




# REALTIME LOG

# Gamma Ray

<div><div><div><div>BAKER HUGHES</div><div>a GE company</div></div><div></div></div></div>				REALTIME LOG									
				Gamma Ray									
Scale:		Company: Anadarko											
1:240 MD		Well: George 25-3HZ											
Depth Reference:		Field: Wattenberg											
Driller's Depth		County: Weld Country: United States											
		State: Colorado											
Status:		Surface Location:						Other Services:					
Final Print		Latitude: 040° 06' 37.638" N Longitude: 104° 36' 36.299" W						Directional					
API No: 051234633100													
Job ID: 9204523		SEC: 25		TWN: 2N		RGE: 65W							
Permanent Datum (P.D.): Mean Sea Level		Elevation:		0.00 ft		Elev. KB: 4917.00 ft		Elev. DF: 4900.00 ft		Elev. GL:		N/A	
Log Measured From: Rig Floor		Above P.D.		4917.00 ft									
Dates				Interval Drilled				Magnetic Field Reference					
Date From: 2018-07-02		Top: (ft) 1928.00		Azi Reference North: True		Dip Angle: (deg) 66.54							
Date To: 2018-07-05		Bottom: (ft) 17957.55		Total Magnetic Field Strength: (nT) 52313									
Spud Date: 2018-07-02				Mag to Reference North Correction: (deg) 7.91									
Borehole Record													
Casing Record													
Hole Size (in)		From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)		To (ft)	
13.500		17.00		1928.00		9.625		25.00		17.00		1918.00	
7.875		1928.00		18092.00									
Mud Record													
Deviation Record													
Type		From (ft)		To (ft)		Hole Size (in)		Interval (ft)		Inc   Az (Start)		Inc   Az (End)	
Diesel-Oil Based Mud		1928.00		18092.00		7.875		16164.00		23.72   26.26		90.06   181.10	
Acquisition System													
Software Version		Other											
Baker Hughes Cadence		RT 4.2		Xtreme 22		Rig: Contractor: District:		Xtreme RMD		Unit: D & E			
Plot Studio		4.2.8155.1											

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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	7.875	PDC	2.00	Steerable	1928.00	18050.00	1928.00	18092.00	2018-07-02 18:00	2018-07-05 16:58	61.34

## Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Teni Onafowokan	2018-07-02	2018-07-06	Will Roth	2018-07-02	2018-07-06			

## 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+ (%)
2018-07-02 19:00	1	2312.05	Diesel-Oil Based Mud	9.2	15	N/A	N/A	74.4/25.6	Active Pit	37000	0.00
2018-07-03 19:00	1	8025.00	Diesel-Oil Based Mud	8.9	53	N/A	N/A	66/34	Active Pit	42000	0.00
2018-07-04 19:00	1	13268.00	Diesel-Oil Based Mud	9.1	15	N/A	N/A	66/34	Active Pit	41000	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	NaviGamma	12662918	Gamma (single)	11.34	41.91	6.500	3.500
1	NaviGamma	12662918	Directional (mag)	14.76	45.33	6.500	3.500
1	NaviGamma	12662918	VSS	14.76	45.33	6.500	3.500

## Service and Tool Mnemonics

Mnemonic	Name	Description
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform

## 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 logging

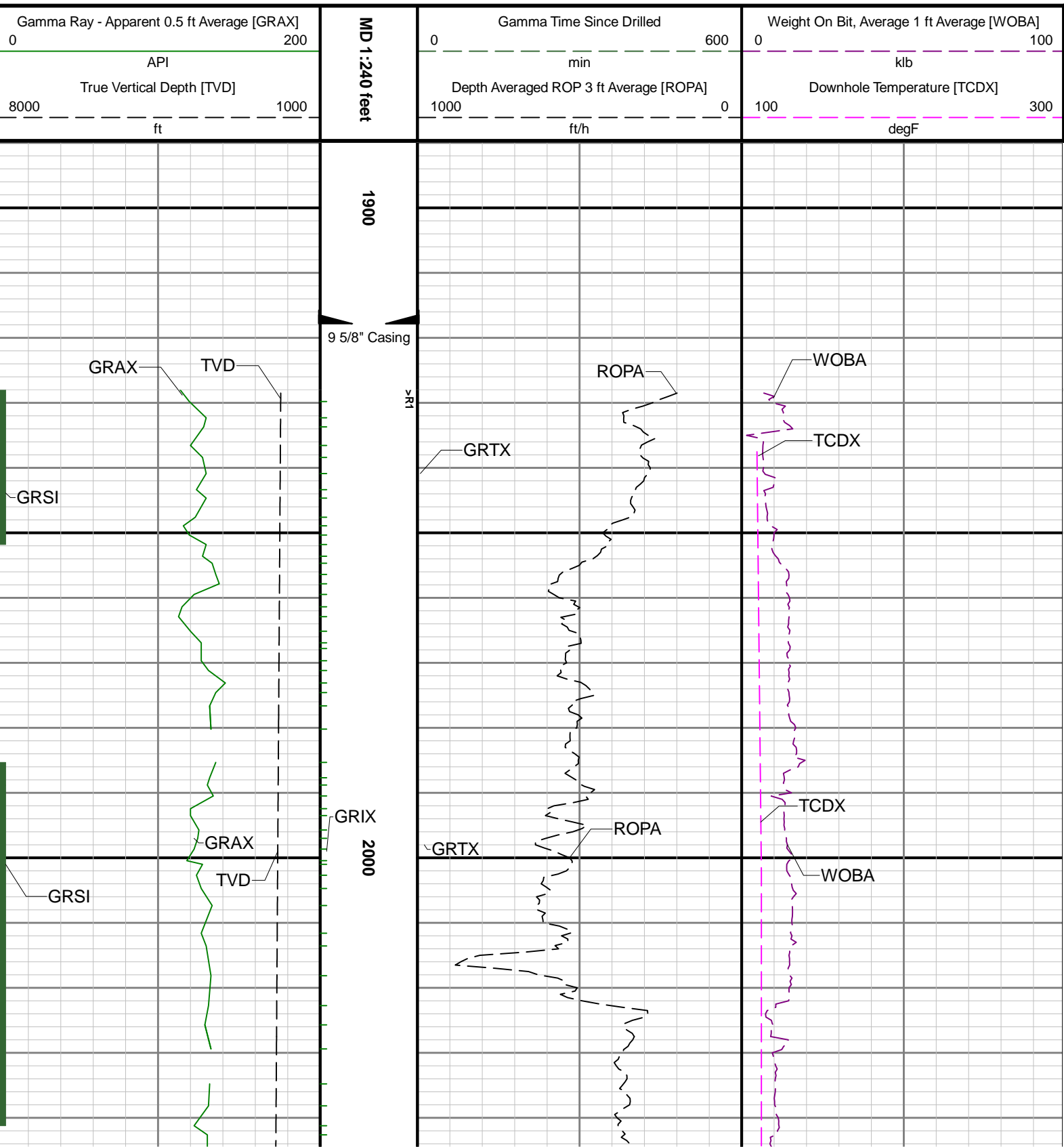
- Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
- A sliding indicator is shown to the left edge of track 1 as a heavy line. The indicator has been depth-shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.
  - Baker Hughes run 1 utilized 6.50 inch NaviGamma services (Gamma Ray and Directional) behind a 7 7/8 inch bit and steerable assembly from 1928 to 18092 feet MD (1851 to 7136 feet TVD).
  - Numerous gaps are present throughout the log due to surveying while on bottom drilling ahead.
  - Gamma Ray (GRAX) scale is presented 0 to 200 API per customer request.

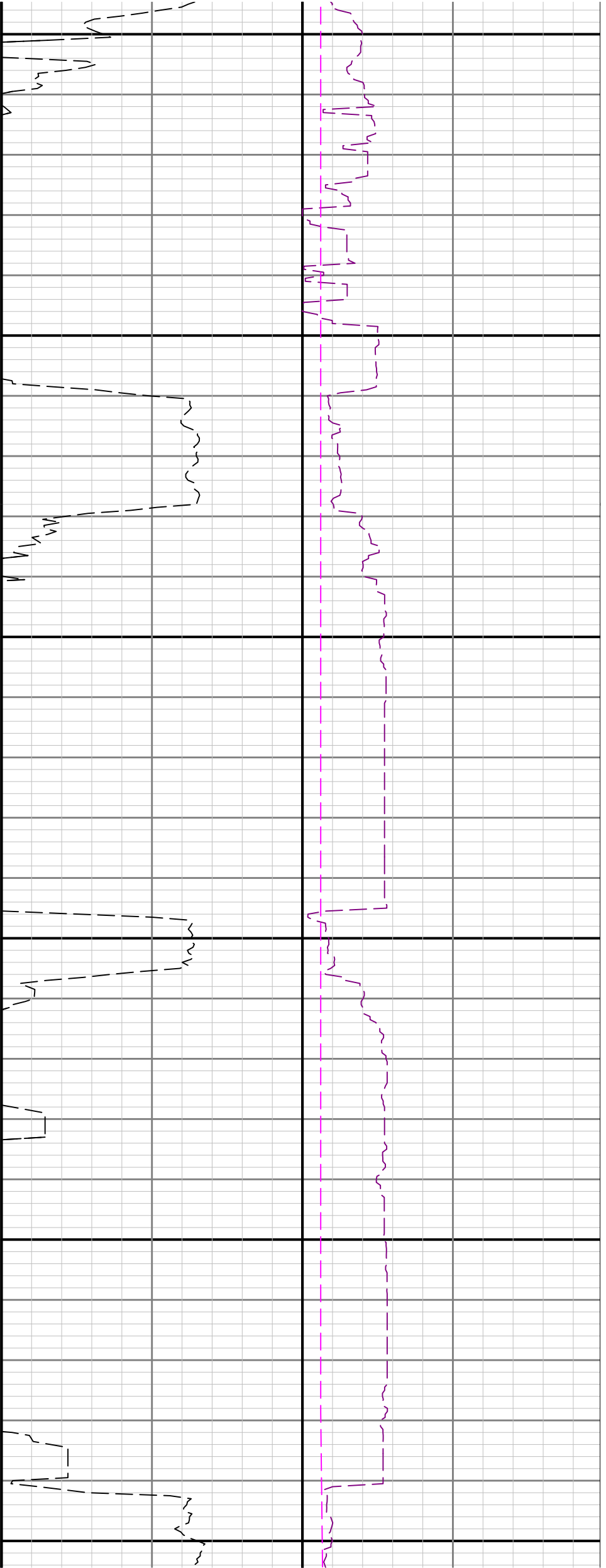
Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	18000.00	7.875	1	The interval from 18050 to 18092 feet MD (7136 feet TVD) was not logged due to sensor to bit offset at the end of Run 1.

Curve Mnemonics

Presented Curves	Description	Units
TCDX	Downhole Temperature	degF
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAX	Gamma Ray - Apparent - Real-Time 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator - Real-Time	unitless
GRTX	Gamma Ray - Time Since Drilled - Real-Time	min
GRSI	Sliding Indicator Flag	unitless

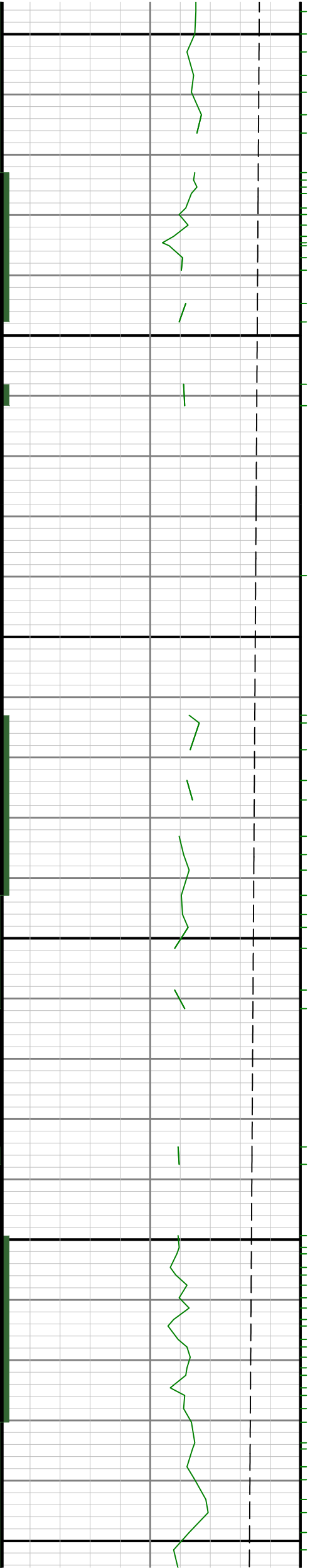


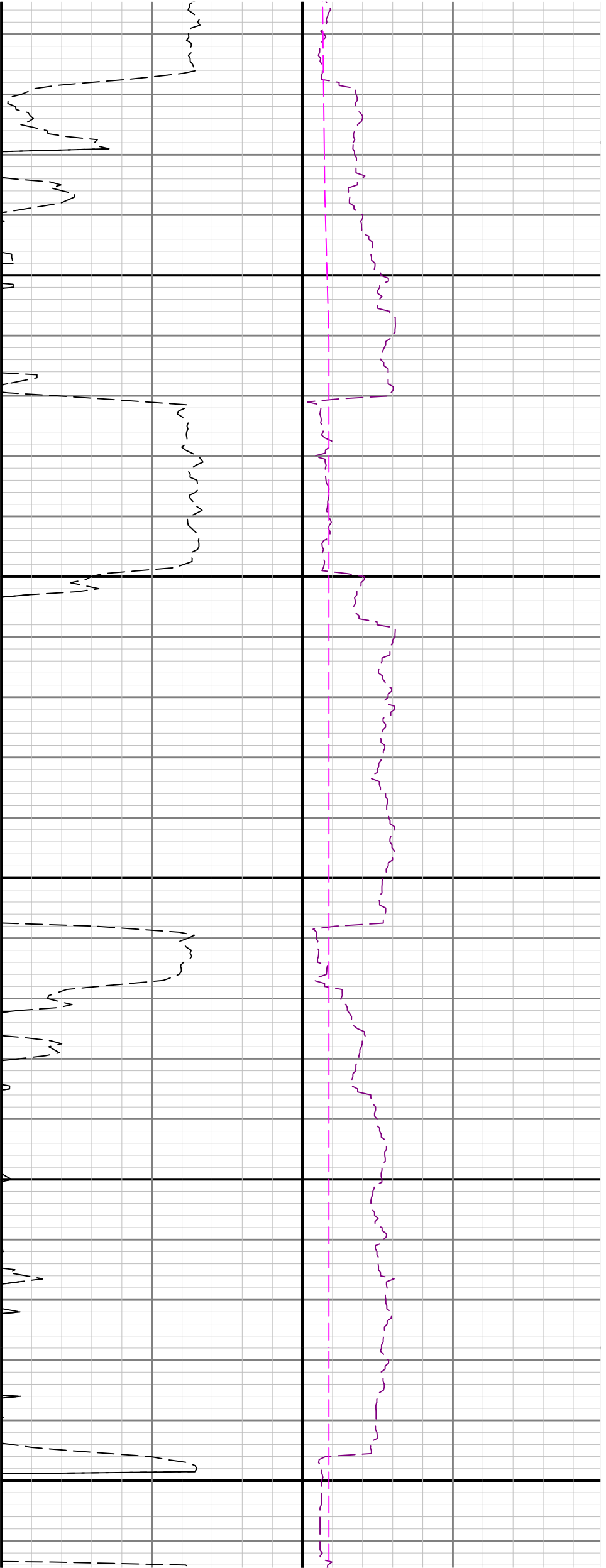


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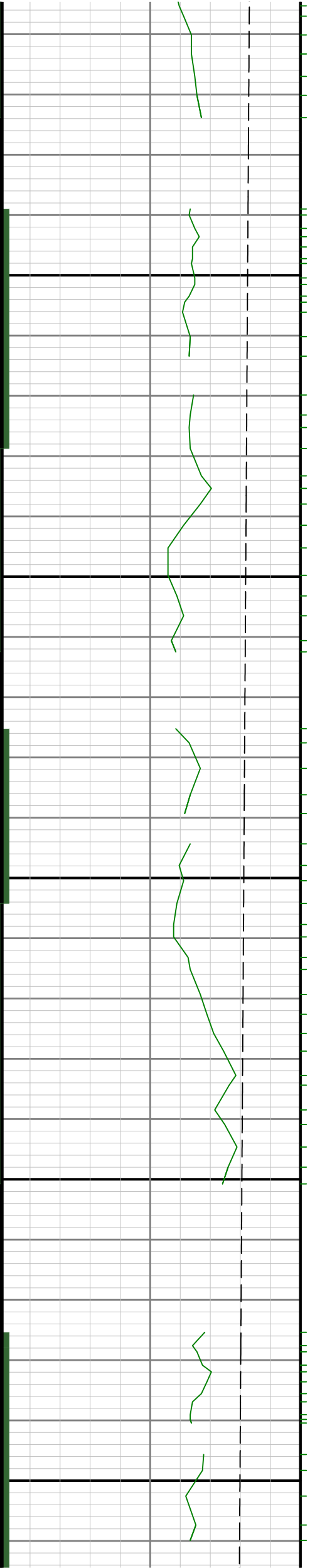
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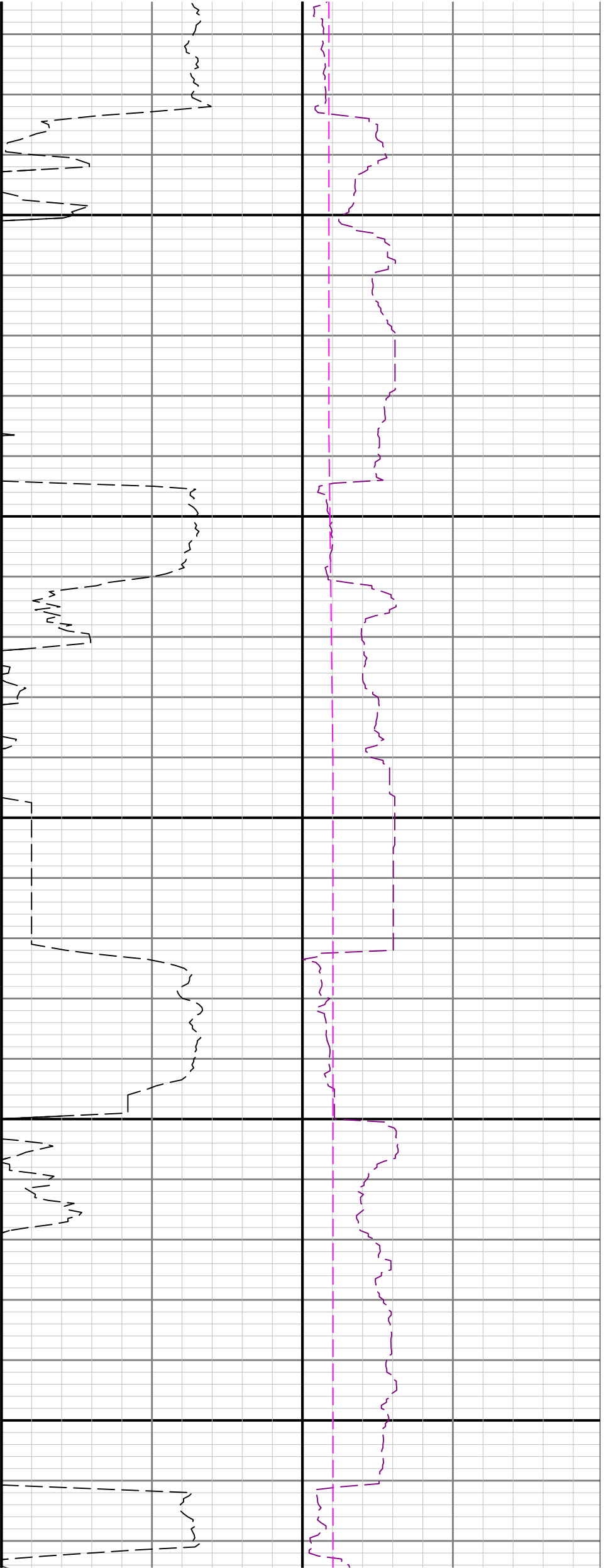




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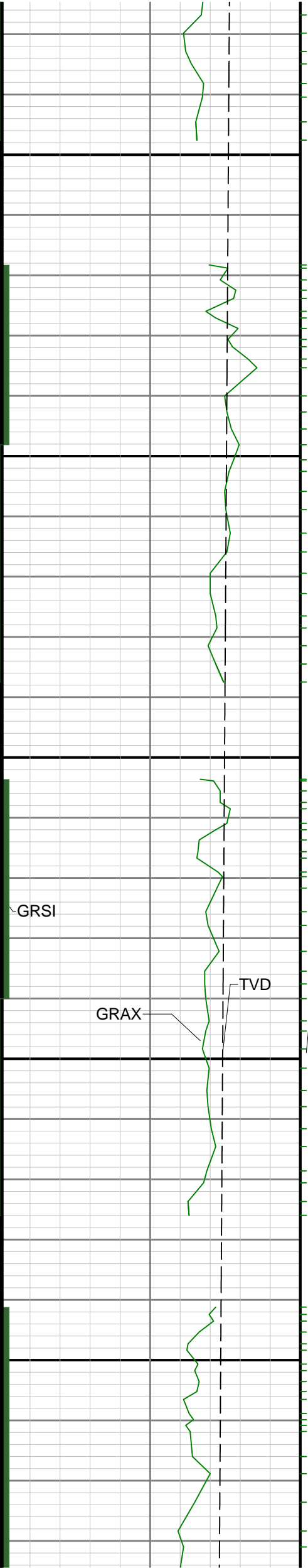




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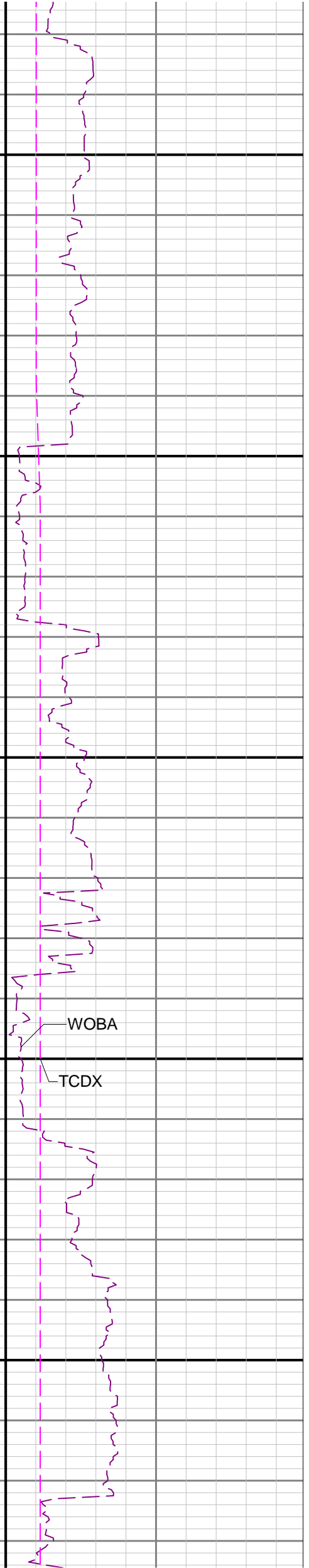
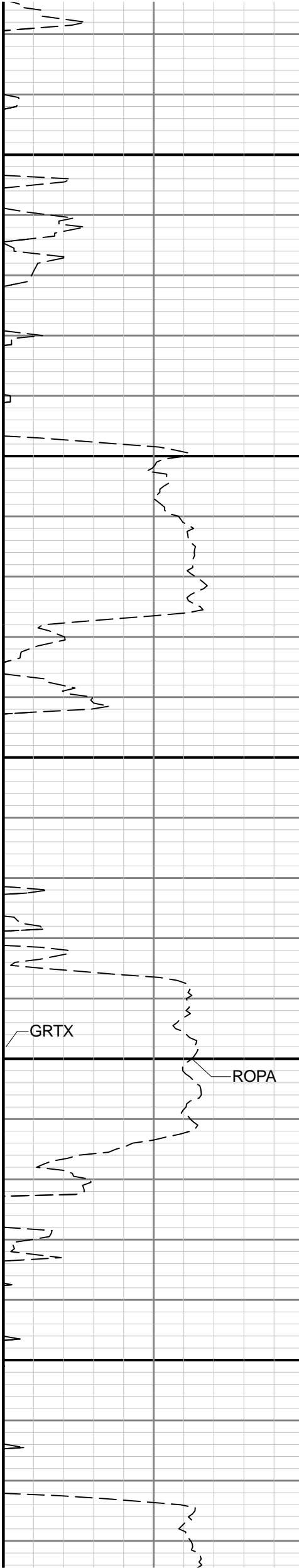
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2900

3000



GRSI

GRAX

TVD

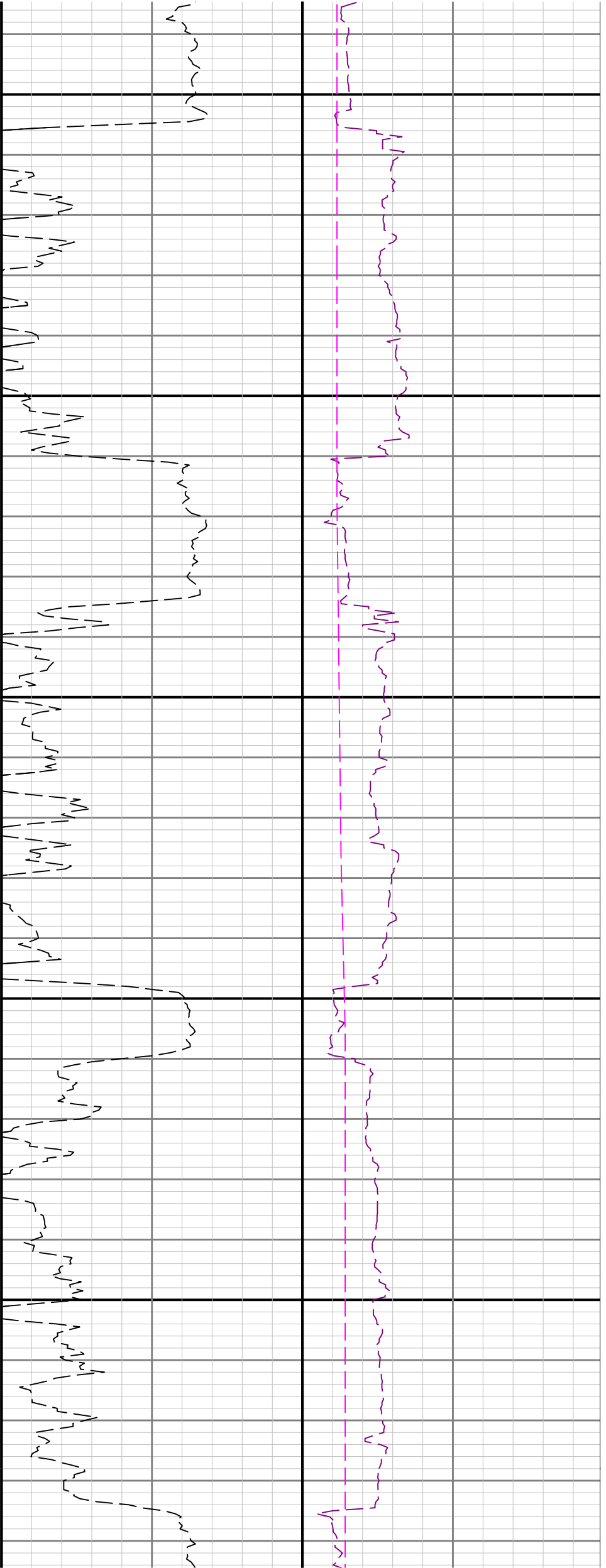
GRIX

GRTX

ROPA

WOBA

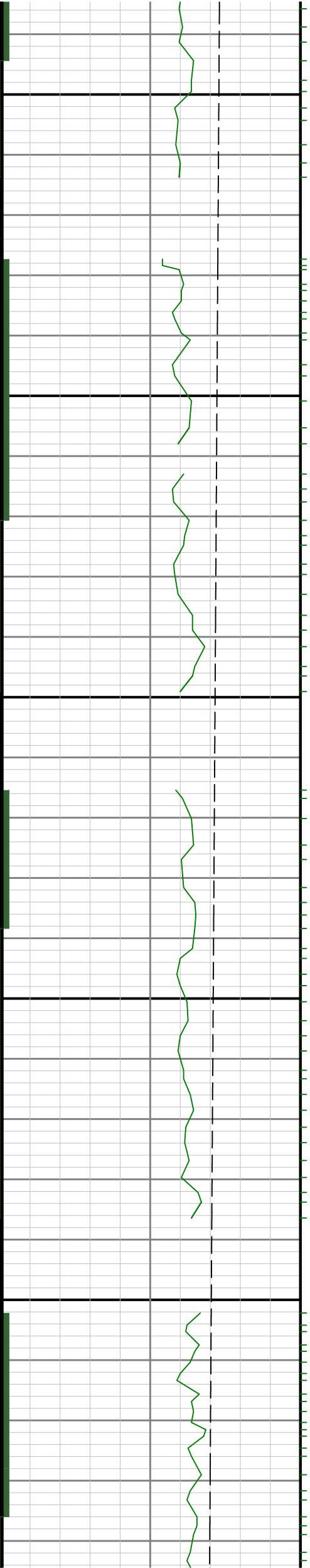
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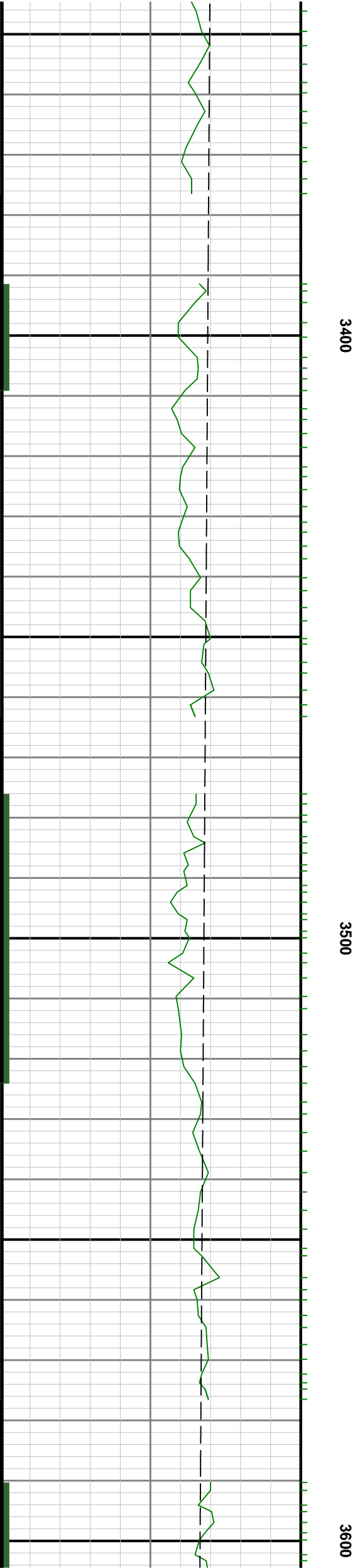
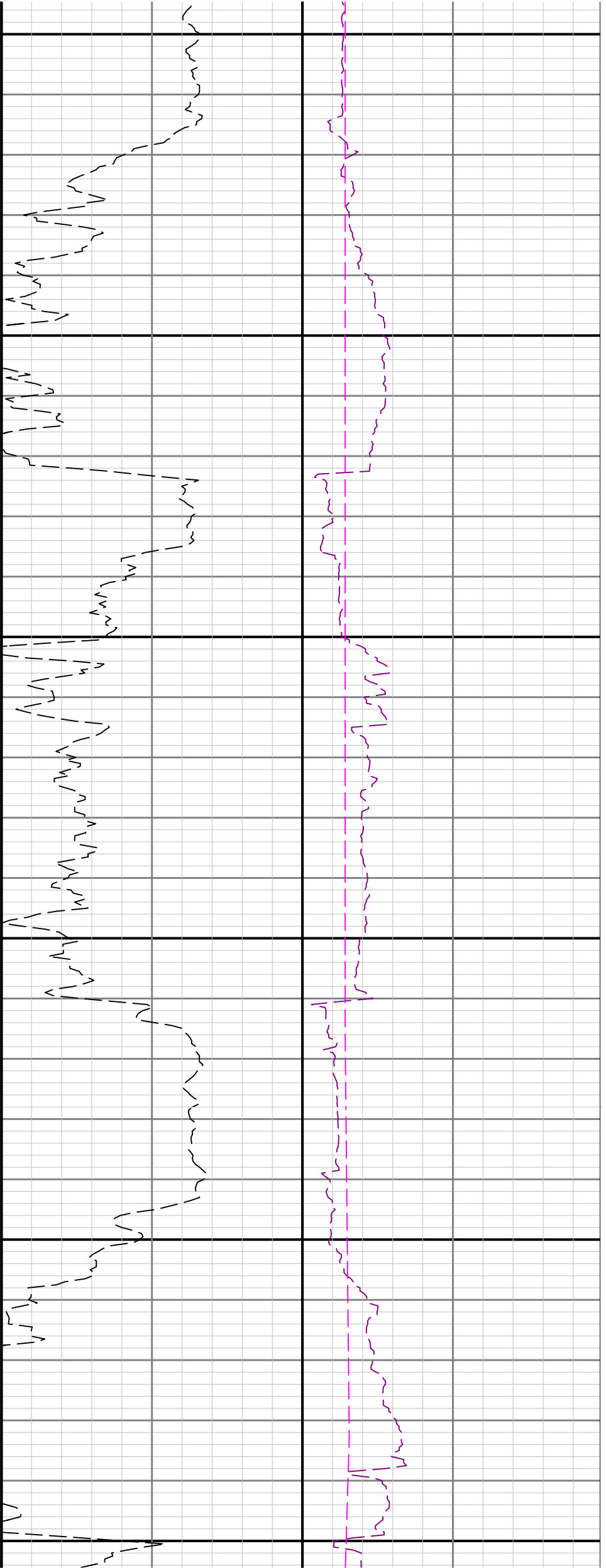


