


<div>  <div> <div>LWD MEMORY LOG</div> <div>Gamma Ray</div> </div> </div>			
Scale:	<div> <div>Company: Noble Energy</div> <div>Well: Reveille A34-746</div> <div>Field: Wattenberg</div> <div>County: Weld</div> <div>State: Colorado</div> <div>Country: United States</div> </div>		
Measured Depth	1:240		
Depth Reference:			
Driller's Depth			
Status:	<div> <div>Surface Location:</div> <div> <div>Latitude: 40° 26' 14.100" N</div> <div>Longitude: 104° 32' 25.224" W</div> </div> <div>Other Services:</div> </div>		
API No:	05-123-50793-00		
Job ID:	110727951	SEC: 34	TWN: 6N
		RGE: 64W	
Permanent Datum (P.D.):	Mean Sea Level	Elevation: 0.00 ft	Elev. KB: N/A
Log Measured From:	Rig Floor	Above P.D.: 4662.00 ft	Elev. DF: 4662.00 ft
			Elev. GL: 4632.00 ft
Dates	<div> <div>Interval</div> <div>Magnetic Field Reference</div> </div>		
From: 2021-03-02	Drilled (ft)	Logged (ft)	Azi Reference North: Grid Dip Angle: (deg) 66.81
To: 2021-03-04	Top: 1953.00	Top: 1953.00	Total Magnetic Field Strength: (nT) 51962
Sput: 2021-02-04	Bottom: 17277.00	Bottom: 17263.00	Mag to Reference North Correction: (deg) 7.12
Borehole Record			
Hole Size (in)	From (ft)	To (ft)	Size (in)
13.500	30.00	1953.00	9.625
8.500	1953.00	17277.00	36.00
			30.00
			1943.00
Casing Record			
Mud Record			
Type	From (ft)	To (ft)	Hole Size (in)
Oil Based Mud	1953.00	17277.00	8.500
			15324.00
			0.71   262.25
			89.91   0.06
Deviation Record			
Acquisition System			
Cadence	RT 5.8	Software Version	
DeliverableGen	5.8.8989.1	Other	
	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 (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
1	1	8.500	PDC	3.00	AutoTrak Curve	1940.05	13221.05	1953.00	13234.00	2021-03-02 01:35	2021-03-03 17:33	36.99
2	2	8.500	PDC	3.00	AutoTrak Curve	13221.00	17263.00	13234.00	17277.00	2021-03-04 07:54	2021-03-04 21:38	15.54

### Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Tien Bui	2021-03-01	2021-03-05						

### 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+ (%)
2021-03-01 09:41	1	1953.00	Oil Based Mud	9.2	10	N/A	19.5	79.5/20.5	Active Pit	27000	0.00
2021-03-03 20:20	1	12600.00	Oil Based Mud	9.7	11	N/A	17.8	79.3/20.7	Active Pit	30000	0.00
2021-03-04 01:52	2	13234.00	Oil Based Mud	9.7	11	N/A	17.8	79.3/20.7	Active Pit	30000	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	14316019	Near Bit VSS	5.93	6.78	7.000	4.330
1	AutoTrak Curve Steering Unit	14316019	Near Bit Inclination	5.93	6.78	7.000	4.330
1	AutoTrak Curve MWD	14281551	Gamma (single)	2.76	12.95	7.000	3.250
1	AutoTrak Curve MWD	14281551	Directional (mag)	12.27	22.46	7.000	3.250
2	AutoTrak Curve Steering Unit	13867779	Near Bit VSS	5.93	6.79	7.000	4.330

2	AutoTrak Curve Steering Unit	13867779	Near Bit Inclination	5.93	6.79	7.000	4.330
2	AutoTrak Curve MWD	12599902	Gamma (single)	2.75	12.96	7.000	3.250
2	AutoTrak Curve MWD	12599902	Directional (mag)	12.27	22.48	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
ATC SU	AutoTrak Curve SU	Auto Trak Curve Steering Unit
ATC MWD	AutoTrak Curve MWD	Auto Trak Curve MWD
ATC LCPM	AutoTrak Curve LCPM	Auto Trak Curve LCPM

Comments

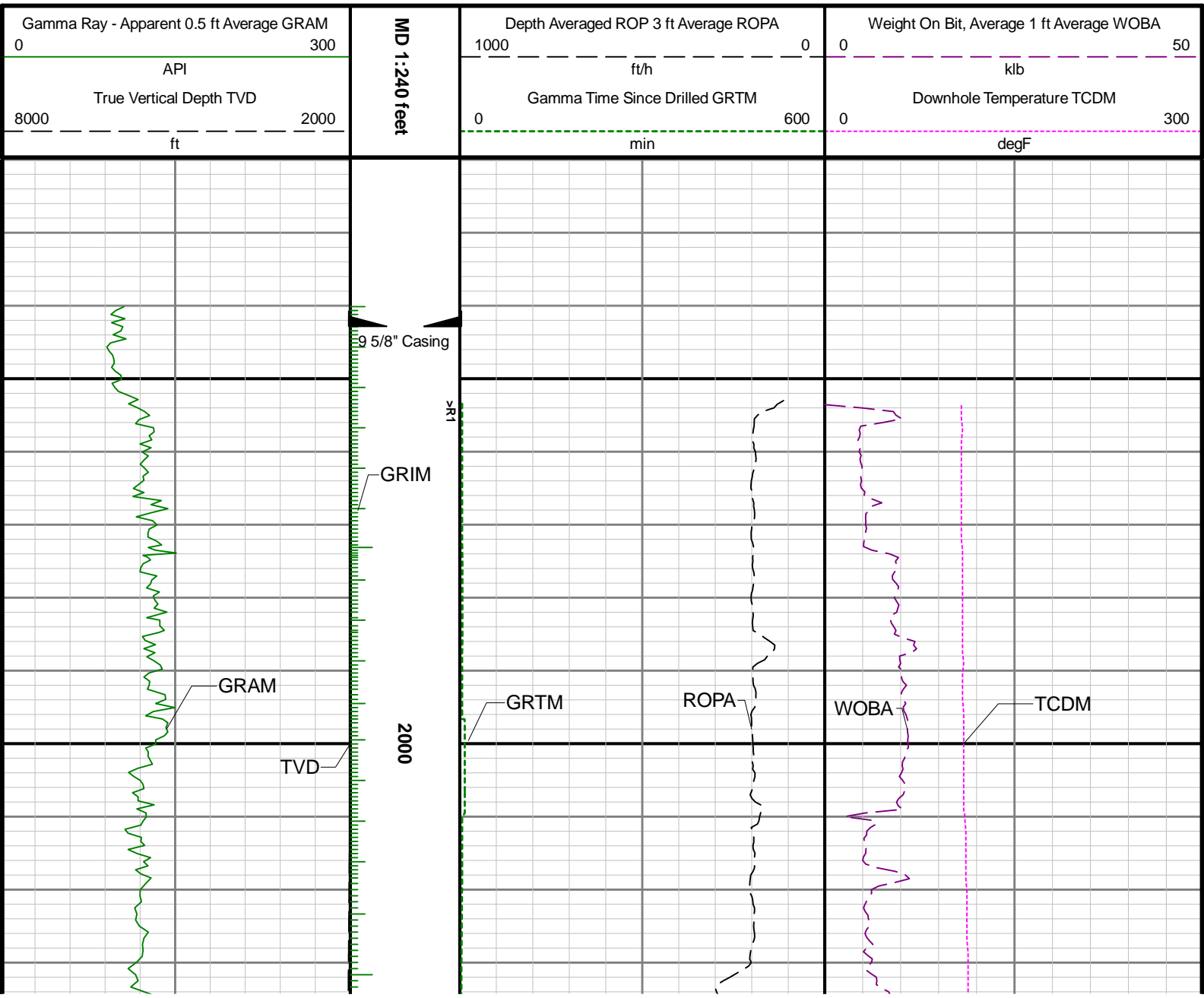
1	Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD Run 1 and 2 utilized 6 ¾ inch NaviGamma service (Gamma Ray and Directional) behind a 8 1/2 inch bit and rotary steerable assembly from 1953 to 17277 feet MD (1953 to 6732 feet TVD).
3	The Gamma Ray Apparent (GRAM) data is presented 0 to 300 API, per the customer's request.
4	Several gaps appear in the log due to drilling ahead before the assembly had time to properly power on.

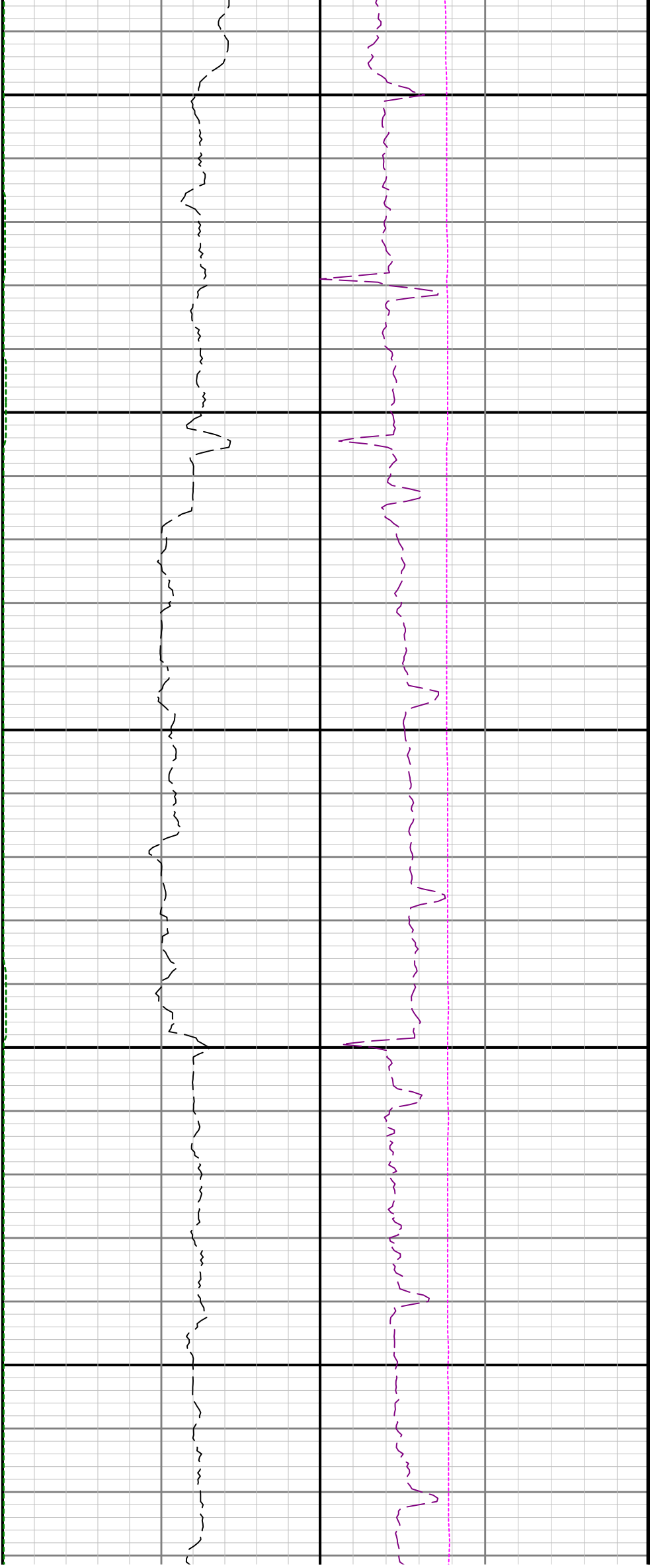
Remarks

Number	Depth (ft)	Hole Section (in)	Run No.	Remark
1	13221.00	8.500	2	The interval from 13221 to 13234 feet MD (6738 feet TVD) was logged up to 14.5 hours after being drilled due to a trip out of hole to change out BHA.
2	17263.00	8.500	2	The interval from 17263 to 17277 feet MD (6732 feet TVD) was not logged due to sensor to bit offset at well TD.

Curve Mnemonics

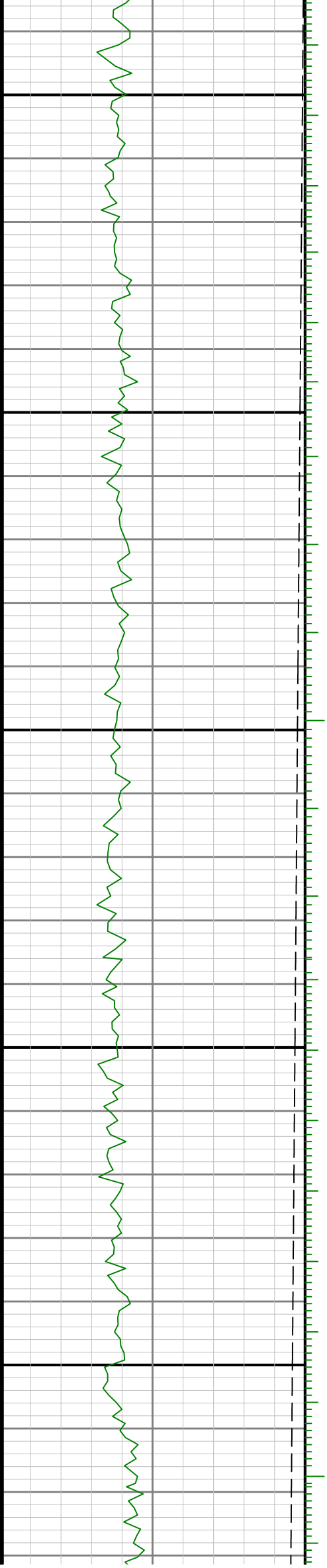
Presented Curves	Description	Units
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight on Bit - Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
TCDM	Directional Real-Time Survey Temperature	degF

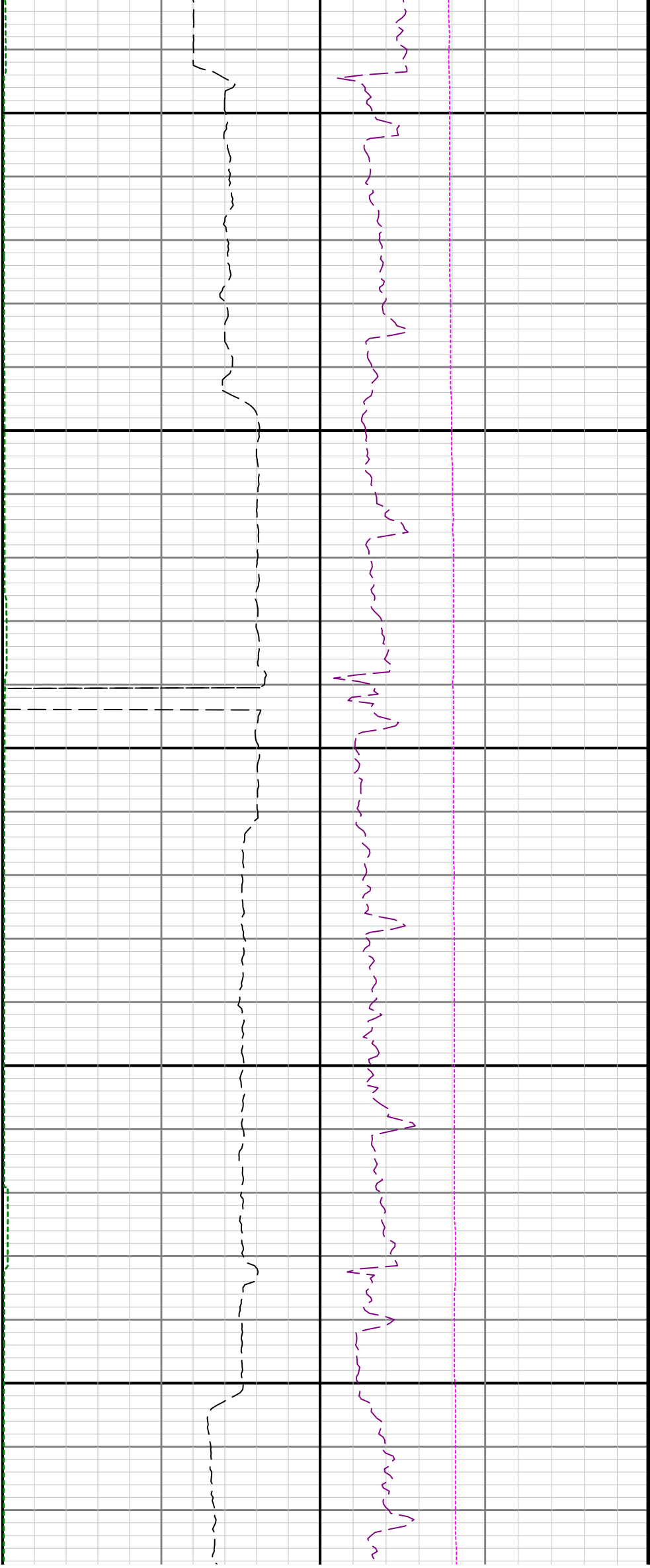




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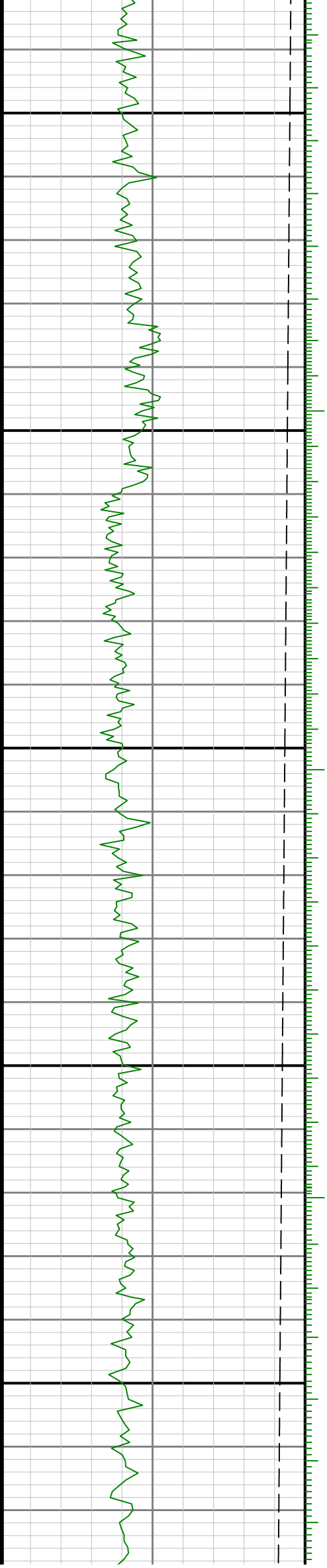


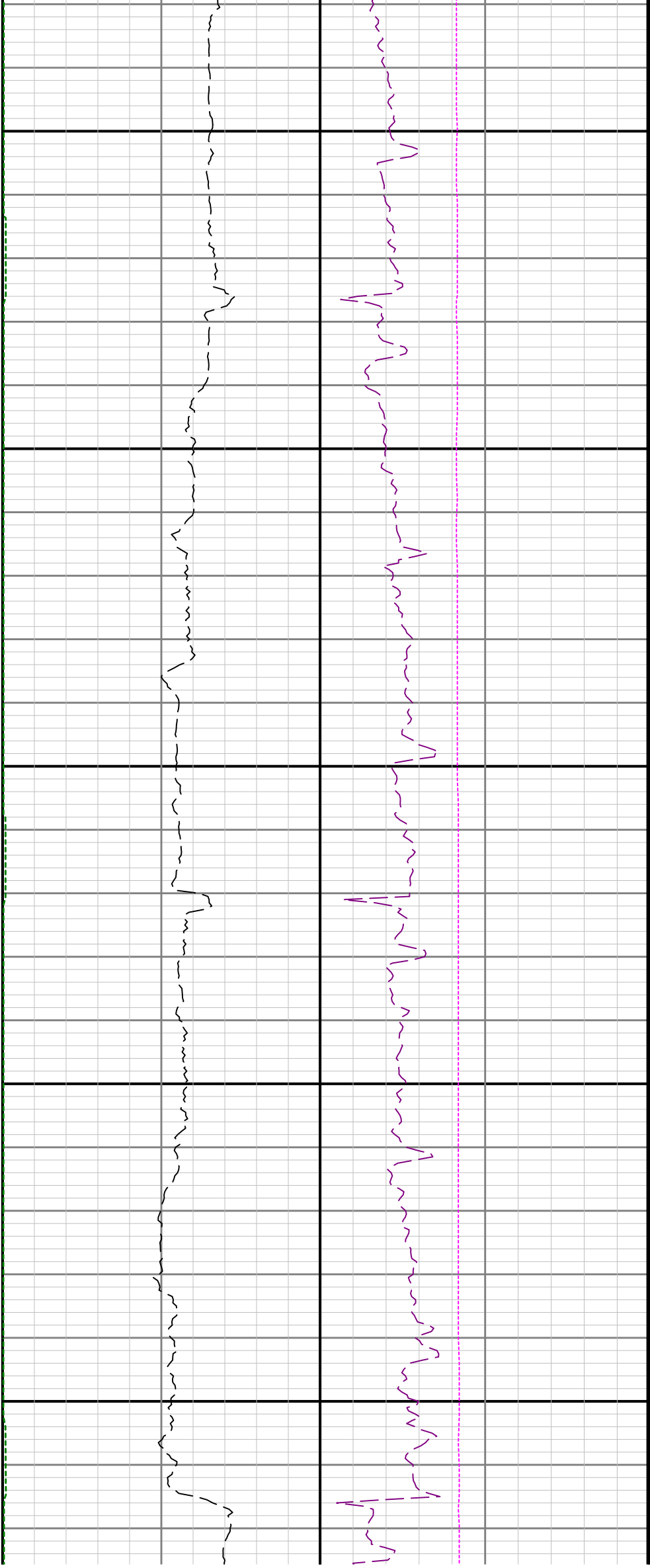


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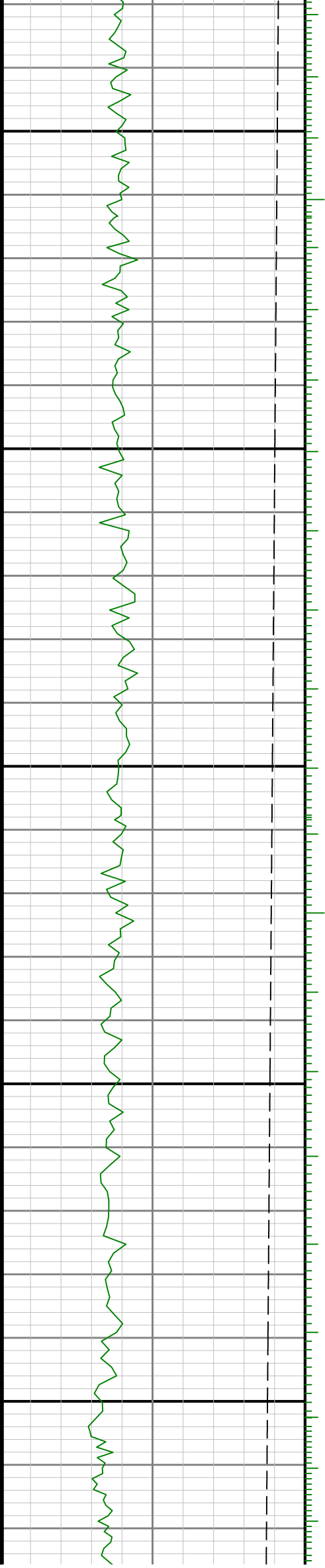
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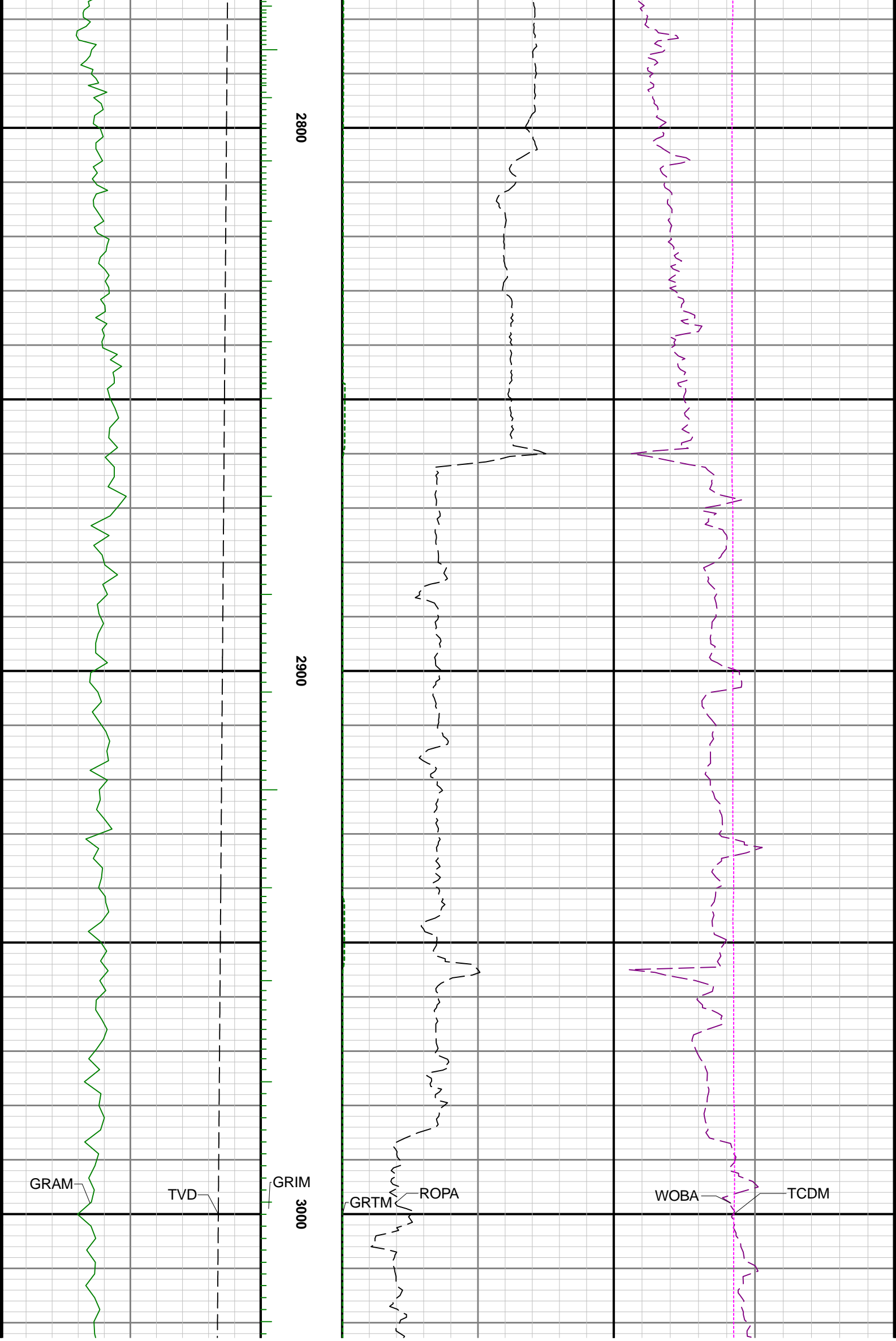


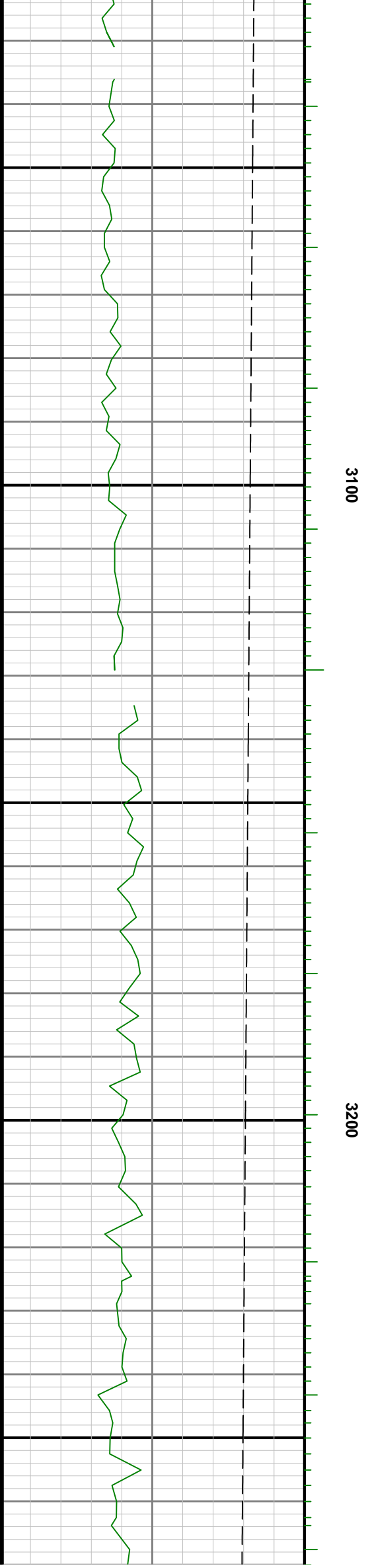
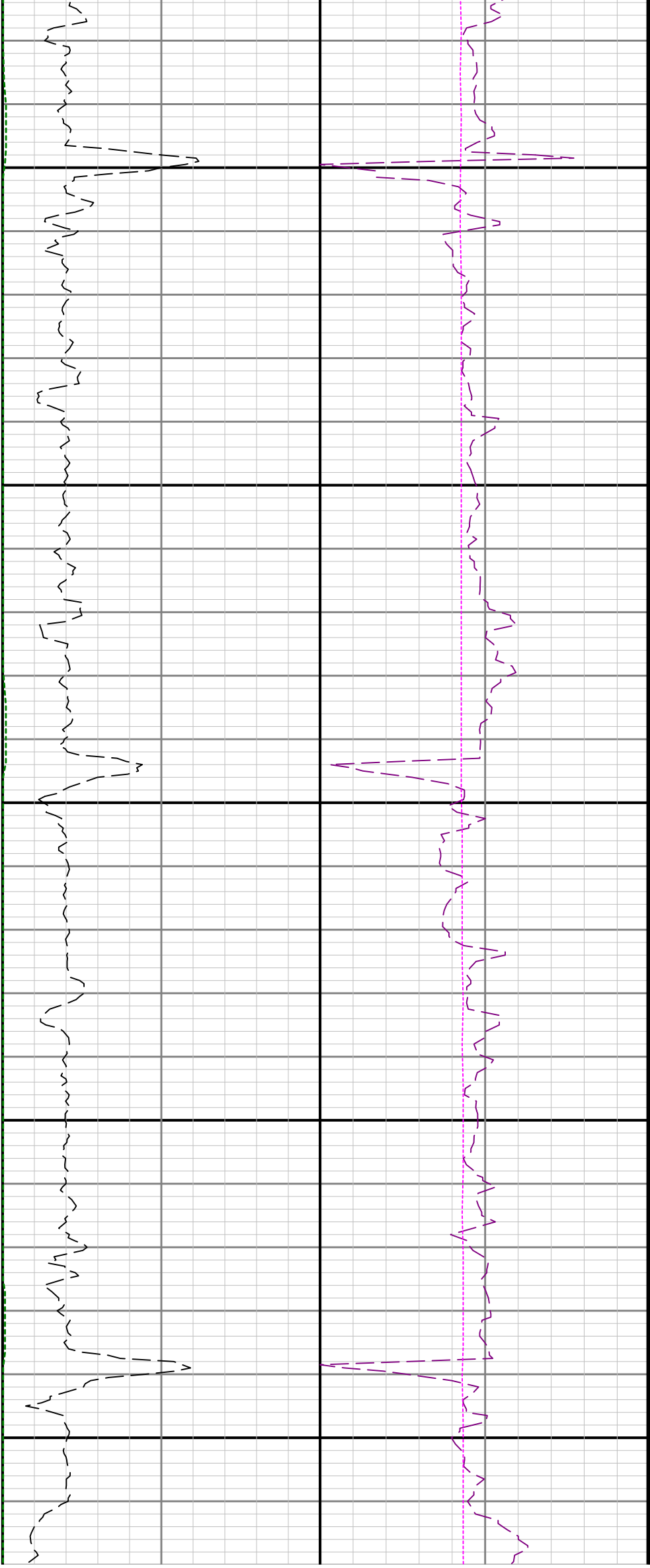


