



Gamma Ray

LWD MEMORY LOG

Scale:

1:240

Measured Depth

Depth Reference:

Driller's Depth

Status:

Final Print

API No: 05-123-50789-00

Job ID: 110727948

Permanent Datum (P.D.): Mean Sea Level

Log Measured From: Rig Floor

Company: Noble Energy

Well: Reveille A34-757

Field: Wattenberg

County: Weld Country: United States

State: Colorado

Surface Location:

Latitude:

Longitude:

Other Services:

40° 26' 13.884" N

104° 32' 25.224" W

Directional

SEC: 34 TWN: 6N RGE: 64W

Elevation: 0.00 ft

Above P.D.: 4662.00 ft

Elev. KB: N/A

Elev. DF: 4662.00 ft

Elev. GL: 4632.00 ft

Magnetic Field Reference

Grid Dip Angle: (deg) 66.81

Total Magnetic Field Strength: (nT) 51962

Mag to Reference North Correction: (deg) 7.12

Dates

From: 2021-02-26

To: 2021-02-28

Spud: 2021-02-04

Drilled (ft) 1937.00

Top: 1937.00

Bottom: 170720.00

Logged (ft) 1937.00

Top: 1937.00

Bottom: 17059.00

Borehole Record

Casing Record

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

30.00

1937.00

8.500

1937.00

17072.00

9.625

36.00

30.00

1927.00

Mud Record

Deviation Record

Type

From (ft)

To (ft)

Hole Size (in)

Interval (ft)

Inc | Az (Start)

Inc | Az (End)

Oil Based Mud

1937.00

17072.00

8.500

15135.00

0.66 | 240.37

89.60 | 359.35

Acquisition System

Software Version

Other

Cadence

DeliverableGen

RT 5.8

5.8.8989.1

Rig: H&P 517

Contractor: Helmerich & Payne Drilling Co

District: RMA

Unit: D&E

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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	
1	1	8.500	PDC	3.00	AutoTrak Curve	1937.00	17059.00	1937.00	17072.00	2021-02-26 07:15	2021-02-28 12:49	49.73

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Tien Bui	2021-02-25	2021-03-01						

Mud Properties Record

Date / Time	Run No.	Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2021-02-25 12:45	1	1937.00	Oil Based Mud	9.2	10	N/A	19.5	79.5/20.5	Active Pit	27000	0.00
2021-02-28 22:37	1	13600.00	Oil Based Mud	9.7	17	N/A	18.4	78.9/21.1	Active Pit	29000	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)
1	AutoTrak Curve Steering Unit	14316019	Near Bit VSS	5.93	6.87	7.000	4.330
1	AutoTrak Curve Steering Unit	14316019	Near Bit Inclination	5.93	6.87	7.000	4.330
1	AutoTrak Curve MWD	14281551	Gamma (single)	2.76	13.04	7.000	3.250
1	AutoTrak Curve MWD	14281551	Directional (mag)	12.27	22.55	7.000	3.250

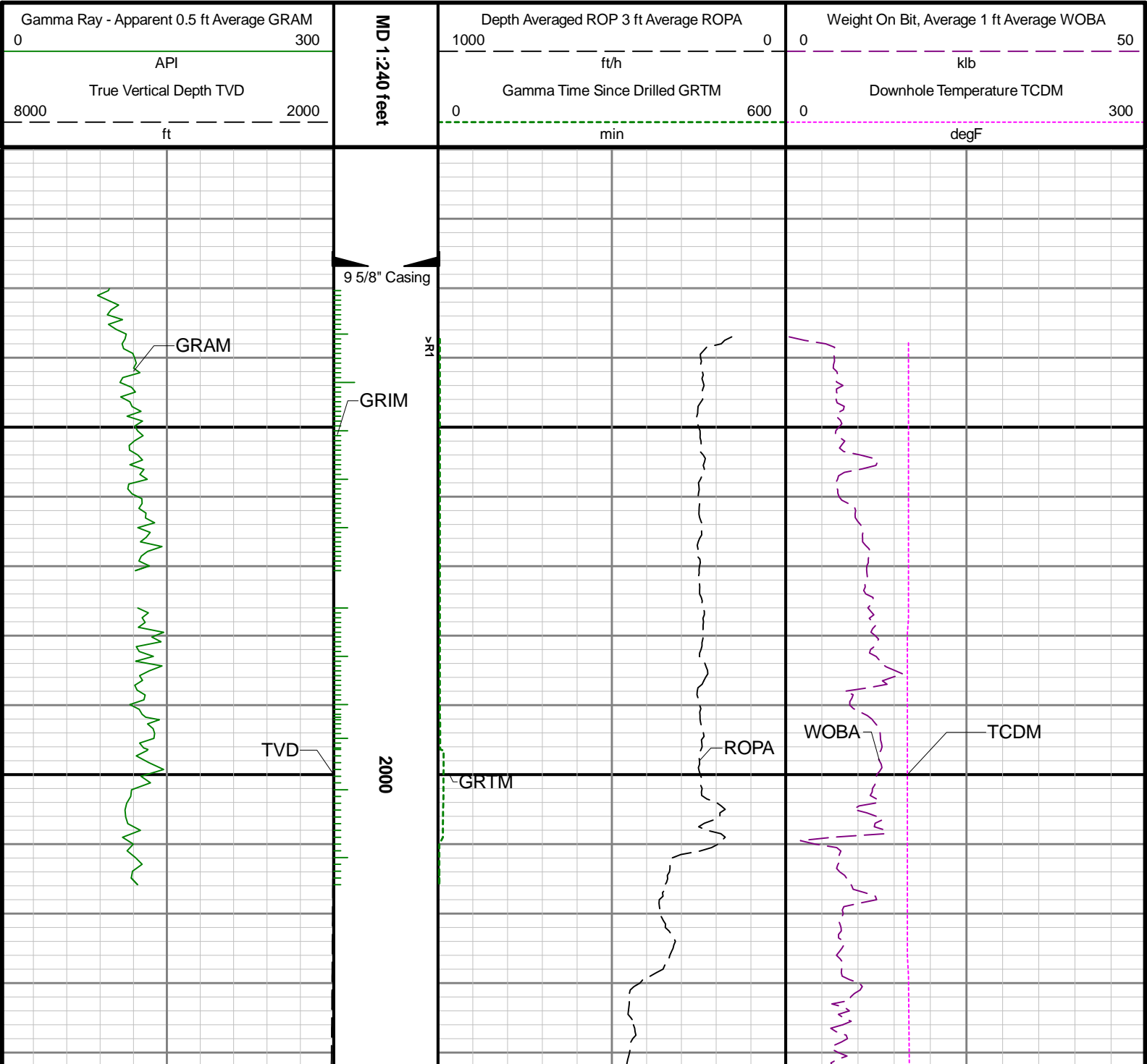
Service and Tool Mnemonics

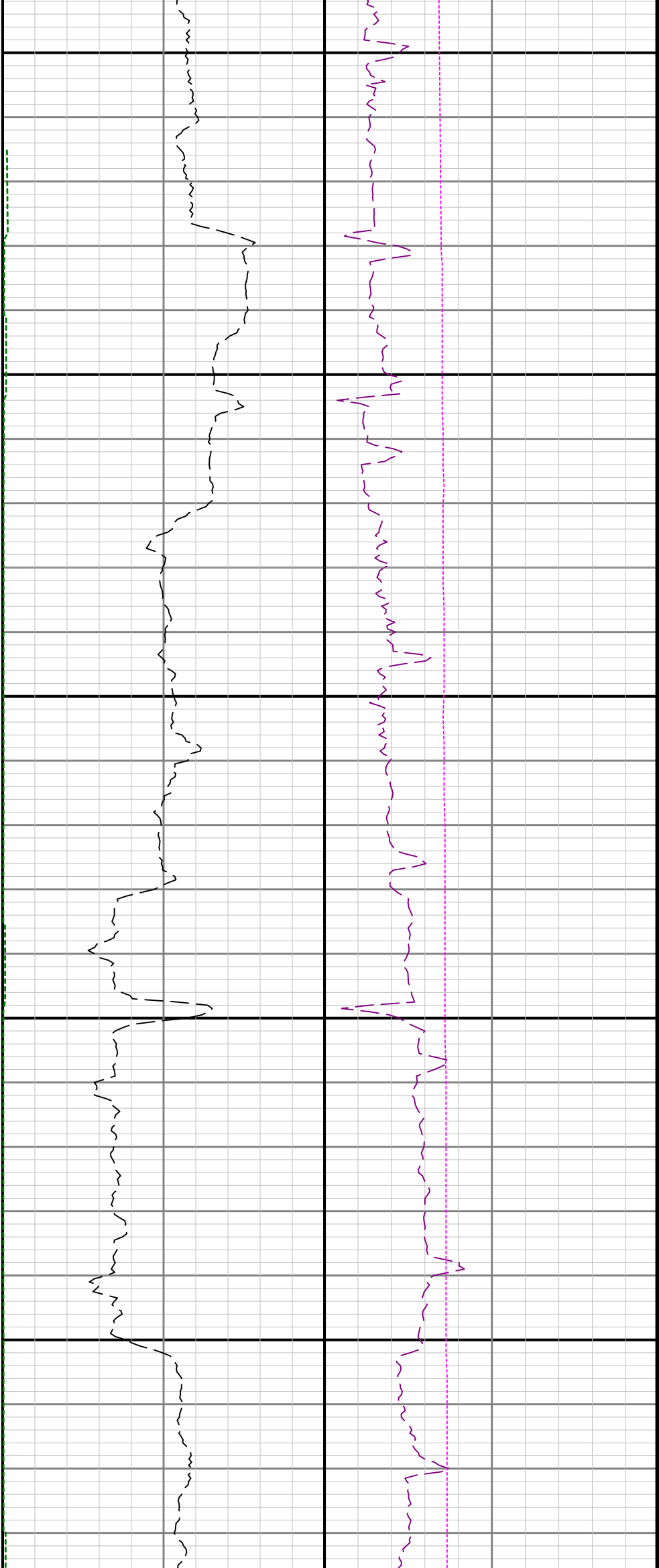
Mnemonic	Name	Description
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM

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 1 utilized 6 ¾ inch NaviGamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable assembly from 1937 to 17072 feet MD (1937 to 6682 feet TVD).
3 The Gamma Ray Apparent (GRAM) data is presented 0 to 300 API, per the customer's request.
4 Several gaps appear in the log due to drilling ahead before the assembly had time to properly power on.

Remarks				
Number	Depth	Hole Section	Run No.	Remark
	(ft)	(in)		
1	17059.00	8.500	1	The interval from 17059 to 17072 feet MD (6682 feet TVD) was not logged due to sensor to bit offset at well TD.

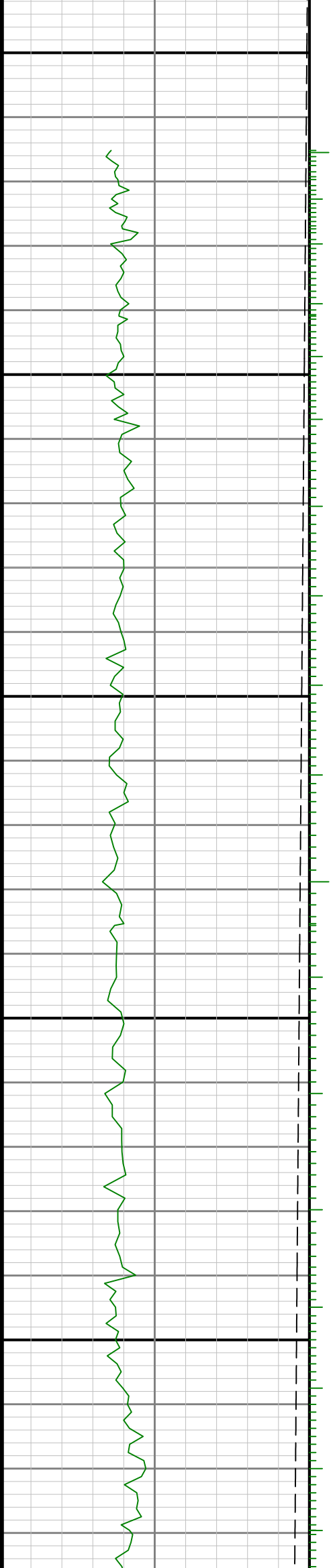
Curve Mnemonics		
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight on Bit - Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
TCDM	Directional Real-Time Survey Temperature	degF

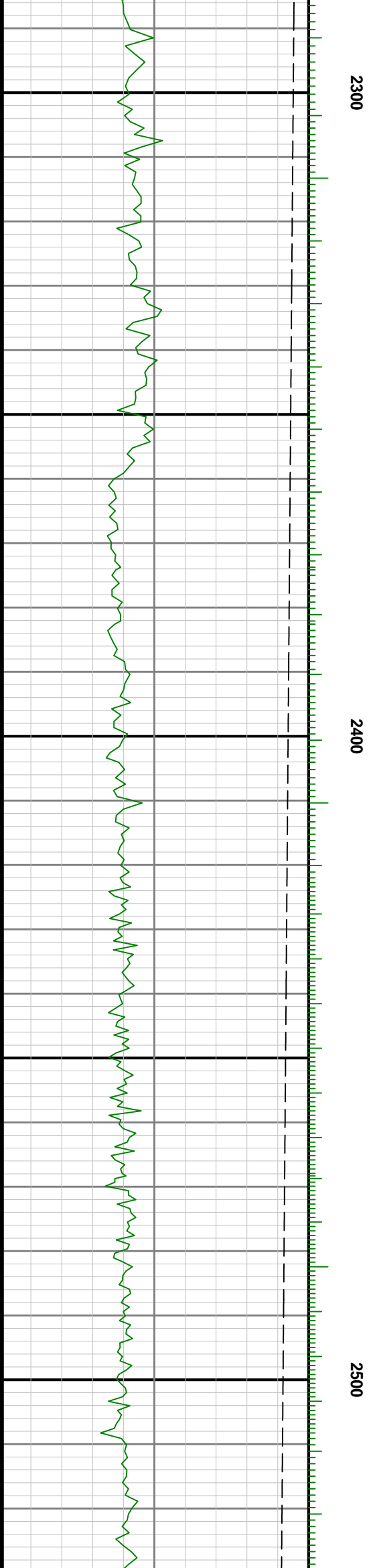


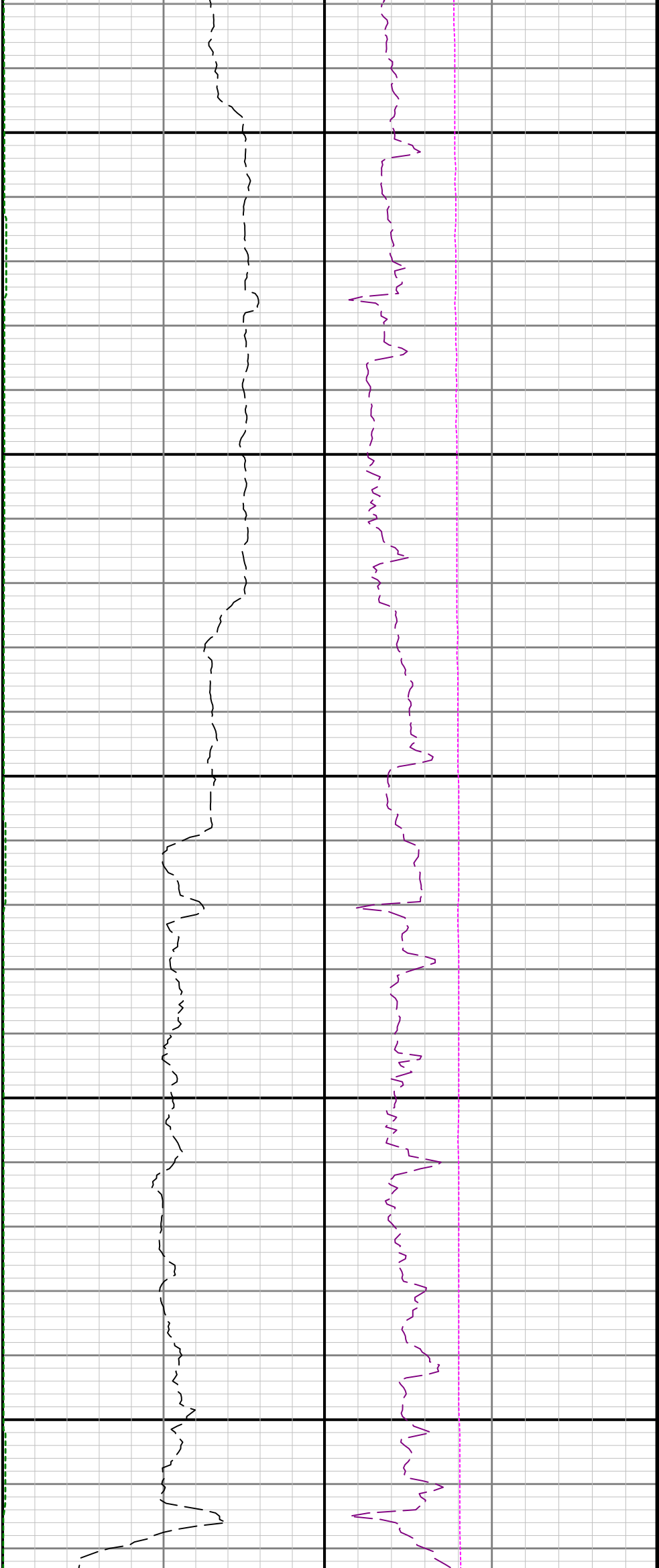


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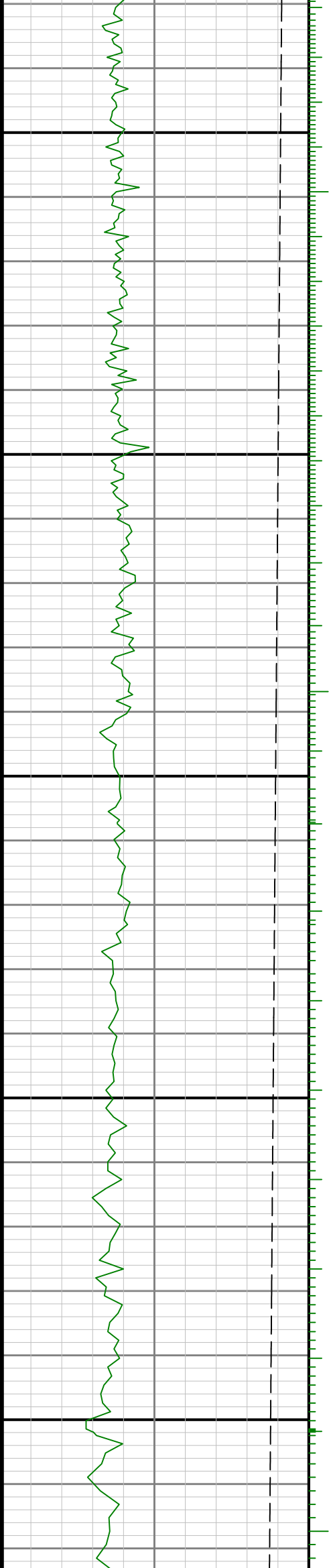


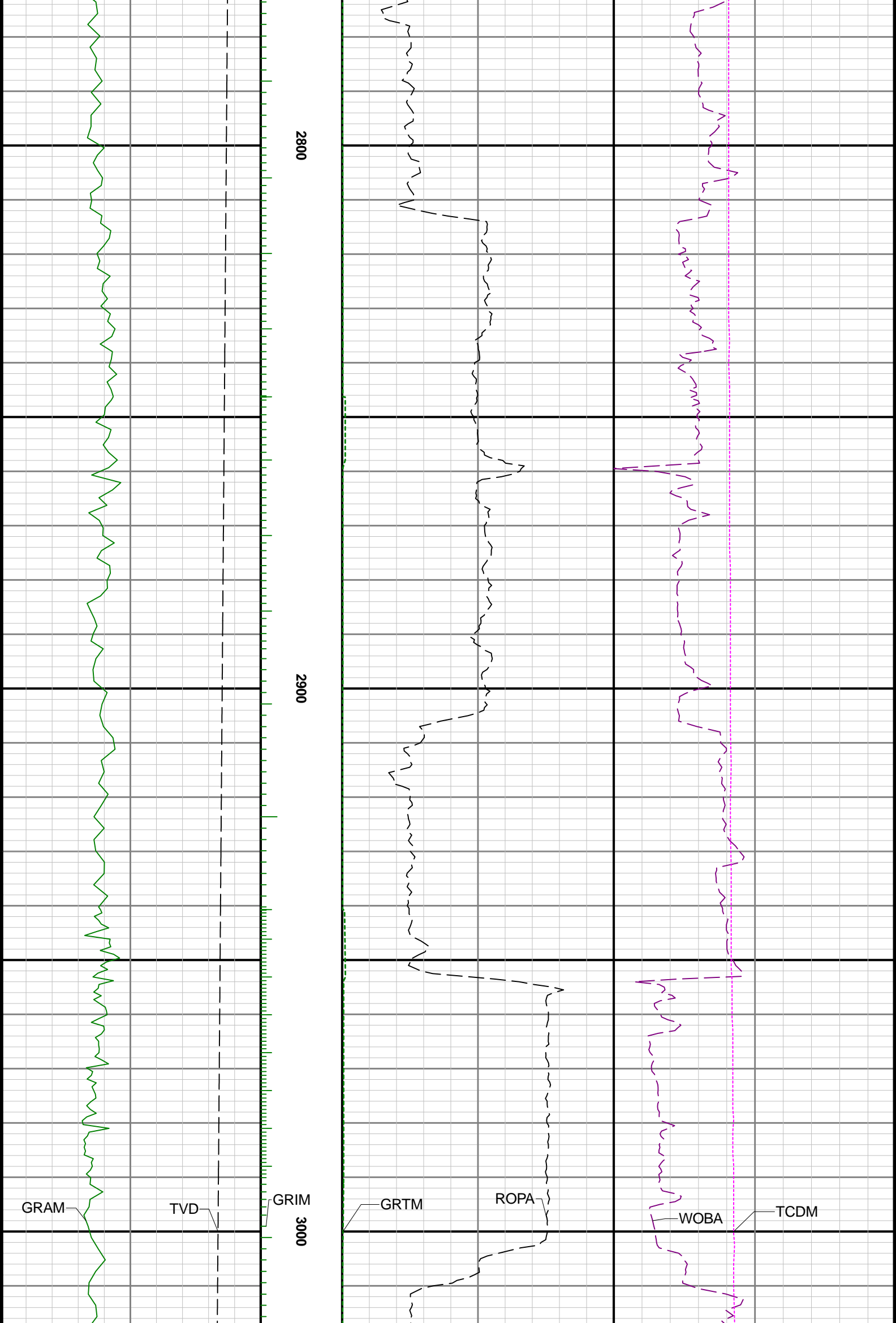


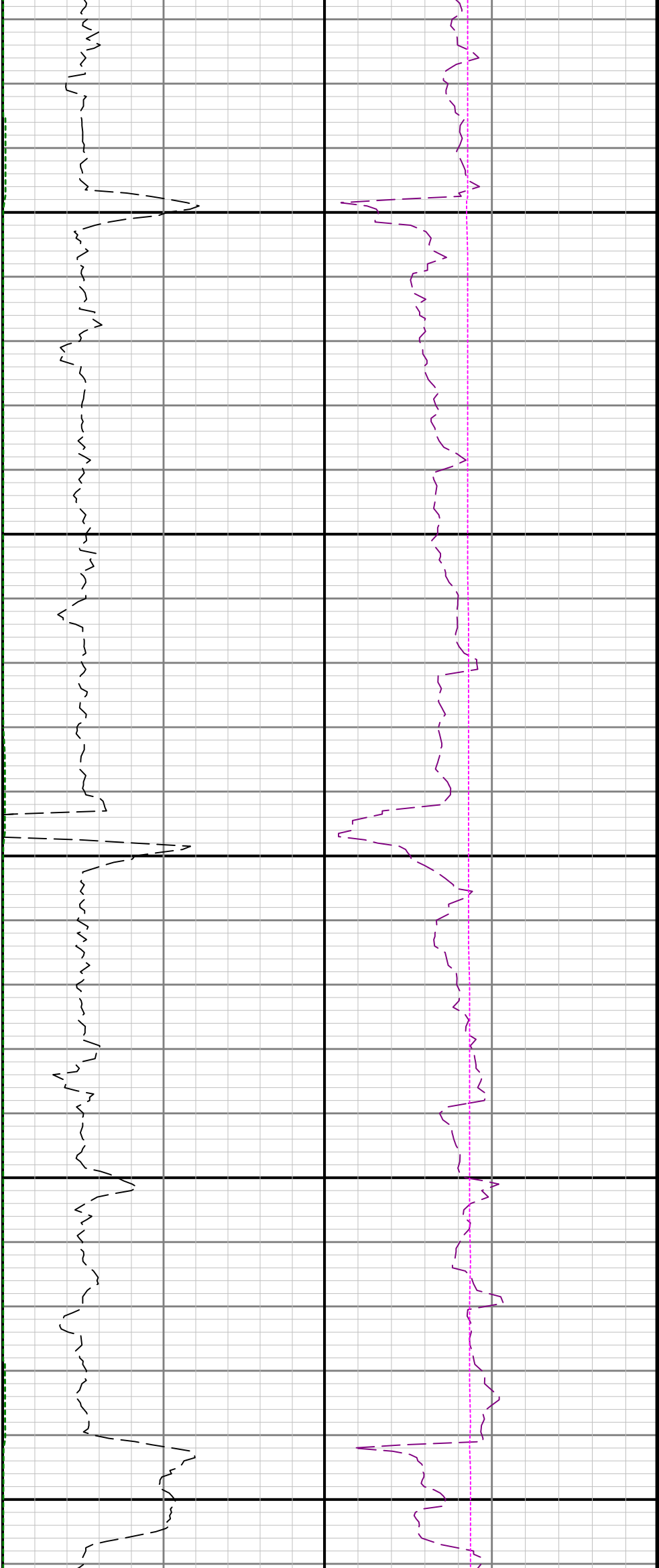


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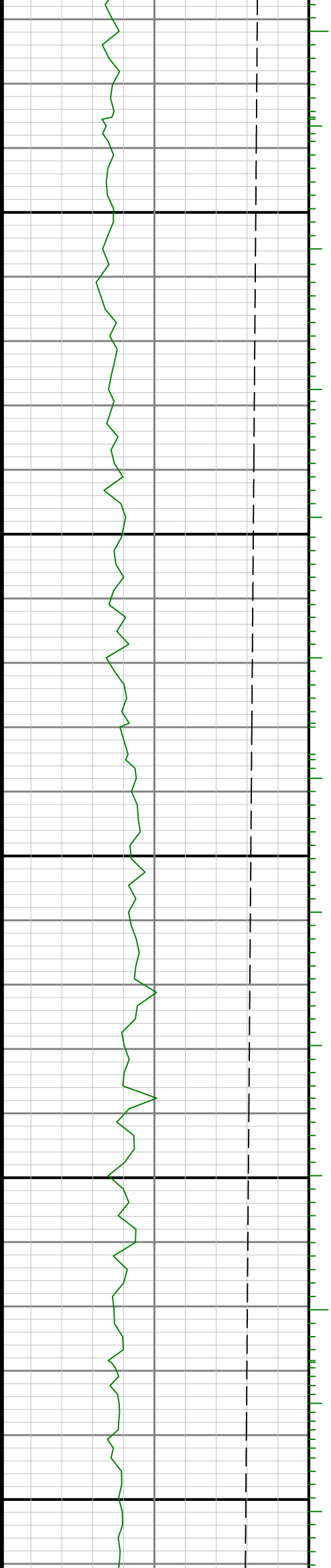


