




# LWD MEMORY LOG

# Gamma Ray

LWD MEMORY LOG									
<div><div><div><div><div><div>BAKER HUGHES</div><div>a GE company</div></div><div></div></div></div><div></div></div></div>			Gamma Ray						
Scale:			Company: Noble Energy						
1:240 MD			Well: Emmy State H25-764						
Depth Reference:			Field: Wattenberg						
Driller's Depth			County: Weld						
			State: Colorado						
Status:			Surface Location:				Other Services:		
Final Print			Latitude: 040° 11' 22.812" N						
API No: 05-123-46973-00			Longitude: 104° 37' 00.588" W				Directional		
Job ID: 109312606									
Permanent Datum (P.D.): Ground Level			Elevation: 4816.00 ft		Elev. KB: 4846.00 ft		N/A		
Log Measured From: Rig Floor			Above P.D. 30.00 ft		Elev. DF: 4816.00 ft				
Dates			Interval Drilled			Magnetic Field Reference			
Date From: 2018-08-10			Top: (ft) 1946.00		Azi Reference North: Grid		Dip Angle: (deg)		66.70
Date To: 2018-08-14			Bottom: (ft) 17494.00		Total Magnetic Field Strength: (mT)				52199
Spud Date: 2018-08-10					Mag to Reference North Correction: (deg)				7.53
Borehole Record									
Casing Record									
Hole Size (in)			From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)	
13.500			30.00	1946.00	9.625	36.00	30.00	1936.00	
8.500			1946.00	17494.00					
Mud Record									
Deviation Record									
Type			From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc   Az (Start)	Inc   Az (End)	
Oil Based Mud			1946.00	17494.00	8.500	15548.00	0.81   72.65	90.06   357.41	
Acquisition System									
Software Version			Other						
Baker Hughes Cadence			RT 4.2		Rig: H&P 517		Contractor: Helmerich & Payne Drilling Co		
Plot Studio			4.2.8155.1		District: RMD		Unit: D&E		

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## Log Run Summary

Run No	Bit Run No.	Bit Size	Bit Type	Bit Gauge Length	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours
		(in)		(in)		Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	8.500	PDC	4.50	Rotary Steerable	1946.00	17481.00	1946.00	17494.00	2018-08-11 02:28	2018-08-14 11:42	75.55

## Crew

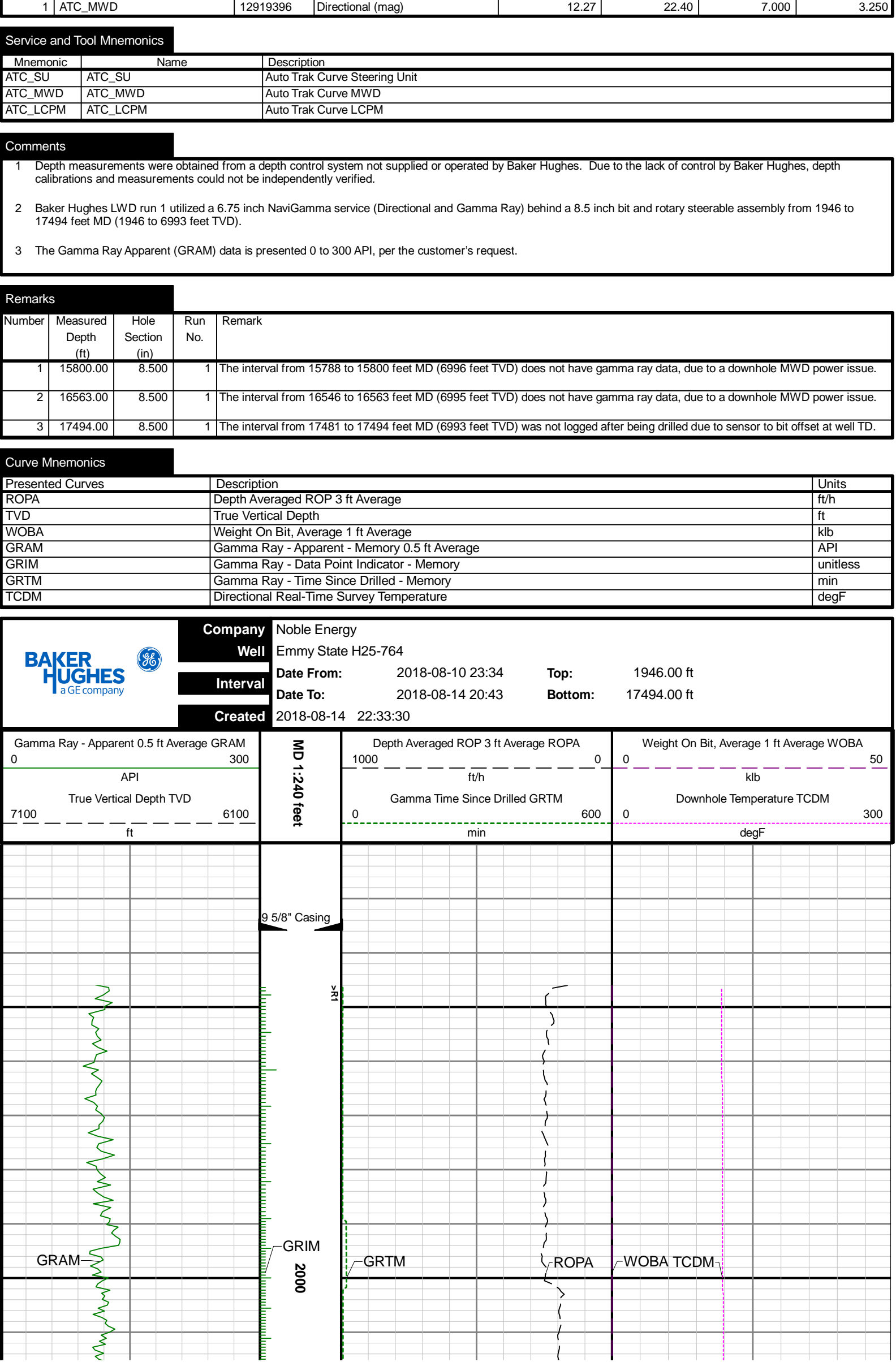
Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
James Himes	2018-08-11	2018-08-13	Adam Schlenz	2018-08-13	2018-08-15			

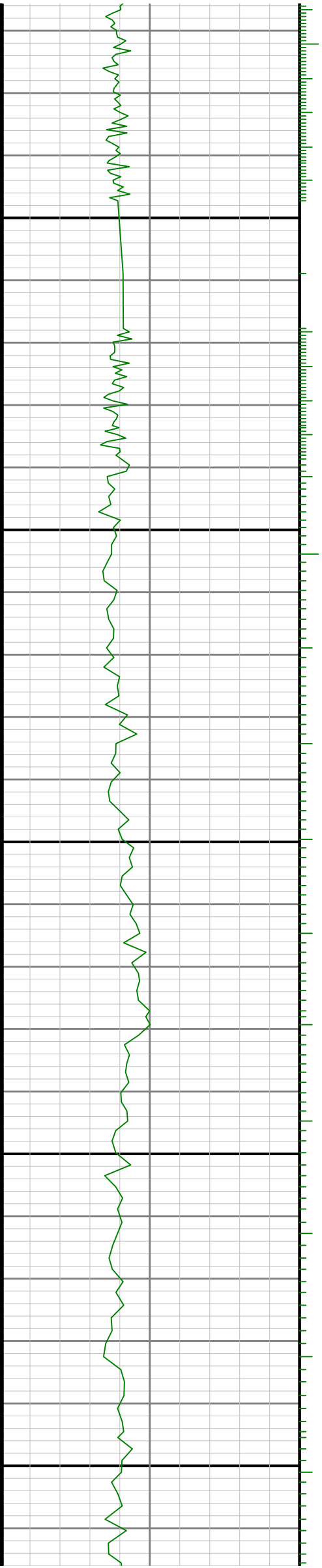
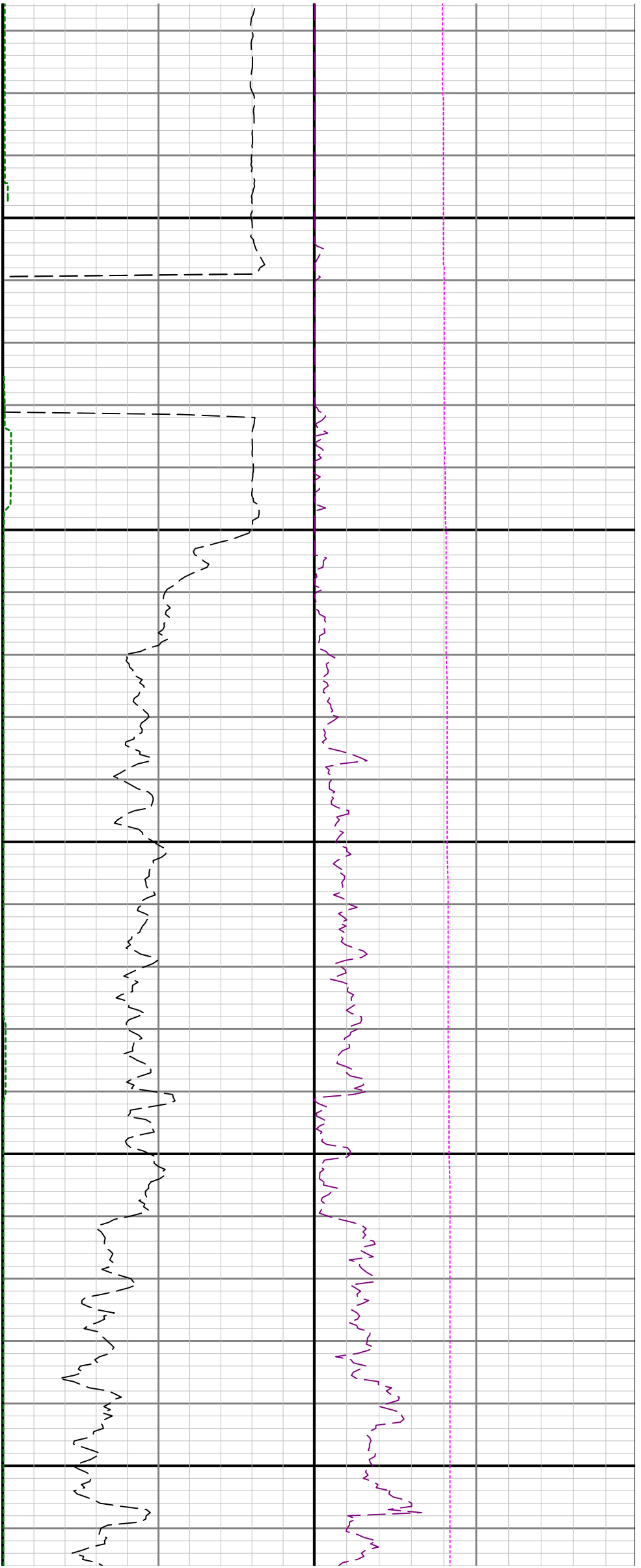
# Mud Properties Record

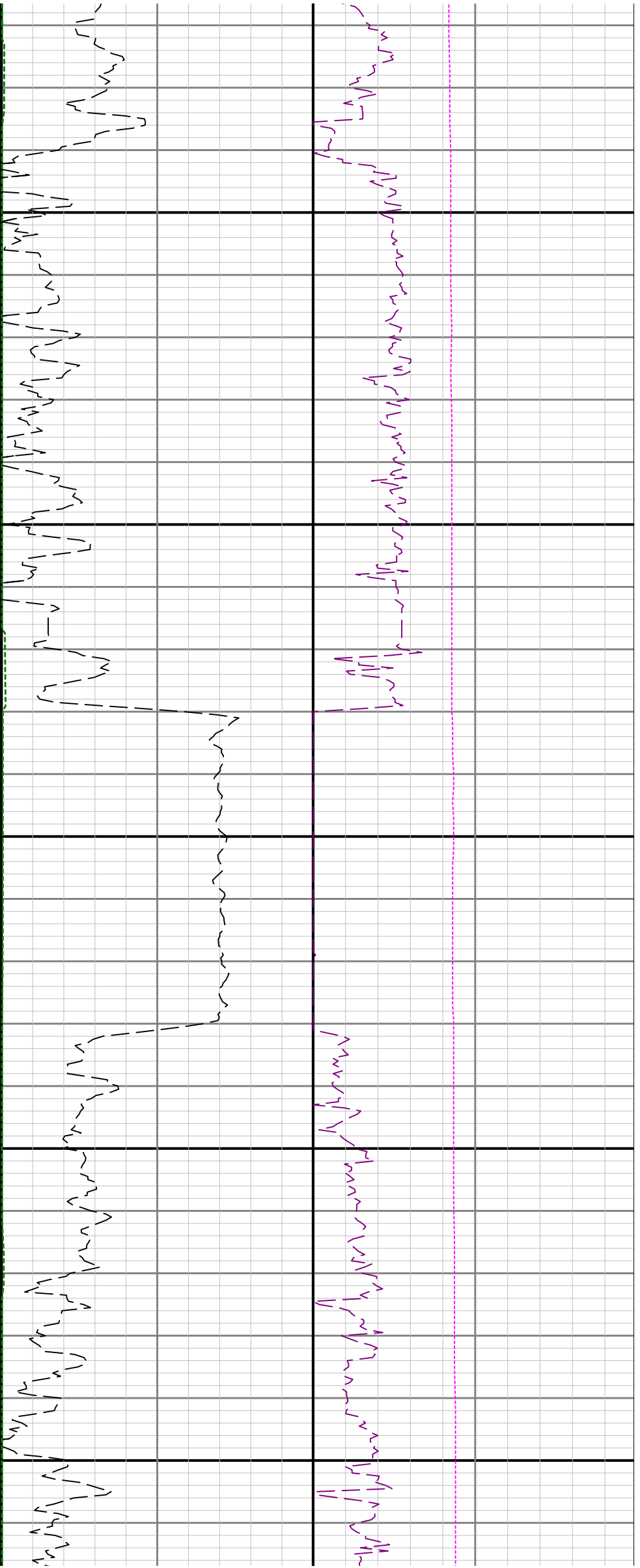
Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2018-08-11 02:30	1	1946.00	Oil Based Mud	9.6	12	N/A	18.8	72.2/14	Active Pit	20000	0.00
2018-08-11 13:30	1	4599.00	Oil Based Mud	9.4	13	N/A	15.0	73.2/14.3	Active Pit	20500	0.00
2018-08-12 02:30	1	6975.00	Oil Based Mud	9.5	14	N/A	14.2	73.2/14.2	Active Pit	20500	0.00
2018-08-12 13:30	1	9156.00	Oil Based Mud	9.5	10	N/A	14.6	73/14.5	Active Pit	20500	0.00
2018-08-13 02:30	1	11940.00	Oil Based Mud	9.6	14	N/A	17.2	72.7/14.5	Active Pit	21000	0.00
2018-08-13 13:30	1	13768.00	Oil Based Mud	9.6	13	N/A	18.0	73.5/13.2	Active Pit	24000	0.00
2018-08-14 04:00	1	16276.00	Oil Based Mud	9.6	13	N/A	23.4	73.5/13	Active Pit	19500	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	14382369	Near Bit VSS	5.93	6.73	7.000	4.330
1	ATC_SU	14382369	Near Bit Inclination	5.93	6.73	7.000	4.330
1	ATC_MWD	12919396	Gamma (single)	2.77	12.90	7.000	3.250



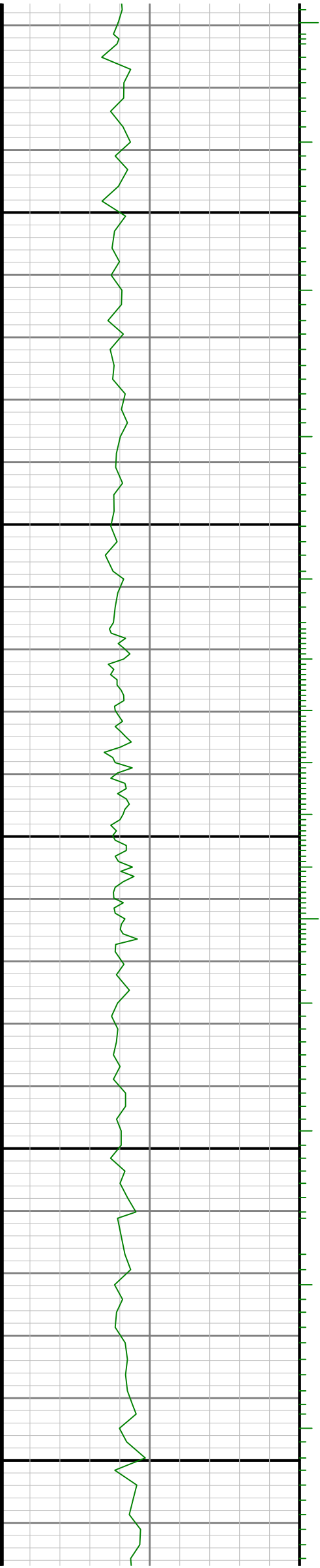


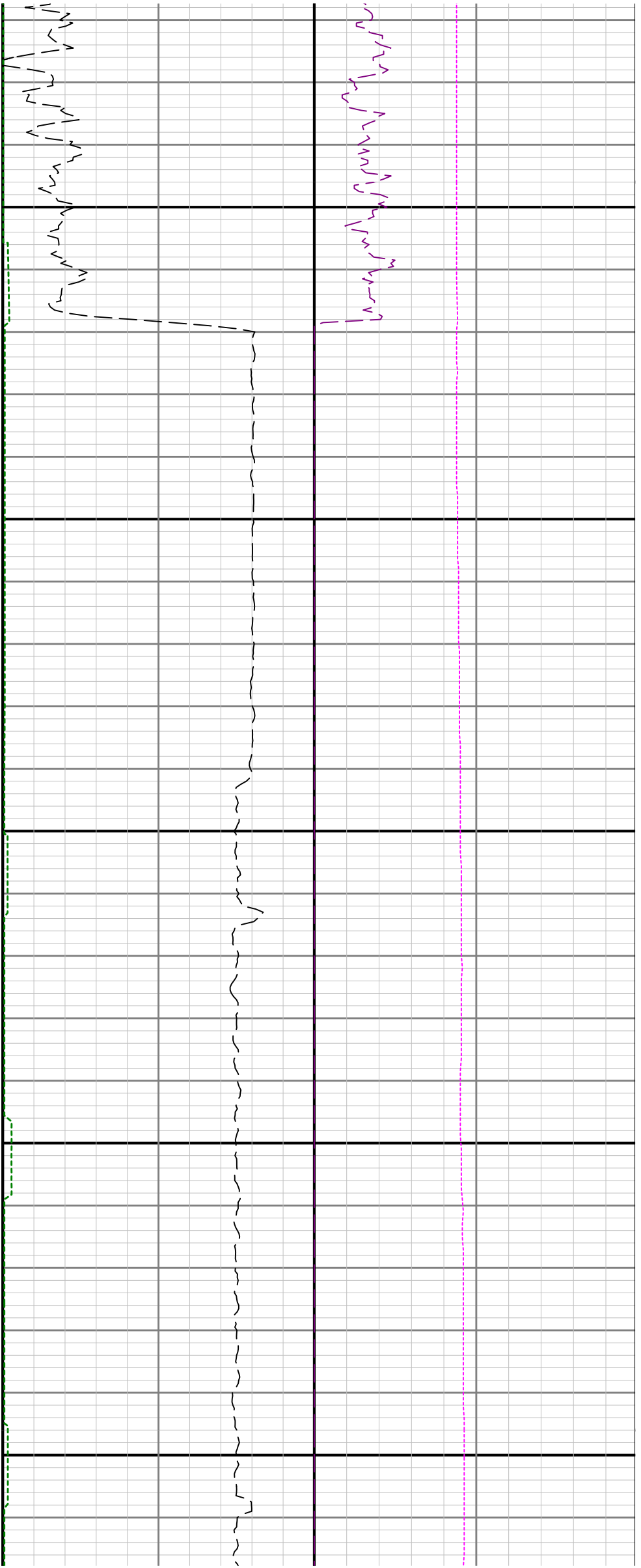


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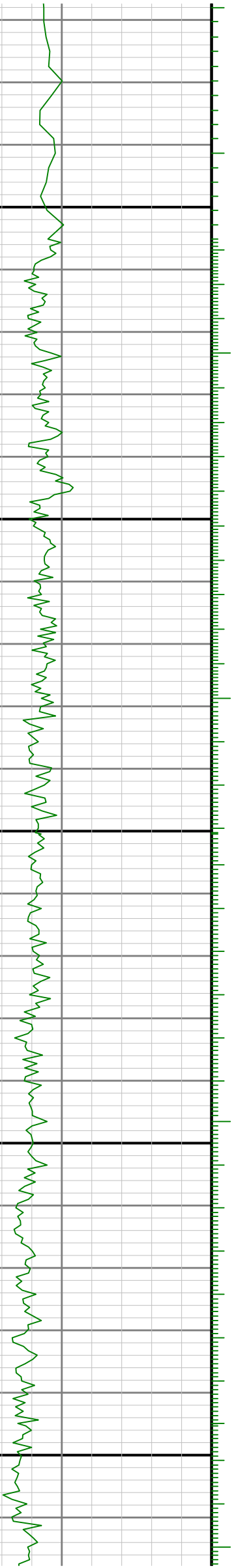
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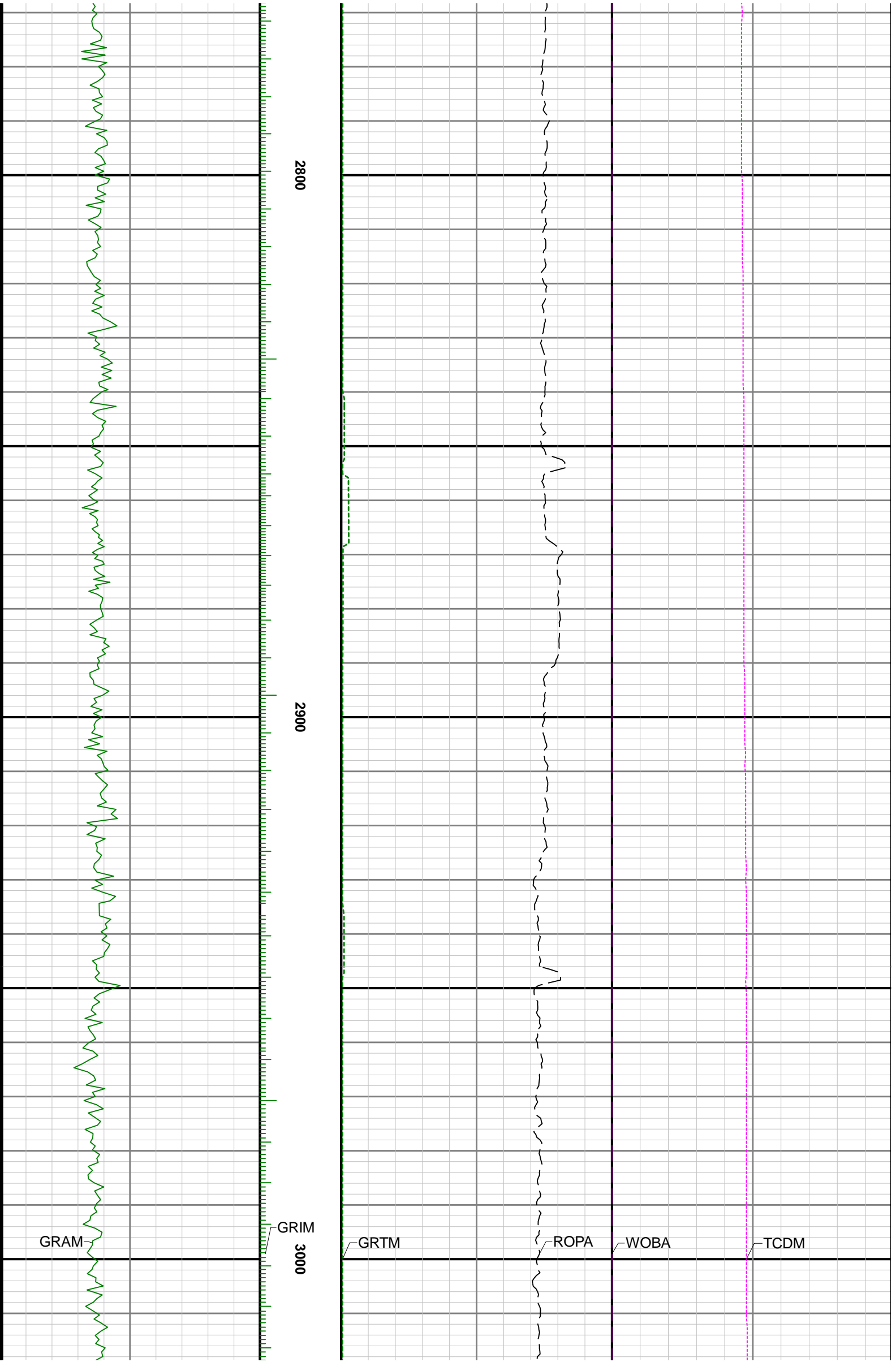


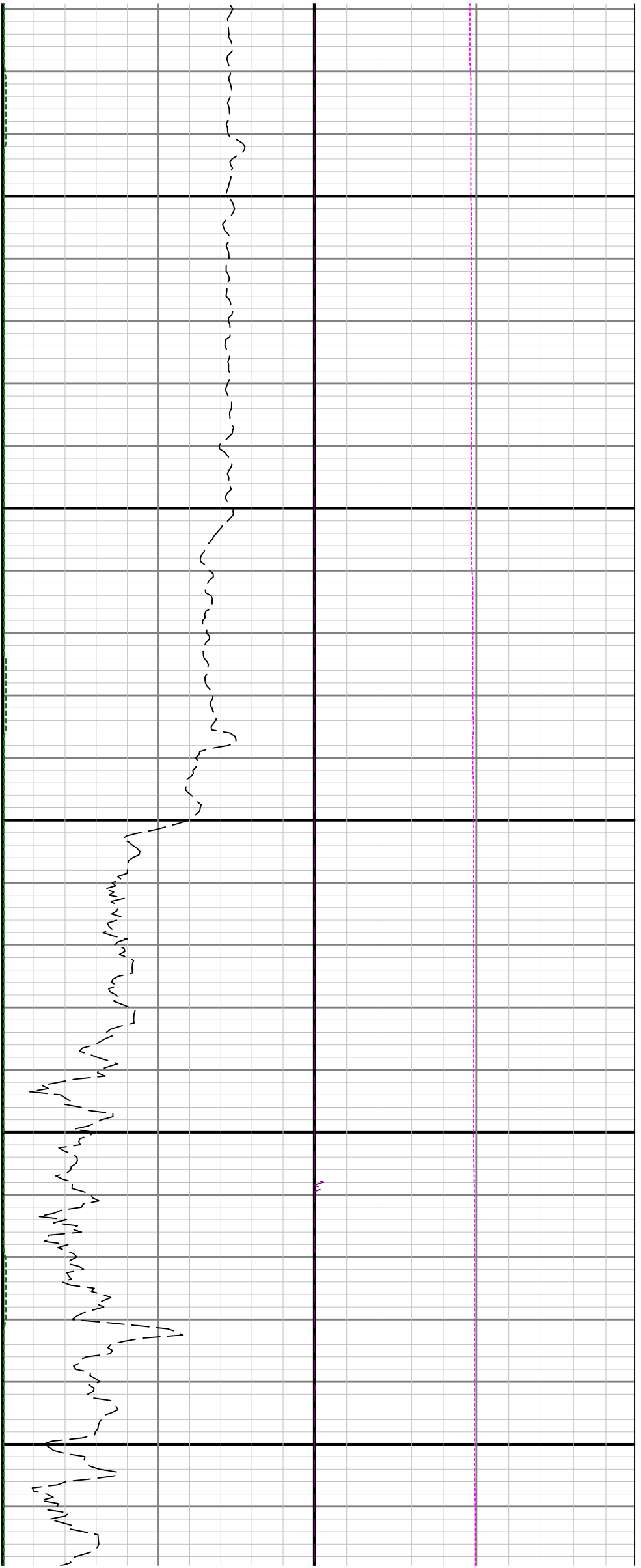


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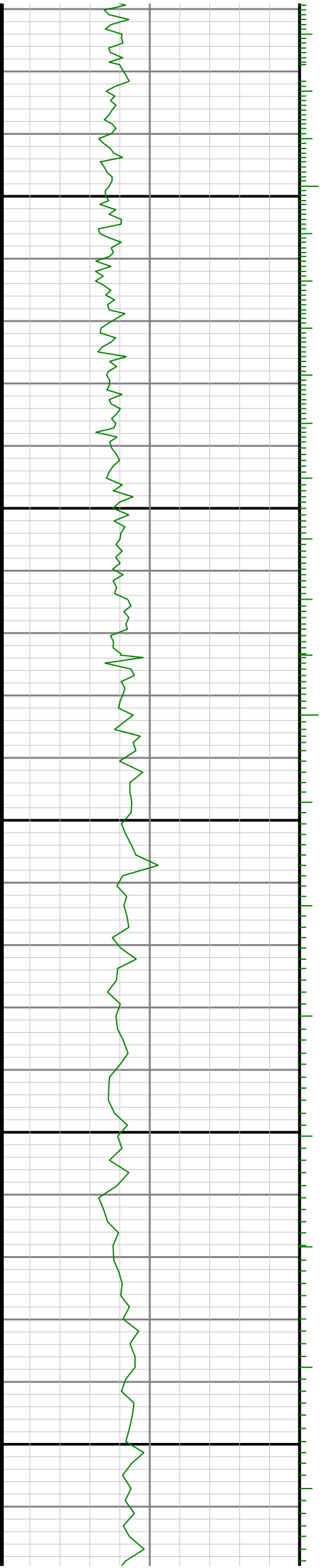


