



Real Time Log

Natural Formation Evaluation  
Gamma Ray

Scale: **Company: Anadarko**

**1:240**  
**Well: Benson Farms 23N-19HZ**

**Measured Depth**  
**Field: Weld County(Kerr McGee)**

**County: Weld County State: Colorado**

Status: **Final Print** Surface Location: Latitude: 40° 12' 22.986" N Other Services:

API Number: 051 23393400000 SEC: 23 TWP: 3N RNG: 68W Directional VSS

Permanent Datum (P.D.): Ground Level Elevation: 4976.00 ft. Elevations: N/A

Log Measured From: Rig Floor 16.00 ft. Above P.D. DF: 4992.00 ft.

Depth Reference: Driller's Depth GL: 4976.00 ft.

Interval Logged Dates Magnetic Field Reference

Top: 6600.0 ft. Date From: 25 Aug 14 Dip Angle: 66.92° Azi Reference North: True

Bottom: 14059.0 ft. Date To: 30 Aug 14 Total Mag to Reference

Spud Date: 23 Aug 14 Field Strength: 52618.0 nT North Correction: 8.64°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	1241.0 ft.	7513.0 ft.	9.625 in.	N/A	Surface	1233.0 ft.
6.125 in.	7513.0 ft.	14120.0 ft.	7.000 in.	N/A	Surface	7501.0 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based Mud	Surface	7513.0 ft.	8.750 in.	6272.0 ft.	0.2° / 233.8°	88.5° / 93.5°
Oil Based Mud	7513.0 ft.	14120.0 ft.	6.125 in.	6607.0 ft.	88.5° / 93.5°	88.5° / 88.9°
					/	/
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig: Xtreme 23	/ Advance Drilling
PATS	6.4.1.34	Job No: 6510799	/ D&E
		District / Unit: RMD	

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Log Run Summary

LWD Run No.	BHA Run No.	Bit Run No.	Bit Size  (in.)	Bit Type	Bit Gauge Length  (in.)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time				Circ. Time  (hrs.)
							Top	Bottom	From	To	Start		End		
1	1	1	8.750	PDC	4.000	Steerable	6600.0	7459.0	1241.0	7513.0	25 Aug 14	01:30	25 Aug 14	15:45	36.8
2	2	2	6.125	PDC	6.000	Steerable	7459.0	14059.0	7513.0	14120.0	27 Aug 14	03:30	29 Aug 14	12:30	1

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Troy Clay	23 Aug 14	30 Aug 14	Stephan Martinez	23 Aug 14	30 Aug 14			
Sumanth Belawadi	23 Aug 14	30 Aug 14	Bob Bartlett	23 Aug 14	30 Aug 14			

Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (ppg)	Viscosity (cp)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
24 Aug 14	8:00	1	5824.0	Polymer Mud	9.0	29	9.3	N/A	0.5/95.0	Halliburton	2100	N/A
25 Aug 14	8:00	1	7085.0	Polymer Mud	9.9	44	9.5	N/A	0.5/91.3	Halliburton	2100	N/A
26 Aug 14	8:00	2	7513.0	Polymer Mud	10.1	43	8.5	N/A	1/93.5	Halliburton	2200	N/A
27 Aug 14	8:00	2	9173.0	Polymer Mud	9.2	45	9.6	N/A	2.0/92.0	Halliburton	1900	N/A
28 Aug 14	8:00	2	12100.0	Polymer Mud	9.4	43	9.0	N/A	2.0/91.0	Halliburton	1900	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg	API
GRIX	Gamma Ray Data Density	points
GRSI	Gamma Ray Sliding Indicator	unitless
GRTX	Gamma Ray Time Since Drilled	min
ROPA	Rate of Penetration, 3.0 ft. Avg	ft/hr
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft.
WOBA	Surface Weight on Bit, 1.0 ft. Avg.	klbs

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12440863	Directional	61.70	6.750	3.250
1	SRIG	10098472	Gamma	58.33	6.750	3.250
1	DIR	12546337	Directional	64.41	4.750	2.625
1	SRIG	12600744	Gamma	61.03	4.750	2.625

Service and Tool Mnemonics

Mnemonic	Name	Description
DIR	Directional	Wellbore directional survey
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module

Comments

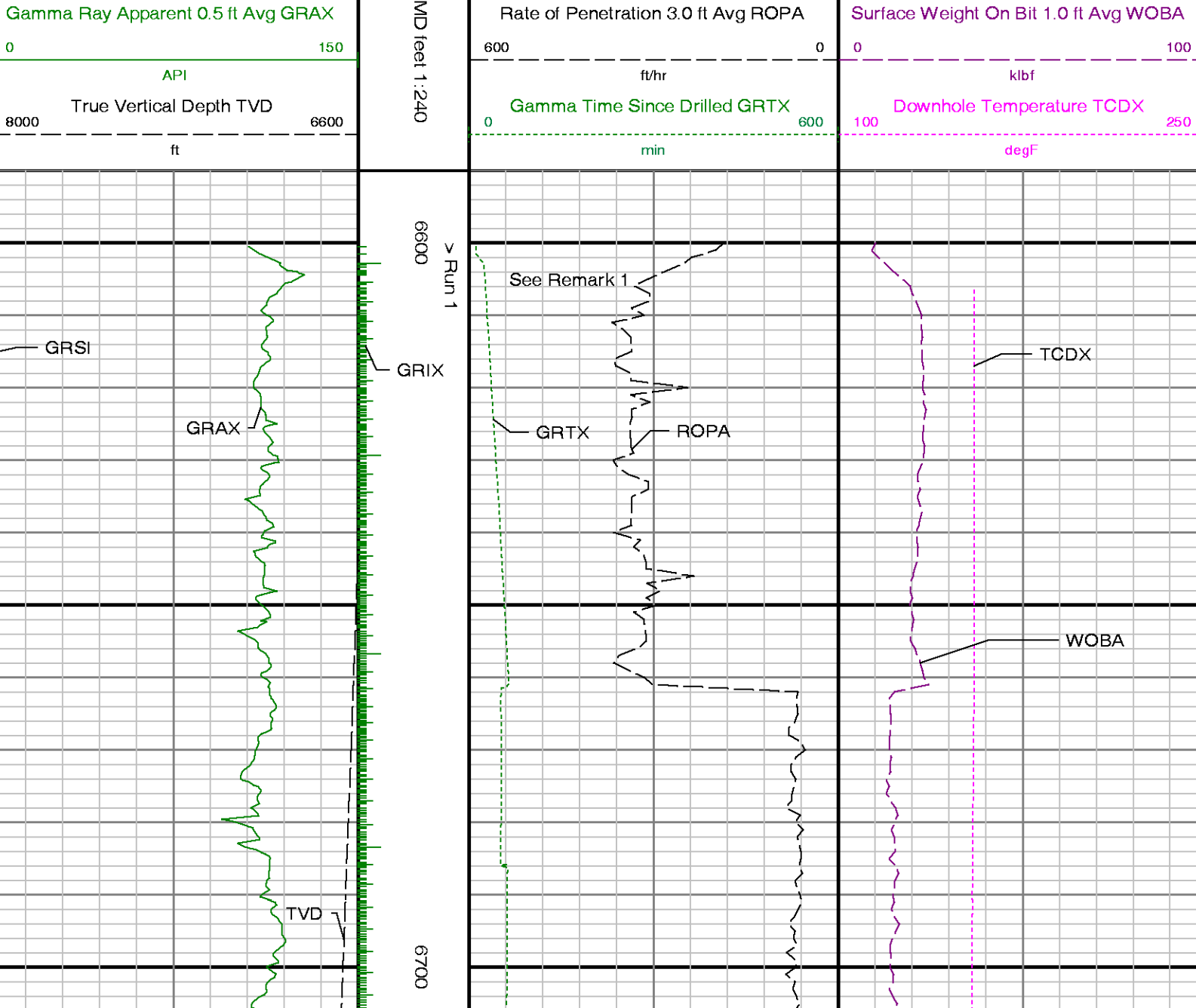
1.) Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to represent logging data.
2.) Baker Hughes Run 1 utilized a 6 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind an 8 3/4 inch bit and steerable assembly from 1241 to 7513 feet MD (1240 to 7170 feet TVD).
3.) Baker Hughes Run 2 utilized a 4 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind a 6 1/8 inch bit and steerable assembly from 7513 to 14120 feet MD ( 7170 to 7160 feet TVD).
4.) A sliding indicator is shown on the left side of track 1 as a heavy line. This indicator has been depth-shifted to the Gamma Ray sensor offset to correspond with Gamma Ray data acquired while sliding.

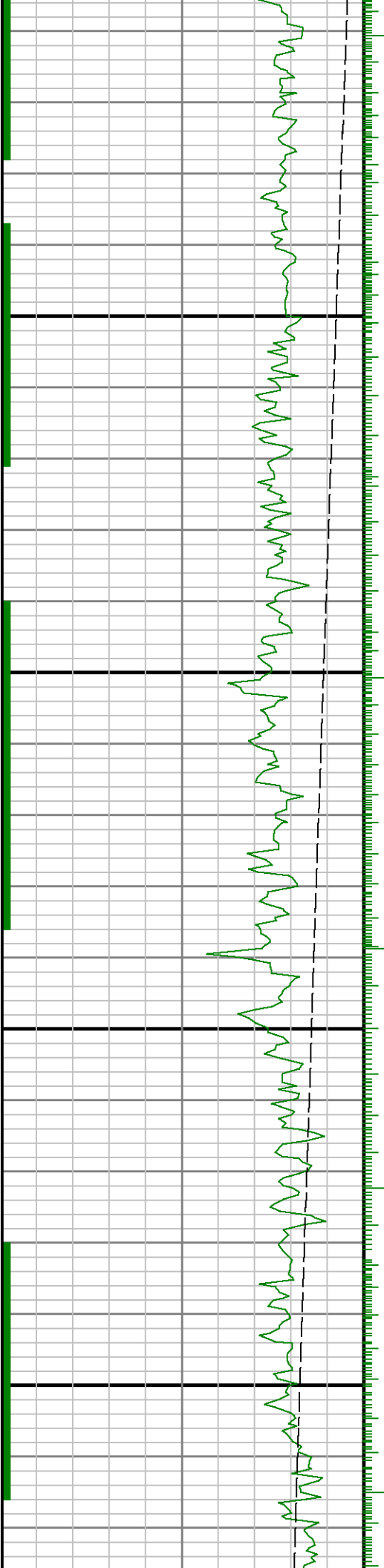
Remarks

Number	Measured Depth (ft)	Hole Section (in.)	LWD Run No.	Remark
1	6600	8.750	1	Logging services began at 6600. No logging data prior to 6600 feet MD.(6599) feet TVD as per client request.
2	7459	8.750	1	The interval from 7459 to 7513 feet MD(7175 to 7170 feet TVD) was logged up to 36 hours after being drilled due to casing operations
3	14059	6.125	2	The interval from 14059 to 14120 feet MD (7159 to 7160 feet TVD) was not logged due to gamma sensor offset to bit at TD



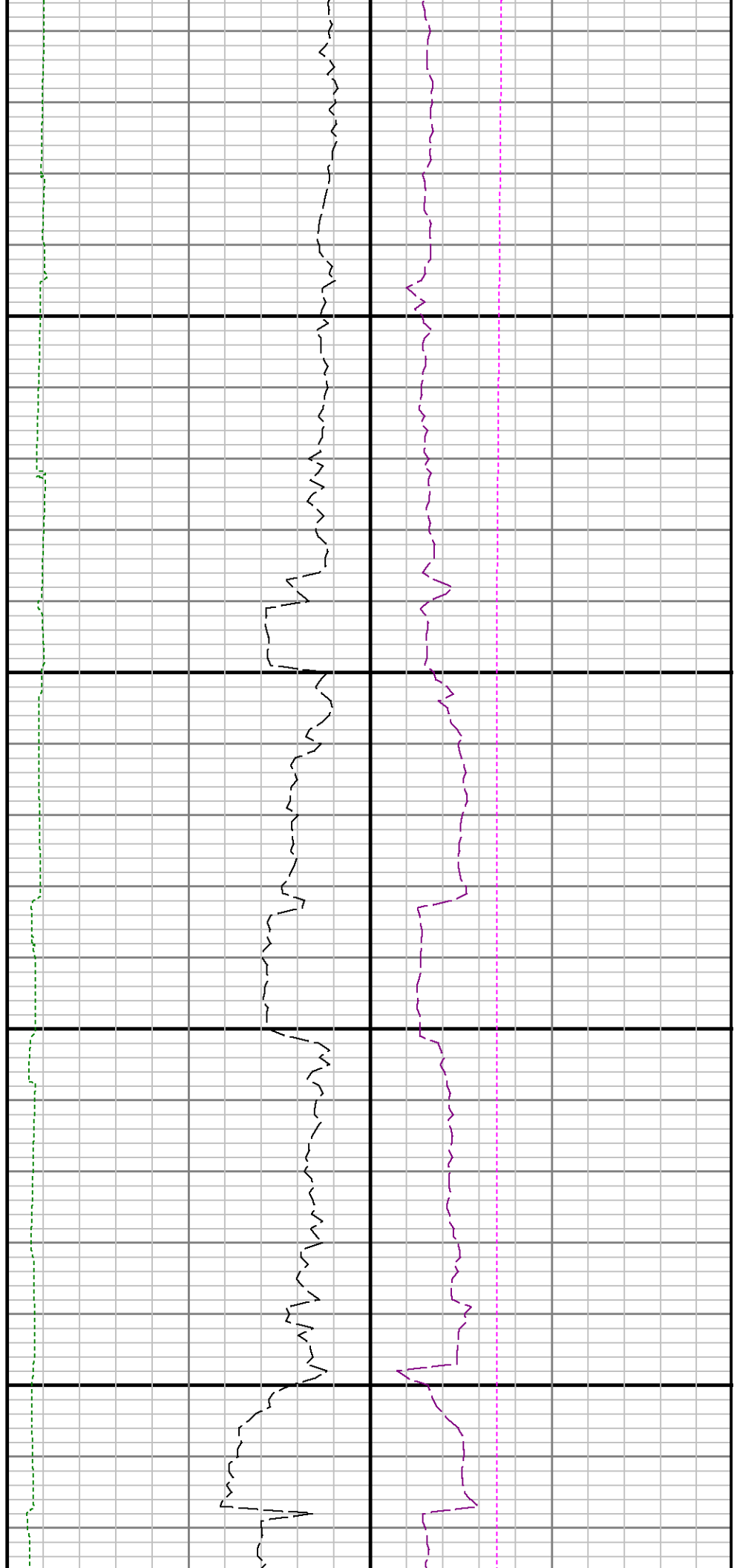
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Well : Benson Farms 23N-19H2  
Interval : 6590.00 - 14150.00 feet  
Created : 29/Aug/2014 12:20:09 PM

