



LWD MEMORY LOG

Gamma Ray

Scale:	Company: Noble Energy					
	1:240		Well: Wells Ranch State AA32-789			
	Measured Depth		Field: Wattenberg			
Depth Reference:	County:	Weld	Country: United States			
Driller's Depth		State:	Colorado			
Status:	Surface Location:		Other Services:			
Final Print		Latitude:	40° 26' 05.604" N			
API No: 05-123-50175-00		Longitude:	104° 28' 04.188" W			
Job ID: 110096539	SEC:	5	TWN: 5N	RGE: 63W		
Permanent Datum (P.D.): Mean Sea Level		Elevation:	0.00 ft			
Log Measured From:	Rig Floor	Above P.D.:	4702.00 ft			
Elev. KB:		N/A				
Elev. DF:		4702.00 ft				
Elev. GL:		4672.00 ft				
Dates		Magnetic Field Reference				
Interval		Azimuth Reference North: Grid Dip Angle: (deg)				
From: 2019-11-10	Drilled (ft)	Logged (ft)	Total Magnetic Field Strength: (nT)			
To: 2019-11-10	Top: 1945.00	Top: 1932.00	52089			
Spud: 2019-11-06	Bottom: 16938.00	Bottom: 10925.00	Mag to Reference North Correction: (deg)			
Bottom: 7.11						
Borehole Record						
Casing Record						
Hole Size (in)	From (ft)	To (ft)	Size (in)	Weight (lb/ft)	From (ft)	To (ft)
13.500	30.00	1945.00	9.625	36.00	30.00	1935.00
8.500	1945.00	16938.00				
Mud Record						
Type	From (ft)	To (ft)	Hole Size (in)	Interval (ft)	Inc Az (Start)	Inc Az (End)
Oil Based Mud	1945.00	16938.00	8.500	14993.00	1.05 28.45	90.59 350.32
Acquisition System						
Cadence	RT 5.4	Software Version		Other		
Prior Studio	5.4.8632.4	Rig:	H&P 517	Contractor: Helmerich & Payne Drilling Co		
		District:	RMA	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
						Top	Bottom	From	To	Start Logging	End Logging	
						(ft)	(ft)	(ft)	(ft)			
1	1	0.800	PDC	3.00	AutoTrak Curve	1932.00	10830.00	1945.00	10843.00	2019-11-07 14:39	2019-11-08 19:20	28.60
2	2	0.800	PDC	3.00	AutoTrak Curve	10830.00	16925.00	10843.00	16938.00	2019-11-09 05:50	2019-11-10 05:50	25.05

Crew

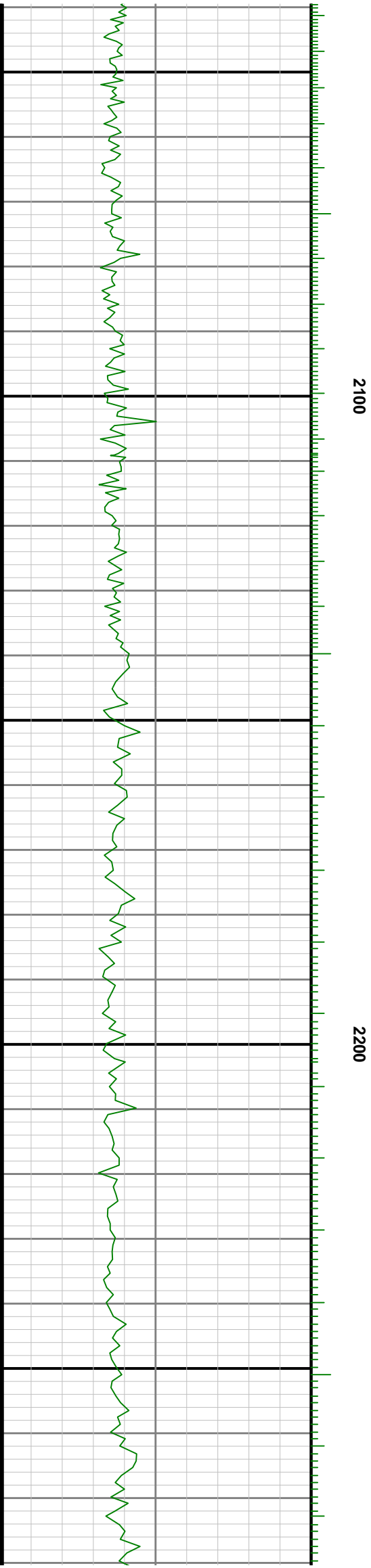
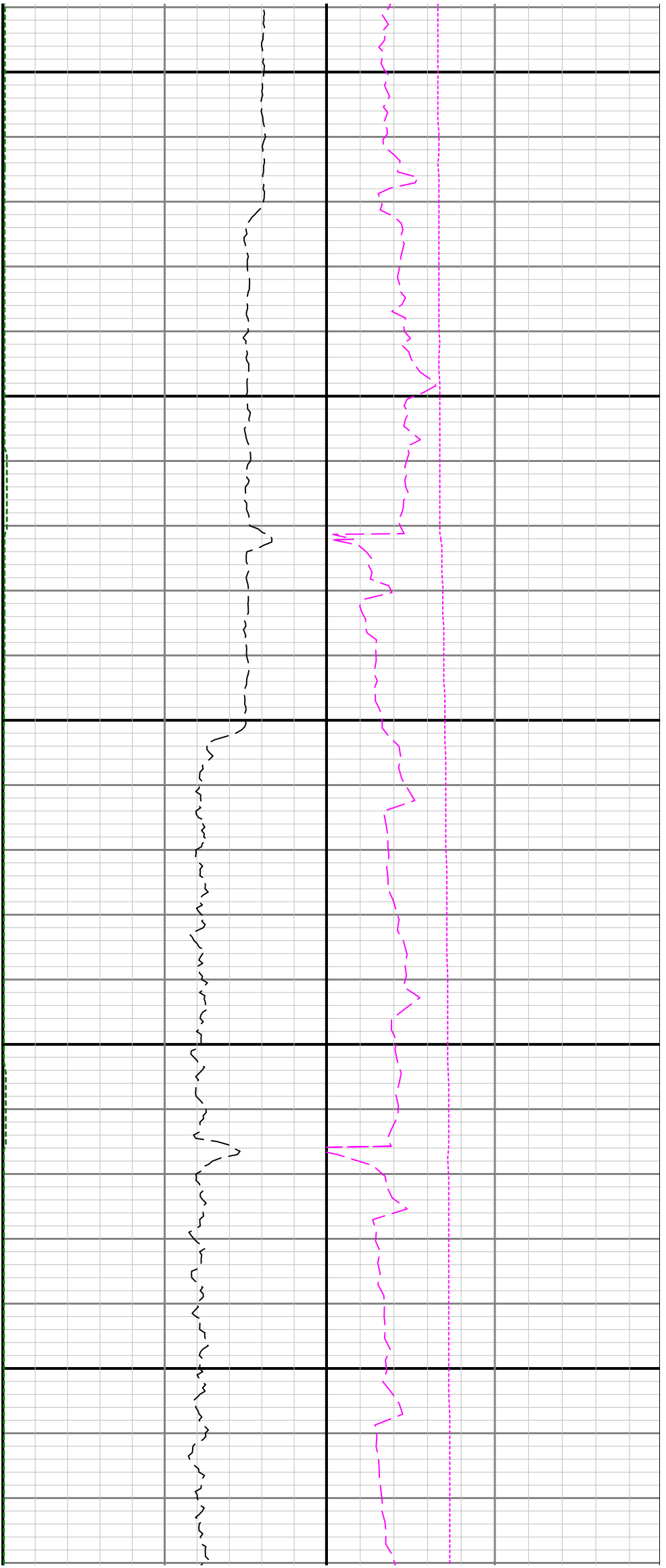
Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Adam Schlenz	2019-11-05	2019-11-09	Ryan Hull	2019-11-09	2019-11-10			

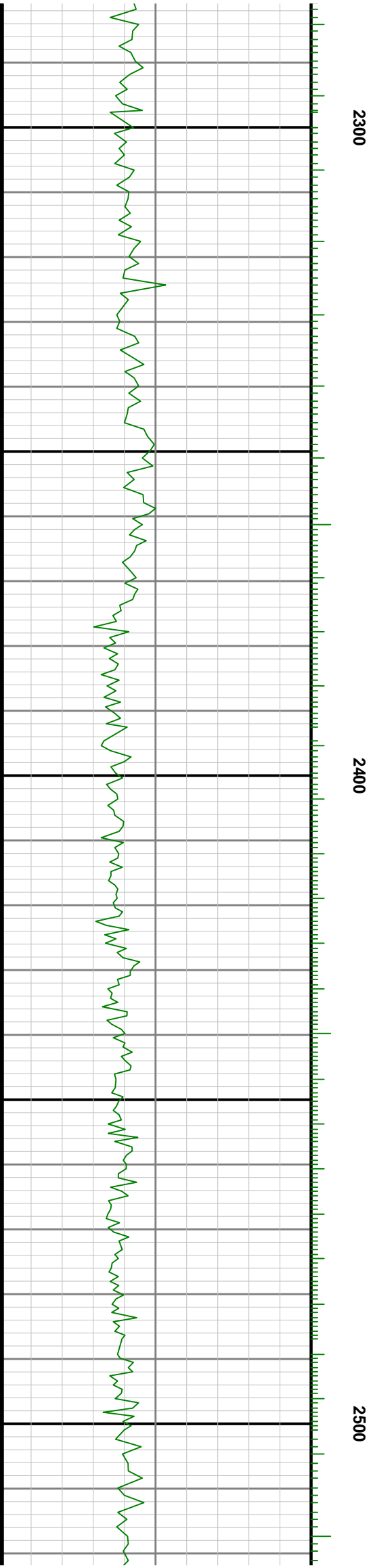
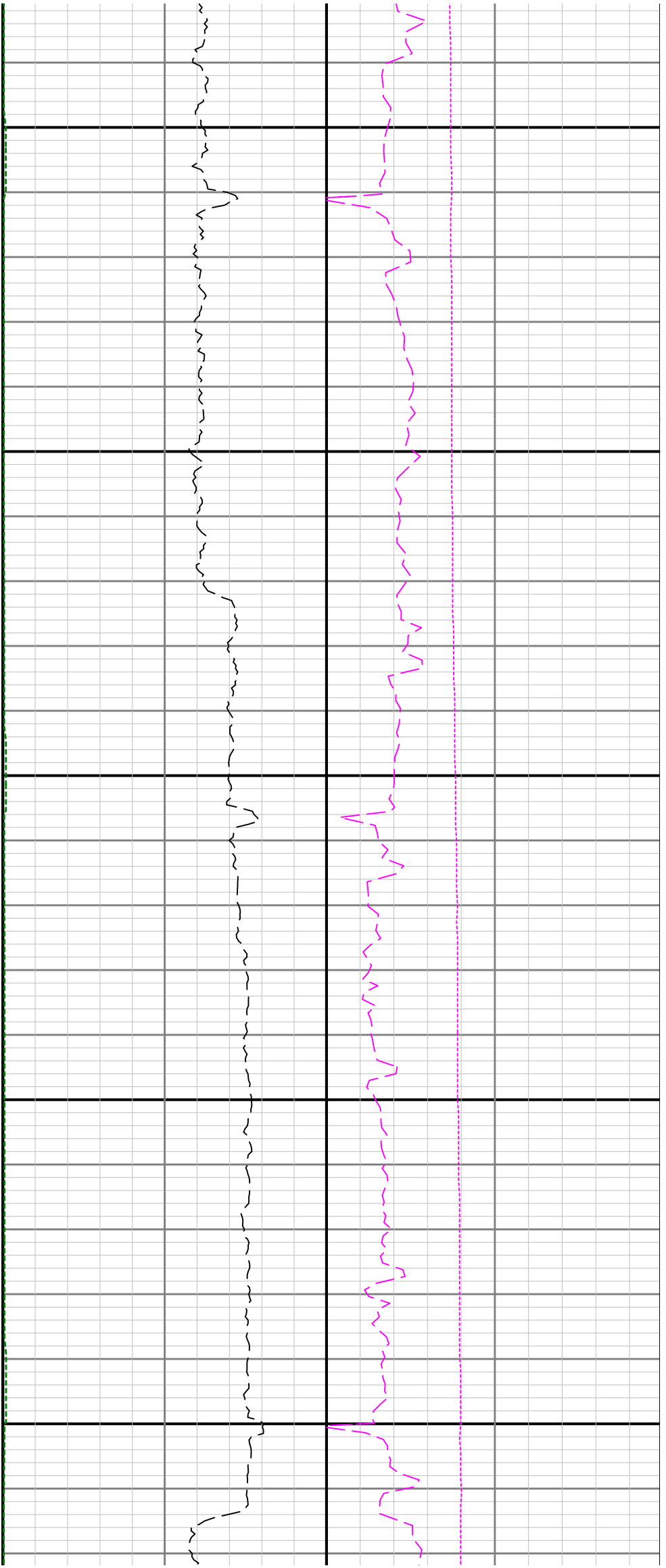
Mud Properties Record

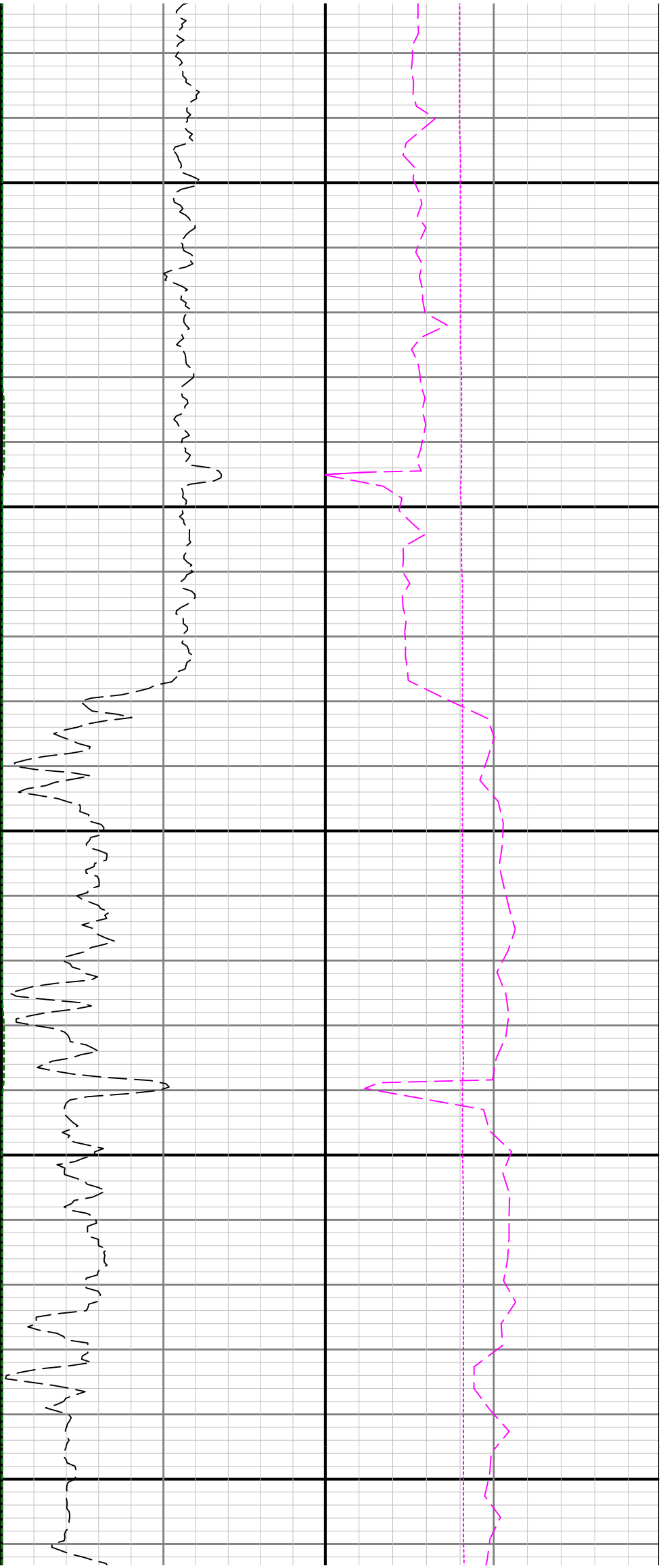
Date / Time	Run No.	Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2019-11-07 03:00	1	1945.00	Oil Based Mud	9.4	13	N/A	24.2	69/19	Active Pit	26239	0.00
2019-11-07 15:00	1	2017.00	Oil Based Mud	9.4	13	N/A	23.8	69/19	Active Pit	27211	0.00
2019-11-08 03:00	1	6371.00	Oil Based Mud	9.3	11	N/A	22.0	69/20	Active Pit	27510	0.00
2019-11-08 15:00	1	9912.00	Oil Based Mud	9.3	11	N/A	19.4	70/19	Active Pit	27992	0.00
2019-11-09 02:29	2	10843.00	Oil Based Mud	9.3	11	N/A	19.4	70/19	Active Pit	28538	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	AutoTrak Curve Steering Unit	14236901	Near Bit VSS	5.93	5.93	7.000	4.330

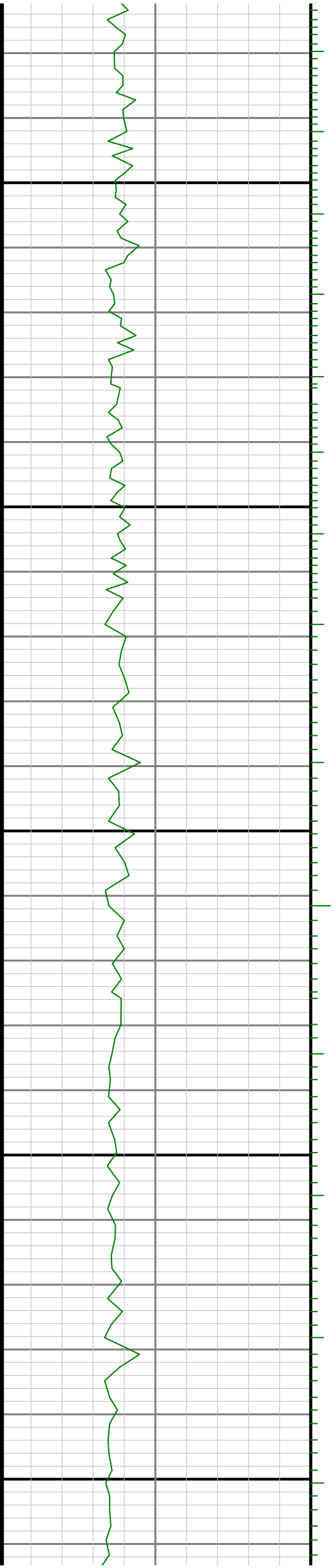


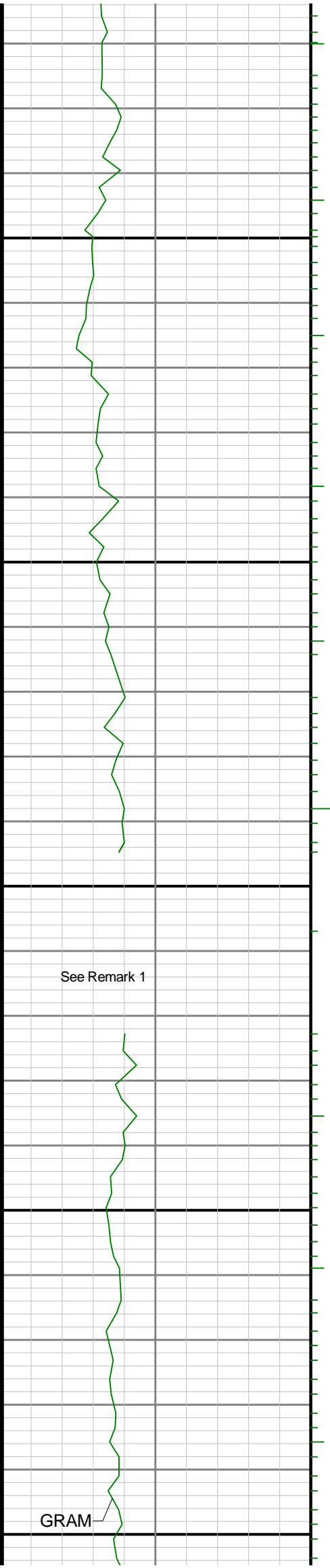




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2700

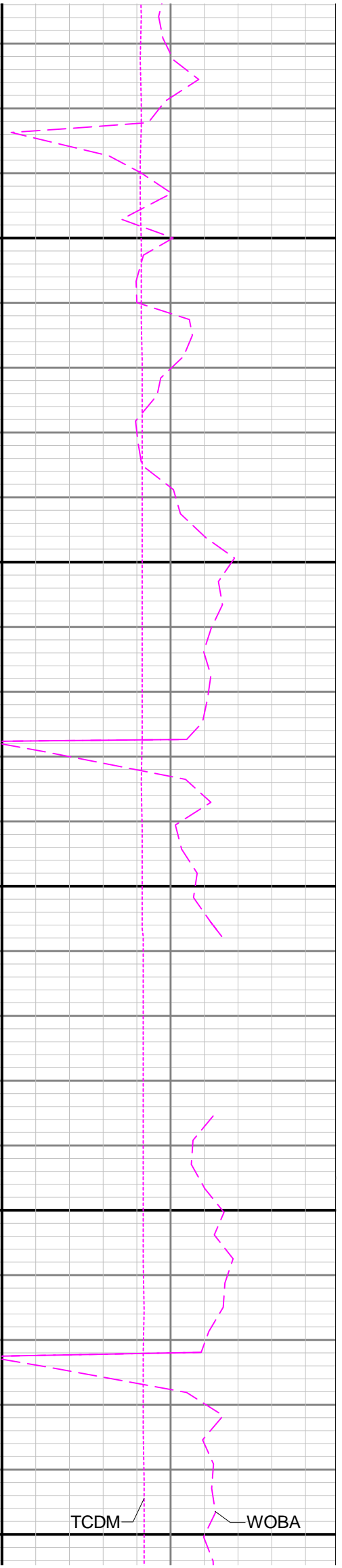
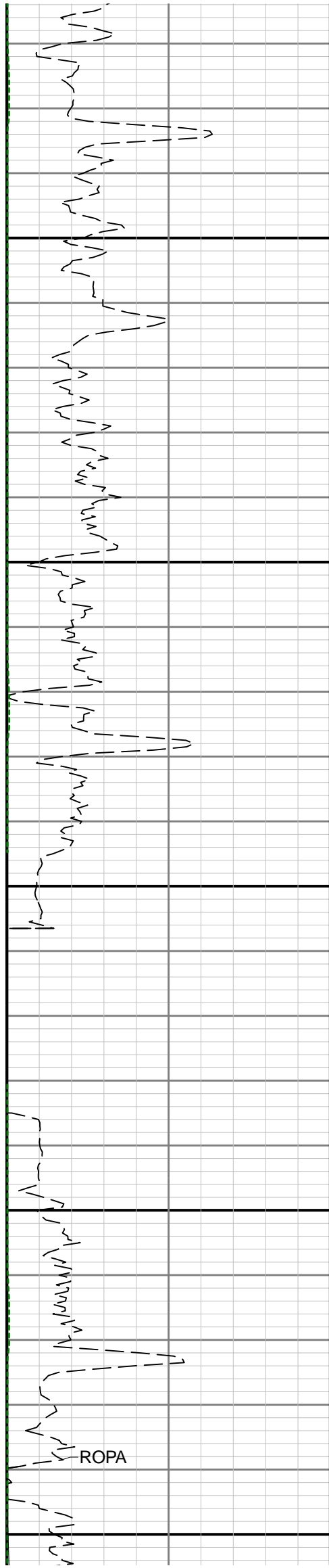




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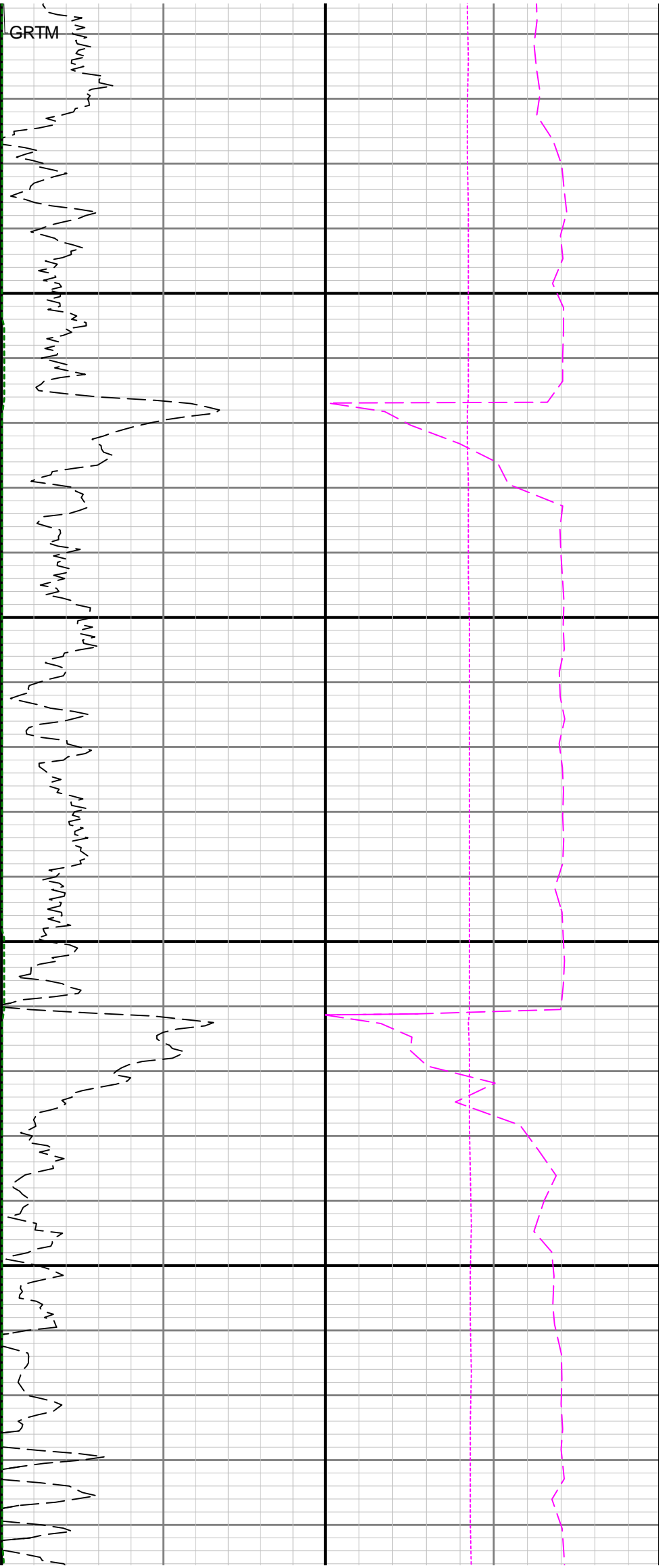
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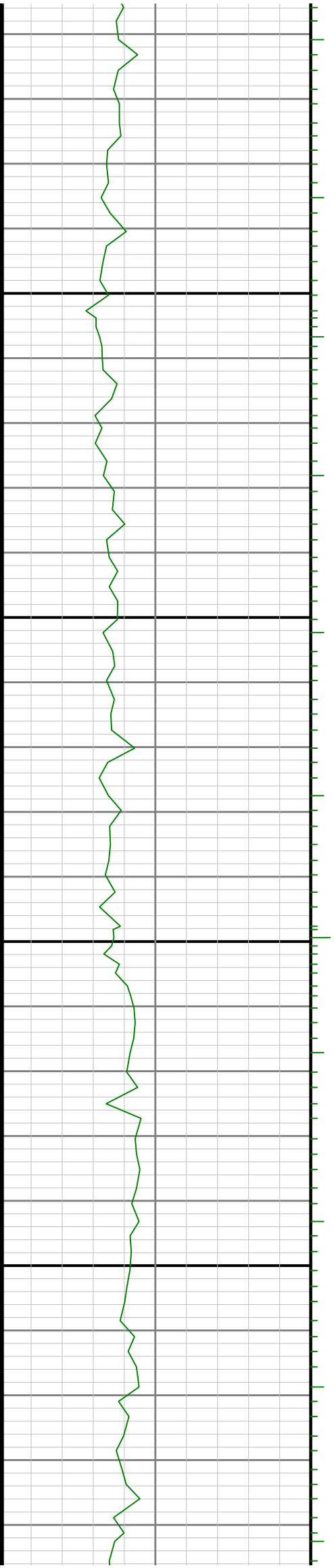
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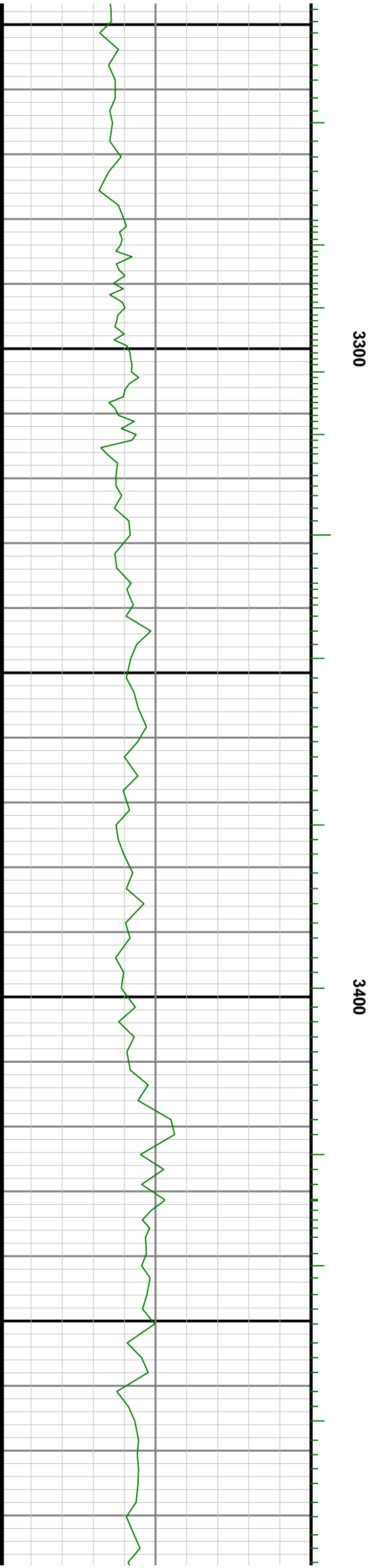
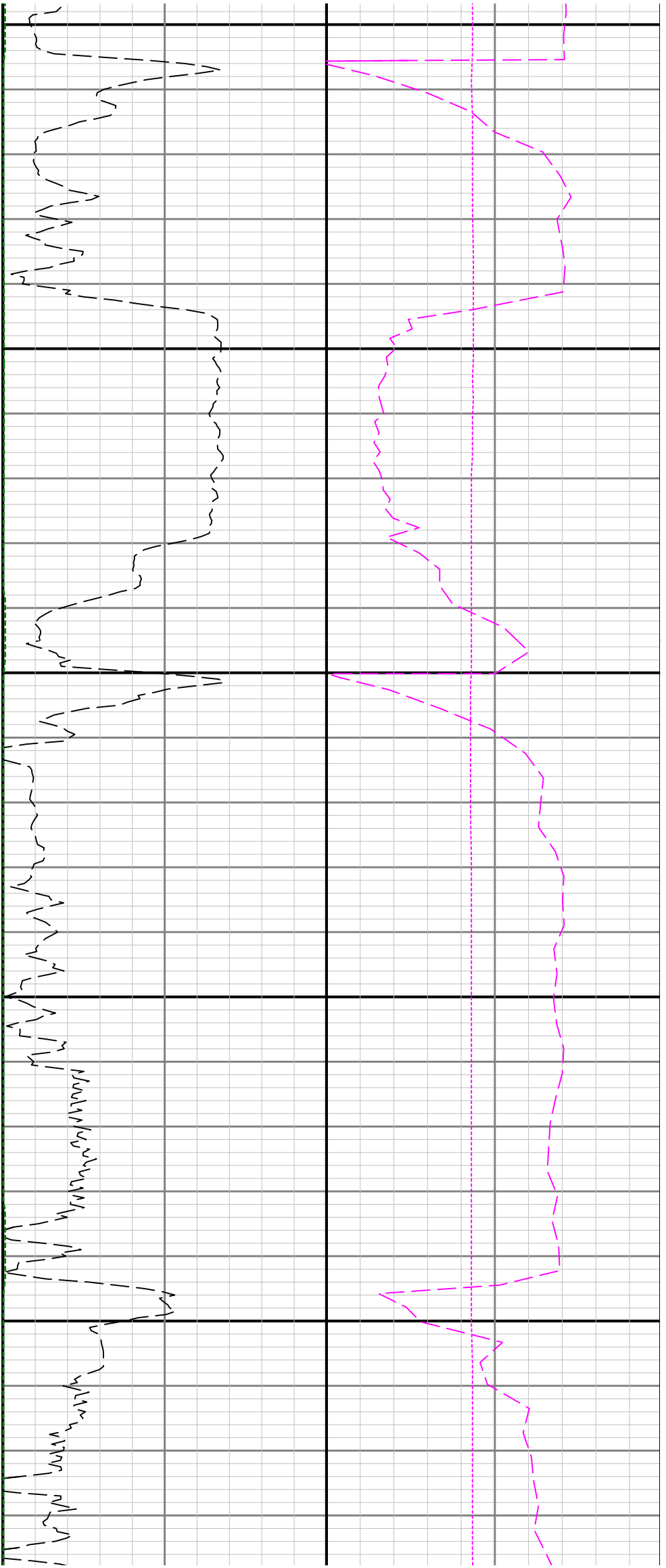
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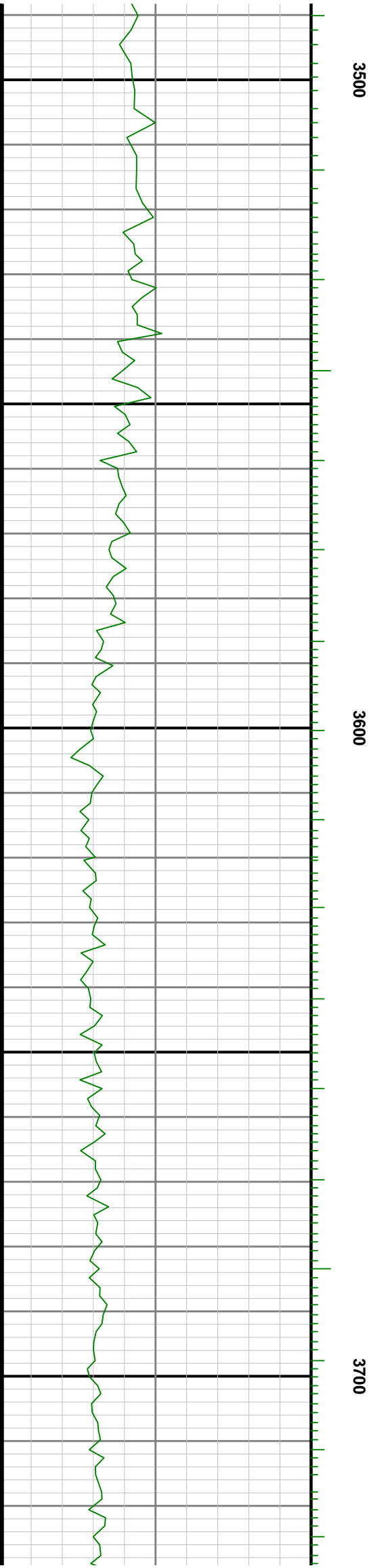
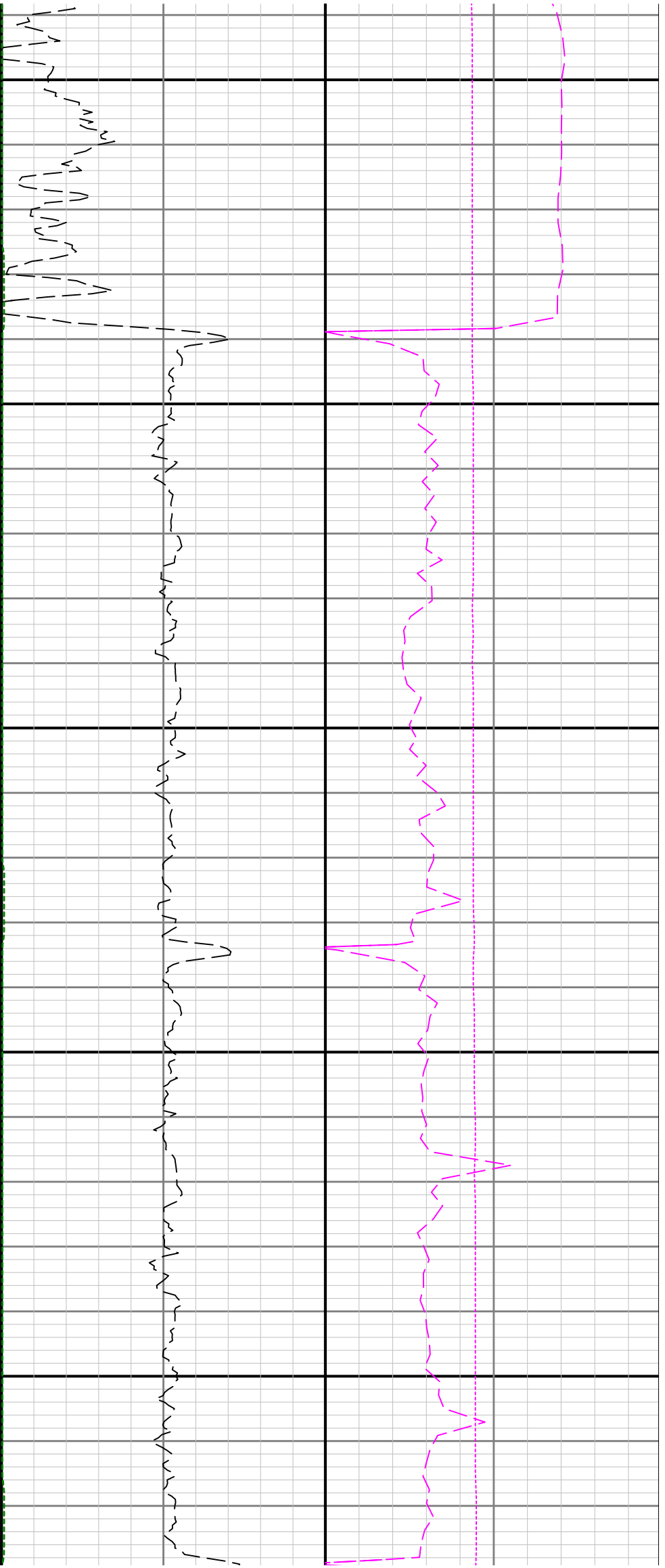