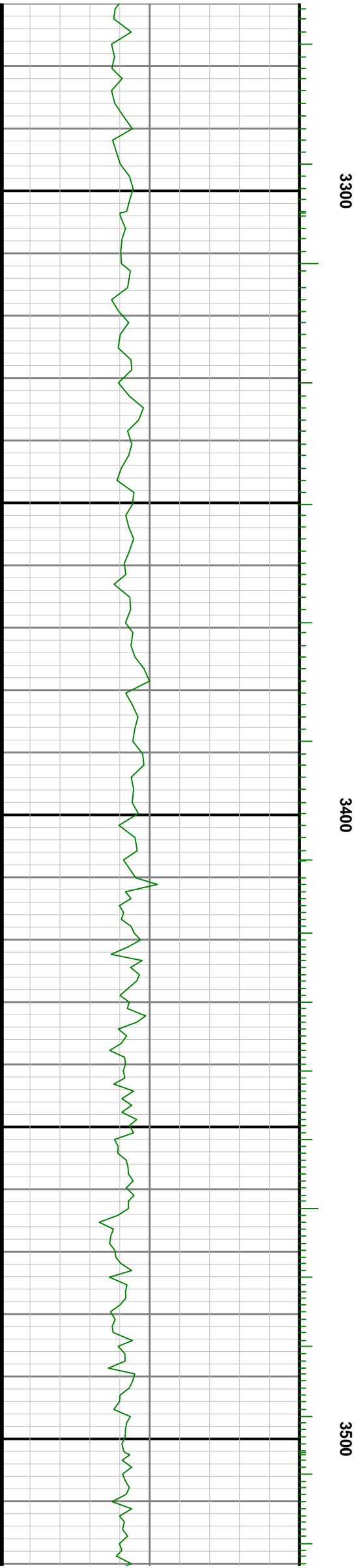
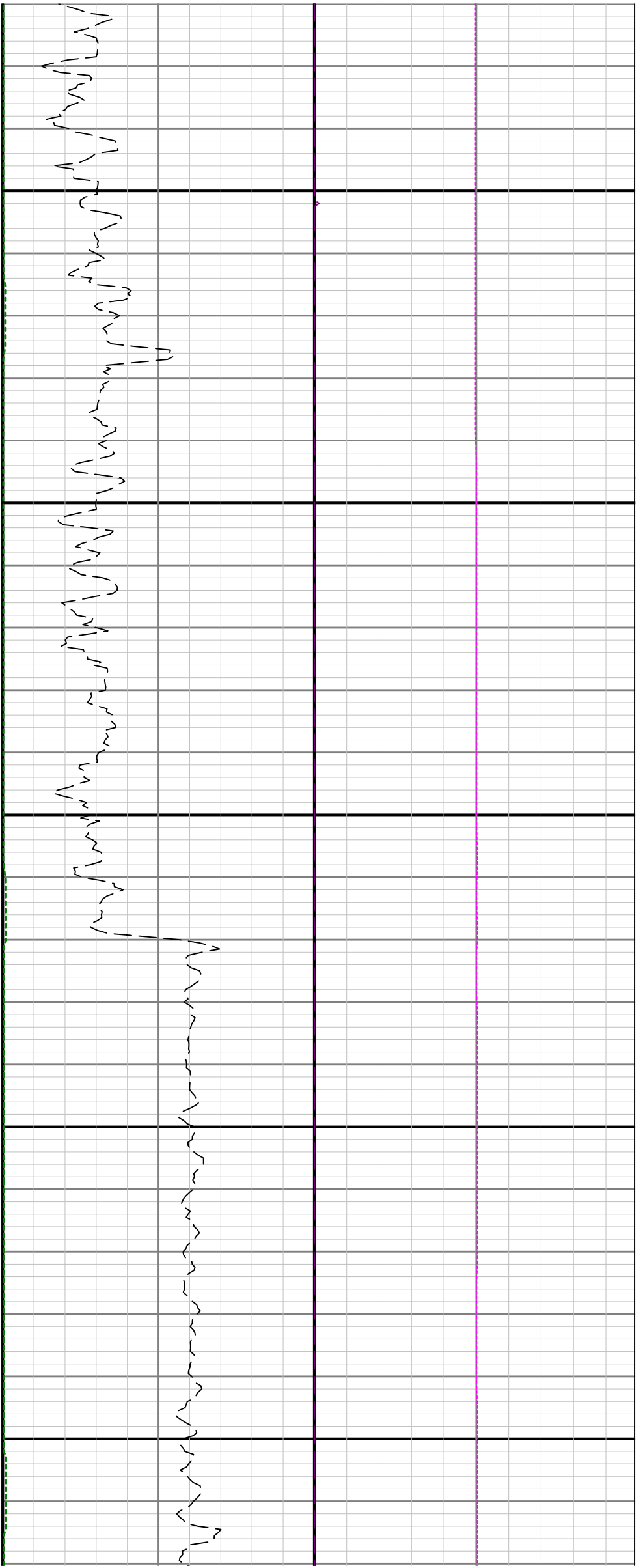




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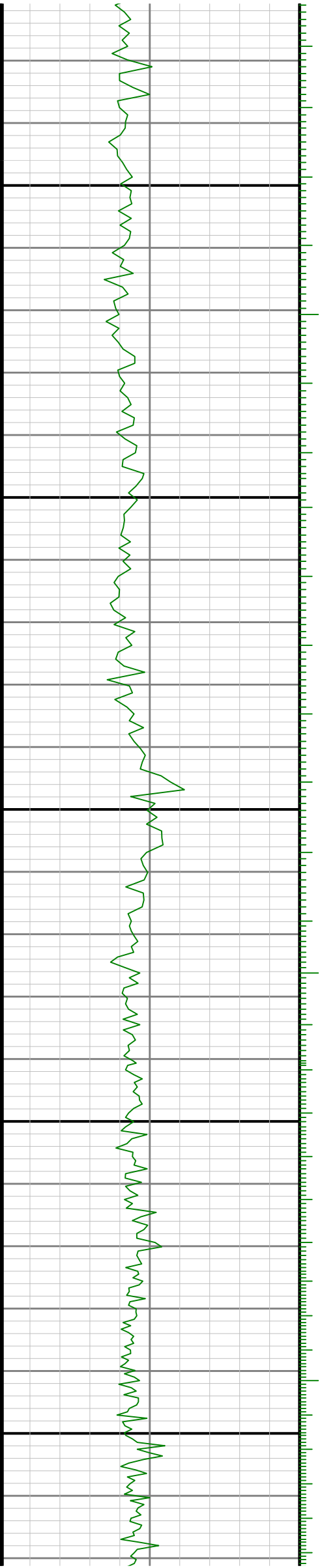


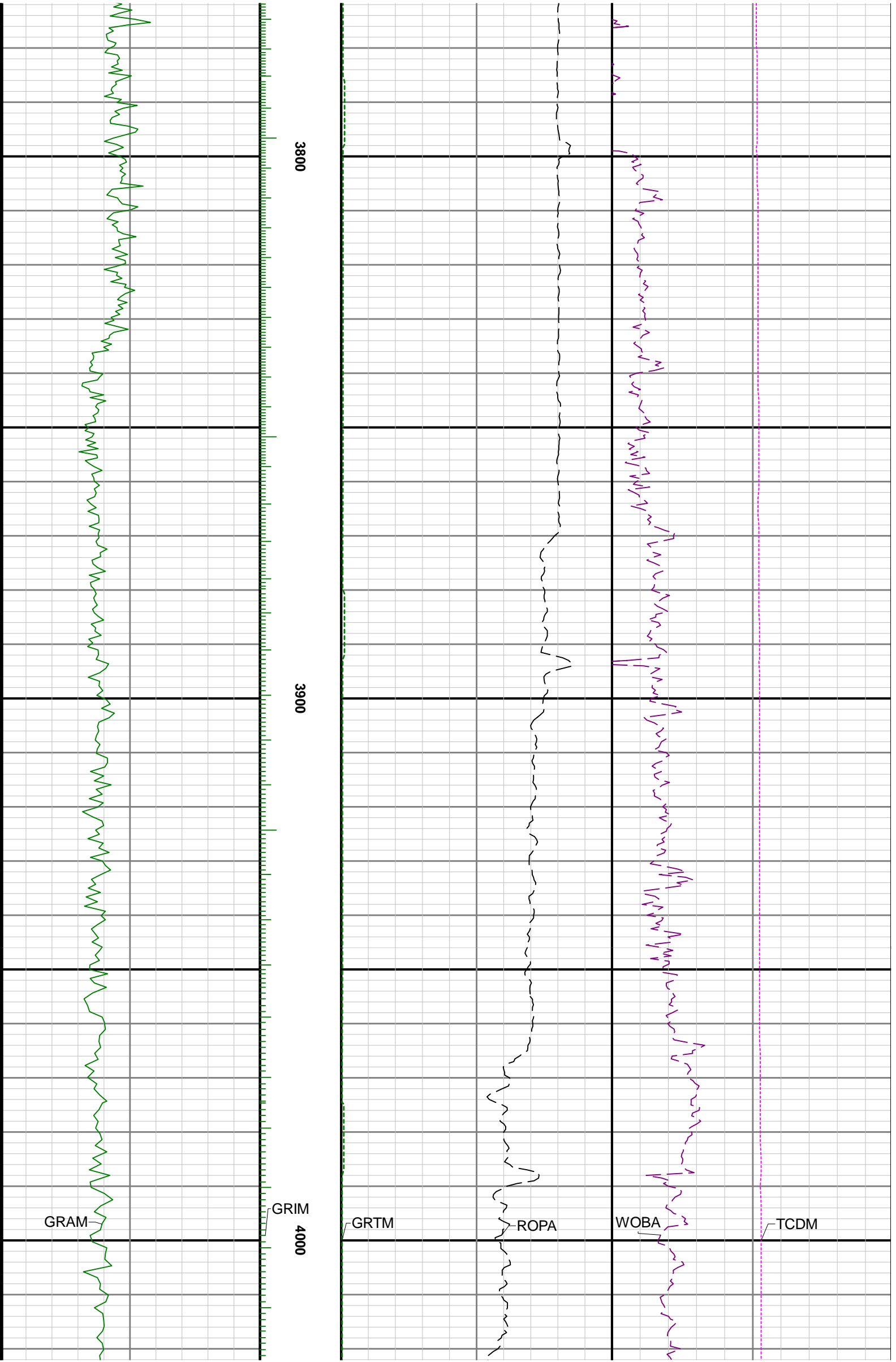


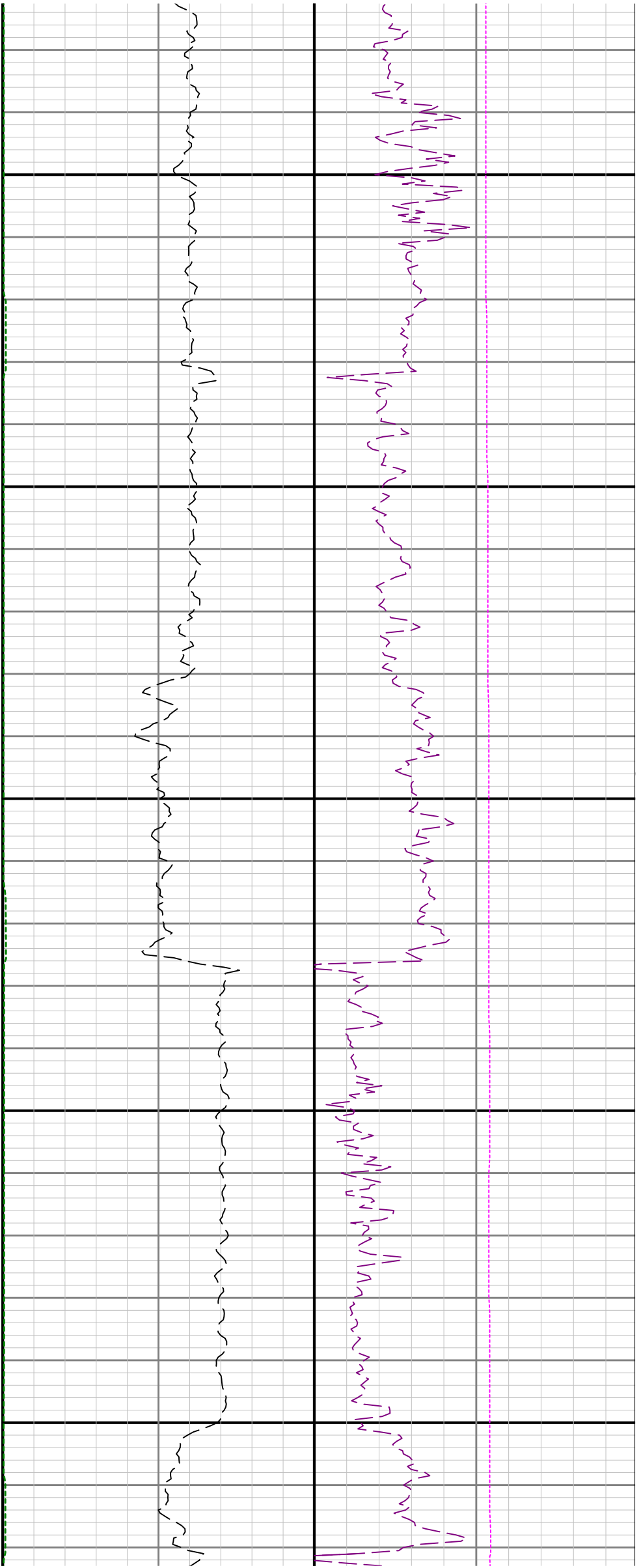


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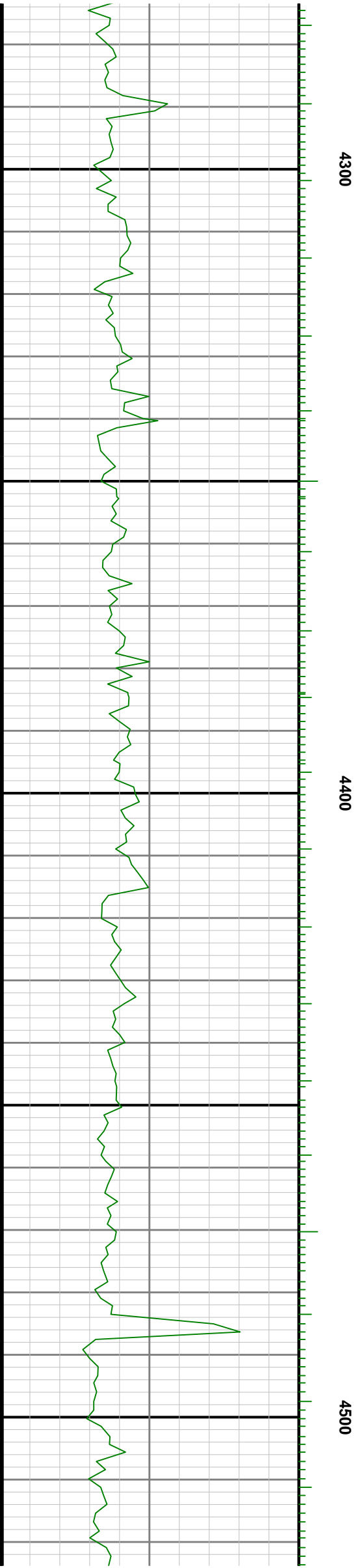
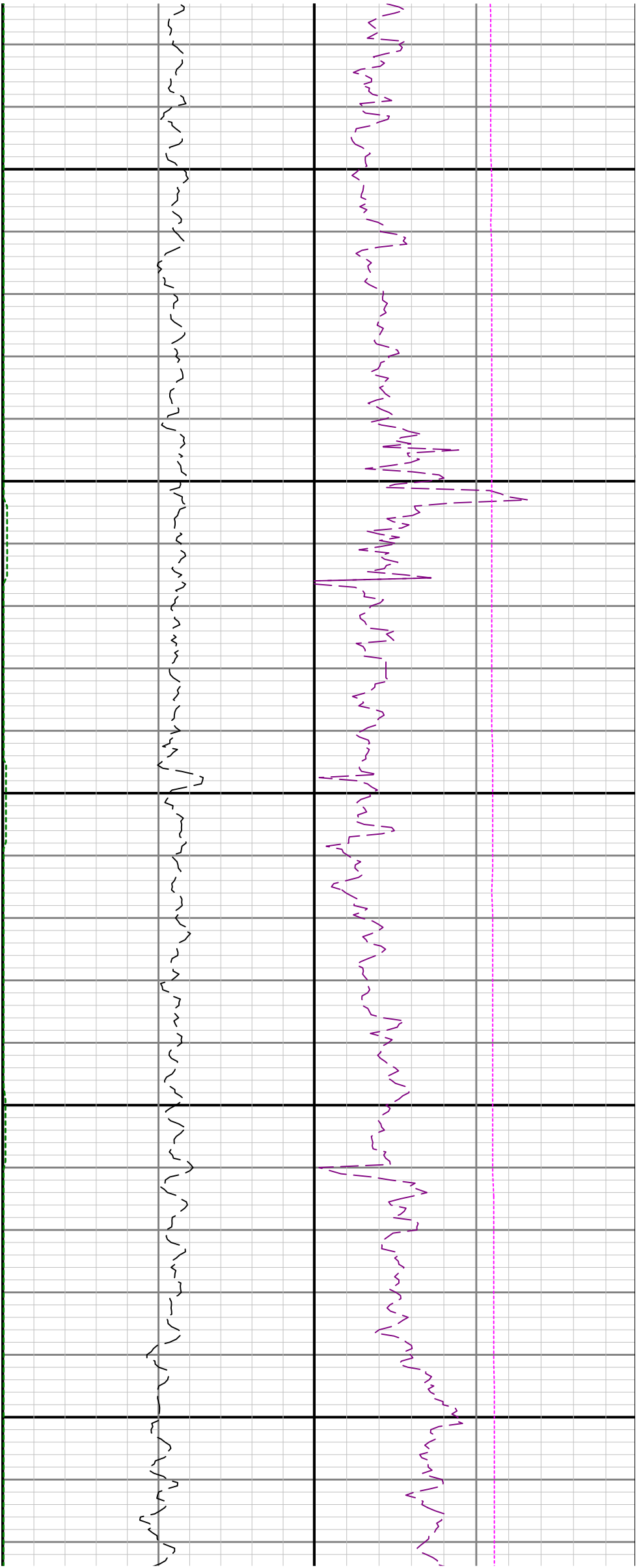


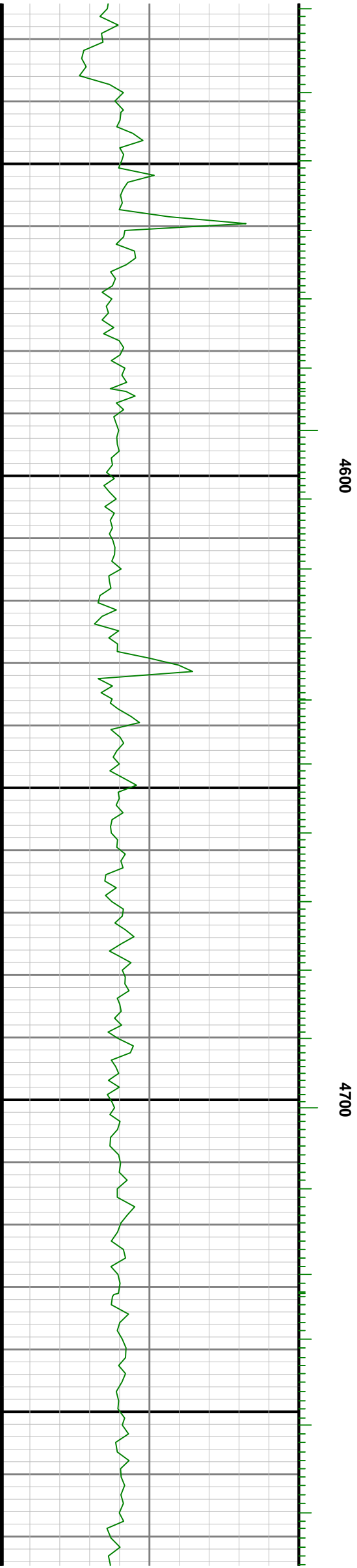
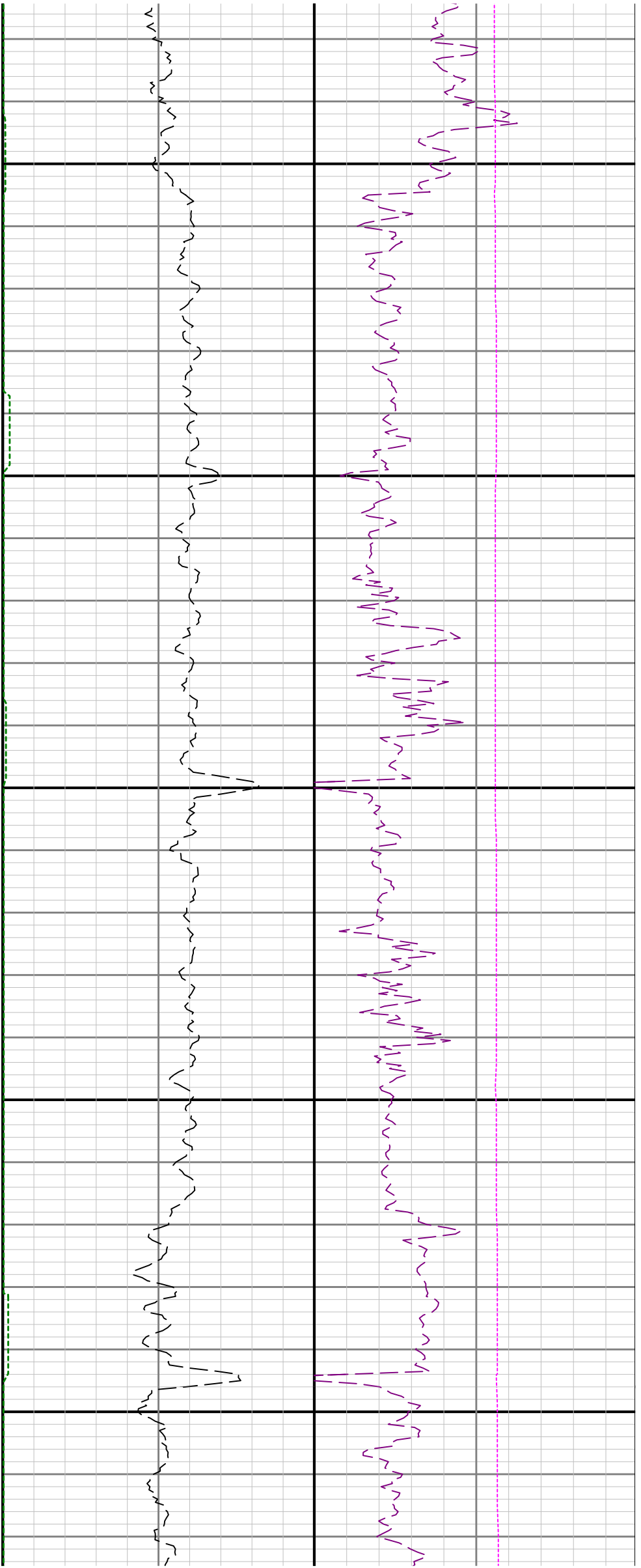


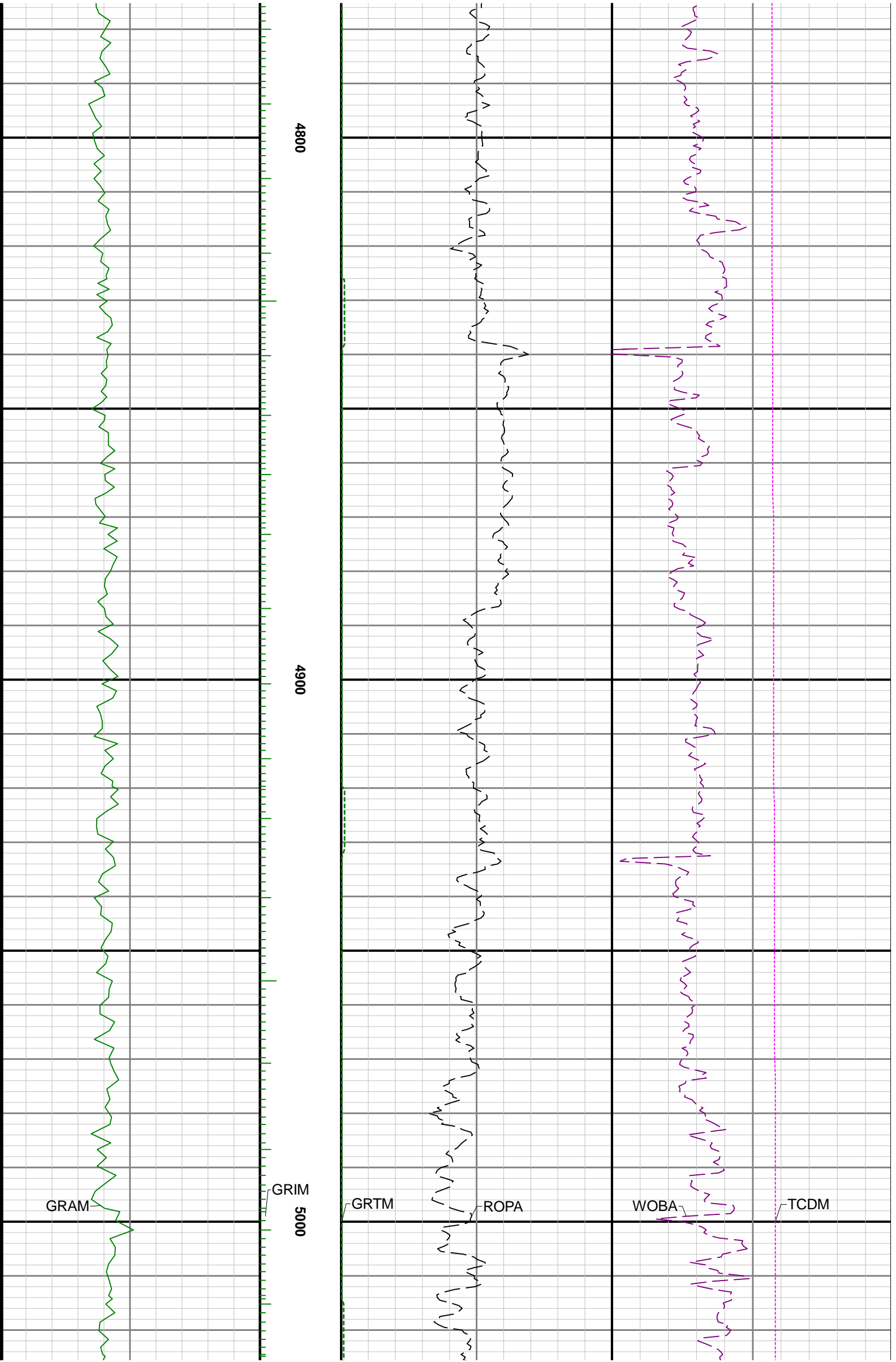
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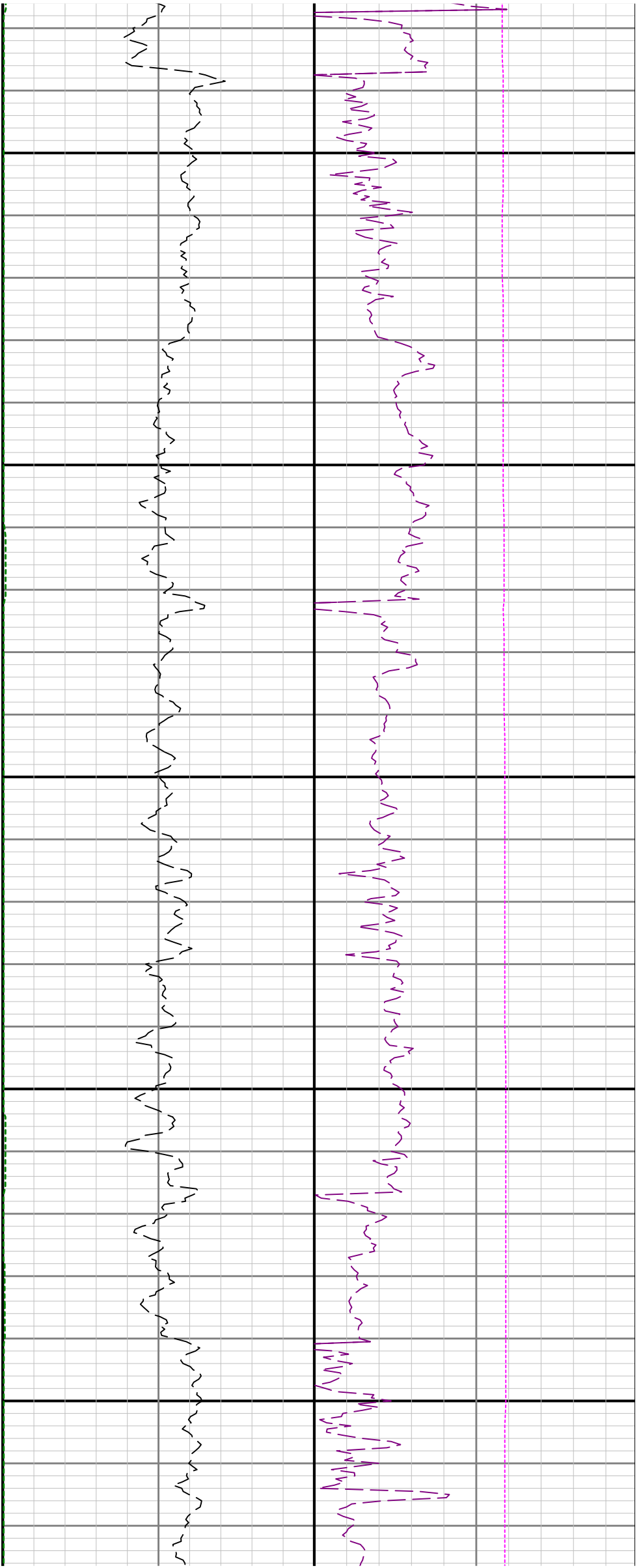
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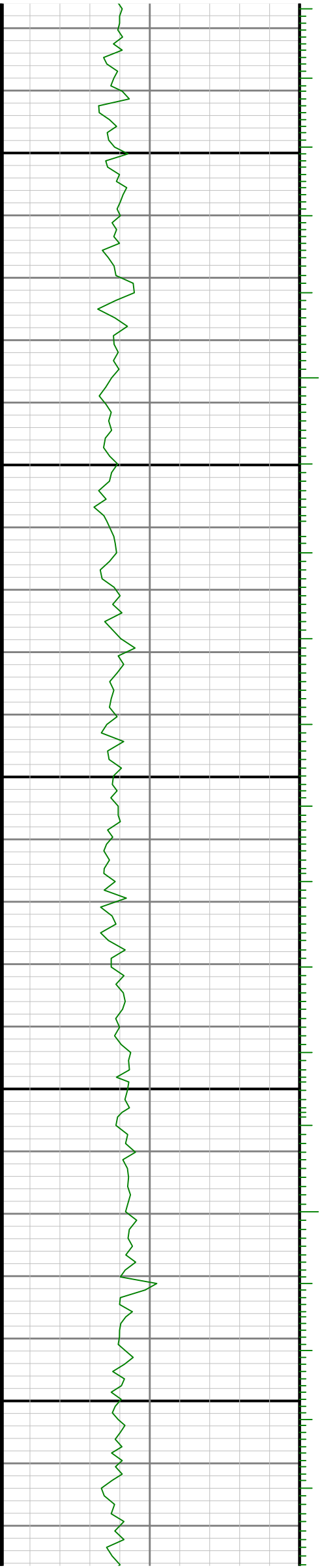


