



Gamma Ray

Scale:

Company: Verdad Oil & Gas Corporation

1:240 MD

Well: Homestead 18

Depth Reference:

Field: Weld County (NAD83/TN)

Driller's Depth

County: Weld Country: United States

State: Colorado

Status:

Final Print

Surface Location:

Latitude: 040° 00' 25.920" N

Other Services:

API No: 05-123-44627

Longitude: 104° 45' 26.748" W

N/A

Job ID: 8560384

SEC:

34

TWN:

1N

RGE:

66W

Permanent Datum (P.D.): Ground Level

Elevation:

5132.00 ft

Elev. KB:

5148.00 ft

Elev. DF:

5132.00 ft

Elev. GL:

16.00 ft

Above P.D.

Log Measured From:

Rig Floor

Dates

Interval Logged

Magnetic Field Reference

Date From: 2017-05-24 Top: (ft) 1729.00

Azi Reference North: True

Dip Angle: (deg)

66.57

Date To: 2017-07-22 Bottom: (ft) 14637.00

Total Magnetic Field Strength: (nT)

52239

Spud Date: 2017-05-23

Mag to Reference North Correction: (deg)

8.35 E

Borehole Record

Casing Record

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

16.00

1729.00

9.625

36.00

16.00

1689.00

8.500

1729.00

14637.00

Mud Record

Deviation Record

Type

From (ft)

To (ft)

Hole Size (in)

Interval (ft)

Inc | Az (Start)

Inc | Az (End)

Diesel-Oil Based Mud

1729.00

14637.46

13.500

1681.41

0.39 | 311.81

5.08 | 312.60

90.06 | 166.15

8.500

12908.46

5.08 | 312.60

90.06 | 166.15

Acquisition System

Software Version

Other

Baker Hughes Cadence

RT4.1

Rig: Xtreme 20

PlotStudio

4.1.7763.3

Contractor: Xtreme

Unit: D&E

District: RMA

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Log Run Summary

| Run No | Bit Run No. | Bit Size (in) | Bit Type | Bit Gauge Length (in) | Assembly Type | Logged Interval | | Bit Depth Interval | | Date / Time | | Circ. Hours (h) |
|--------|-------------|---------------|----------|-----------------------|----------------|-----------------|-------------|--------------------|----------|------------------|------------------|-----------------|
| | | | | | | Top (ft) | Bottom (ft) | From (ft) | To (ft) | Start Logging | End Logging | |
| 2 | 2 | 8.500 | PDC | 3.00 | AutoTrak Curve | 1729.00 | 14625.00 | 1729.00 | 14637.00 | 2017-07-19 08:47 | 2017-07-22 09:31 | 65.26 |

Crew

| Name | Position | Name | Position | Name | Position | Name | Position | Name | Position |
|------|----------|------|----------|------|----------|------|----------|------|----------|
|------|----------|------|----------|------|----------|------|----------|------|----------|

| Name | Arrive | Depart | Name | Arrive | Depart | Name | Arrive | Depart |
|--------------|------------|------------|-----------------|------------|------------|------|----------|----------|
| | Wellsite | Wellsite | | Wellsite | Wellsite | | Wellsite | Wellsite |
| Eugene Igewe | 2017-07-19 | 2017-07-22 | Garrett Gerdson | 2017-07-19 | 2017-07-22 | | | |

Mud Properties Record

| Date / Time | Run No. | Measured Depth (ft) | Mud Type | Density (ppg) | Viscosity (cP) | pH | Fluid Loss (cm3) | Oil / Water | Source | Total Chlorides (ppm) | K+ (%) |
|------------------|---------|---------------------|----------------------|---------------|----------------|-----|------------------|-------------|------------|-----------------------|--------|
| 2017-07-19 05:30 | 2 | 1729.00 | Diesel-Oil Based Mud | 9.6 | 48 | N/A | 8.5 | 66/34 | Active Pit | 38500 | 0.00 |
| 2017-07-19 15:00 | 2 | 3451.00 | Diesel-Oil Based Mud | 9.6 | 48 | N/A | 8.5 | 66/34 | Active Pit | 38500 | 0.00 |
| 2017-07-20 05:30 | 2 | 6875.00 | Diesel-Oil Based Mud | 9.4 | 45 | N/A | 8.5 | 66/34 | Active Pit | 39000 | 0.00 |
| 2017-07-20 15:00 | 2 | 9066.00 | Diesel-Oil Based Mud | 9.8 | 45 | N/A | 8.0 | 66/34 | Active Pit | 38500 | 0.00 |
| 2017-07-21 05:30 | 2 | 10297.00 | Diesel-Oil Based Mud | 9.8 | 45 | N/A | 8.0 | 67/33 | Active Pit | 39000 | 0.00 |
| 2017-07-21 15:00 | 2 | 12140.00 | Diesel-Oil Based Mud | 9.8 | 48 | N/A | 8.0 | 66/34 | Active Pit | 36500 | 0.00 |
| 2017-07-22 05:00 | 2 | 13909.00 | Diesel-Oil Based Mud | 9.8 | 49 | N/A | 8.0 | 66/34 | Active Pit | 38000 | 0.00 |

Equipment and Service Data

| Run No. | Tool | Serial Number | Measurement | Sensor Offset (ft) | Bit Offset (ft) | Max O.D. (in) | Min I.D. (in) |
|---------|---------|---------------|----------------------|--------------------|-----------------|---------------|---------------|
| 2 | ATC_SU | 12187651 | Near Bit Inclination | 5.93 | 6.69 | 7.000 | 4.330 |
| 2 | ATC_SU | 12187651 | Near Bit VSS | 5.93 | 6.69 | 7.000 | 4.330 |
| 2 | ATC_MWD | 12304801 | Gamma (single) | 2.78 | 12.86 | 7.000 | 3.250 |
| 2 | ATC_MWD | 12304801 | Directional (mag) | 12.26 | 22.34 | 7.000 | 3.250 |

Service and Tool Mnemonics

| Mnemonic | Name | Description |
|----------|----------|-------------------------------|
| ATC_SU | ATC_SU | Auto Trak Curve Steering Unit |
| ATC_MWD | ATC_MWD | Auto Trak Curve MWD |
| ATC_LCPM | ATC_LCPM | Auto Trak Curve LCPM |

Comments

| | |
|---|---|
| 1 | Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified. |
| 2 | Baker Hughes LWD Run 2 utilized 6 3/4 inch Navigamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1729 to 14815 feet MD (1725 to 7550 feet TVD). |


Remarks

| Number | Measured Depth (ft) | Hole Section (in) | Run No. | Remark |
|--------|---------------------|-------------------|---------|---|
| 1 | 1729.00 | 8.500 | 2 | Baker Hughes LWD began logging services at 1729 feet MD (1725 feet TVD) per client request. |
| 2 | 14630.00 | 8.500 | 2 | The interval from 14624 to 14637 feet MD (7550 feet TVD) was not logged due to sensor to bit offset at well TD. |

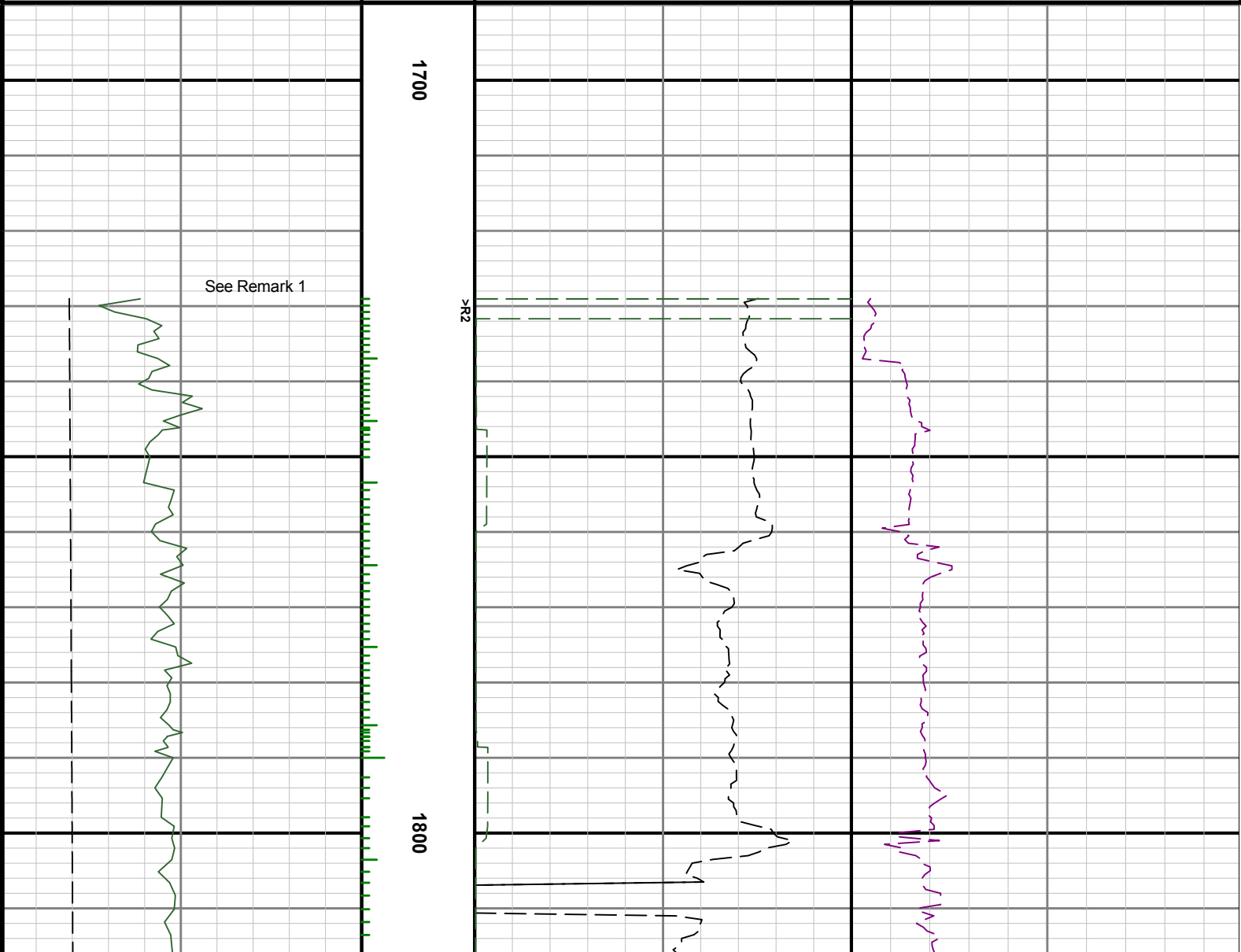
Curve Mnemonics

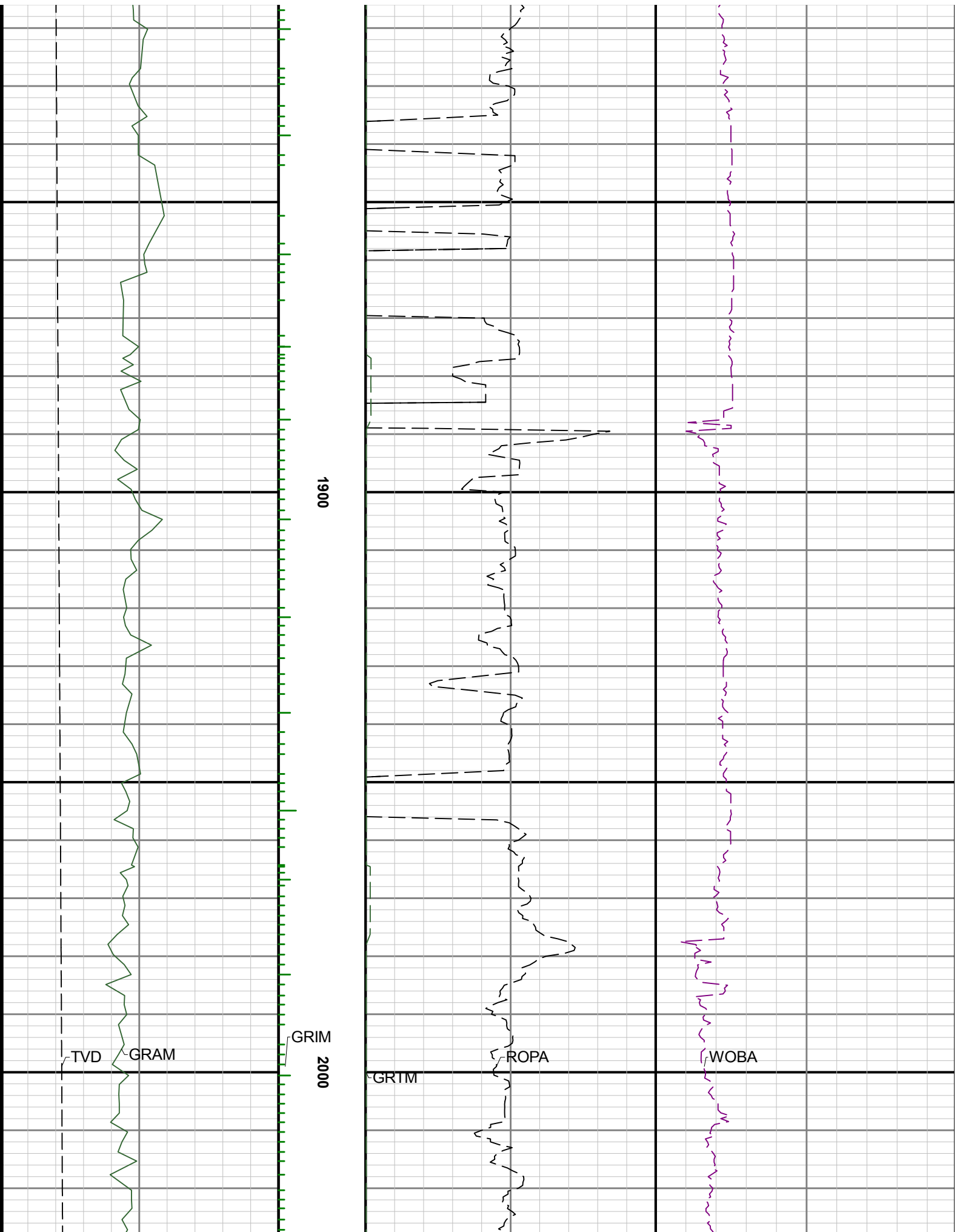
| Presented Curves | Description | Units |
|------------------|---|----------|
| ROPA | Depth Averaged ROP 3 ft Average | ft/h |
| TVD | True Vertical Depth | ft |
| WOBA | Weight On Bit, Average 1 ft Average | klb |
| GRAM | OnTrak - Gamma Ray - Apparent - Memory 0.5 ft Average | API |
| GRIM | OnTrak - Gamma Ray - Data Point Indicator - Memory | unitless |
| GRTM | OnTrak - Gamma Ray - Time Since Drilled - Memory | min |

| | | |
|-------|---|------|
| GRADM | OnTrak - Gamma Ray - Apparent - Down Quadrant - Memory 0.5 ft Average | API |
| GRAUM | OnTrak - Gamma Ray - Apparent - Up Quadrant - Memory 0.5 ft Average | API |
| TCDM | Downhole Temperature | degF |

| | | | |
|---|------------------------------|---------------------|------------------|
| <div> <div>  </div> <div> <div>Company</div> <div>Well</div> <div>Interval</div> <div>Created</div> </div> </div> | Verdad Oil & Gas Corporation | | |
| | Homestead 18 | | |
| | Date From: | 2017-05-24 05:13:28 | Top: 16.00 |
| | Date To: | 2017-07-22 03:24:55 | Bottom: 14638.00 |
| | | 2017-07-23 00:42:23 | |

| | | | |
|--|---------------|--|-----------------------------------|
| Gamma Ray Apparent 0.5 ft Average [GRAM] | MD 1:240 feet | Depth Averaged ROP 3 ft Average [ROPA] | Weight On Bit 1 ft Average [WOBA] |
| 0 250 | | 1200 0 | 0 50 |
| API | | ft/h | klb |
| Gamma Ray Apparent UP 0.5 ft Average [GRAUM] | | Time Since Drilled [GRTM] | Downhole Temperature [TCDM] |
| 0 250 | | 0 600 | 0 300 |
| API | | min | degF |
| Gamma Ray Apparent DOWN 0.5 ft Average [GRADM] | | | |
| 0 250 | | | |
| API | | | |
| True Vertical Depth [TVD] | | | |
| 0 9000 | | | |
| ft | | | |

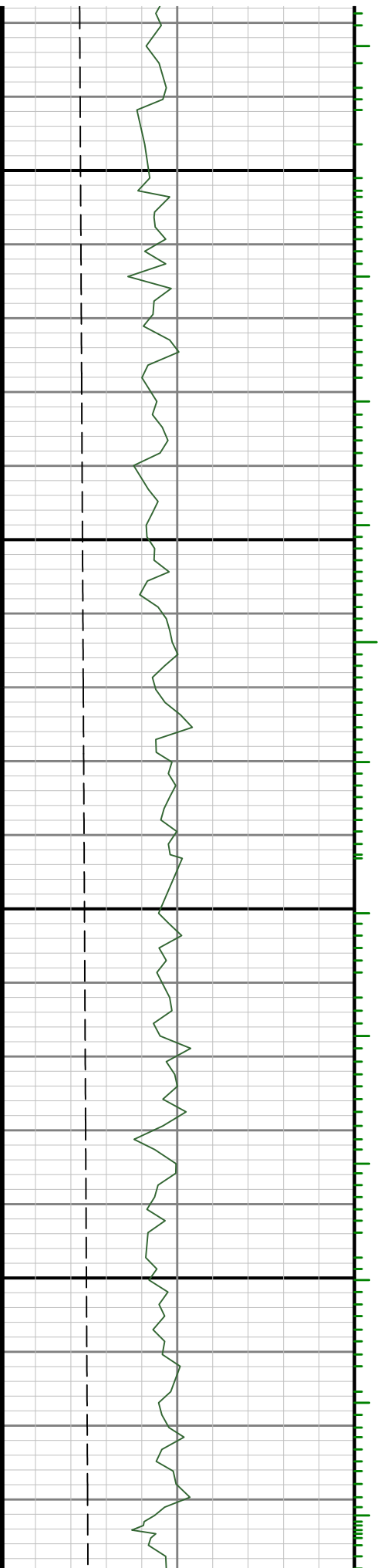


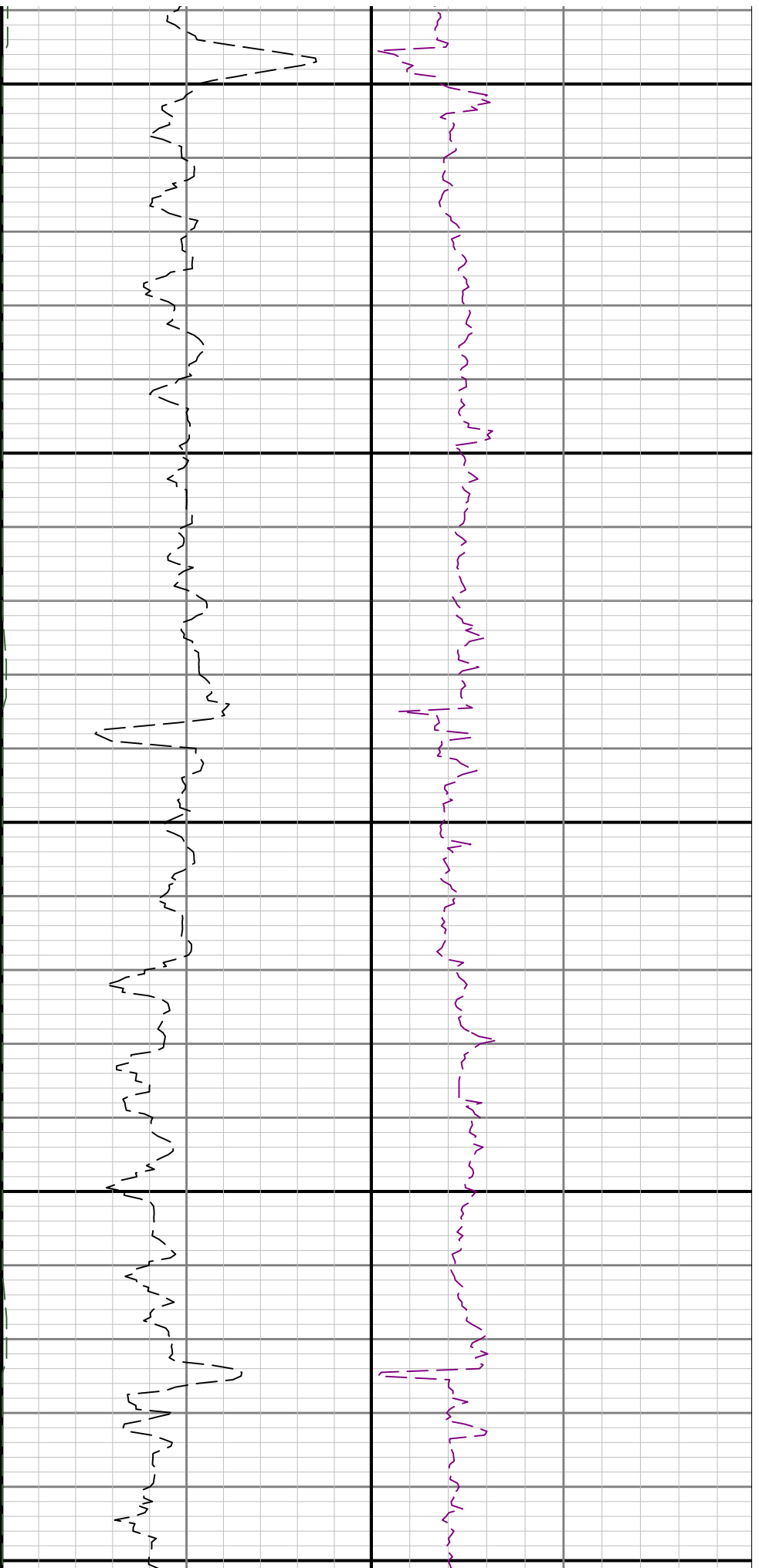




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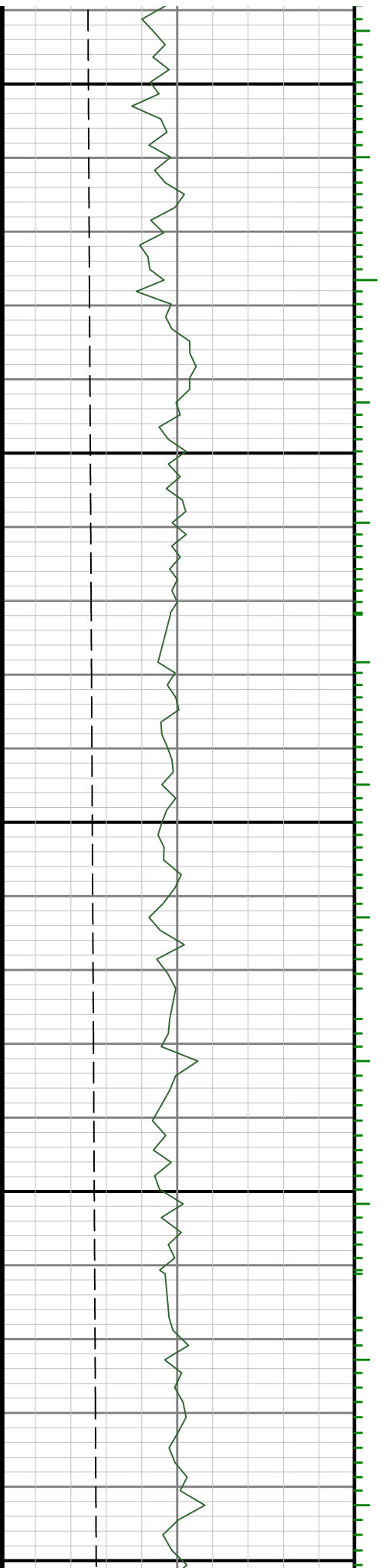
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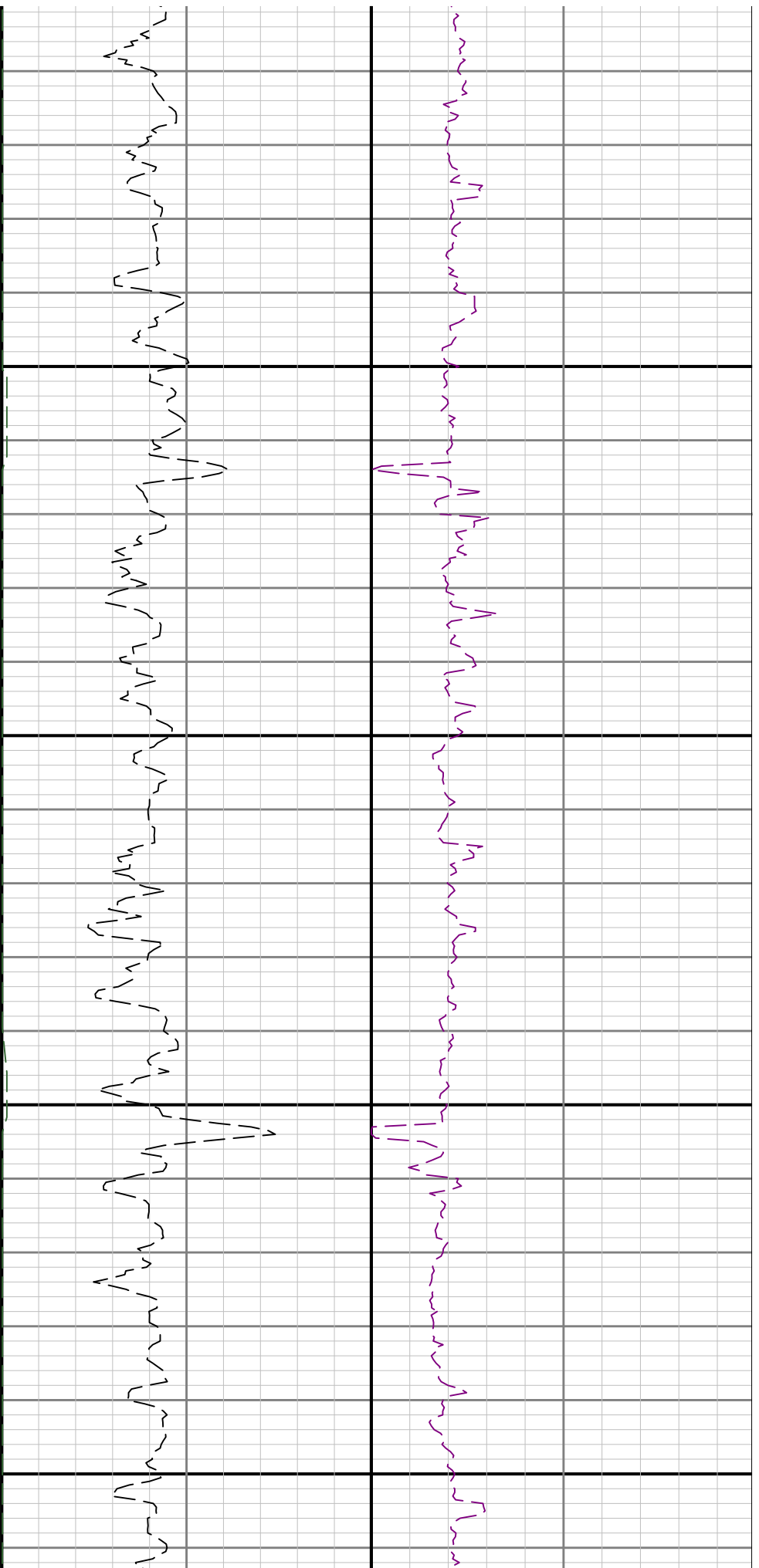




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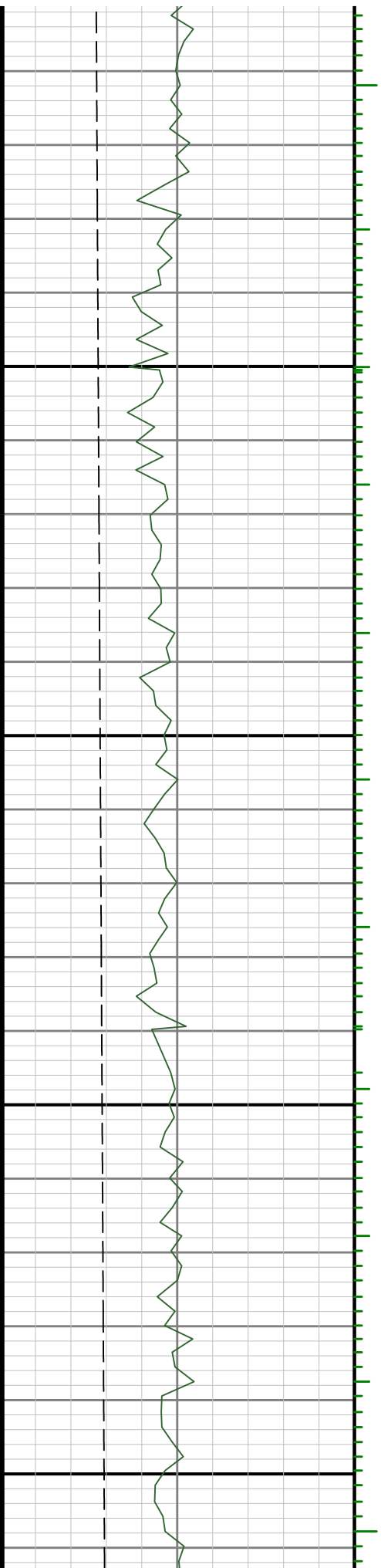
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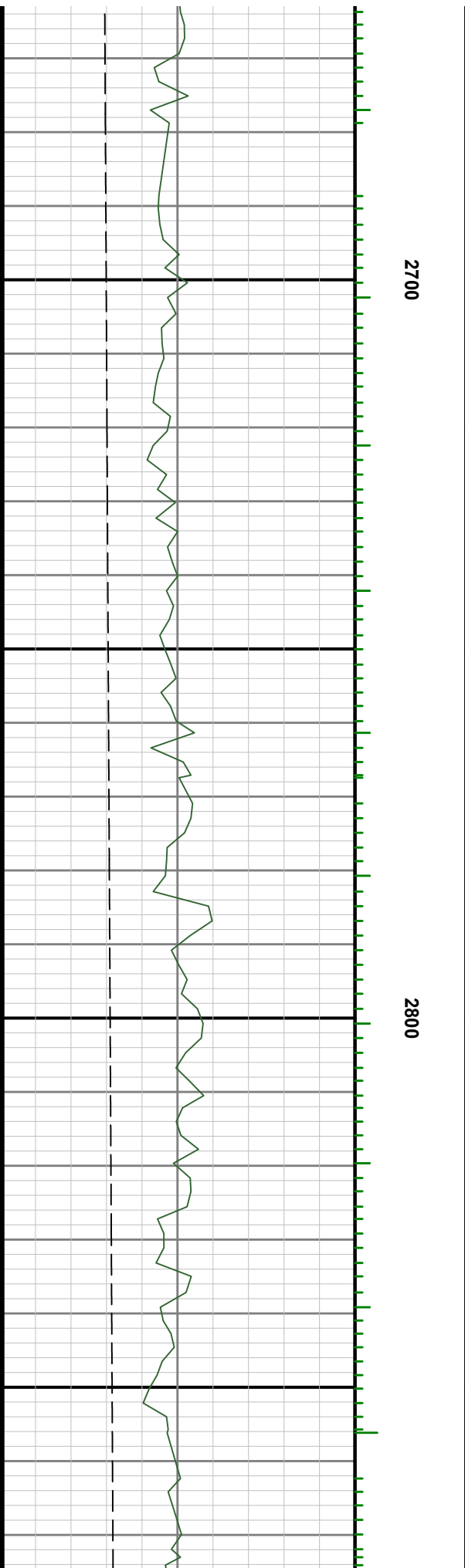
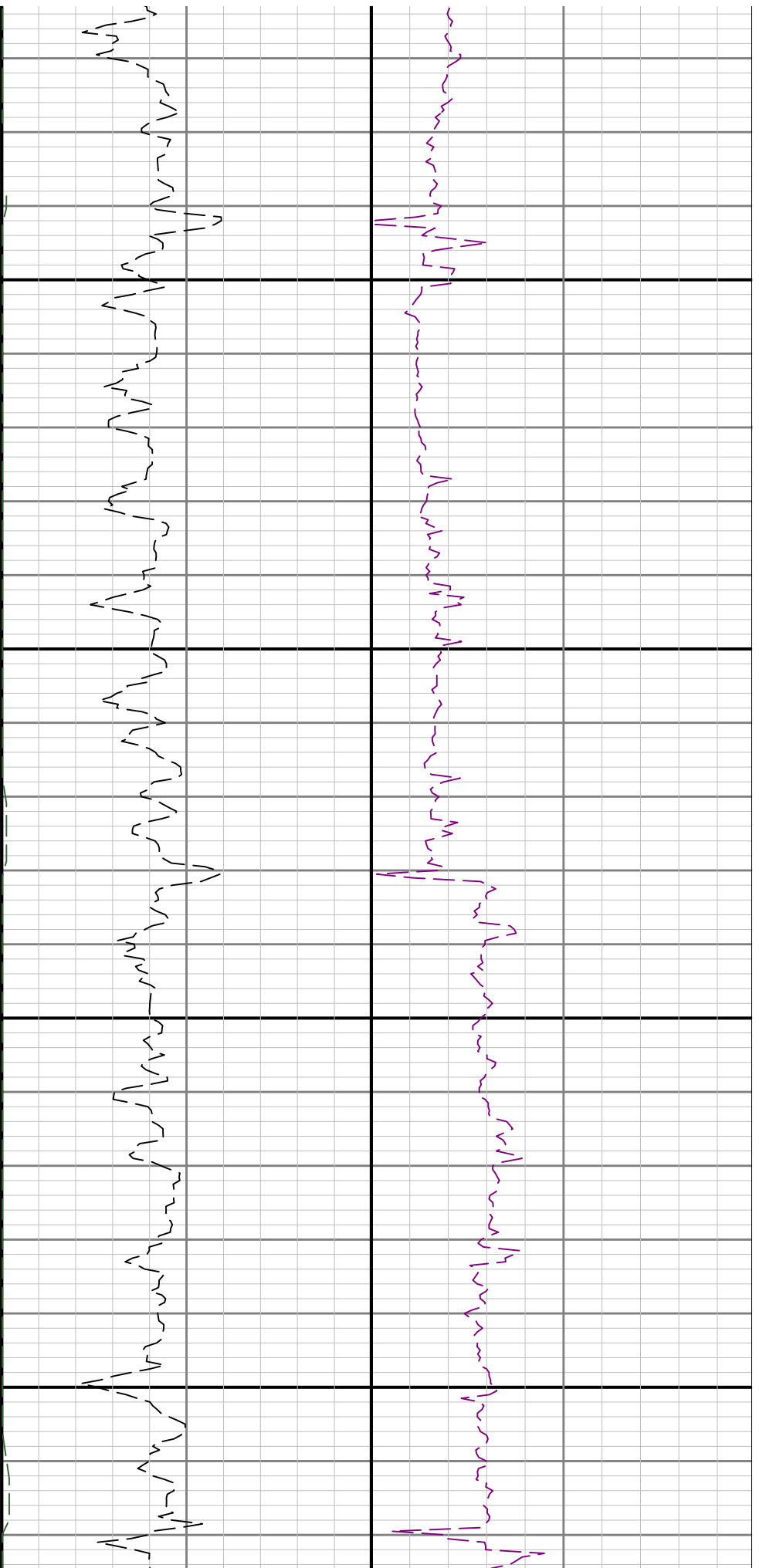