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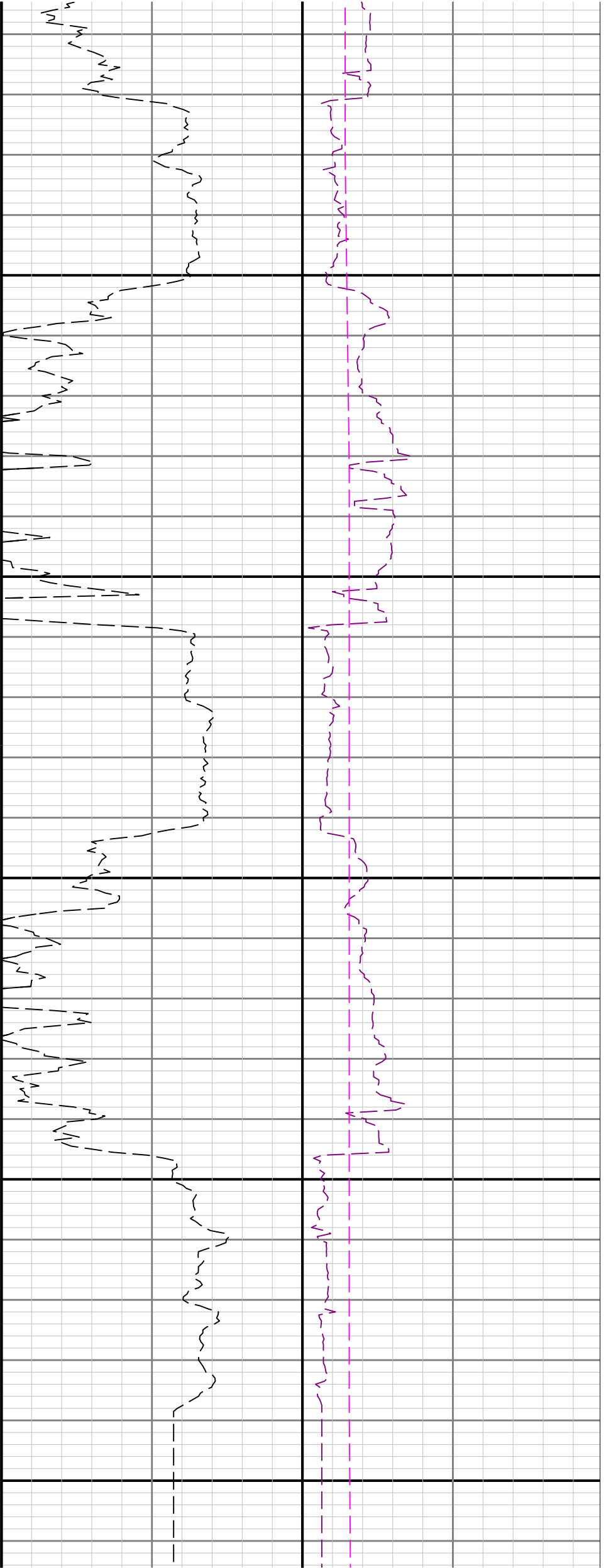
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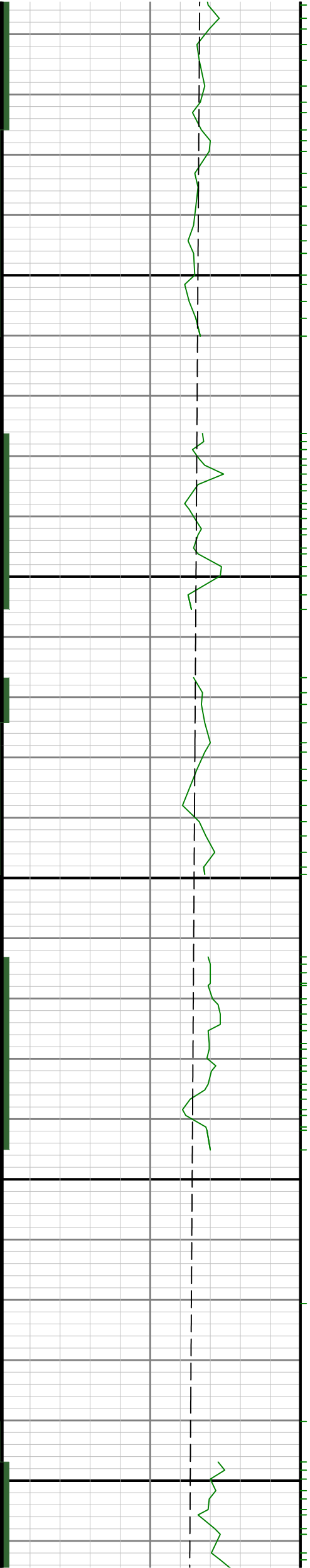


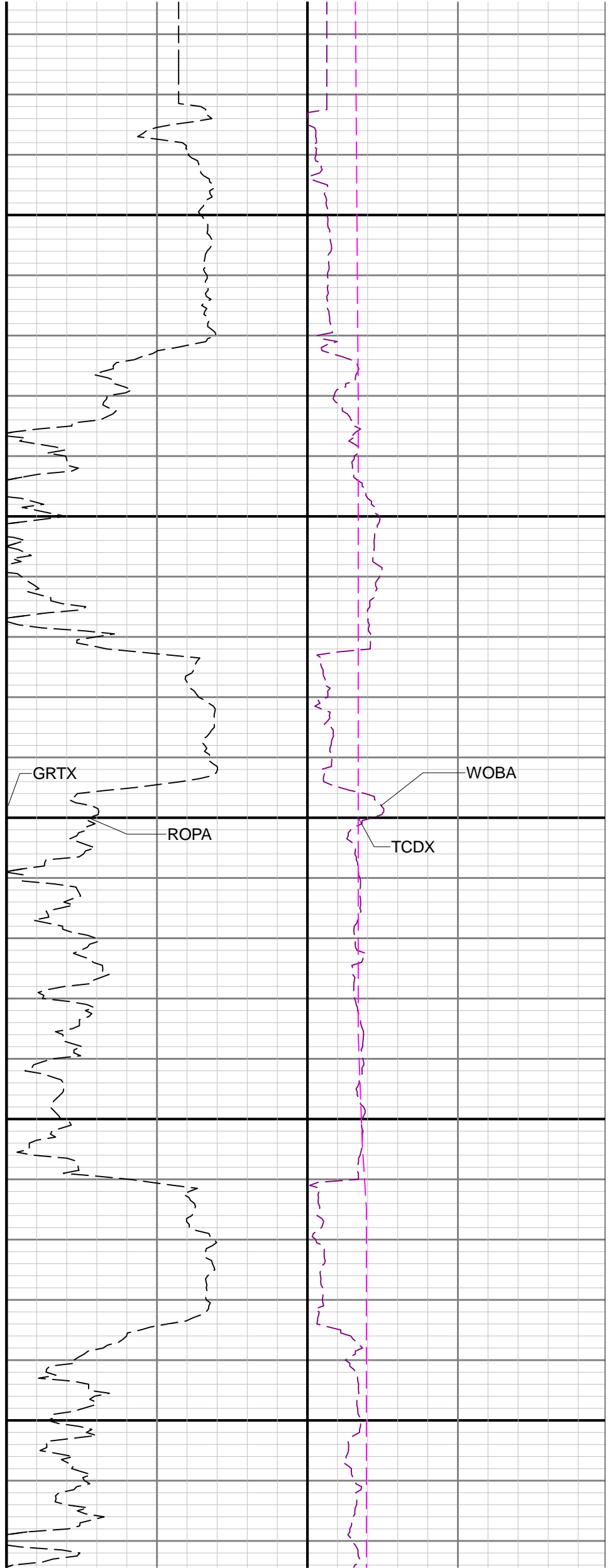
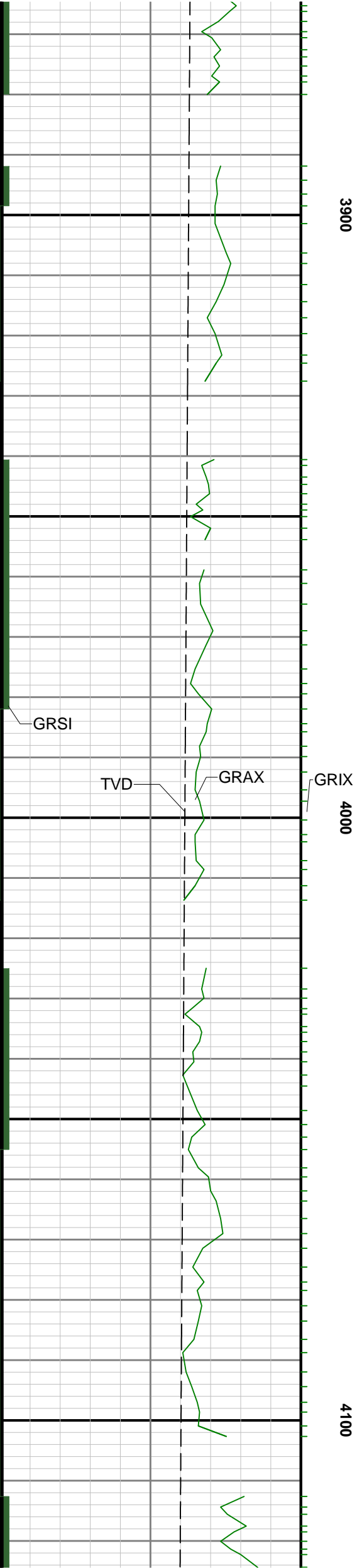


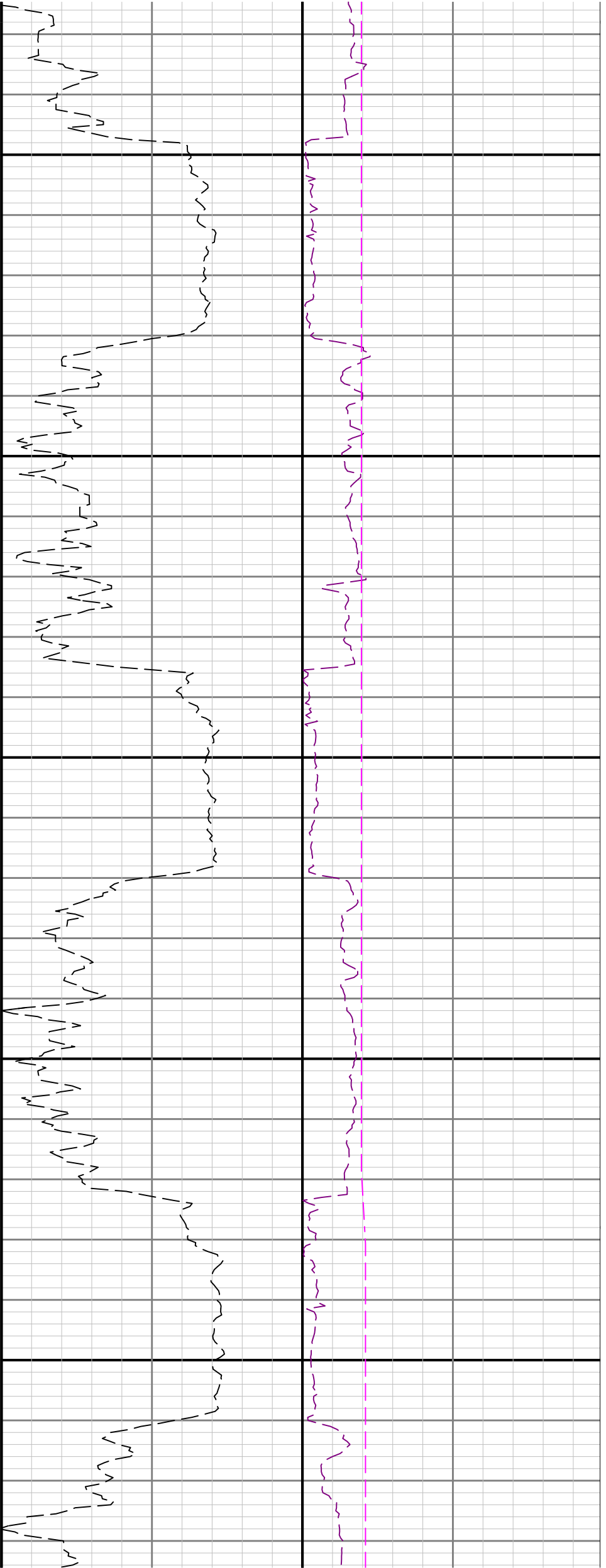


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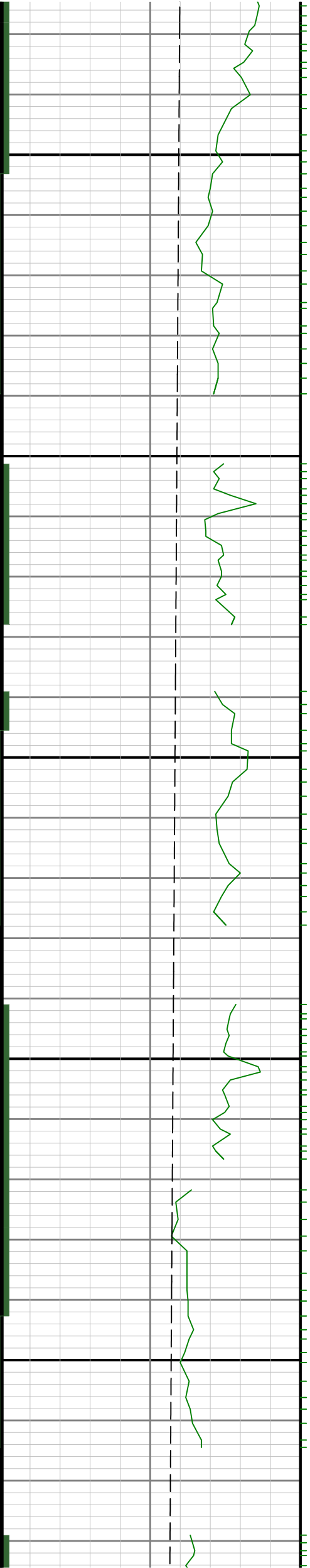


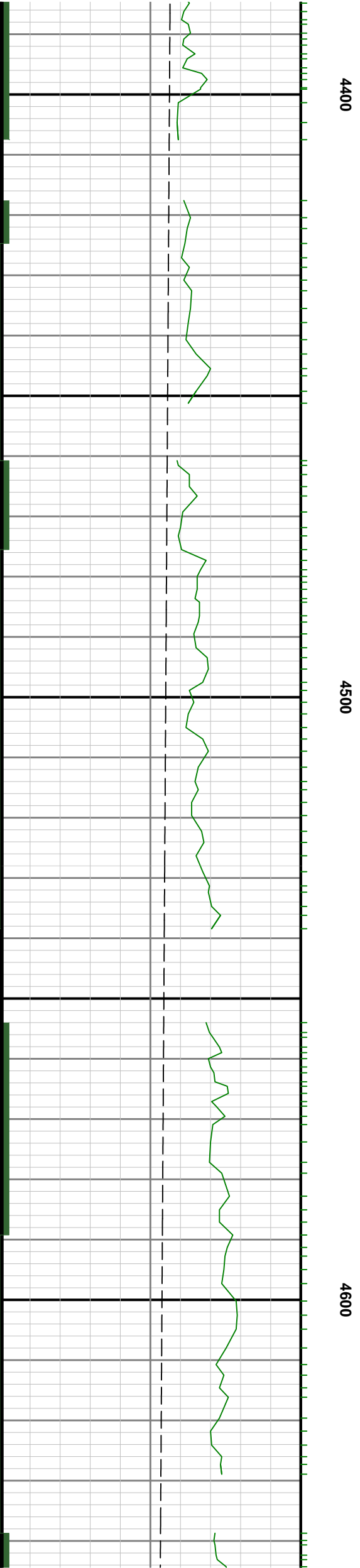
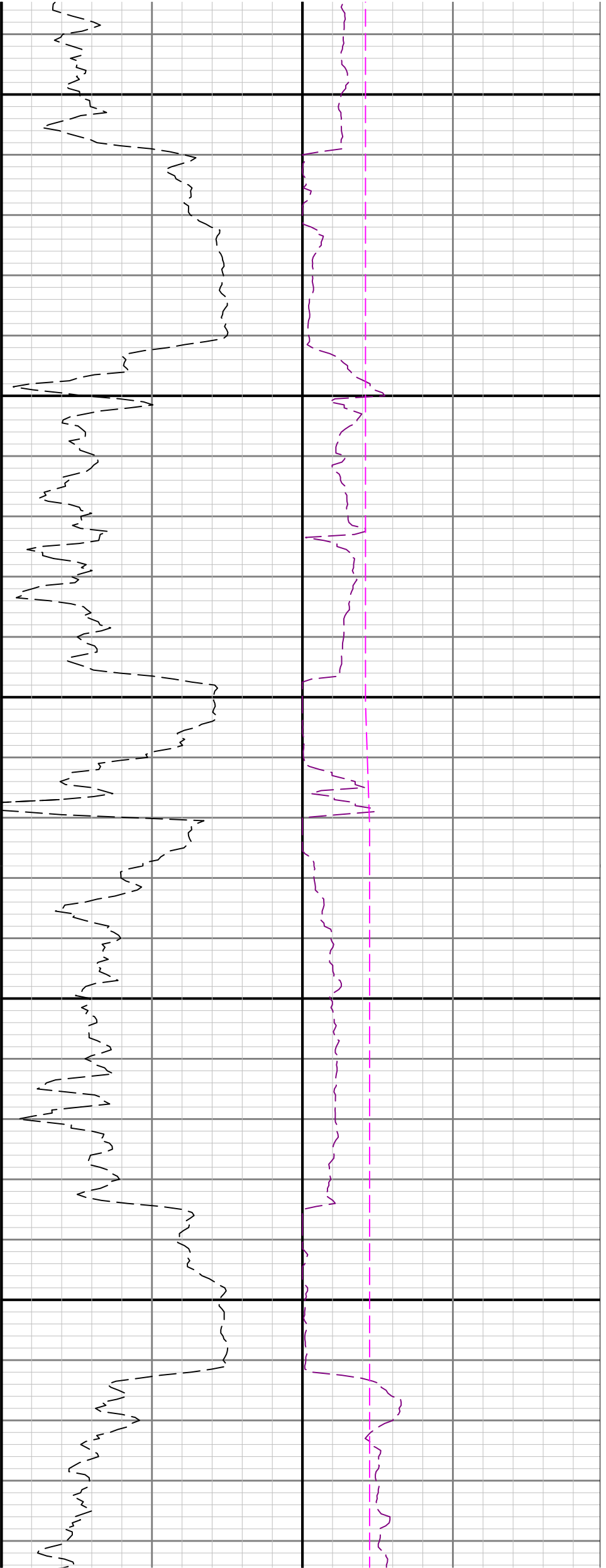


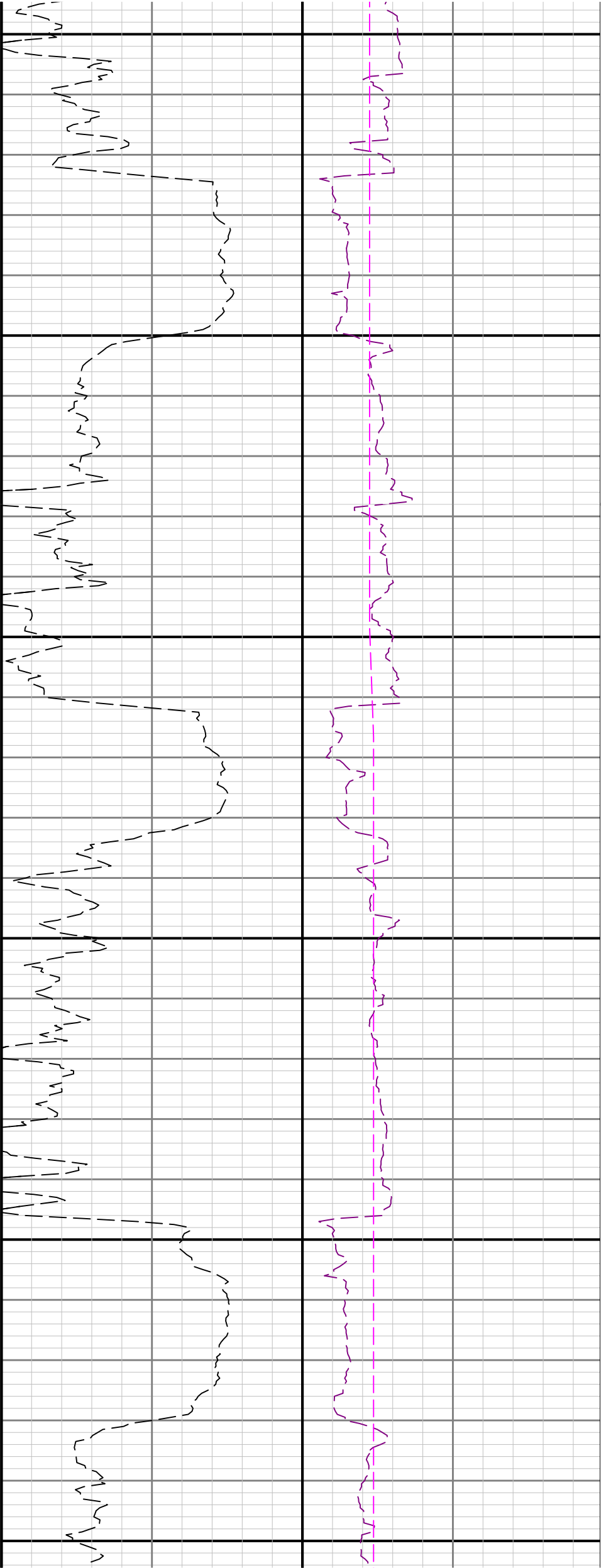


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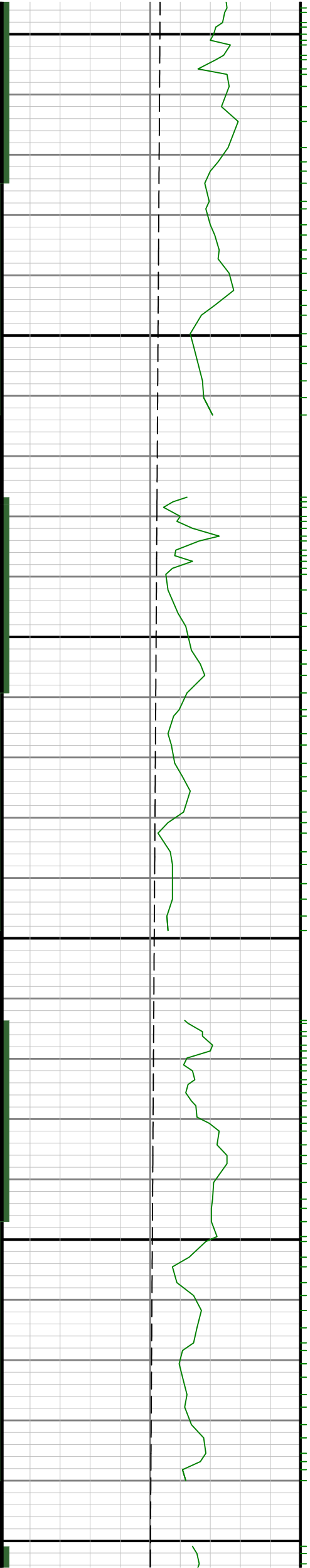


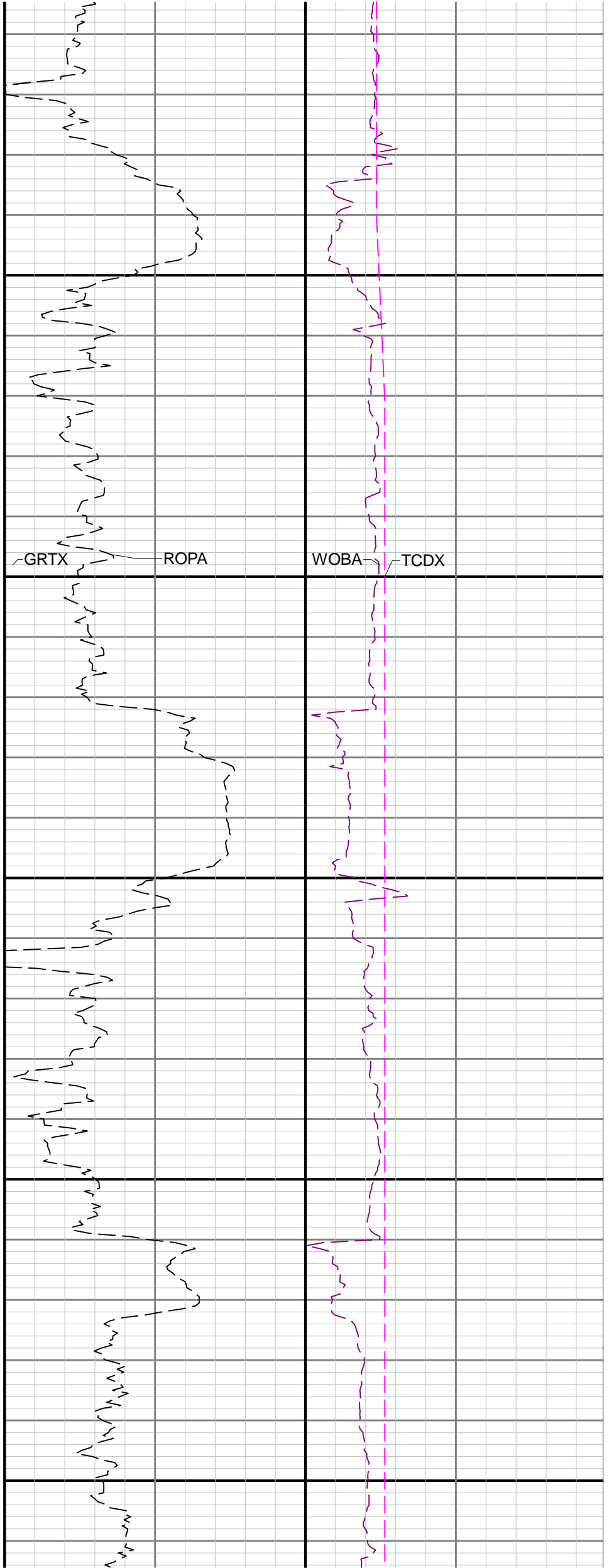
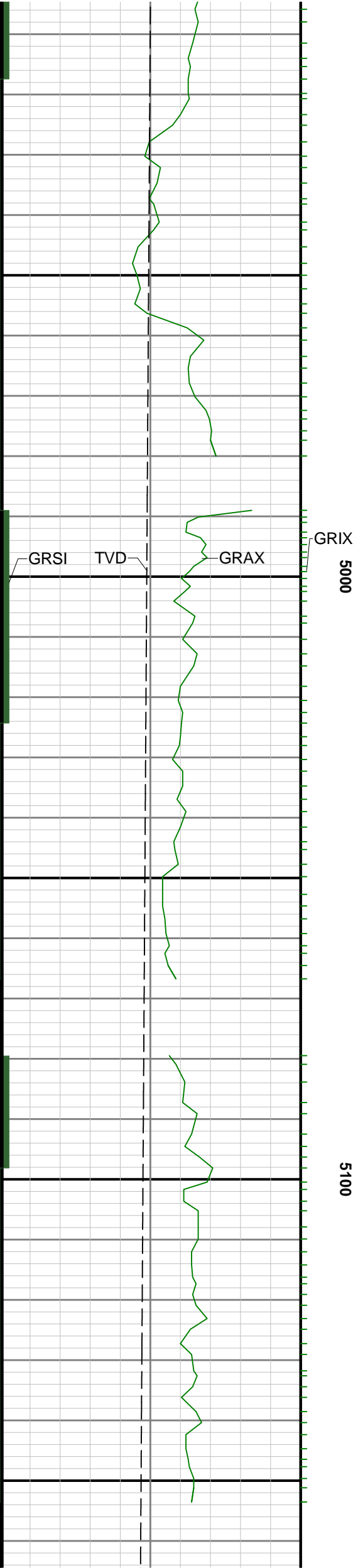


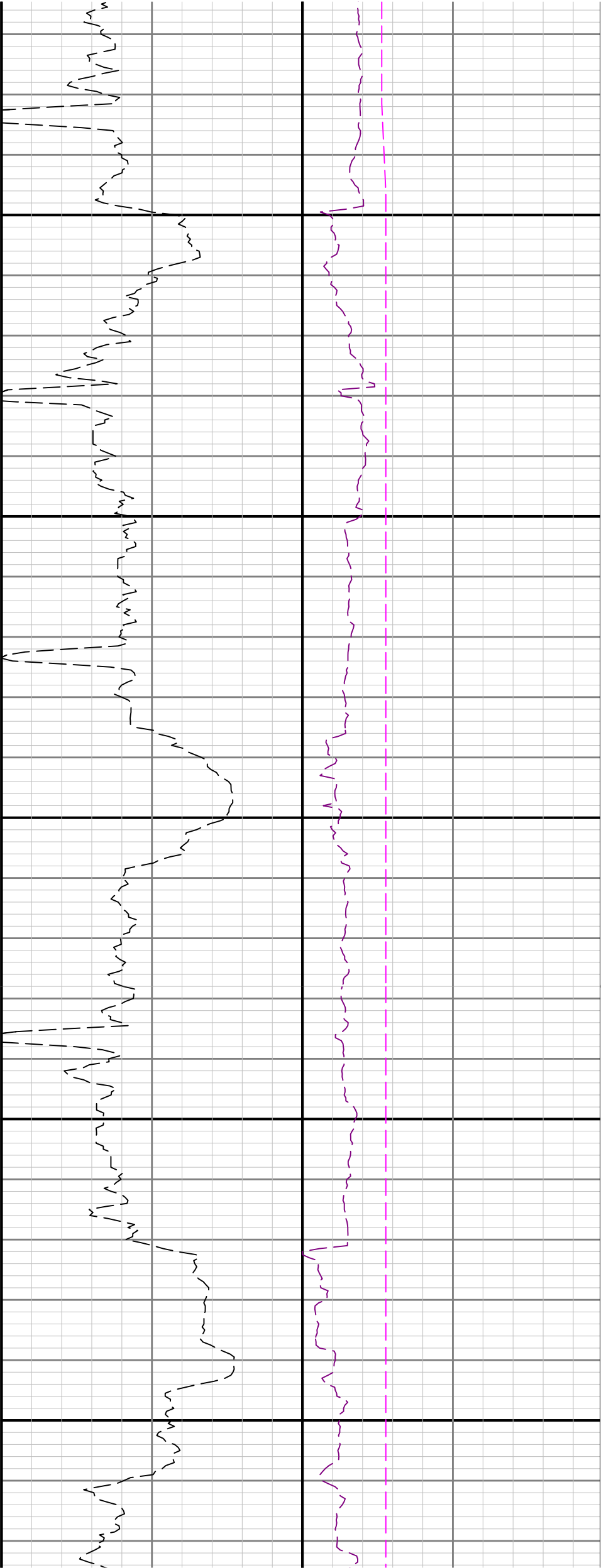
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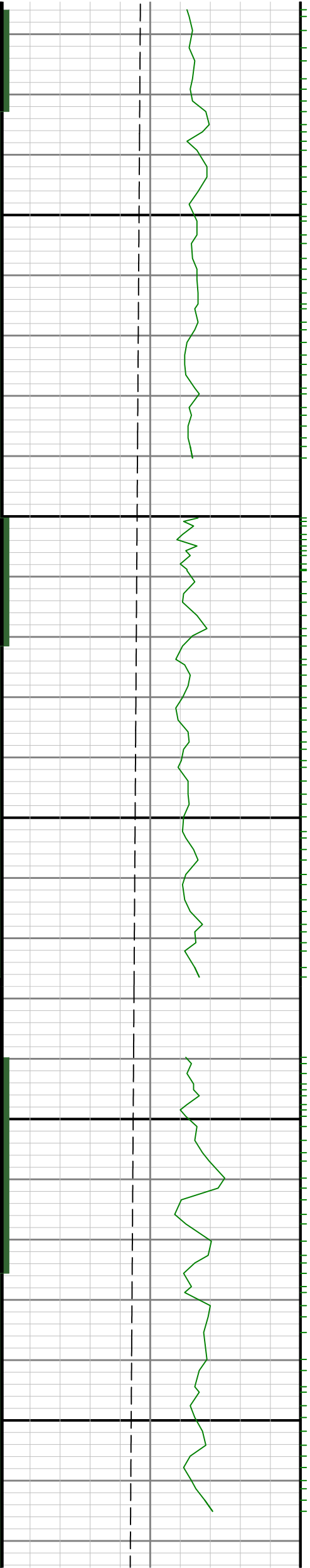


