



LWD MEMORY LOG

Gamma Ray

Scale:

1:240

Measured Depth

Depth Reference:

Driller's Depth

State: Colorado

County: Weld Country: United States

Status:

Final Print

Surface Location:

Latitude:

Longitude:

40° 16' 58.584" N
104° 27' 56.412" W

Other Services:

API No: 05-123-49270-00

Job ID: 111313220

SEC: 29

TWN: 4N

RGE: 63W

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

Log Measured From: Rig Floor

Elevation:

Above P.D.:

4762.00 ft

4792.00 ft

Elev. KB: 4792.00 ft

Elev. DF: 4792.00 ft

Elev. GL: 4762.00 ft

Dates

From: 2022-05-15
To: 2022-05-28
Spud: 2022-05-15

Drilled (ft) 110.00
Top: 110.00
Bottom: 14490.00

Logged (ft) 110.00
Top: 110.00
Bottom: 14477.00

Azi Reference North: Grid Dip Angle: (deg) 66.63
Total Magnetic Field Strength: (nT) 51842
Mag to Reference North Correction: (deg) 7.25

Interval

Magnetic Field Reference

Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	30.00	1959.00	9.625	36.00	30.00	1949.00
8.500	1959.00	14490.00				

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	1975.60	8.500	12531.00	1.18 153.57	90.13 179.29
Oil Based Mud	1959.00	14490.16				

Acquisition System

Software Version

Other

Cadence
Plot Studio

RT 6.4
6.4.9541.2

Rig:
Contractor:
District:

H&P 517
Helmerich & Payne Drilling Co
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	1RR	13.500	PDC	4.00	Motor	110.00	1959.00	110.50	1959.00	2022-05-15 06:29	2022-05-15 15:35	7.29
2	2	8.500	PDC	3.00	AutoTrak Curve	1959.00	14477.00	1959.00	14490.00	2022-05-26 13:22	2022-05-28 03:41	35.22

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Tien Bui	2022-05-15	2022-05-29						

Mud Properties Record

Date / Time	Run No	Depth	Mud Type	Density	Viscosity	pH	Fluid Loss	Oil / Water	Source	Total Chlorides	K+
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		(ft)		(ppg)	(cP)		(cm3)			(ppm)	(%)
2022-05-15 05:54	1	200.00	Water Based Mud	9.1	1	9	N/A	N/A	Active Pit	695	N/A
2022-05-25 17:40	2	1959.00	Oil Based Mud	9.3	10	N/A	18.0	79.5/20.5	Active Pit	25000	N/A
2022-05-28 01:00	2	9580.00	Oil Based Mud	9.6	16	N/A	19.8	80.5/19.5	Active Pit	25000	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	NaviTrak	ZDHP899	VSS	14.64	50.82	8.062	3.250
1	NaviTrak	ZDHP899	Directional (mag)	14.64	50.82	8.062	3.250
2	AutoTrak Curve Steering Unit	15141455	Near Bit Inclination	5.93	6.78	7.000	4.330
2	AutoTrak Curve Steering Unit	15141455	Near Bit VSS	5.93	6.78	7.000	4.330
2	AutoTrak Curve MWD	14281551	Gamma (single)	2.07	12.95	7.000	3.250
2	AutoTrak Curve MWD	14281551	Directional (mag)	12.27	23.15	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
NTK	NaviTrak	Probe Based Directional Module, NaviTrak Platform
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

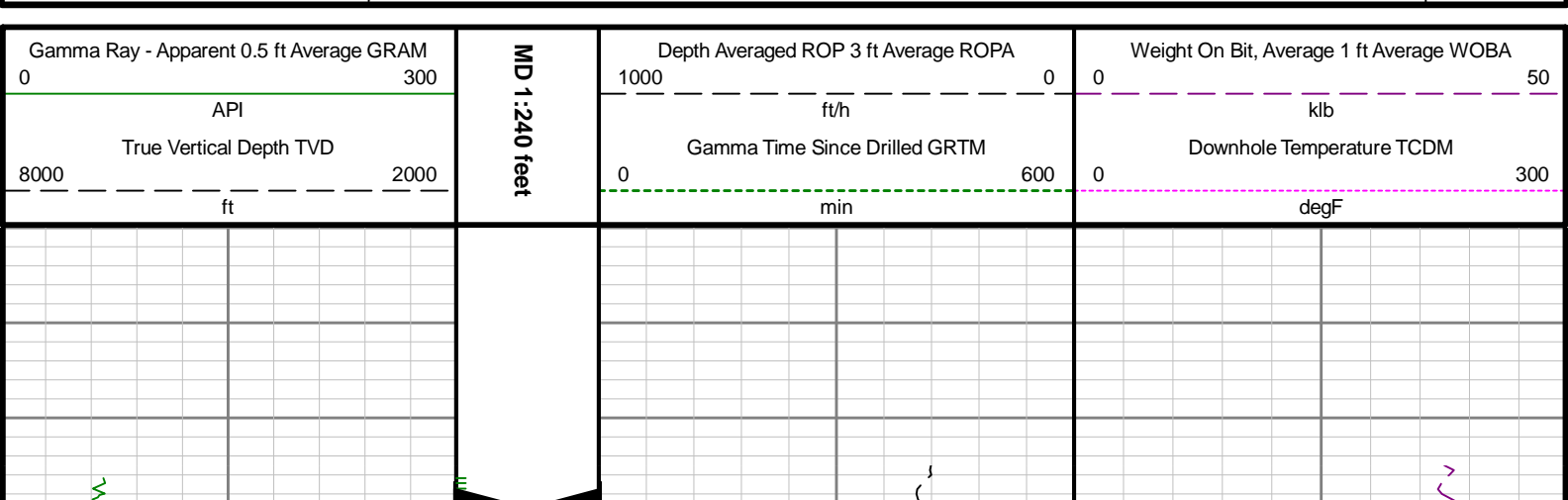
1	Baker Hughes Company run 1 utilized 8 inch NaviGamma services (Gamma Ray and Directional) behind an 13 ½ inch PDC bit and steerable assembly from 110 to 1959 feet MD (110 to 1958 feet TVD).
2	Baker Hughes Company run 2 utilized 6 ¾ inch NaviGamma services (Gamma Ray and Directional) behind an 8 ½ inch PDC bit and rotary steerable assembly from 1959 to 14490 feet MD (1958 to 6660 feet TVD).
3	The Gamma Ray Apparent (GRAM) data is presented 0 to 300 API, per the customer's request.
4	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.

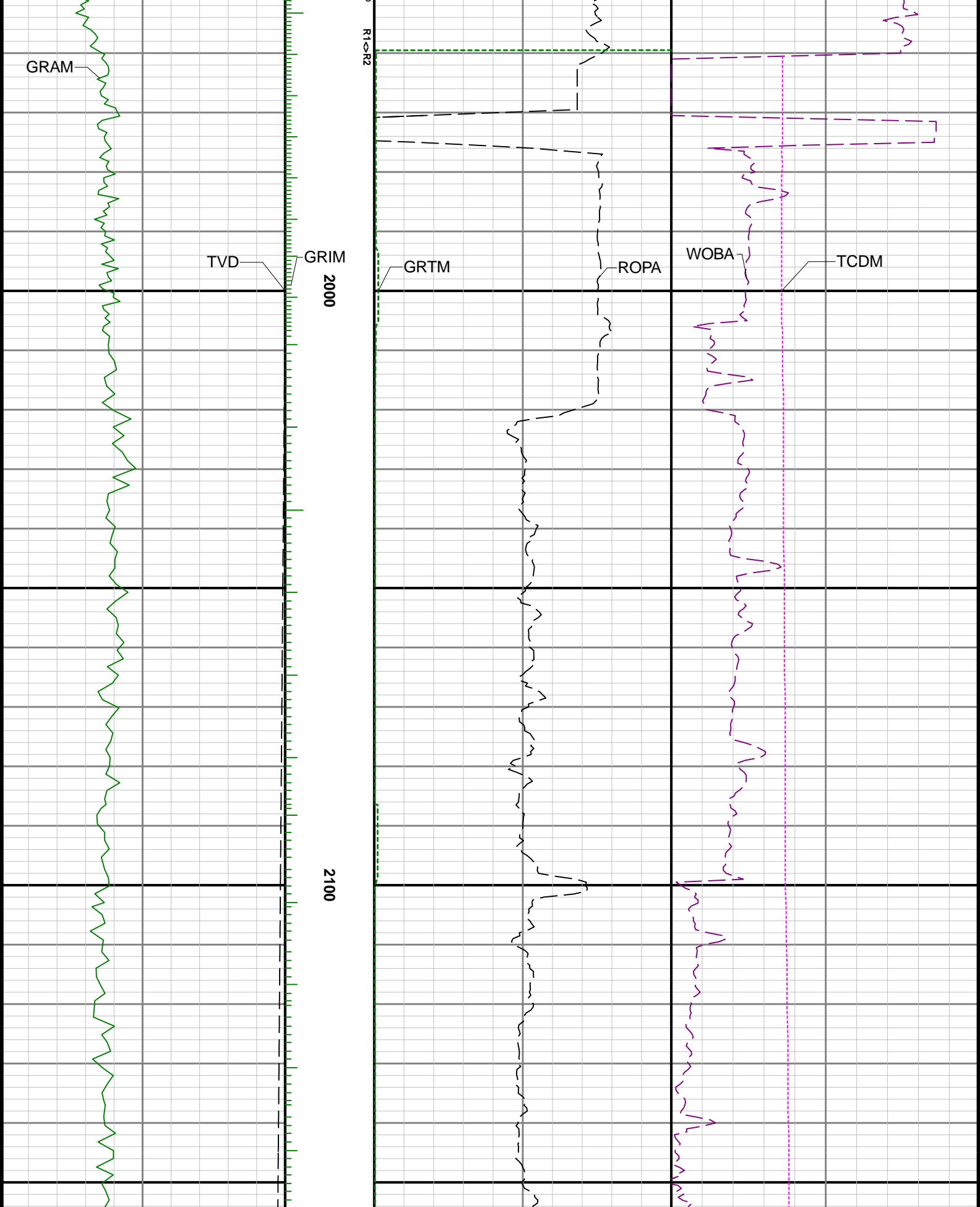
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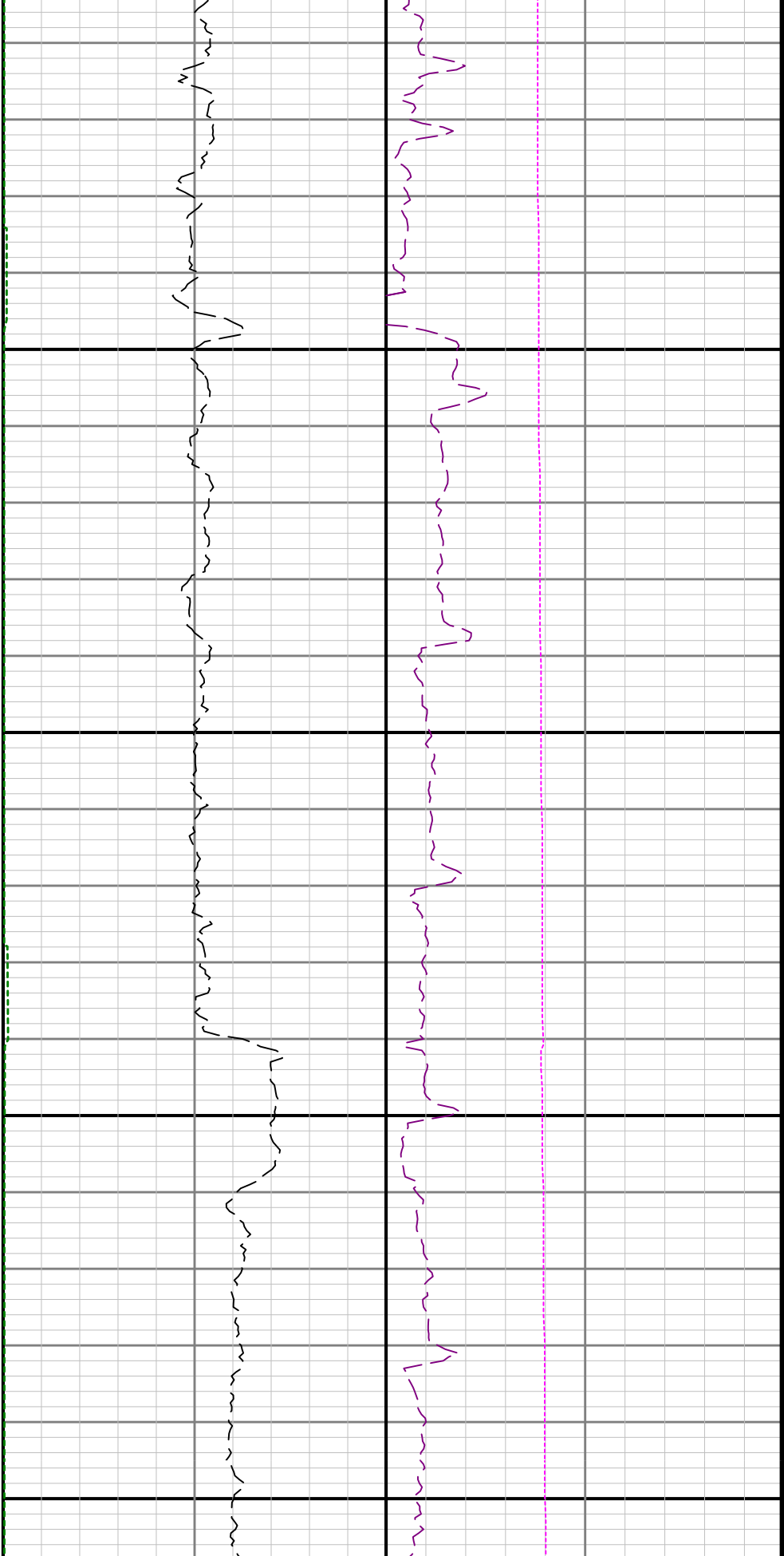
Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	14477.00	8.500	2	The interval from 14477 to 14490 feet MD (6660 to 6660 feet TVD) was not logged due to sensor to bit offset at well TD.

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

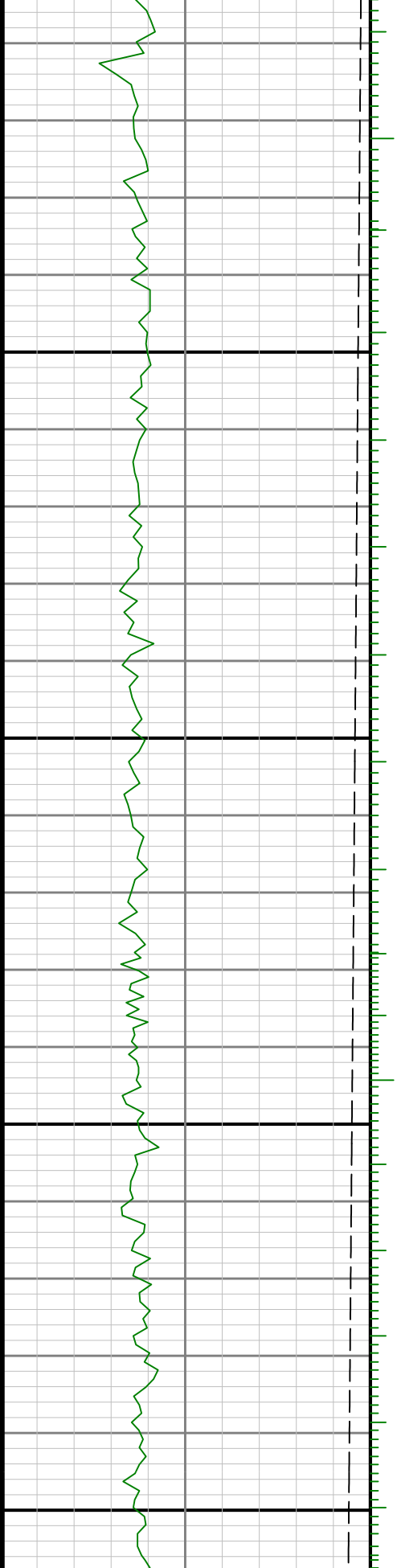


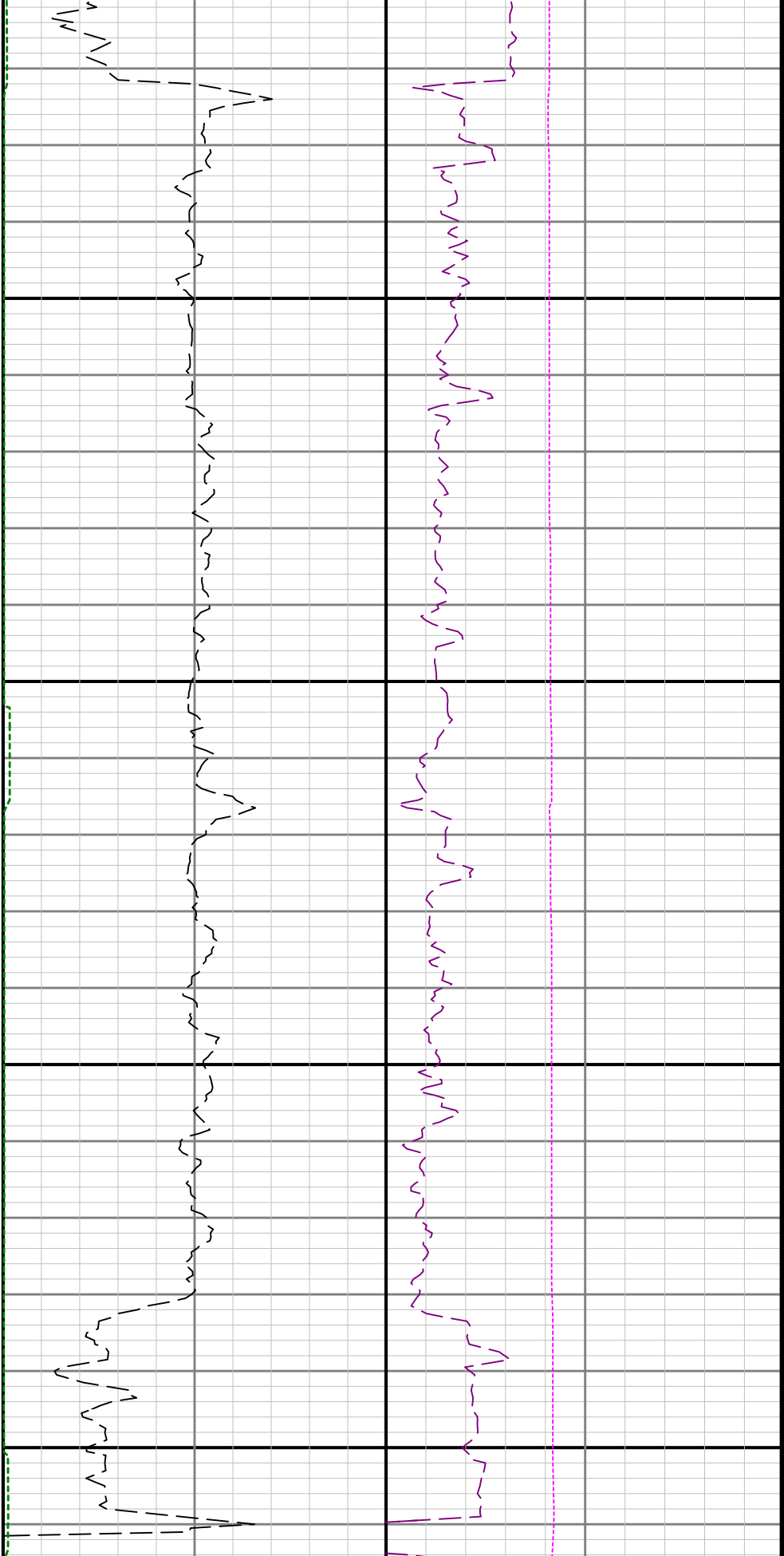




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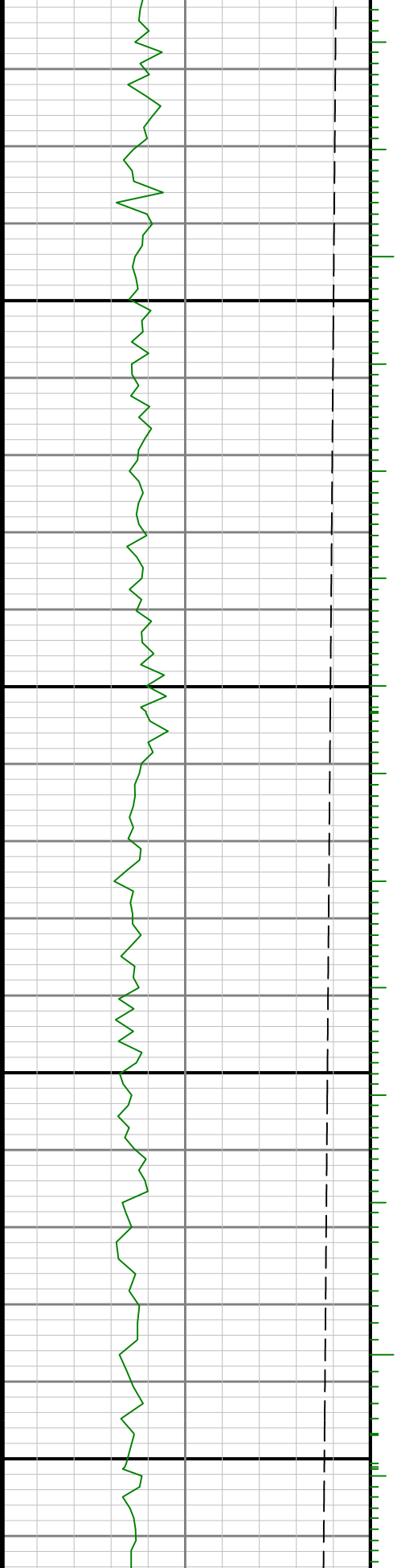
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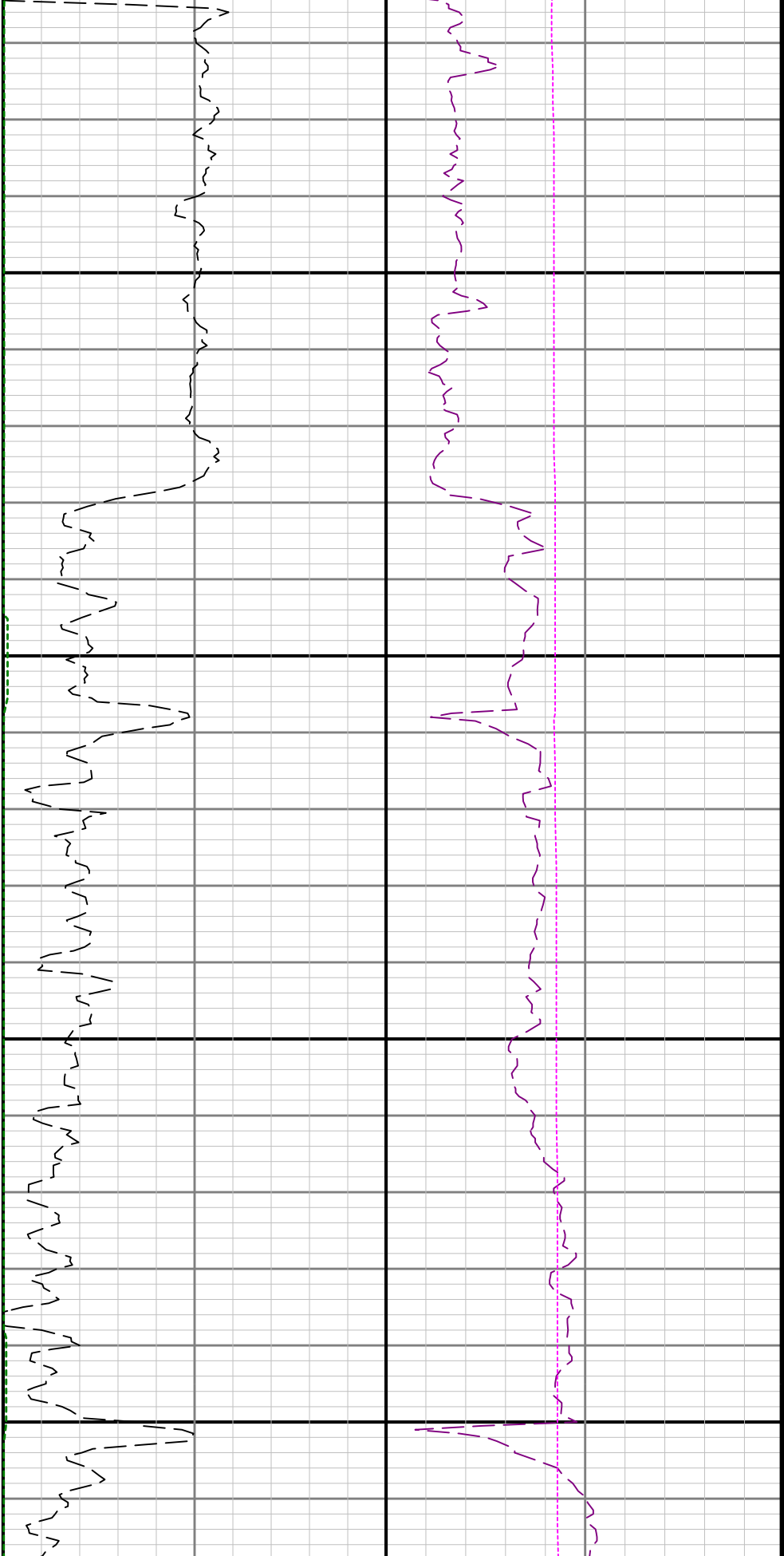




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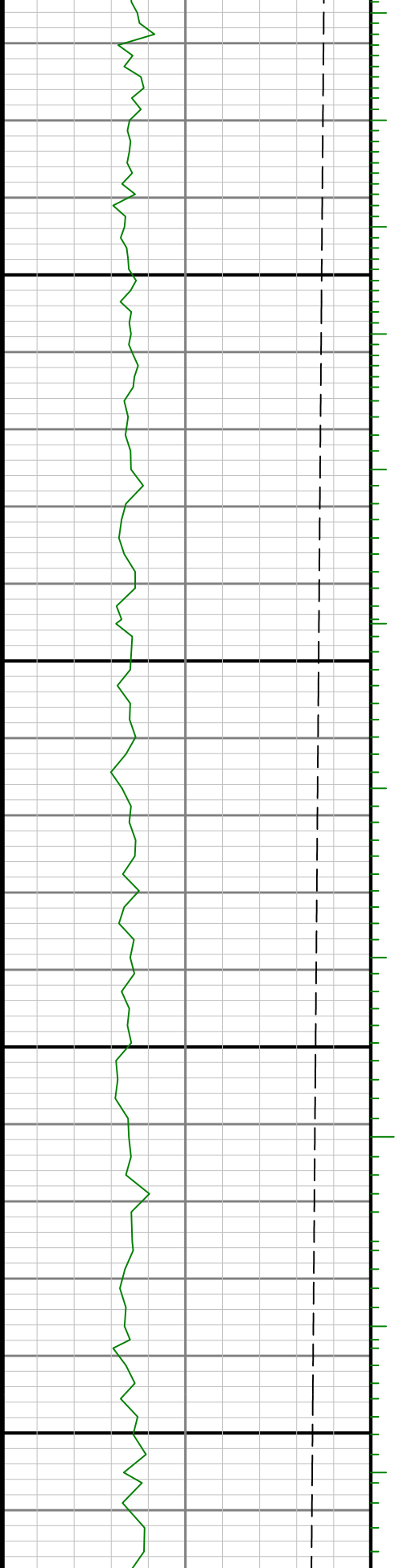
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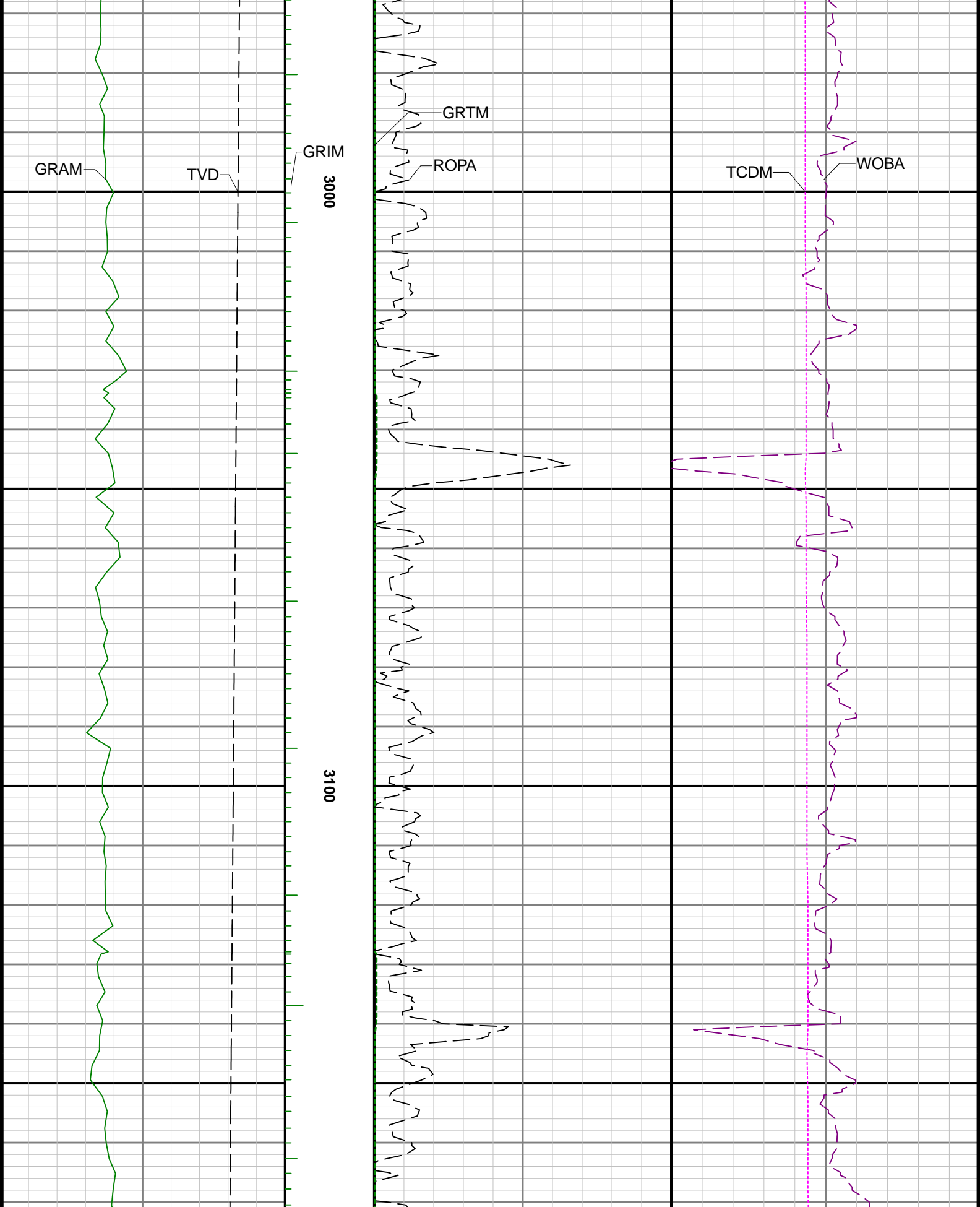


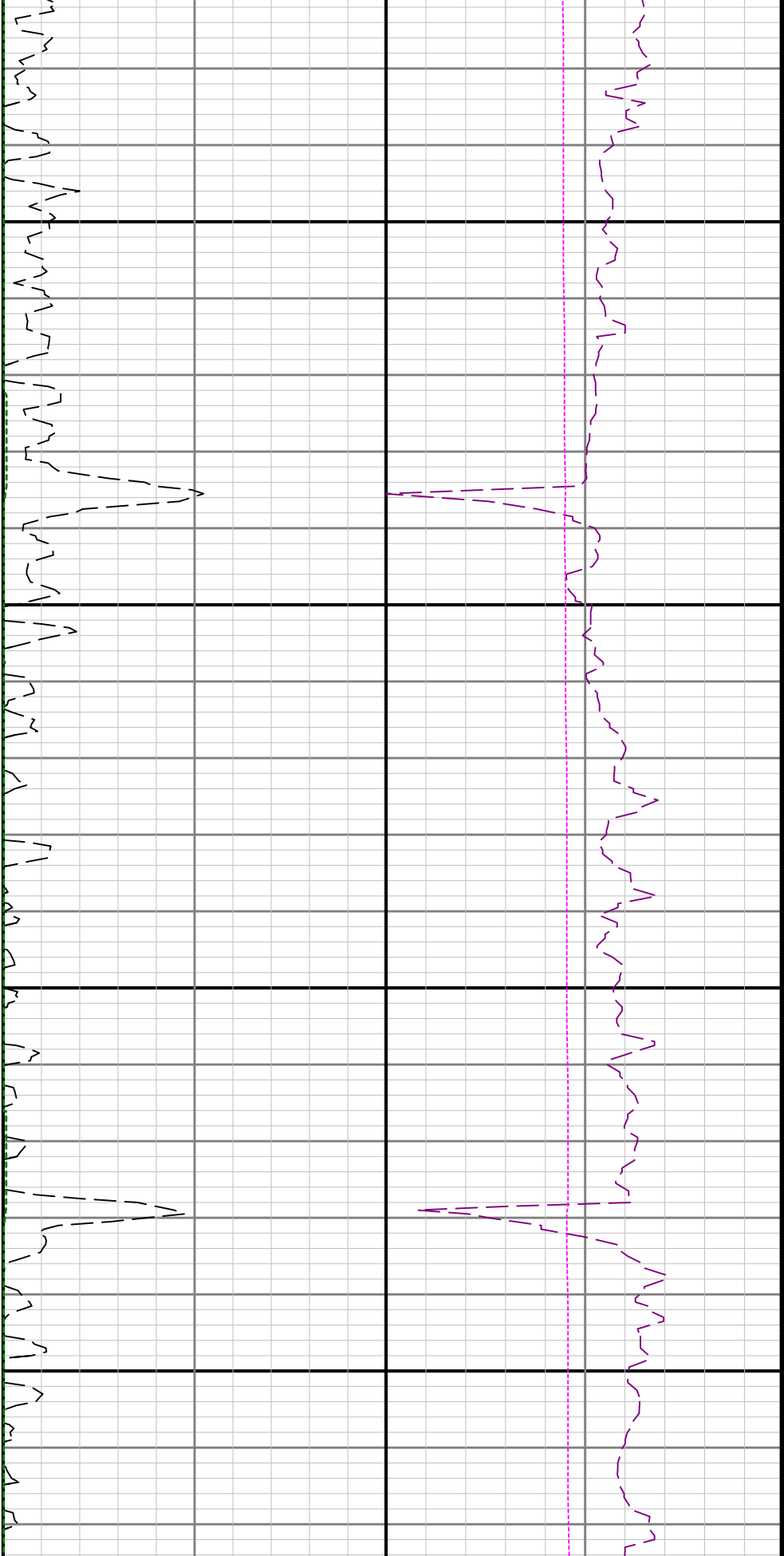


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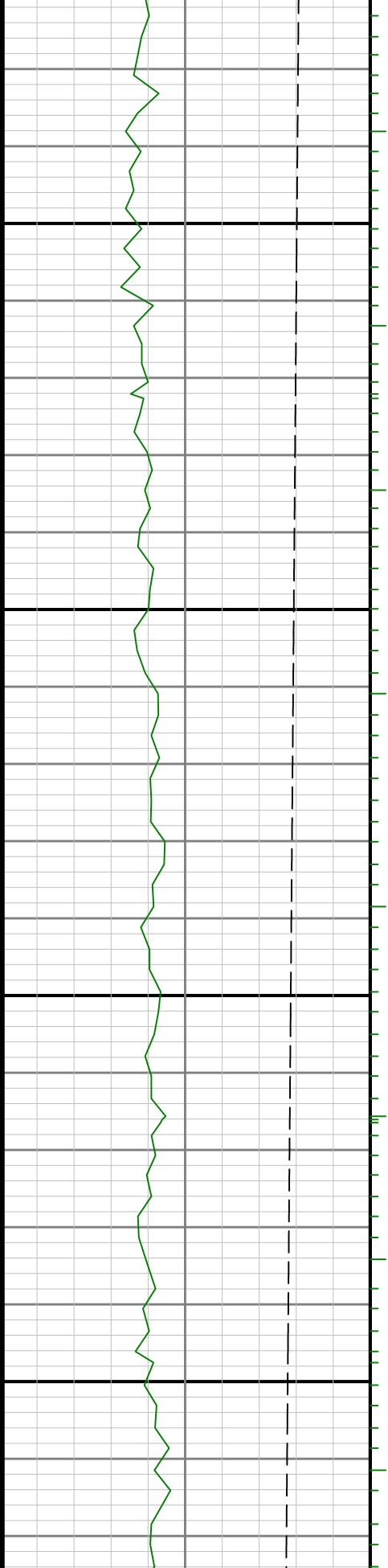