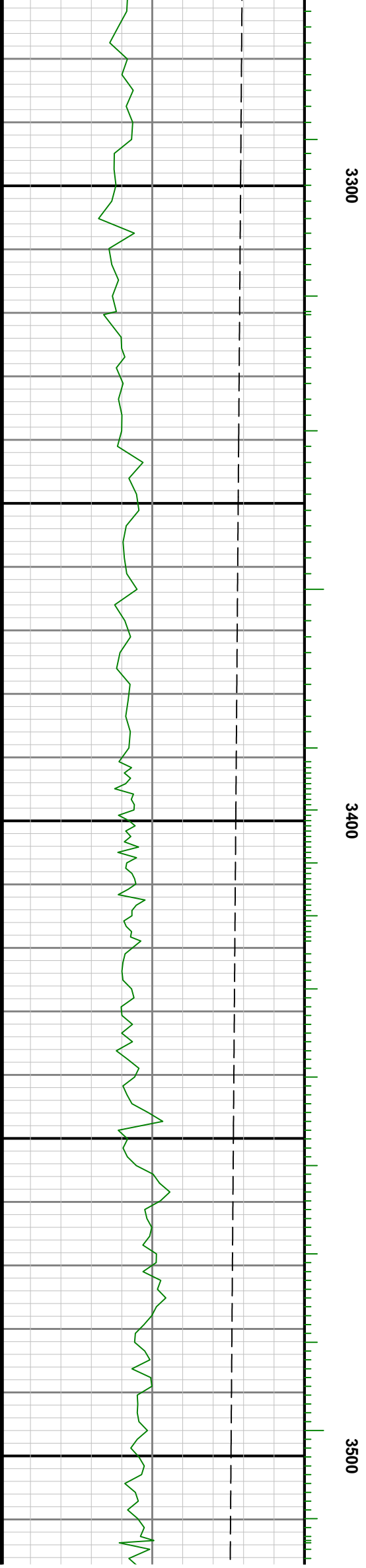
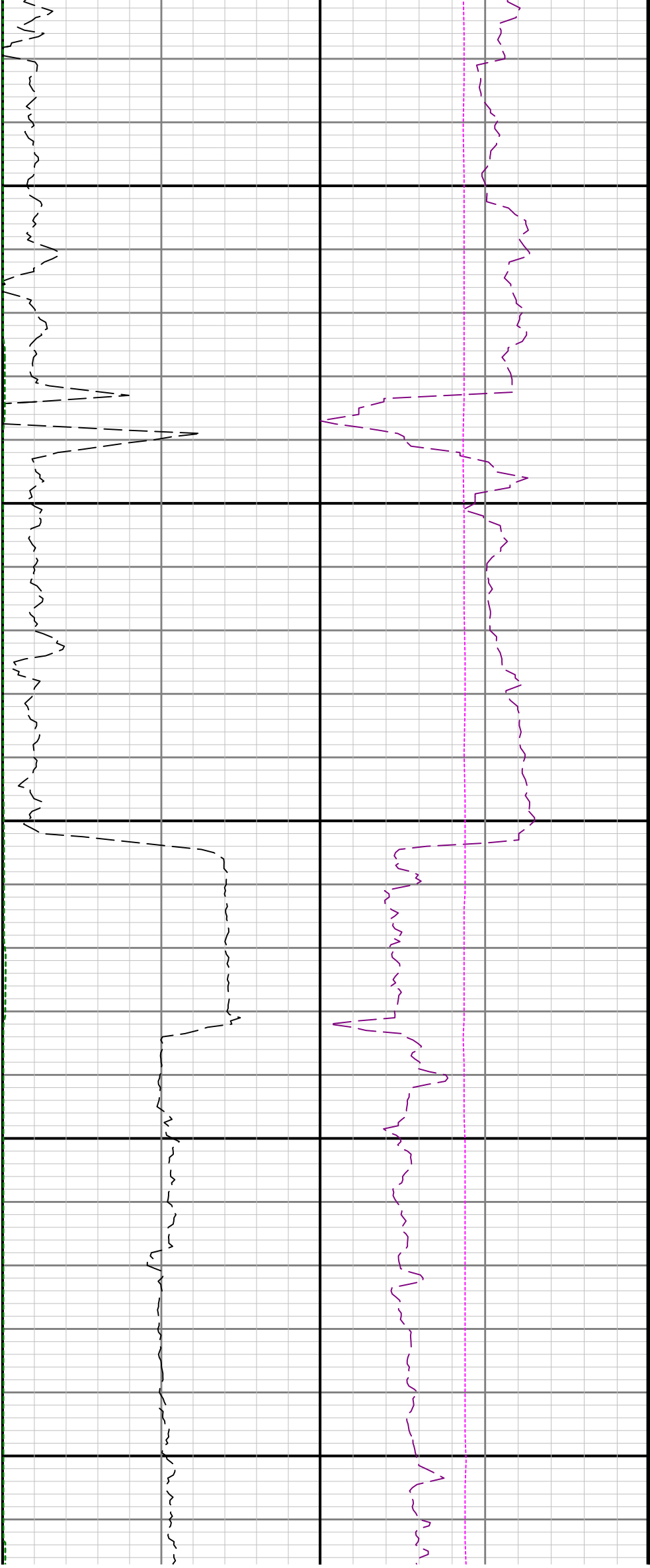
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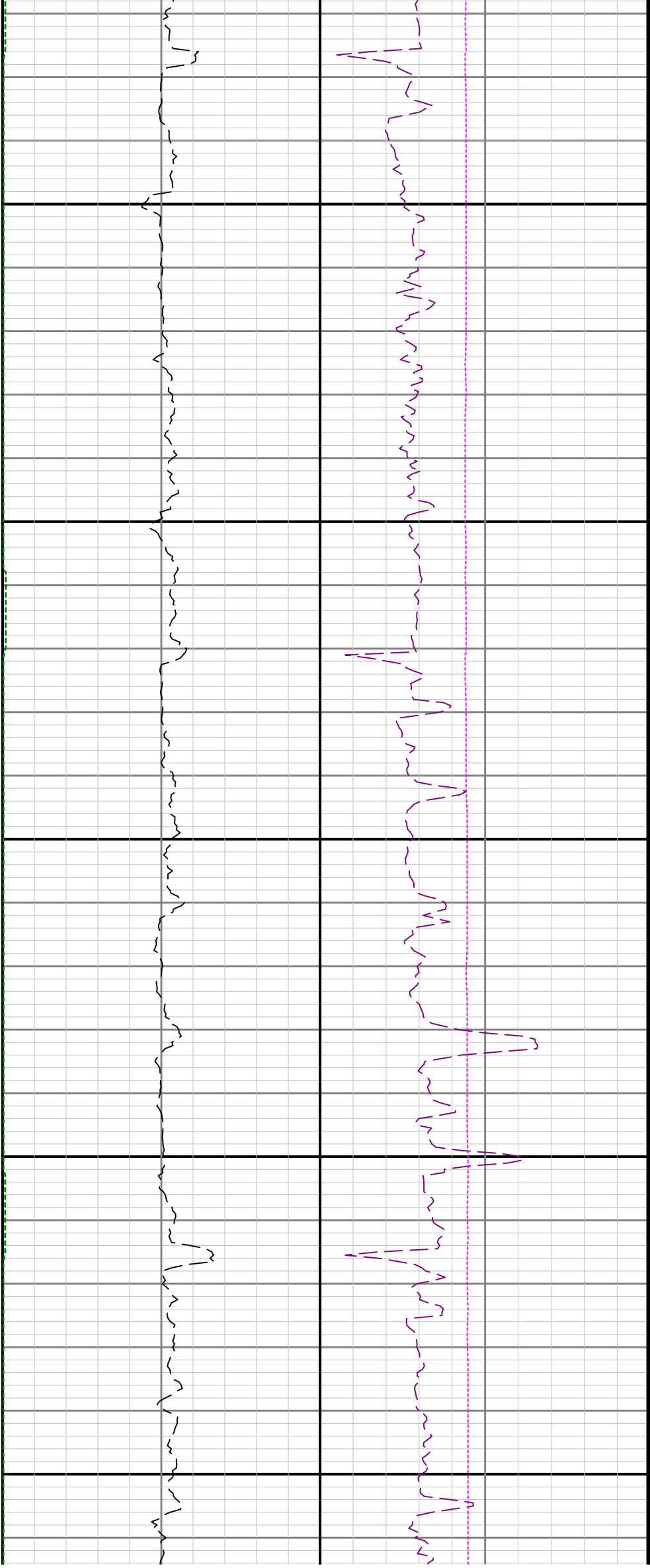






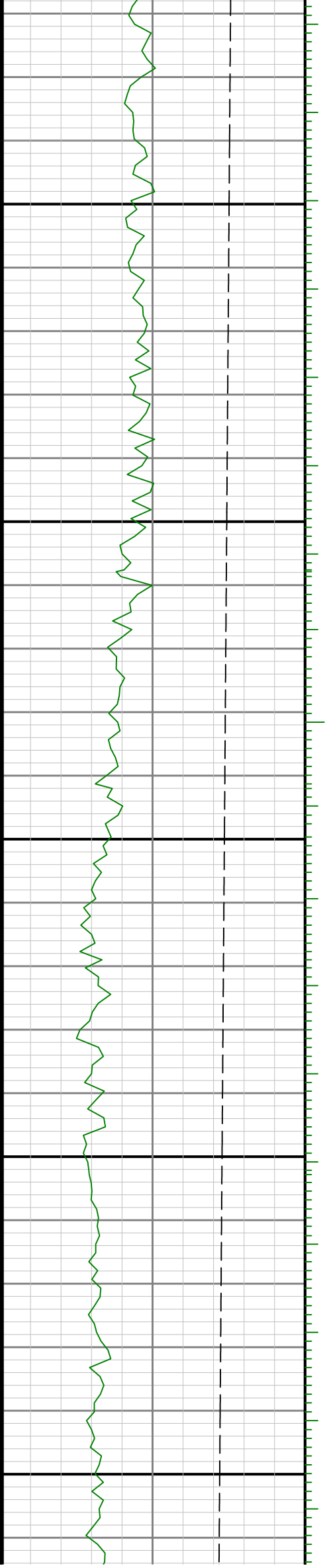


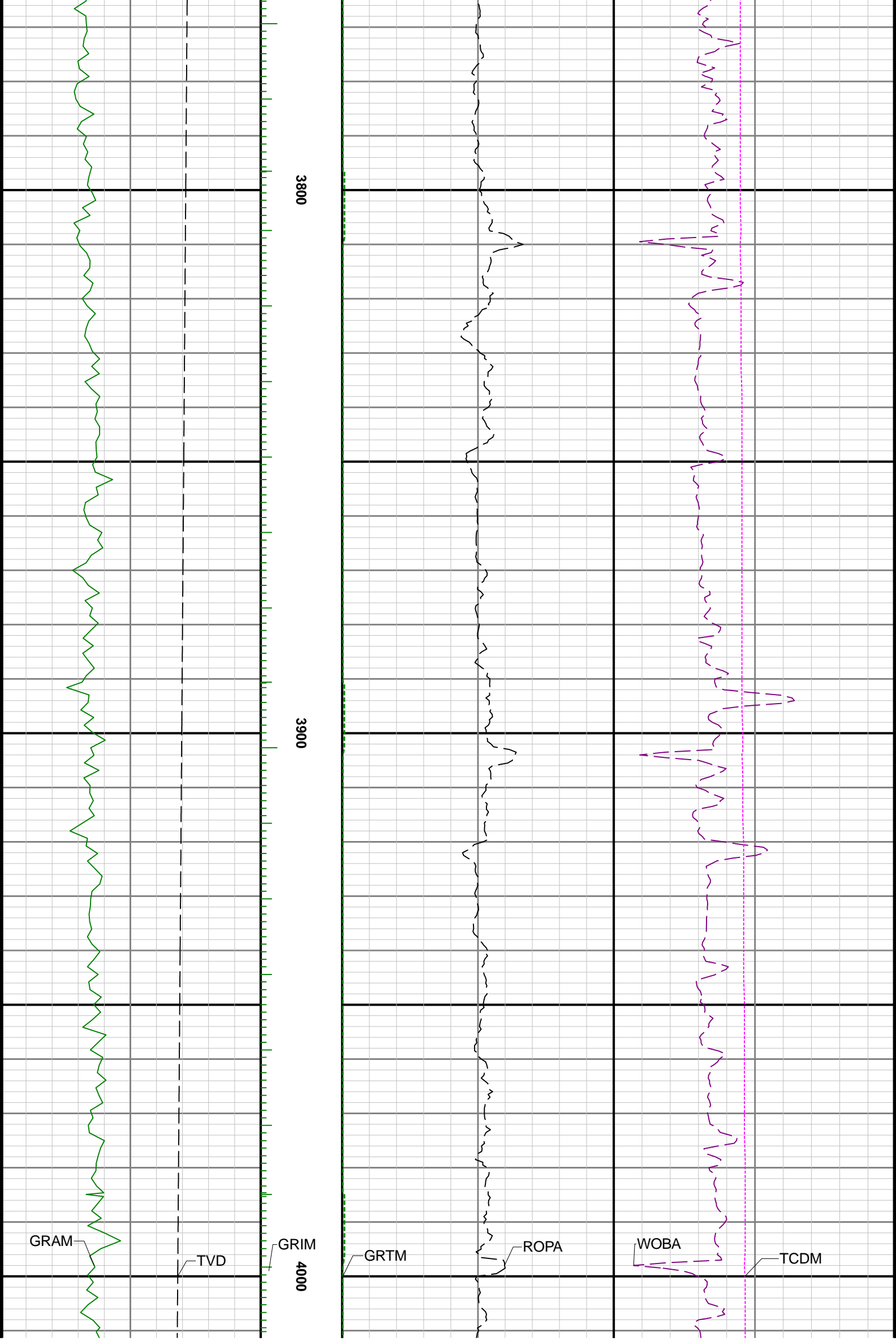




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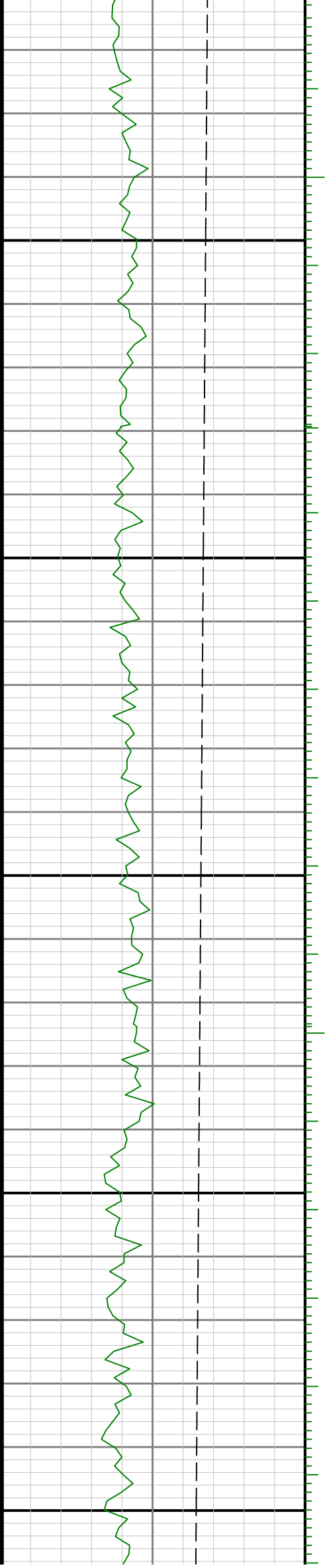


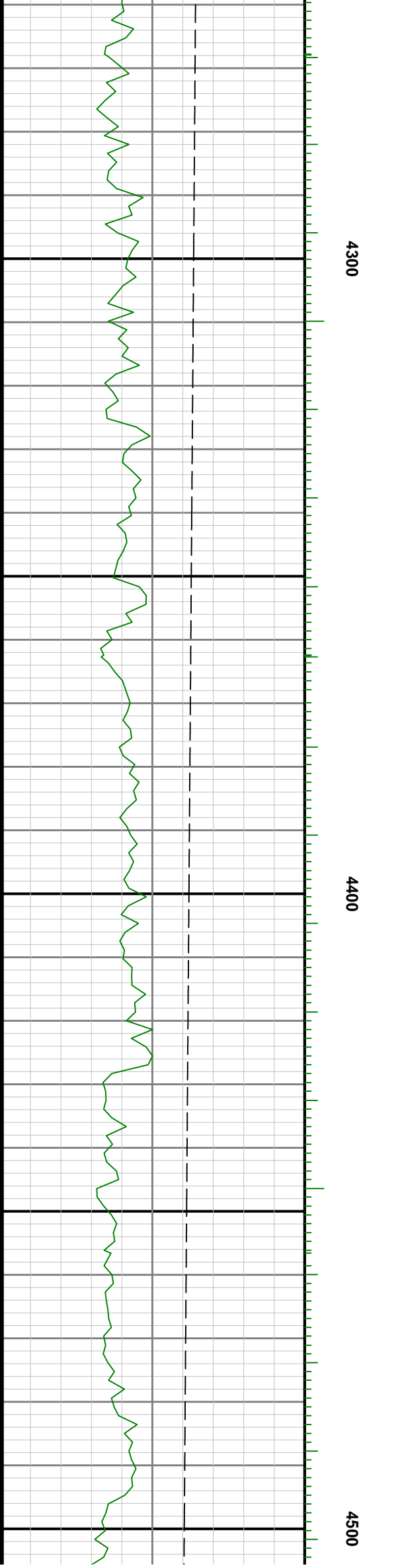
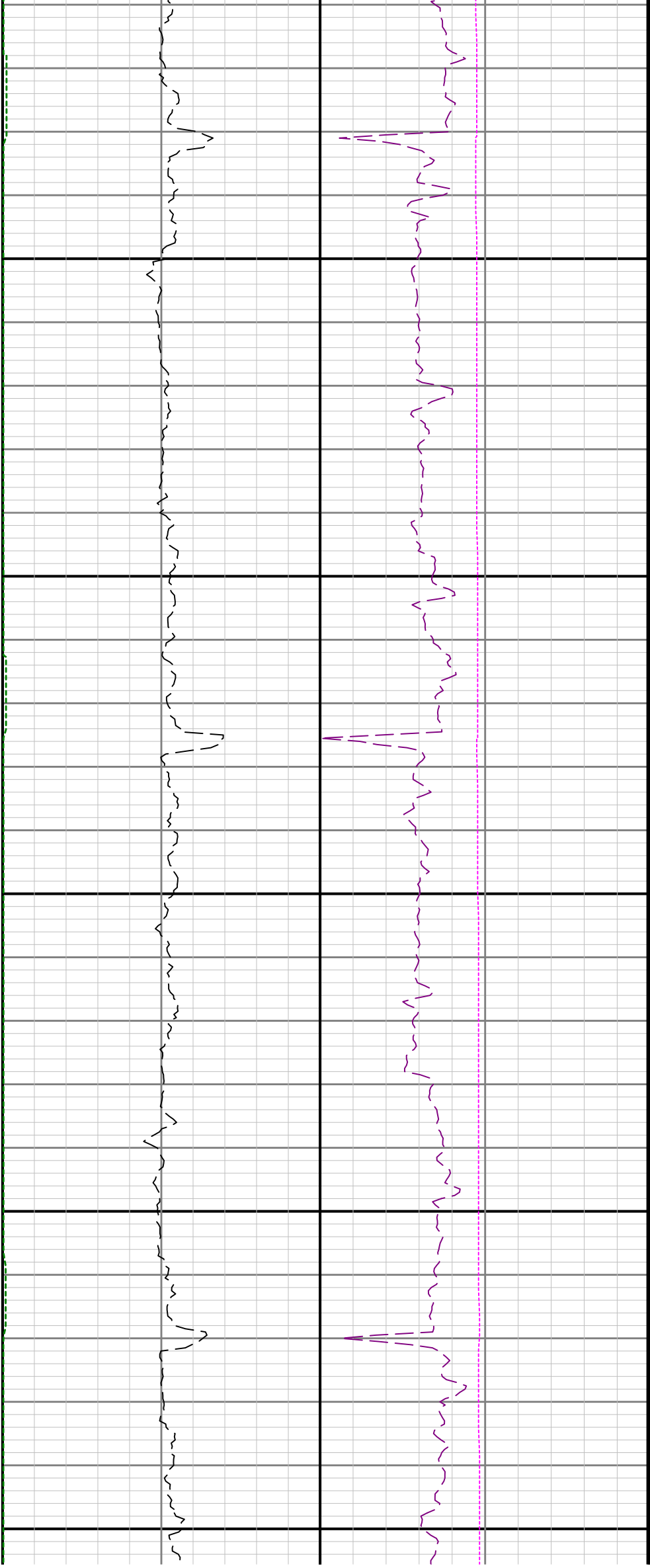


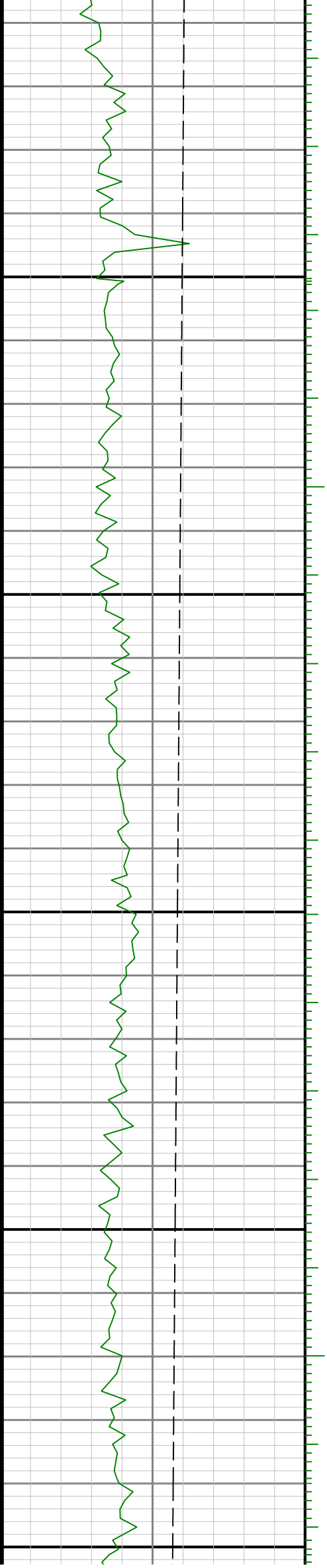
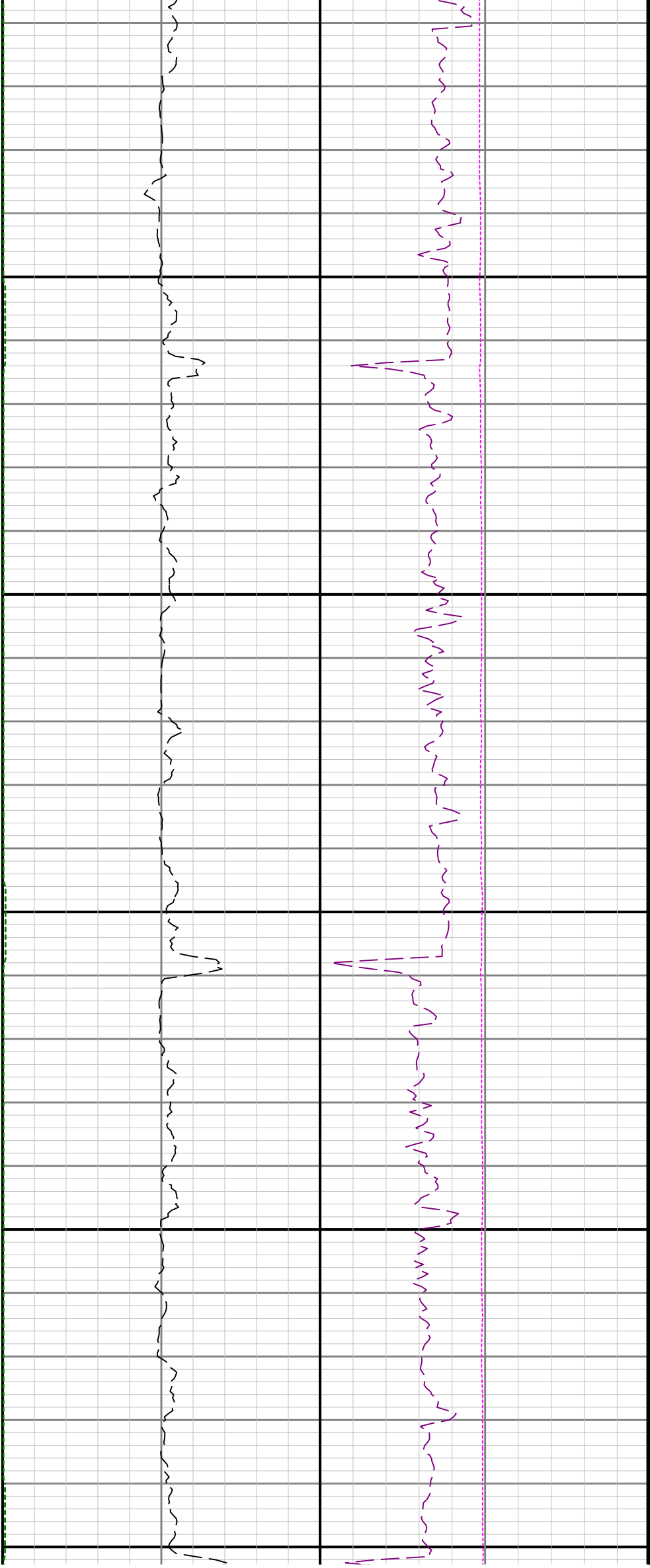


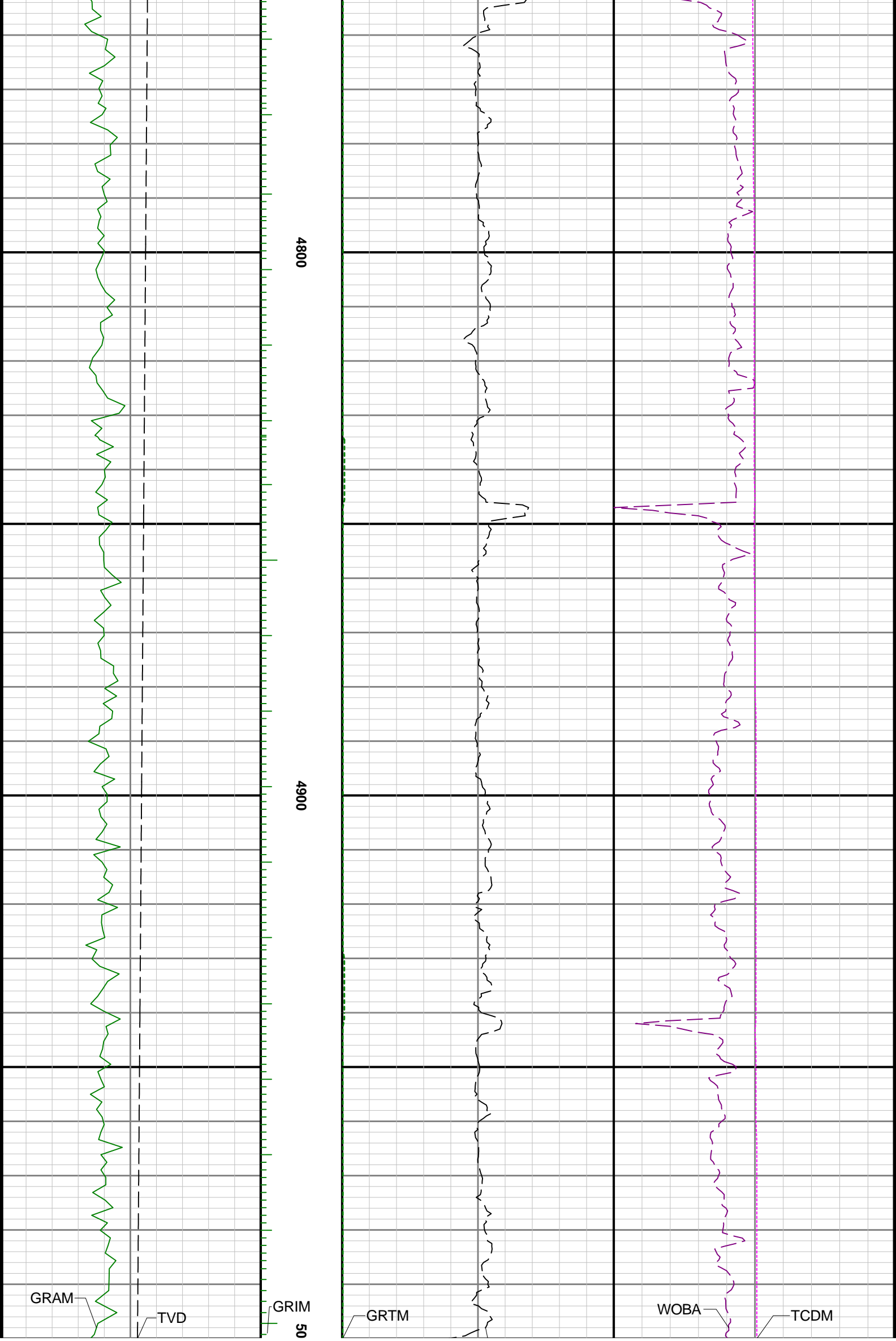
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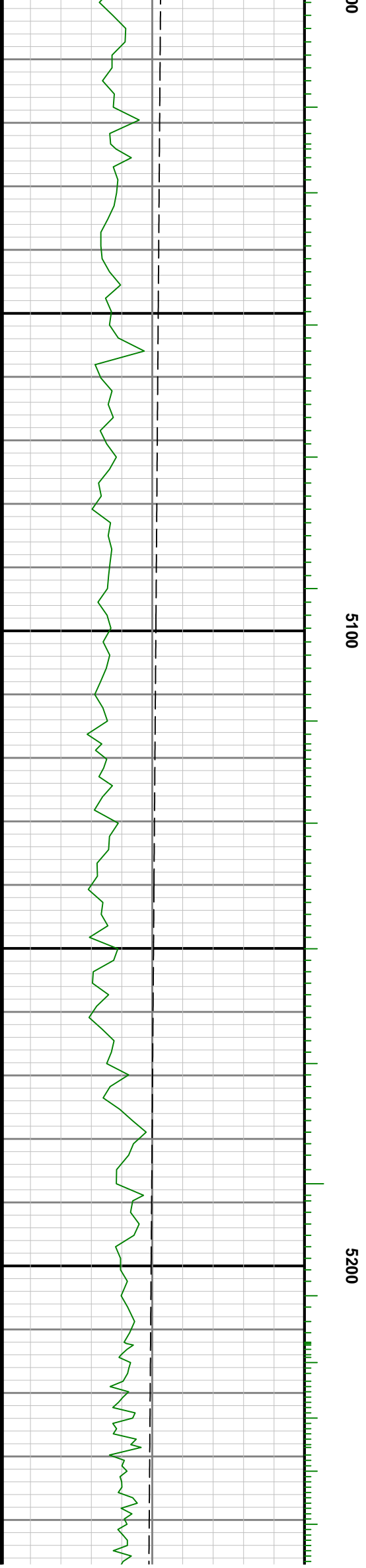
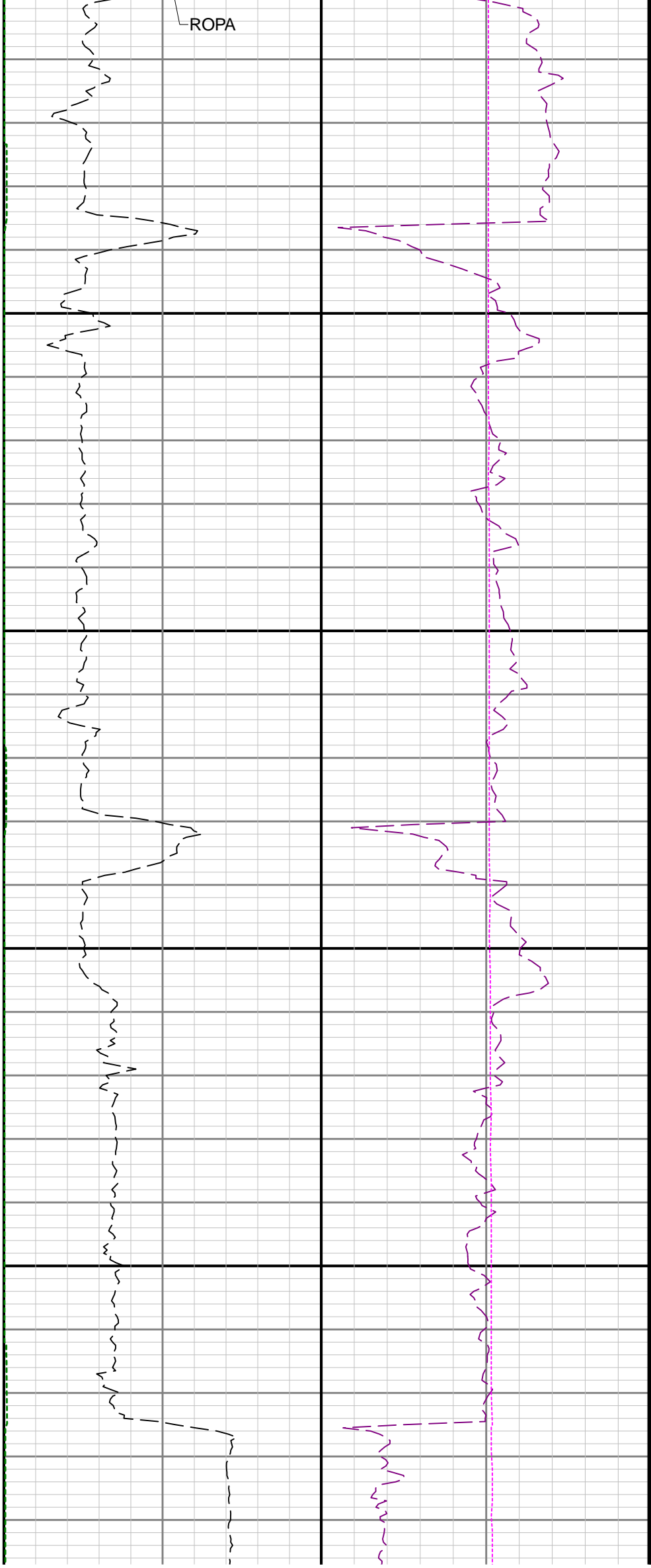
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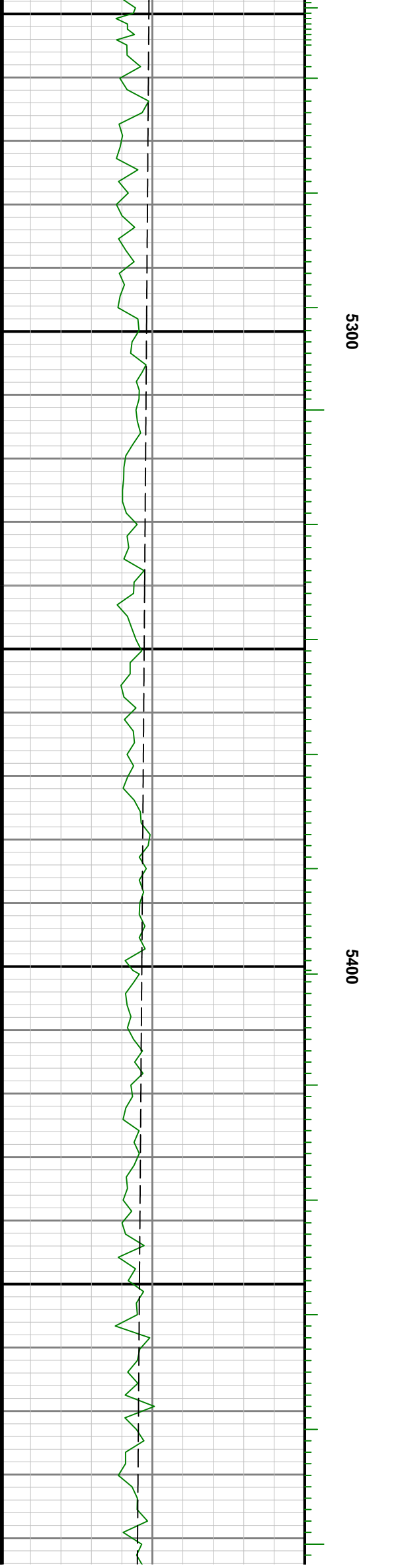
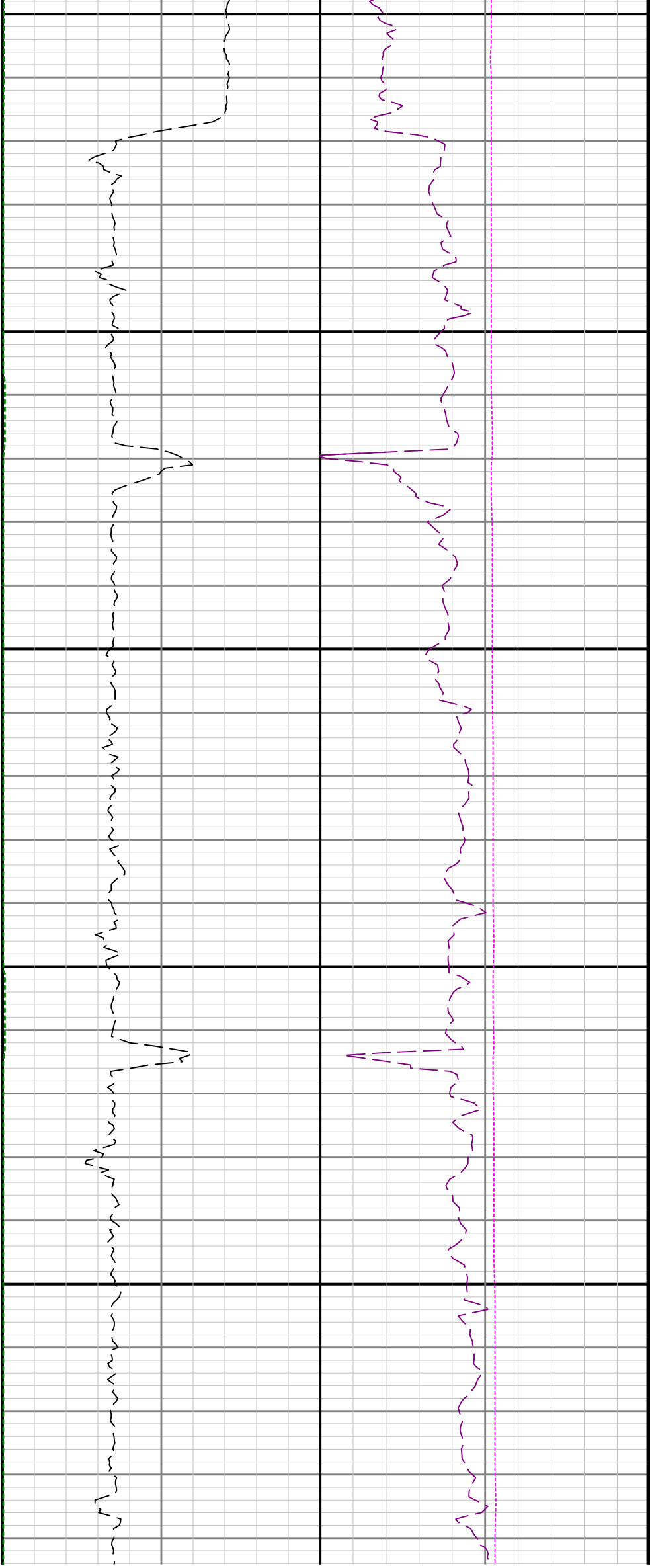