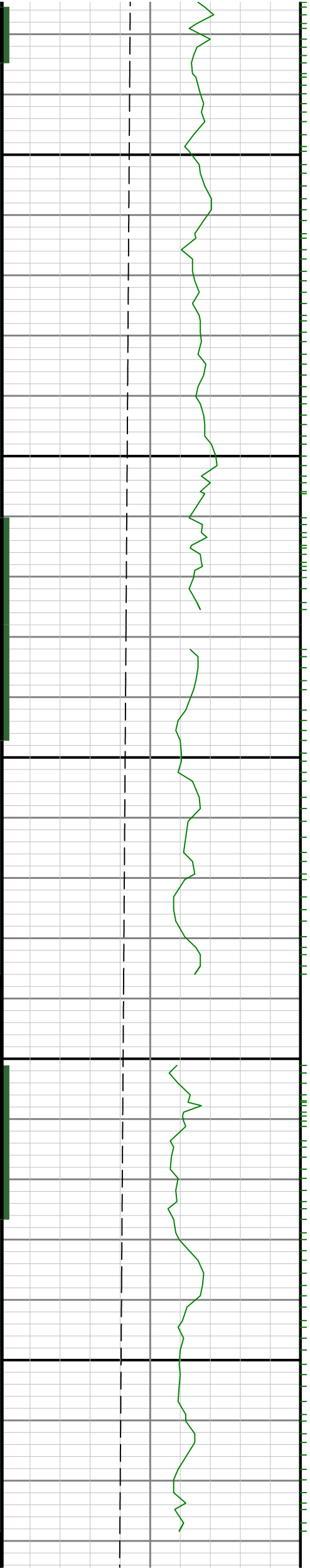
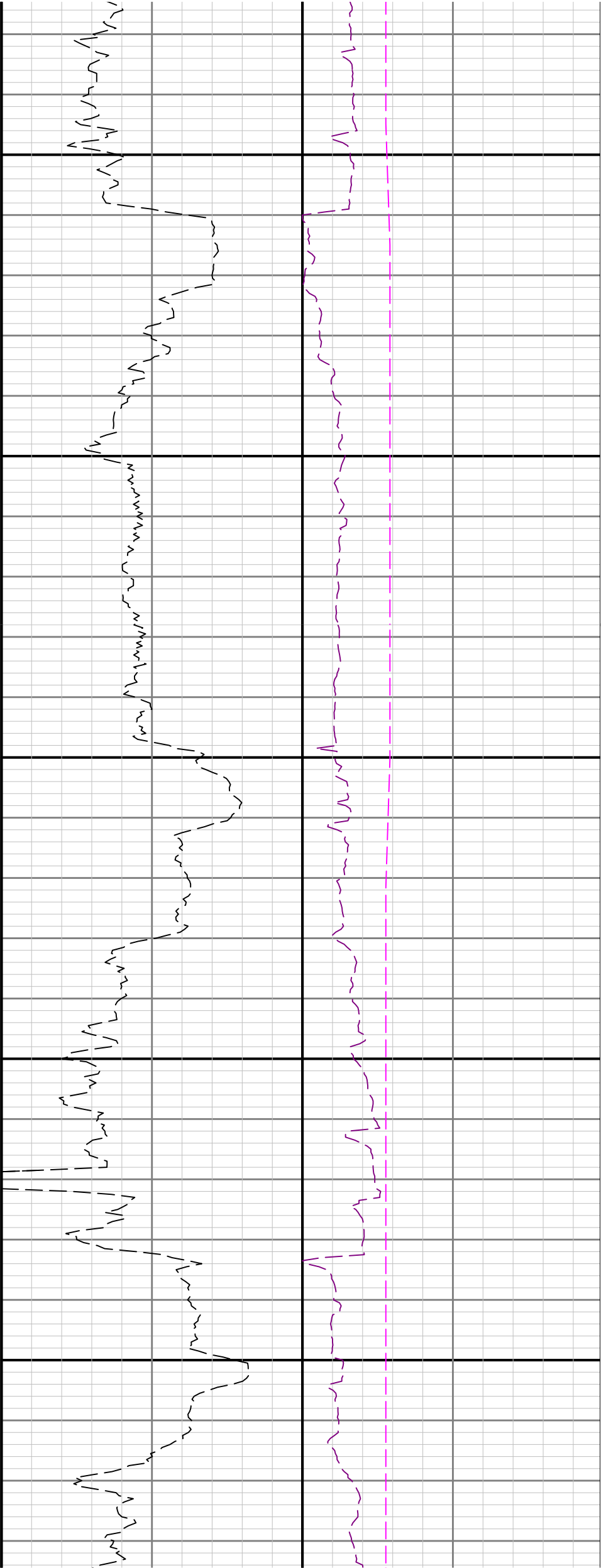


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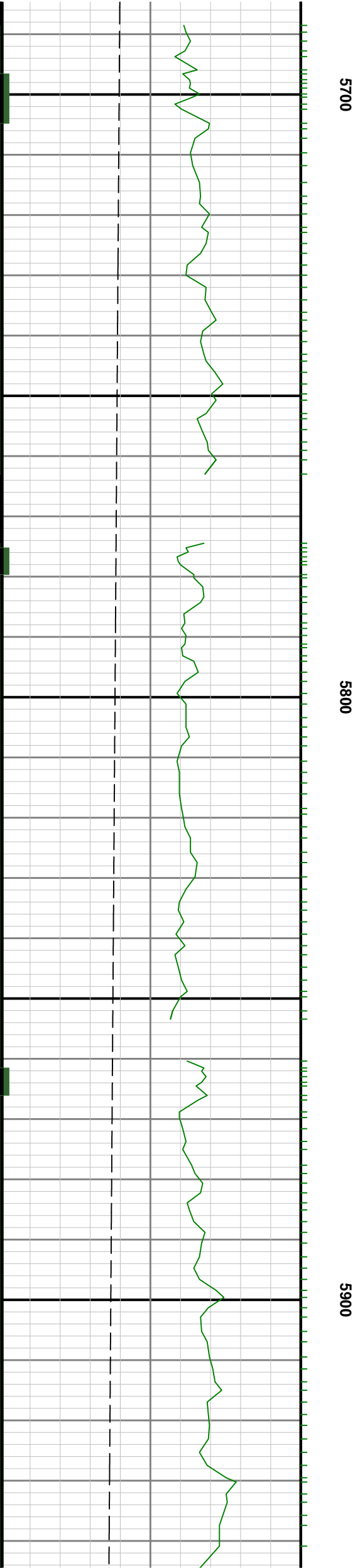
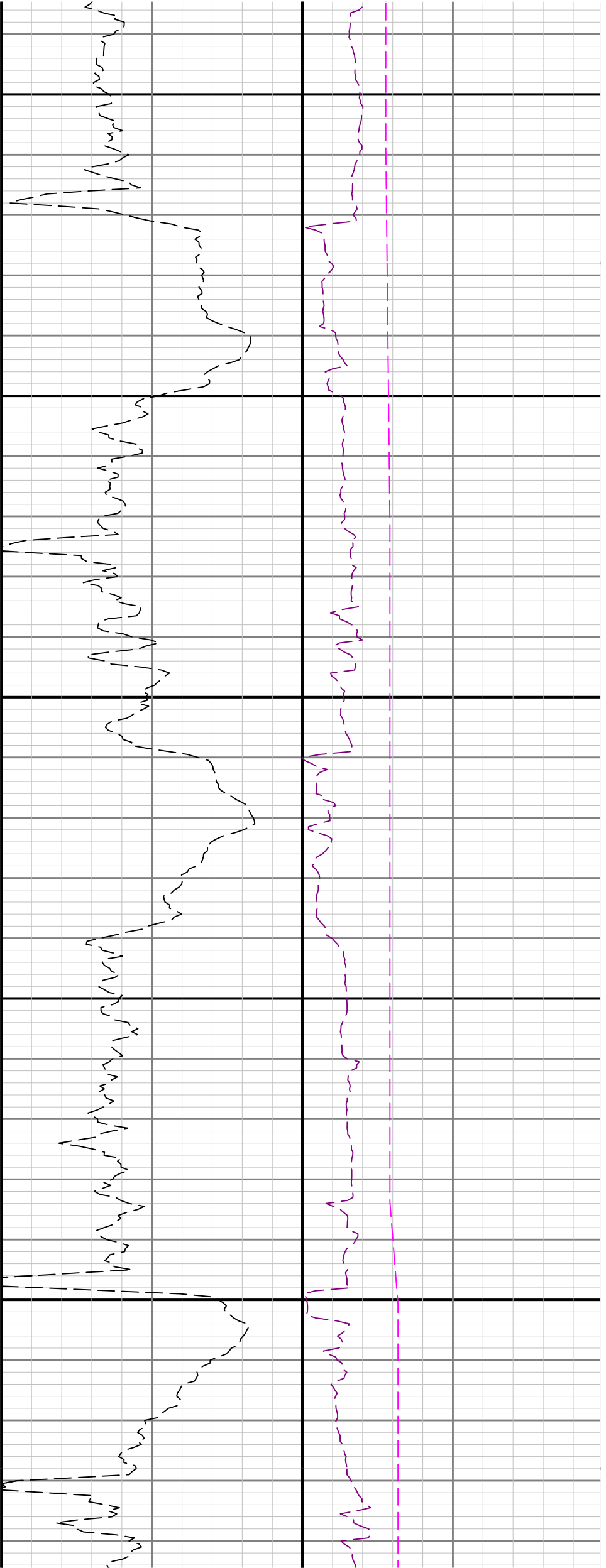
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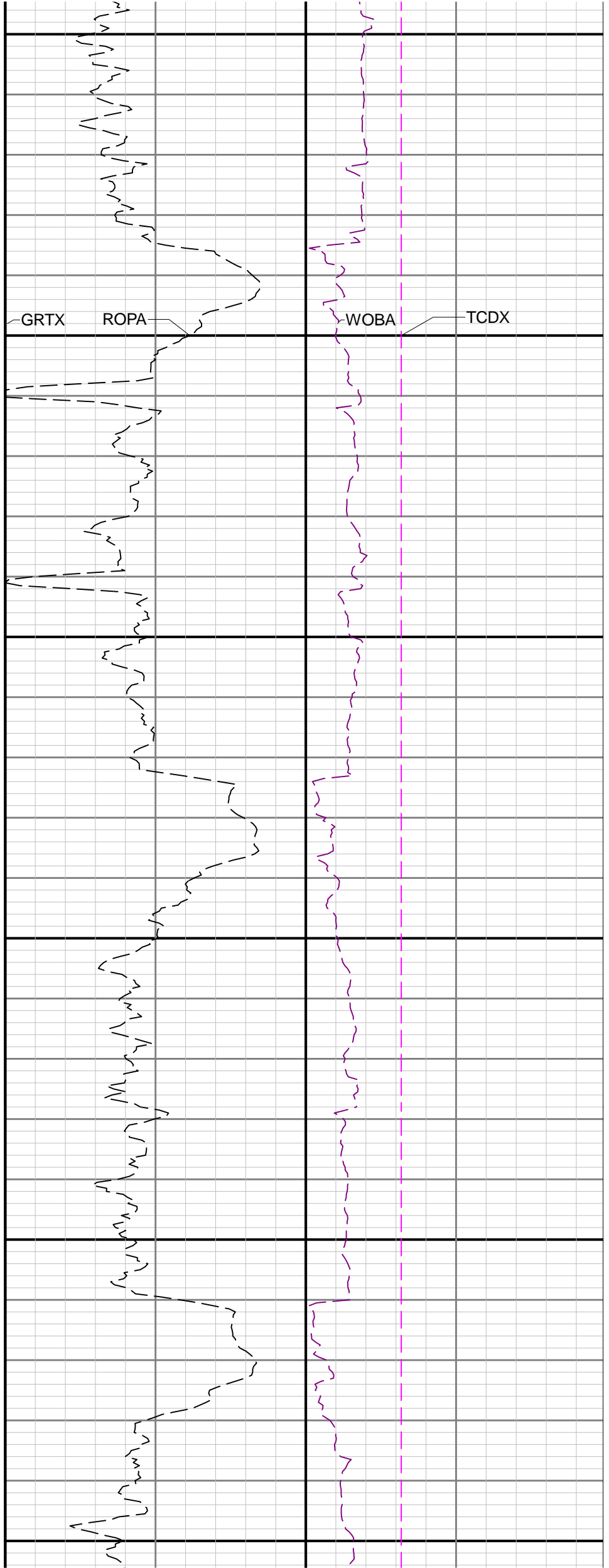
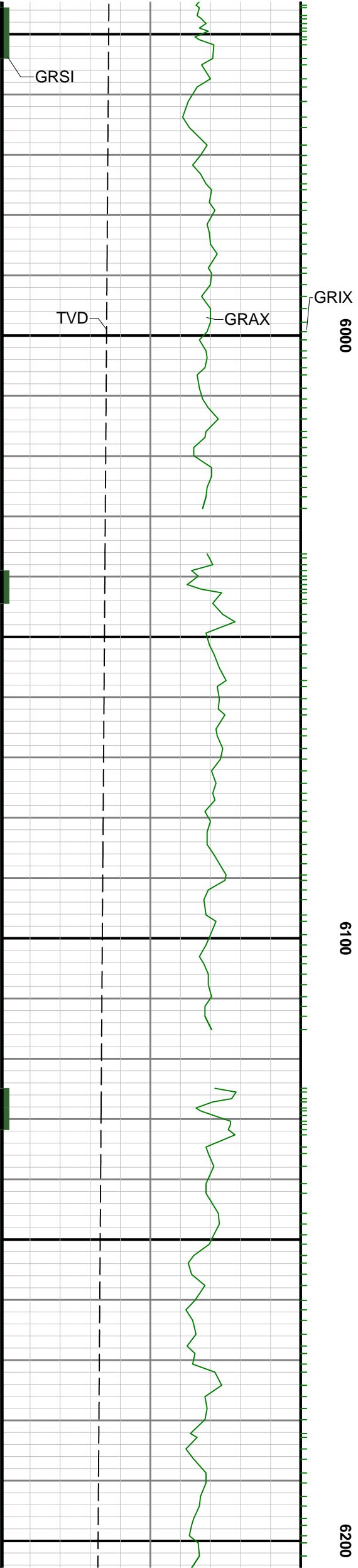
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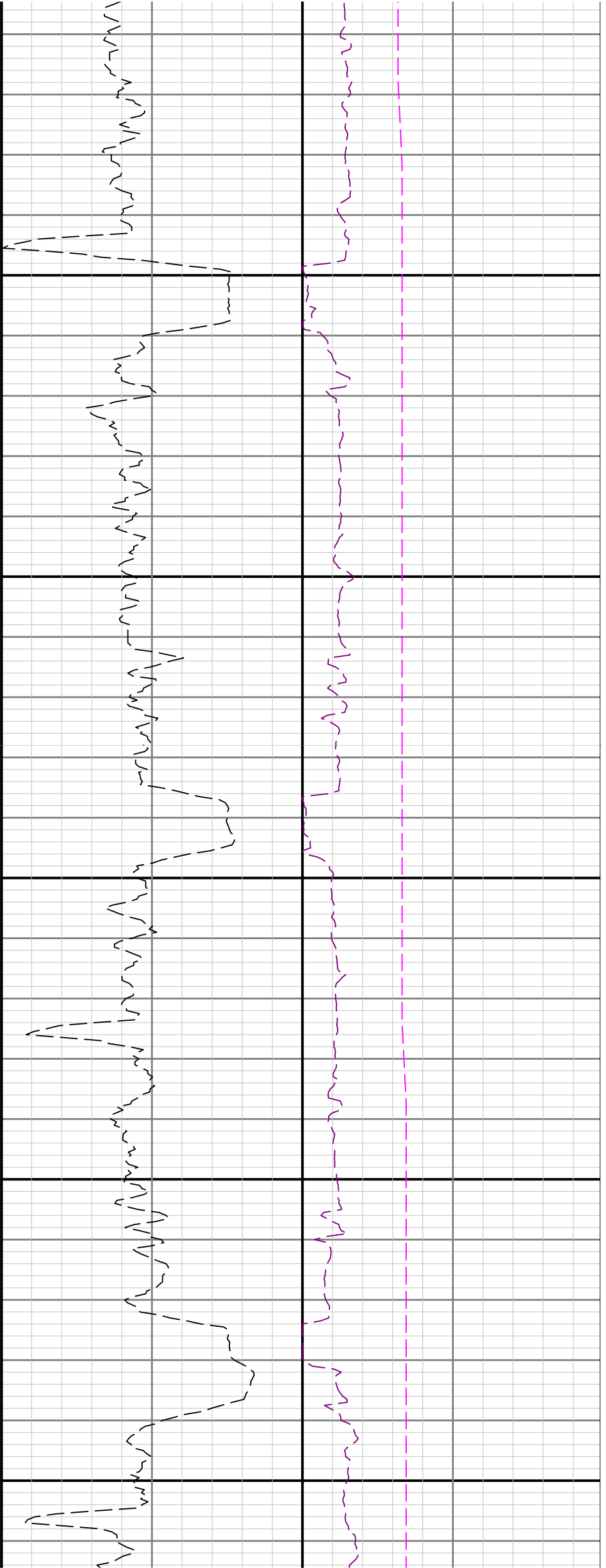






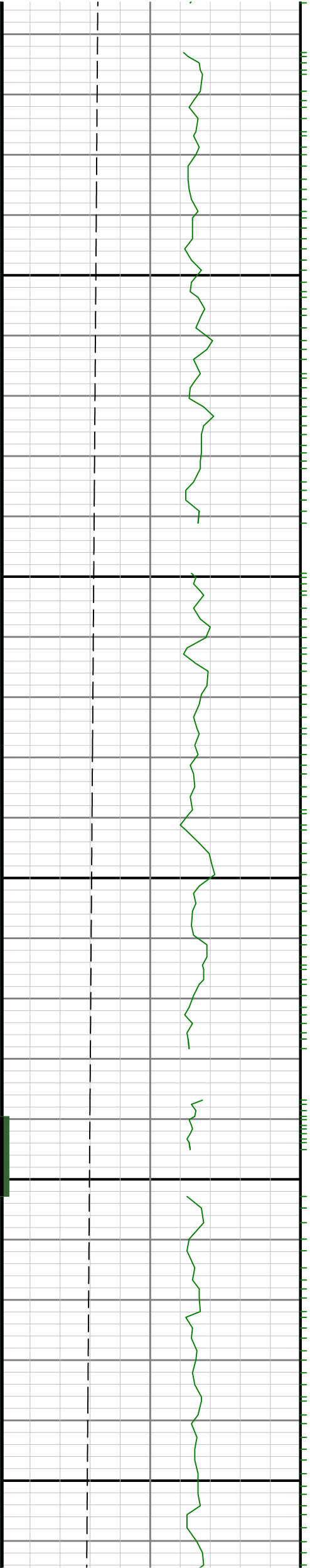


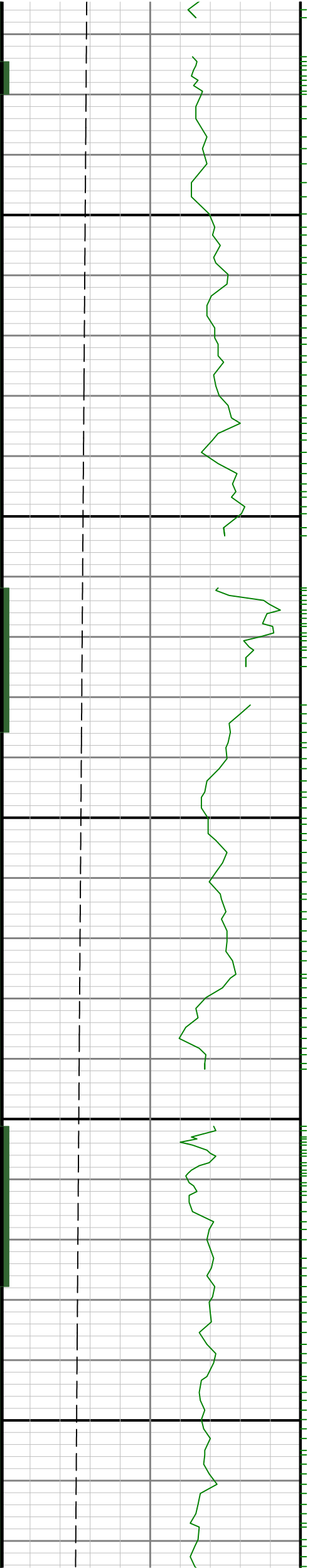




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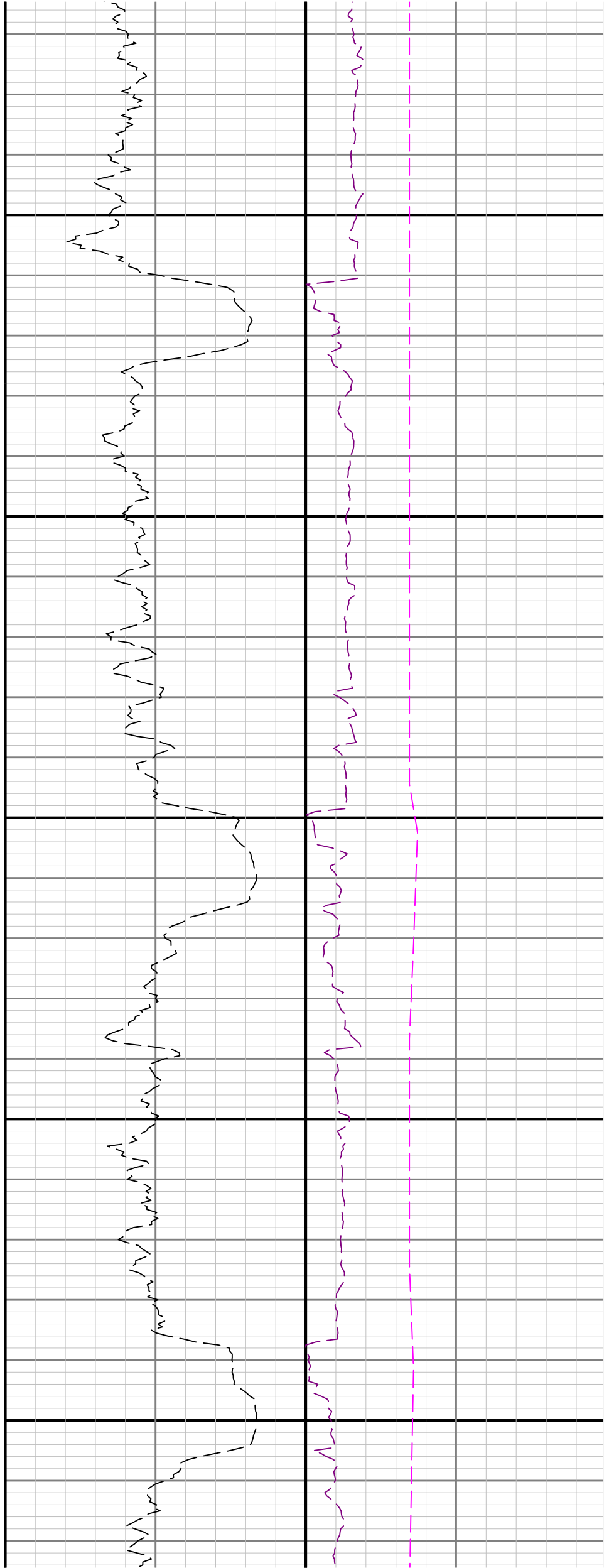


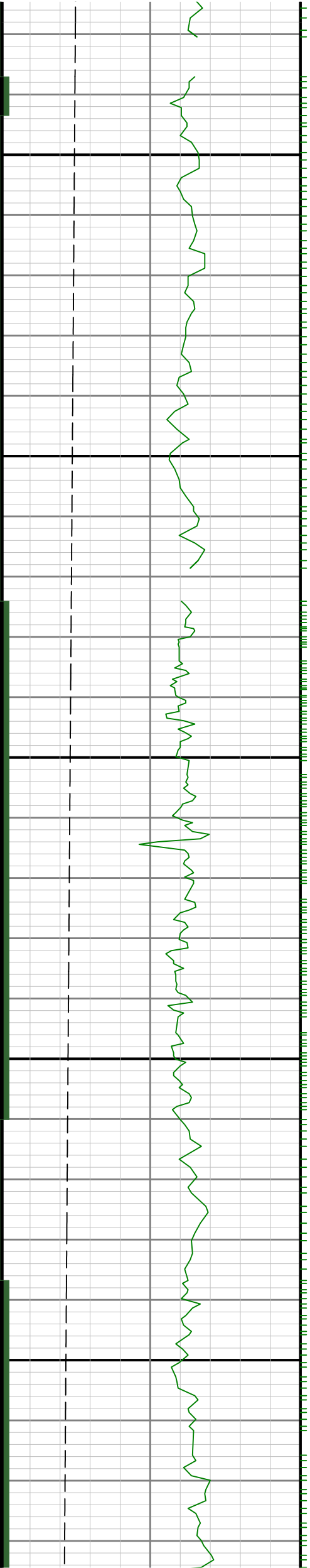


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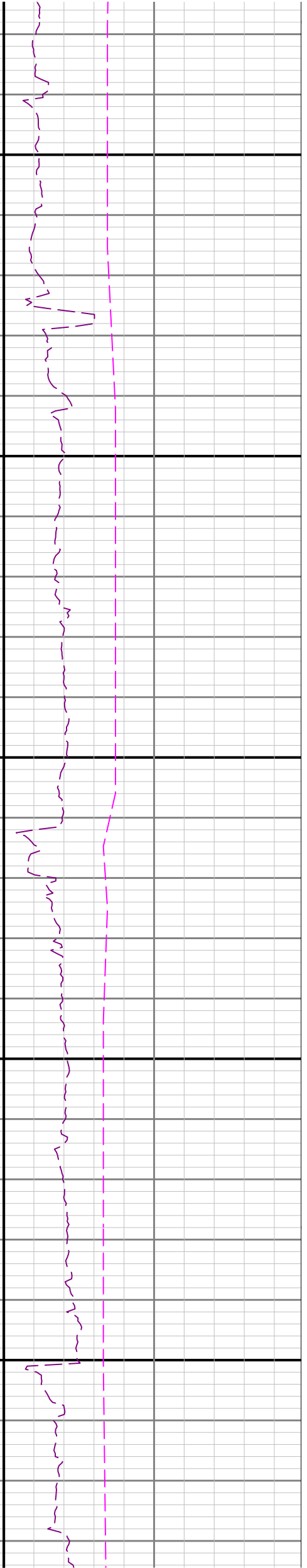
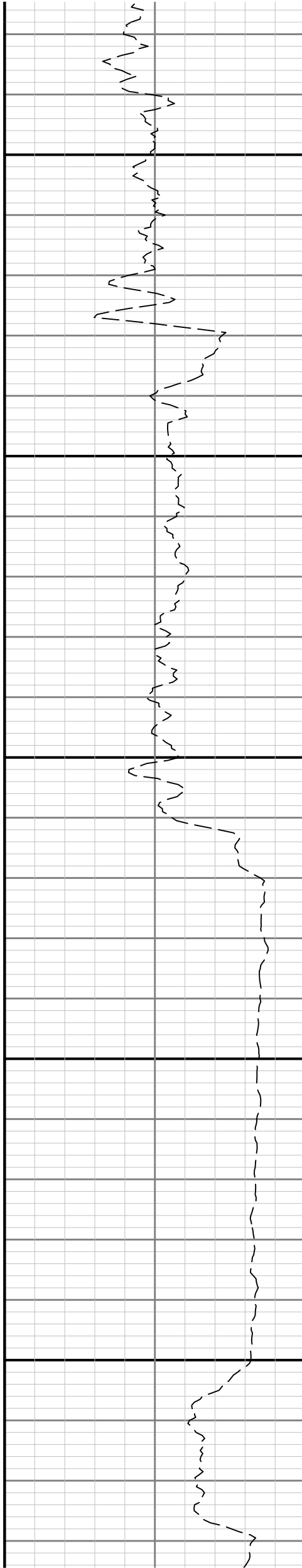
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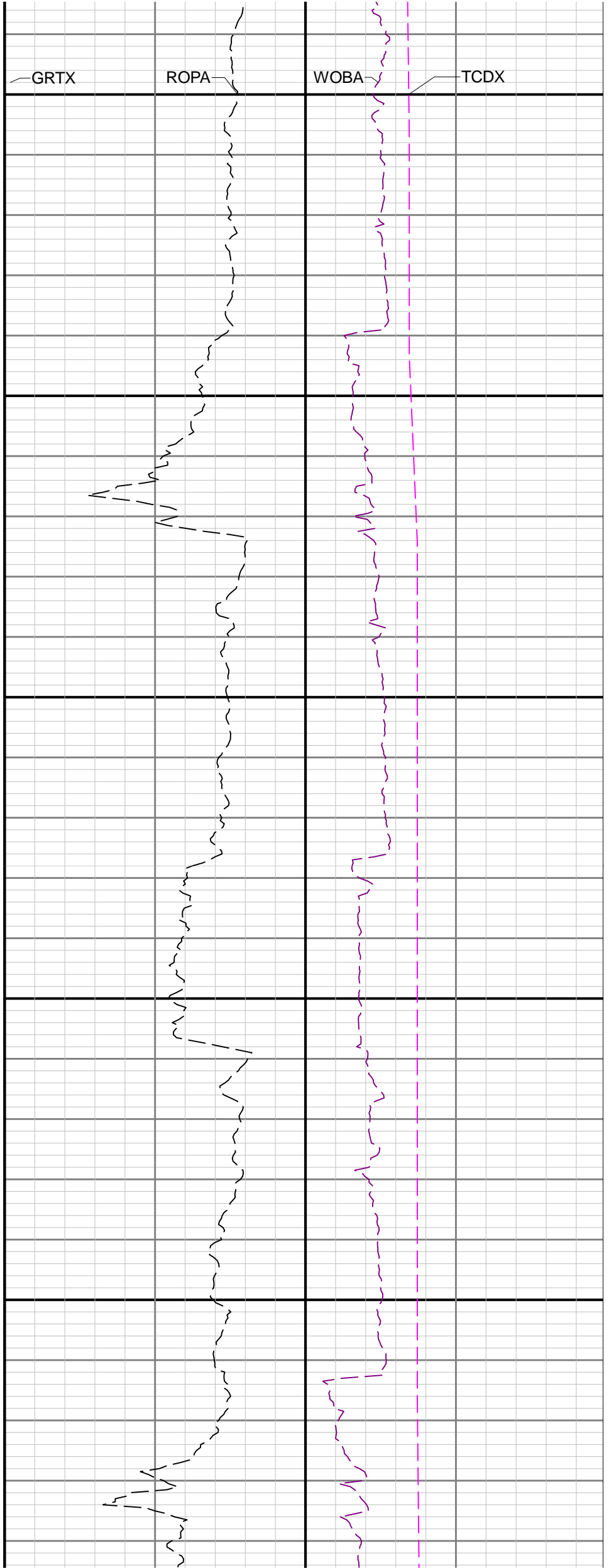
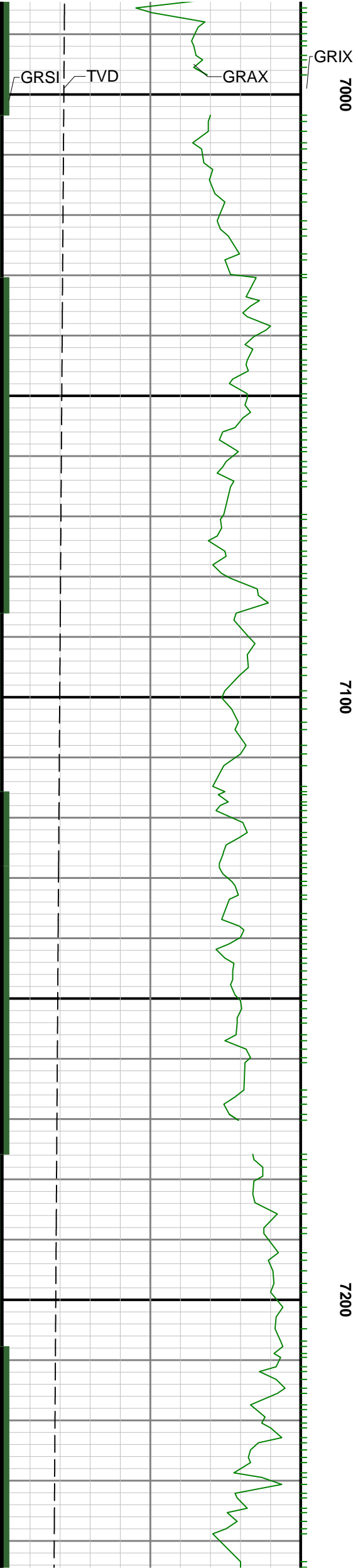


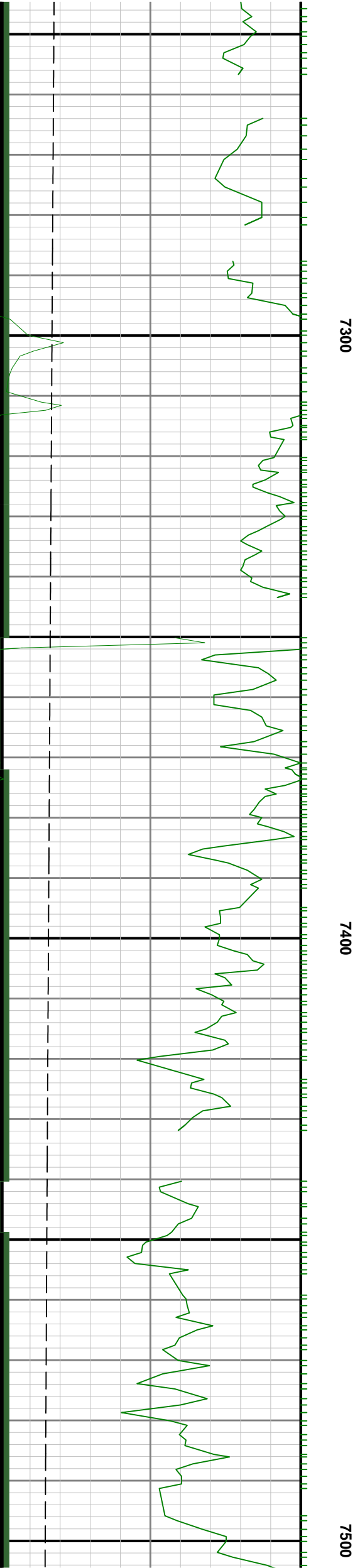
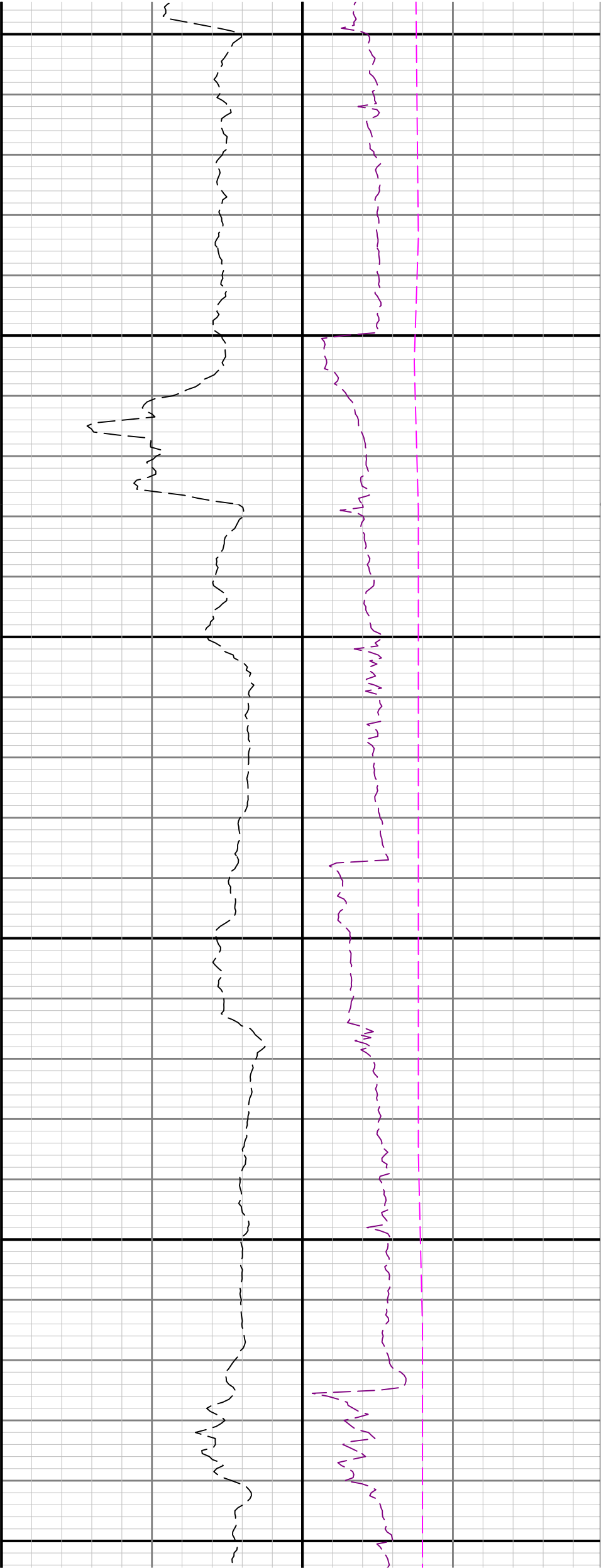


