



Gamma Ray

Scale:

Company: Noble Energy

1:240 MD

Well: Centennial State G34-675

Depth Reference:

Field: Wattenberg

Driller's Depth

County: Weld Country: United States

State: Colorado

Status:

Final Print

Surface Location:

Latitude: 40° 41' 00" N  
Longitude: 105° 41' 00" W

Other Services:

API No: 05-123-44604-00

Job ID: 8929098

SEC: 35 TWN: 4N RGE: 6SW

Permanent Datum (P.D.): Ground Level

Log Measured From: Rig Floor

Elevation: 4784.00 ft  
Above P.D. 30.00 ft

Elev. KB: N/A  
Elev. DF: 4814.00 ft  
Elev. GL: 4784.00 ft

Dates

Interval Logged

Magnetic Field Reference

Date From: 2018-02-12 Top: (ft) 1957.00

Date To: 2018-02-14 Bottom: (ft) 12297.00

Spud Date: 2018-02-11

Azi Reference North: Grid Dip Angle: (deg) 66.74

Total Magnetic Field Strength: (mT) 52171

Mag to Reference North Correction: (deg) 7.55 E

Borehole Record

Casing Record

Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
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13.500	30.00	1957.00	9.625	36.00		1947.00
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8.500	1957.00	12297.00				
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Mud Record

Deviation Record

Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc   Az (Start)	Inc   Az (End)
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Oil Based Mud	1957.00	12297.00	8.500	10340.00	2.07   259.64	89.63   265.73
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Acquisition System

Software Version

Other

Baker Hughes Cadence

RT4.1  
4.1.7763.3

Rig:

H&P 517

PlotStudio

Contractor: Helmerich & Payne Drilling Co

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	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	8.500	PDC	3.00	Rotary Steerable	1957.00	12284.00	1957.00	12297.00	2018-02-12 10:21	2018-02-14 05:29	40.38

Crew

Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite	Name		Arrive Wellsite	Depart Wellsite
Adam Schlenz		2018-02-11	2018-02-14								

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+ (%)
2018-02-12 03:00	1	1957.00	Oil Based Mud	9.1	9	N/A	32.0	77/23	Active Pit	18000	0.00
2018-02-12 13:45	1	2945.00	Oil Based Mud	9.0	9	N/A	22.0	76.5/23.5	Active Pit	22000	0.00
2018-02-13 02:45	1	6448.00	Oil Based Mud	9.4	12	N/A	14.0	72/28	Active Pit	23000	0.00
2018-02-13 13:45	1	7673.00	Oil Based Mud	9.5	13	N/A	16.0	72/28	Active Pit	21000	0.00
2018-02-14 02:45	1	11587.00	Oil Based Mud	9.6	12	N/A	18.0	73.5/26.5	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	ATC_SU	13993180	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_SU	13993180	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_MWD	14179564	Gamma (single)	2.75	12.90	7.000	3.250
1	ATC_MWD	14179564	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 the lack of control by Baker Hughes, depth calibrations and measurements could not be independently verified.
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2 Baker Hughes LWD run 1 utilized a 6.75 inch NaviGamma service (Directional and Gamma Ray) behind a 8.5 inch bit and rotary steerable assembly from 1957 to 12297 feet MD (1957 to 6934 feet TVD).

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Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	12297.00	8.500	1	The interval from 12284 to 12297 feet MD (6934 feet TVD) was not logged after being drilled 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	Downhole Temperature	degF



Company

Well

Interval

Created

Noble Energy

Centennial State G34-675

Date From: 2018-02-12 10:21:21

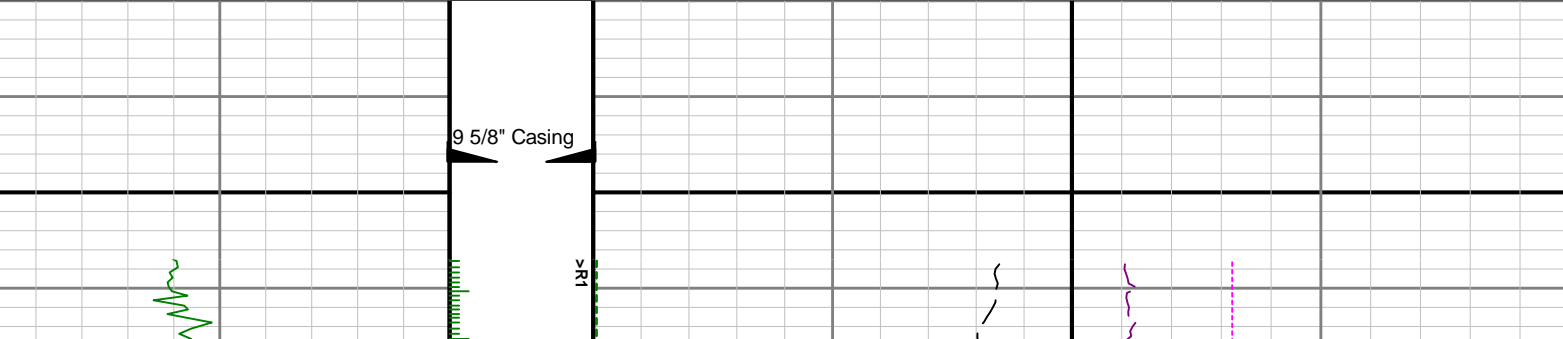
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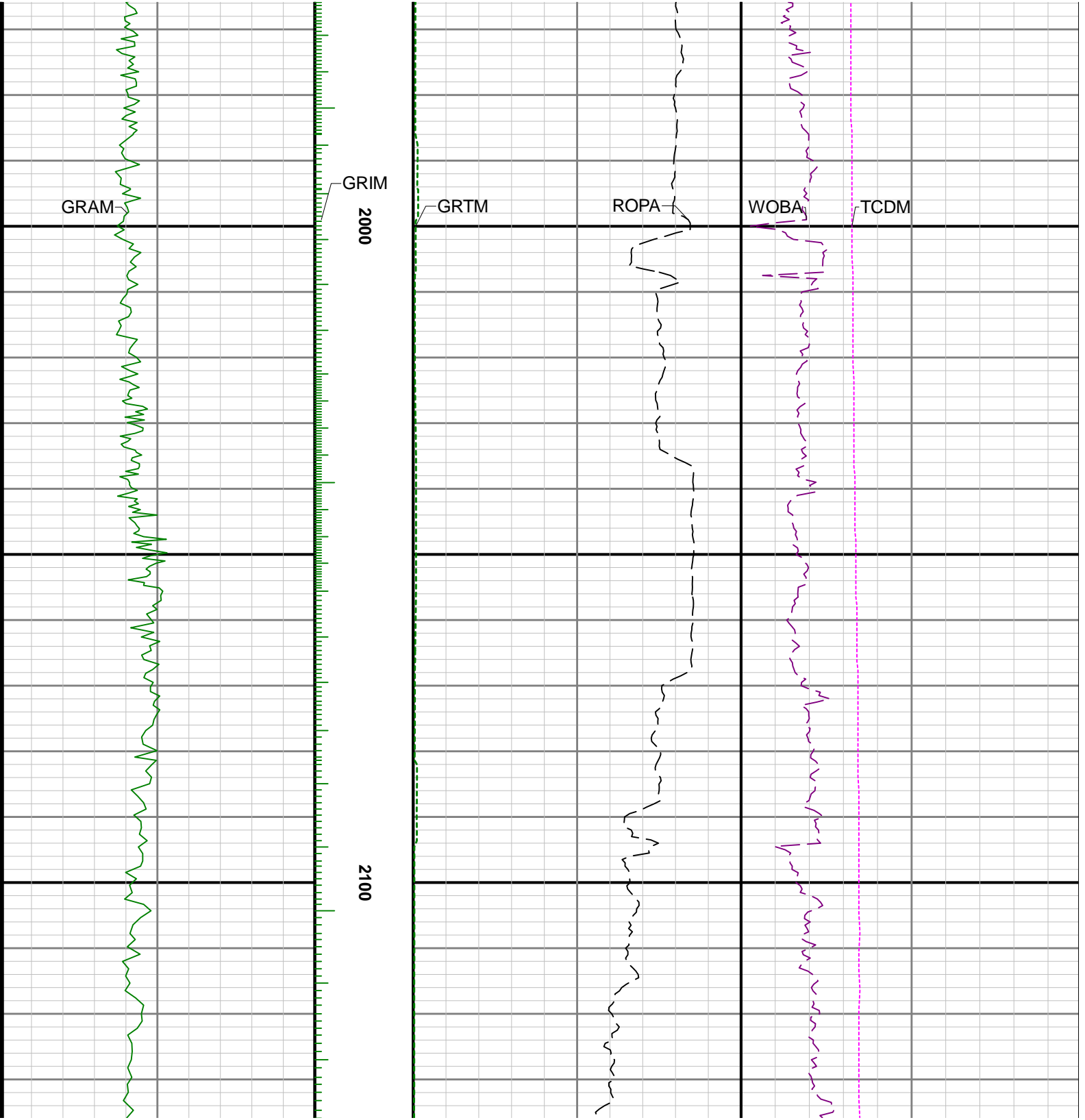
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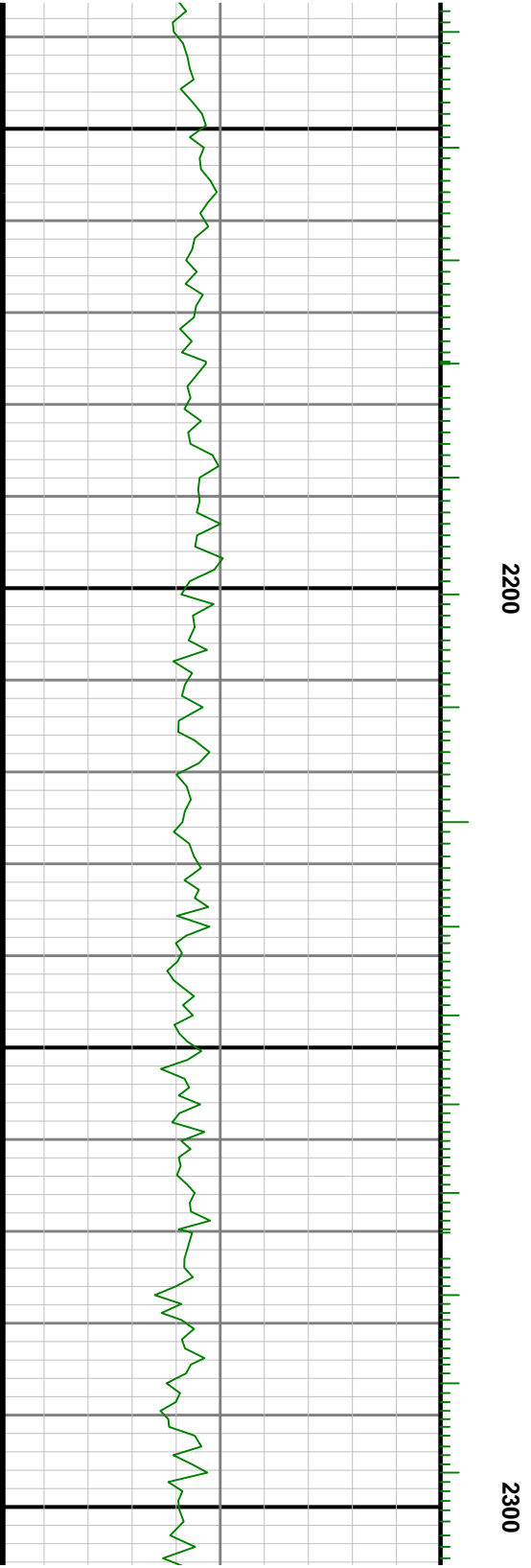
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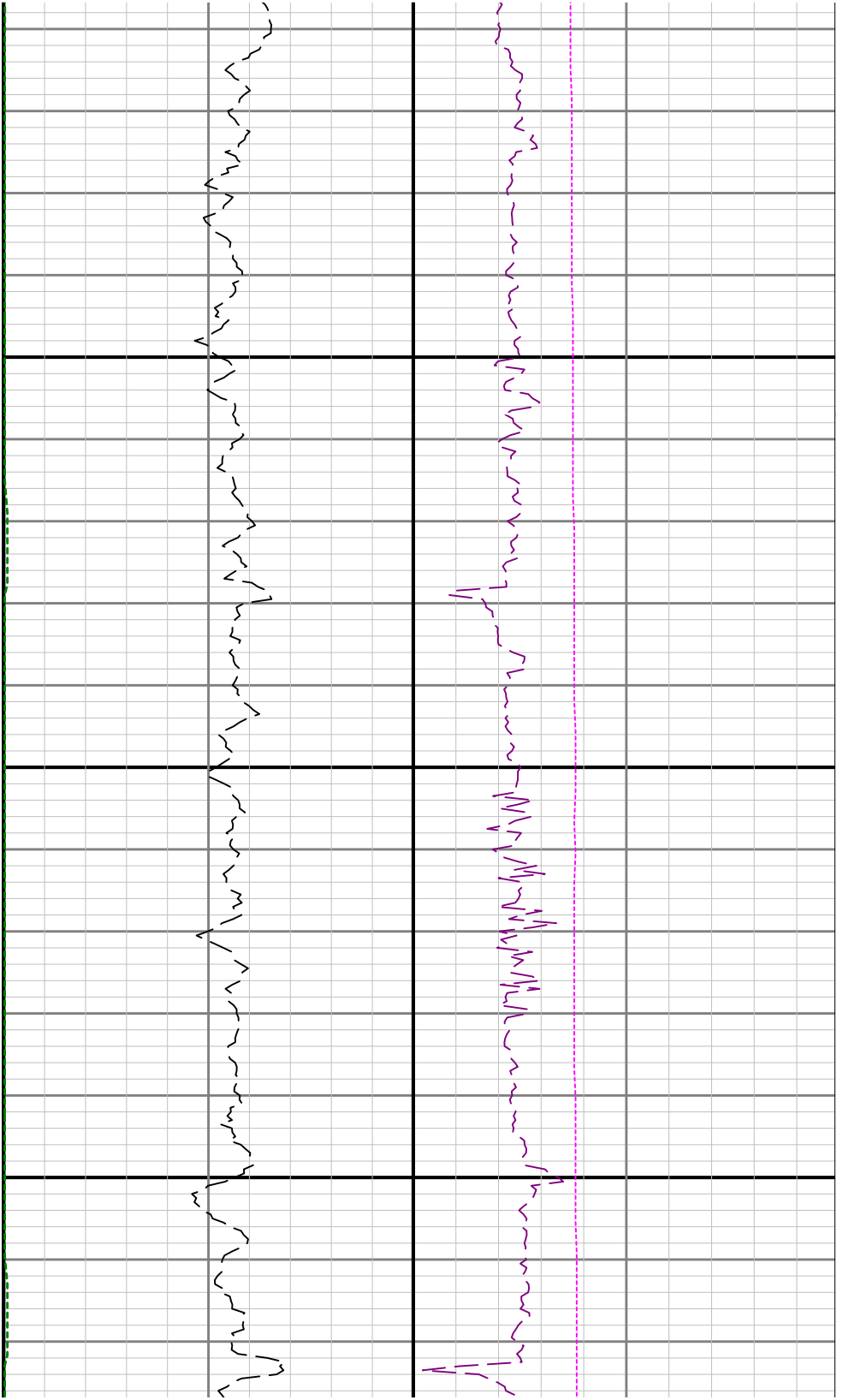
Bottom: 12297.00

Gamma Ray - Apparent 0.5 ft Average GRAM	MD 1:240 feet	Depth Averaged ROP 3 ft Average ROPA	Weight On Bit, Average 1 ft Average WOBA
0 300		1000 0	0 50
API		ft/h	klb
True Vertical Depth TVD		Gamma Time Since Drilled GRTM	Downhole Temperature TCDM
7200 6200		0 600	0 300
ft		min	degF

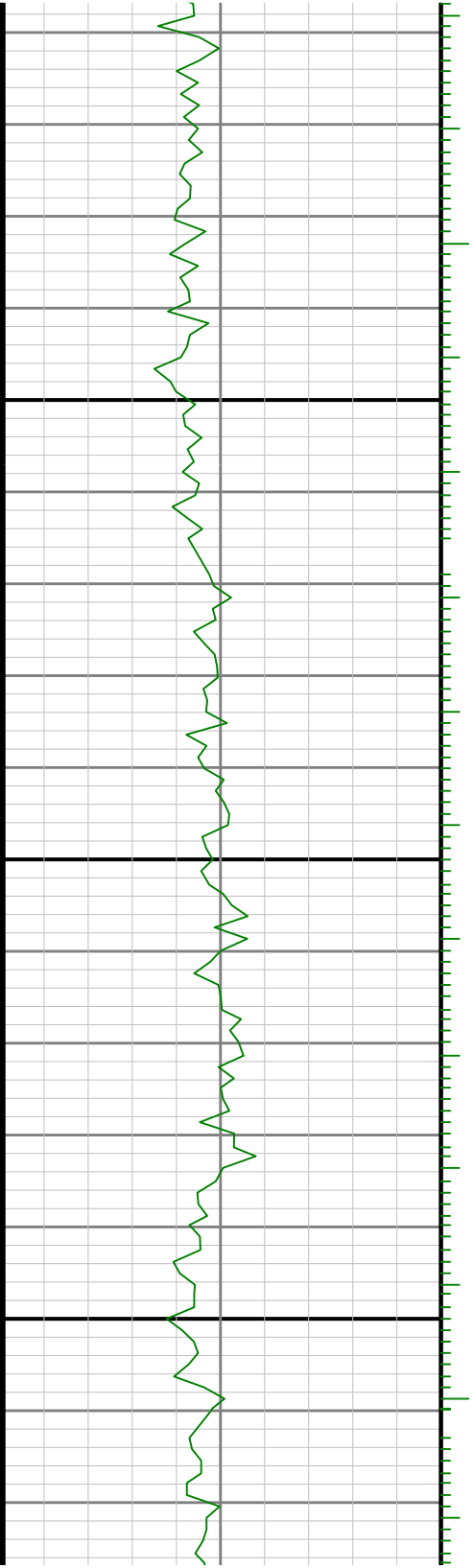


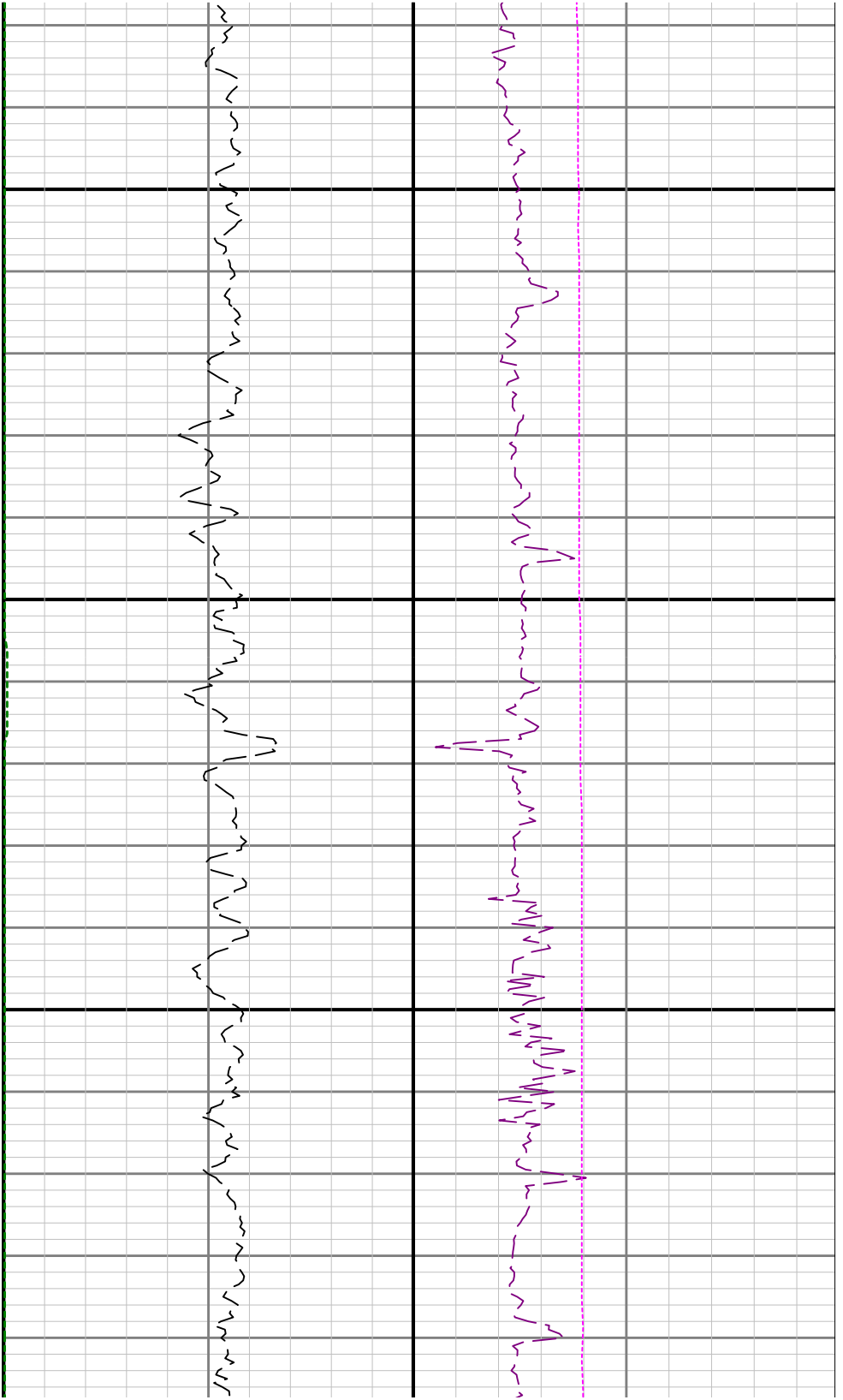






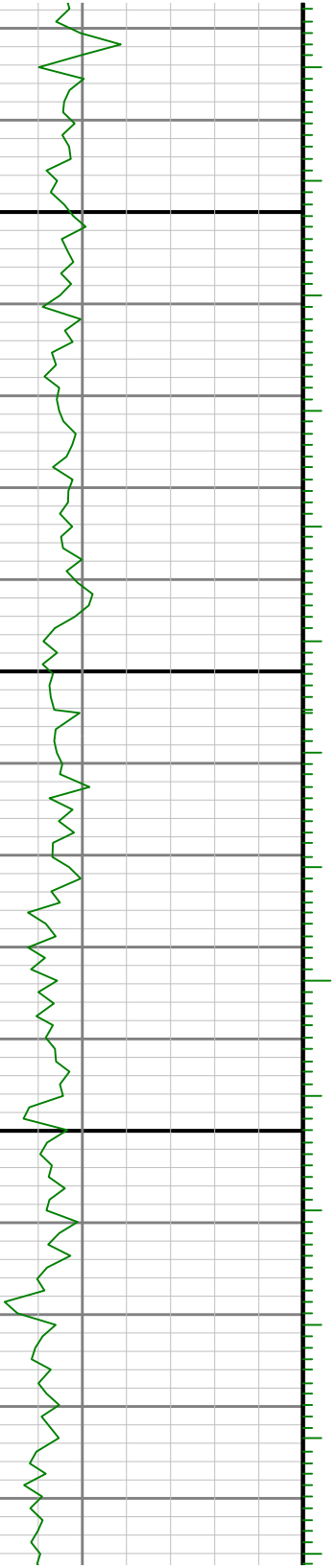
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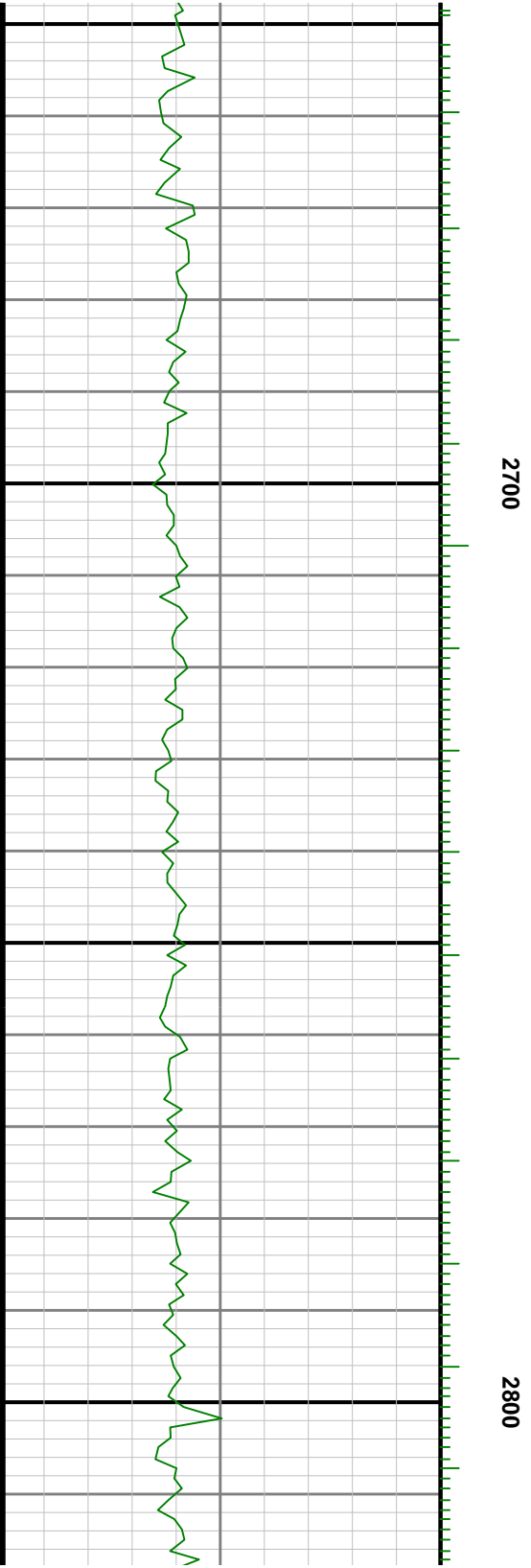
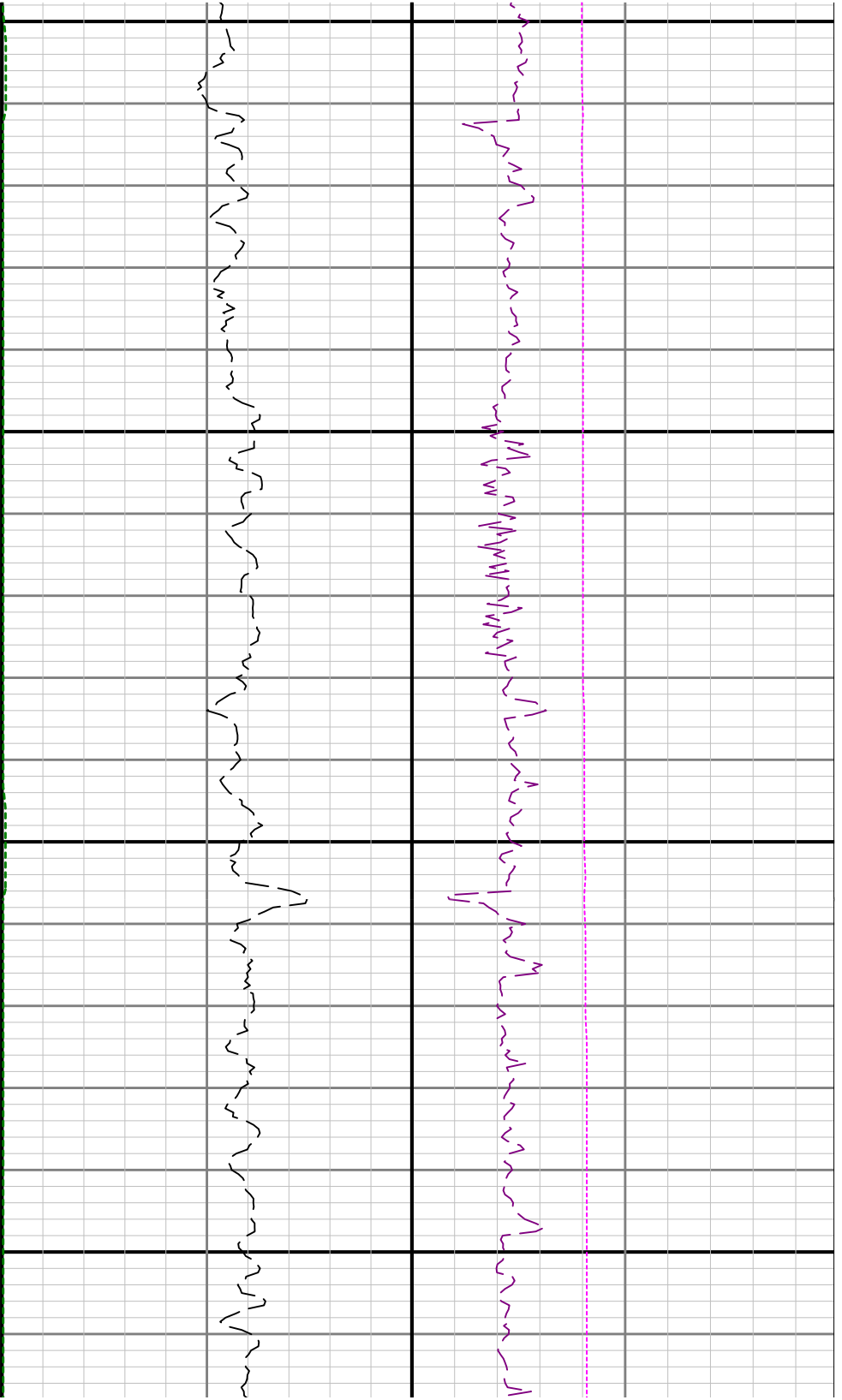




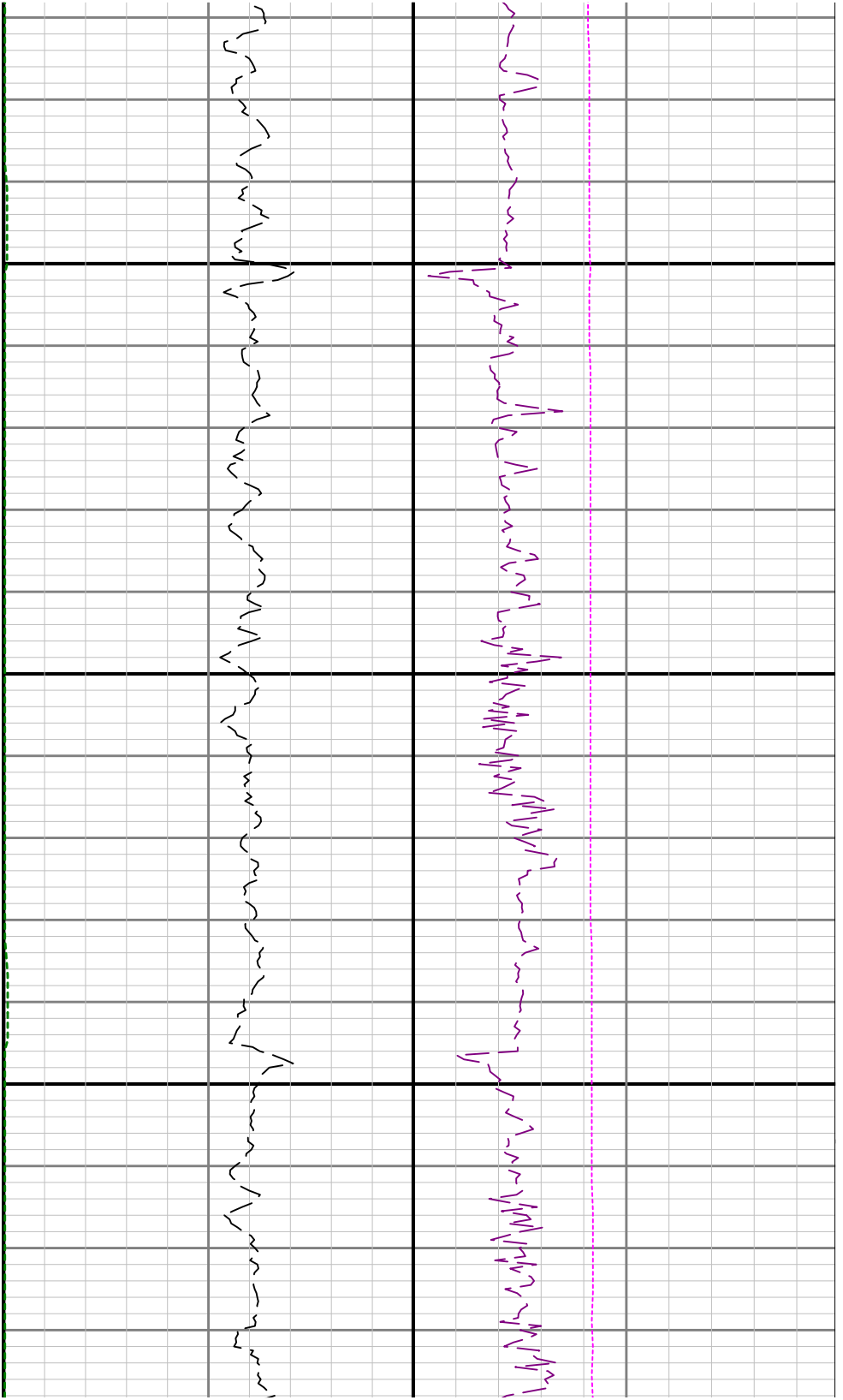
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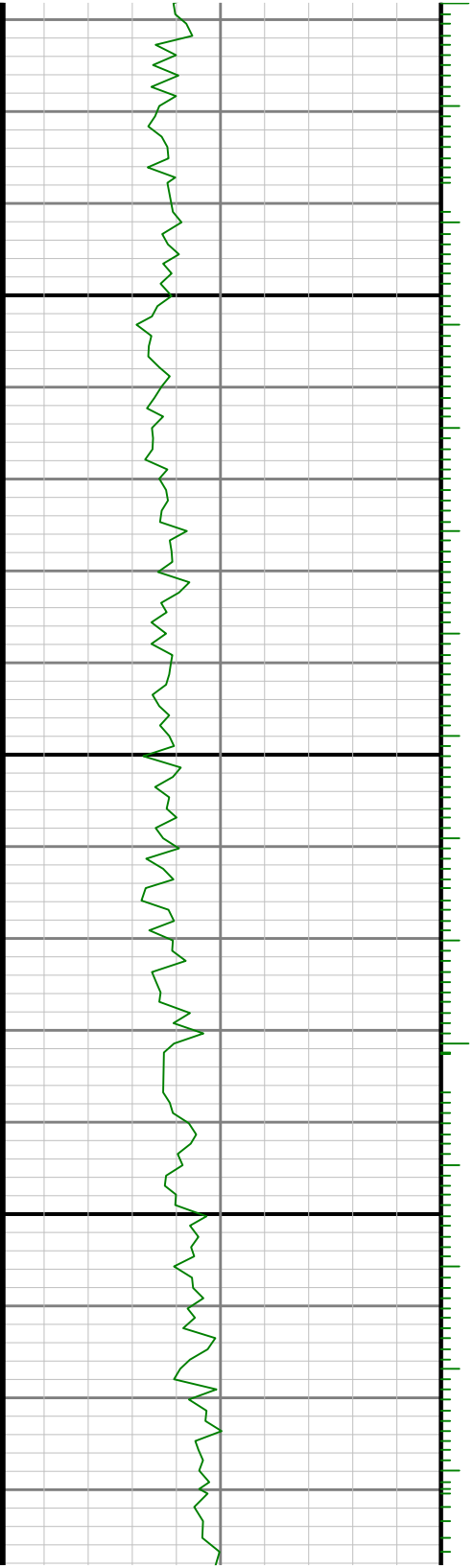