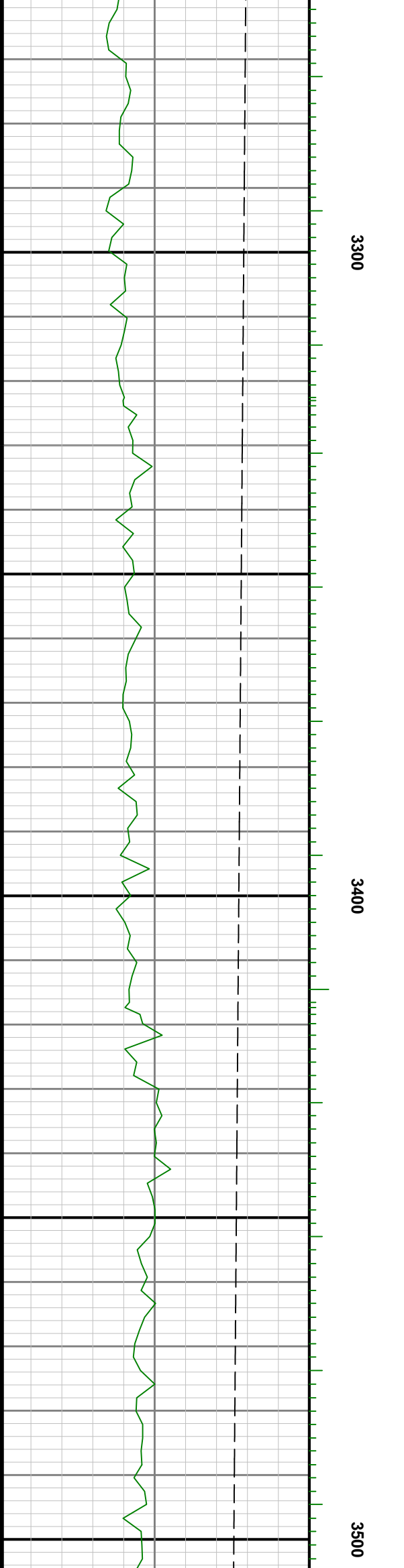


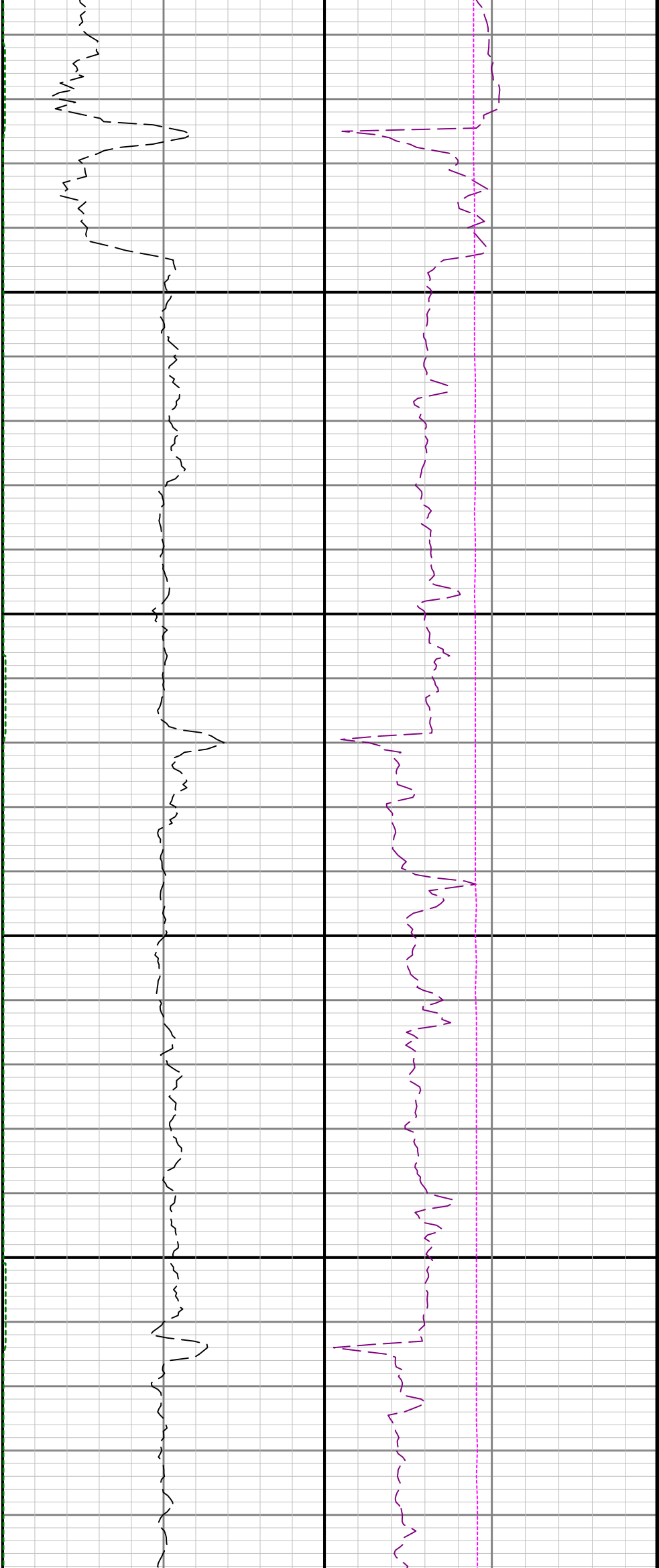


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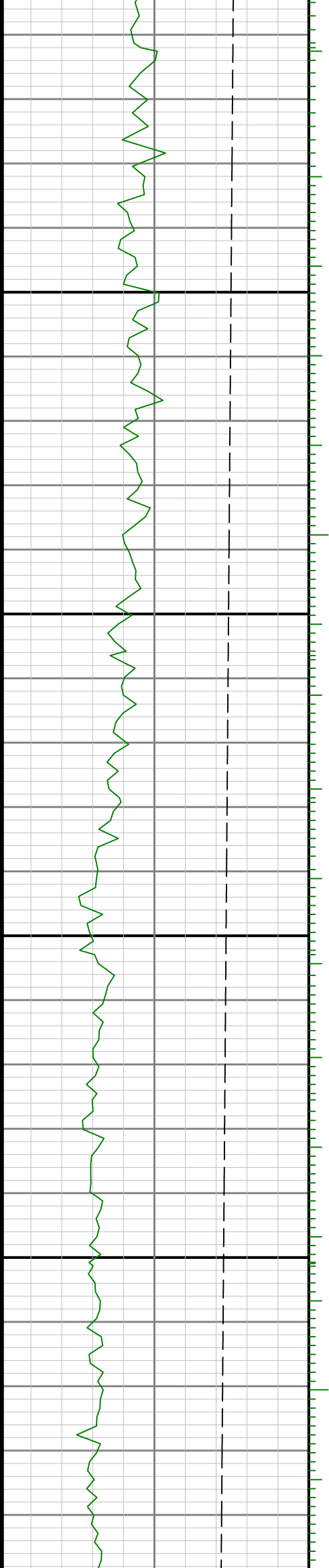






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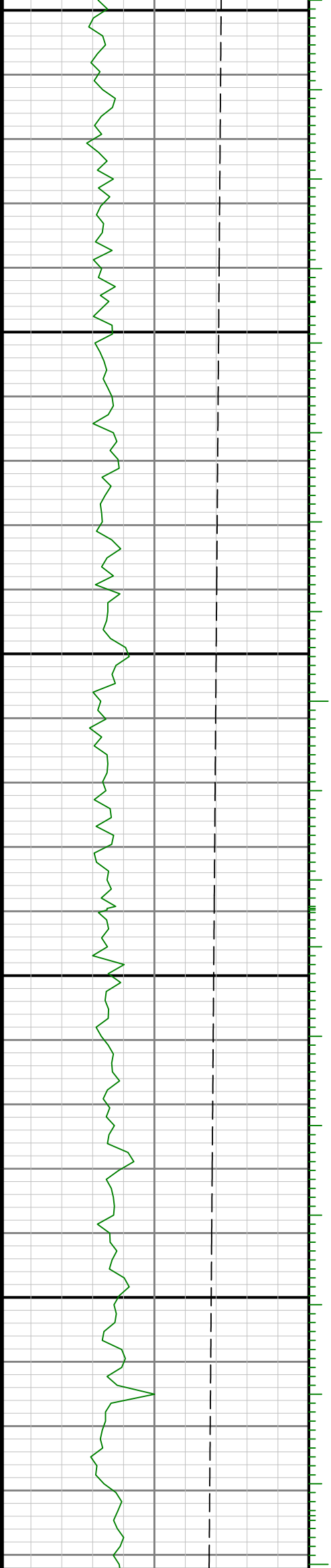
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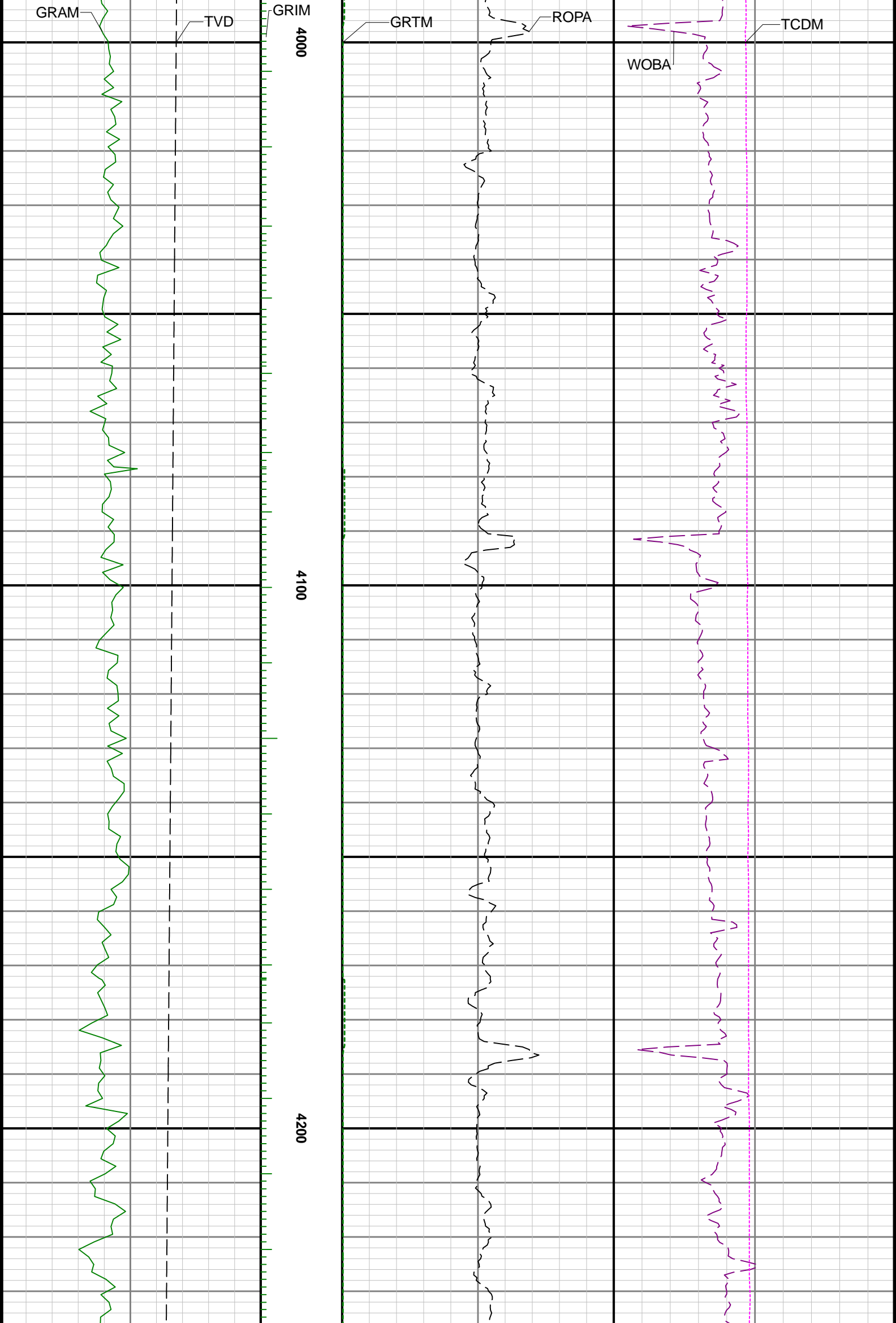


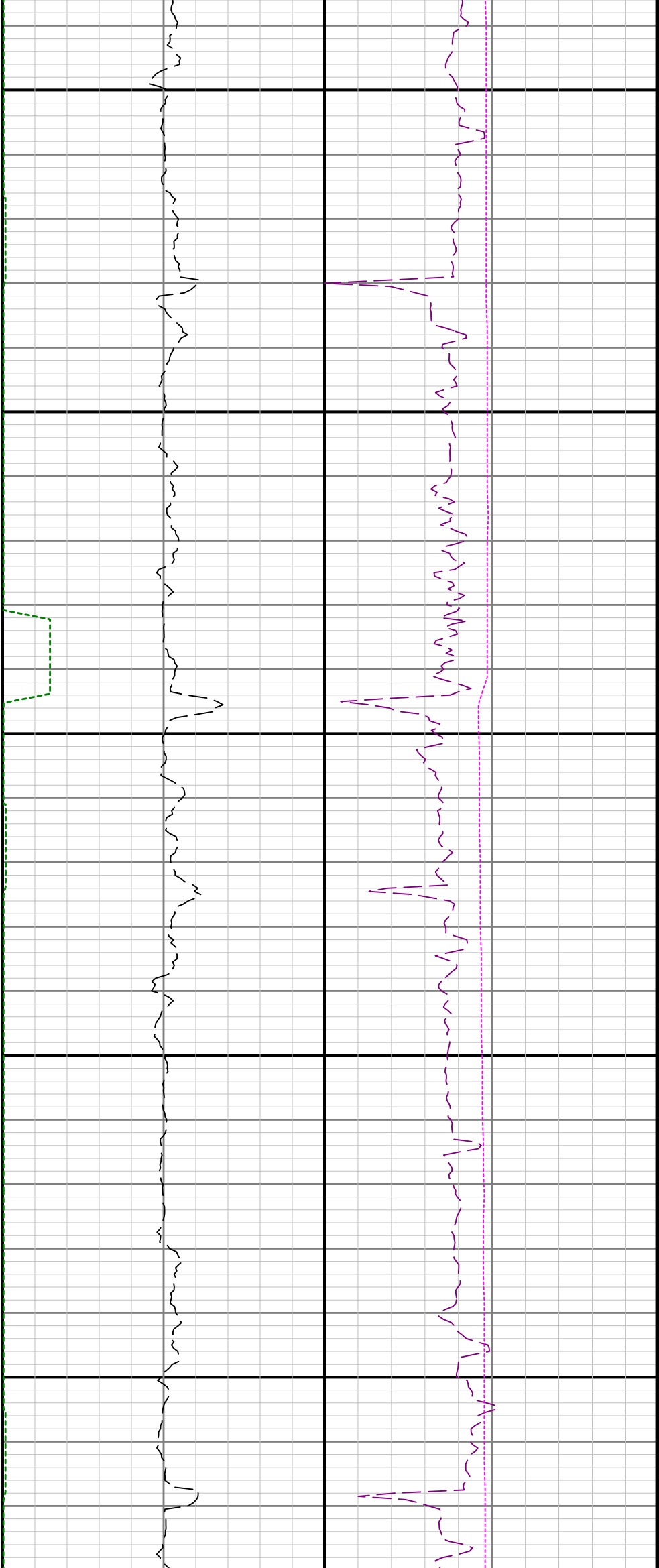


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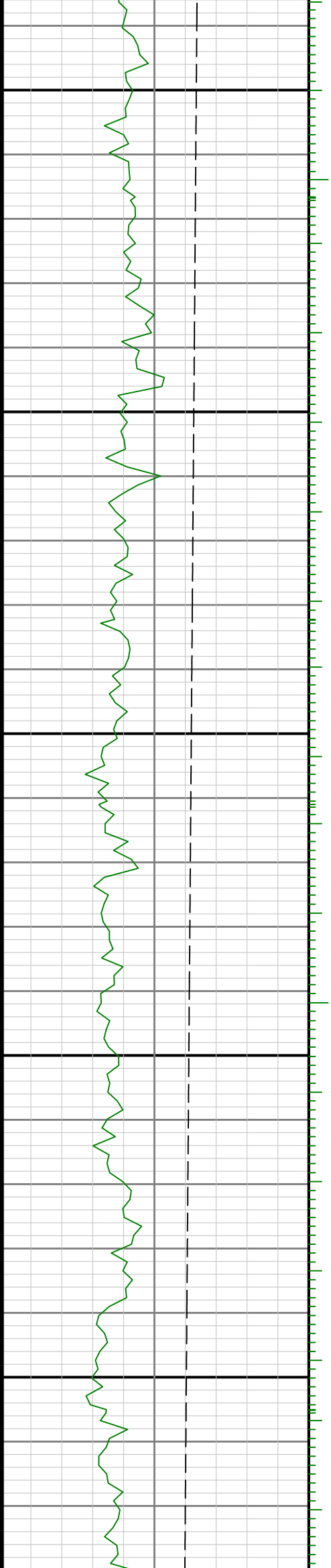


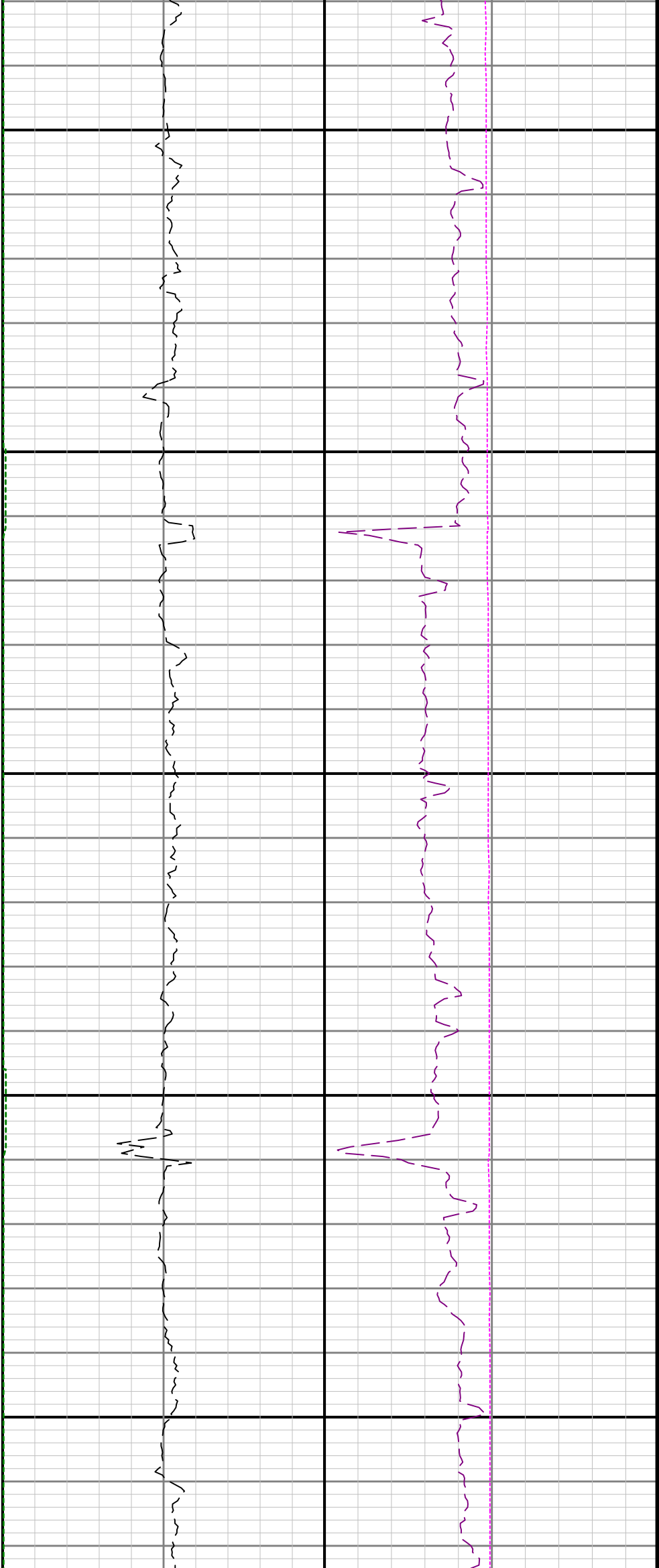




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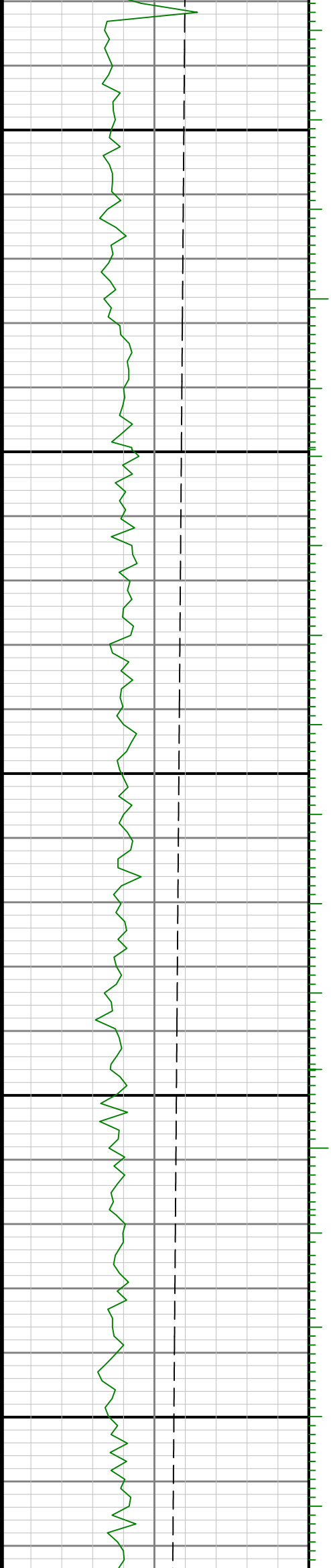




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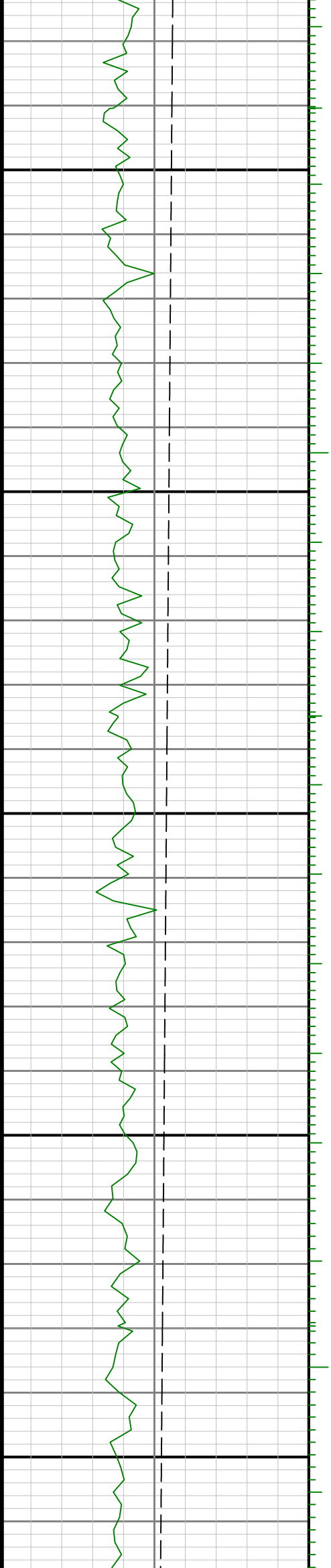
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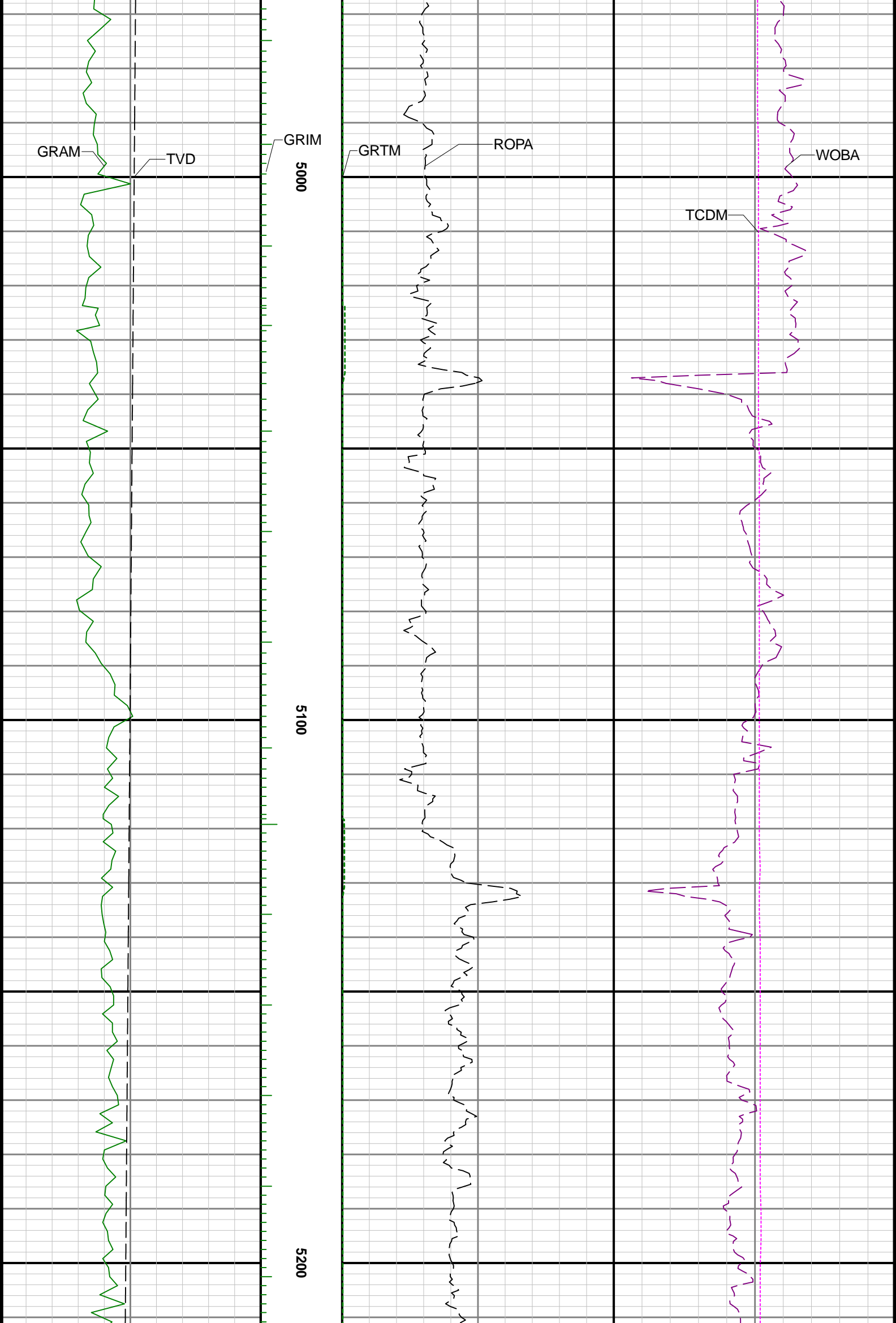


