



Gamma Ray

Scale:

Company: Ward Petroleum

1:240 MD

Well: Ritchey 26-1-22HC

Depth Reference:

Field: Weld County

Driller's Depth

County: Weld County Country: United States

State: Colorado

Status:

Final Print

Surface Location:

Latitude: 040° 01' 40.988" N

Longitude: 104° 45' 05.848" W

Other Services:

API No: 05-123-44767-0000

Job ID: 8628643

SEC: 26 TWN: 1N RGE: 66W

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

Elevation: 0.00 ft

Above P.D.

Elev. KB: 5174.00 ft

Log Measured From: Rig Floor

5174.00 ft

Elev. DF: 5154.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2017-07-10 Top: (ft) 1500.00

Azi Reference North: True

Dip Angle: (deg) 66.59

Date To: 2017-07-12 Bottom: (ft) 12563.00

Total Magnetic Field Strength: (nT) 52225

Spud Date: 2017-06-26

Mag to Reference North Correction: (deg) 8.35 E

Borehole Record

Casing Record

Hole Size (in)

From (ft)

To (ft)

Size (in)

Weight (lb/ft)

From (ft)

To (ft)

13.500

20.00

1500.00

9.625

37.00

20.00

1490.00

8.500

1500.00

12563.00

Mud Record

Deviation Record

Type

From (ft)

To (ft)

Hole Size (in)

Interval (ft)

Inc | Azi (Start)

Inc | Azi (End)

Oil Based Mud

1500.00

12563.00

8.500

11063.00

5.50 | 359.72

90.43 | 183.68

Acquisition System

Software Version

Other

Baker Hughes Cadence

RT4.1

Plot Studio

4.1.7763.3

Rig: PD 460

Contractor: Precision Drilling

District: US Land

Unit: RMA

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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	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	8.500	PDC	3.00	AutoTrak Curve	1500.00	12550.00	1500.00	12563.00	2017-07-10 12:32	2017-07-12 17:56	49.79

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Andrew Clancy		2017-07-10	2017-07-13	Doug Rusco		2017-07-10	2017-07-13				

Mud Properties Record

Date / Time		Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2017-07-10 11:38		1	1500.00	Oil Based Mud	10.0	26	0	0.0	73/27	Active Pit	30000	0.00
2017-07-11 09:25		1	7452.91	Oil Based Mud	9.9	23	0	0.0	70/30	Active Pit	32000	0.00
2017-07-12 08:12		1	10715.76	Oil Based Mud	9.9	21	0	0.0	74/26	Active Pit	35000	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	ATC_SU		12215165	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_SU		12215165	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_MWD		12232962	Gamma (single)	2.75	12.90	7.000	3.250
1	ATC_MWD		12232962	Directional (mag)	12.27	22.42	7.000	3.250

Service and Tool Mnemonics

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

Comments

1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD Run 1 utilized 6 ¾ inch Navigamma service (Gamma Ray and Directional) behind an 8 1/2 inch bit and rotary steerable assembly from 1500 to 12563 feet MD (1495 to 7727 feet TVD).

Remarks

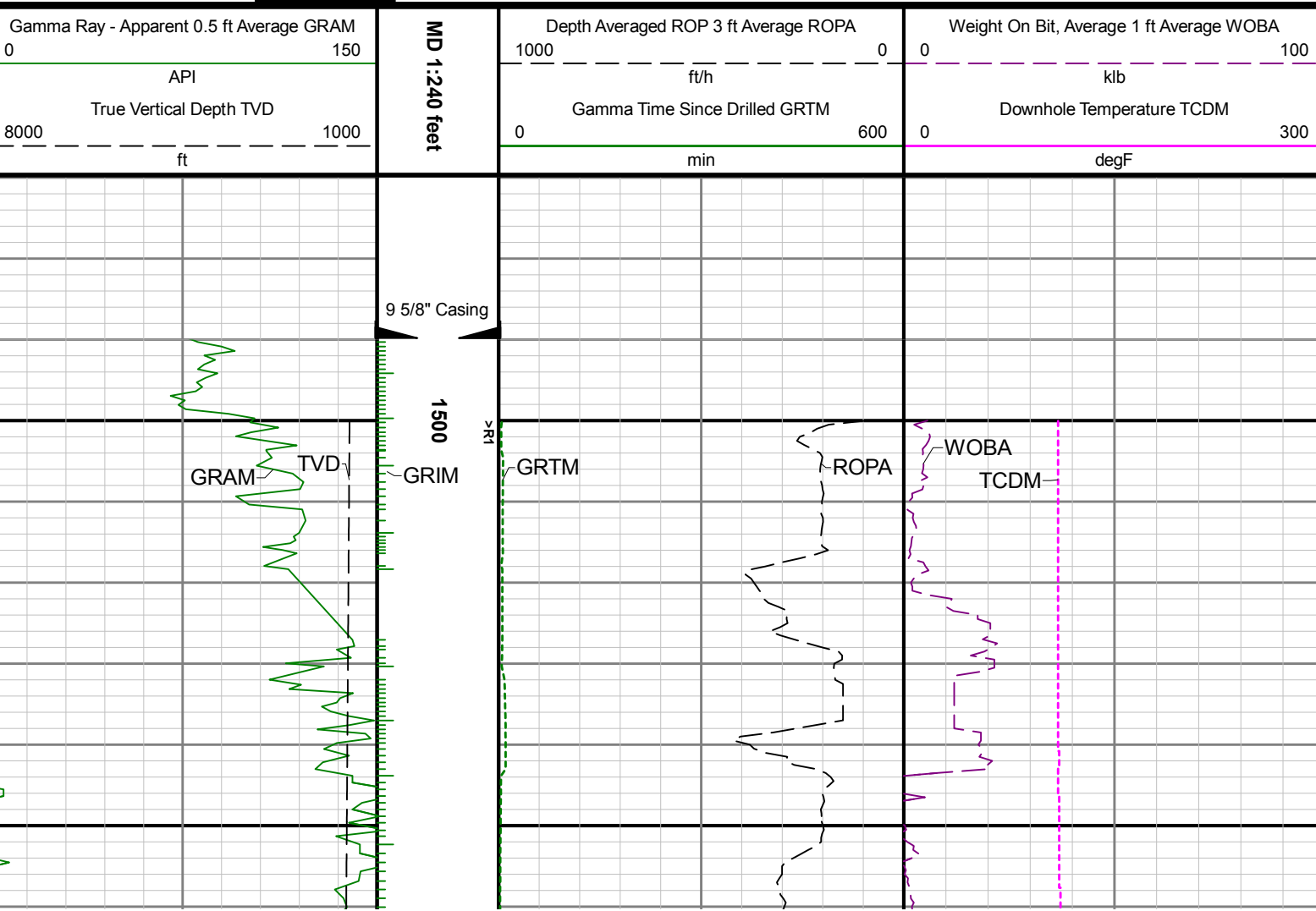
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	12550.00	8.500	1	The interval from 12550 to 12563 feet MD (7727 feet TVD) was not logged due to sensor to bit offset at well TD.

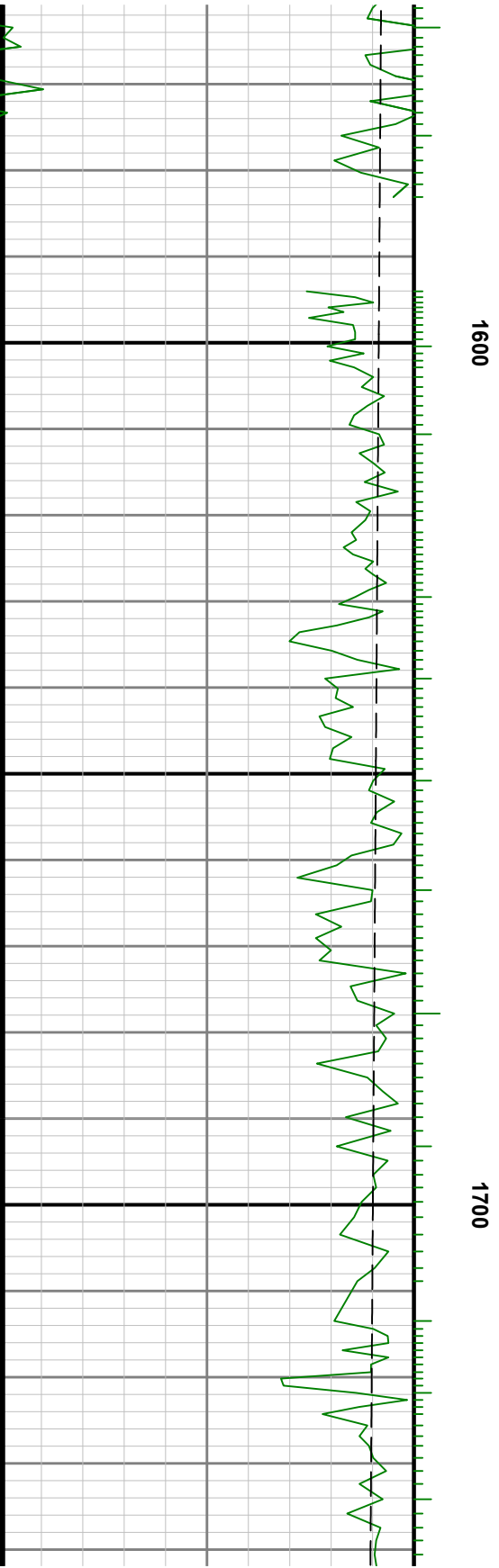
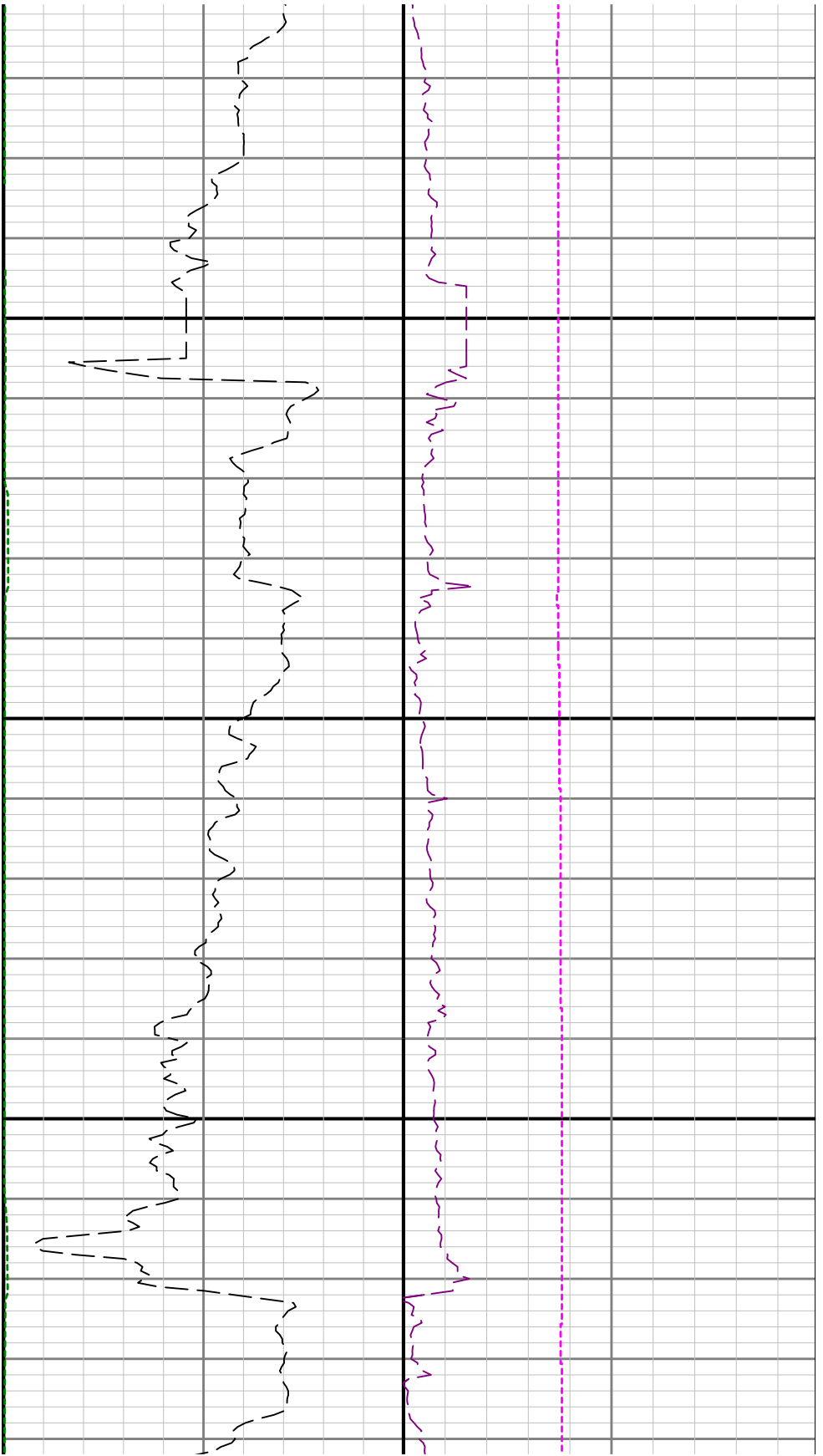
Curve Mnemonics

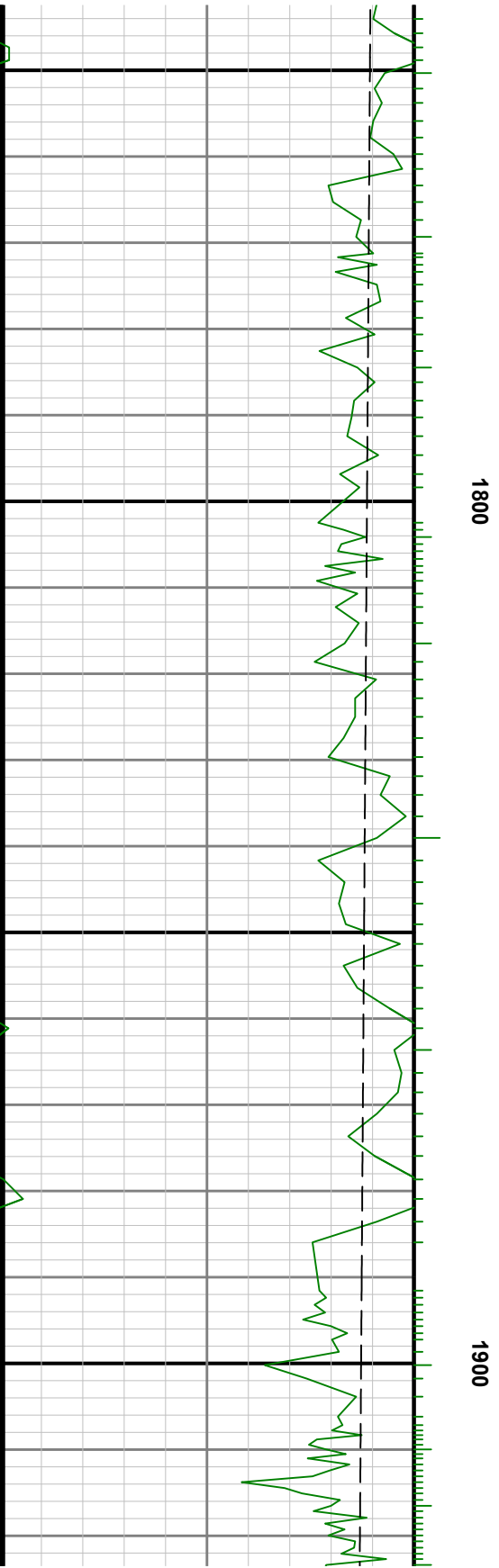
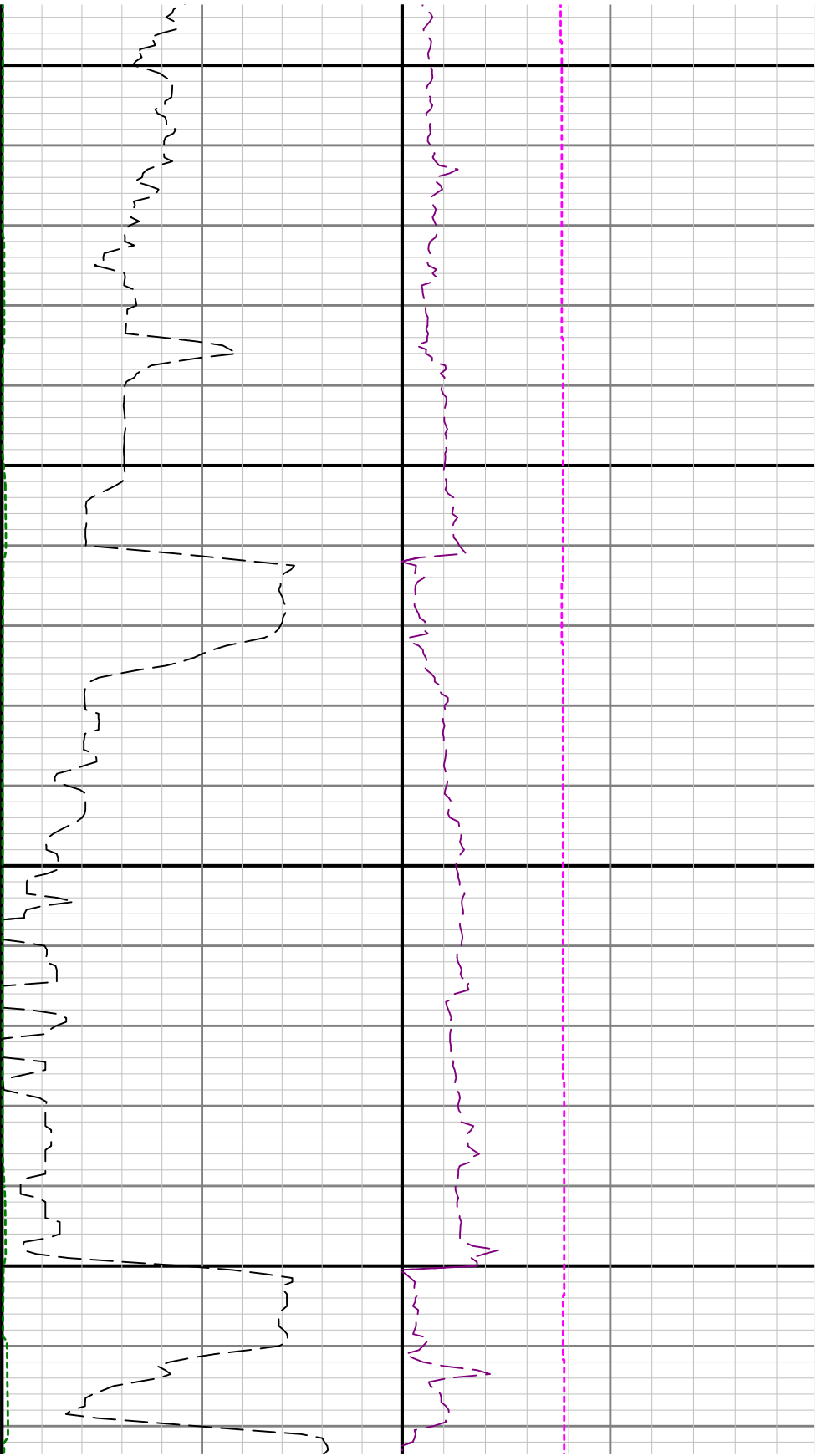
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	OnTrak - Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	OnTrak - Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	OnTrak - Gamma Ray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

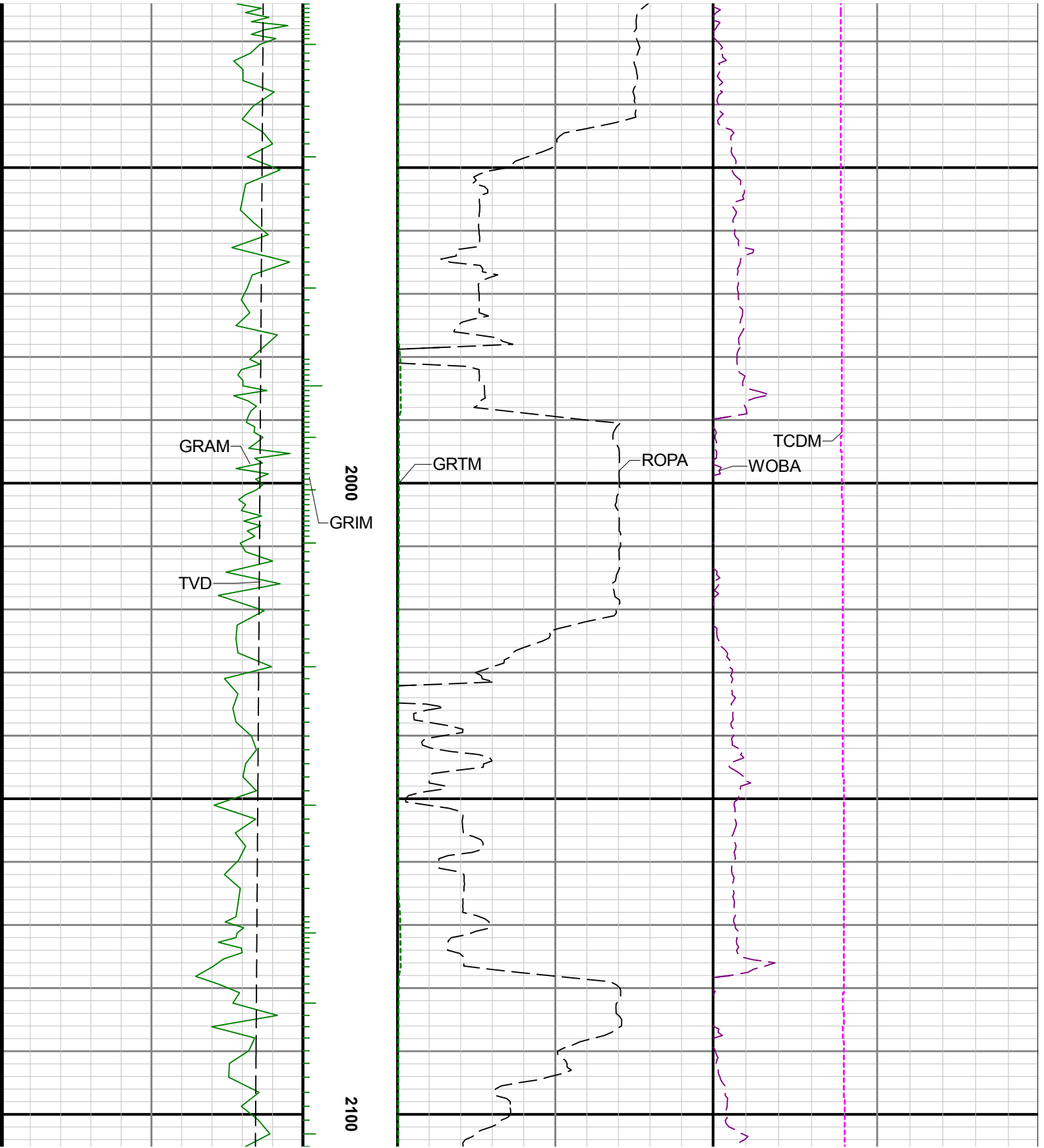


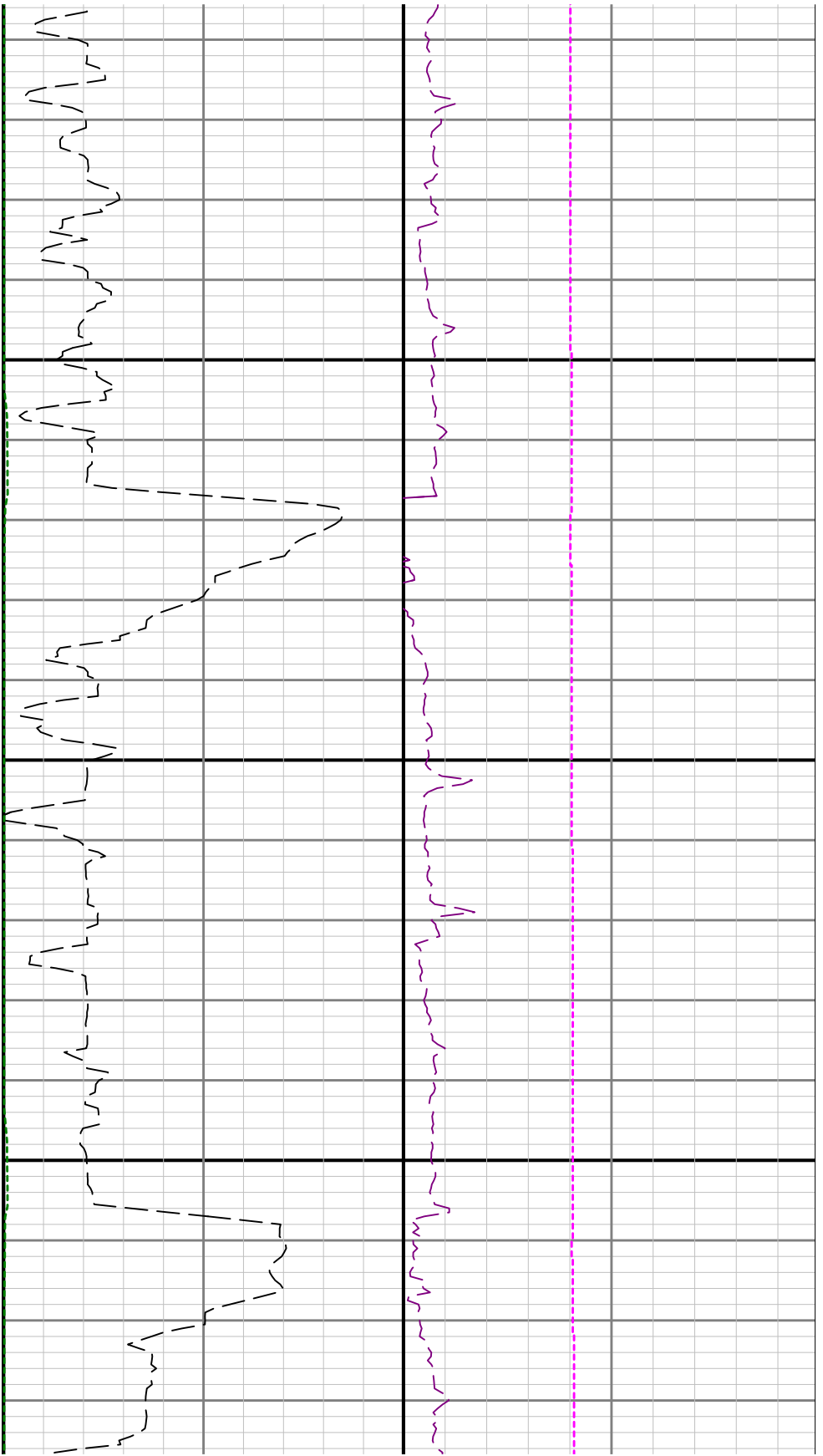
<b>Company</b>	Ward Petroleum
<b>Well</b>	Ritchey 26-1-22HC
<b>Interval</b>	<b>Date From:</b> 2017-07-10 12:32:18 <b>Top:</b> 1490.00
<b>Created</b>	<b>Date To:</b> 2017-07-12 17:56:42 <b>Bottom:</b> 12563.00
	2017-07-13 07:48:57



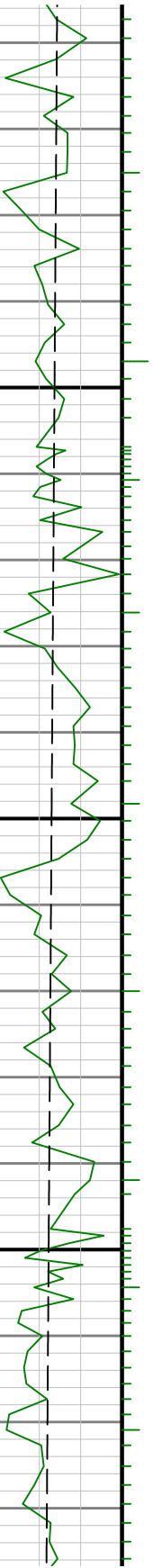


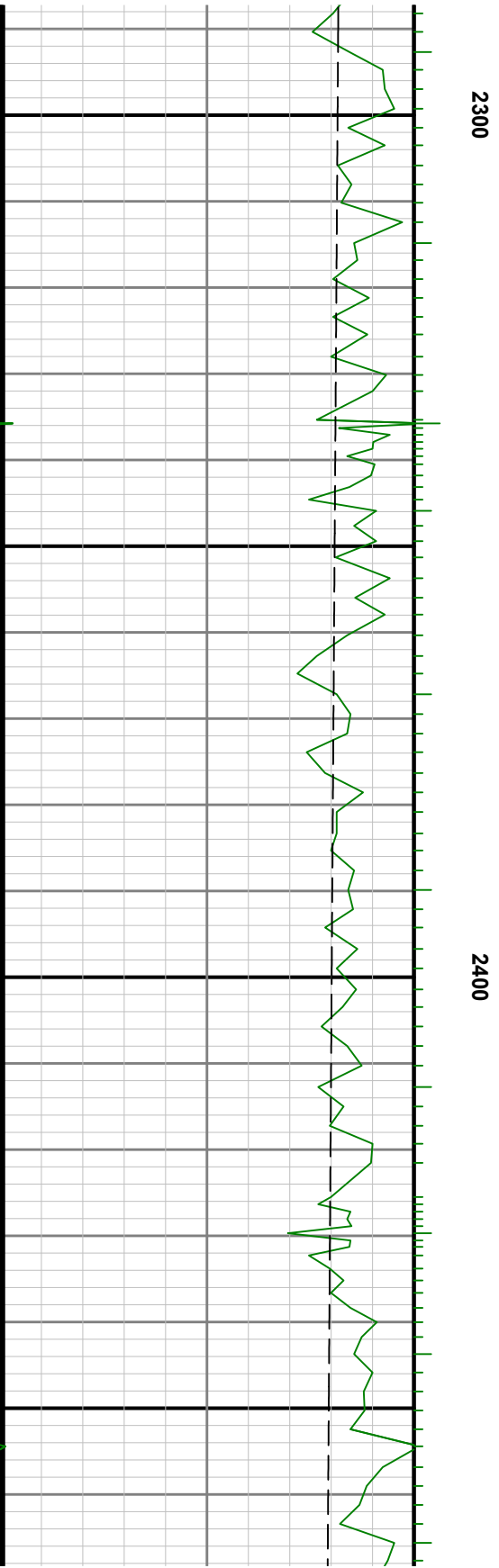
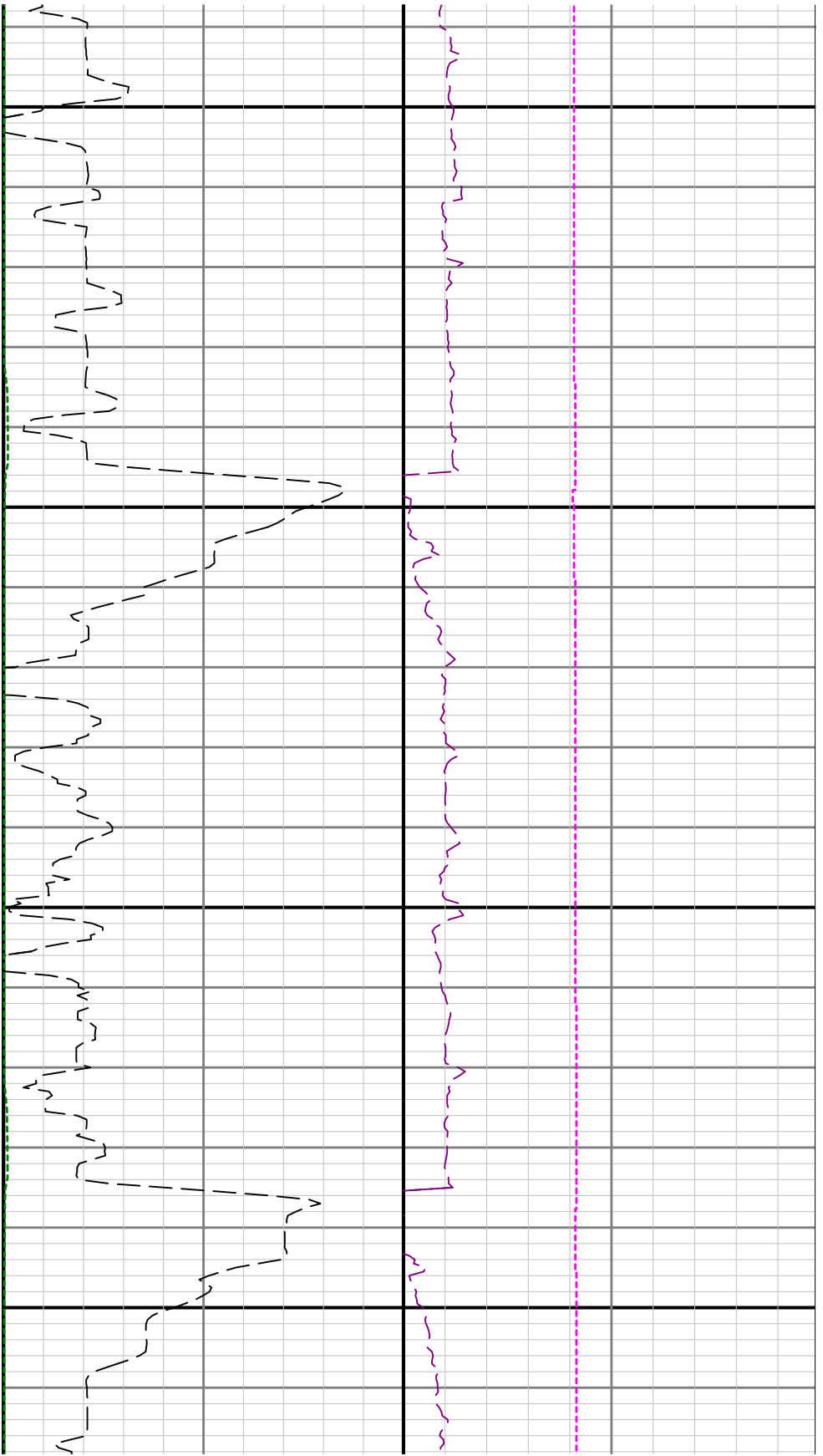




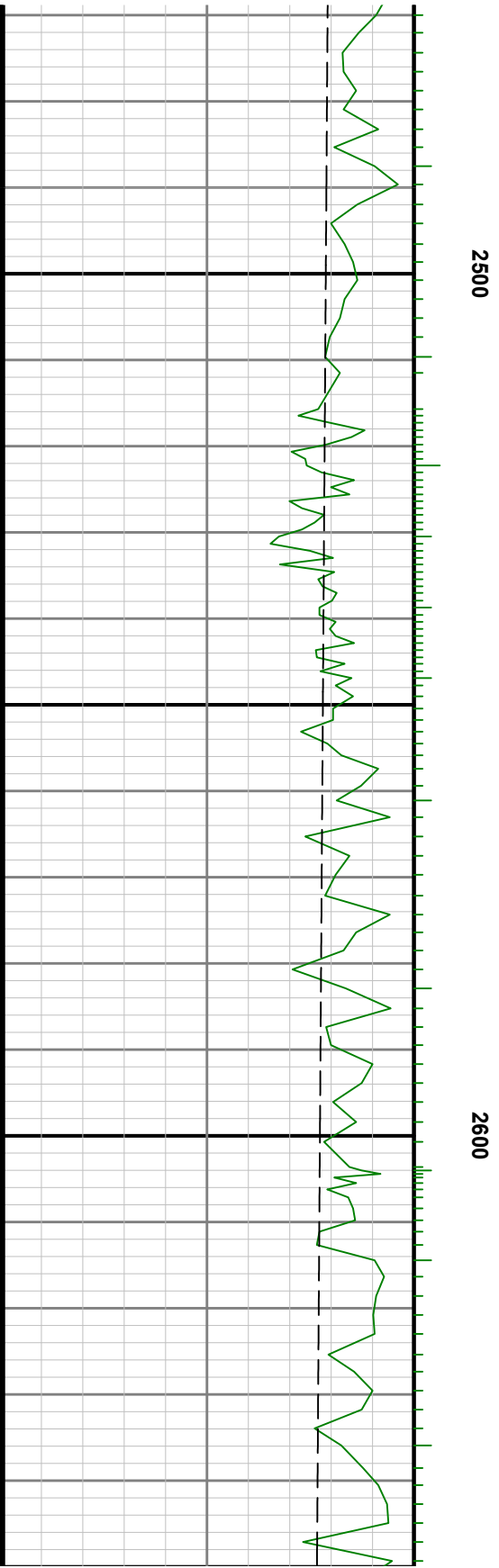
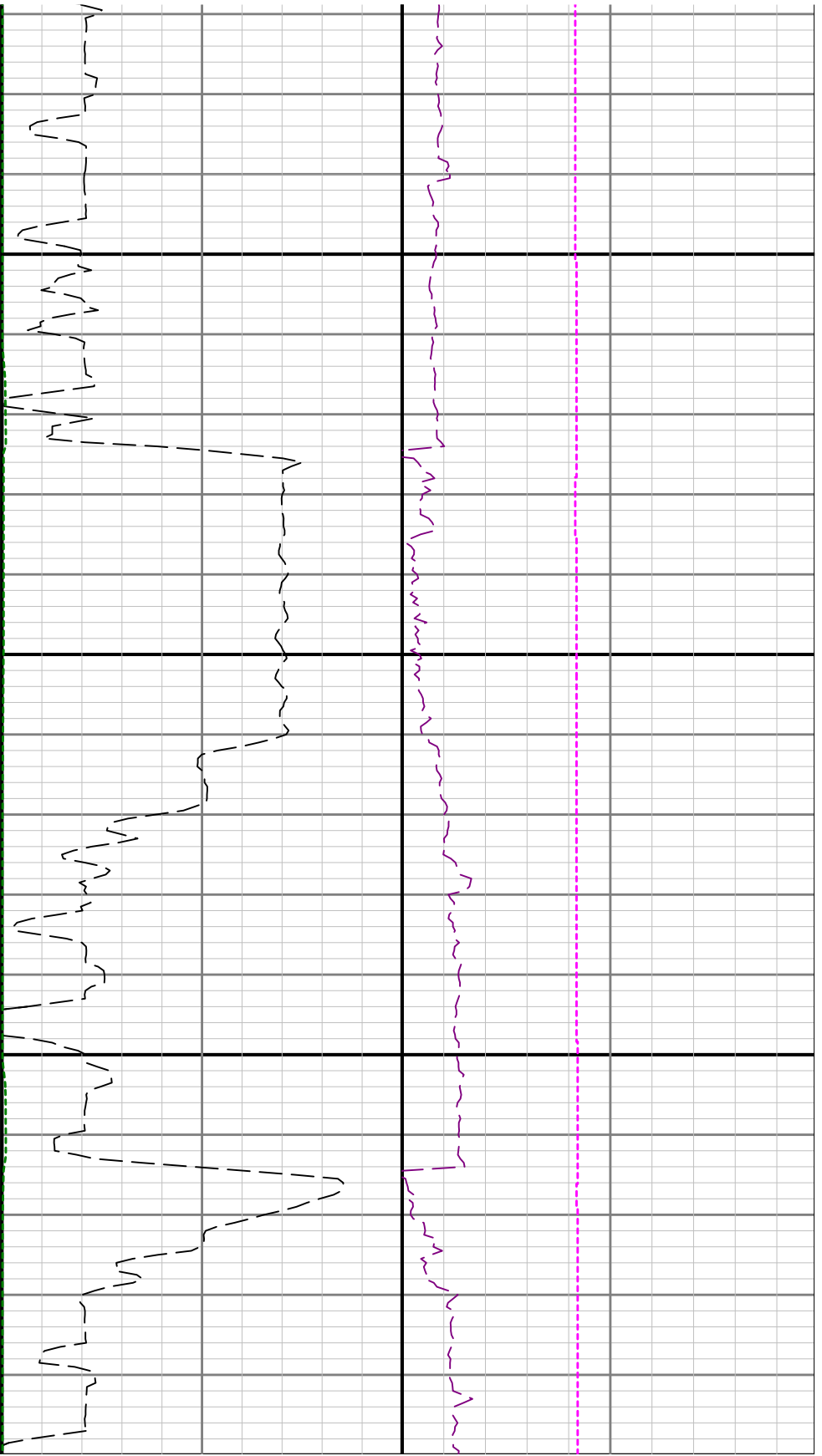