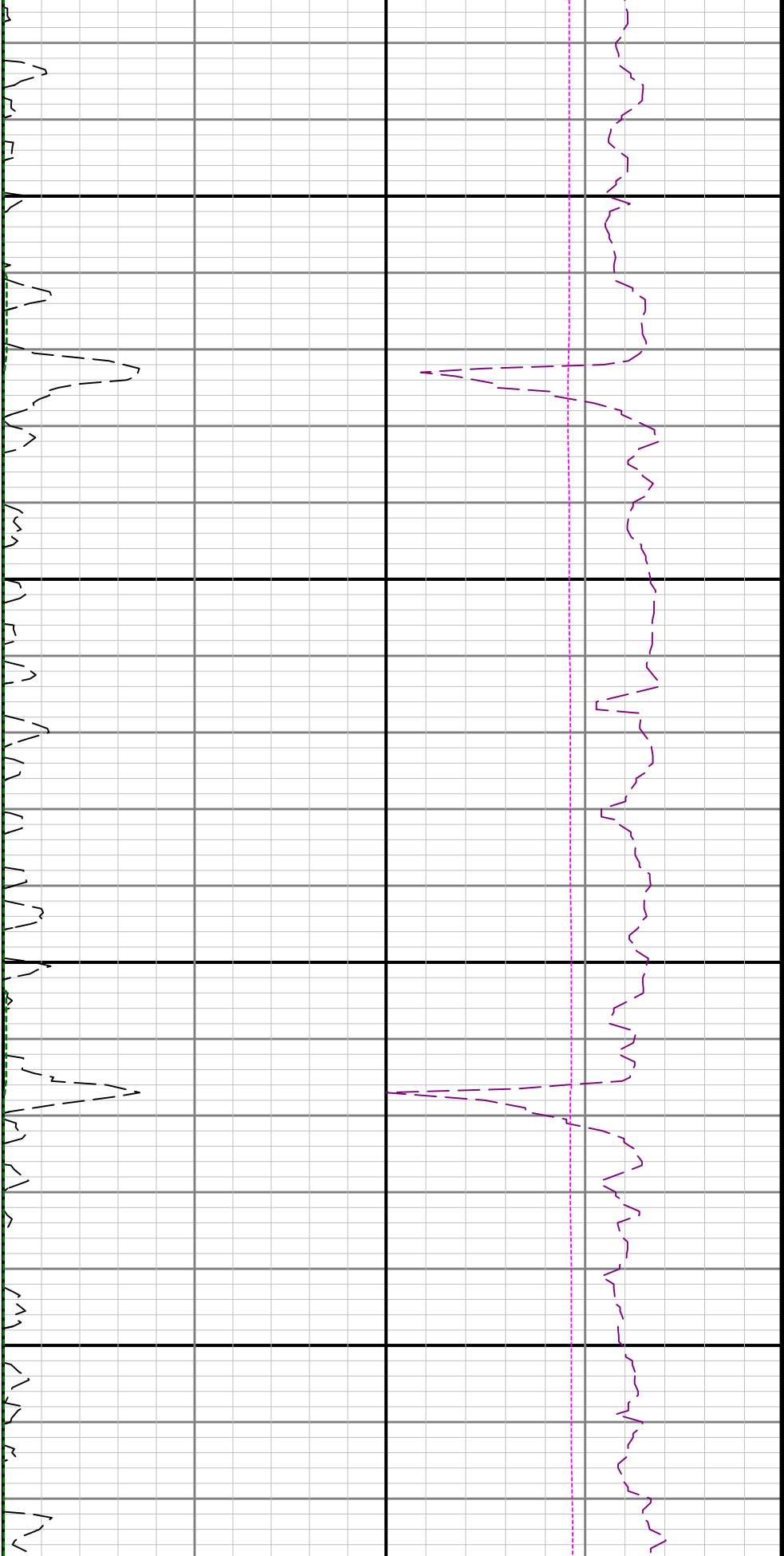




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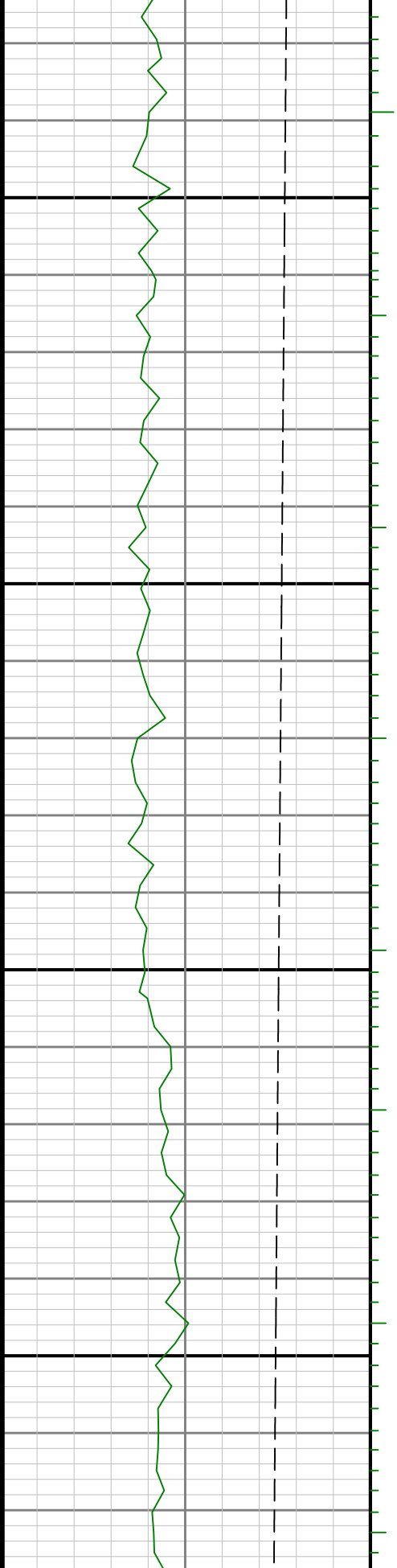
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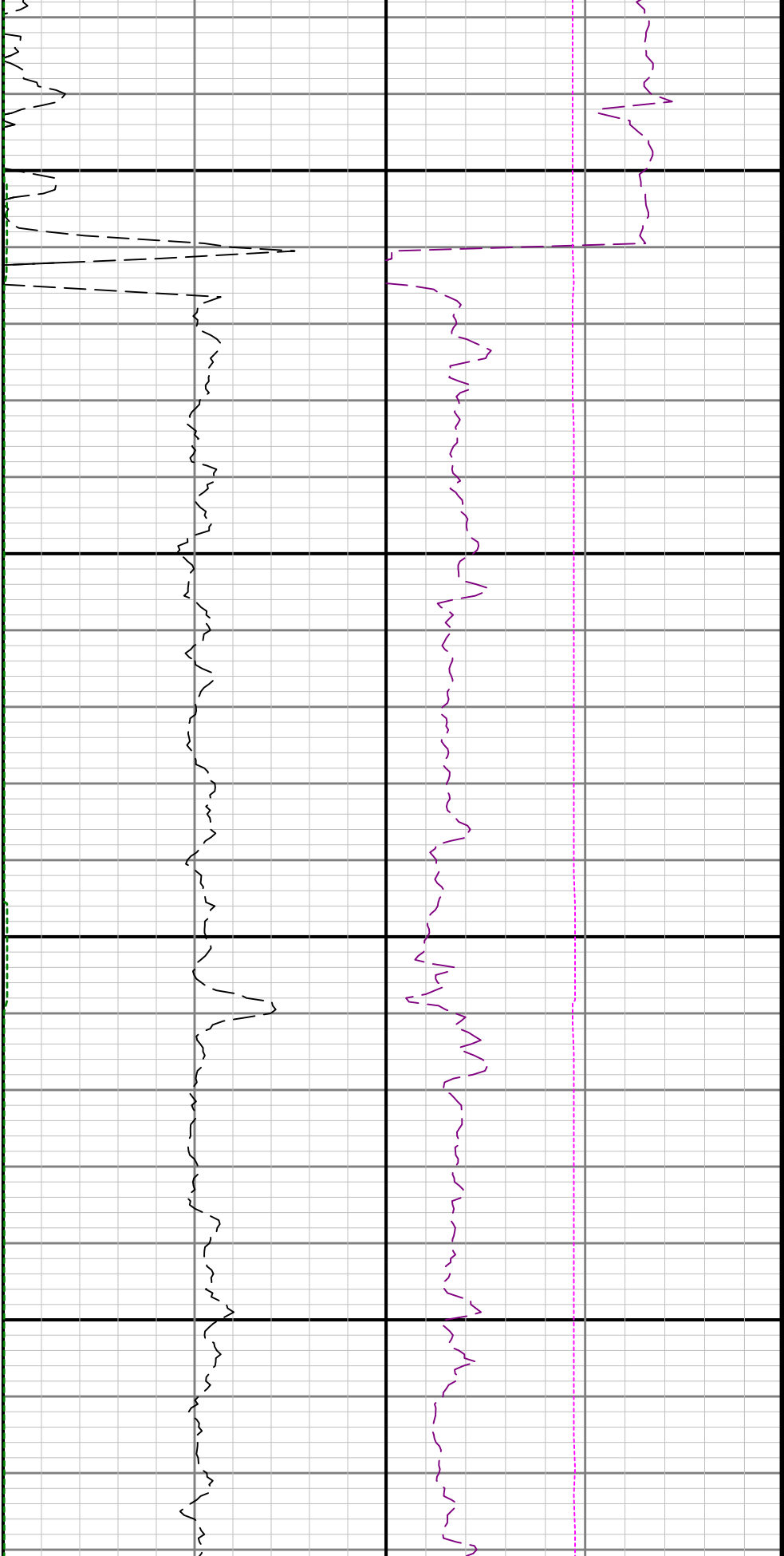




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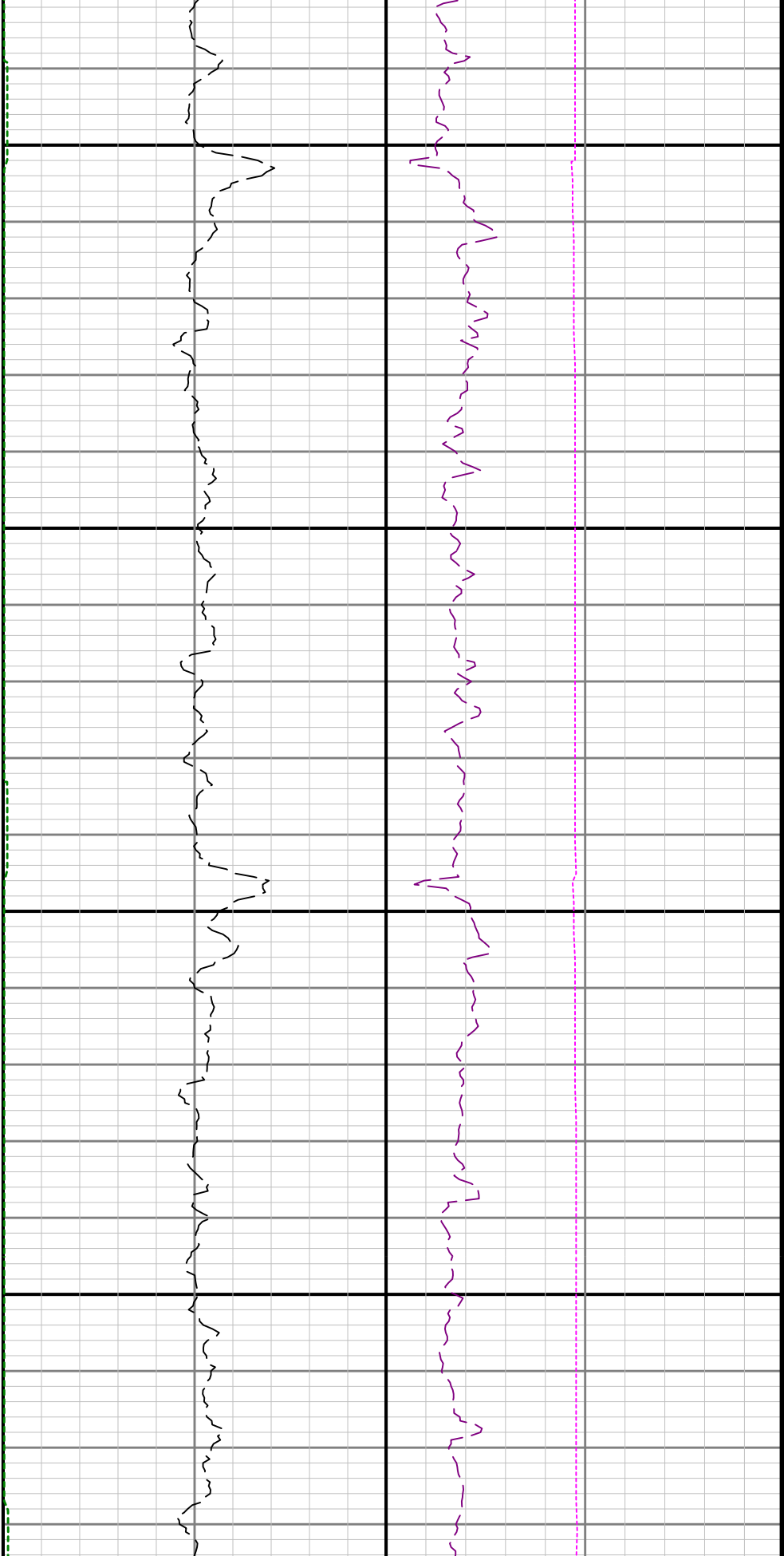
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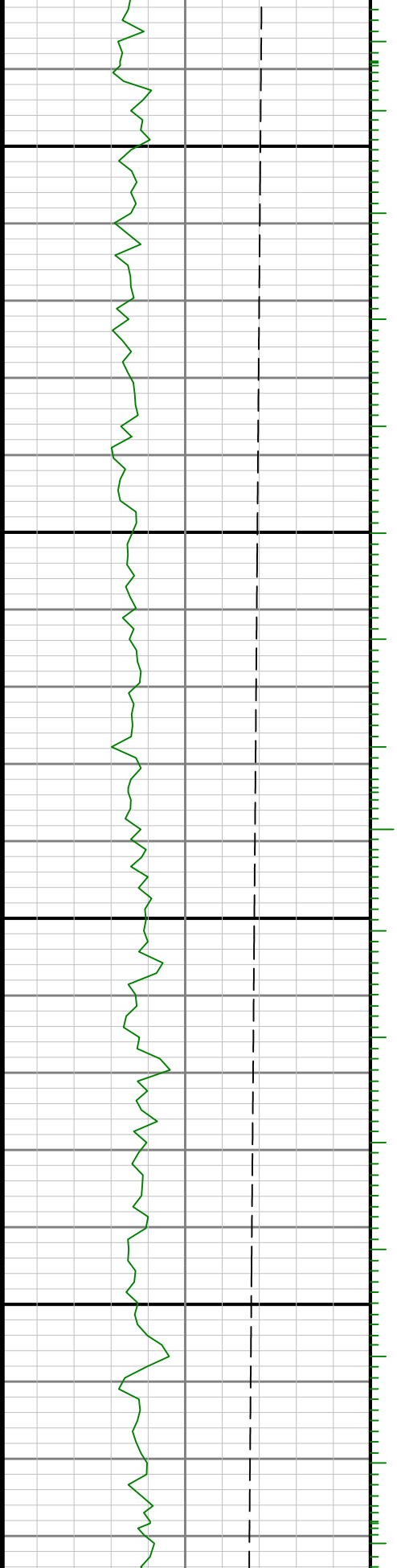
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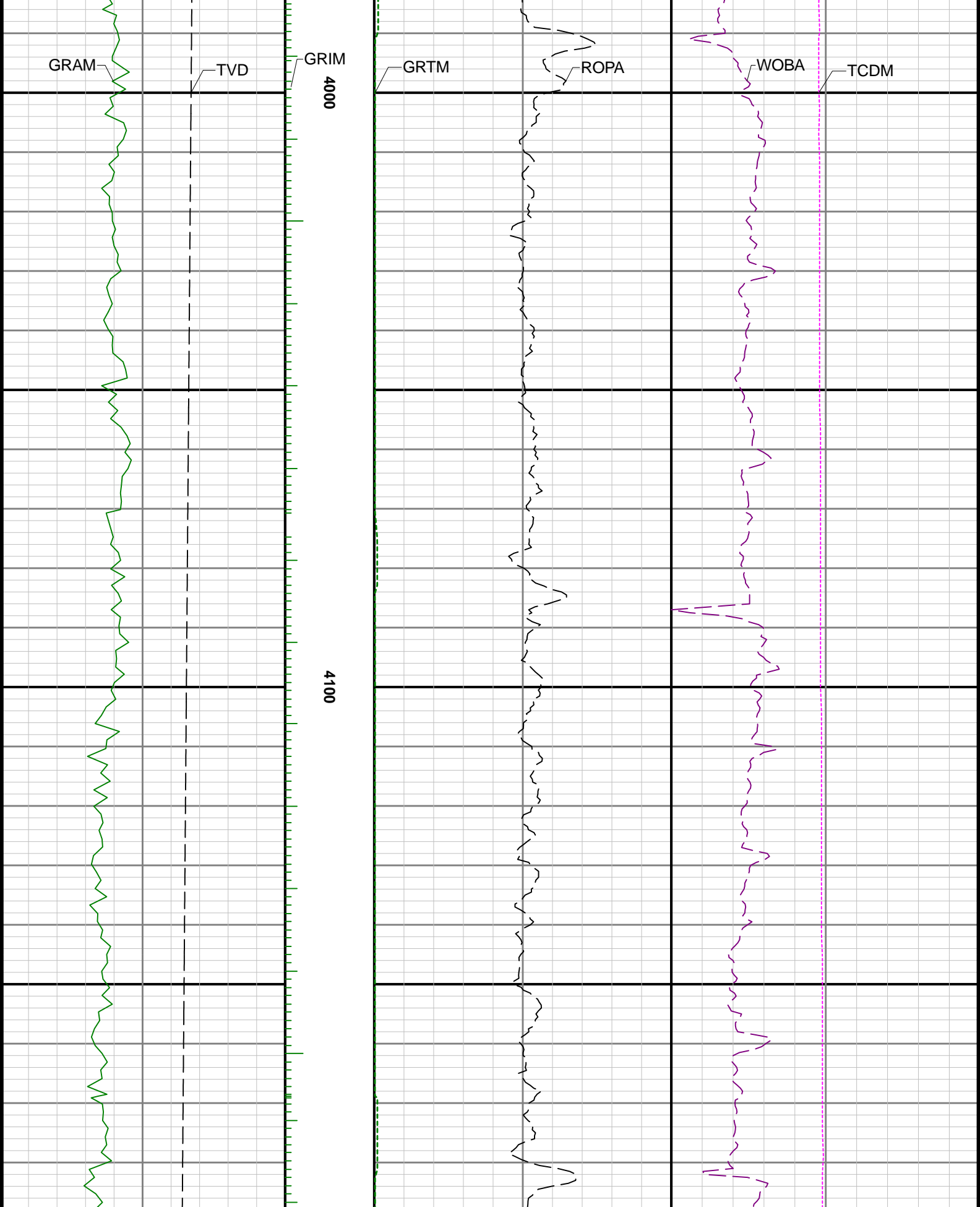
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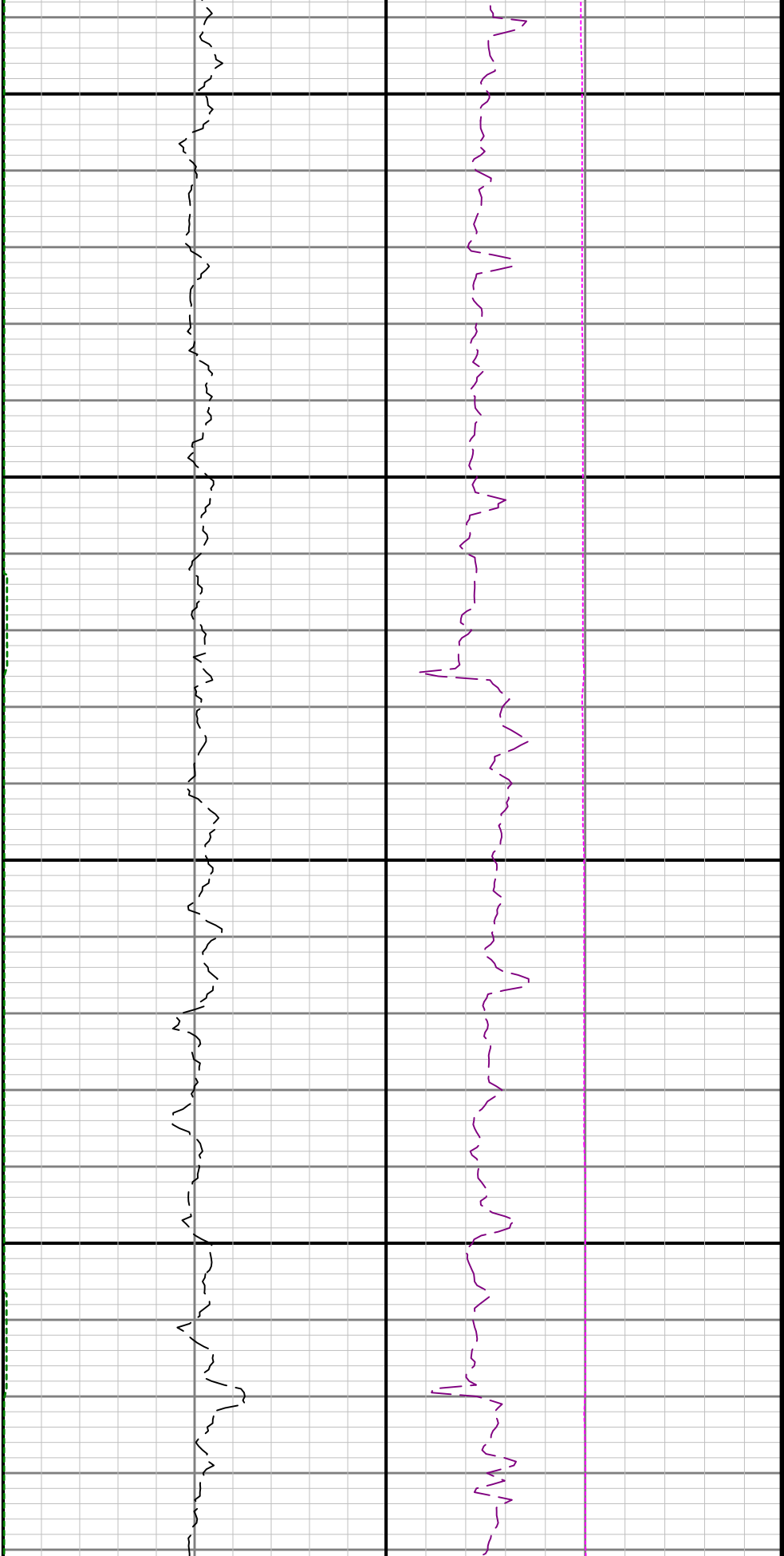


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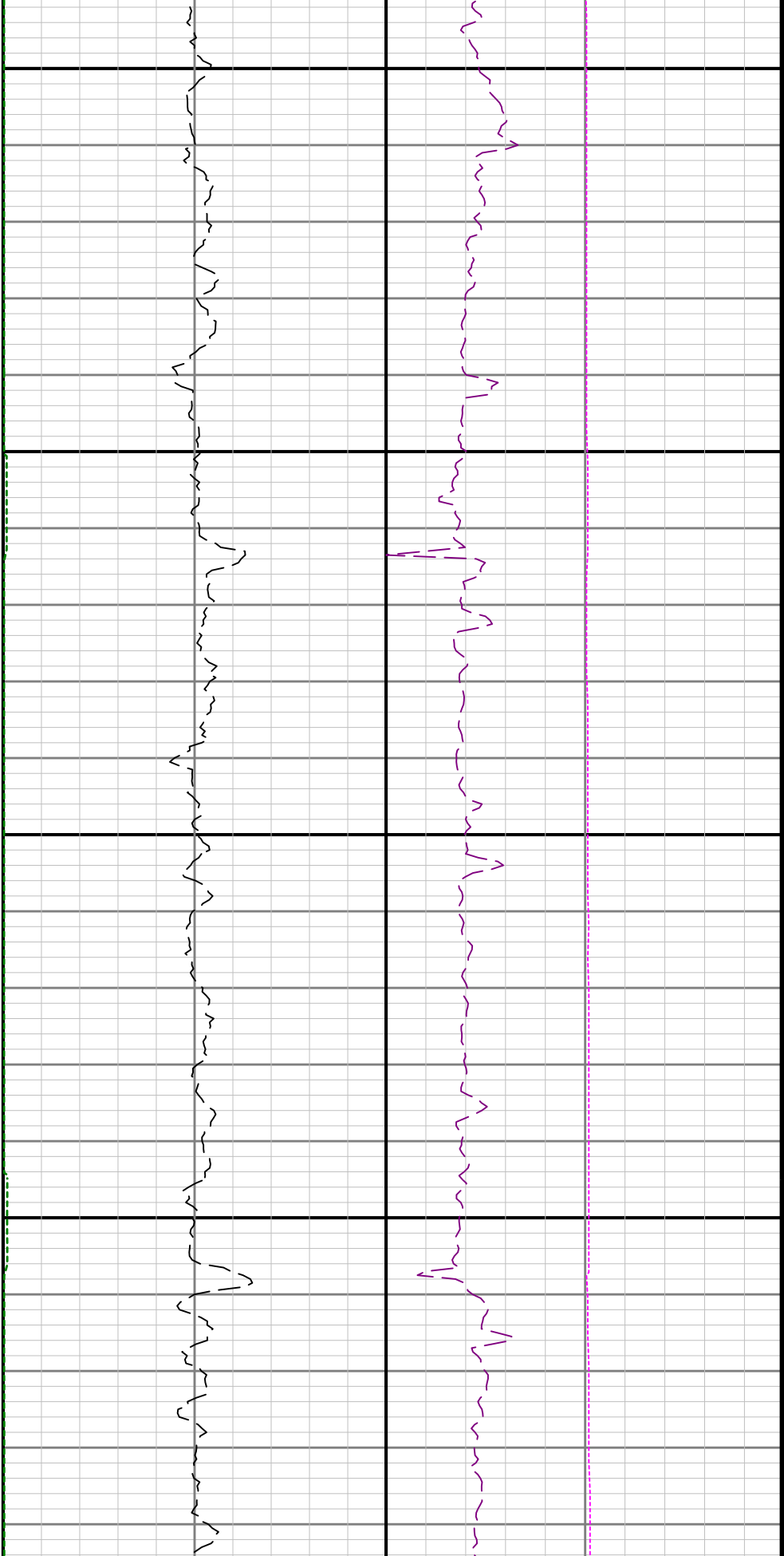






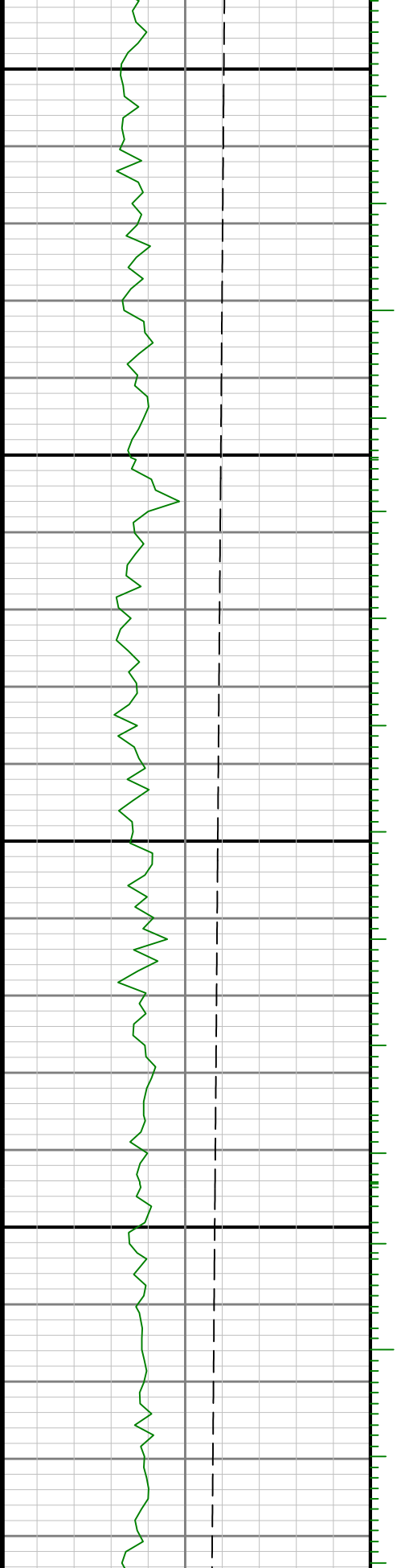
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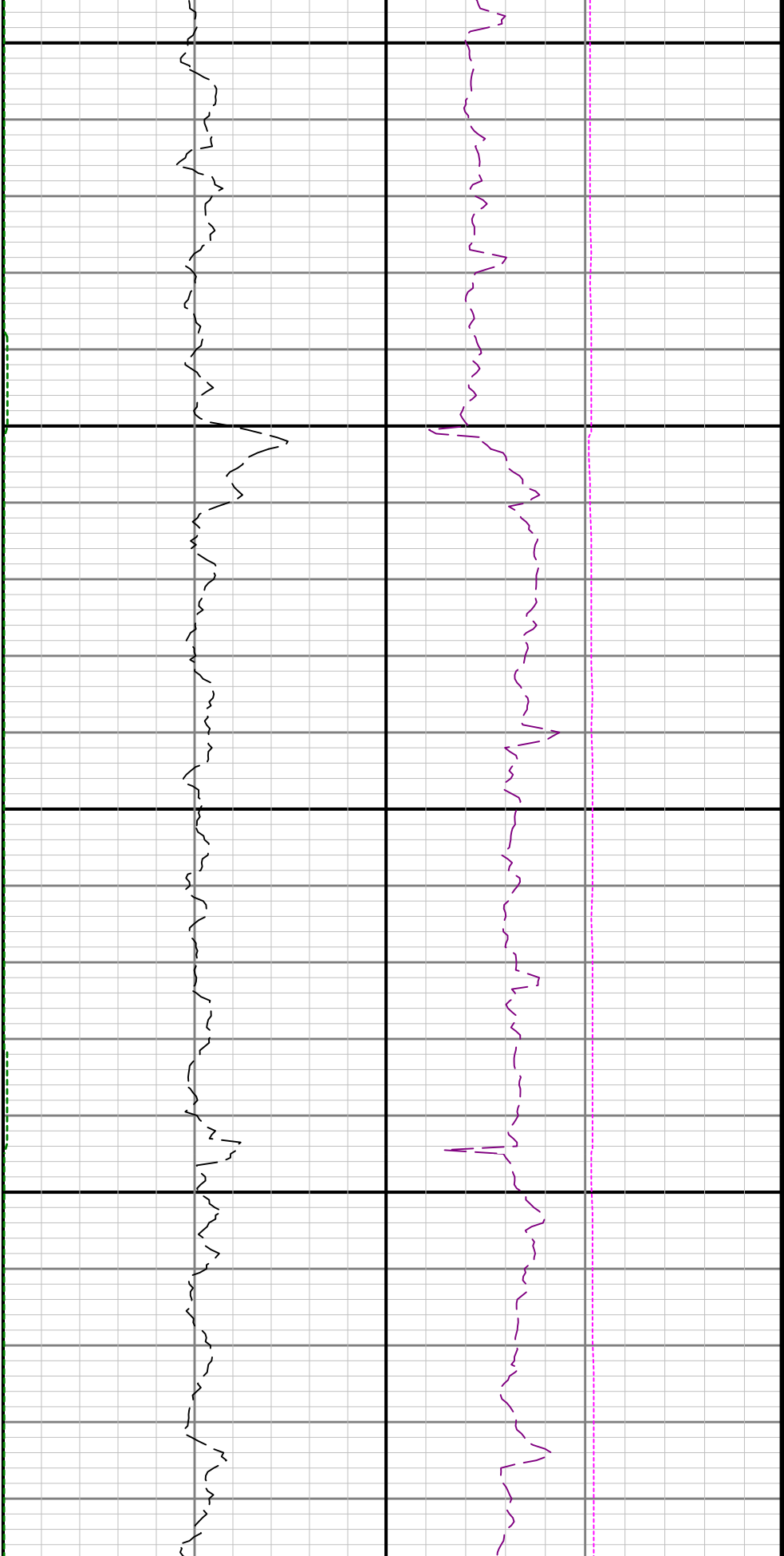
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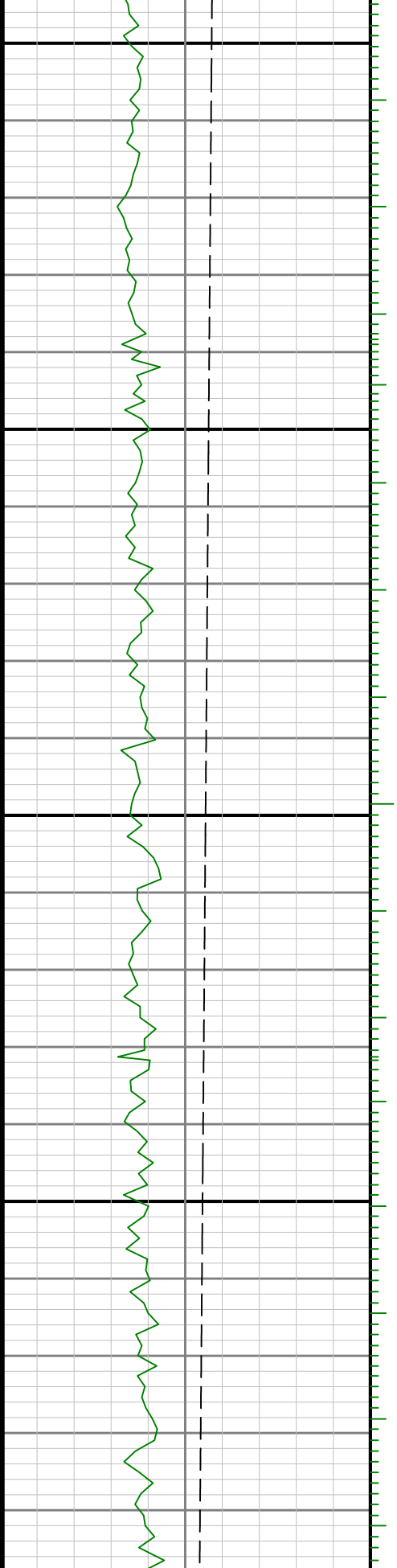
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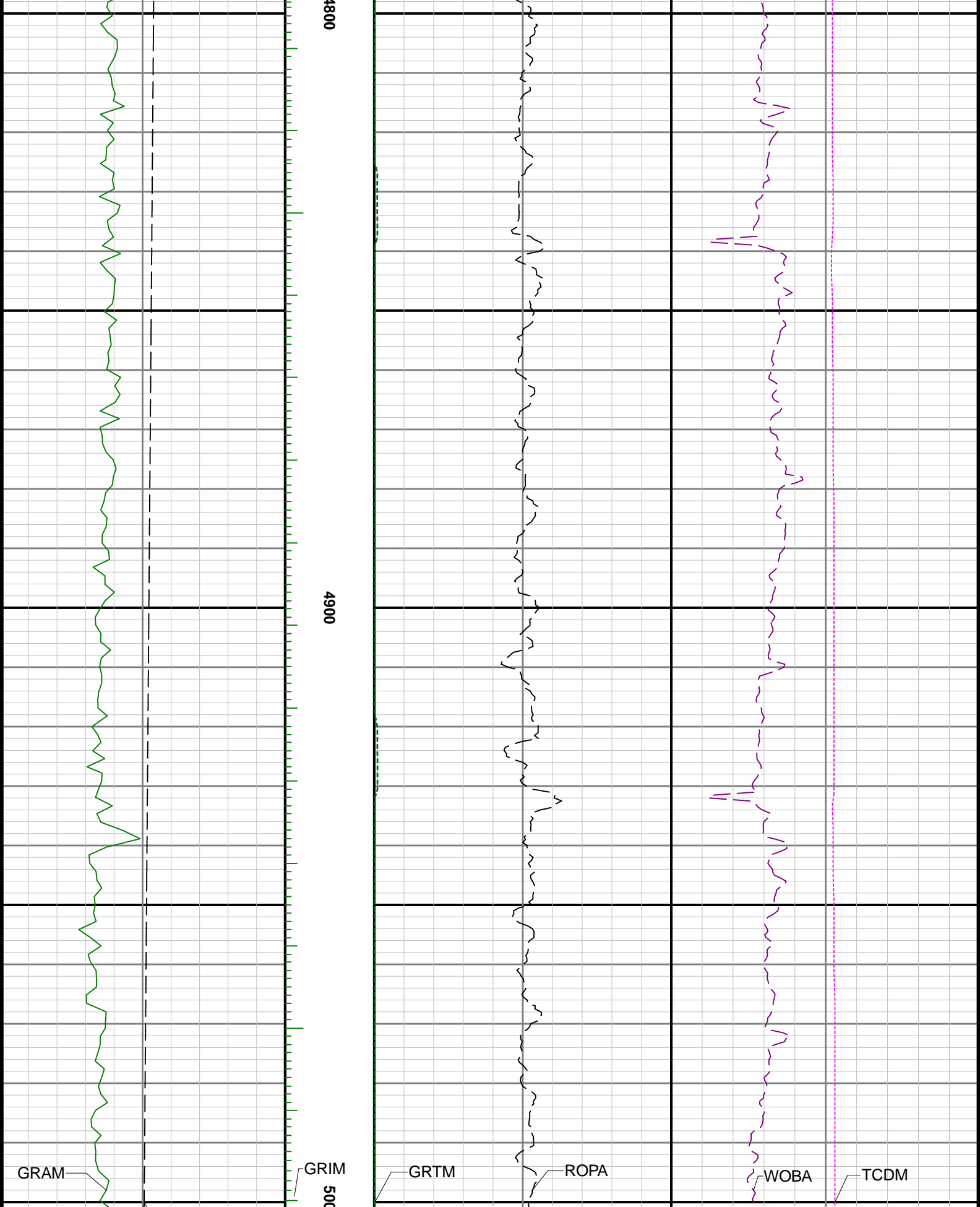


