



# NABORS

**COMPLETION  
& PRODUCTION  
SERVICES CO.**

## DUAL INDUCTION LOG

|                              |               |                            |  |                |  |                                     |  |
|------------------------------|---------------|----------------------------|--|----------------|--|-------------------------------------|--|
| Company                      |               | WOOLSEY OPERATING CO. LLC. |  | Company        |  | WOOLSEY OPERATING COMPANY, LLC.     |  |
| Well                         |               | BETTY YOST GU B-2          |  | Well           |  | BETTY YOST GU B-2                   |  |
| Field                        |               | WILMORE EAST               |  | Field          |  | WILMORE EAST                        |  |
| County                       |               | COMANCHE                   |  | County         |  | COMANCHE                            |  |
| State                        |               | KANSAS                     |  | State          |  | KANSAS                              |  |
| Location:                    |               | API # : 15-033-21675-0000  |  | Other Services |  | CDL/CNL/PE<br>MEL                   |  |
| Permanent Datum              |               | GROUND LEVEL               |  | Elevation      |  | 1970                                |  |
| Log Measured From            |               | KELLY BUSHING 13' A.G.L.   |  | Elevation      |  | K.B. 1983<br>D.F. 1981<br>G.L. 1970 |  |
| Drilling Measured From       |               | KELLY BUSHING              |  | Elevation      |  |                                     |  |
| SEC 26 TWP 31S RGE 17W       |               |                            |  |                |  |                                     |  |
| Date                         | 11/2/12       |                            |  |                |  |                                     |  |
| Run Number                   | ONE           |                            |  |                |  |                                     |  |
| Depth Driller                | 5500          |                            |  |                |  |                                     |  |
| Depth Logger                 | 5498          |                            |  |                |  |                                     |  |
| Bottom Logged Interval       | 5496          |                            |  |                |  |                                     |  |
| Top Log Interval             | 00            |                            |  |                |  |                                     |  |
| Casing Driller               | 10 3/4"@217'  |                            |  |                |  |                                     |  |
| Casing Logger                | 218           |                            |  |                |  |                                     |  |
| Bit Size                     | 7 7/8"        |                            |  |                |  |                                     |  |
| Type Fluid in Hole           | CHEMICAL MUD  | CHLORIDES 8,000 PPM        |  |                |  |                                     |  |
| Density / Viscosity          | 9.4/49        |                            |  |                |  |                                     |  |
| pH / Fluid Loss              | 8.5/12.8      |                            |  |                |  |                                     |  |
| Source of Sample             | FLOWLINE      |                            |  |                |  |                                     |  |
| Rim @ Meas. Temp             | .700@95F      |                            |  |                |  |                                     |  |
| Rmf @ Meas. Temp             | .525@95F      |                            |  |                |  |                                     |  |
| Rmc @ Meas. Temp             | .840@95F      |                            |  |                |  |                                     |  |
| Source of Rmf / Rmc          | MEASUREMENT   |                            |  |                |  |                                     |  |
| Rim @ BHT                    | .512@130F     |                            |  |                |  |                                     |  |
| Time Circulation Stopped     | 4.5 HOURS     |                            |  |                |  |                                     |  |
| Time Logger on Bottom        | 7:45 A.M.     |                            |  |                |  |                                     |  |
| Maximum Recorded Temperature | 130F          |                            |  |                |  |                                     |  |
| Equipment Number             | 4854          |                            |  |                |  |                                     |  |
| Location                     | HAYS, KANSAS  |                            |  |                |  |                                     |  |
| Recorded By                  | JEFF LUEBBERS |                            |  |                |  |                                     |  |
| Witnessed By                 | SCOTT ALBERG  |                            |  |                |  |                                     |  |

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, 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. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

### Comments

THANK YOU FOR USING "NABORS" (785) 628-6395  
DIRECTIONS  
WILMORE, KS., 1/2E., 1/2S. TO "AVE. E", APPROX. 4E., S. INTO

Database File:

010003pe.db

Dataset Pathname:

pass4.5

Presentation Format:

dil2

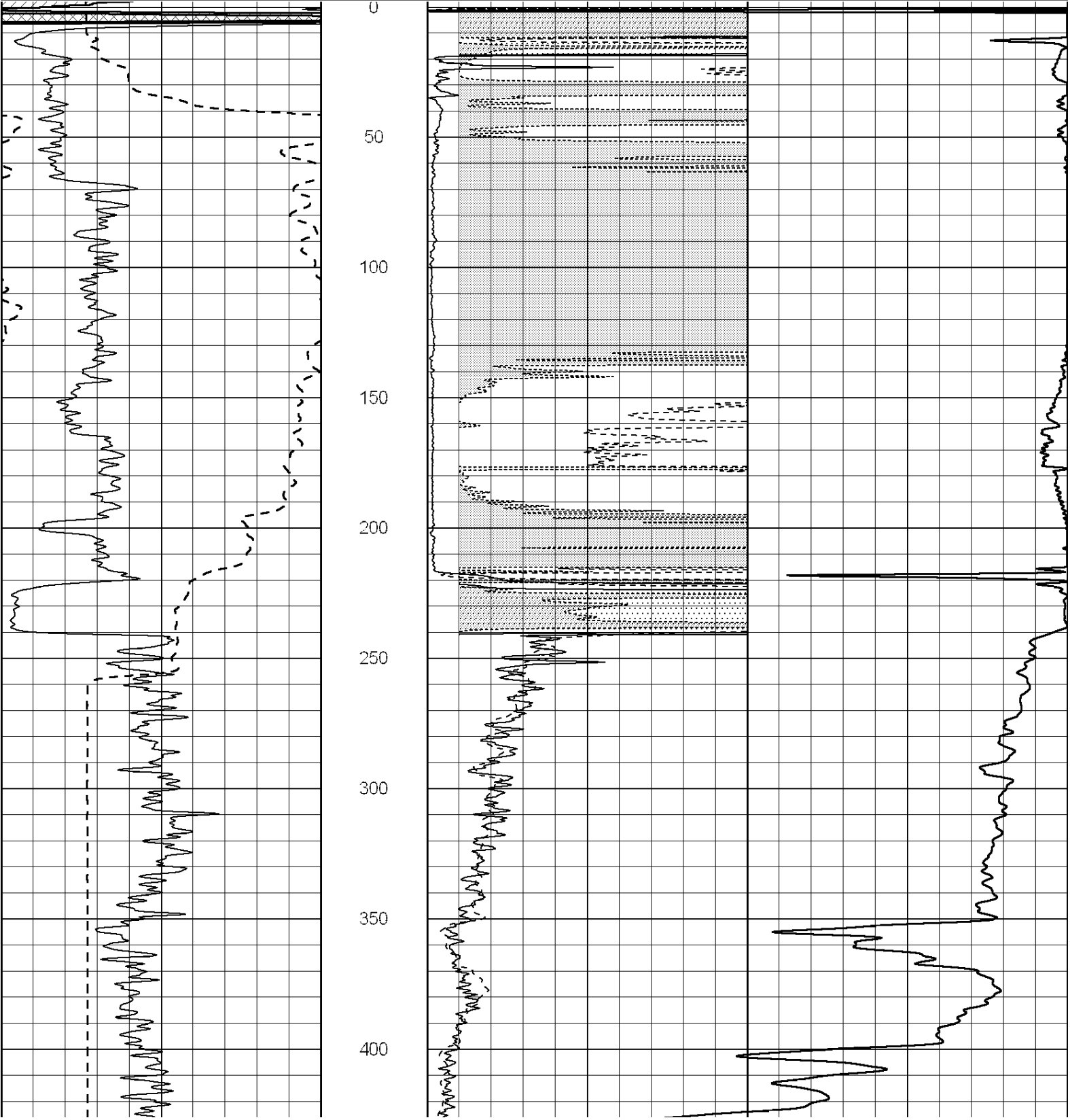
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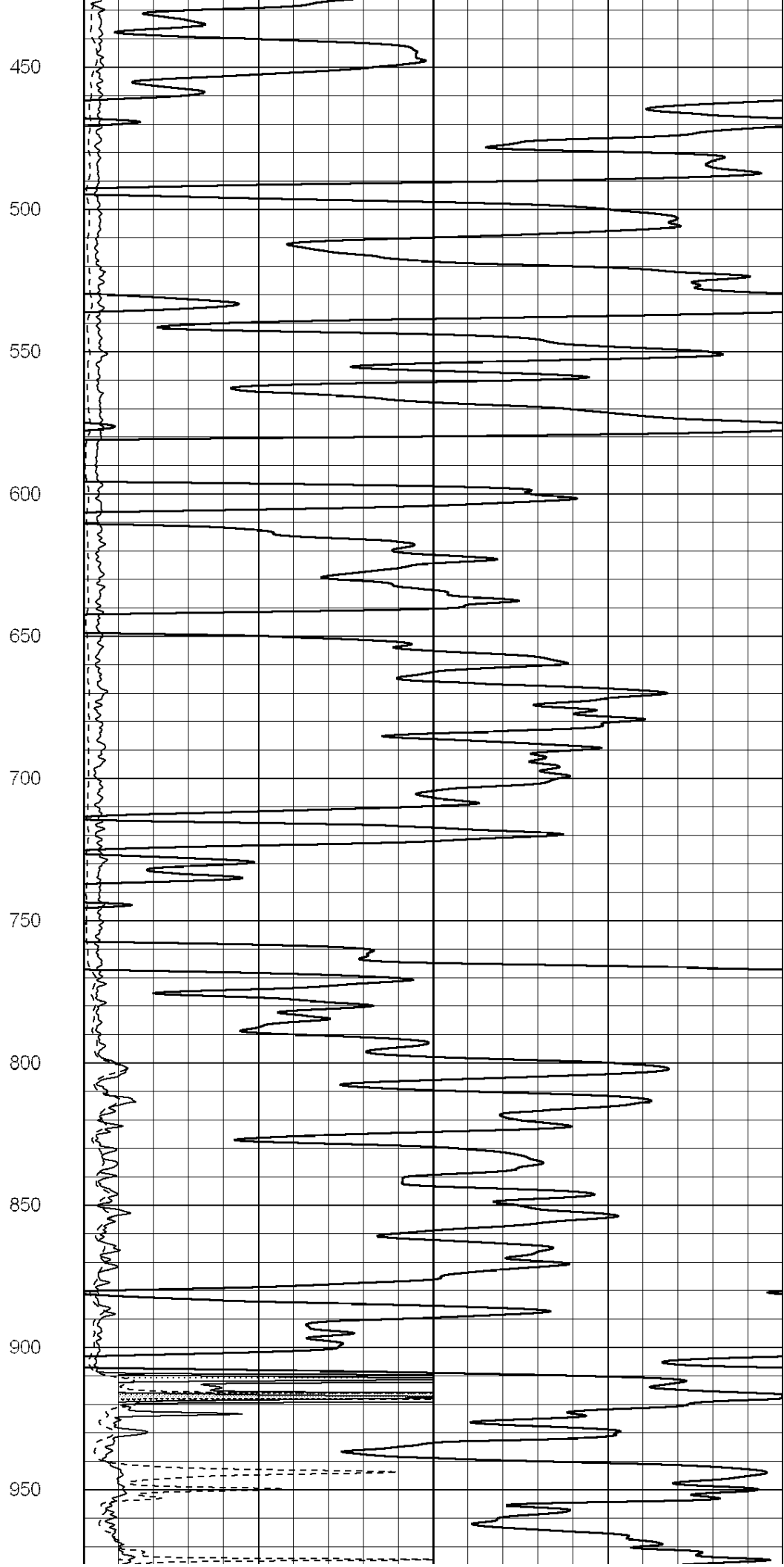
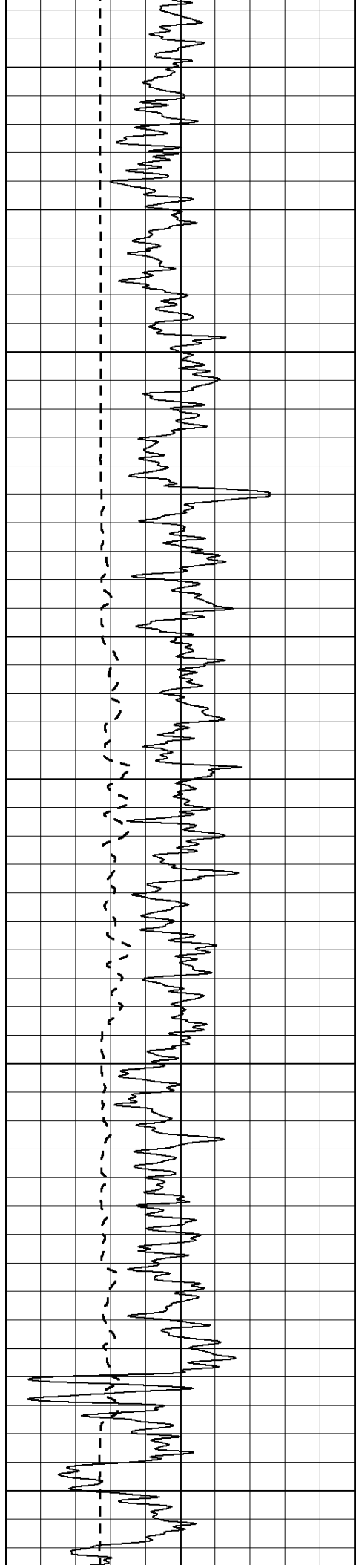
Fri Nov 02 09:27:51 2012 by Calc SOC 120430

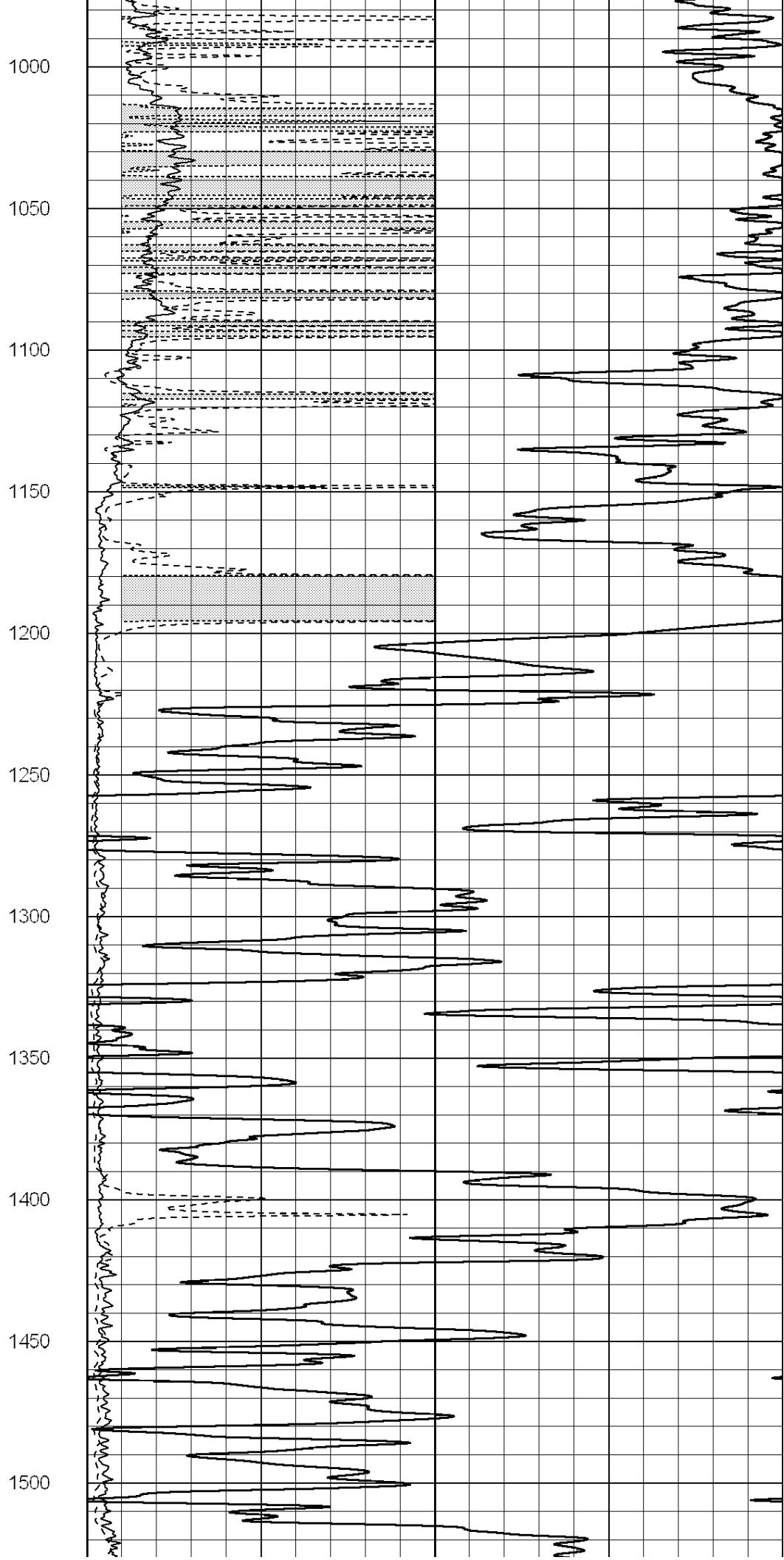
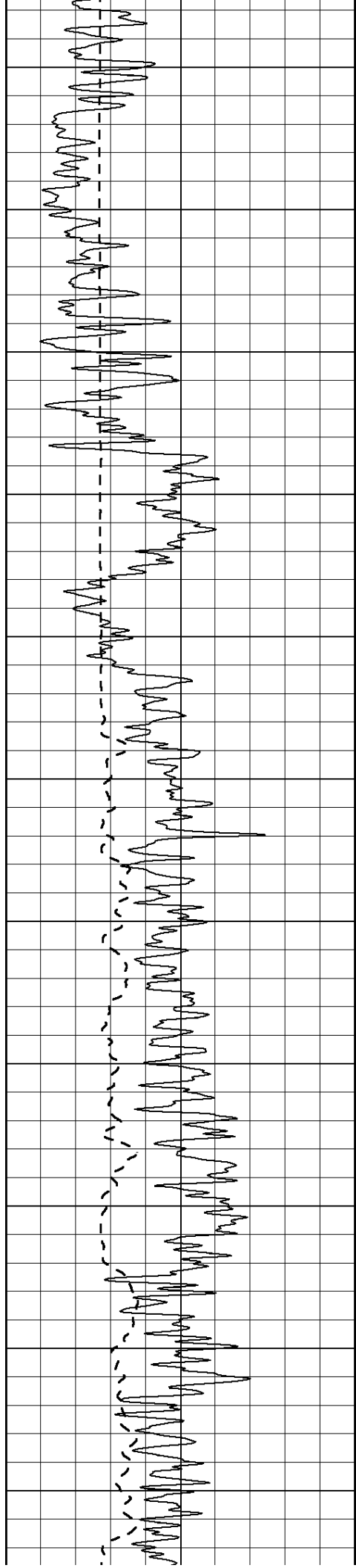
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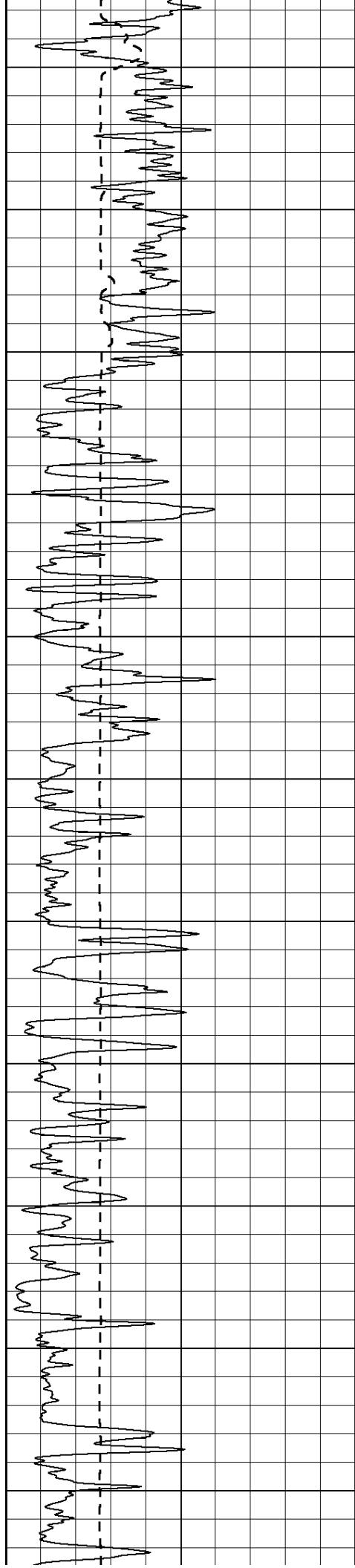
Depth in Feet scaled 1:600

|       |                  |     |               |                  |     |   |
|-------|------------------|-----|---------------|------------------|-----|---|
| 0     | Gamma Ray (GAPI) | 150 | 0             | RLL3 (Ohm-m)     | 50  |   |
| -100  | SP (mV)          | 100 | 0             | RILD (Ohm-m)     | 50  |   |
| ----- |                  |     | CILD (mmho/m) |                  |     | 0 |
|       |                  |     | 1000          |                  |     |   |
|       |                  |     | 50            | RILD X10 (Ohm-m) | 500 |   |
|       |                  |     | 50            | RLL3 X10 (Ohm-m) | 500 |   |
|       |                  |     |               |                  |     |   |









