



Gamma Ray

LWD MEMORY LOG

Scale:

1:240

Measured Depth

Depth Reference:

Driller's Depth

Status:

Final Print

API No: 05-123-50792-00

Job ID: 110727930

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

Log Measured From: Rig Floor

Company: Noble Energy

Well: Reveille A34-768

Field: Wattenberg

County: Weld Country: United States

State: Colorado

Surface Location:

Latitude:

Longitude:

SEC: 34

TWN: 6N

RGE: 64W

Elevation:

Above P.D.:

0.00 ft

4661.00 ft

4631.00 ft

N/A

Elev. KB:

Elev. DF:

Elev. GL:

Directional

Other Services:

Grid

Dip Angle: (deg)

66.81

51961

7.12

Mag to Reference North Correction: (deg)

Interval

From: 2021-02-07

To: 2021-02-10

Spud: 2021-02-06

Drilled (ft)

1956.00

Top: 1956.00

Bottom: 17016.00

Logged (ft)

1956.00

Magnetic Field Reference

Azi Reference North:

Total Magnetic Field Strength: (nT)

Mag to Reference North Correction: (deg)

Interval

From: 2021-02-07

To: 2021-02-10

Spud: 2021-02-06

Drilled (ft)

1956.00

Top: 1956.00

Bottom: 17016.00

Logged (ft)

1956.00

Top: 1956.00

Bottom: 17016.00

Mag to Reference North Correction: (deg)

Interval

From: 2021-02-07

To: 2021-02-10

Spud: 2021-02-06

Drilled (ft)

1956.00

Top: 1956.00

Bottom: 17016.00

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

30.00

1956.00

1956.00

17016.00

9.625

36.00

30.00

1946.00

8.500

1956.00

17016.00

8.500

15060.00

Inc | Az (Start)

Inc | Az (End)

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

Inc | Az (Start)

Inc | Az (End)

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

Inc | Az (Start)

Inc | Az (End)

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

Inc | Az (Start)

Inc | Az (End)

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

215.75

90.12

359.40

8.500

15060.00

1.11

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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	1956.00	17003.00	1956.00	17016.00	2021-02-07 21:04	2021-02-10 00:51	48.65

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Tien Bui	2021-02-07	2021-02-10						

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+ (%)
2021-02-06 23:12	1	1956.00	Oil Based Mud	9.2	10	N/A	20.0	79.5/20.5	Active Pit	27000	0.00
2021-02-10 09:08	1	11004.00	Oil Based Mud	9.6	13	N/A	20.0	79.5/20.5	Active Pit	24000	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	14452346	Near Bit Inclination	5.93	6.79	7.000	4.330
1	AutoTrak Curve Steering Unit	14452346	Near Bit VSS	5.93	6.79	7.000	4.330
1	AutoTrak Curve MWD	14705361	Gamma (single)	2.75	12.96	7.000	3.250
1	AutoTrak Curve MWD	14705361	Directional (mag)	12.27	22.48	7.000	3.250

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
BCPM	BCPM	Bi-Directional Communication and Power Module, OnTrak Platform

Comments

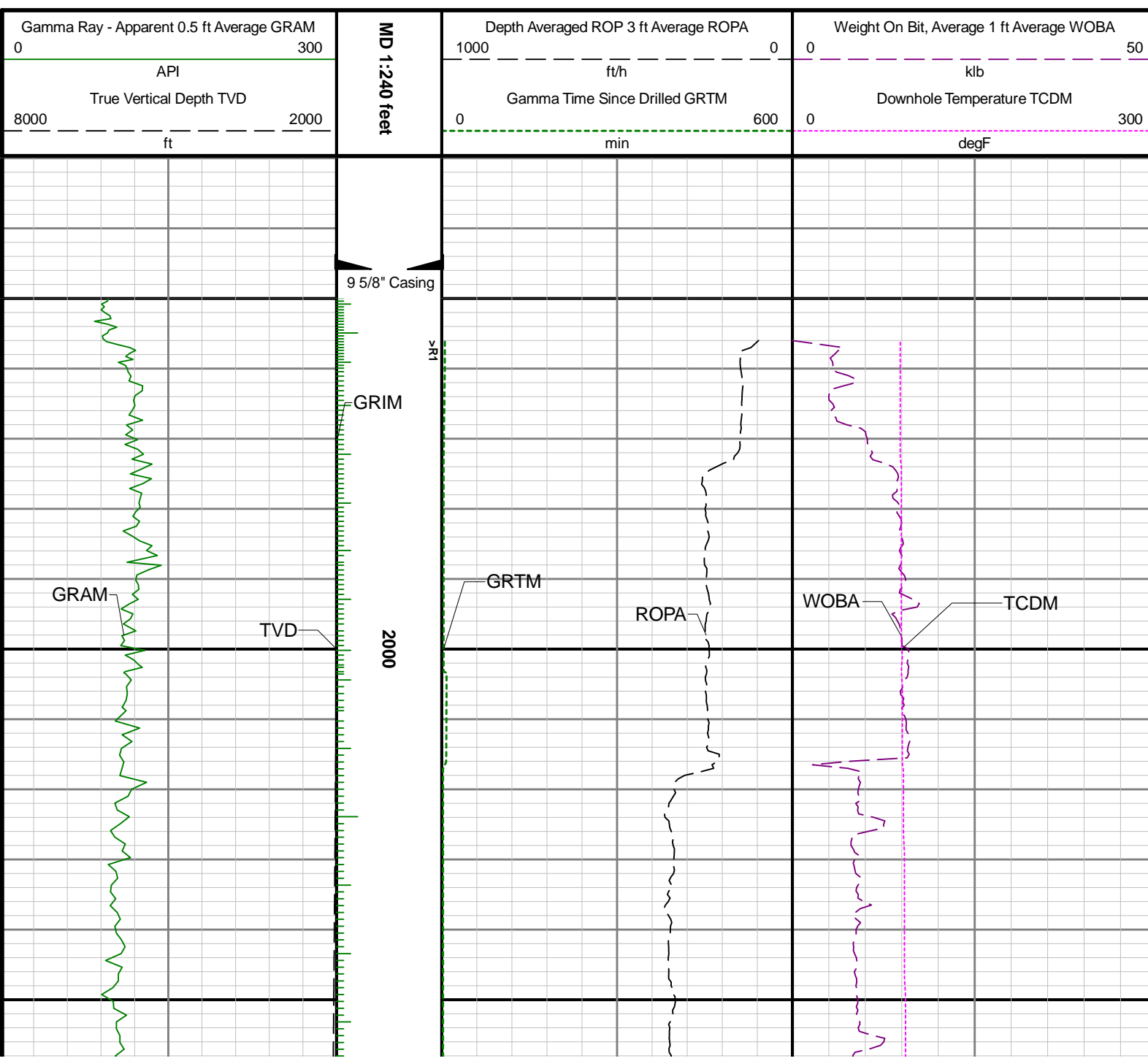
- 1 Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- 2 Baker Hughes LWD Run 1 utilized 6 3/4 inch NaviGamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable assembly from 1956 to 17016 feet MD (1956 to 6746 feet TVD).
- 3 The Gamma Ray Apparent (GRAM) data is presented 0 to 300 API, per the customer's request.

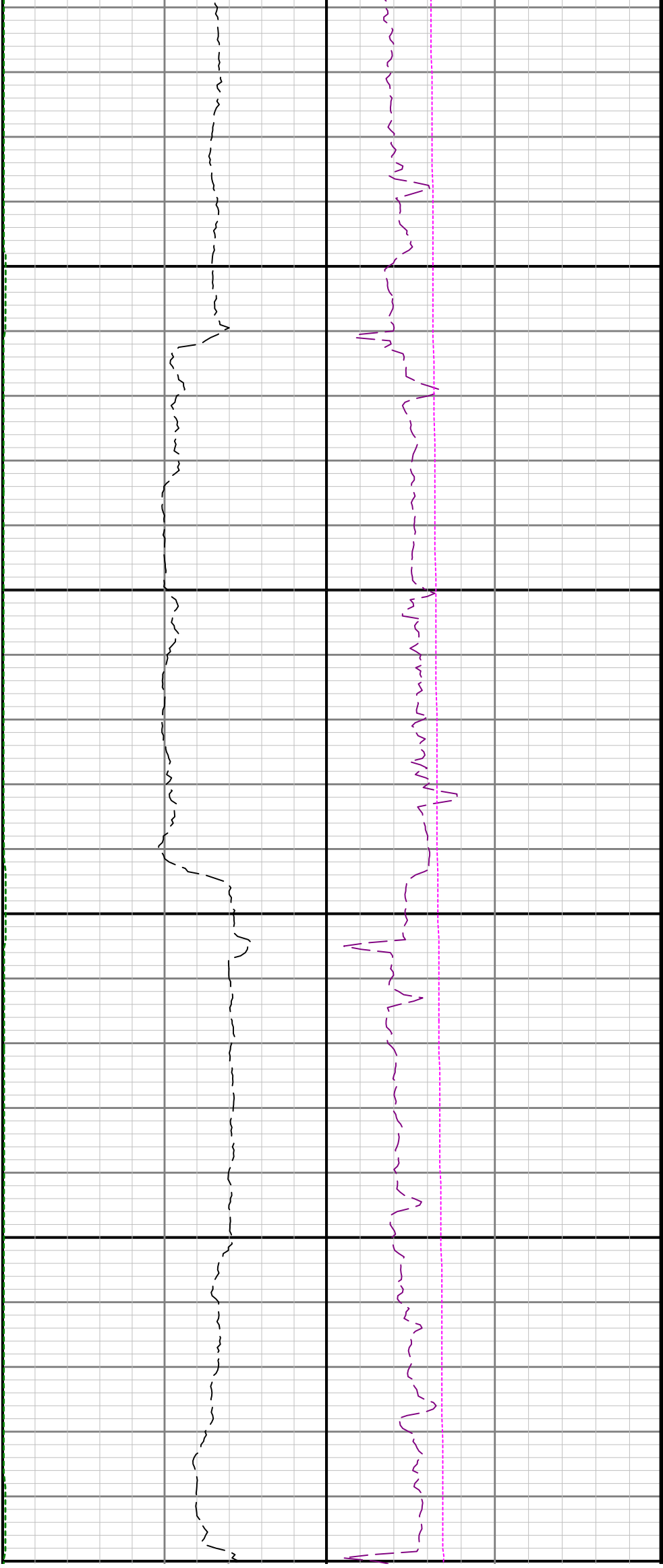
Remarks

Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	17003.00	8.500	1	The interval from 17003 to 17016 feet MD (6746 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

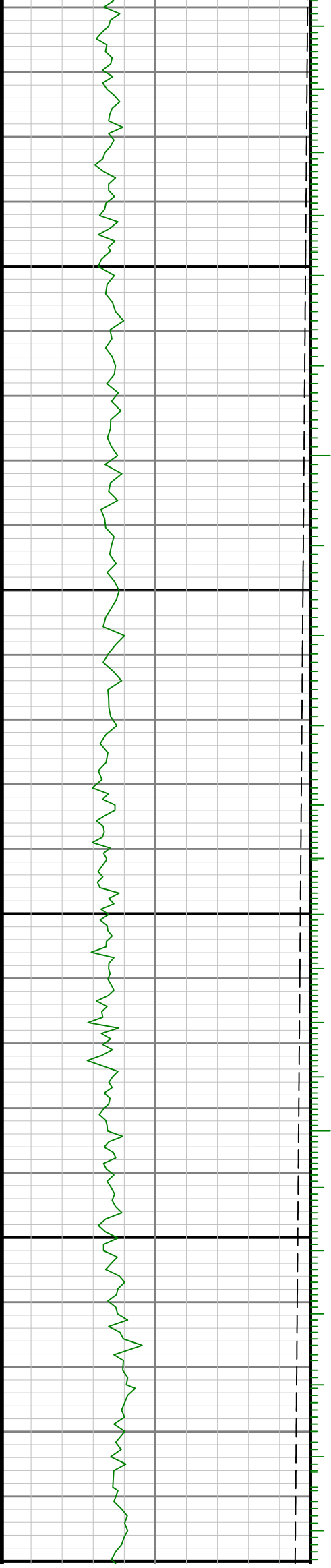


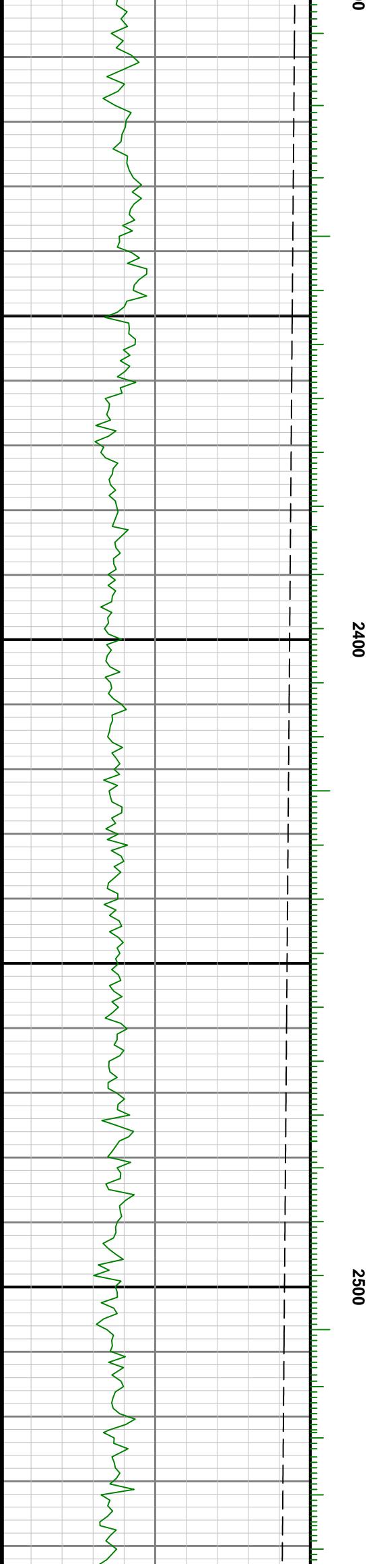
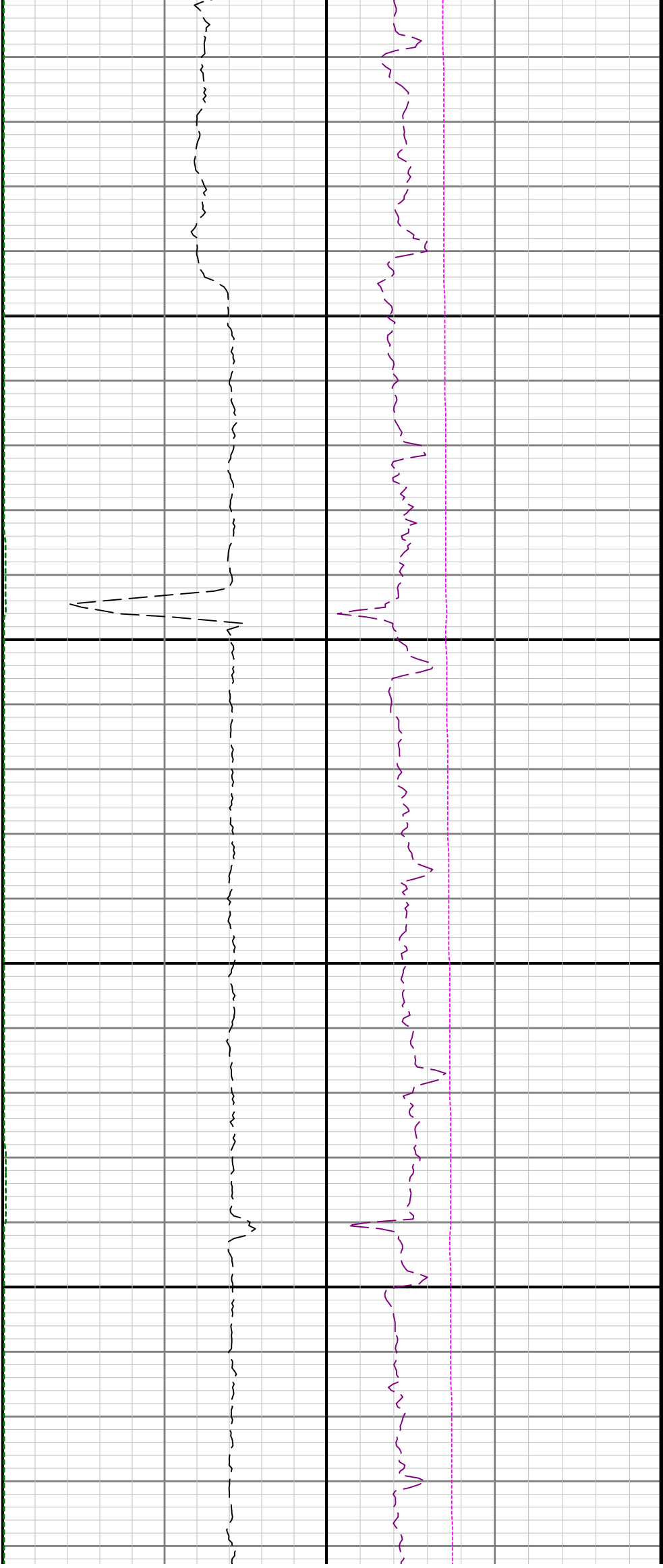


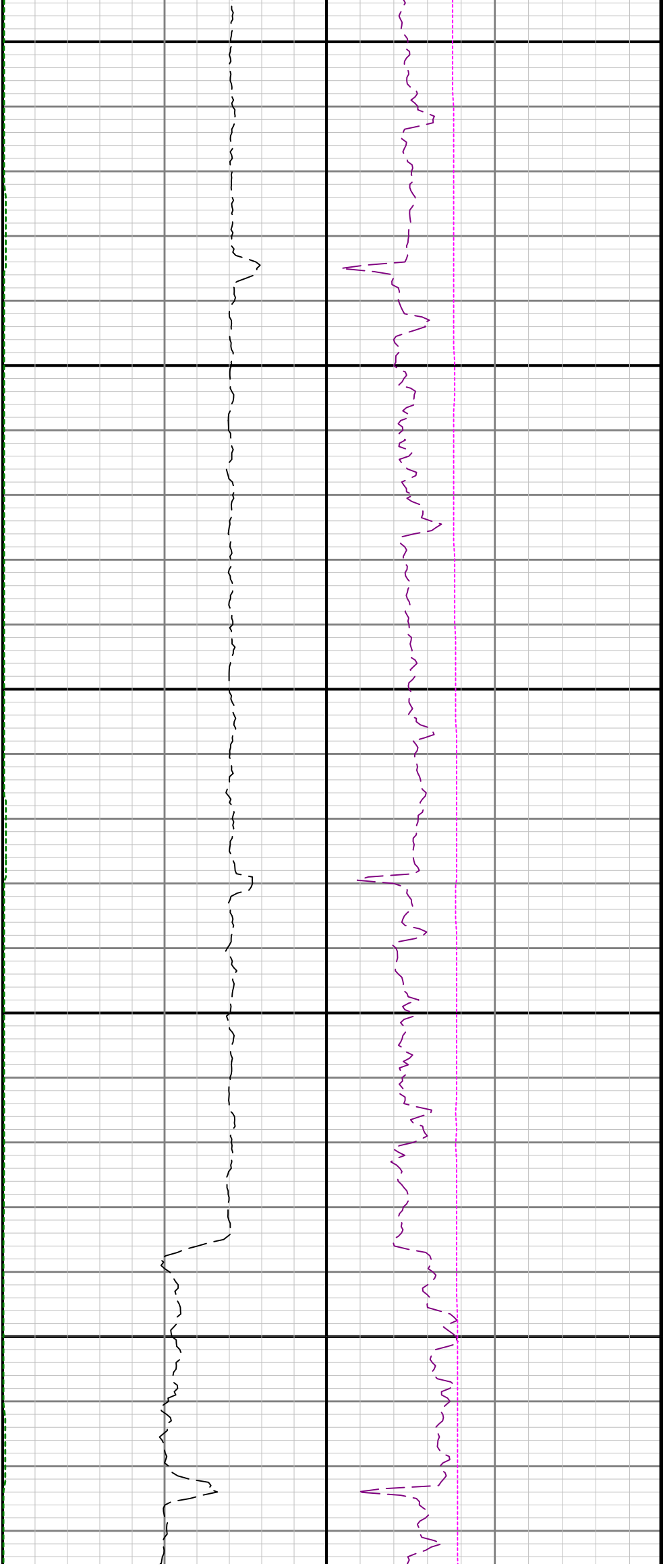
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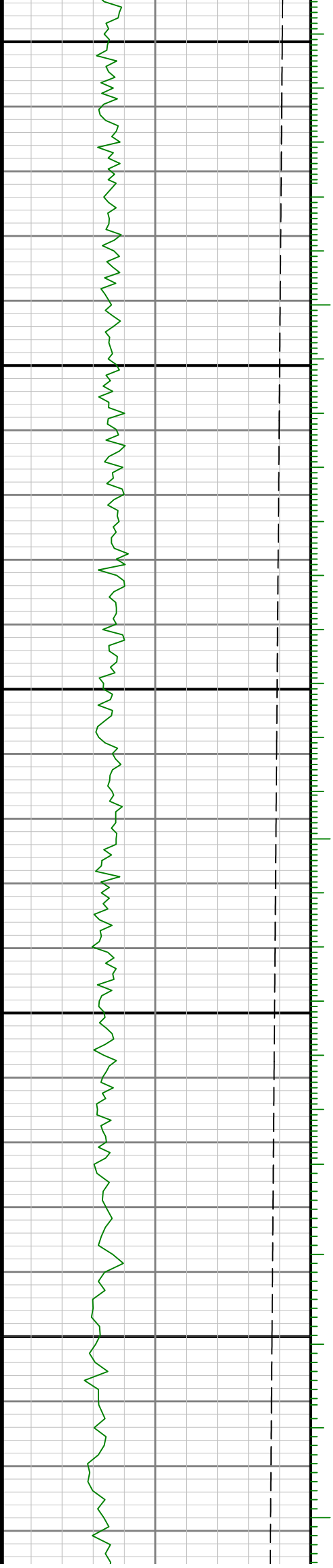


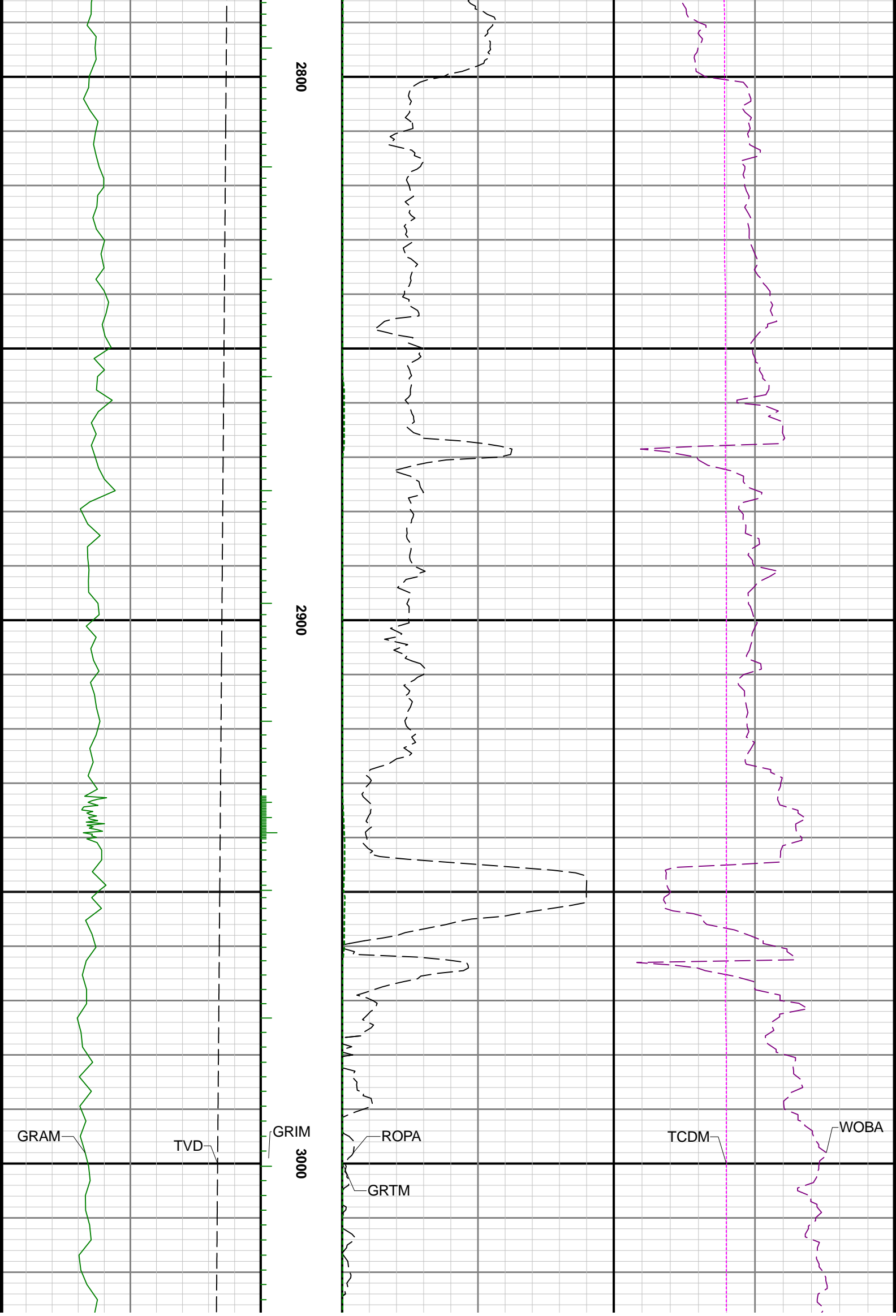


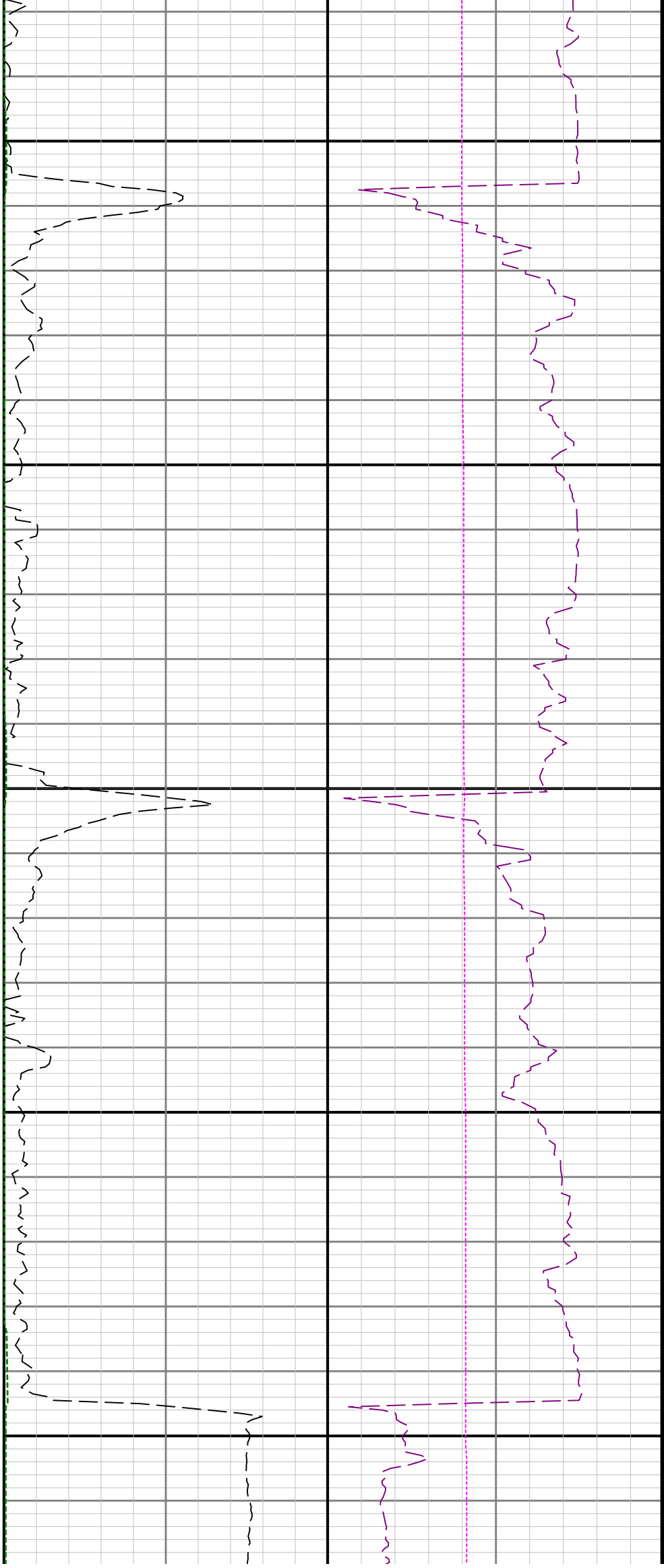


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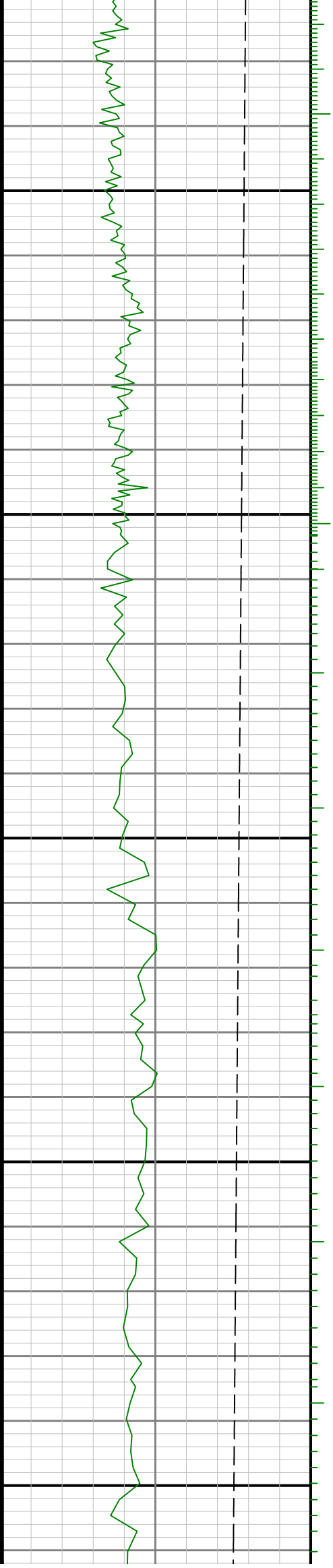
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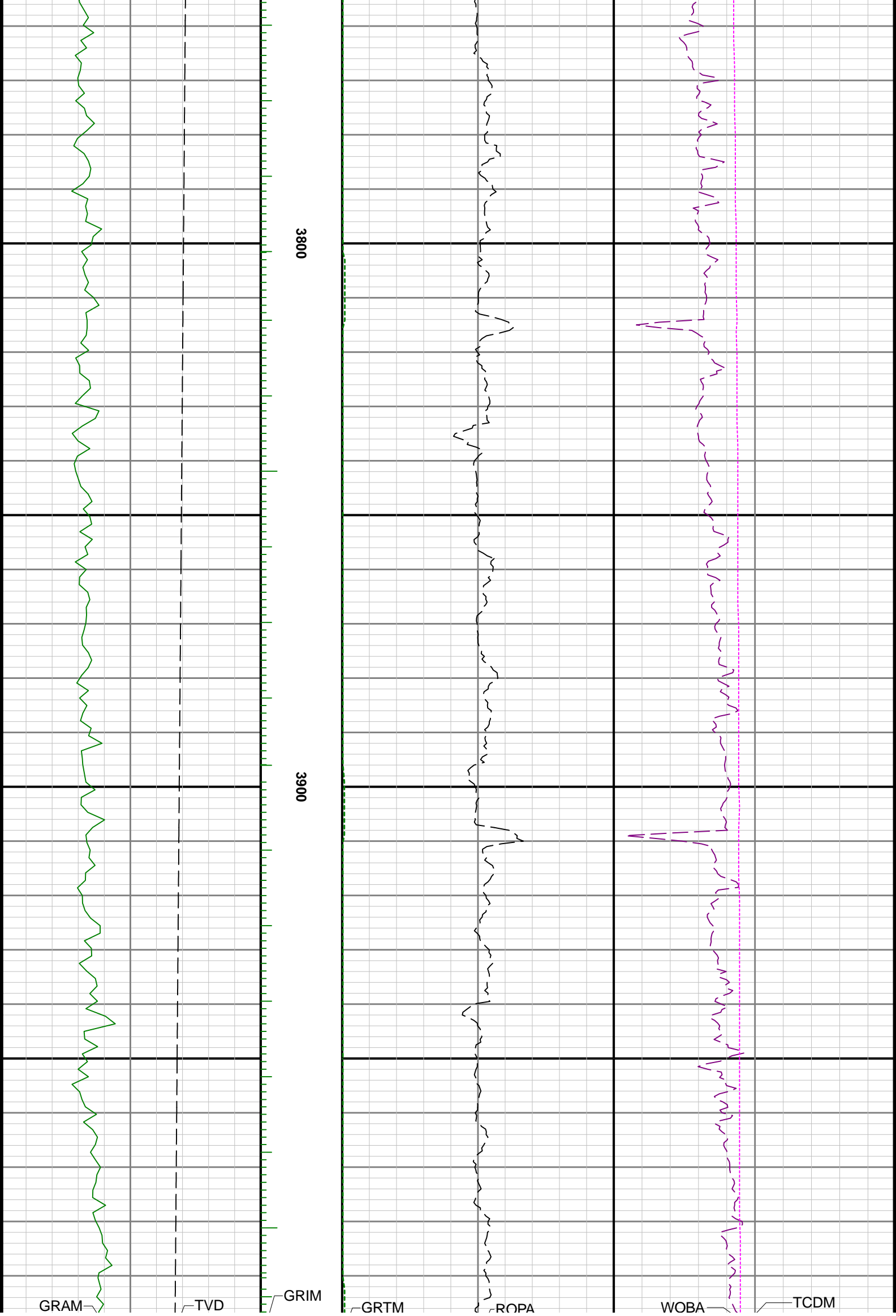


