

LWD REALTIME LOG											
<div><div><div>BAKER HUGHES</div><div>a GE company</div></div><div></div></div>				<div><div>Drilling Dynamics</div><div>Gamma Ray</div></div>							
Scale:		Company: Great Western									
1:240 MD		Well: Marcus LD 11-378NHX									
Depth Reference:		Field: Weld County									
Driller's Depth		County: Weld									
State:		Colorado									
Status:		Surface Location:				Other Services:					
Final Print		Latitude:				Longitude:					
API No: 05-123-45387		SEC: 34				TWN: 1N					
Job ID: 8789500		RGE: 67W				Directional					
Permanent Datum (P.D.): Mean Sea Level		Elevation: 0.00 ft				Elev. KB: 5062.00 ft					
Log Measured From: Rig Floor		Above P.D. 5062.00 ft				Elev. DF: 5042.00 ft					
Dates		Interval Logged				Magnetic Field Reference					
Date From: 2017-10-31		Top: (ft) 1736.00				Azi Reference North: True					
Date To: 2017-11-04		Bottom: (ft) 16242.00				Total Magnetic Field Strength: (nT) 52132					
Spud Date: 2017-09-15						Mag to Reference North Correction: (deg) 8.38 E					
Borehole Record											
Casing Record											
Hole Size (in)		From (ft)		To (ft)		Size (in)		Weight (lb/ft)		From (ft)	
13.500		20.00		1736.00		9.625		32.00		20.00	
8.500		1736.00		16242.00							
Mud Record											
Deviation Record											
Type		From (ft)		To (ft)		Hole Size (in)		Interval (ft)		Inc Az (Start)	
Diesel-Oil Based Mud		1736.00		16242.00		8.500		14506.00		0.50 267.84	
										89.97 181.17	
Acquisition System											
Software Version				Other							
Baker Hughes Cadence				RT4.1				Rig: PD 460			
PlotStudio				4.1.7763.3				Contractor: Precision Drilling			
								District: US Land			
								Unit: RMA			

Run No.	Depth (ft)	Type	Density (ppg)	Viscosity (cP)	Flow Rate (gpm)	Loss (cm3)	Water	Surfactant	Chlorides (ppm)	API
2017-10-31 13:00	1	Diesel-Oil Based Mud	10.3	27	0	0.0	77/23	Active Pit	17000	0.00
2017-11-01 13:00	1	Diesel-Oil Based Mud	10.0	20	0	0.0	75/25	Active Pit	20000	0.00
2017-11-02 15:00	1	Diesel-Oil Based Mud	10.0	21	0	0.0	77/23	Active Pit	20000	0.00
2017-11-03 15:00	1	Diesel-Oil Based Mud	10.1	25	0	0.0	76/24	Active Pit	20000	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	12161973	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_SU	12161973	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_MWD	13067101	Gamma (single)	2.21	12.35	7.000	3.250
1	ATC_MWD	13067101	Directional (mag)	12.28	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	On 11/3/2017, the well was shut in at 16242 feet MD (1735 to 7366 feet TVD).
3	Gaps in Gamma Ray data are present throughout the log due to downlinking while drilling ahead.

Remarks

Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	16229.00	8.500	1	The interval from 16229 to 16242 feet MD (7366 feet TVD) was not logged due to sensor to bit offset at well TD.

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	OnTrak - Gamma Ray - Apparent - Real-Time 0.5 ft Average	API
GRIX	OnTrak - Gamma Ray - Data Point Indicator - Real-Time	unitless
GRTX	OnTrak - Gamma Ray - Time Since Drilled - Real-Time	min

<div><div><div>BAKER HUGHES</div><div>a GE company</div></div><div></div></div>	Company	Great Western		
	Well	Marcus LD 11-378NHX		
	Interval	Date From:	2017-10-31 12:25:04	Top: 1736.00
	Created	Date To:	2017-11-04 00:30:30	Bottom: 16242.00
		2017-11-04 01:51:35		
Gamma Ray - Apparent 0.5 ft Average GRAX 0 150	MD 1:240 feet	Depth Averaged ROP 3 ft Average ROPA 1000 0	Weight On Bit, Average 1 ft Average WOBA 0 100	
API		ft/h	klb	
True Vertical Depth TVD 8000 1000		Gamma Time Since Drilled GRTX 0 600	Downhole Temperature TCDX 0 300	
ft		min	degF	

9 5/8" Casing

GRAX

TVD

GRIX

GRTX

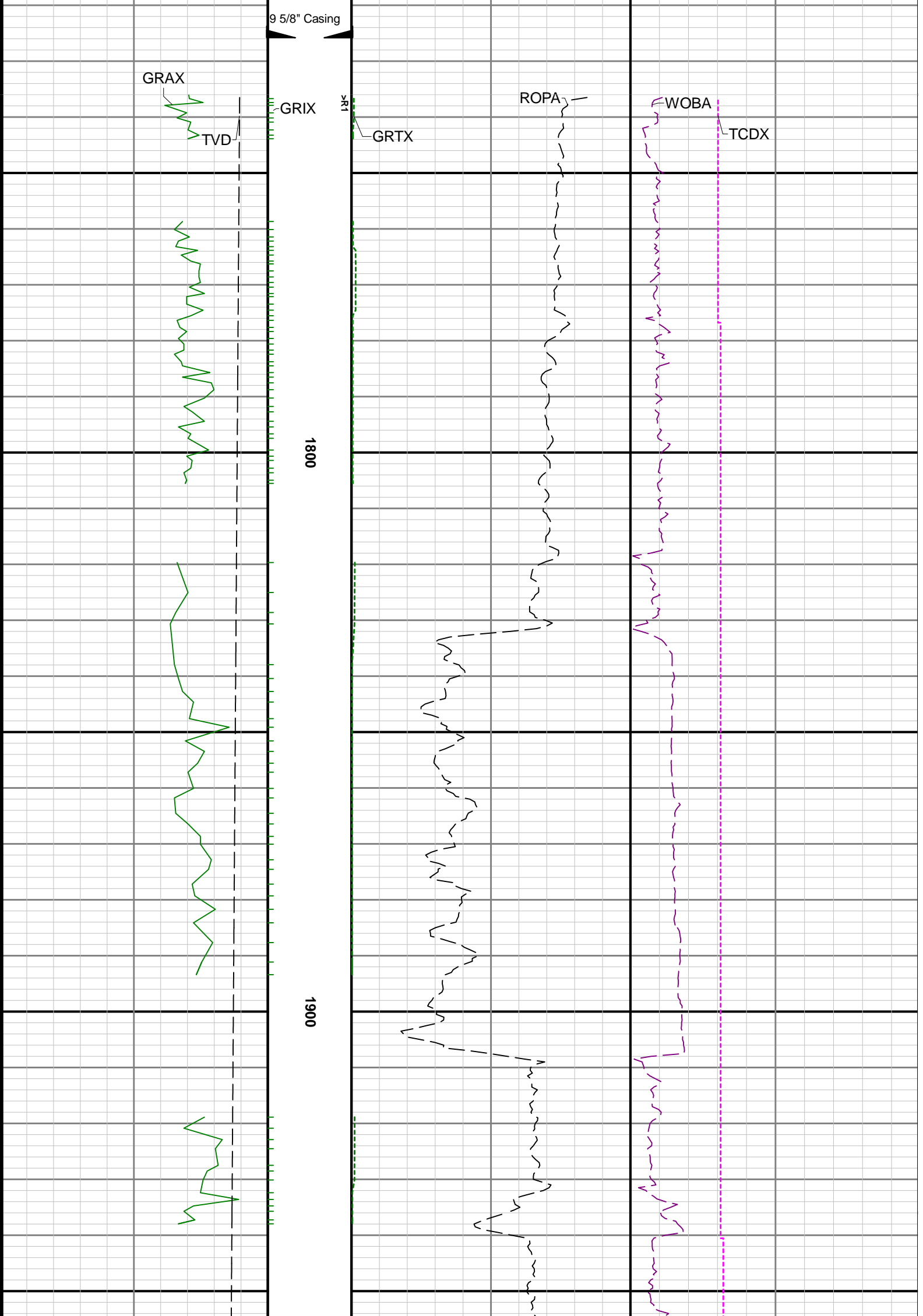
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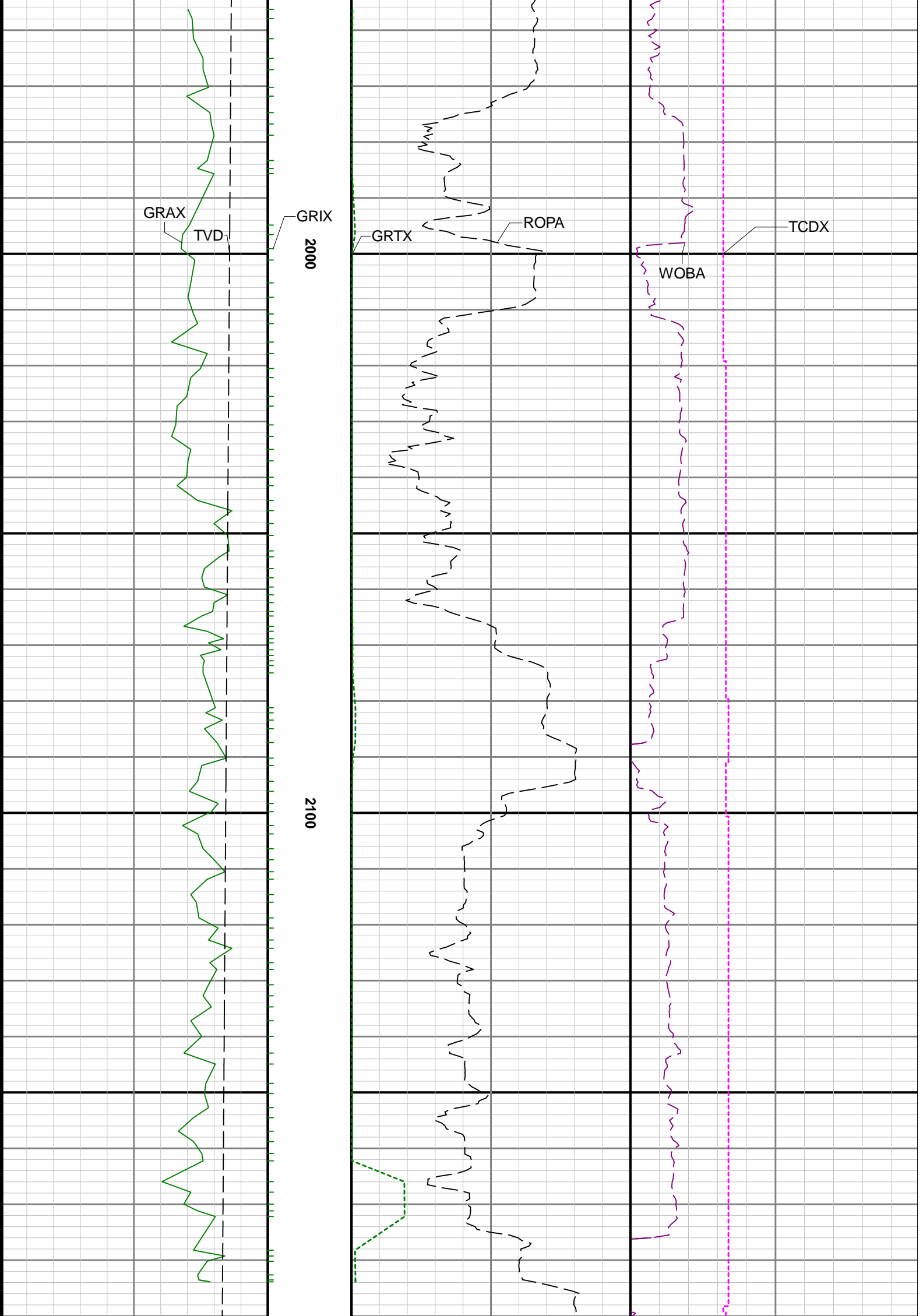
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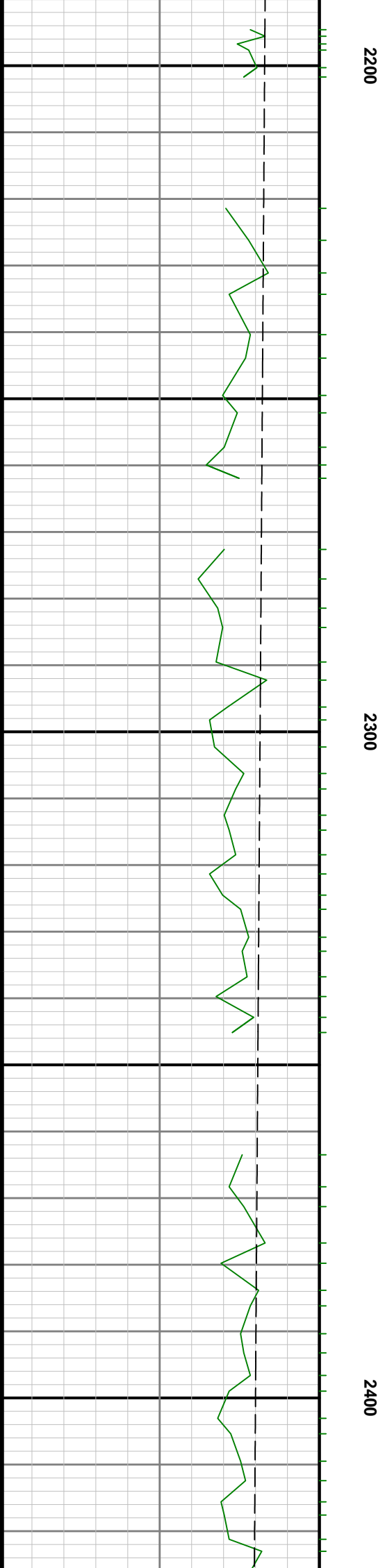
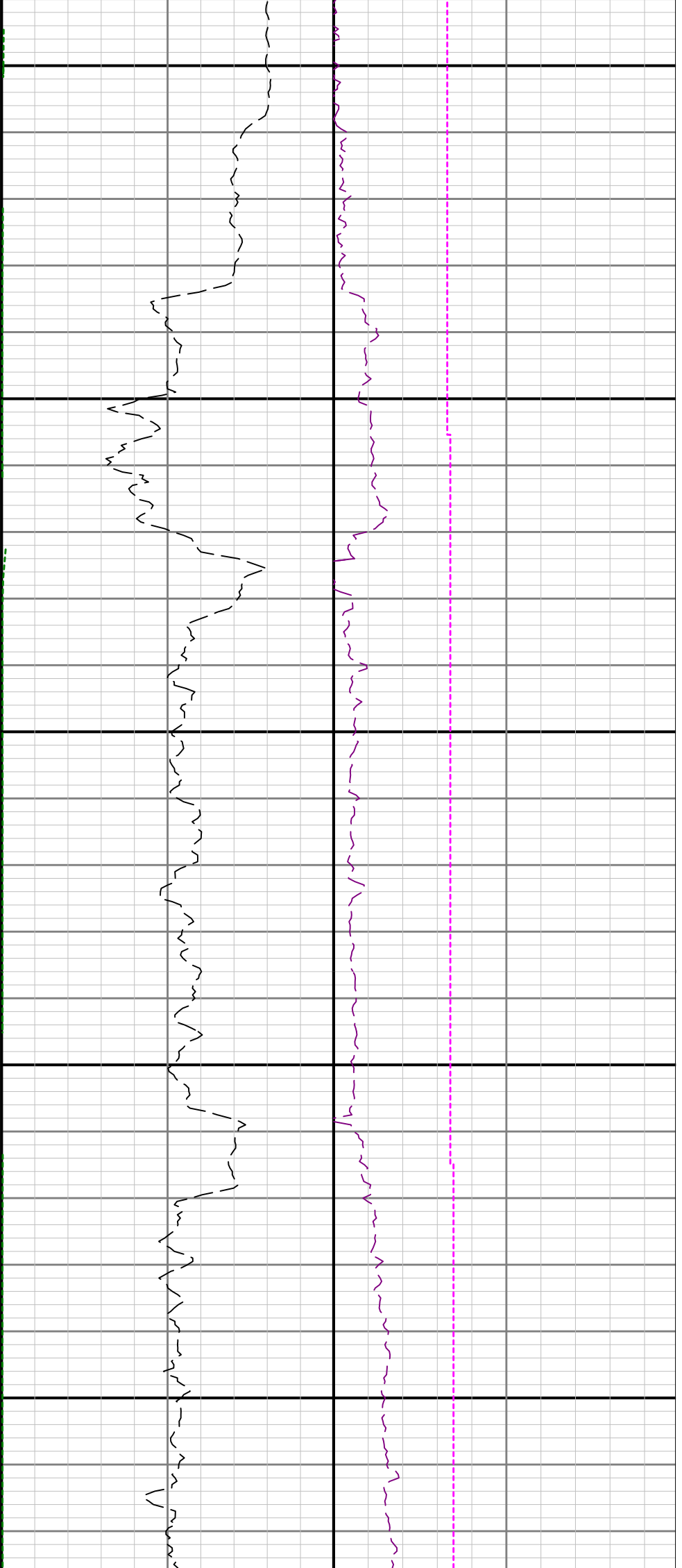
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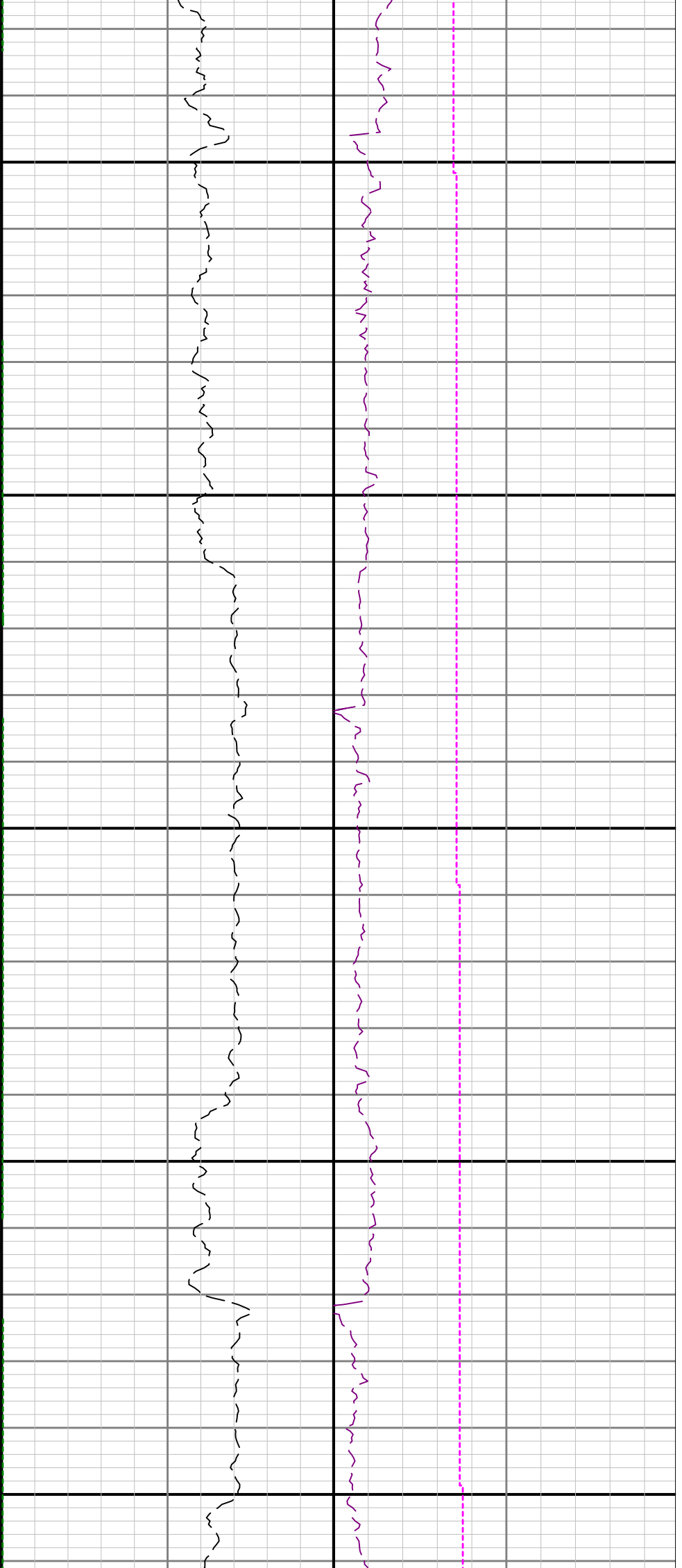
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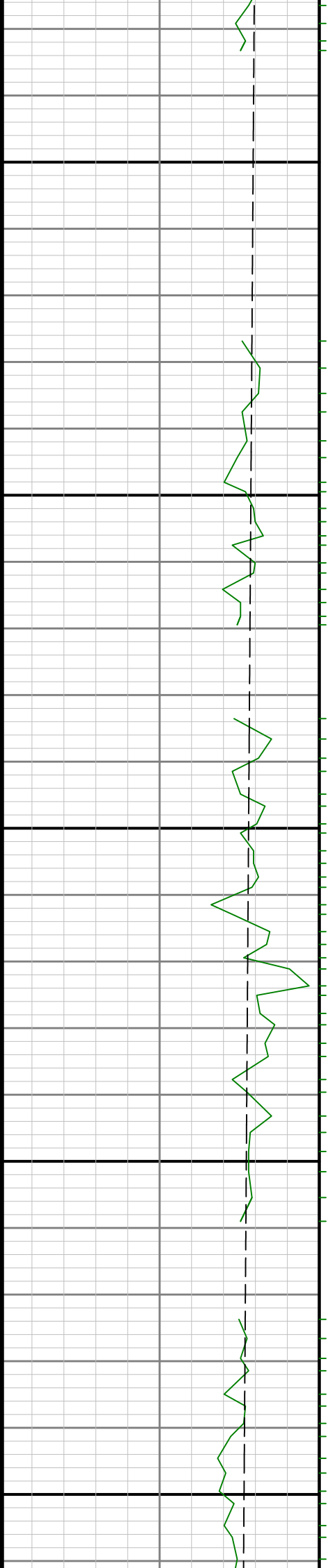






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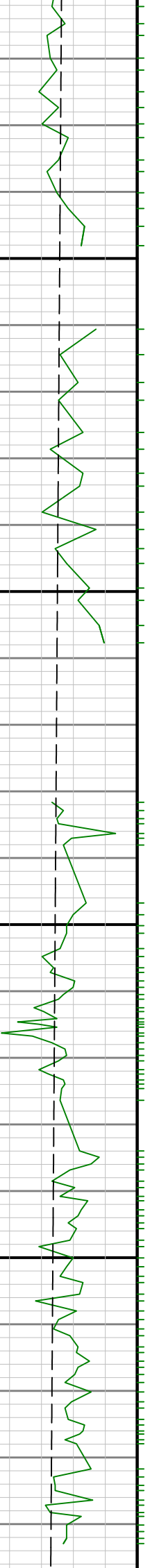
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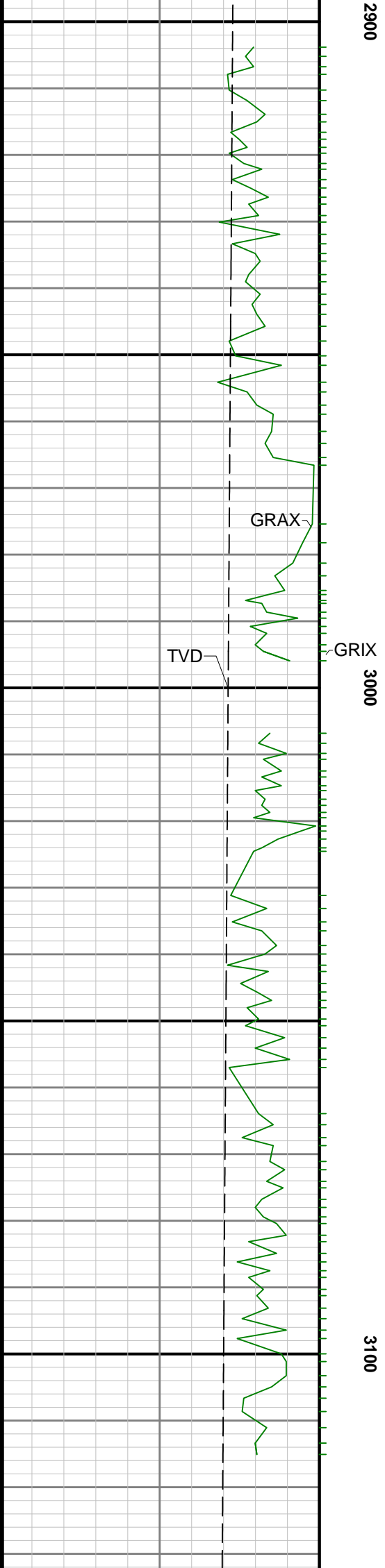
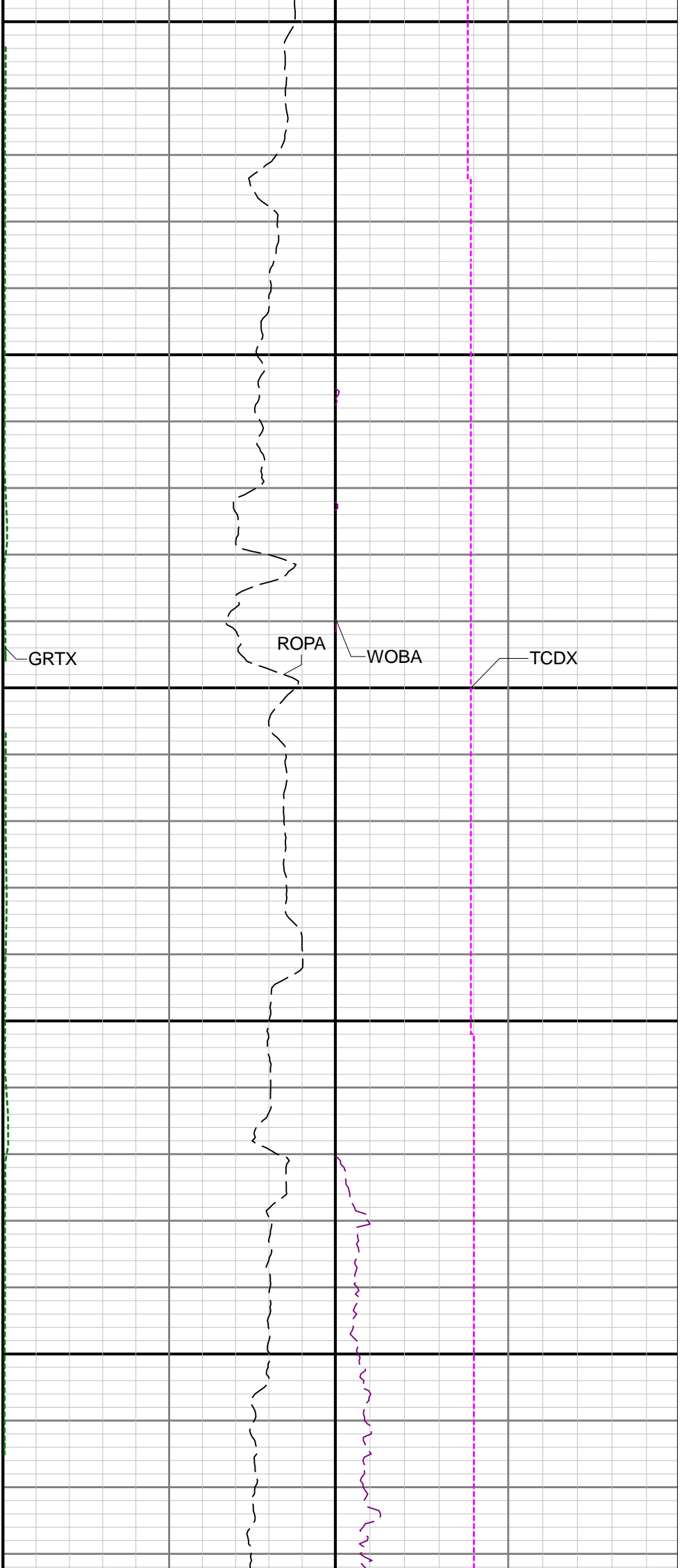


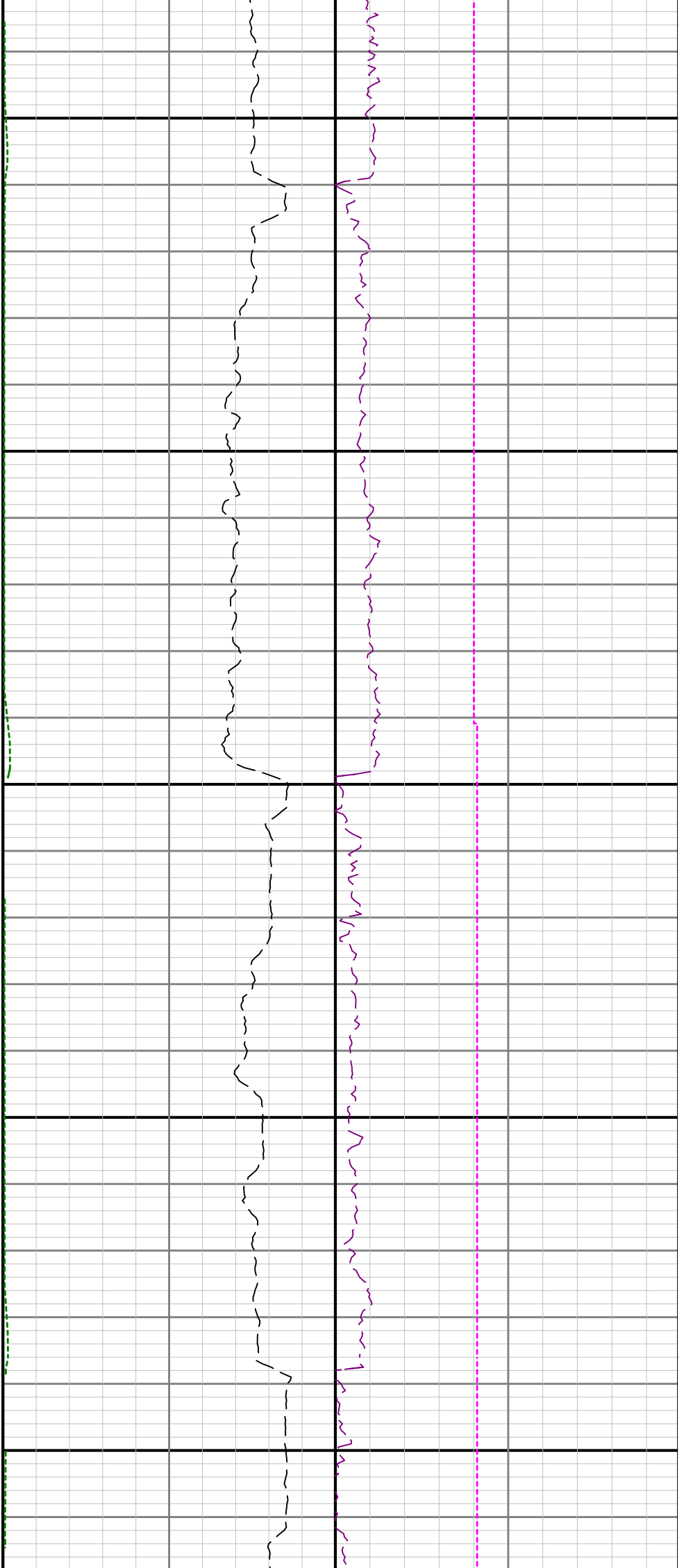


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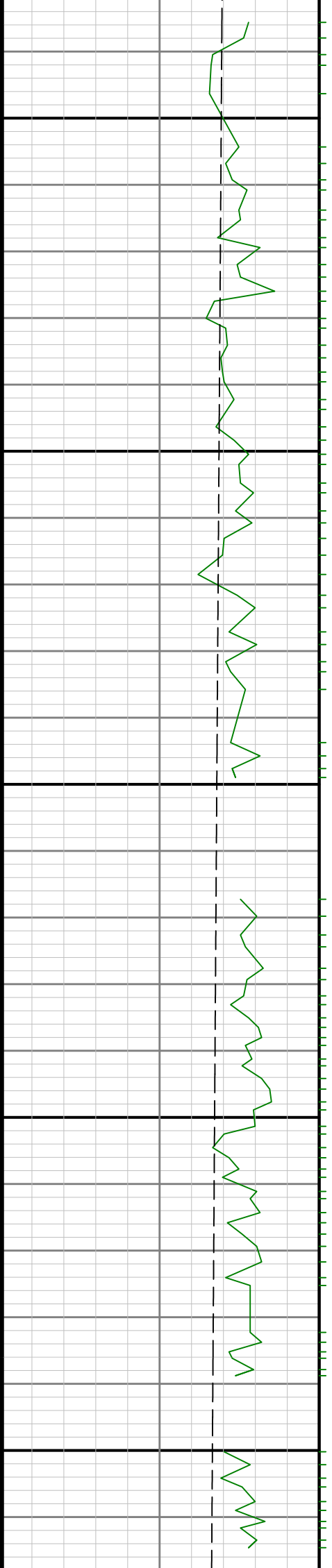