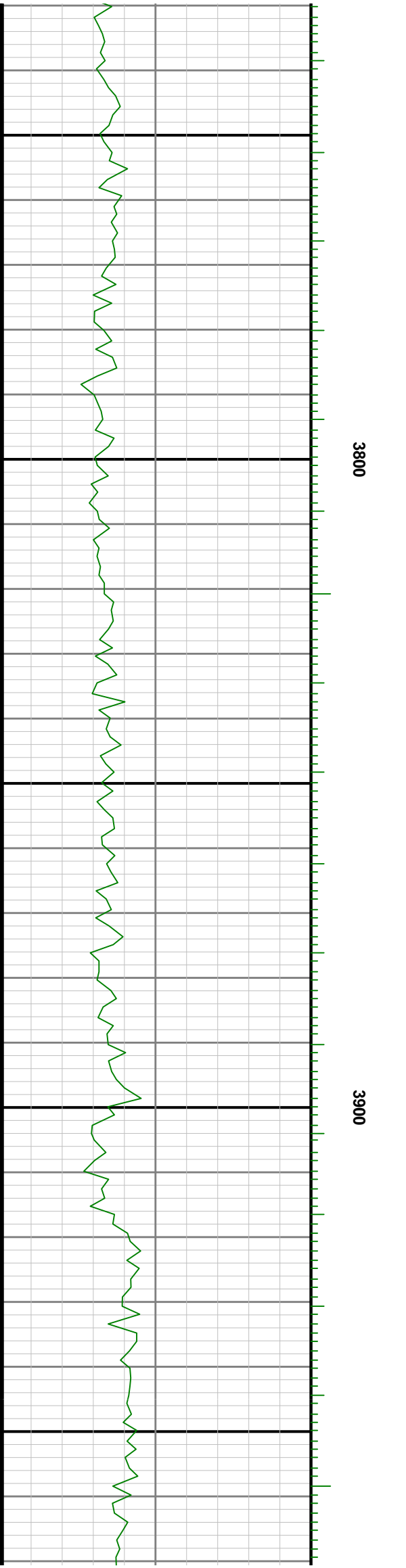
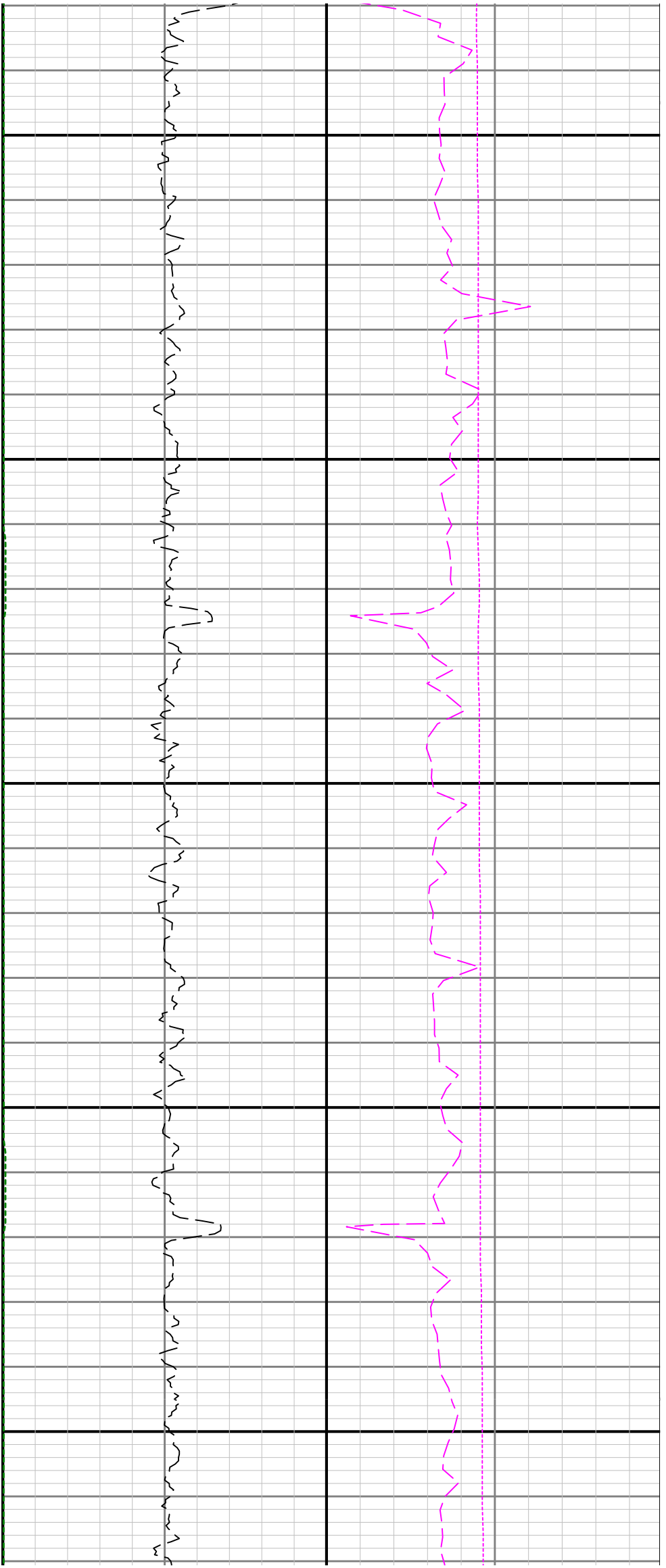
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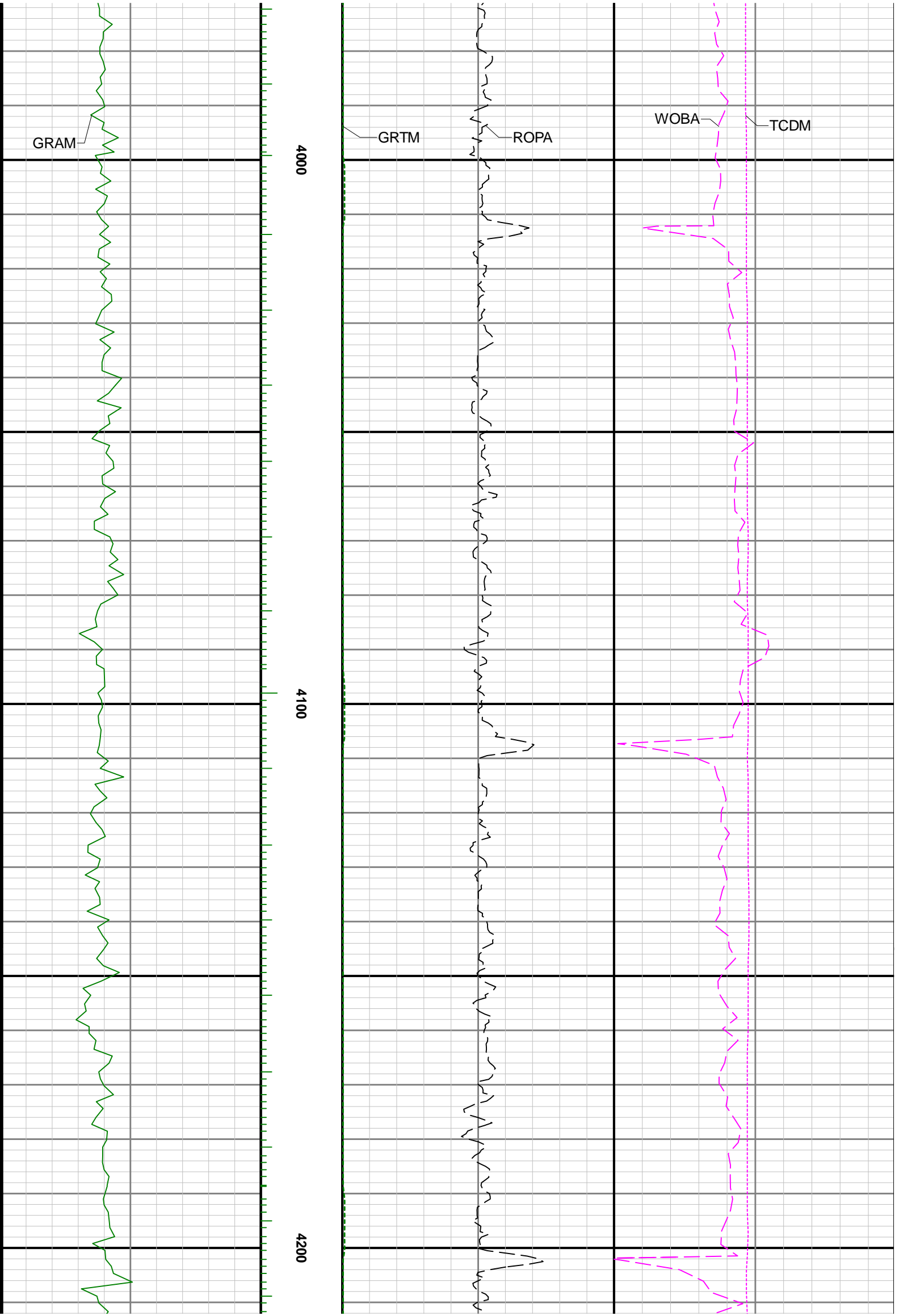
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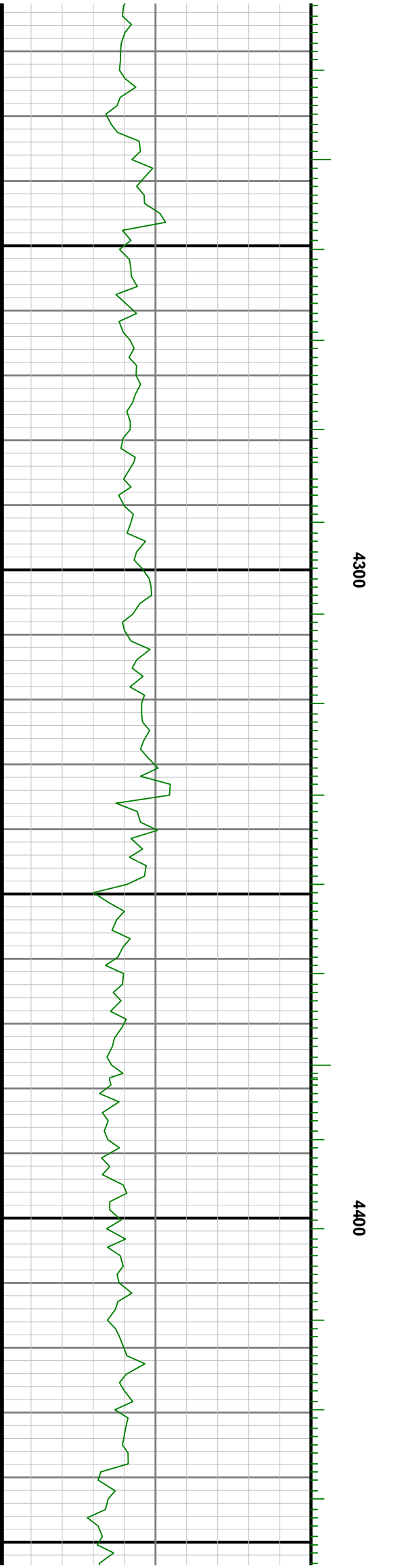
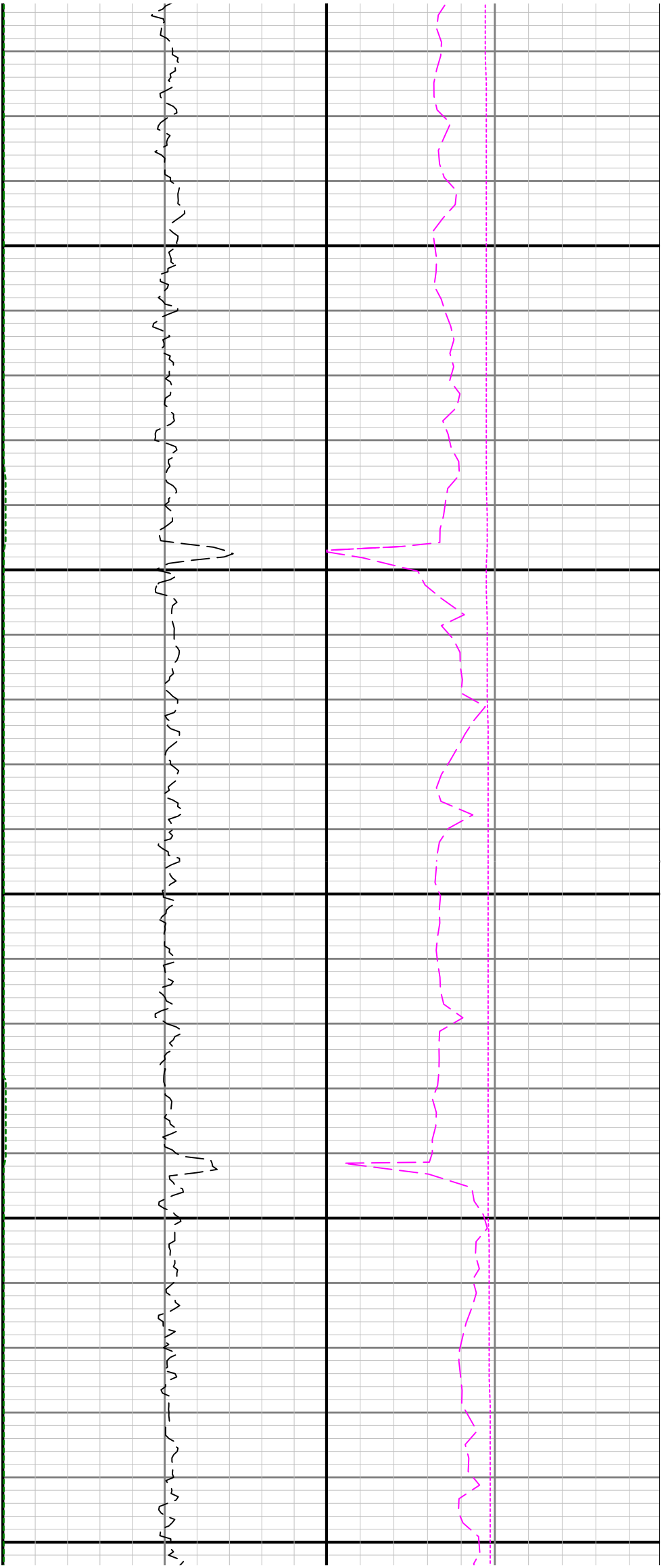


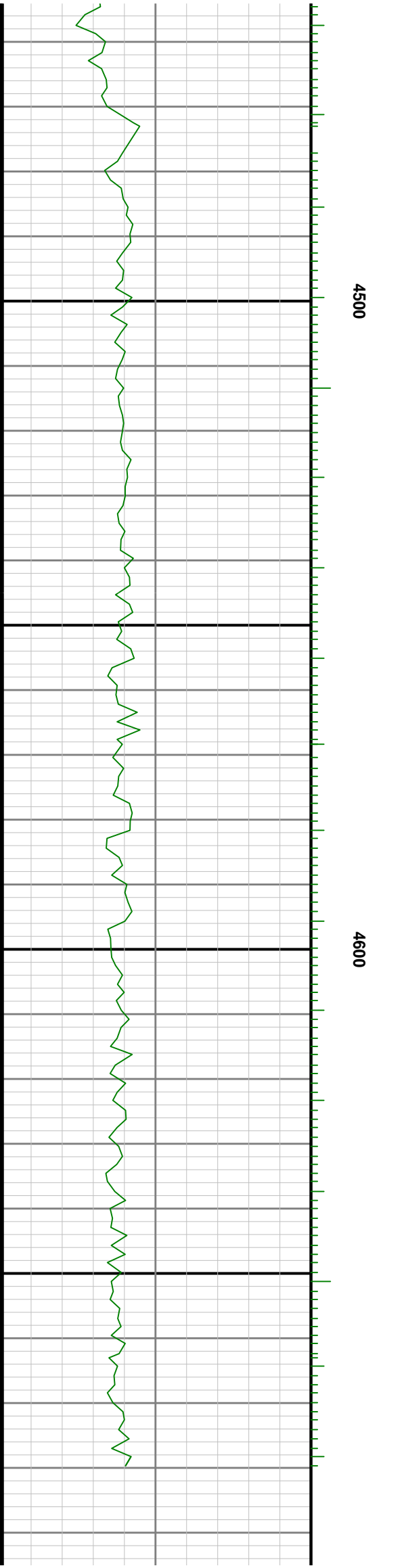
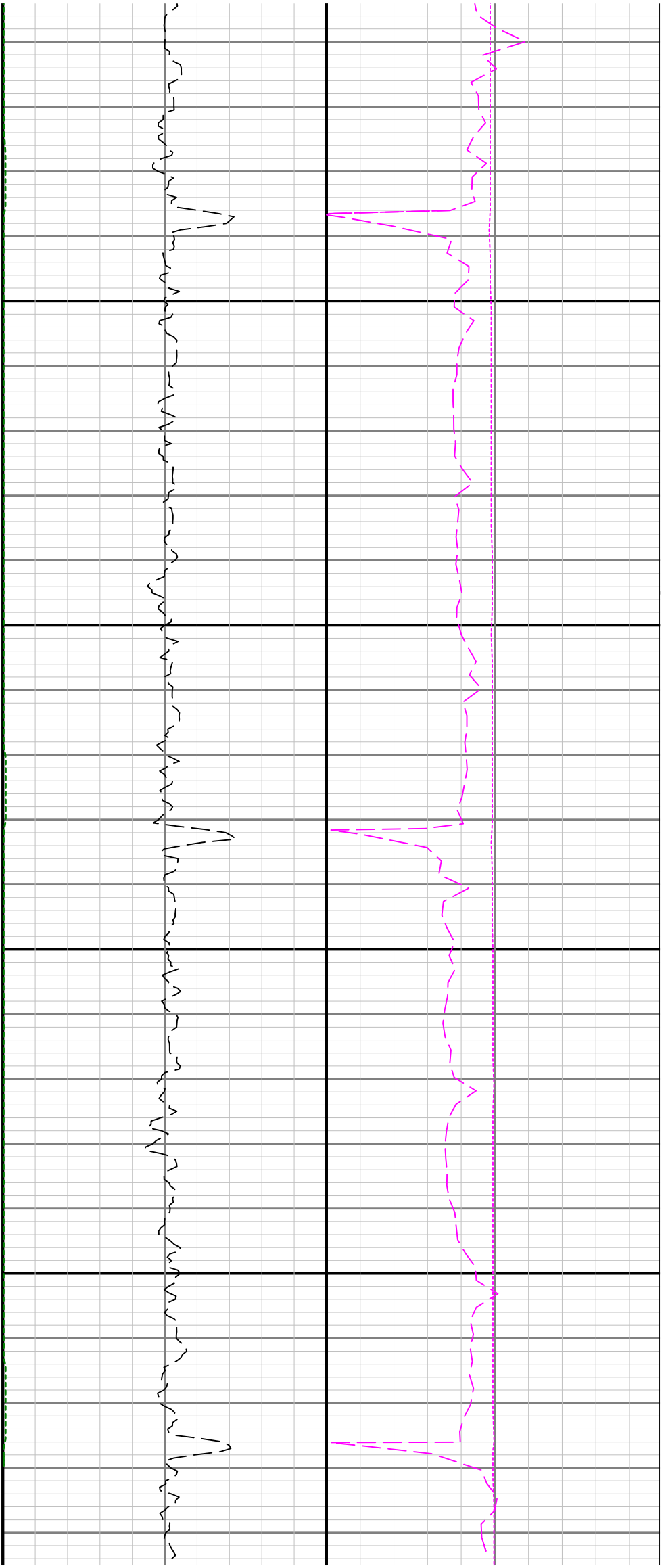


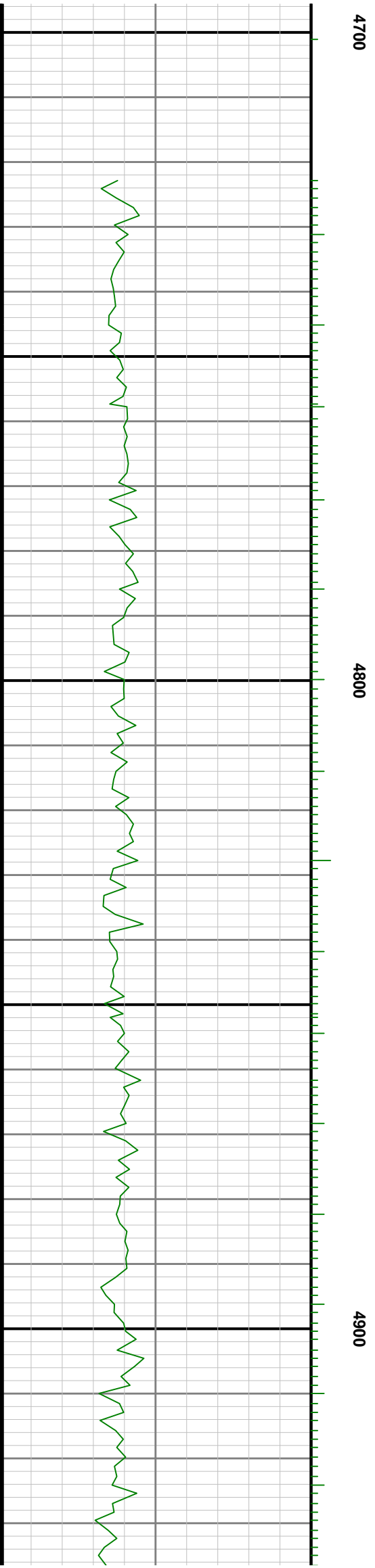
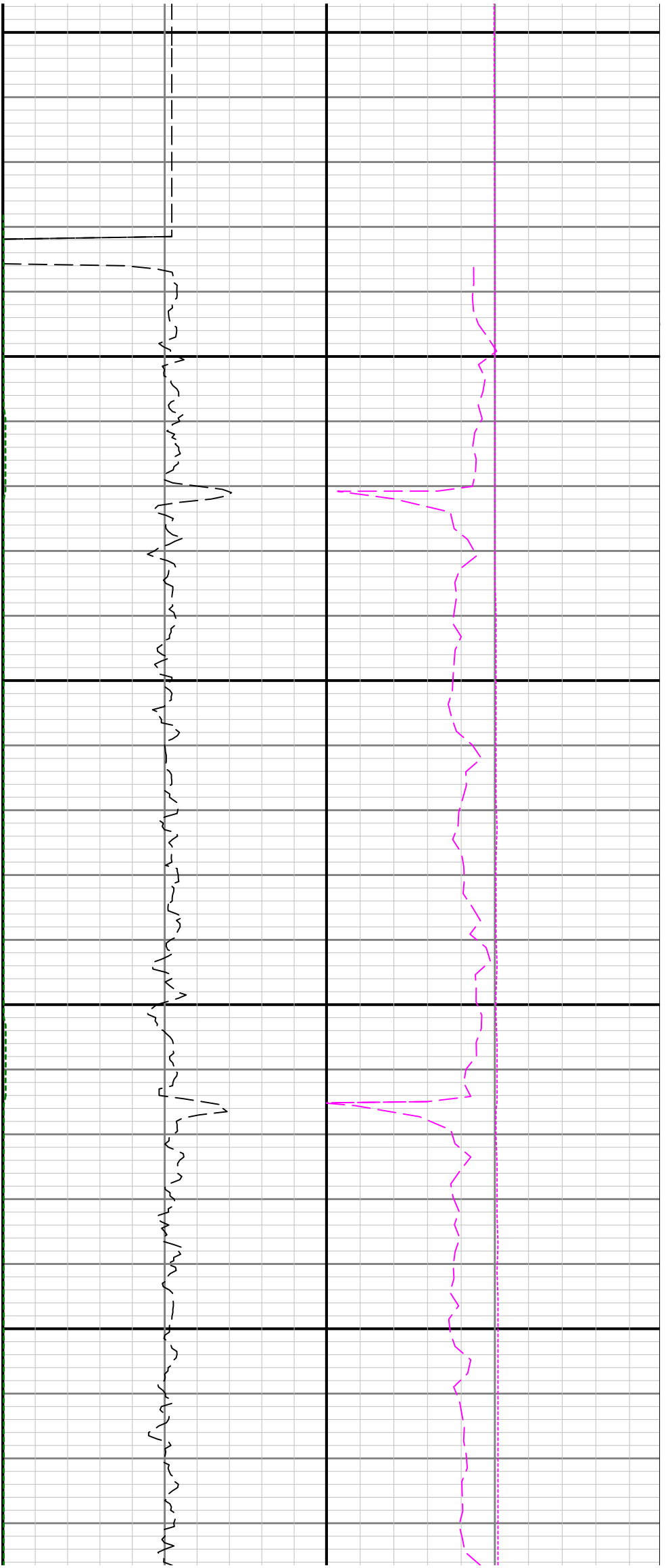


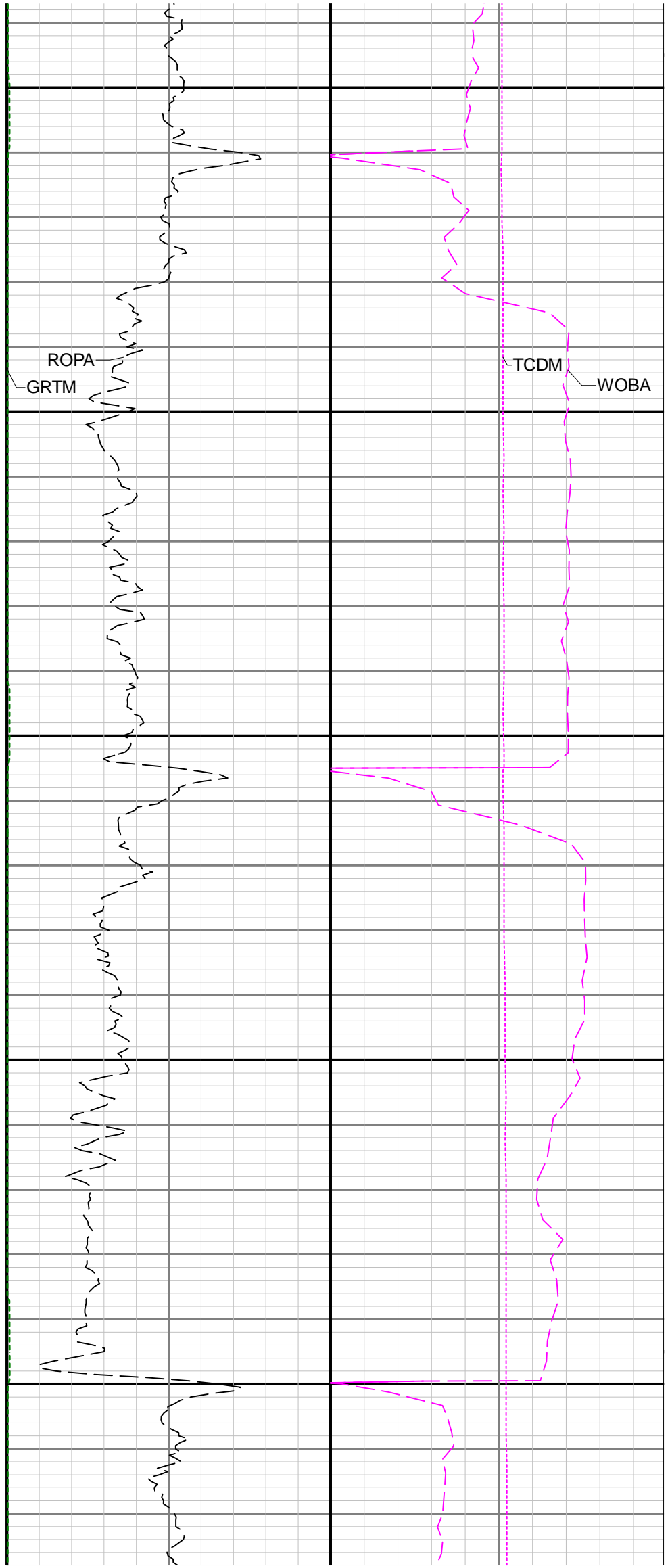
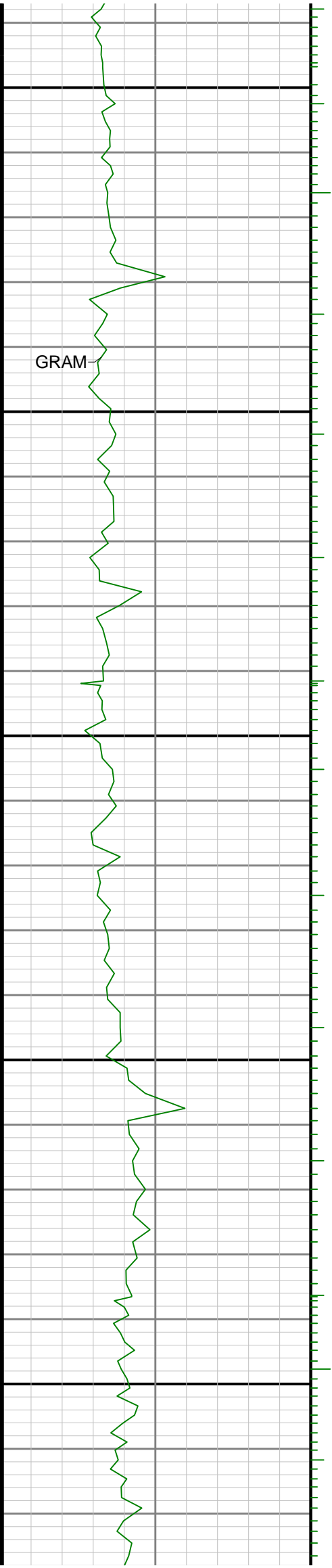


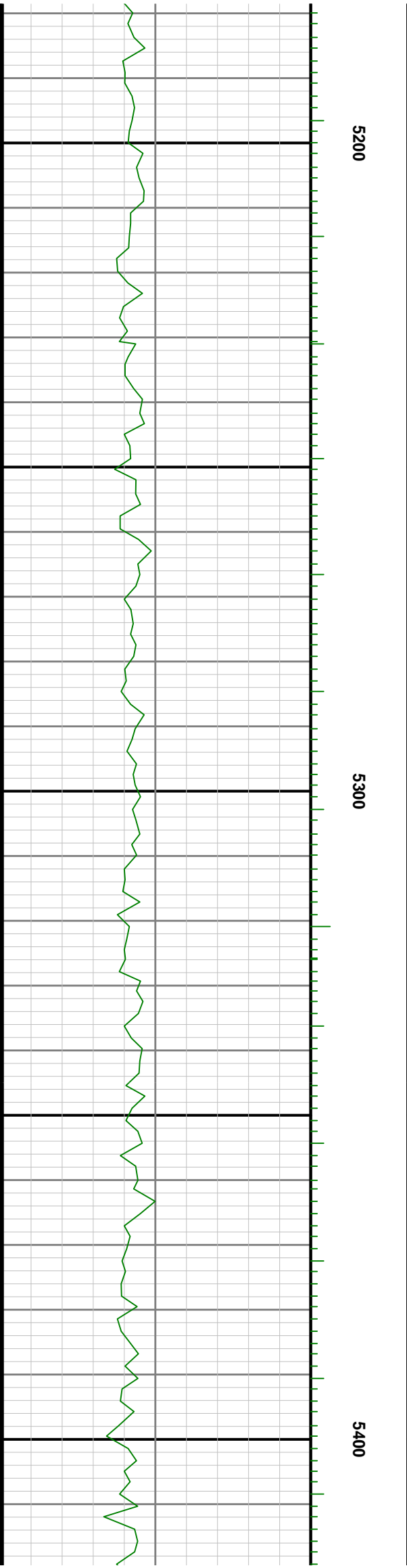
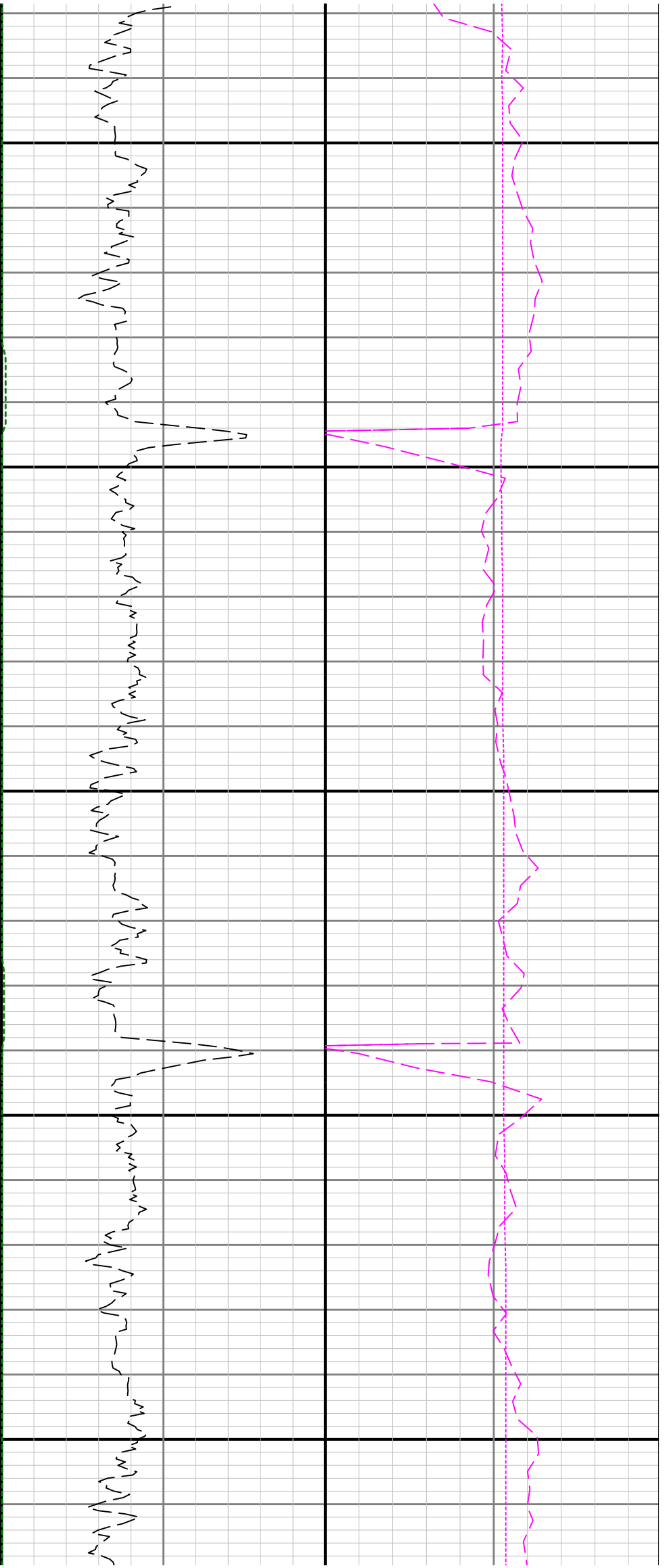