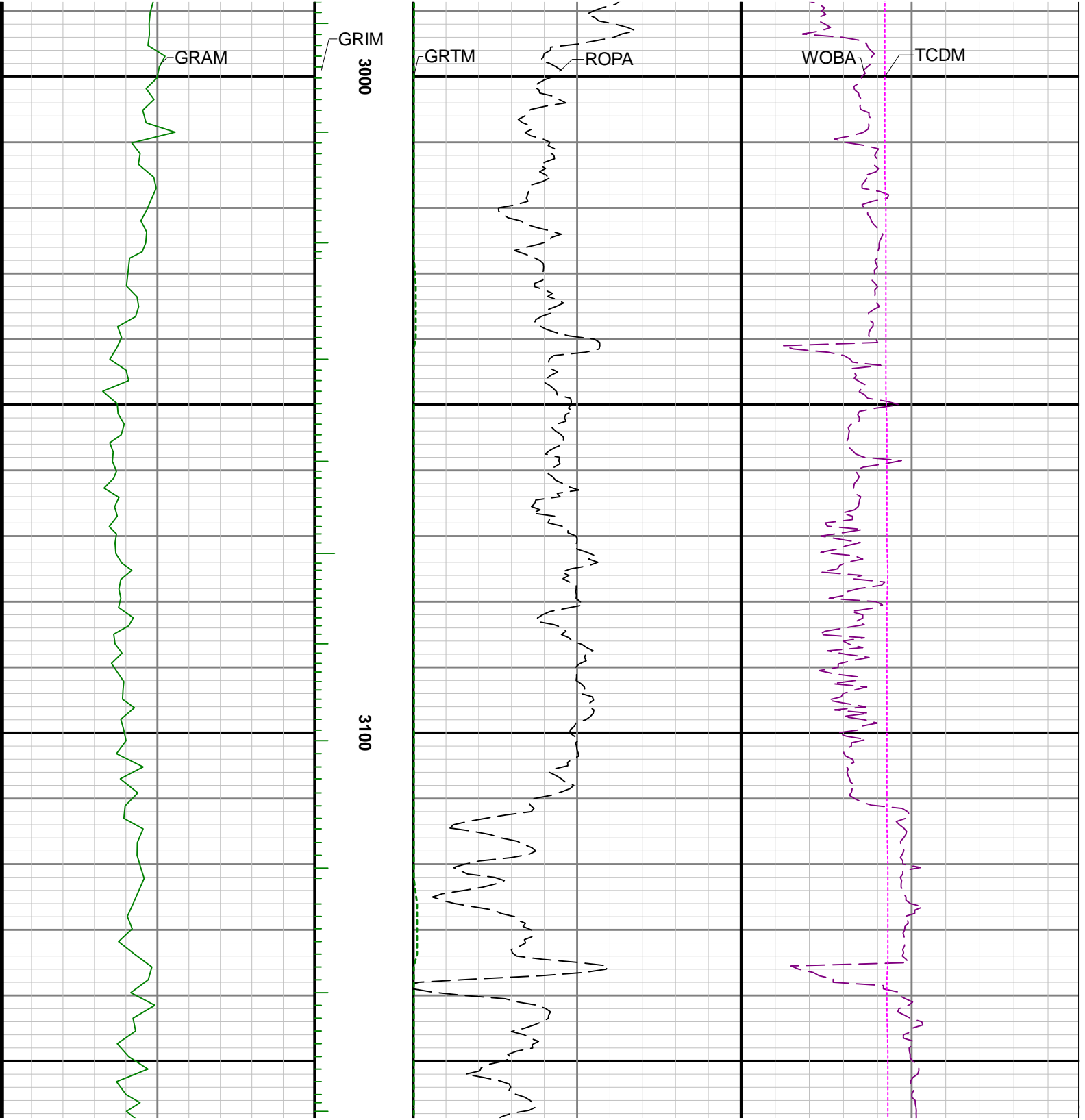


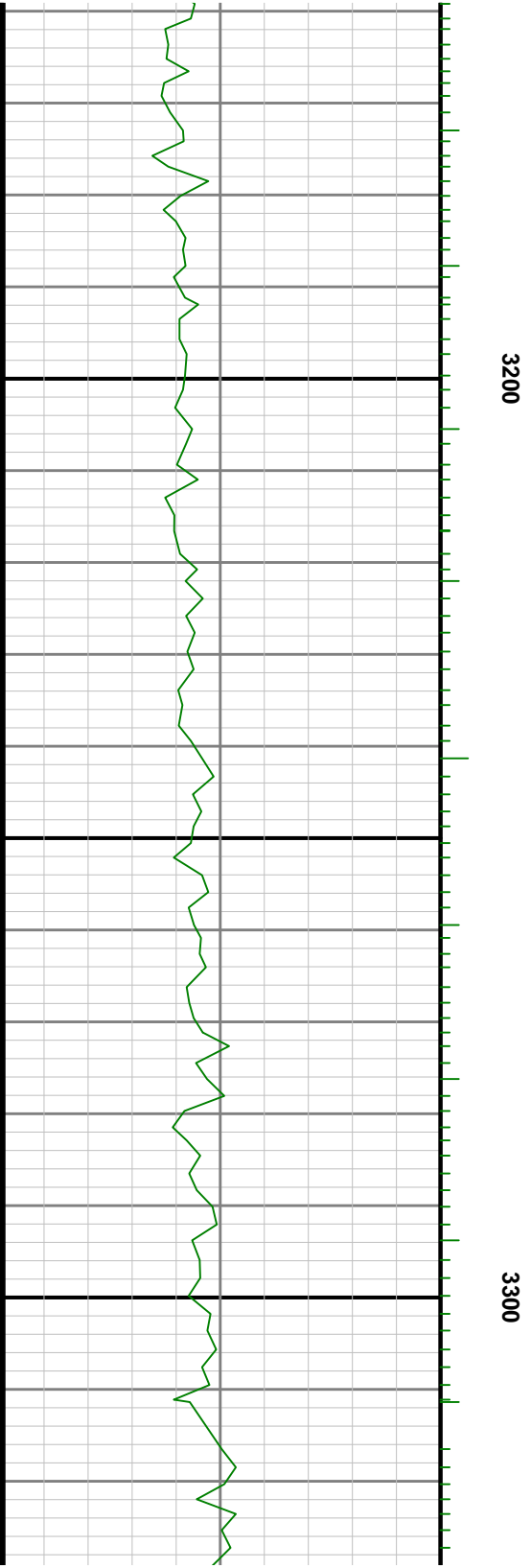
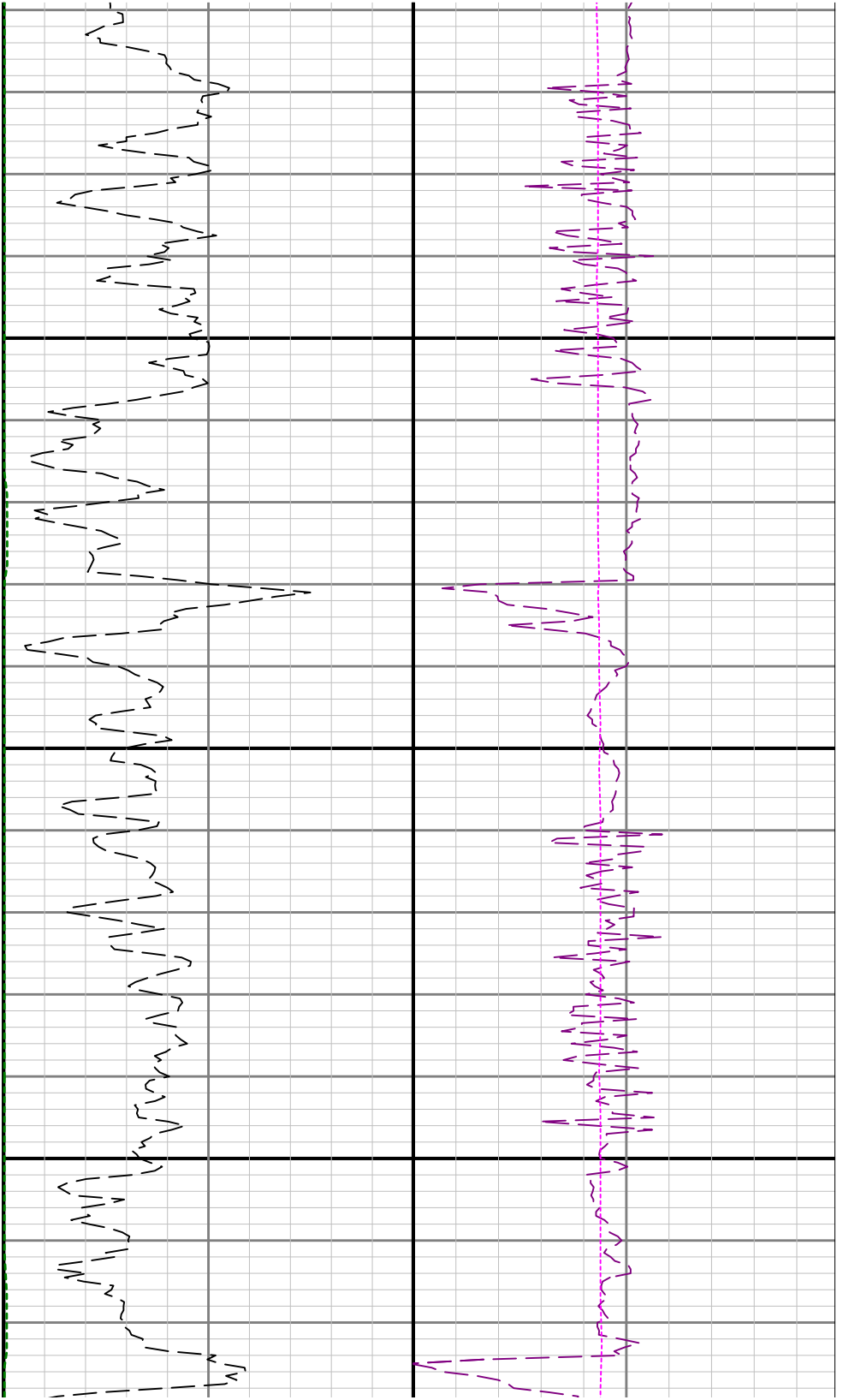


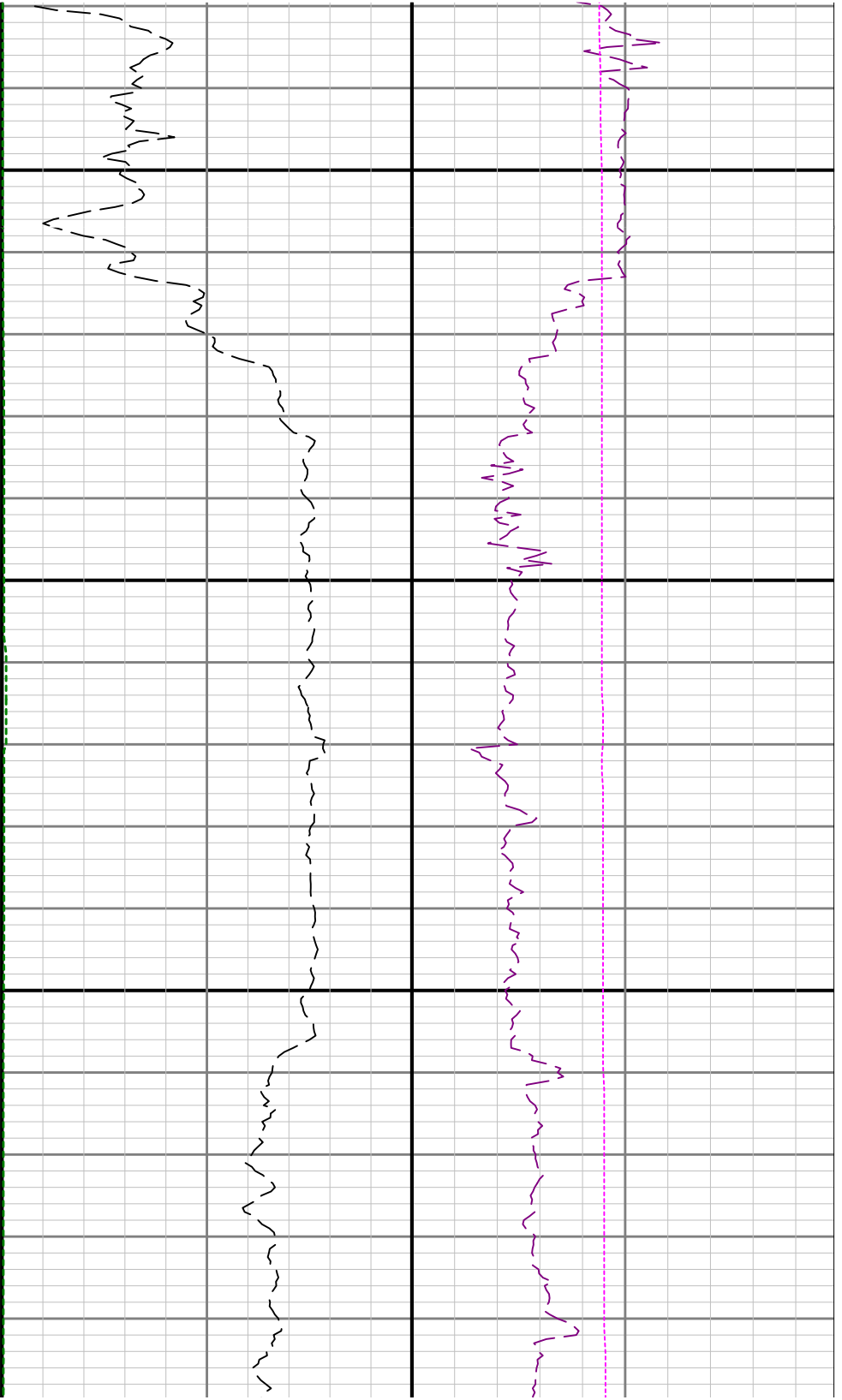


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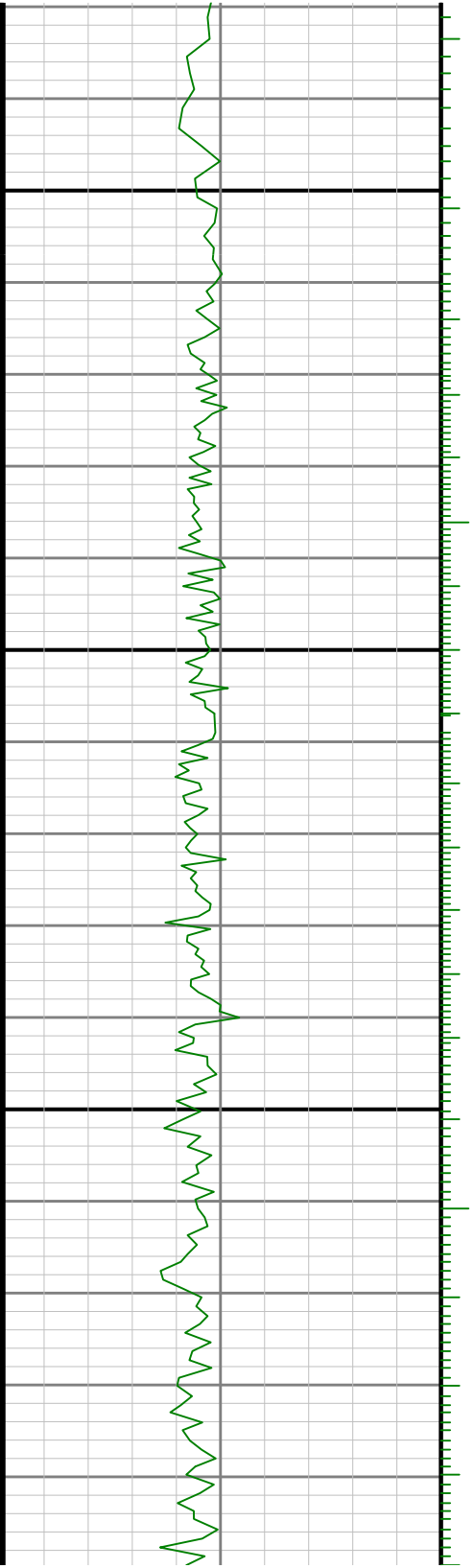


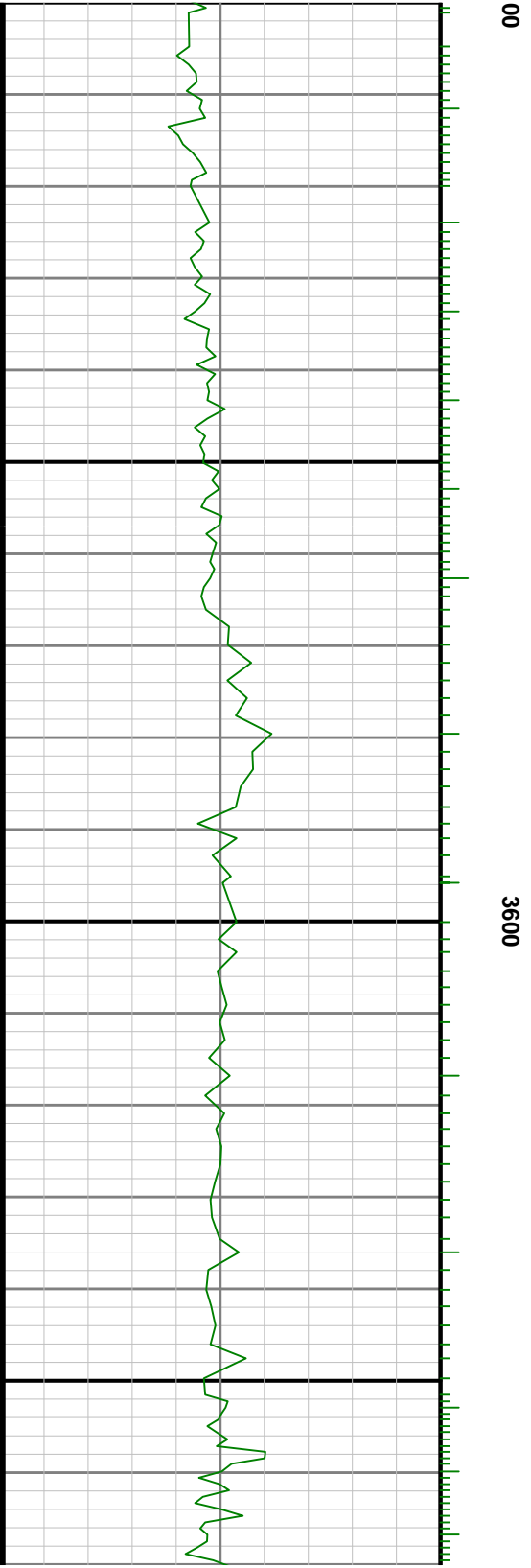
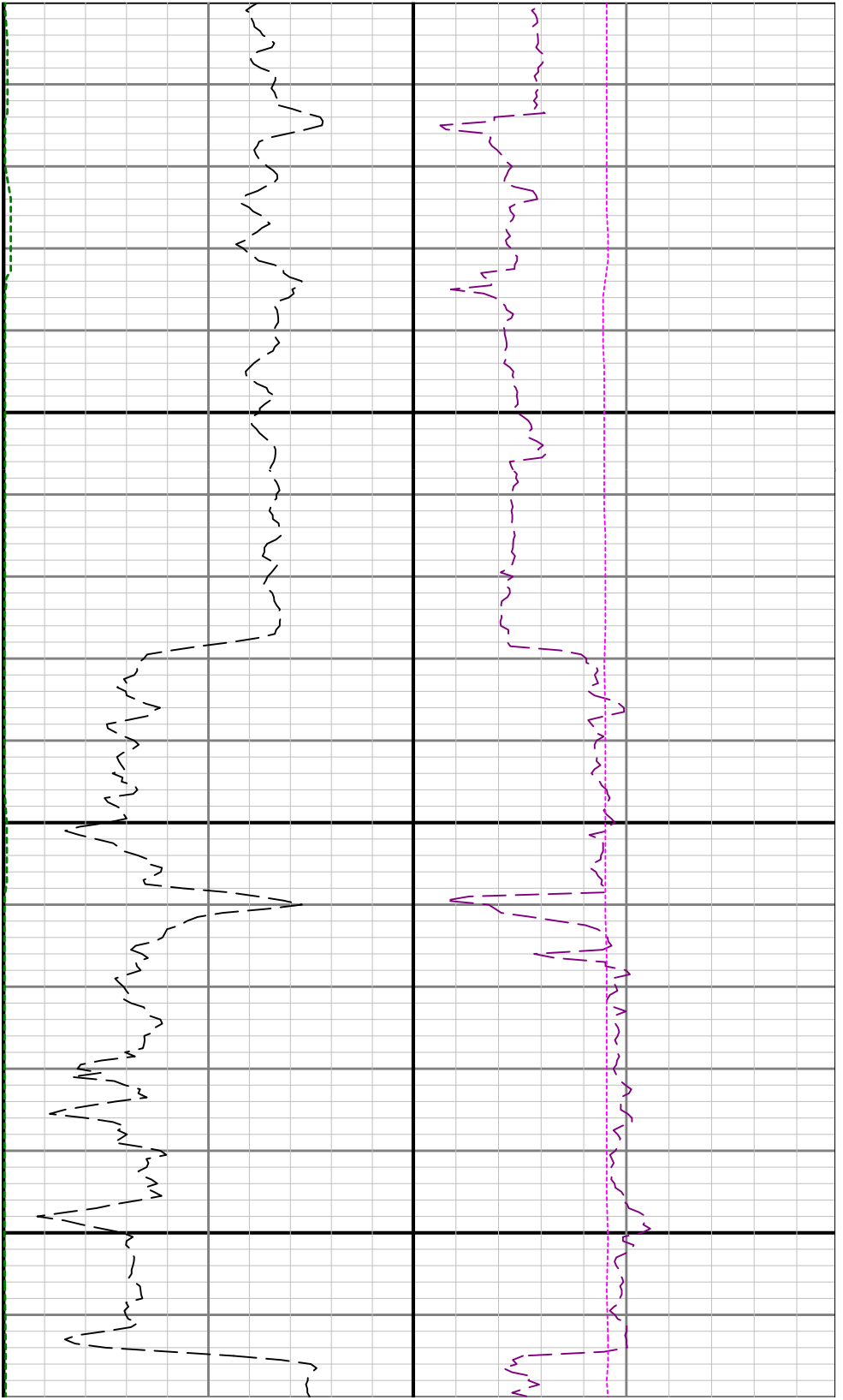


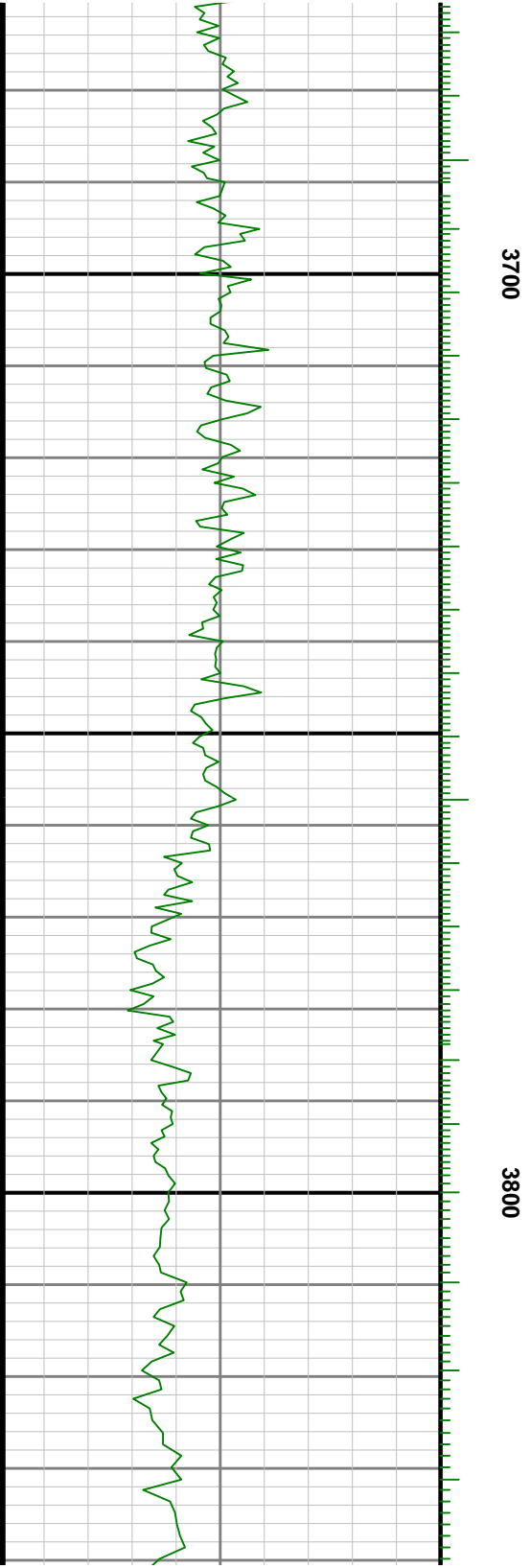
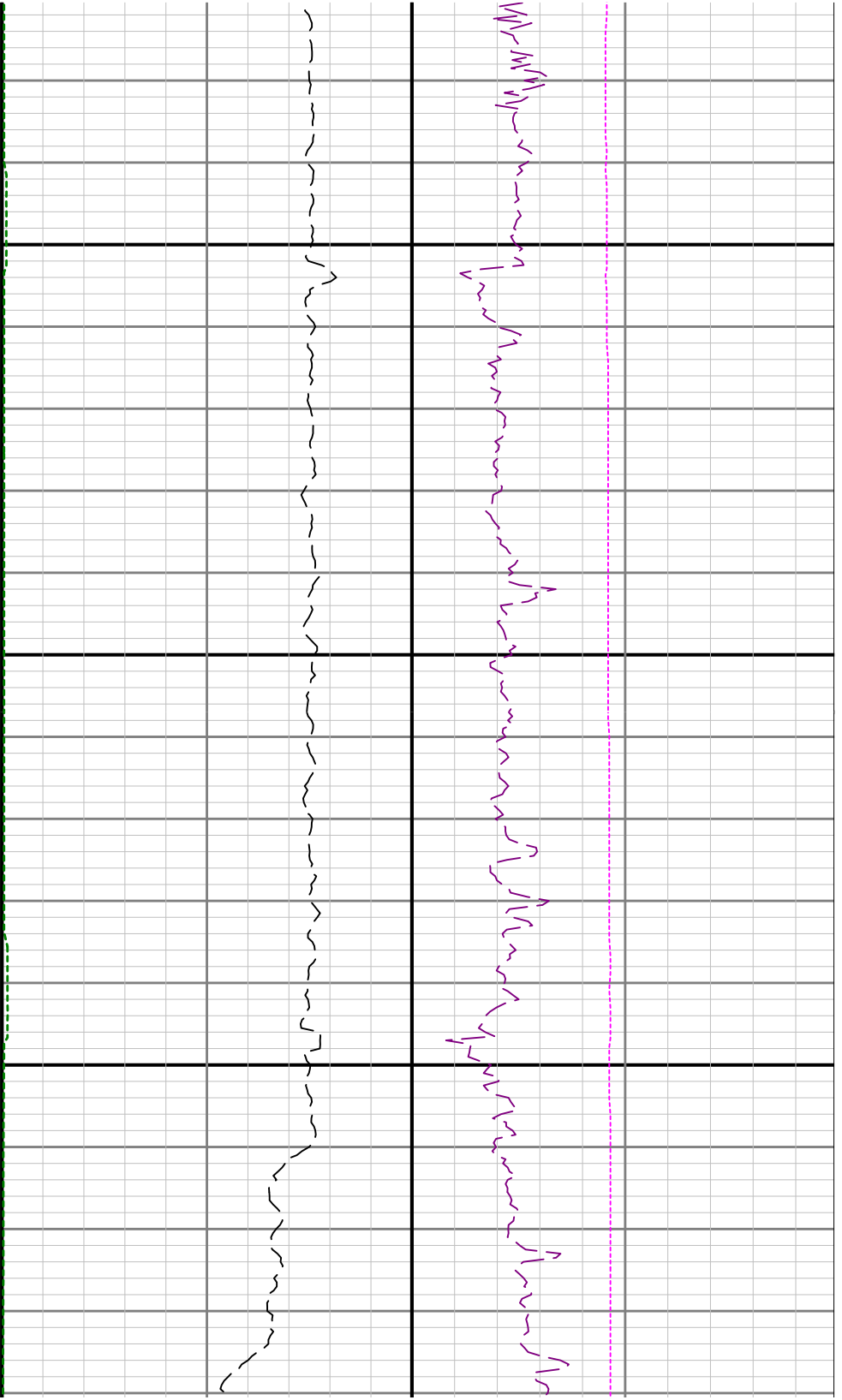


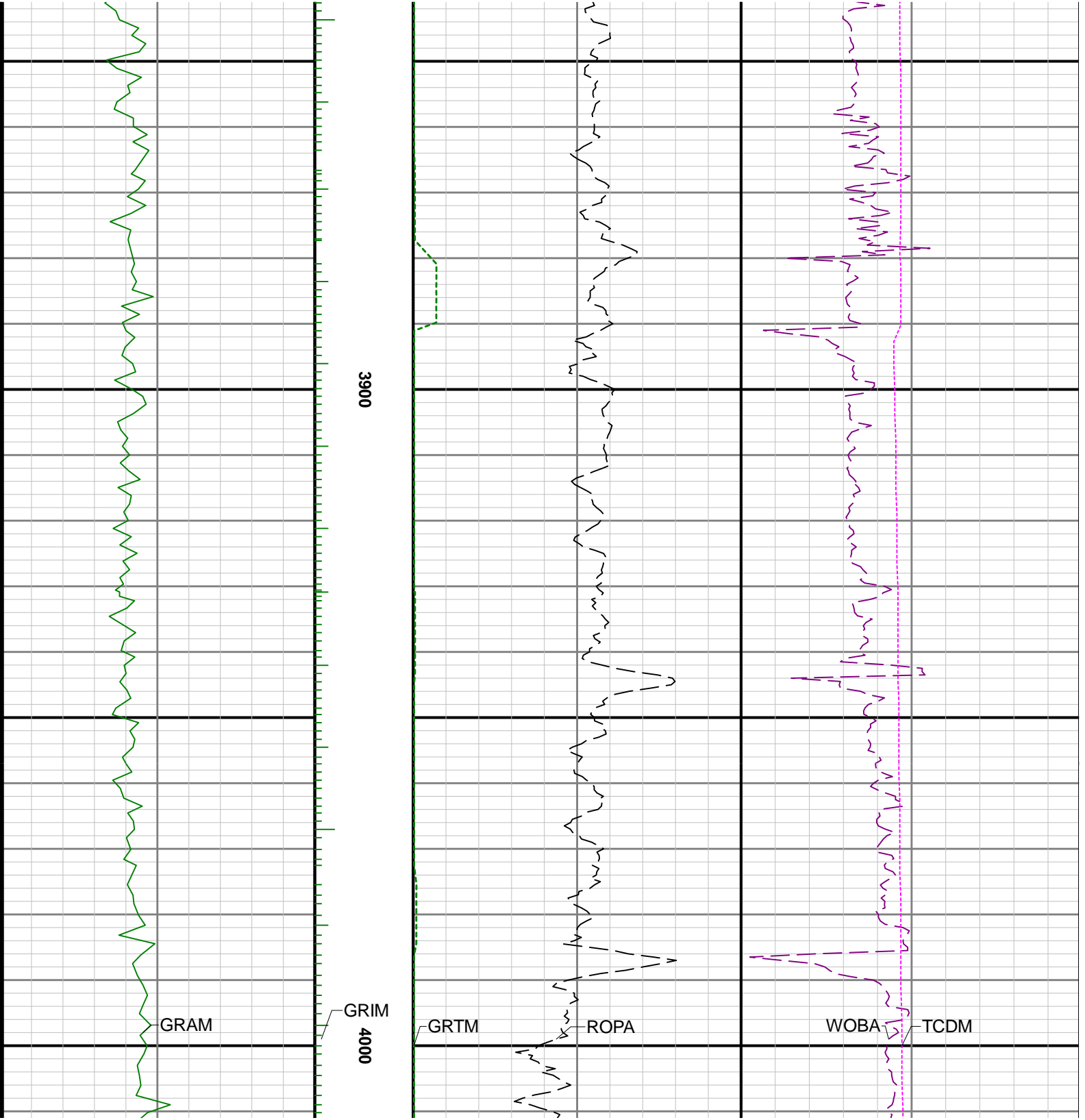
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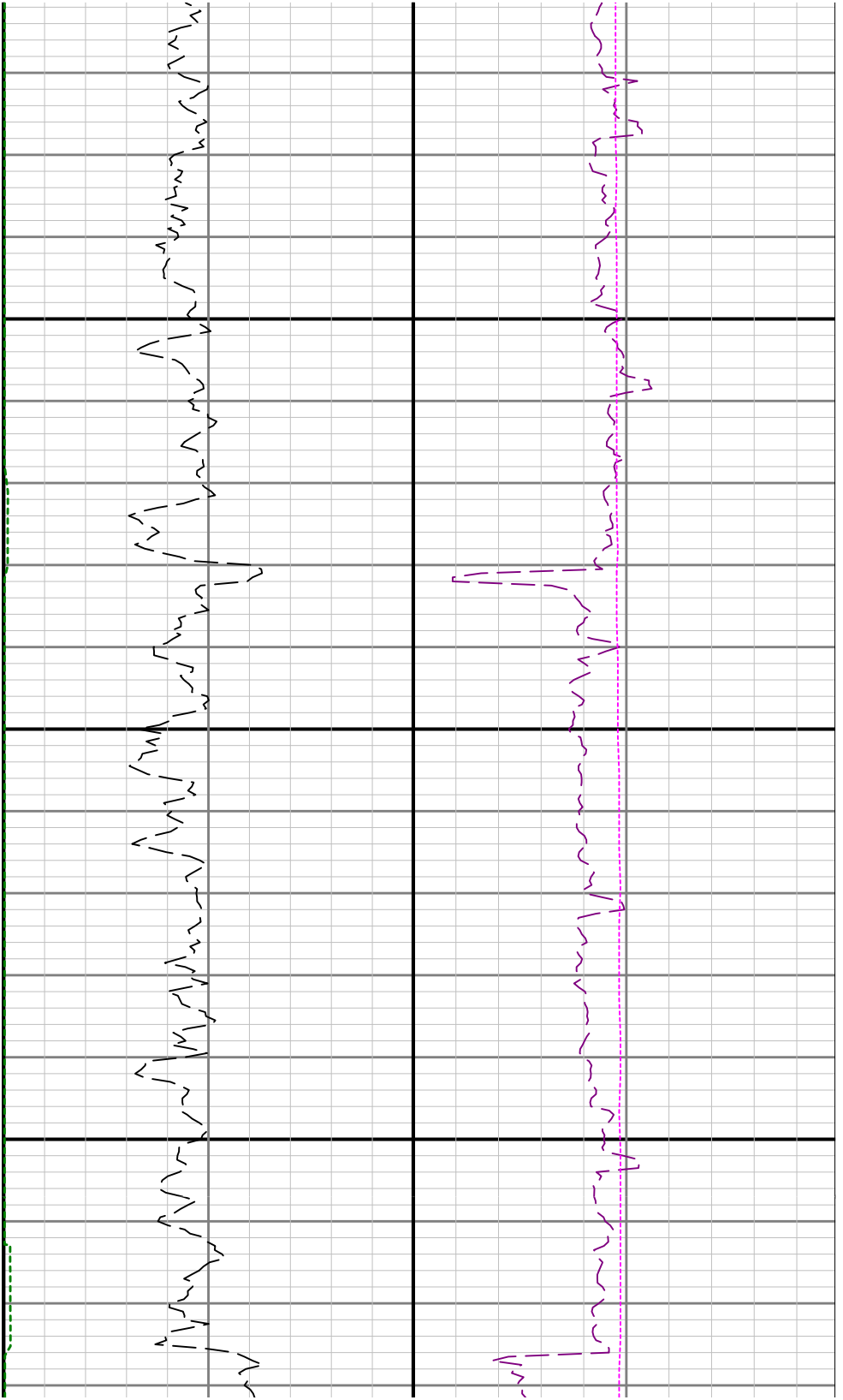
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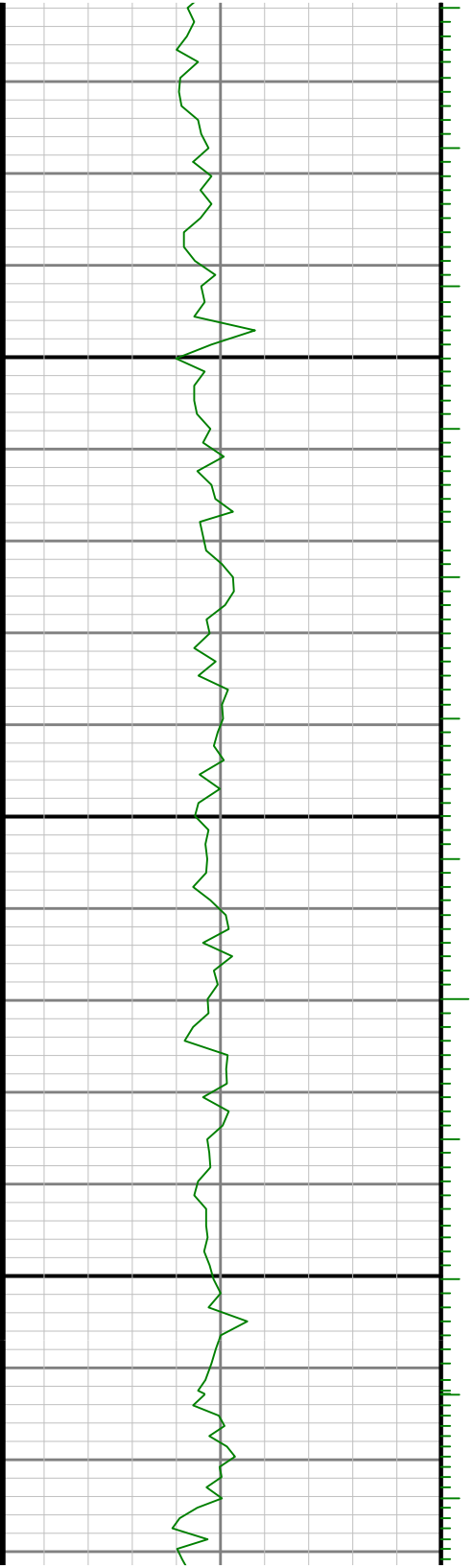




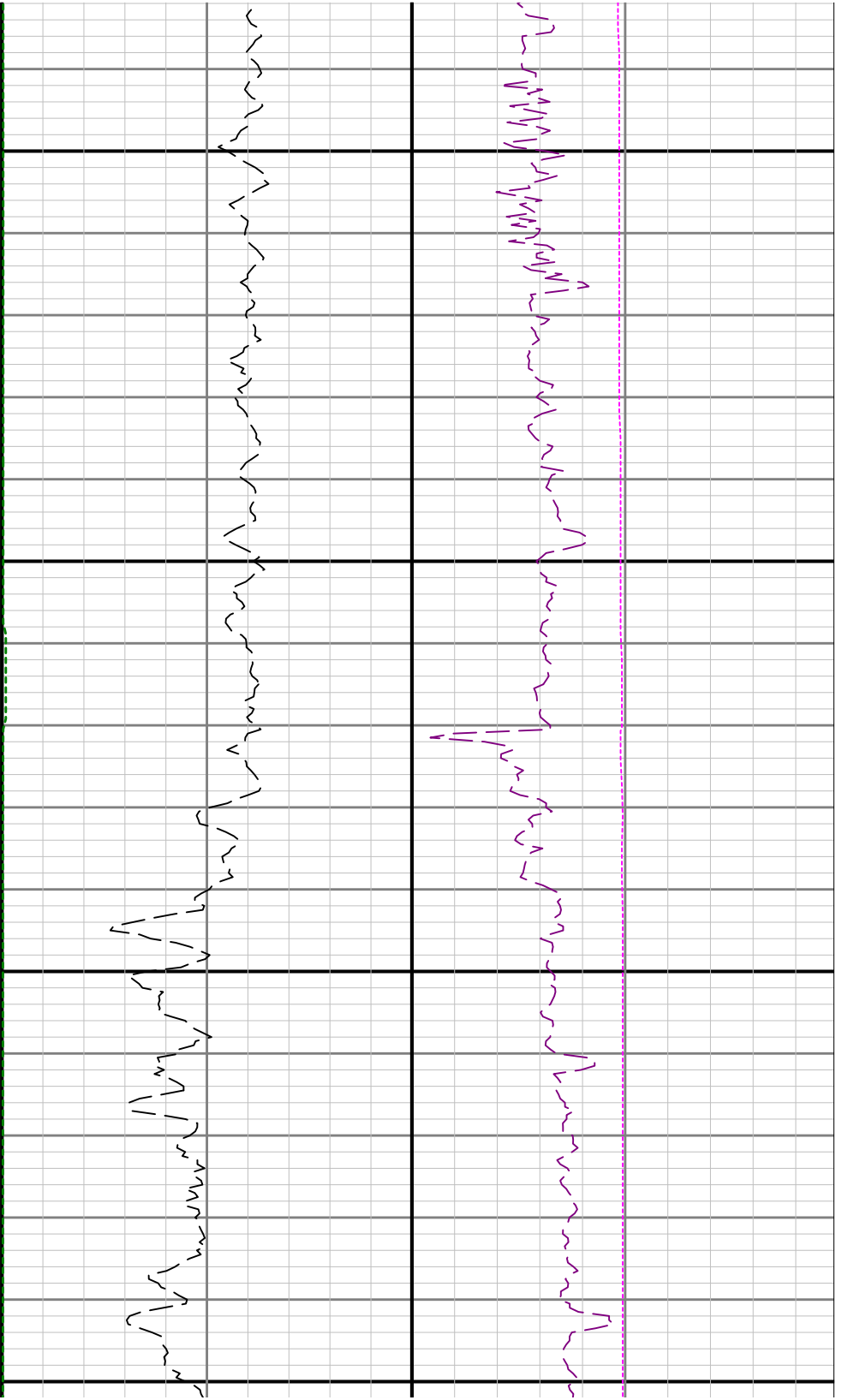




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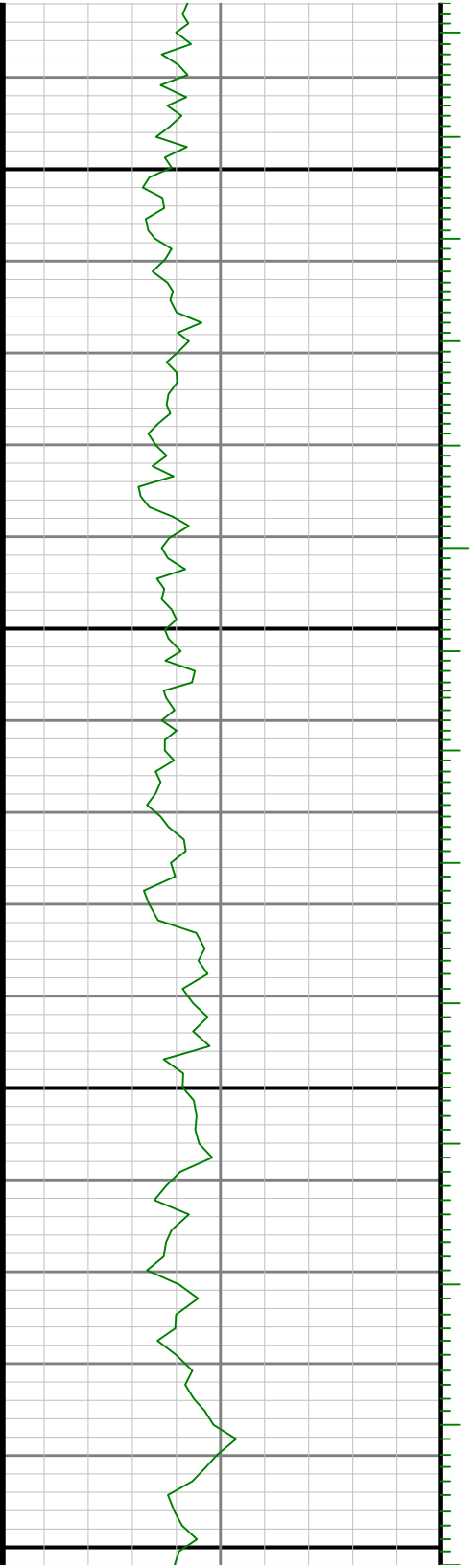