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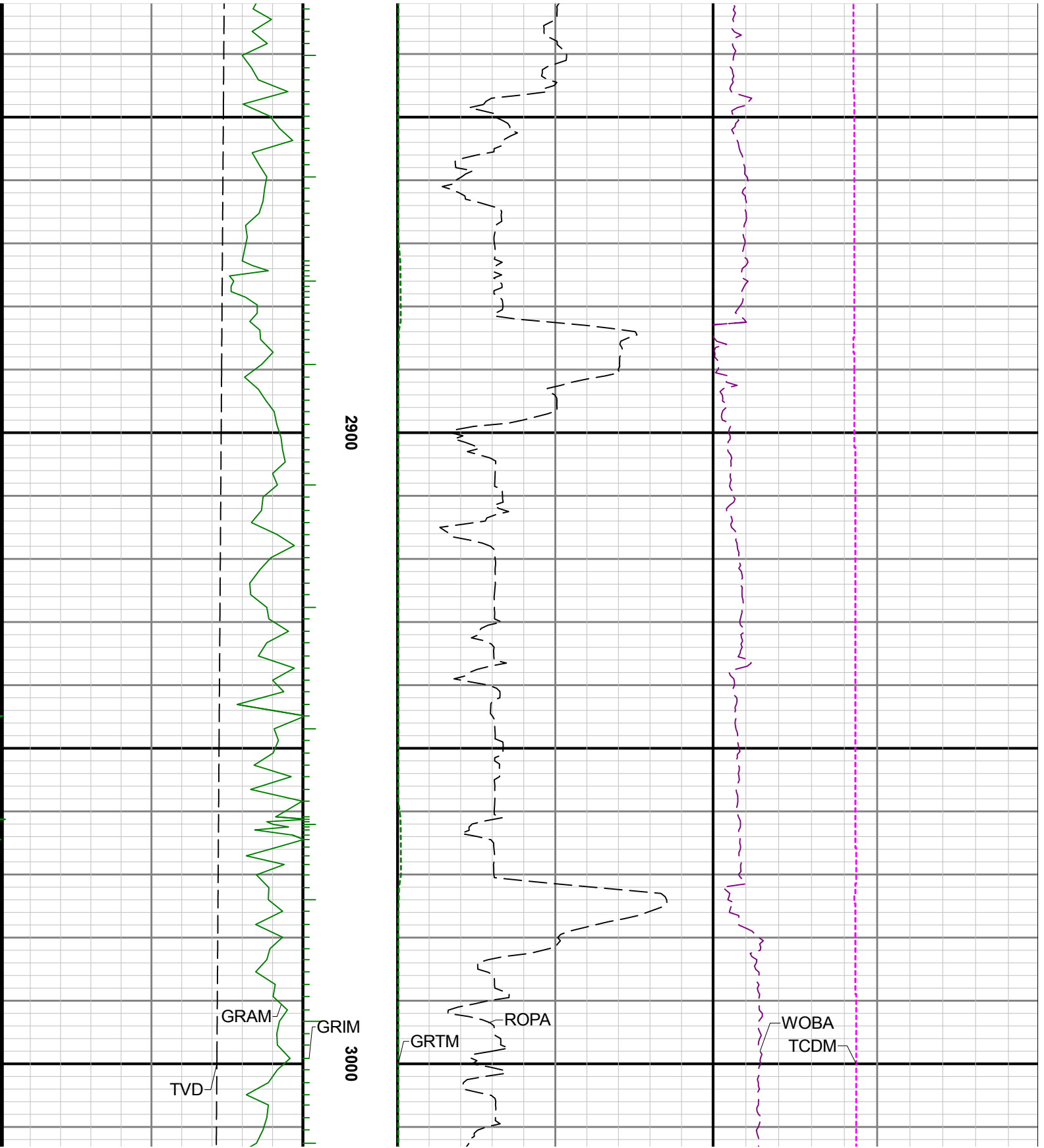


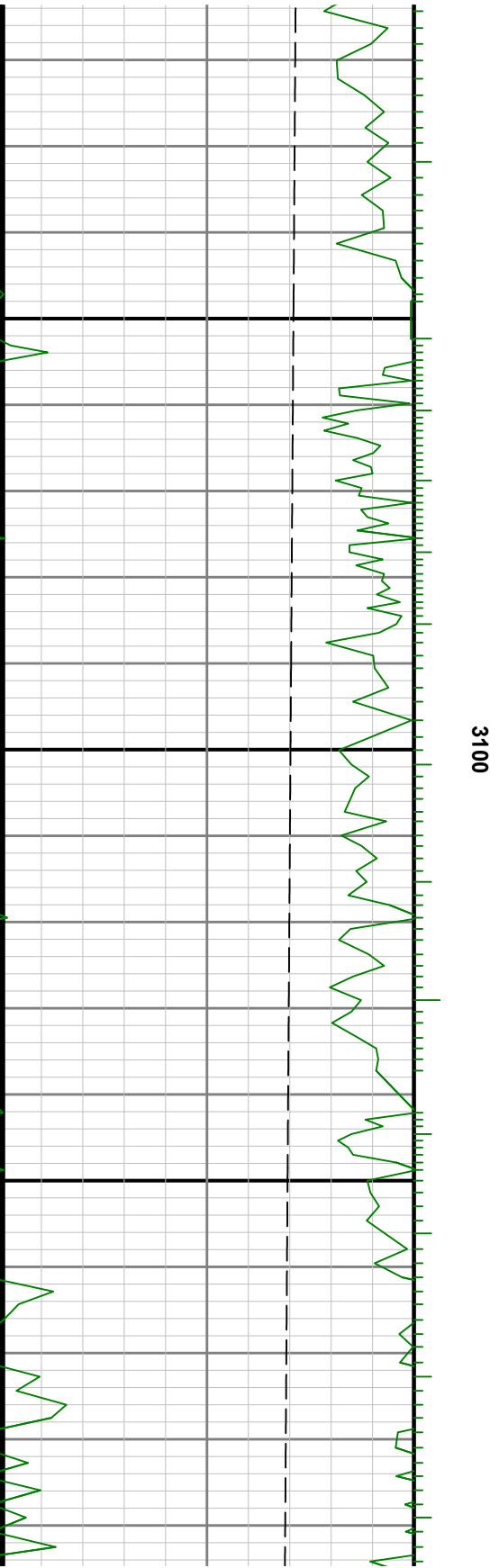
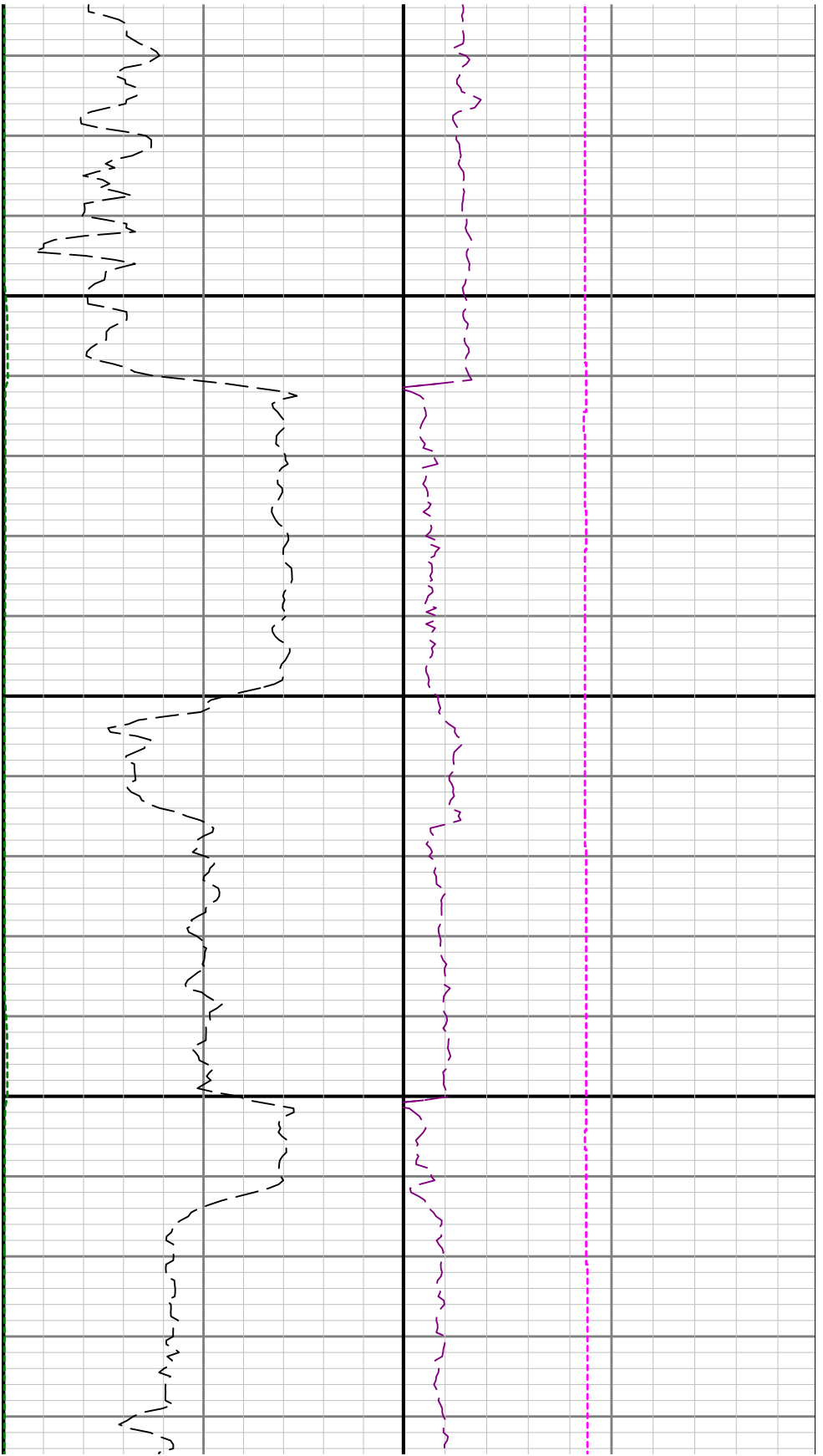


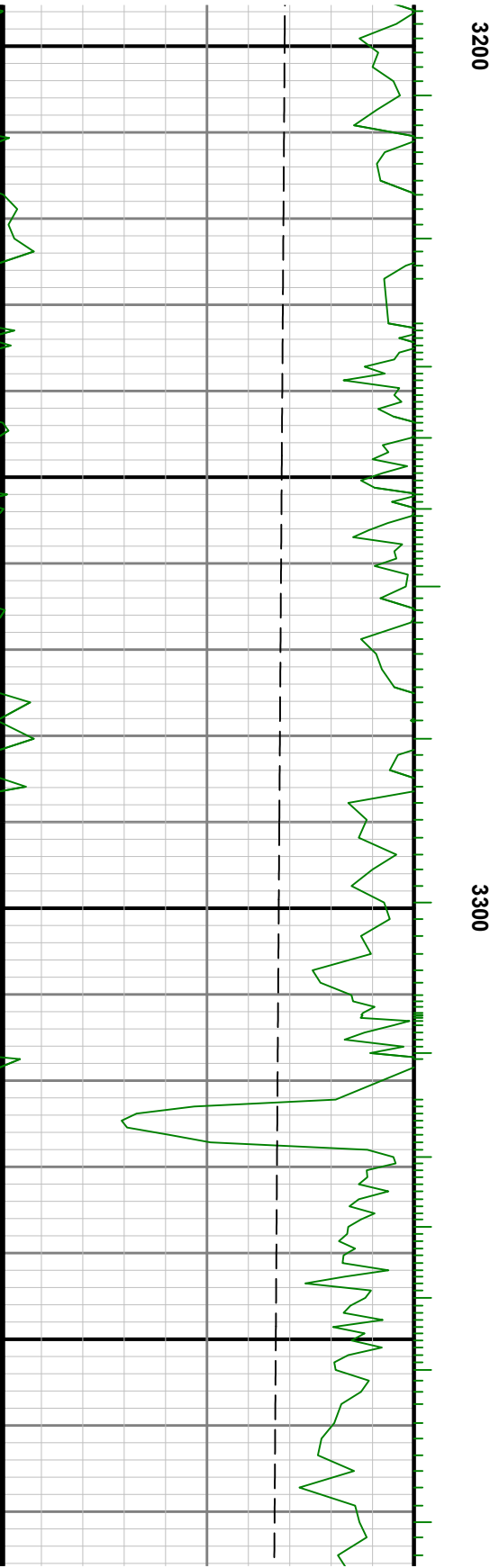
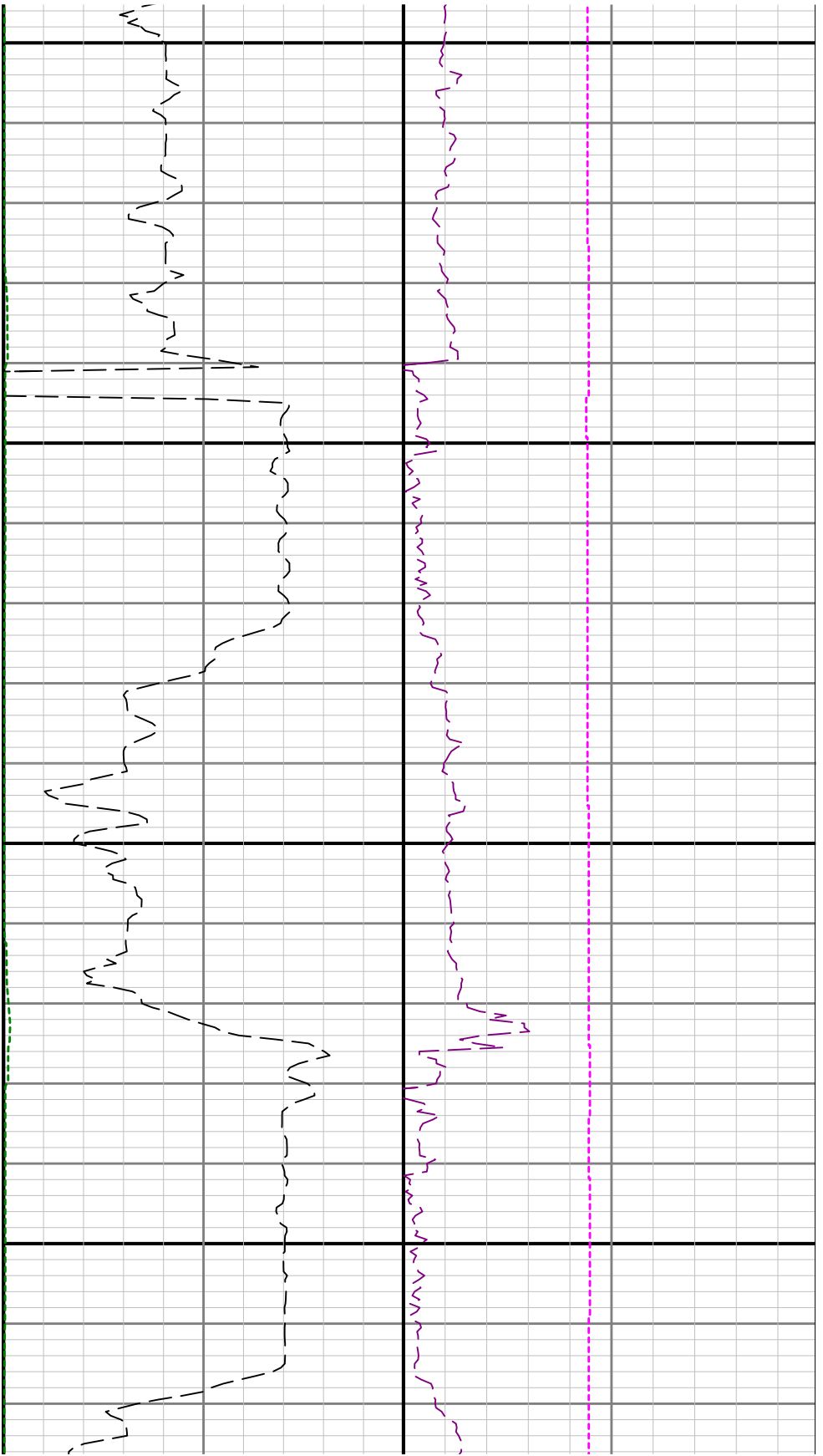


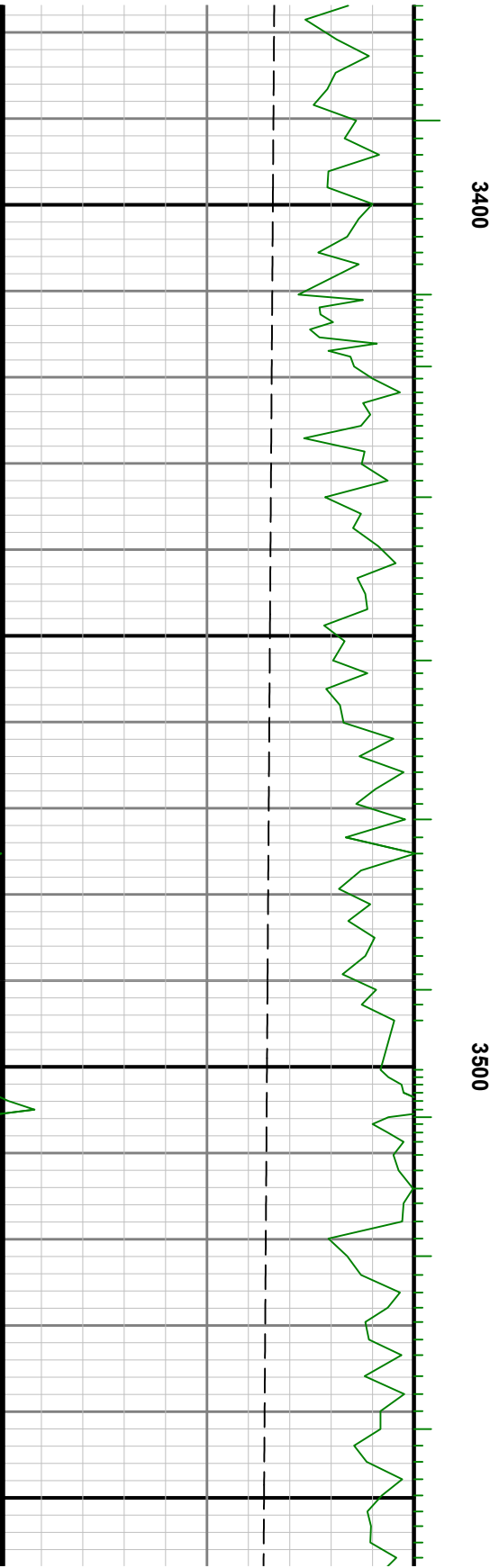
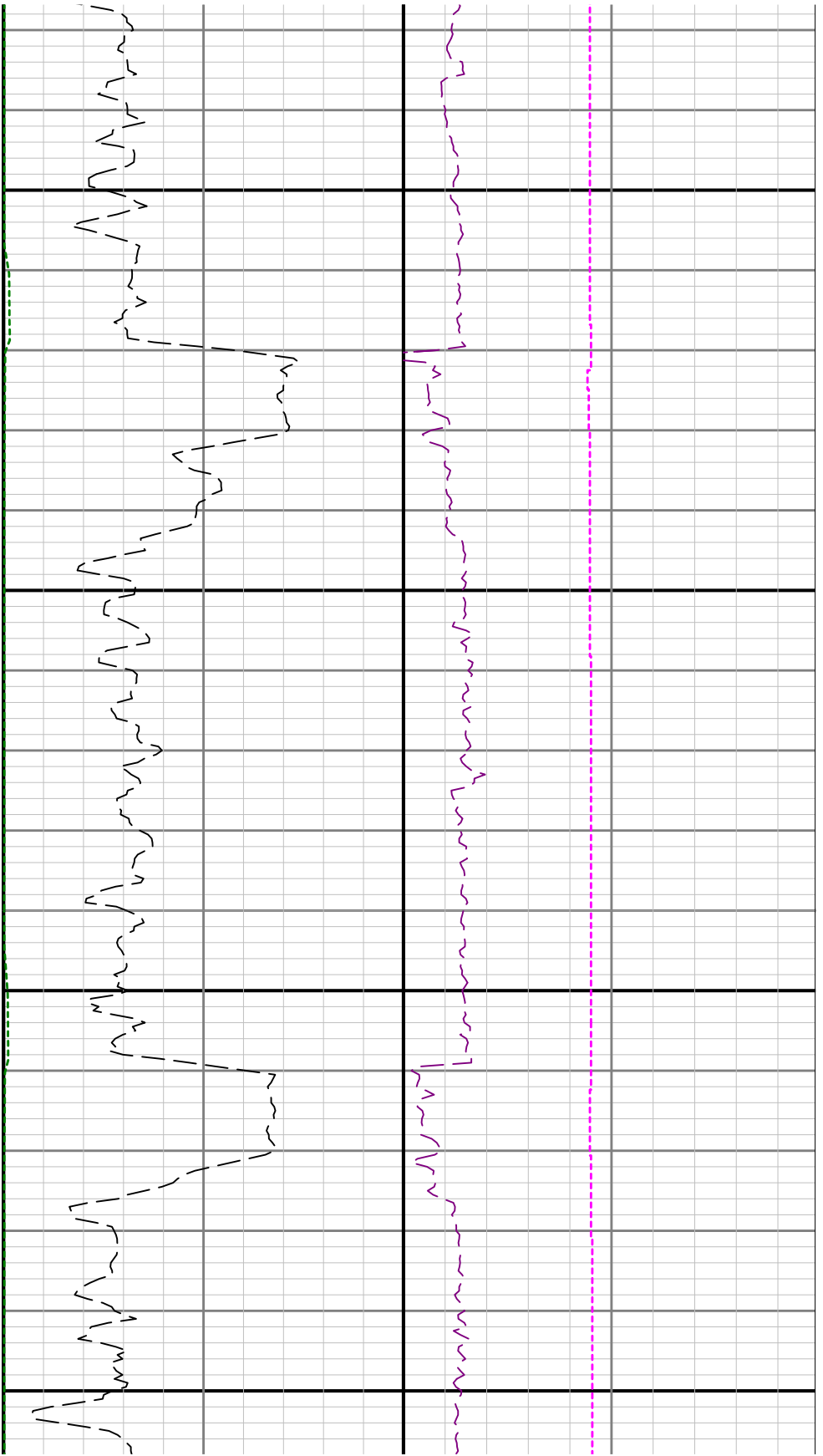


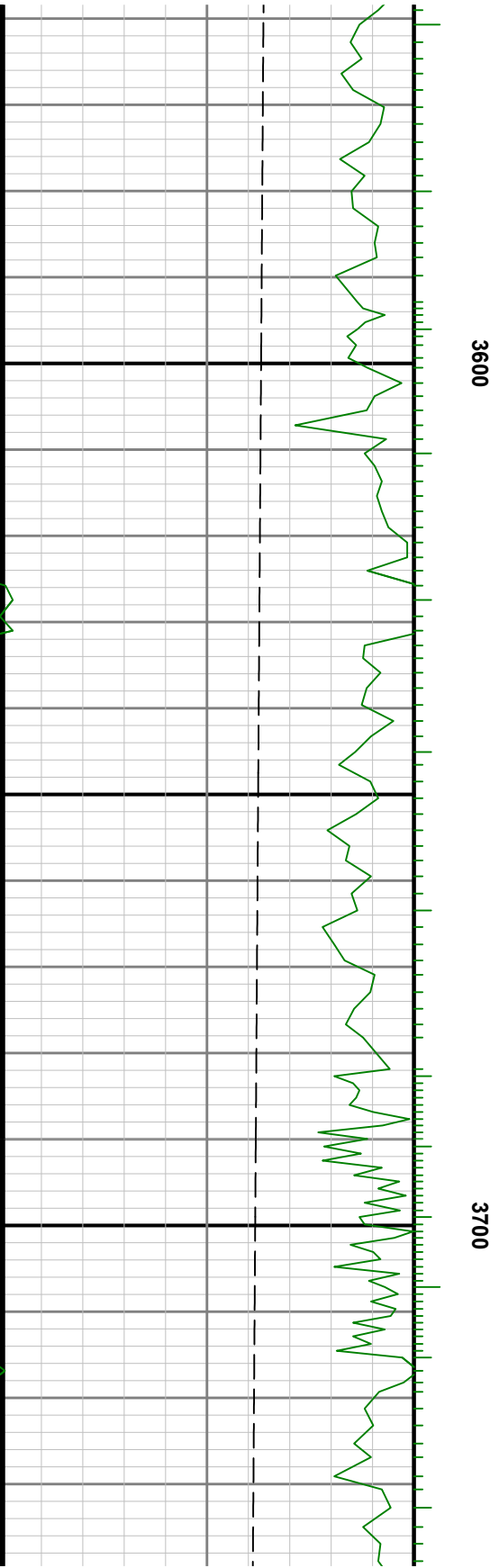
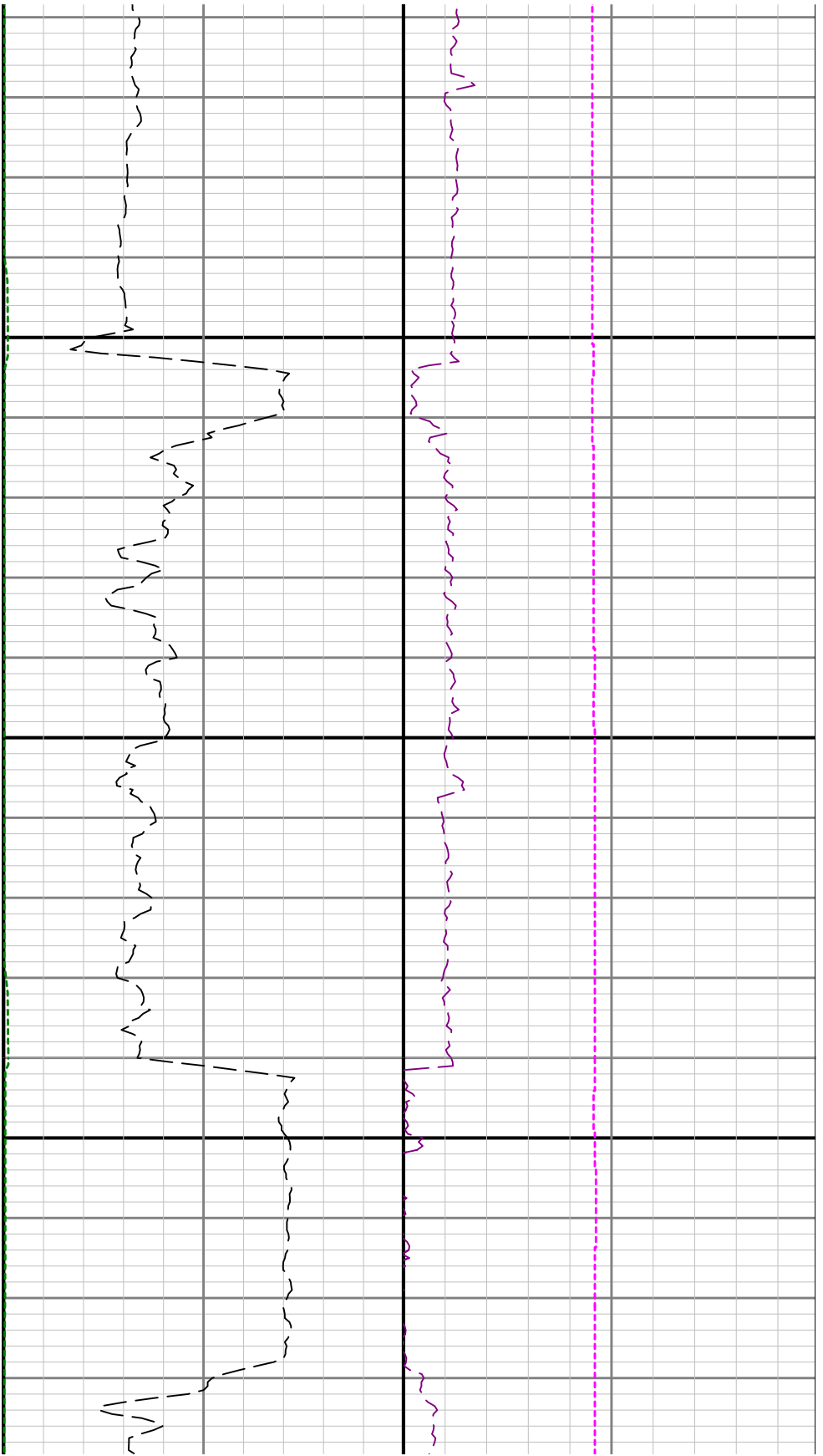


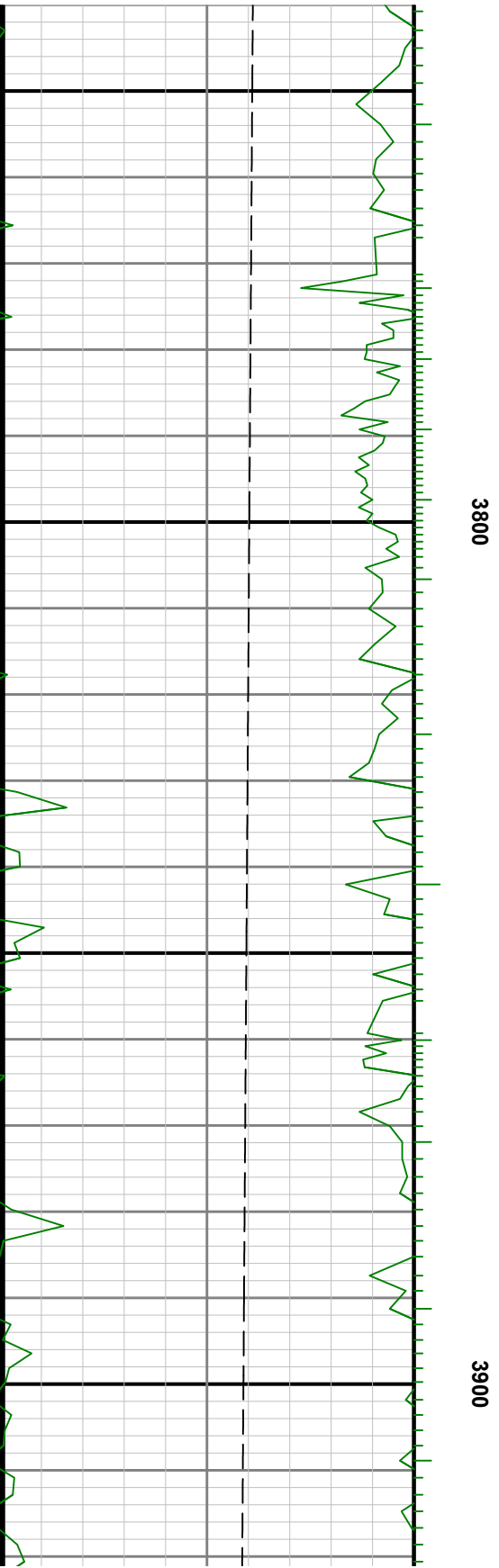
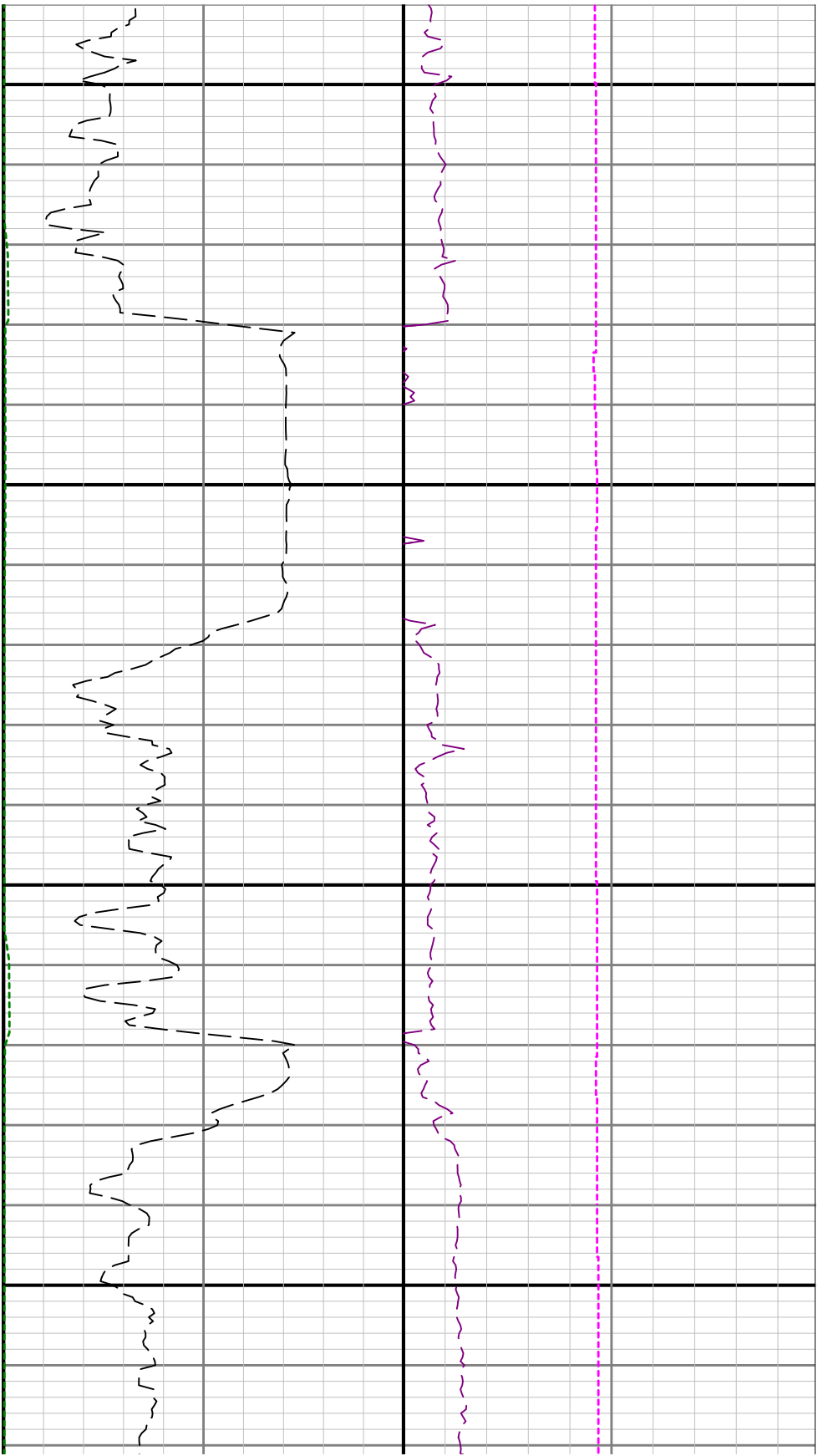




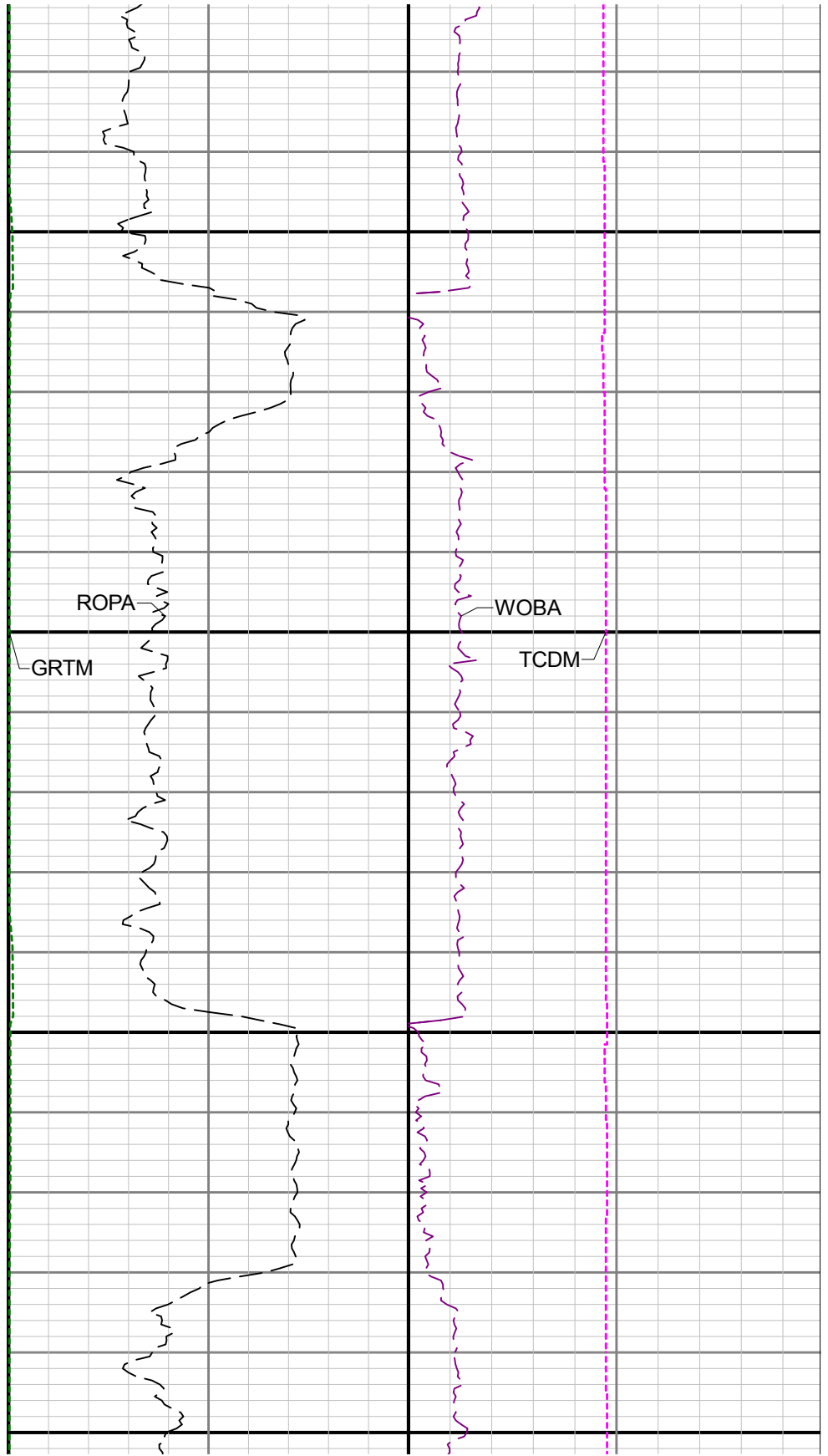
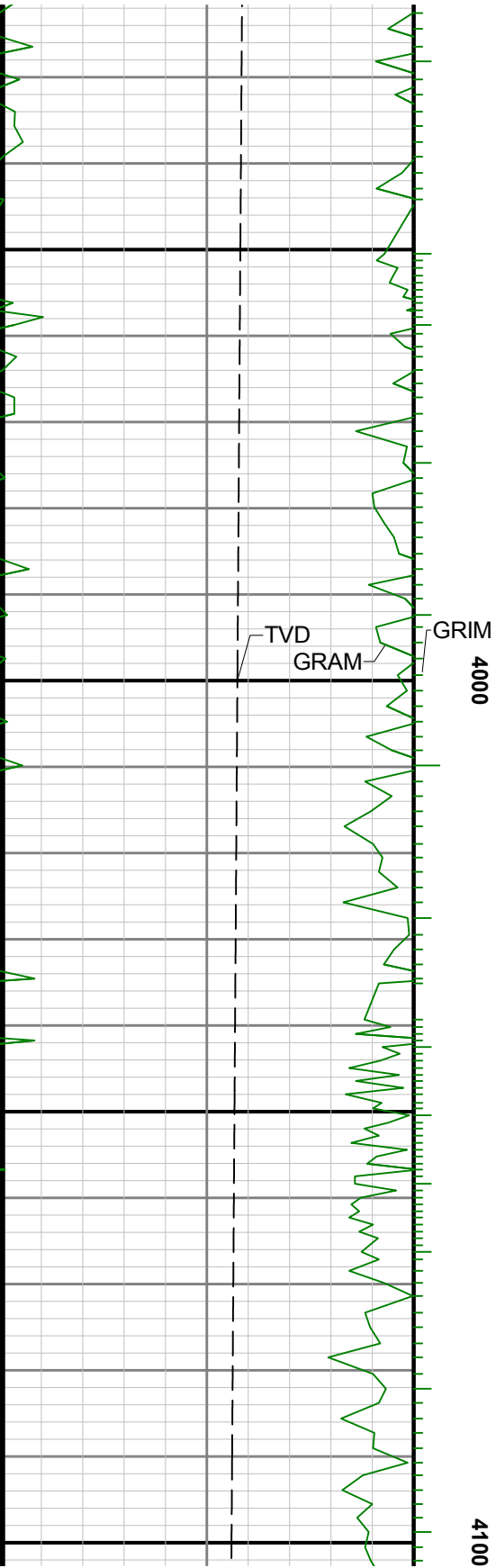