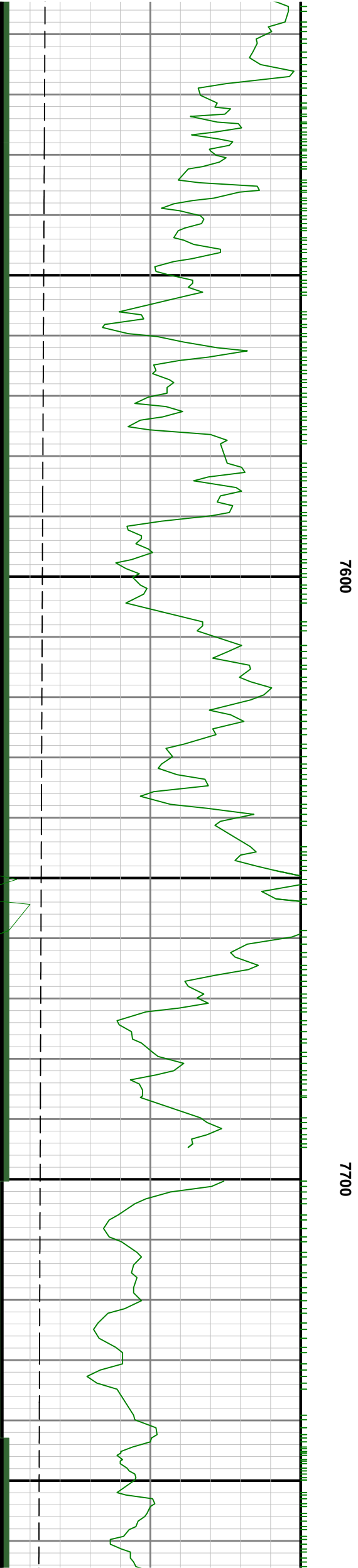
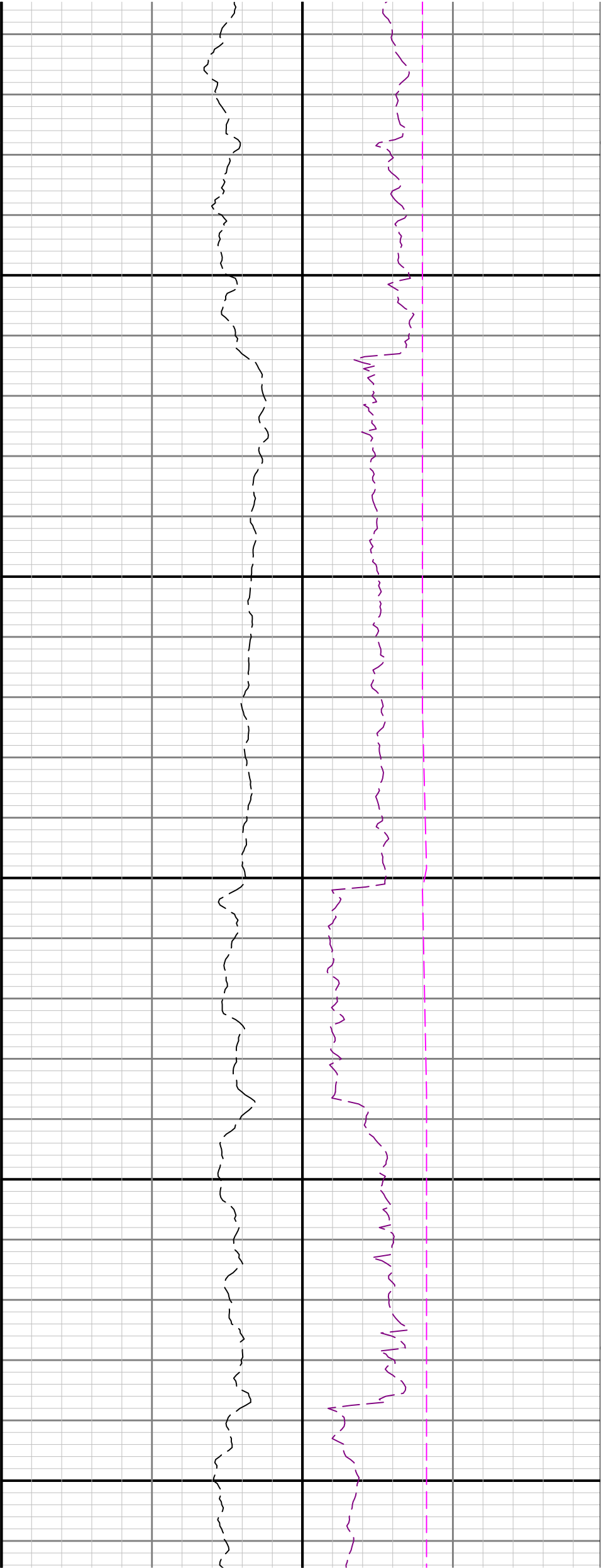
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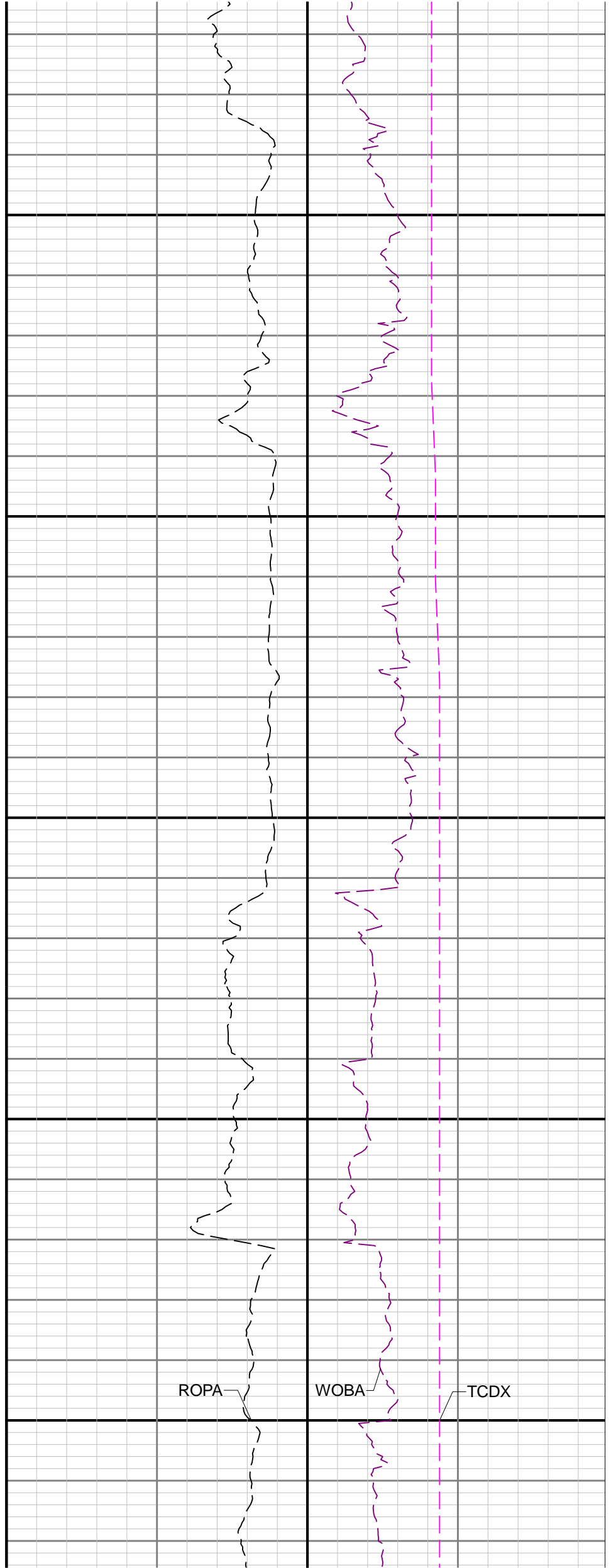
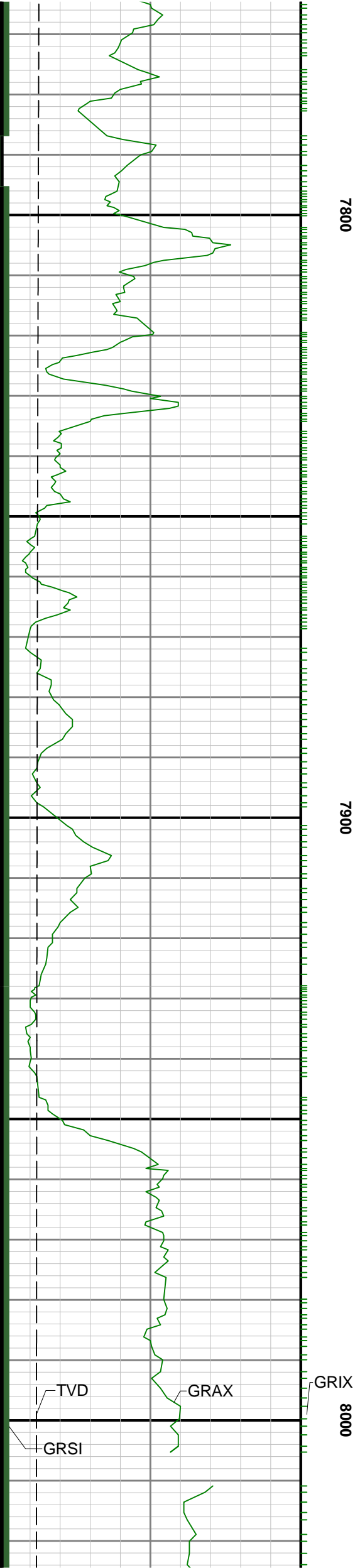


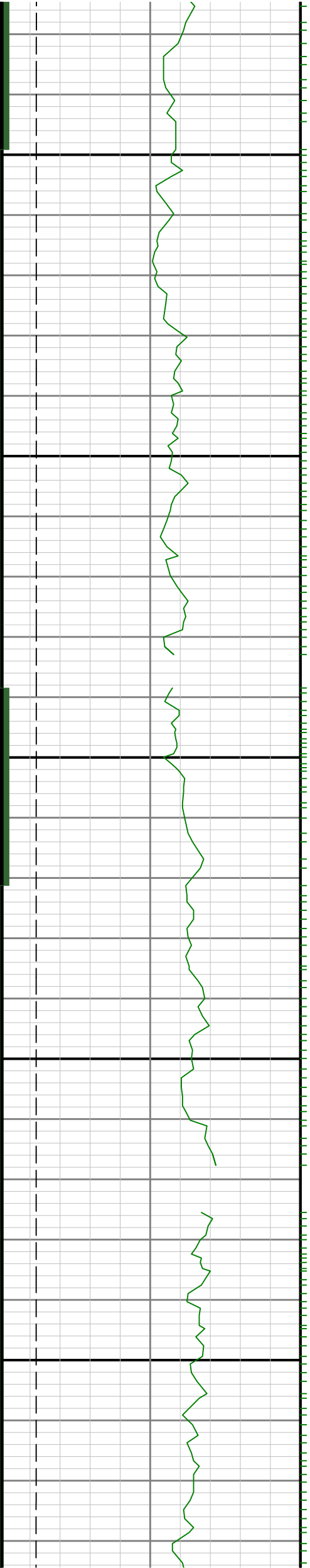
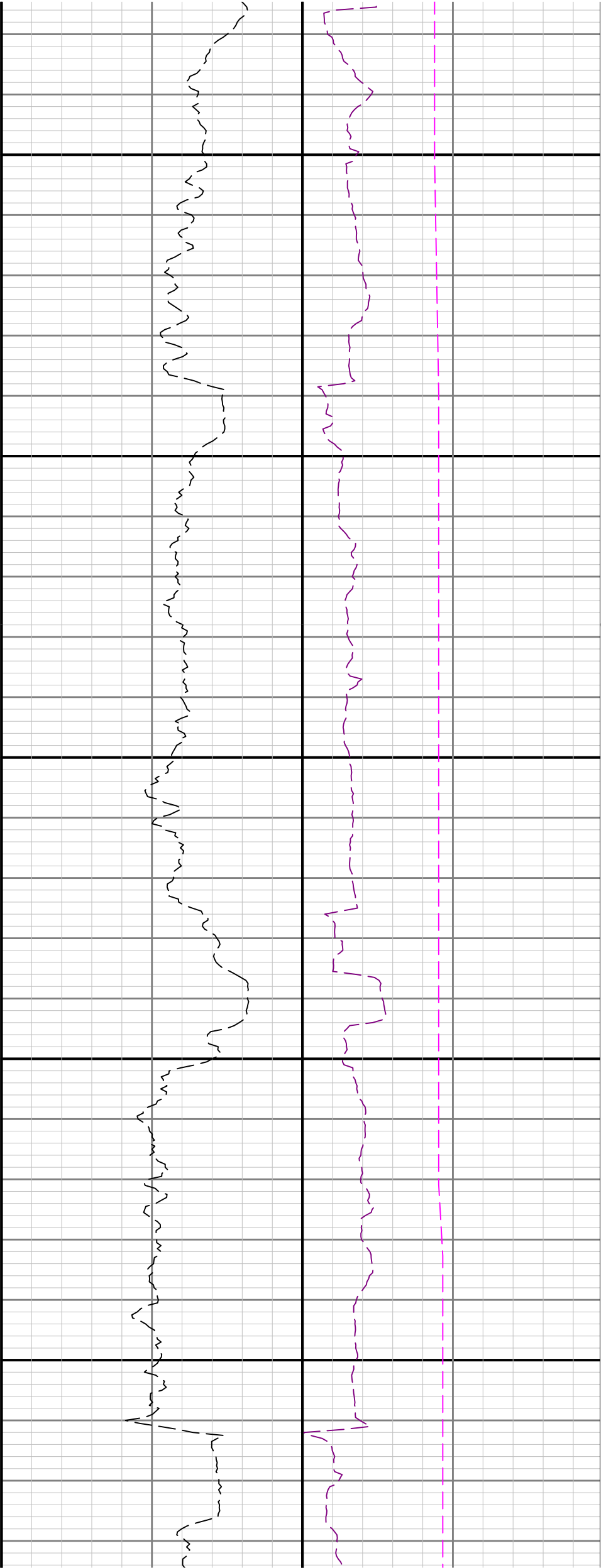


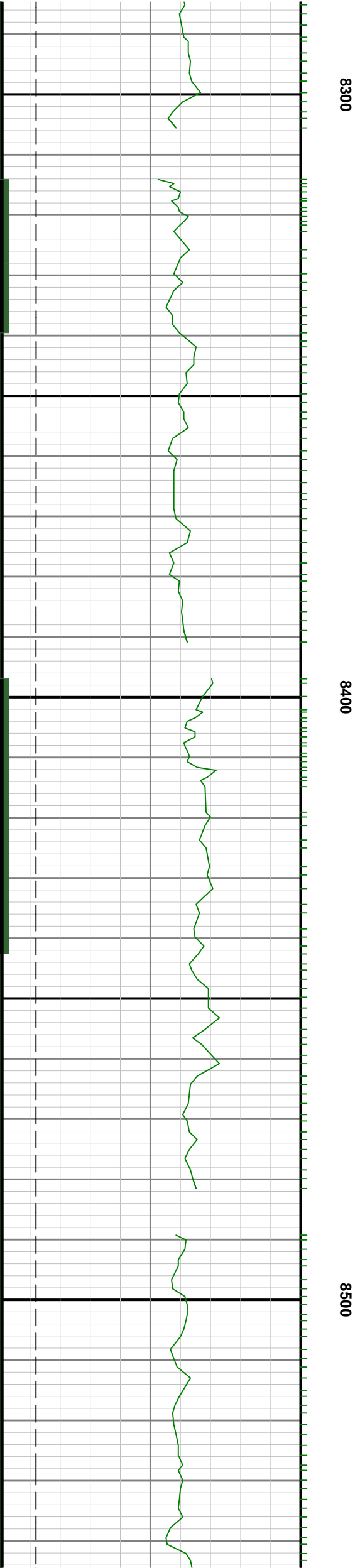
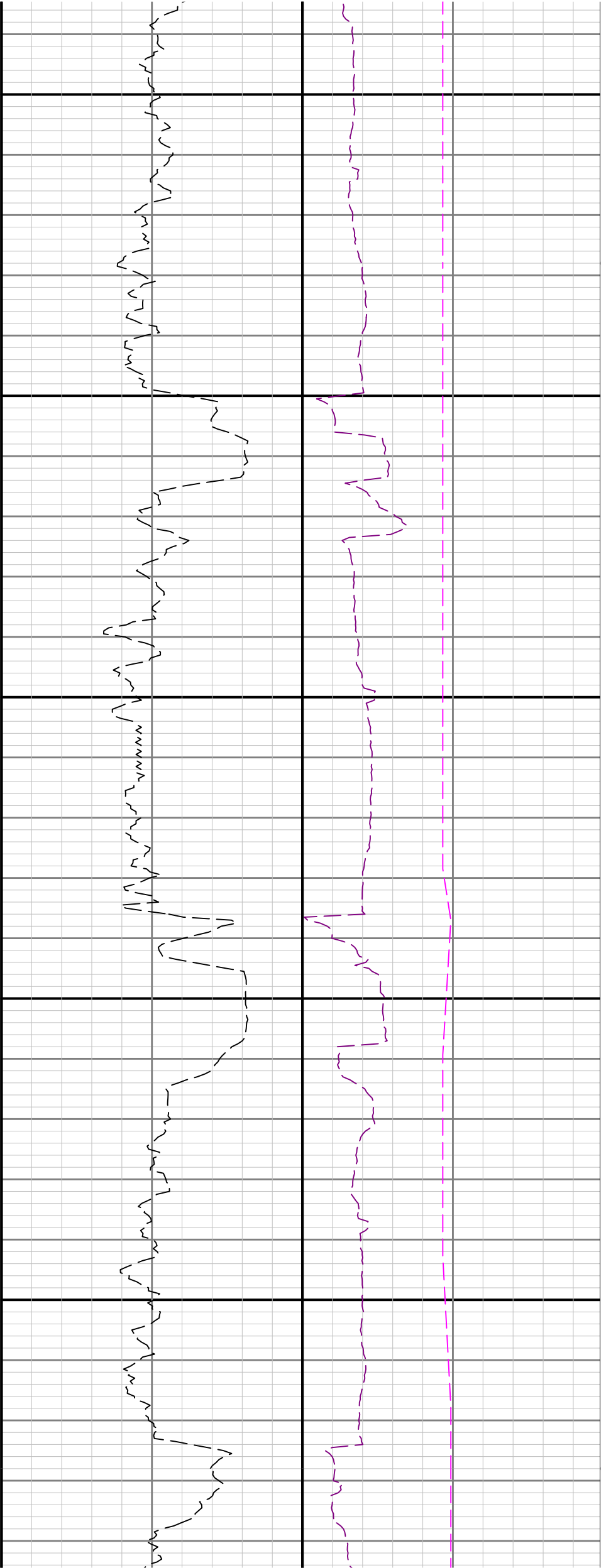


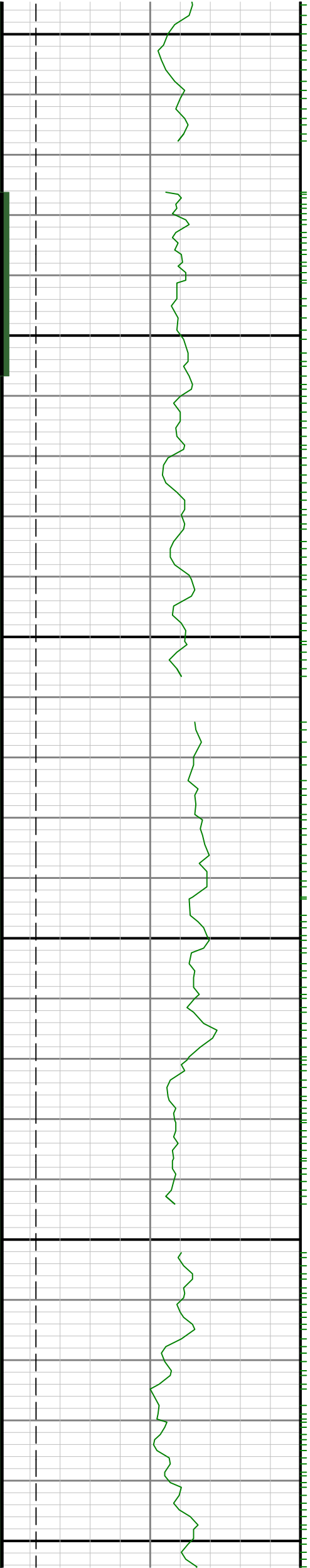








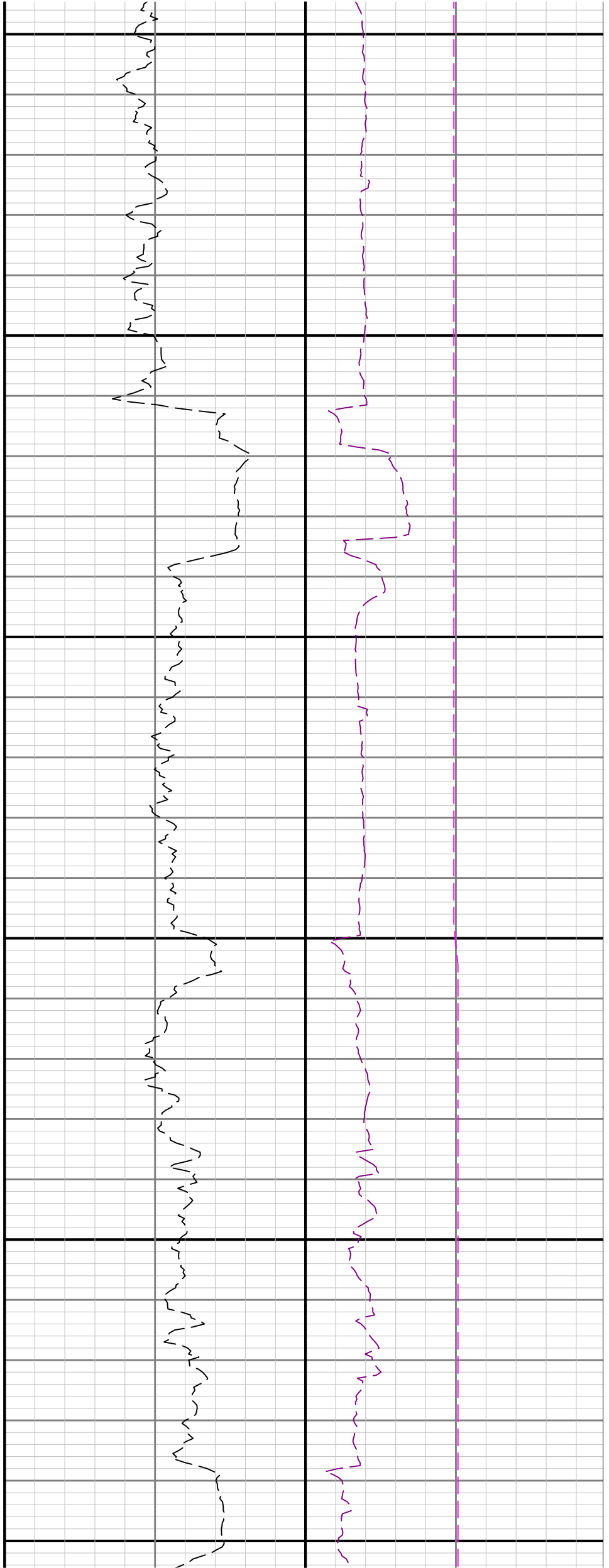


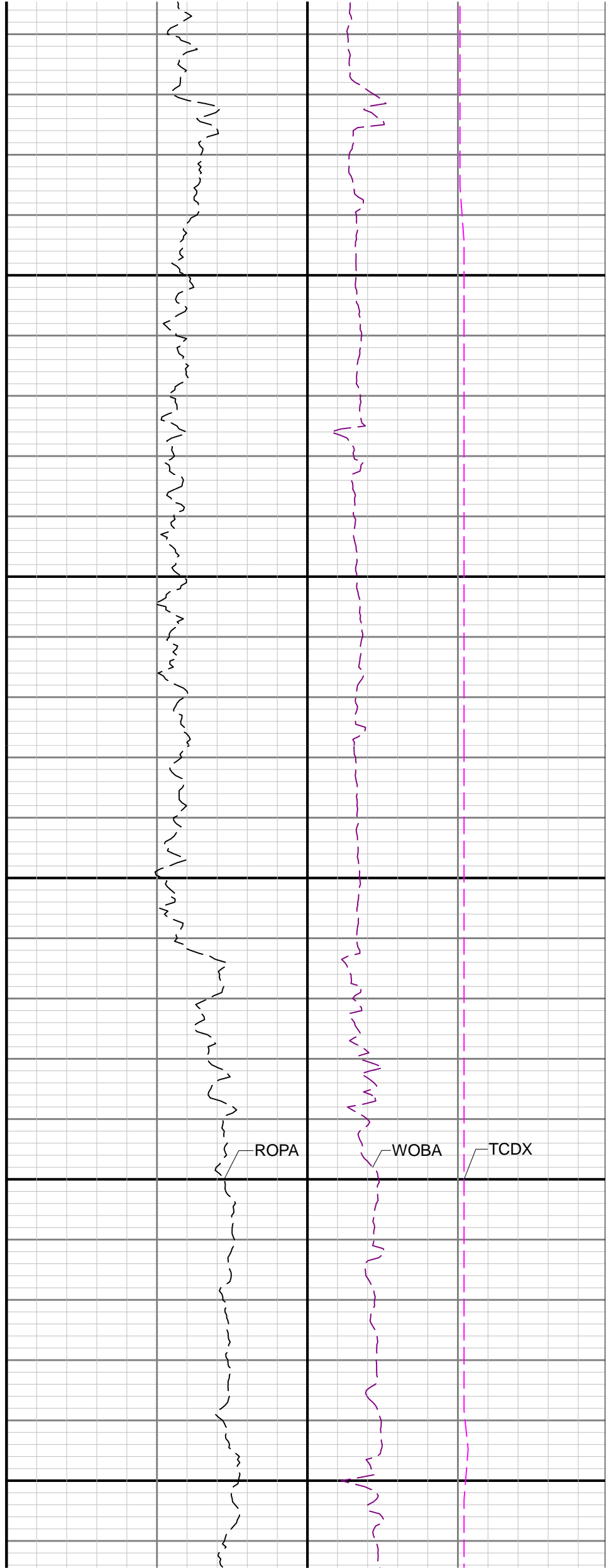
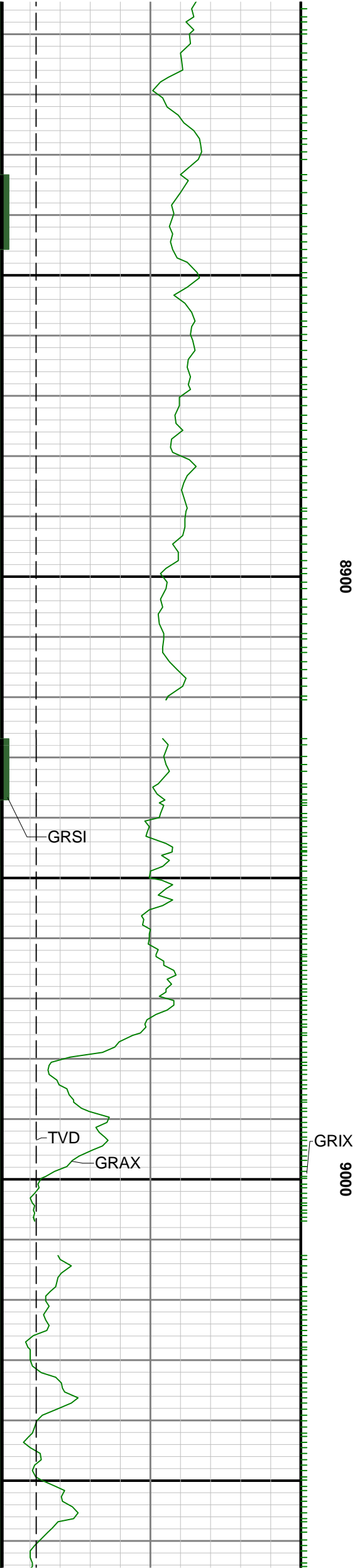