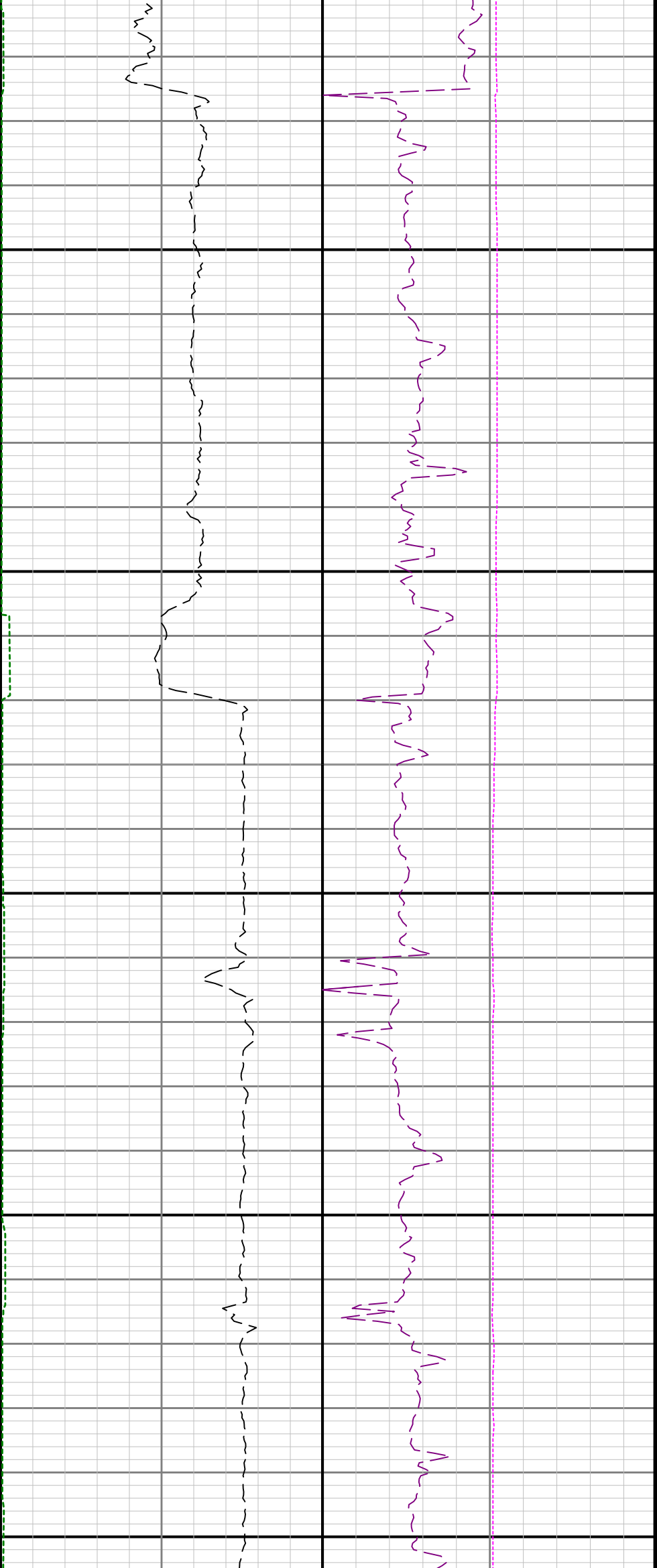


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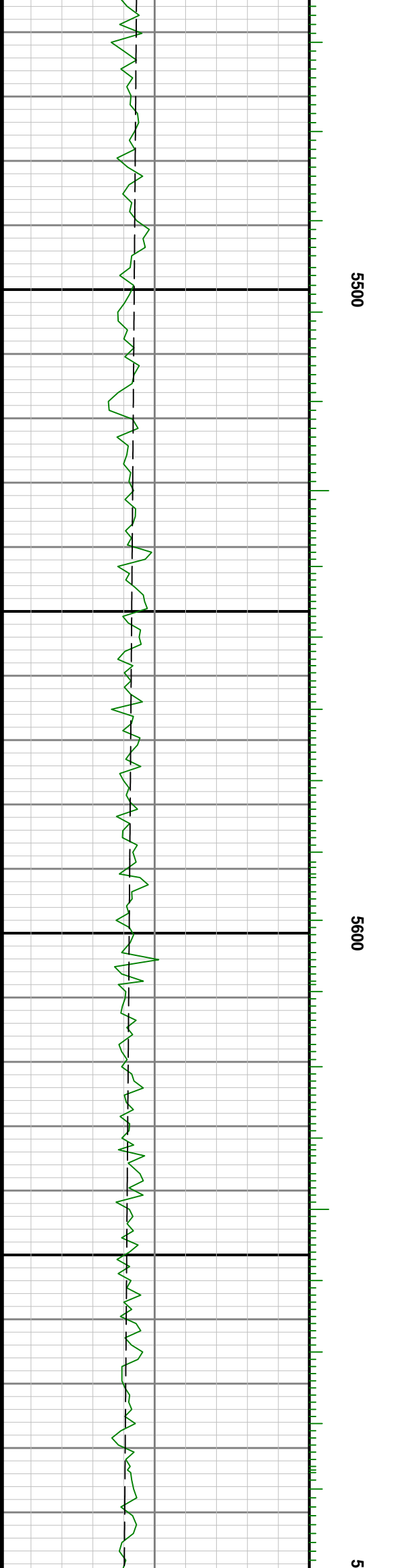
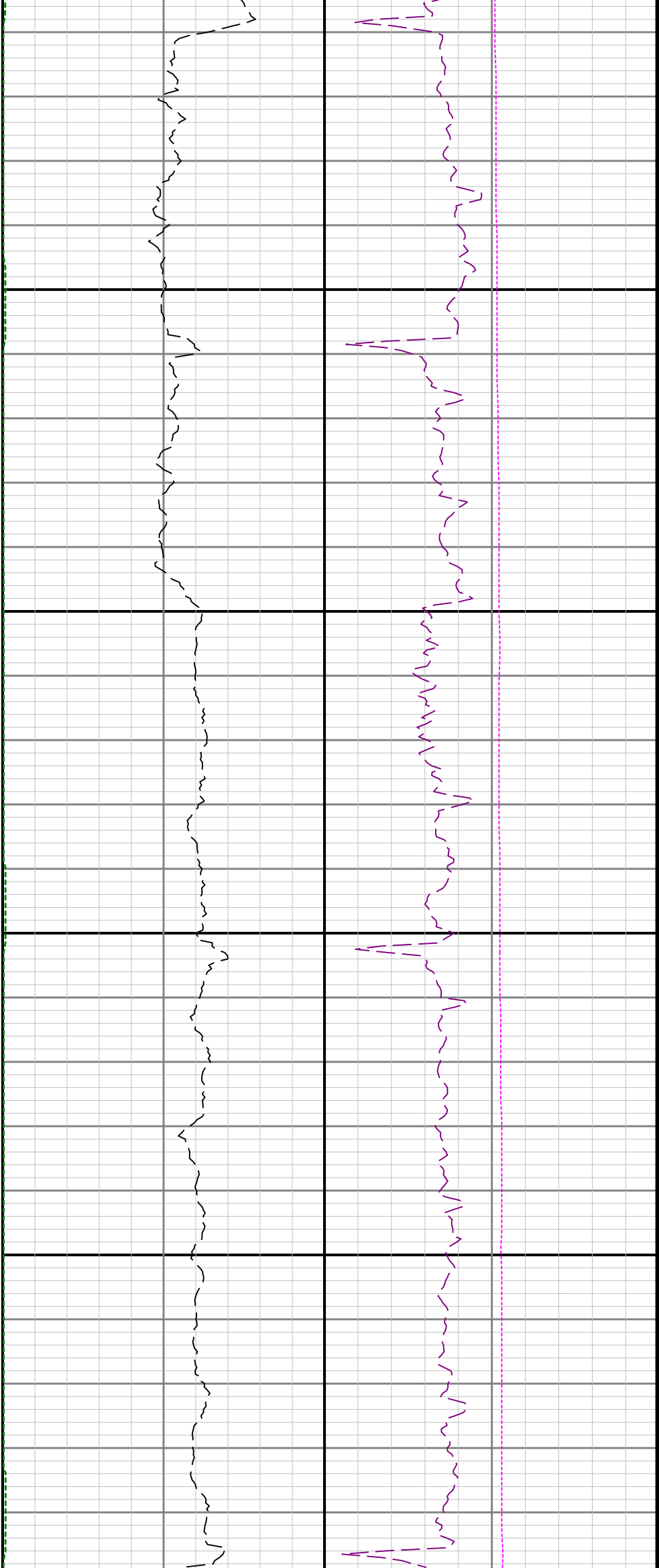


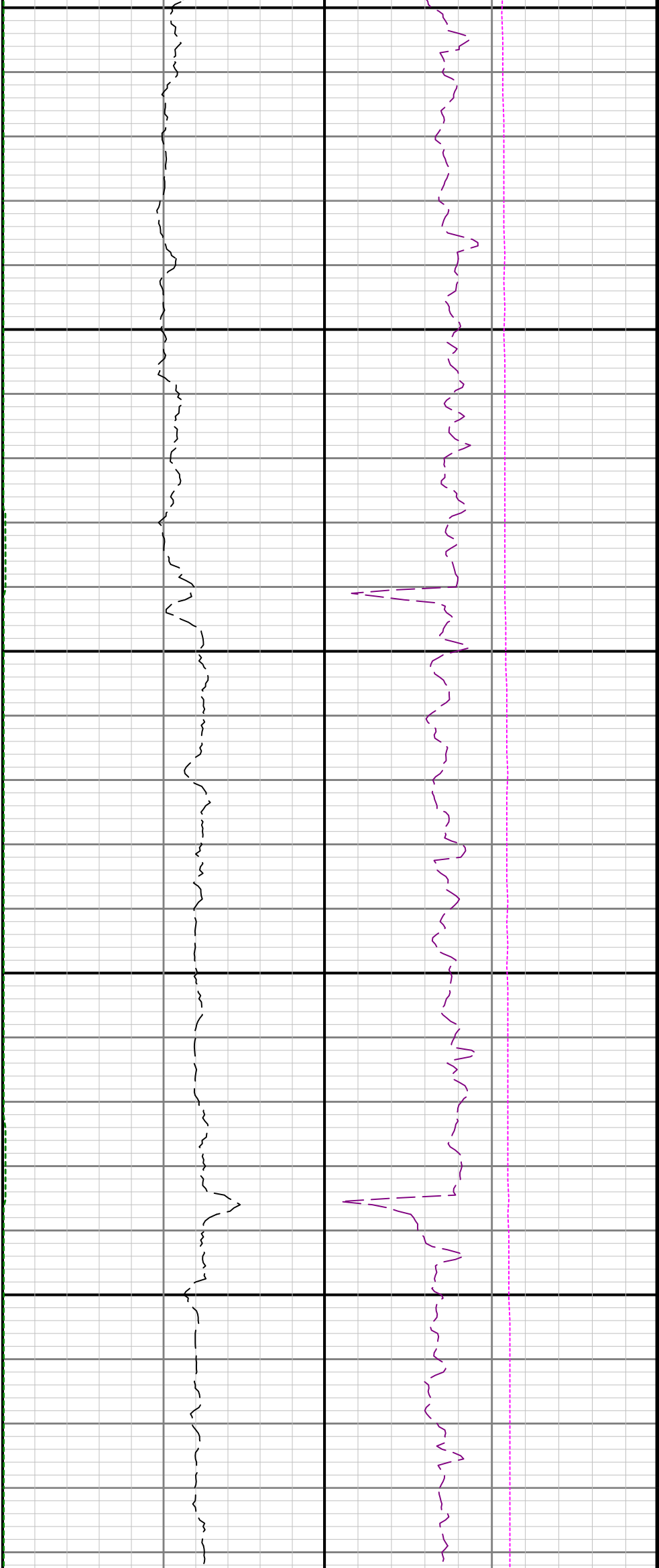




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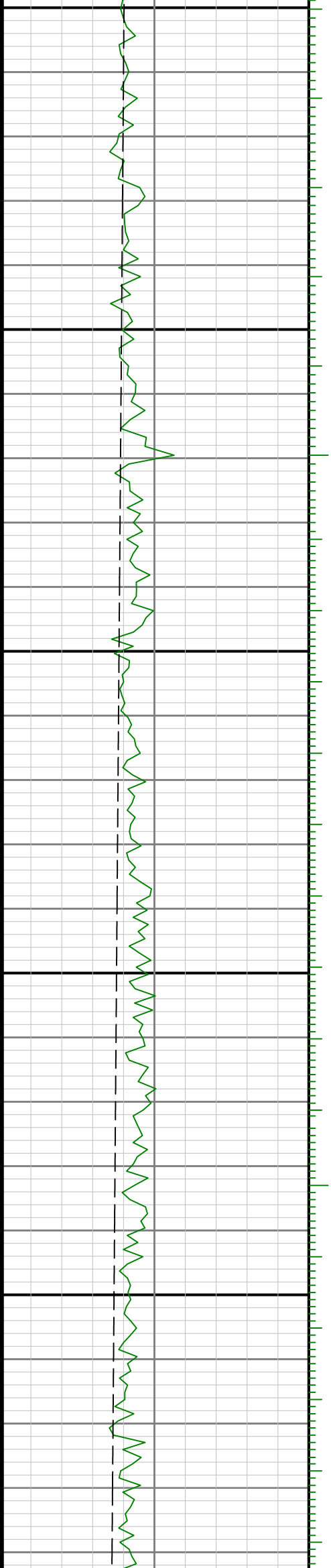


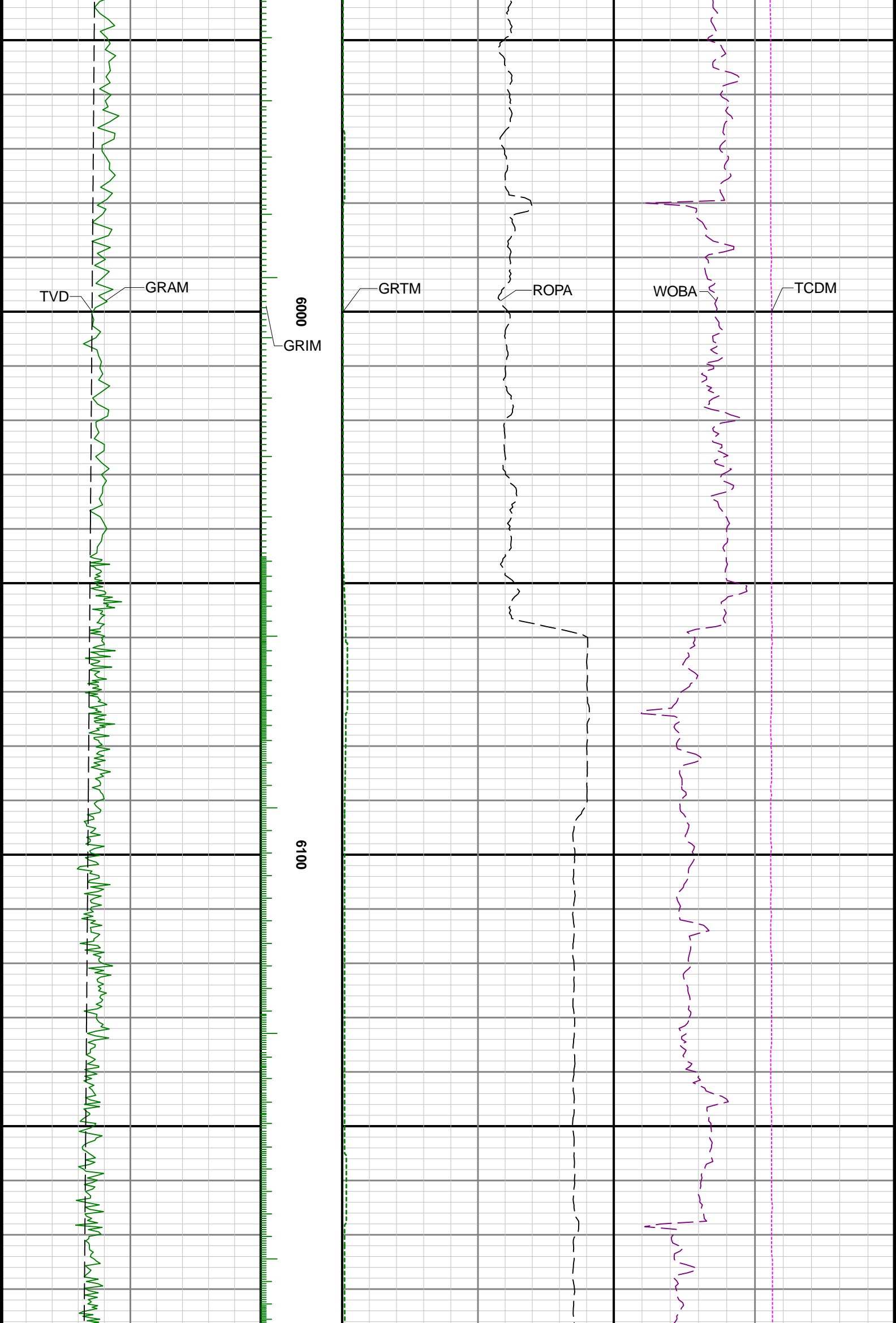


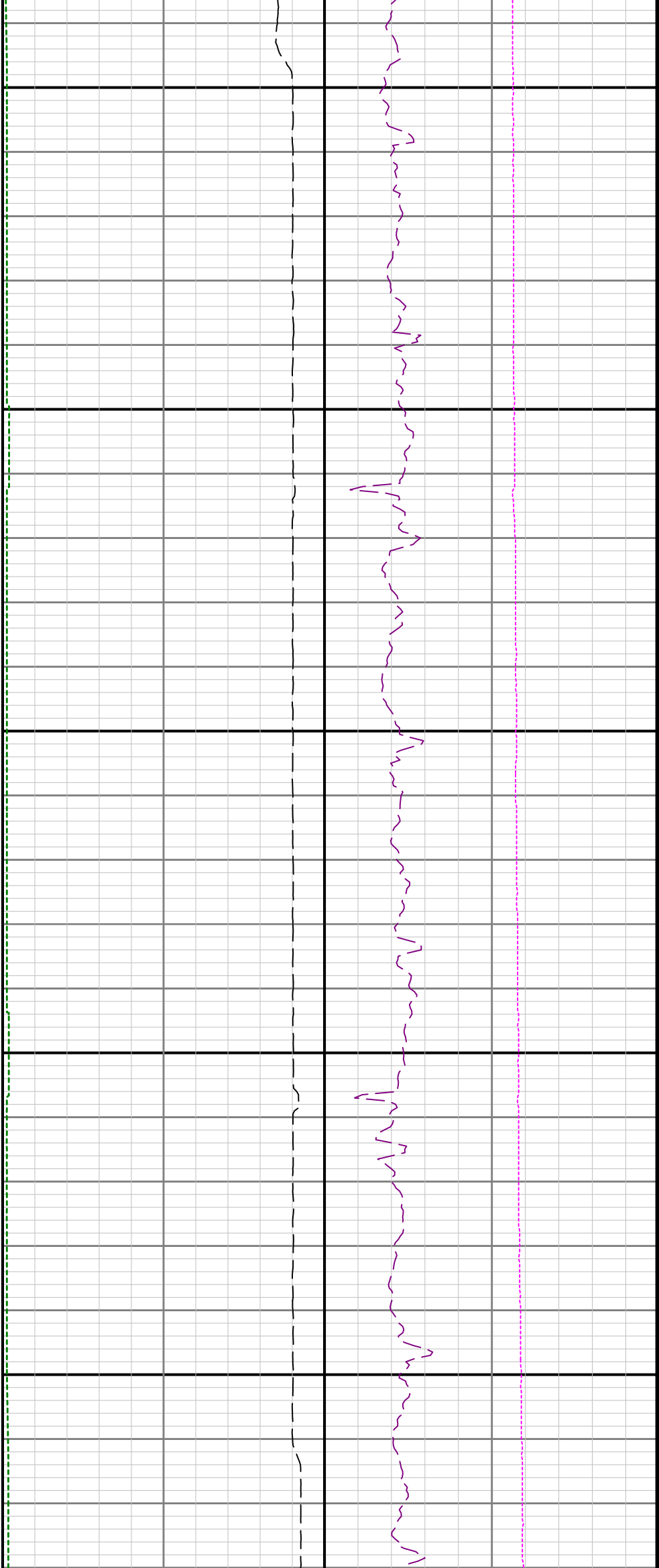
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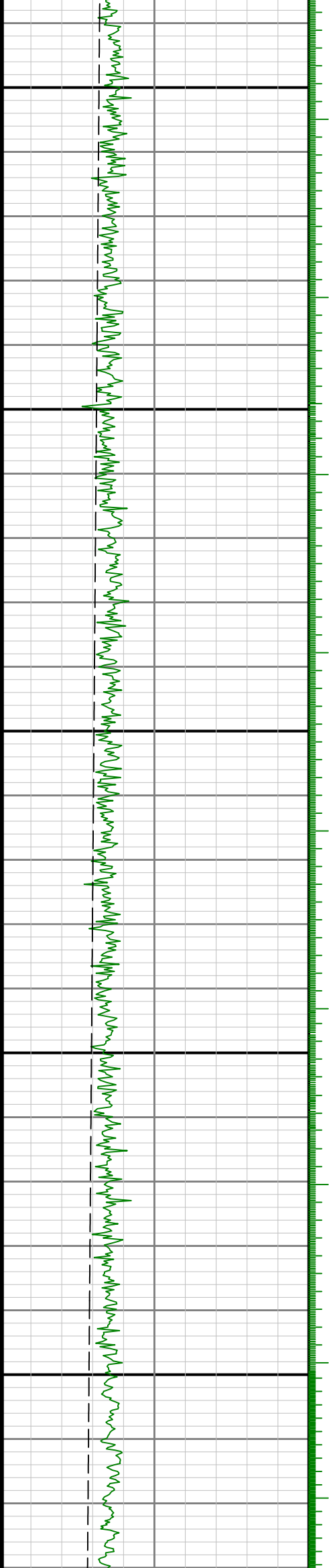


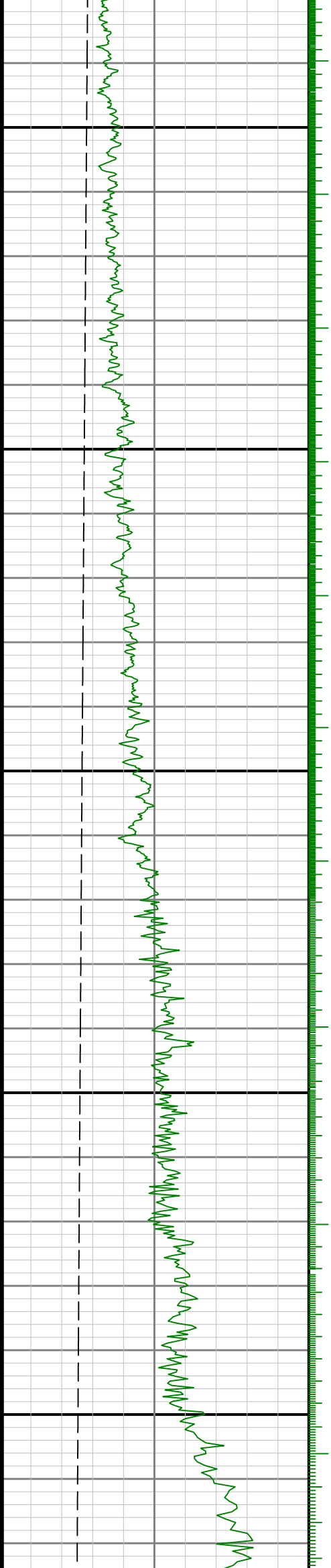


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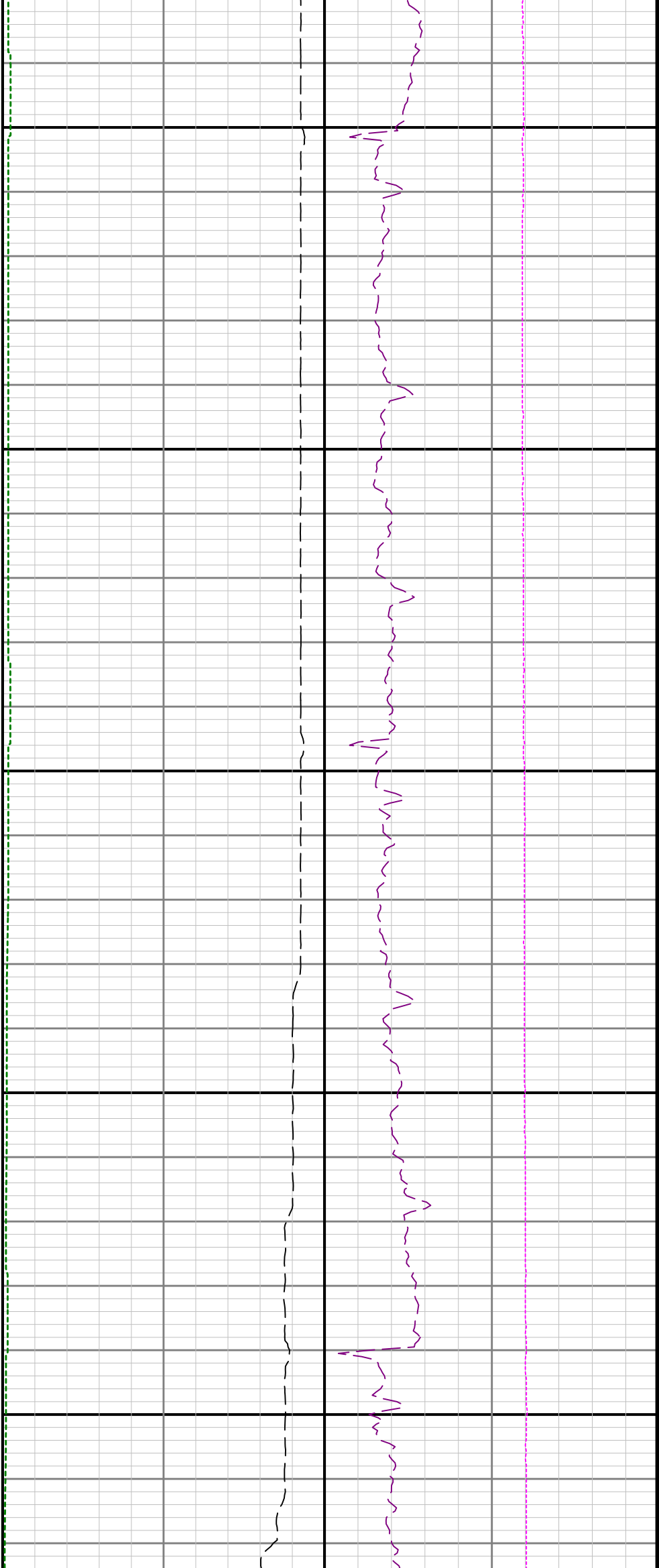
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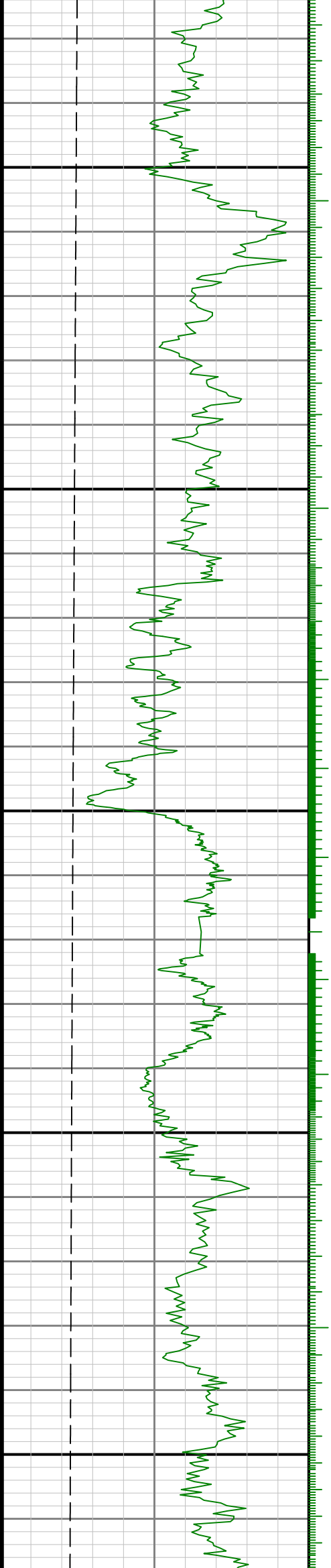




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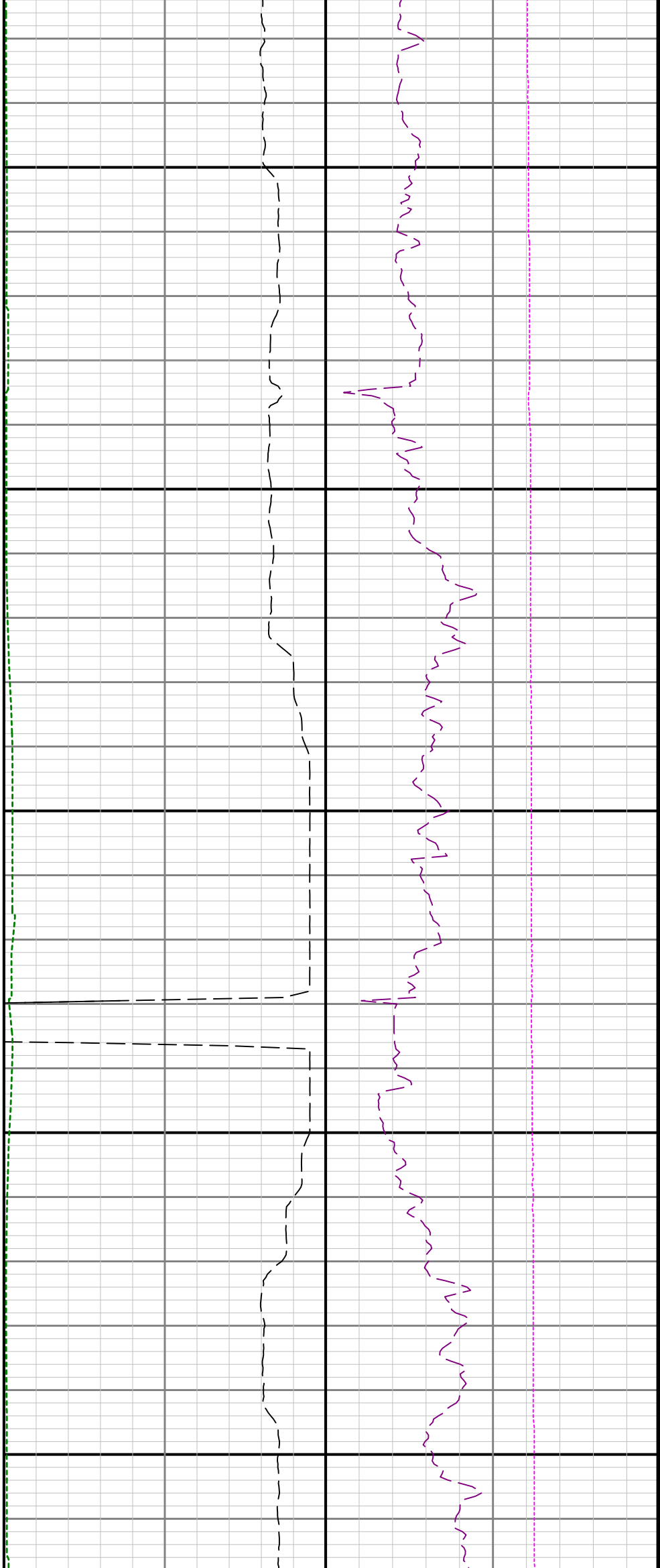