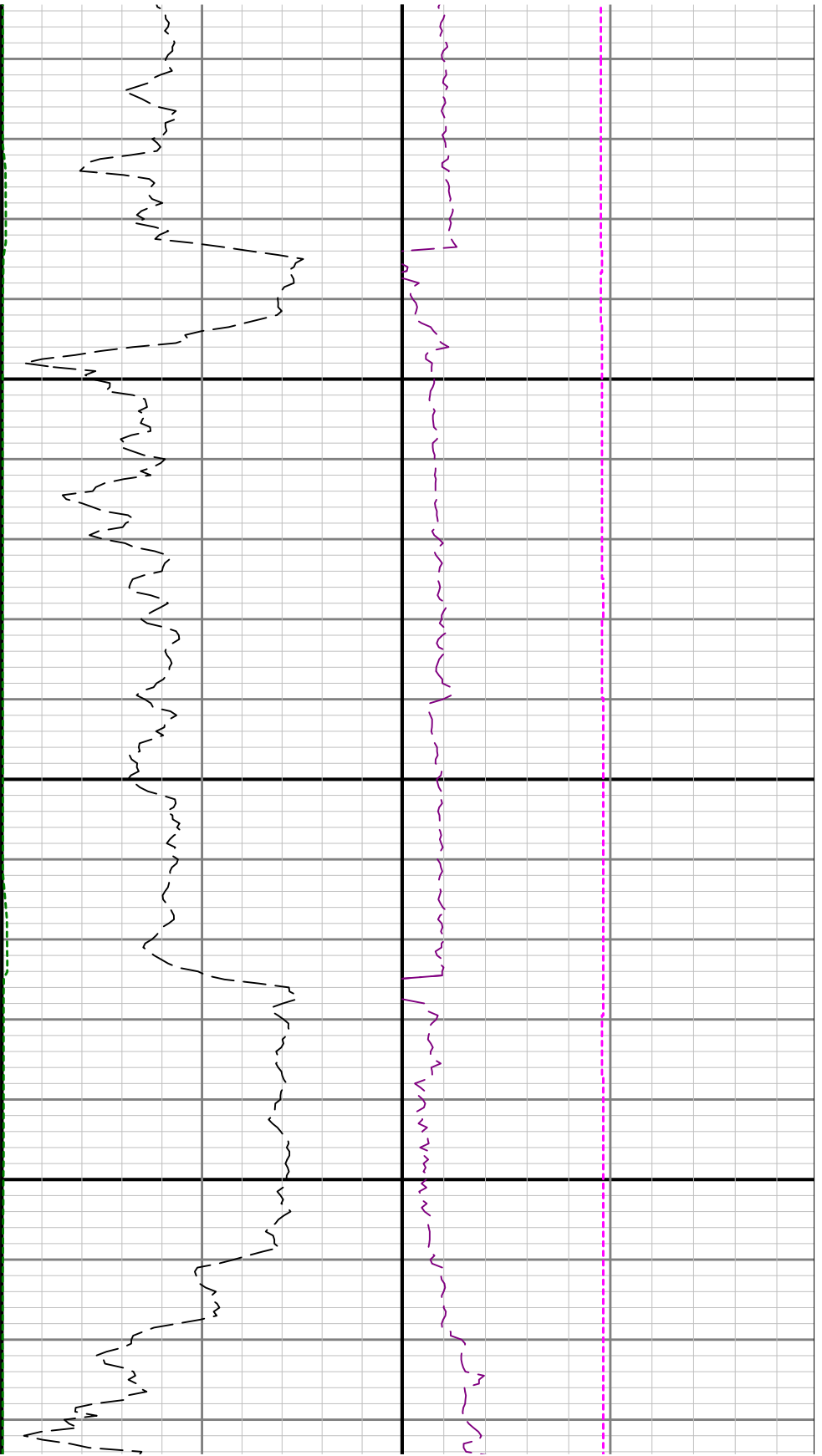




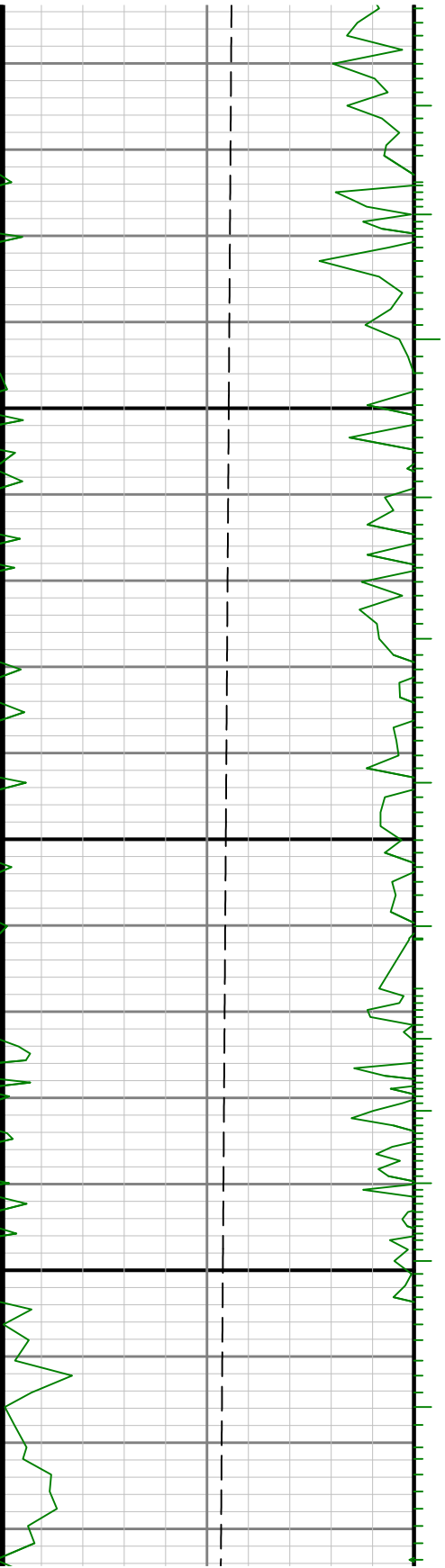


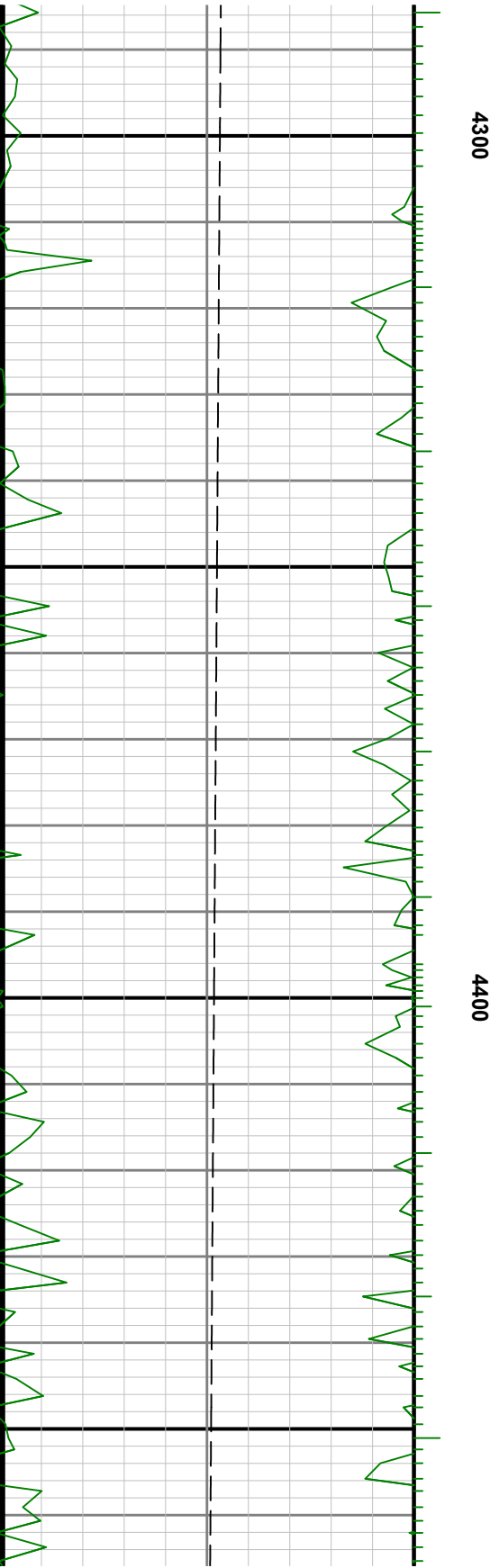
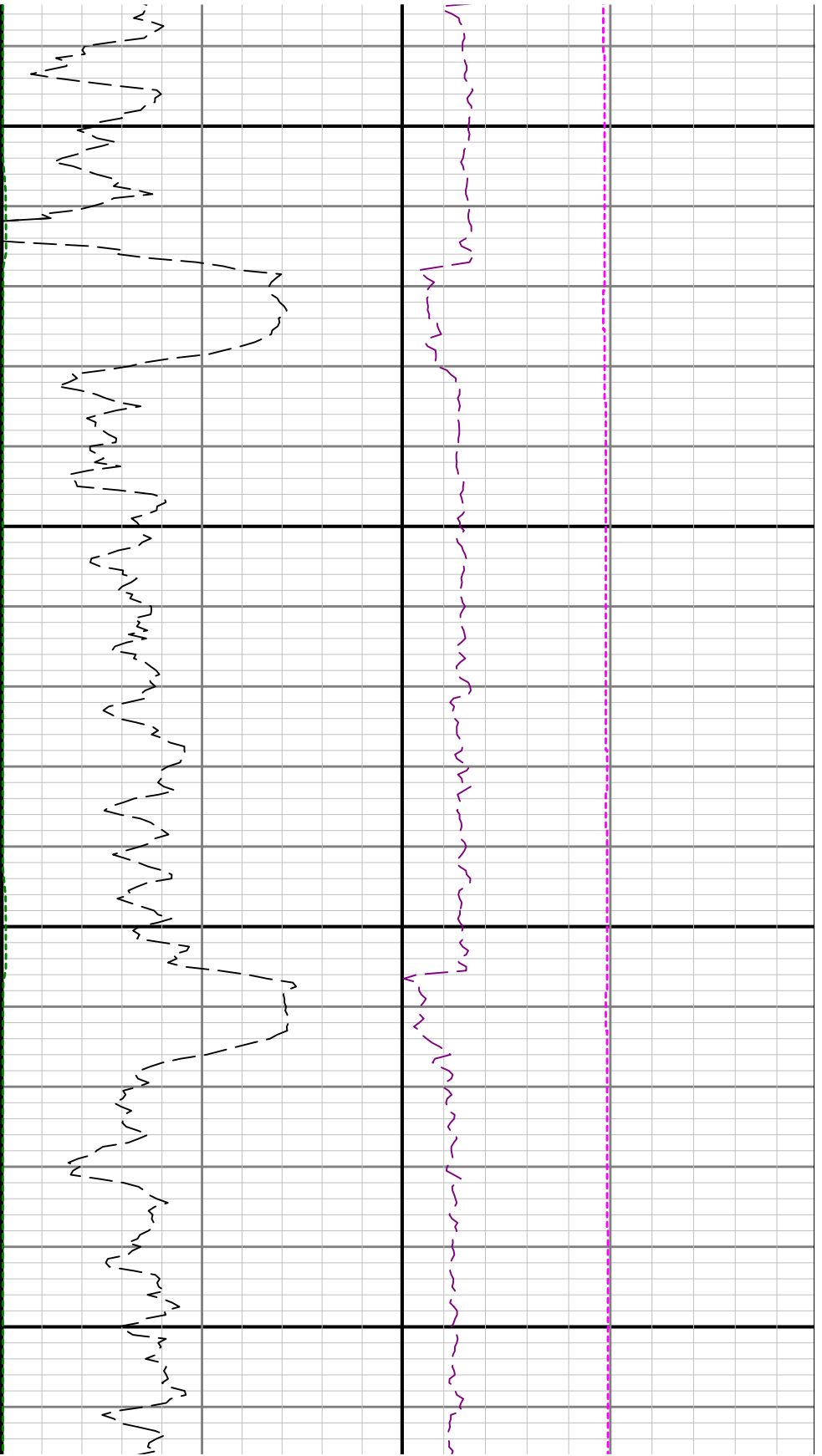


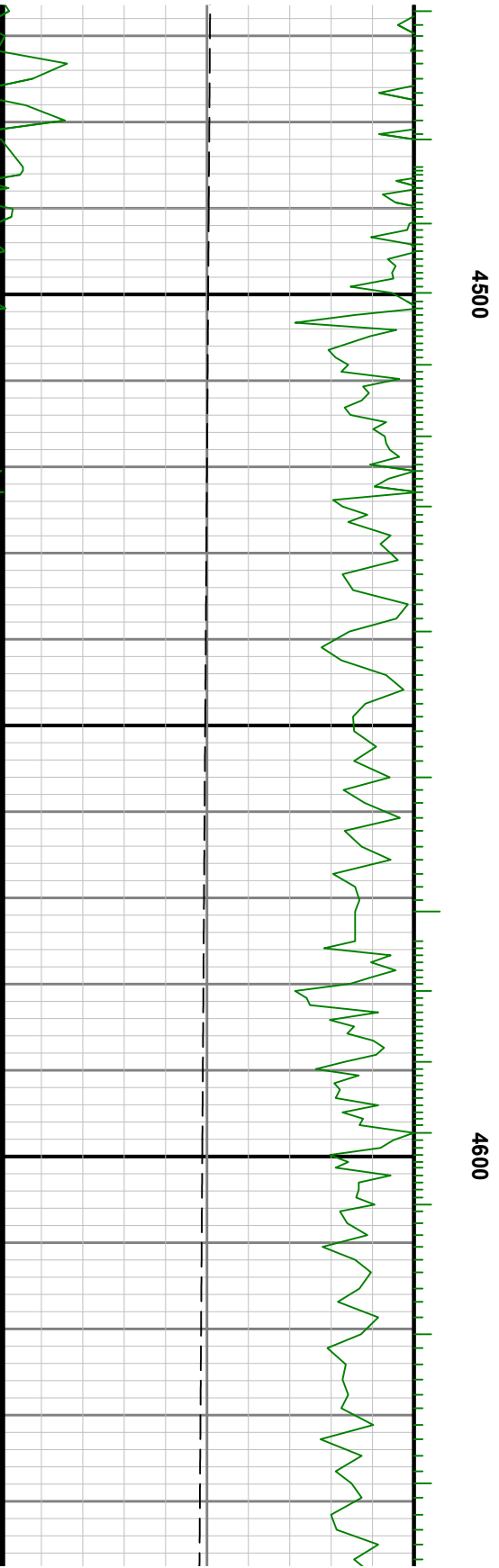
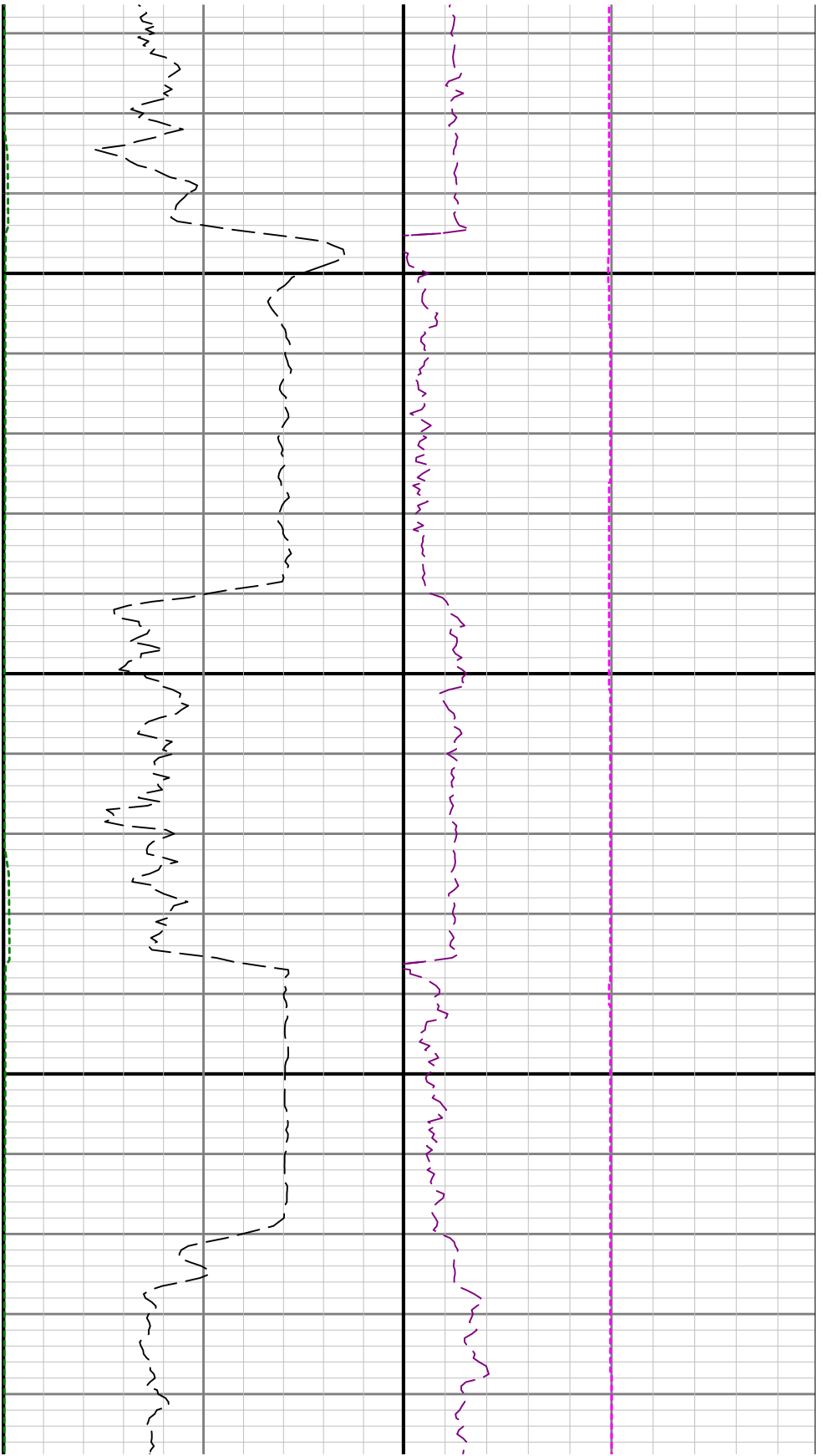


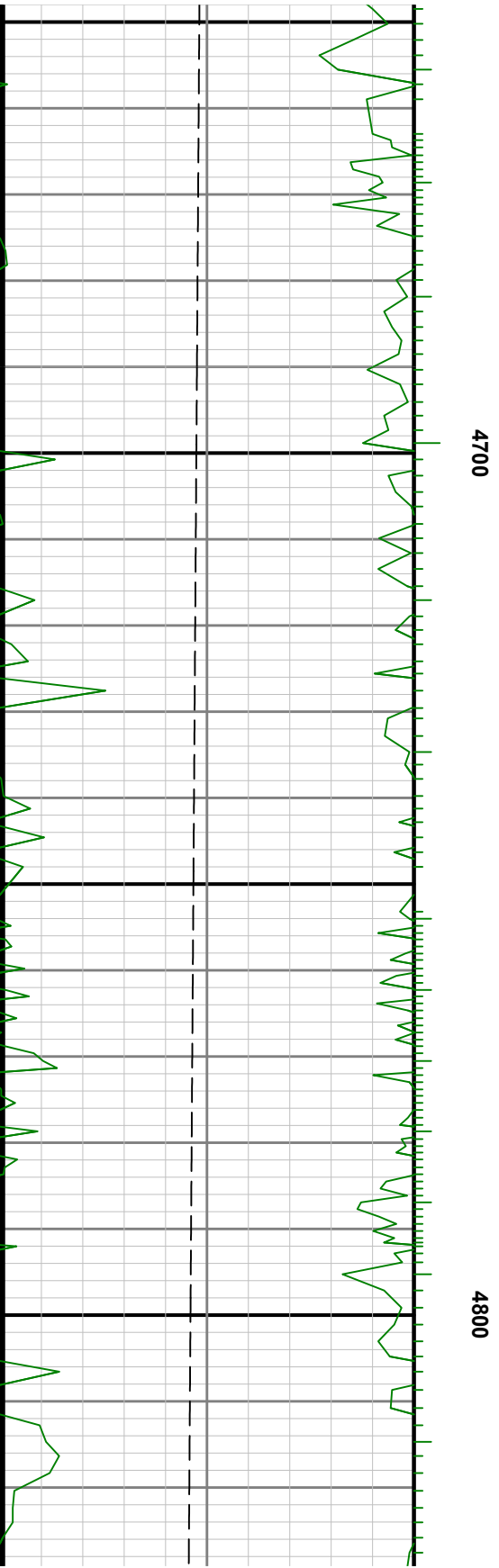
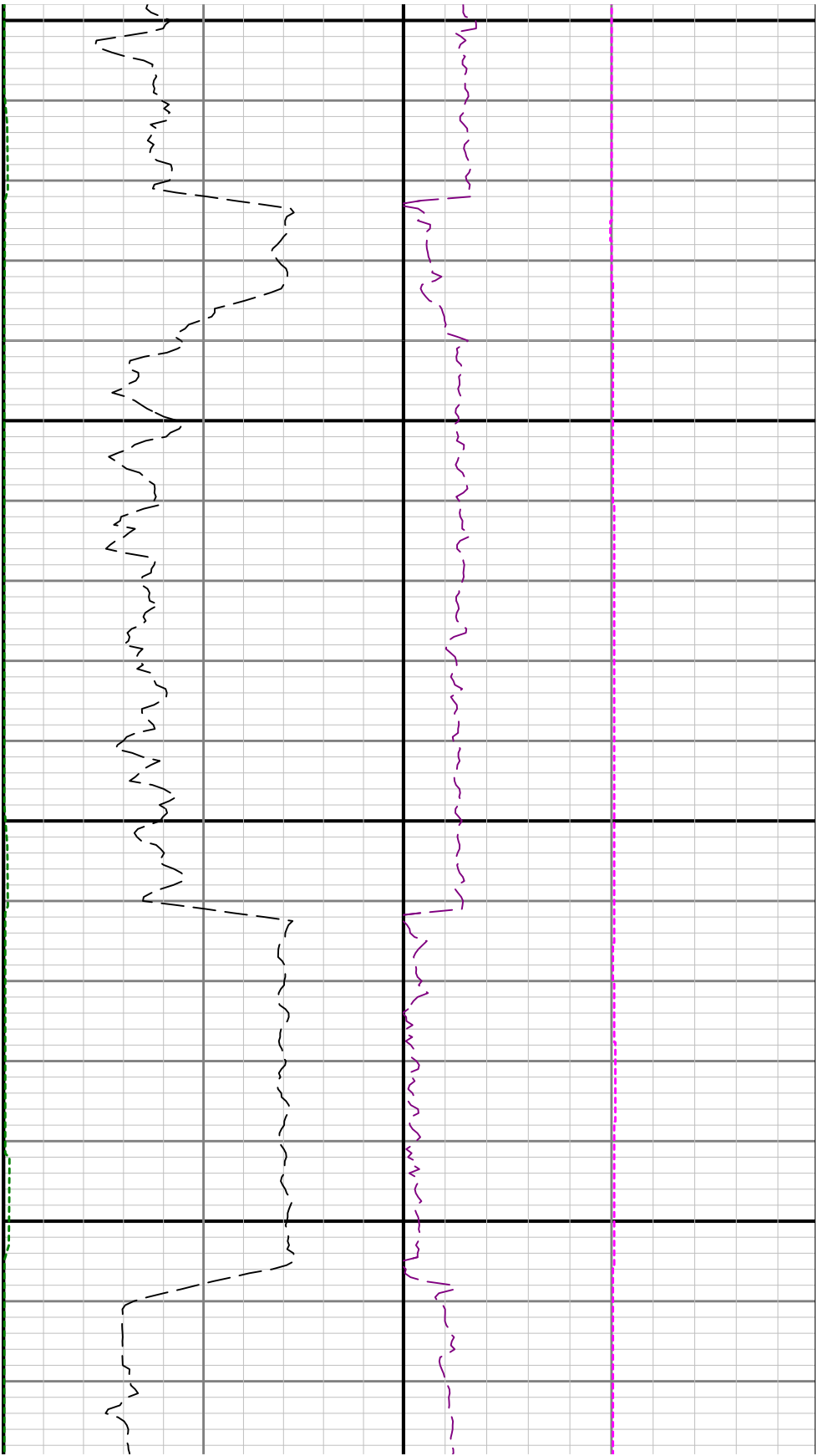


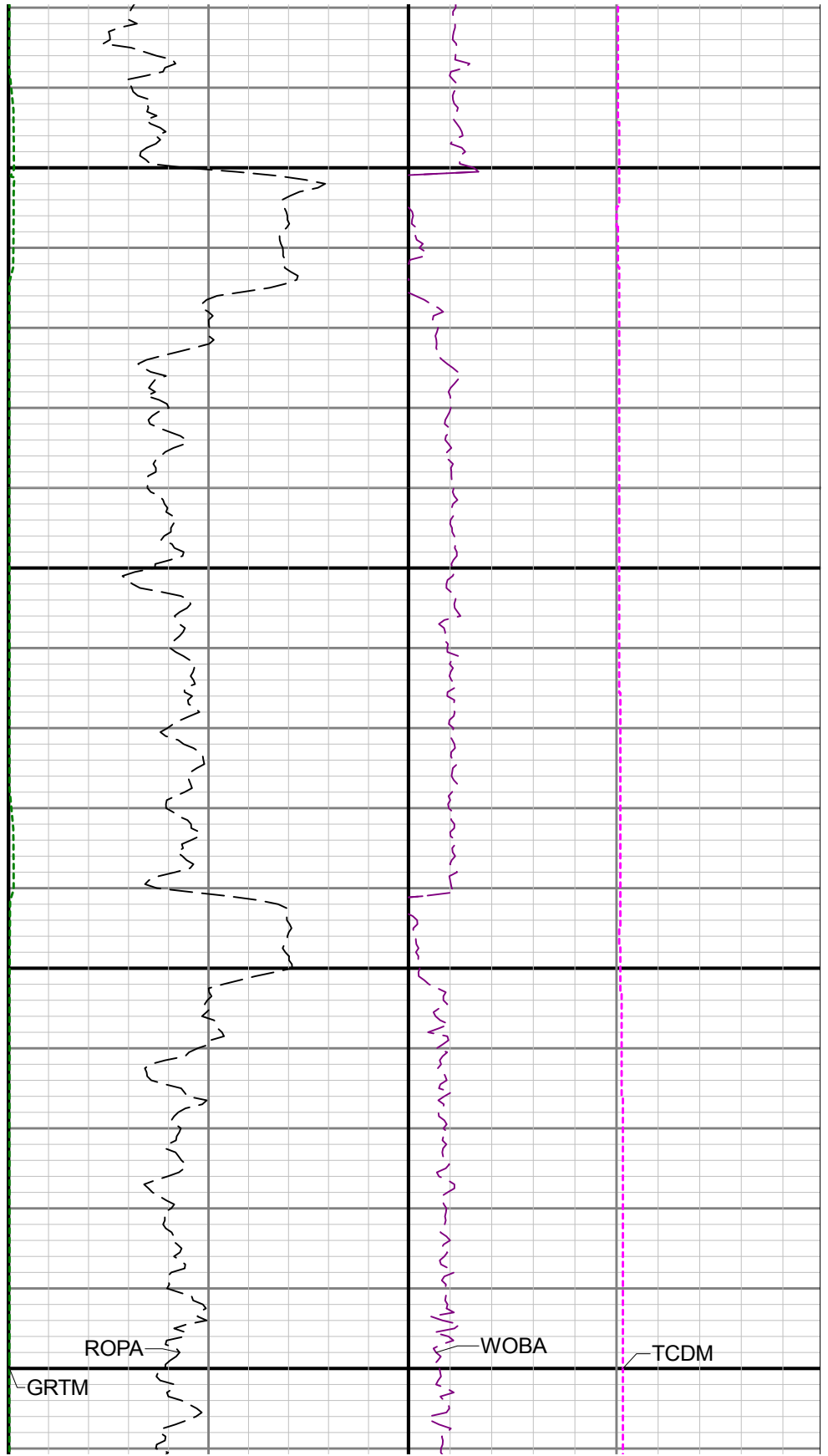
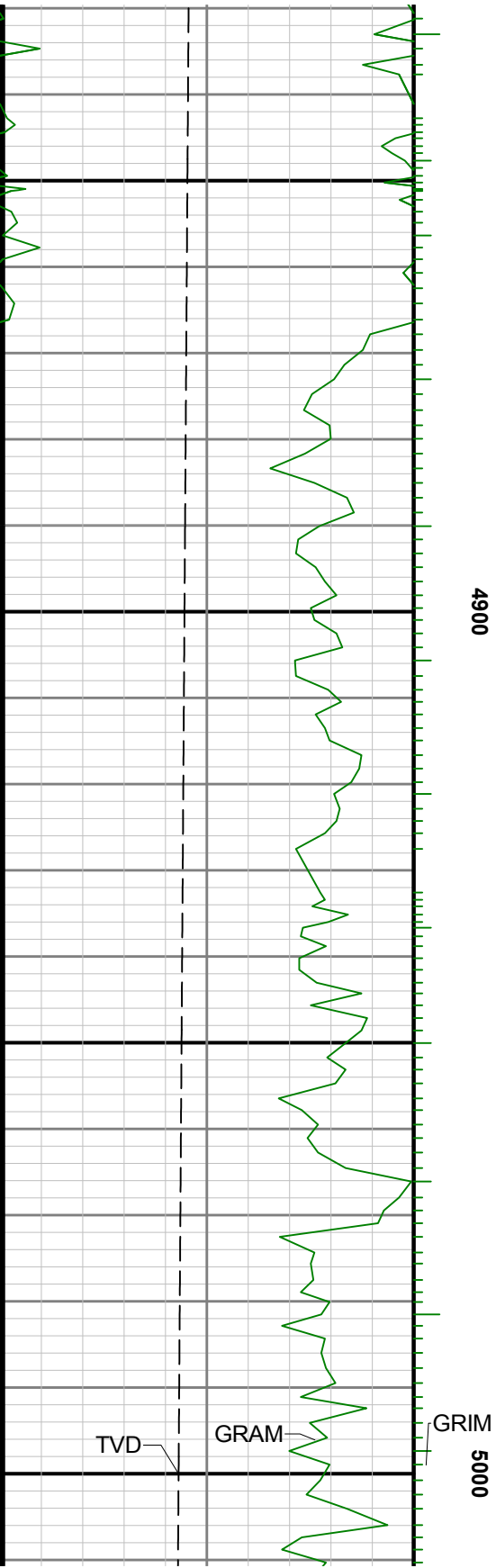
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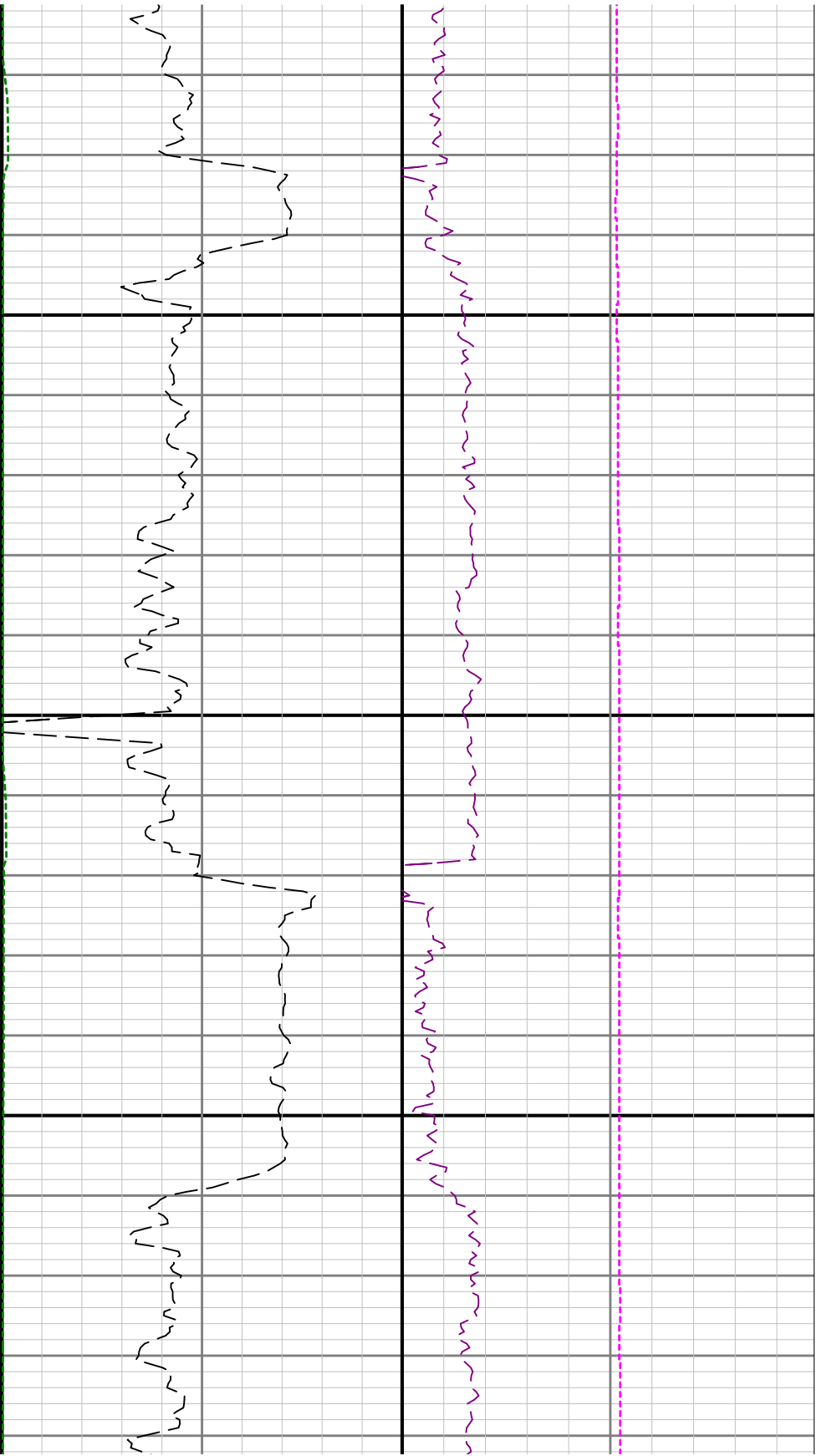