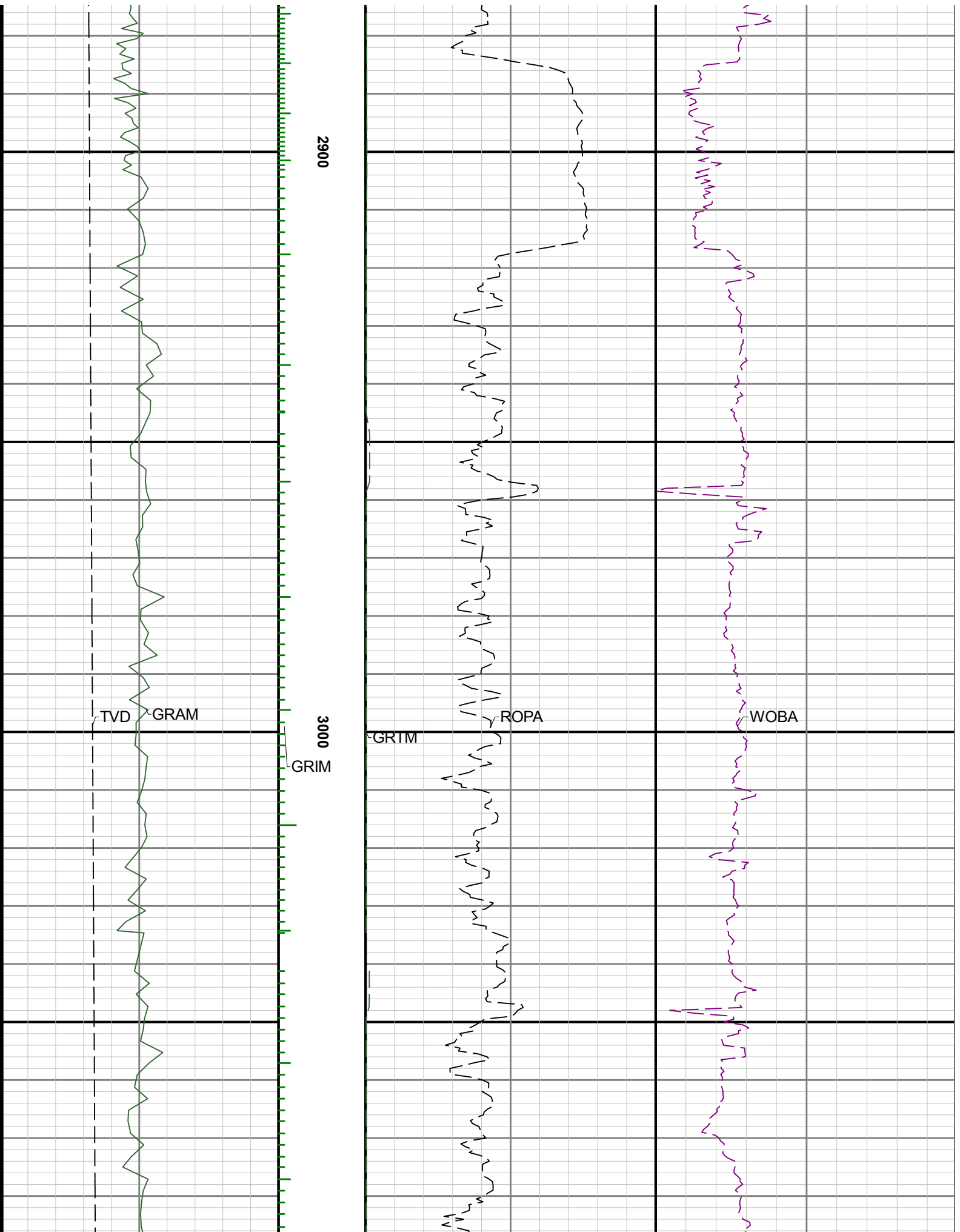


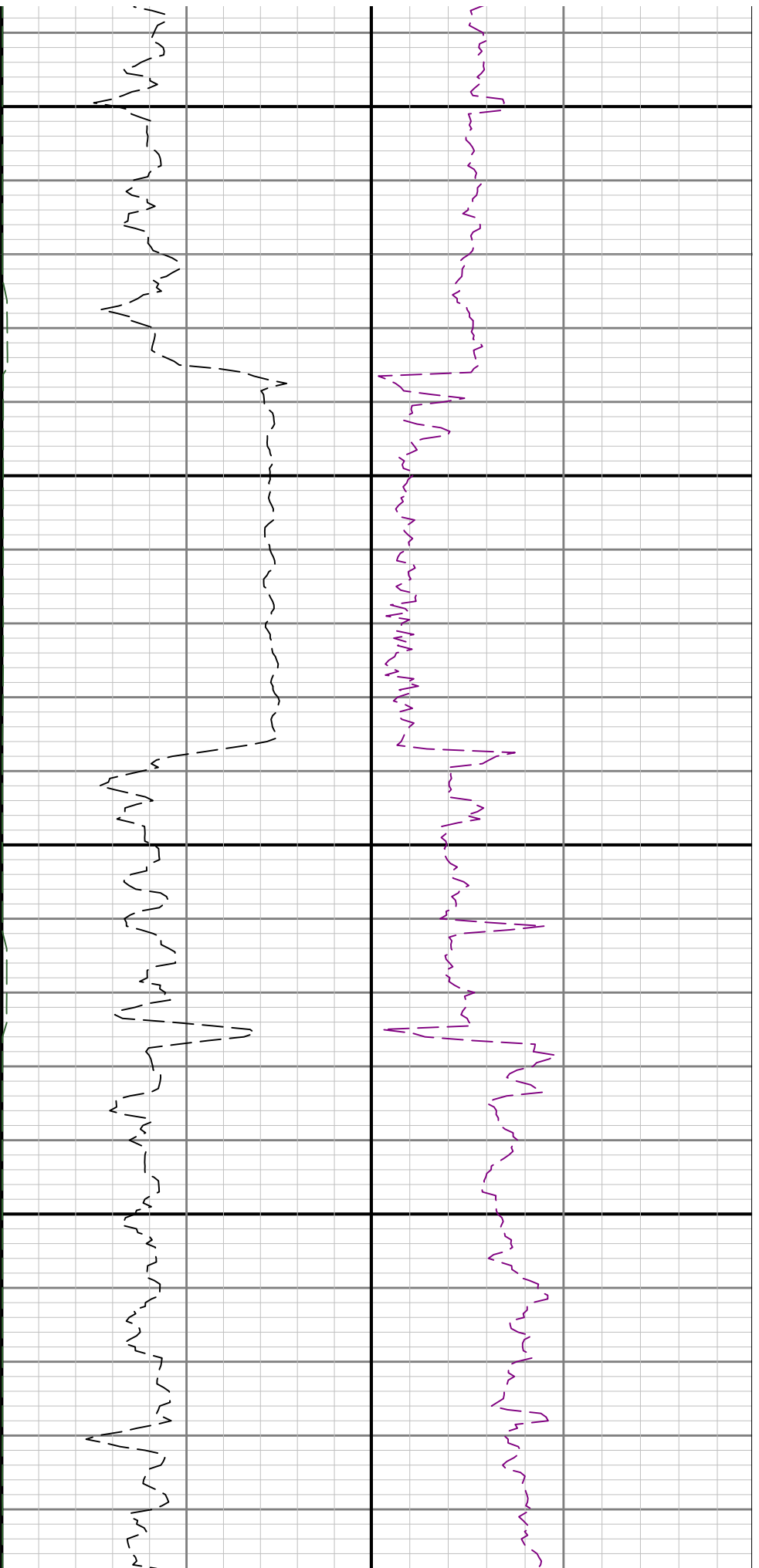
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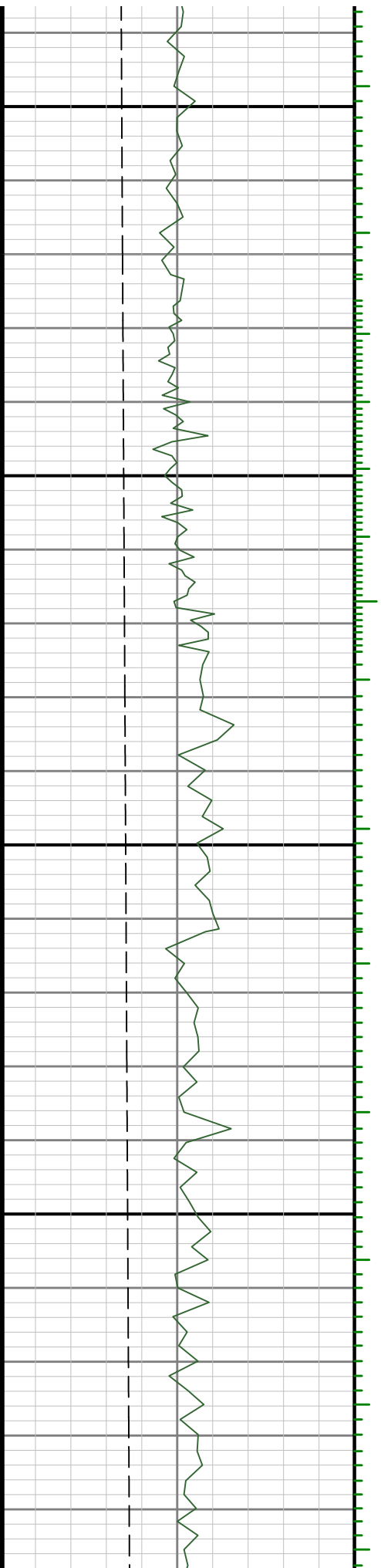


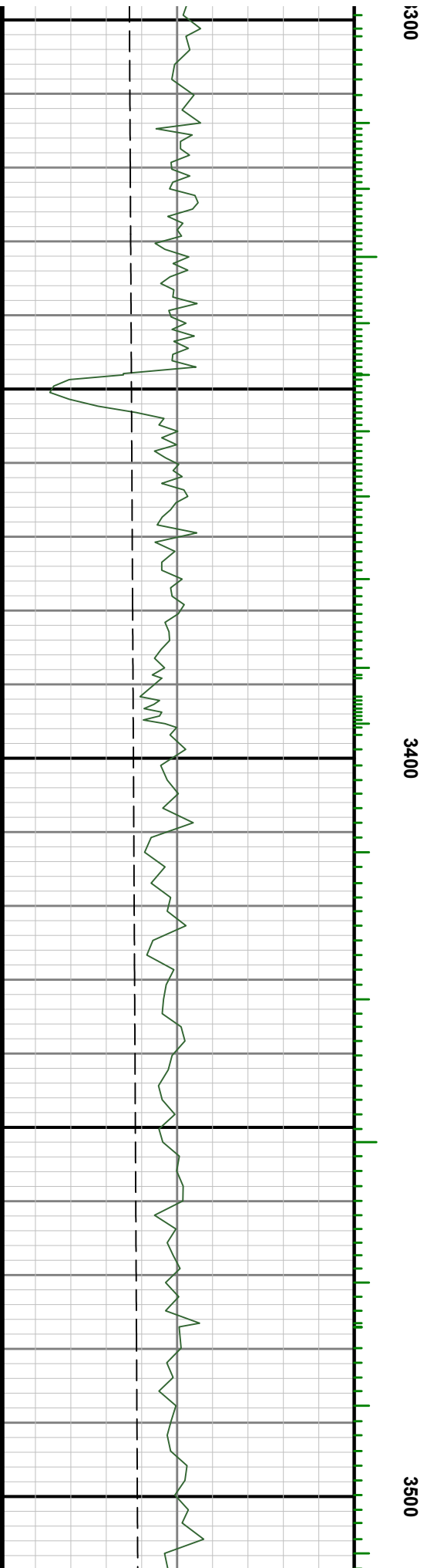
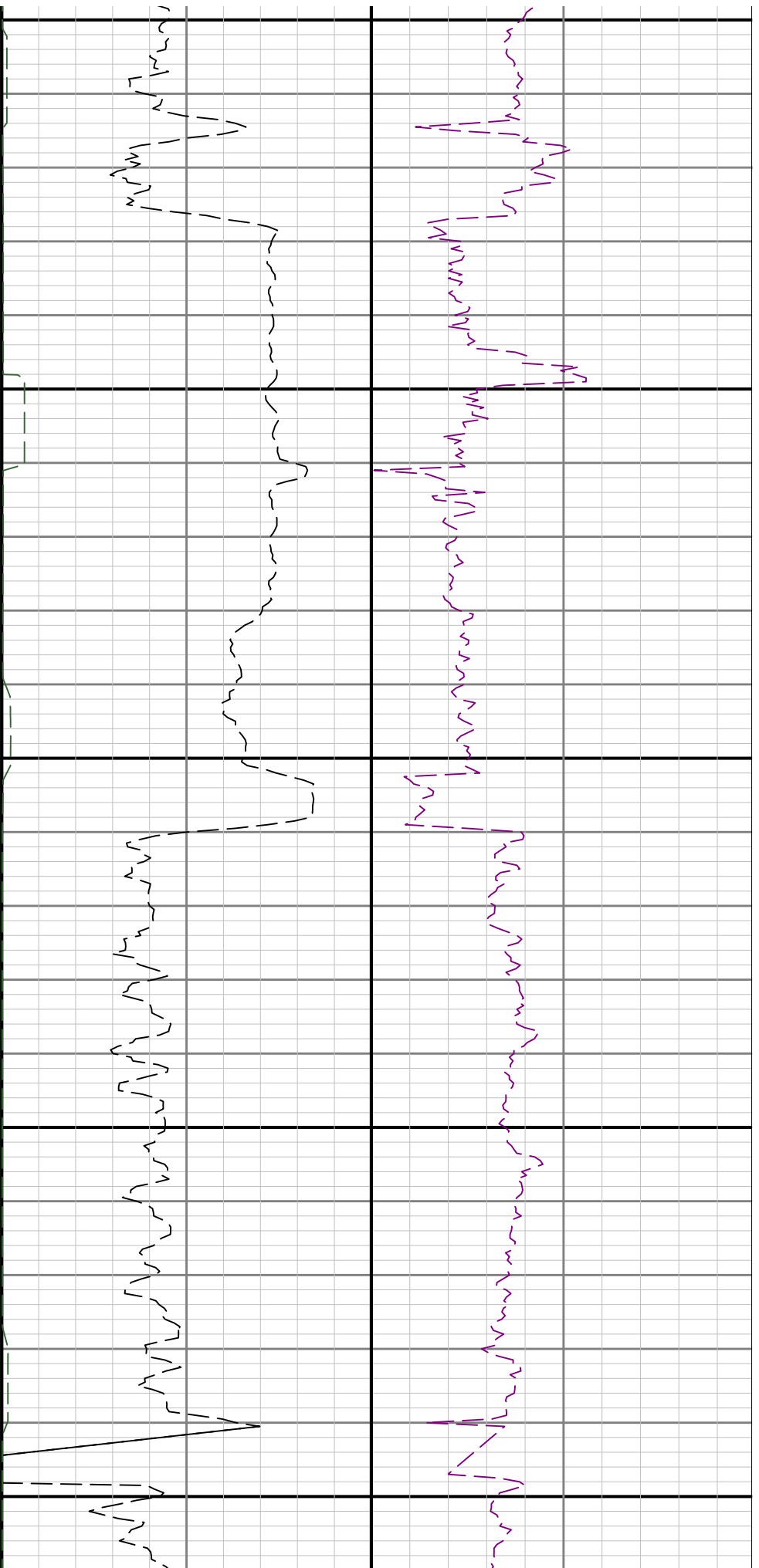


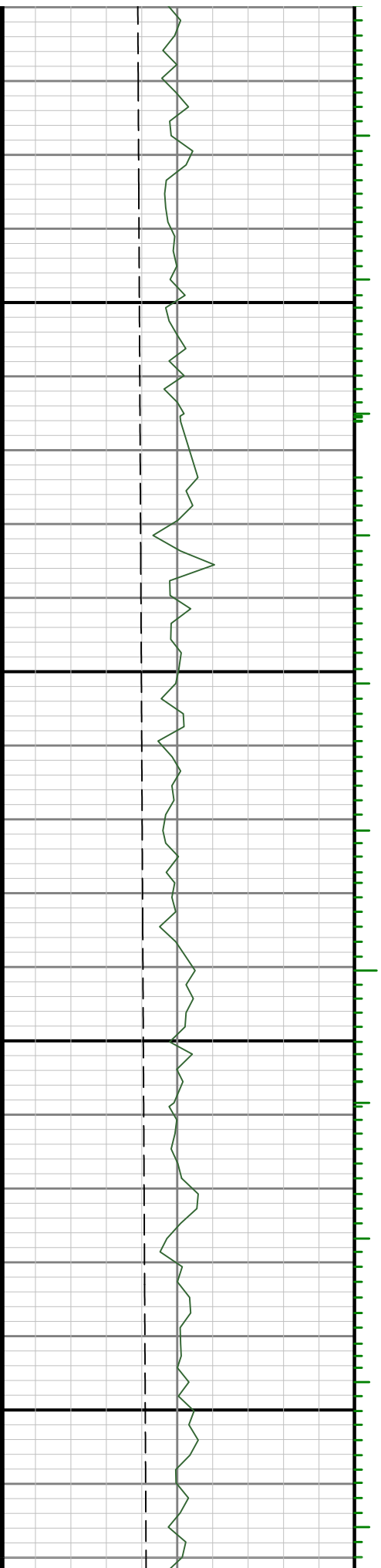
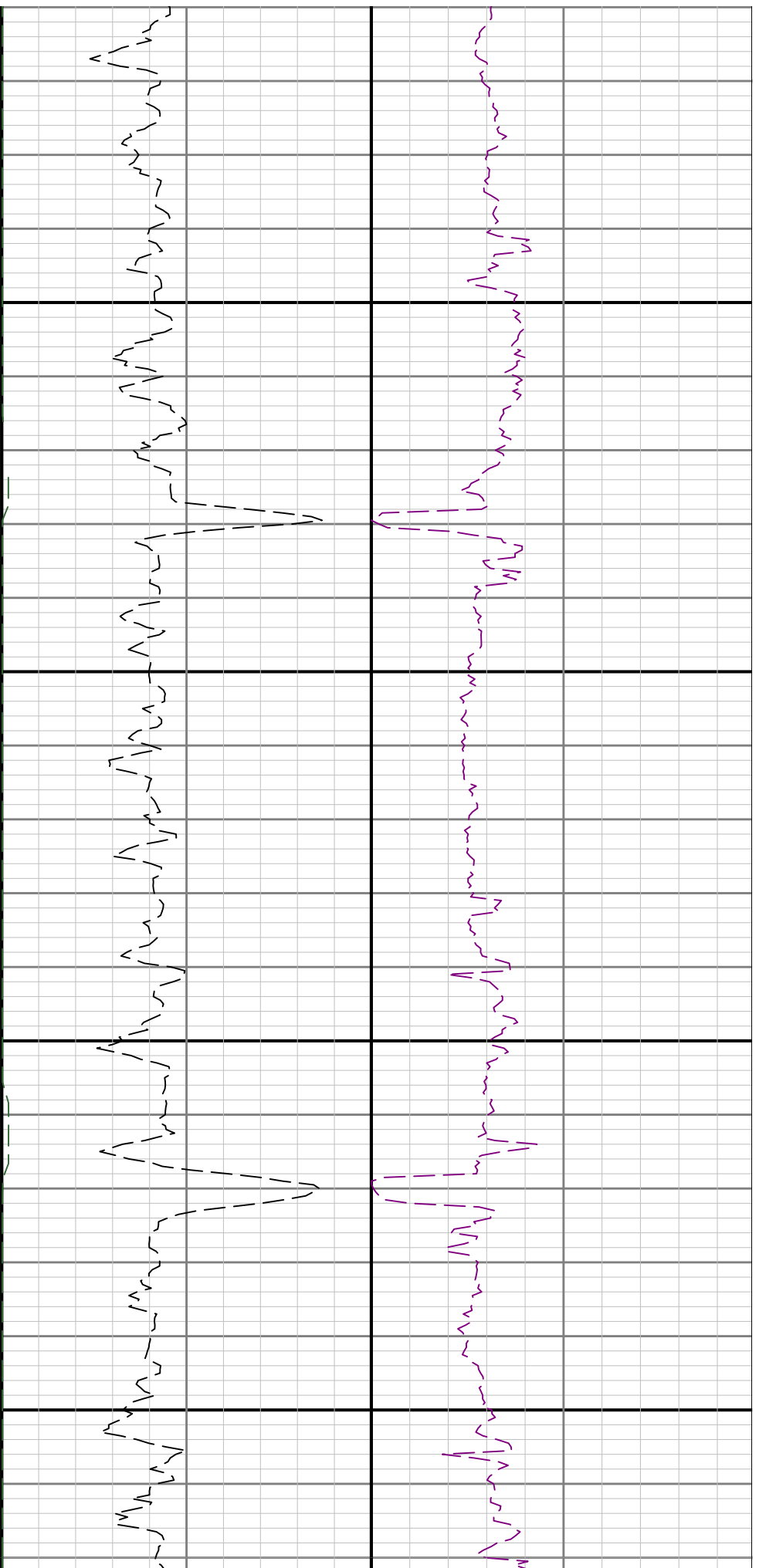


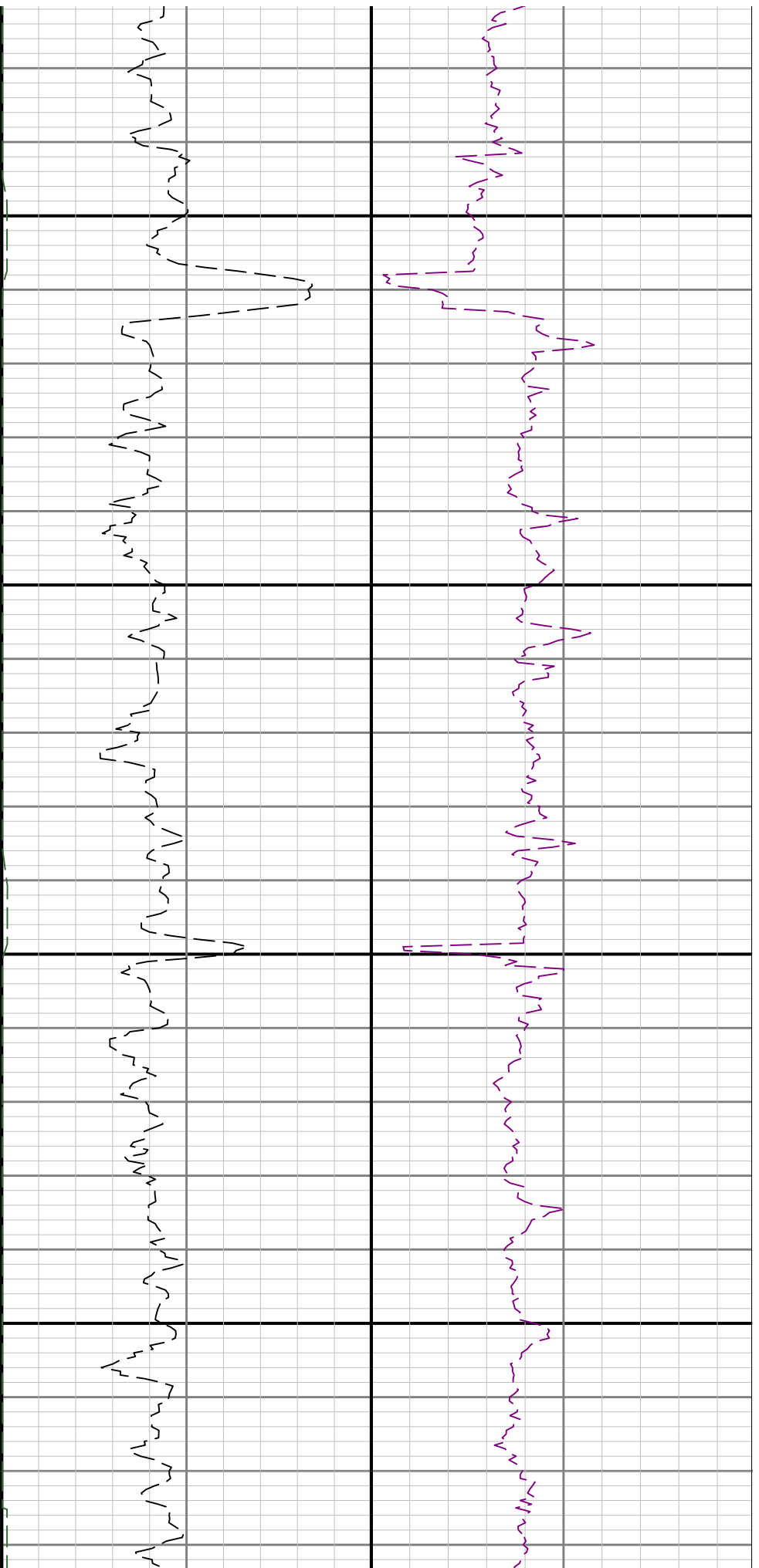
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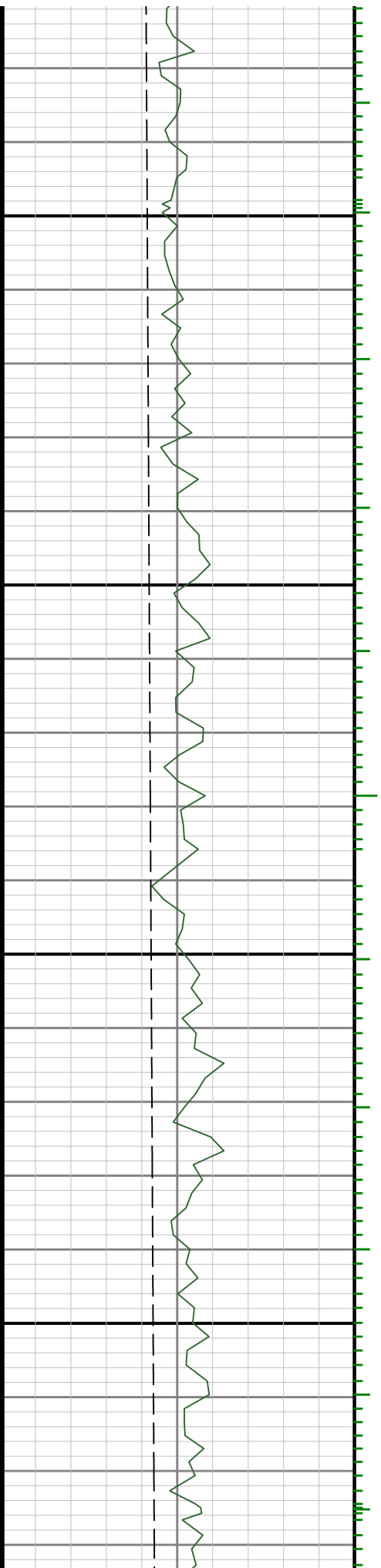


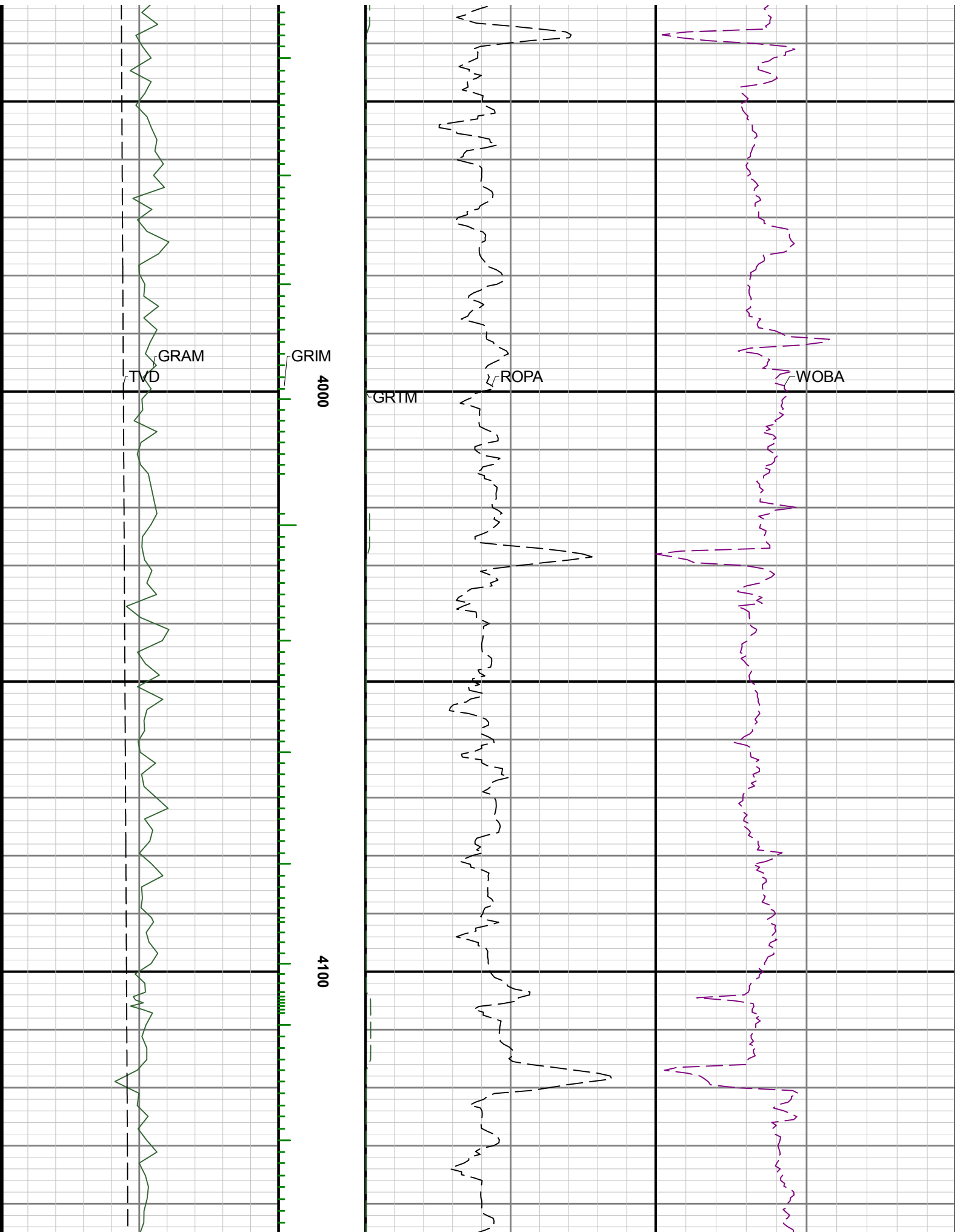


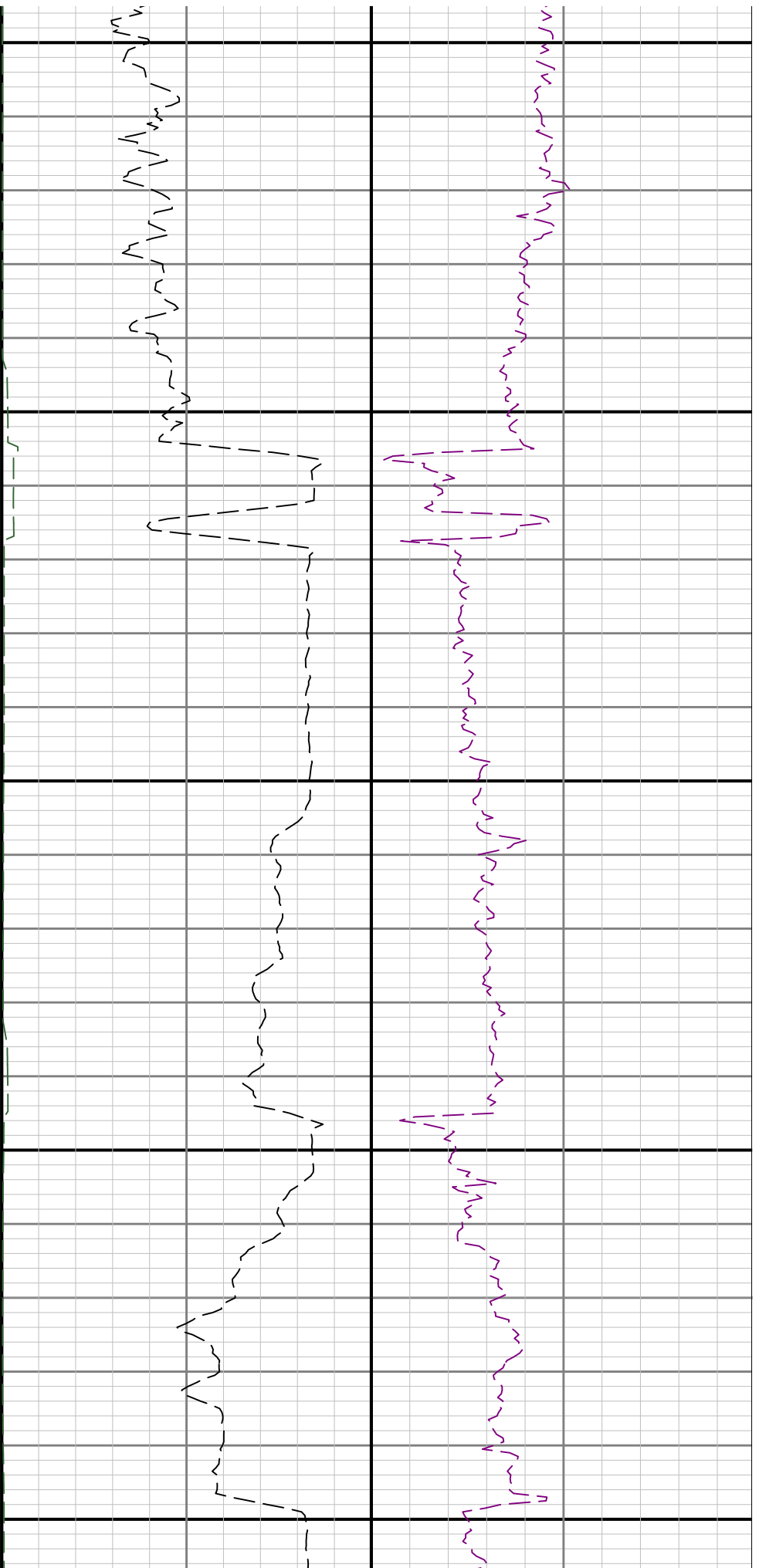


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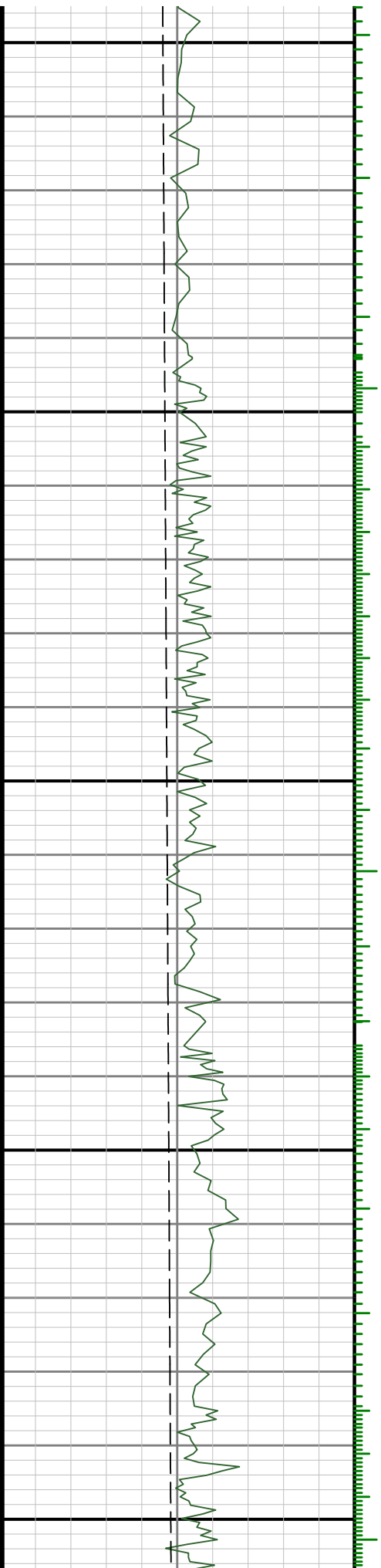


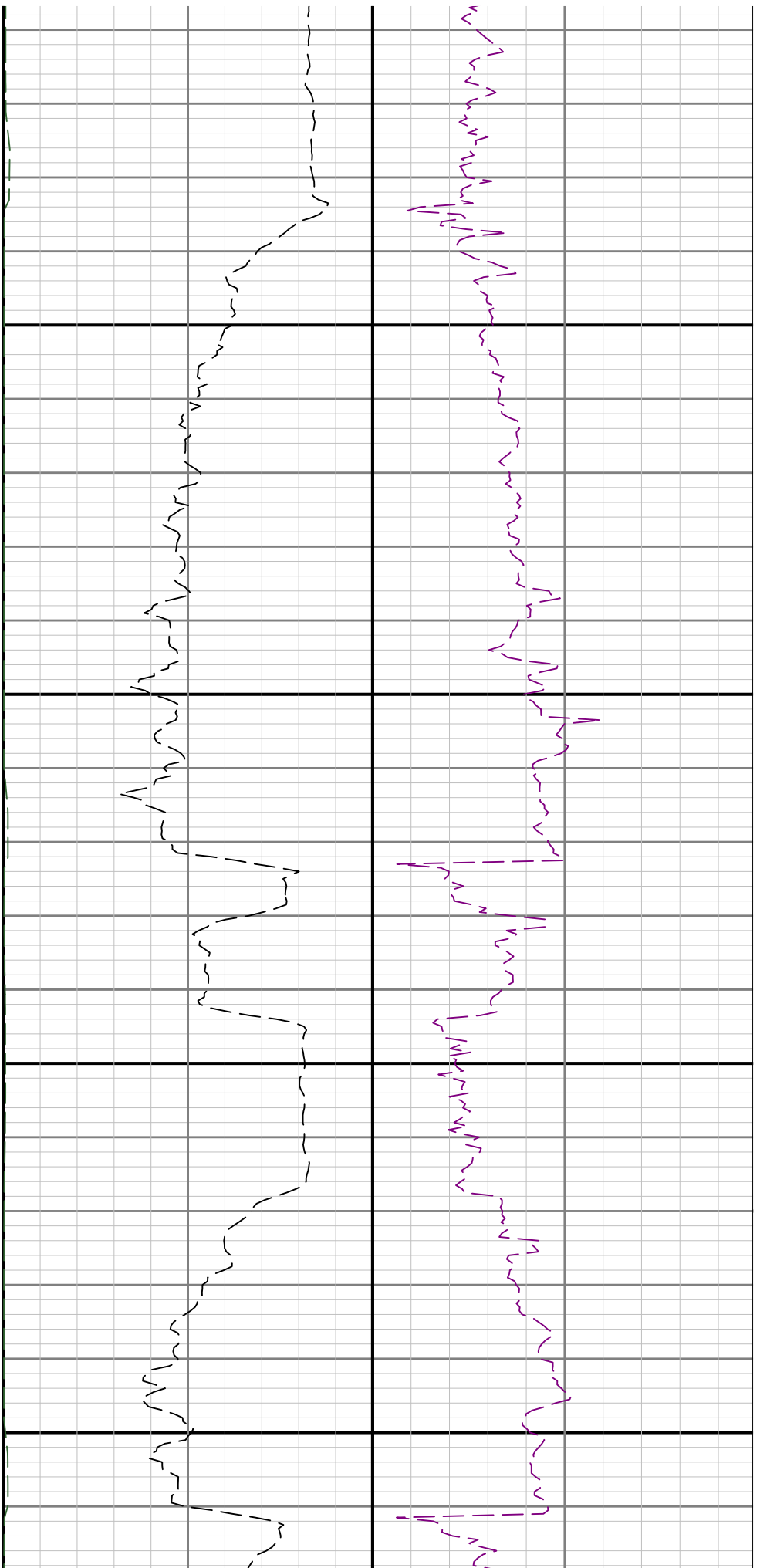




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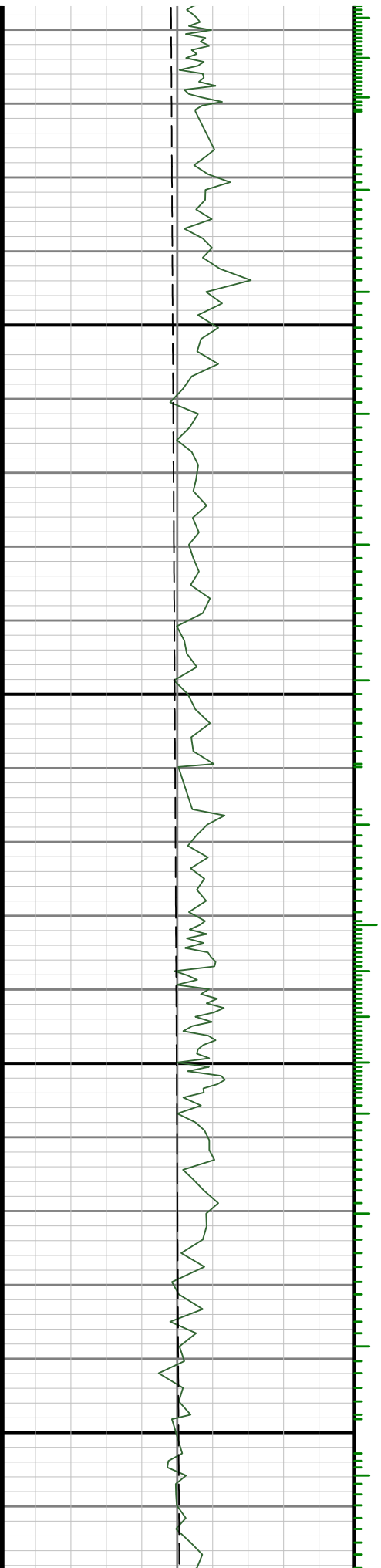
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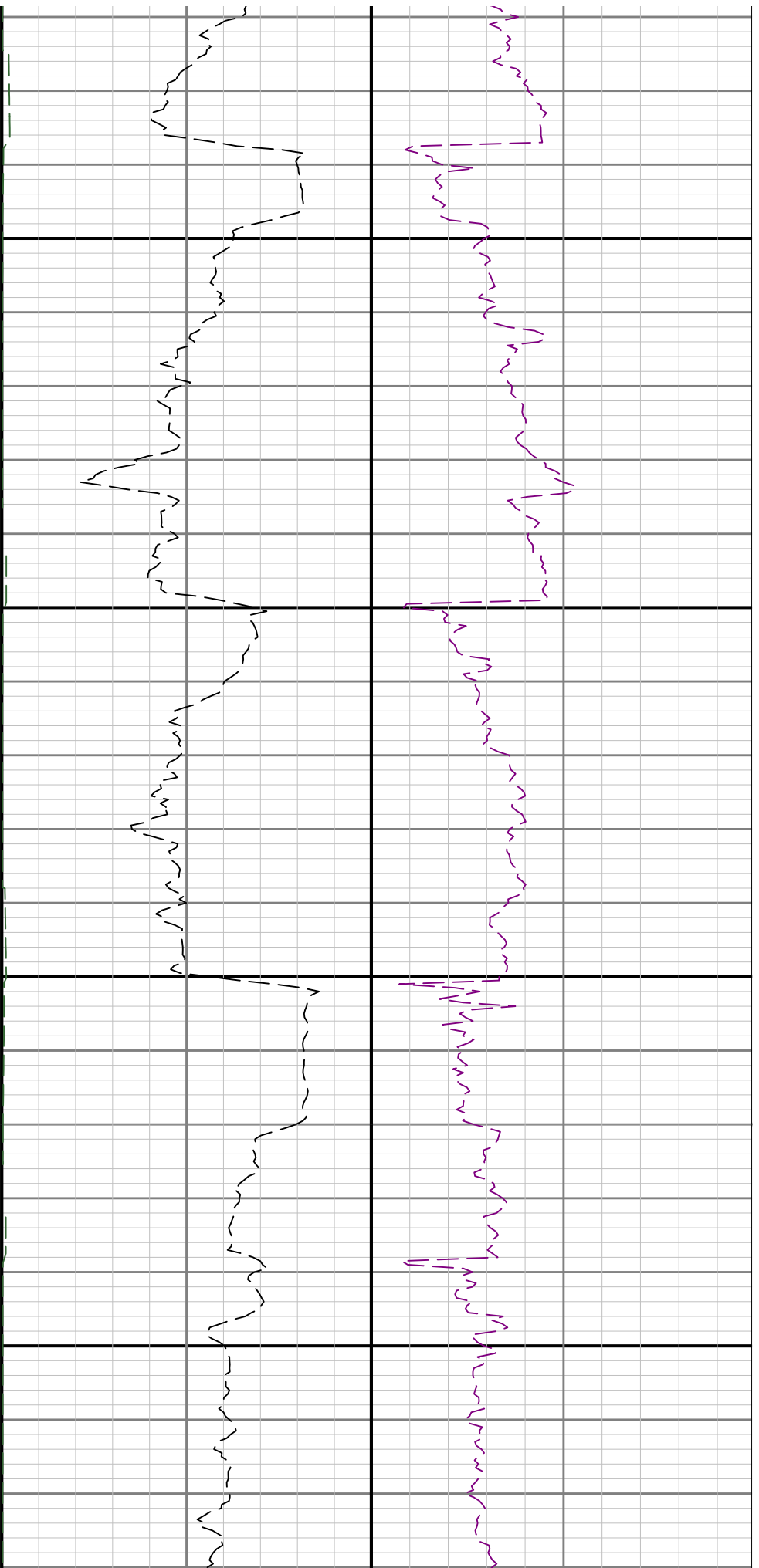




