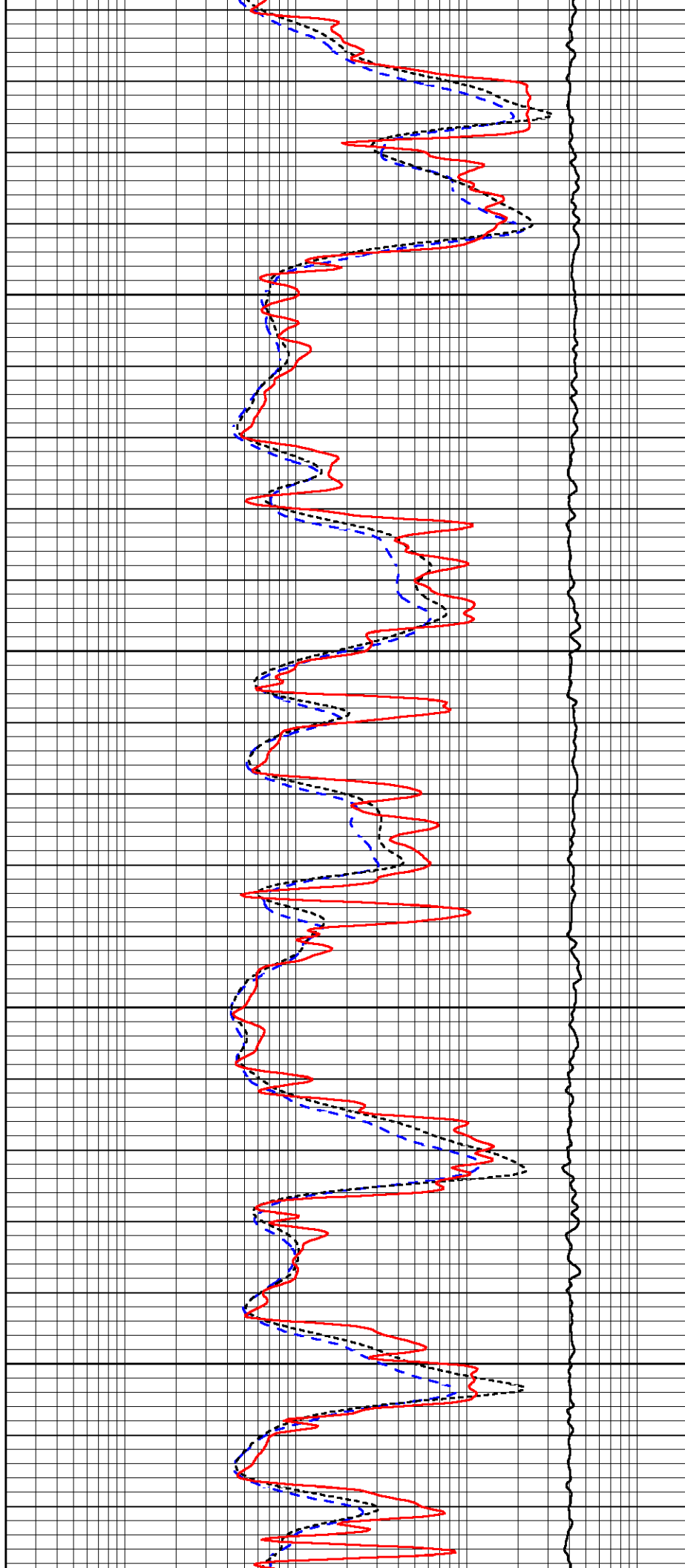


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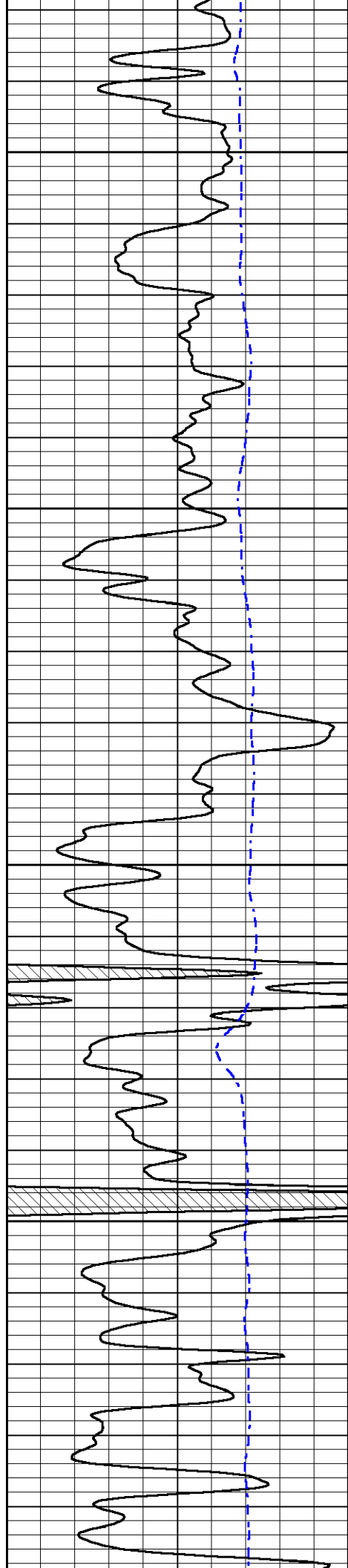
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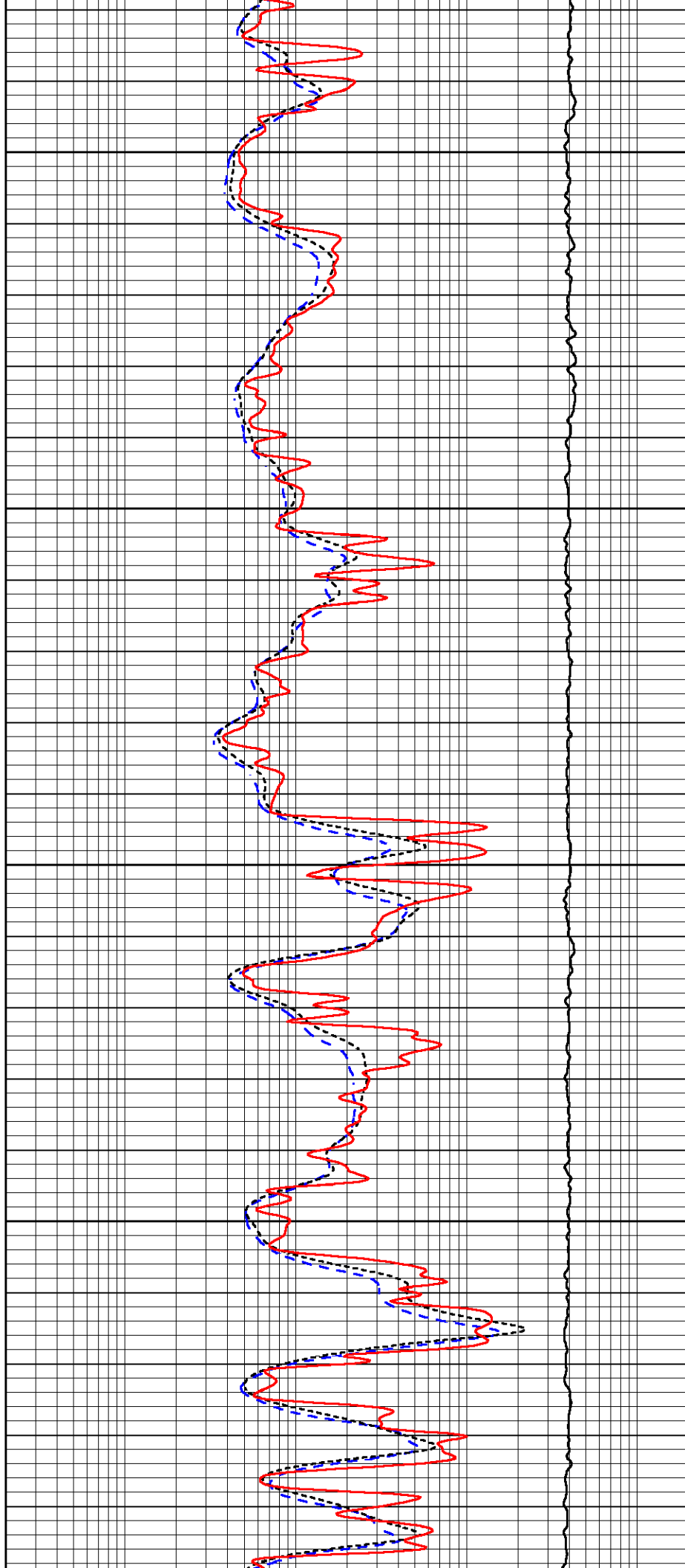