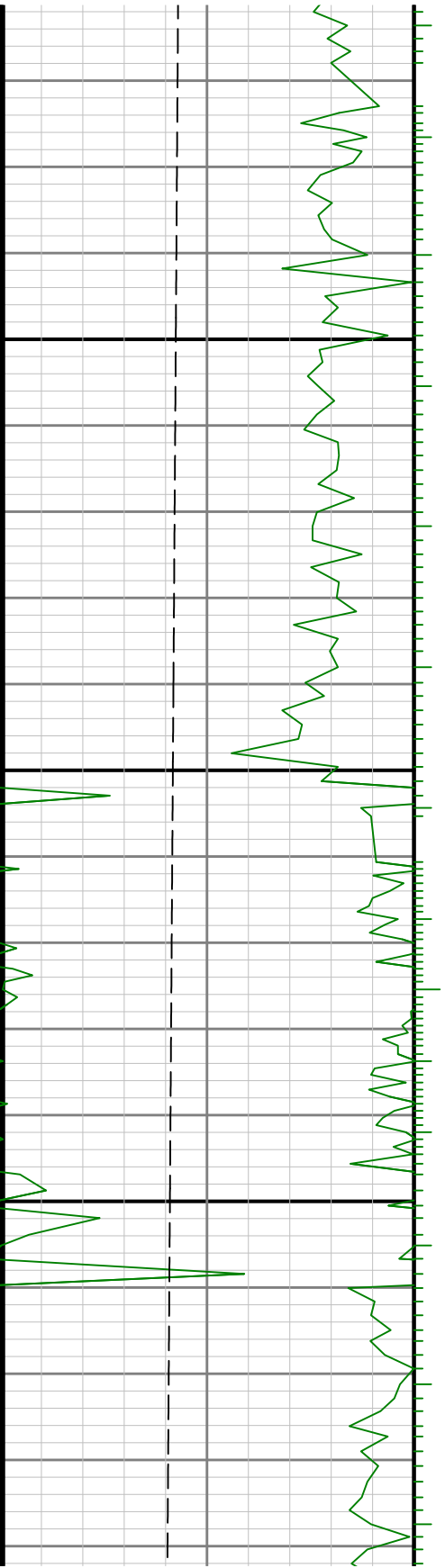


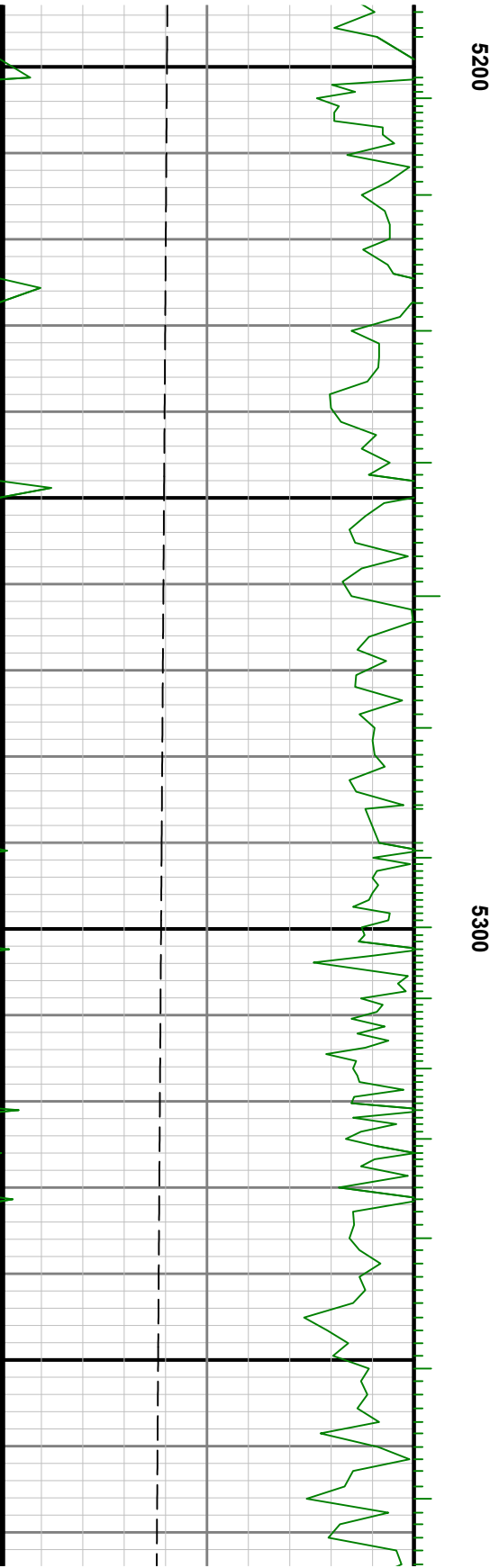
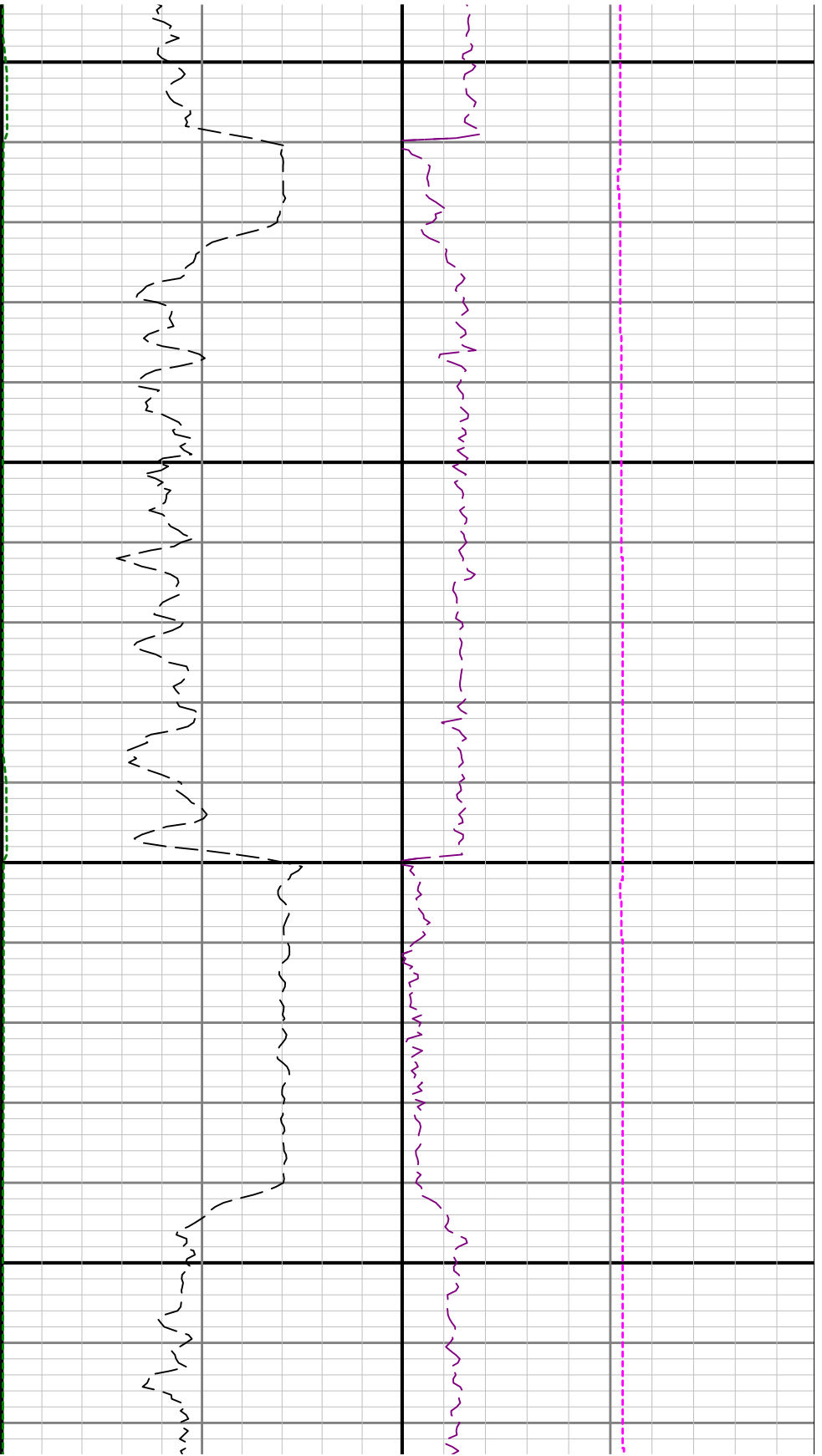




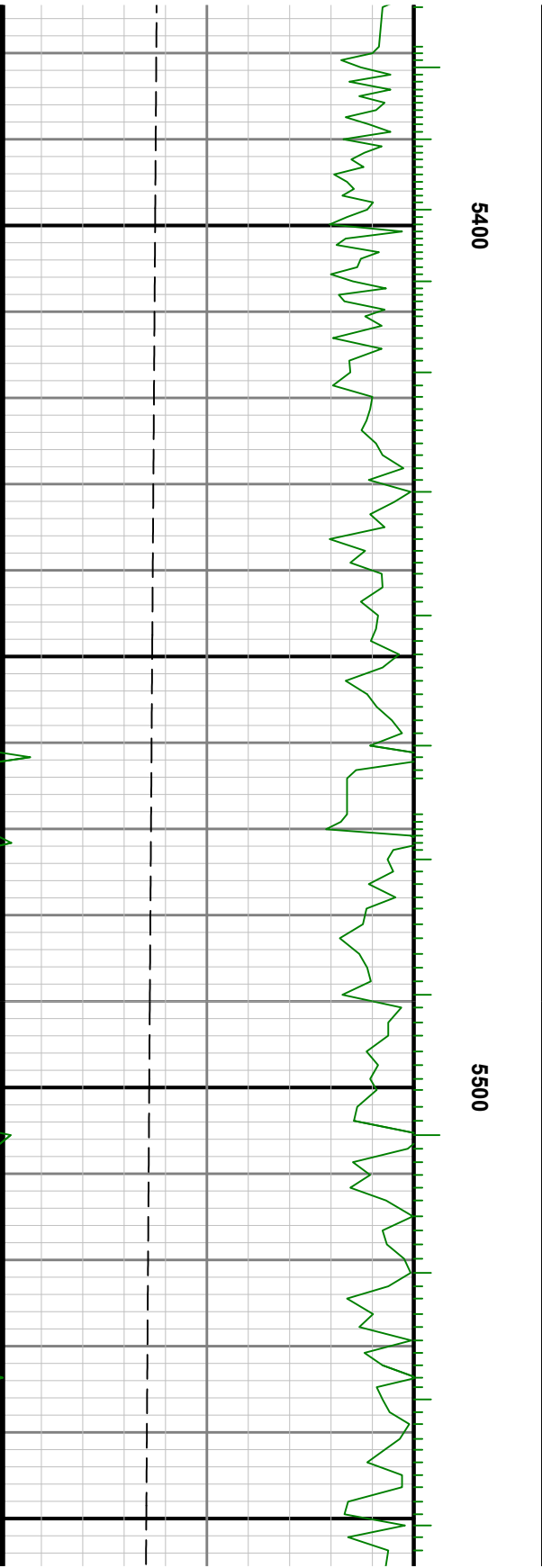
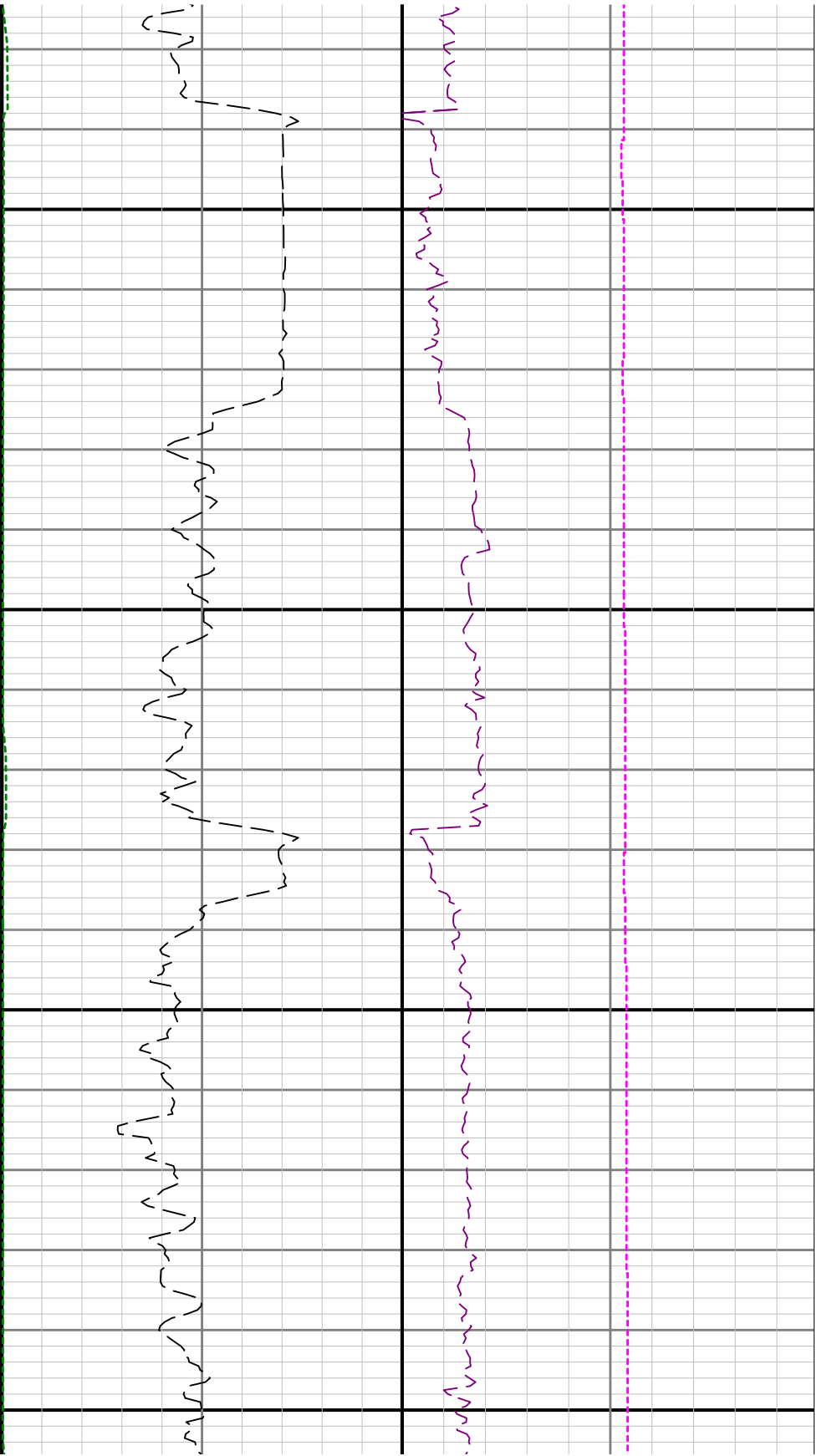


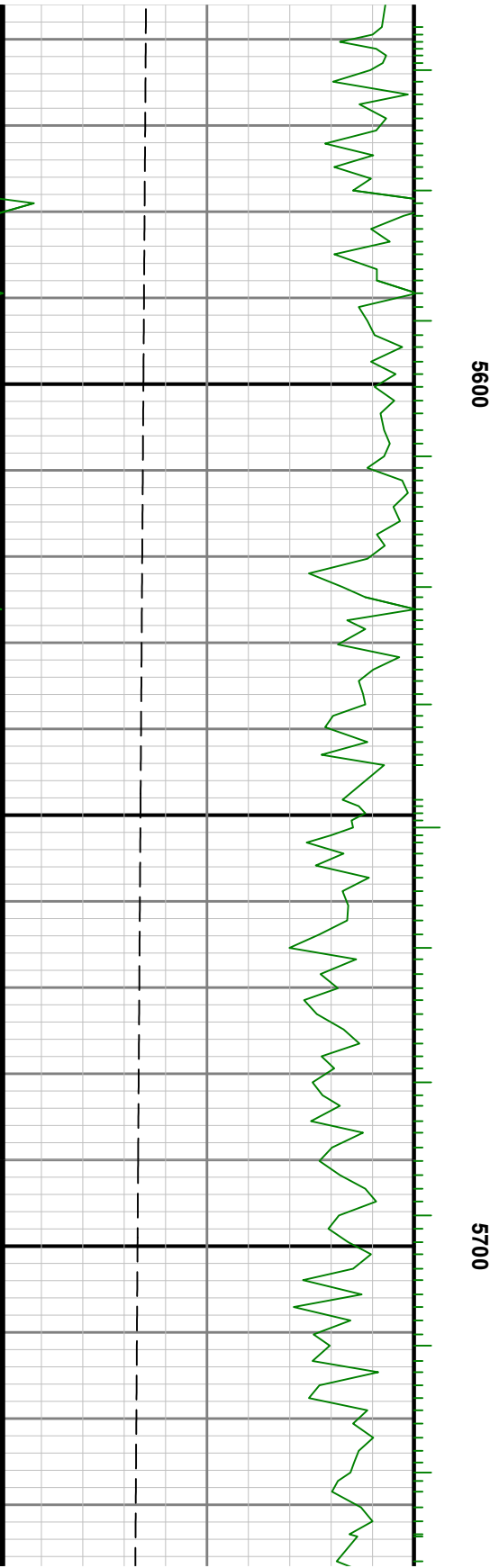
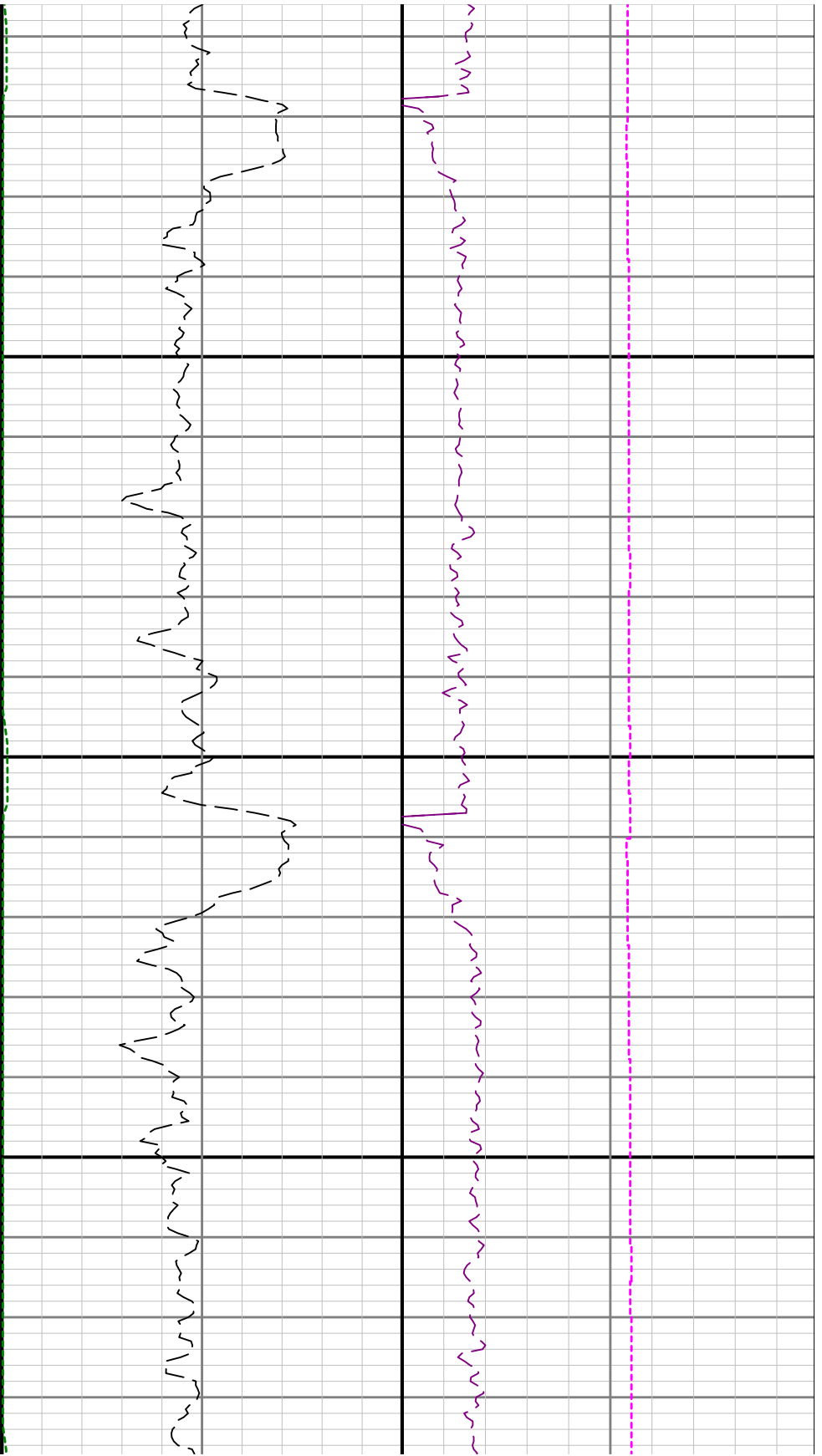
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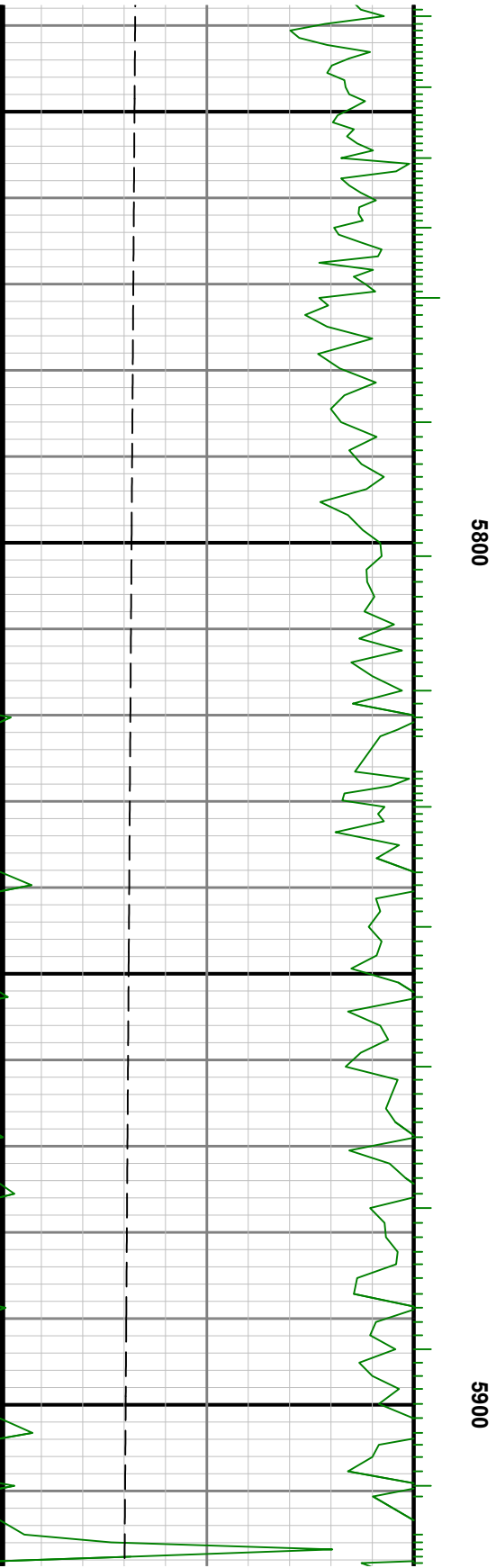
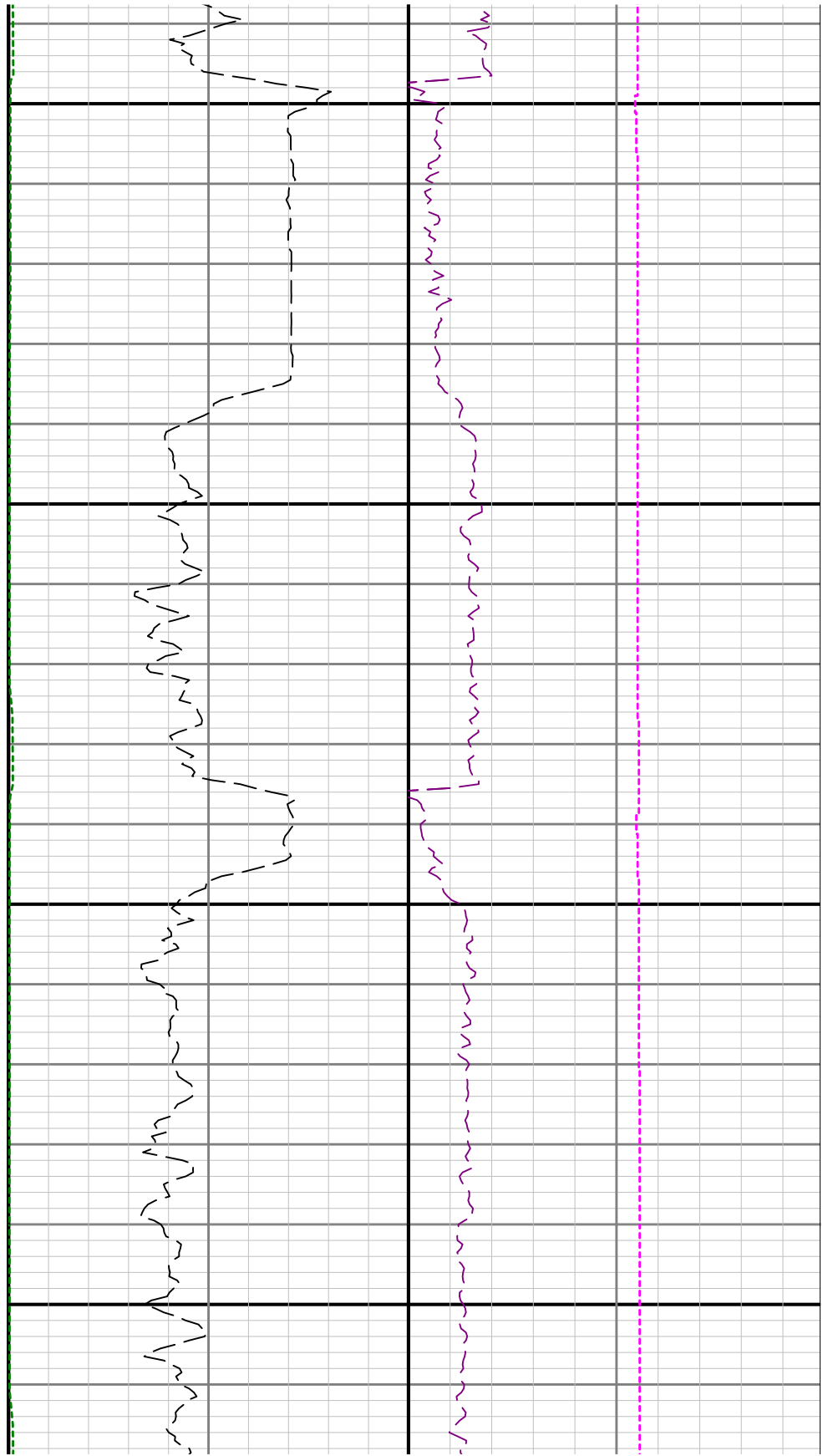


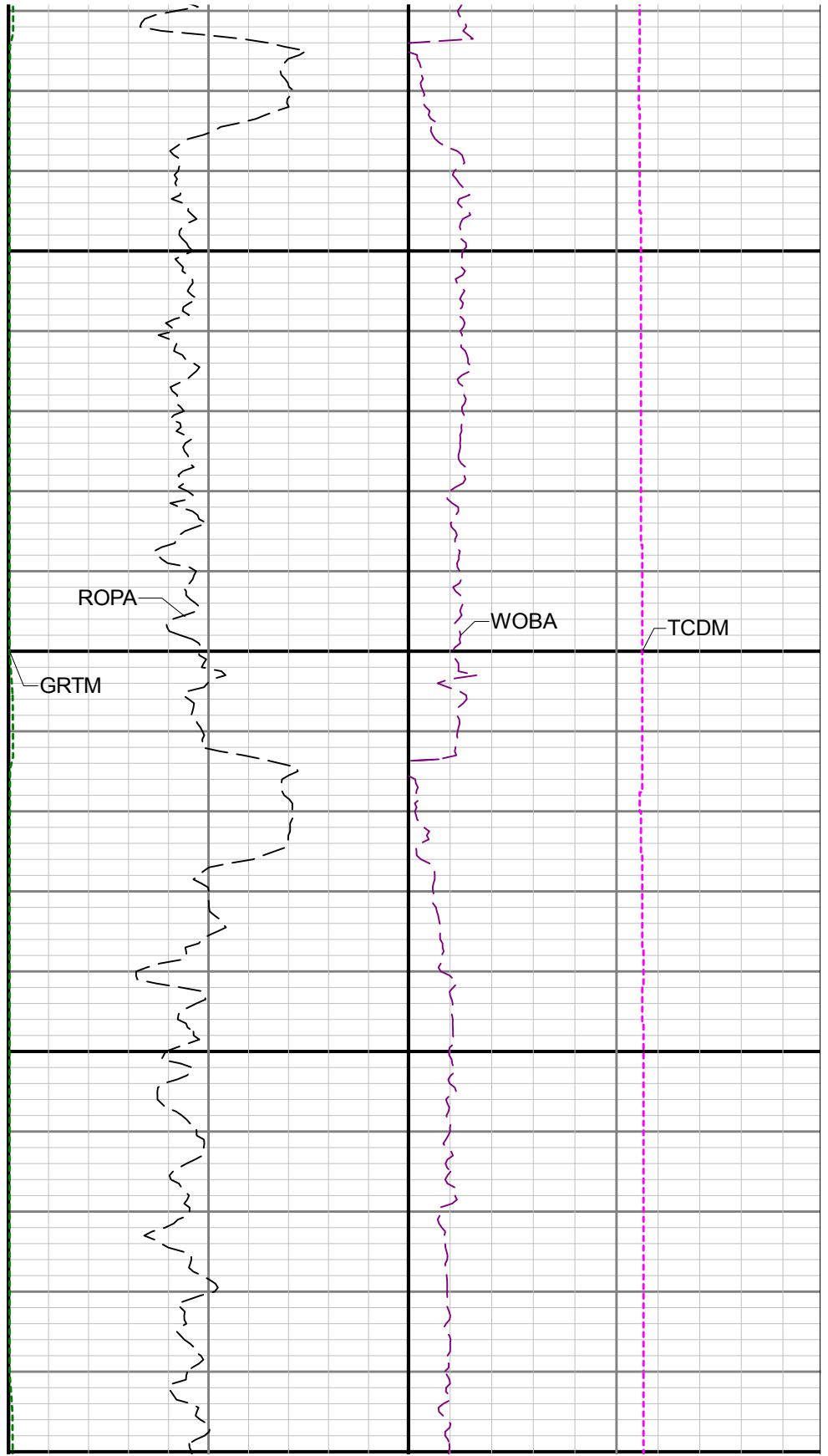
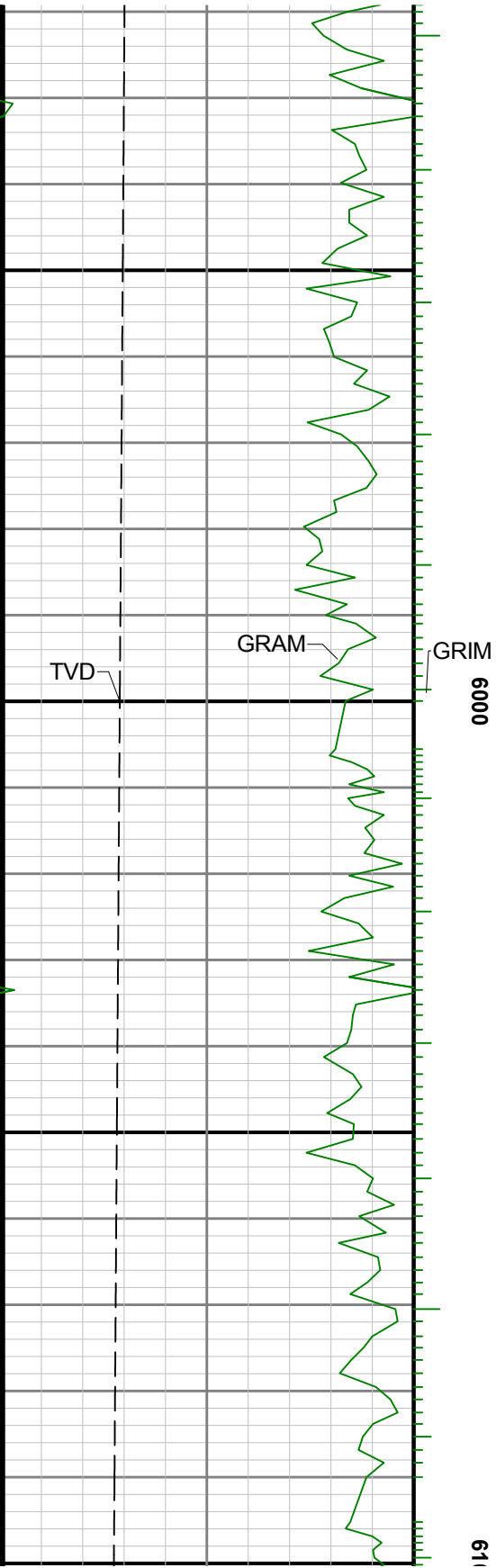


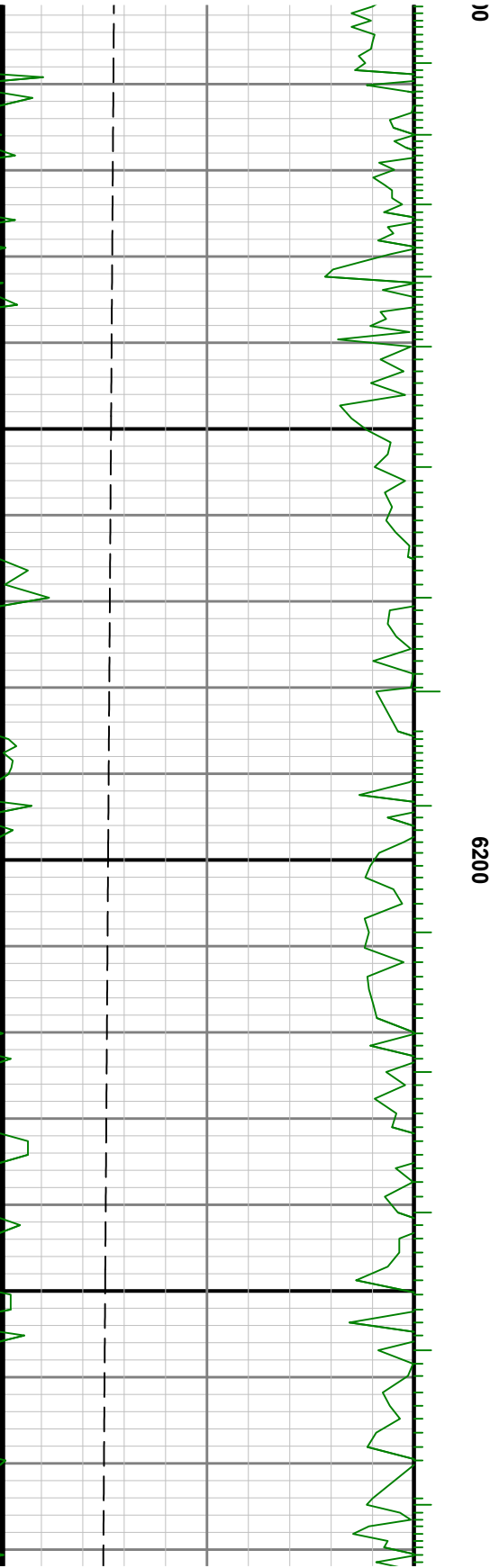
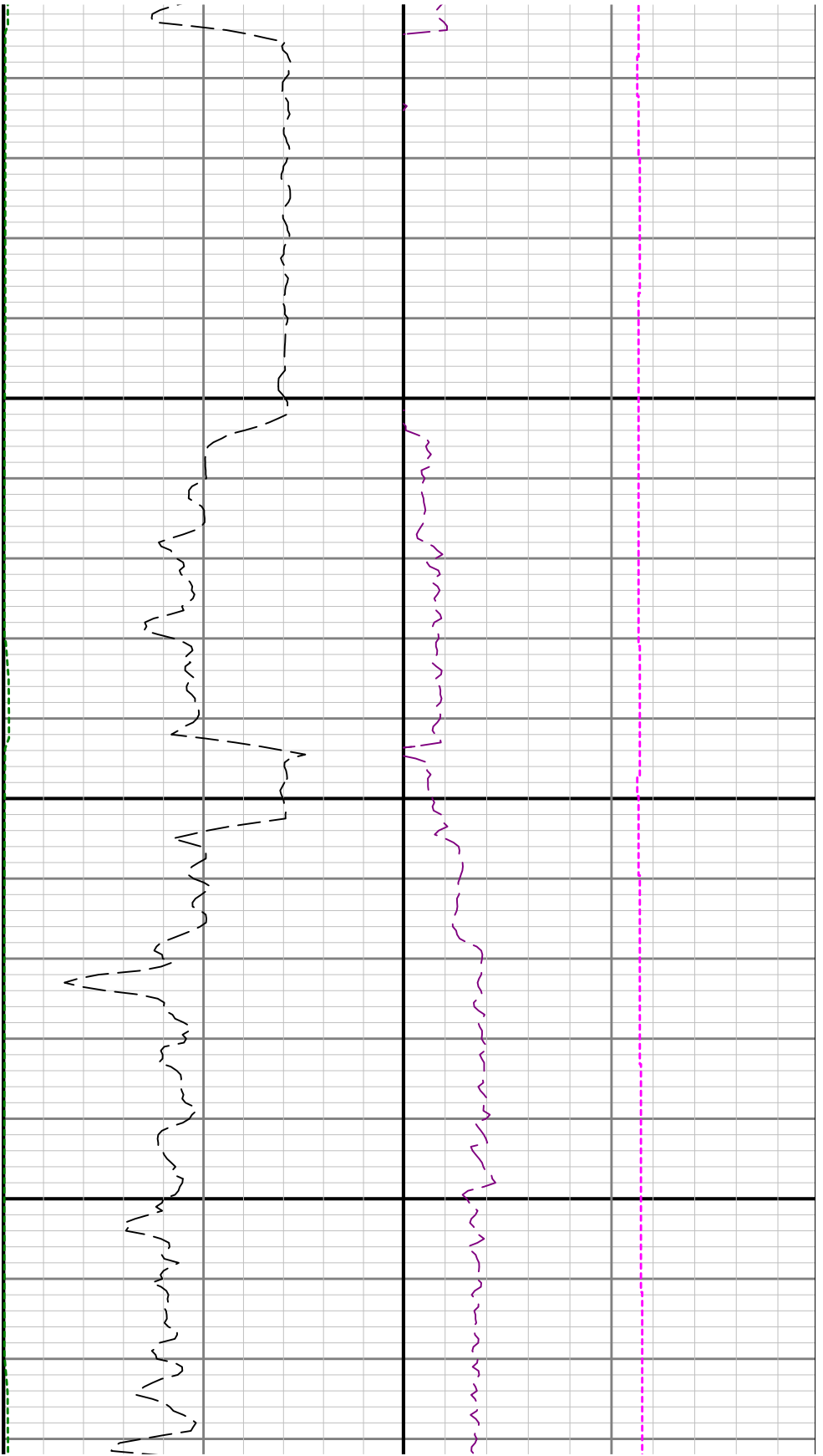


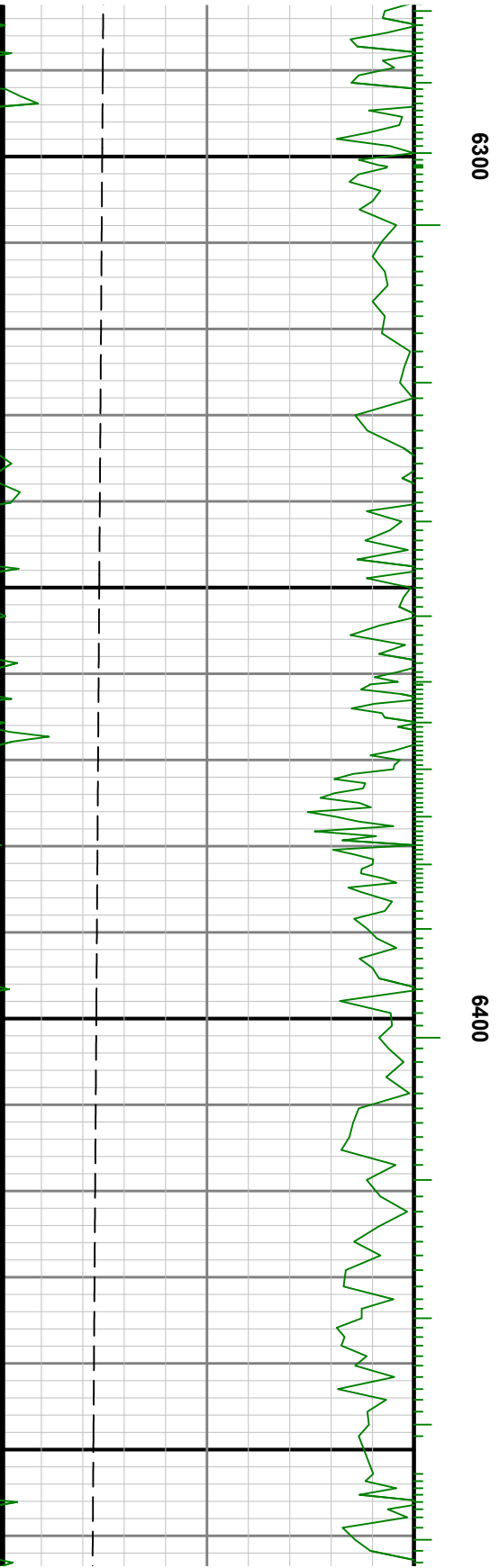
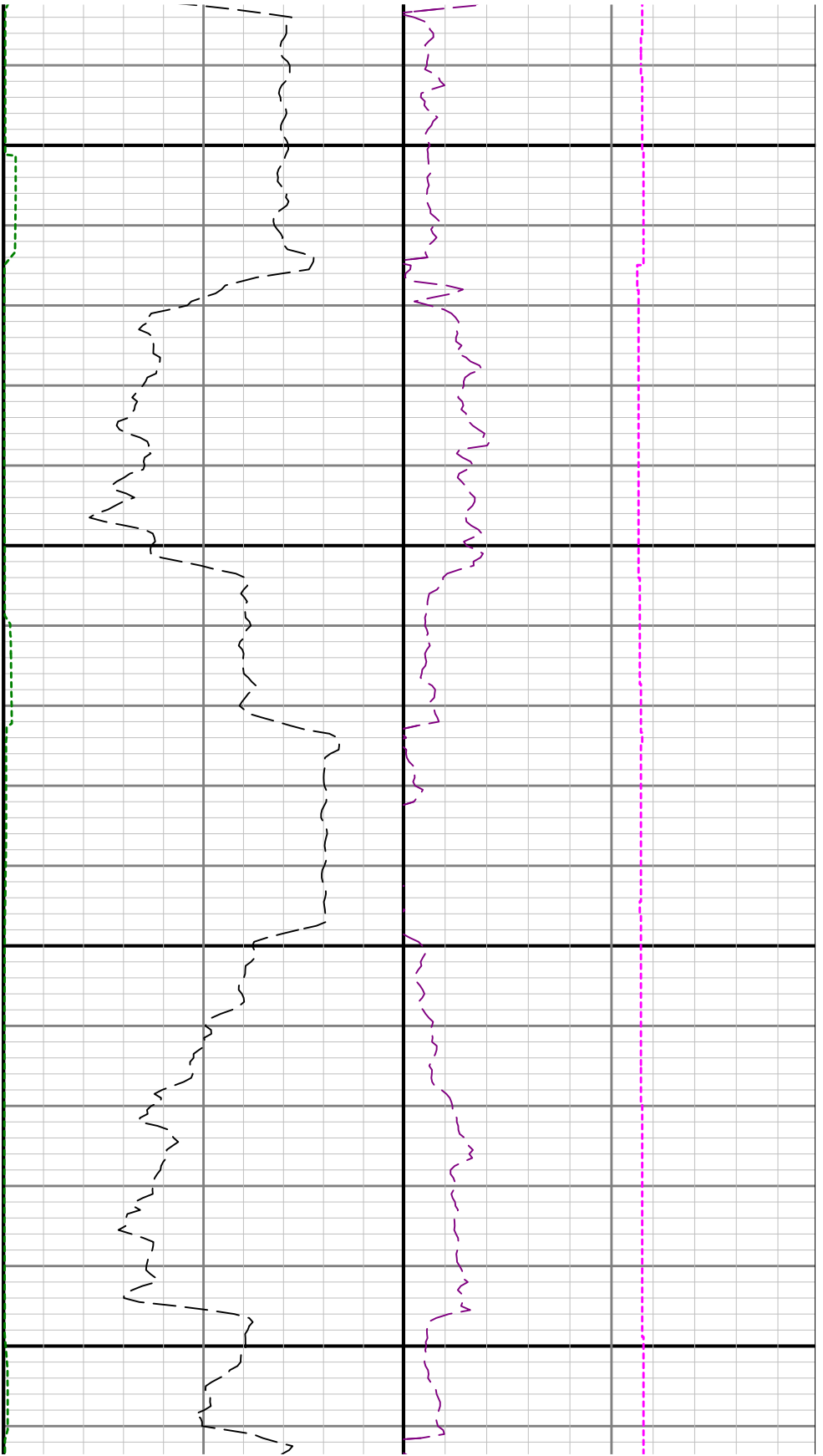