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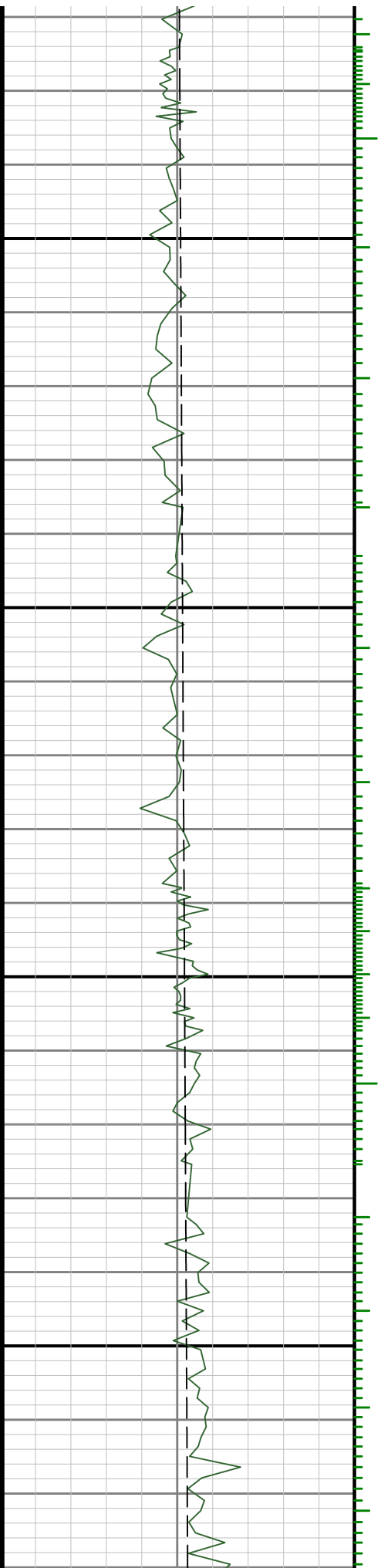
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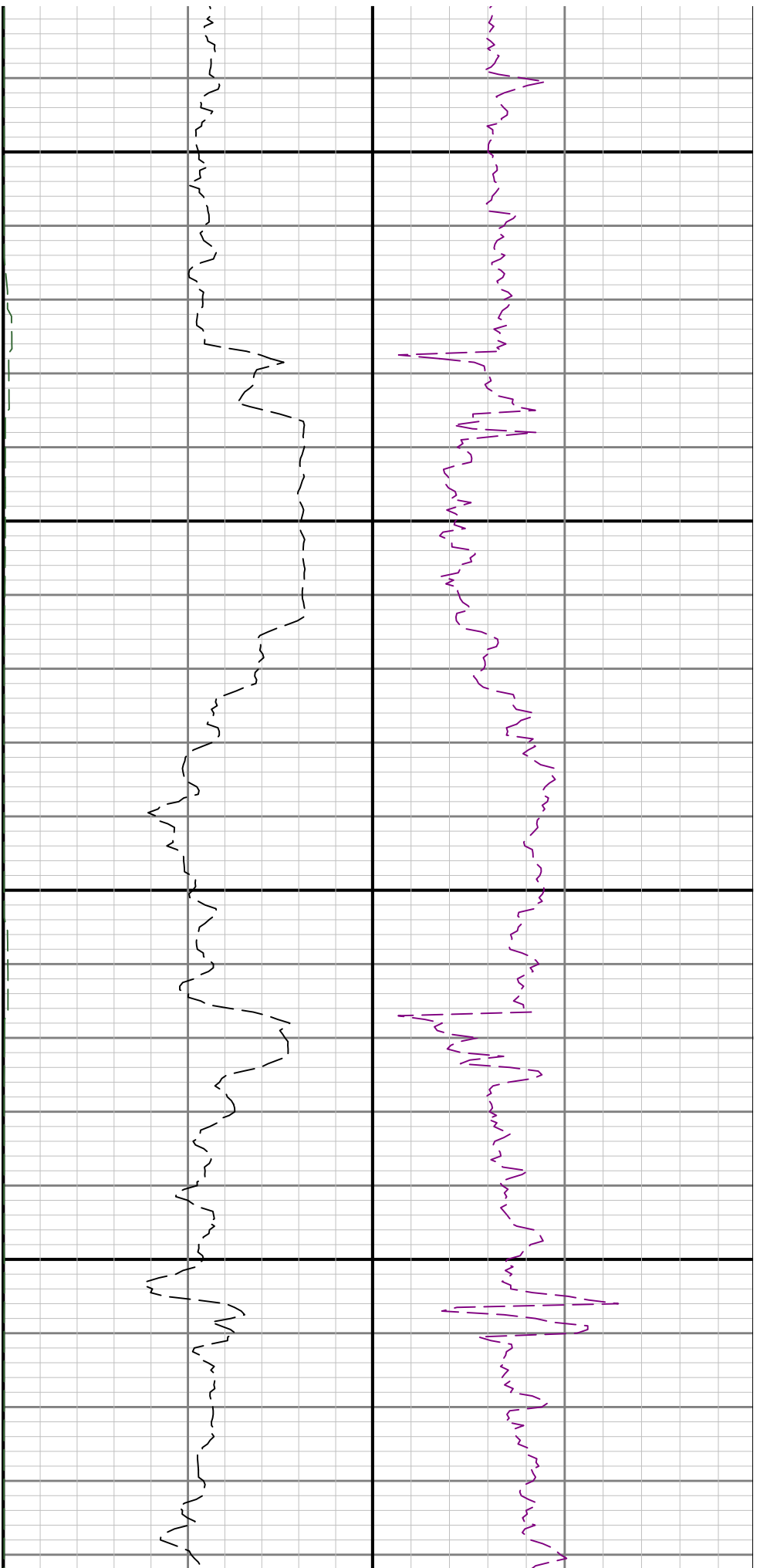




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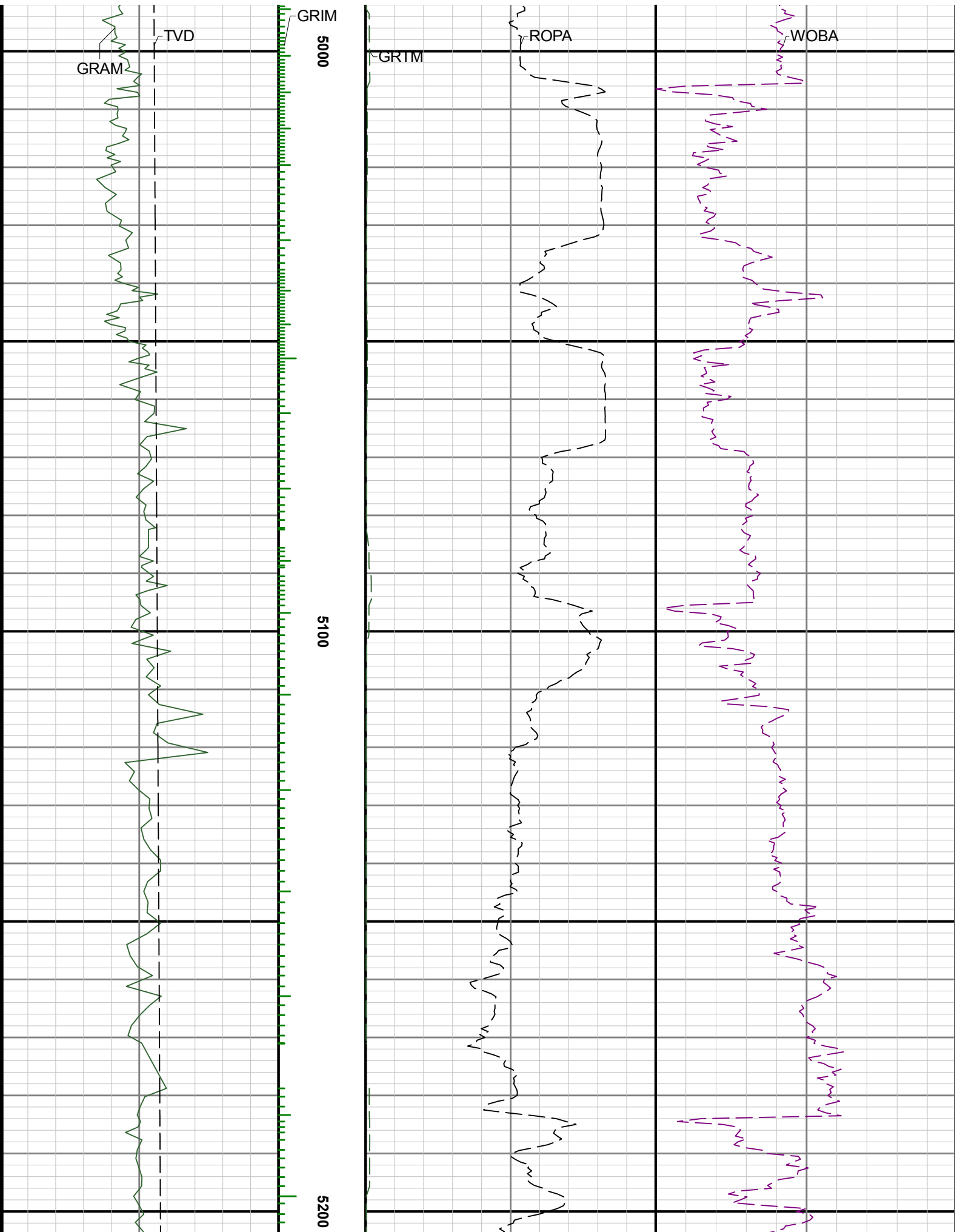
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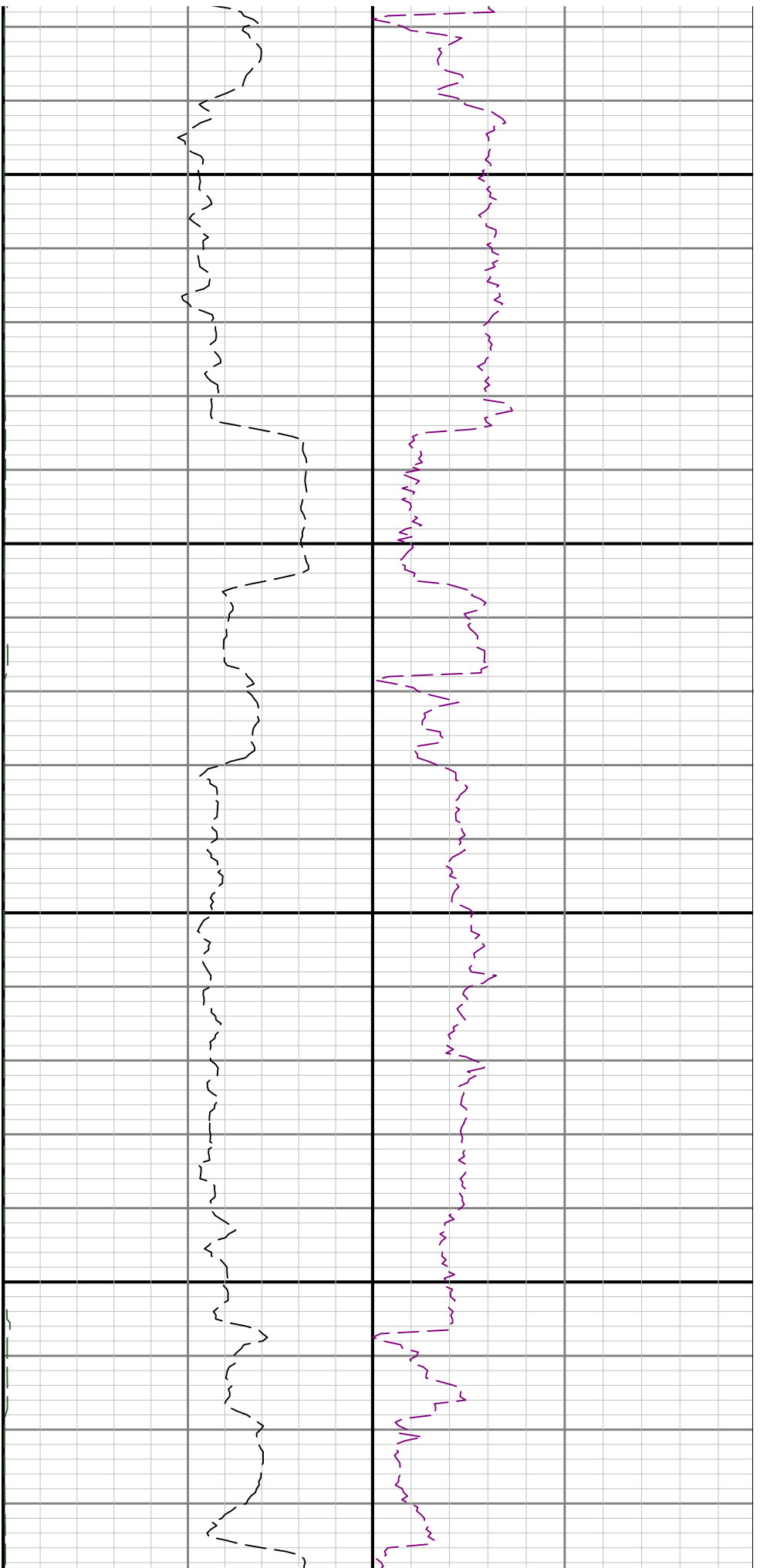




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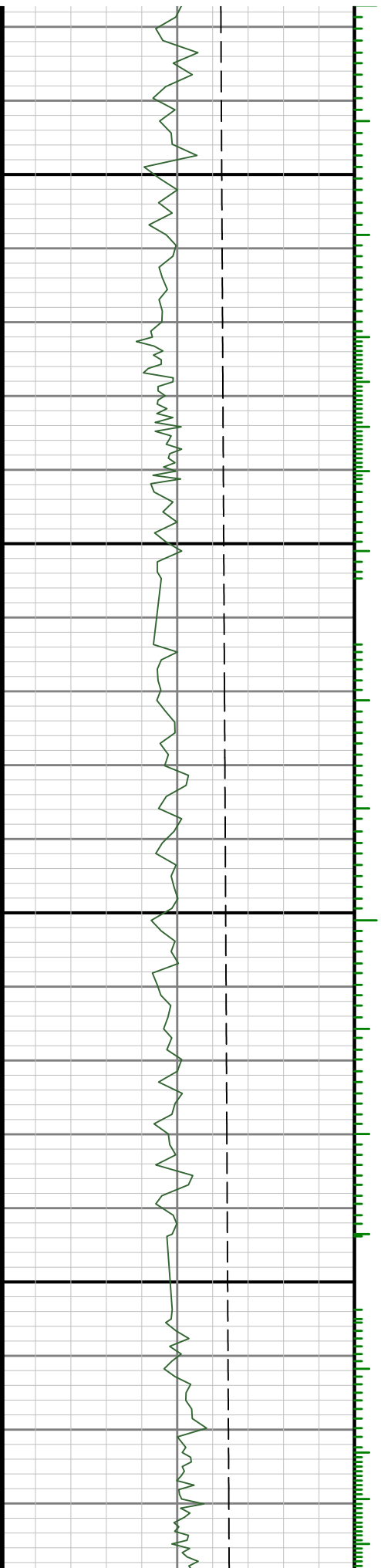
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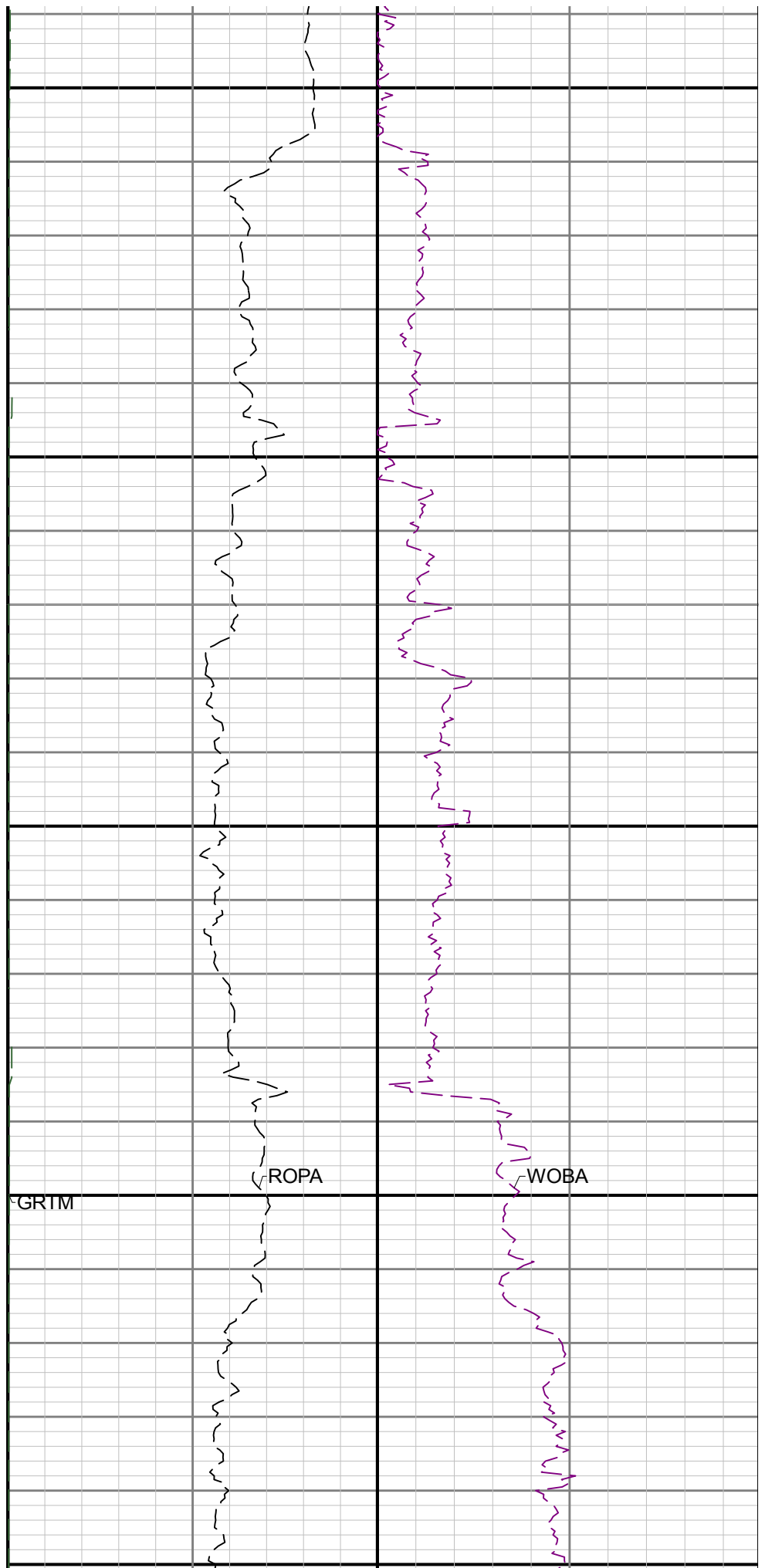
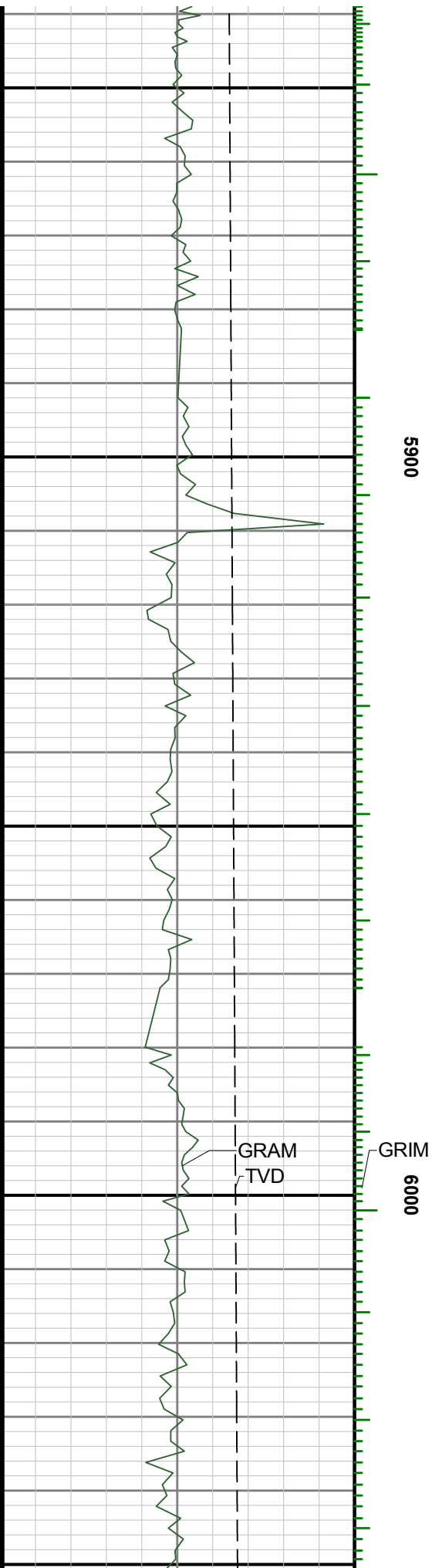


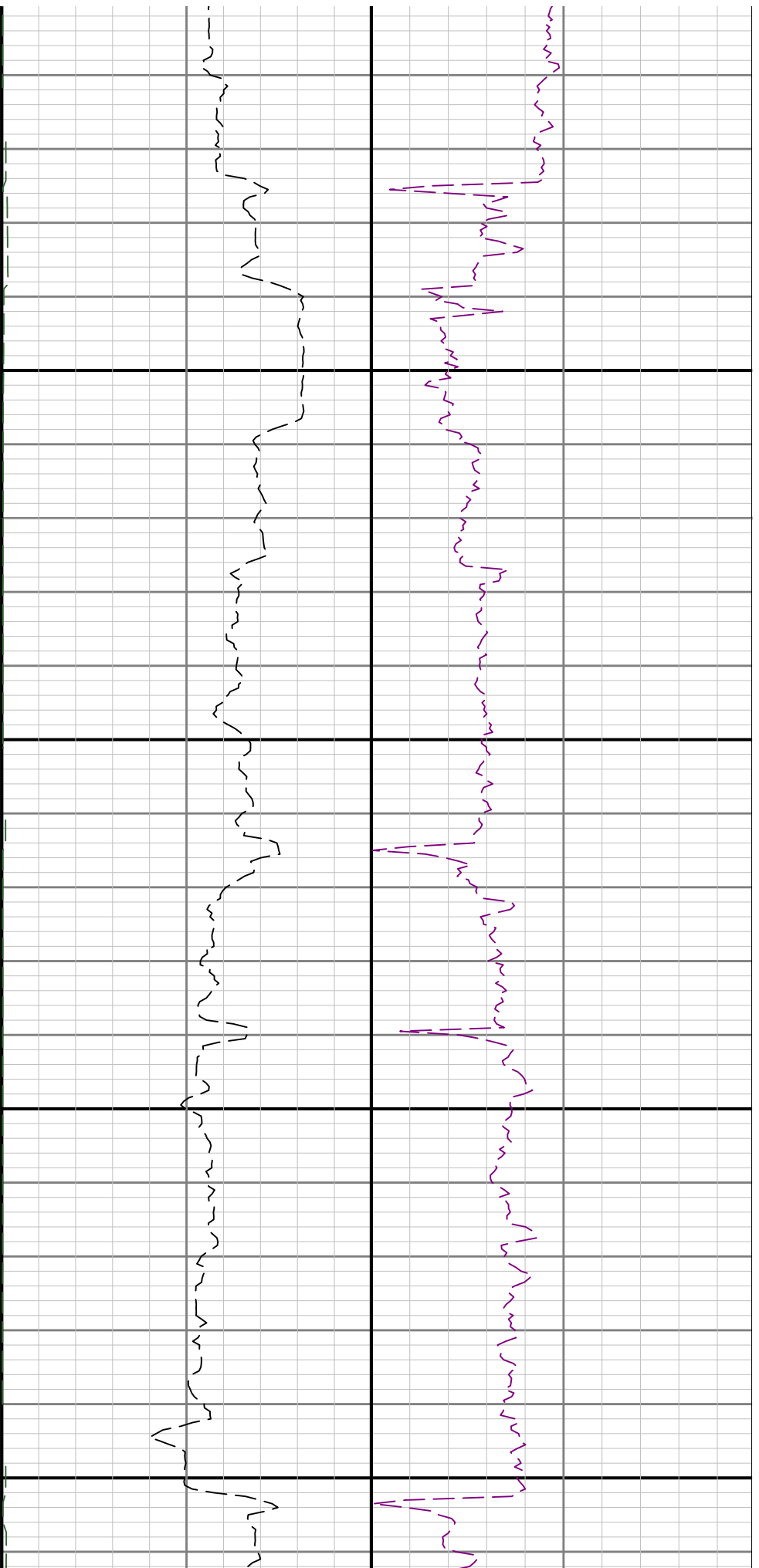


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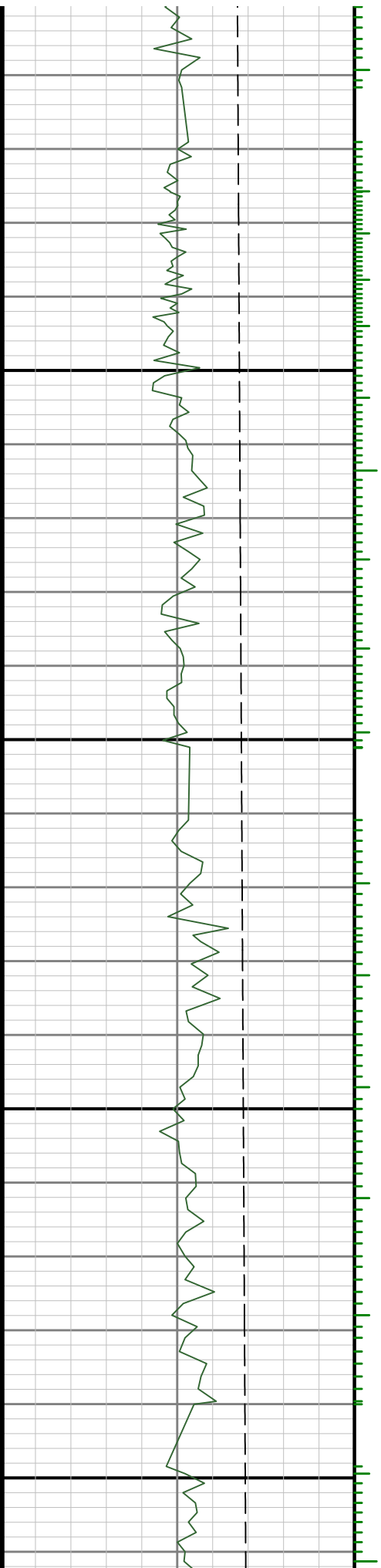


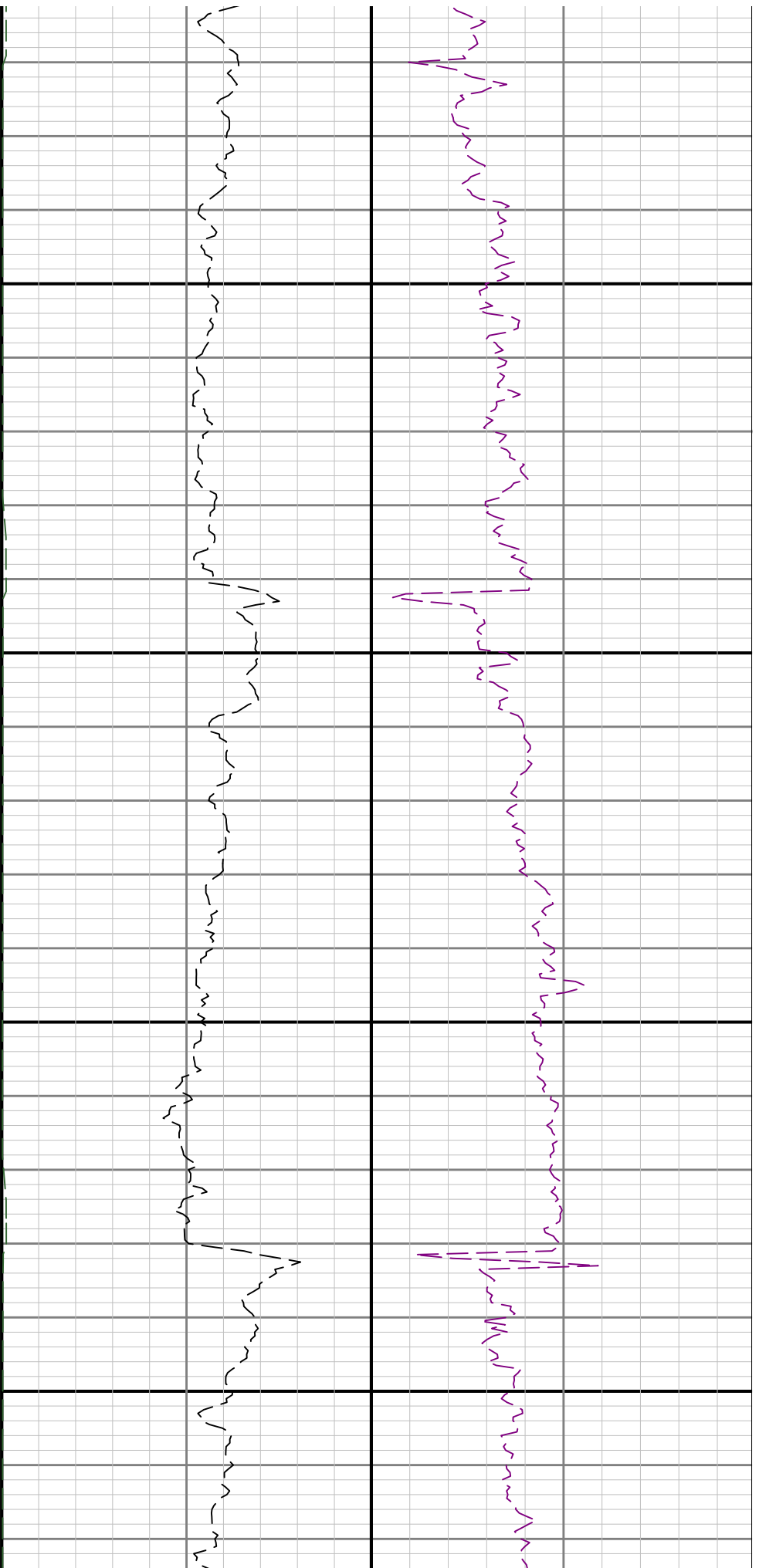




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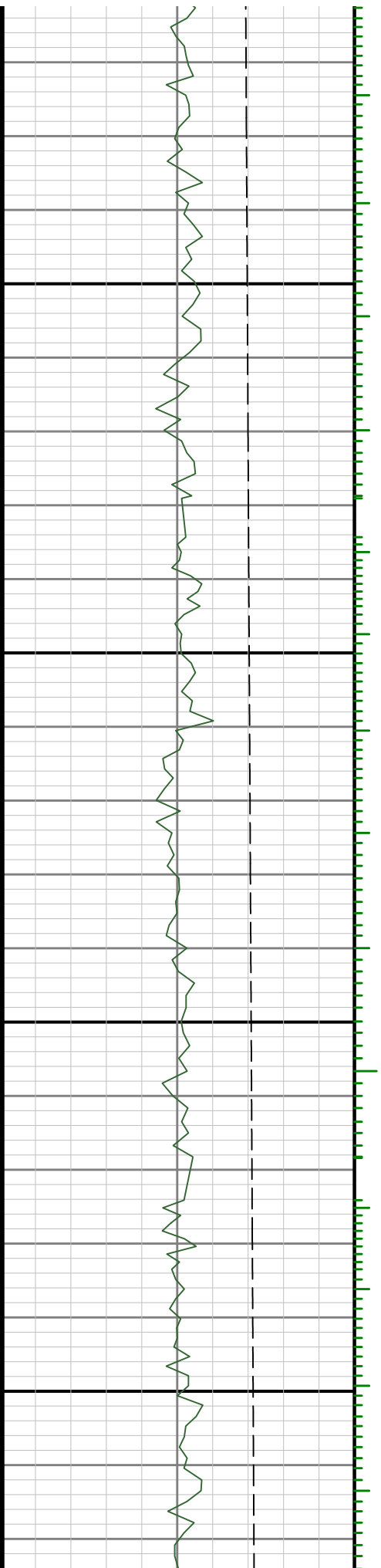
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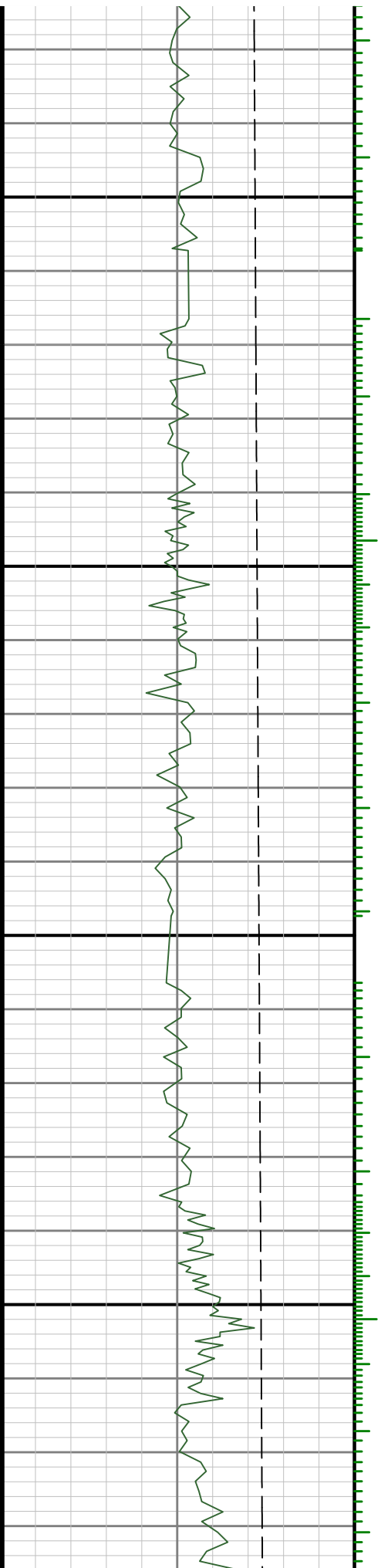