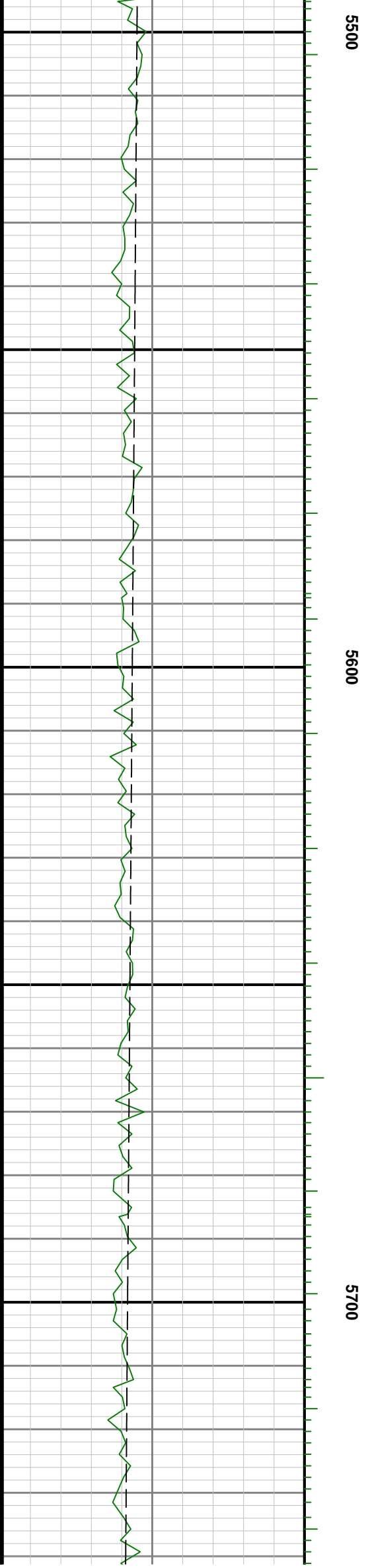


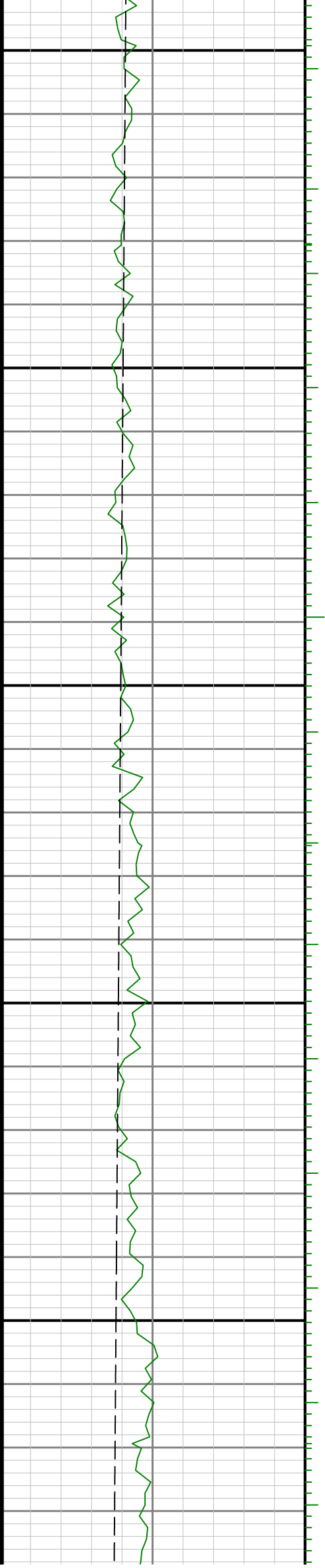
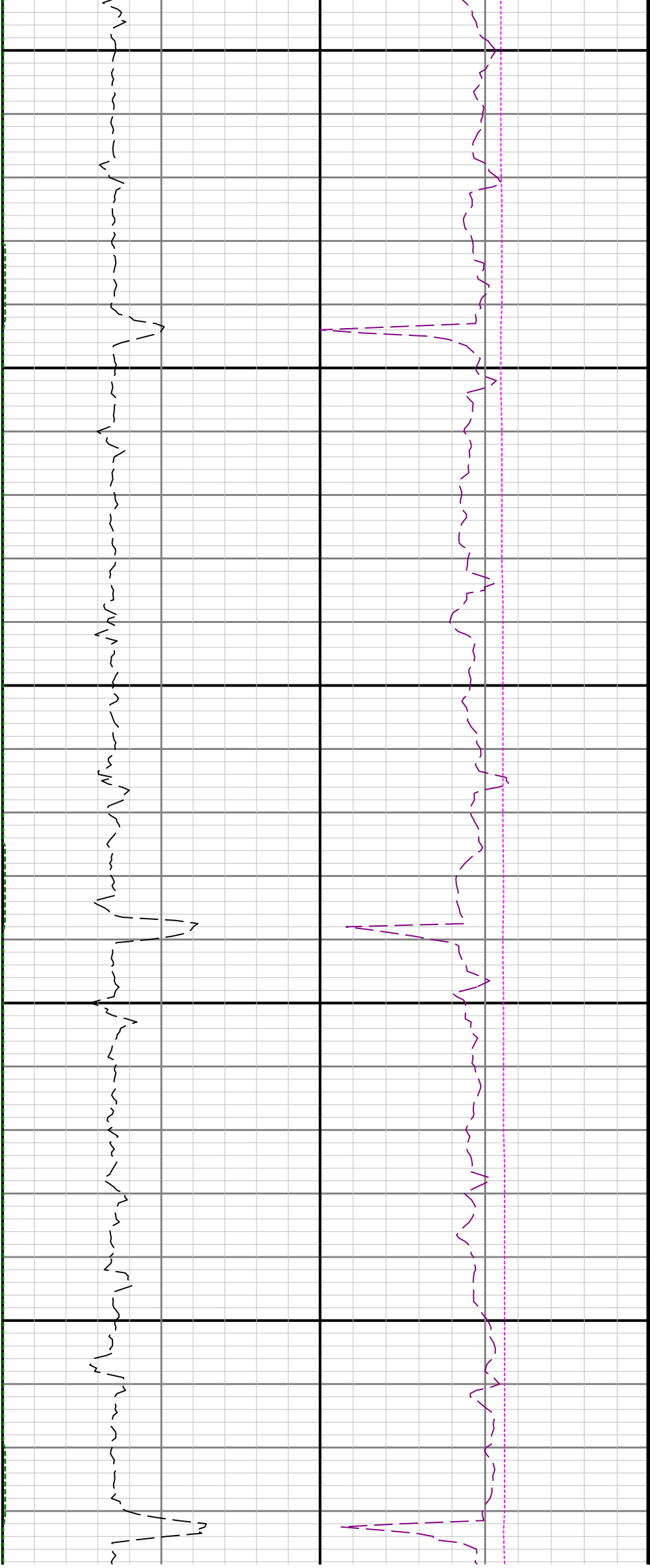


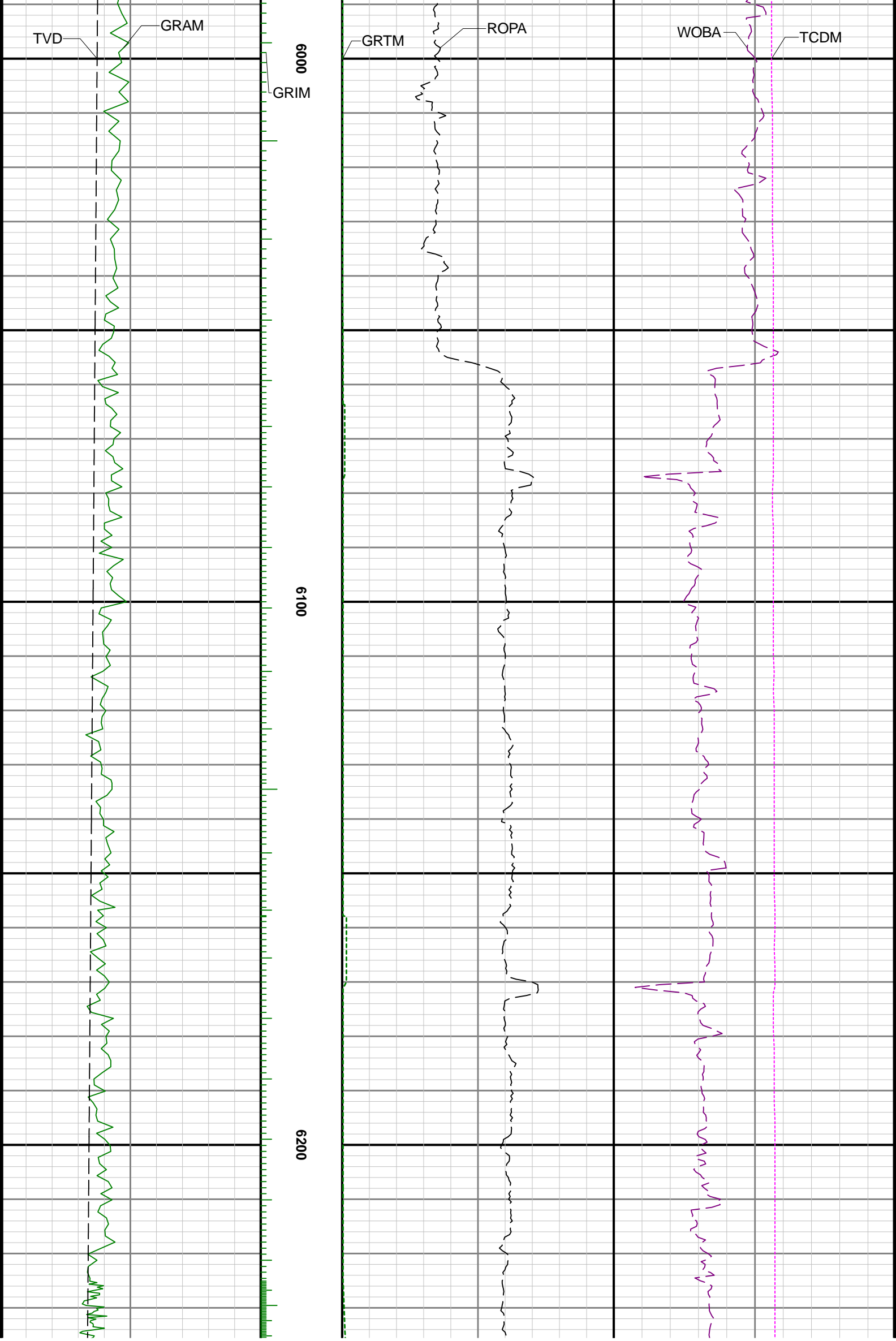


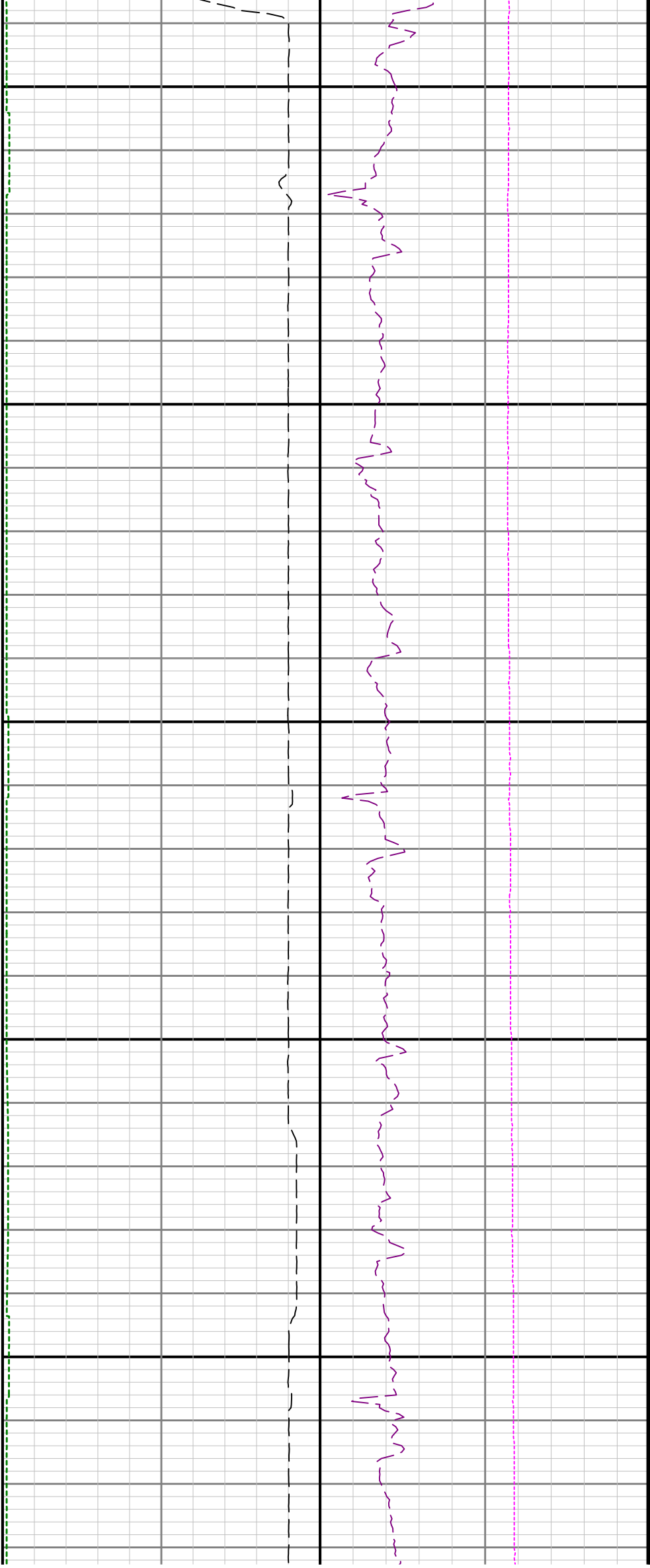






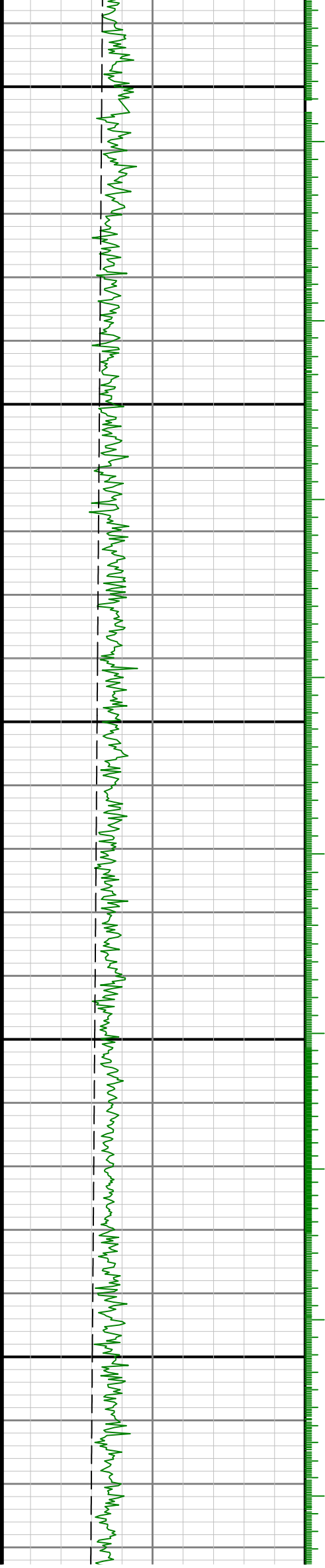


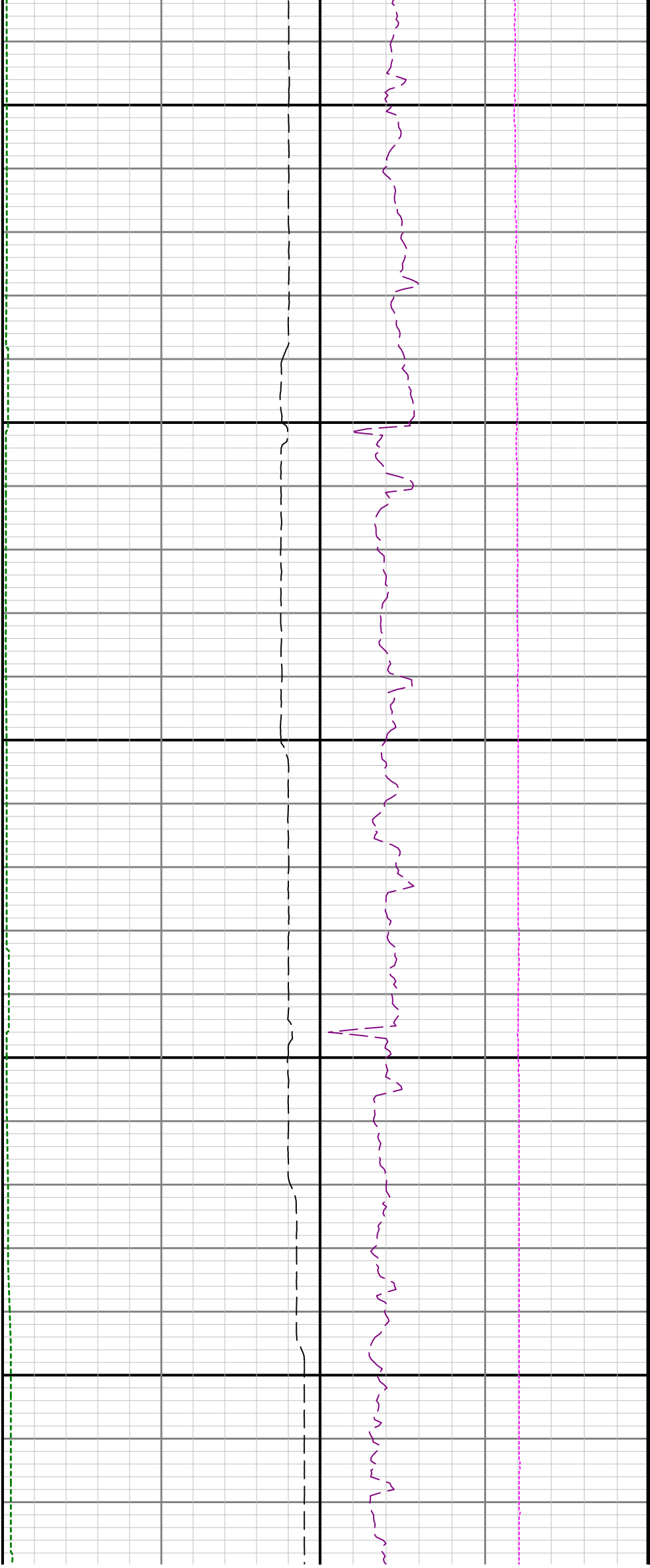




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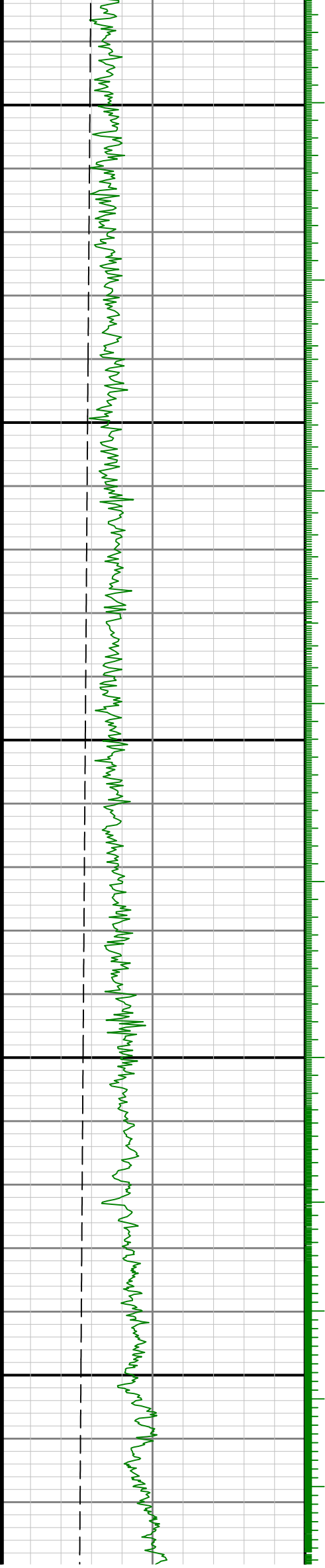


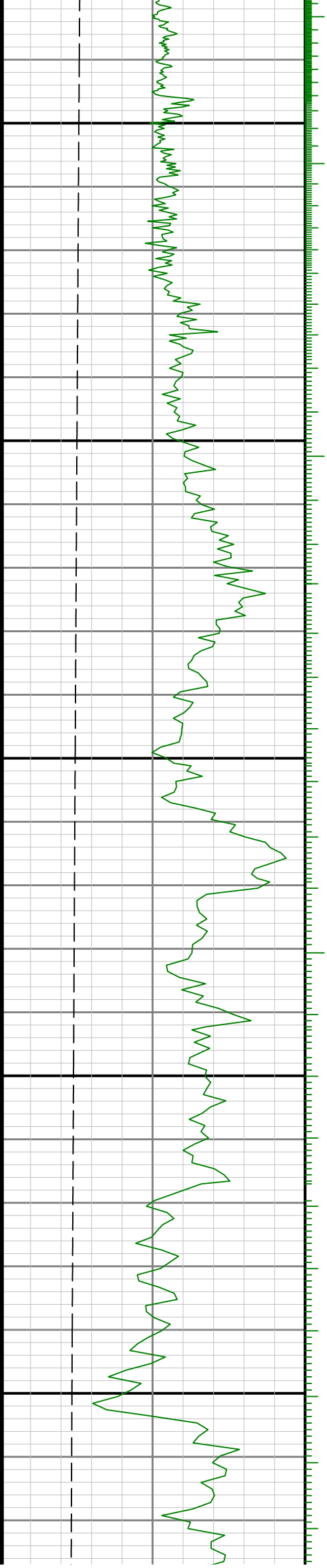


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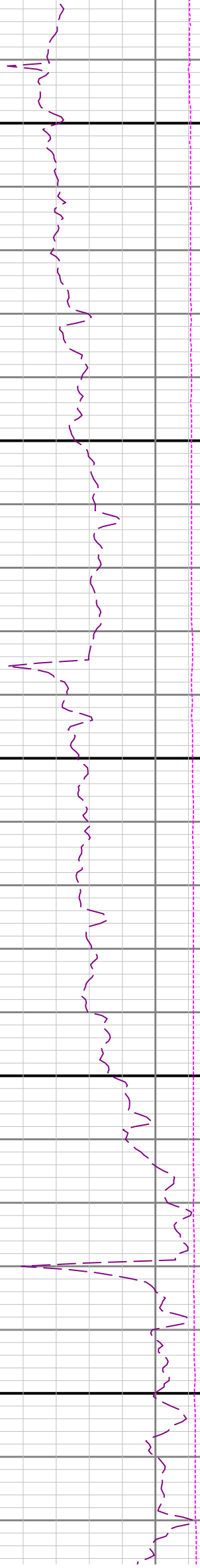
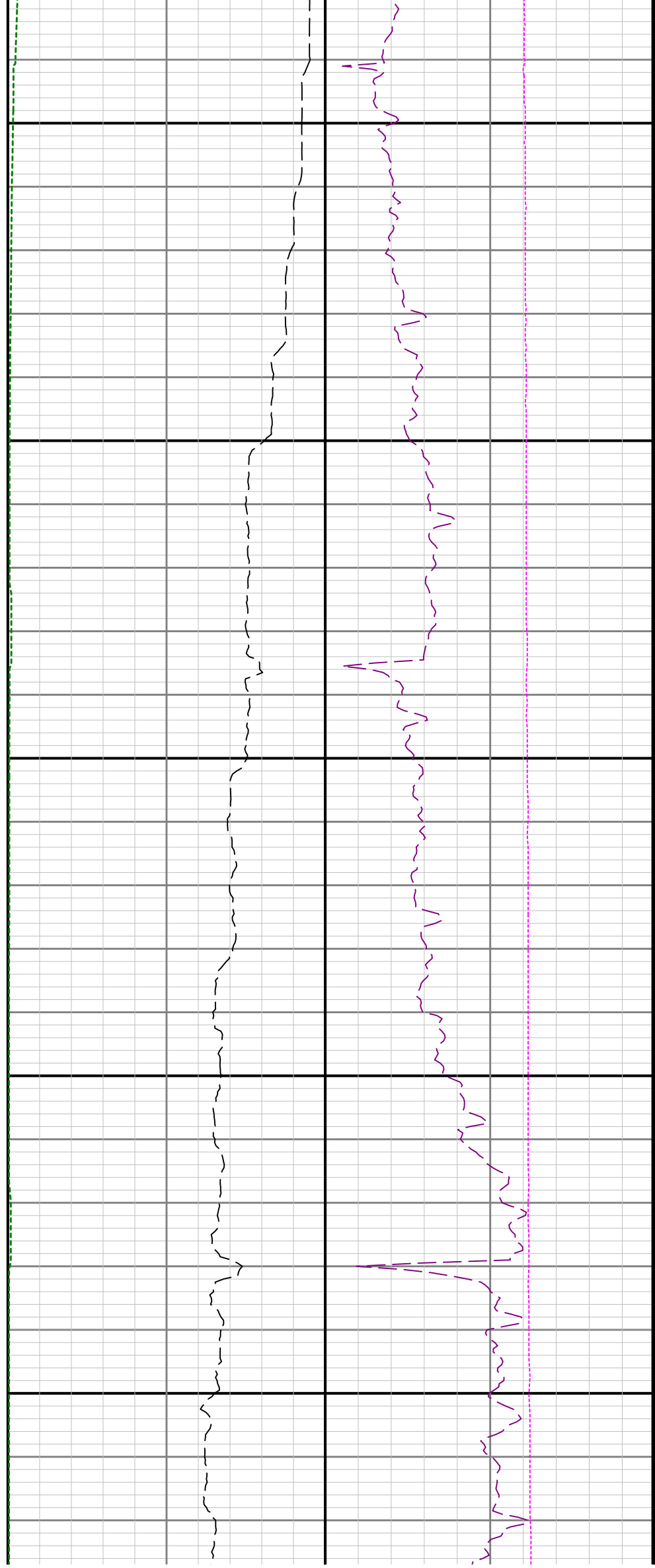
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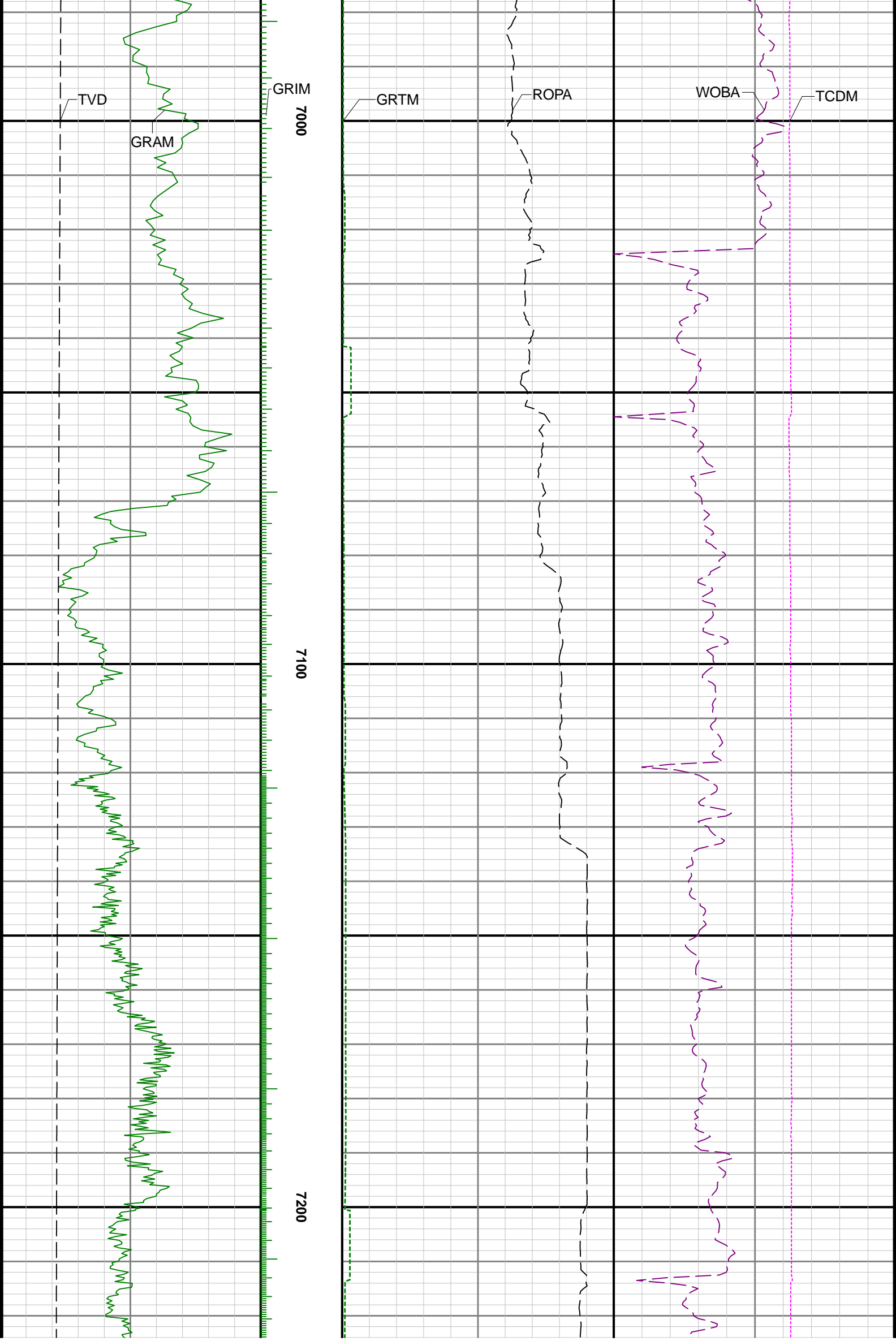