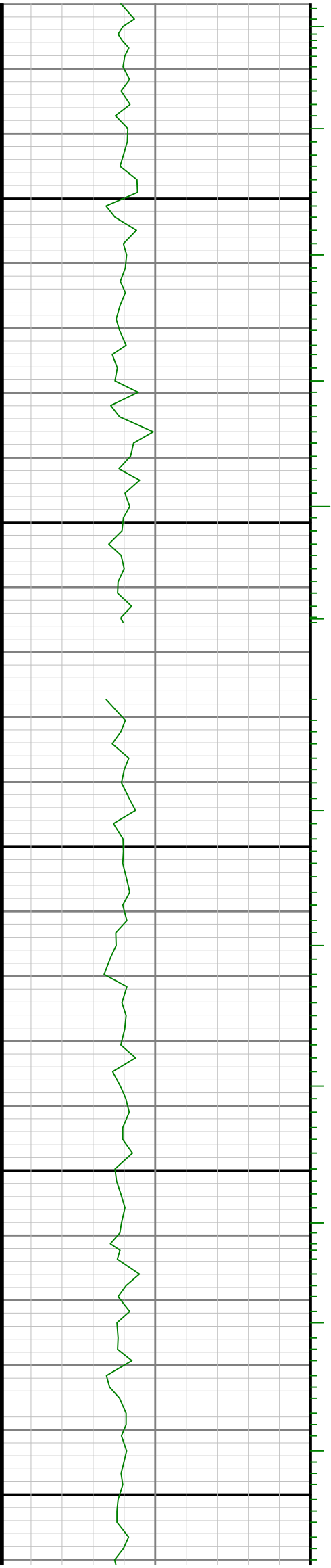






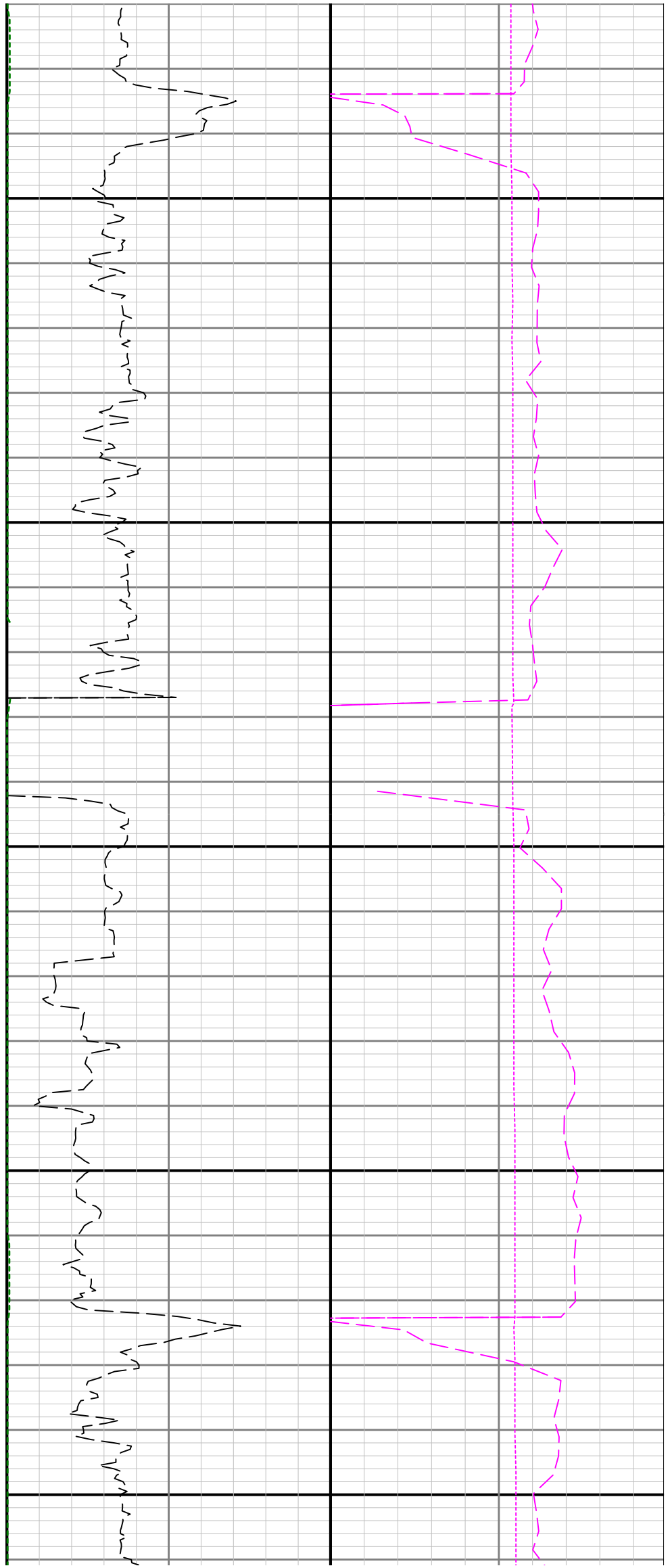


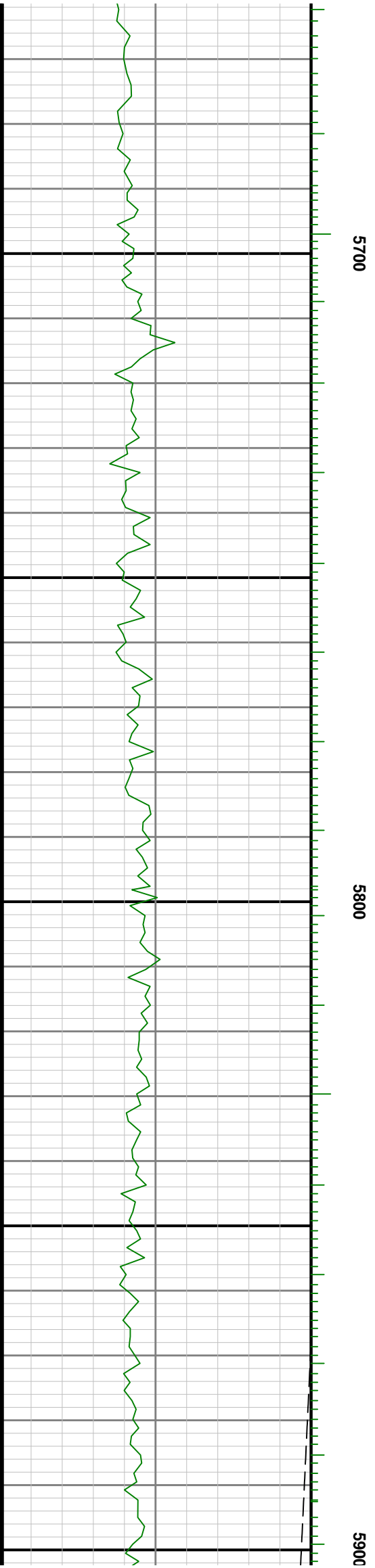
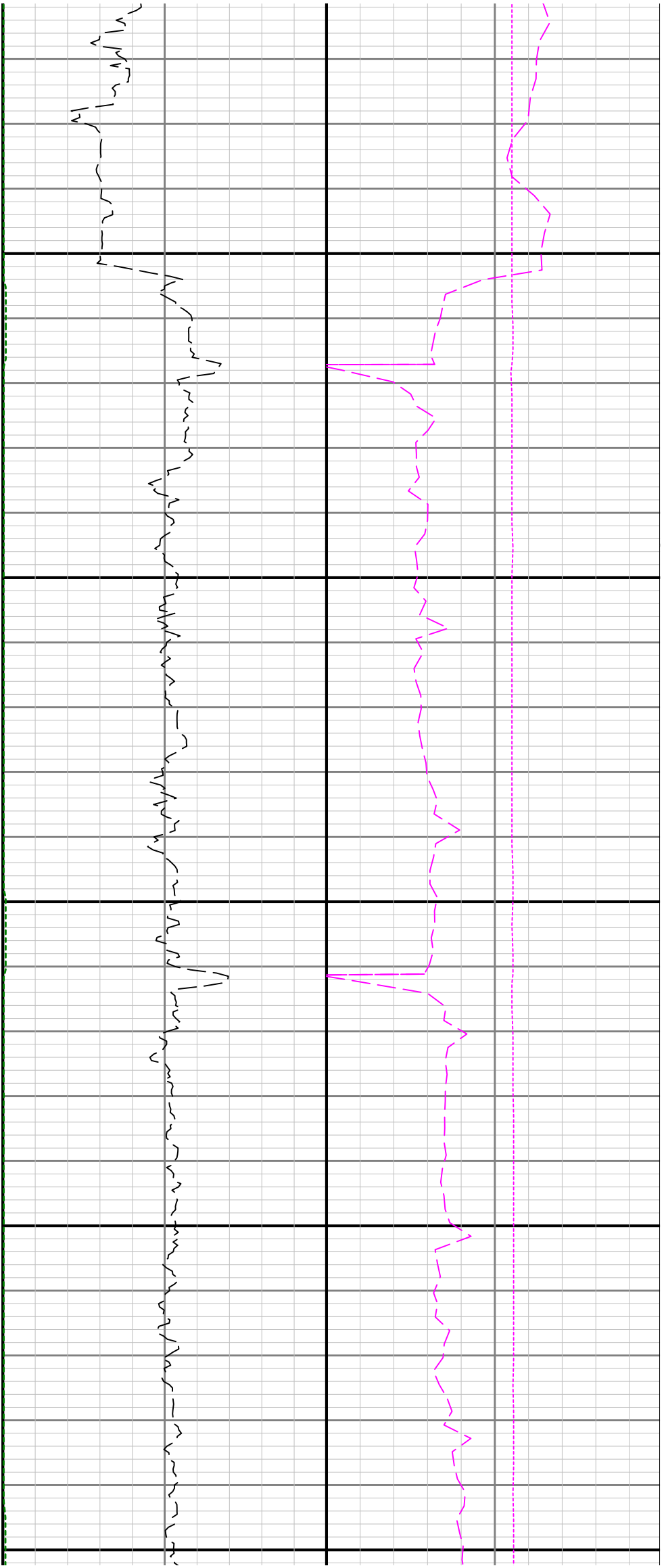


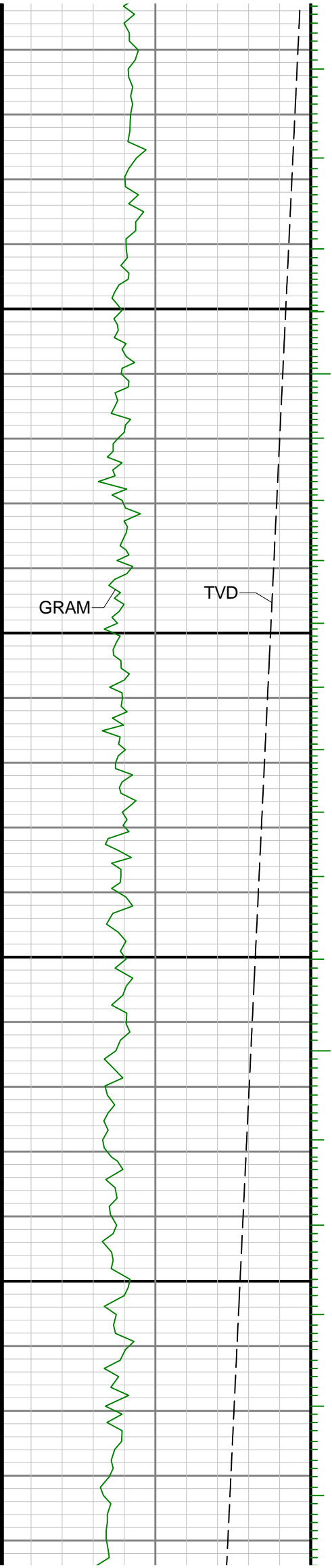


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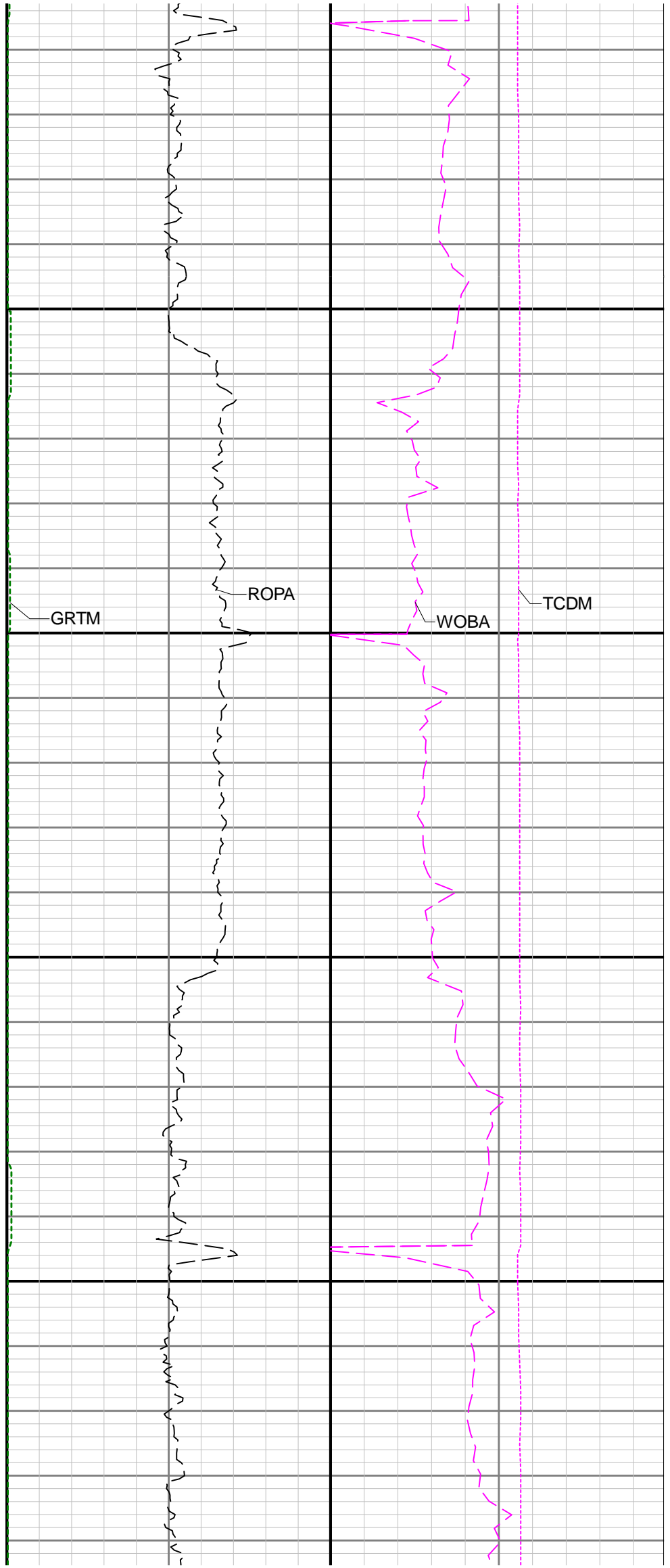






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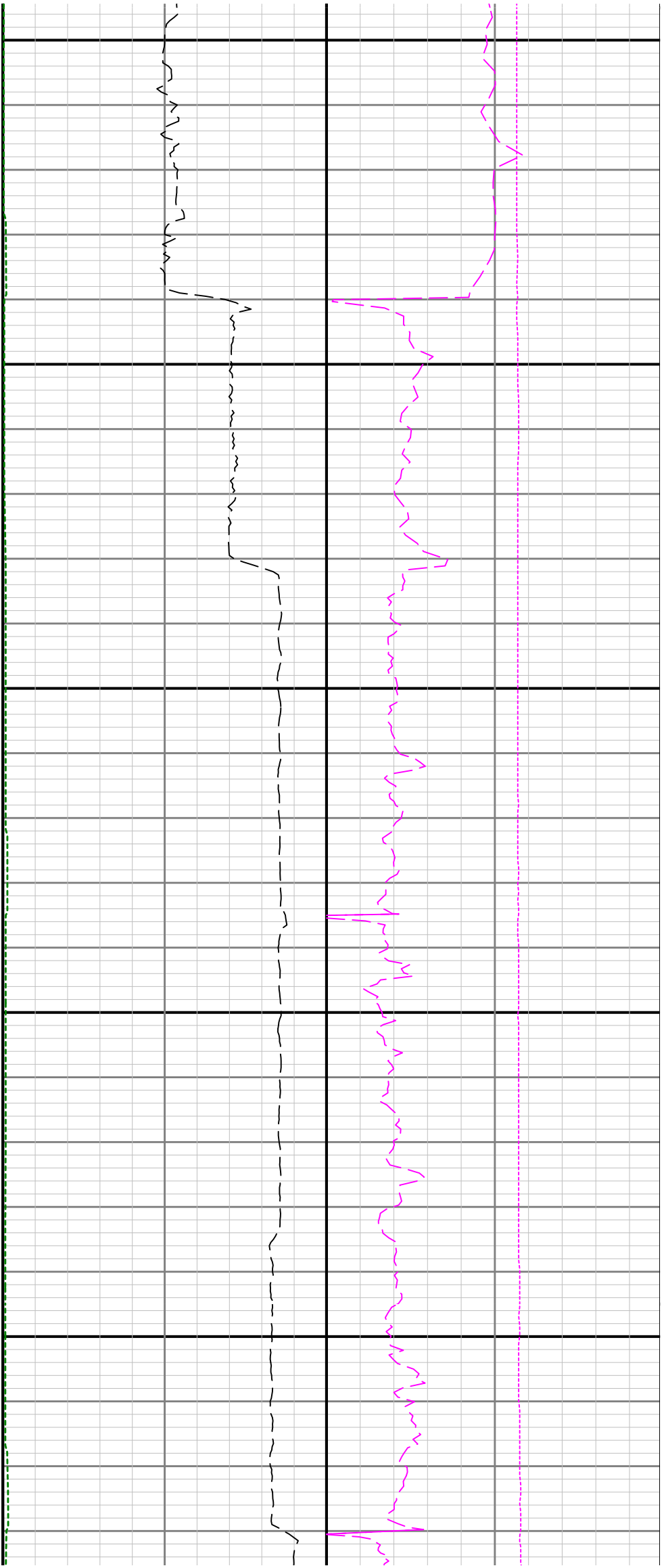


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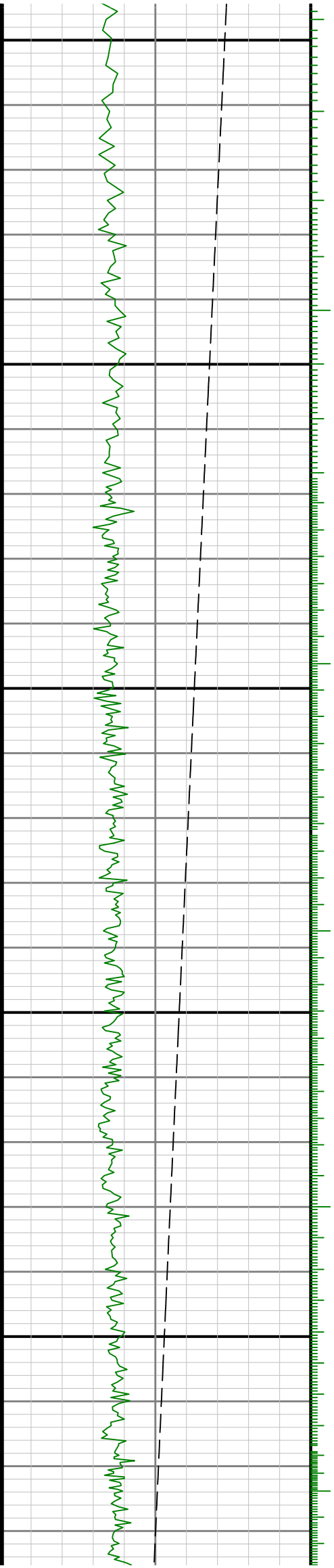
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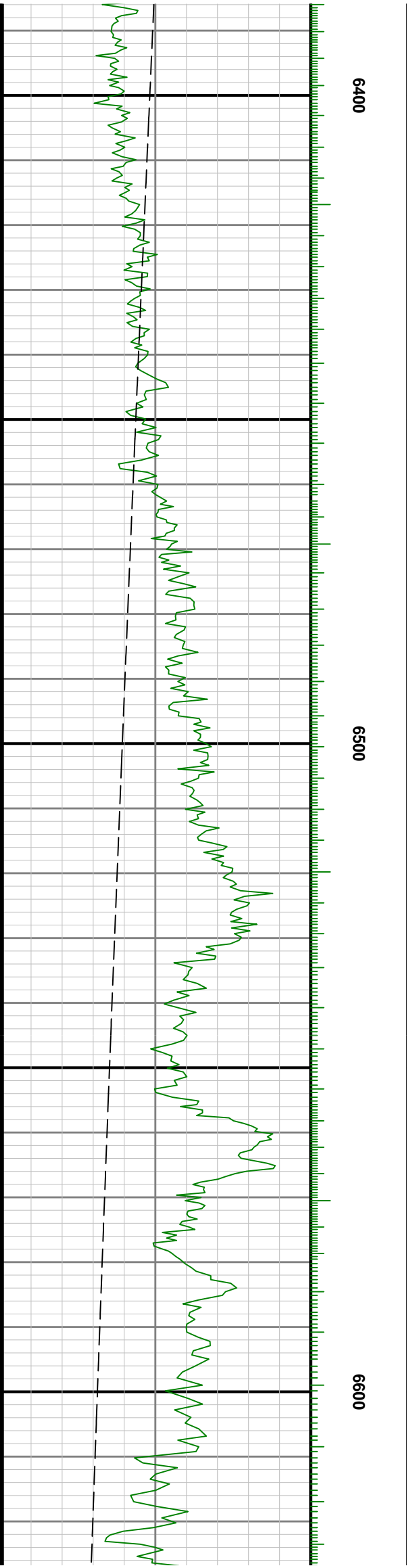
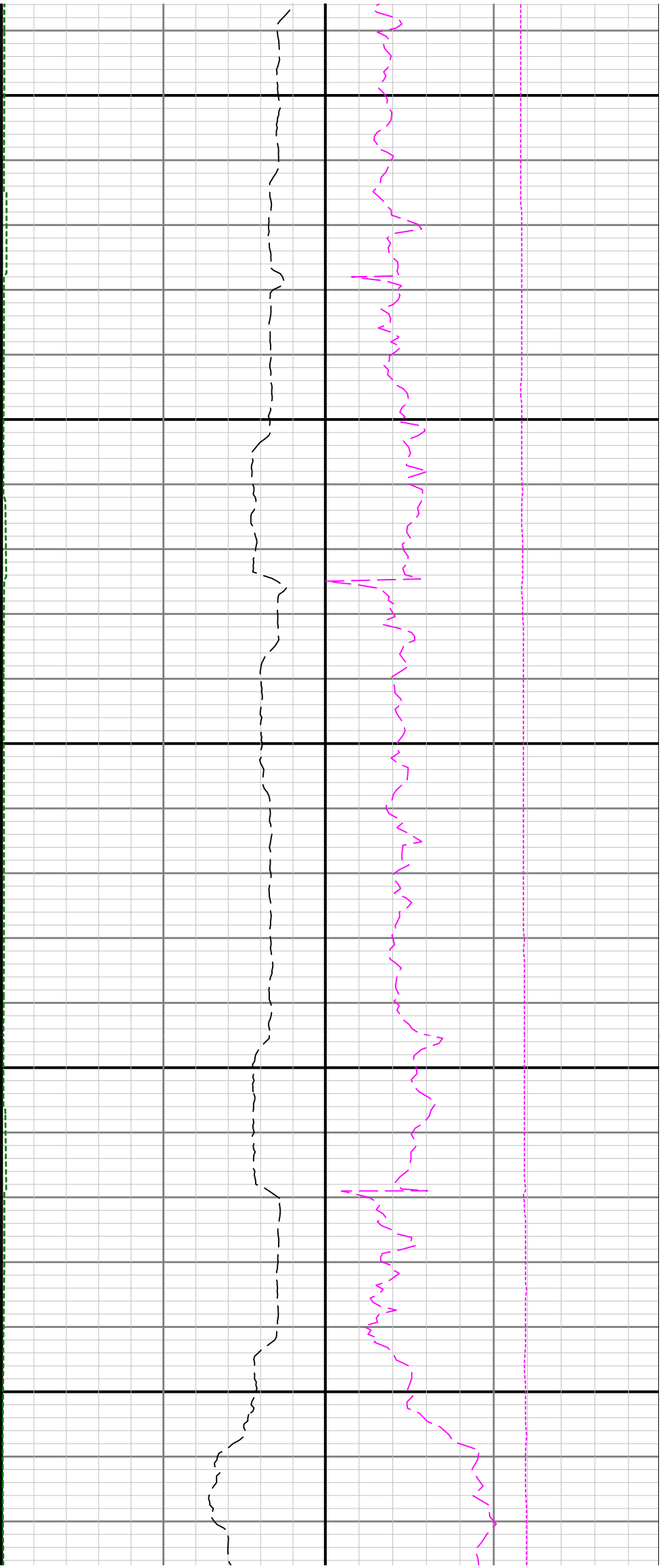
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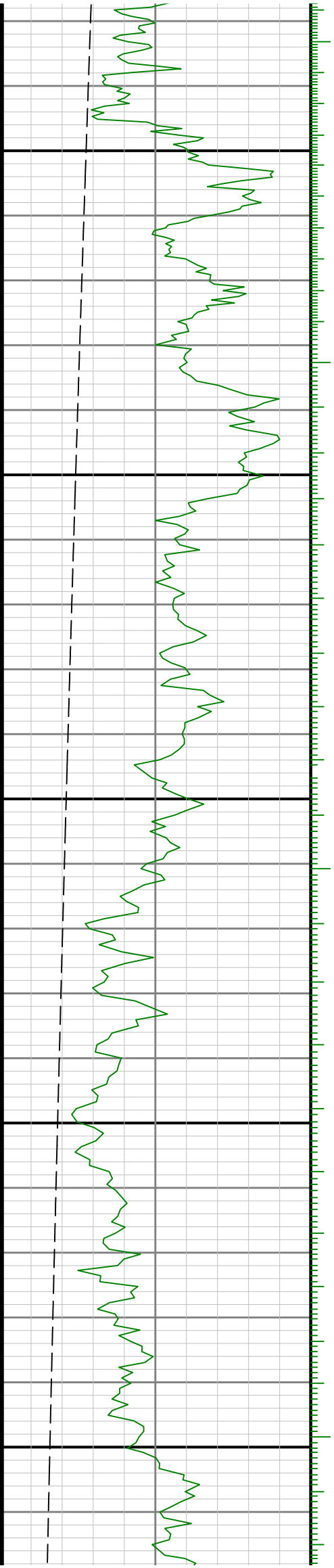


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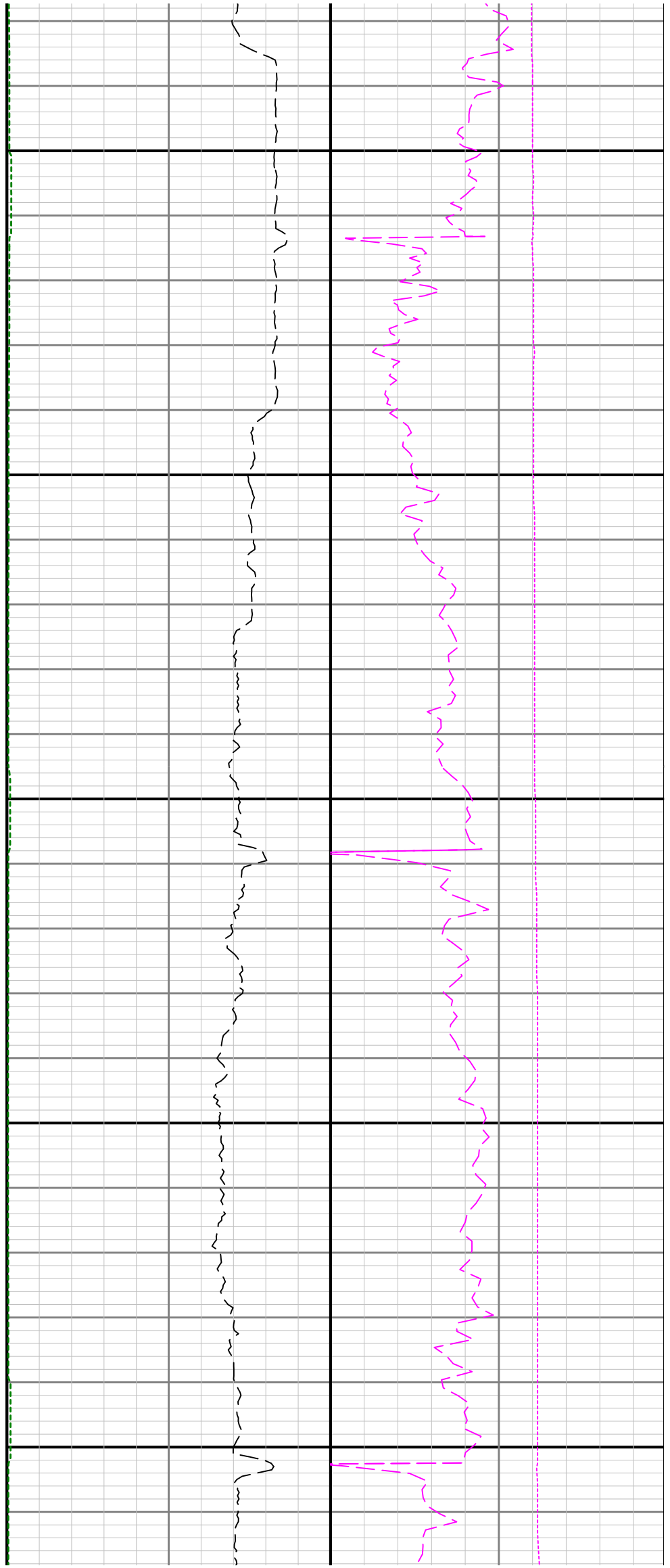


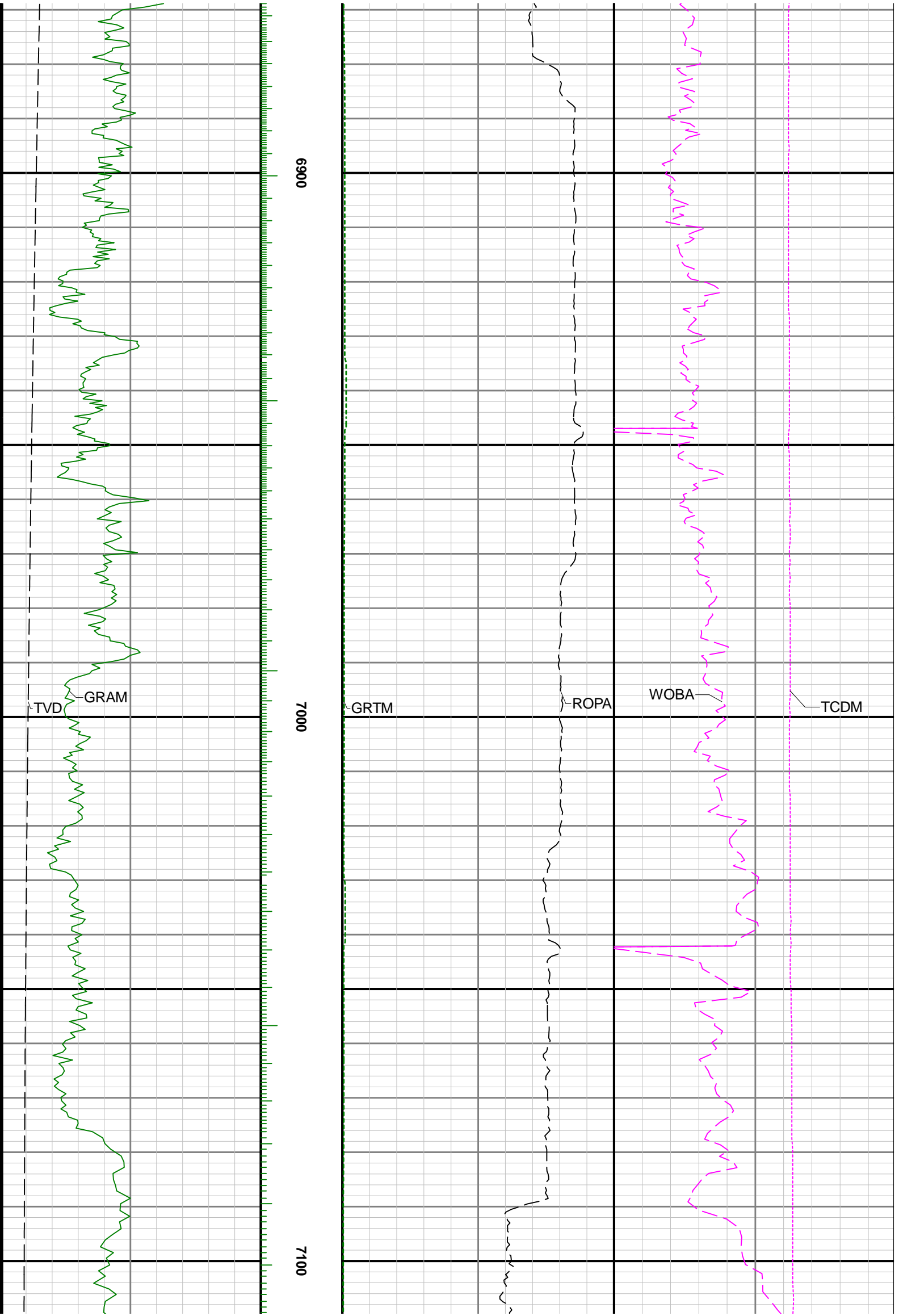


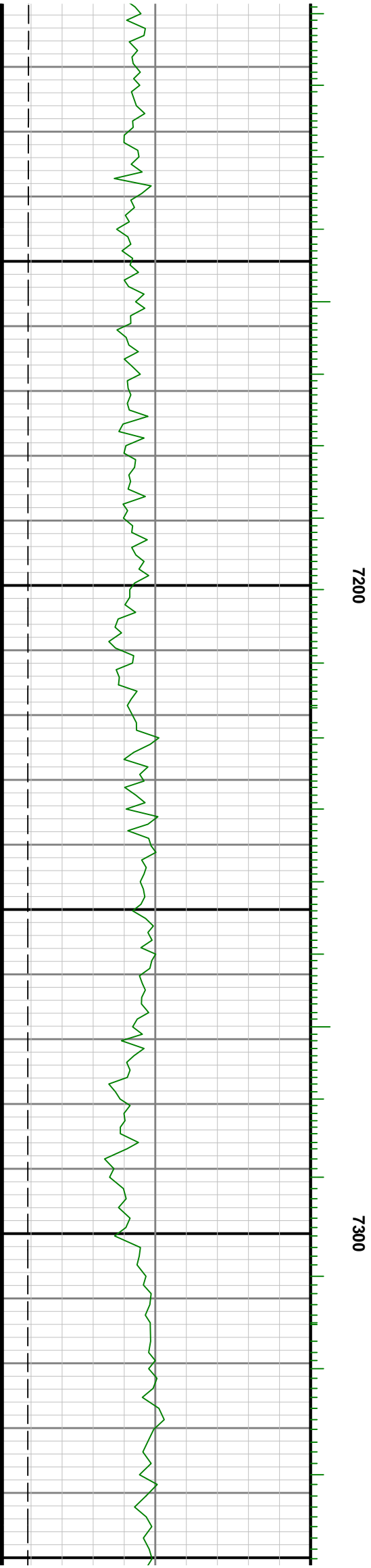
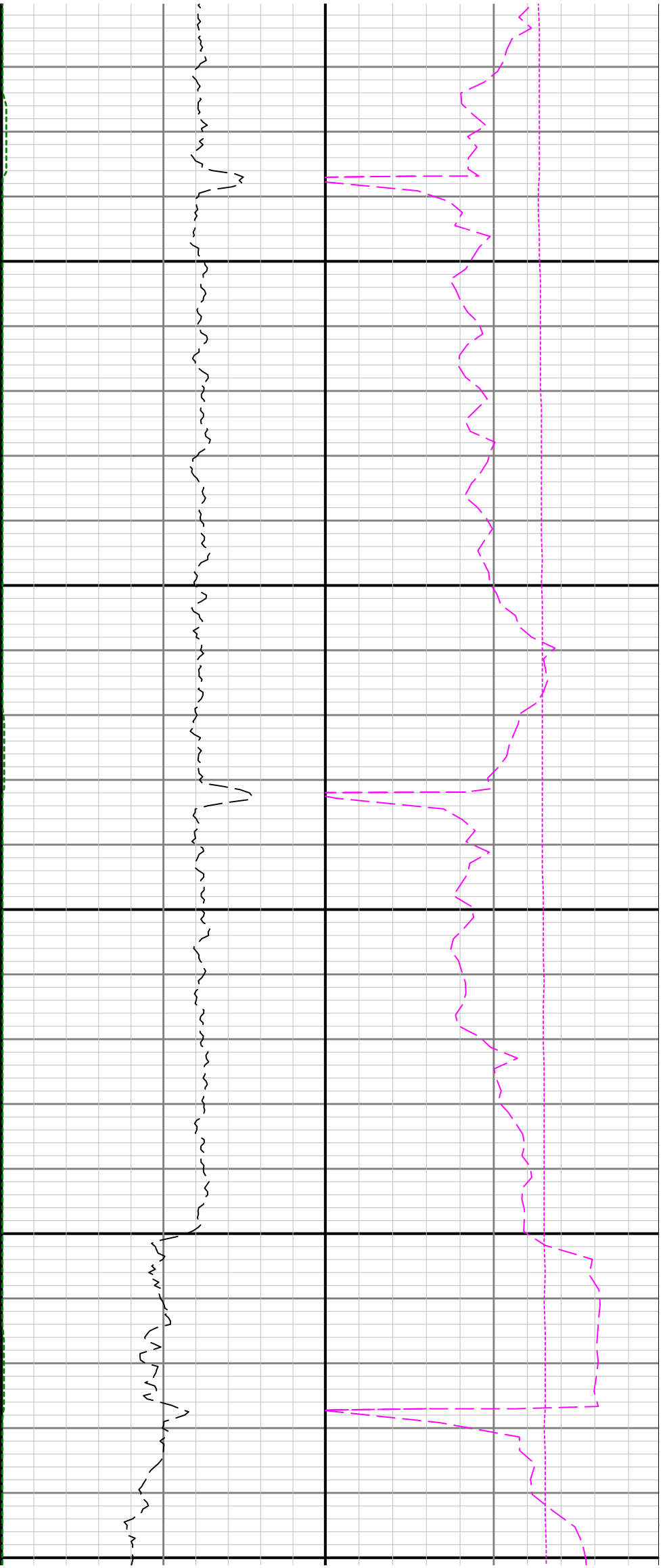