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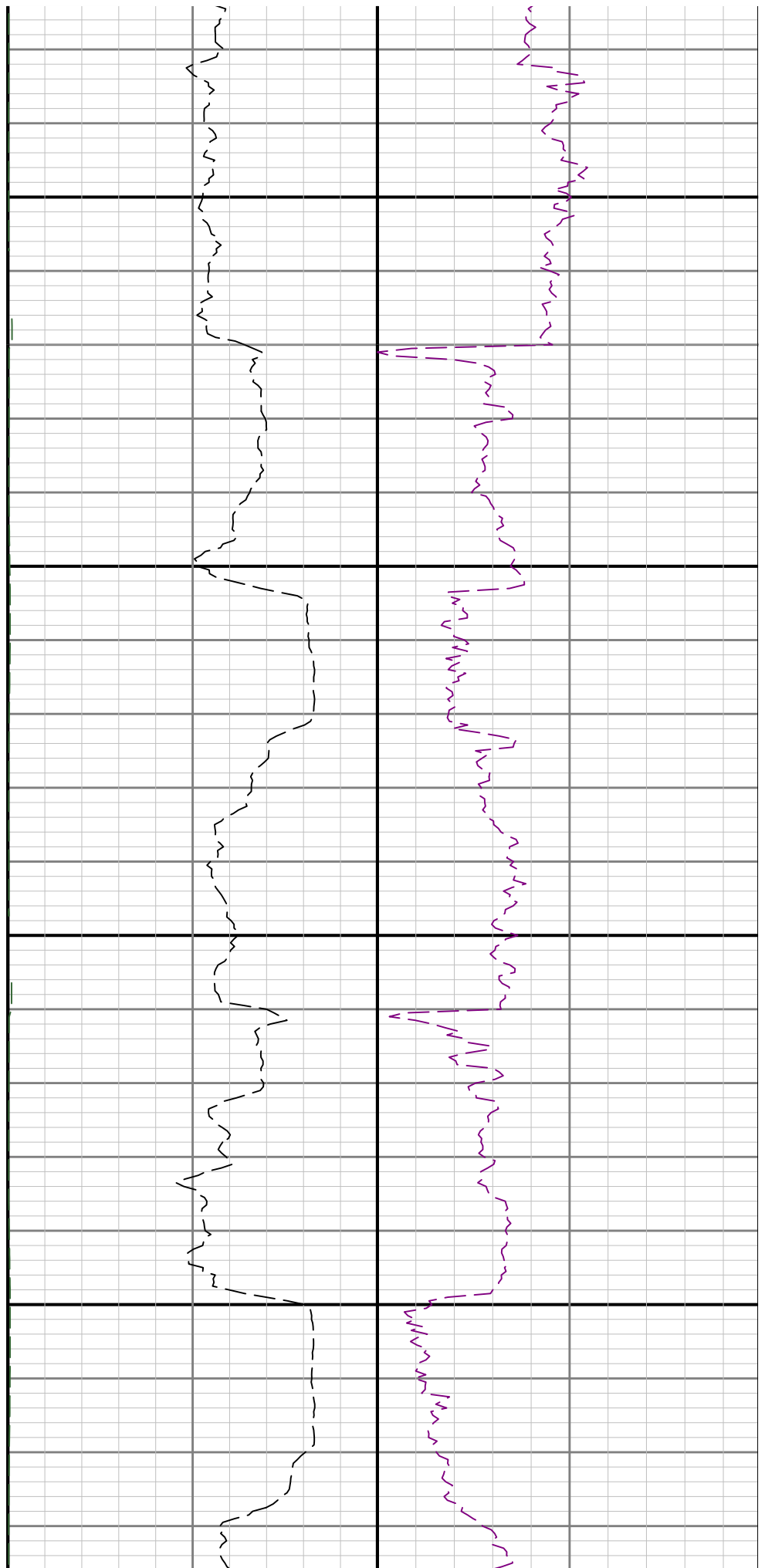
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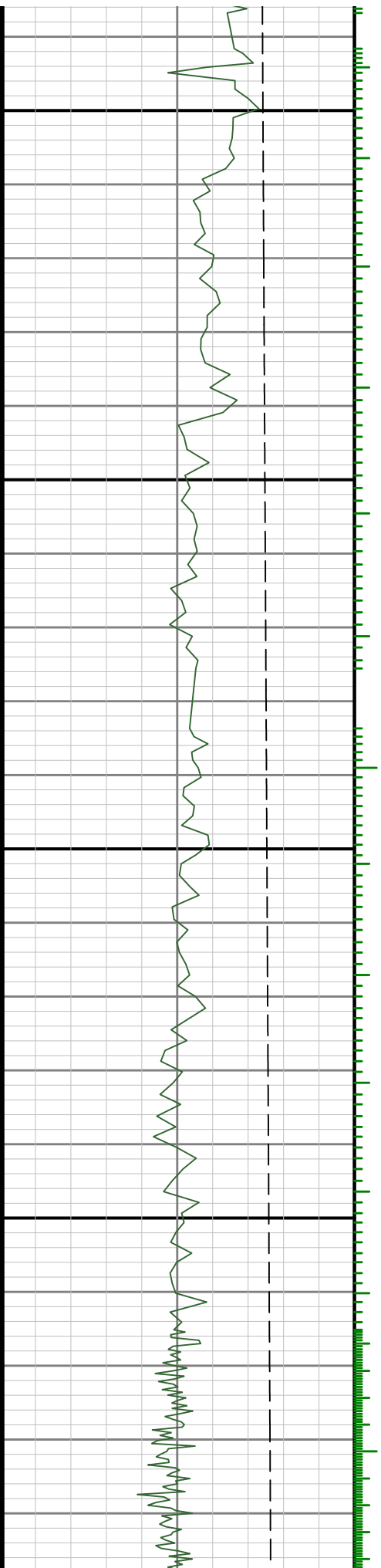




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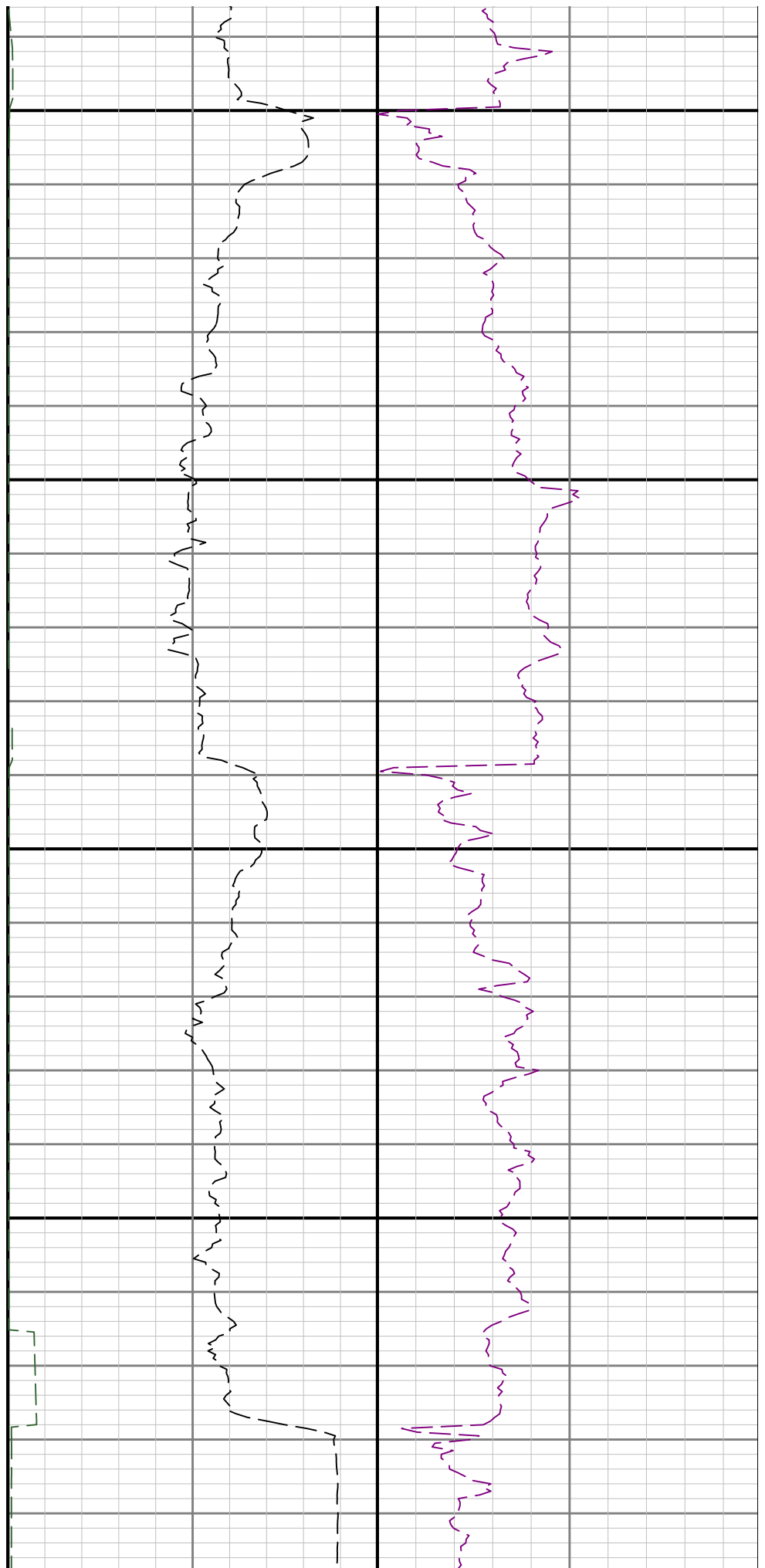
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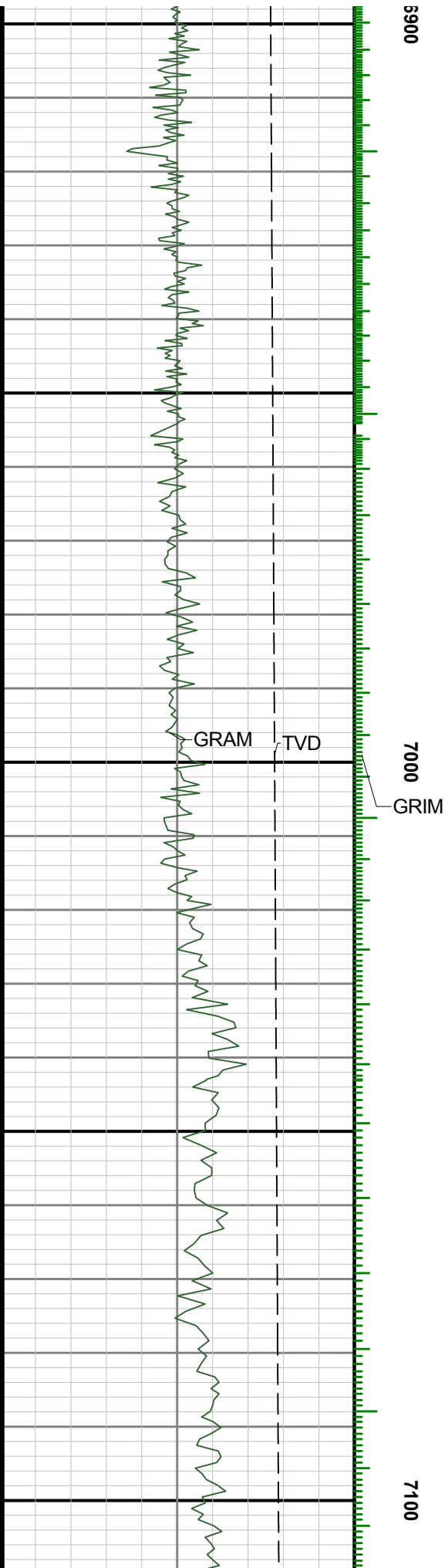
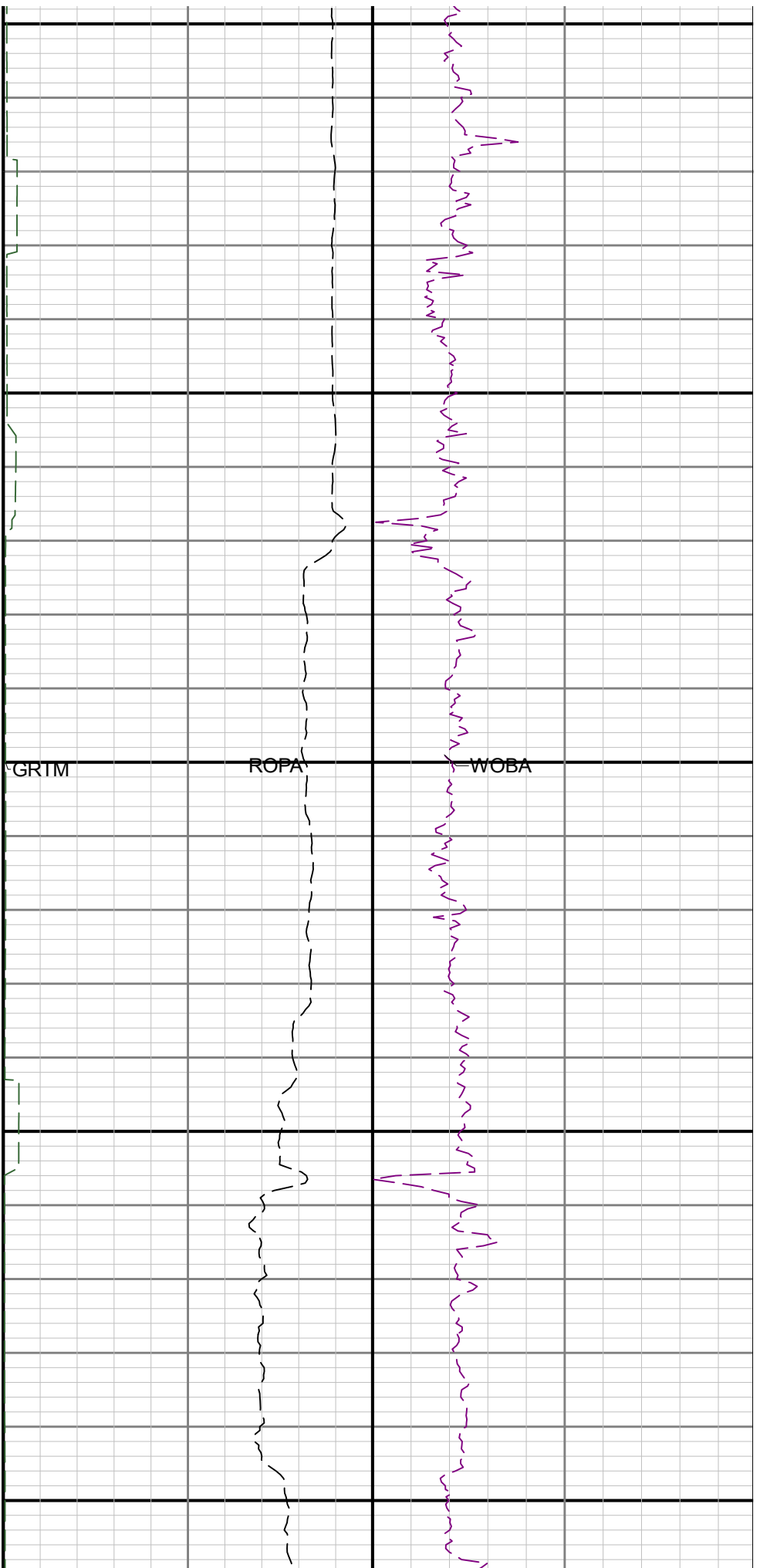


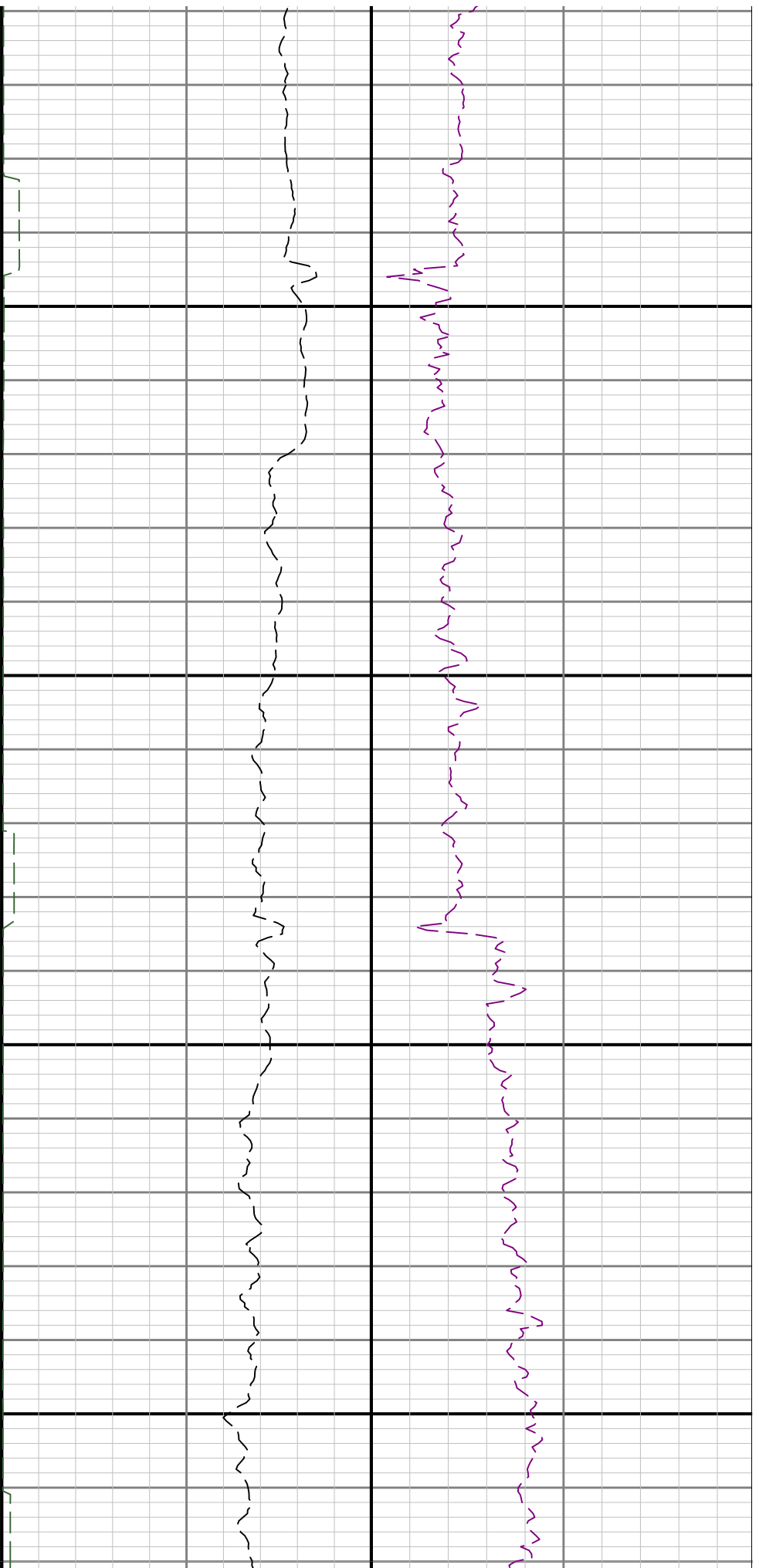


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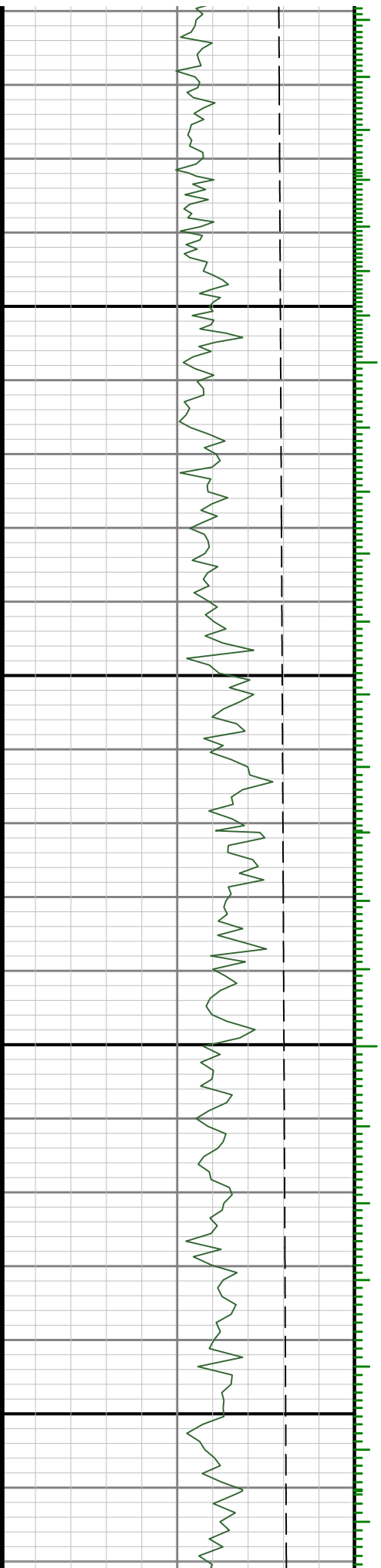


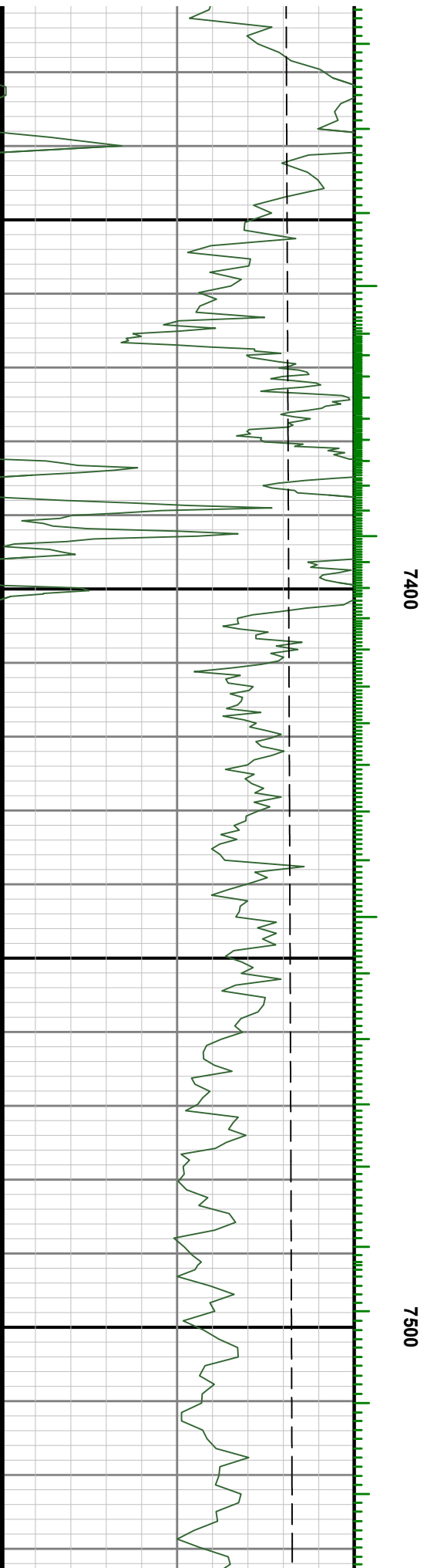
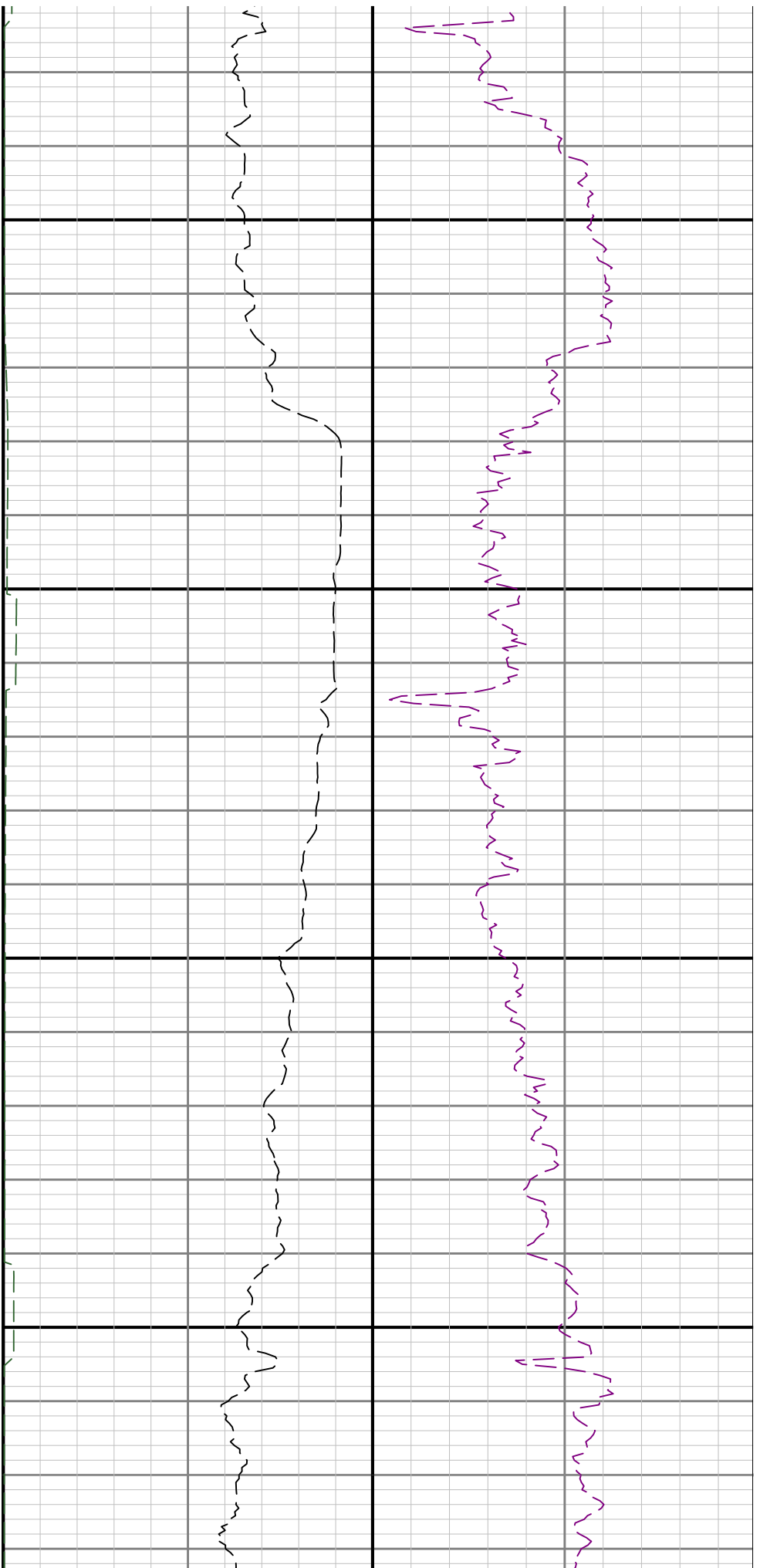


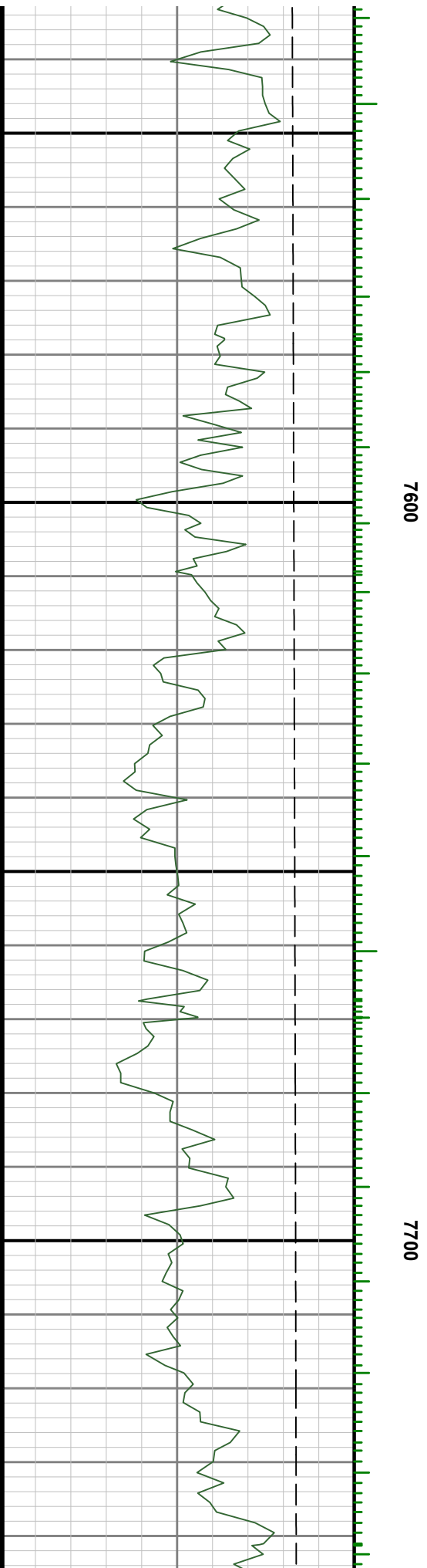
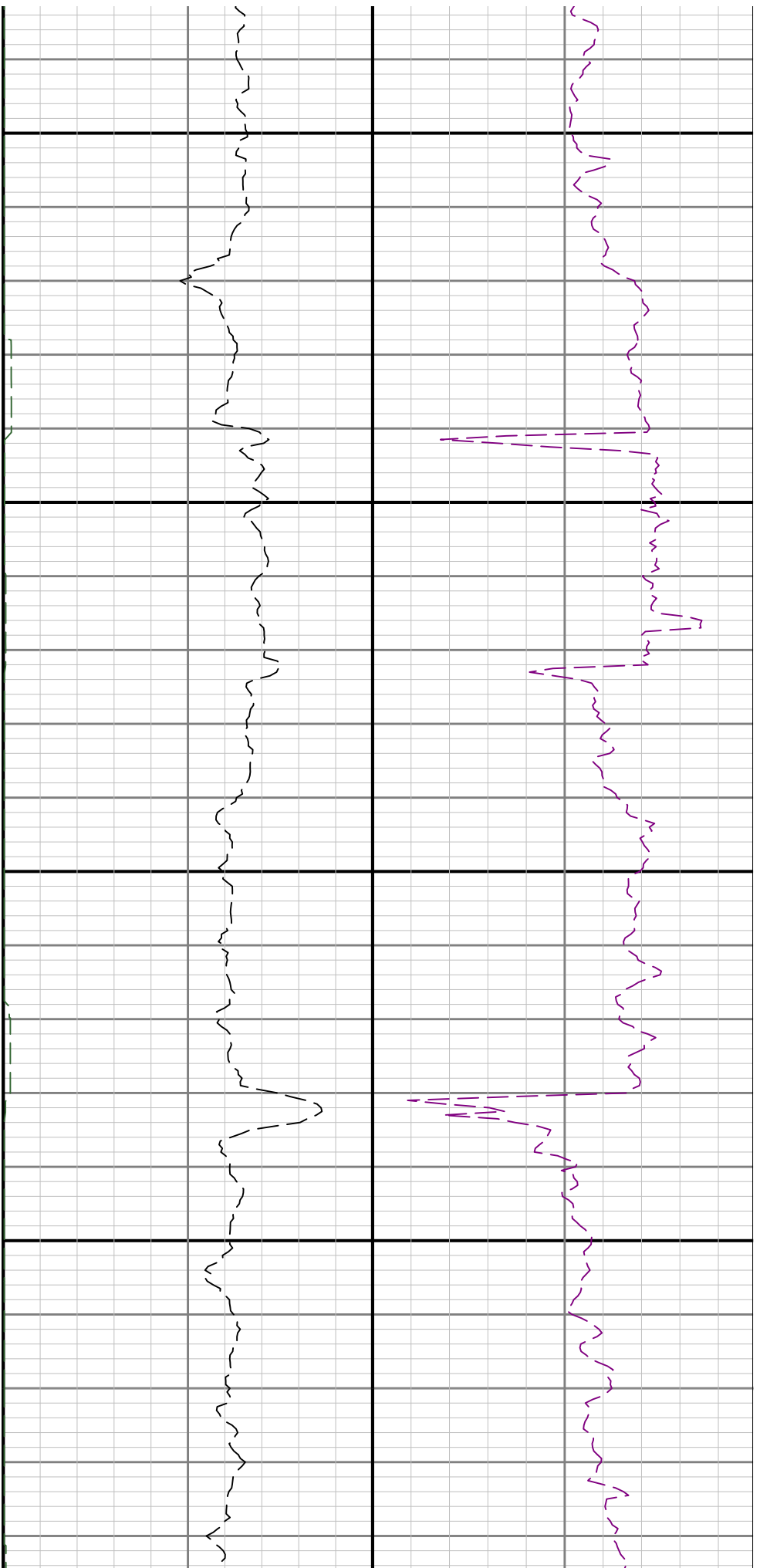