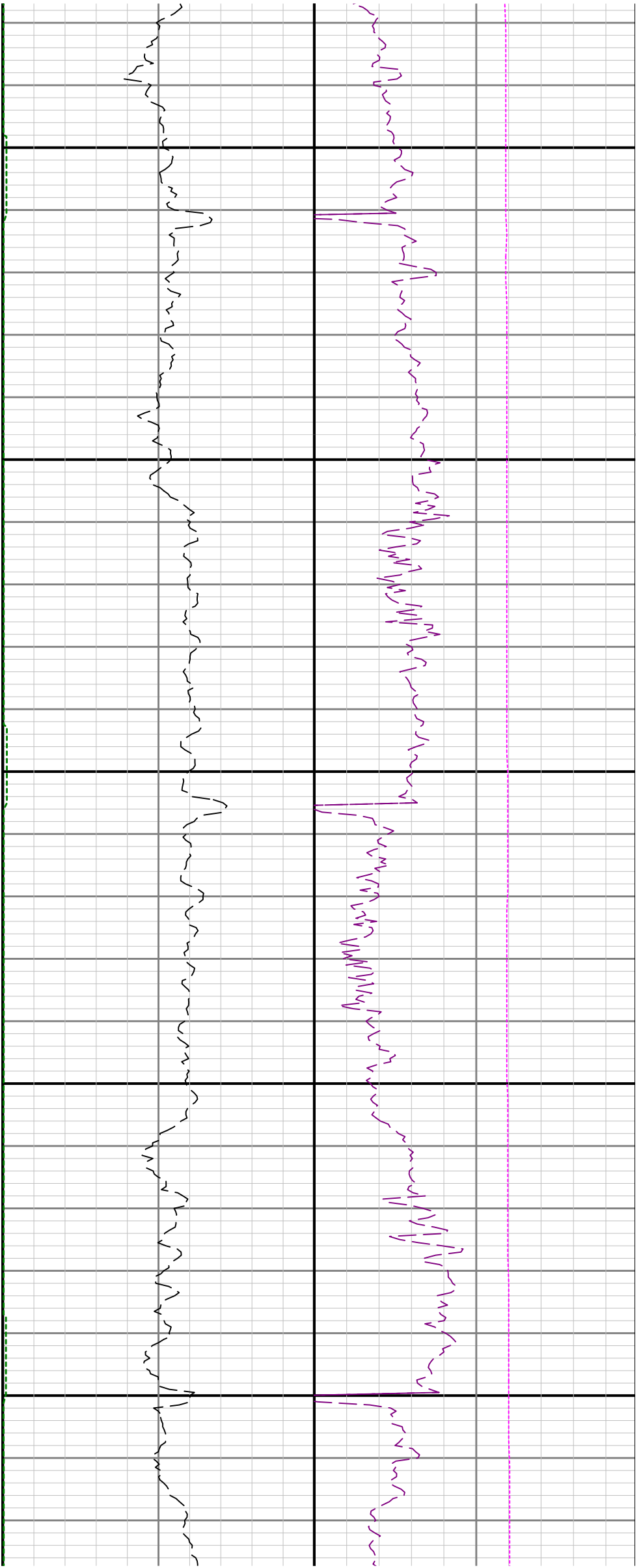




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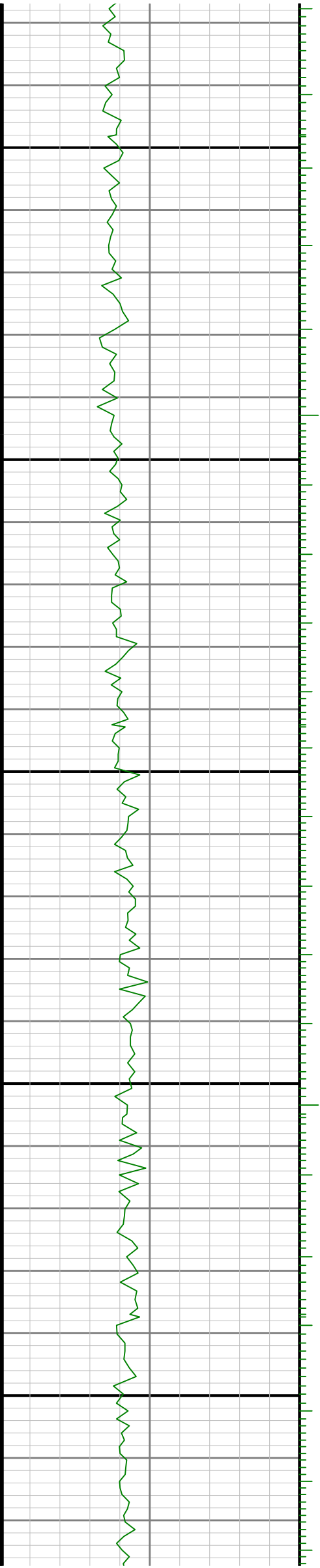


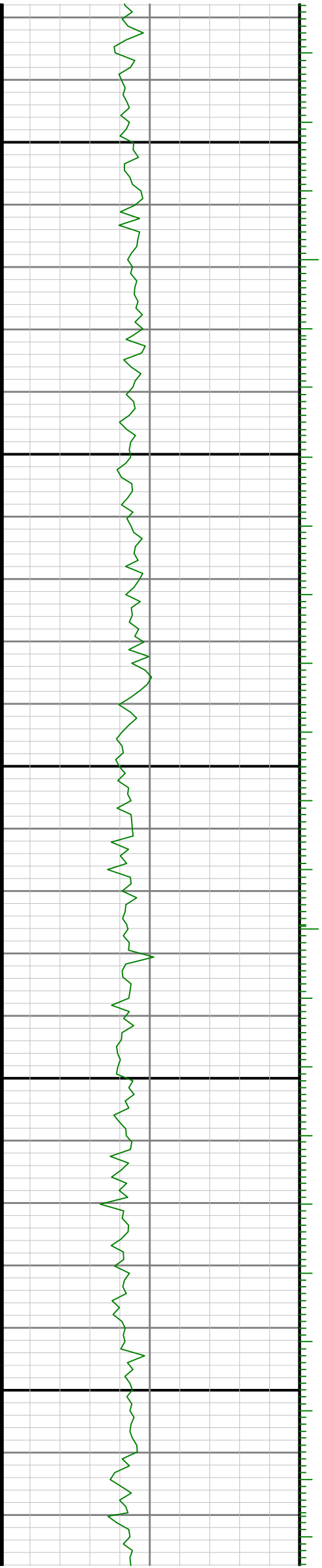
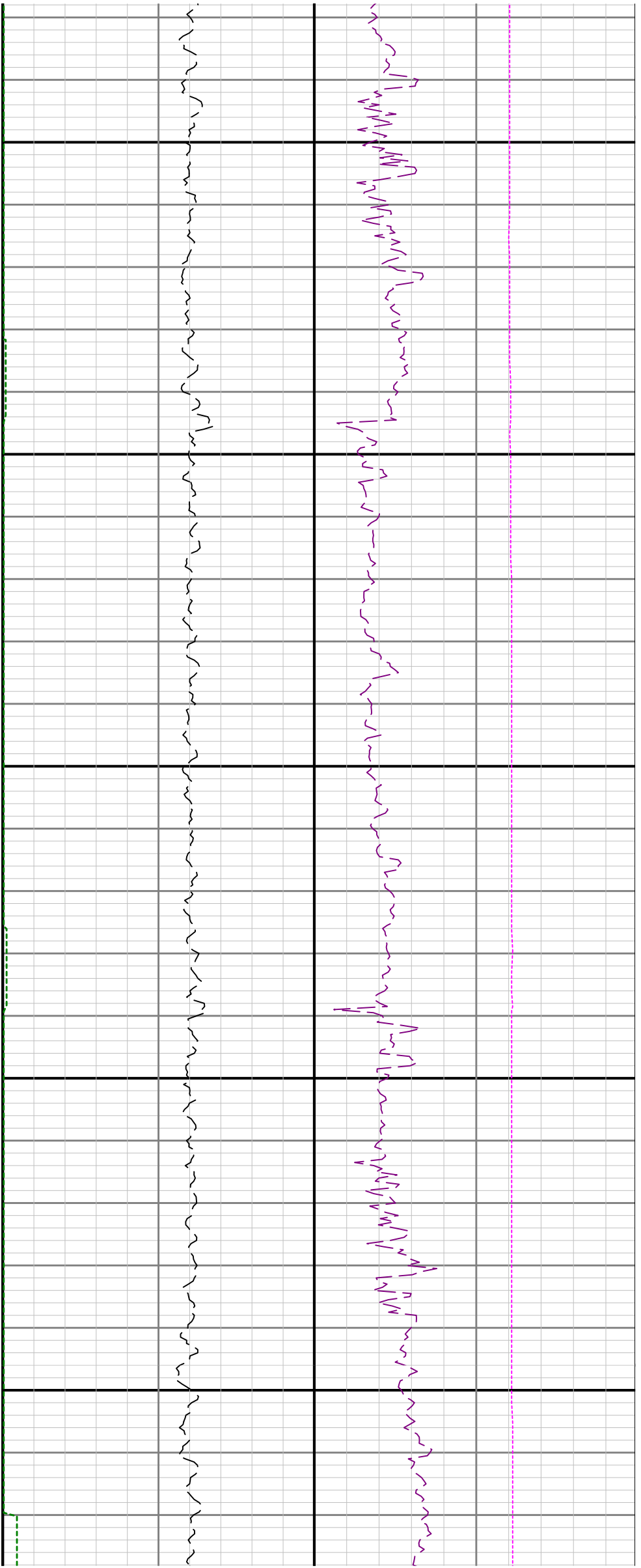


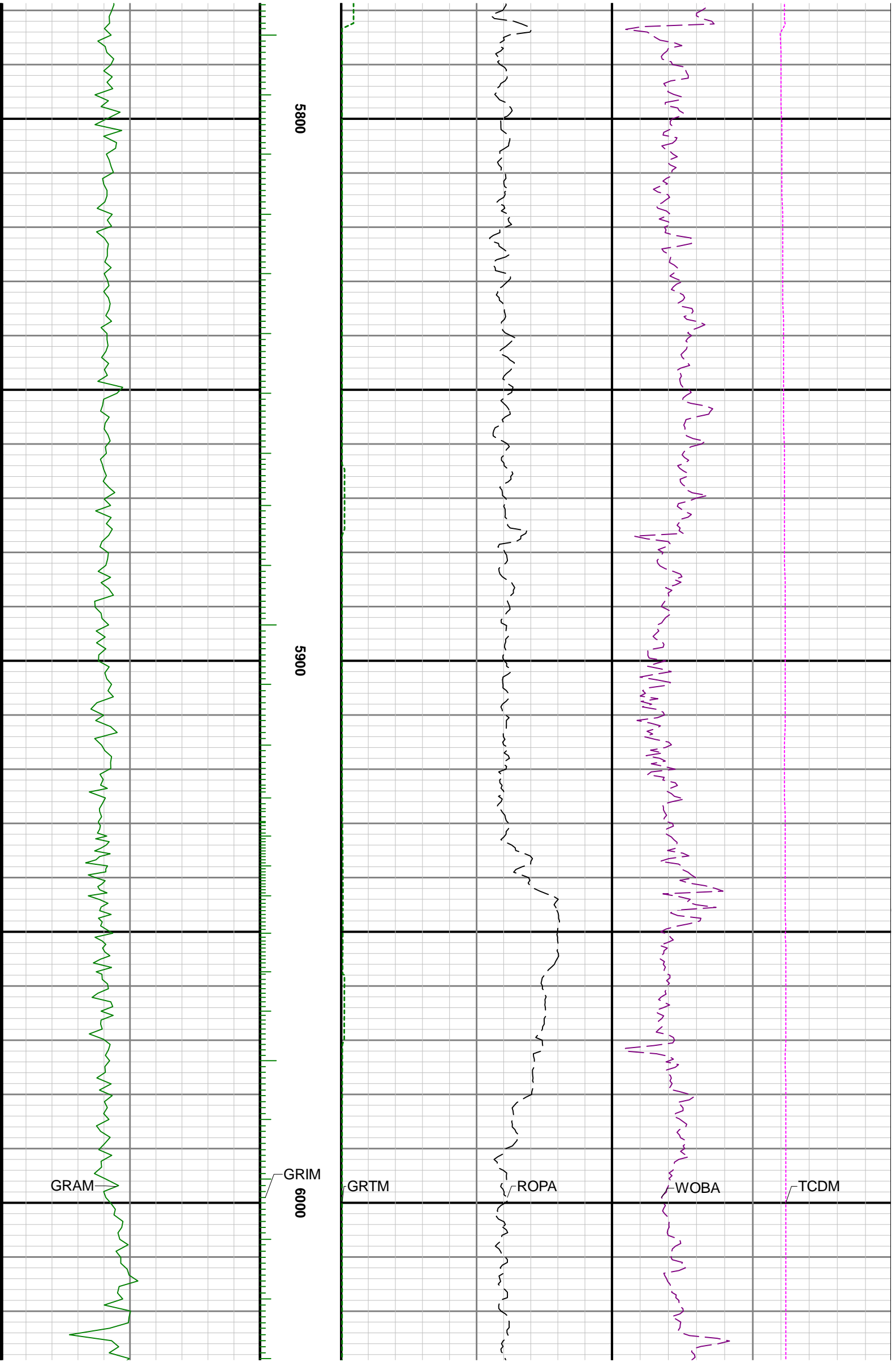
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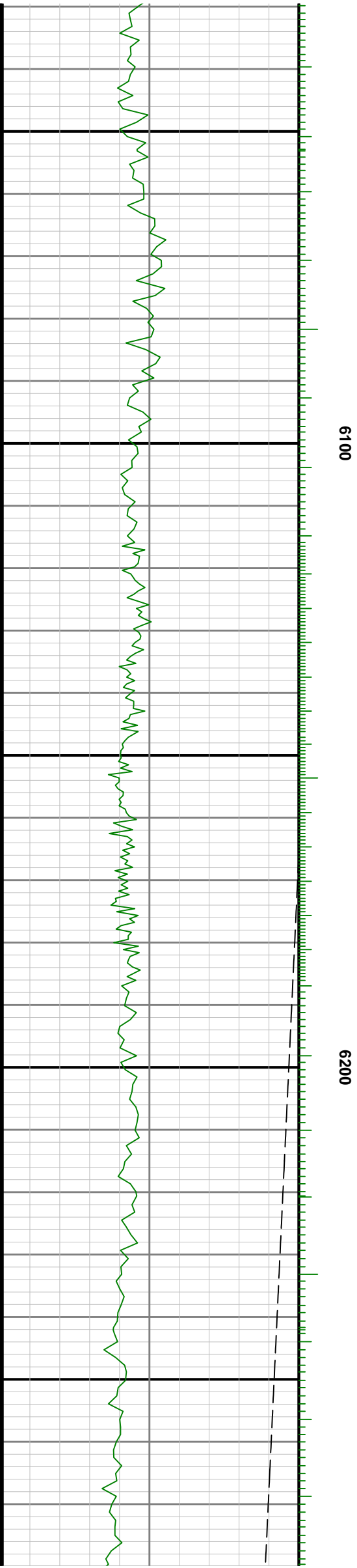
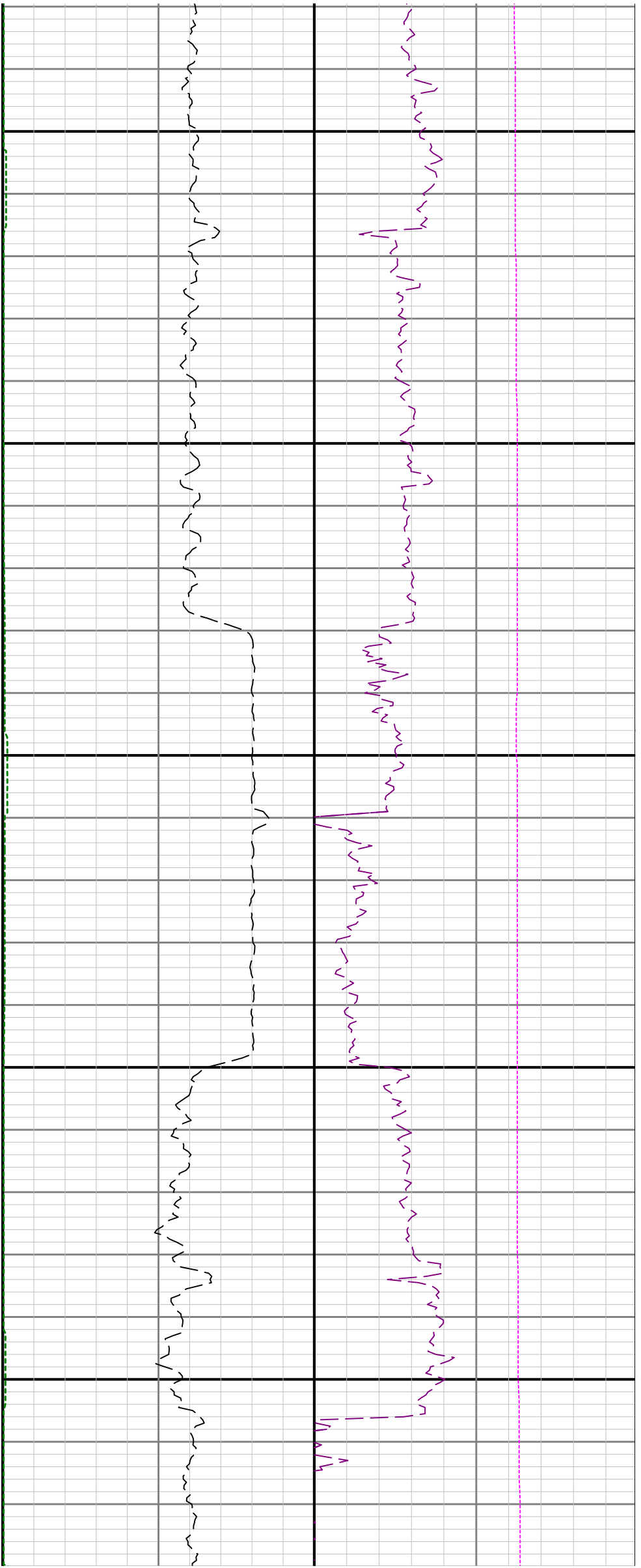
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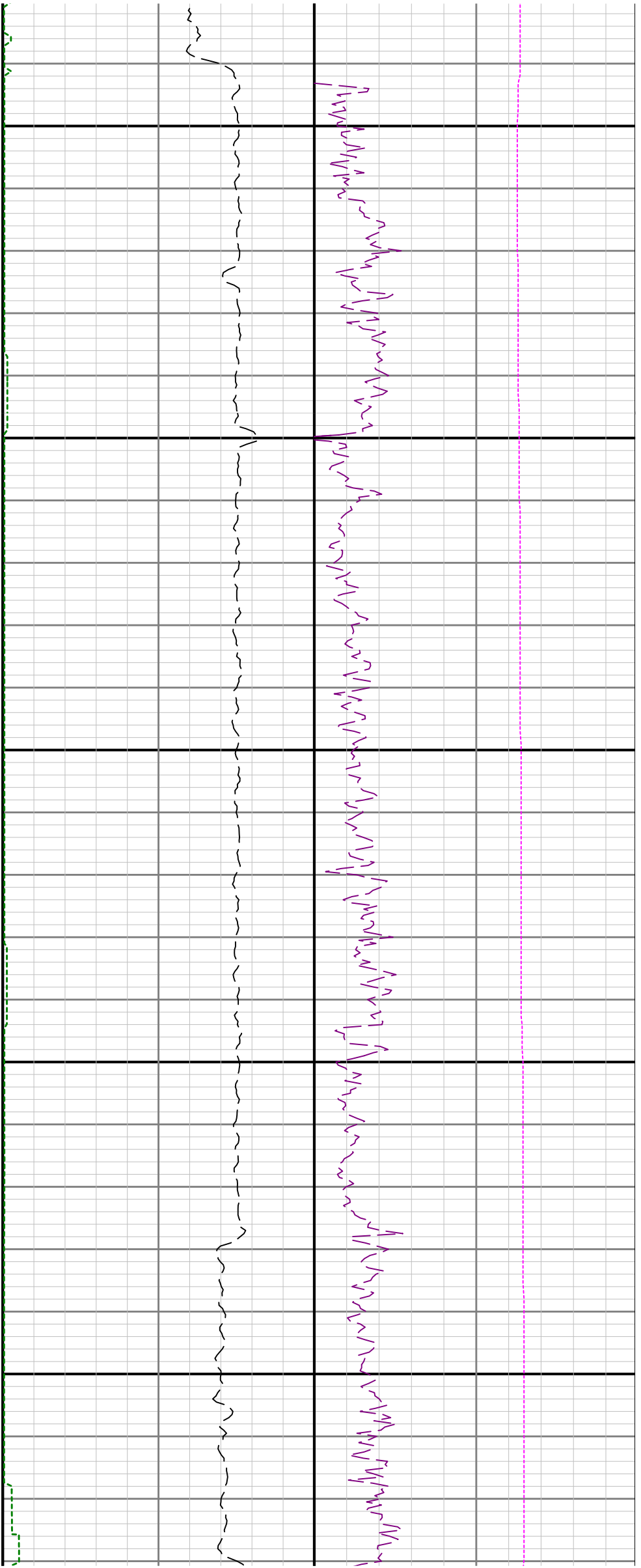
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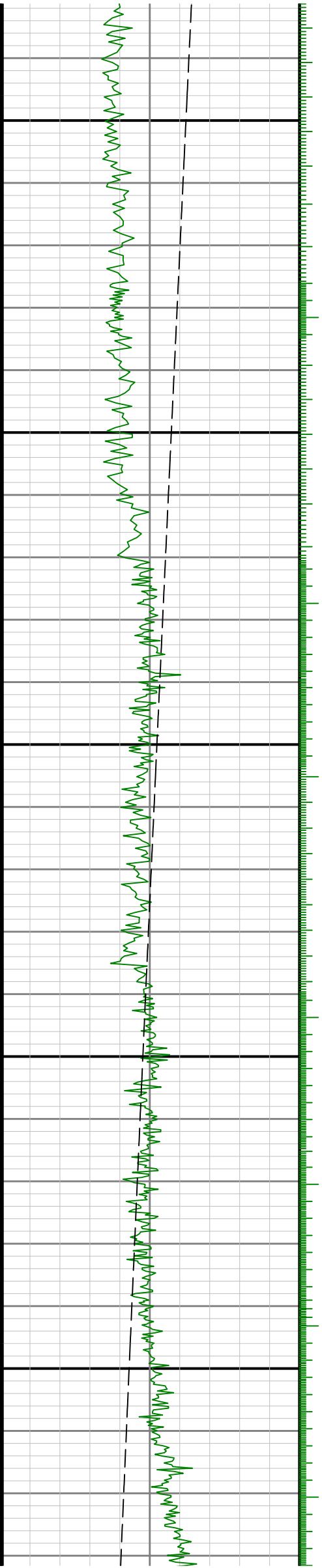
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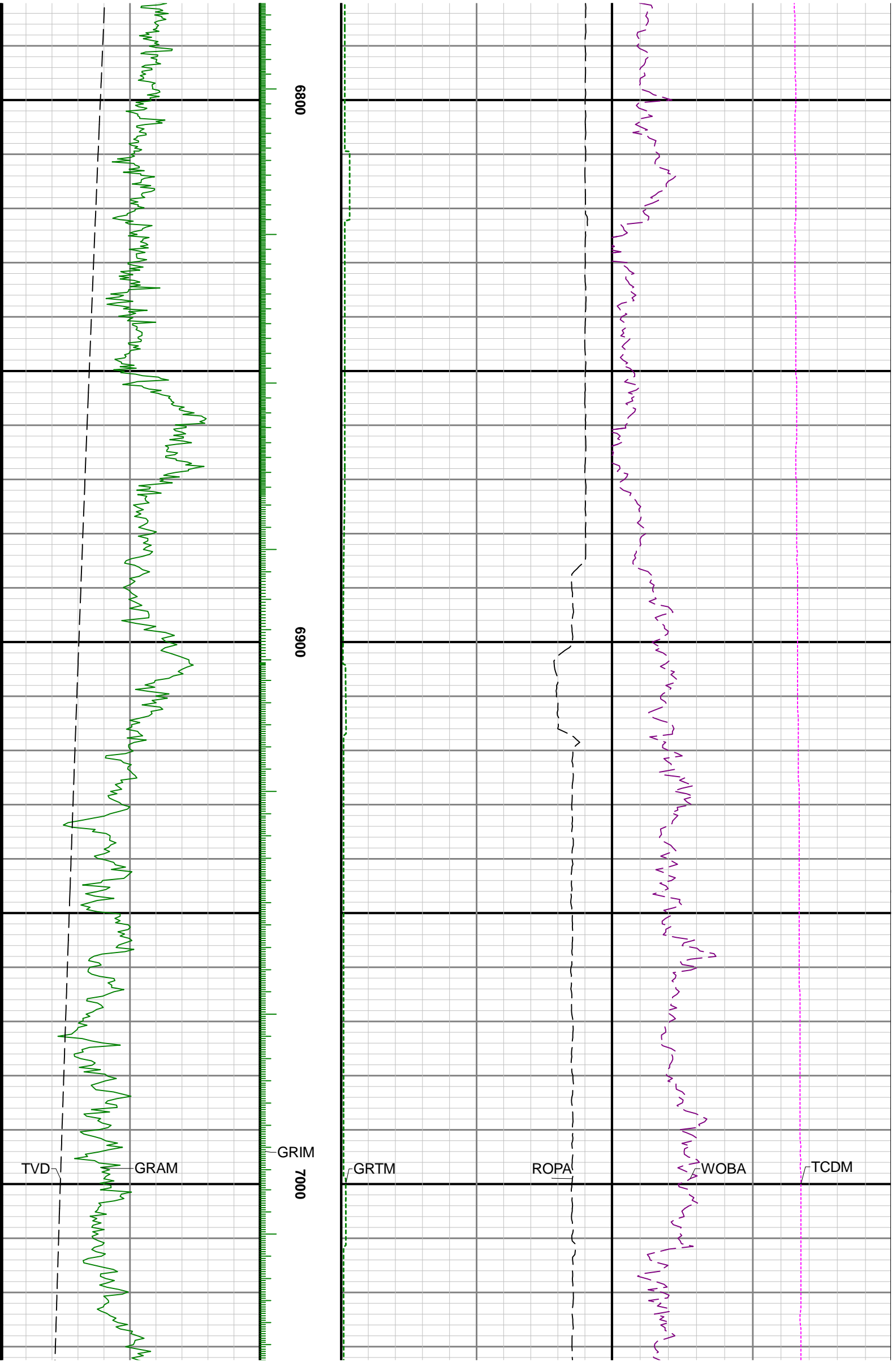
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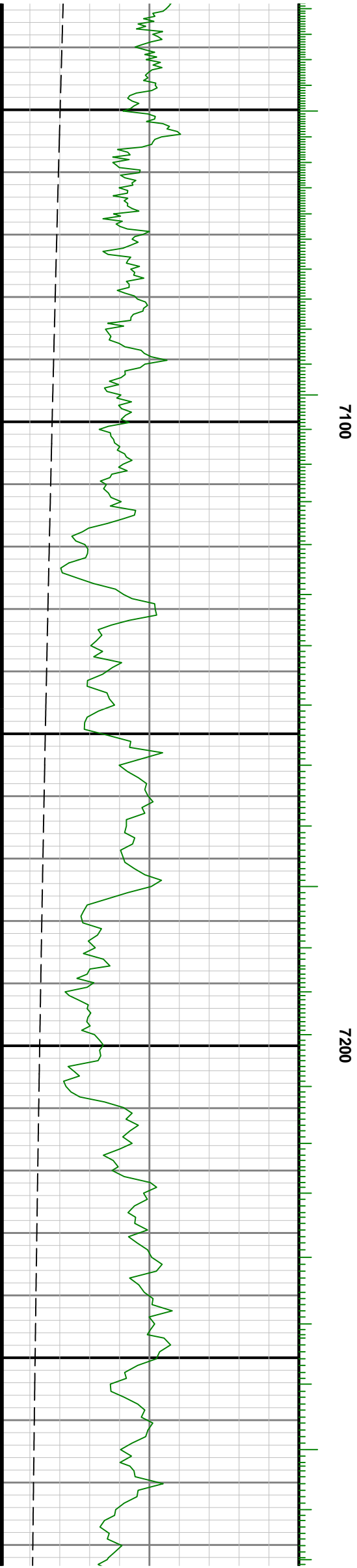
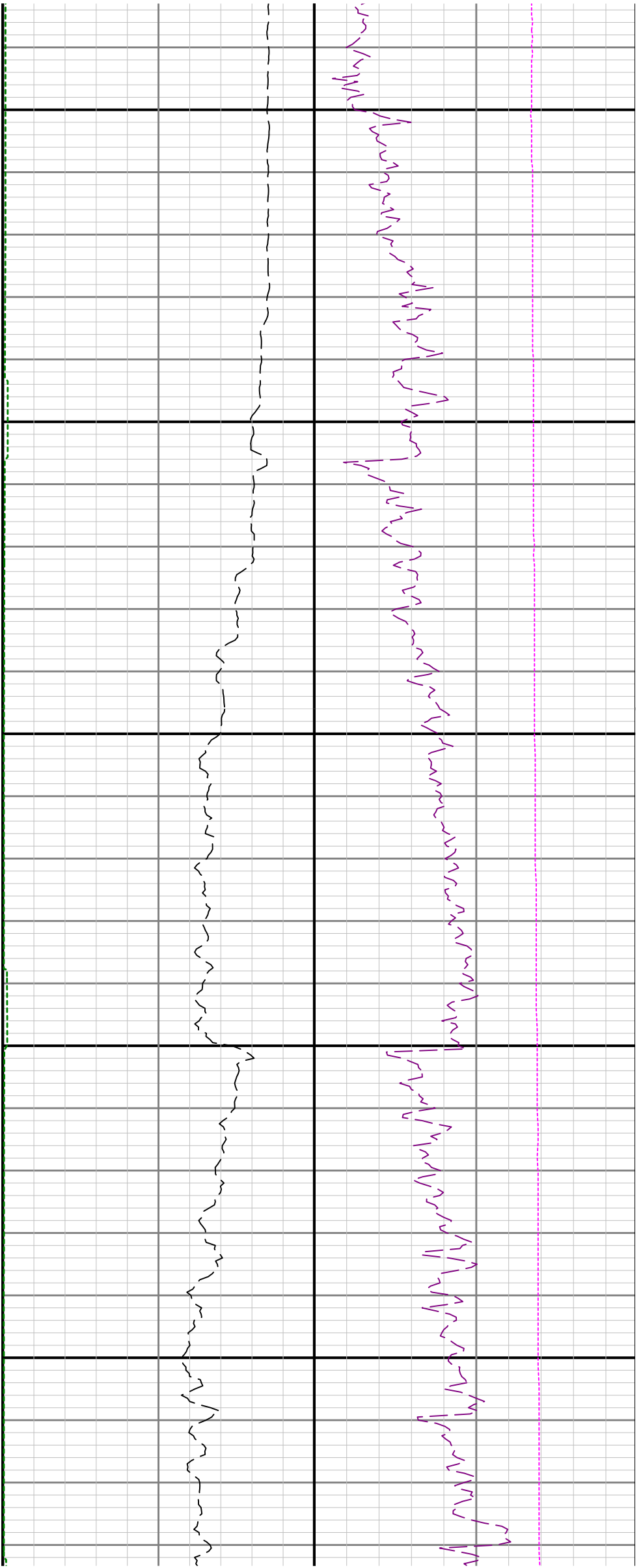