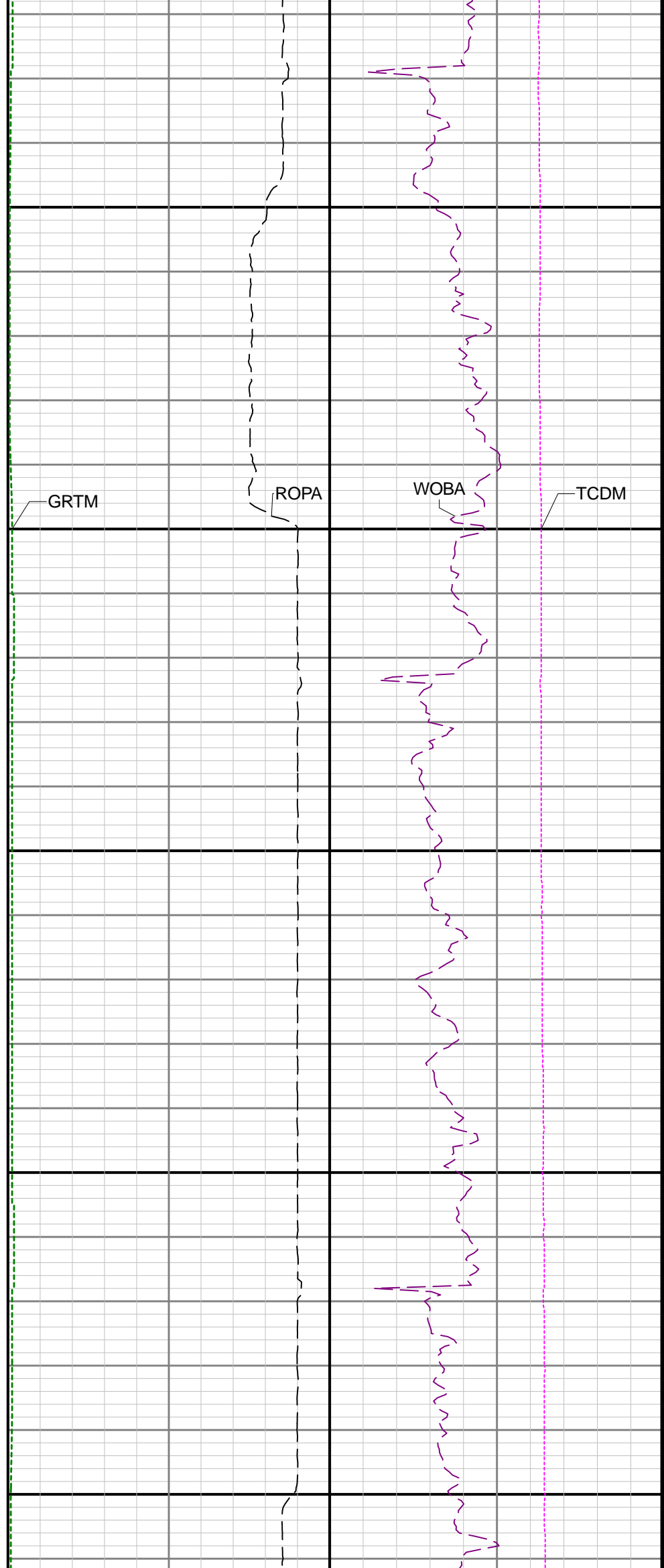
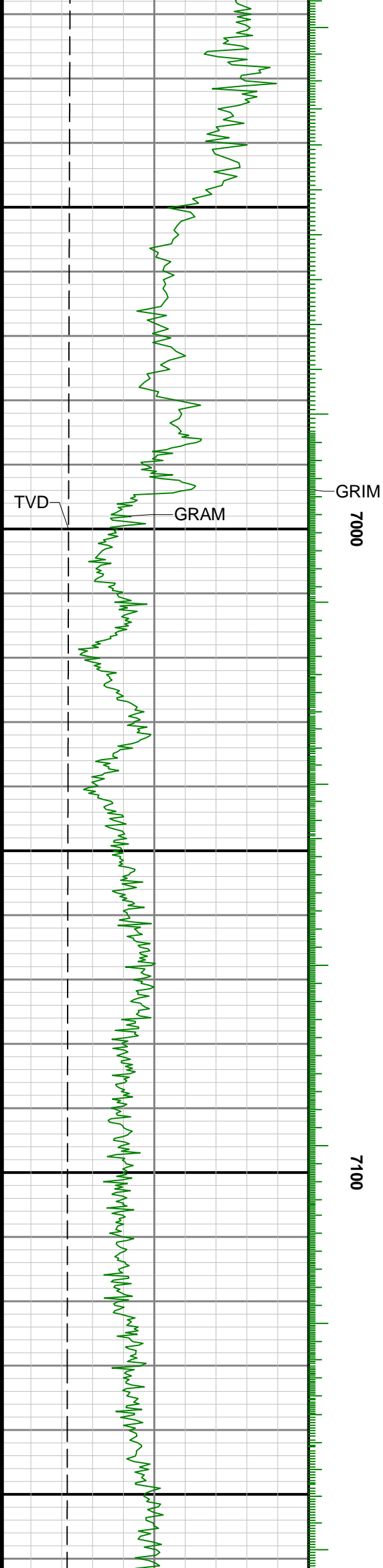


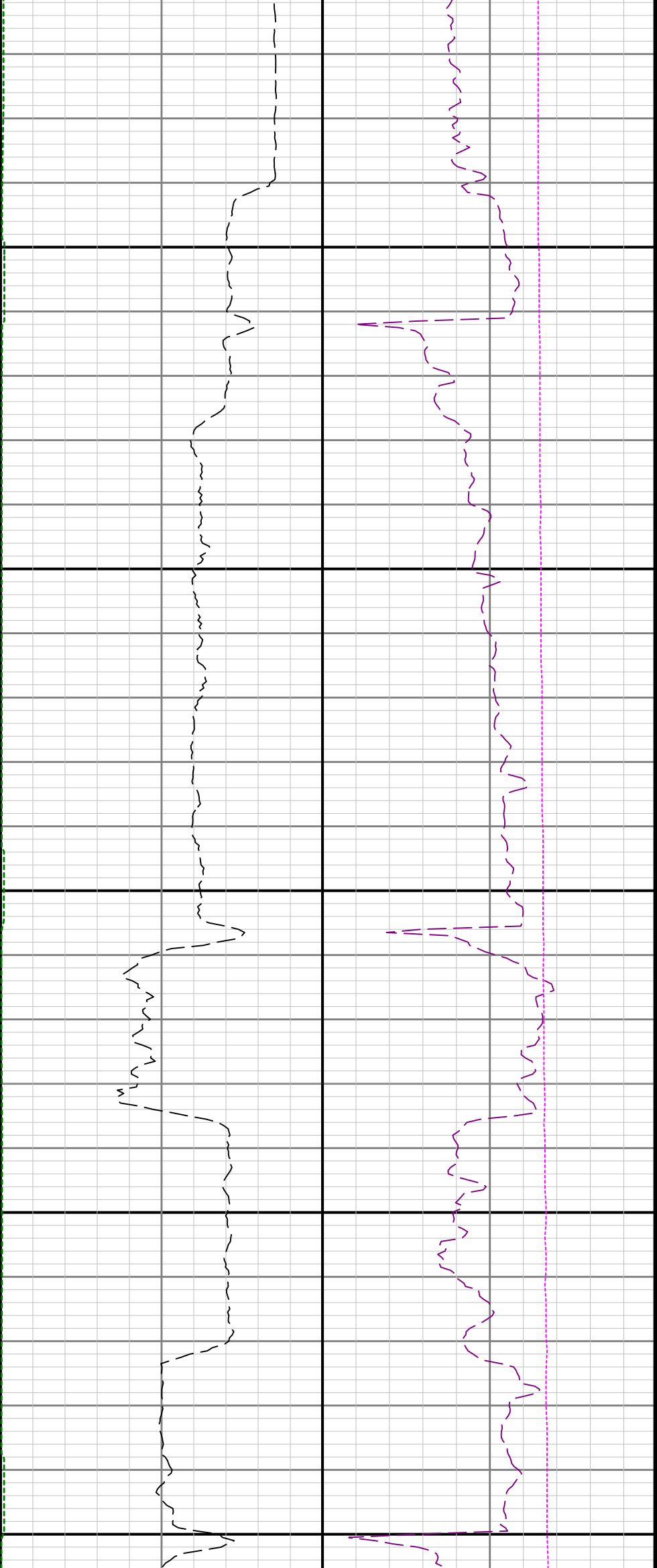
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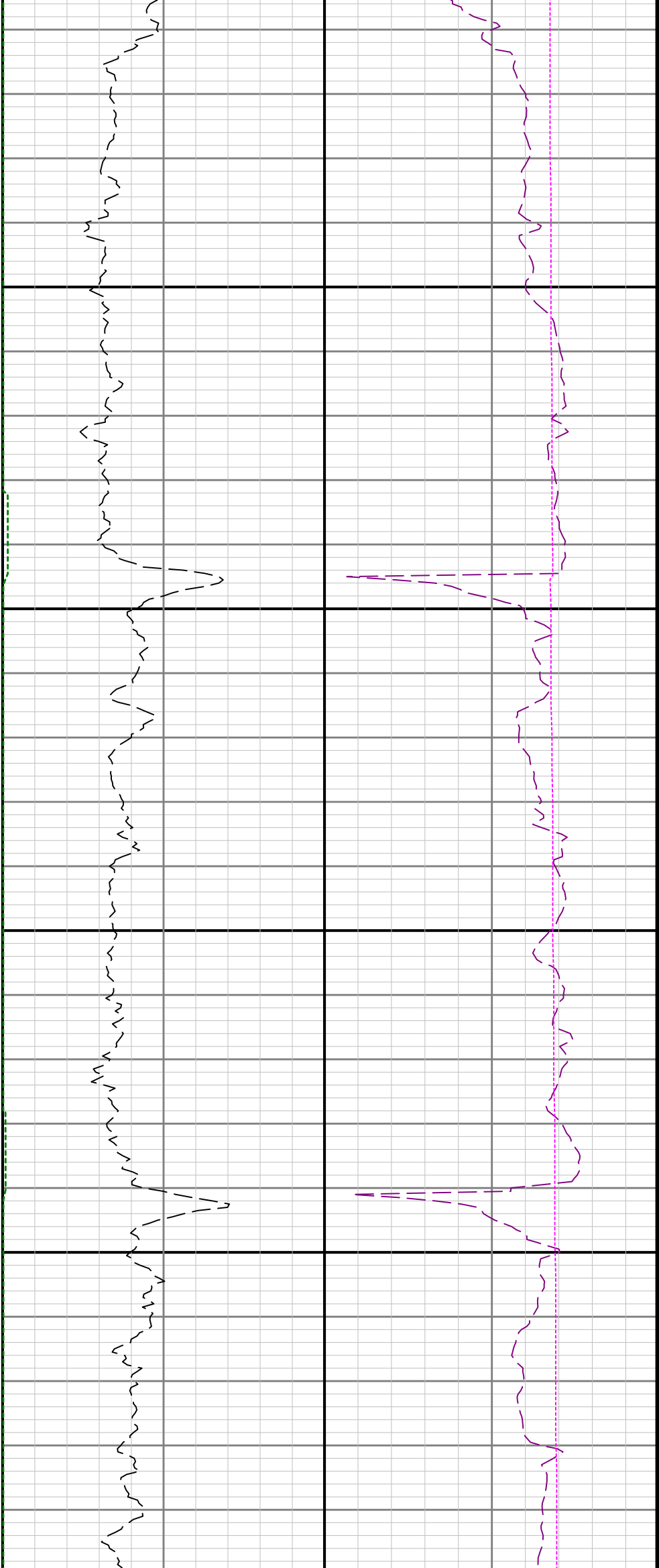




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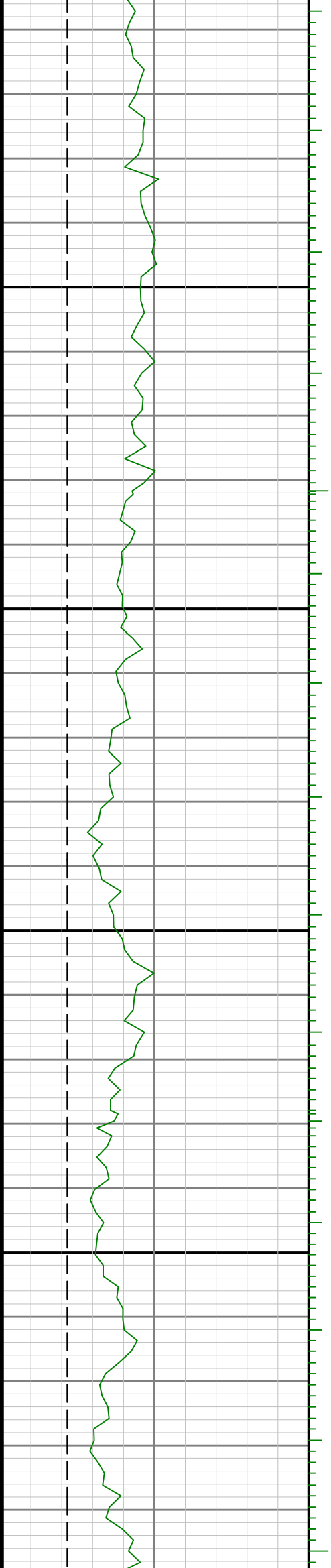
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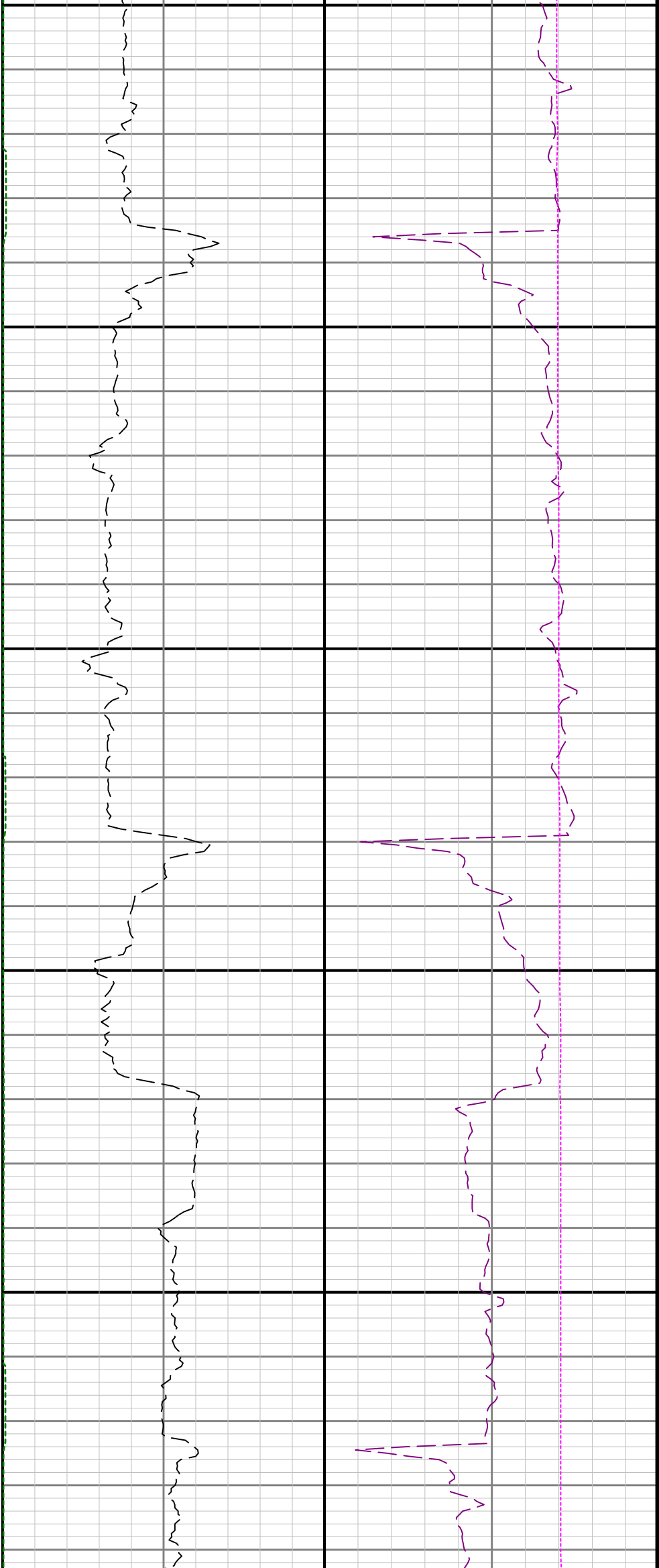
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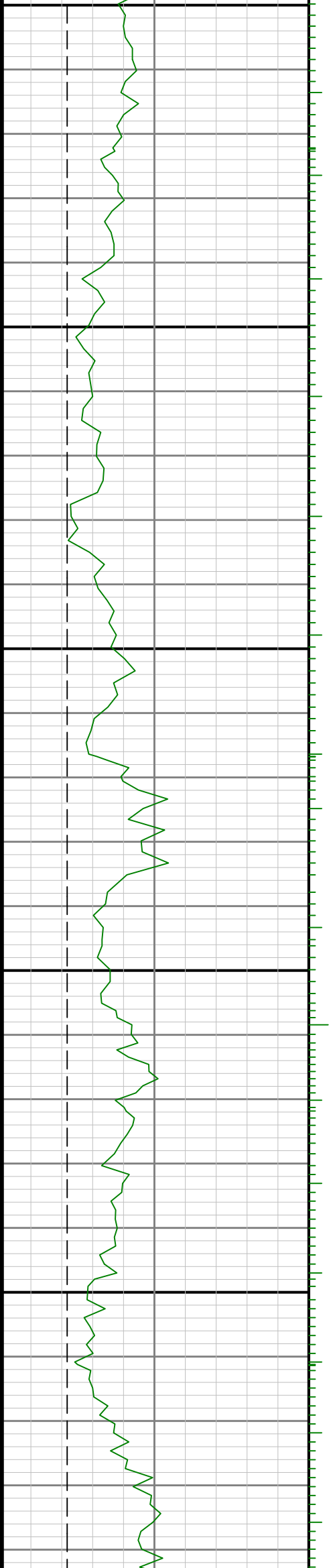
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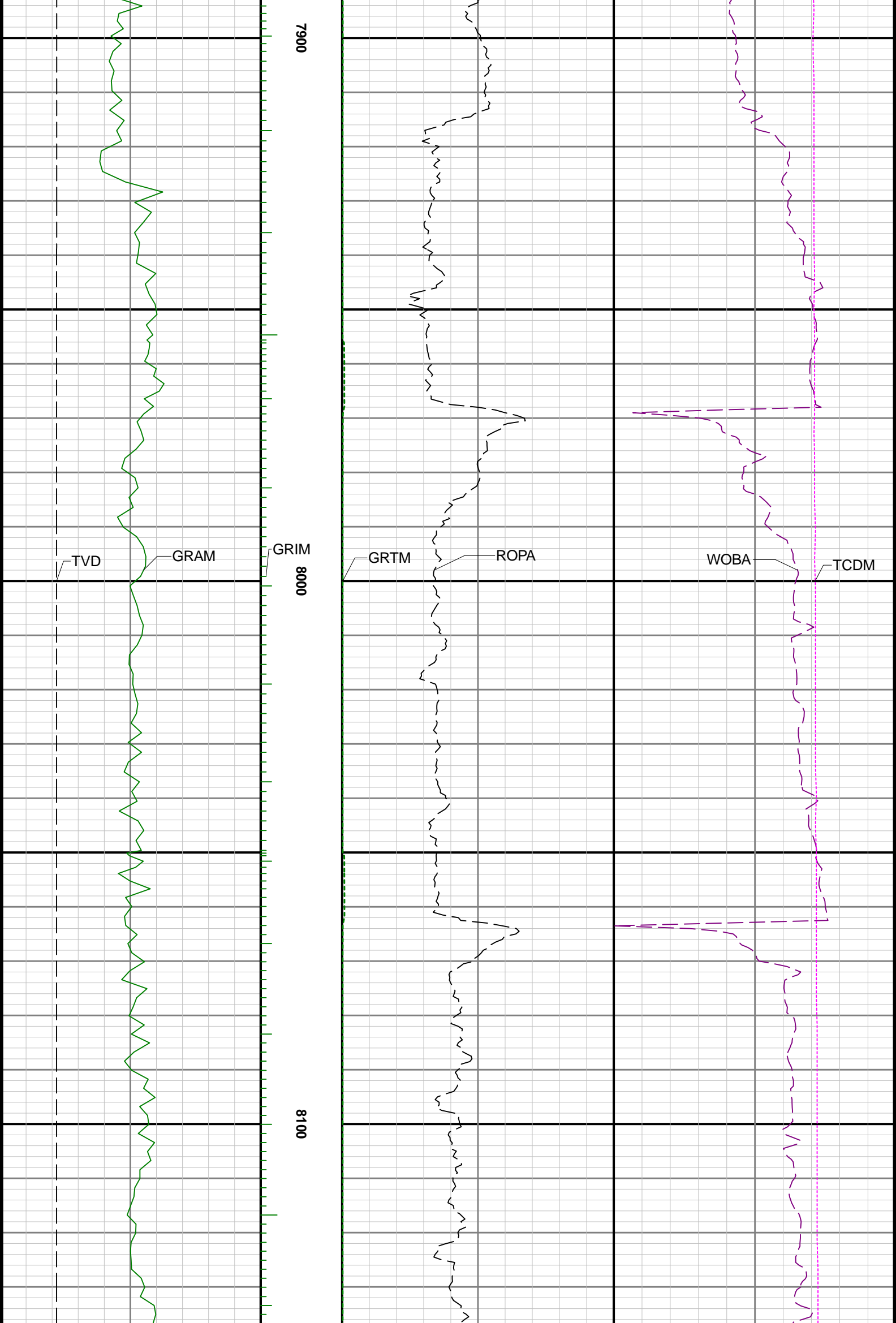


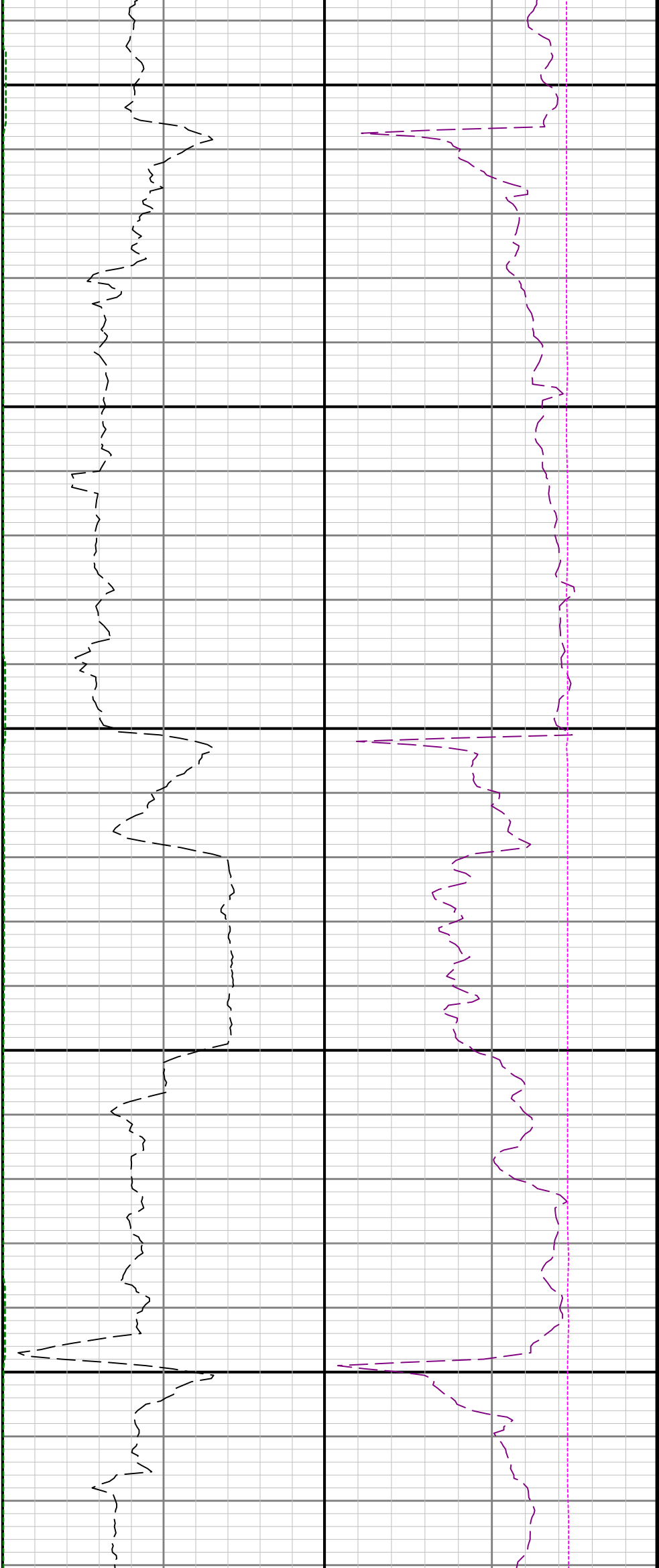


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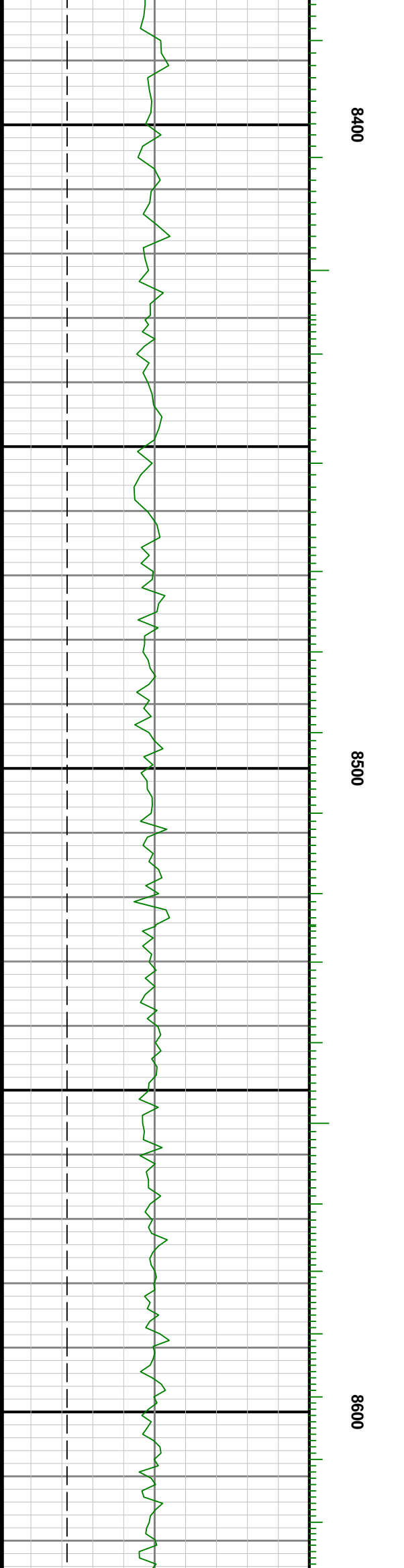
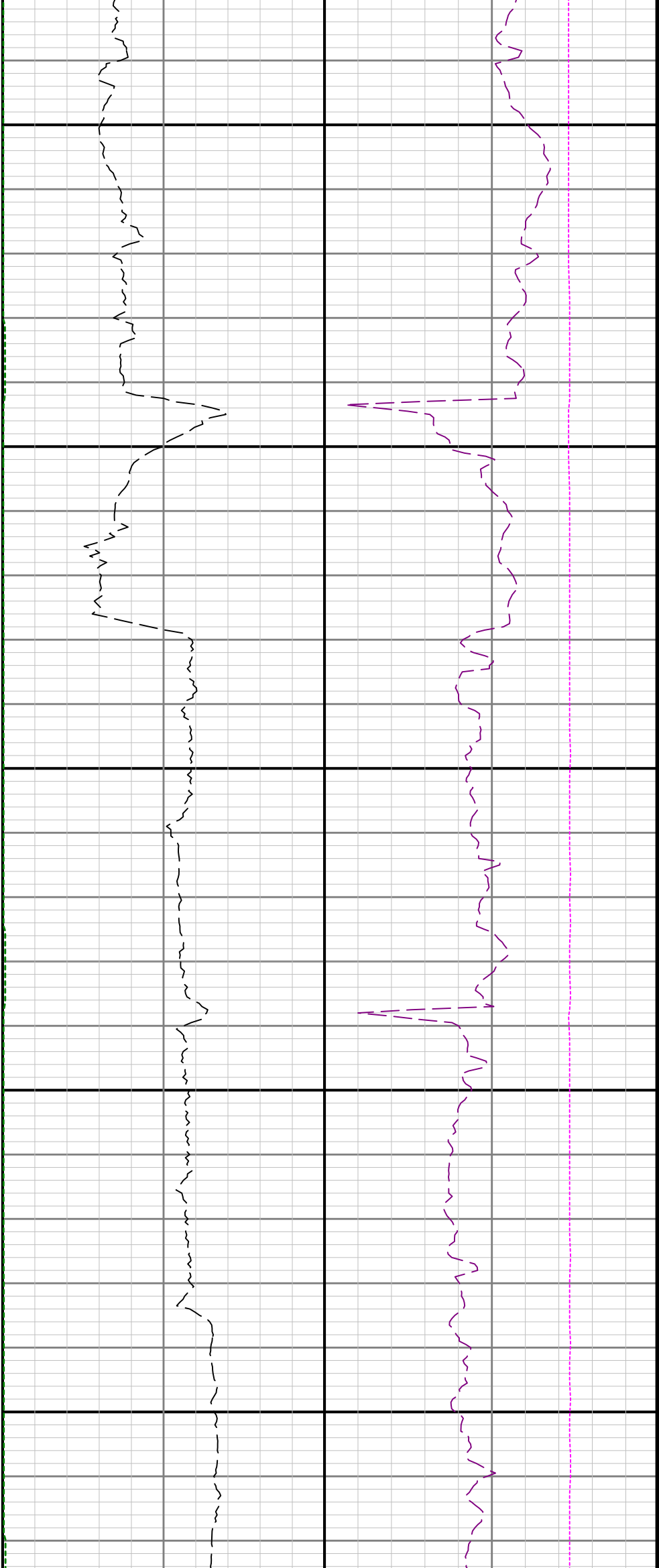