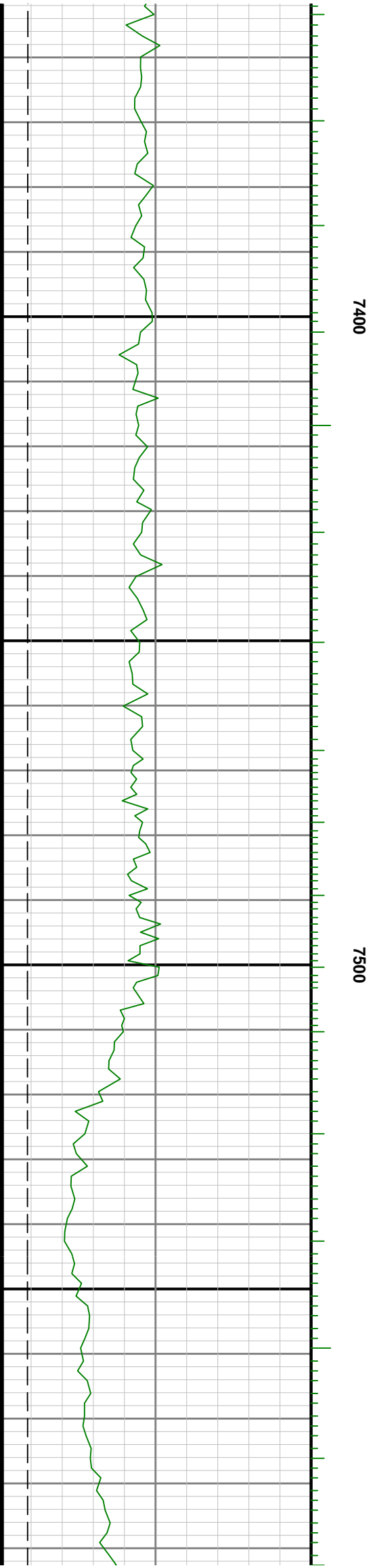
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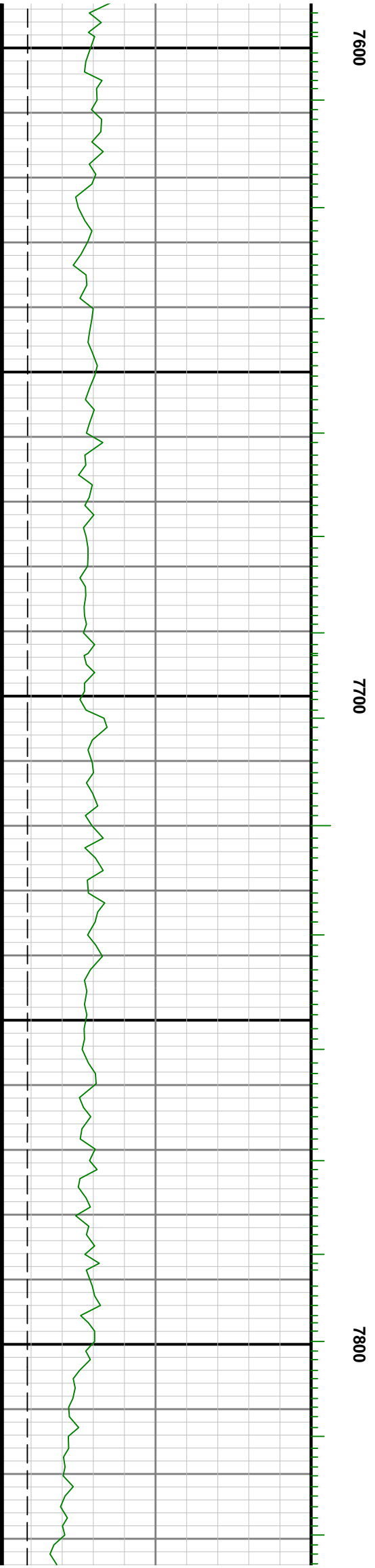
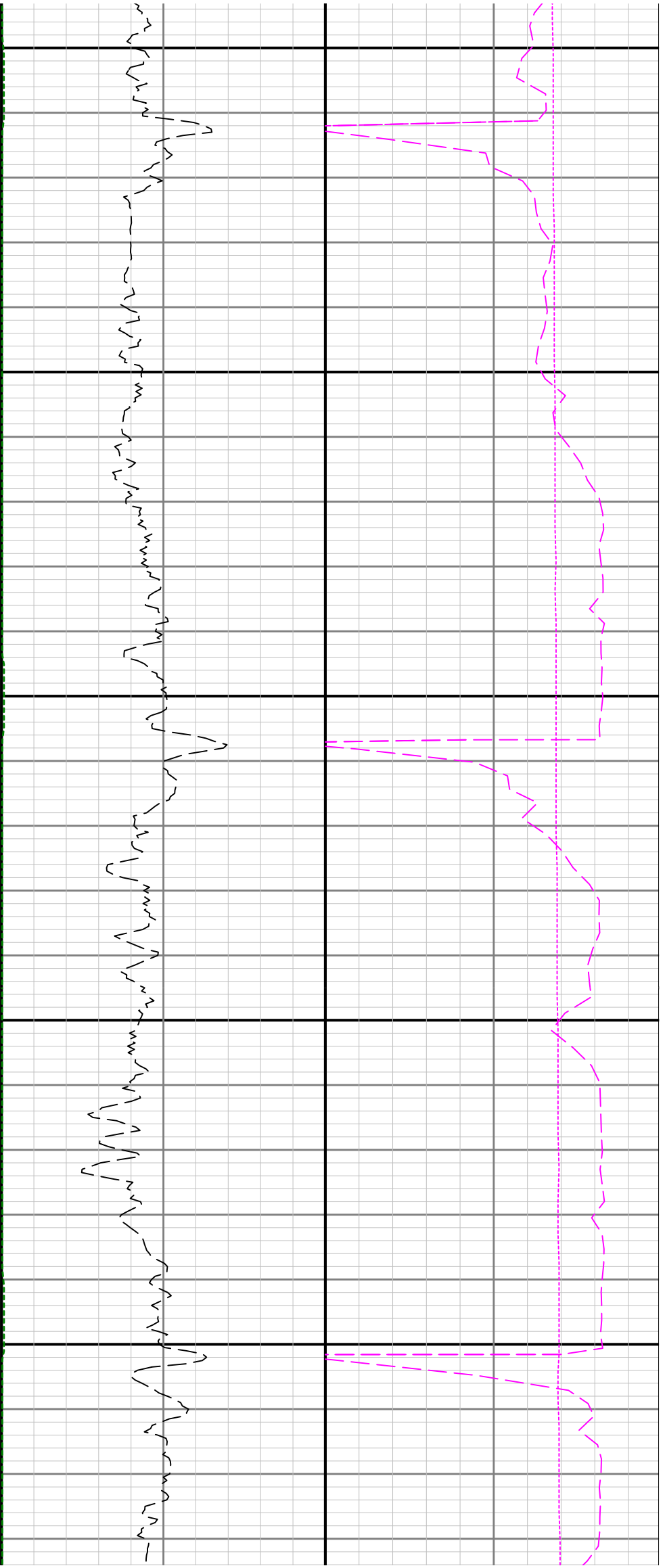
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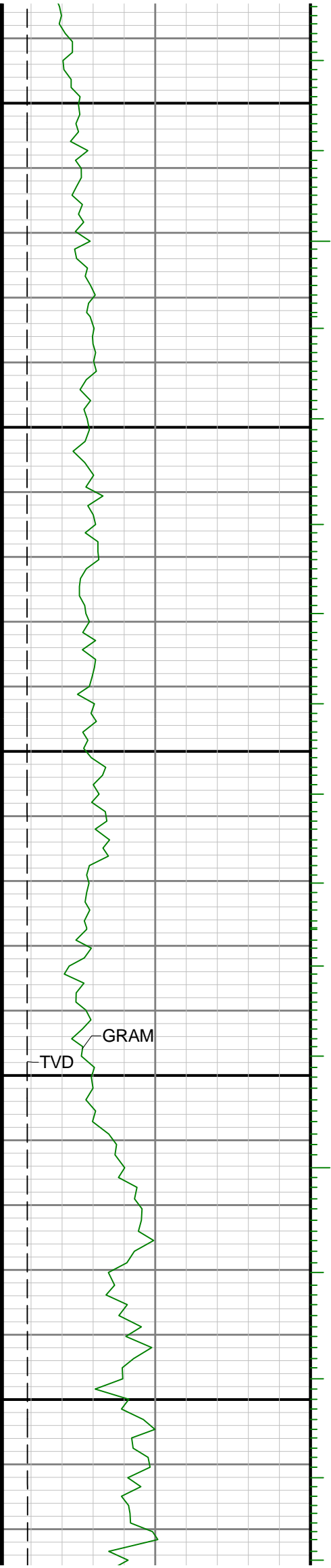






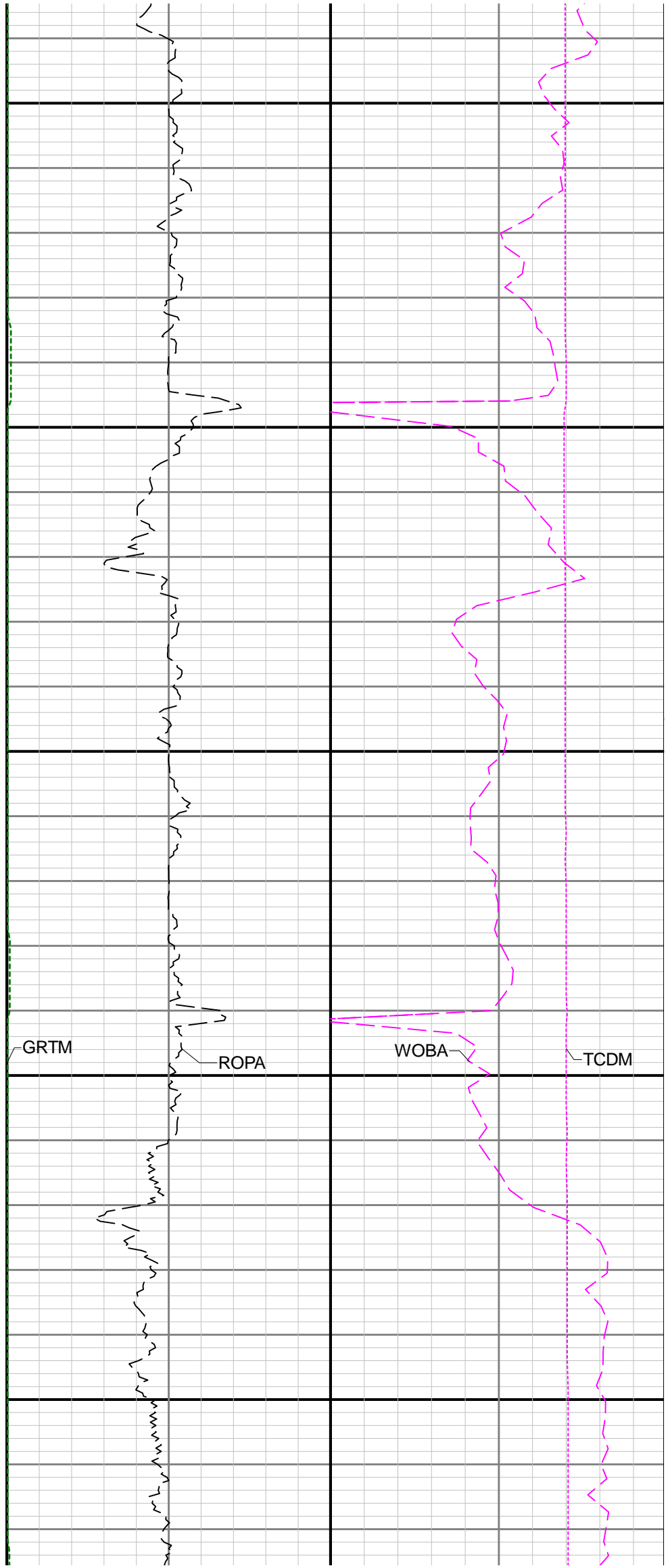






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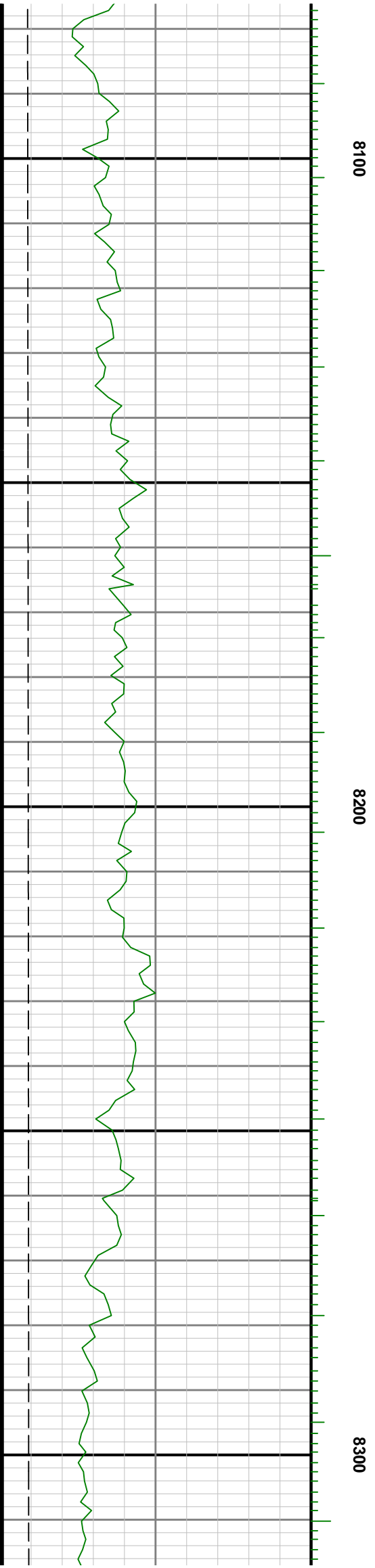
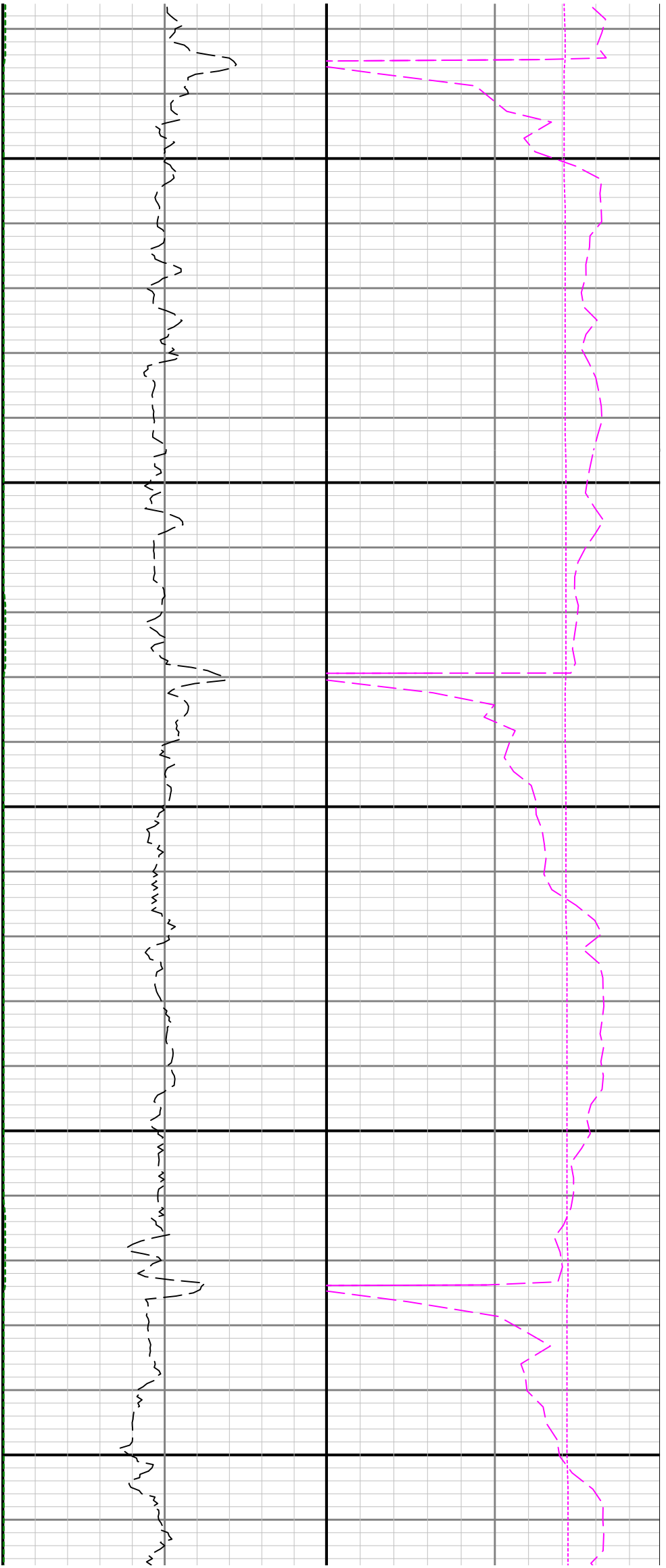


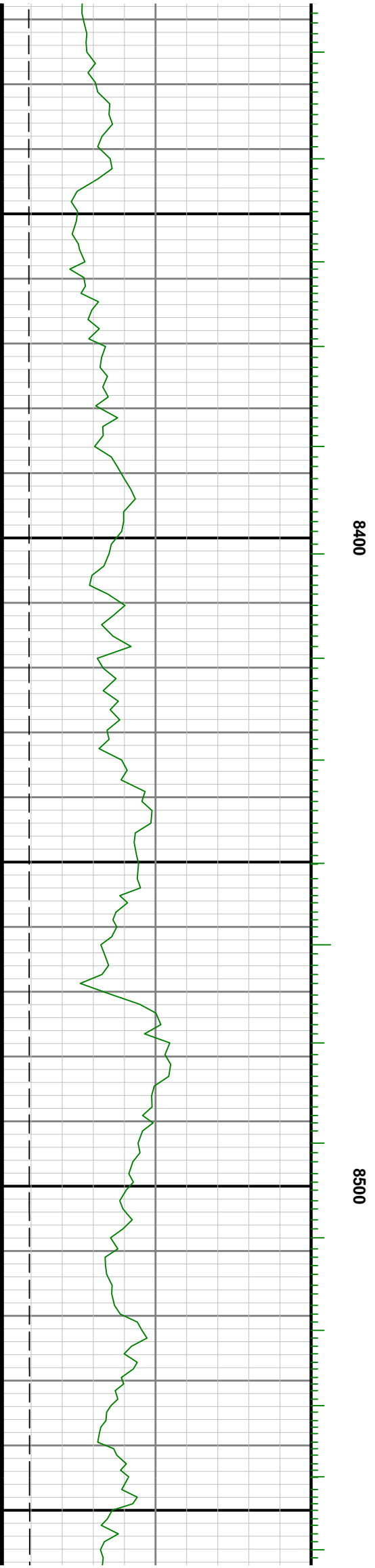
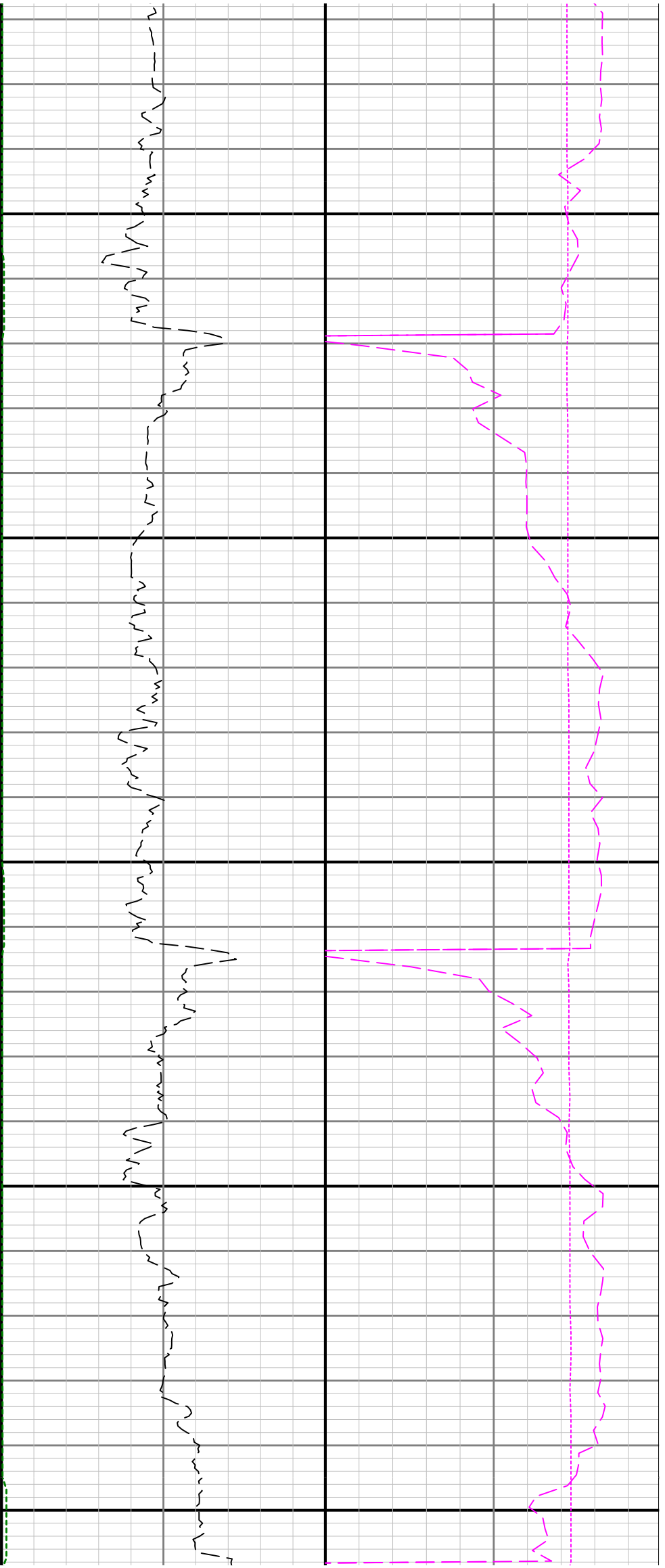
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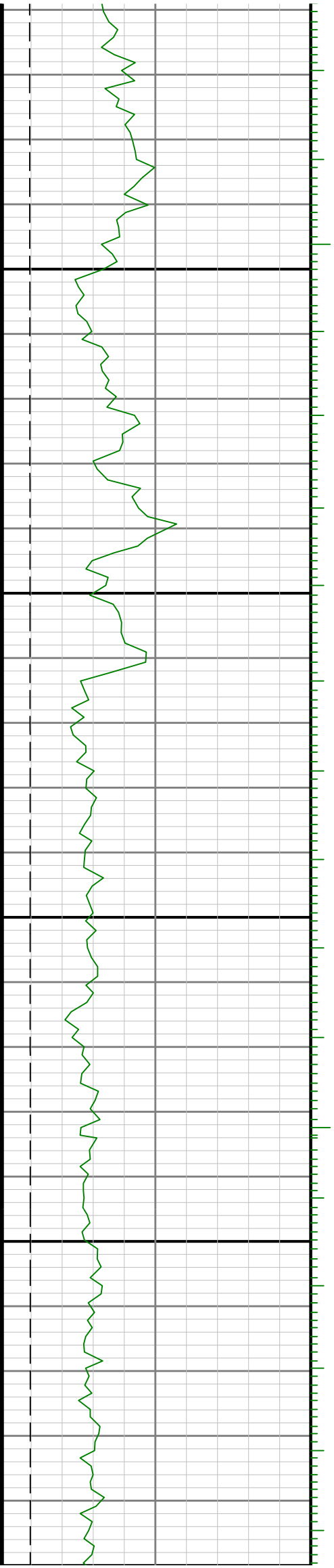
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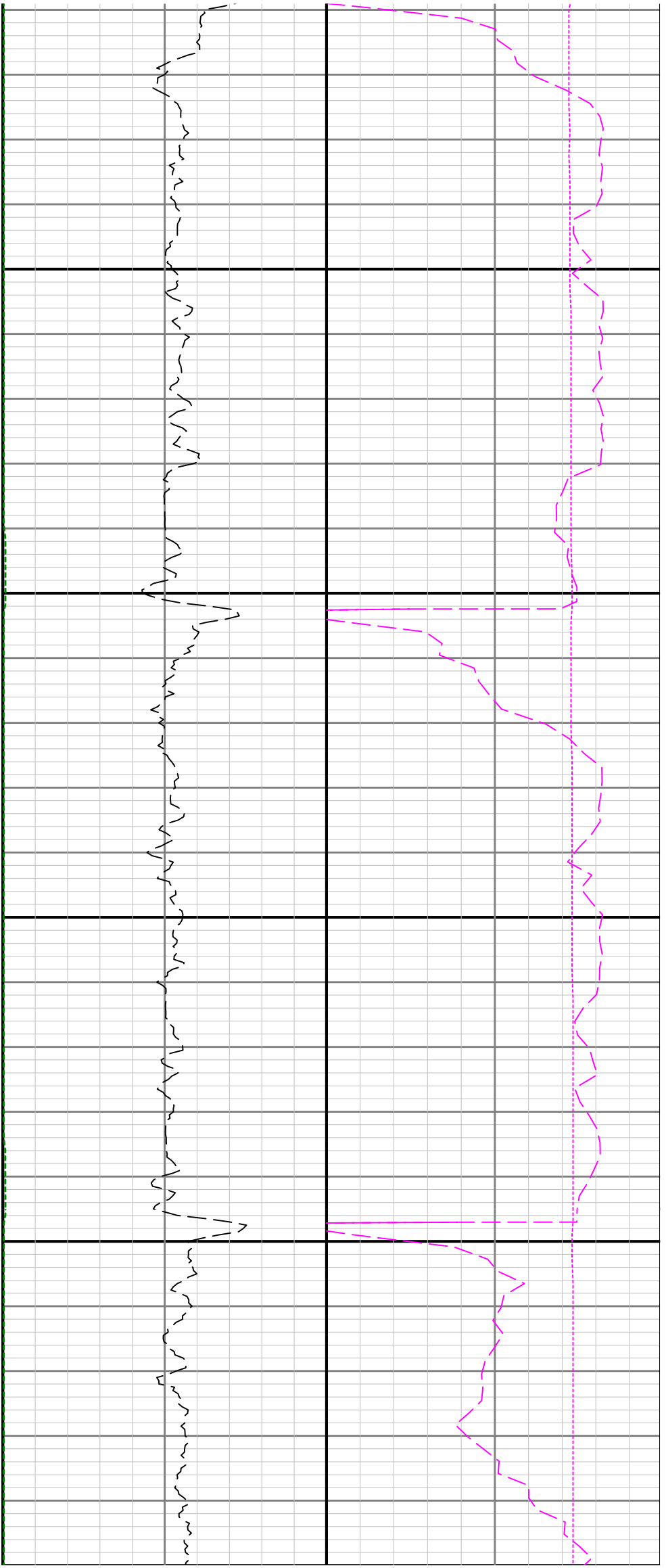


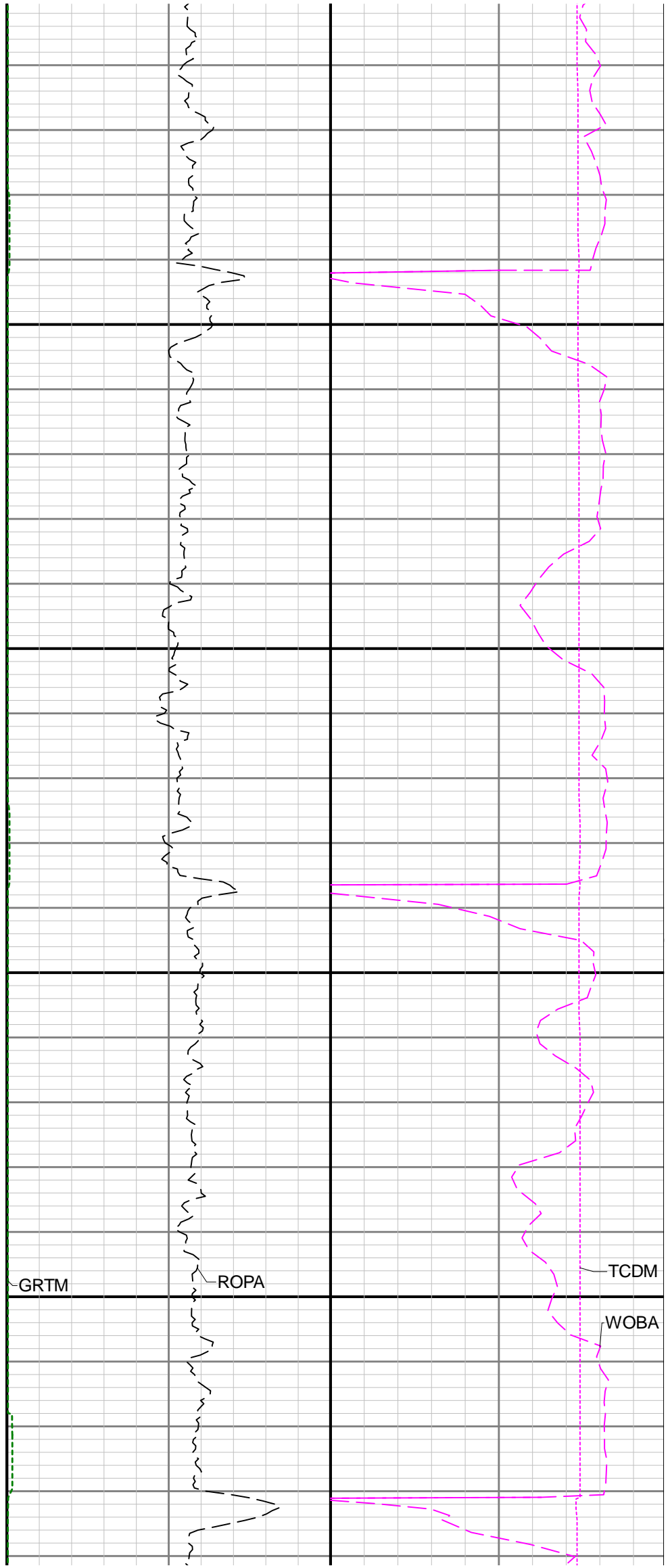
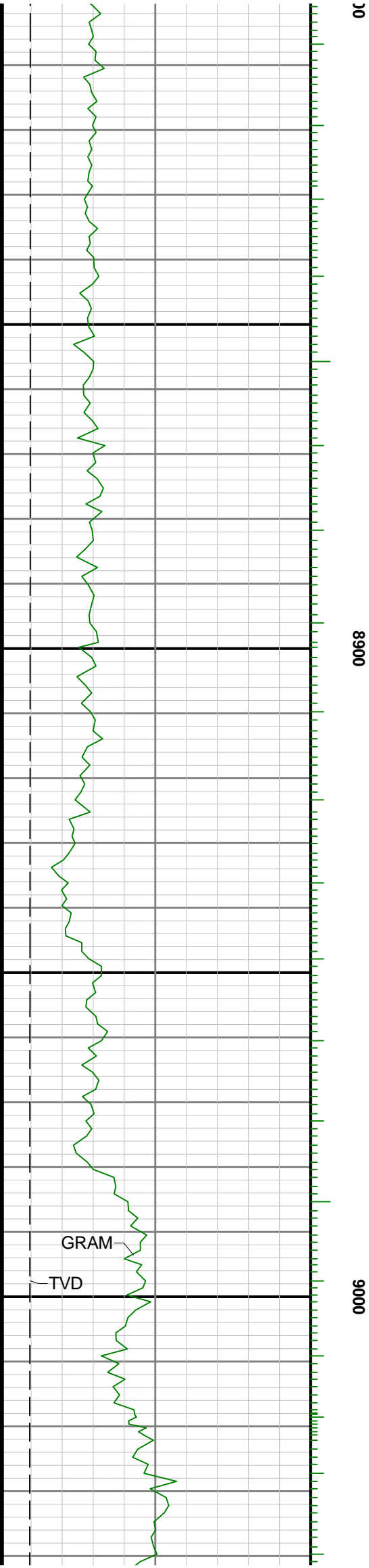