1550

1600

1650

1700

1750

1800

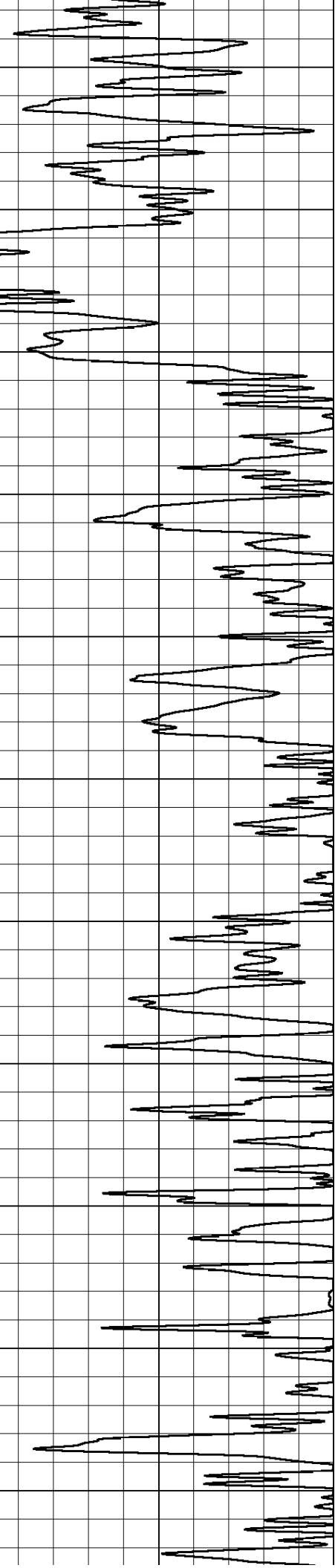
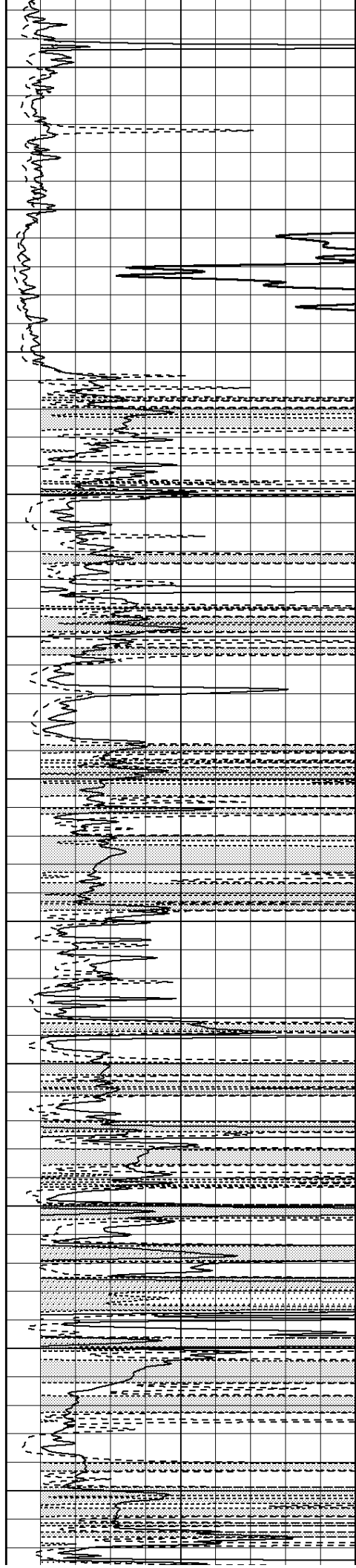
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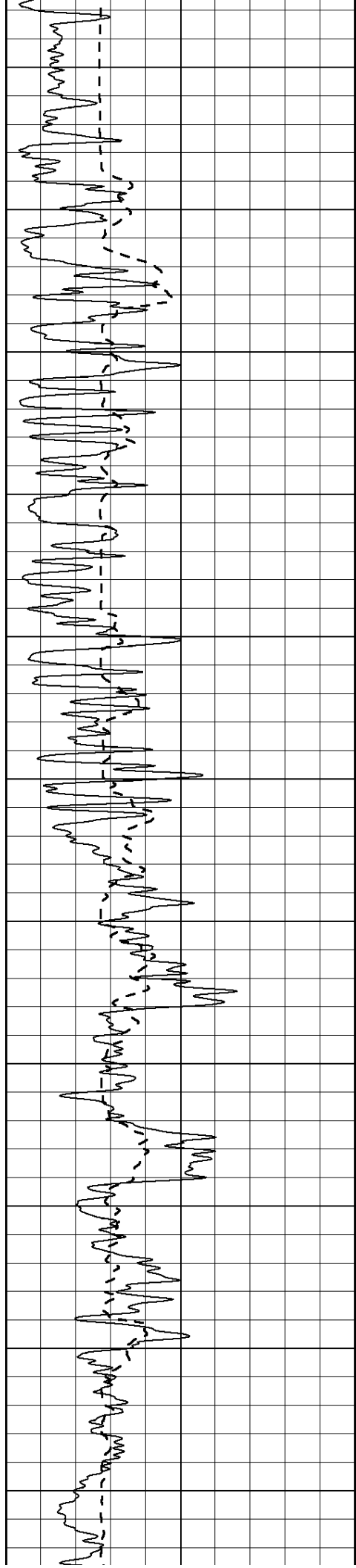
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1950

2000

2050





2100

2150

2200

2250

2300

2350

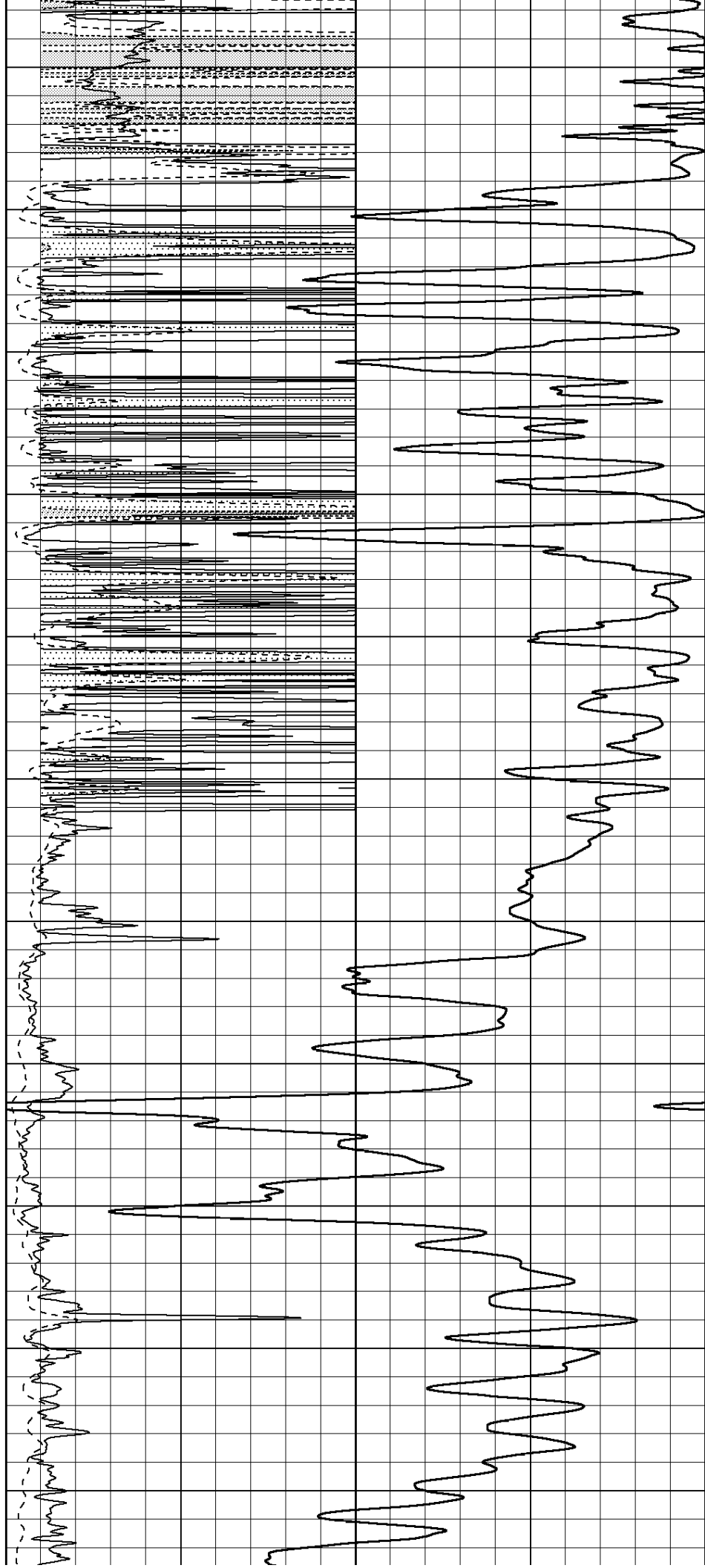
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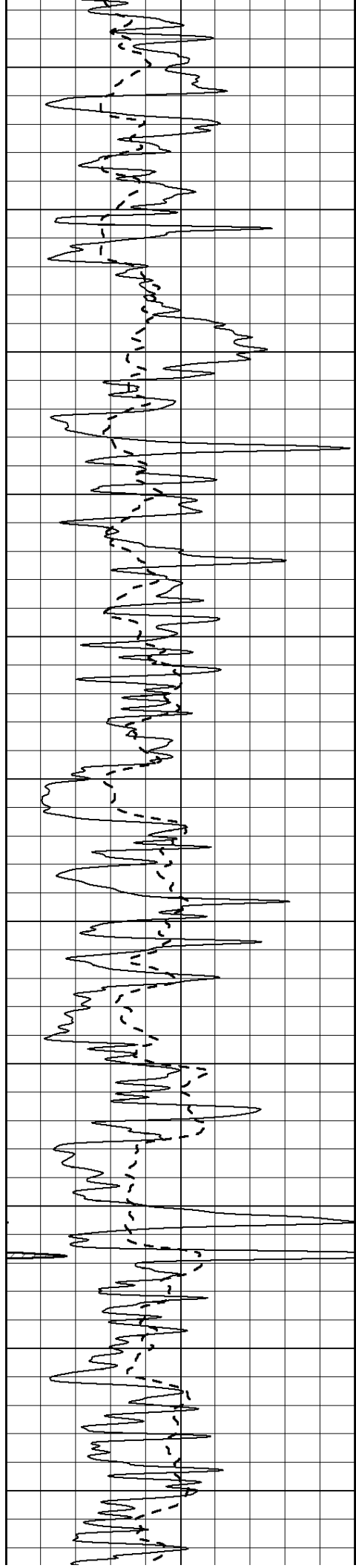
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2600





2650

2700

2750

2800

2850

2900

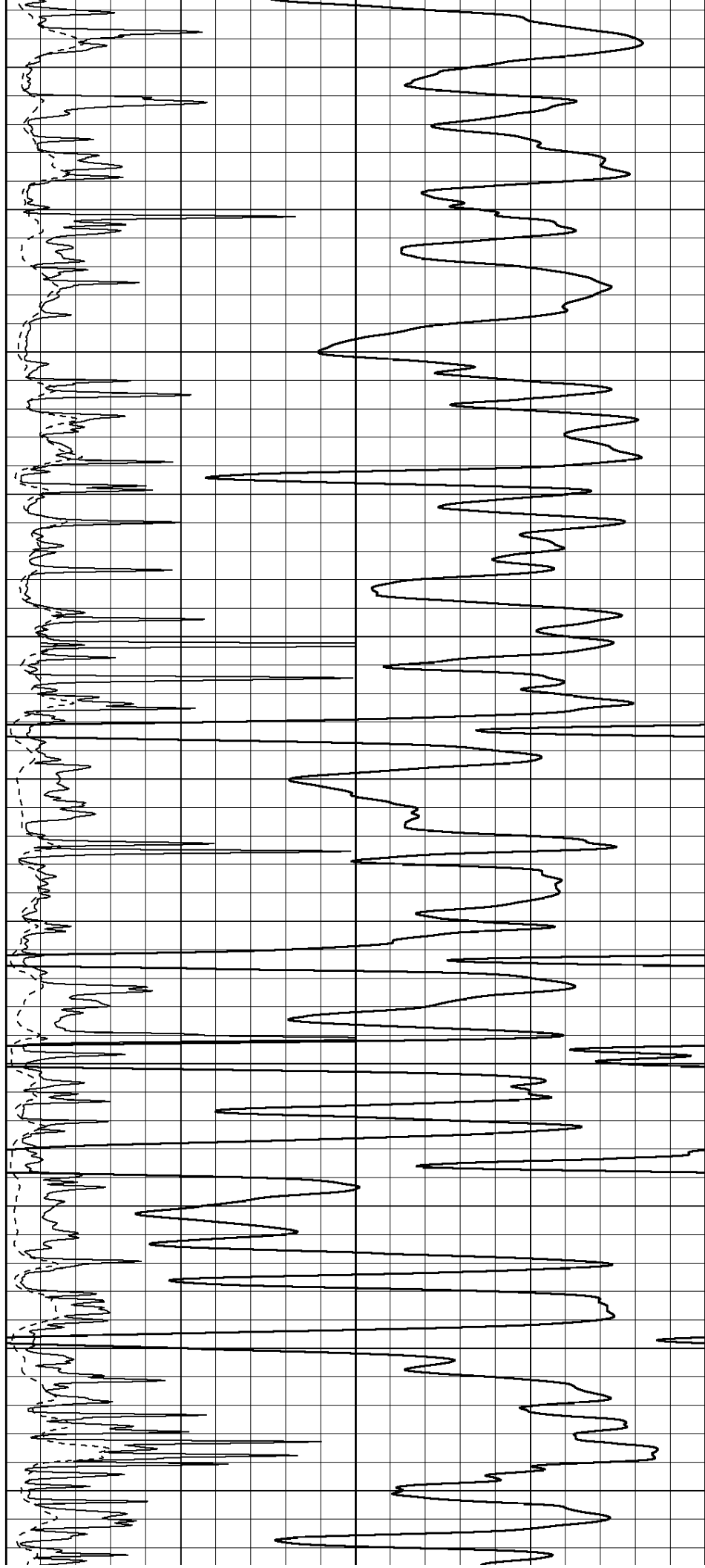
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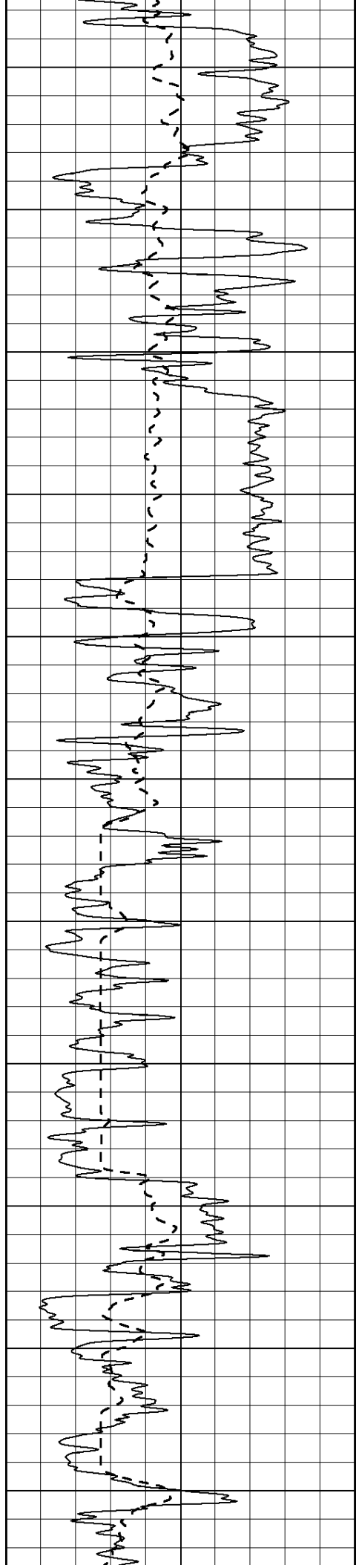
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3150





3200

3250

3300

3350

3400

3450

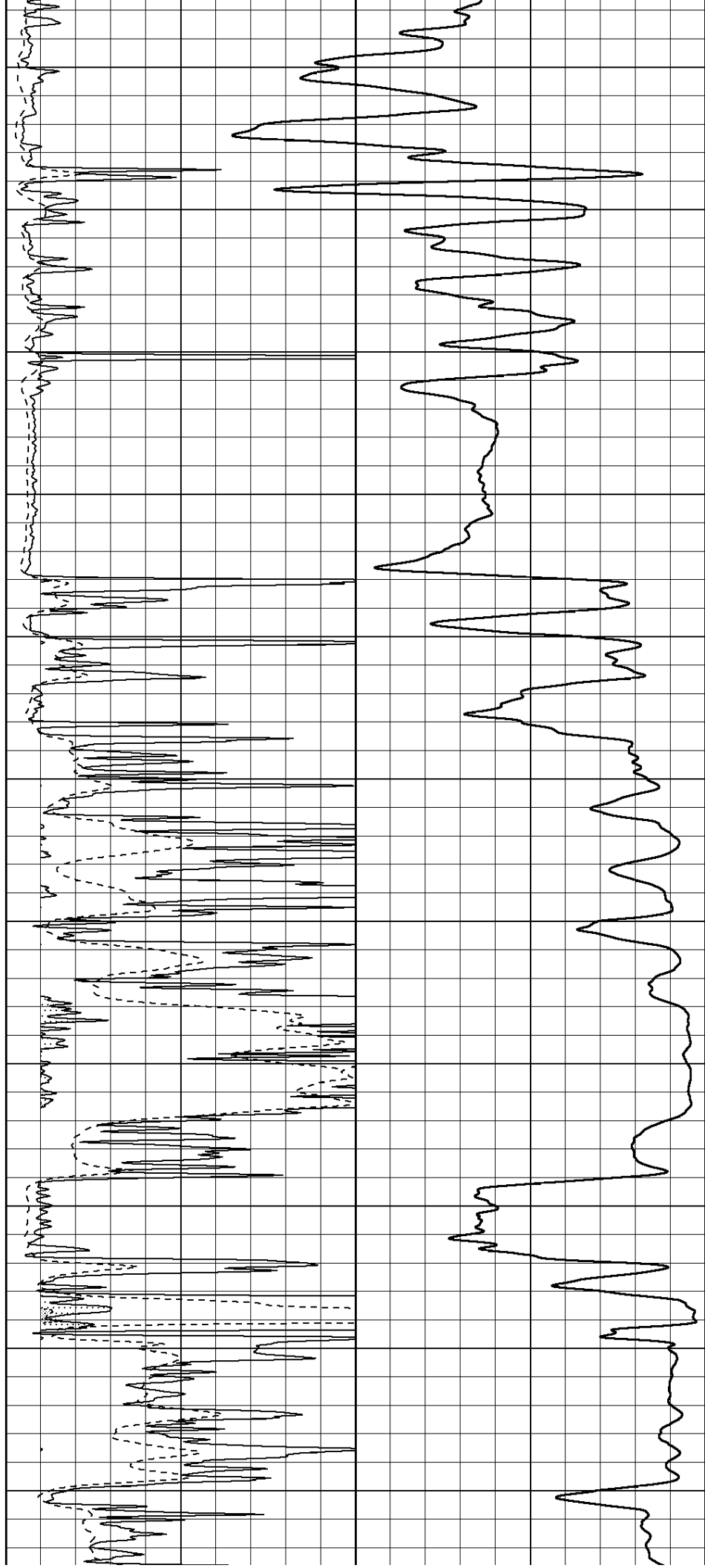
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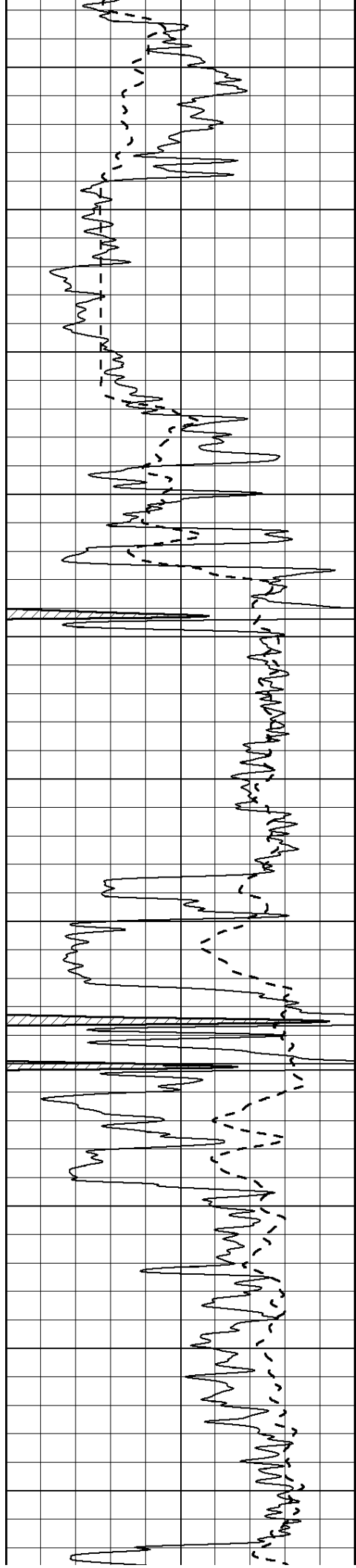
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3700