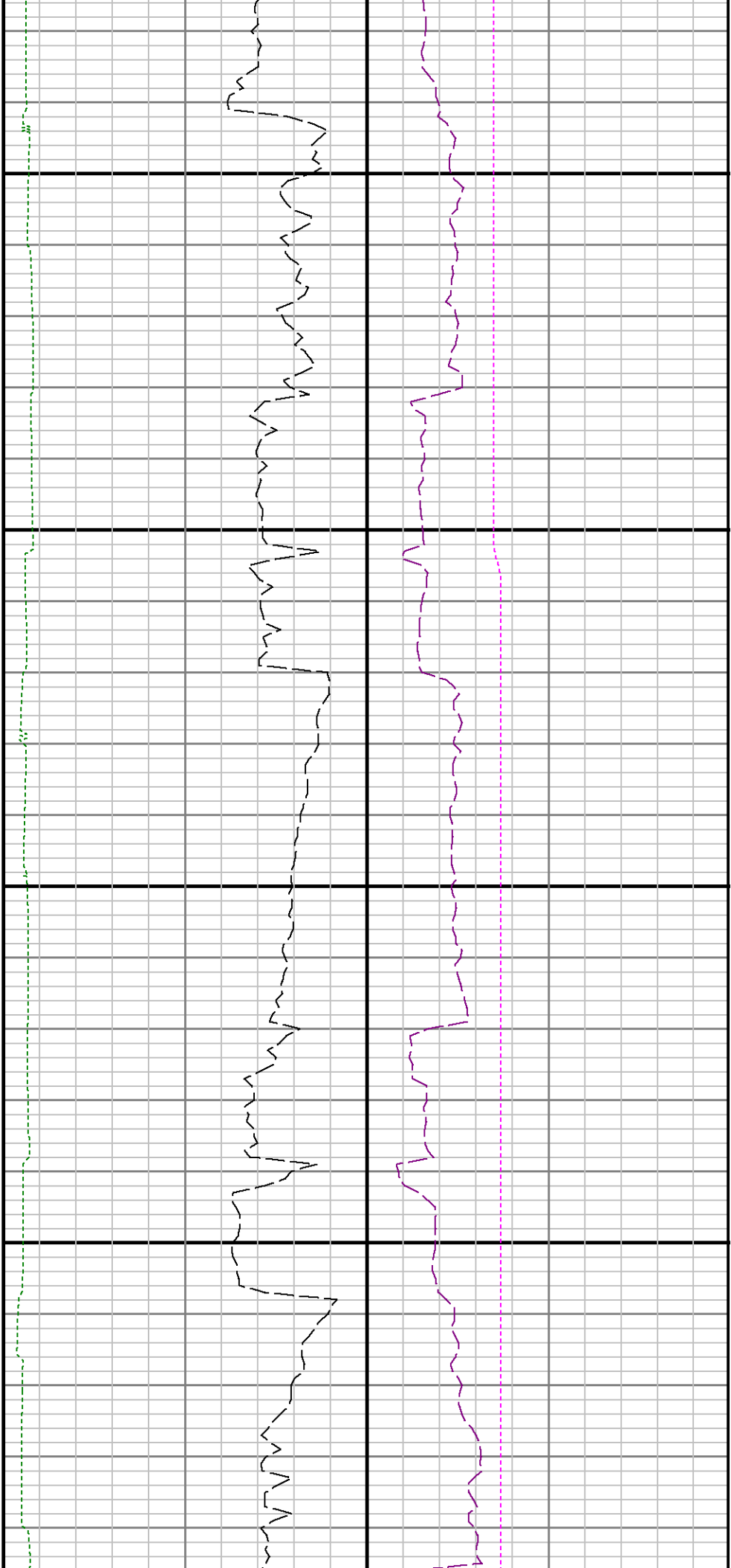




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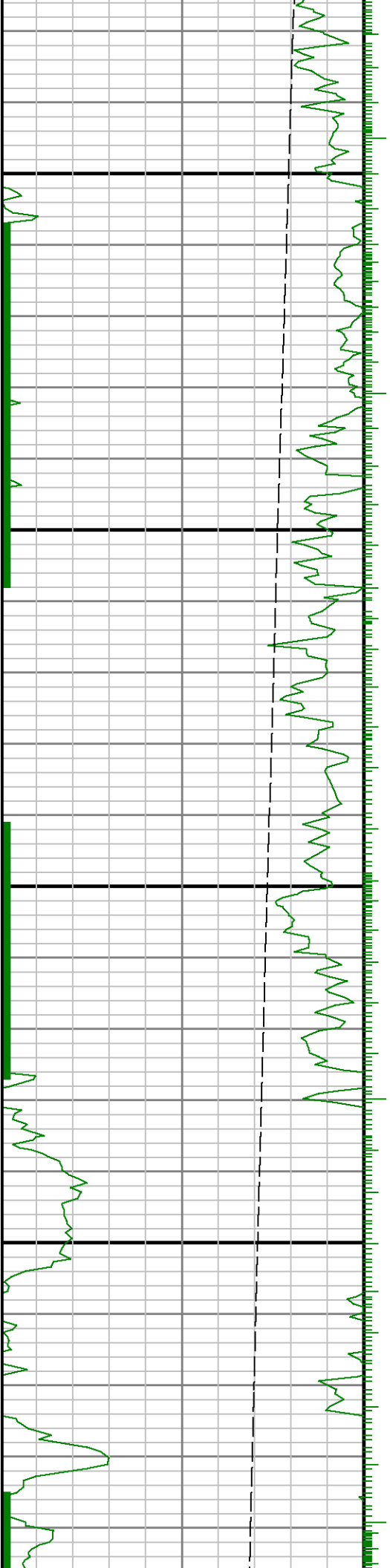
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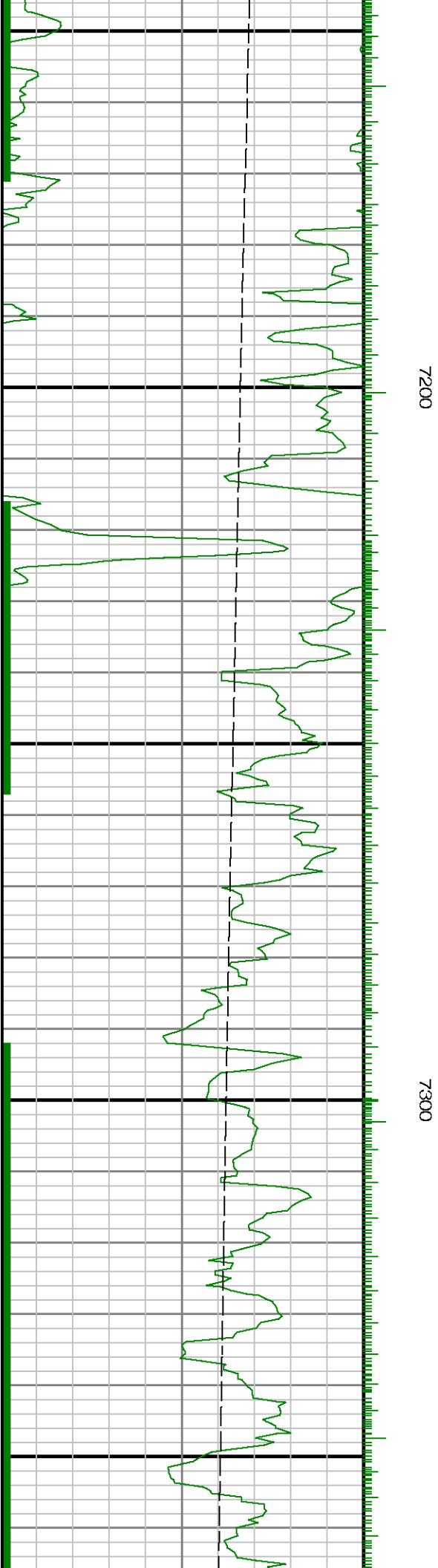
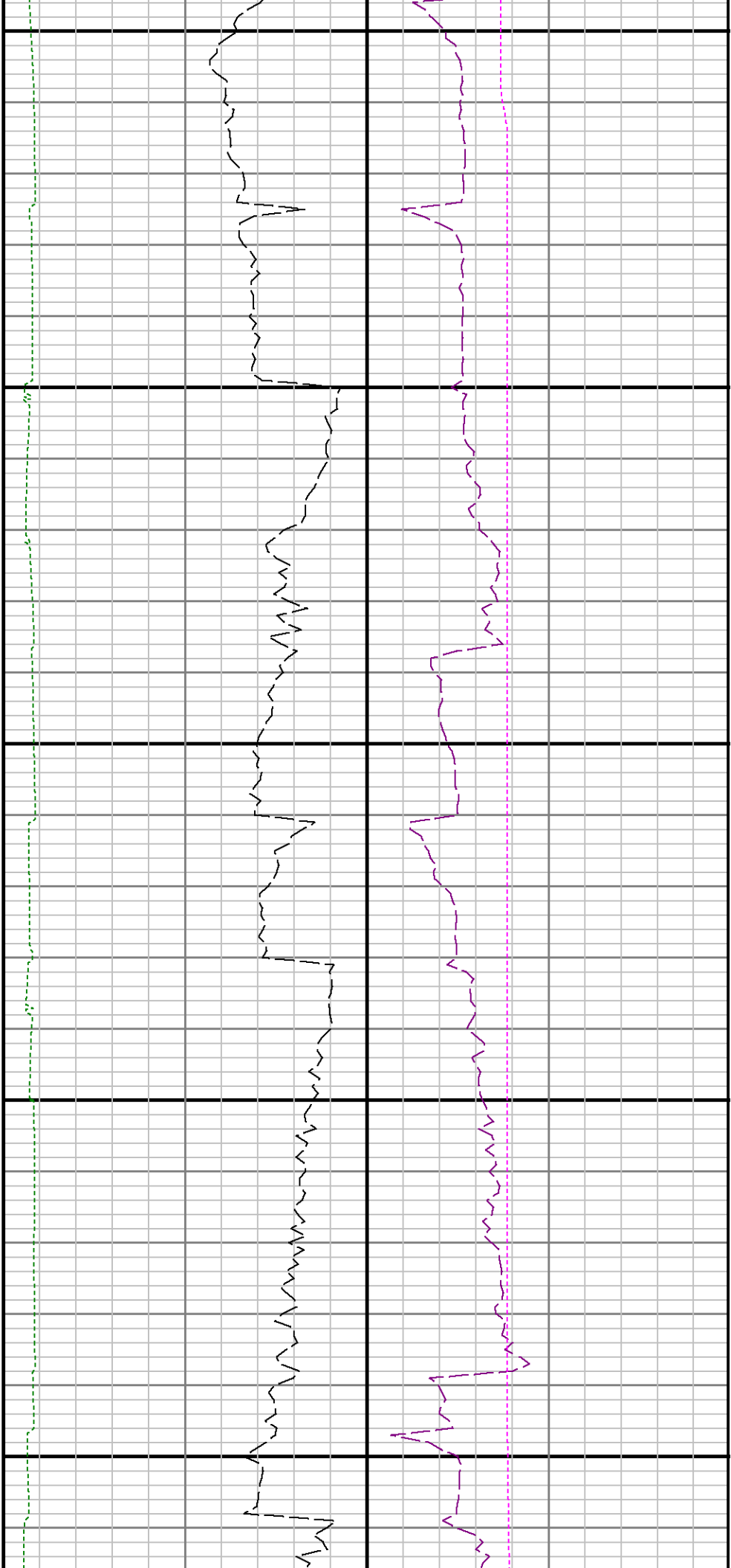