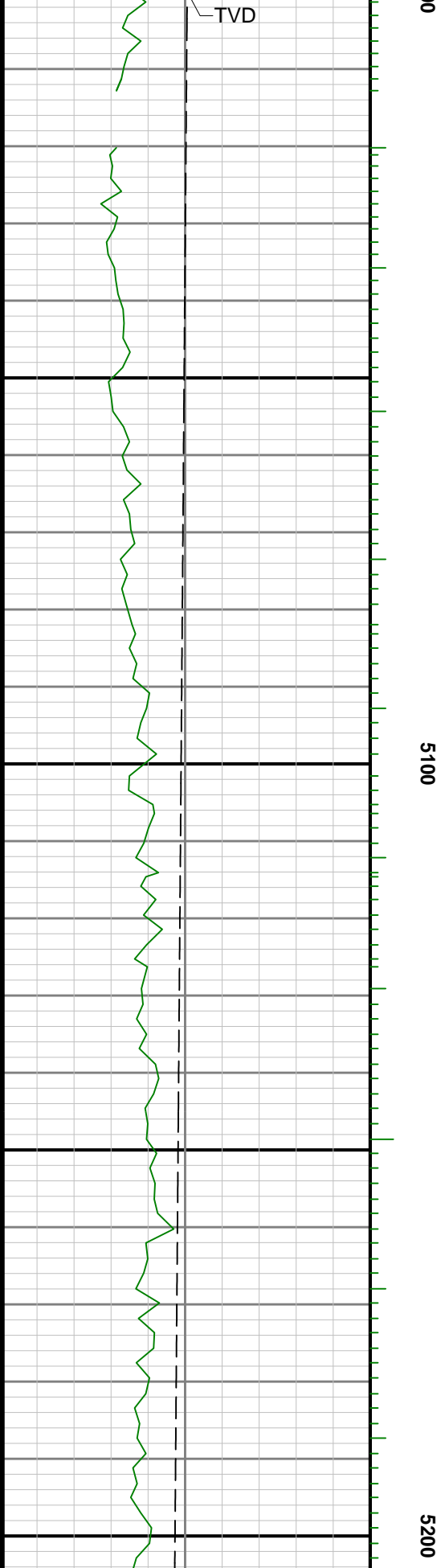
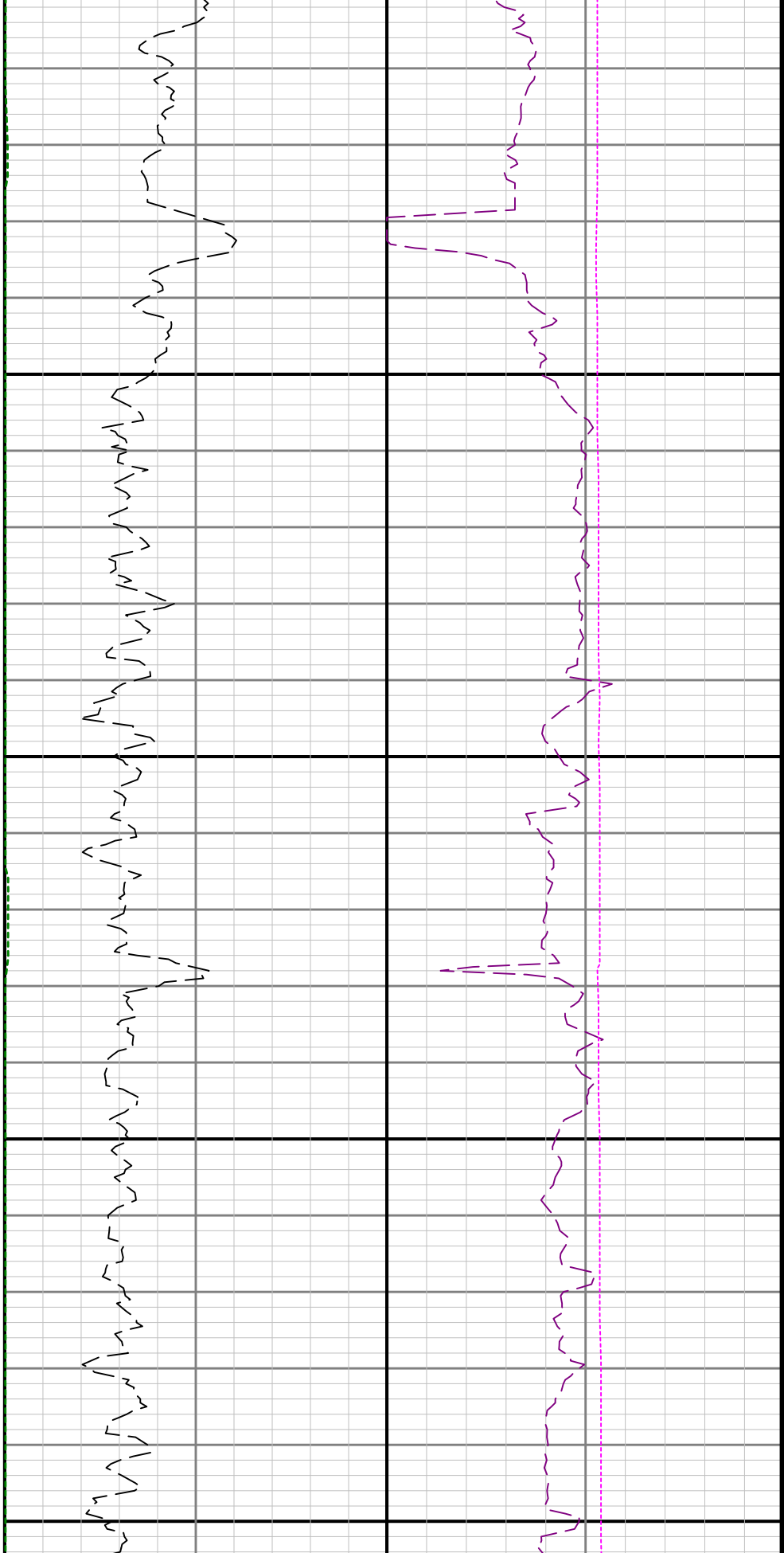


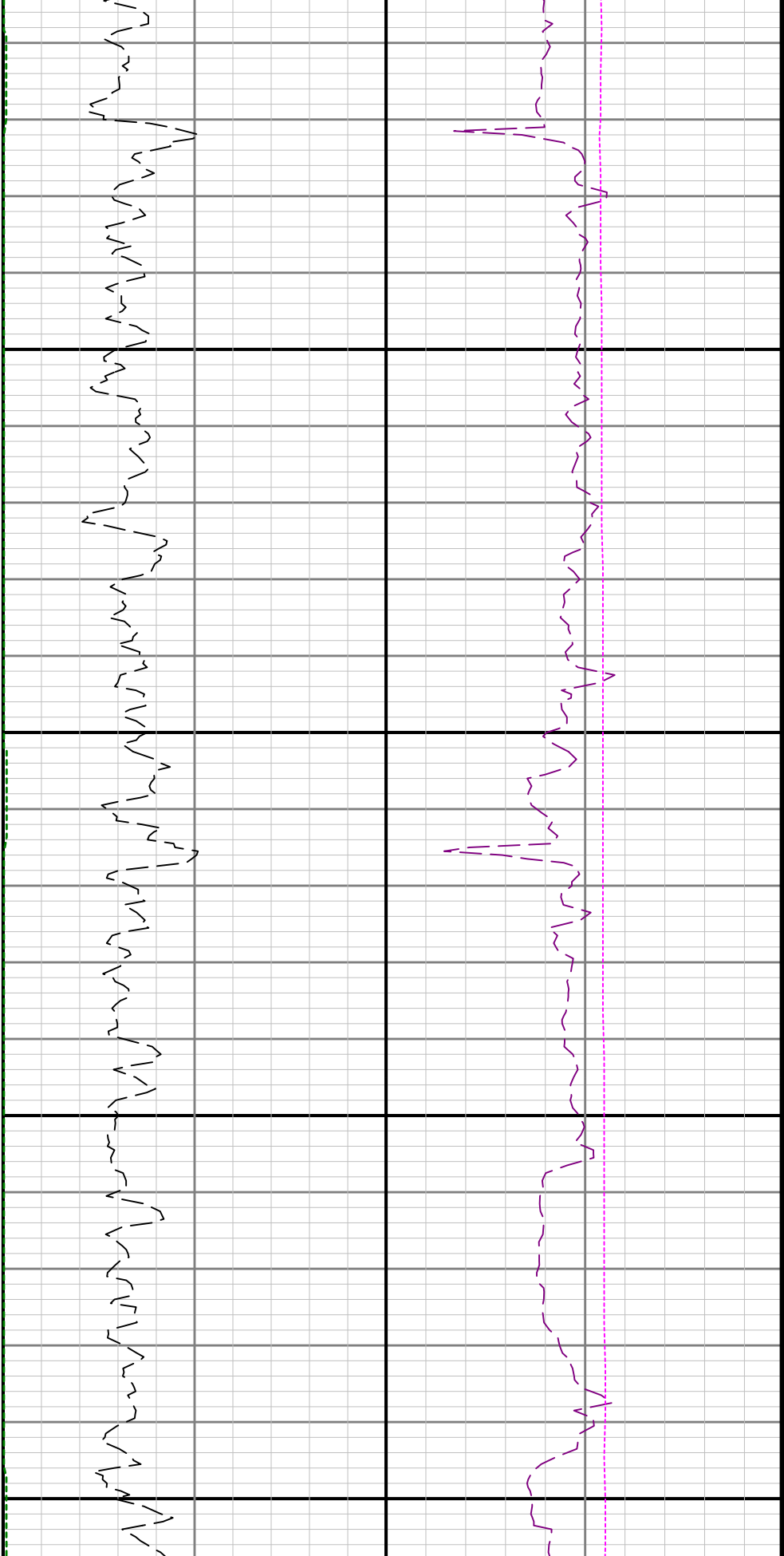
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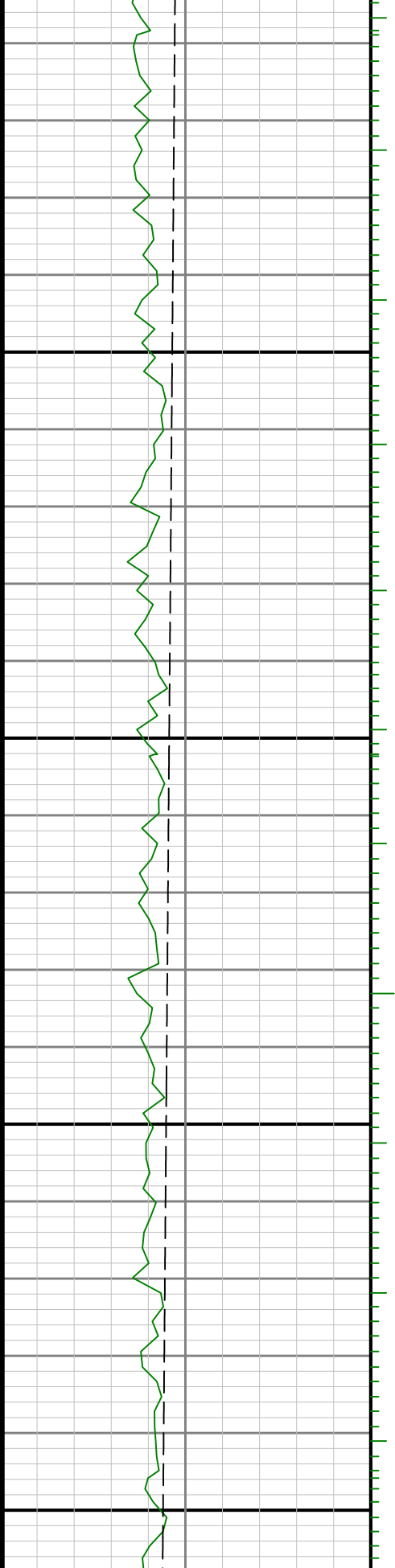


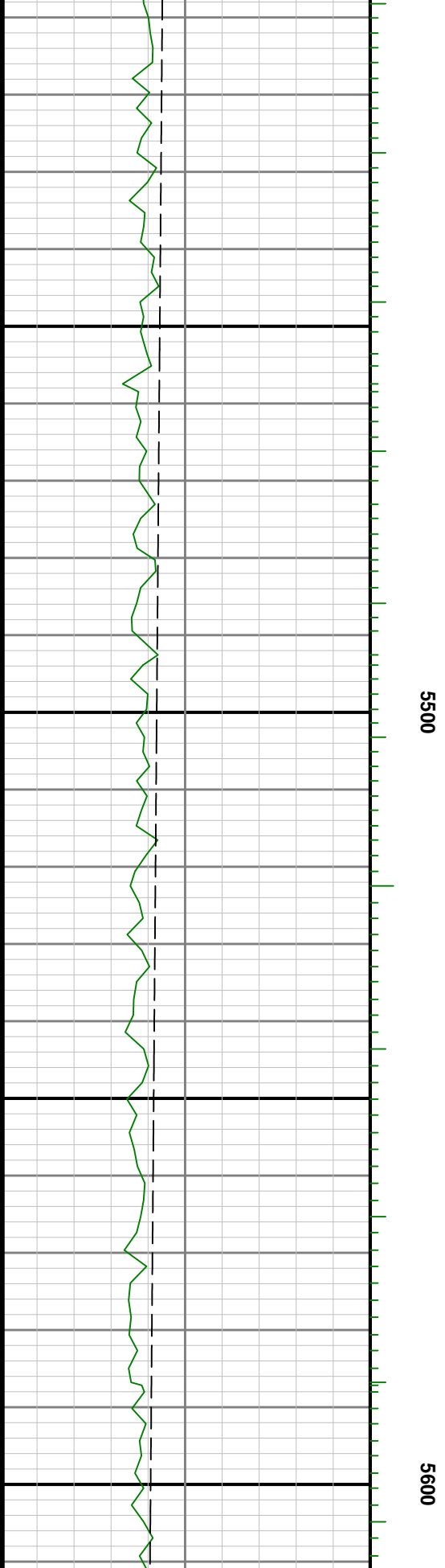
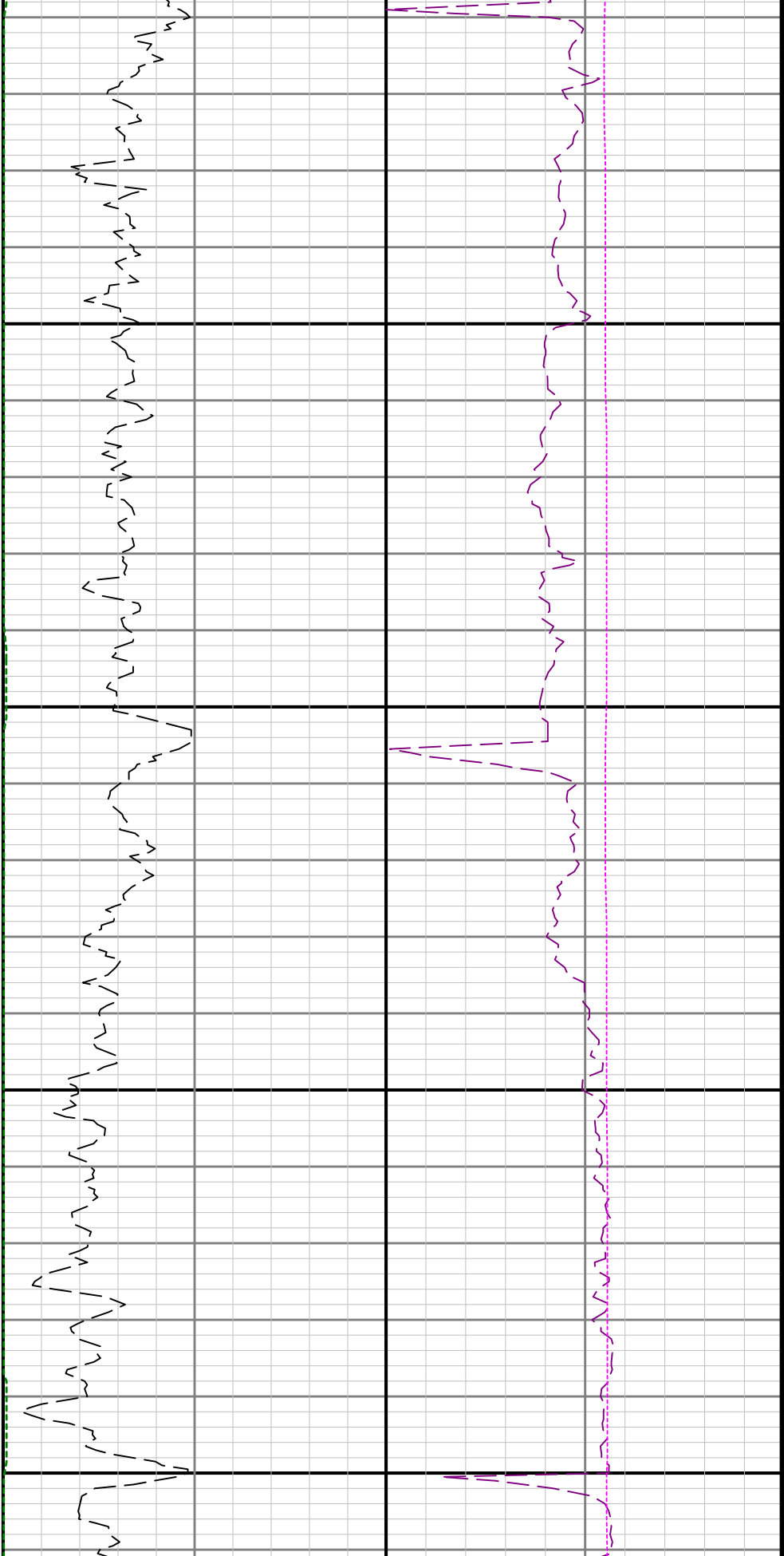


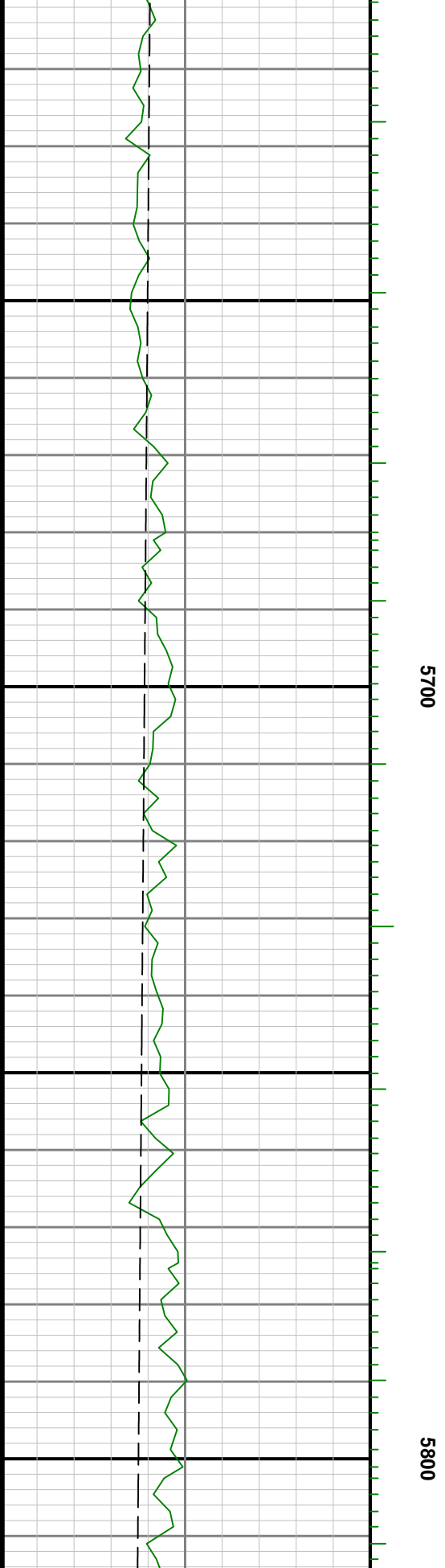
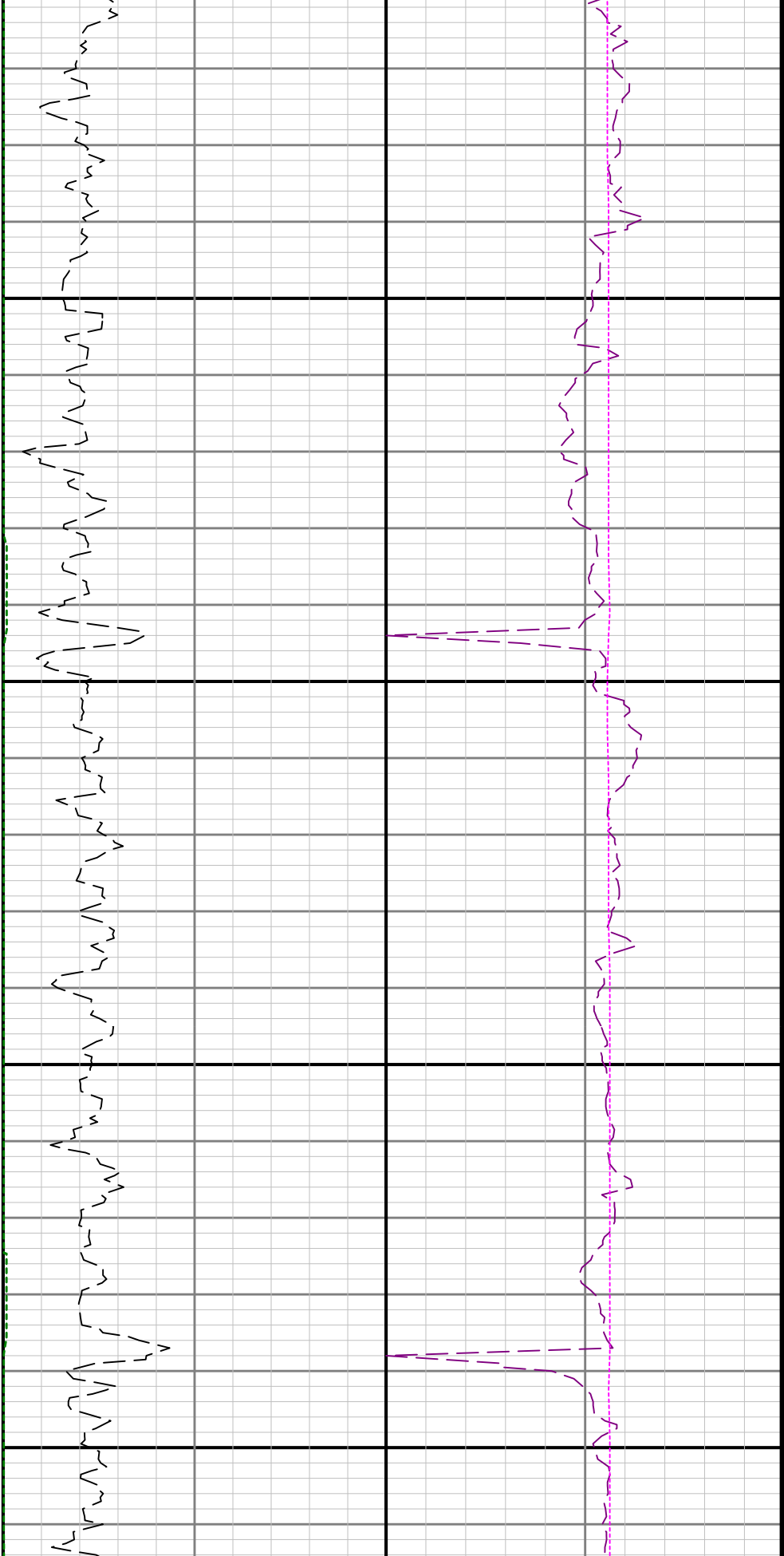


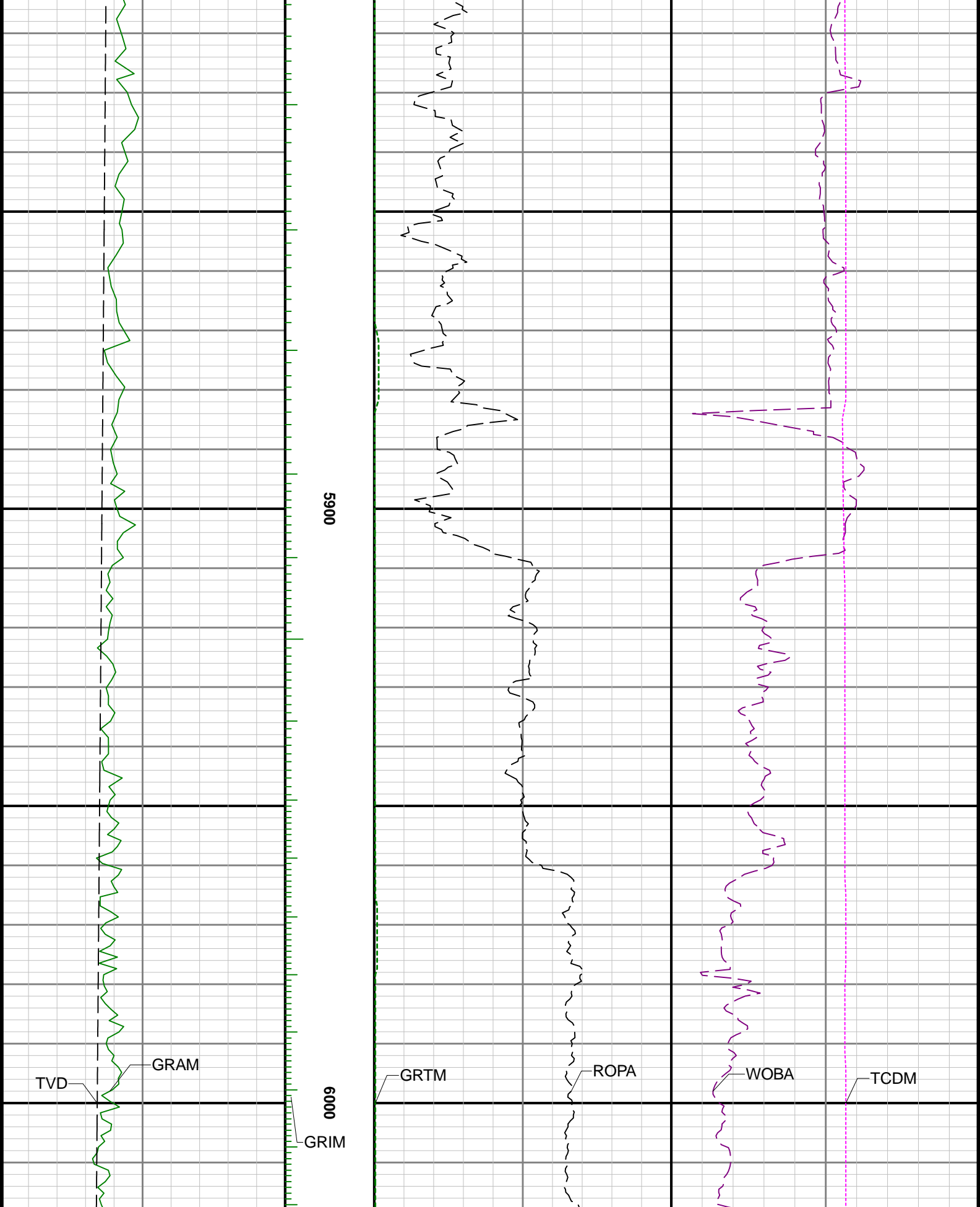
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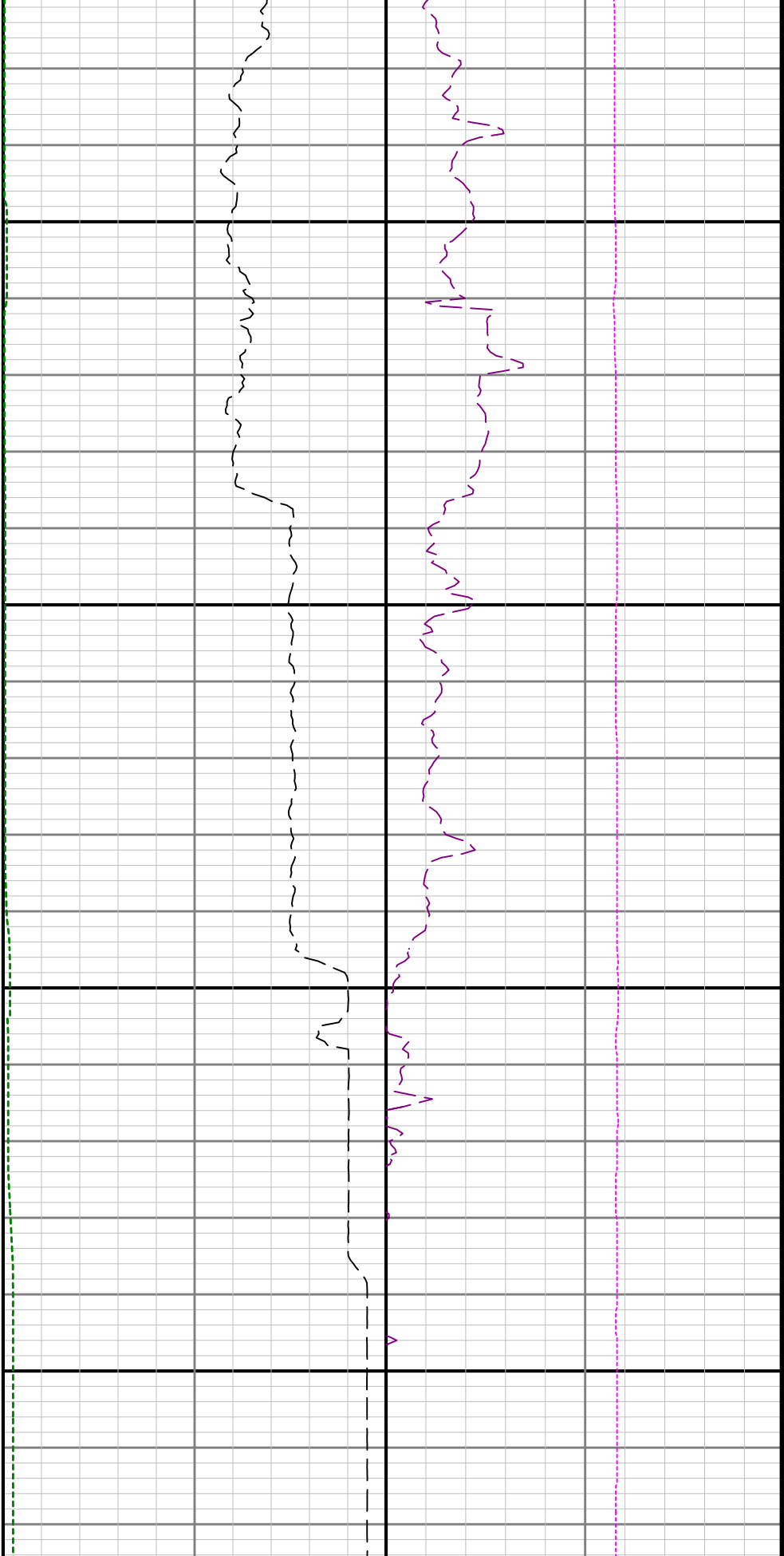
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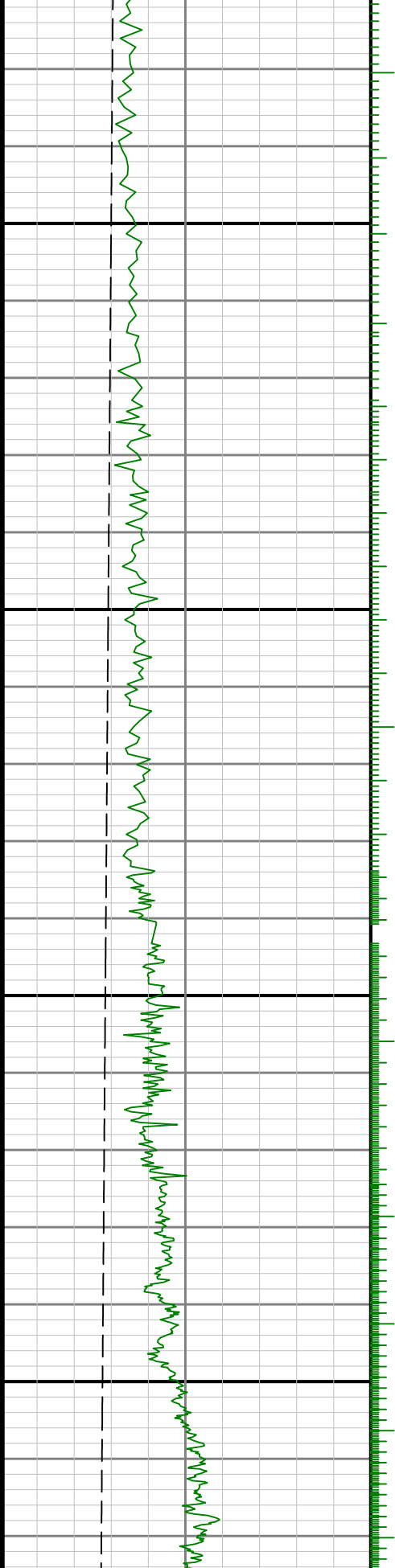