3750

3800

3850

3900

3950

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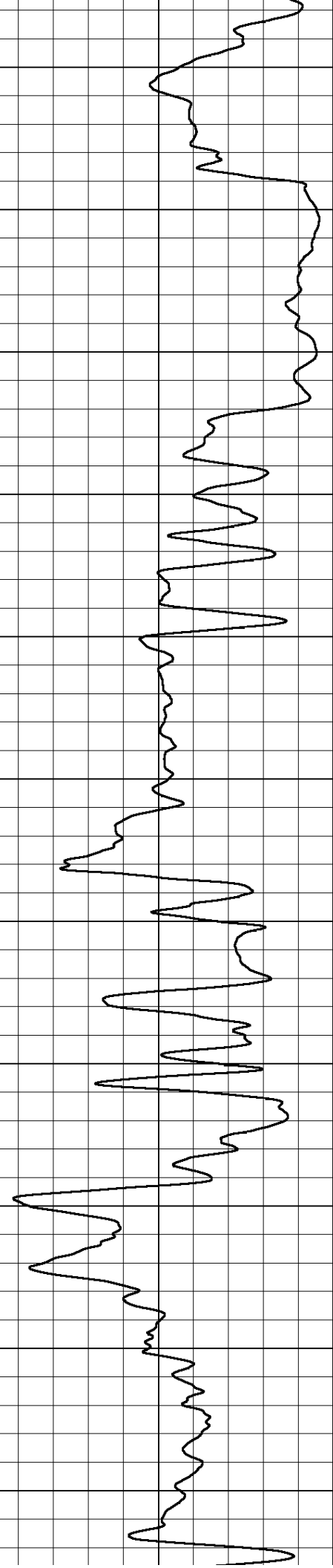
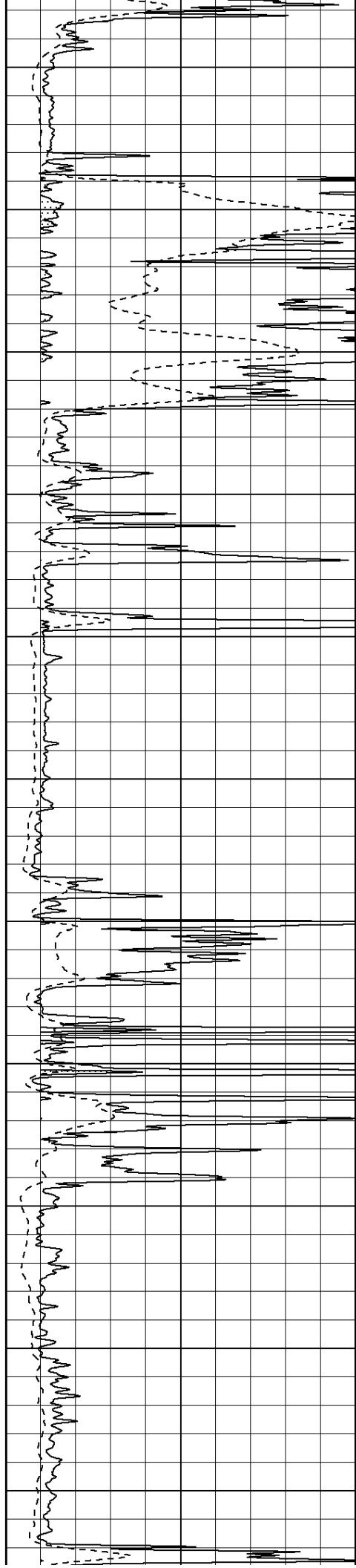
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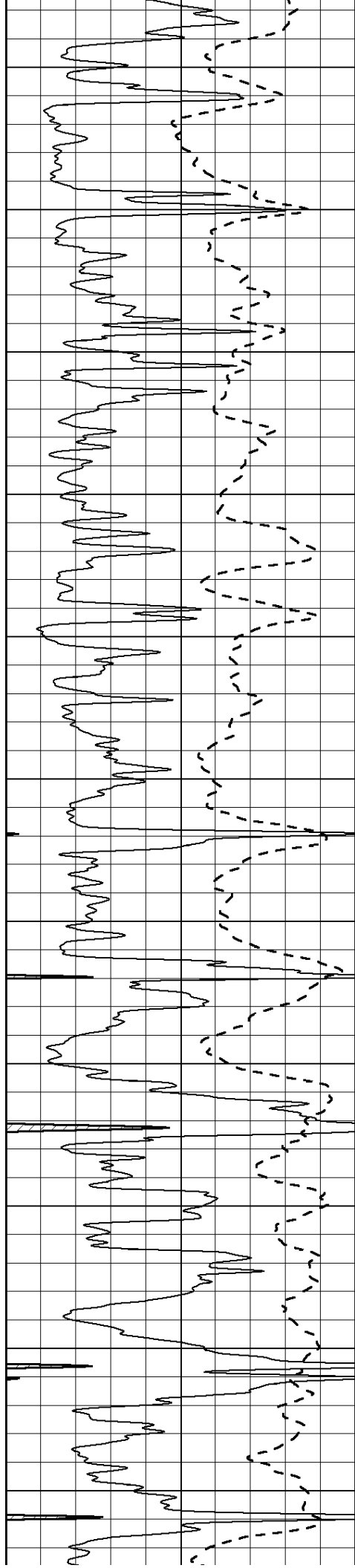
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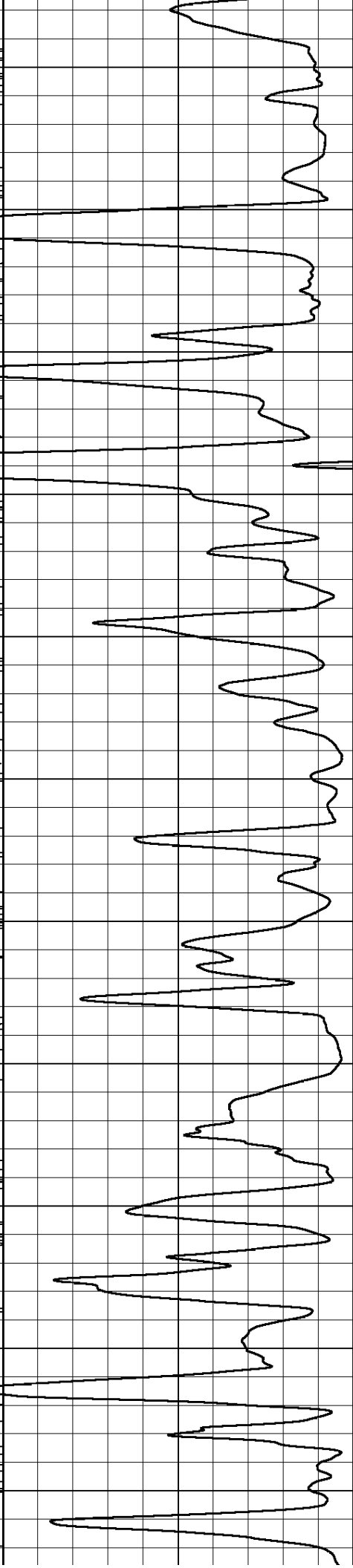
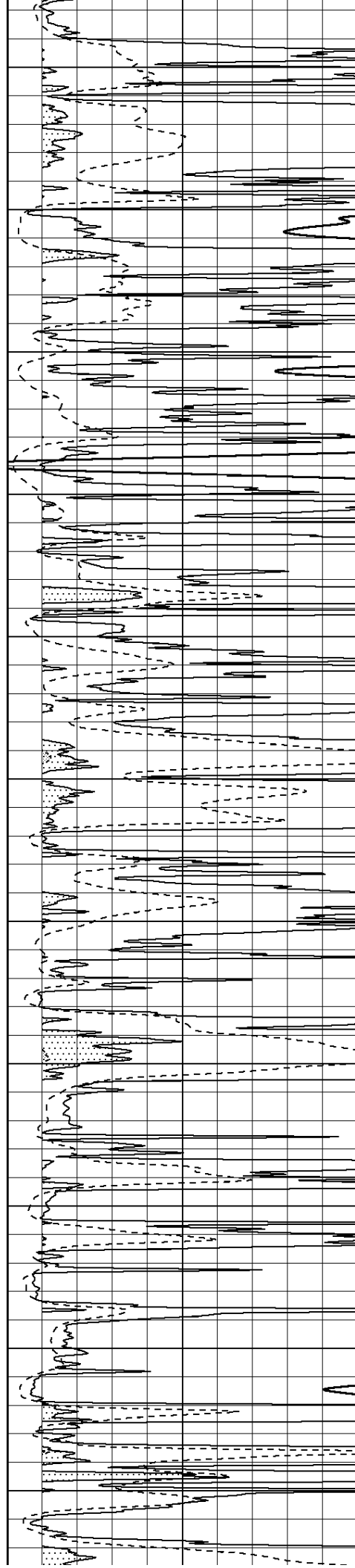
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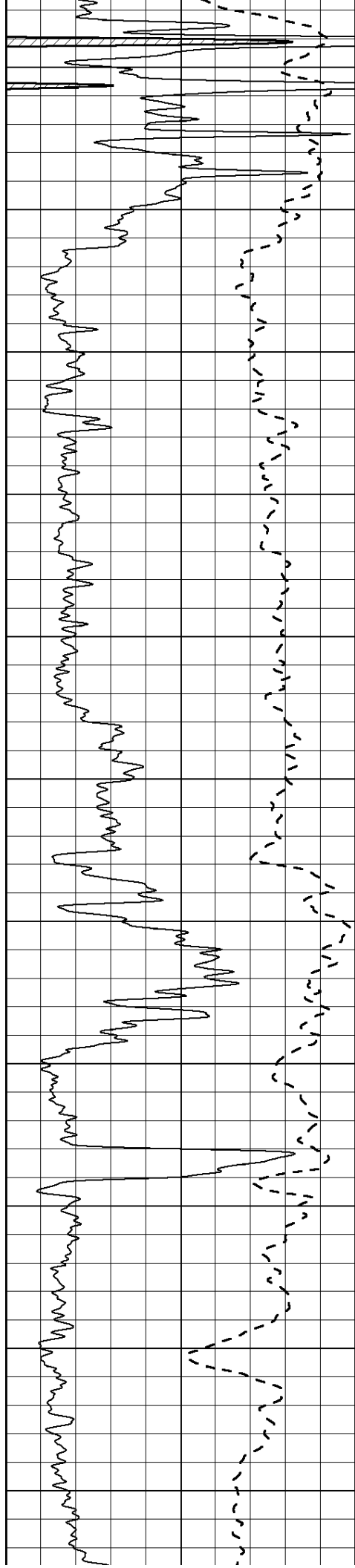
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4850

4900

4950

5000

5050

5100

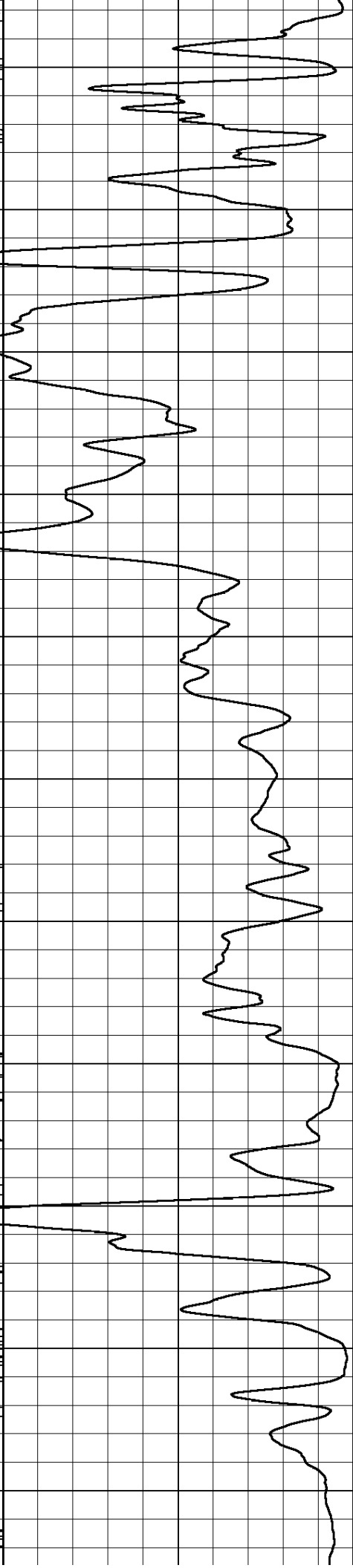
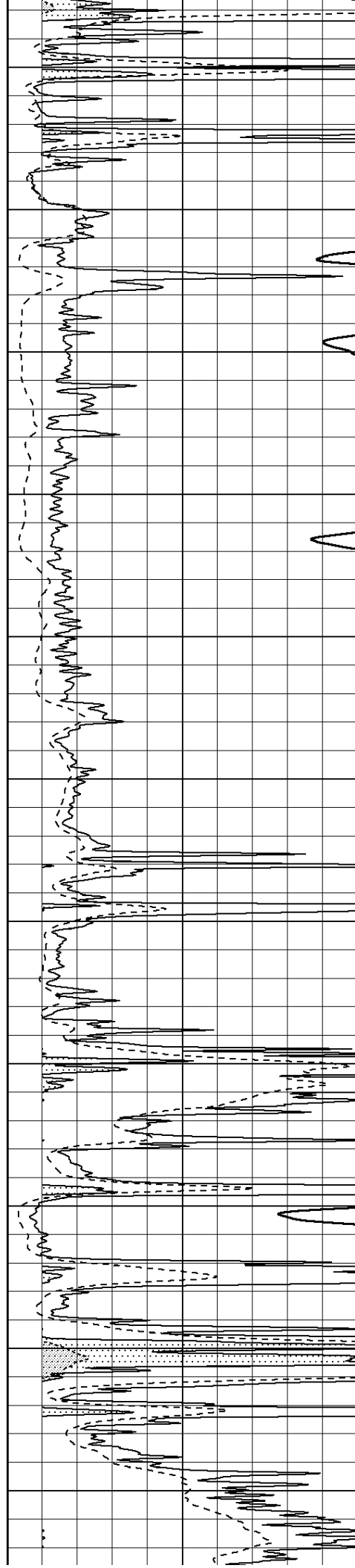
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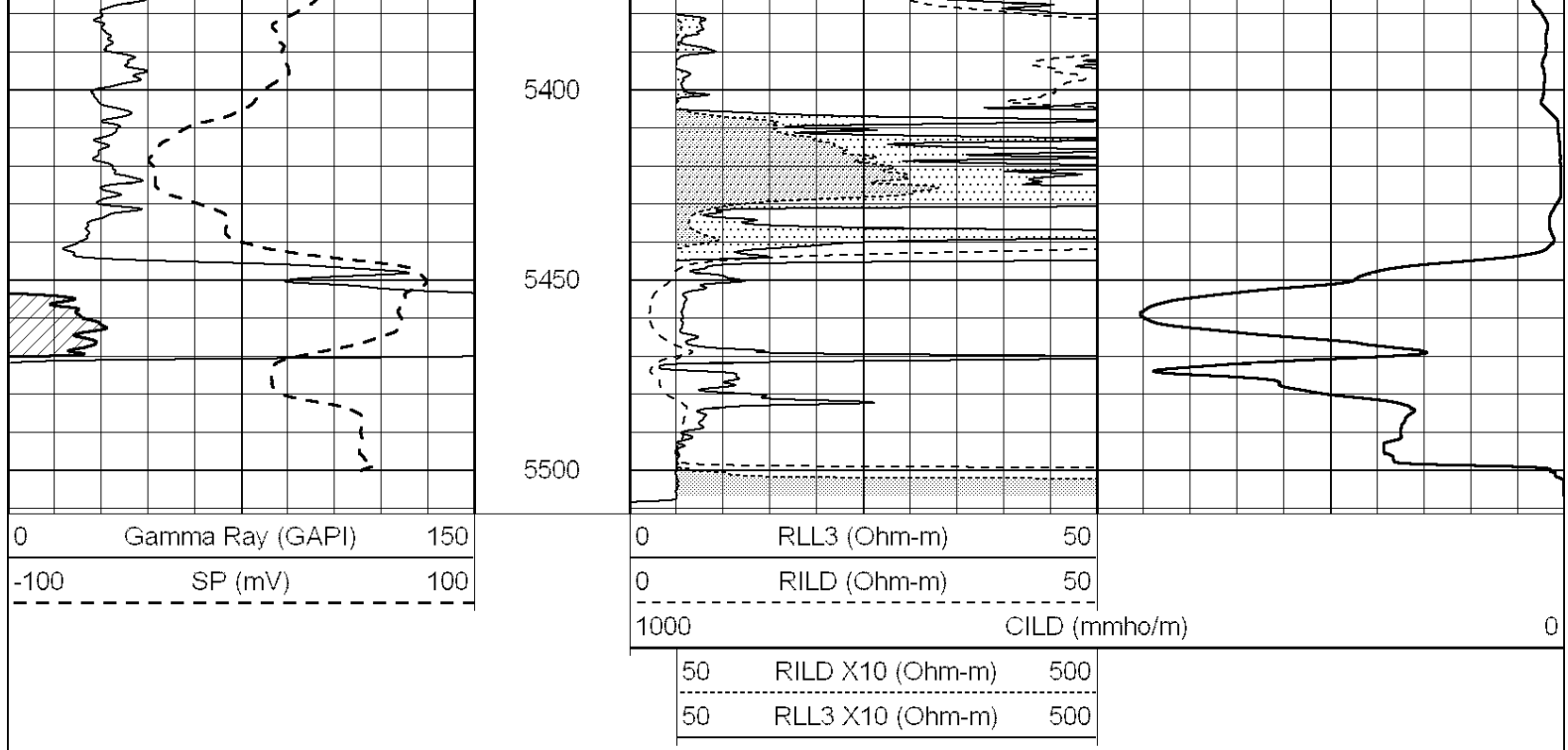
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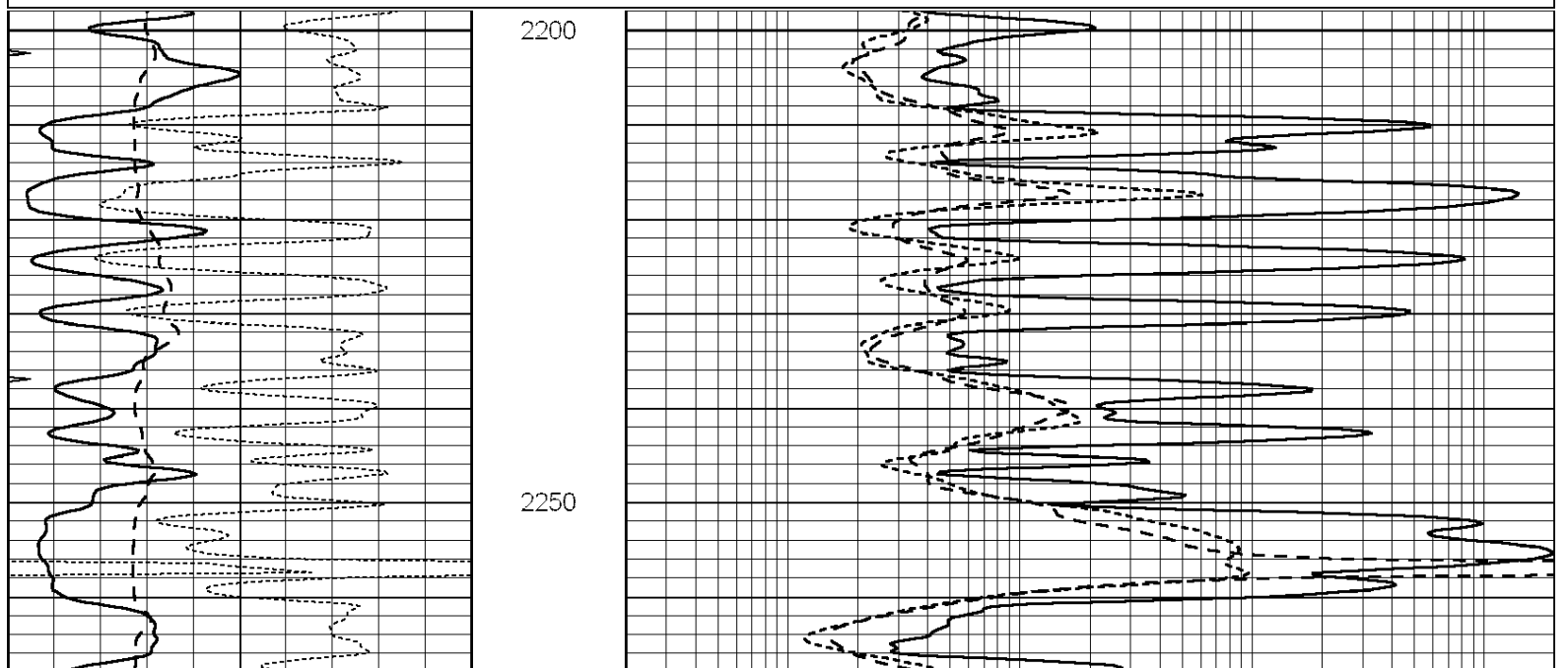