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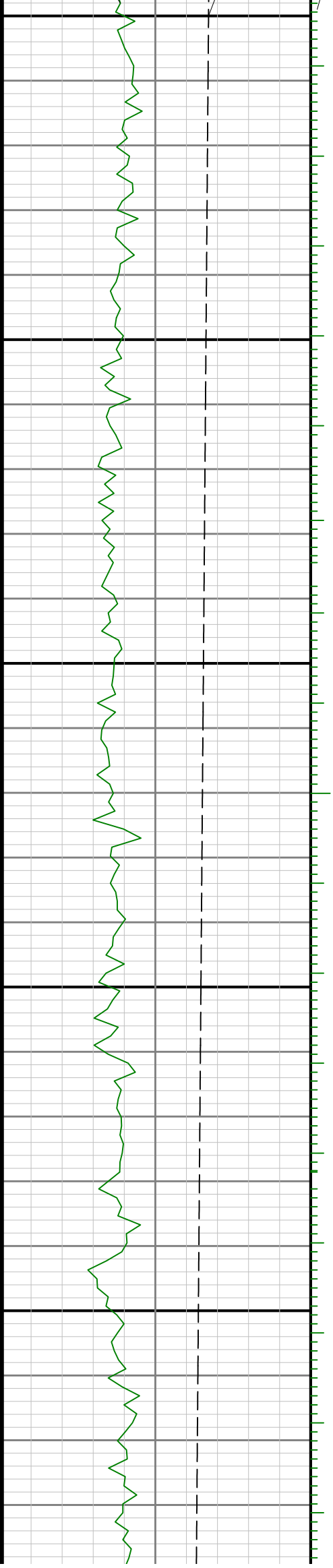


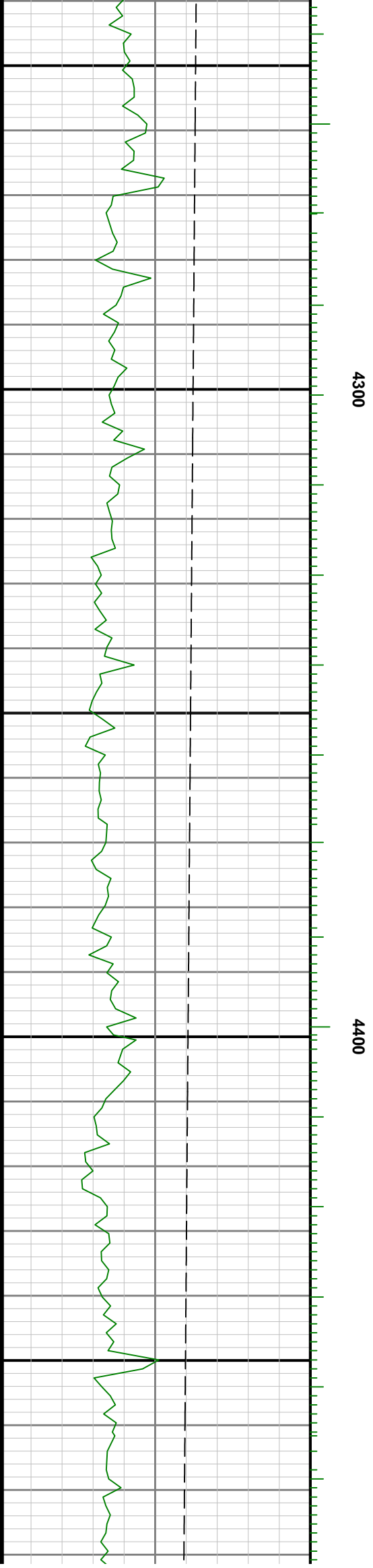


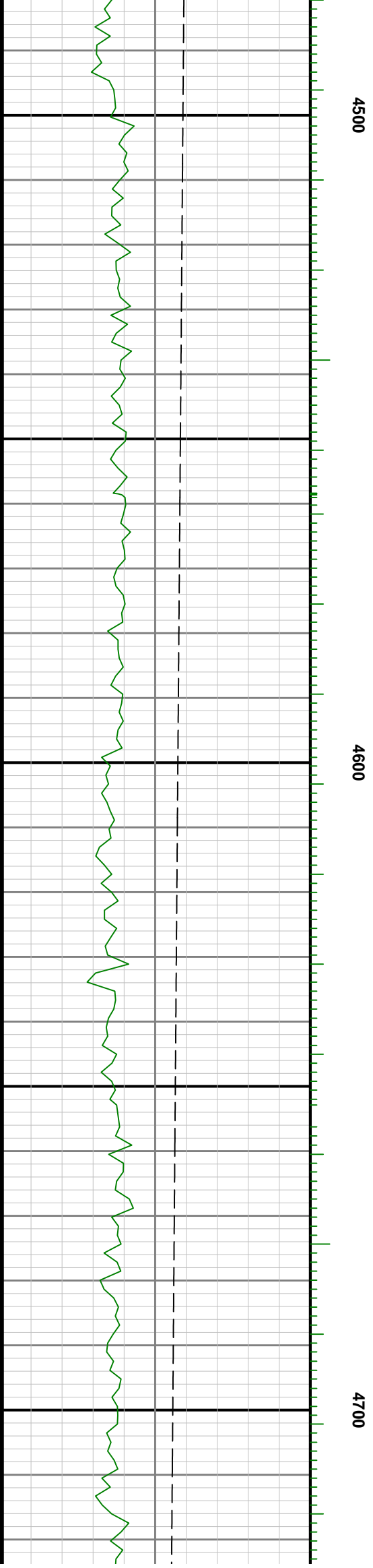
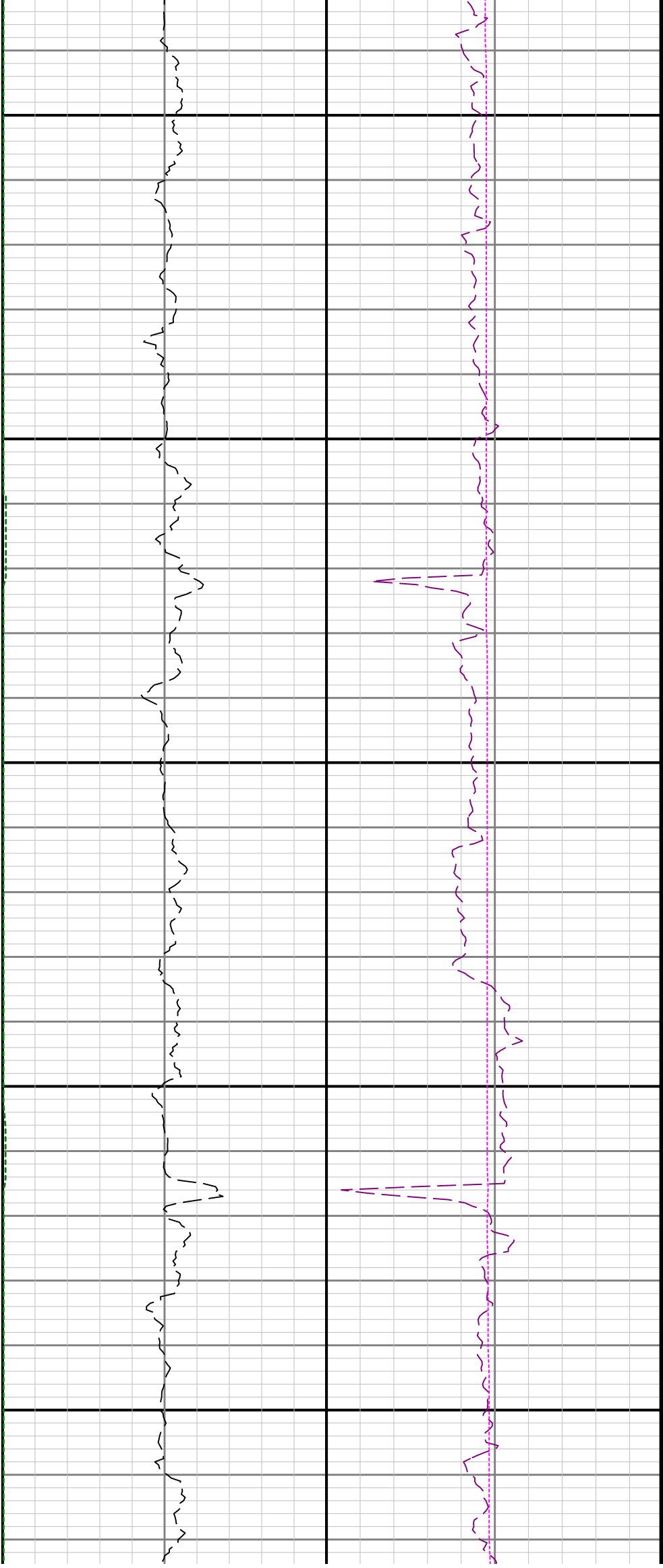
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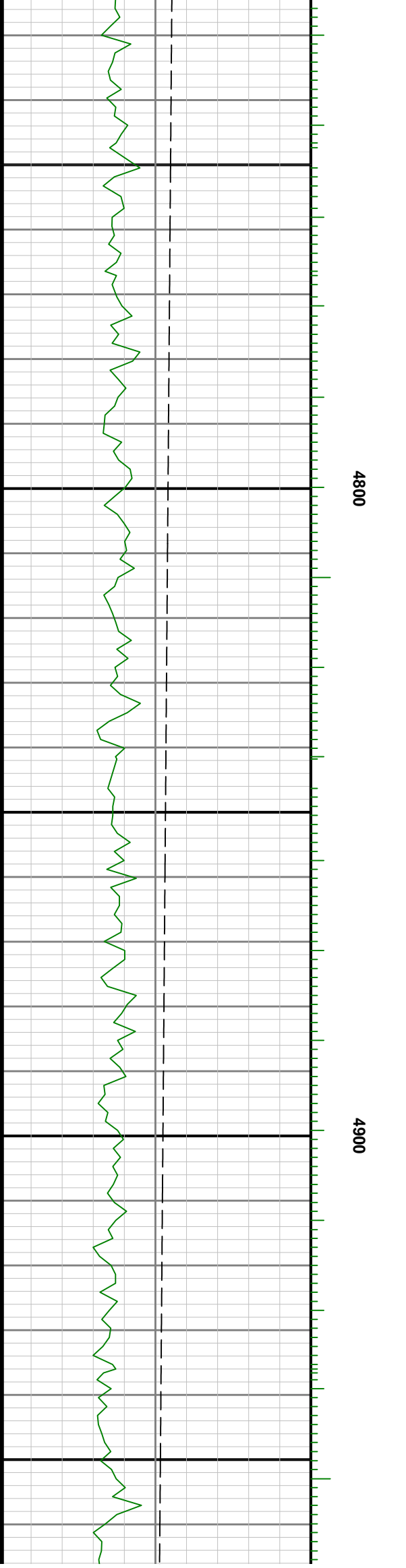
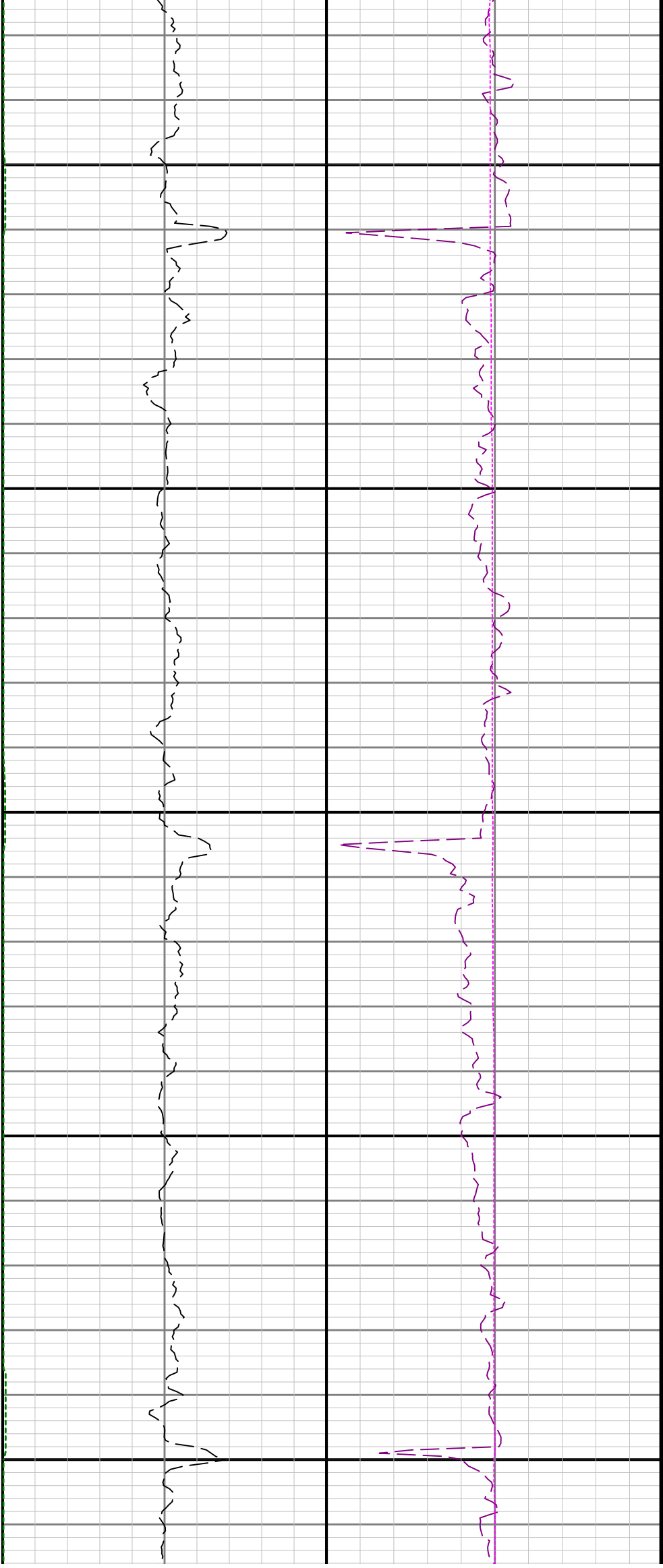
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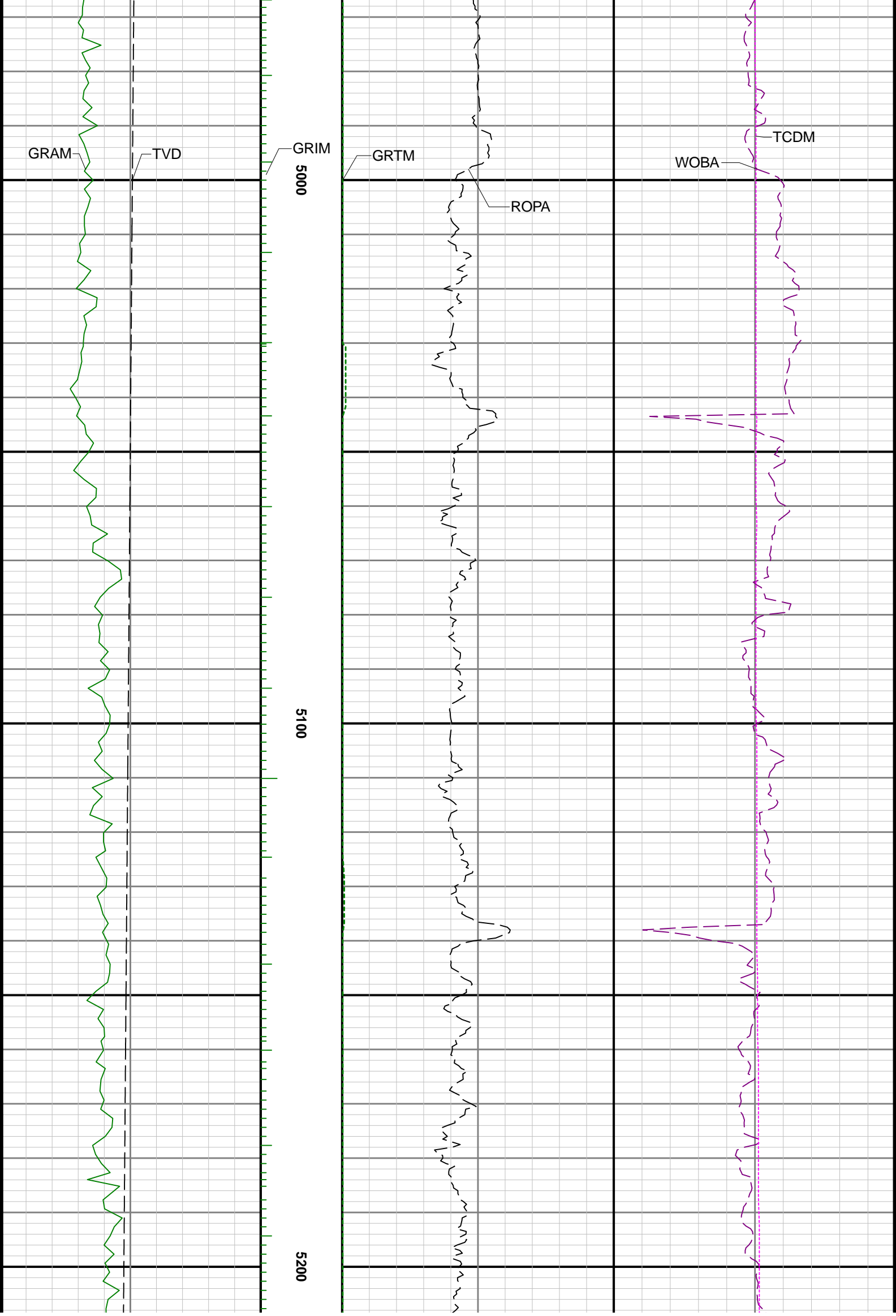
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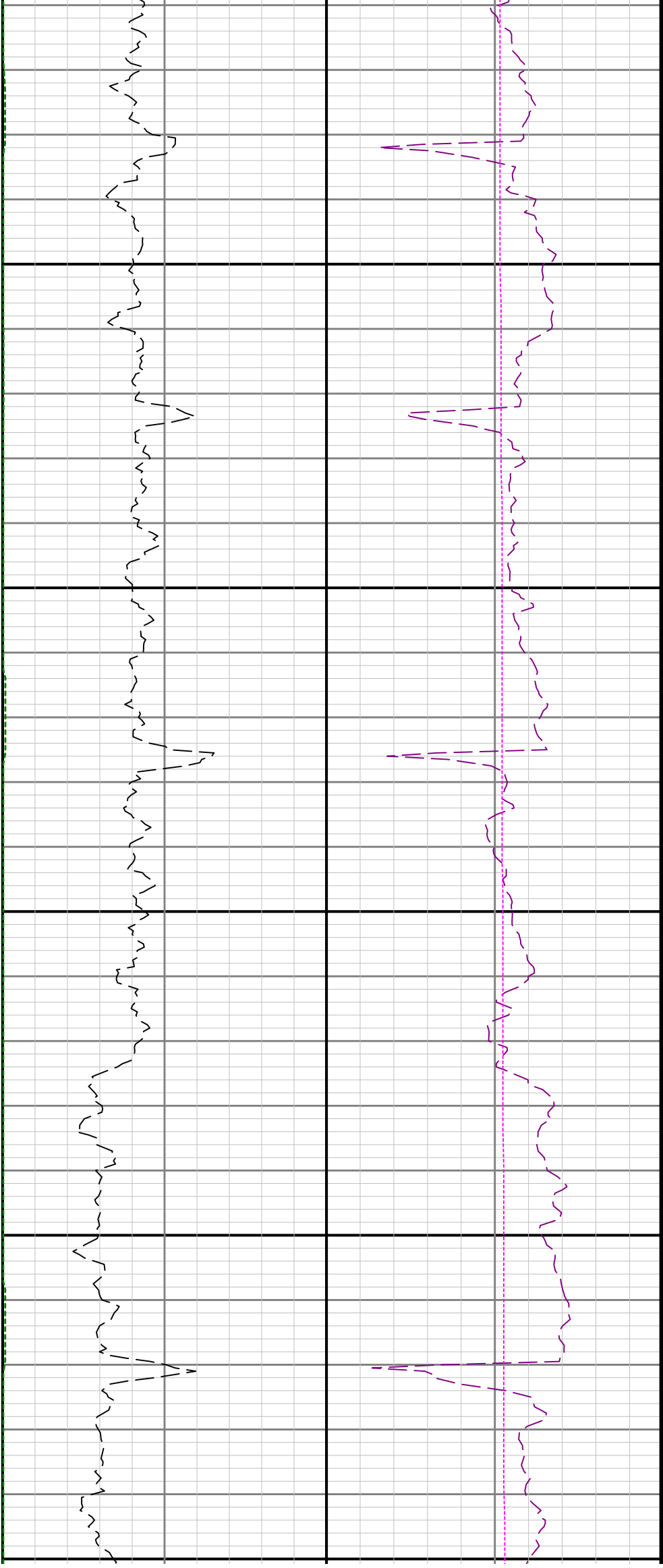