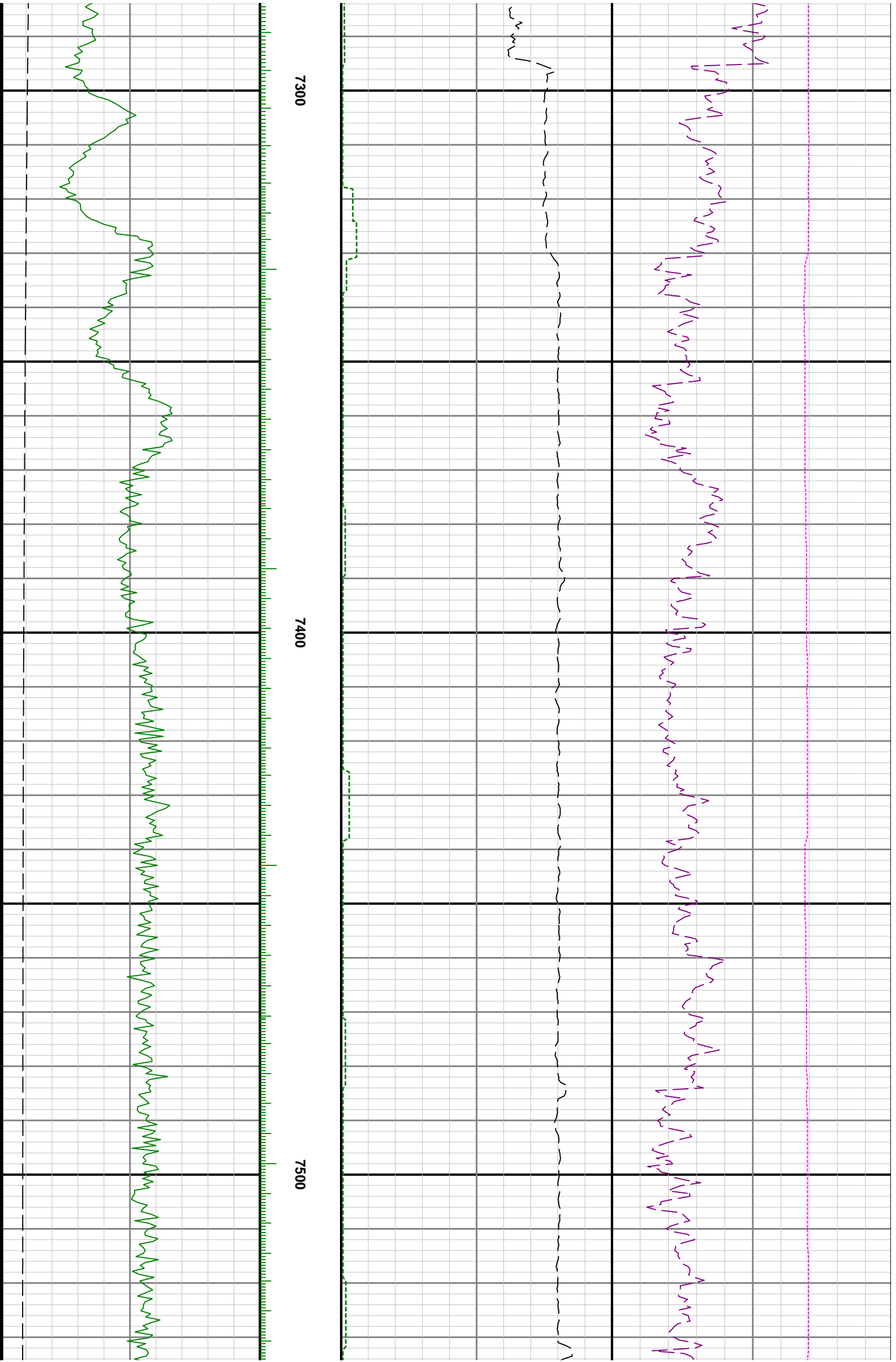
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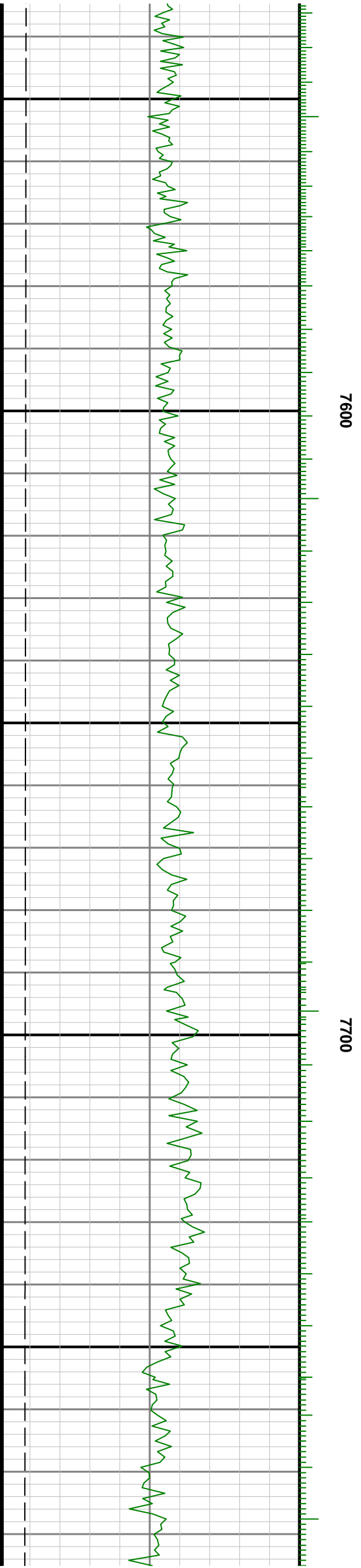
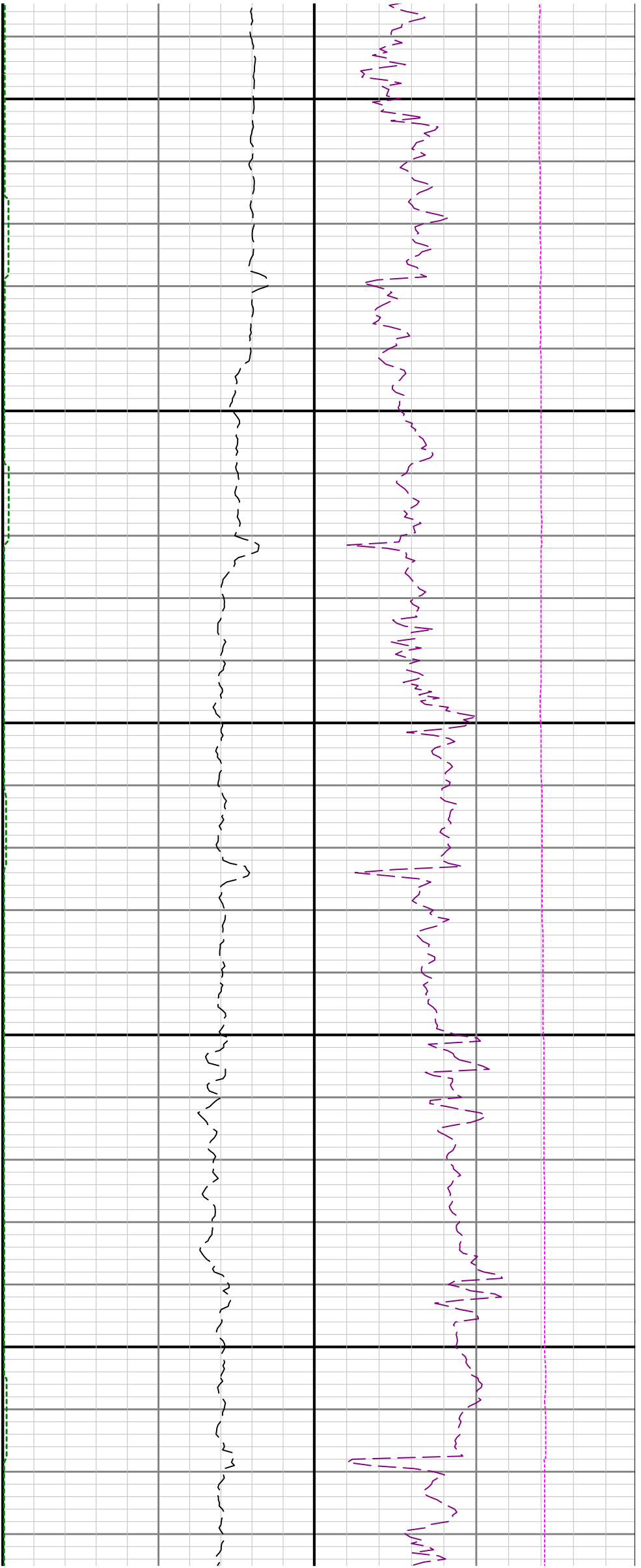
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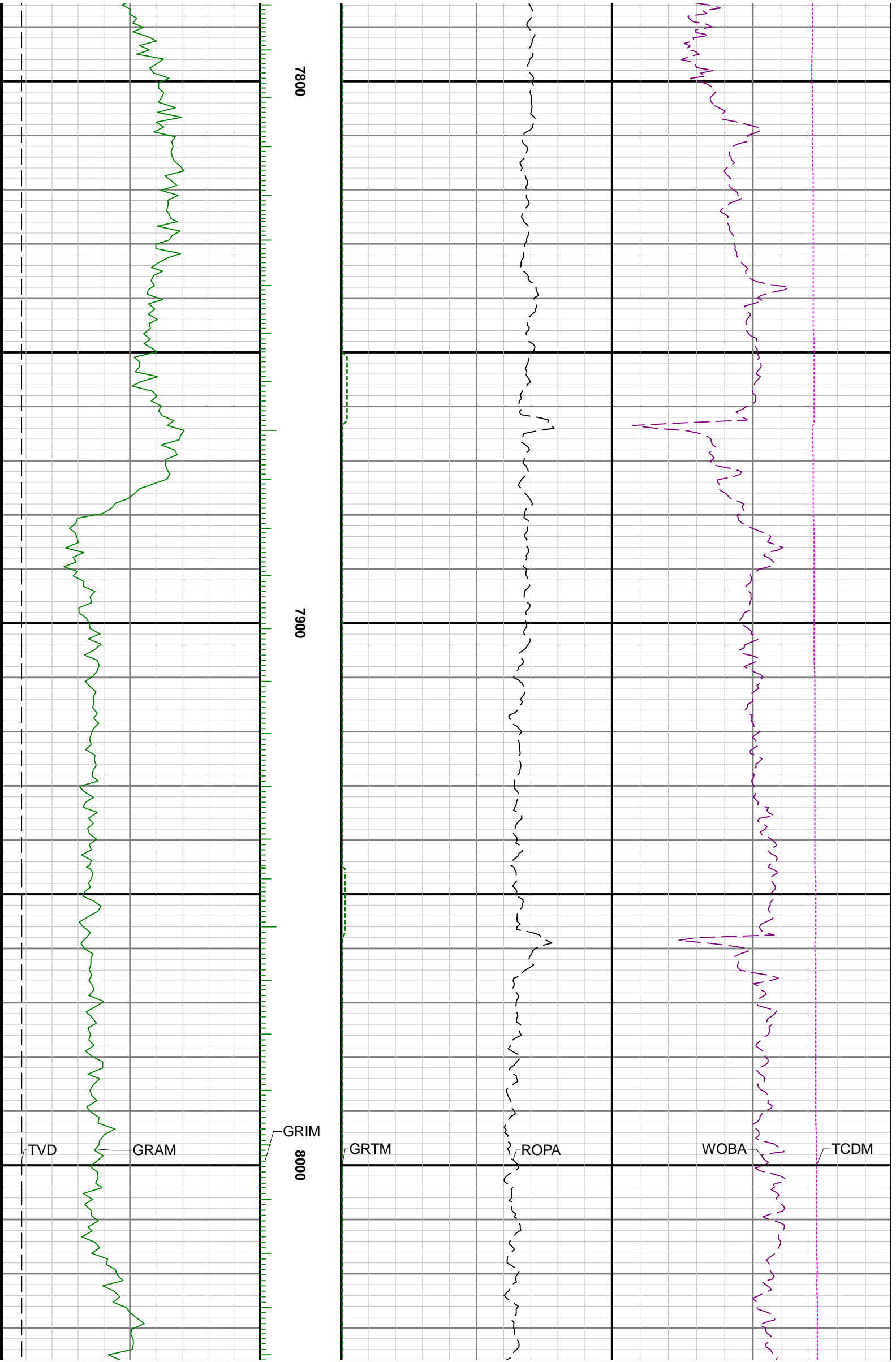


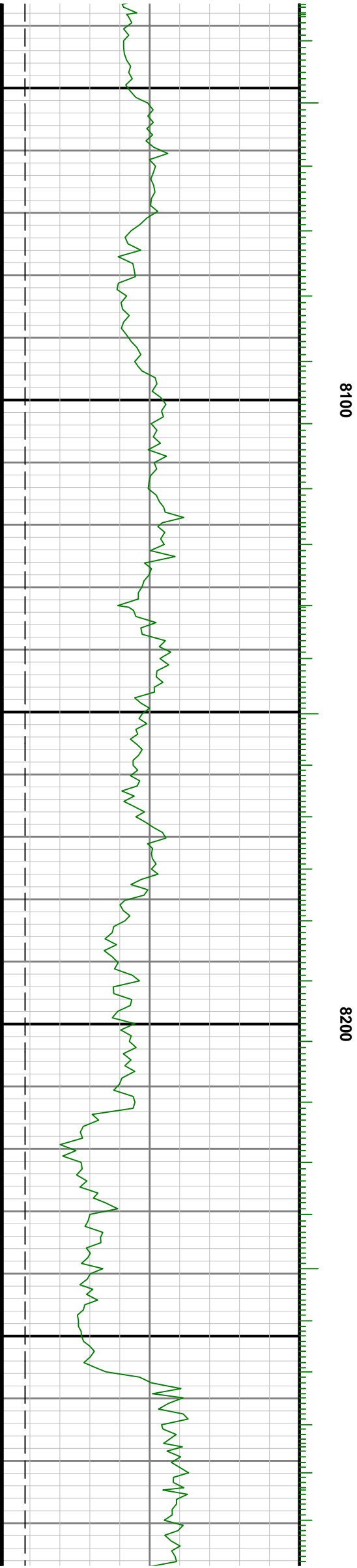
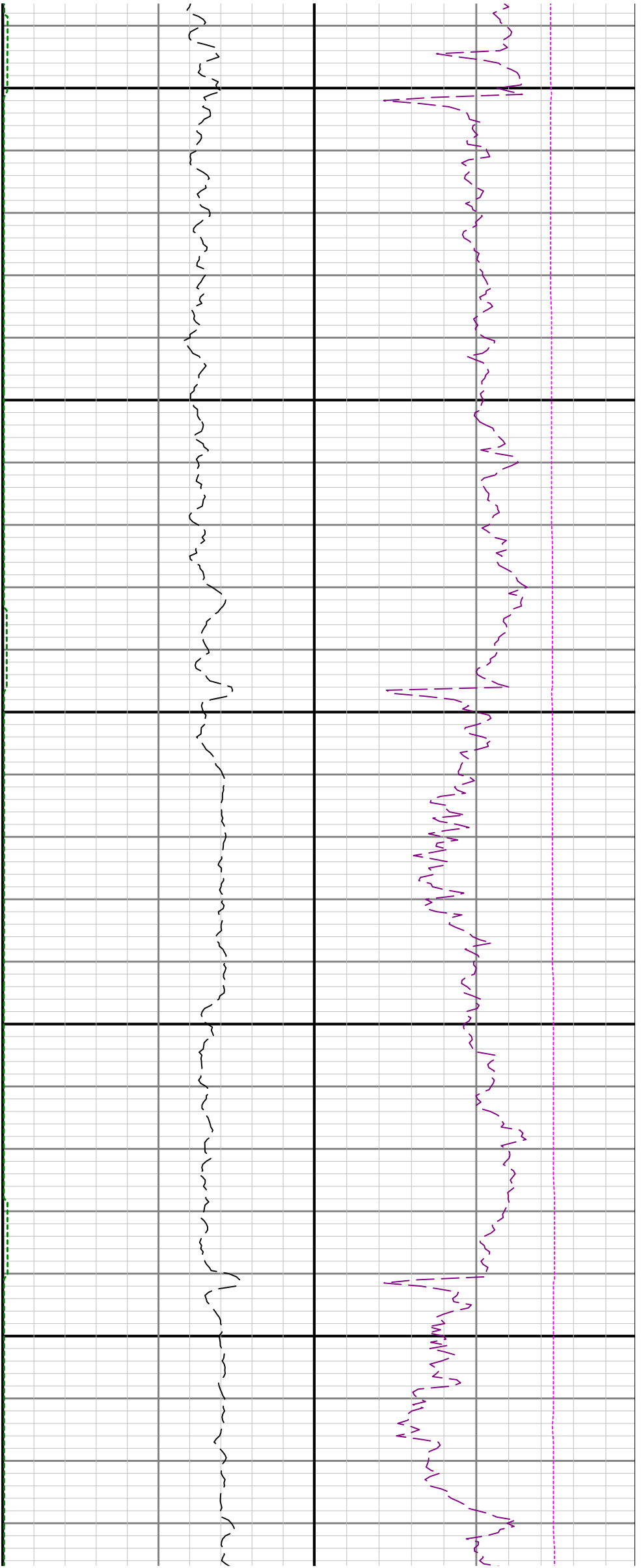


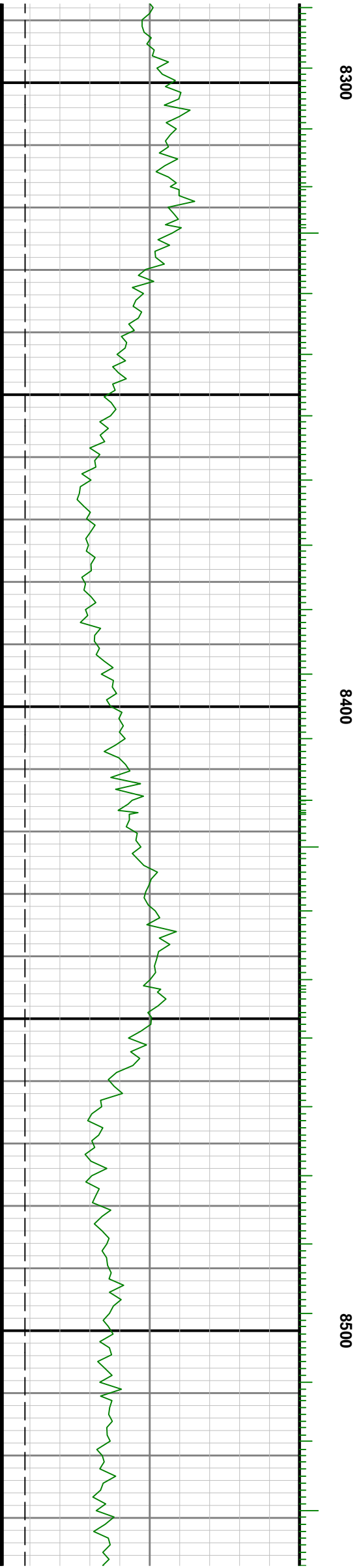
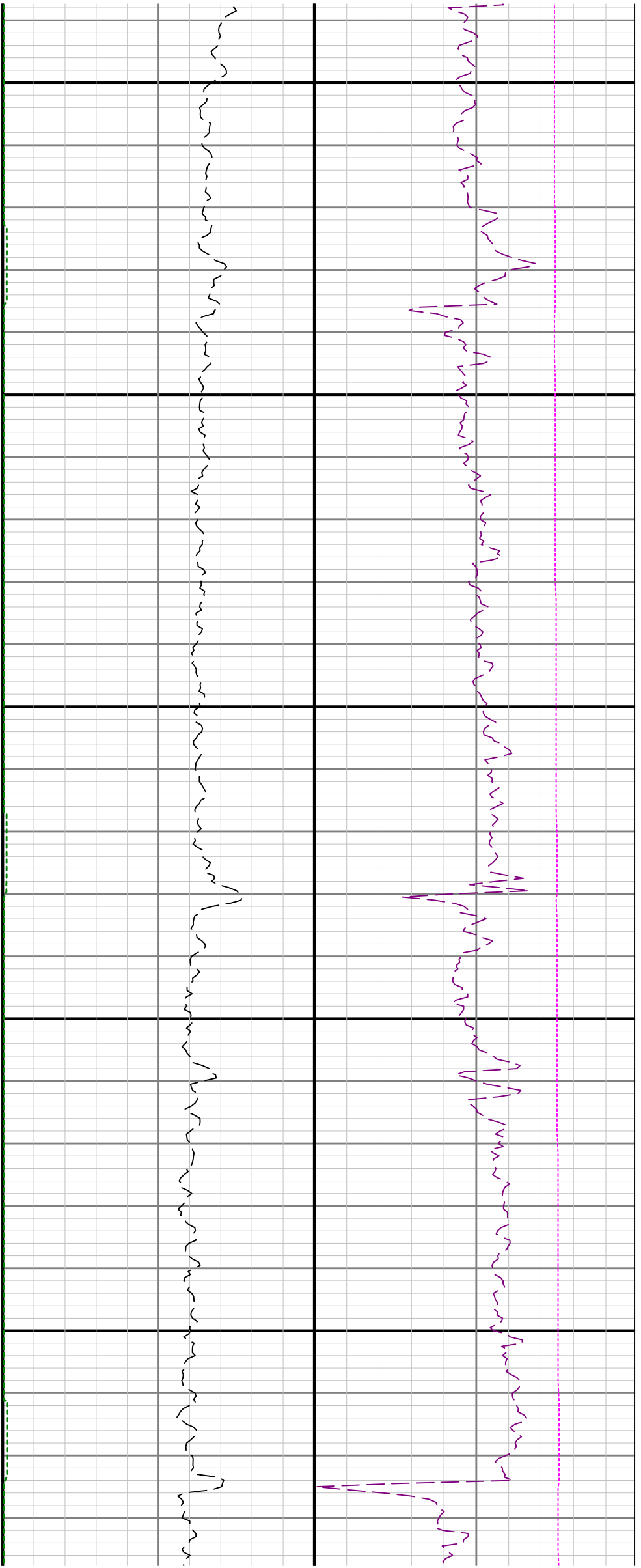


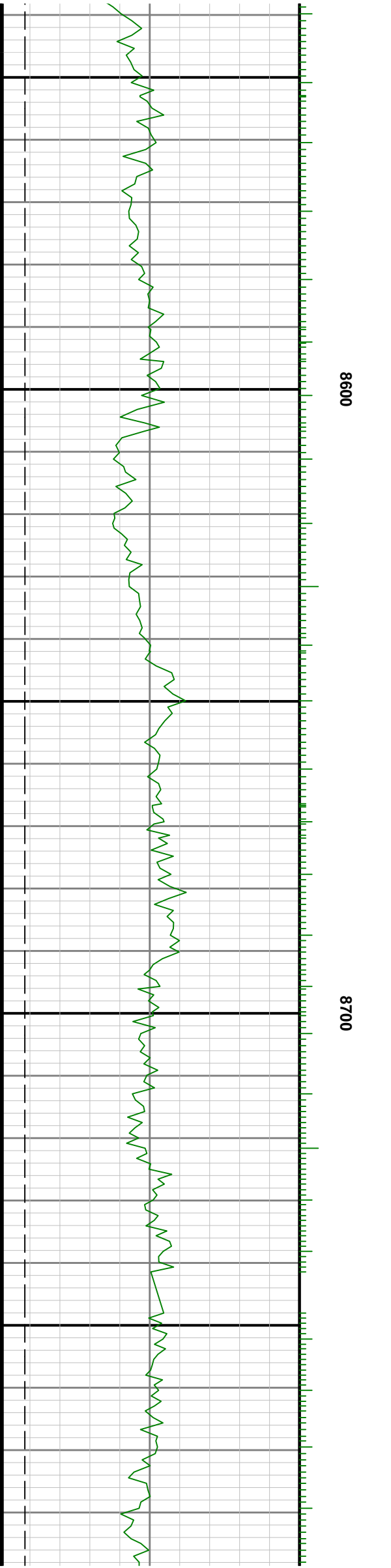
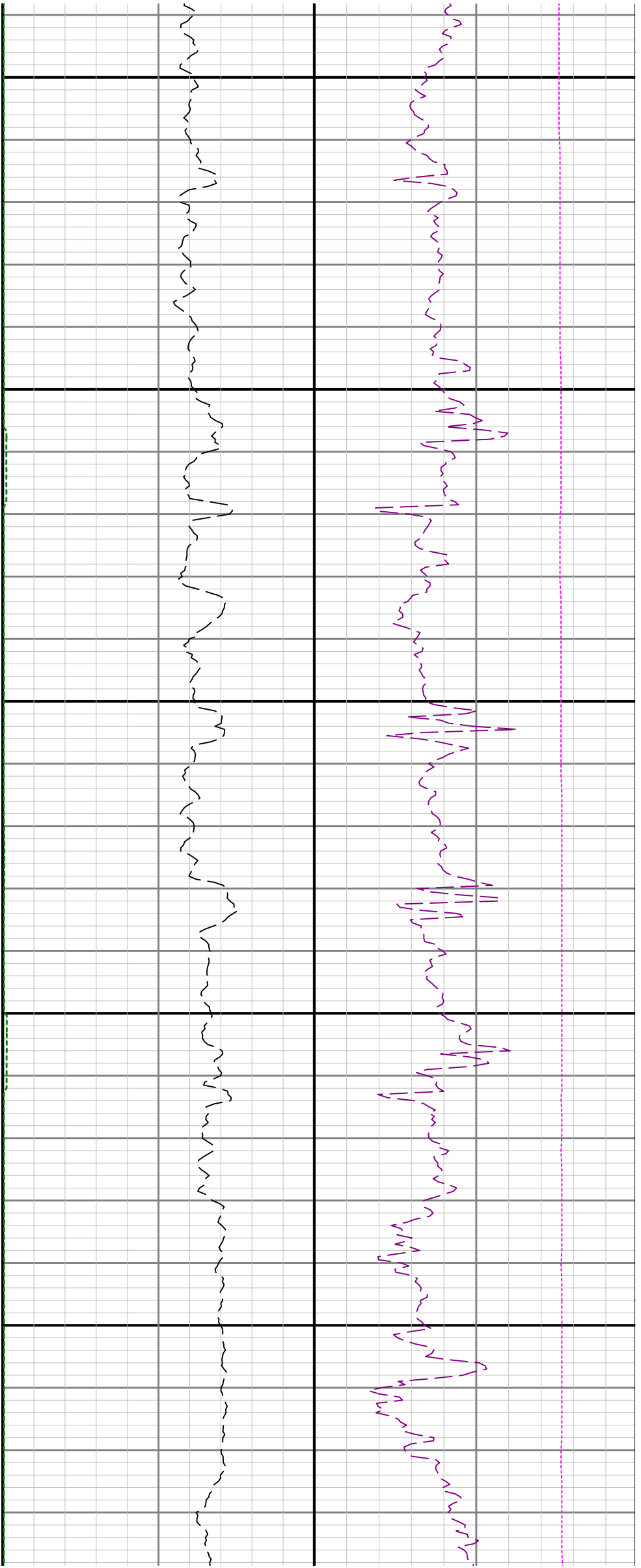


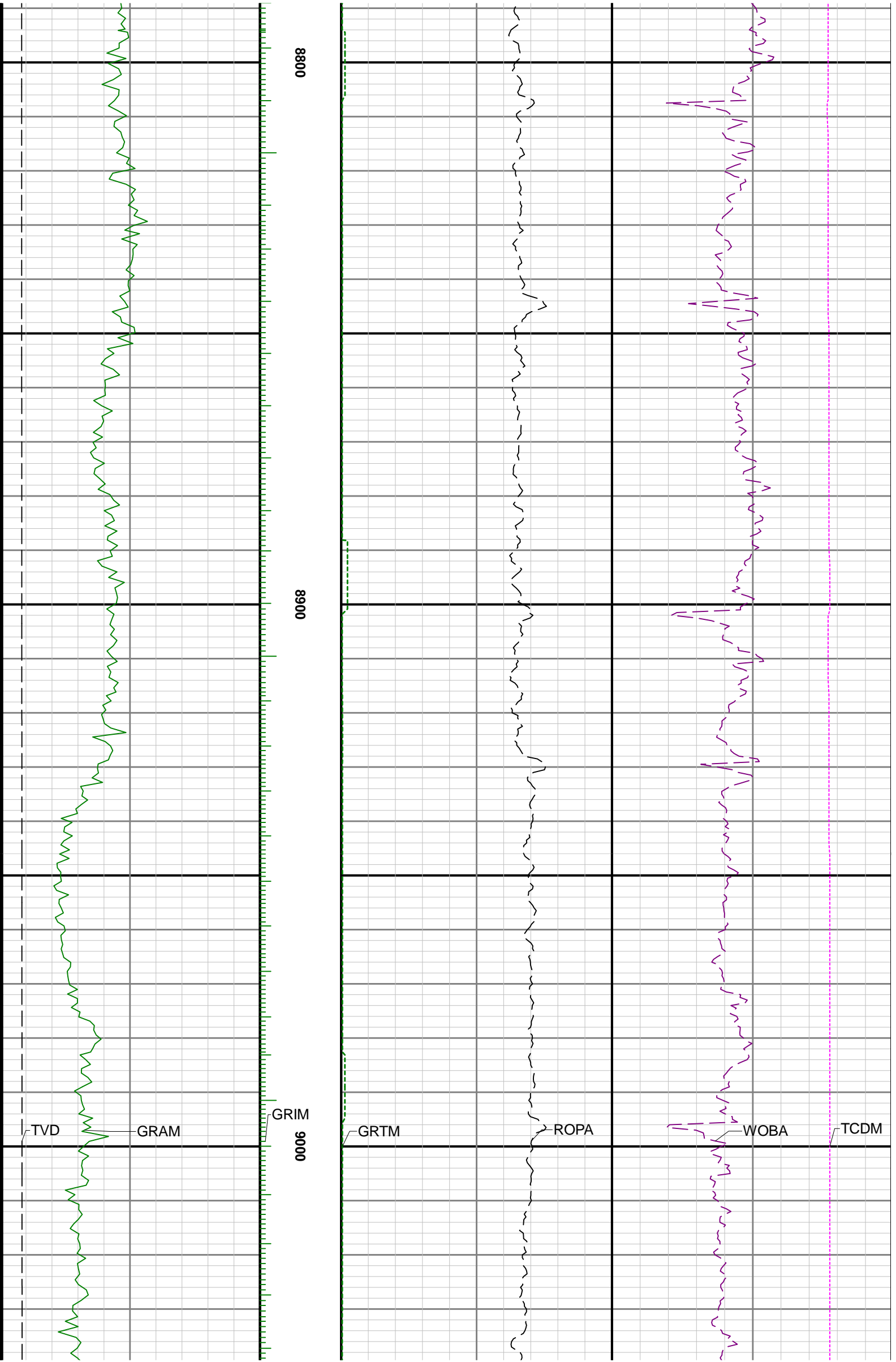


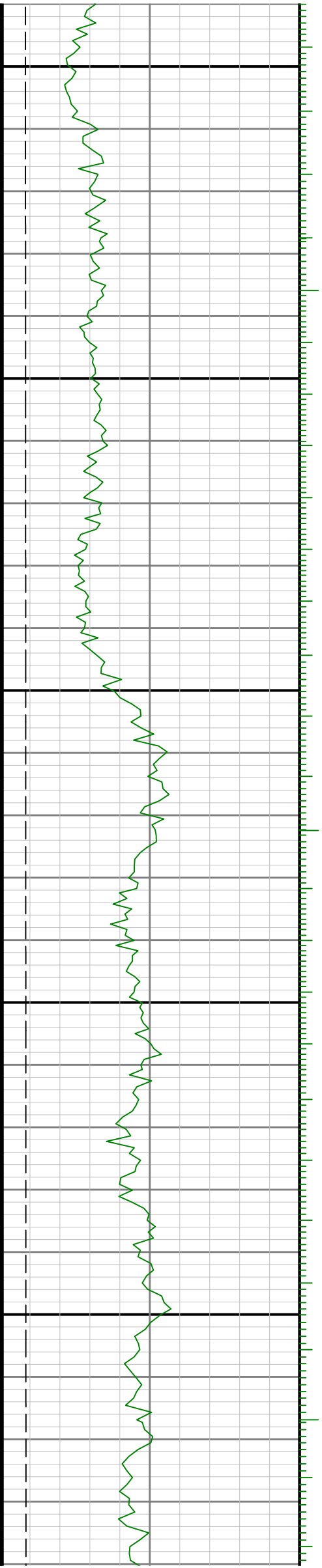
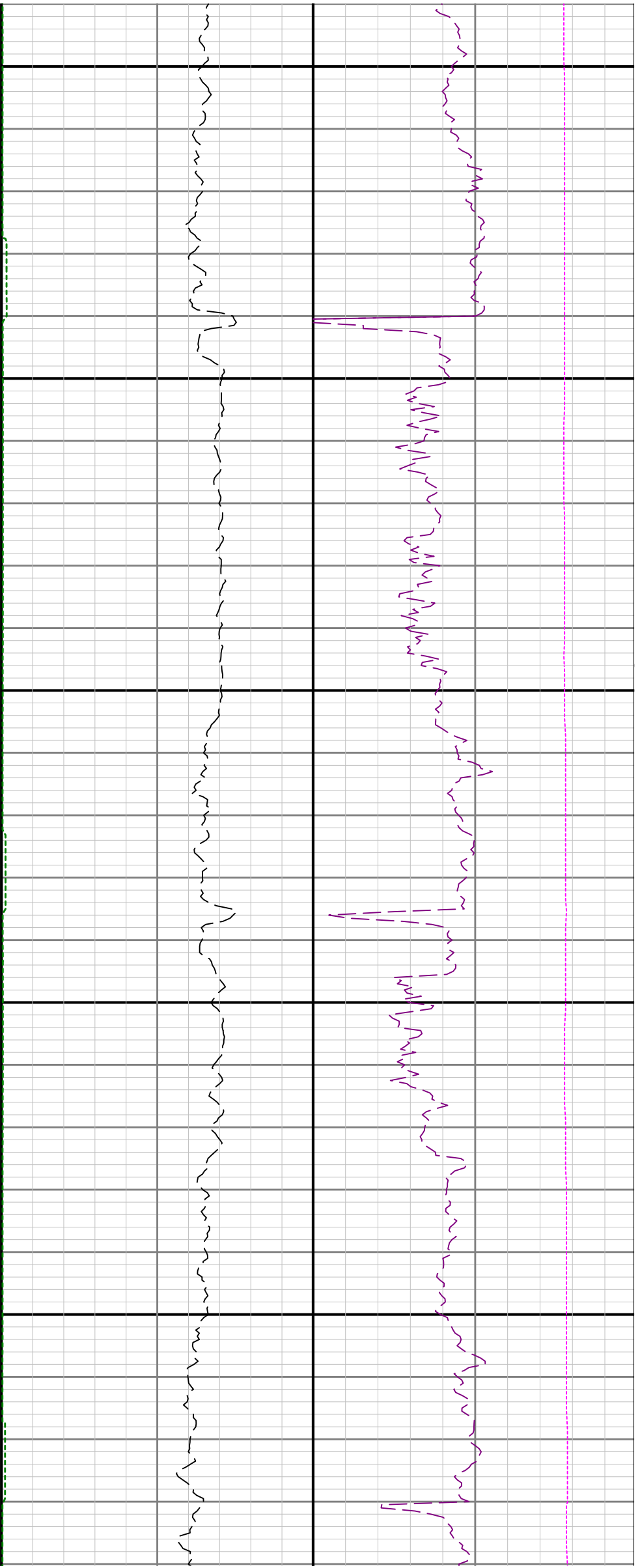