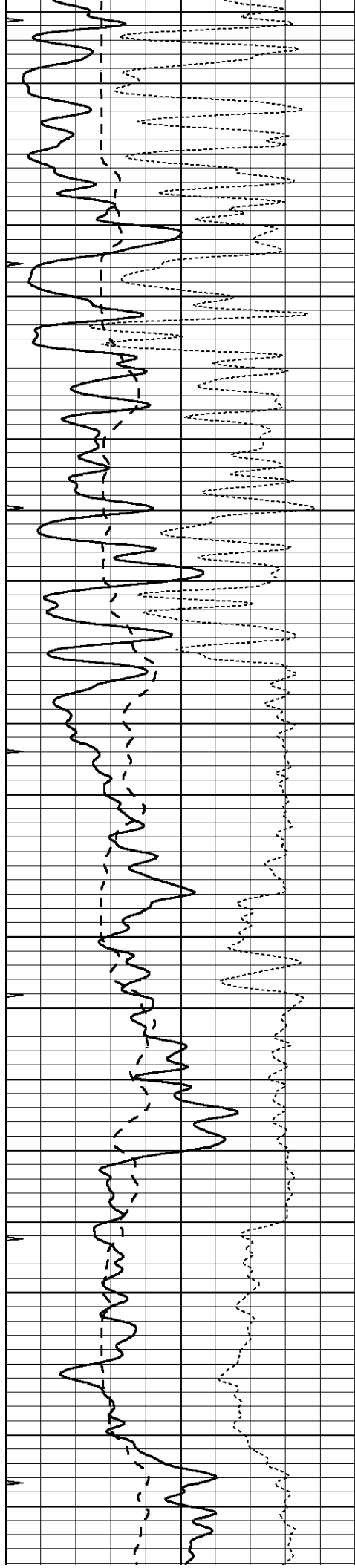


# MAIN SECTION

Database File: 010003pe.db  
 Dataset Pathname: pass4.5  
 Presentation Format: dil  
 Dataset Creation: Fri Nov 02 09:27:51 2012 by Calc SOC 120430  
 Charted by: Depth in Feet scaled 1:240

|      |                  |     |     |                          |      |
|------|------------------|-----|-----|--------------------------|------|
| 0    | GAMMA RAY (GAPI) | 150 | 0.2 | SHALLOW GUARD (Ohm-m)    | 2000 |
| -100 | SP (mV)          | 100 | 0.2 | DEEP INDUCTION (Ohm-m)   | 2000 |
| -250 | Rxo/Rt           | 50  | 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |
| 0    | MINMK            | 20  |     |                          |      |



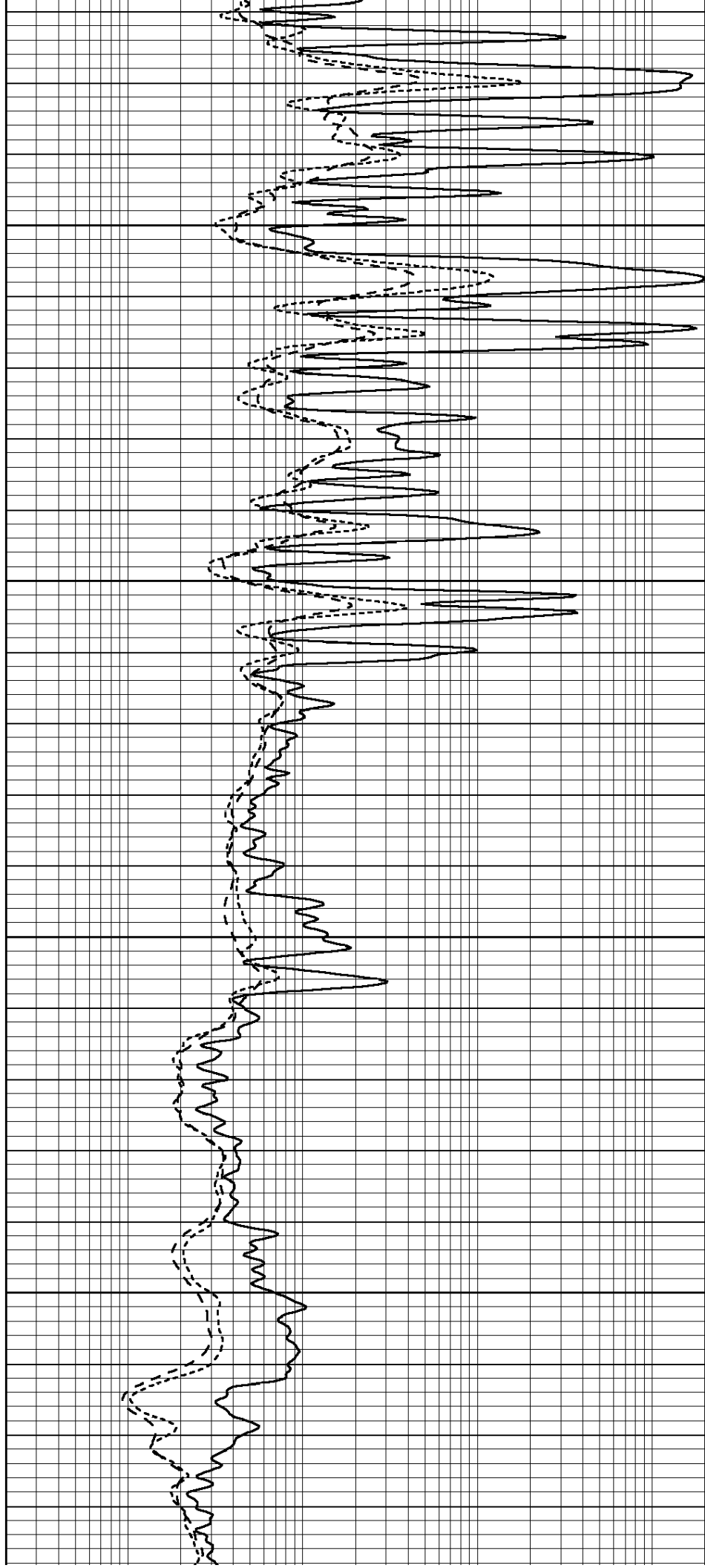


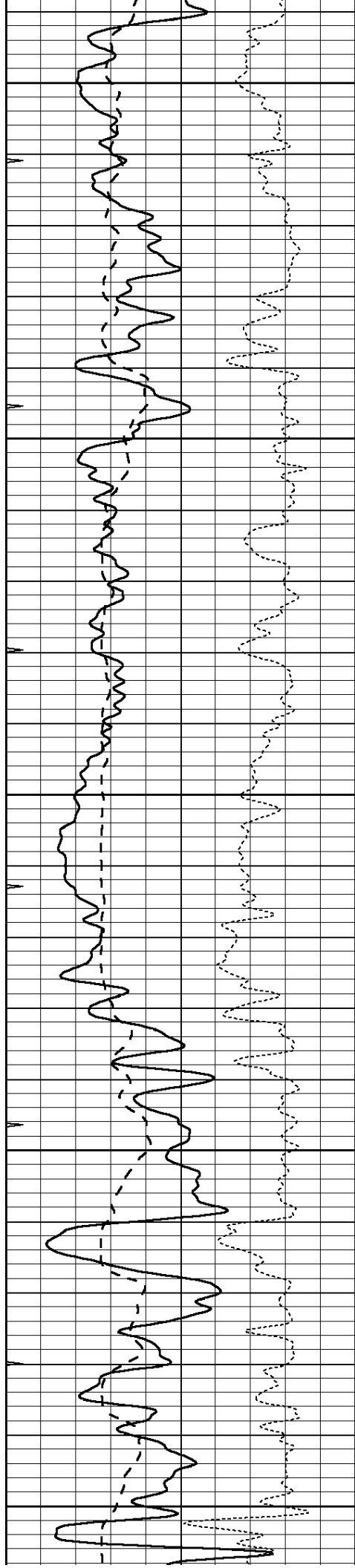
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2400

2450





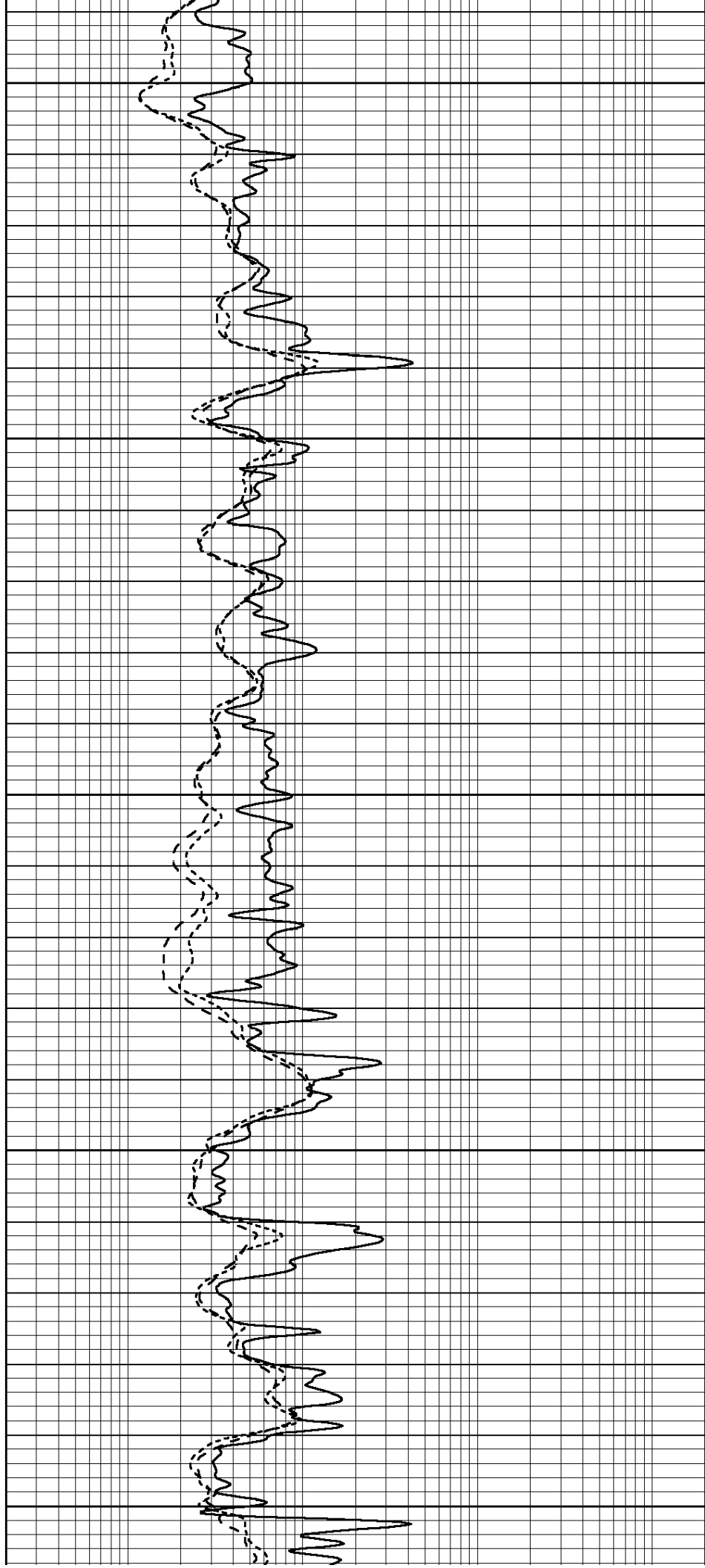
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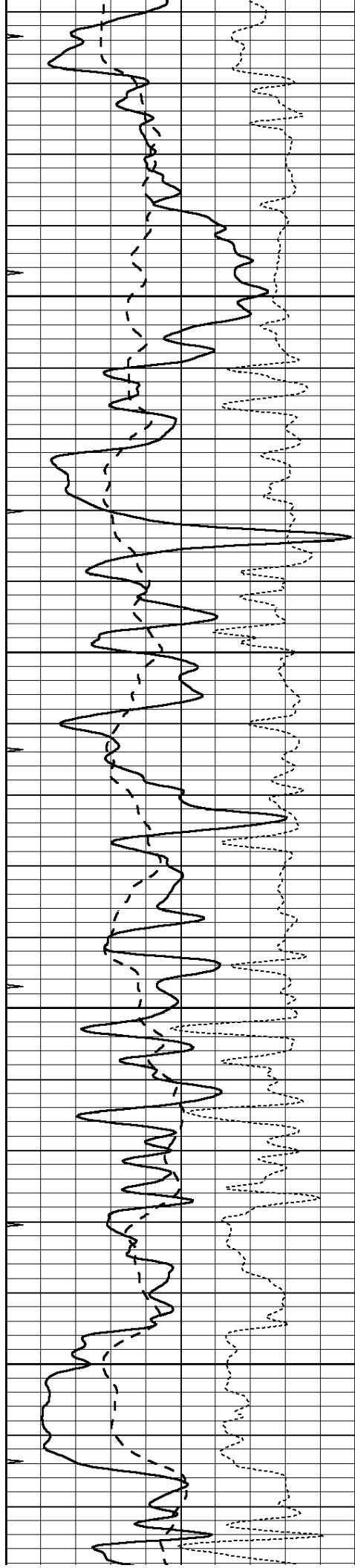
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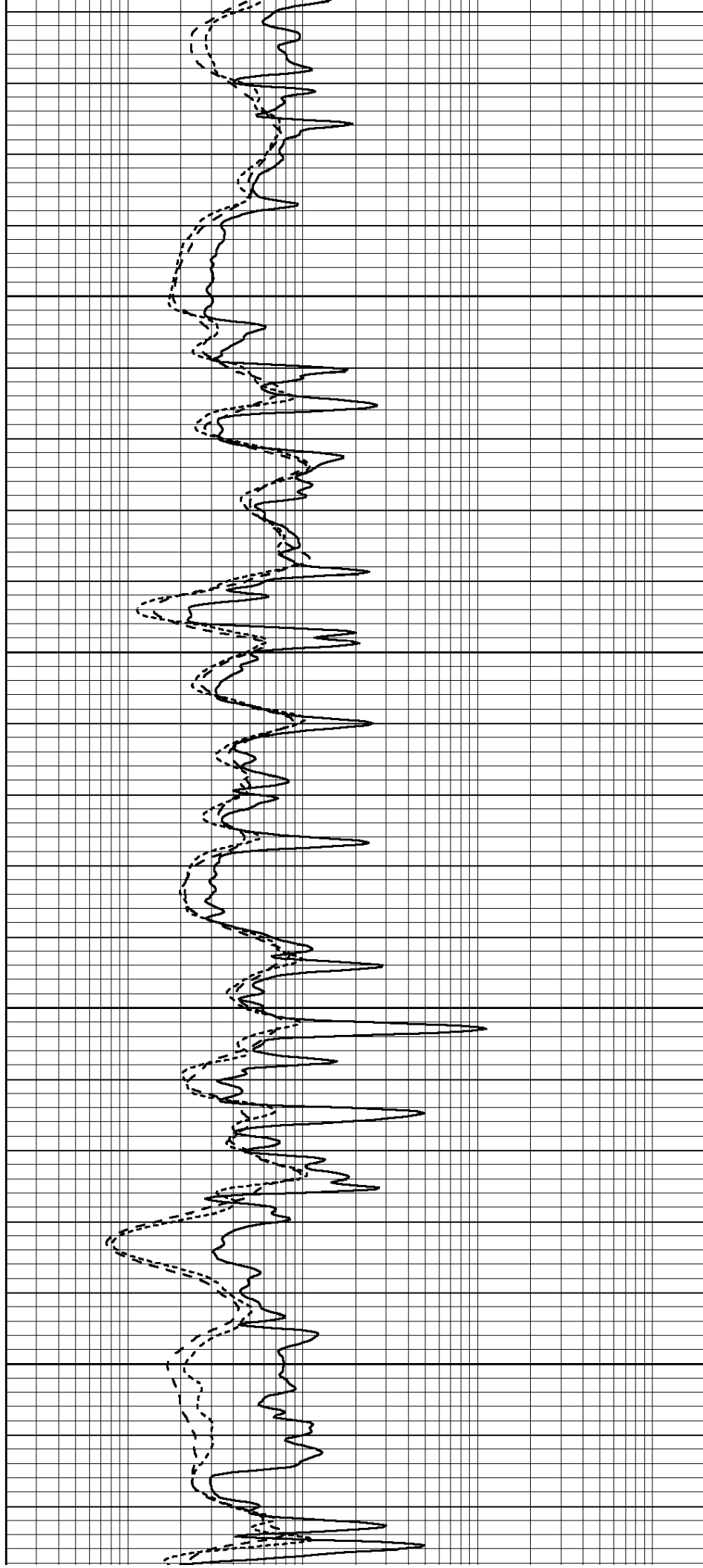