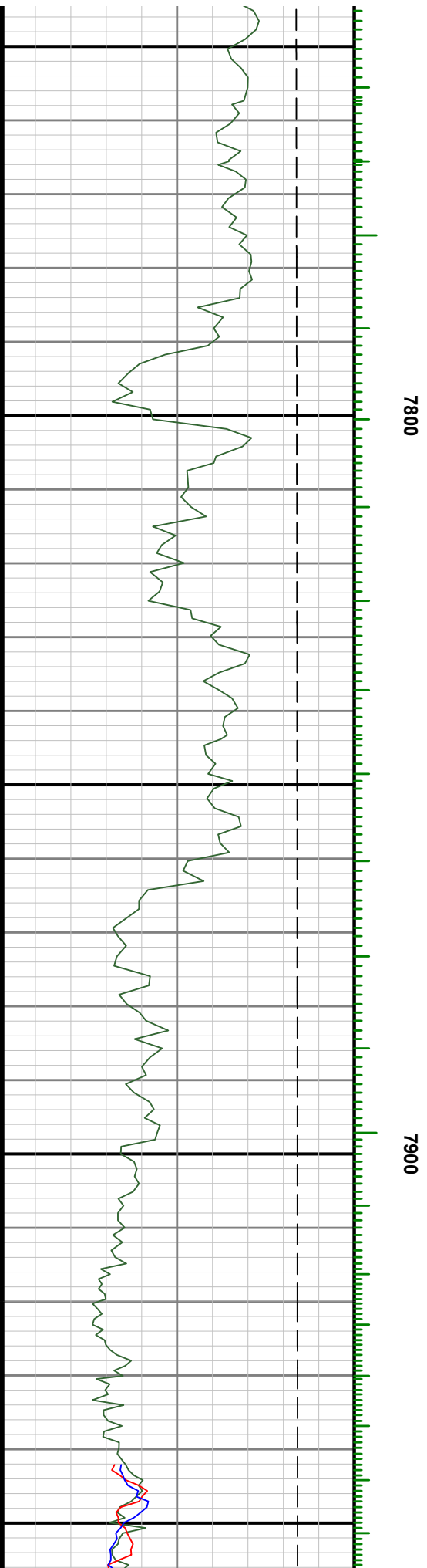
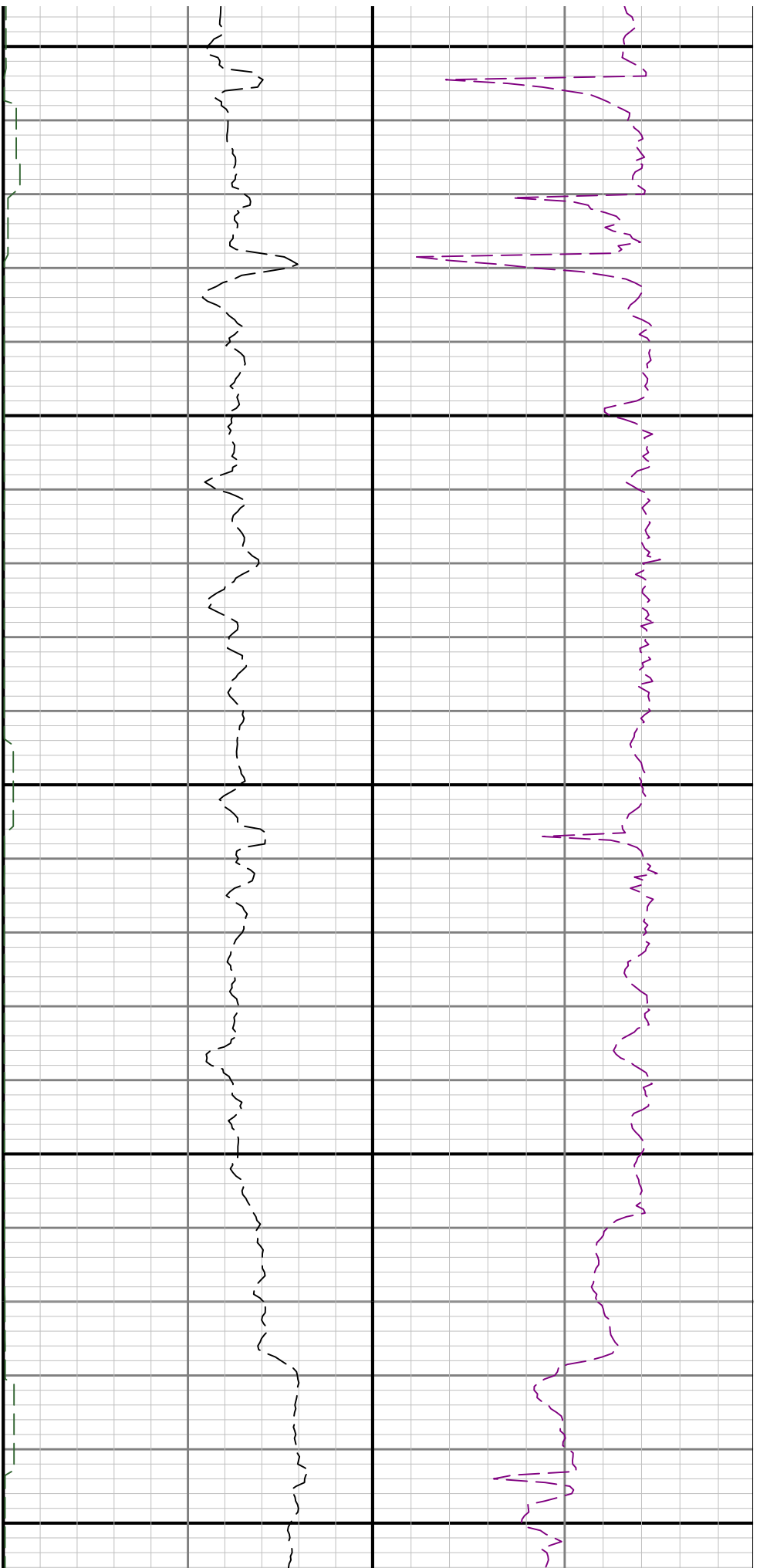
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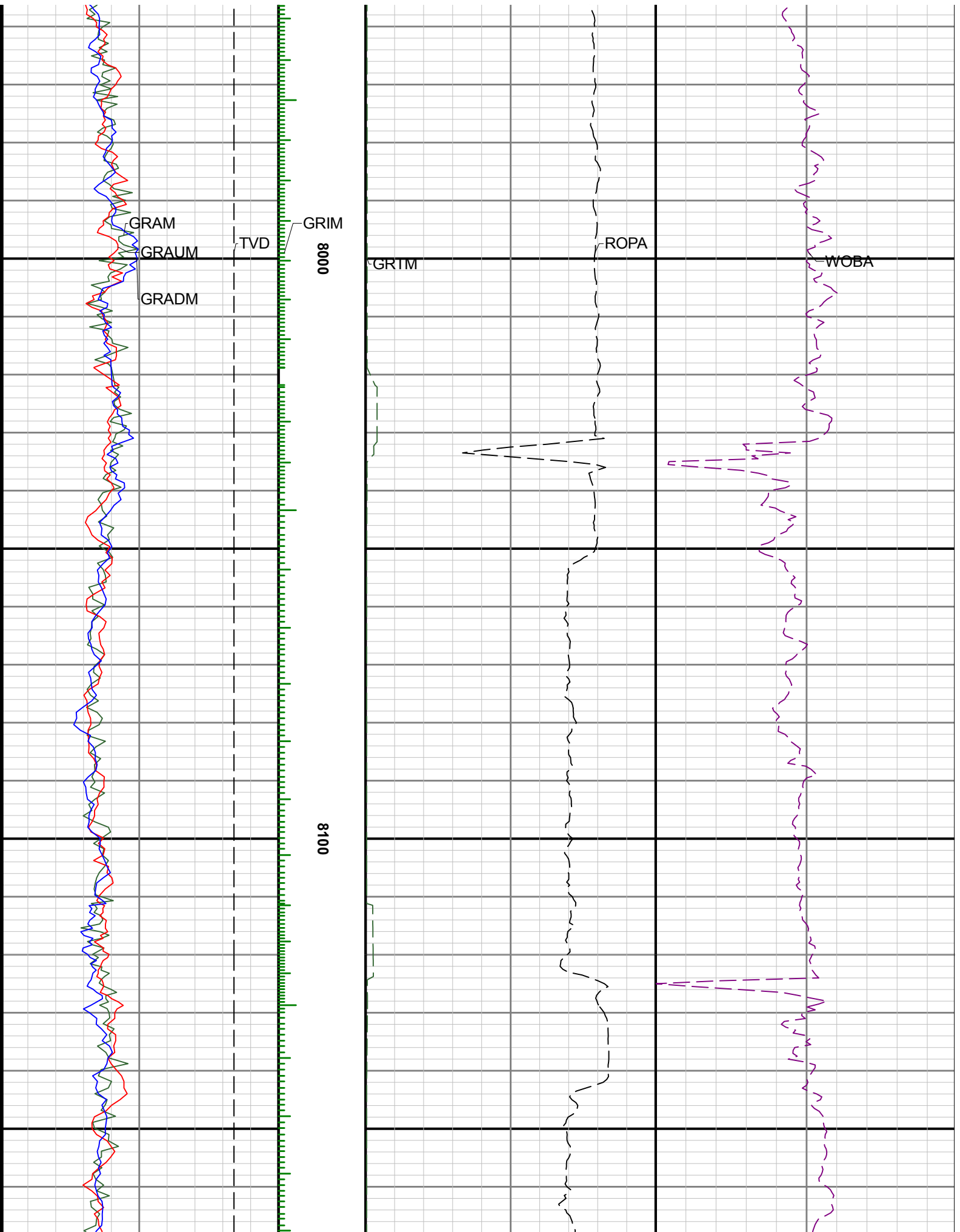
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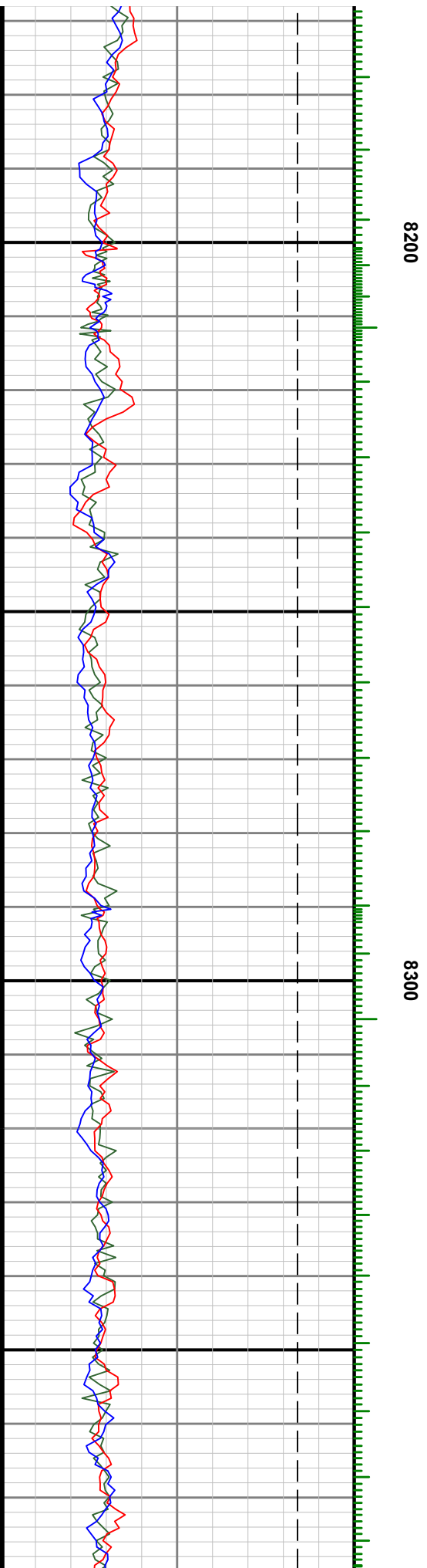
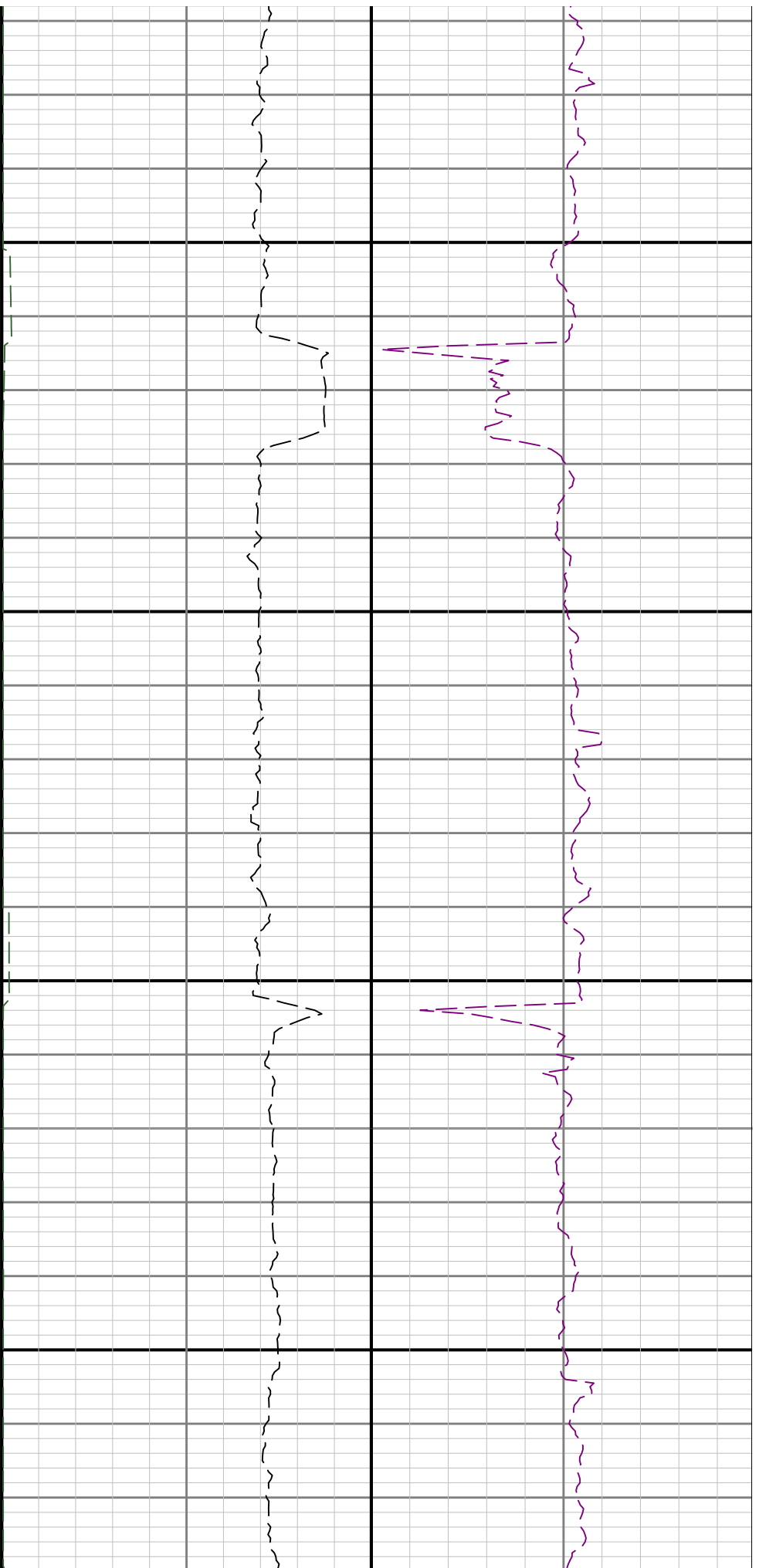


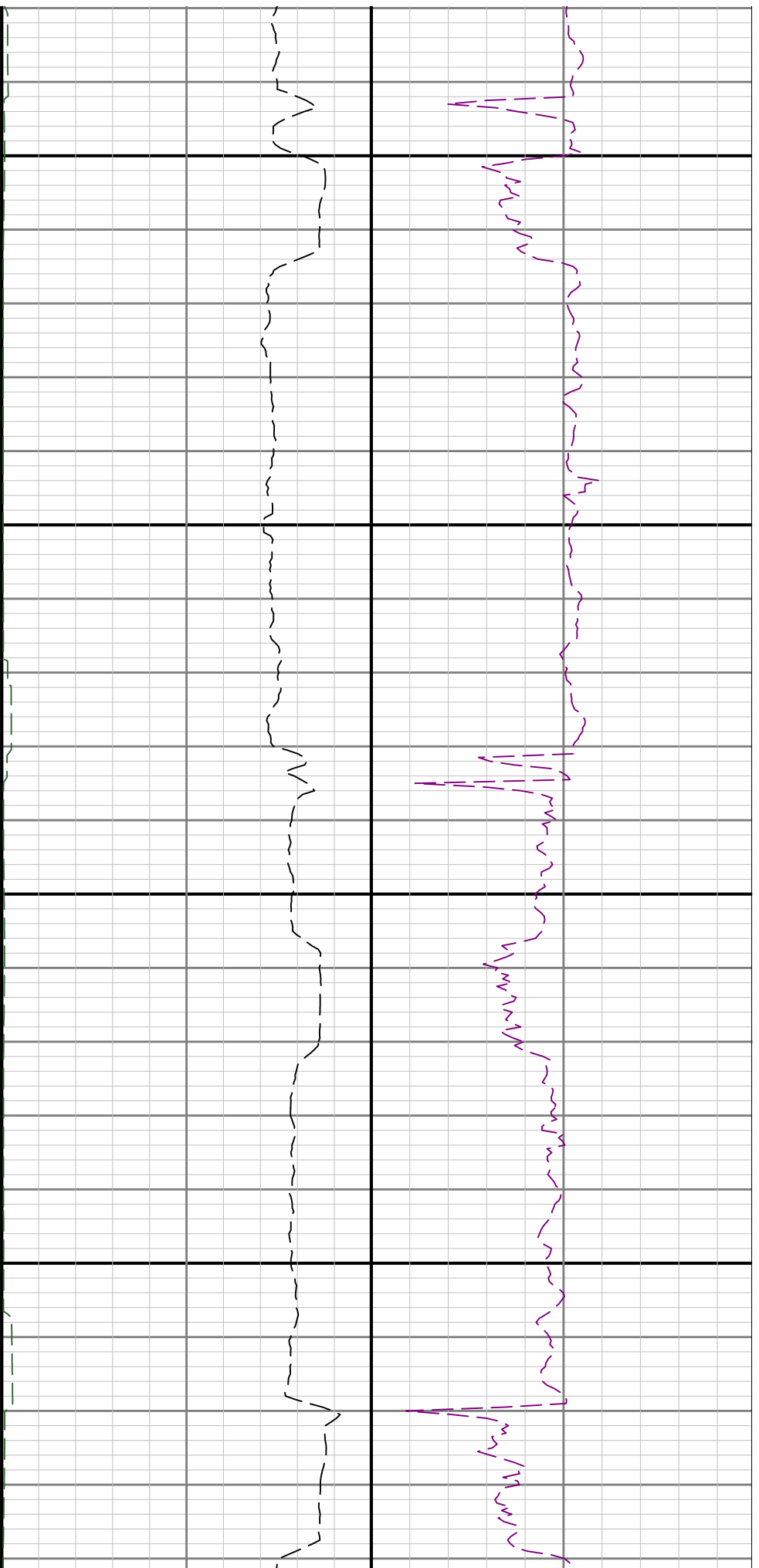






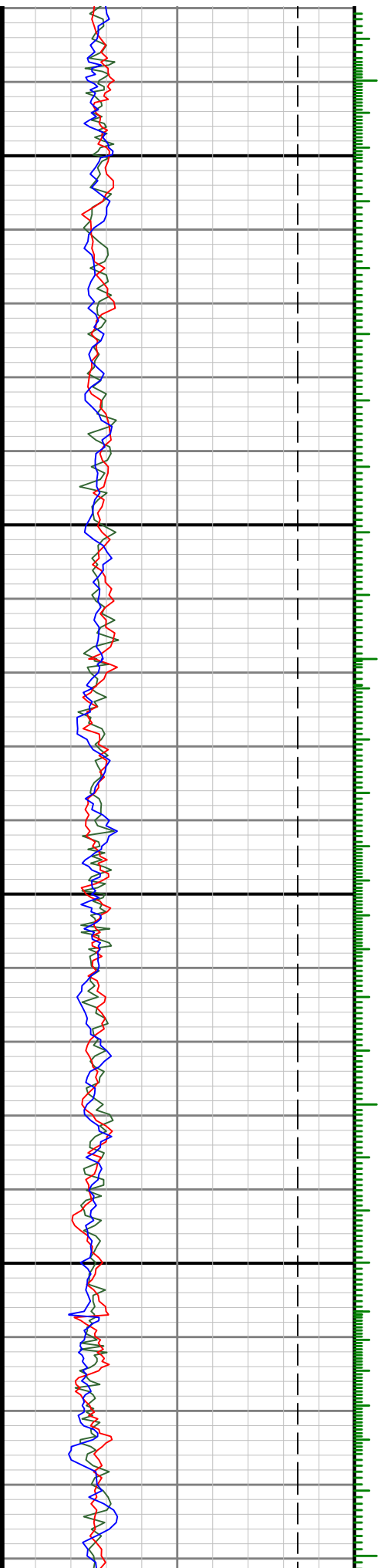


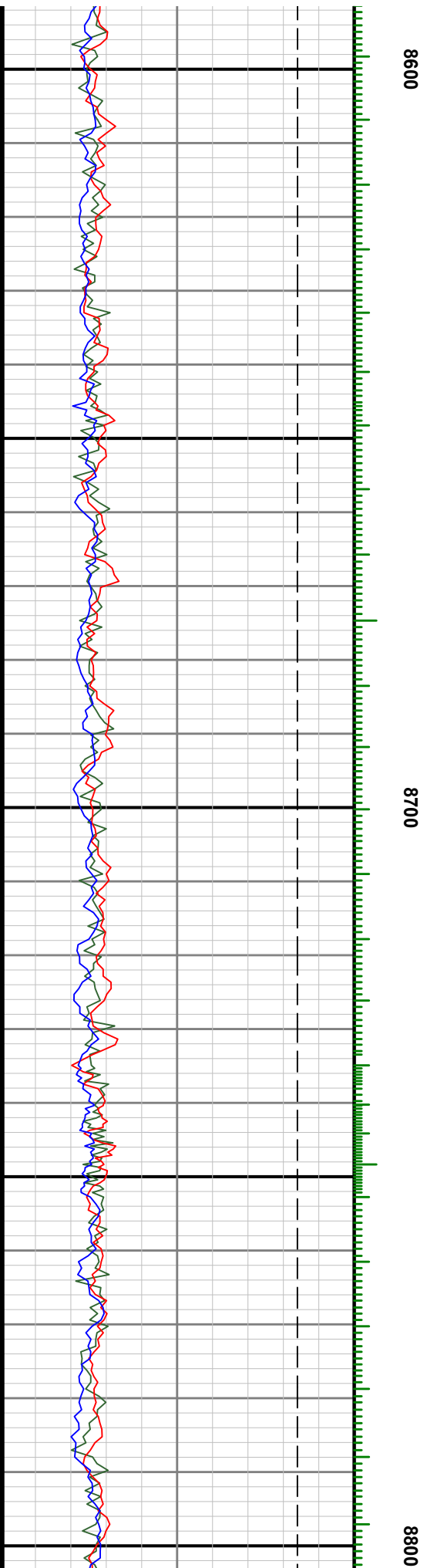
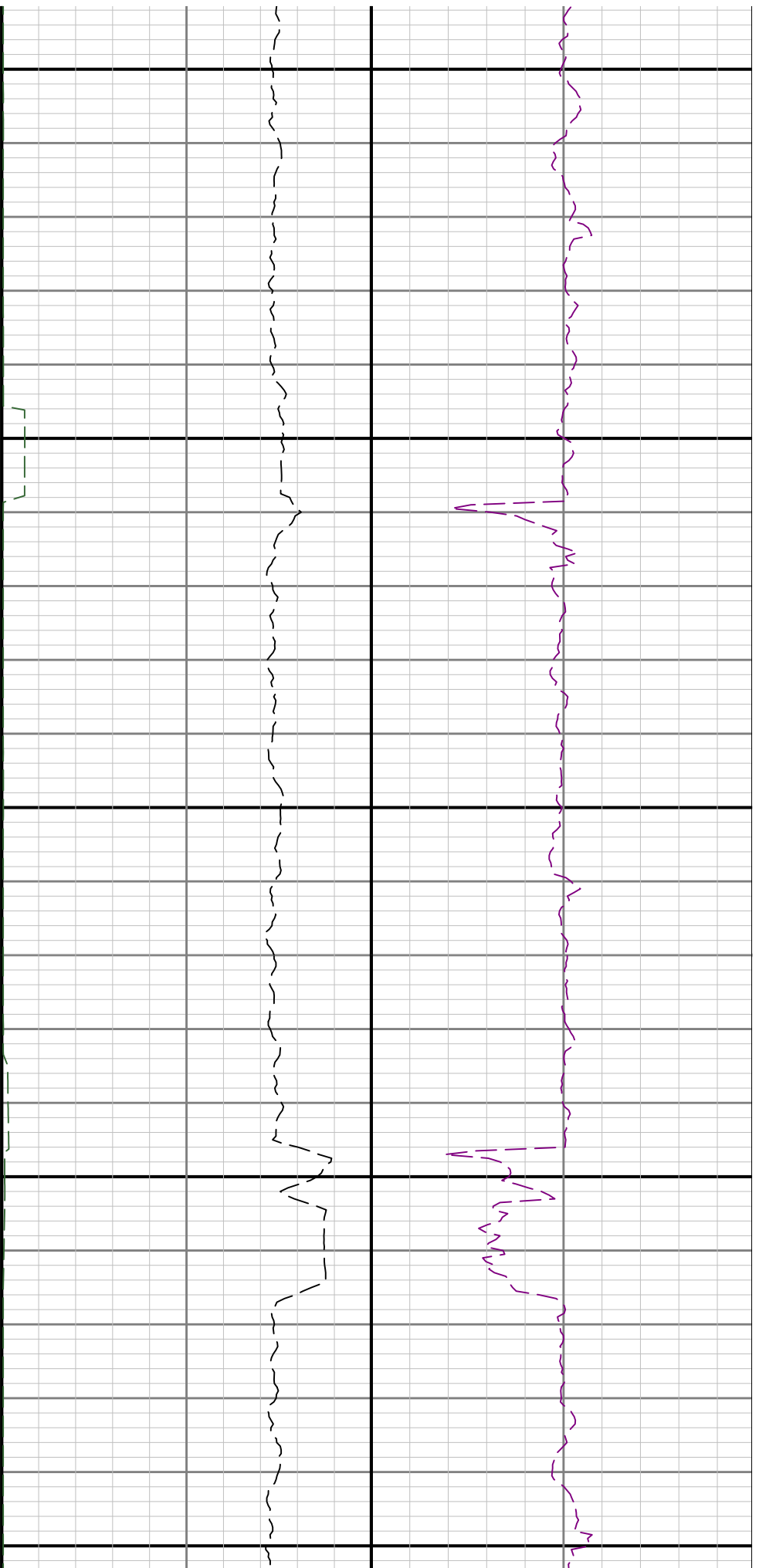


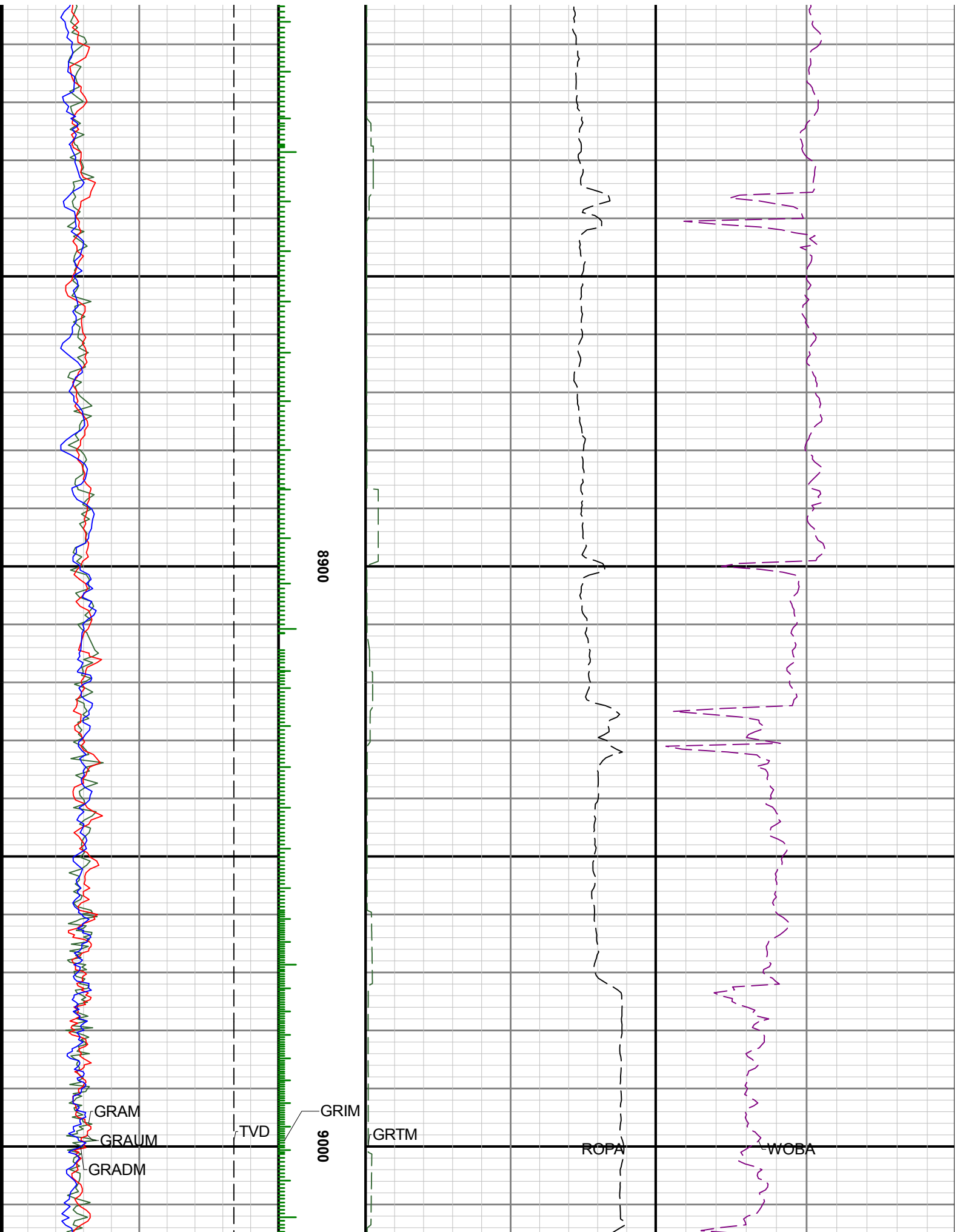


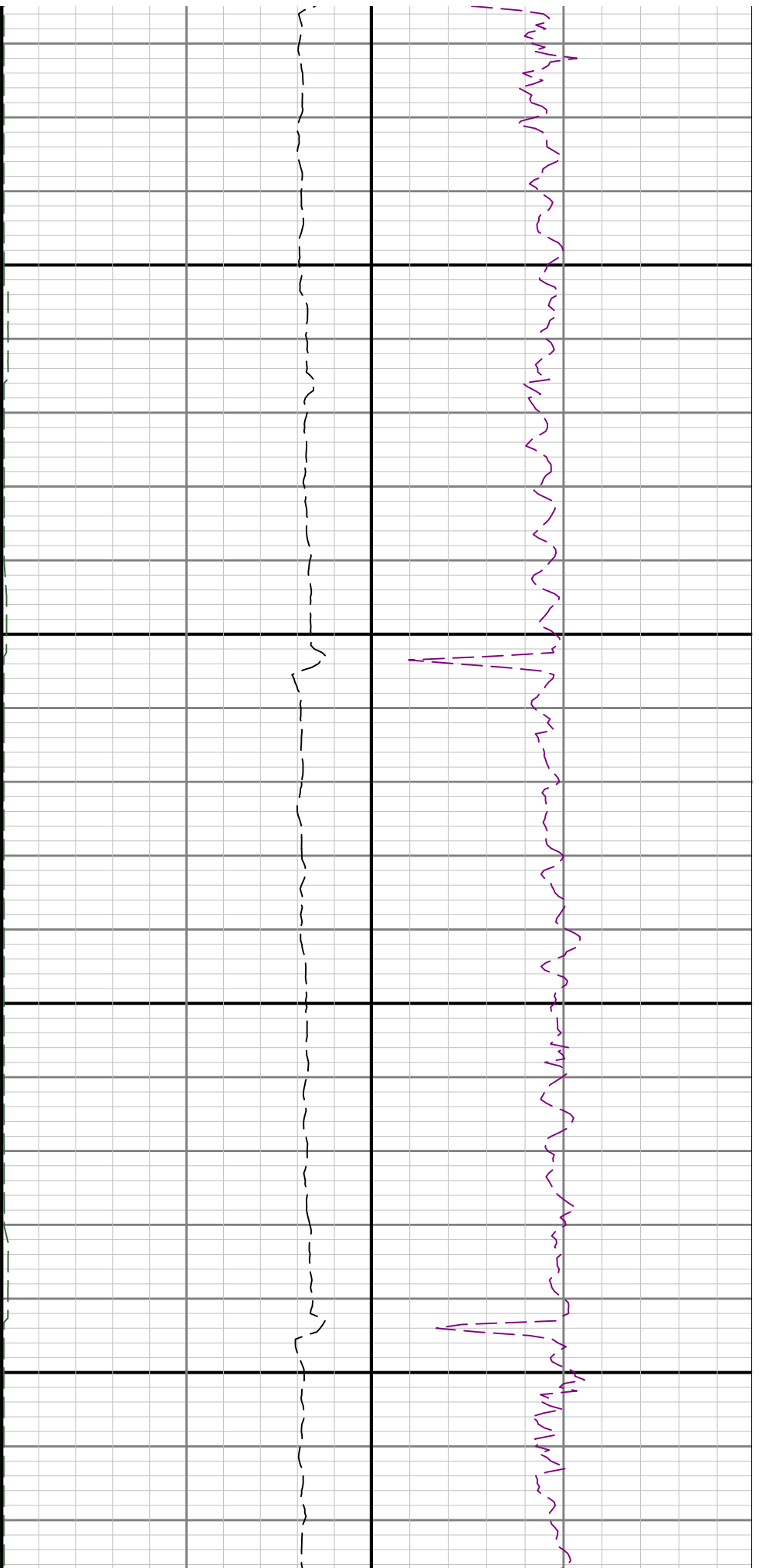
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8500



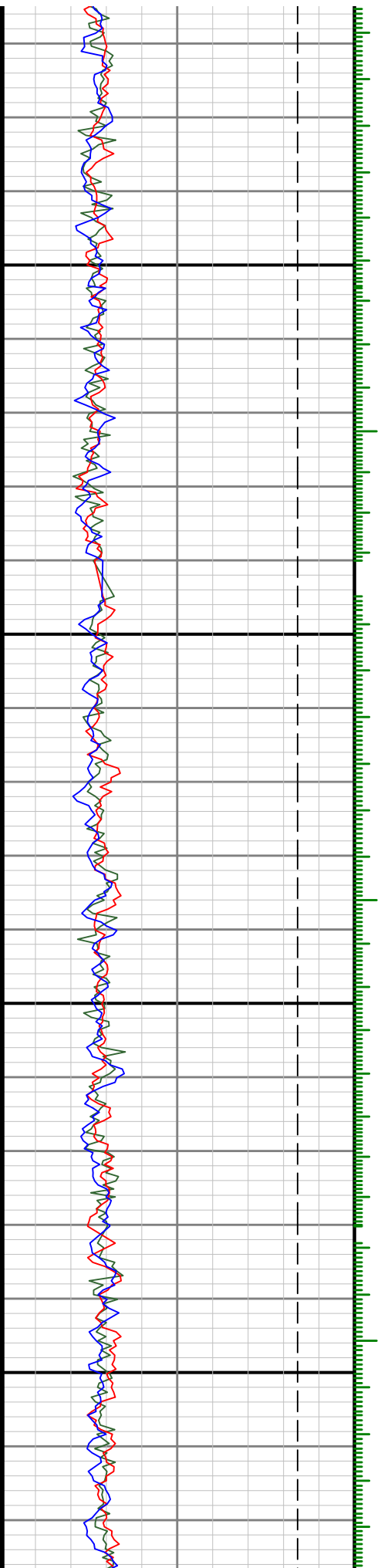


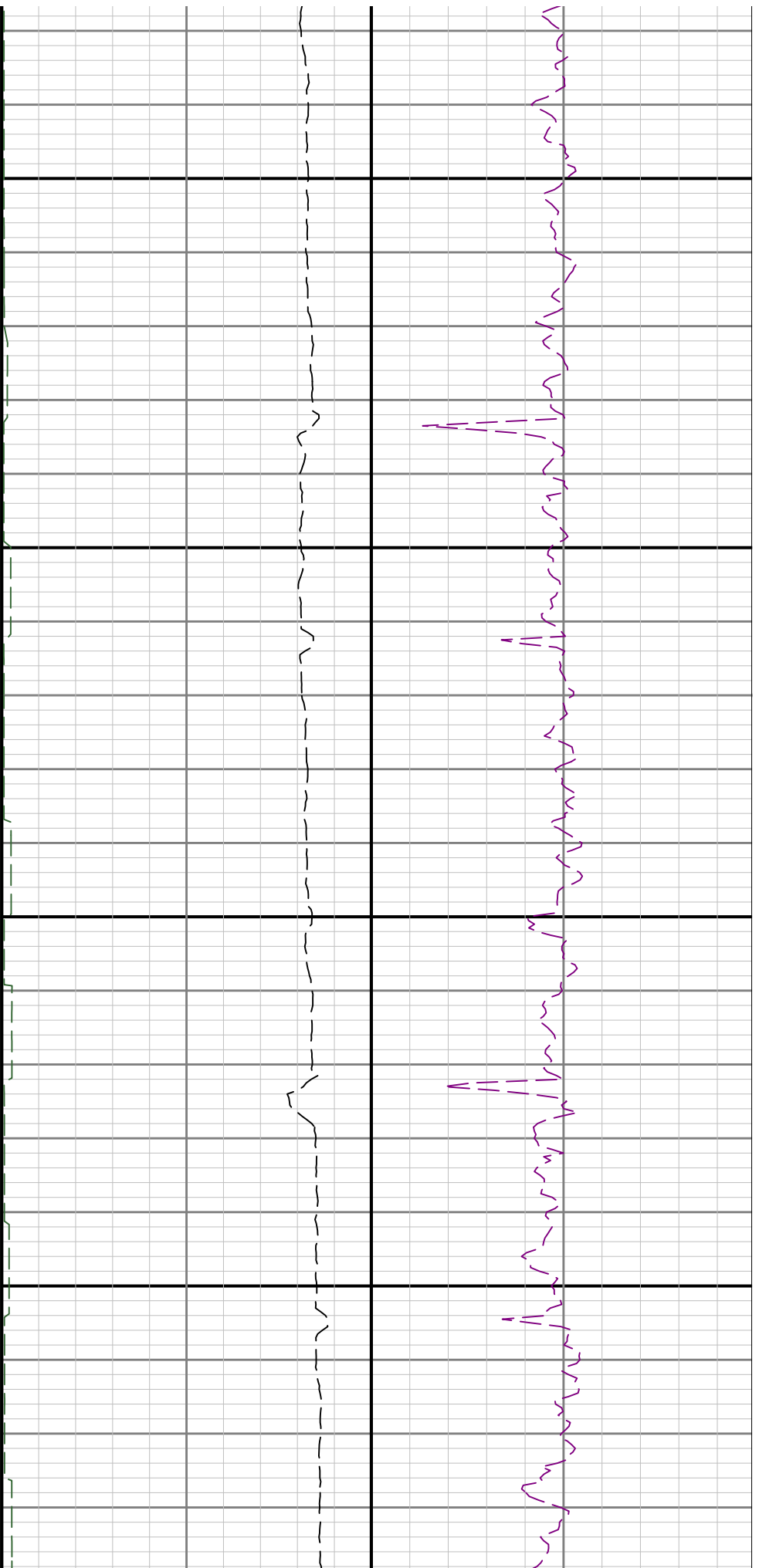




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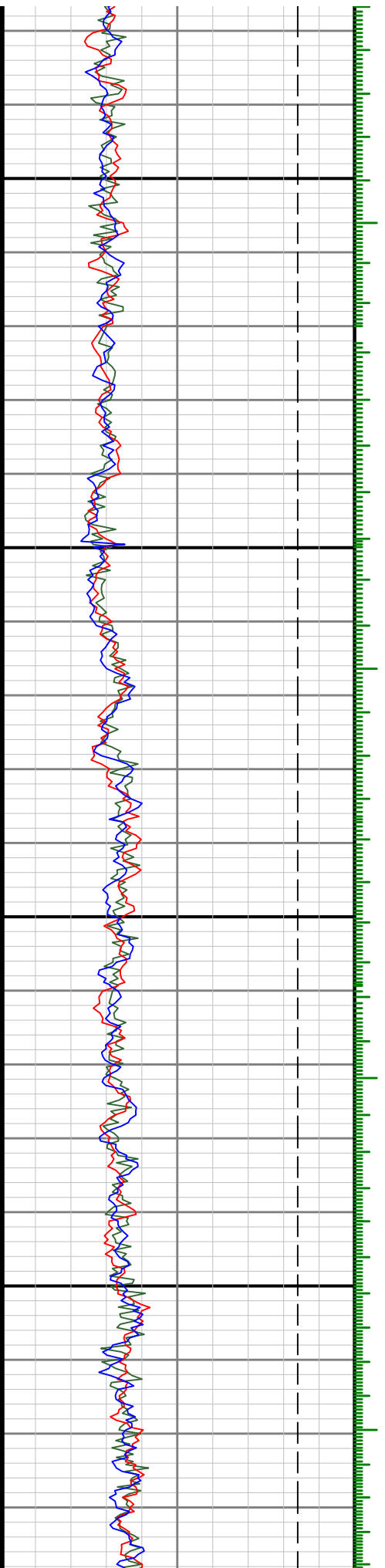
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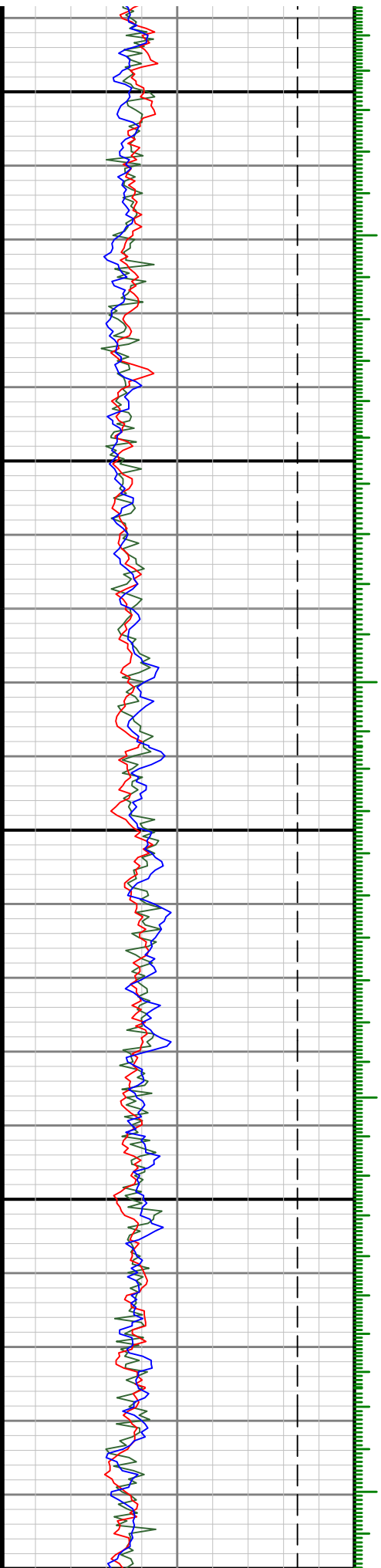