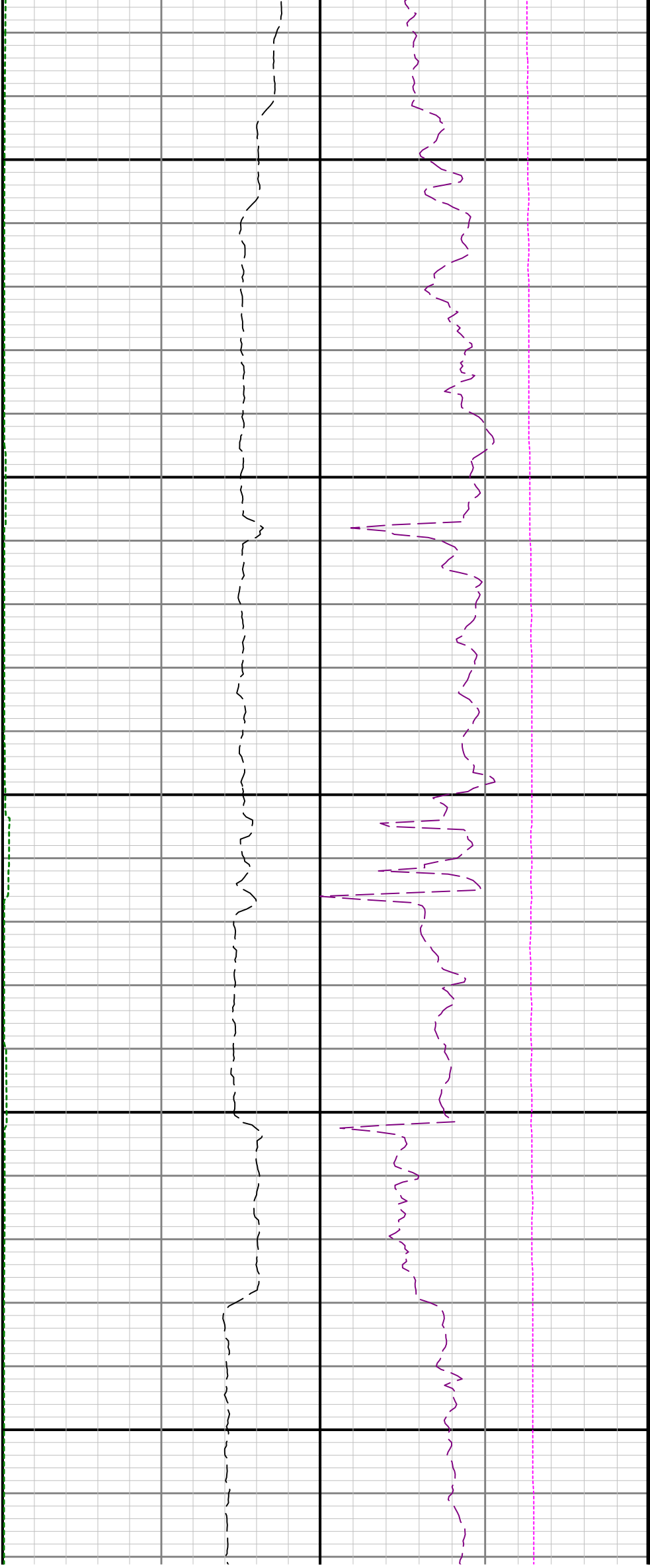


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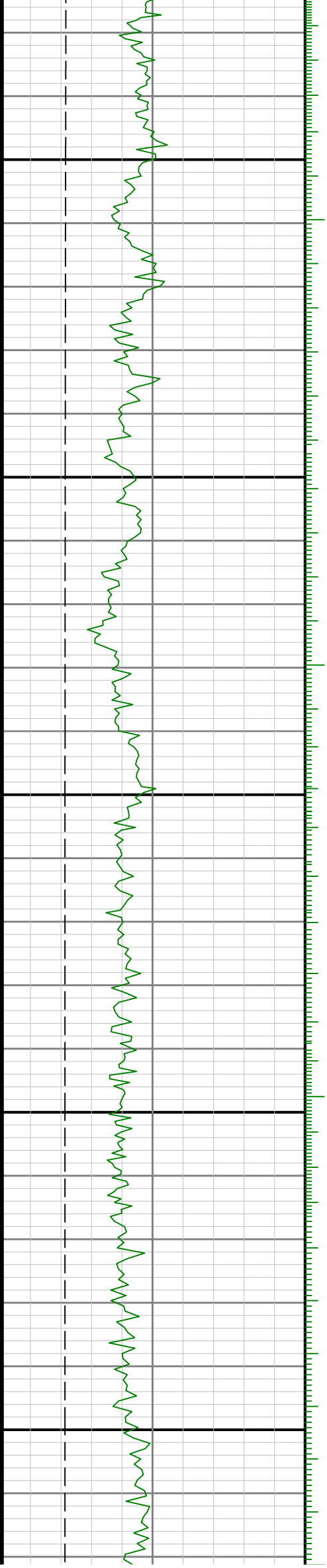




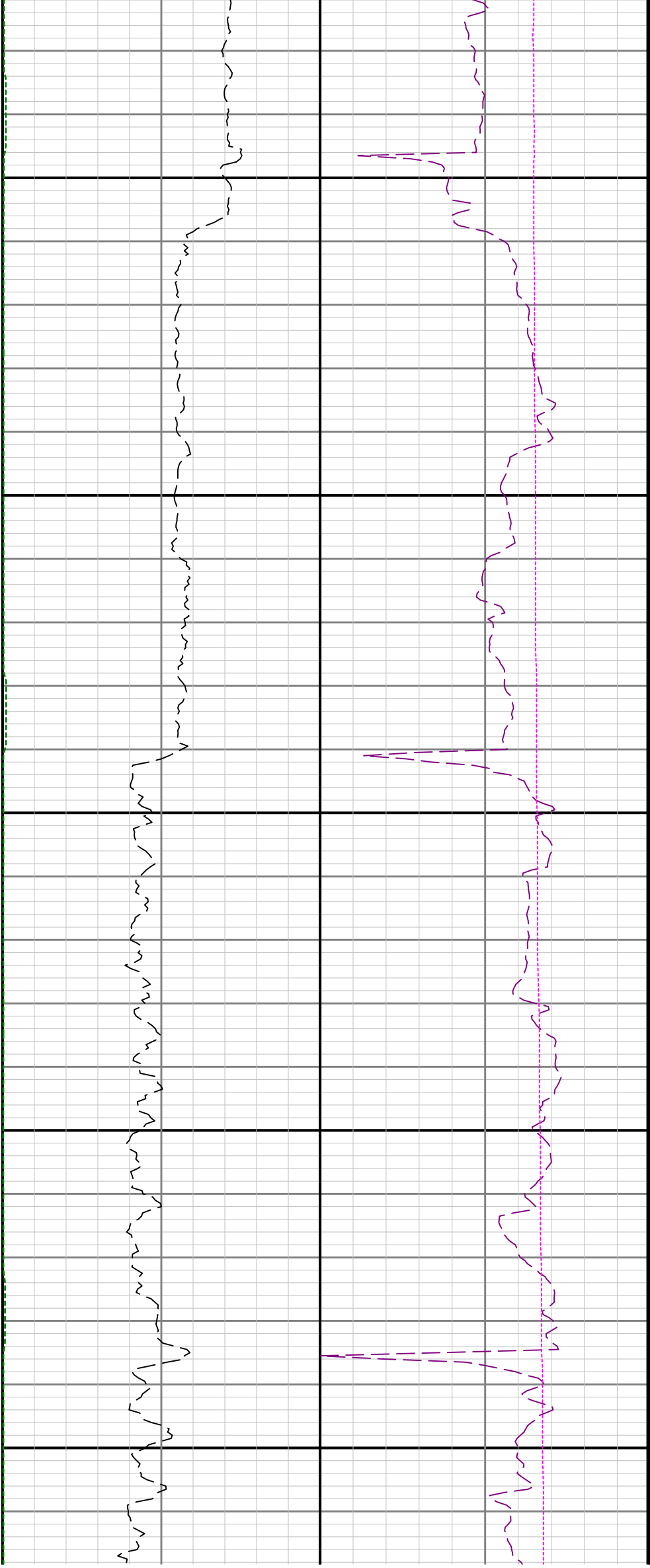


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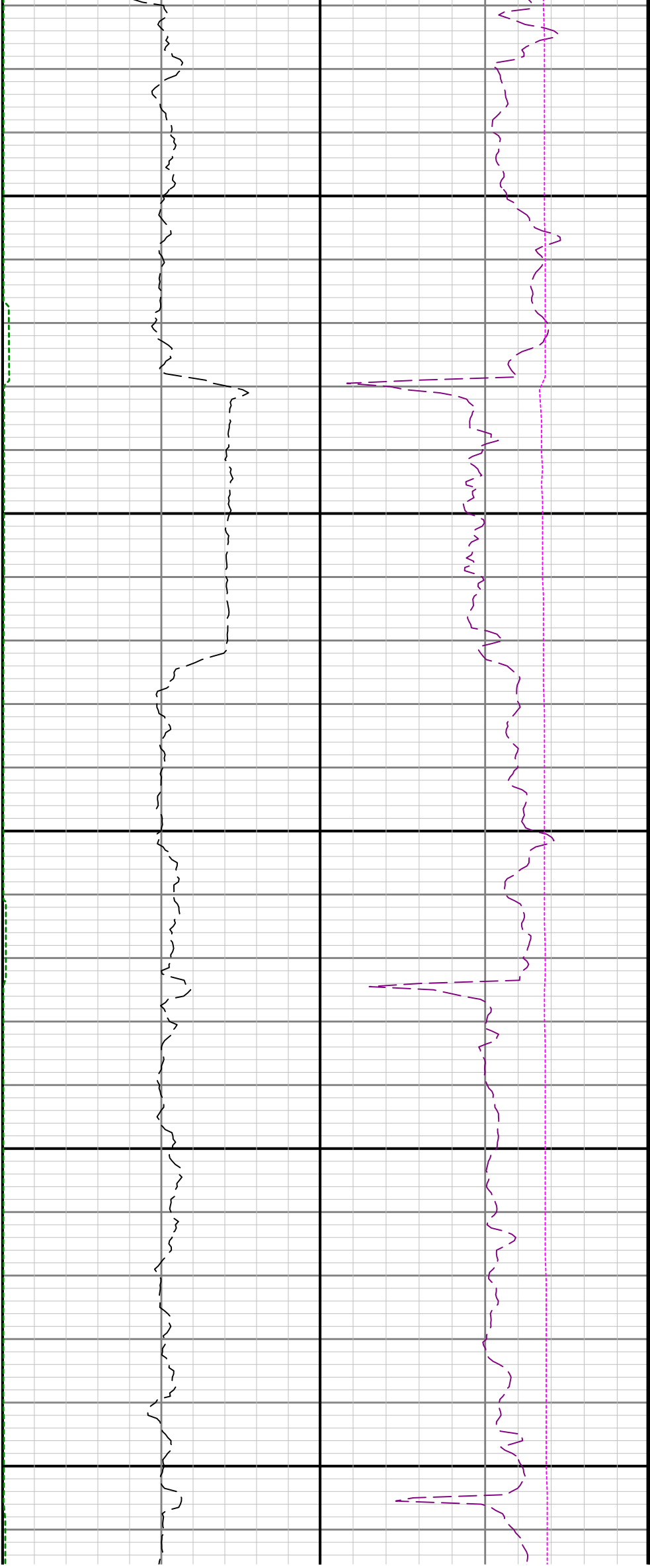
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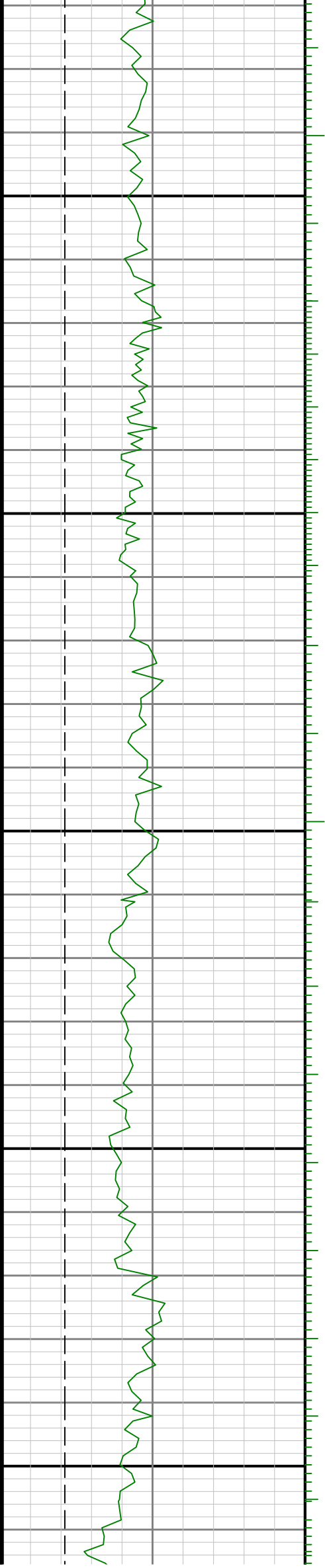
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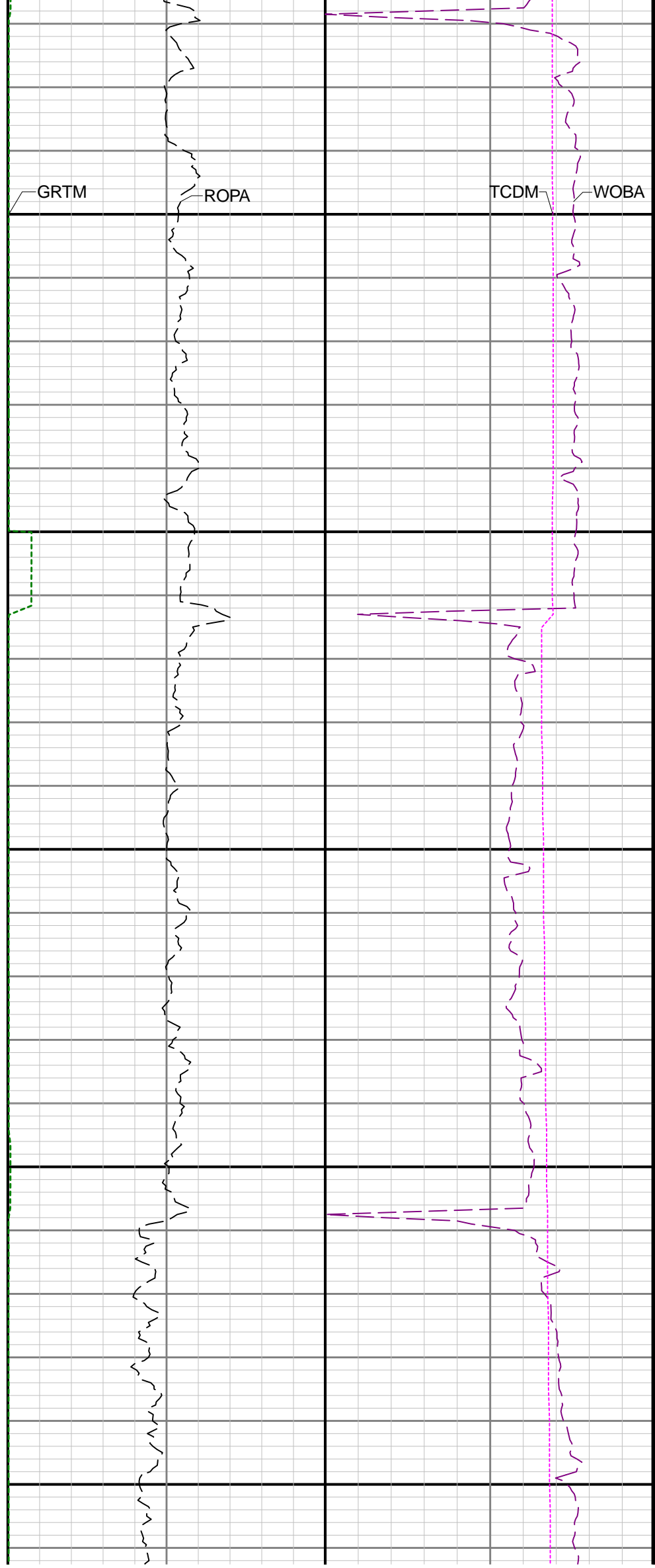
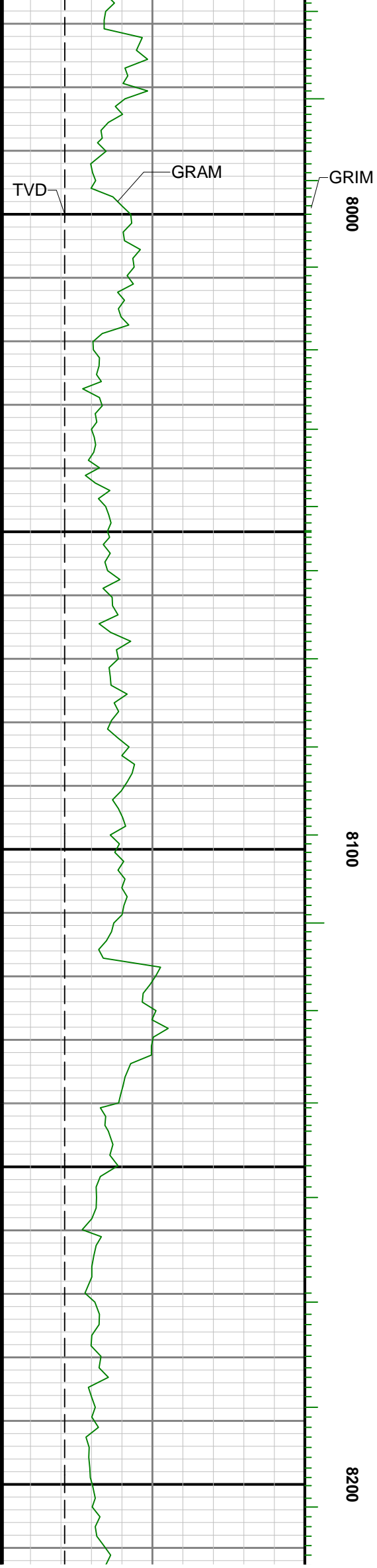
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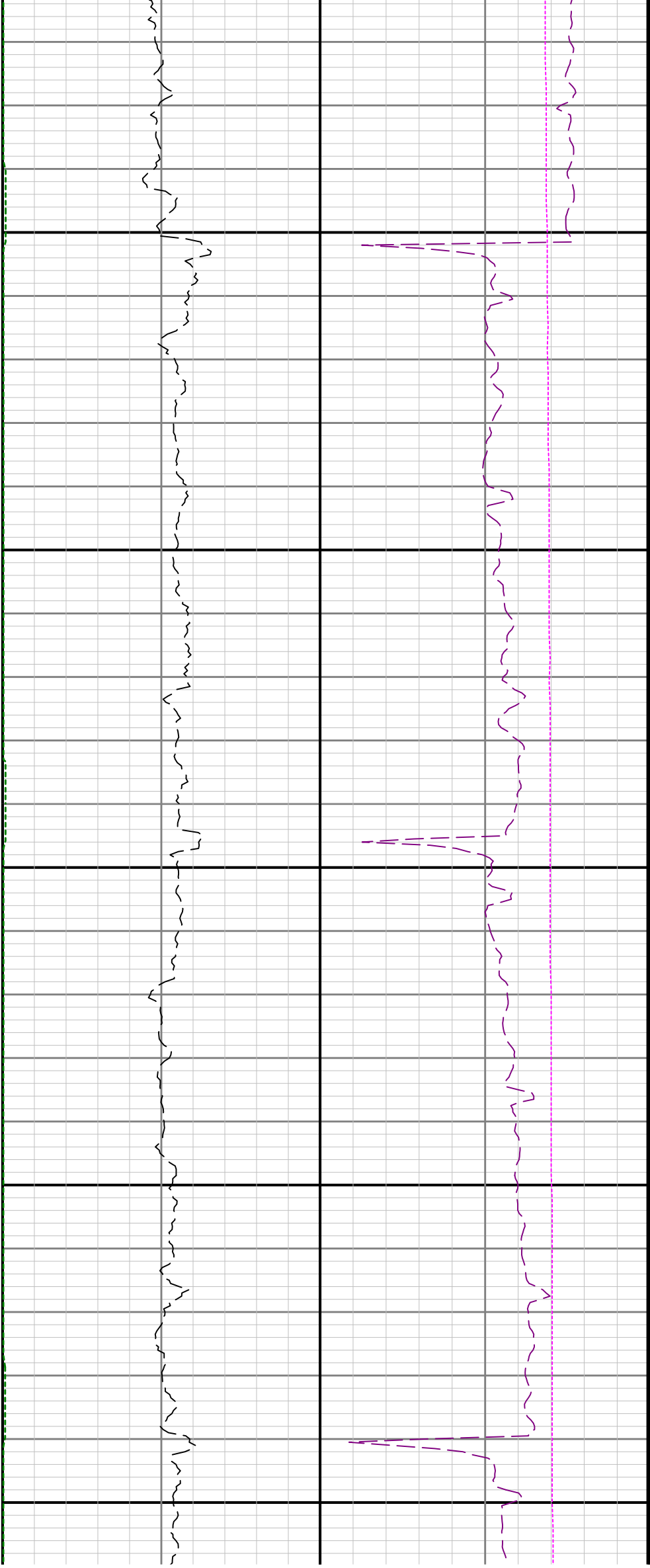


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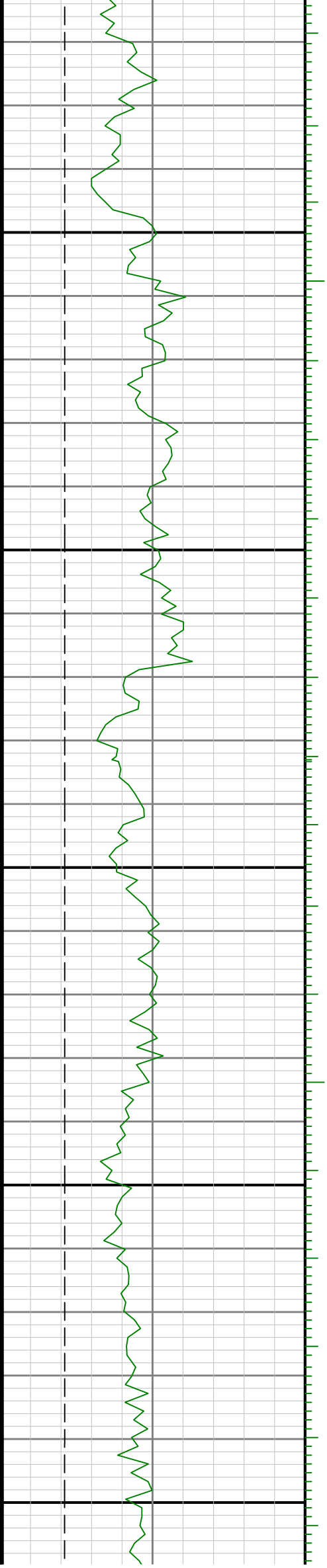


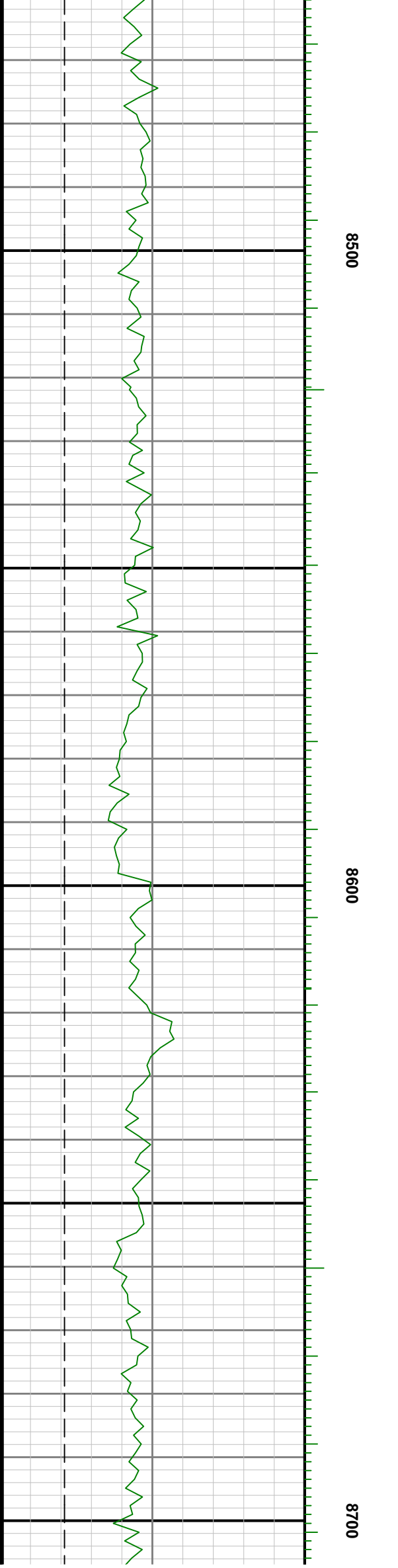
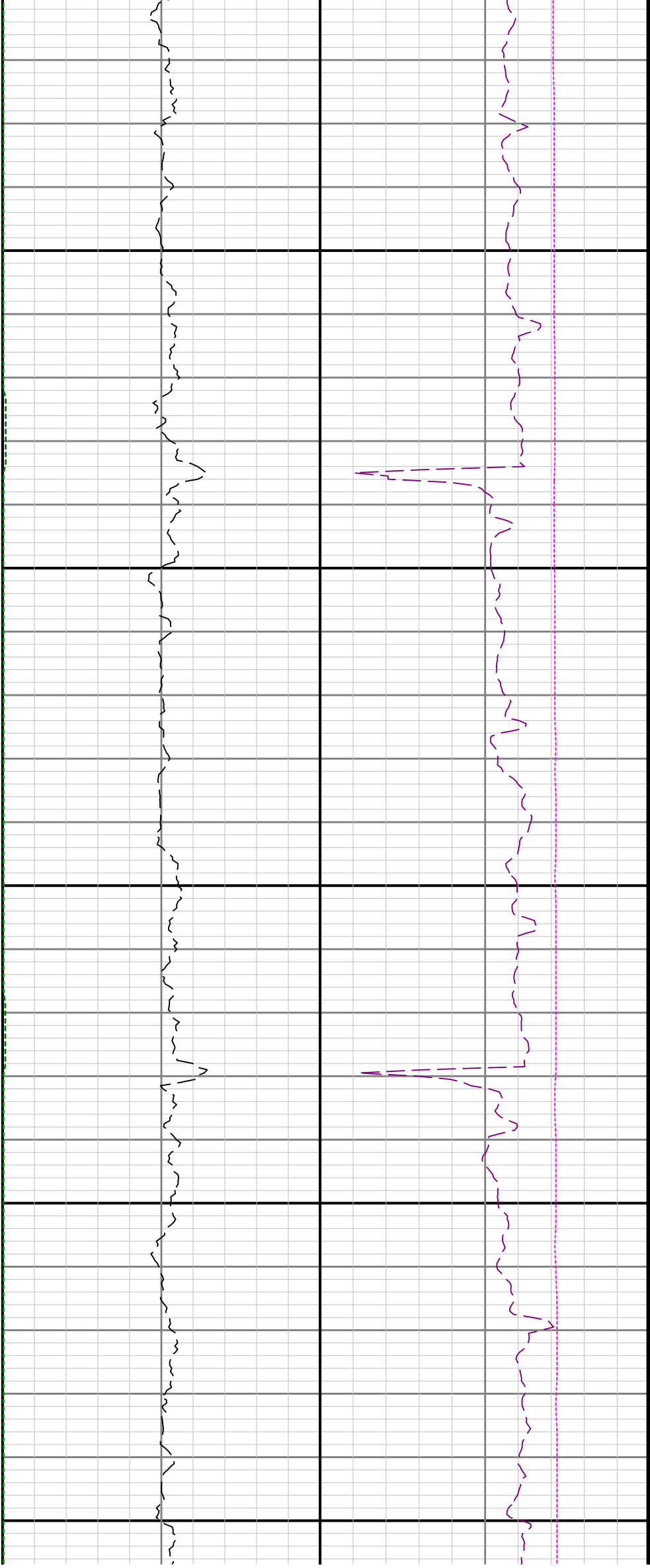


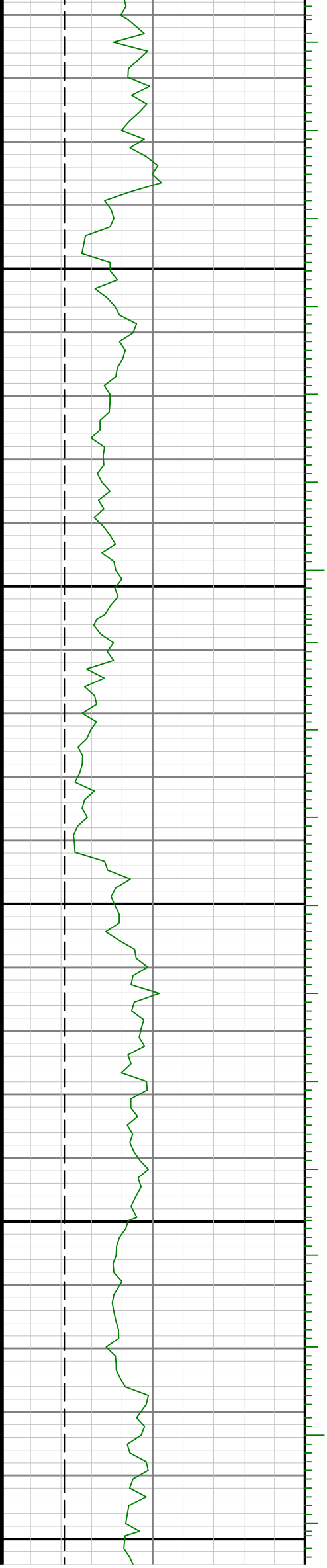


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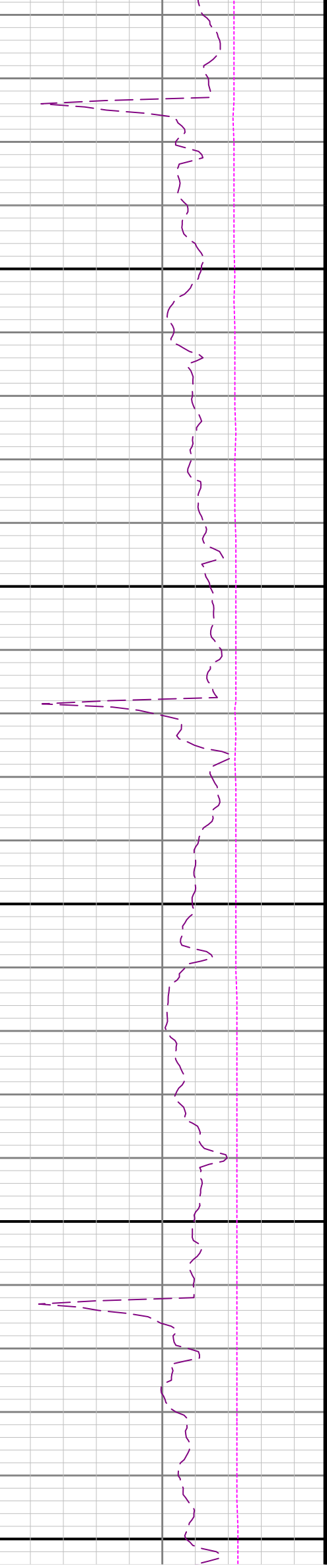