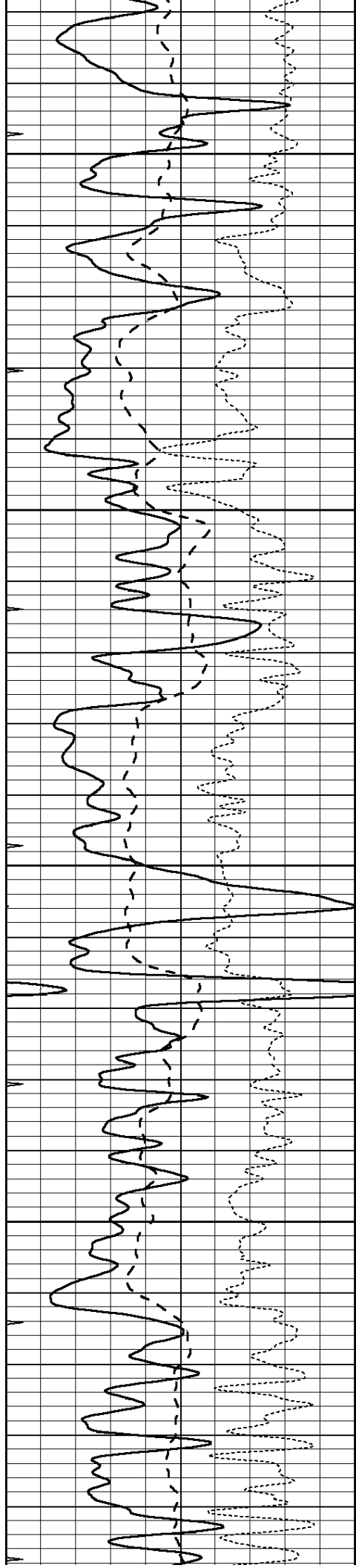
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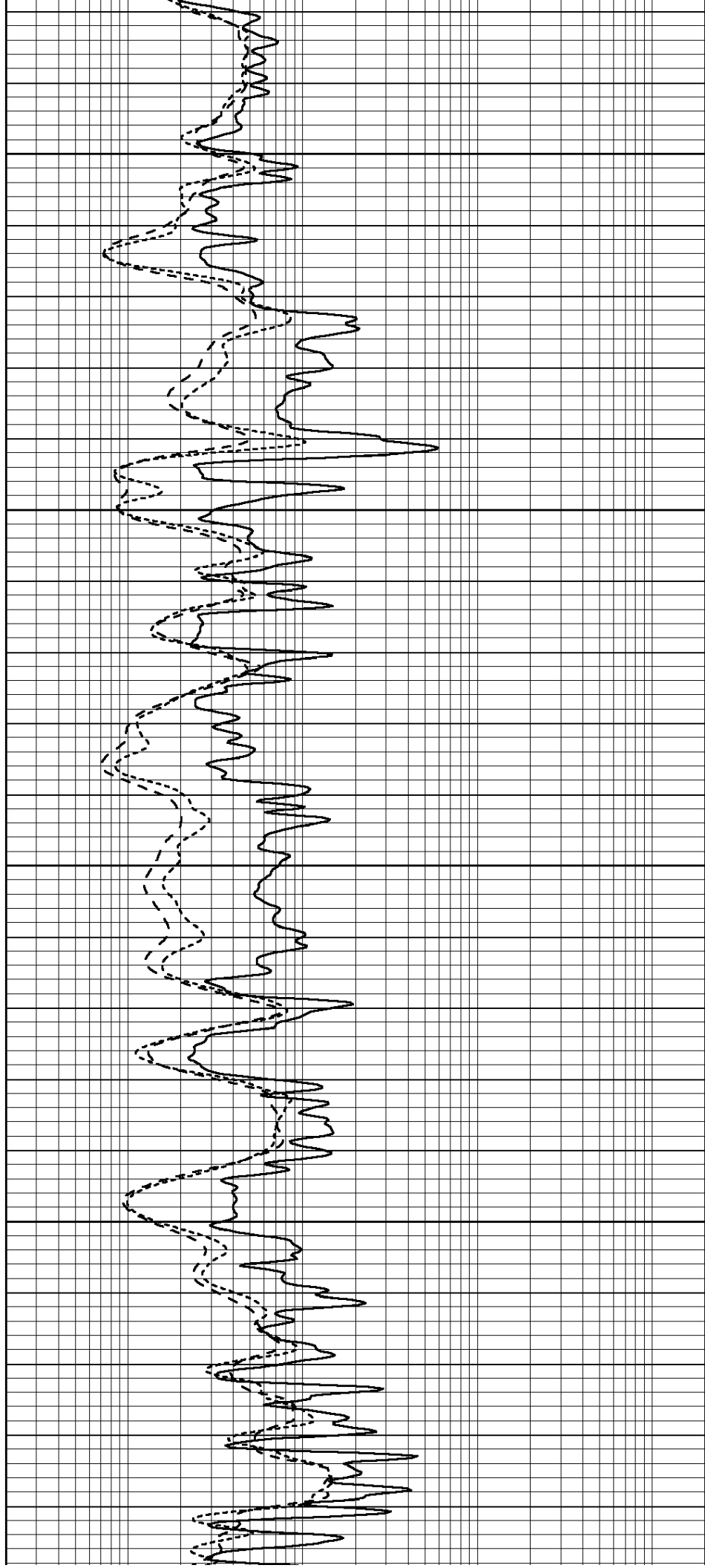


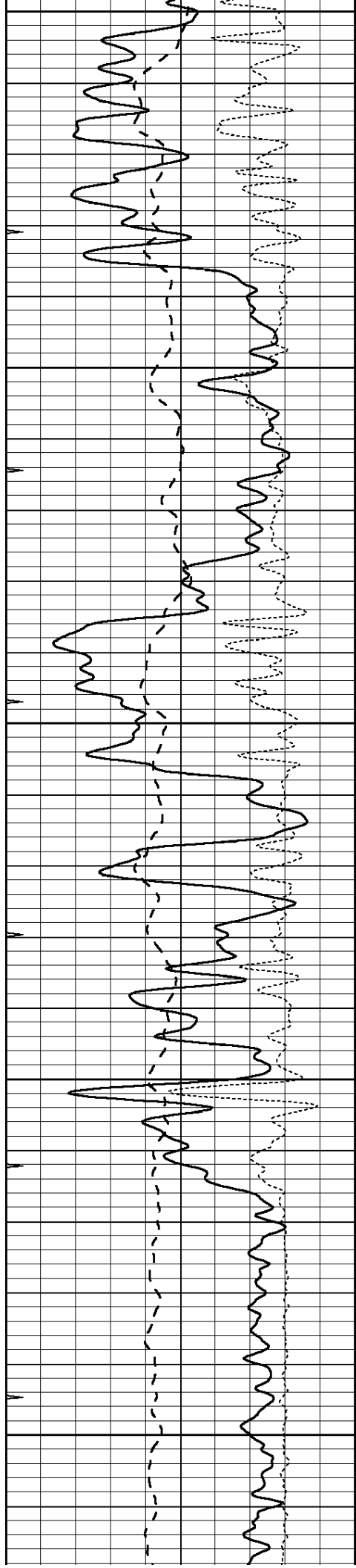
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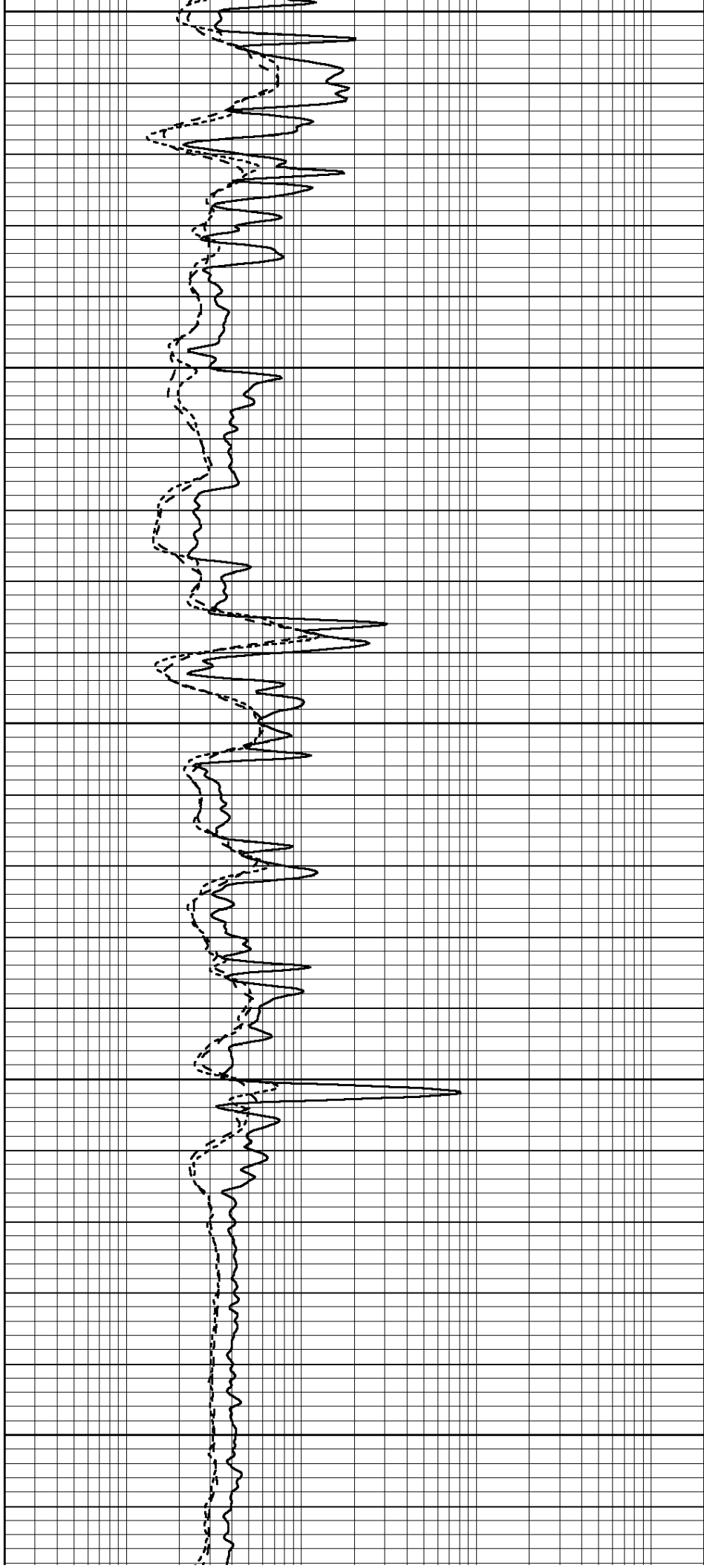
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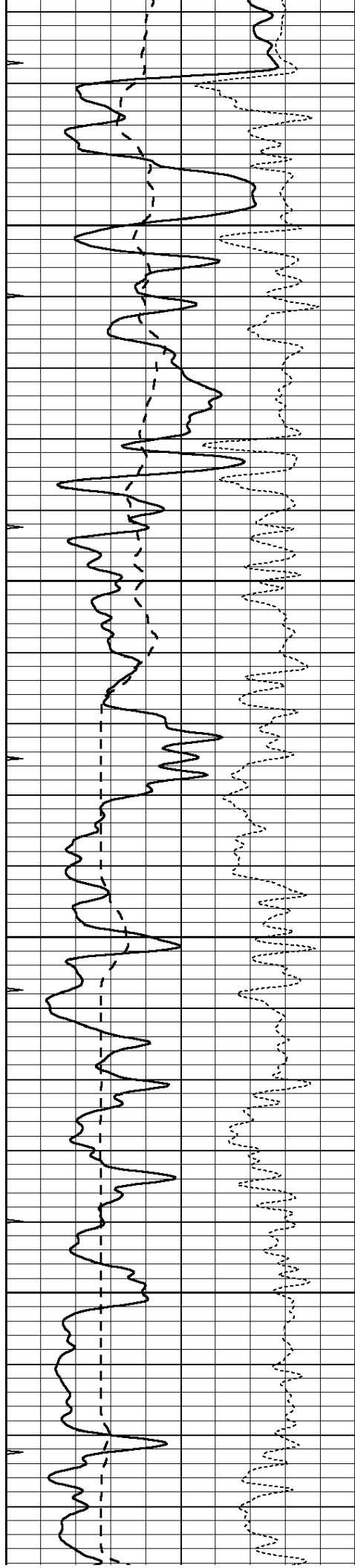
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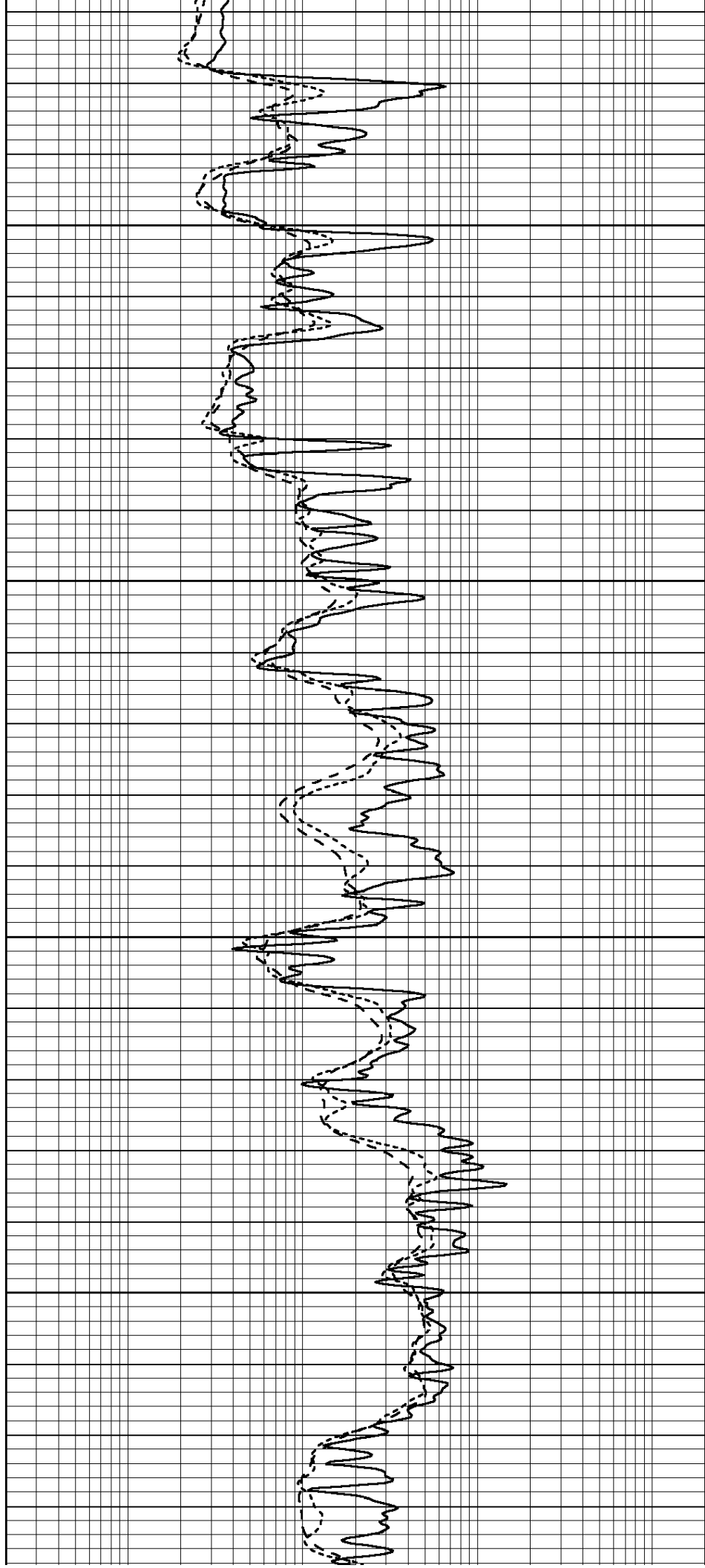