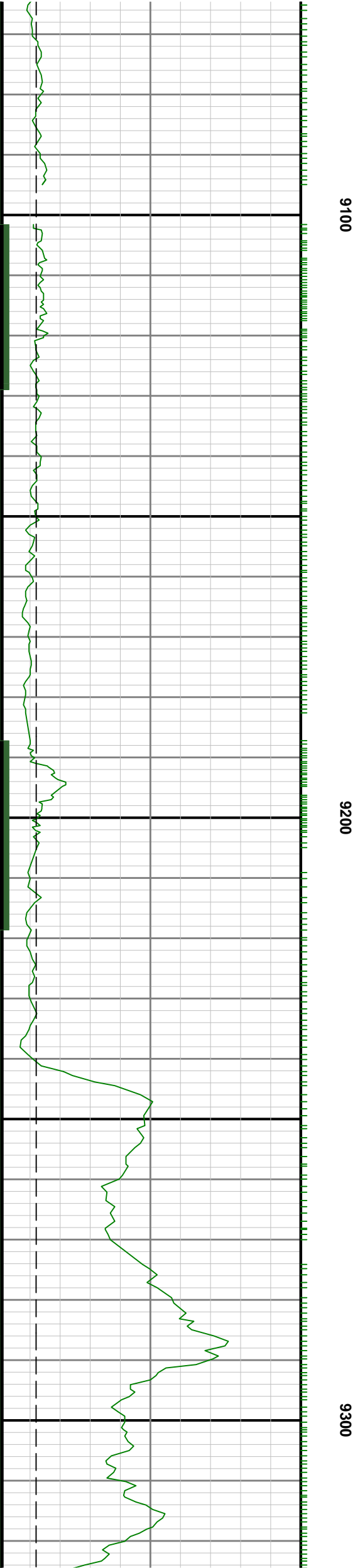
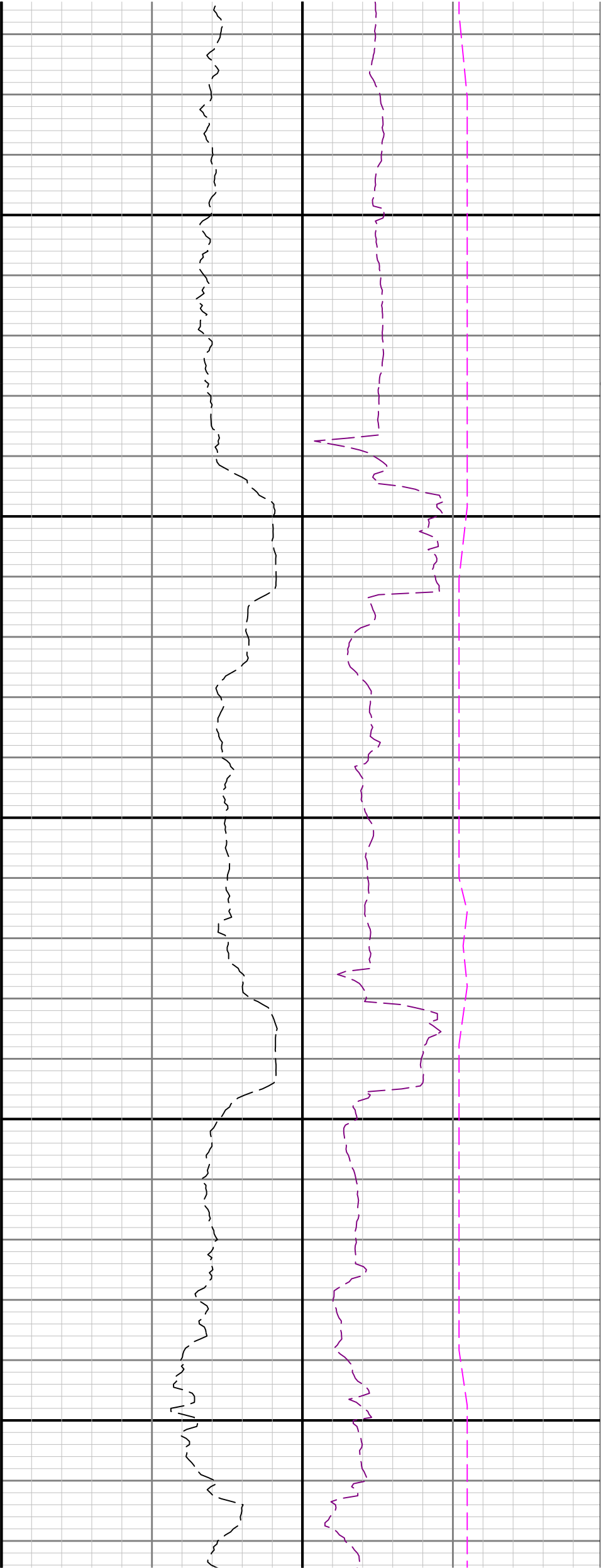
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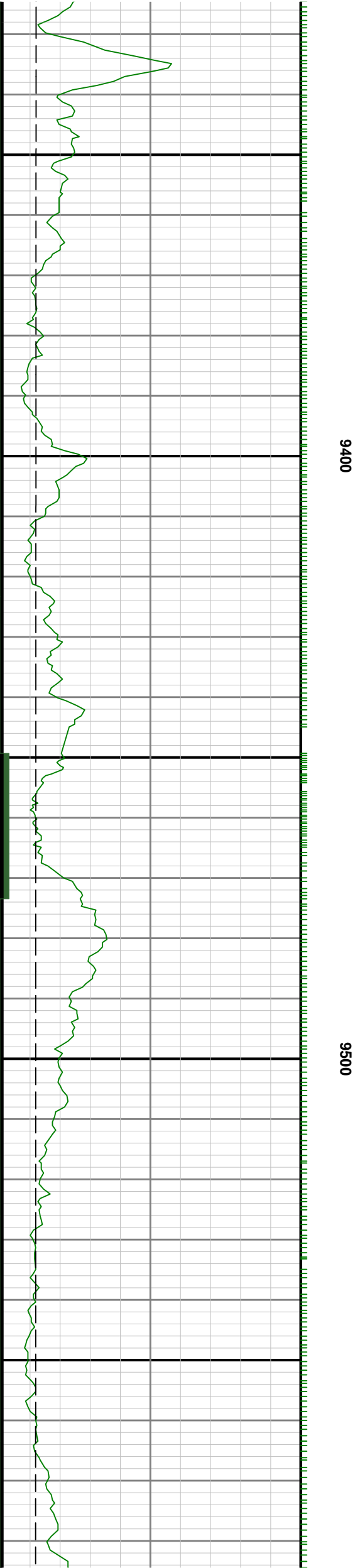
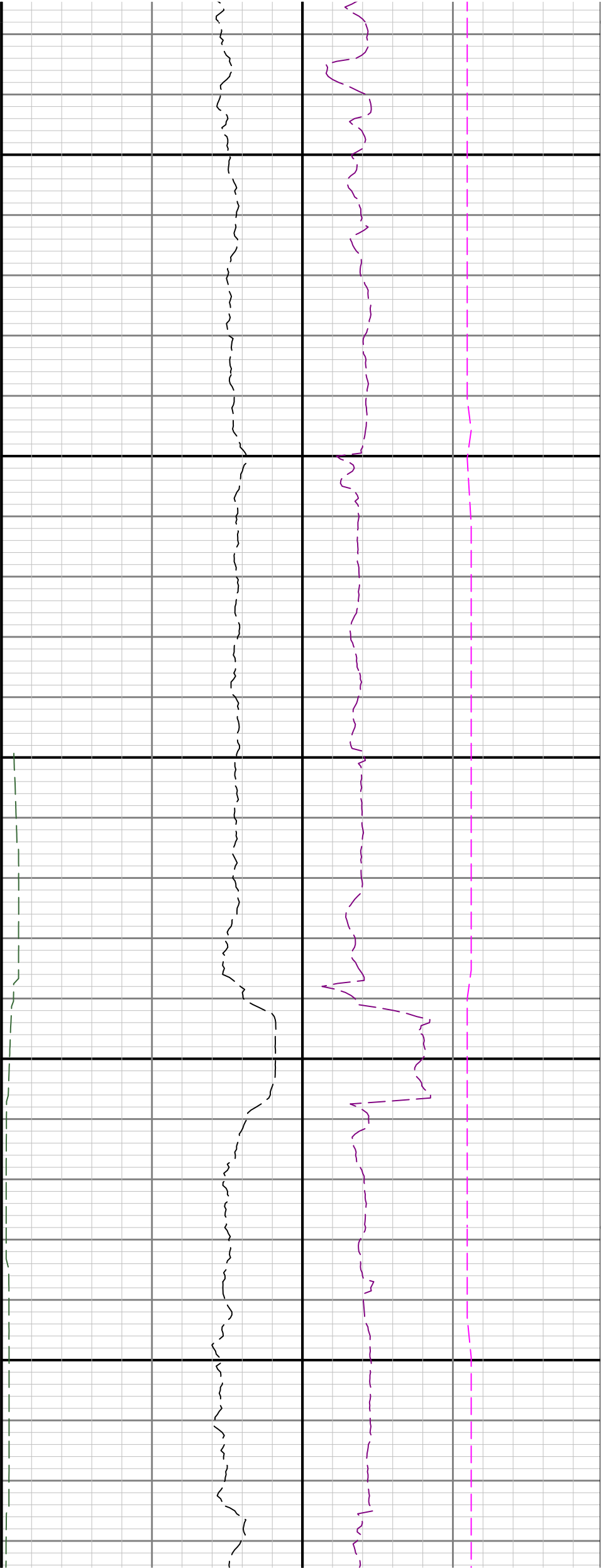
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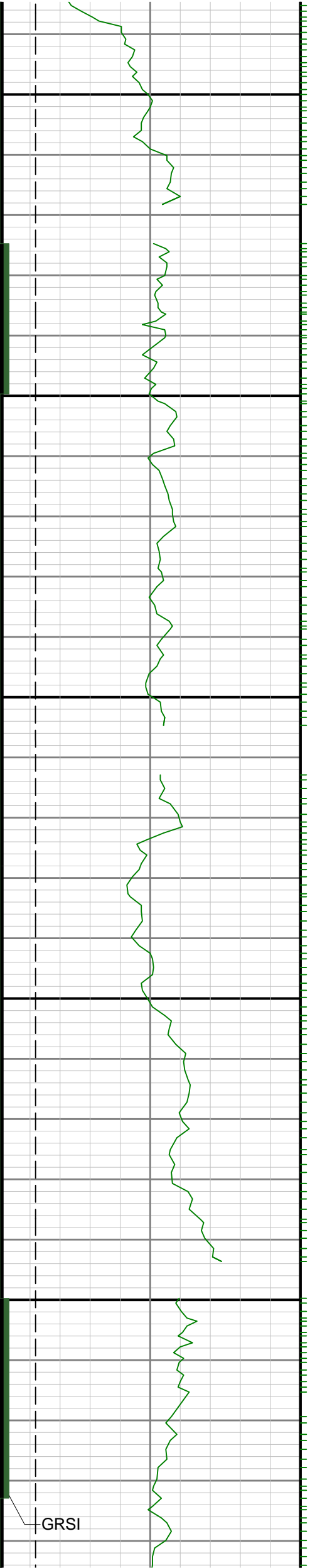
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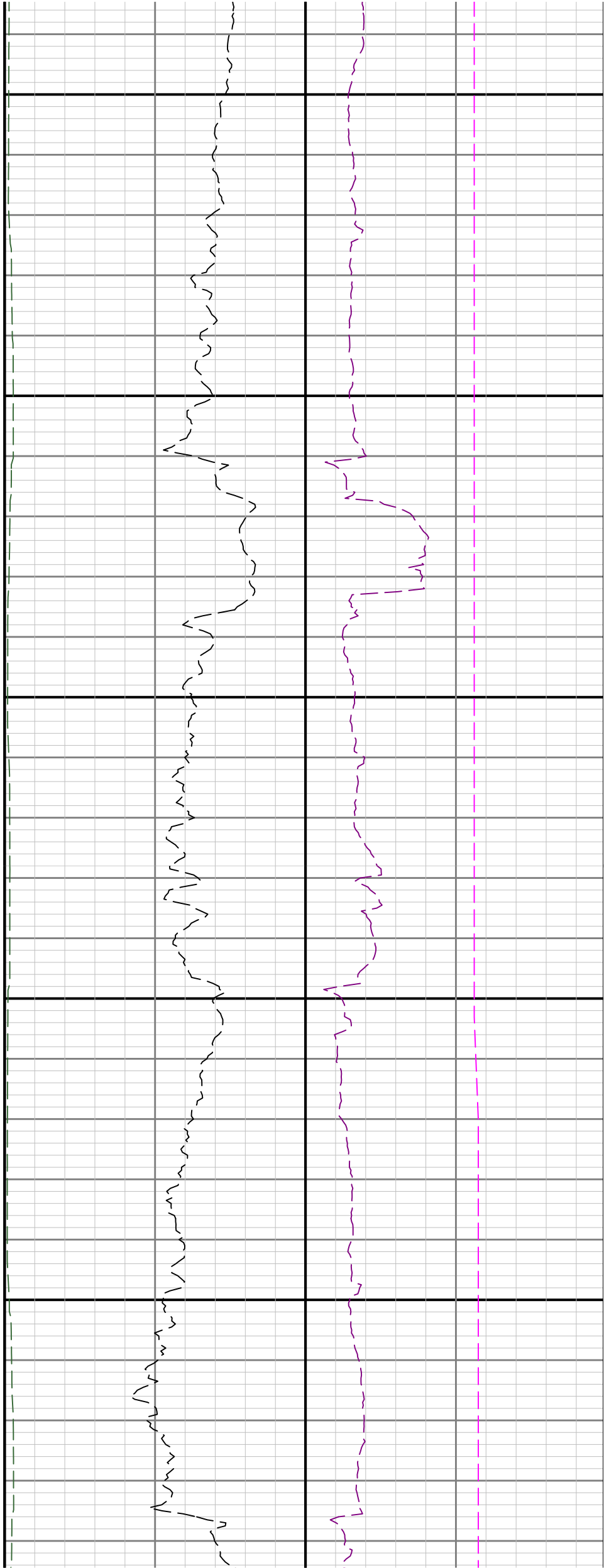


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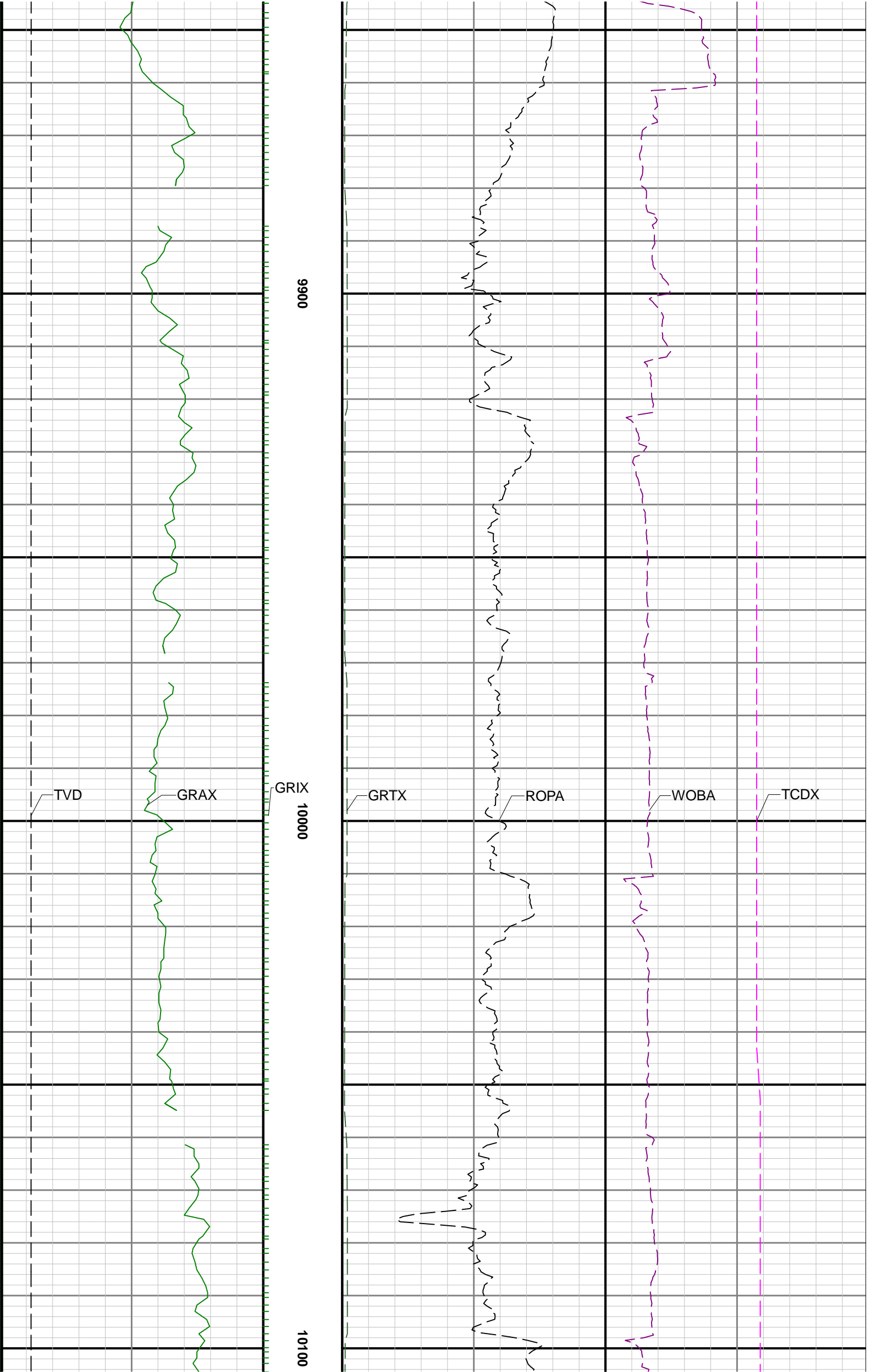
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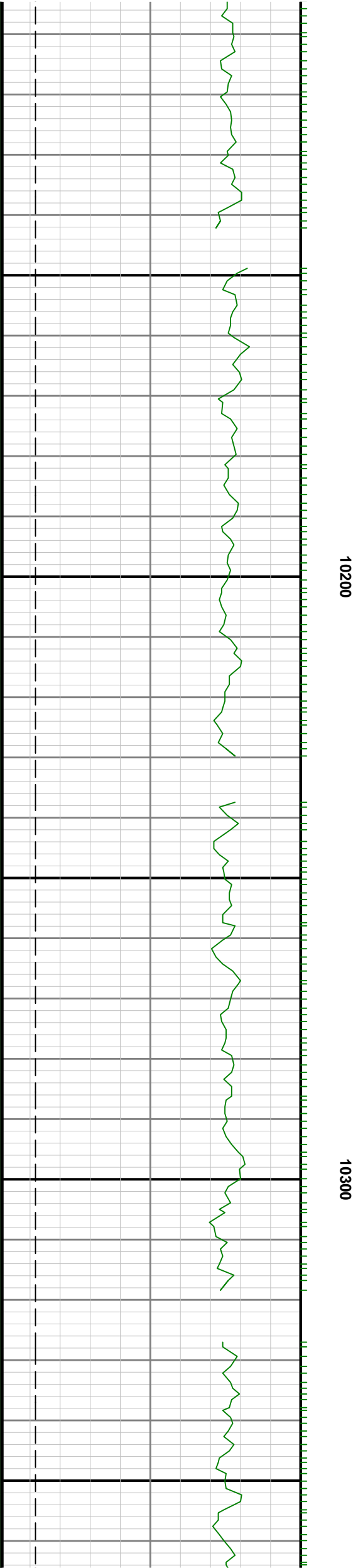
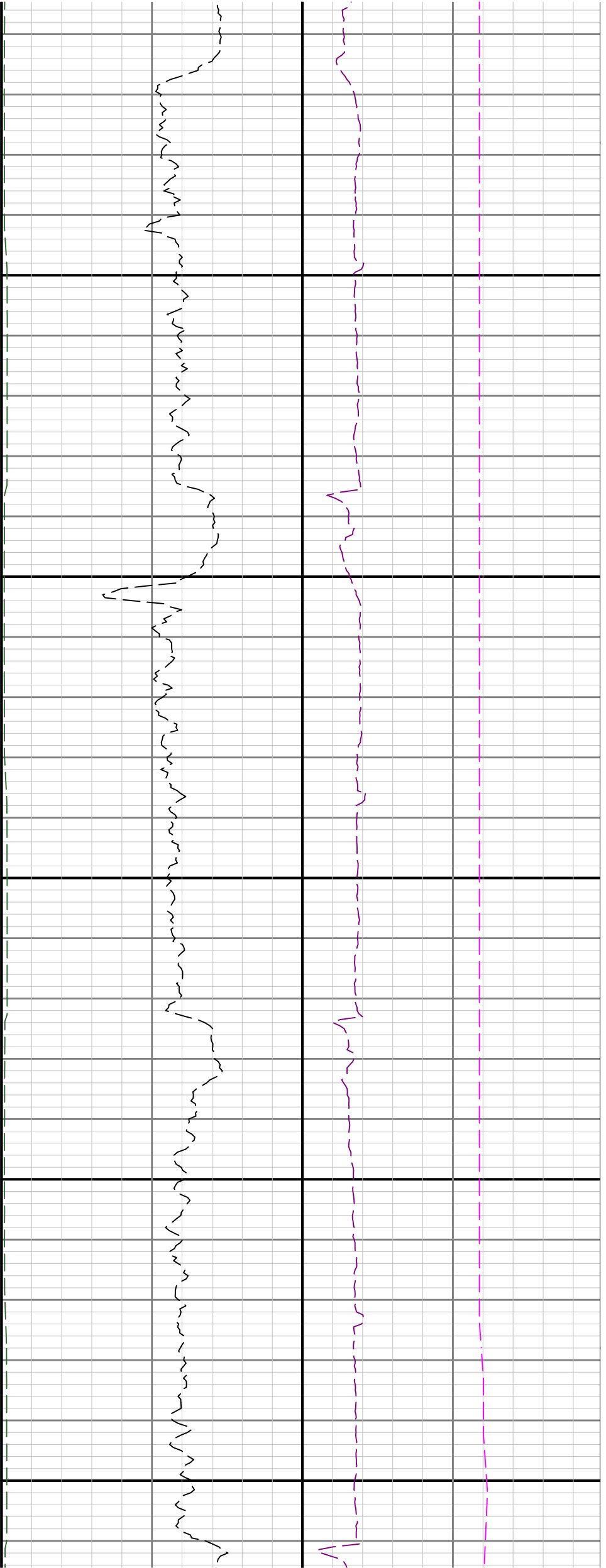
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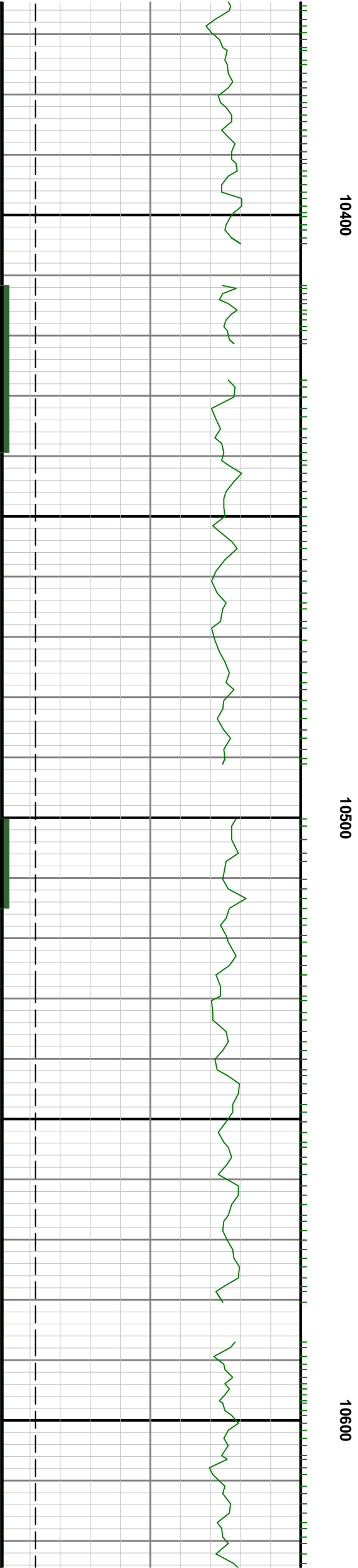
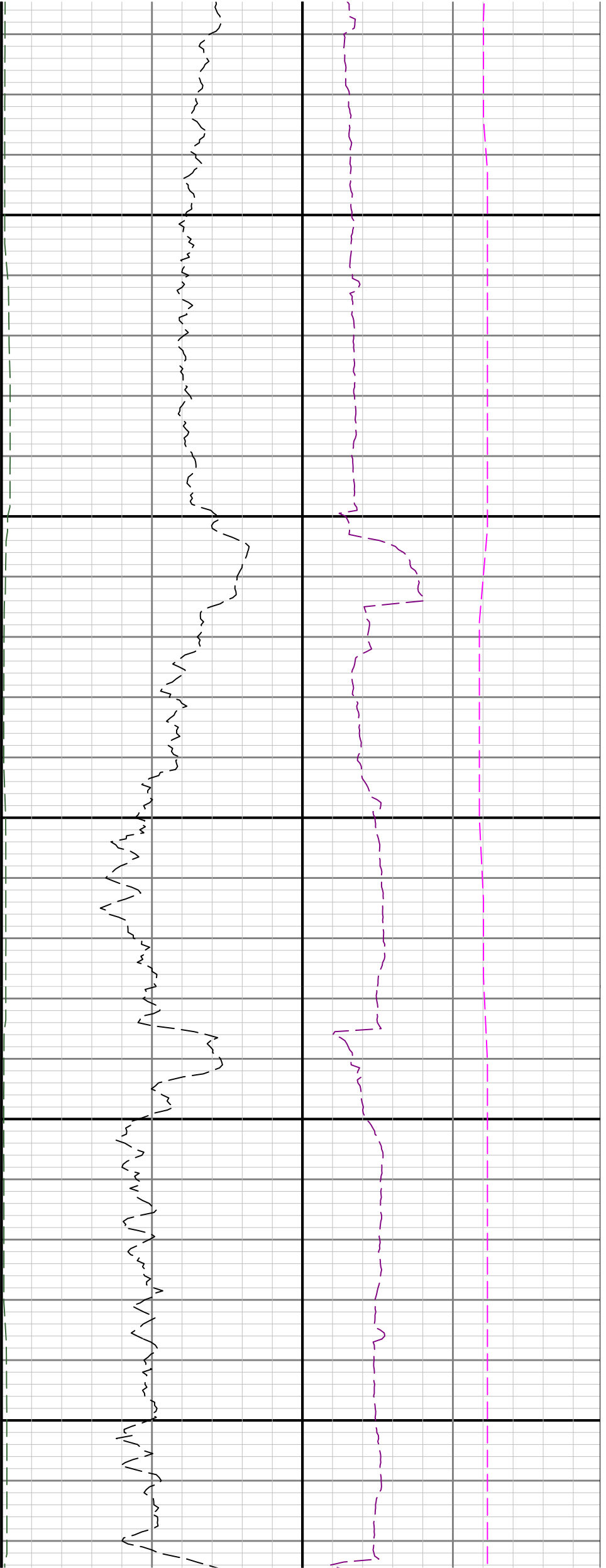
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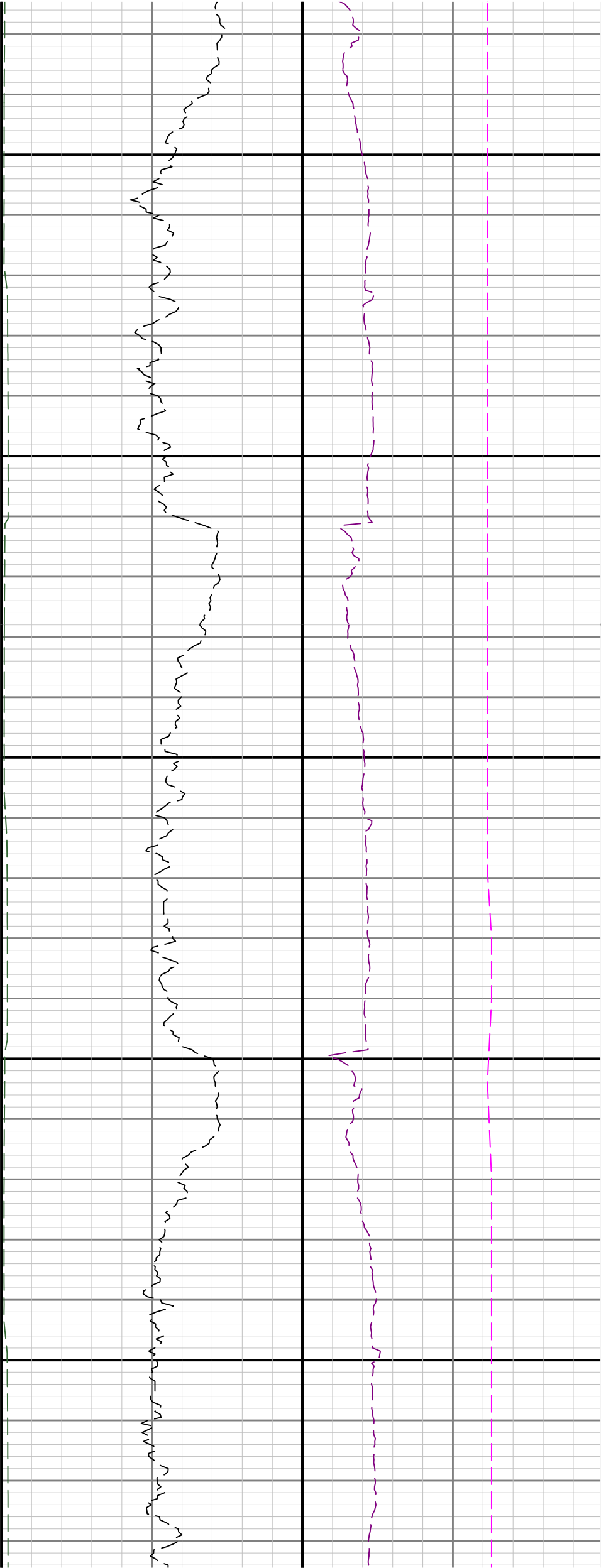






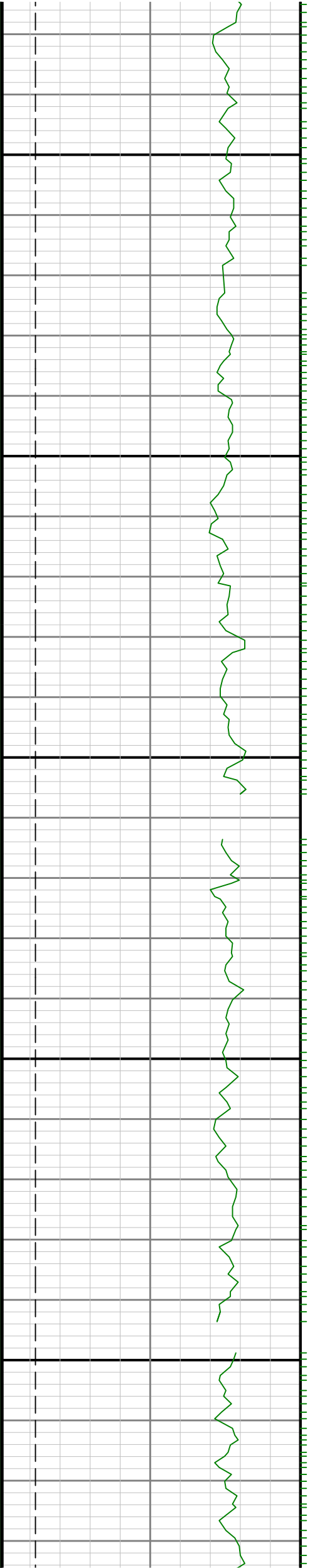


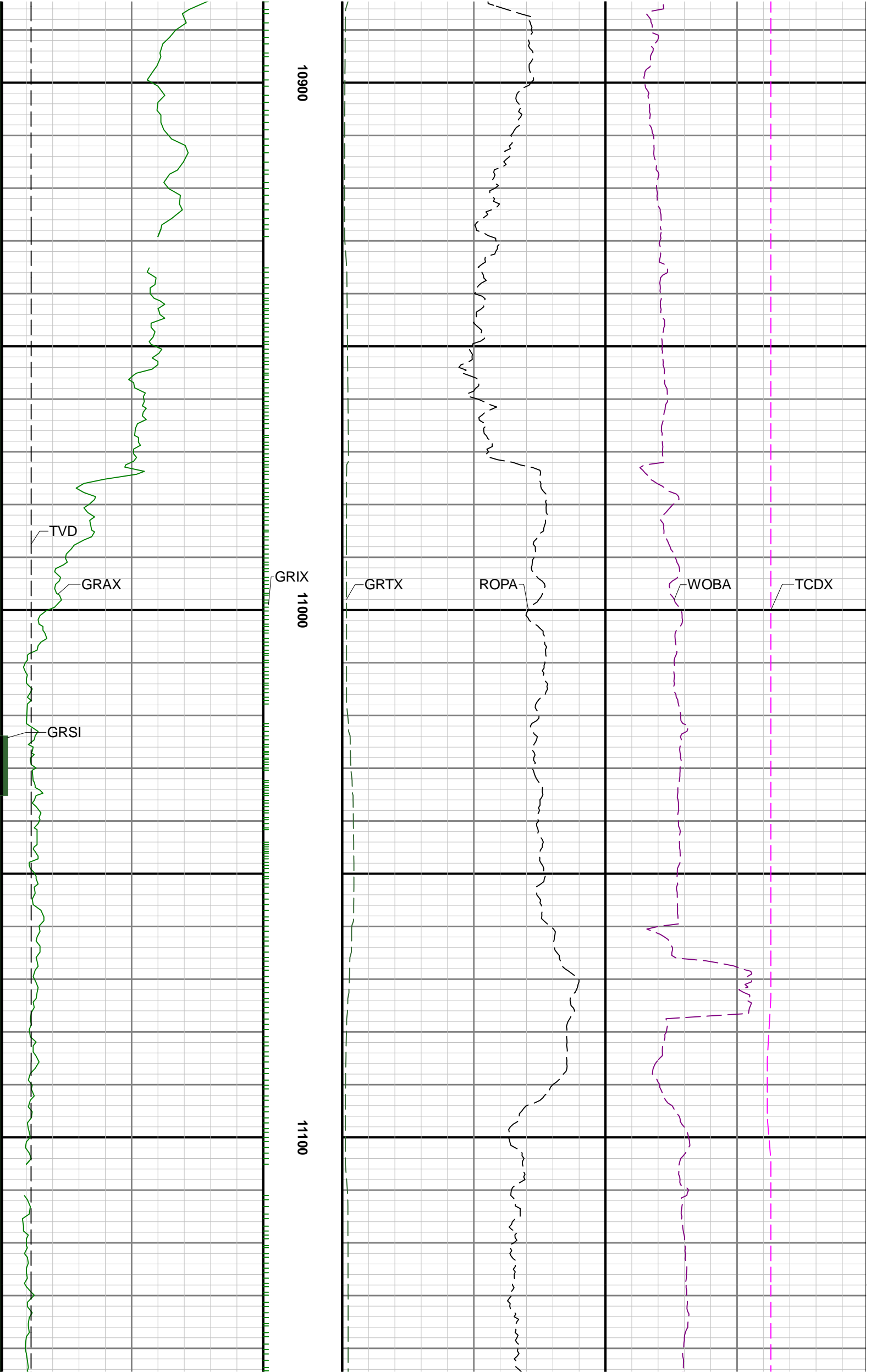


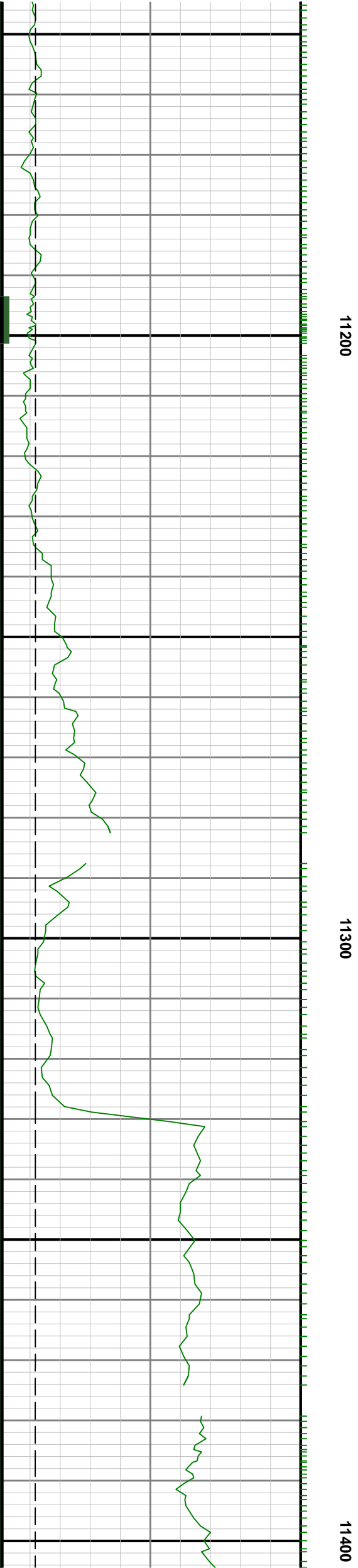
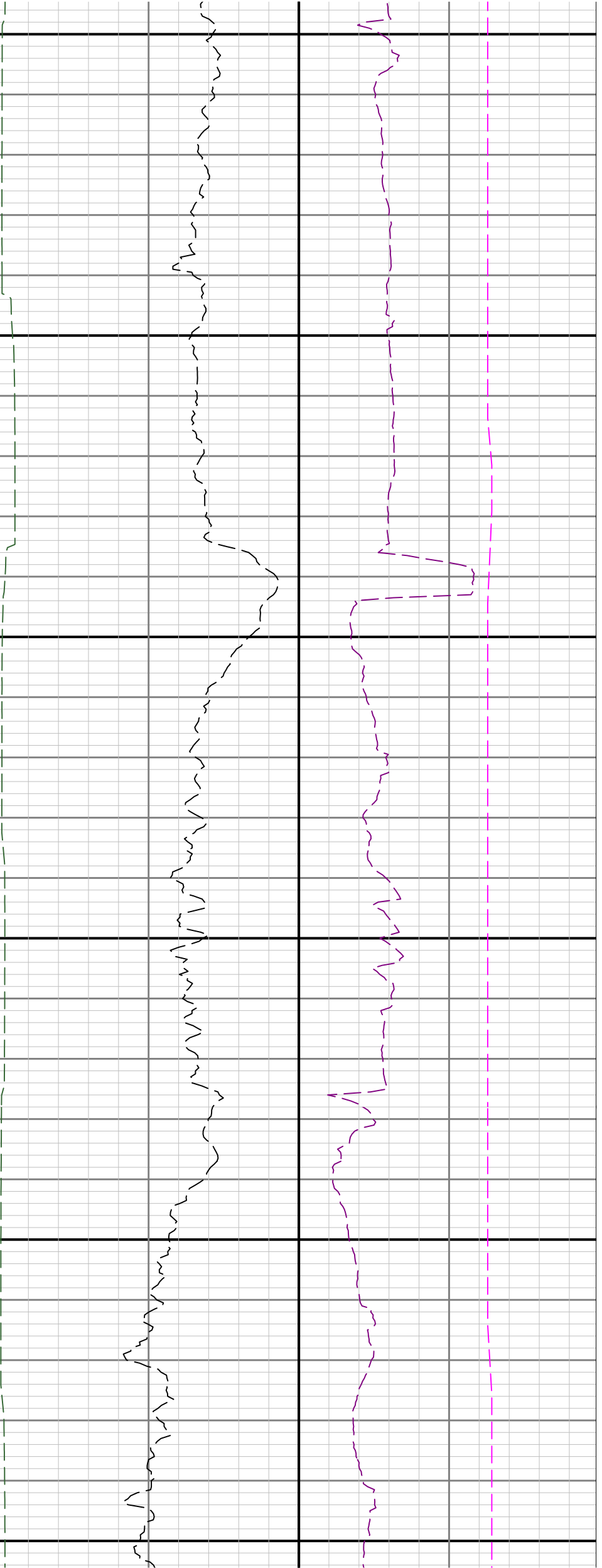


