



Gamma Ray

LWD MEMORY LOG

Scale:

1:240

Measured Depth

Company: Noble Energy, Inc

Well: Booth State CC30-725

Field: Weld County (Noble NAD 83 GRID)

County: Weld State: Colorado Country: United States

Driller's Depth

Surface Location:

Latitude: 40° 16' 28.344" N

Longitude: 104° 28' 35.292" W

Other Services:

Final Print

API No: 05123492720000

Job ID: 111707246

SEC: 31 TWN: 4N RGE: 63W

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

Elevation: 4787.00 ft

Elev. KB: 4817.00 ft

Elev. DF: 4817.00 ft

Elev. GL: 4787.00 ft

Rig Floor Above P.D.: 4817.00 ft

Dates

From: 2023-03-31

To: 2023-04-02

Spud: 2023-03-22

Interval

Drilled (ft)

Logged (ft)

Azi Reference North:

Magnetic Field Reference

Grid Dip Angle: (deg)

Total Magnetic Field Strength: (nT)

Mag to Reference North Correction: (deg)

Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	30.00	1962.00	9.630	36.00	30.00	1962.00
8.500	1962.00	16900.00	5.500	17.00	30.00	16900.00

Mud Record

Deviation Record

Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Water Based Mud	110.00	1972.00	8.500	14935.00	0.04 299.91	89.97 359.04
Oil Based Mud	1972.00	16907.00				

Acquisition System

Software Version

Other

Cadence DeliverableGen	RT 6.8 6.8.9898.1	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	13.500	PDC	4.00	Rotary	0.00	0.00	110.00	1972.00	N/A	N/A	2.81
2	2	8.500	PDC	2.50	AutoTrak Curve	1961.00	16894.00	1972.00	16907.00	2023-03-31 03:46	2023-04-02 05:05	46.40

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Henry Mata	2023-03-21	2023-03-22	Jon Roop	2023-03-21	2023-03-23	Marcos Favela	2023-03-21	2023-03-22
Ryan Rippetoe	2023-03-21	2023-03-22	Tien Bui	2023-03-21	2023-03-22	Alex Robinson	2023-03-30	2023-04-03
Henry Mata	2023-03-30	2023-04-03	Jeremiah Samson	2023-03-30	2023-04-03	Jon Roop	2023-03-30	2023-04-03
Ryan Rippetoe	2023-03-30	2023-04-01	Adam Schlenz	2023-04-01	2023-04-03			

Witness

Name	Run
Charles Kelley	1,2

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+ (%)
2023-03-21 01:31	1	110.00	Water Based Mud	8.8	1	8.2	N/A	0/100	Active Pit	300	N/A
2023-03-31 01:40	2	1972.00	Oil Based Mud	9.5	15	N/A	20.4	72/16	Active Pit	23500	N/A

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	EvoOne	G800-0129	Gamma (single)	8.93	20.80	8.000	3.250
1	EvoOne	G800-0129	Directional (mag)	10.12	21.99	8.000	3.250
2	AutoTrak Curve Steering Unit	15874530	Near Bit Inclination	5.93	6.78	7.000	4.330
2	AutoTrak Curve Steering Unit	15874530	Near Bit VSS	5.93	6.78	7.000	4.330
2	AutoTrak Curve MWD	14452413	Gamma (single)	2.01	12.95	7.000	3.250
2	AutoTrak Curve MWD	14452413	Directional (mag)	12.25	23.19	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
MWD	EvoOne - Dir Gamma	EvoOne
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

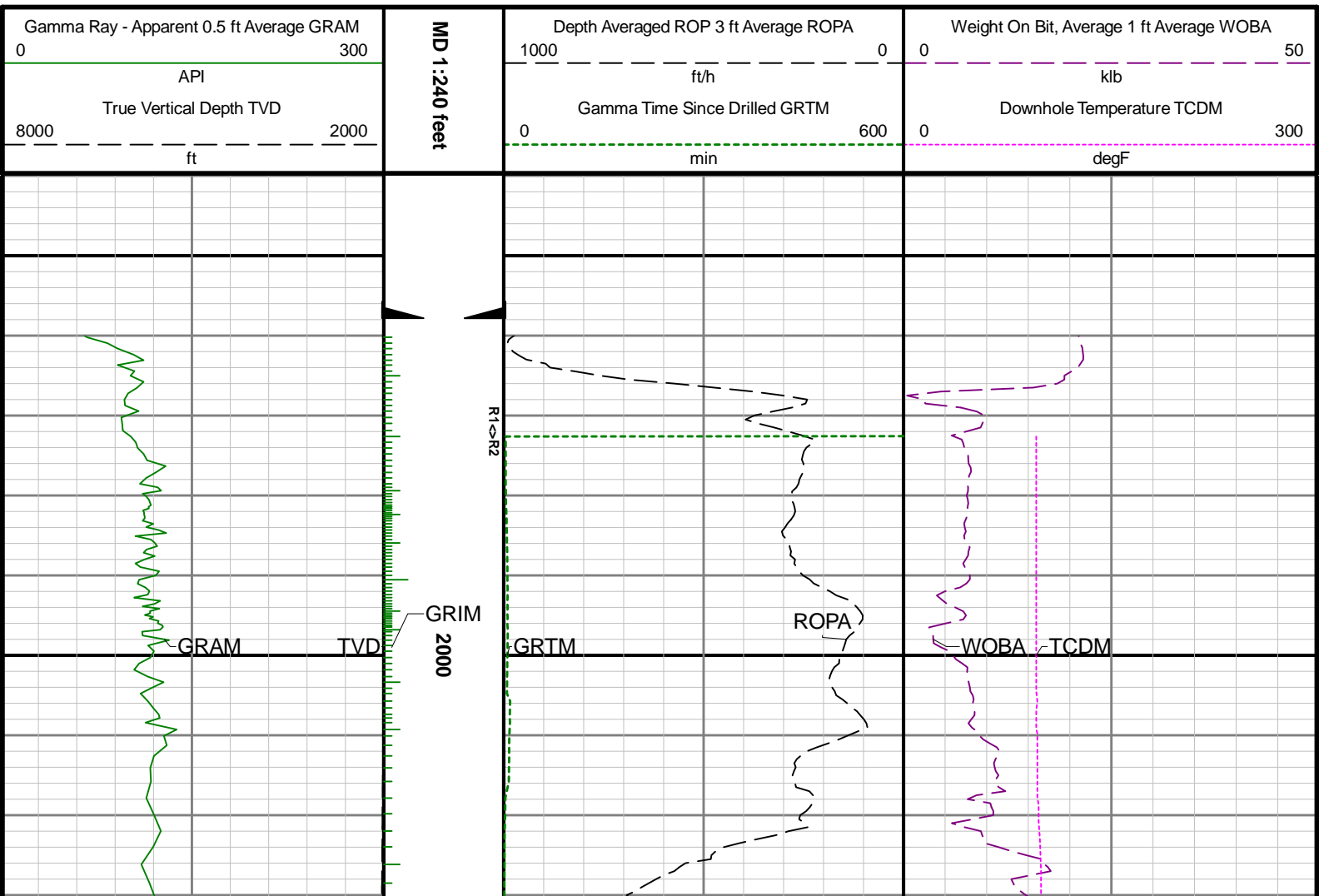
- 1 Baker Hughes Company runs 1 utilized 8 inch Directional-only with EM service behind an 13 1/2 inch TriCone bit and steerable assembly from 110 to 1972 feet MD (110 to 1971 feet TVD) therefore, no logging data was acquired for this run.
- 2 Baker Hughes Company runs 2 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 1/2 inch PDC bit and rotary steerable assembly from 1972 to 16907 feet MD (1971 to 6712 feet TVD).
- 3 Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to a lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.

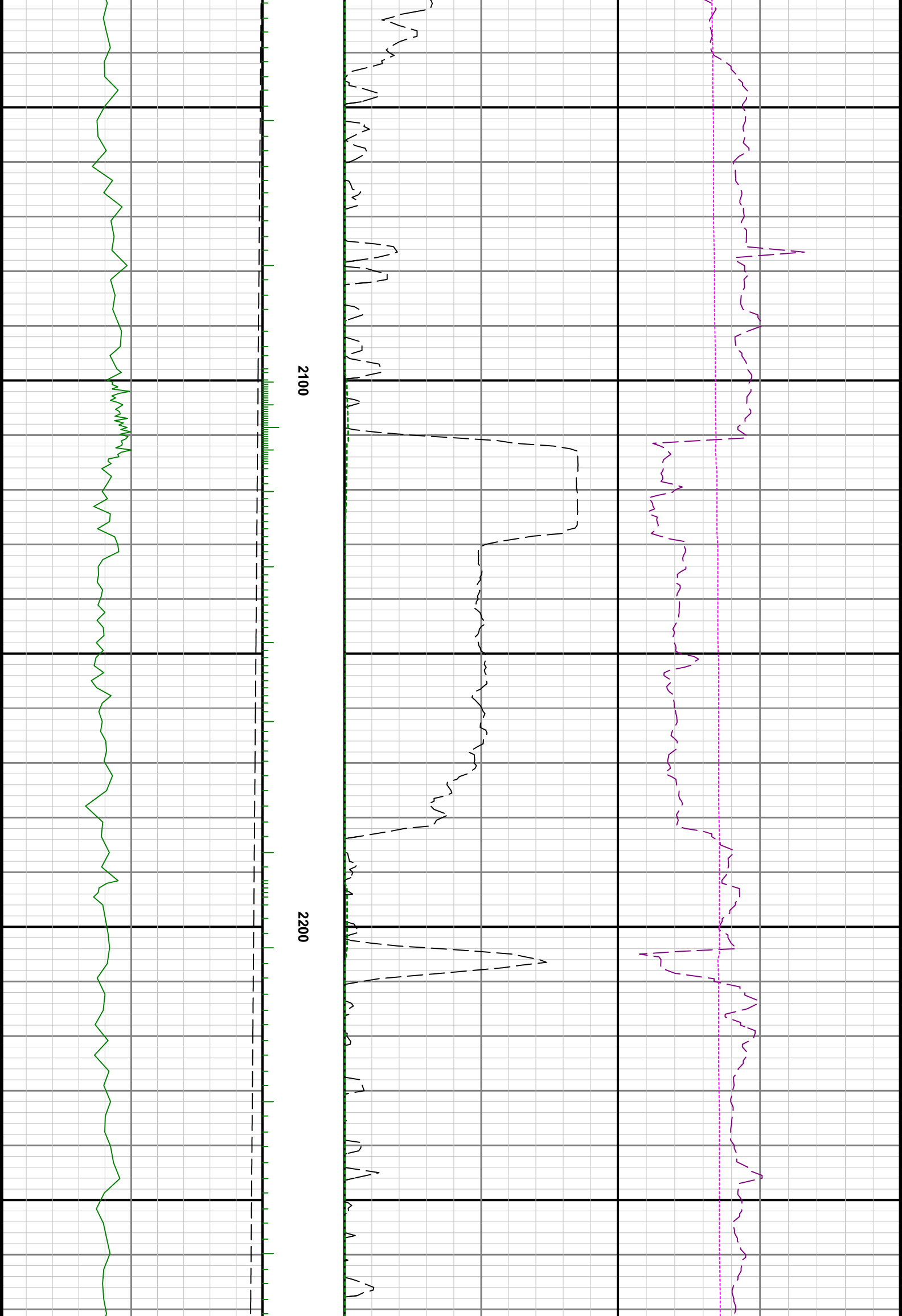
Remarks

Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	16894.00	8.500	2	The interval from 16894 to 16907 feet MD (6712 to 6712 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

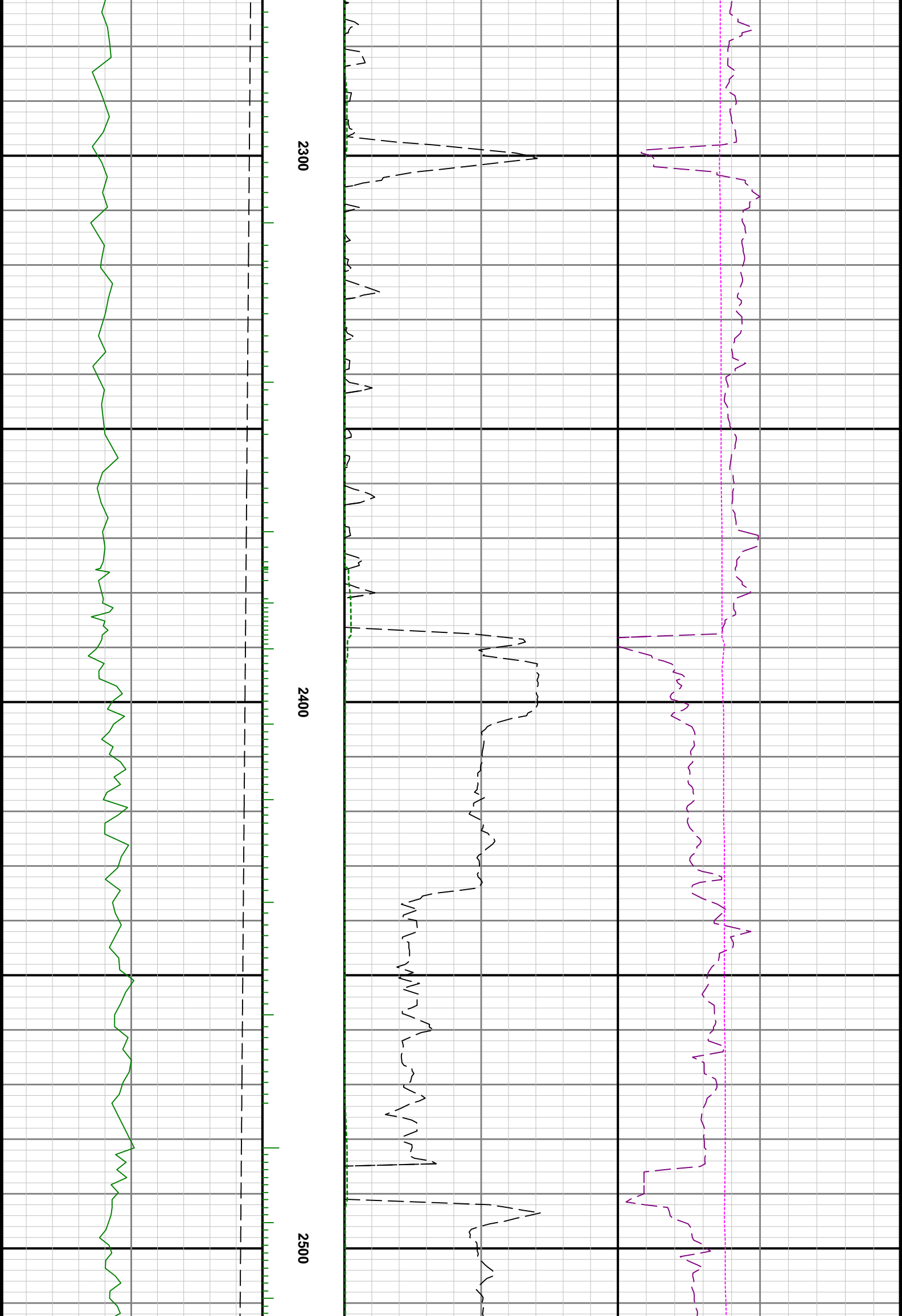
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory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

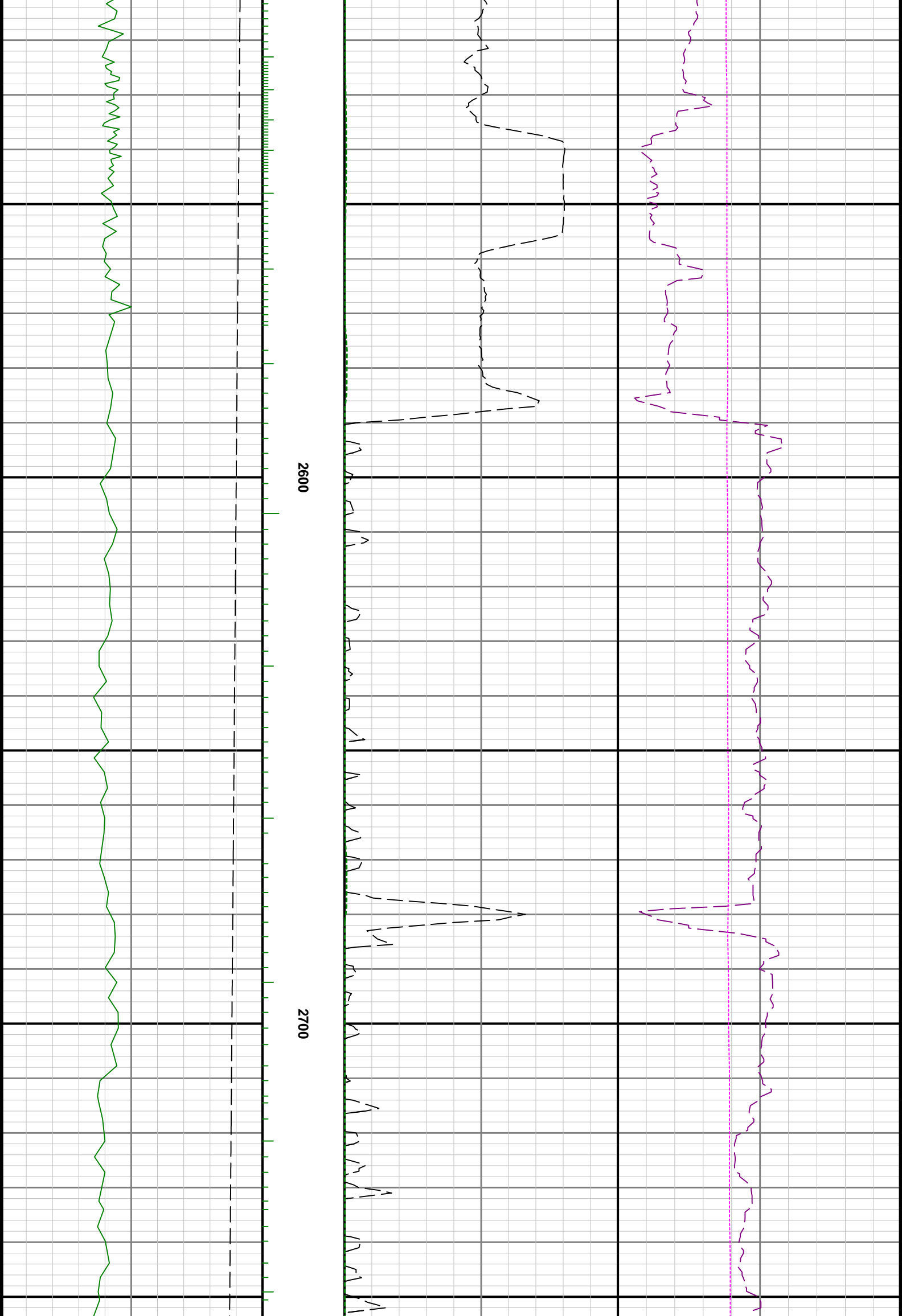


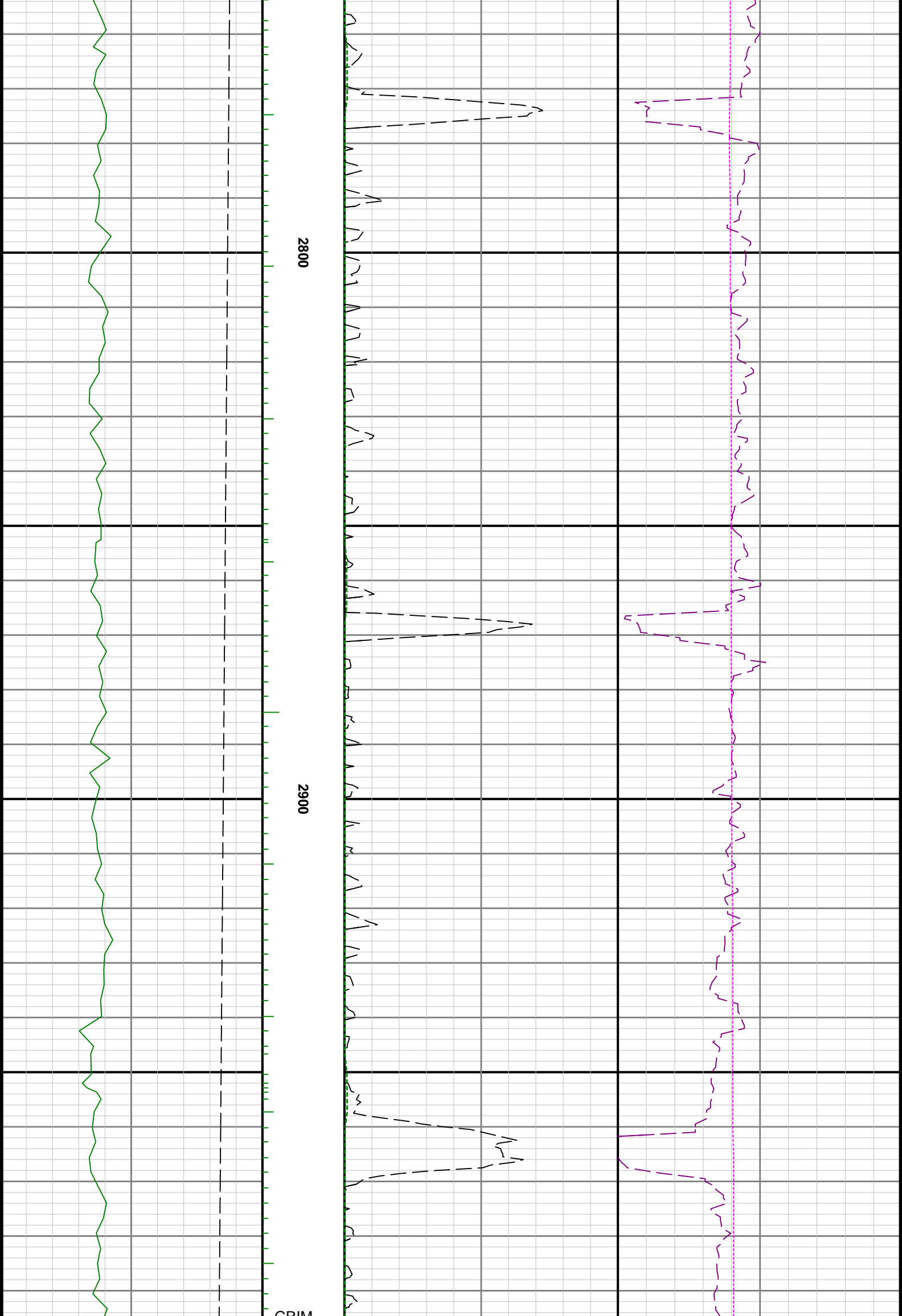


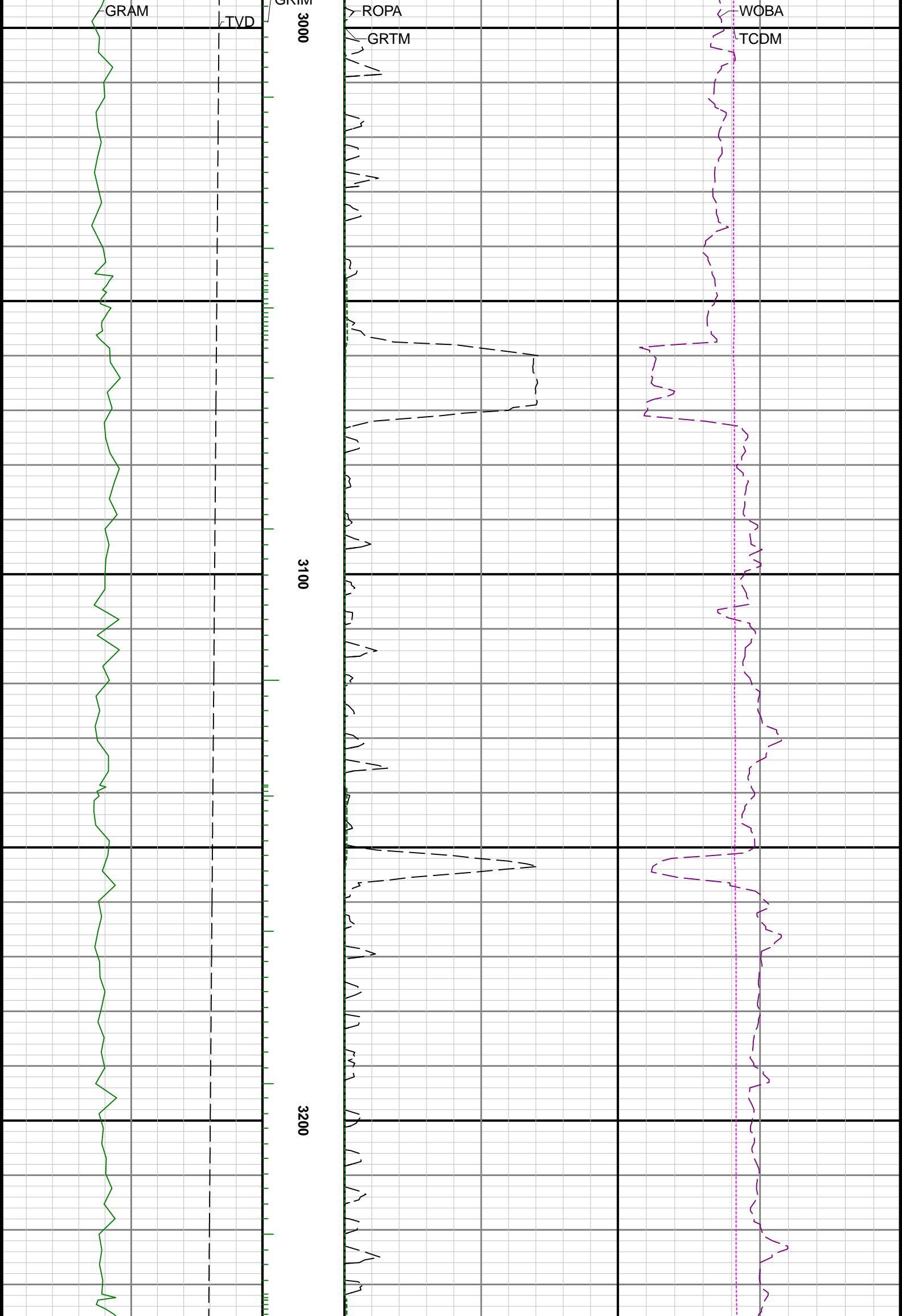
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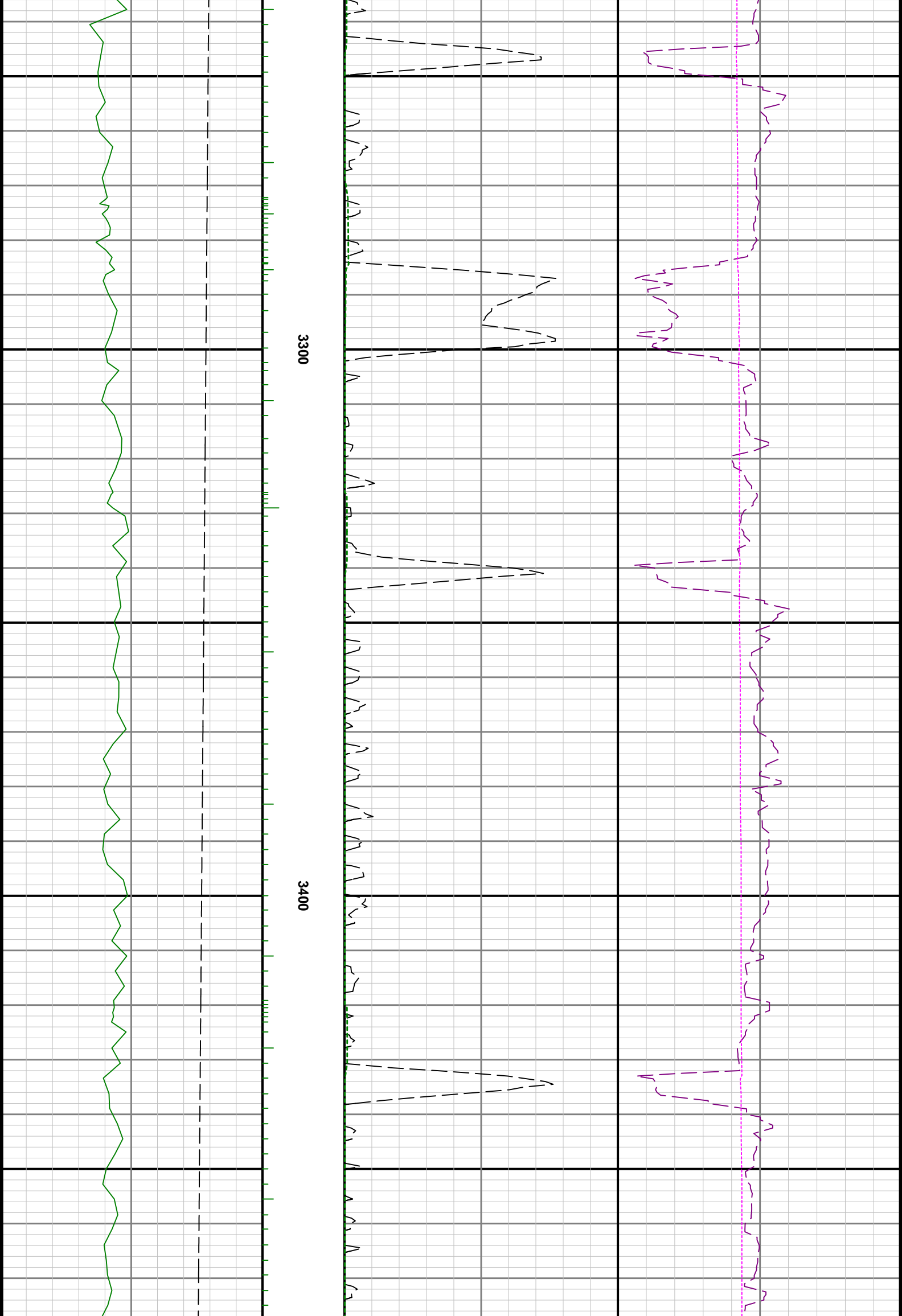
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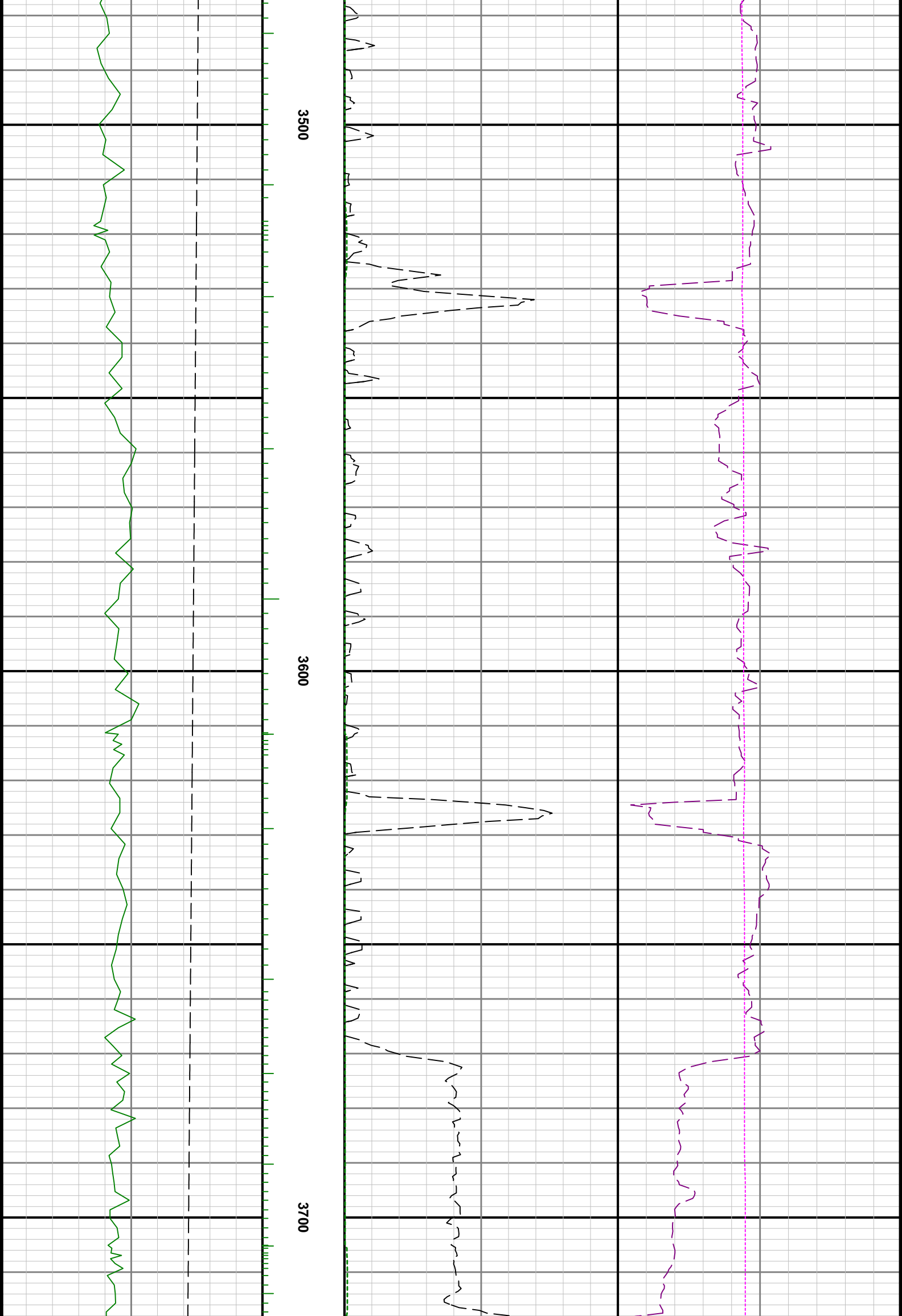