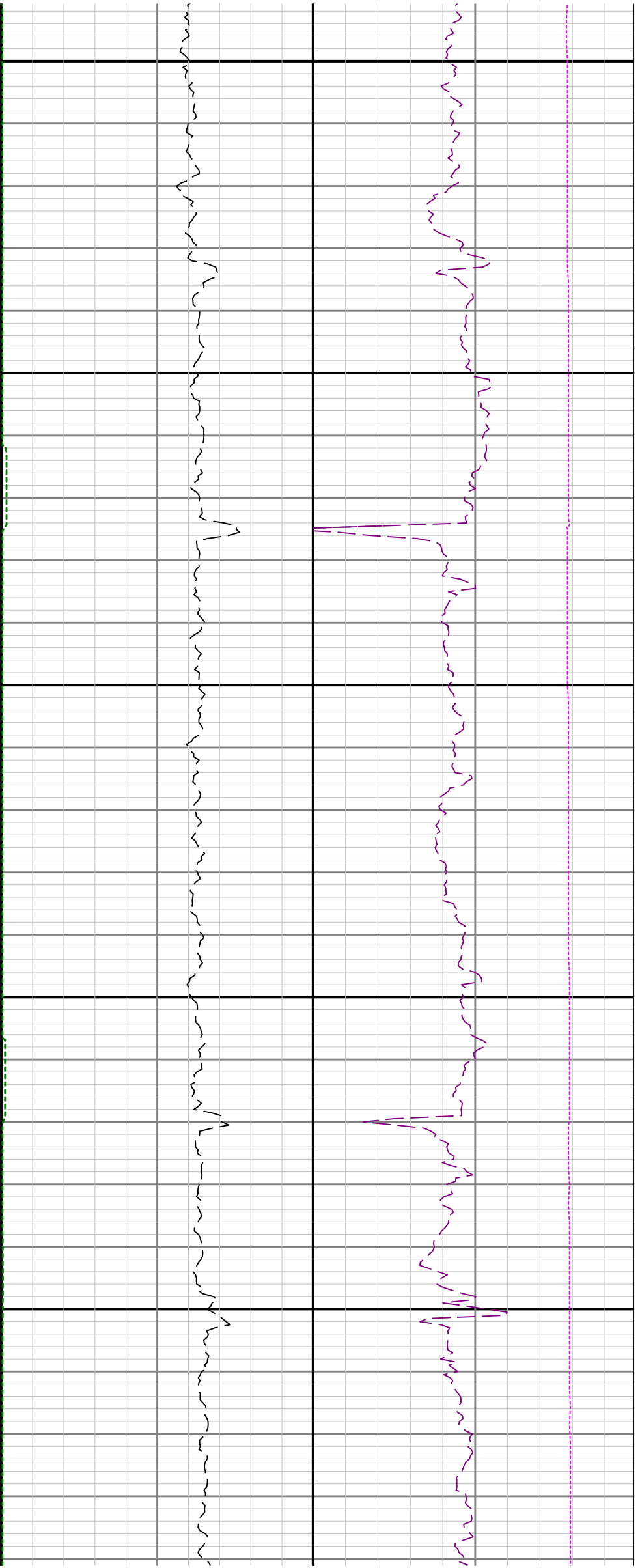








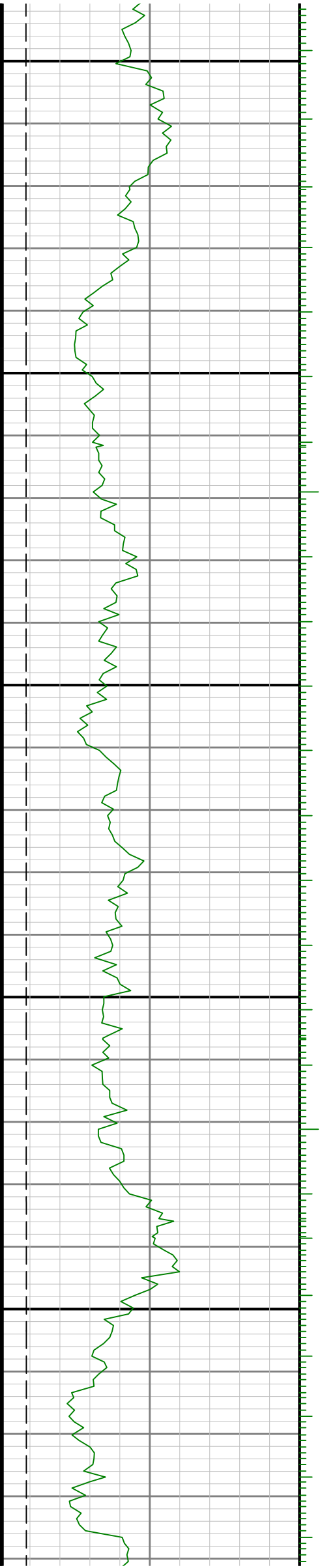


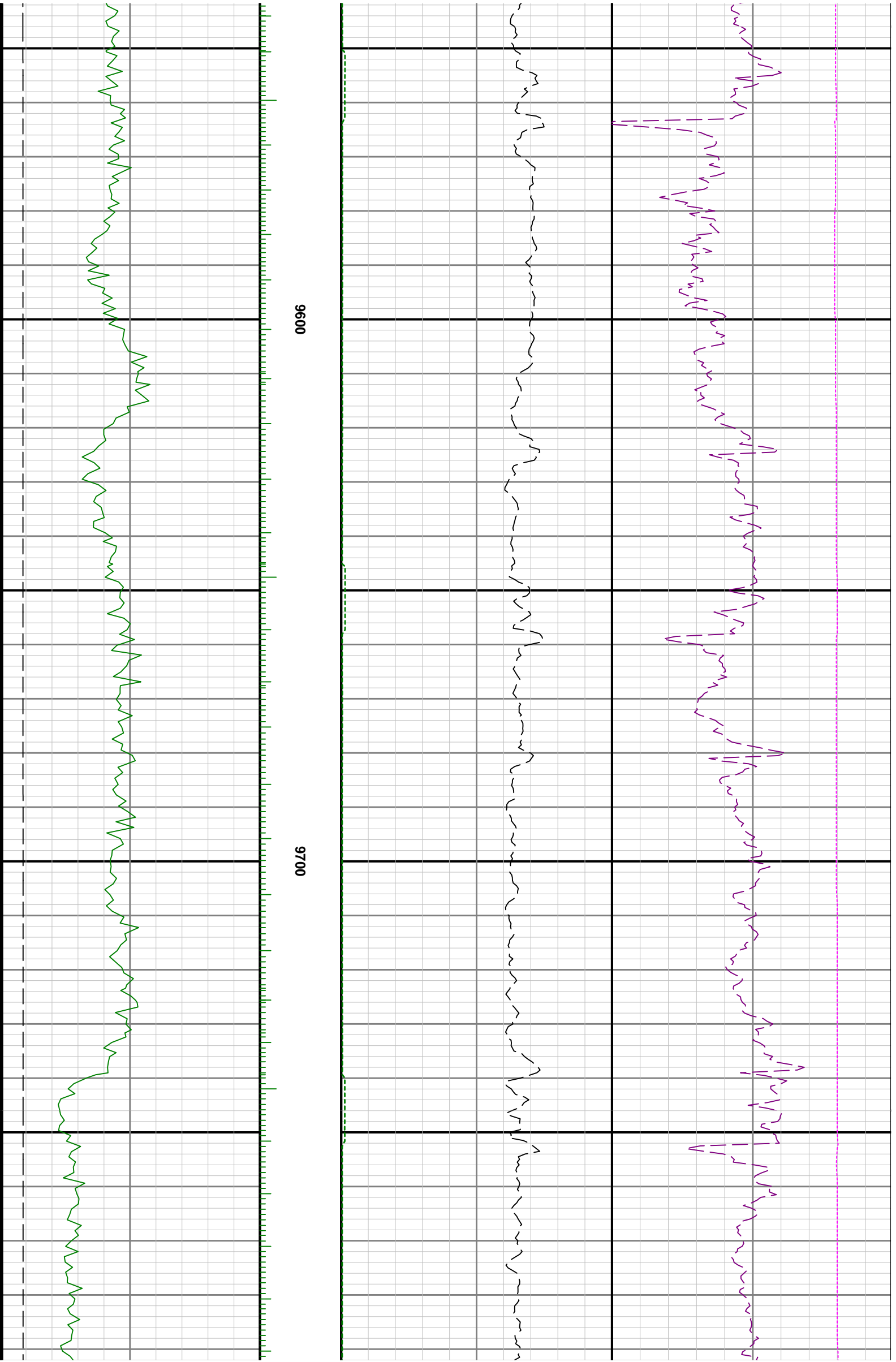


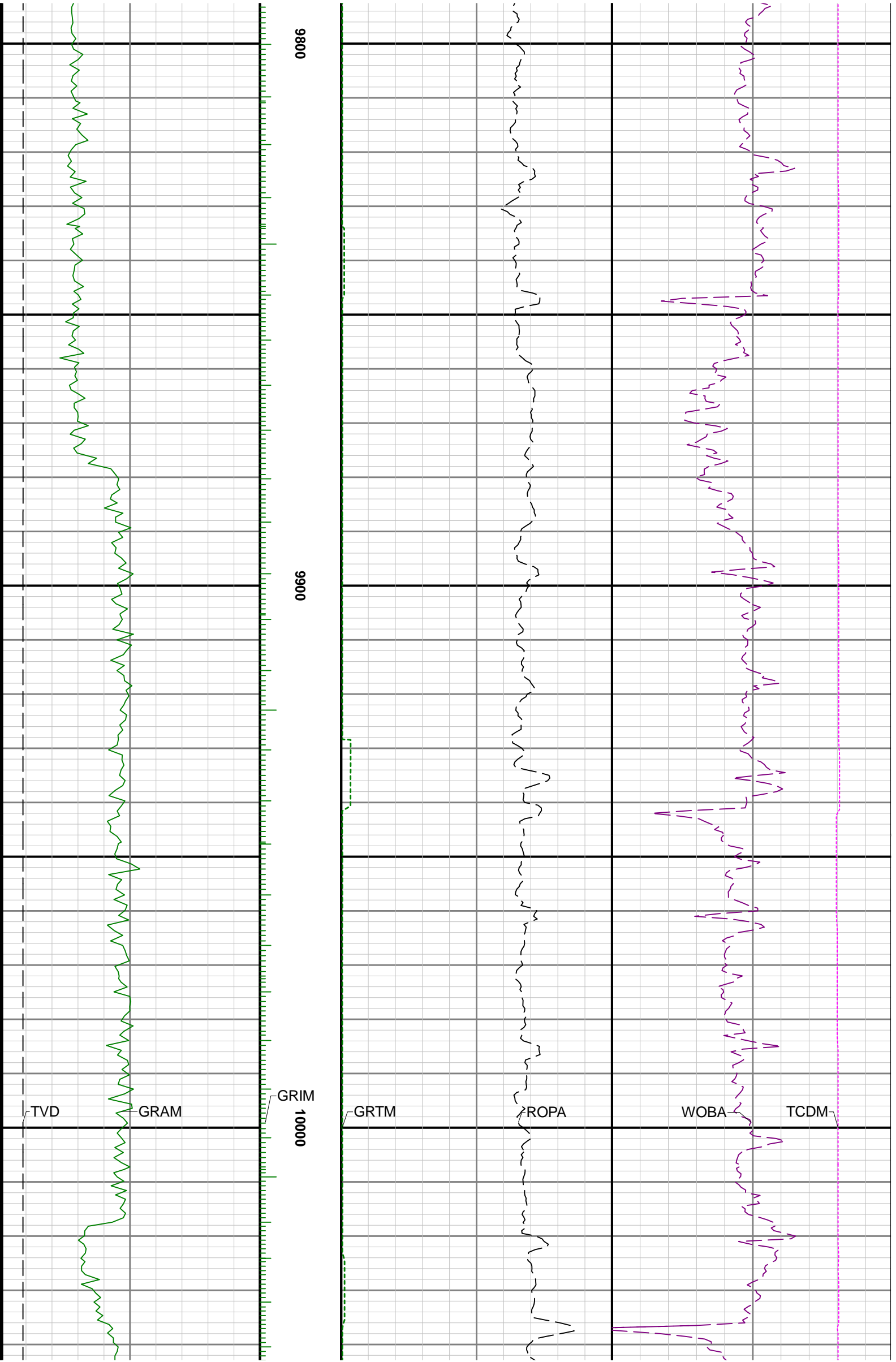
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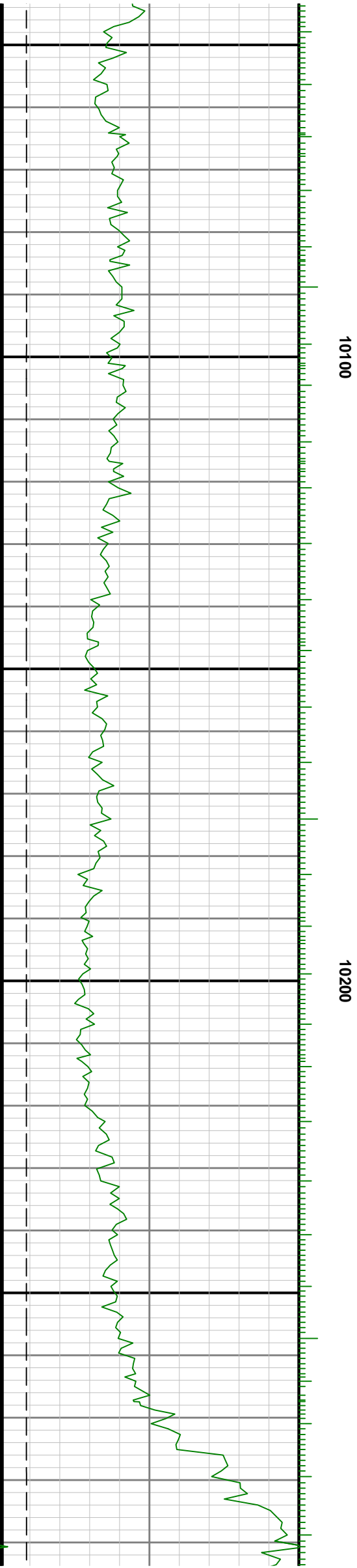
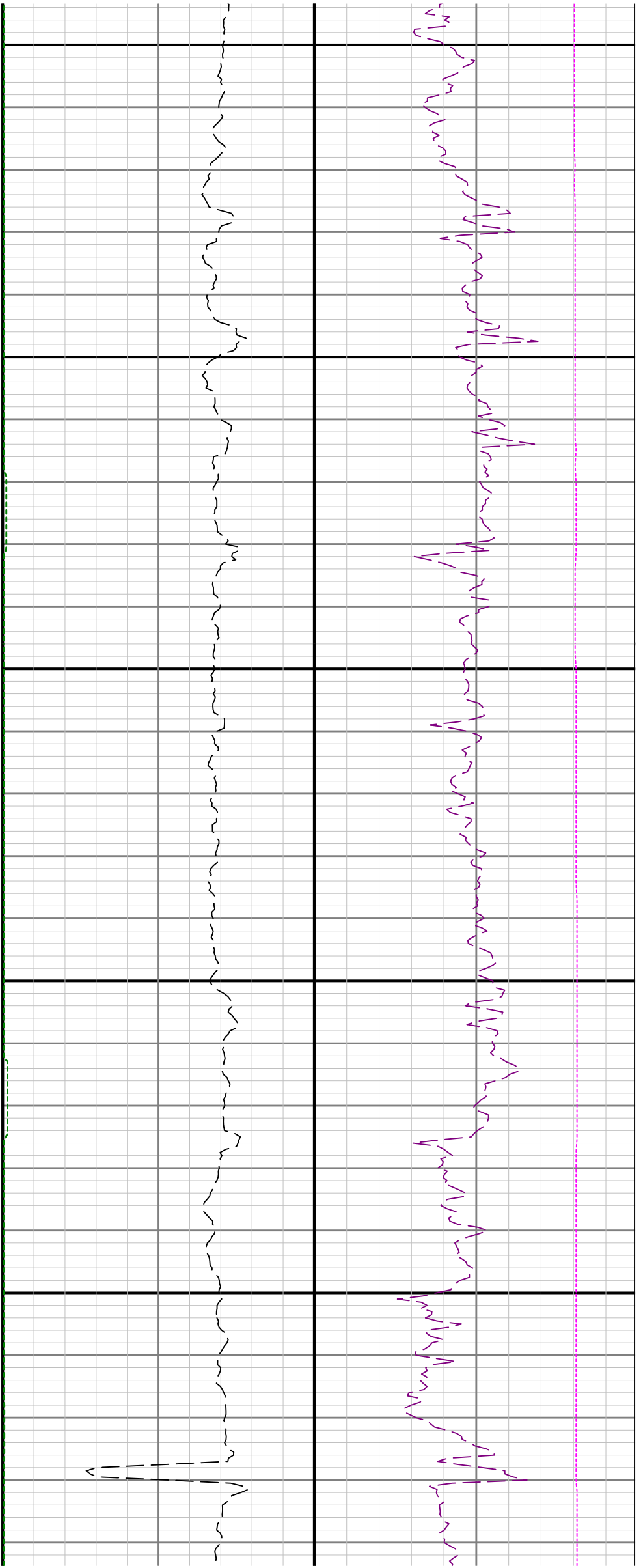
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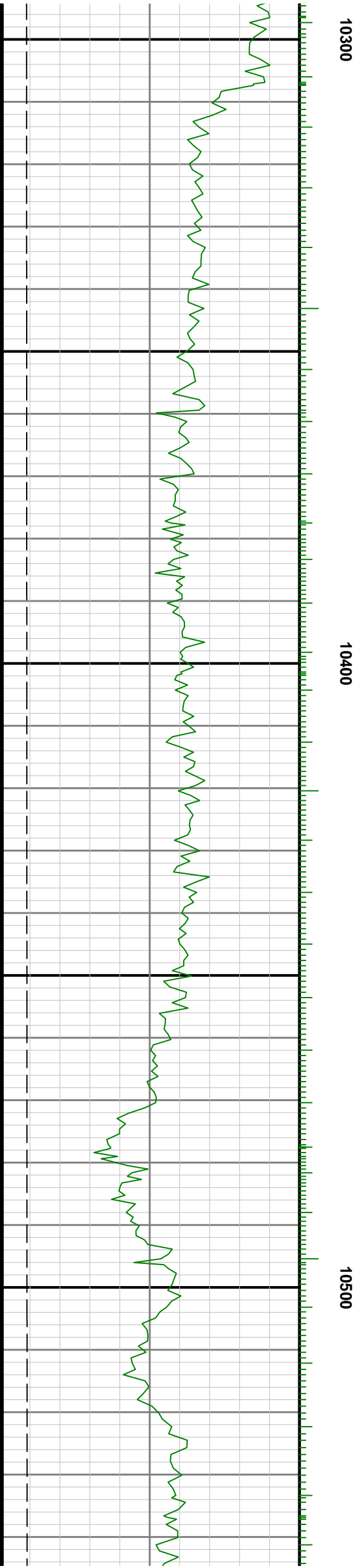
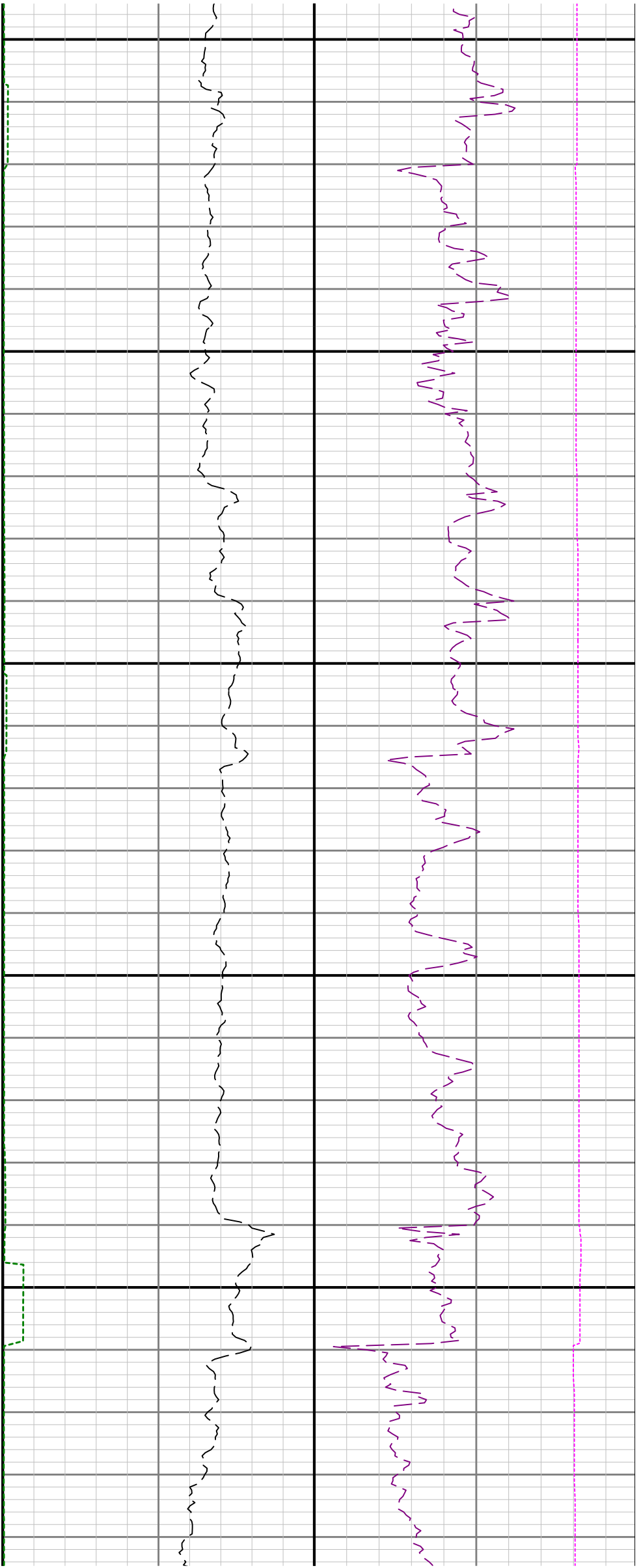
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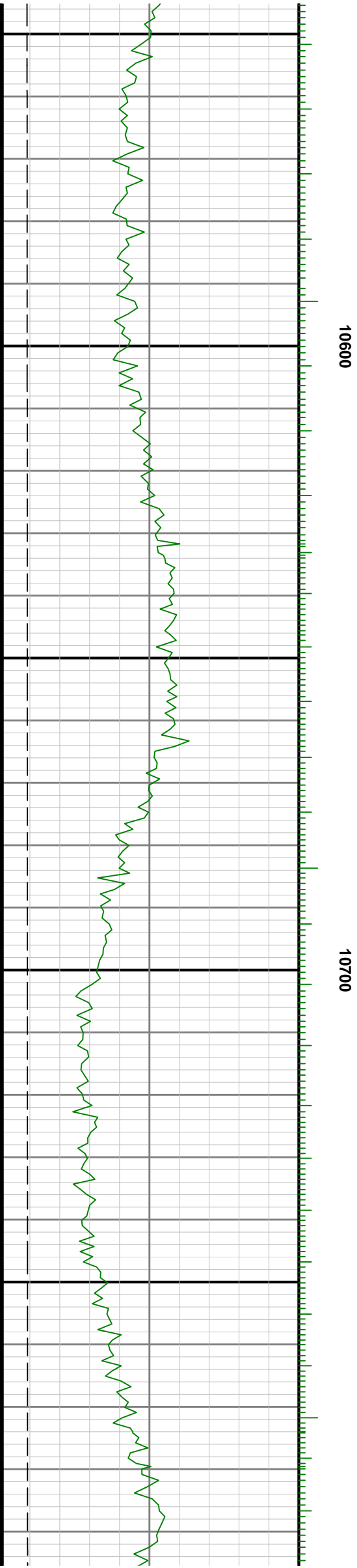
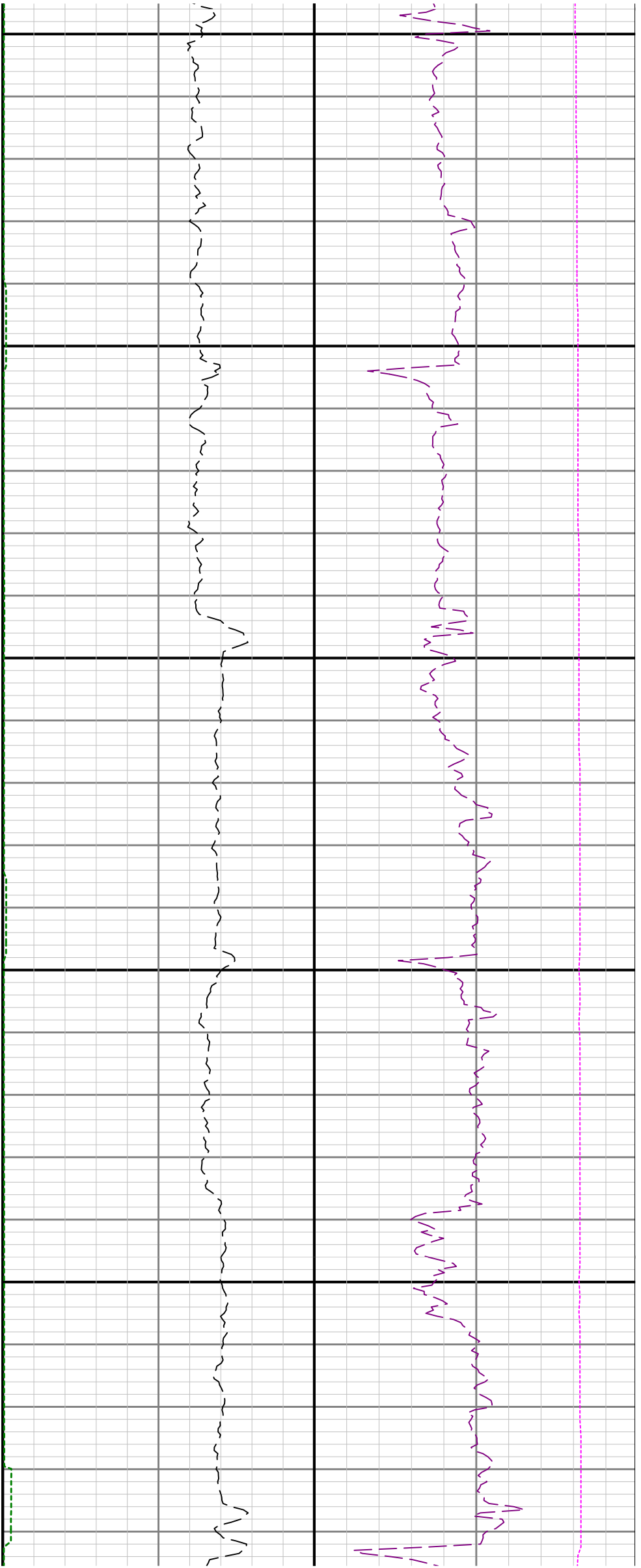