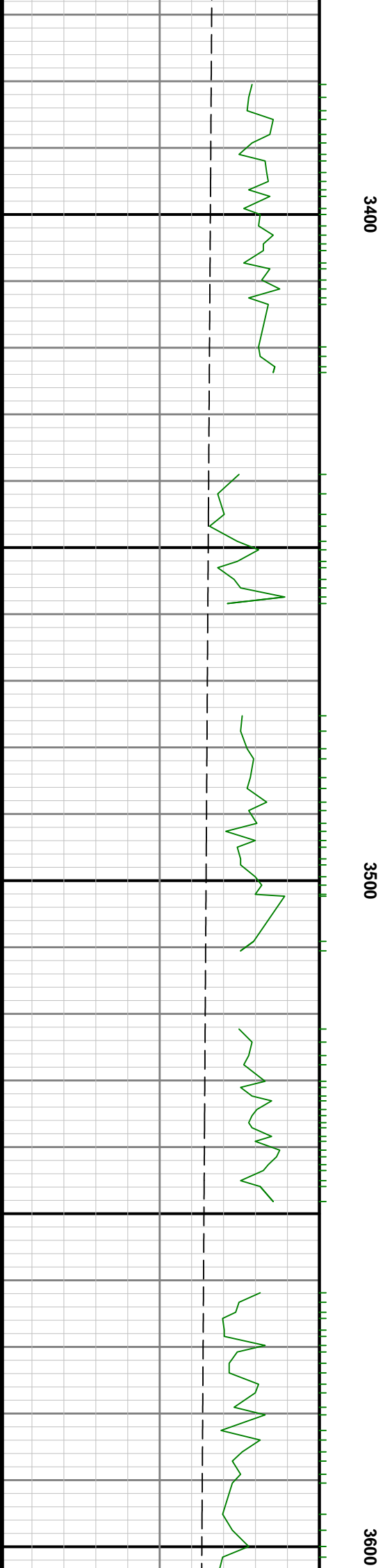
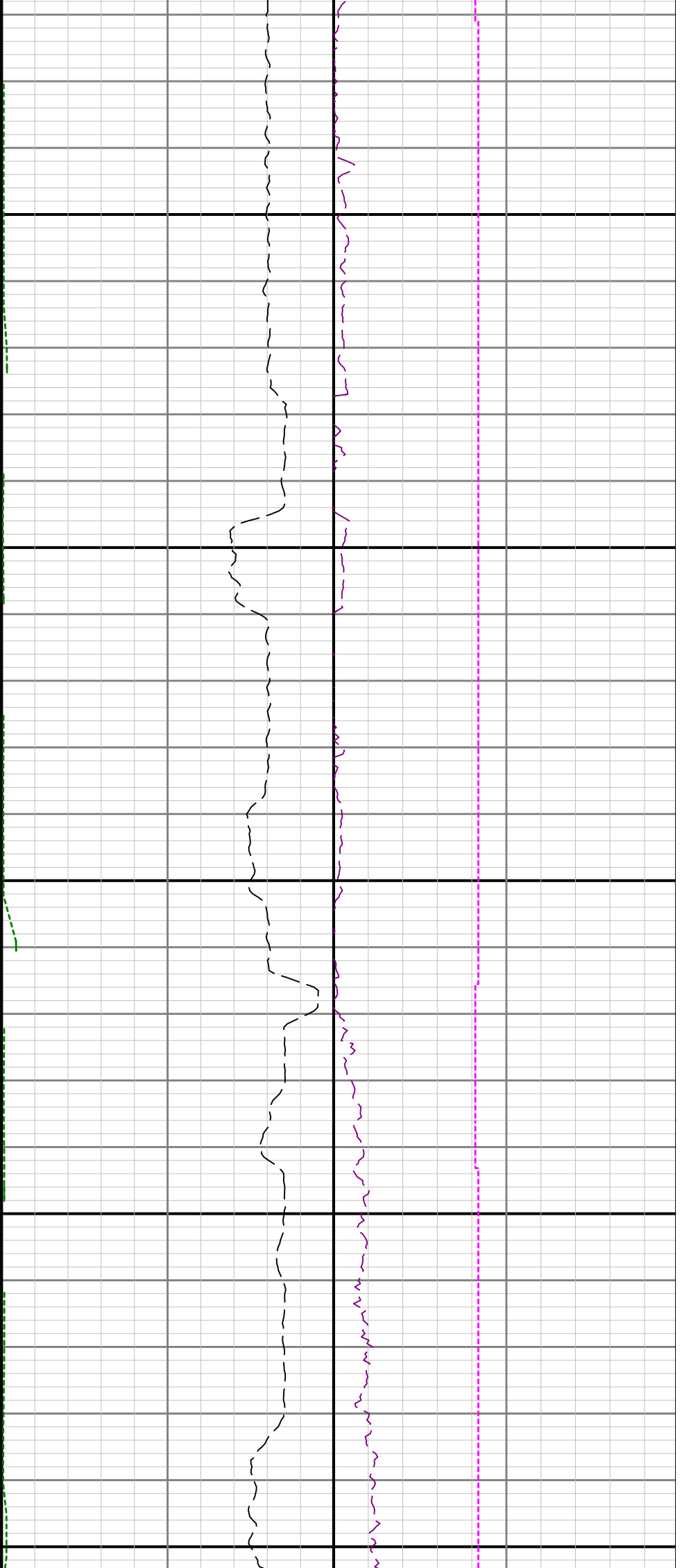


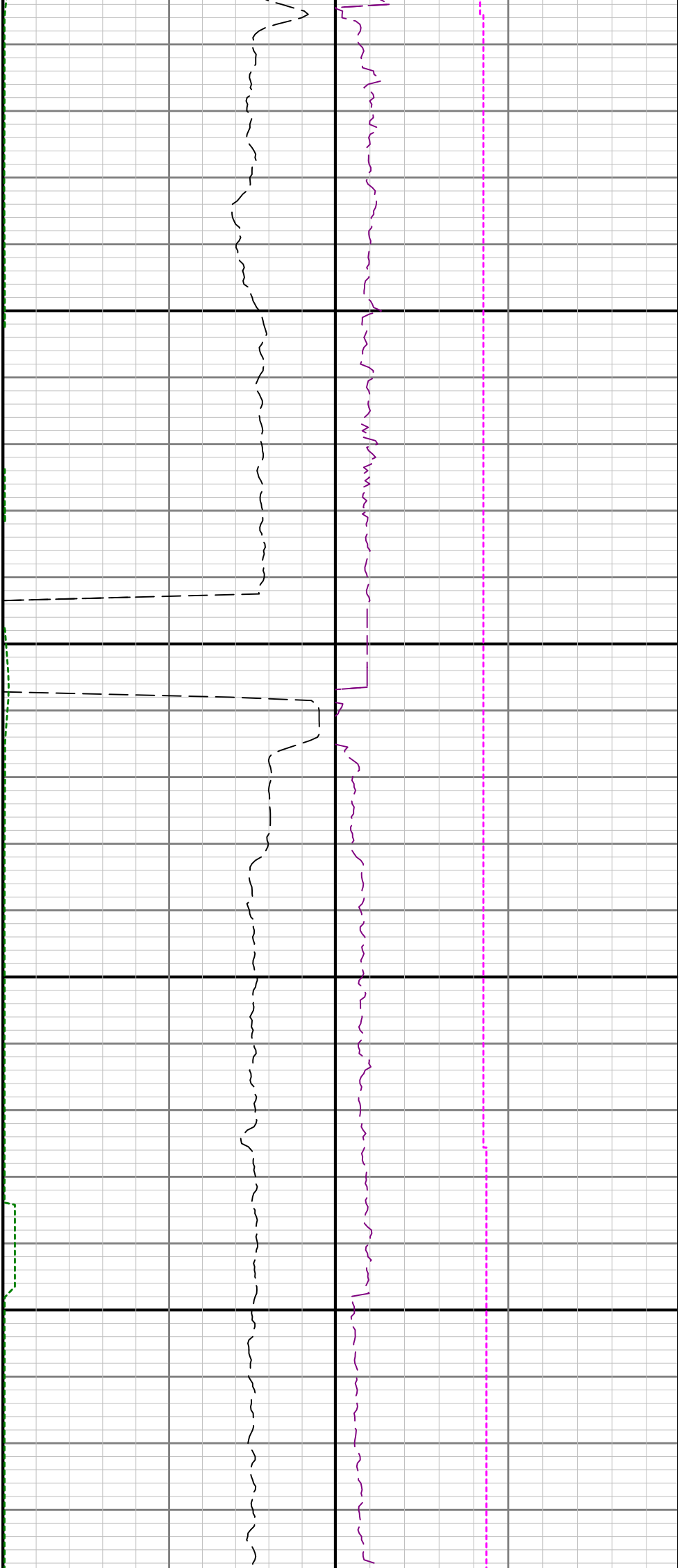


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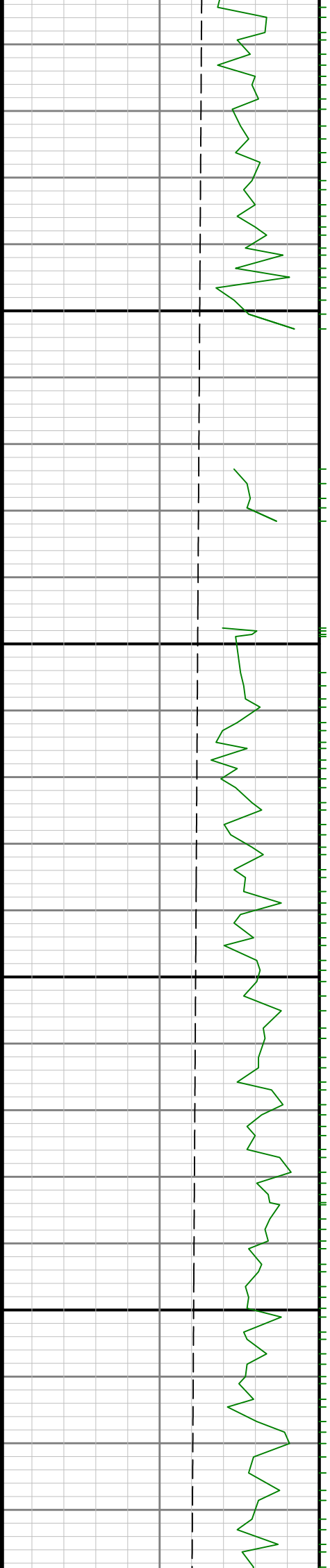


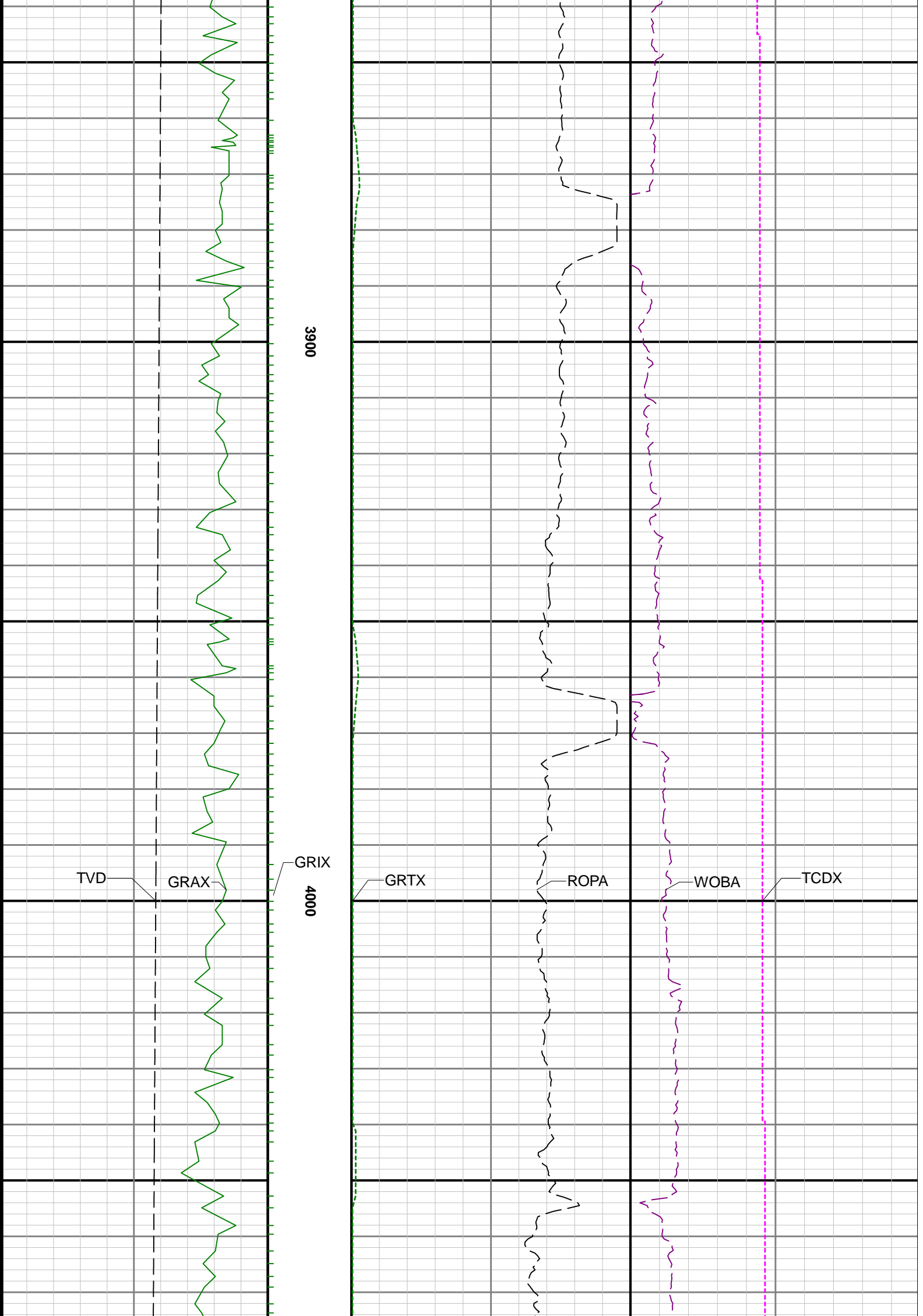


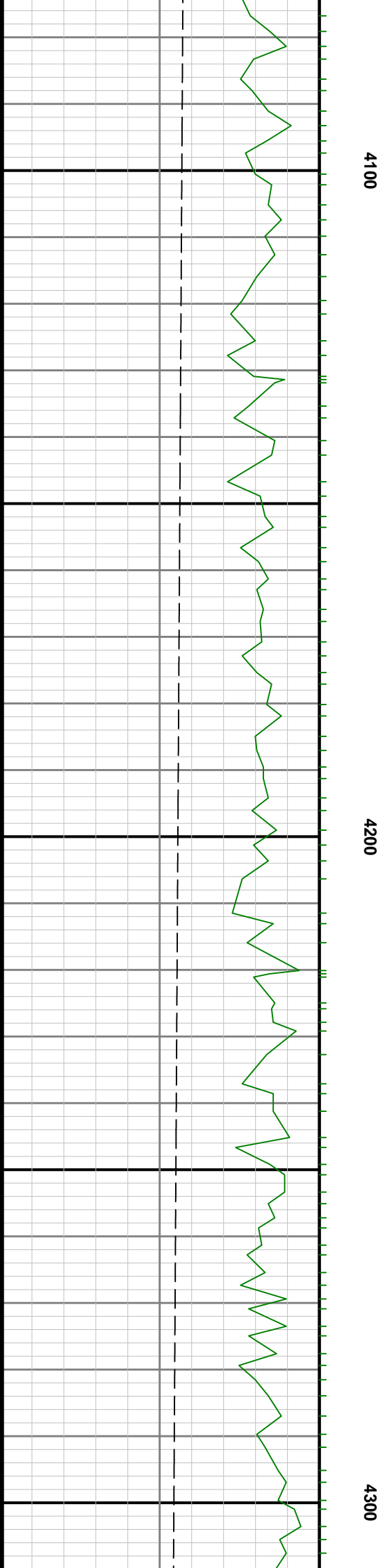
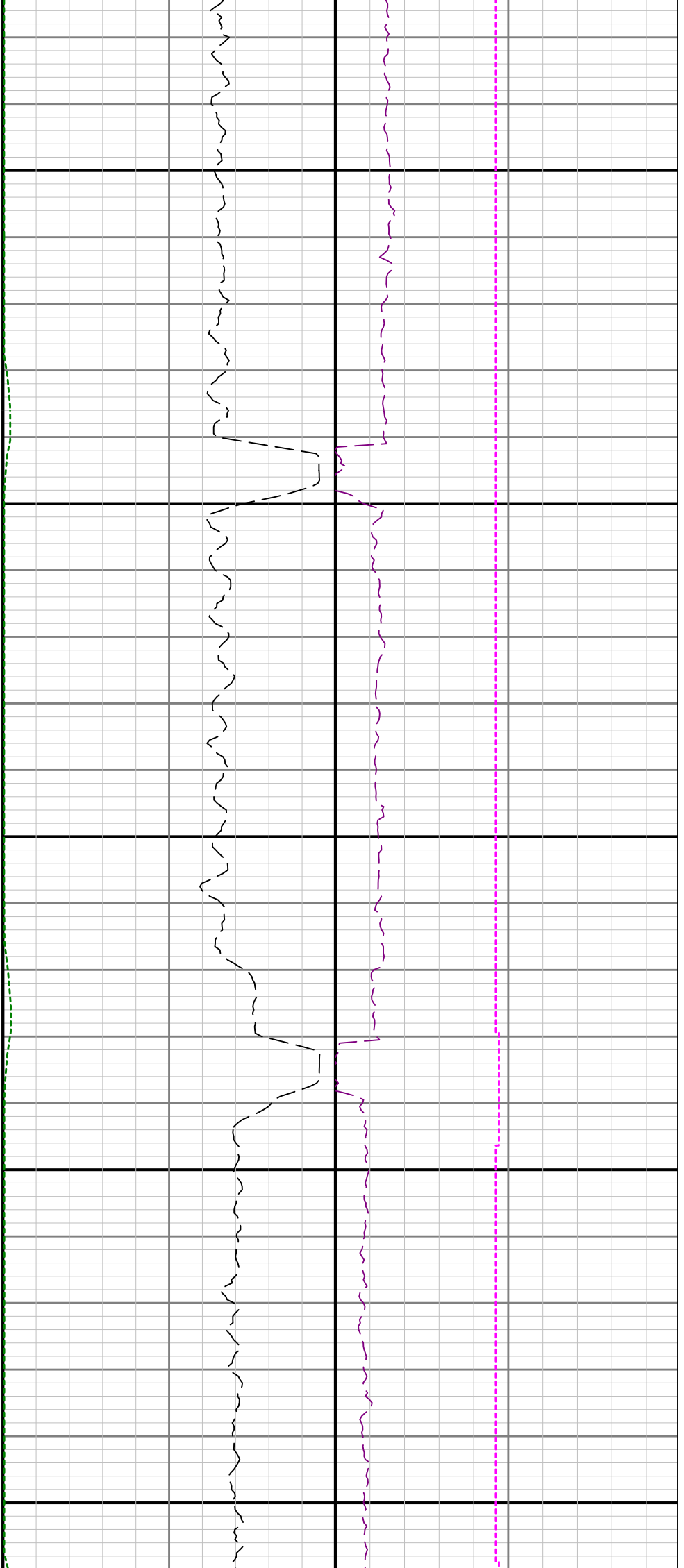


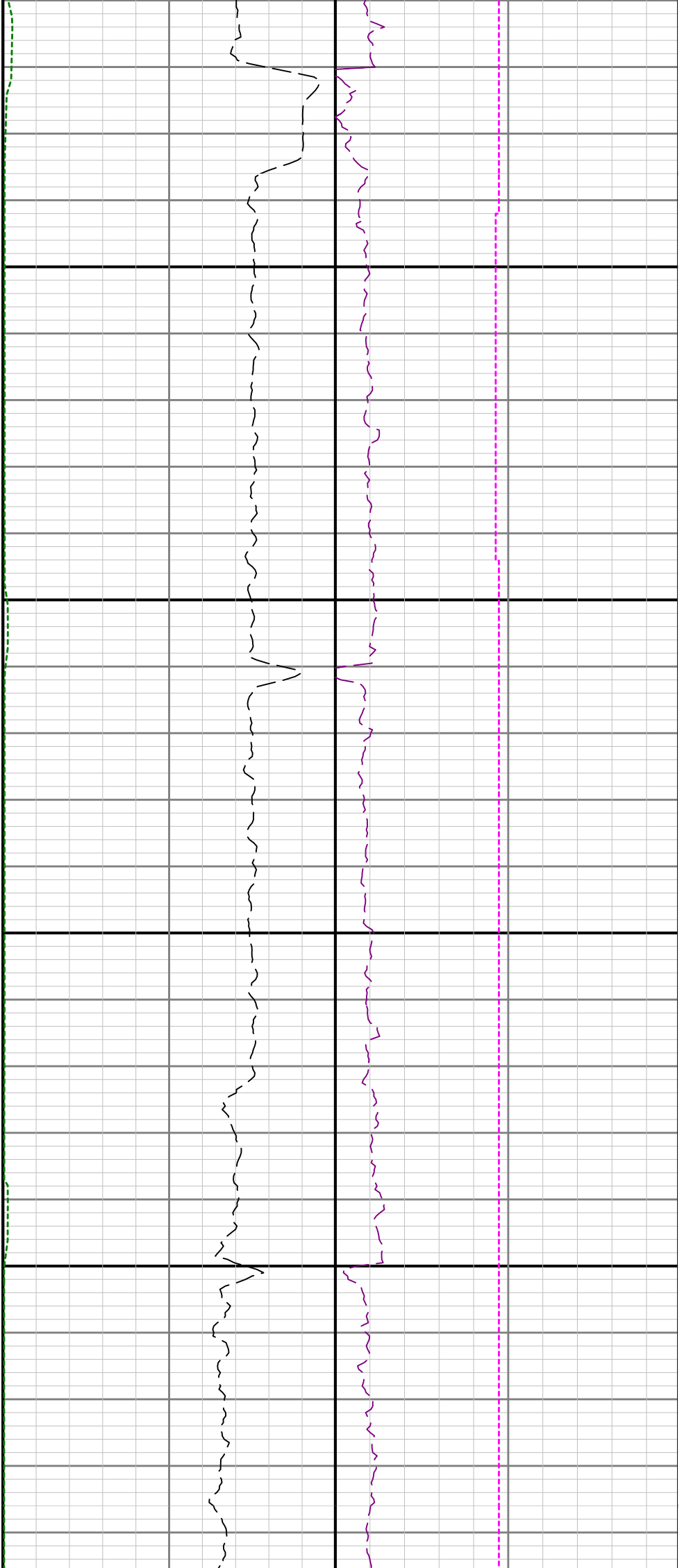
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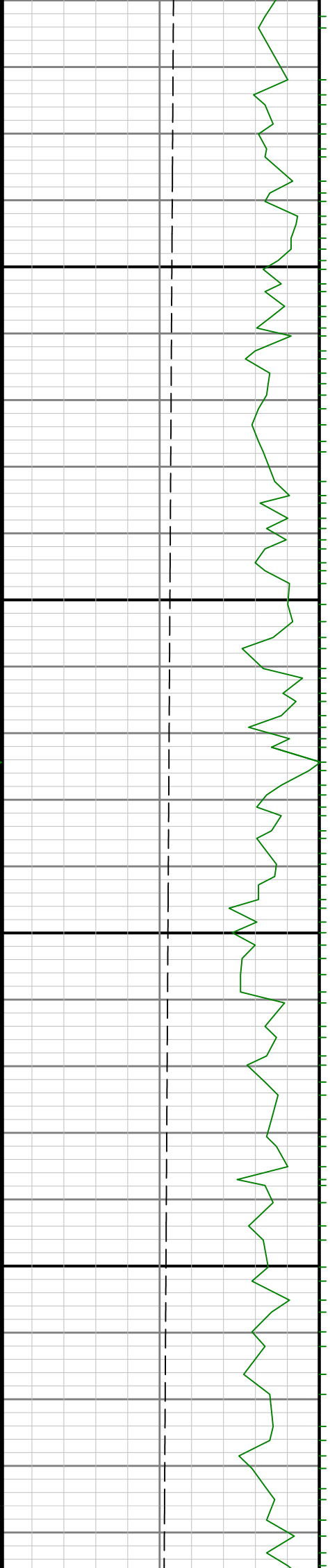


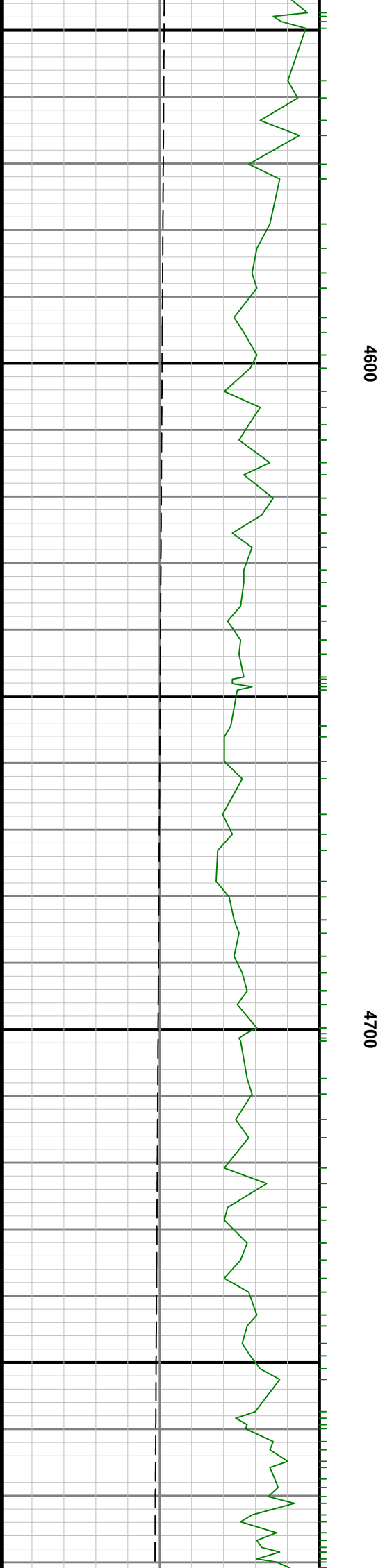
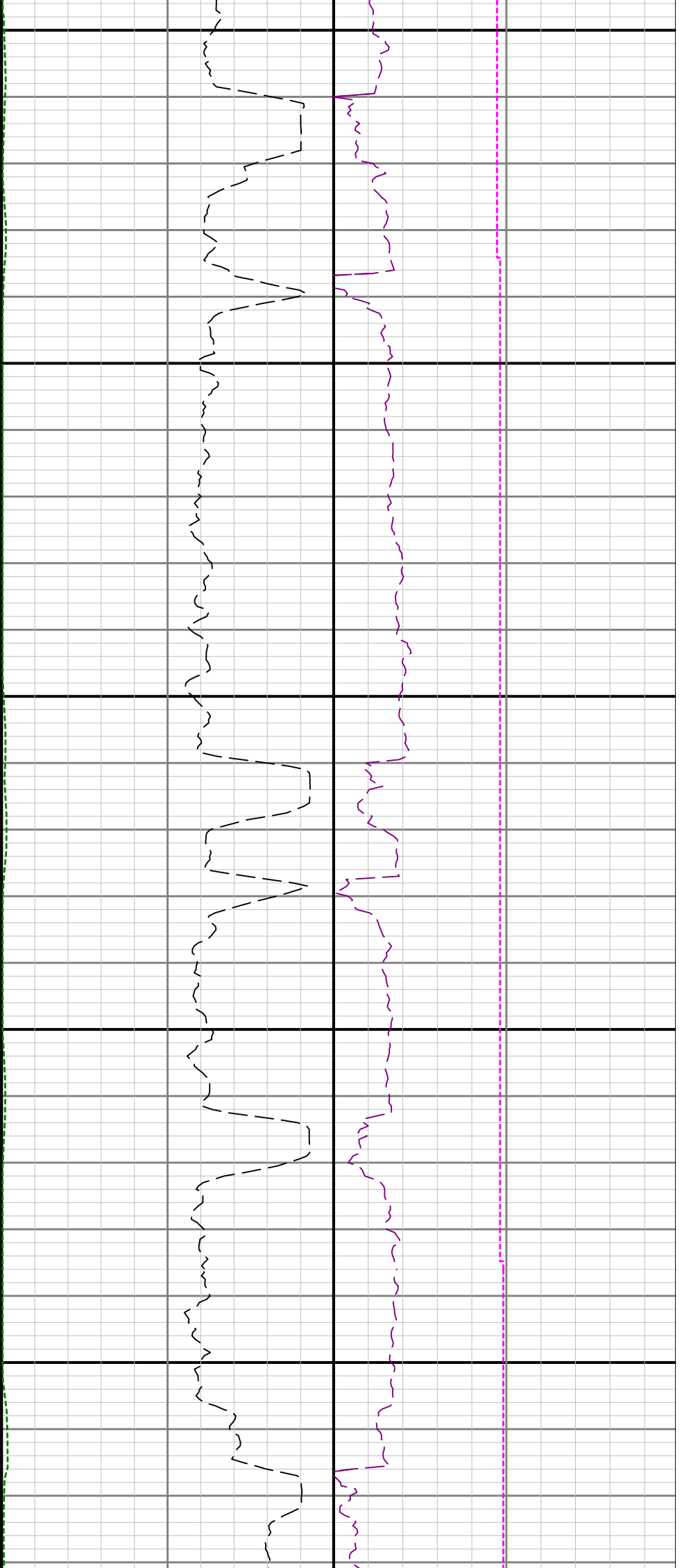