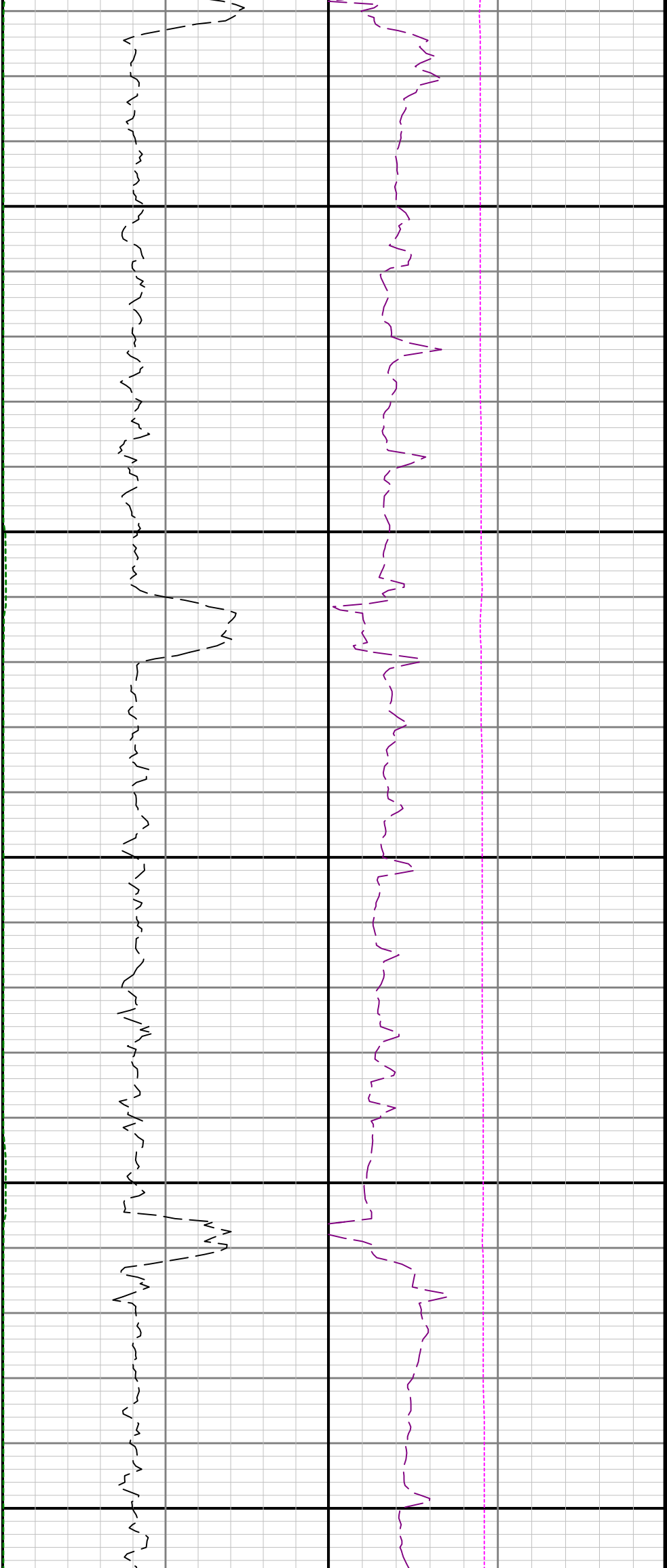




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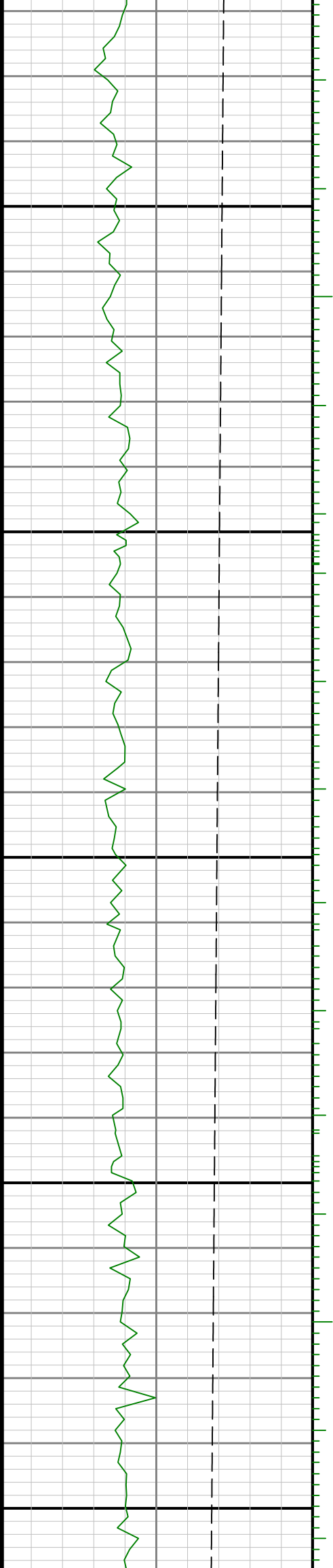
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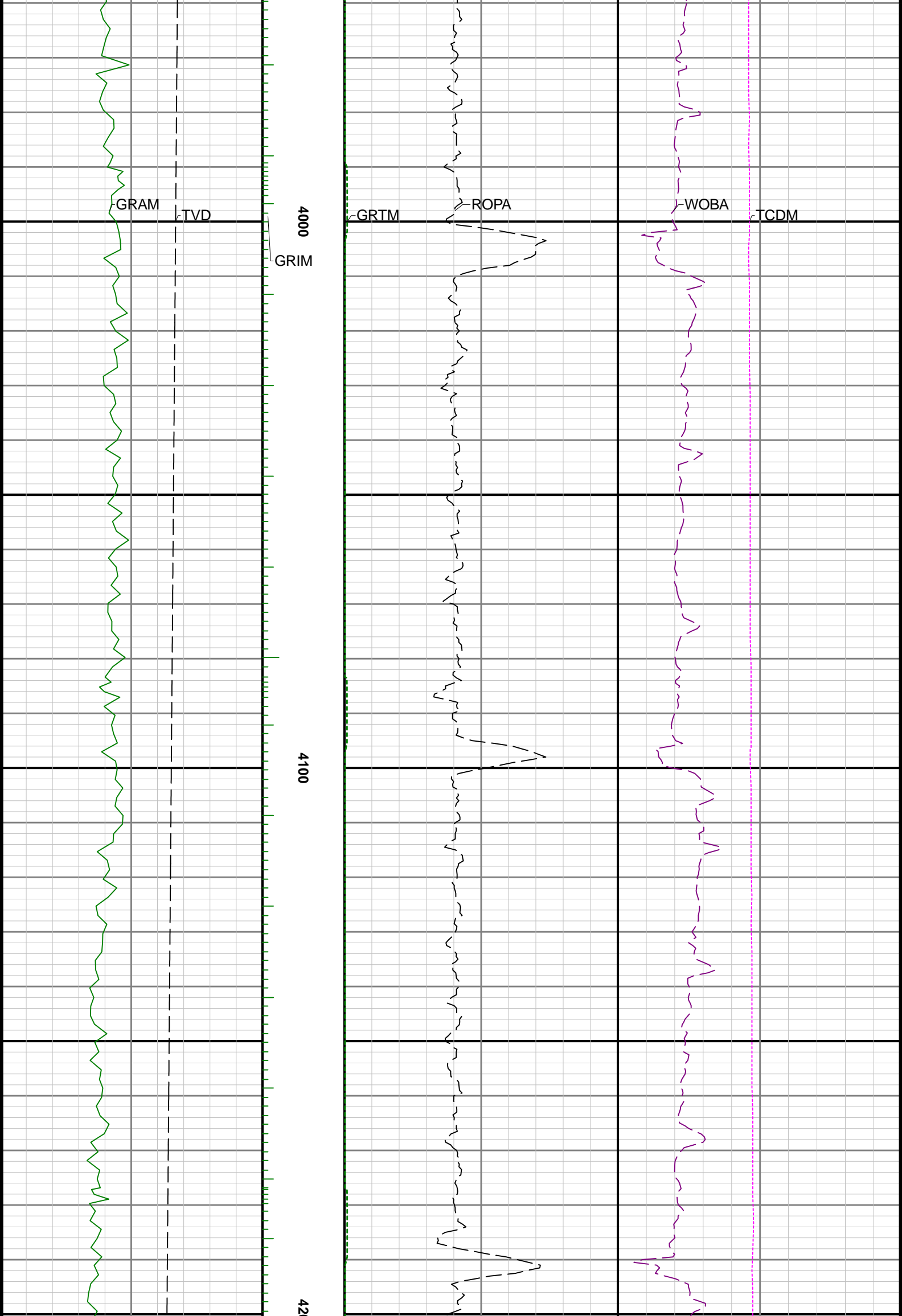




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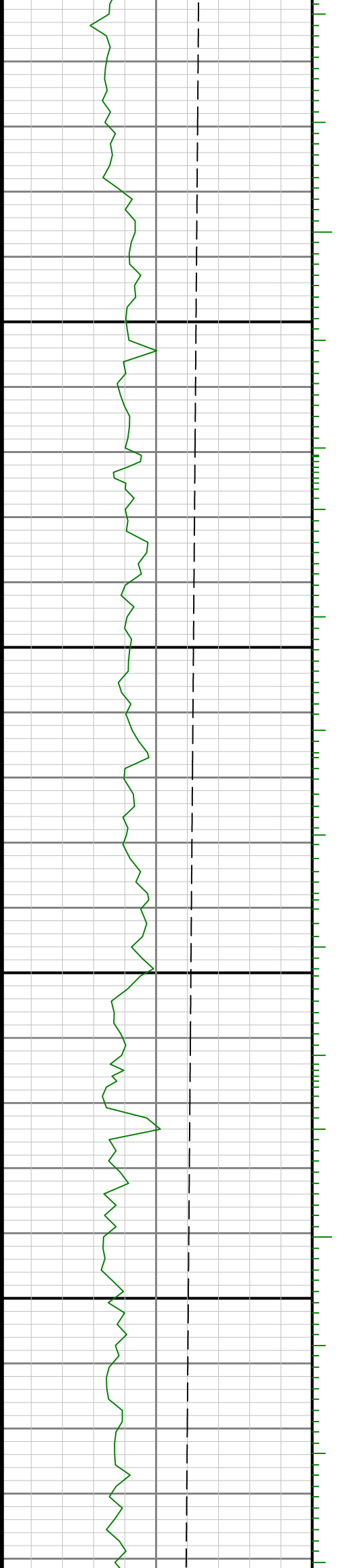


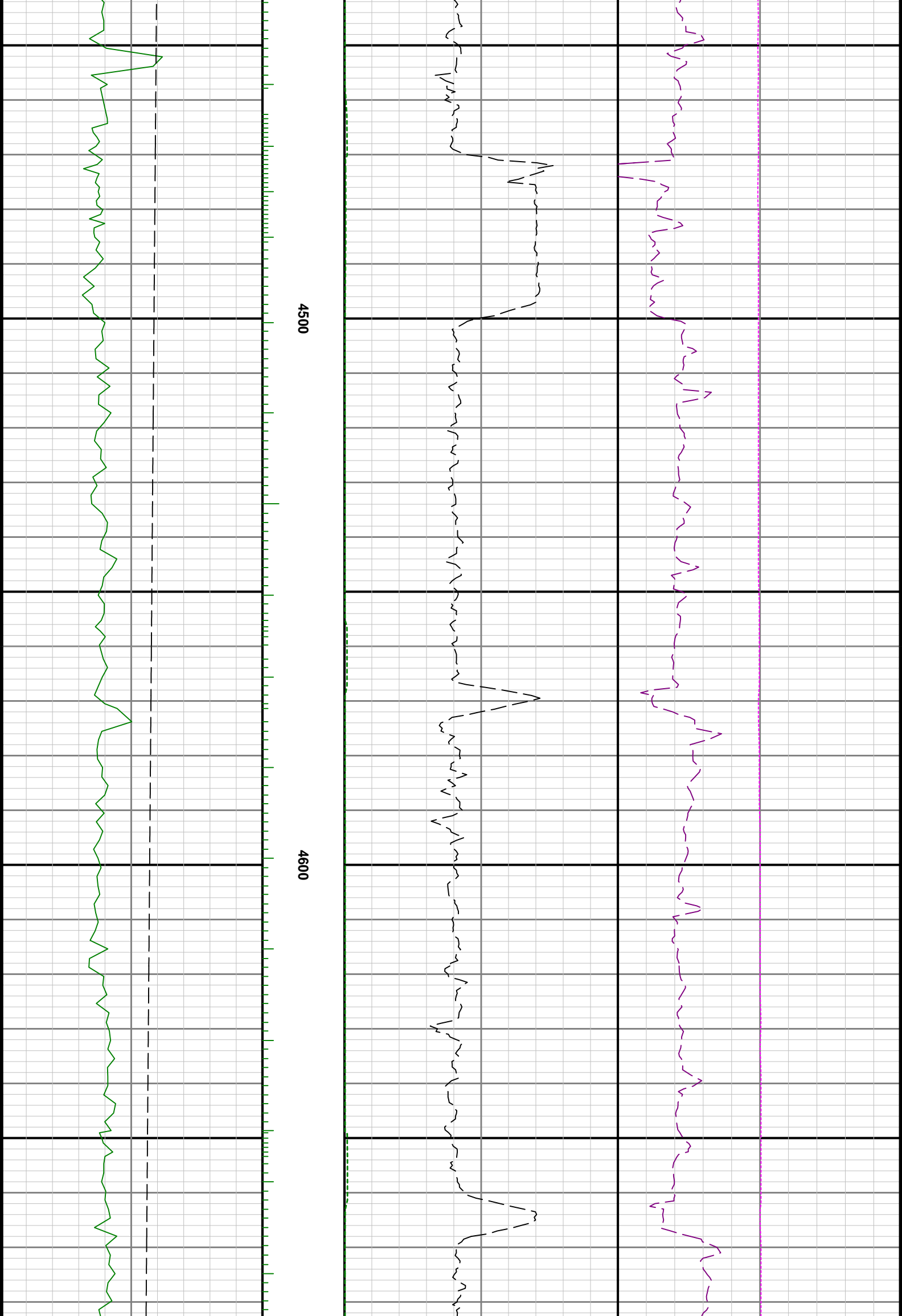


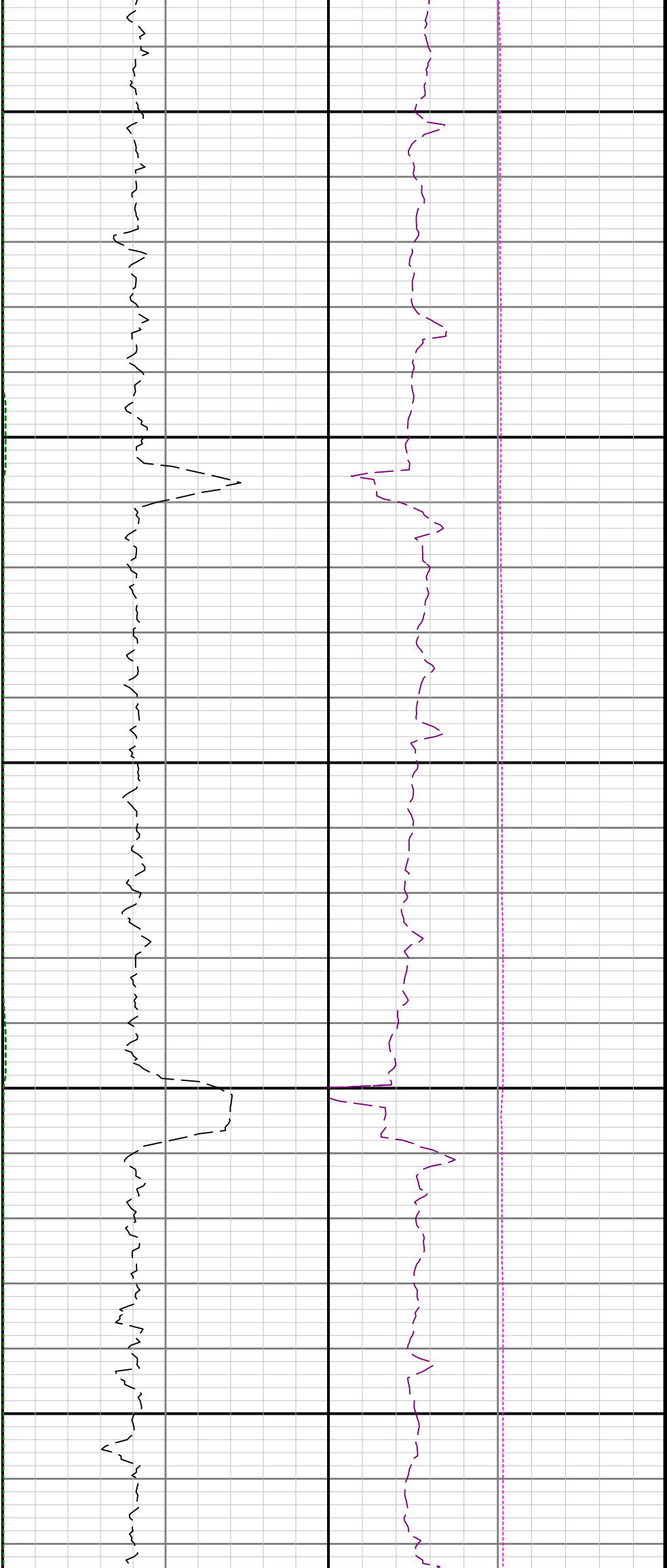
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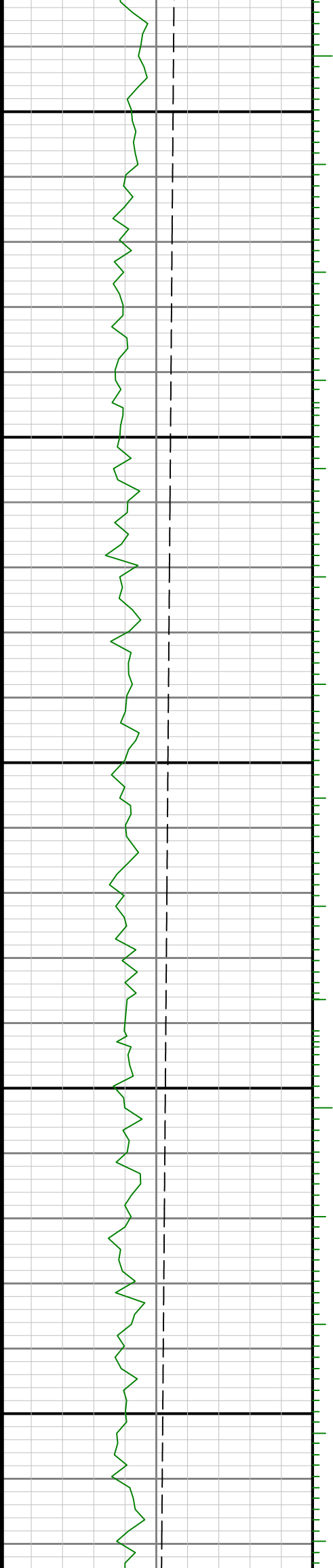


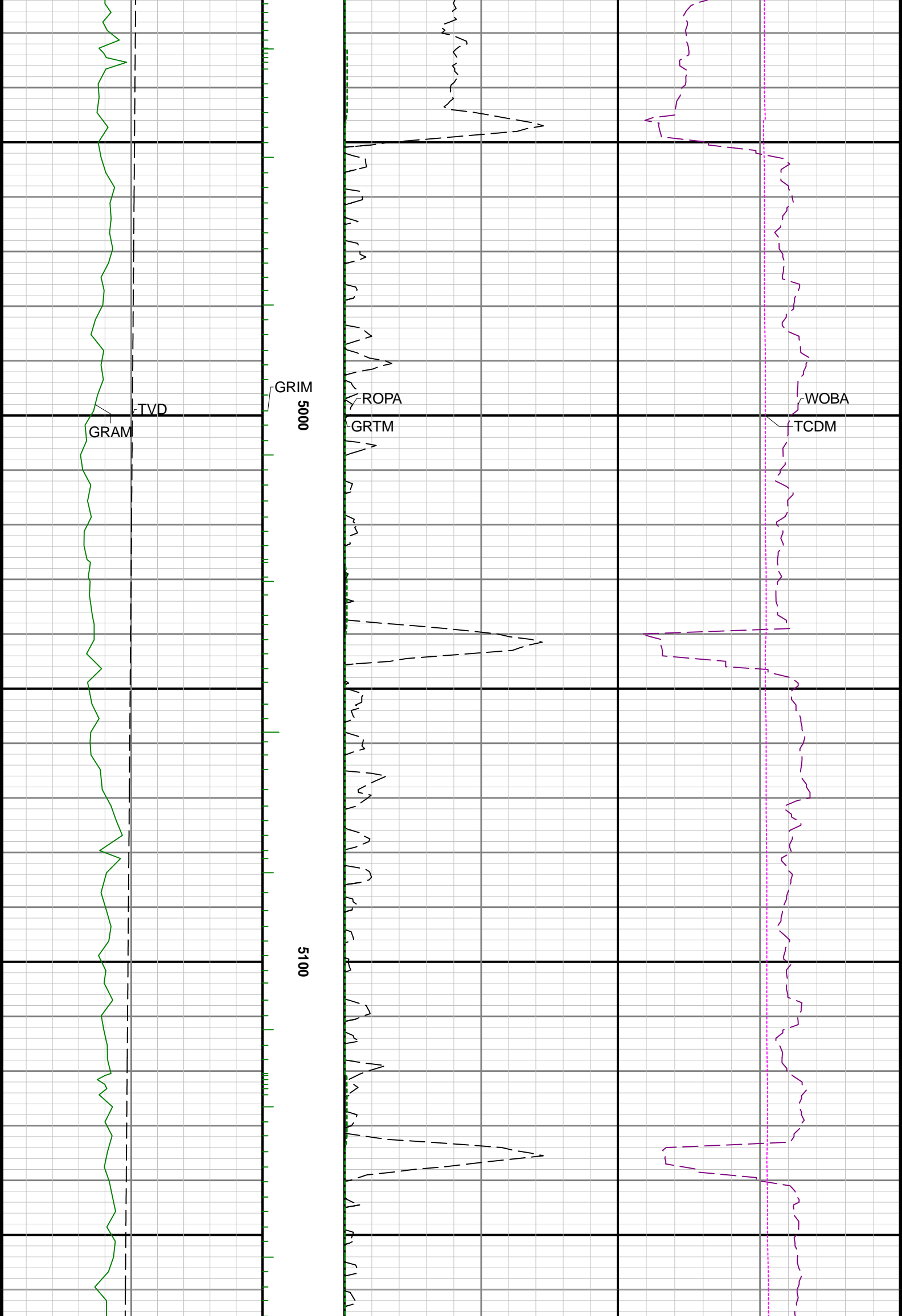


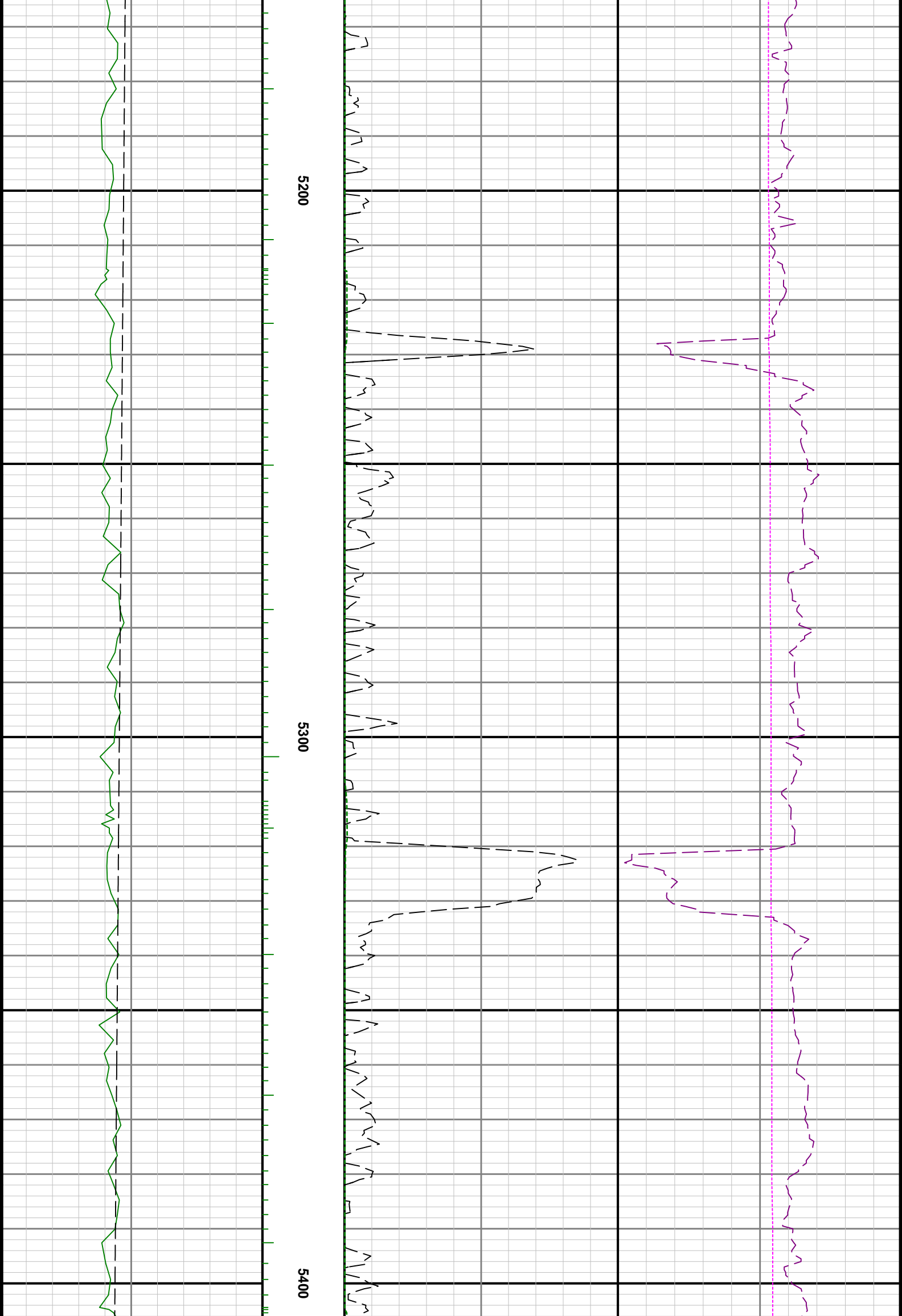
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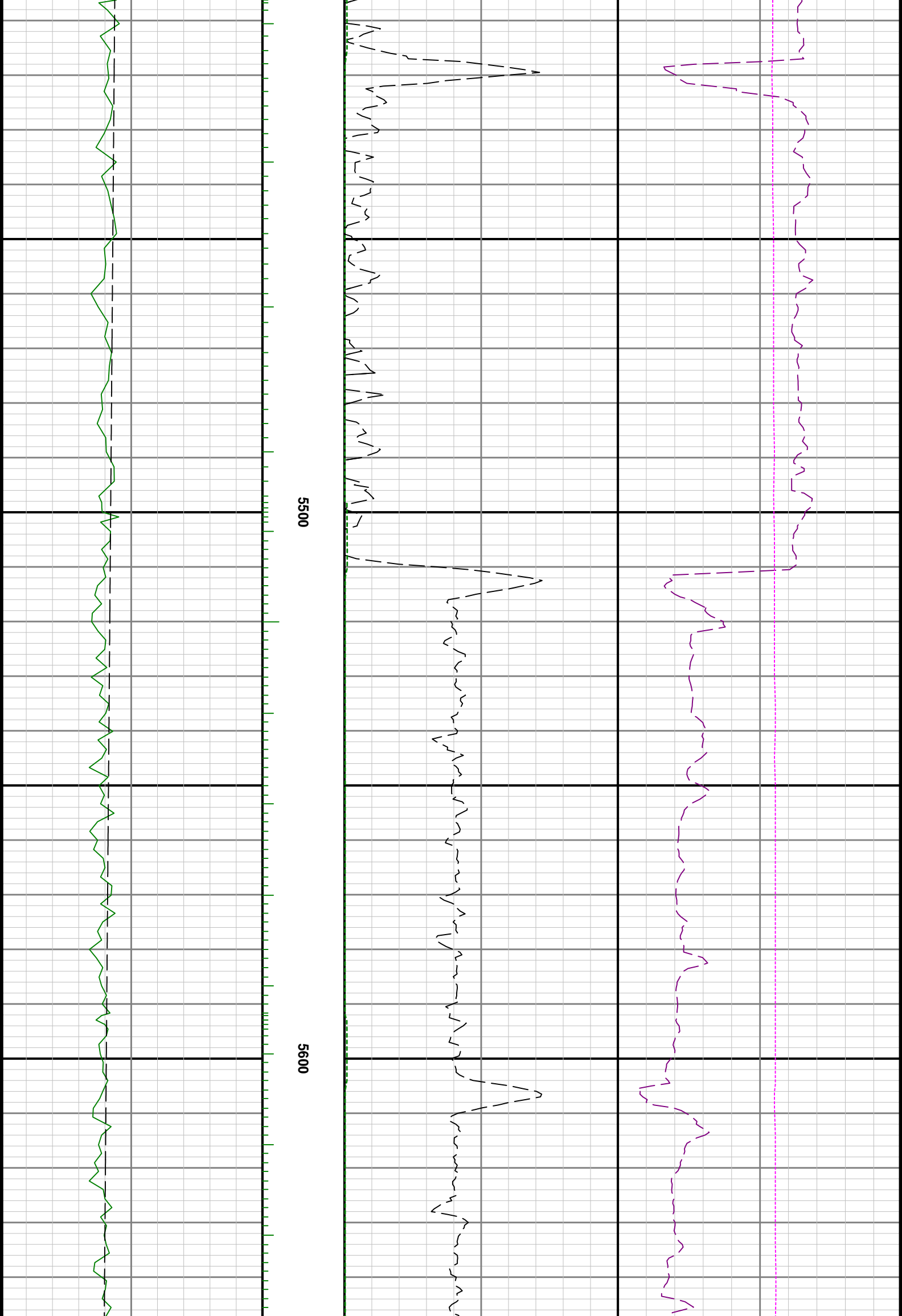
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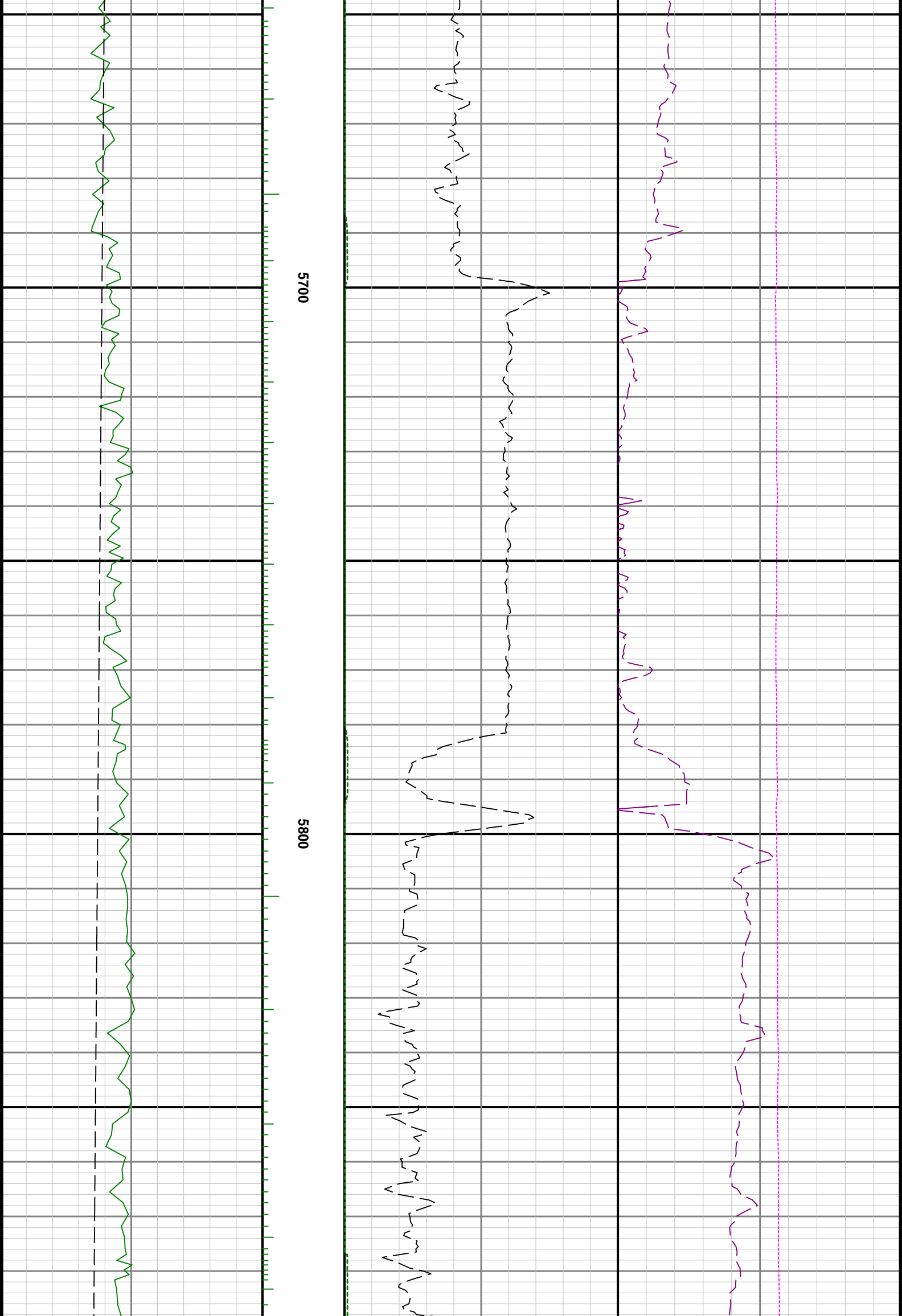