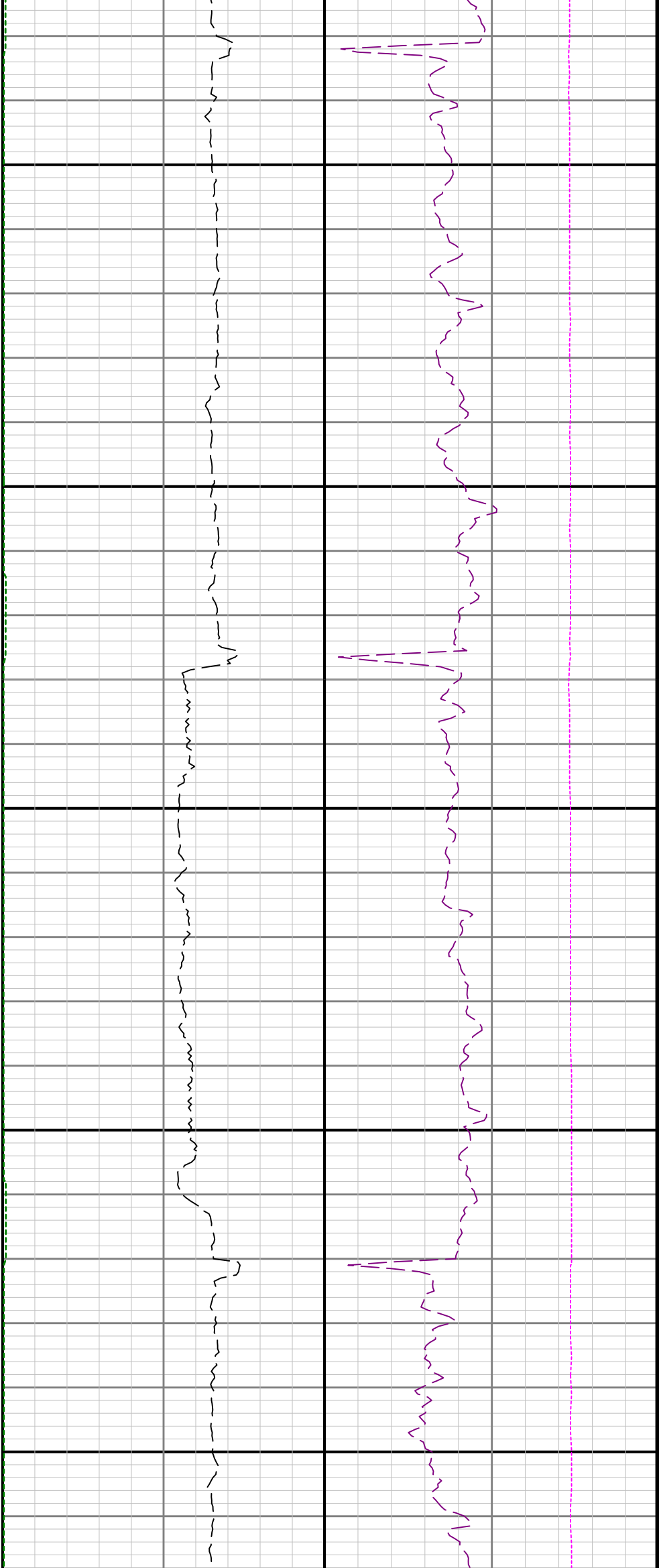




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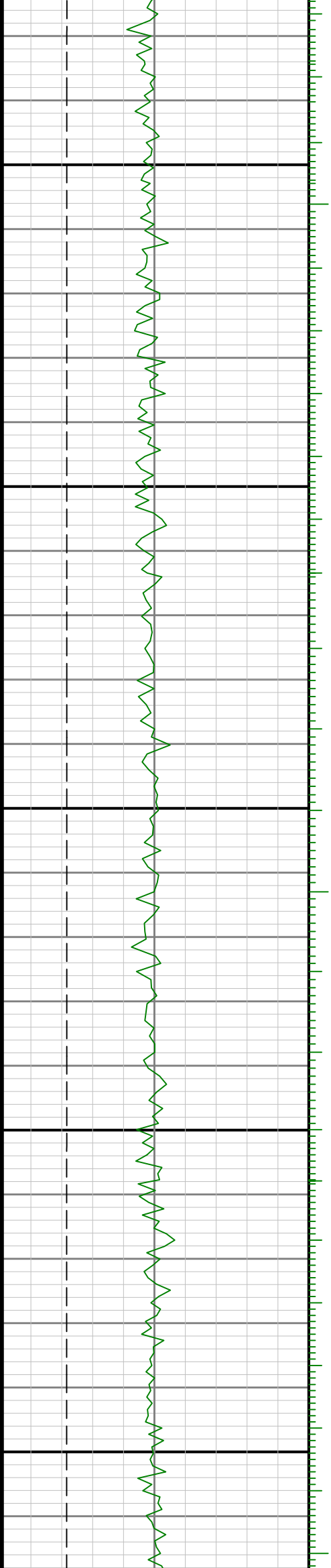
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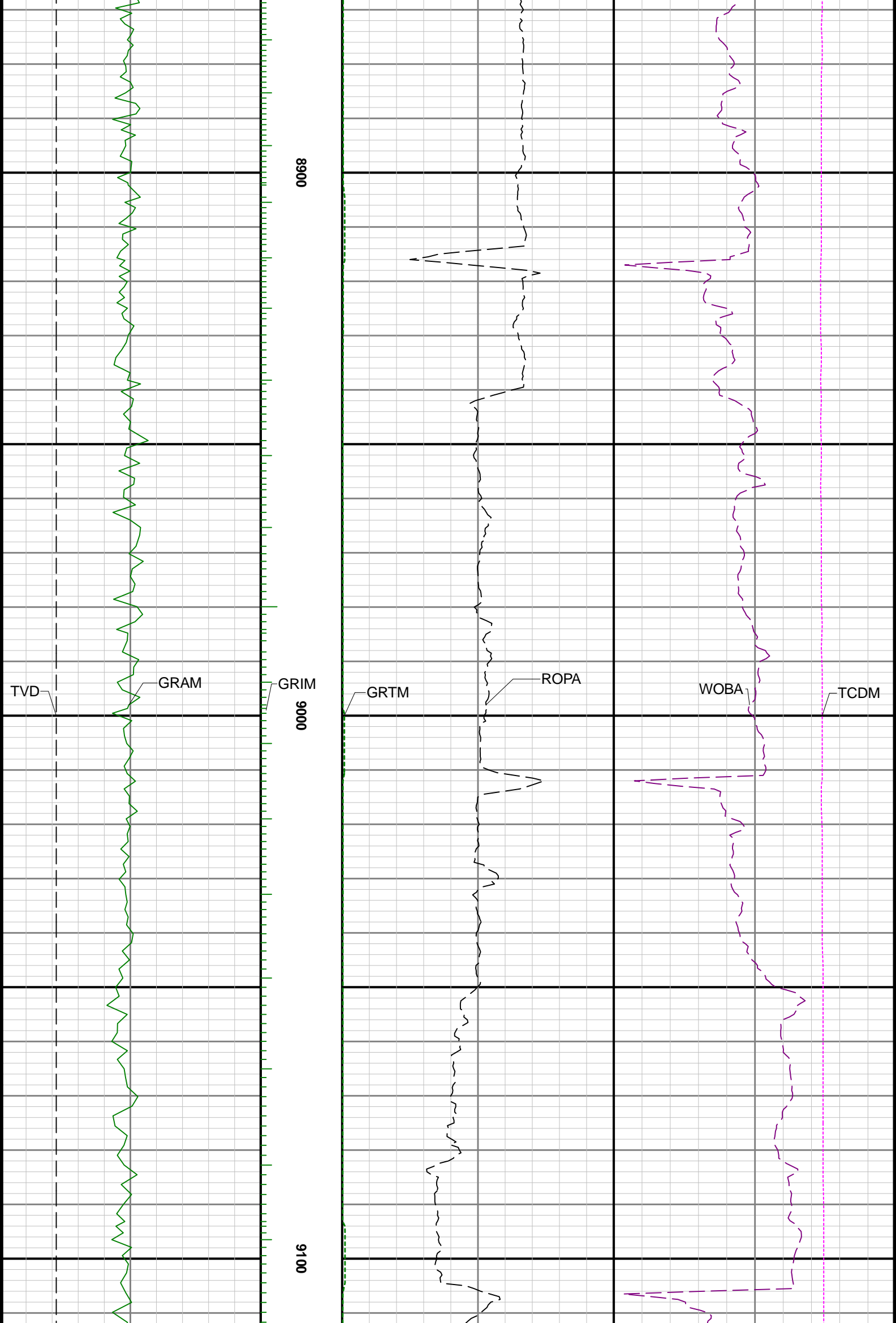


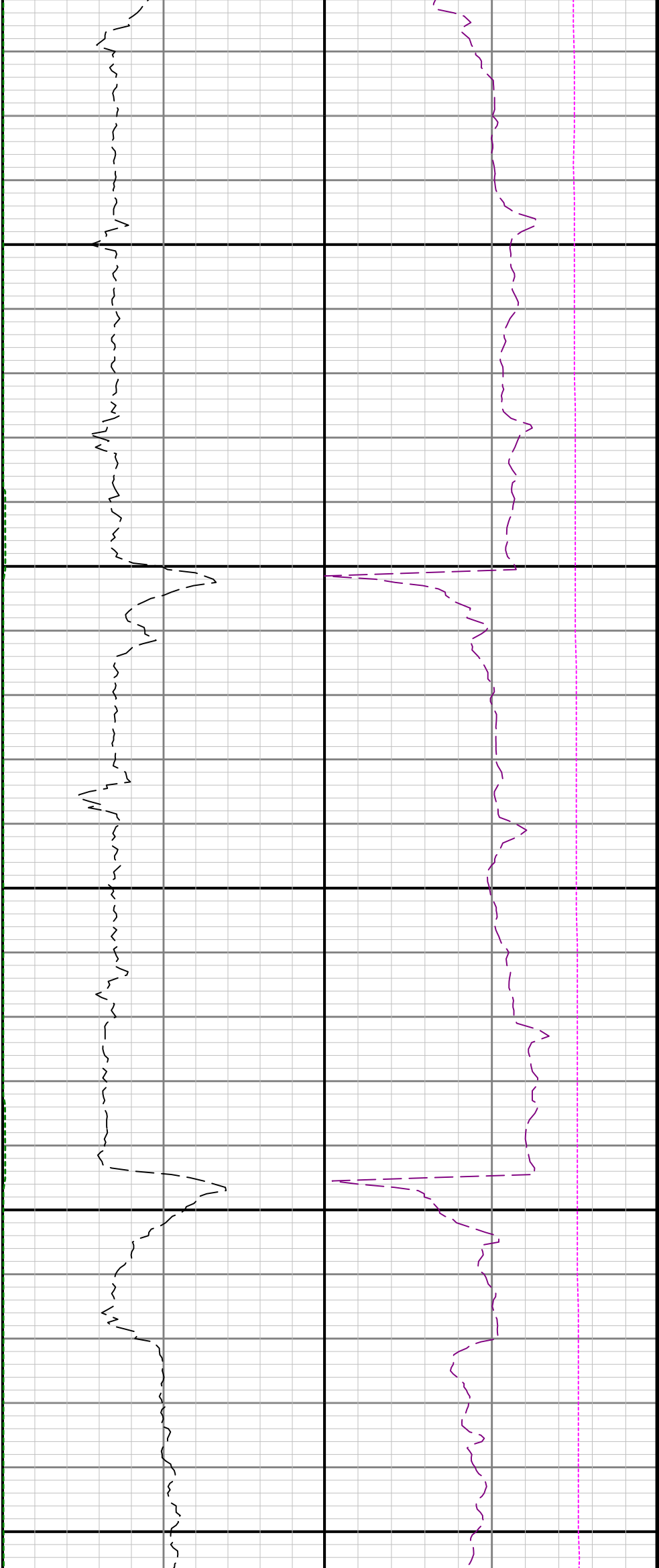


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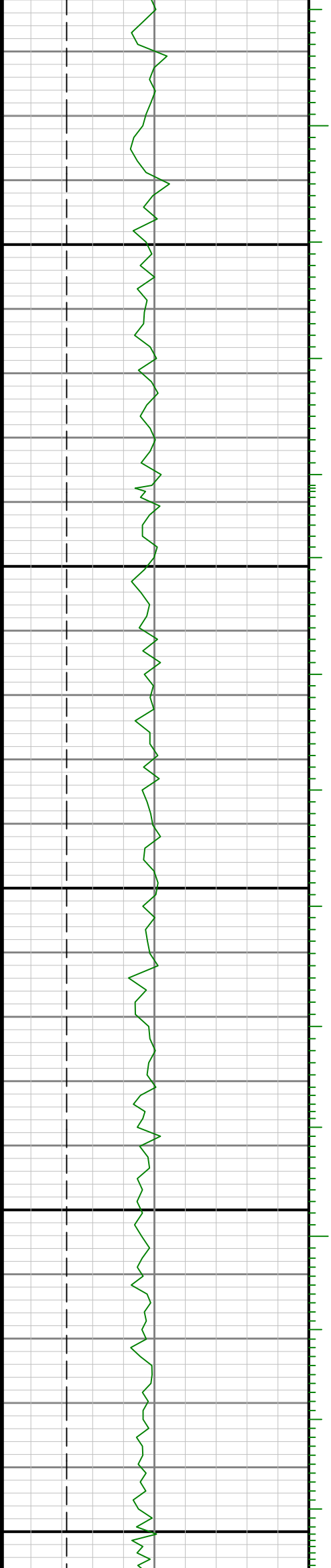






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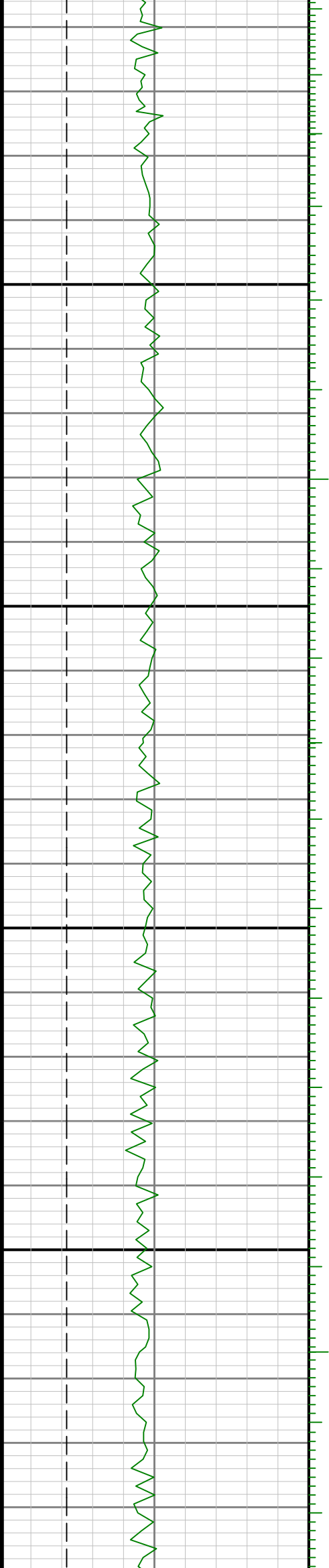


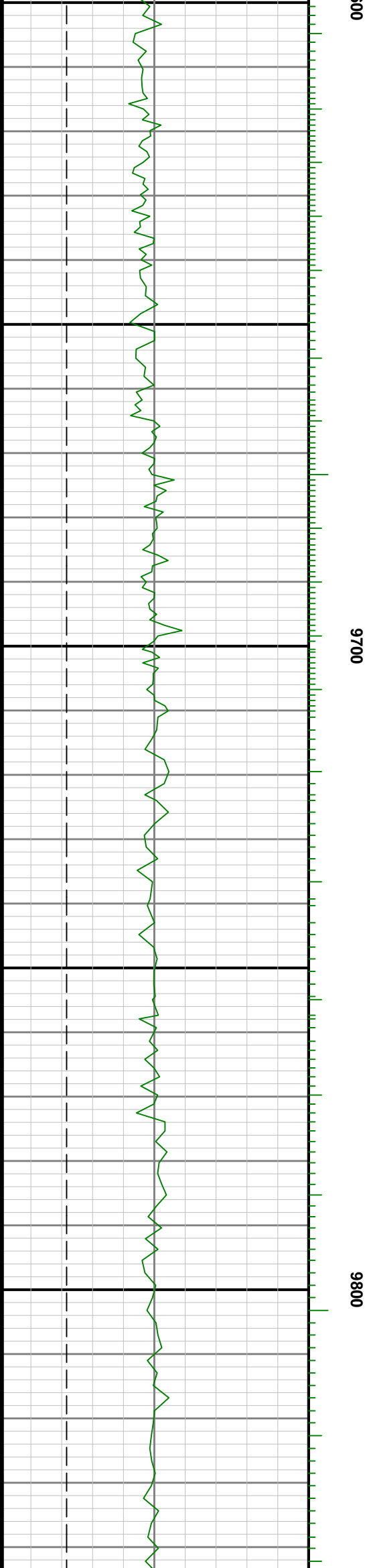
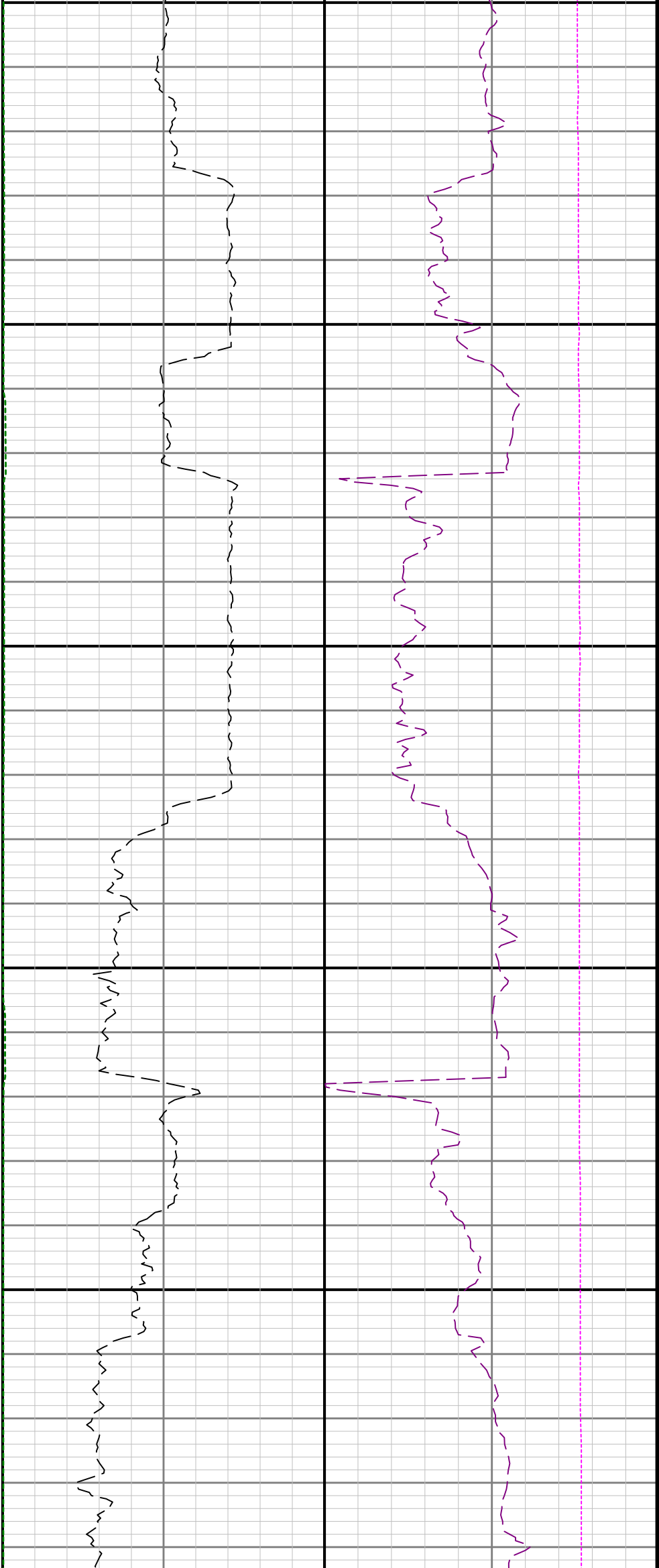


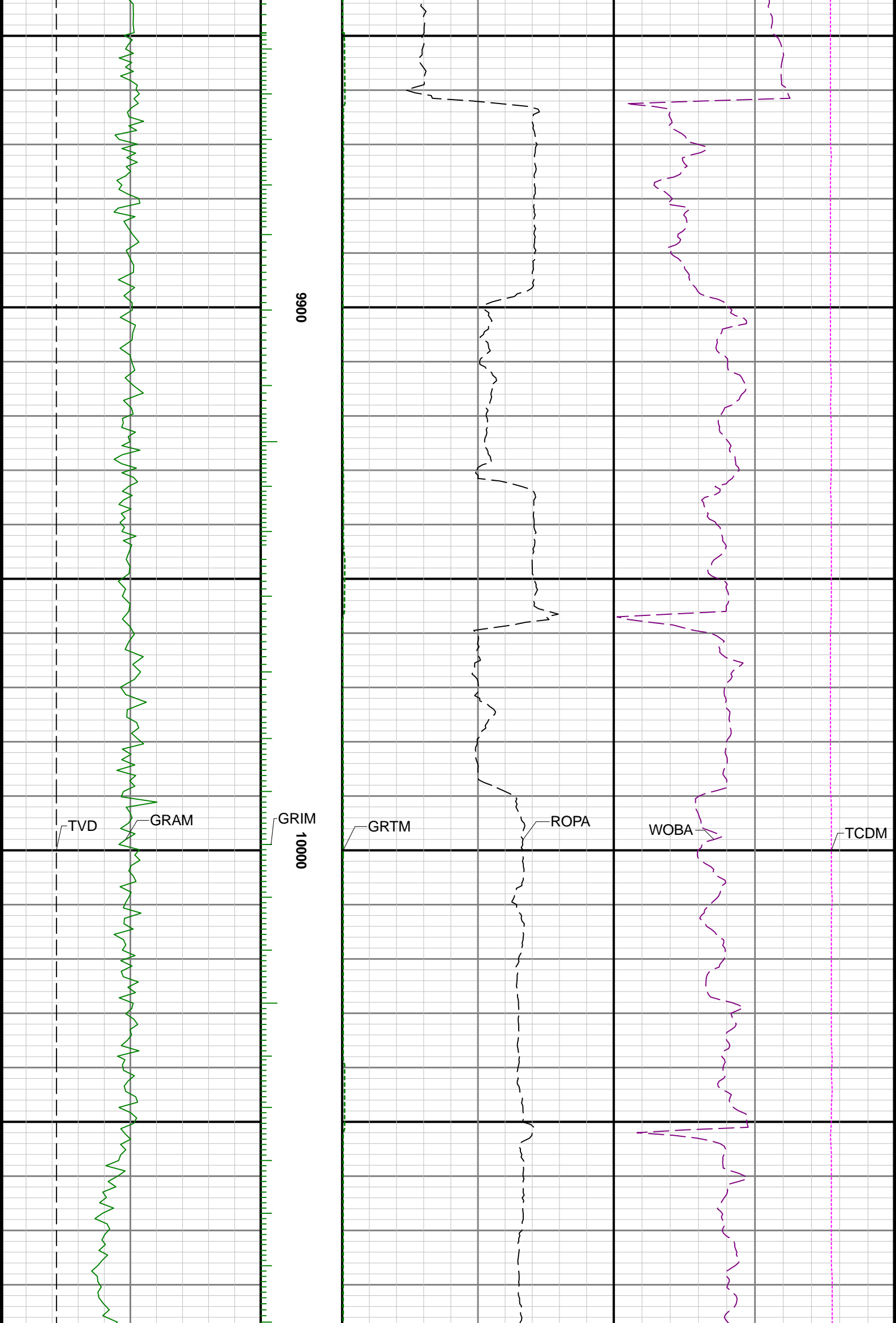
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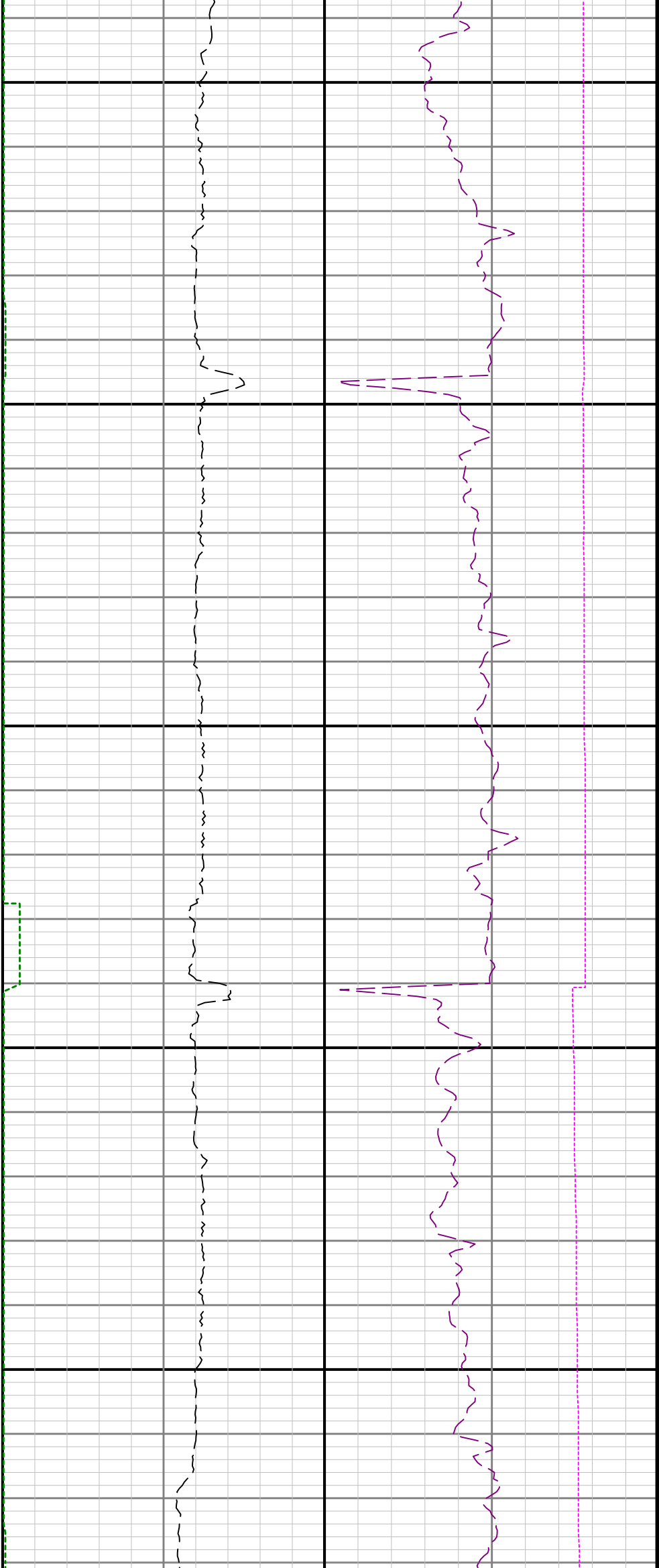
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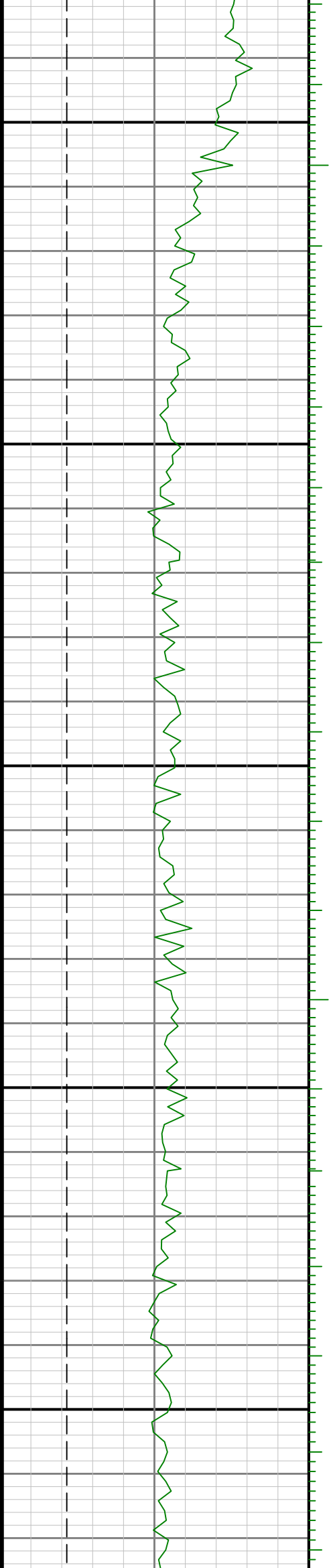
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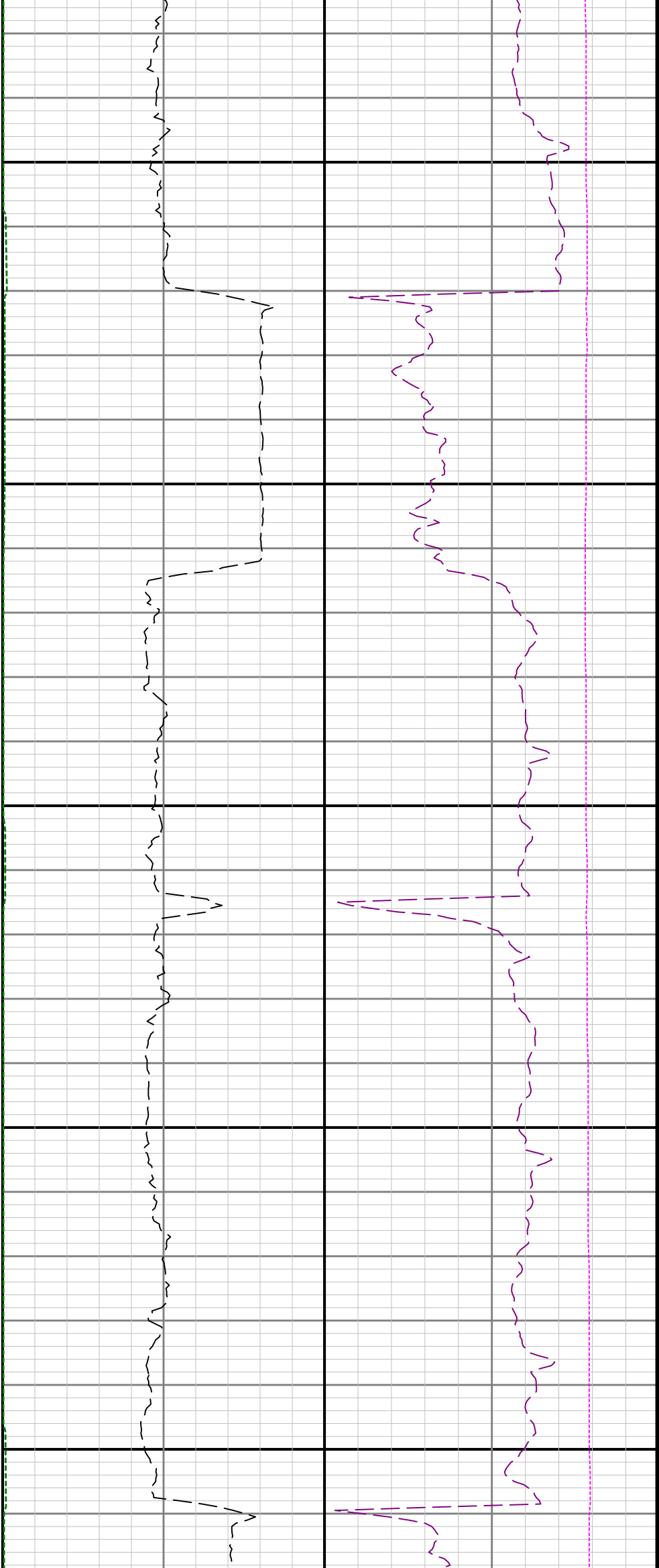
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10400