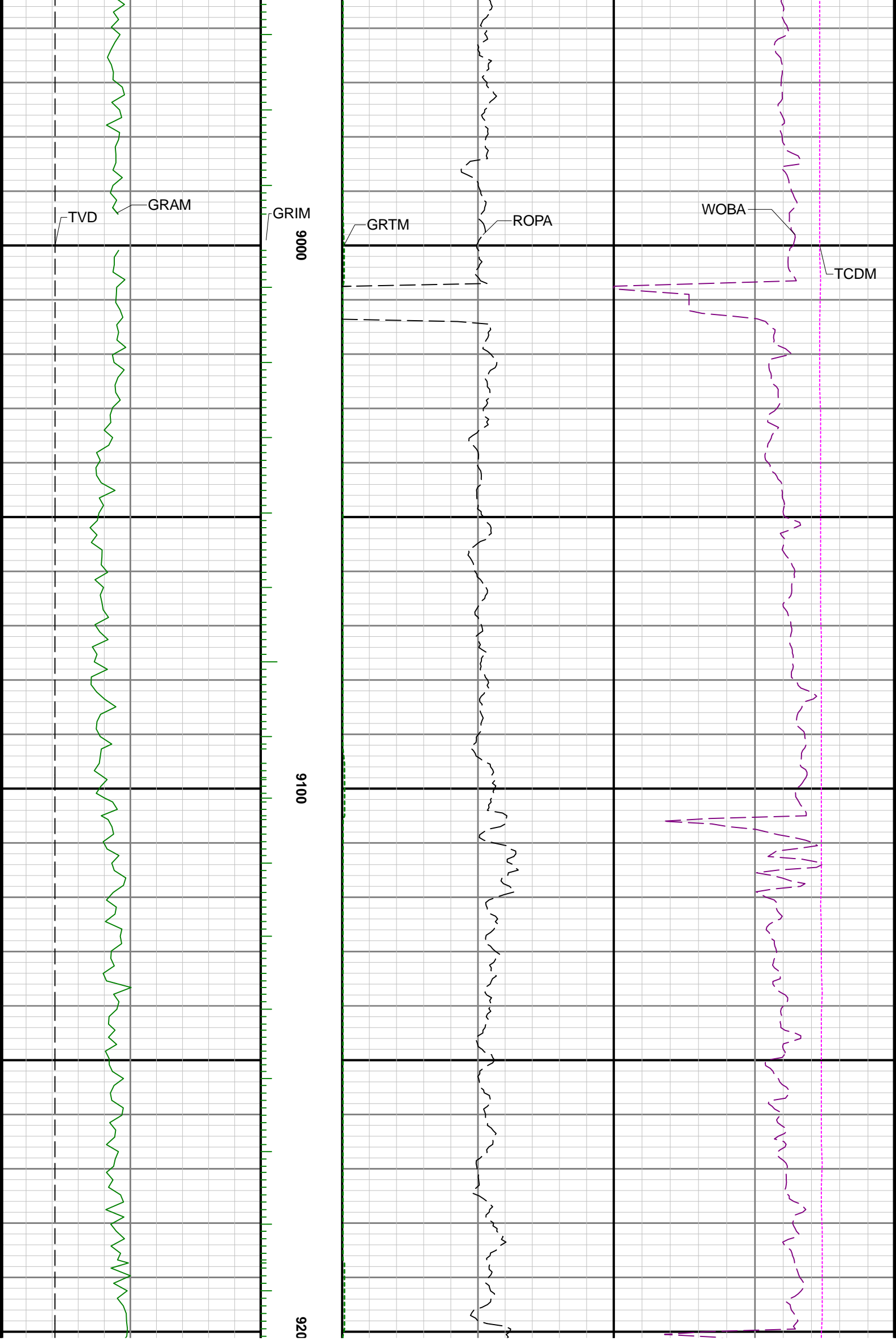




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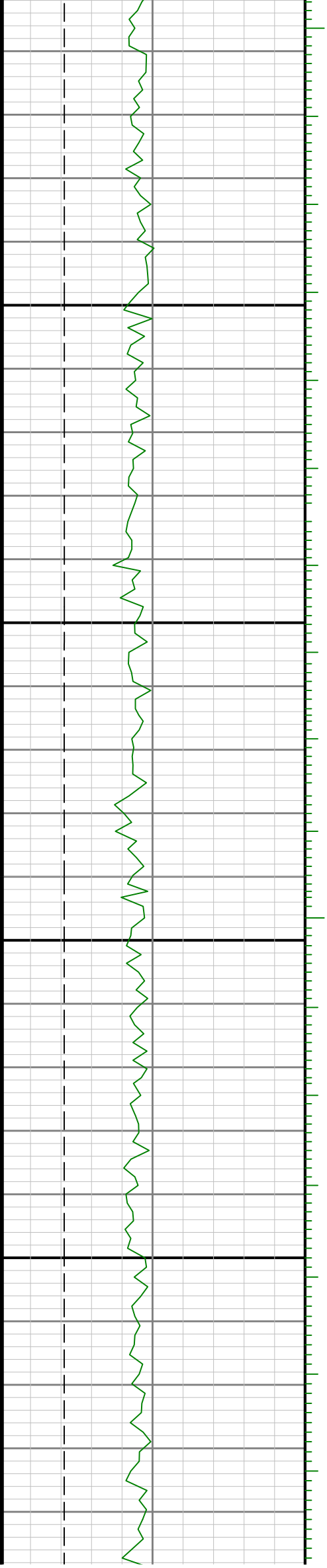




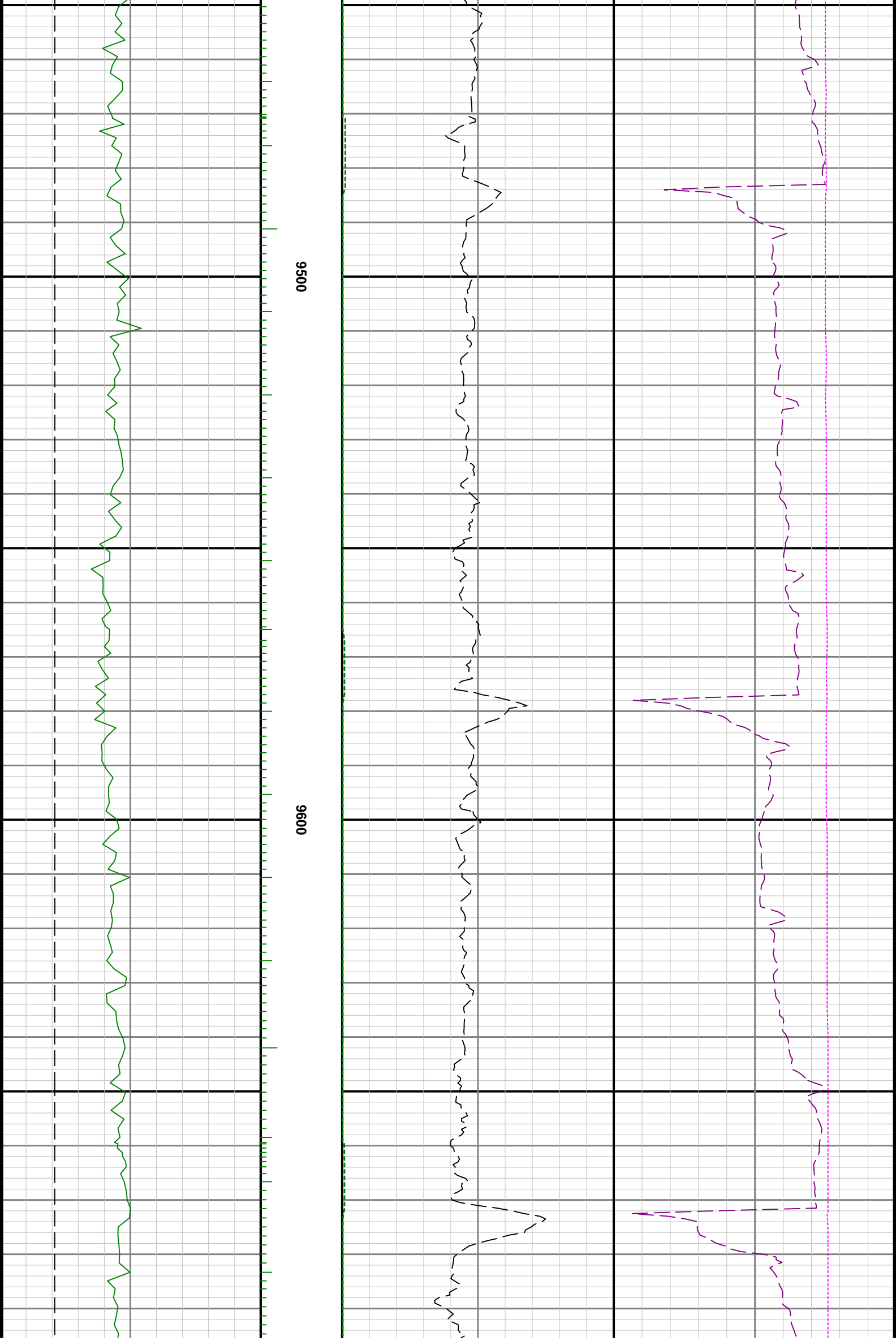


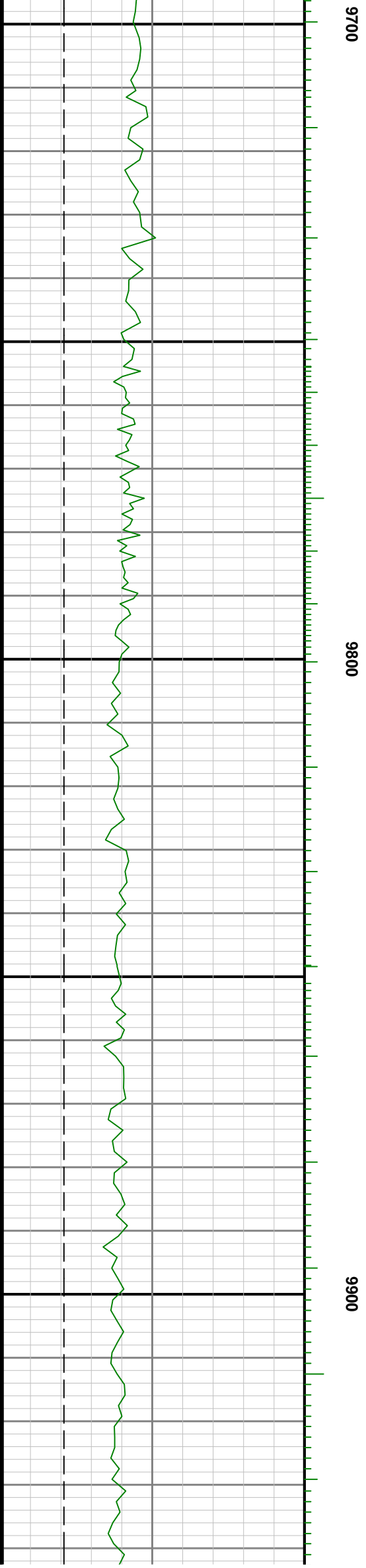
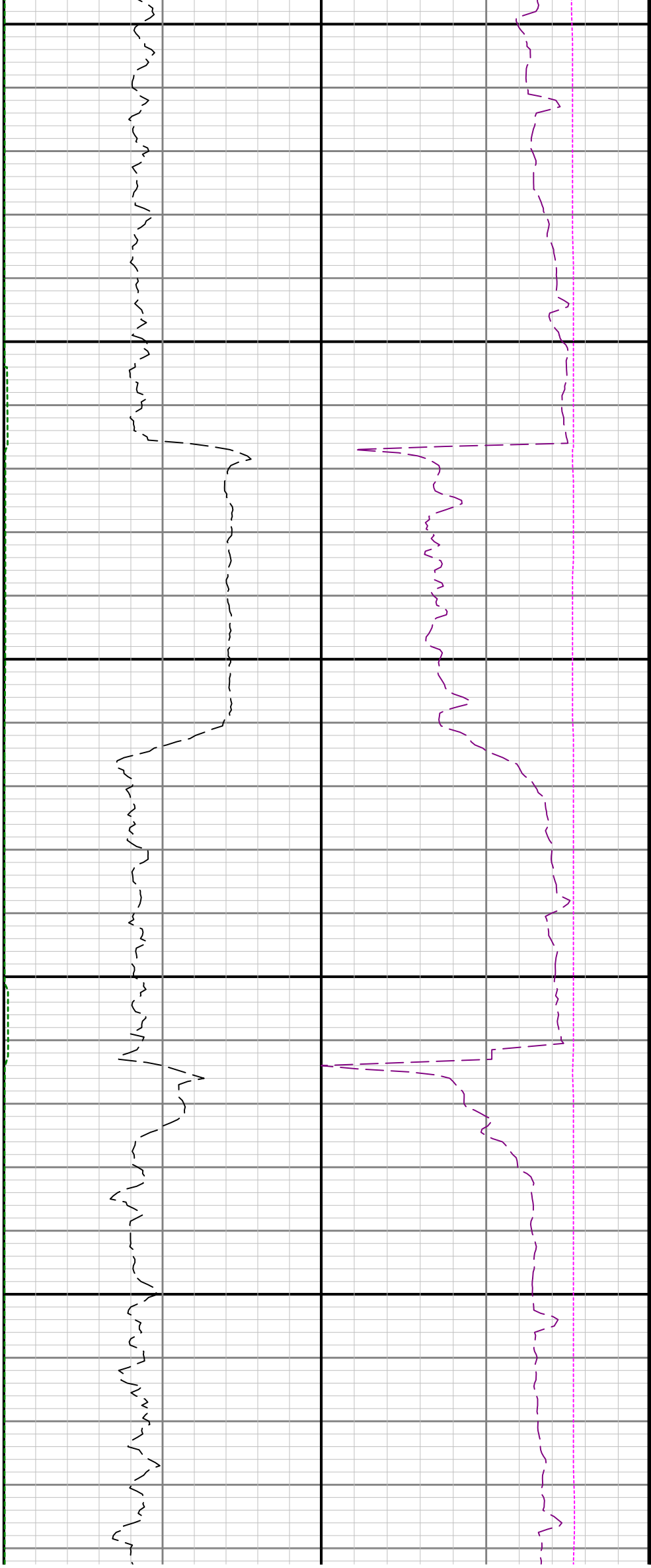
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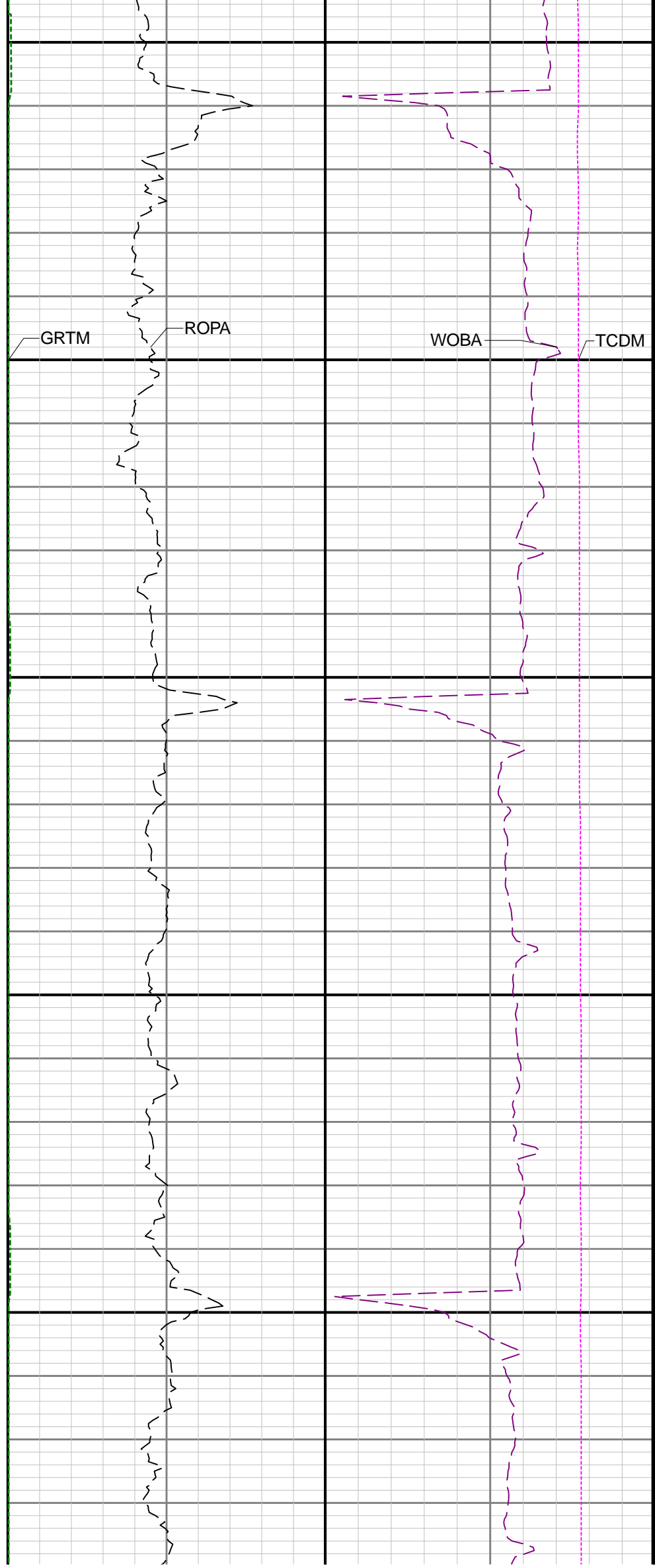
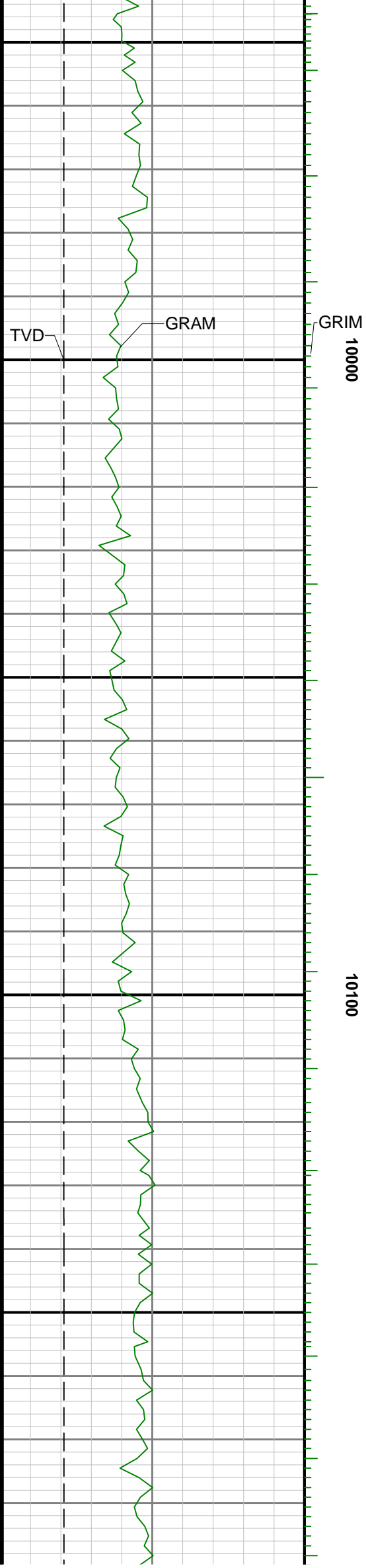
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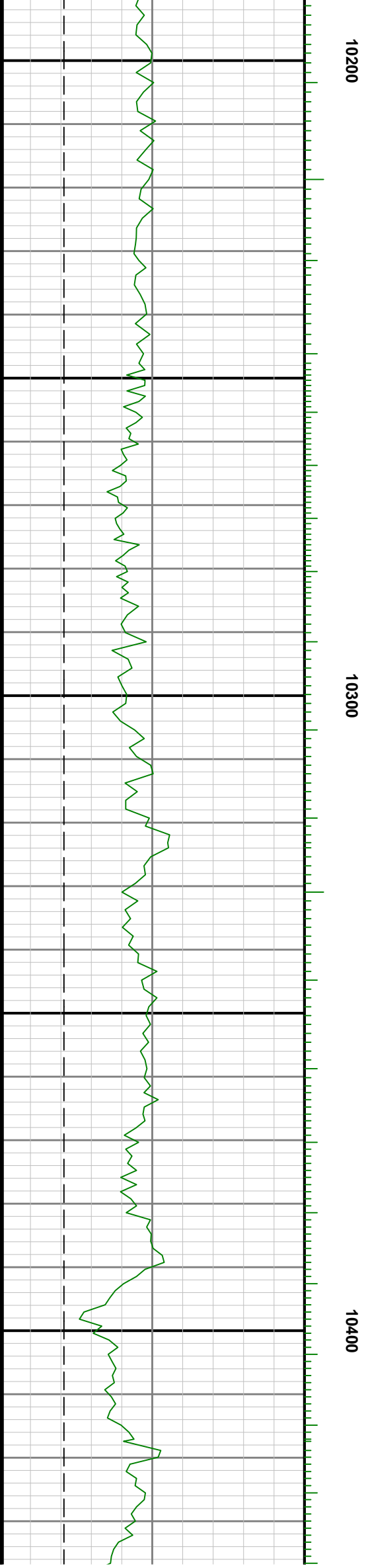
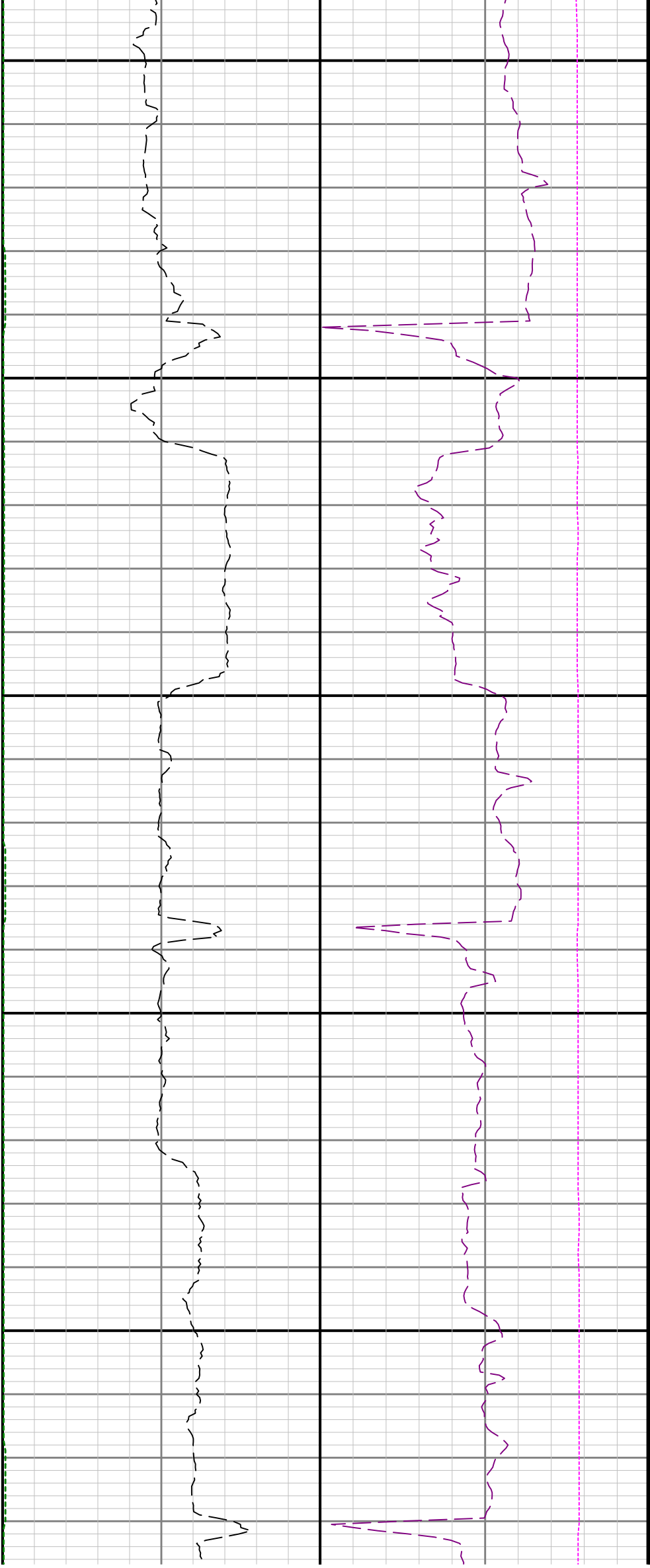








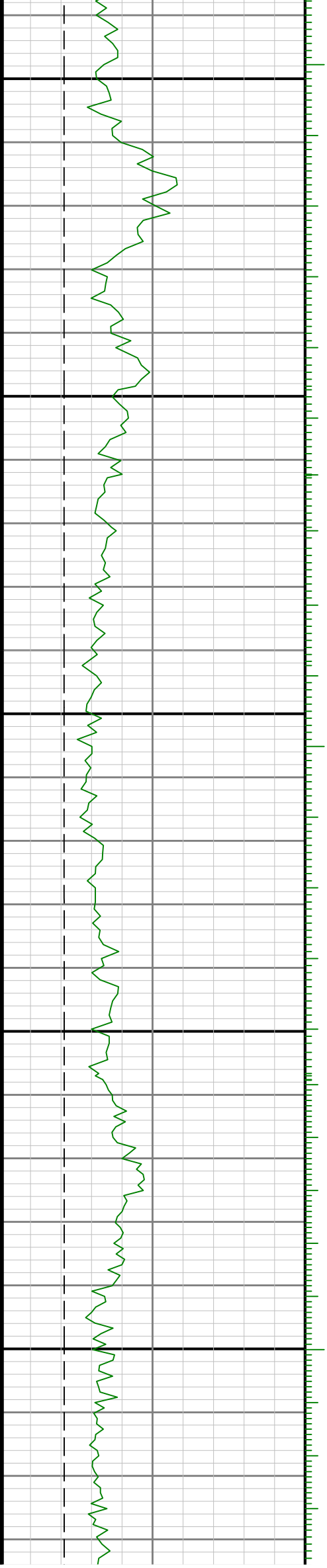


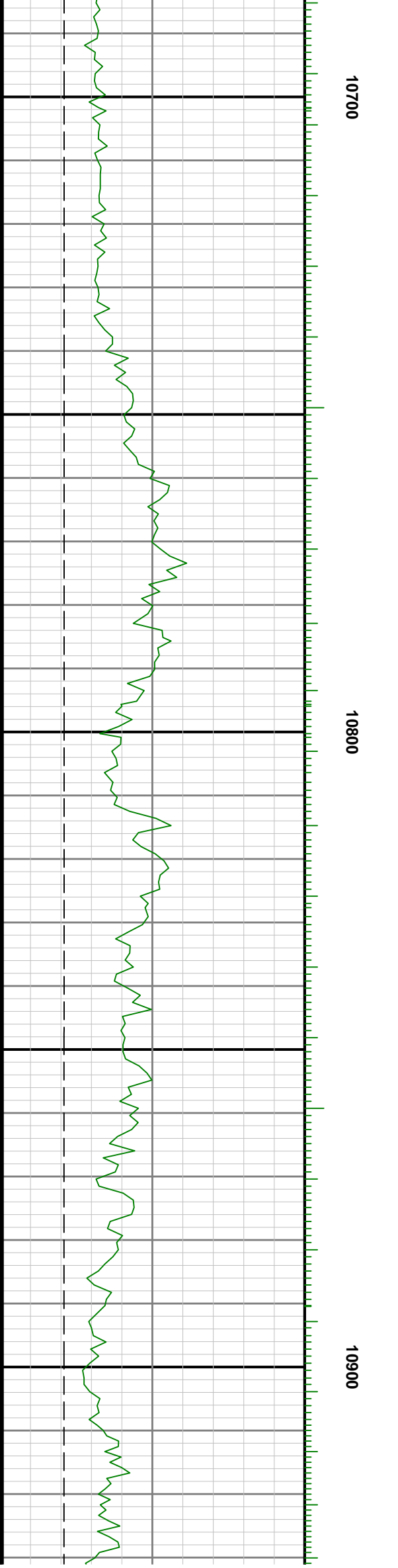
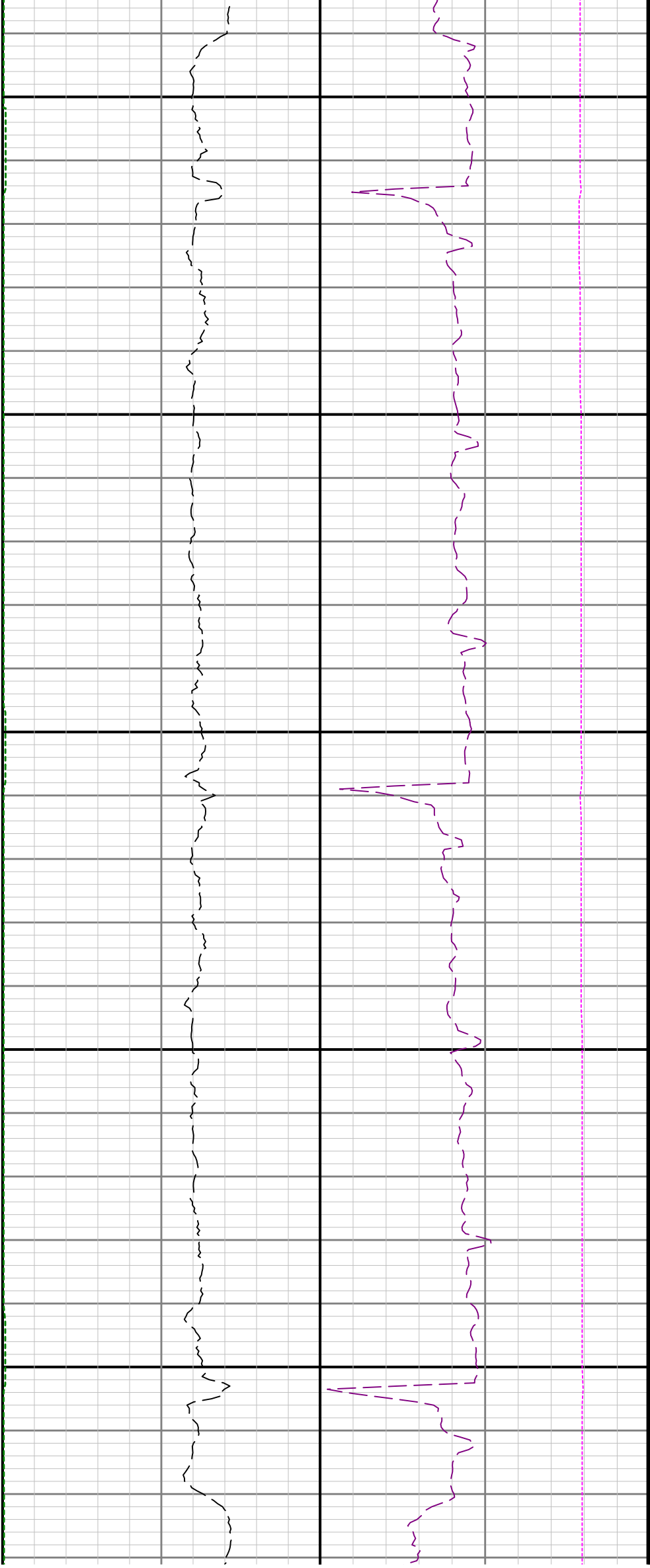