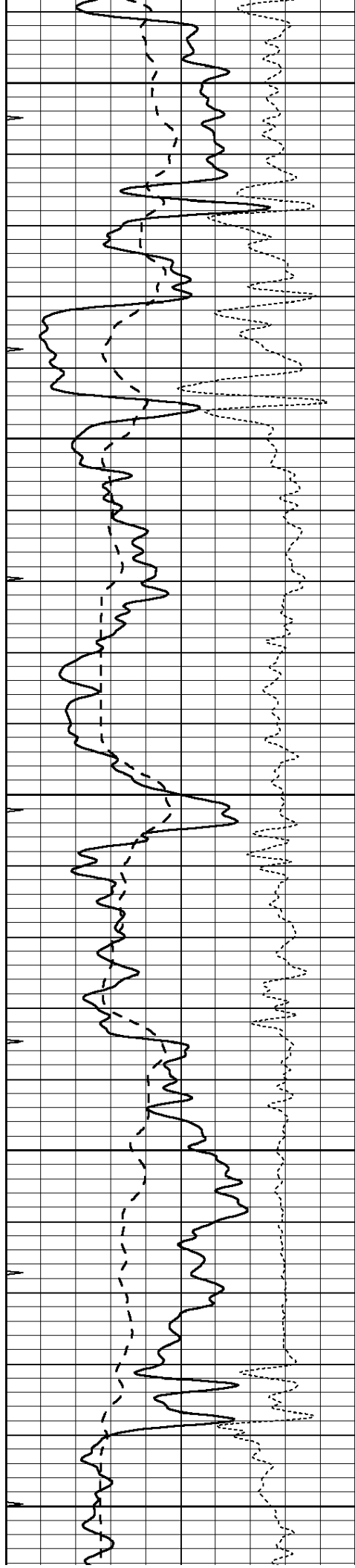
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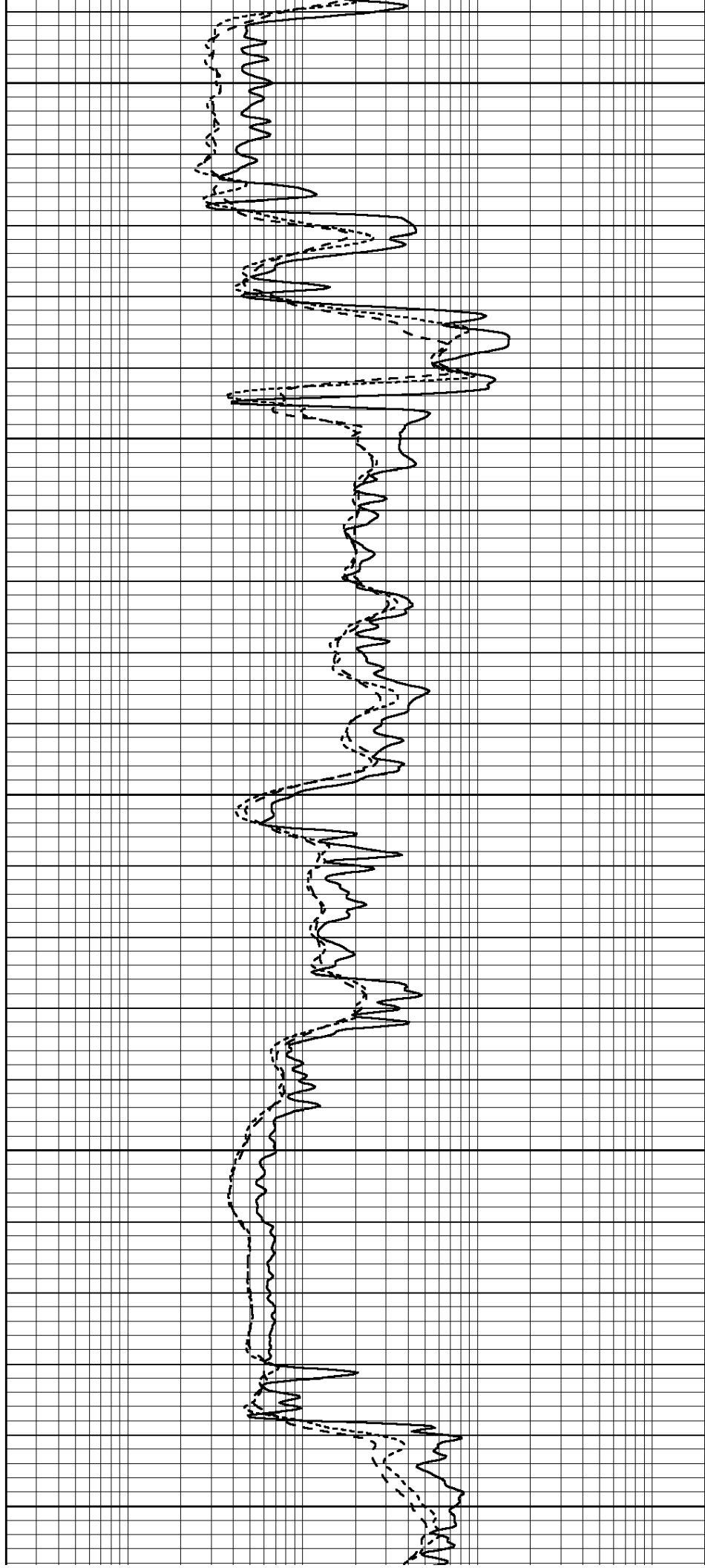
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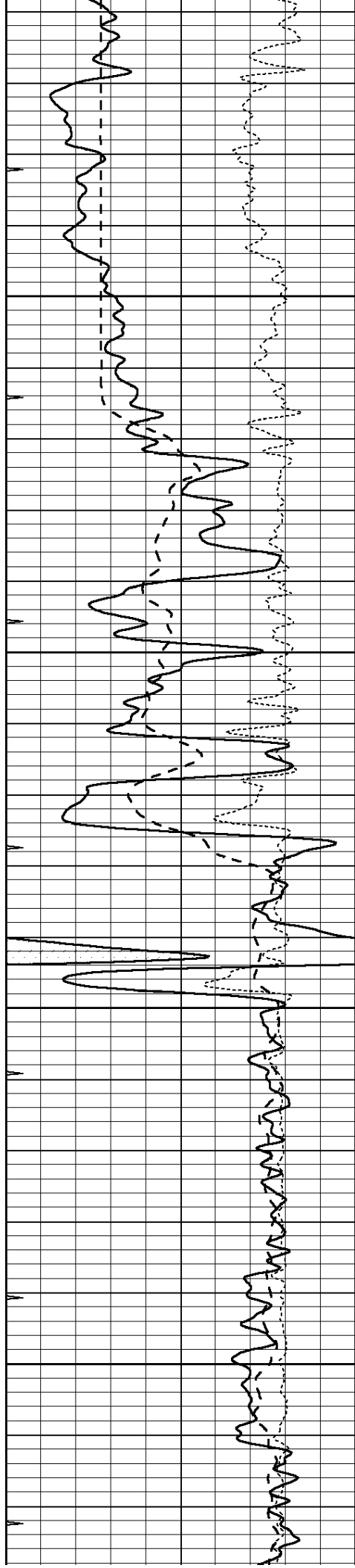
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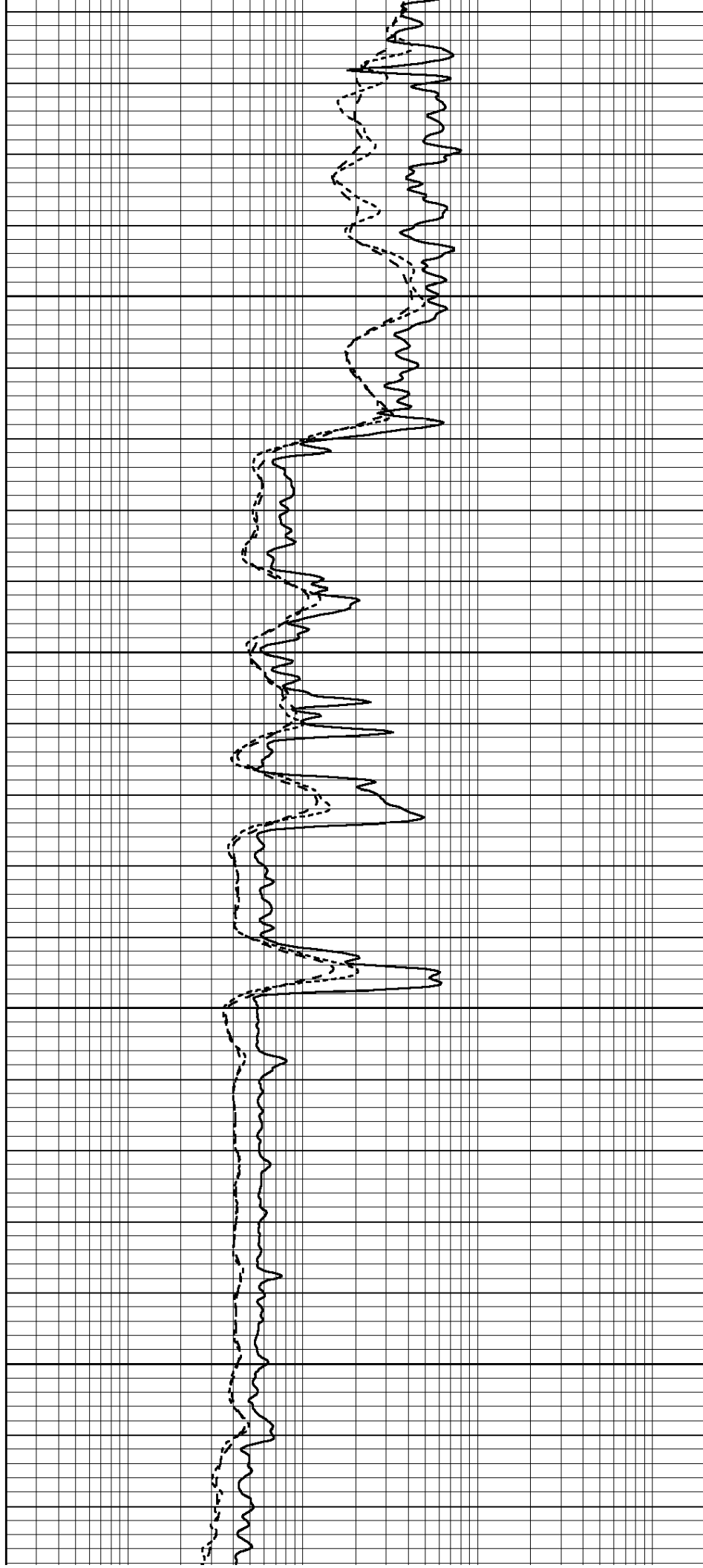


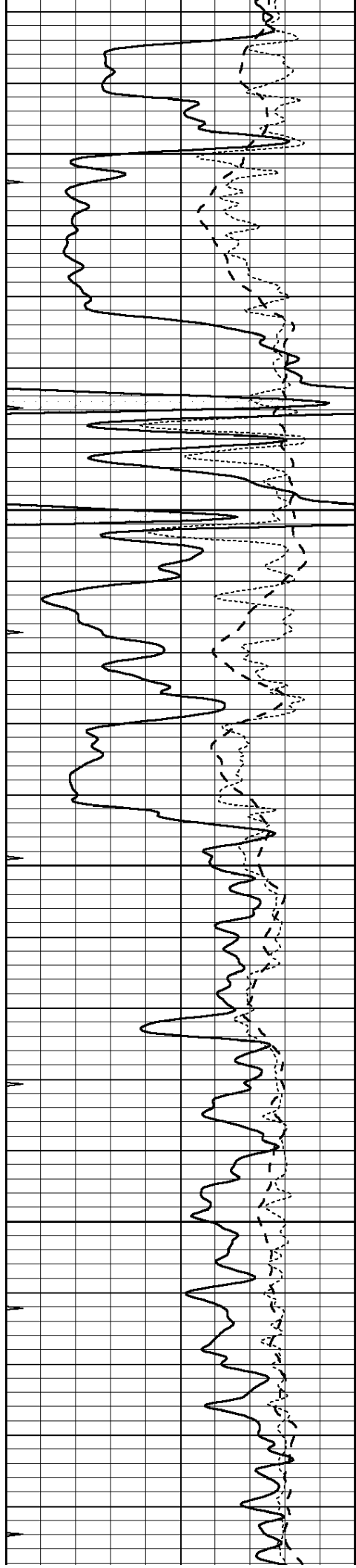
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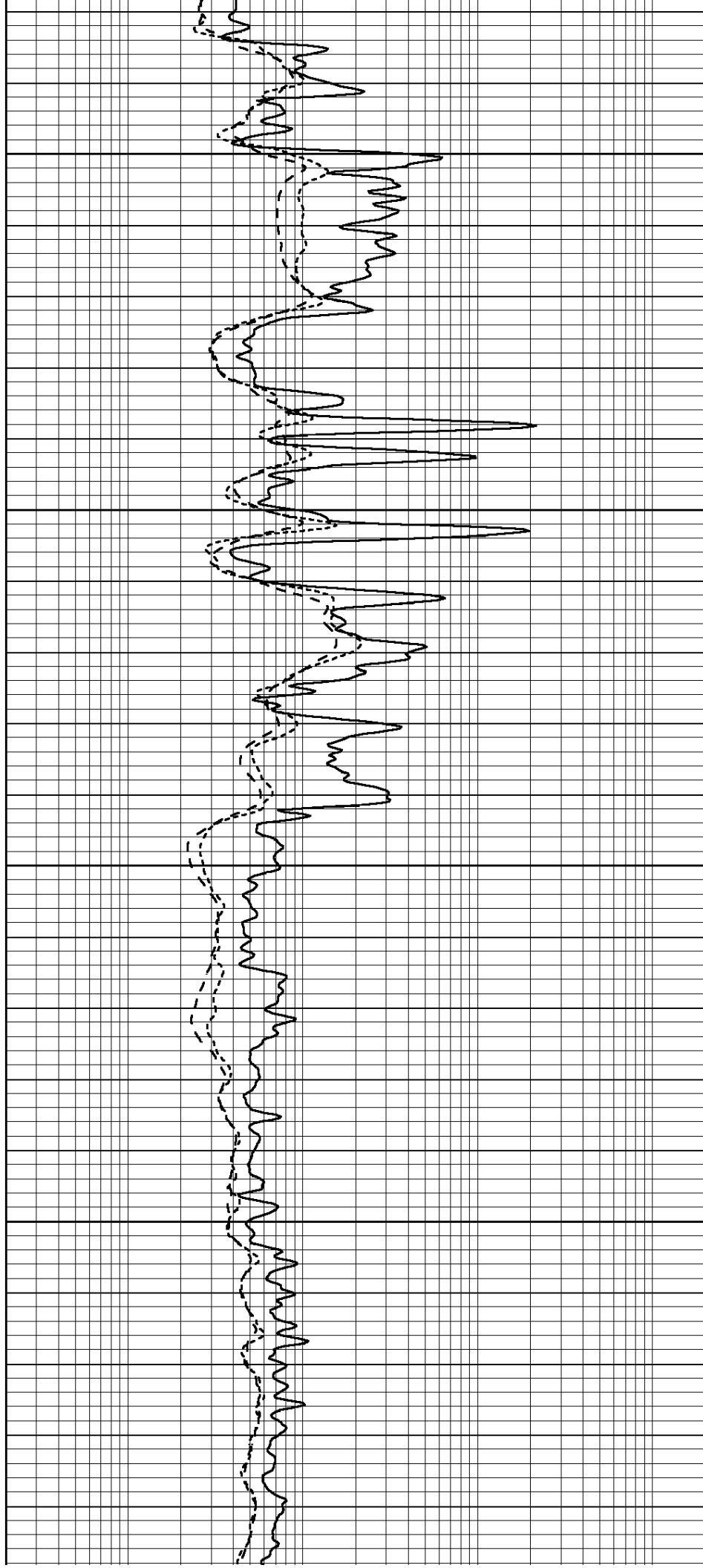


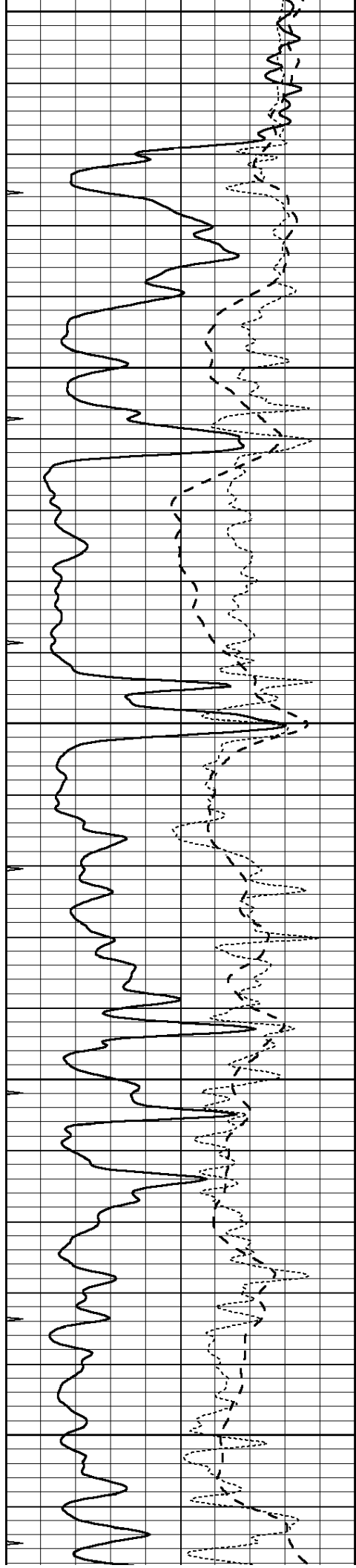
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4150

4200





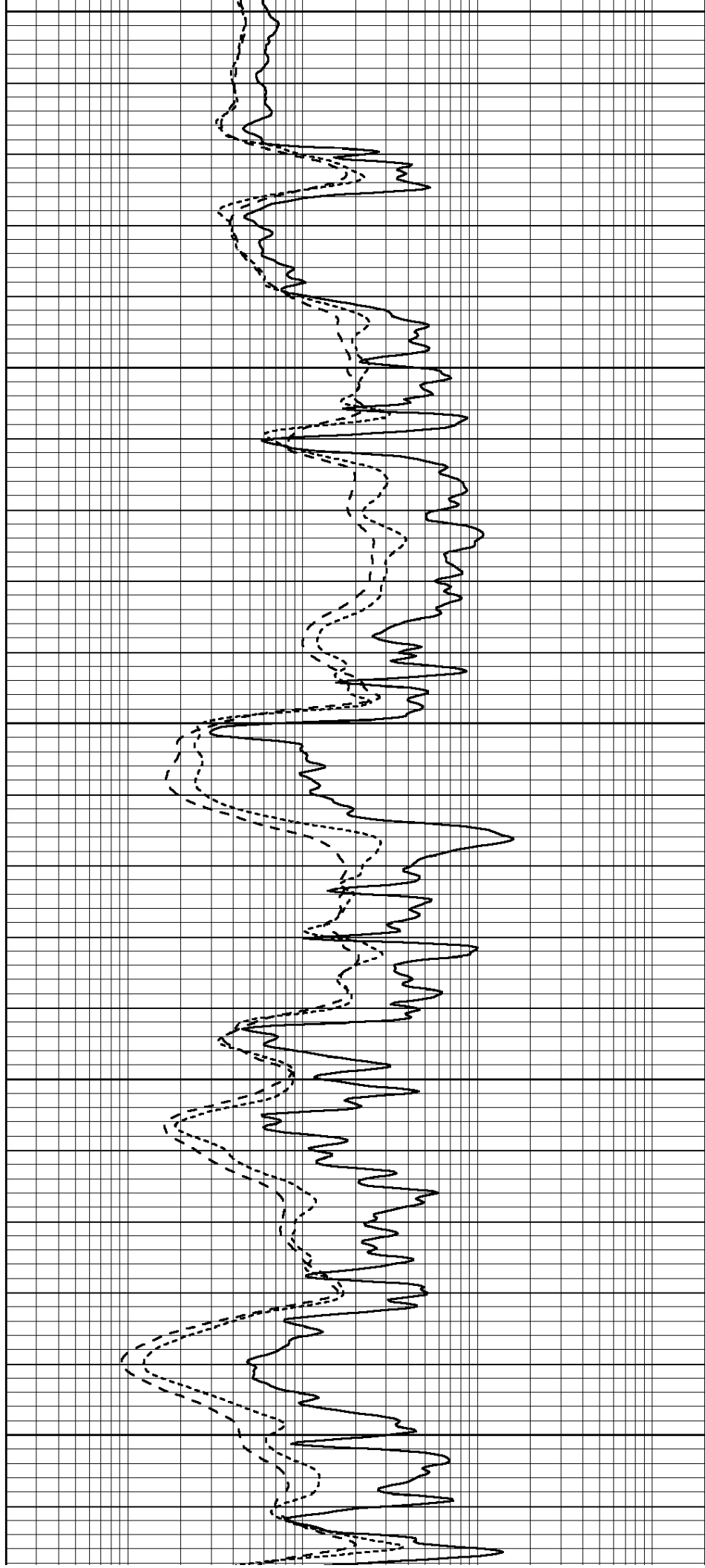
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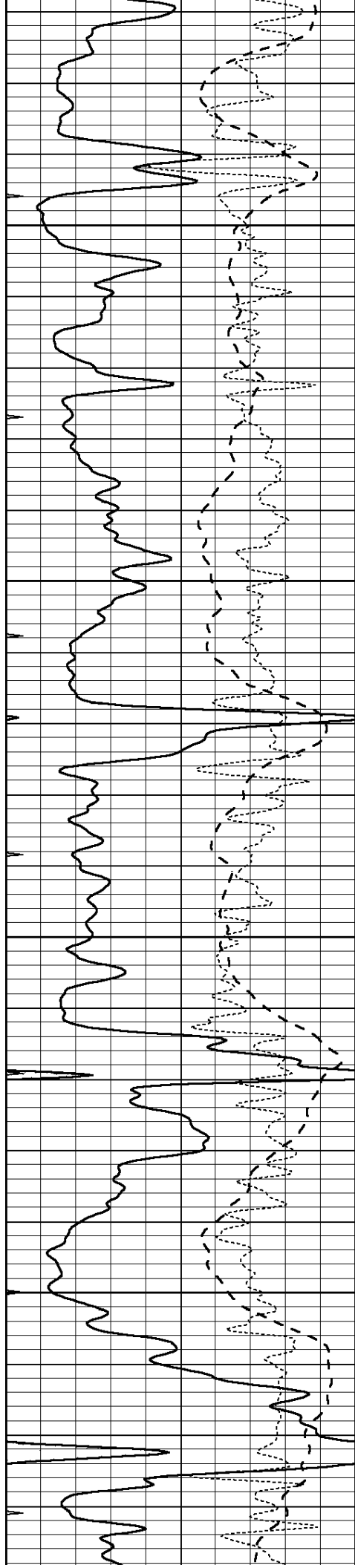
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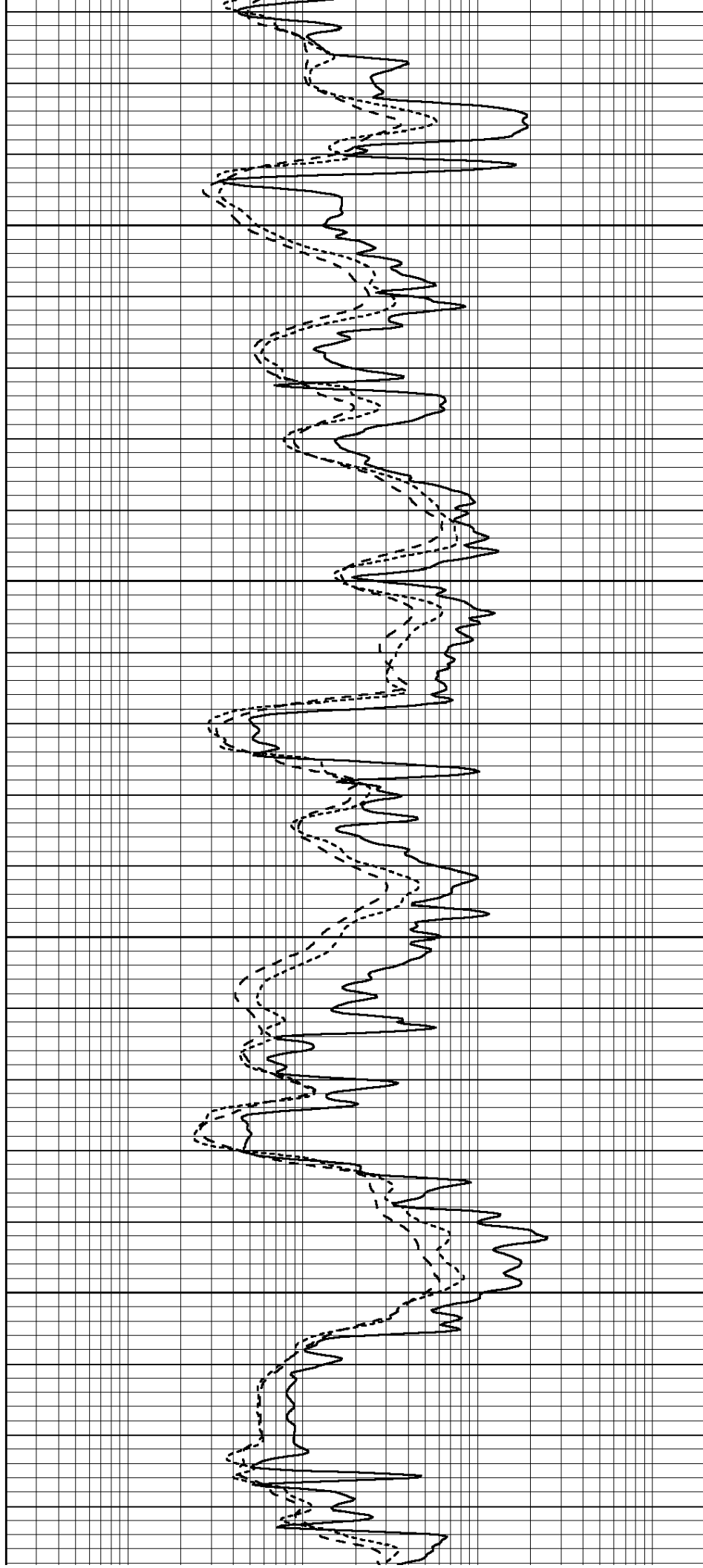