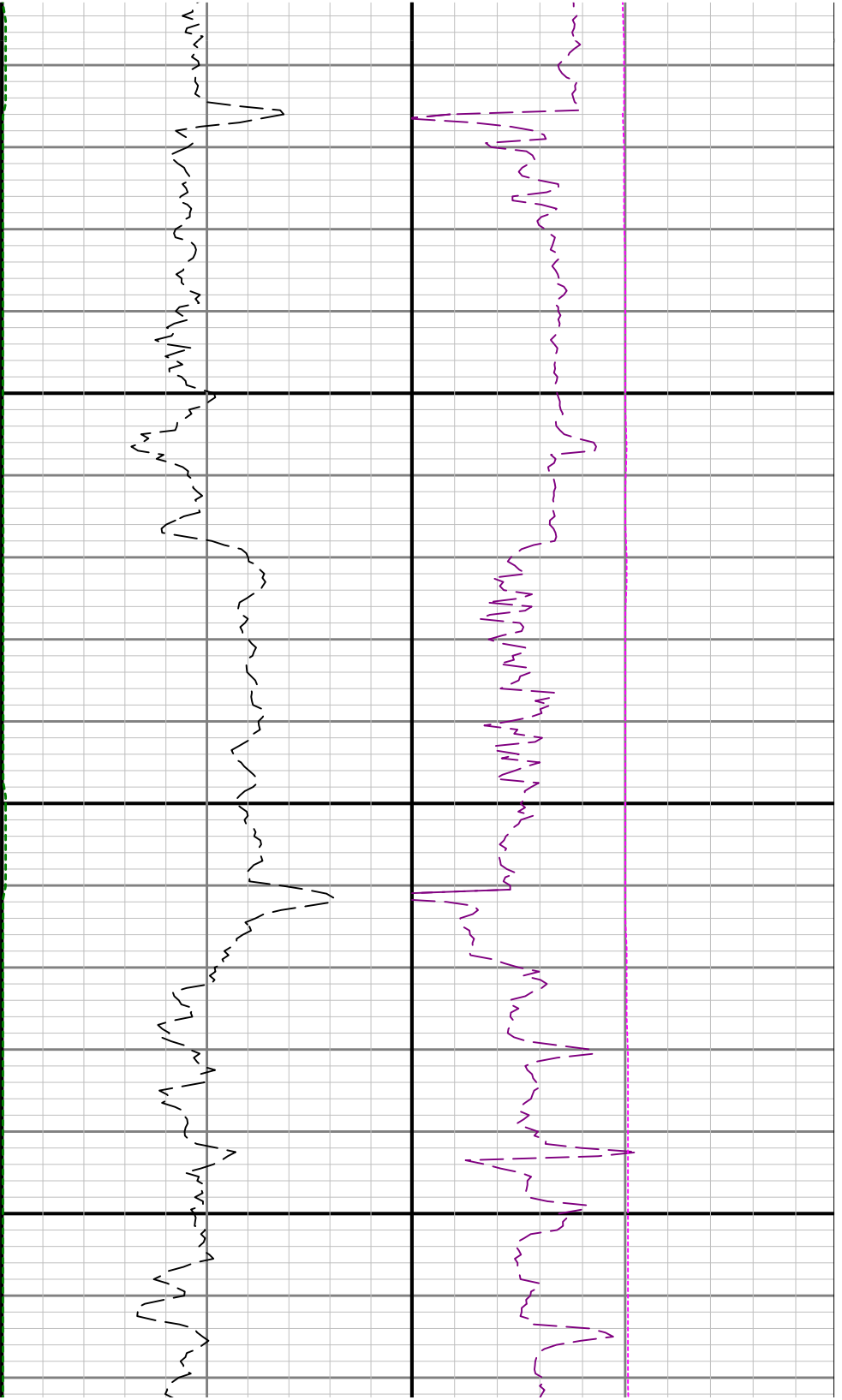




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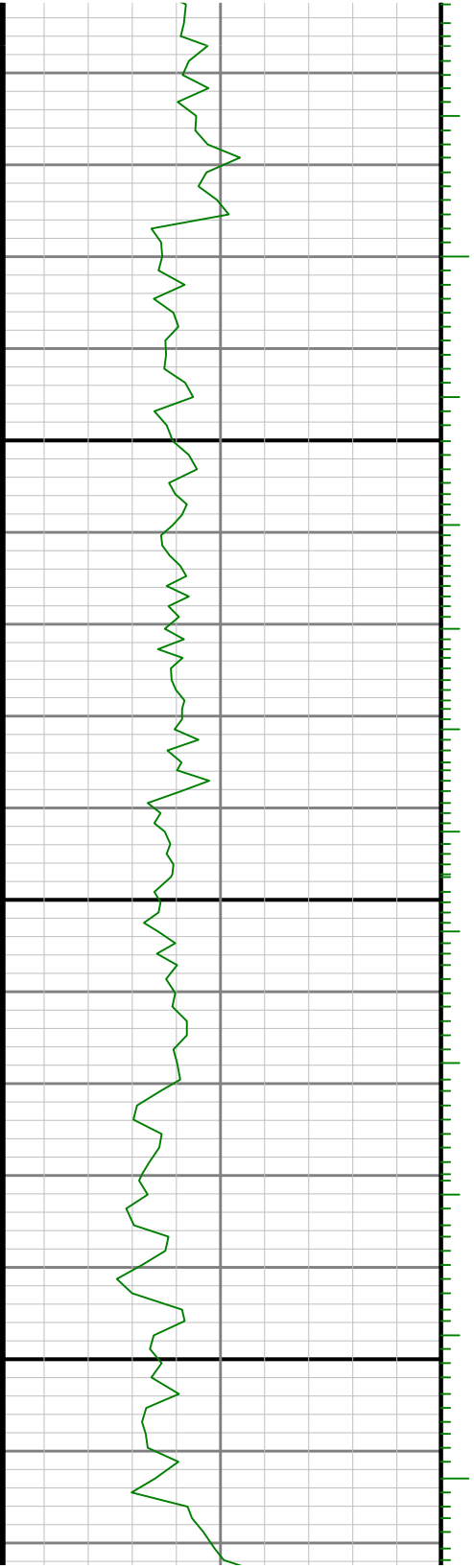
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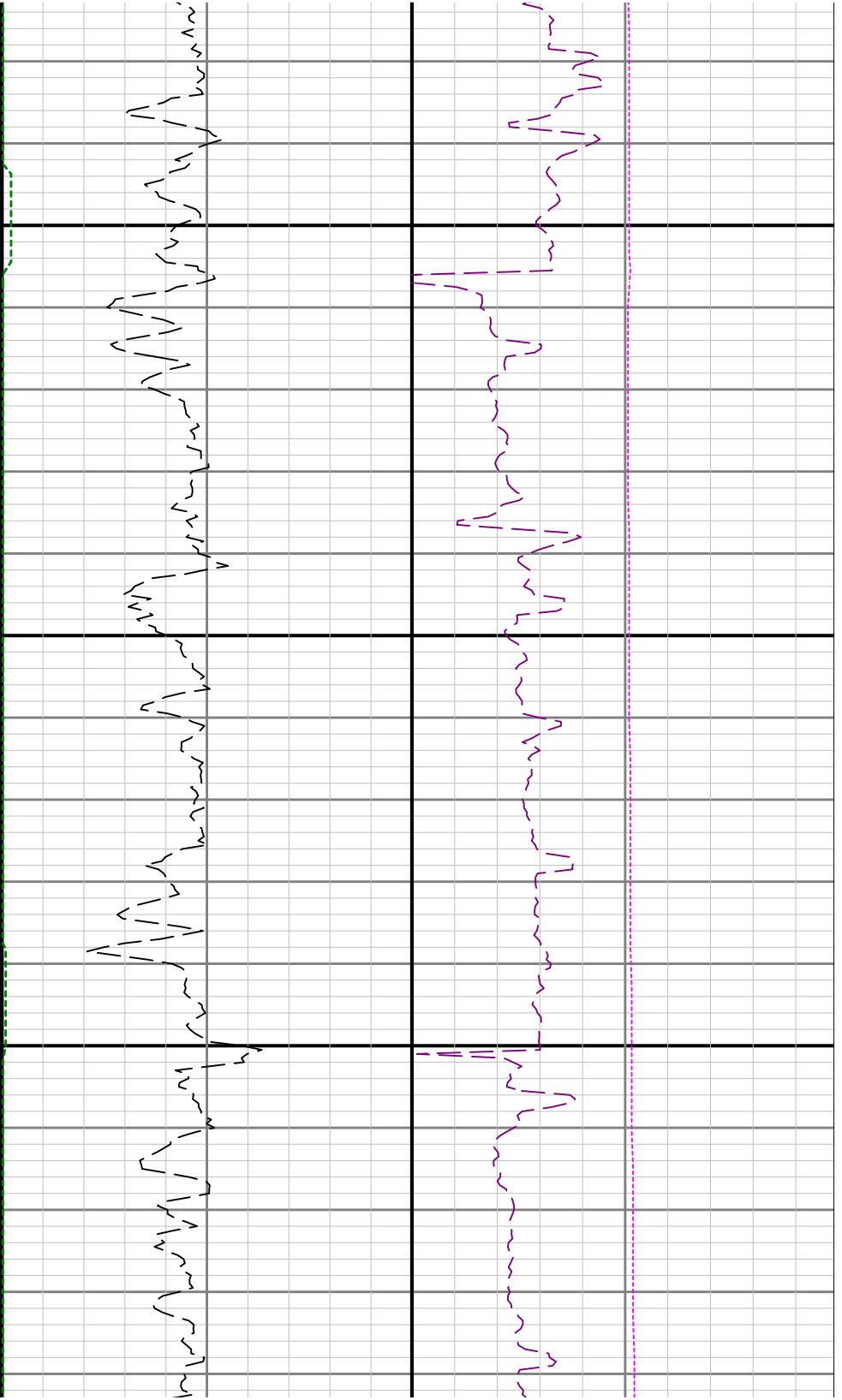




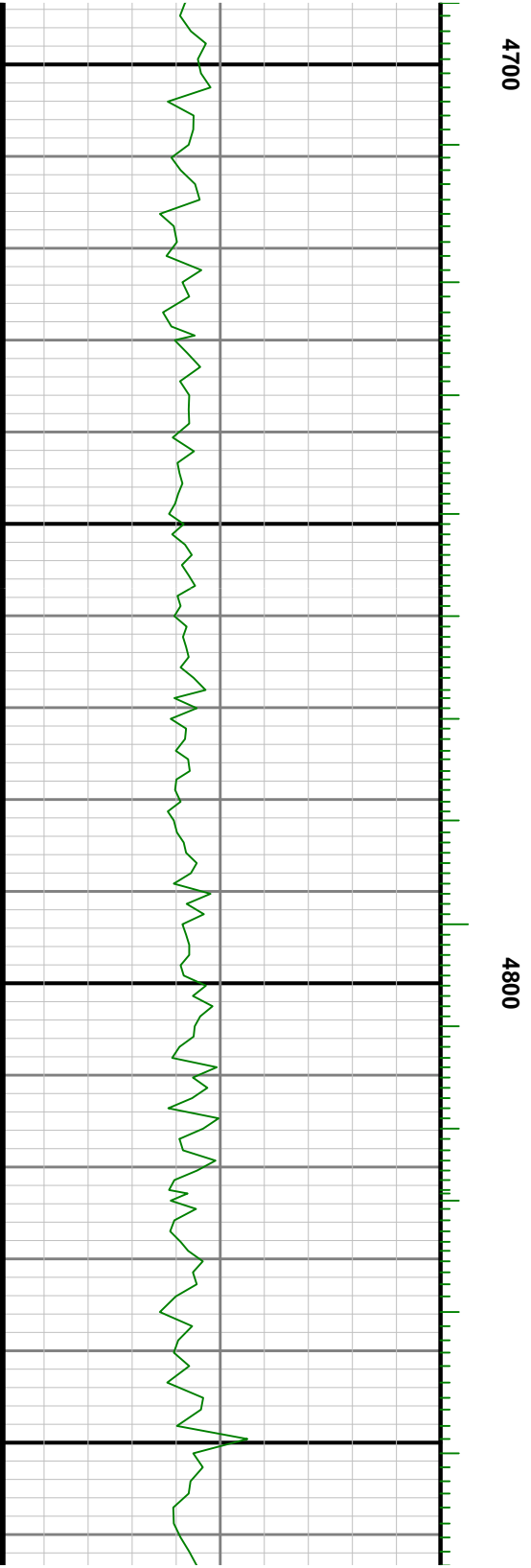
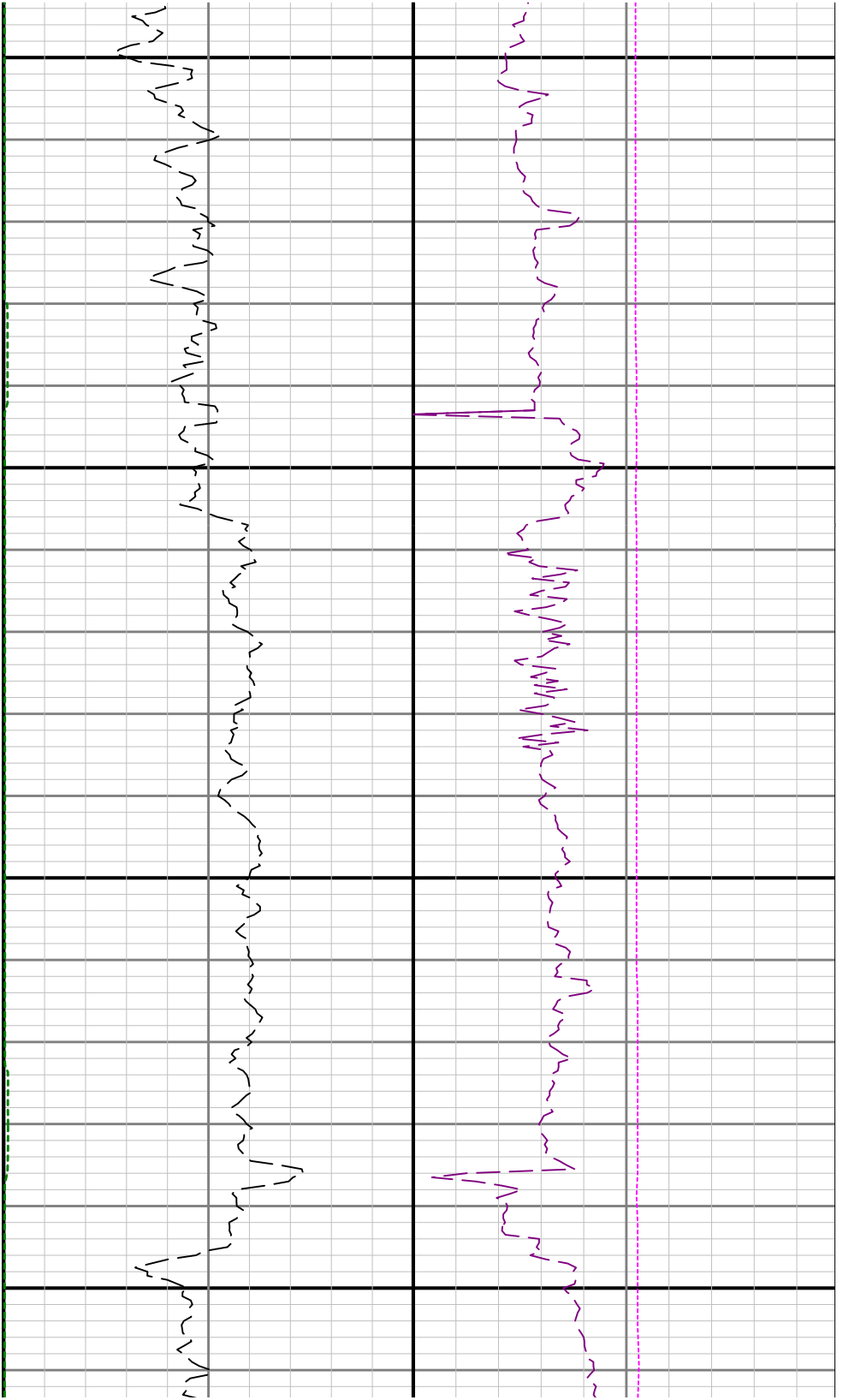
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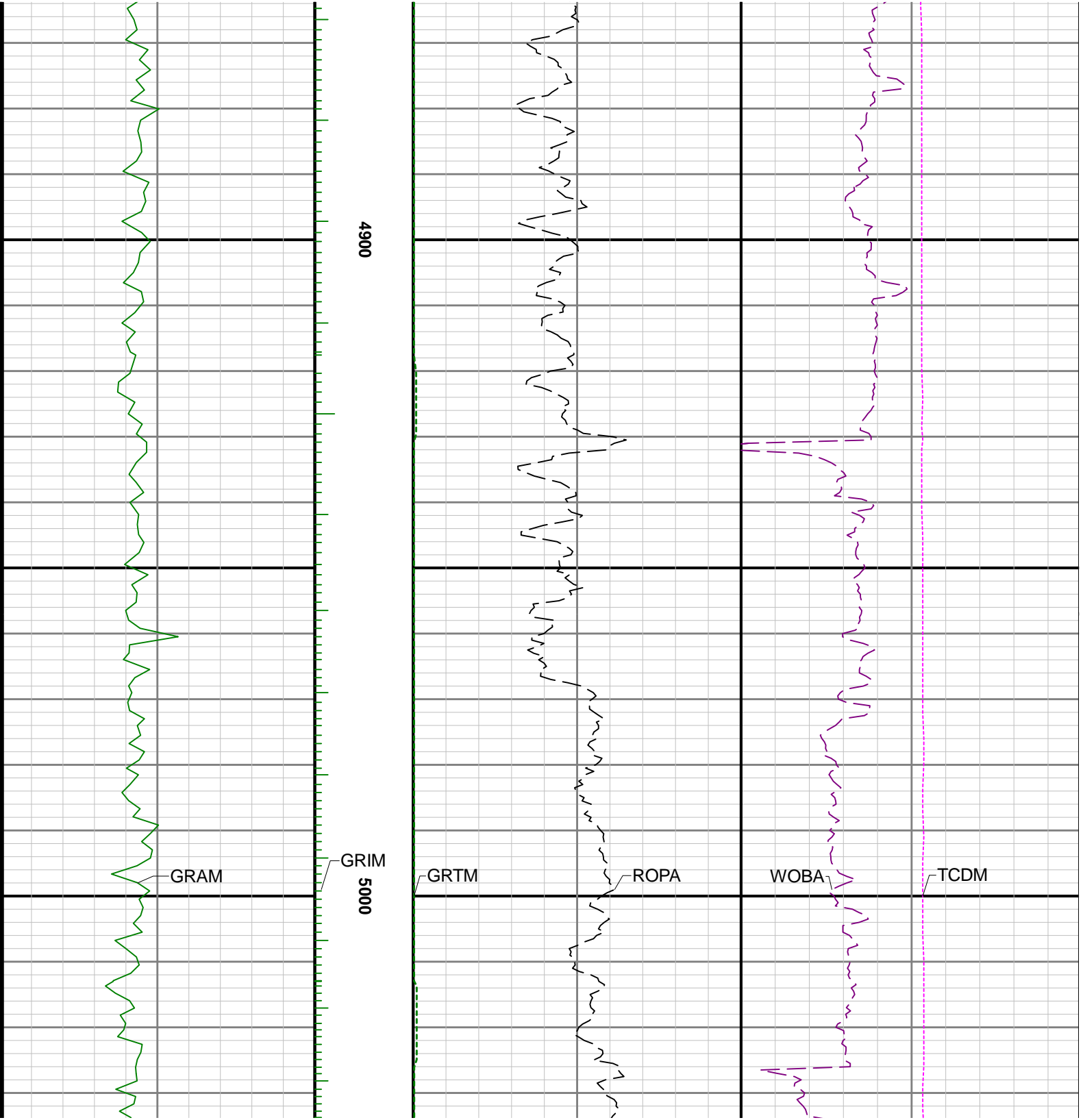
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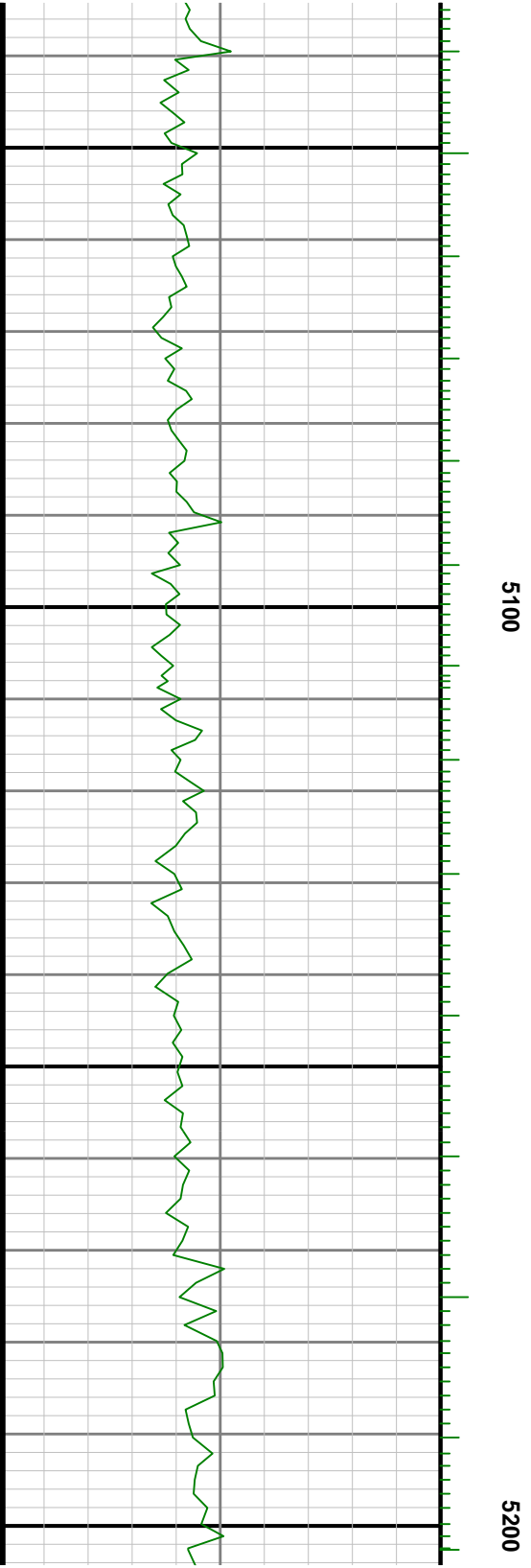
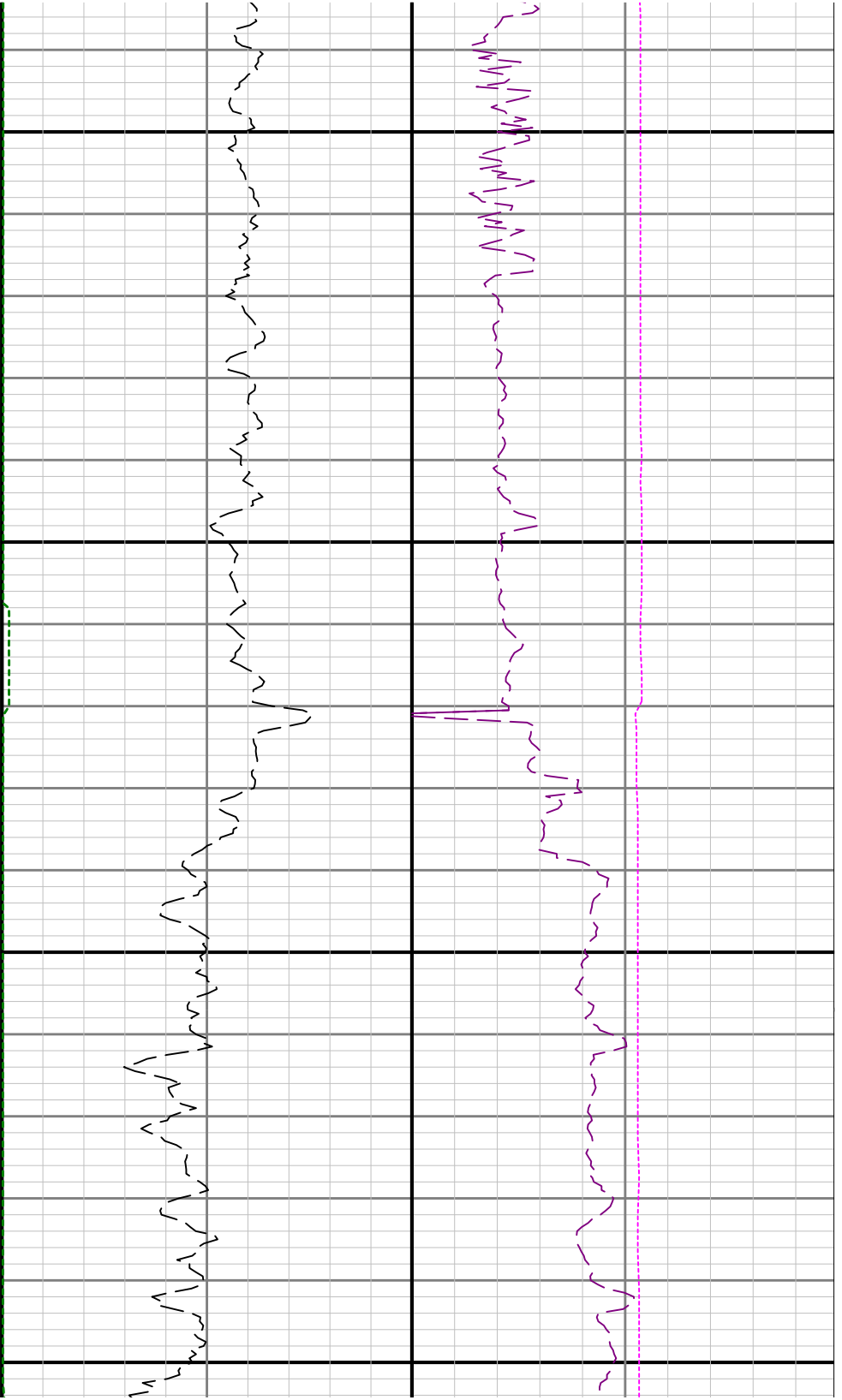


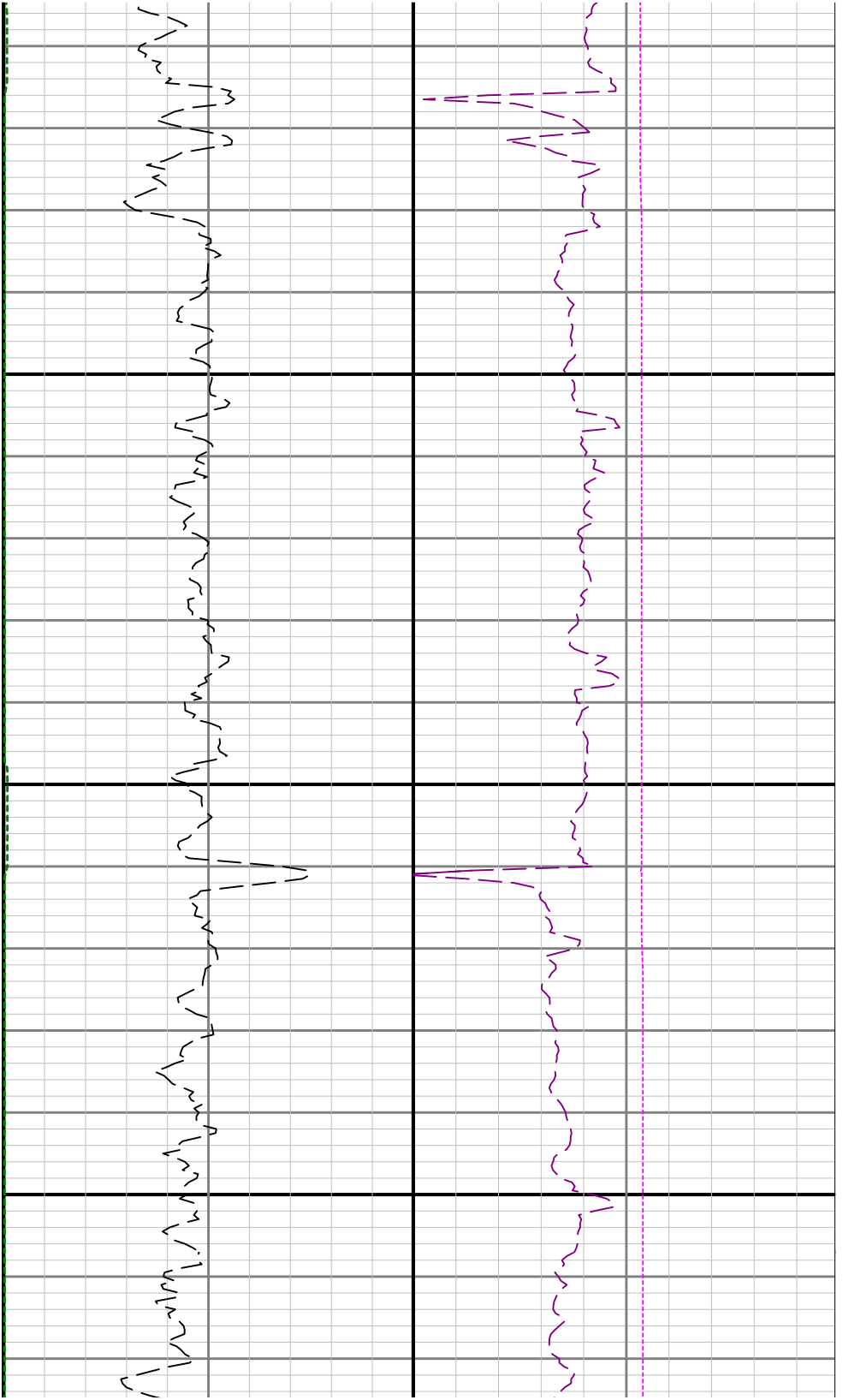


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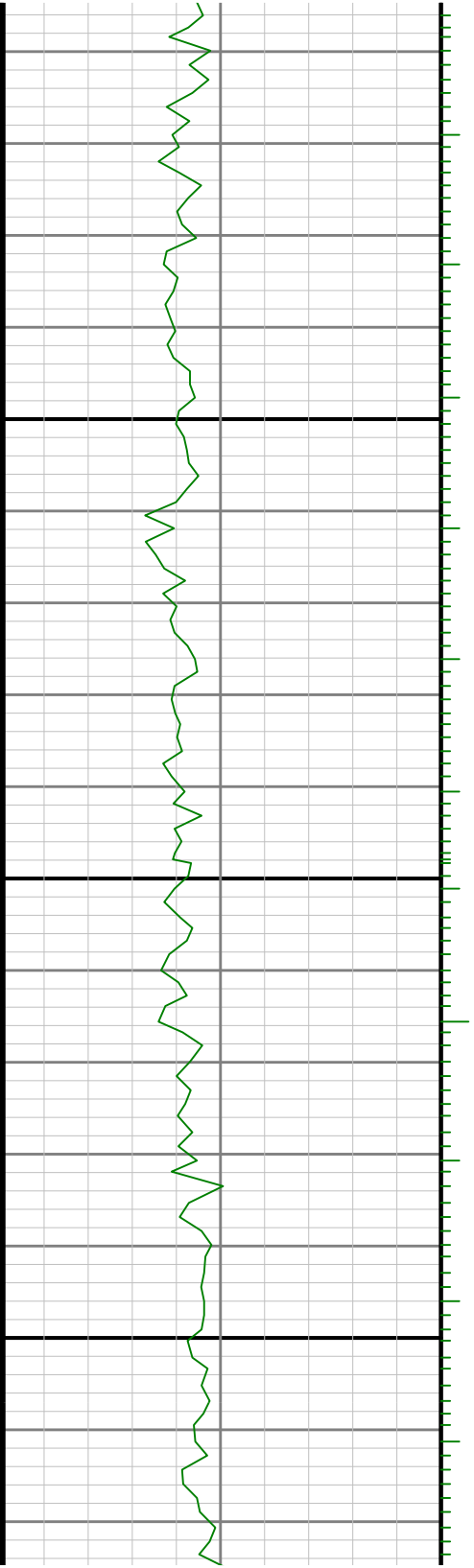