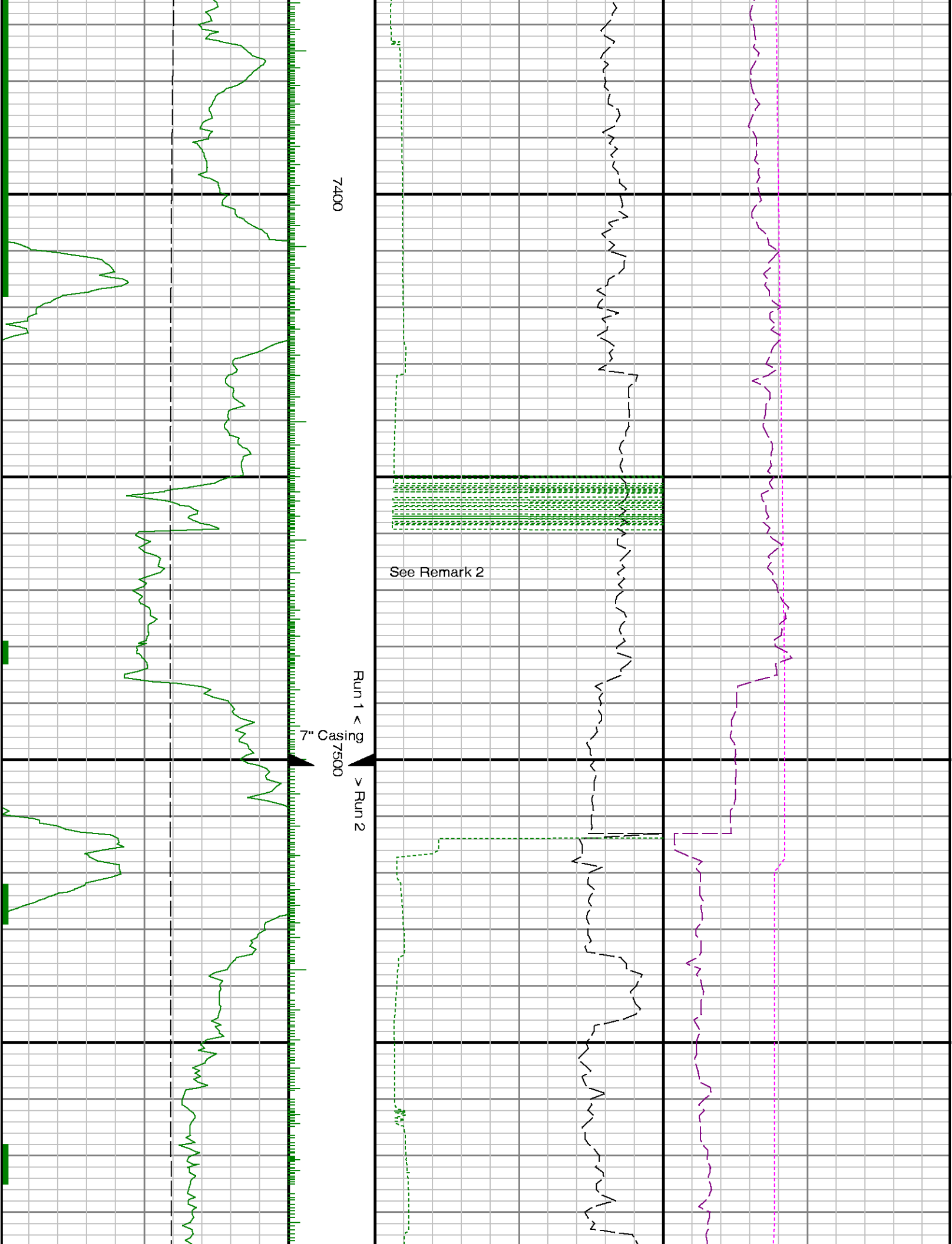


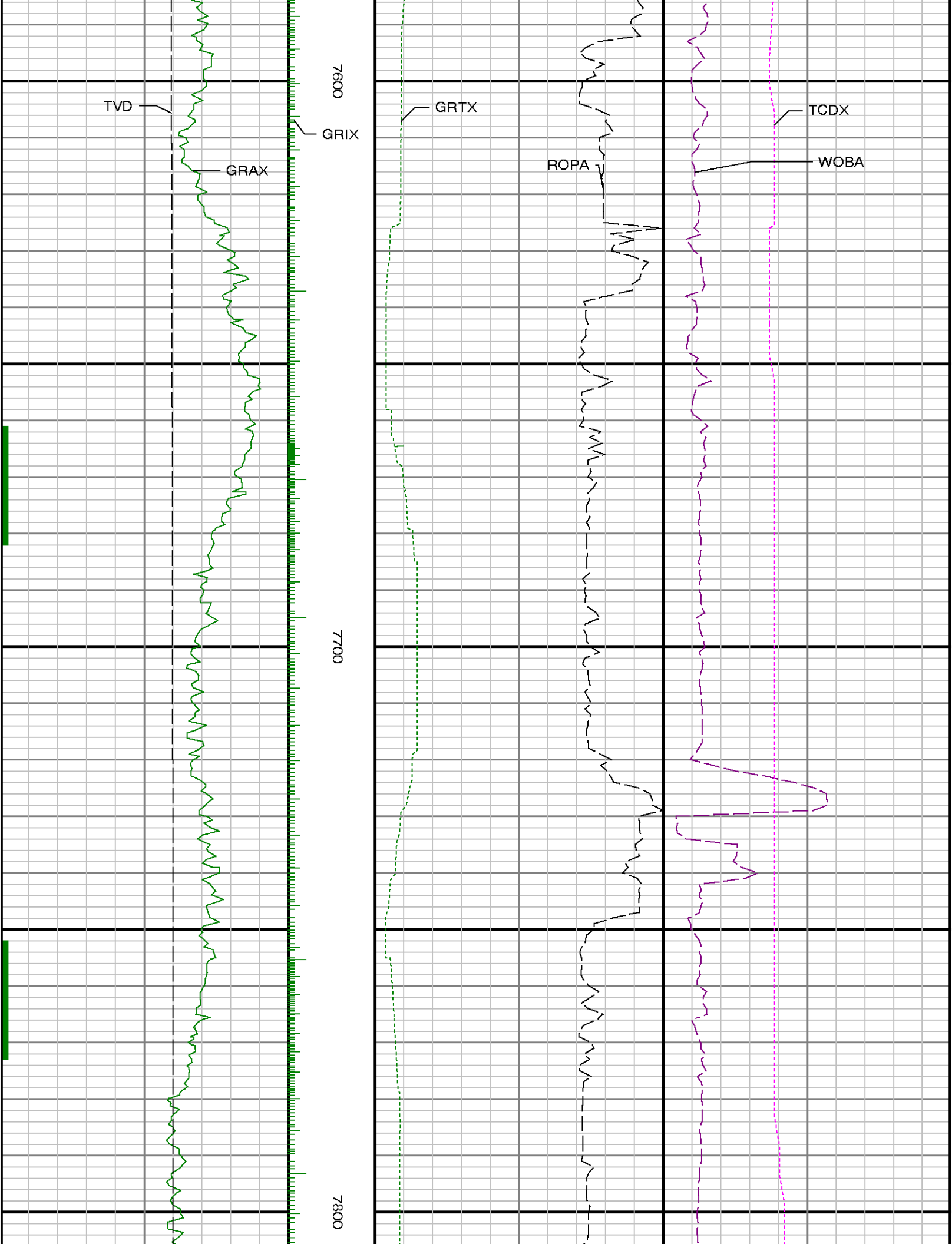
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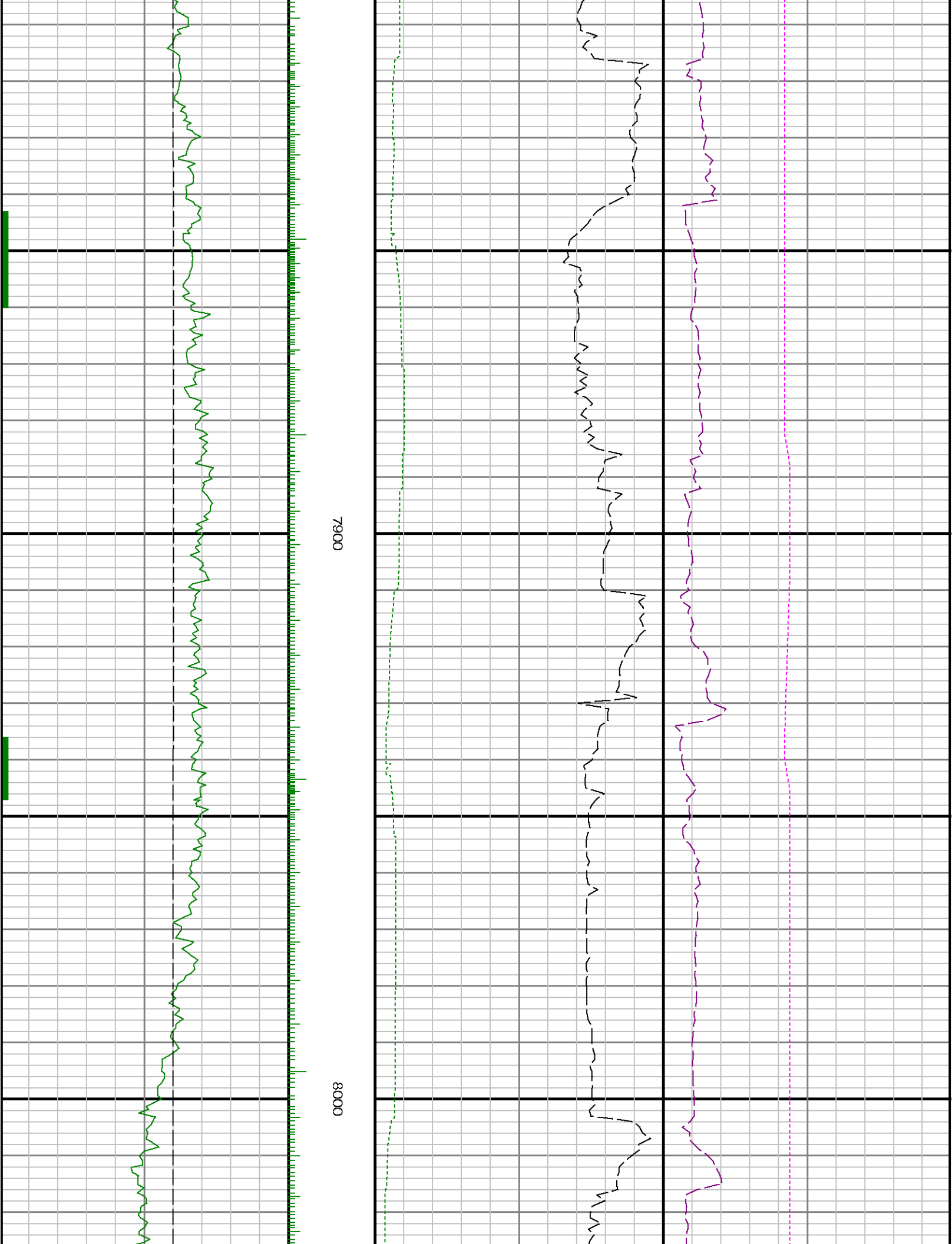








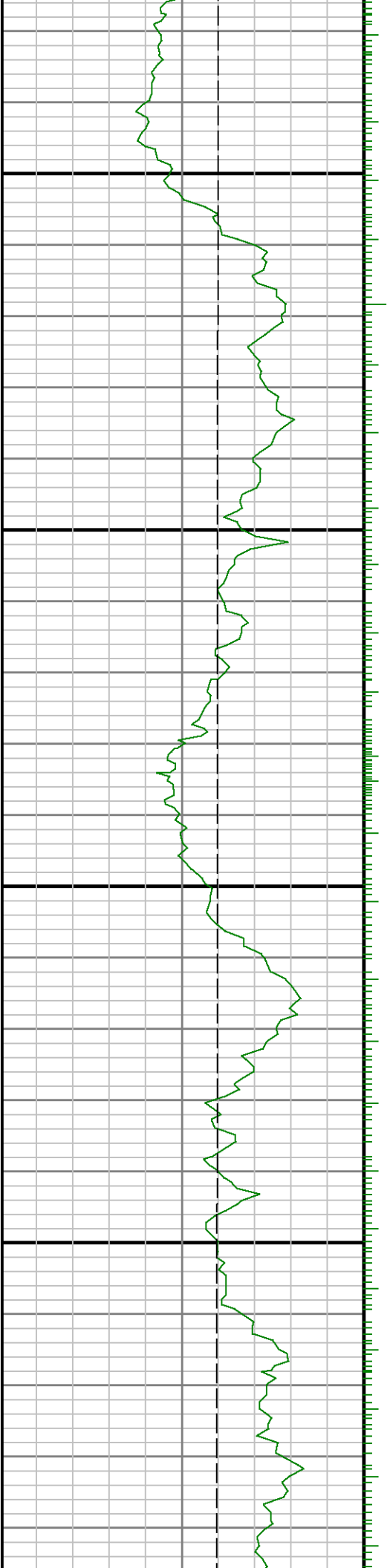


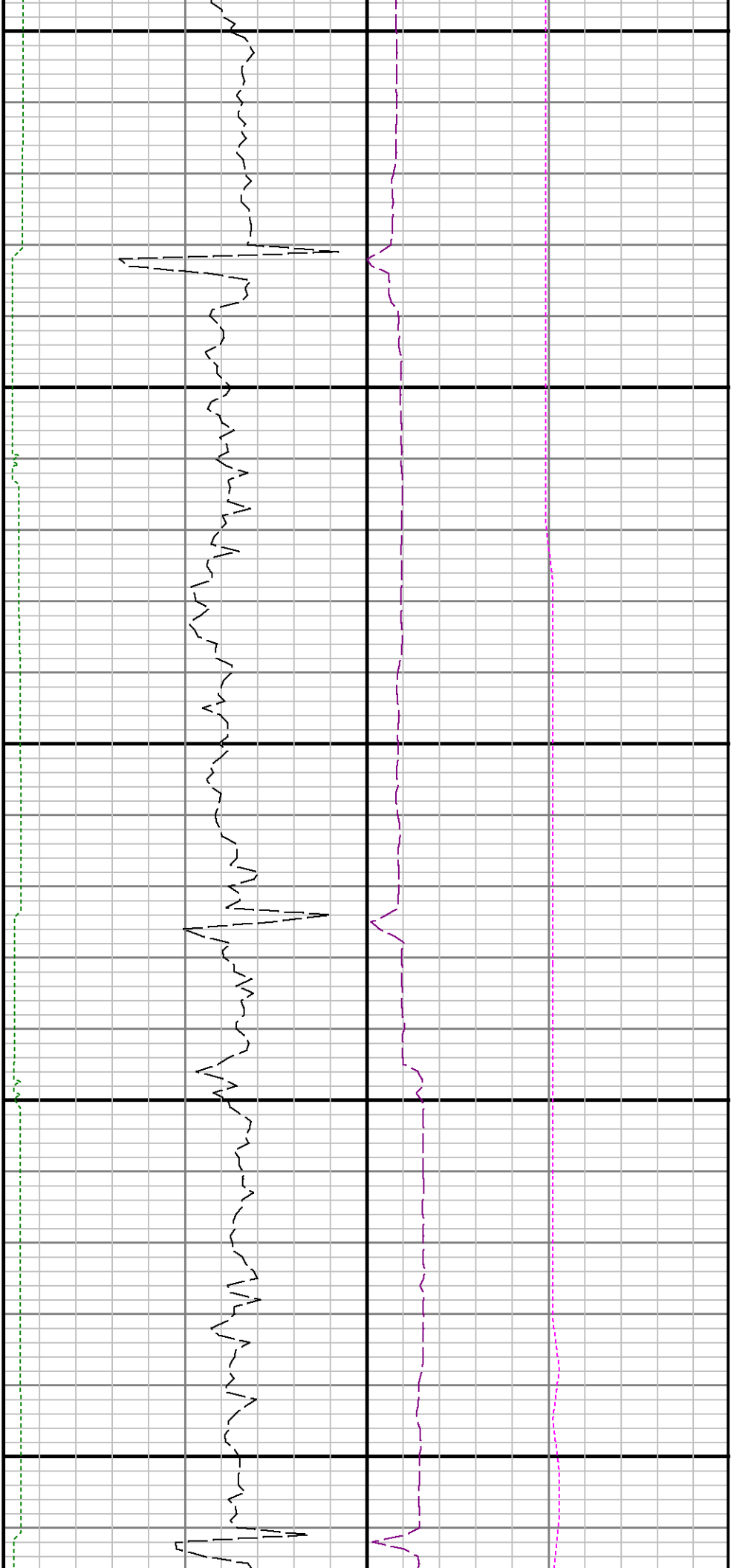




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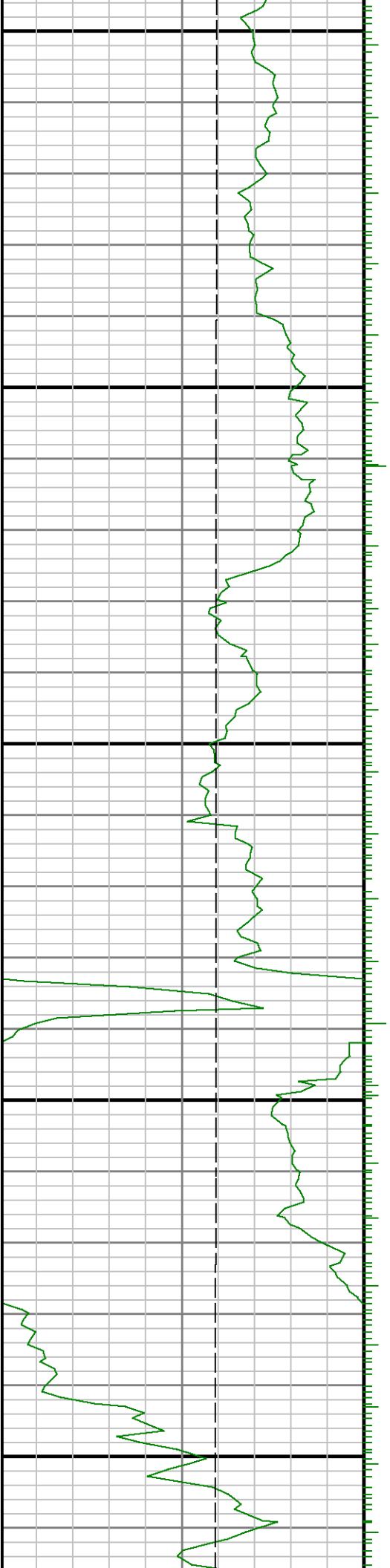
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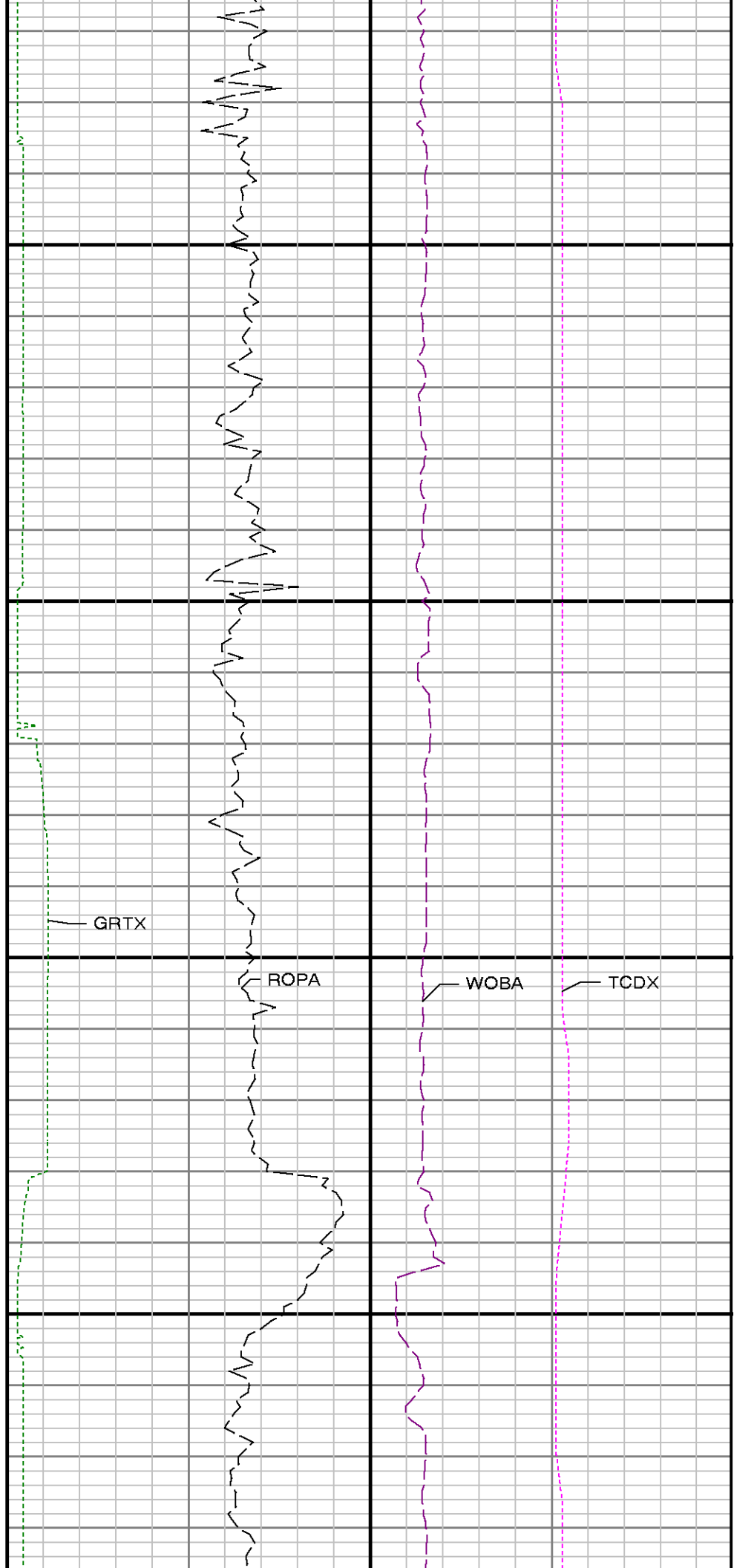
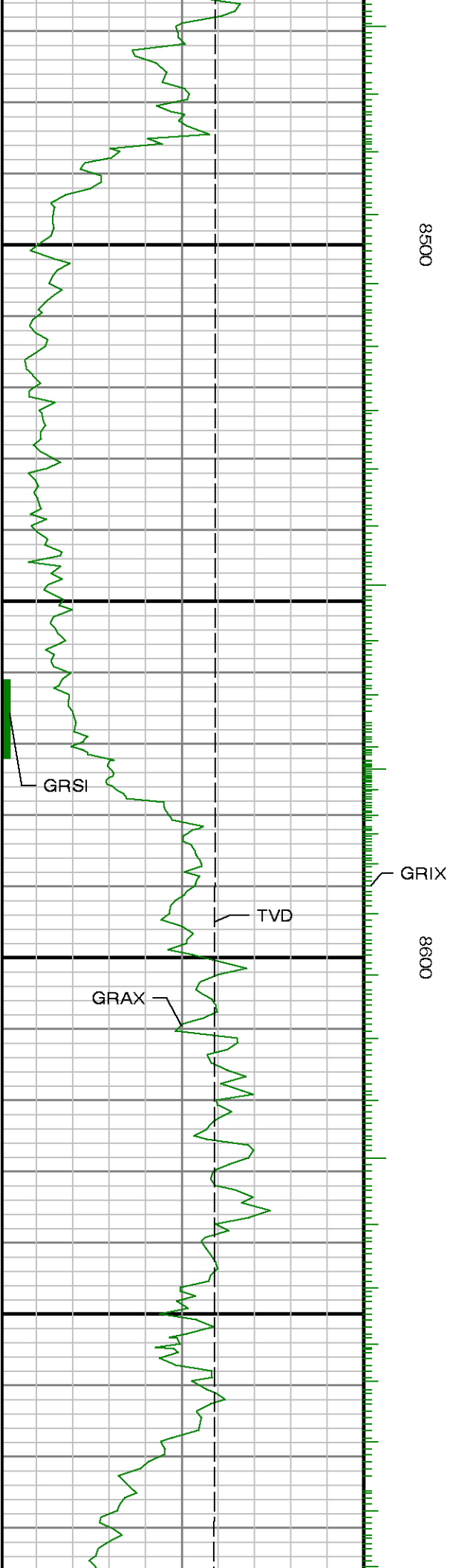