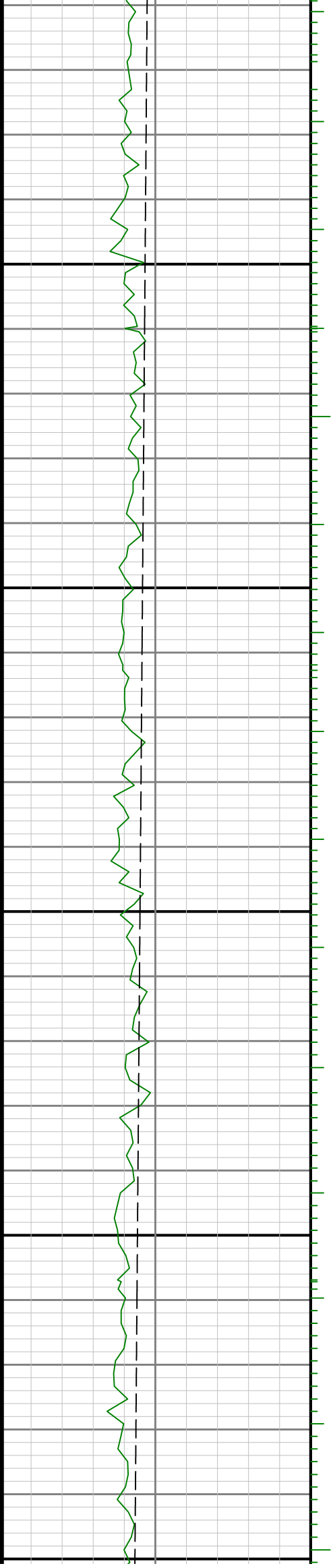


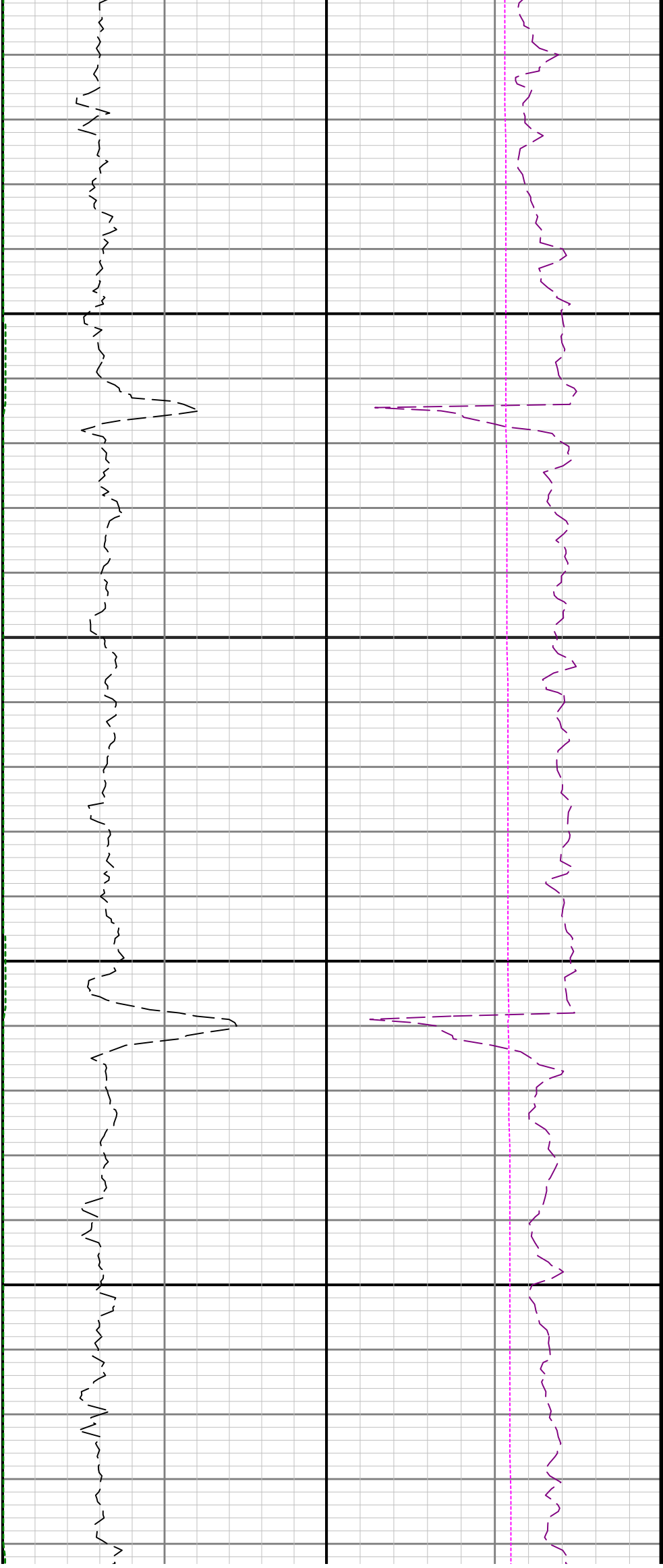




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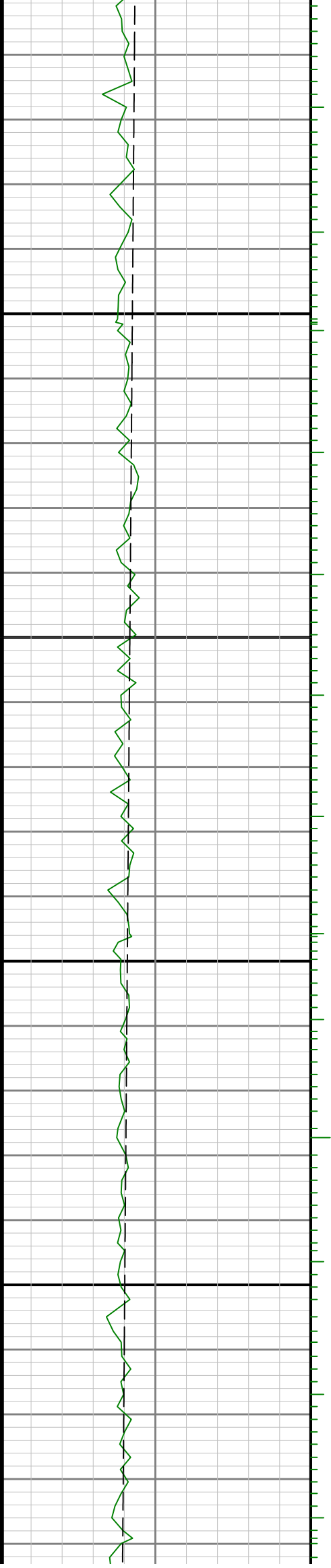
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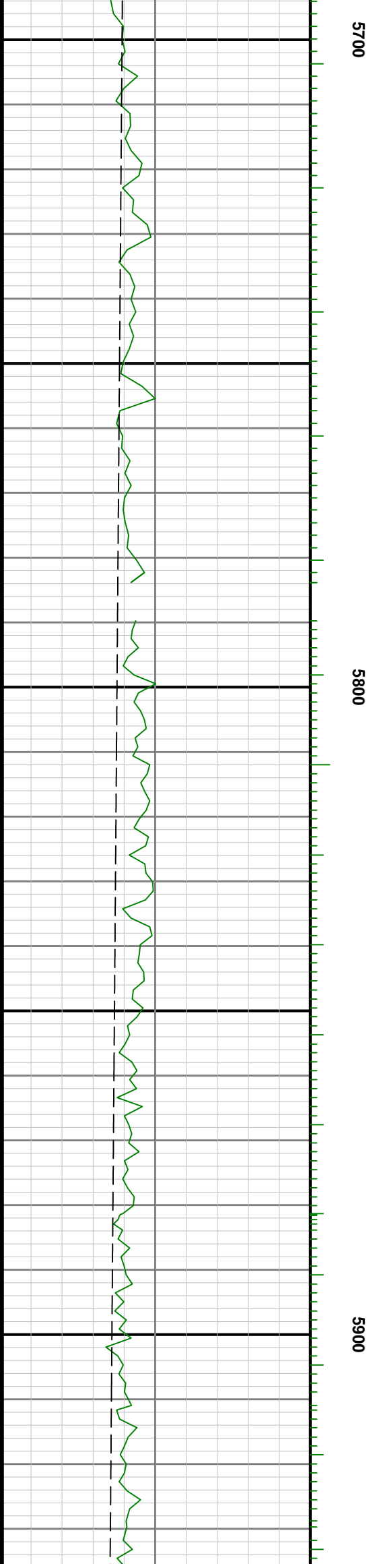
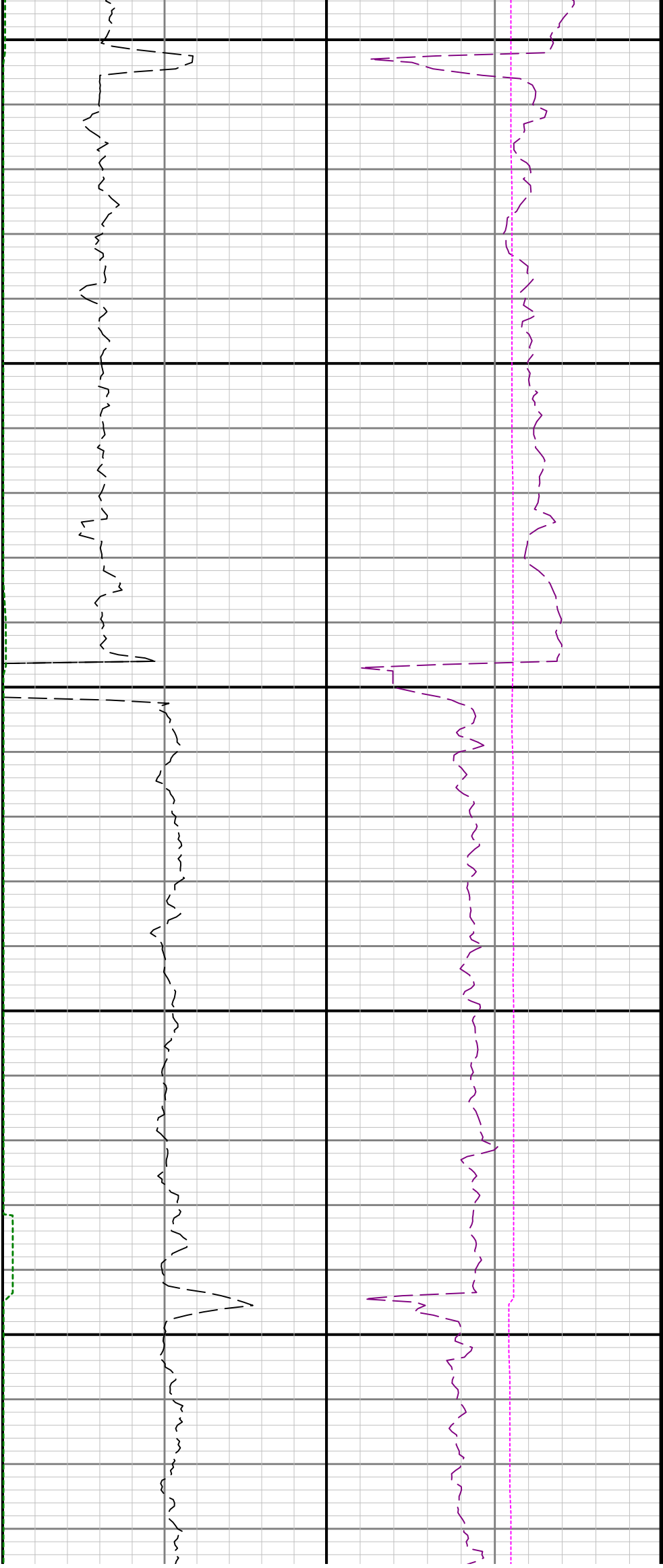


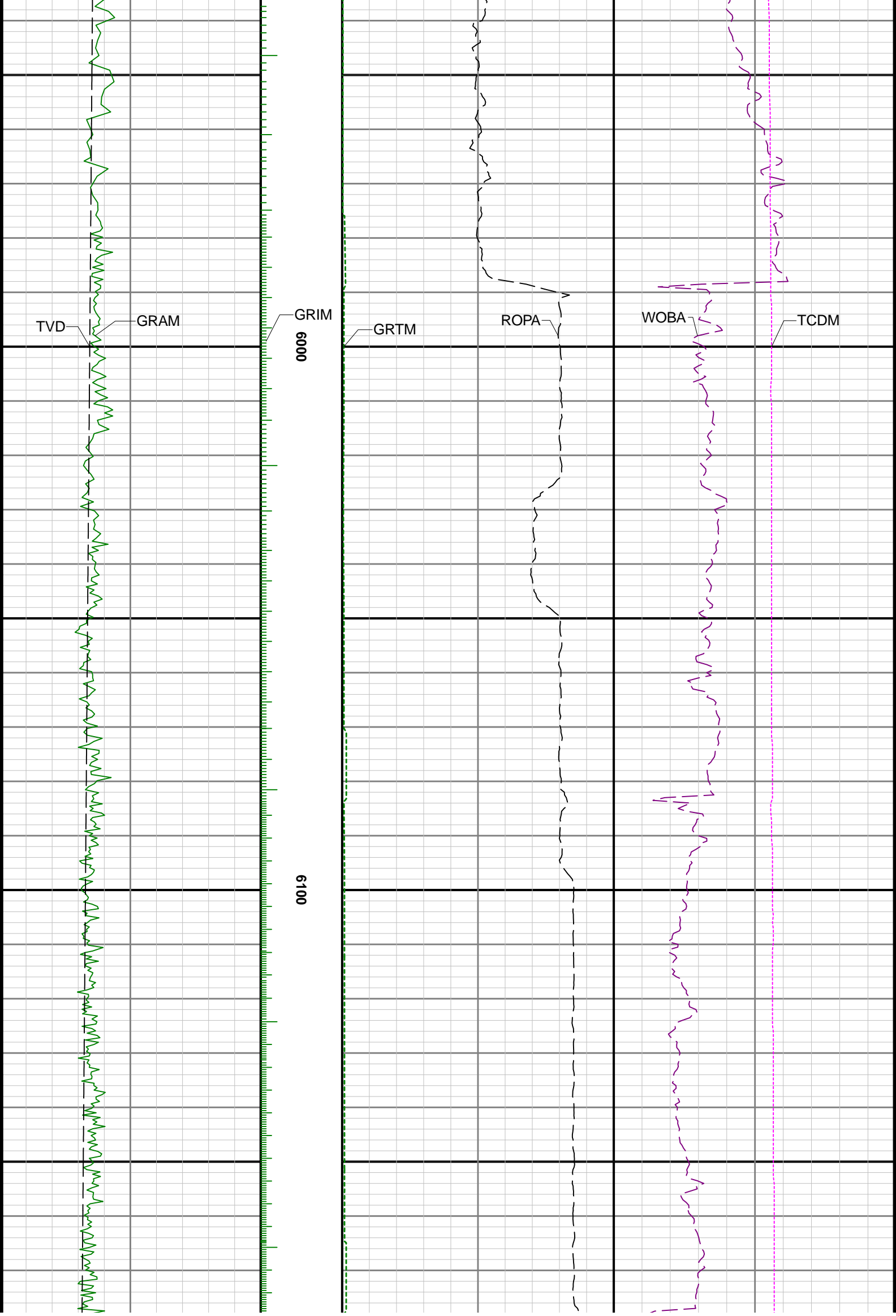


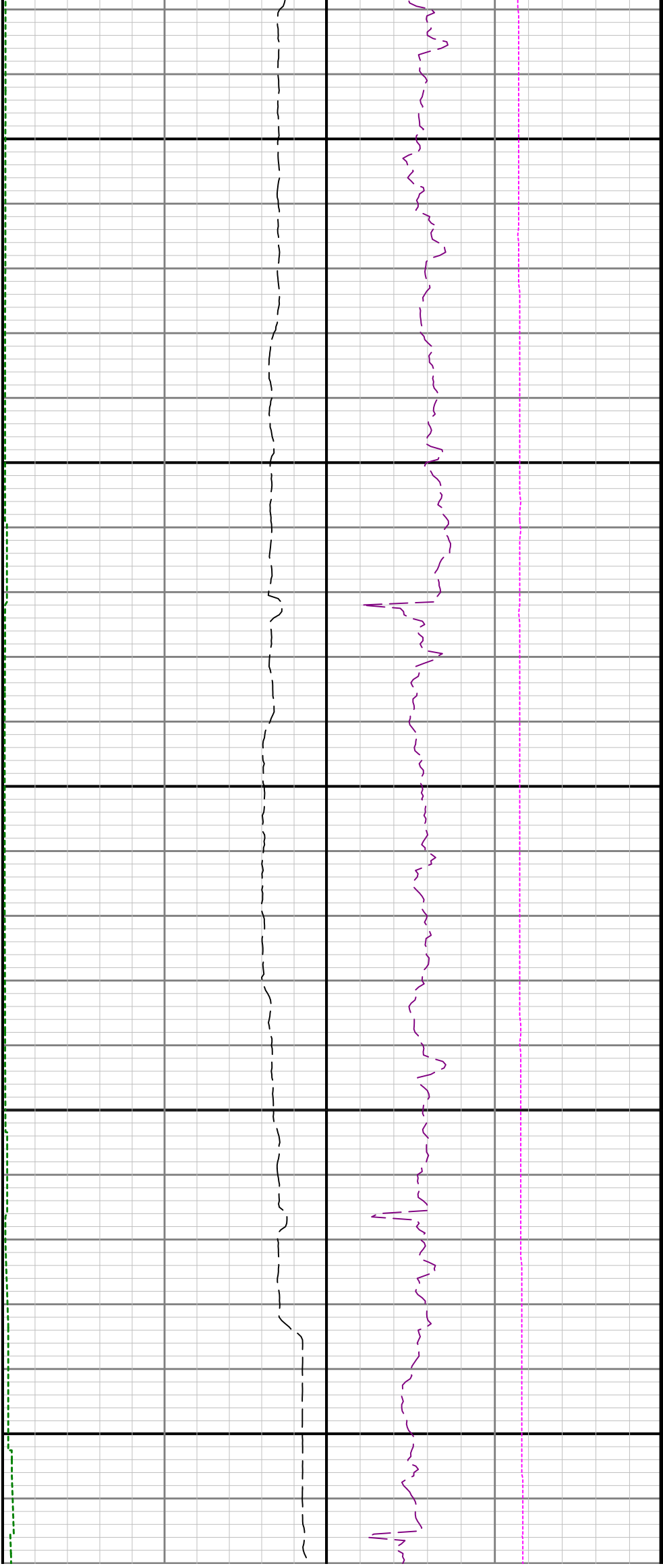
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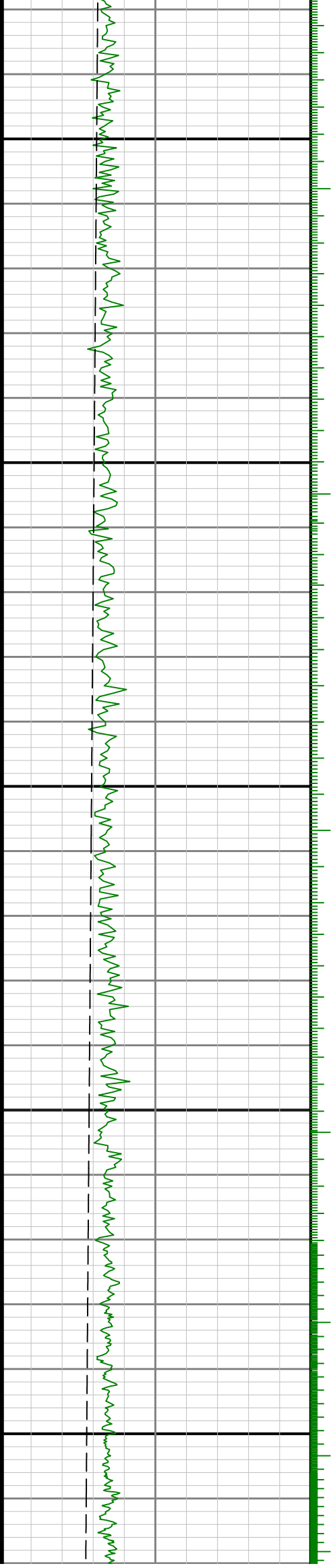


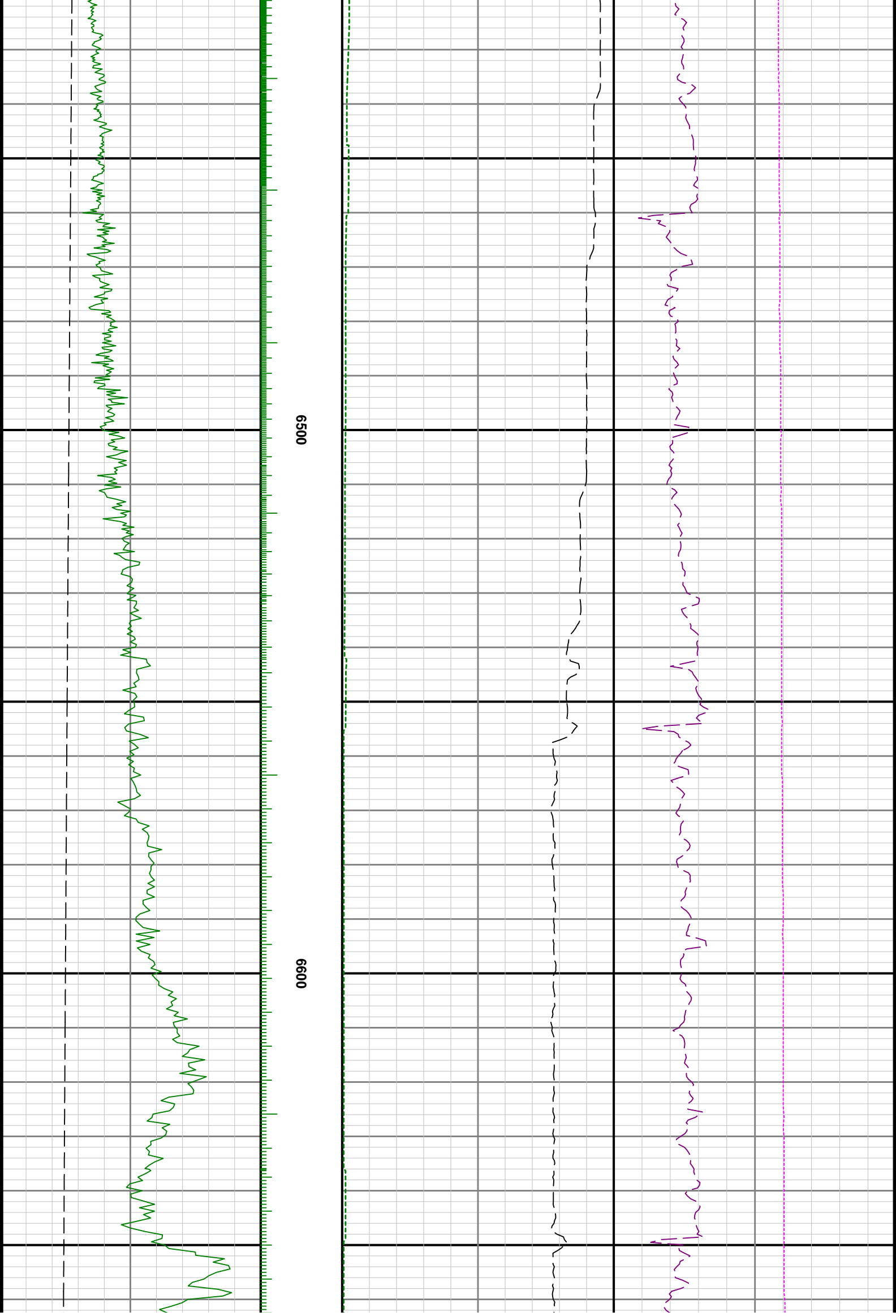


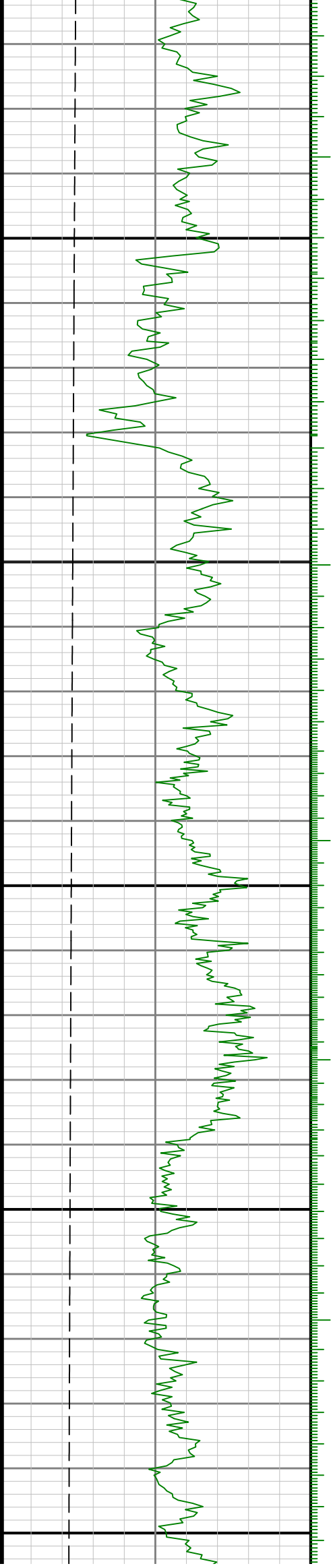
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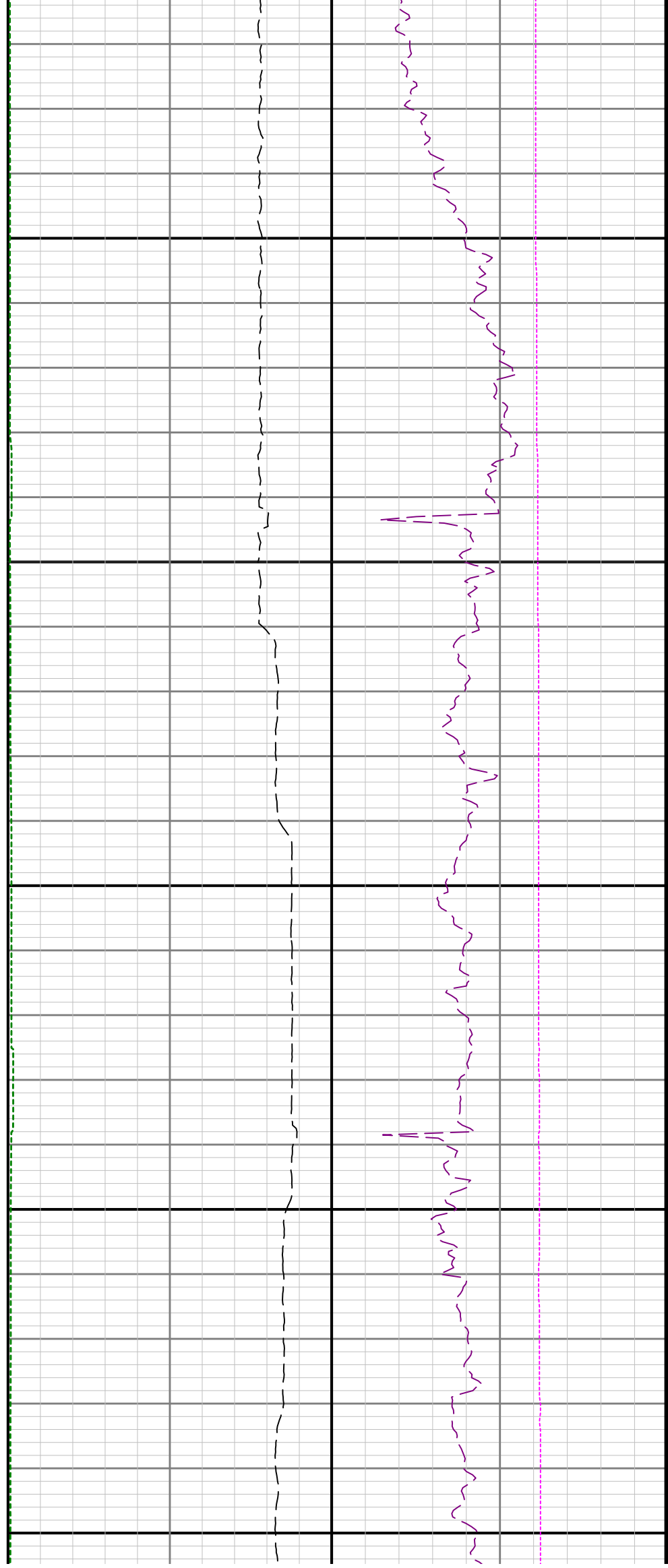