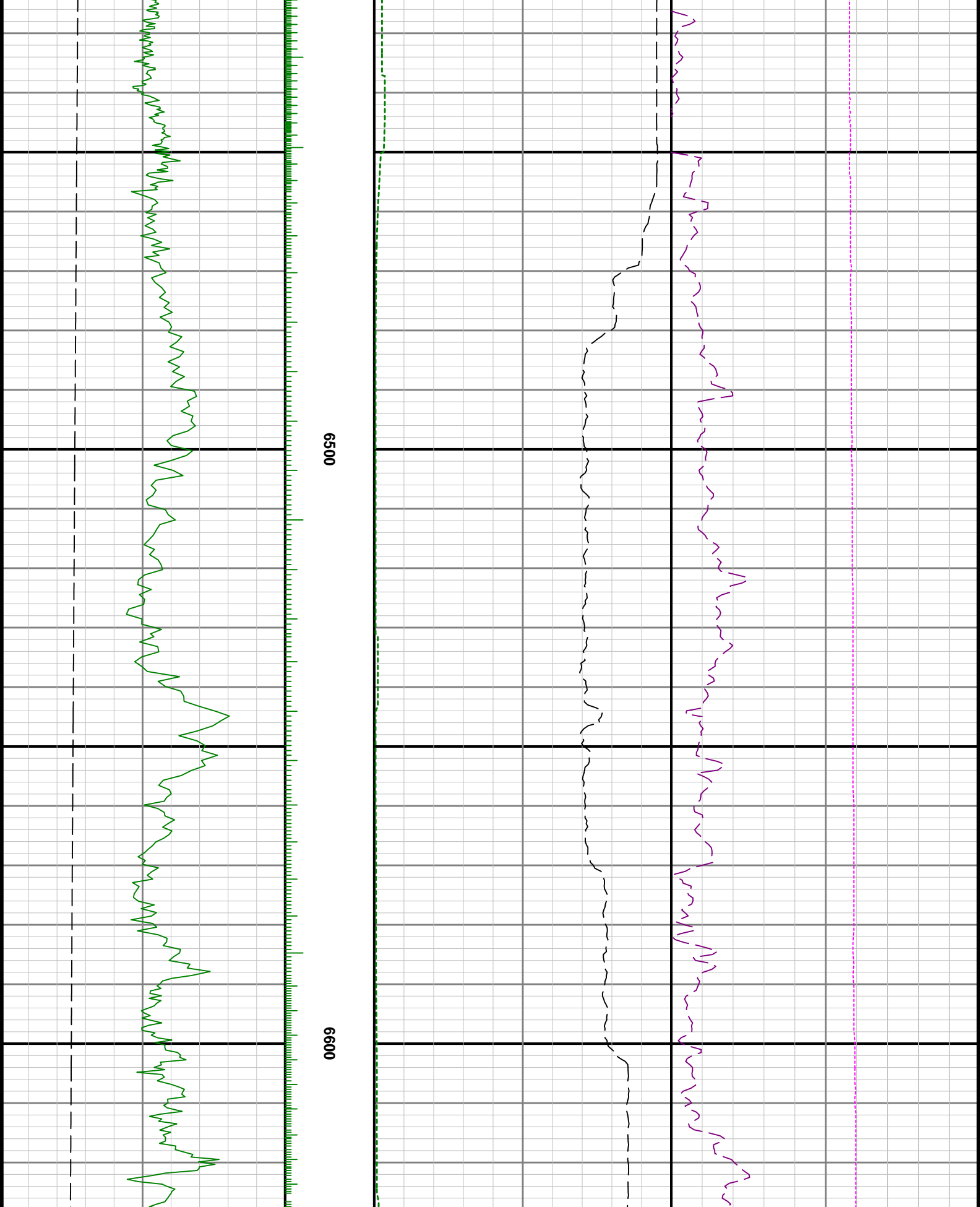




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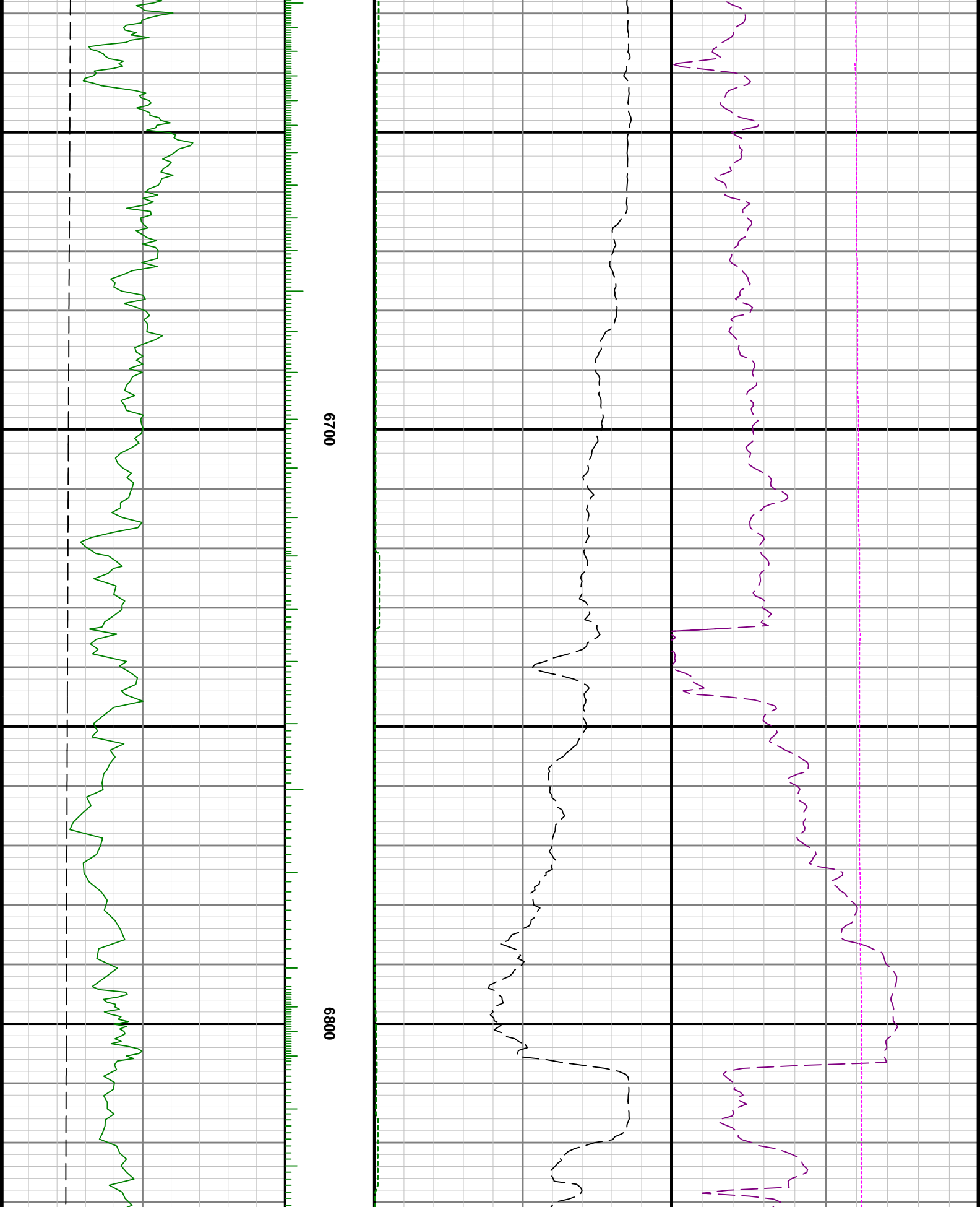
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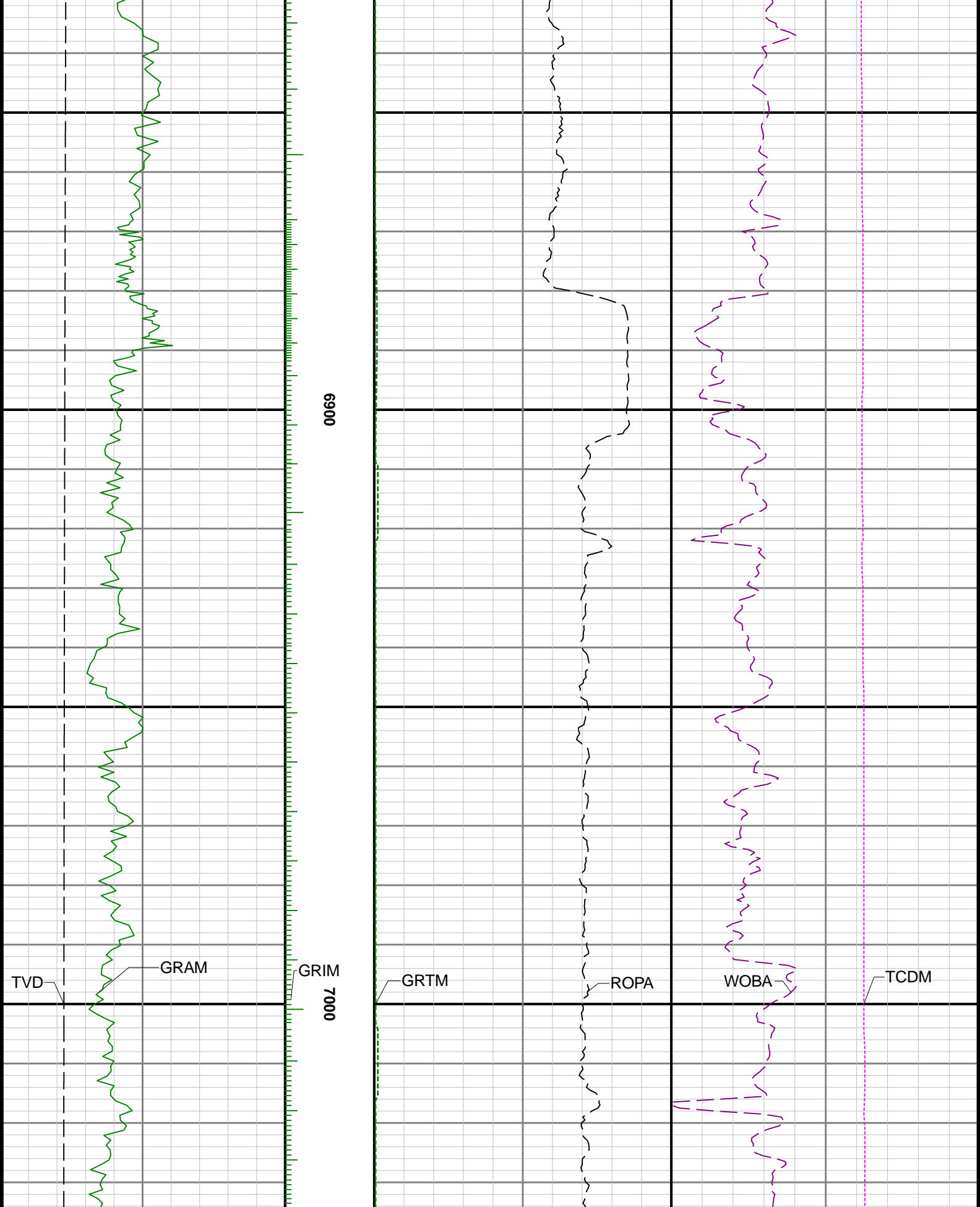


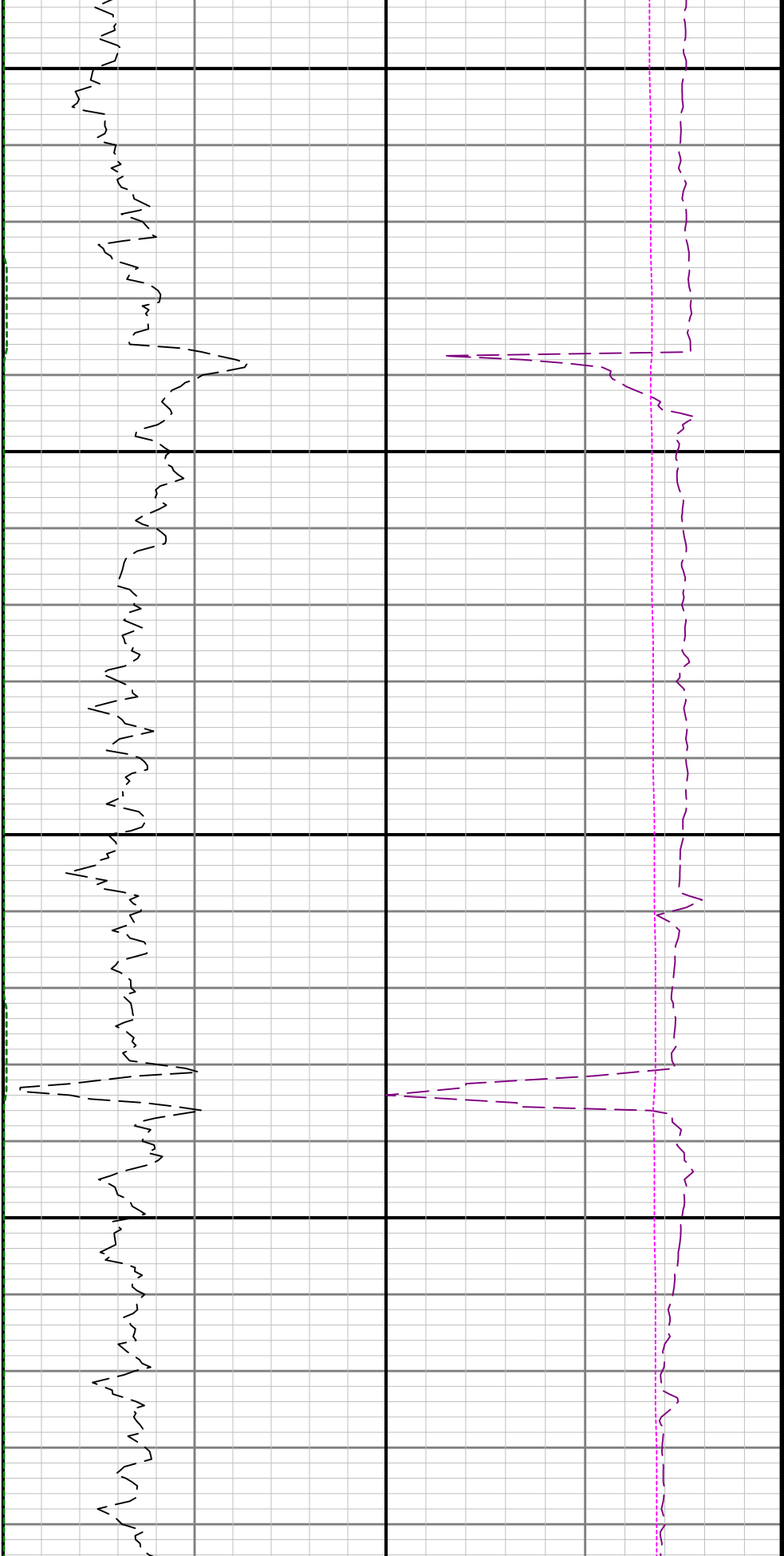


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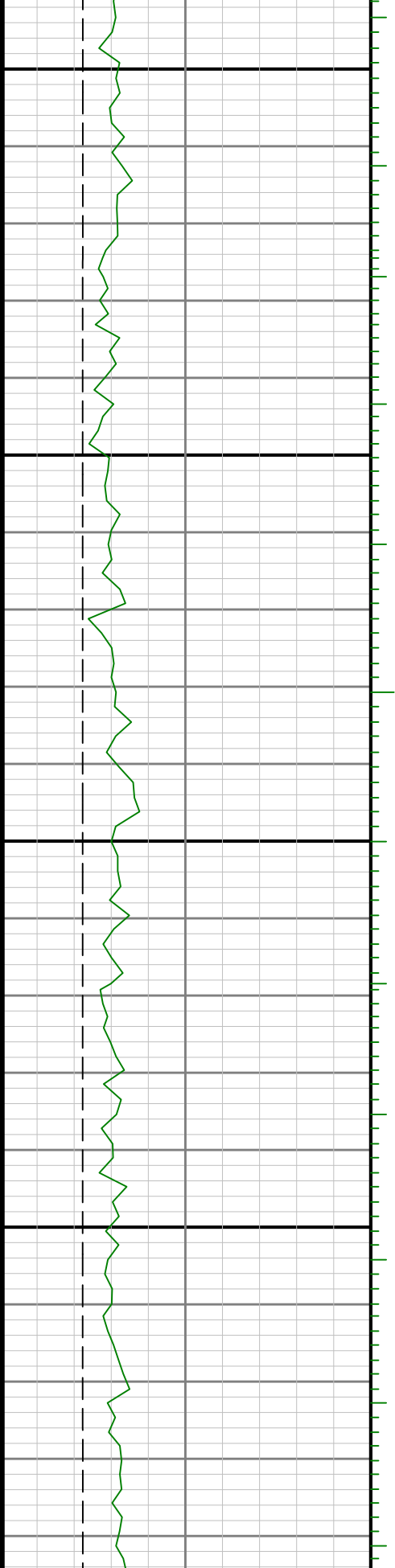


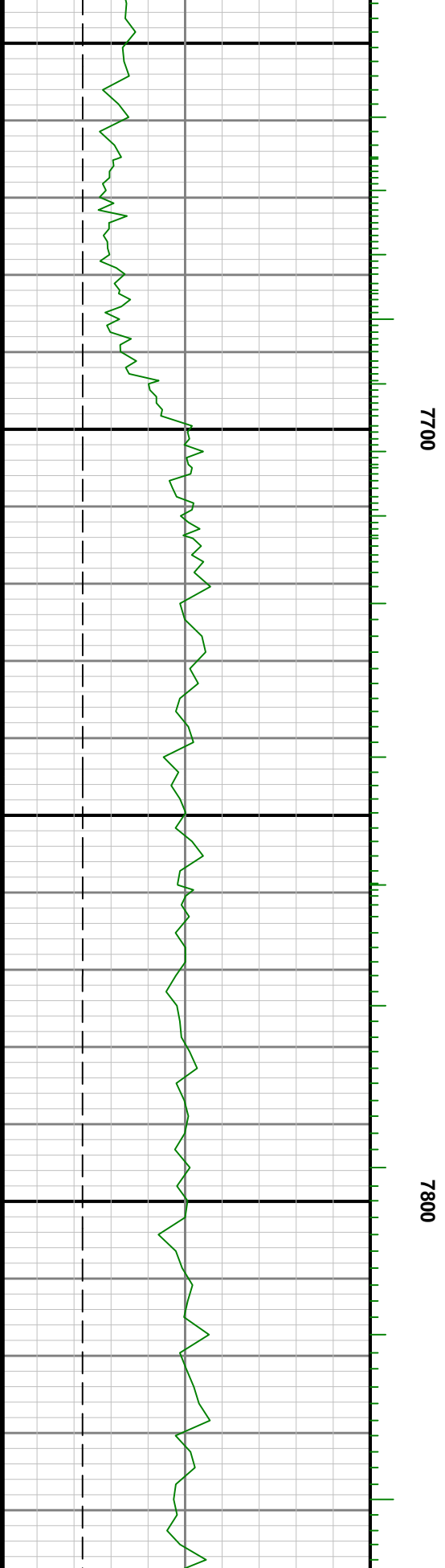
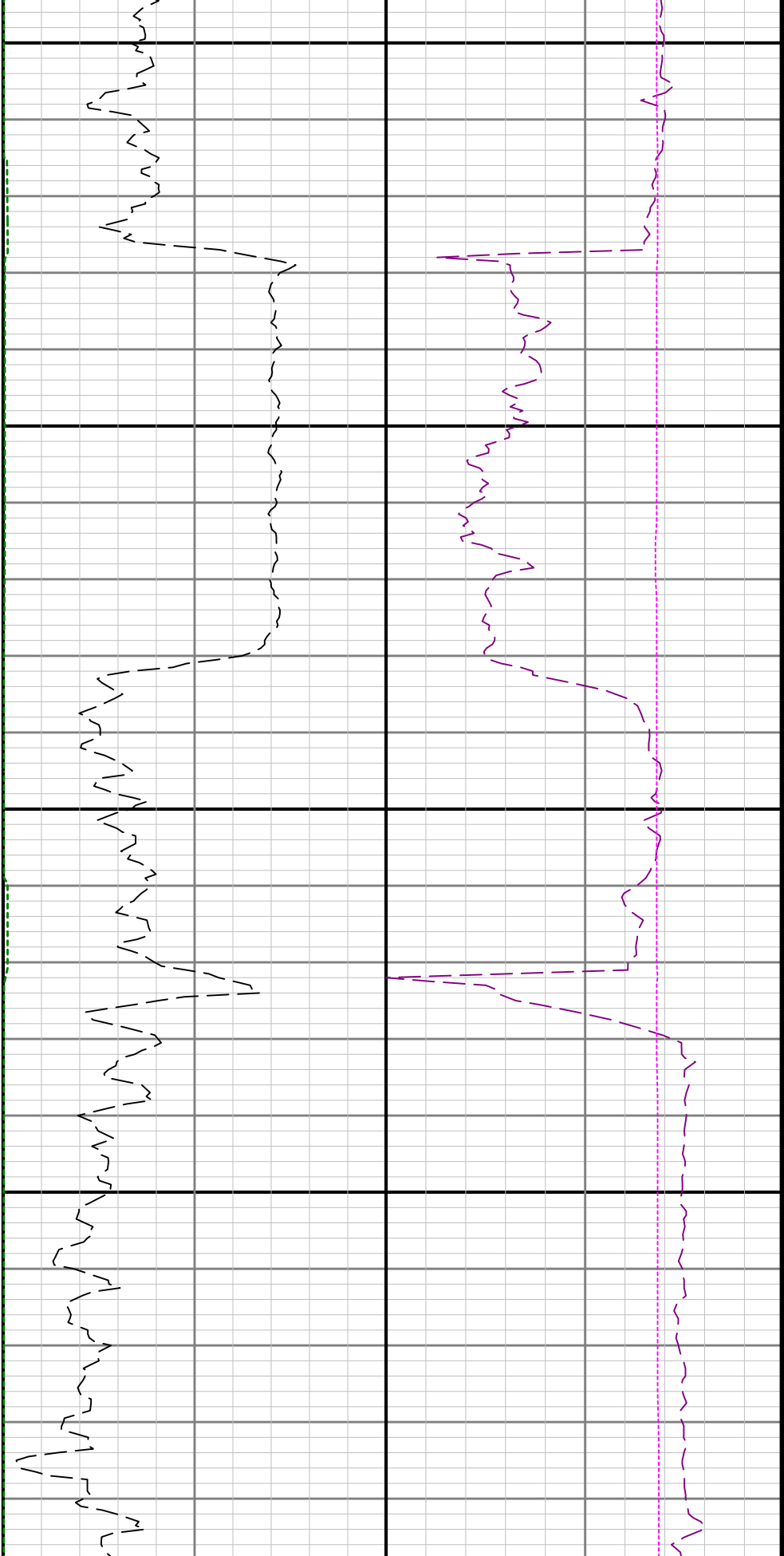


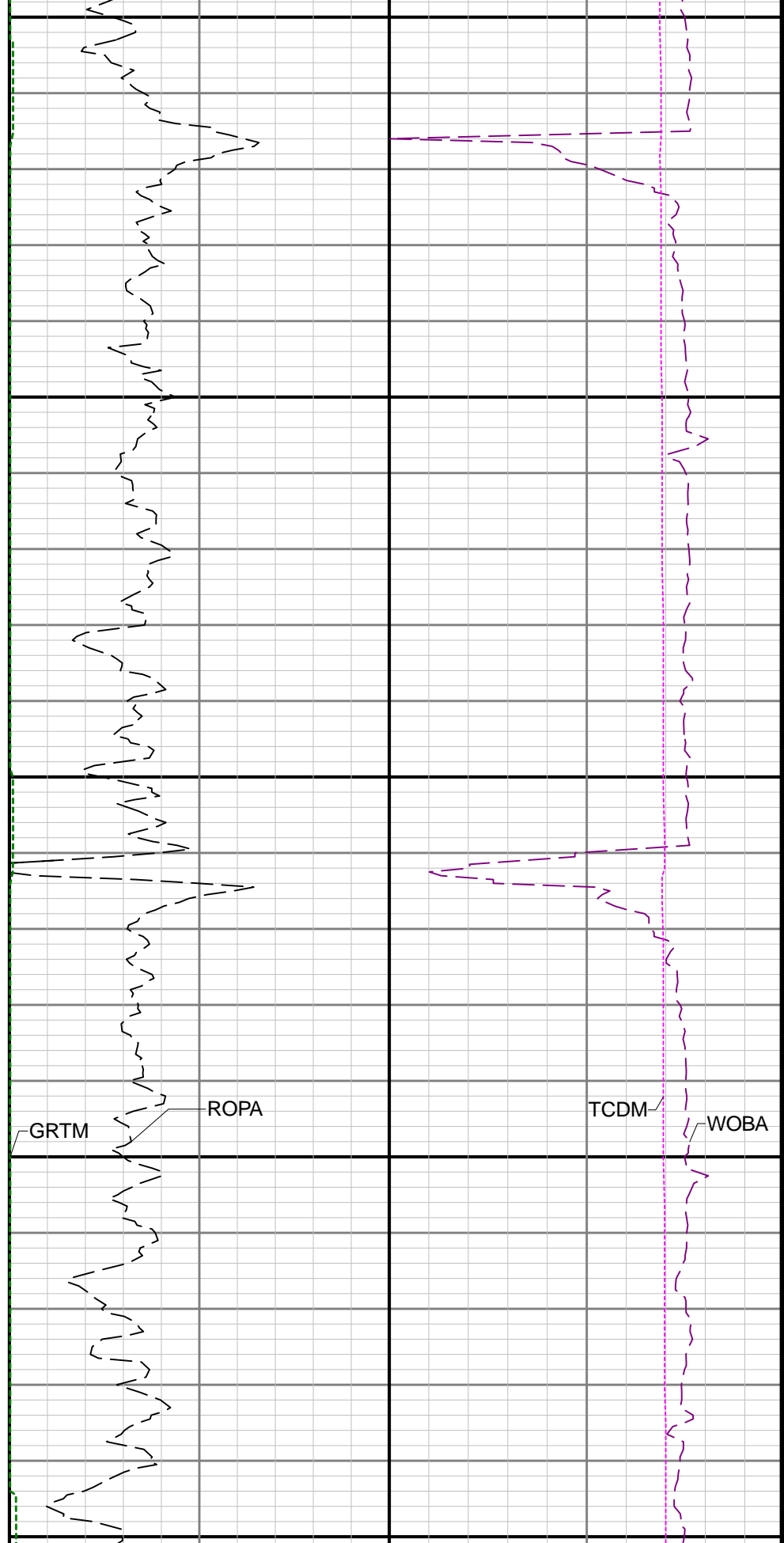
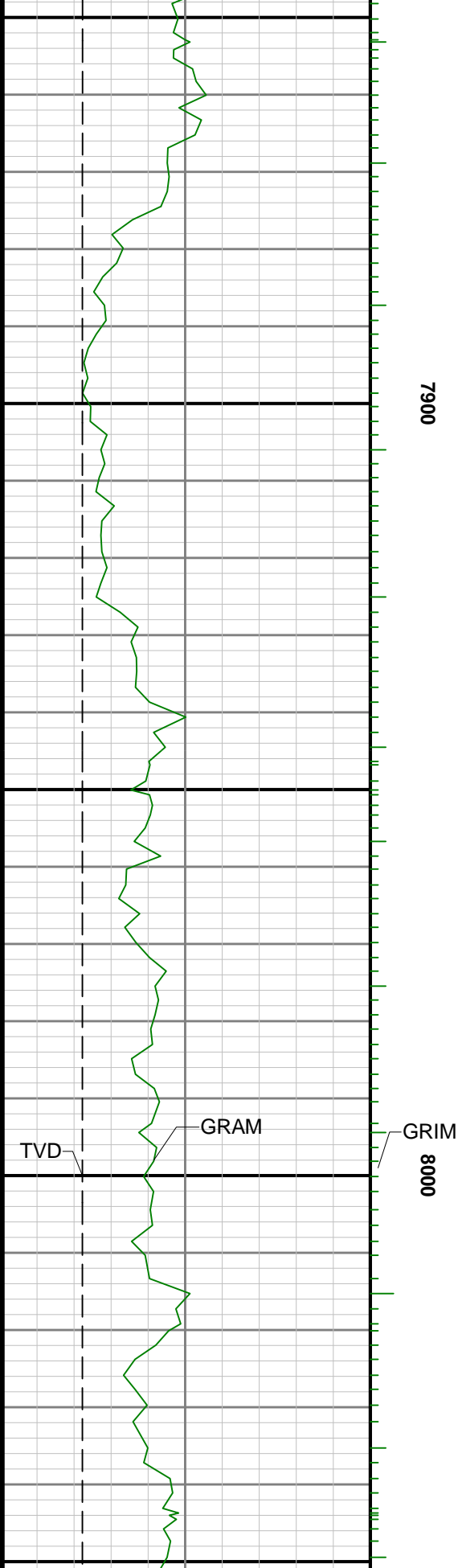


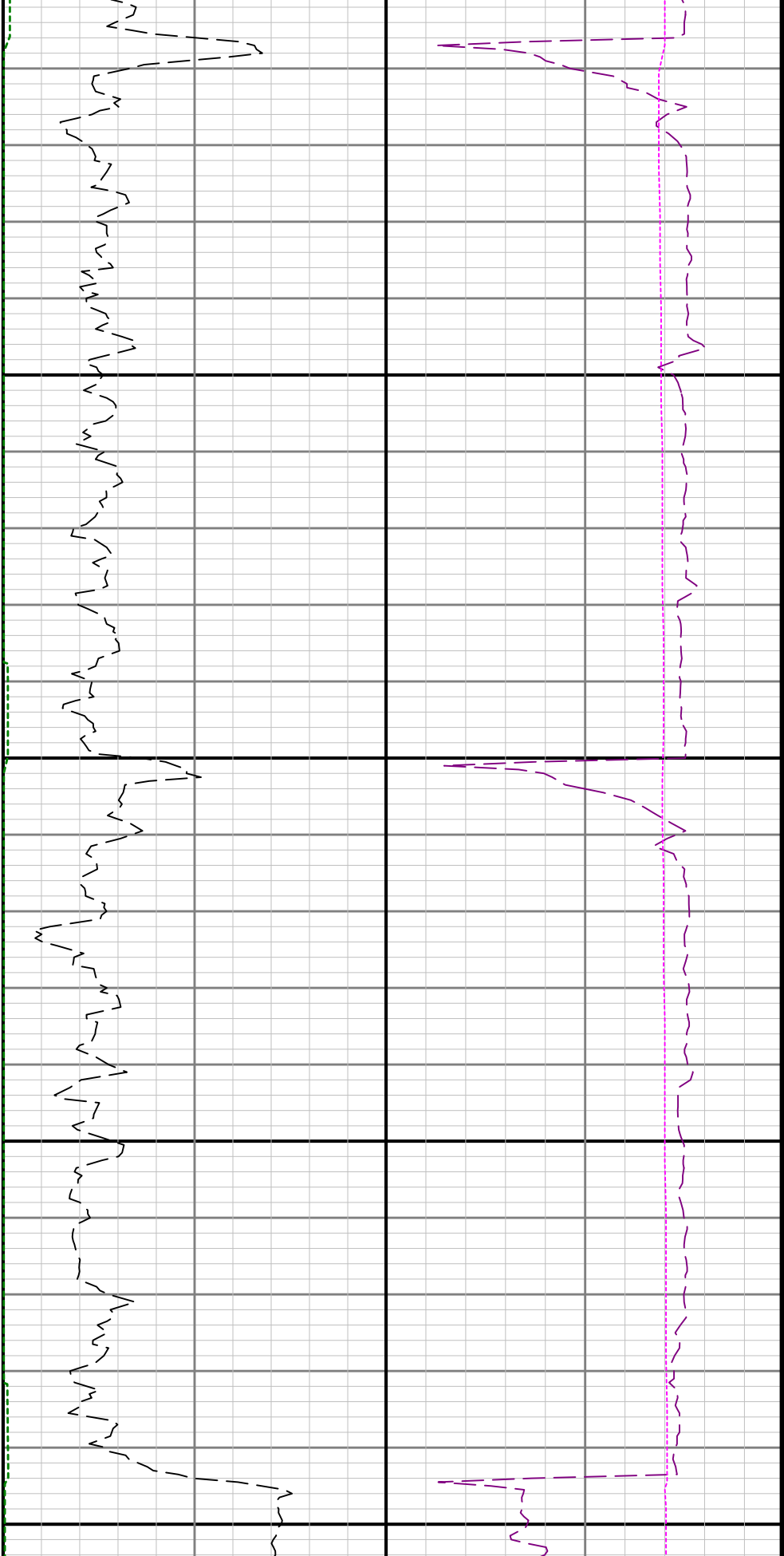
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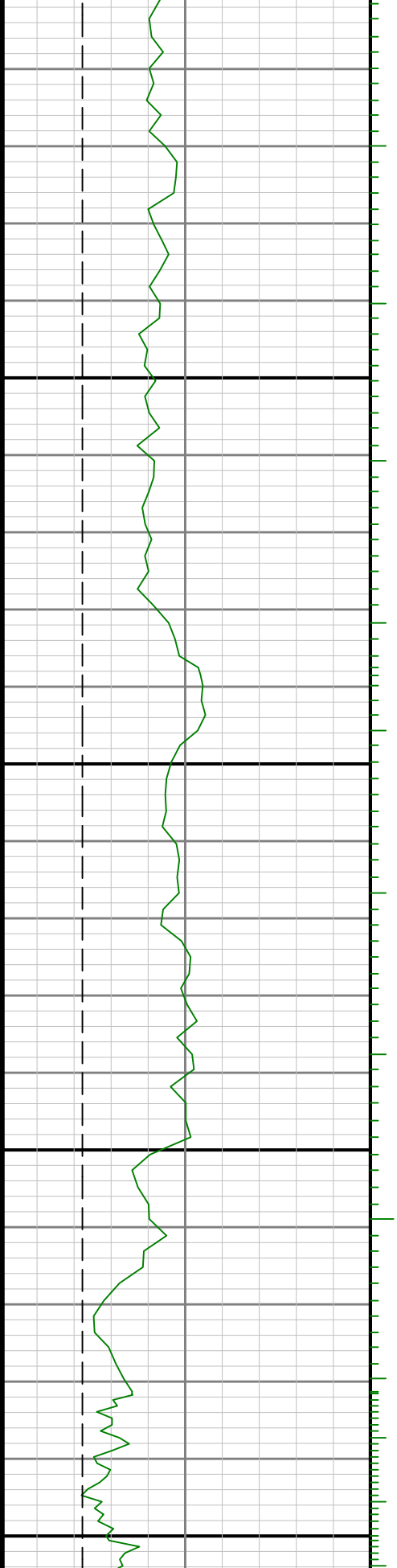