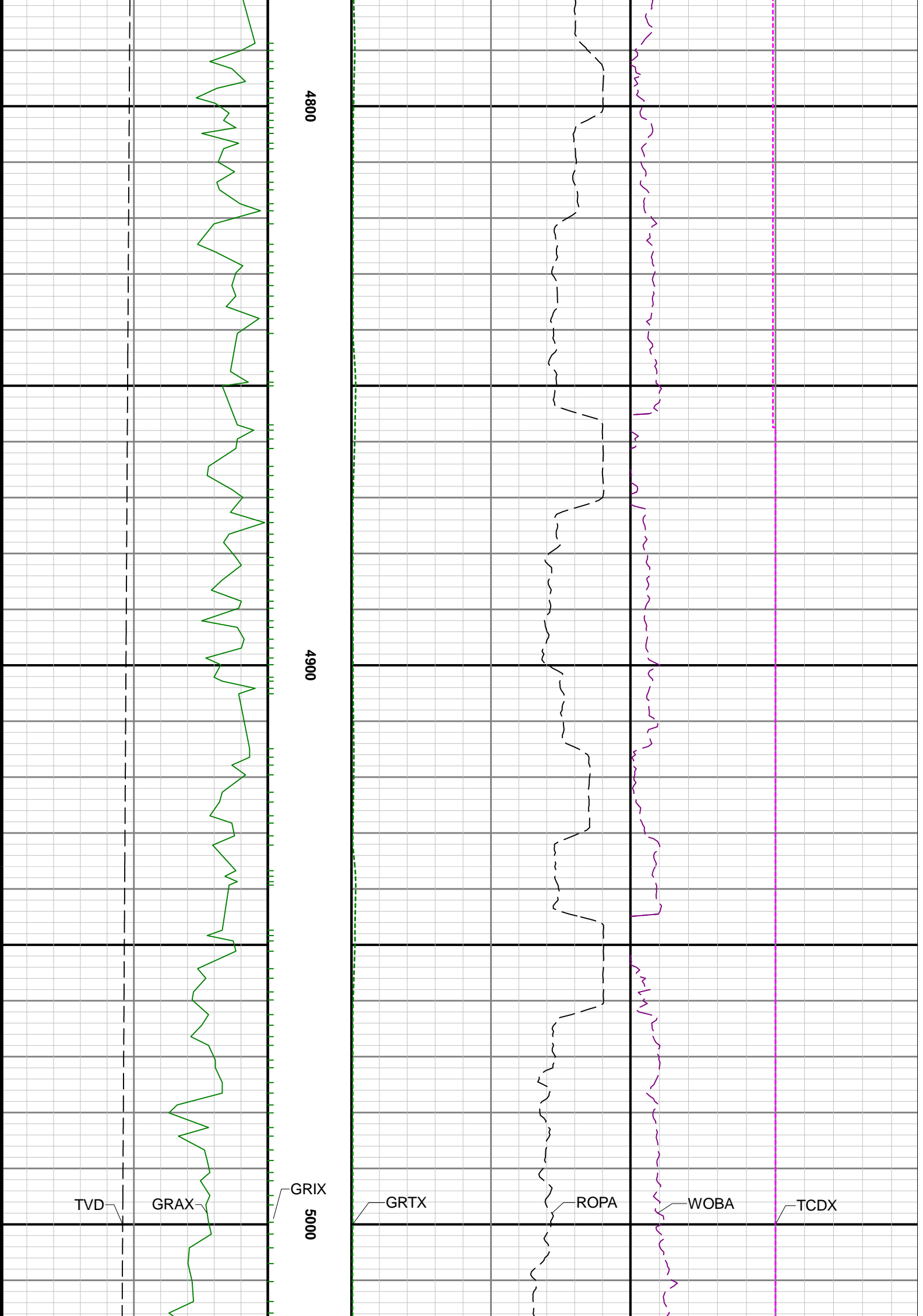


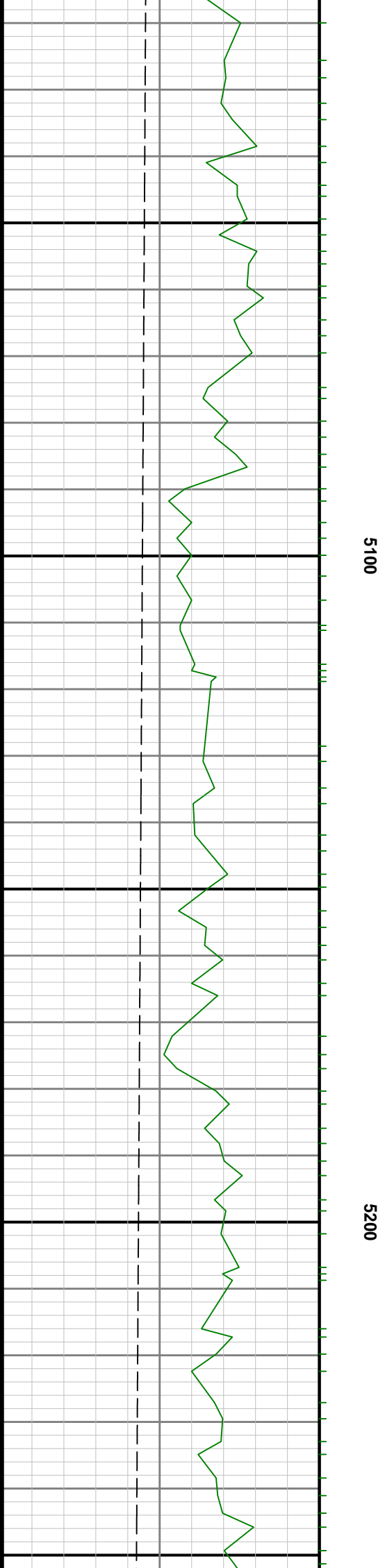
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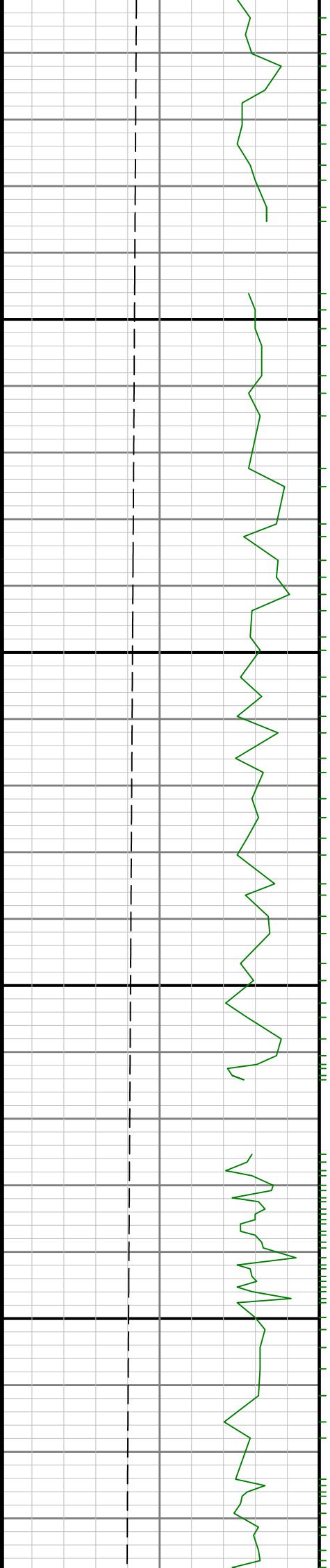


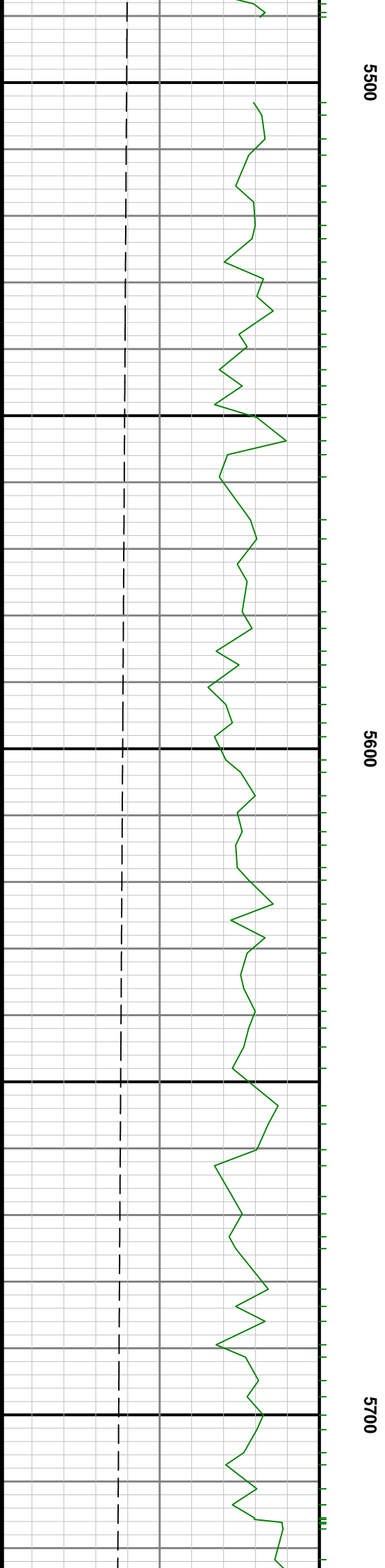
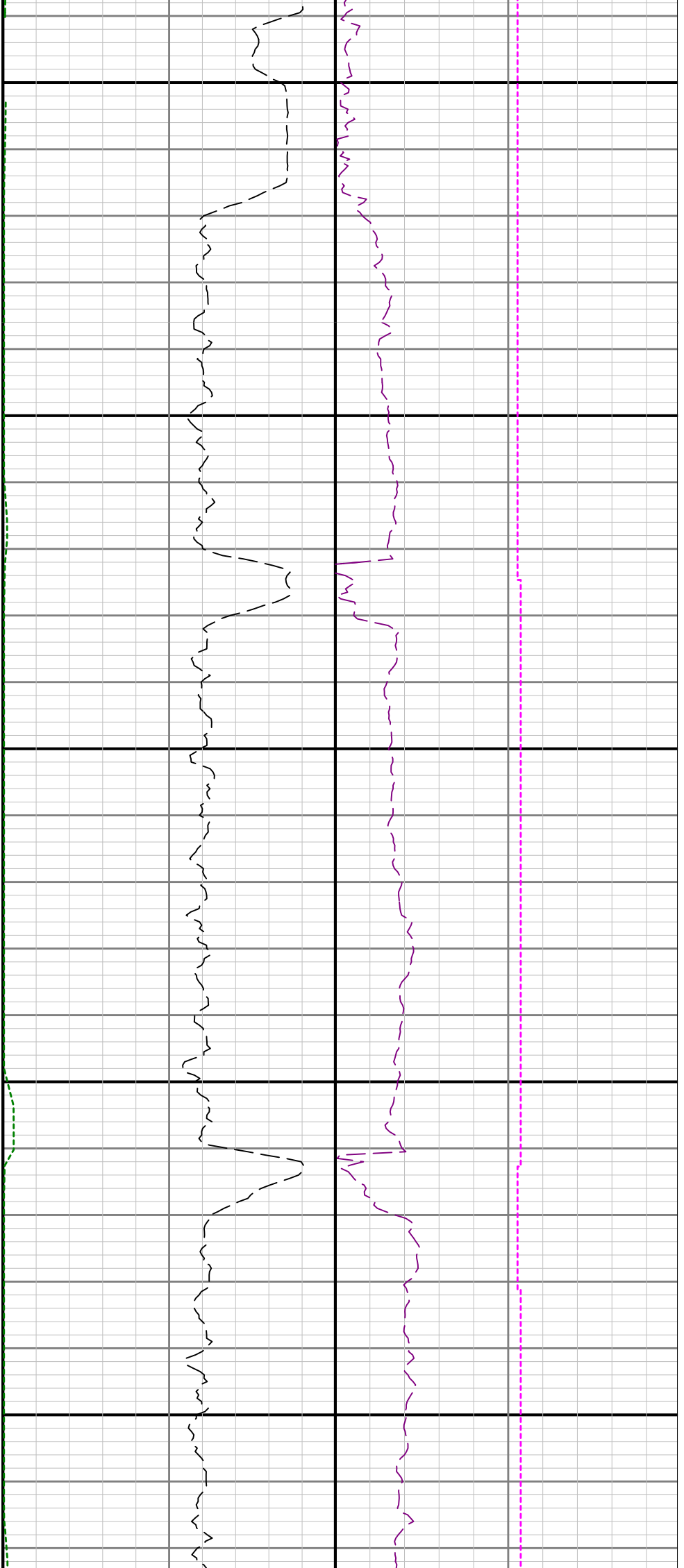


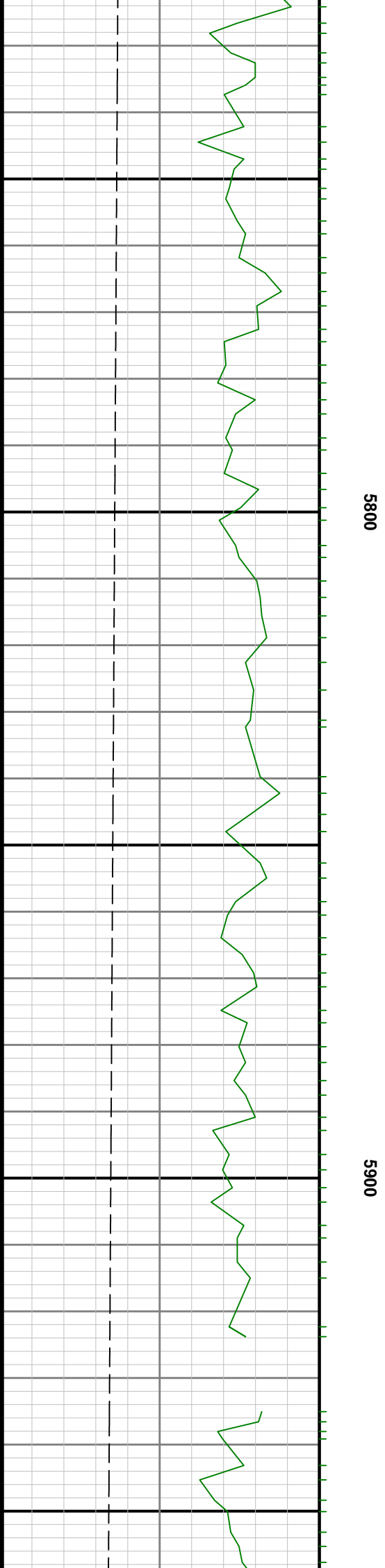
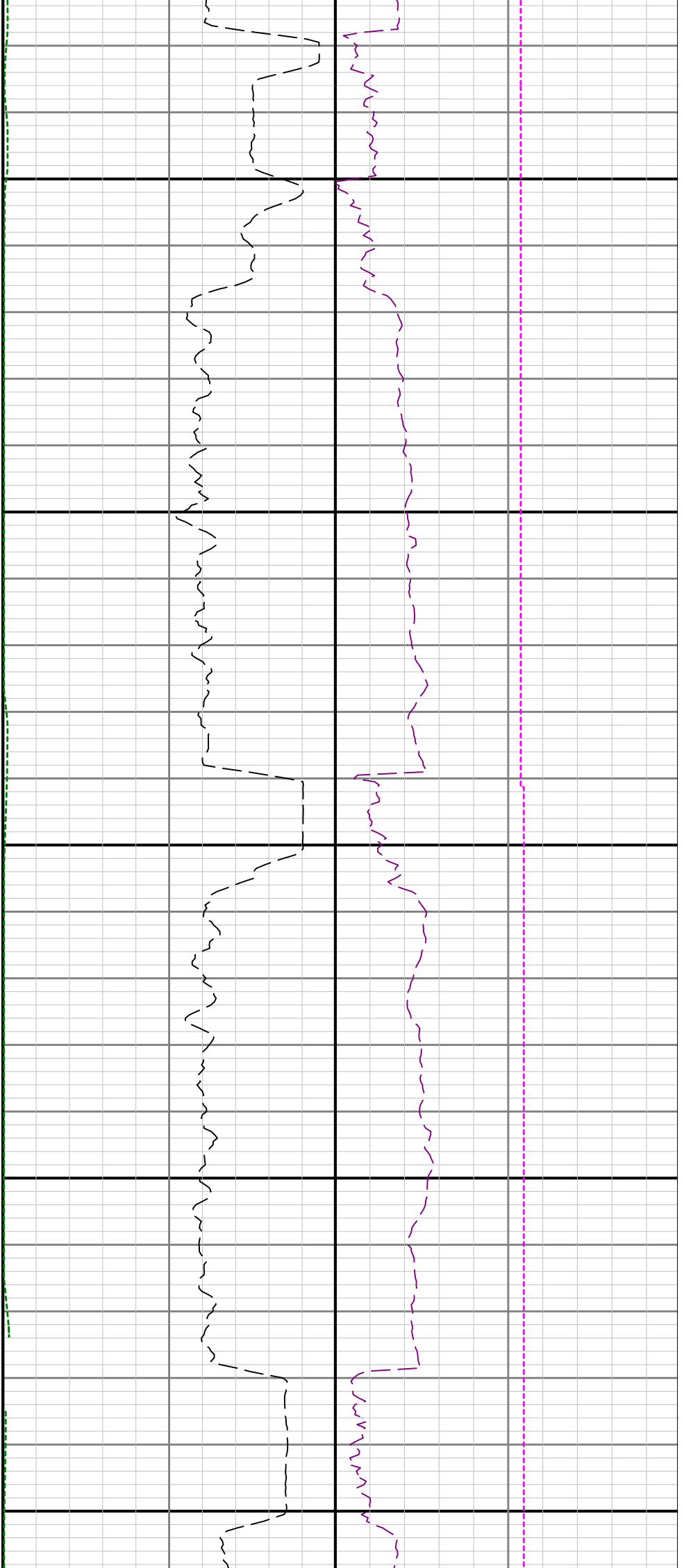


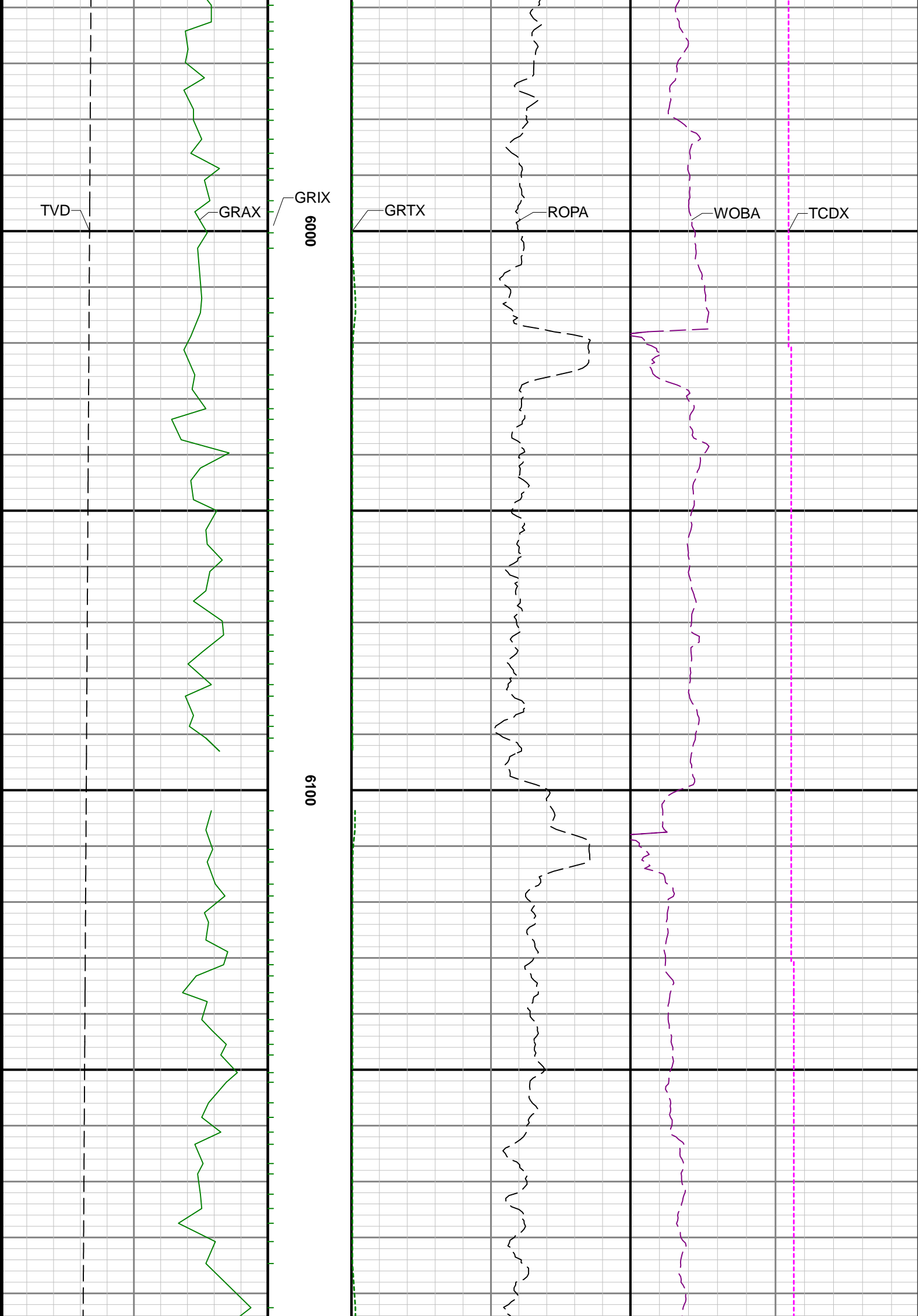
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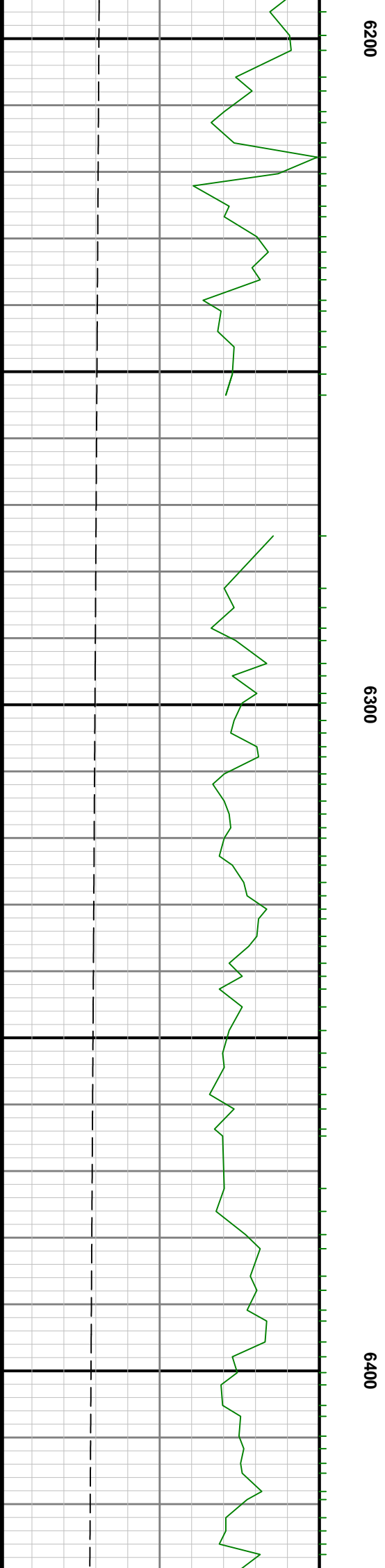
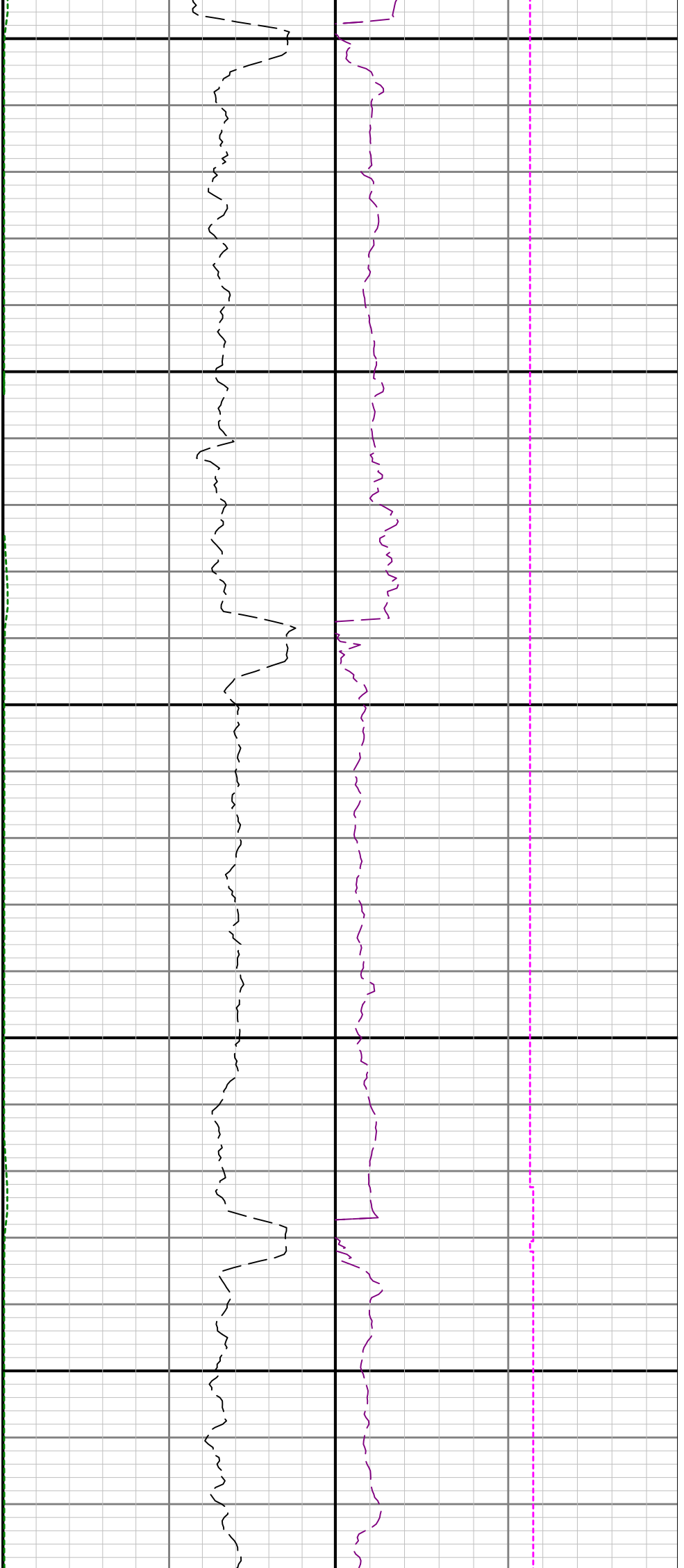
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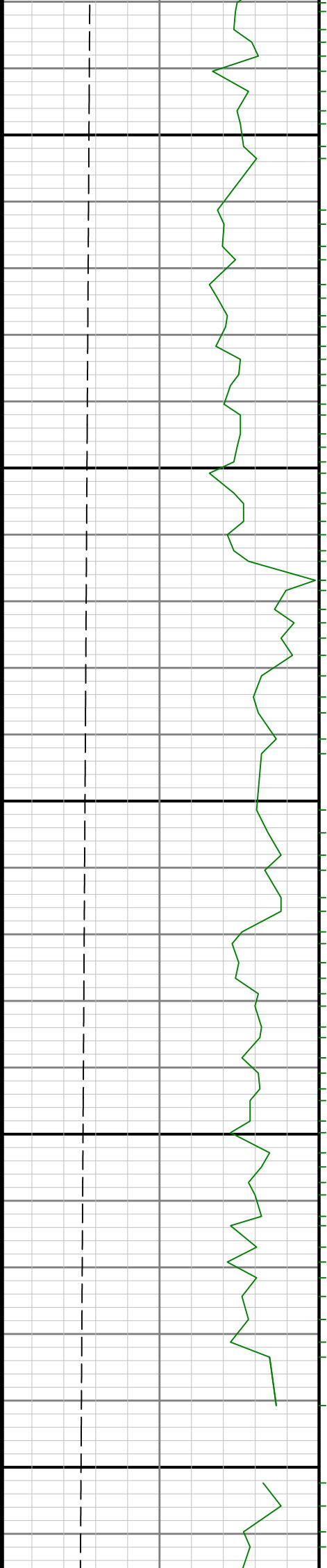