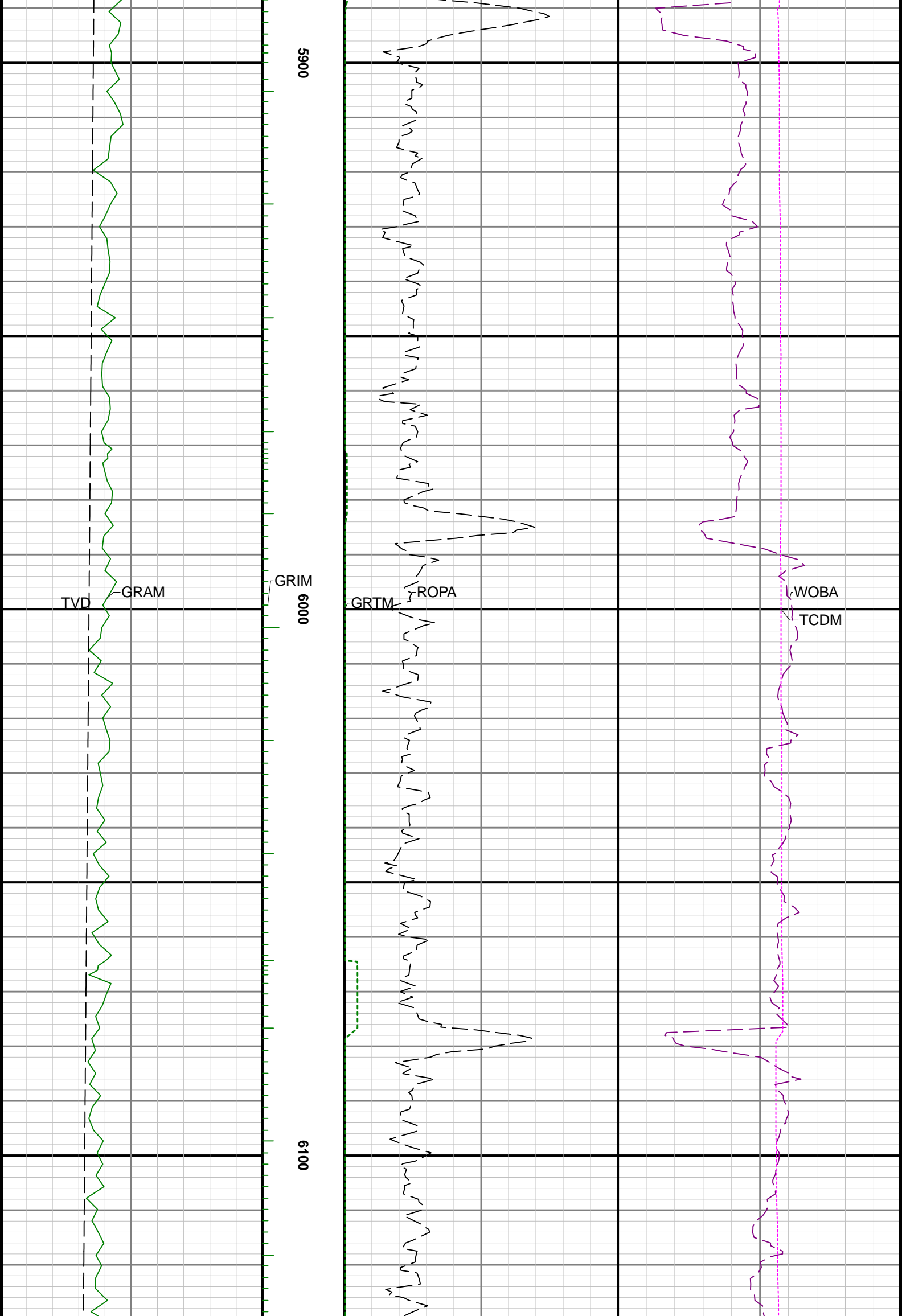


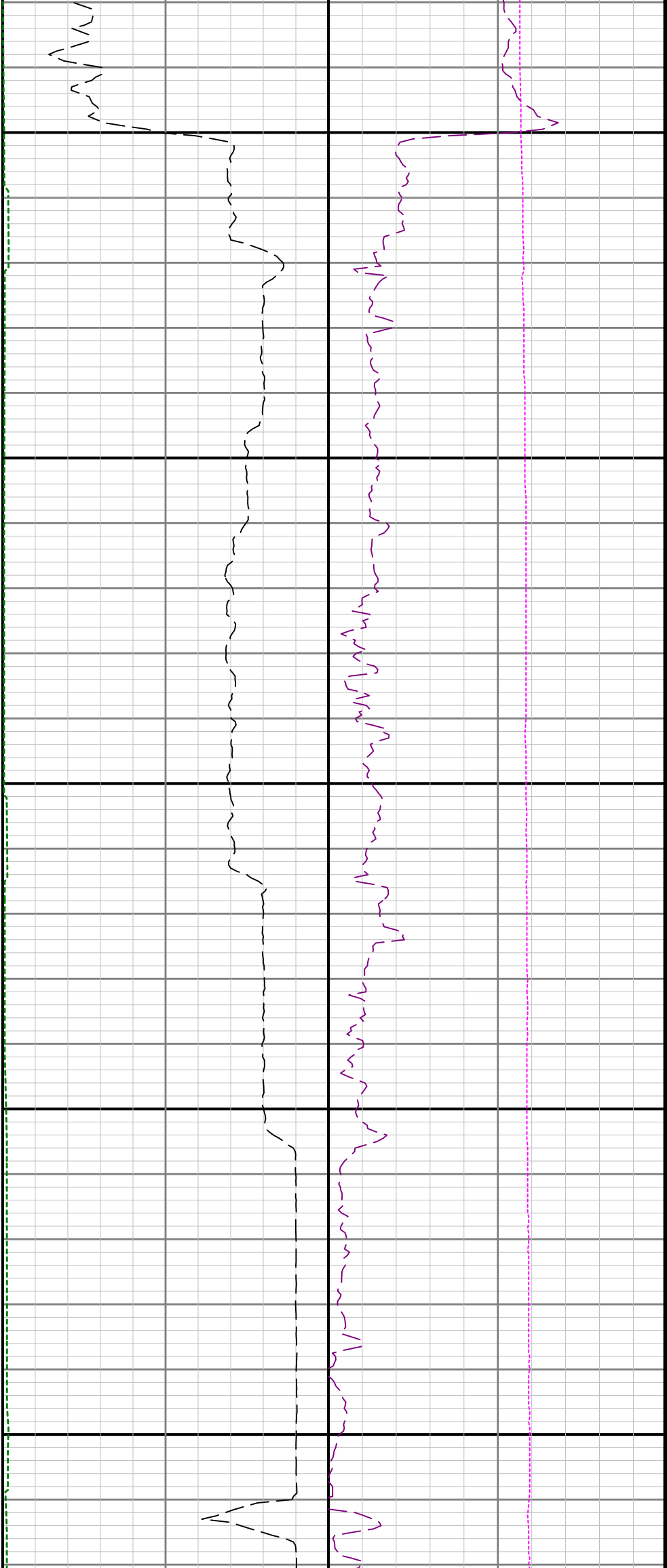


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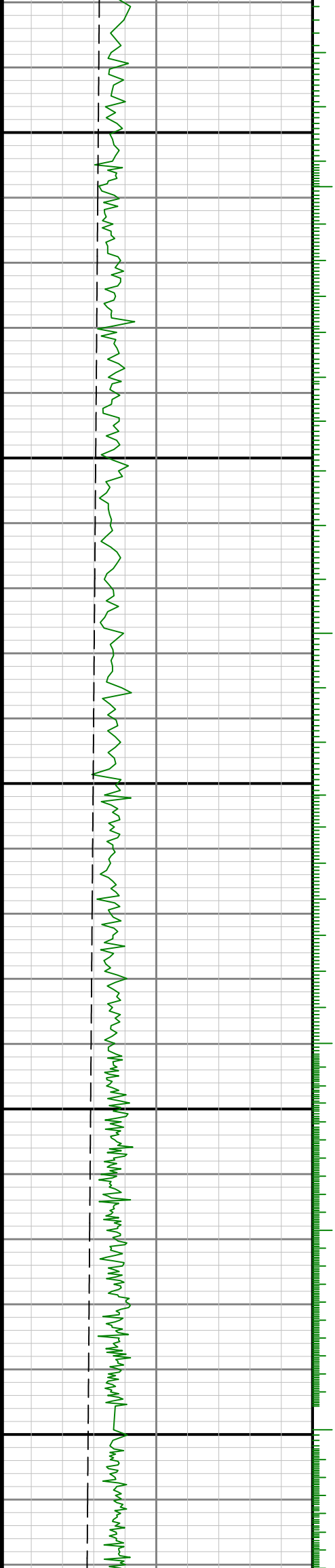


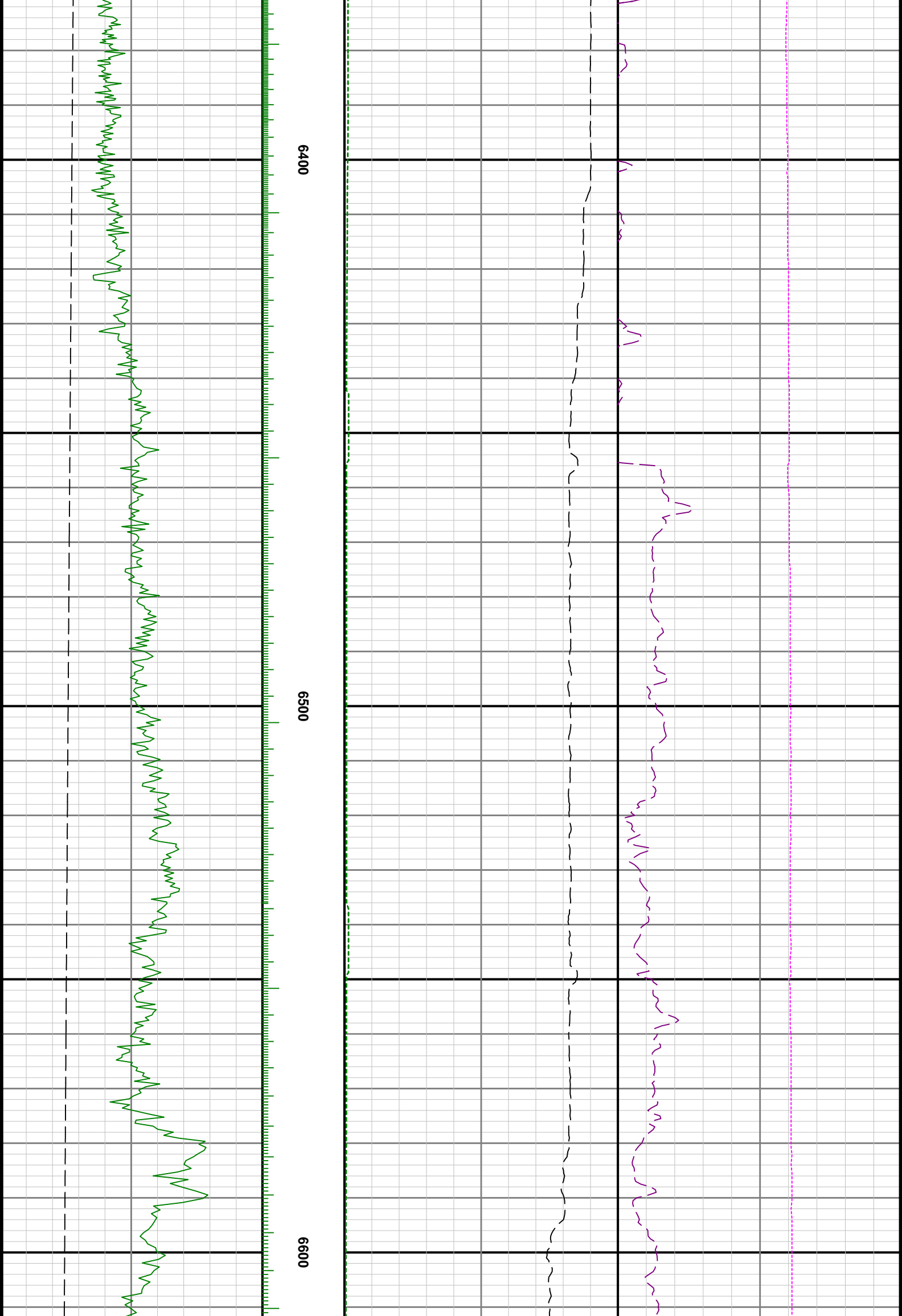


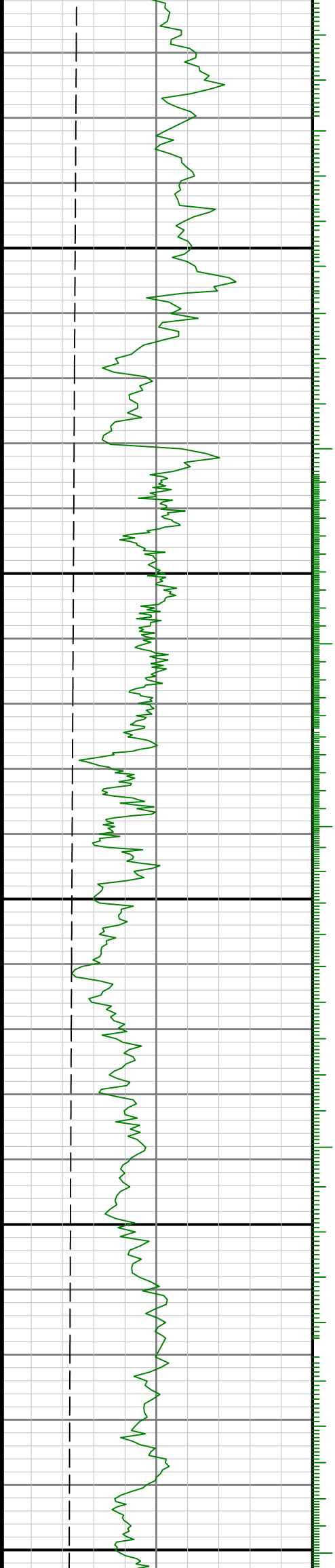


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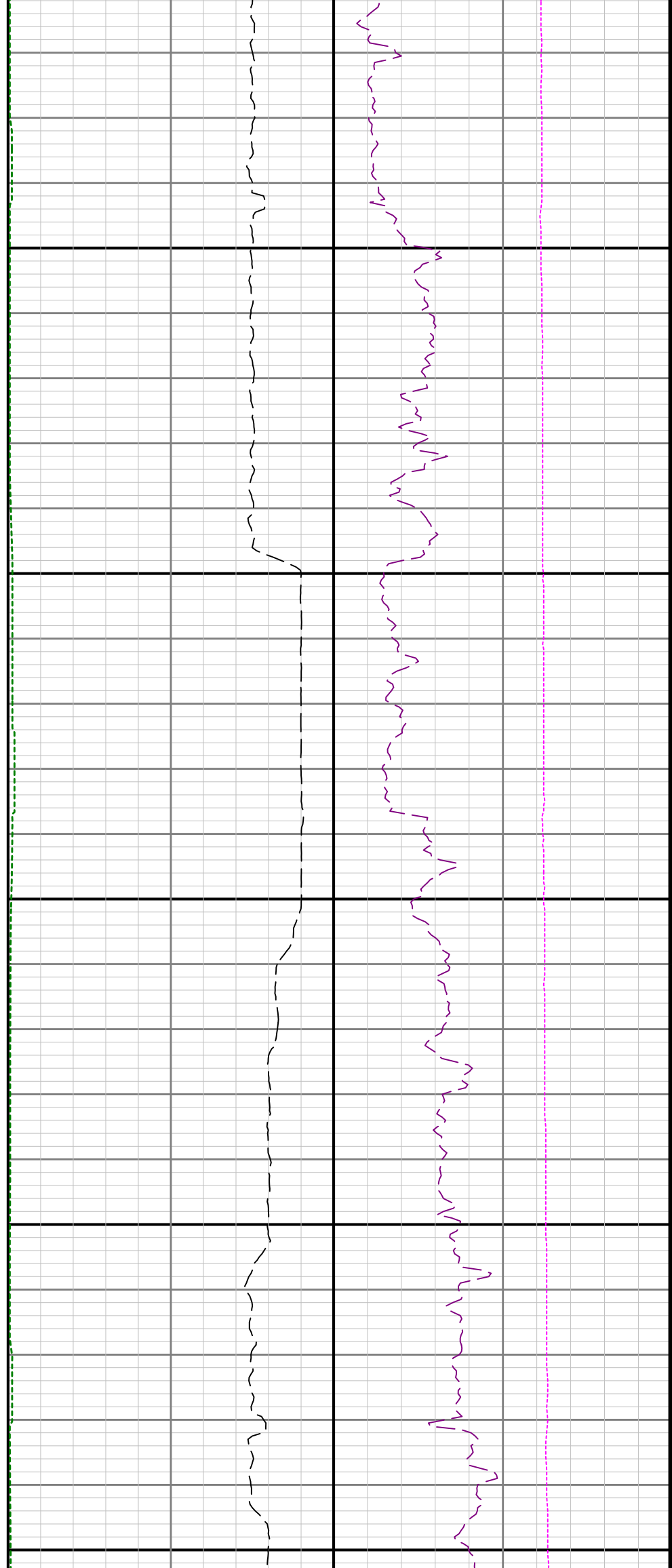


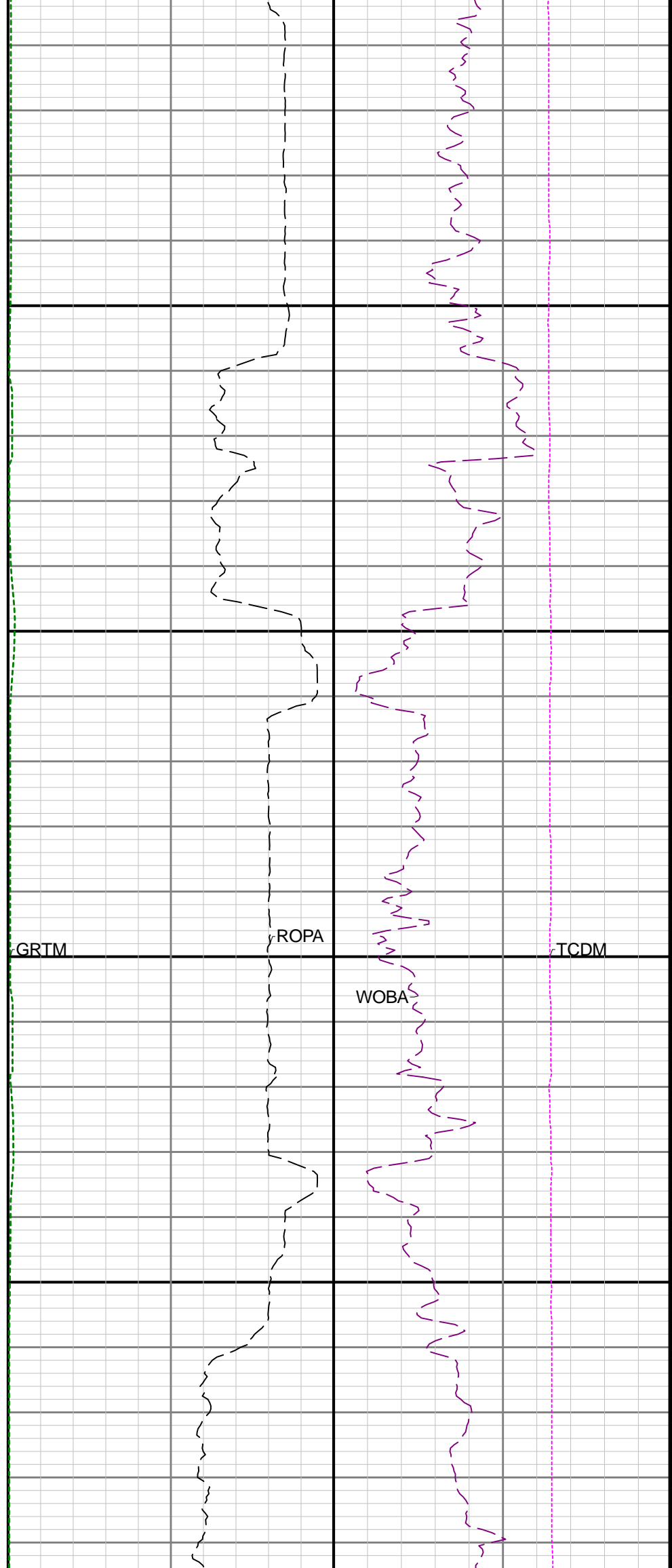
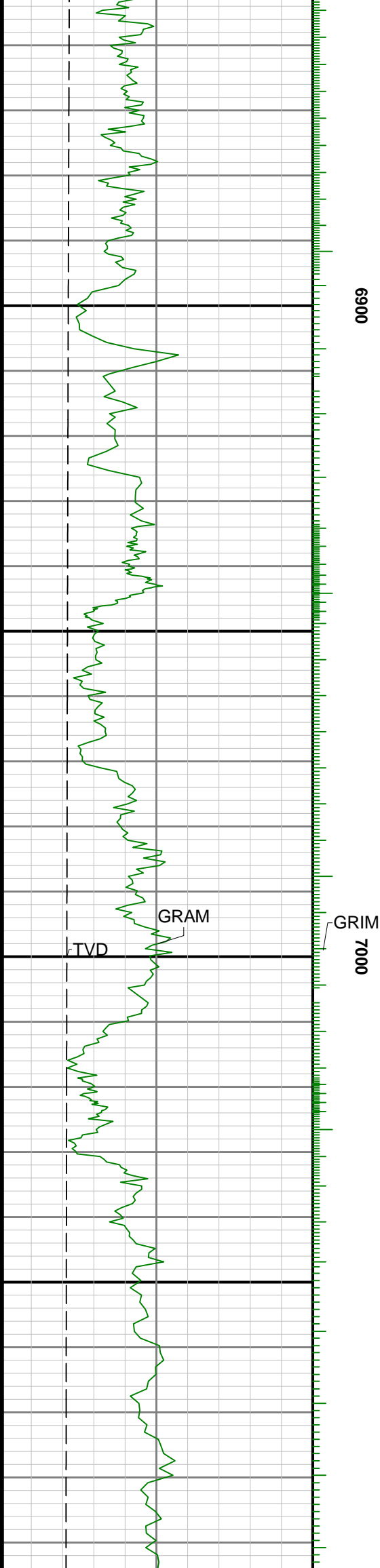