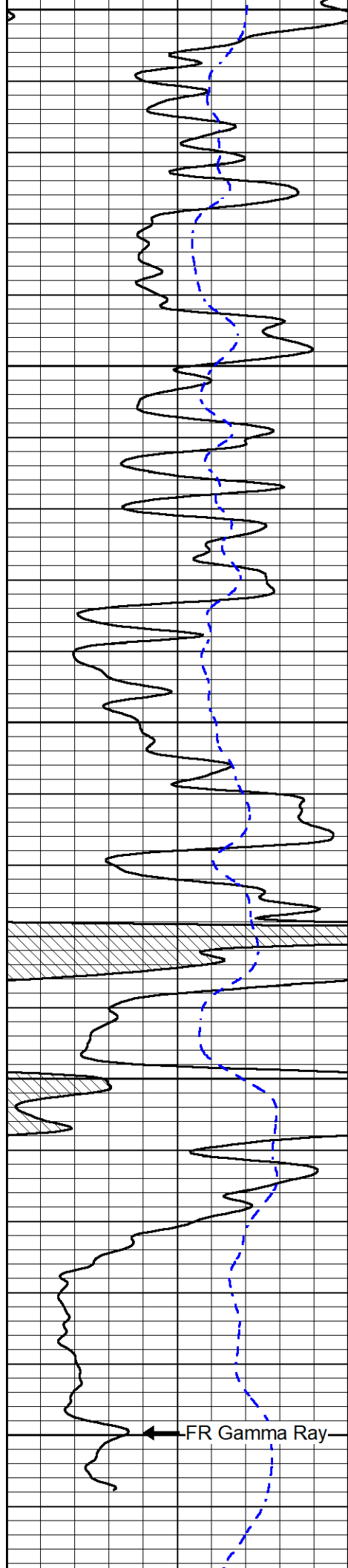
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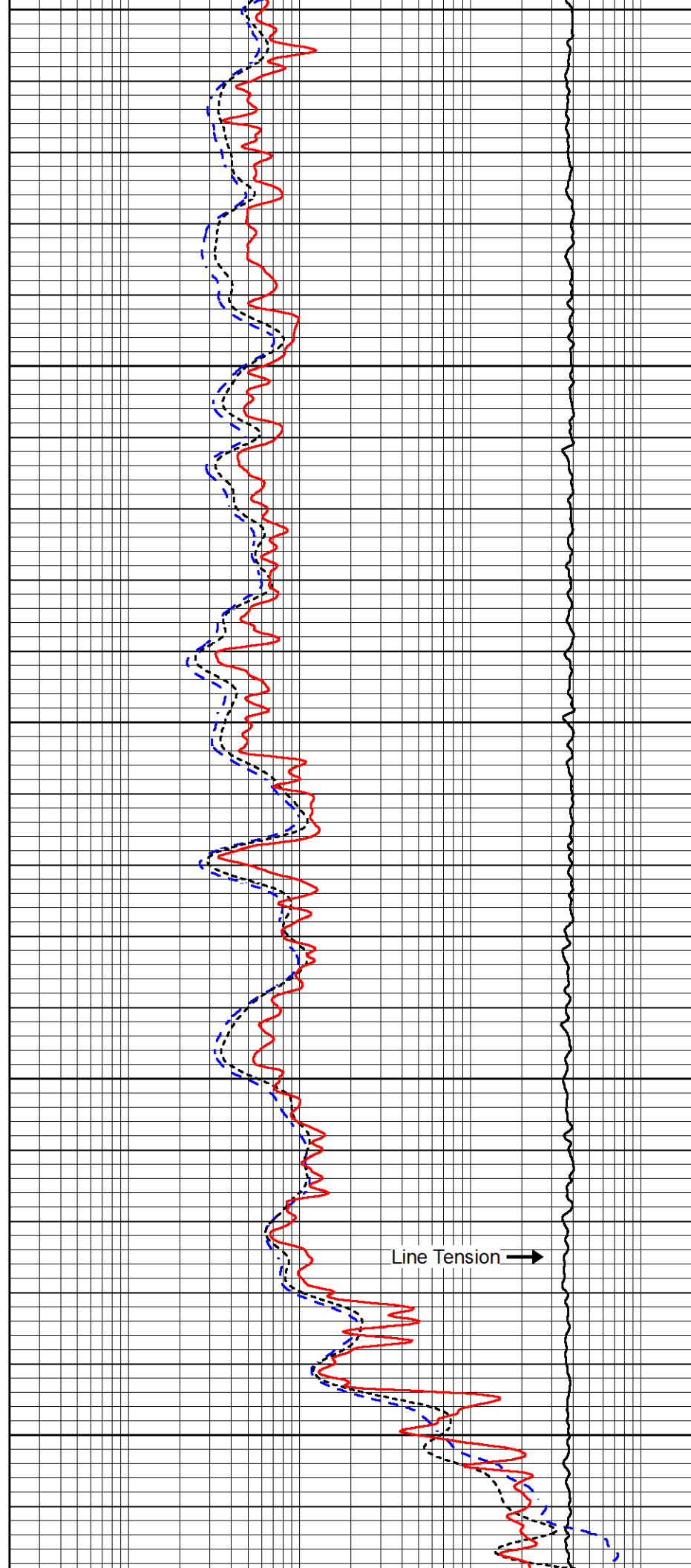
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