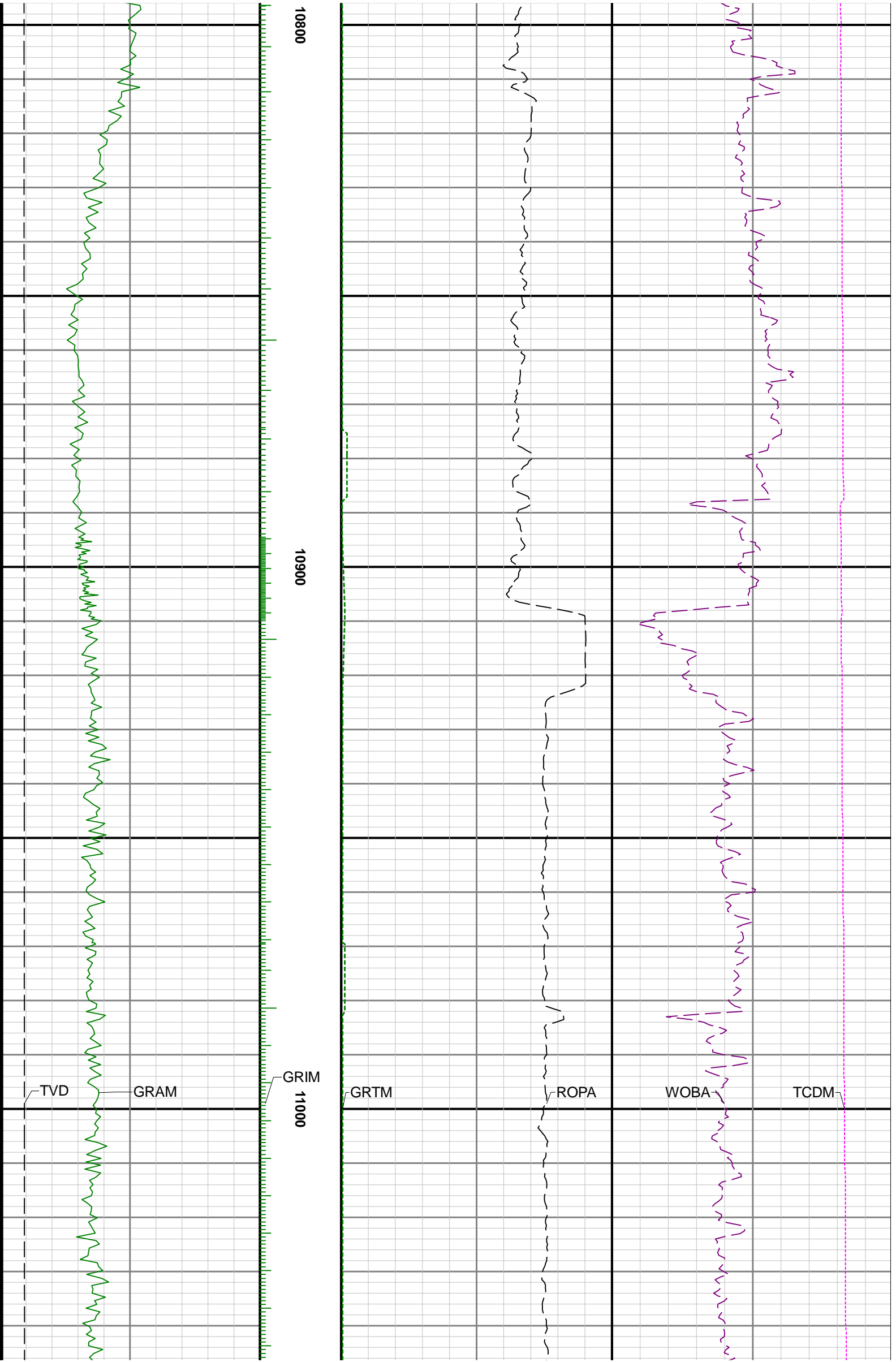


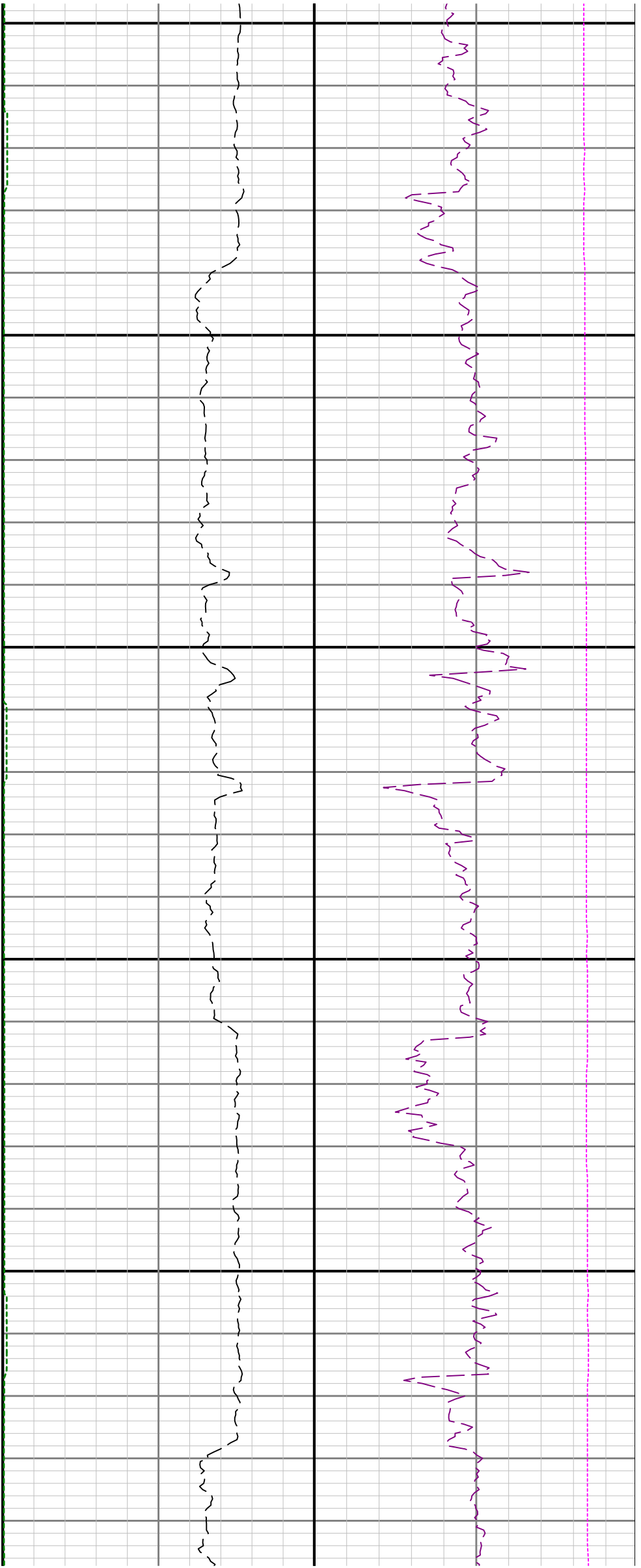






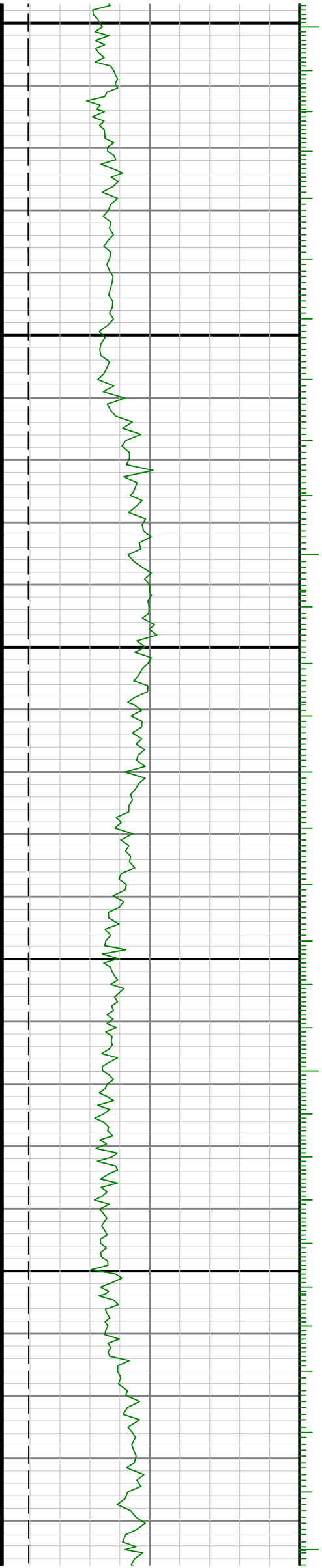


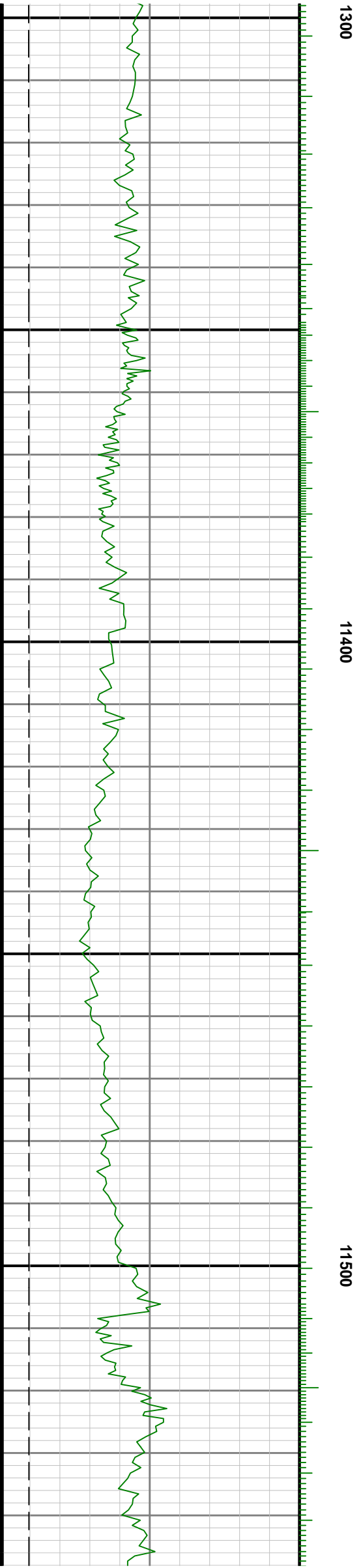
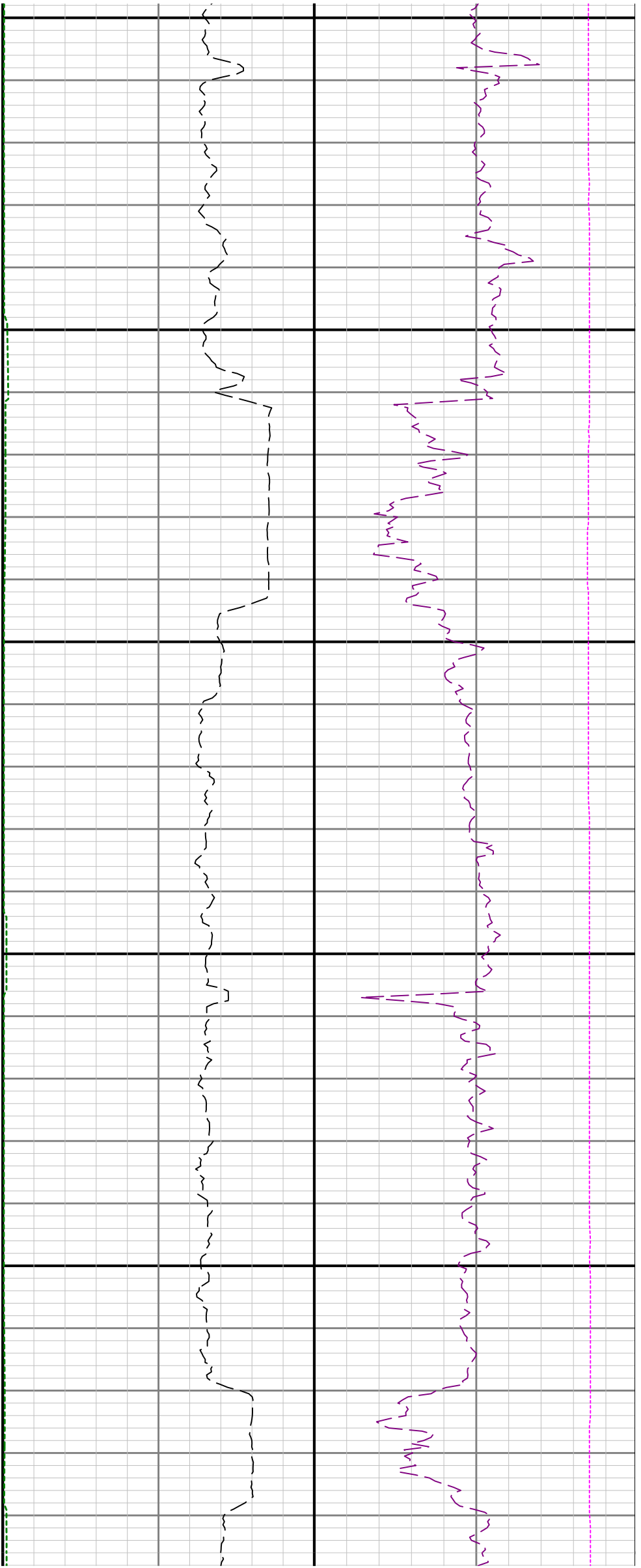


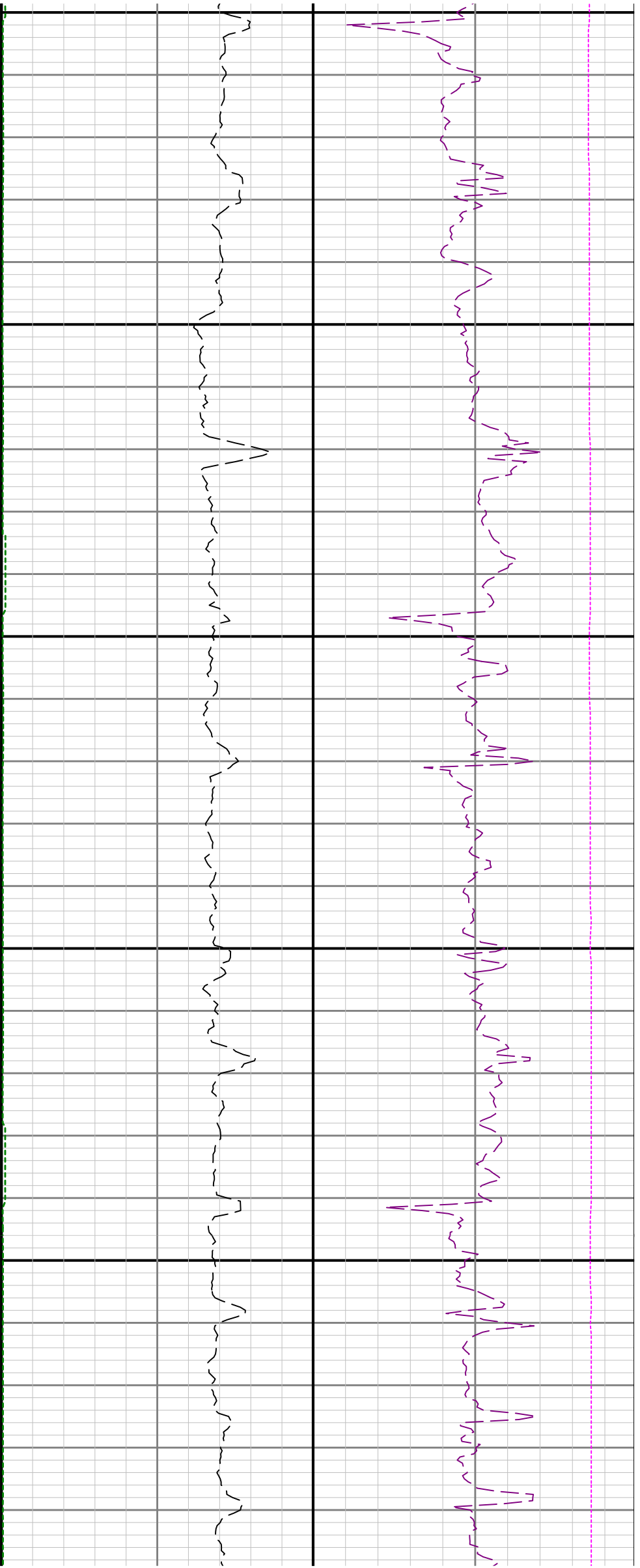


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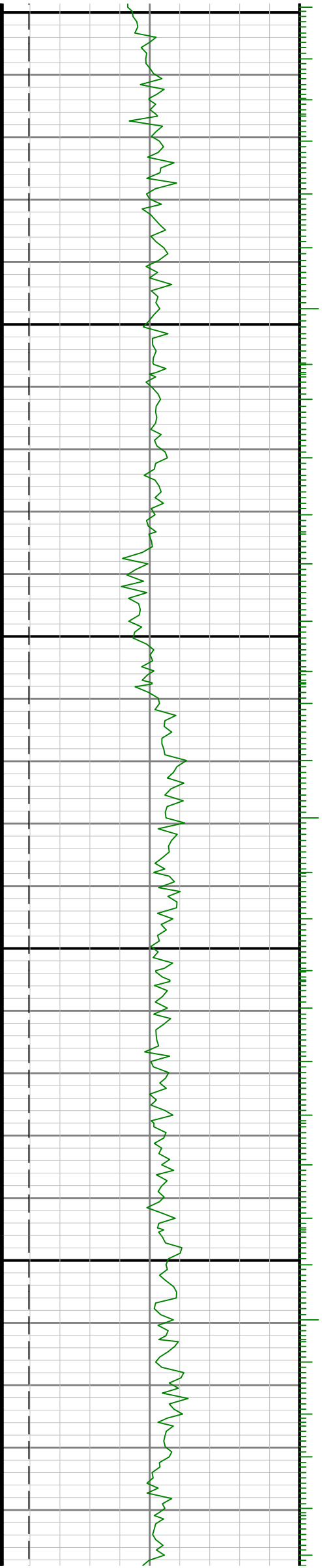


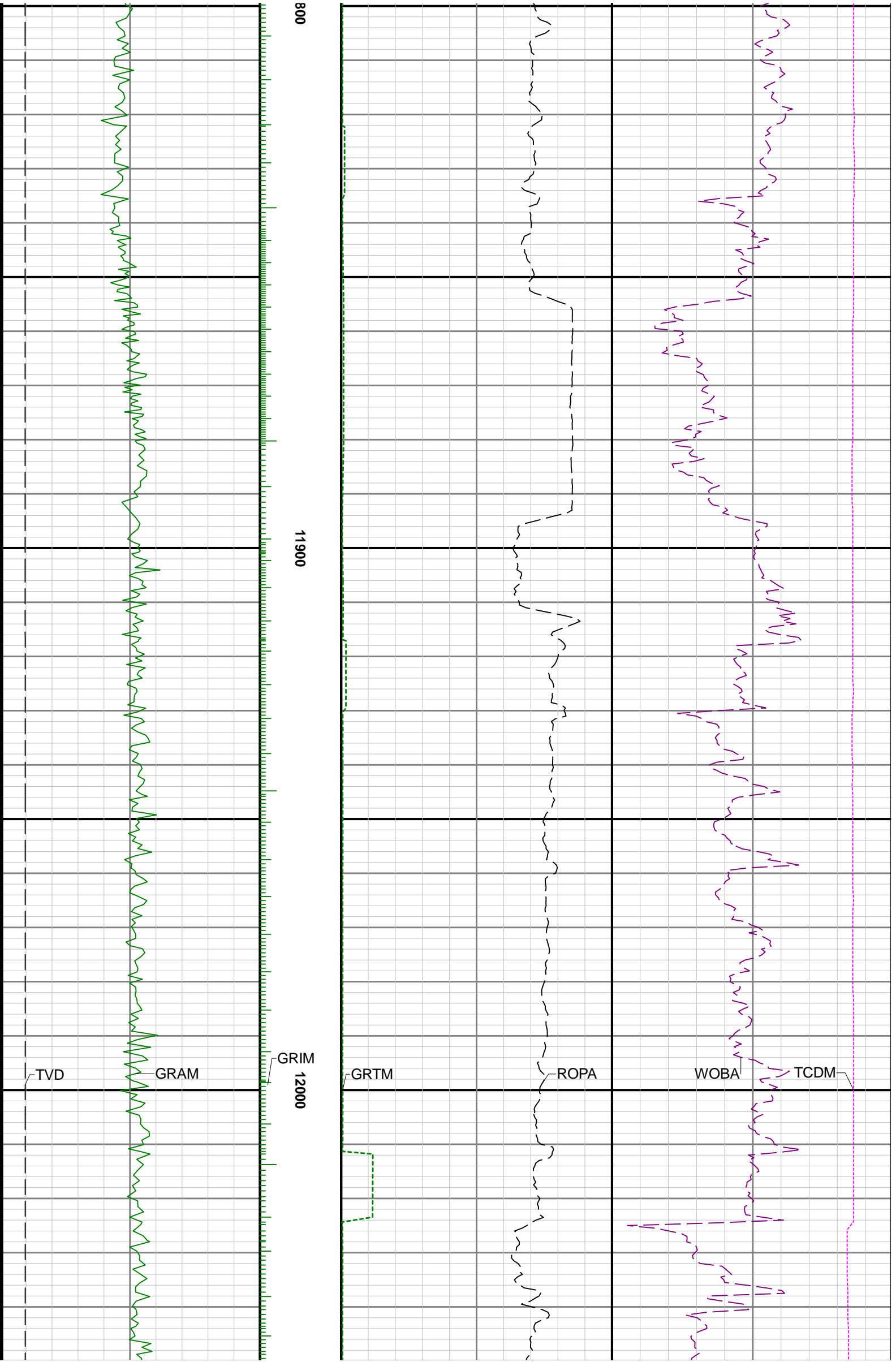


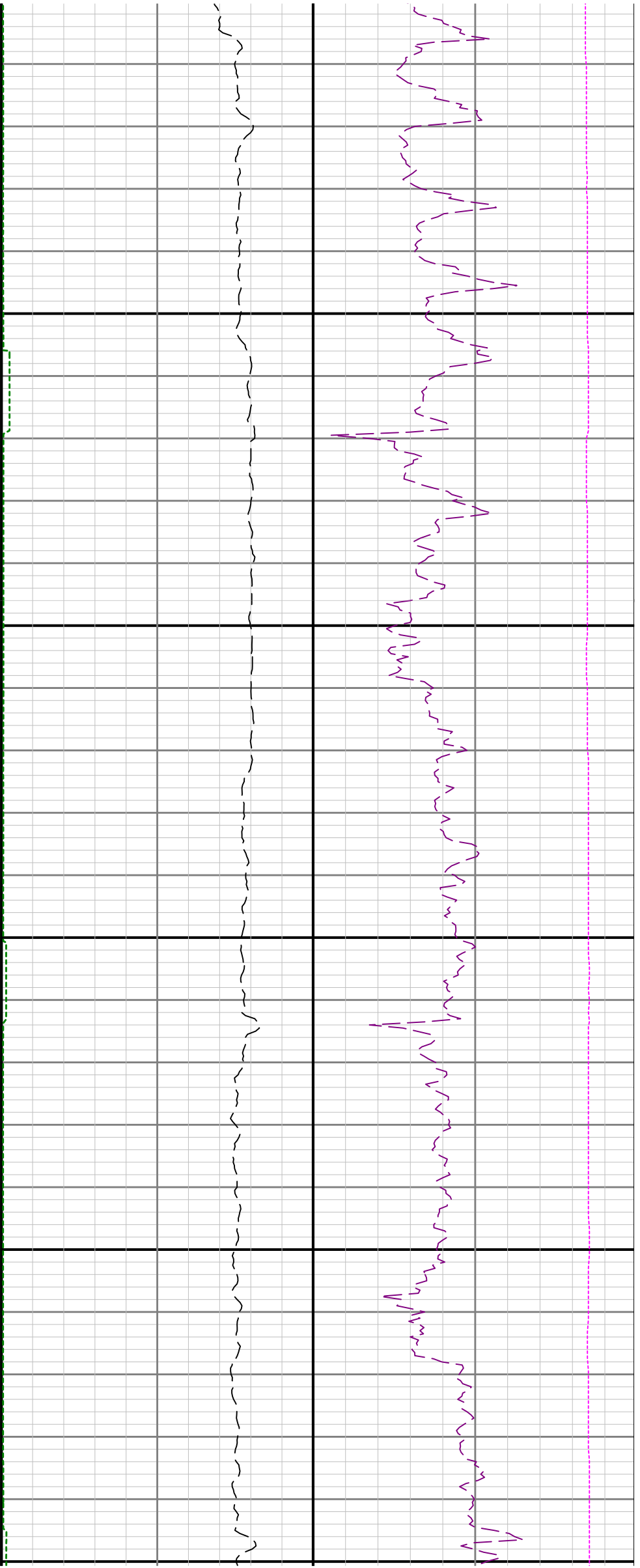
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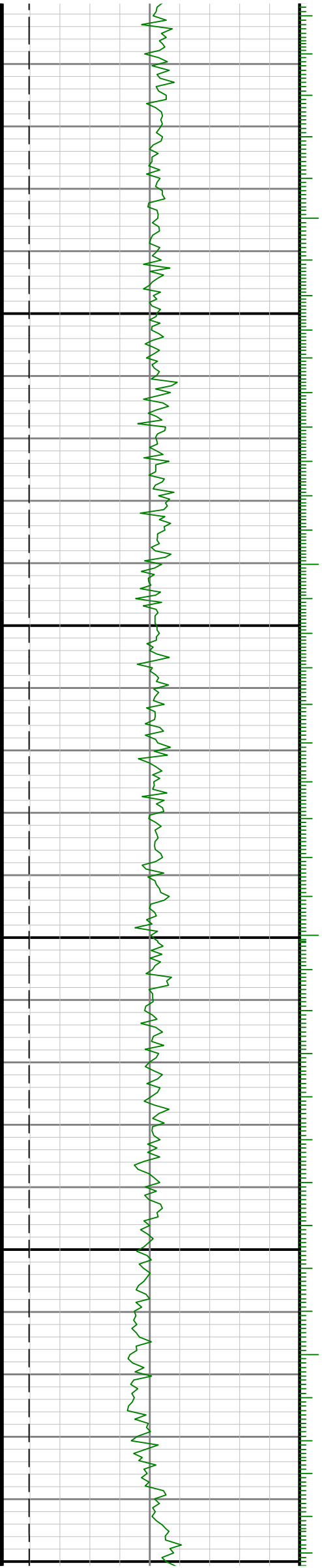


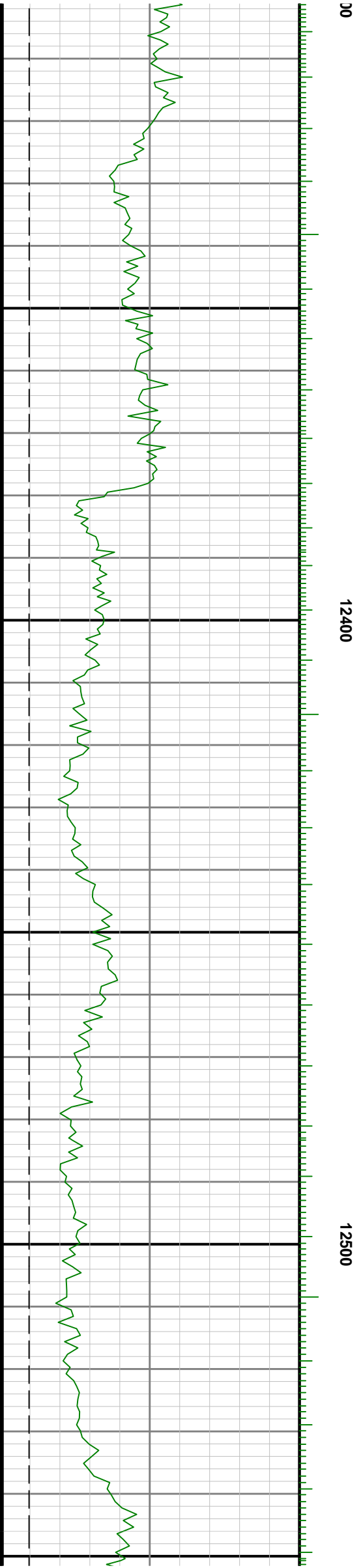
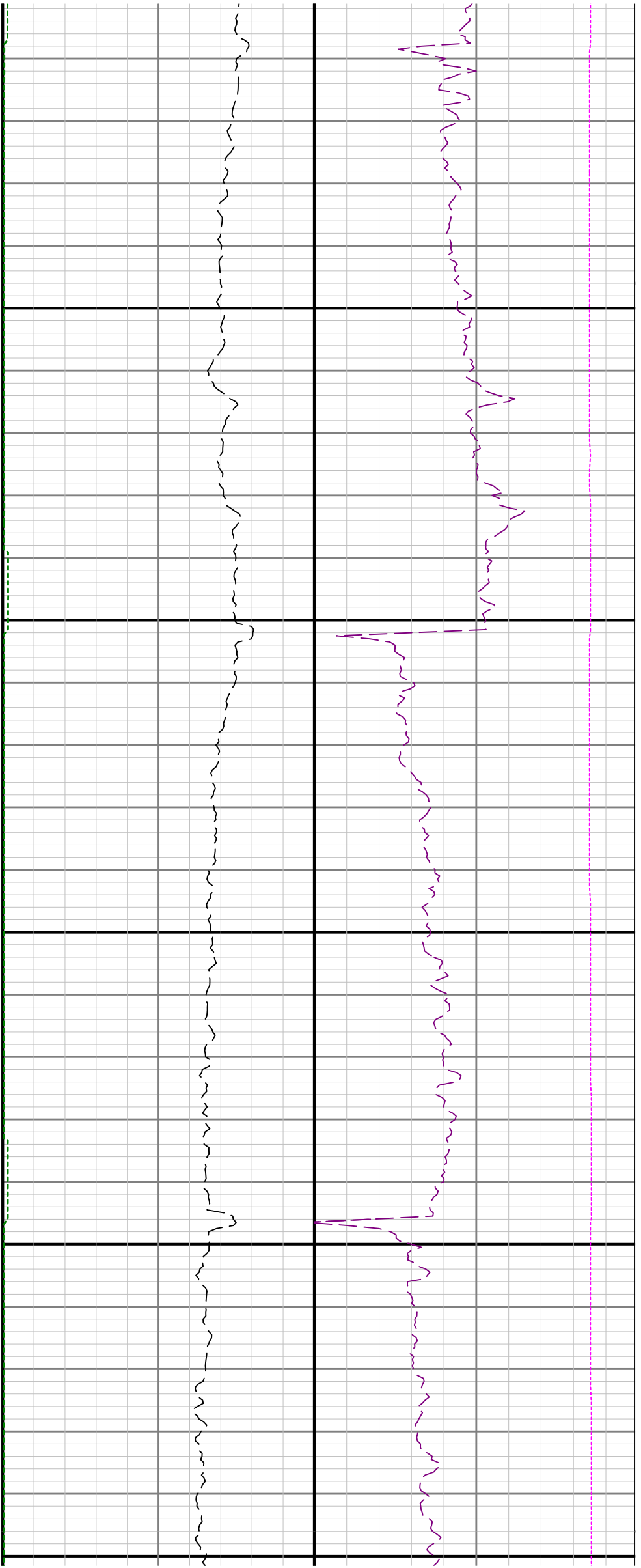