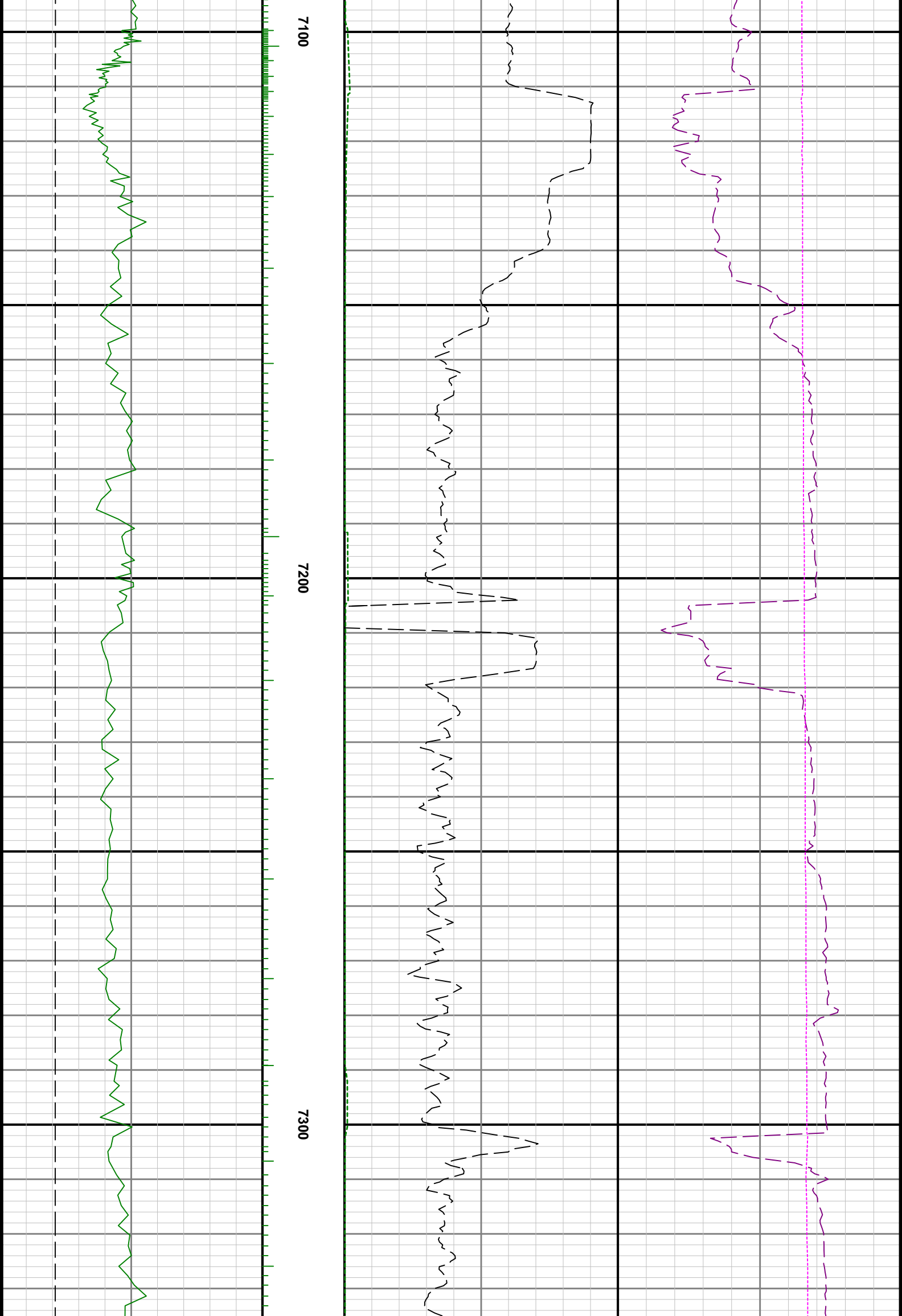


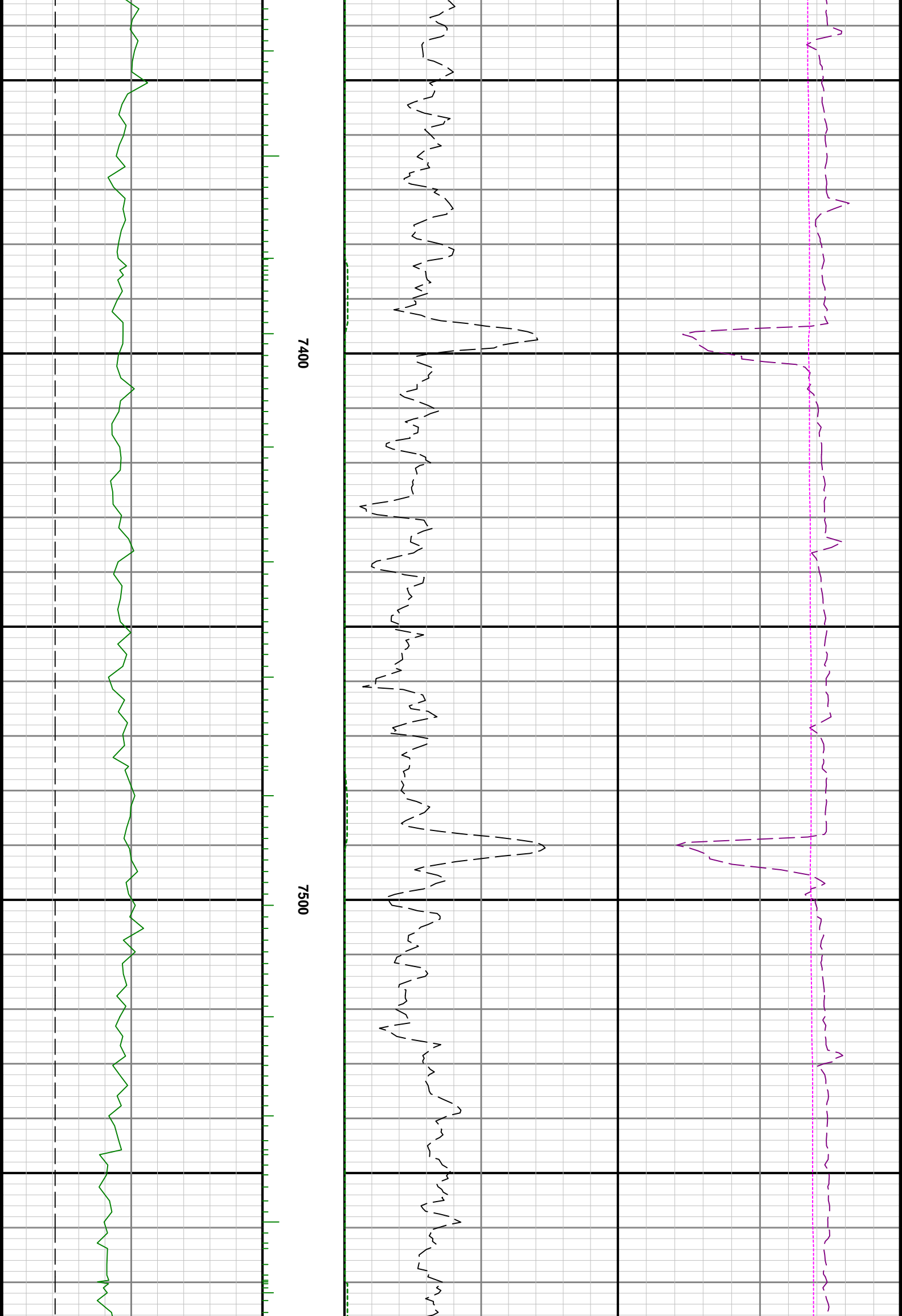
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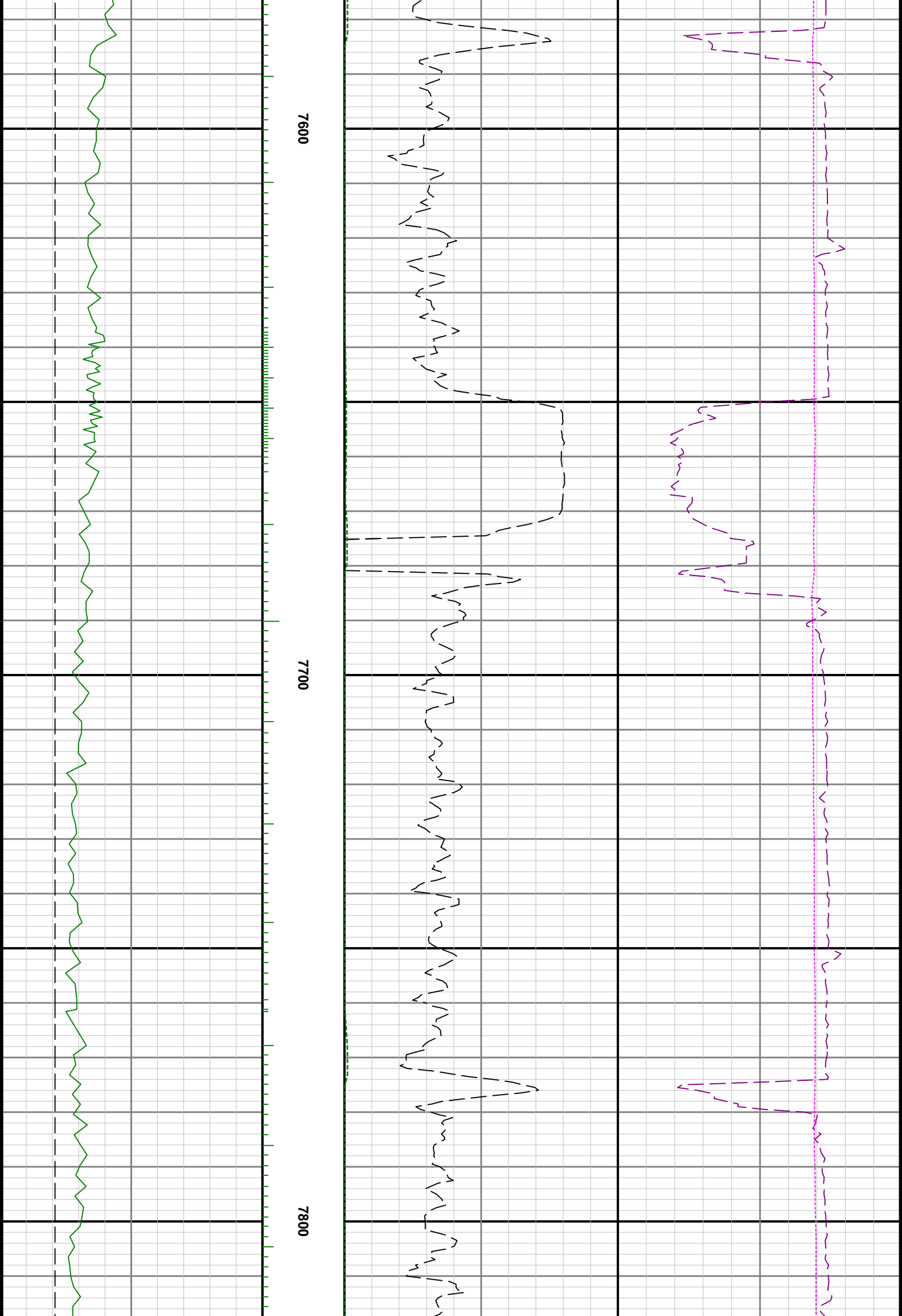
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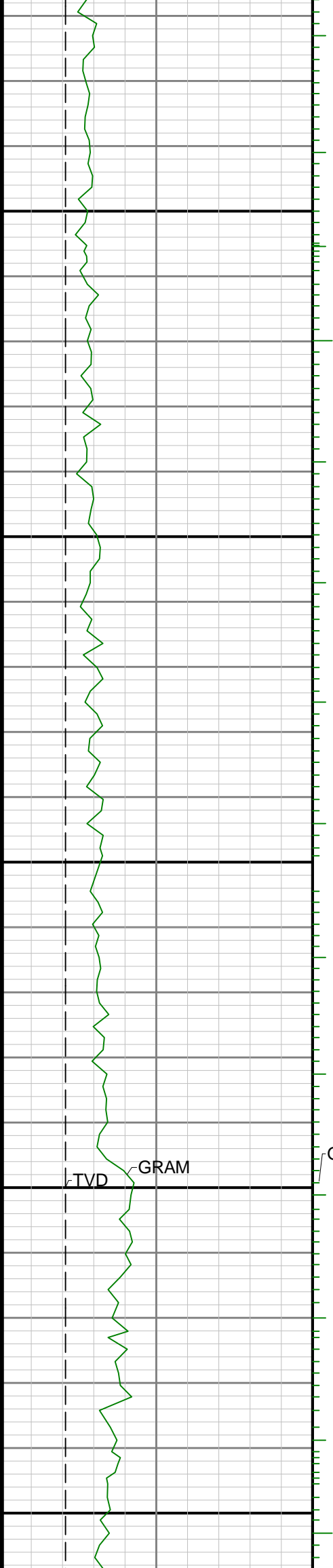




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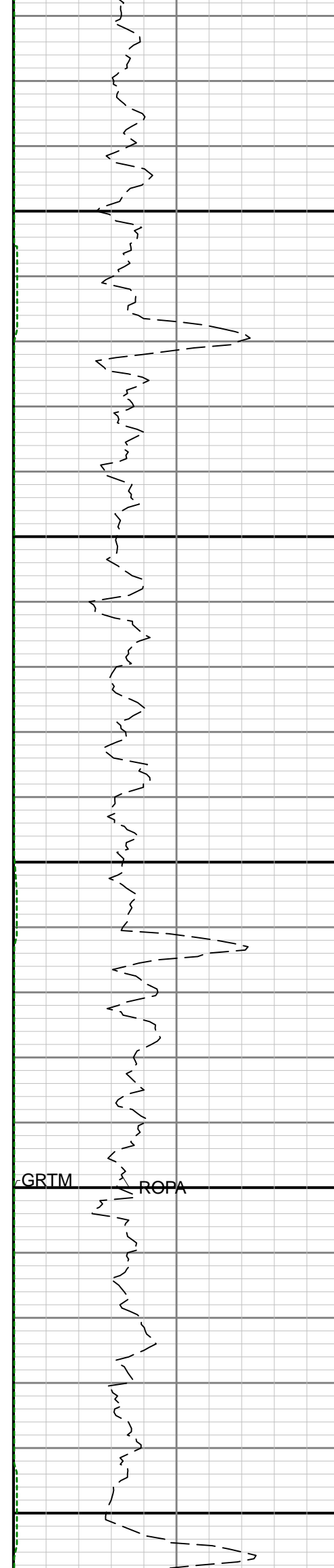
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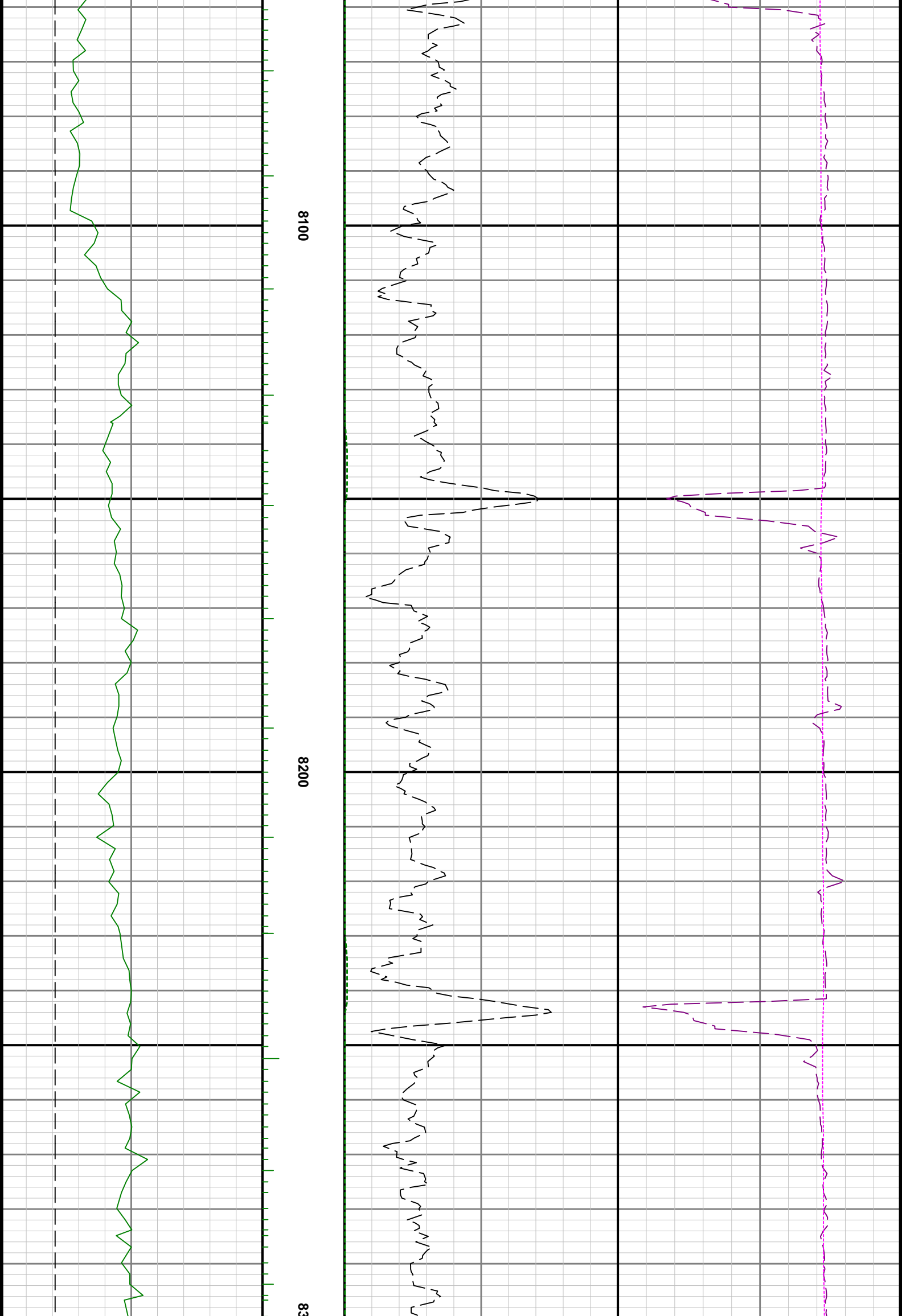
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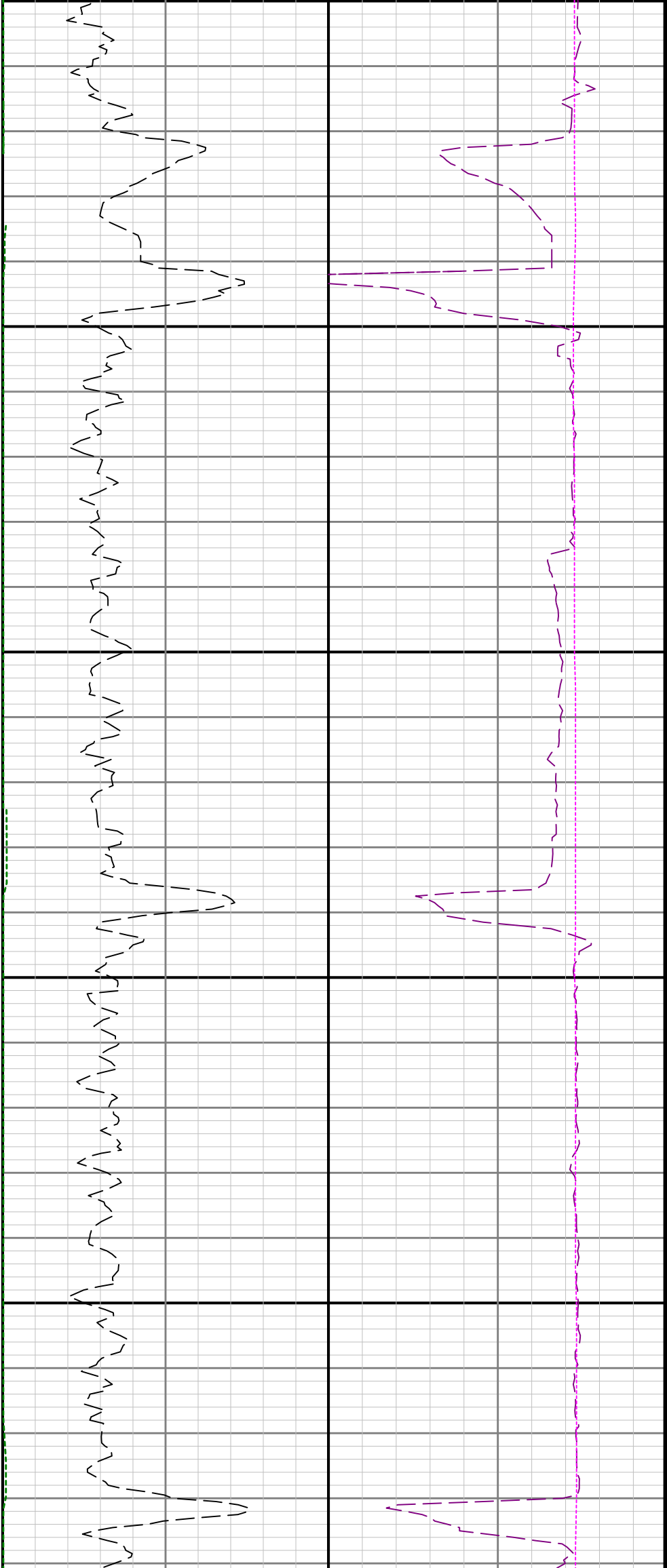
ROPA



WOBA

TCDM

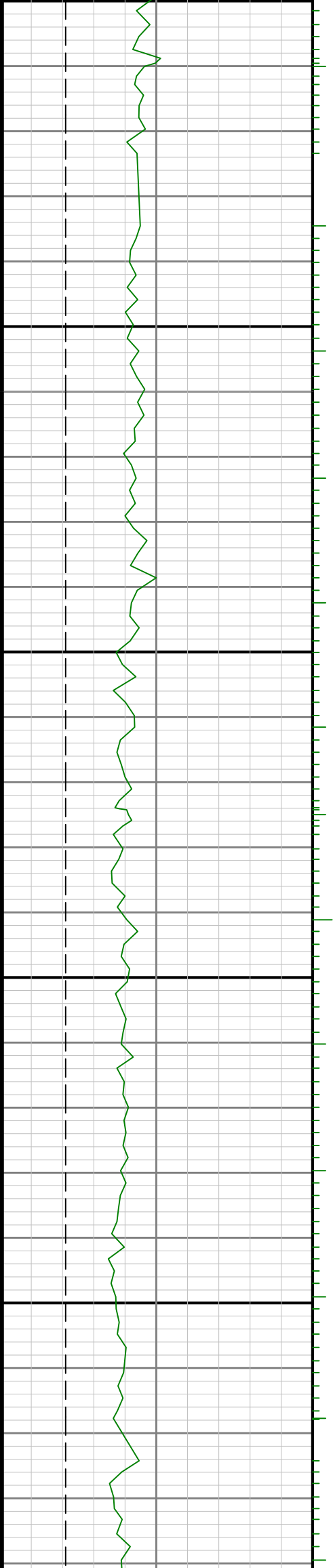


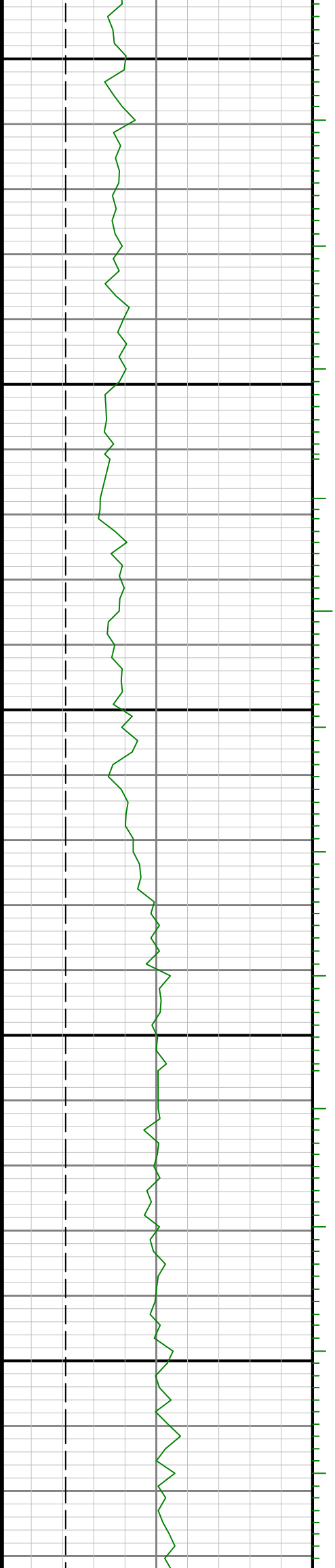


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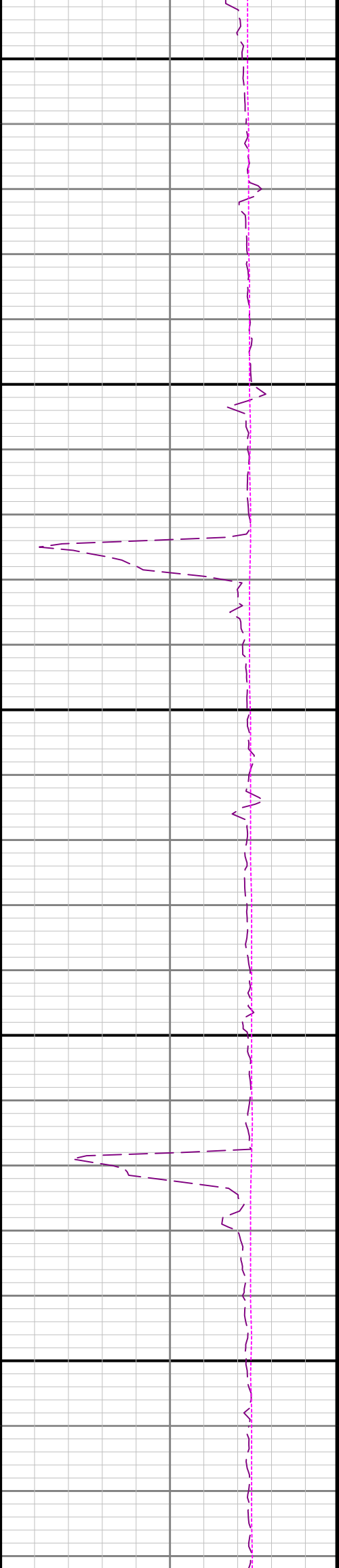
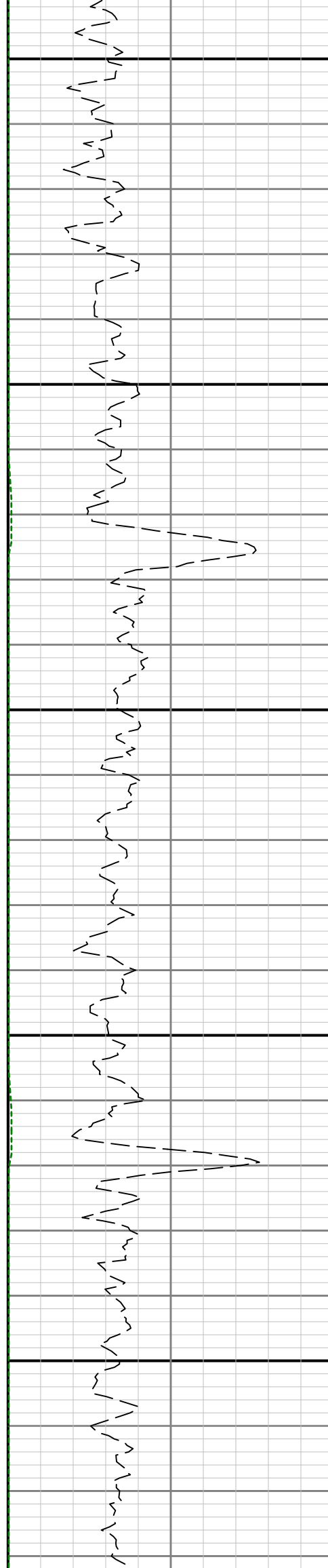
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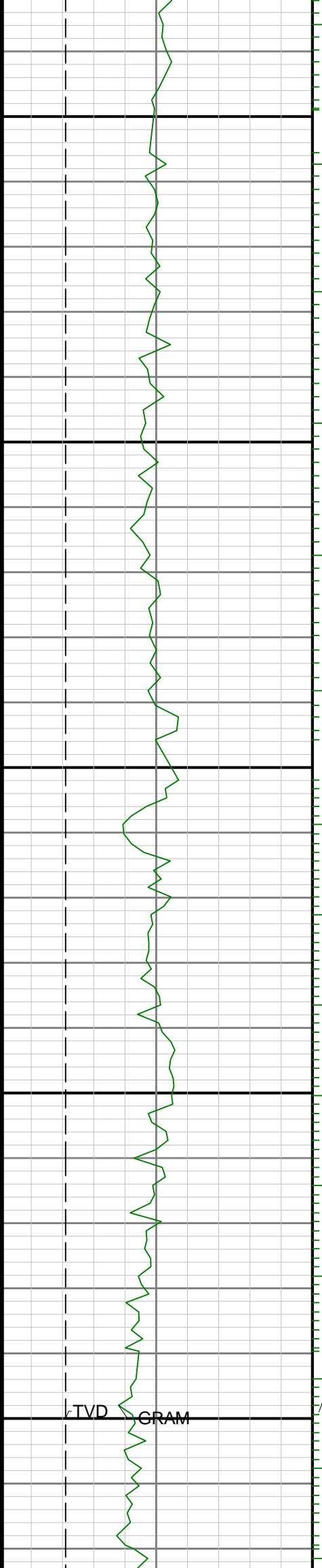




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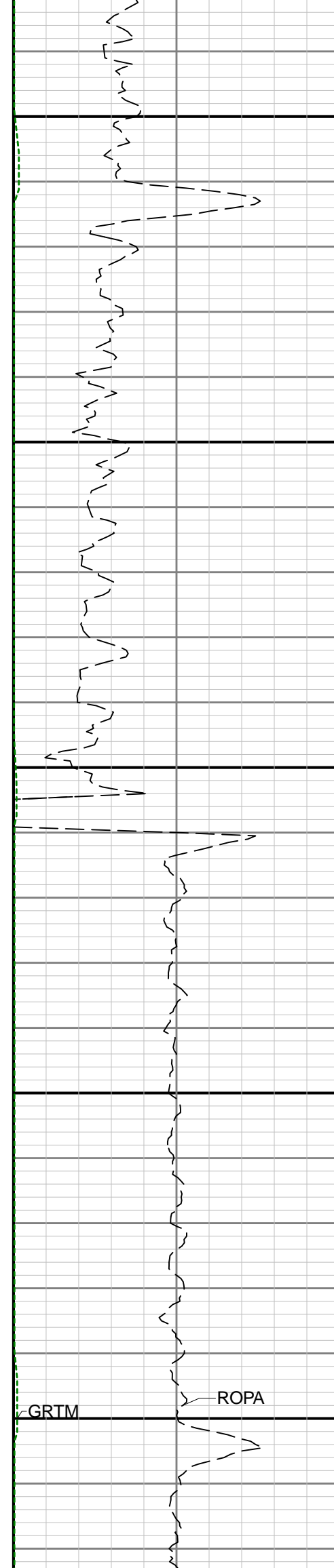