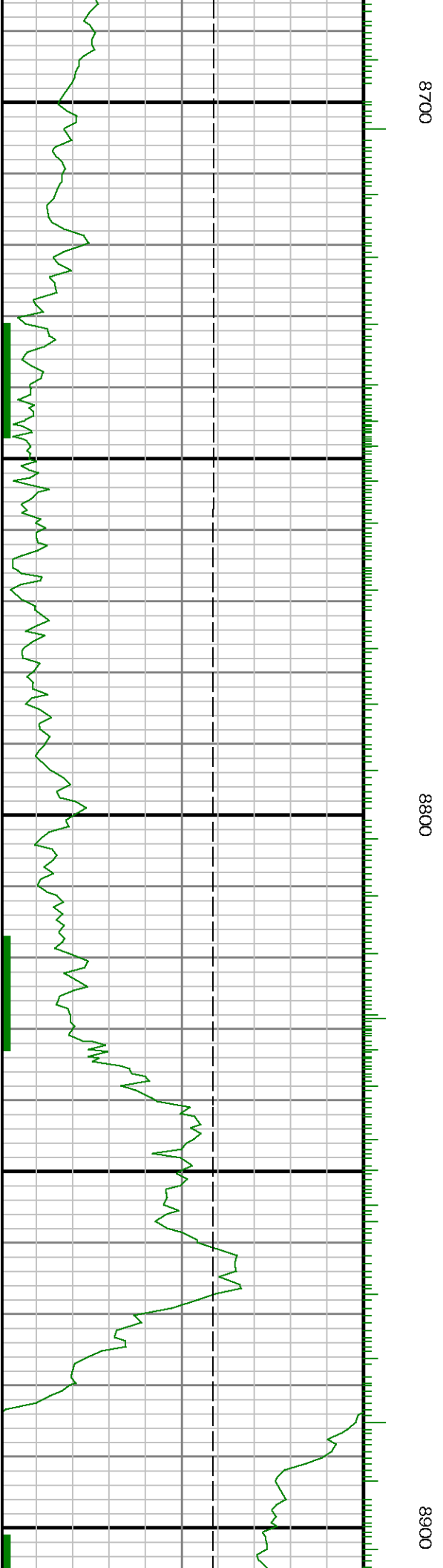
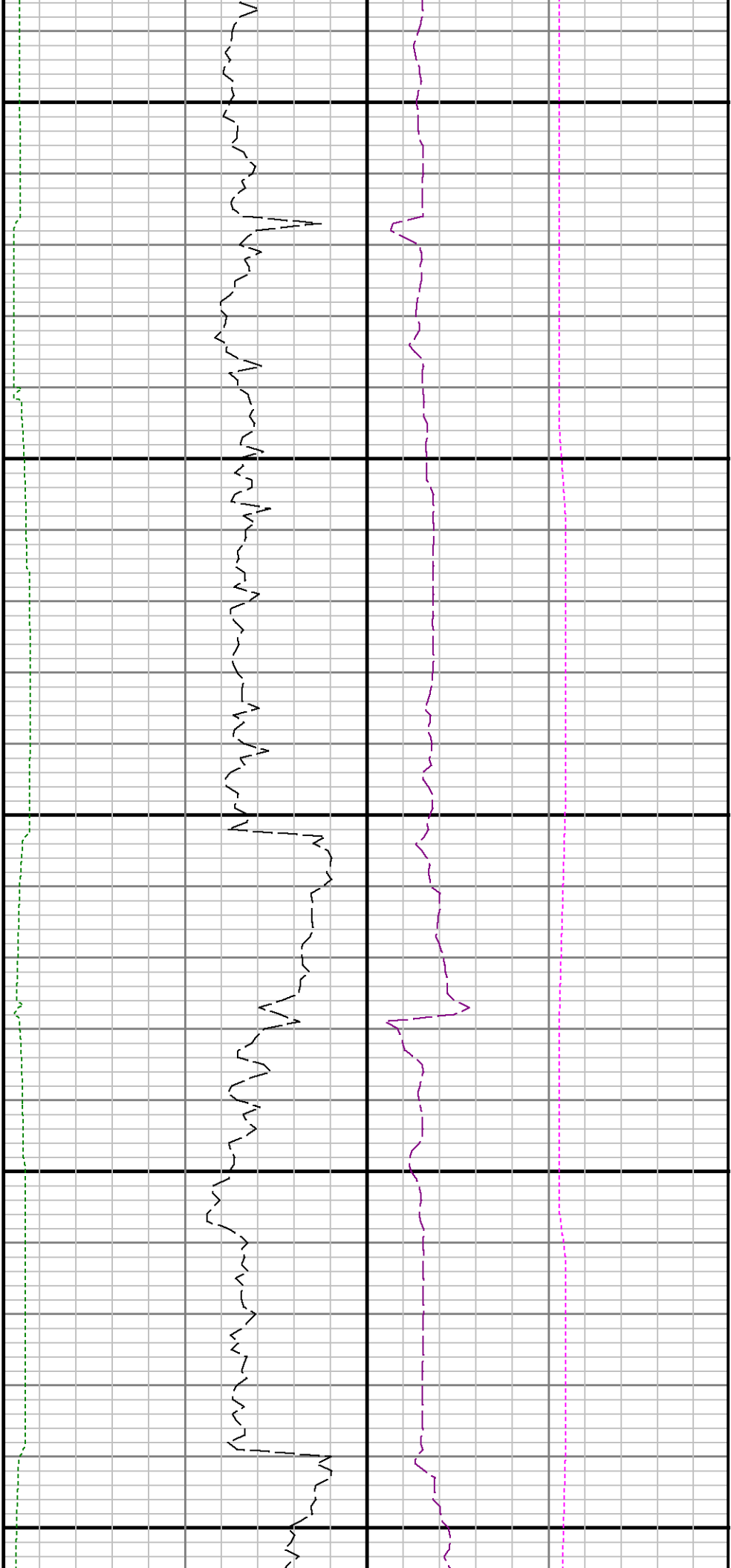


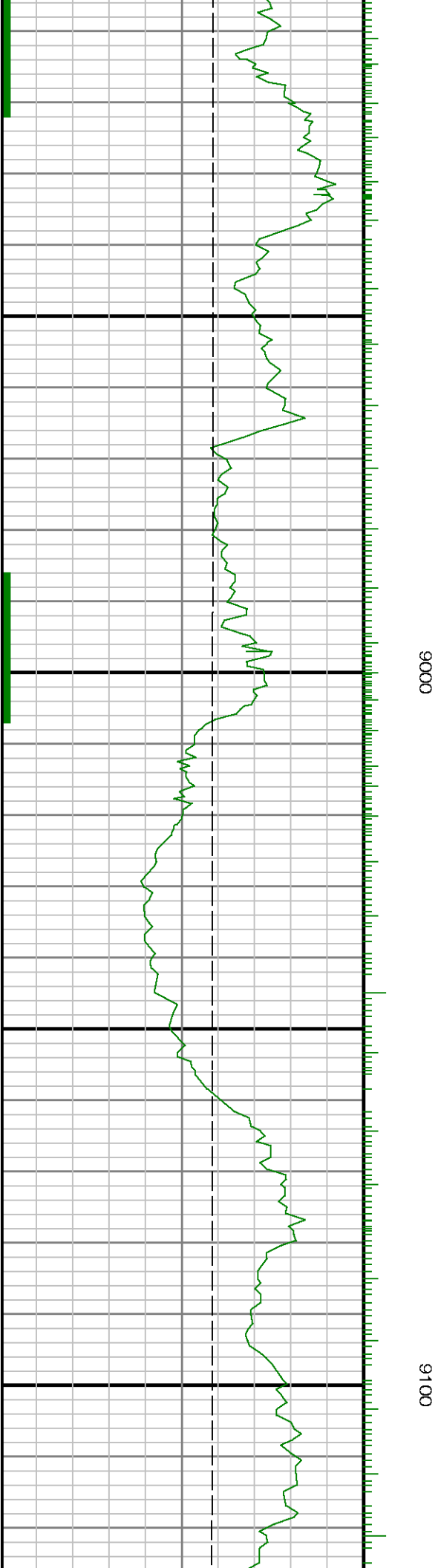
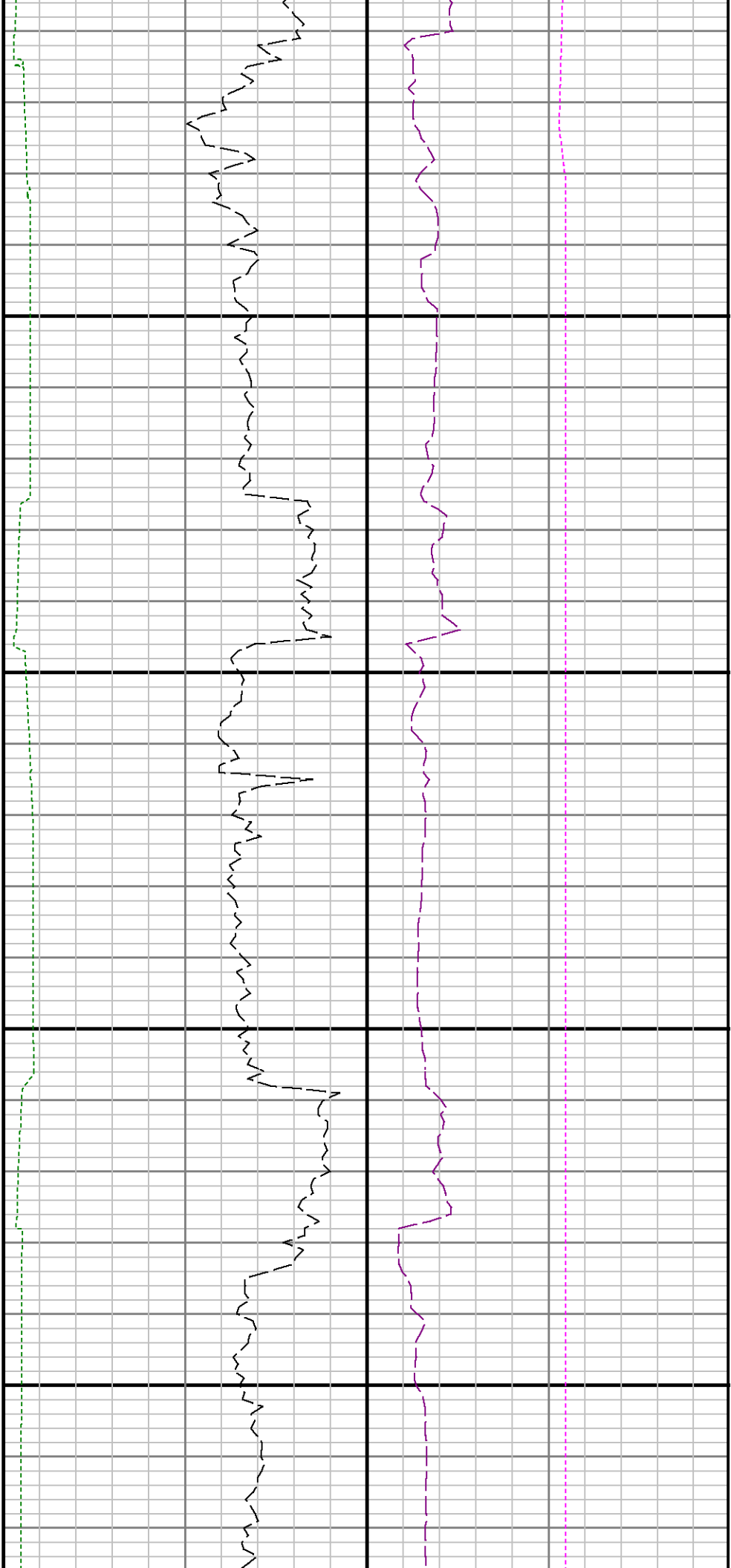
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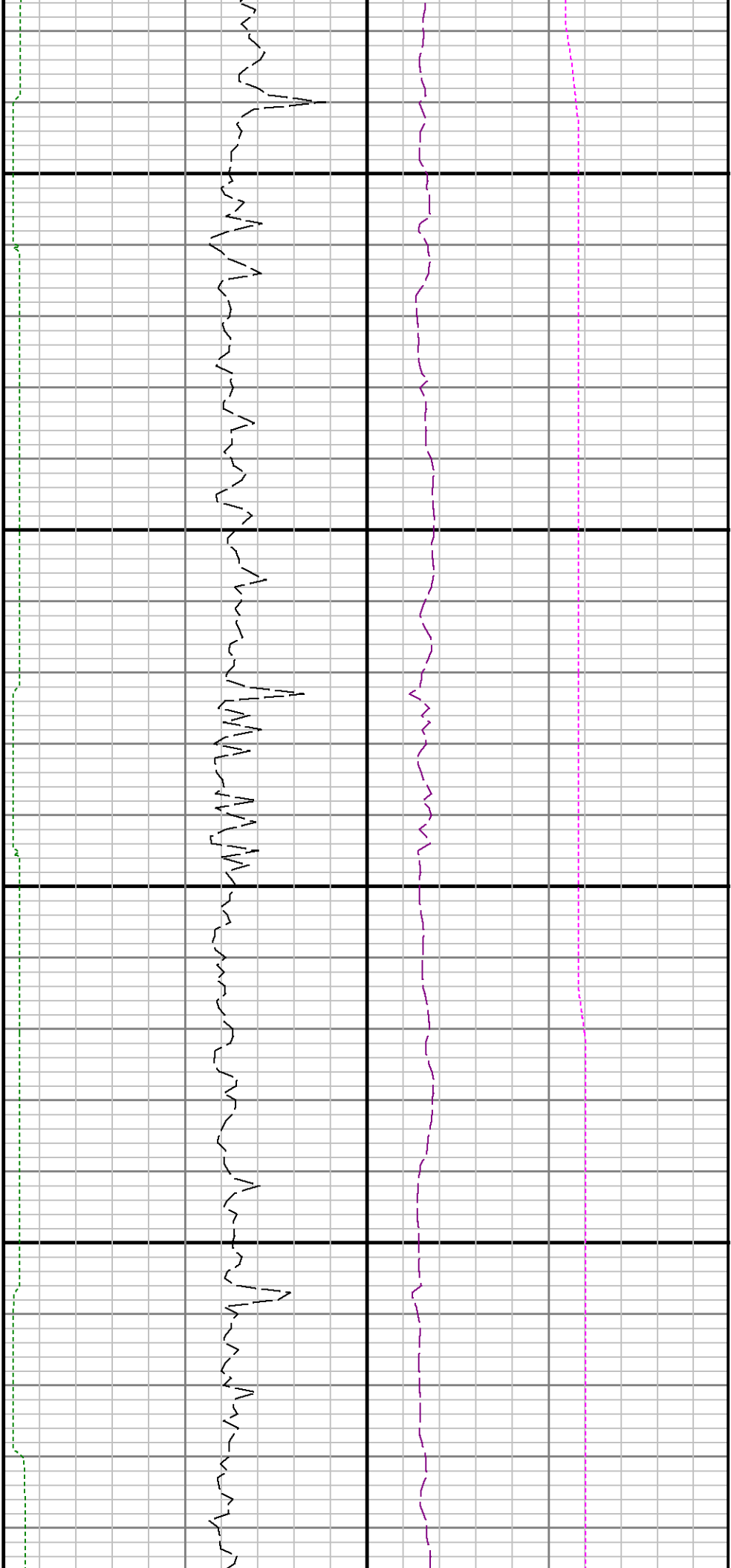
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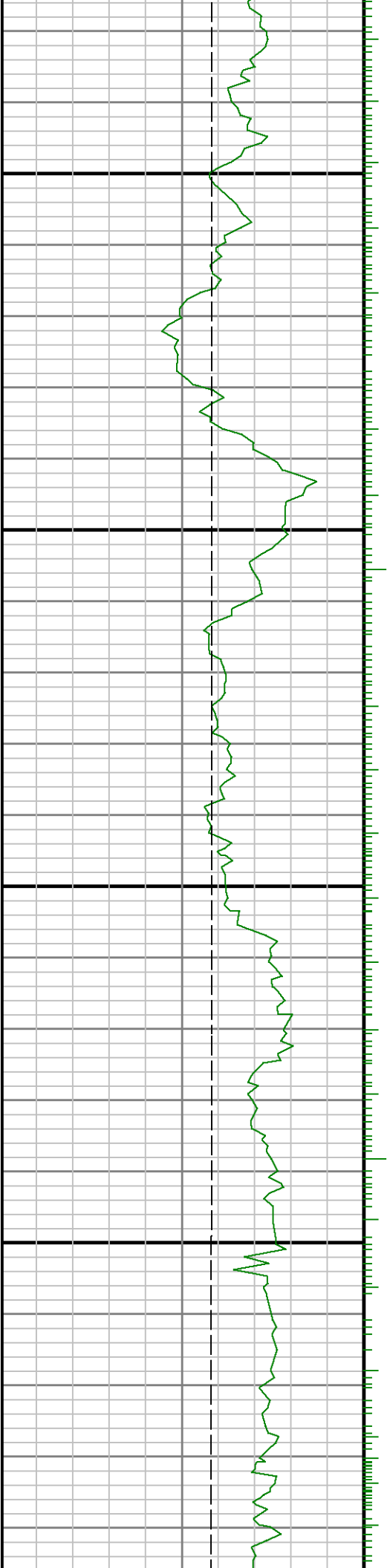