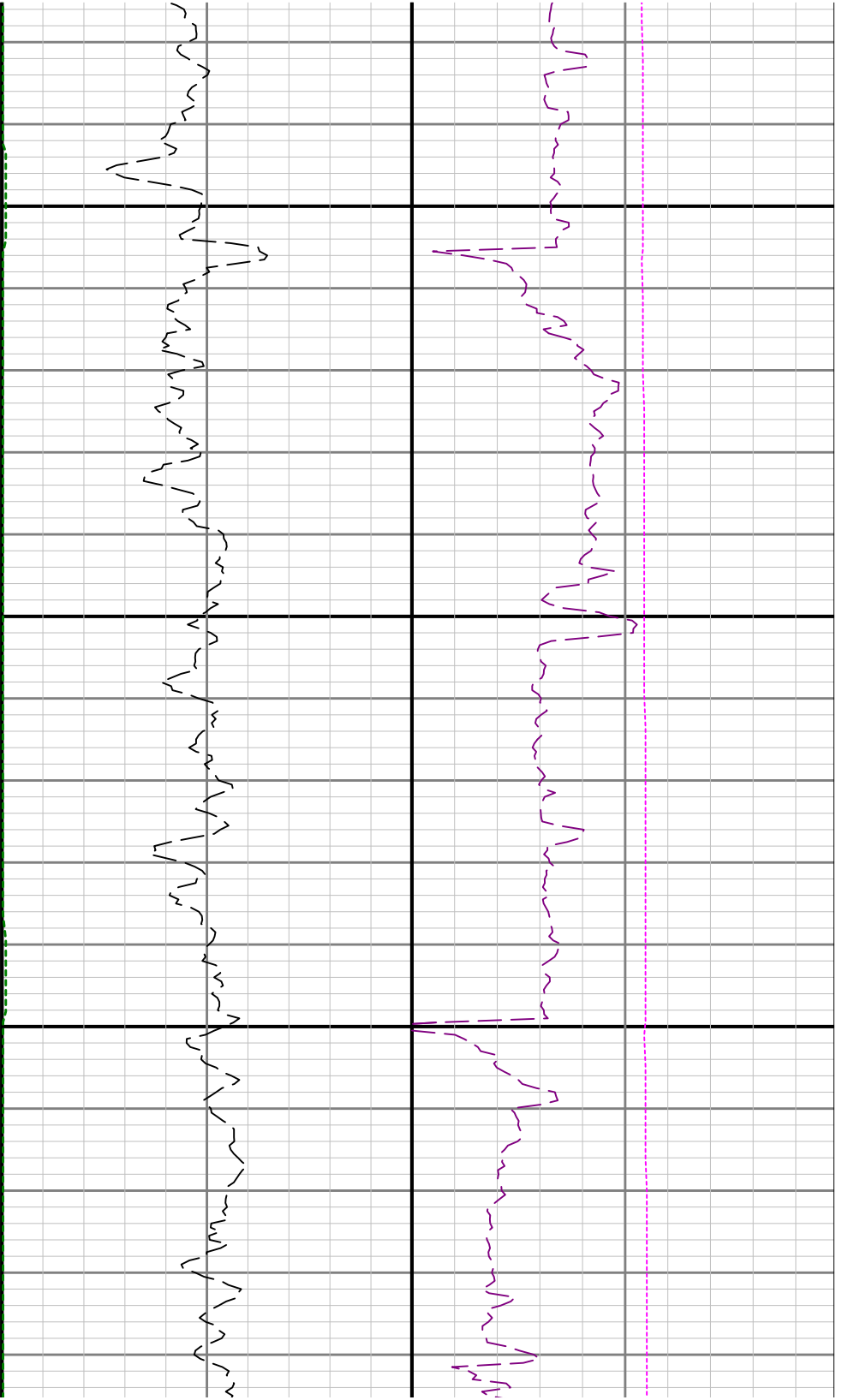






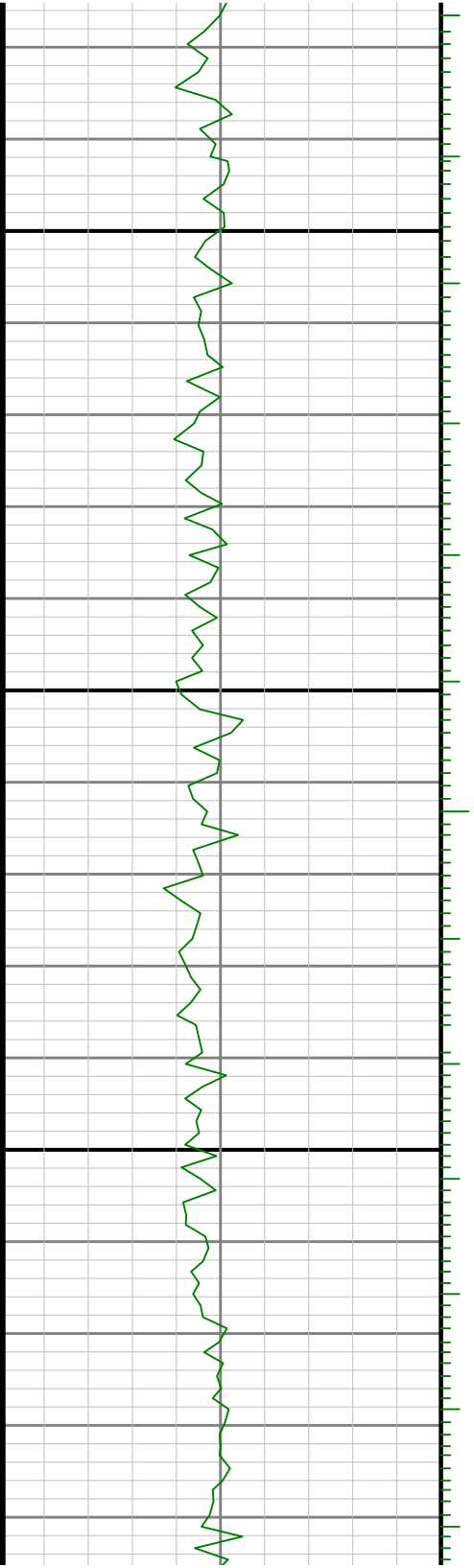
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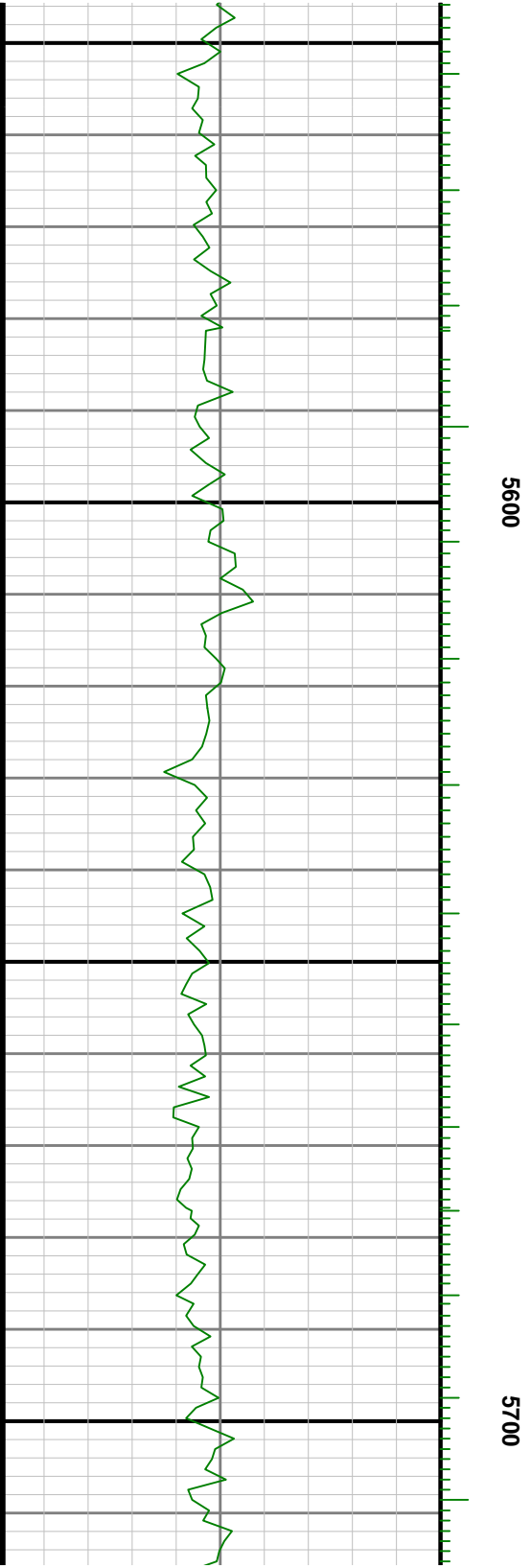
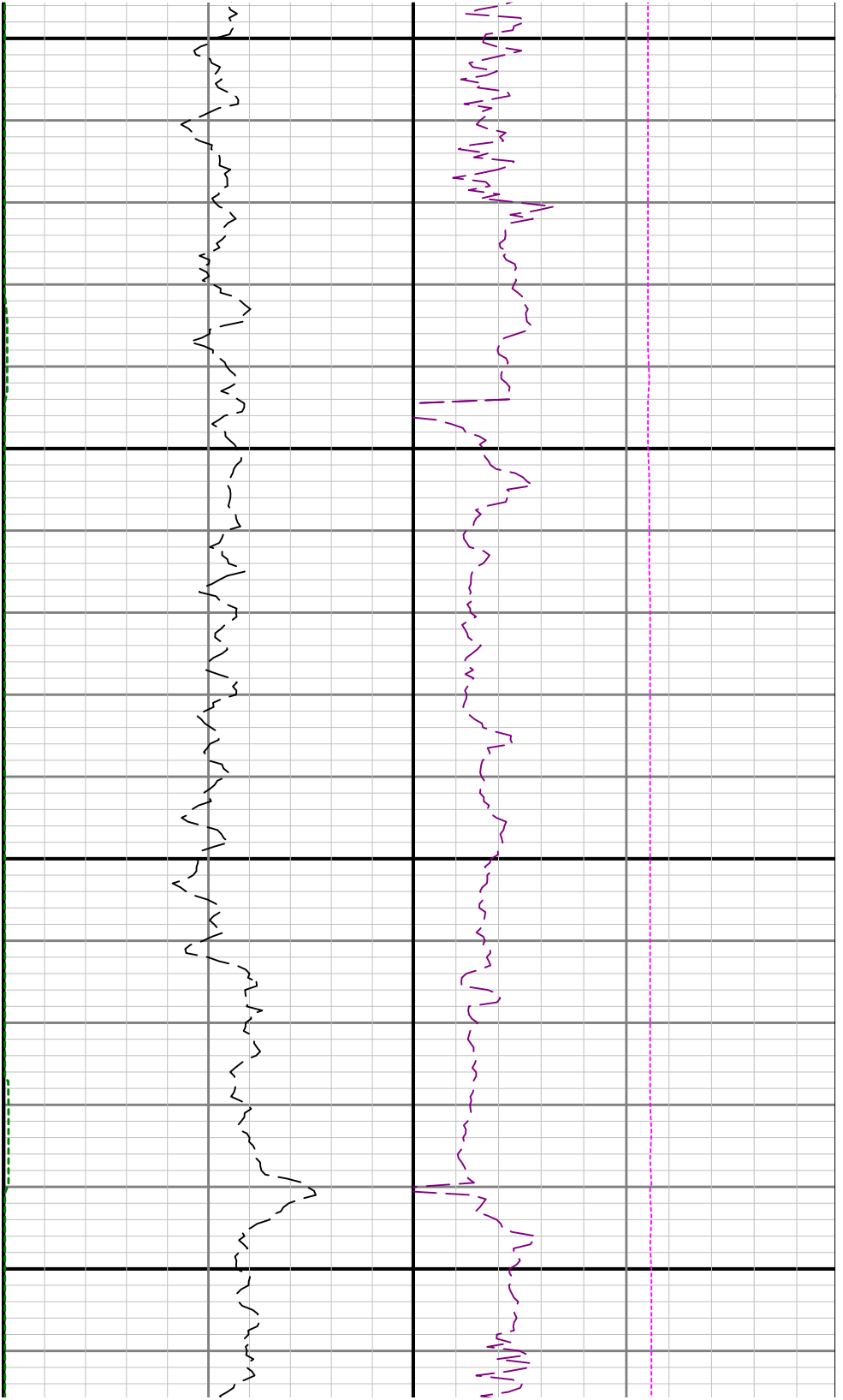


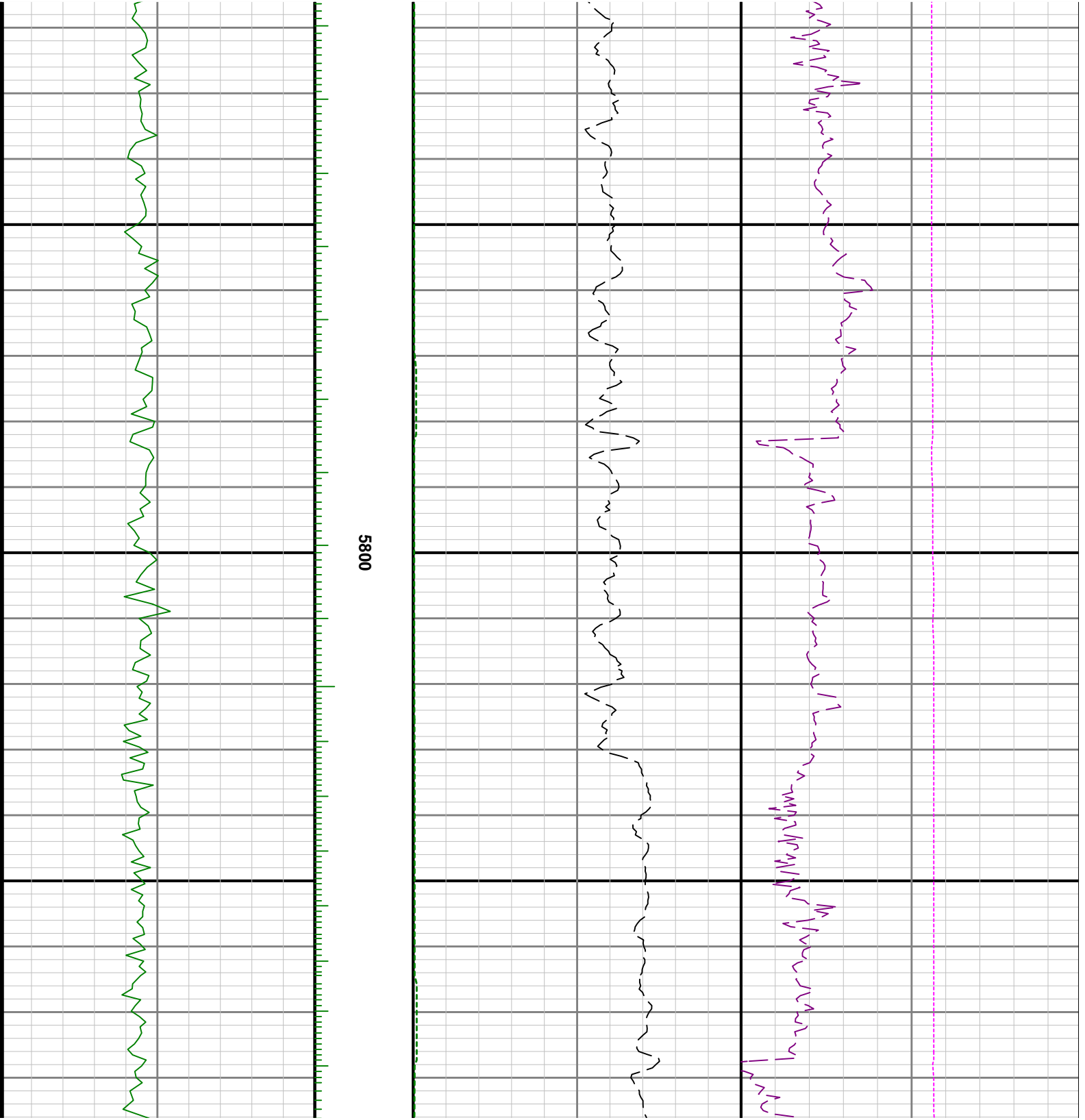
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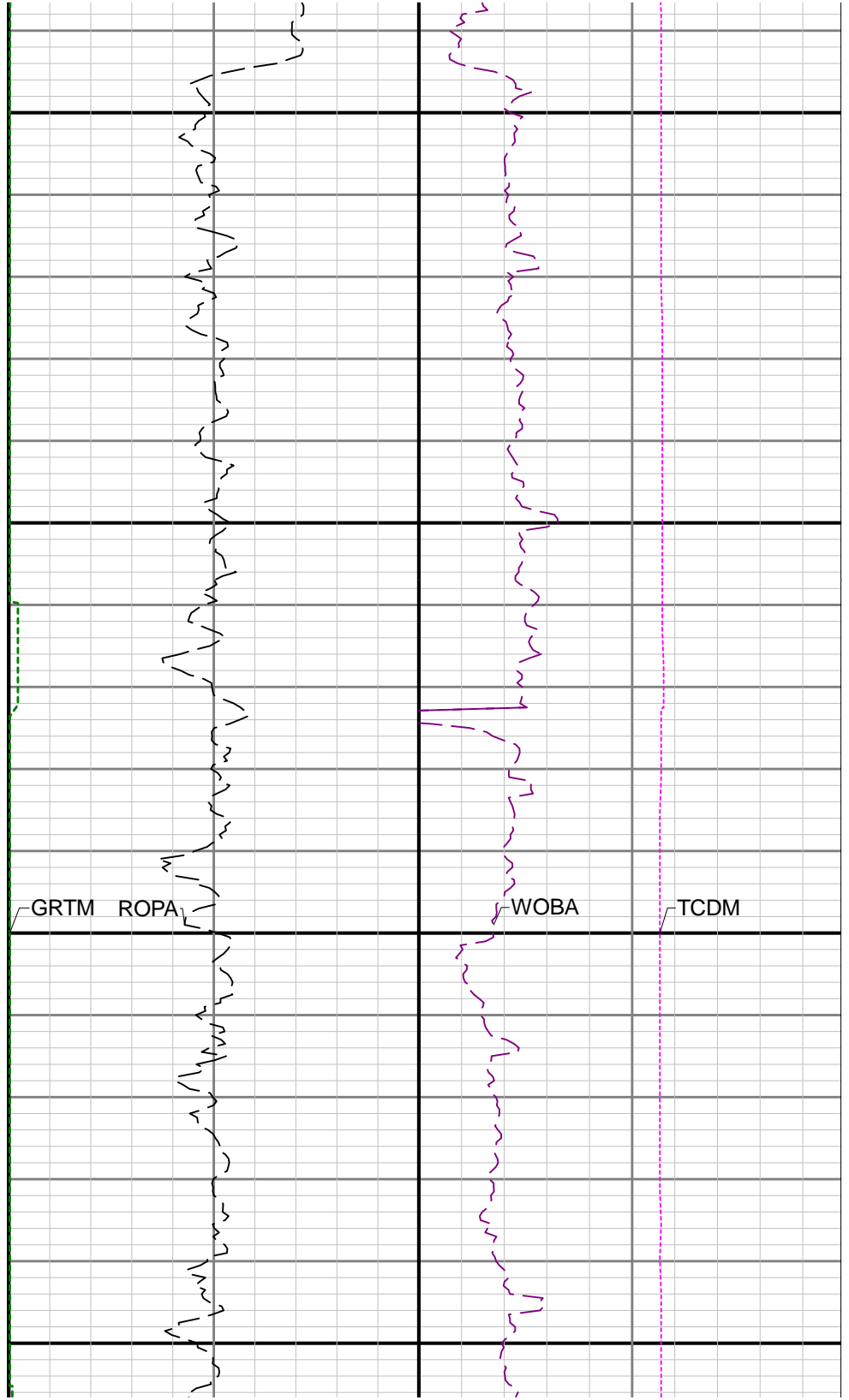
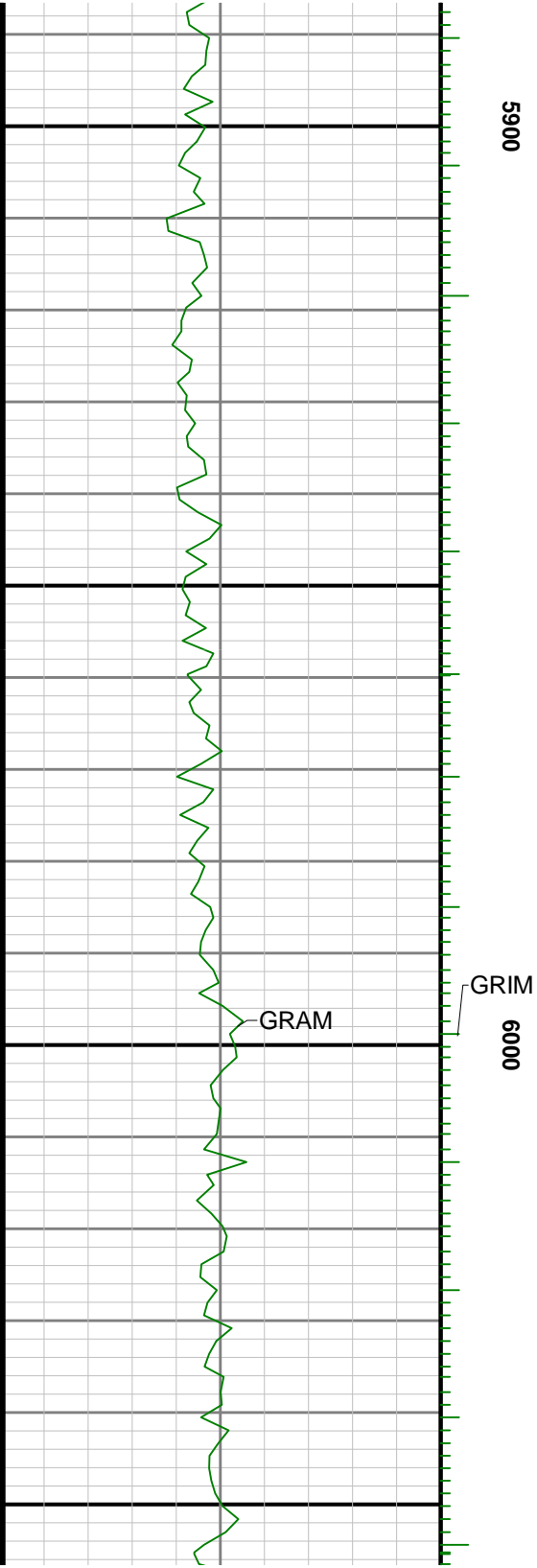
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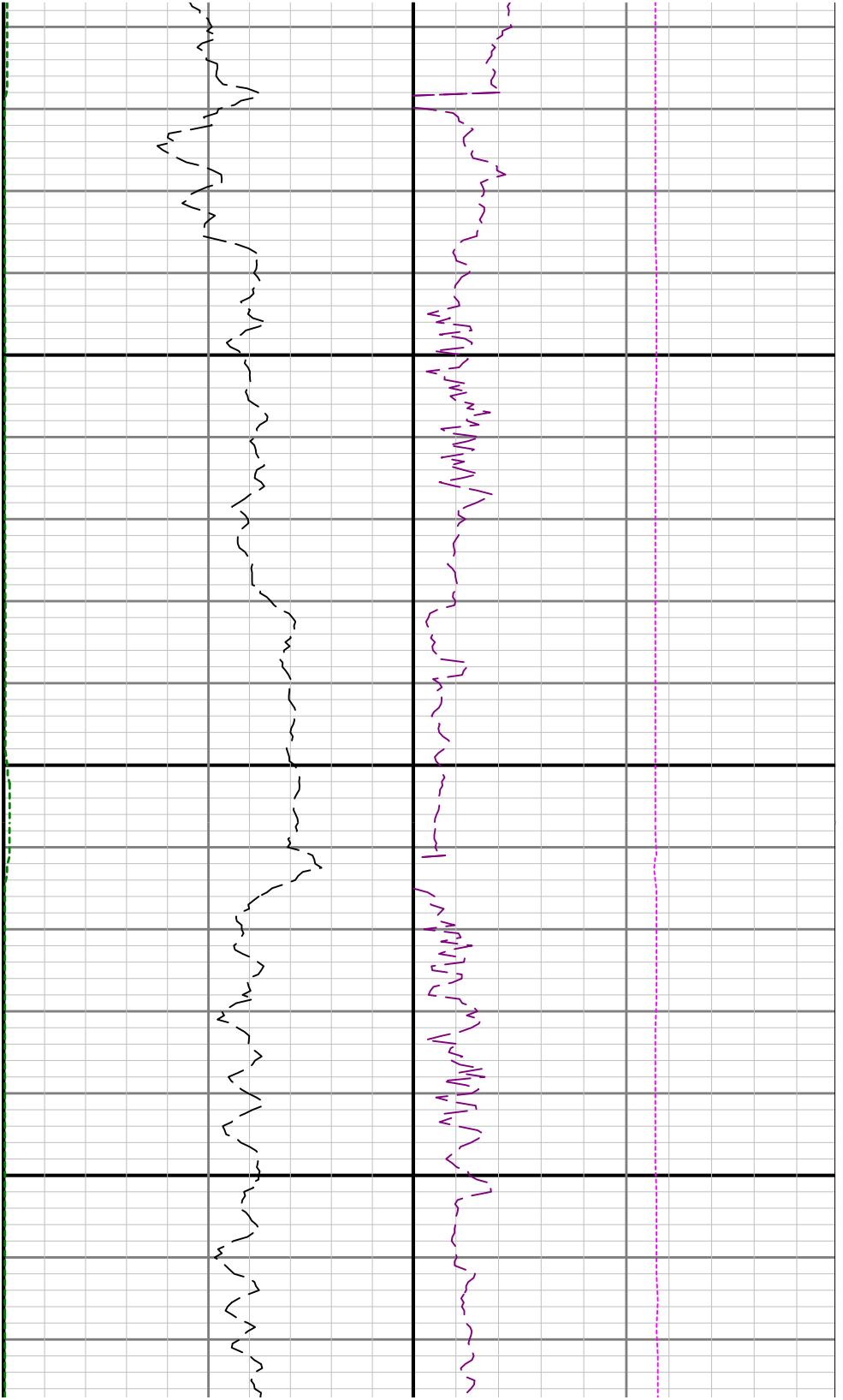






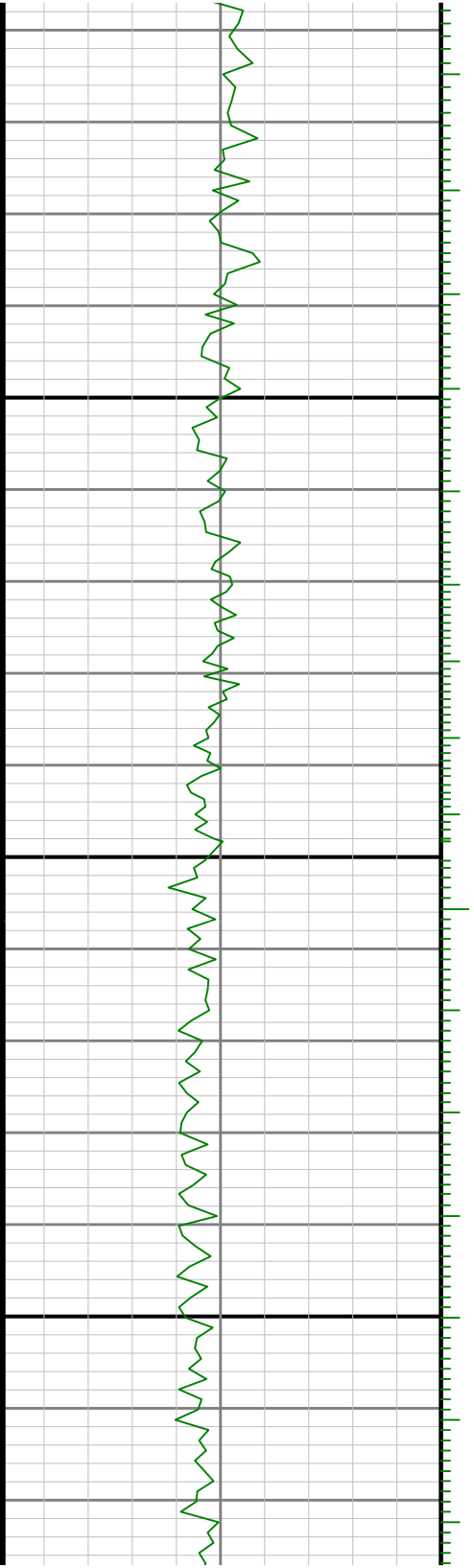


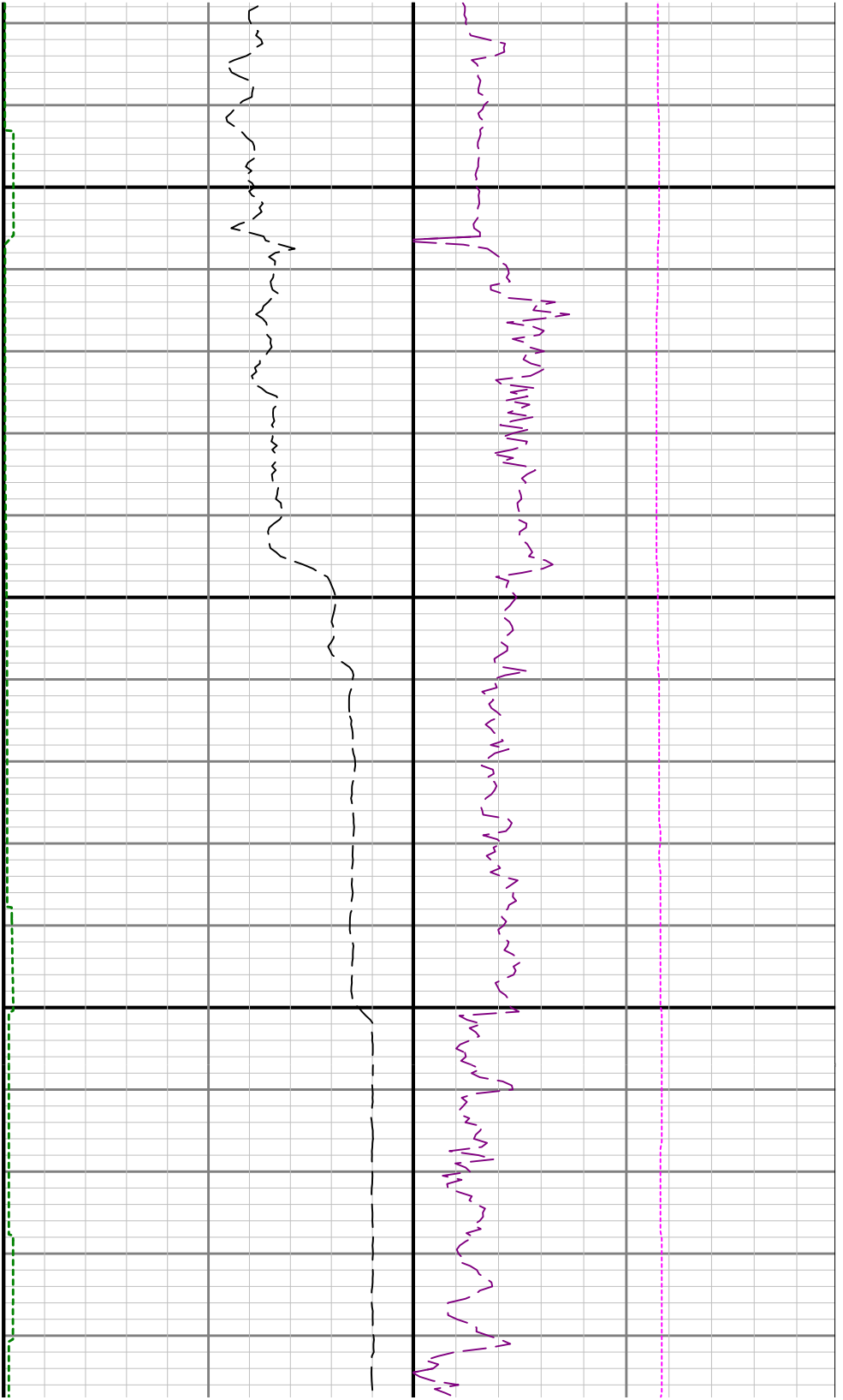




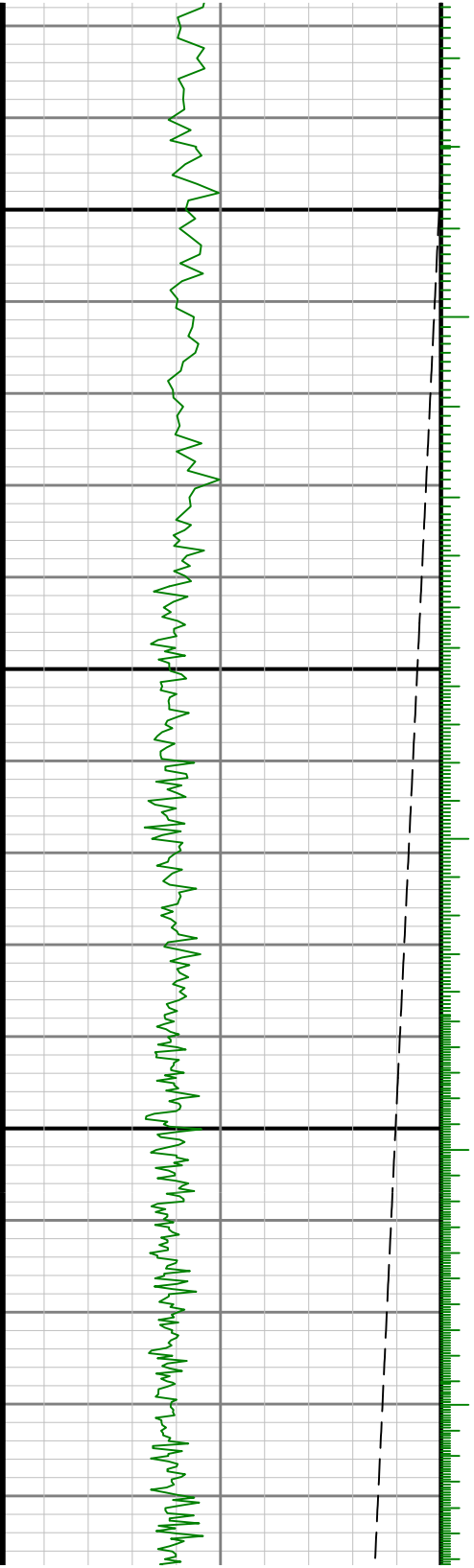
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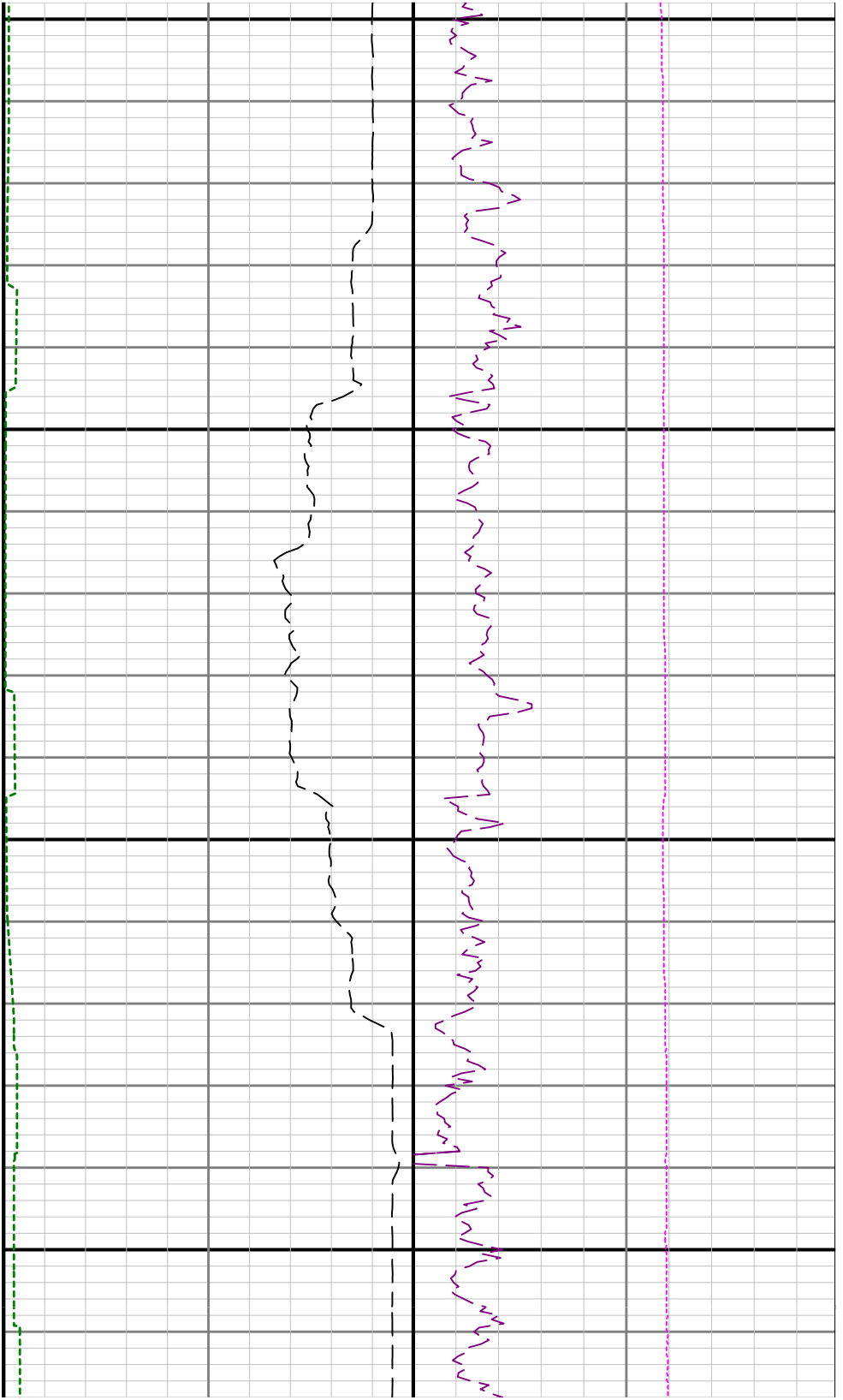
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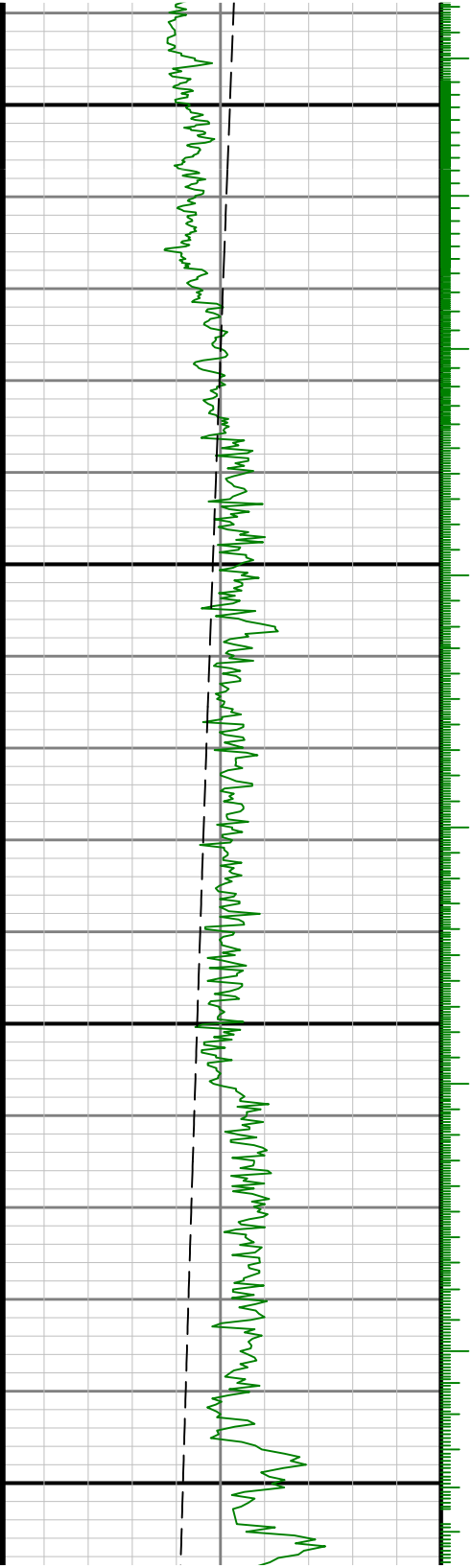