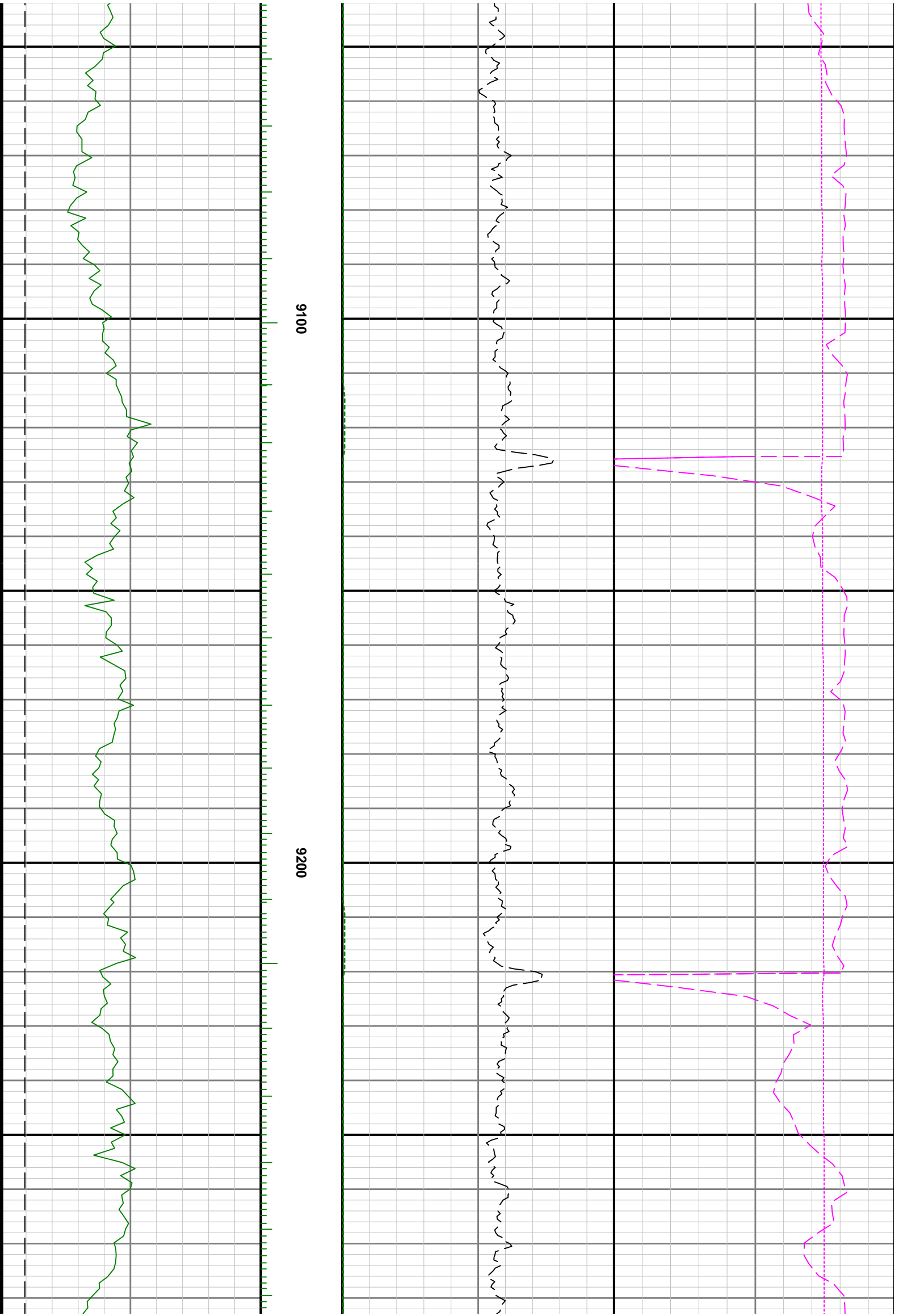
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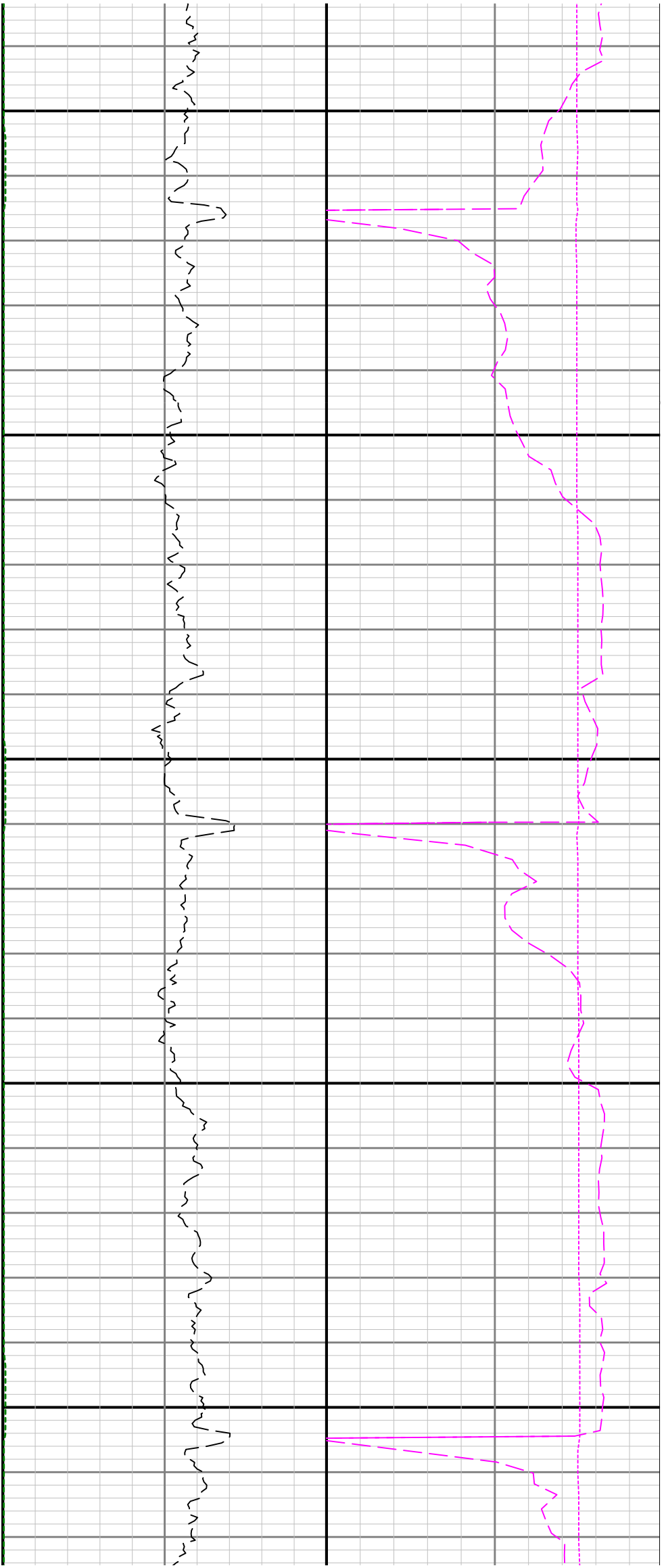
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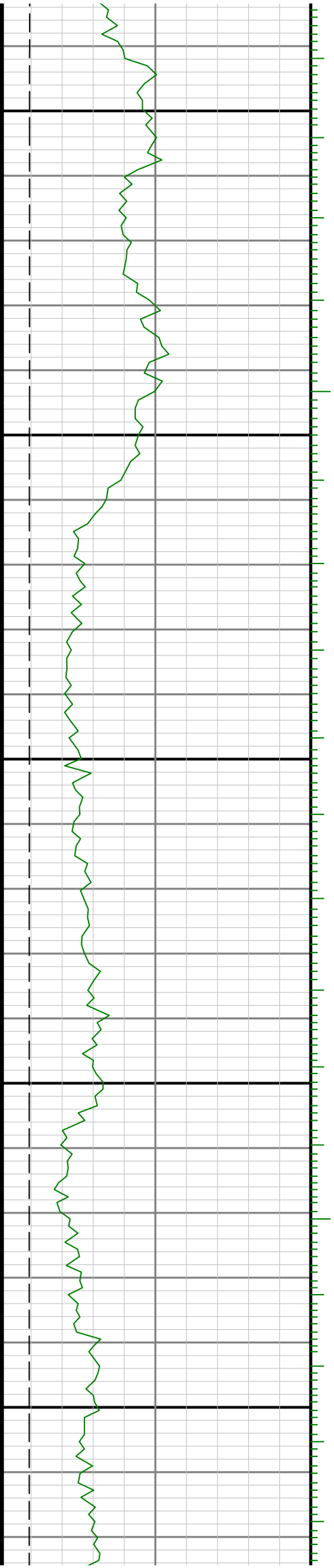




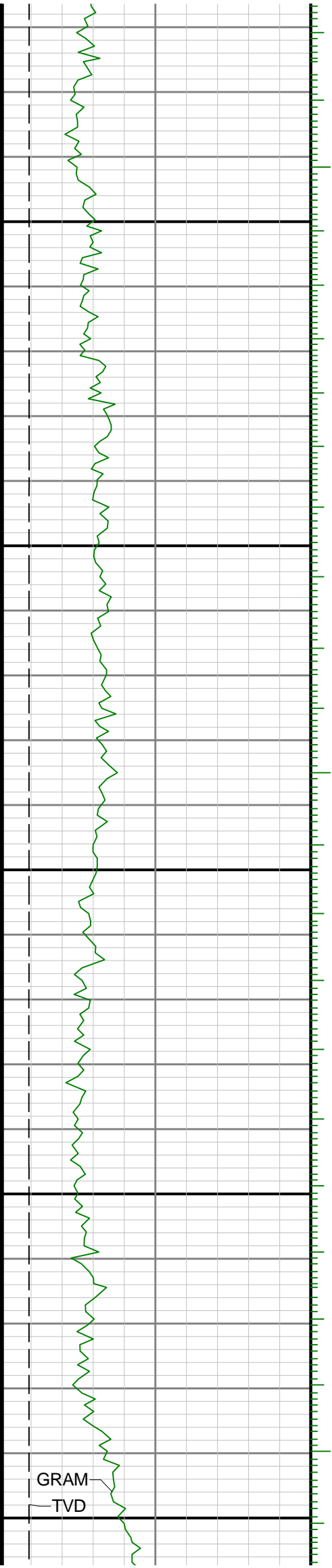
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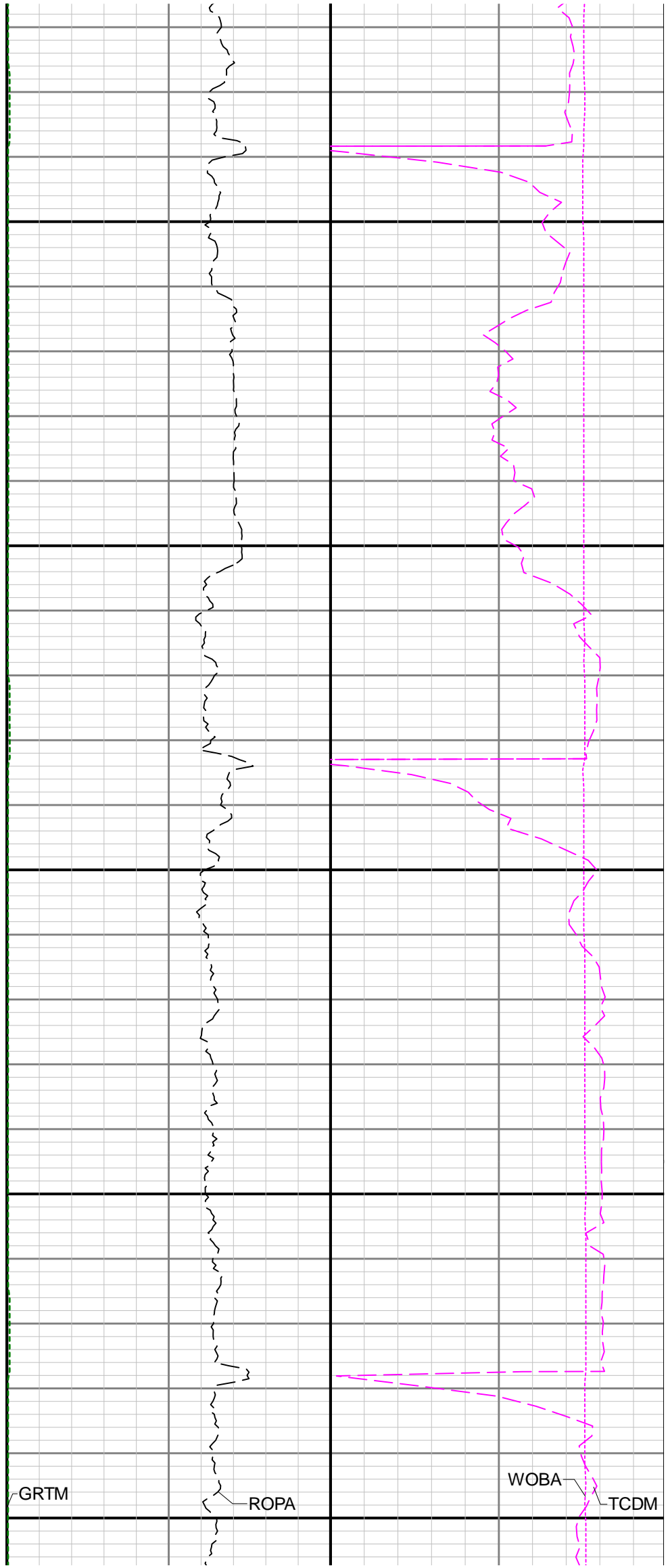


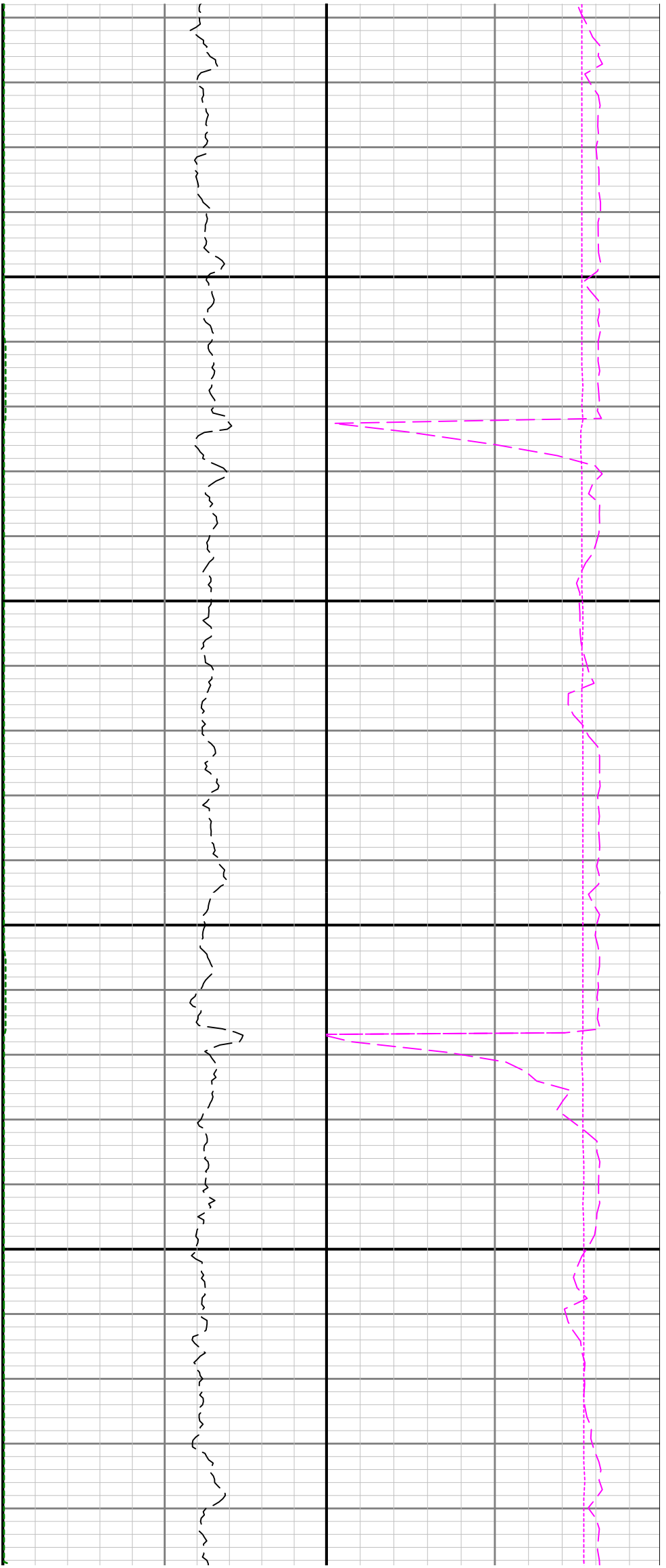


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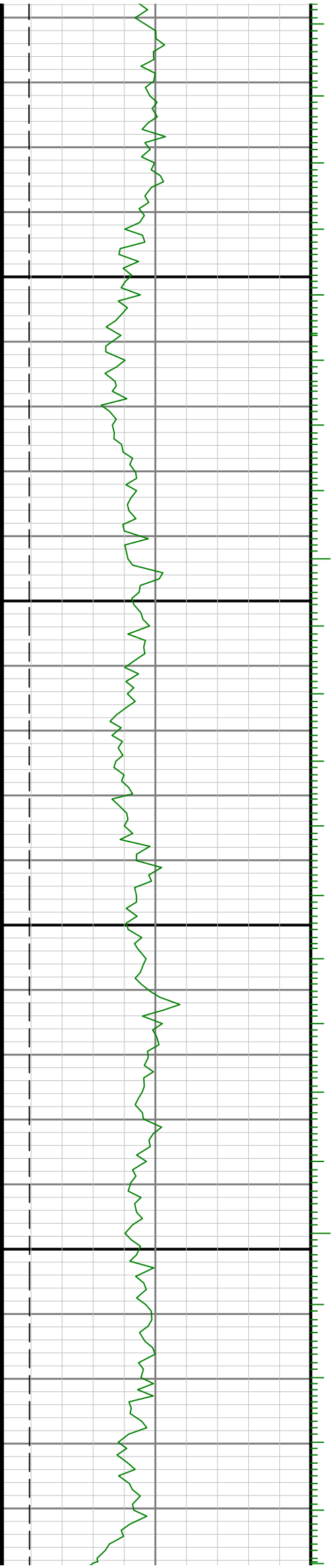
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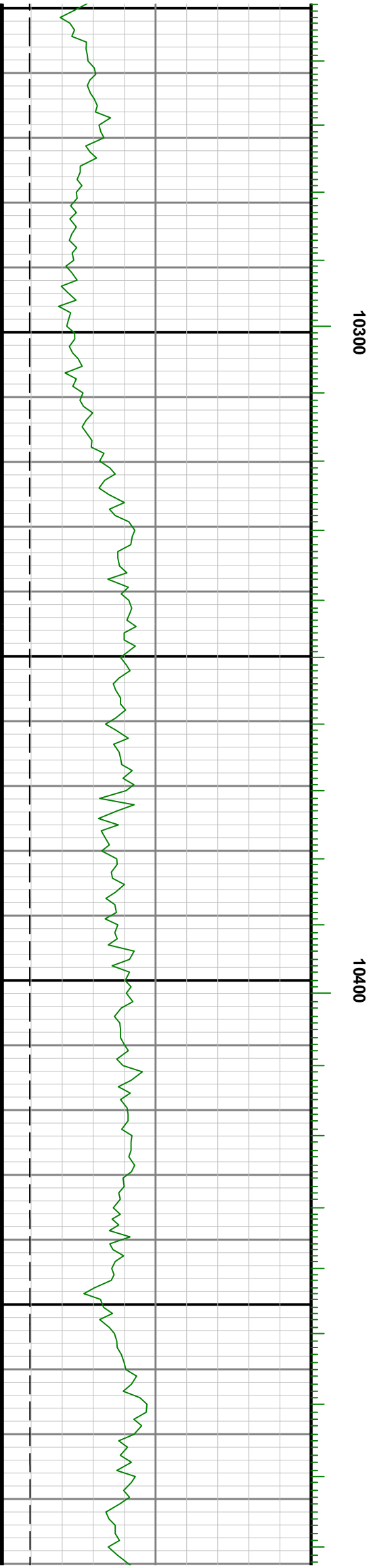
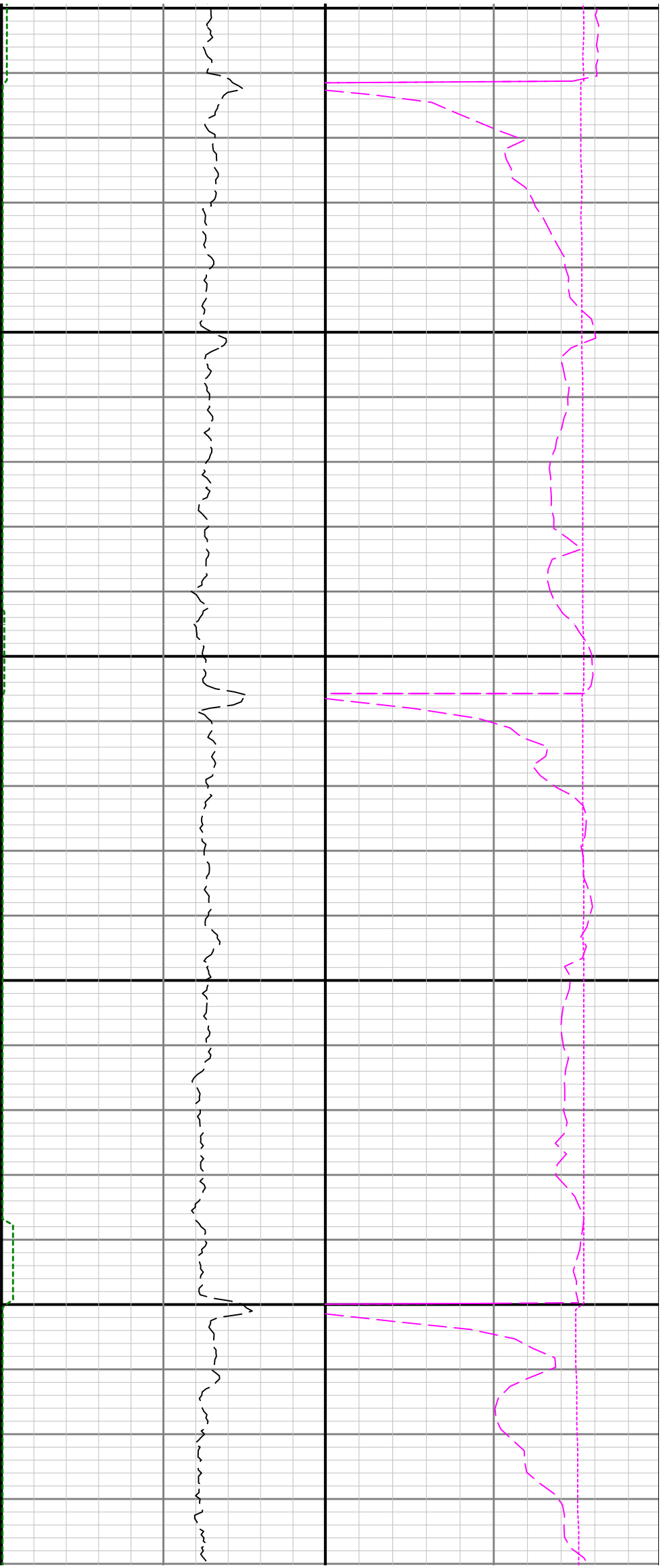


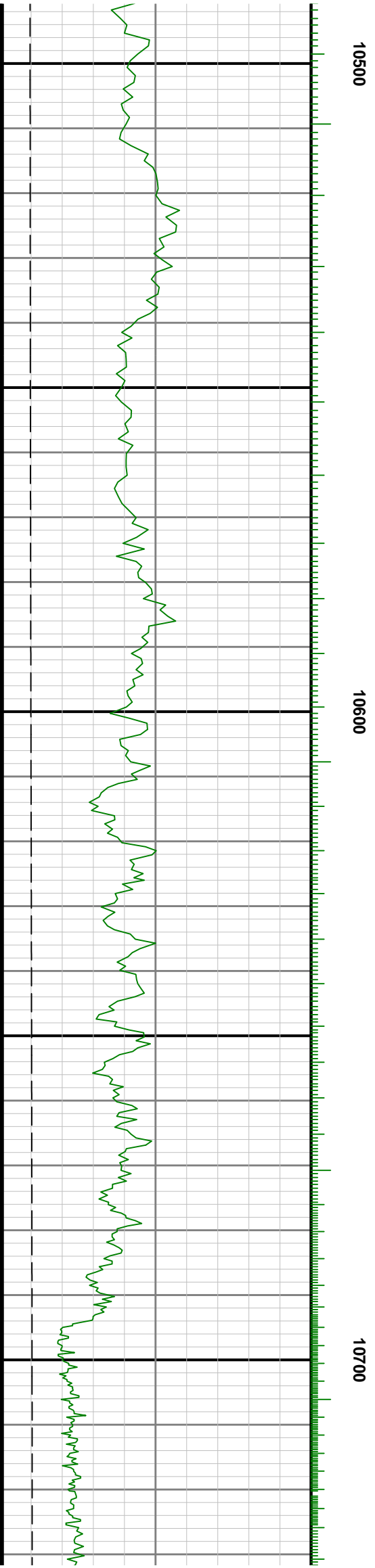
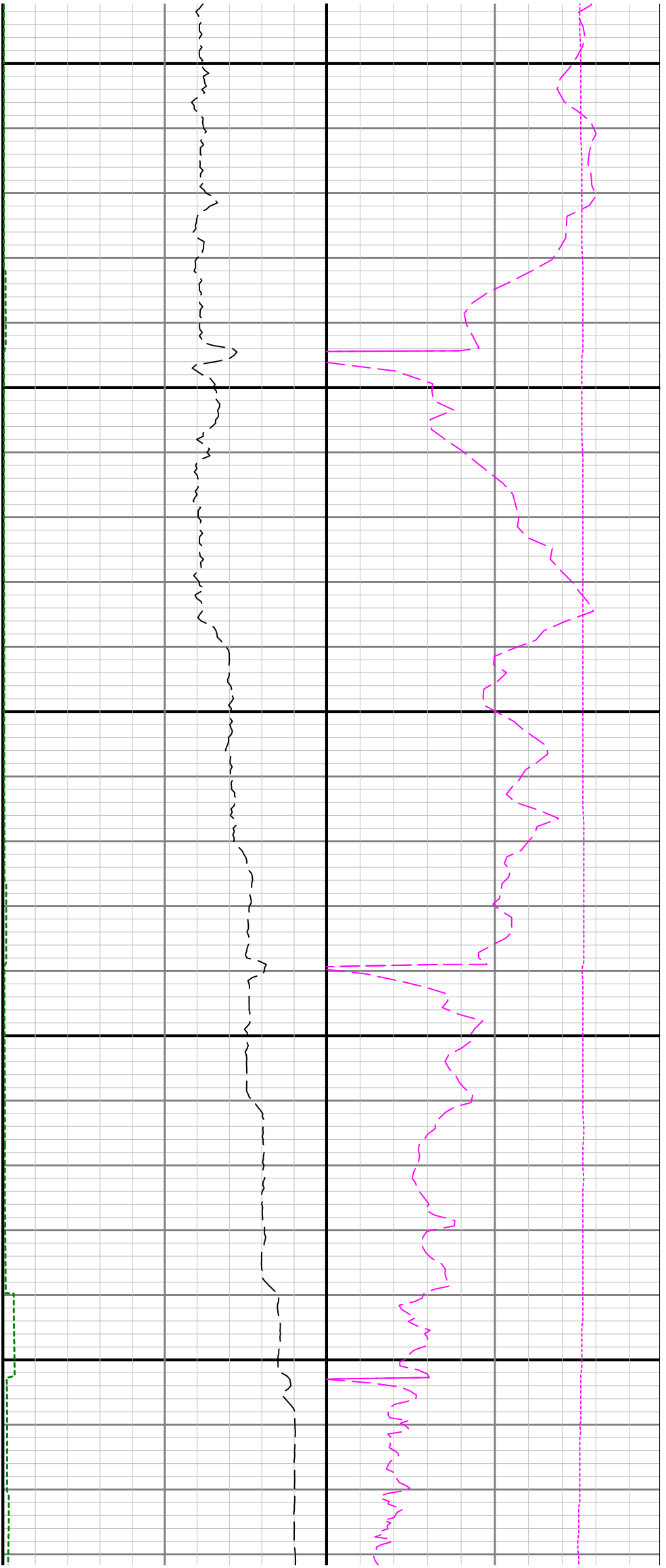


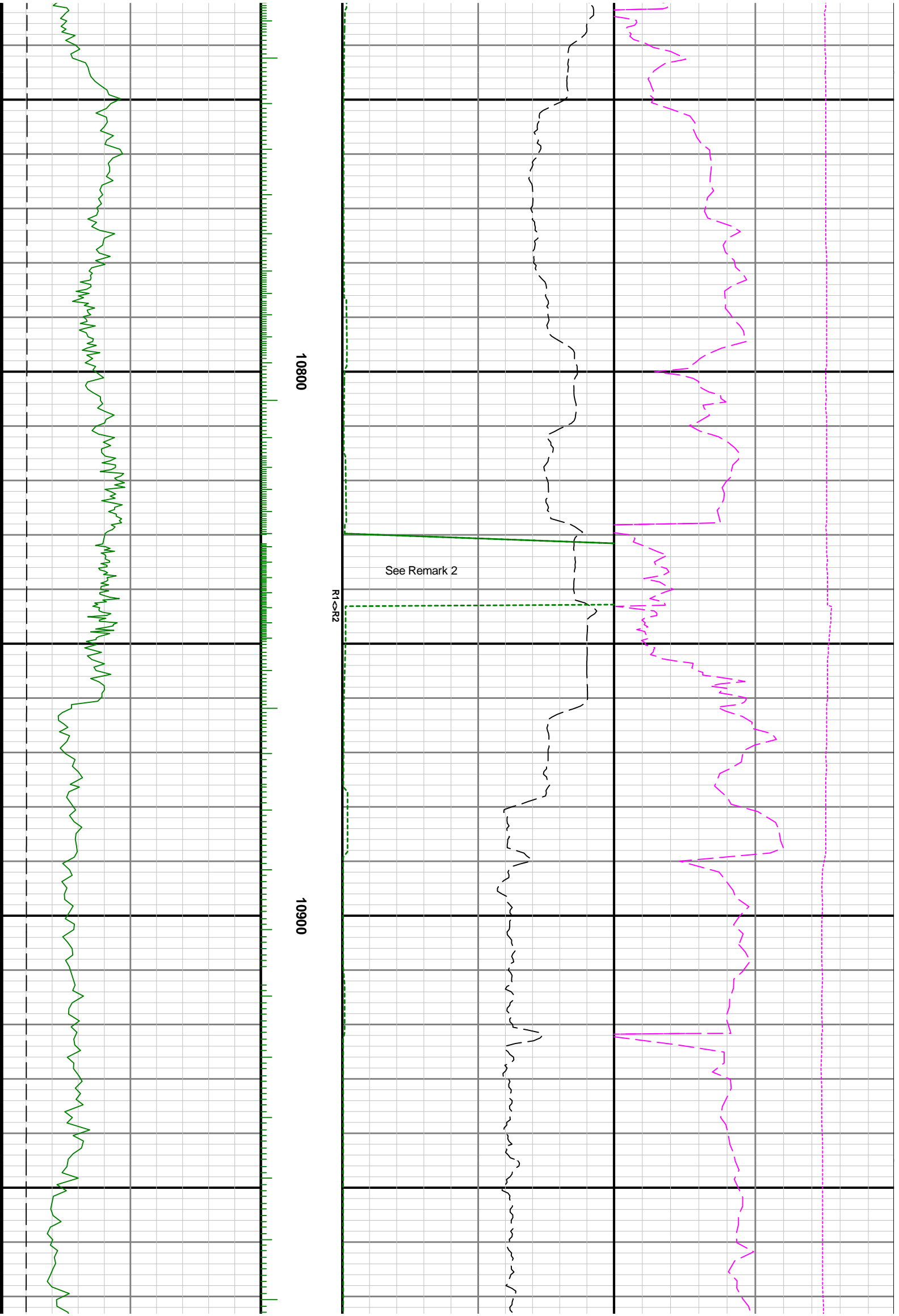
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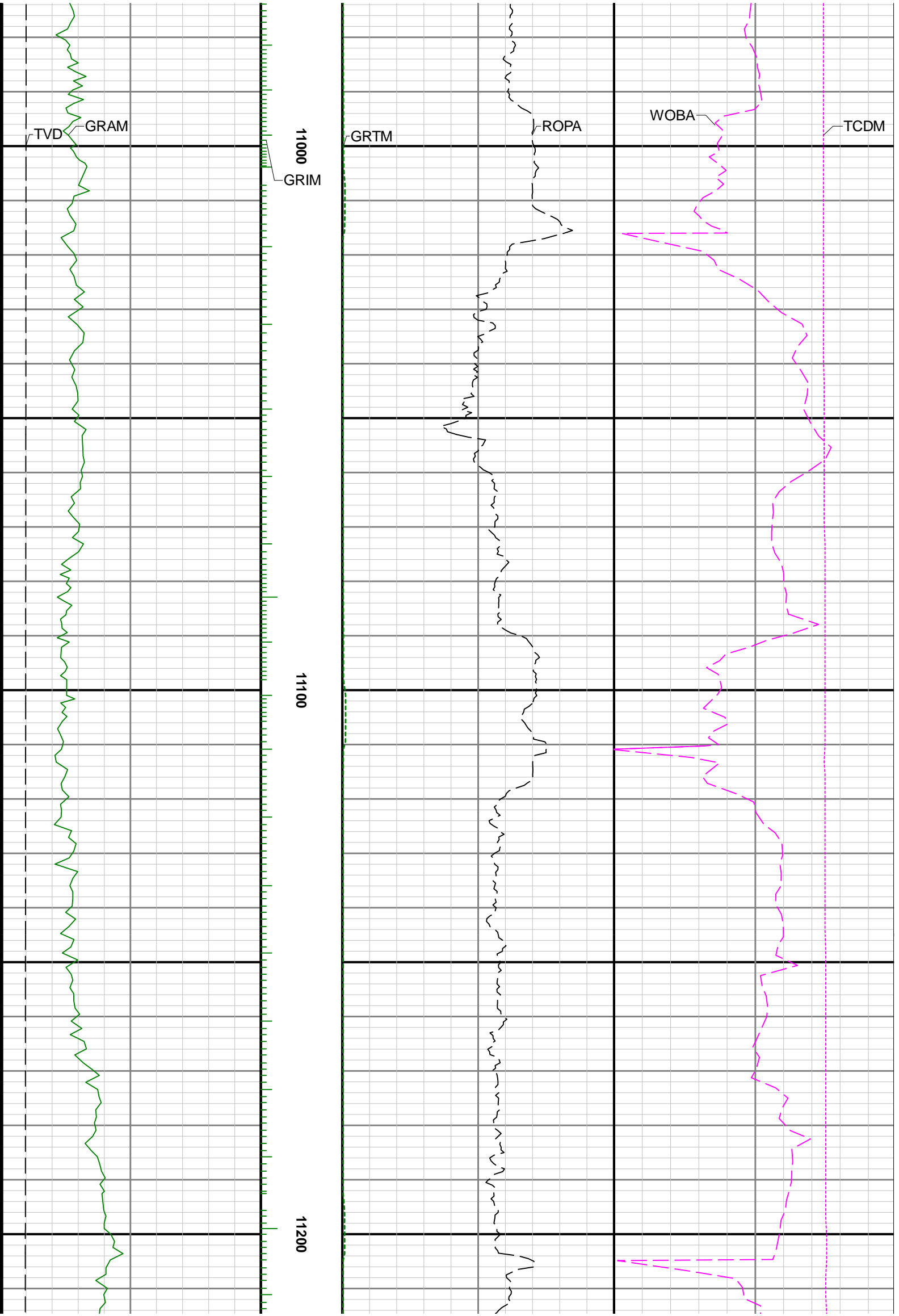
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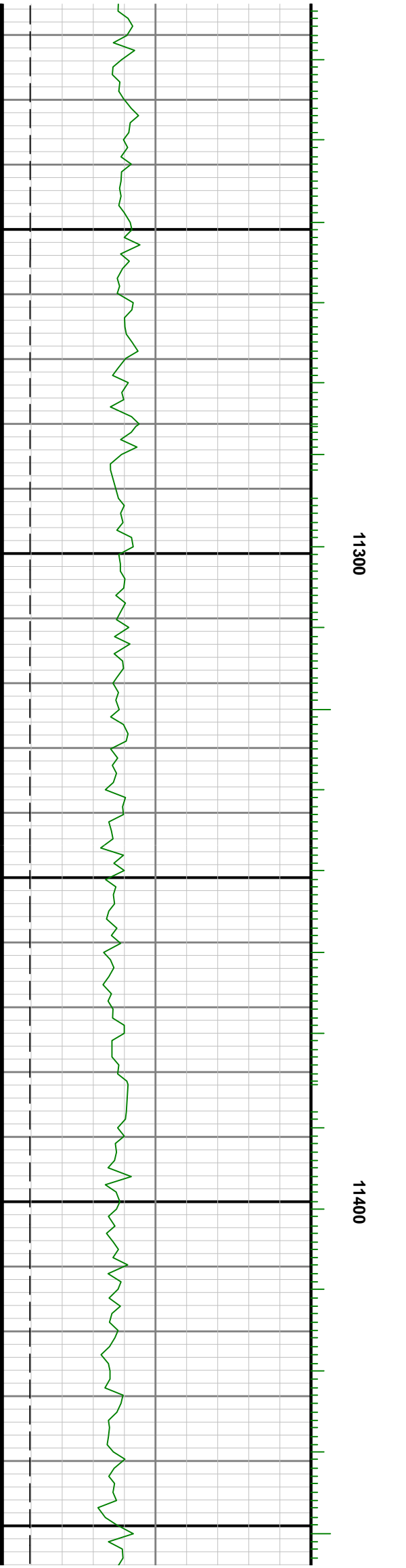
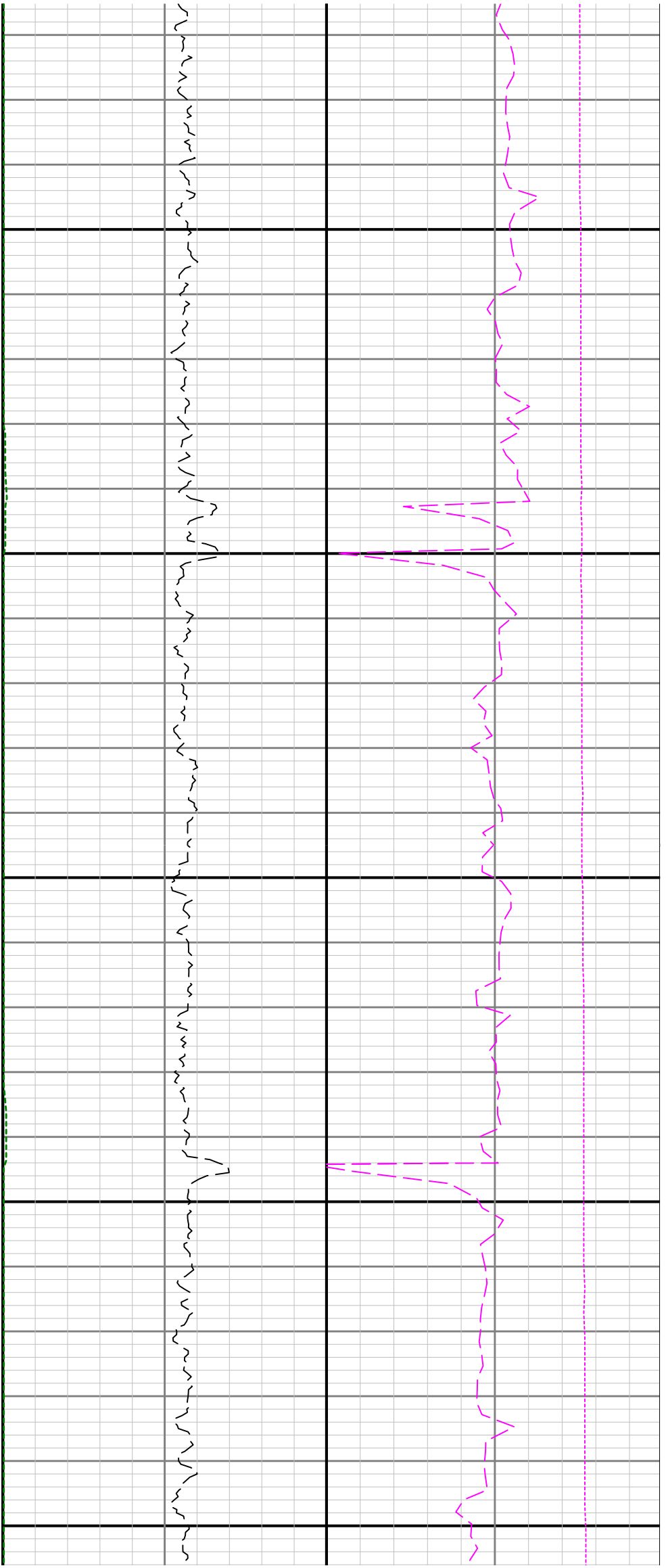