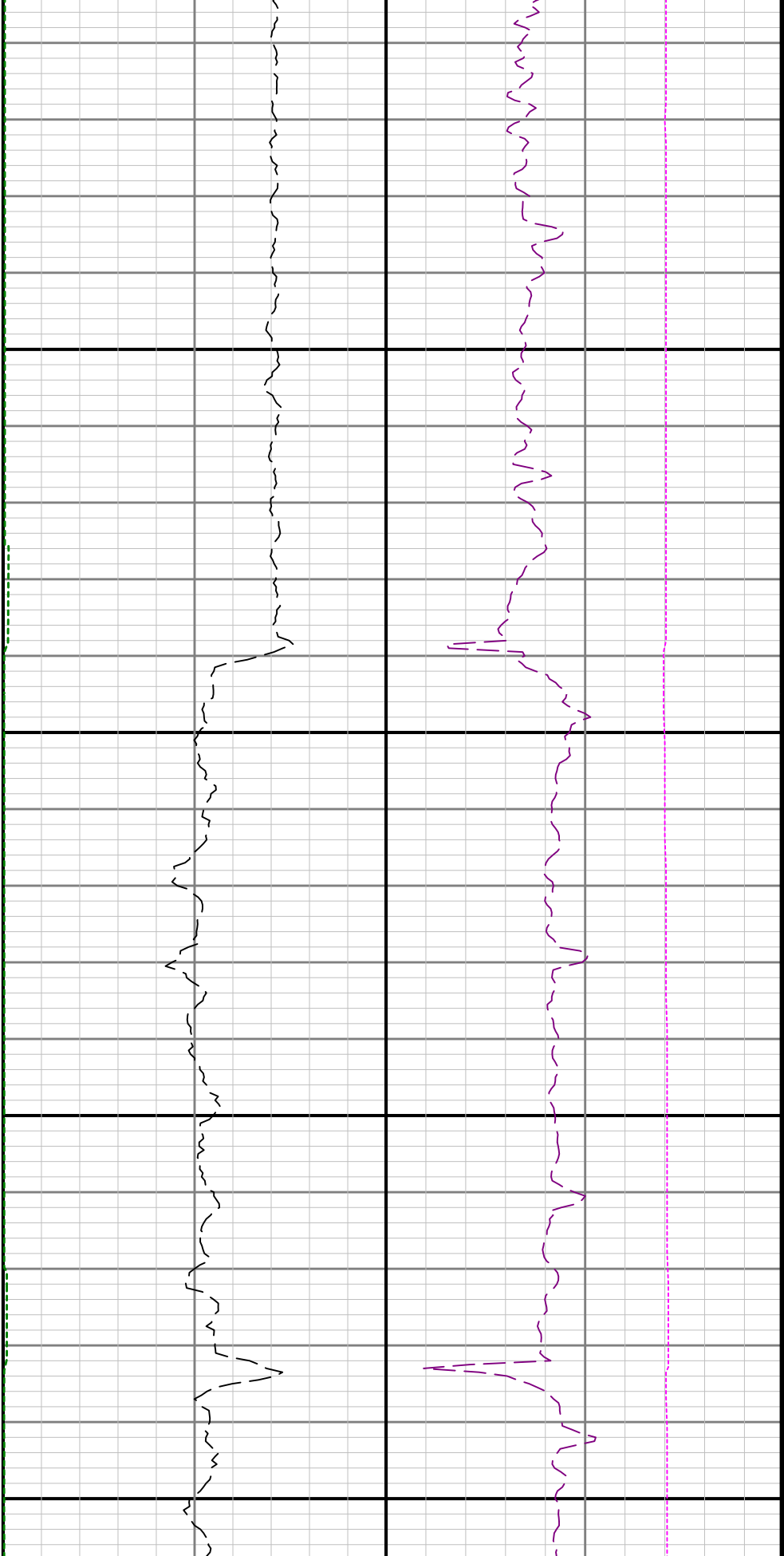




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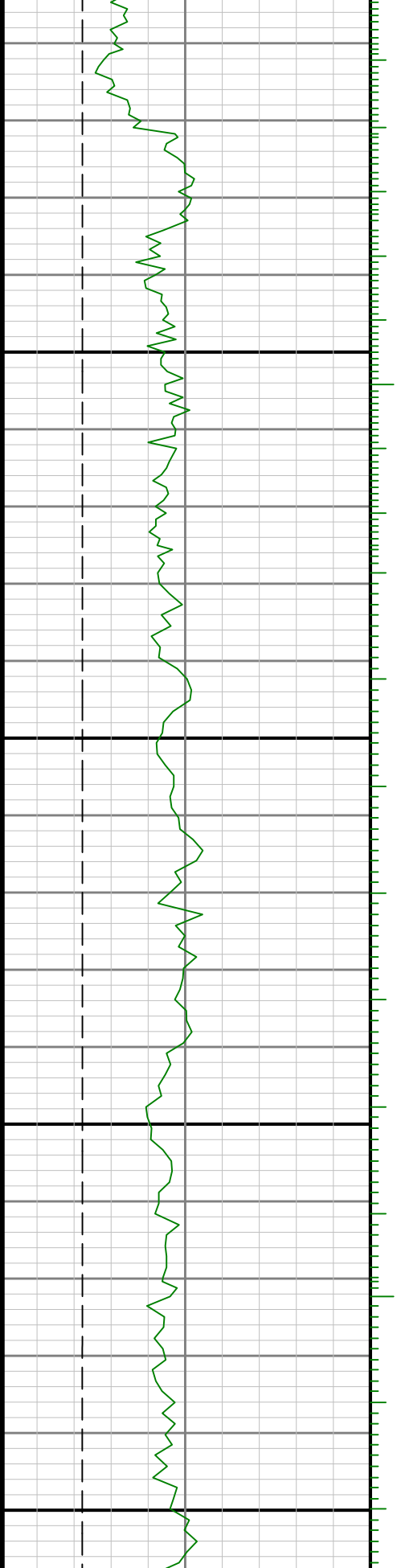
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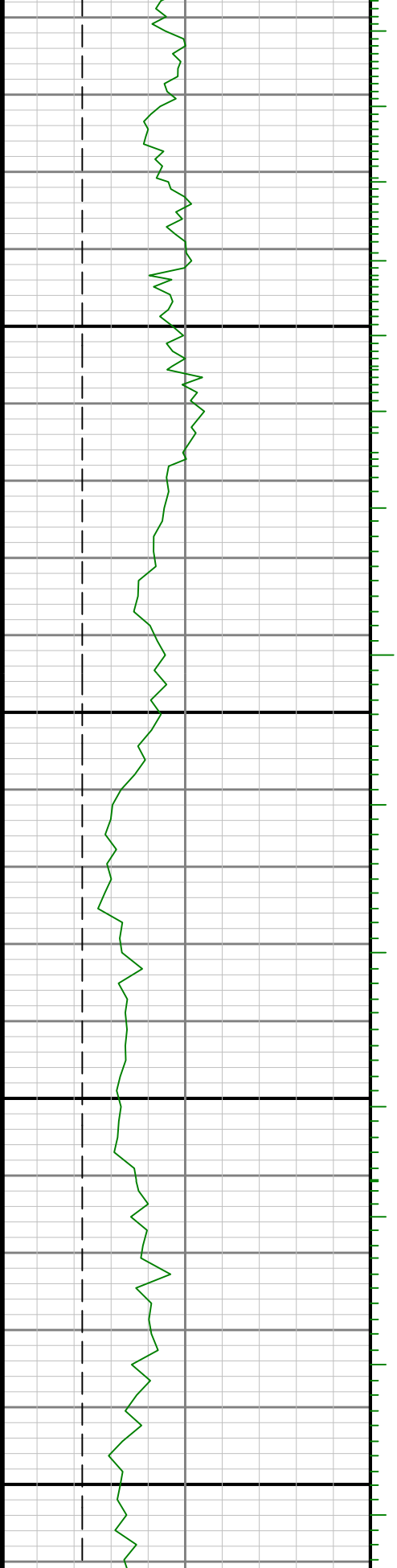




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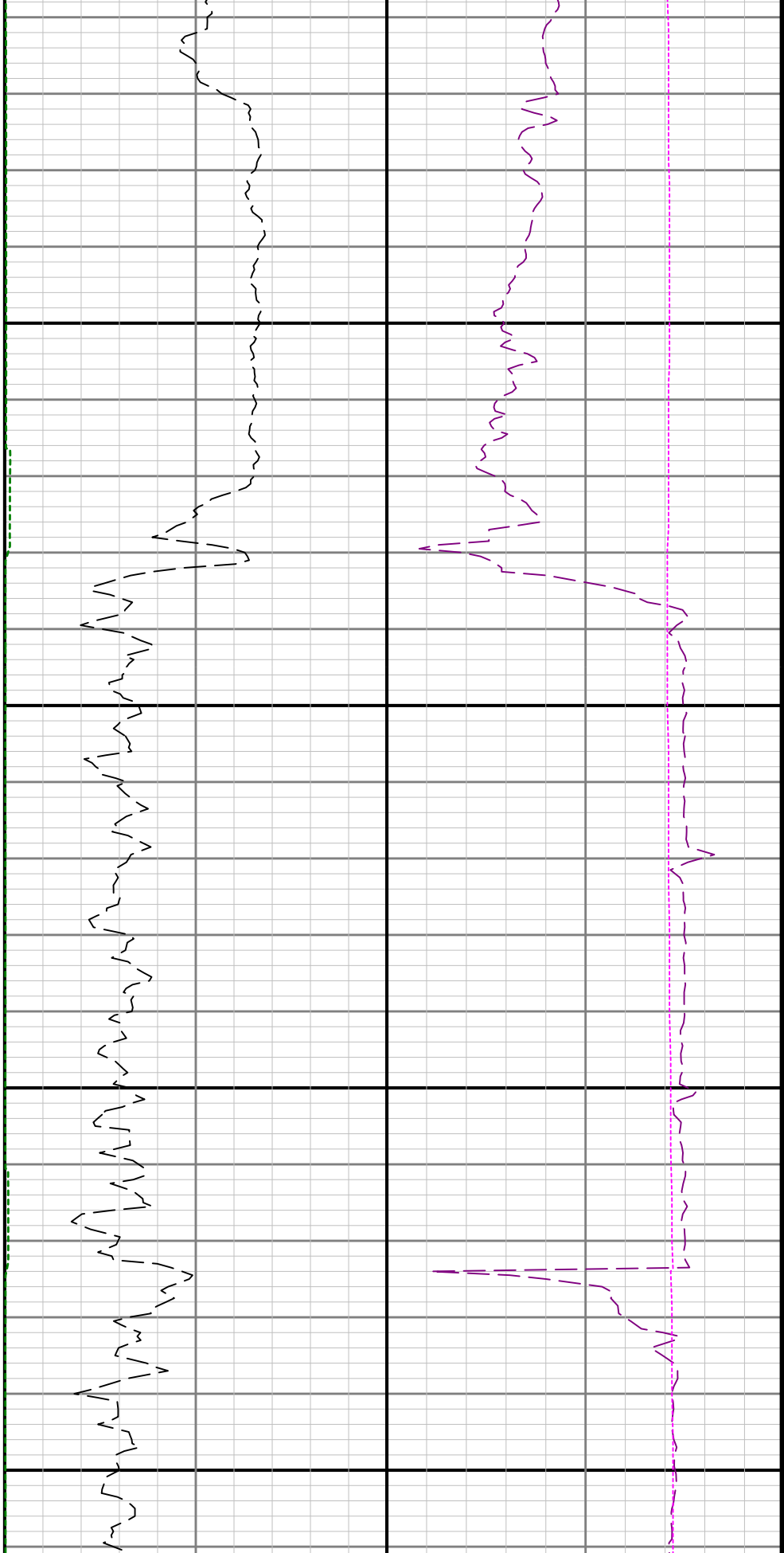
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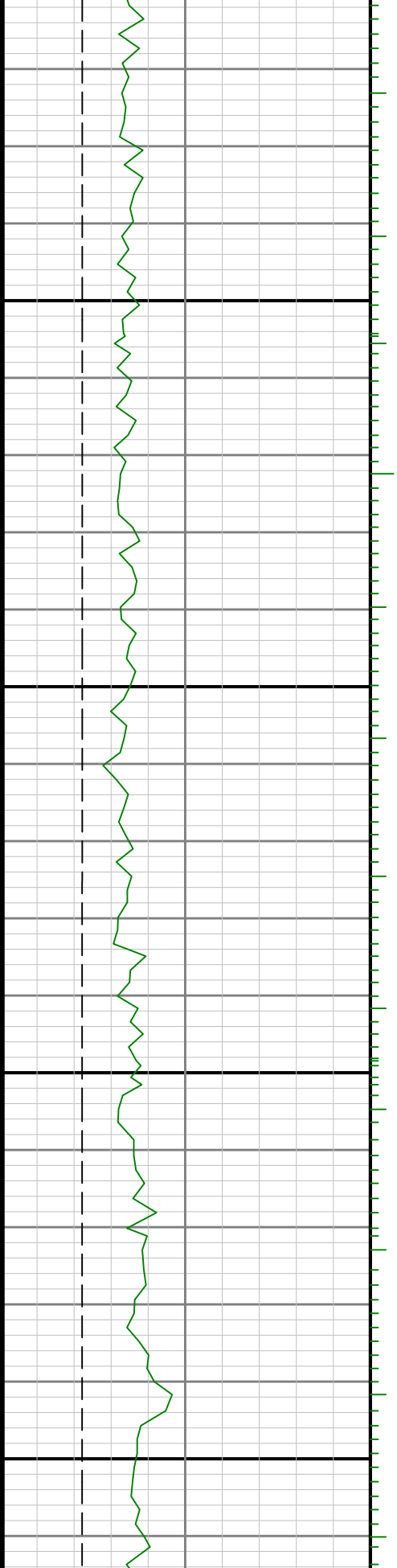




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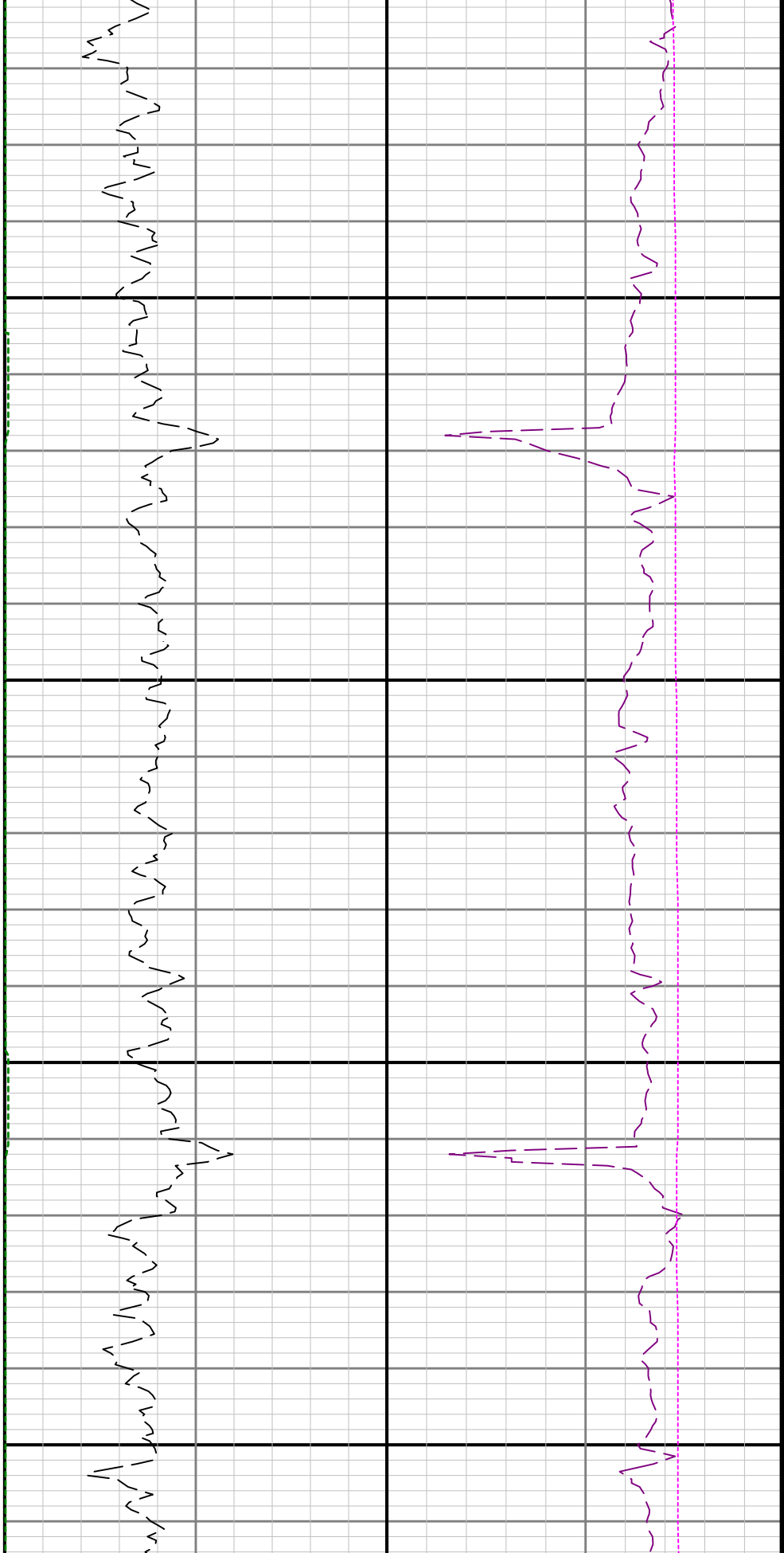
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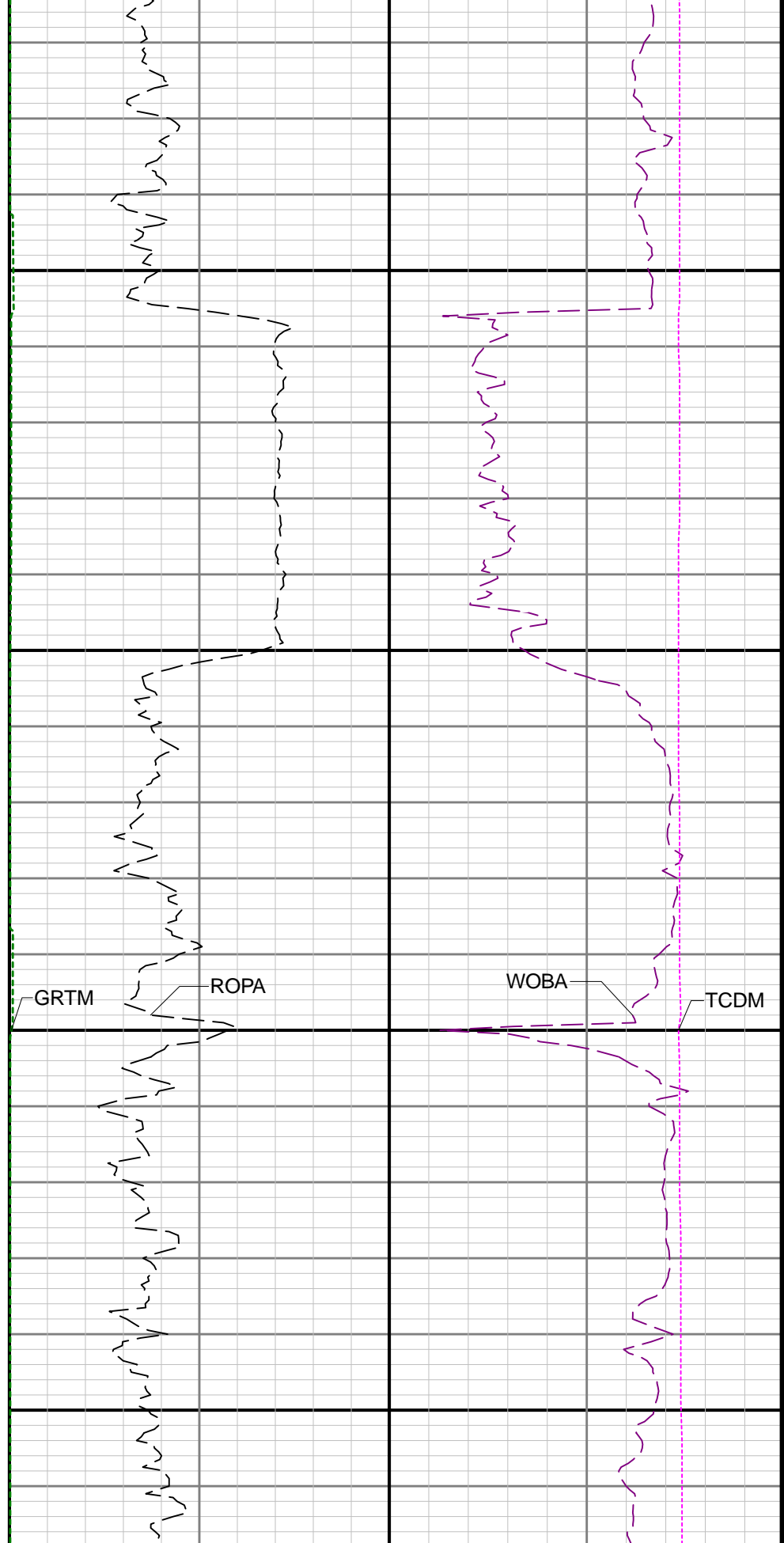
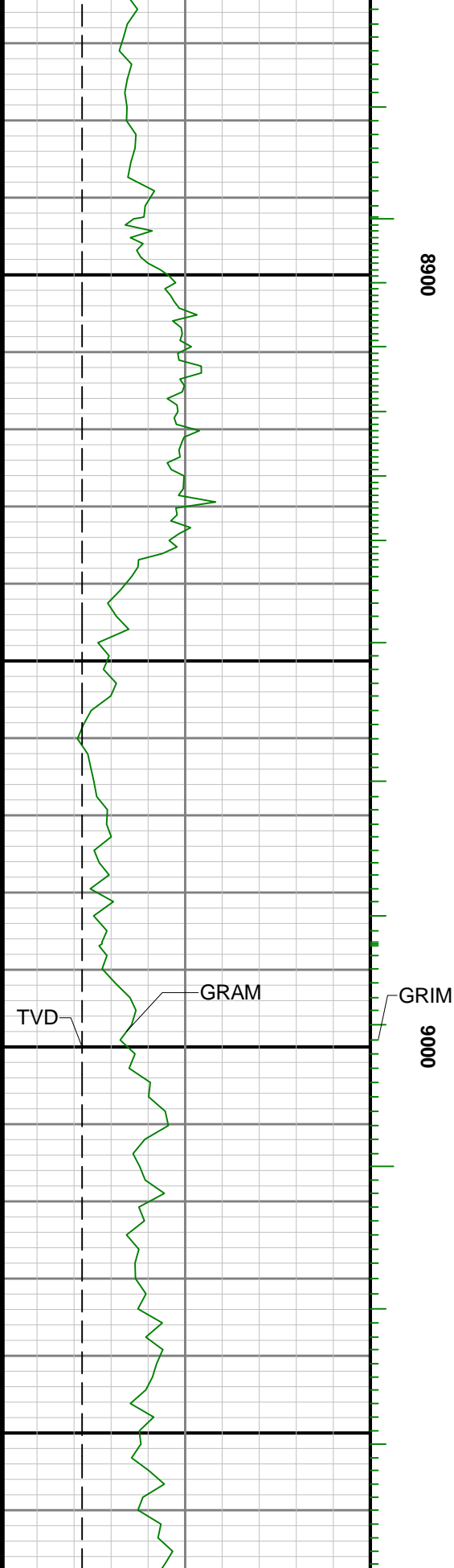


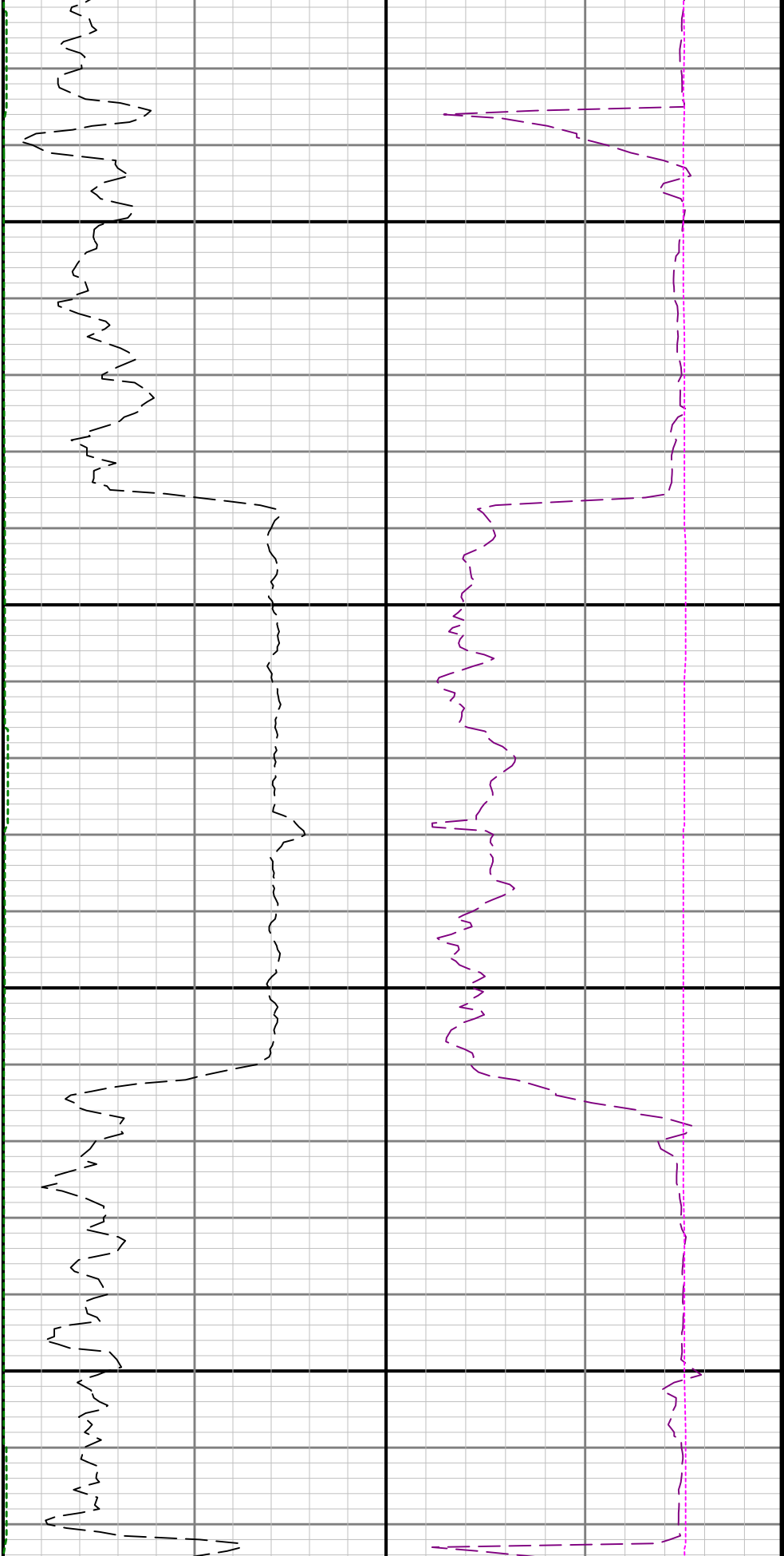


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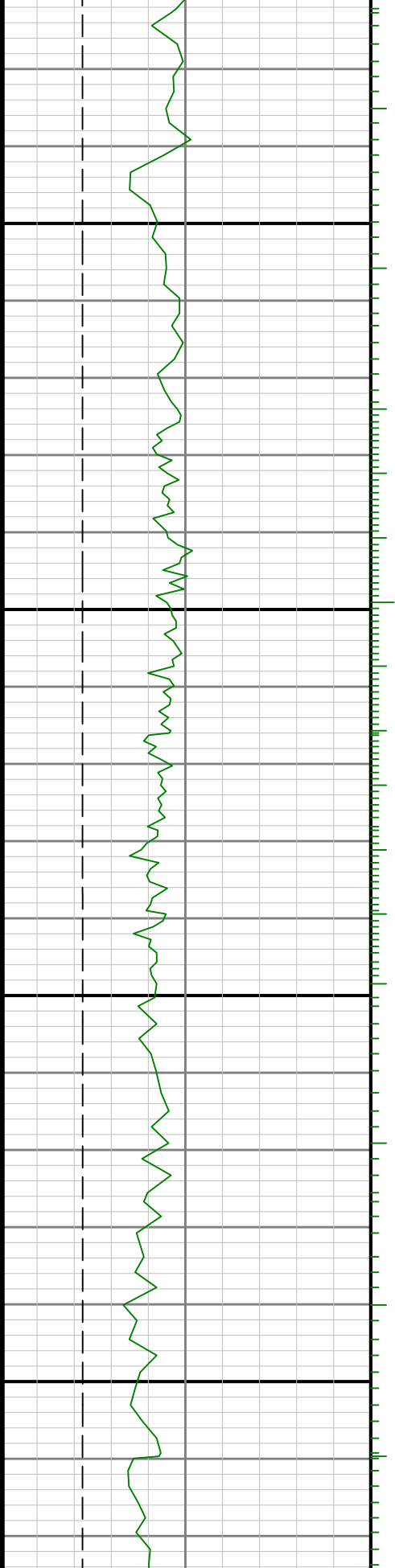


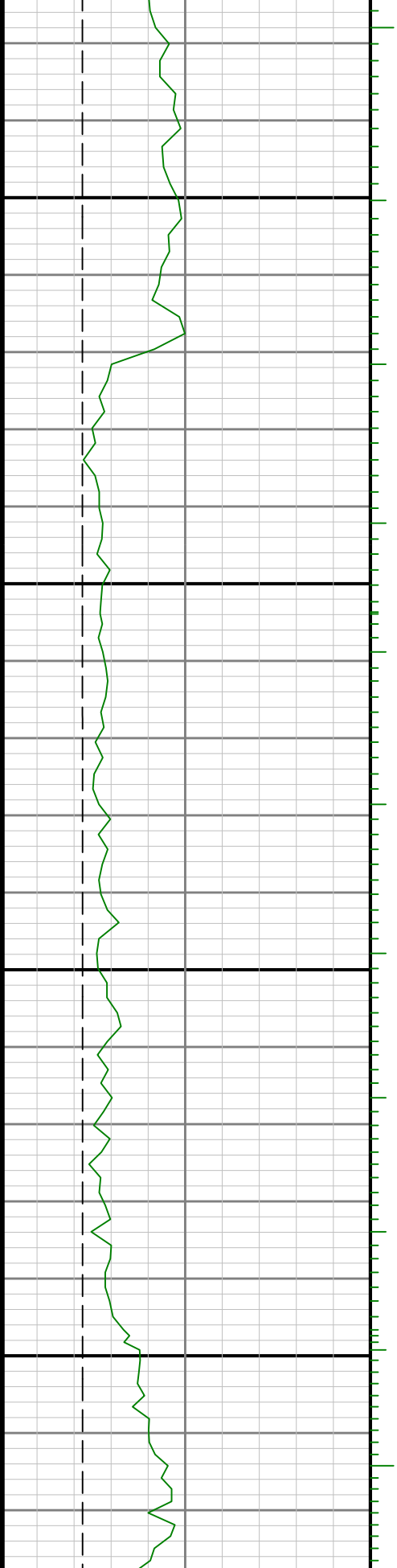




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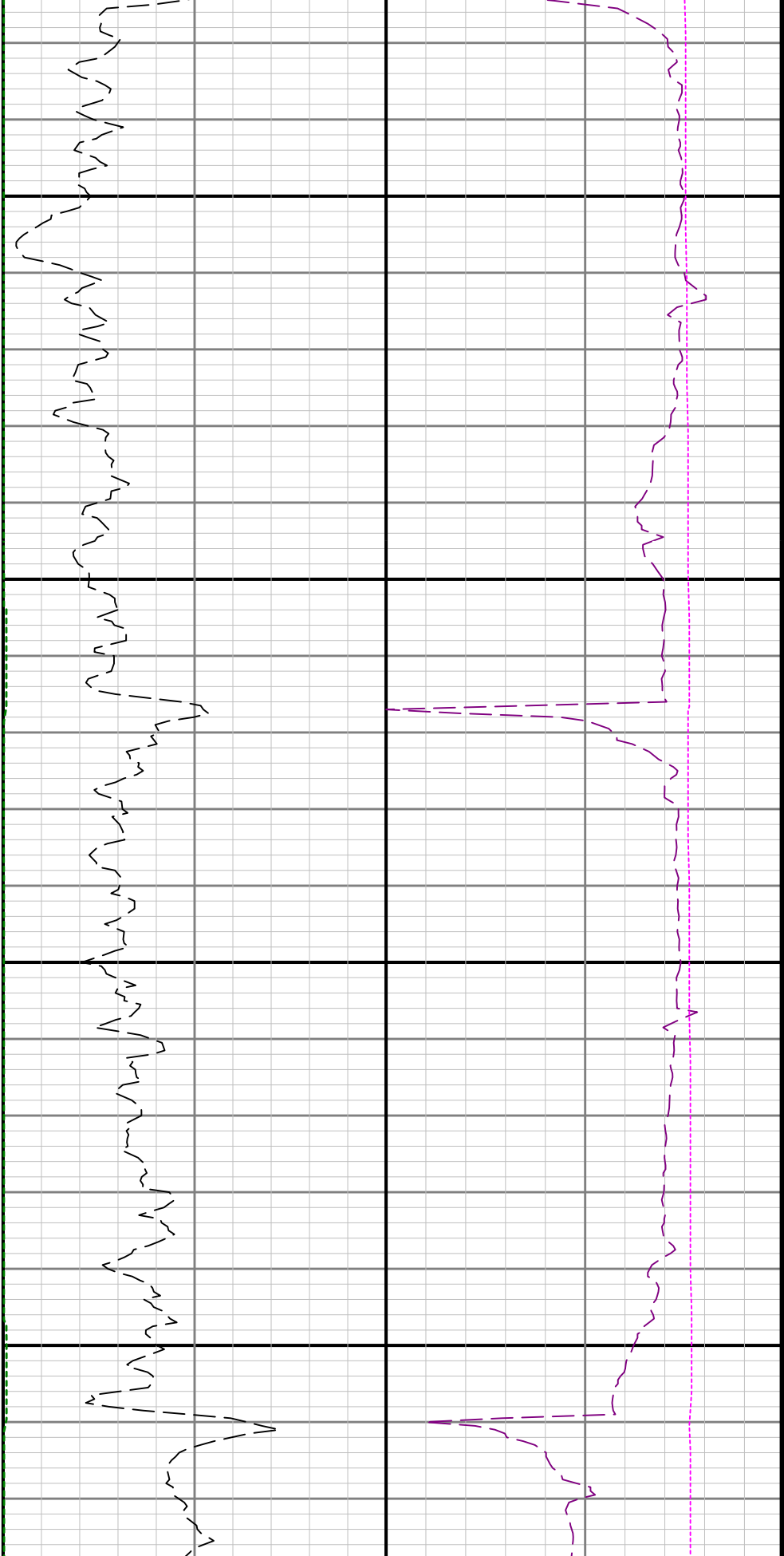
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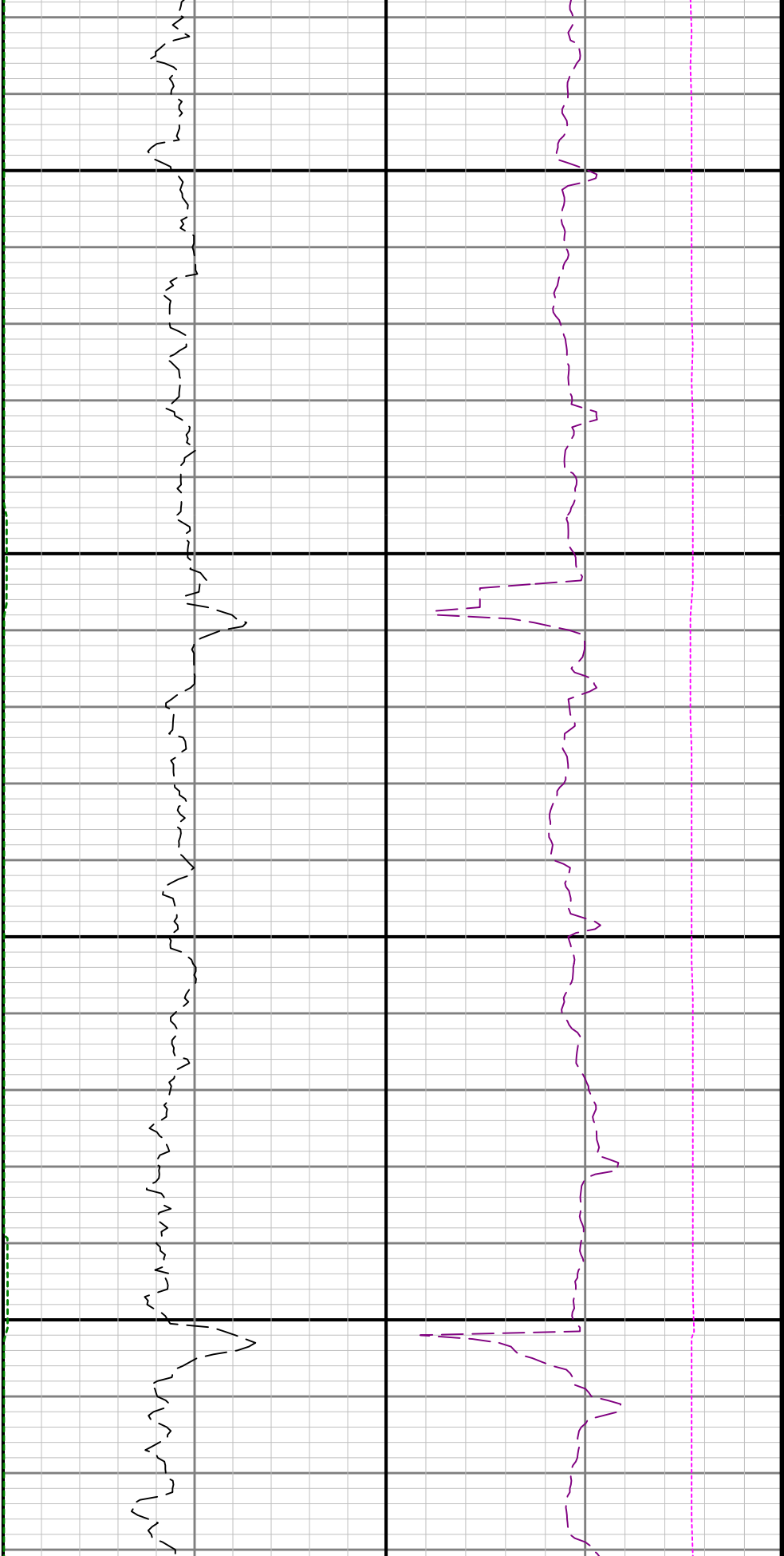