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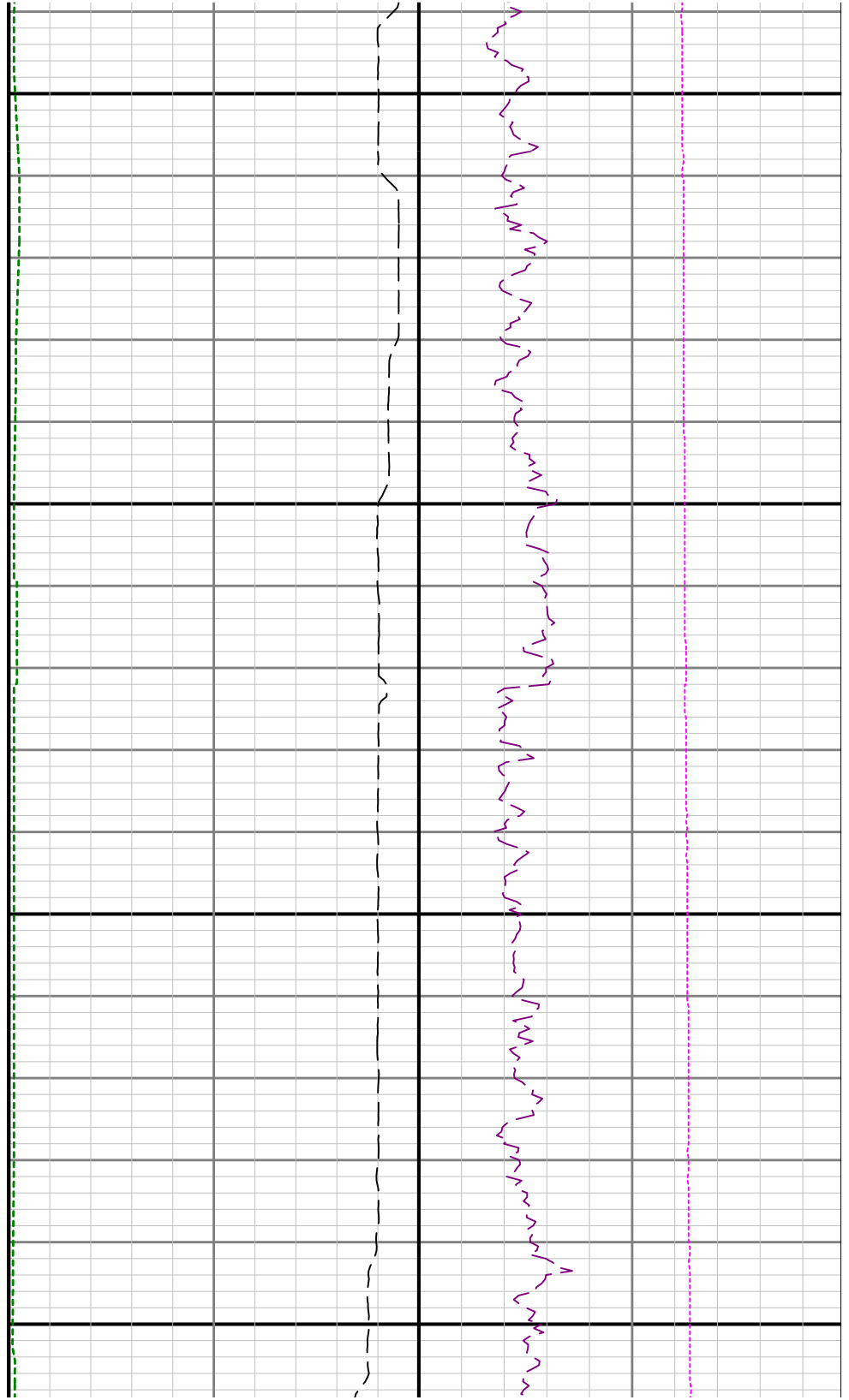
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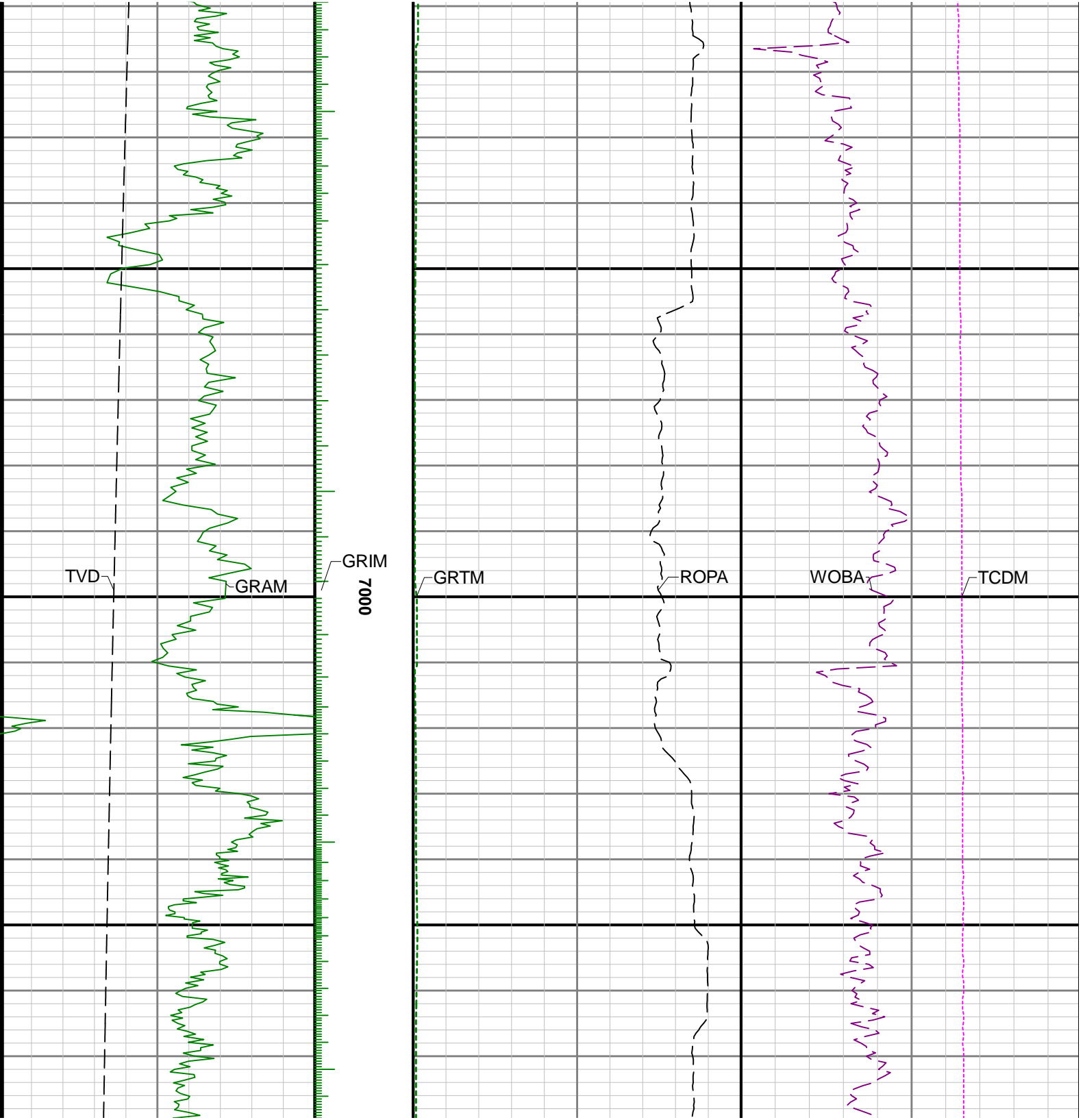


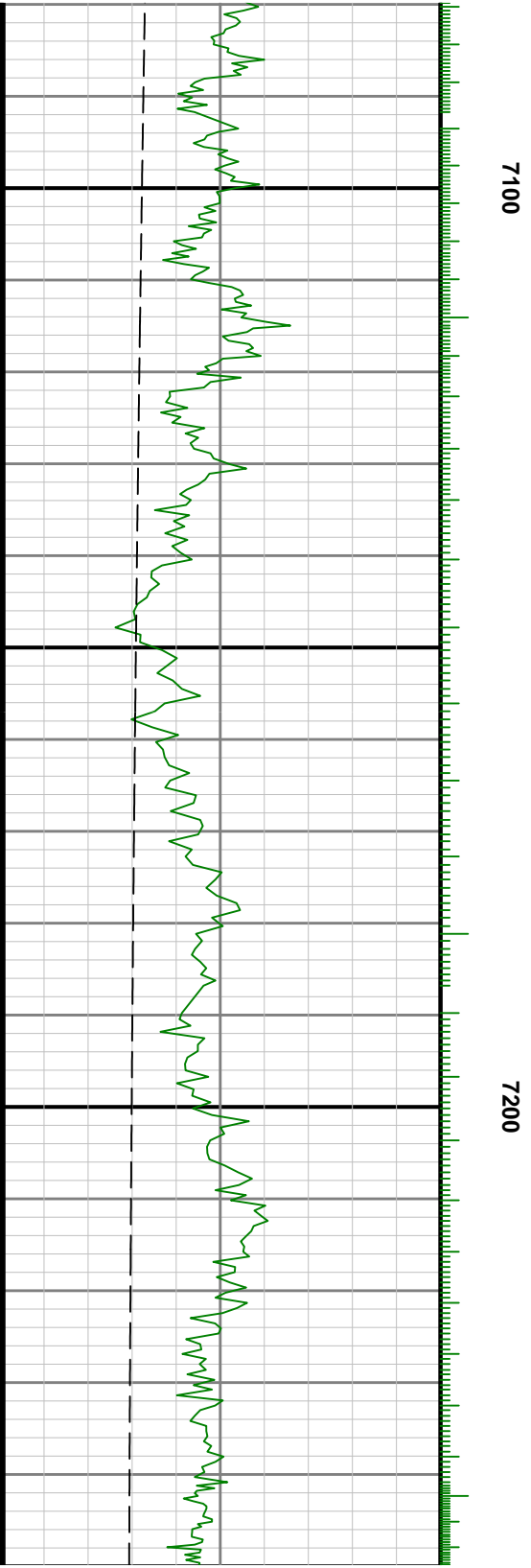
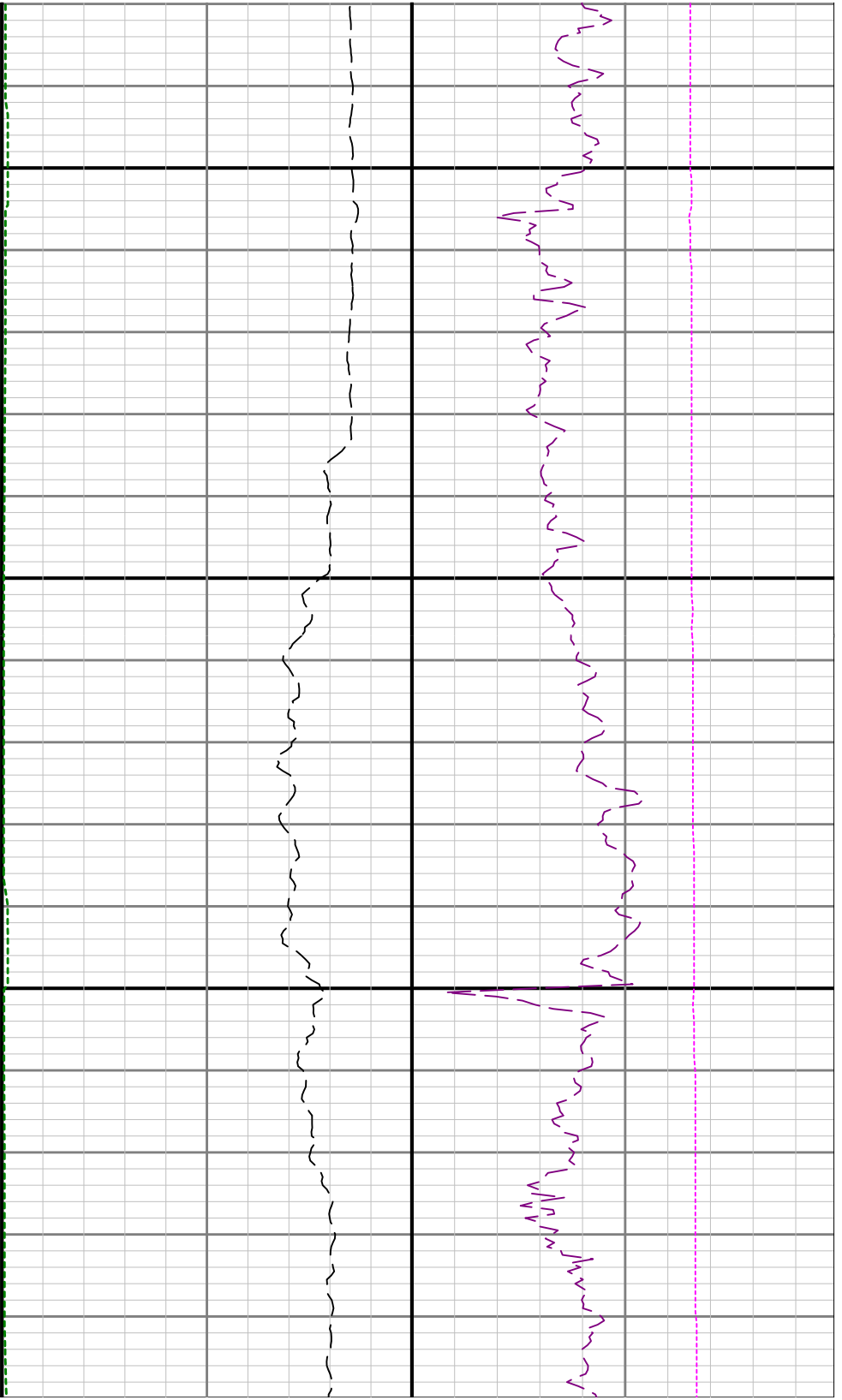
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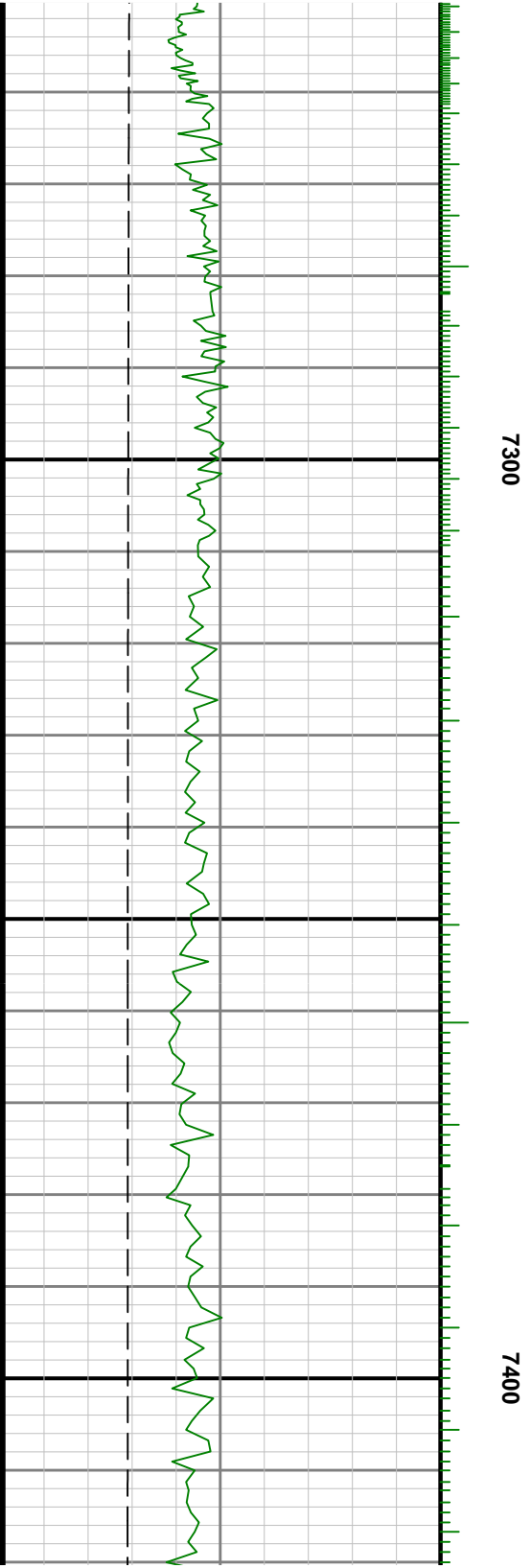
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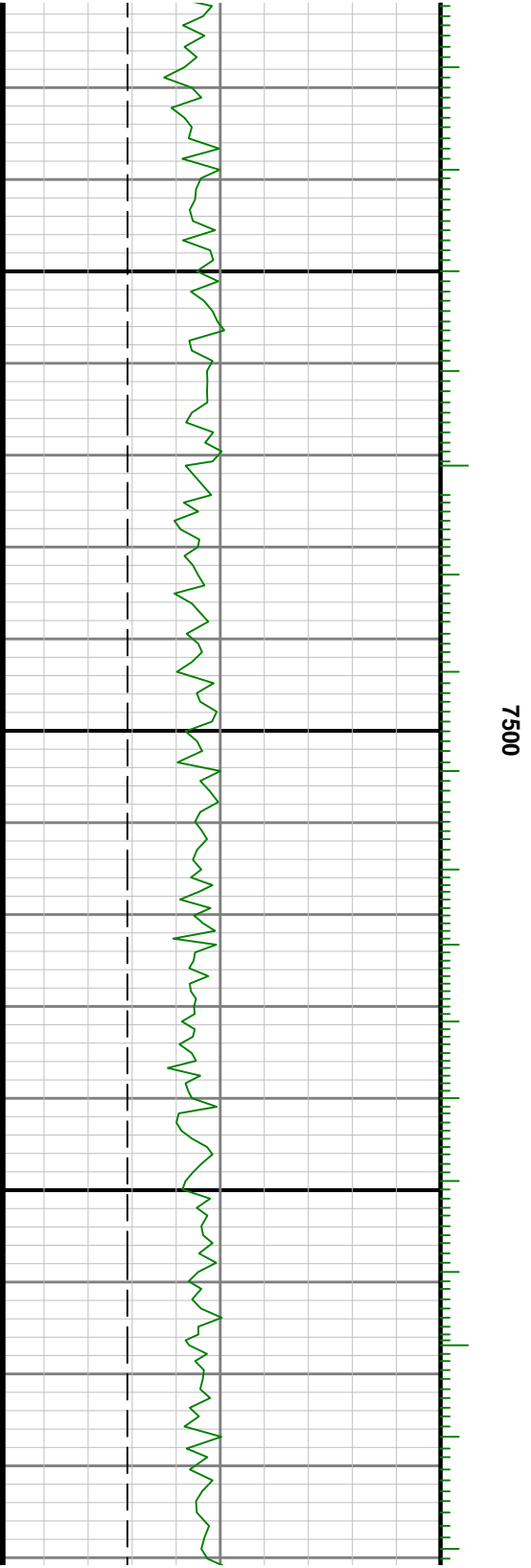
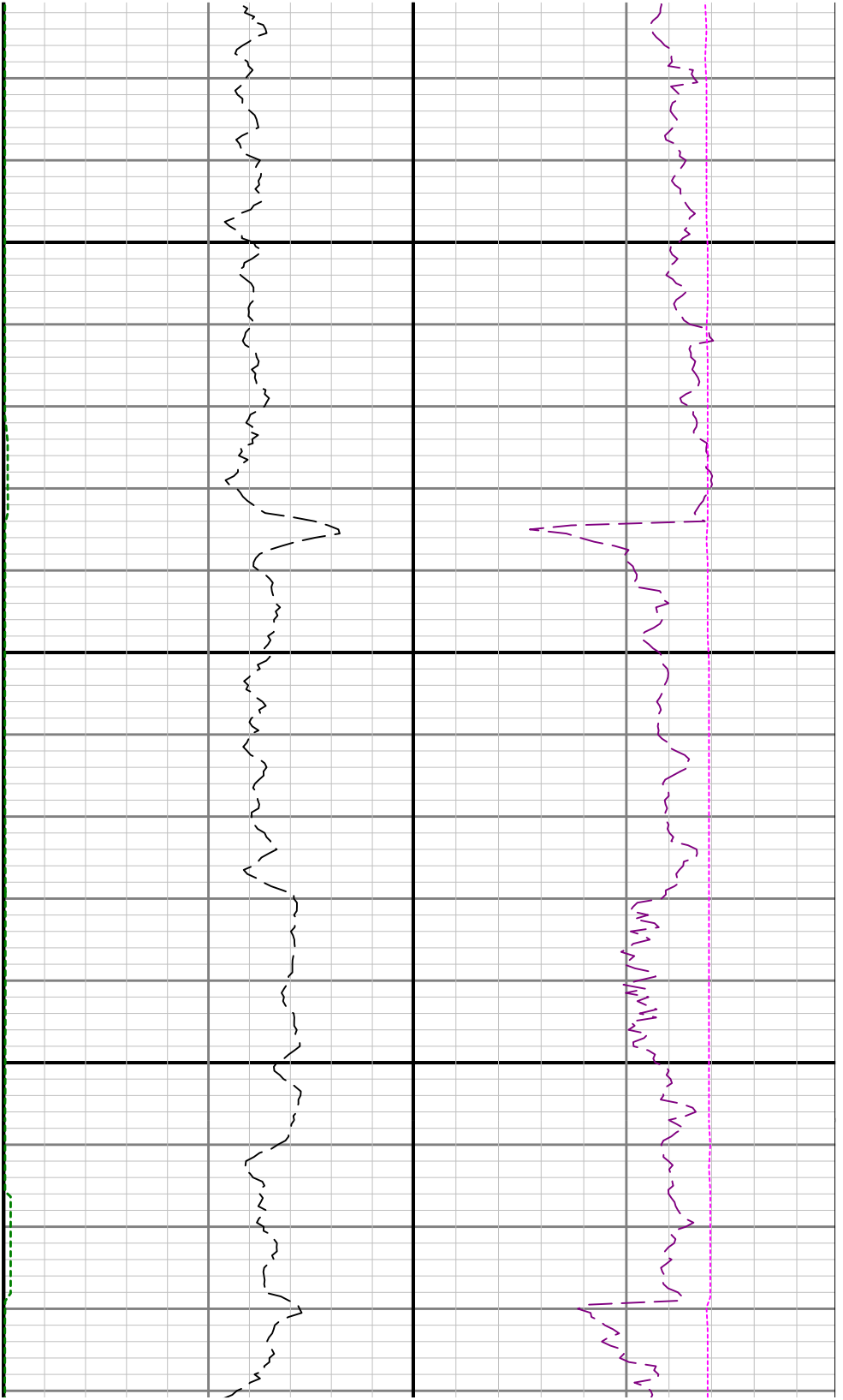


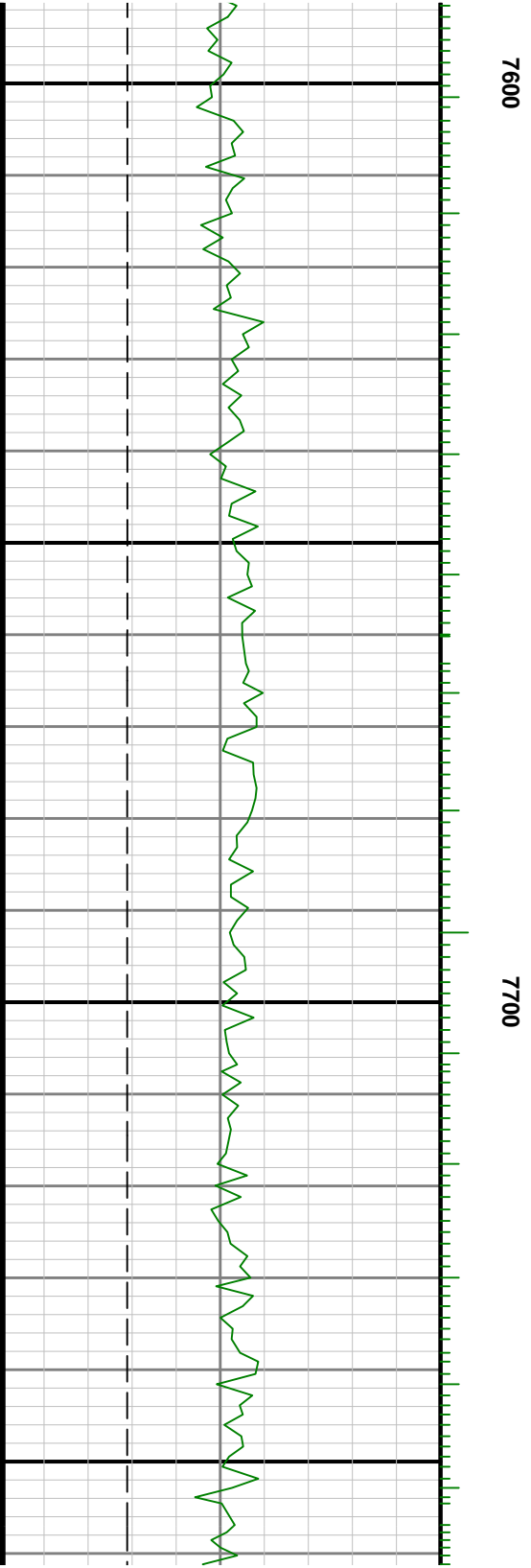
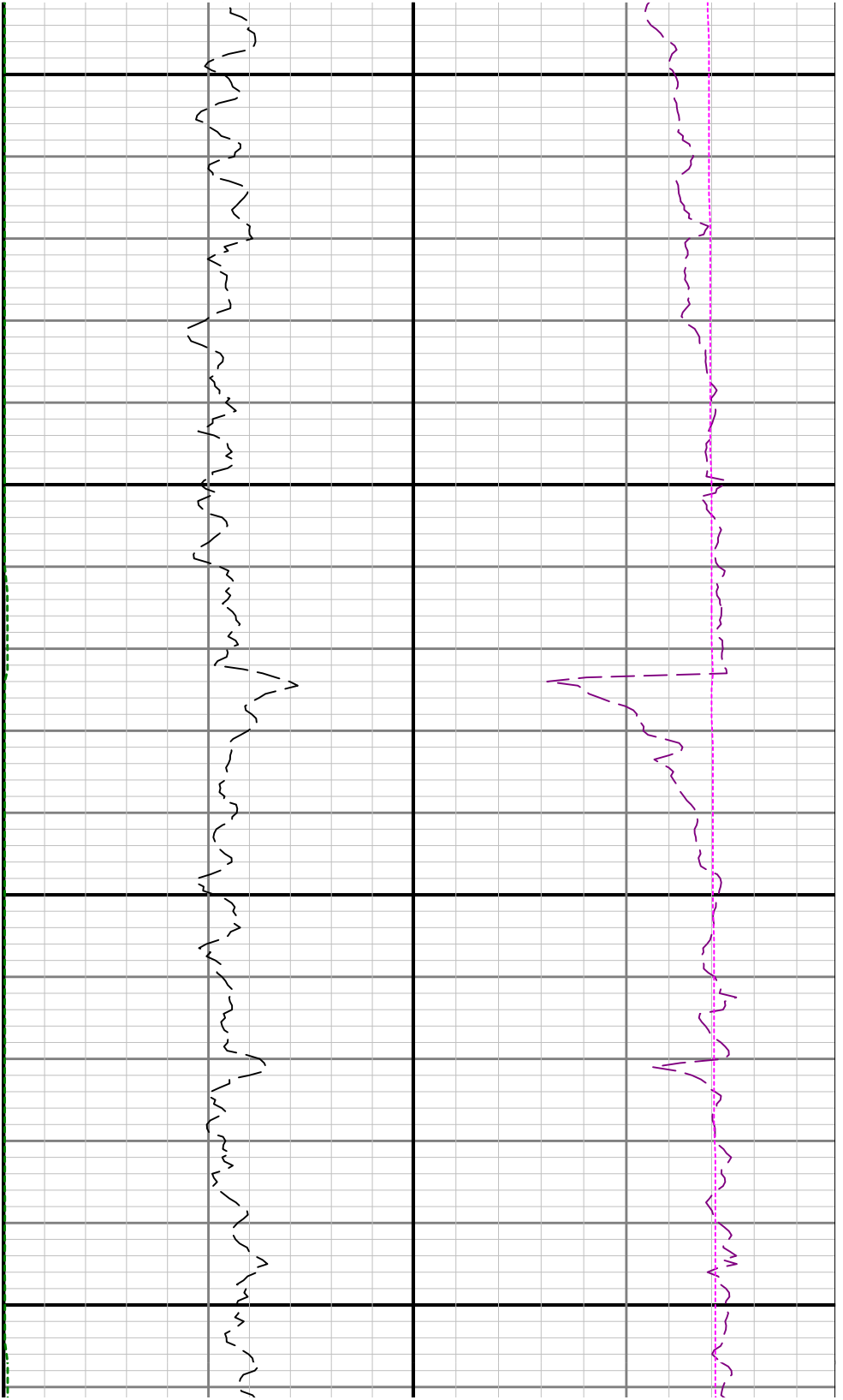


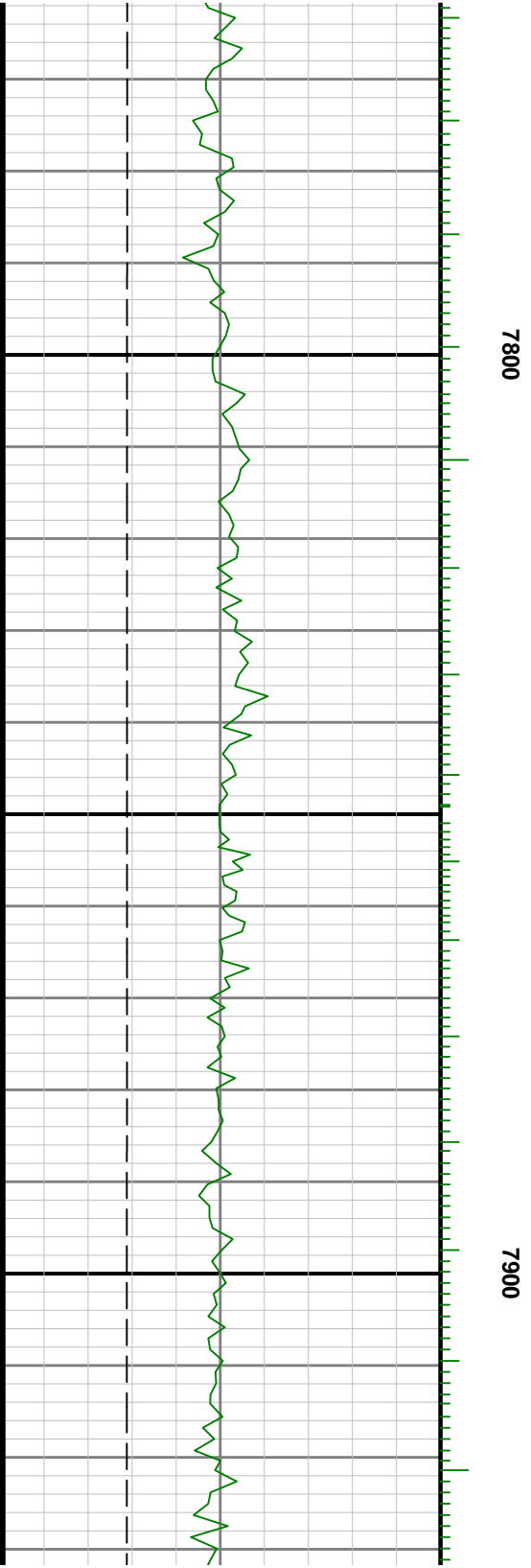
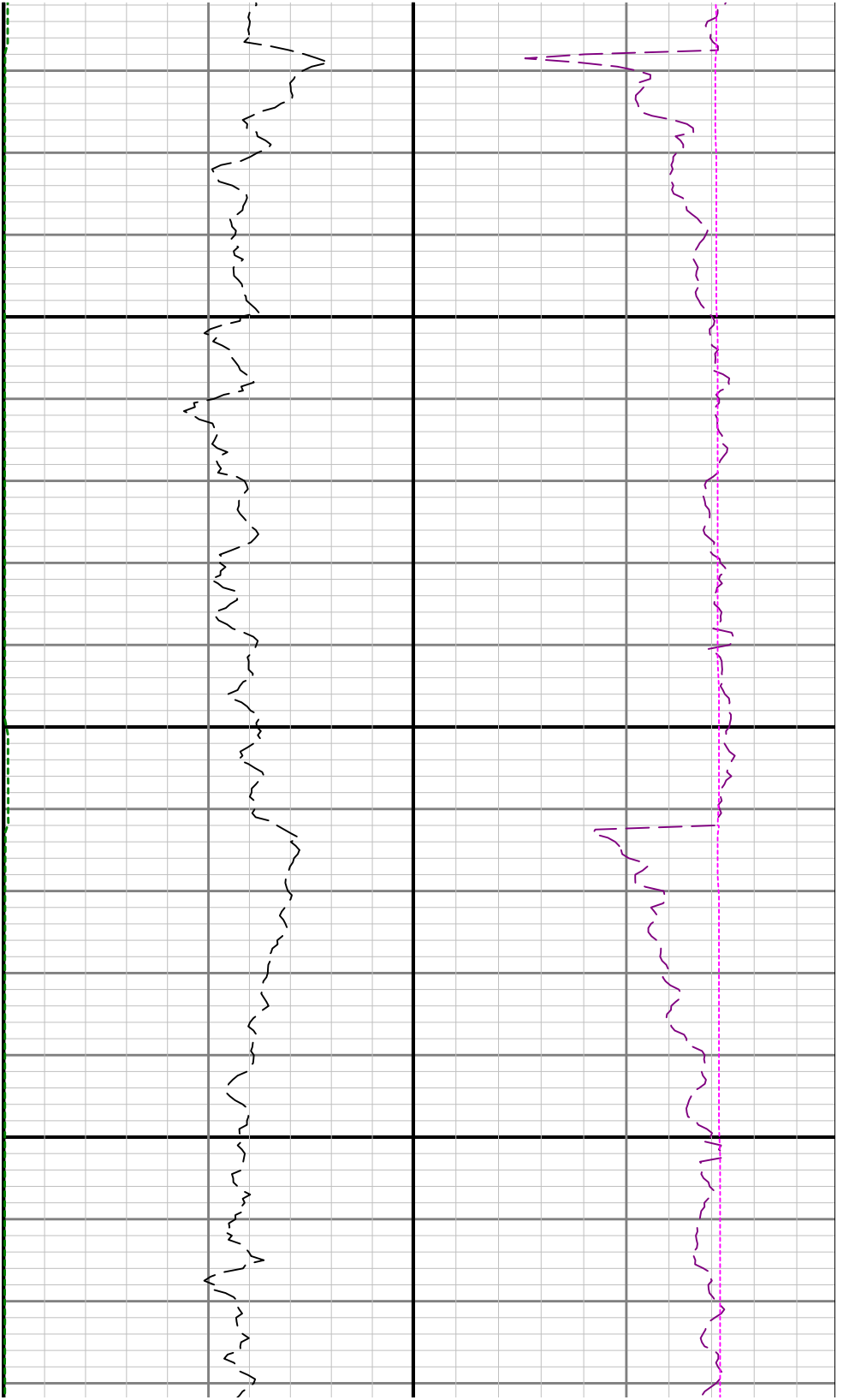


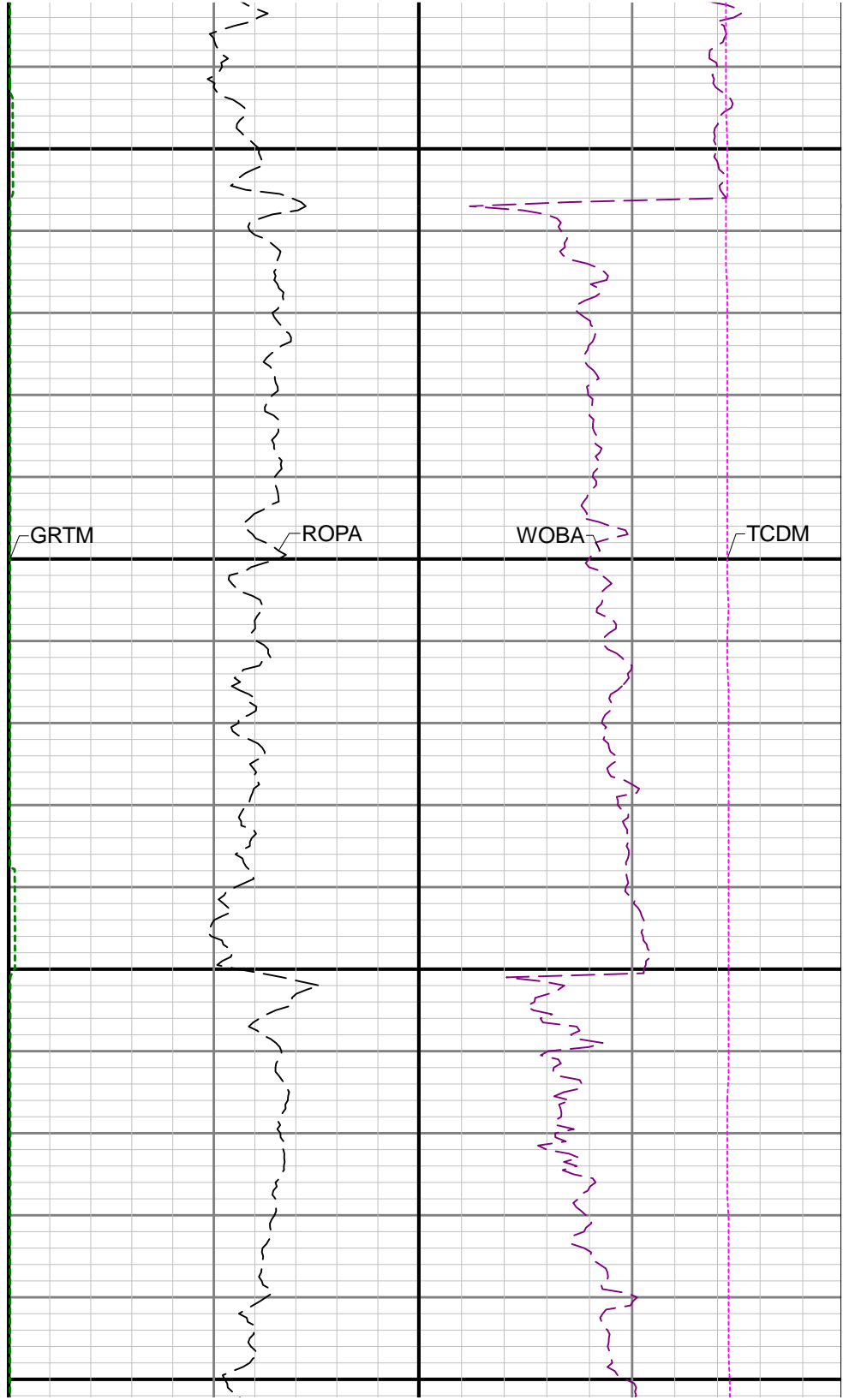
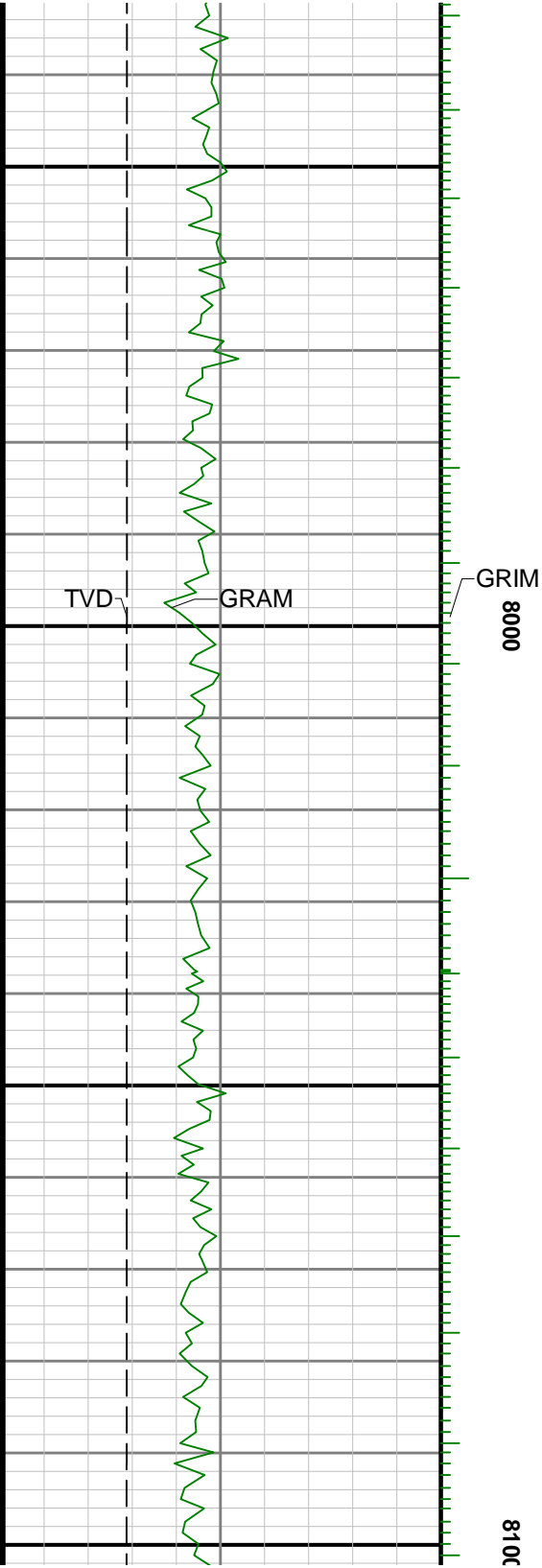