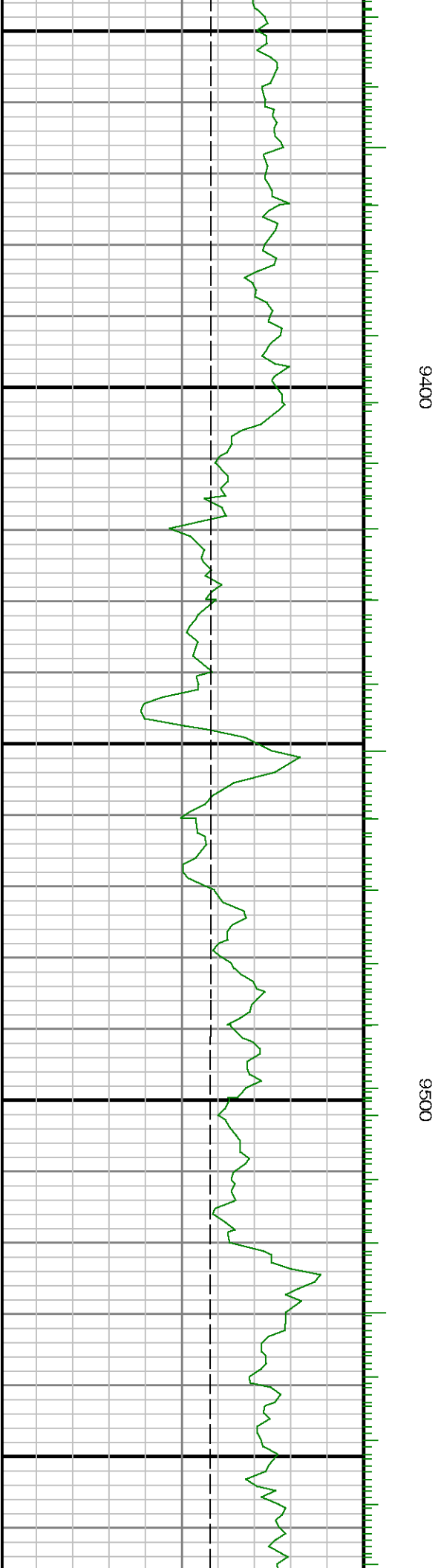
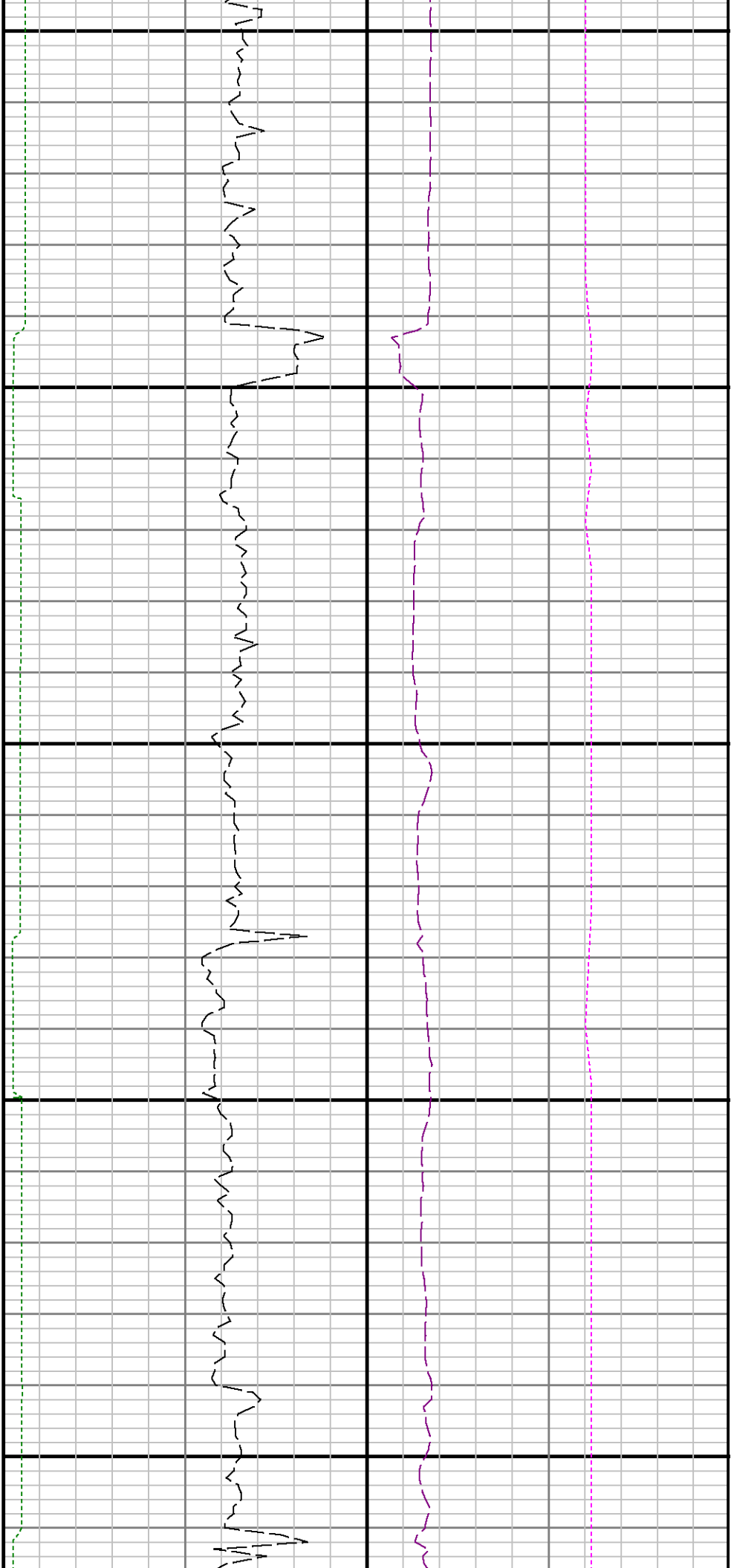