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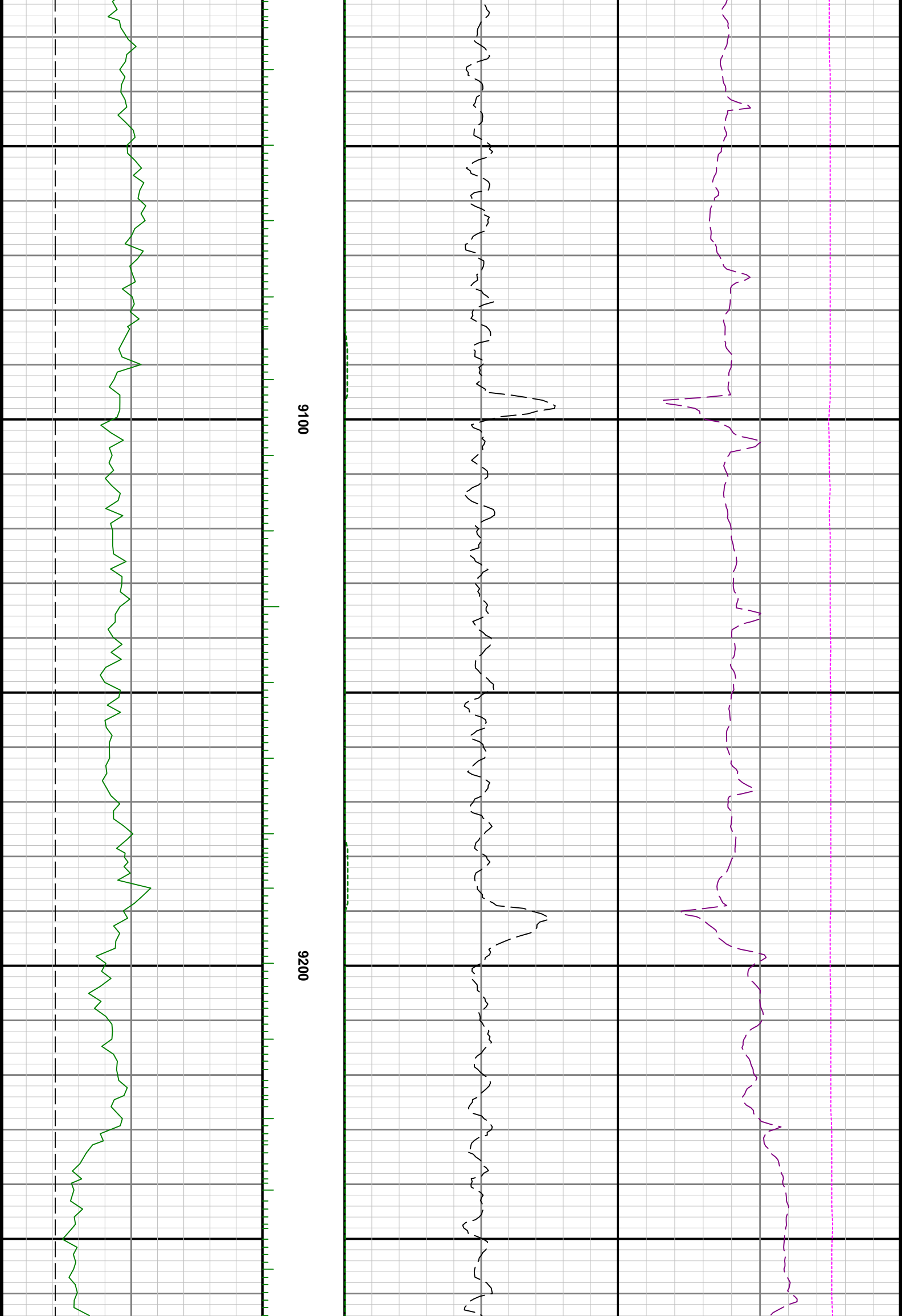
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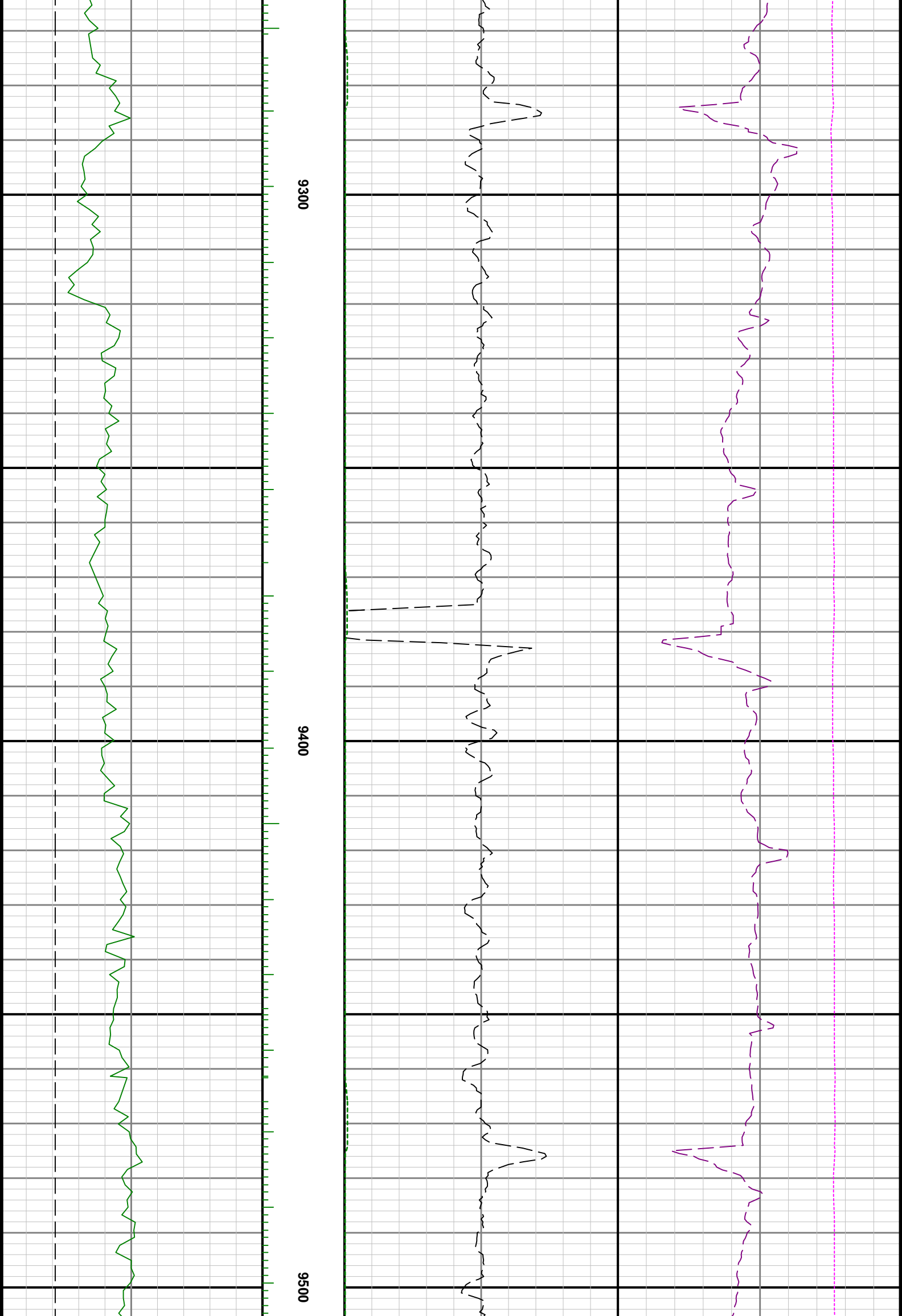
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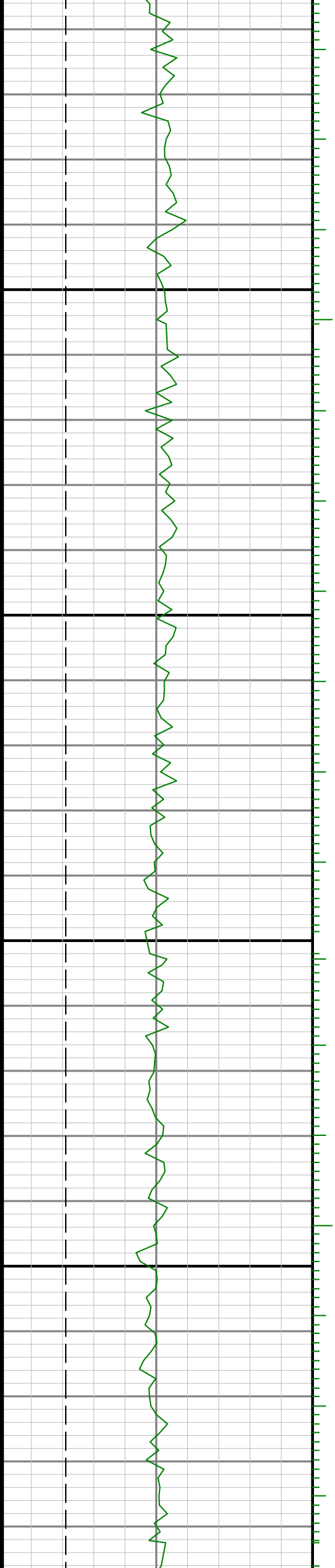
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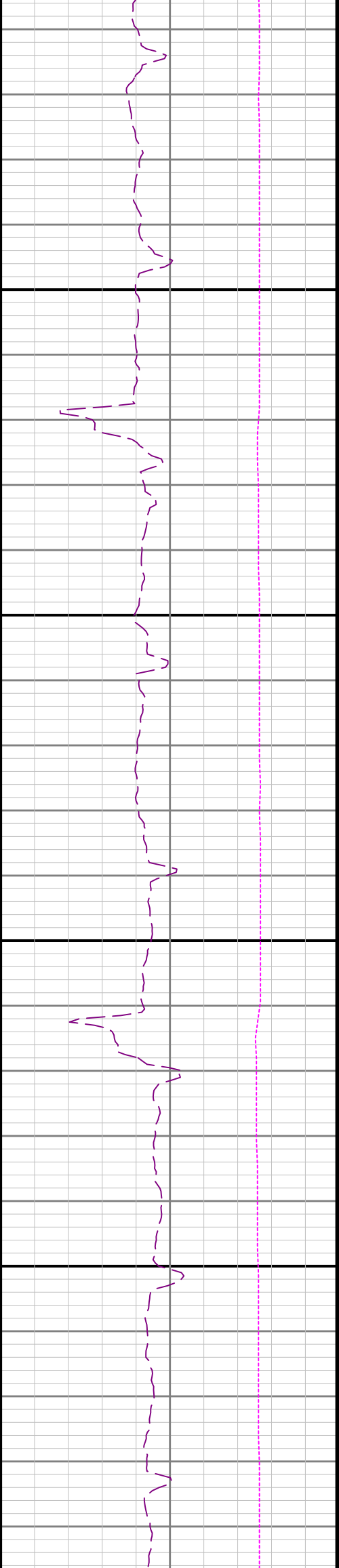
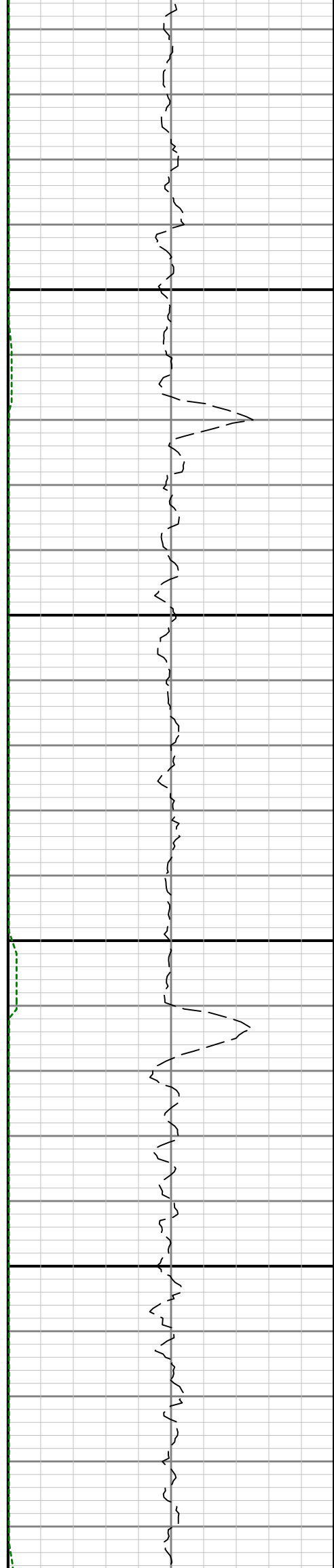
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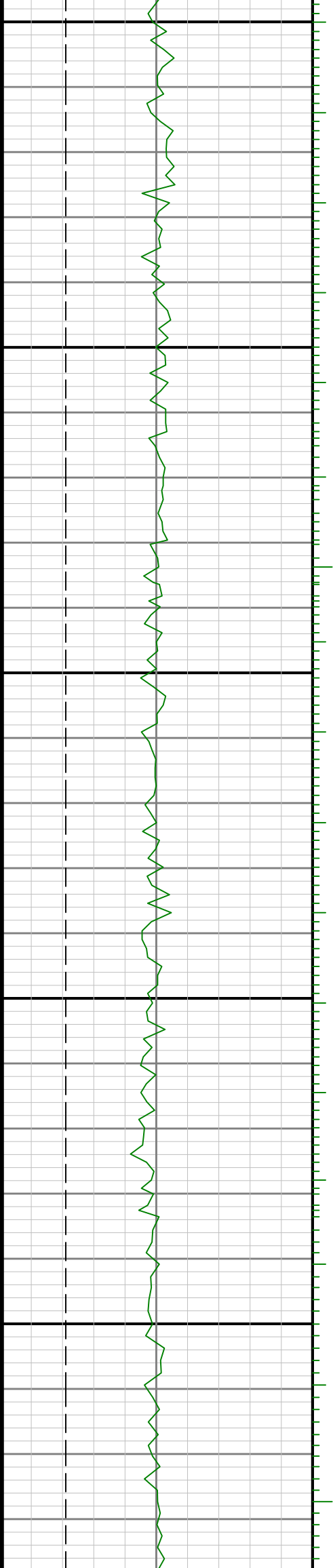




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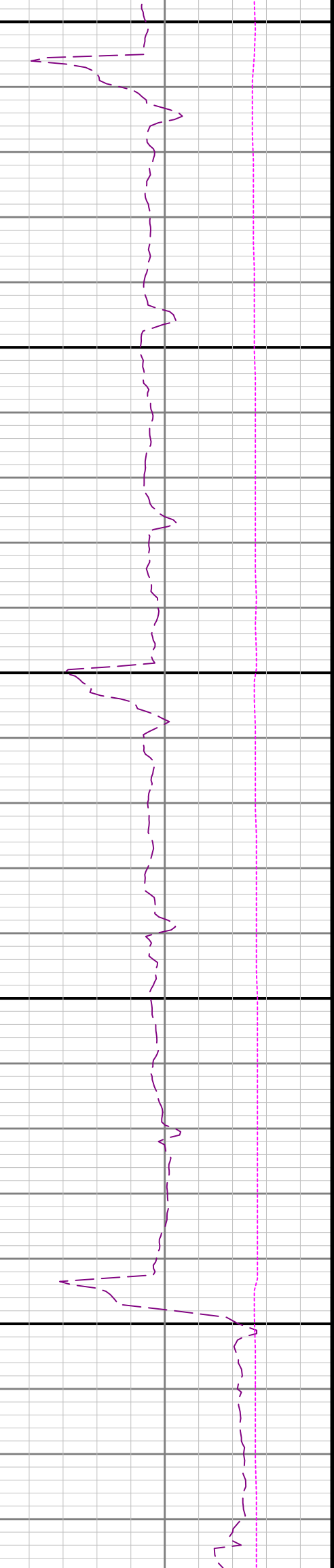
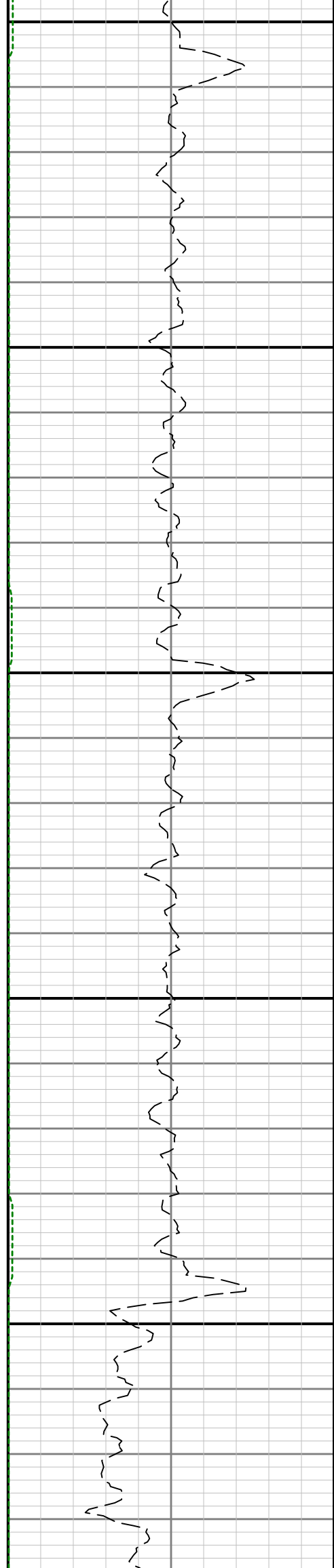
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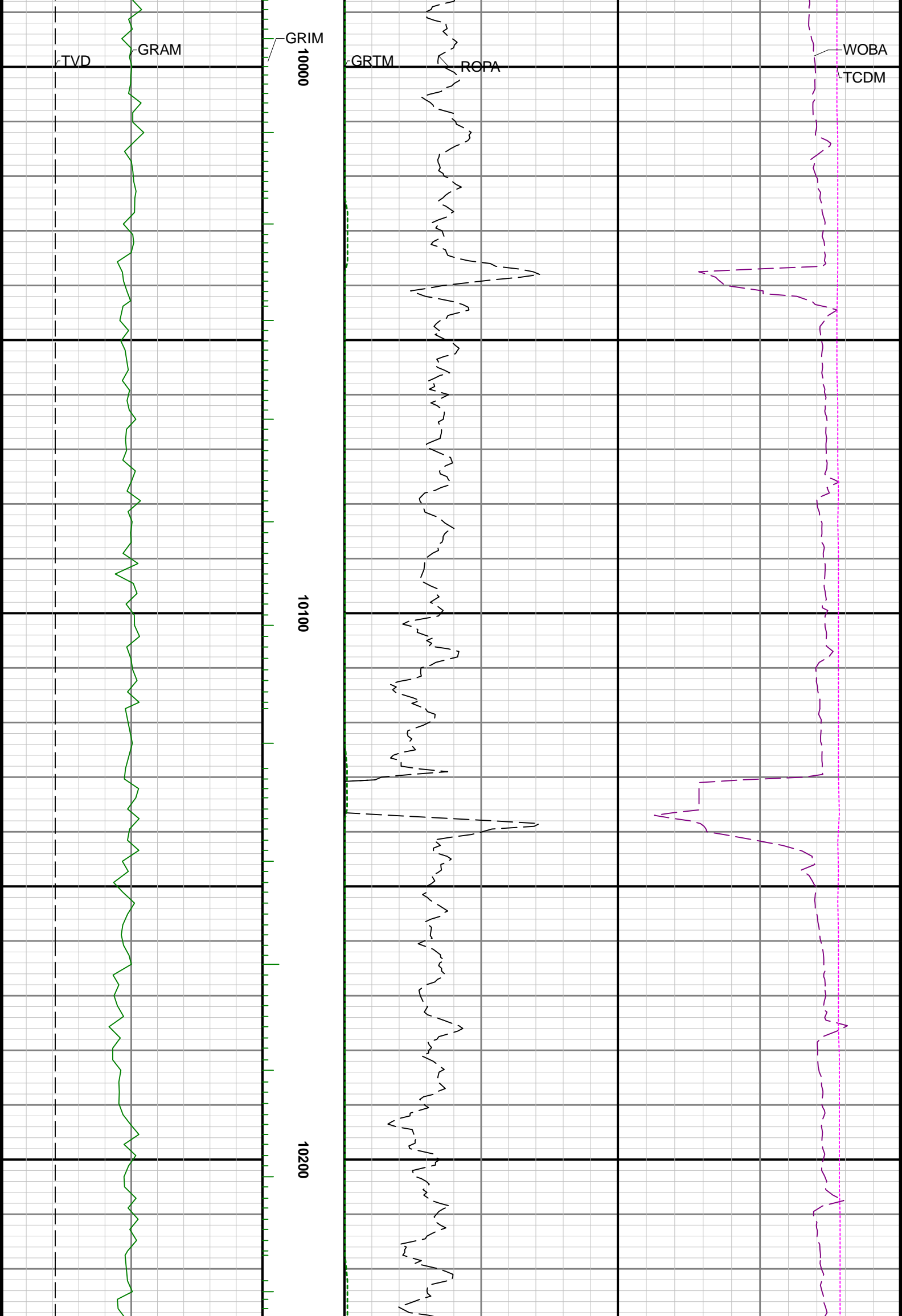


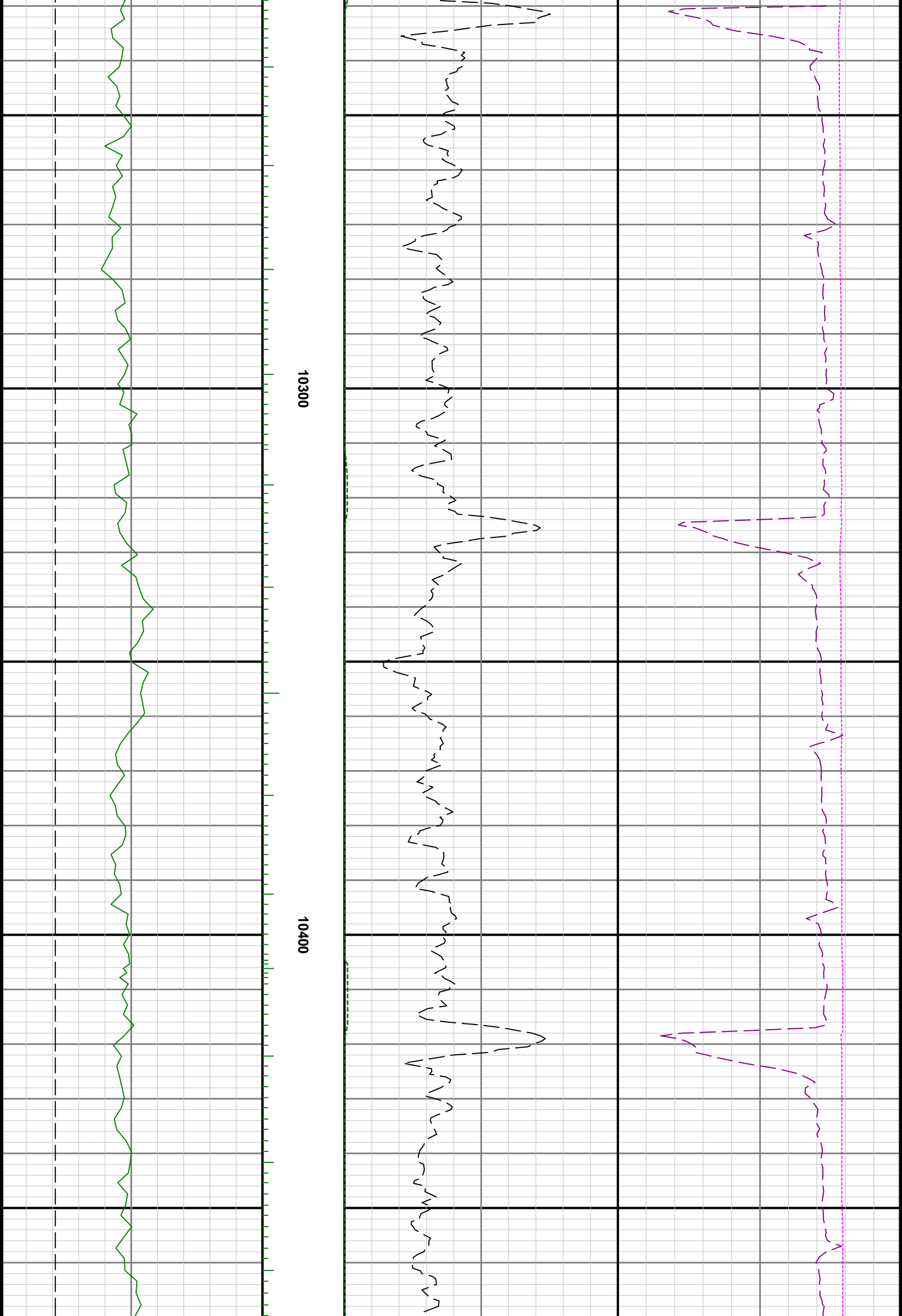


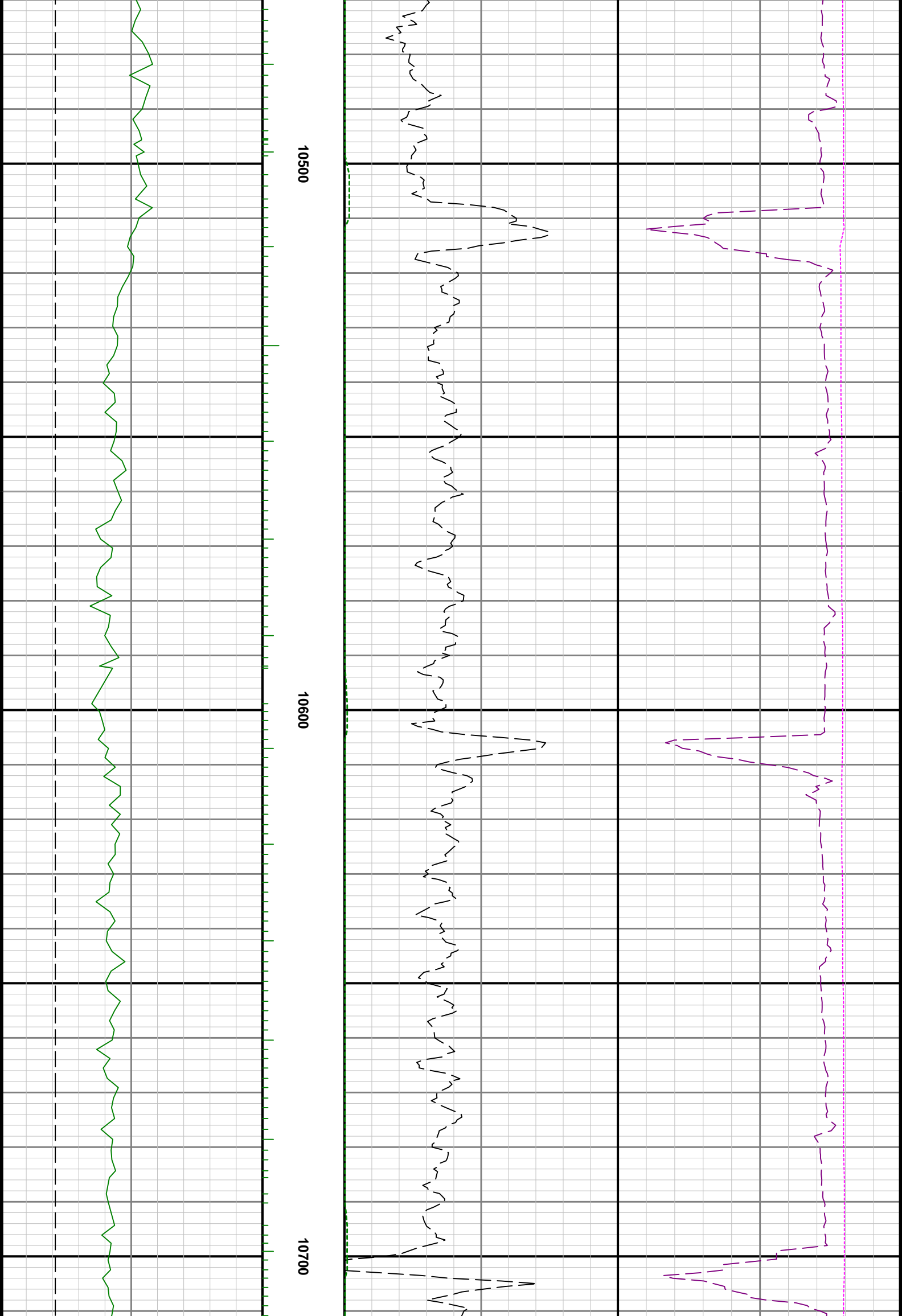
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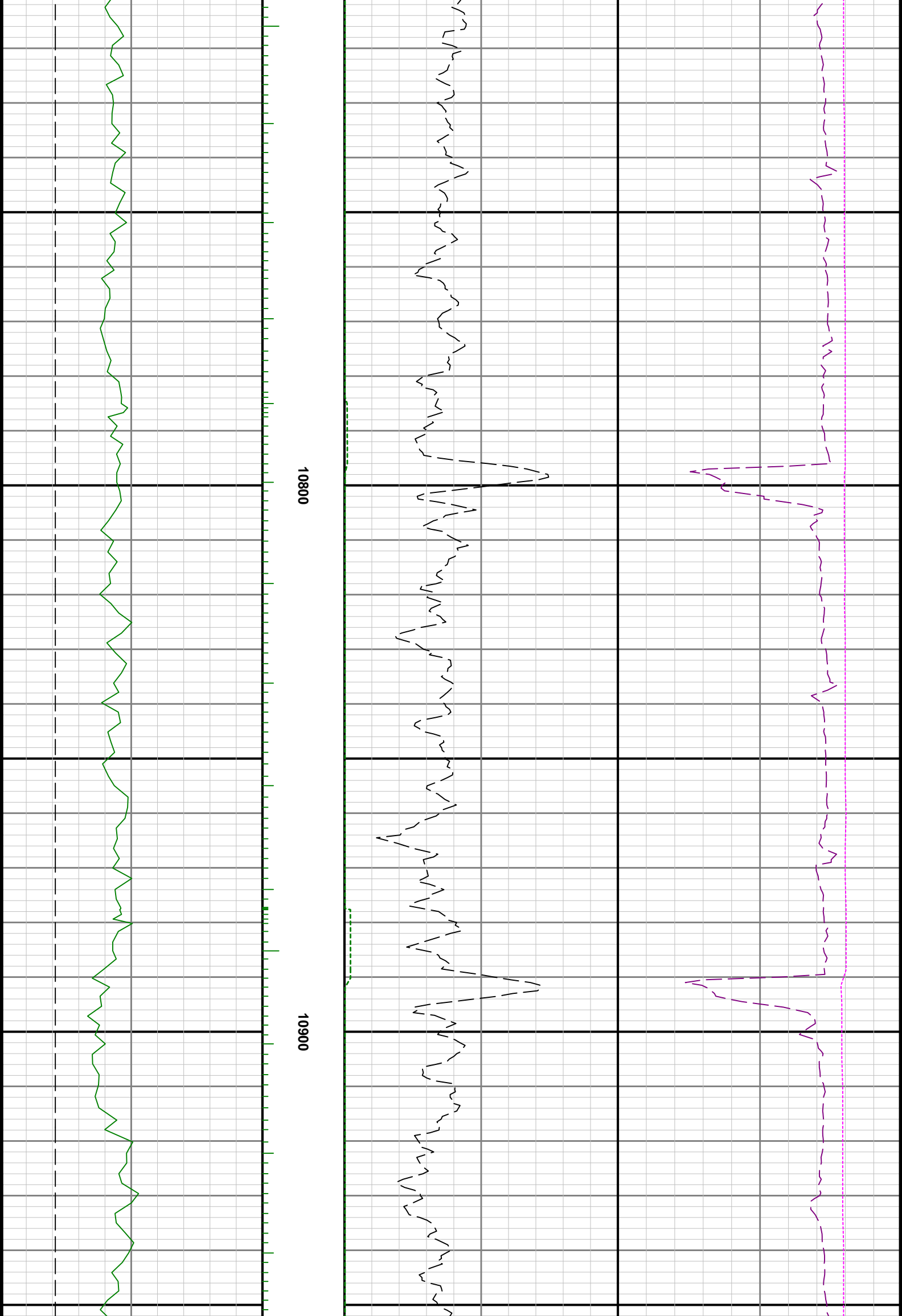
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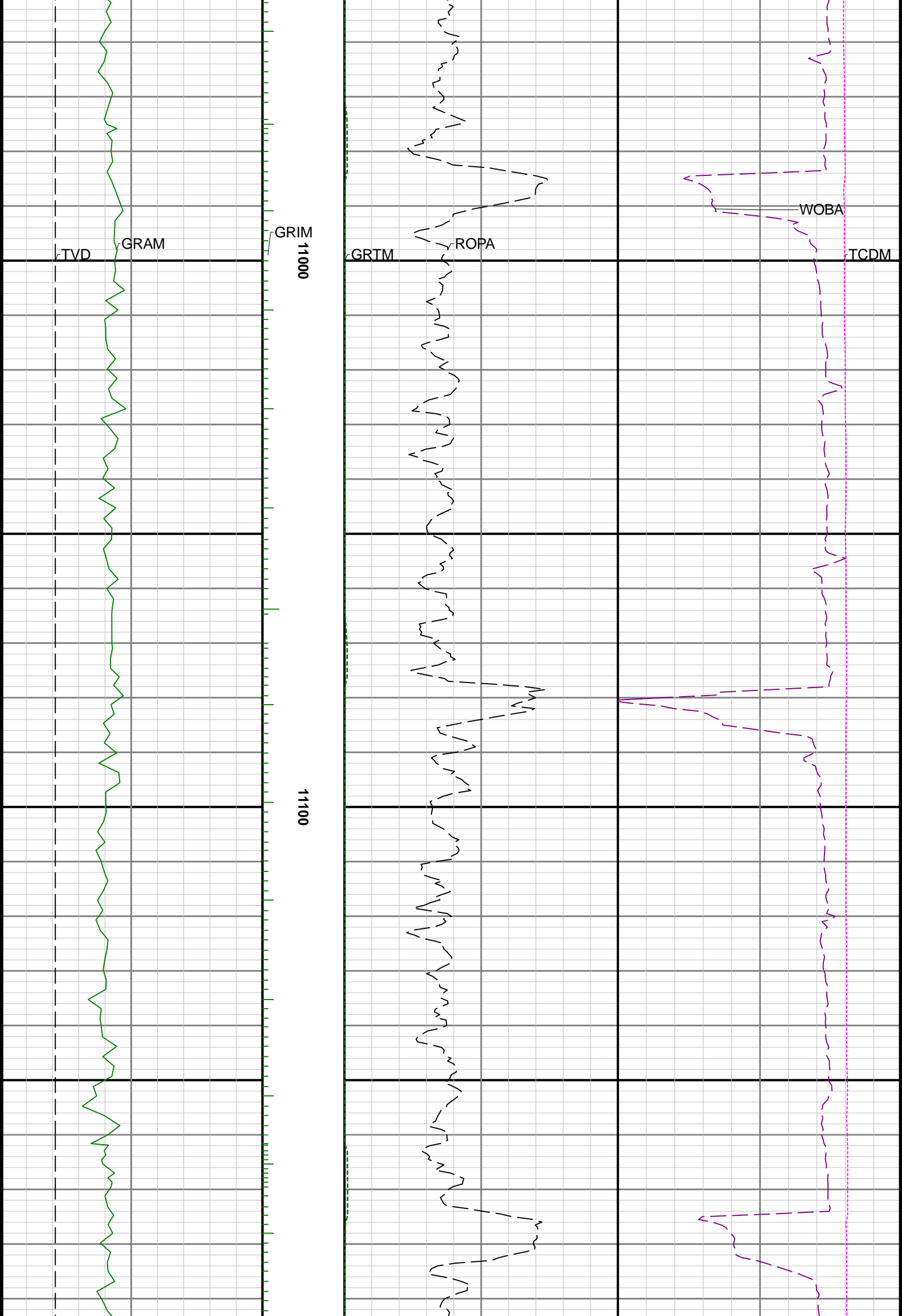