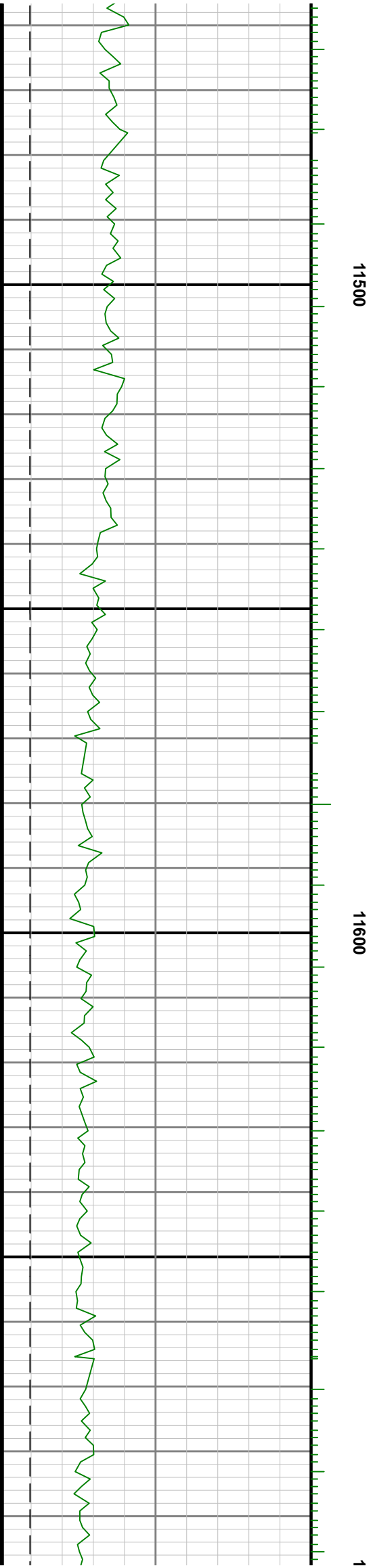
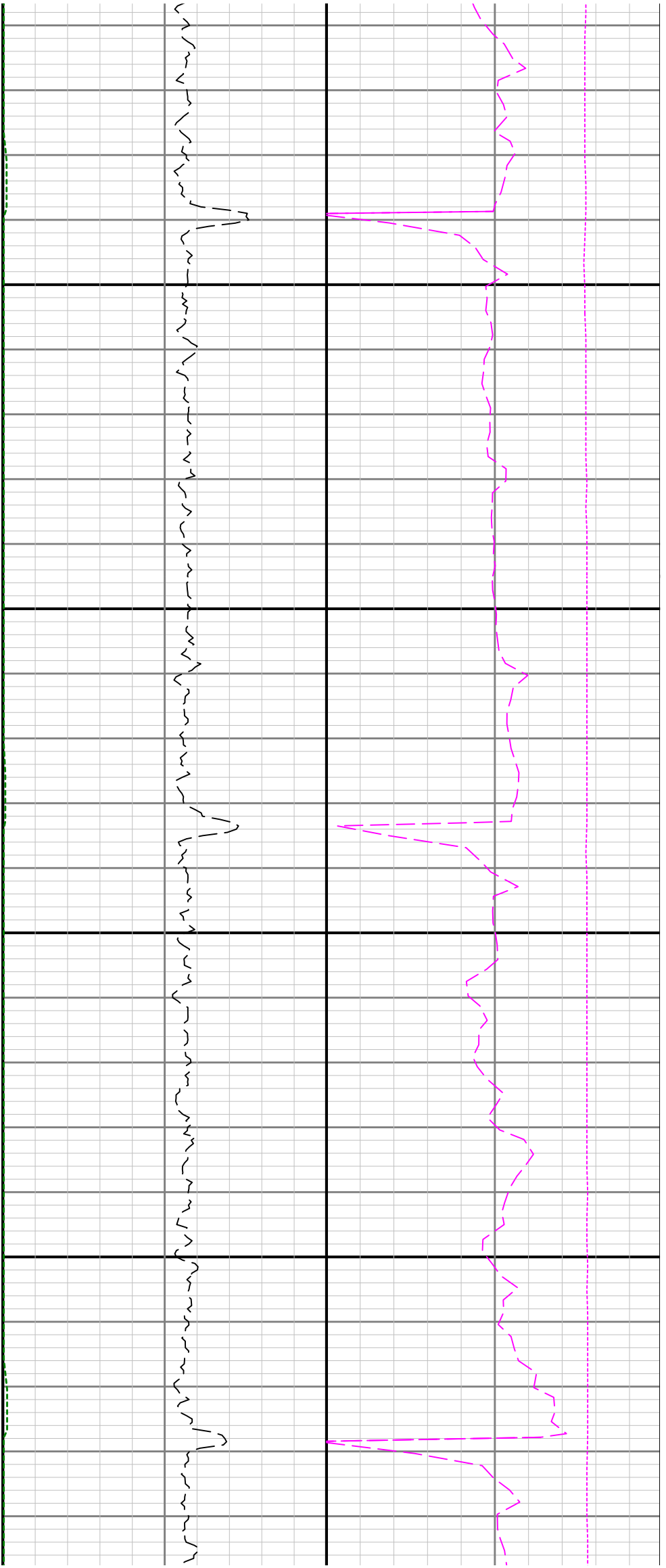


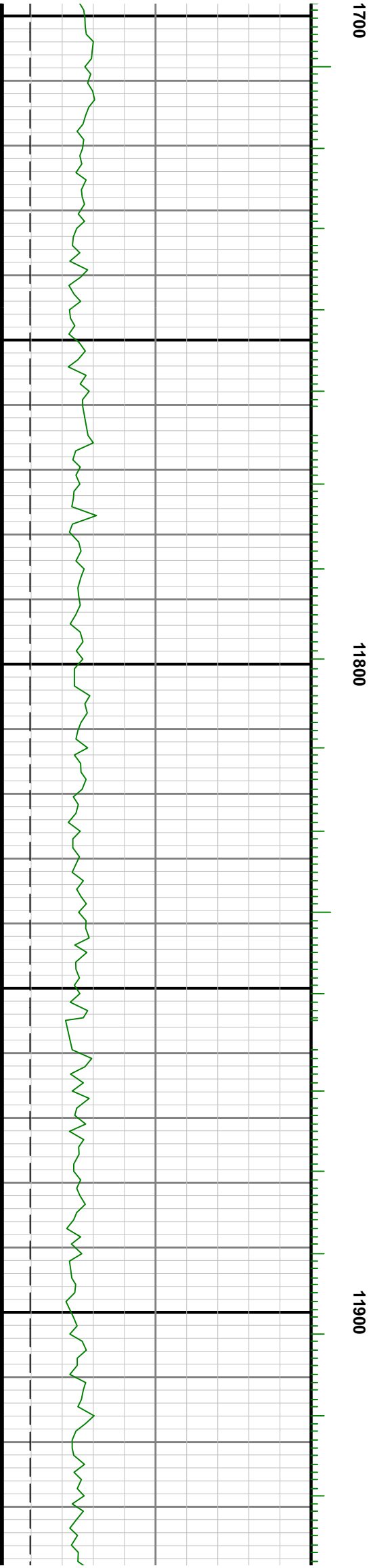
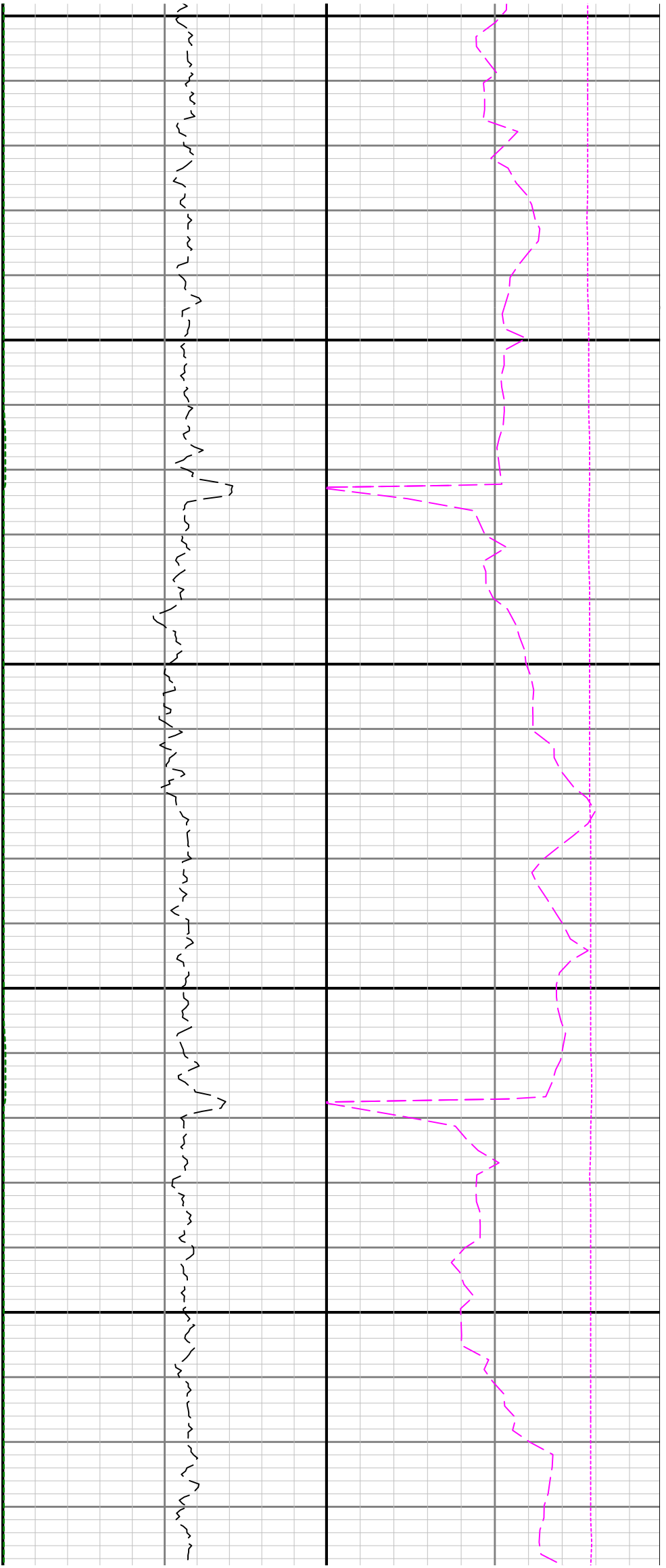


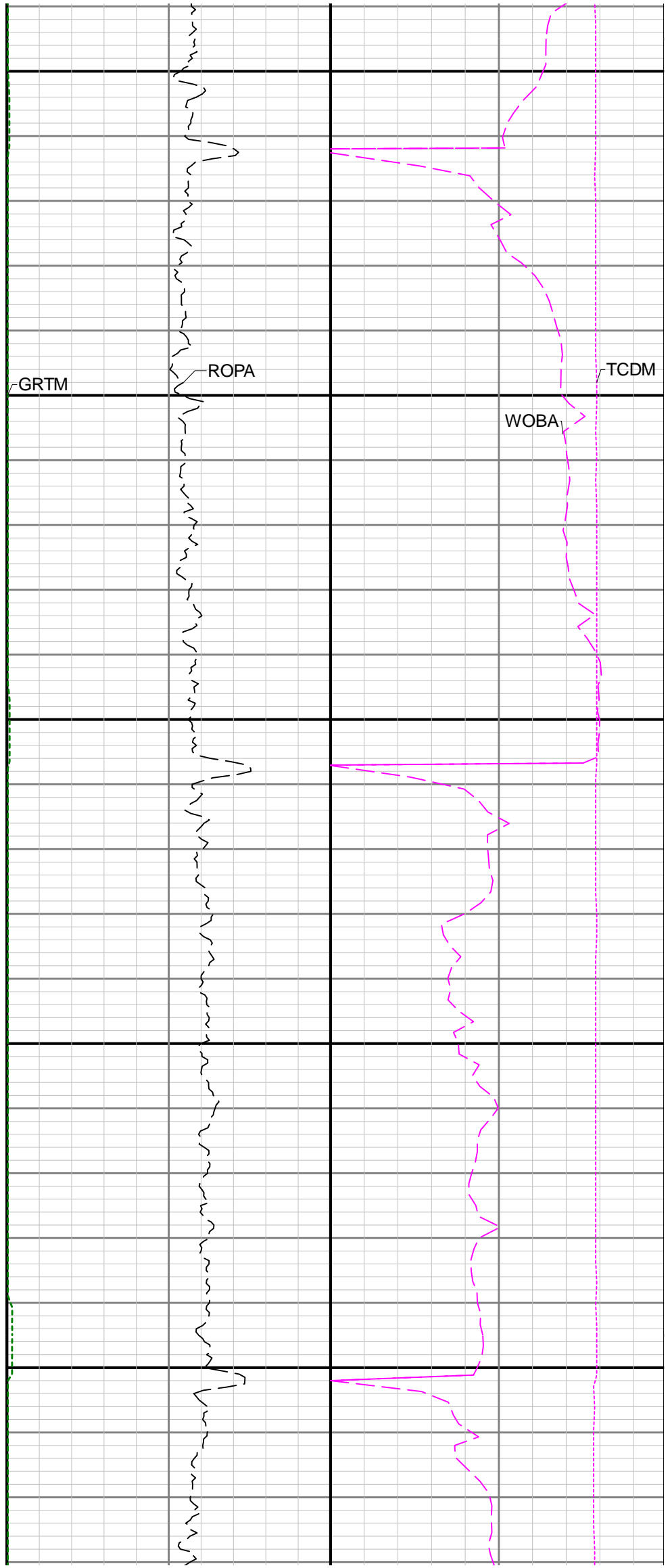
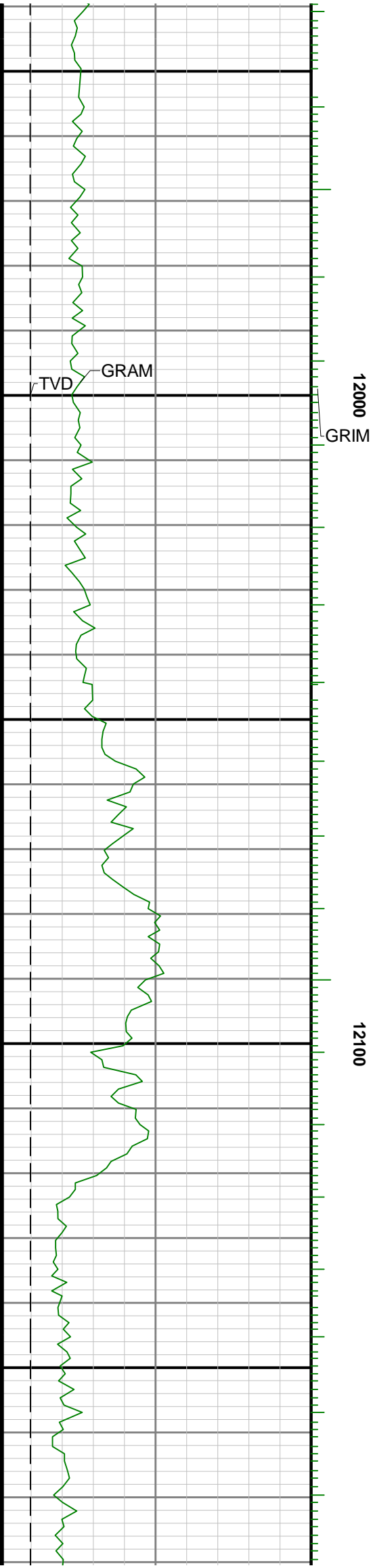


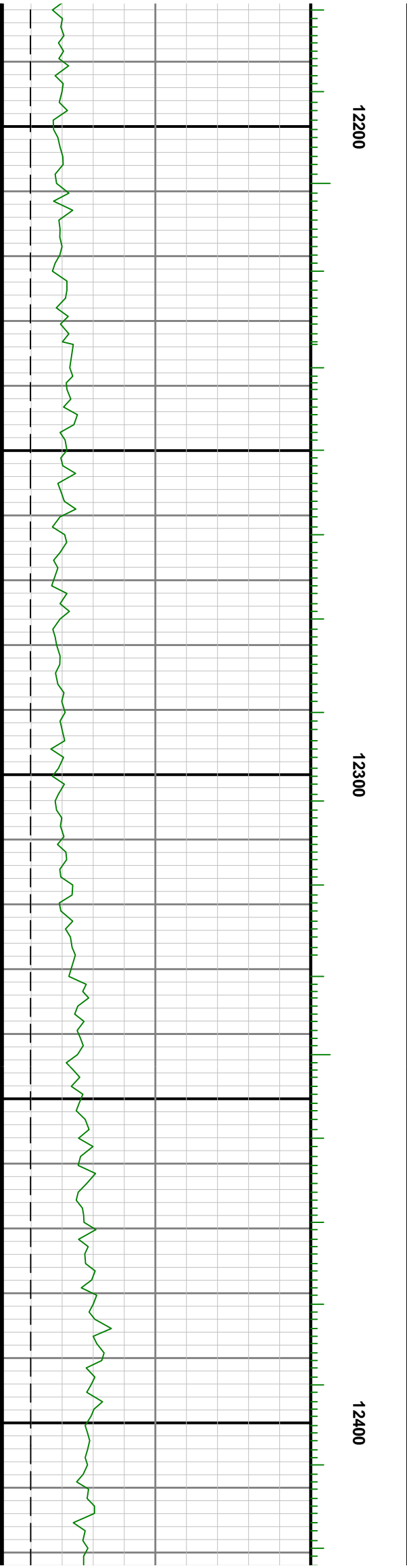
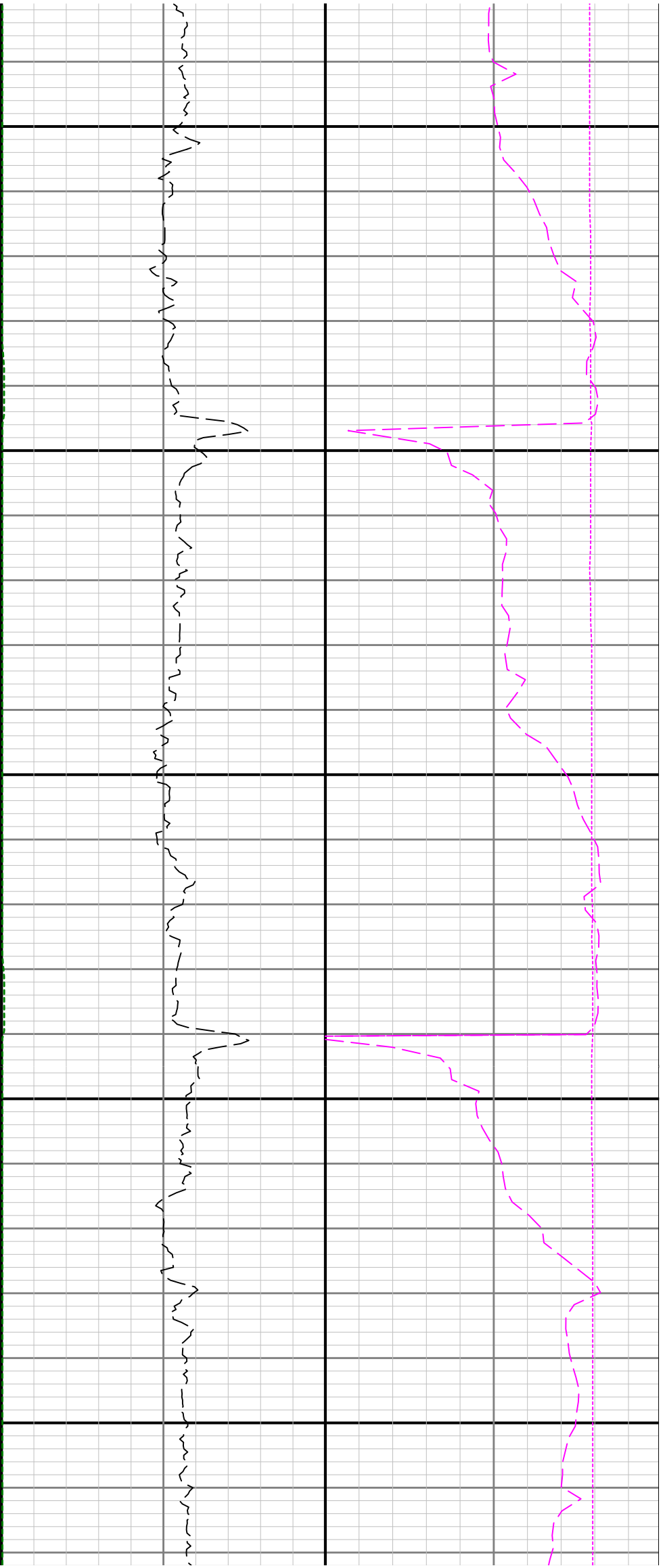


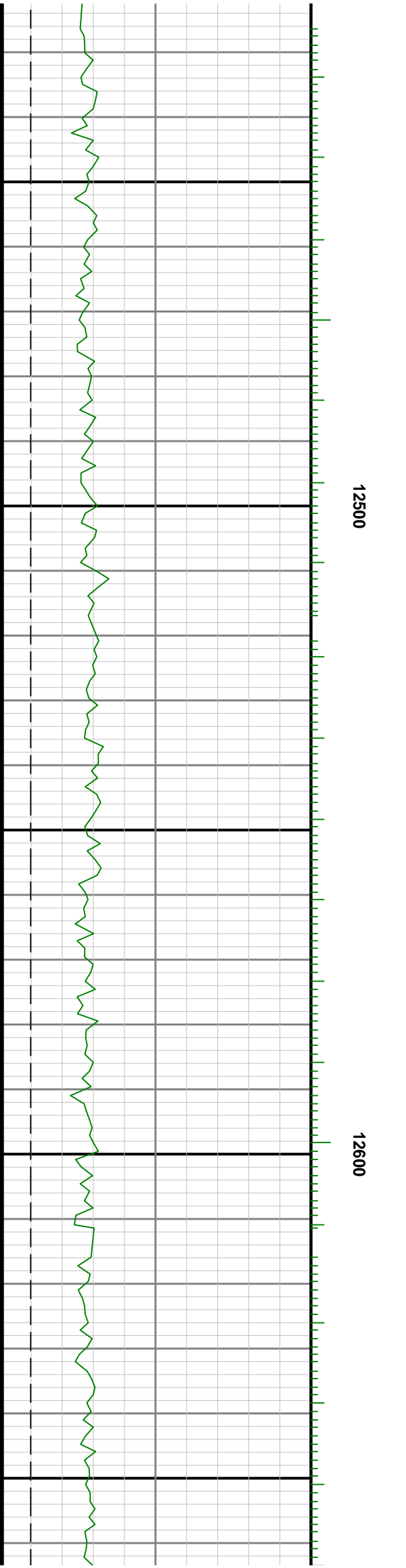
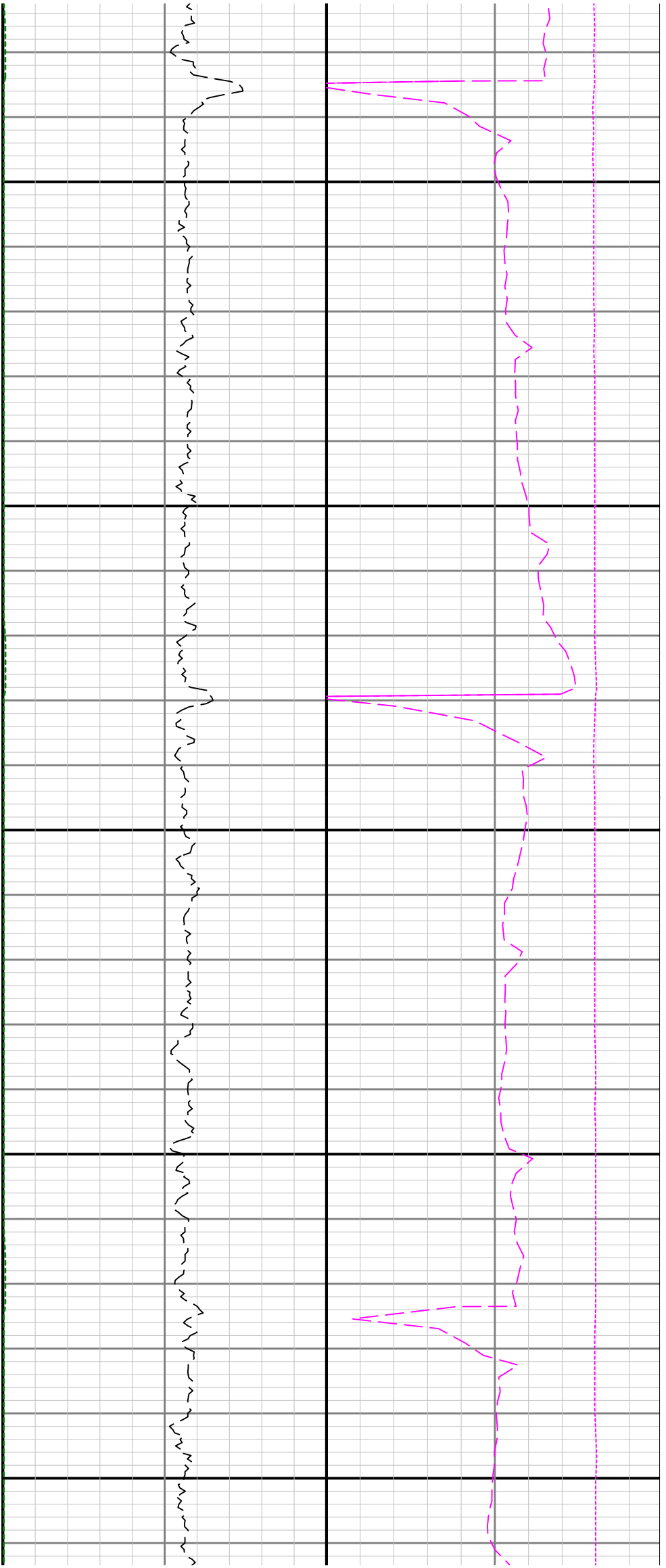