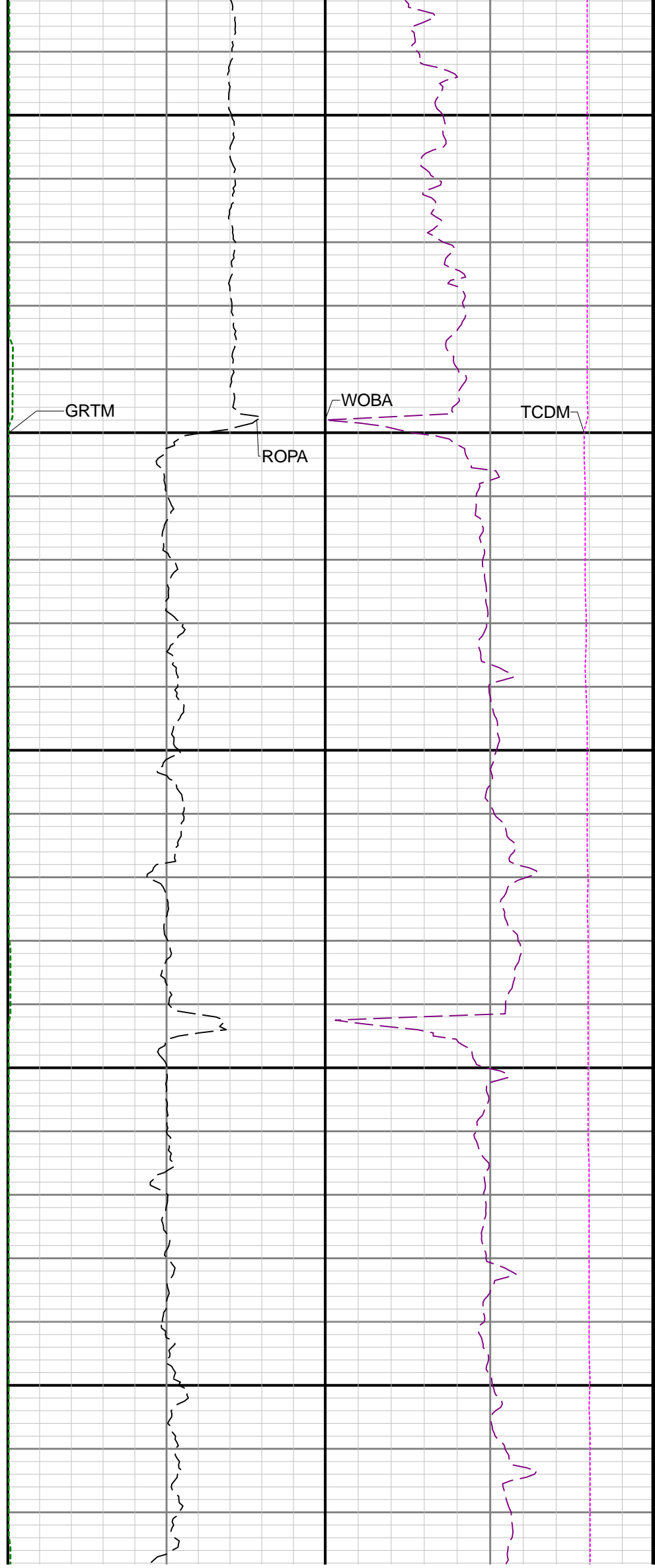
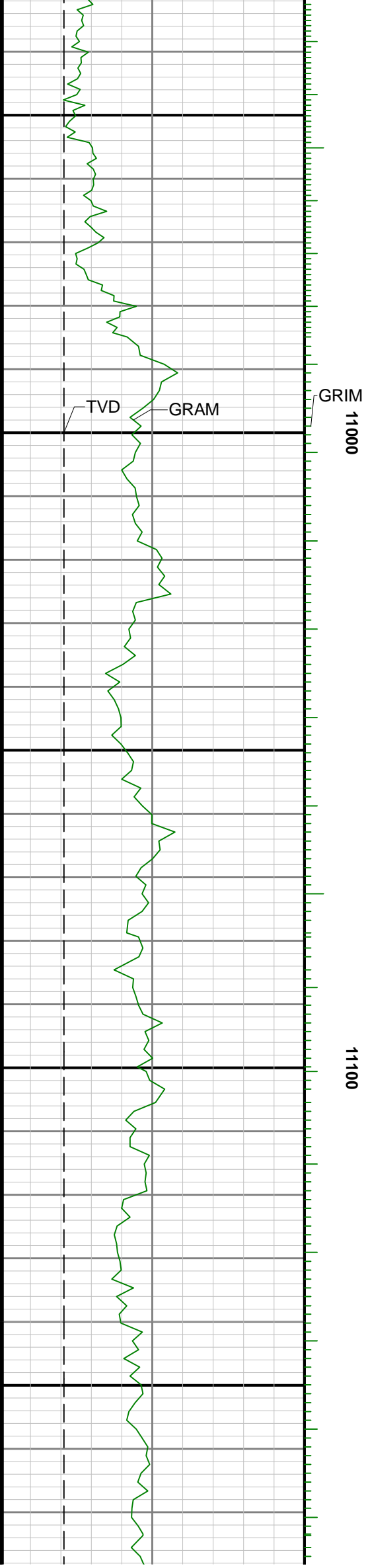


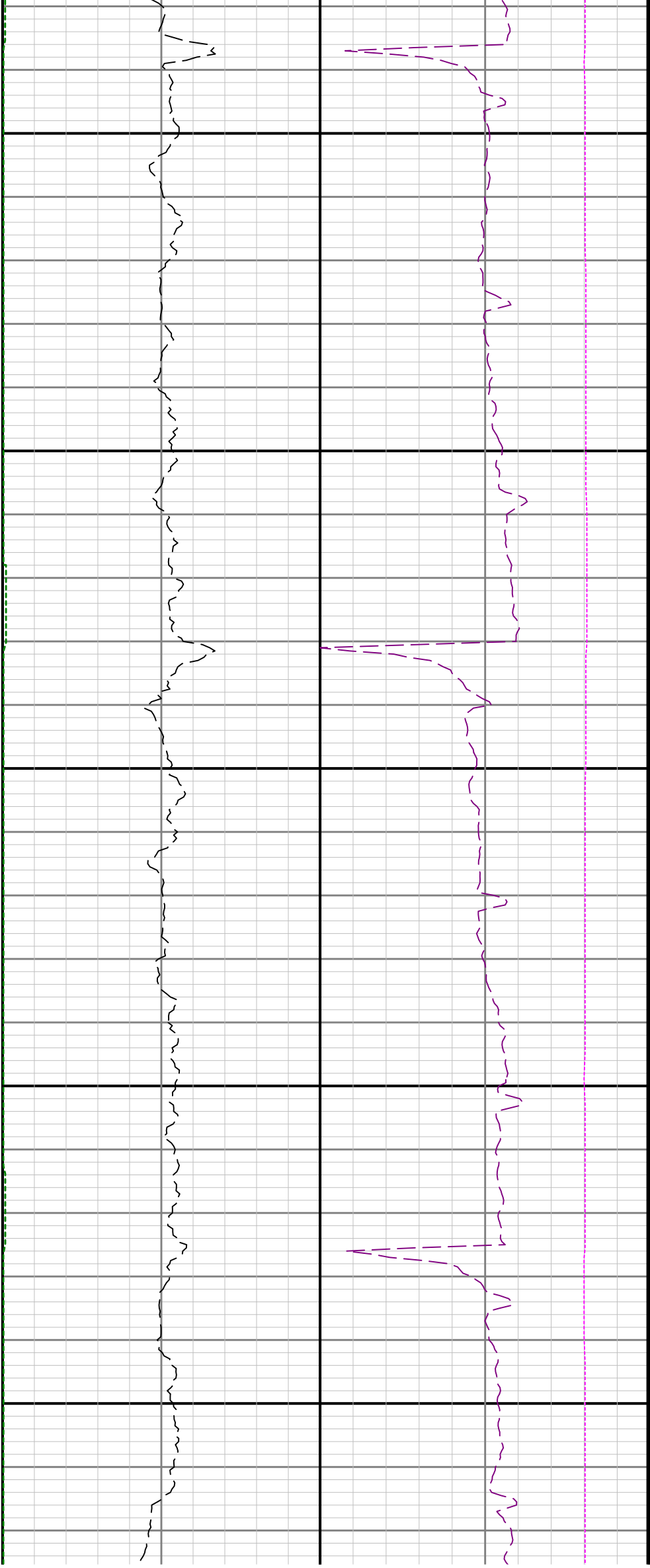
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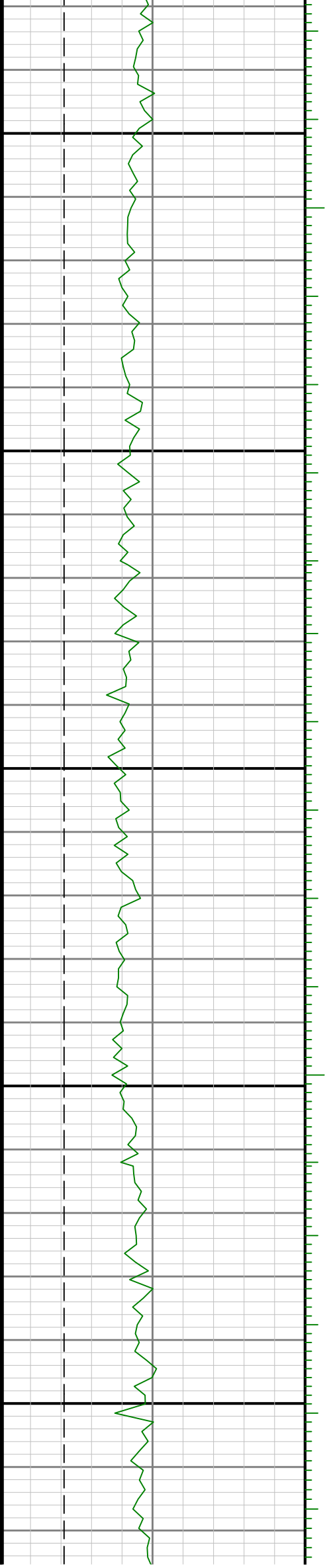




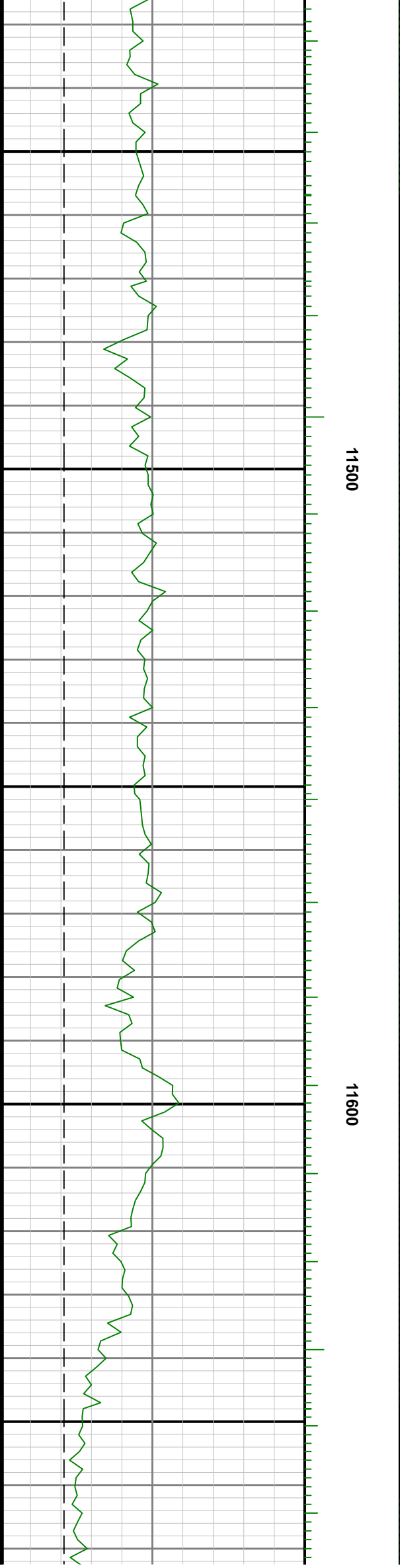
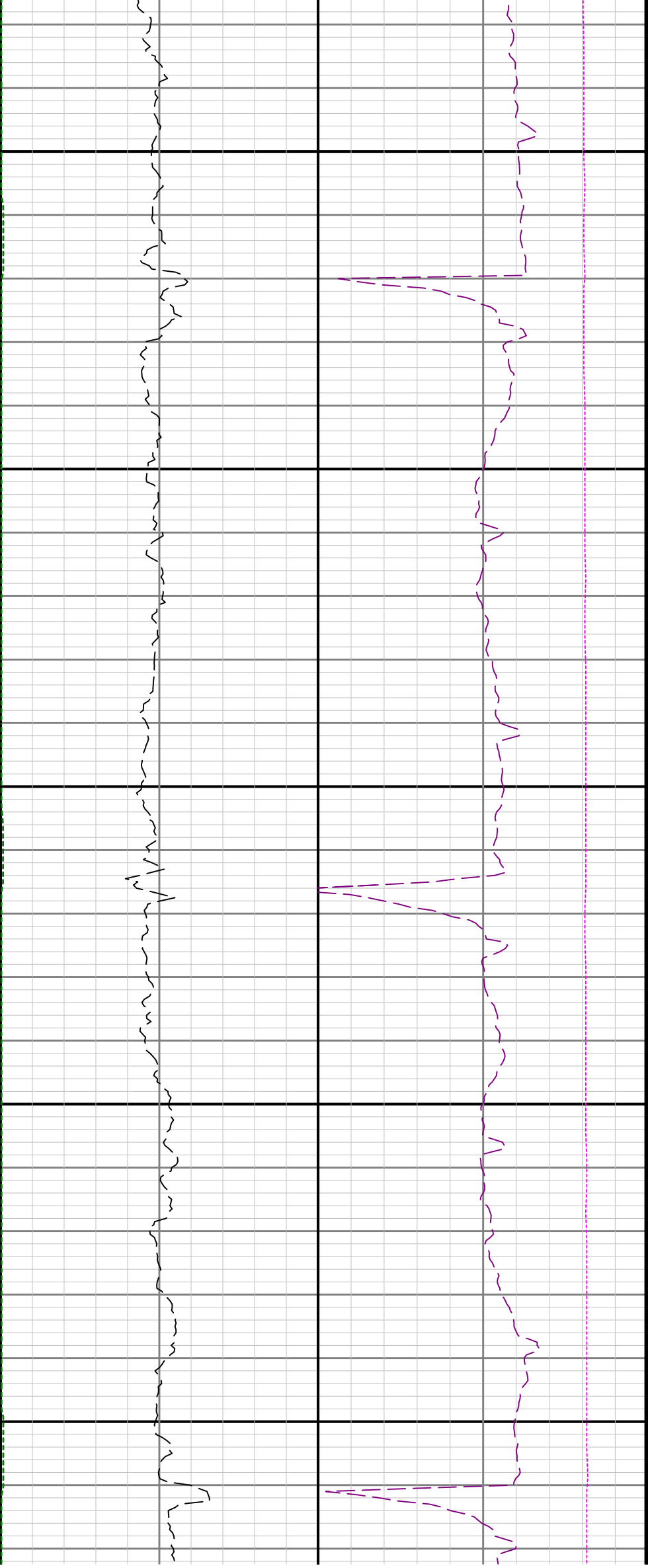
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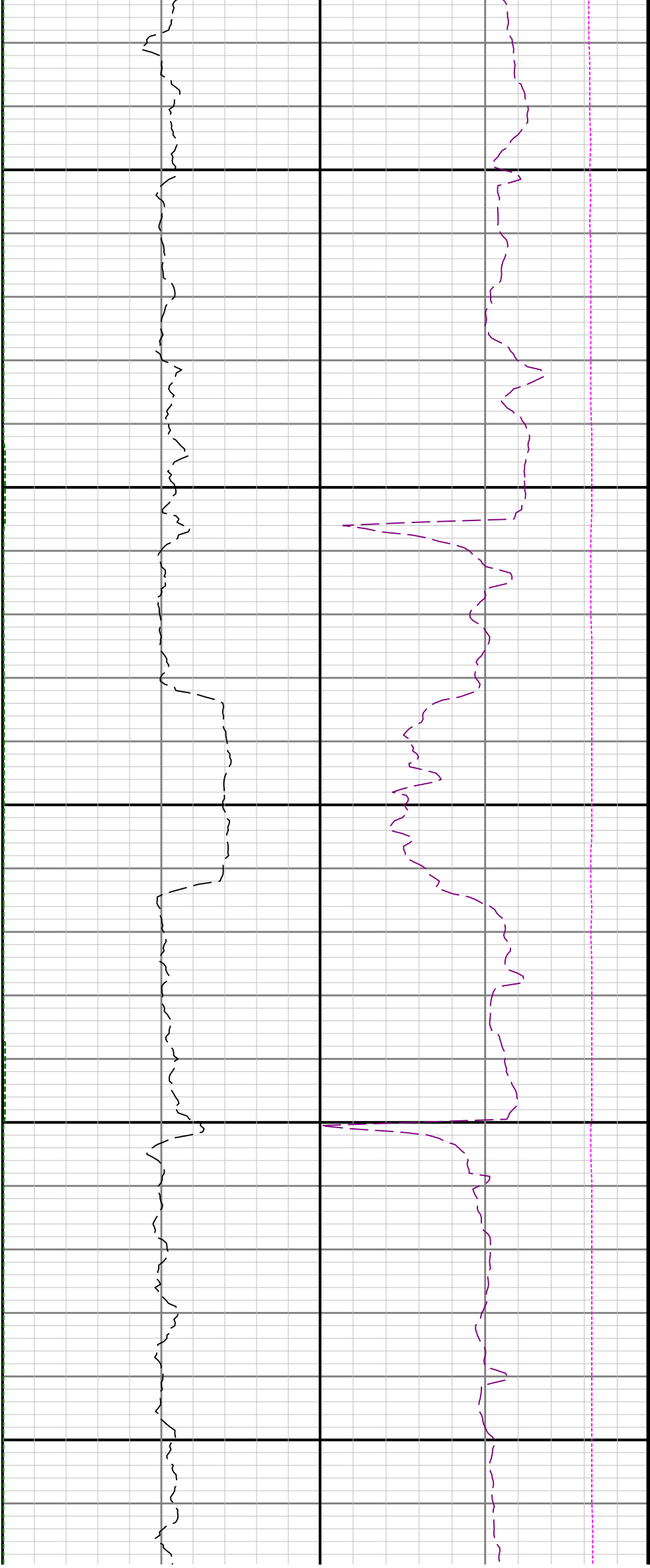
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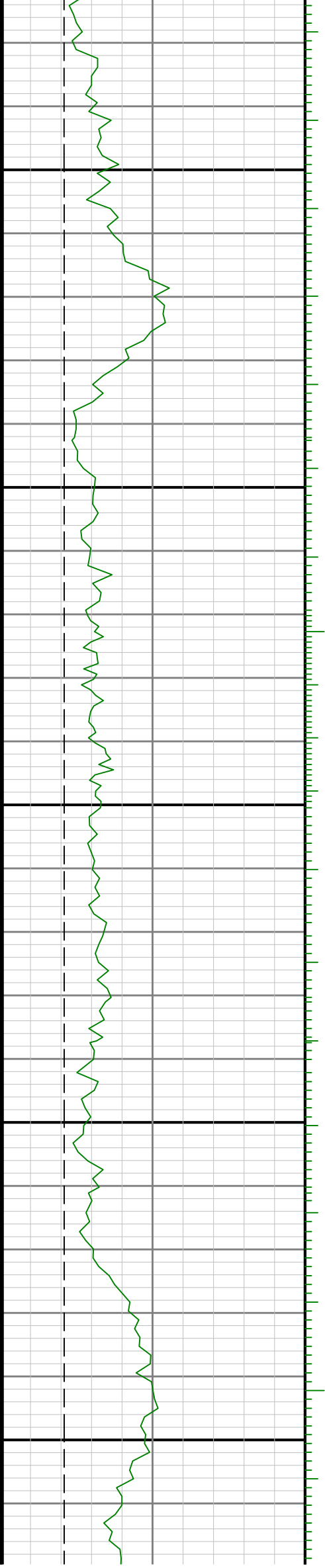


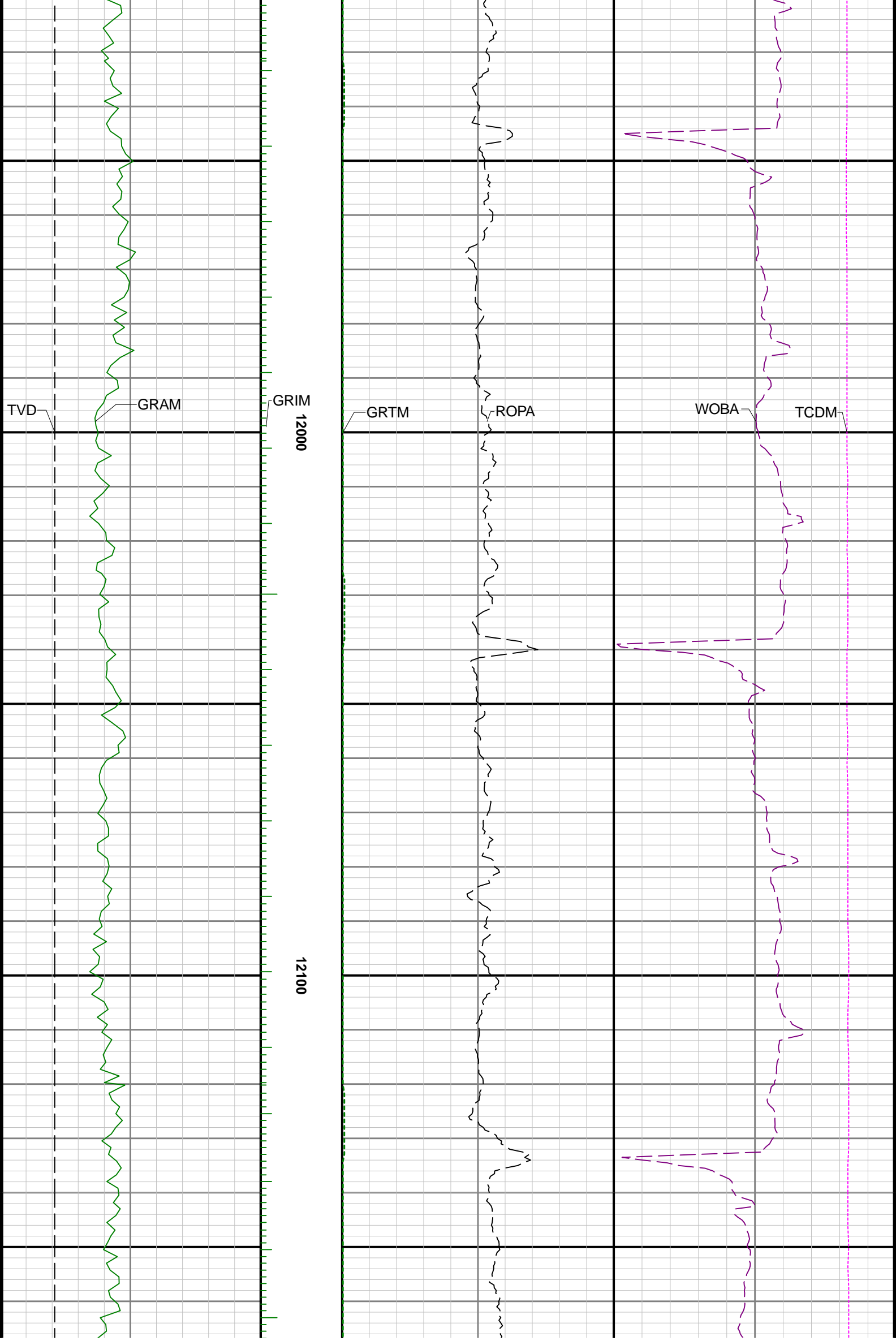


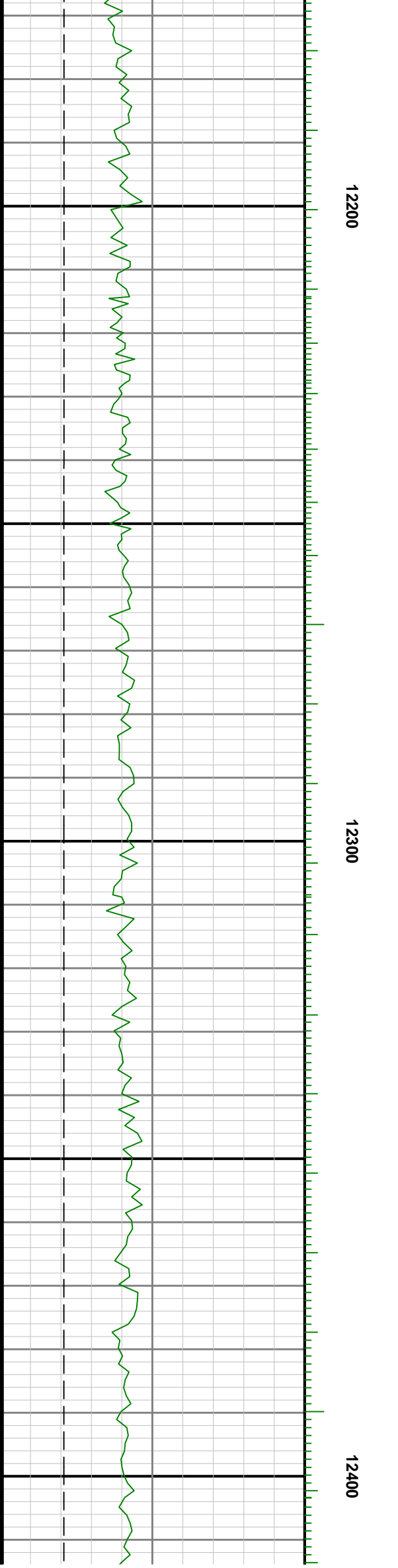
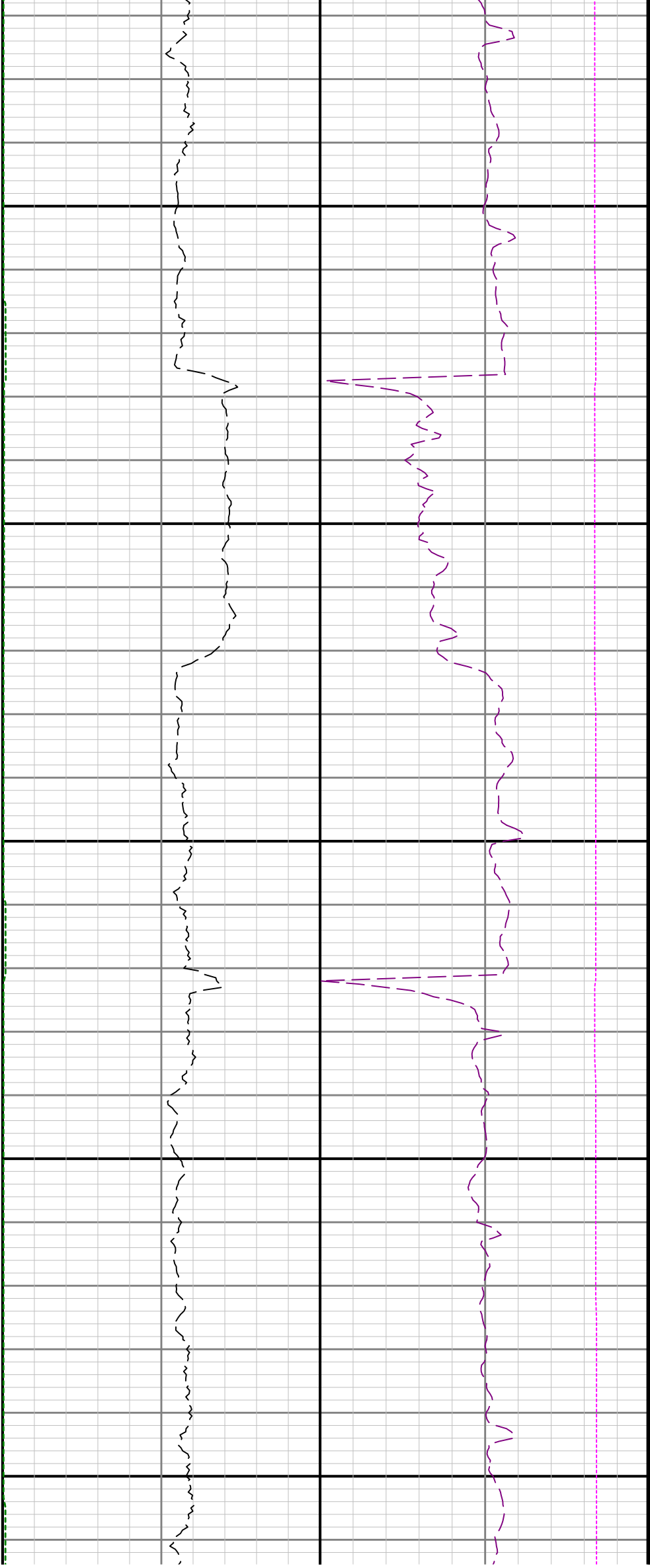
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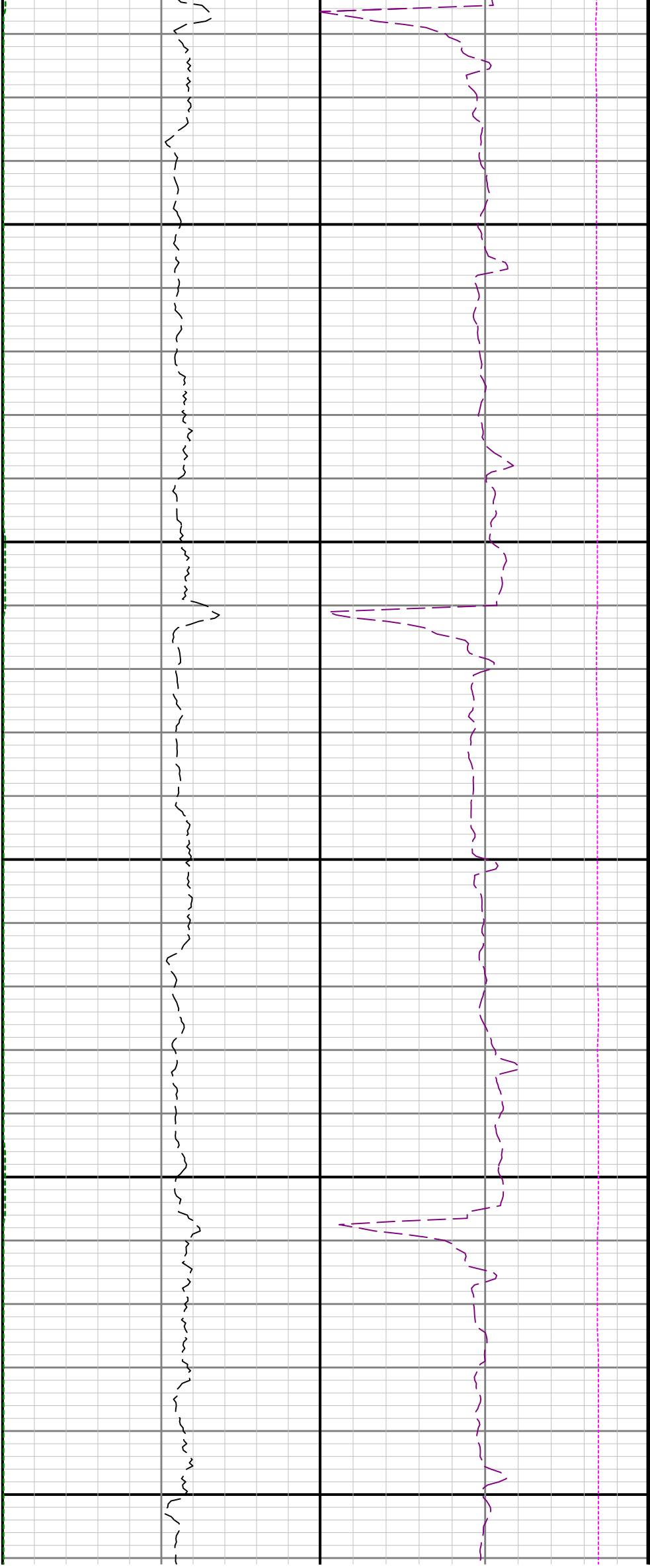
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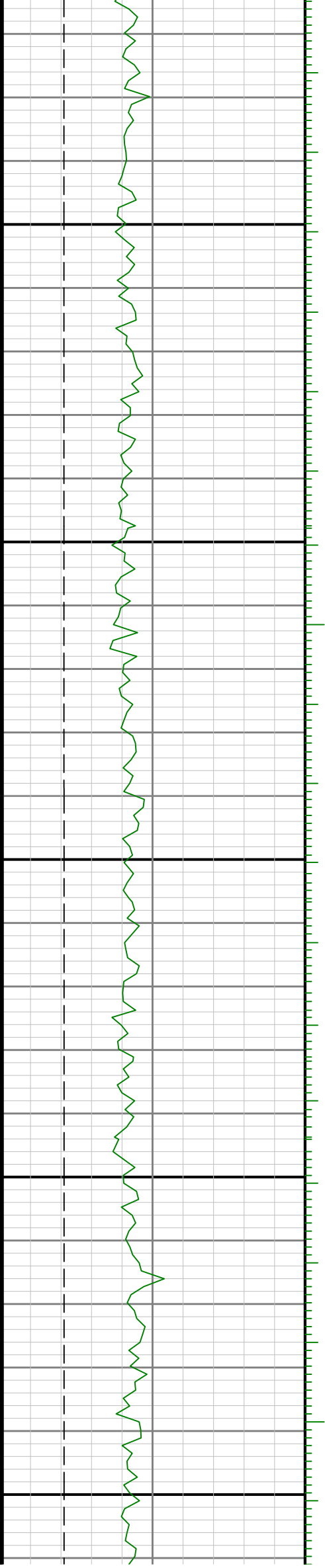