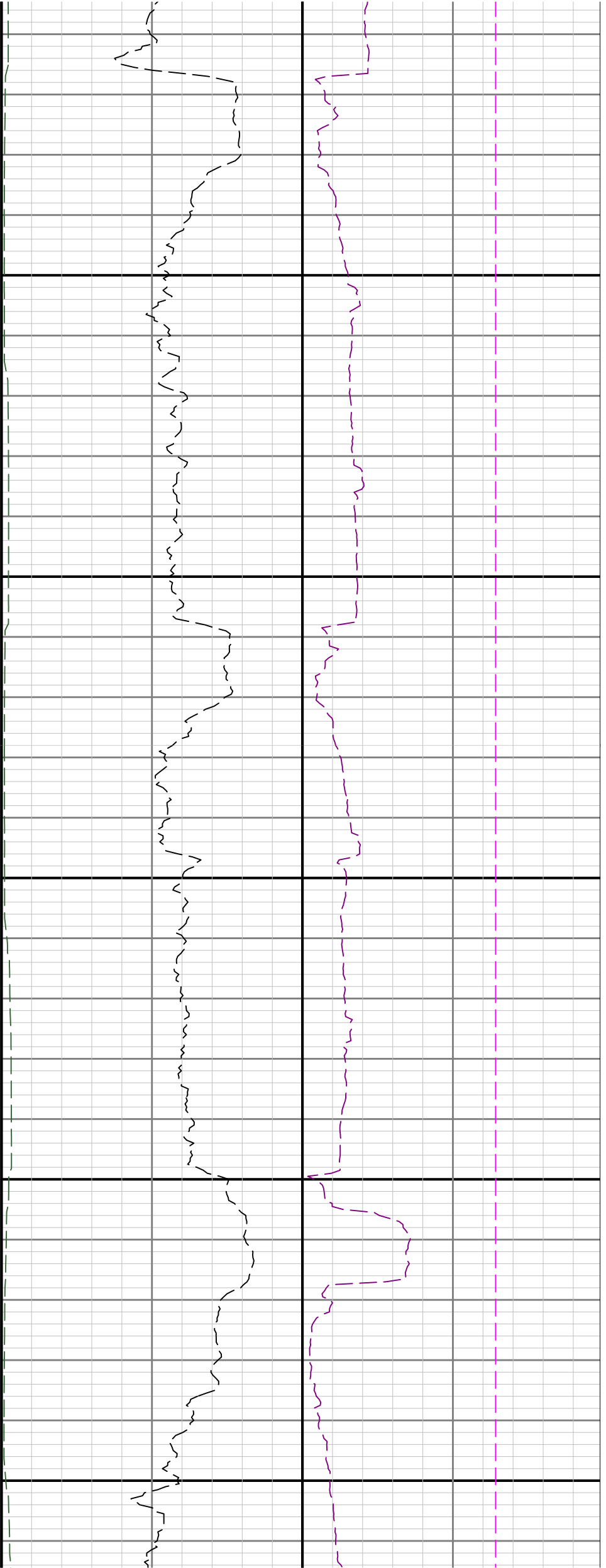
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10800



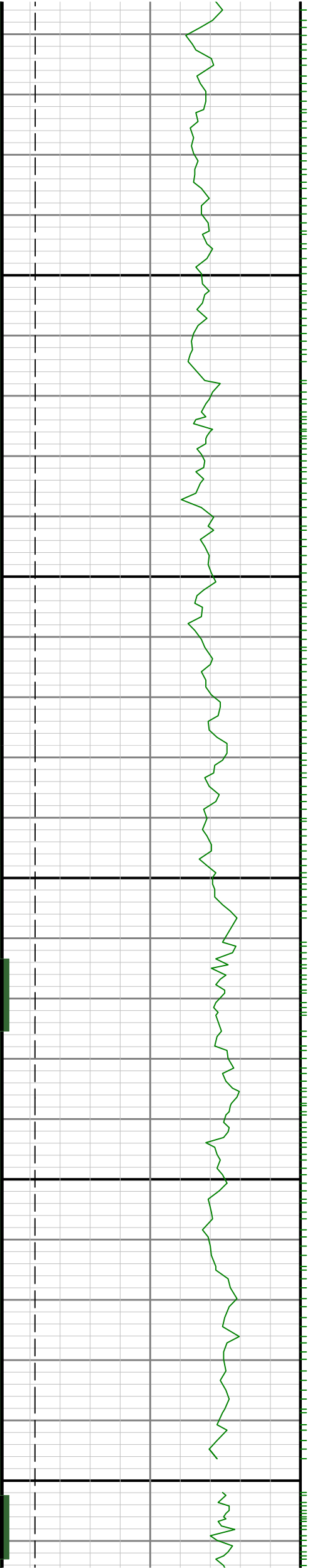


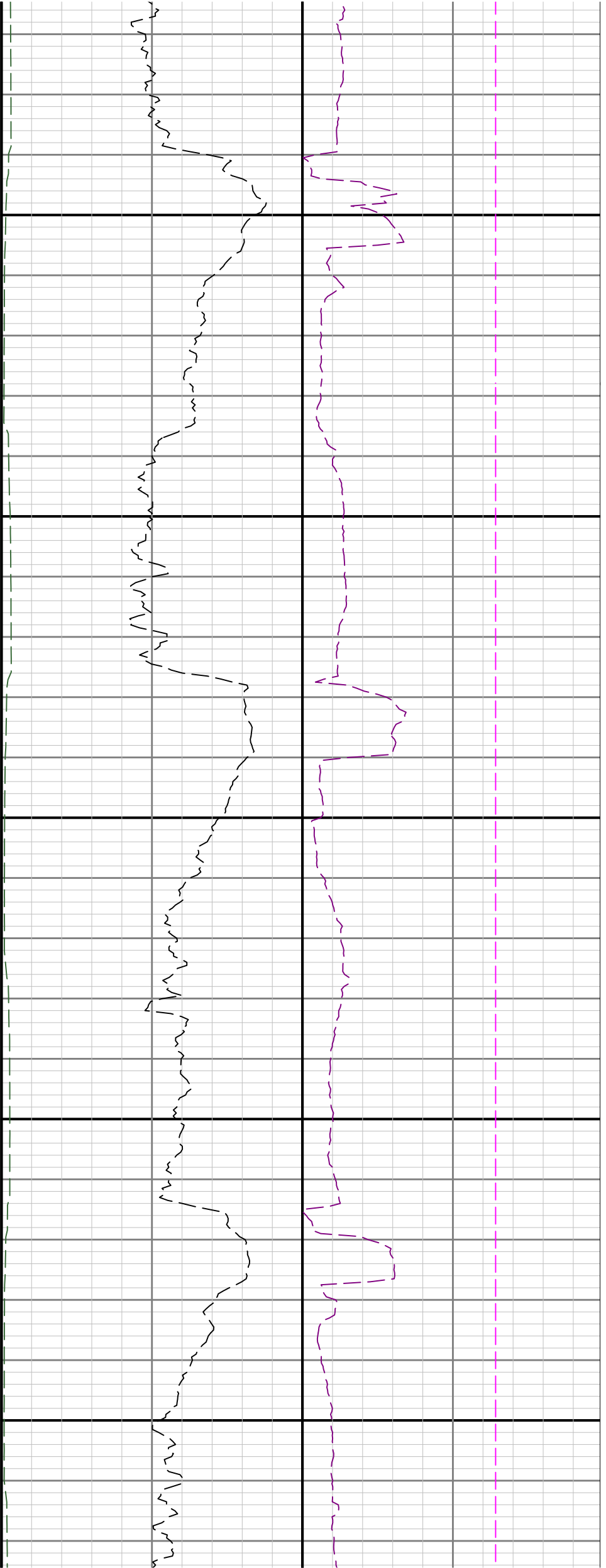




11500

11600

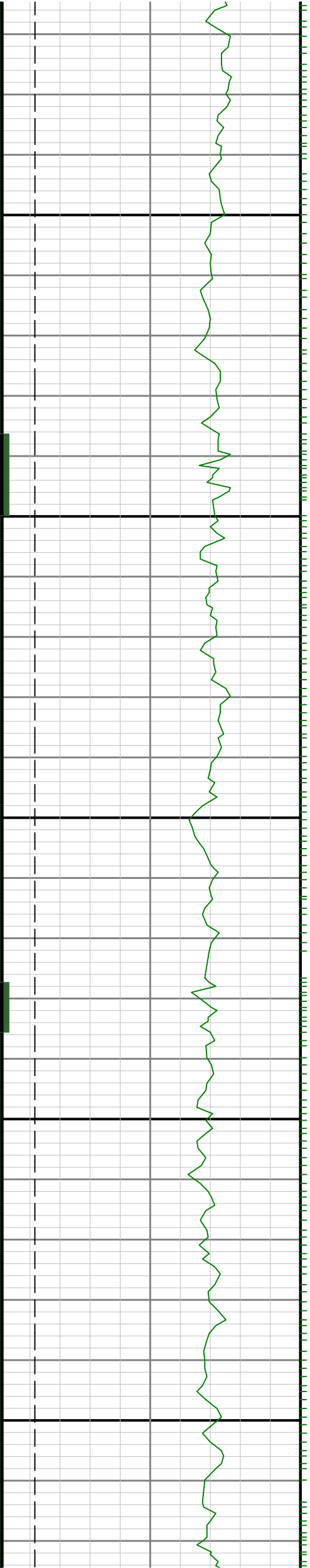




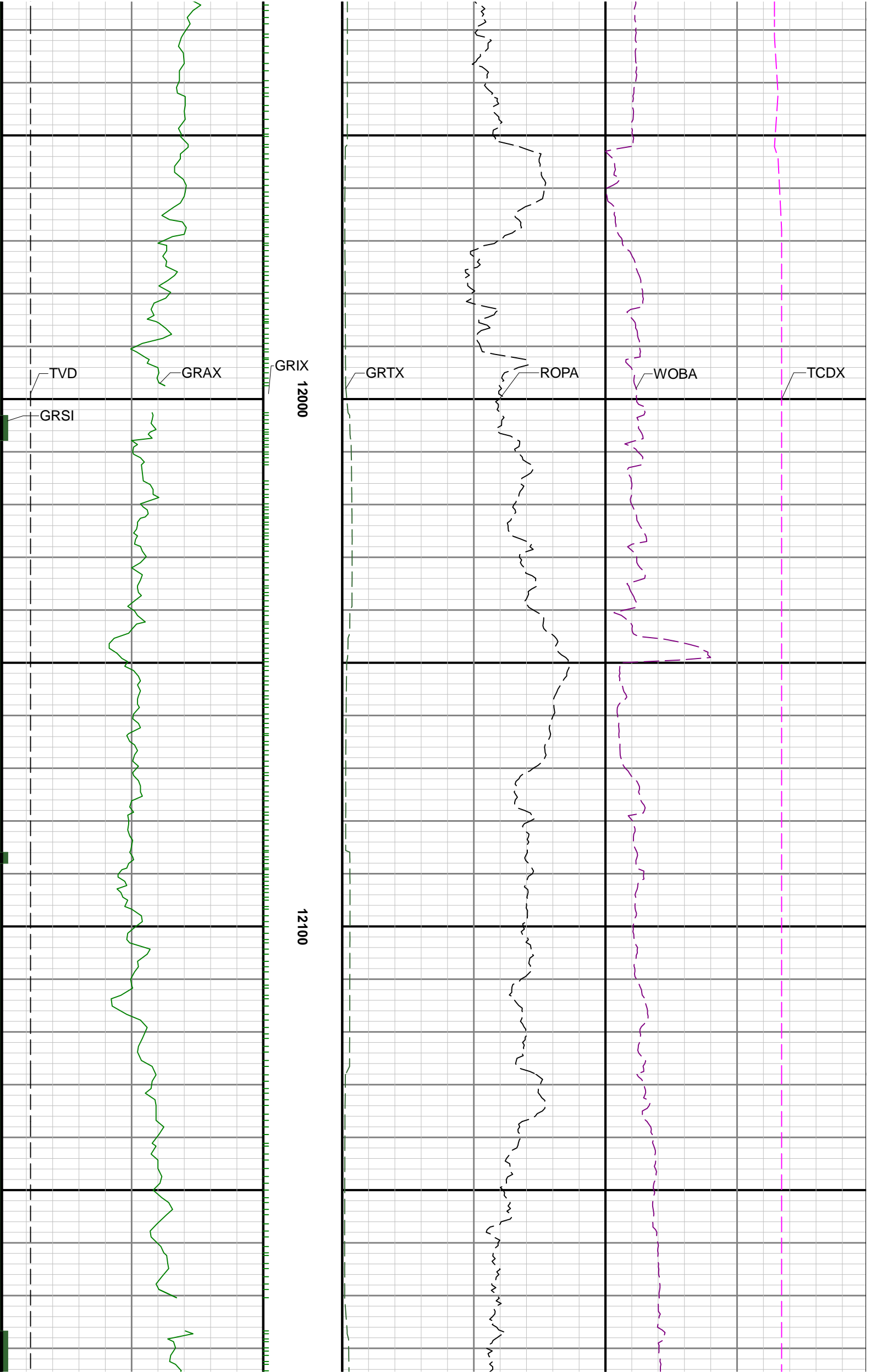
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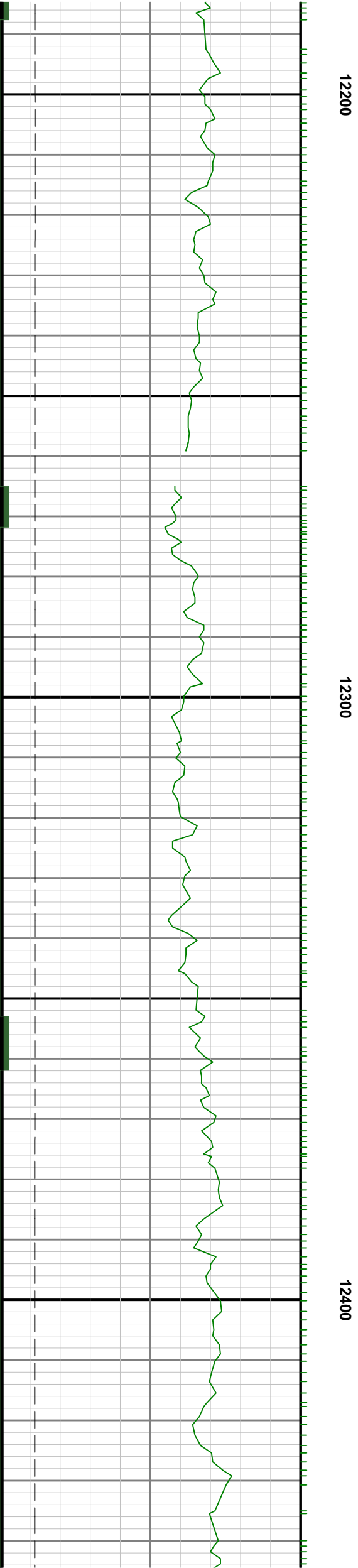
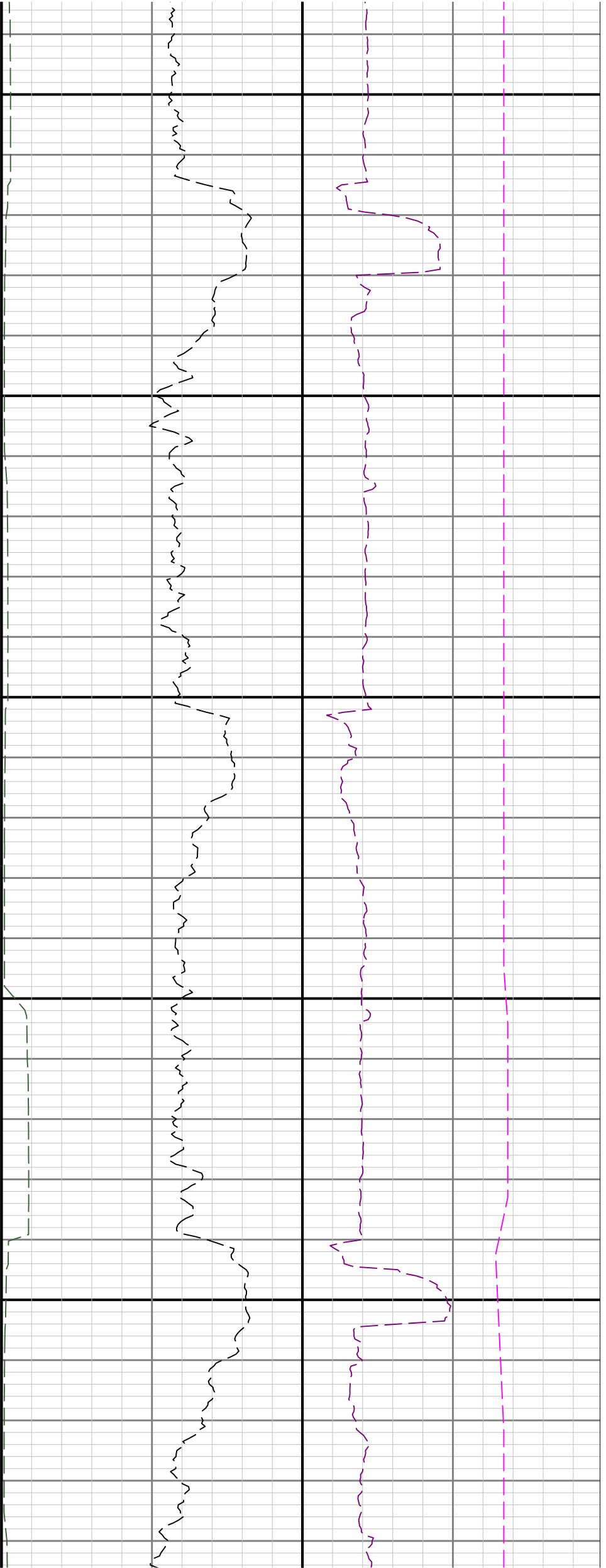
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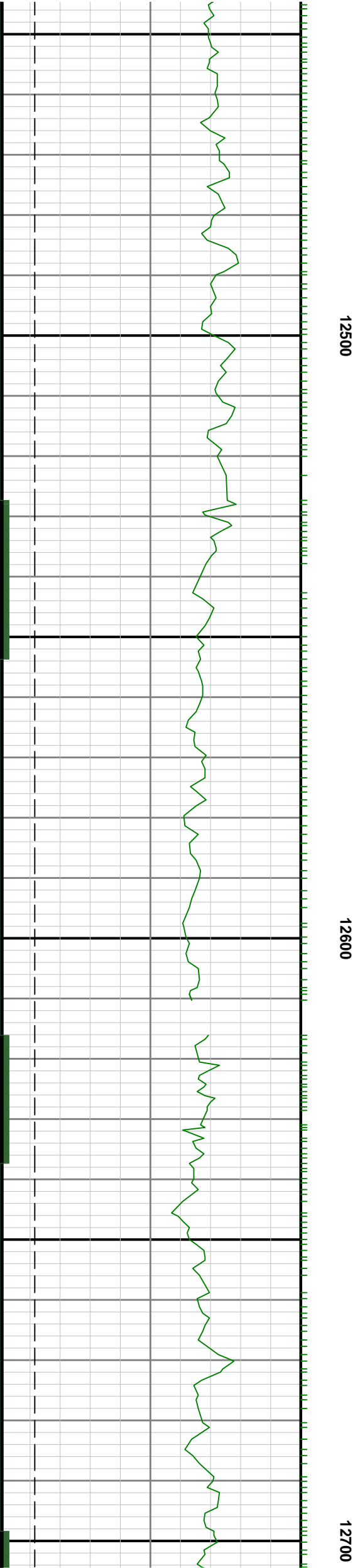
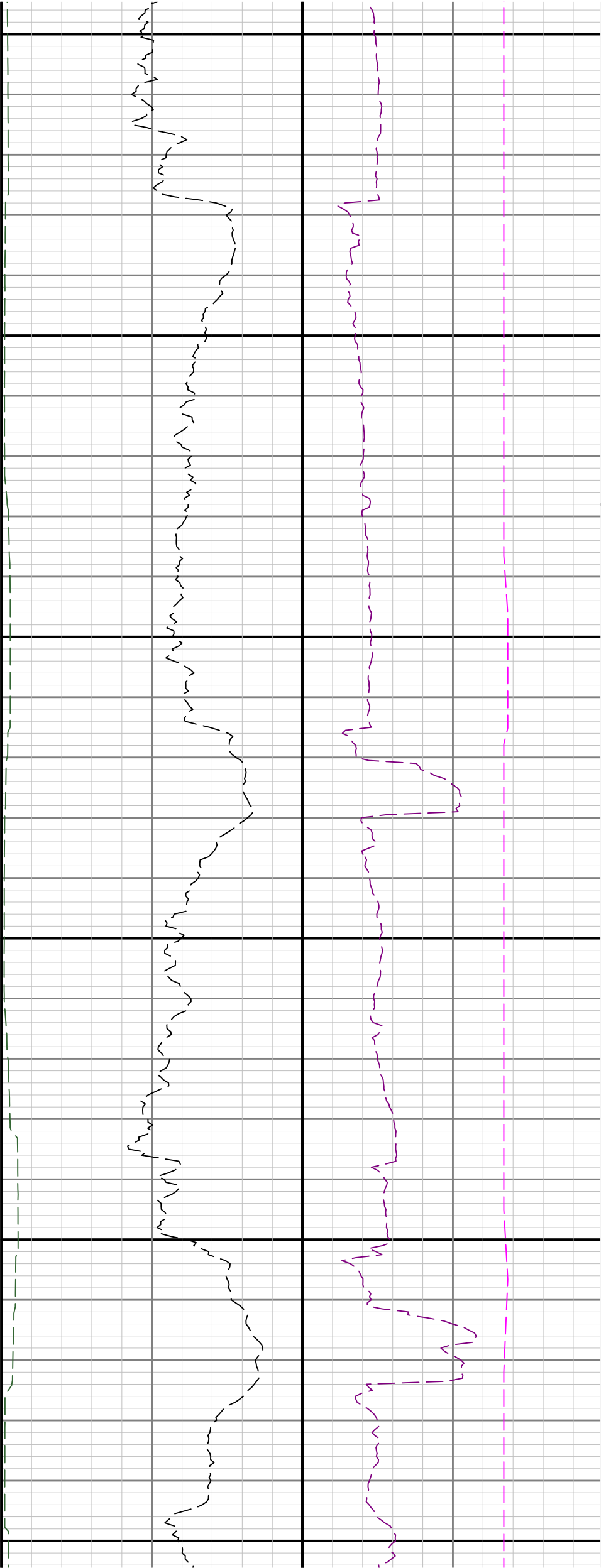
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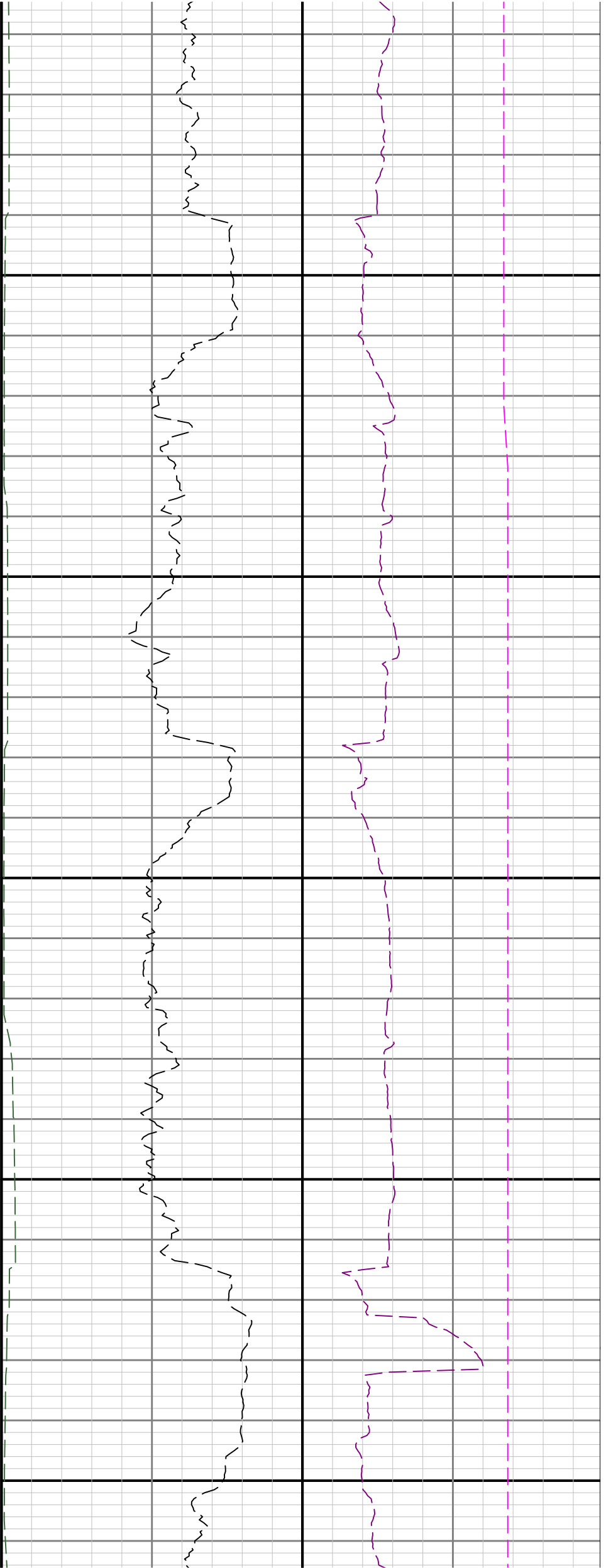