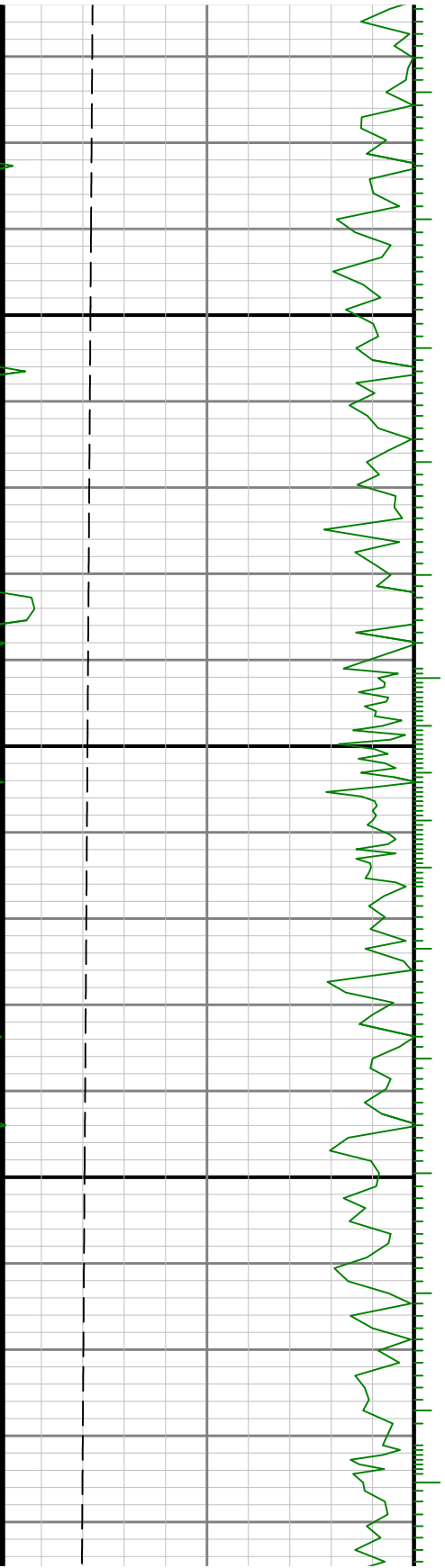






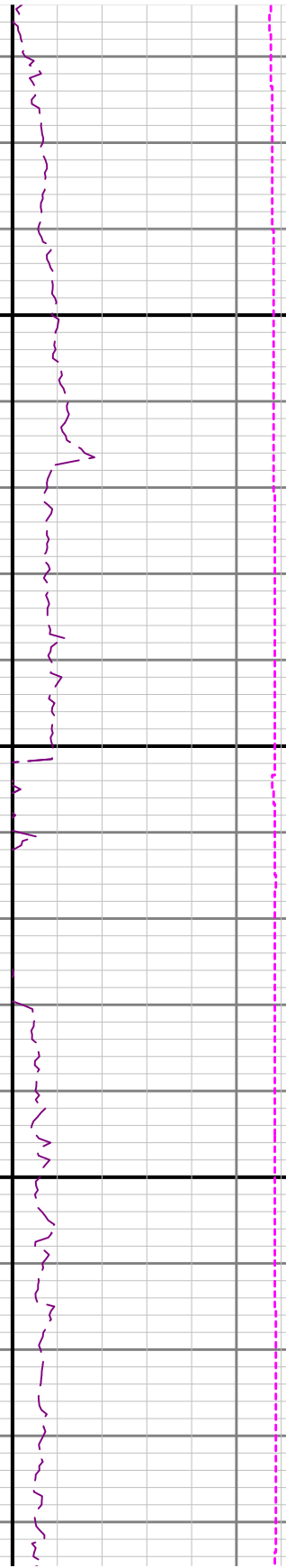


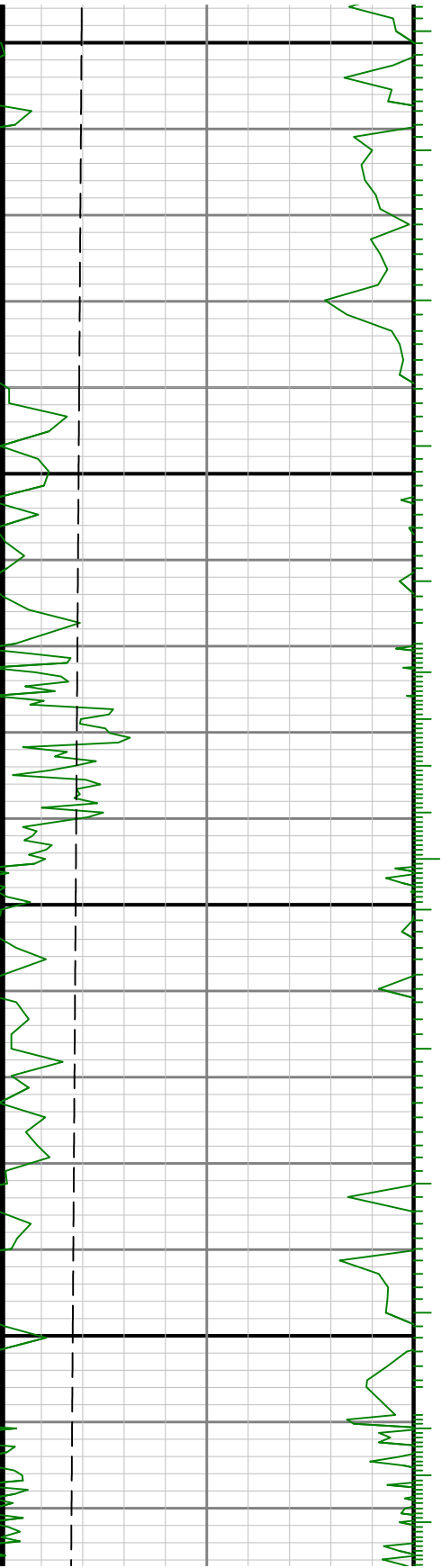




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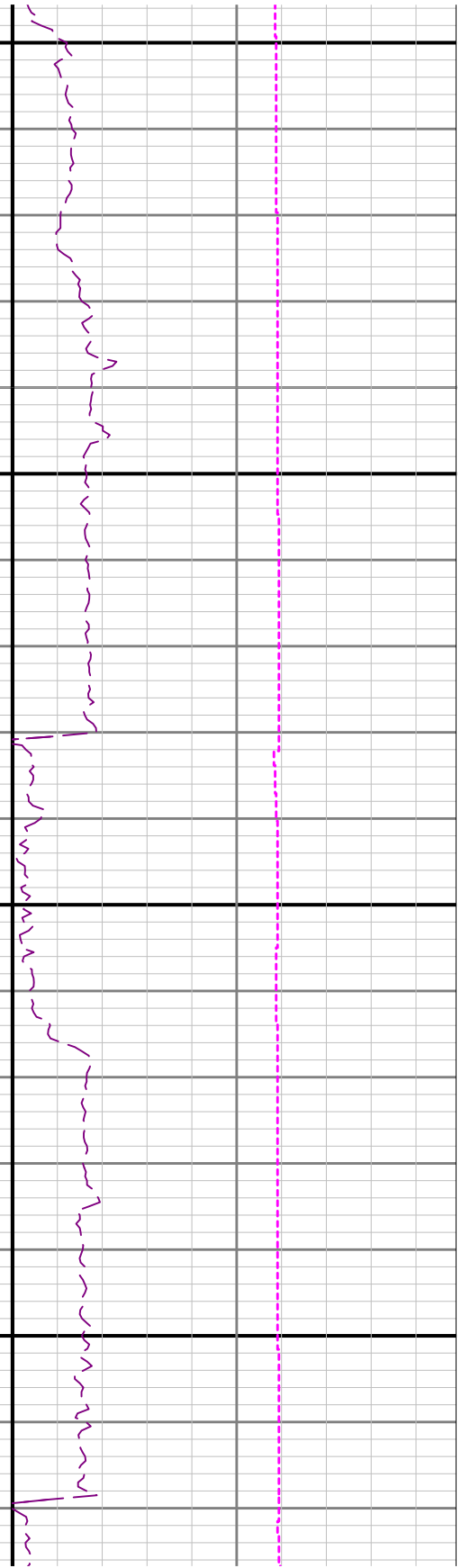
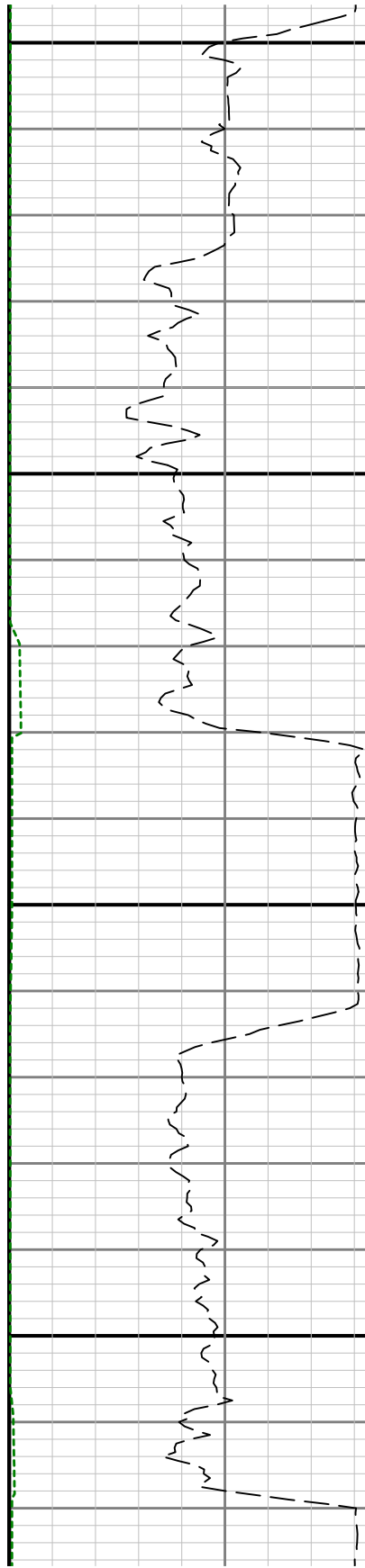
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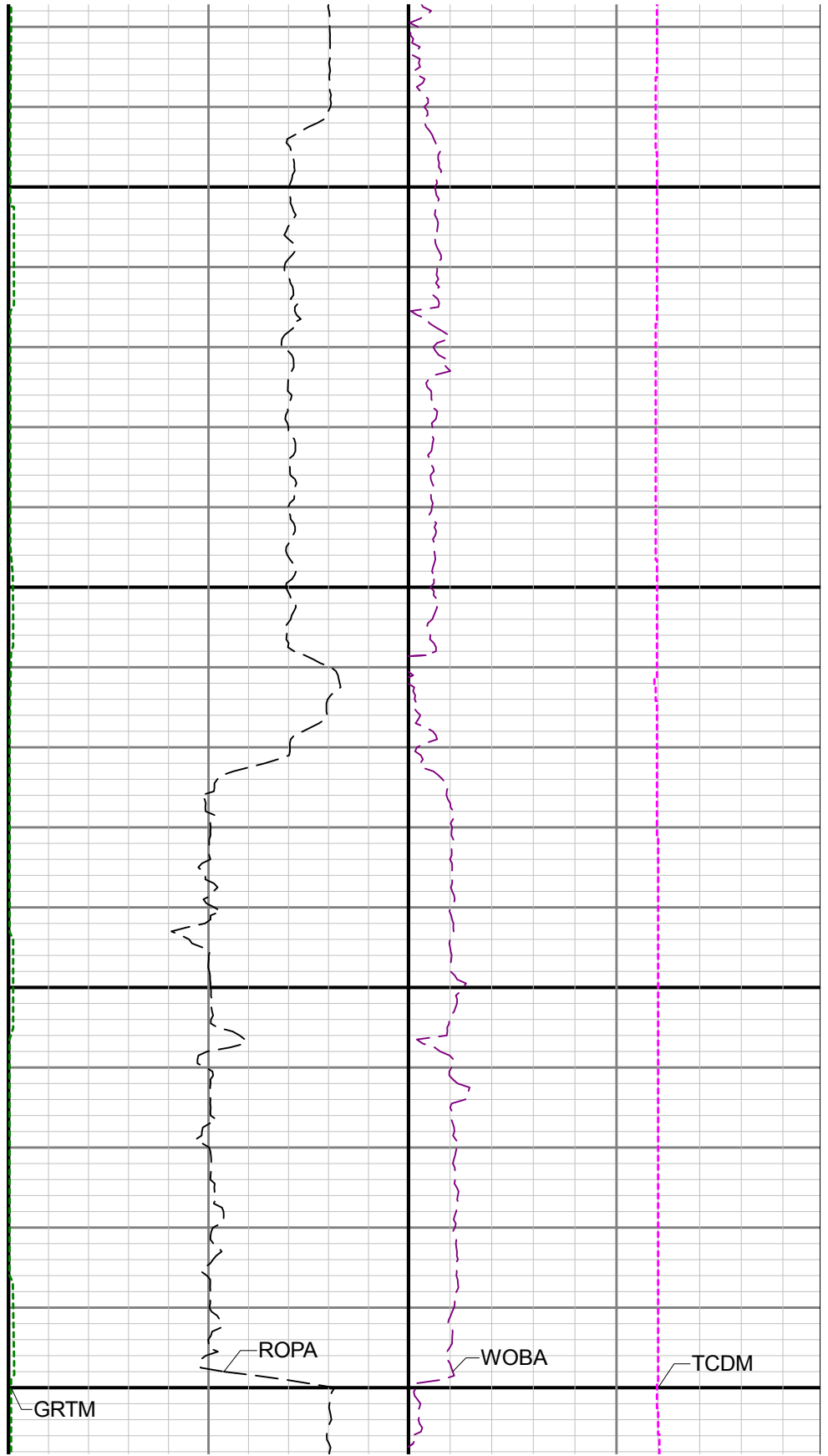
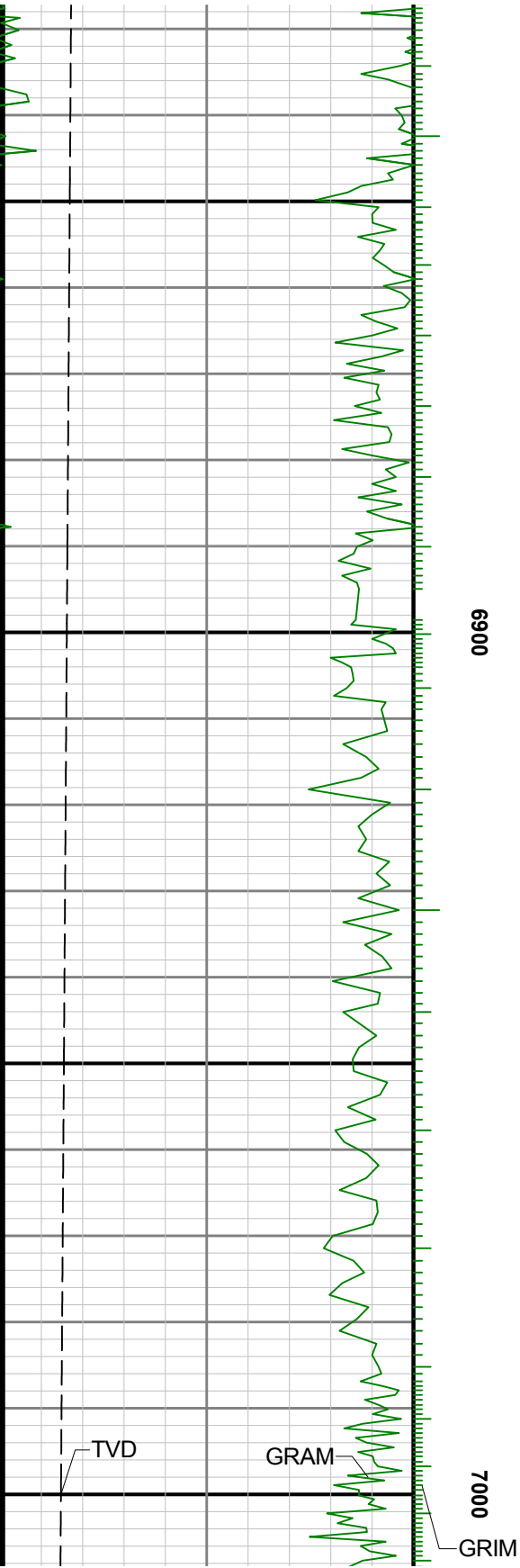


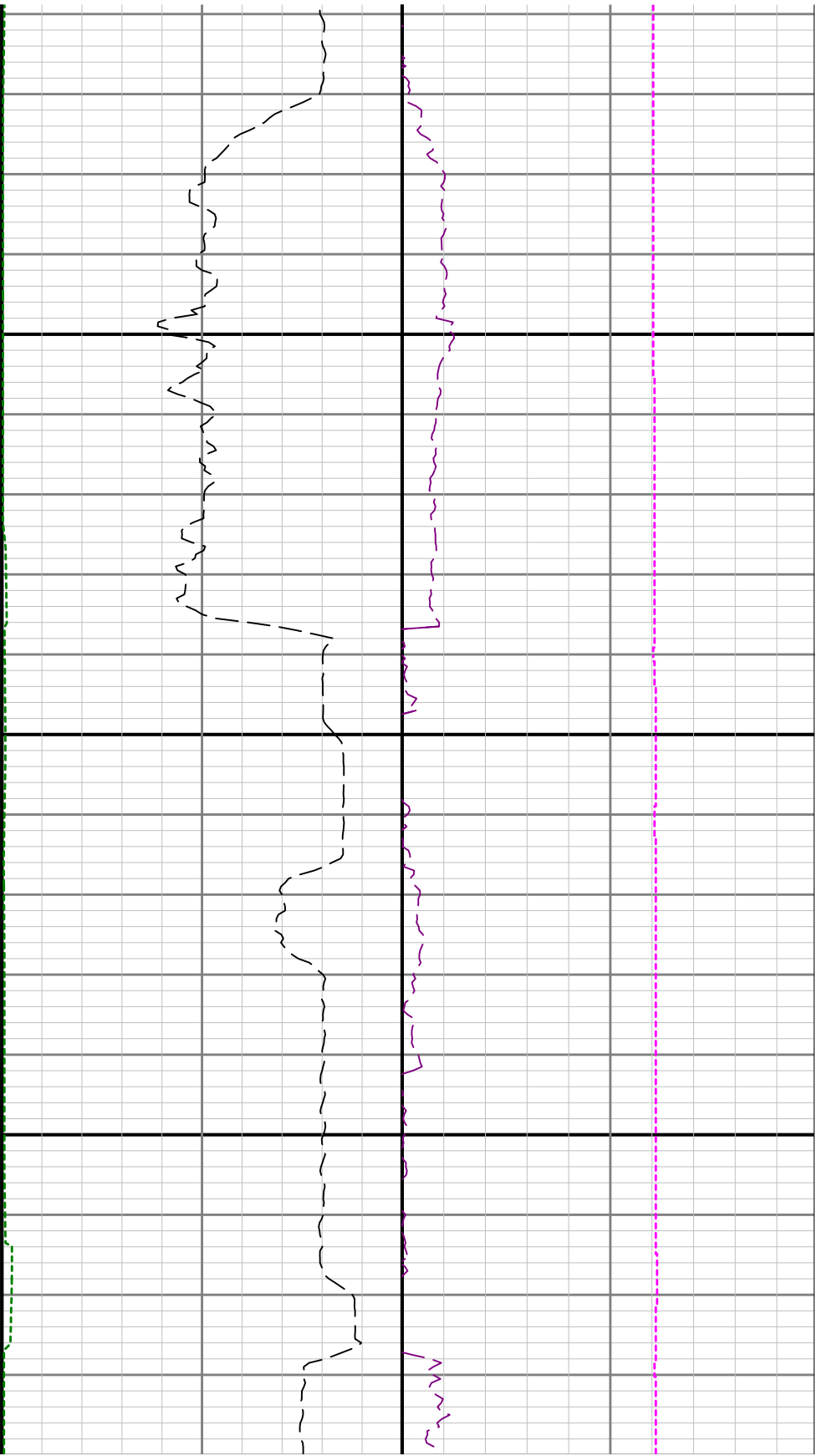
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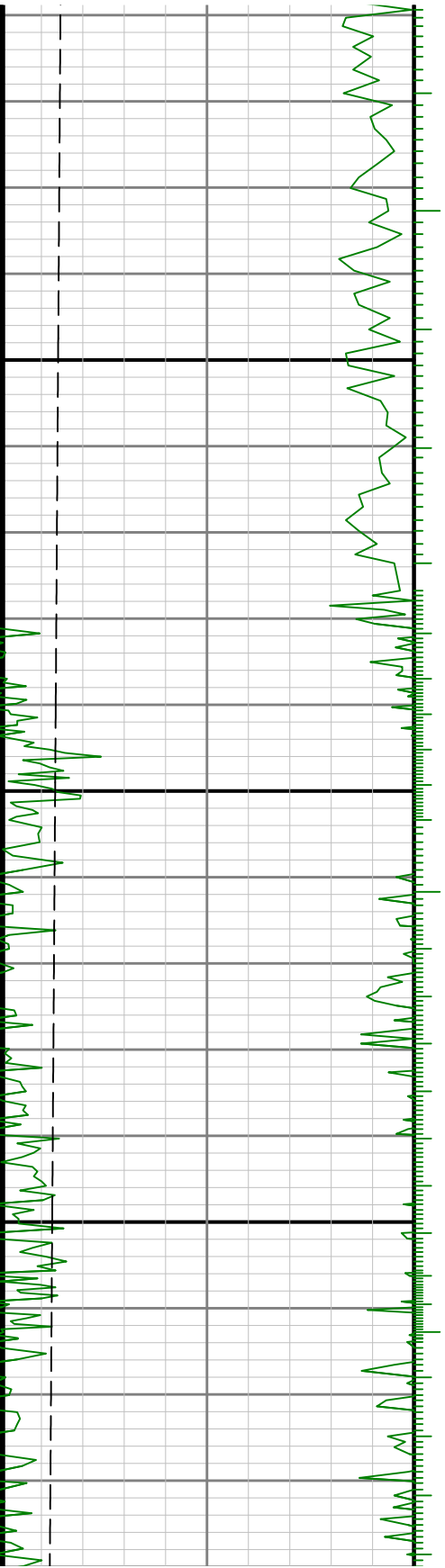


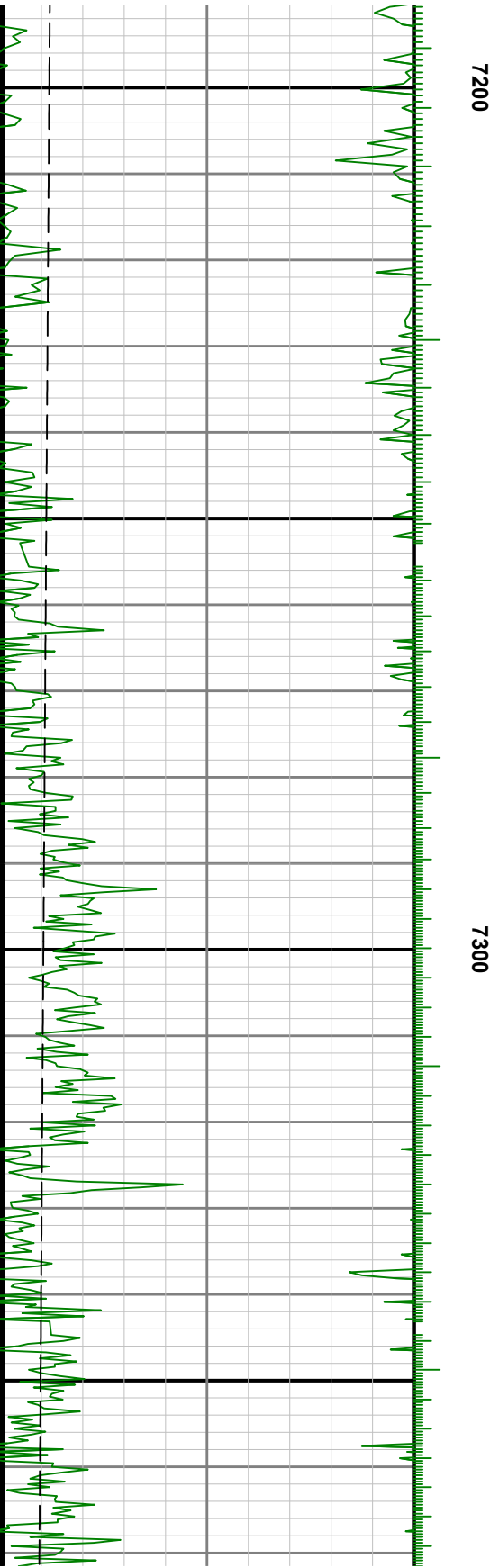


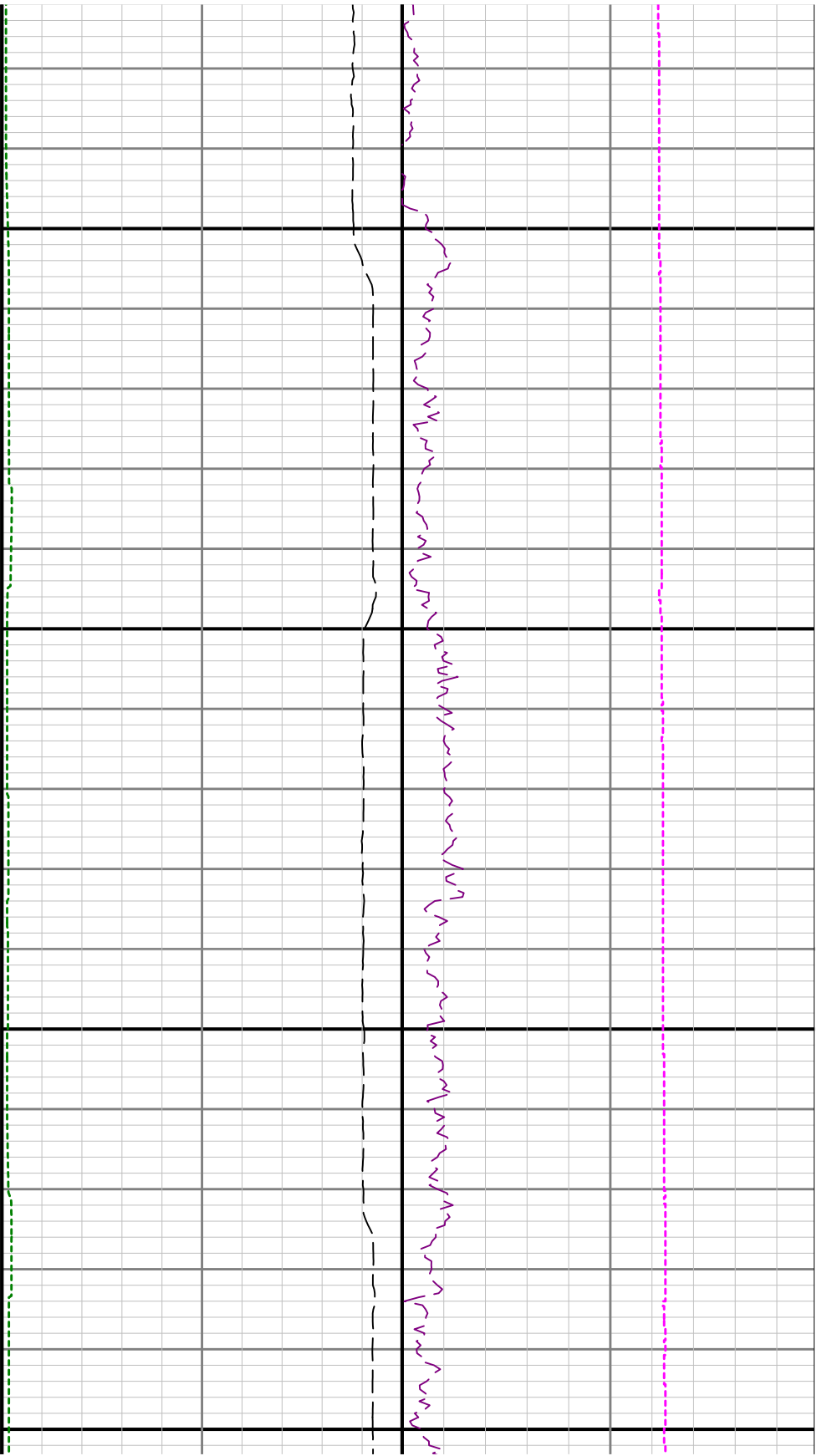


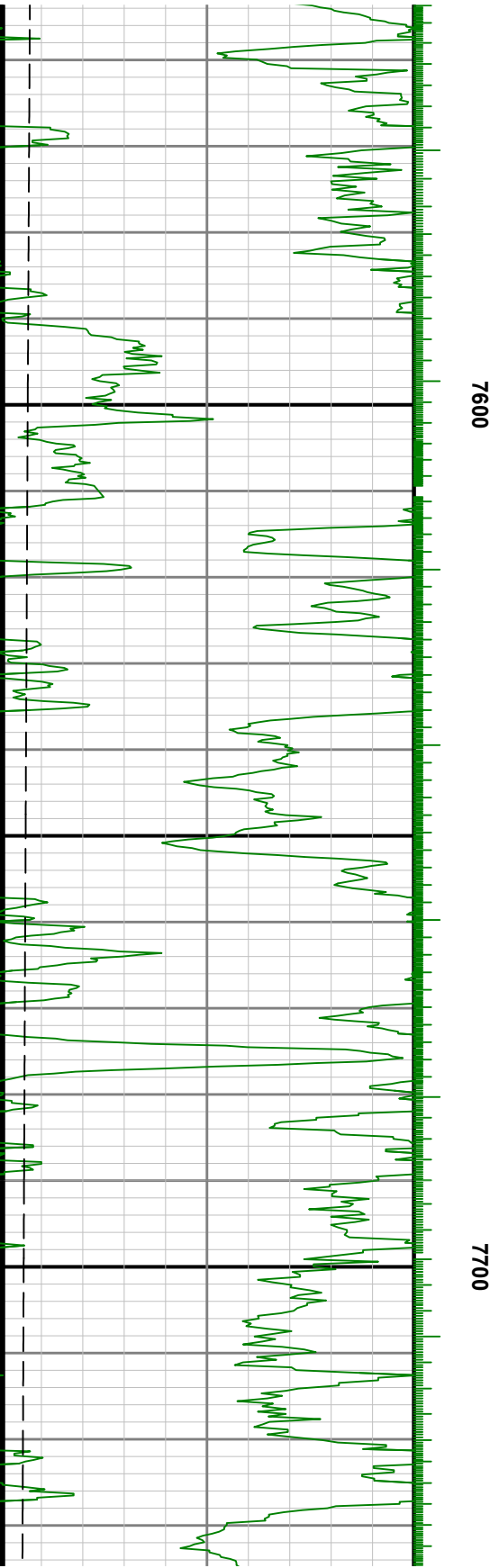


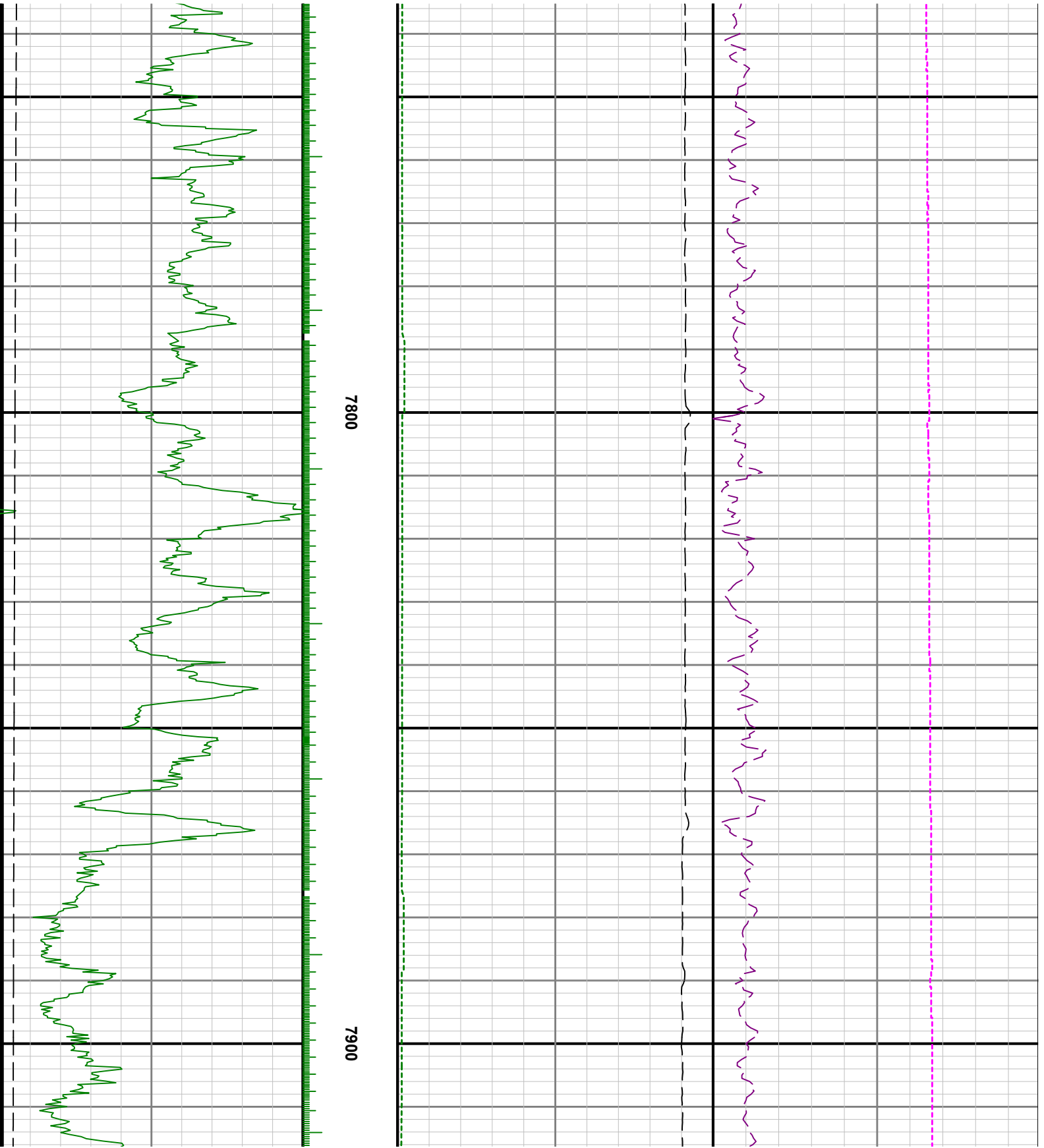
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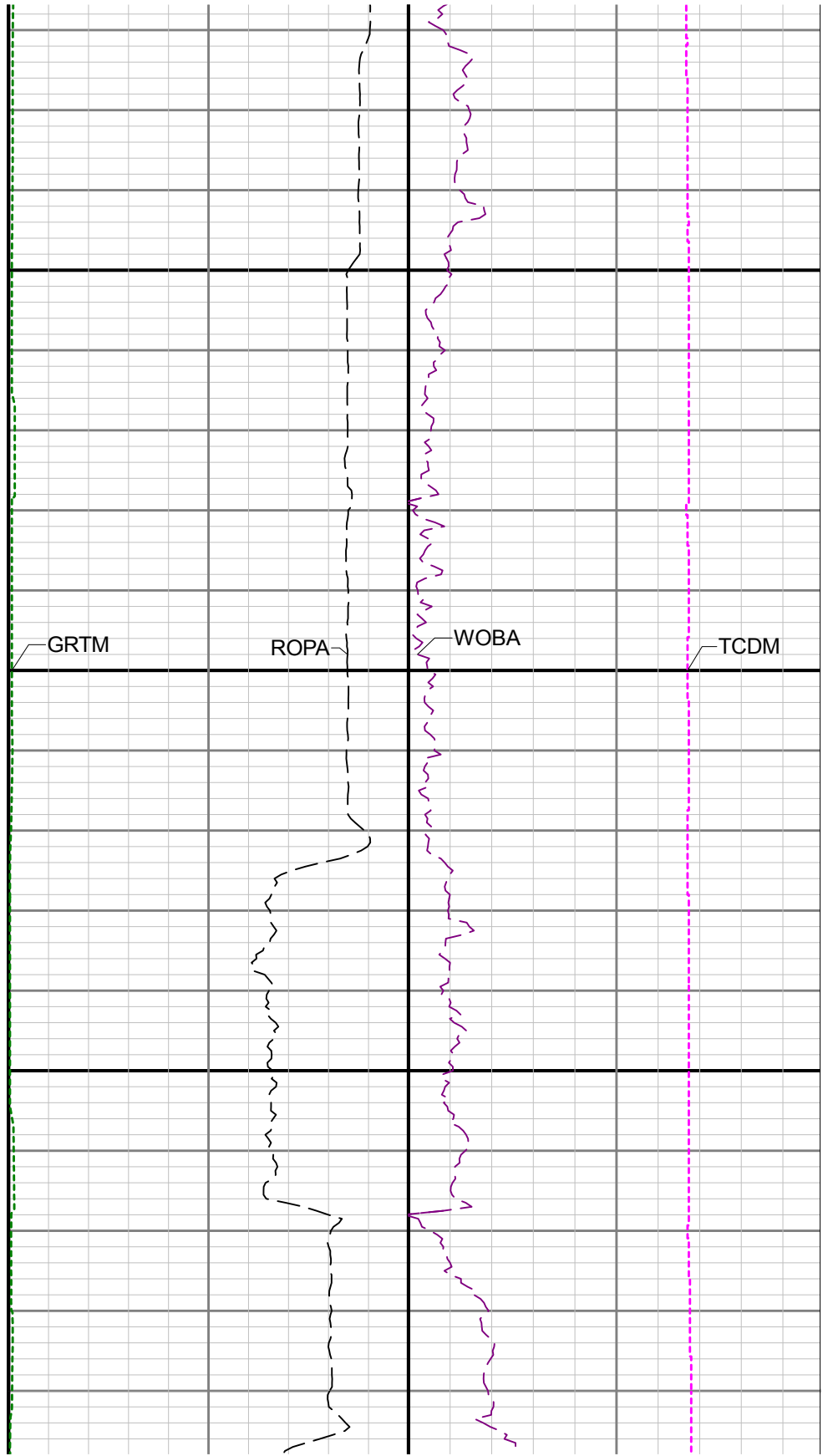
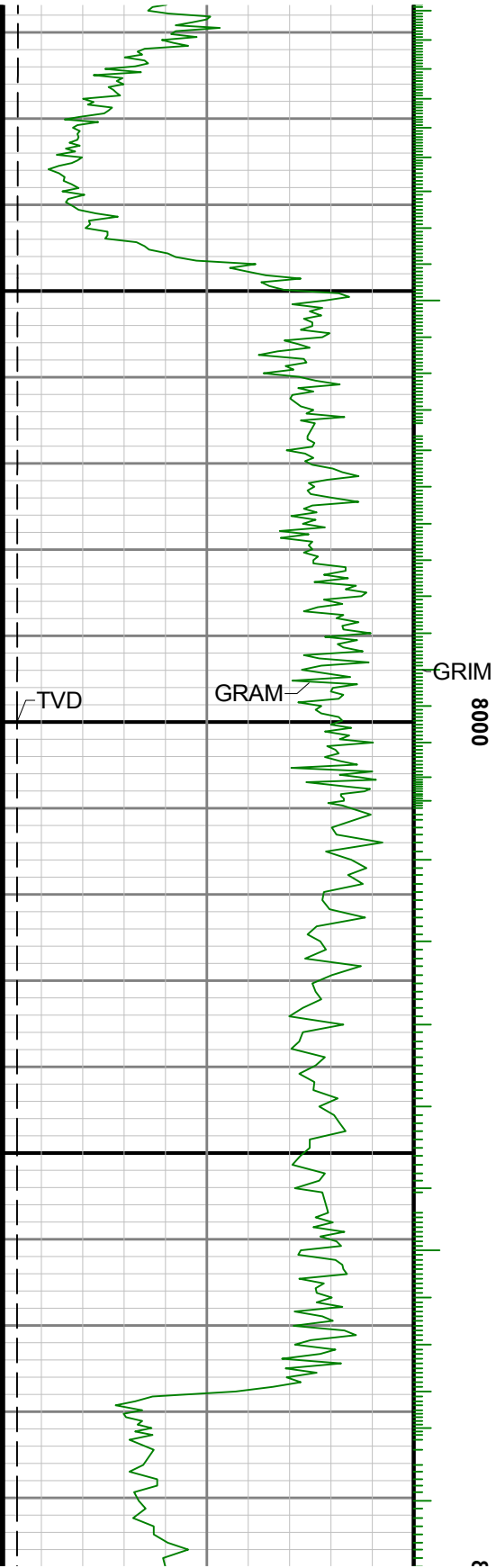