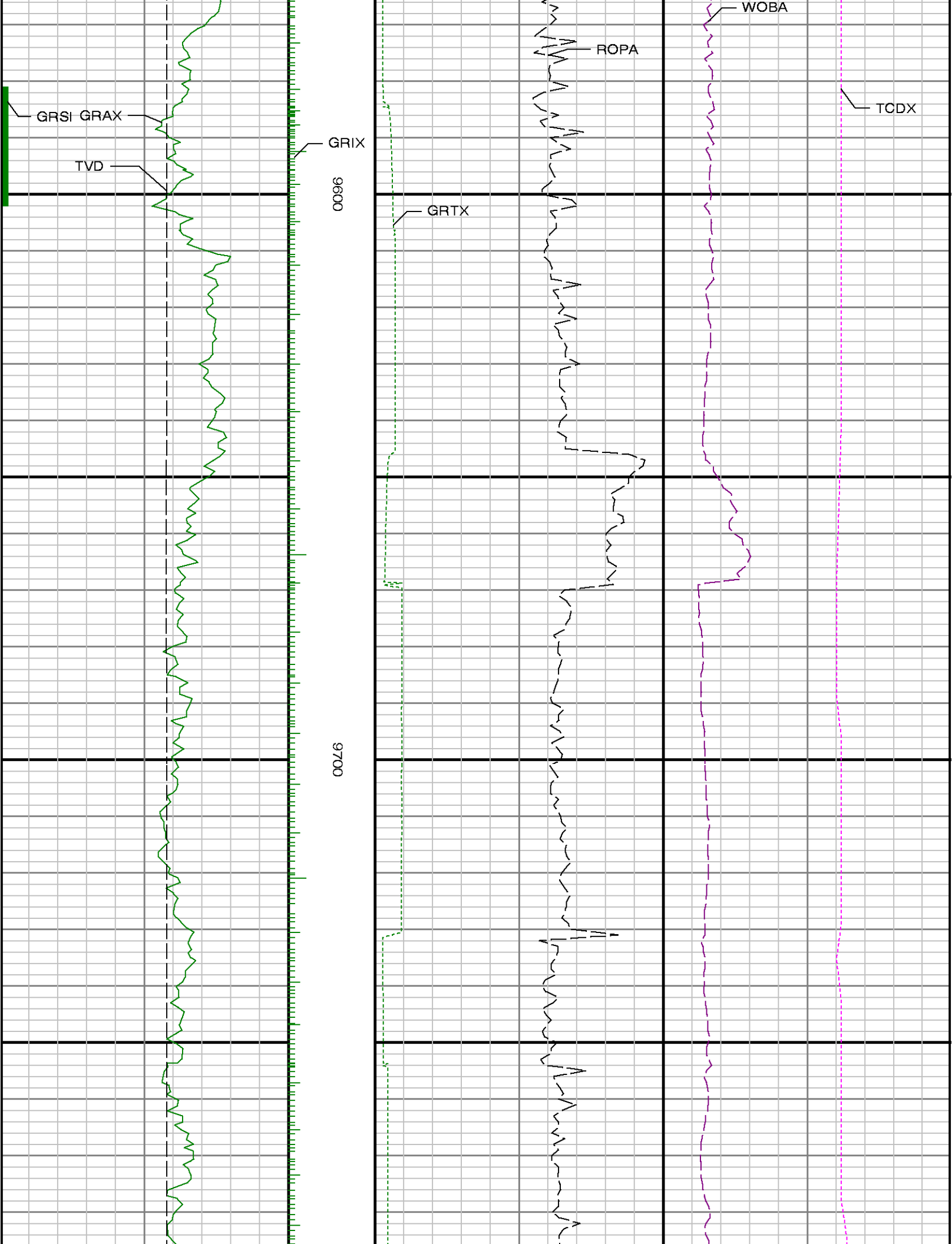
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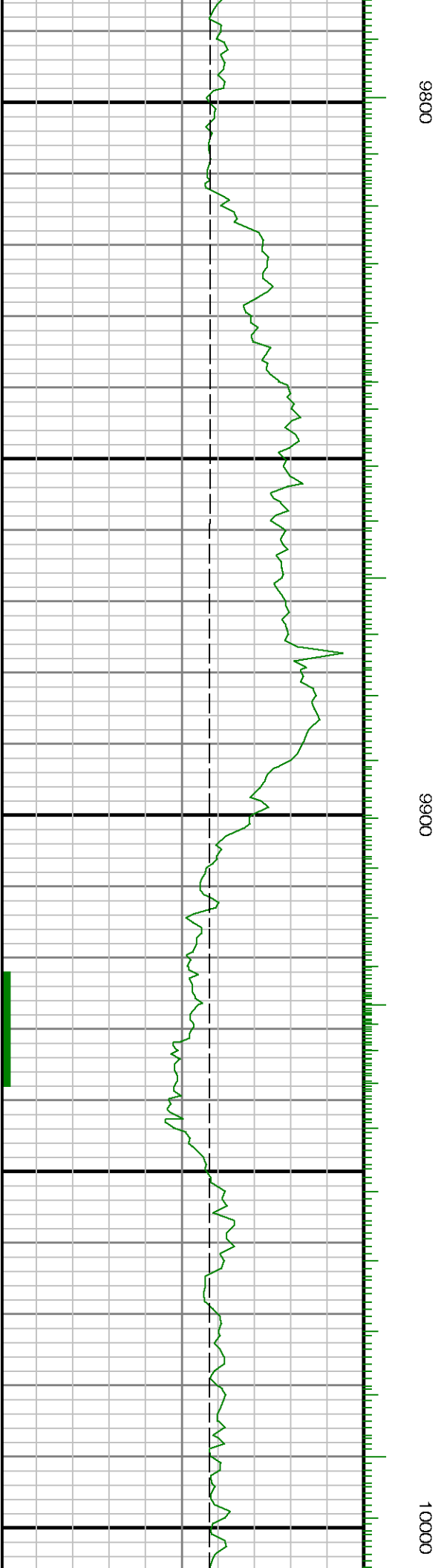
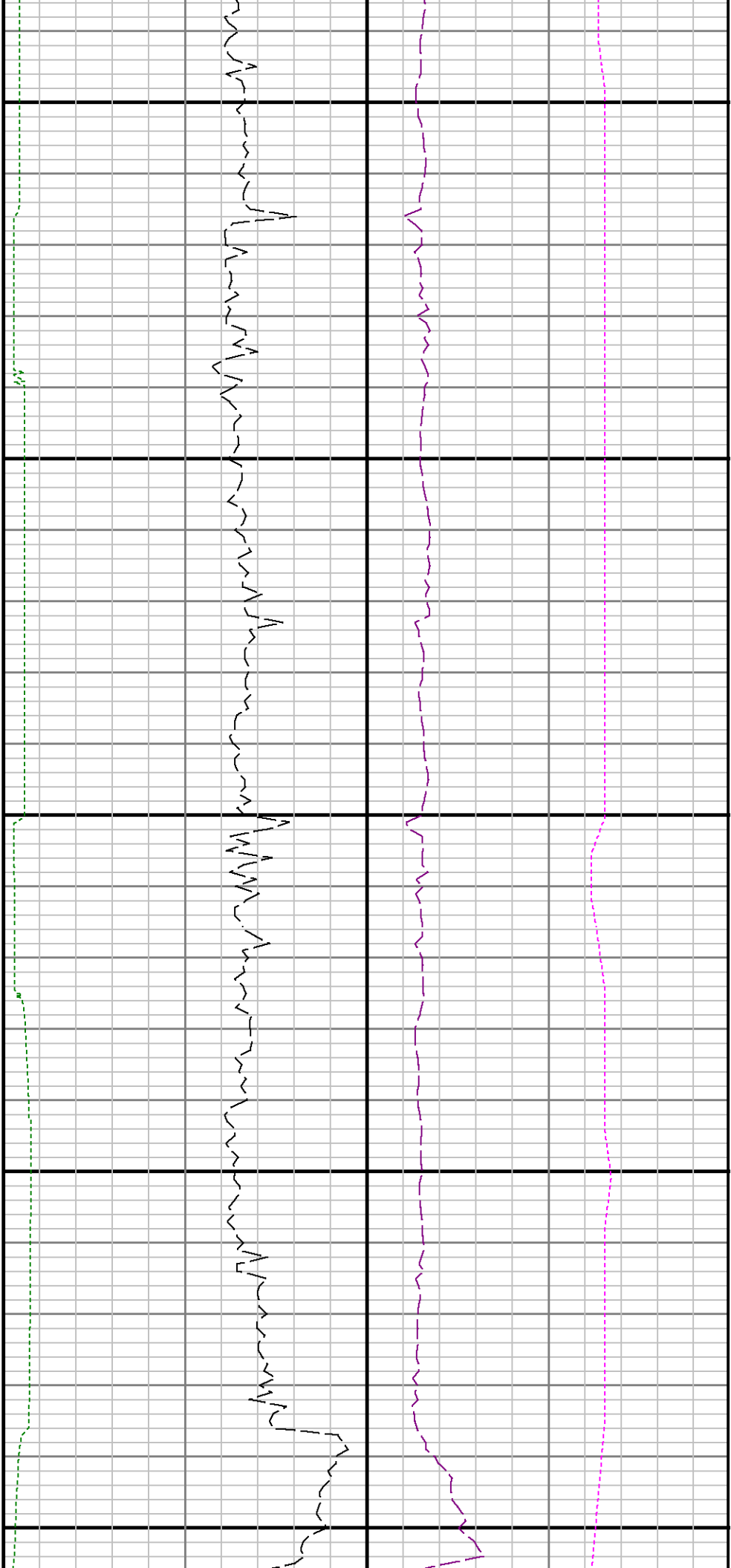
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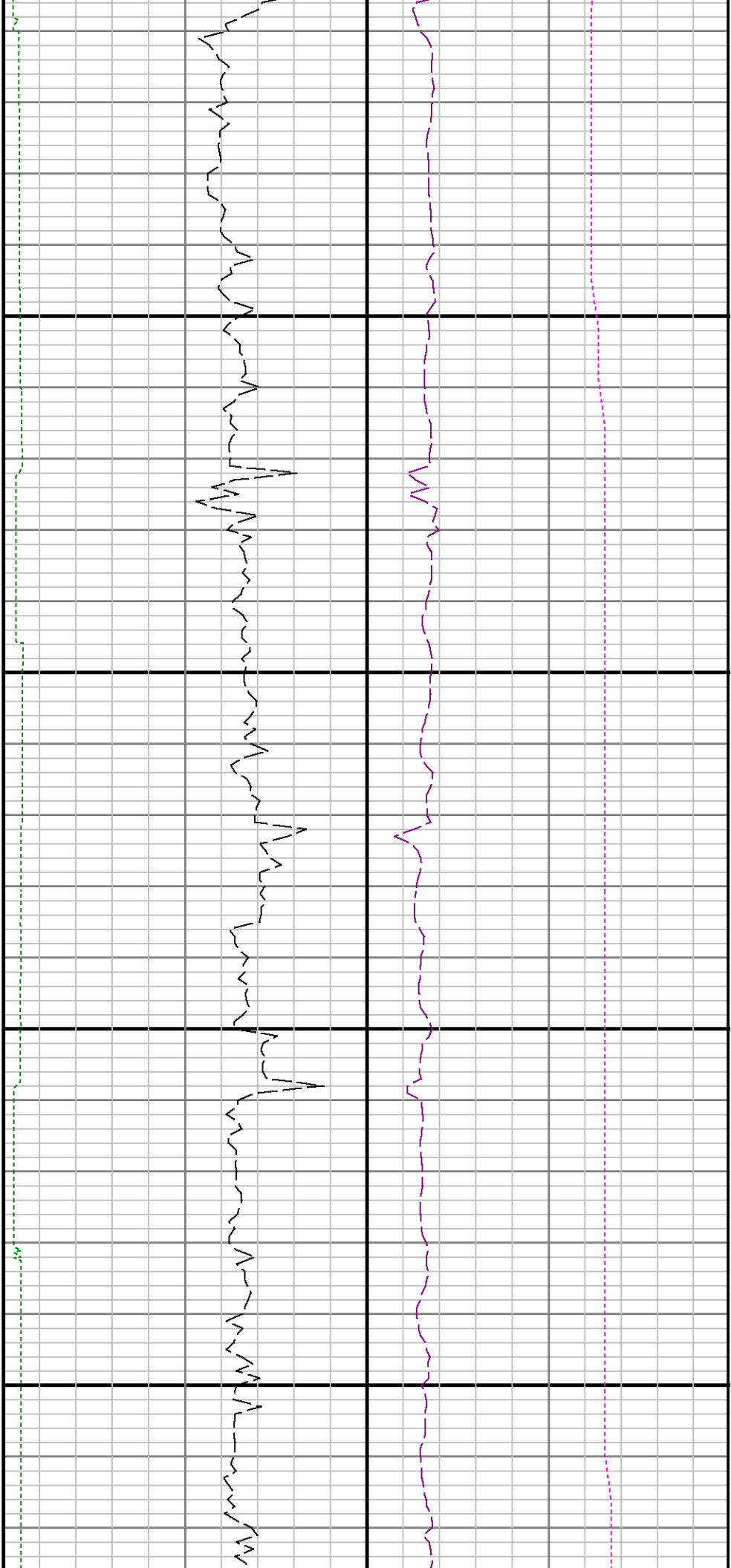