10500

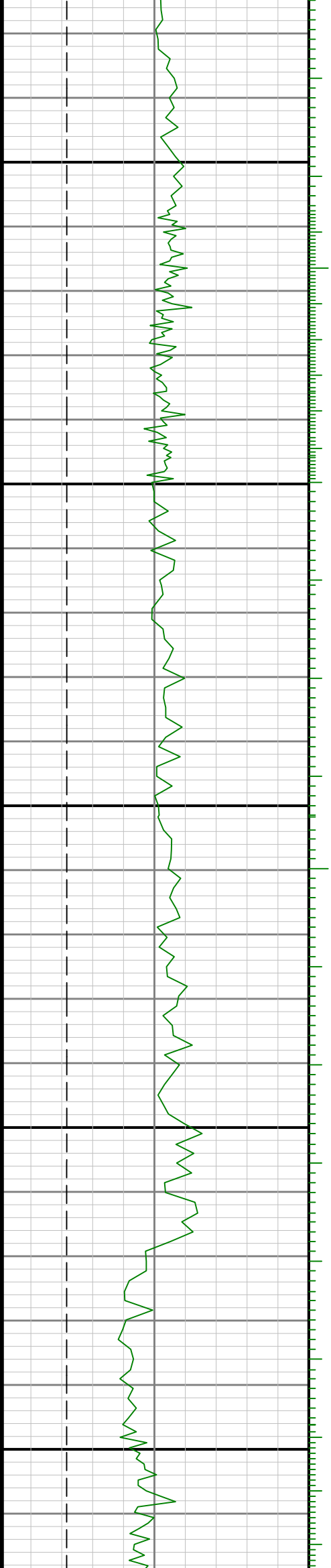


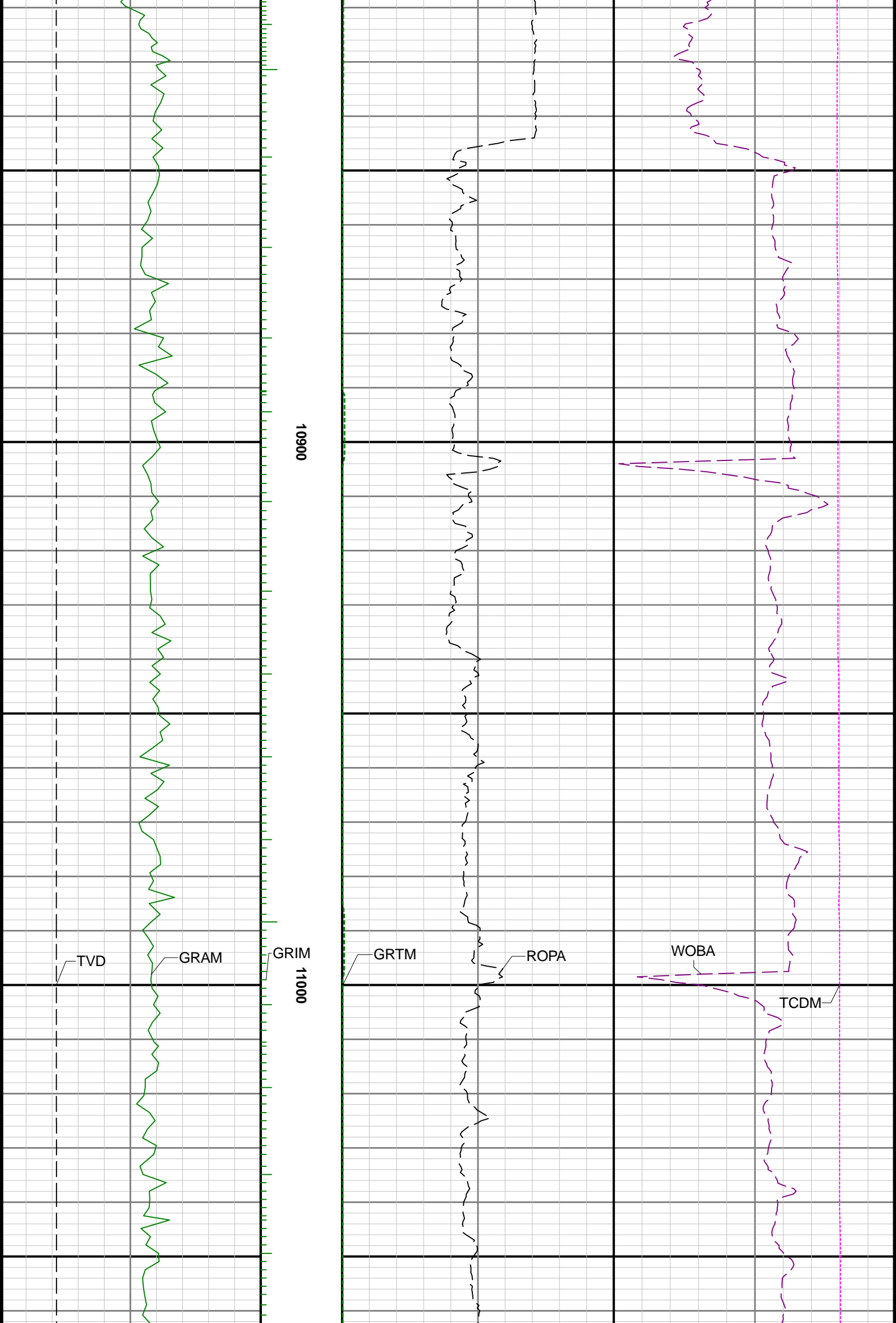


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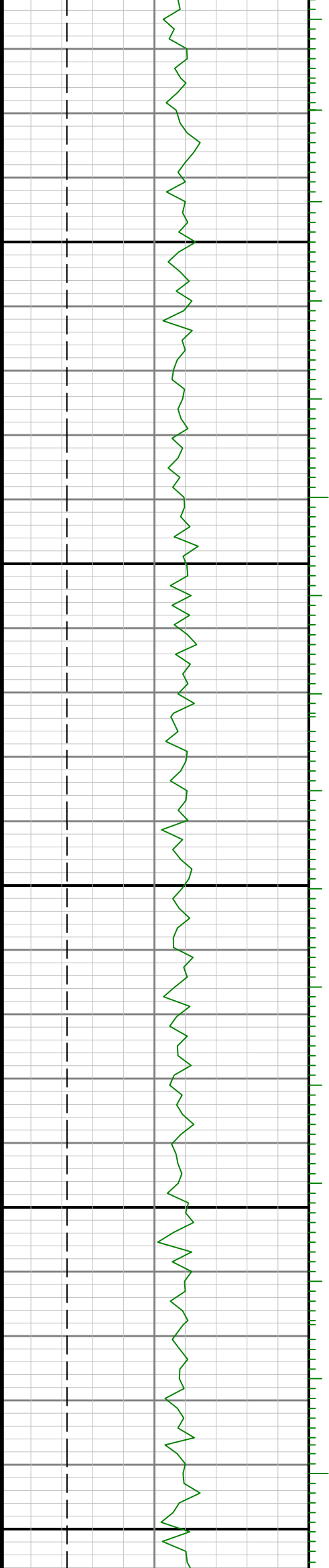


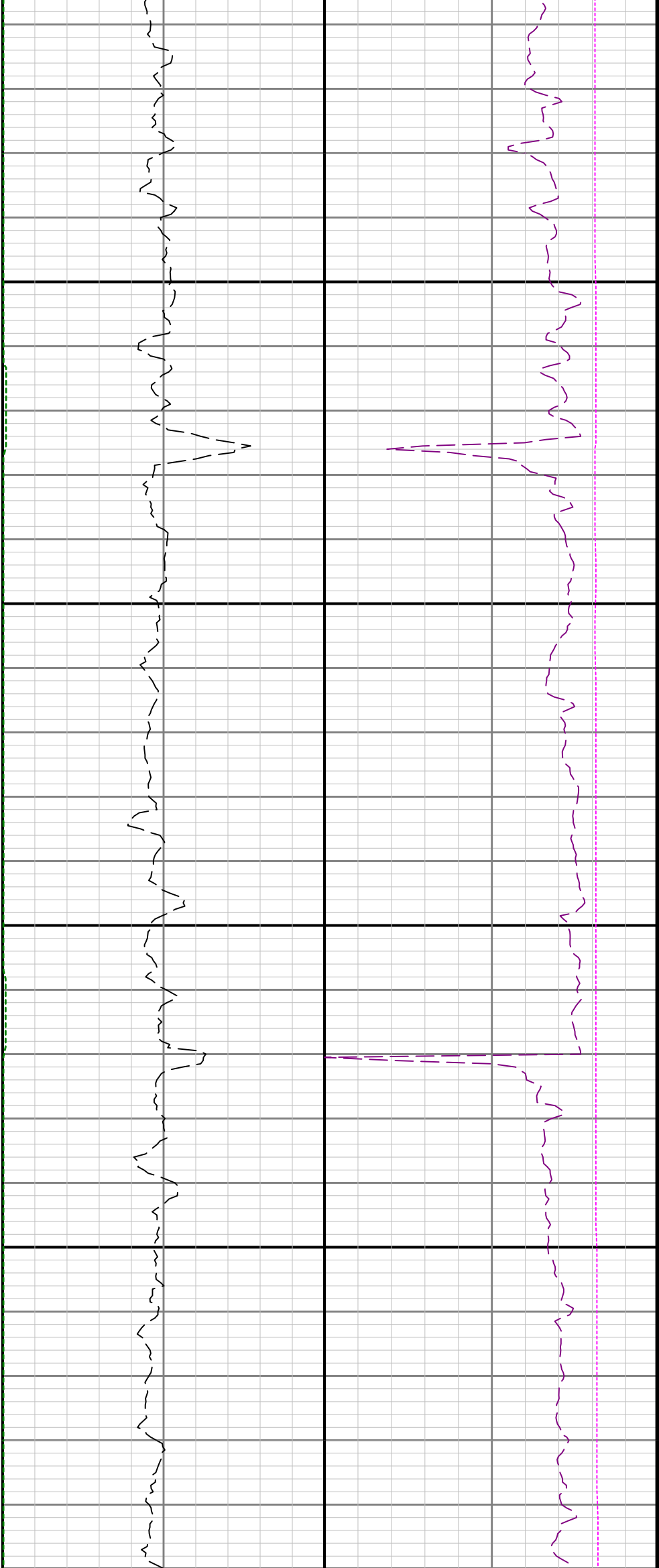


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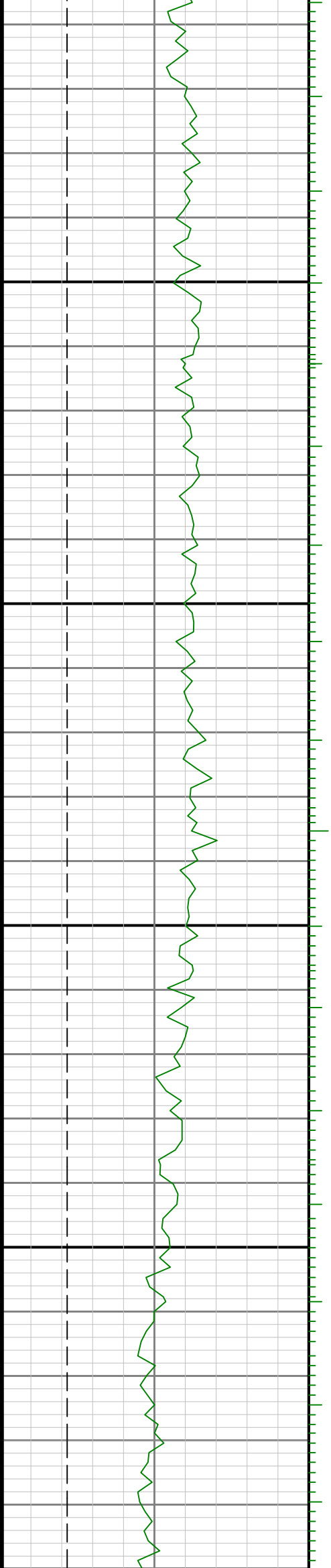
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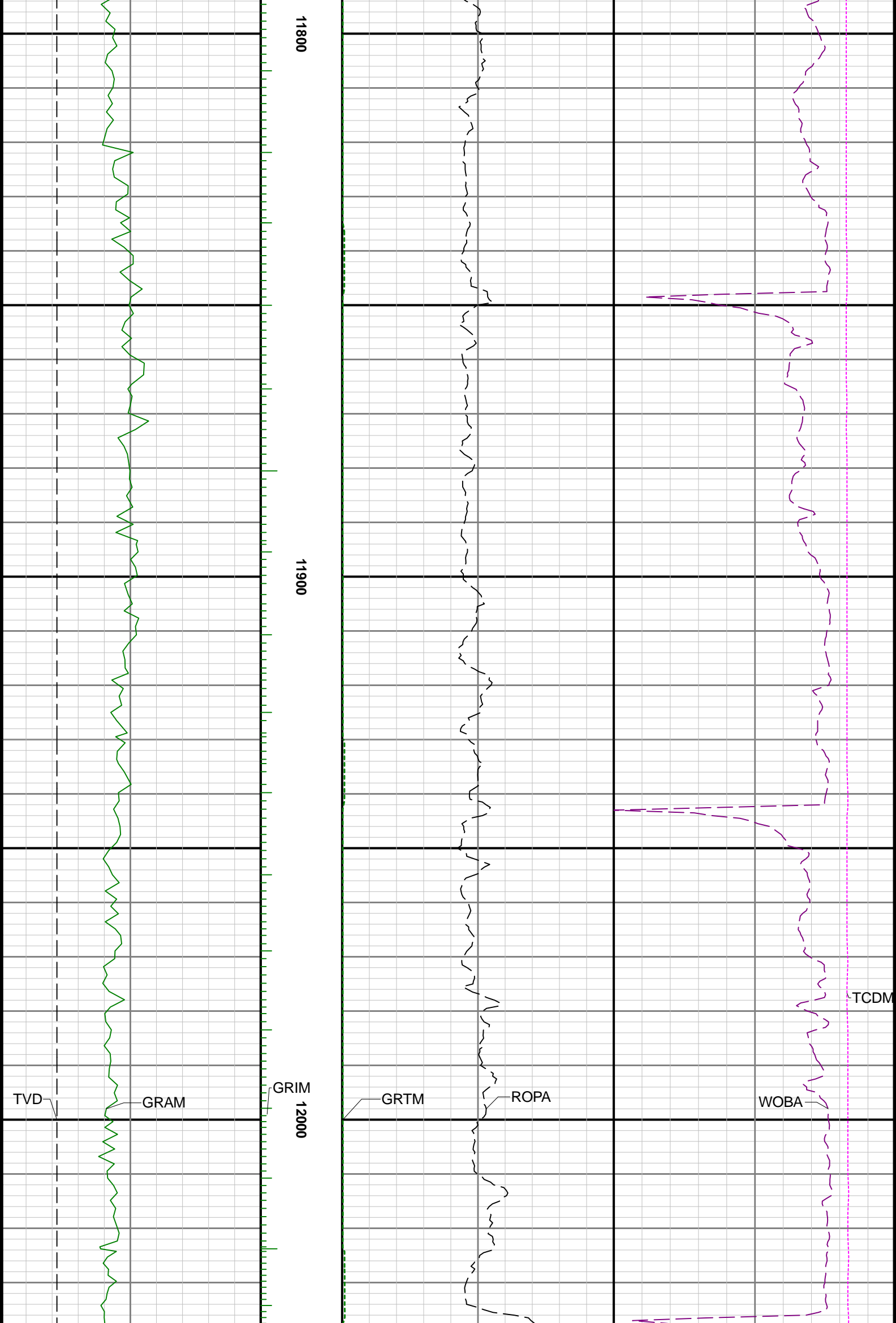
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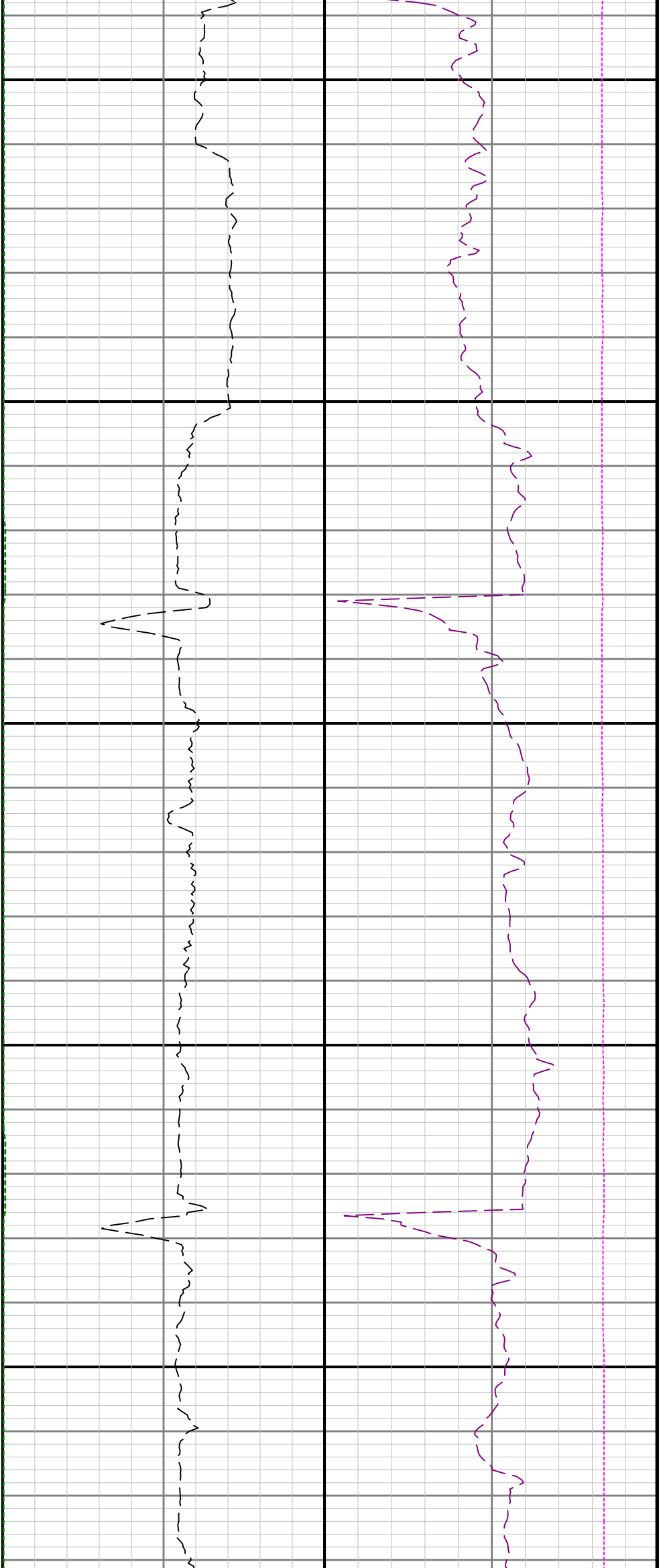




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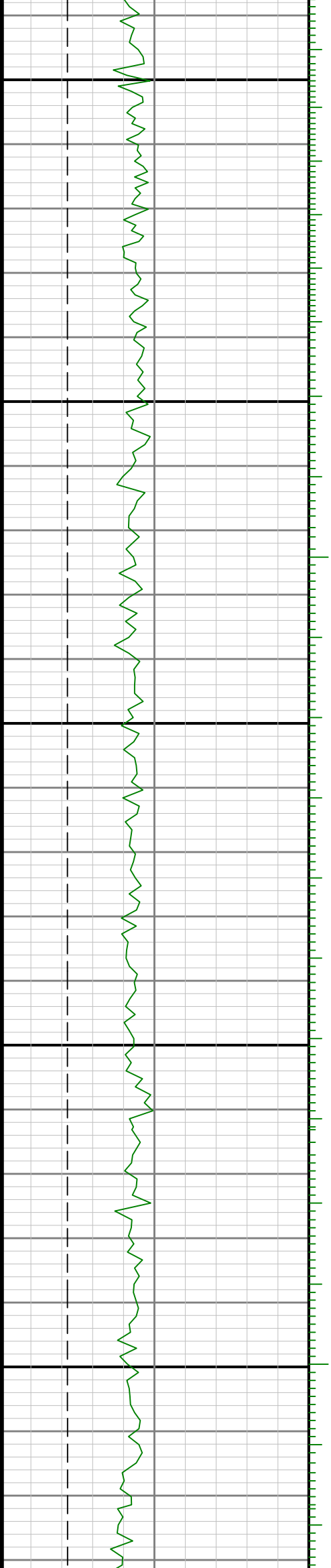
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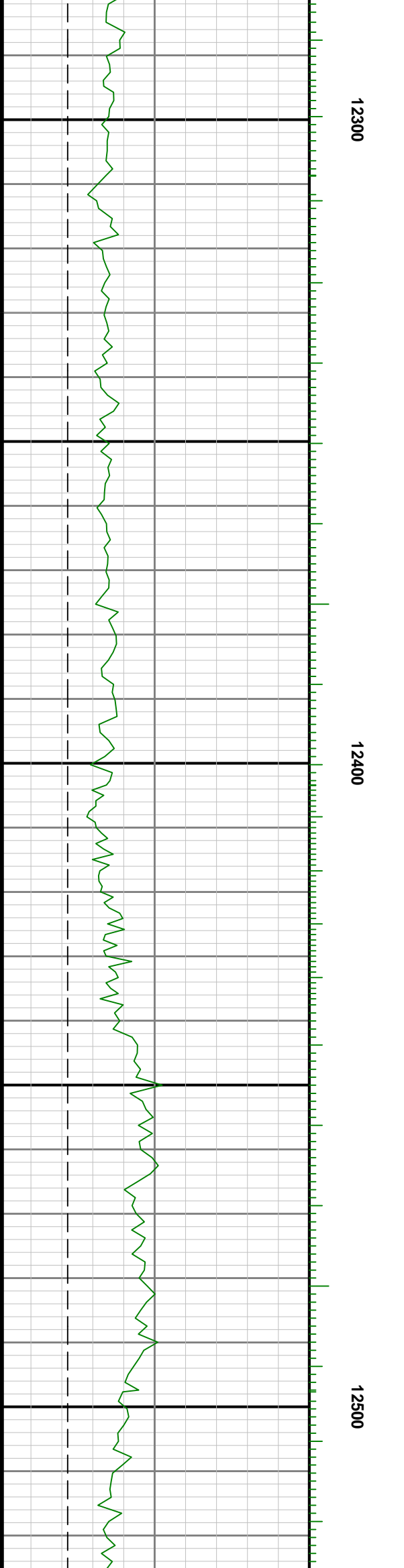
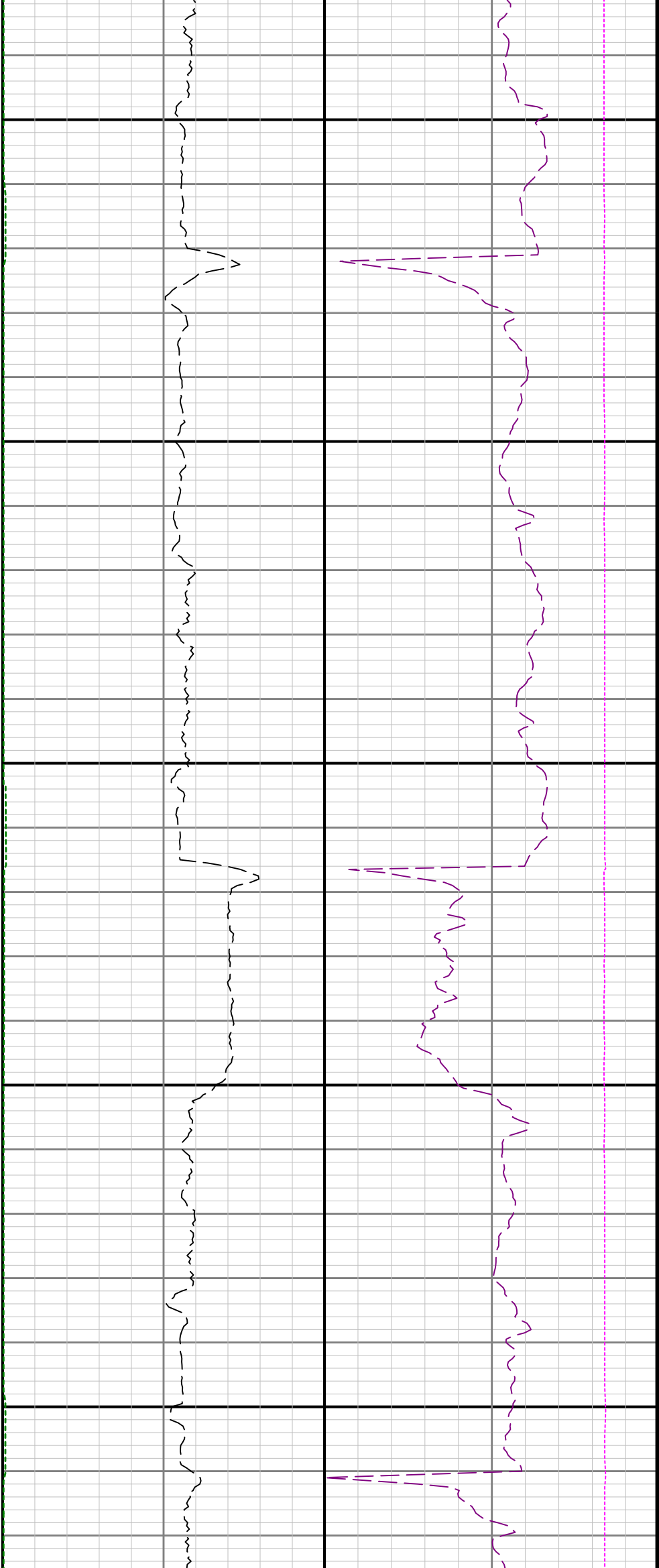