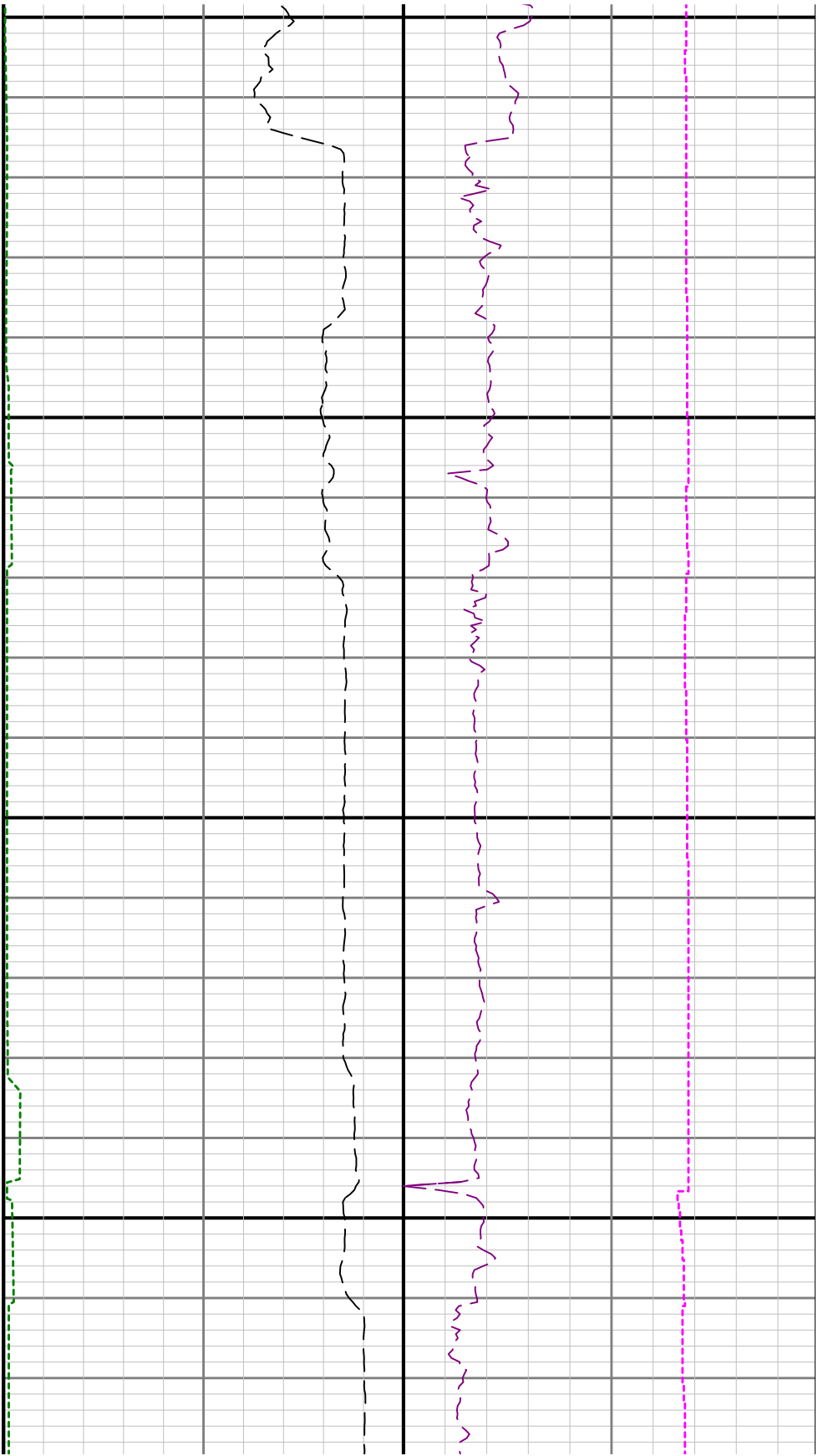






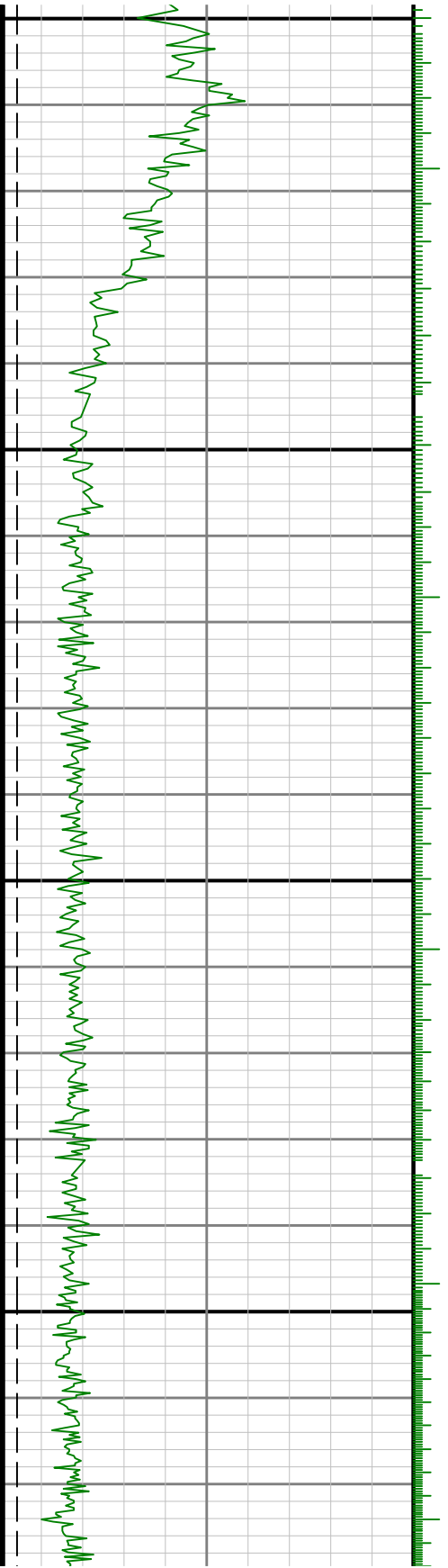




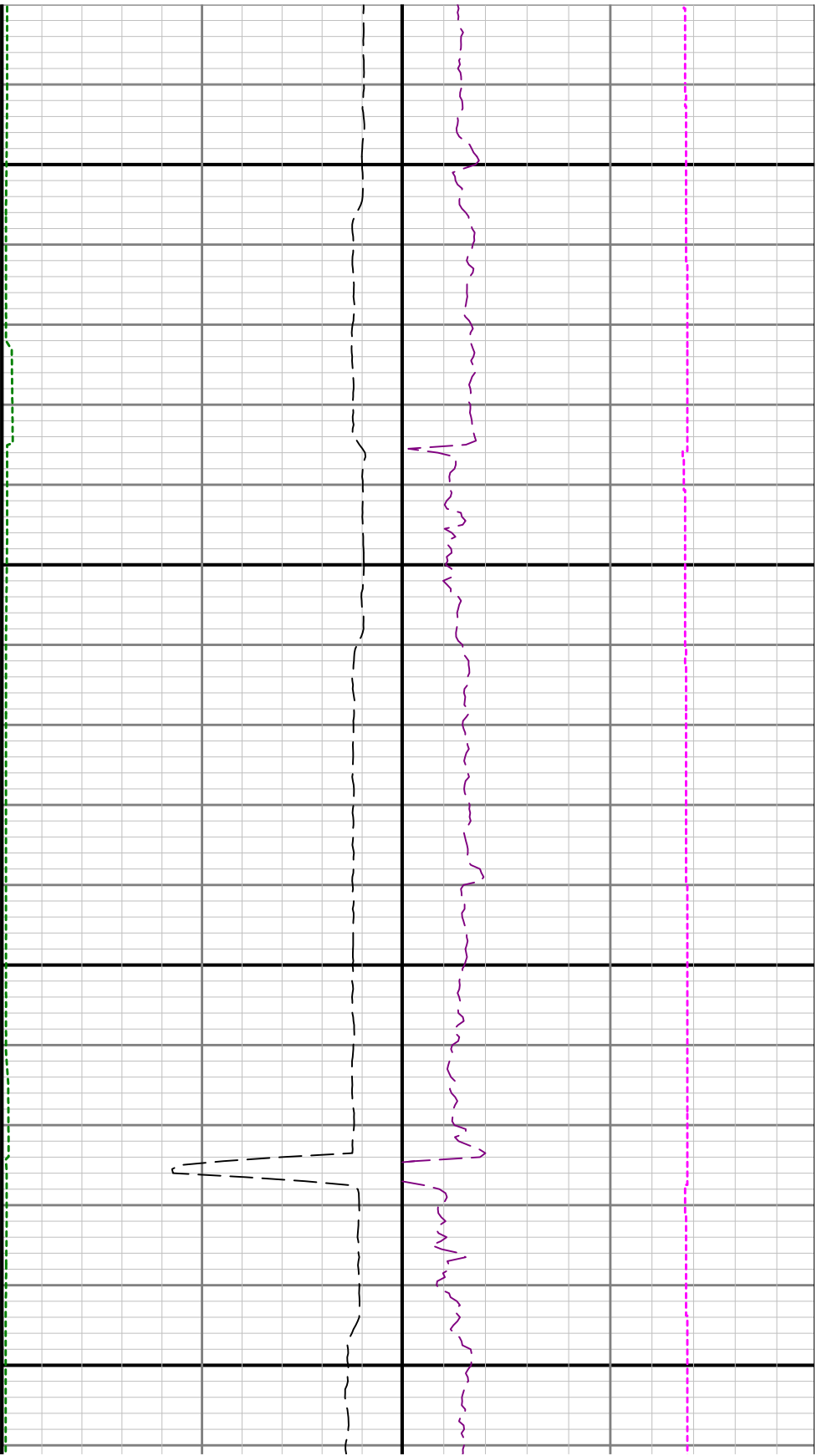


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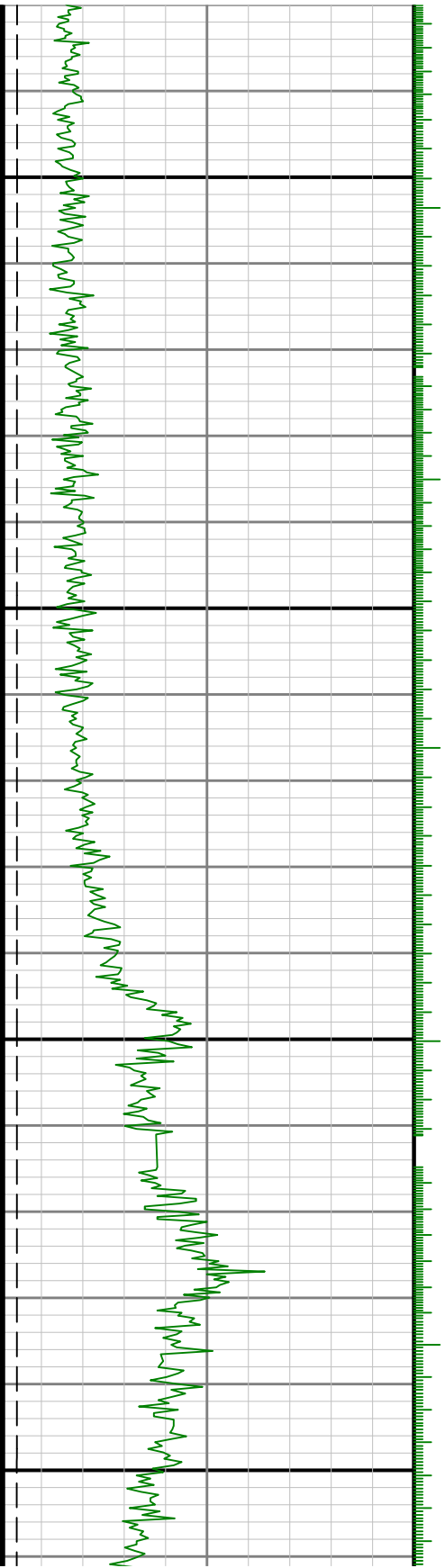


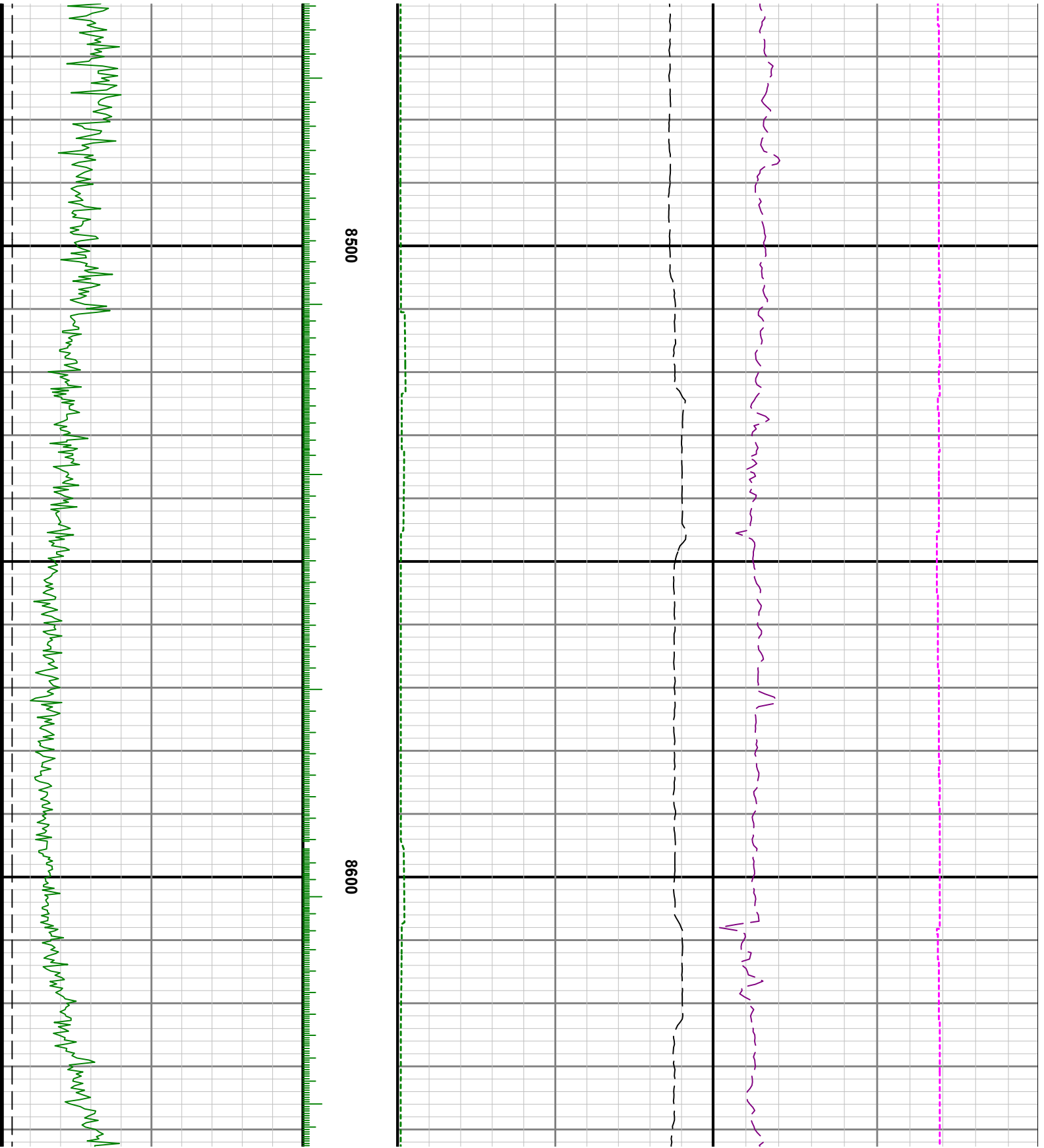


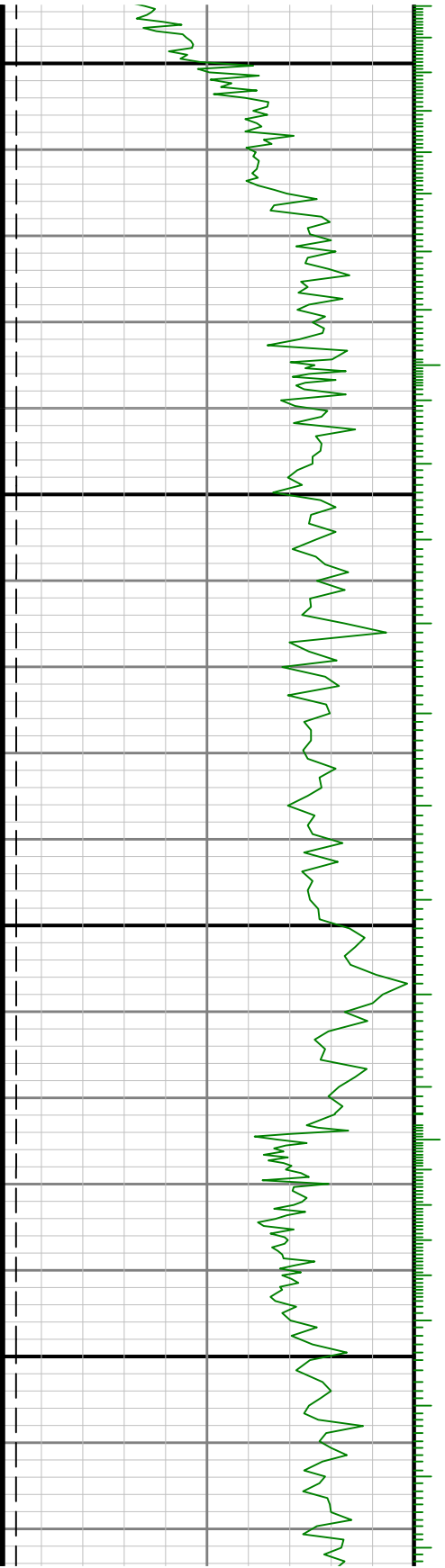


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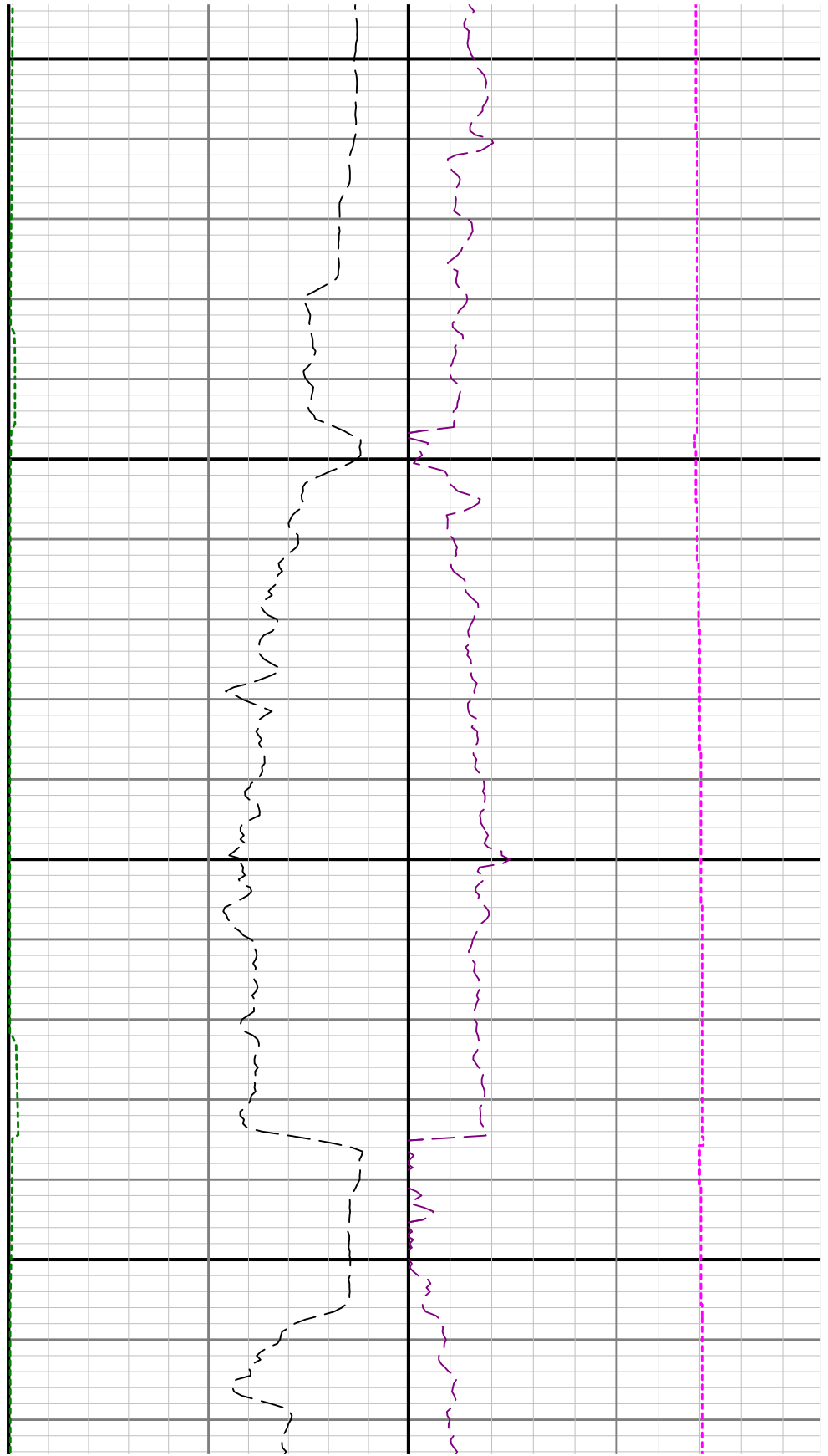


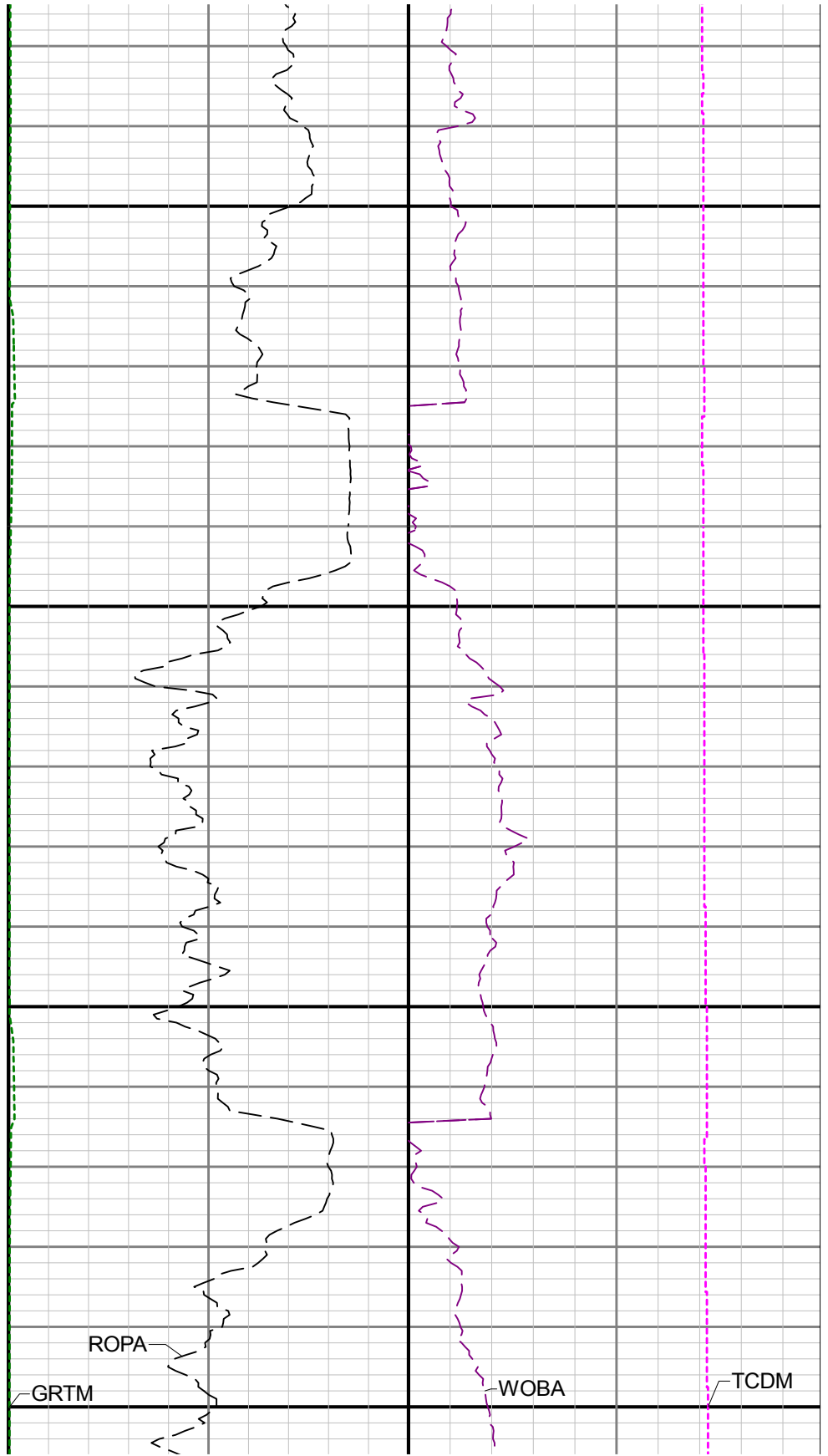
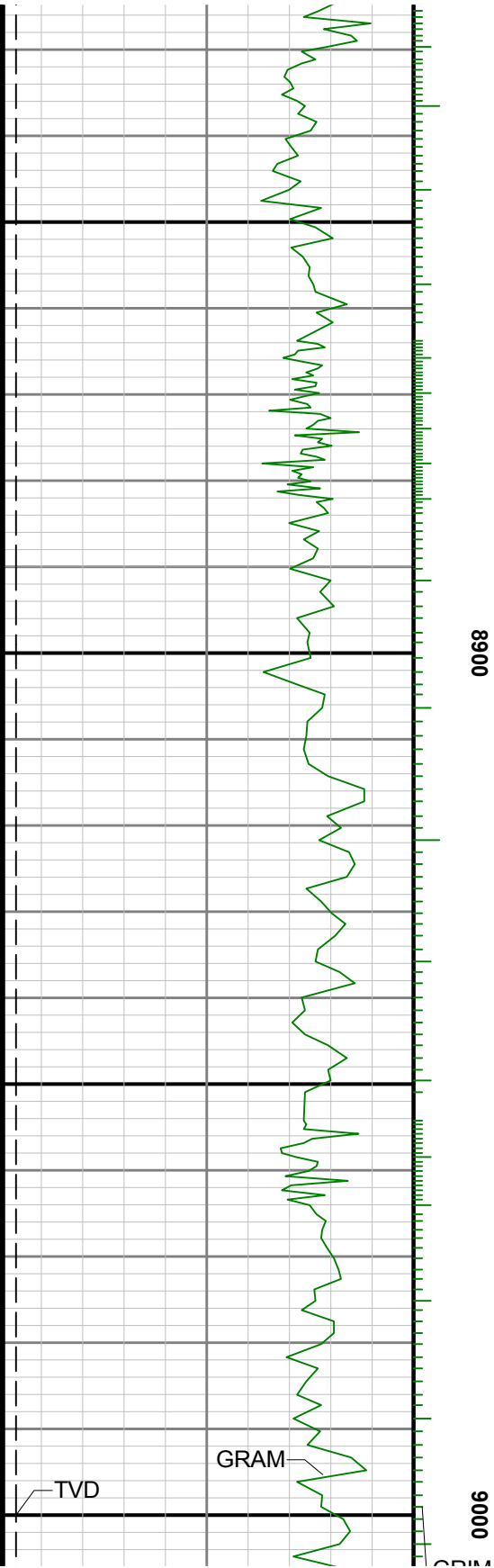


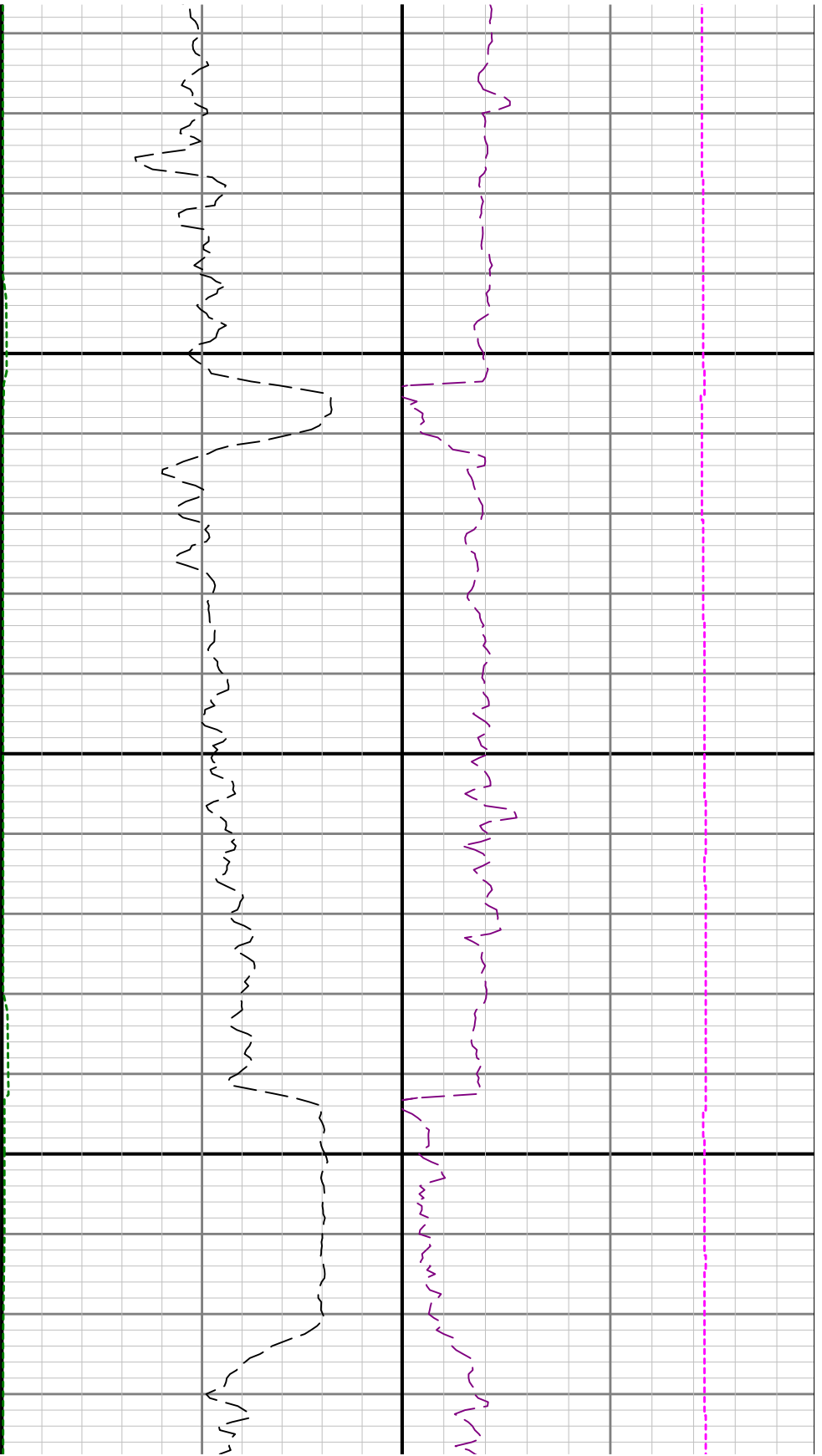


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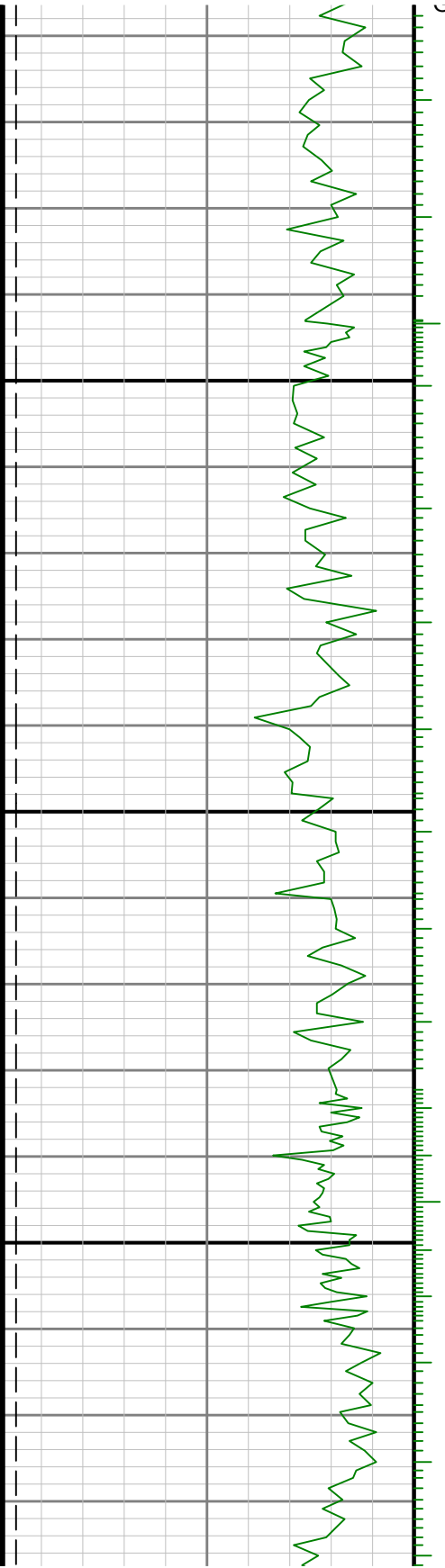
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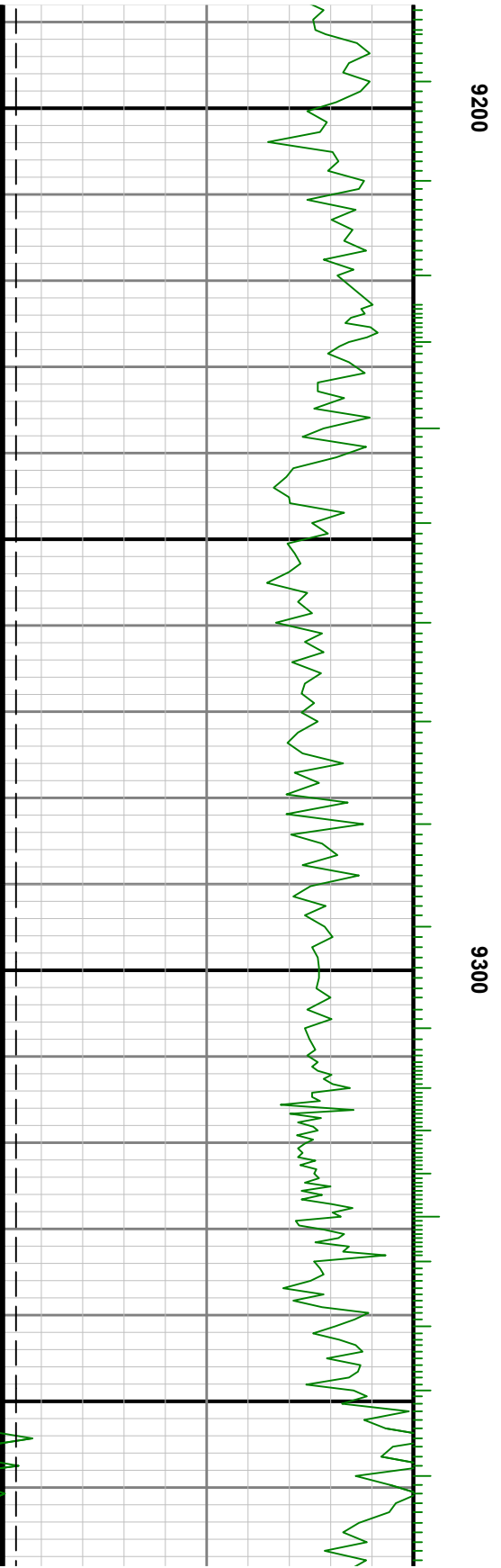
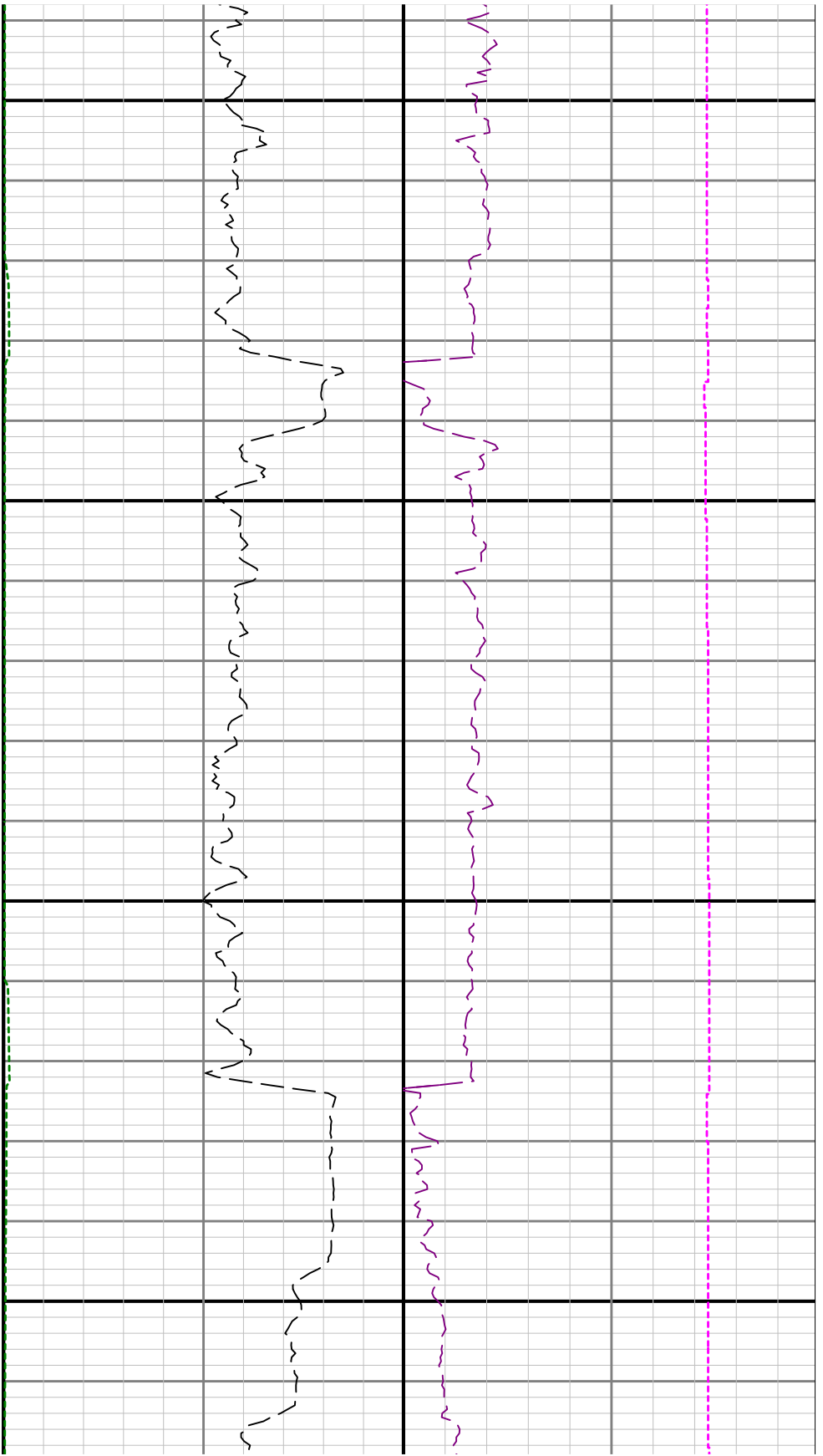