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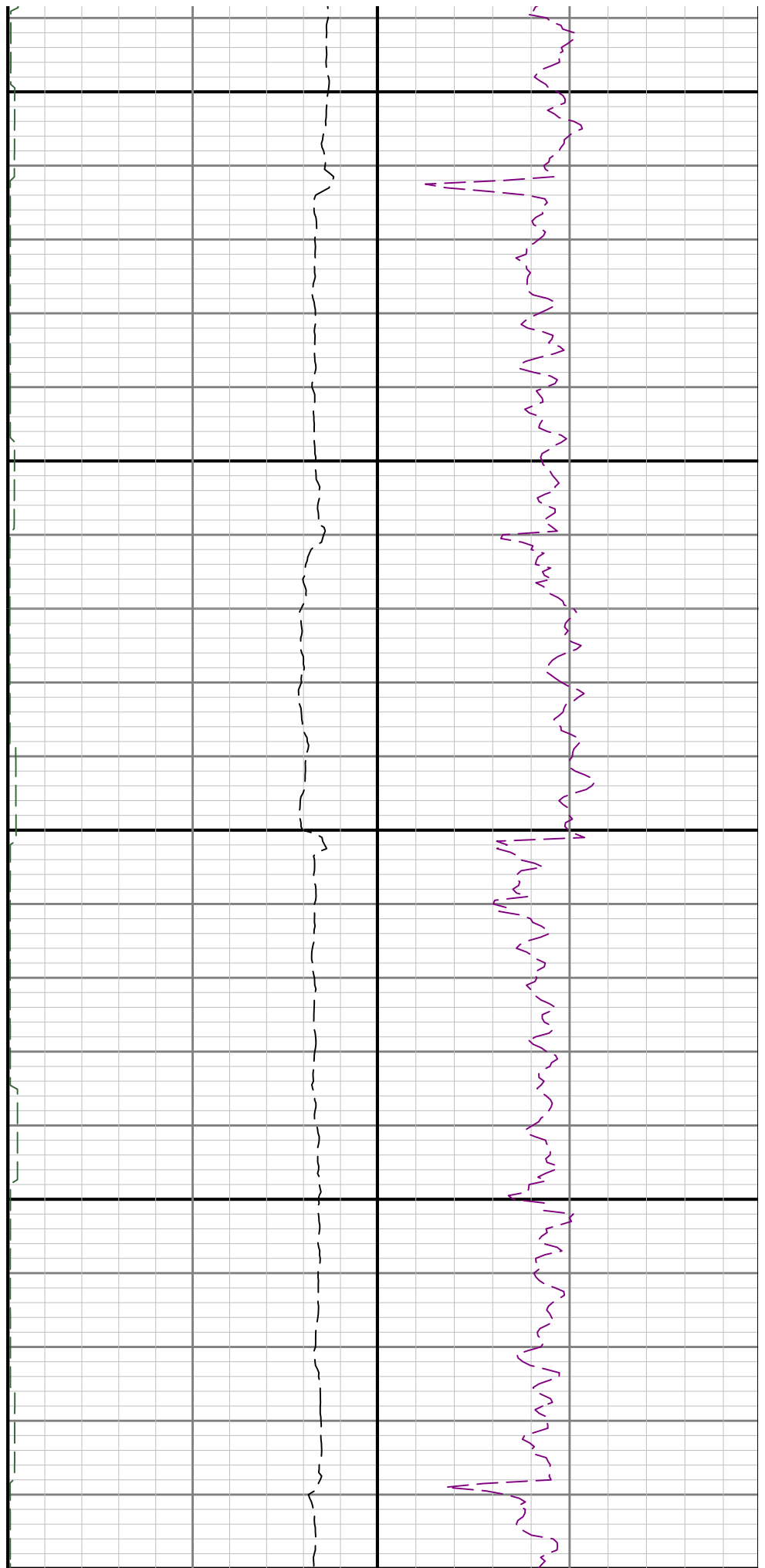
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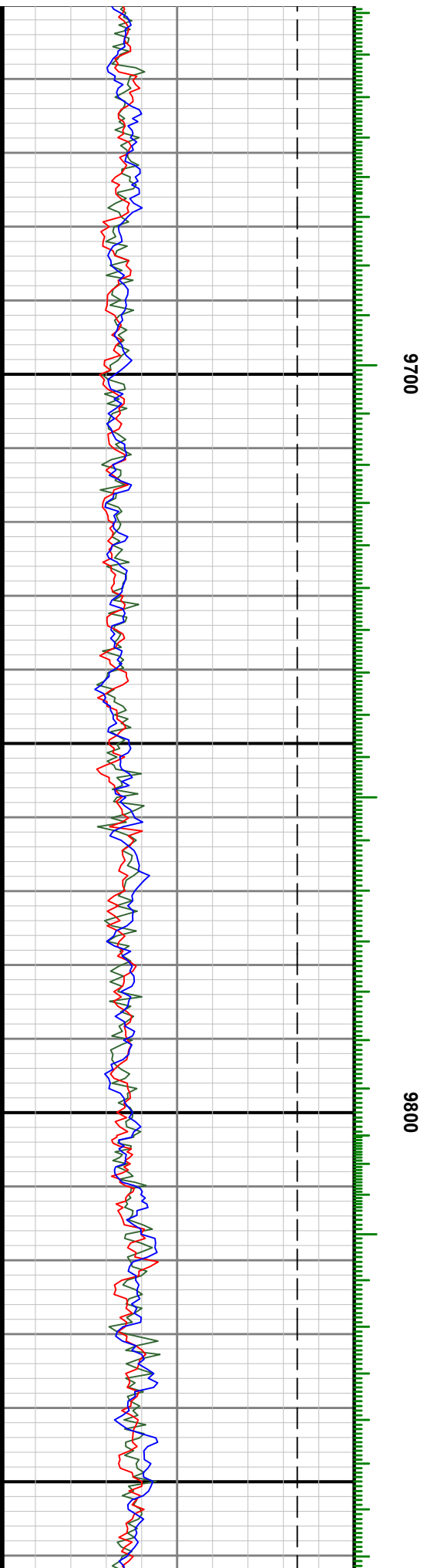
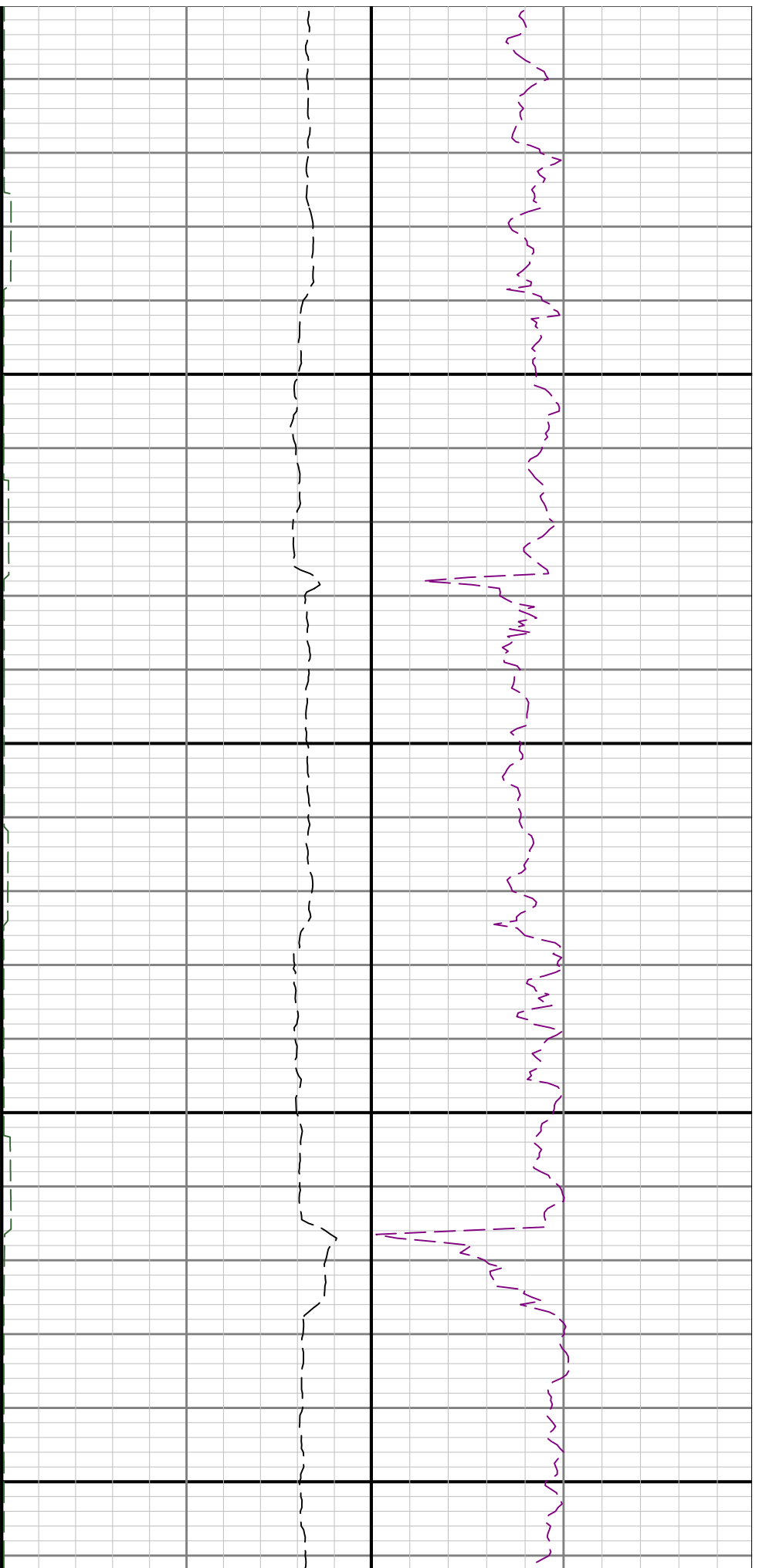


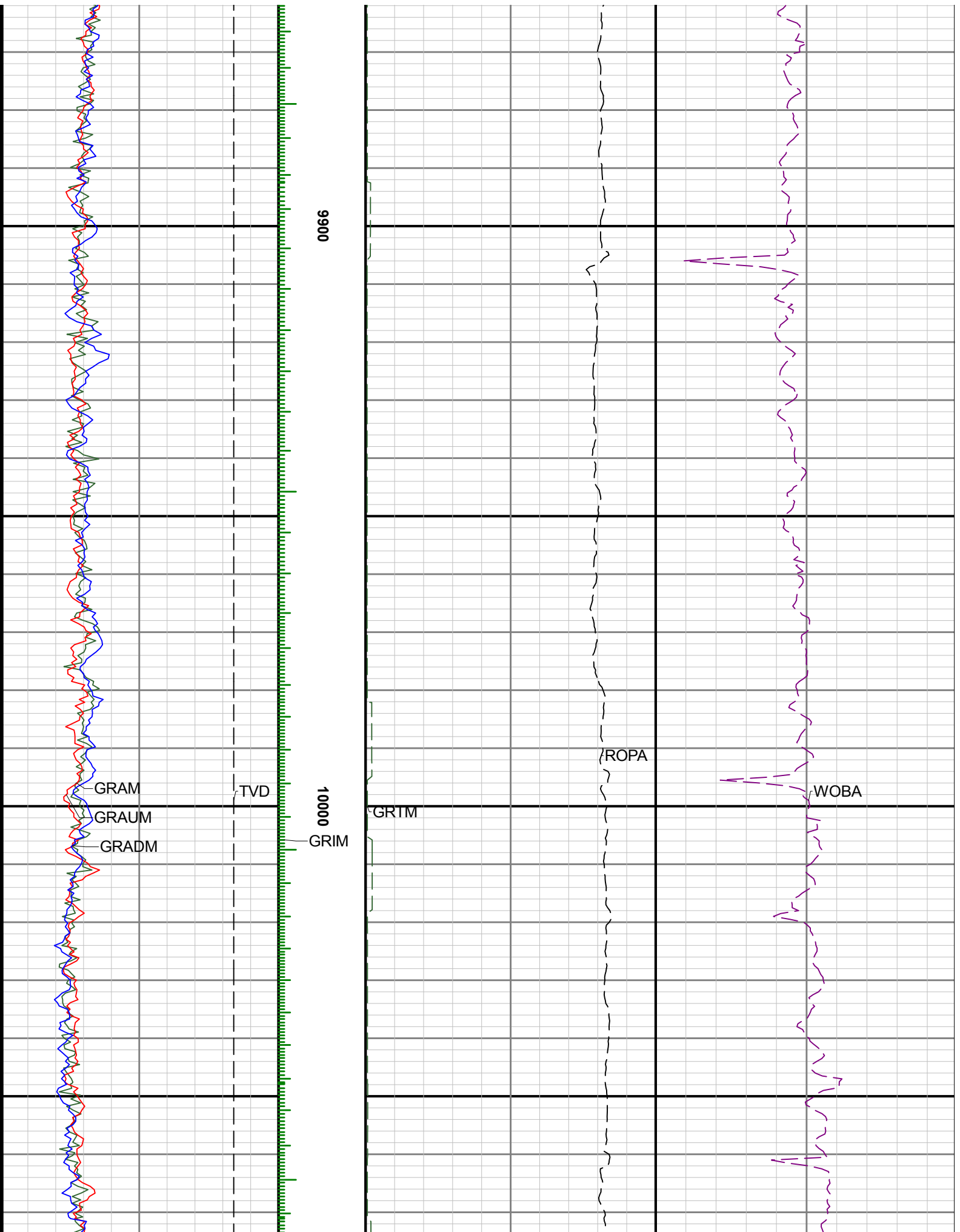


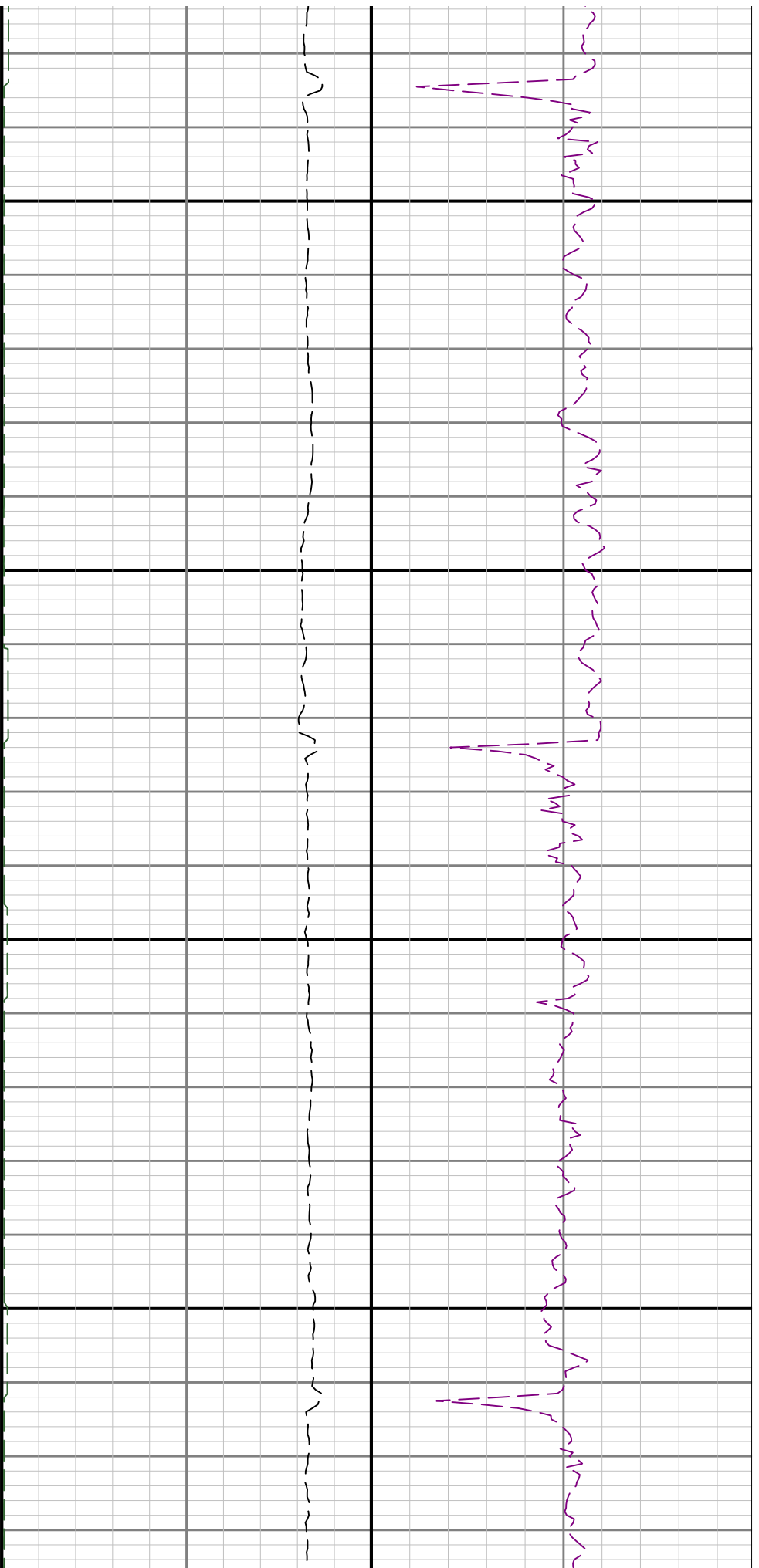
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0096



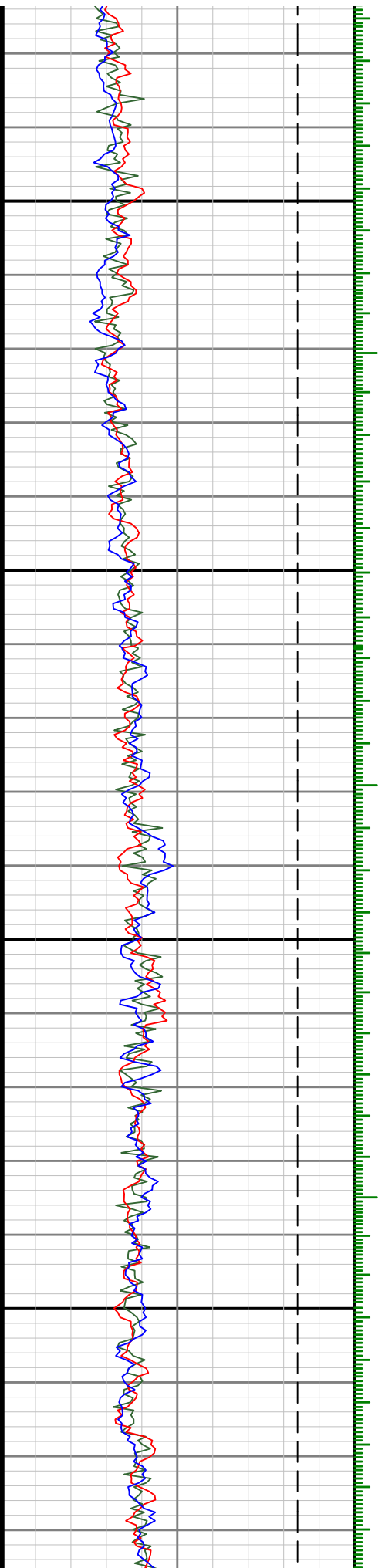


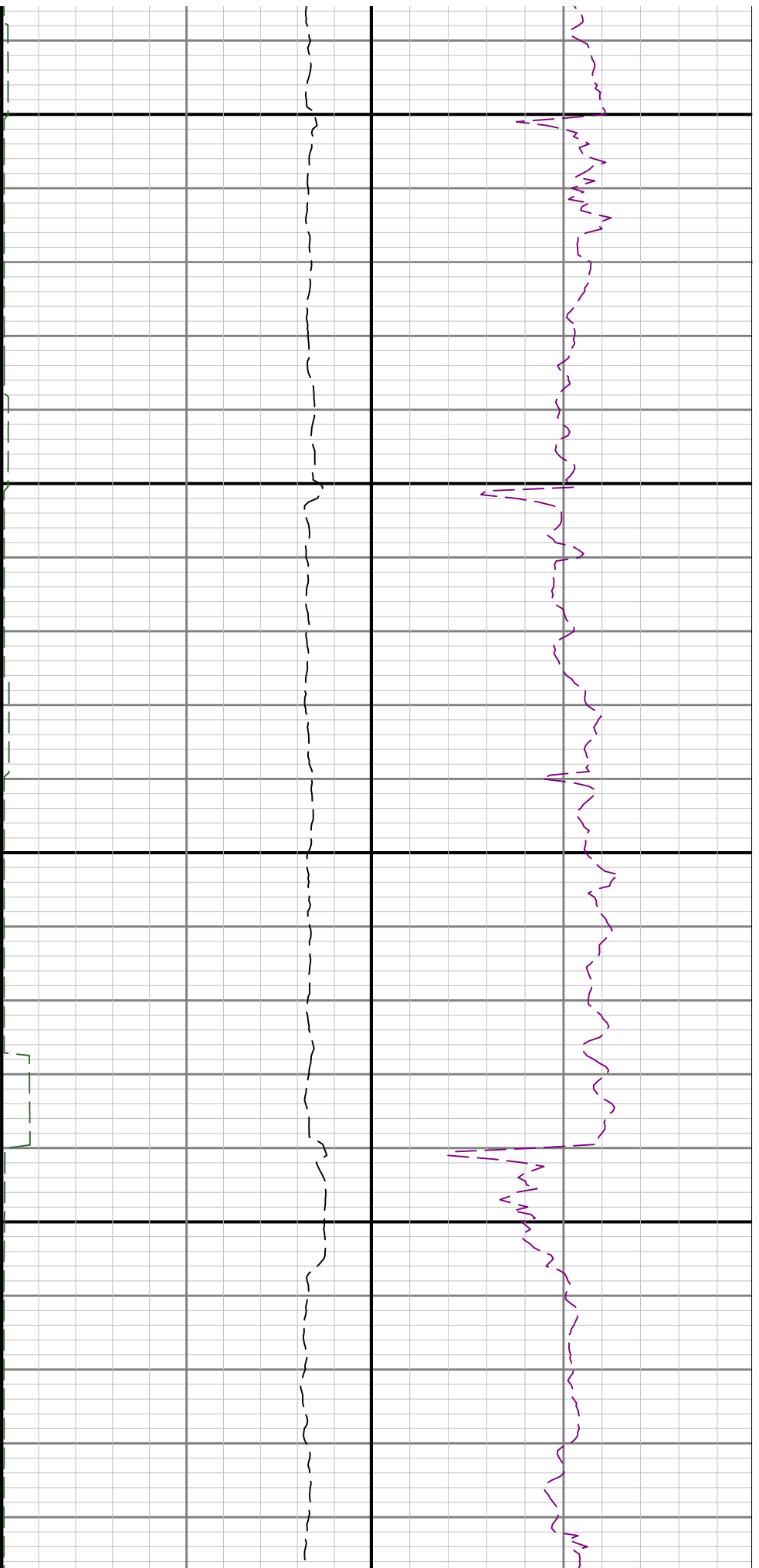




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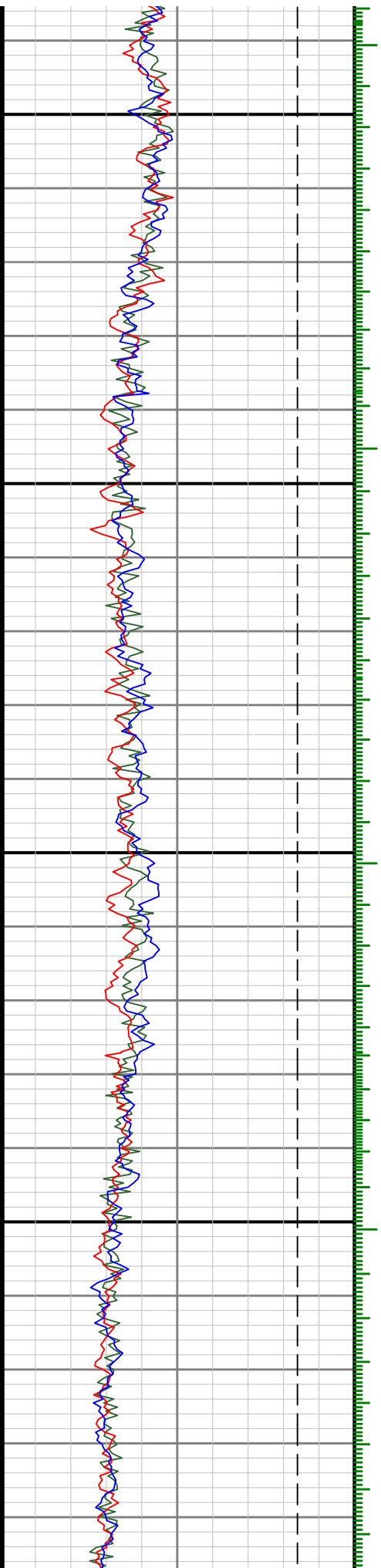
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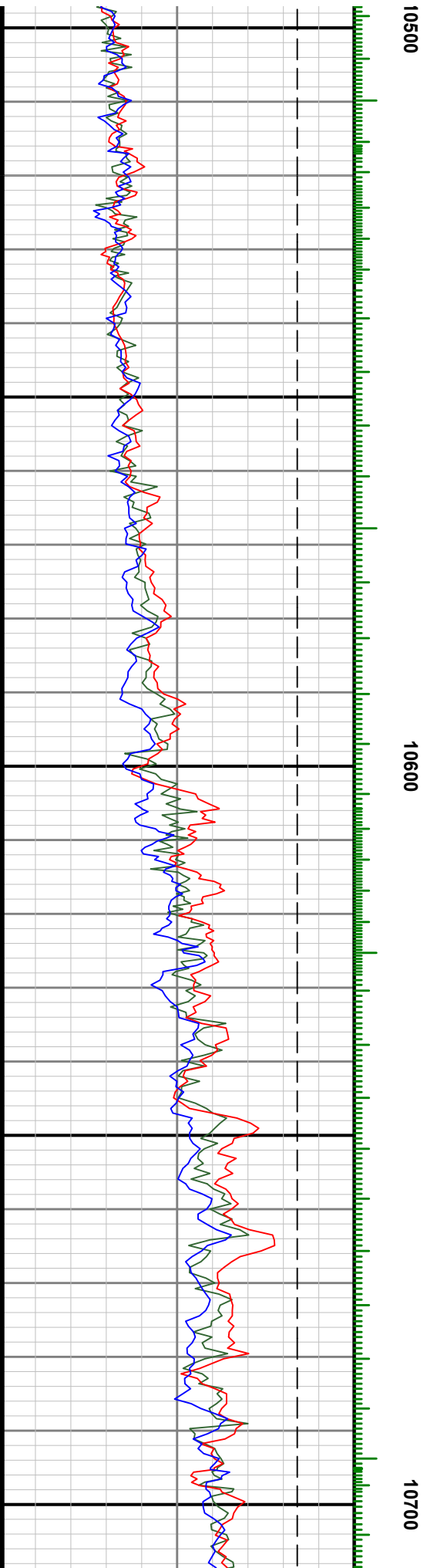
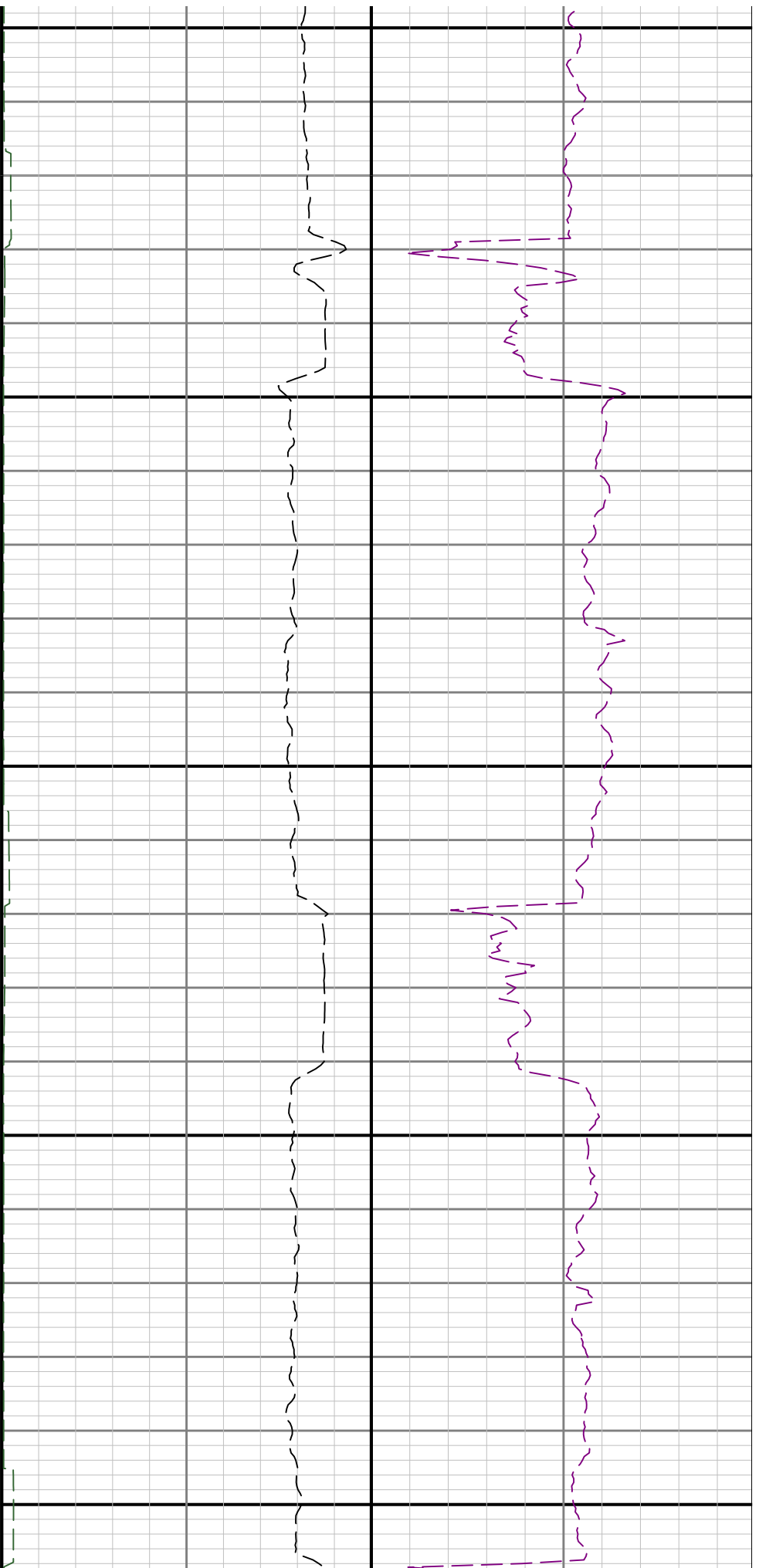


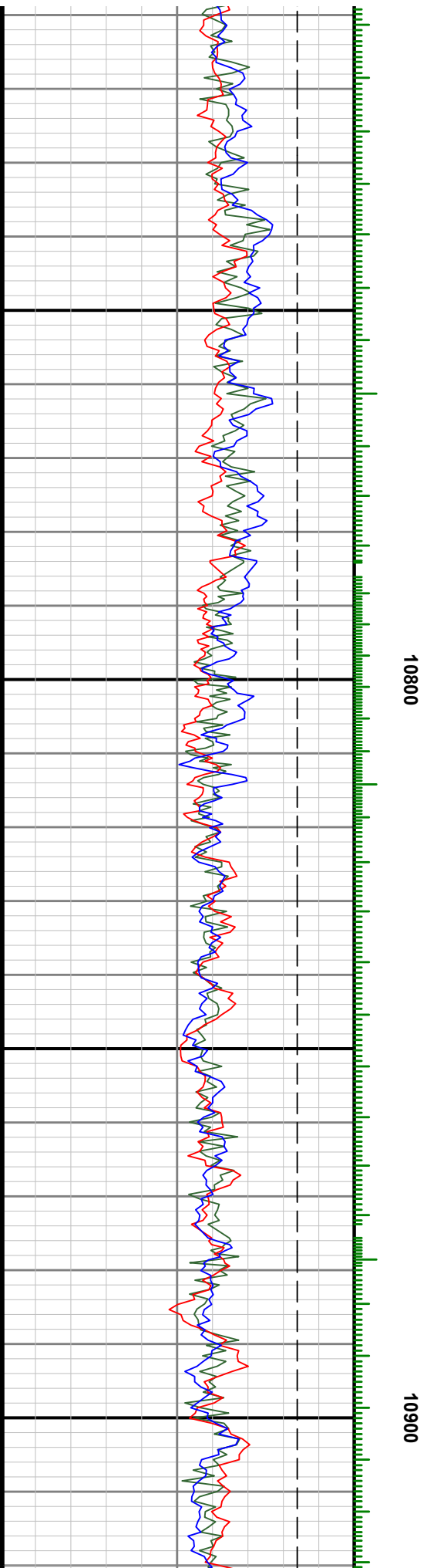


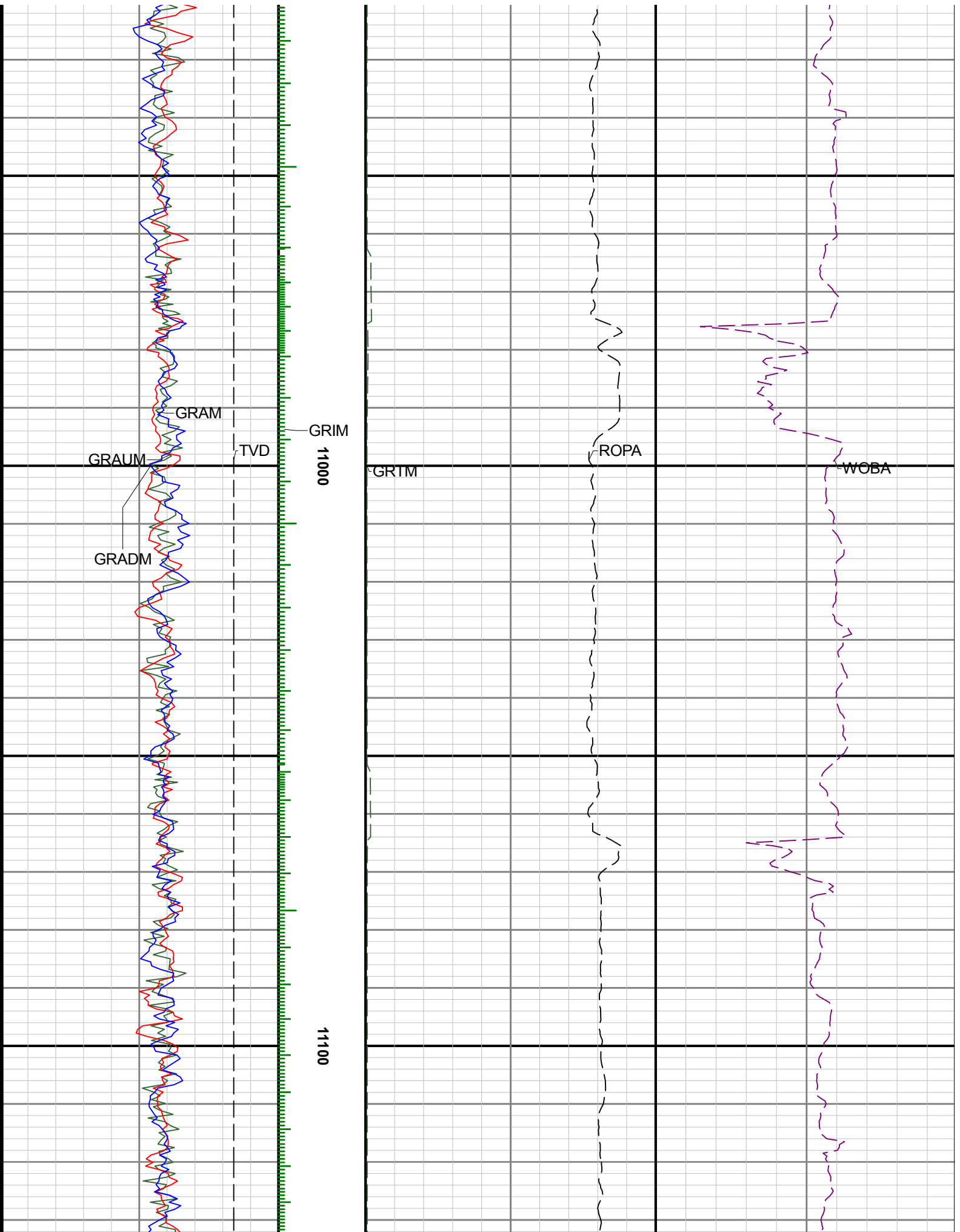
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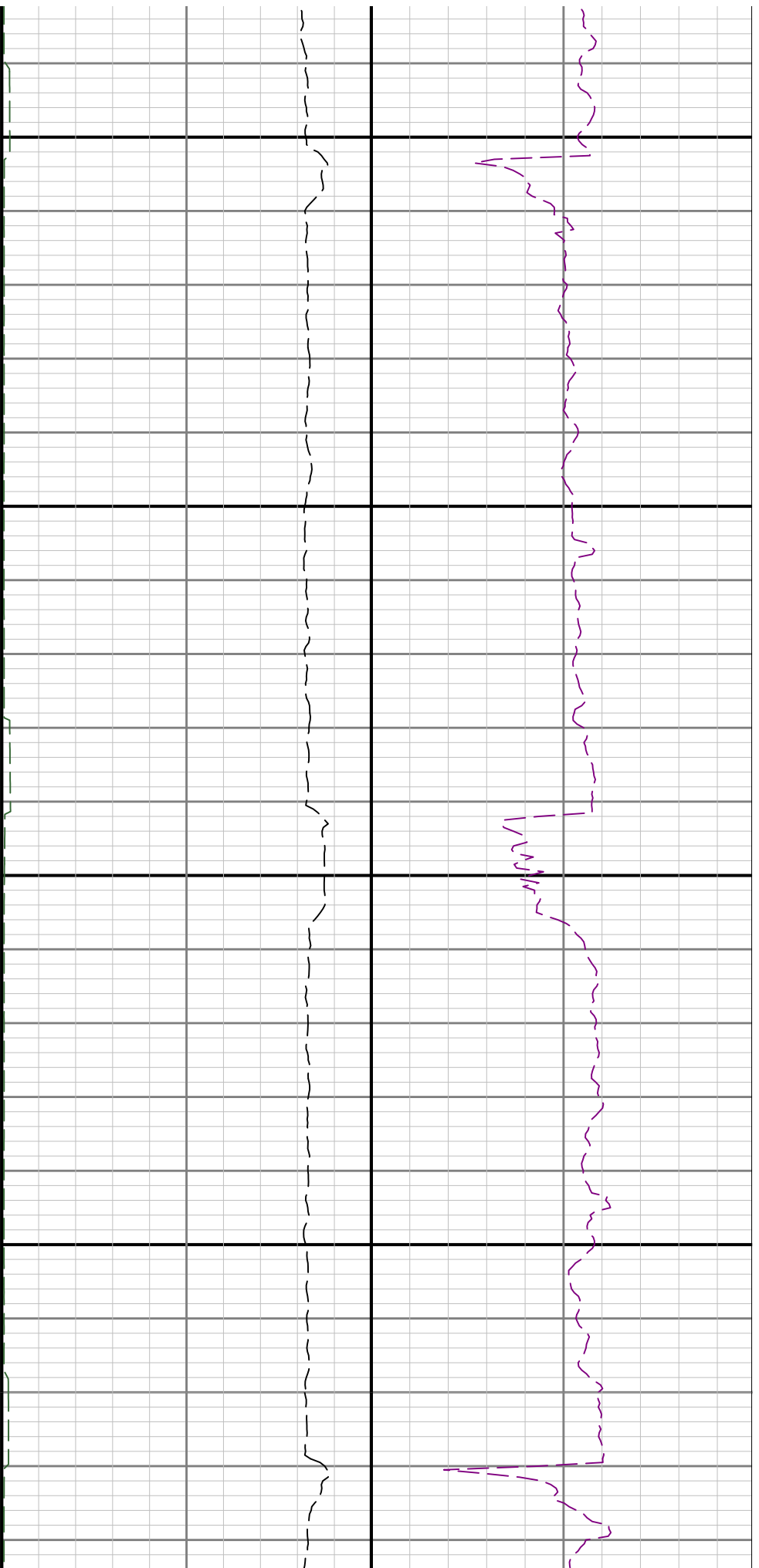
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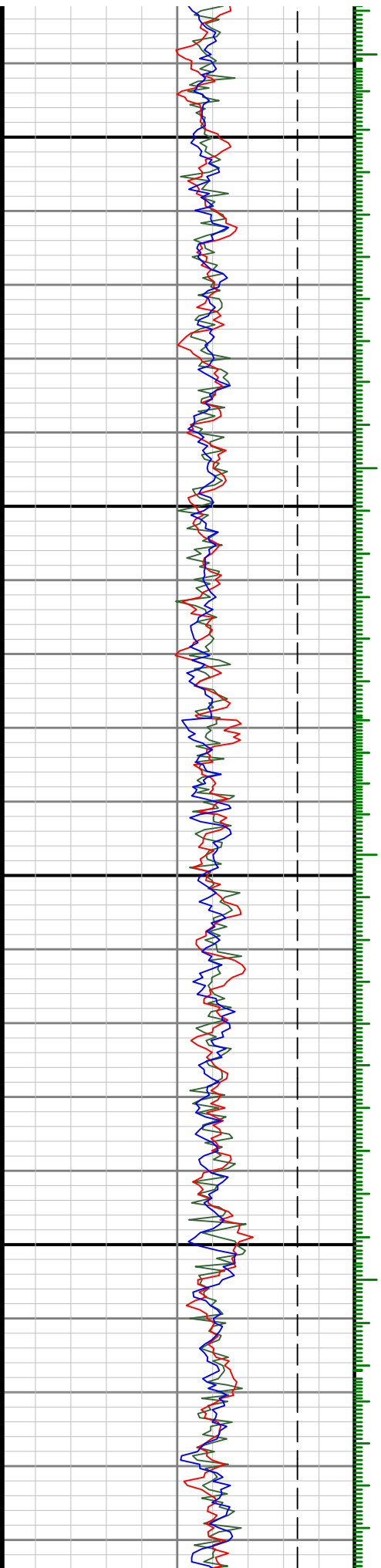