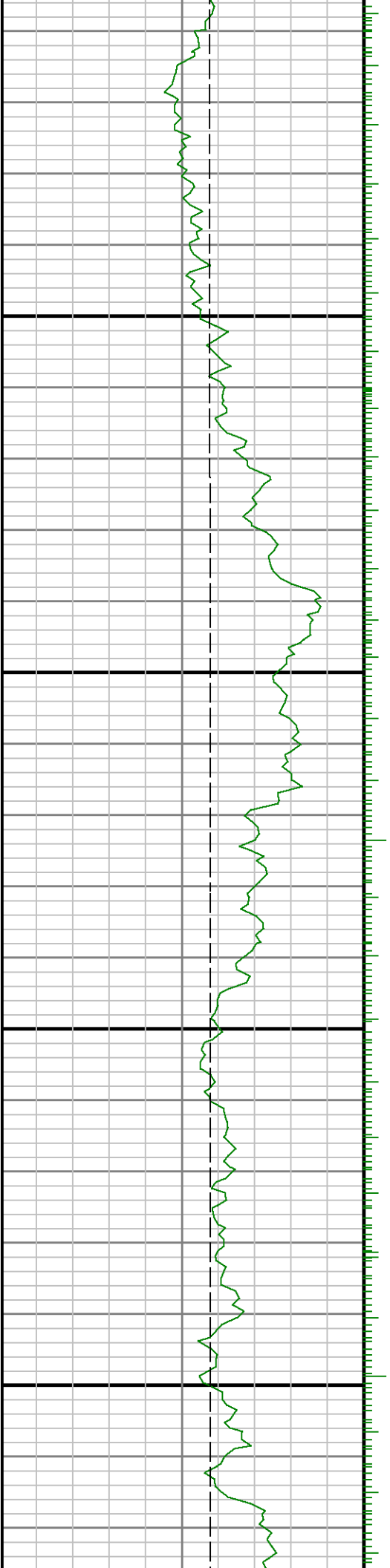


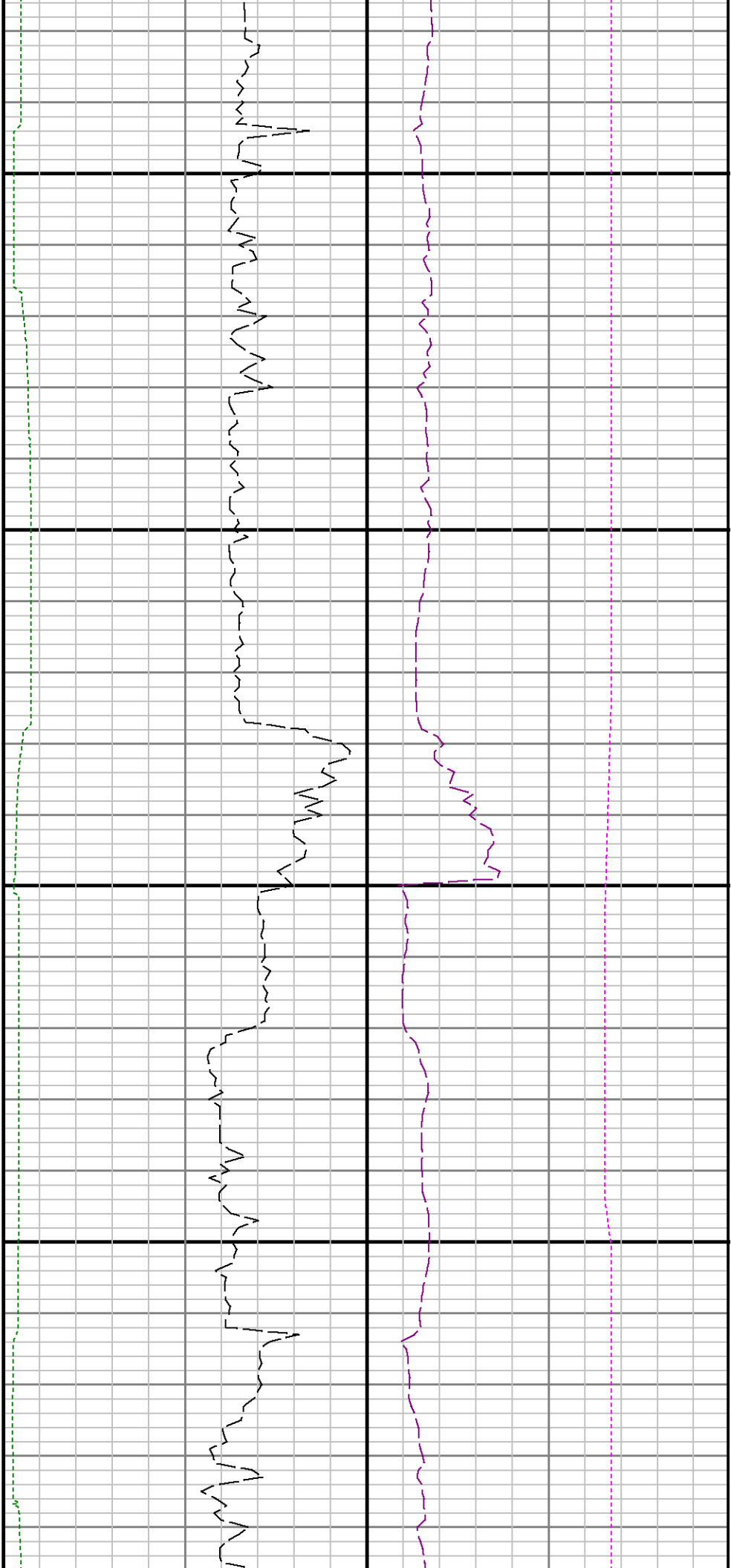




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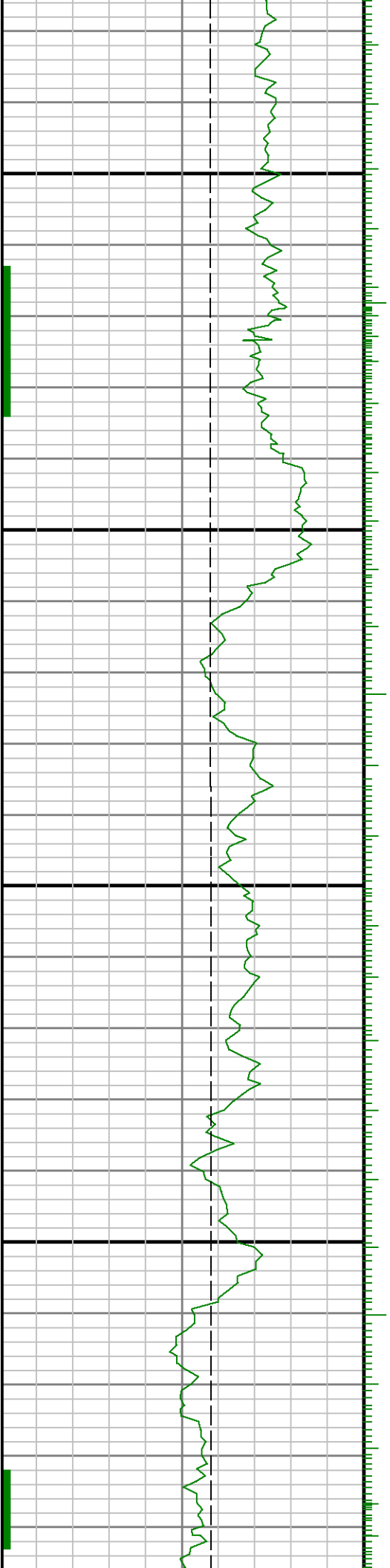
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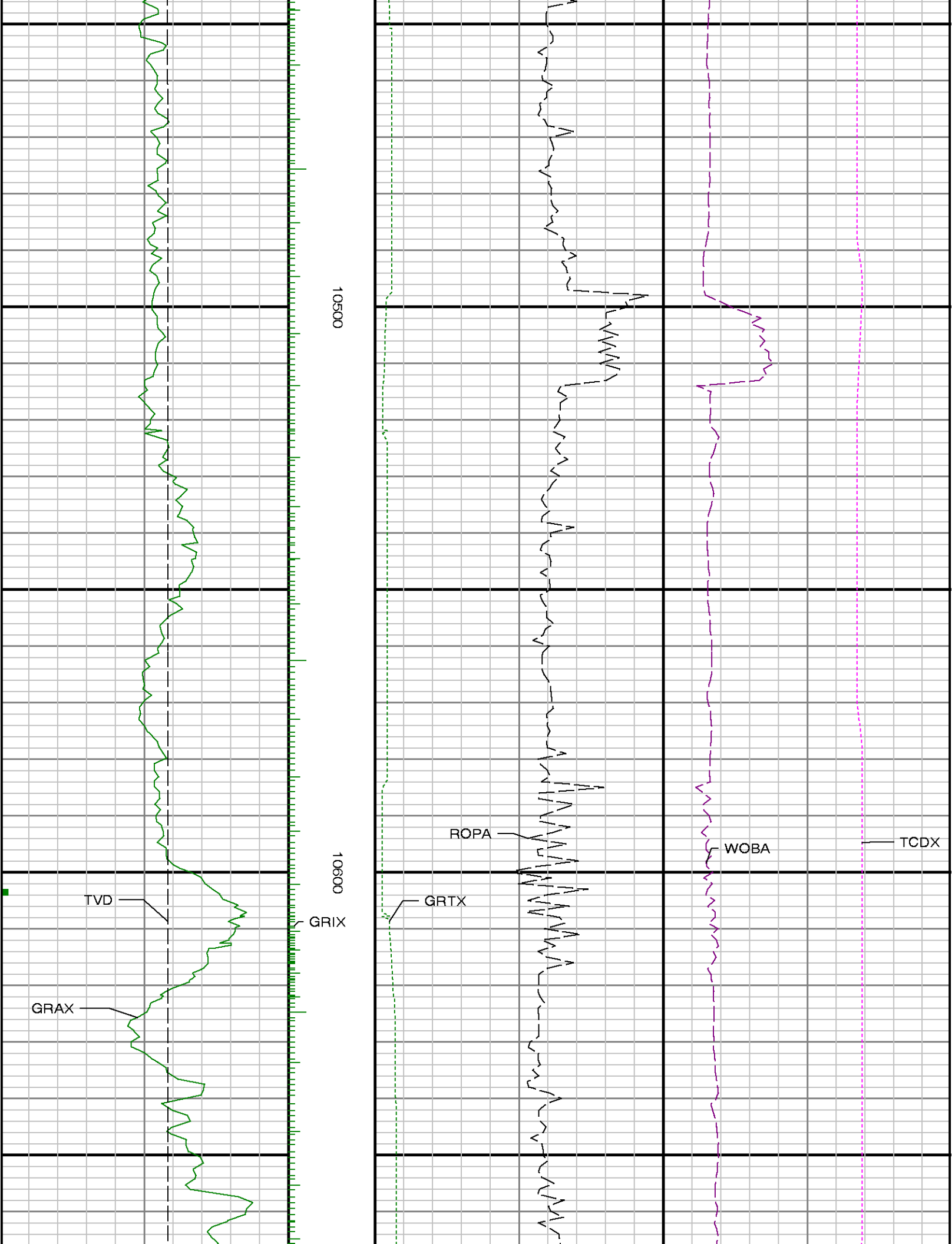


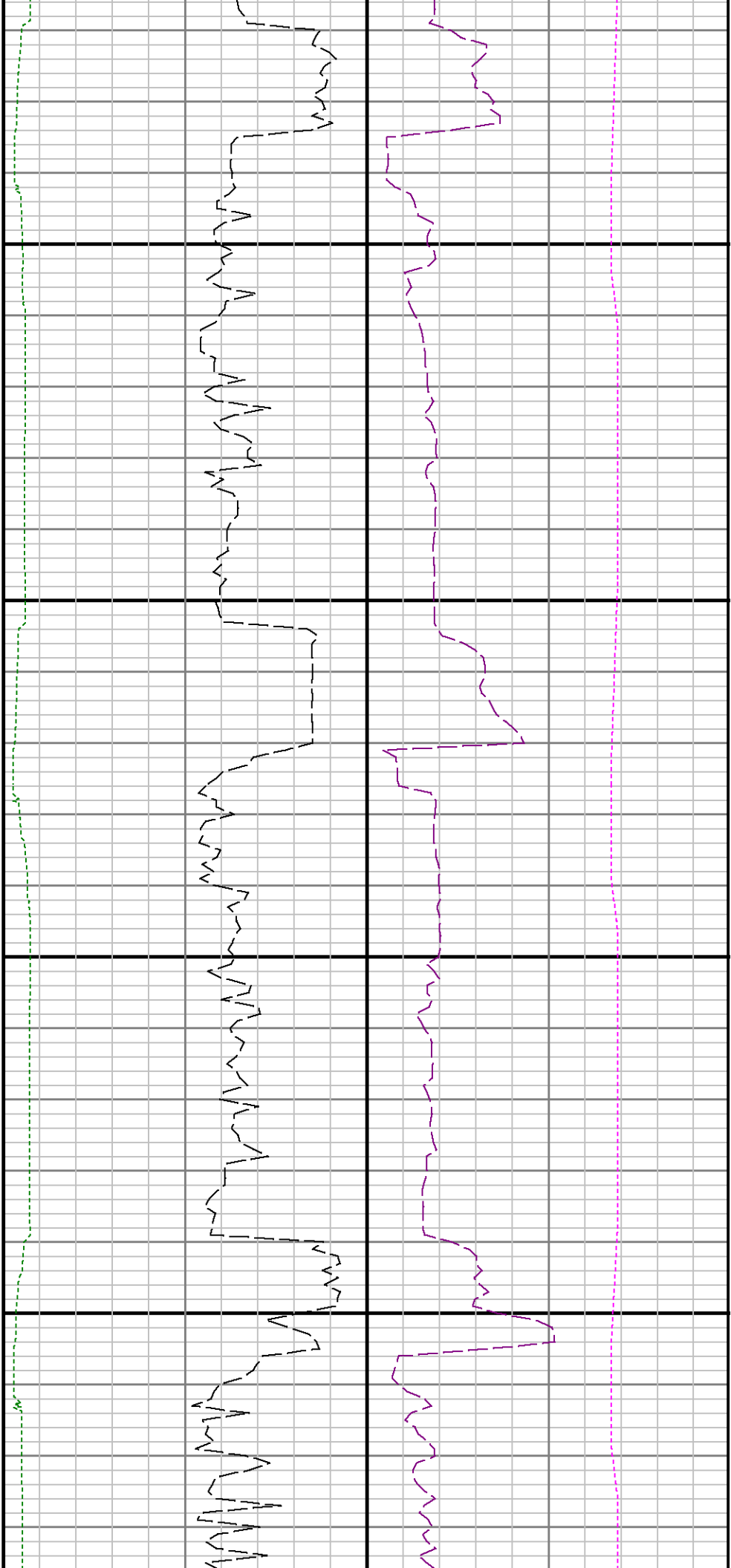


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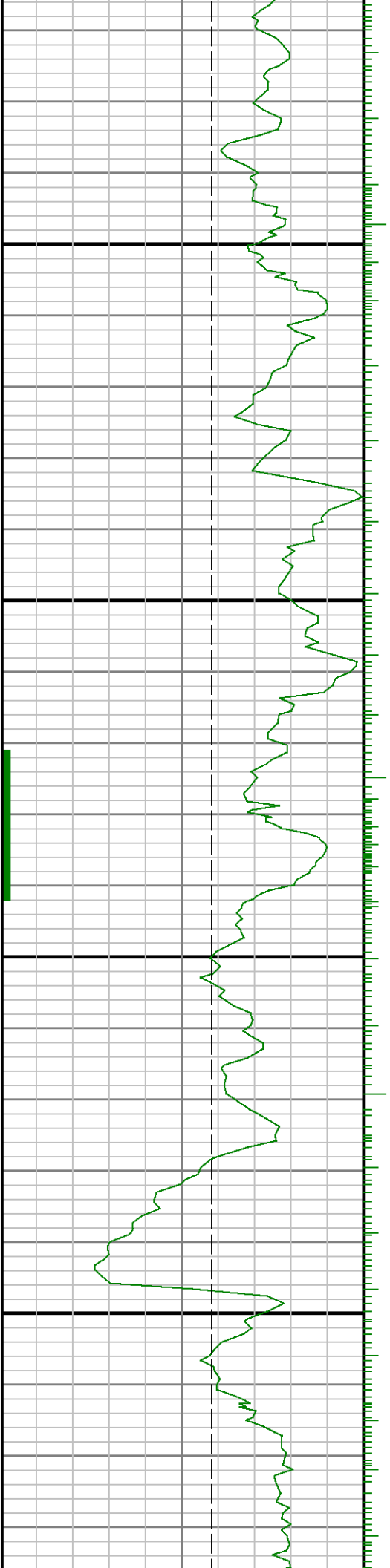


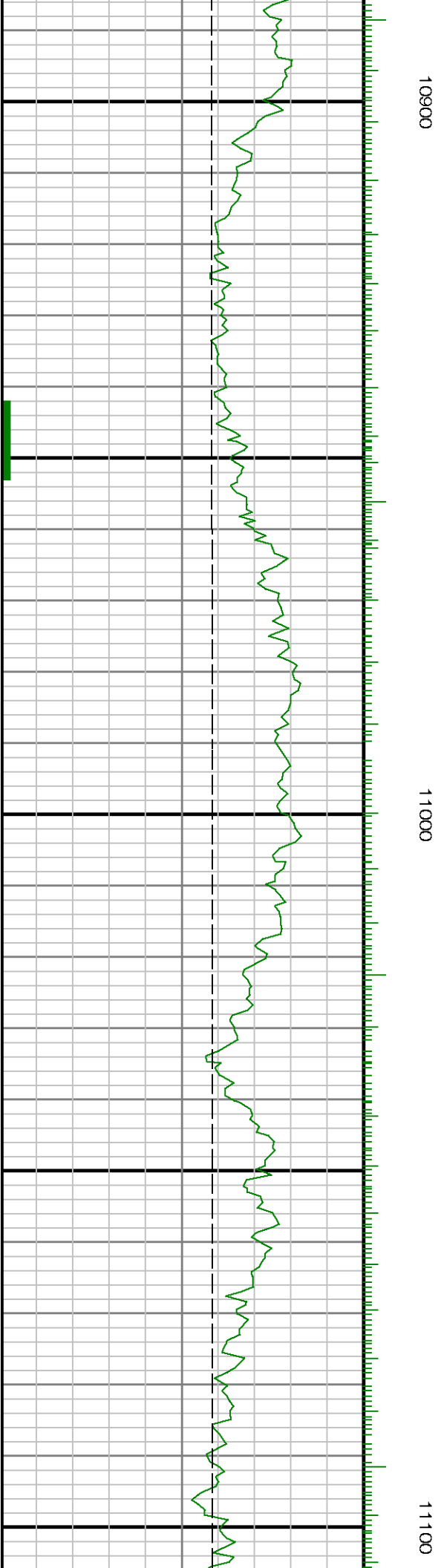
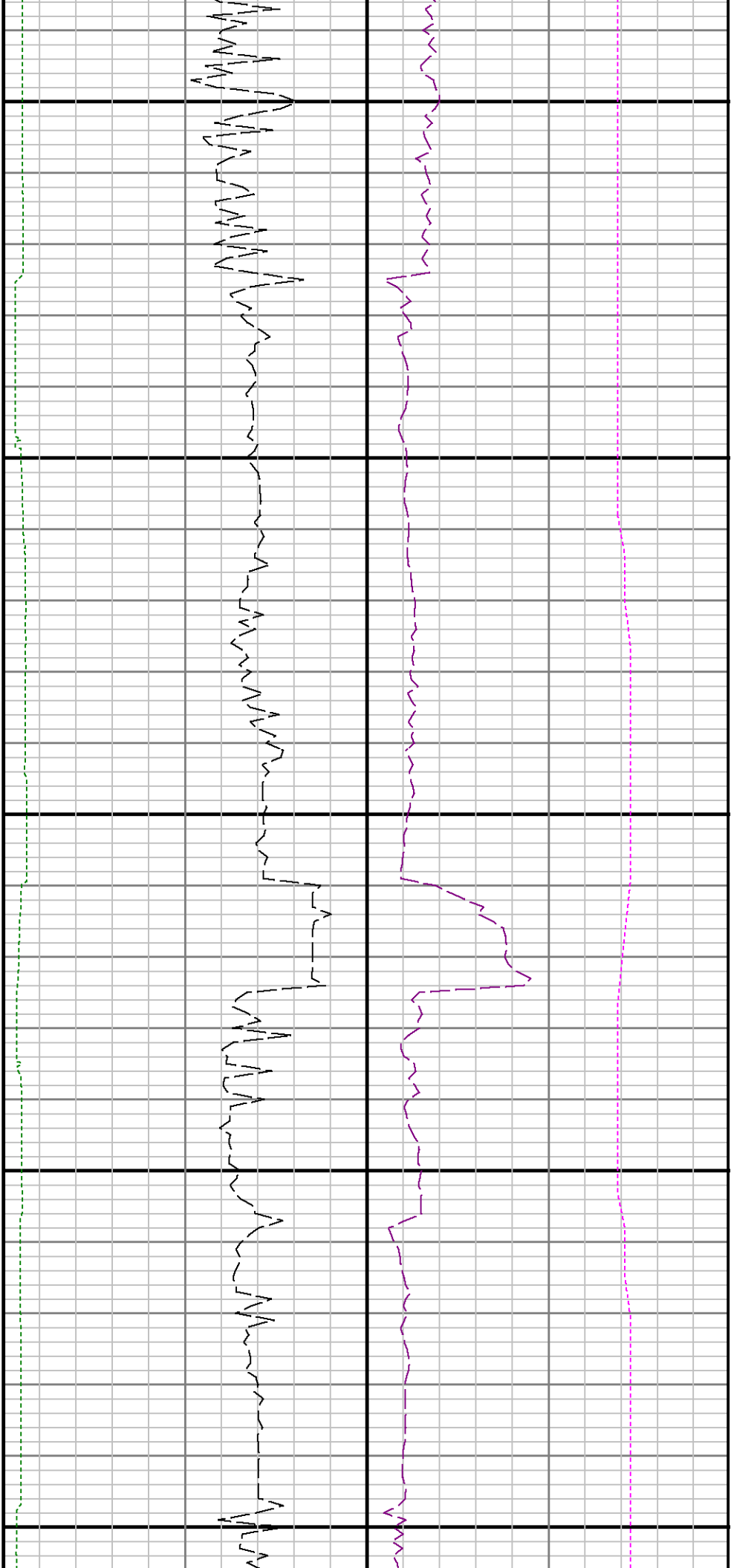