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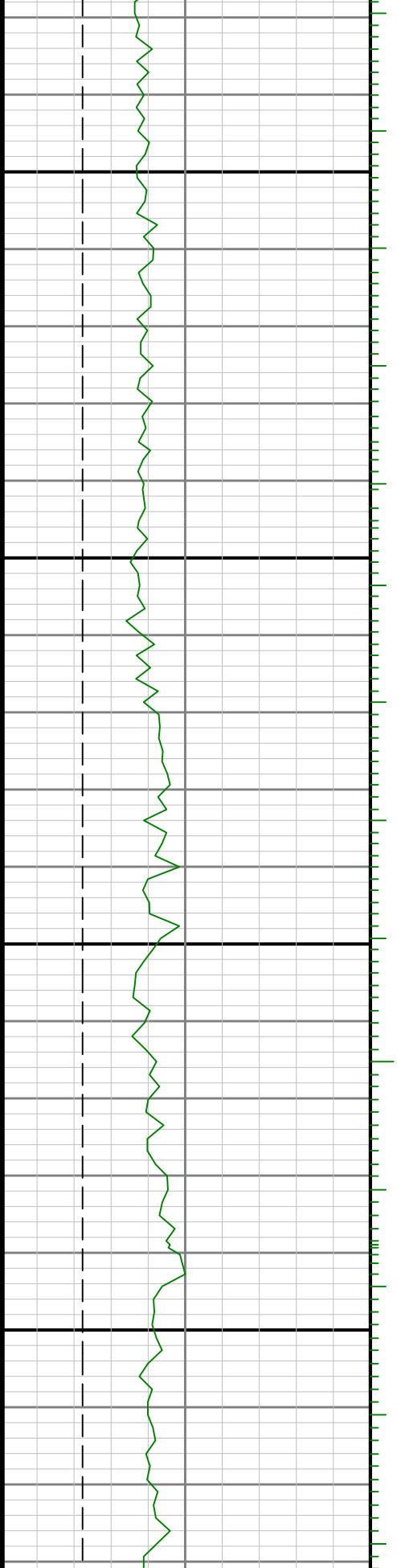
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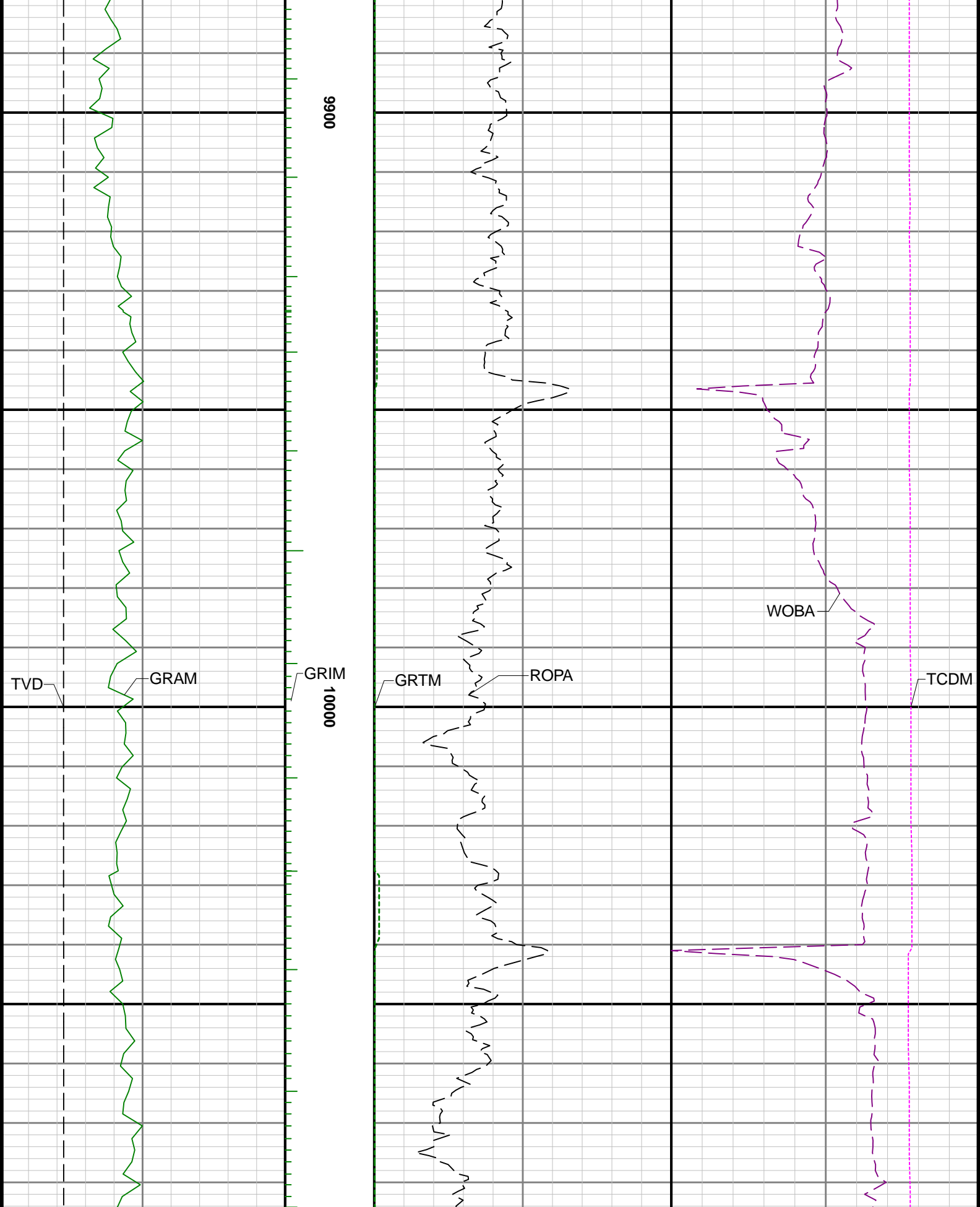


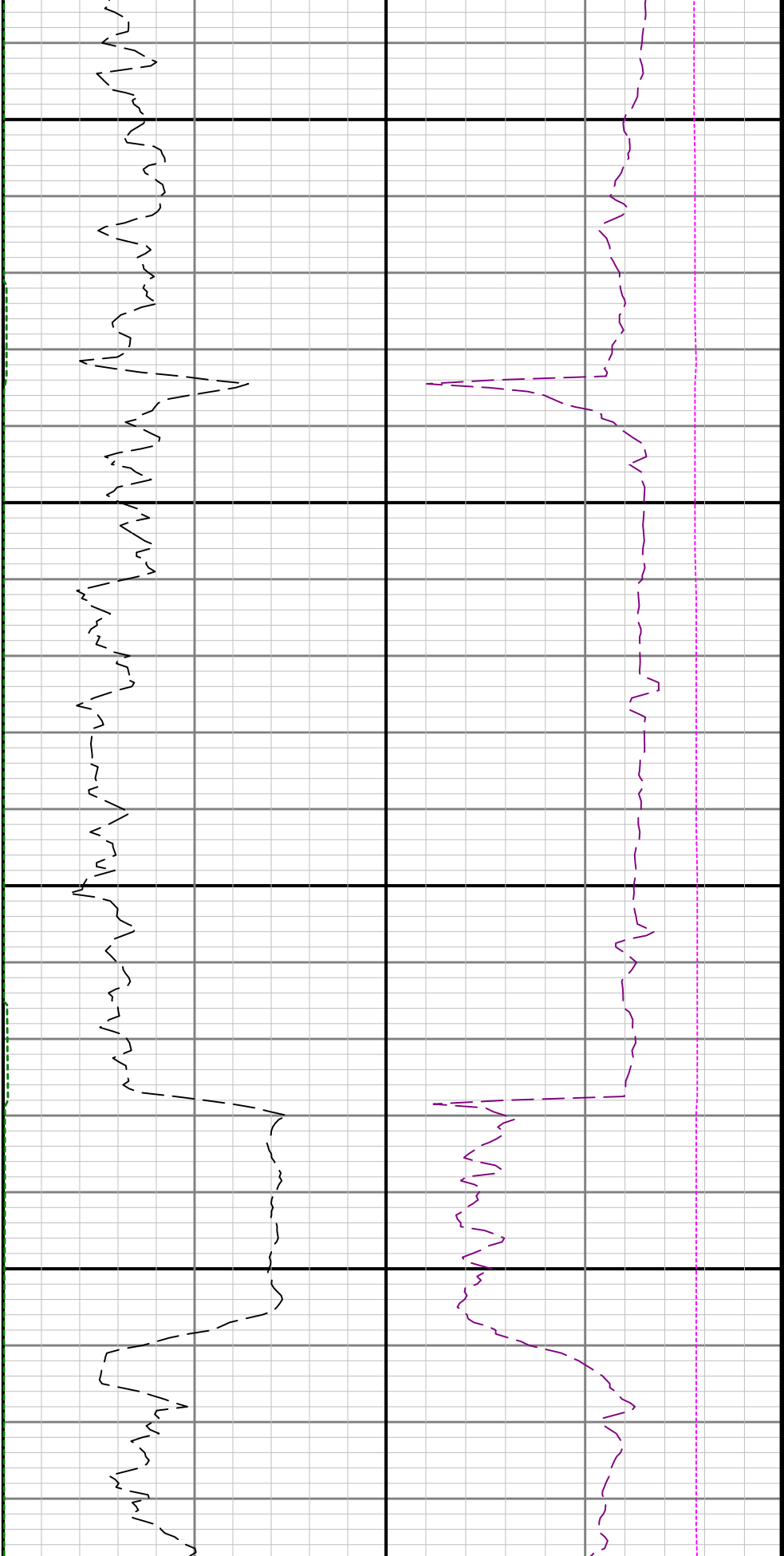


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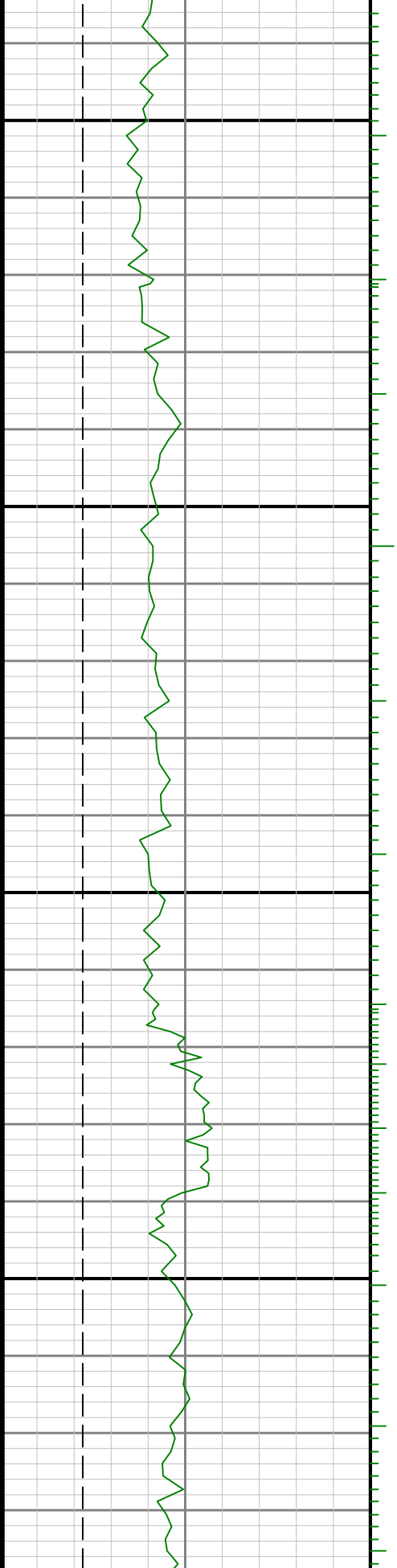


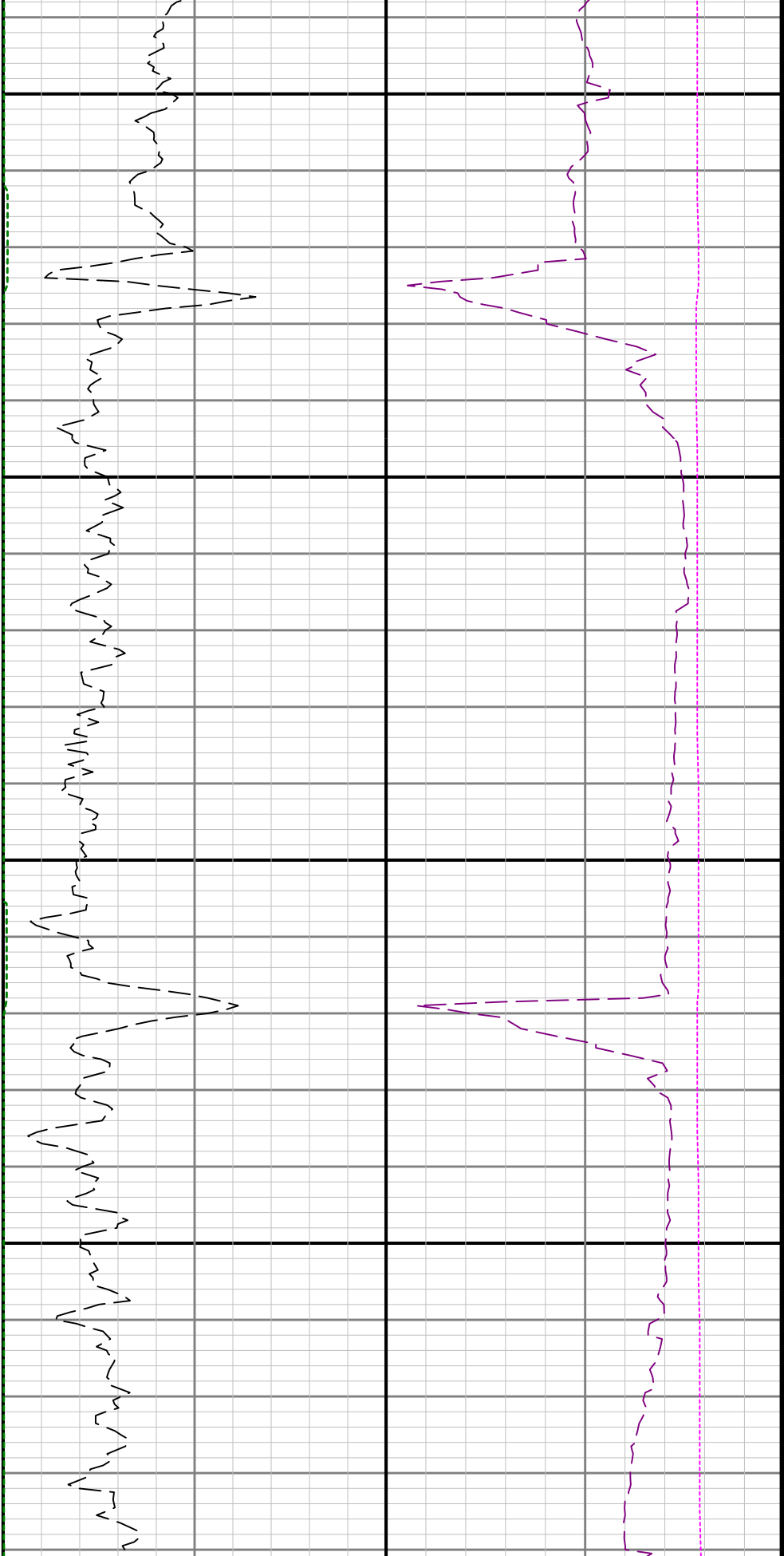




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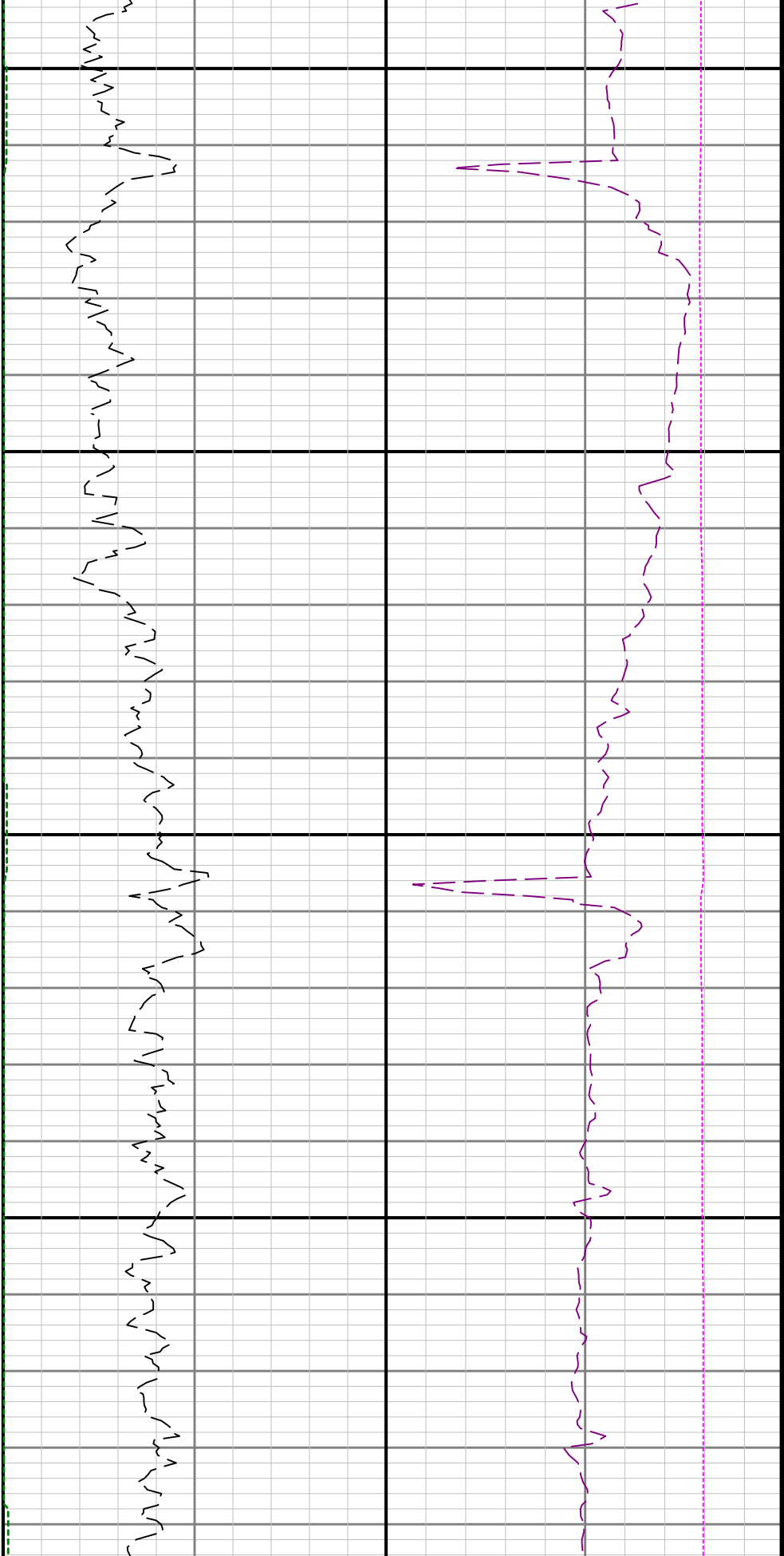
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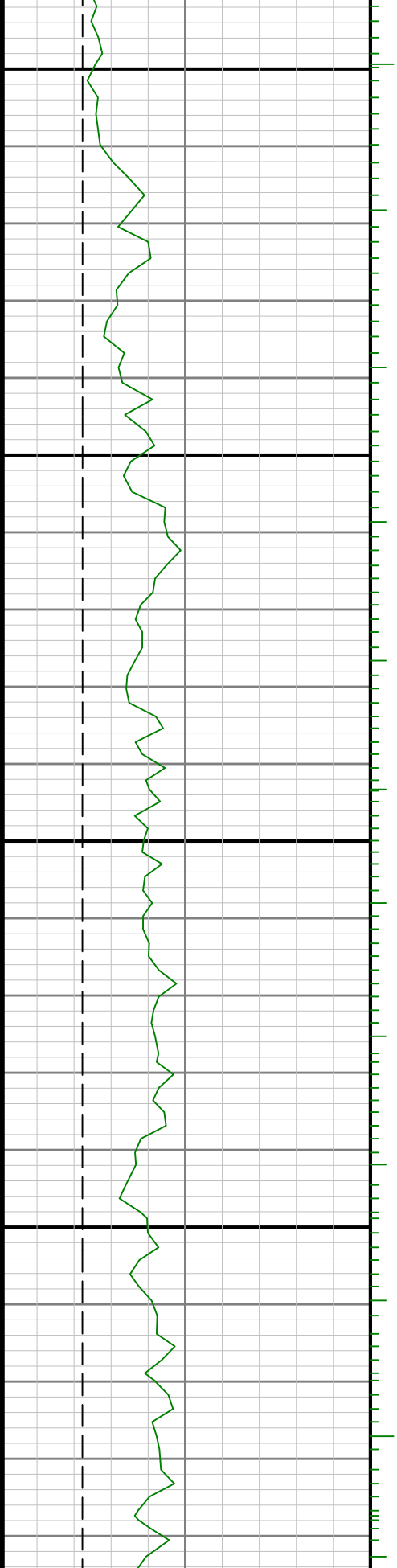
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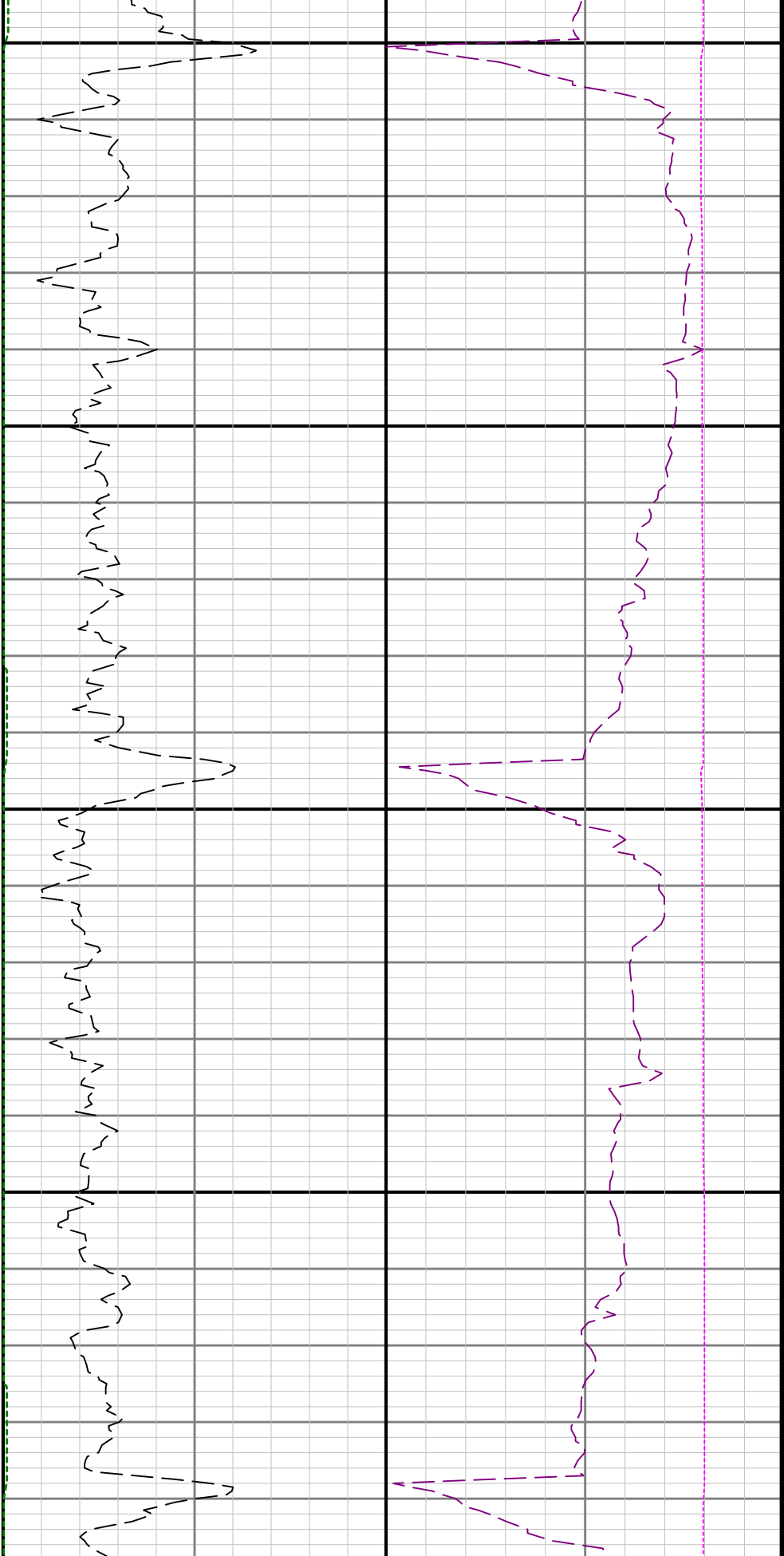
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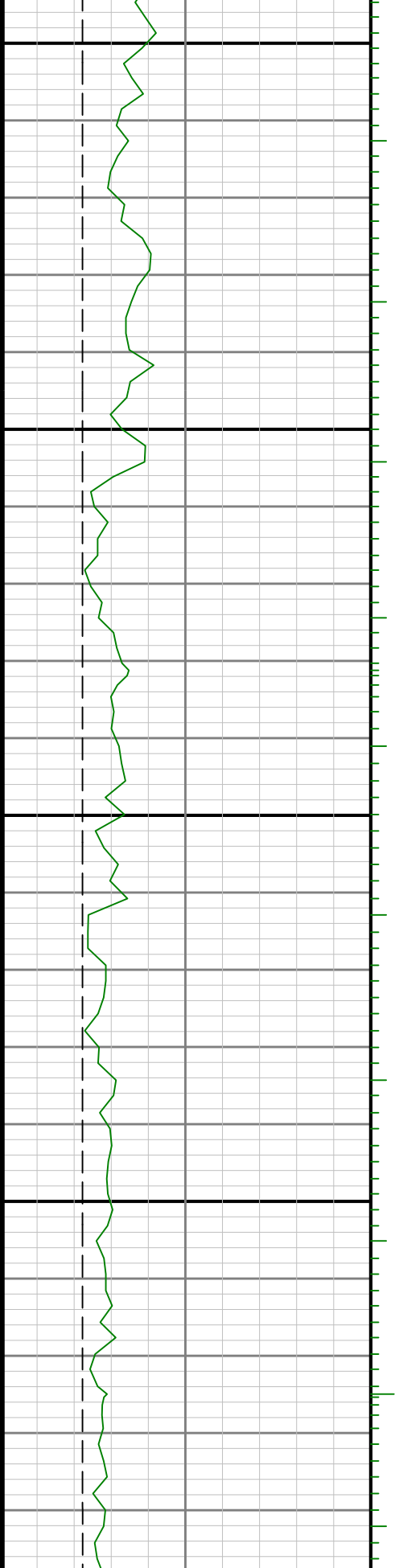