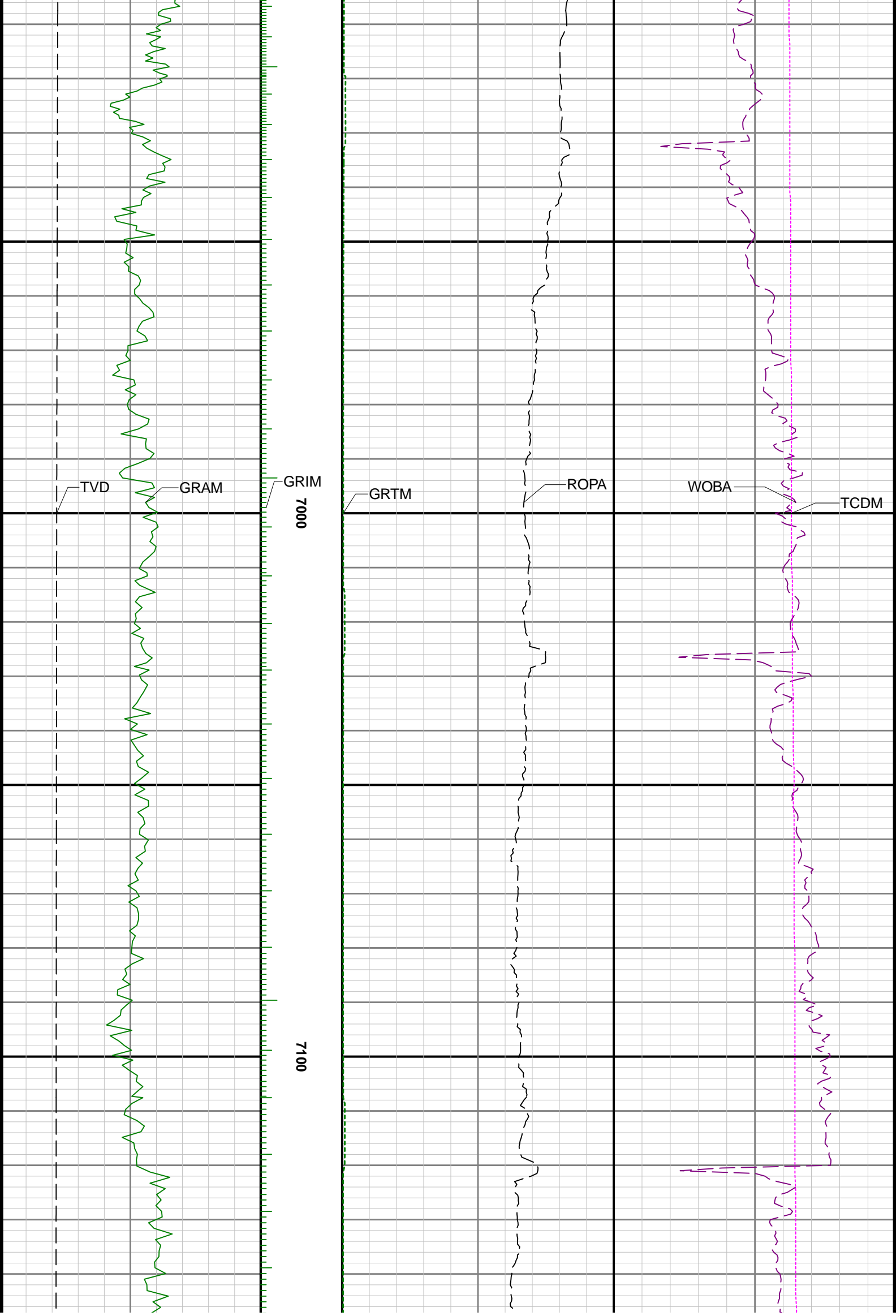


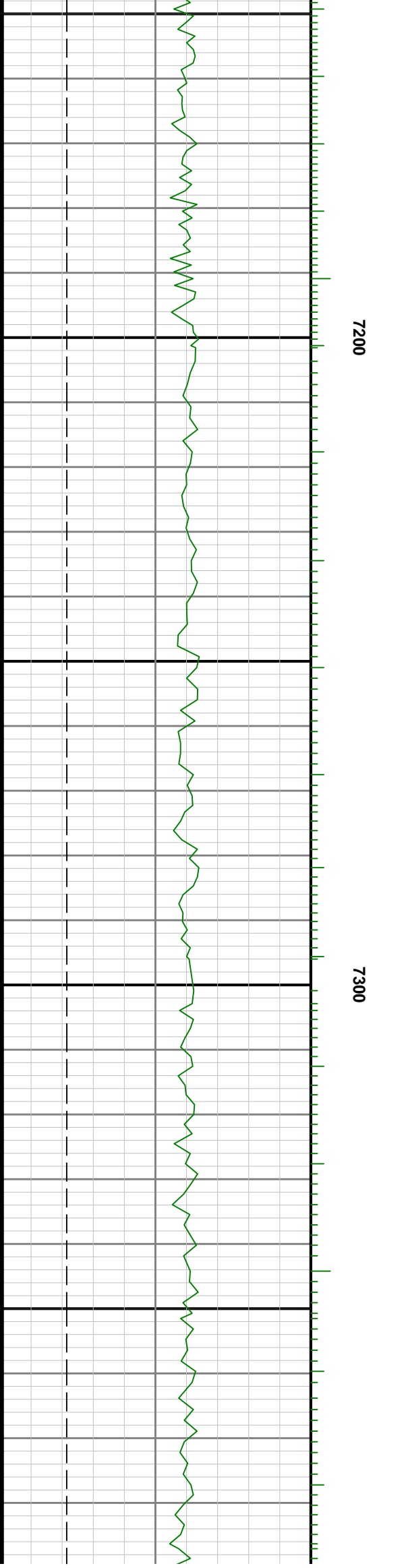
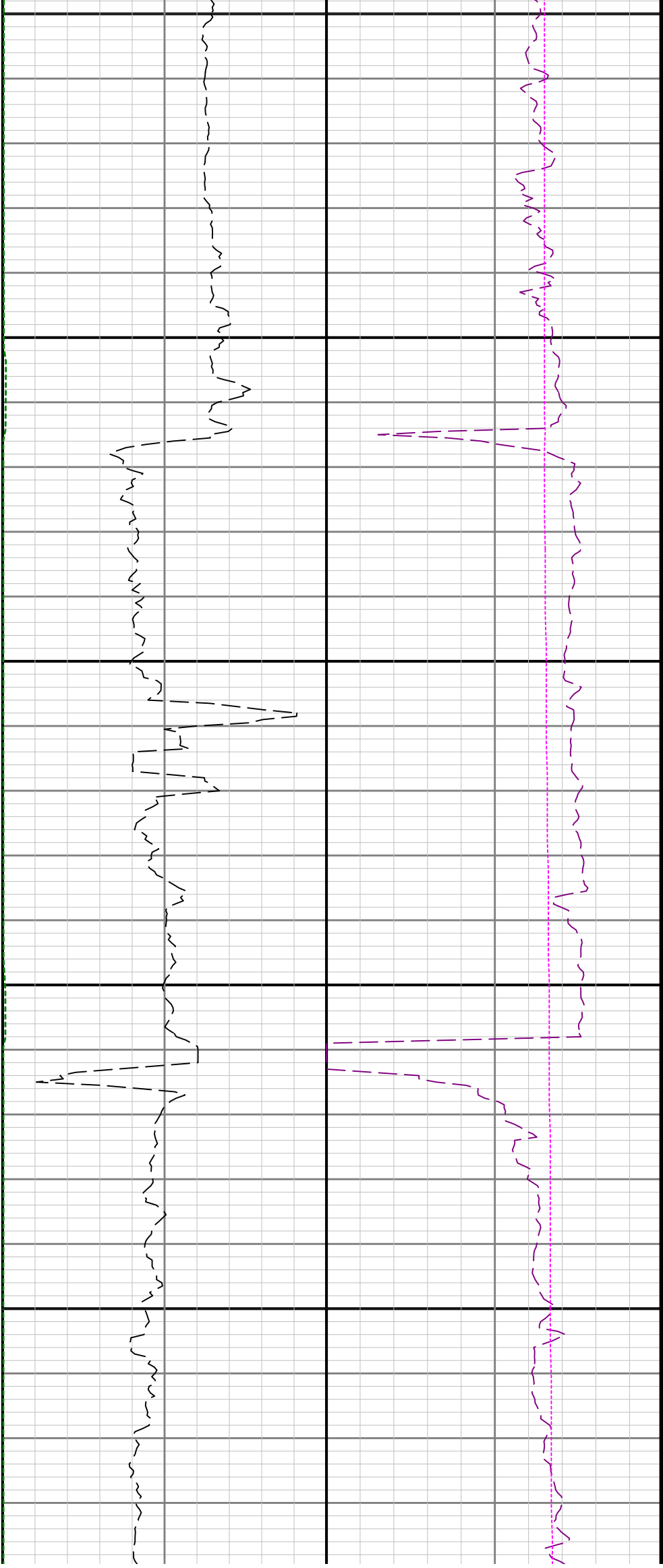
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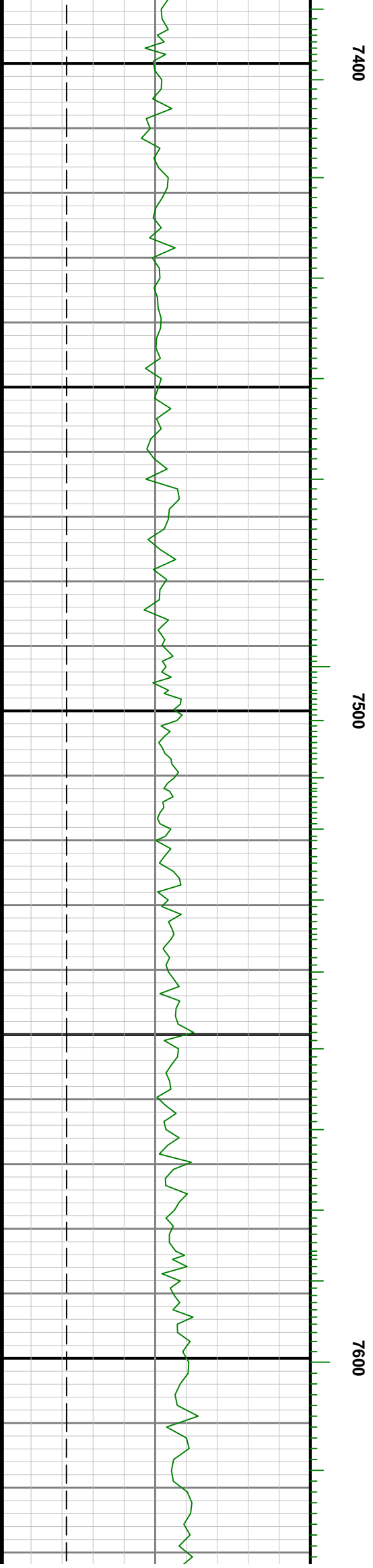
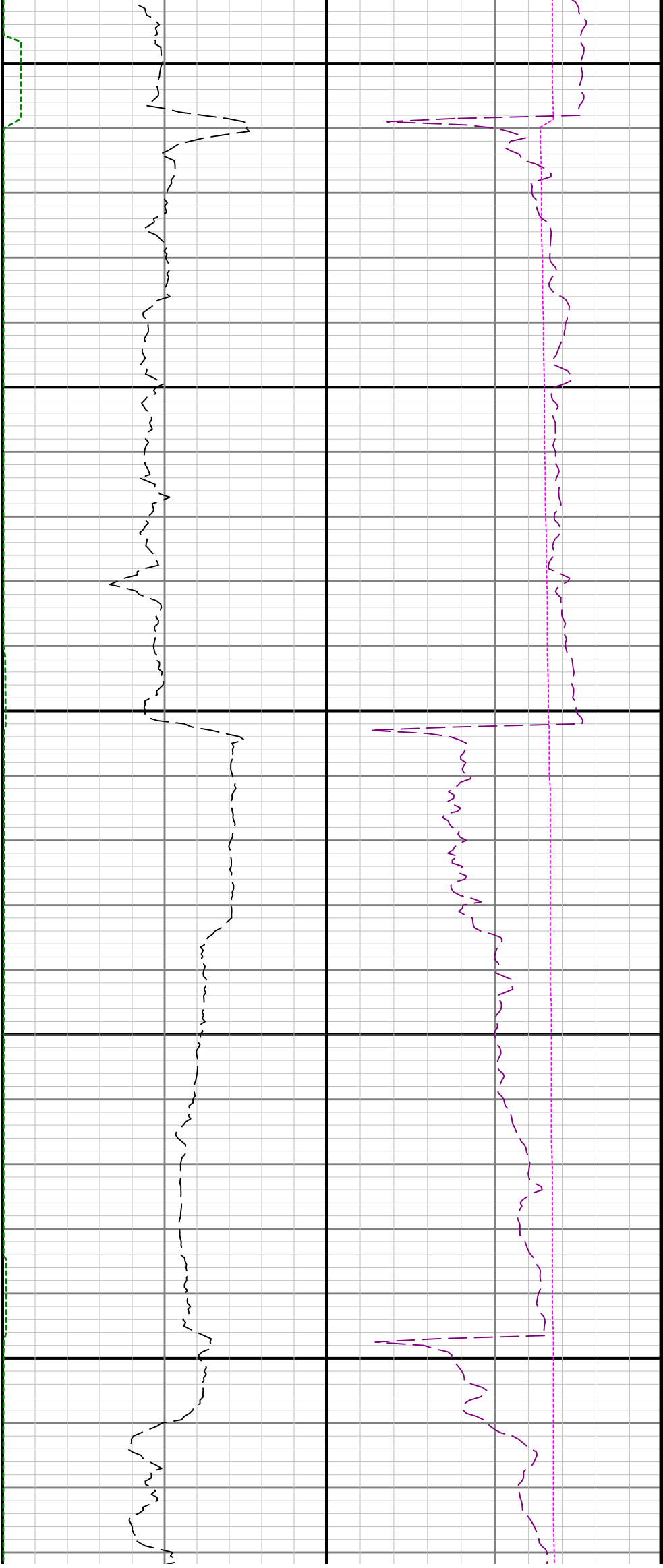
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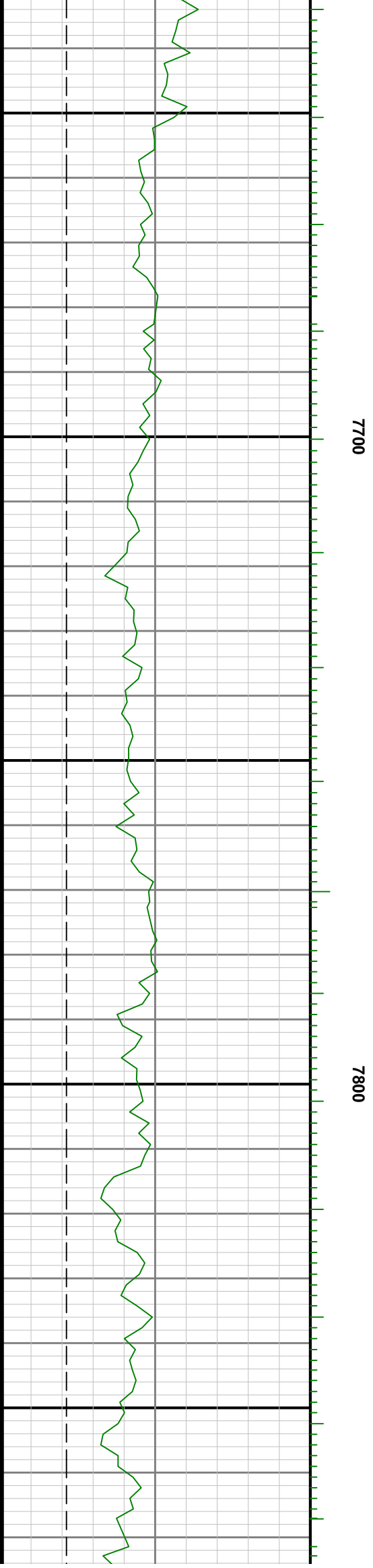
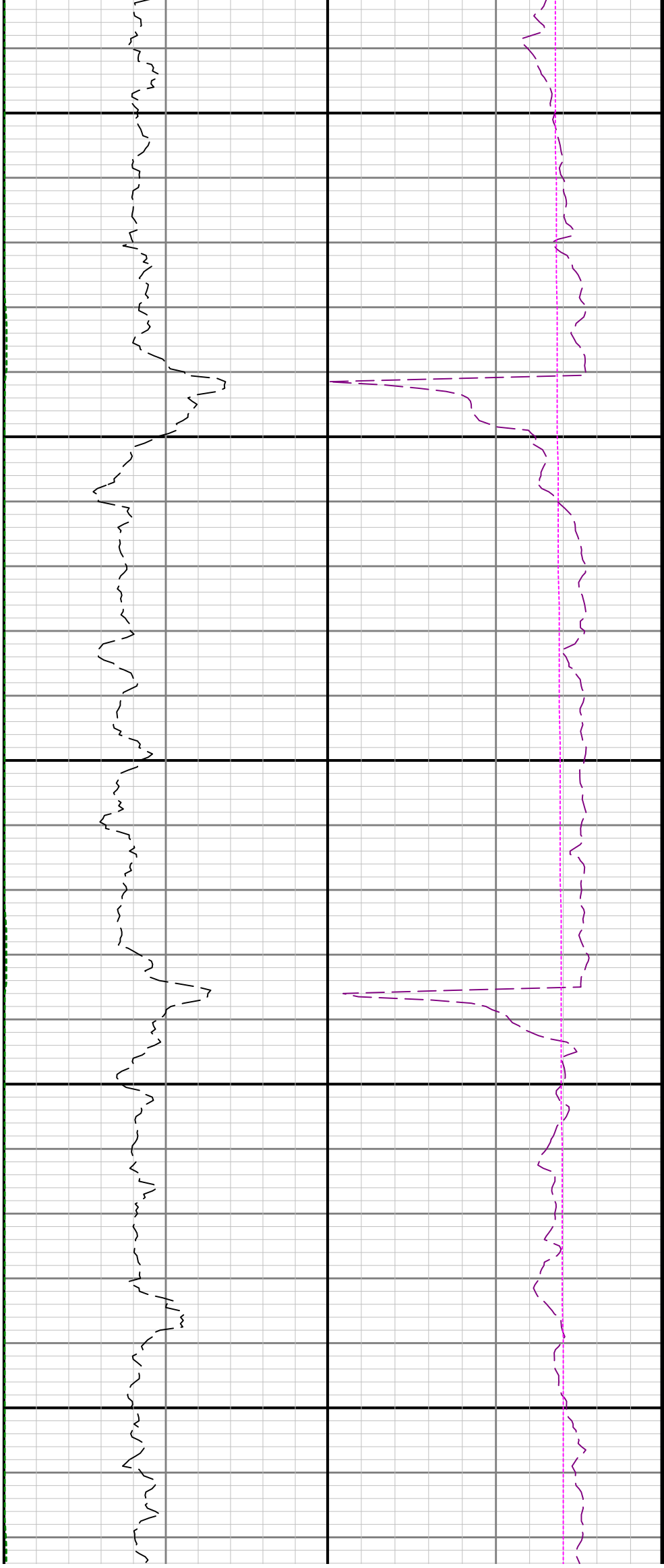
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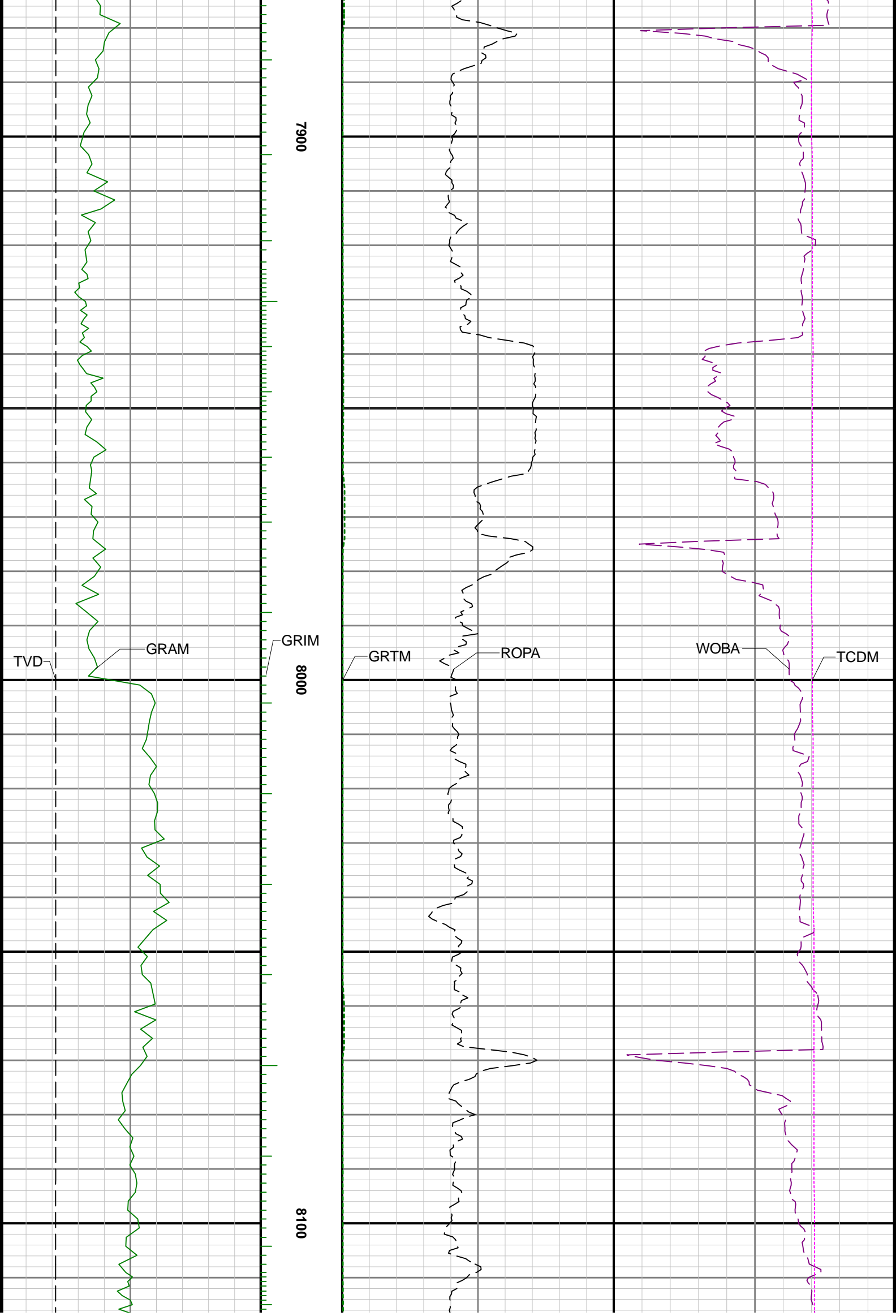


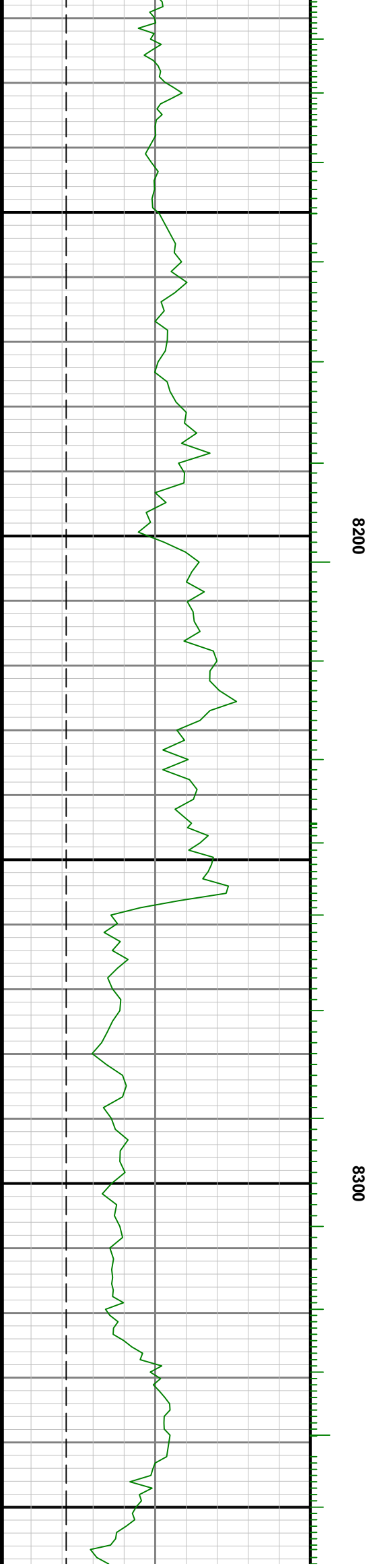
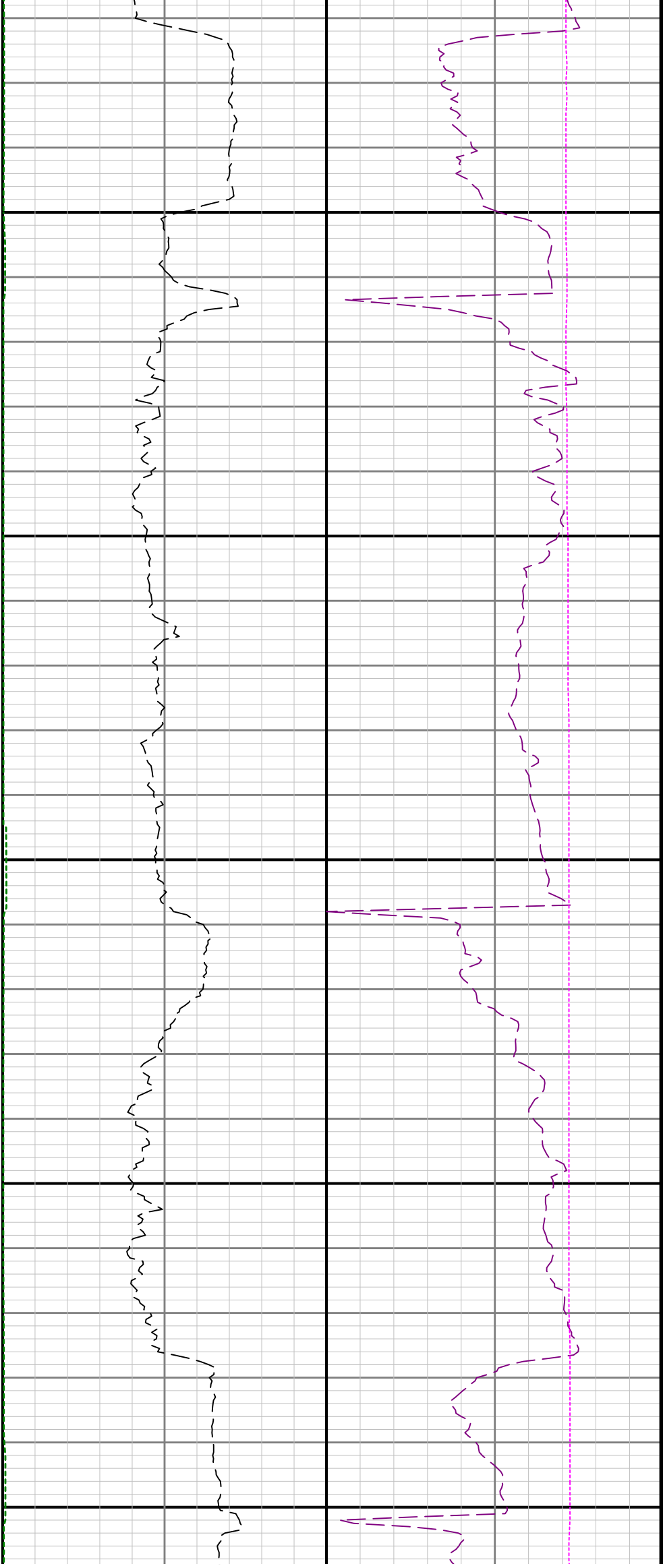


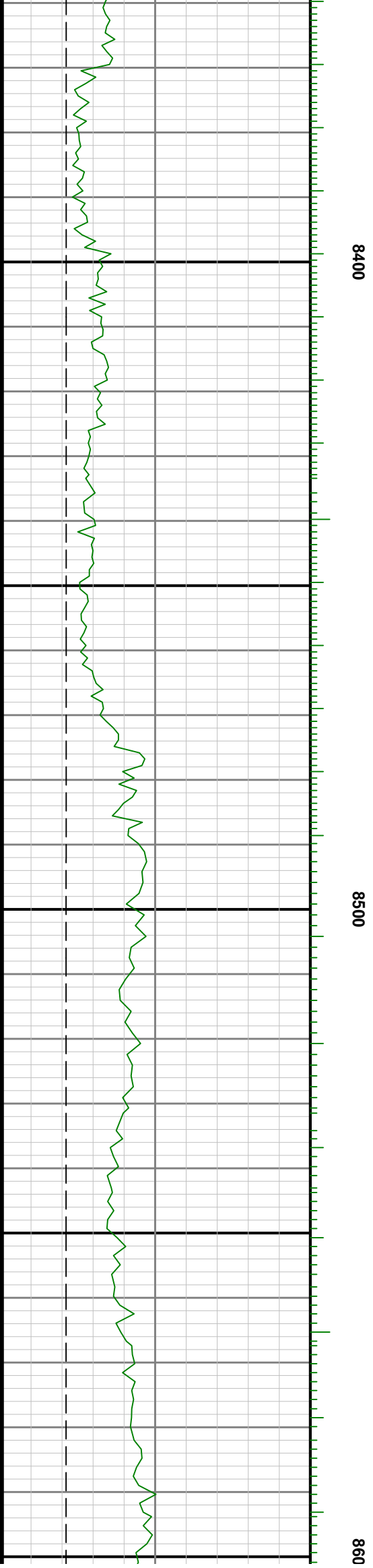
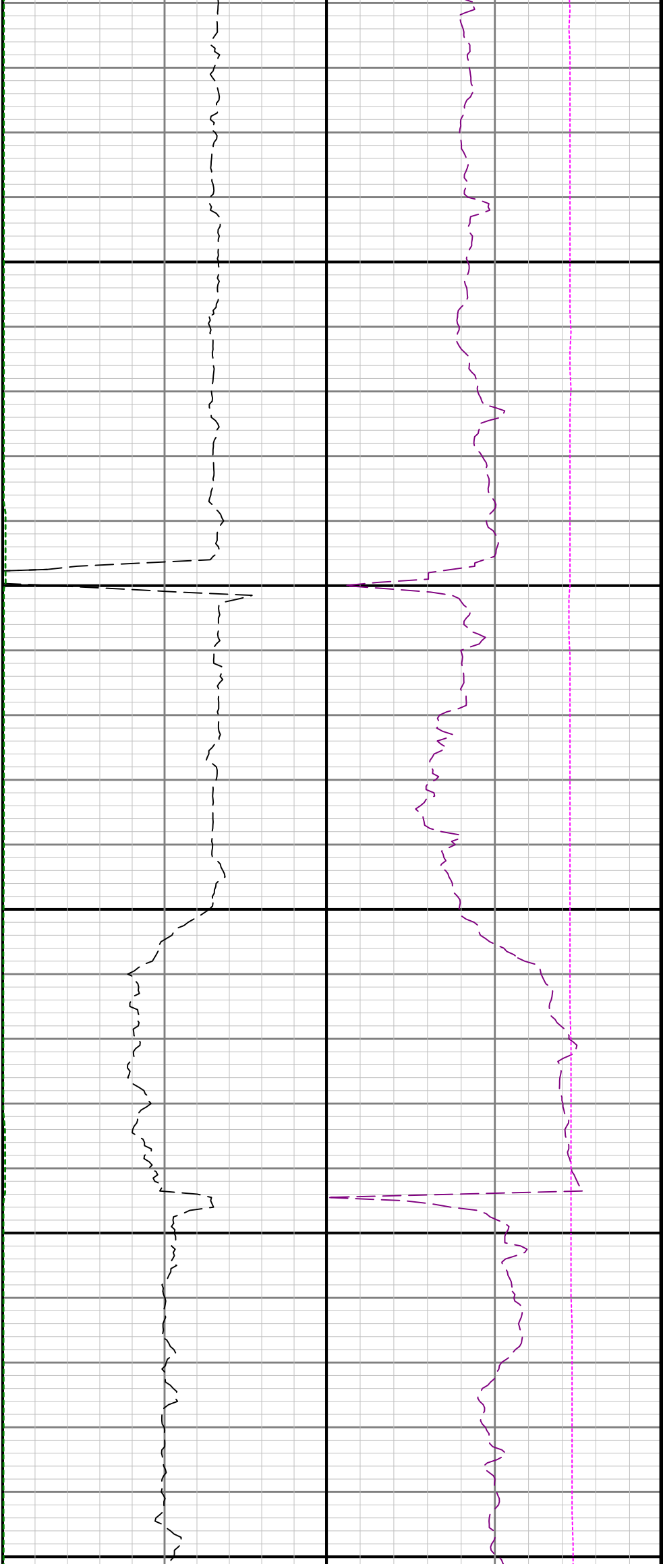


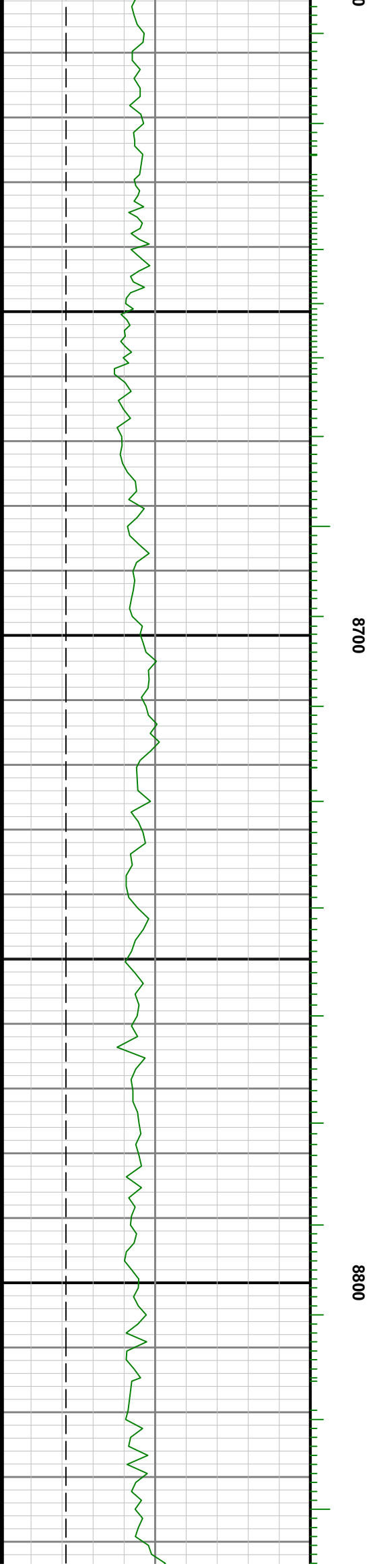
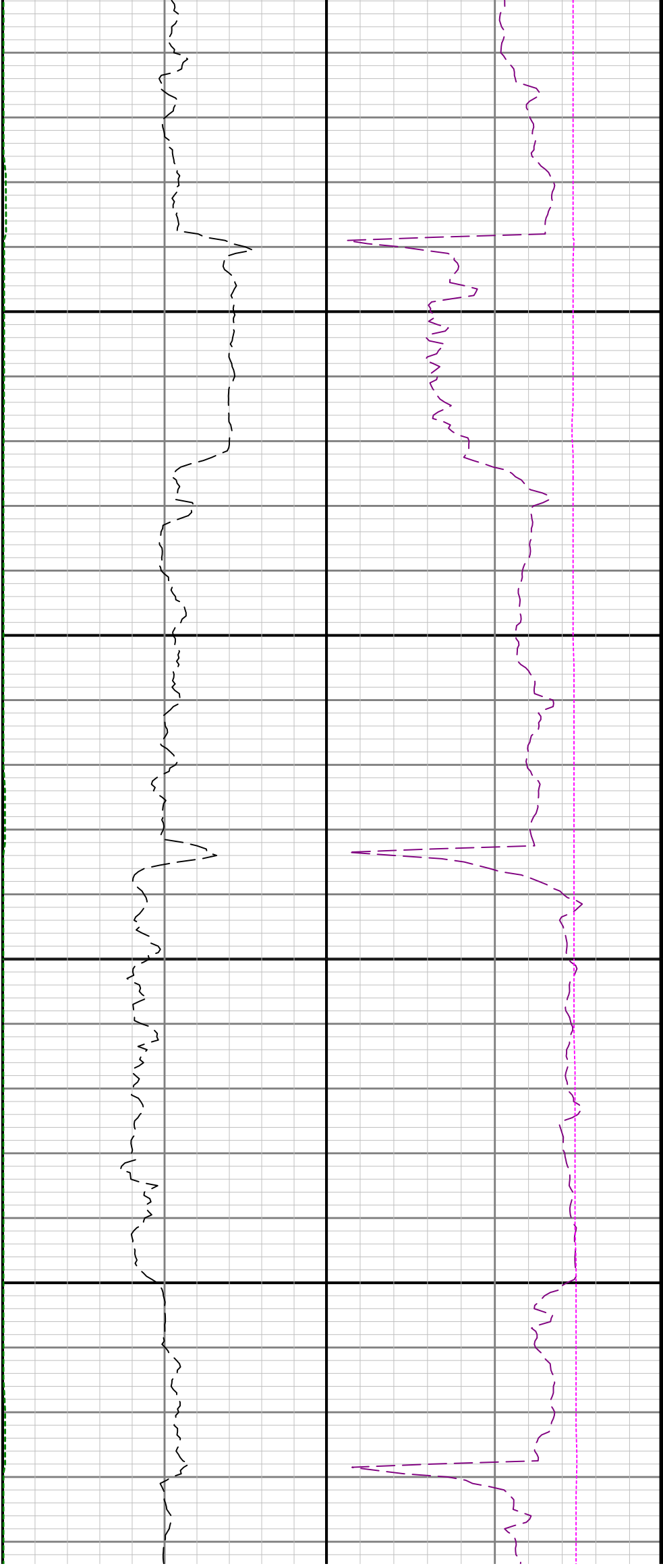