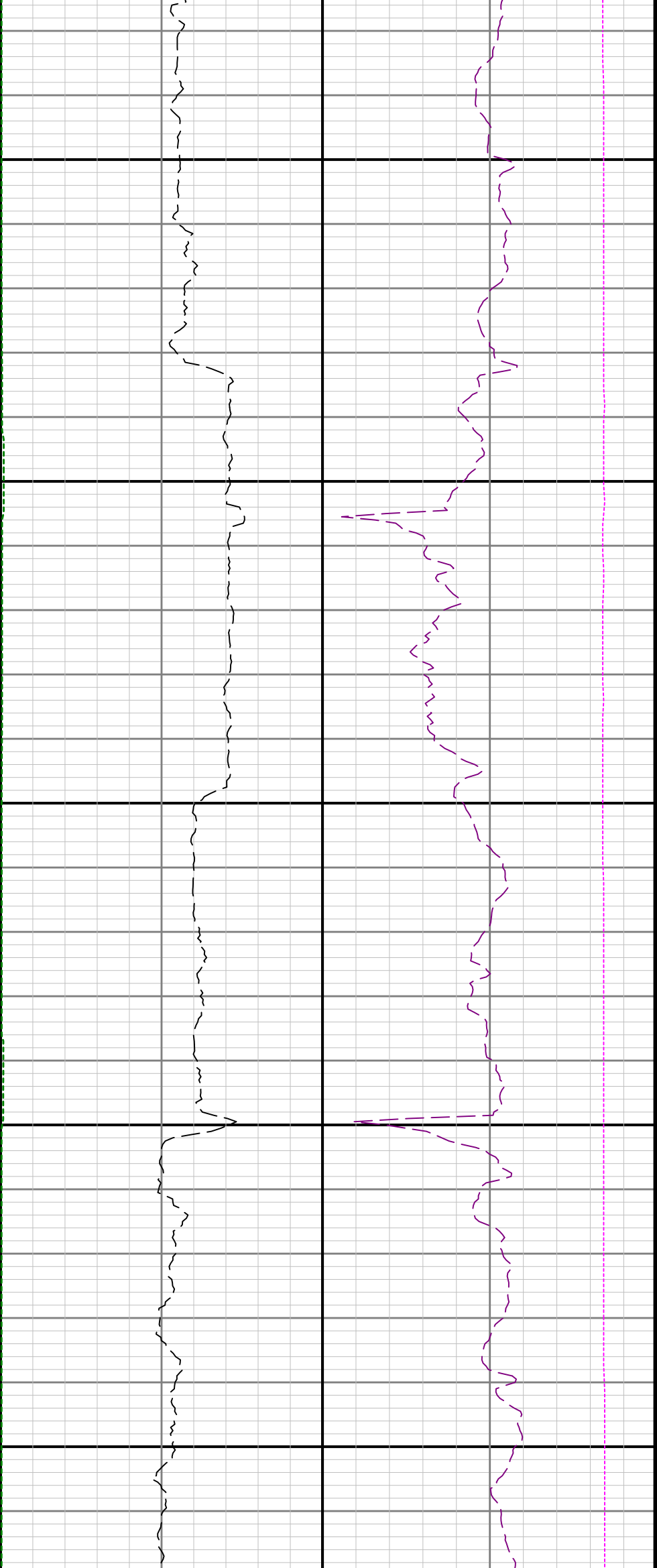


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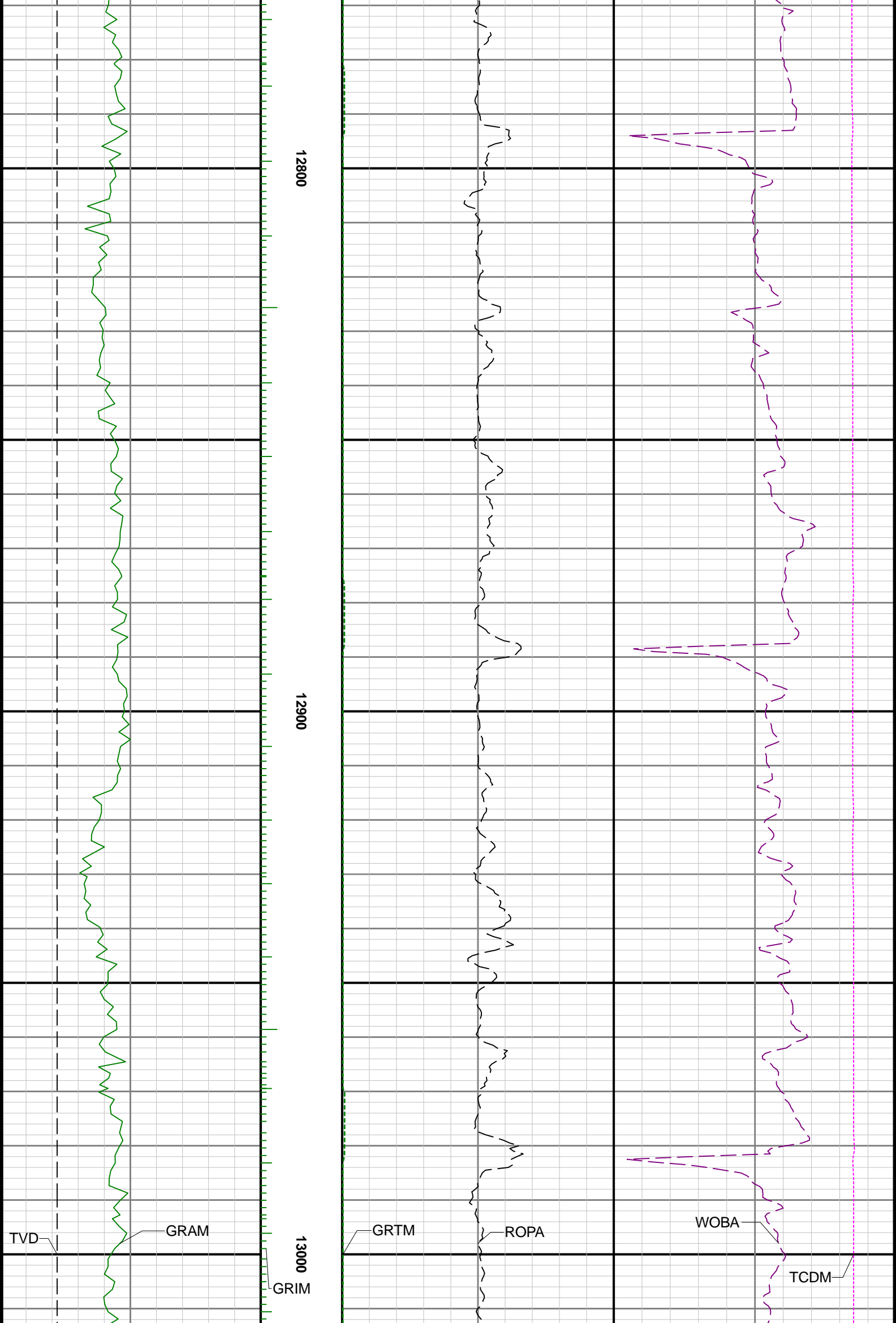






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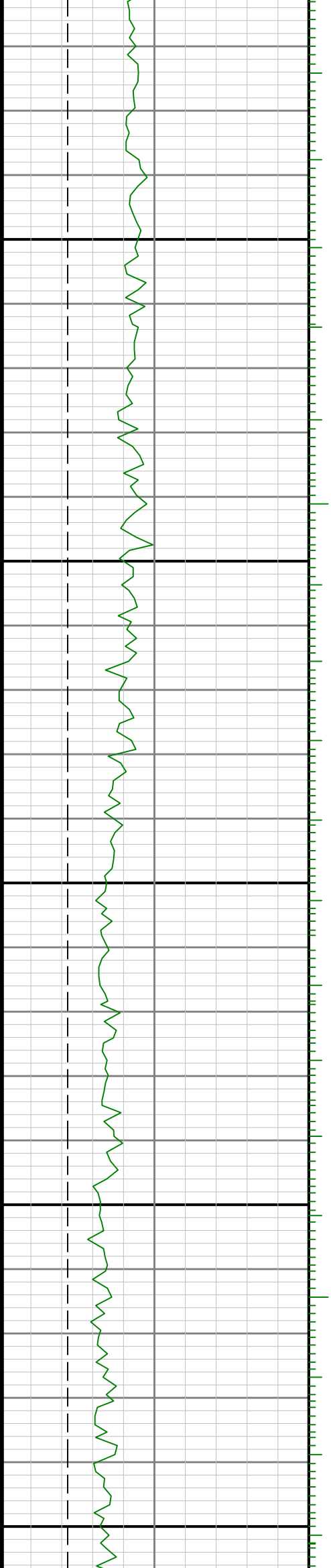
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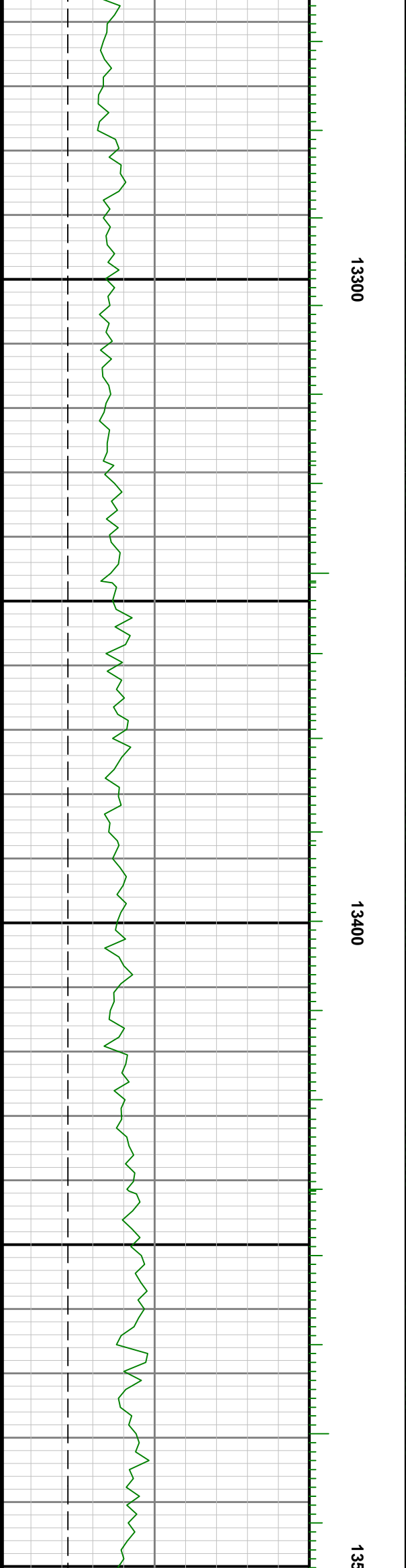
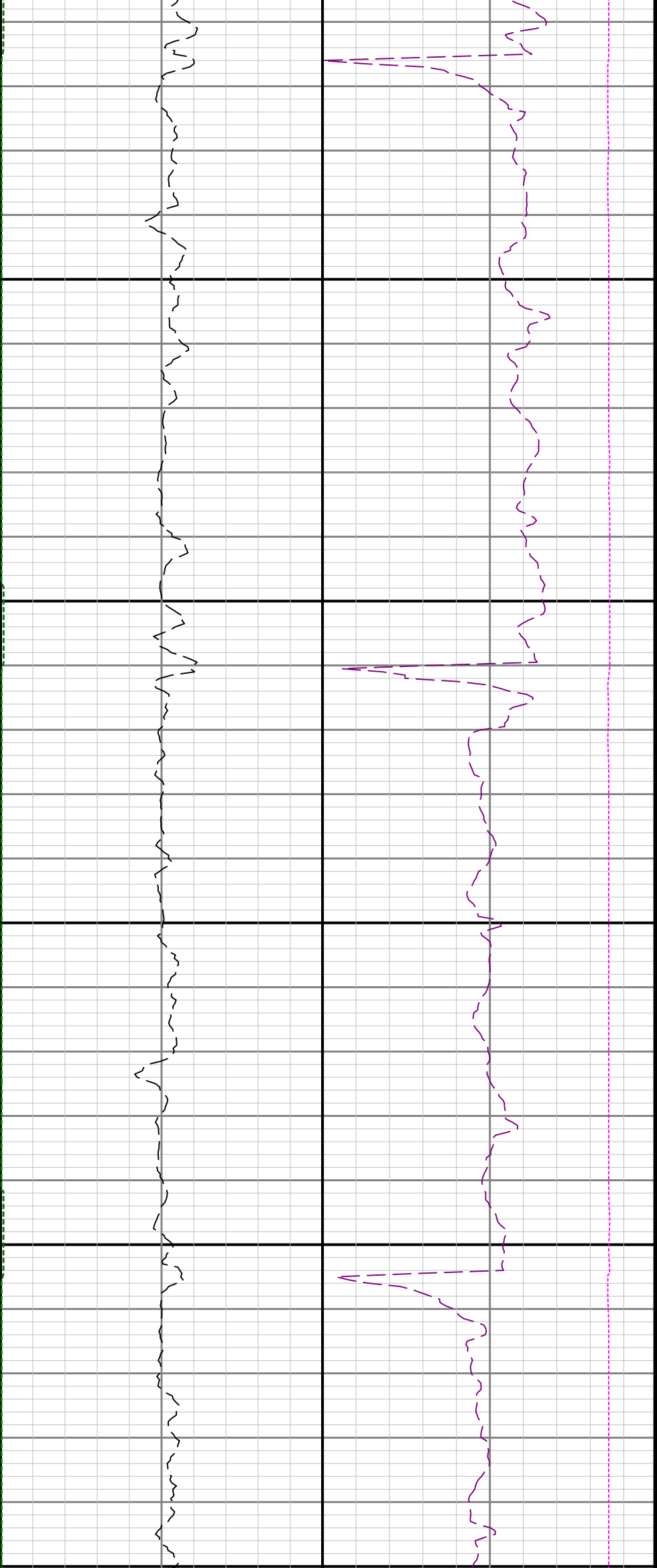


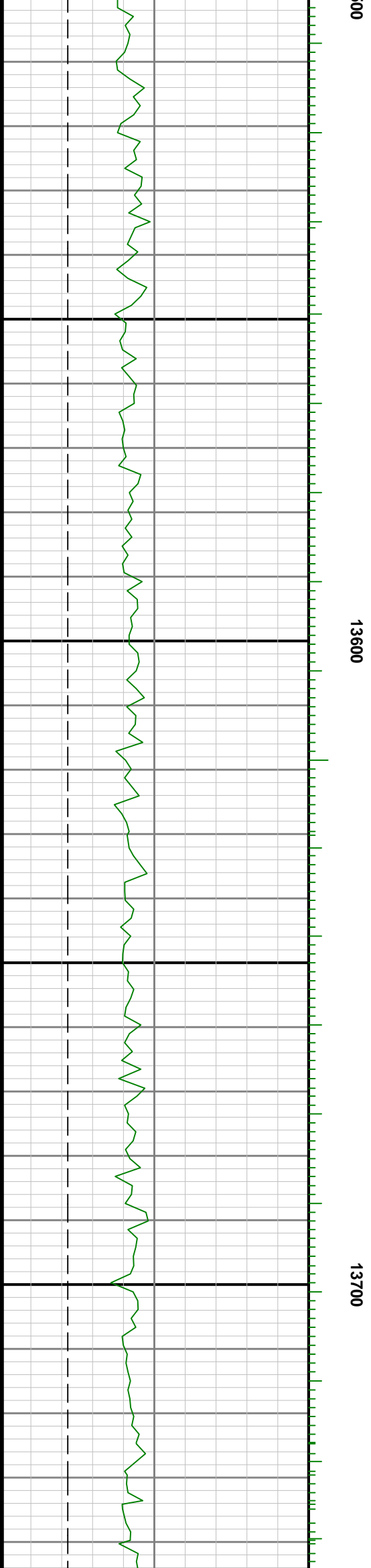
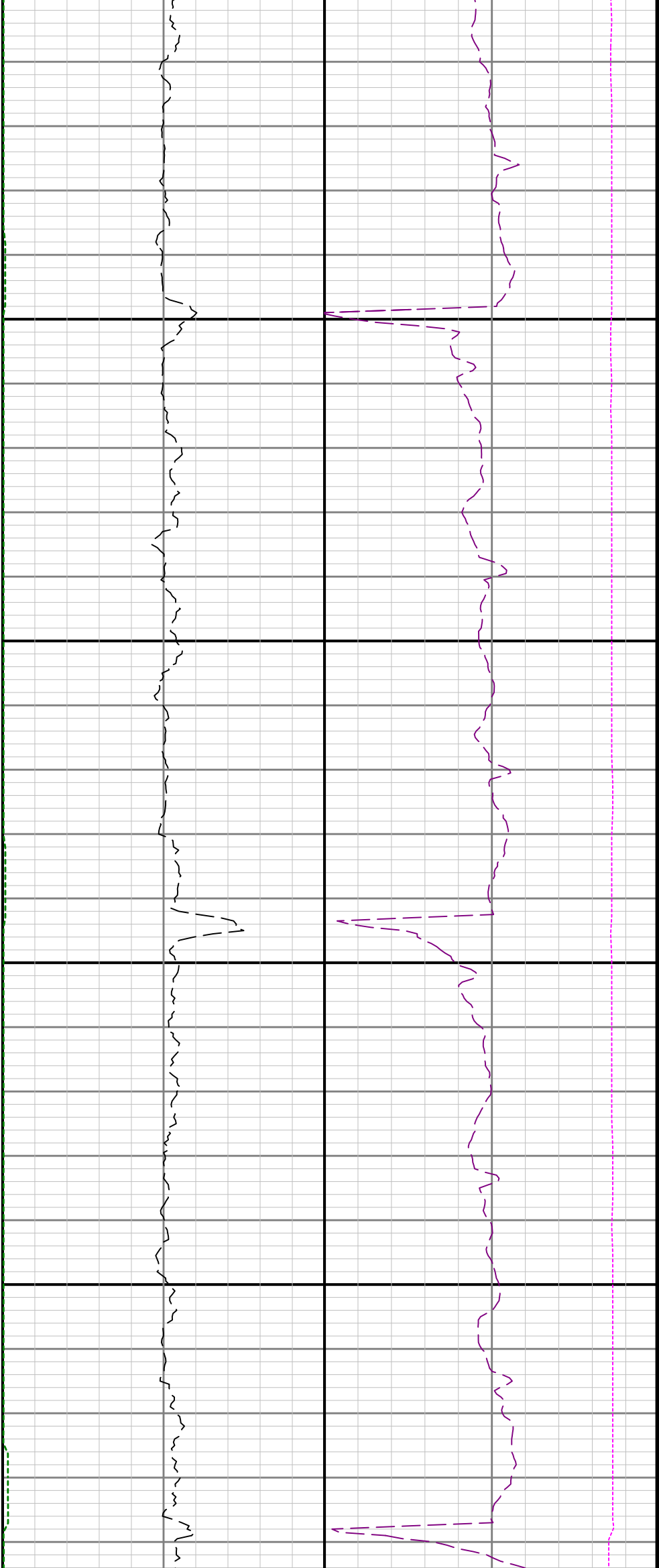


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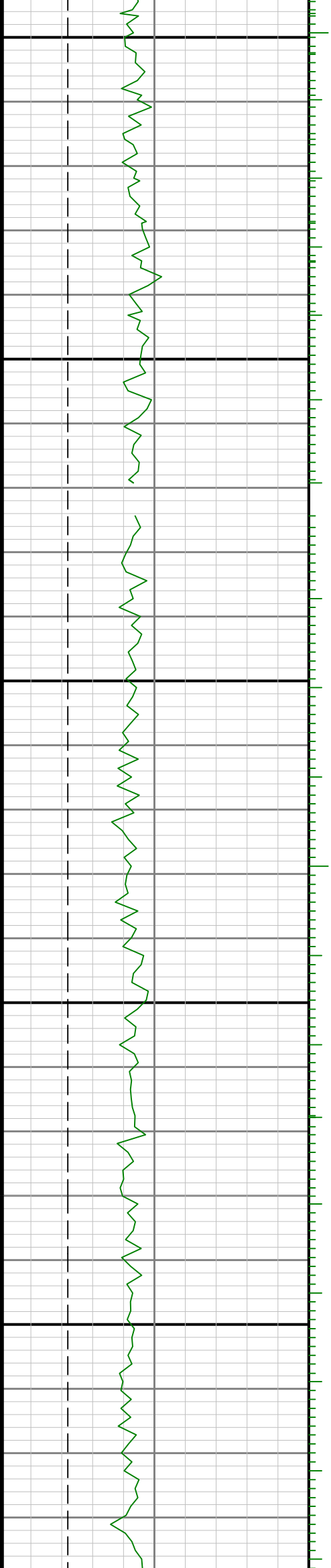




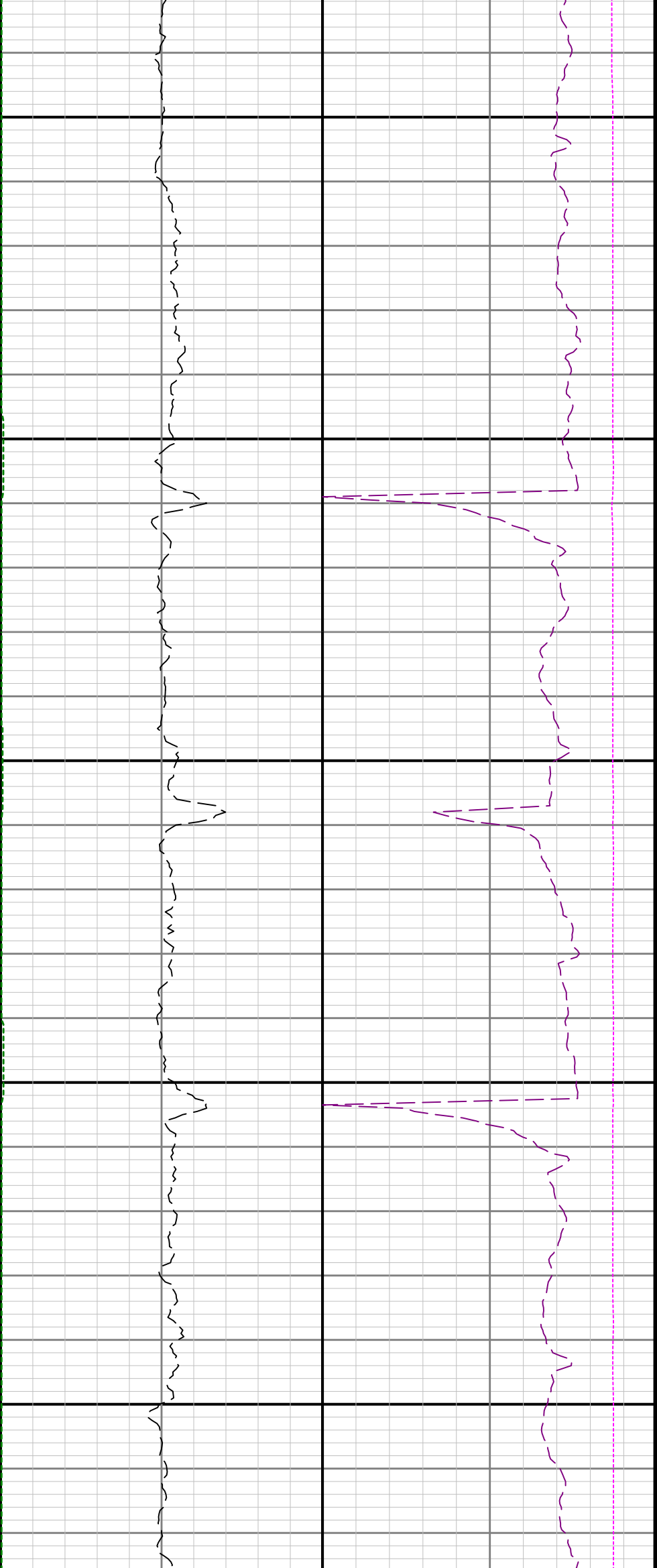


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13900

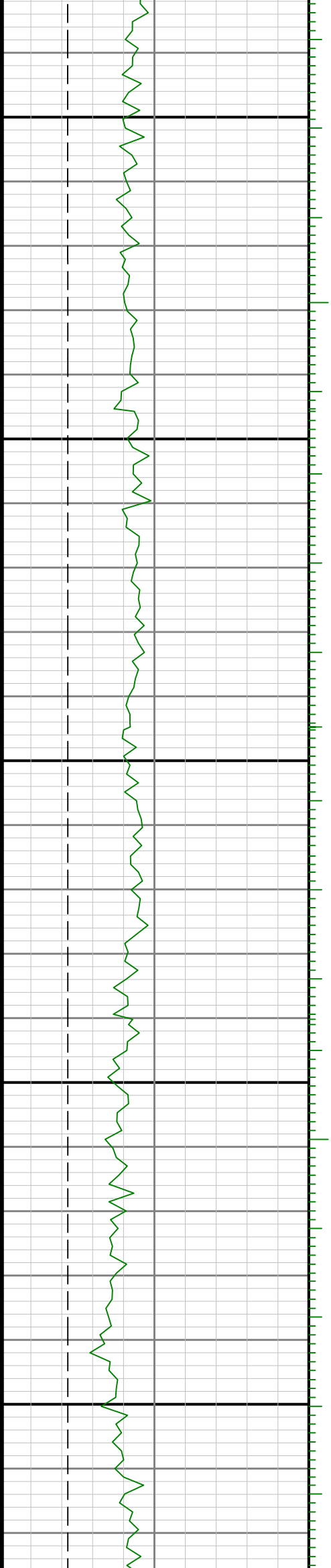






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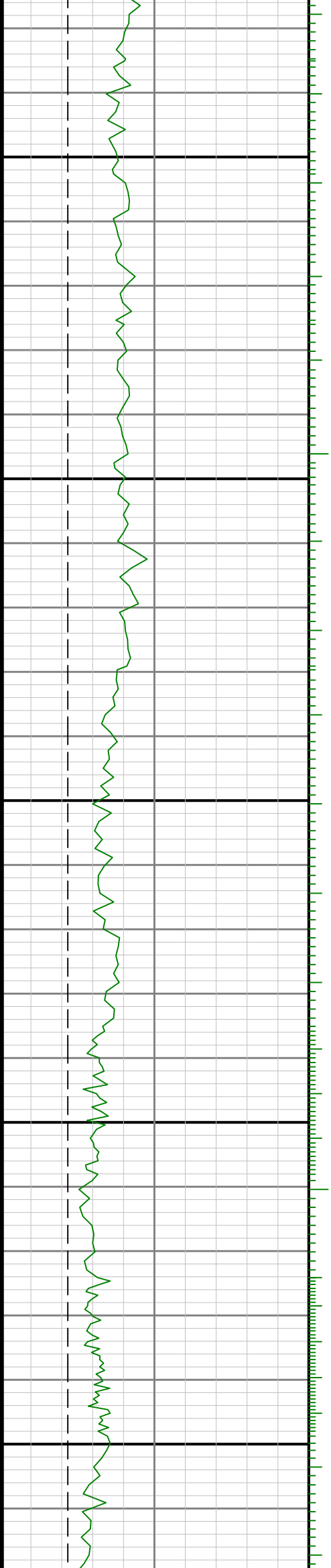