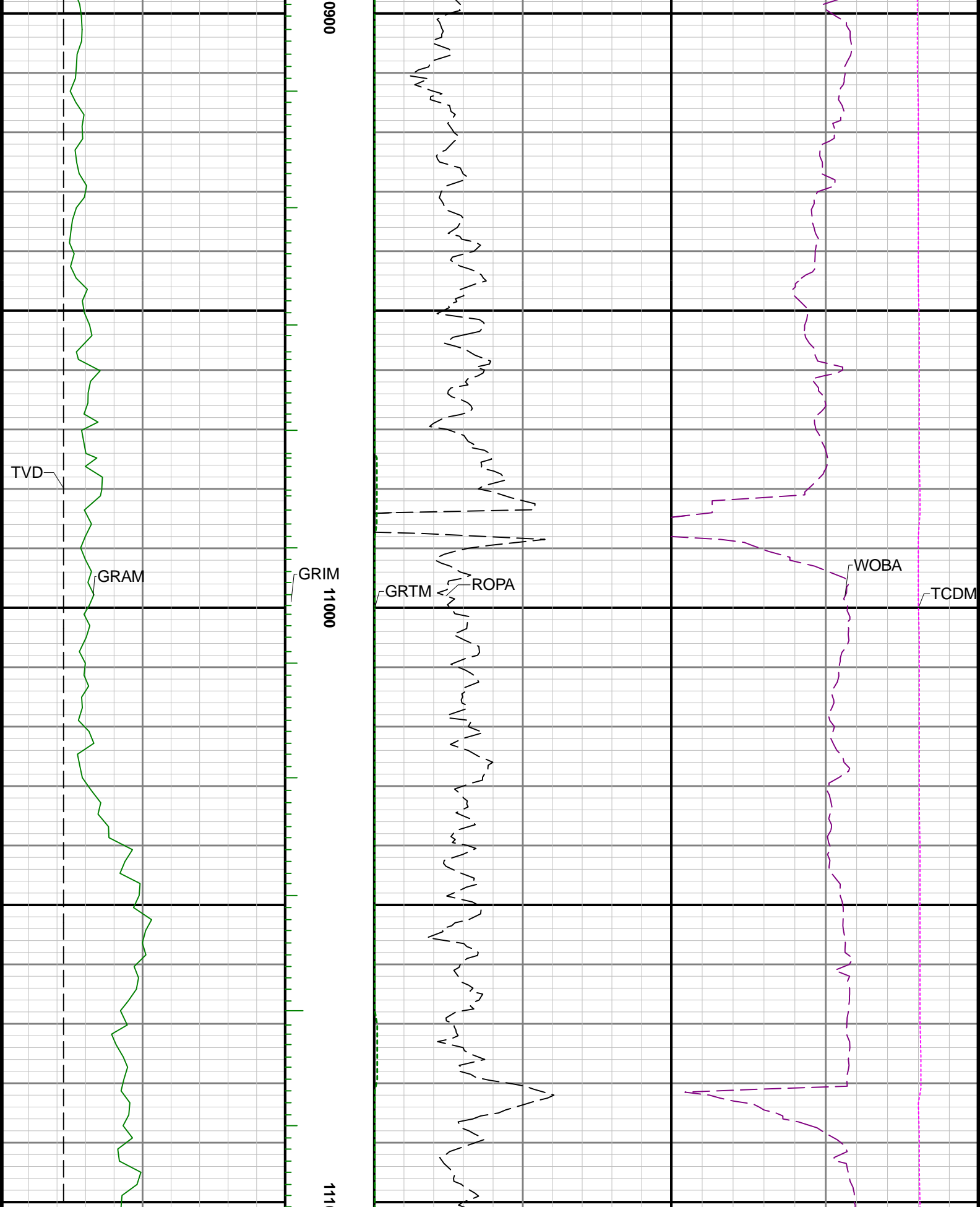


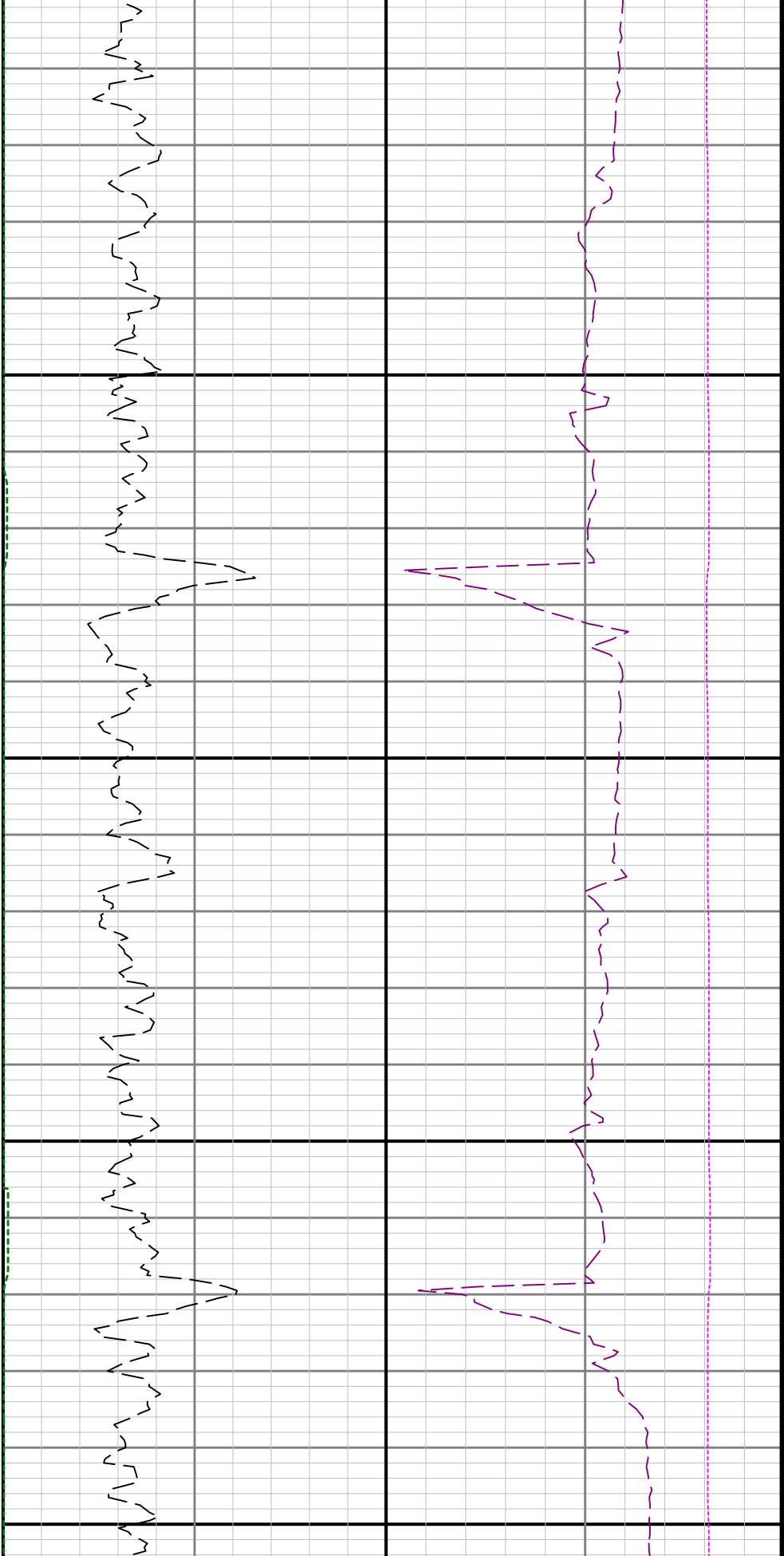
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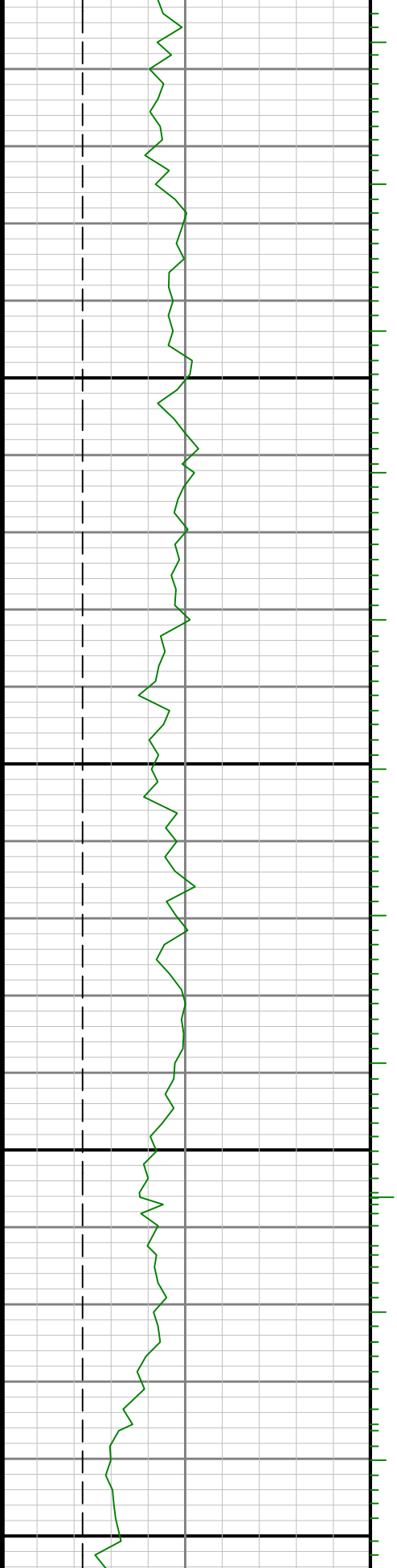


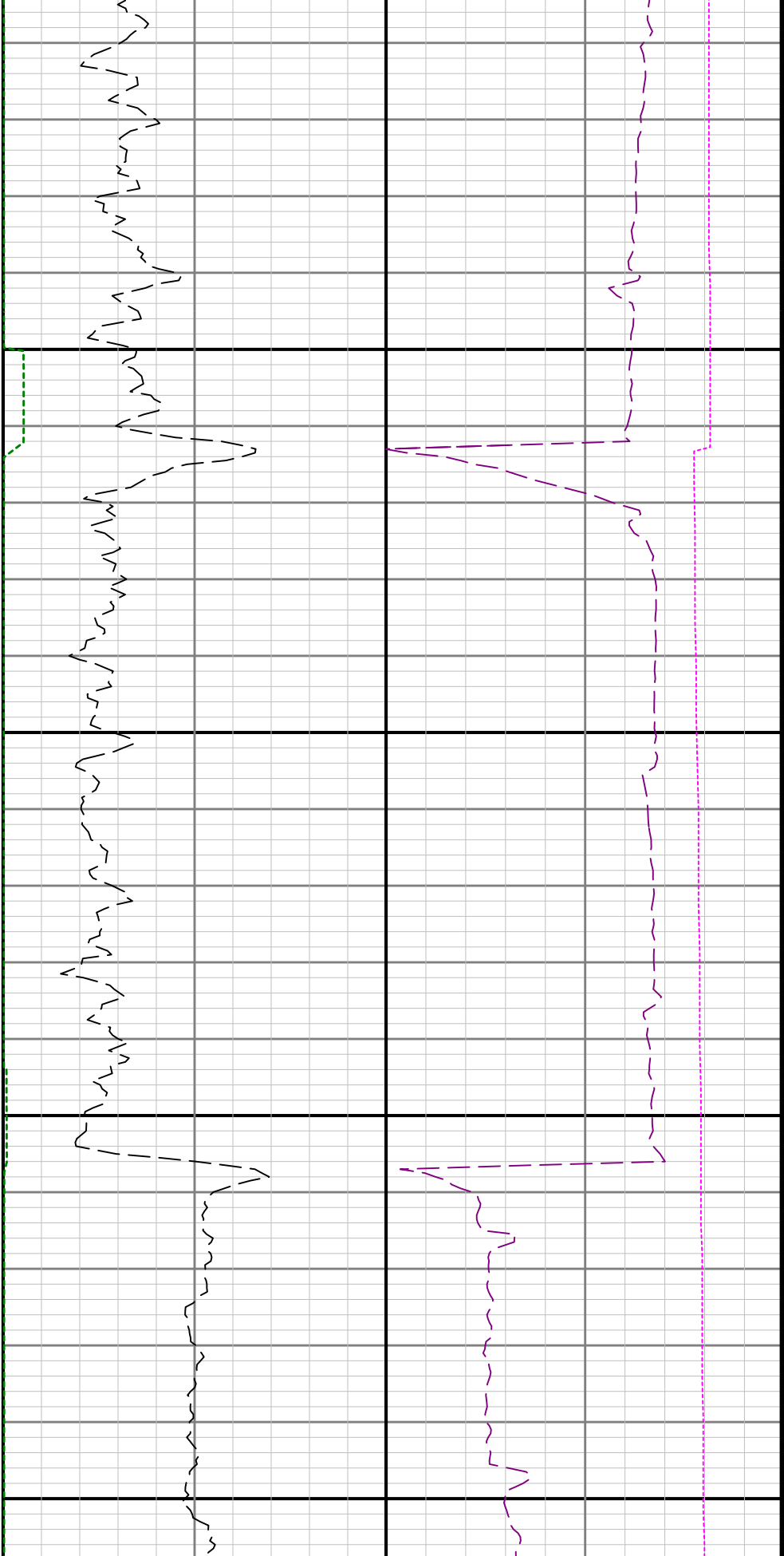


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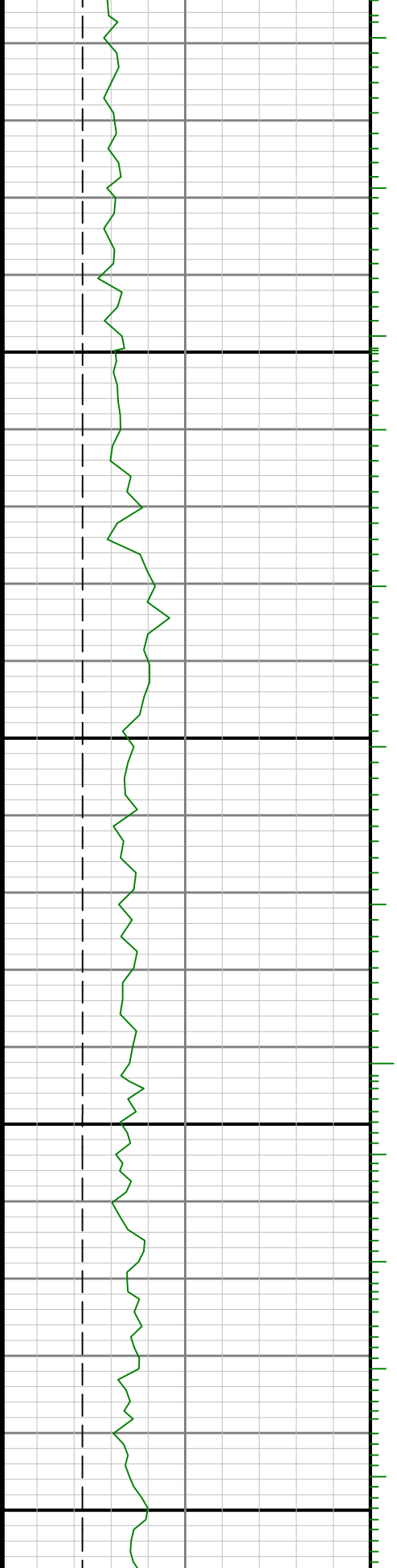
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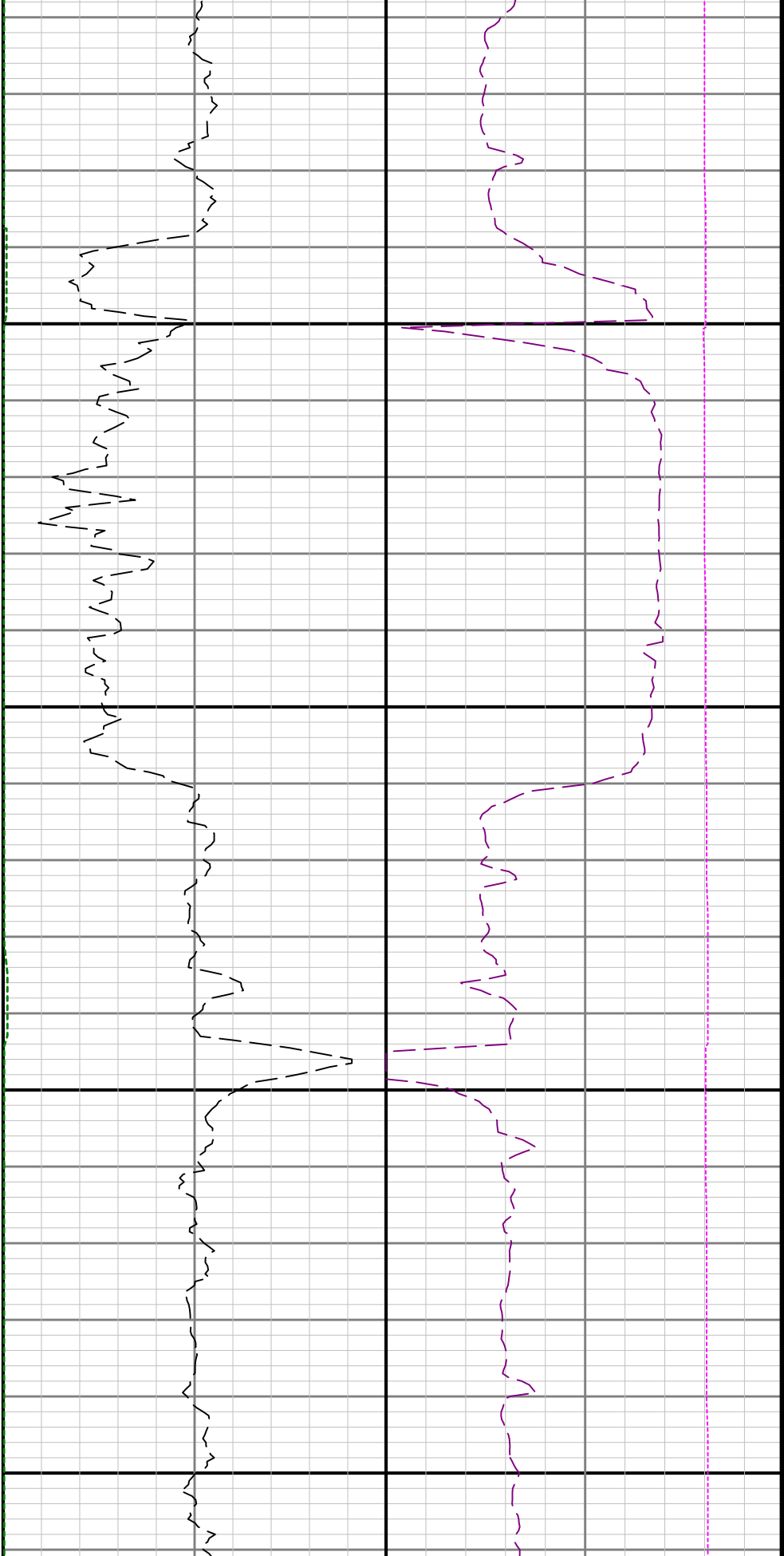




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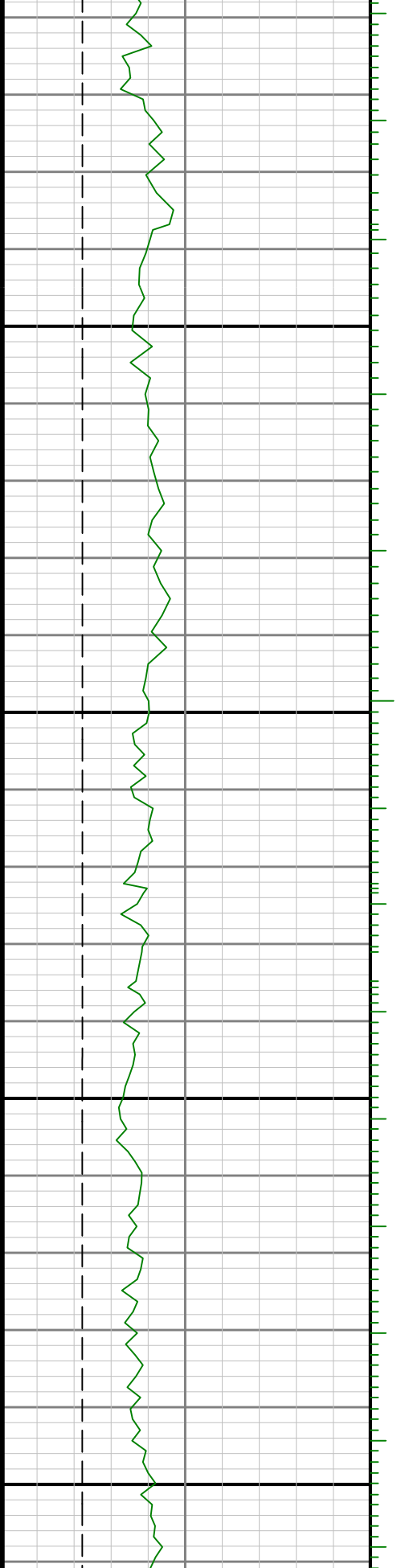
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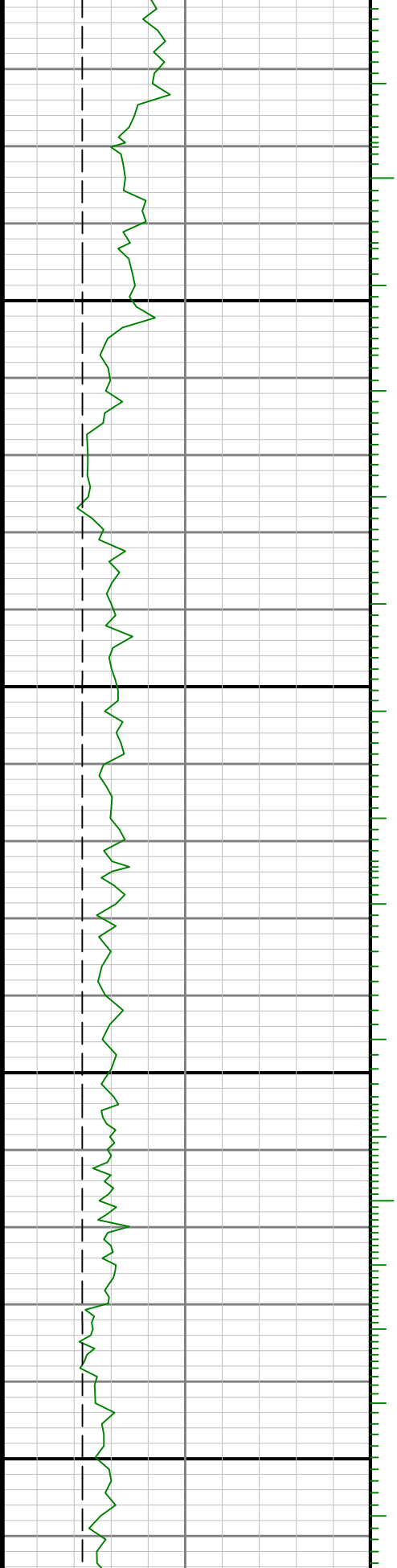
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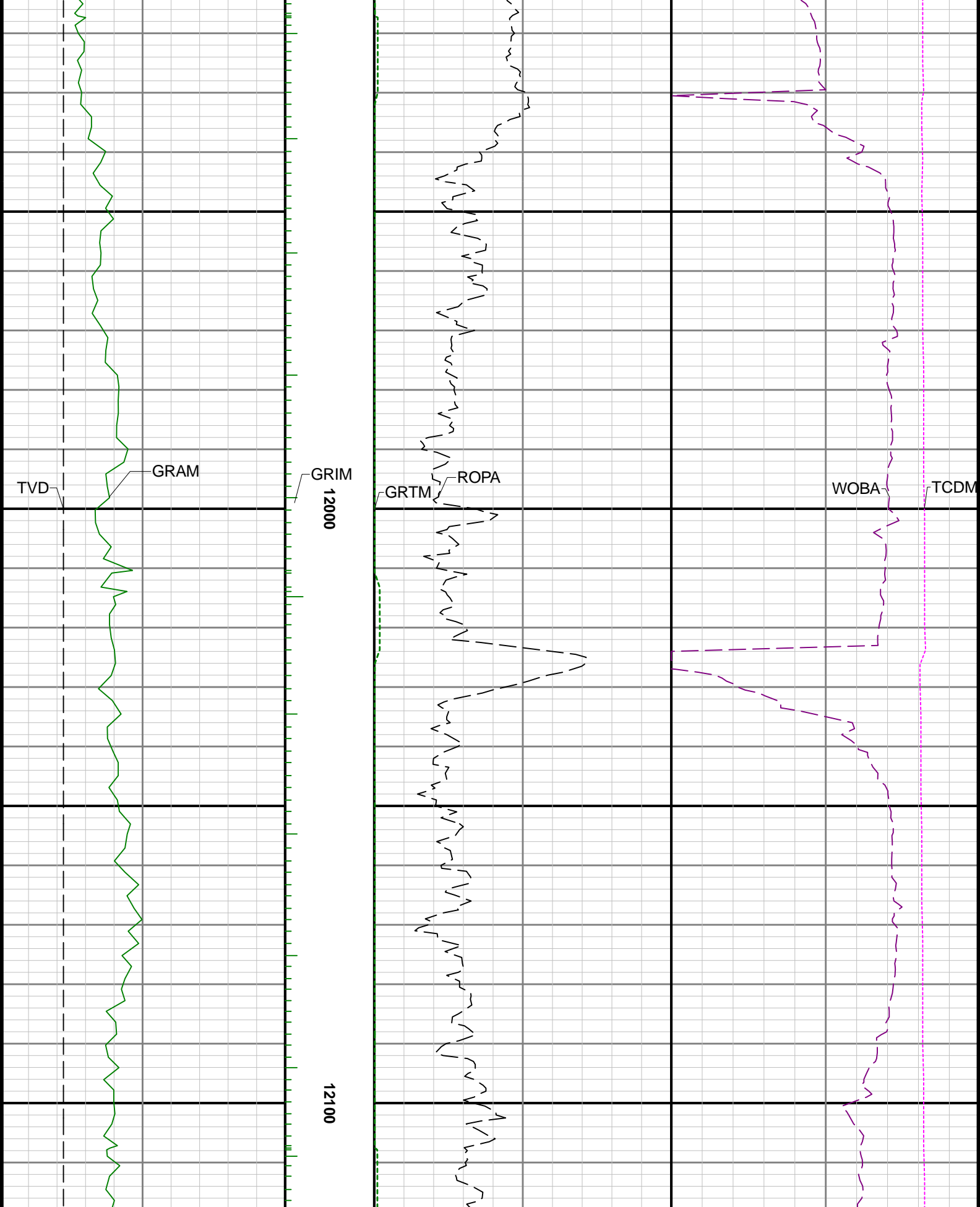


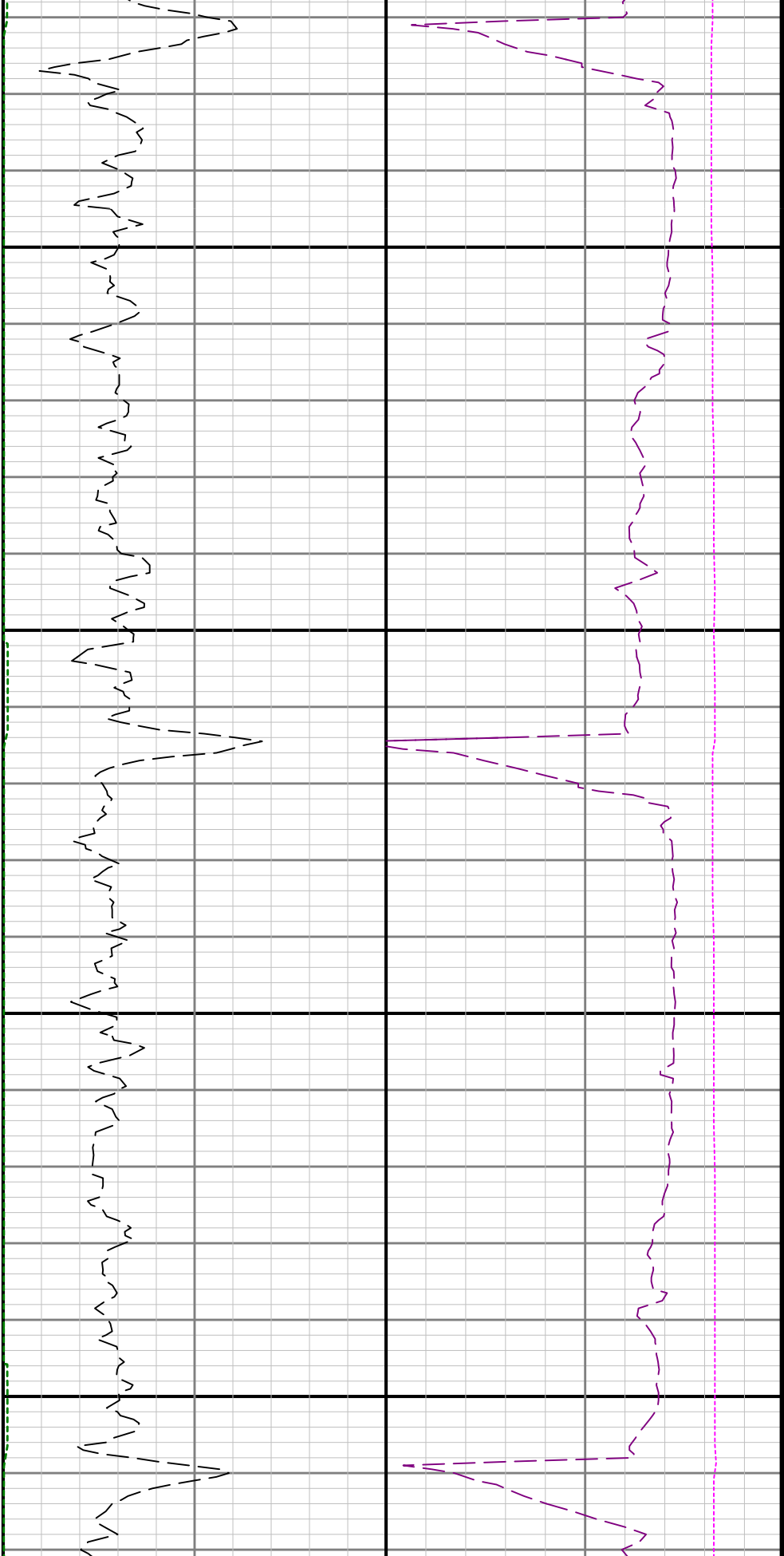


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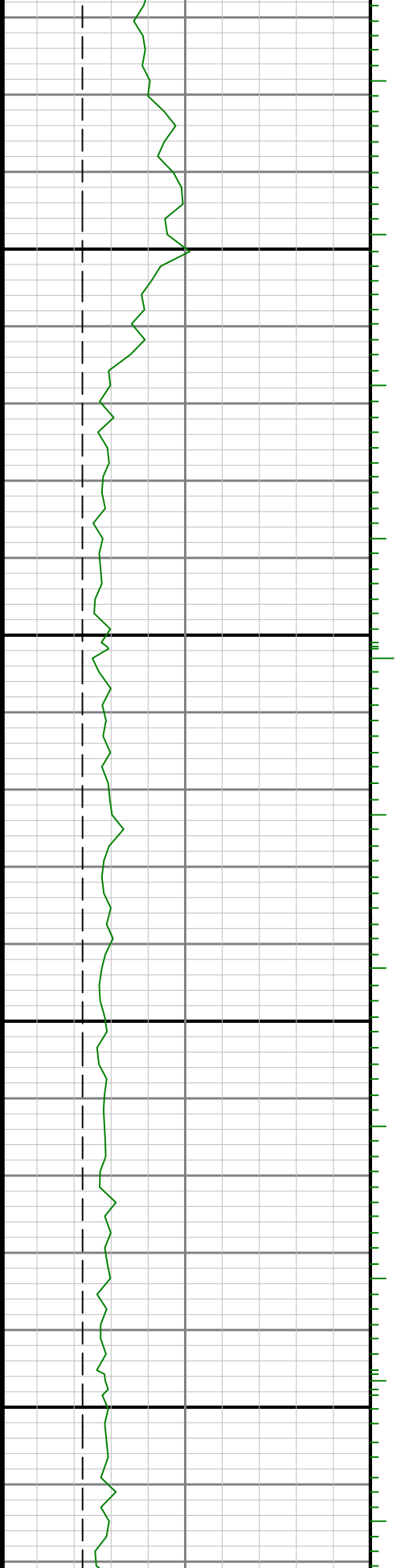


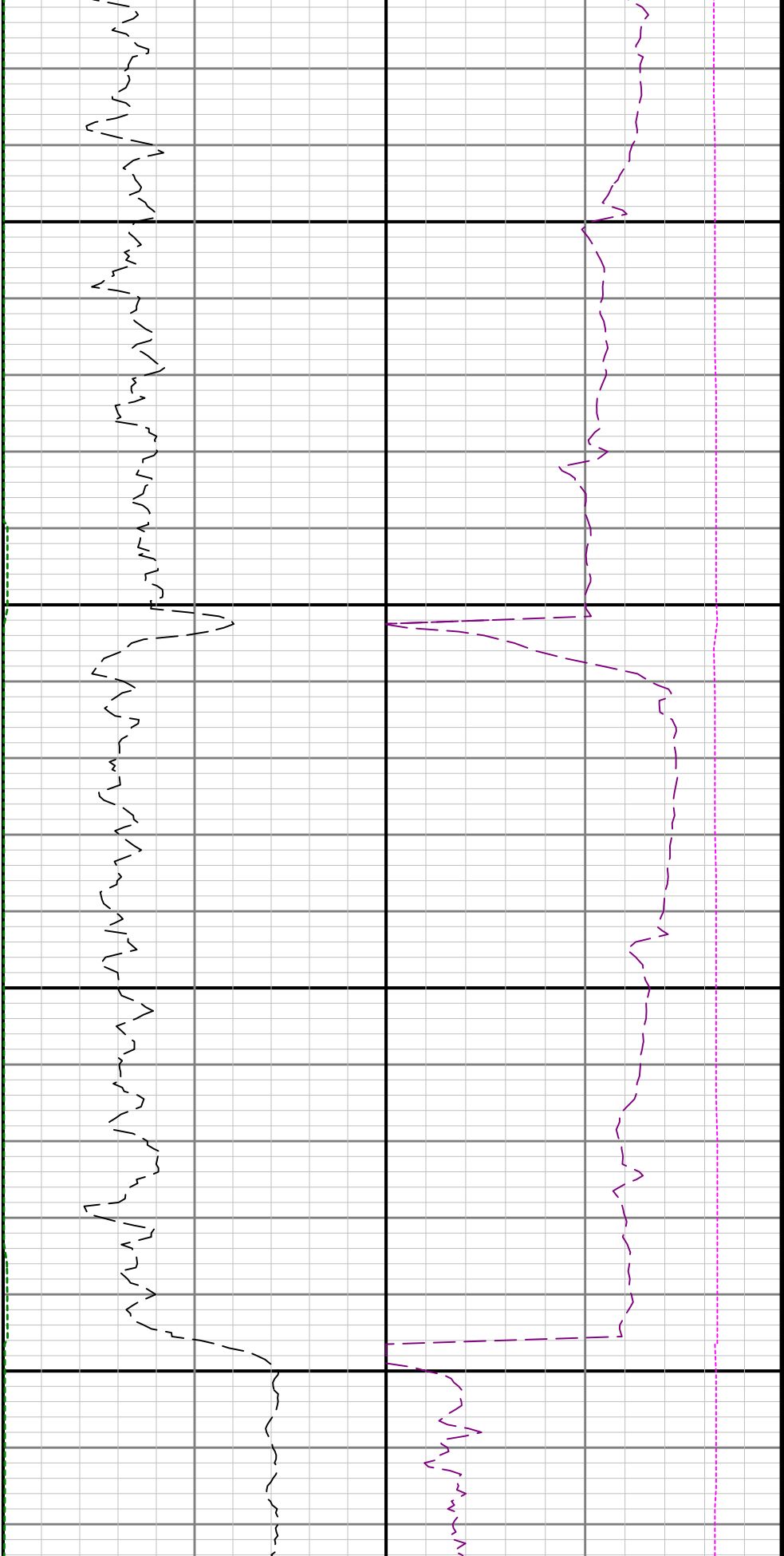




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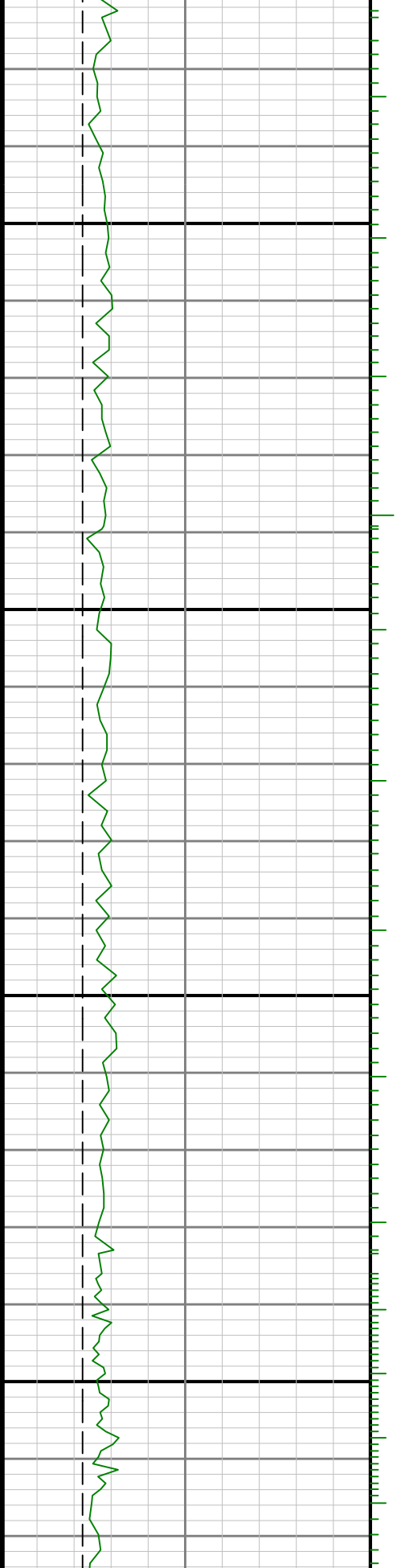
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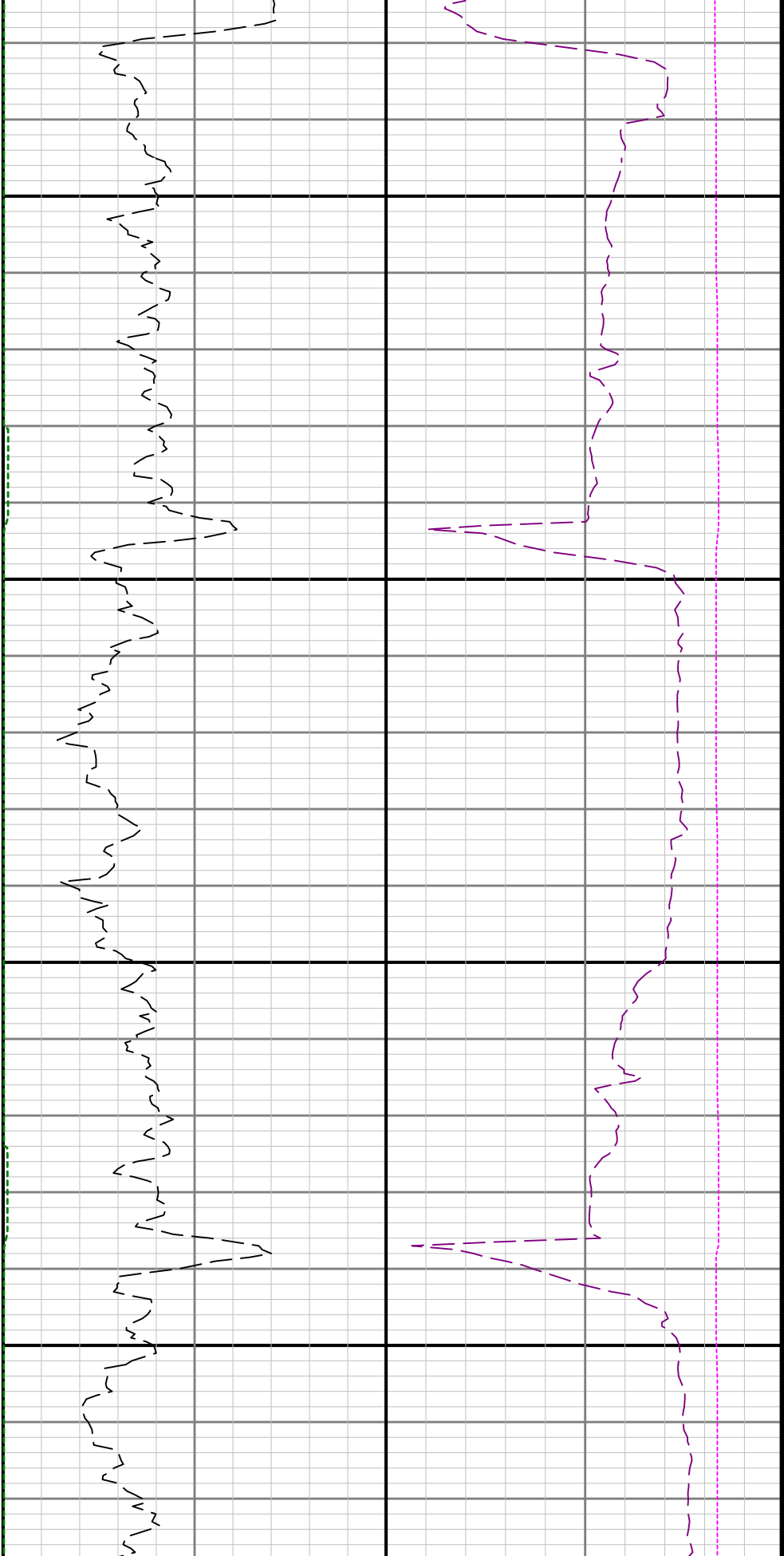