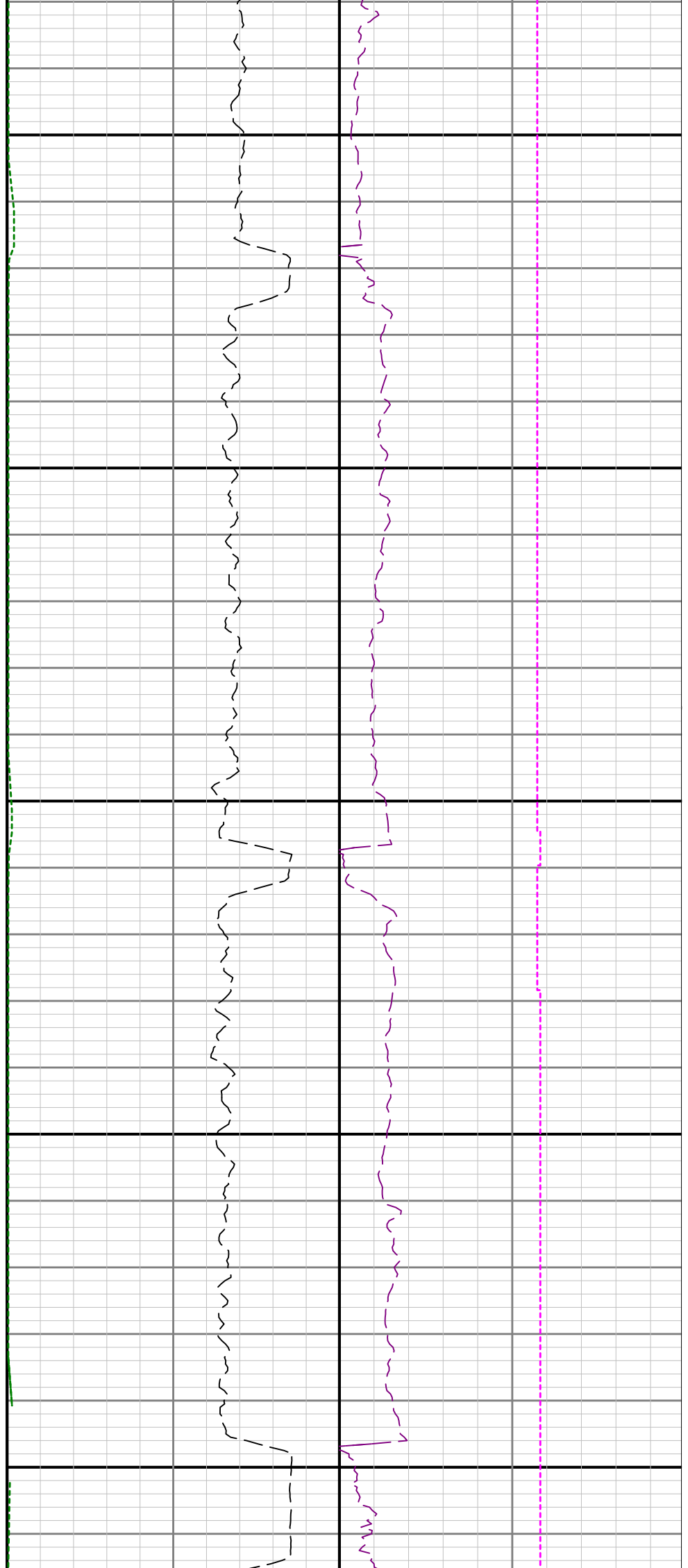


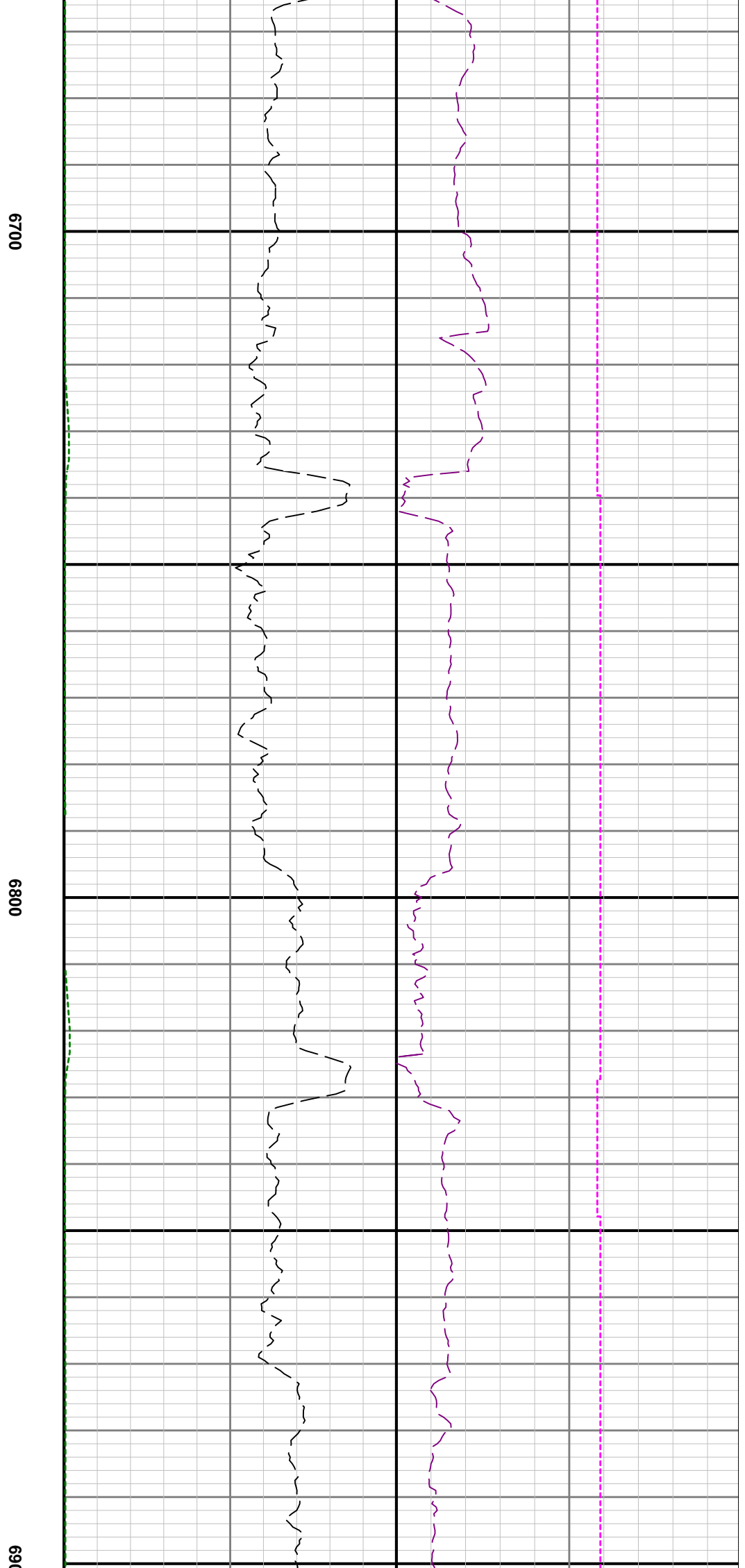
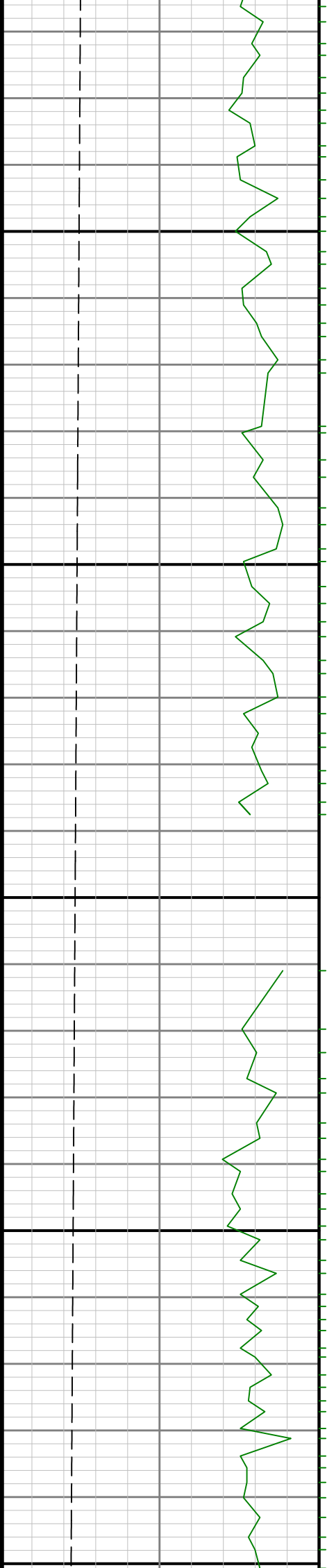


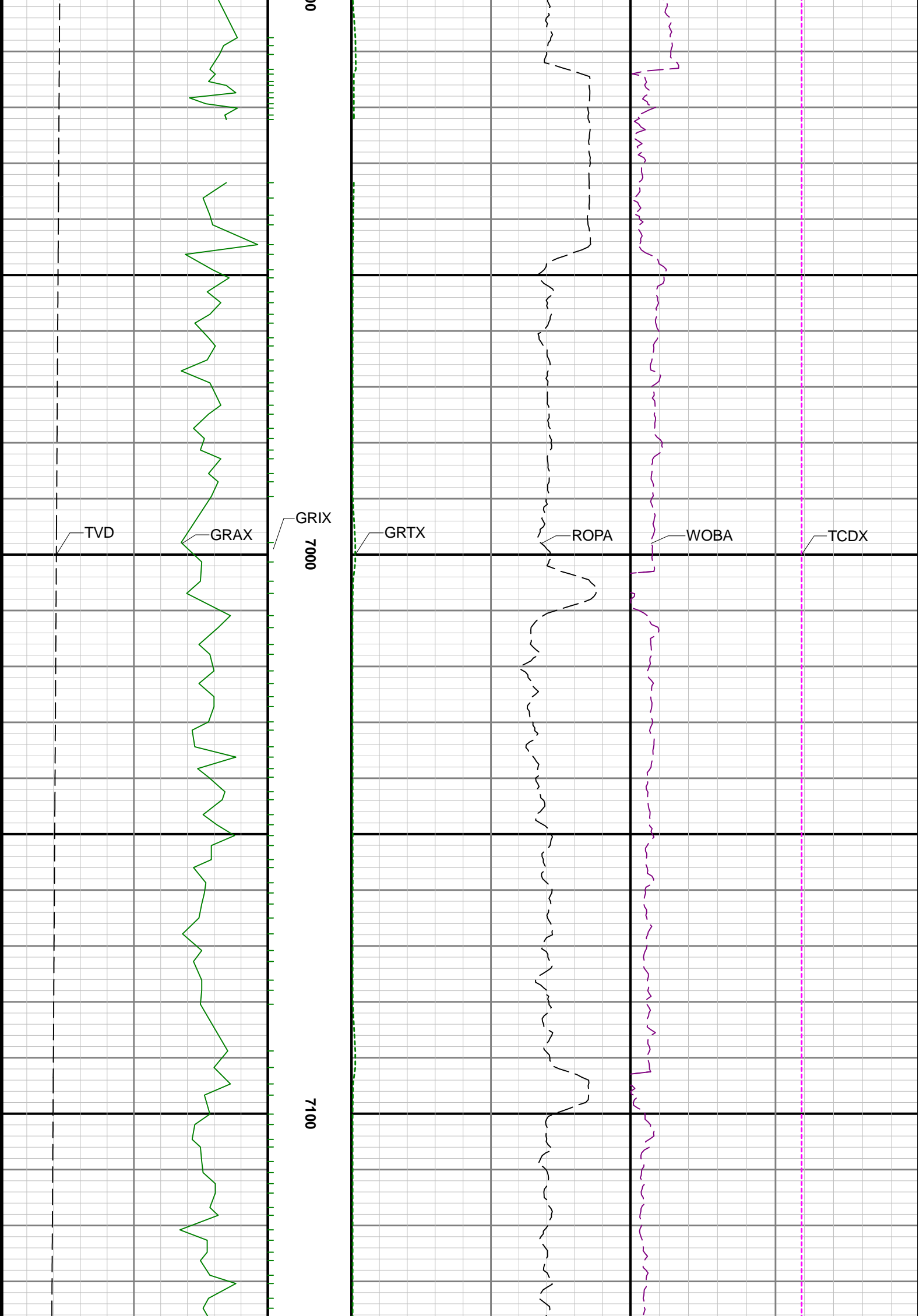


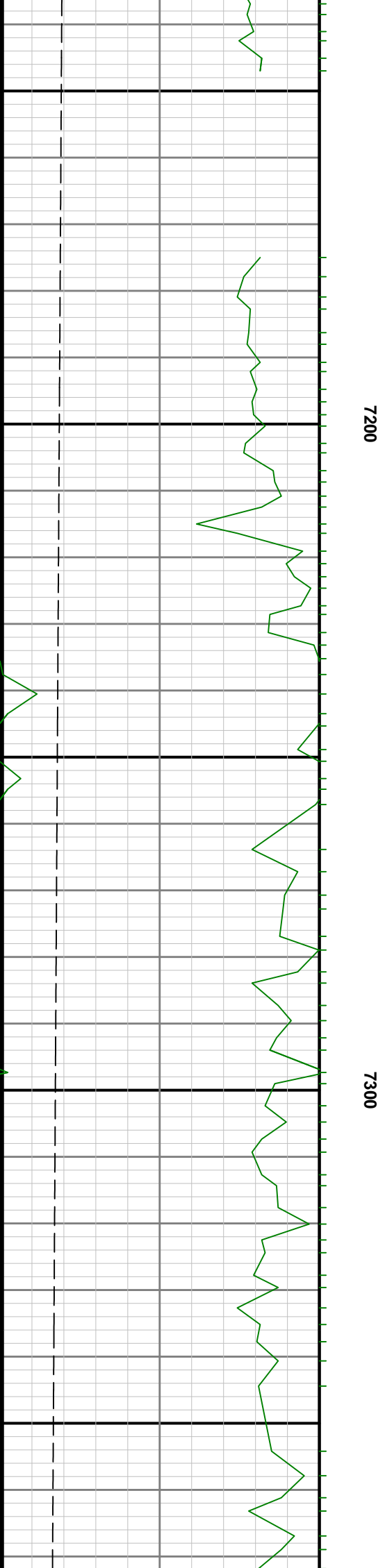
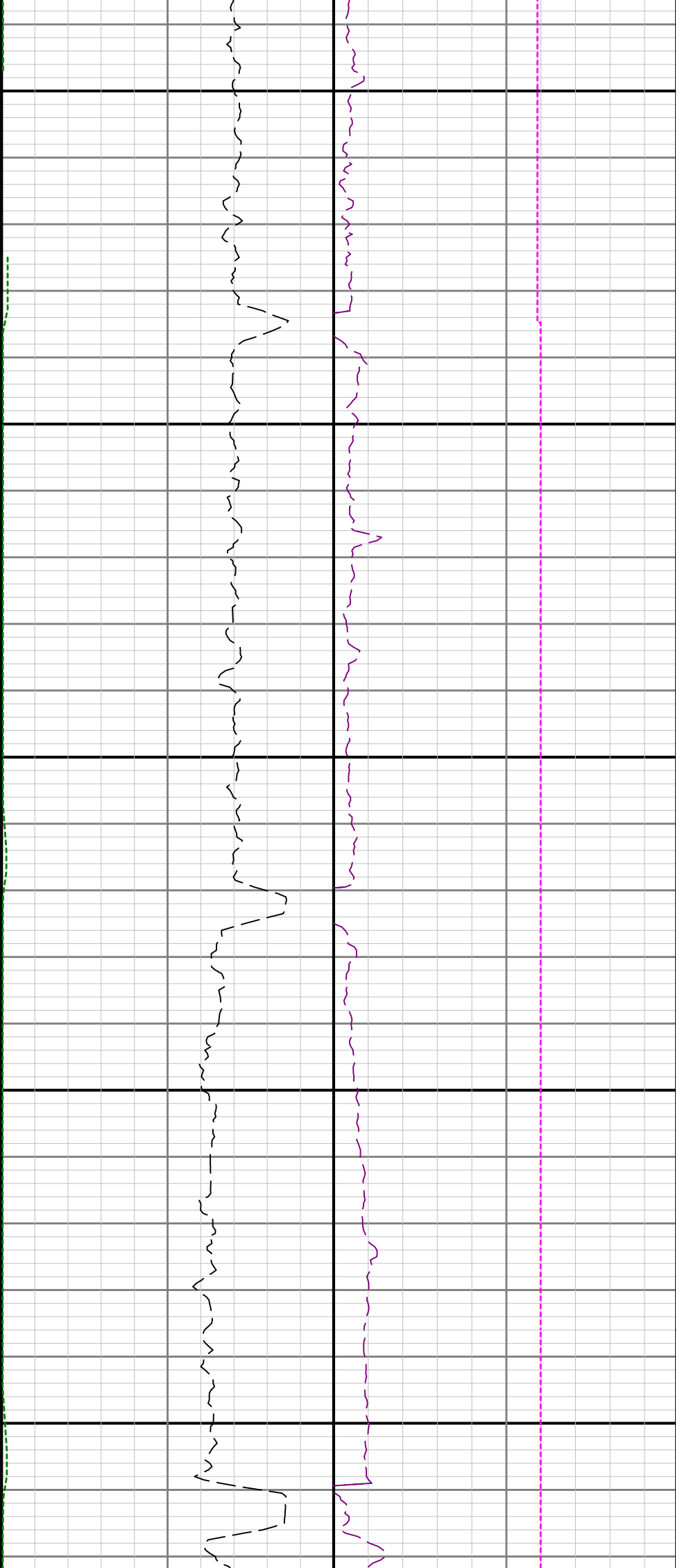
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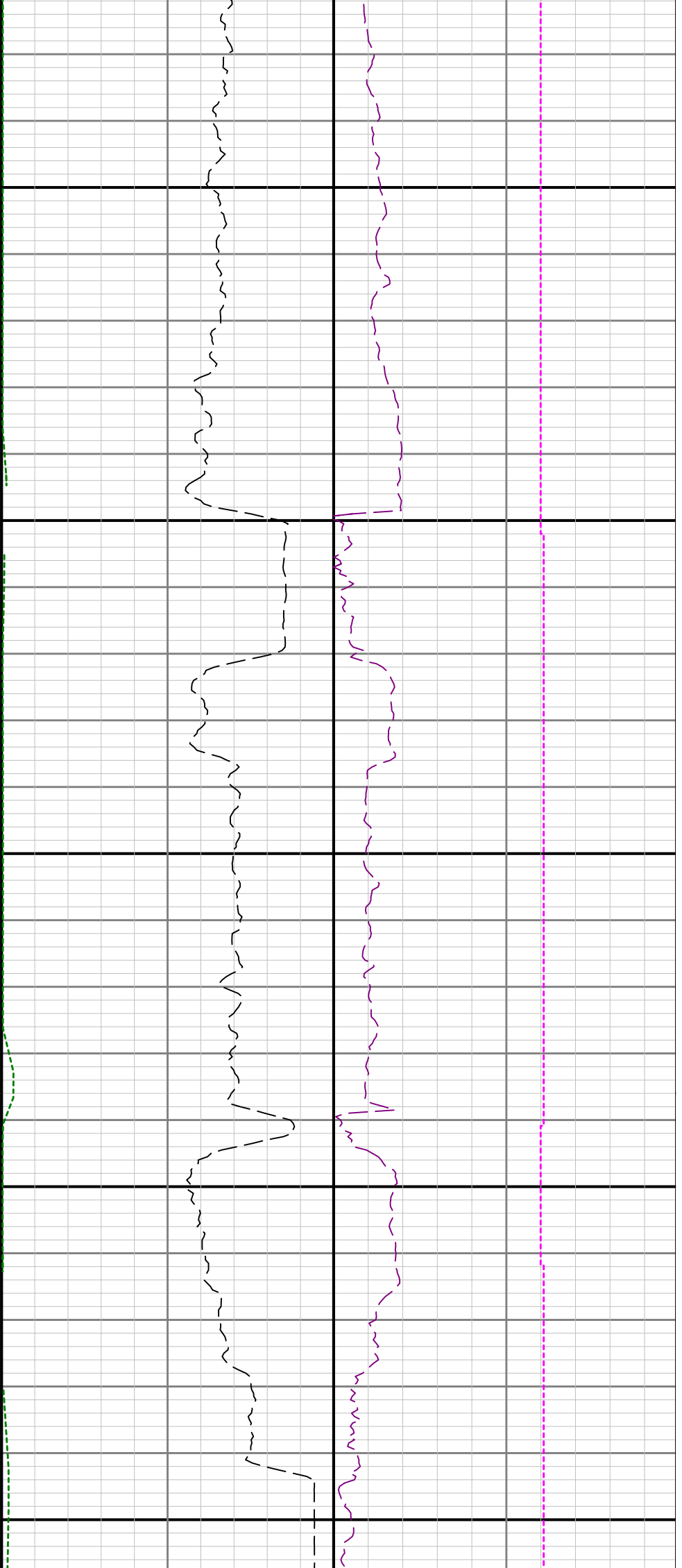
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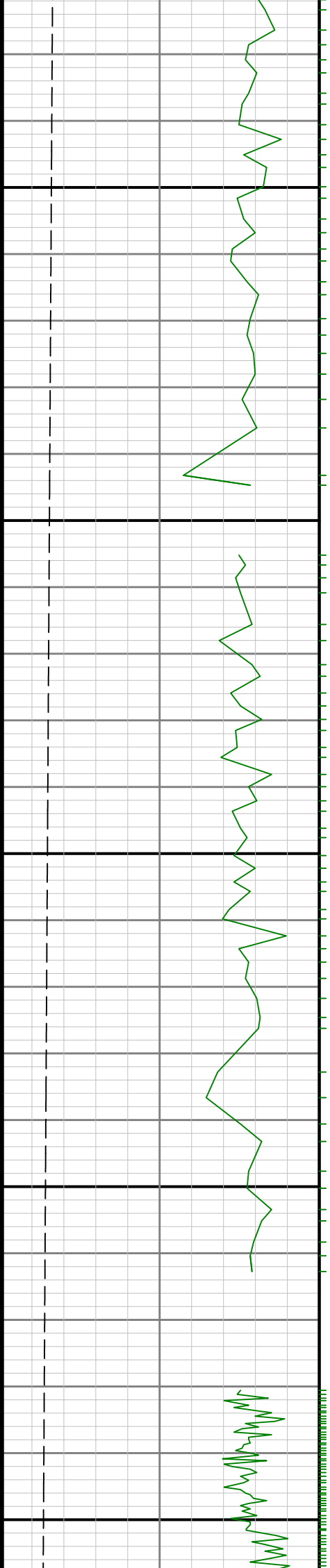


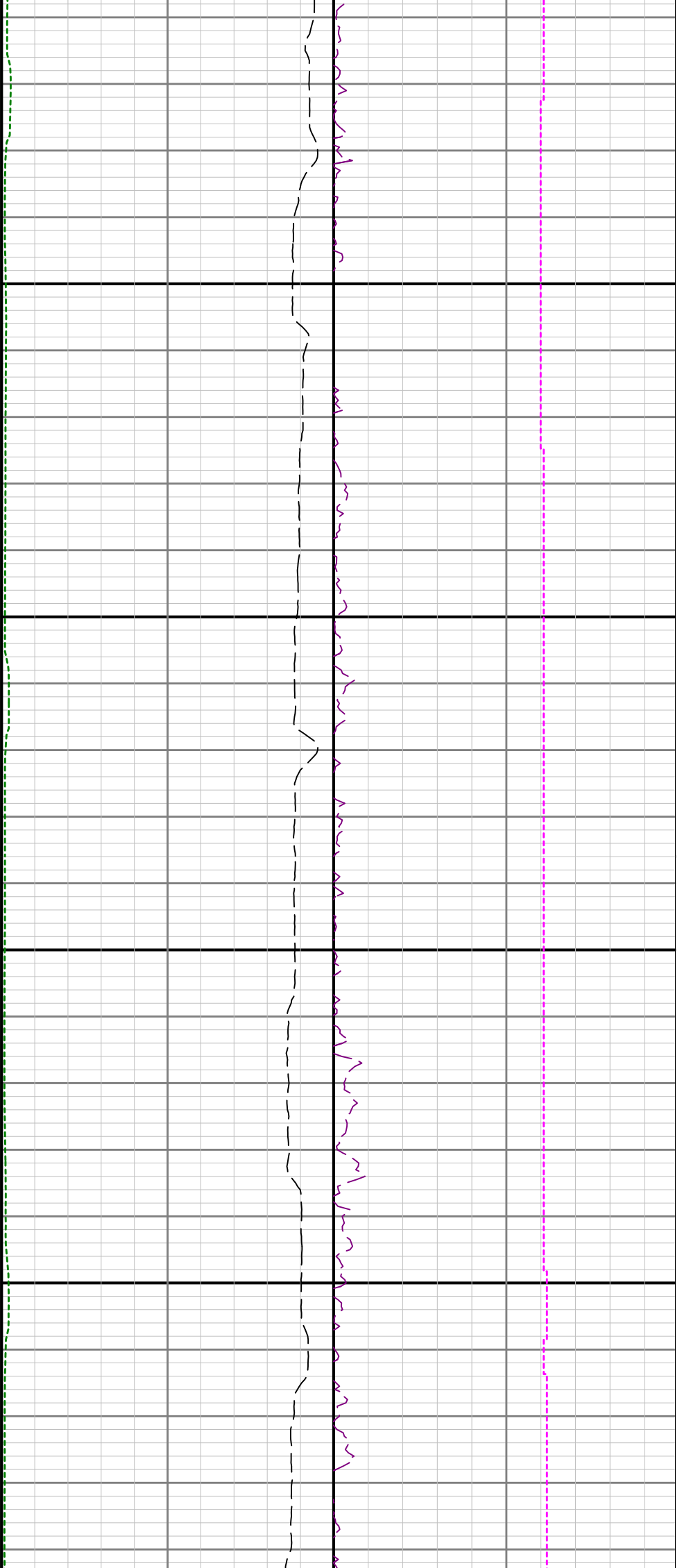


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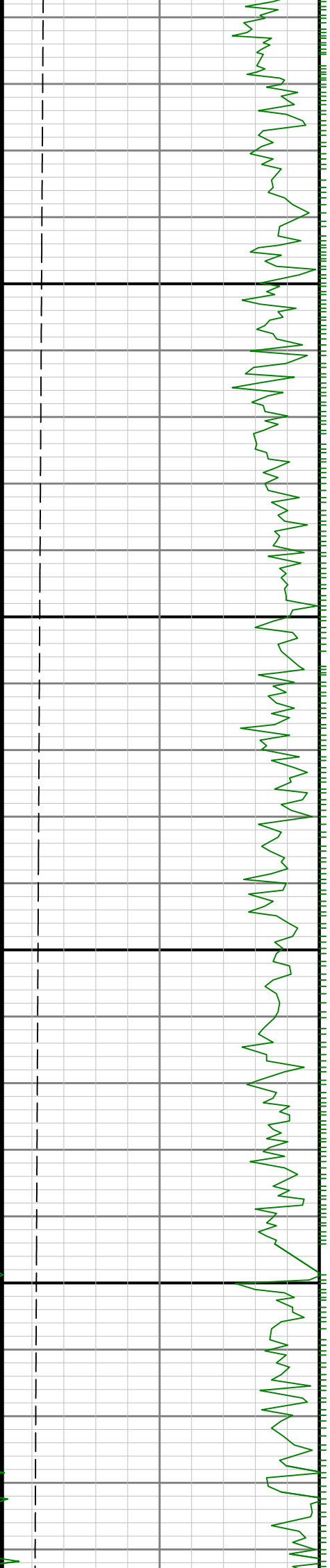
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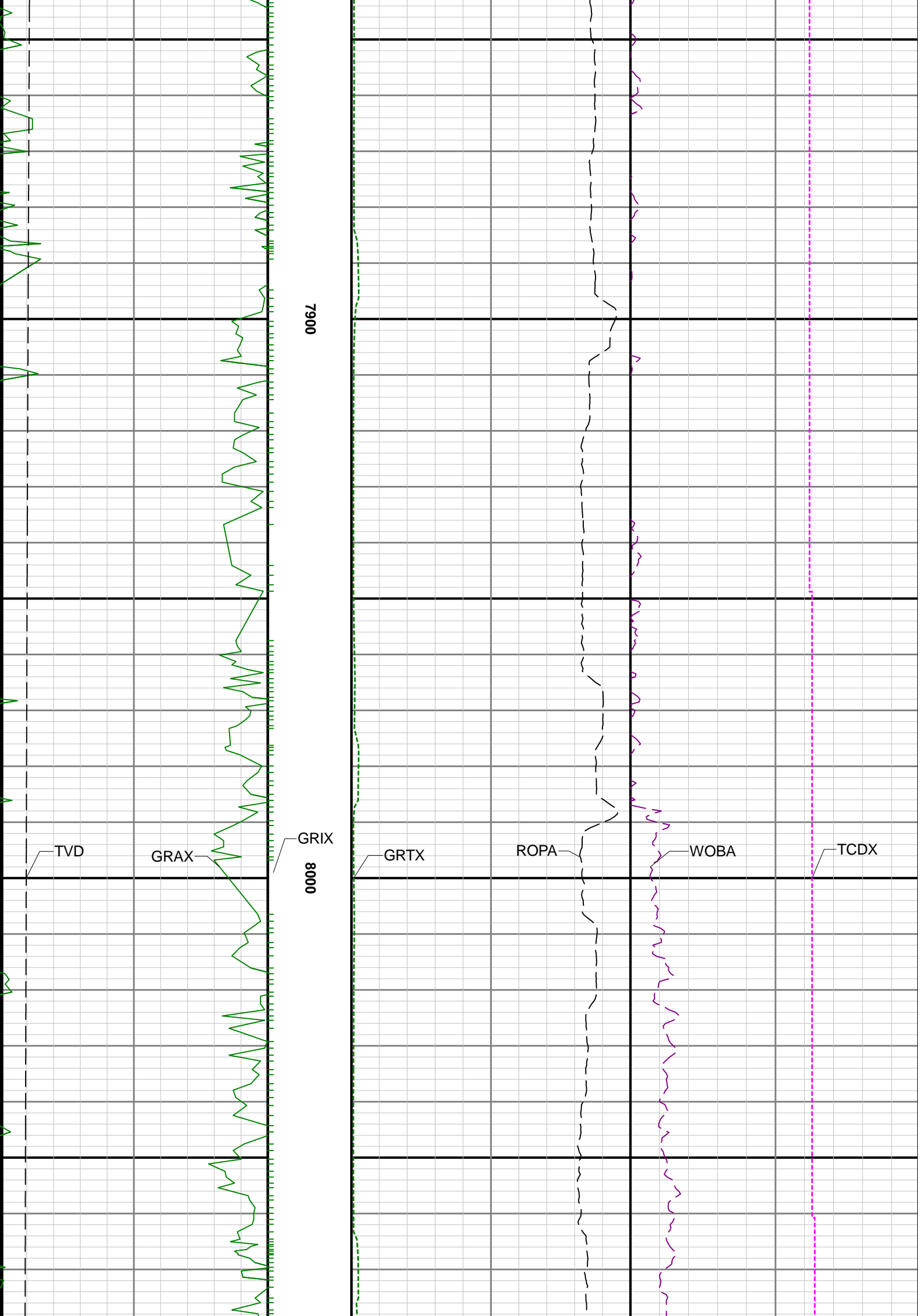