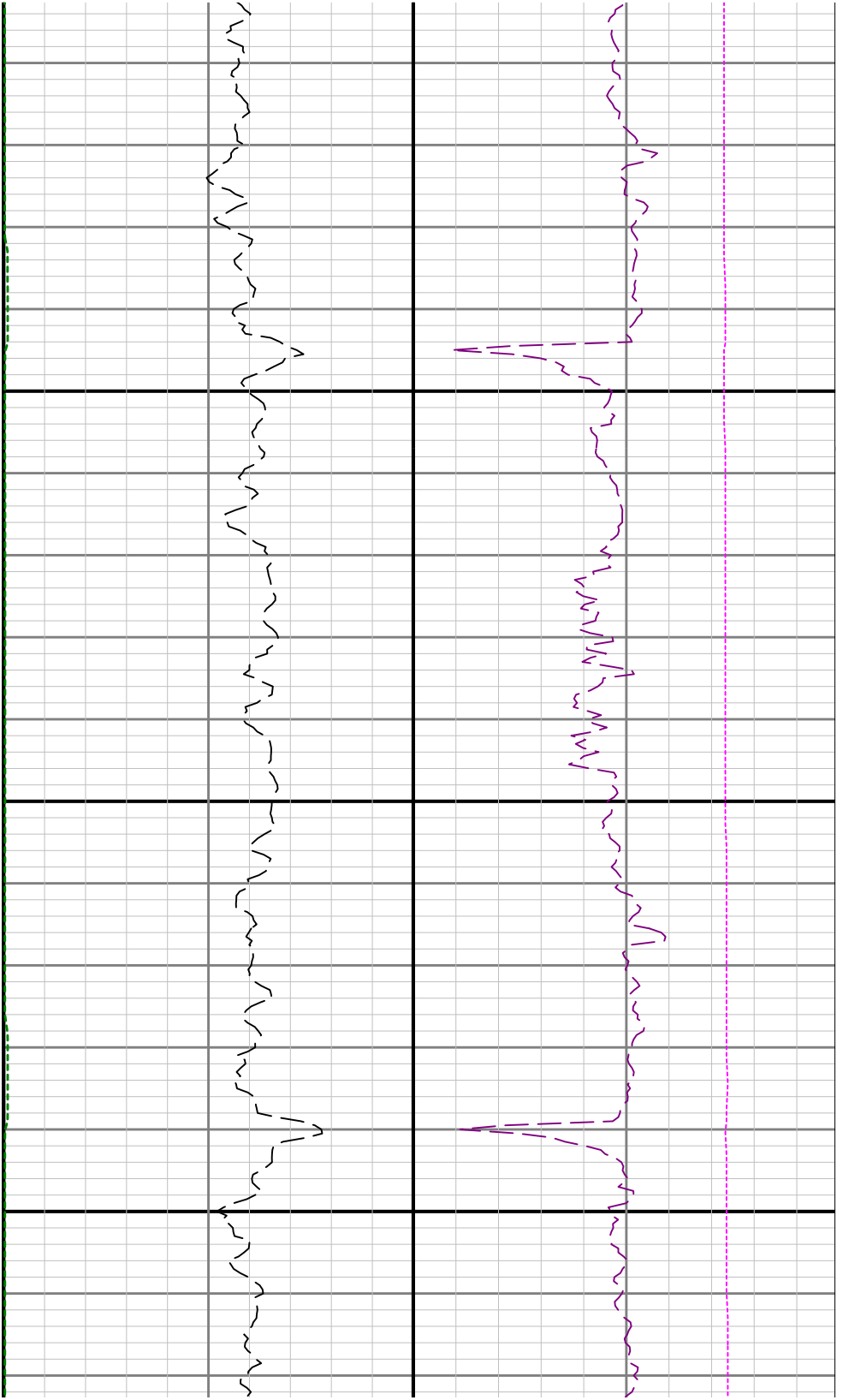




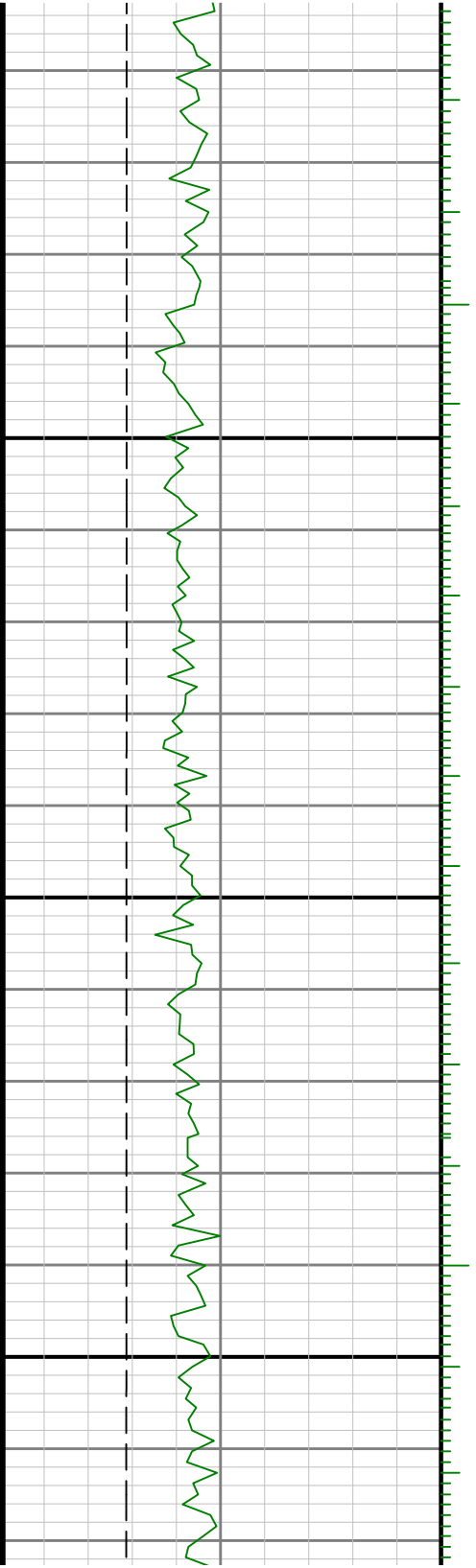




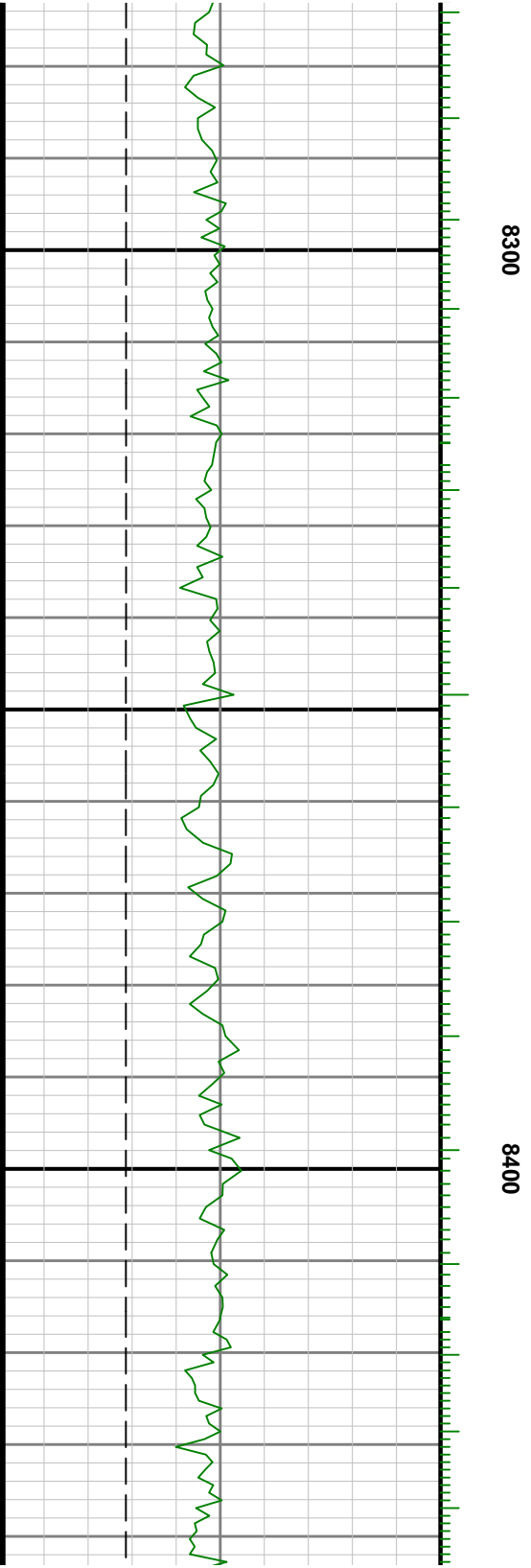
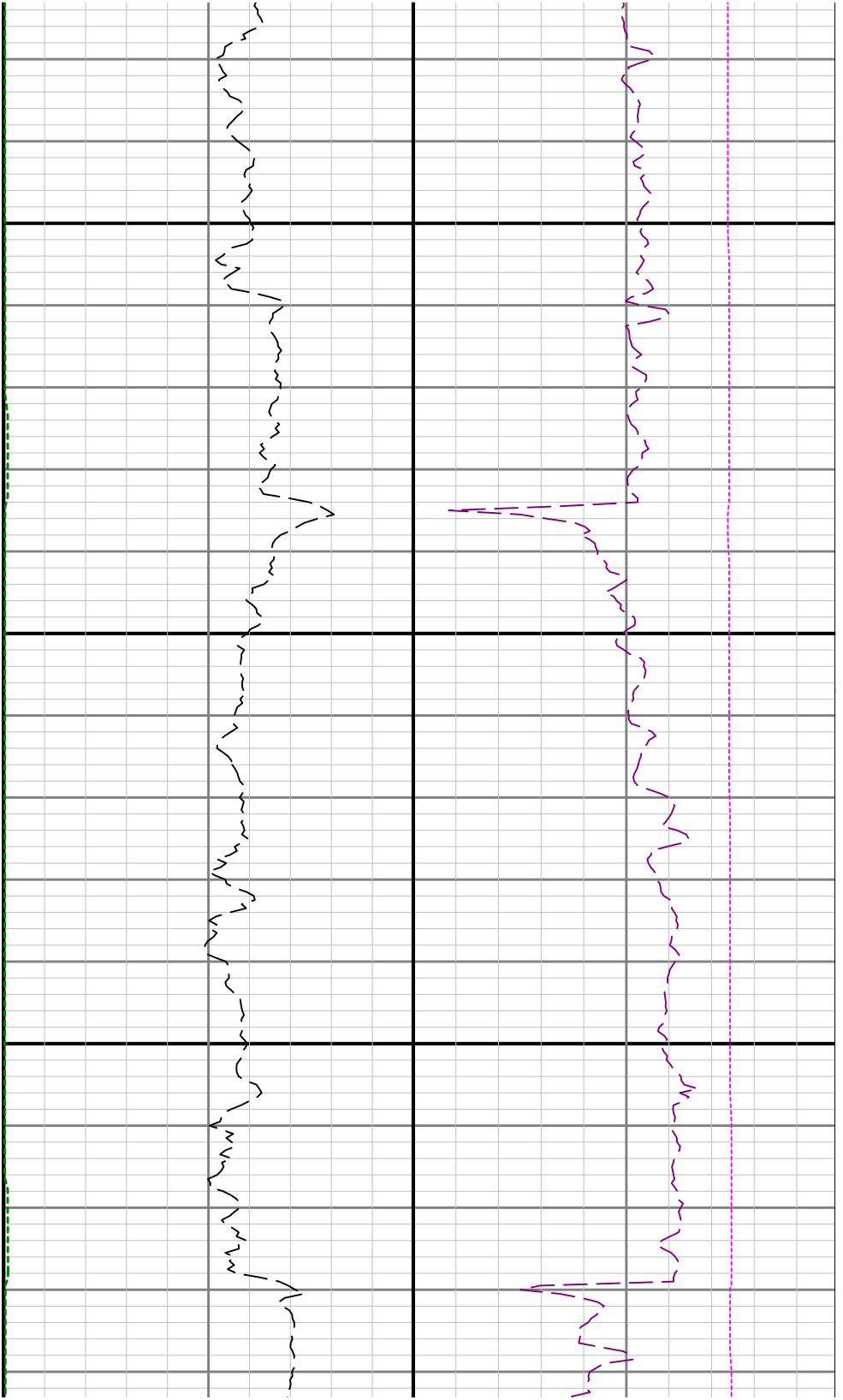


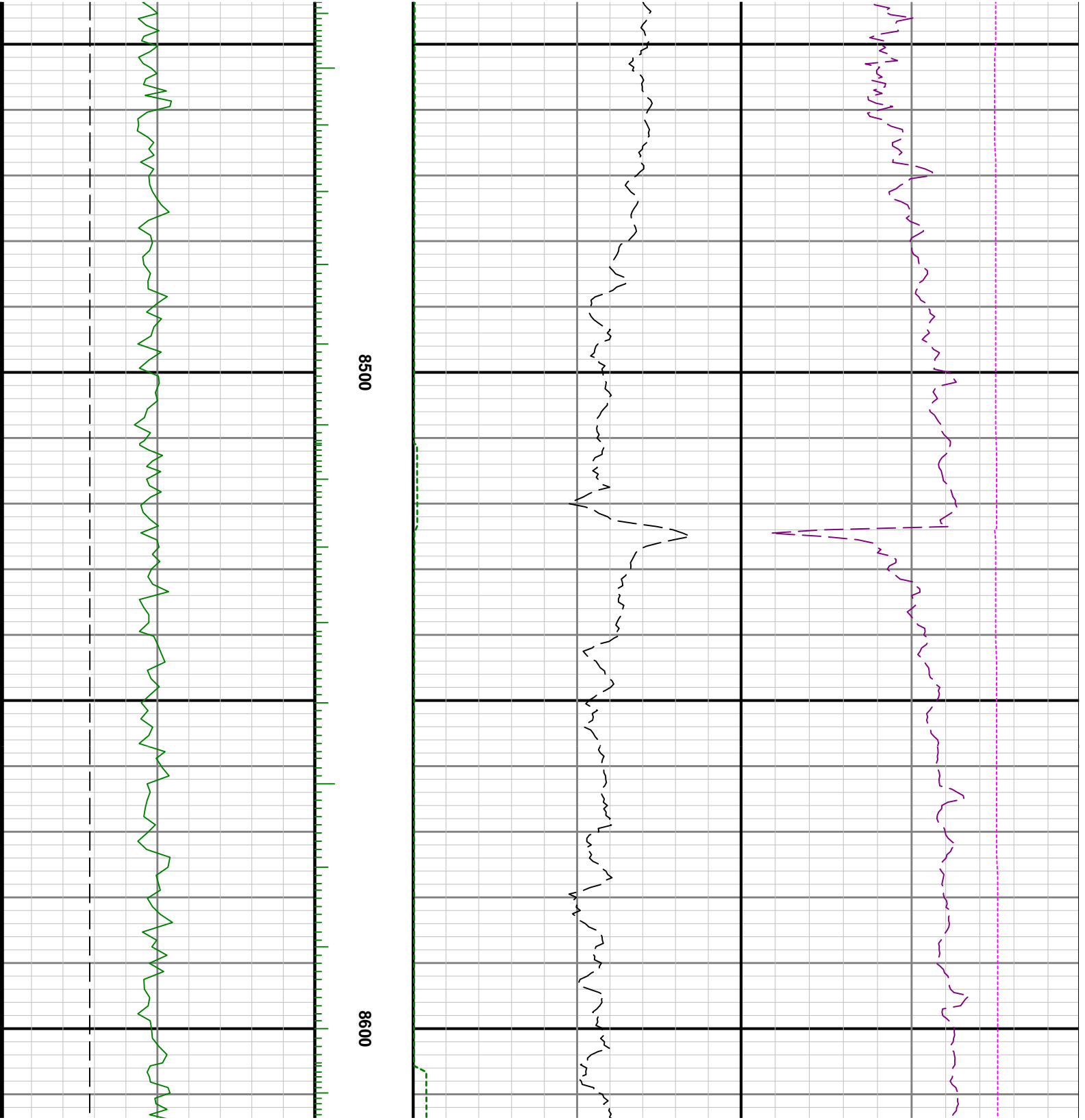


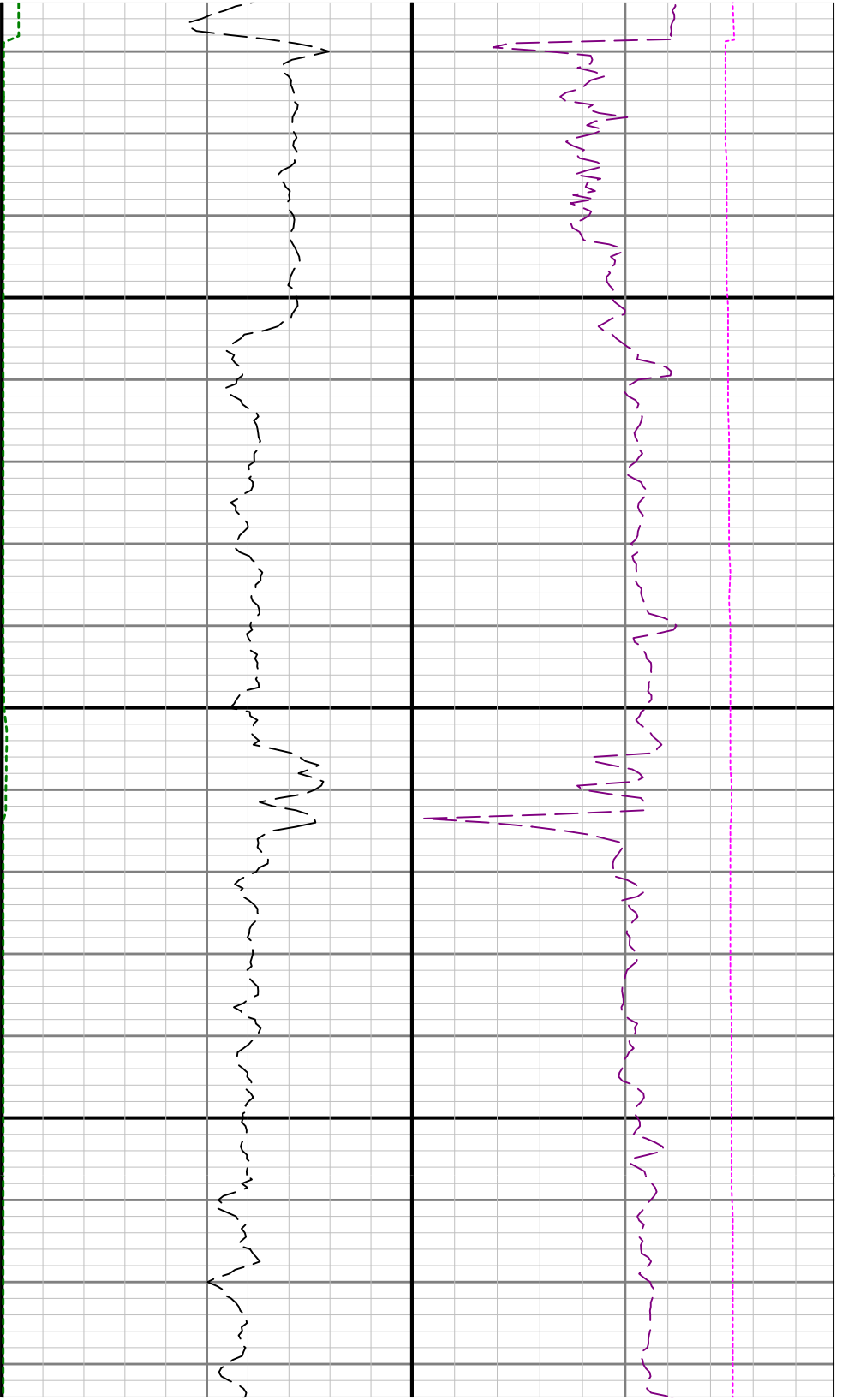
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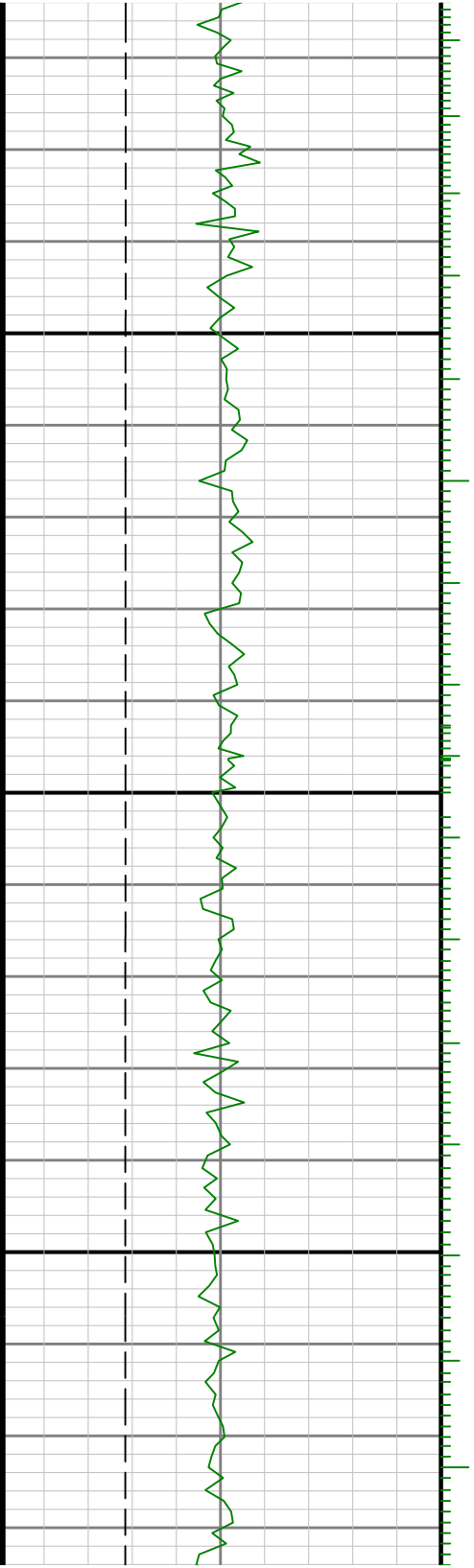


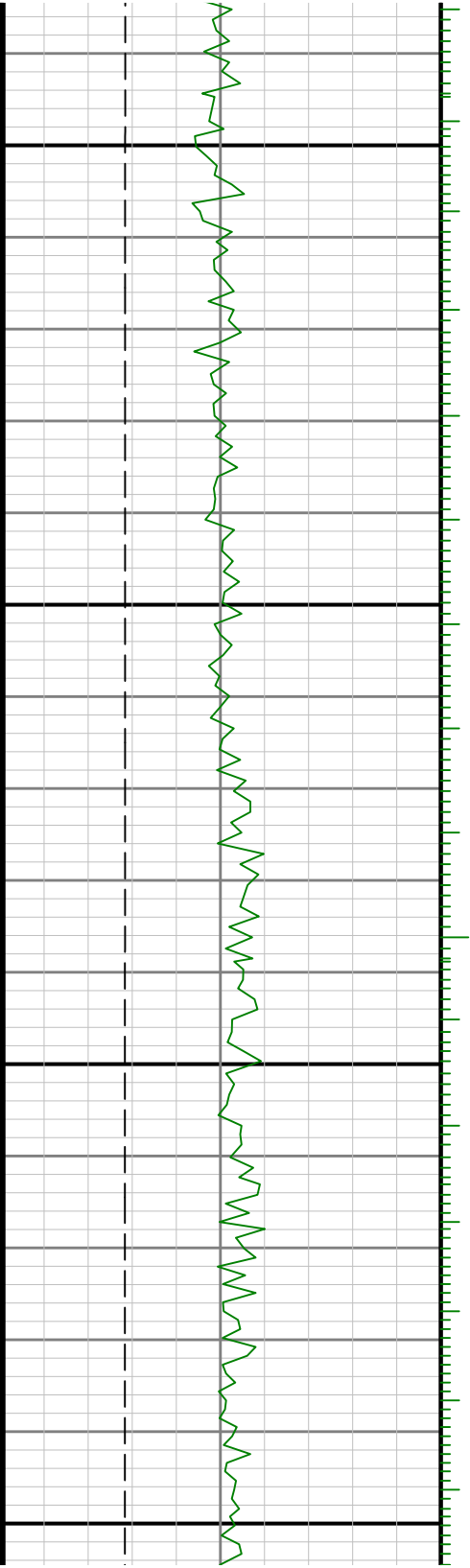






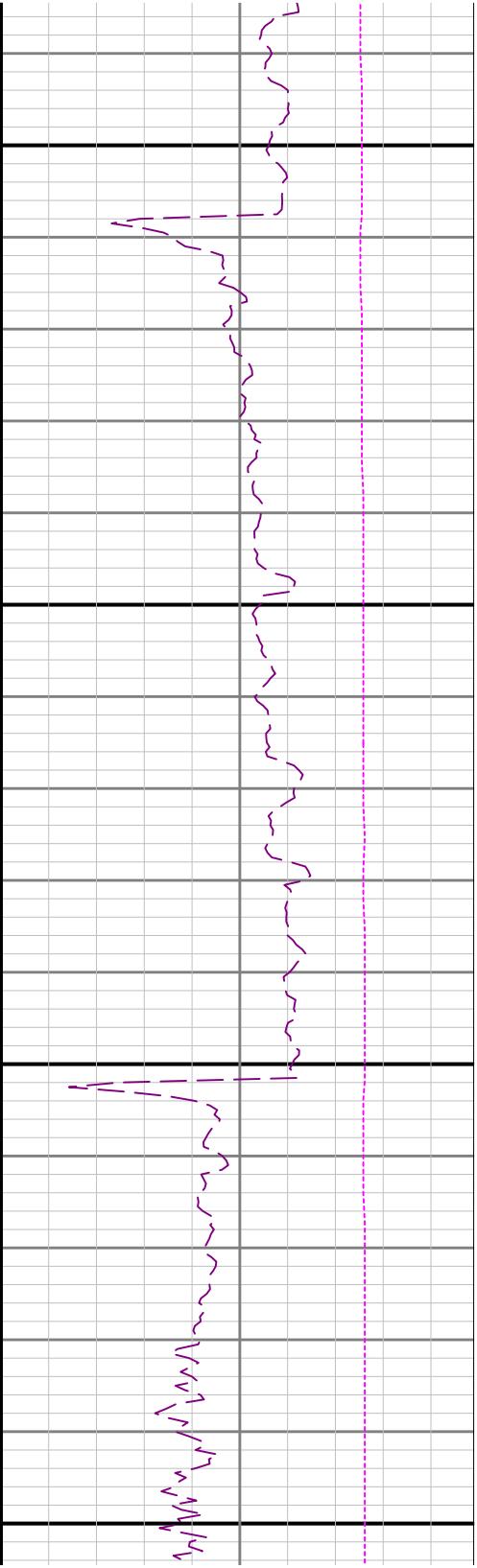
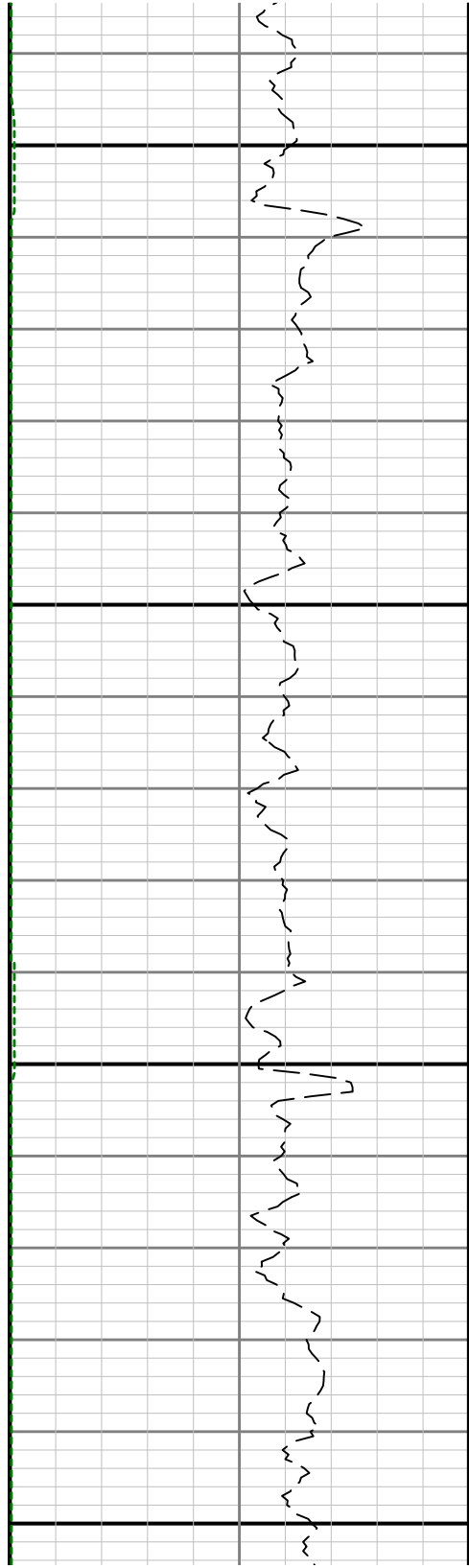
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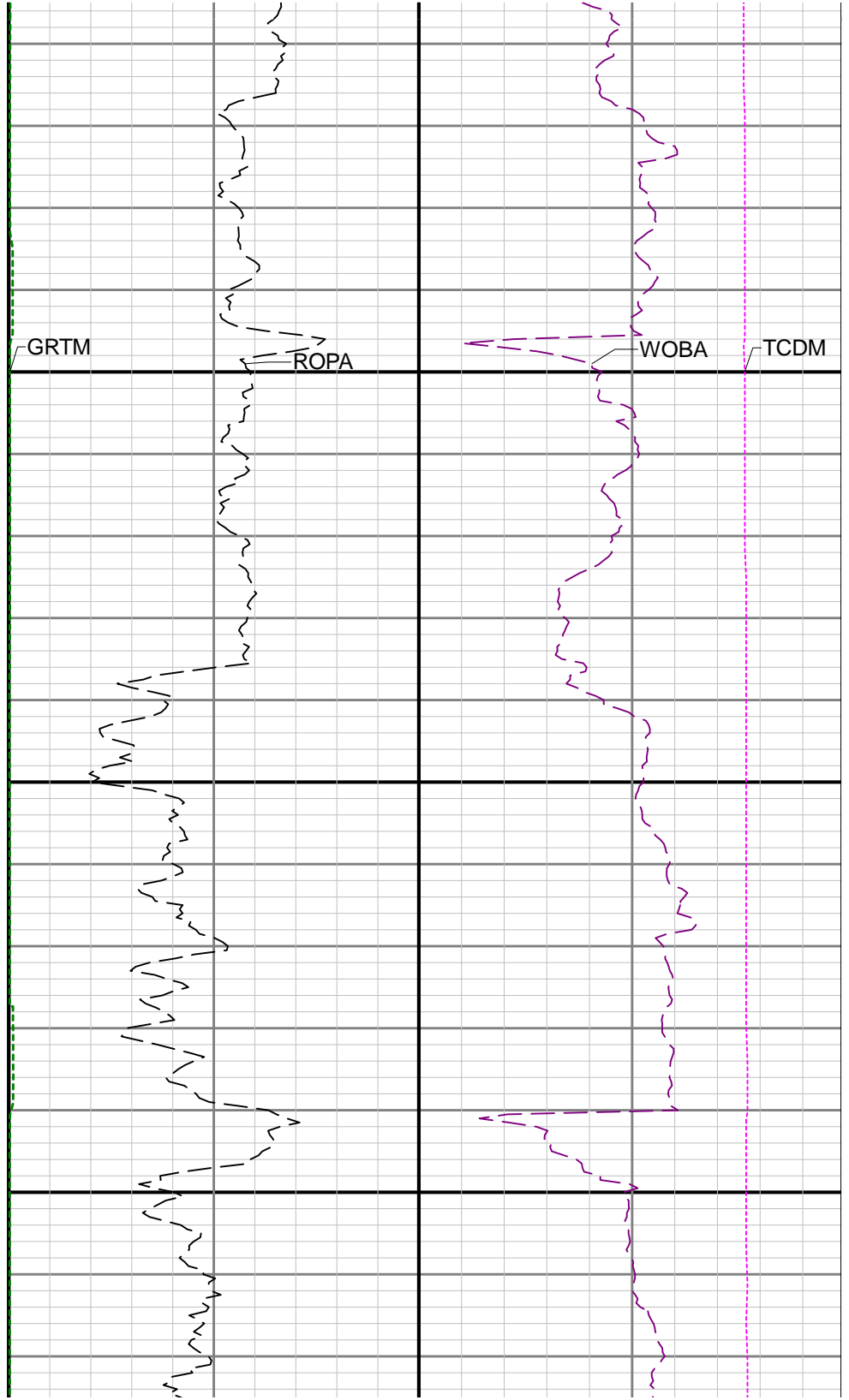
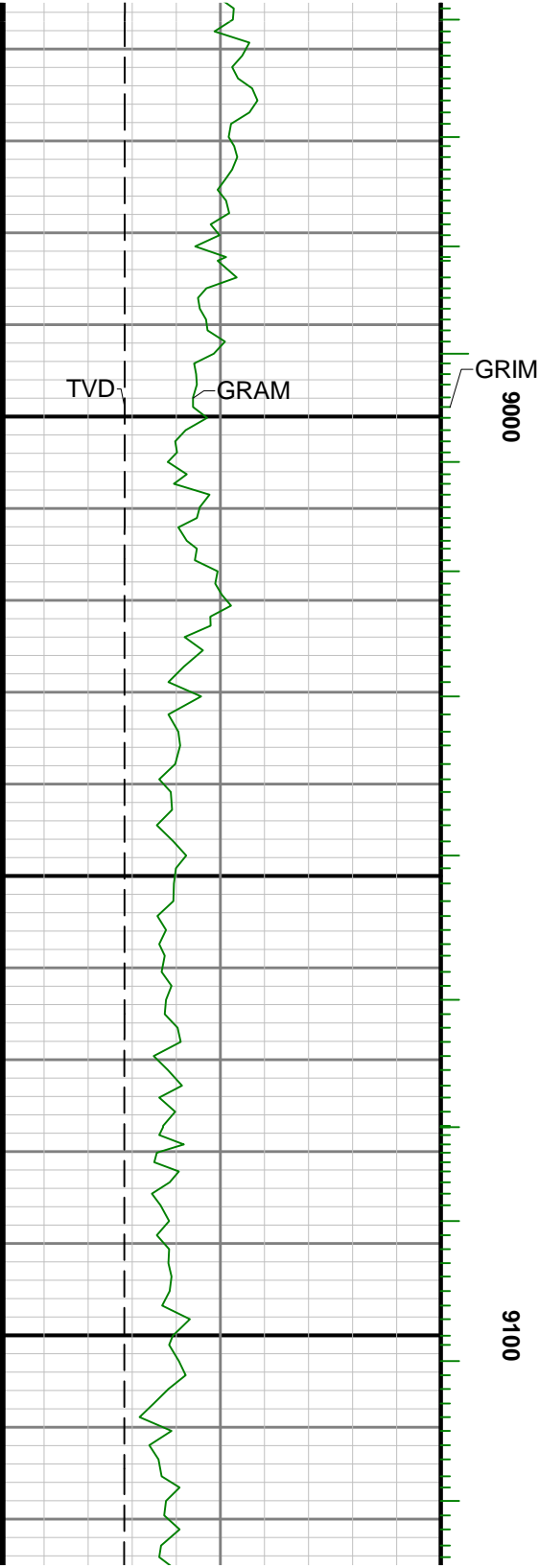




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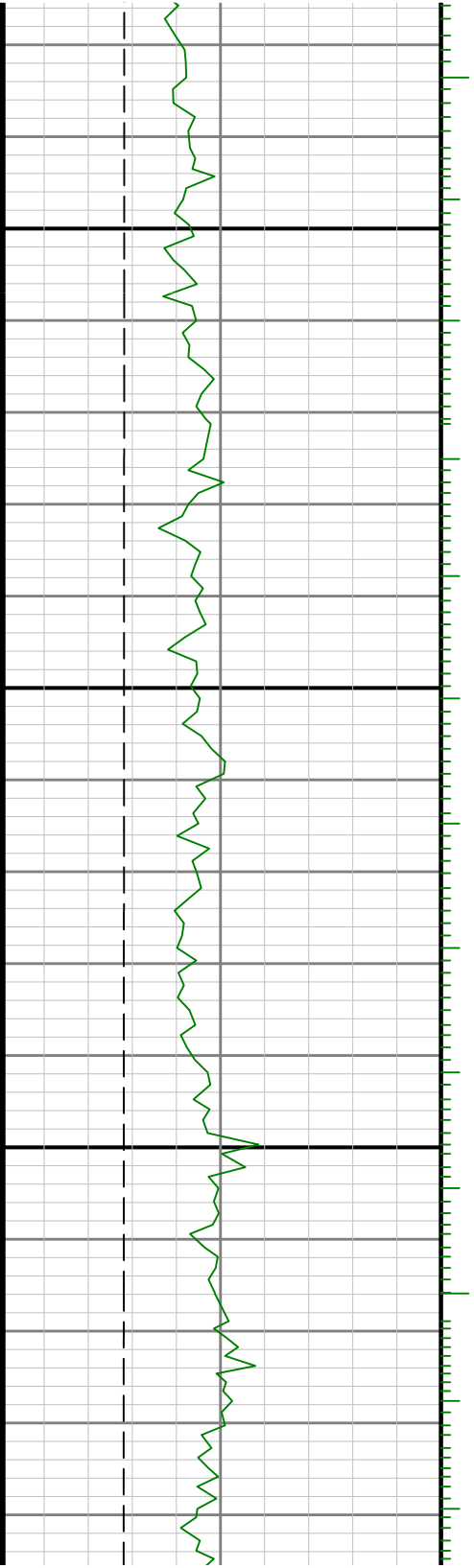
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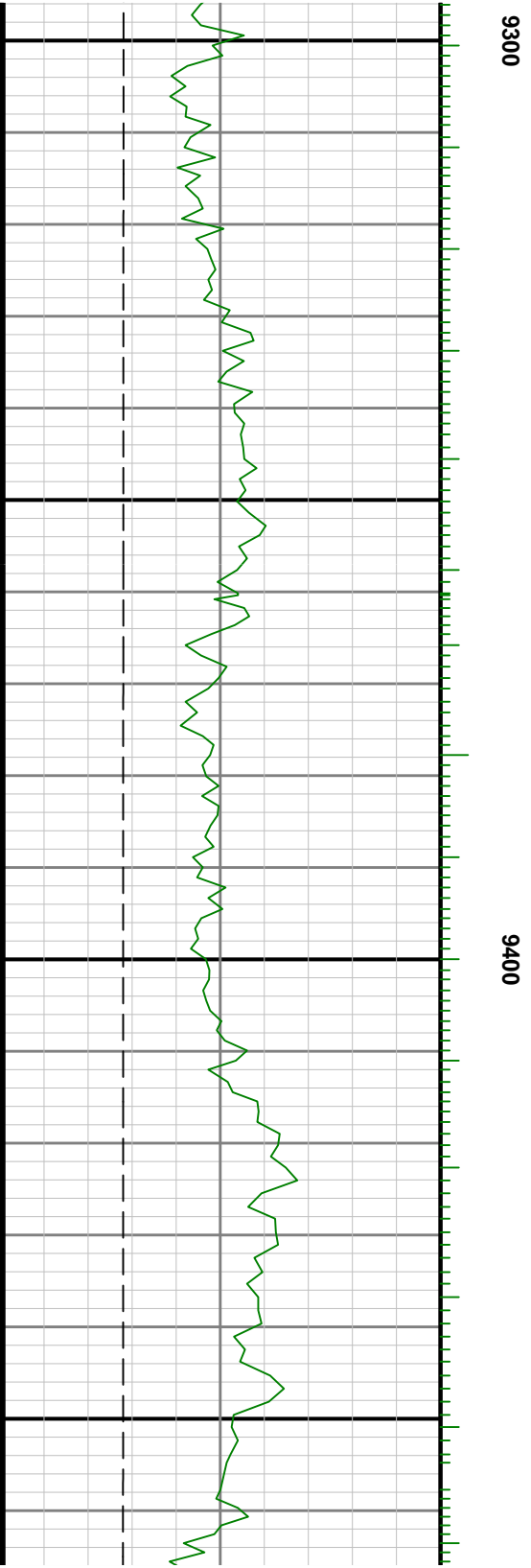
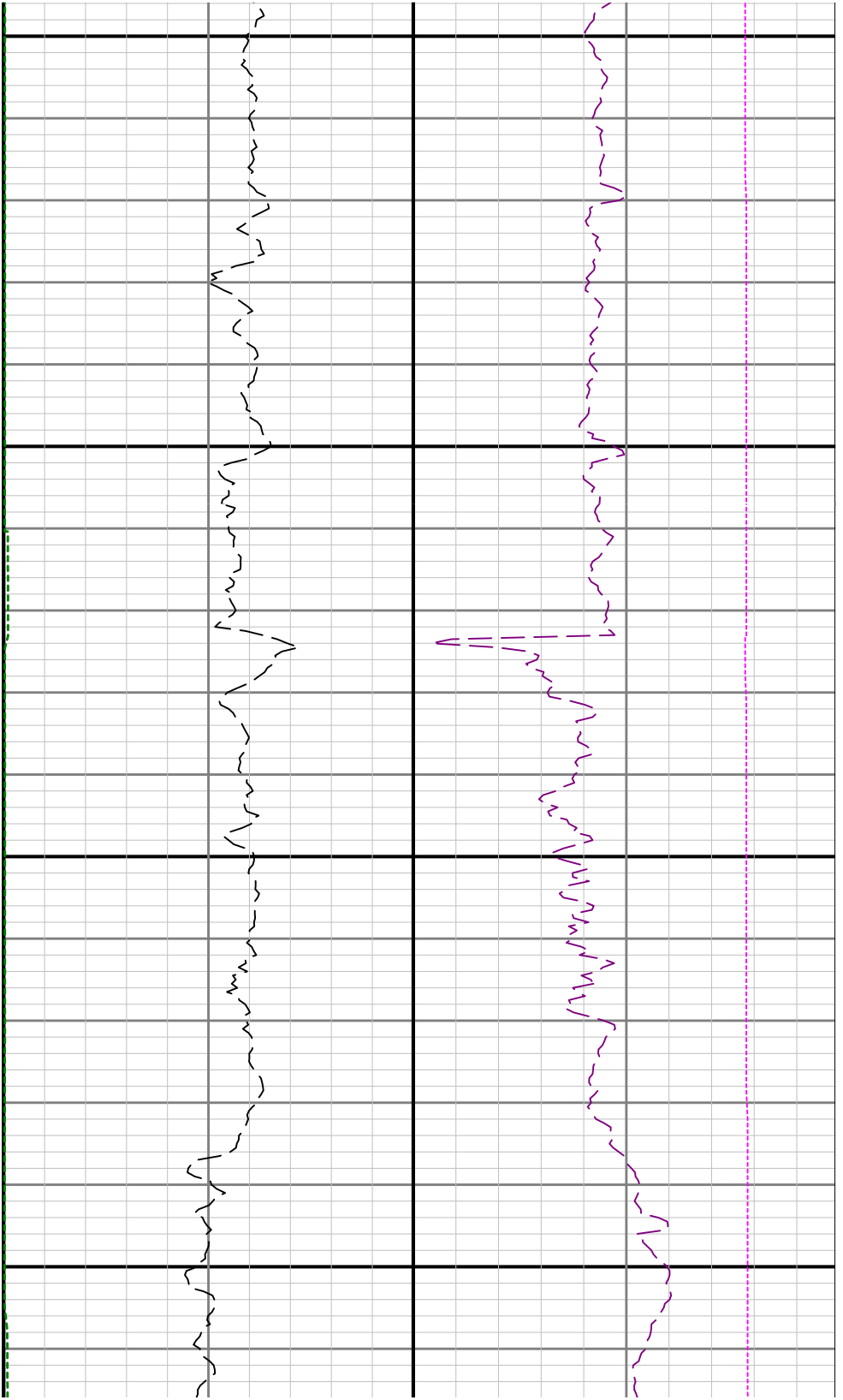