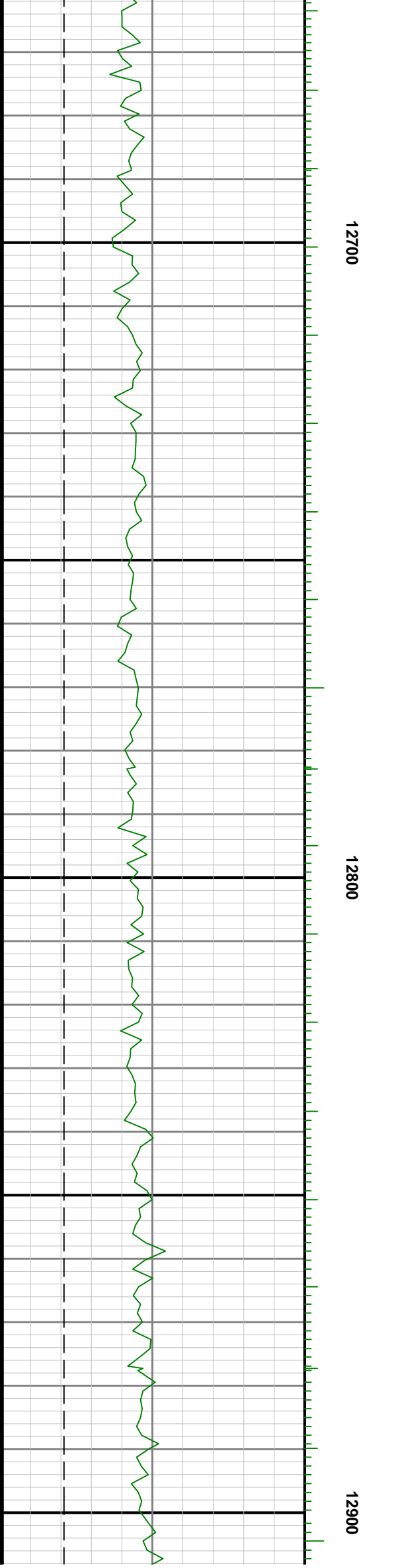
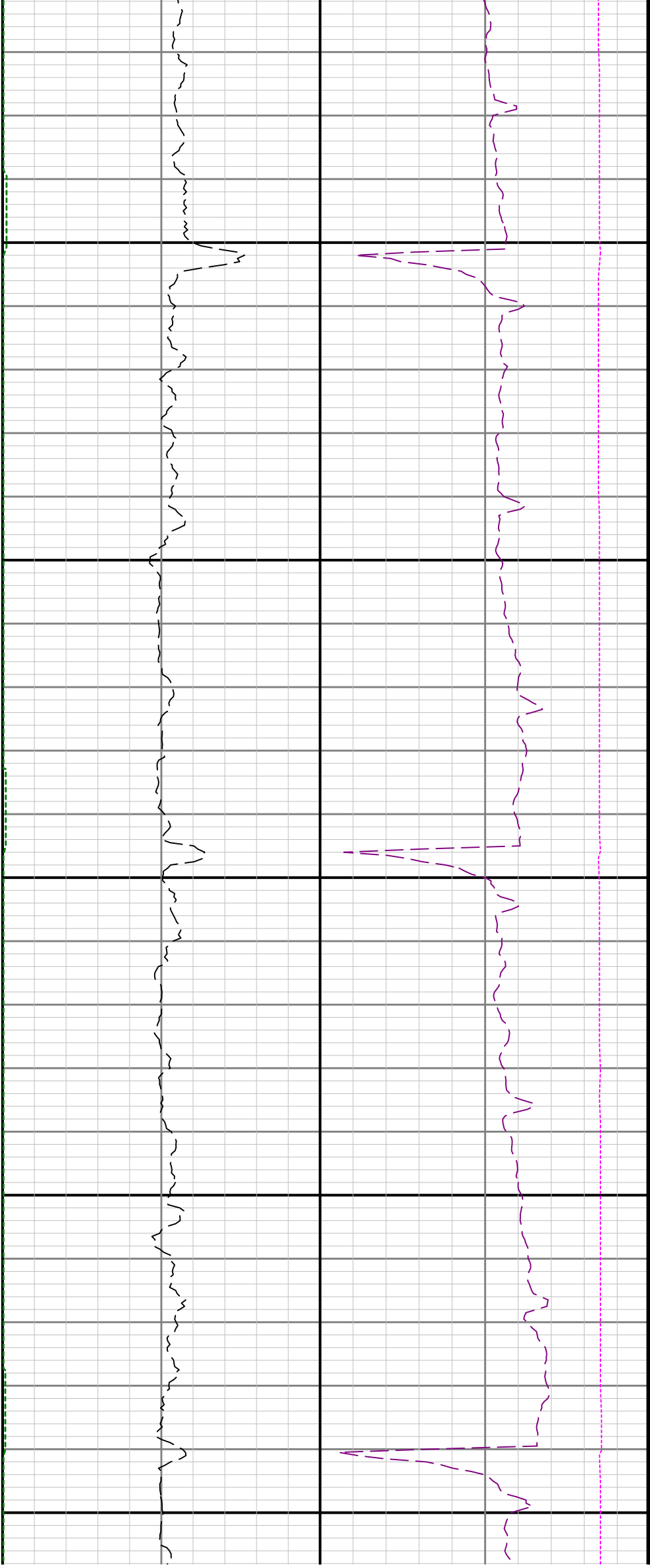


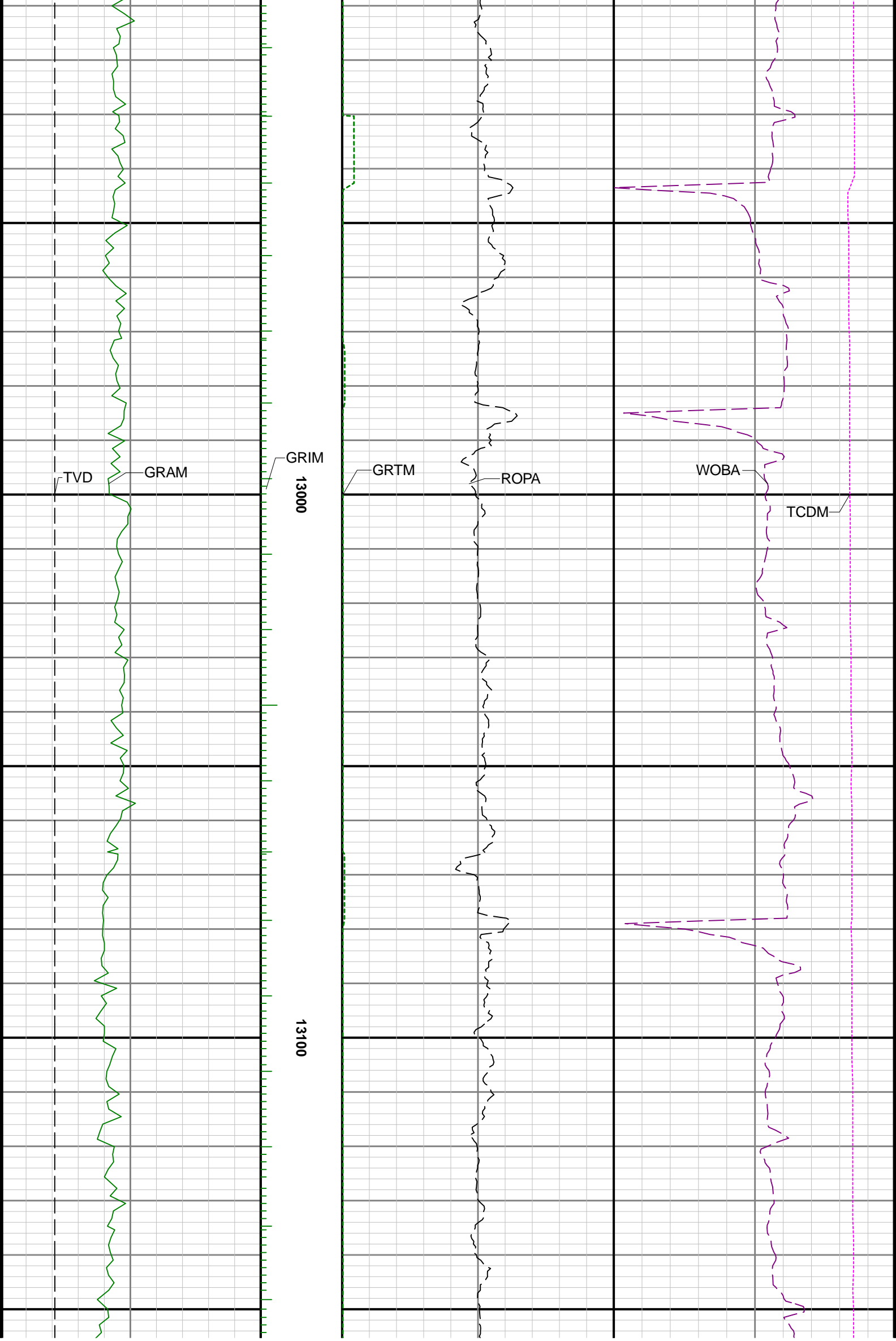


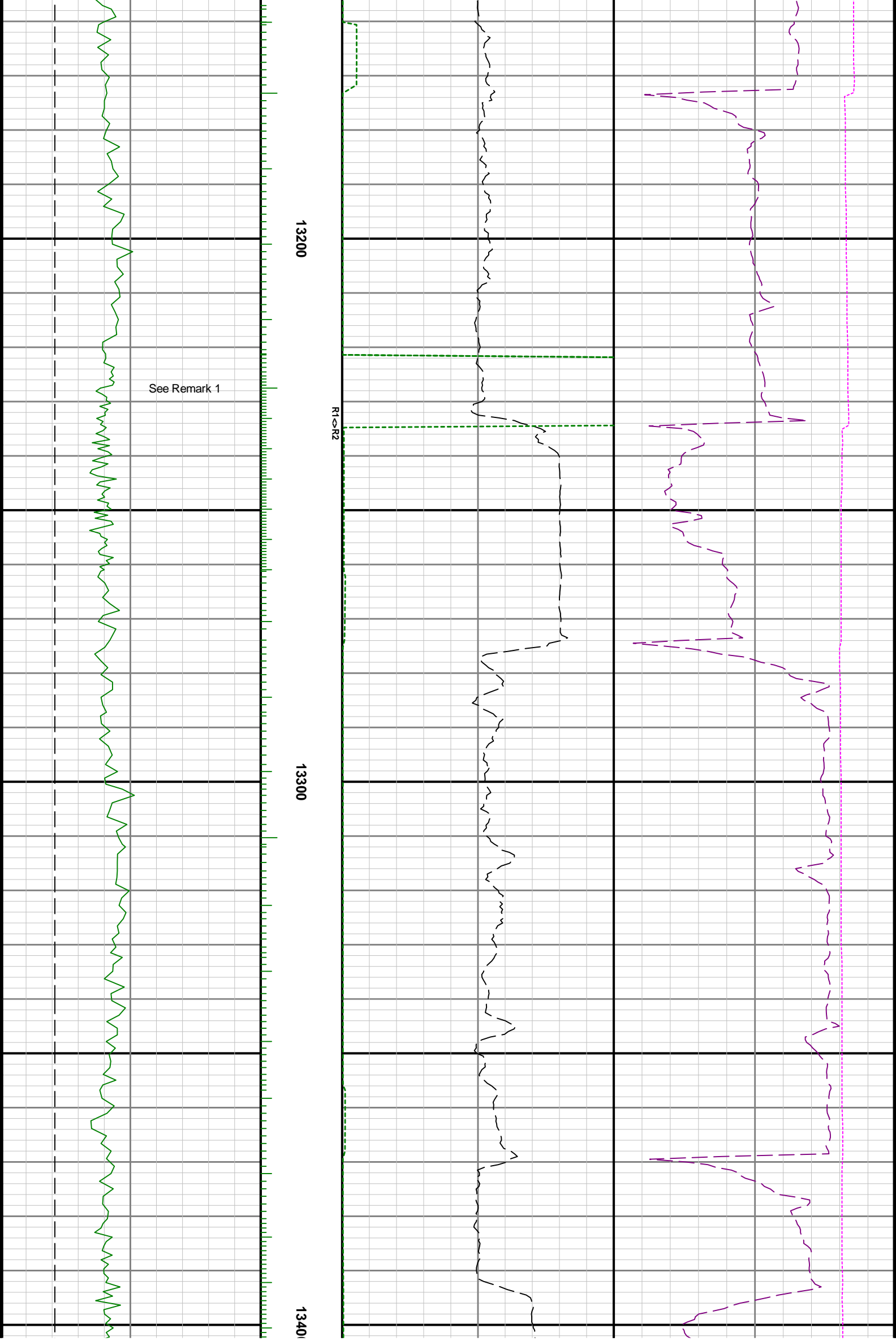
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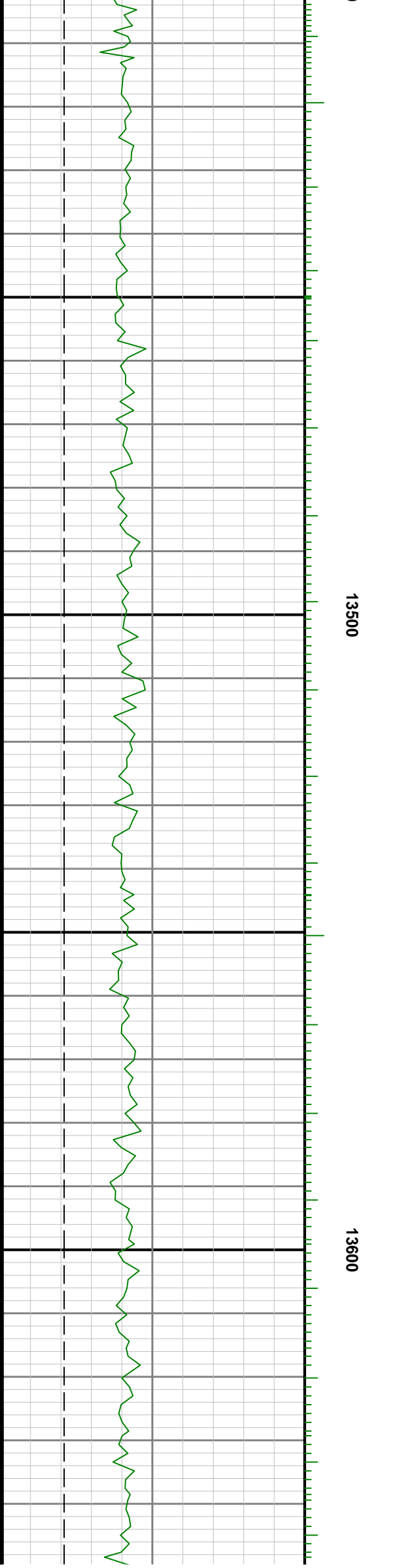


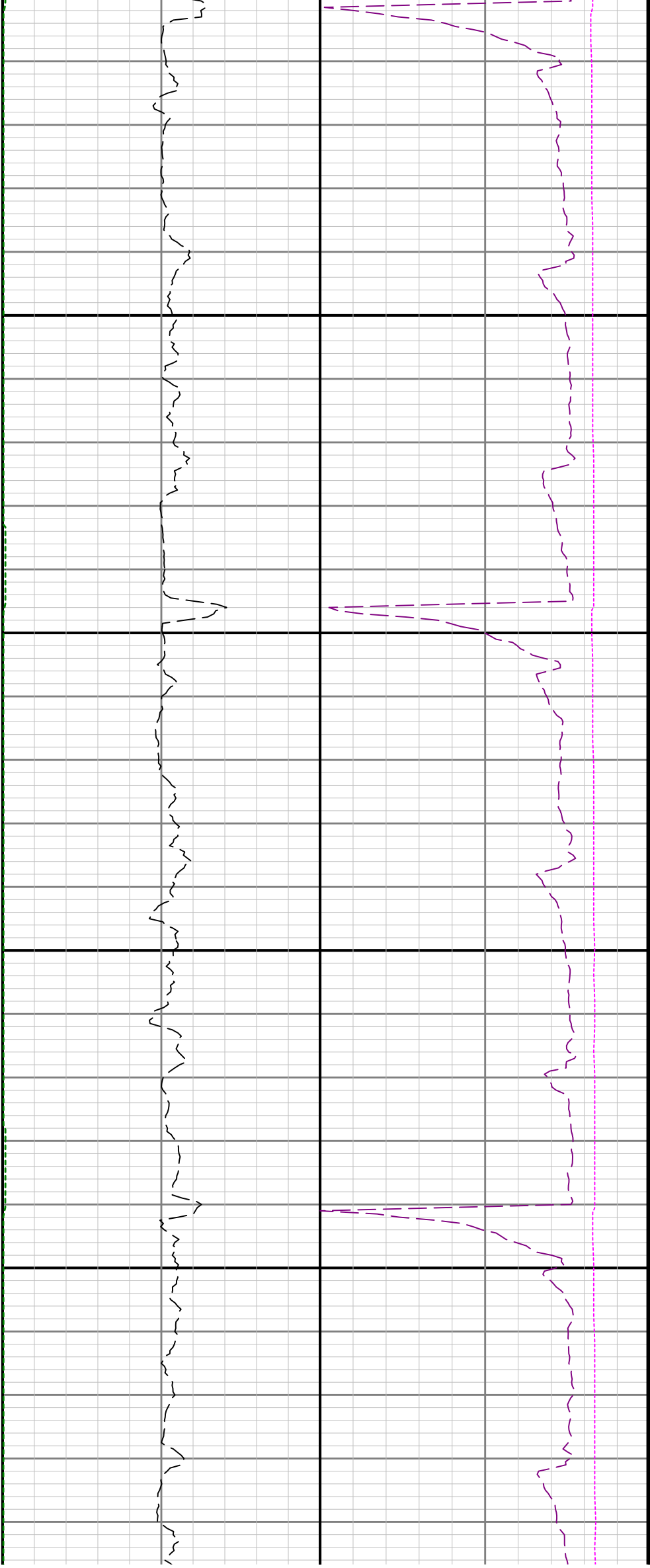






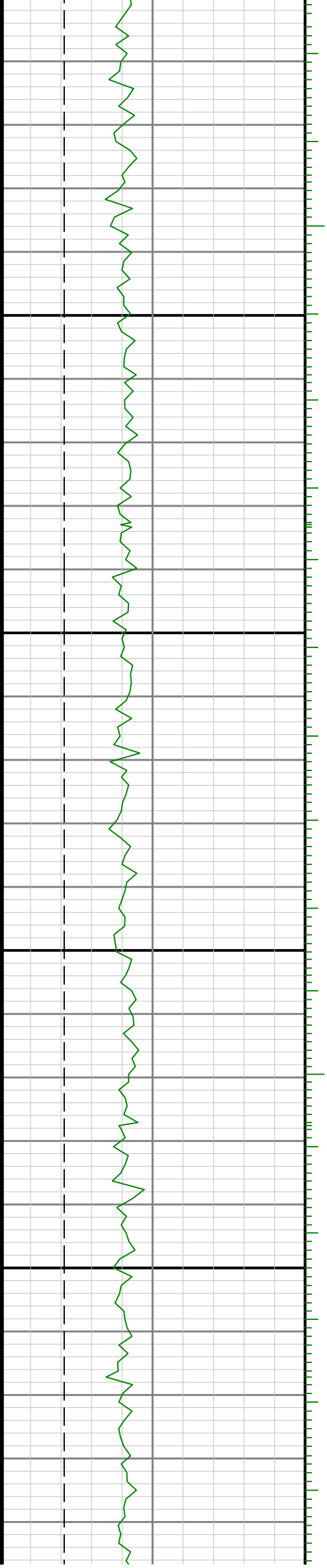


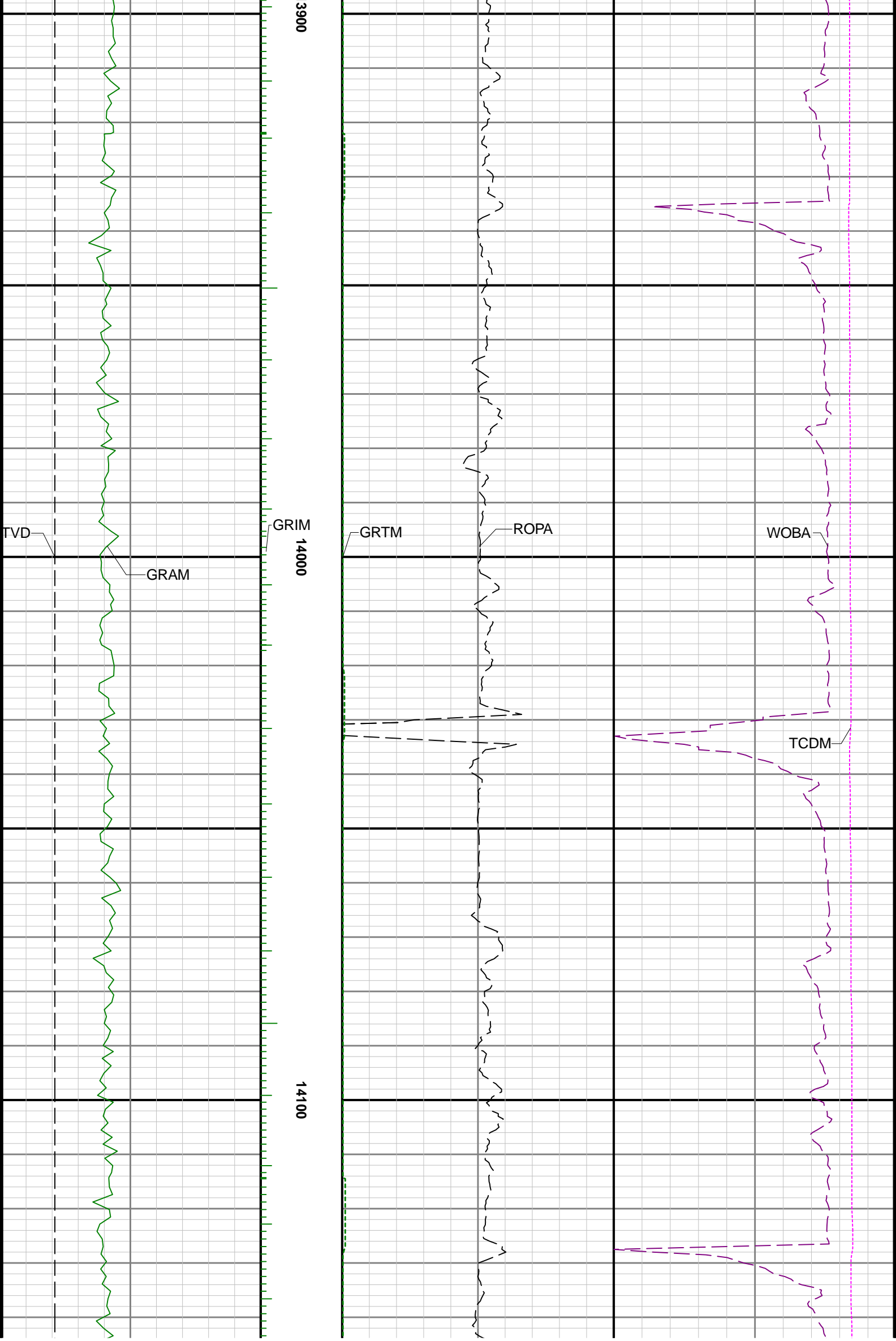


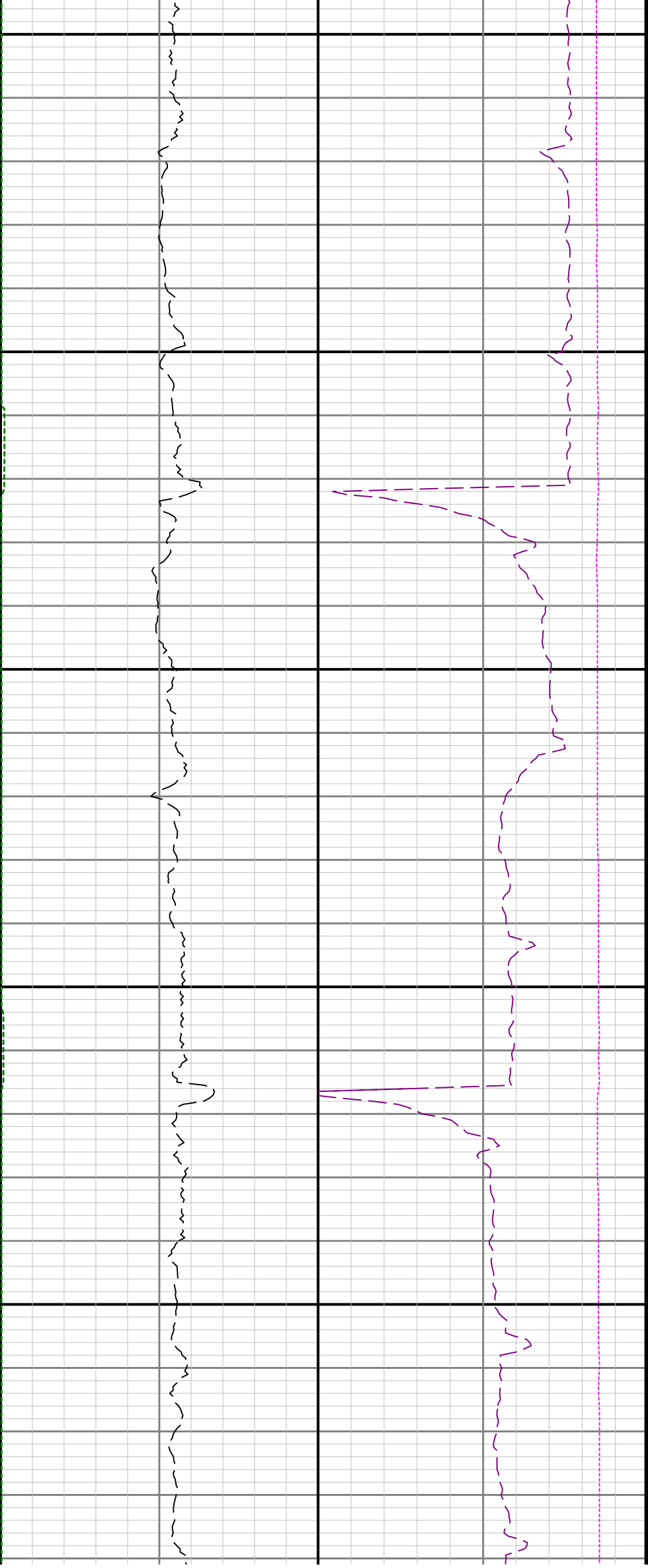


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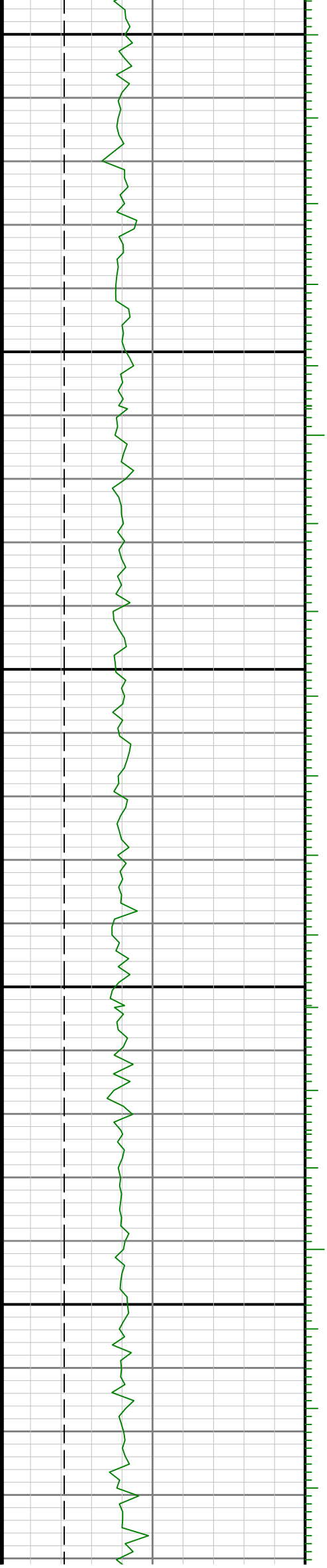


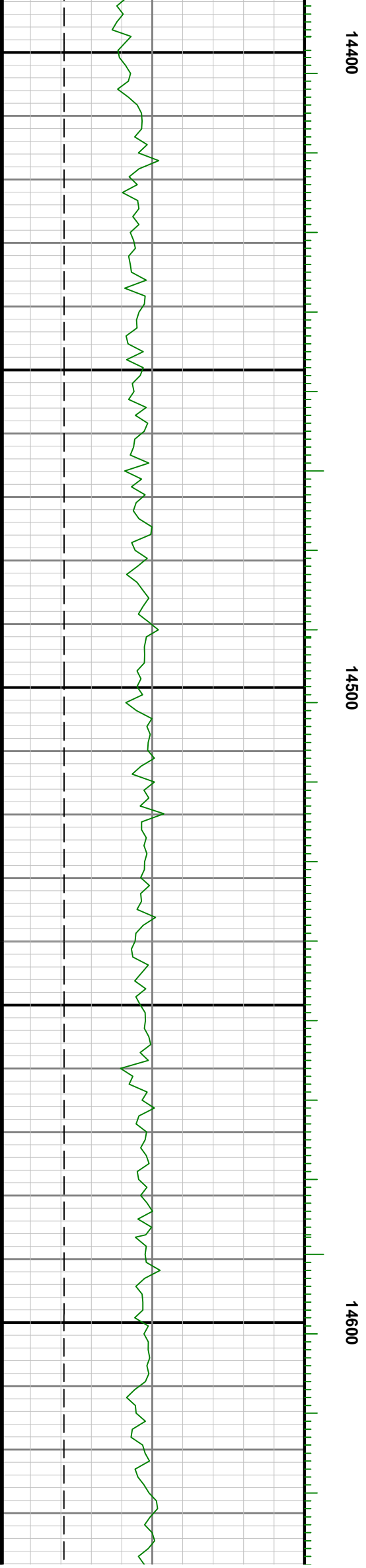
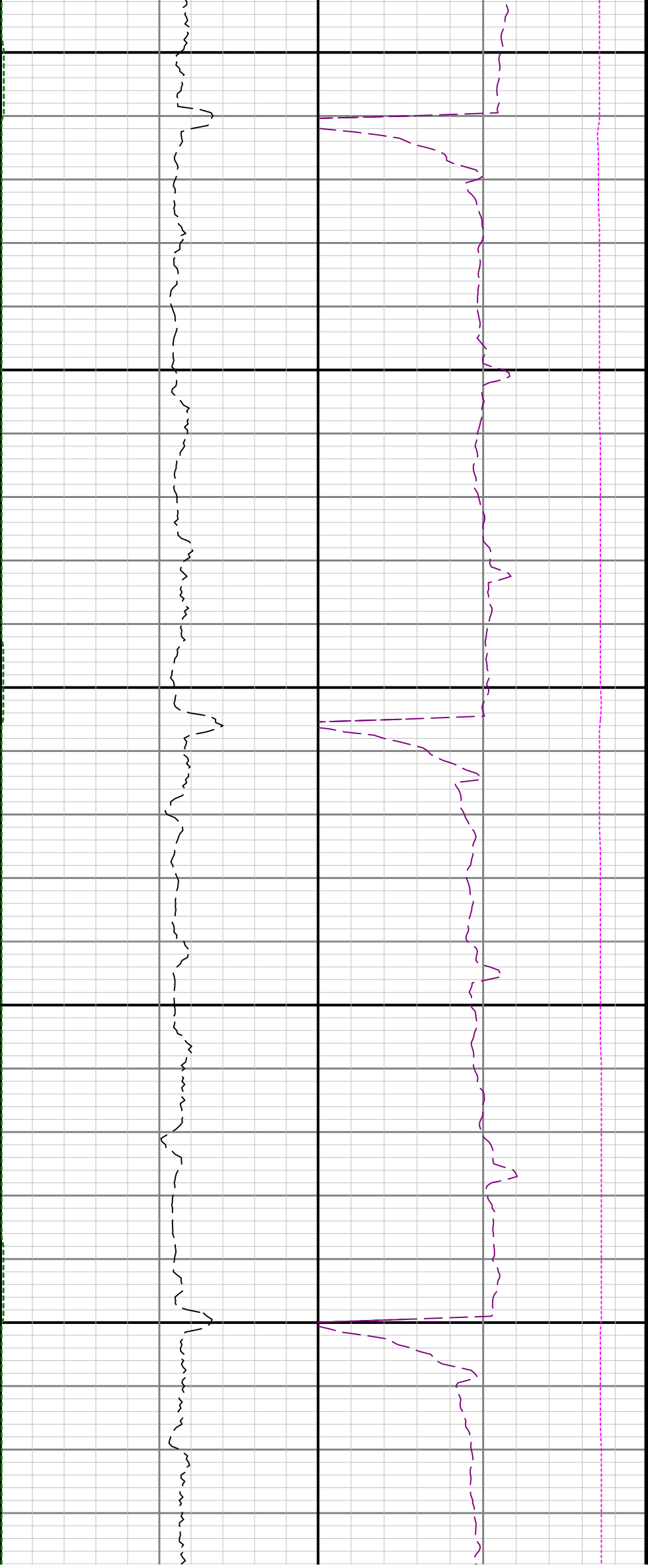