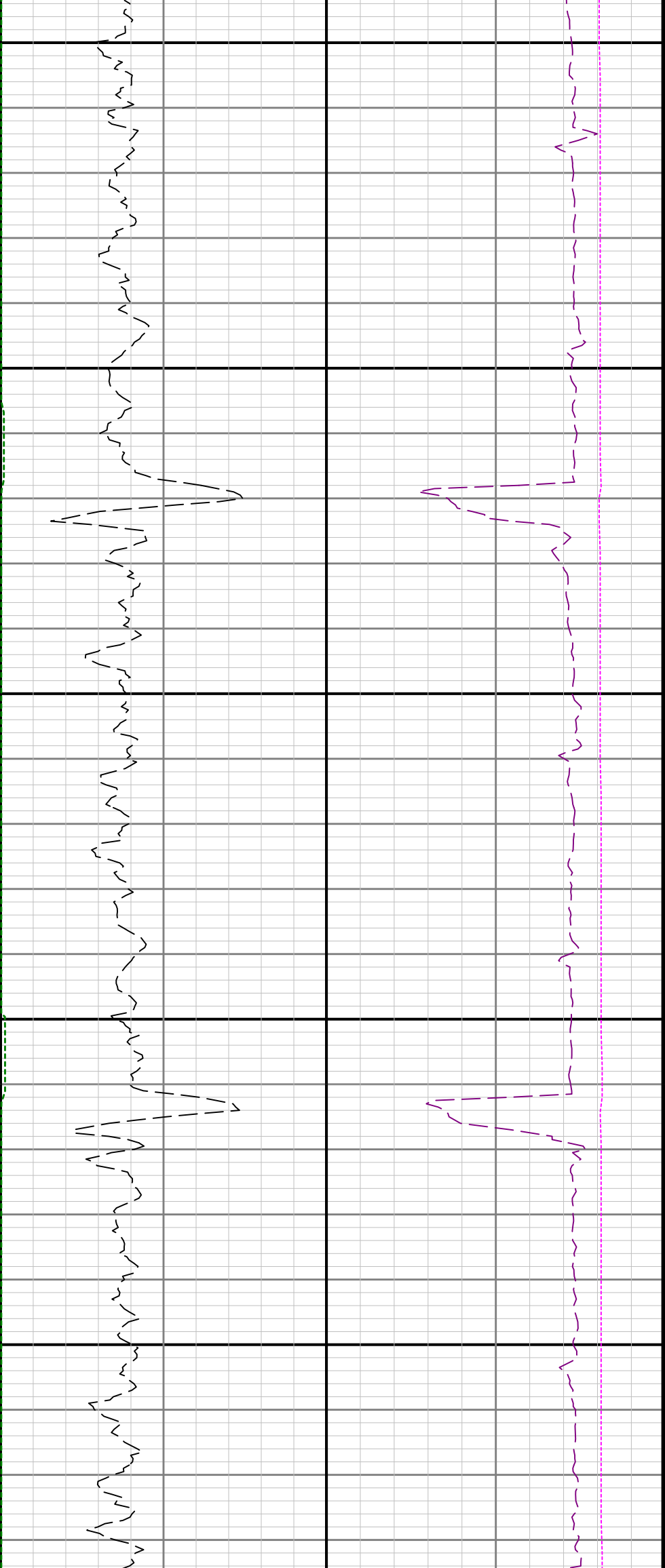








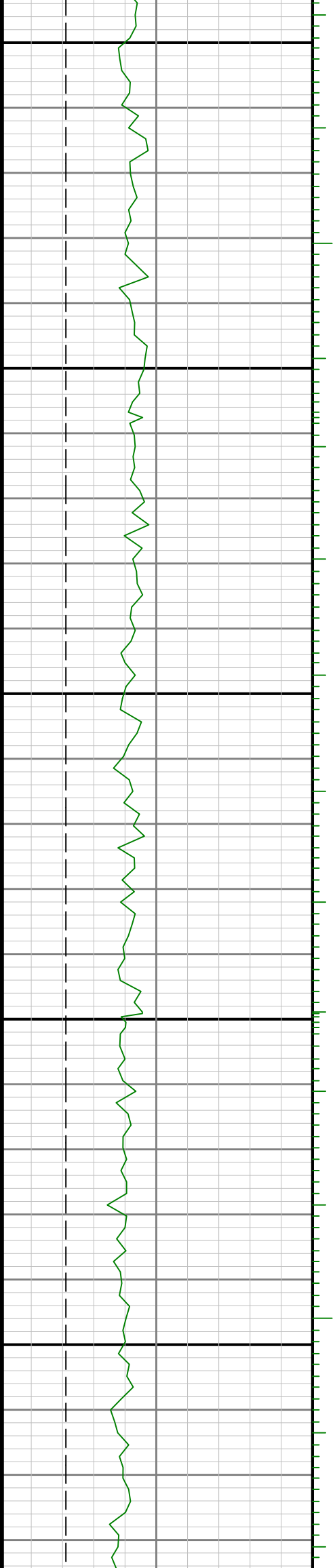


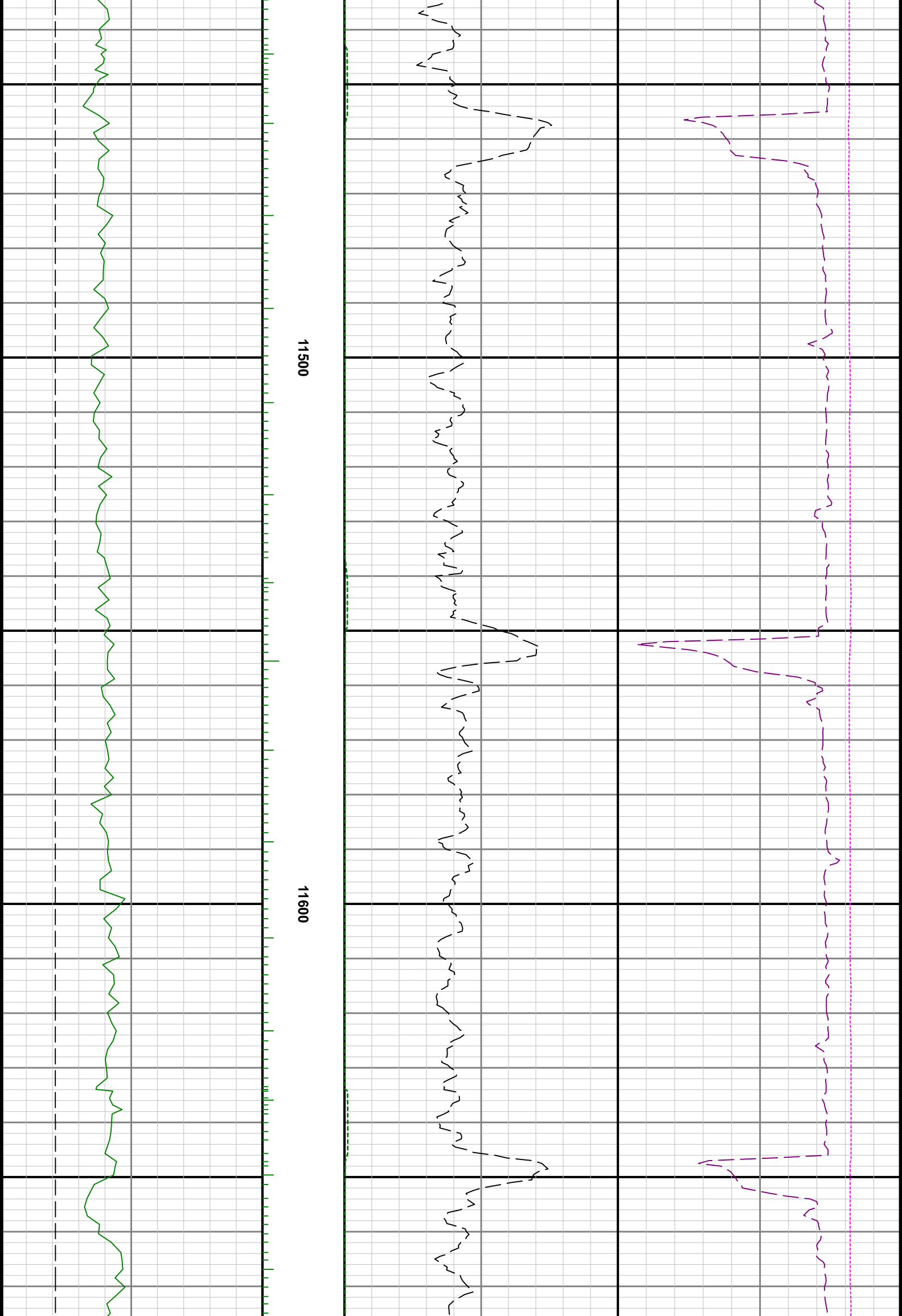


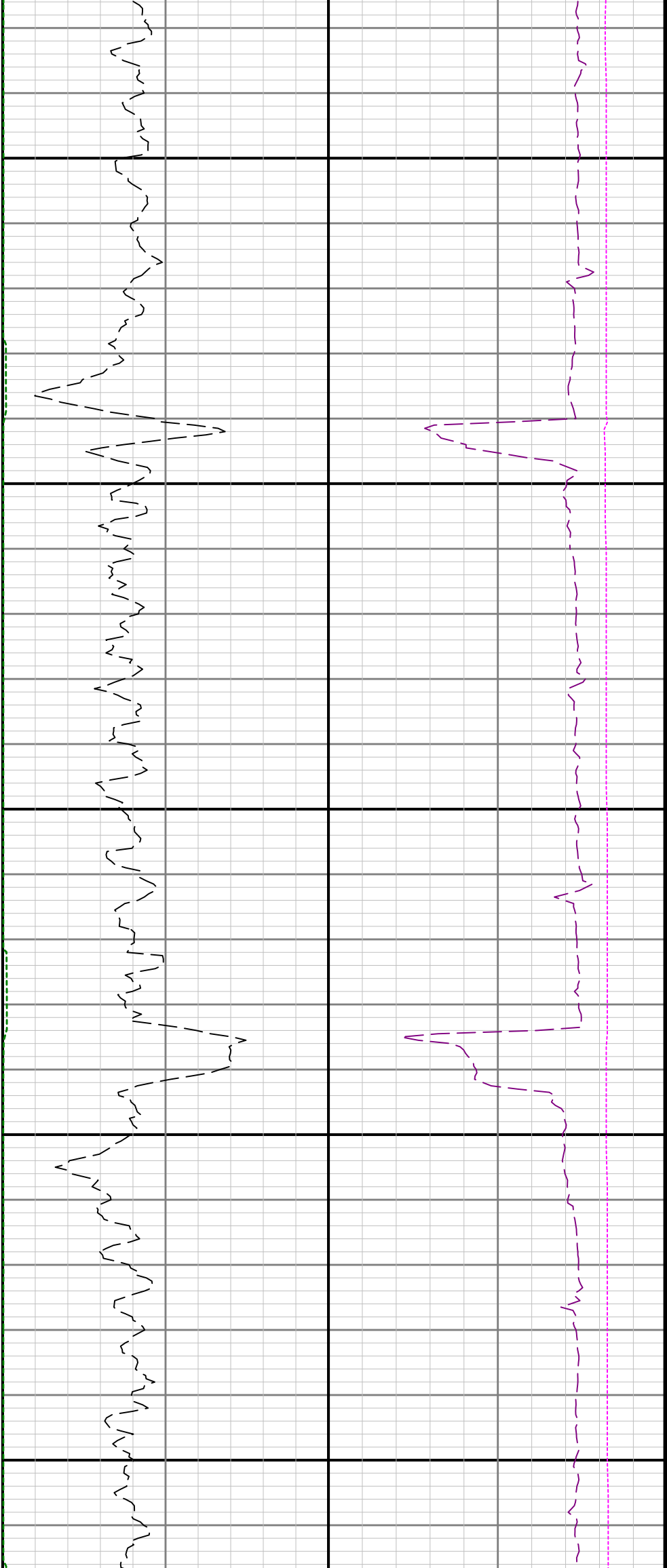
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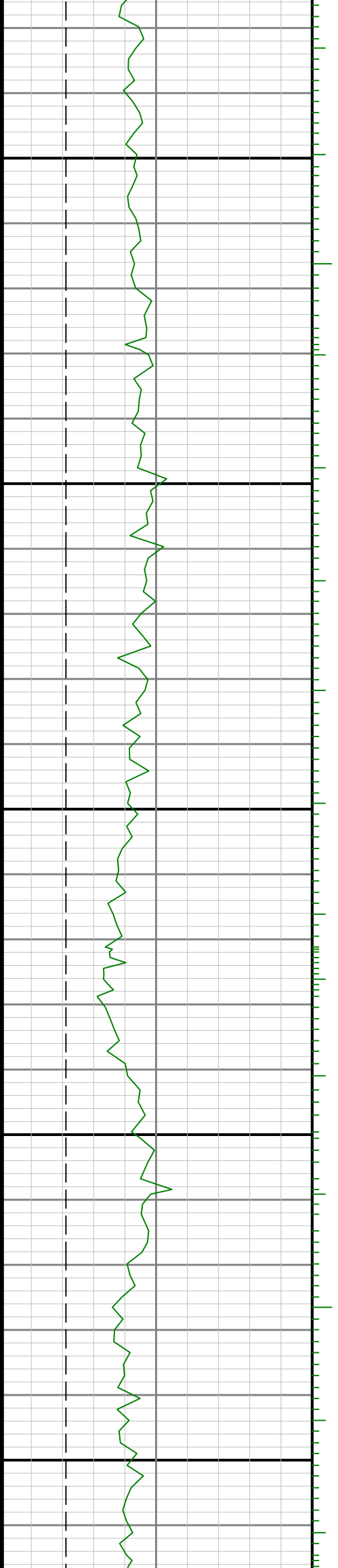




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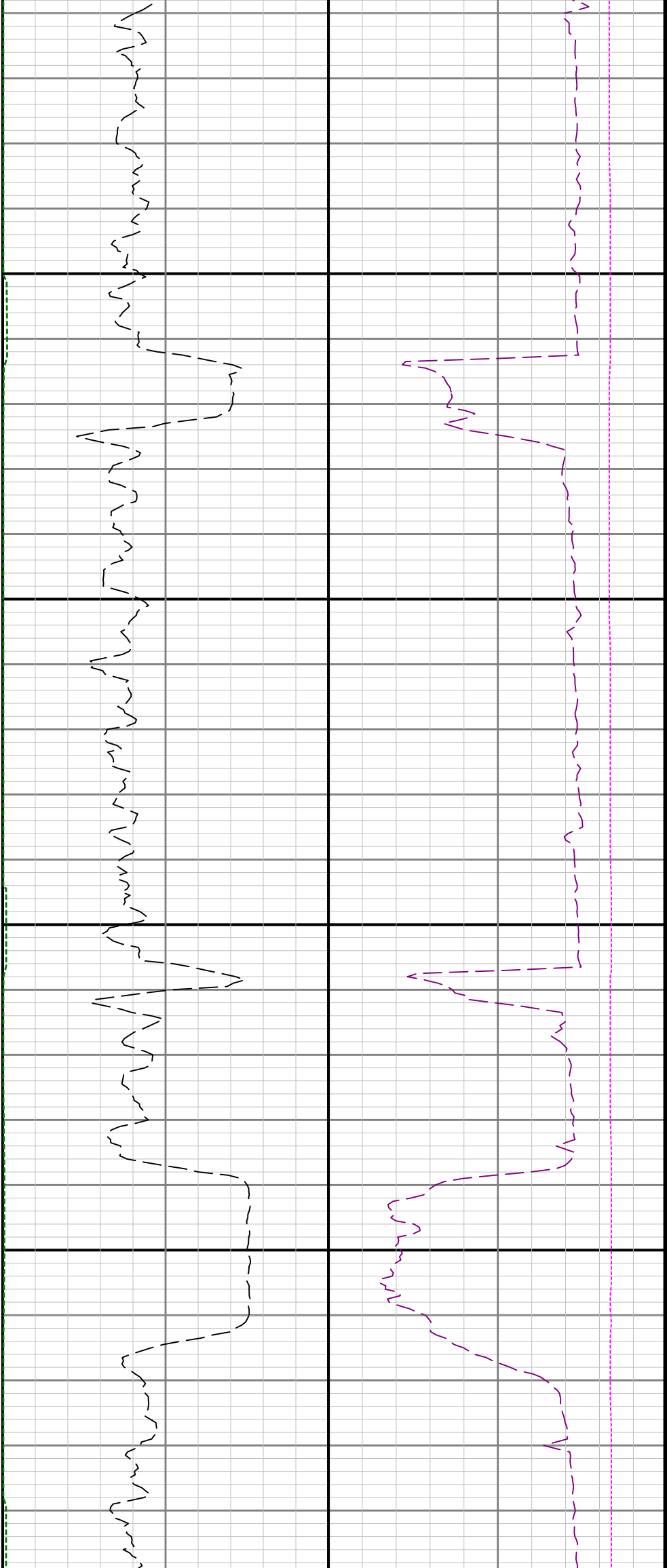
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ROPA

WOBA

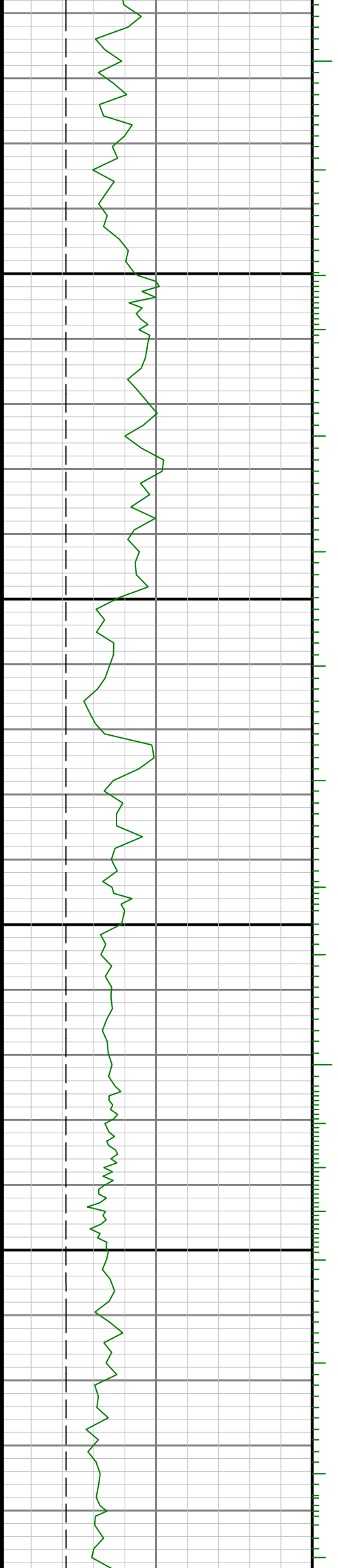
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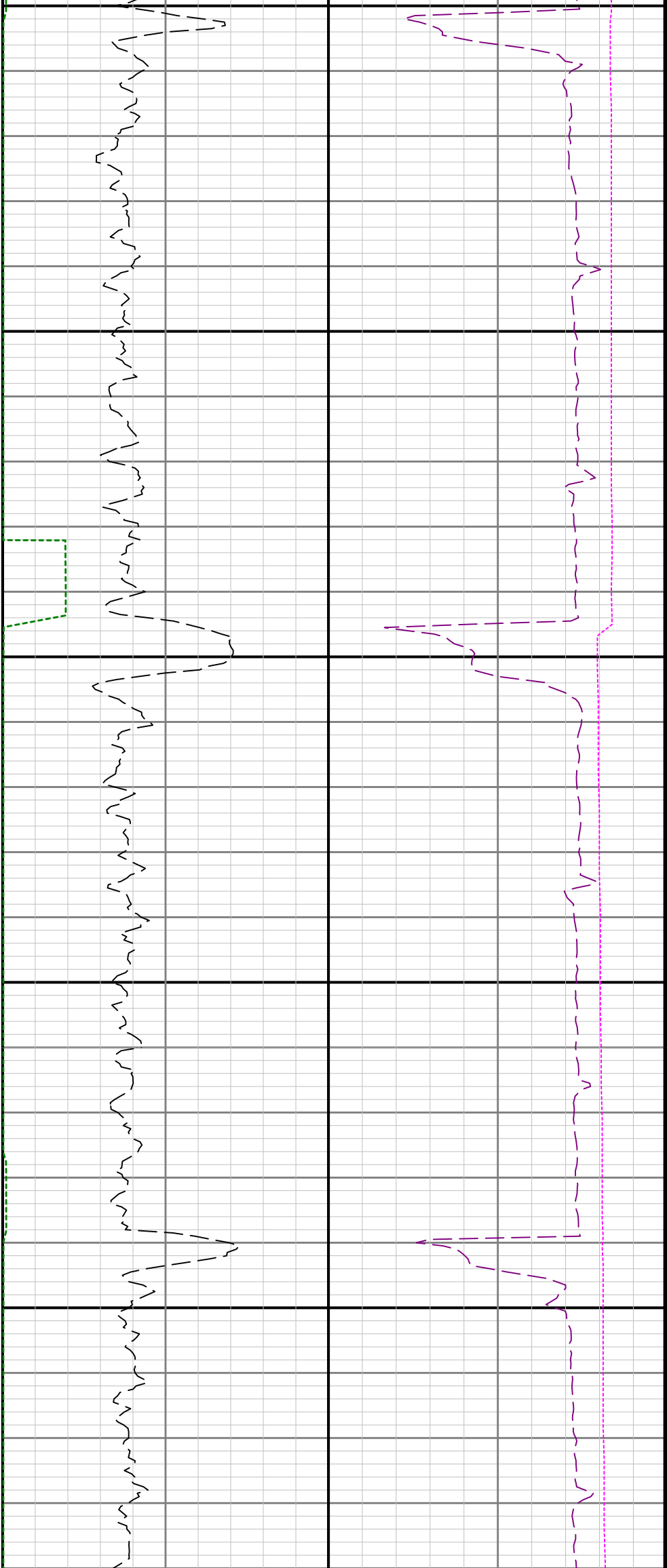


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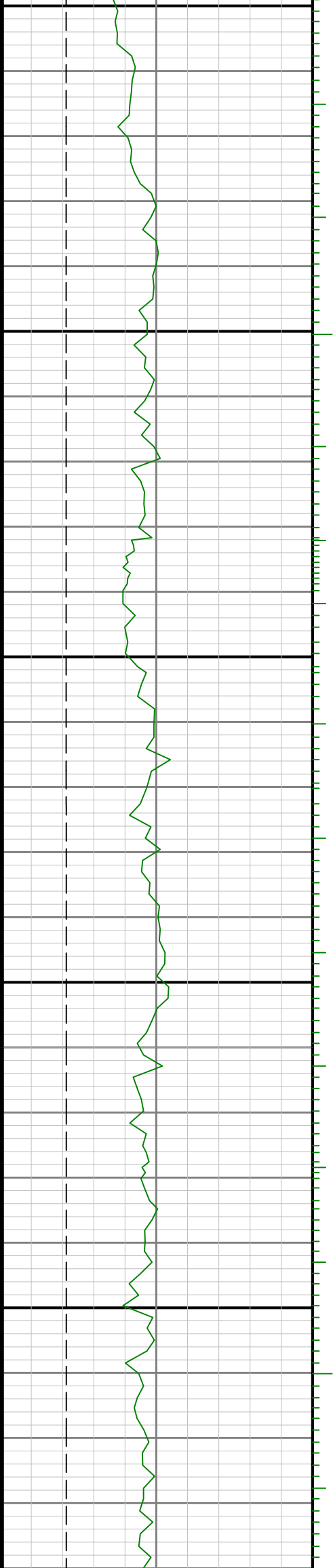


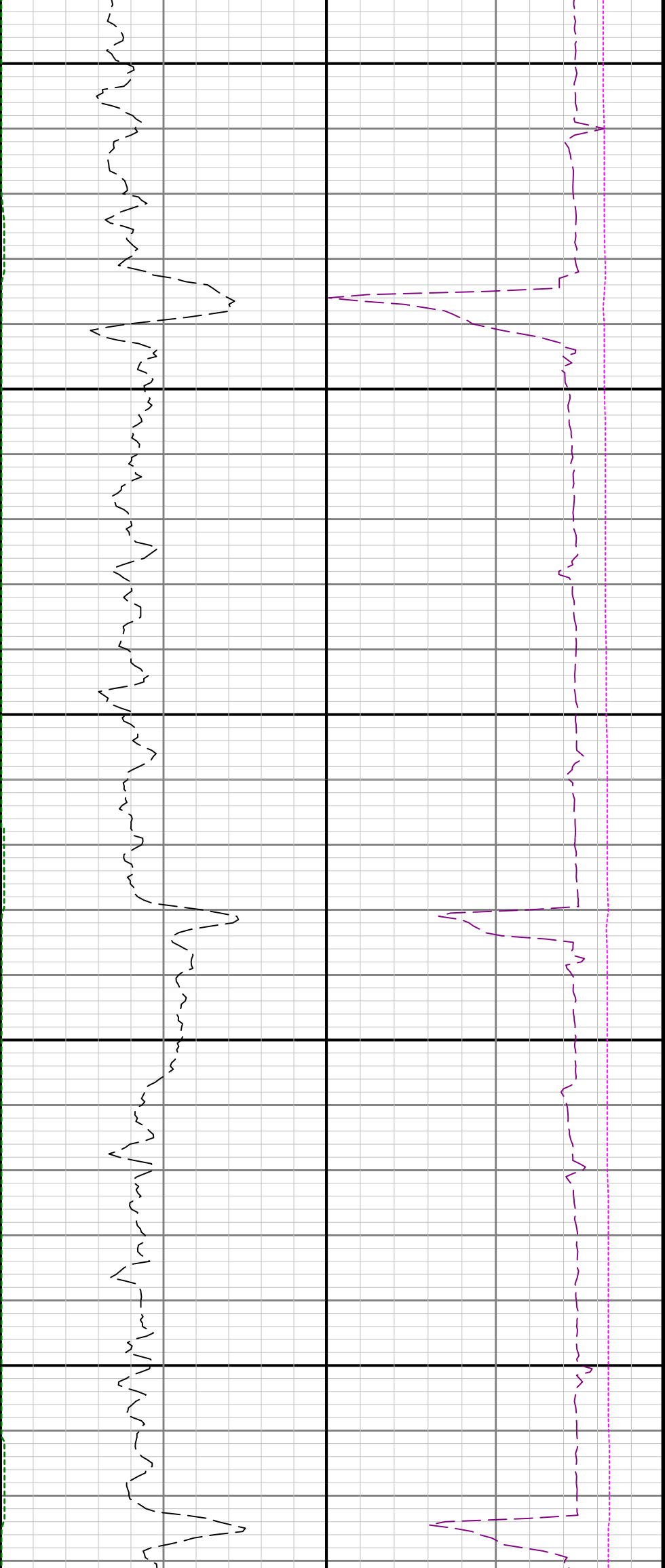


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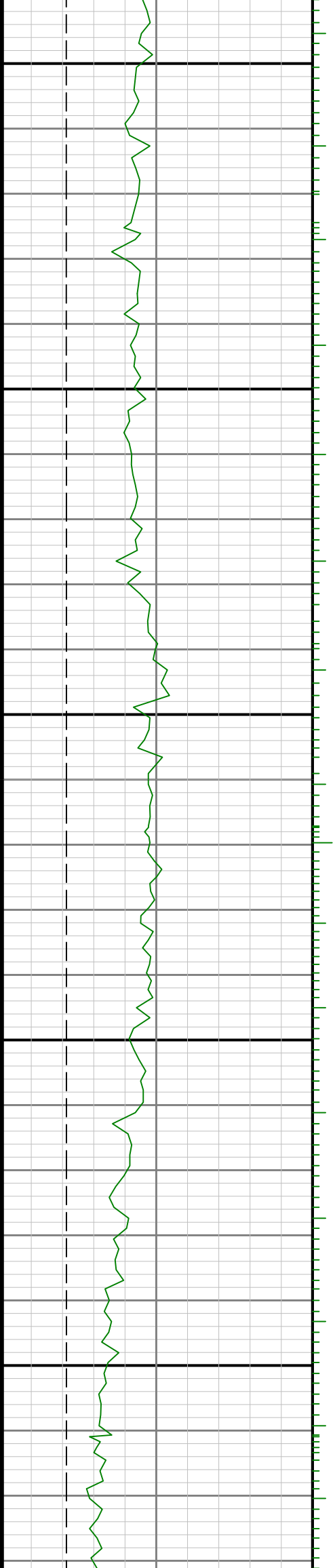
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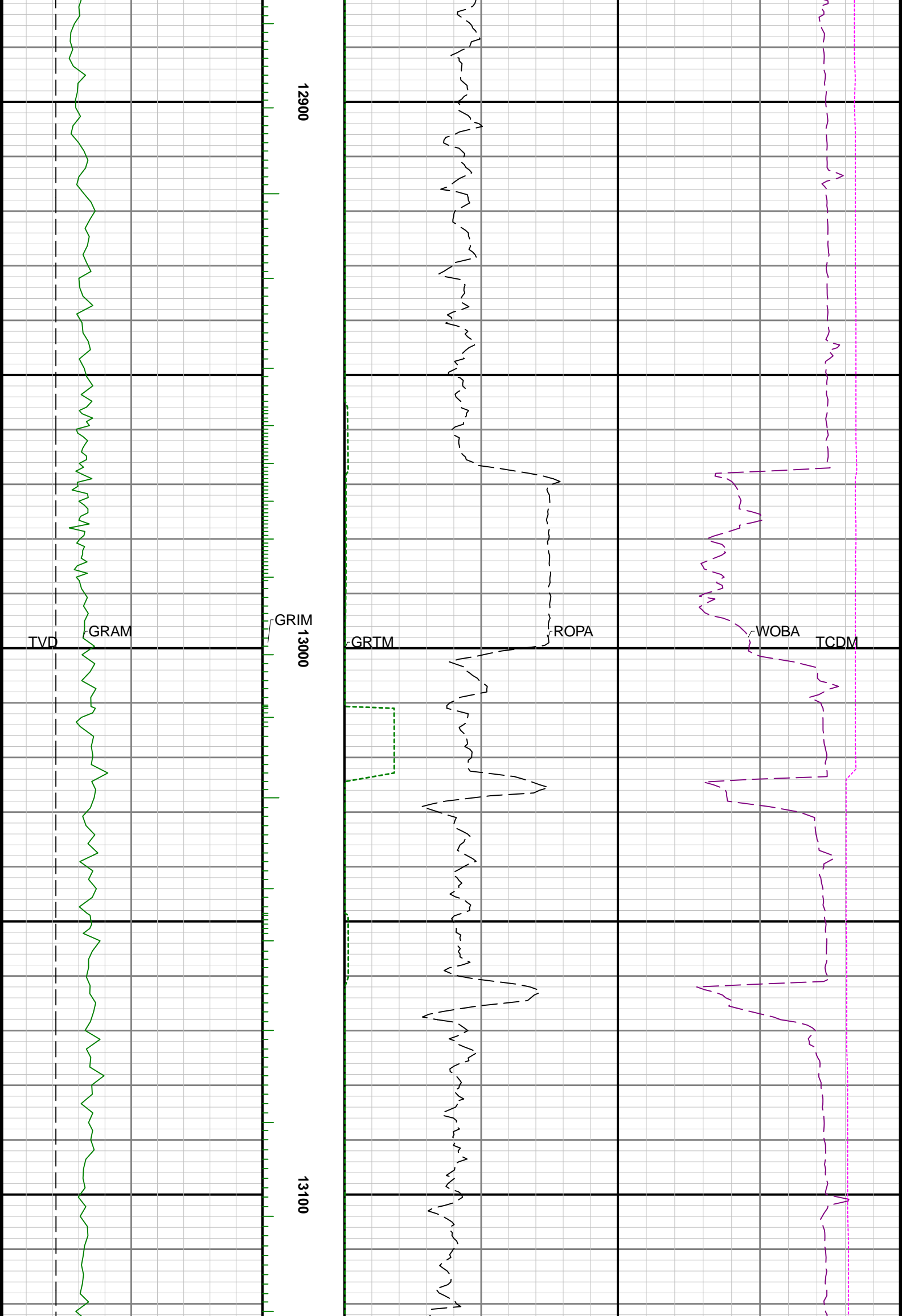