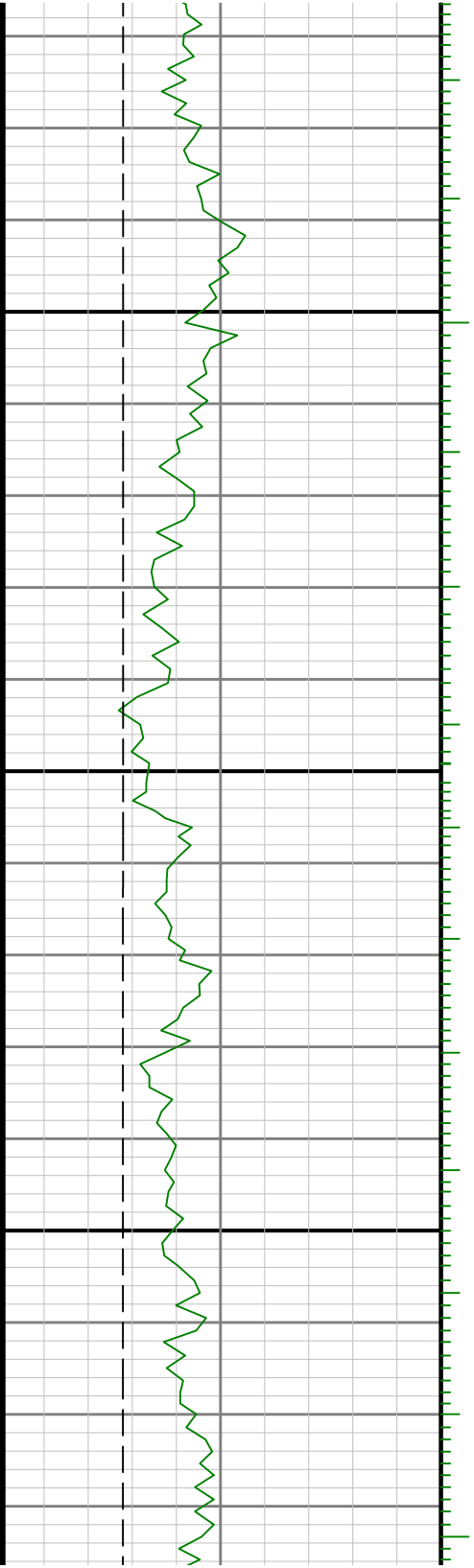




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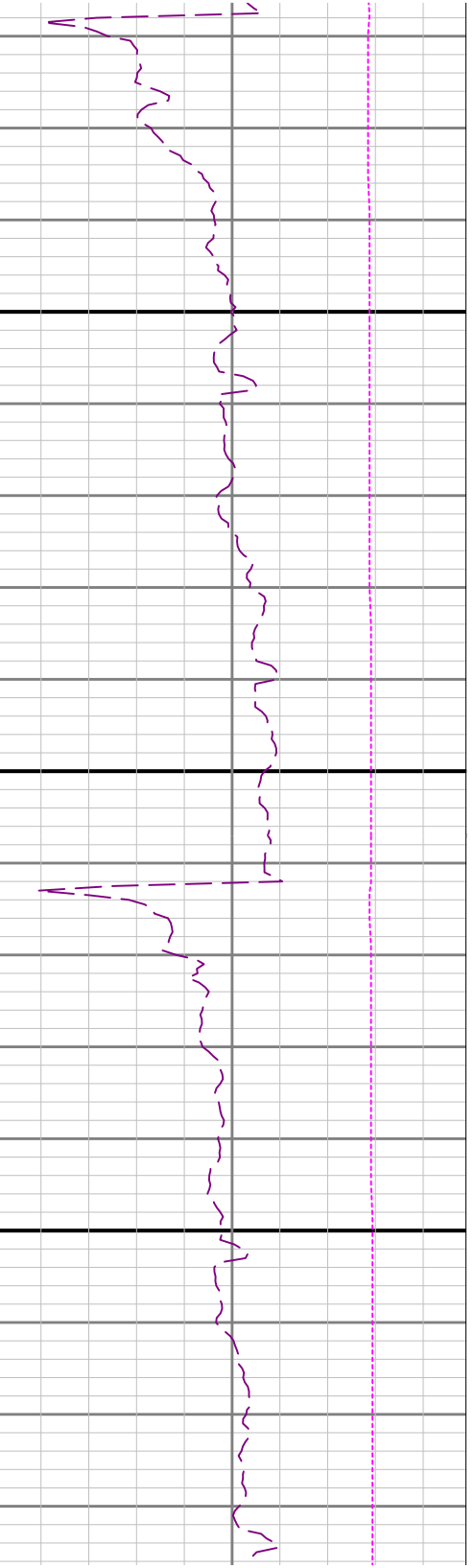
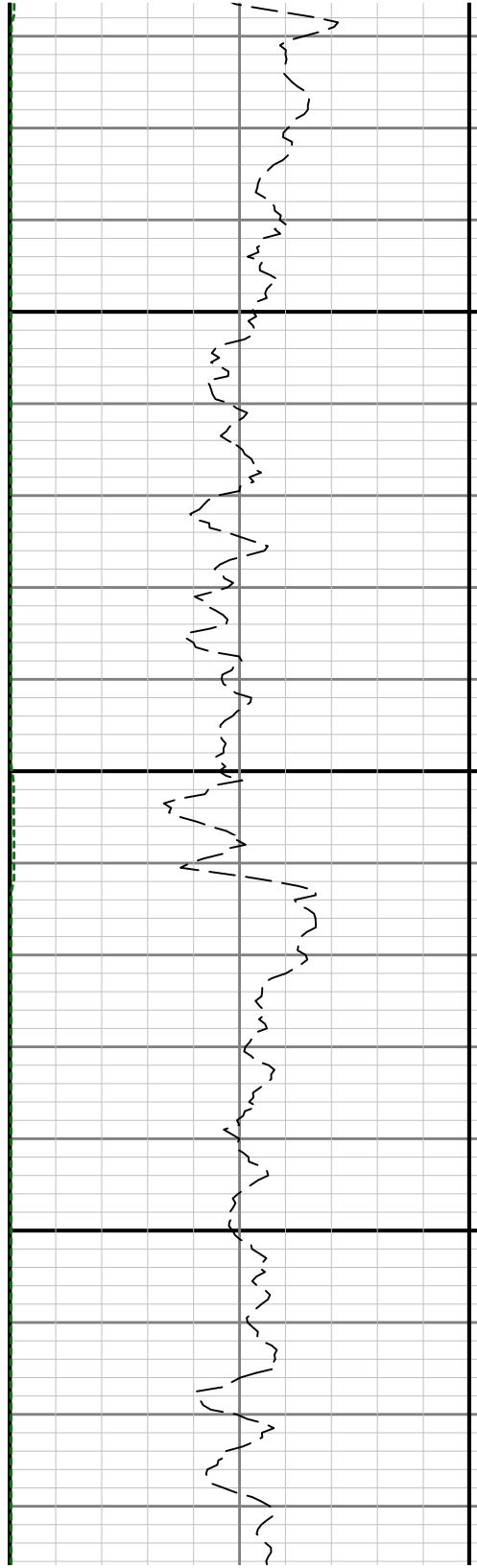




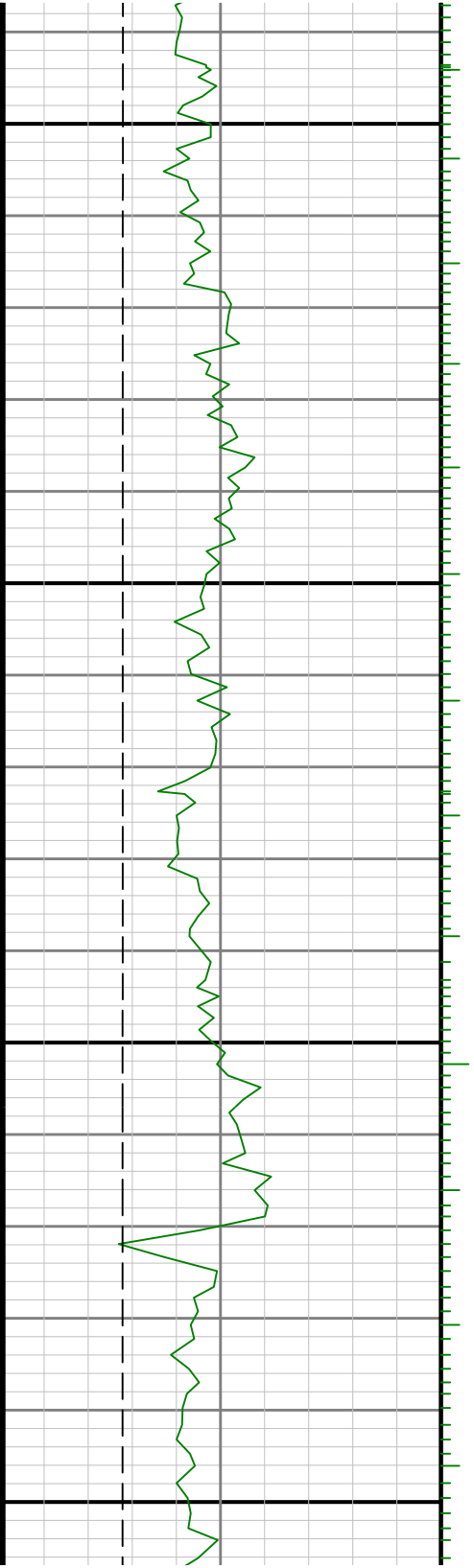


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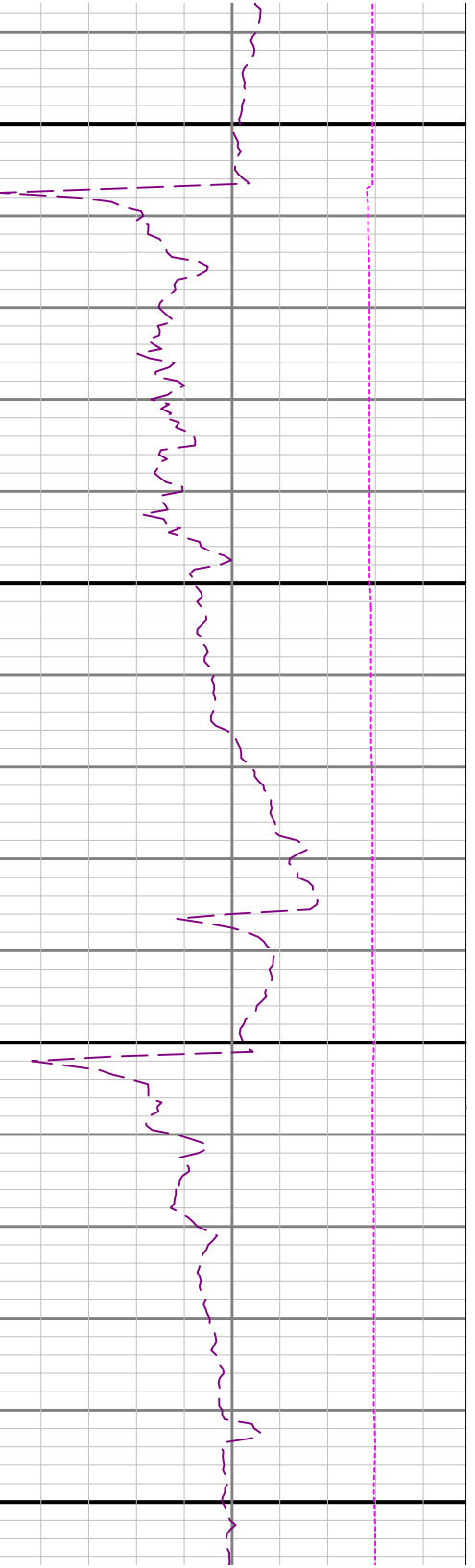
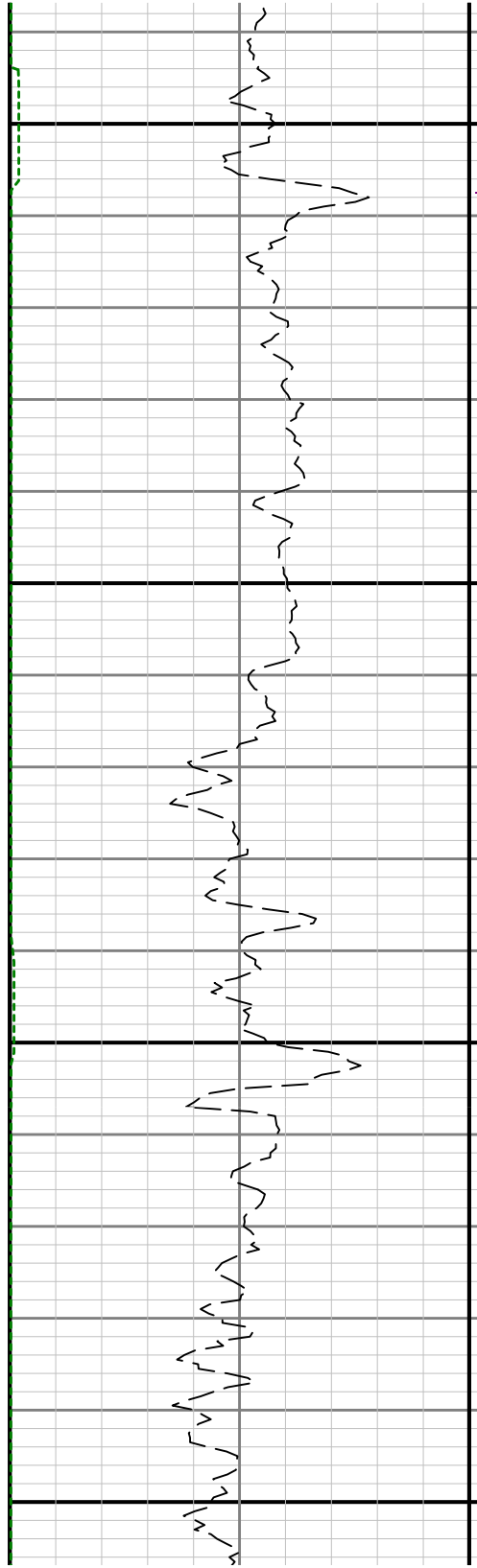


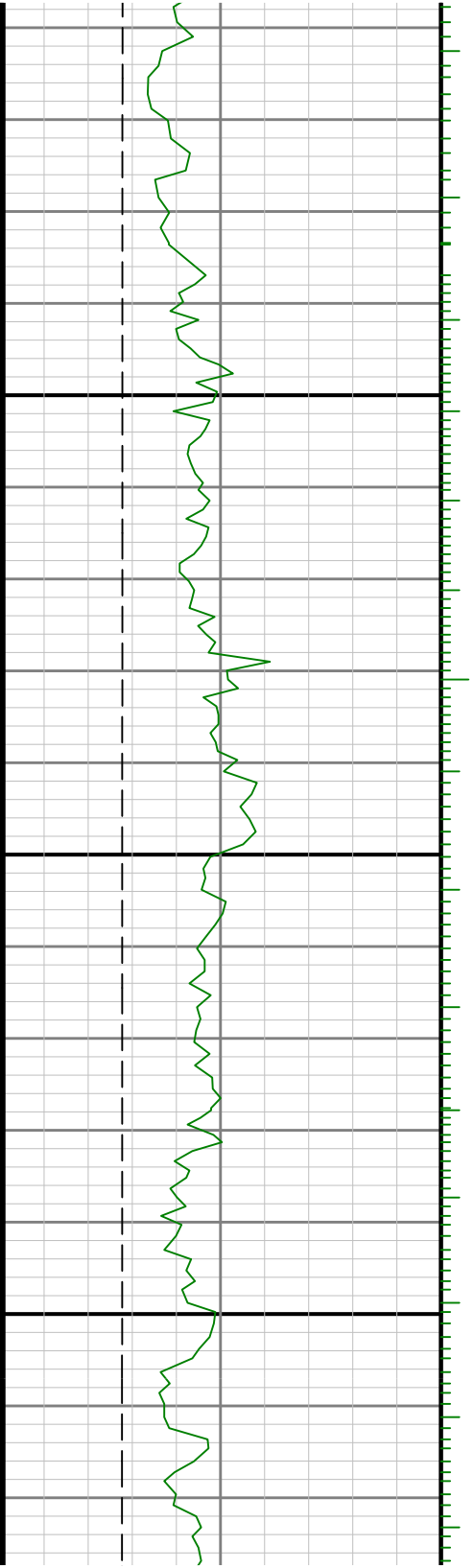




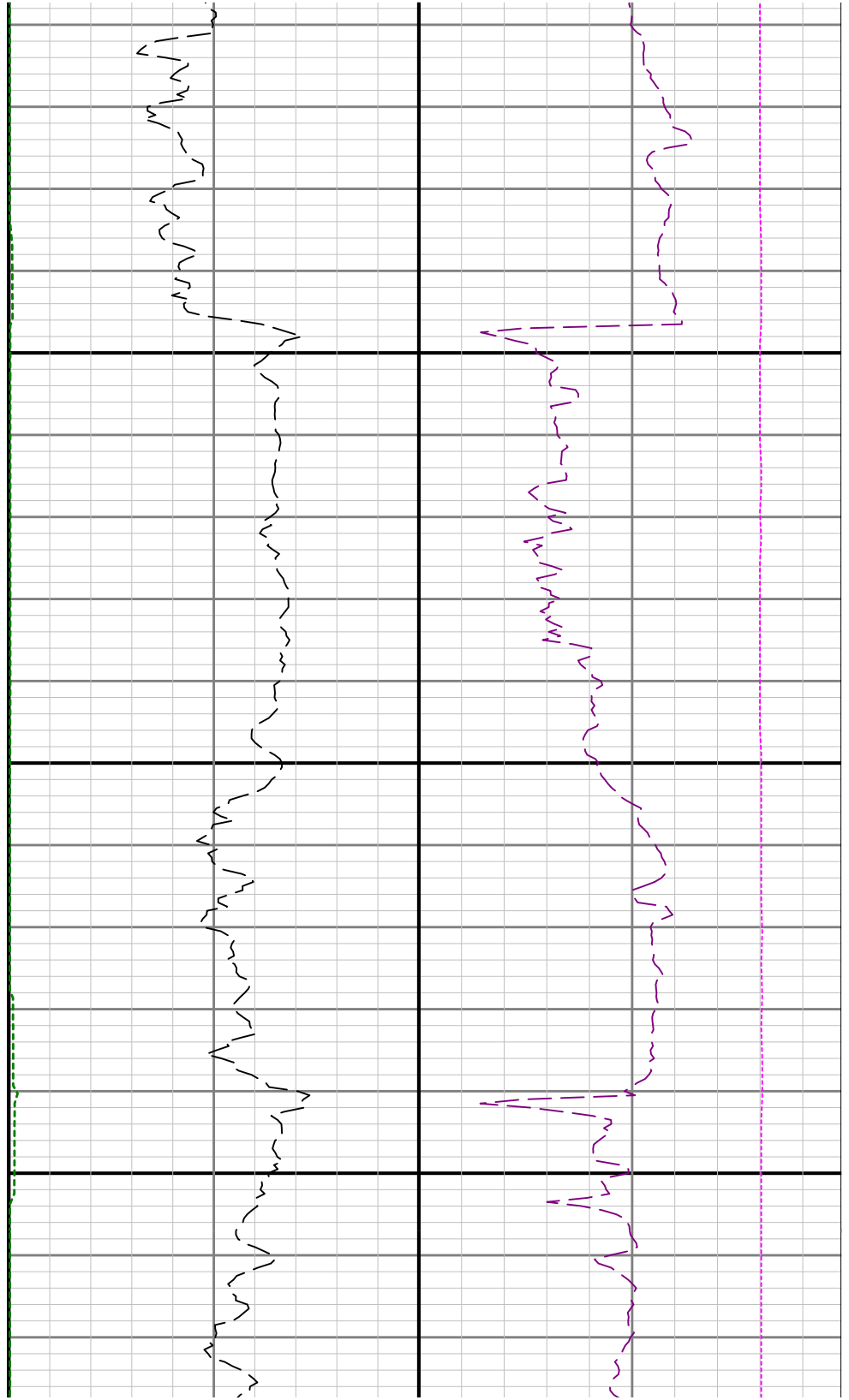
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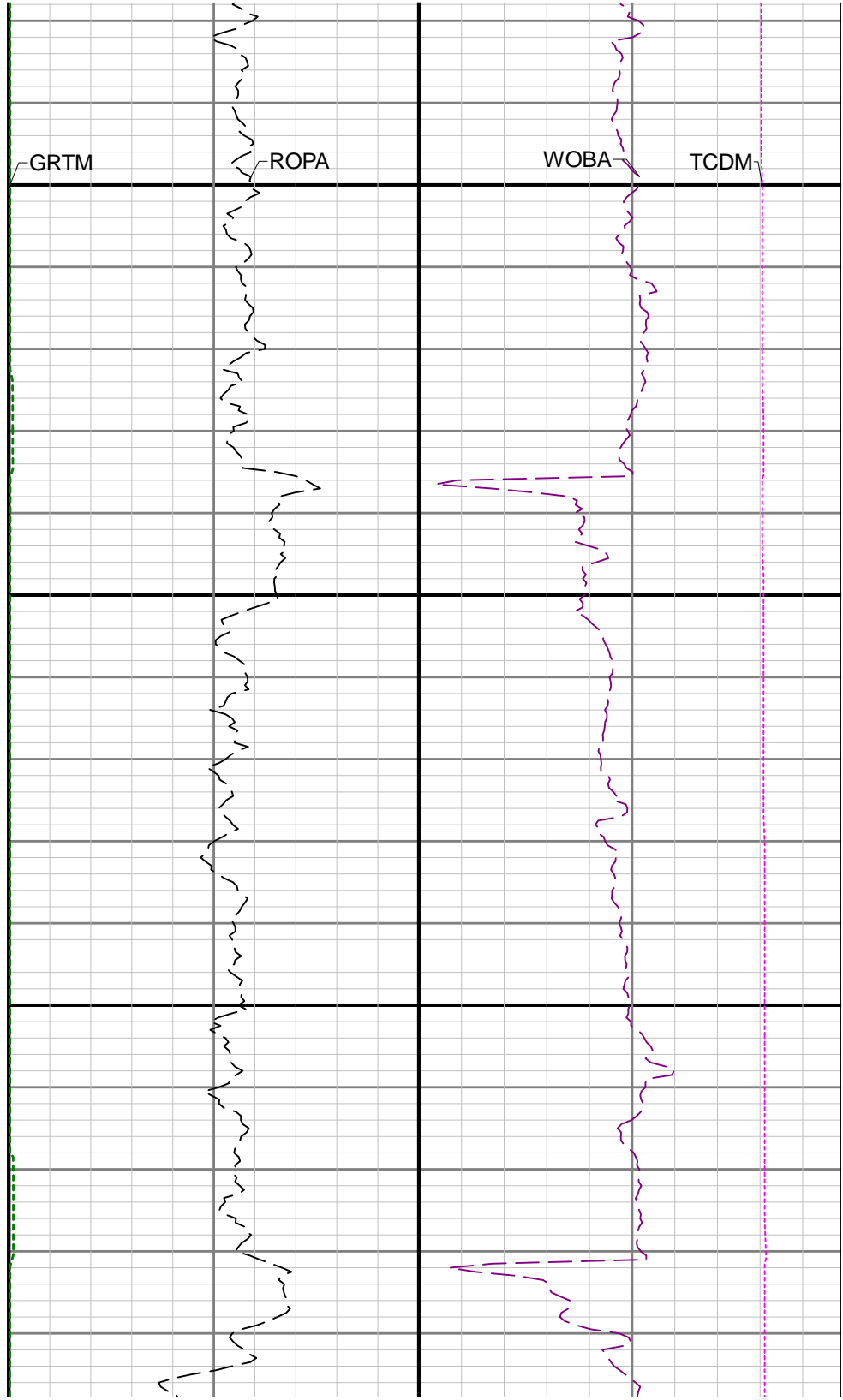
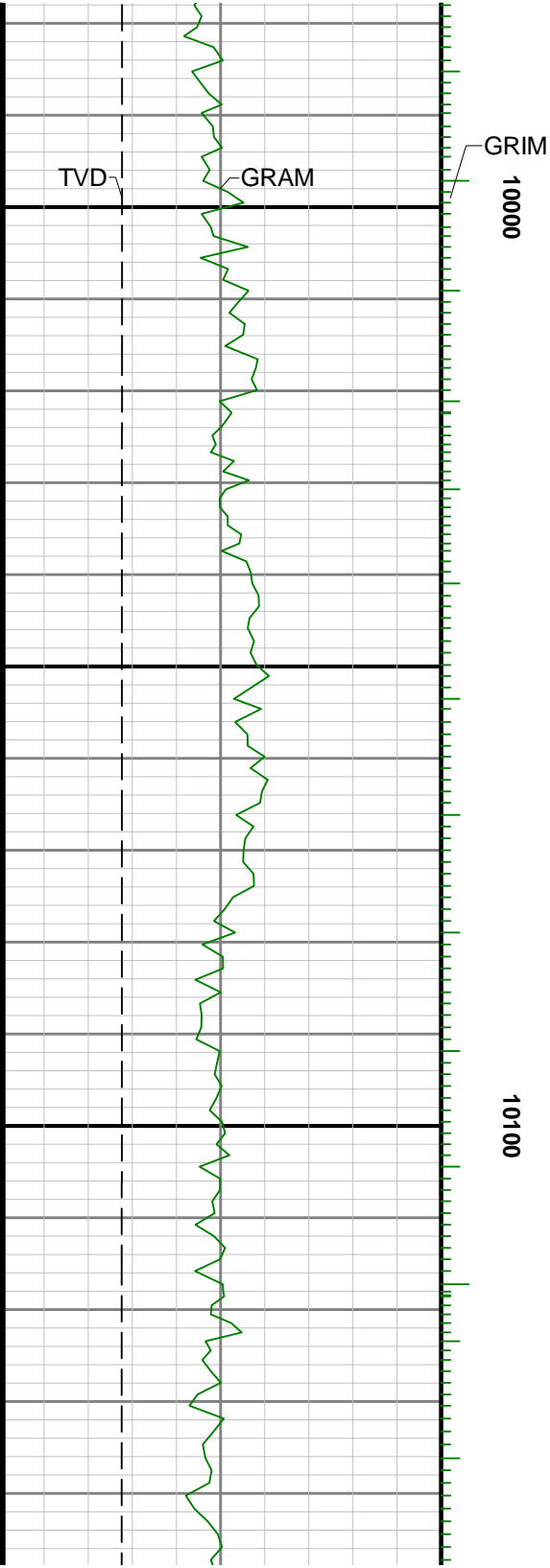
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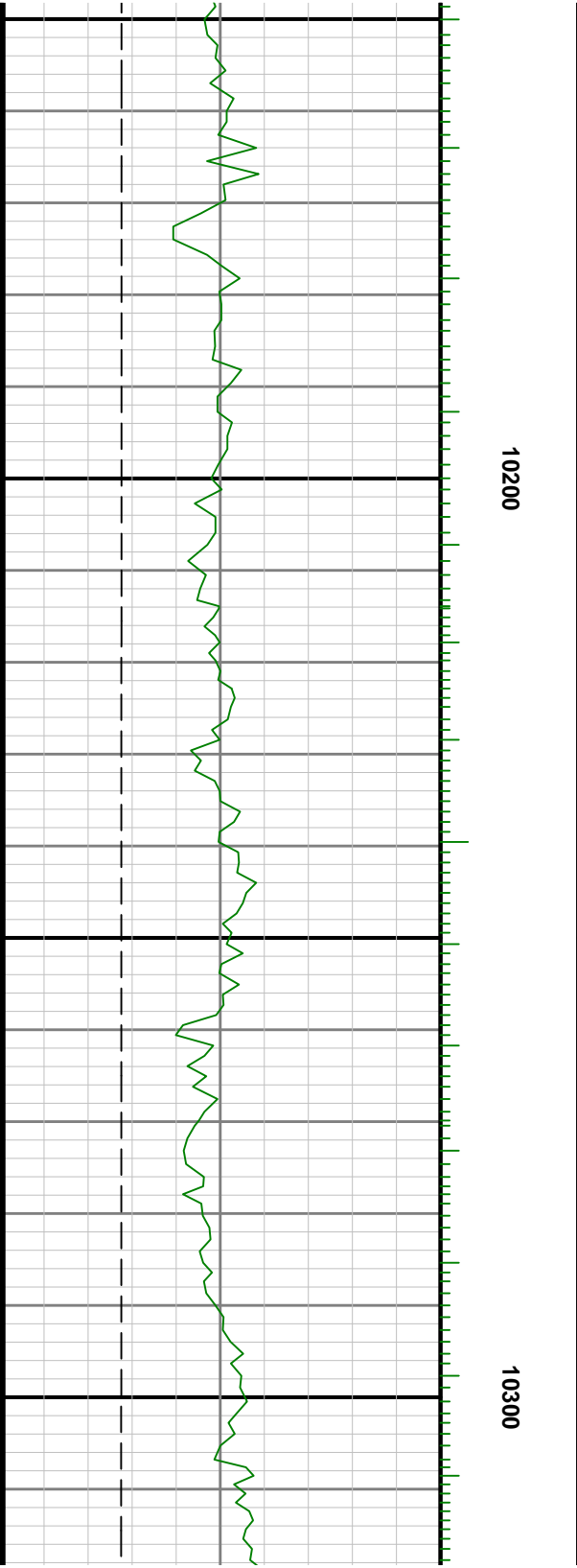
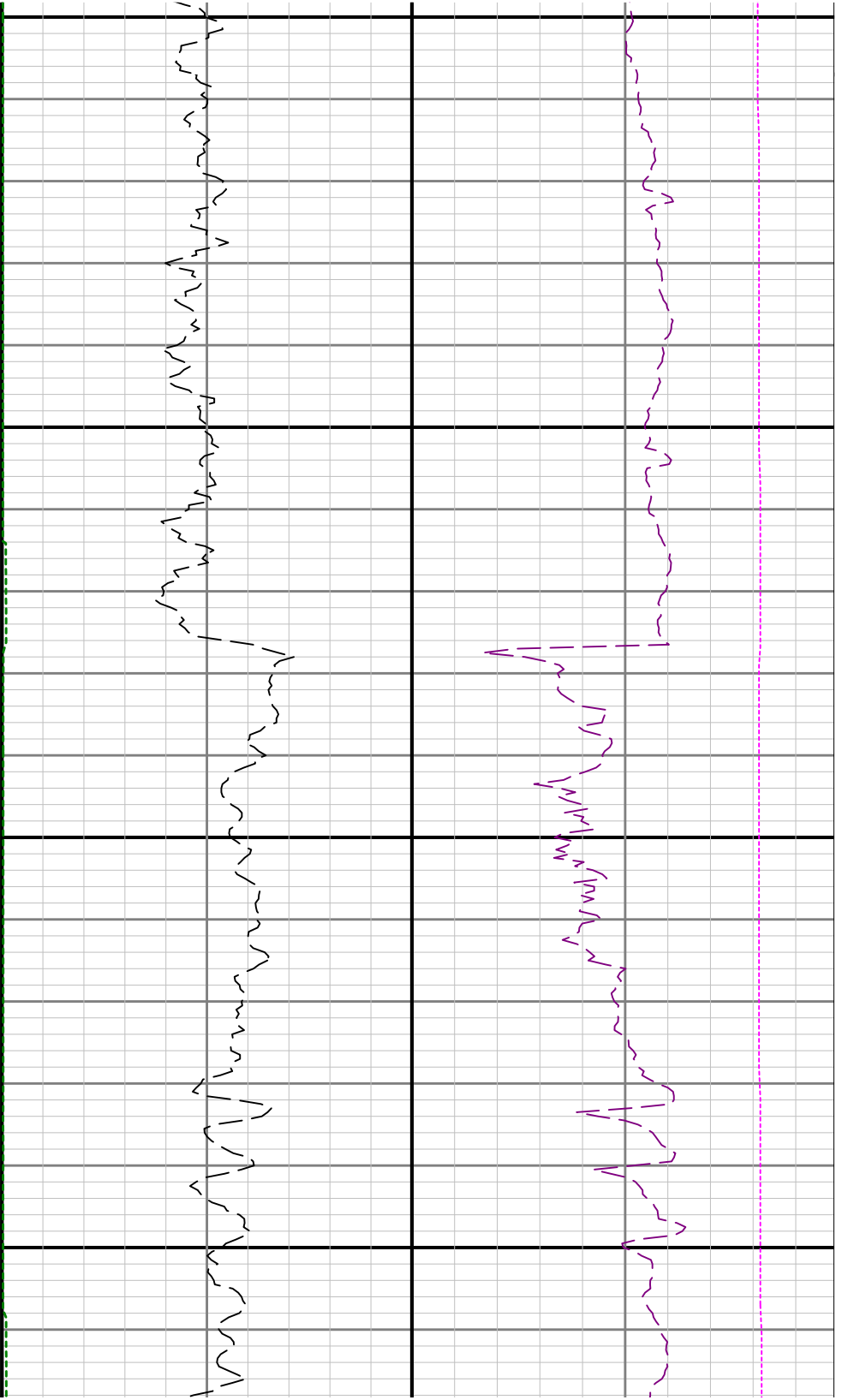