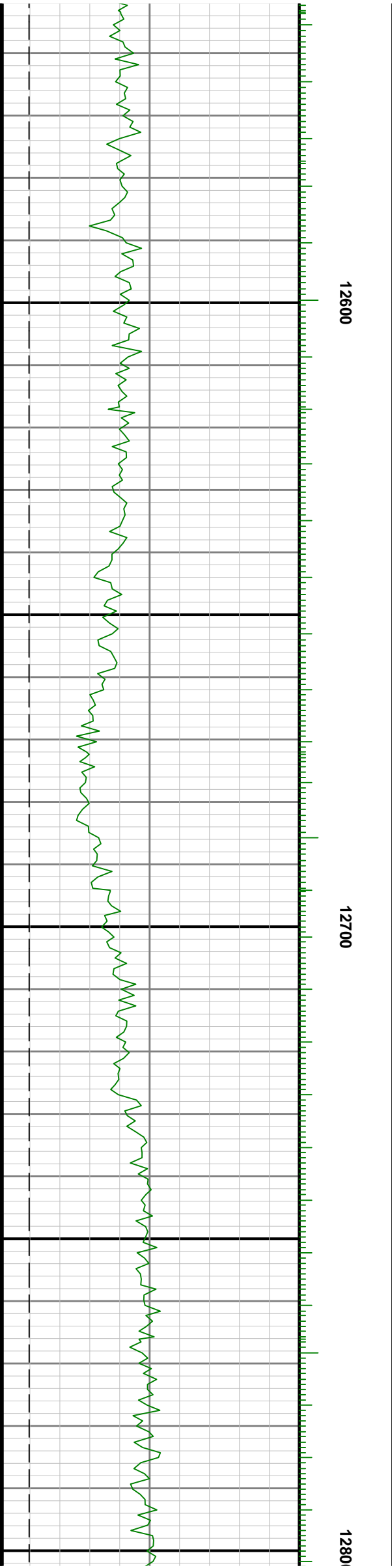
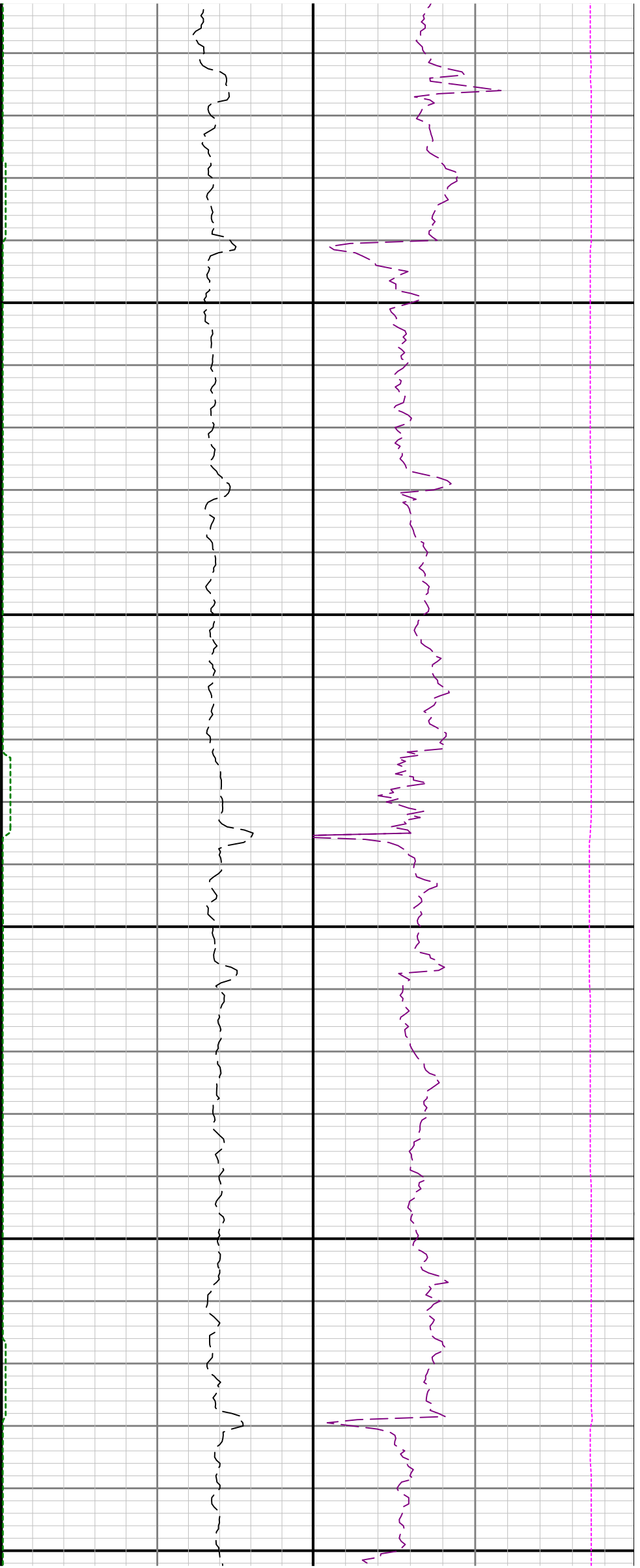
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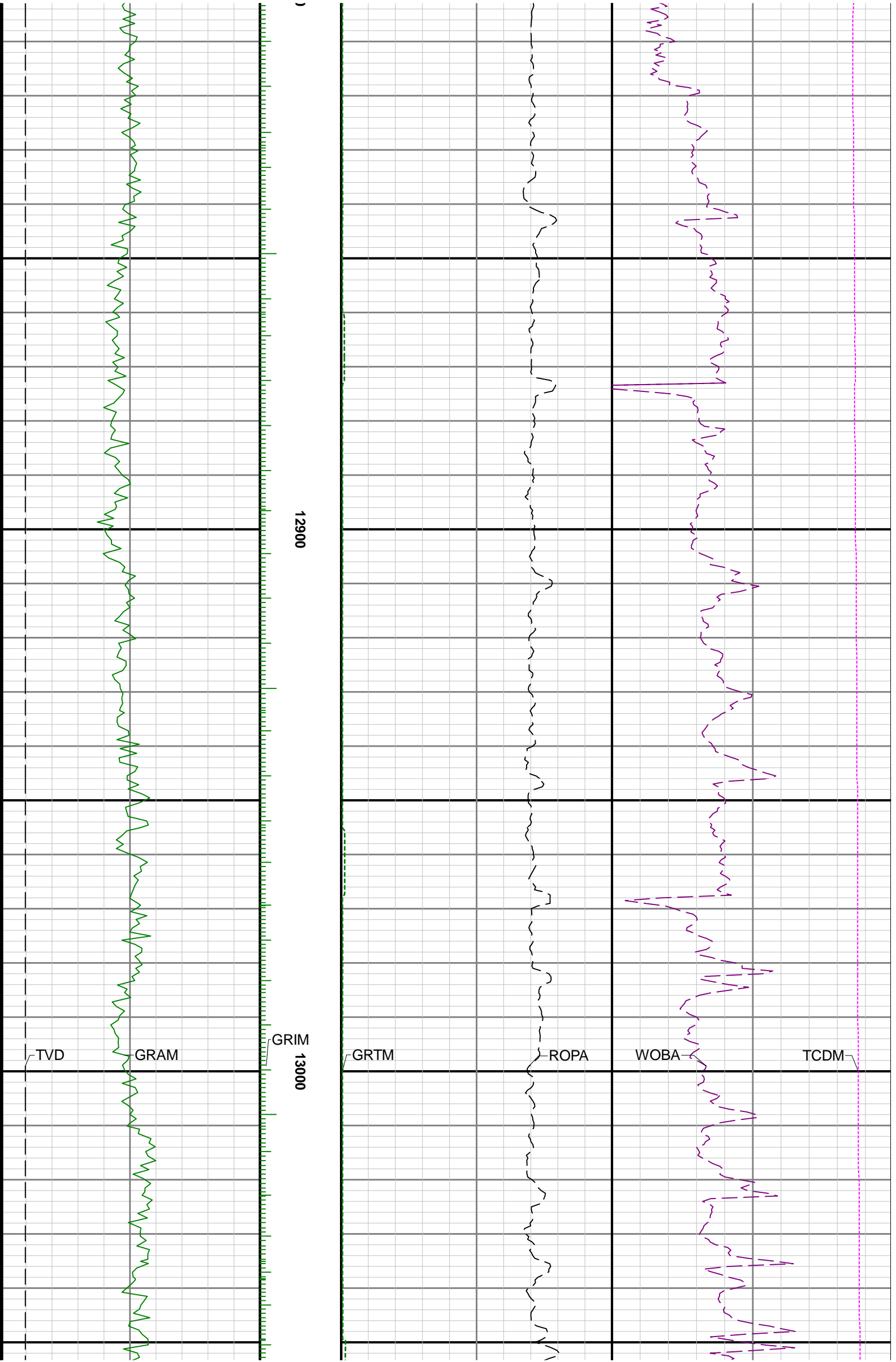
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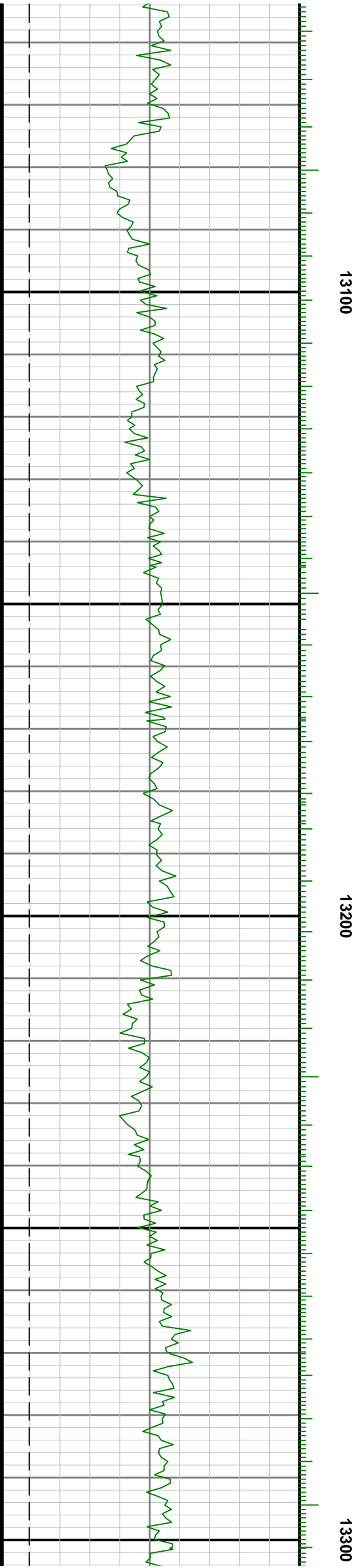
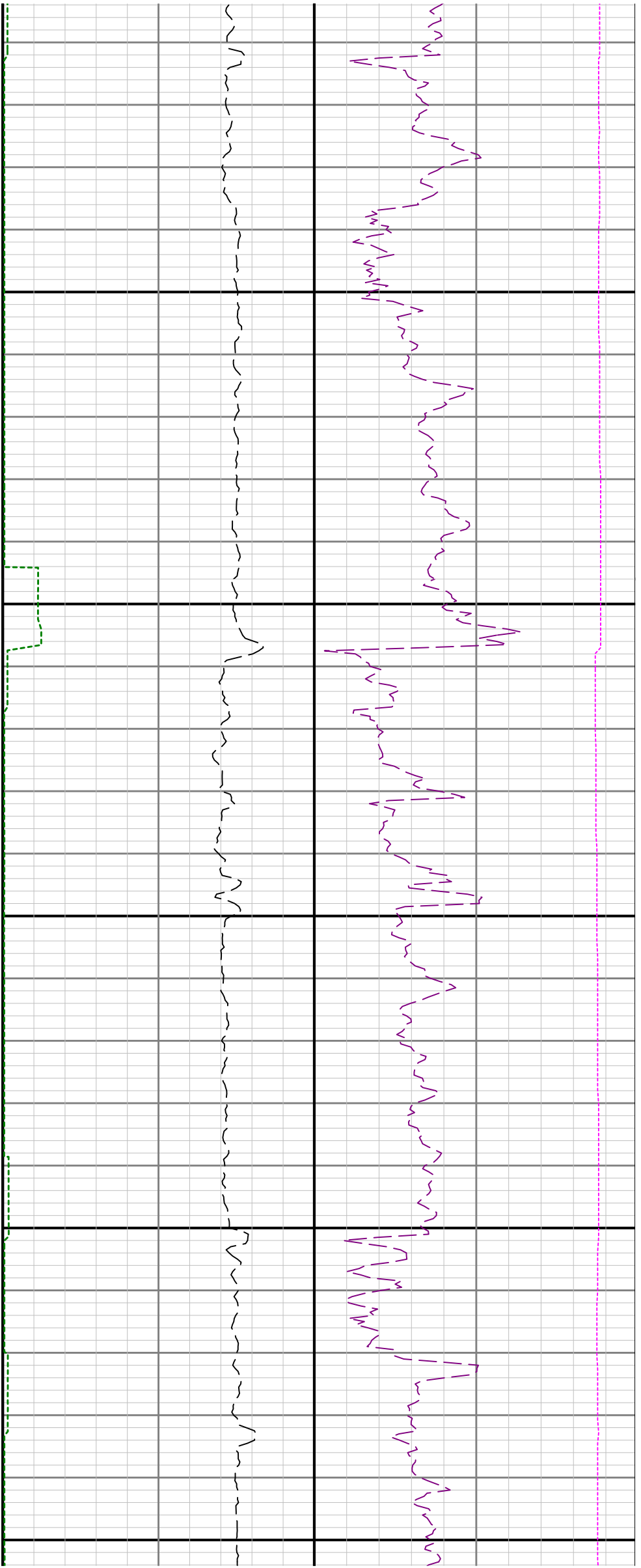
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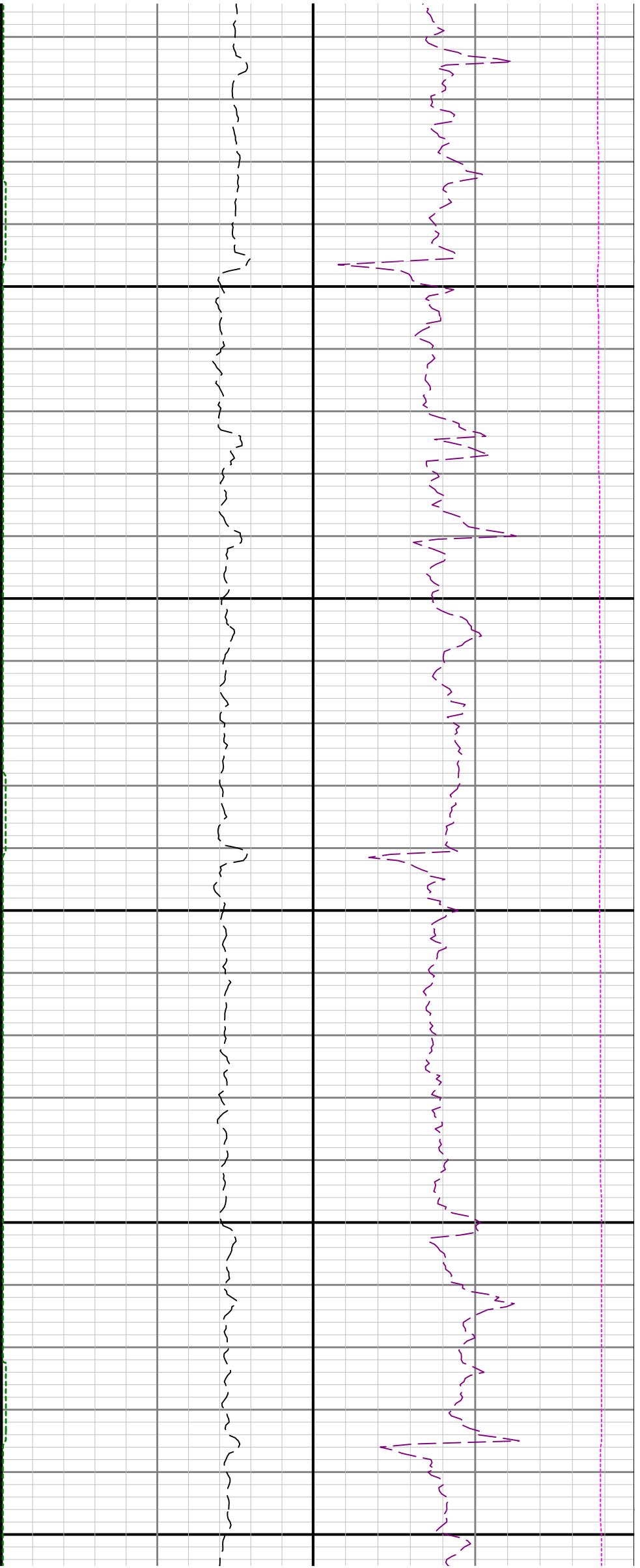






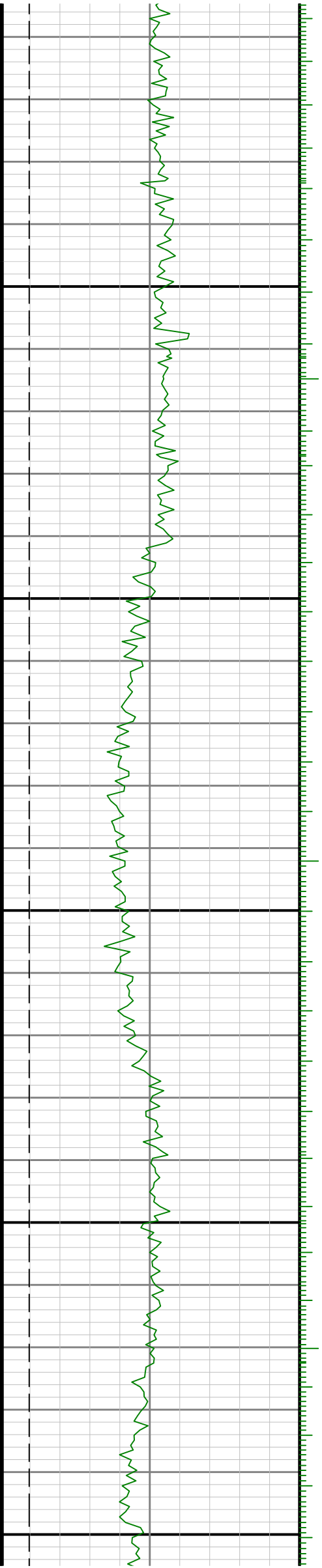


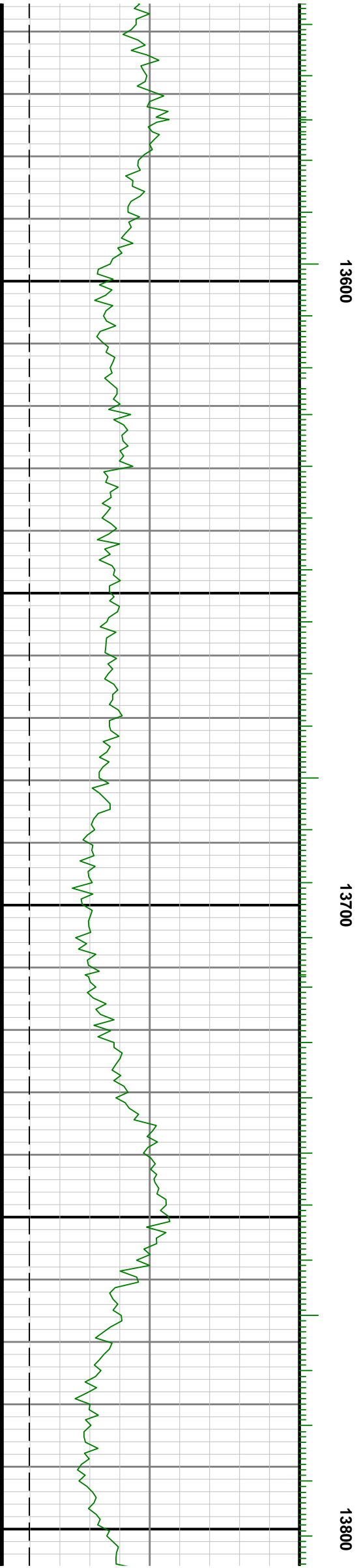
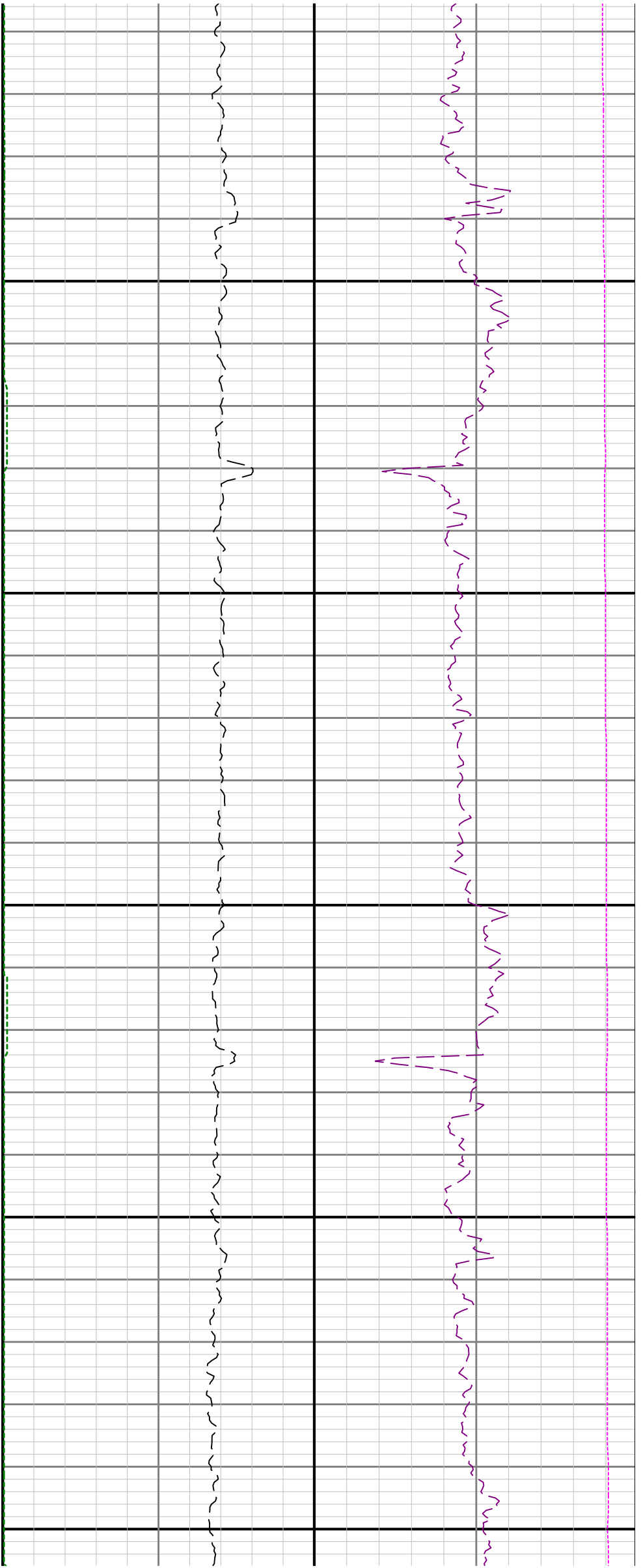


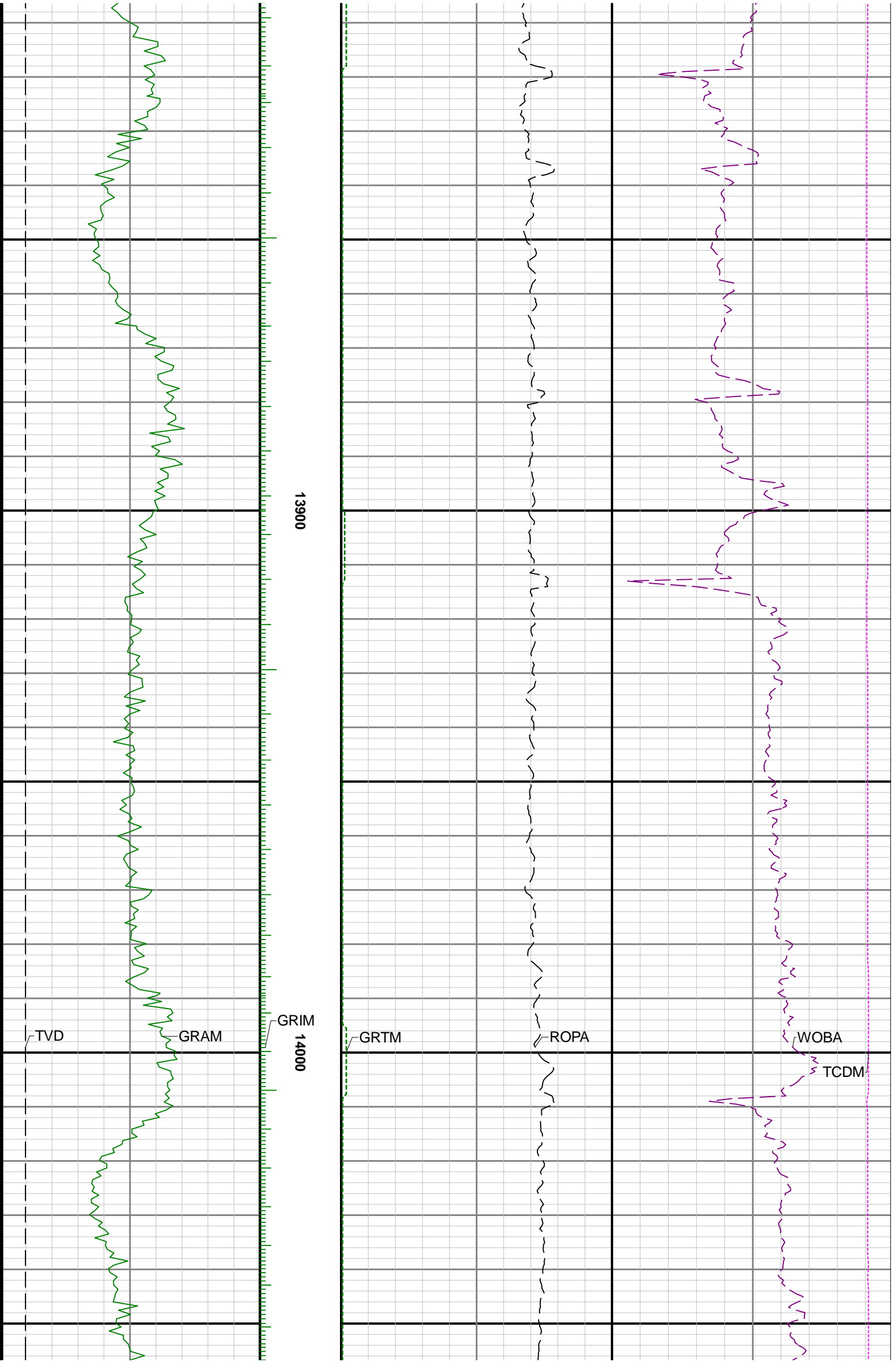


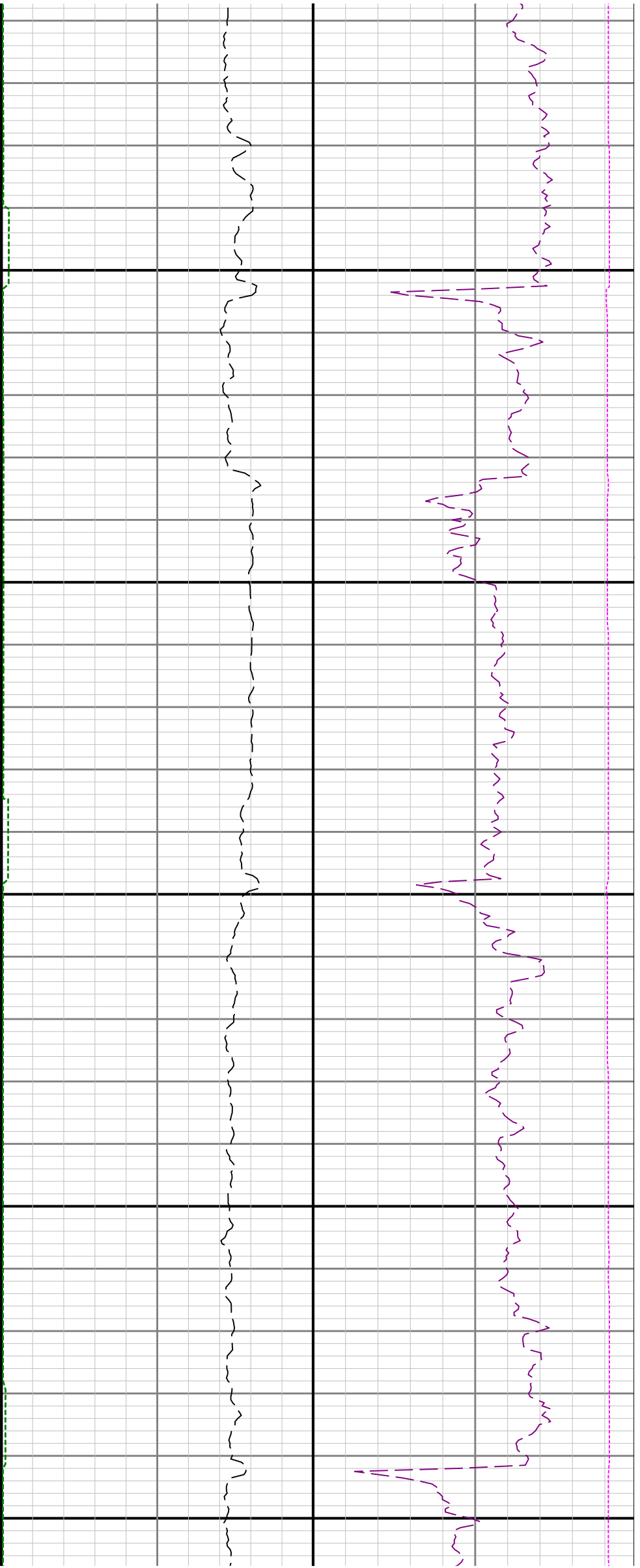
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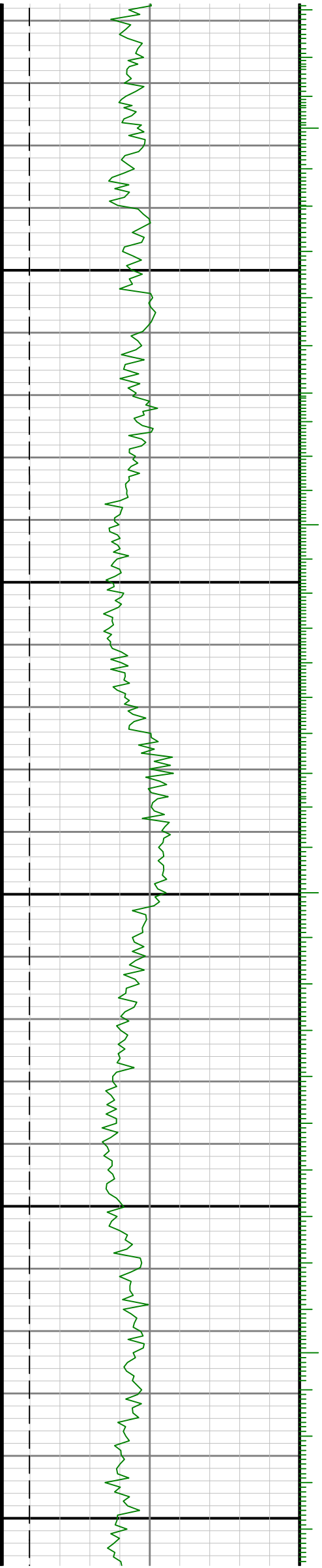


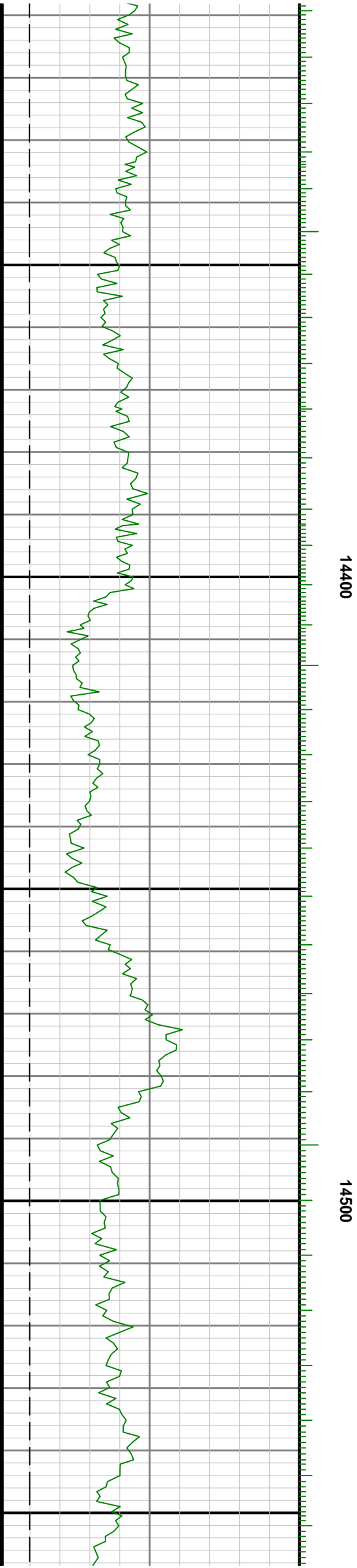
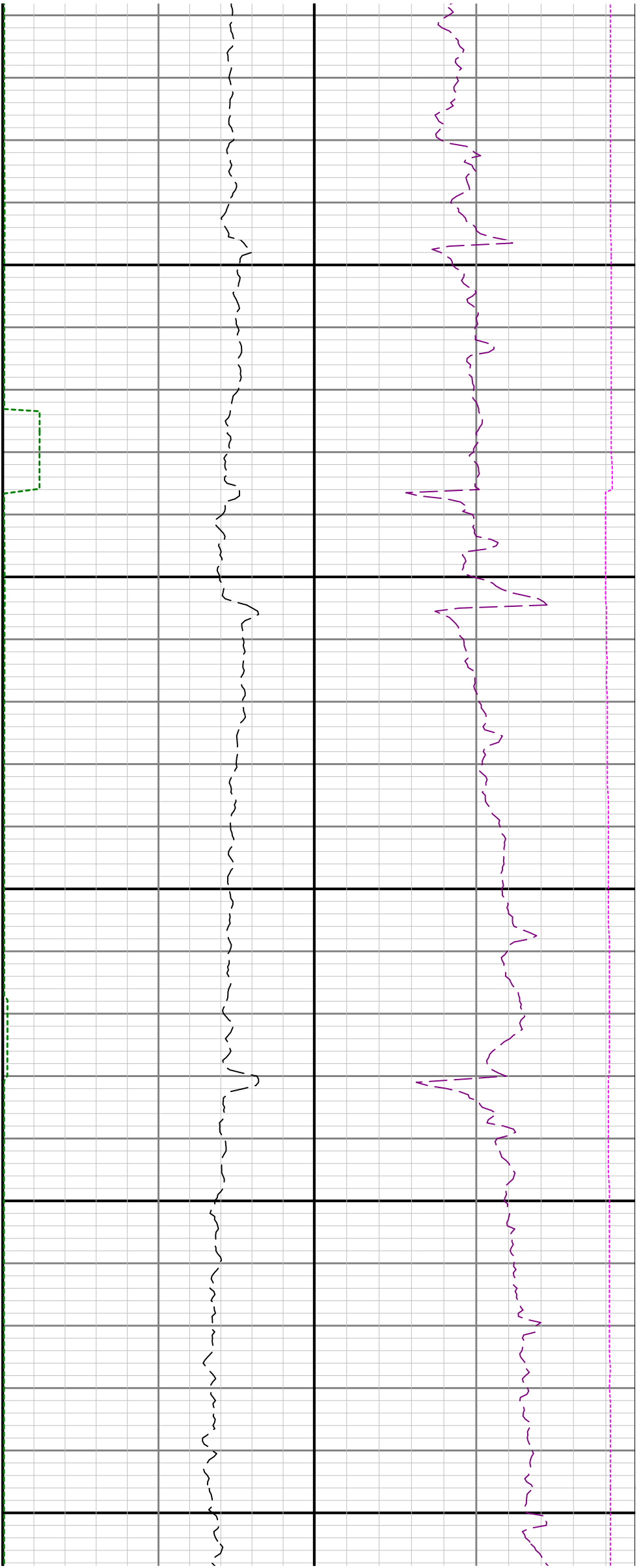