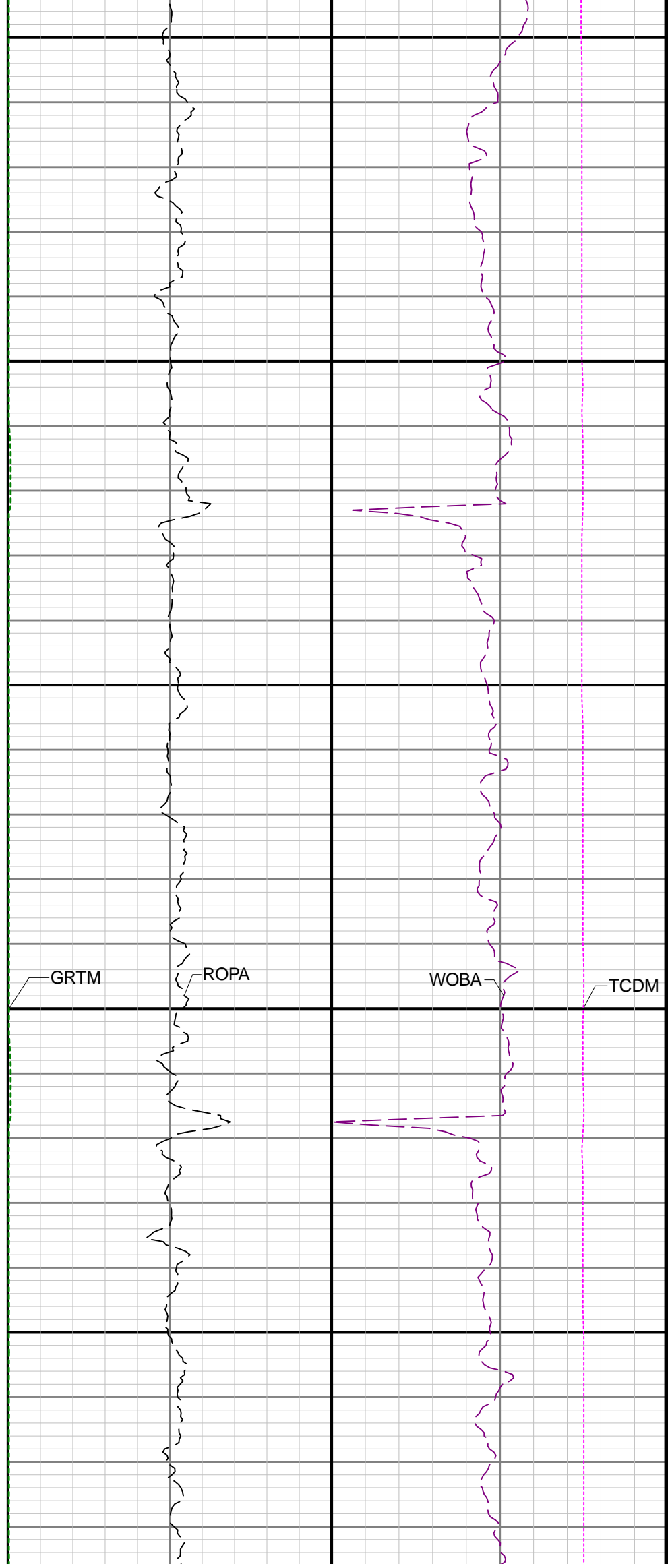
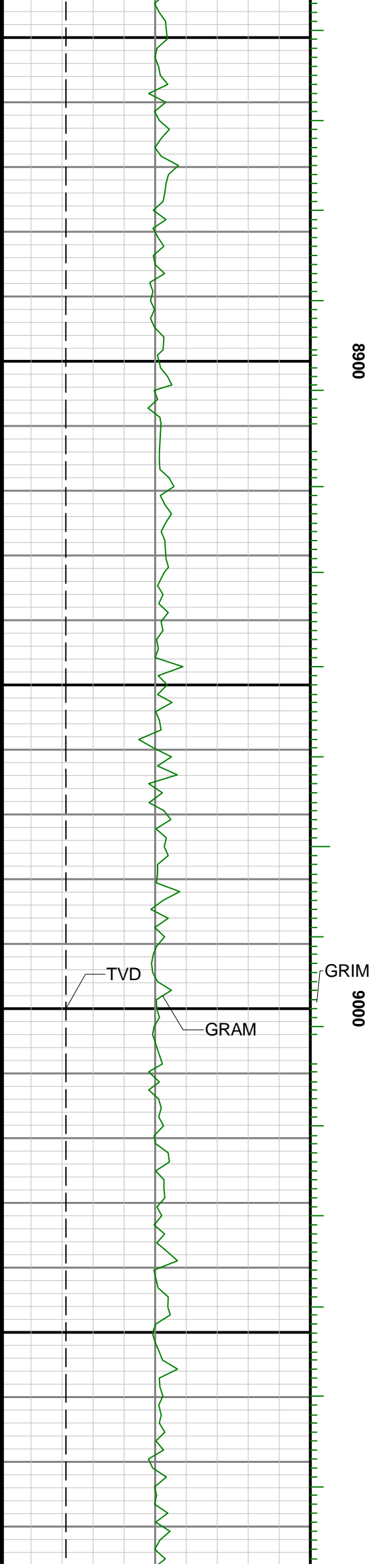


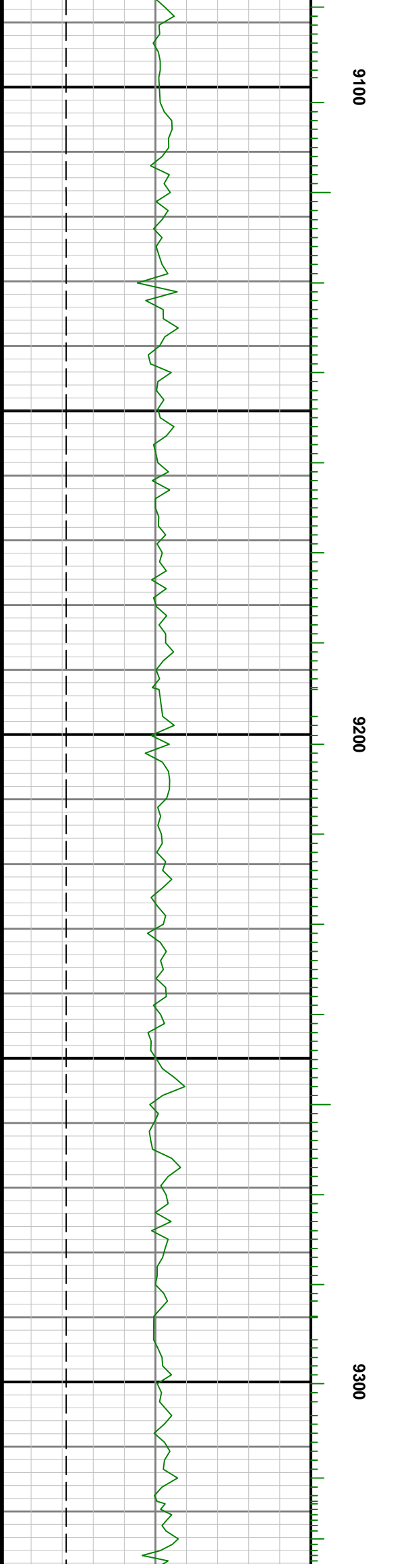
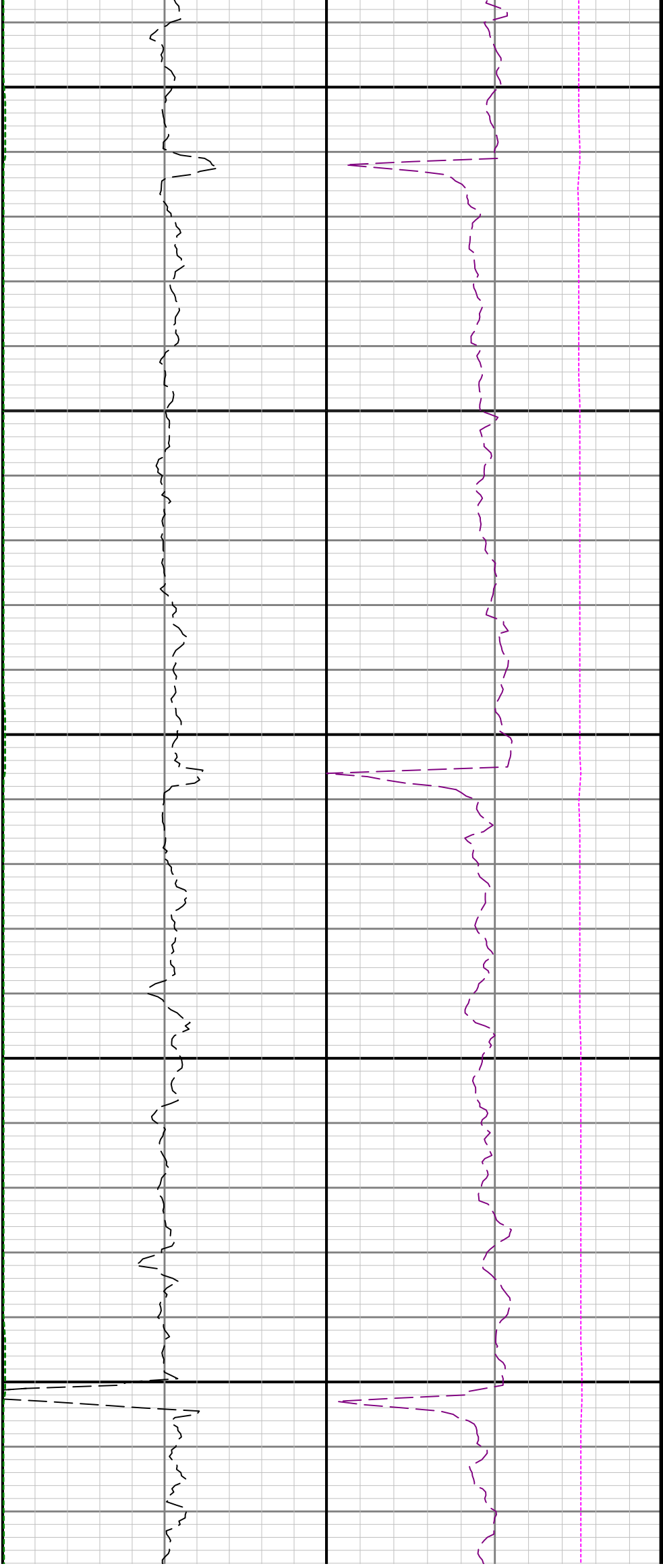


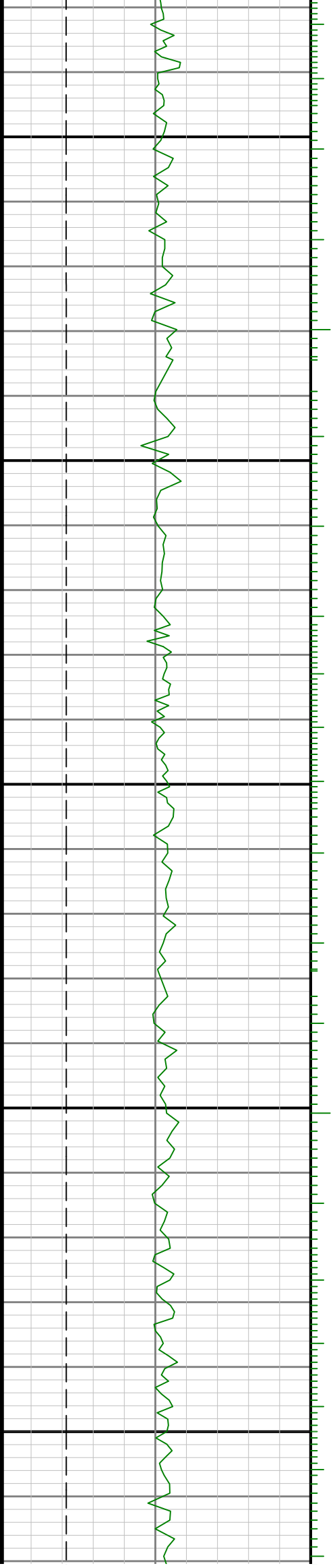
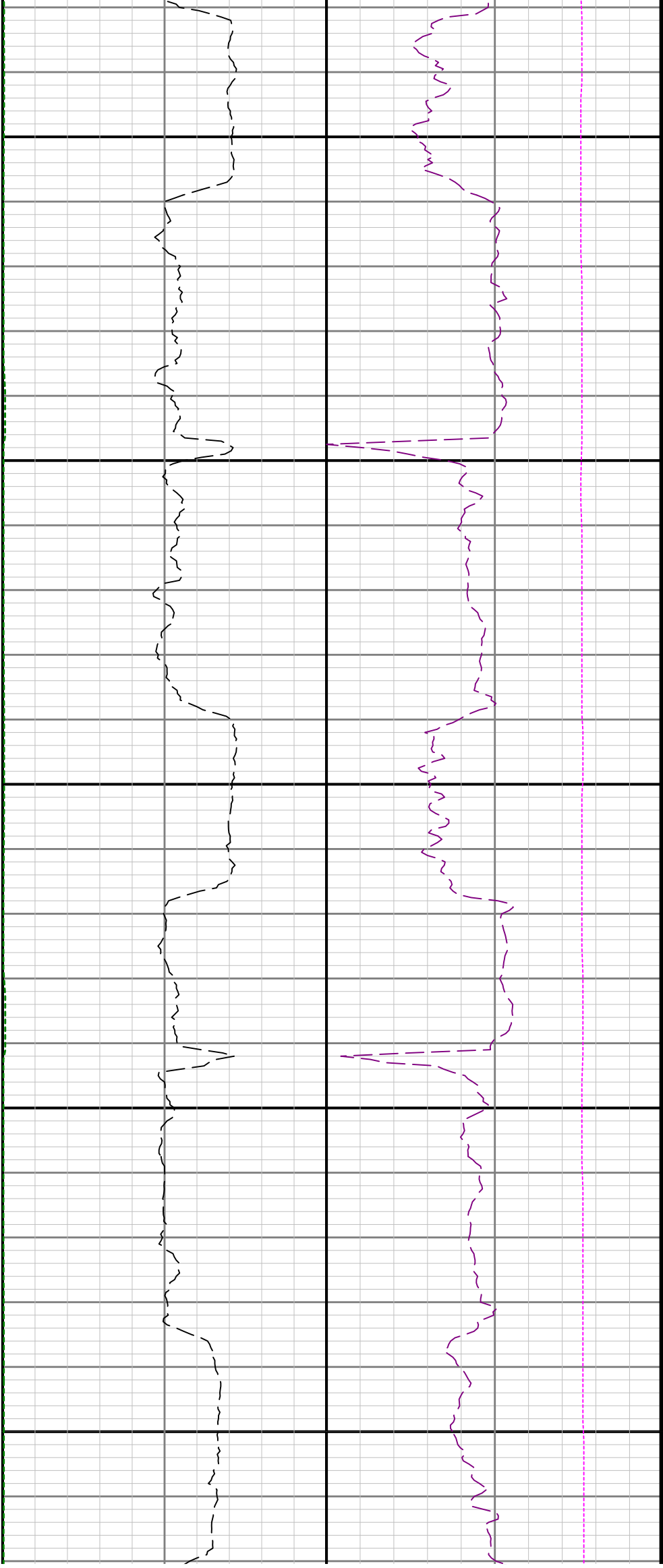


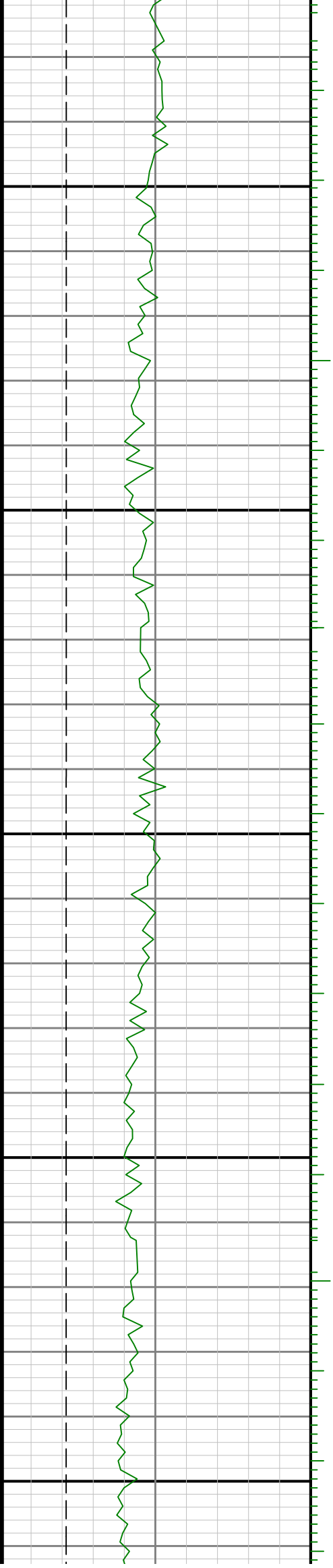








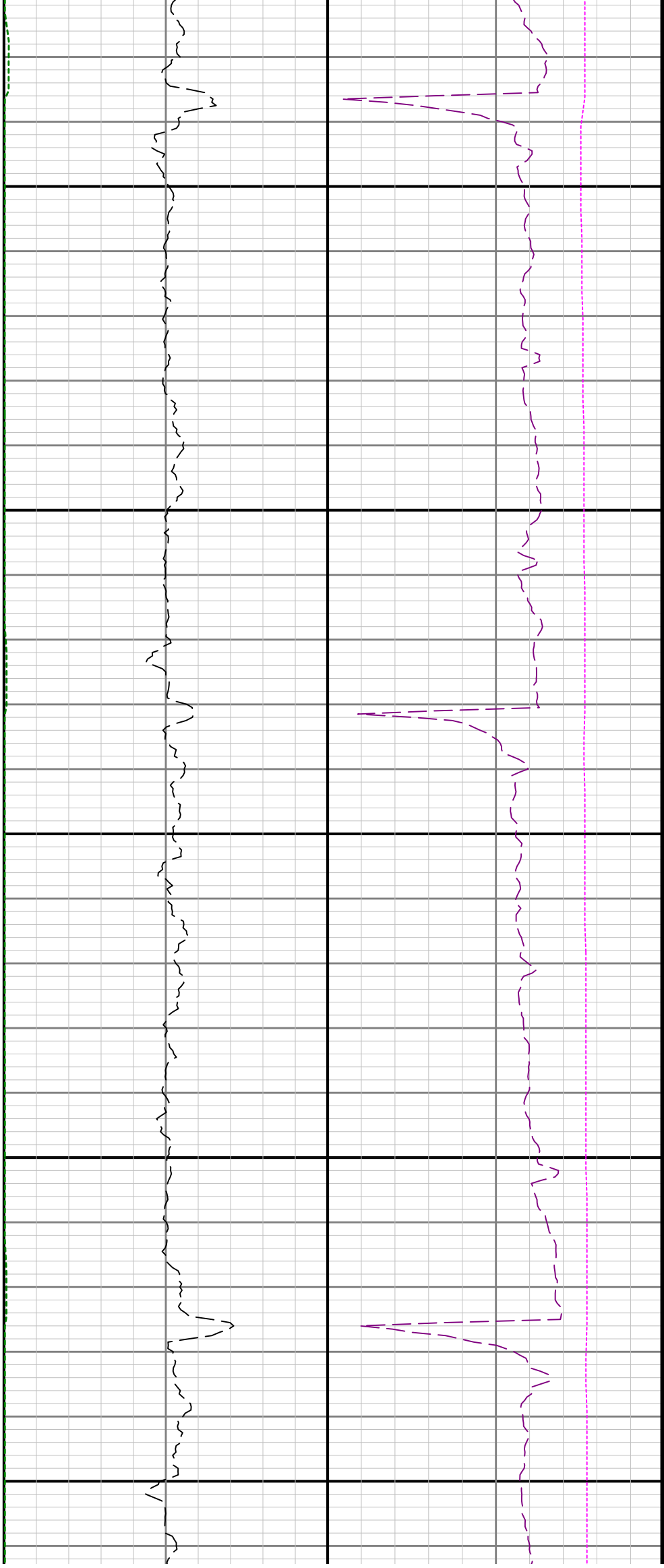


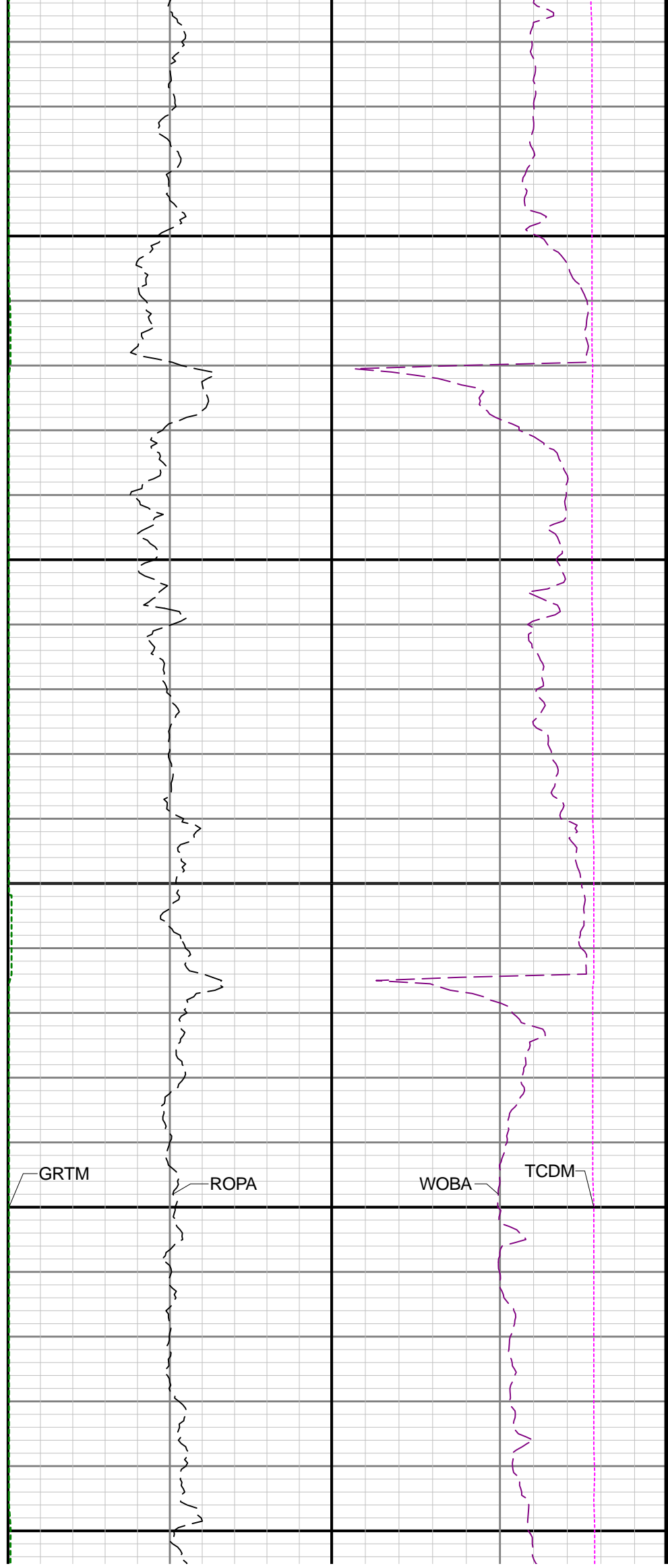
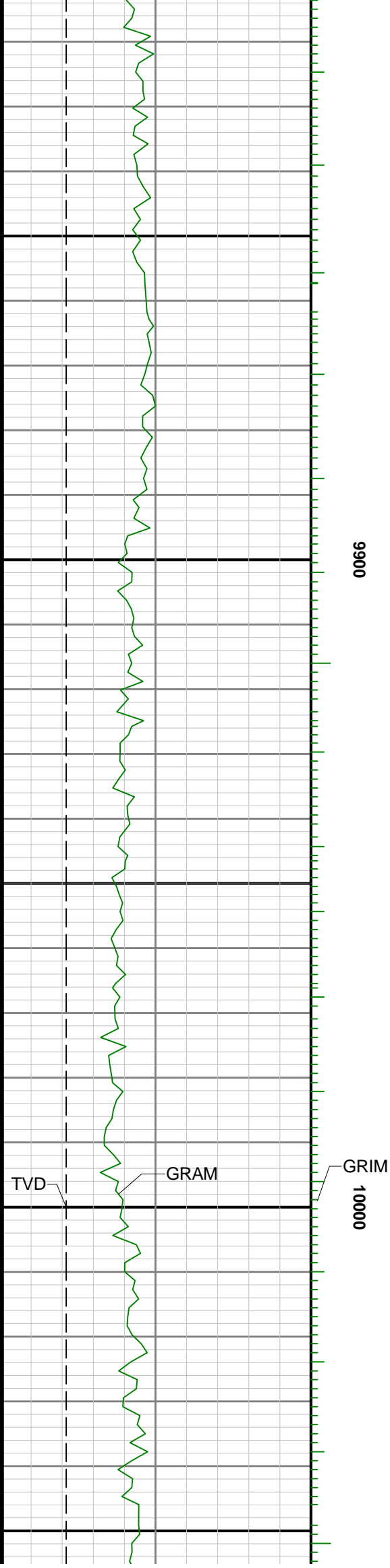


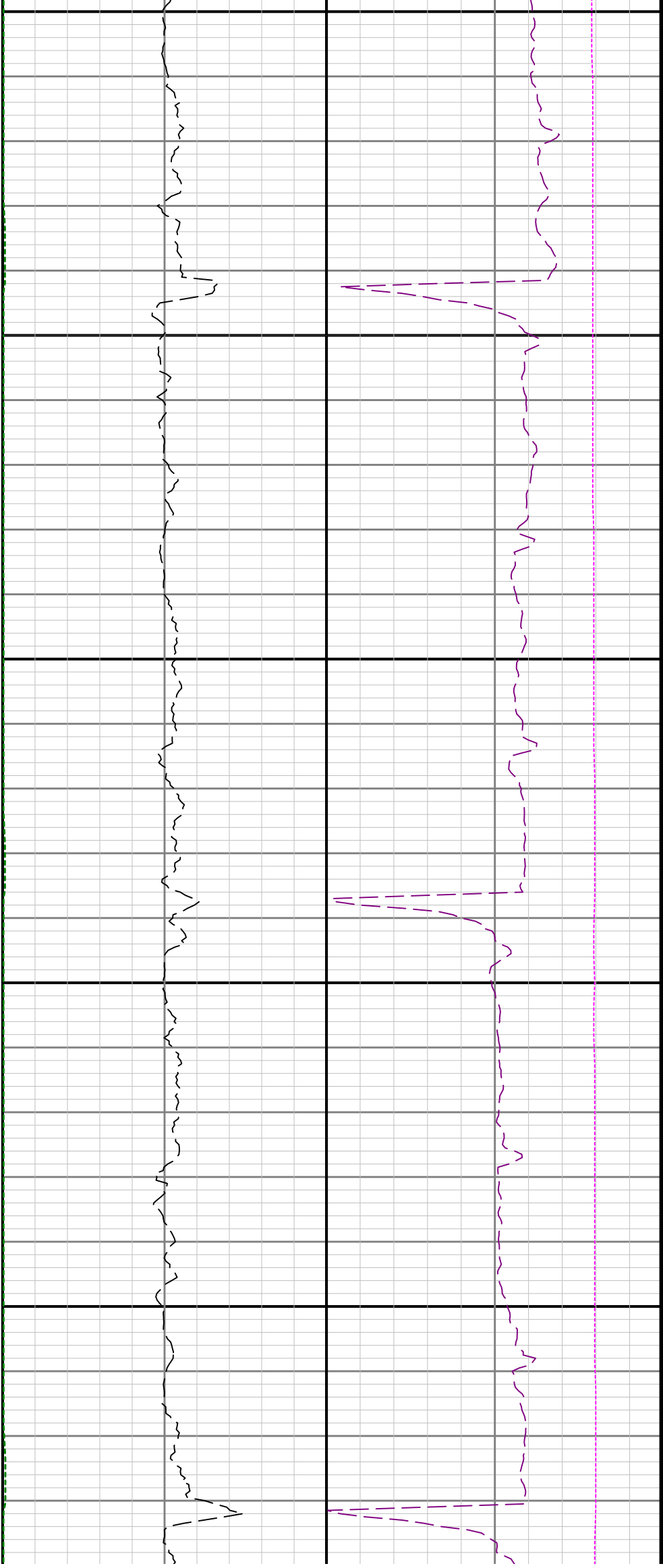
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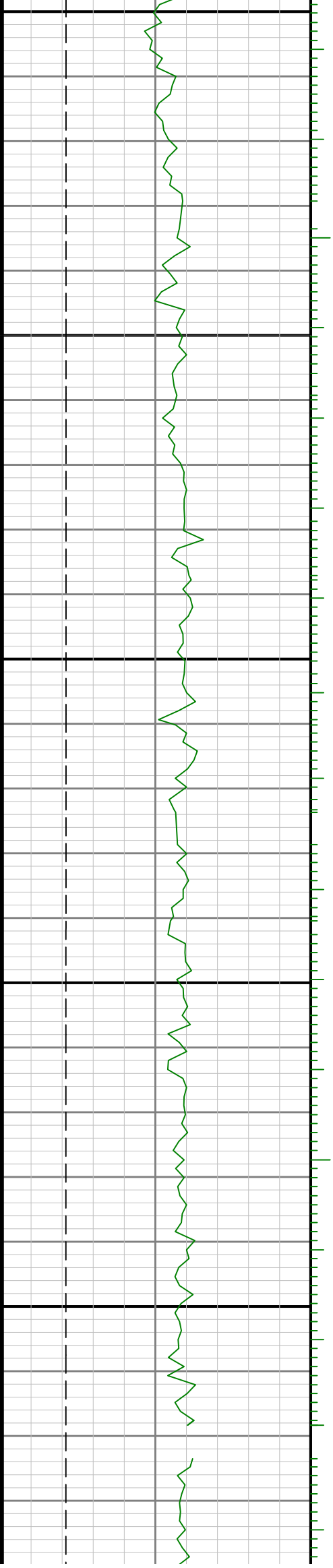