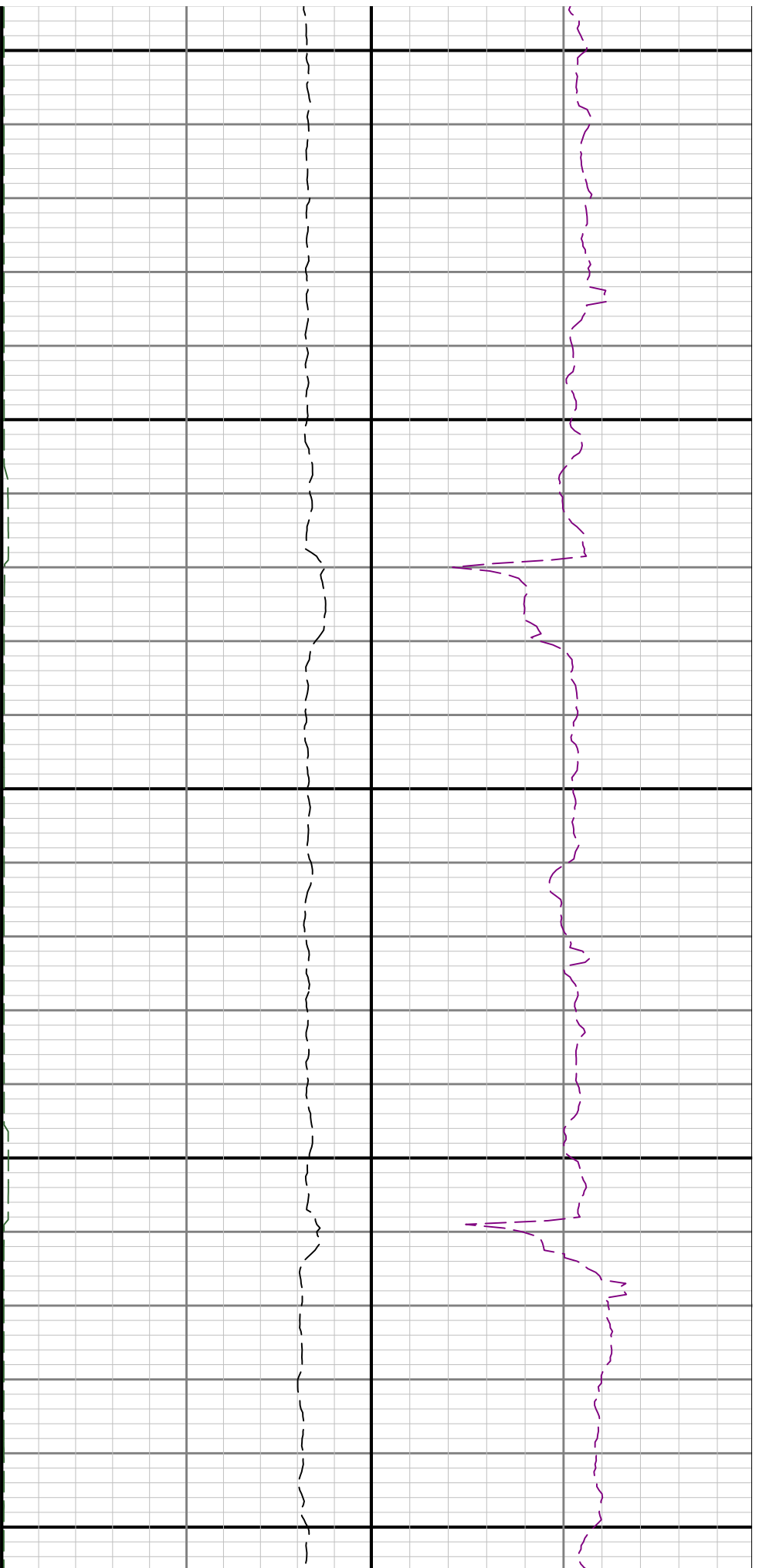




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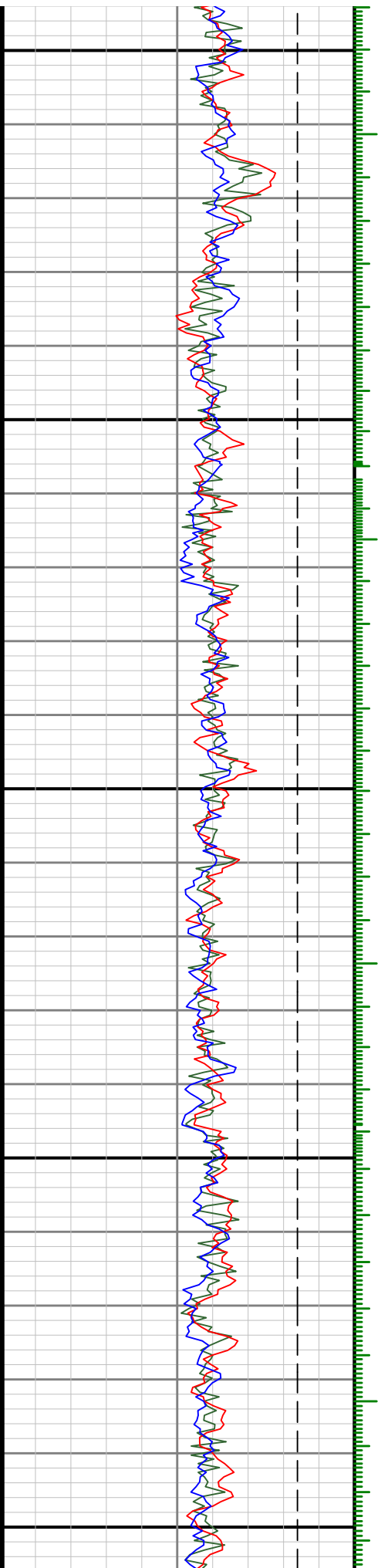
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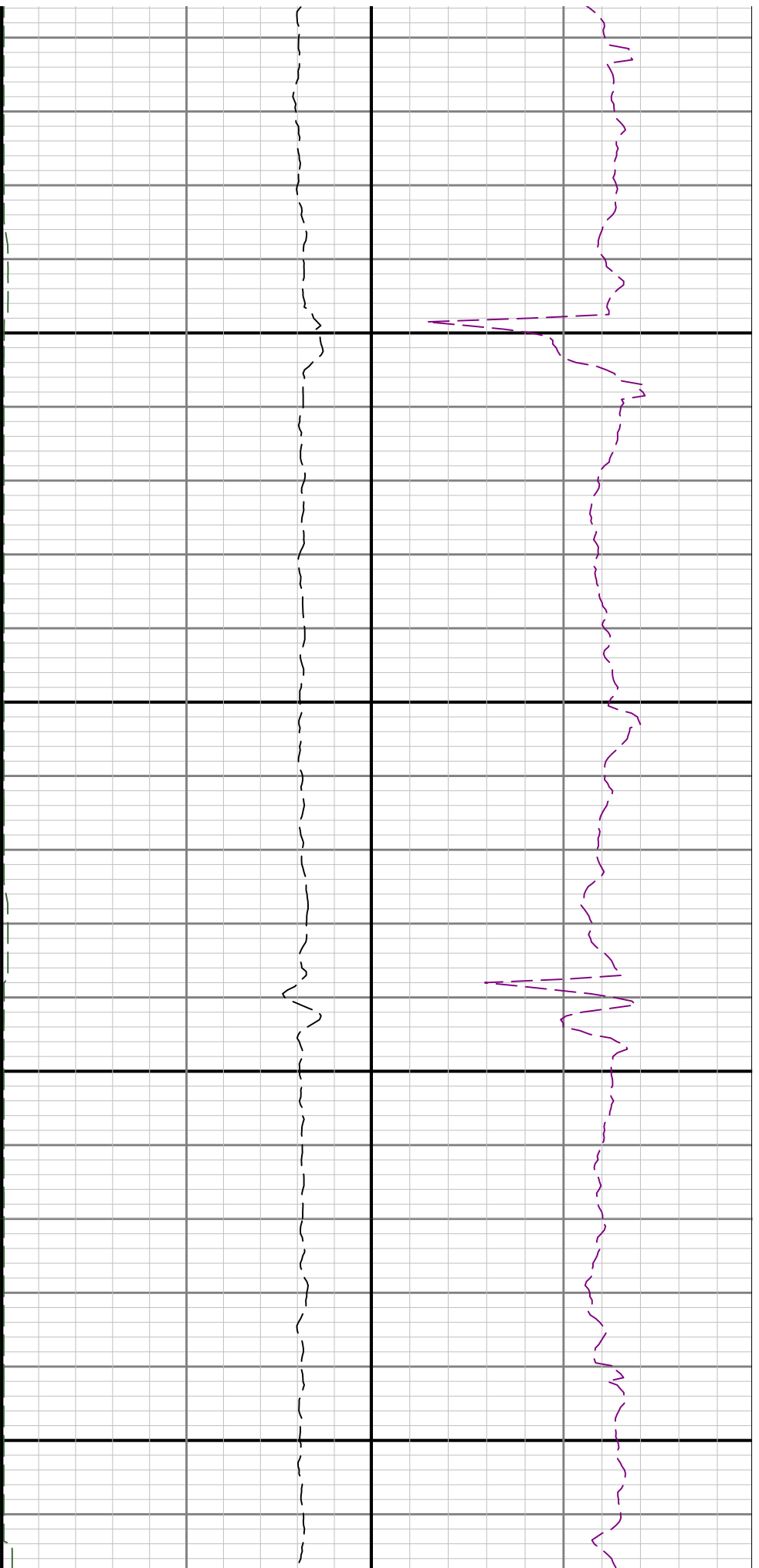




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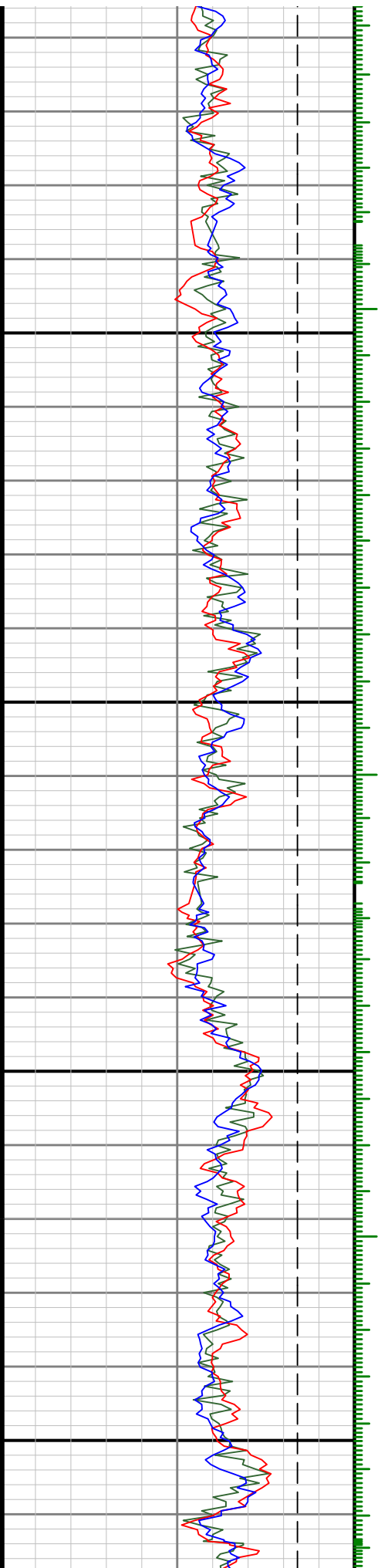
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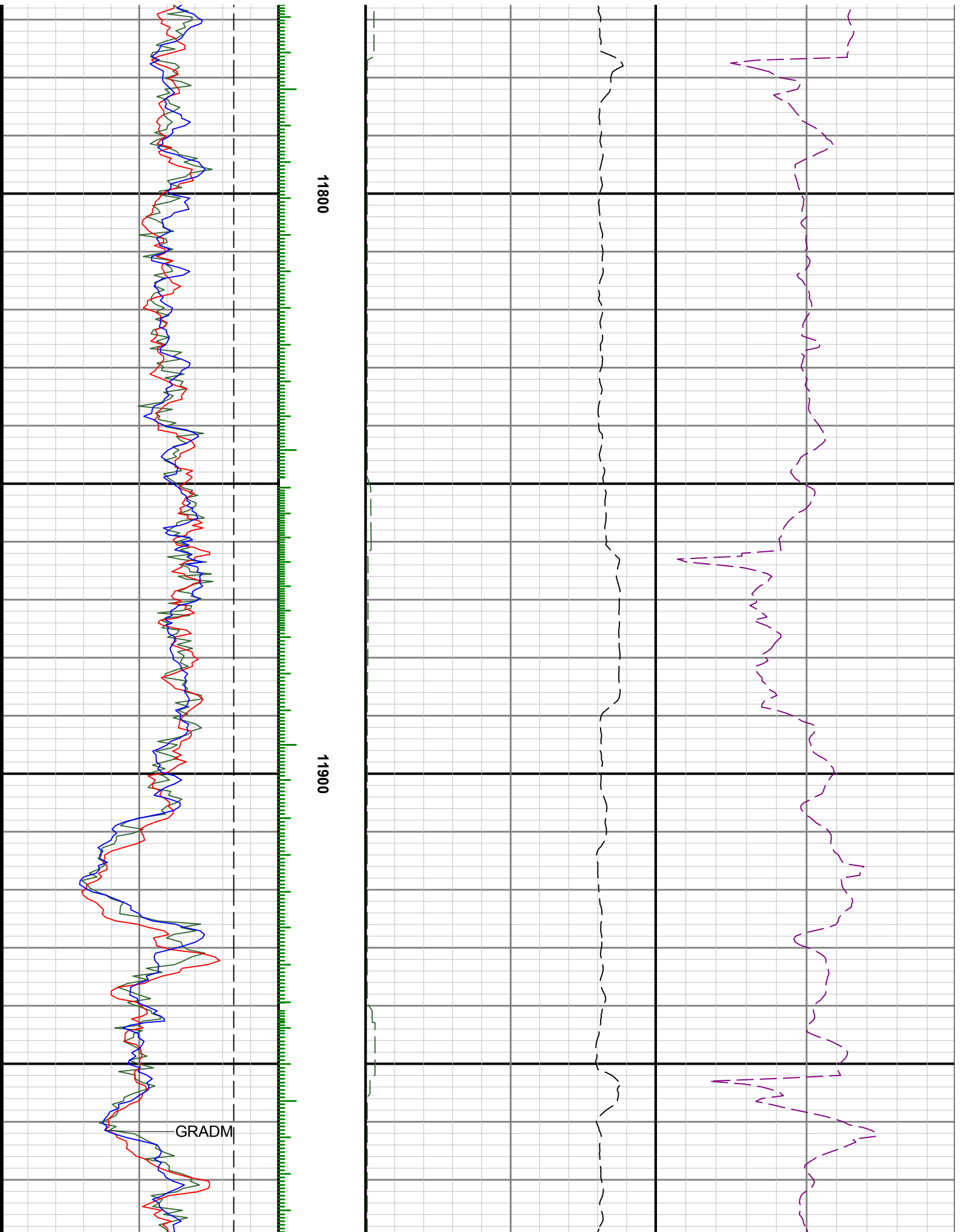


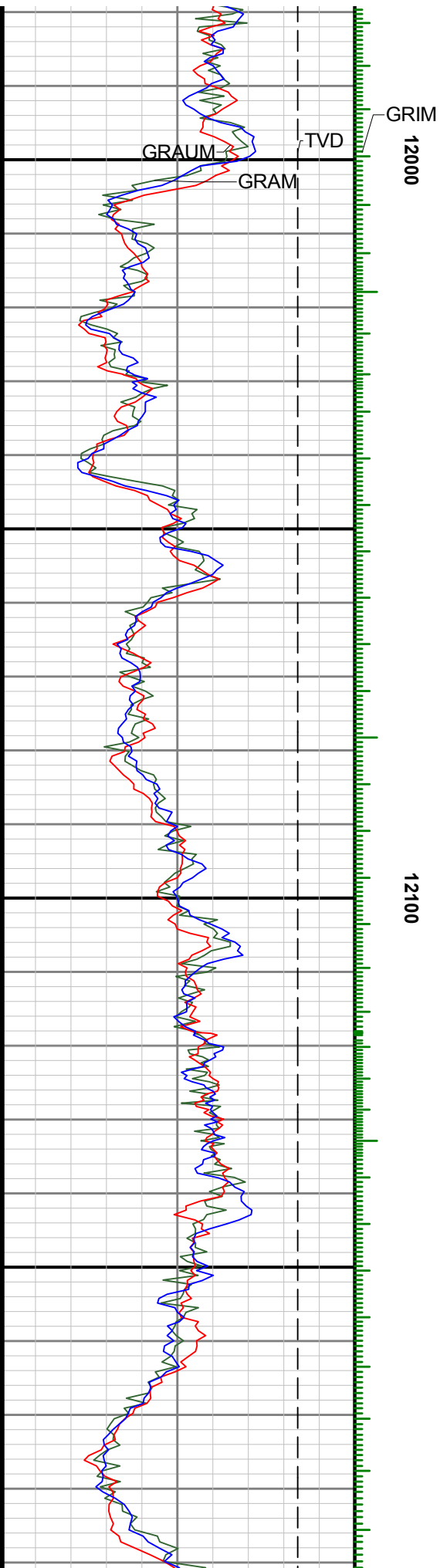


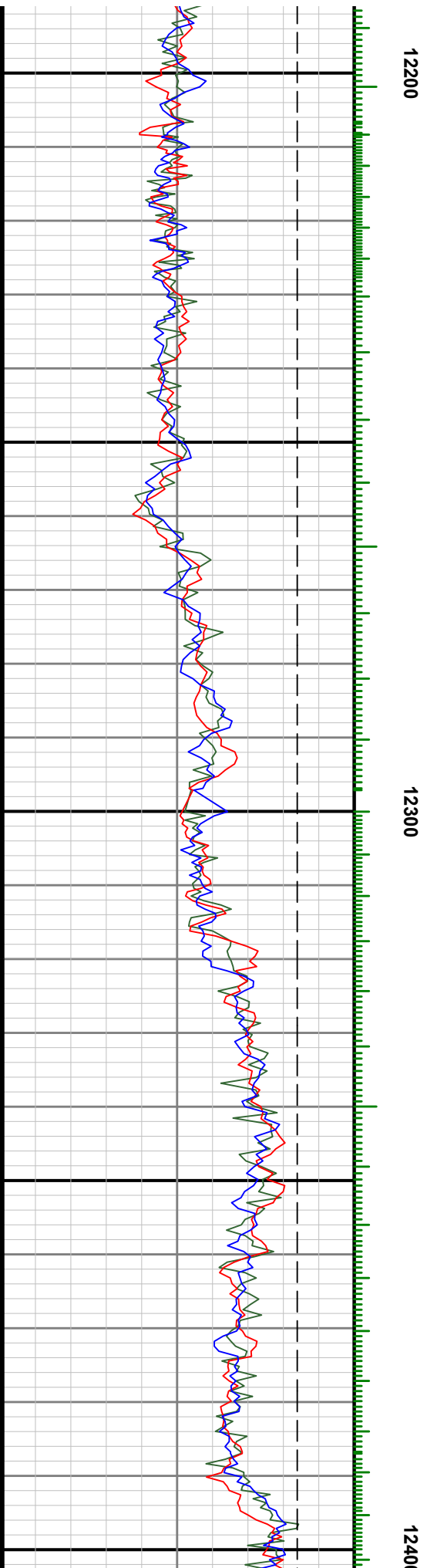
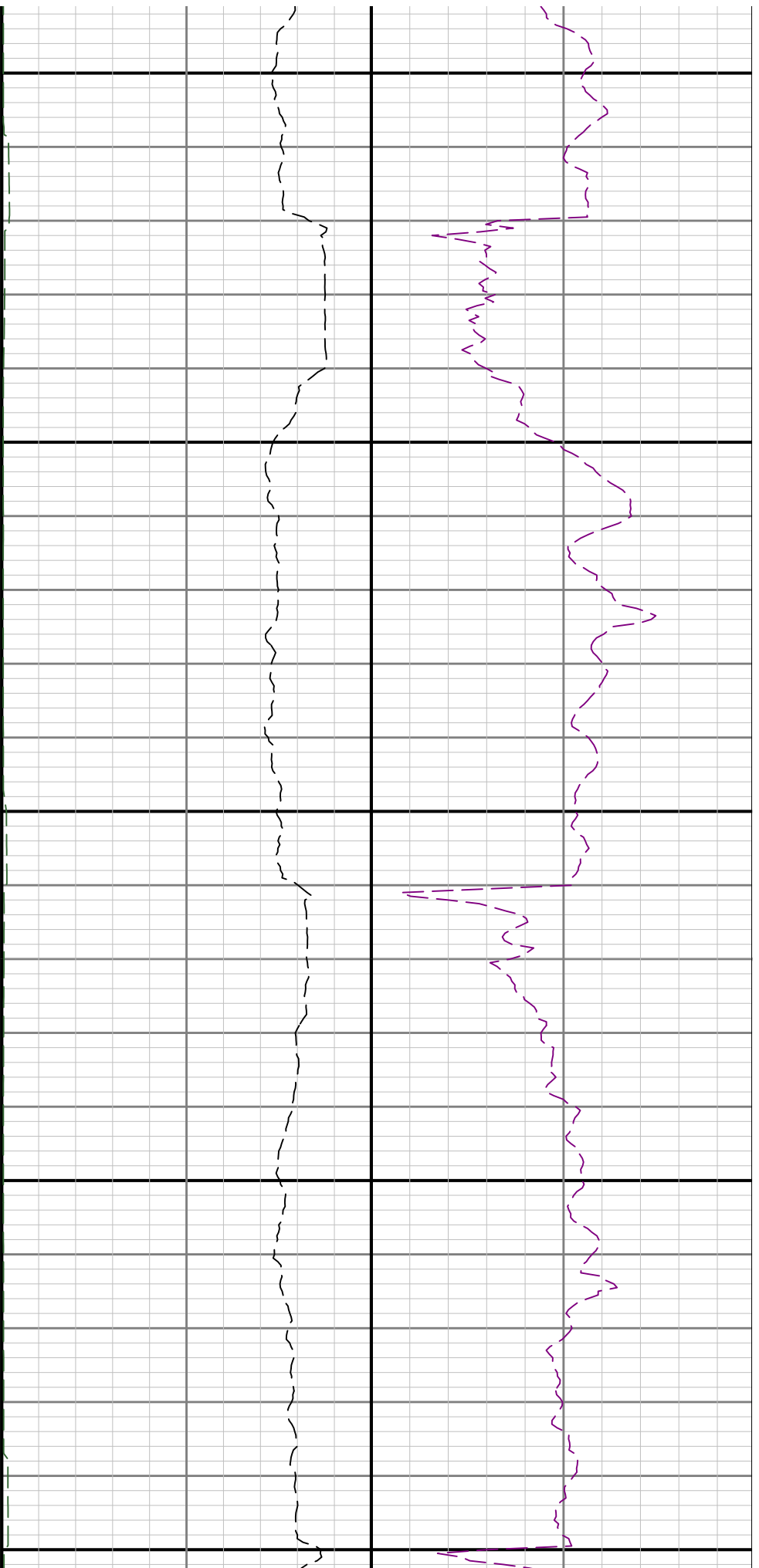
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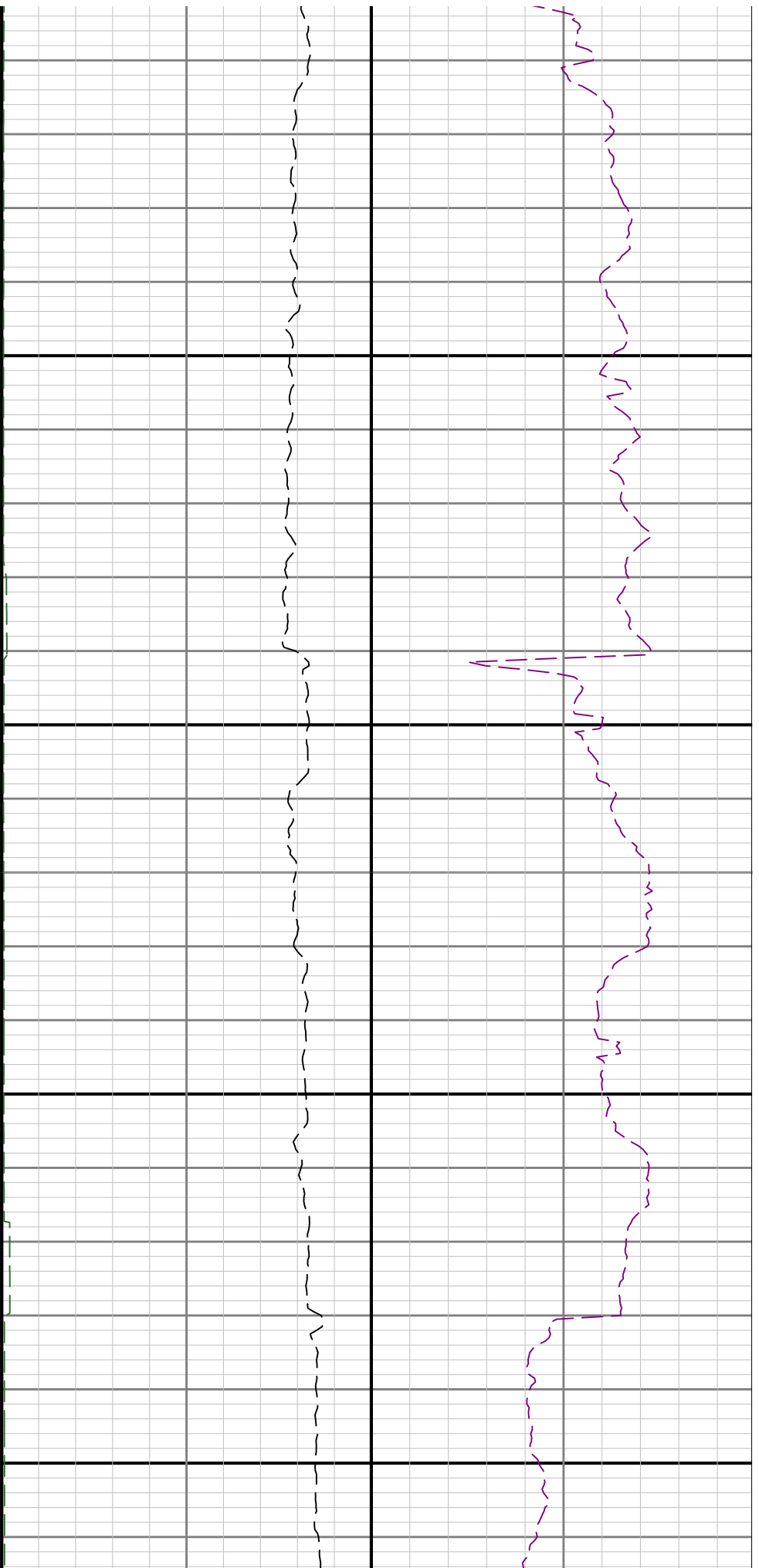
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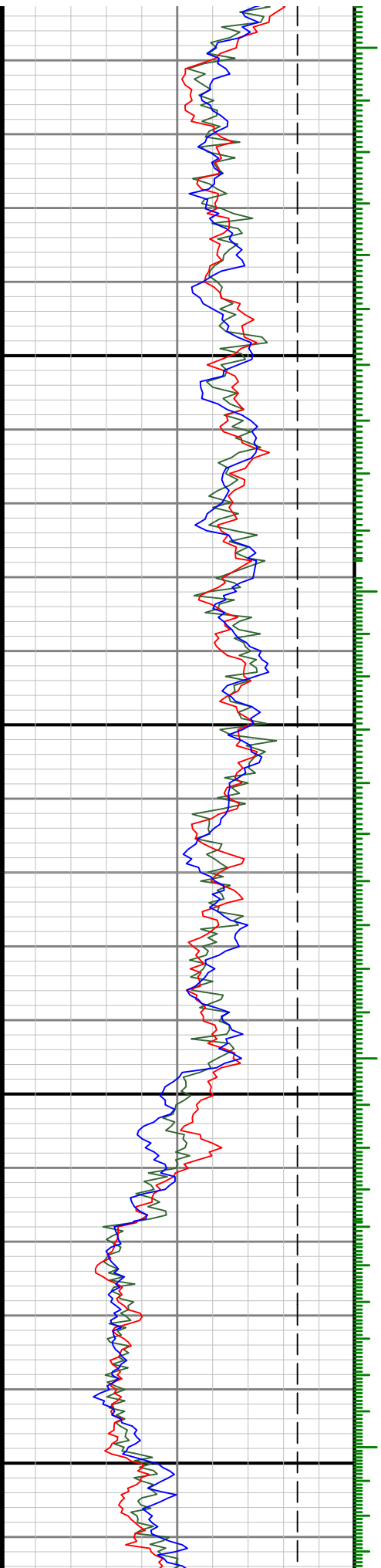


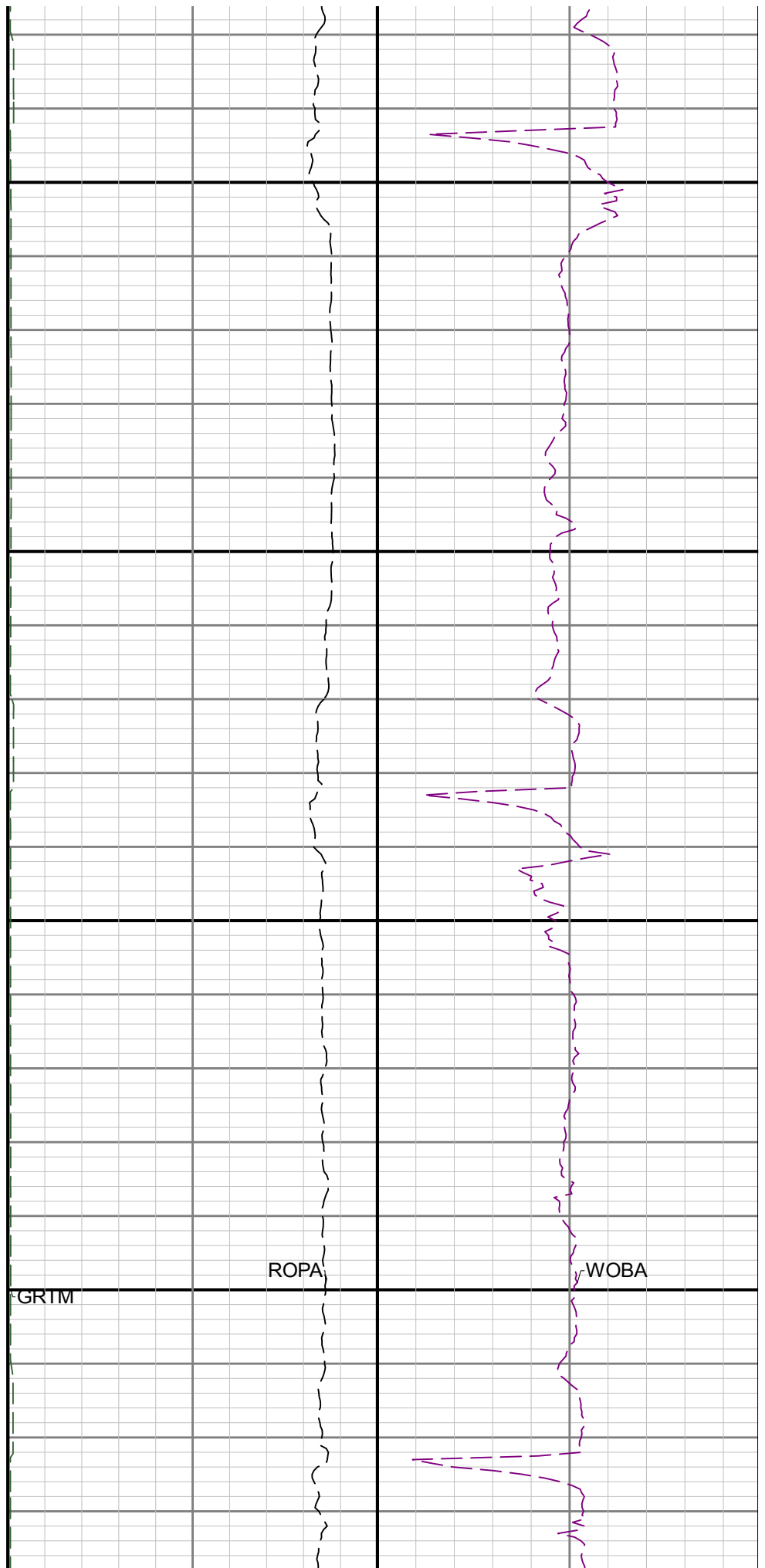
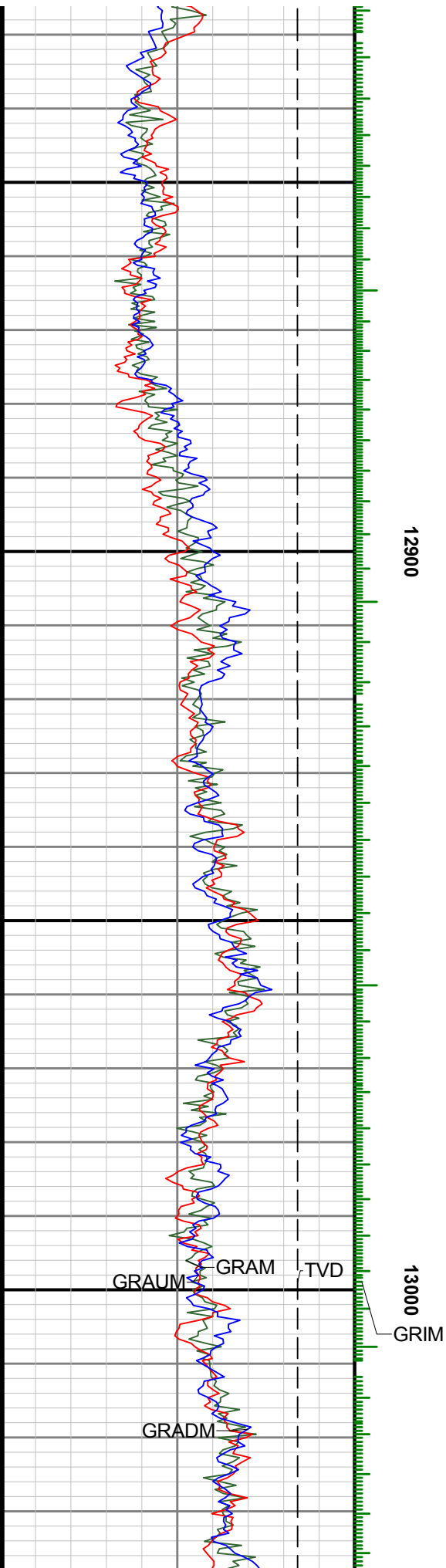