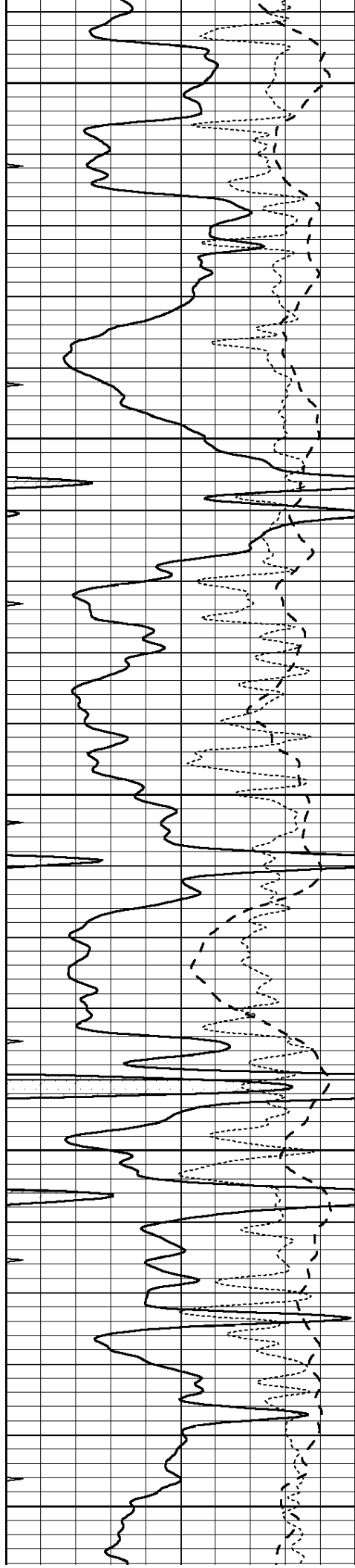
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4650





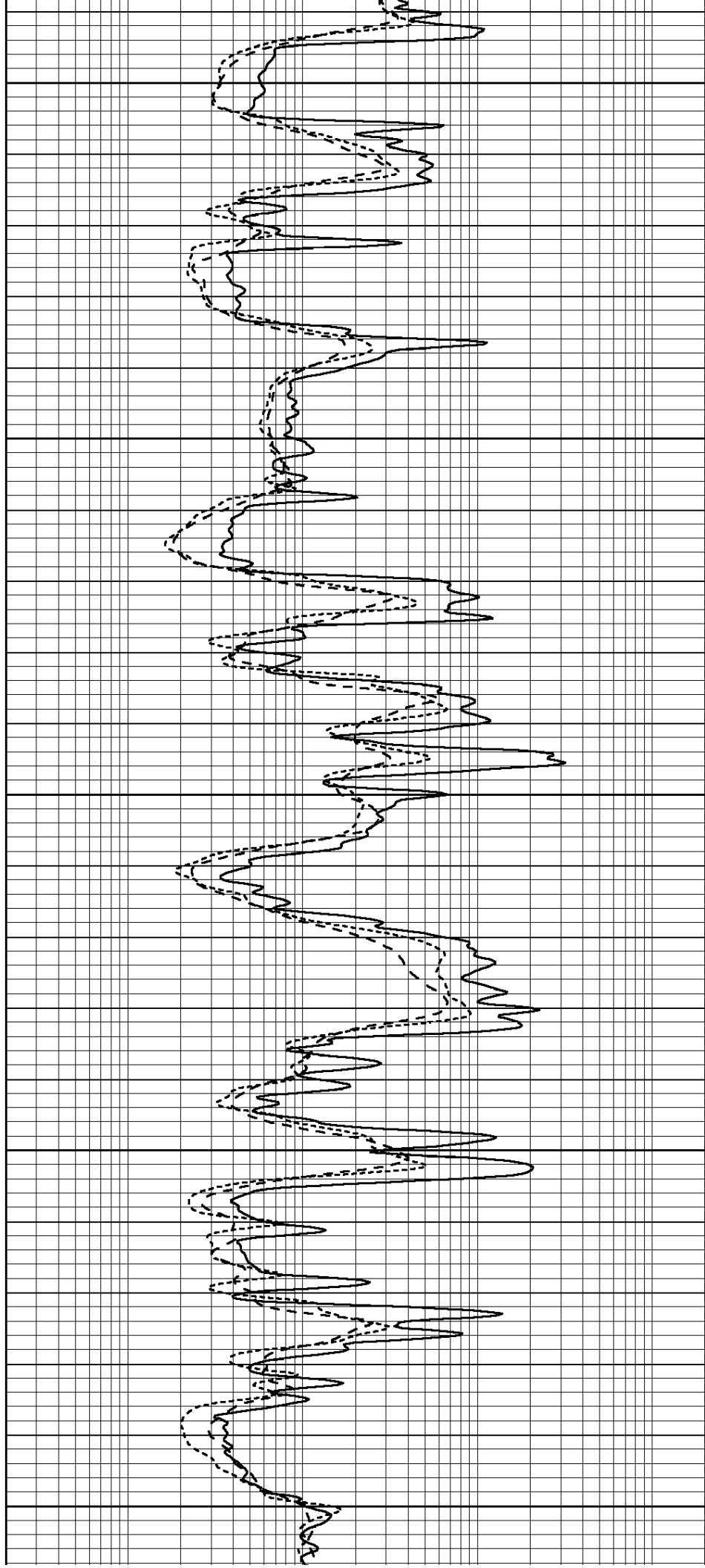
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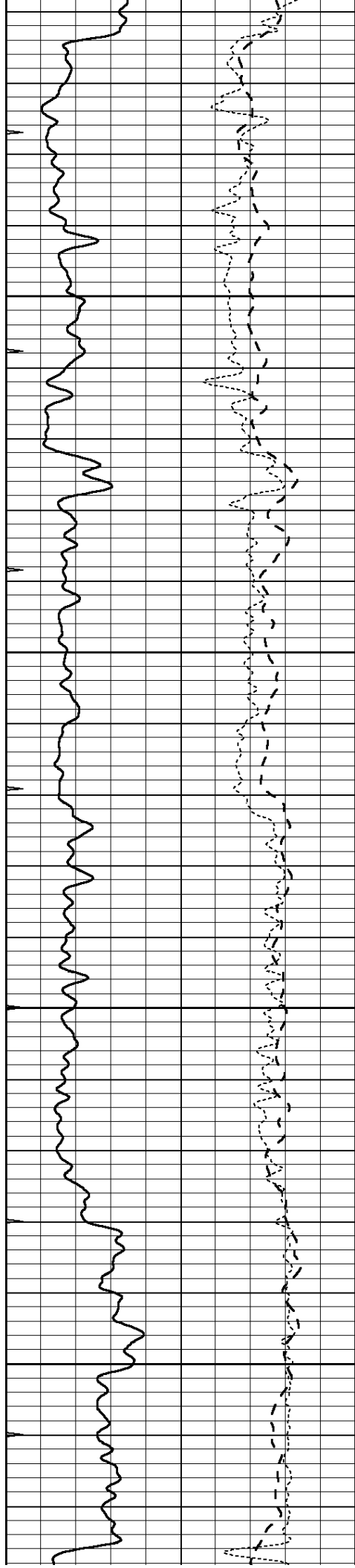
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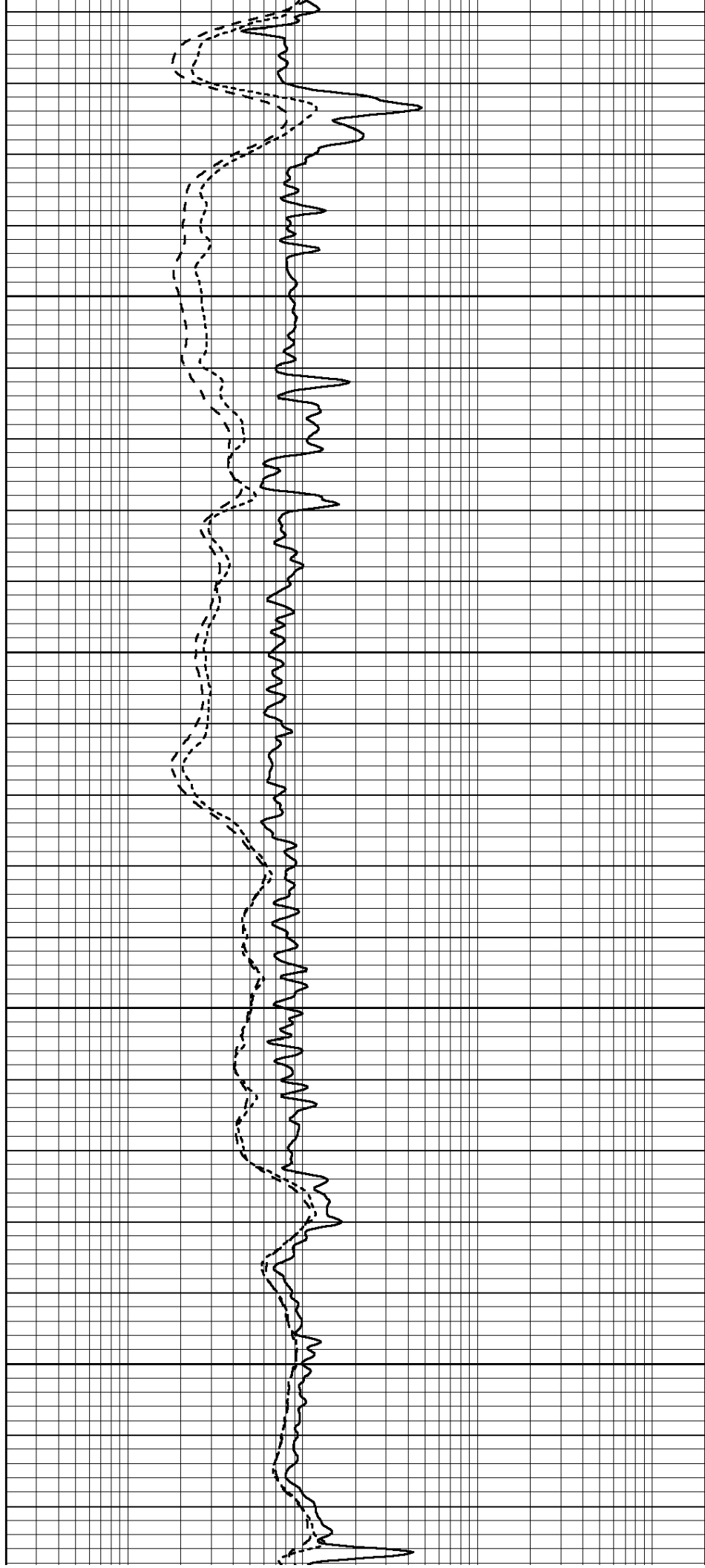


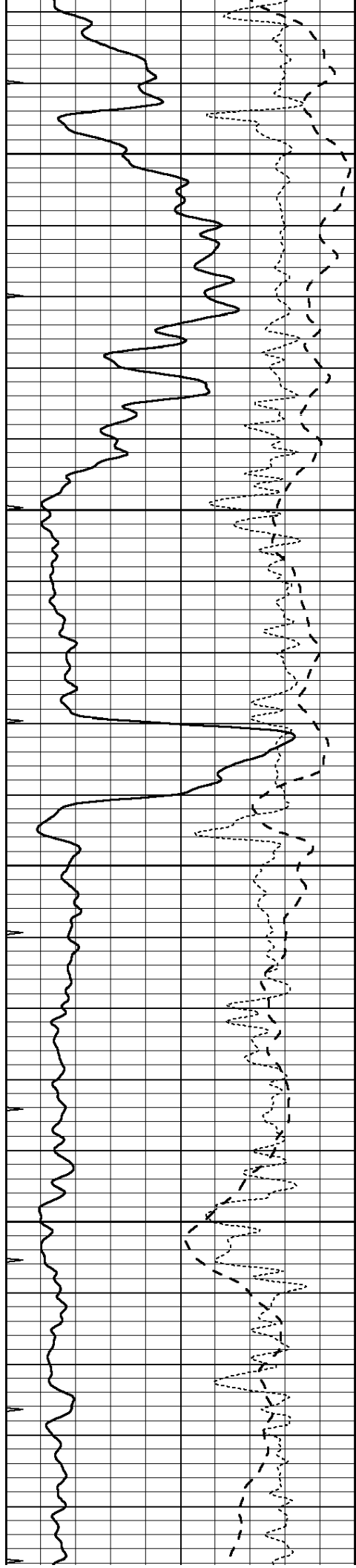
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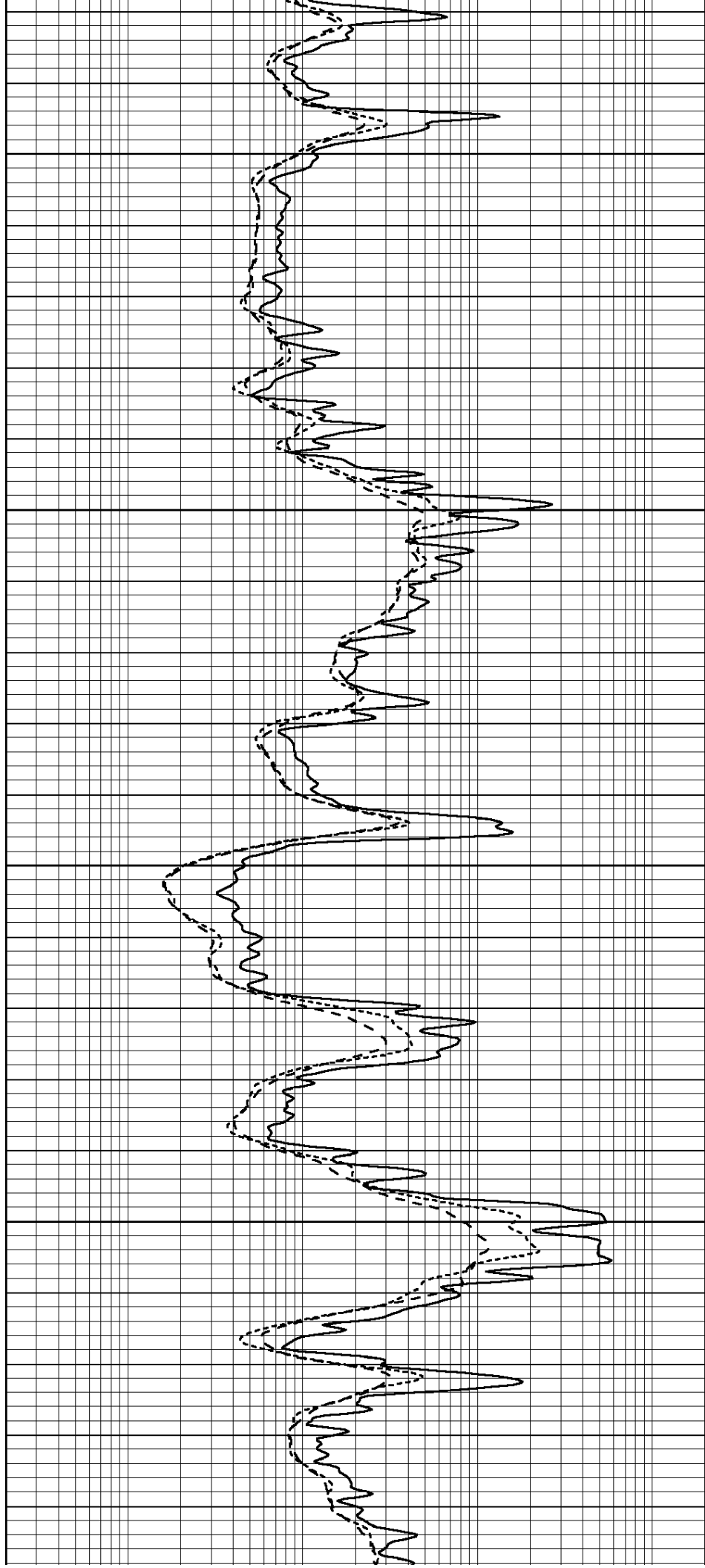