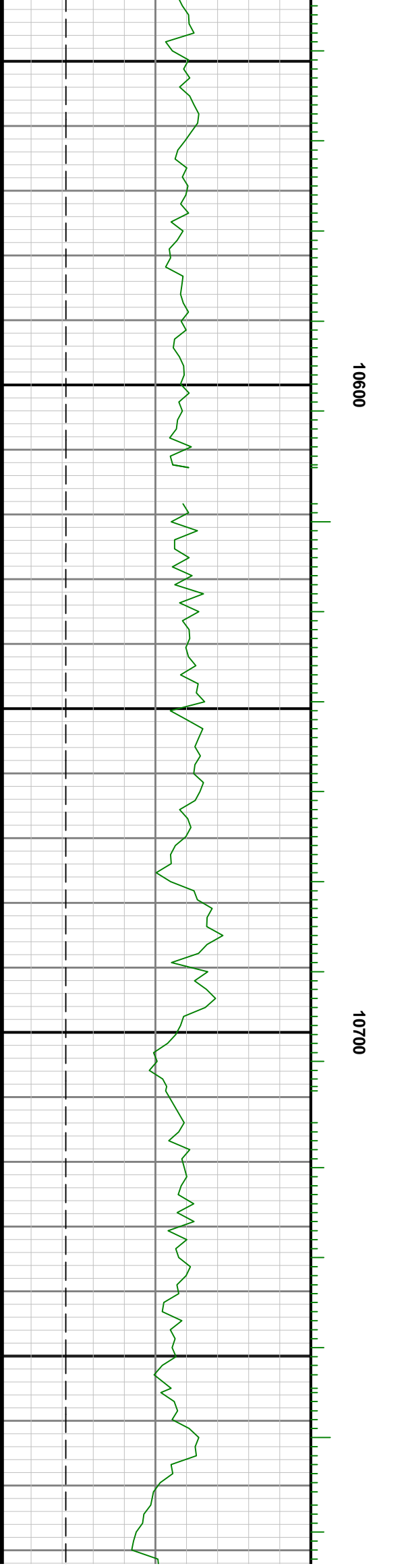
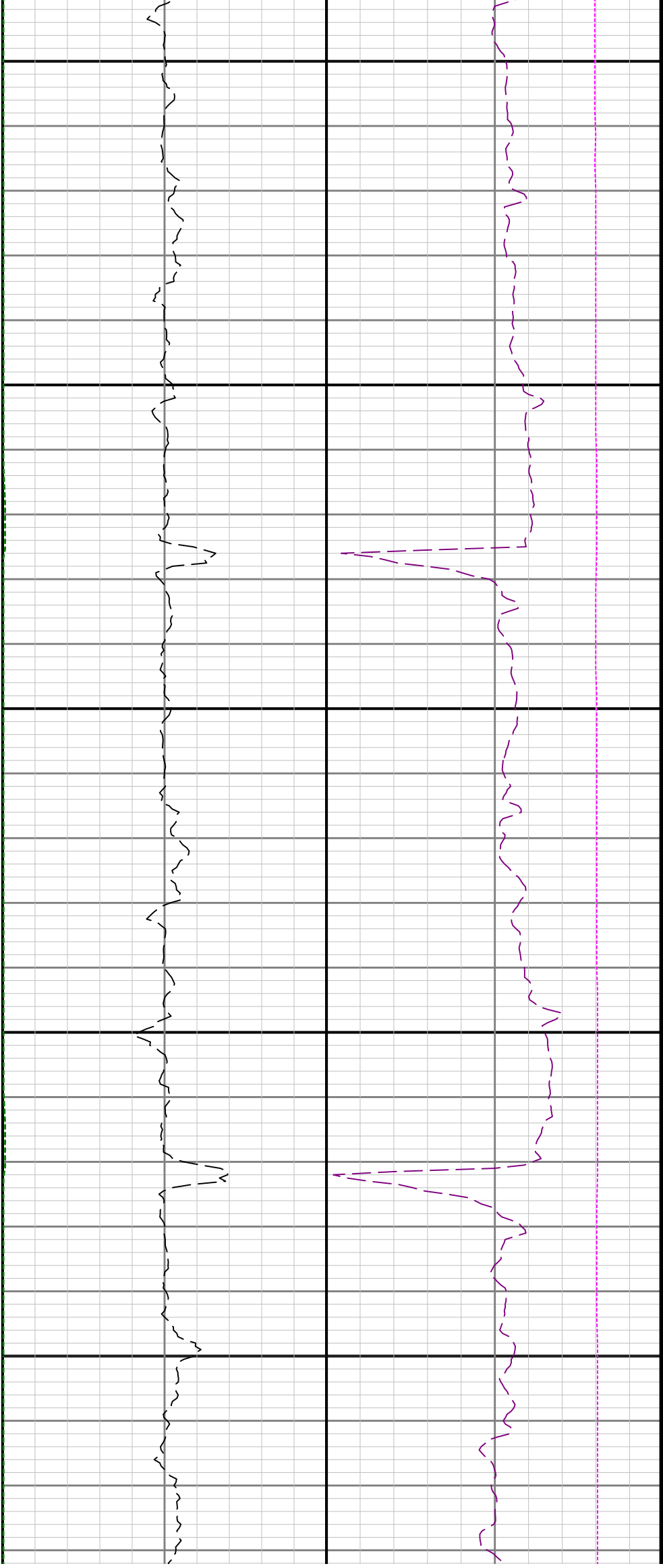


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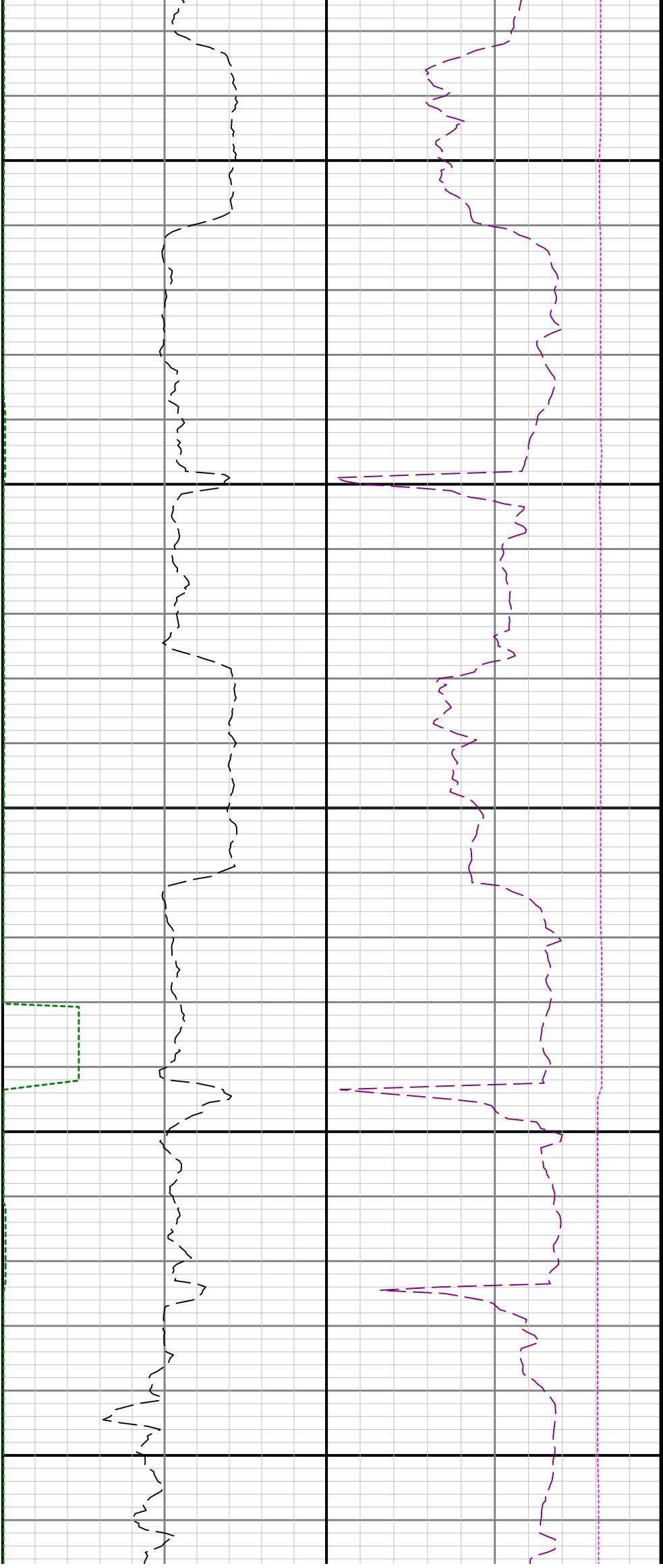
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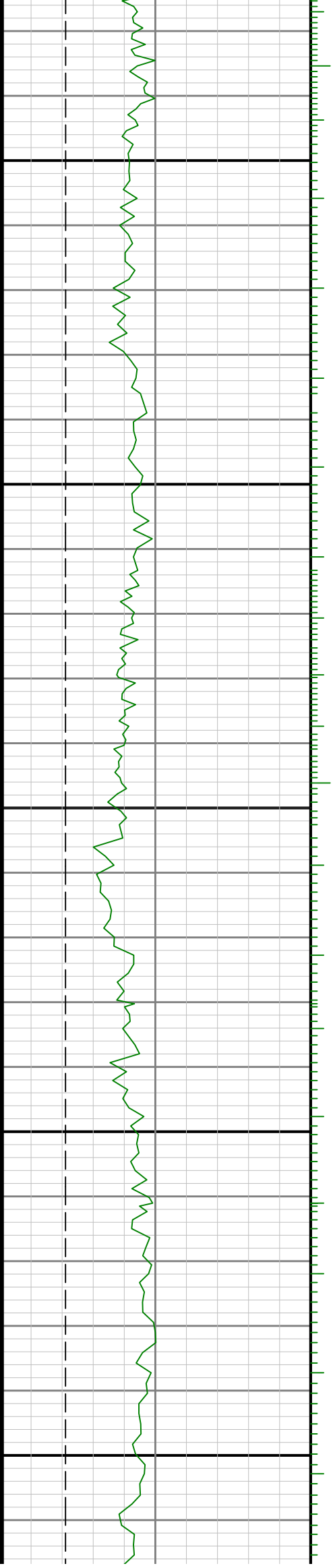


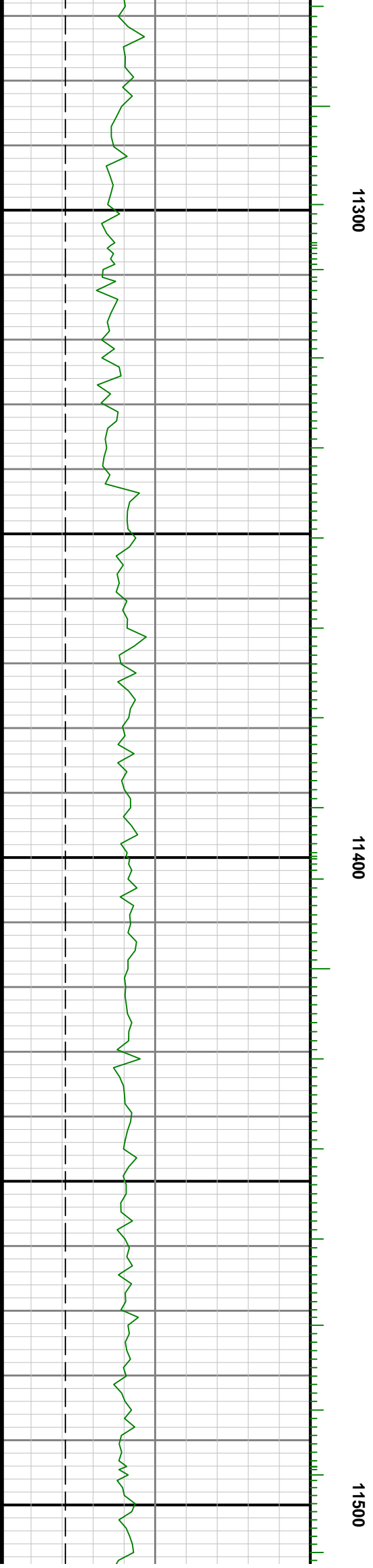
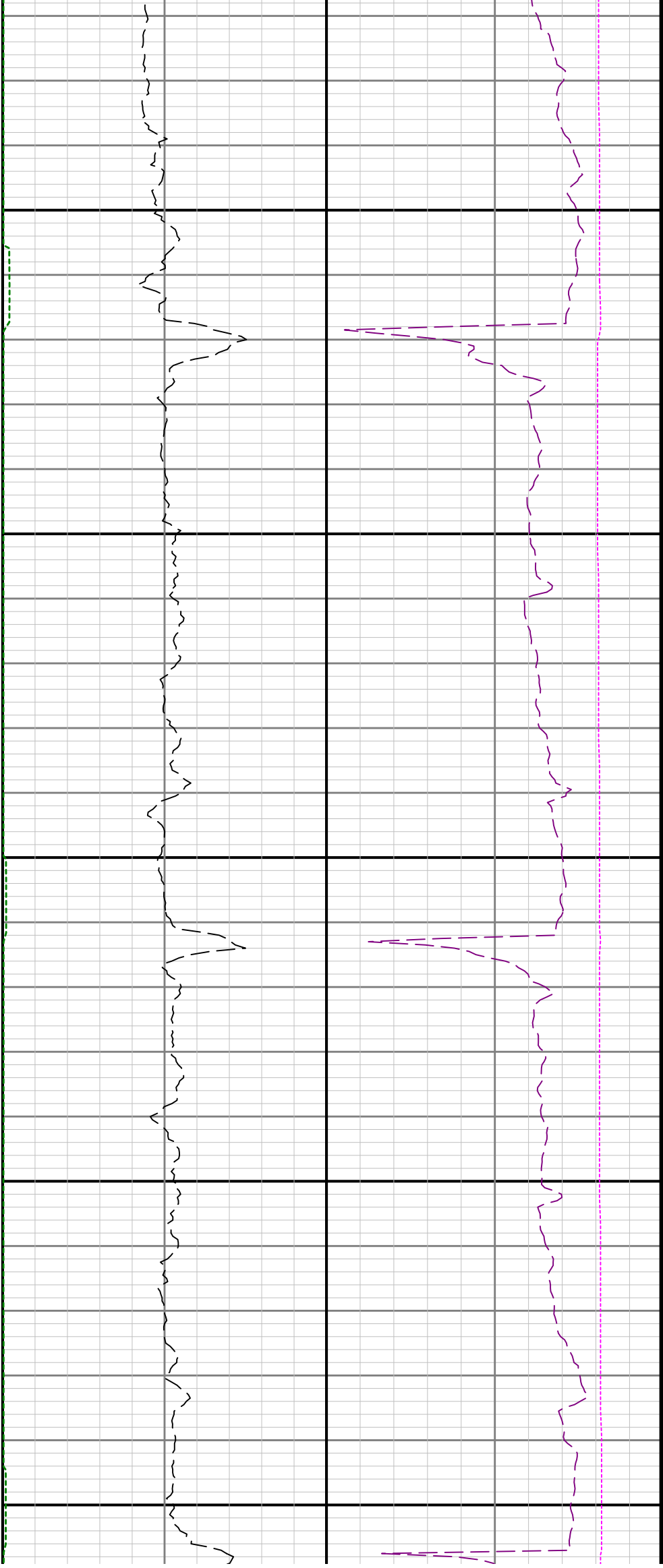


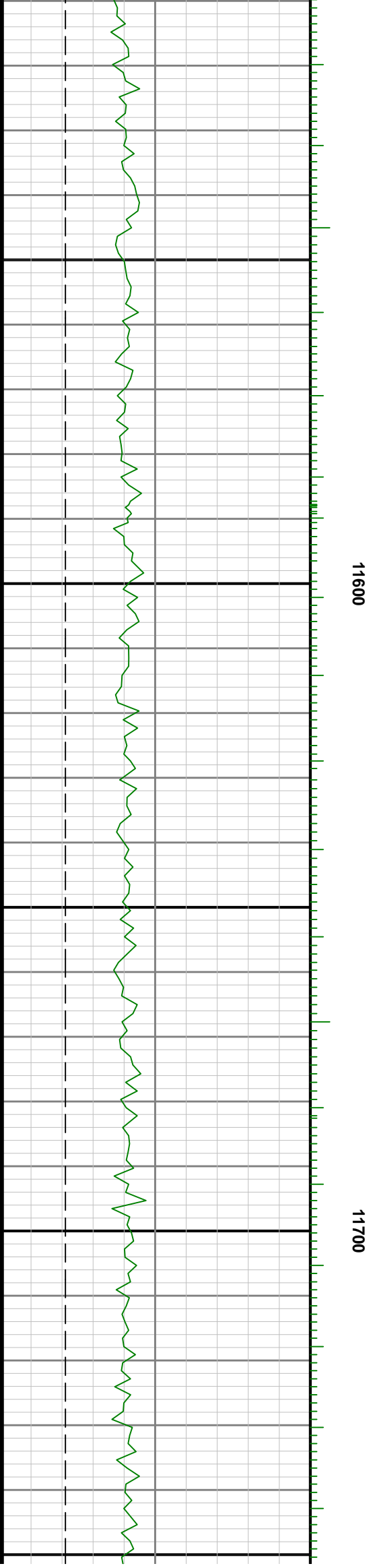


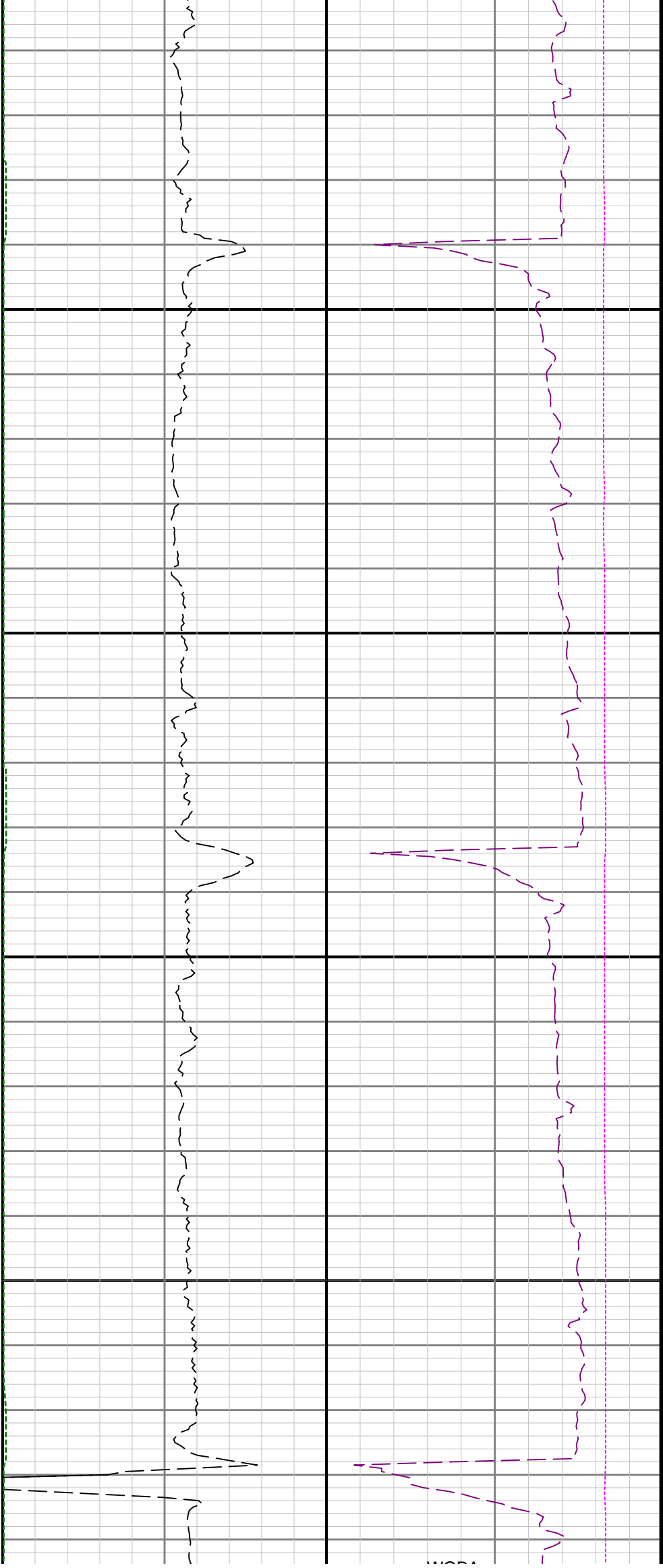
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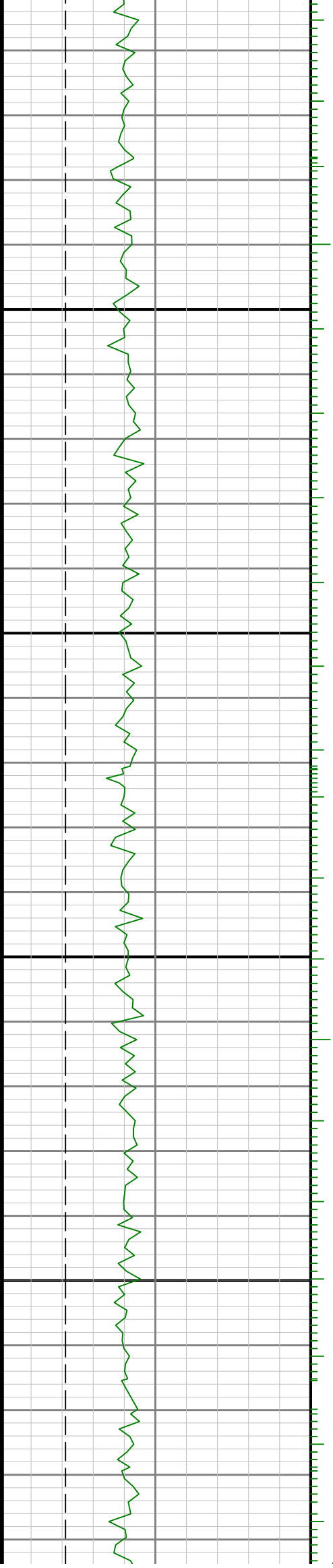


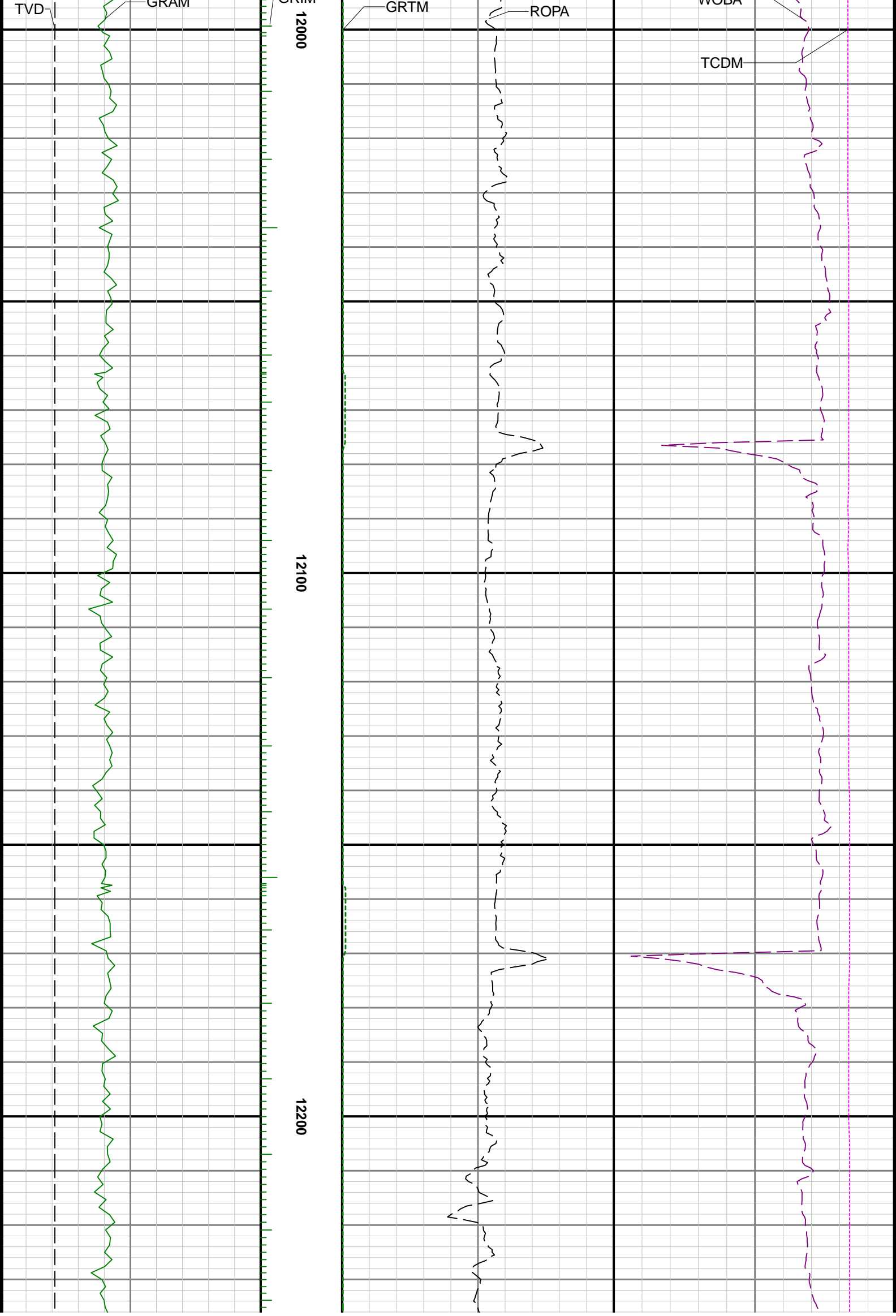


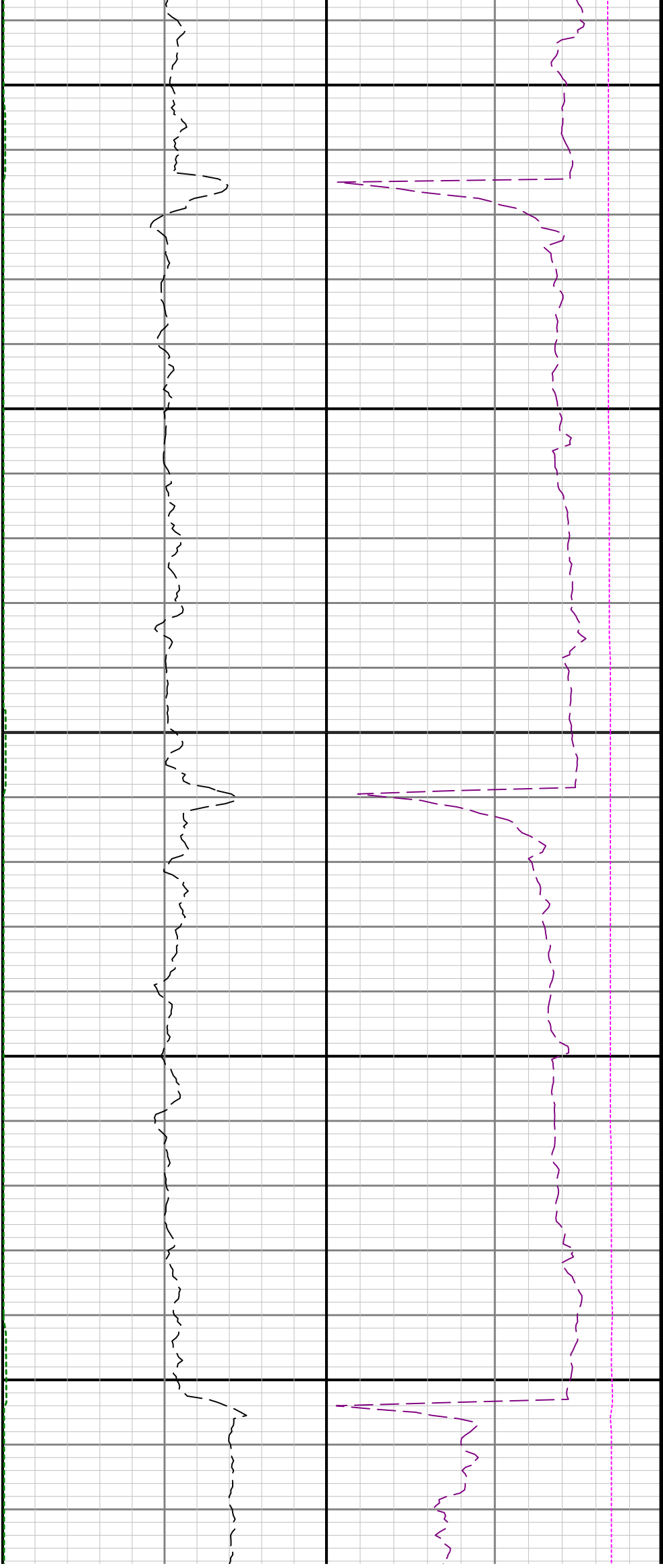


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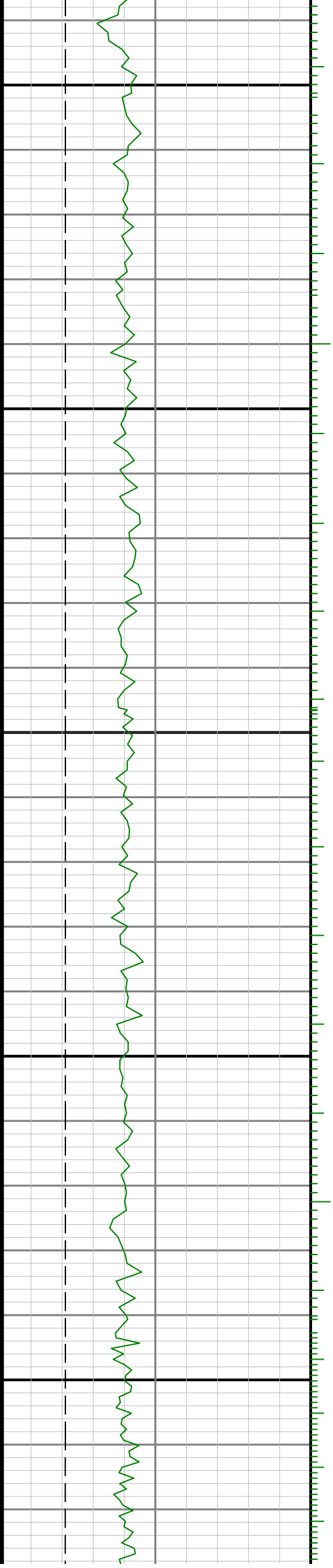