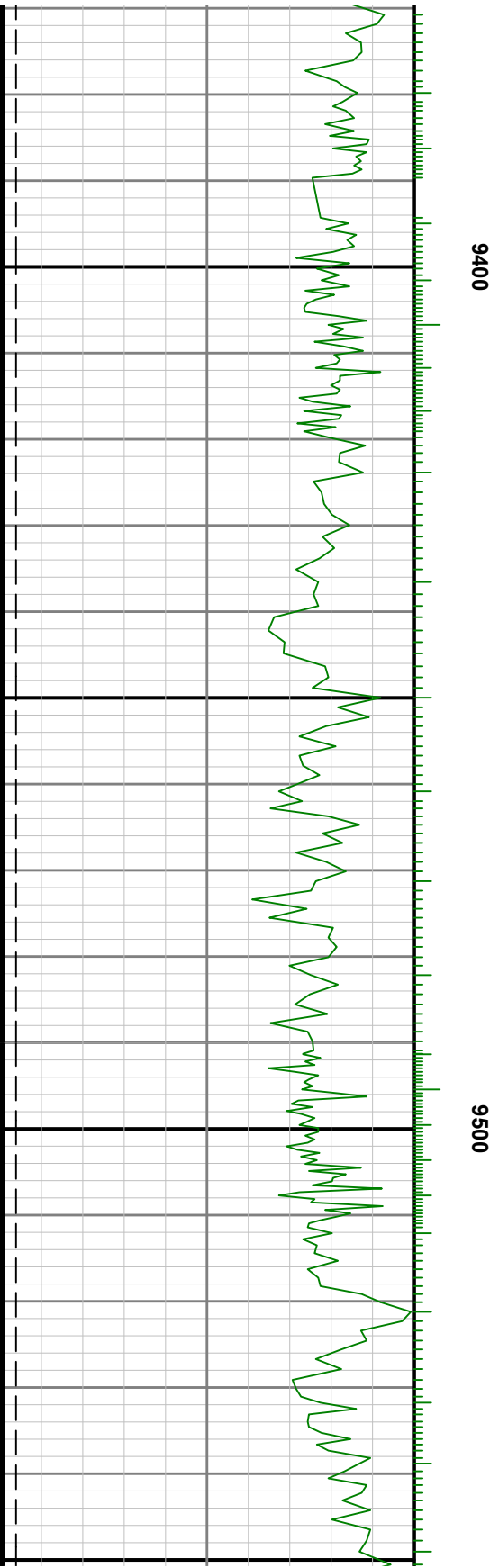
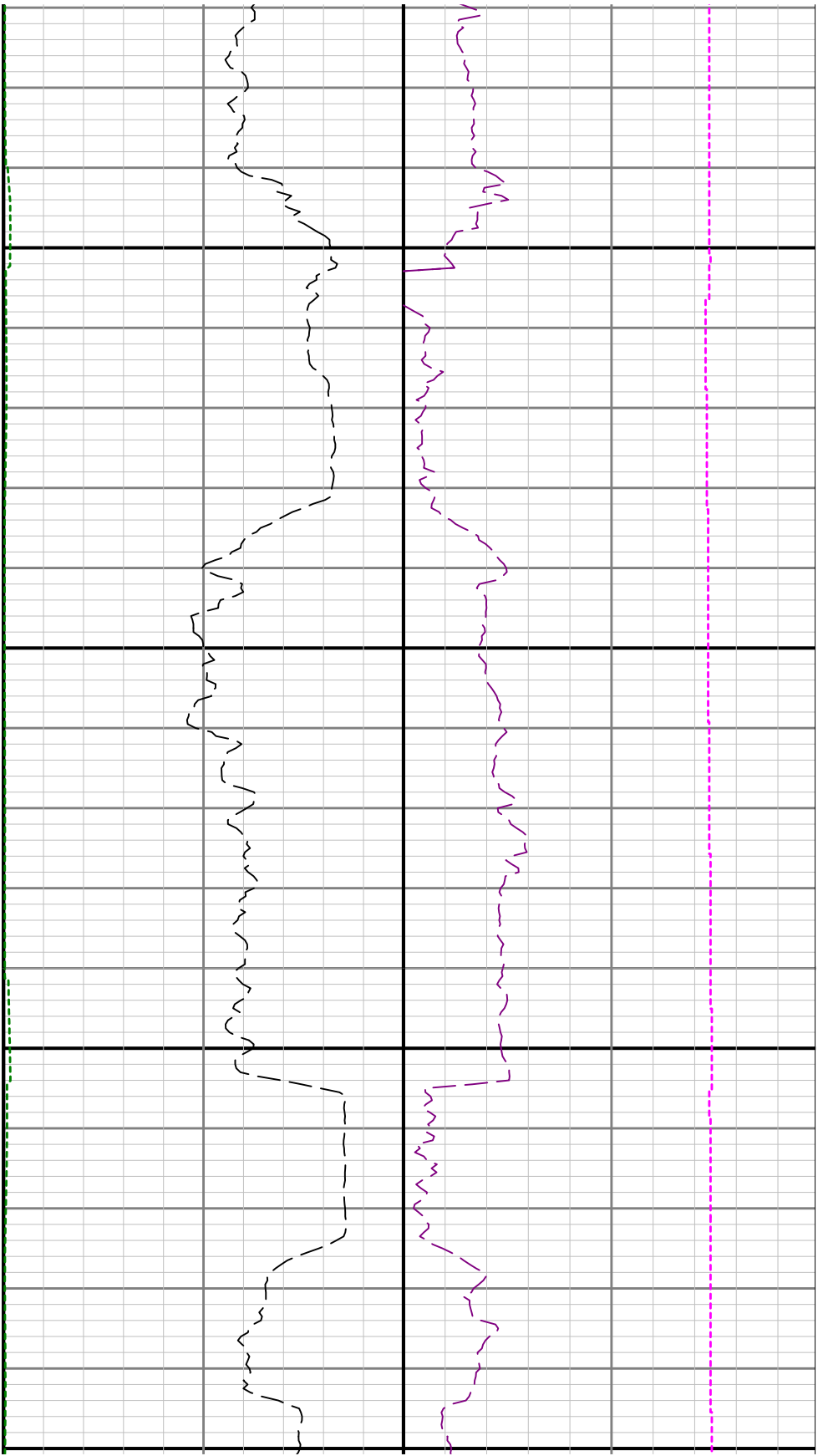


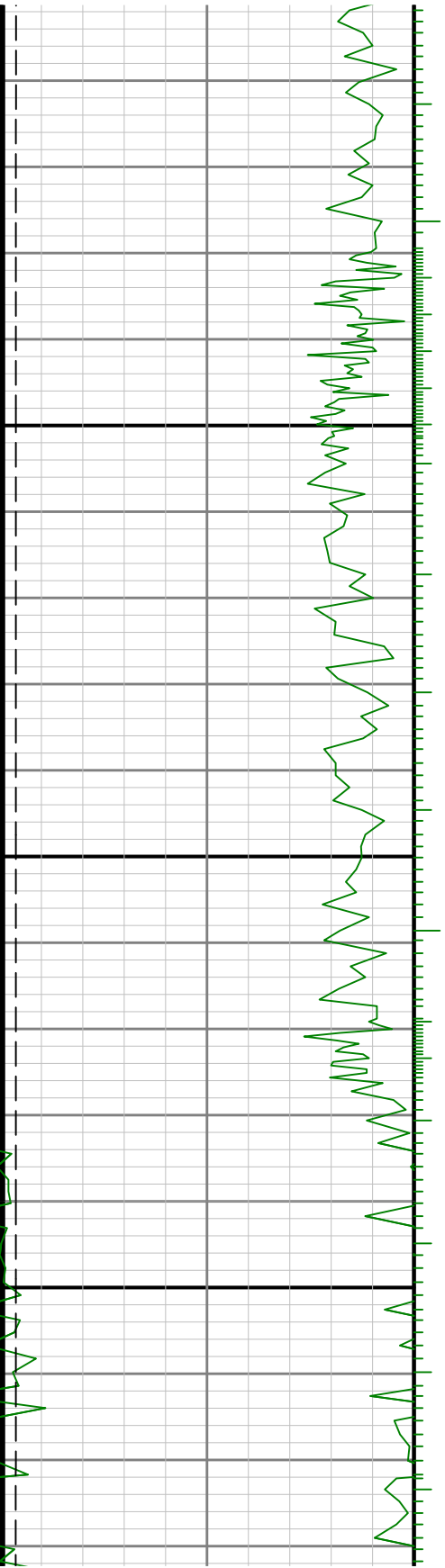


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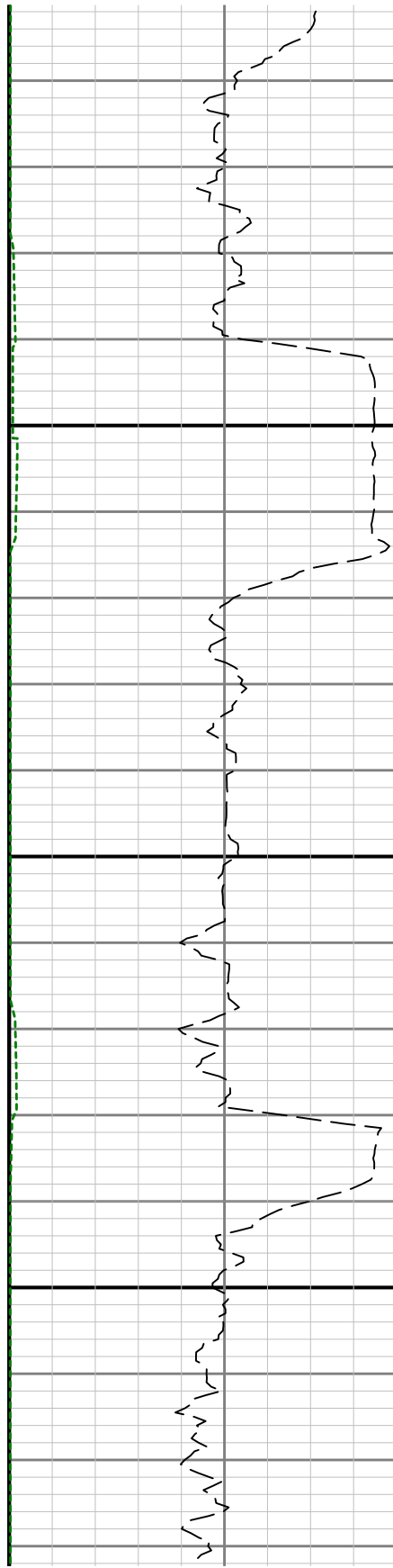




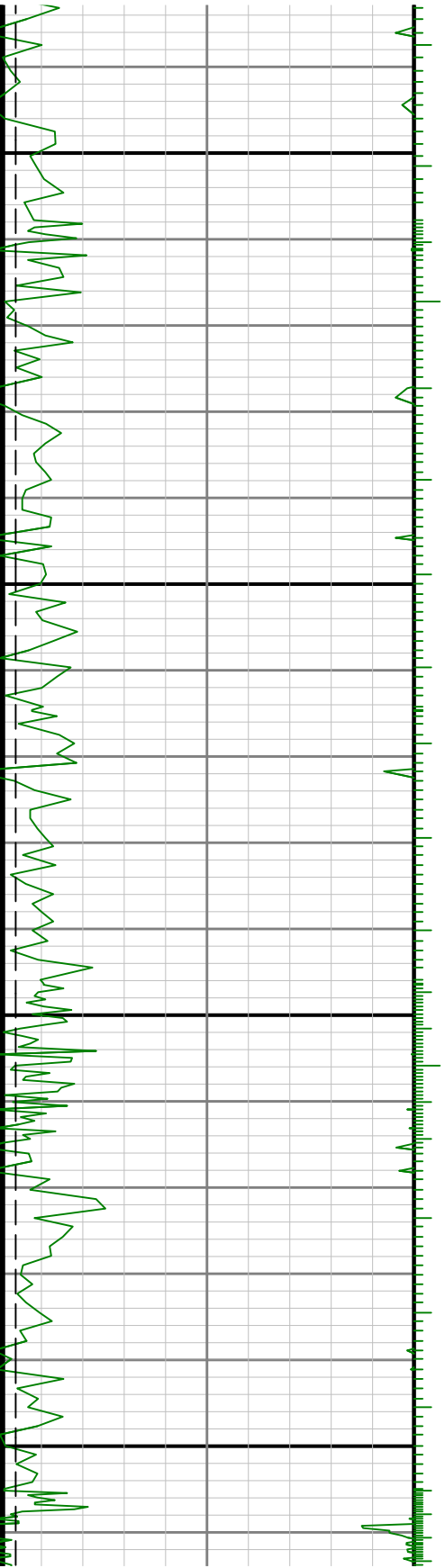


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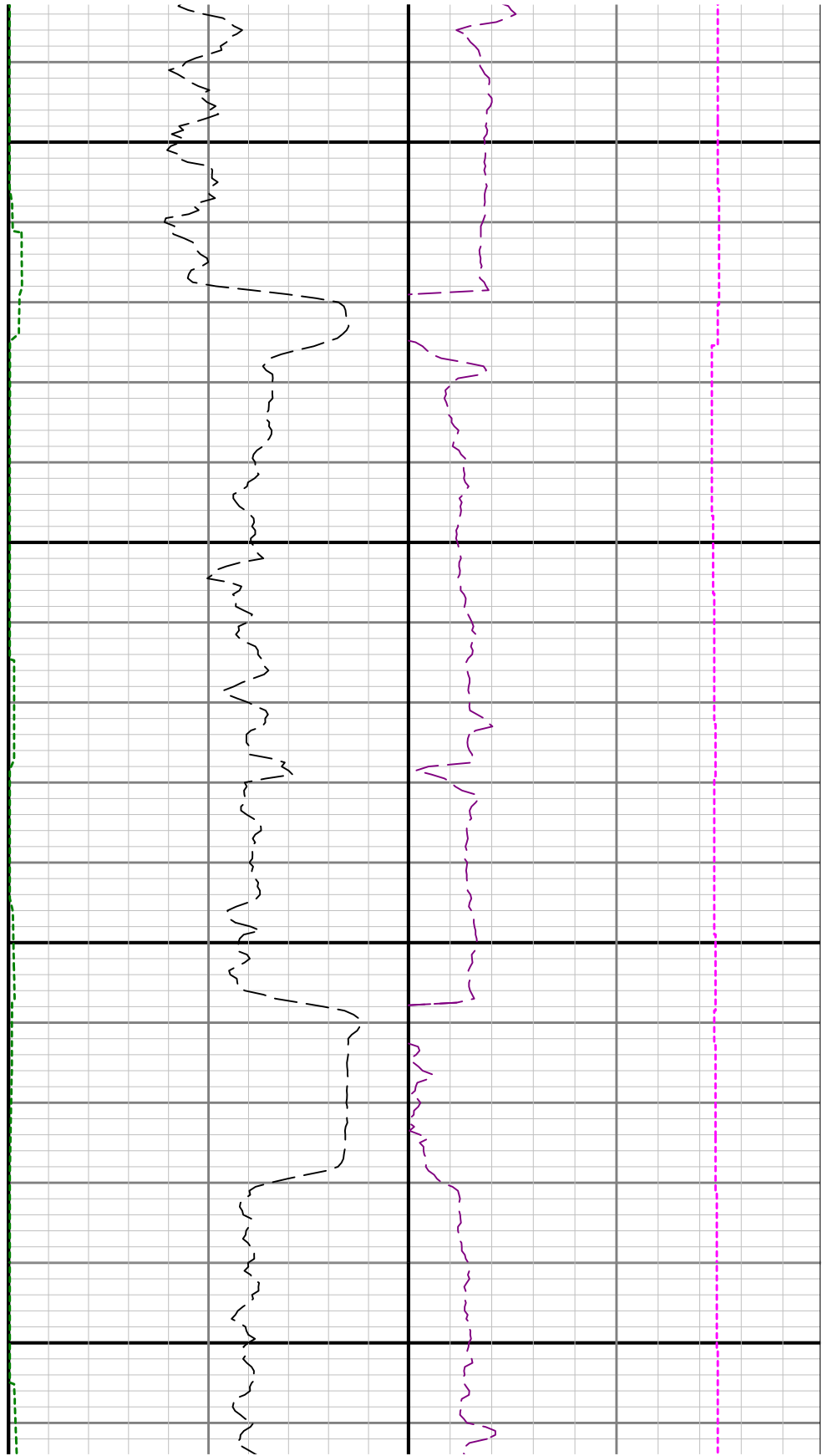


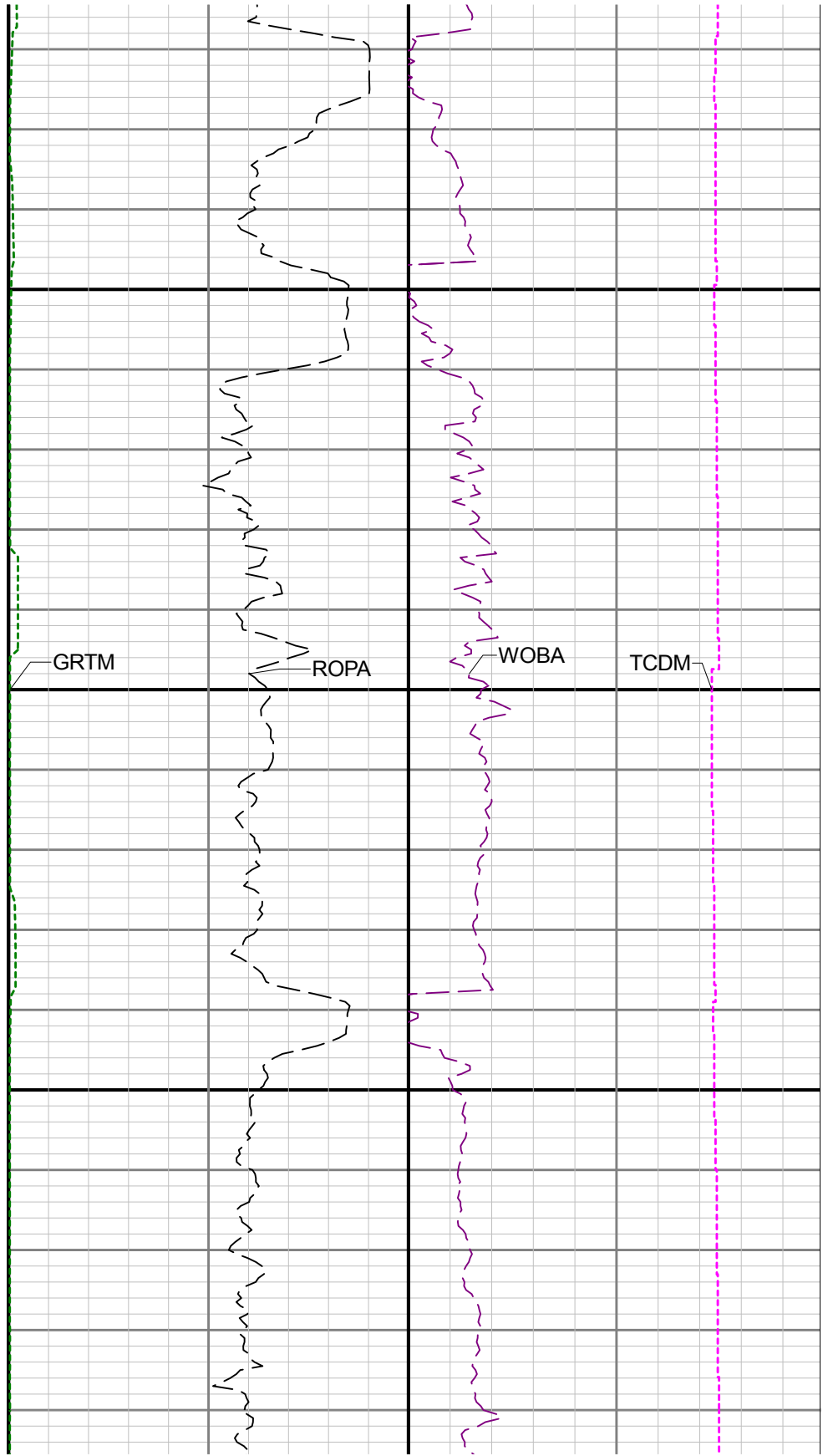
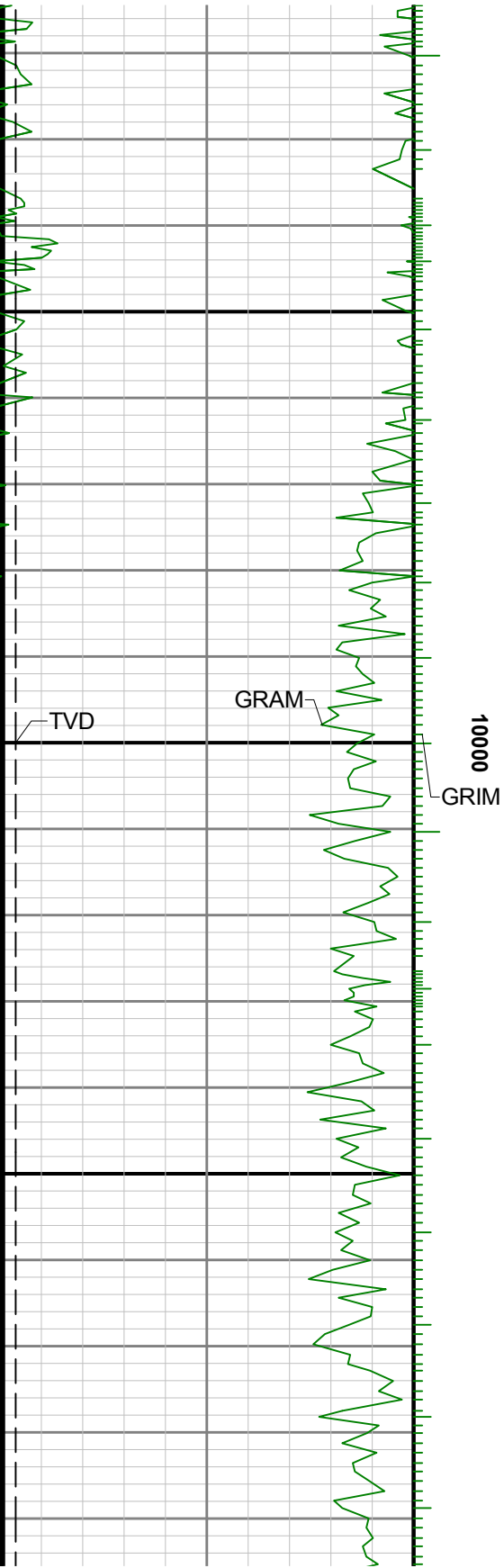


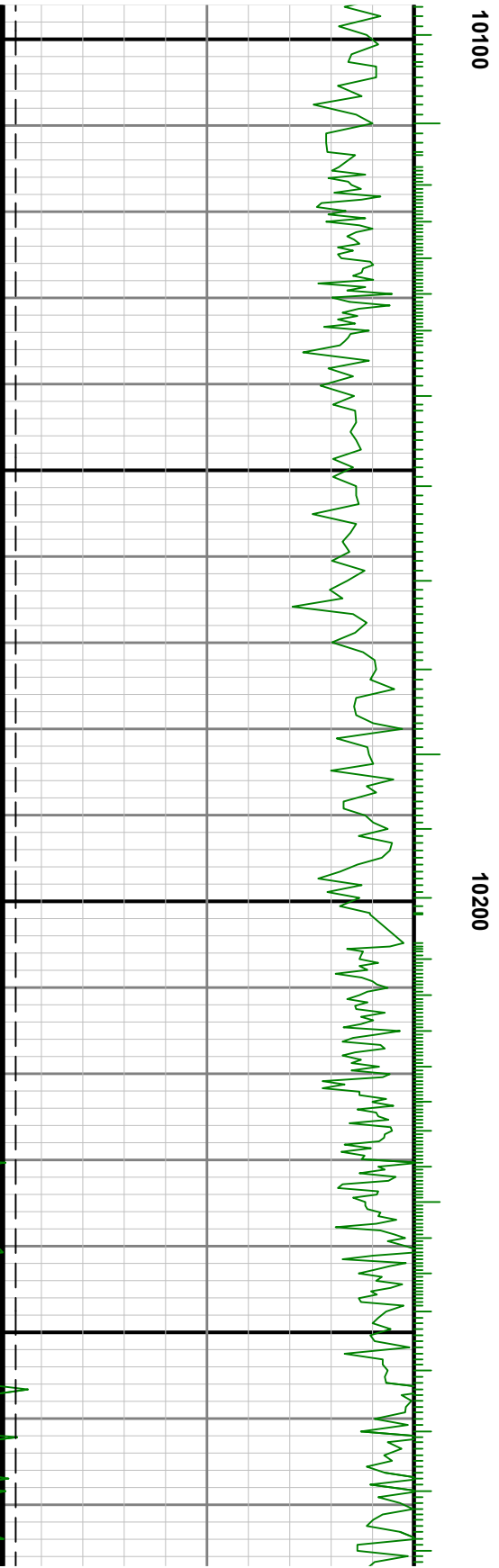
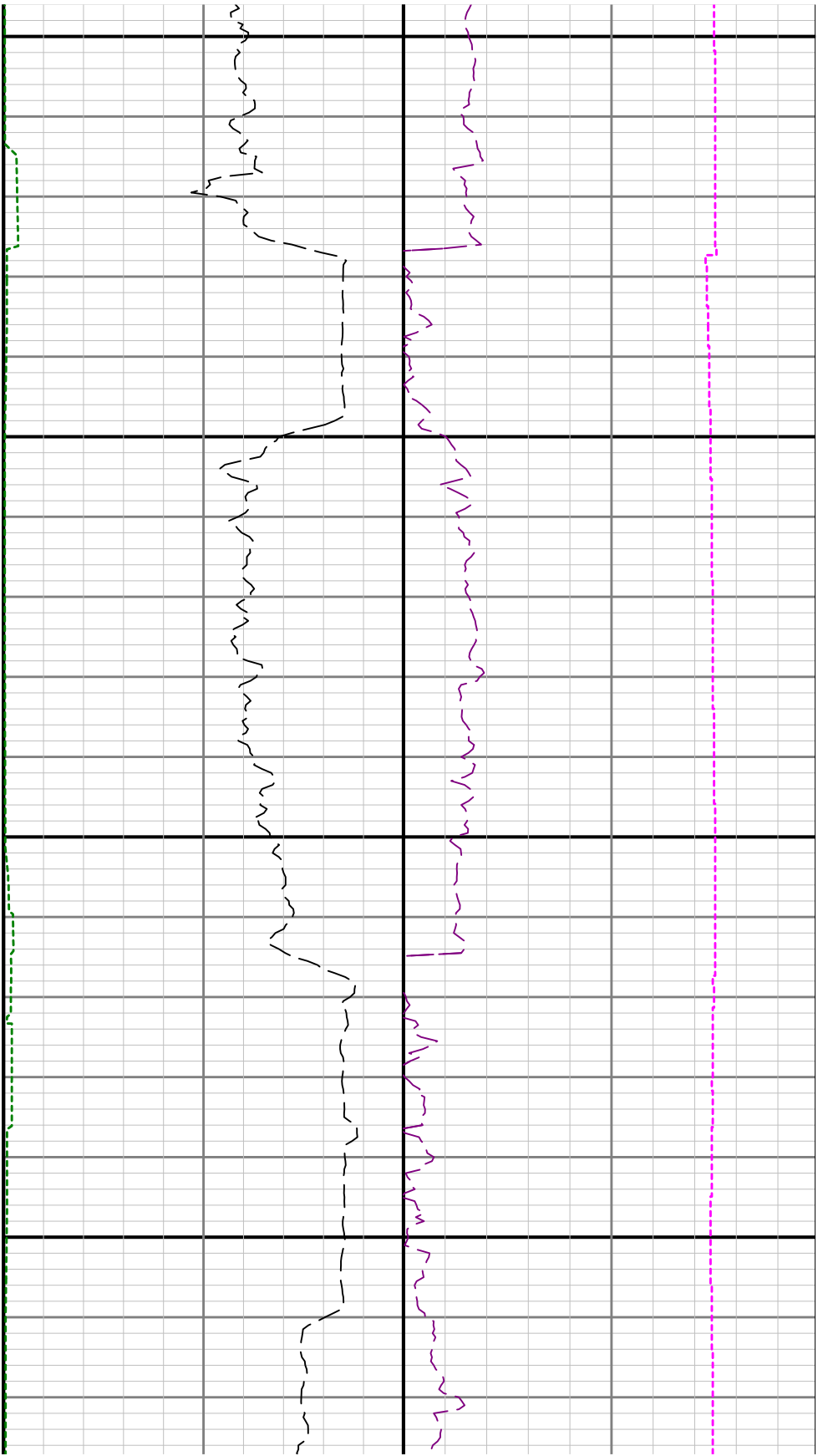


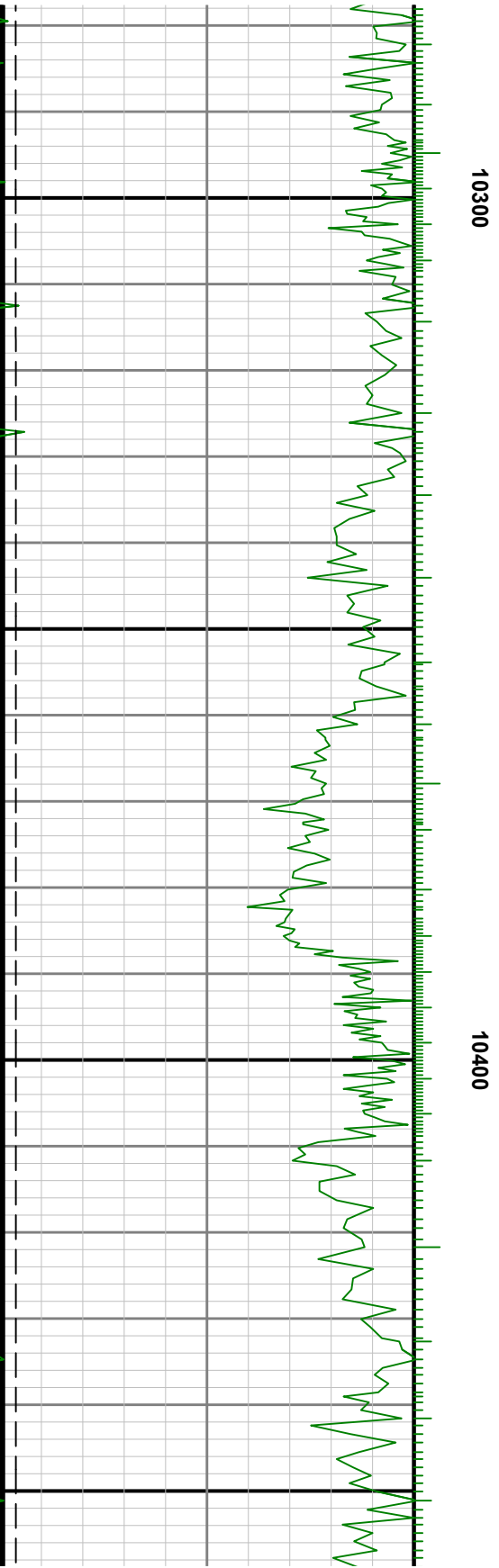
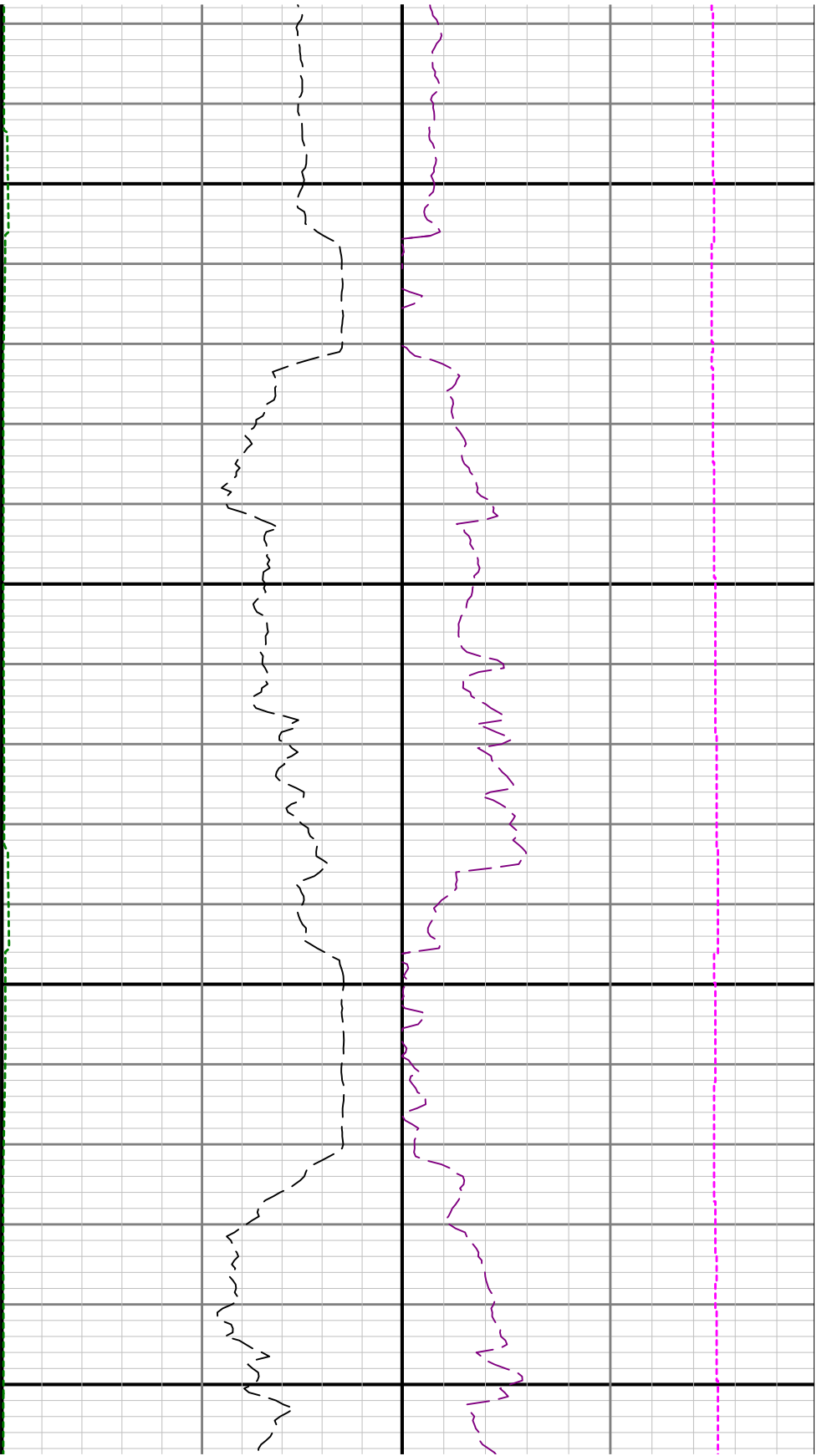
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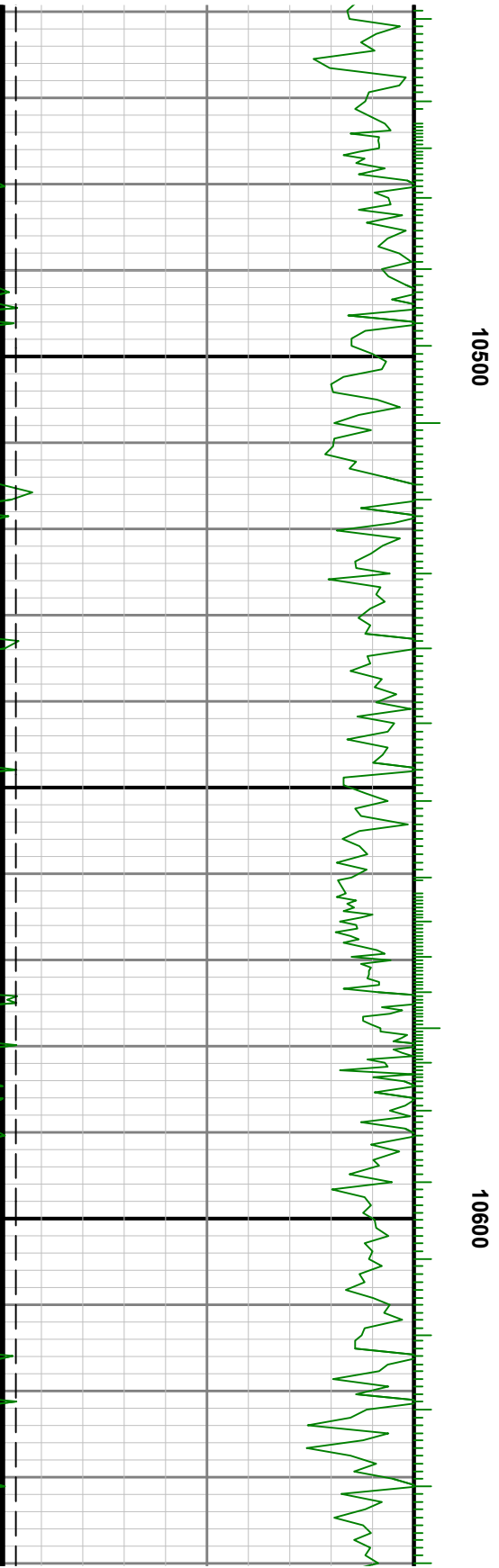
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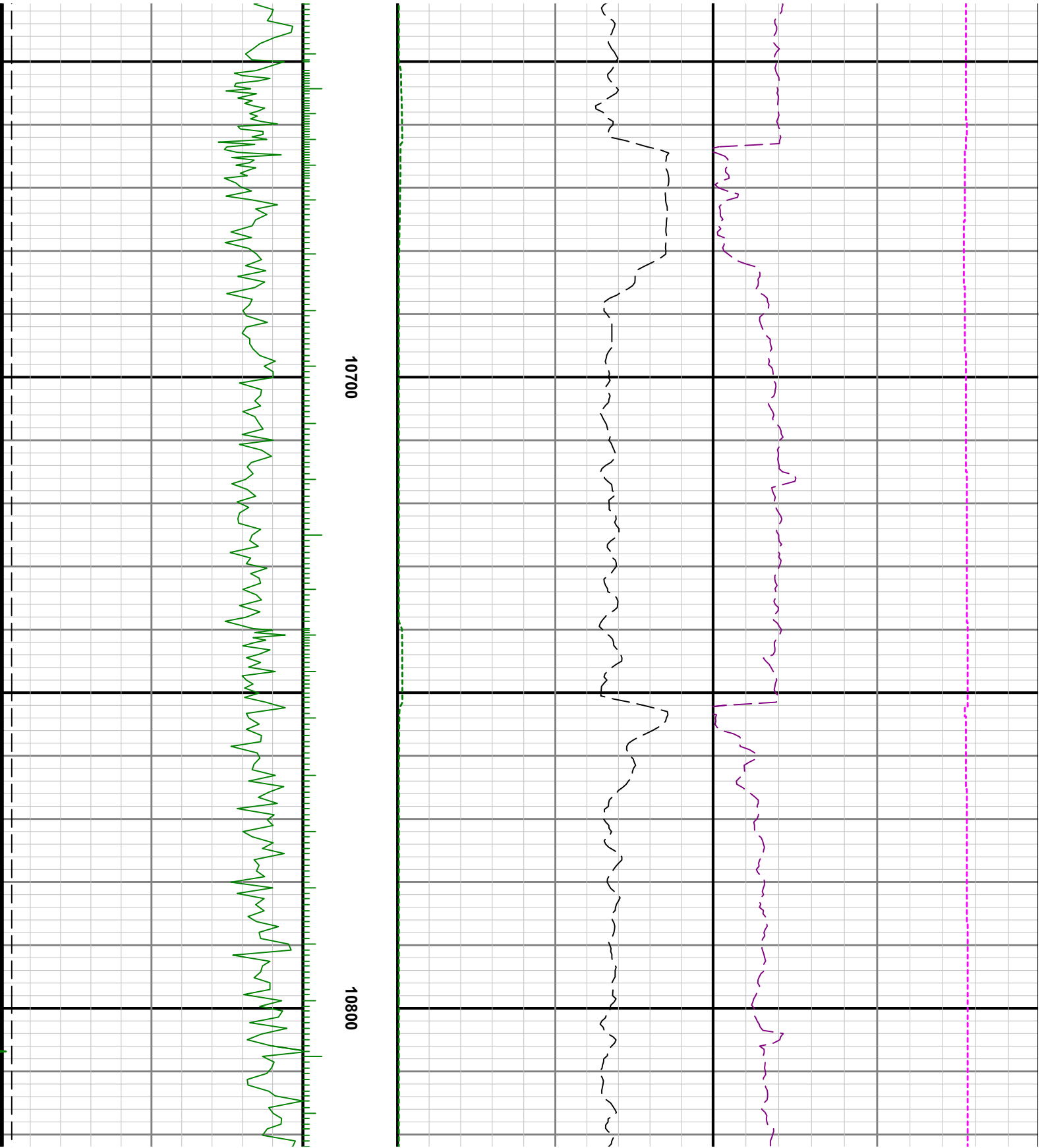