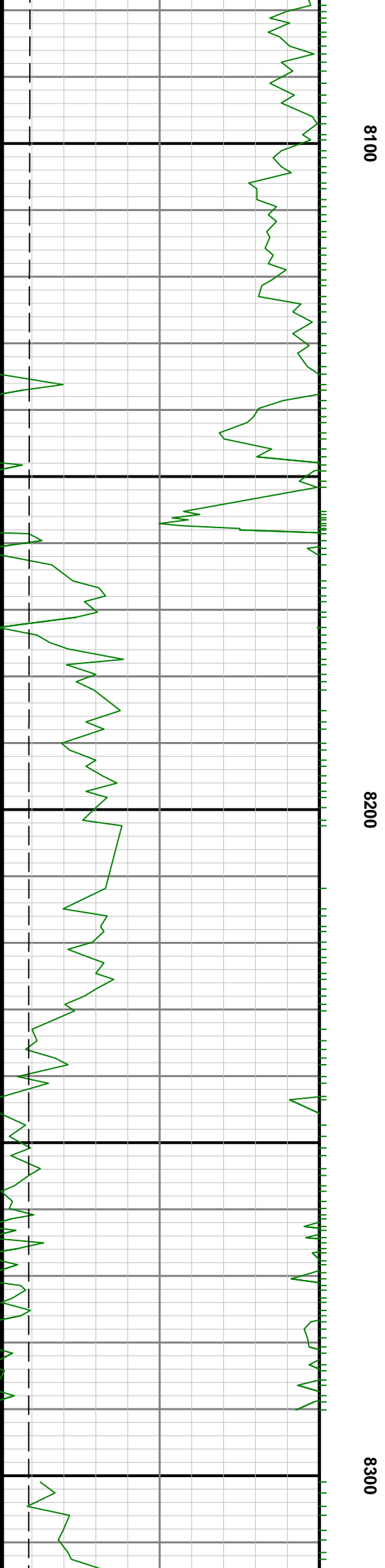


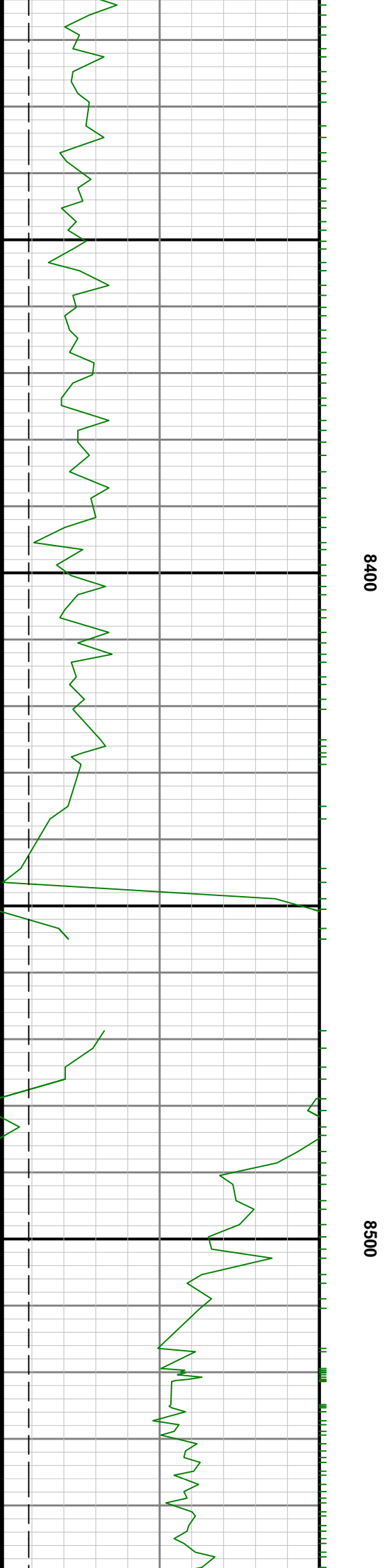
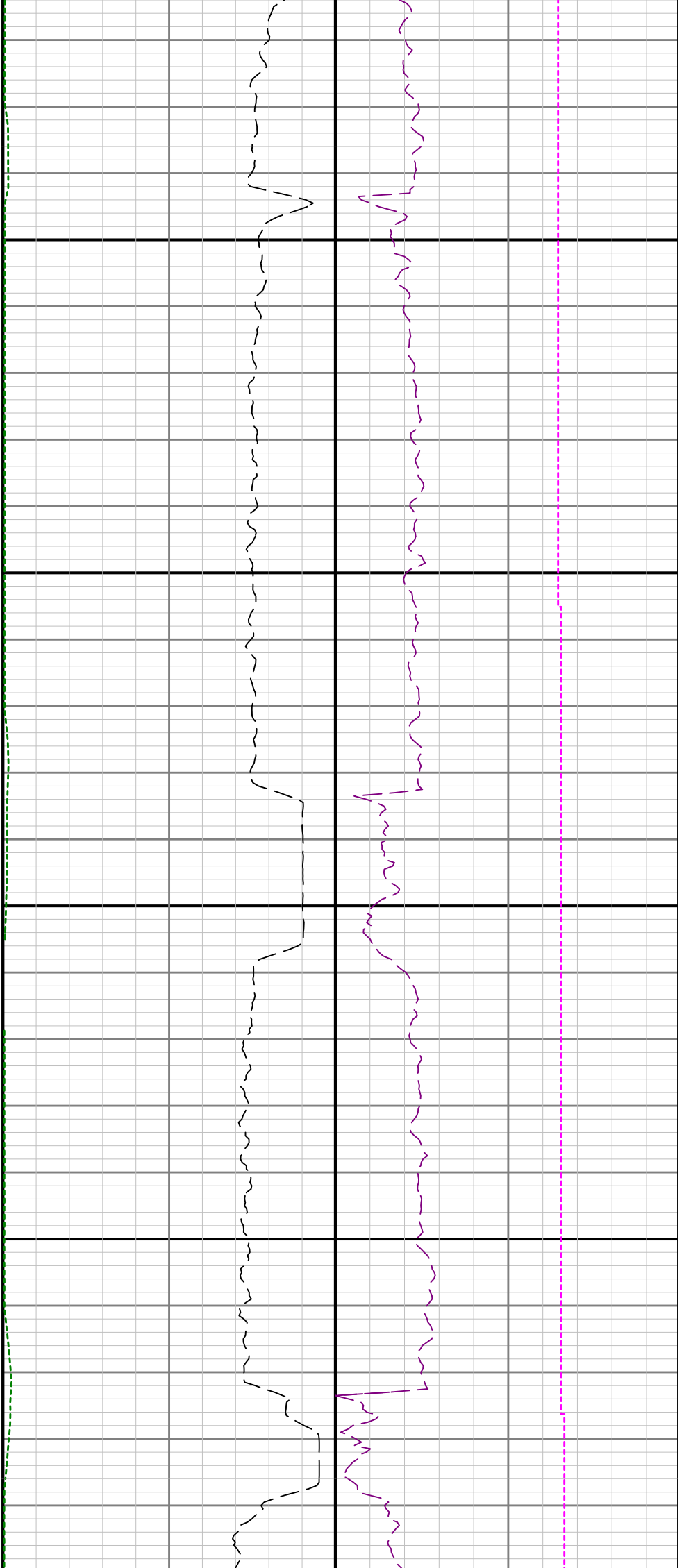
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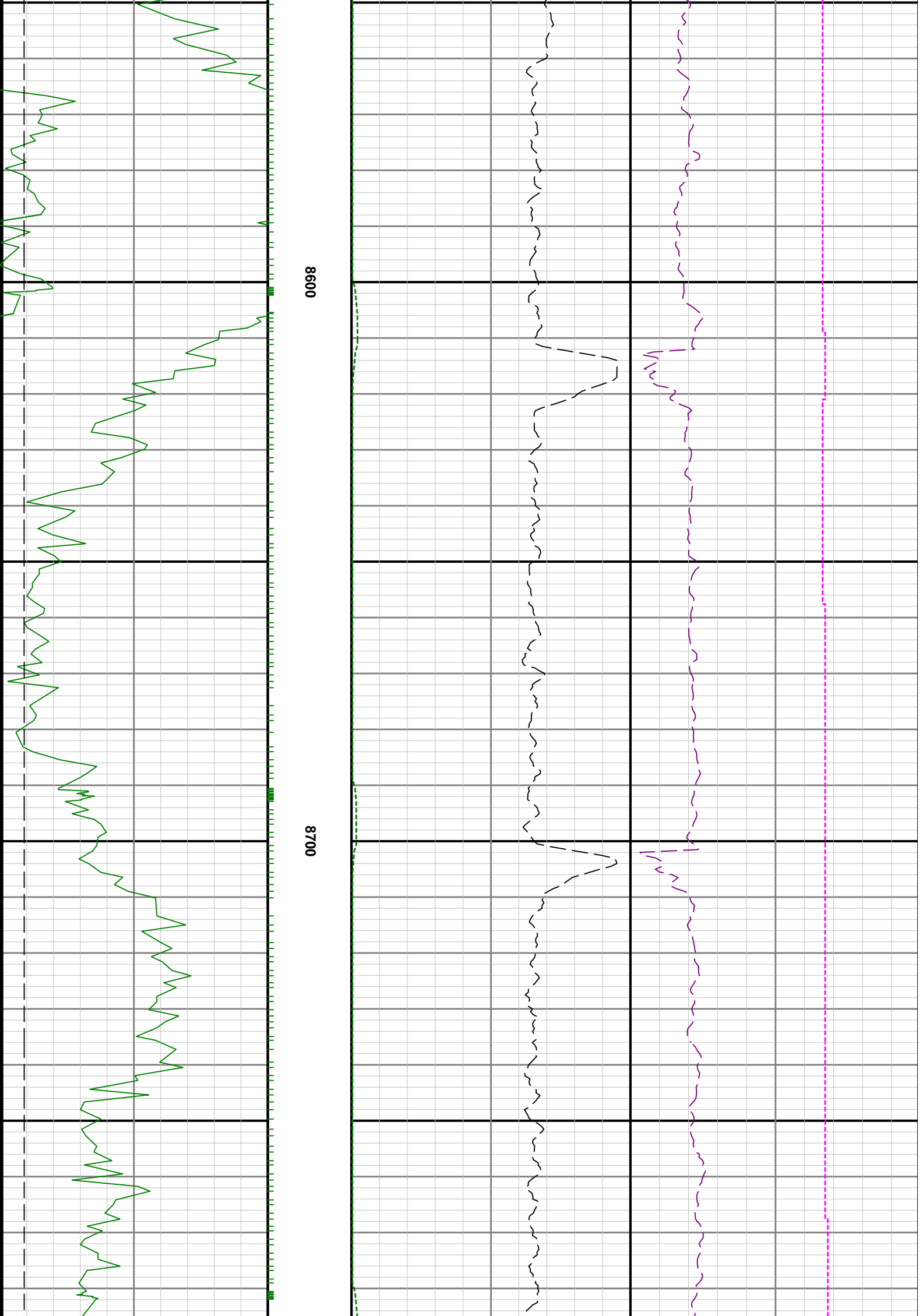
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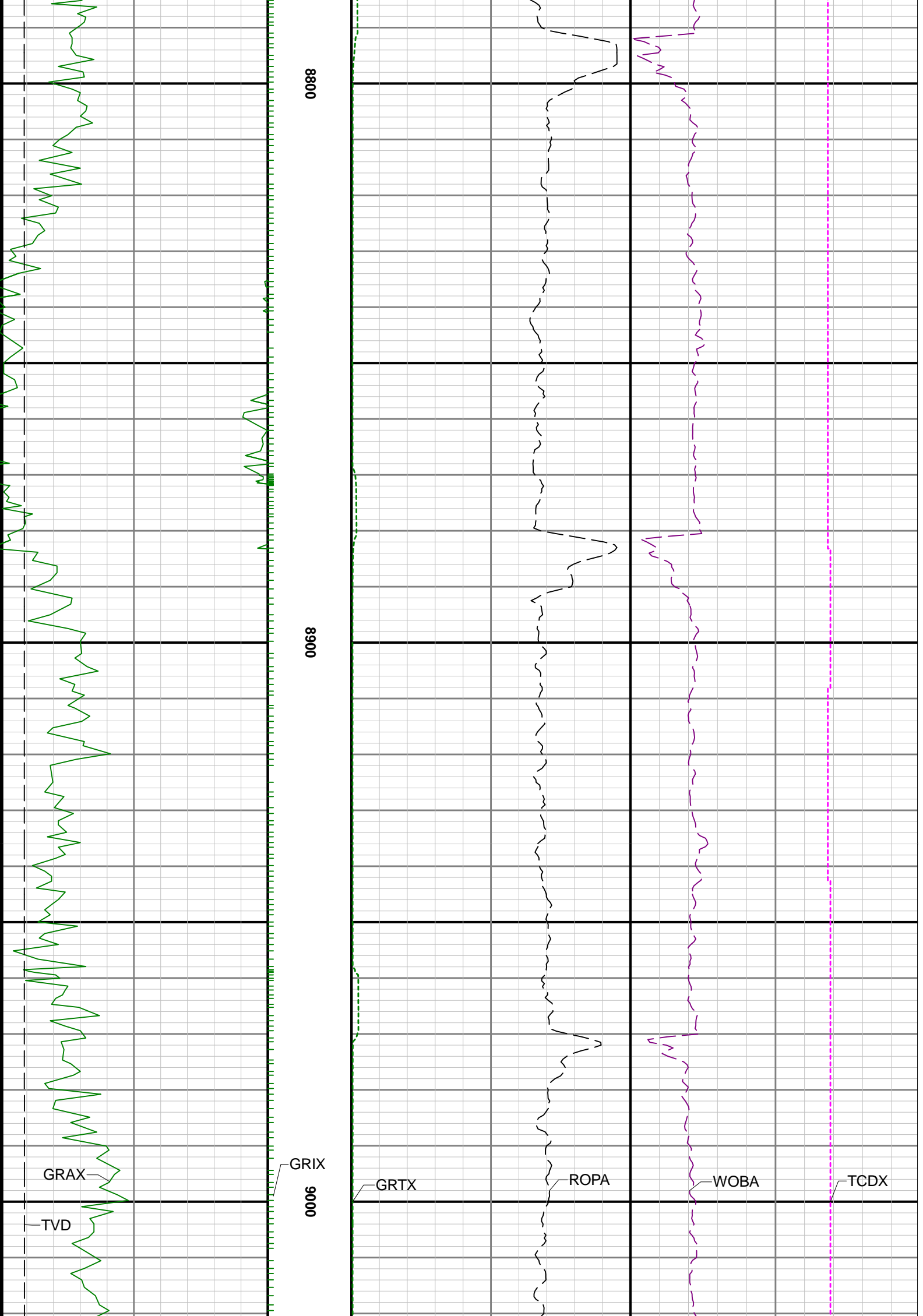


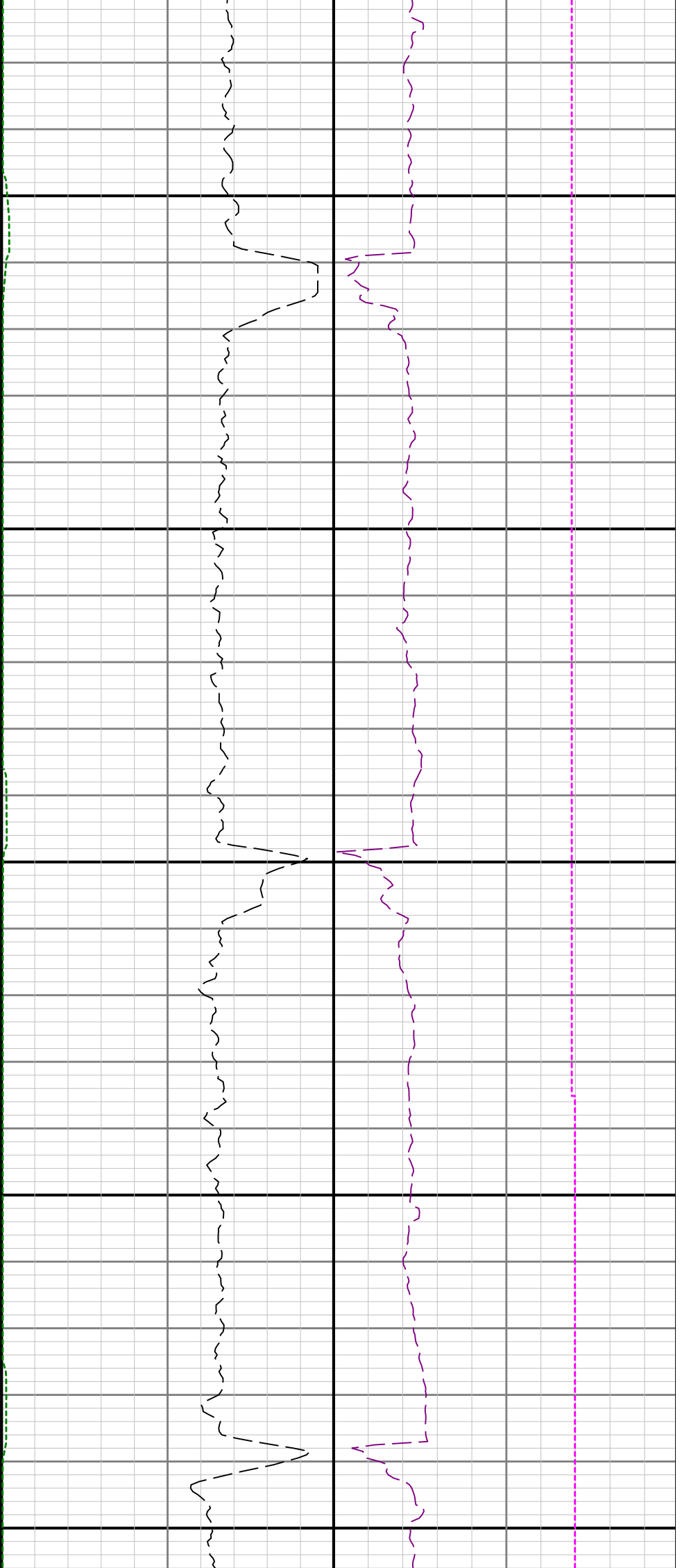






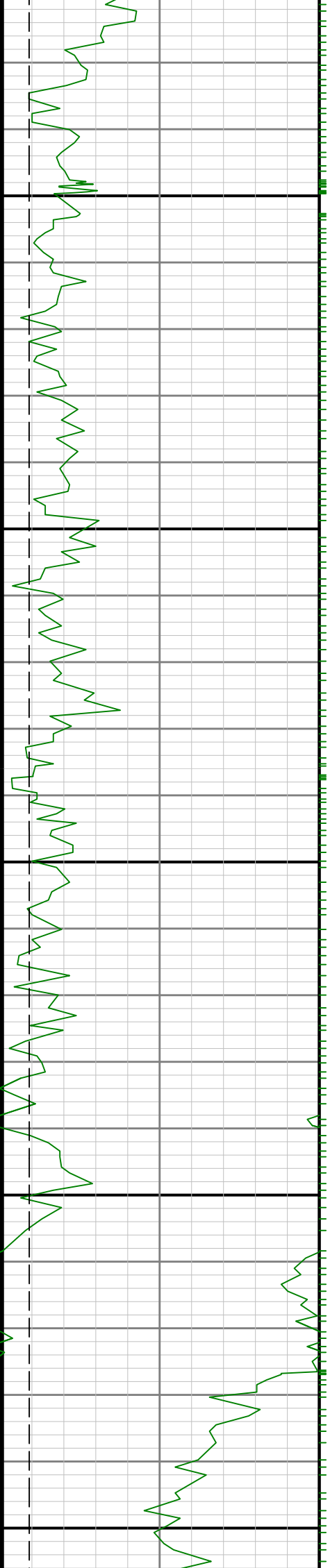


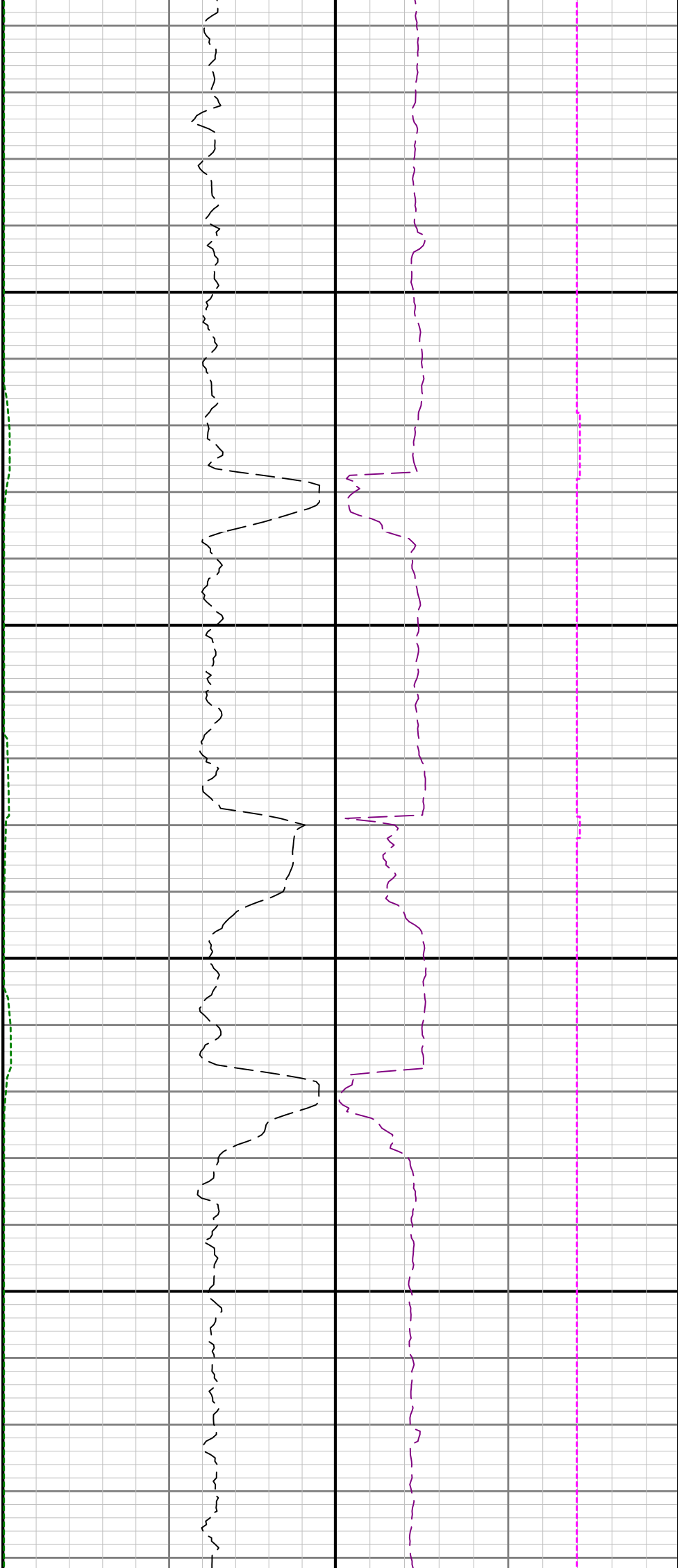




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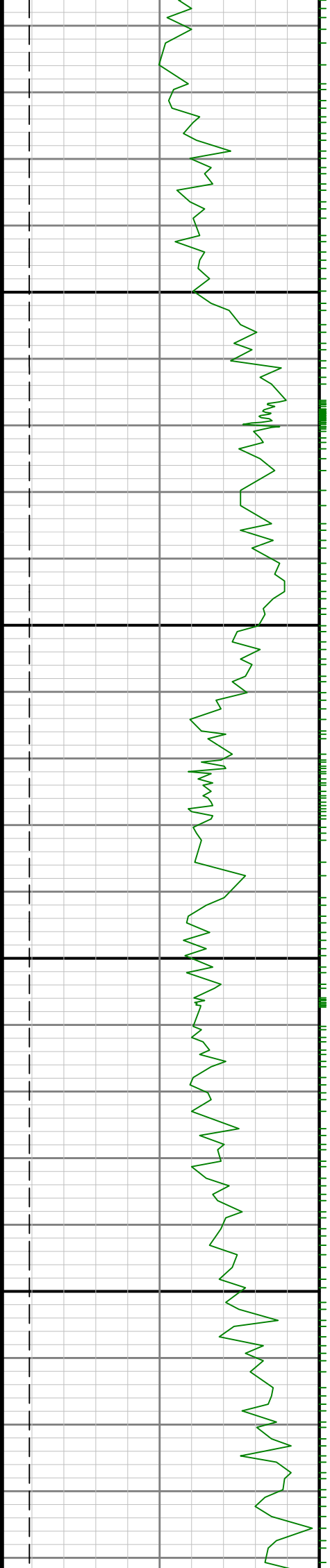
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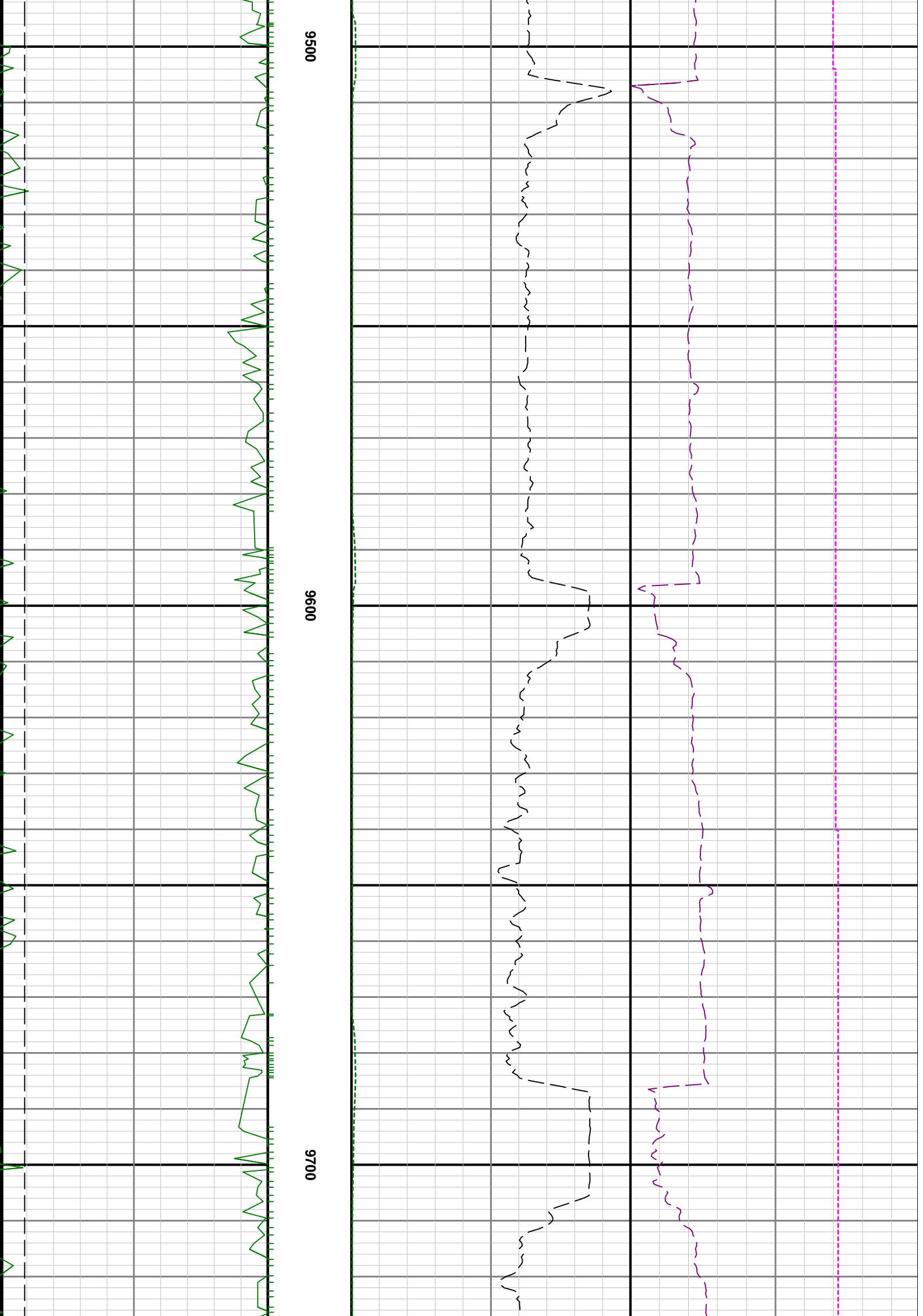


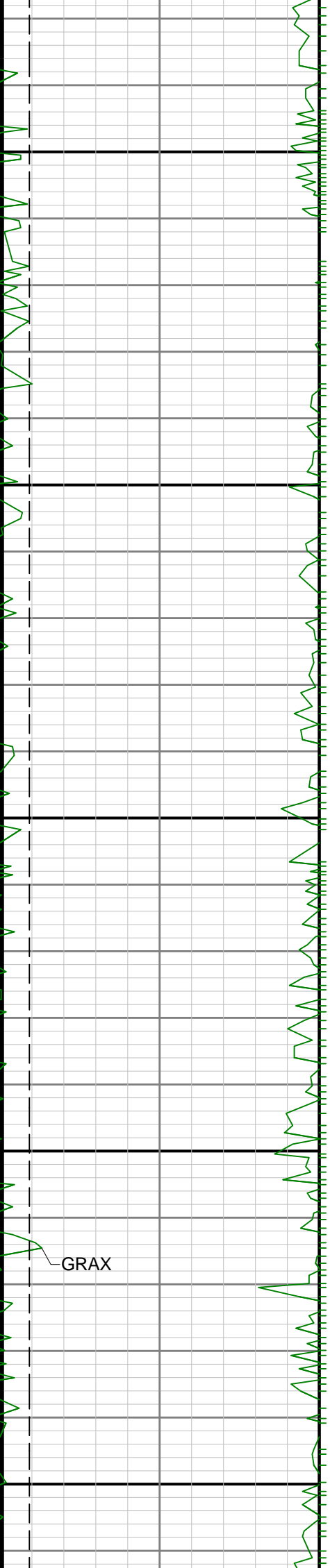


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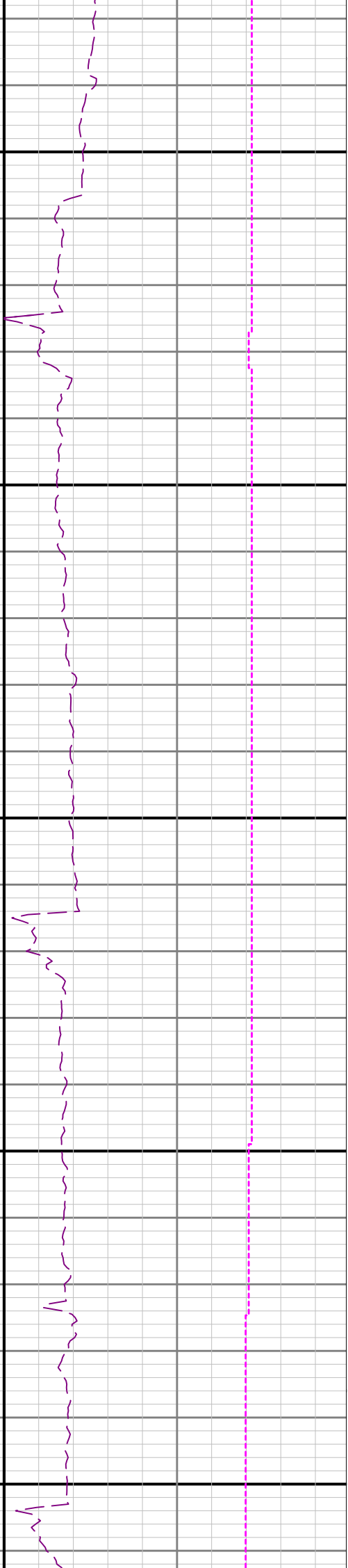