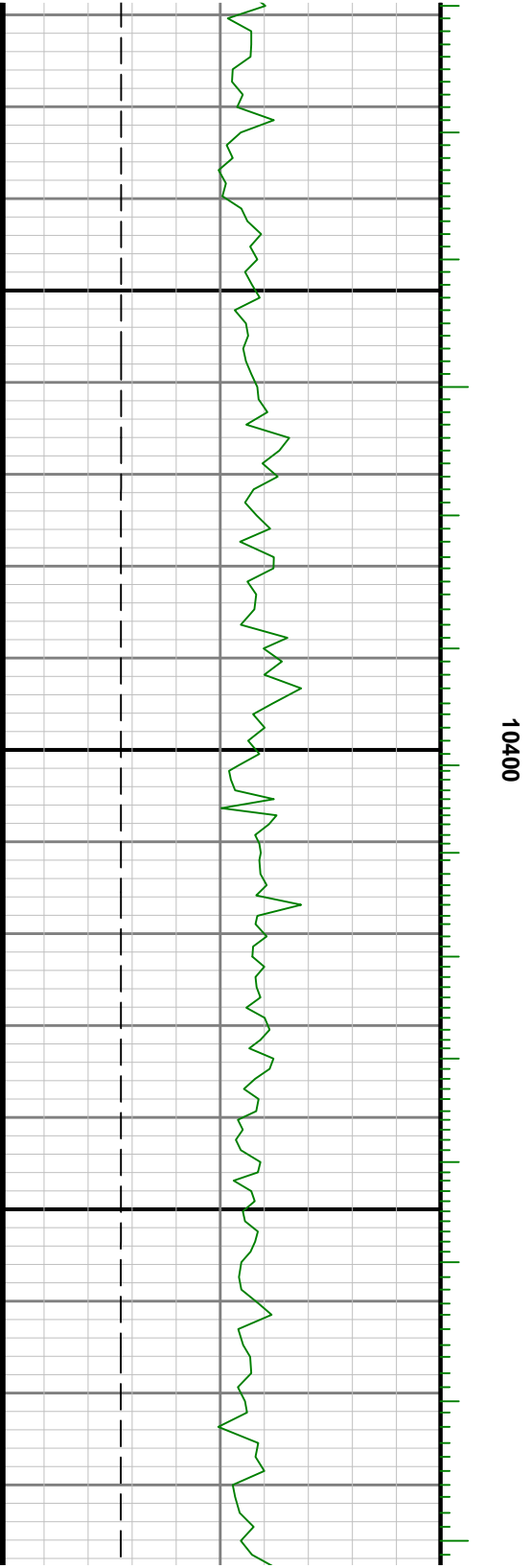
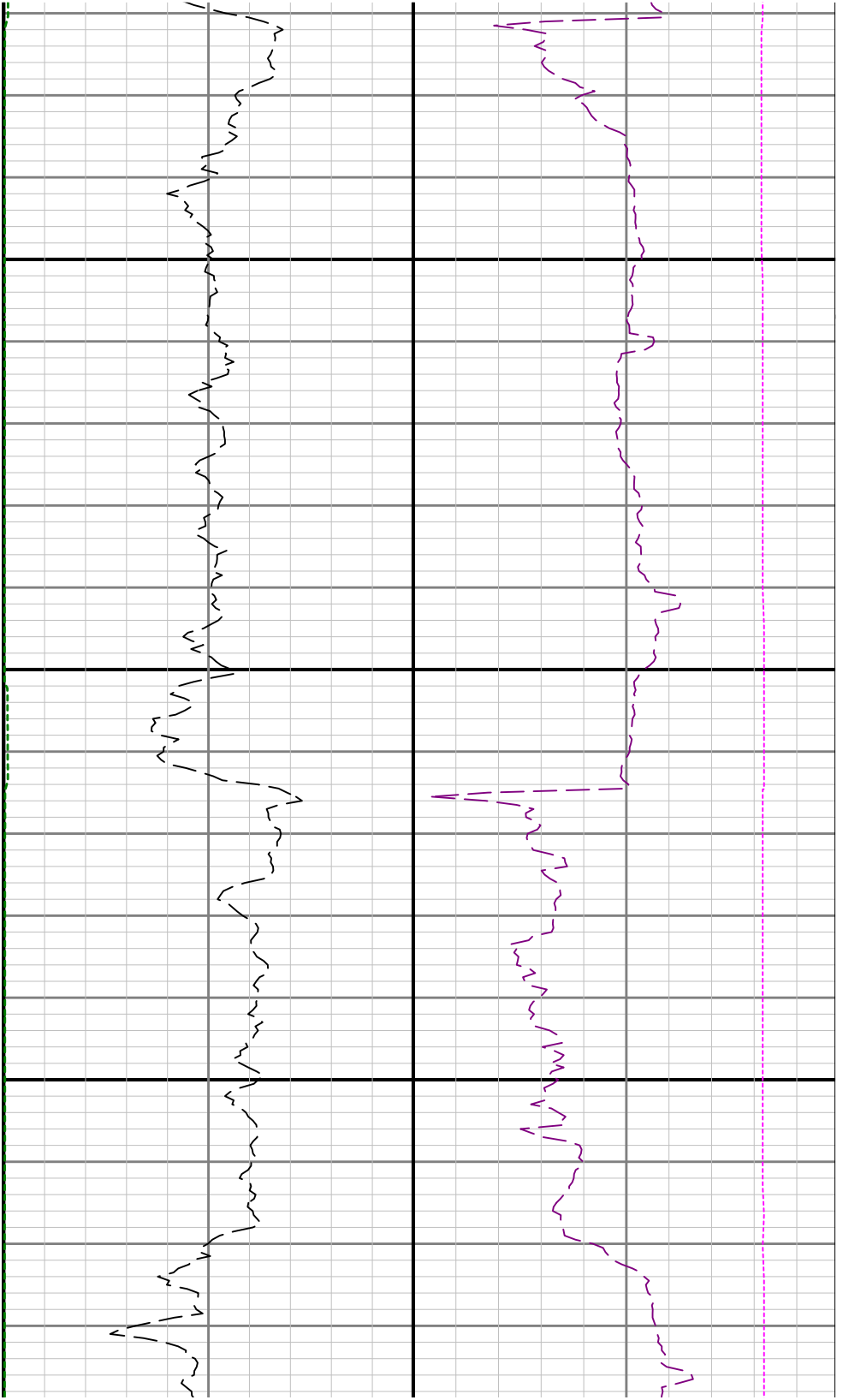


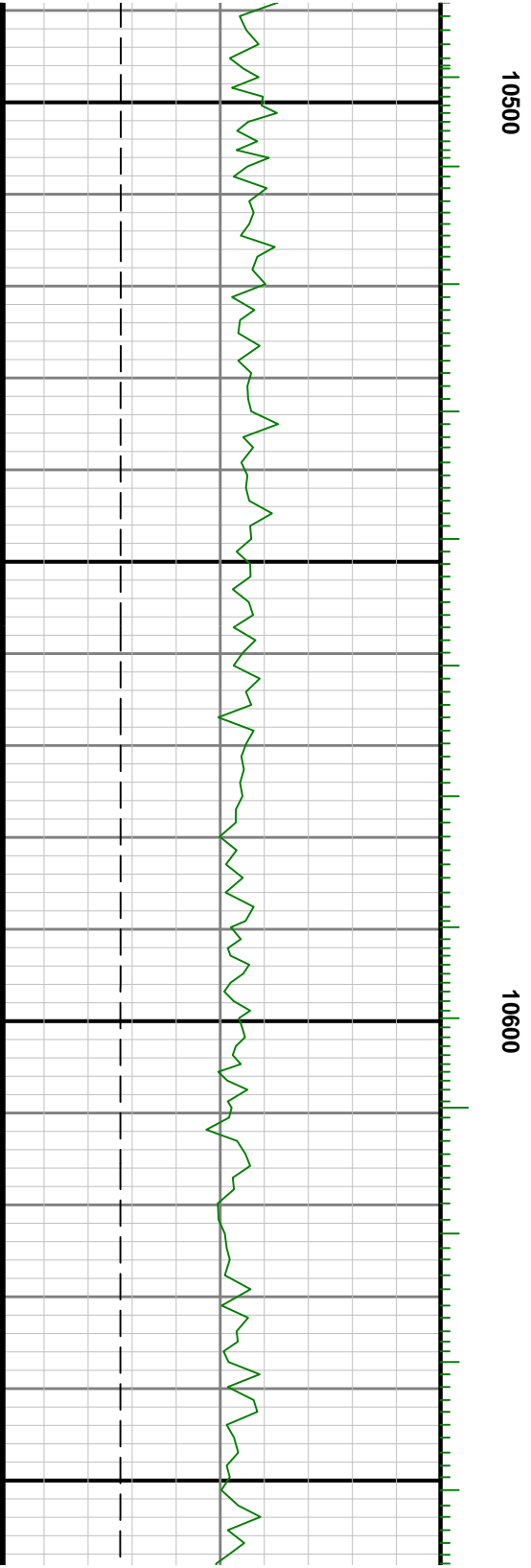
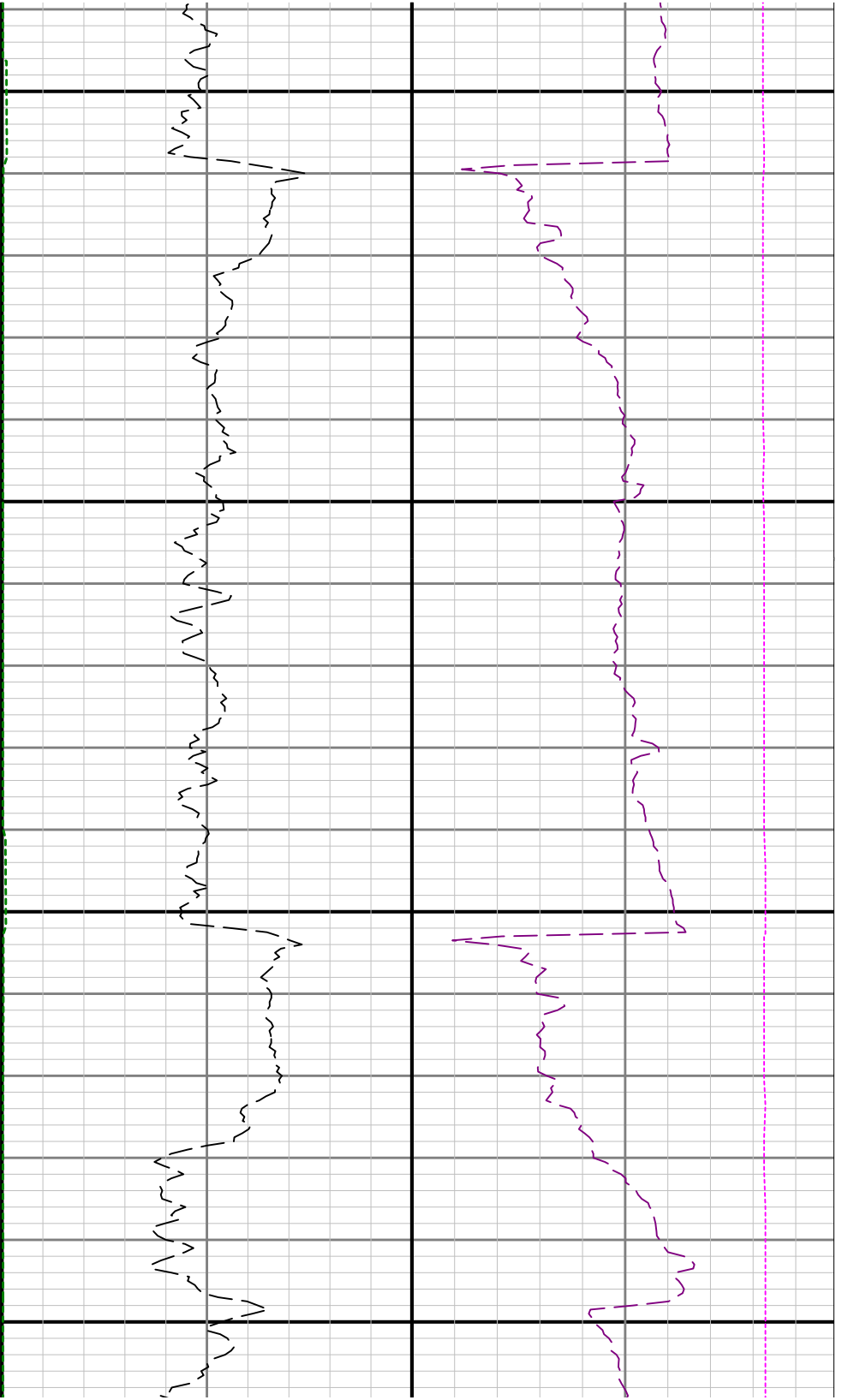
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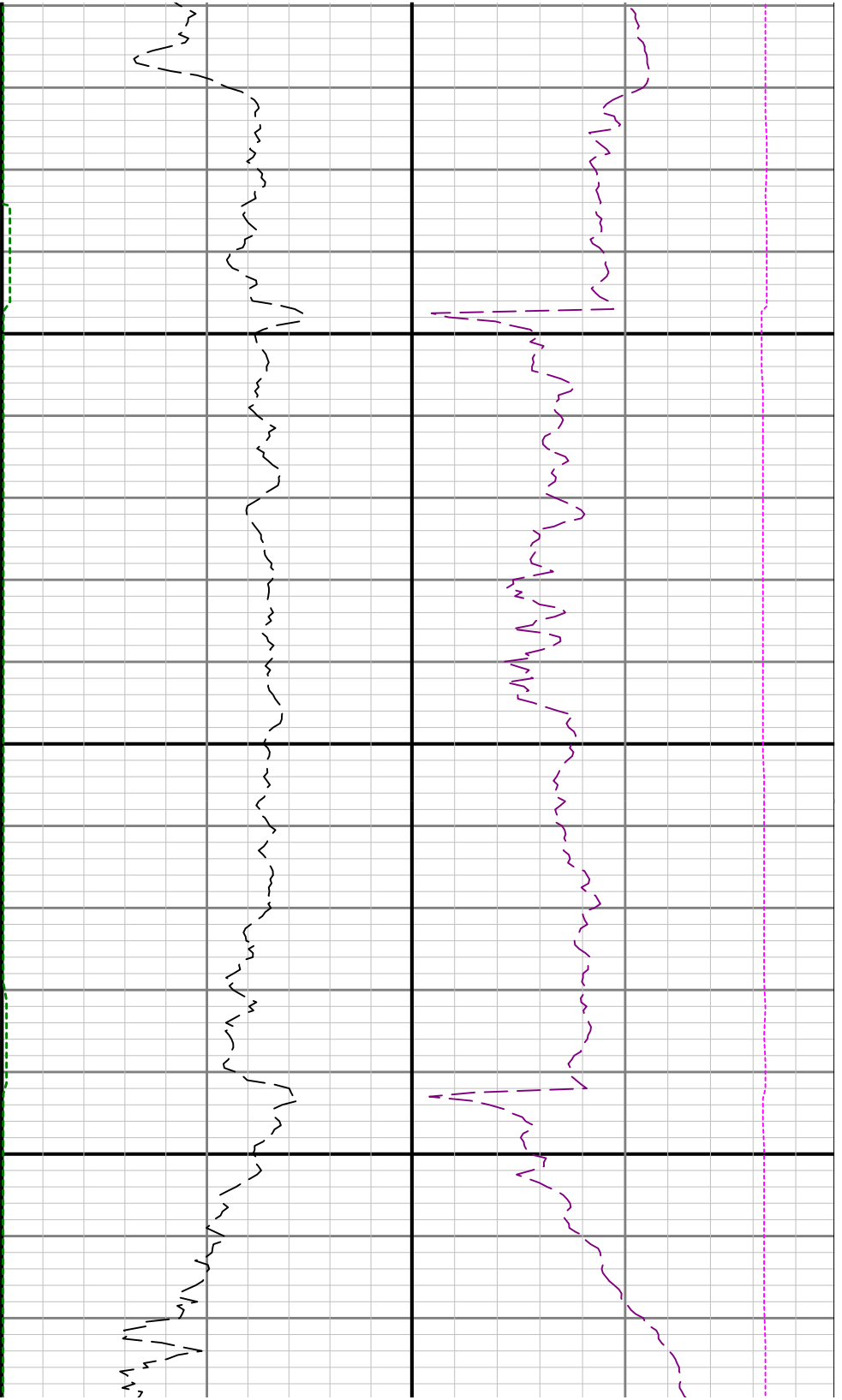






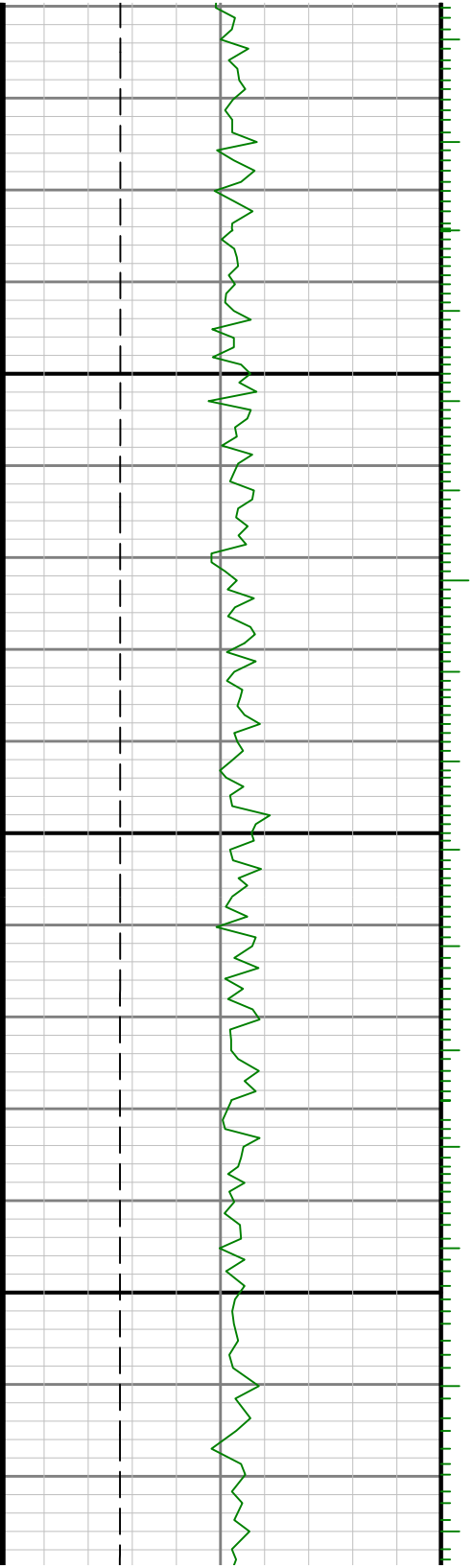


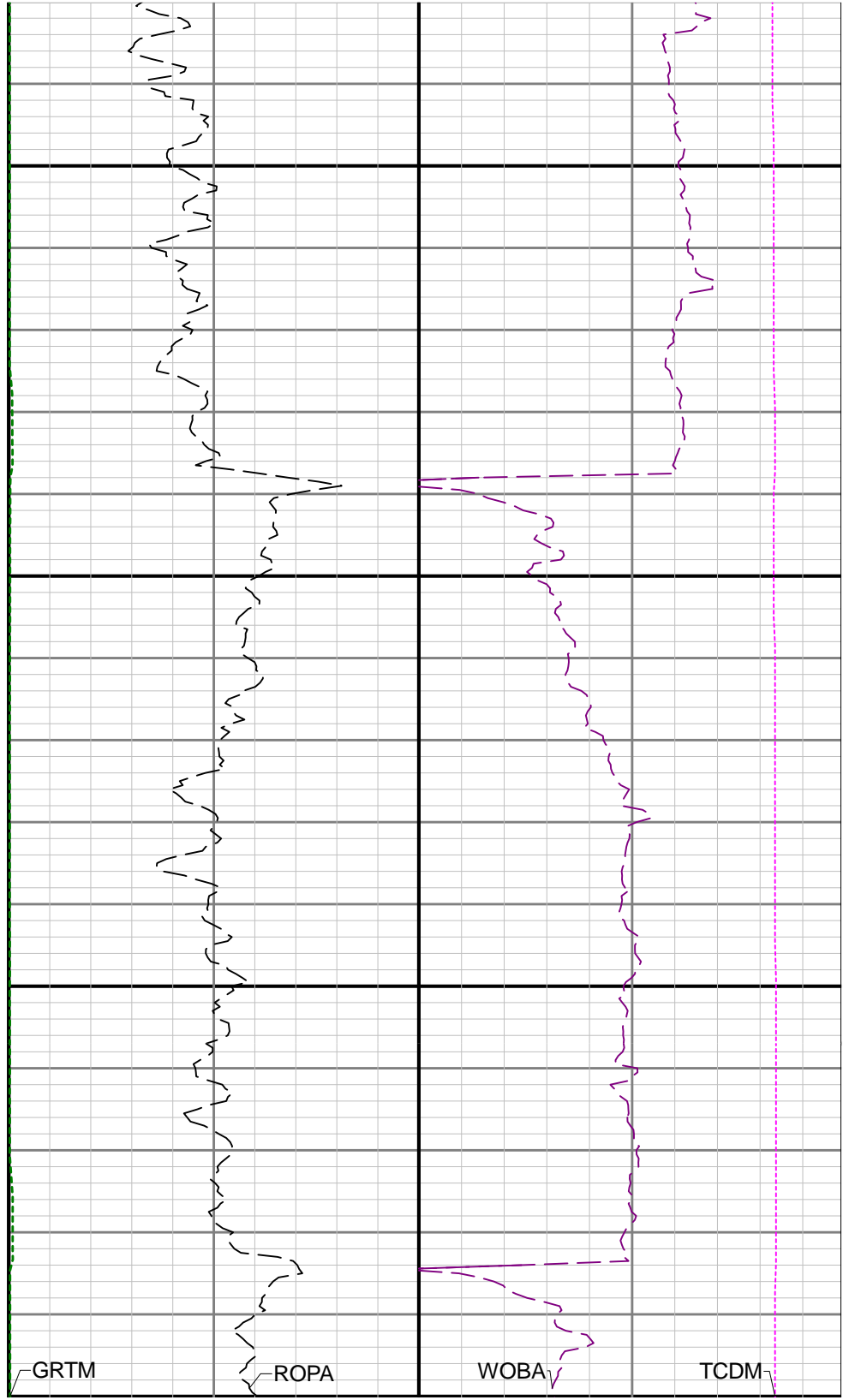
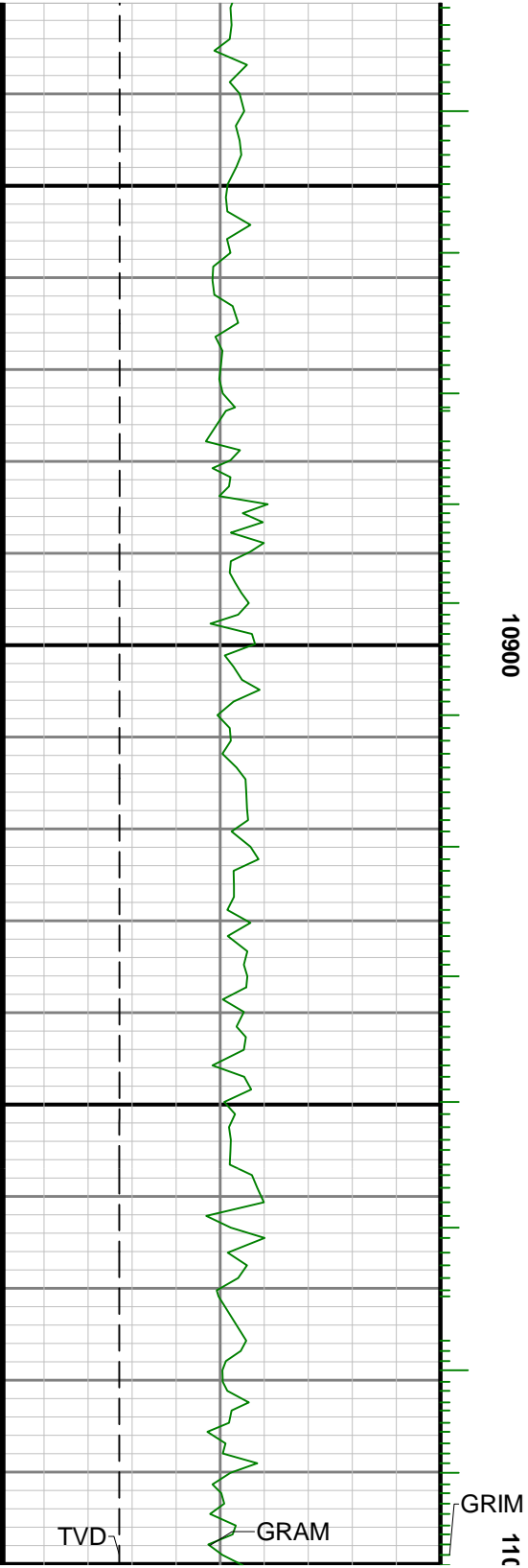




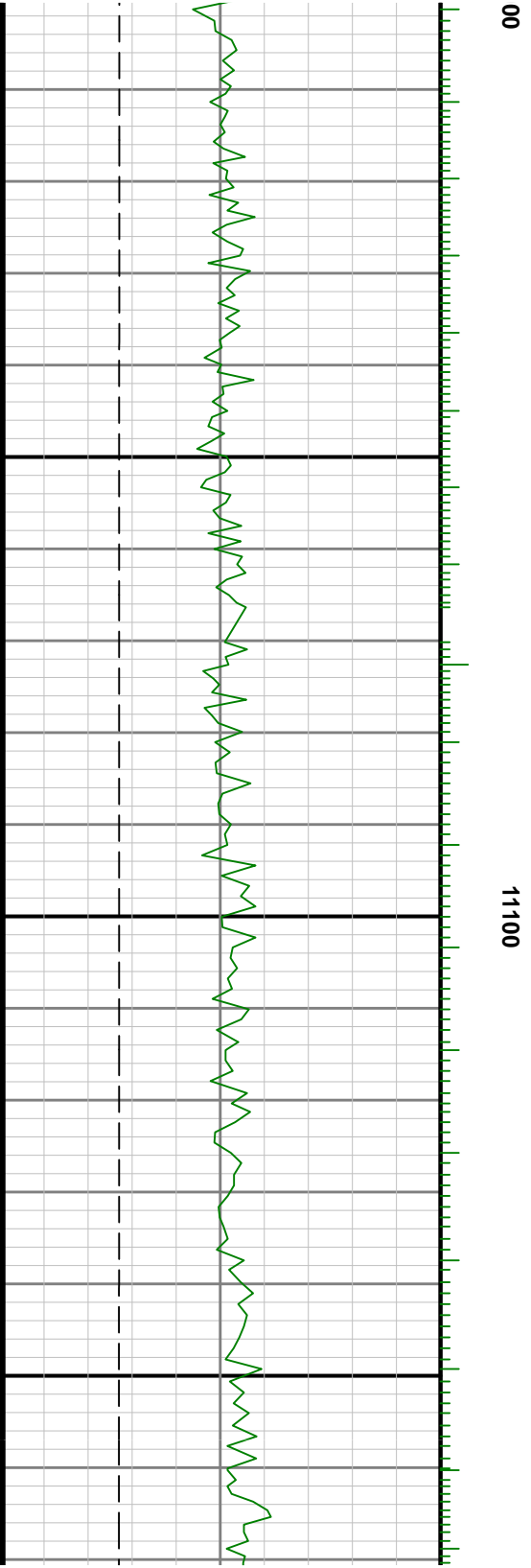
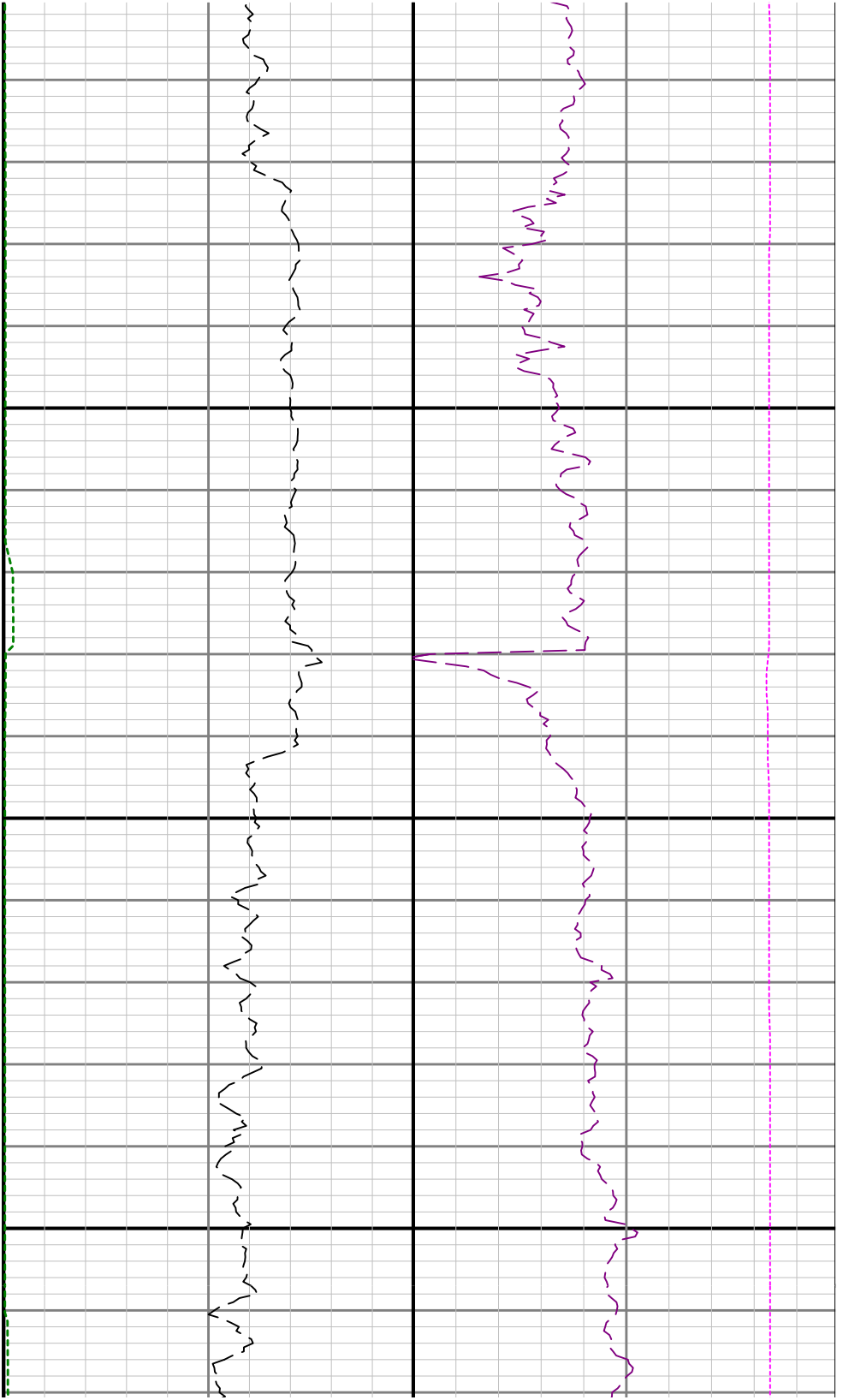
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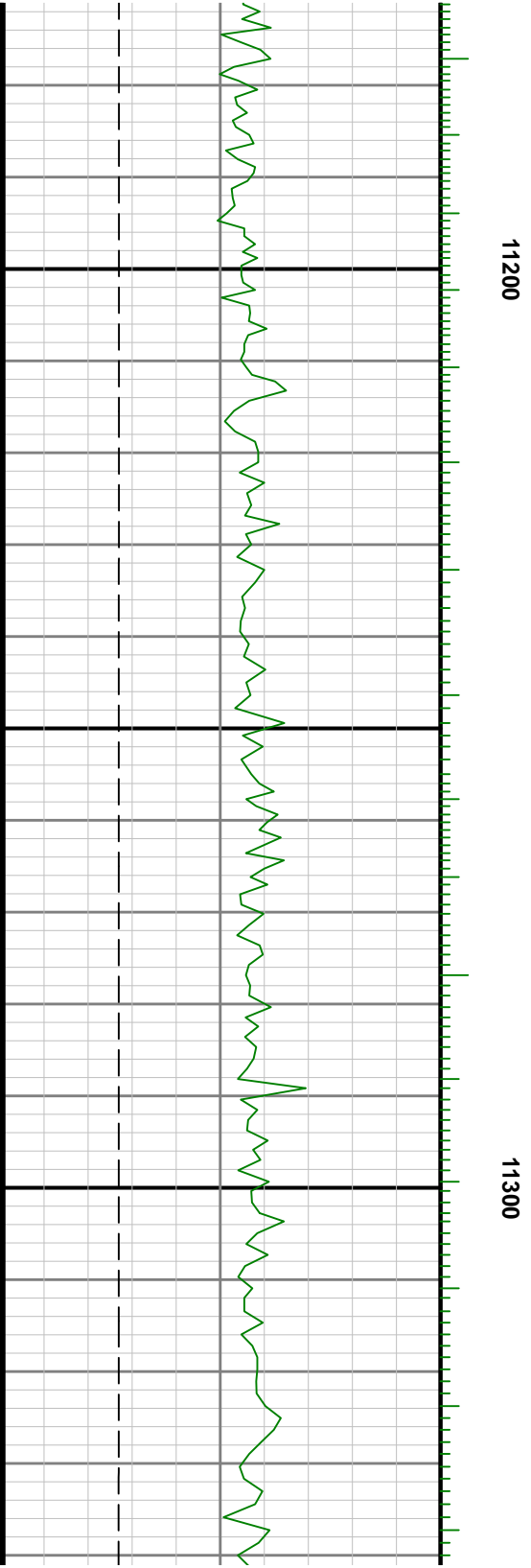
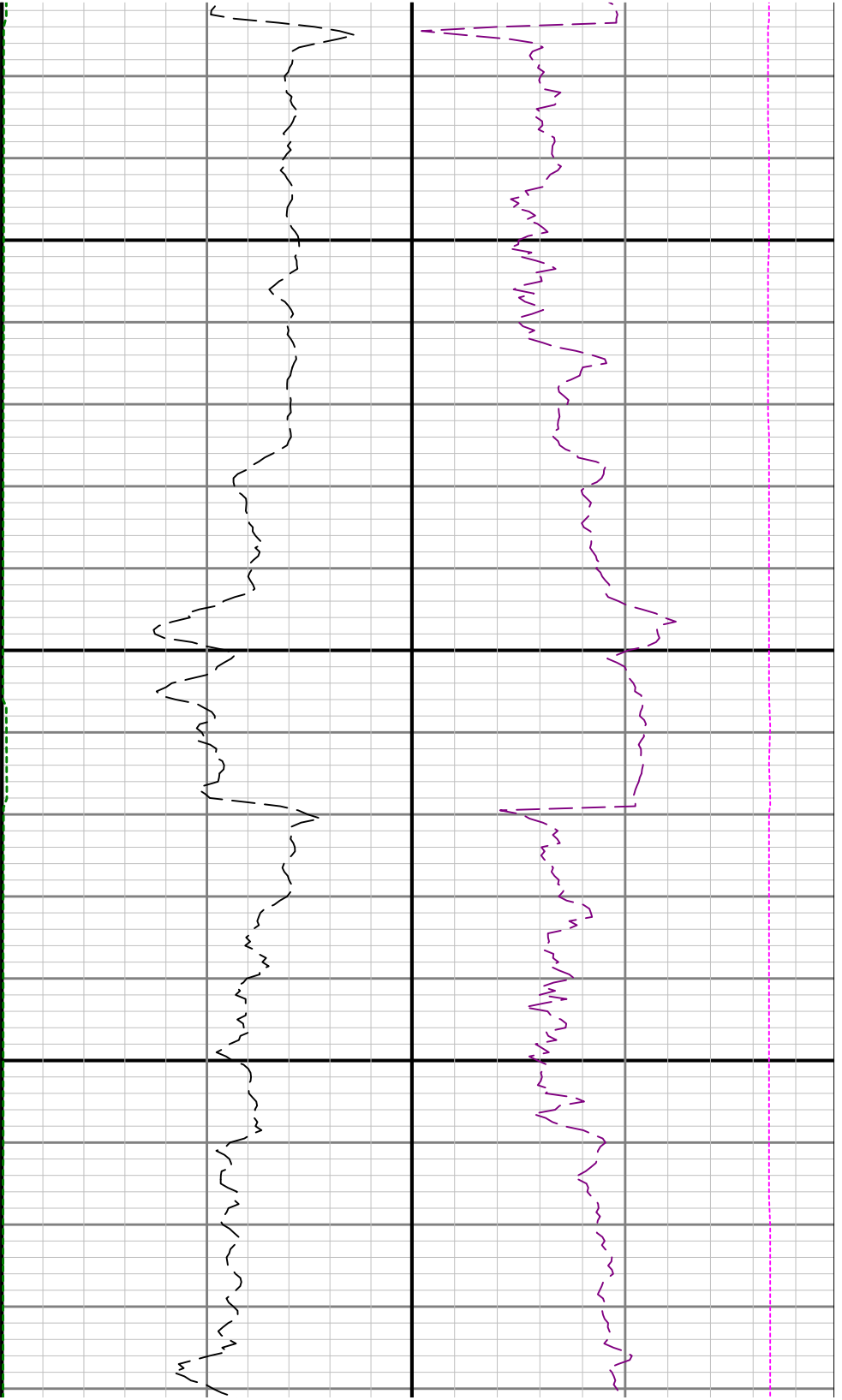
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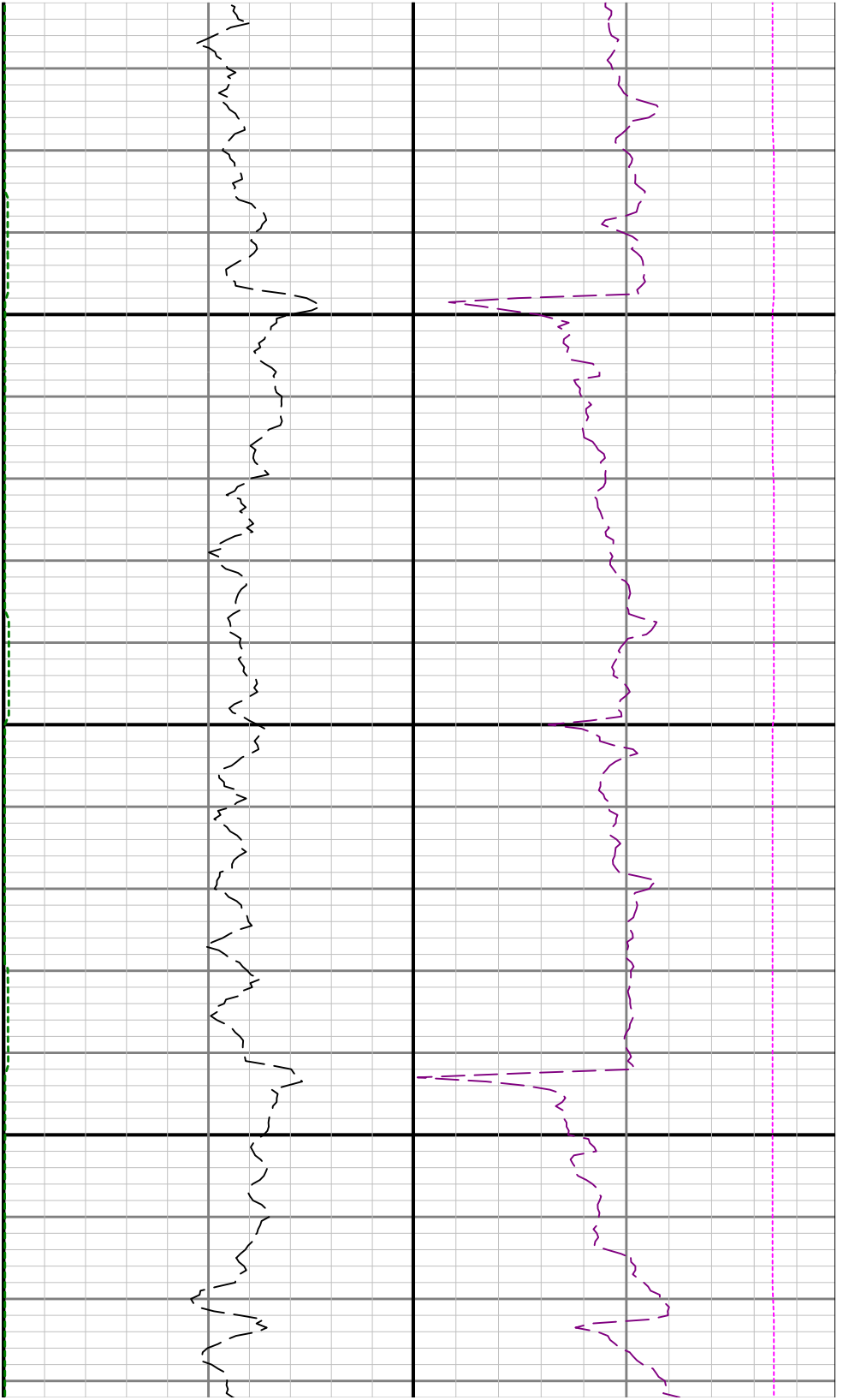












11600