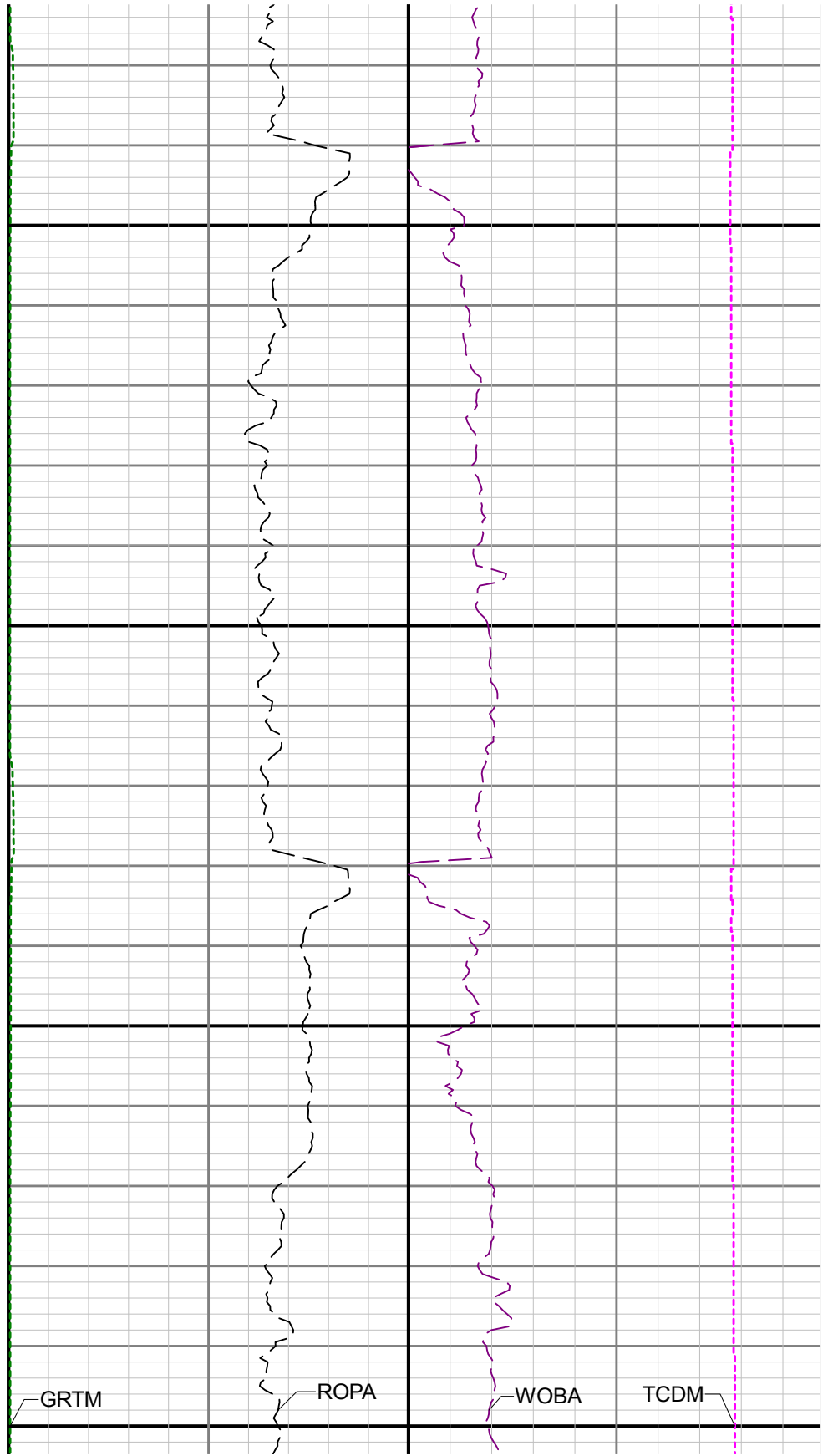
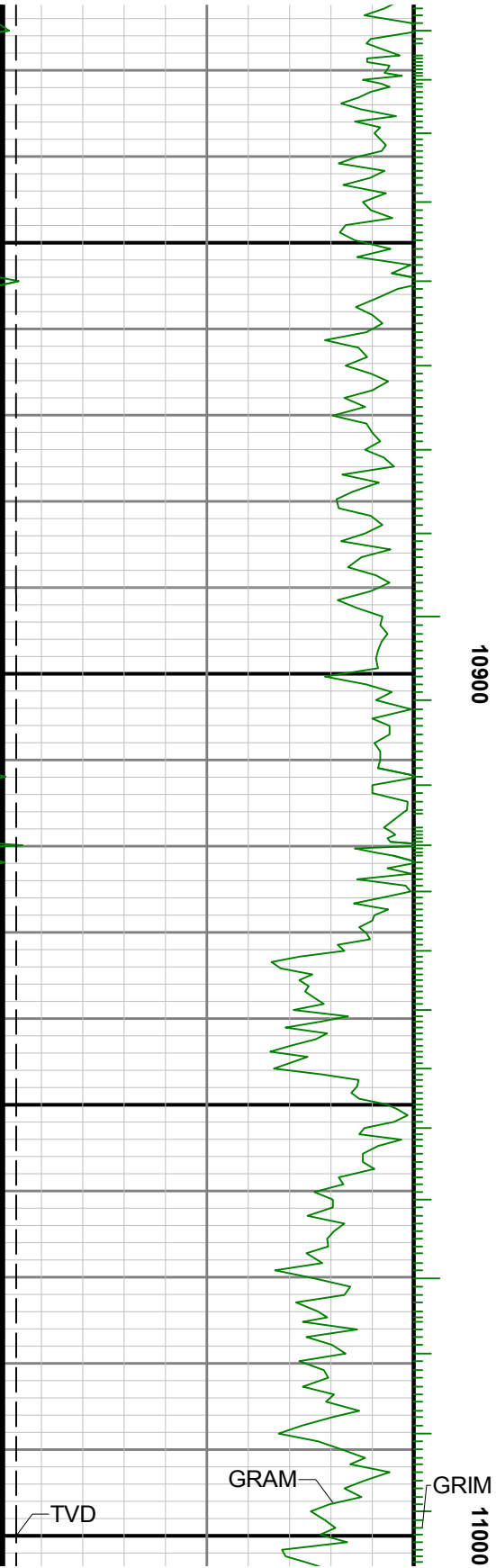


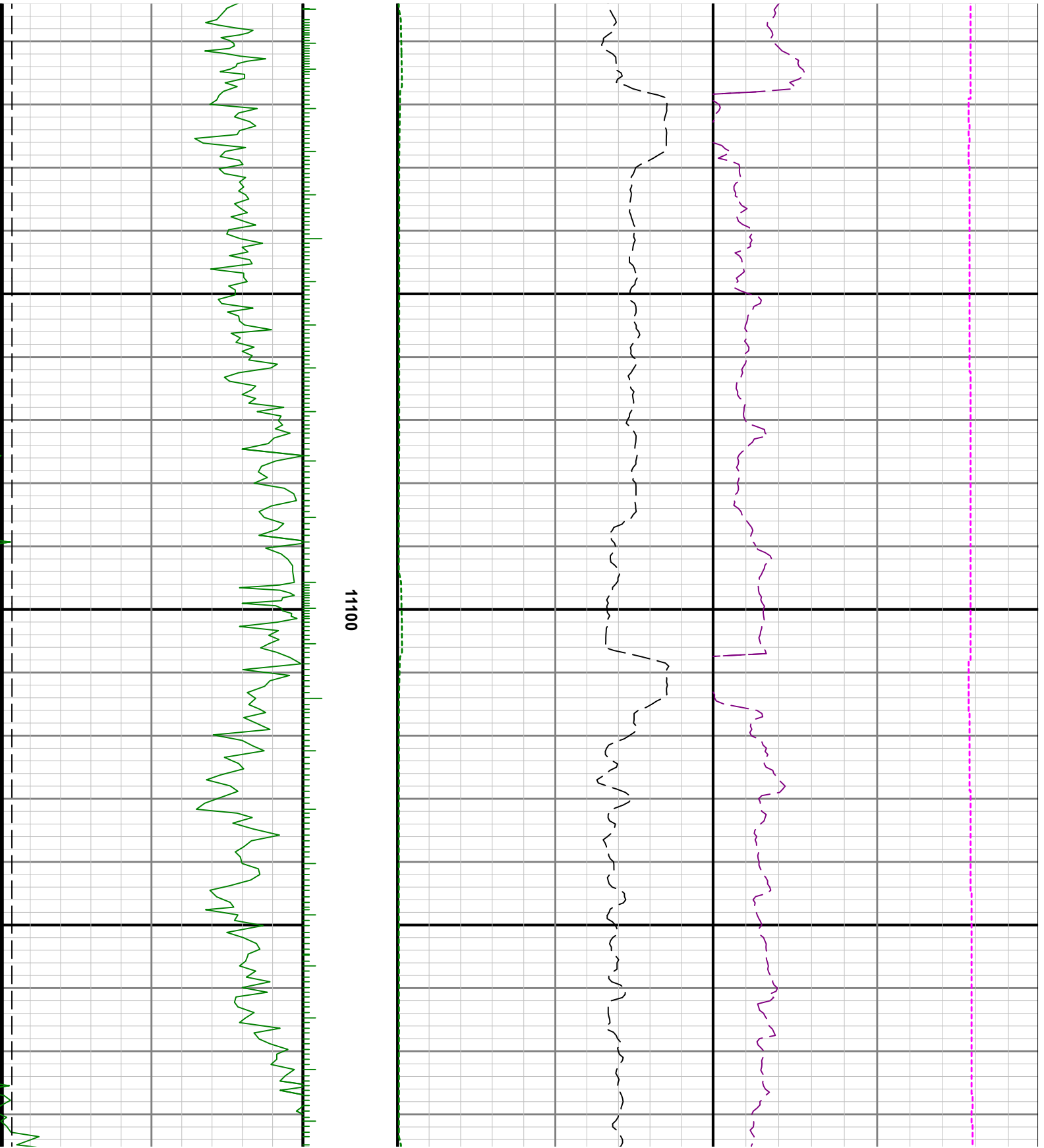




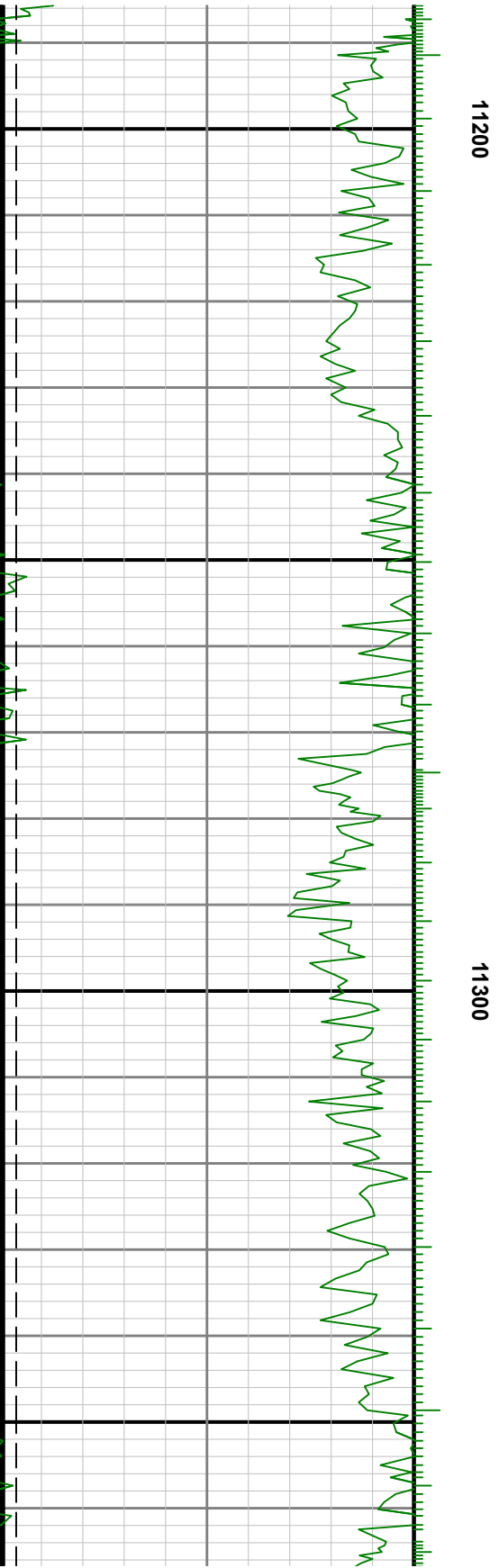


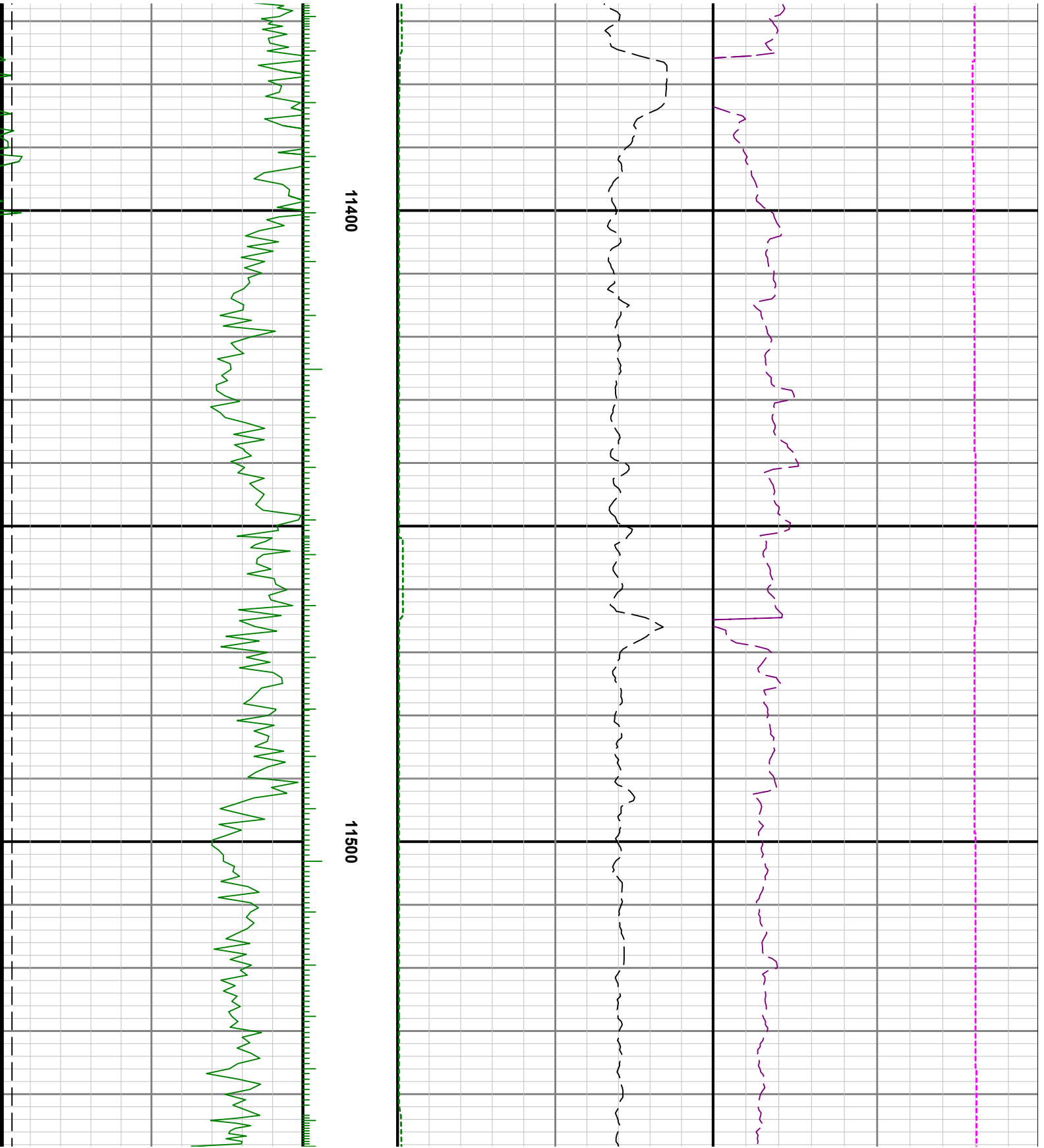


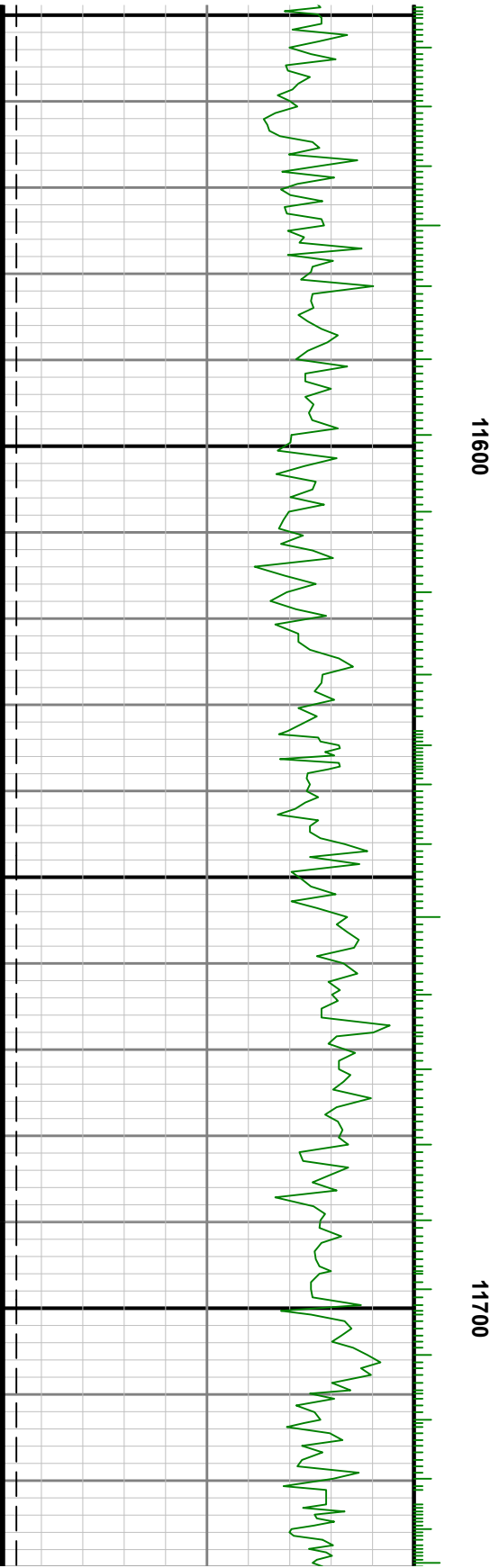
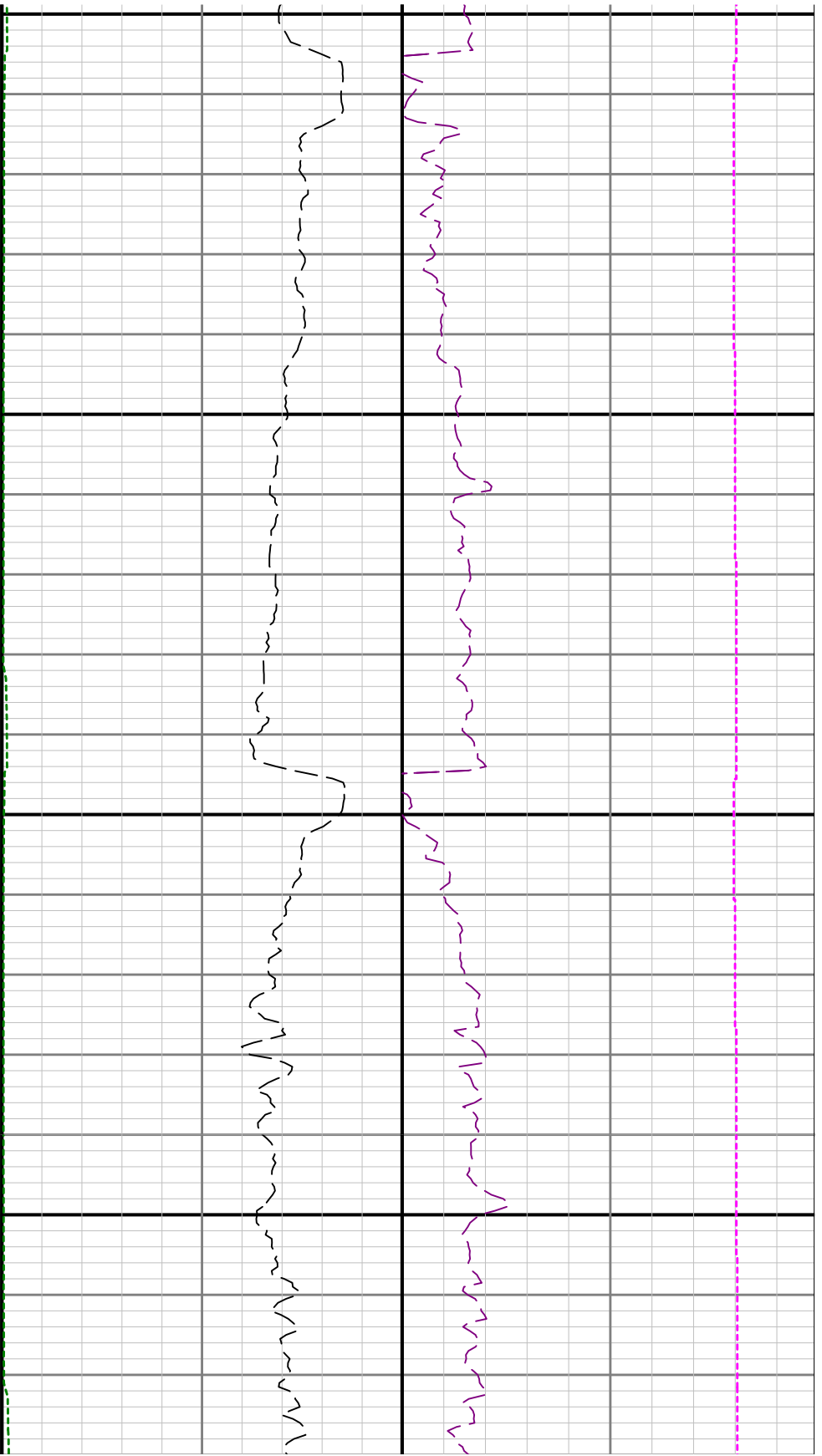


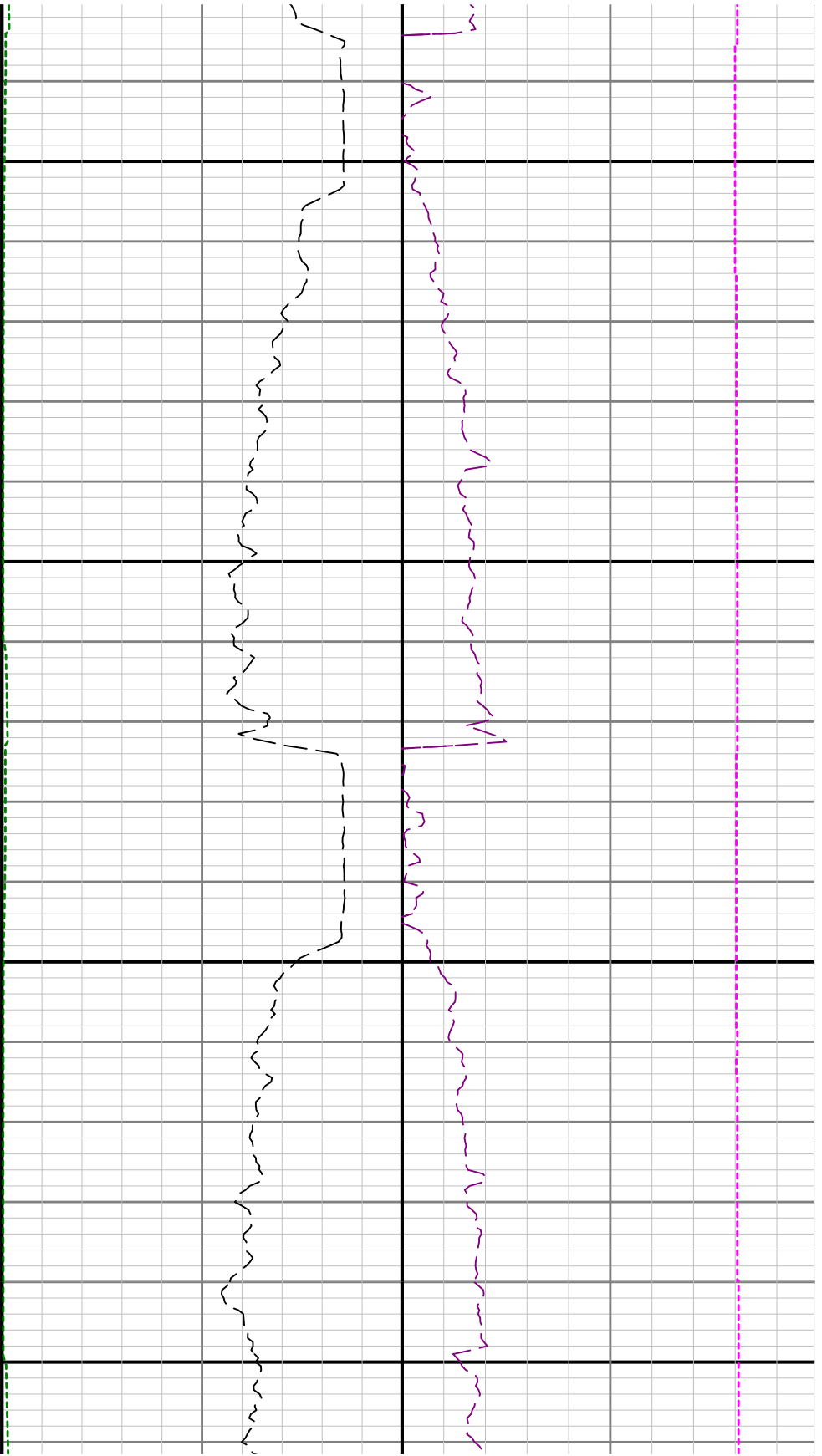






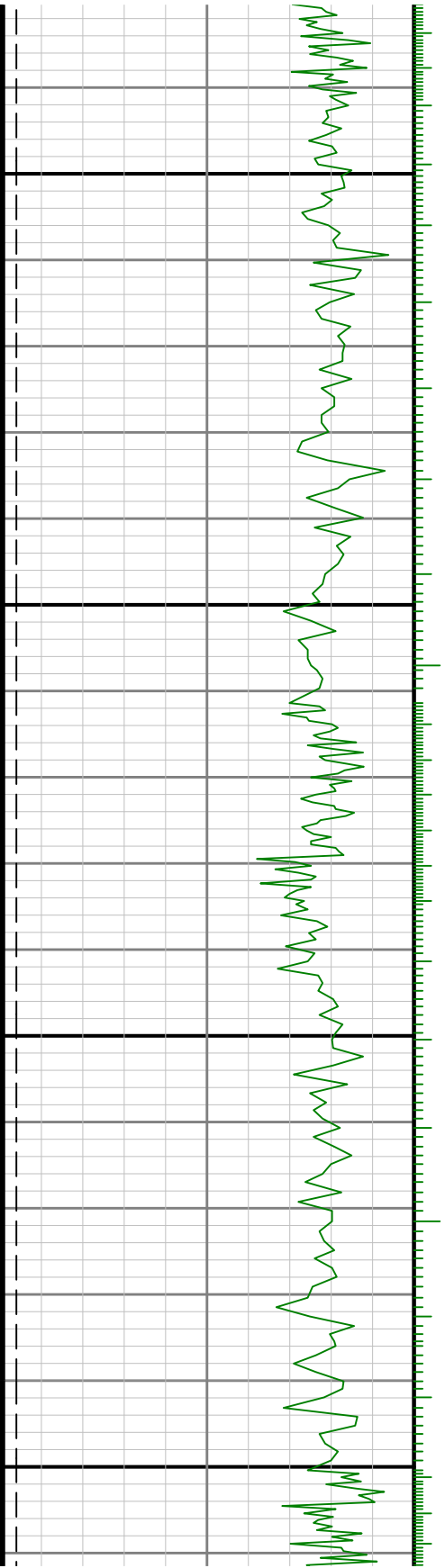


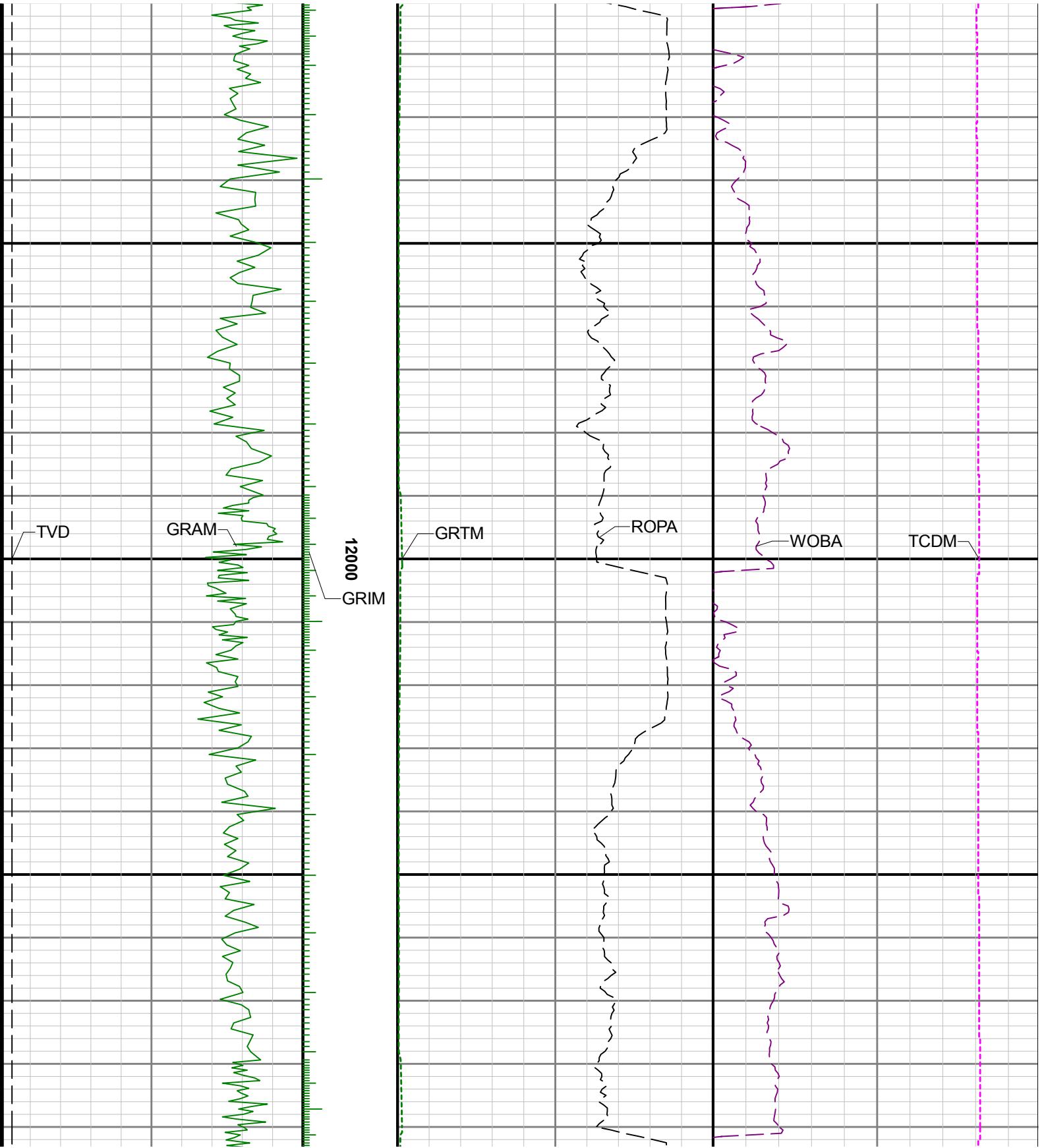


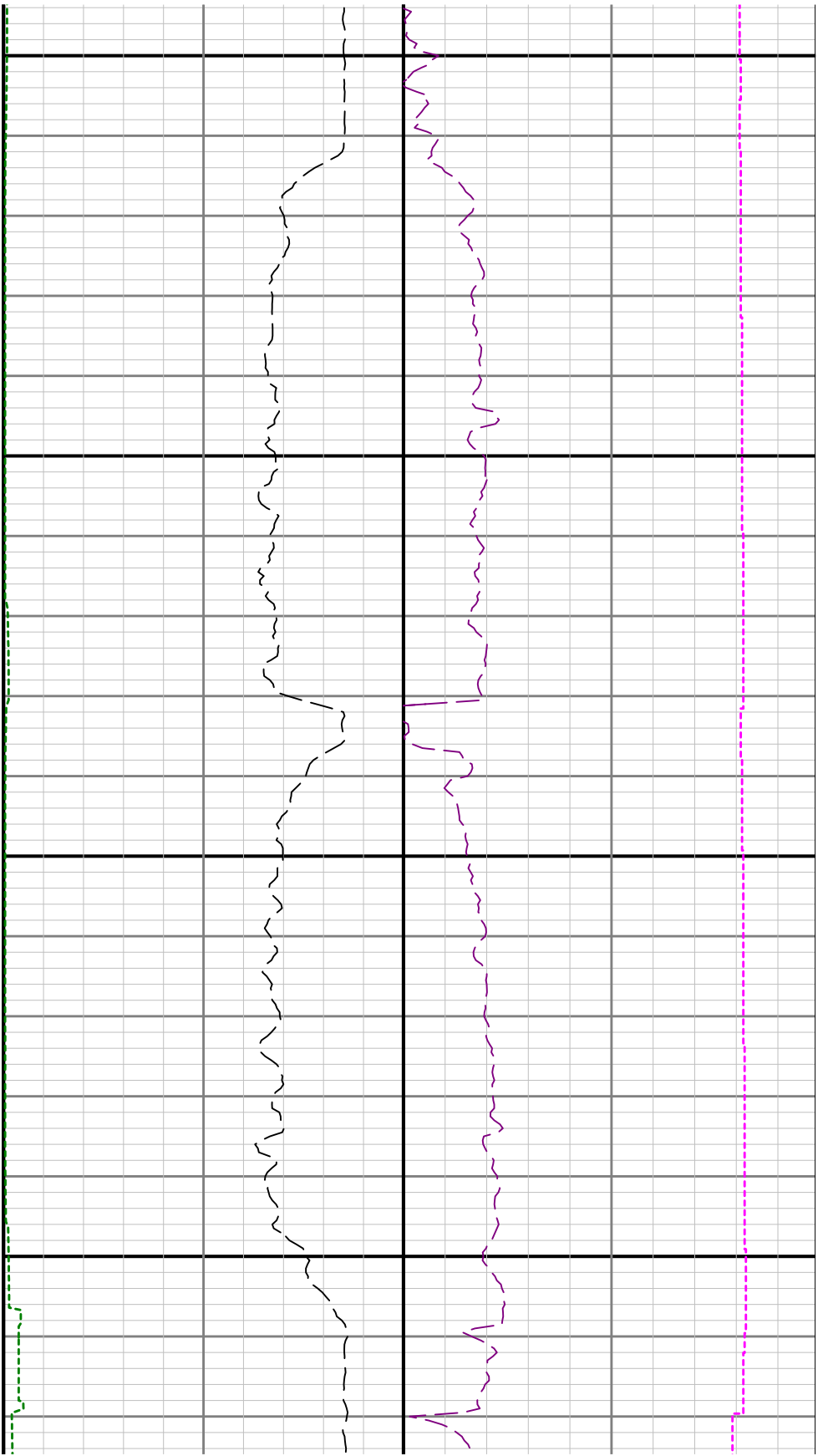


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