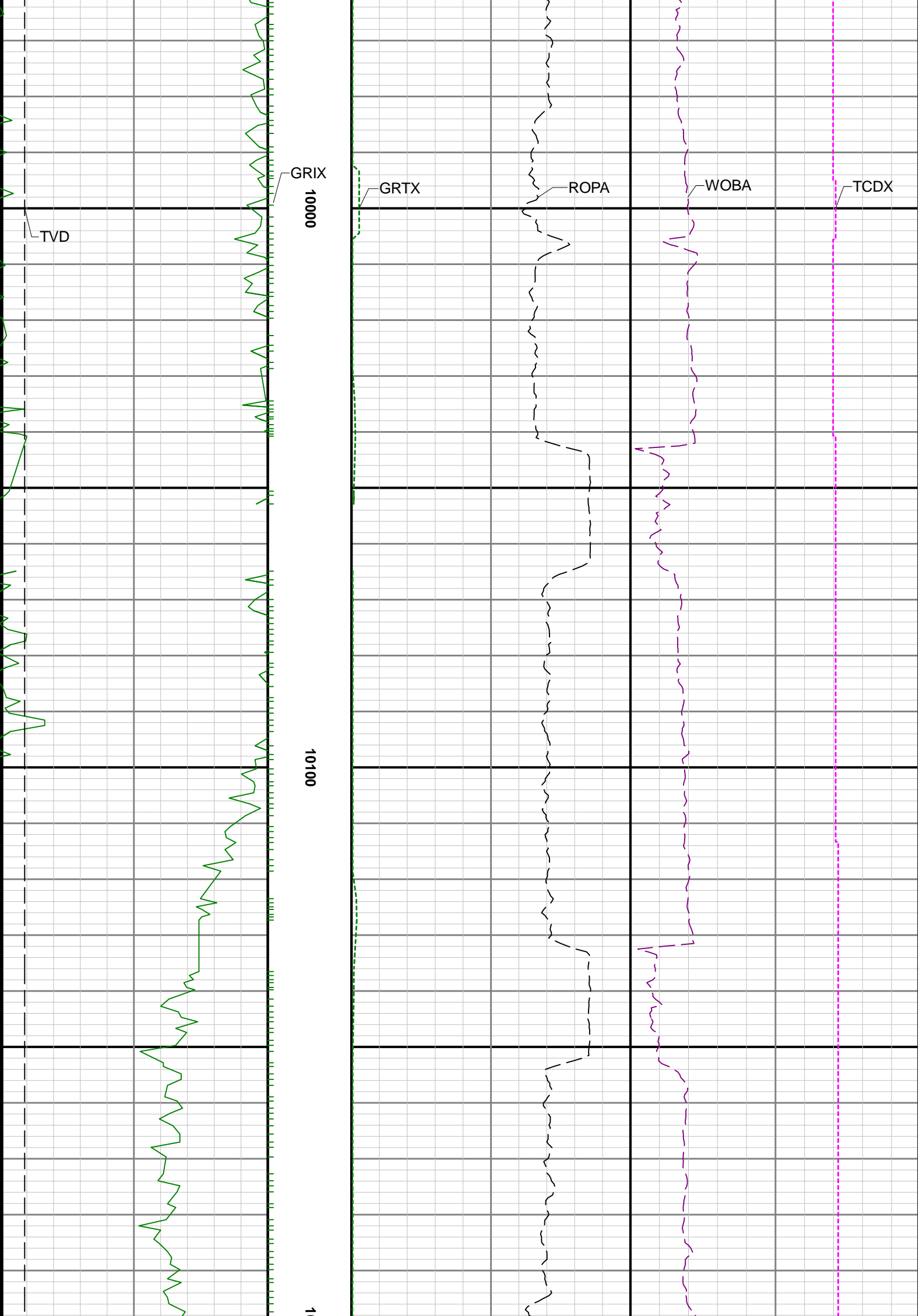


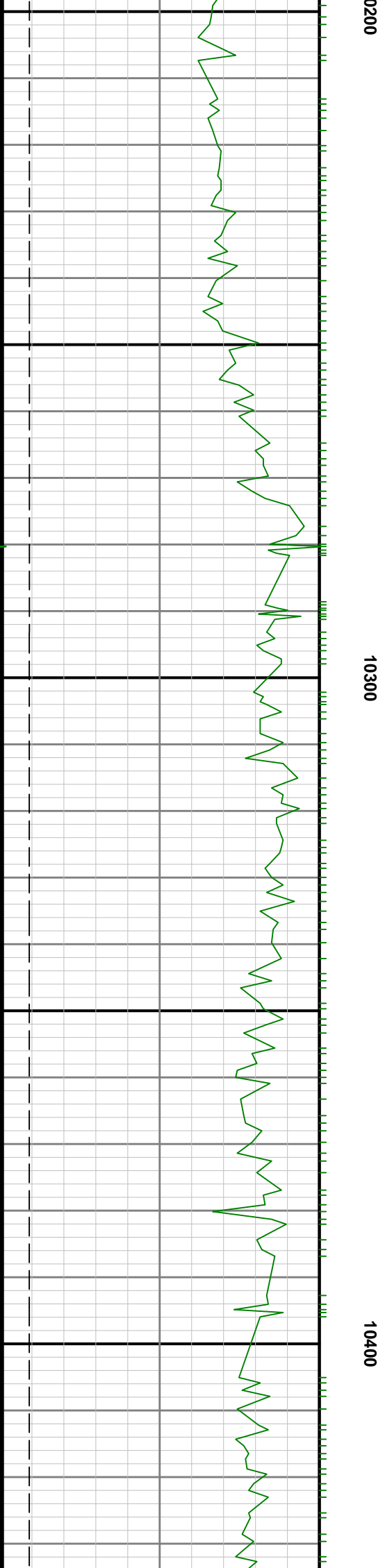
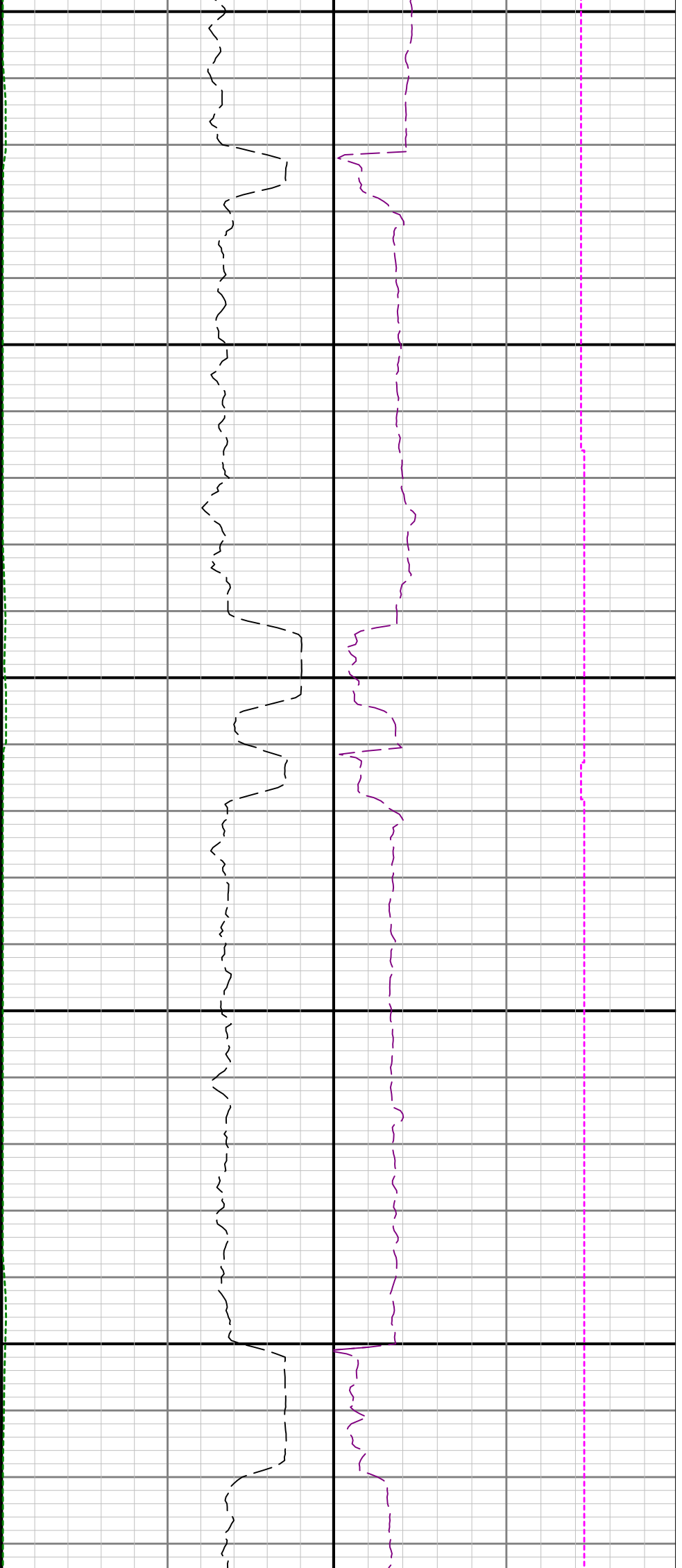


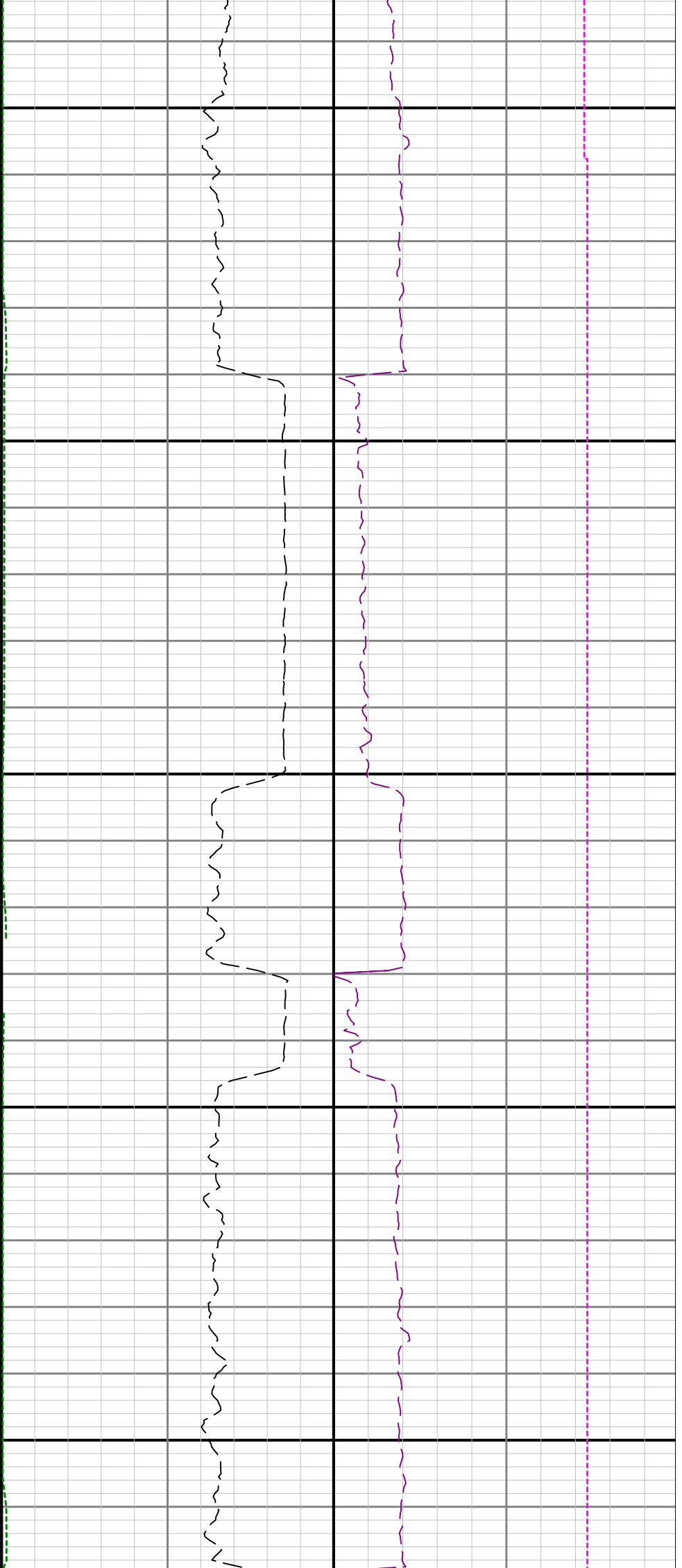
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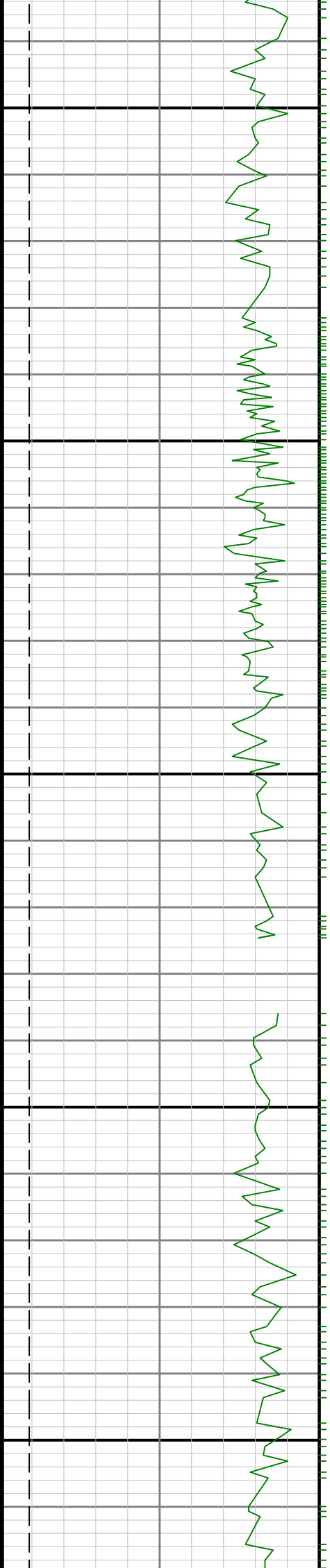


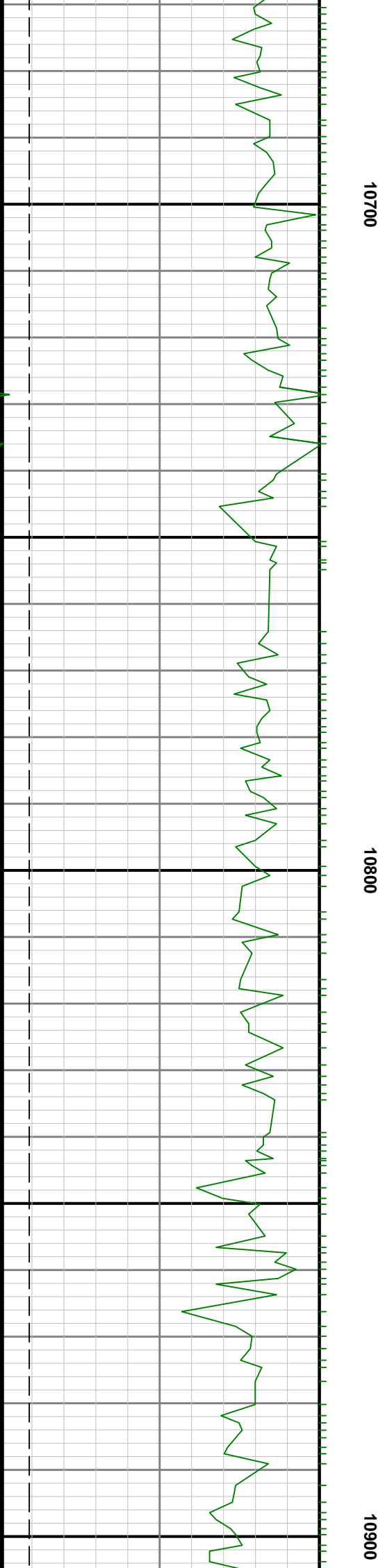
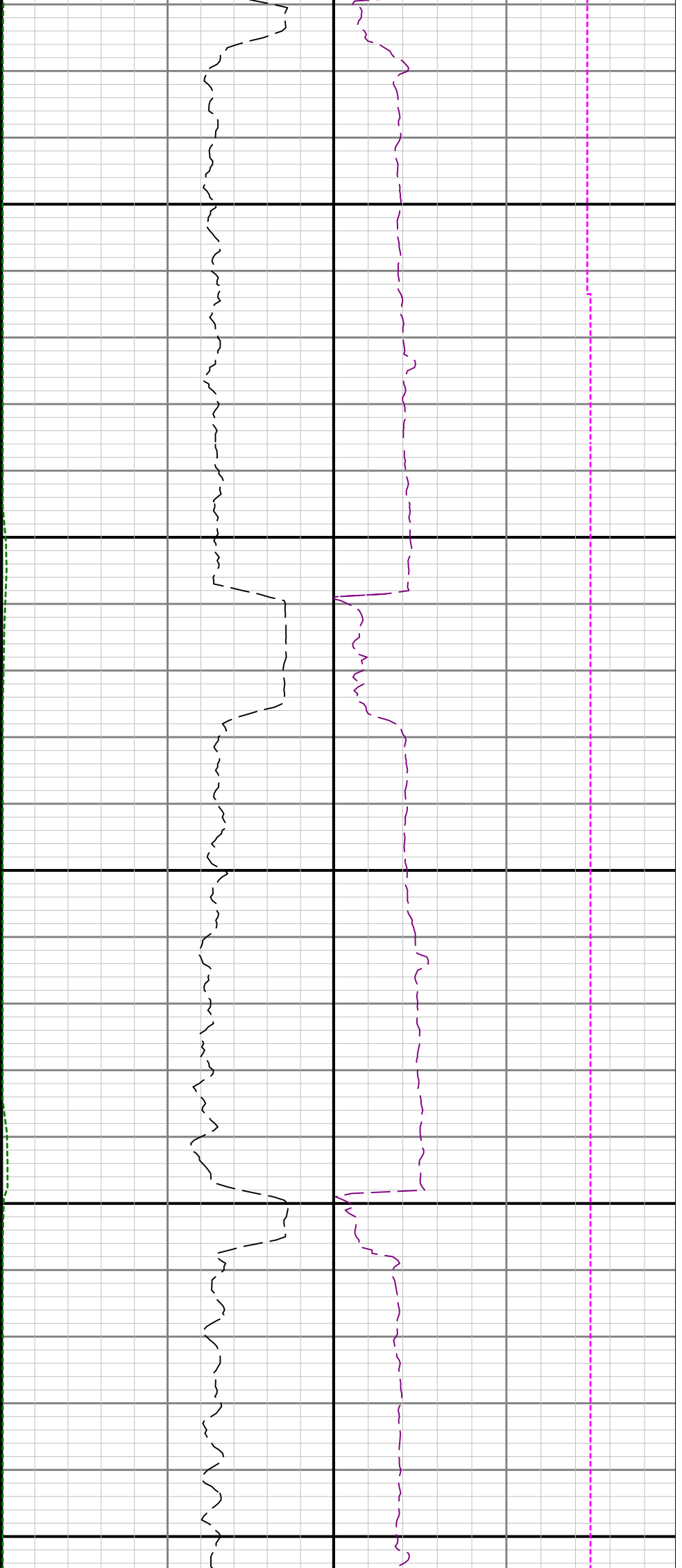


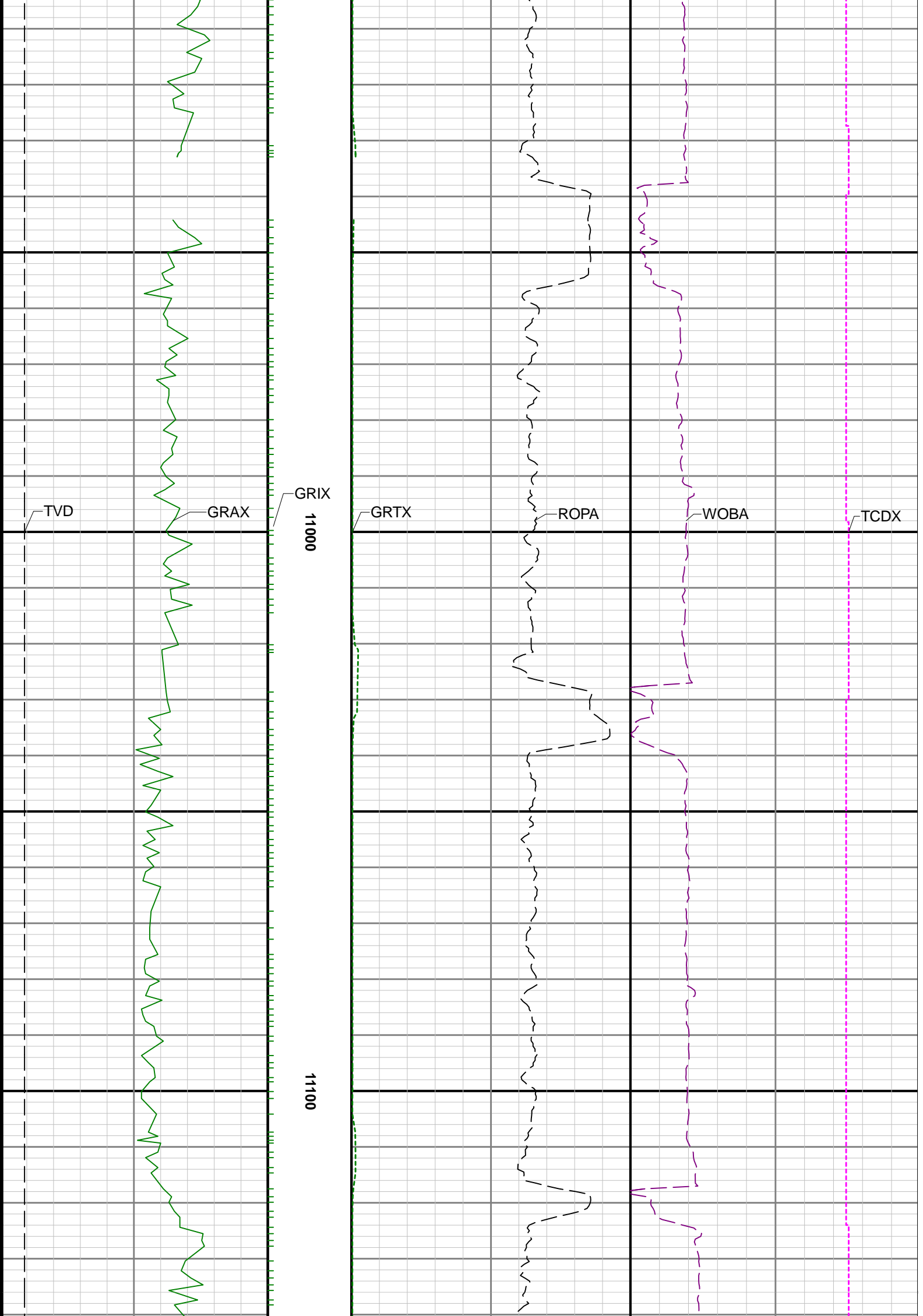


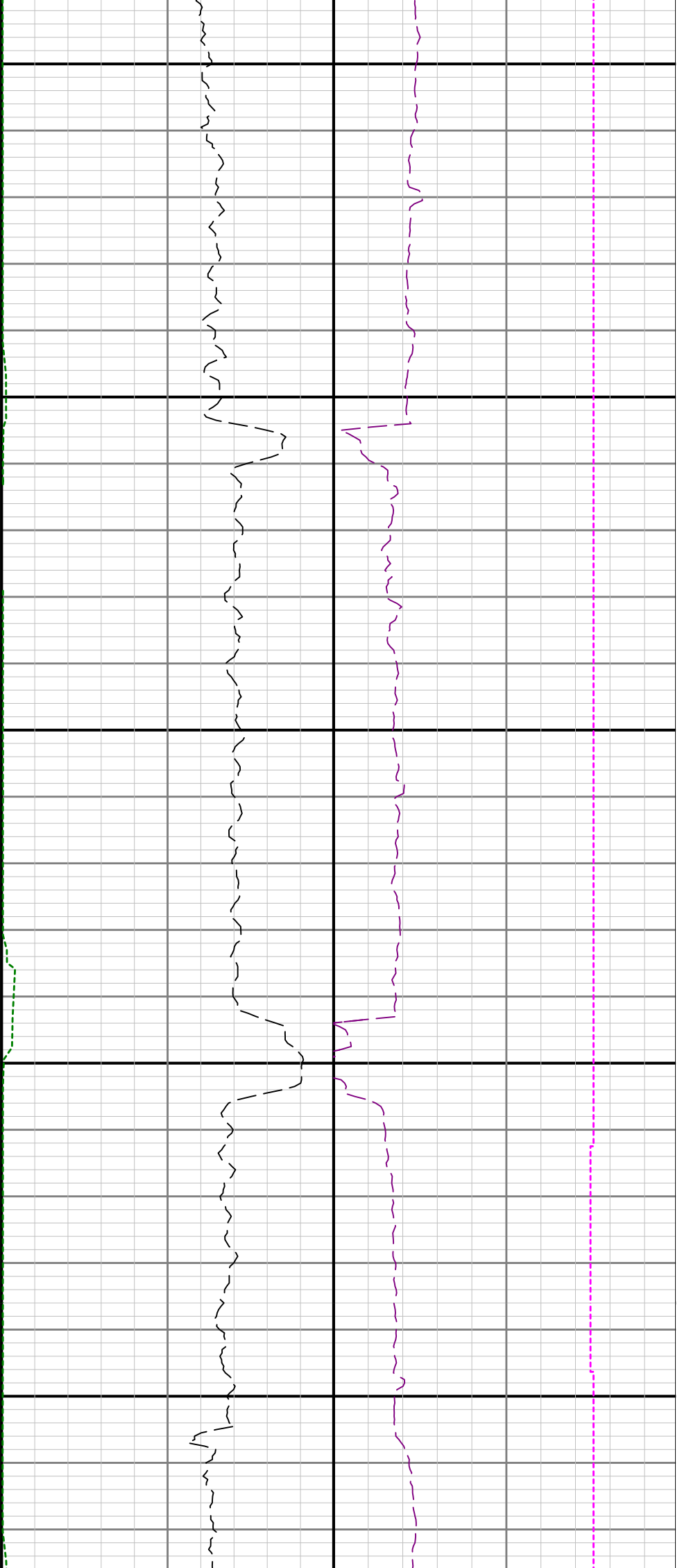
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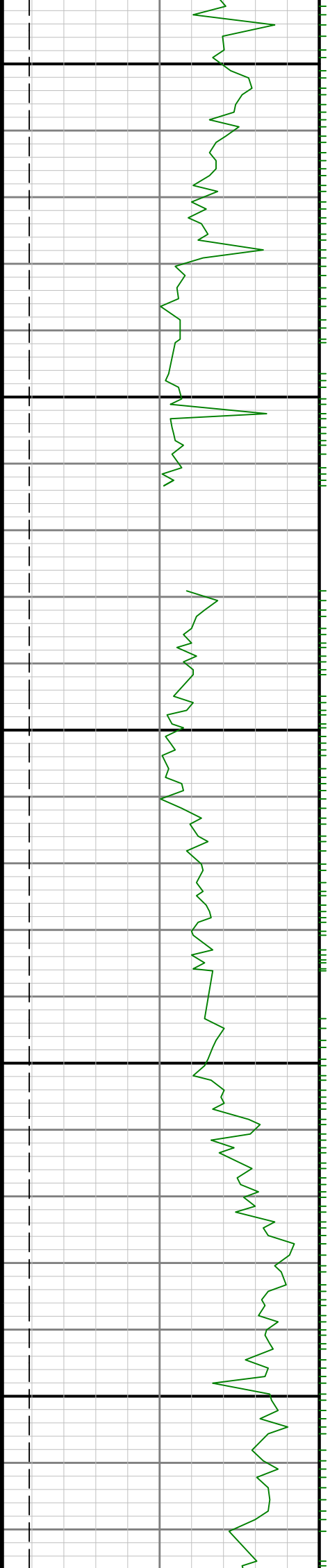