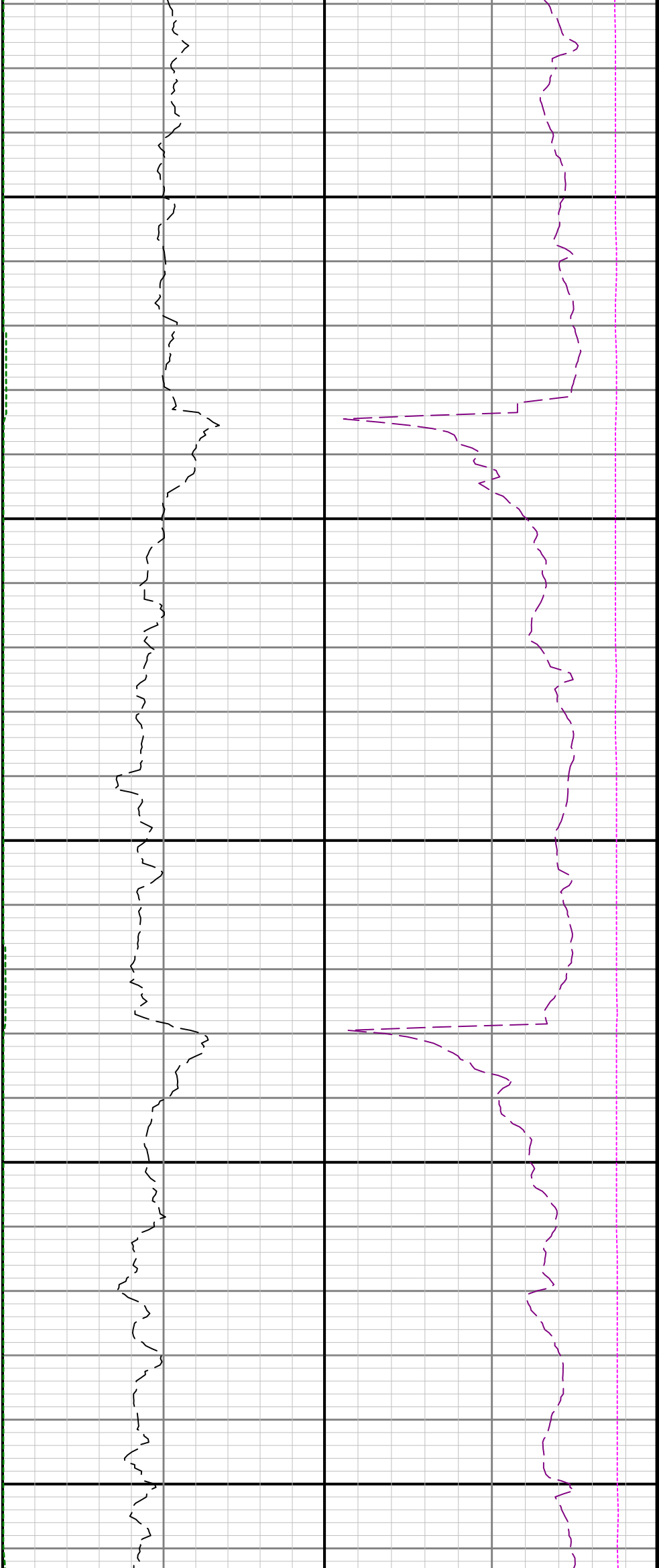


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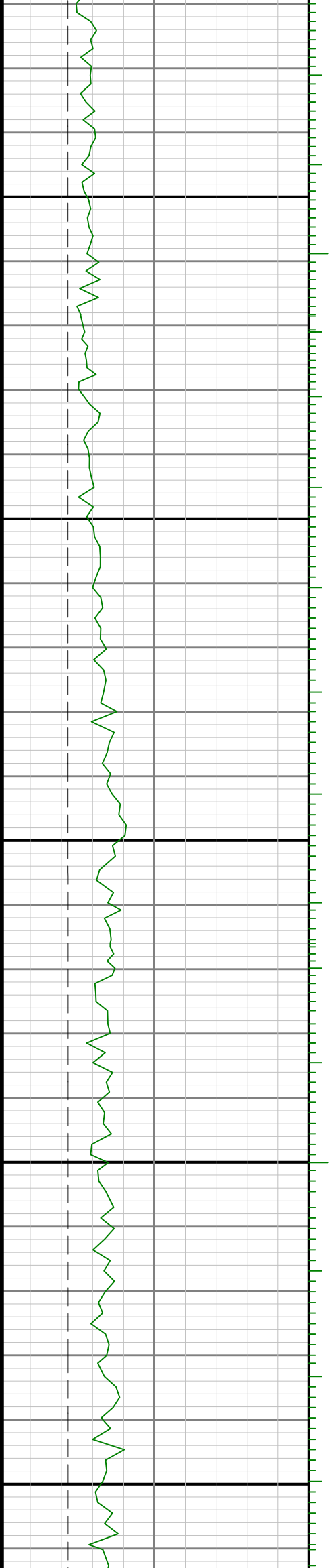
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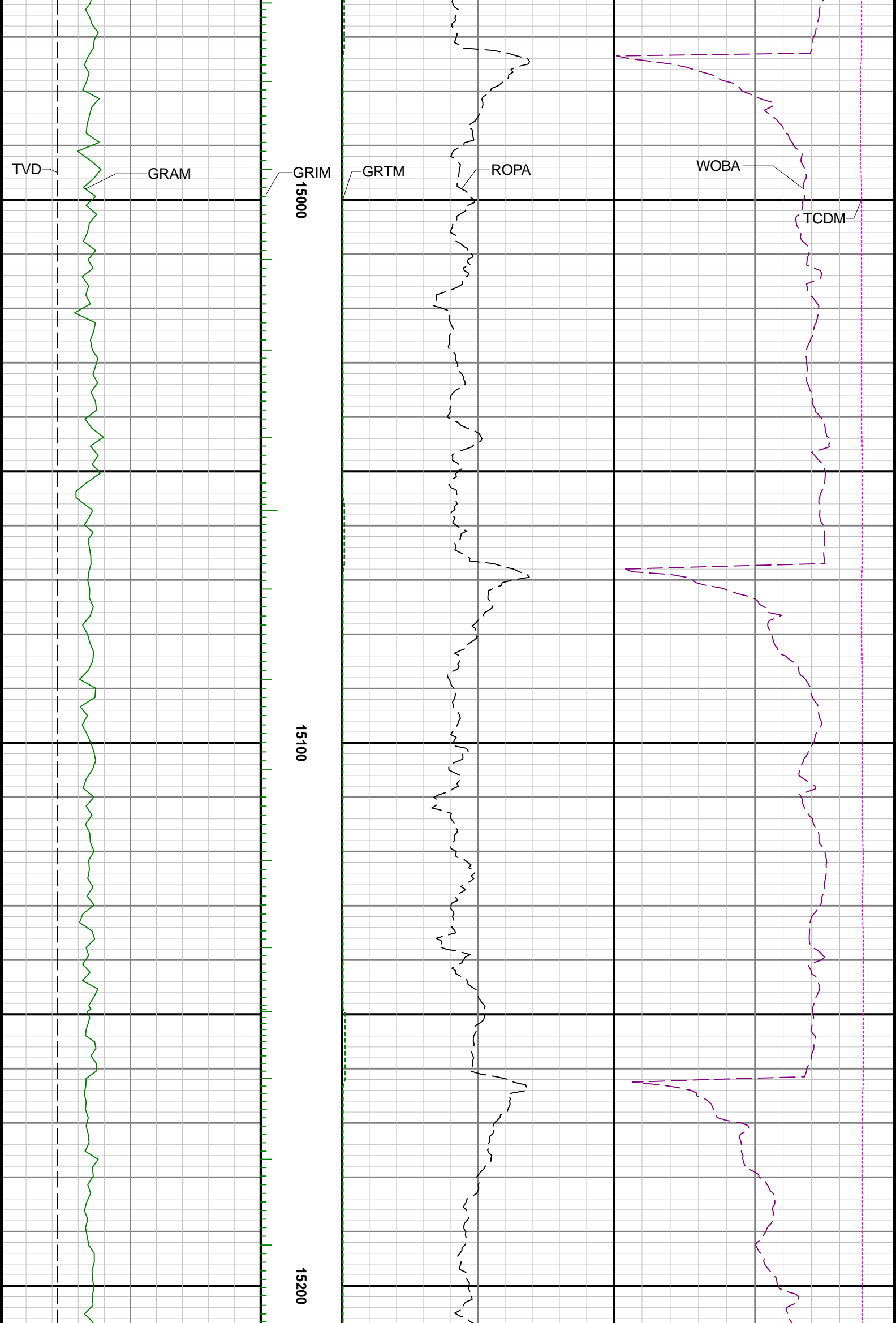


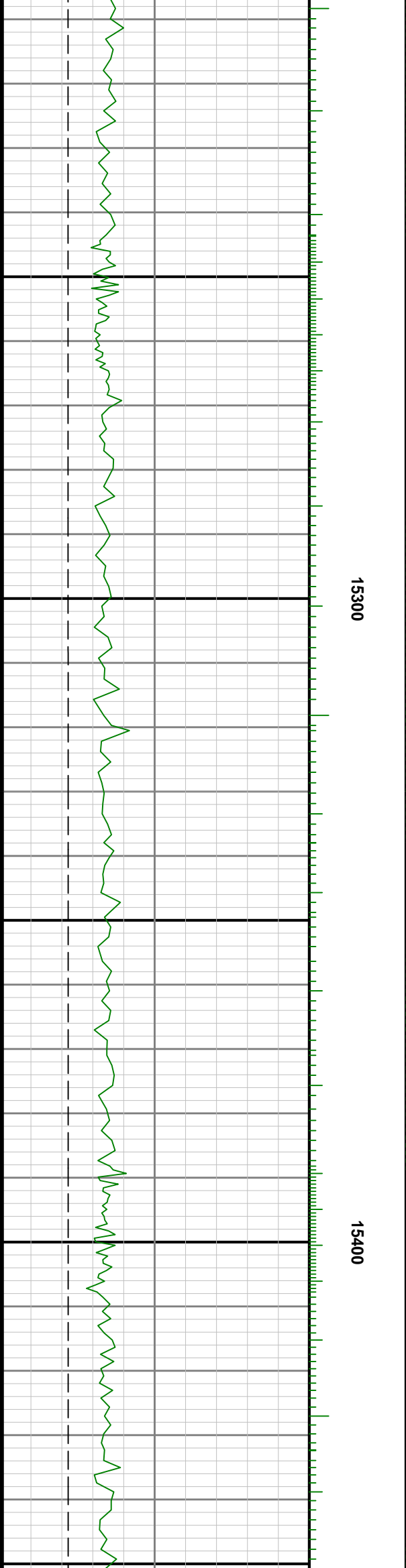
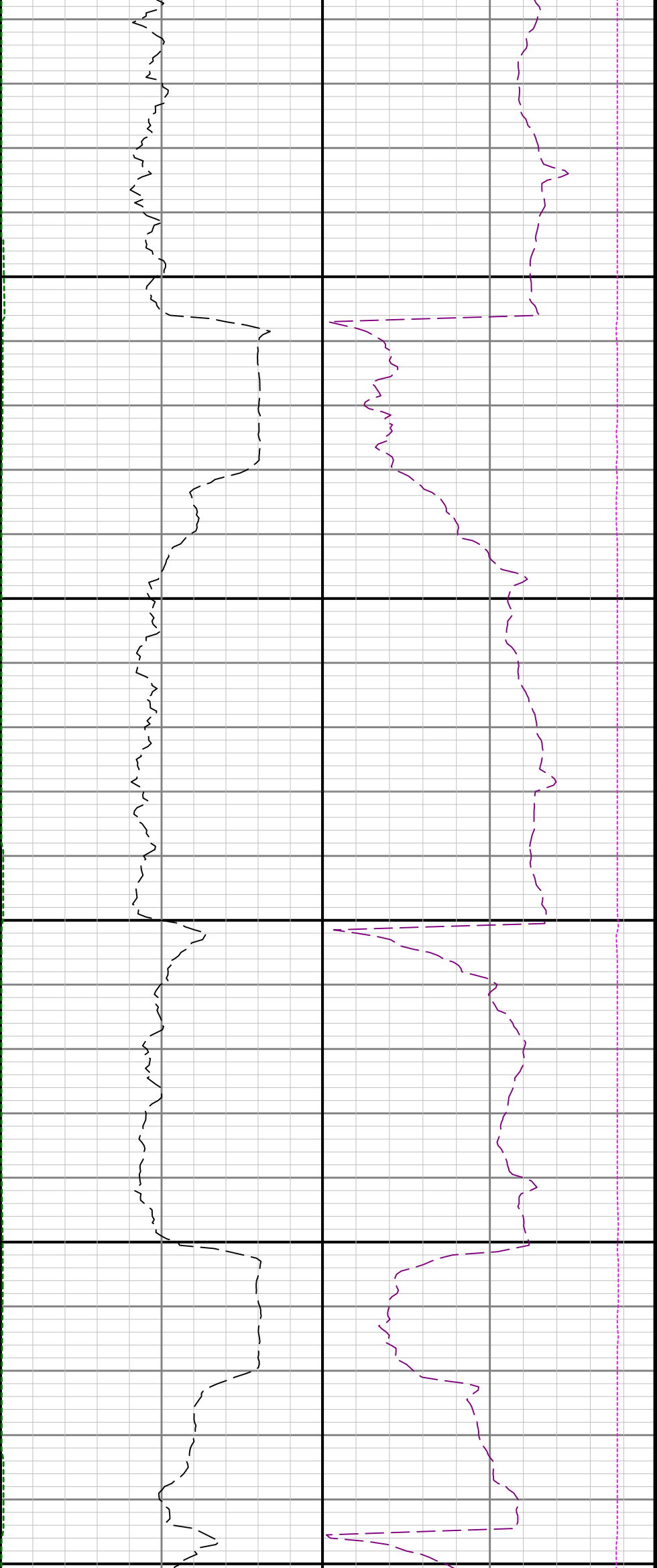


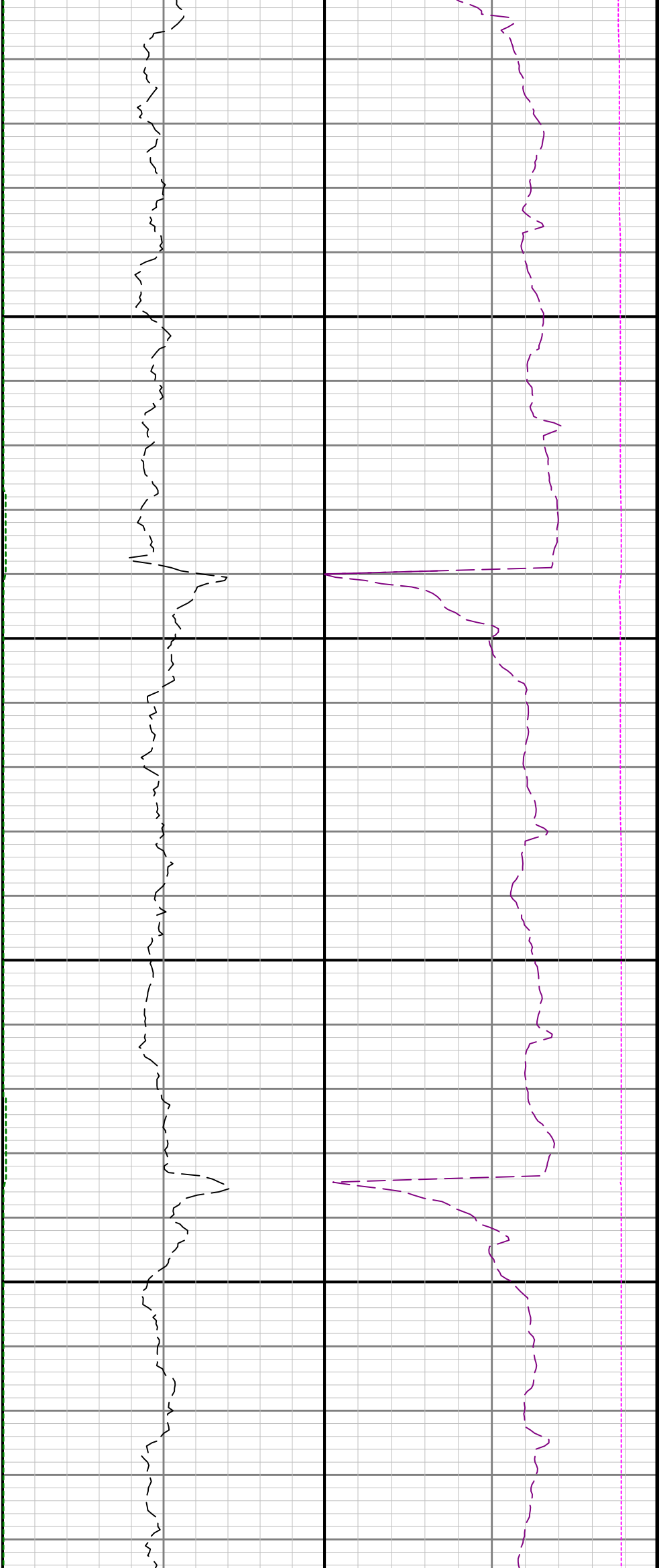
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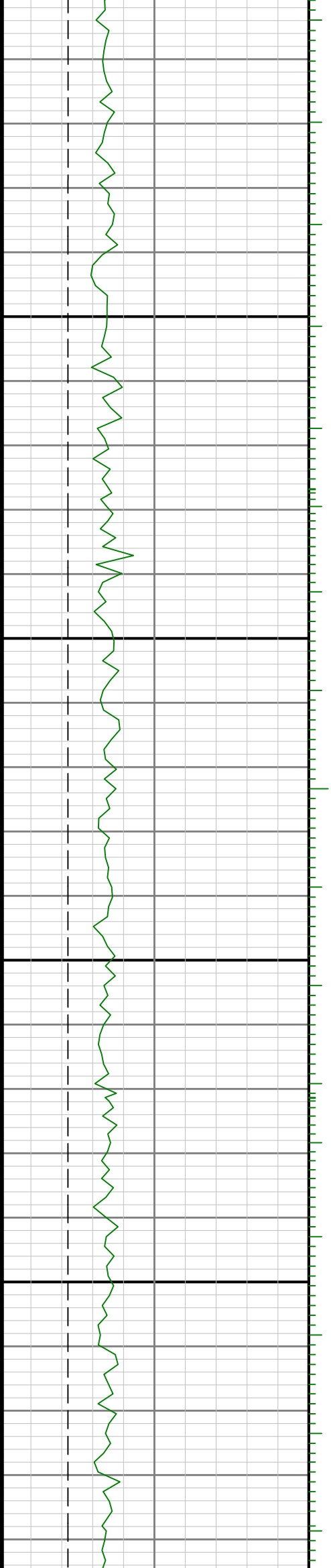


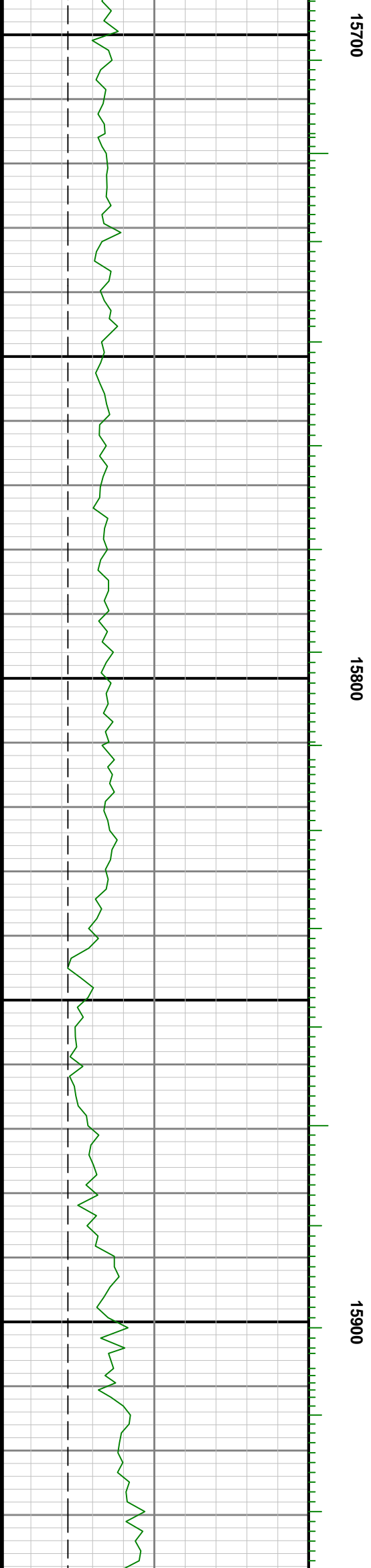


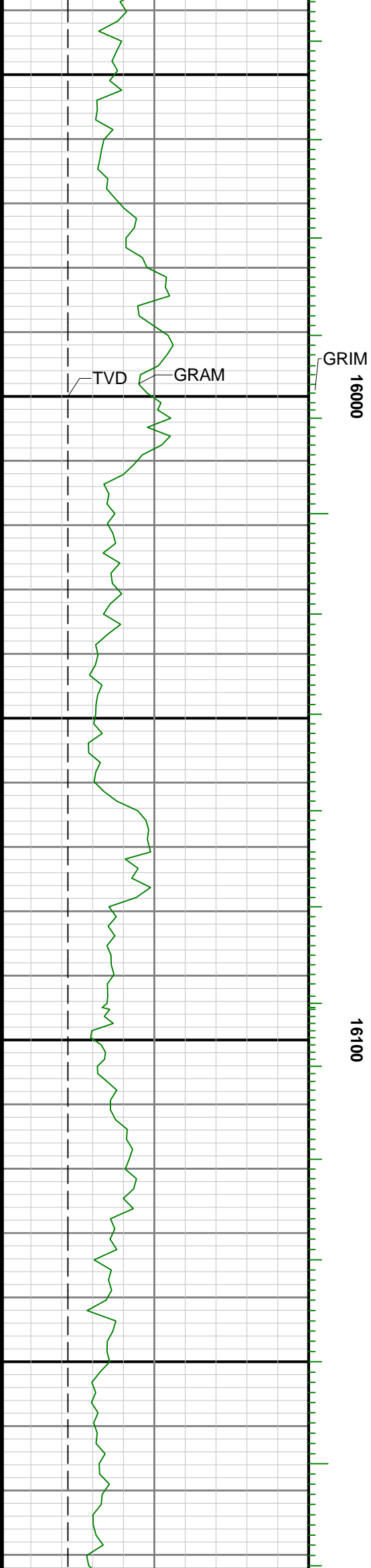


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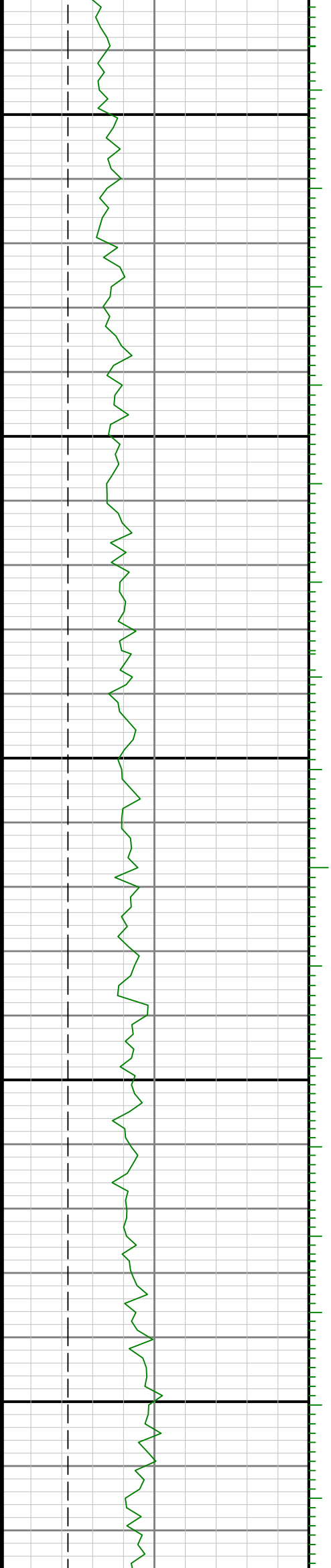


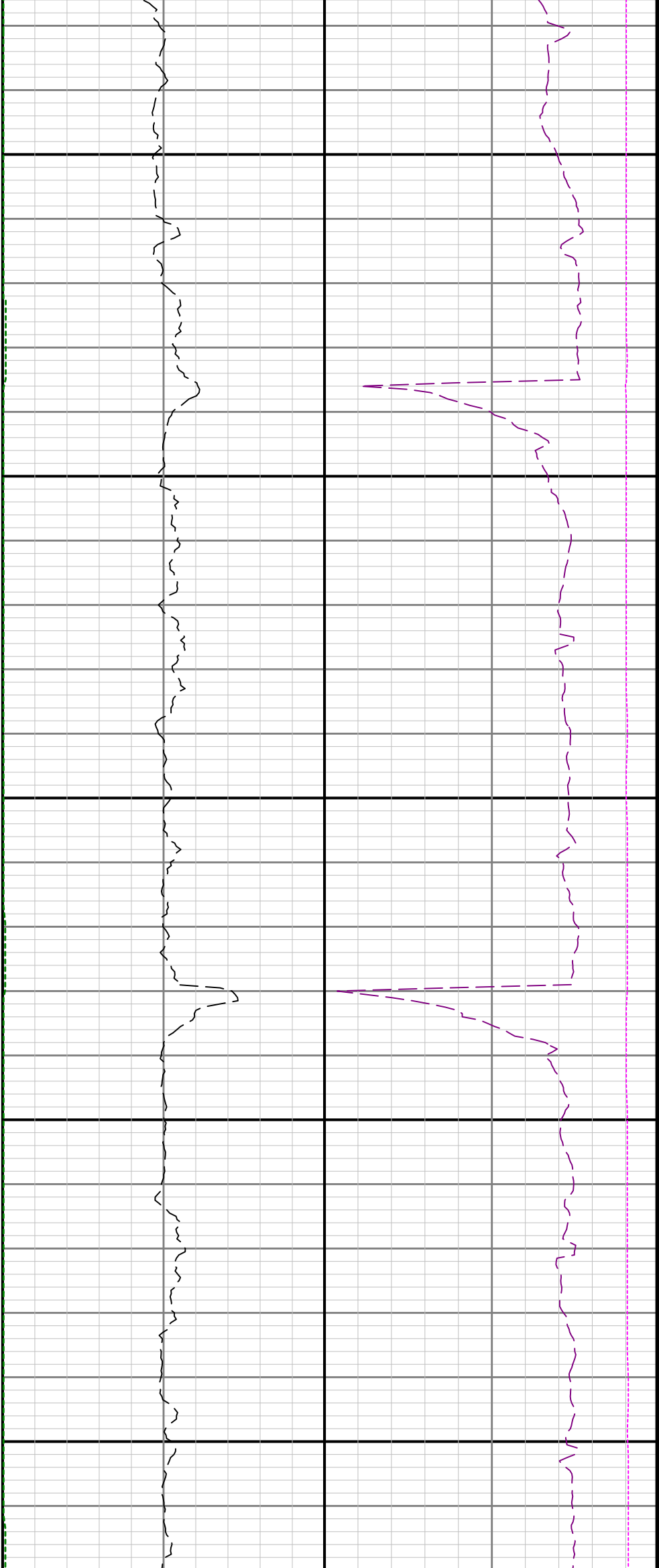


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