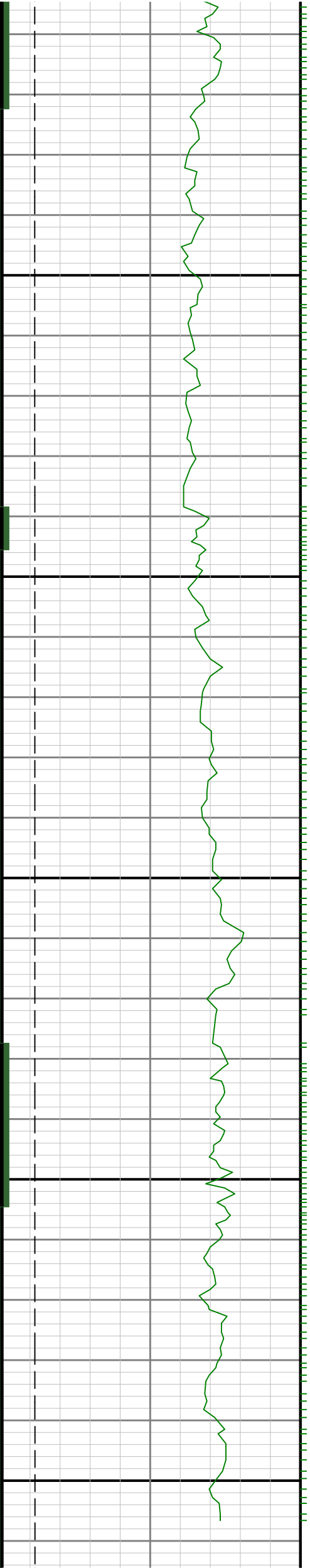


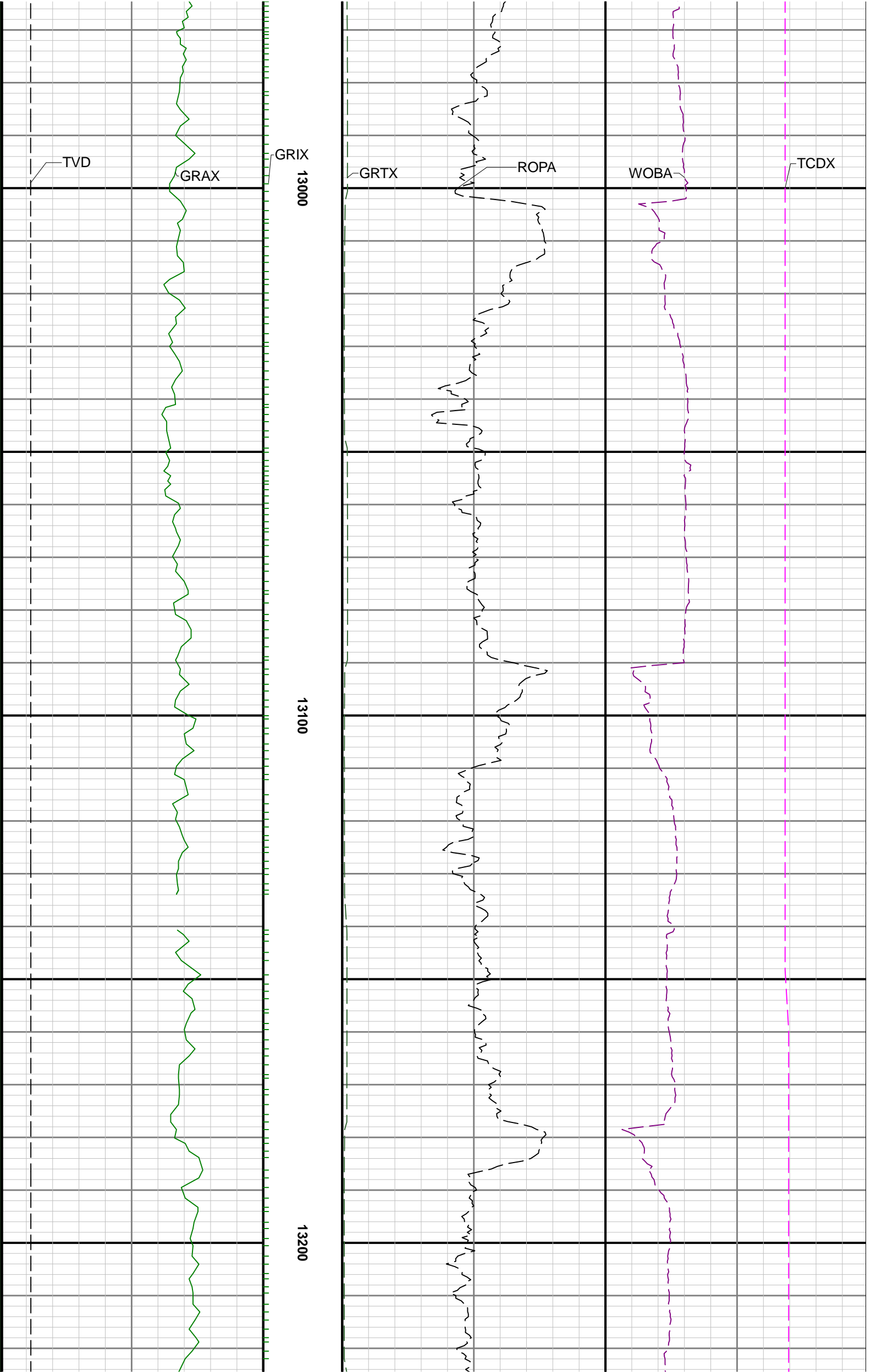


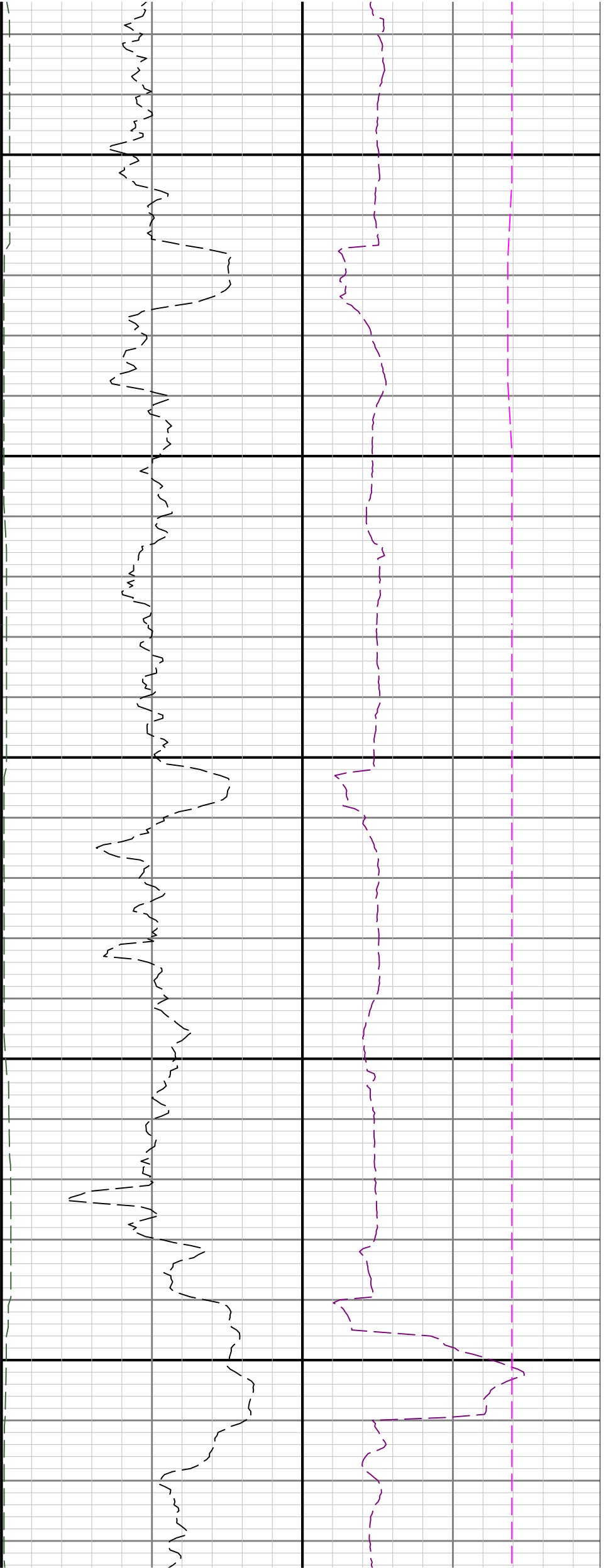


12800

12900

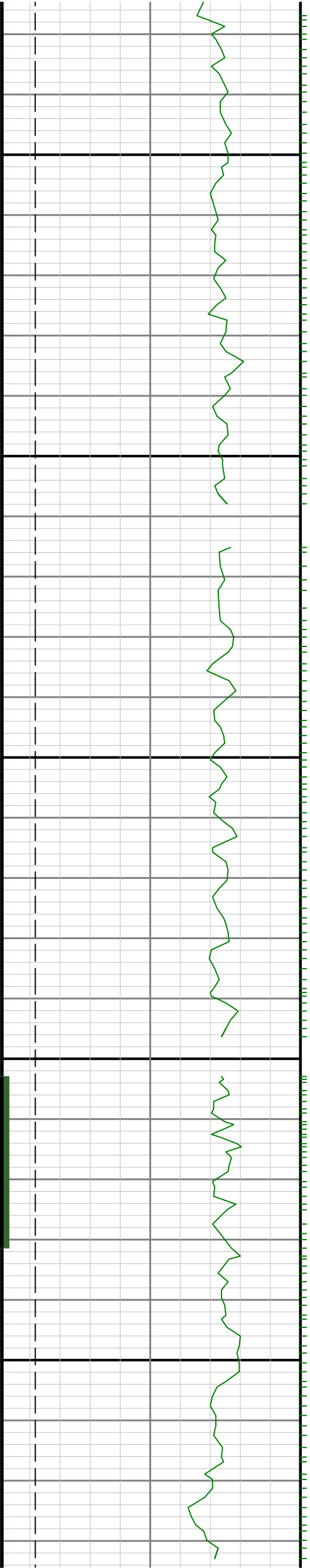


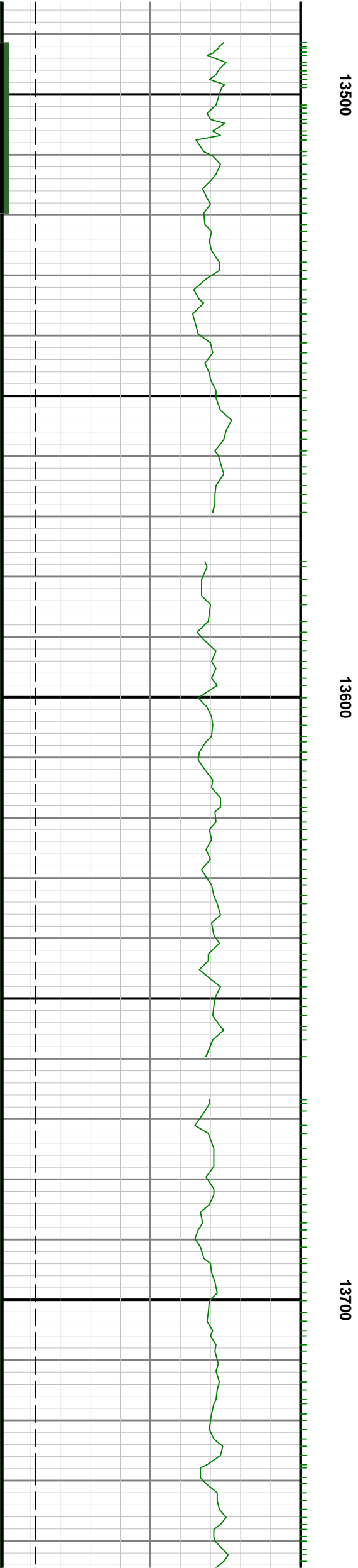
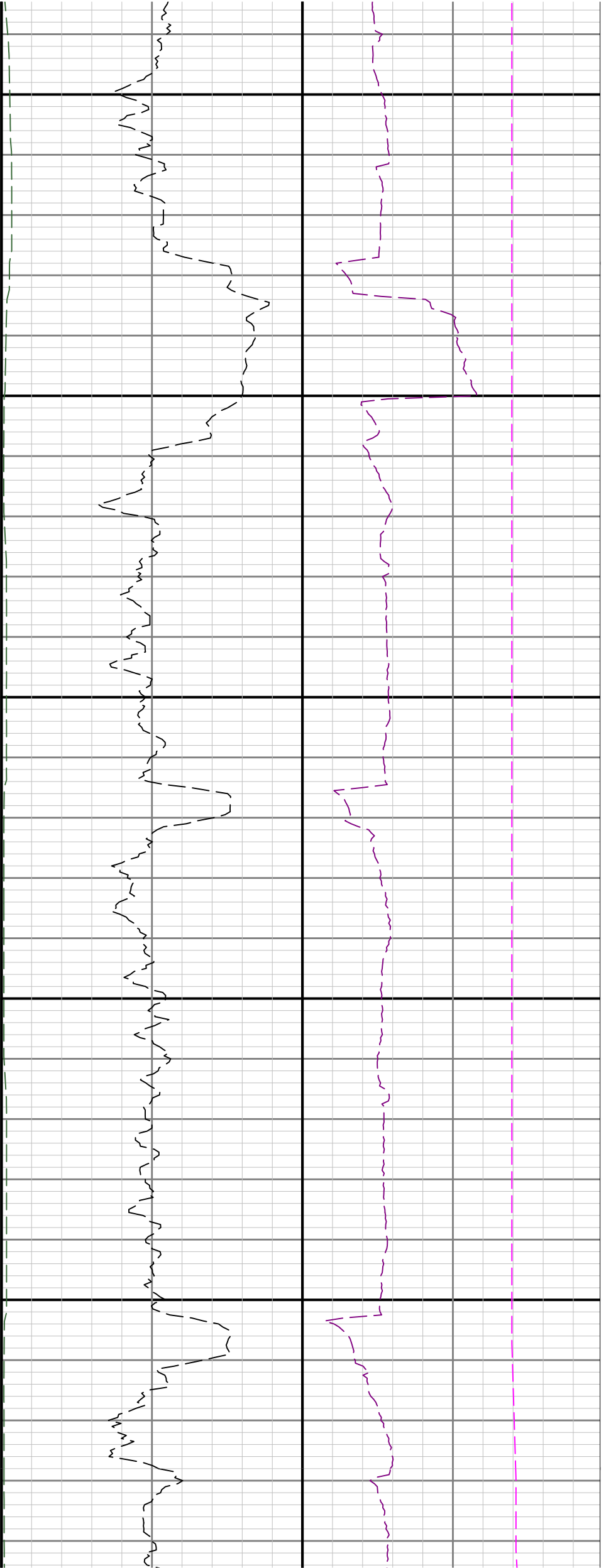


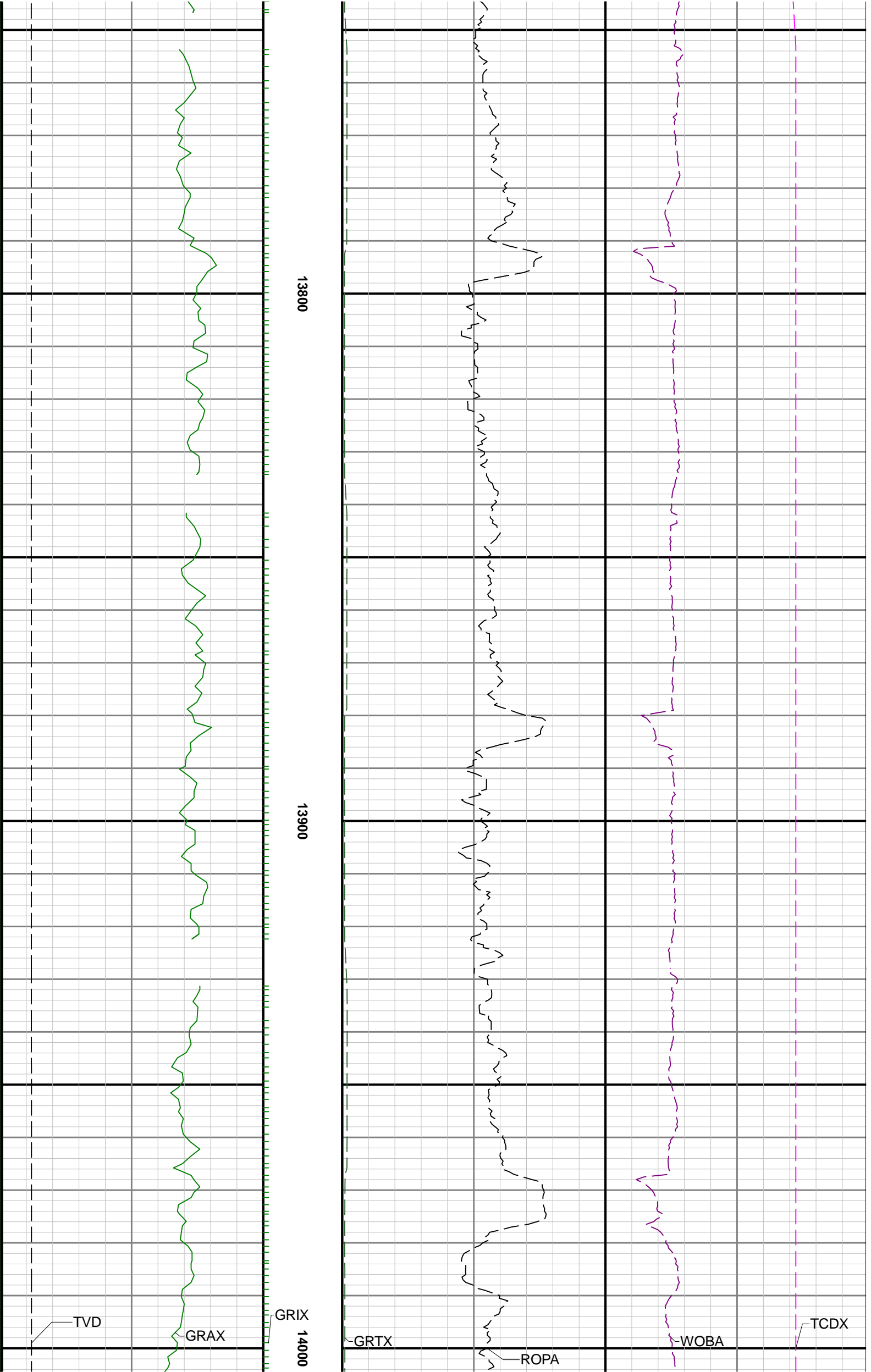


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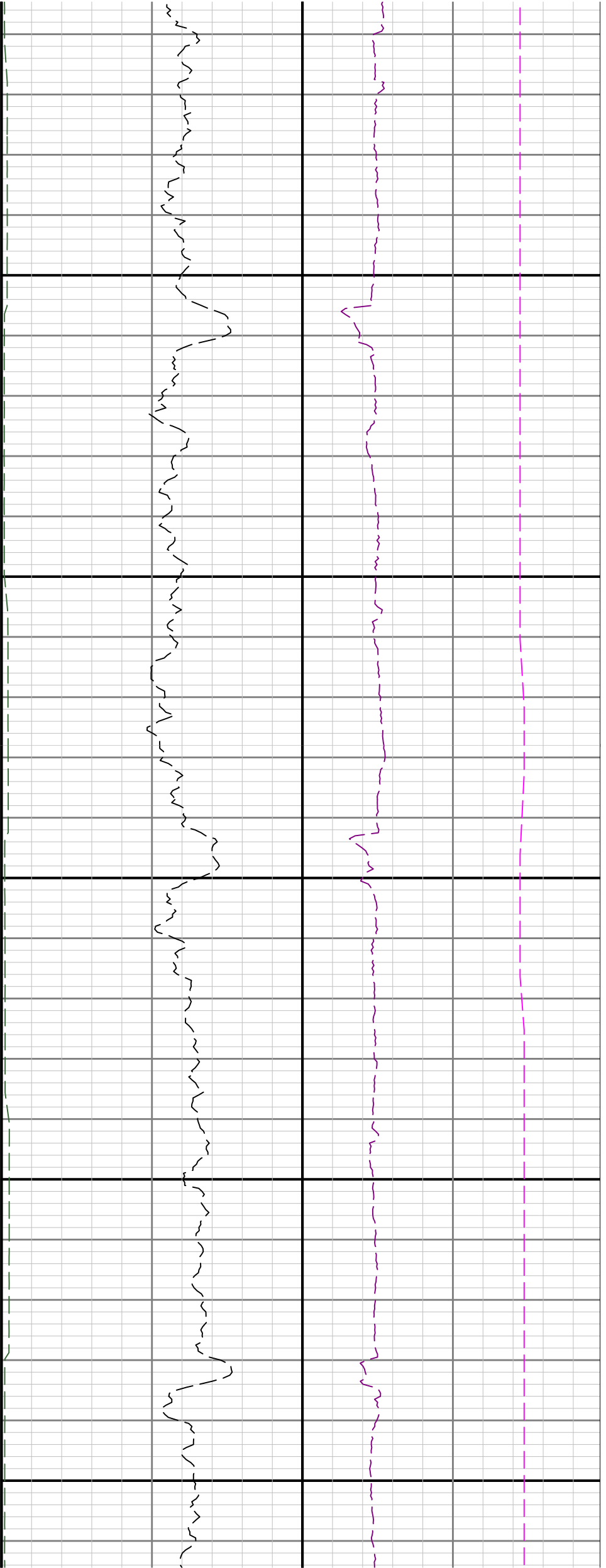
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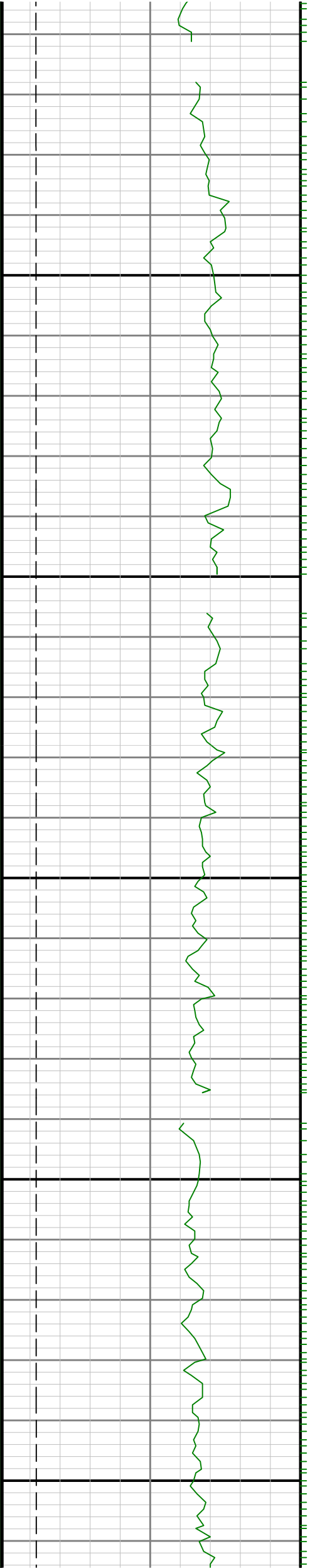


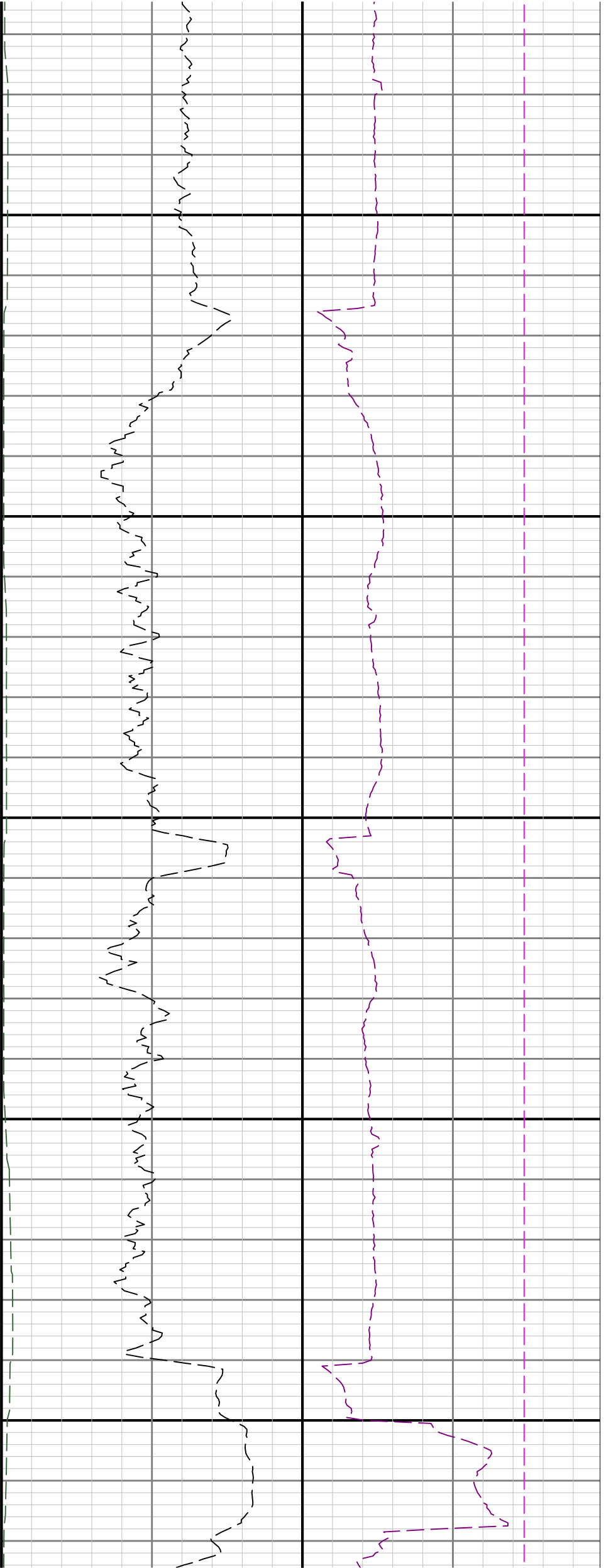




14100

14200

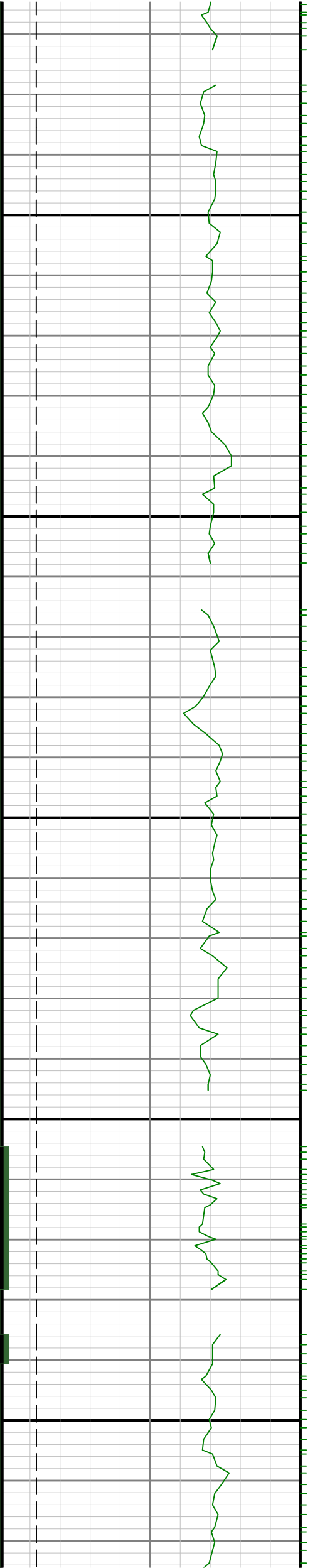


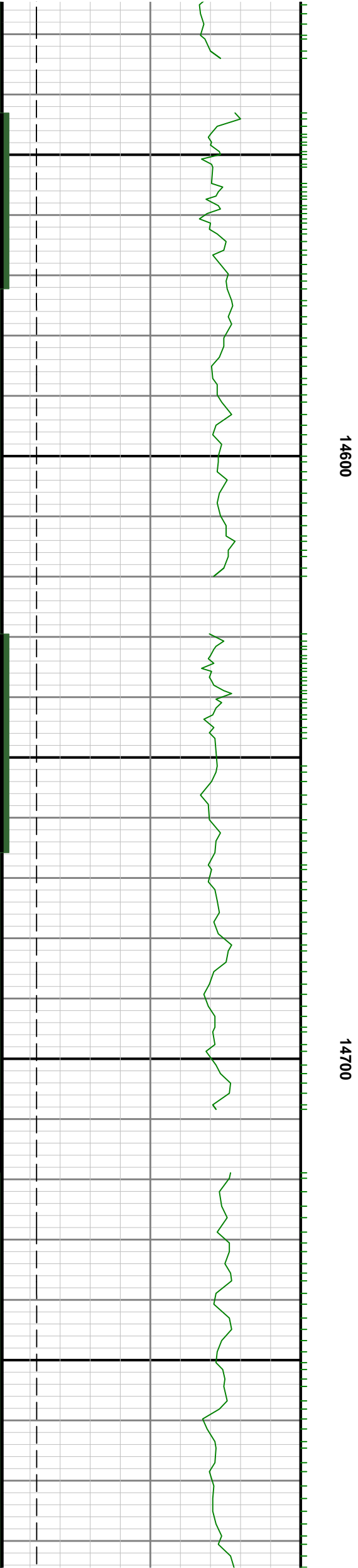
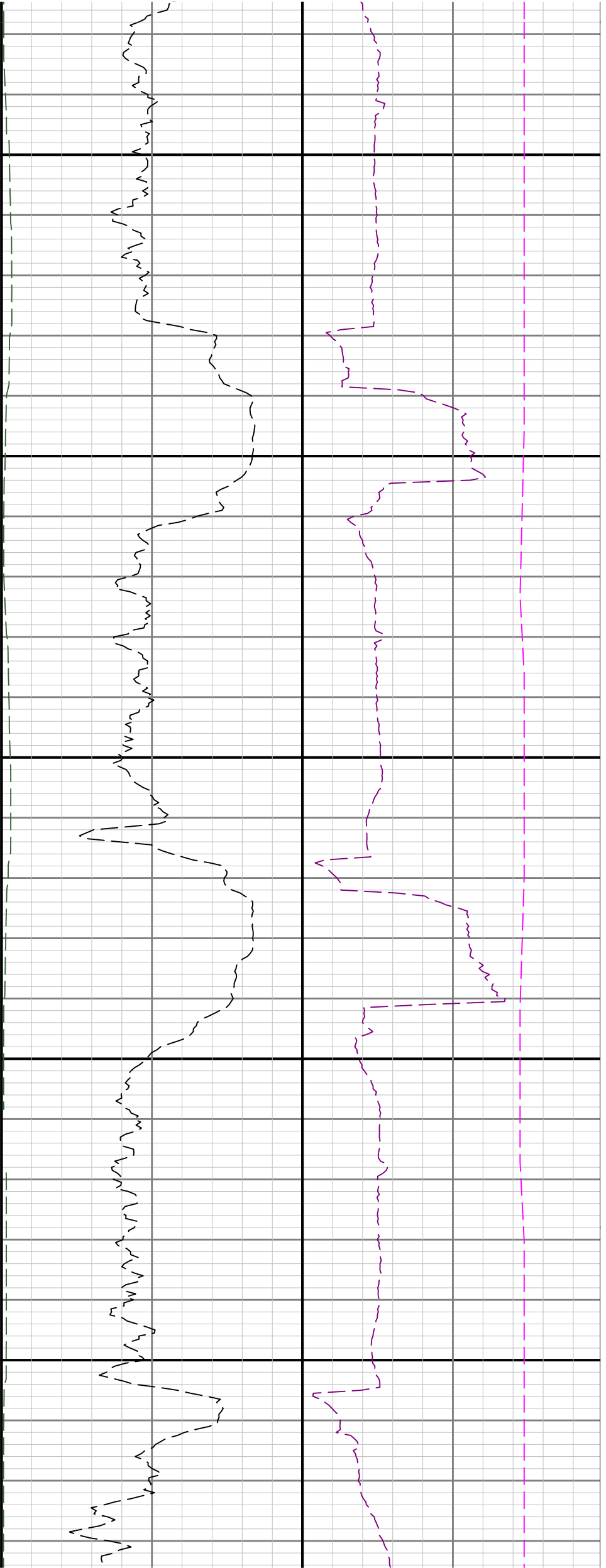


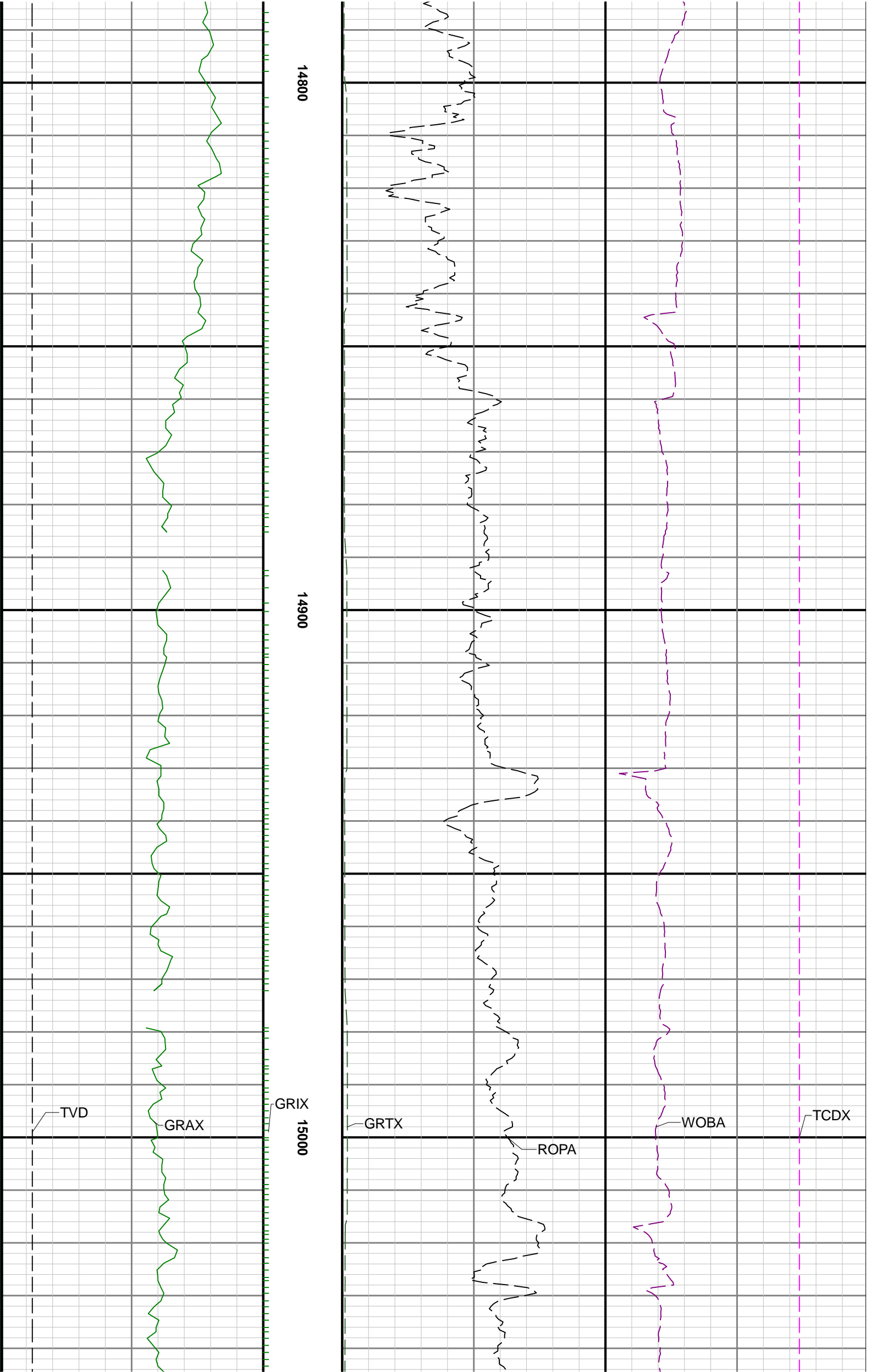
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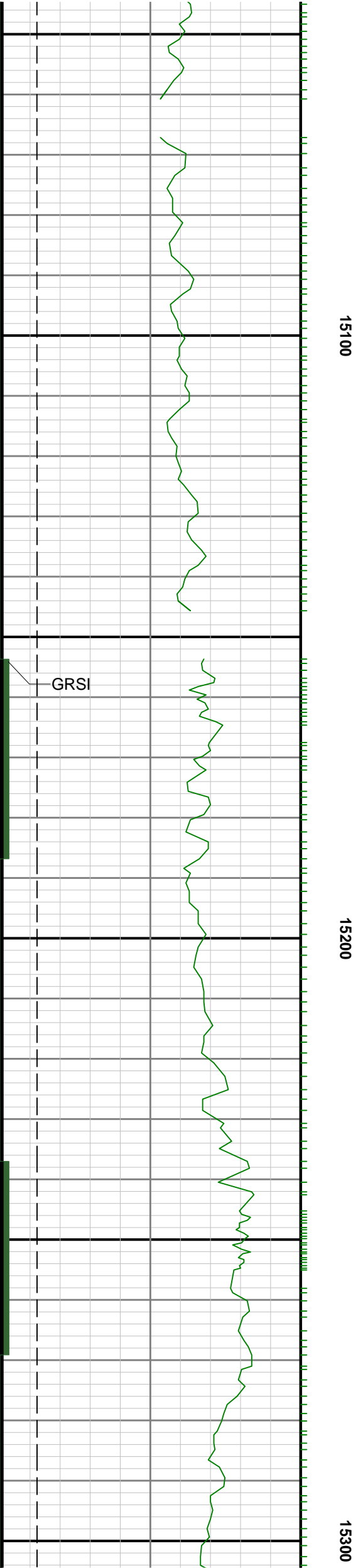
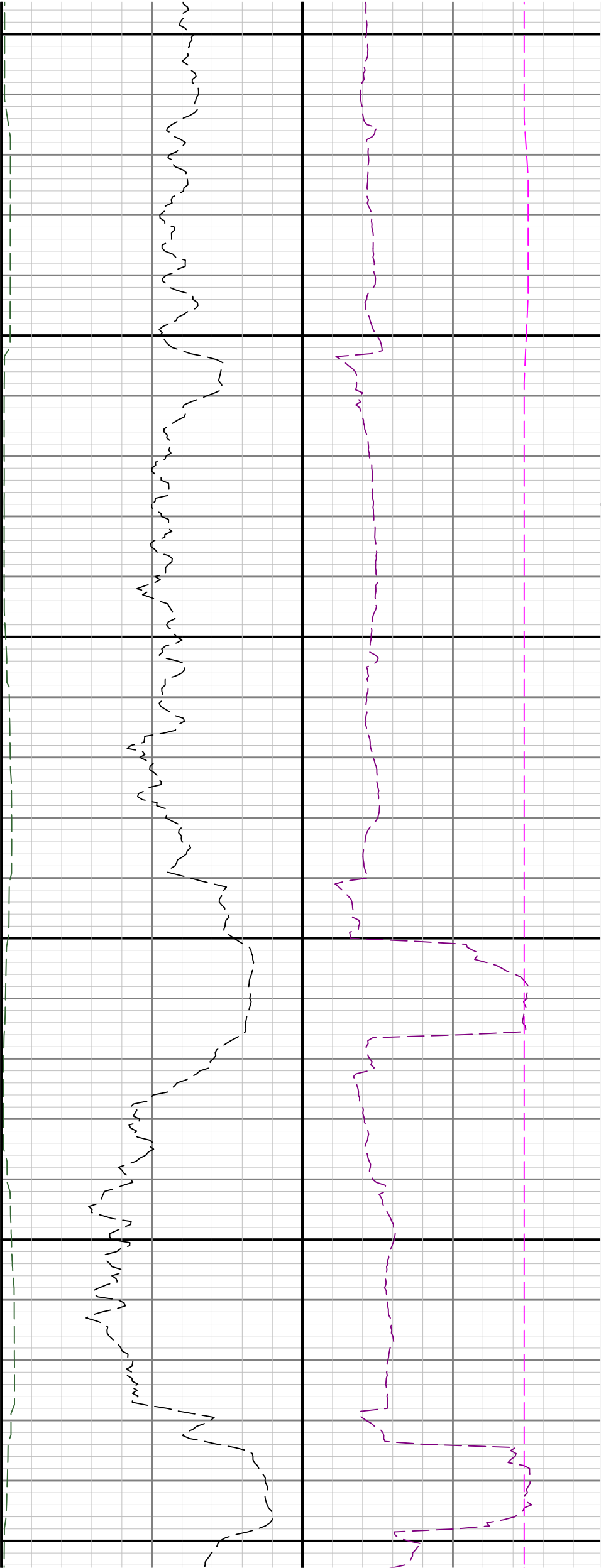
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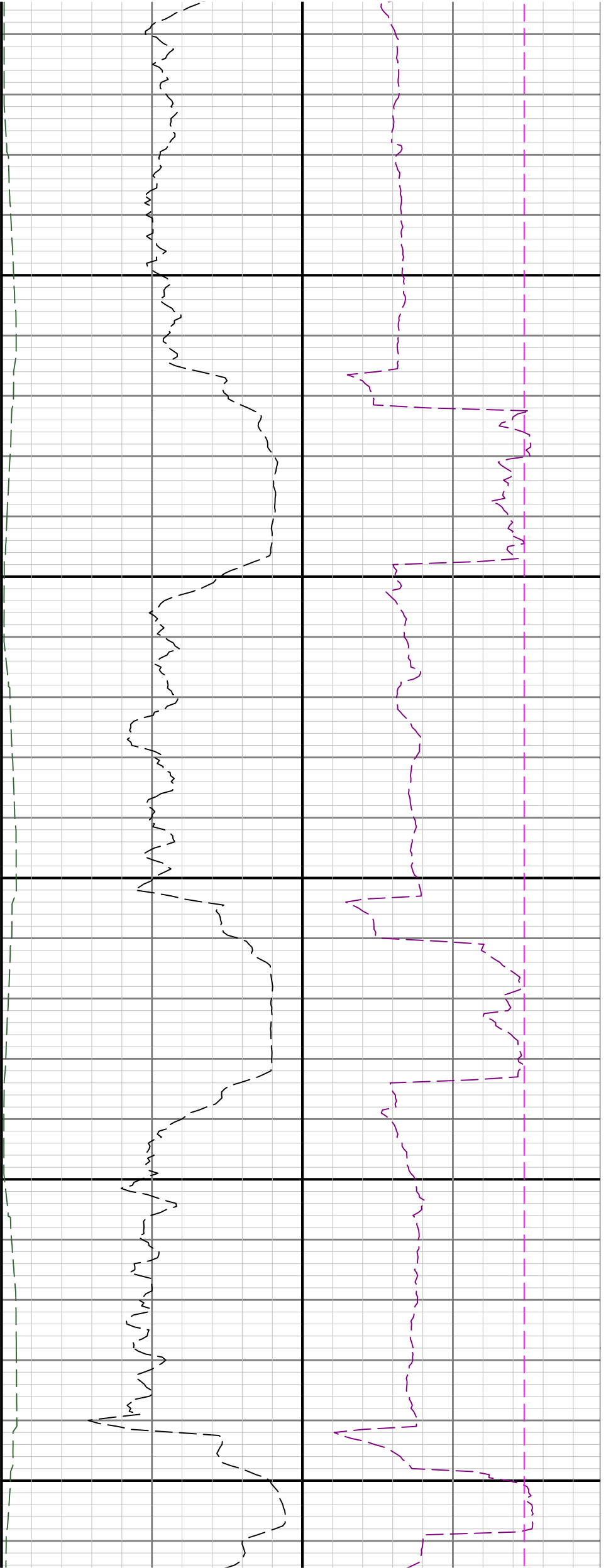
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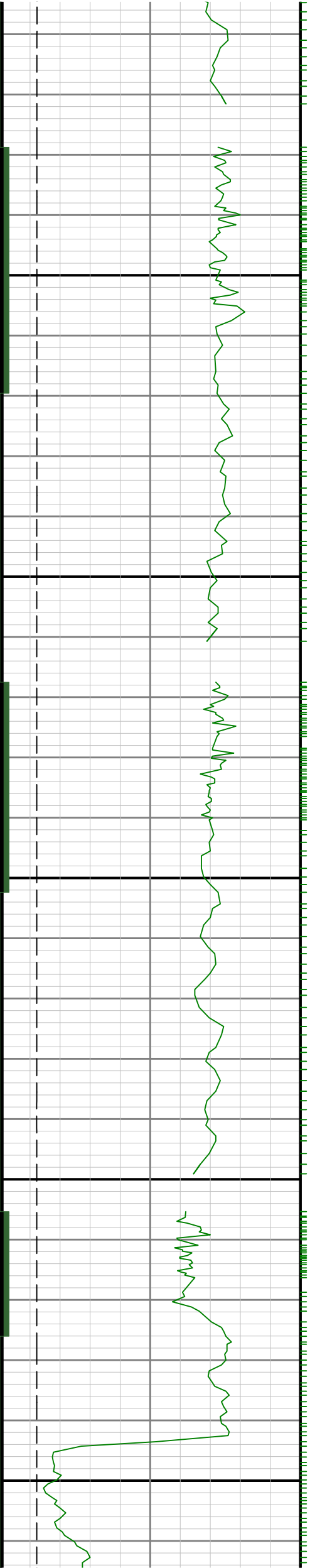