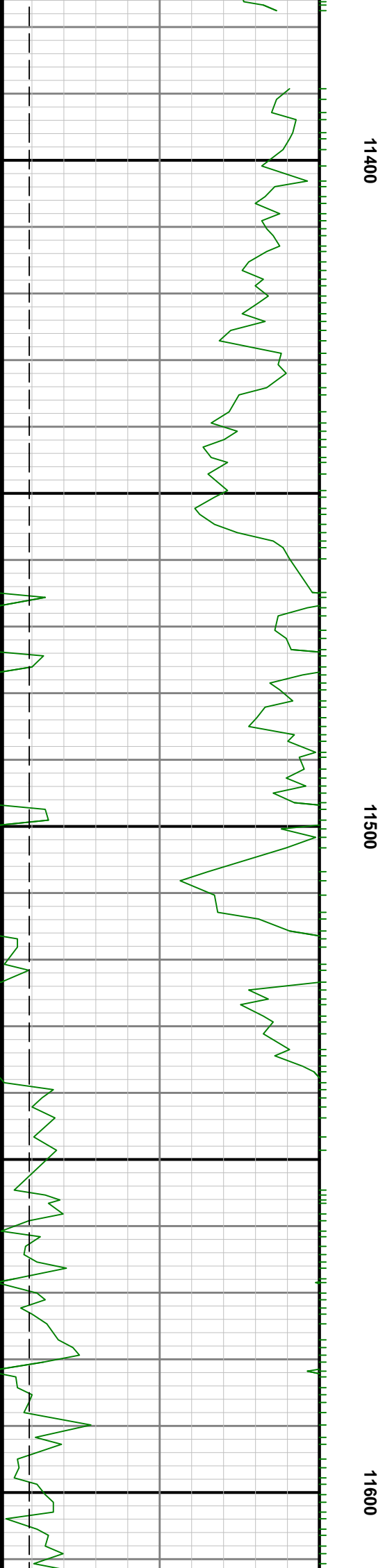




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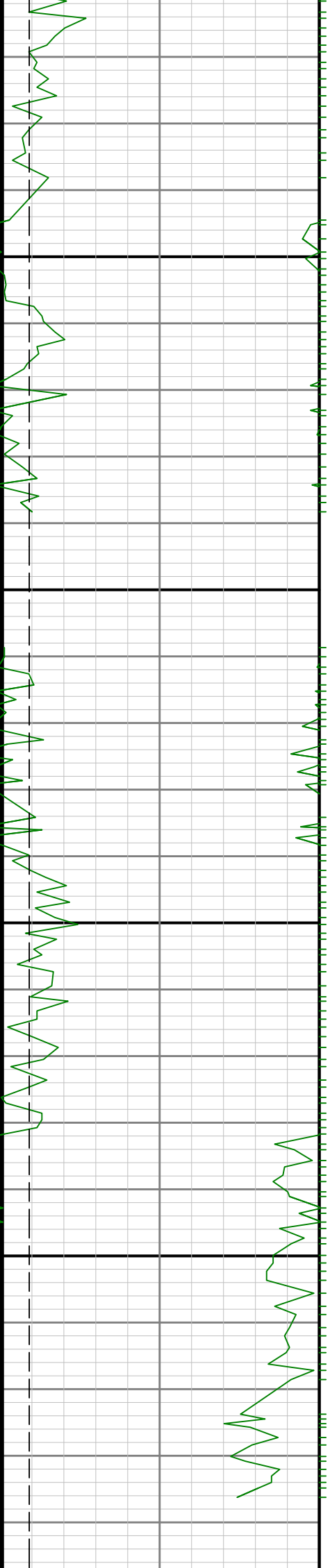


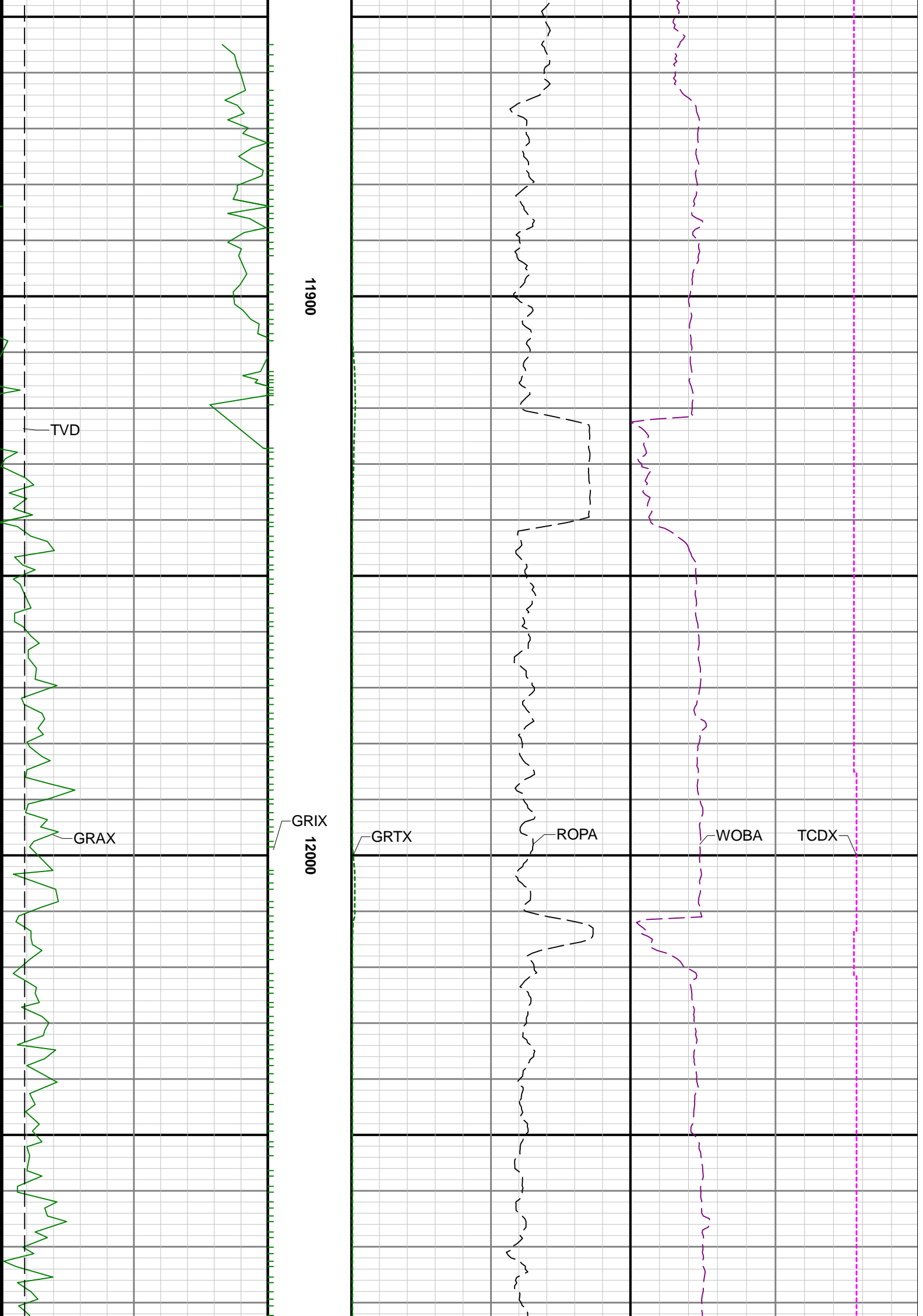


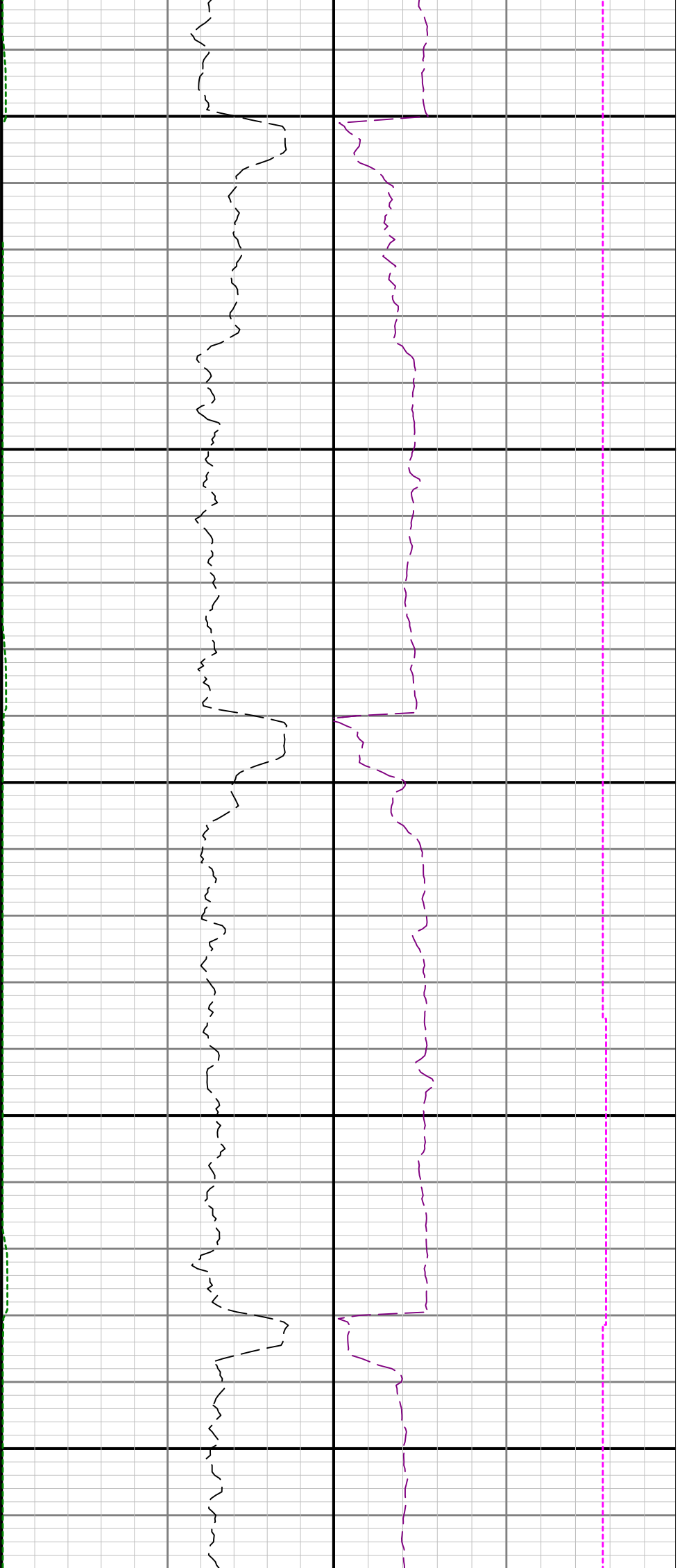


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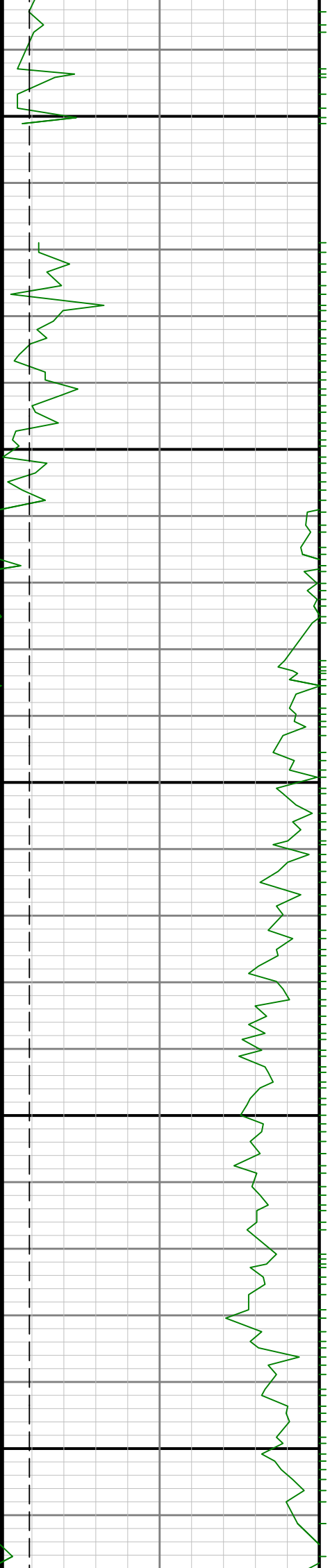




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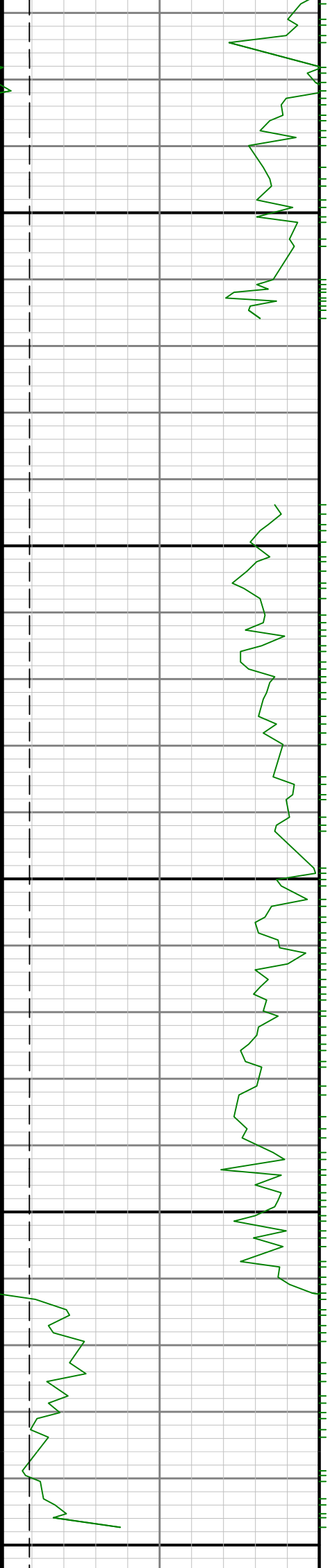
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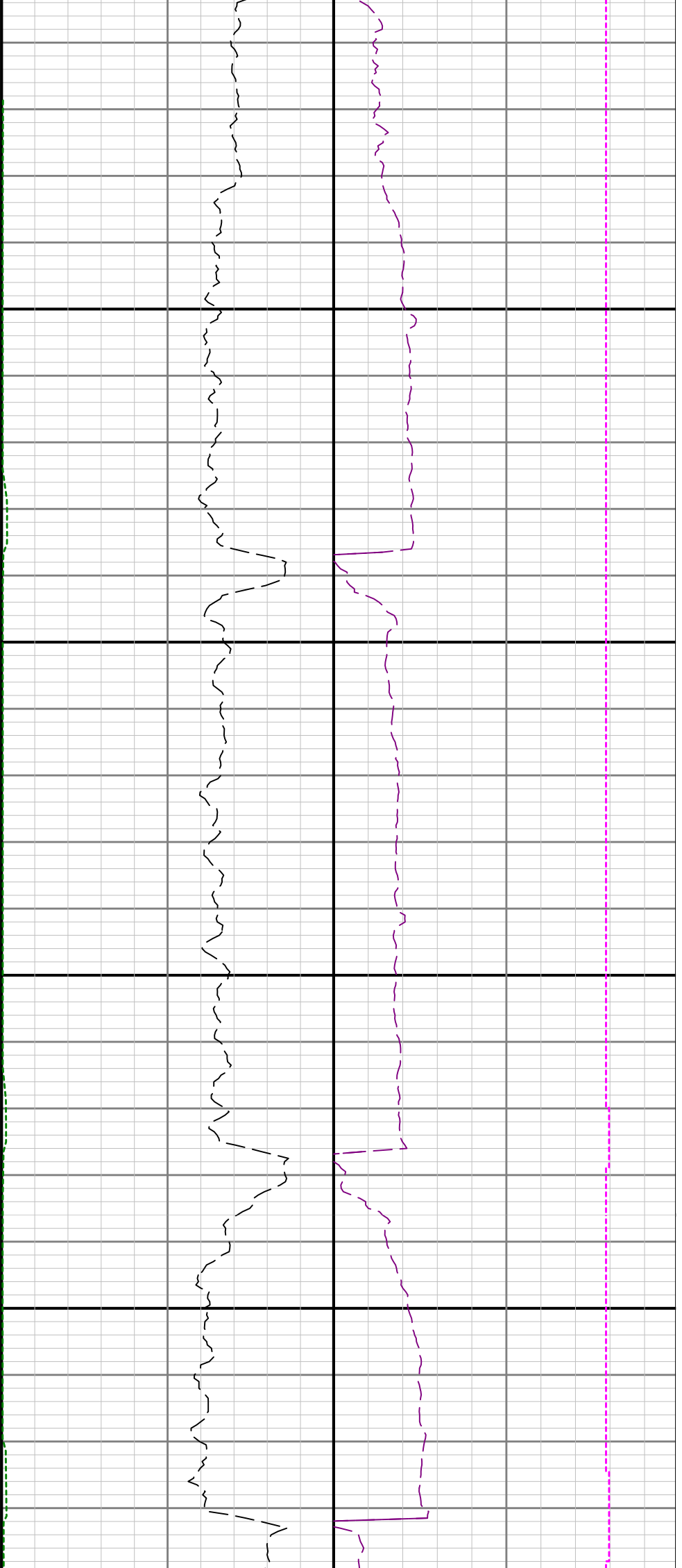




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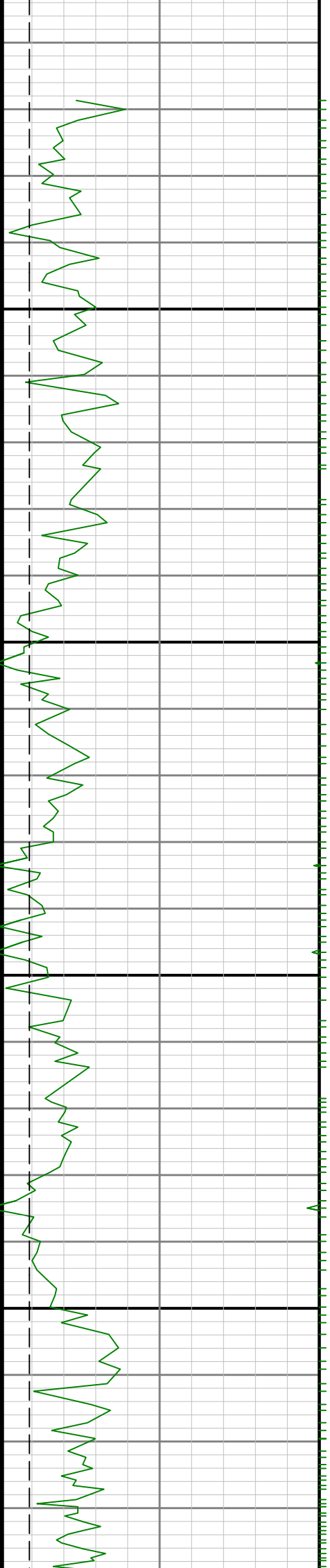
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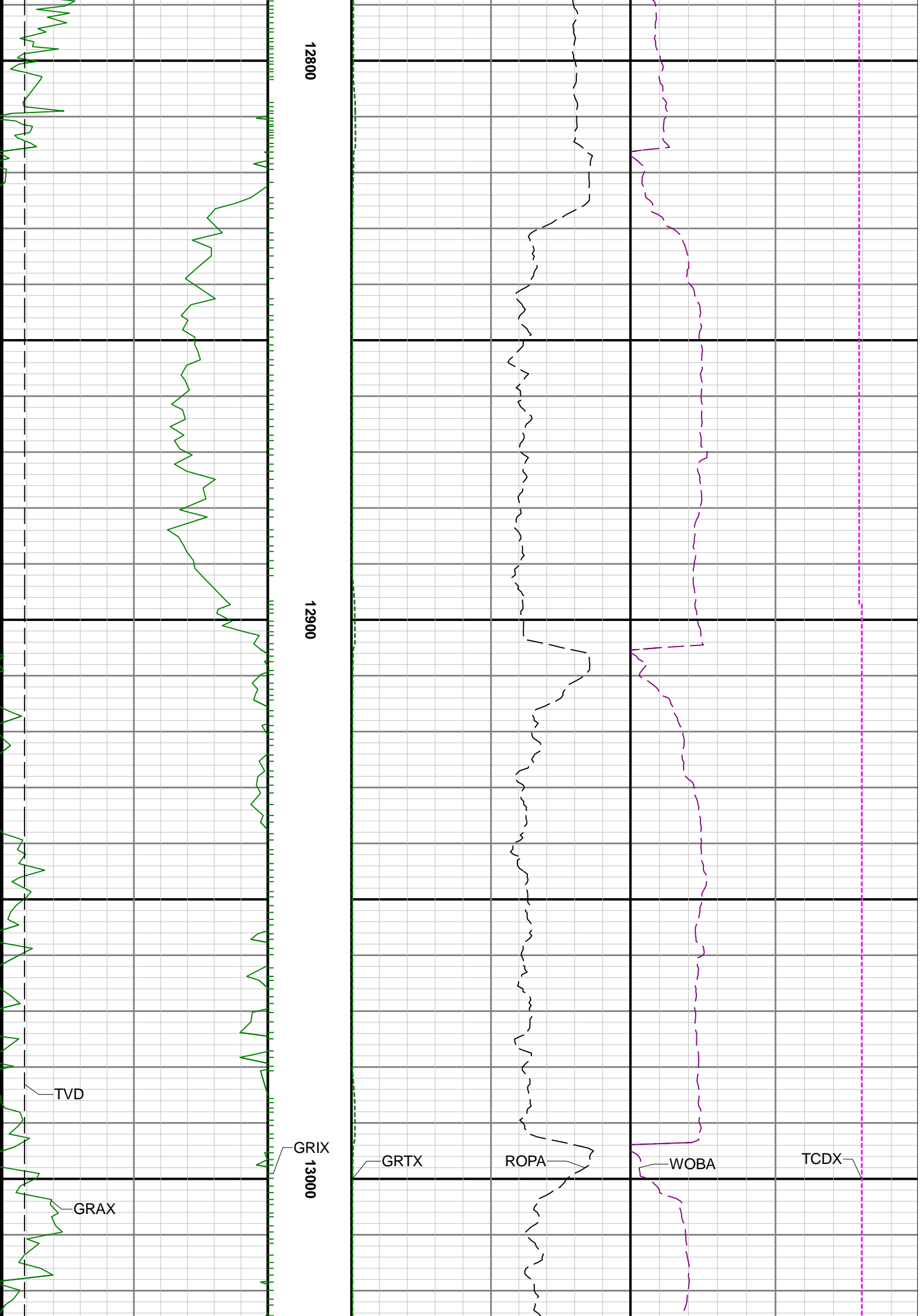




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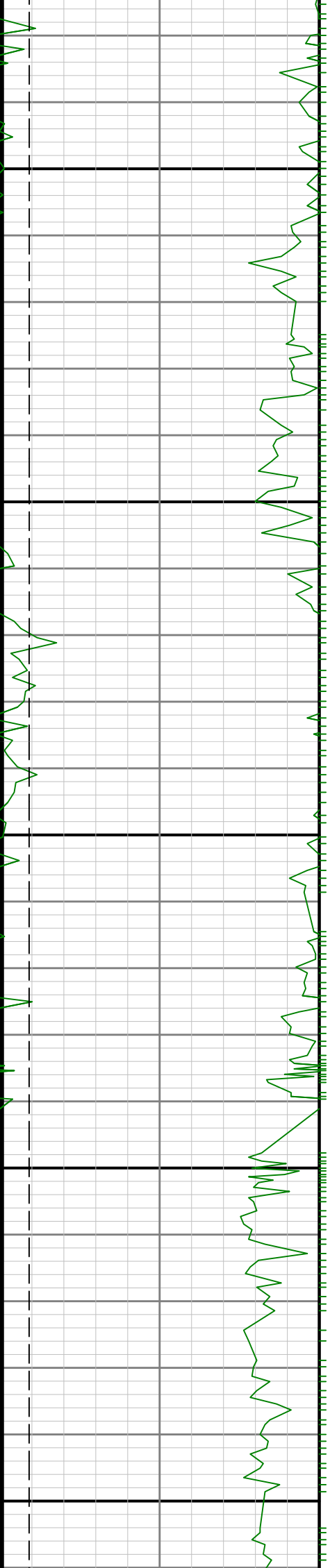






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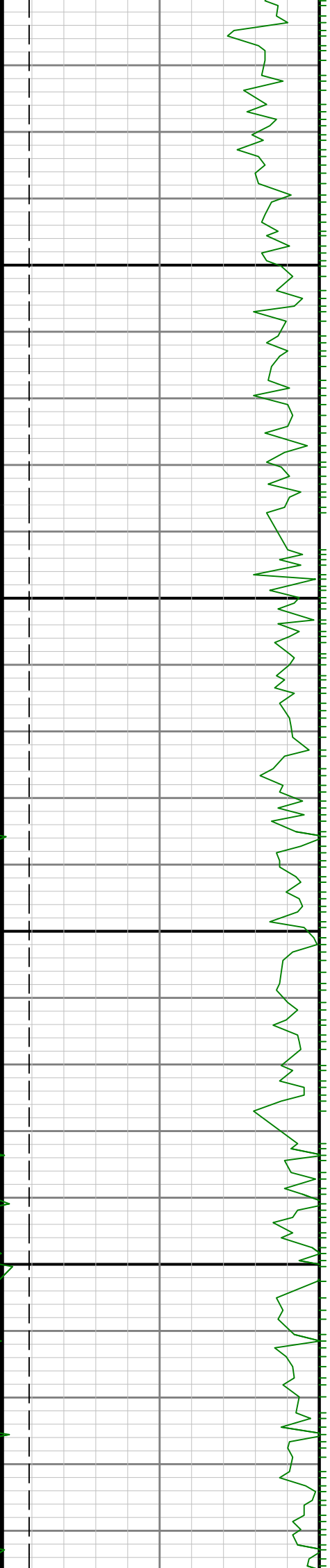
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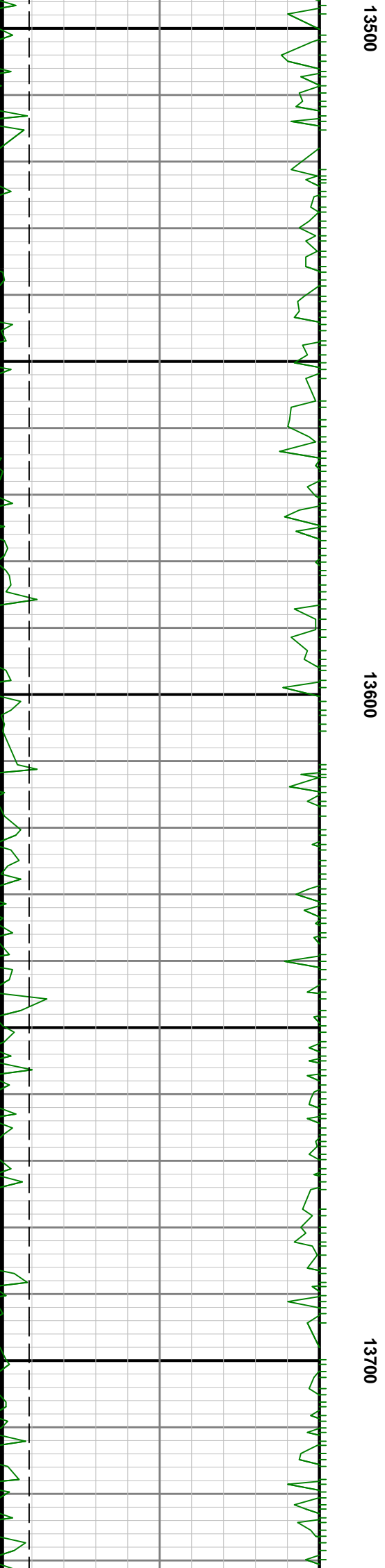
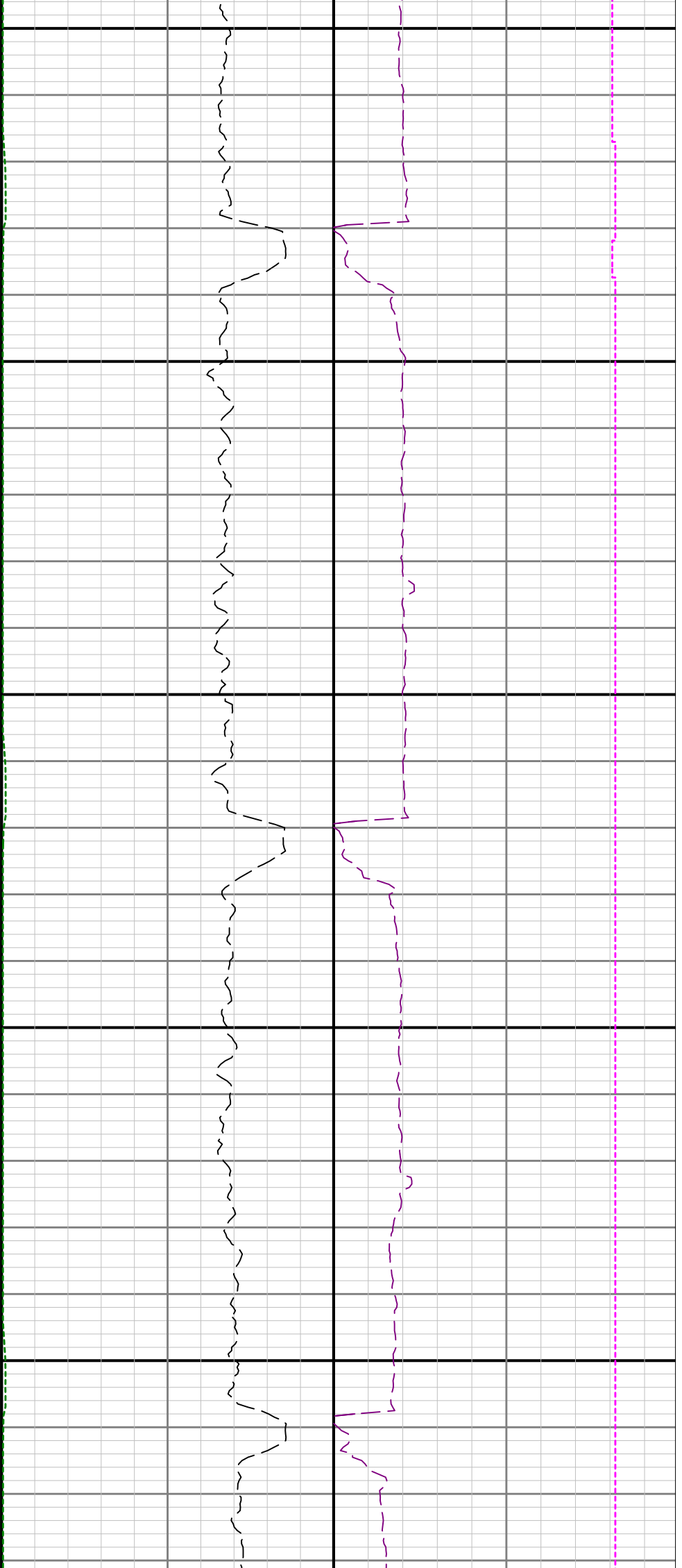