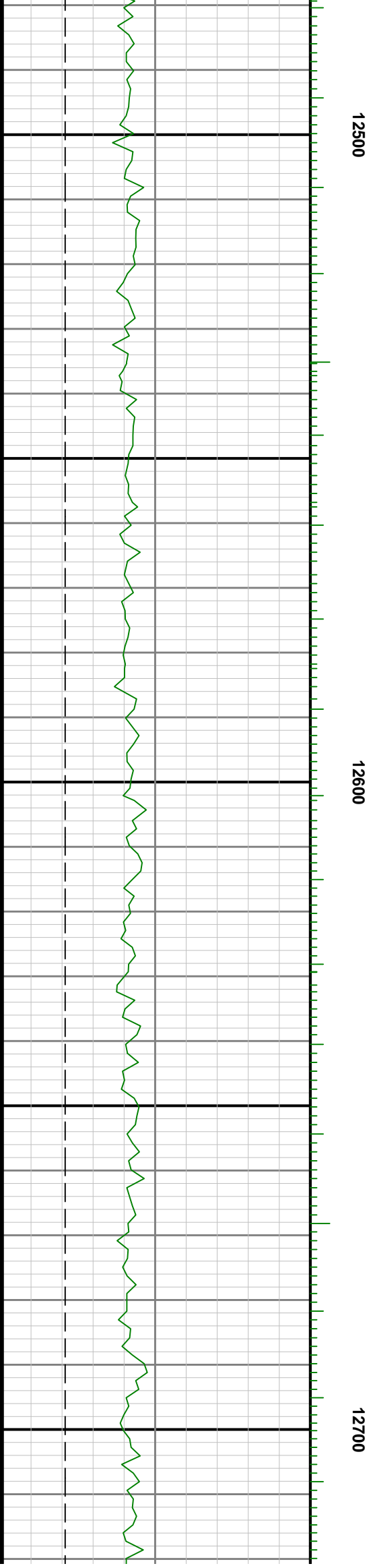
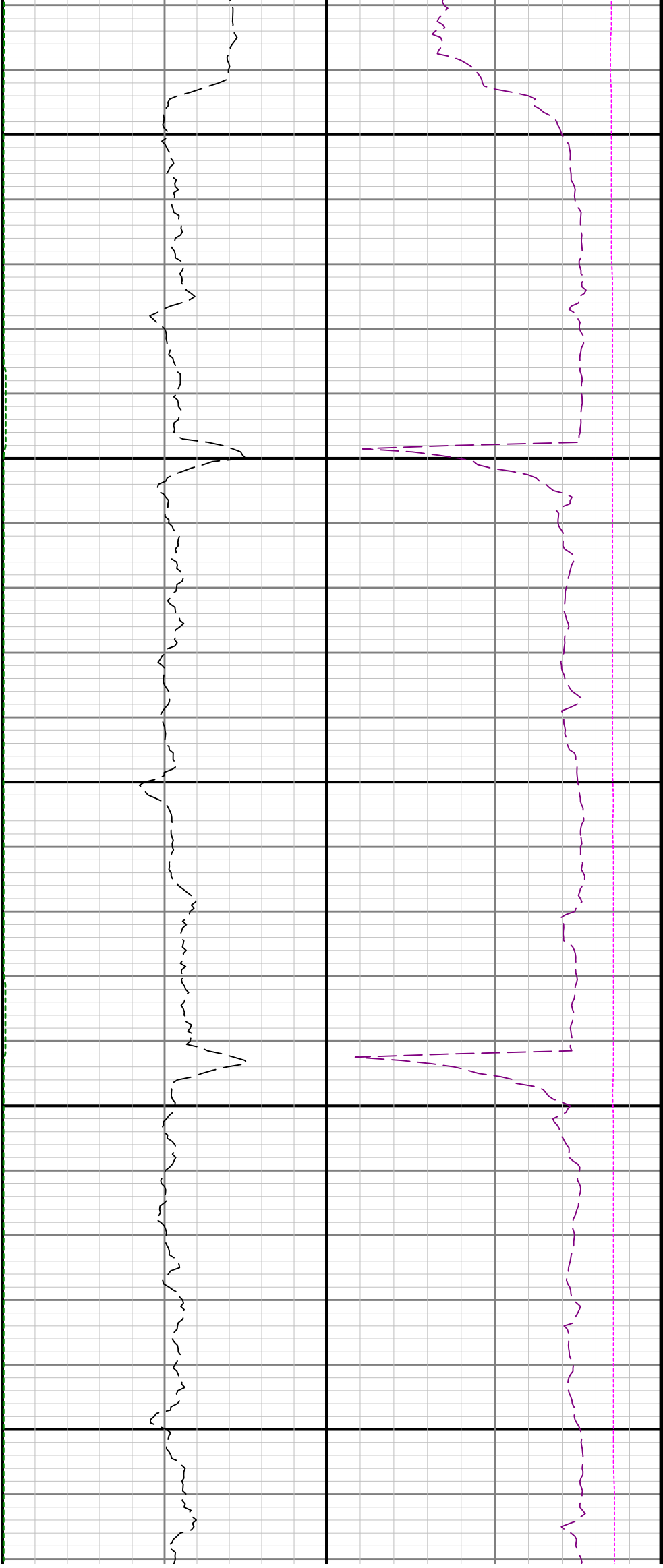


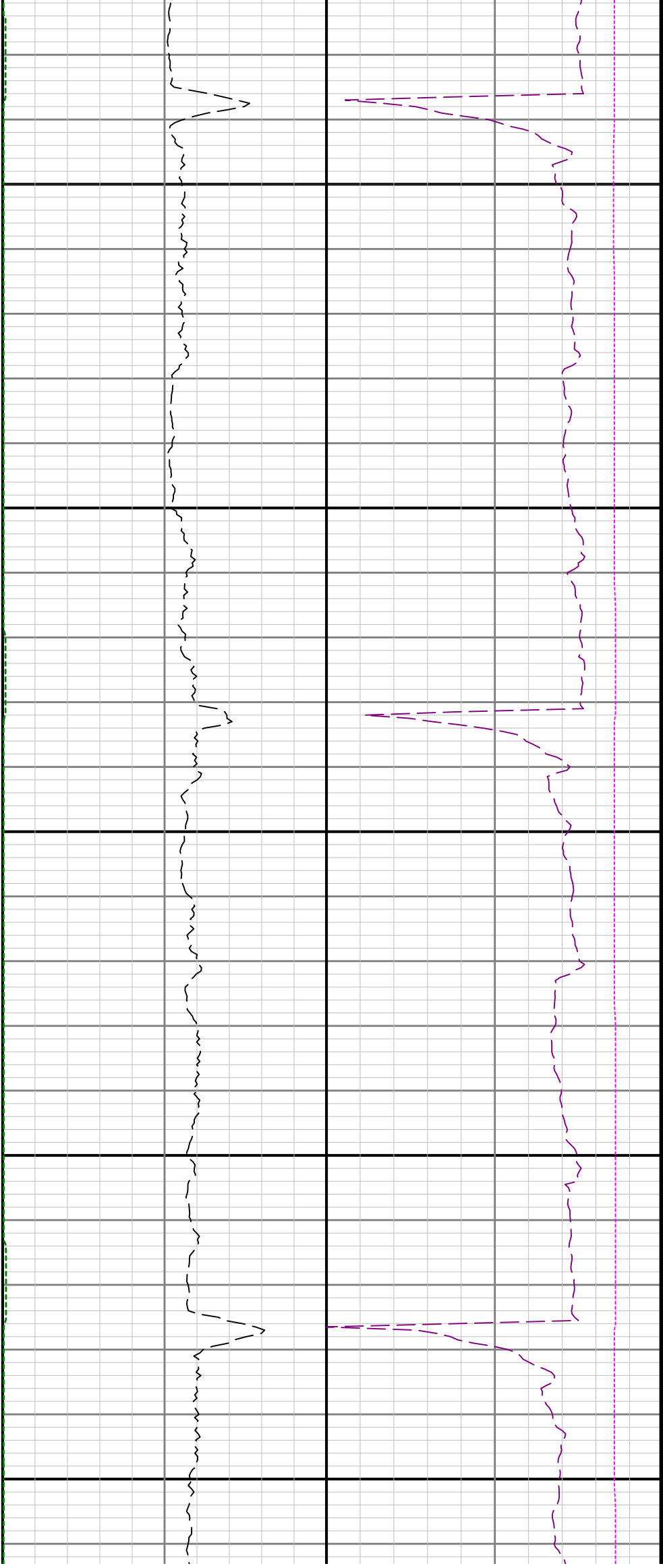


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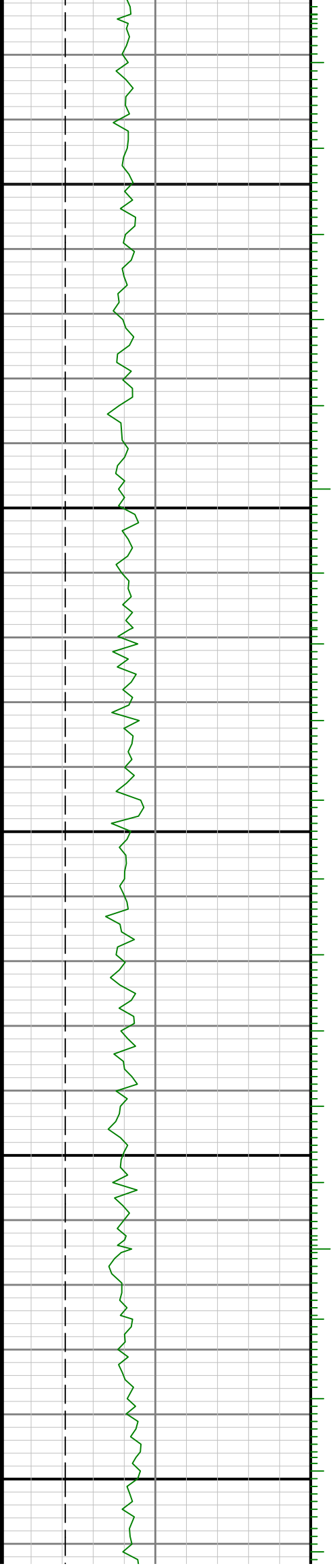


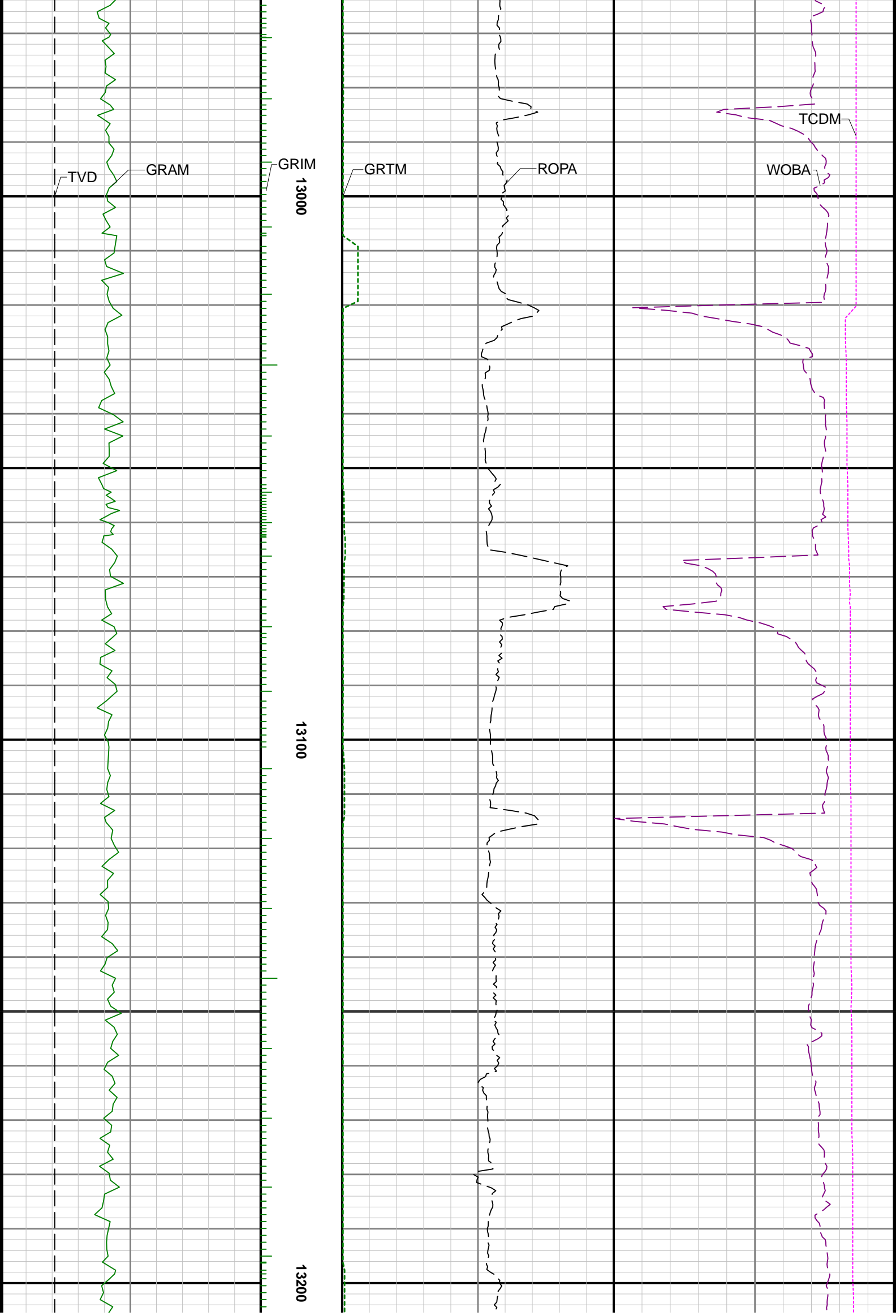


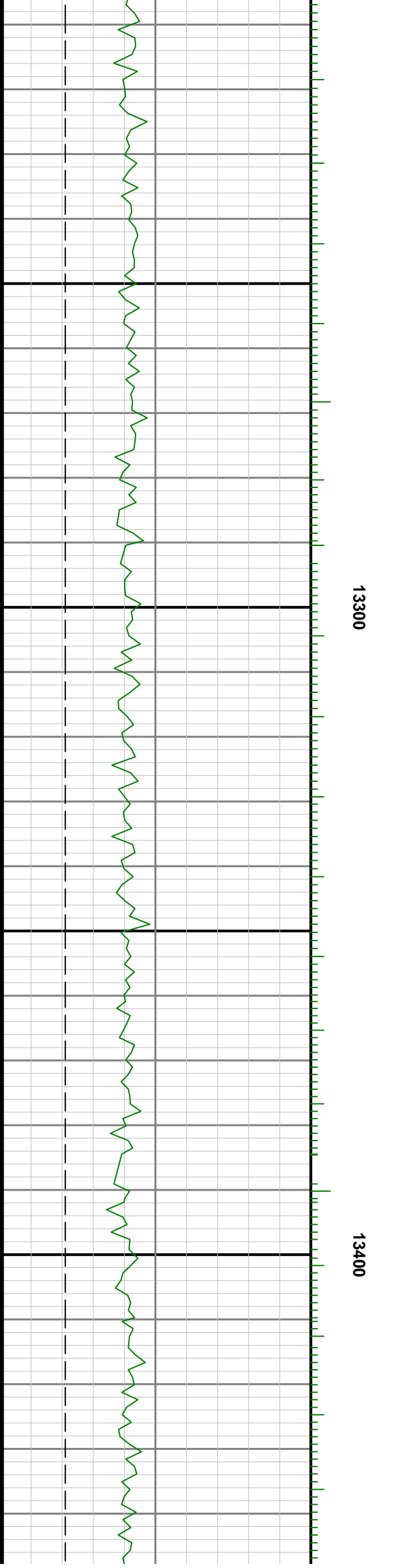
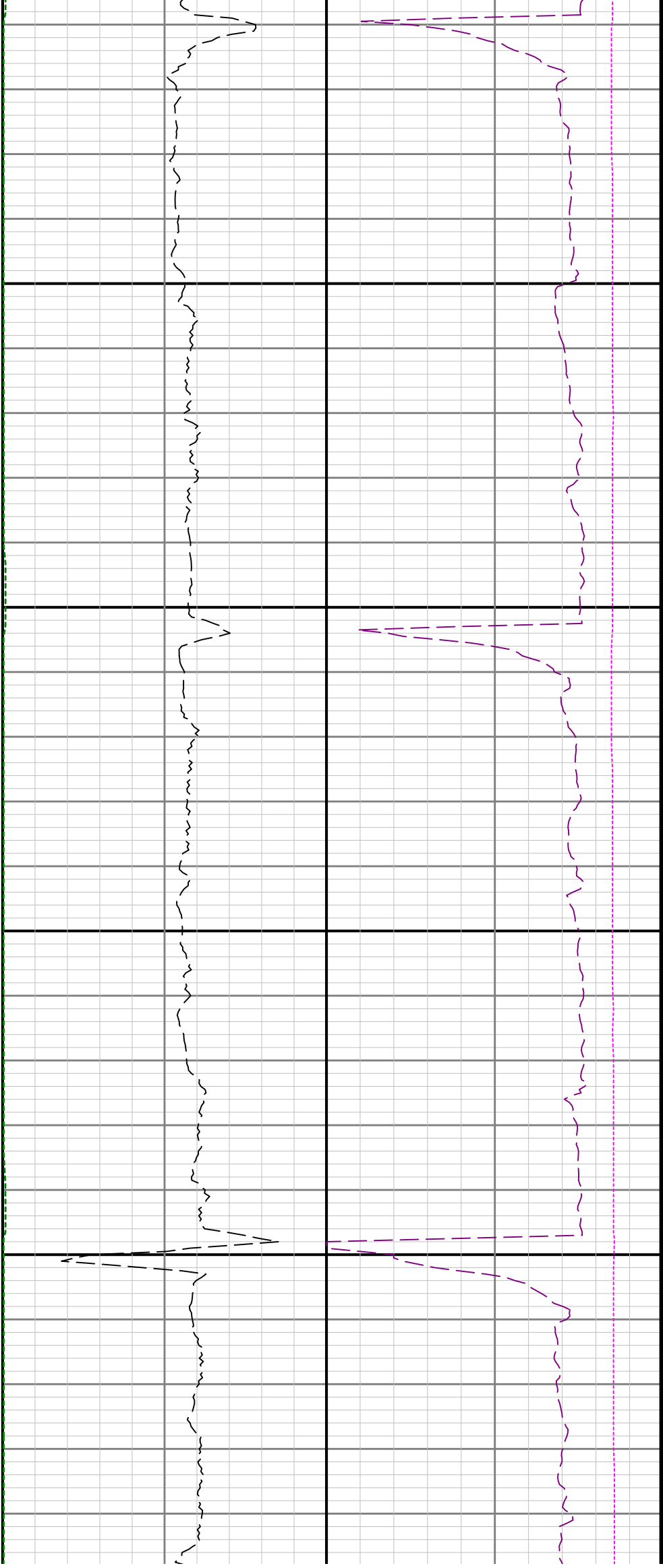


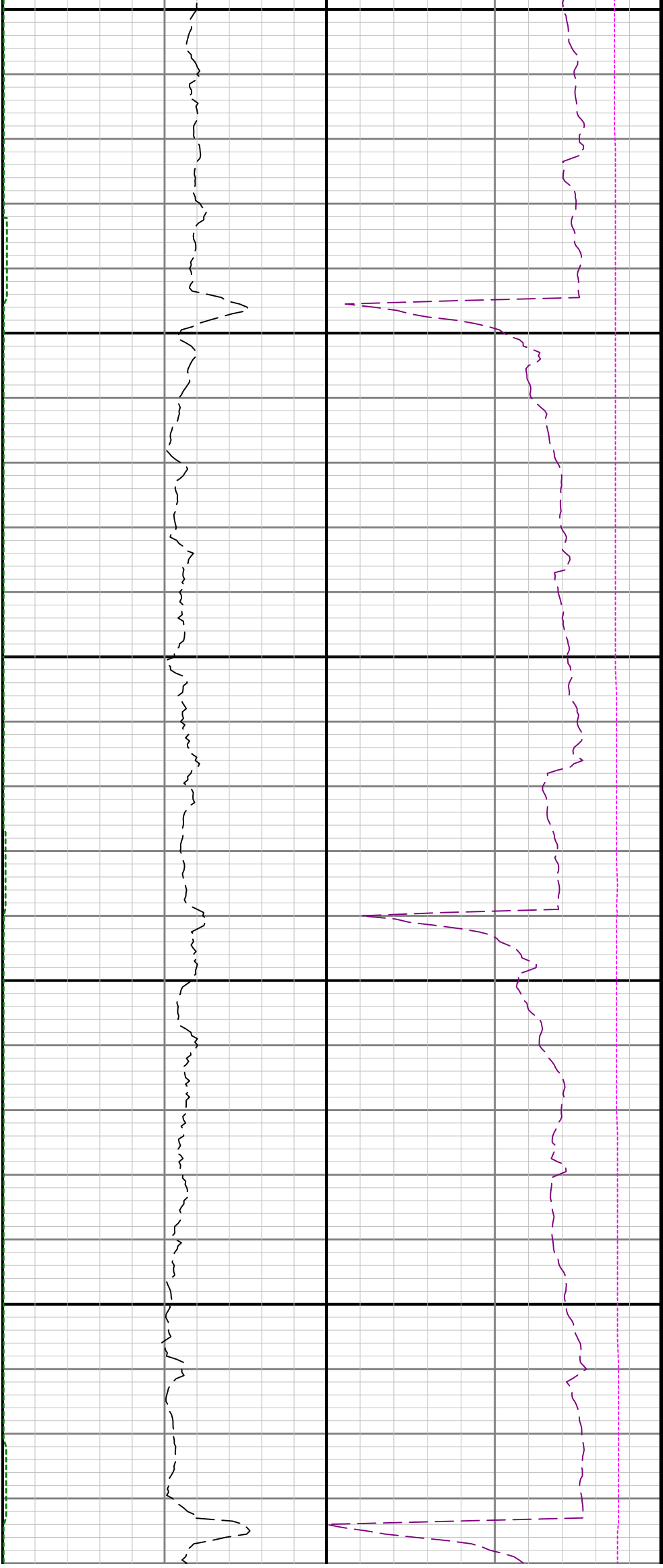
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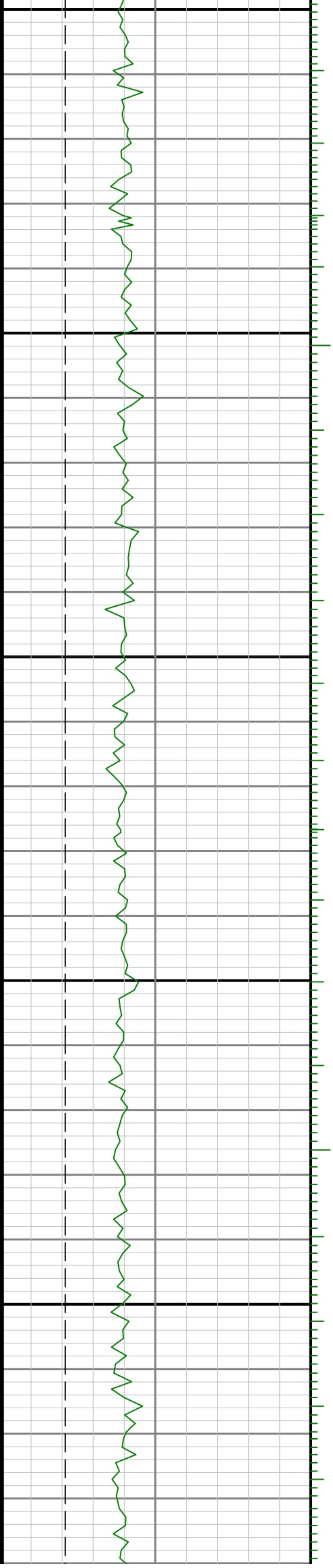


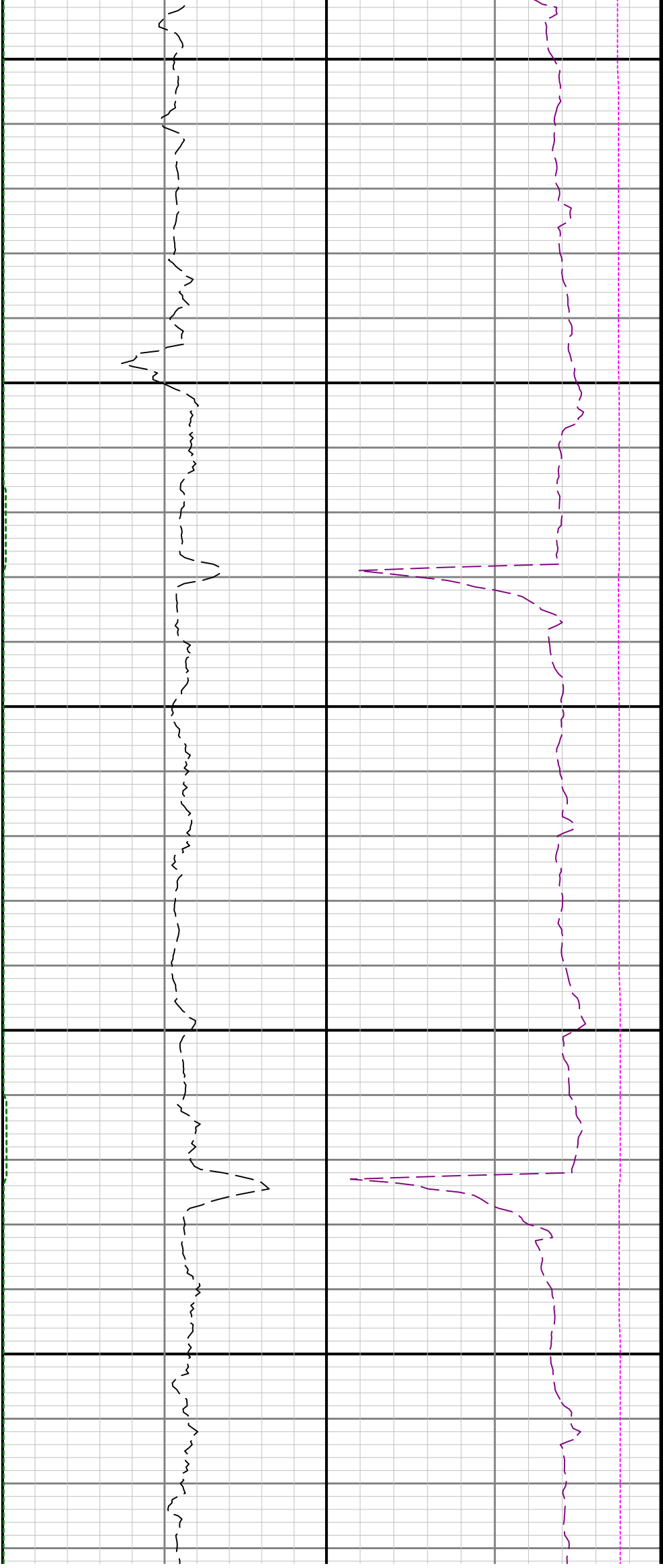




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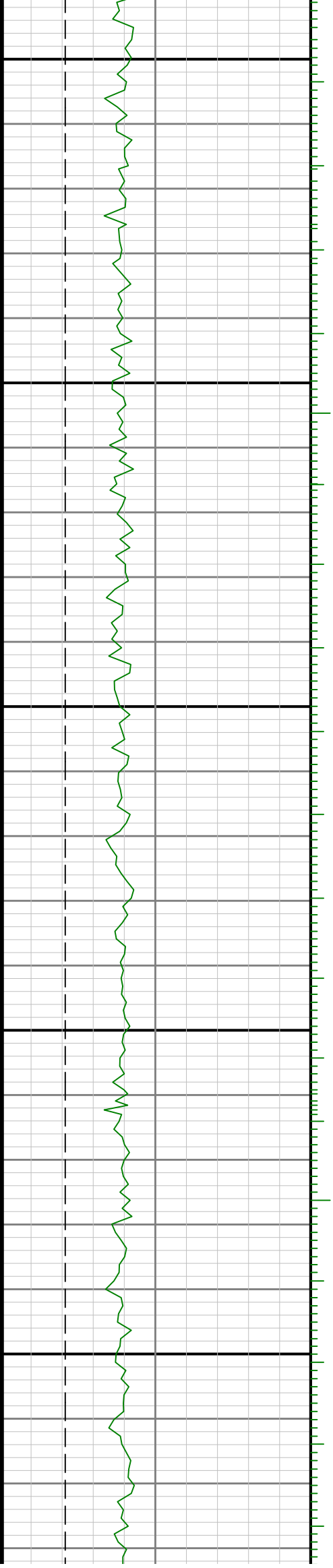