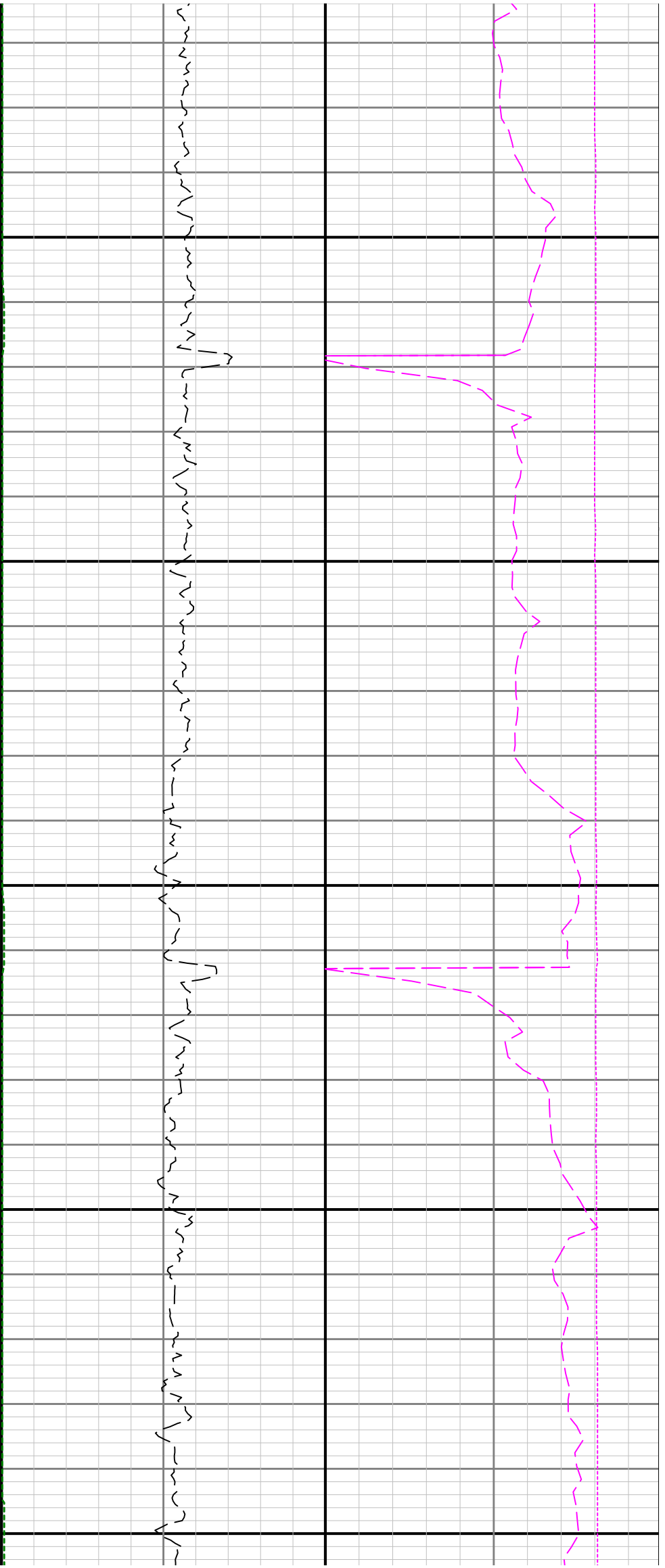








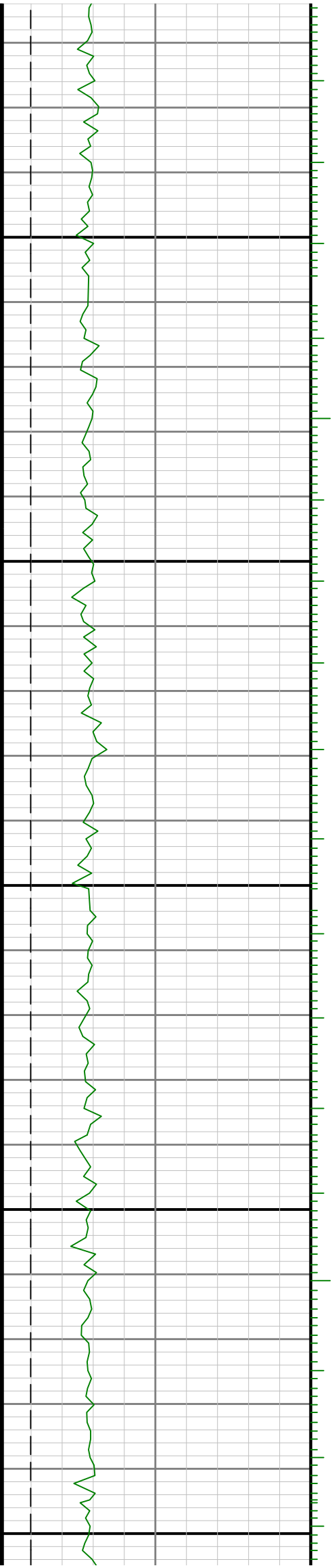


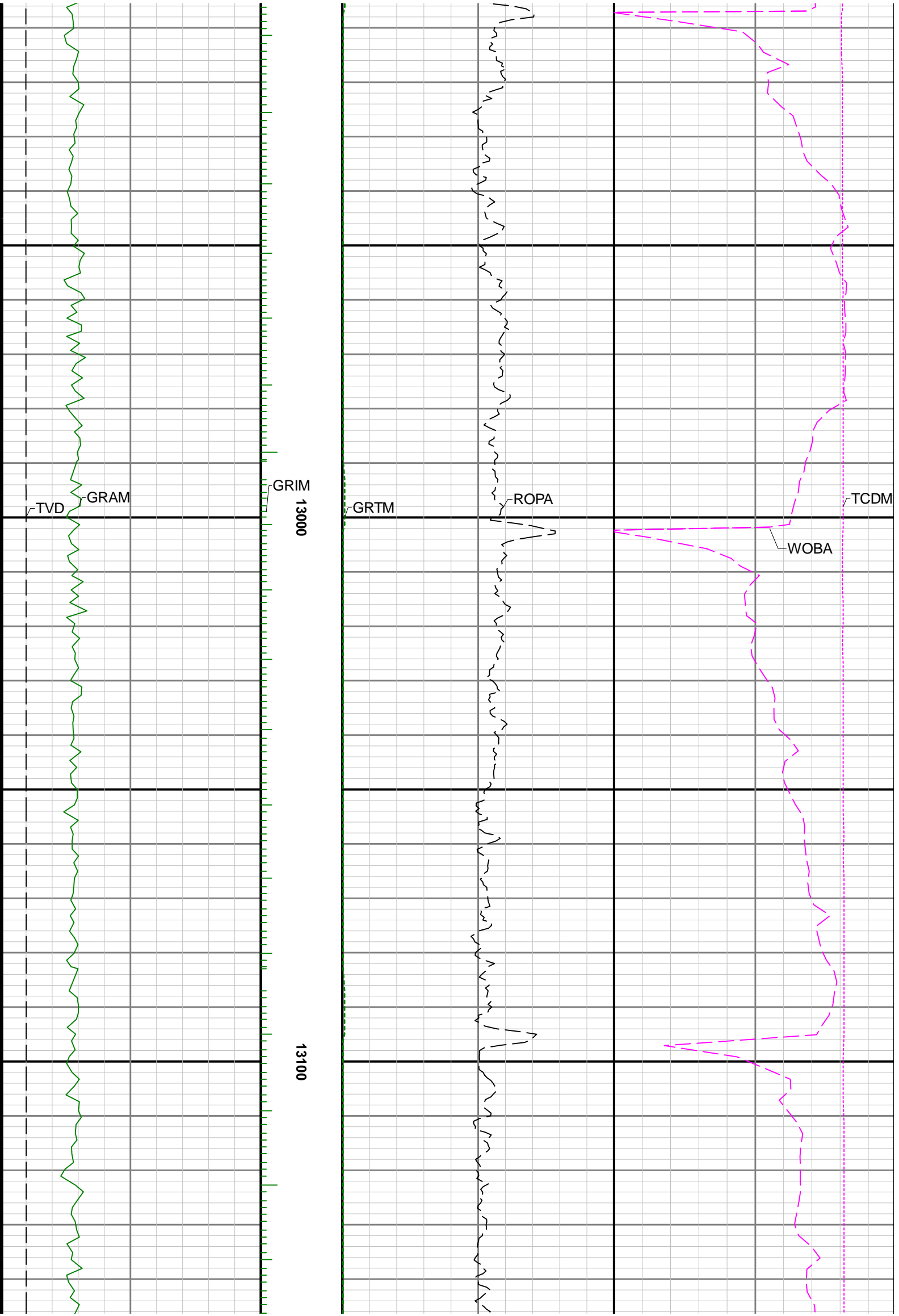


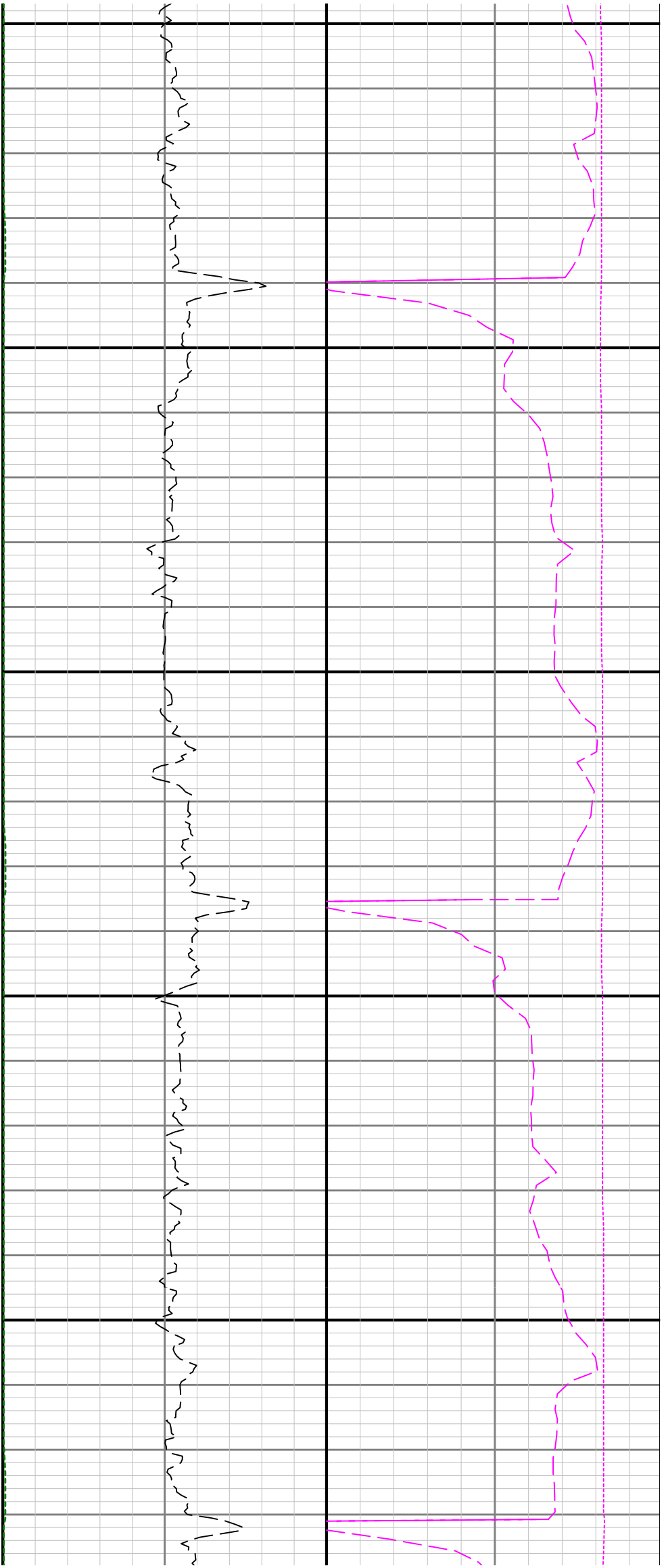
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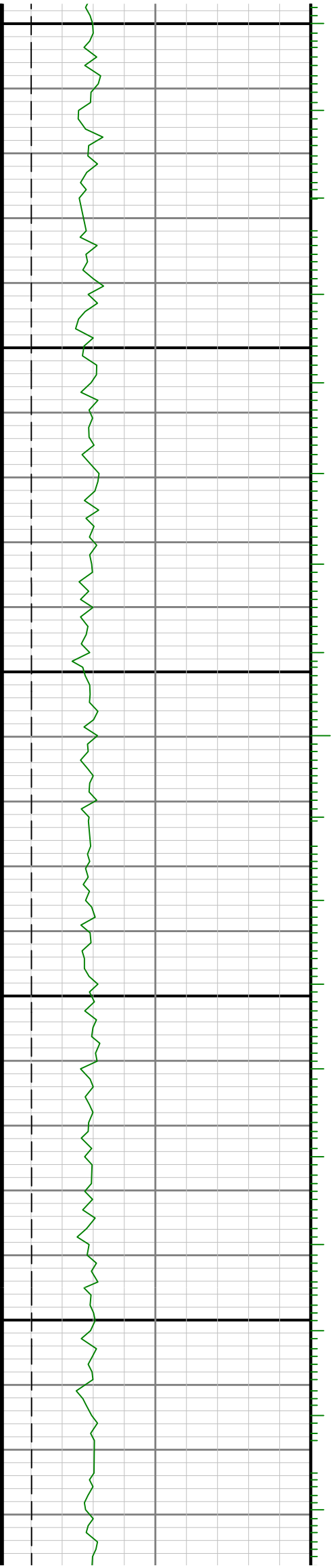


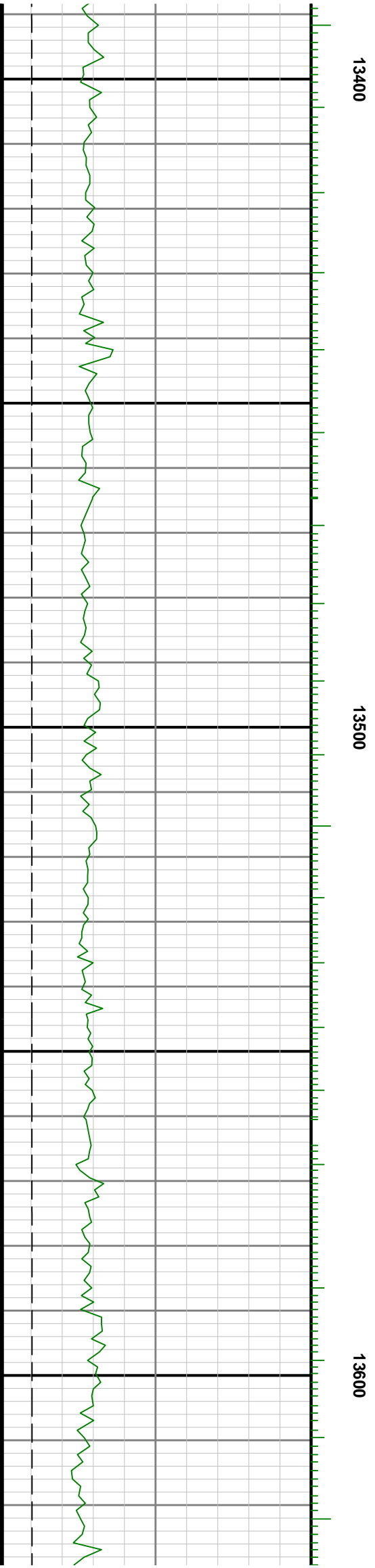
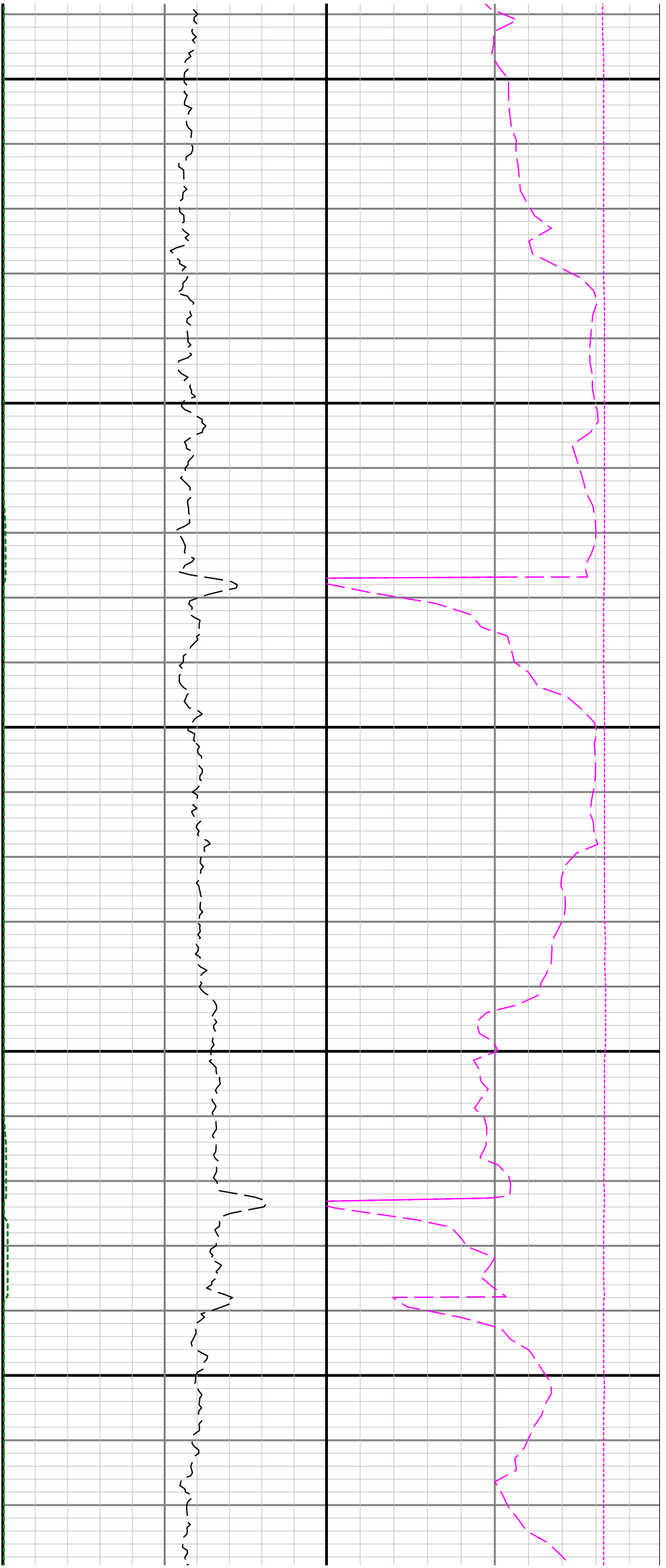


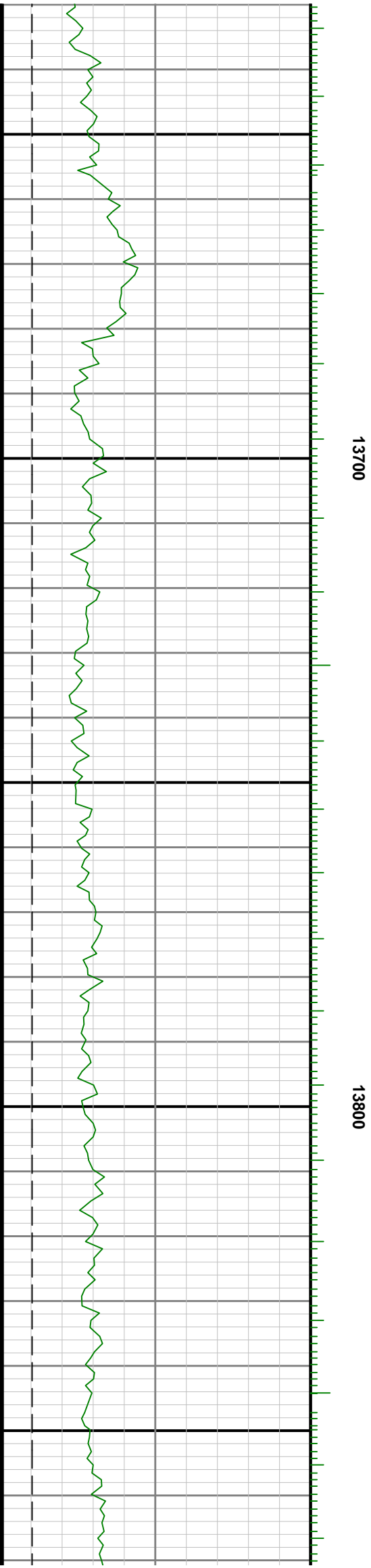
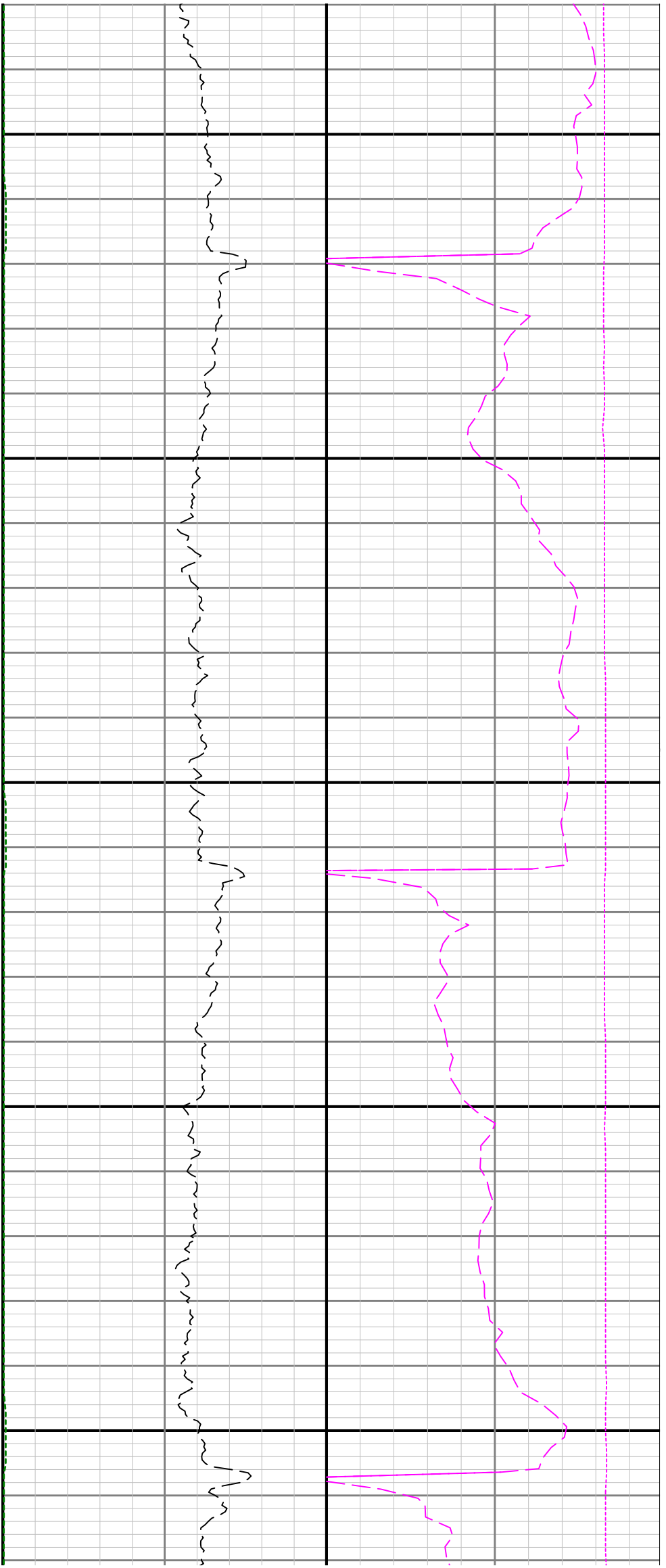


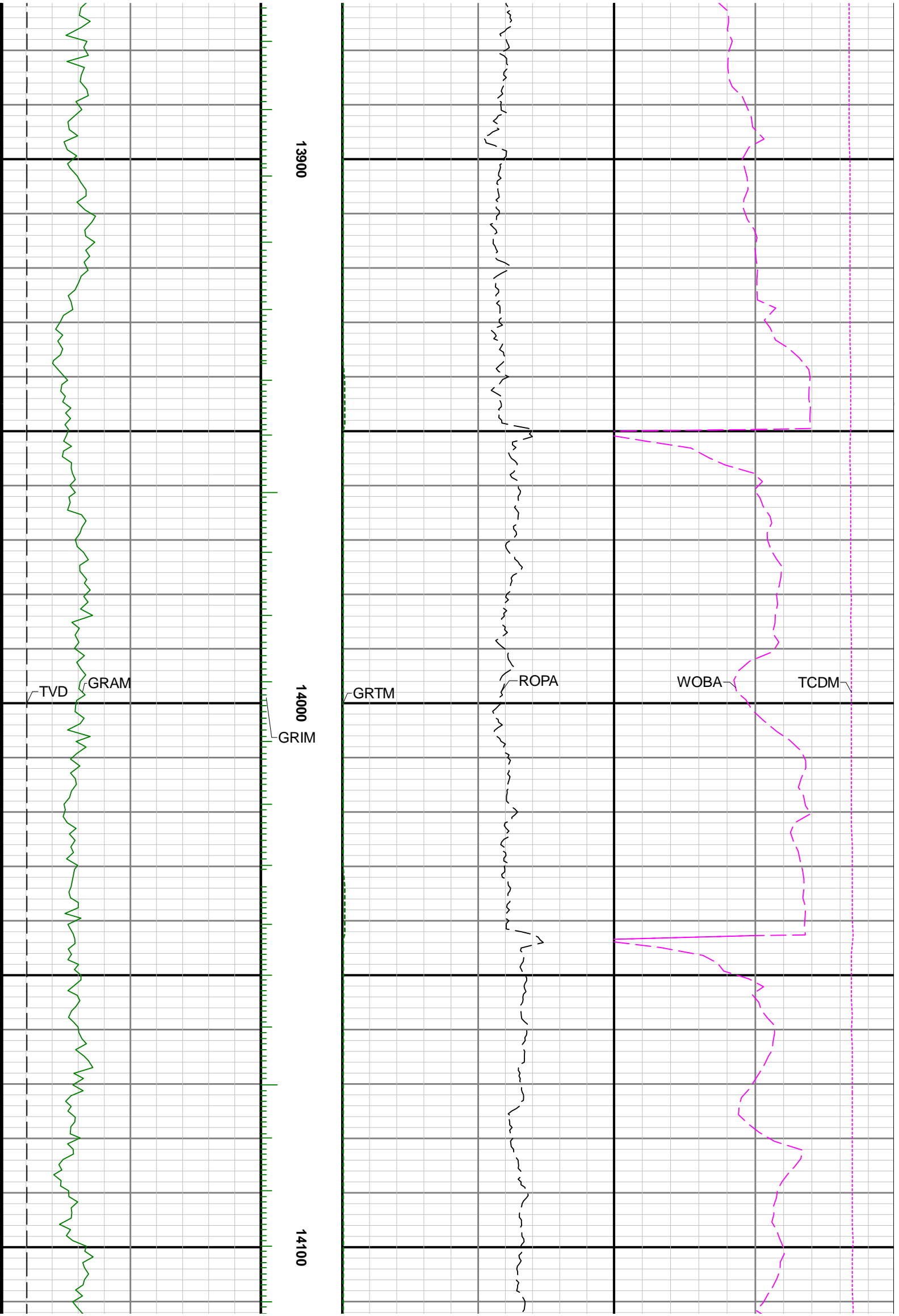
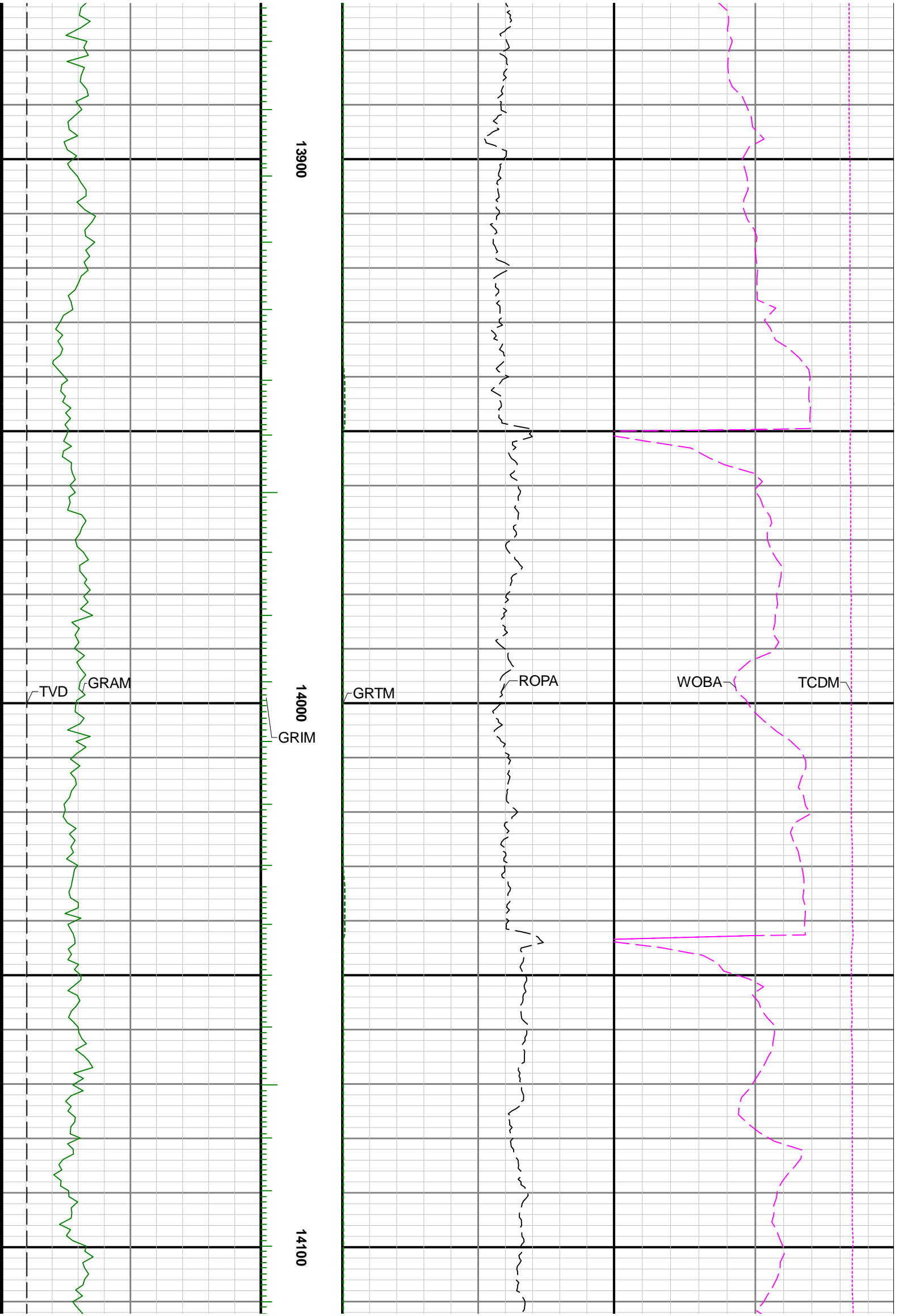
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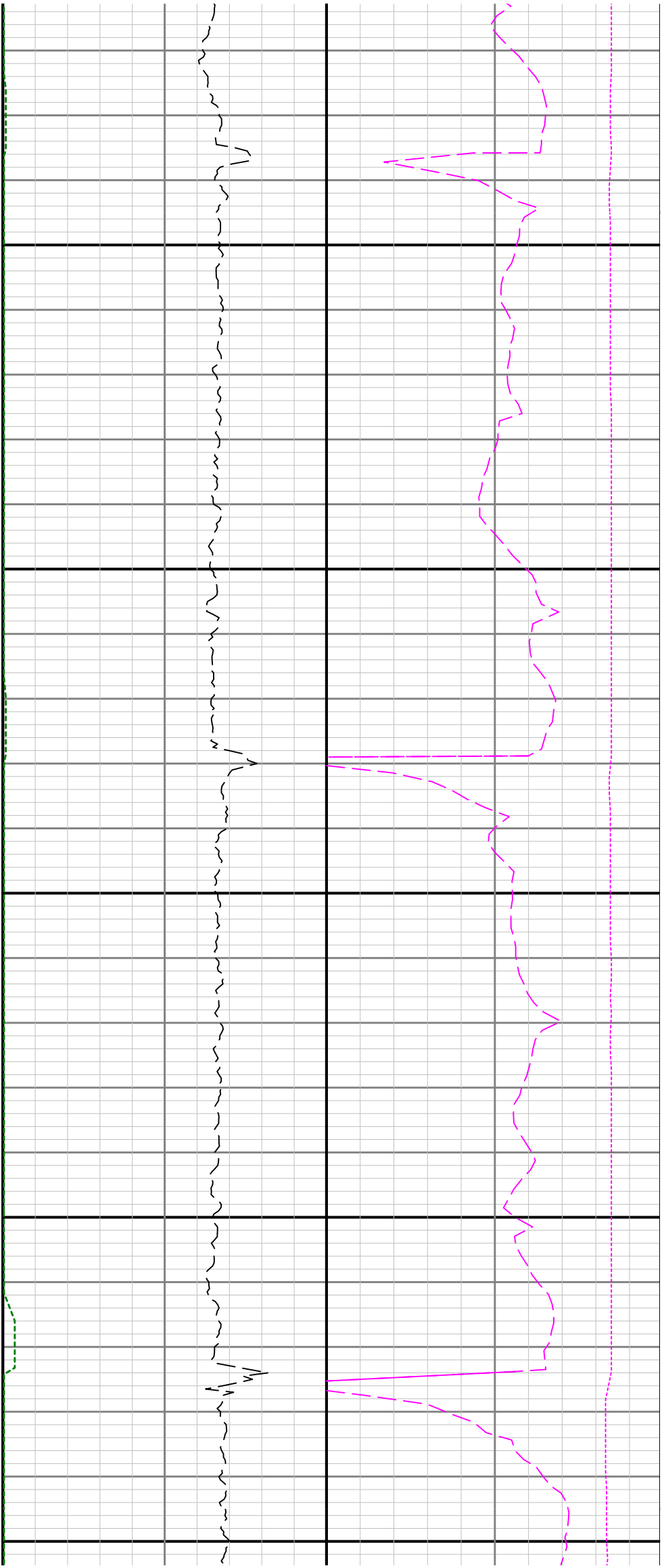
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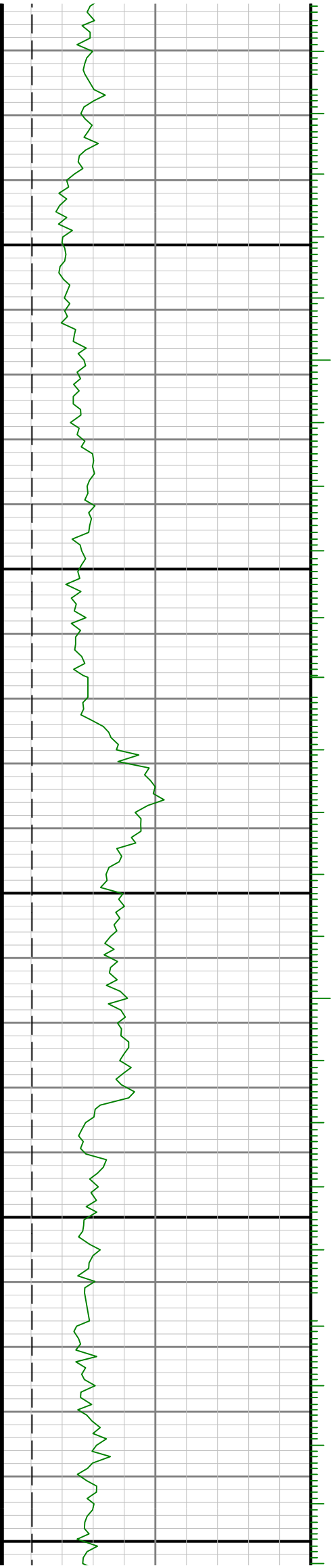


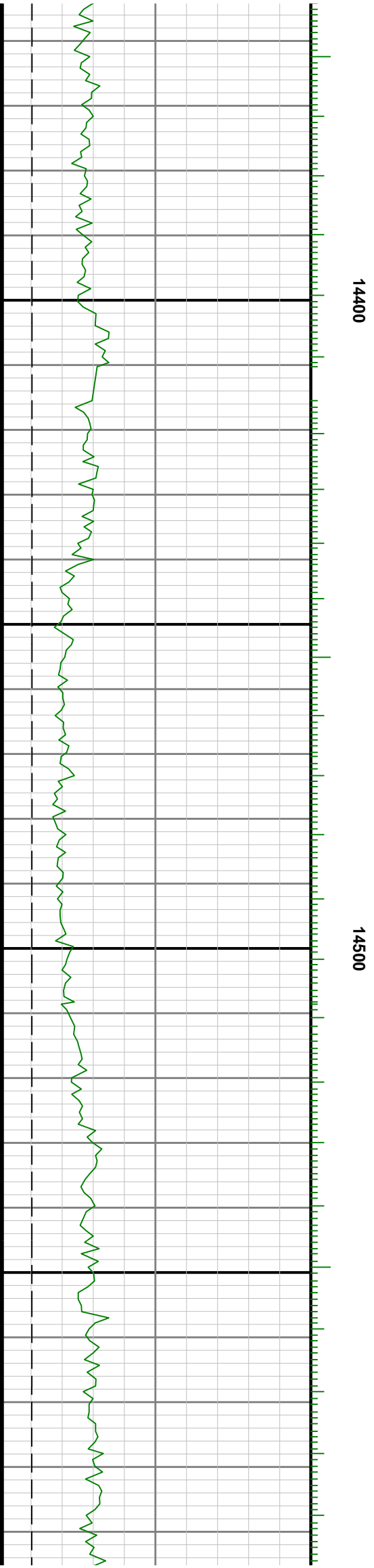
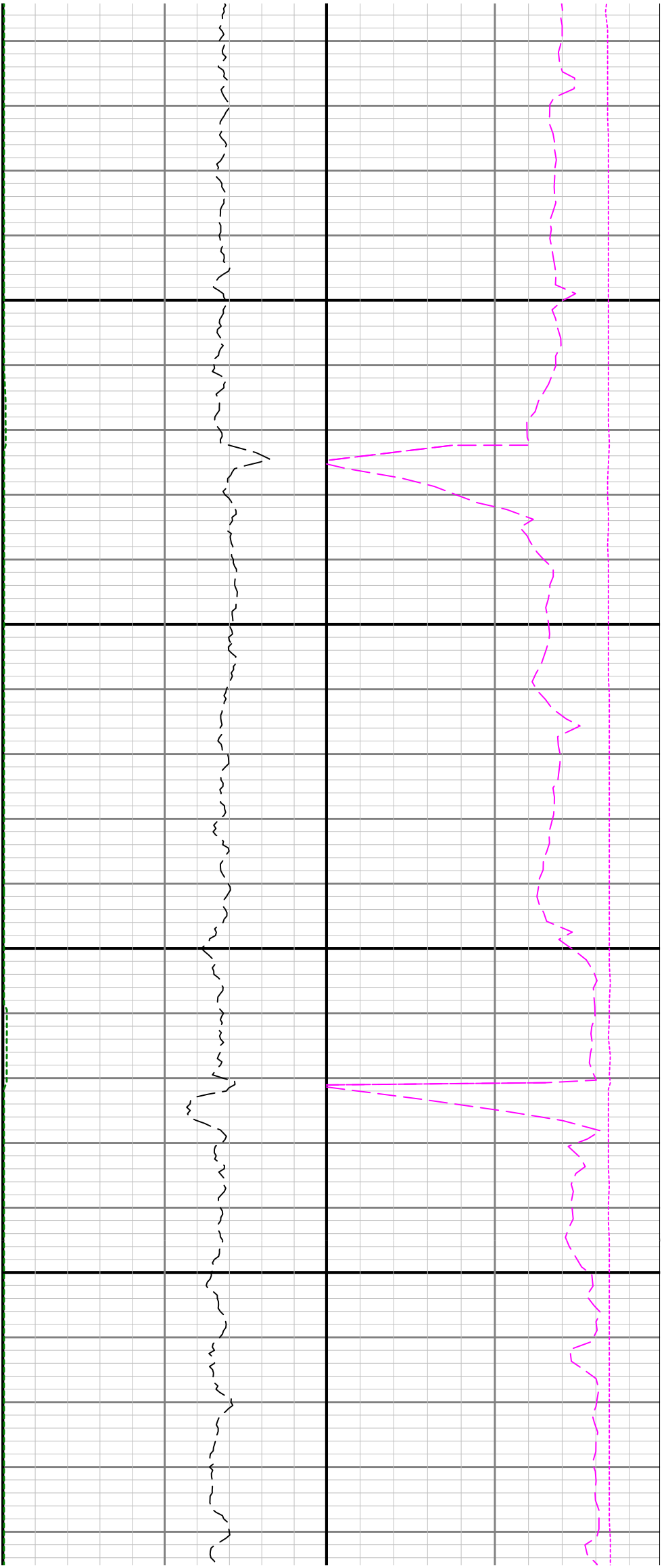