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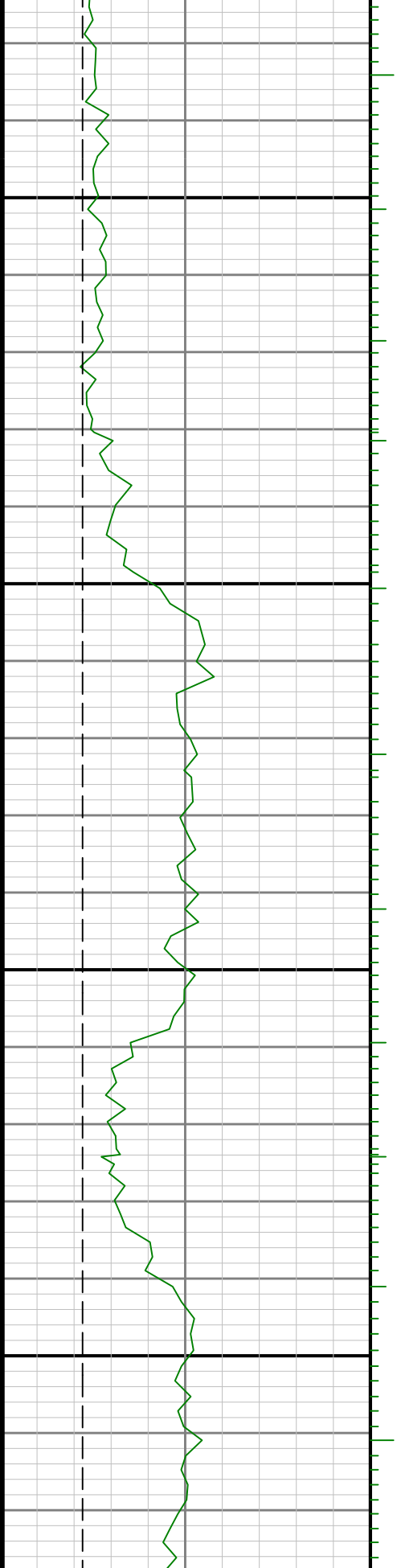
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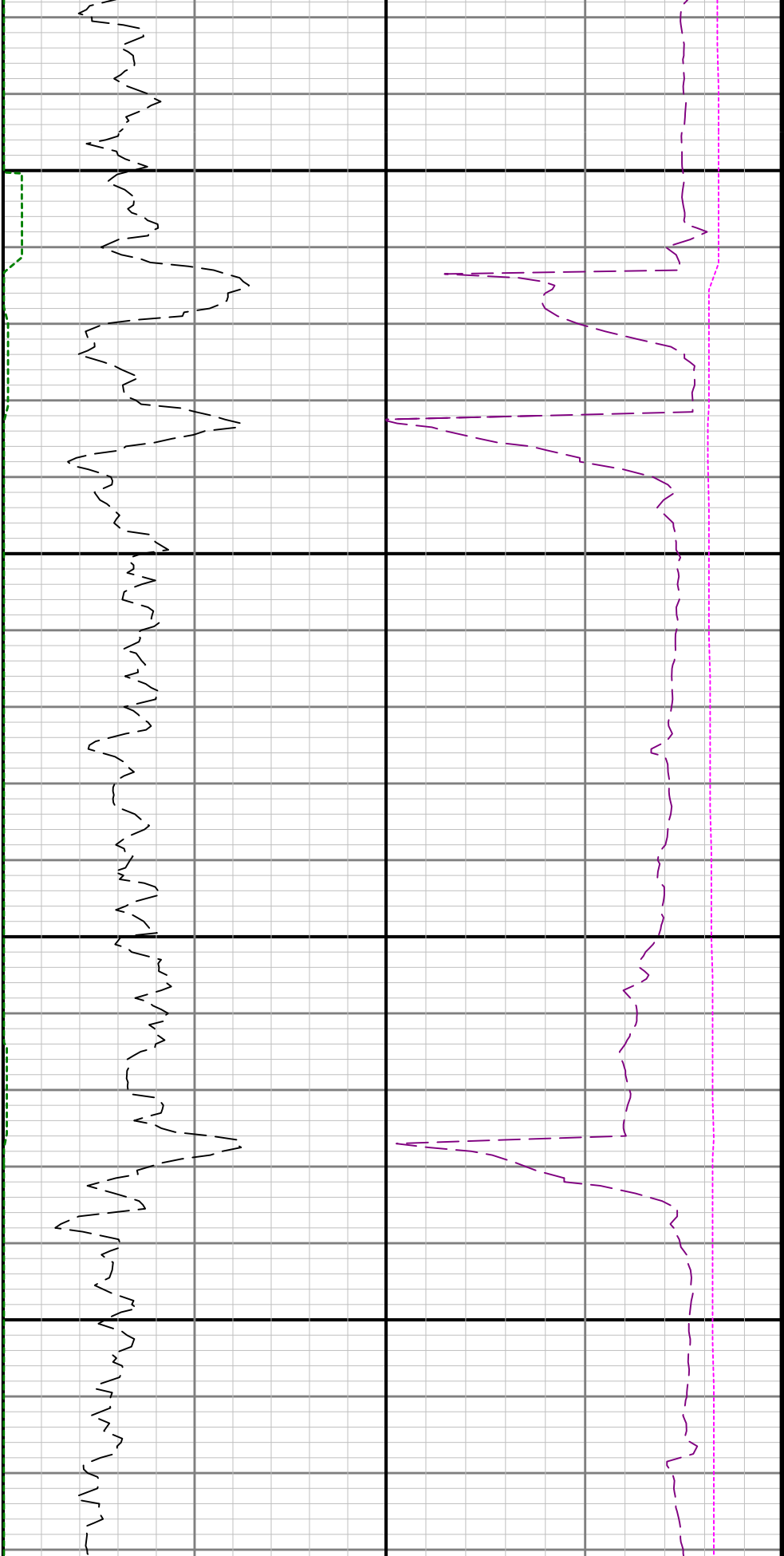




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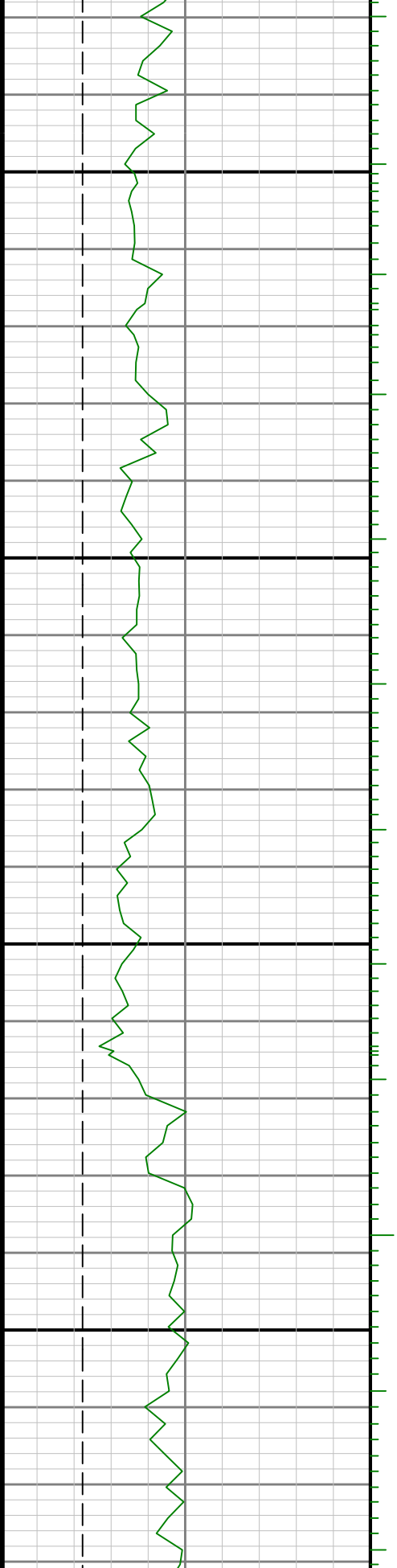
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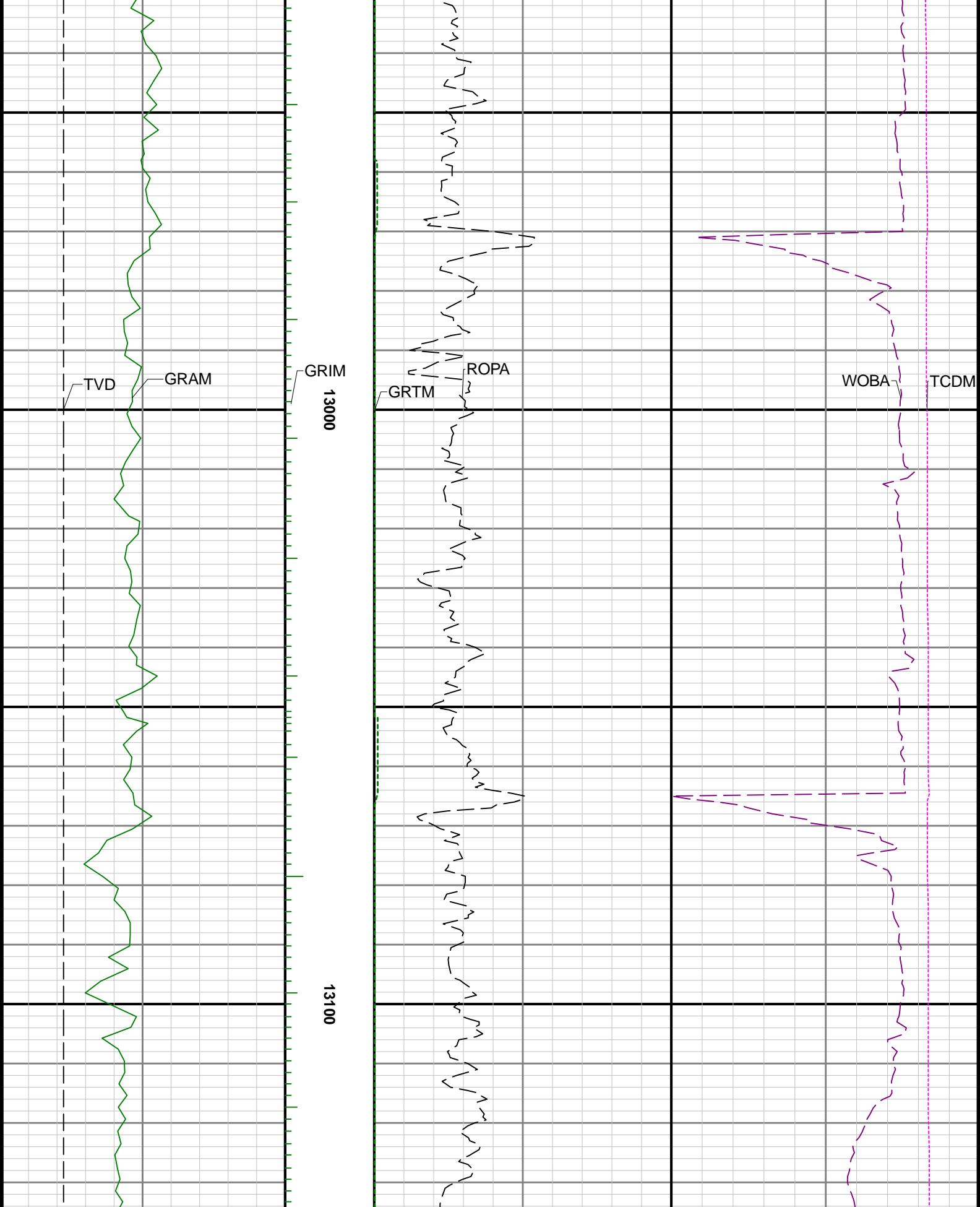


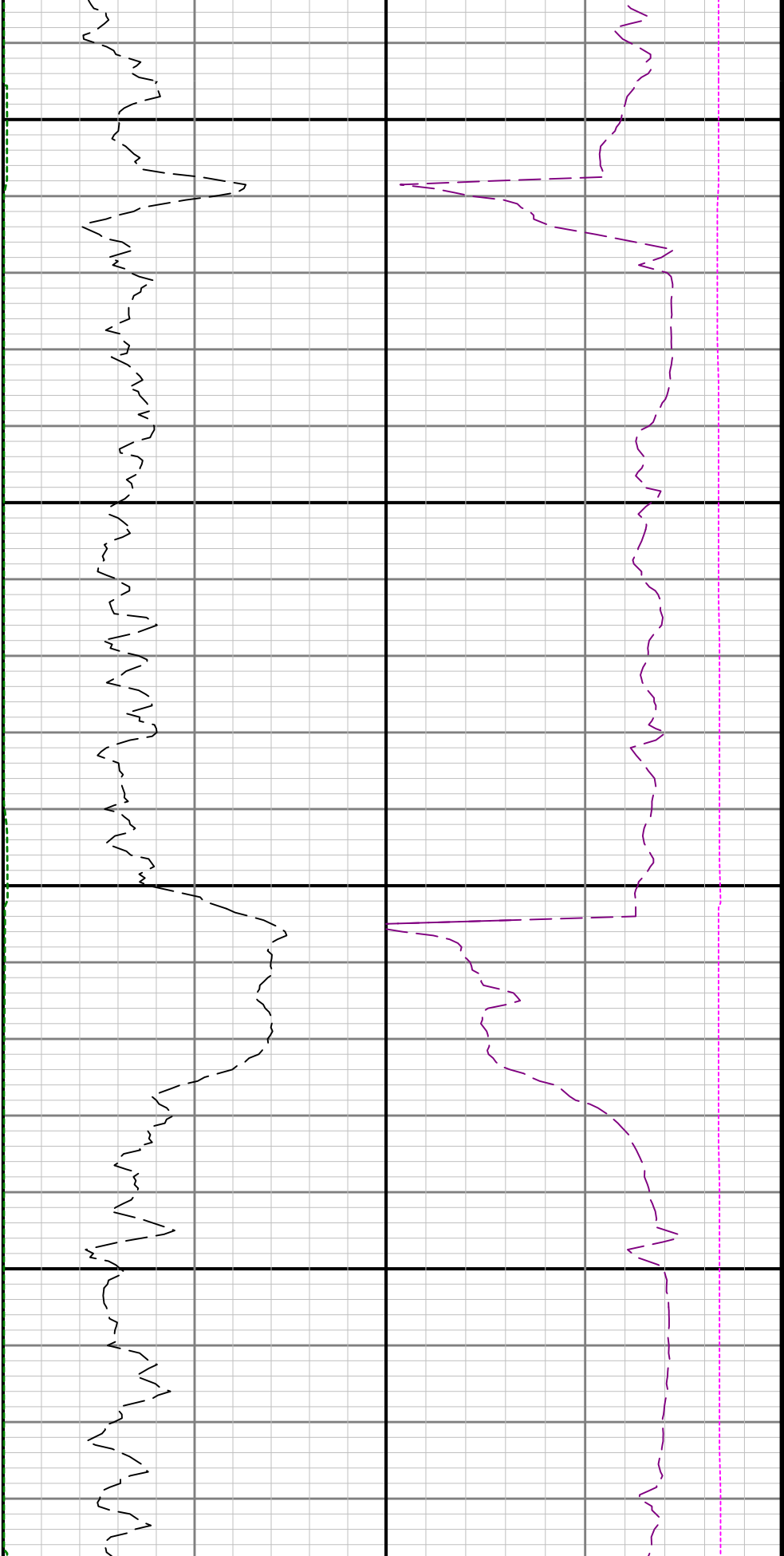


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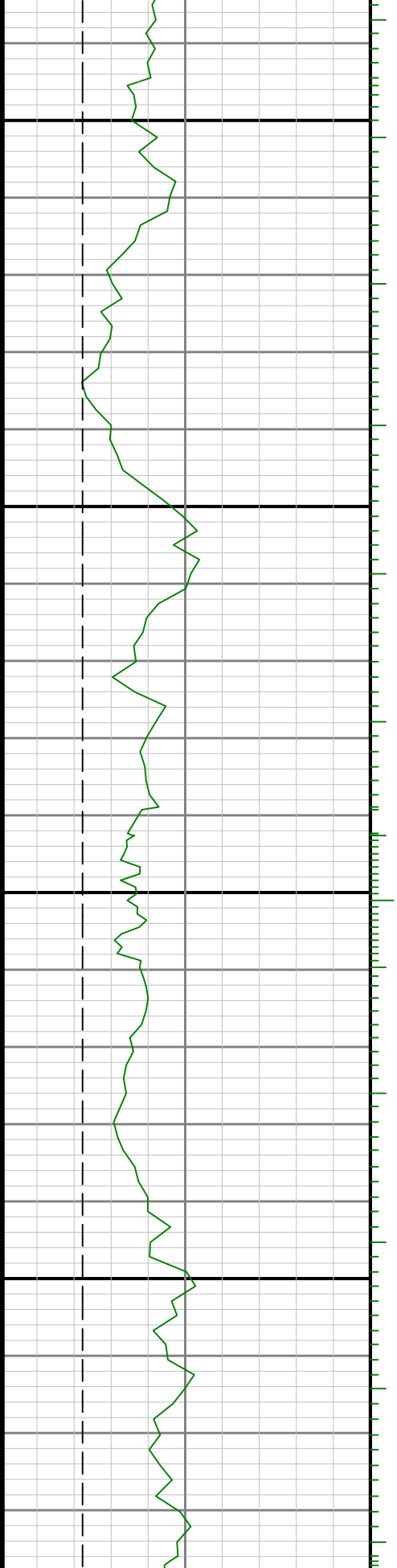


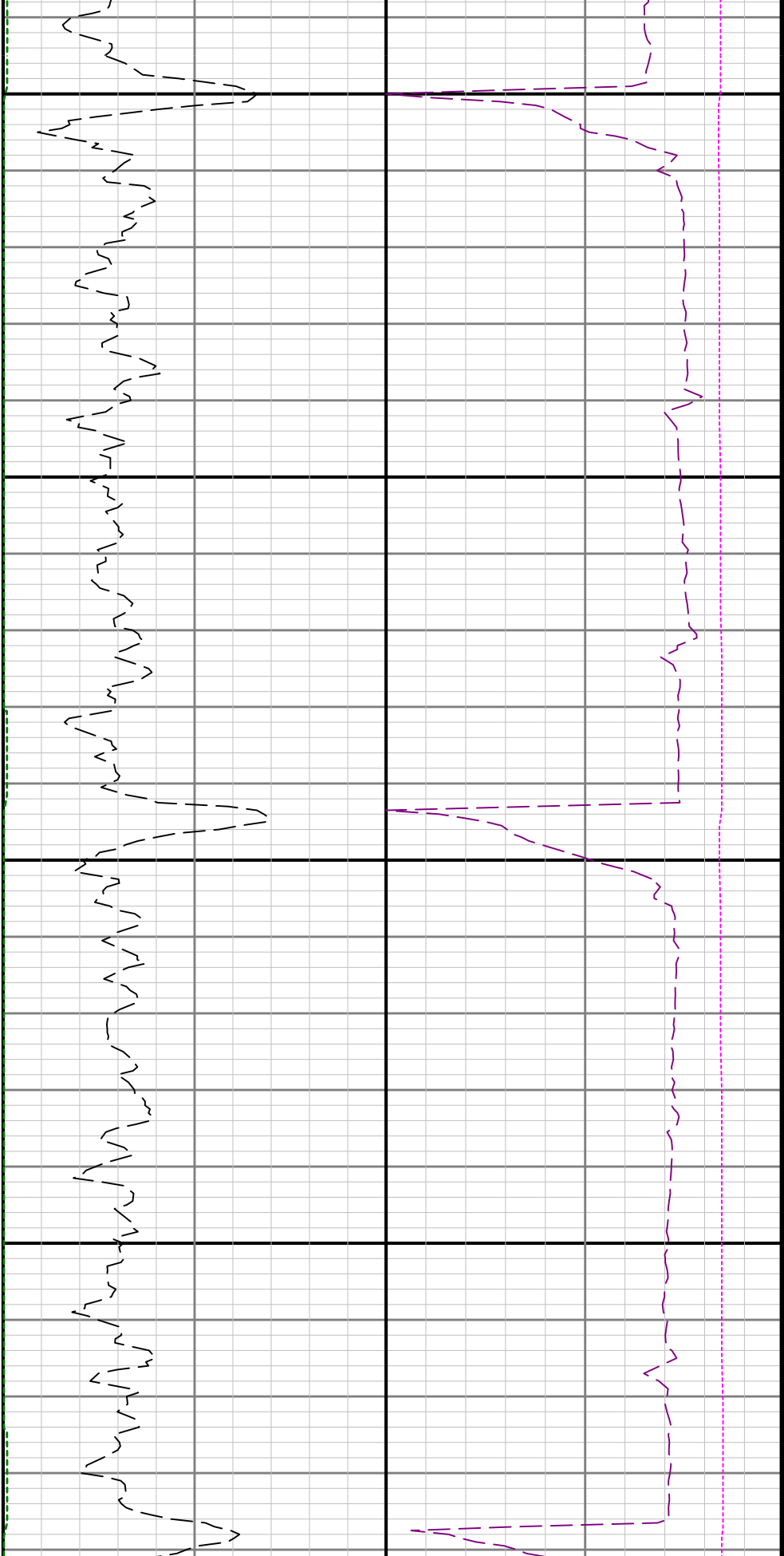




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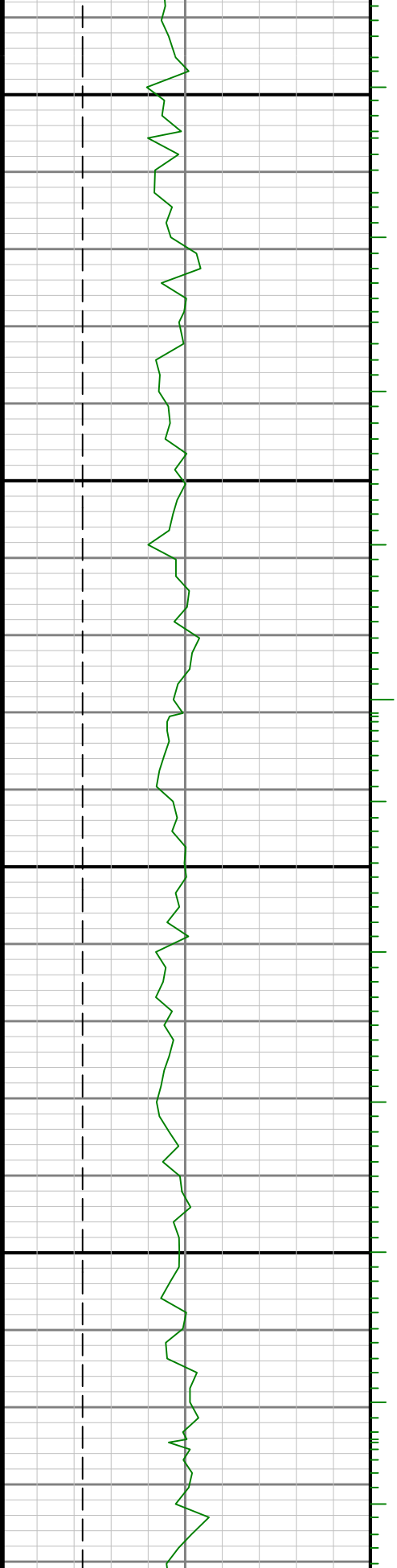
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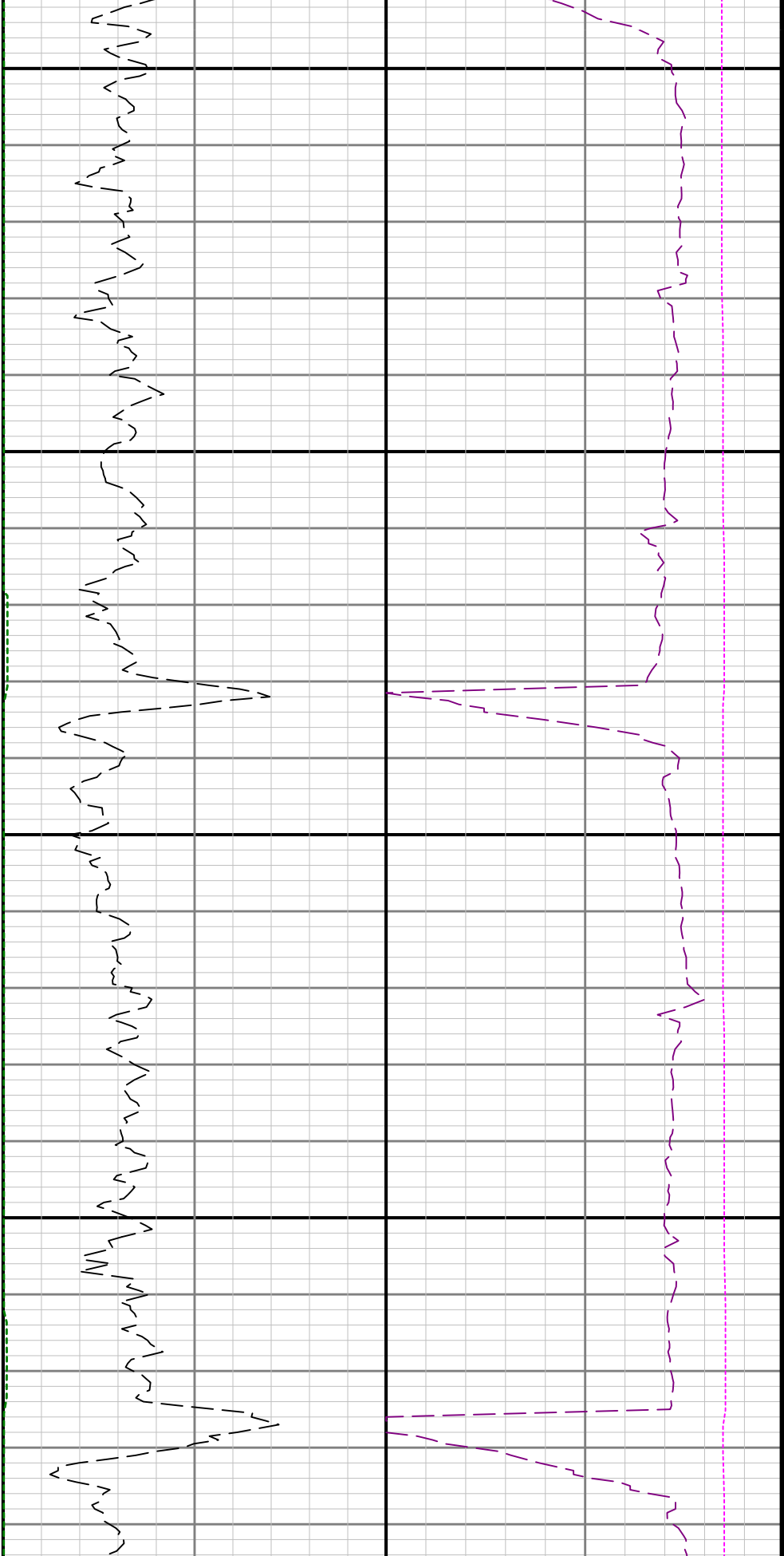




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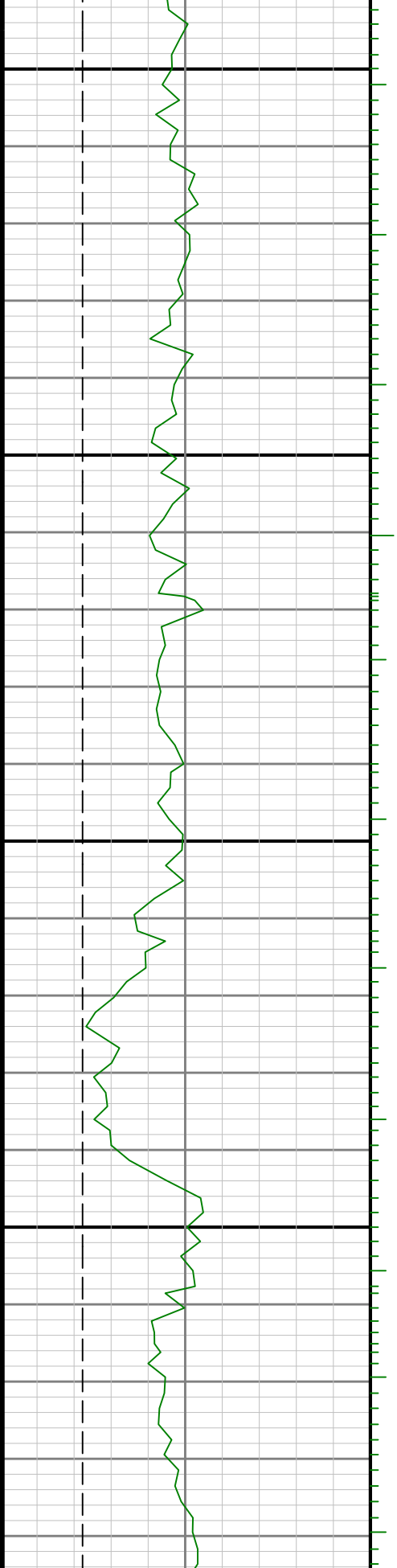
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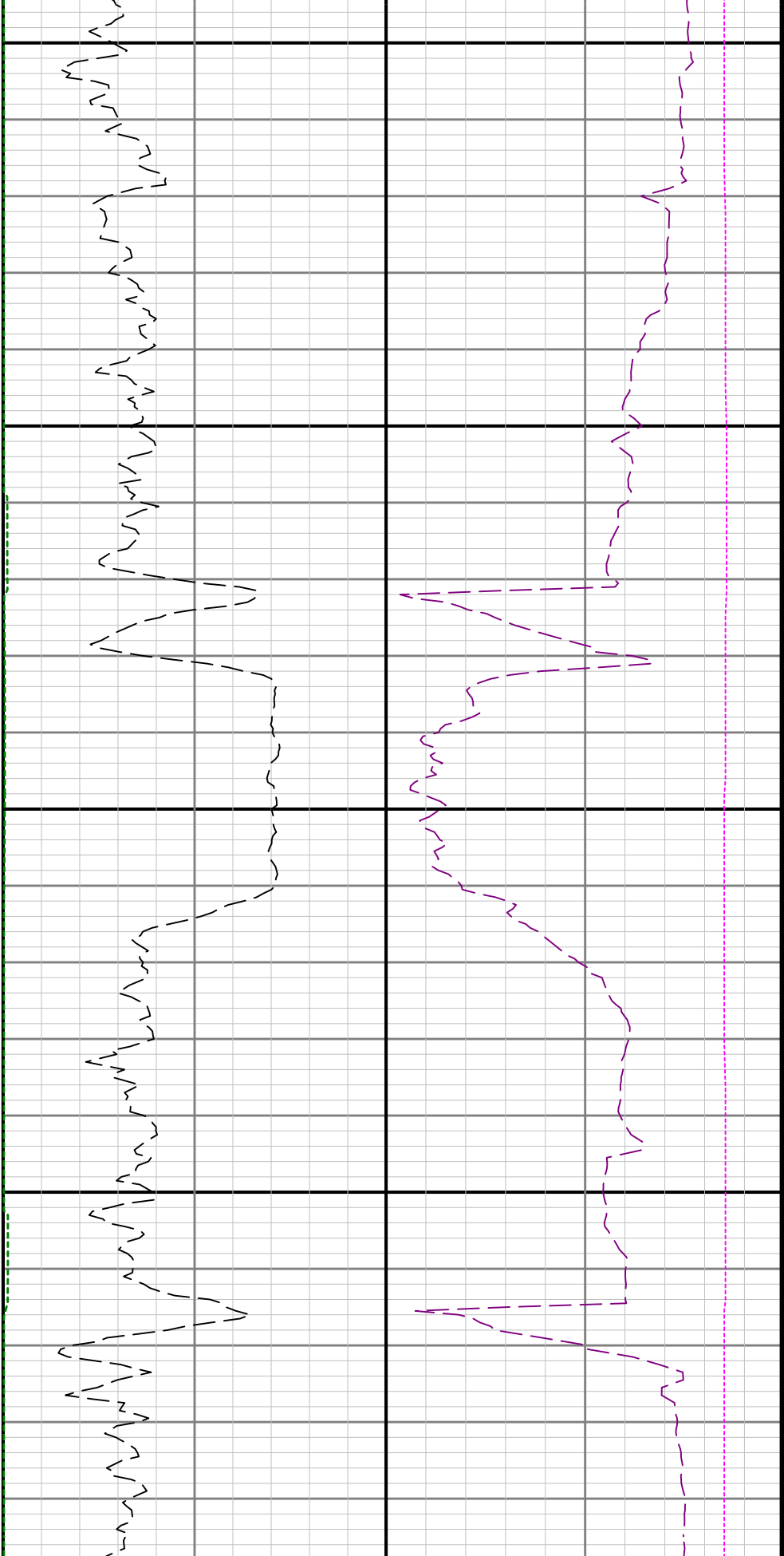




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13900