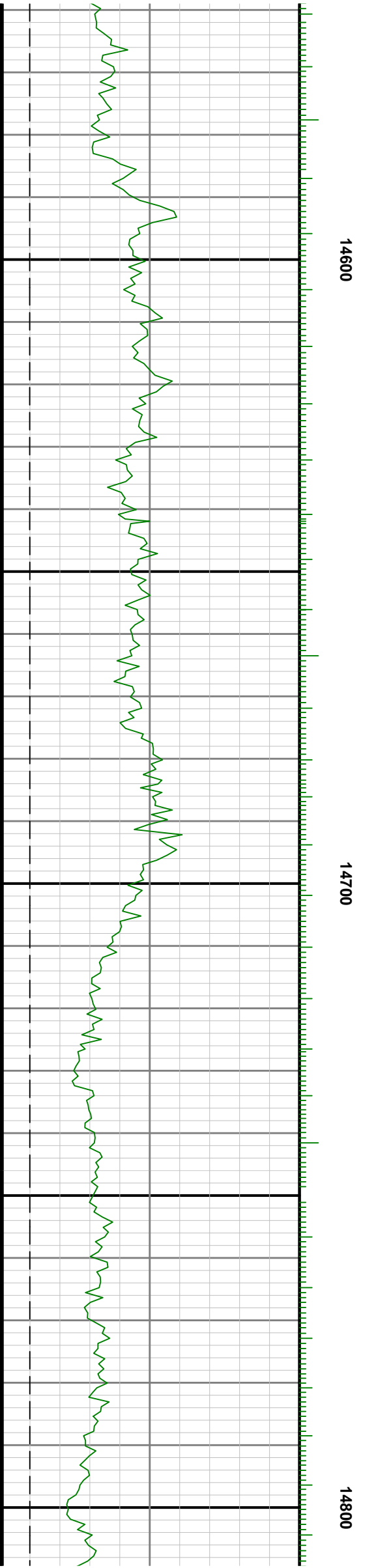
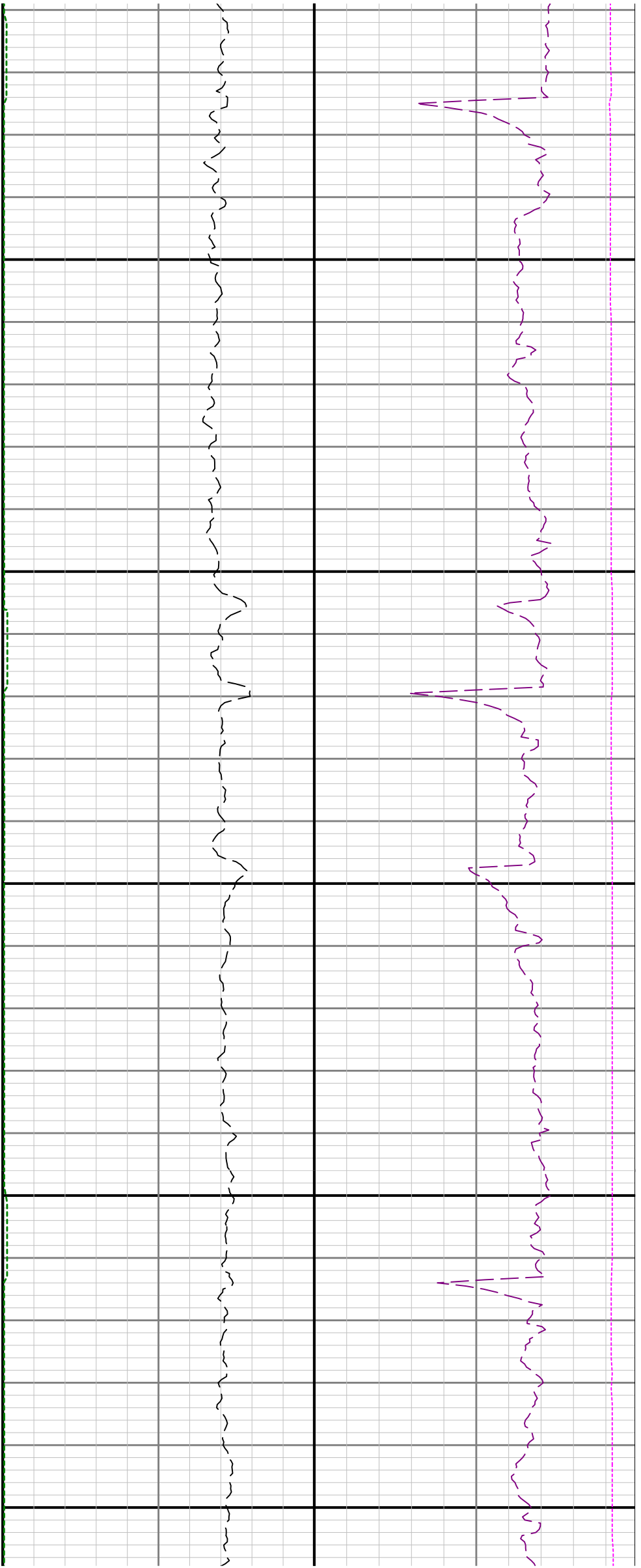
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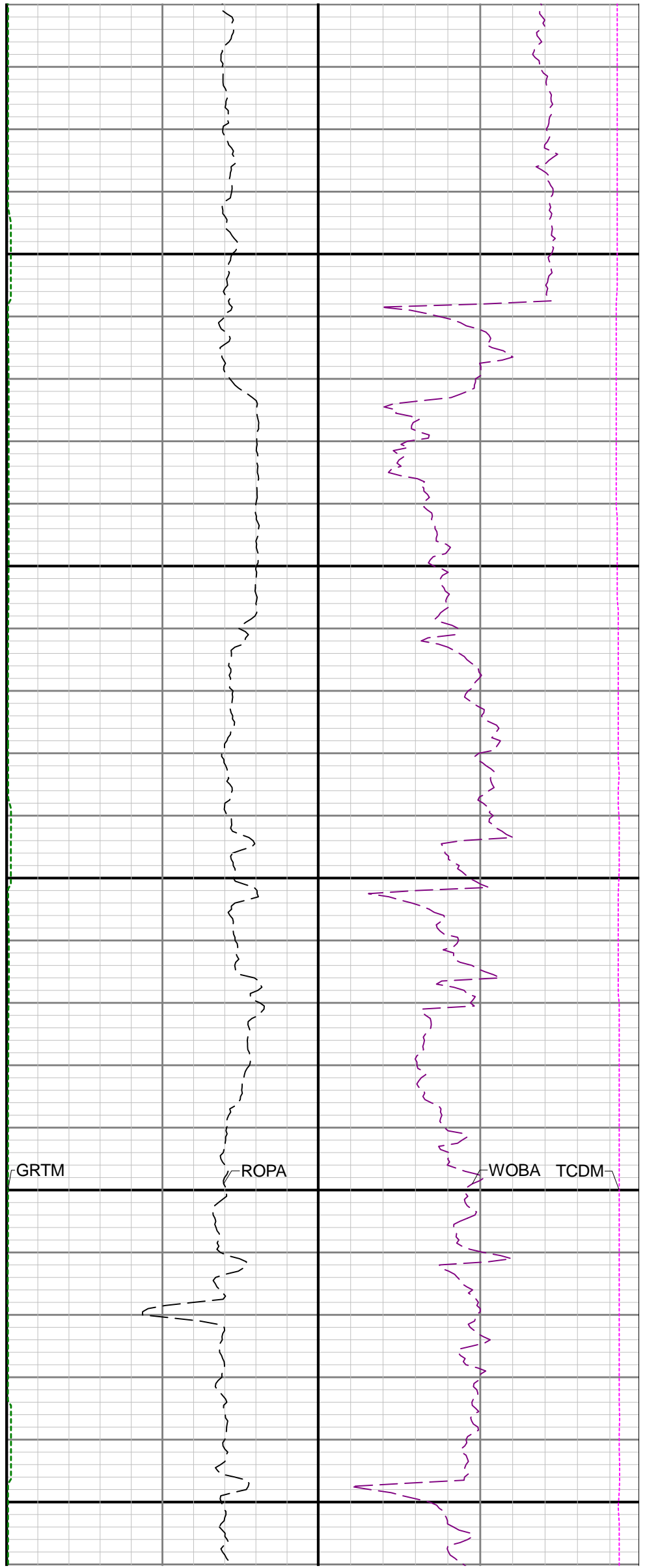
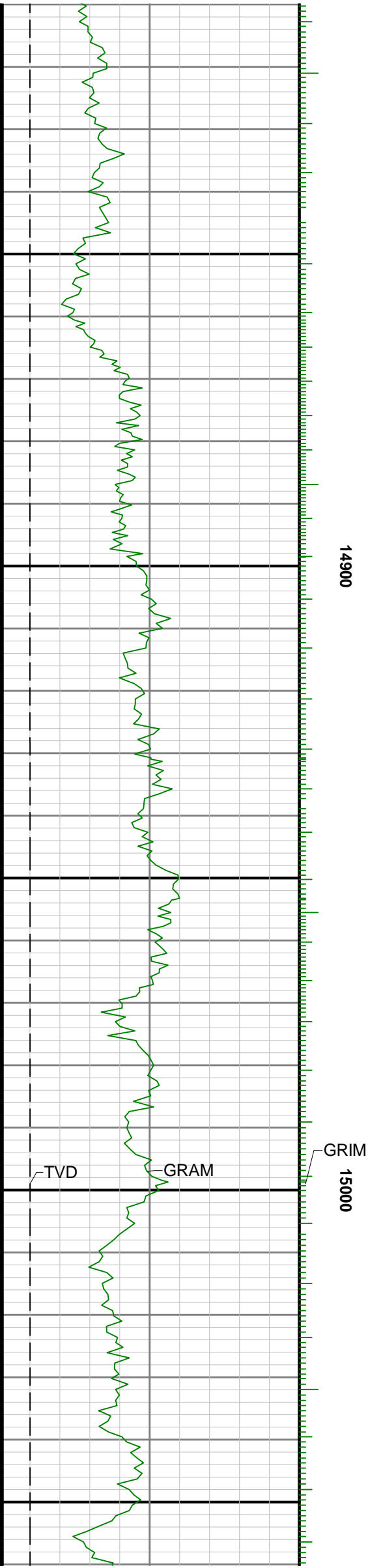
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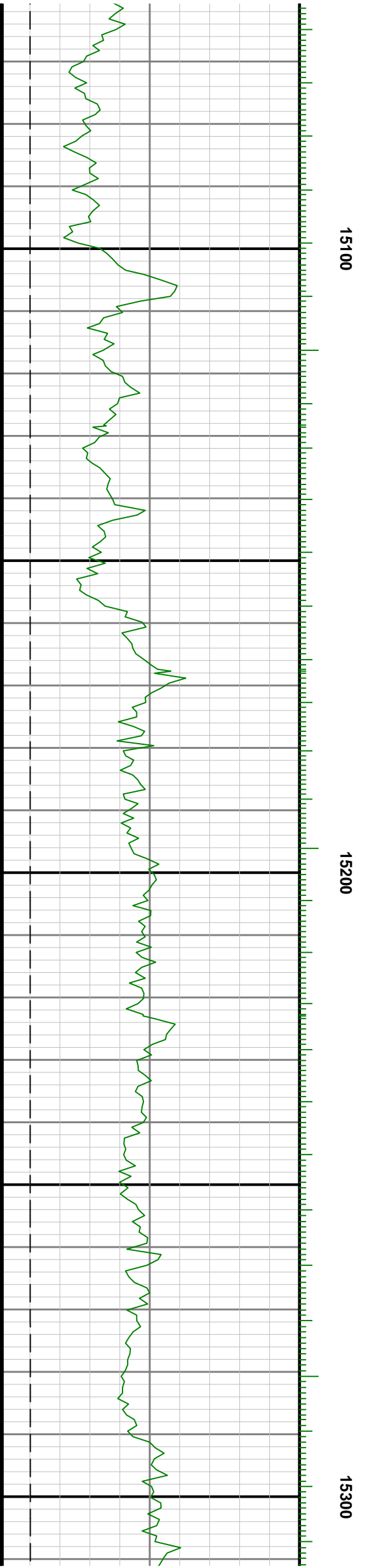
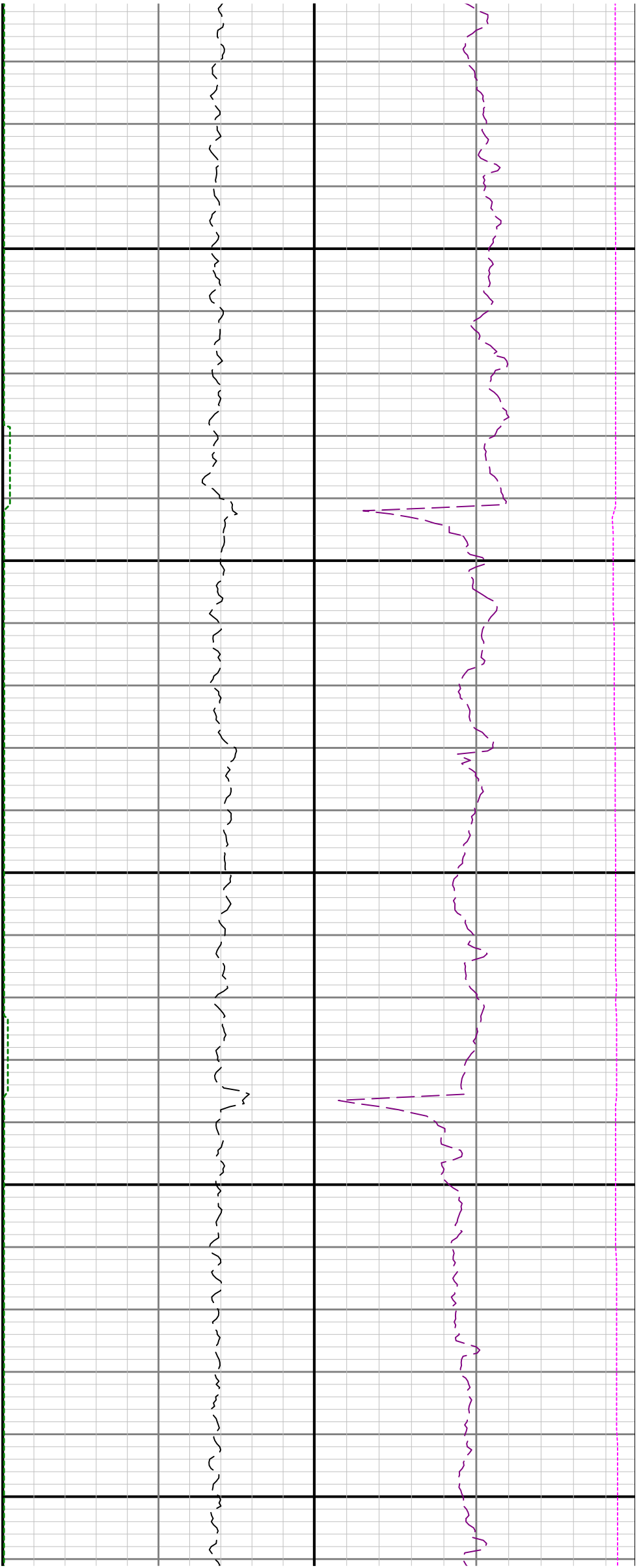
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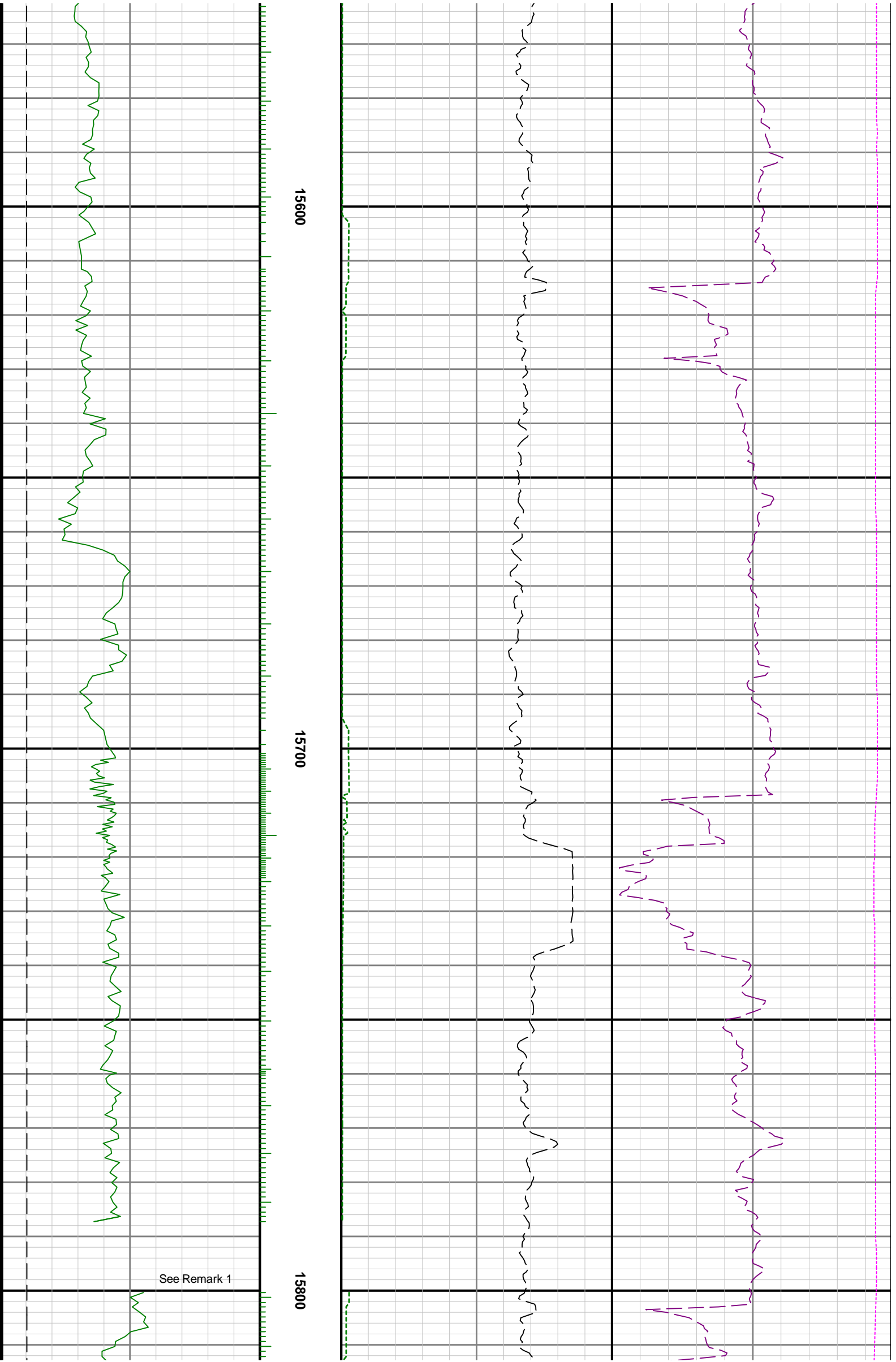


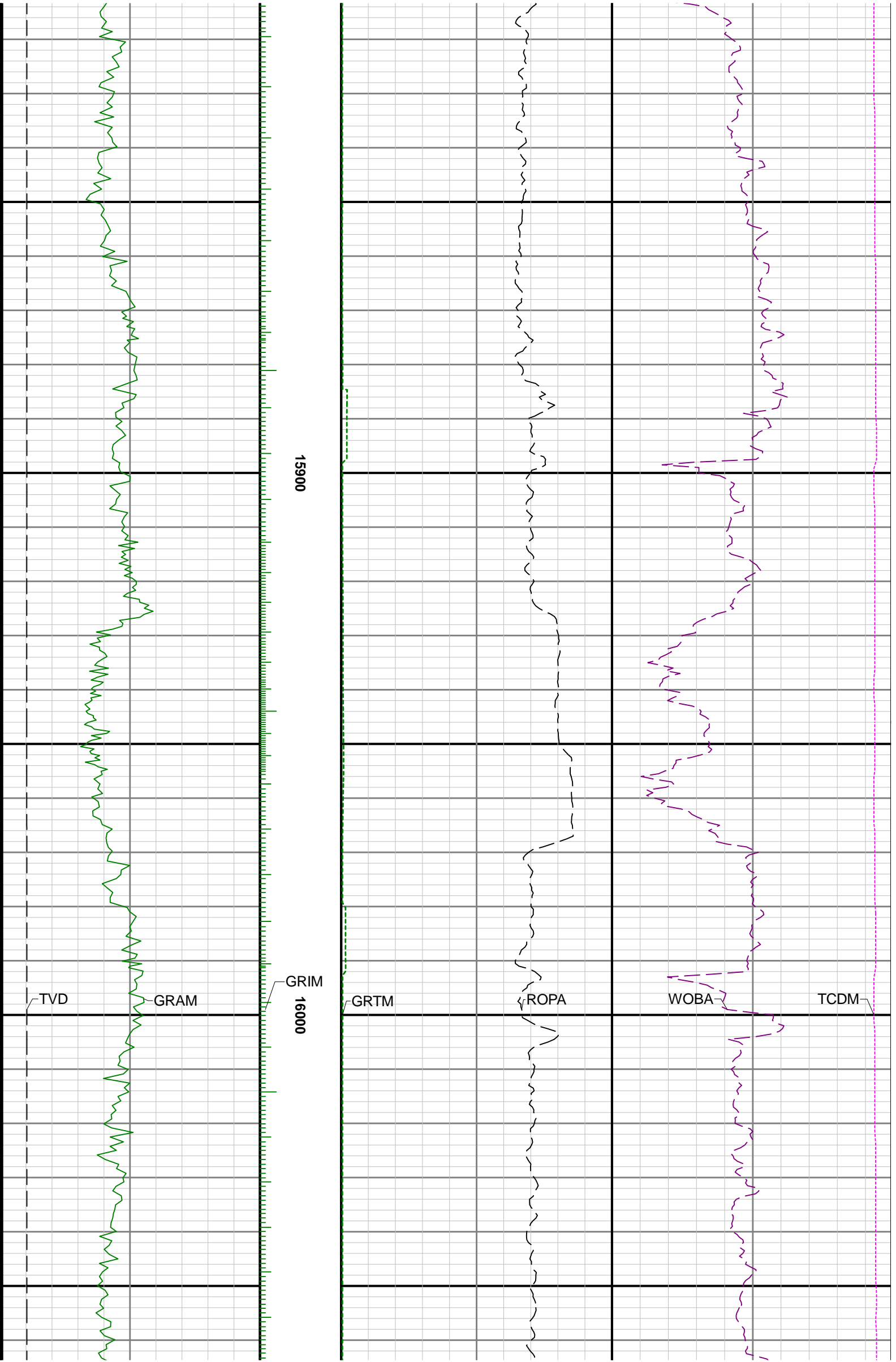


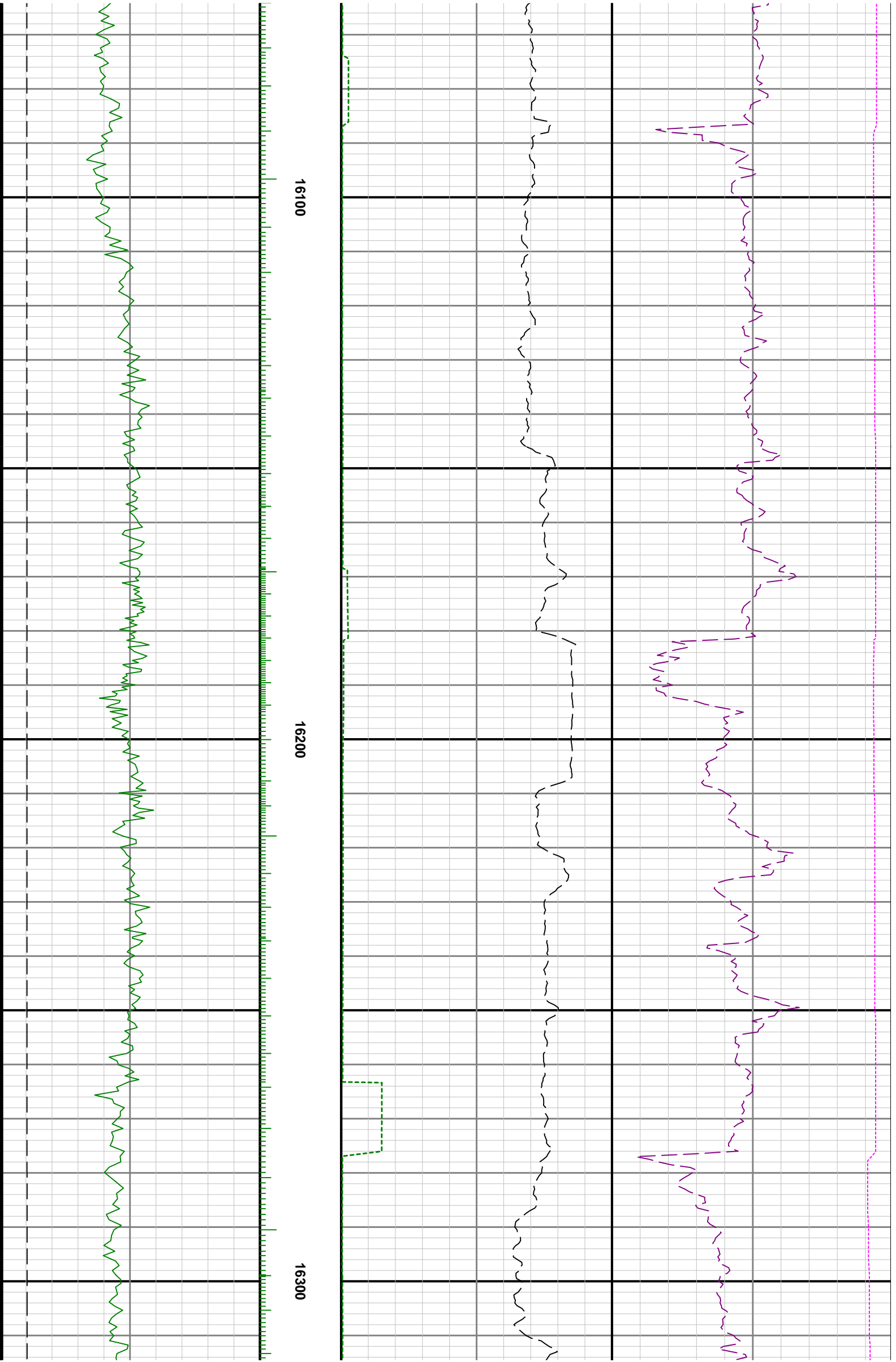


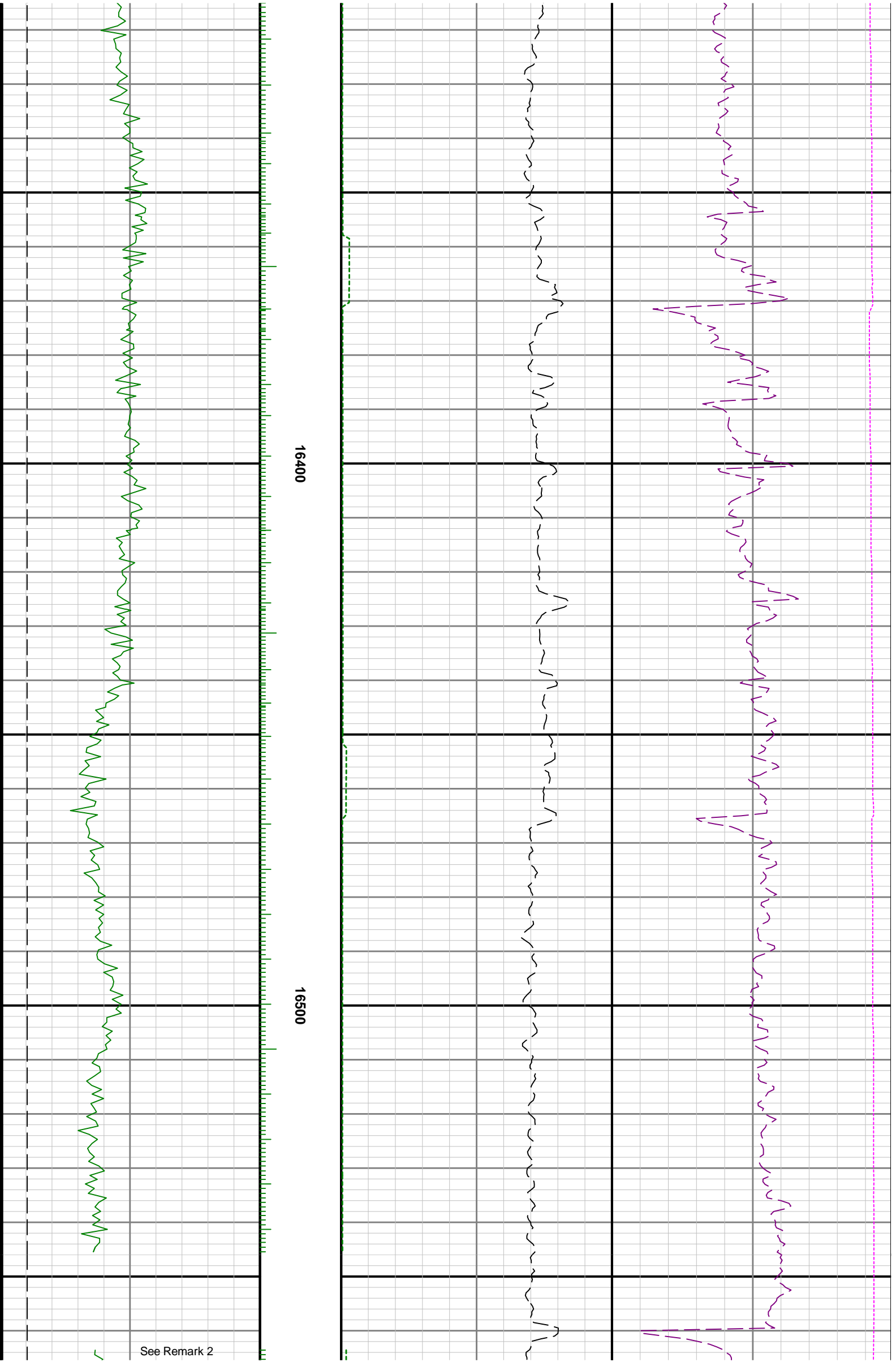












See Remark 2