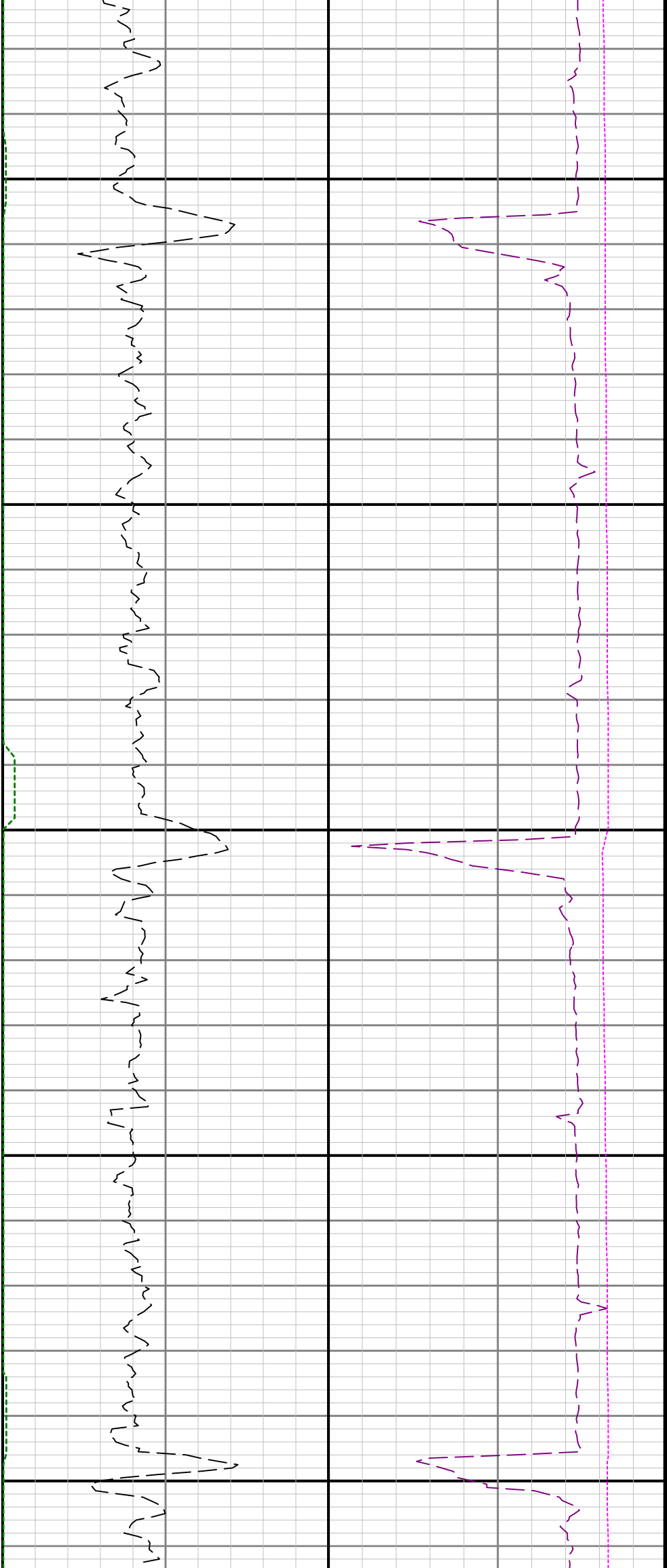


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12800

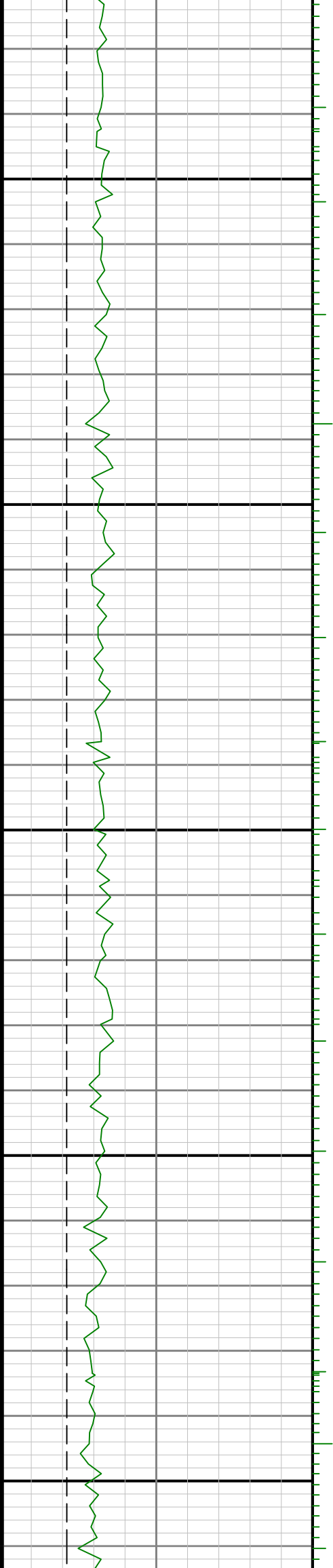


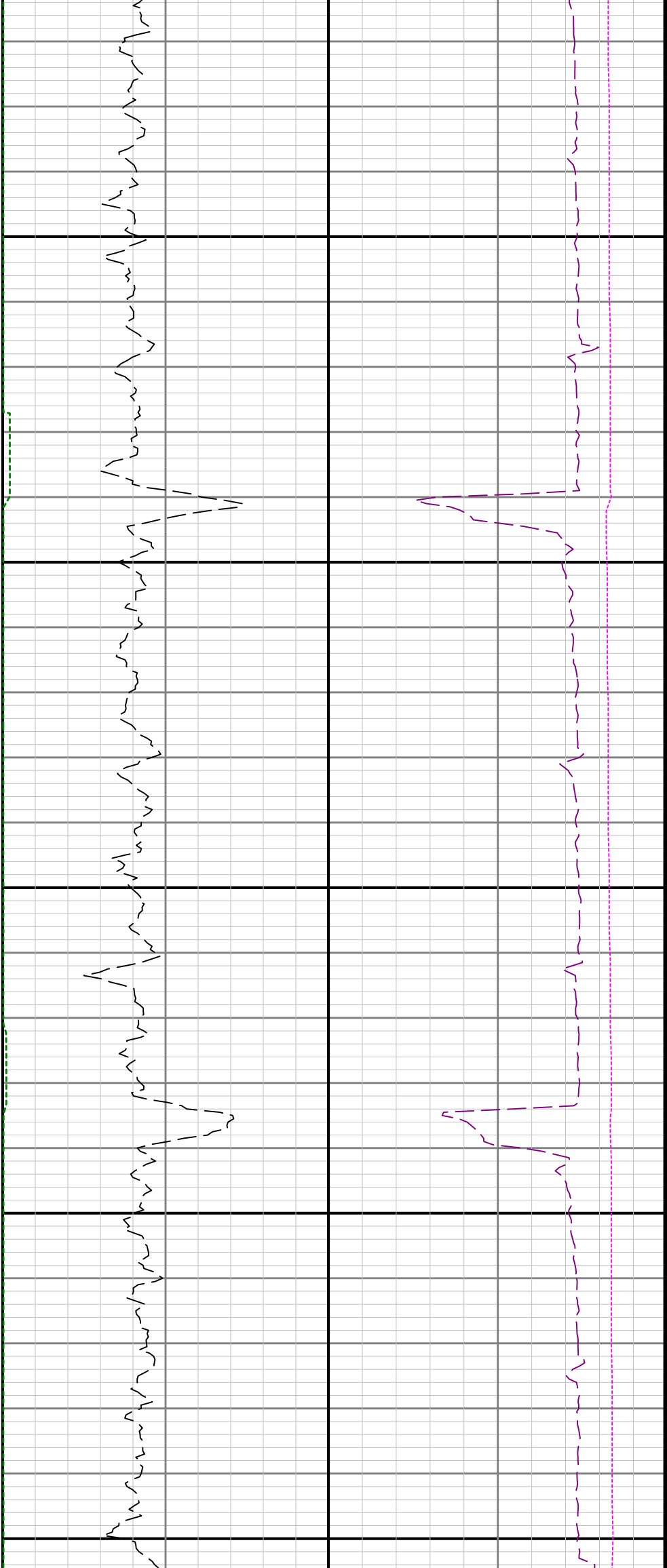




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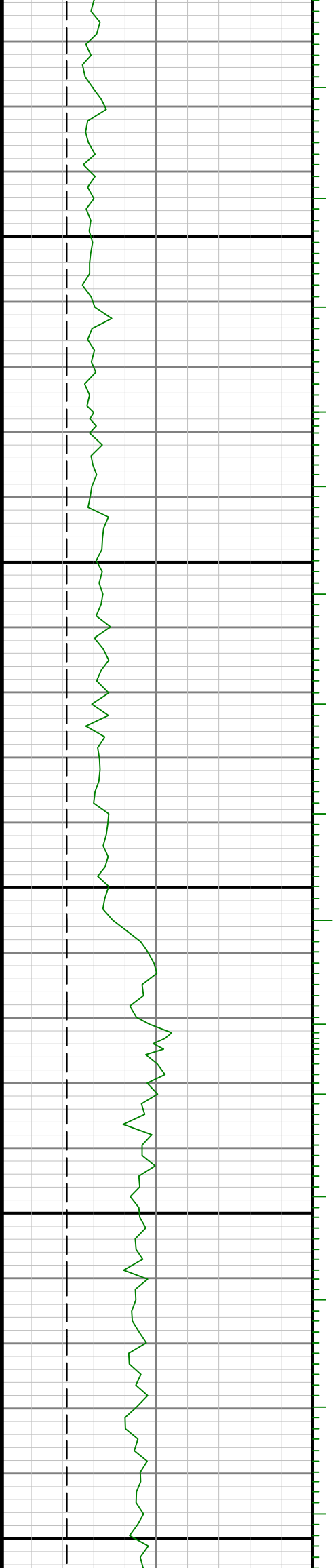


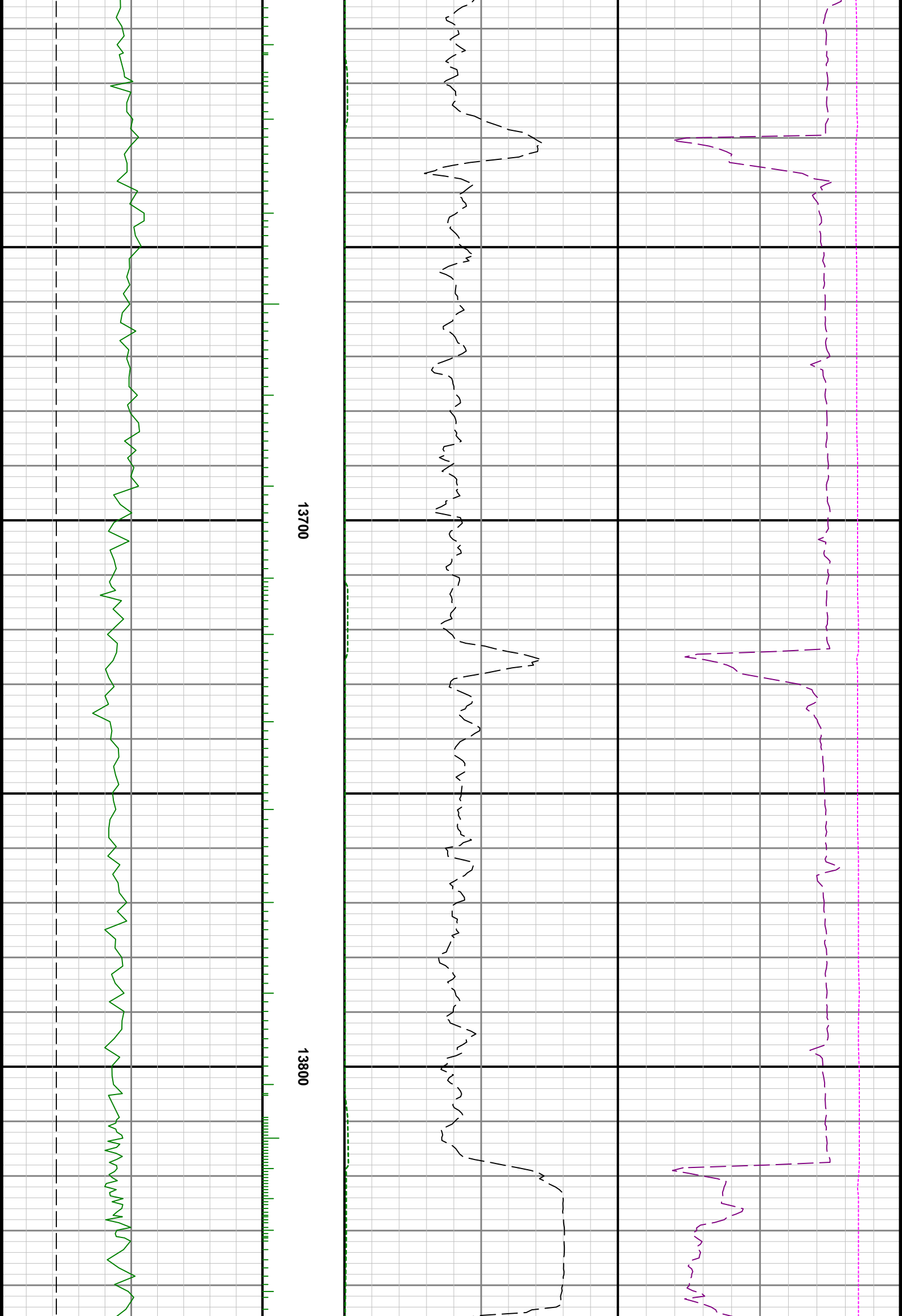


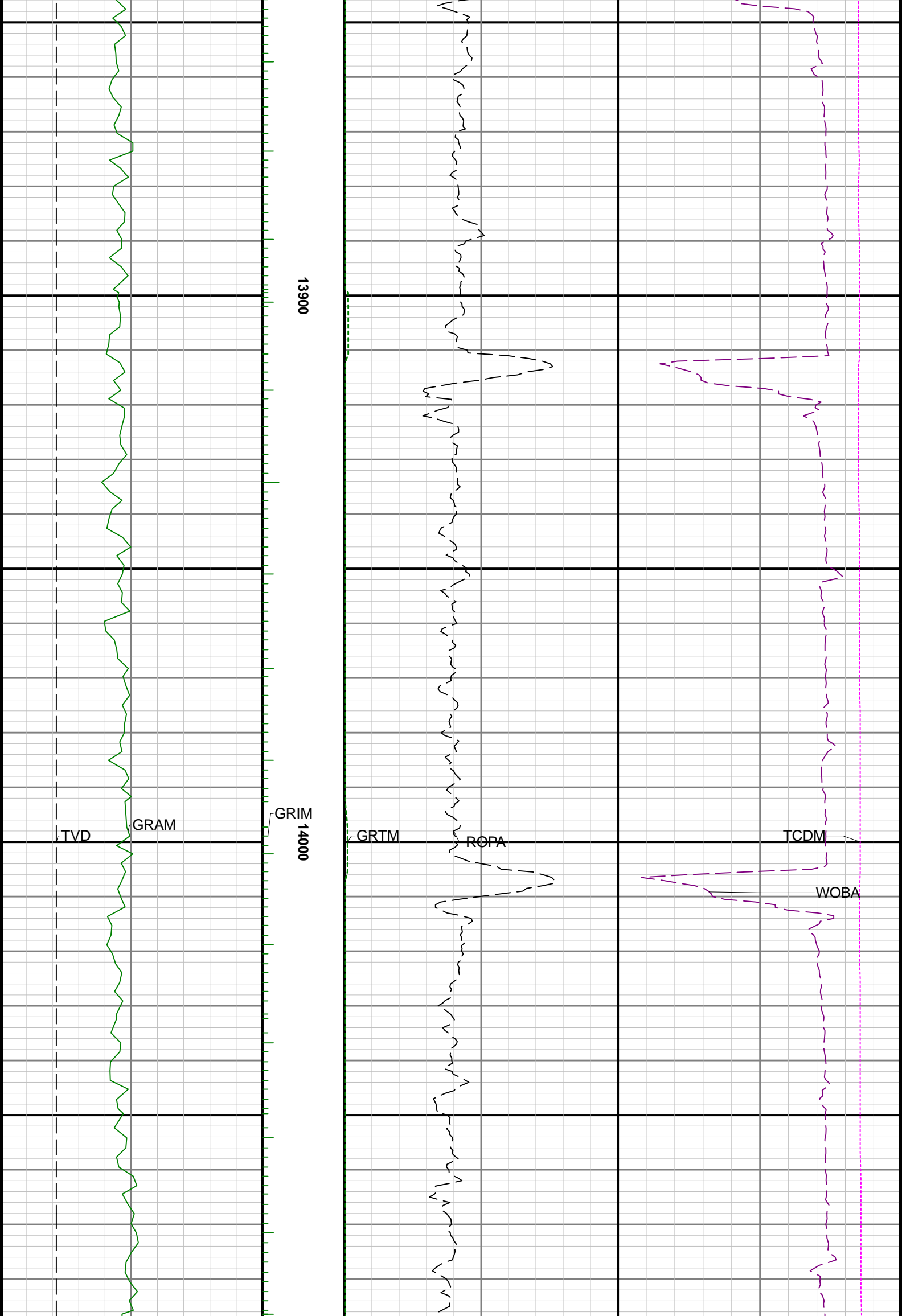
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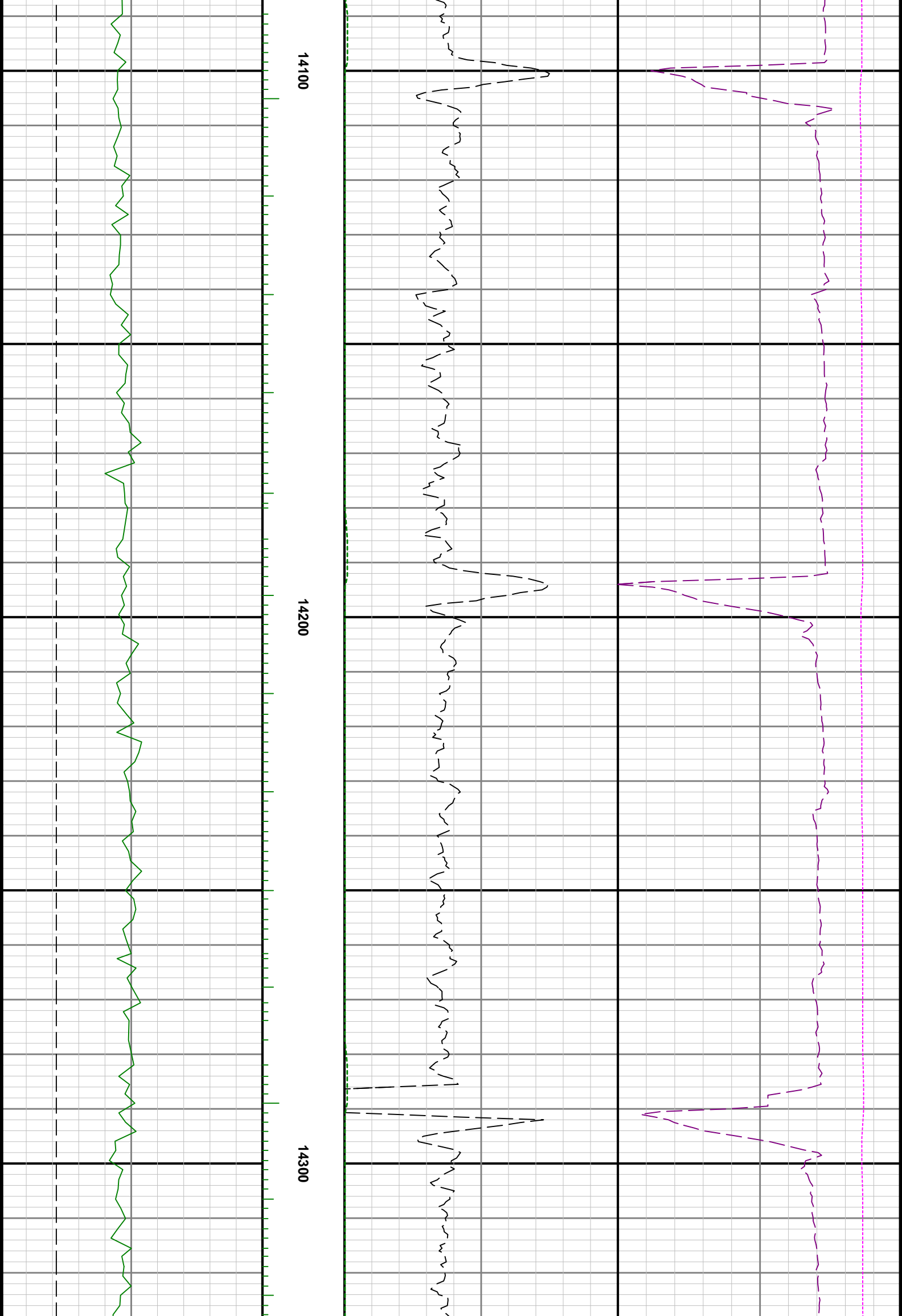
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13600





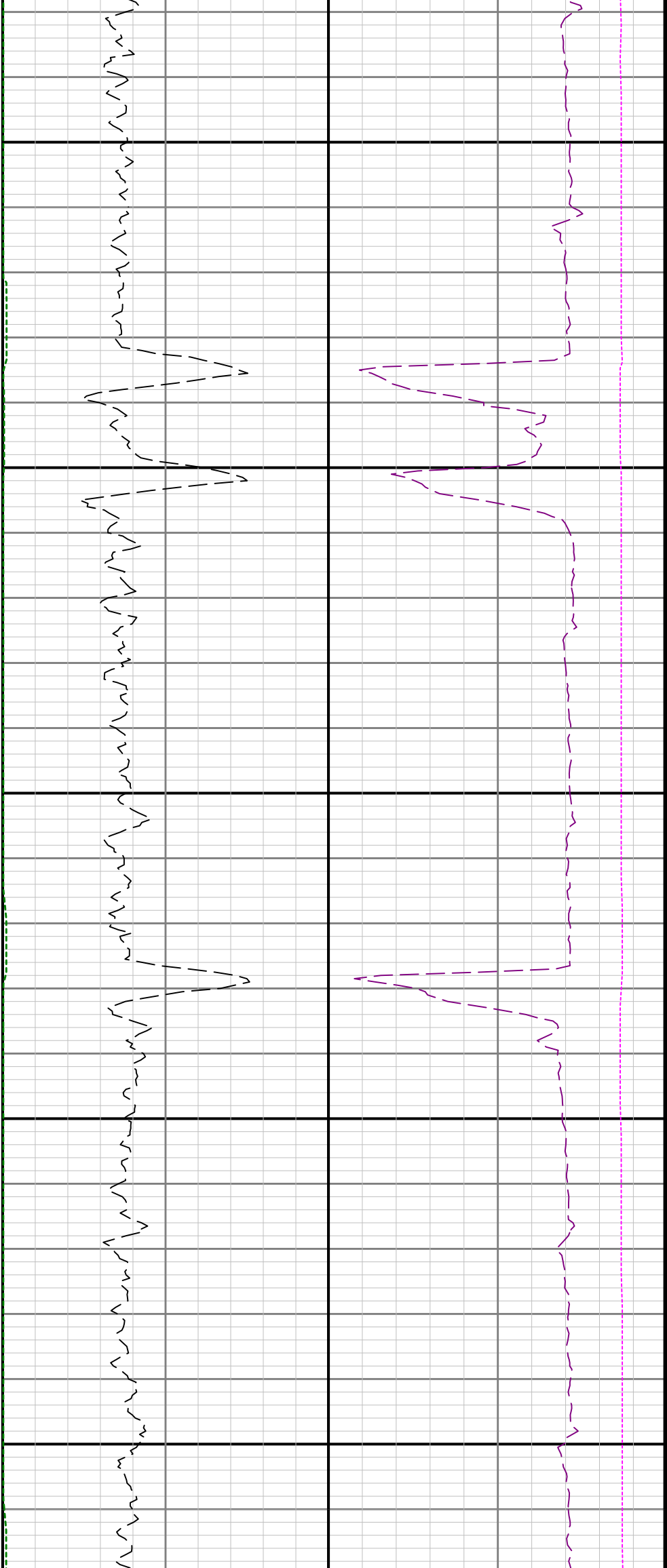




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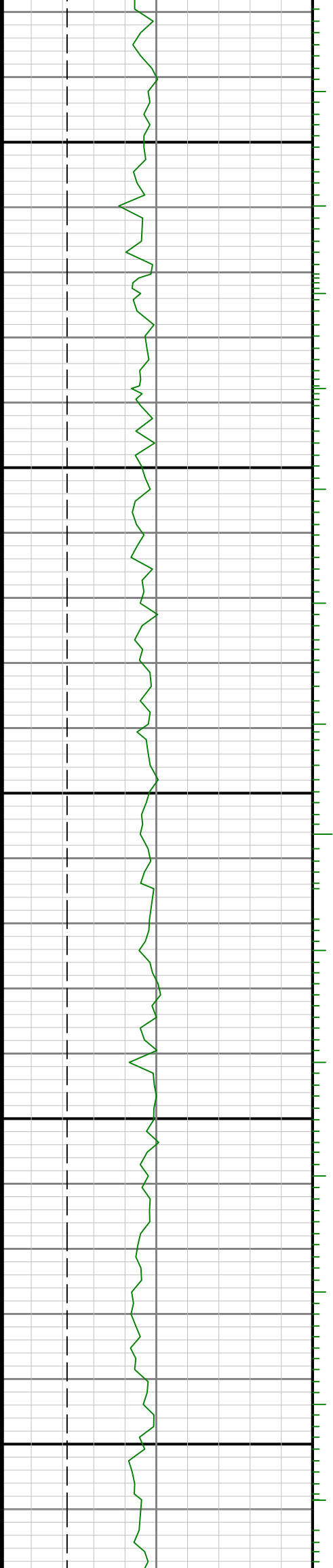
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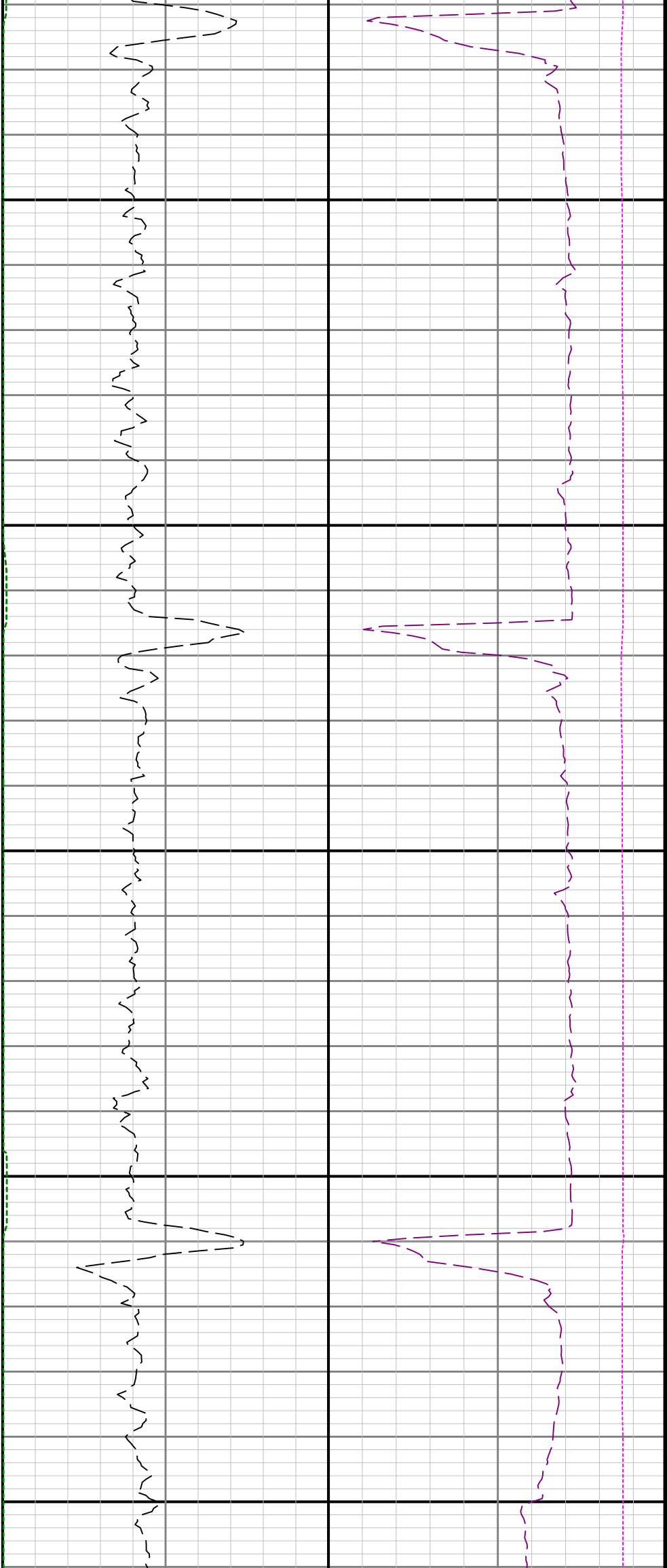
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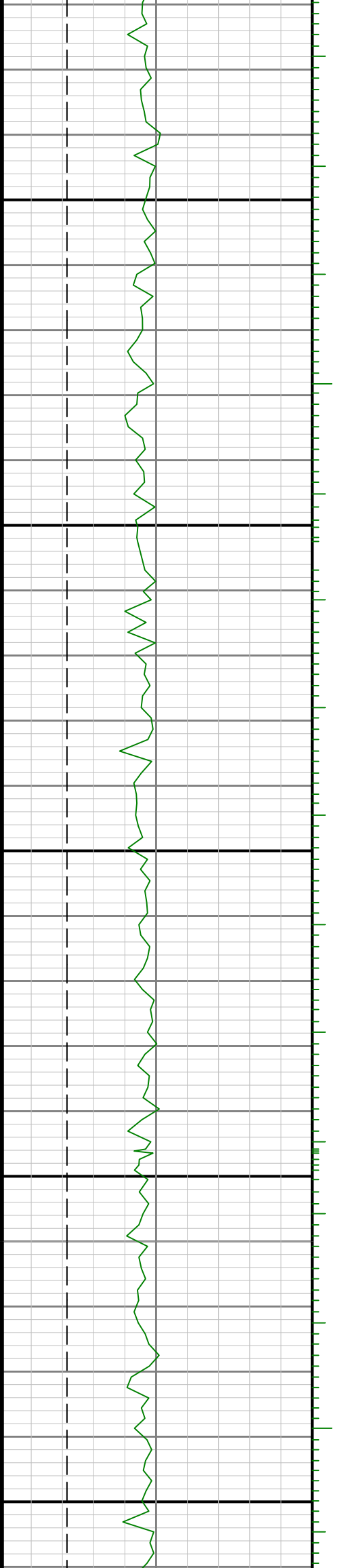