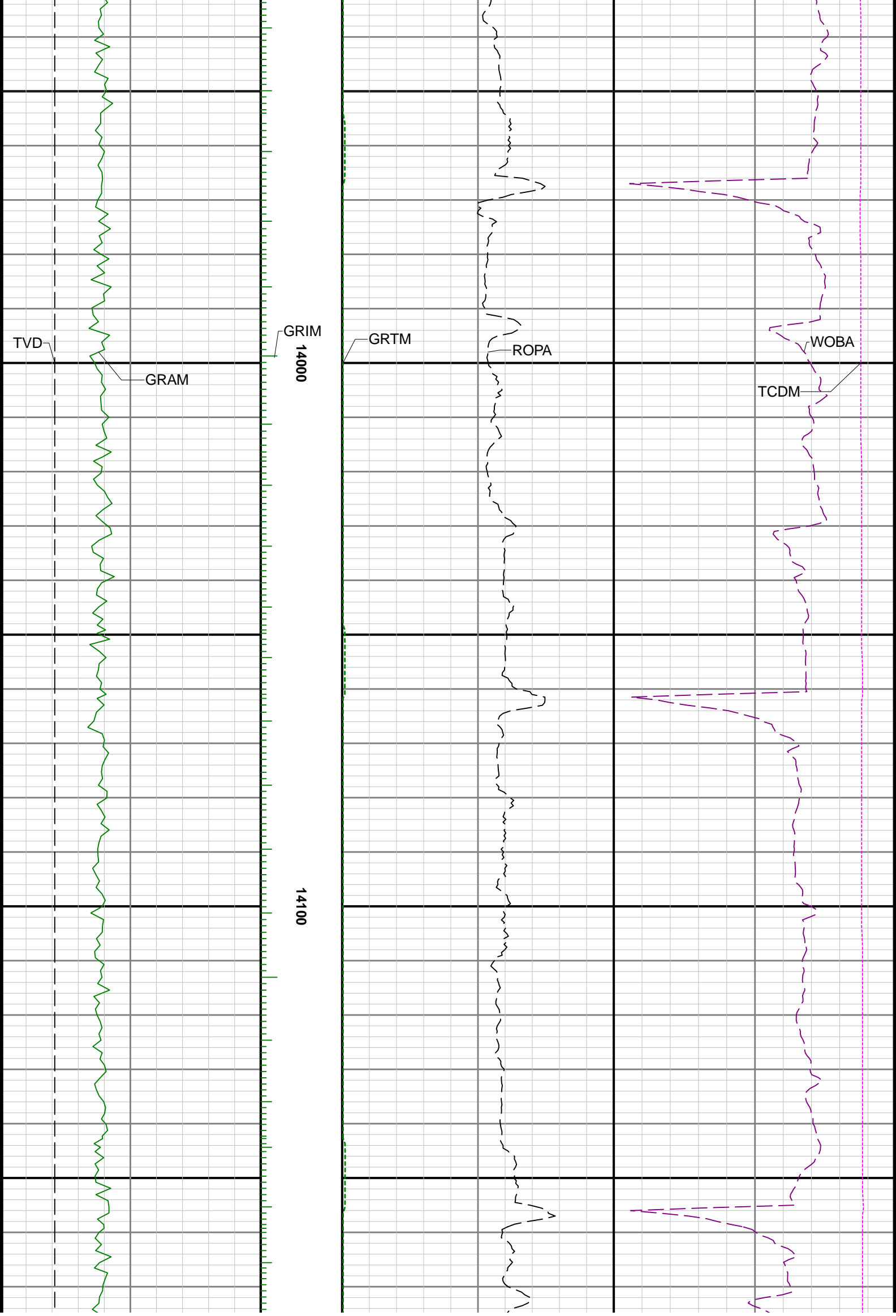


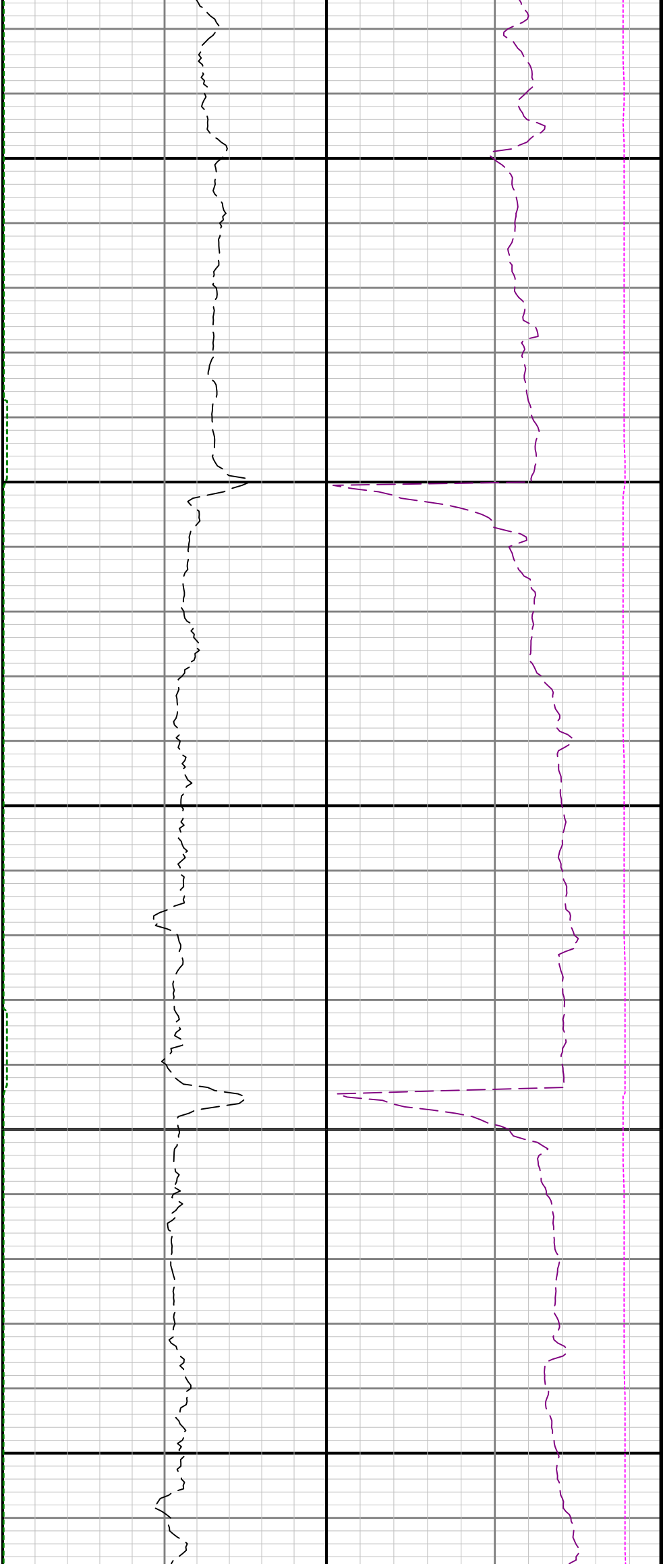
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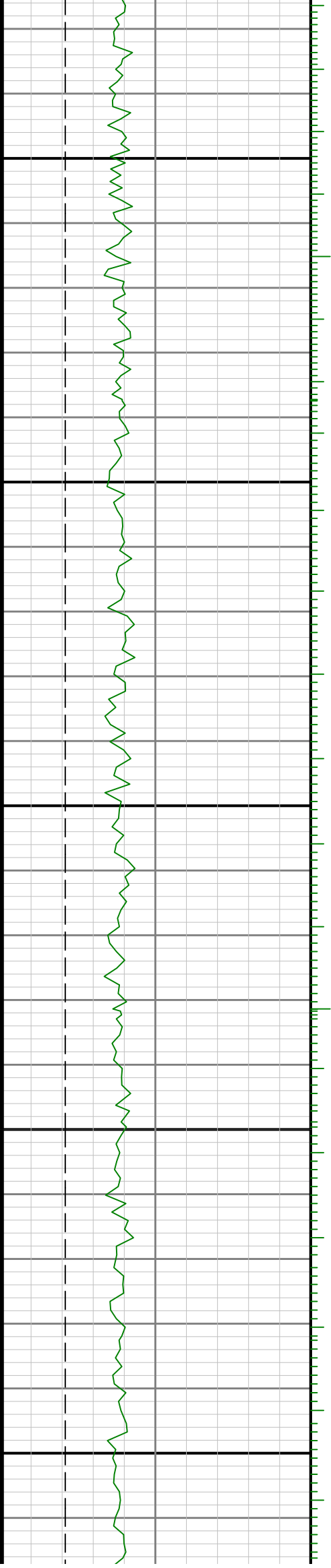


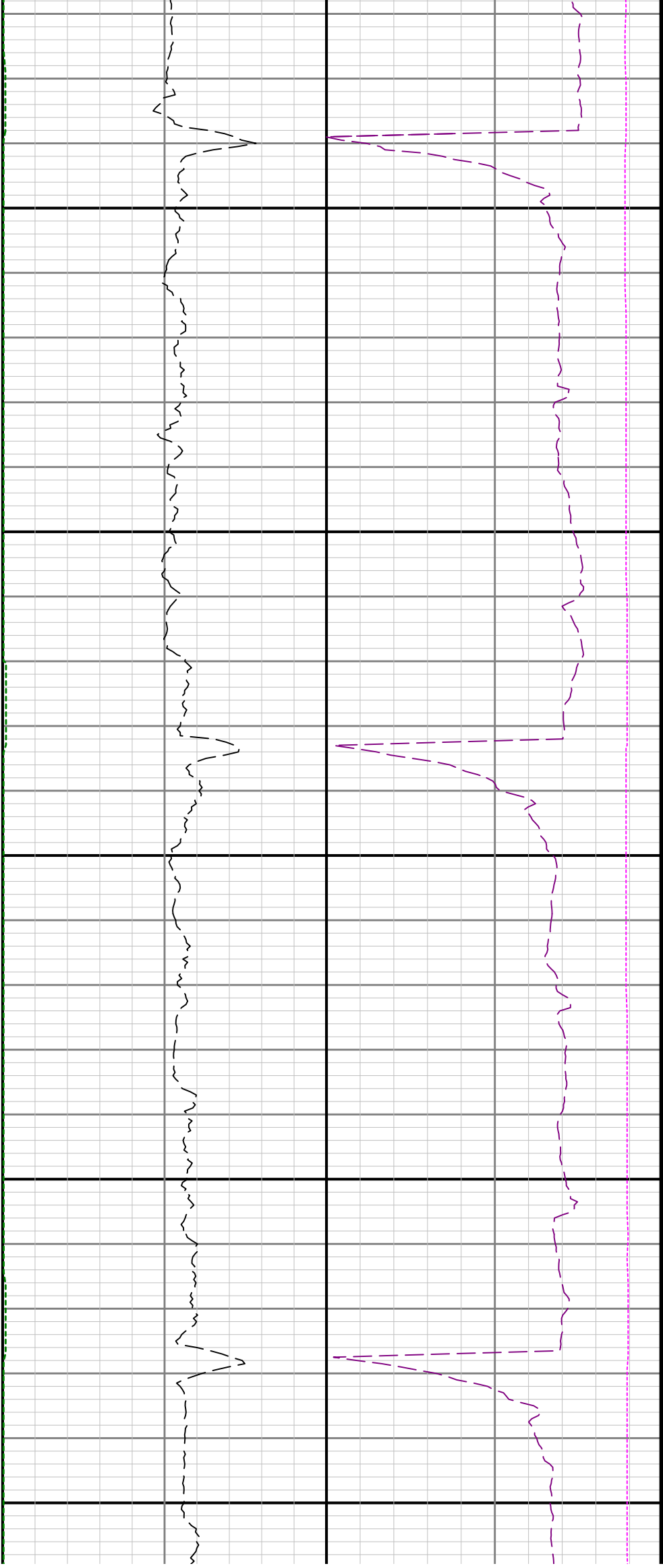


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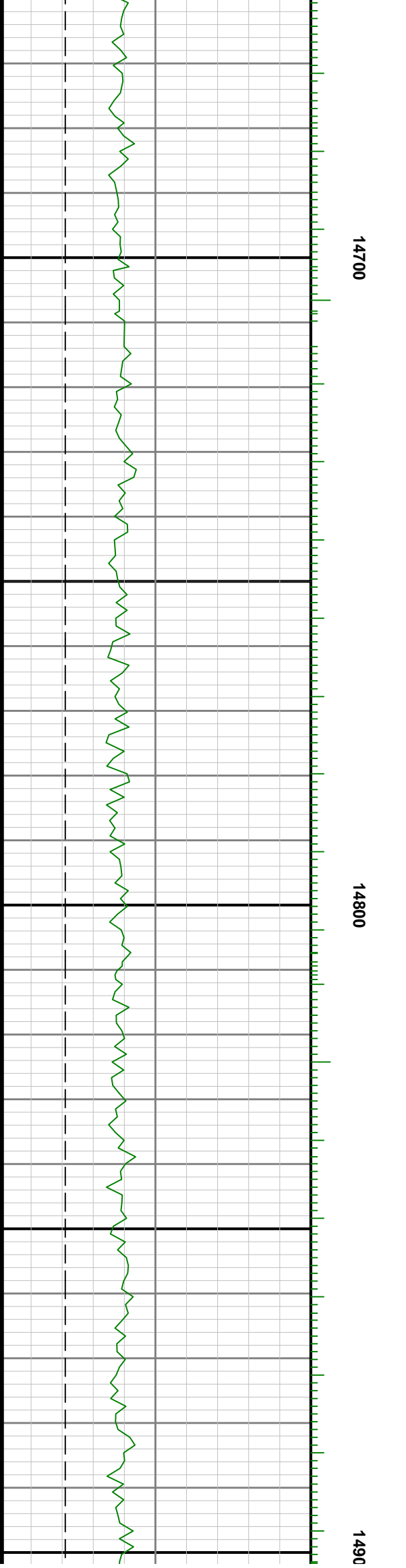
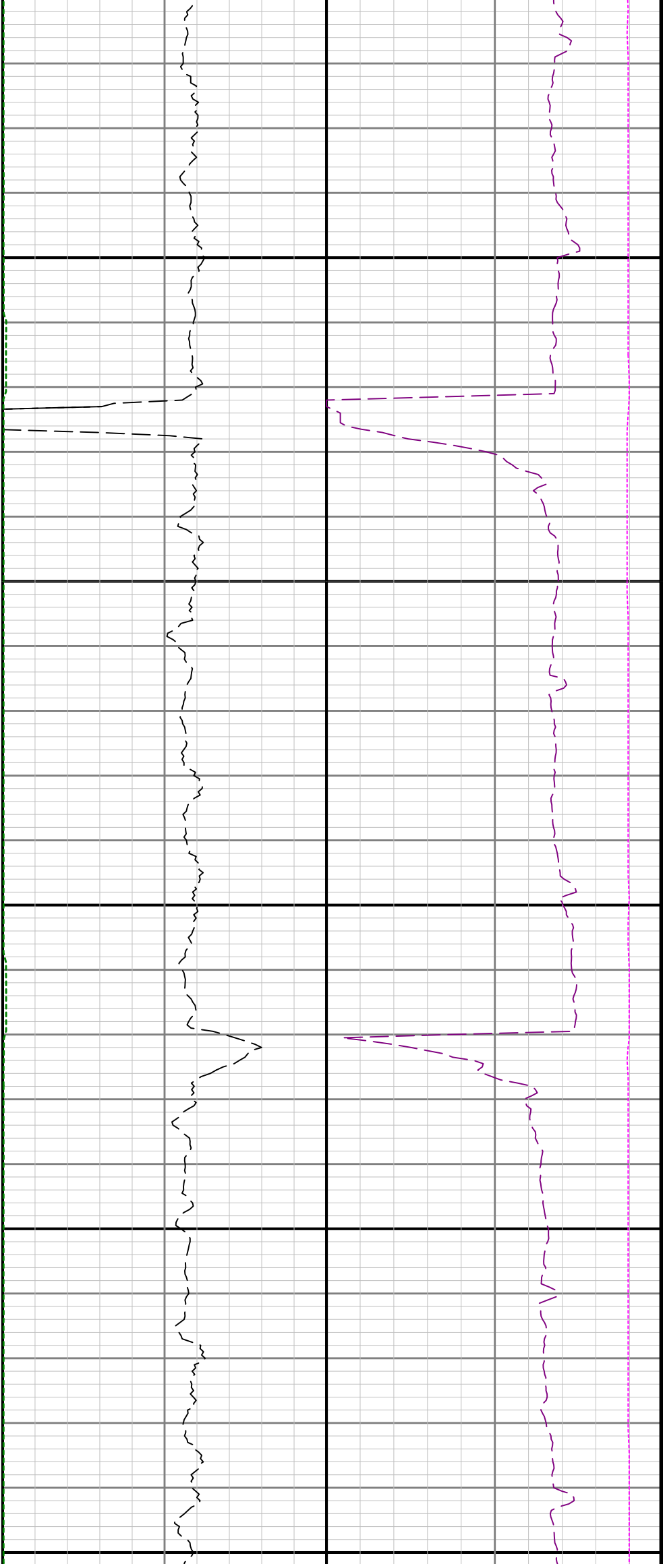
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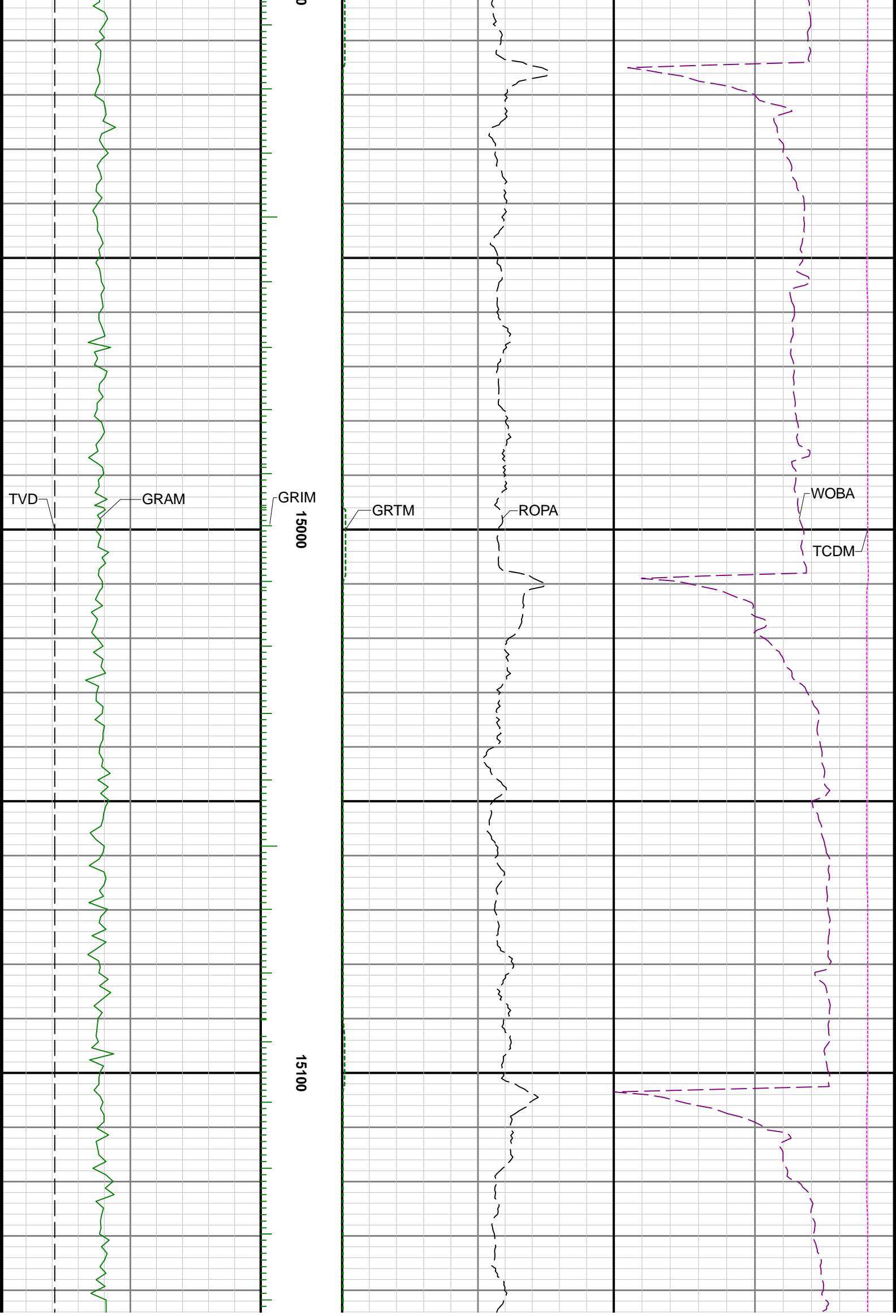




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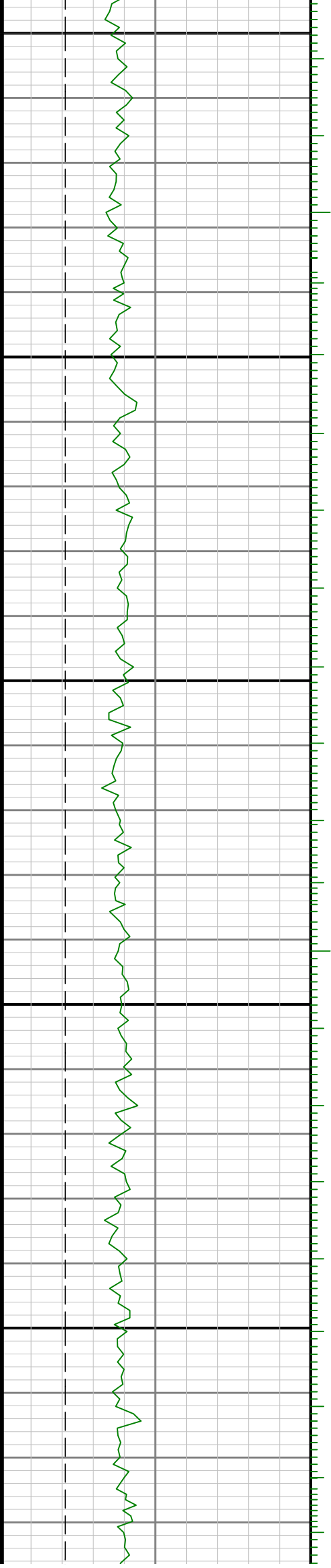


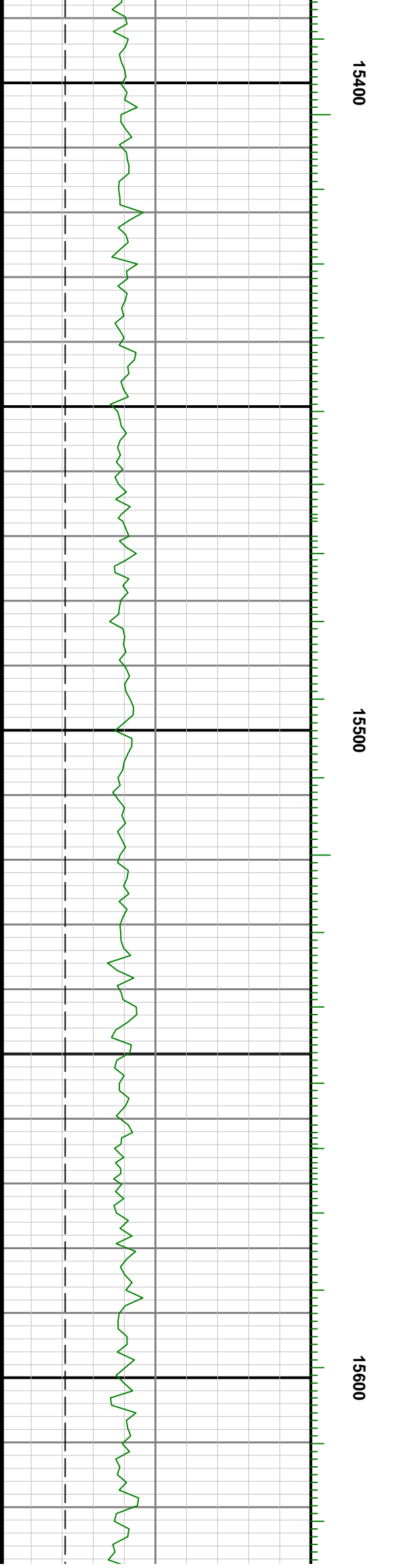
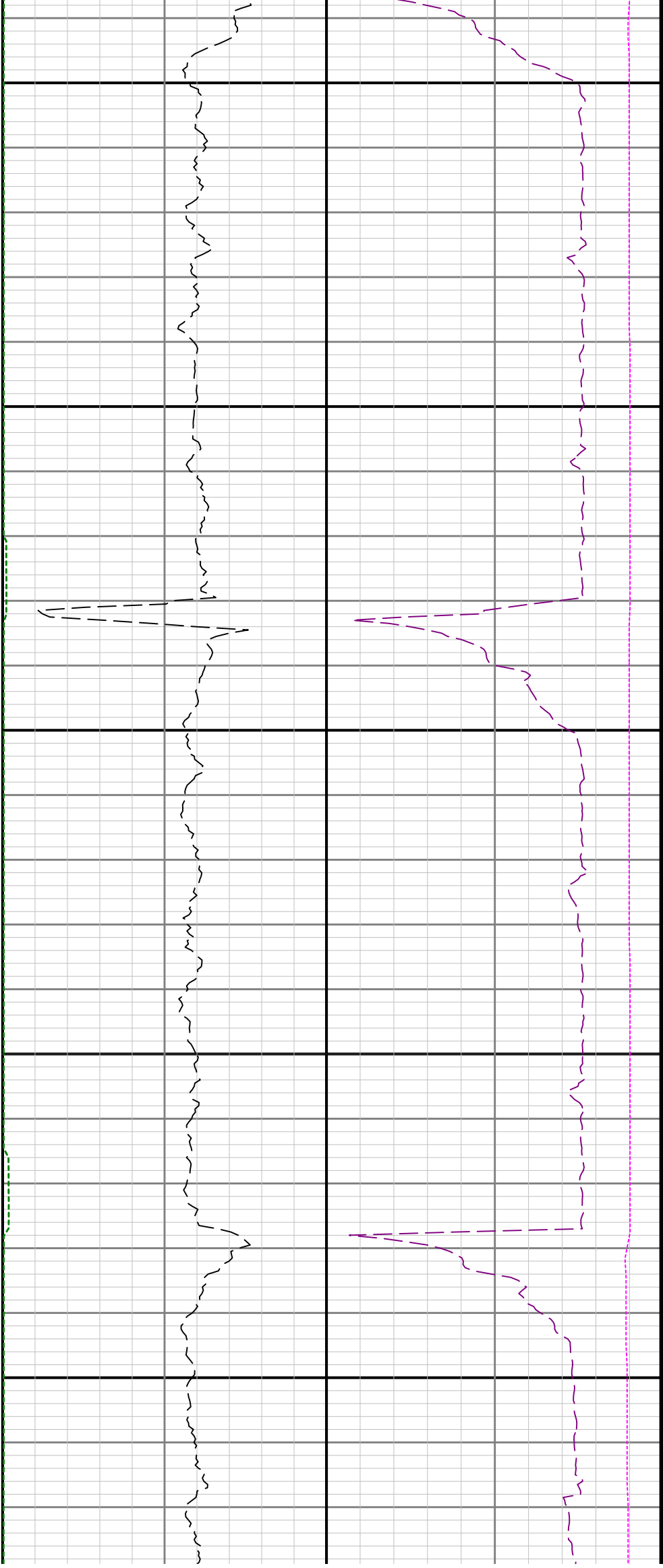


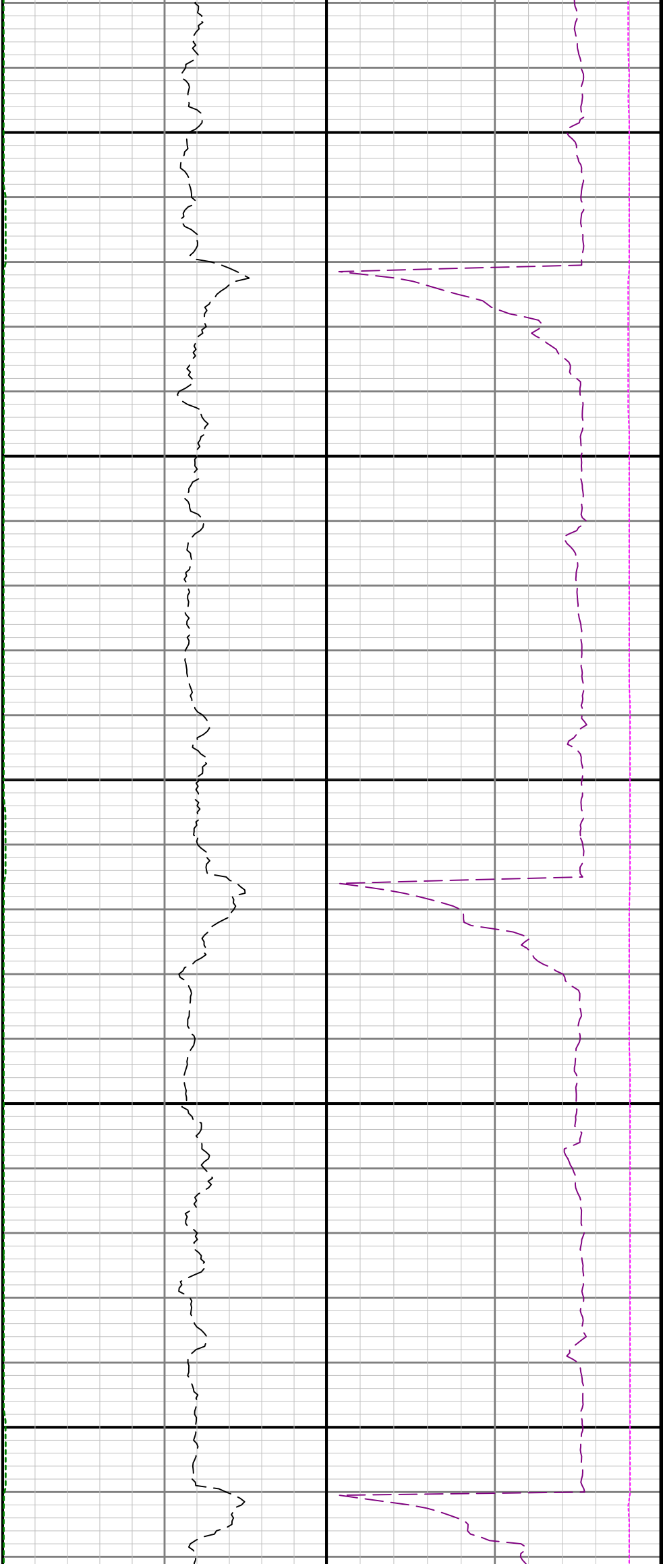


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