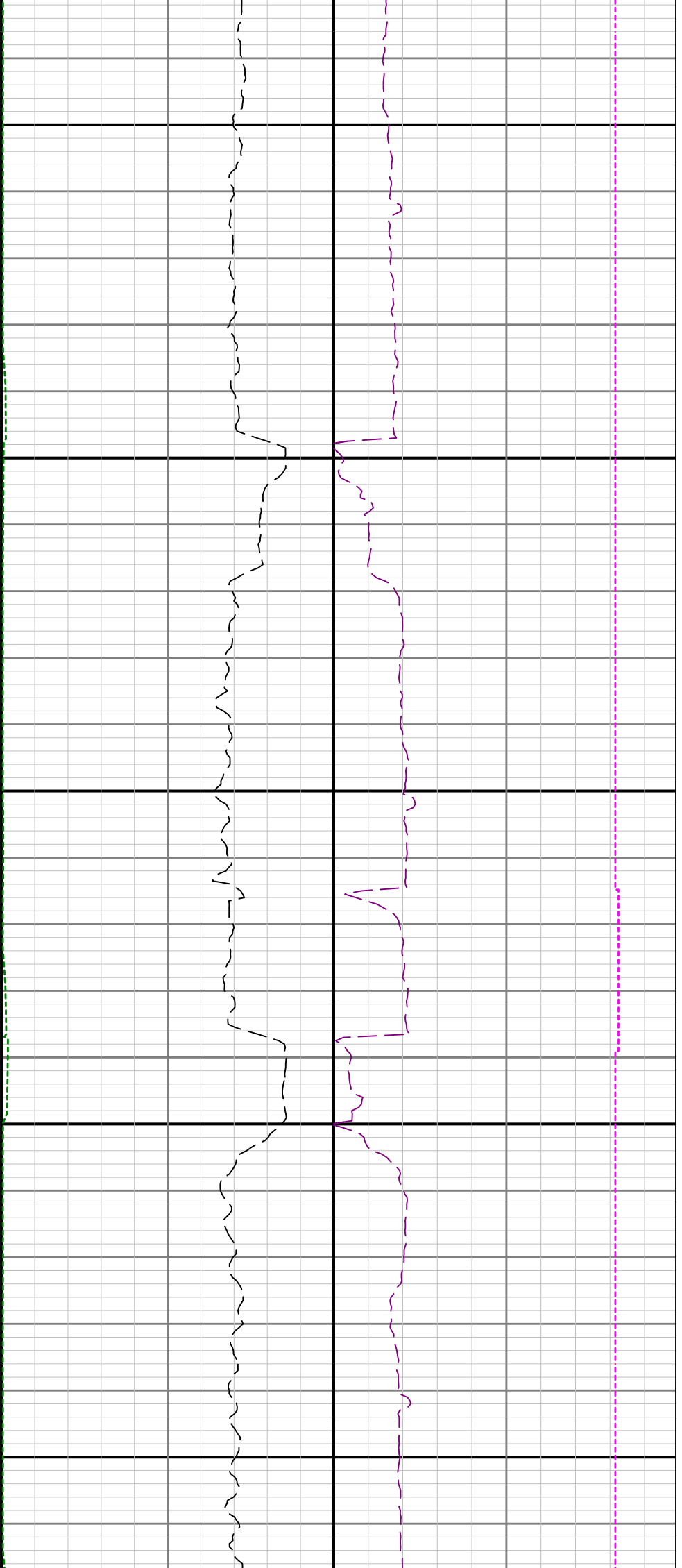


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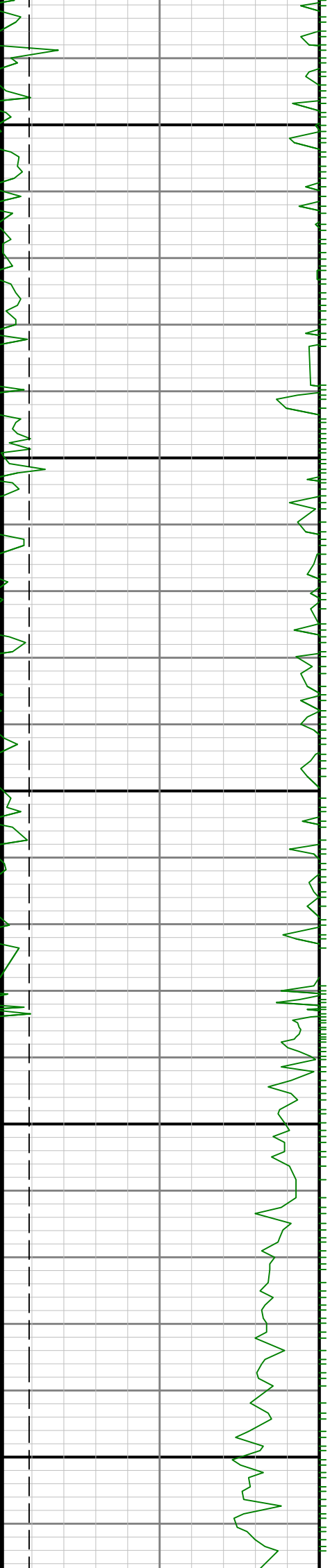


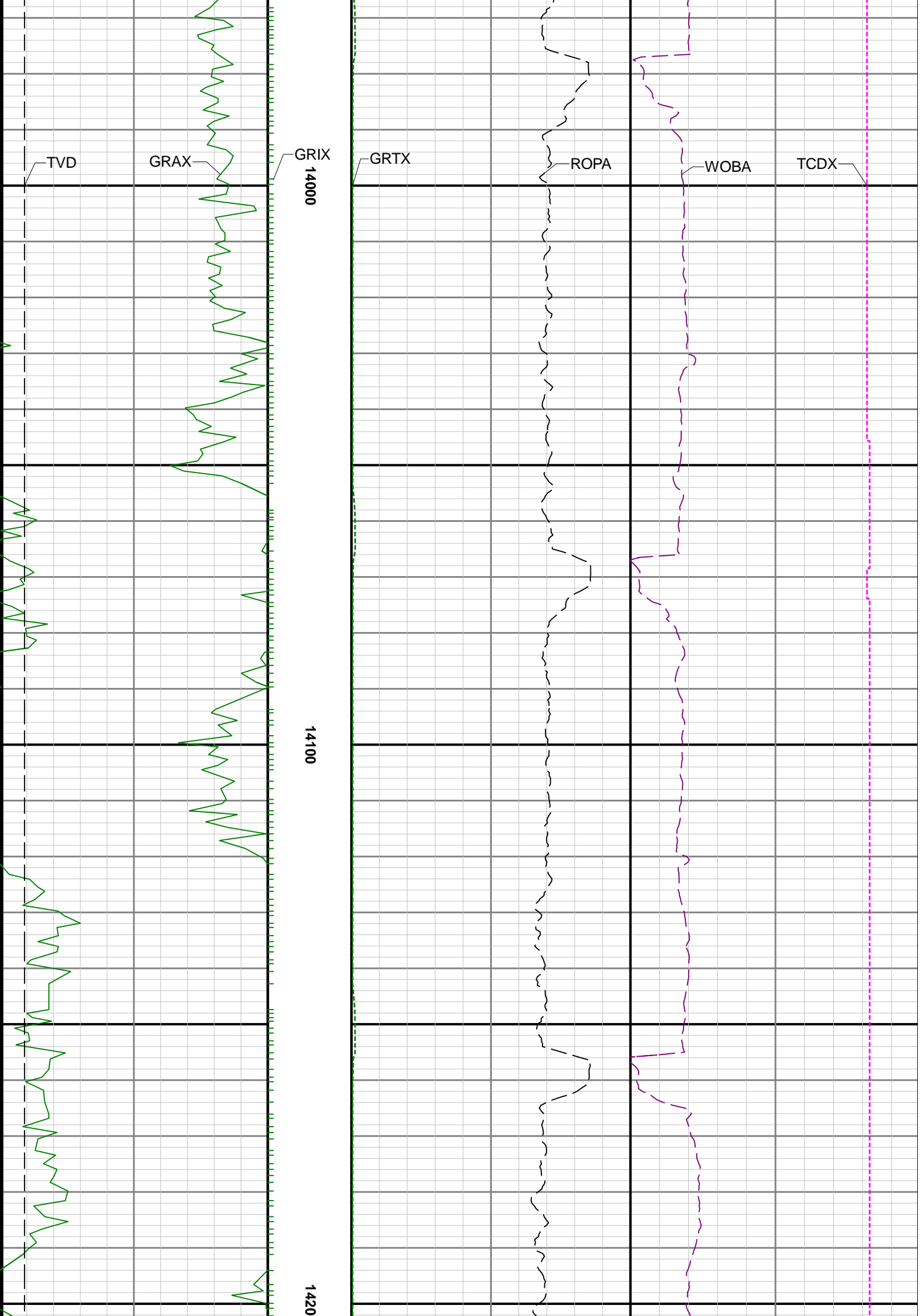


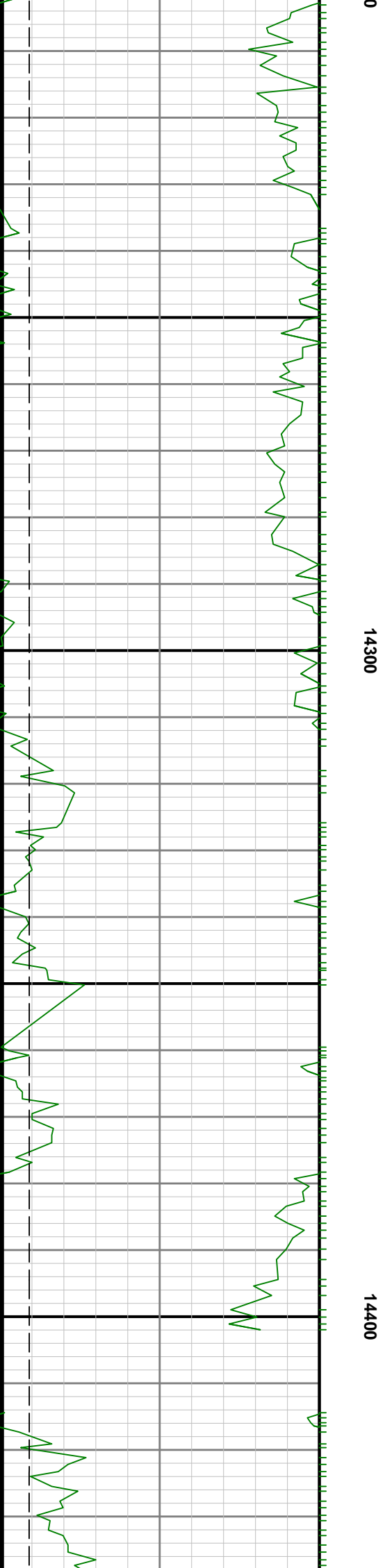
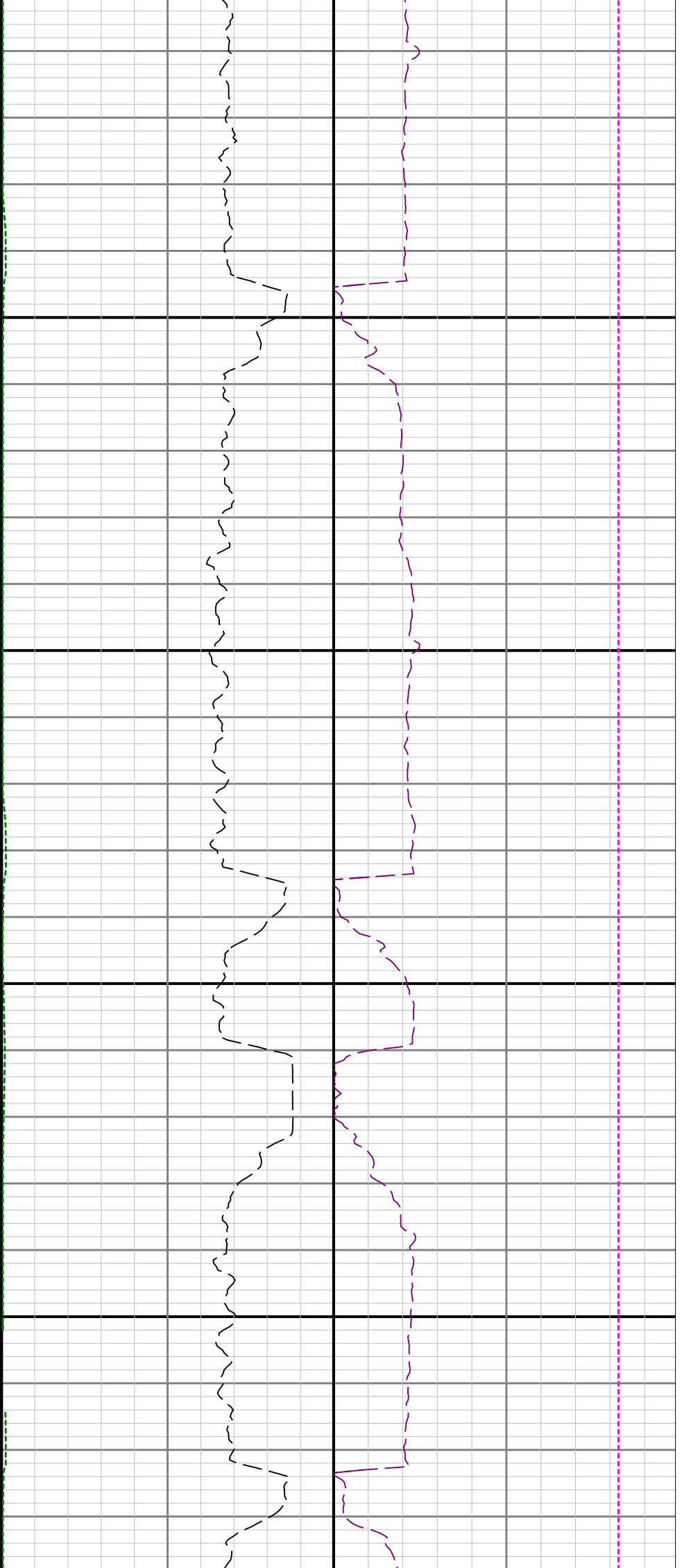


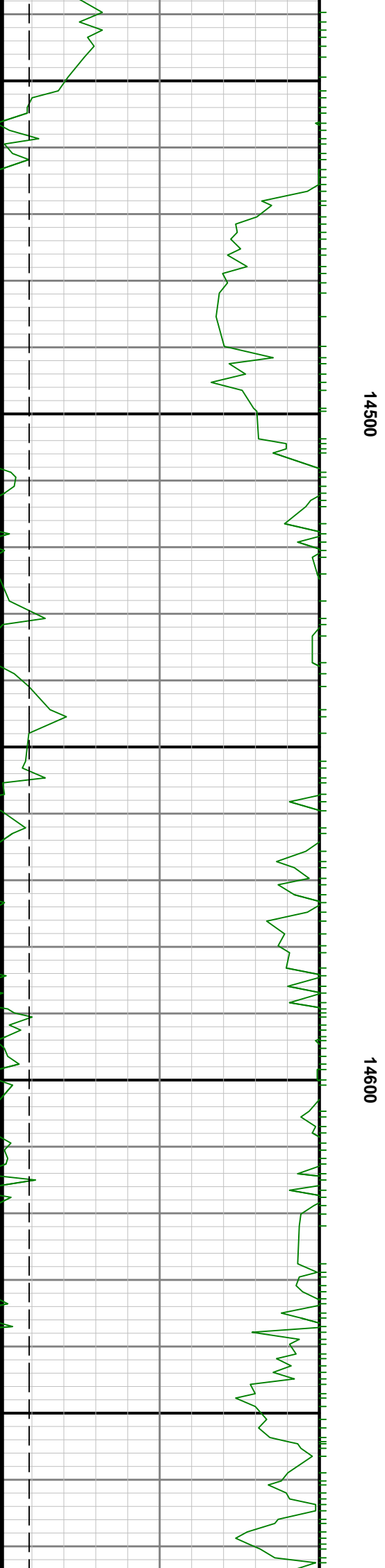
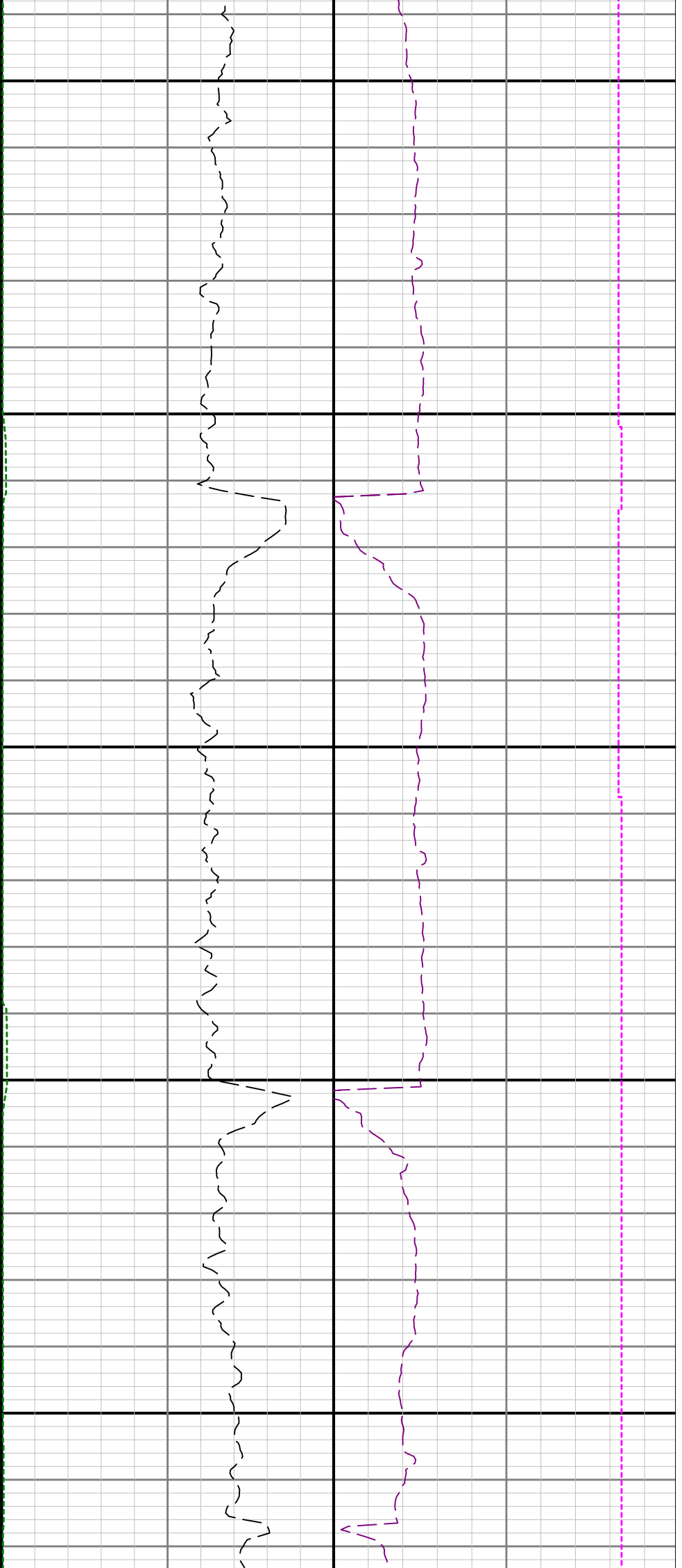
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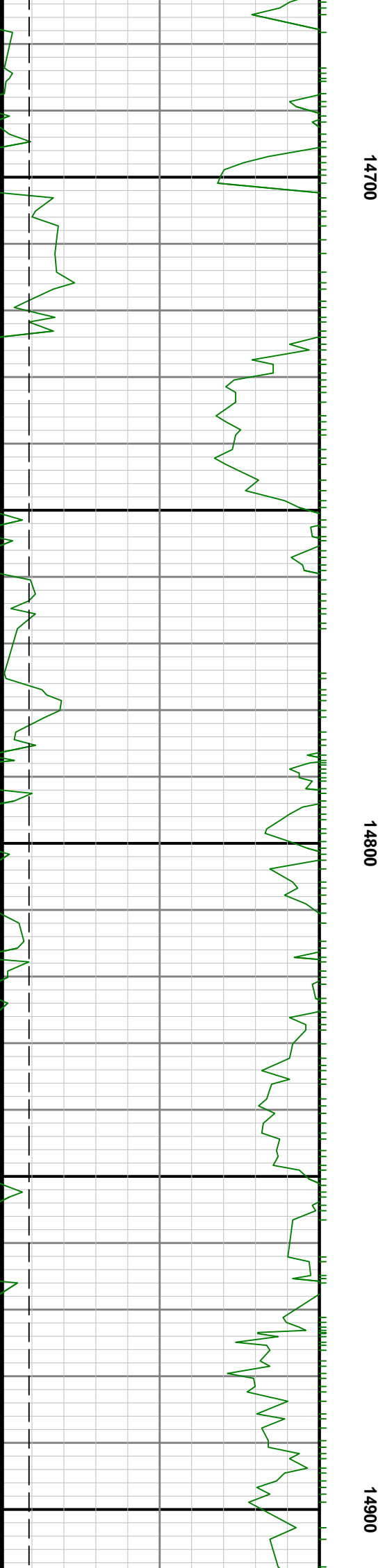
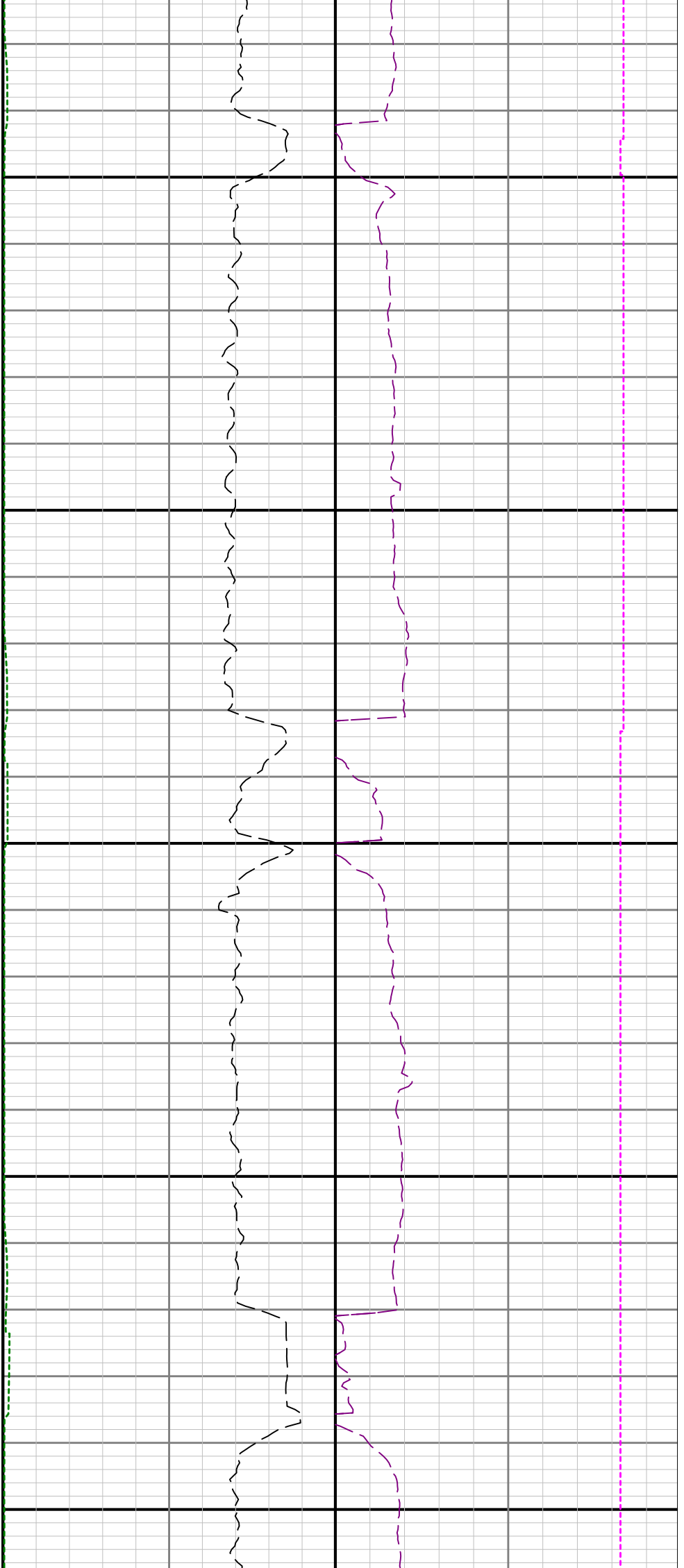
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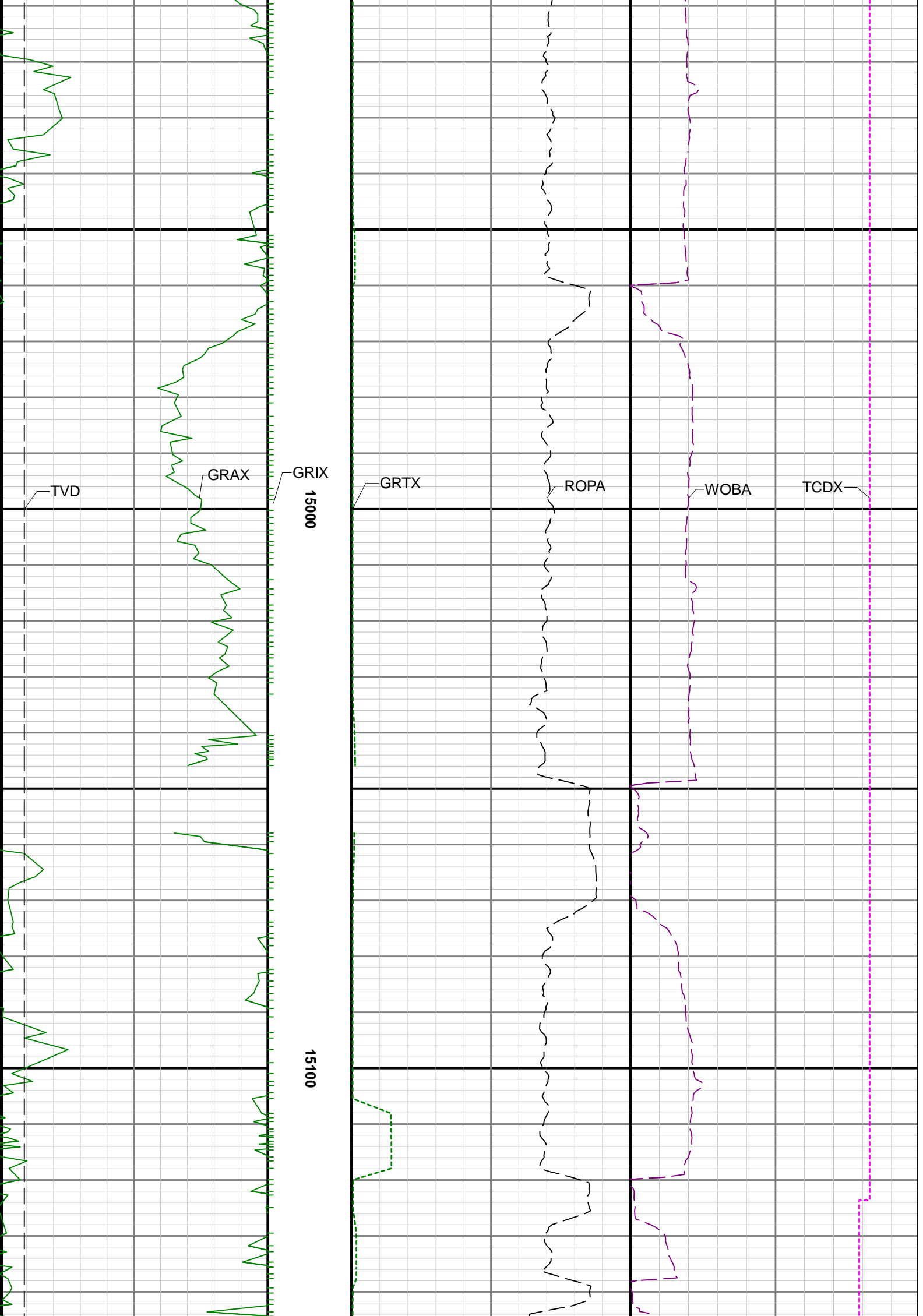


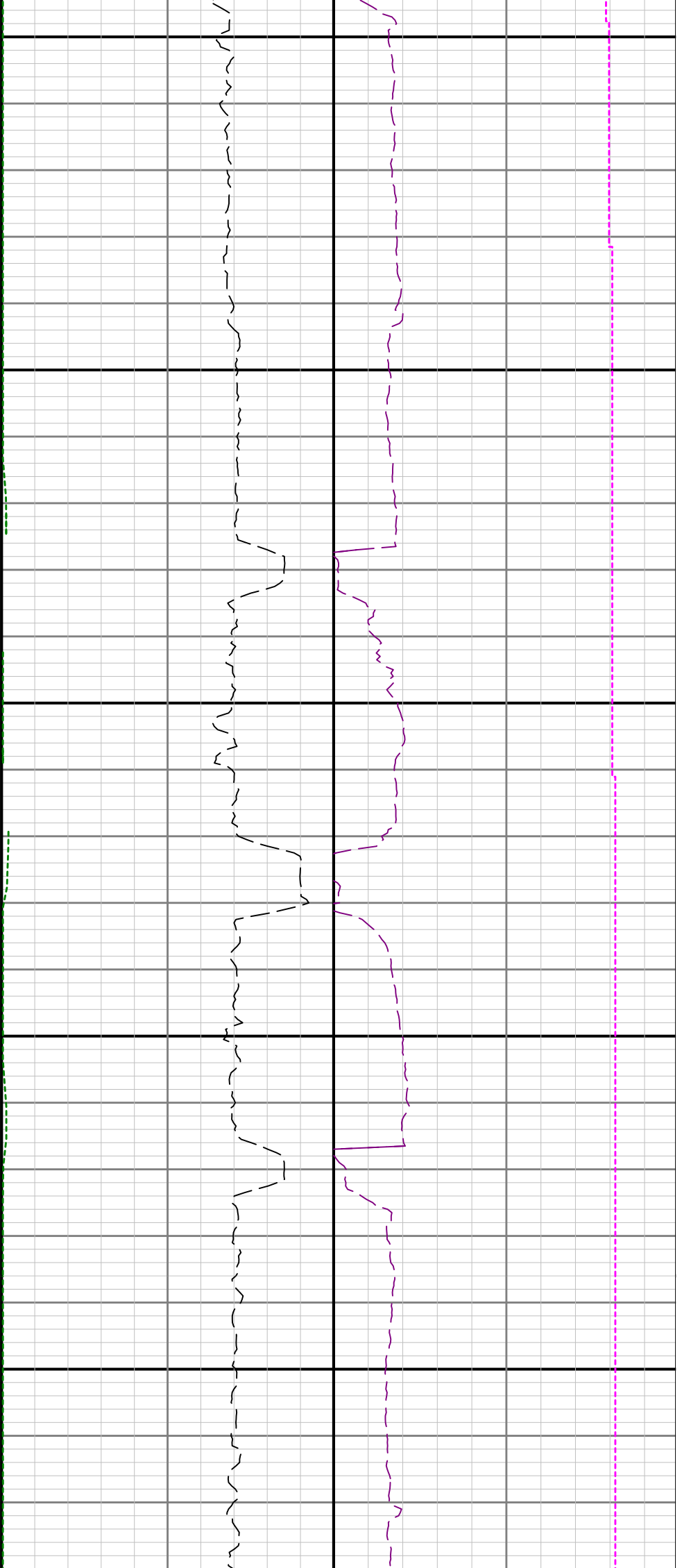












15200

15300