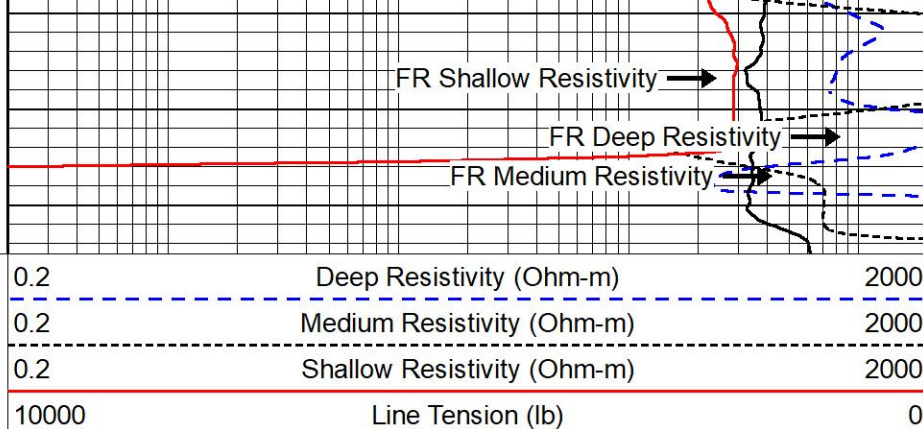
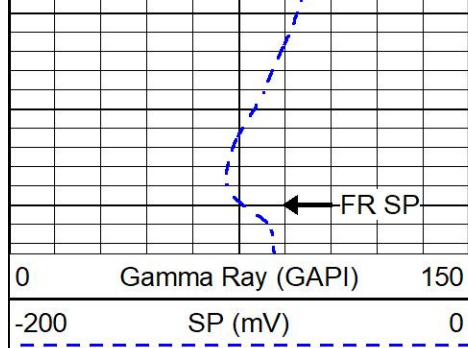
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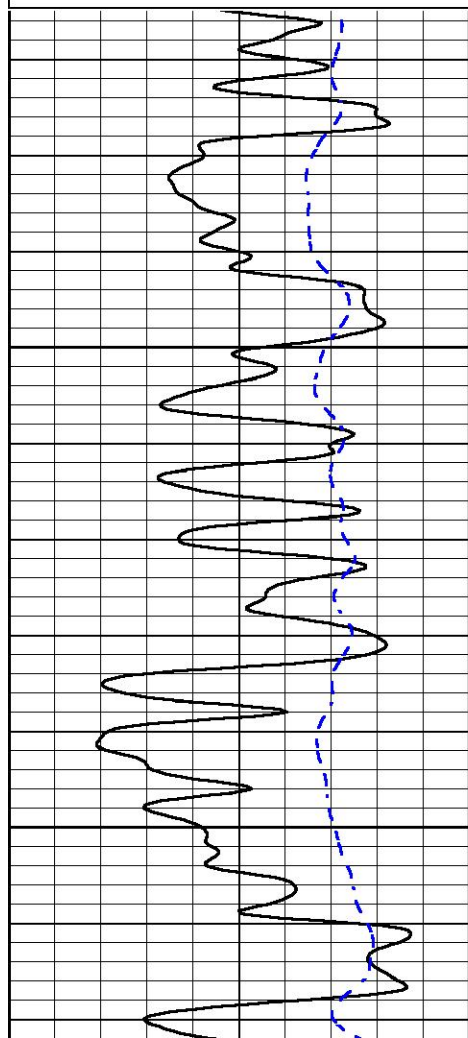
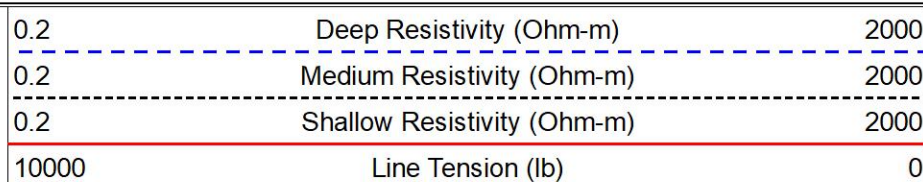