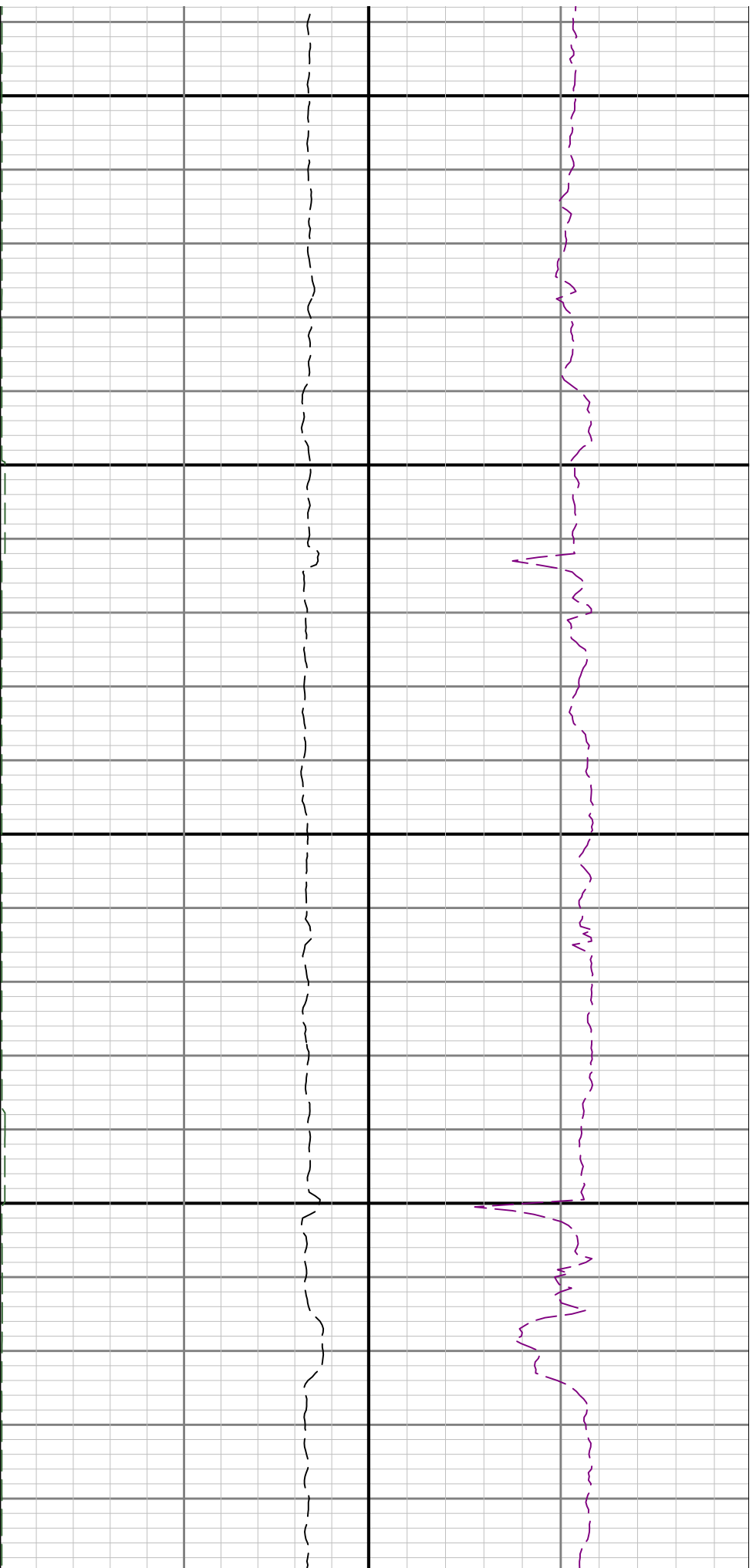




12500 12600

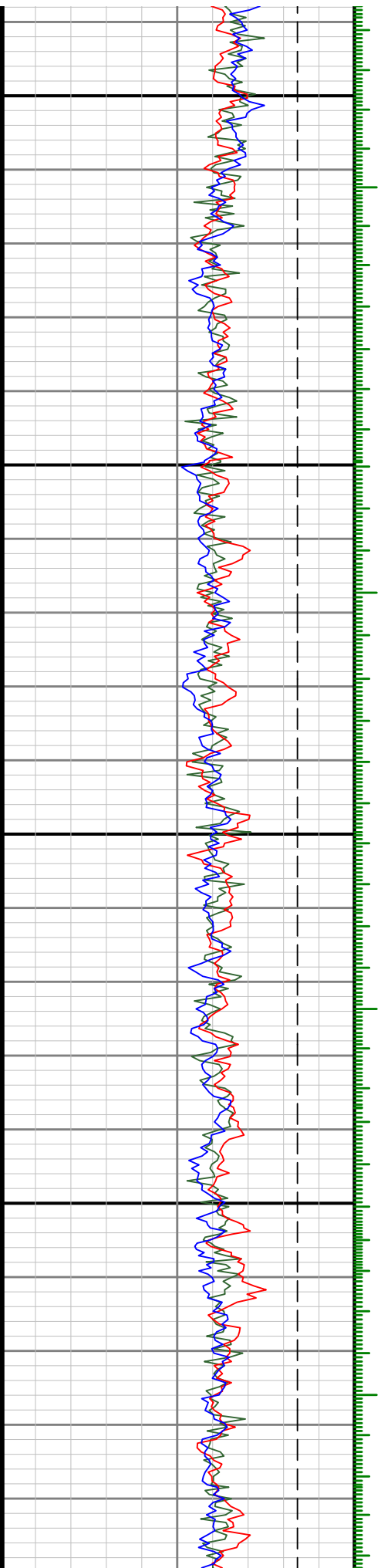


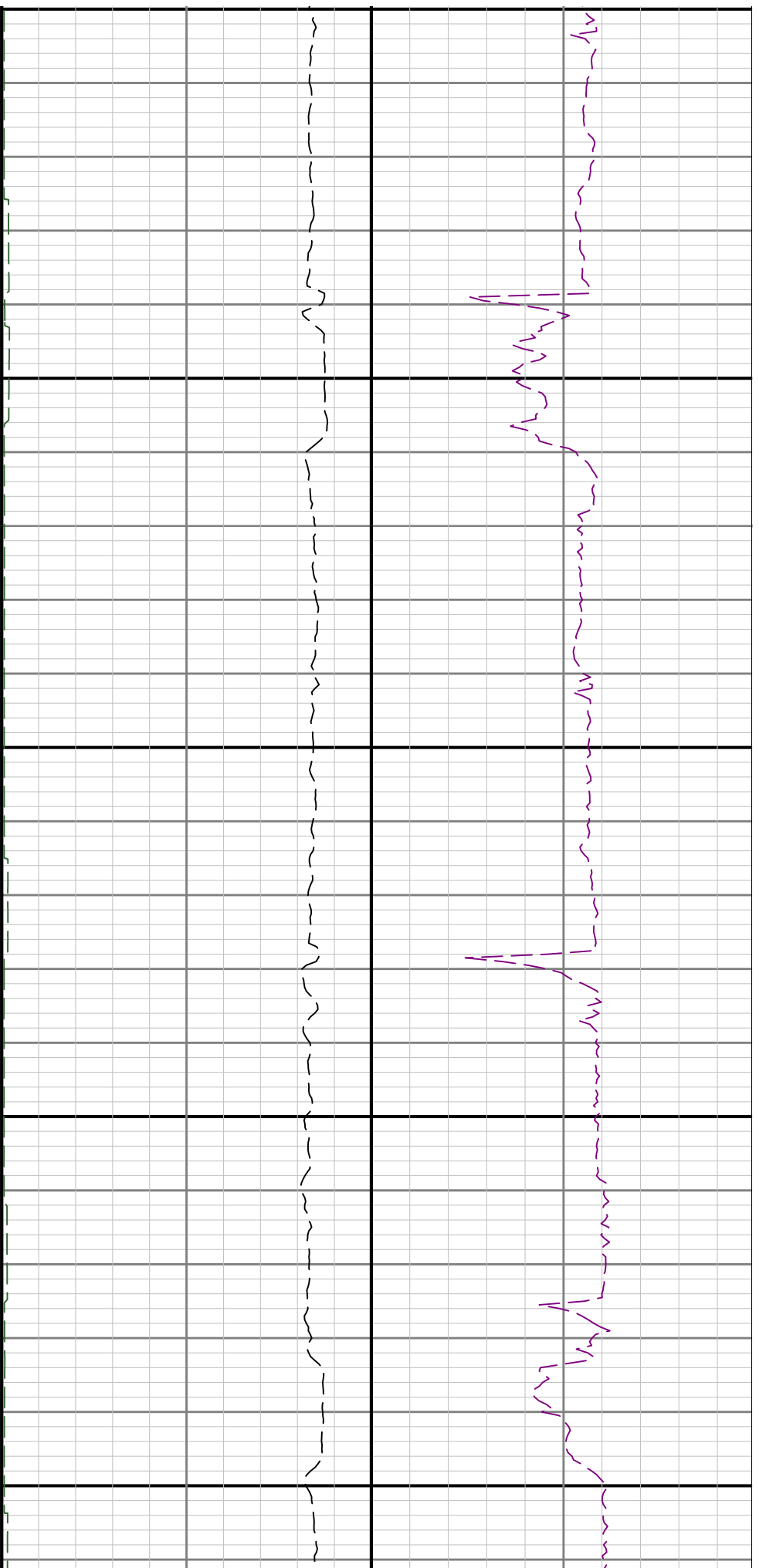




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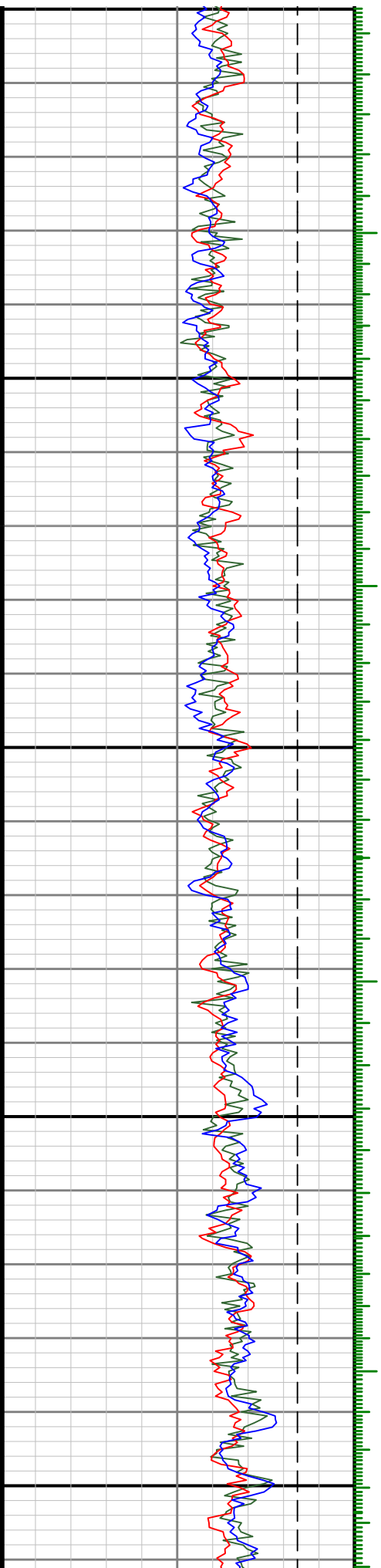
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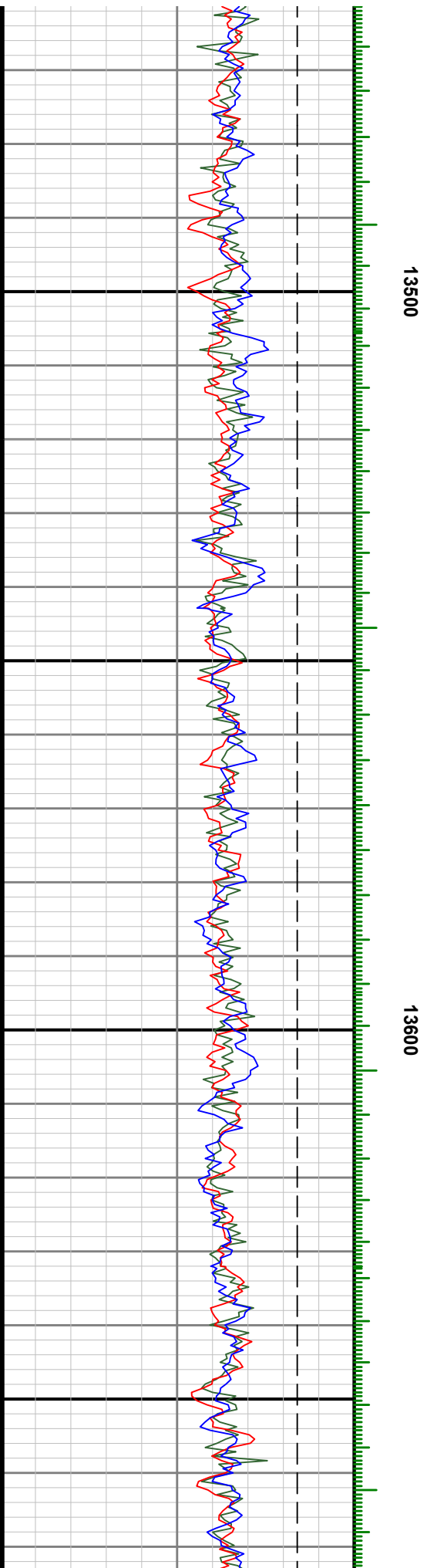
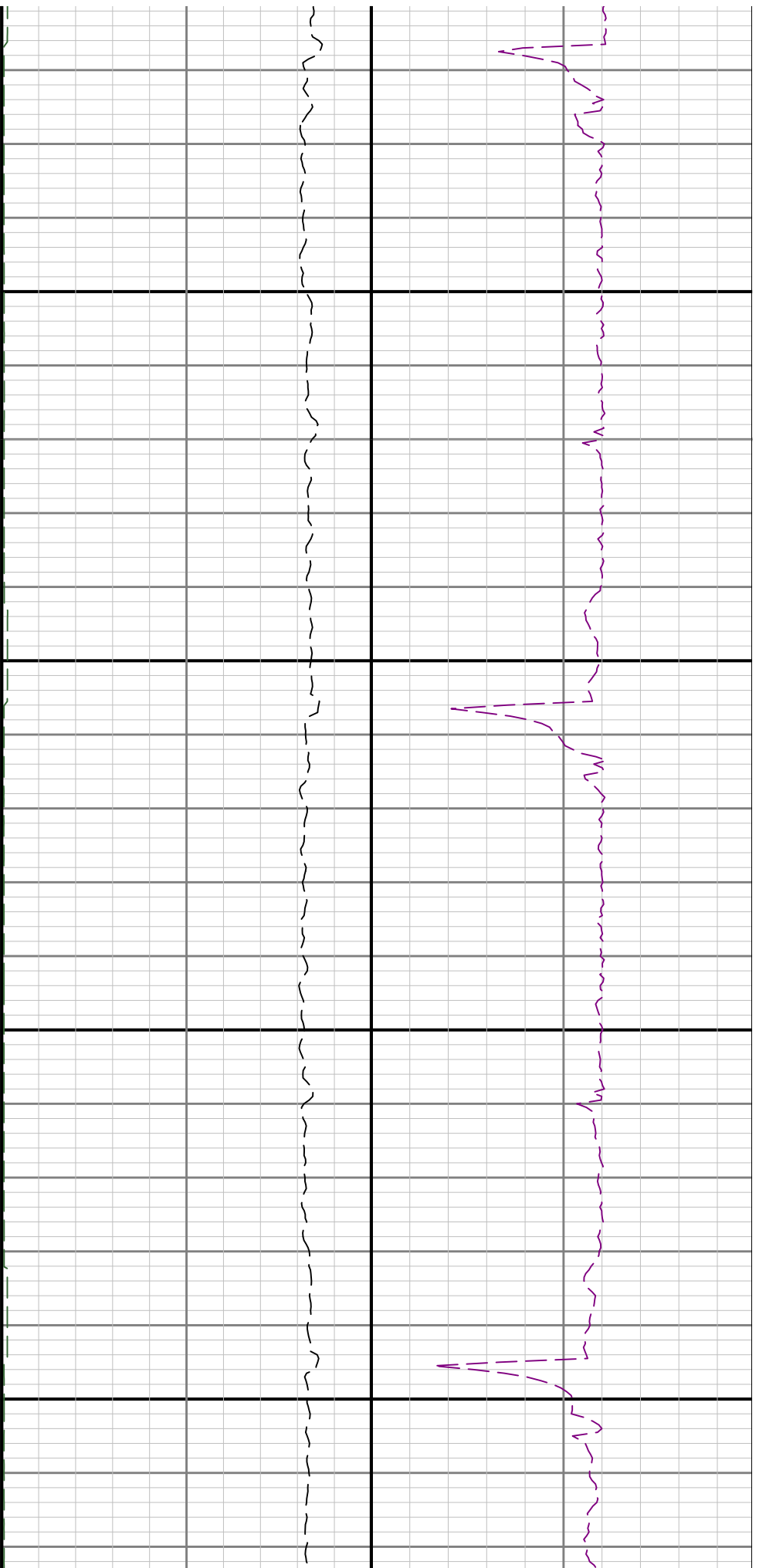


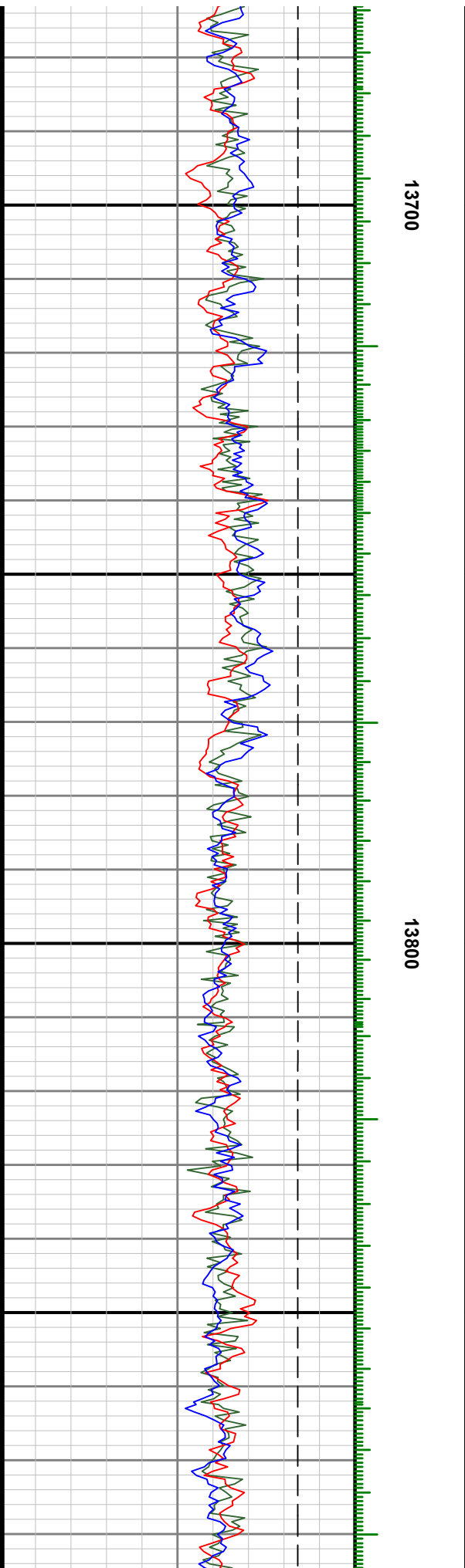
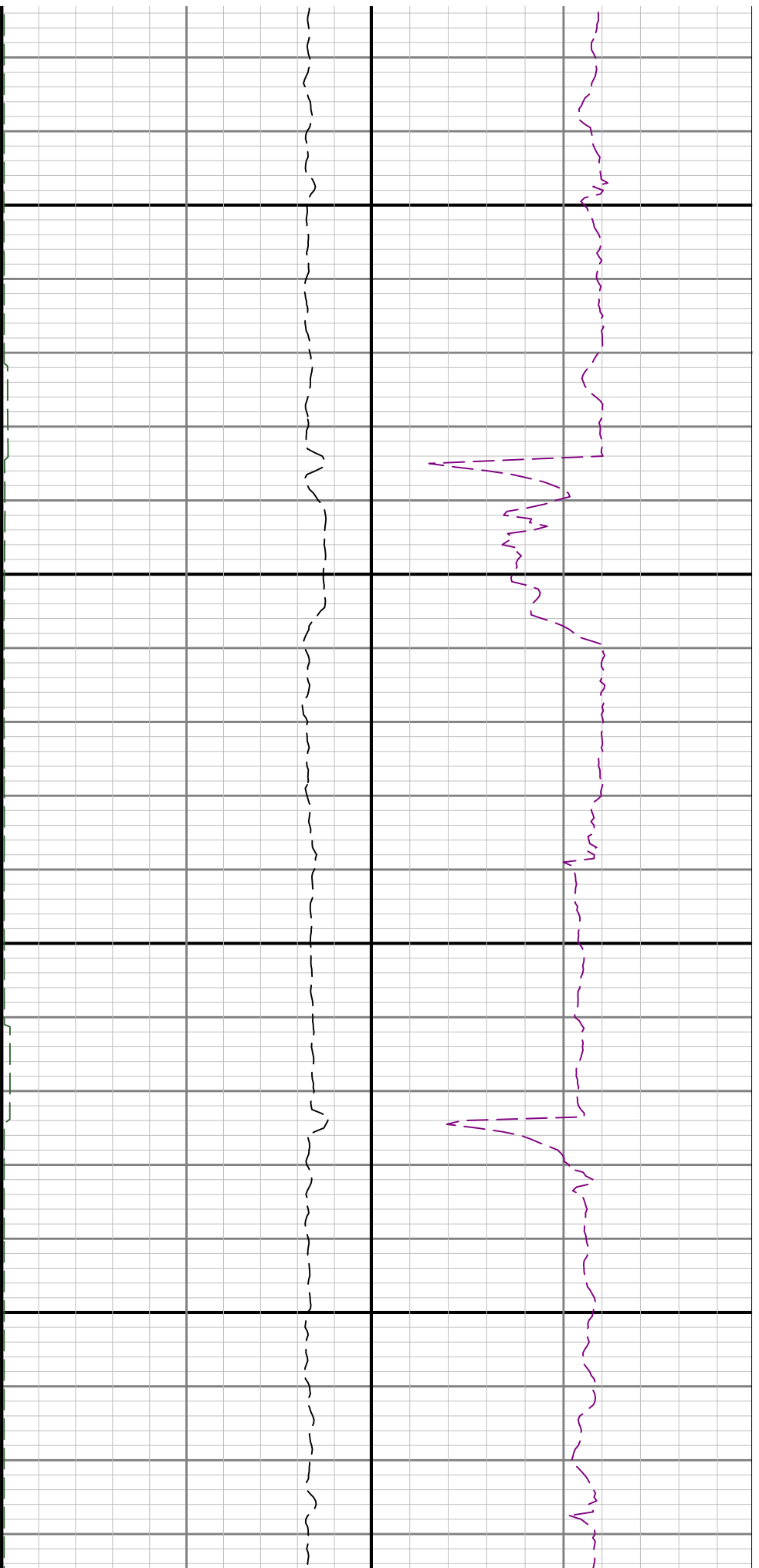


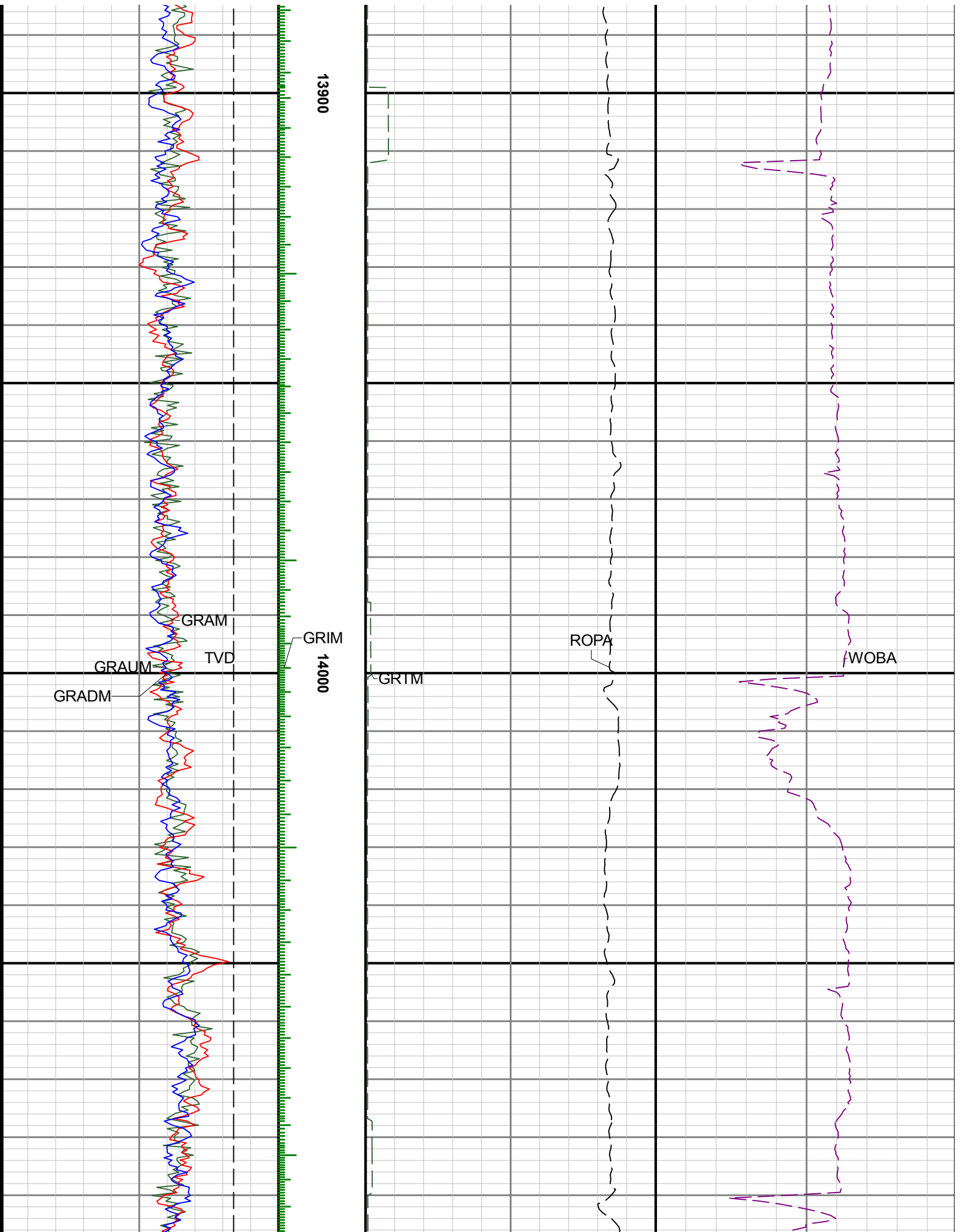
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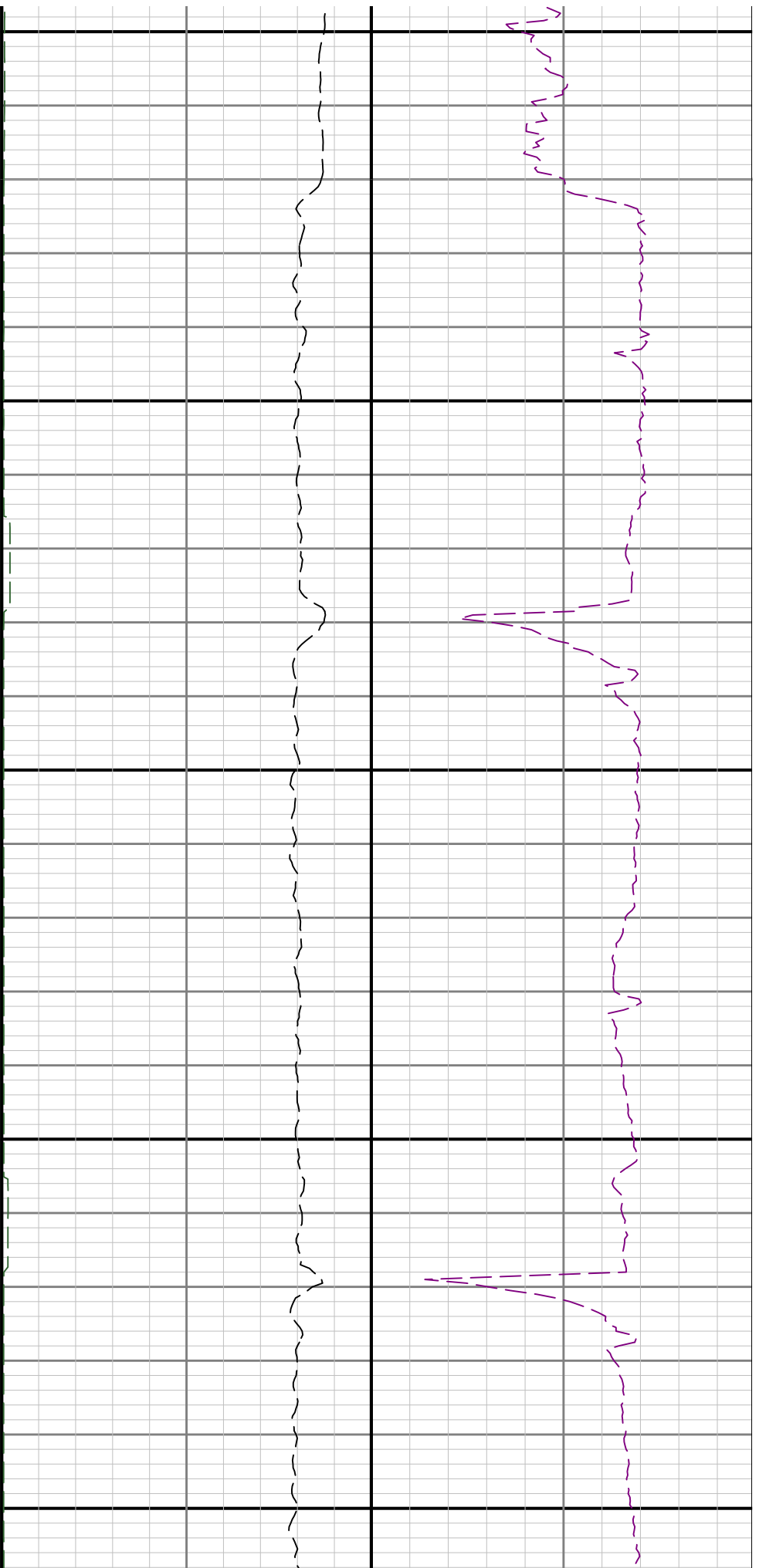
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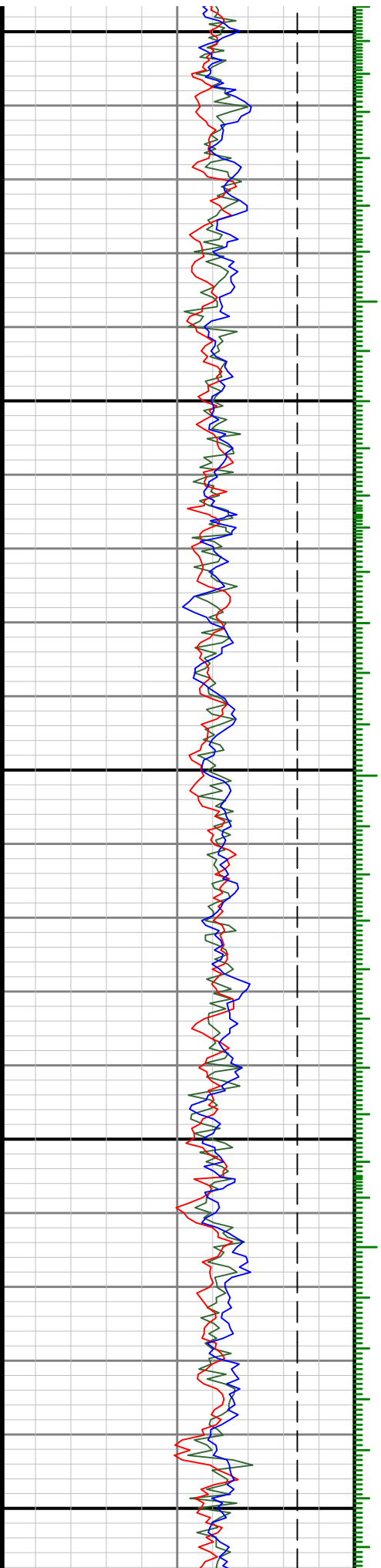


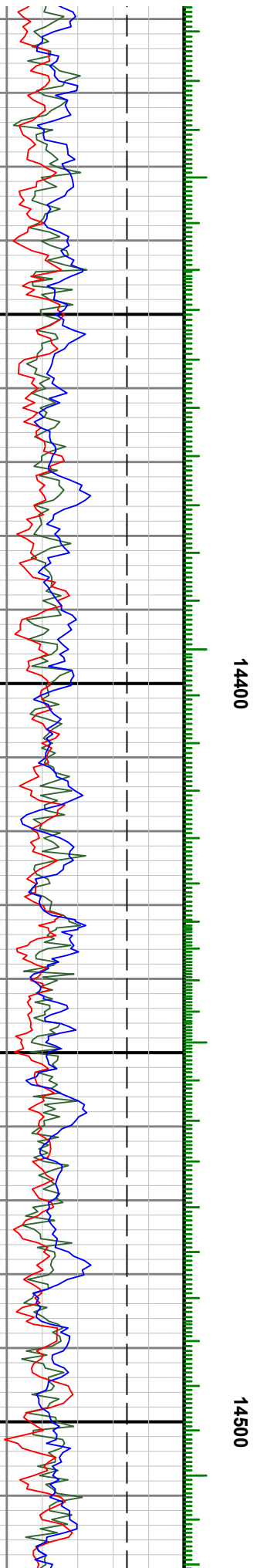
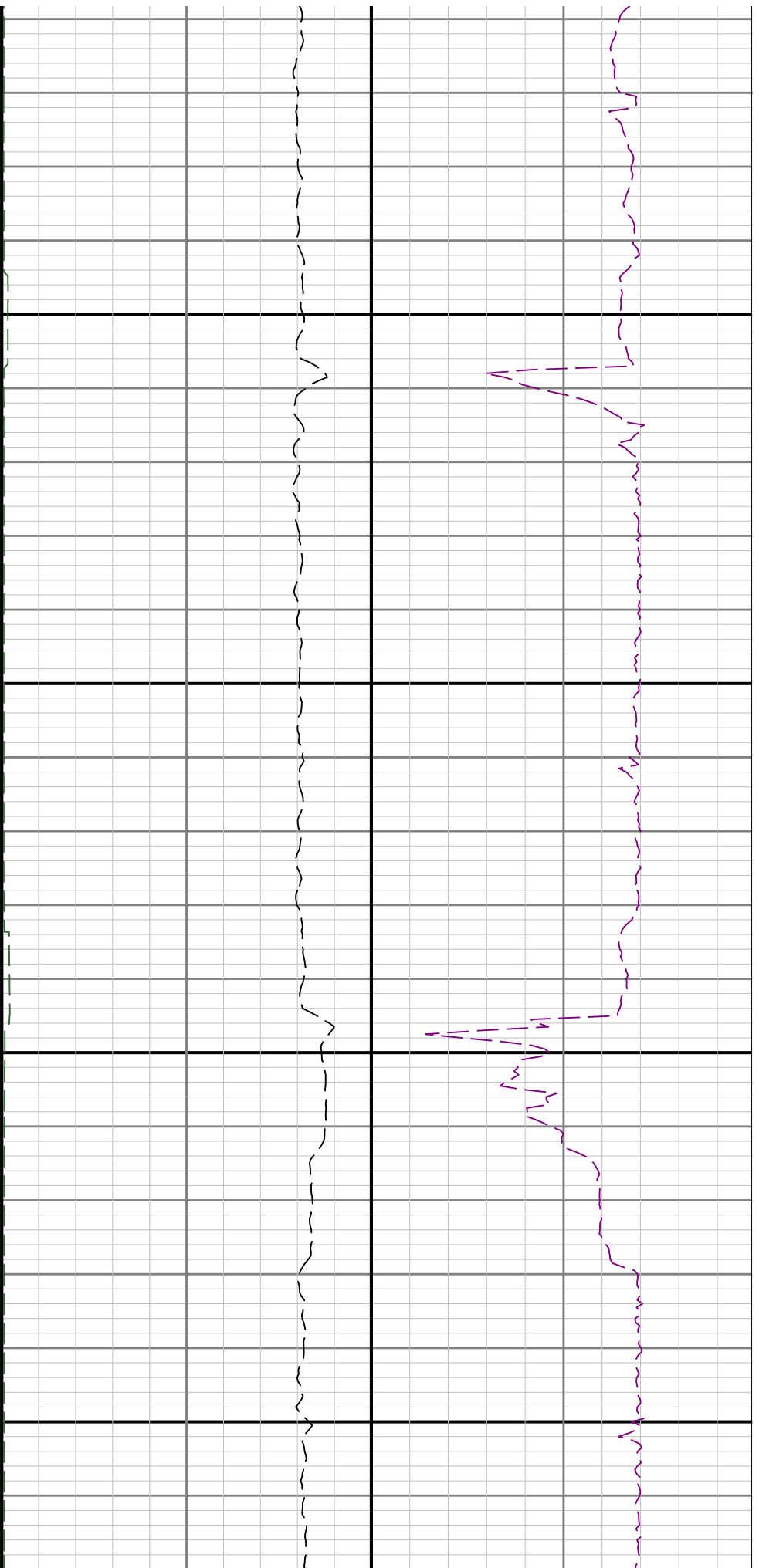


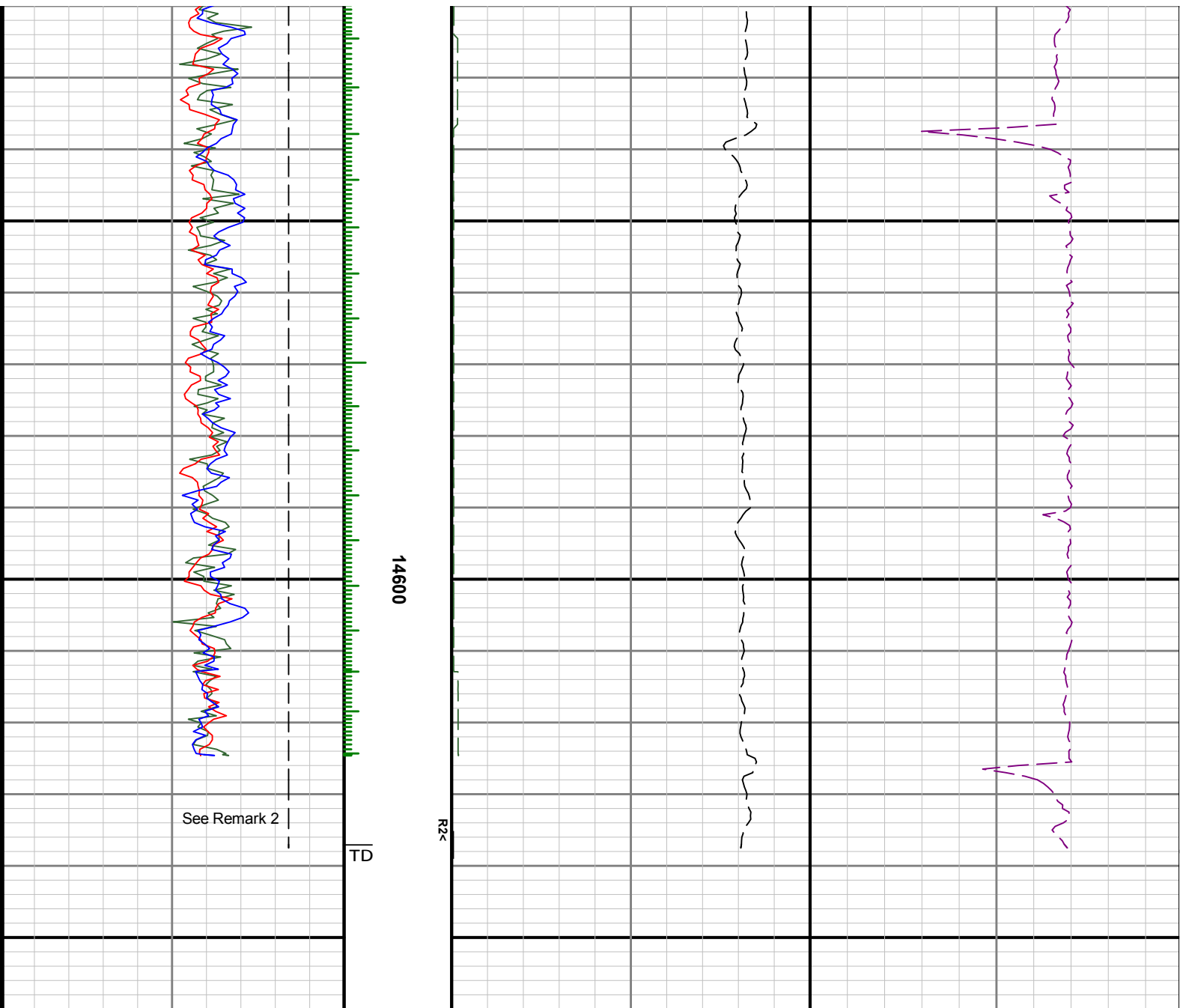
14100

14200

14300







14600

See Remark 2

TD

R2<

| | | | | | |
|--|------|--|-----|-----------------------------------|-----|
| Gamma Ray Apparent 0.5 ft Average [GRAM] | | Depth Averaged ROP 3 ft Average [ROPA] | | Weight On Bit 1 ft Average [WOBA] | |
| 0 | 250 | 1200 | 0 | 0 | 50 |
| API | | ft/h | | klb | |
| Gamma Ray Apparent UP 0.5 ft Average [GRAUM] | | Time Since Drilled [GRTM] | | Downhole Temperature [TCDM] | |
| 0 | 250 | 0 | 600 | 0 | 300 |
| API | | min | | degF | |
| Gamma Ray Apparent DOWN 0.5 ft Average [GRADM] | | | | | |
| 0 | 250 | | | | |
| API | | | | | |
| True Vertical Depth [TVD] | | | | | |
| 0 | 9000 | | | | |
| ft | | | | | |

MD 1:240 feet