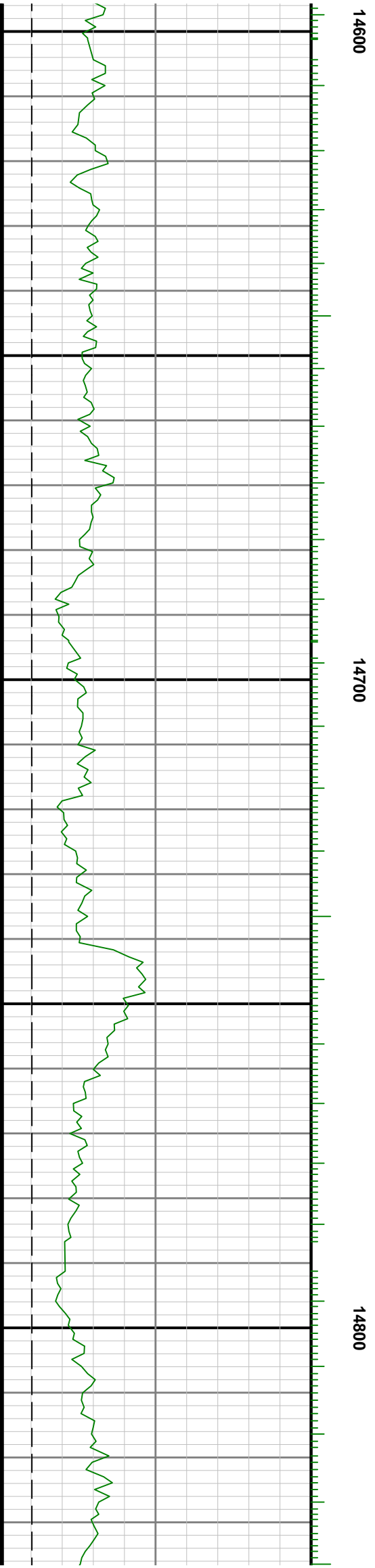


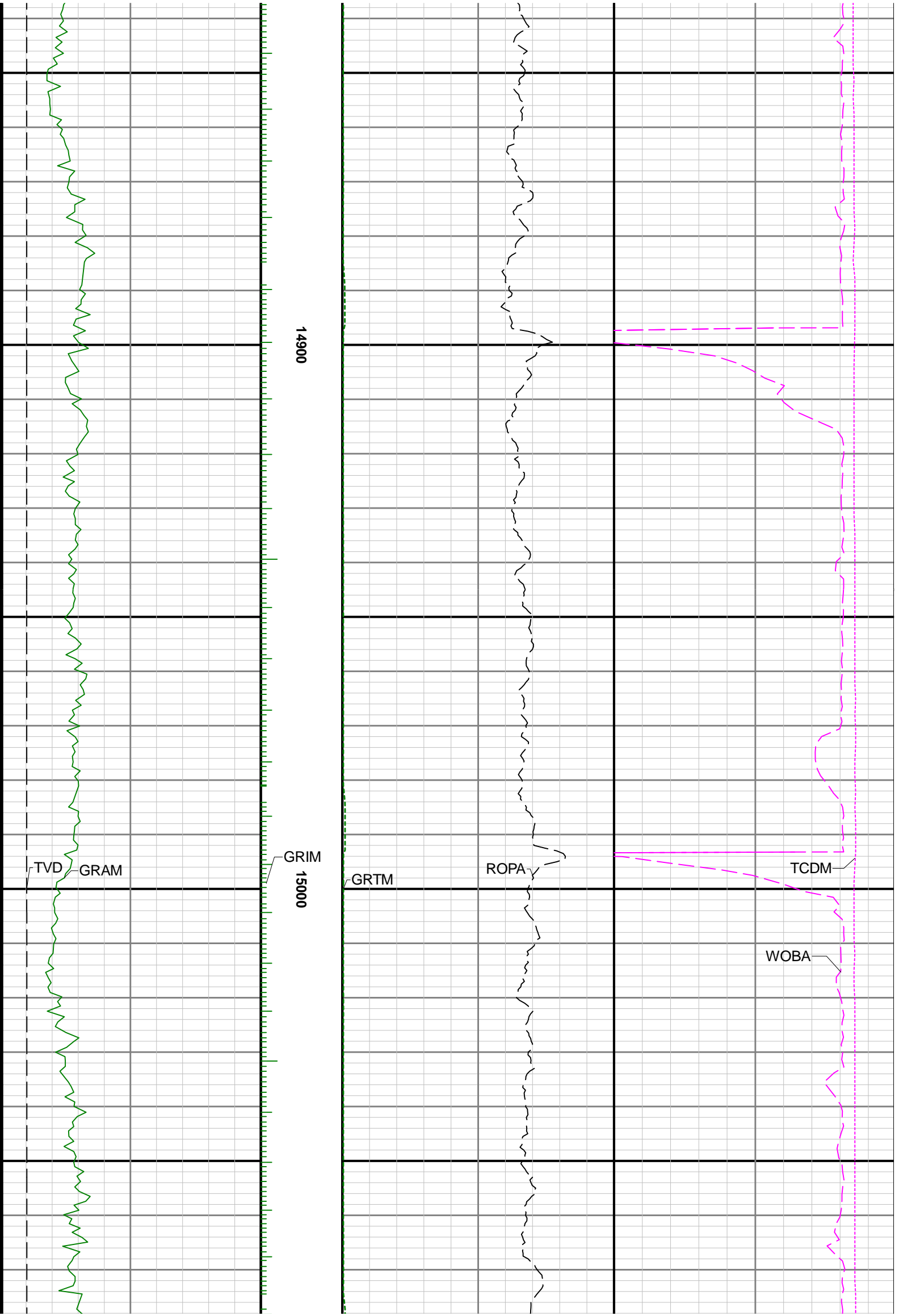
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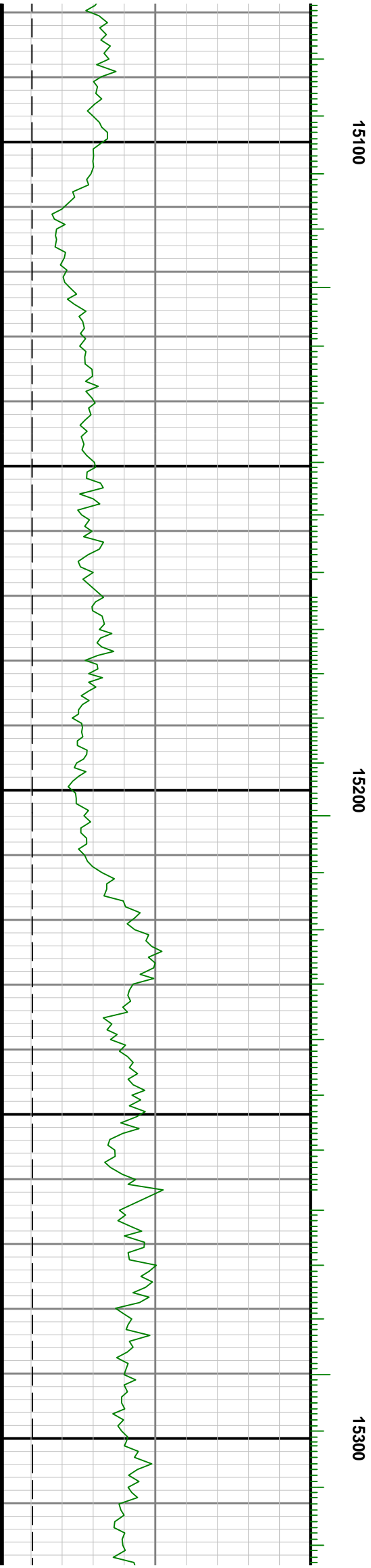
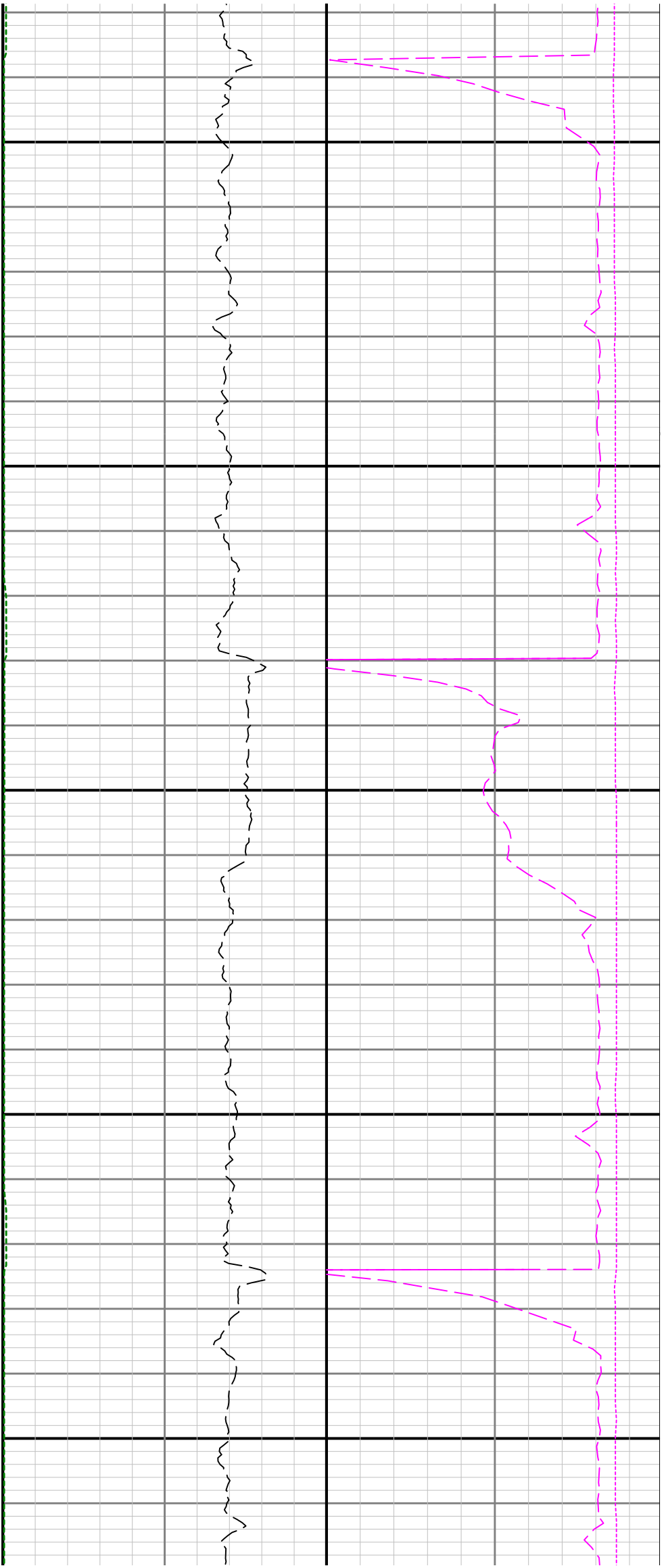
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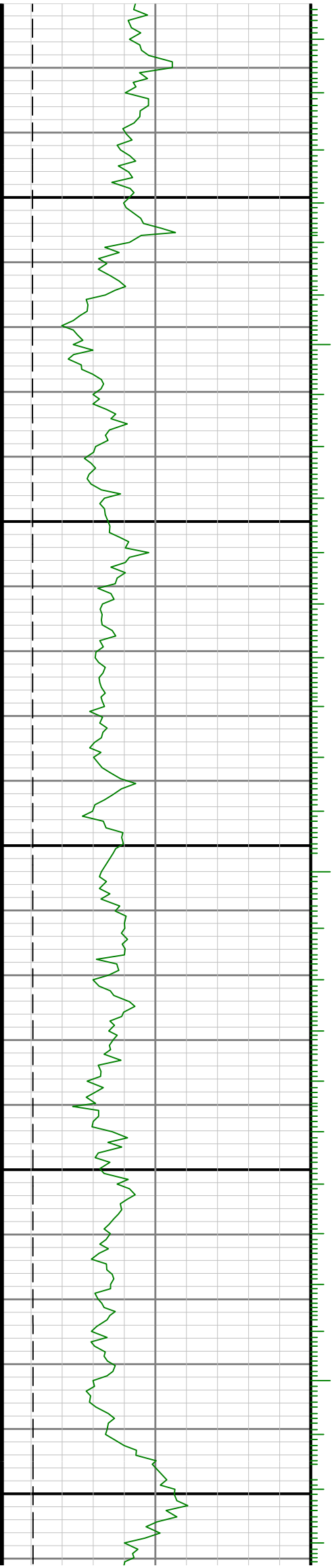
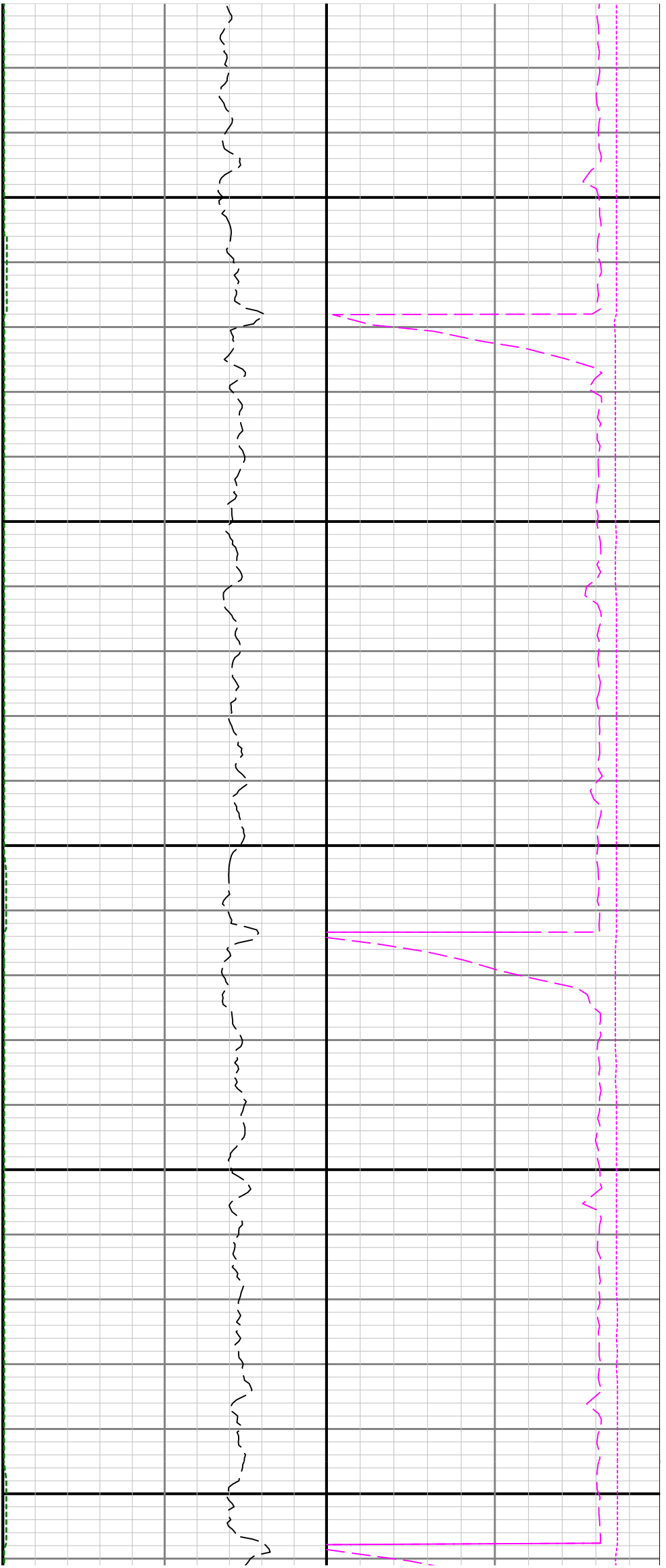


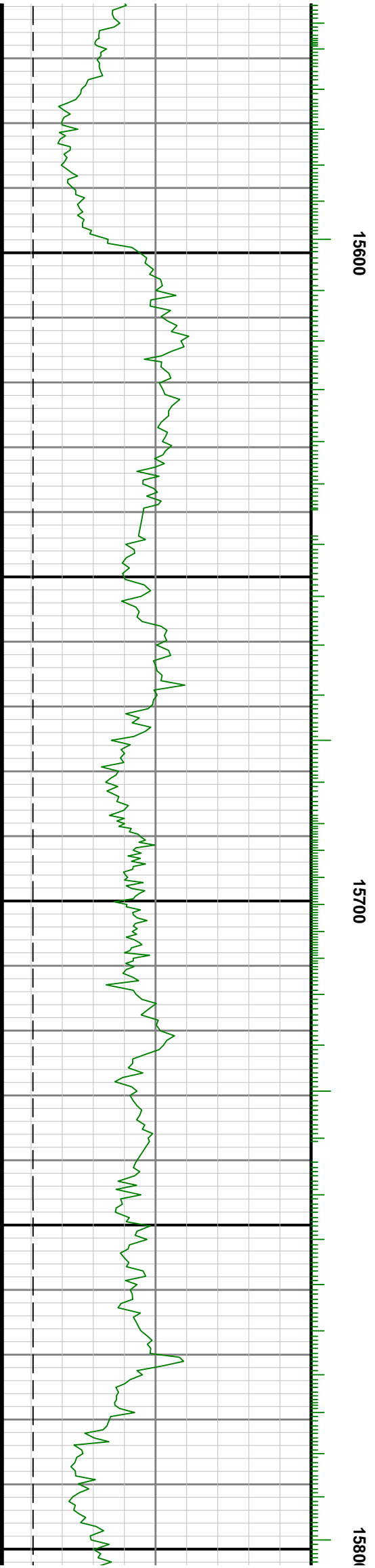
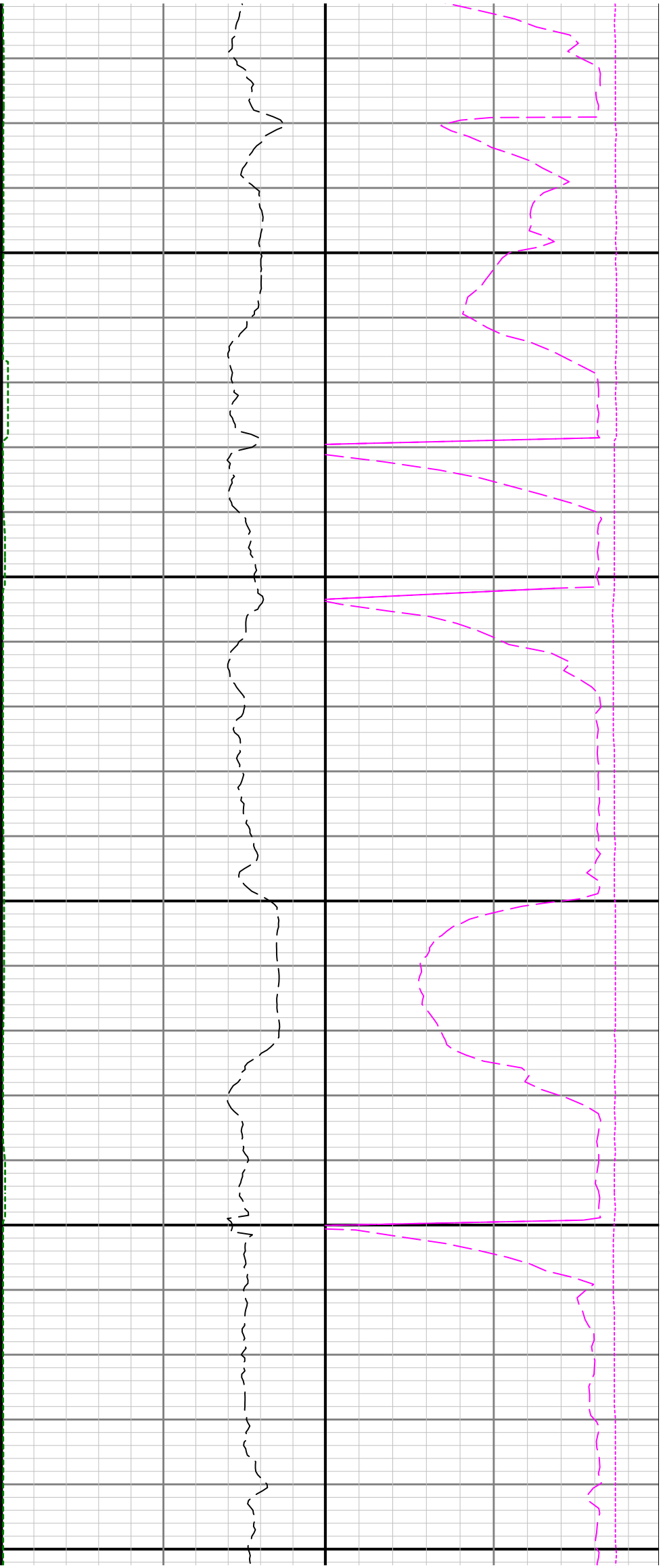


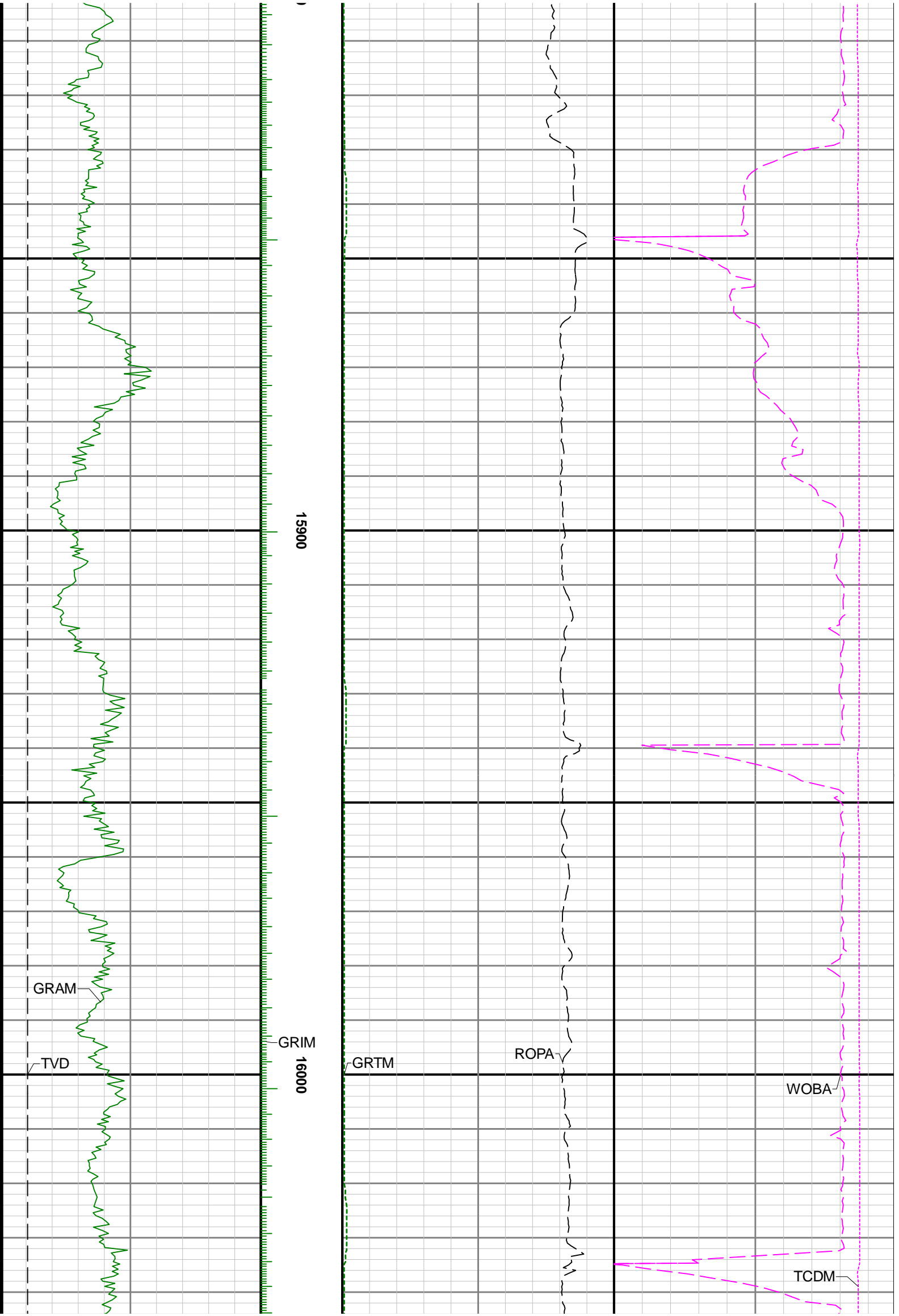


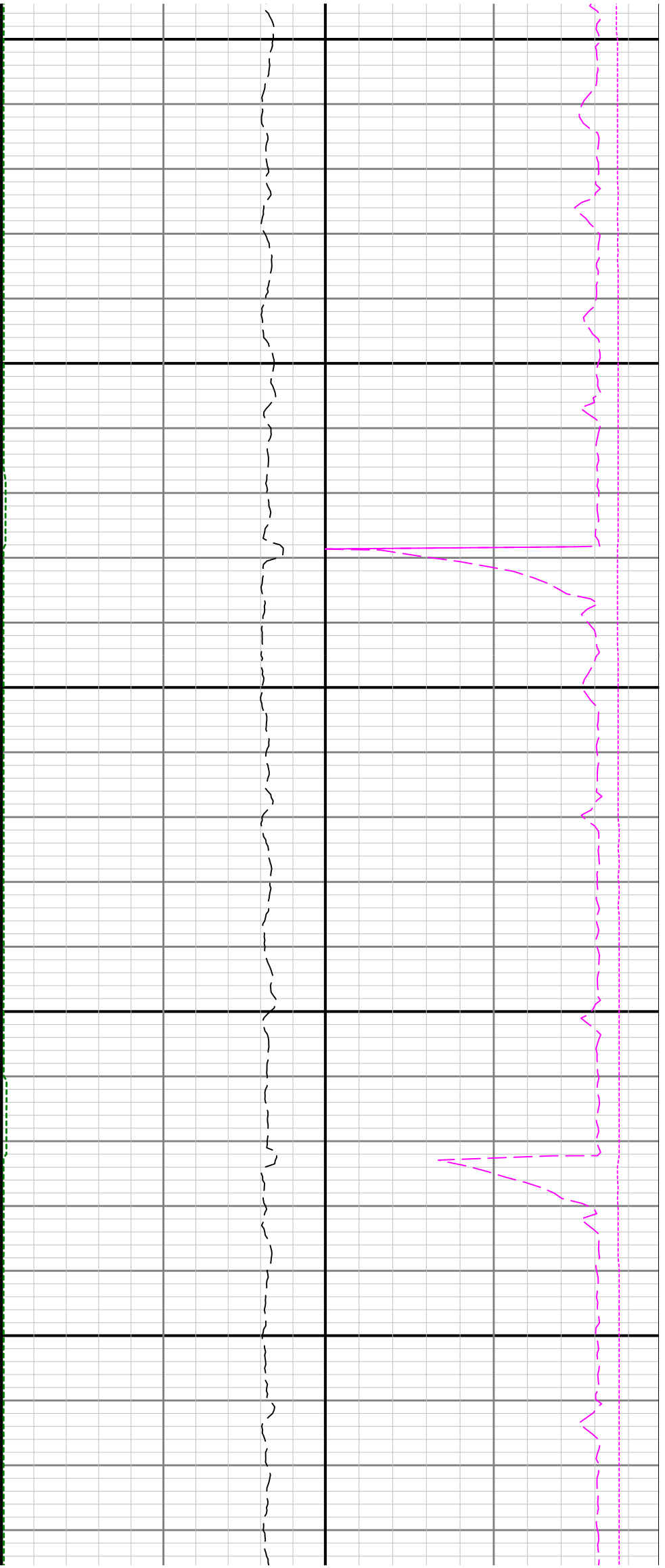






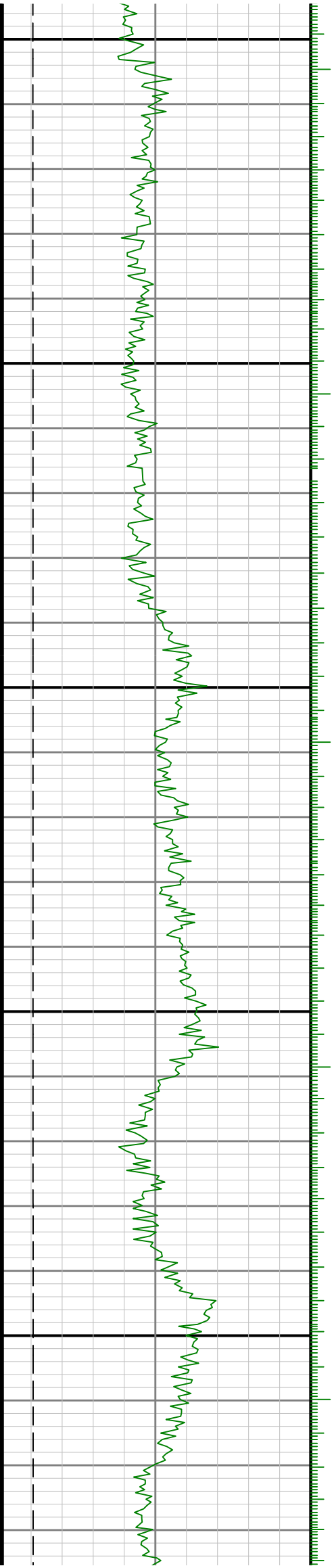


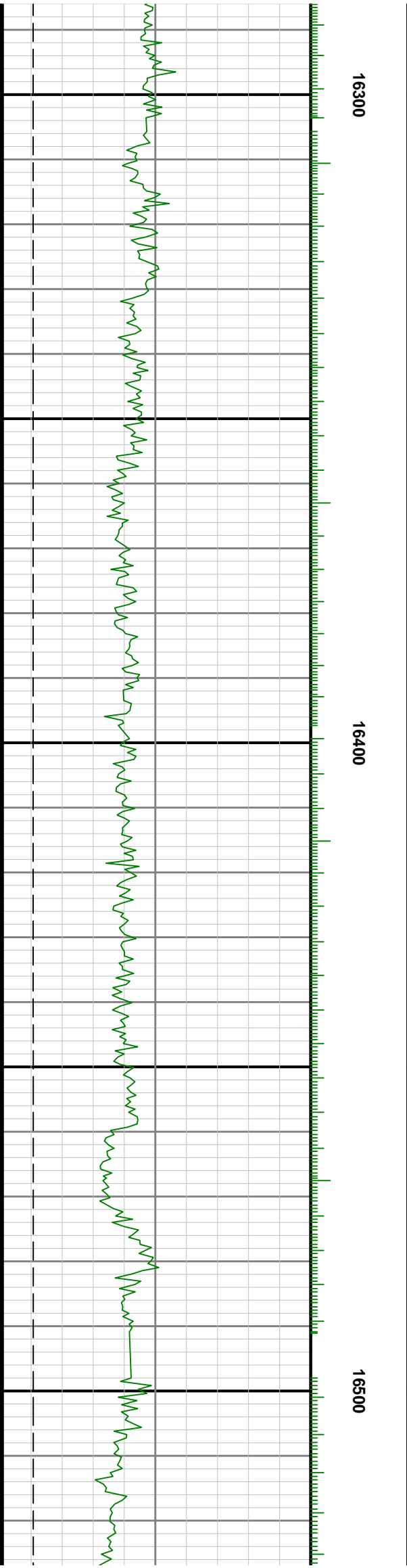
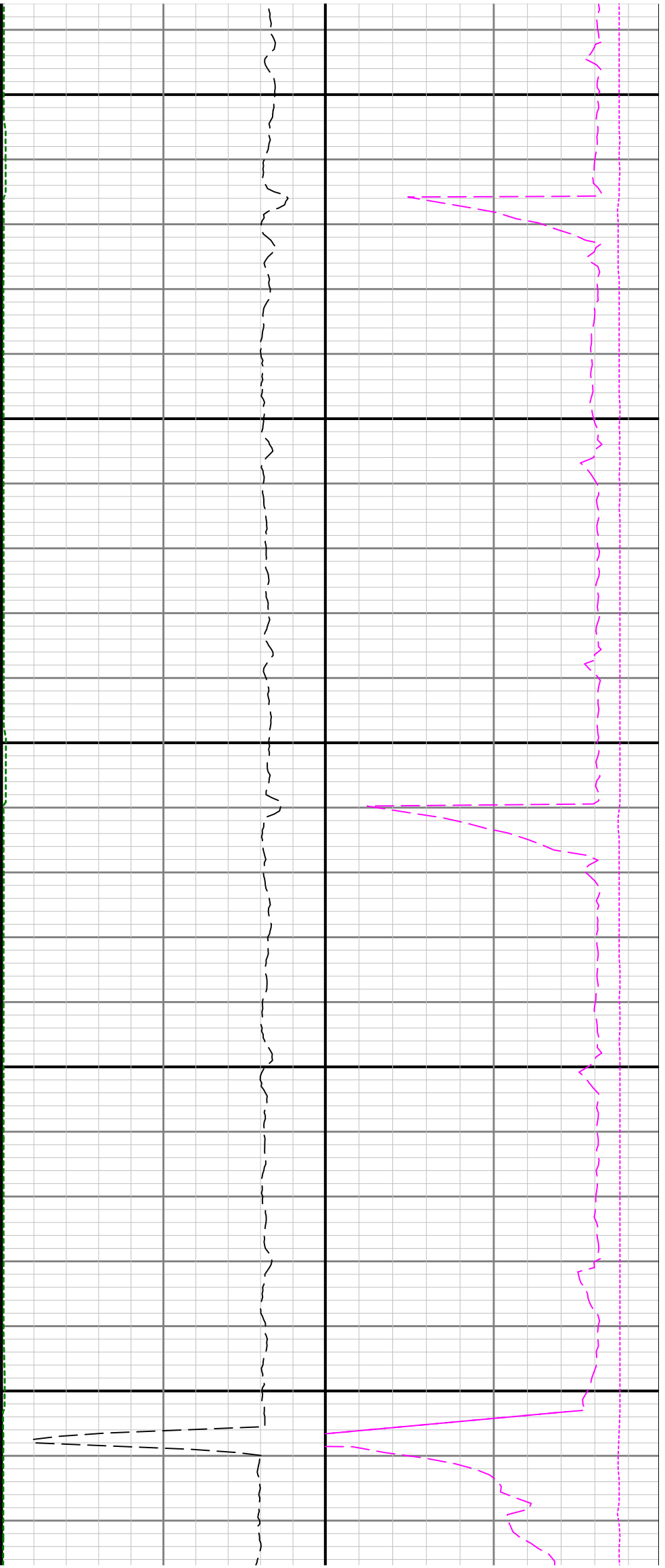


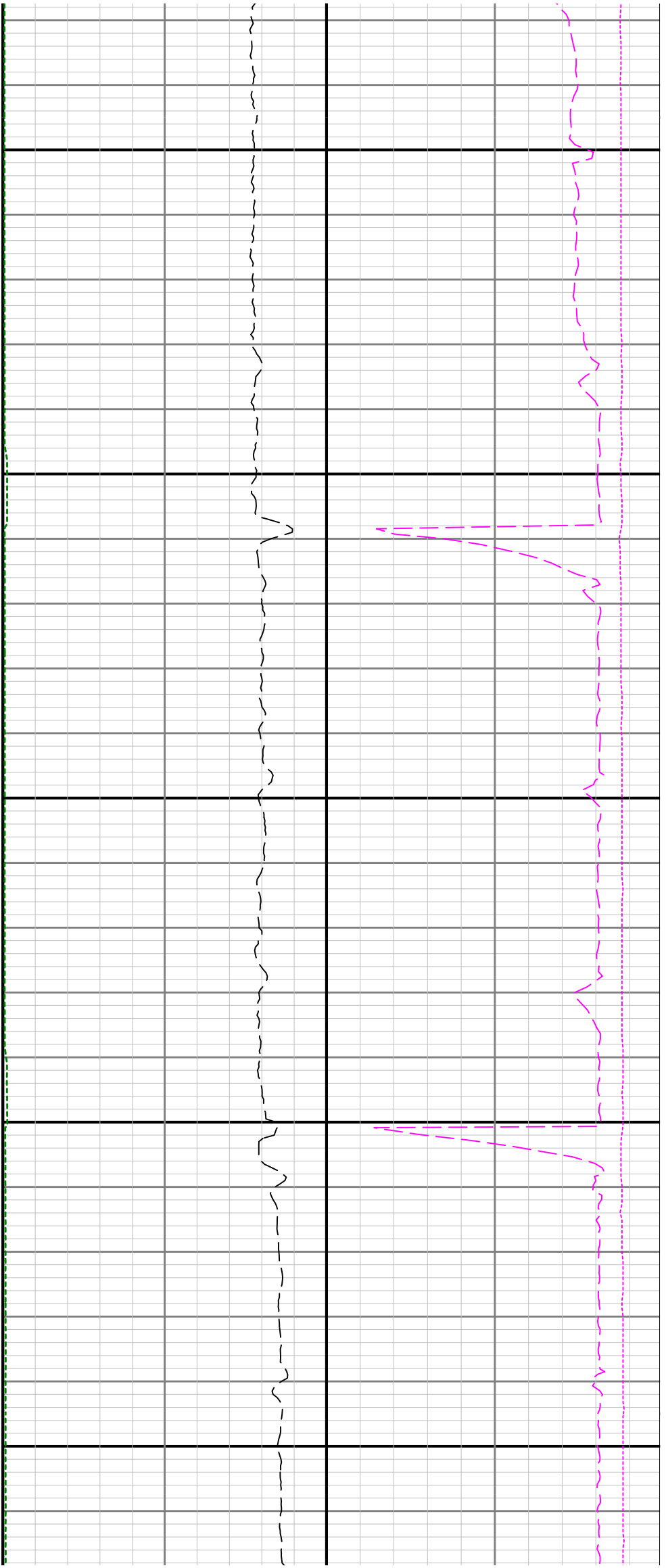


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16200







16600

16700