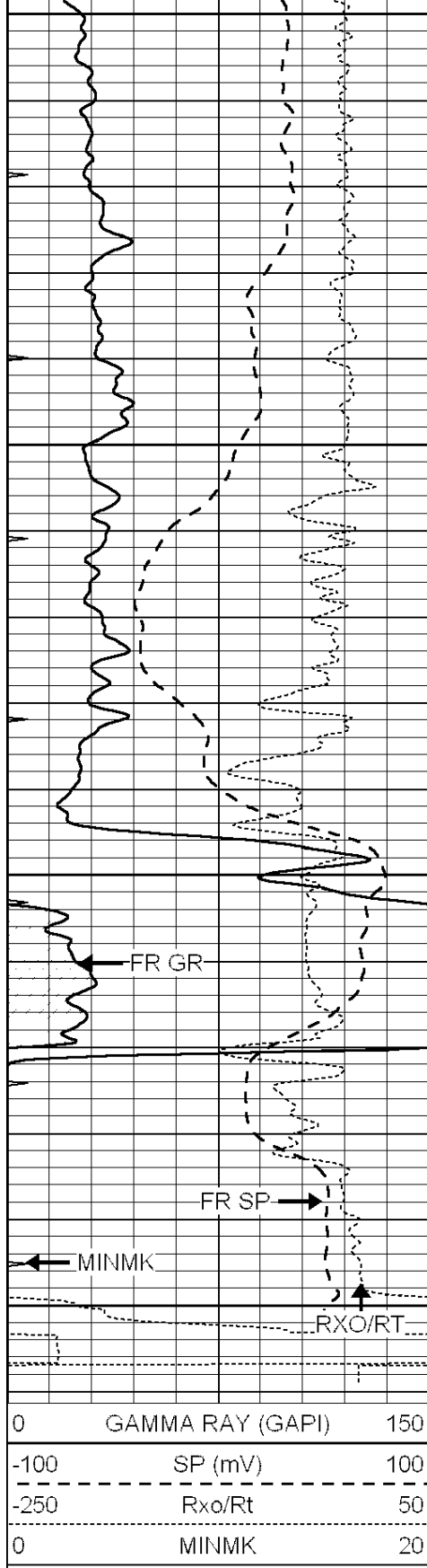
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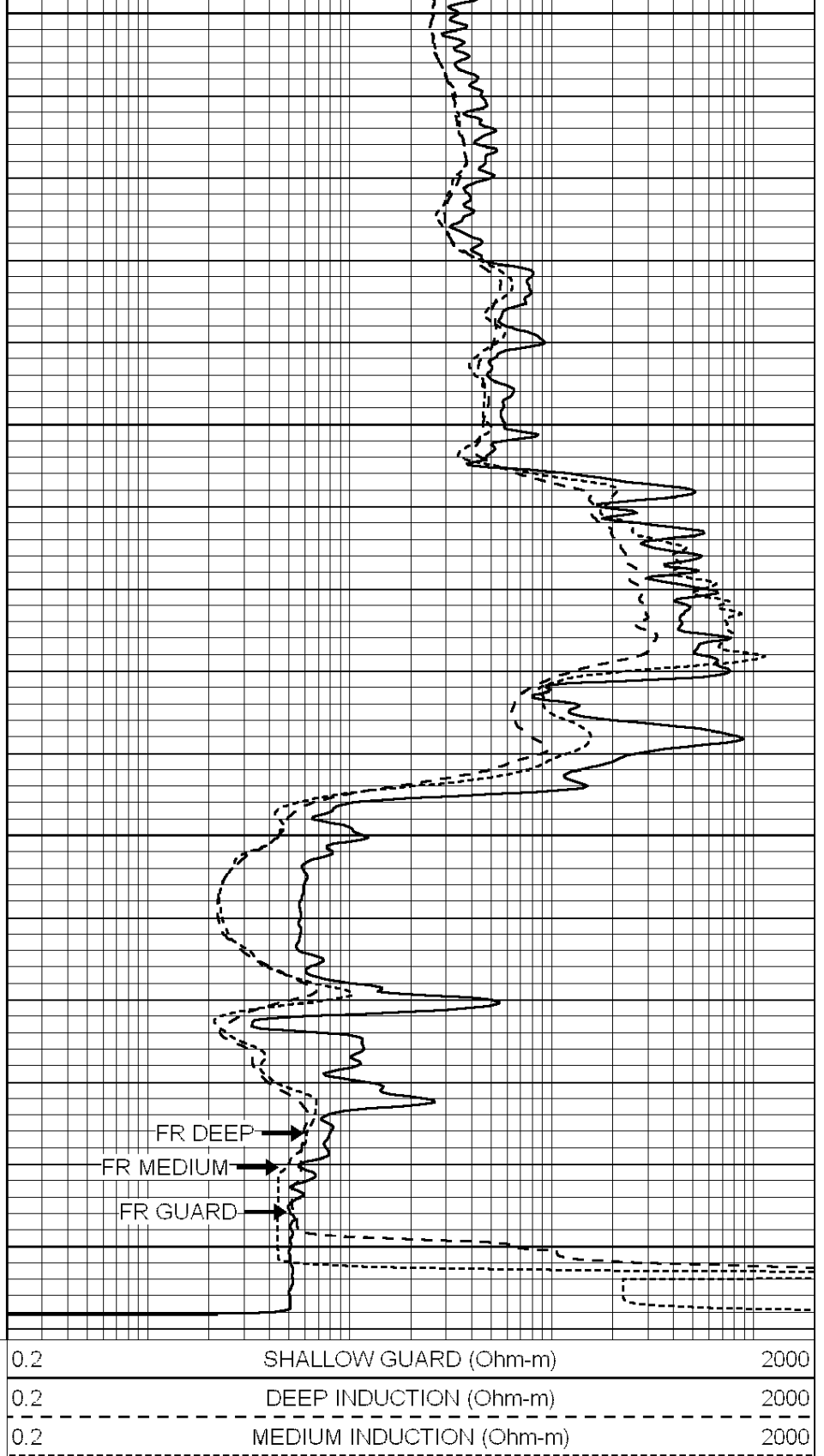


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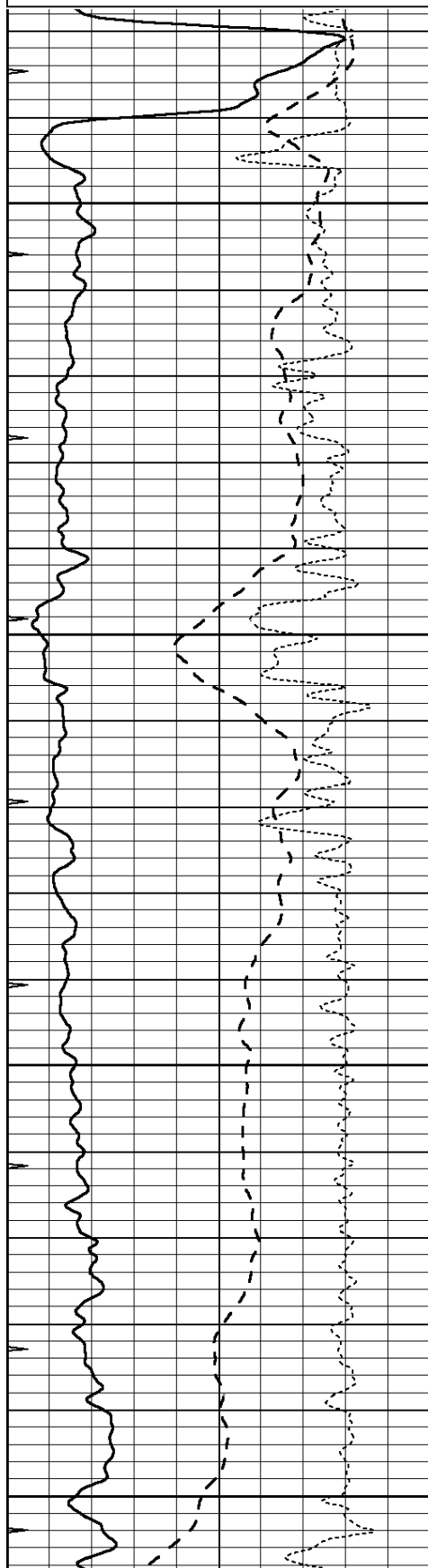
LTD 5498  
5500



Dataset Pathname: pass3.4  
Presentation Format: dil  
Dataset Creation: Fri Nov 02 07:21:51 2012 by Calc SOC 120430  
Charted by: Depth in Feet scaled 1:240

|      |                  |     |
|------|------------------|-----|
| 0    | GAMMA RAY (GAPI) | 150 |
| -100 | SP (mV)          | 100 |
| -250 | Rxo/Rt           | 50  |
| 0    | MINMK            | 20  |

|     |                          |      |
|-----|--------------------------|------|
| 0.2 | SHALLOW GUARD (Ohm-m)    | 2000 |
| 0.2 | DEEP INDUCTION (Ohm-m)   | 2000 |
| 0.2 | MEDIUM INDUCTION (Ohm-m) | 2000 |

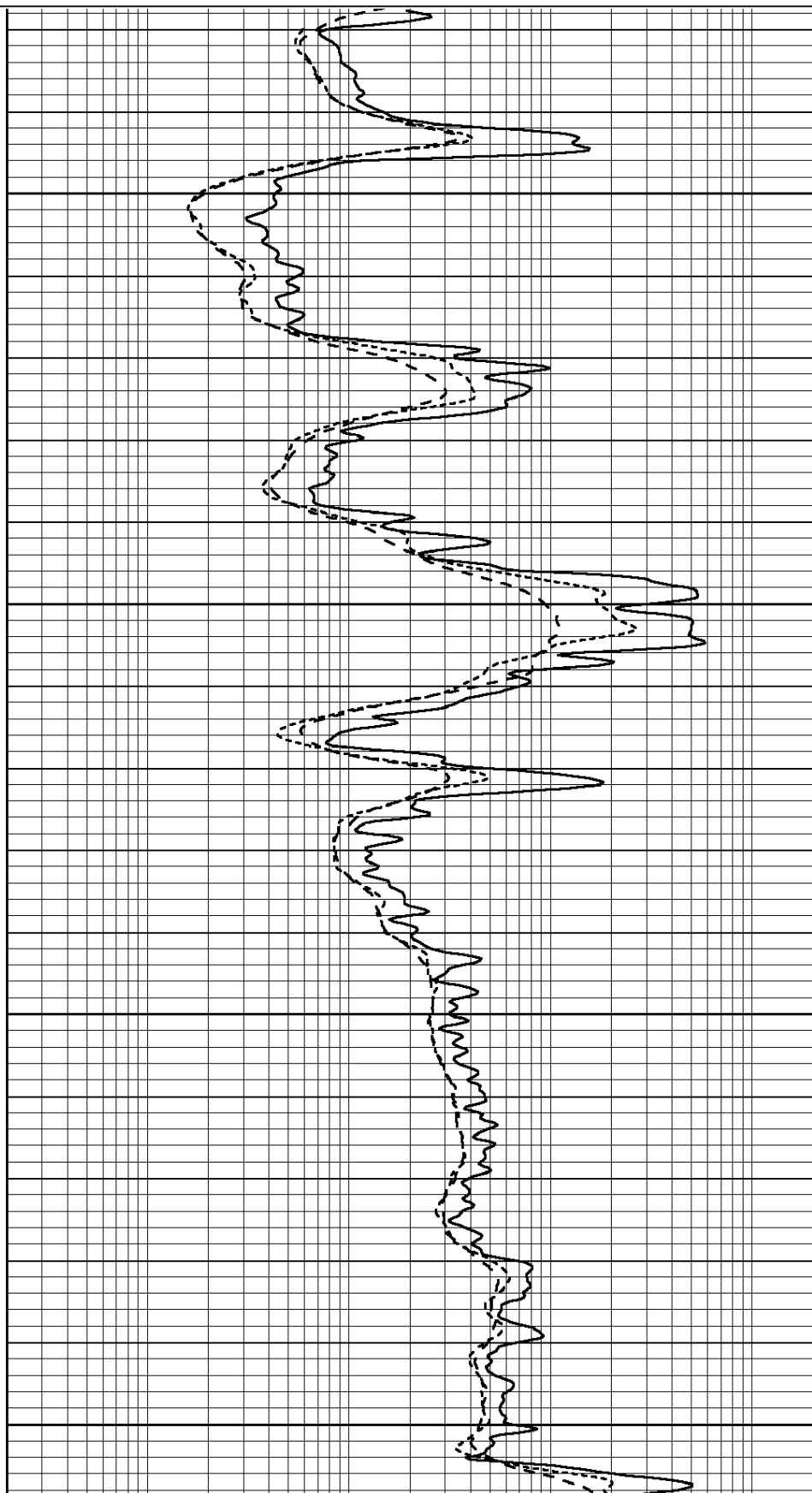


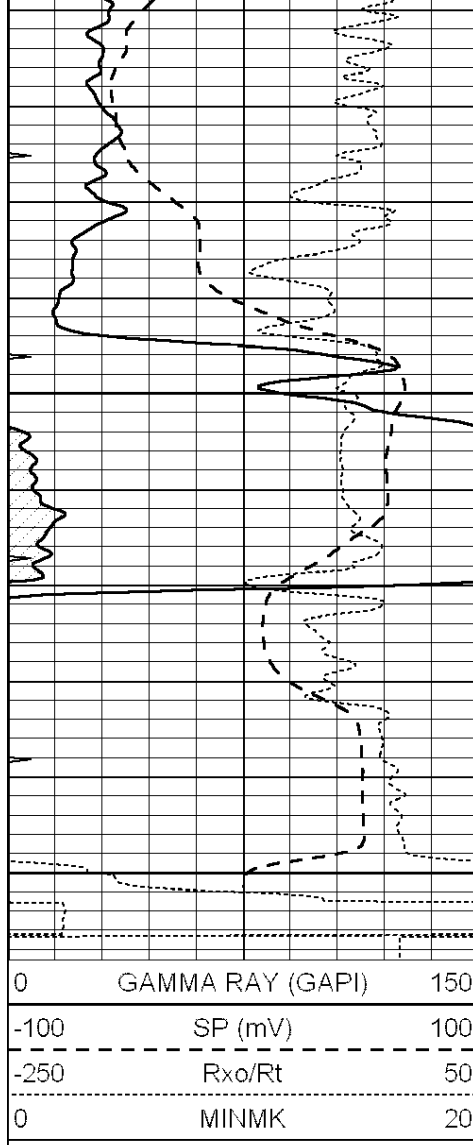
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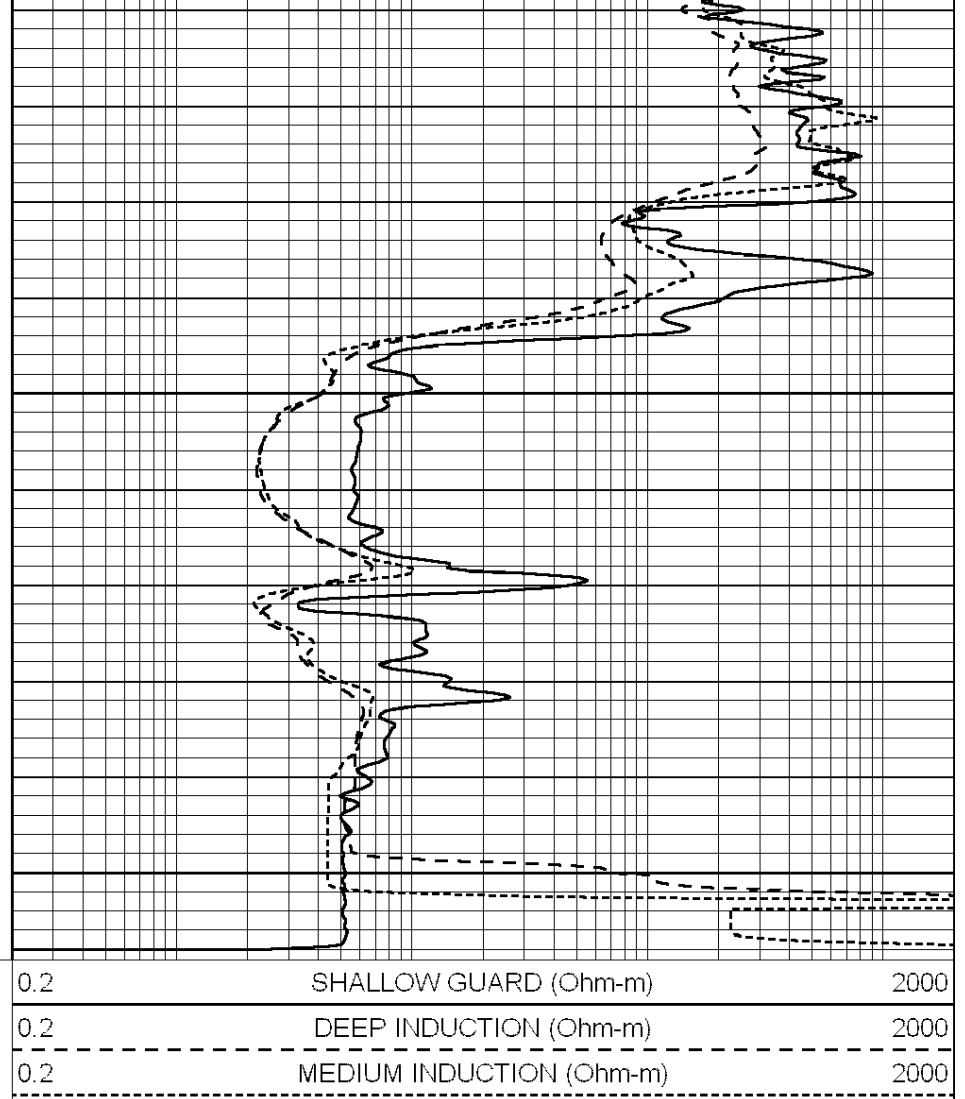
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5450

5500



### Calibration Report

Database File: 010003pe.db  
 Dataset Pathname: pass4.5  
 Dataset Creation: Fri Nov 02 09:27:51 2012 by Calc SOC 120430

### Dual Induction Calibration Report

Serial-Model: DIL3-GEAR  
 Performed: Fri Nov 02 08:44:54 2012

| Readings  |       |       |   | References |         |        | Results |         |
|-----------|-------|-------|---|------------|---------|--------|---------|---------|
| Loop:     | Air   | Loop  |   | Air        | Loop    |        | m       | b       |
| Deep      | 0.011 | 0.656 | V | 0.000      | 400.000 | mmho/m | 640.000 | 5.000   |
| Medium    | 0.013 | 0.740 | V | 0.000      | 462.500 | mmho/m | 700.000 | -11.000 |
| Internal: | Zero  | Cal   |   | Zero       | Cal     |        | m       | b       |
| Deep      | 0.002 | 0.645 | V | 0.000      | 400.000 | mmho/m | 622.059 | -1.071  |
| Medium    | 0.007 | 0.740 | V | 0.000      | 462.500 | mmho/m | 631.393 | -4.555  |

Litho Density Calibration Report  
 Serial: 006 Model: PRB  
 Performed Sun Aug 15 09:48:41 2010

Litho Density Calibration

|                                        | Background          | Magnesium                | Aluminum     | Sandstone           |         |
|----------------------------------------|---------------------|--------------------------|--------------|---------------------|---------|
| Window 1                               | 1686.6              | 11612.8                  | 3932.0       | 12718.8             | cps     |
| Window 2                               | 1531.4              | 9204.7                   | 3267.8       | 9851.9              | cps     |
| Window 3                               | 1198.3              | 4733.6                   | 1952.5       | 4920.6              | cps     |
| Window 4                               | 317.3               | 321.2                    | 325.9        | 303.6               | cps     |
| Long Space                             | 0.0                 | 7673.3                   | 1736.4       | 8320.4              | cps     |
| Short Space                            | 1.7                 | 2548.5                   | 1657.2       | 2628.8              | cps     |
| Rho                                    |                     | 1.7100                   | 2.5900       | 1.3800              | g/cc    |
| Pe                                     |                     |                          | 2.5700       | 1.5500              |         |
| Rib Angle                              | : 43.8              | Rib Slope                | : 0.961      | Density/Spine Ratio | : 0.569 |
| Spine Angle                            | : 73.8              | Spine Slope              | : 3.453      | Spine Intercept     | : -18.1 |
|                                        |                     |                          |              |                     |         |
| Caliper                                |                     |                          |              |                     |         |
|                                        | Readings            | Reference                |              |                     |         |
| Low Ref                                | 3.5                 | 6.4                      |              |                     |         |
| High Ref                               | 5.5                 | 15.0                     |              |                     |         |
|                                        | Gain: 4.5           |                          | Offset: -9.3 |                     |         |
| Compensated Neutron Calibration Report |                     |                          |              |                     |         |
|                                        |                     | Serial Number:           | 070808       |                     |         |
|                                        |                     | Tool Model:              | Probe        |                     |         |
| PRE-SURVEY VERIFICATION                |                     |                          |              |                     |         |
|                                        | Detector            | Readings                 | Measured     | Target              |         |
|                                        | Short Space         | cps                      |              |                     |         |
|                                        | Long Space          | cps                      | pu           | pu                  |         |
| POST-SURVEY VERIFICATION               |                     |                          |              |                     |         |
|                                        | Detector            | Readings                 | Measured     | Target              |         |
|                                        | Short Space         | cps                      |              |                     |         |
|                                        | Long Space          | cps                      | pu           | pu                  |         |
| Gamma Ray Calibration Report           |                     |                          |              |                     |         |
|                                        | Serial Number:      | 070559                   |              |                     |         |
|                                        | Tool Model:         | OPEN_GR                  |              |                     |         |
|                                        | Performed:          | Wed Sep 19 15:58:00 2012 |              |                     |         |
|                                        | Calibrator Value:   | 1.0                      | GAPI         |                     |         |
|                                        | Background Reading: | 0.0                      | cps          |                     |         |
|                                        | Calibrator Reading: | 1.0                      | cps          |                     |         |
|                                        | Sensitivity:        | 0.3000                   | GAPI/cps     |                     |         |