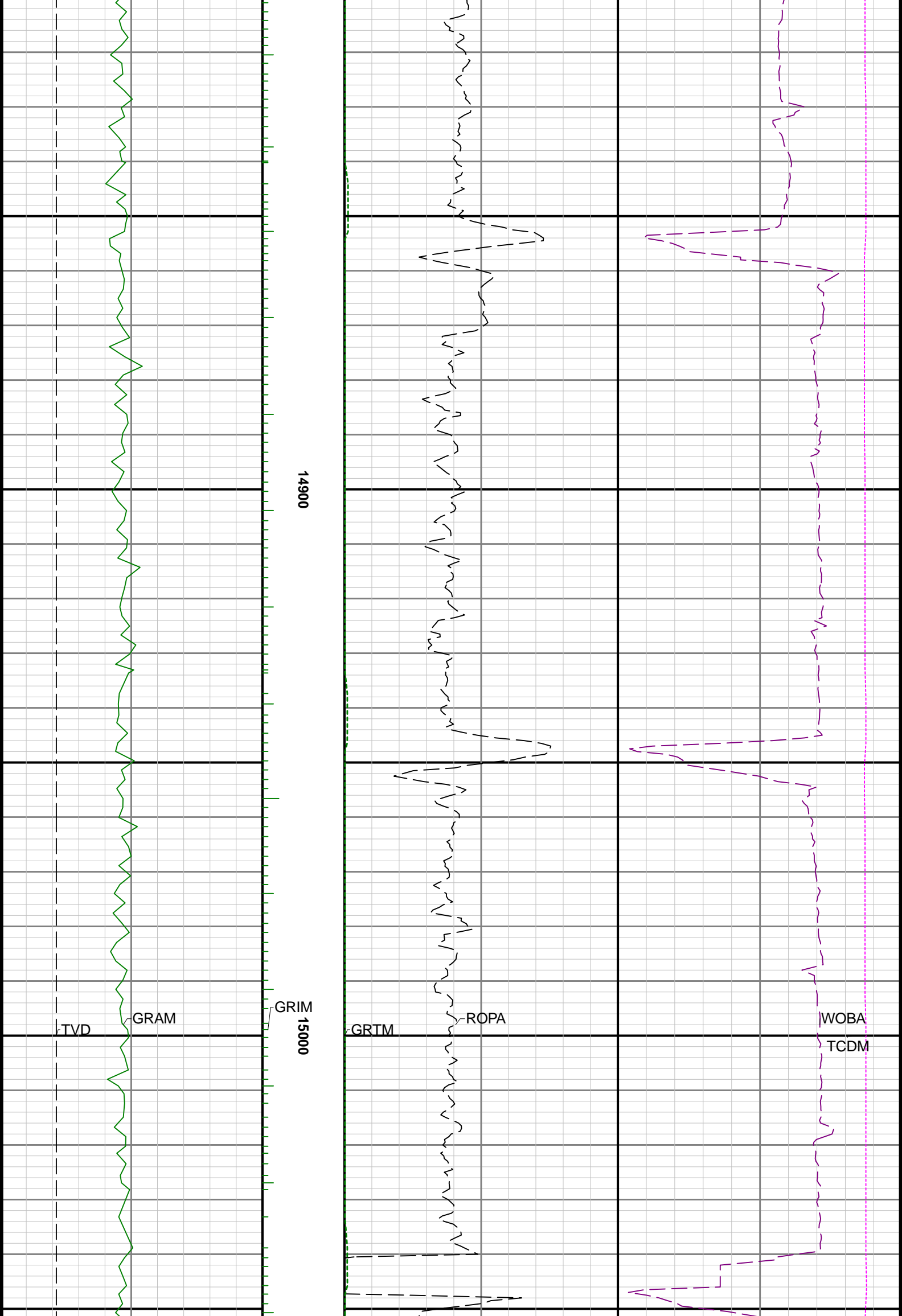


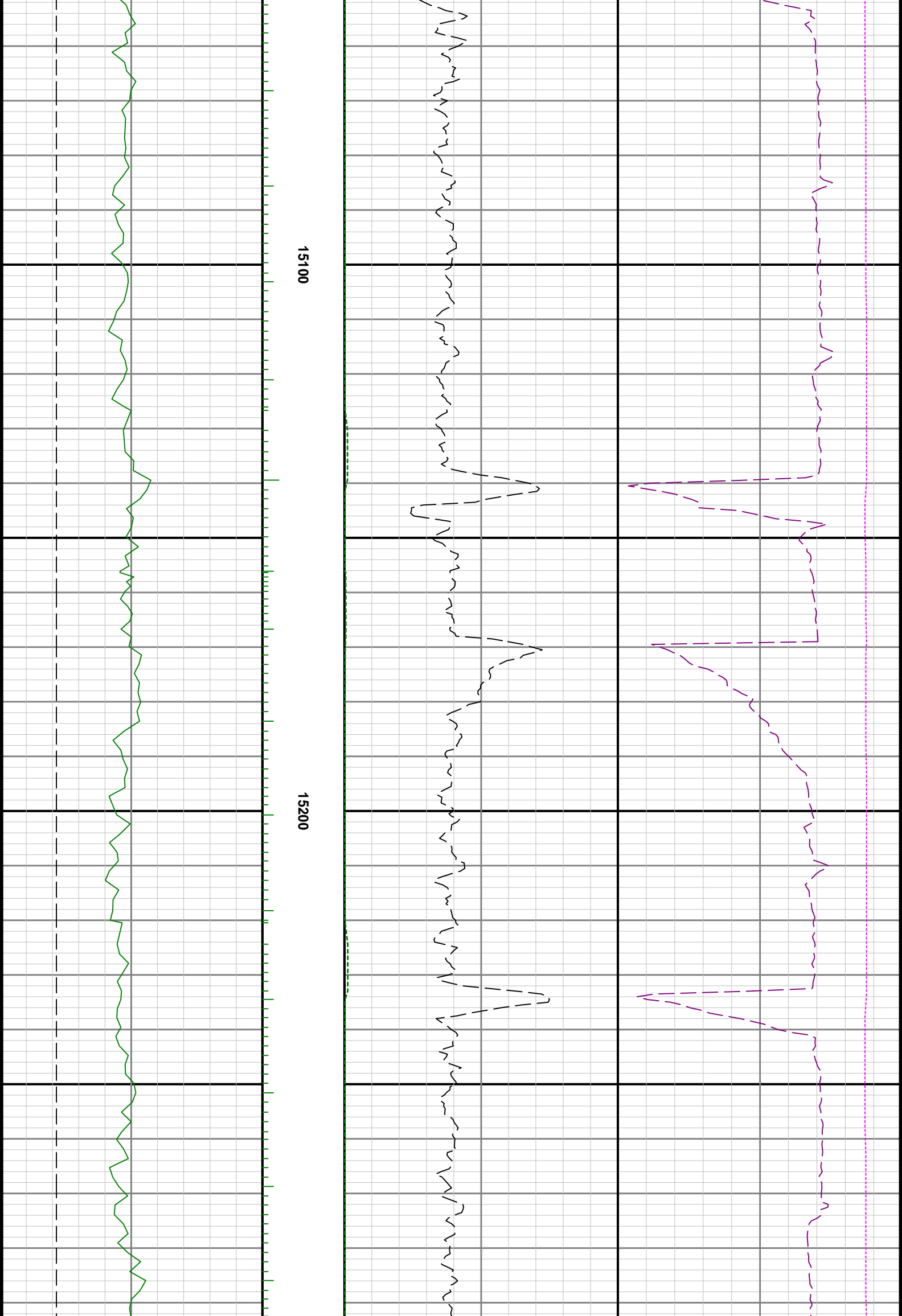
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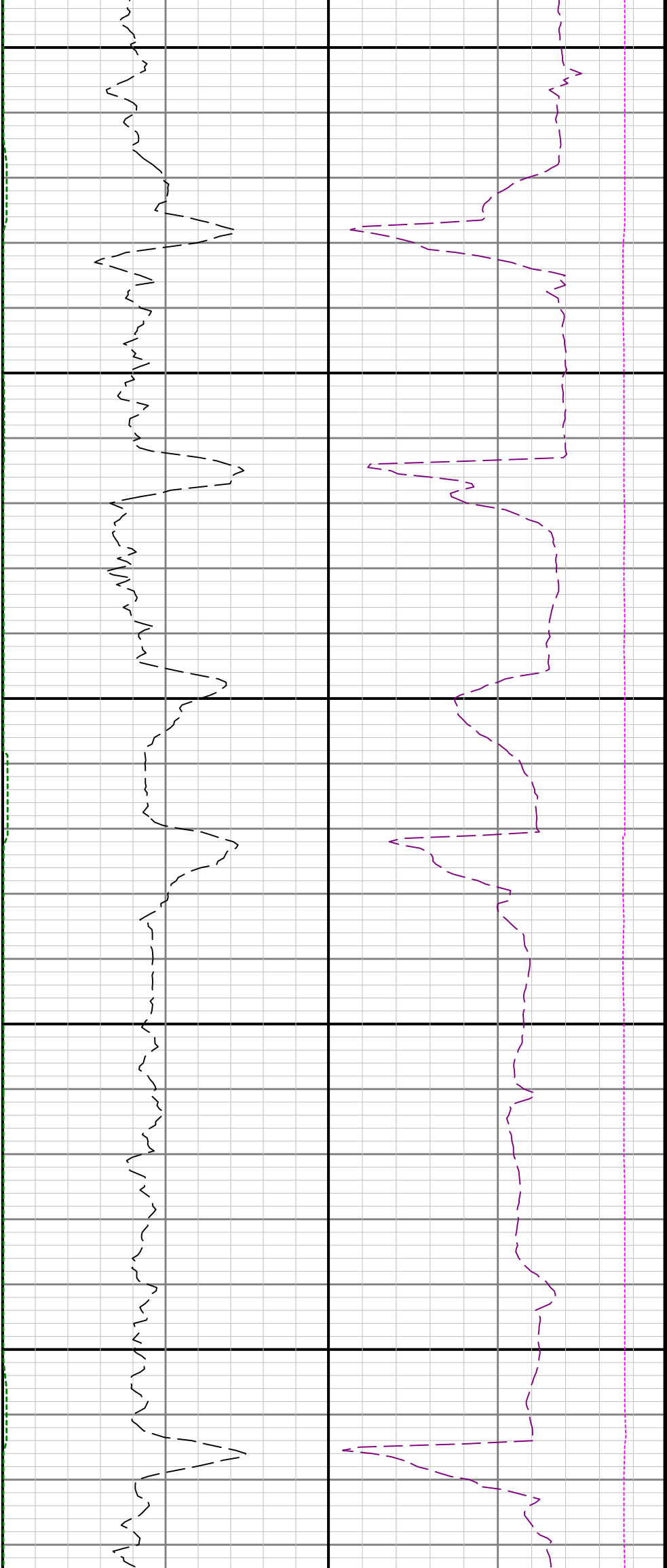
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14800









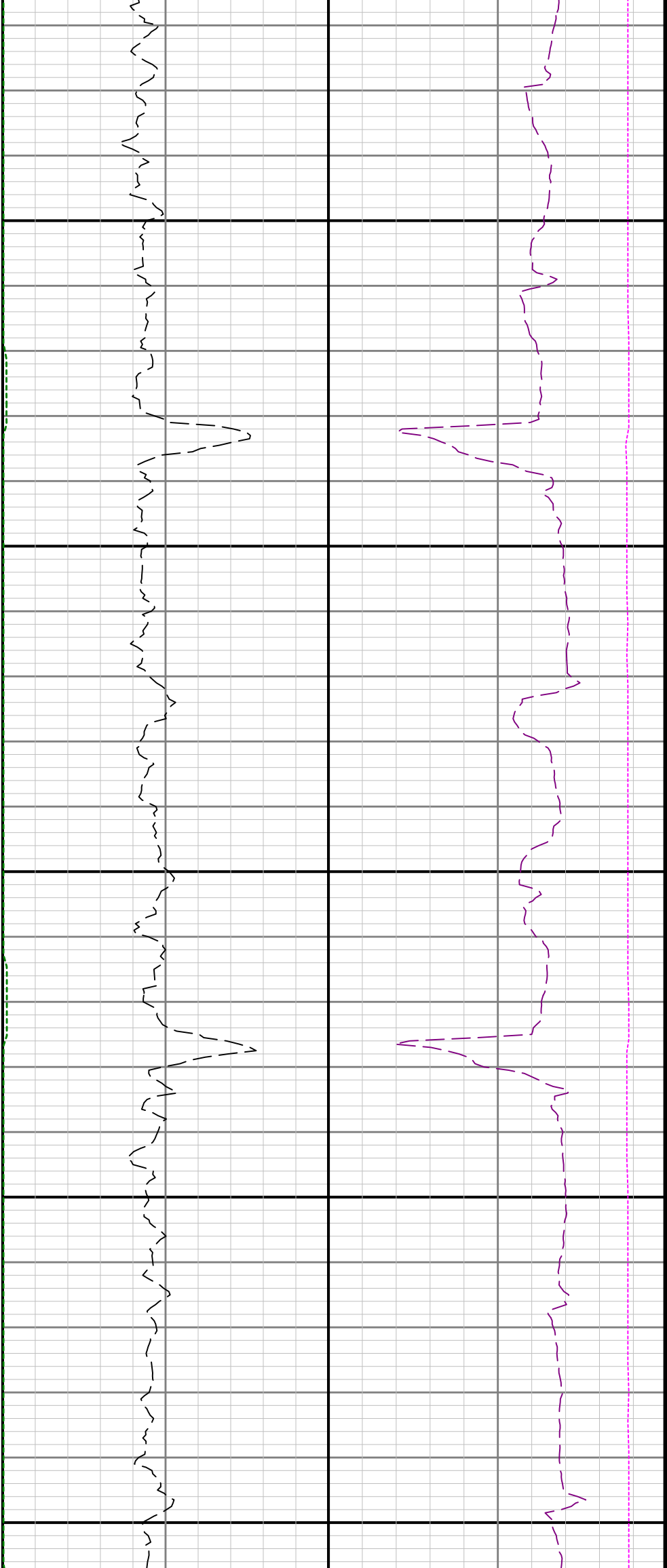
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15400

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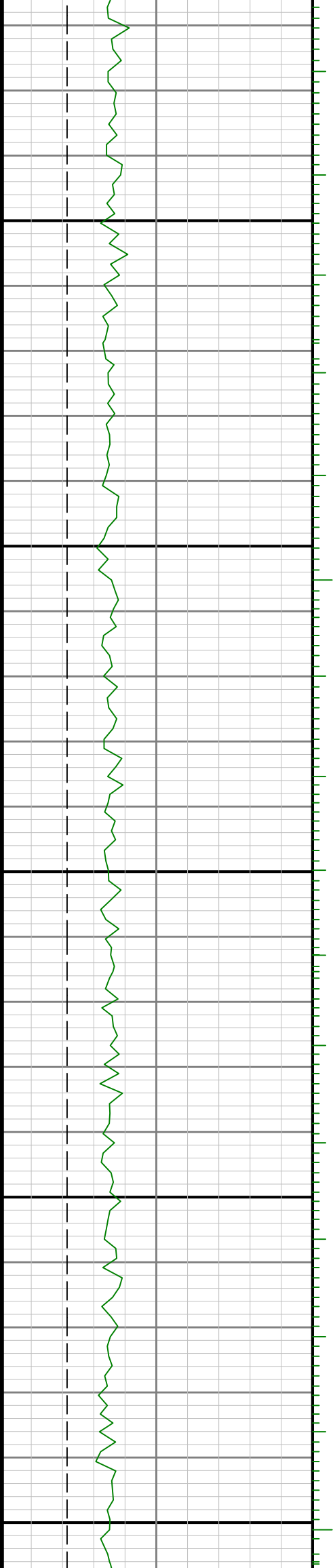


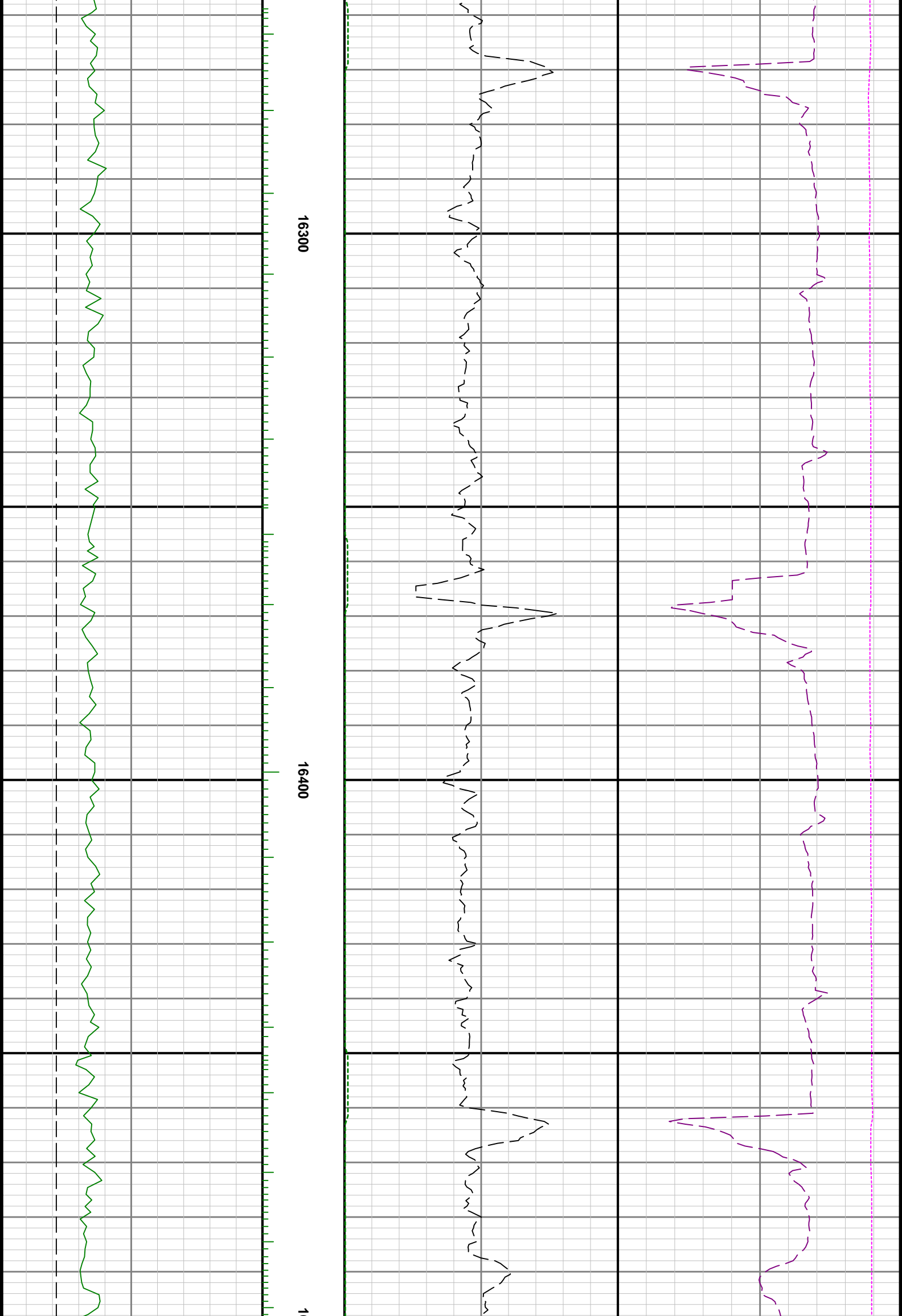


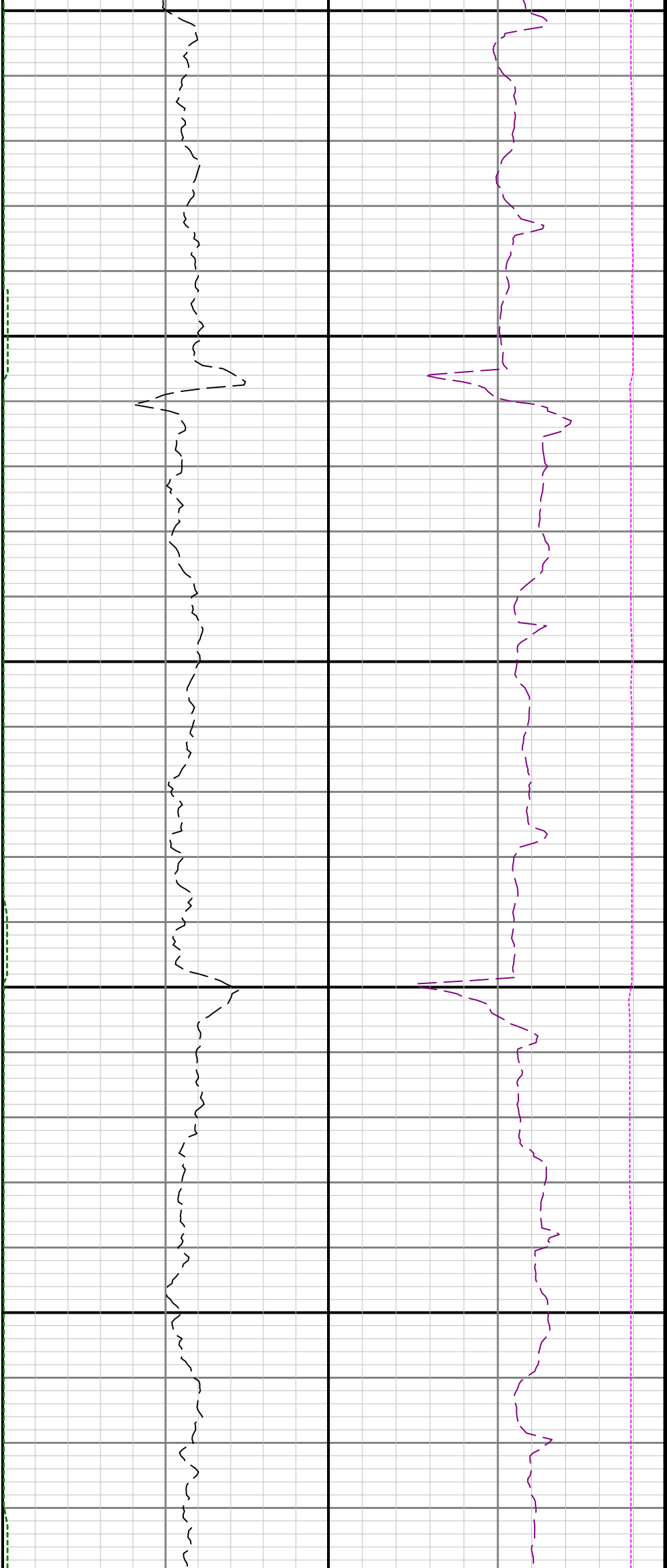


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16200



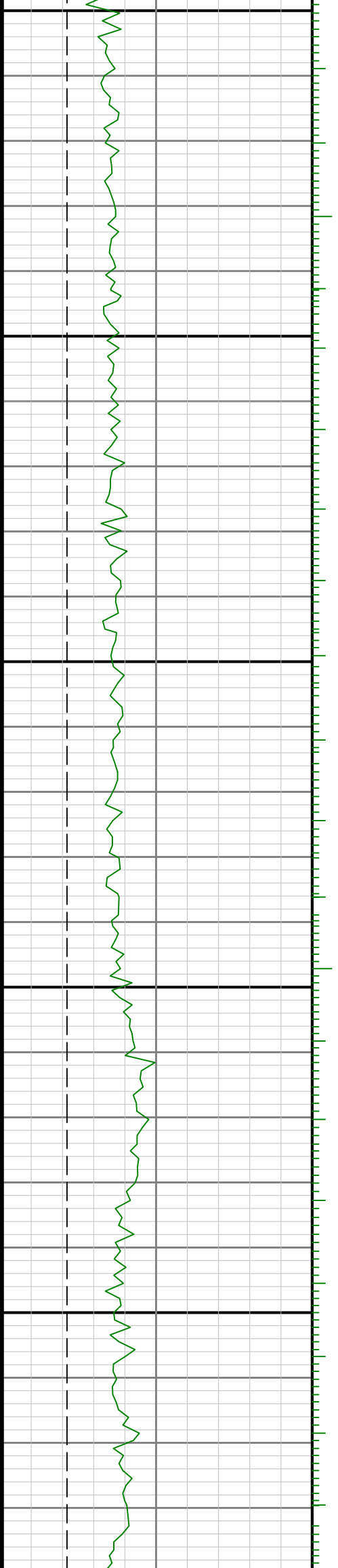


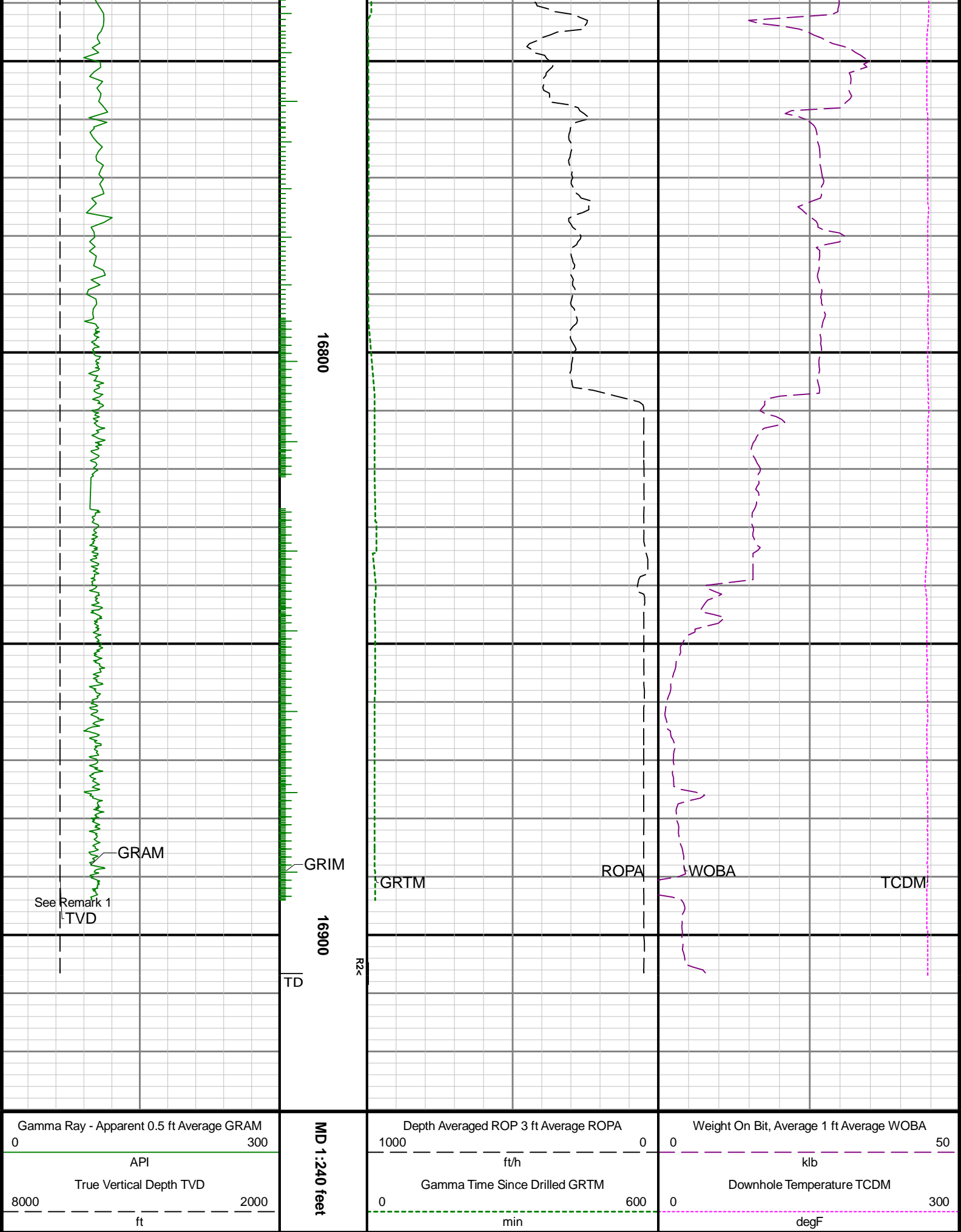


6500

16600

16700





See Remark 1

GRAM

GRIM

16800

16900

TVD

R2<

GRTM

ROPA

WOBA

TCDM

Gamma Ray - Apparent 0.5 ft Average GRAM

0 300

API

True Vertical Depth TVD

8000 2000

ft

MD 1:240 feet

Depth Averaged ROP 3 ft Average ROPA

1000 0

ft/h

Gamma Time Since Drilled GRTM

0 600

min

Weight On Bit, Average 1 ft Average WOBA

0 50

klb

Downhole Temperature TCDM

0 300

degF