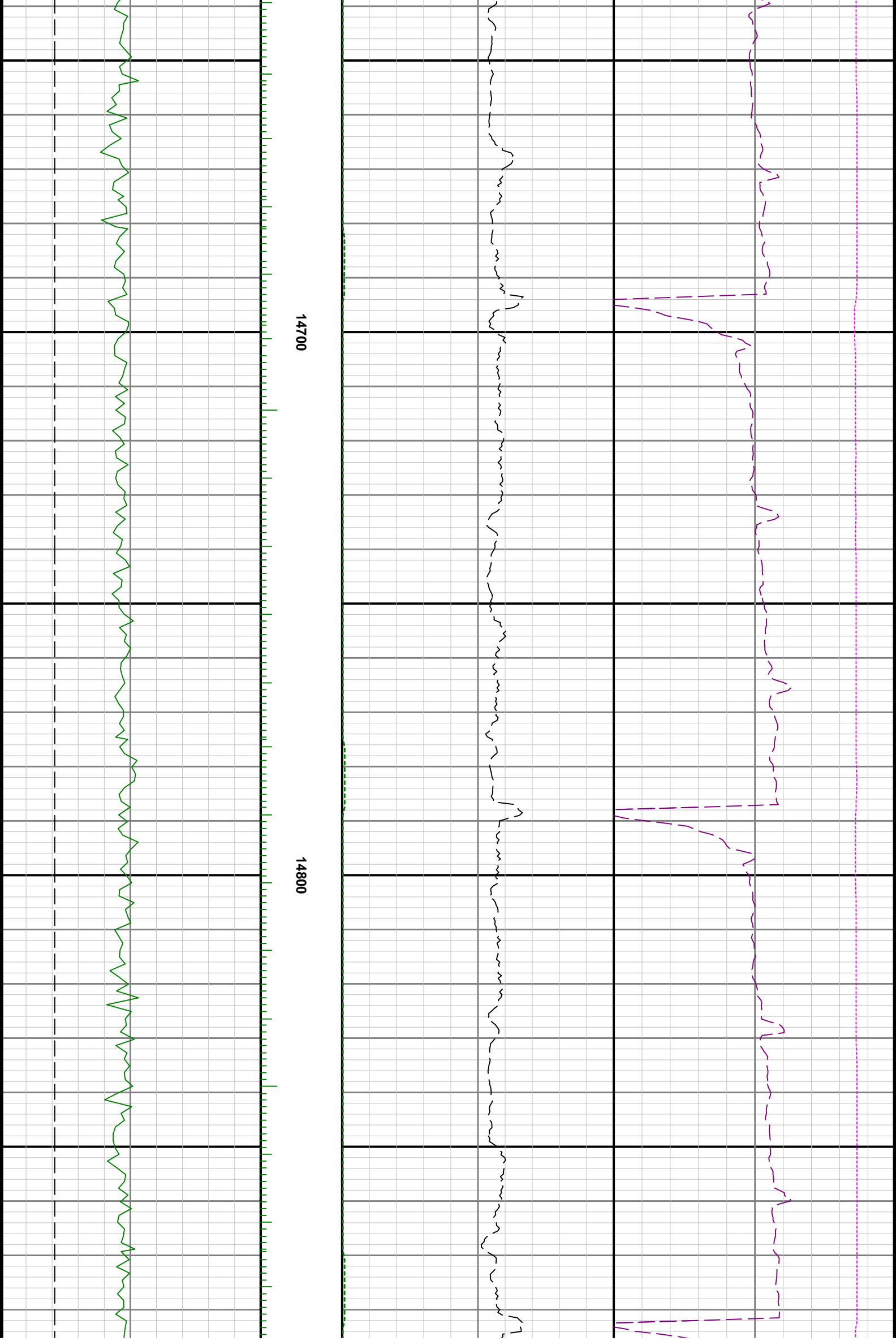


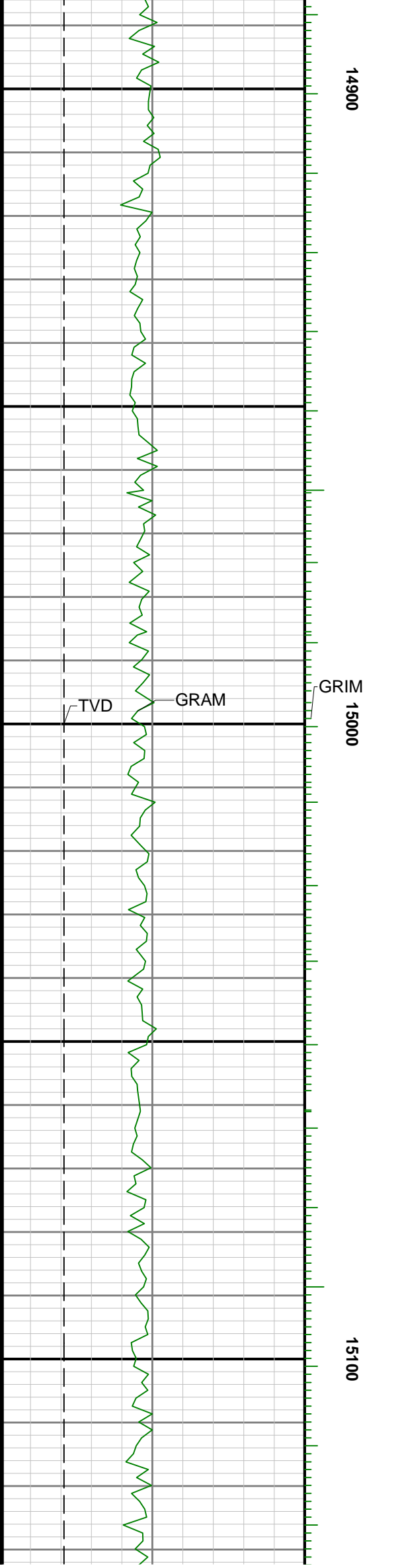
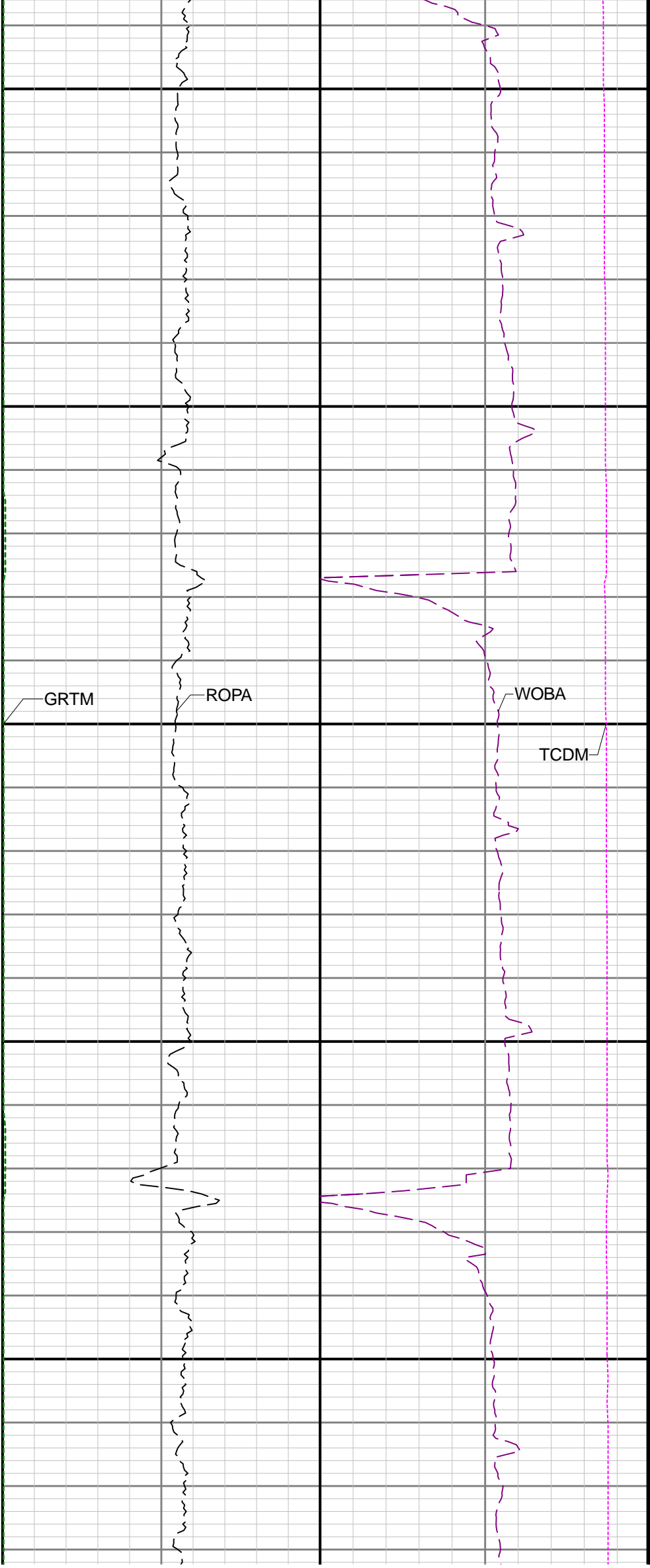
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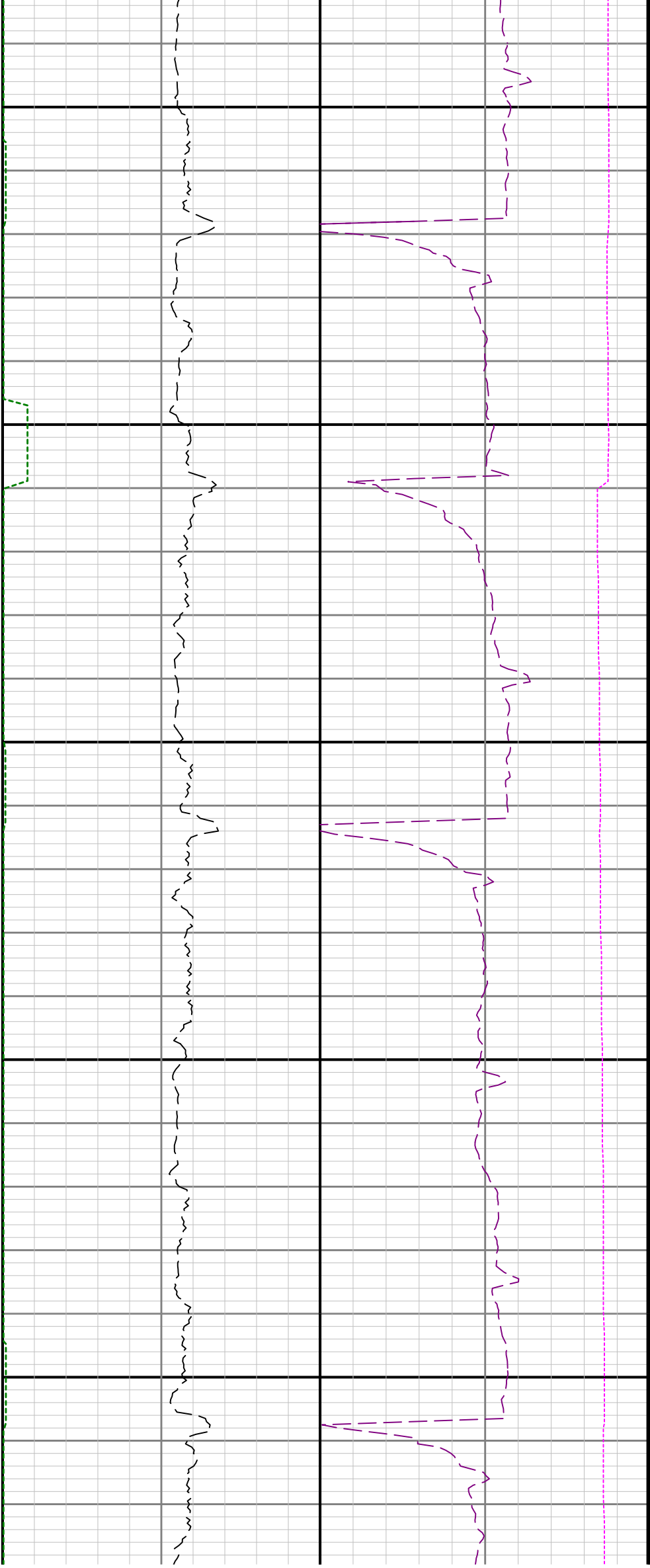
14300











15200

15300

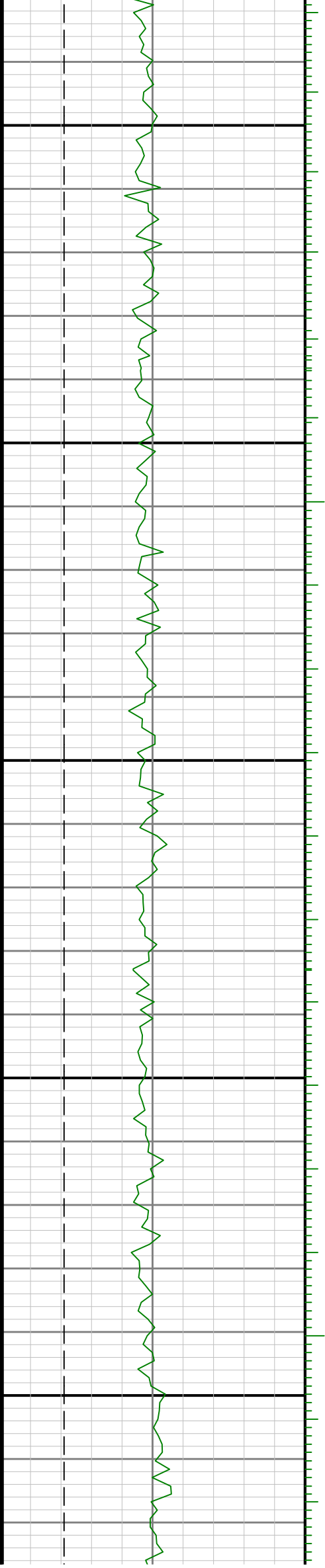


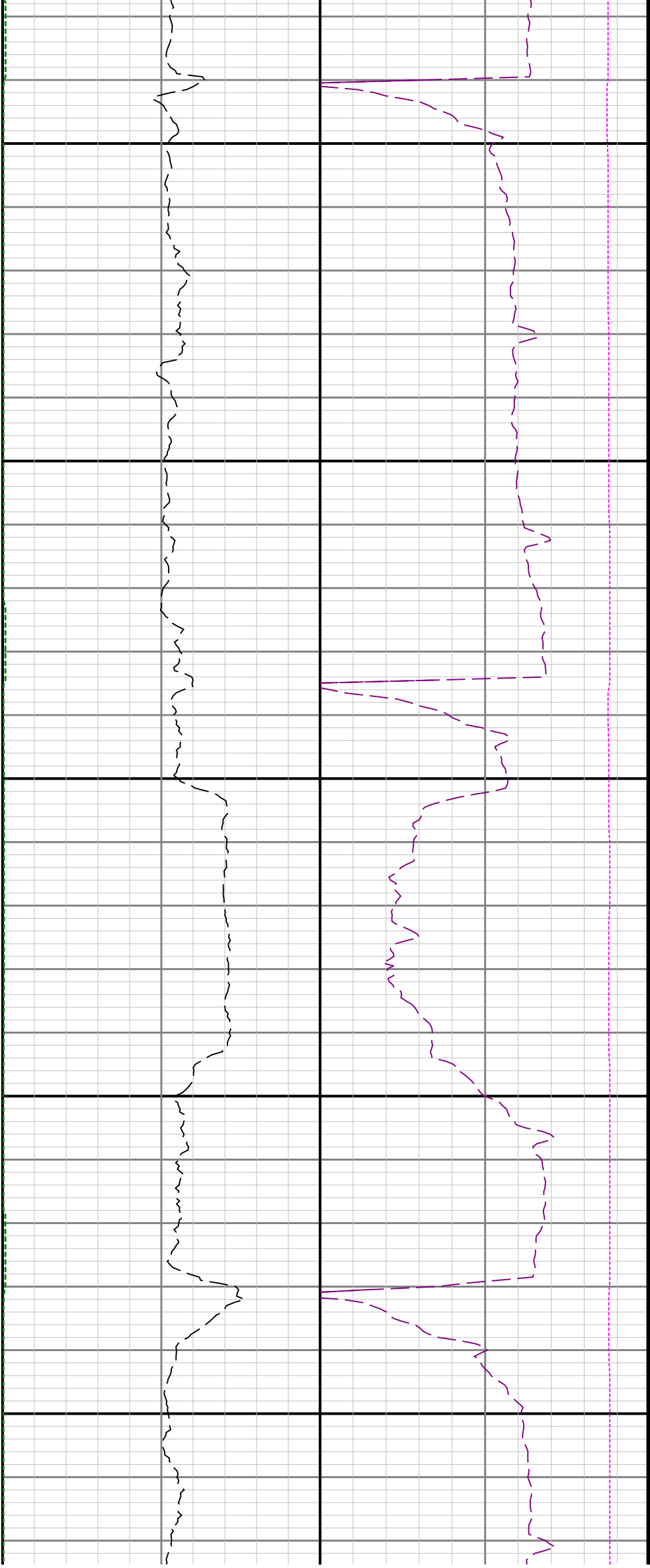


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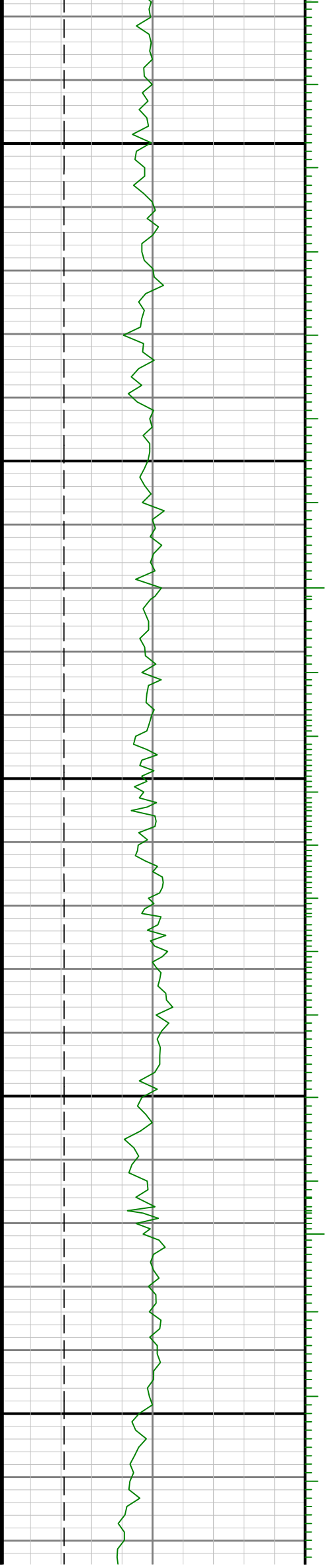
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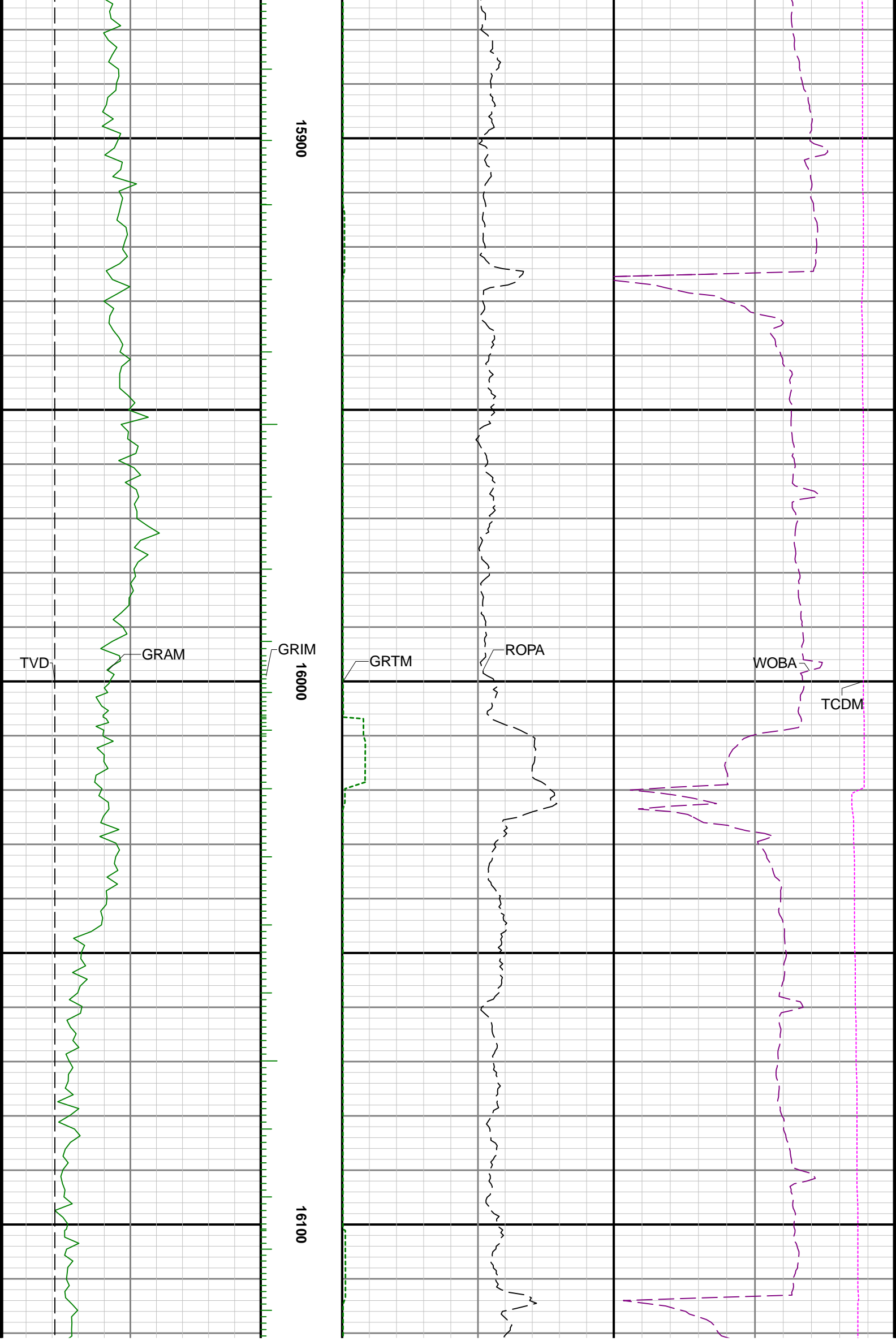


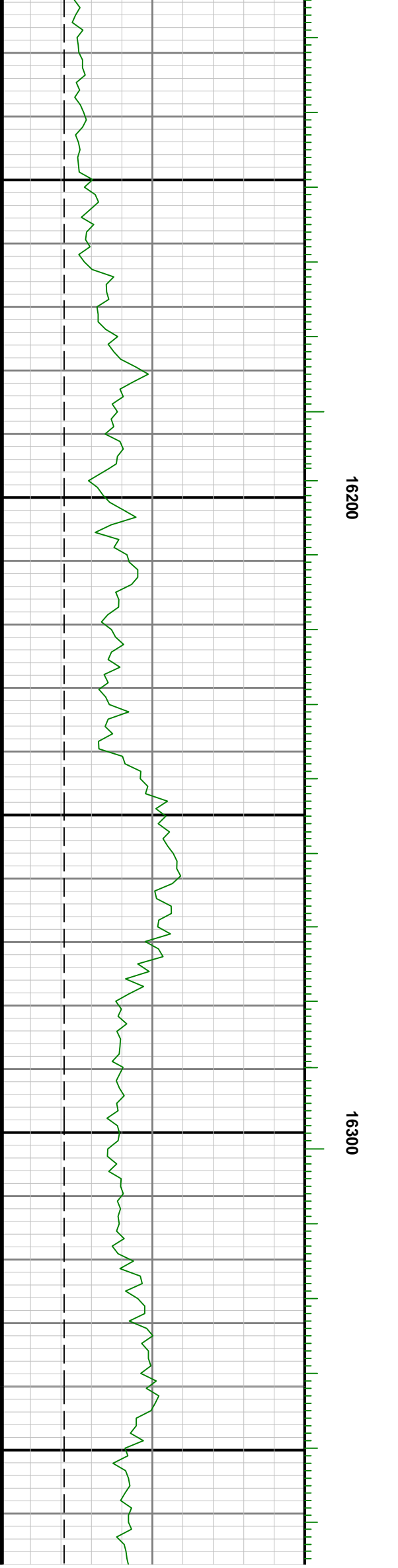
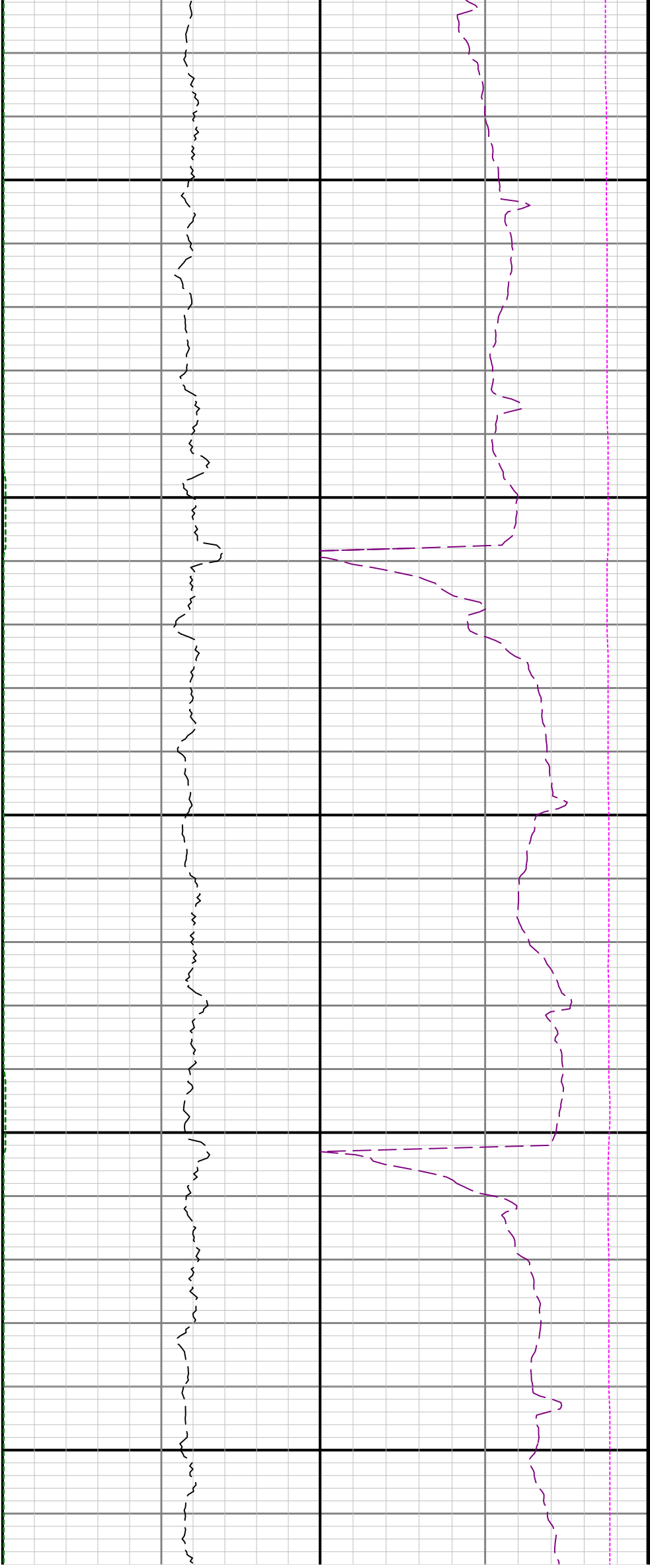


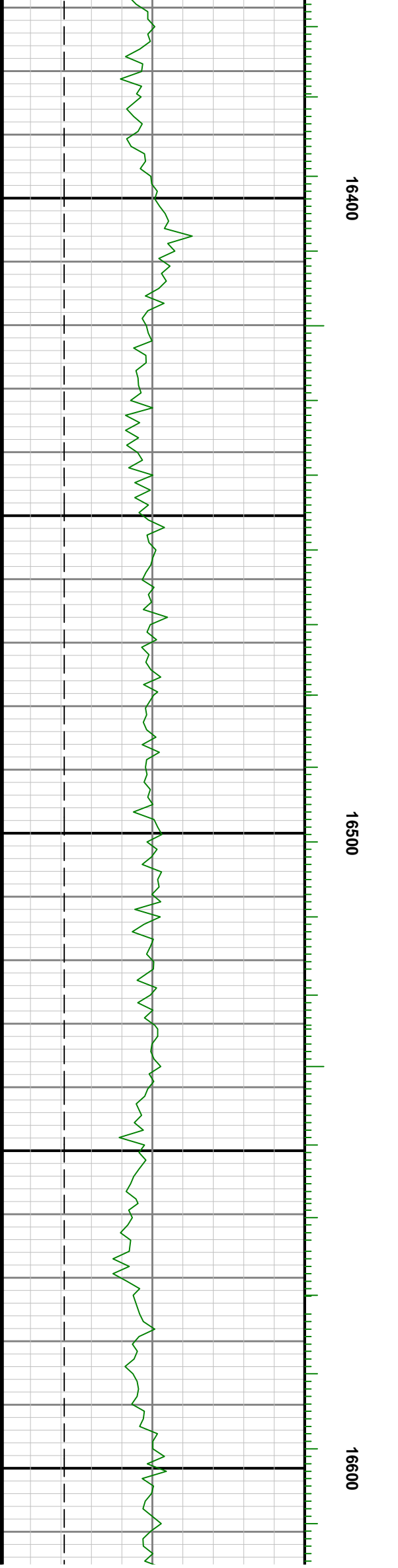
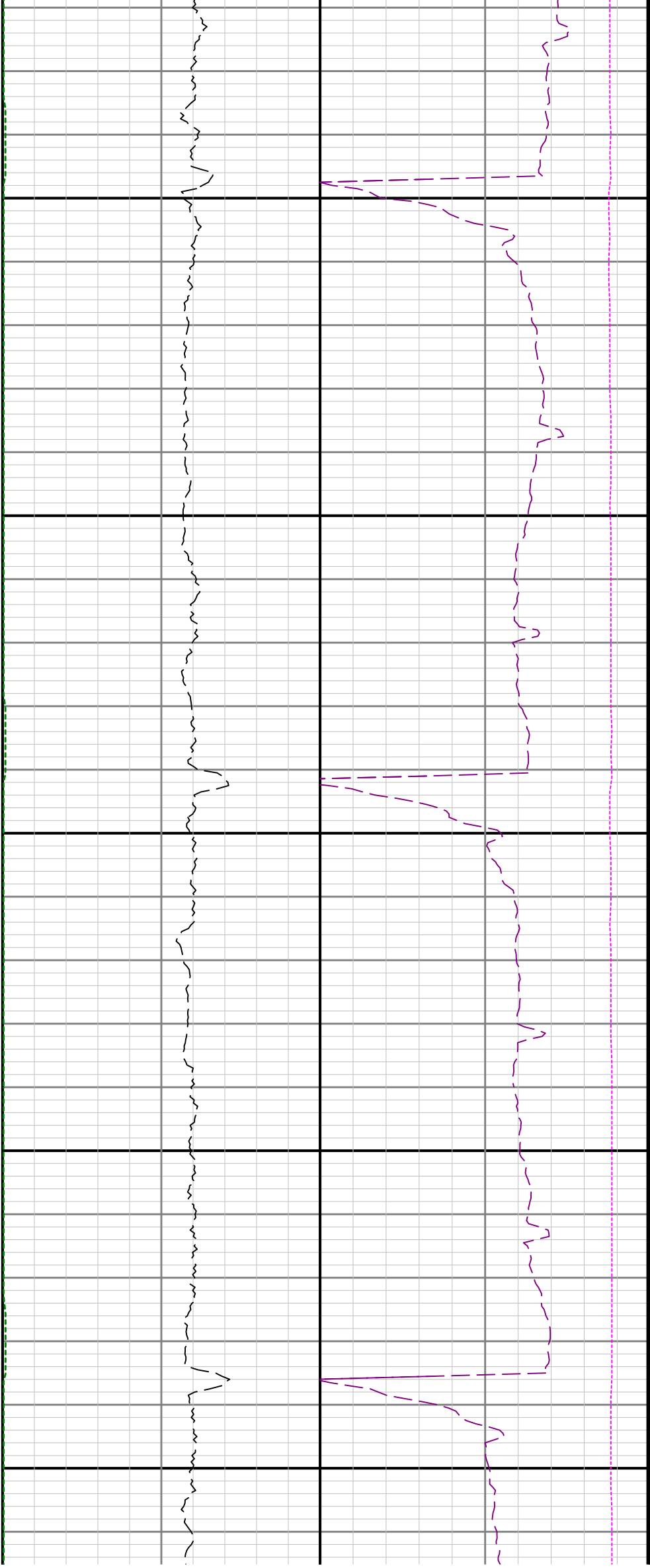
15700

15800











16700

16800