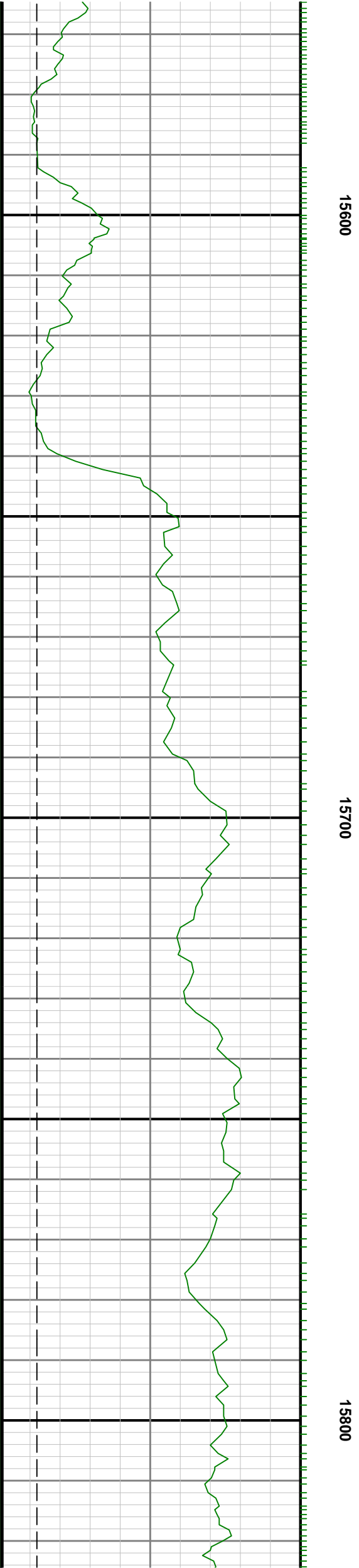
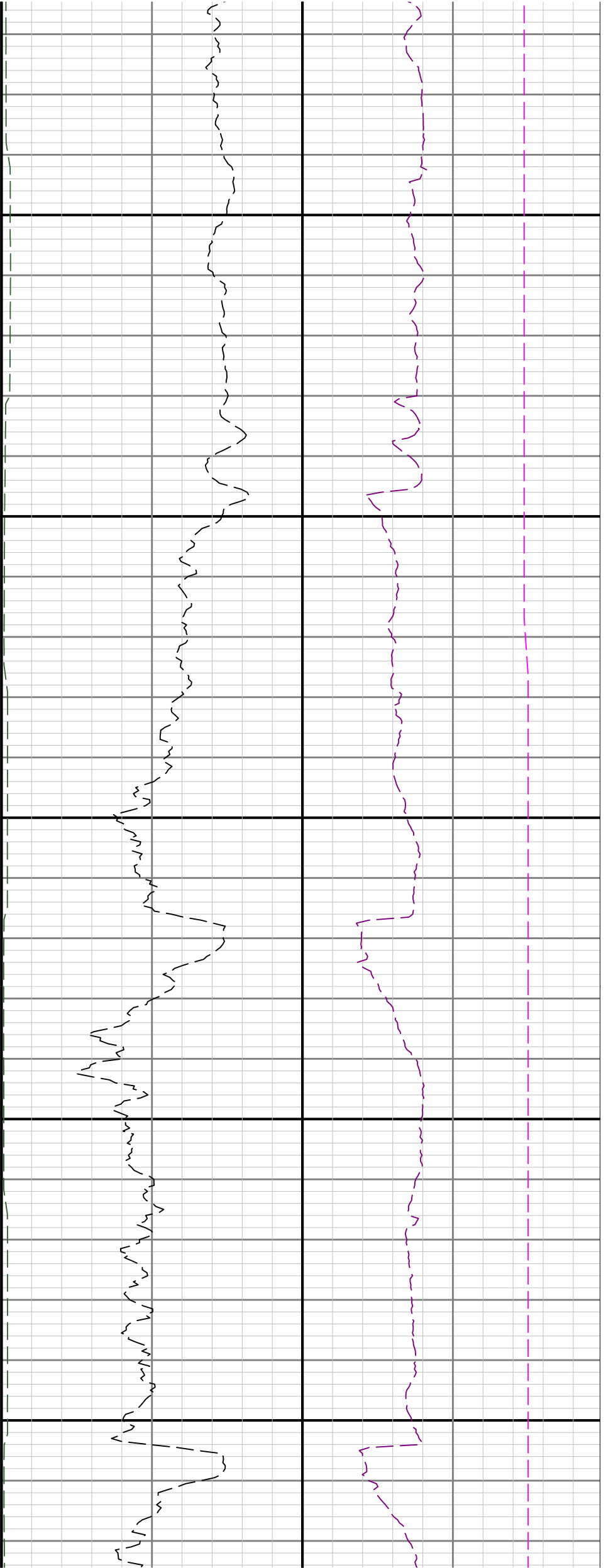


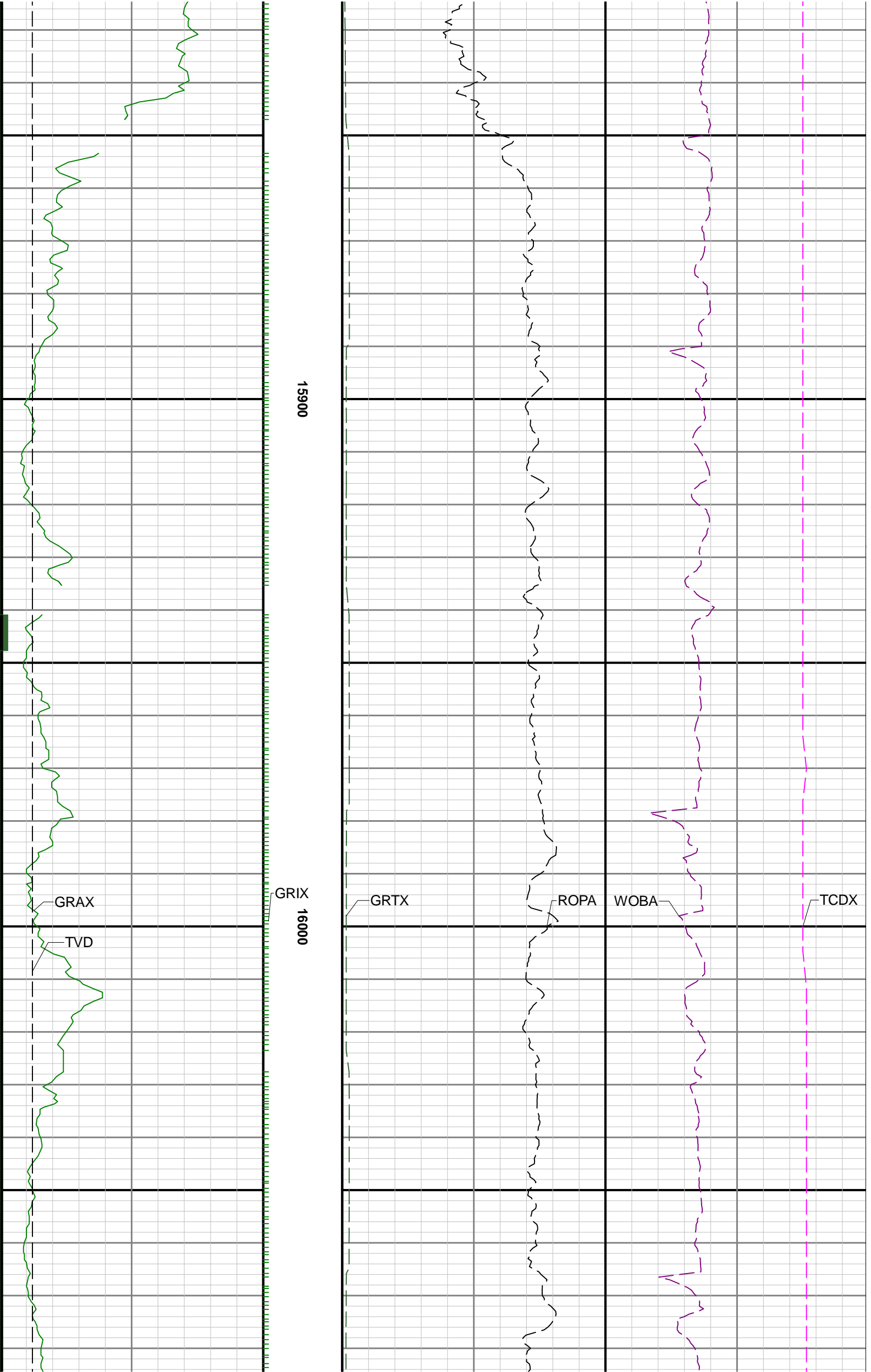


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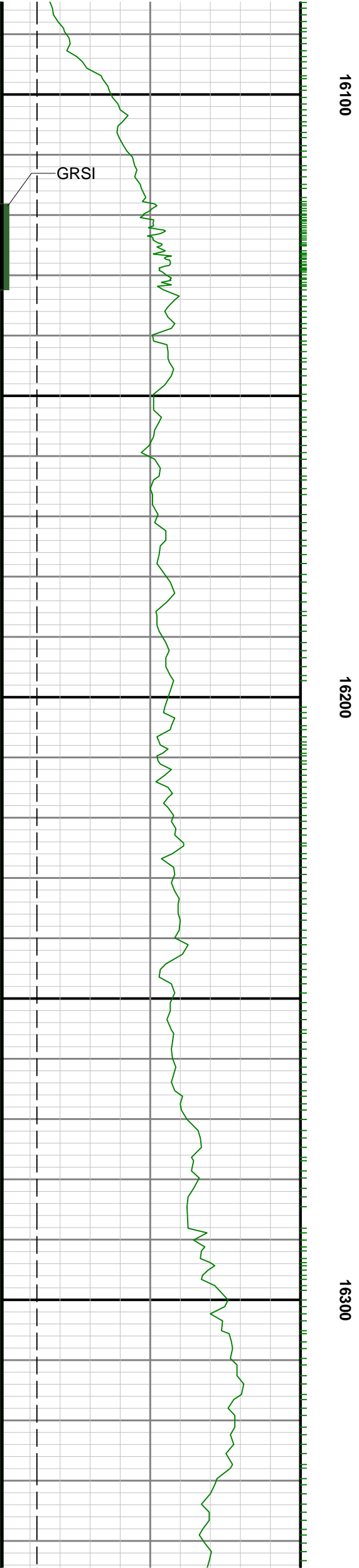
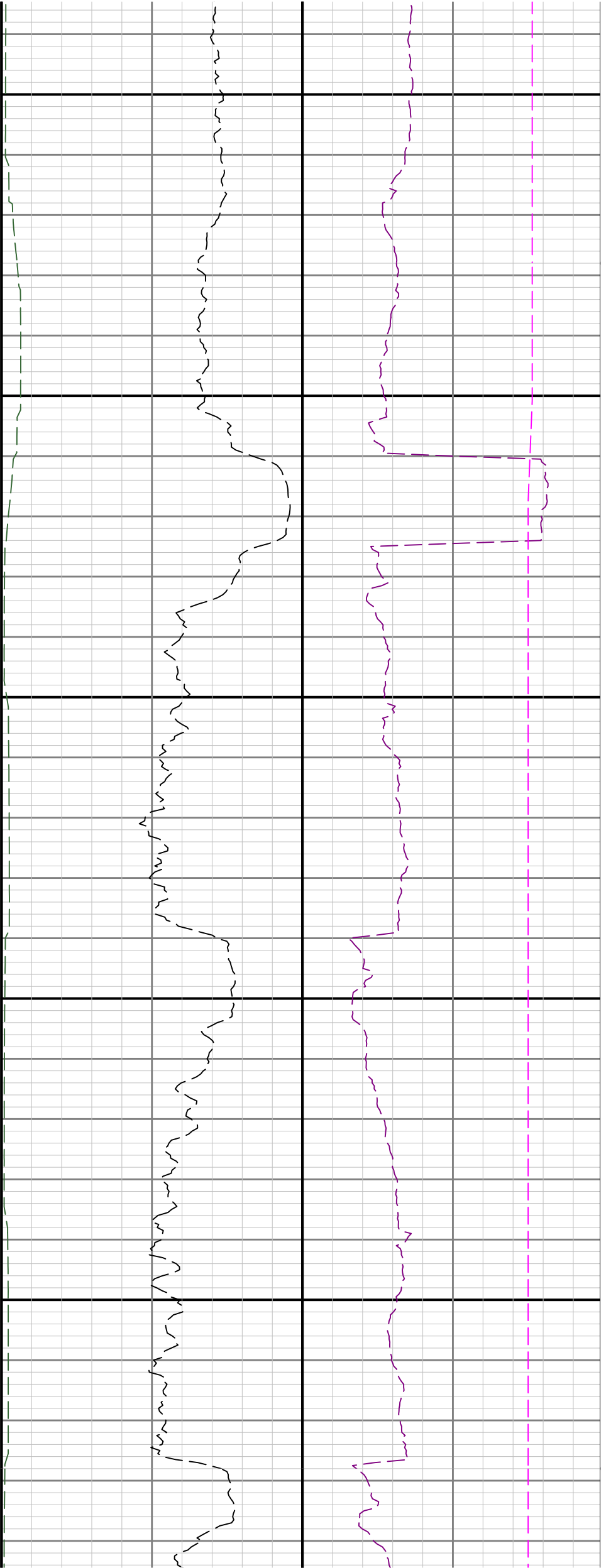
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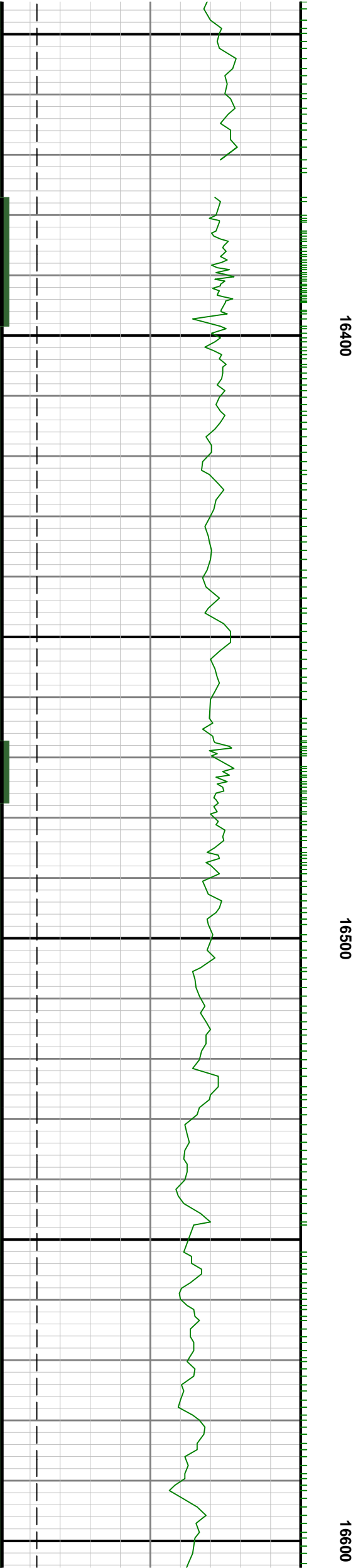
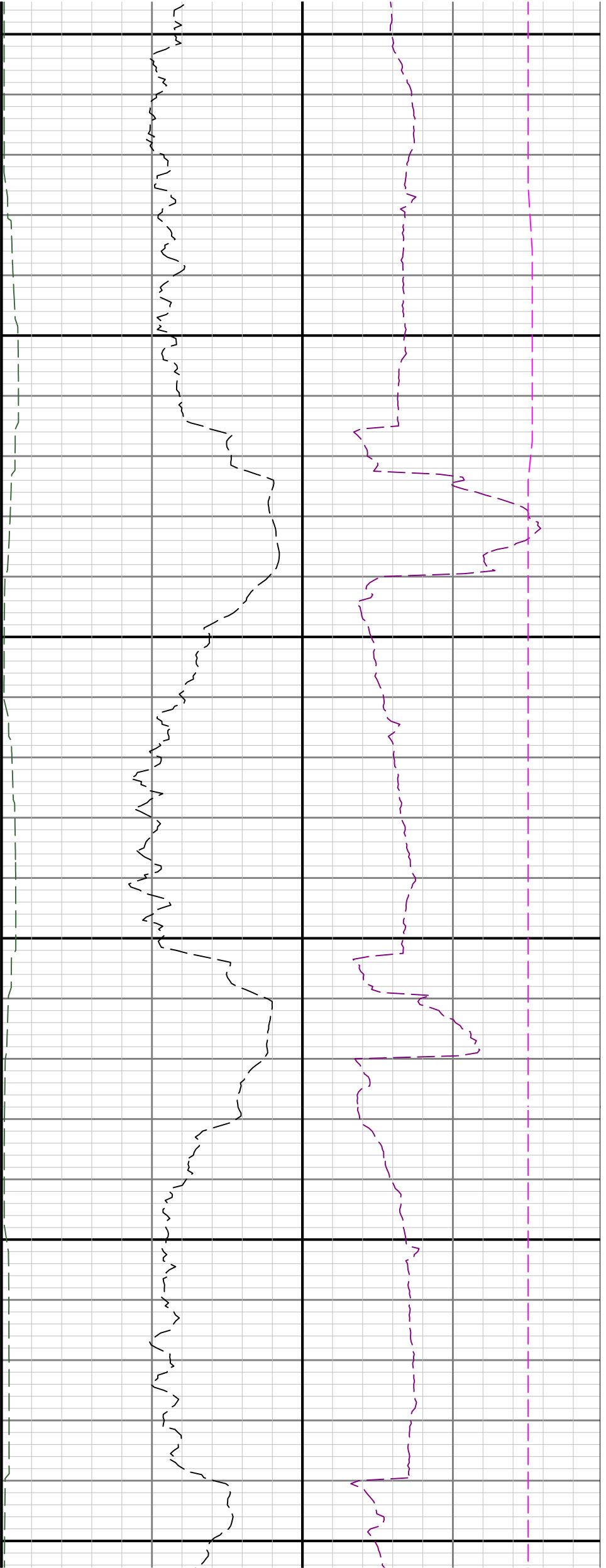


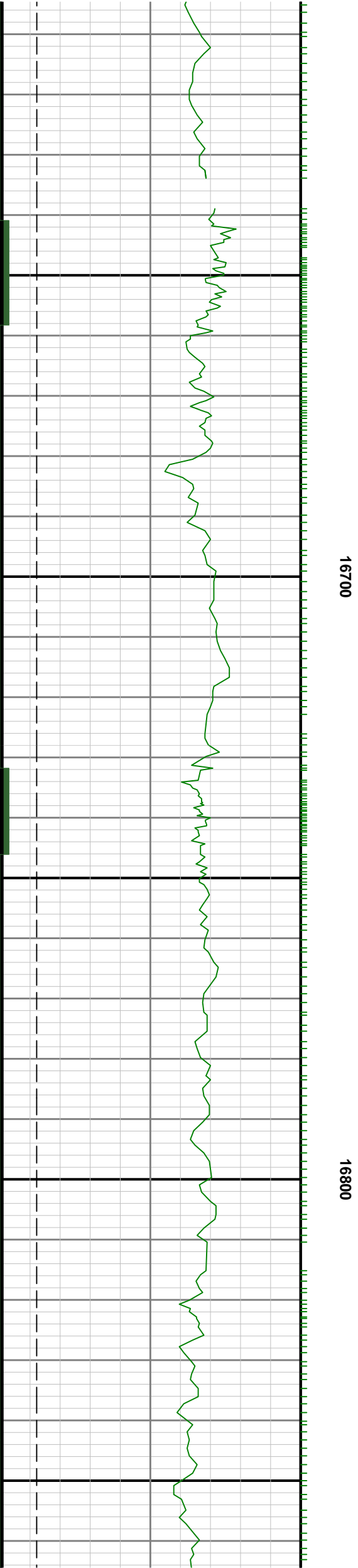
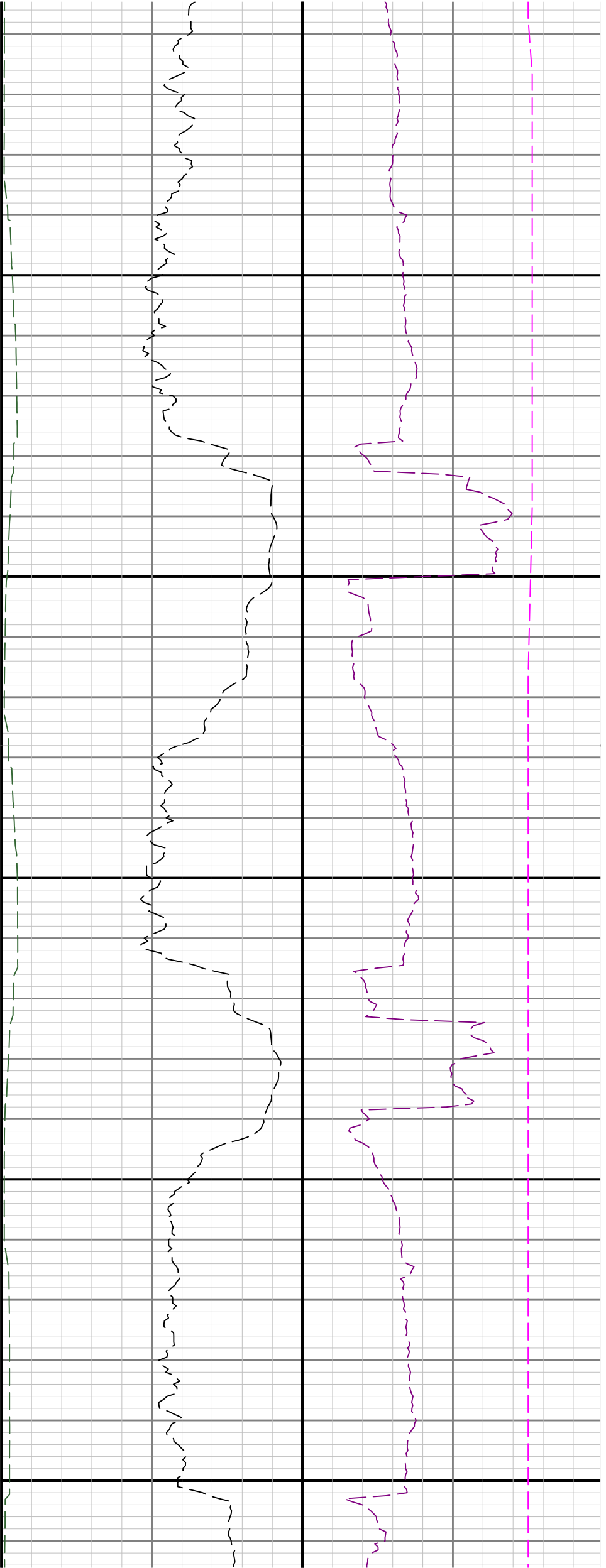


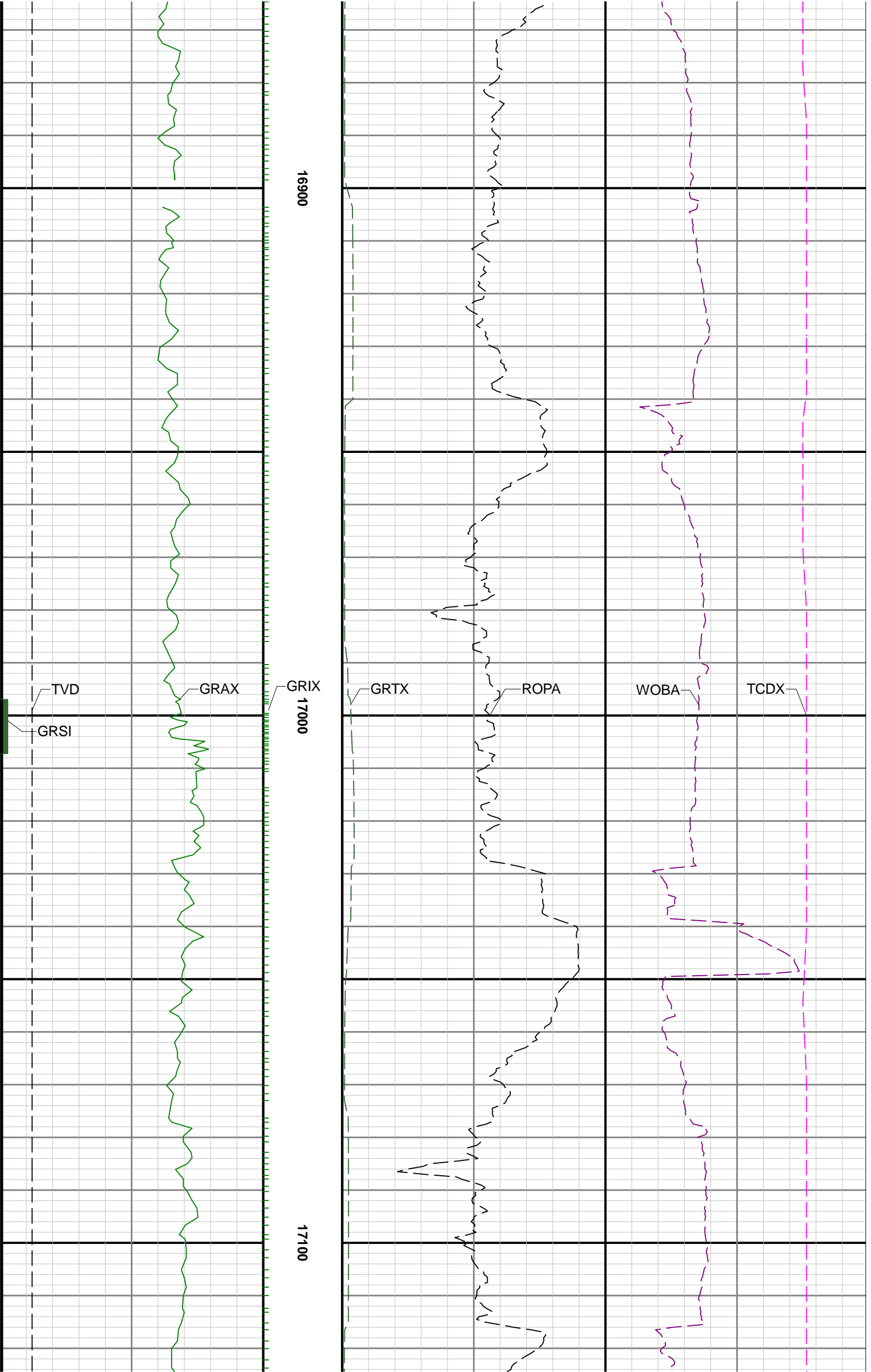


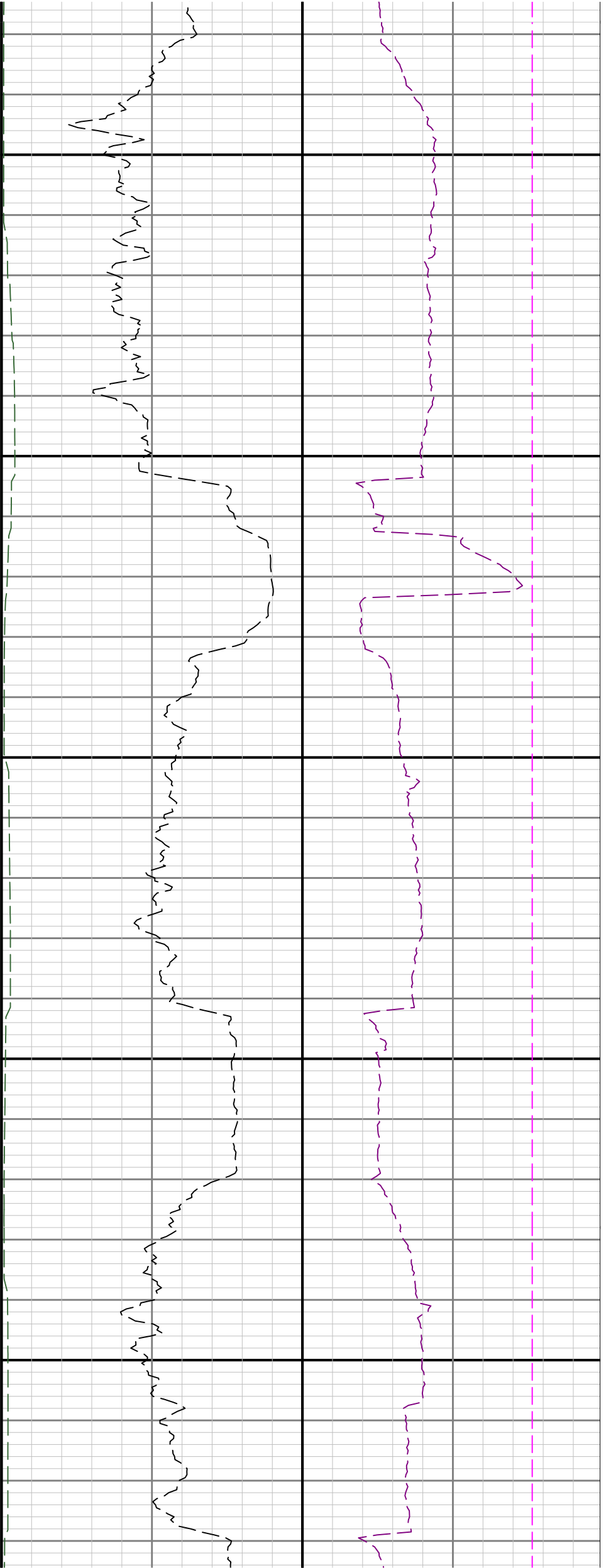












17200

17300