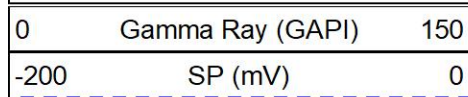




## REPEAT SECTION

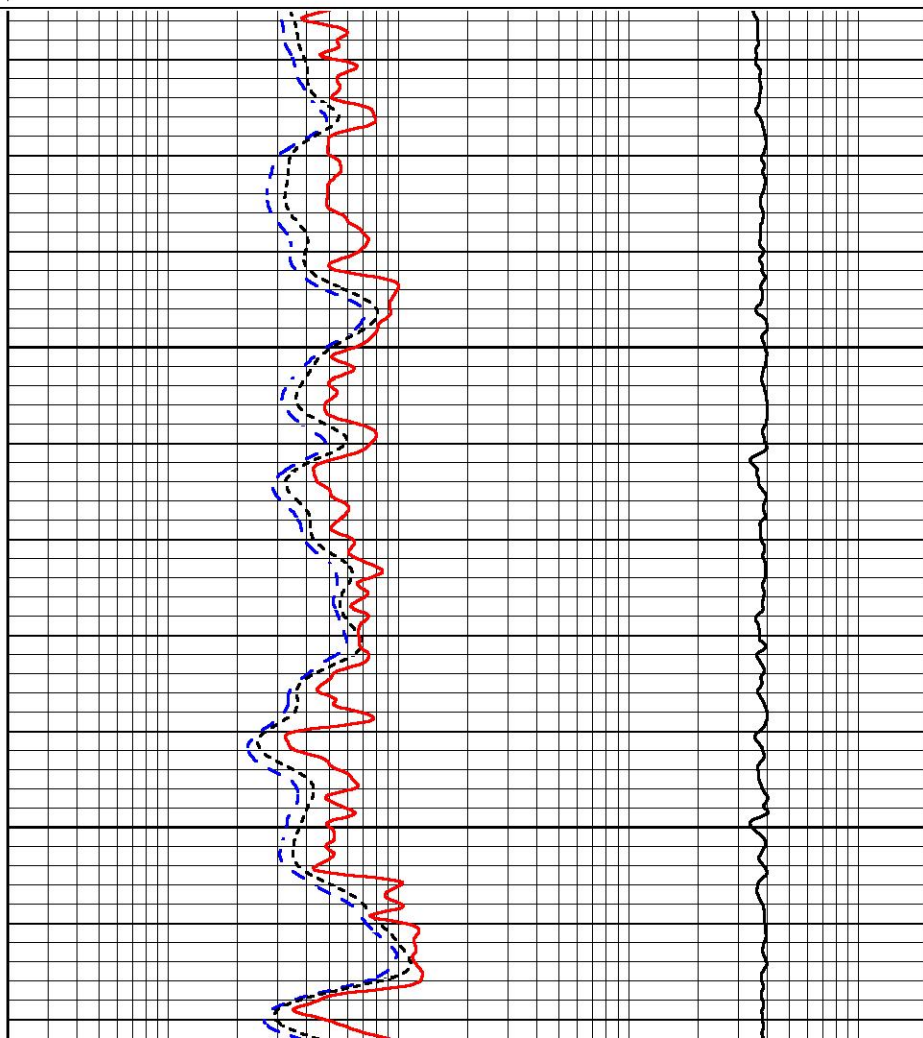
### REPEAT PASS

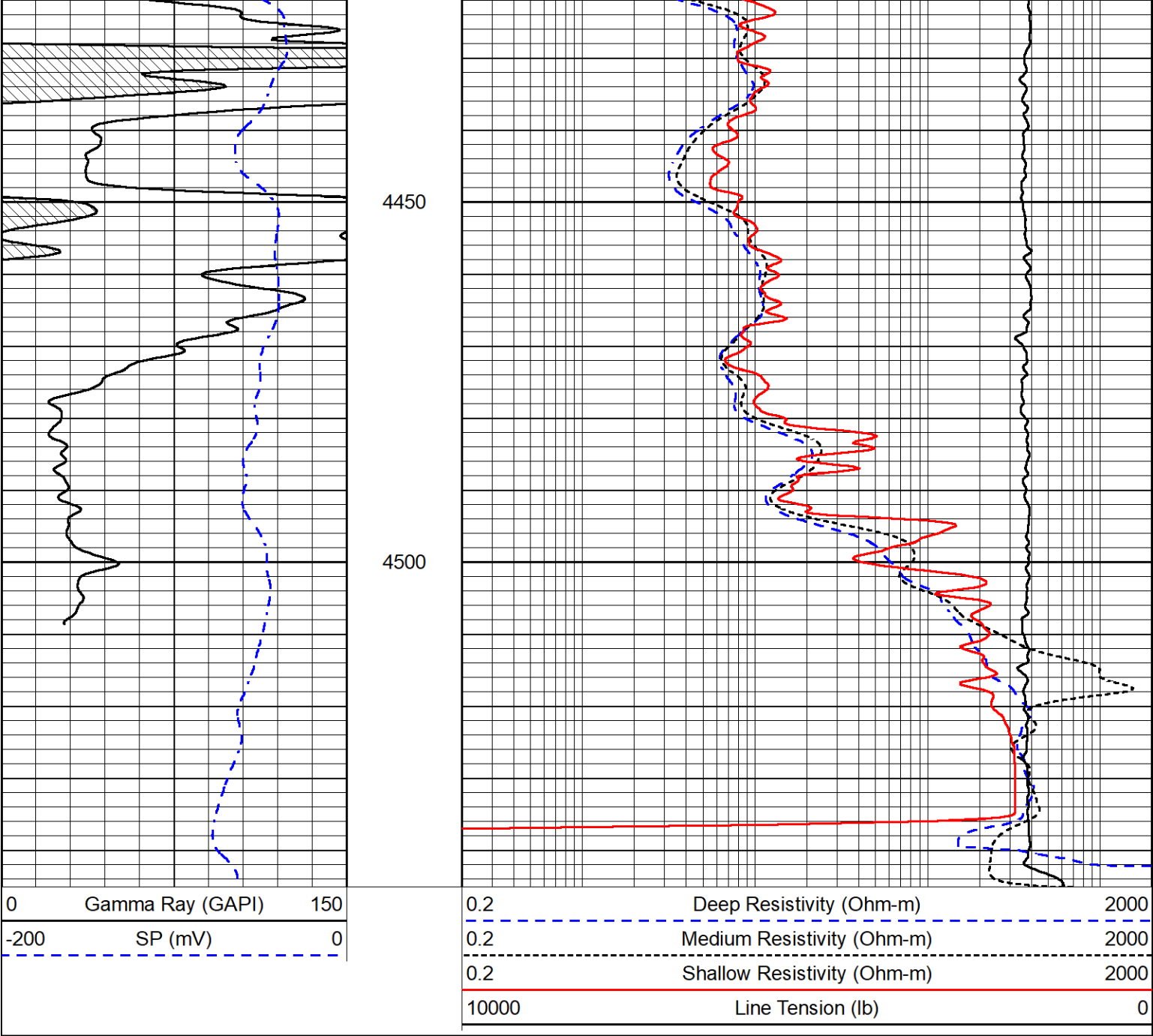
Database File black oak\_argabright 1-4.db  
 Dataset Pathname stkml/pass3.1  
 Presentation Format \_dil  
 Dataset Creation Thu Oct 28 04:10:34 2021  
 Charted by Depth in Feet scaled 1:240



4350

4400





| 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<br>CNSSC | 37.48<br>36.73 |           | CNT-M&W (207-MW)  | 5.50        | 3.50      | 100.00      |
|                |                |           | CDL-M&W (934-226) | 8.50        | 4.00      | 250.00      |