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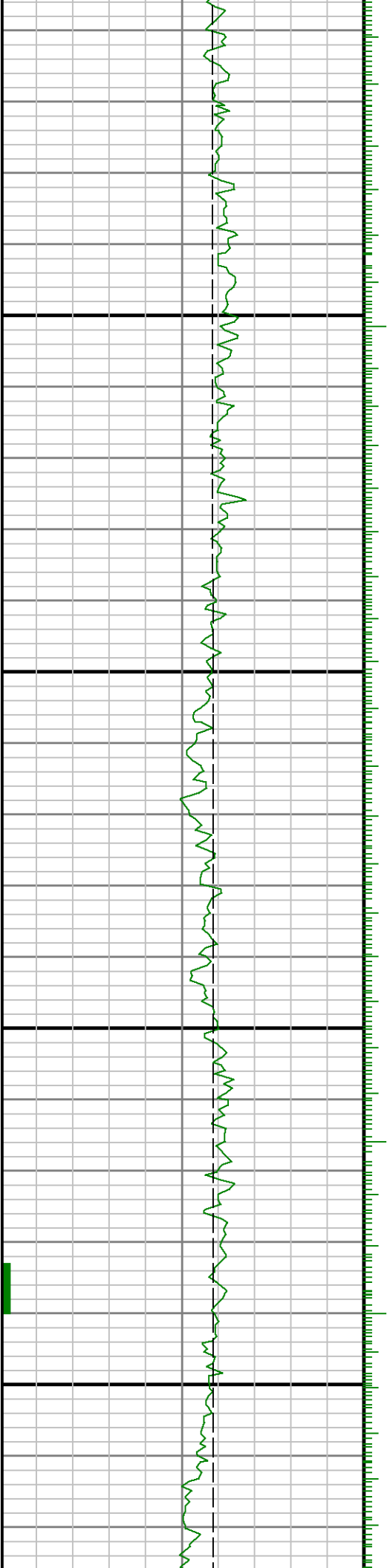




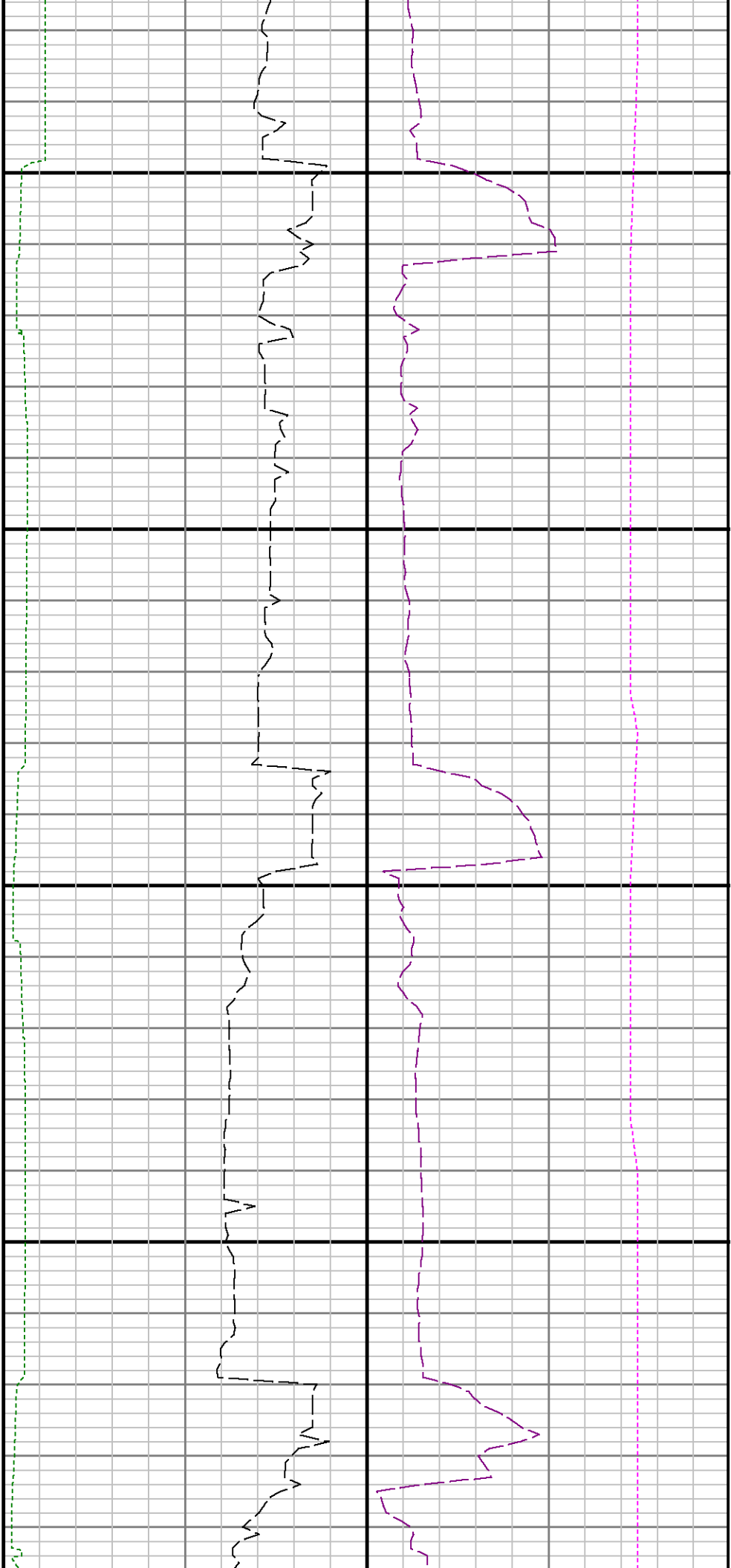


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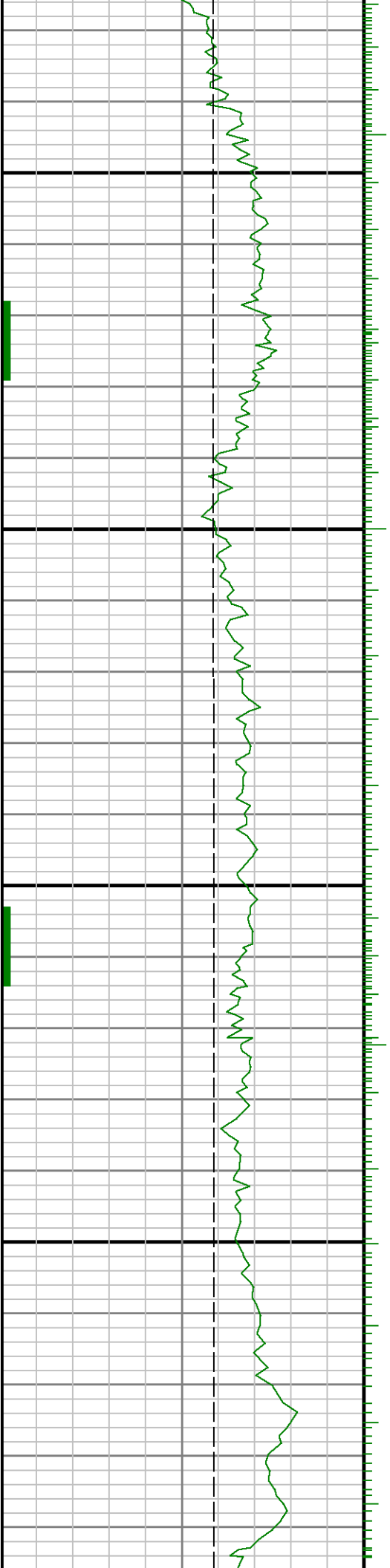


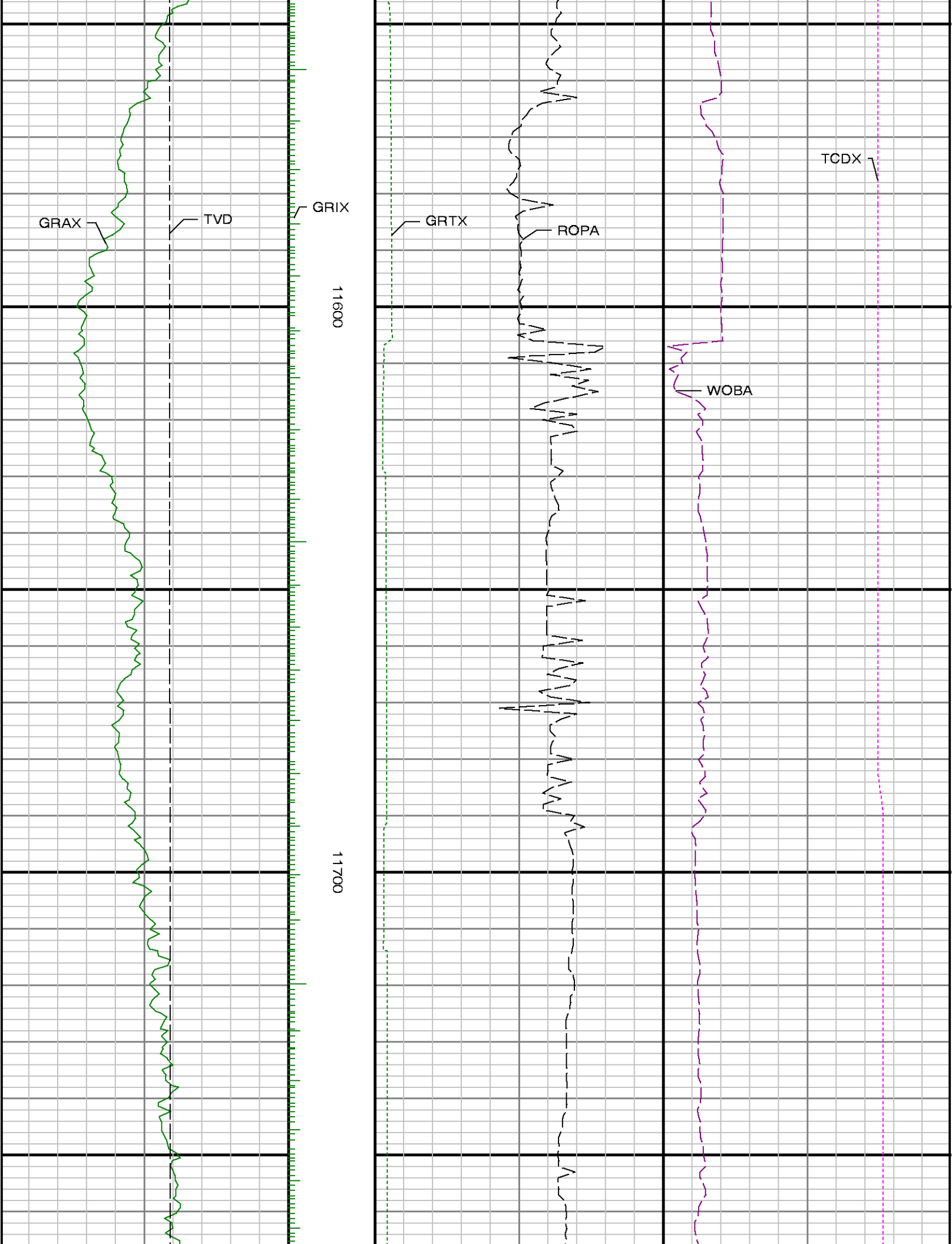




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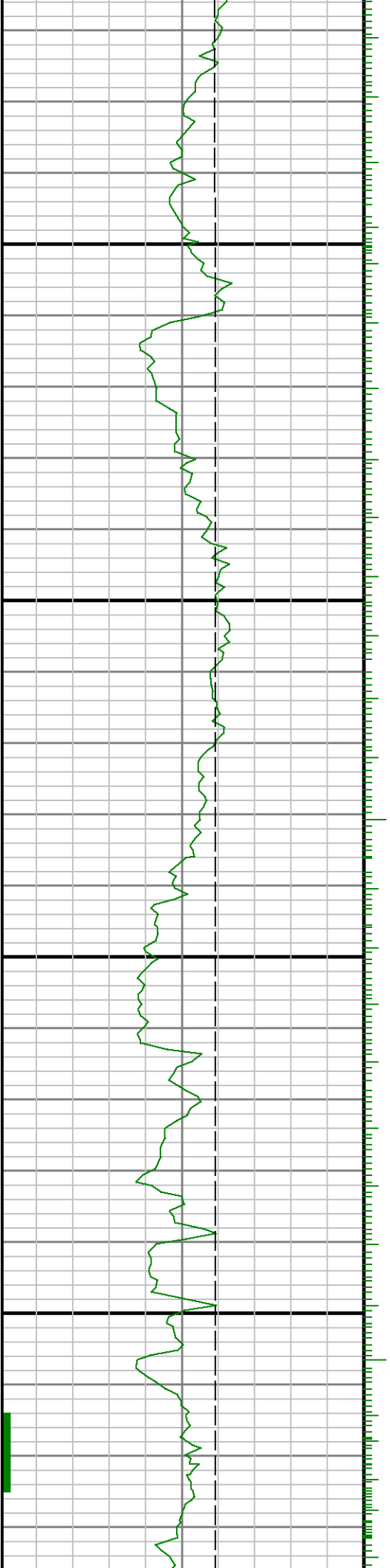


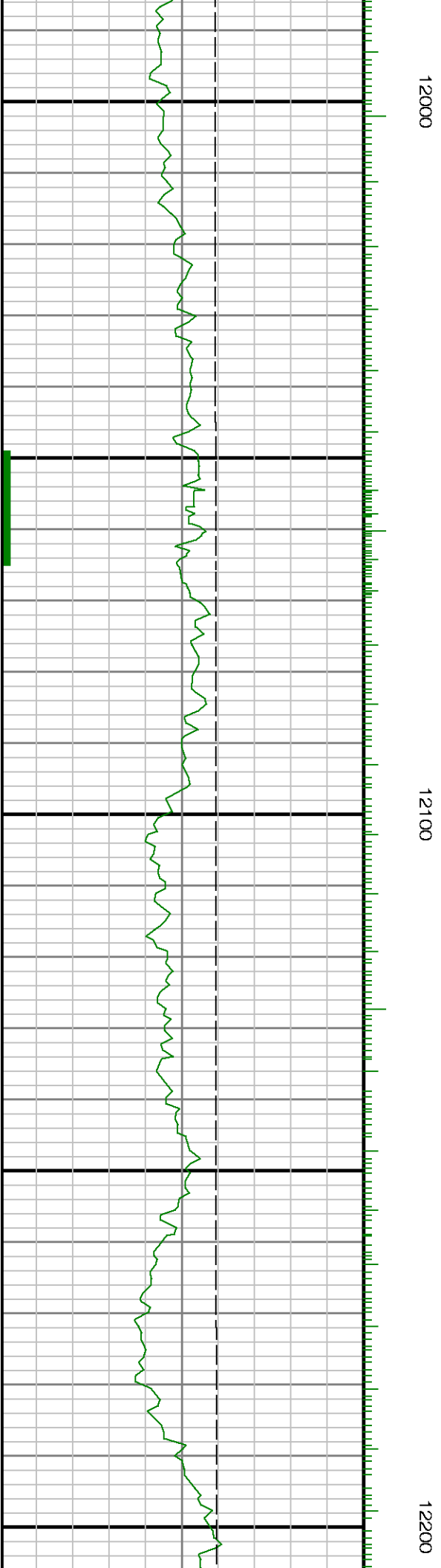
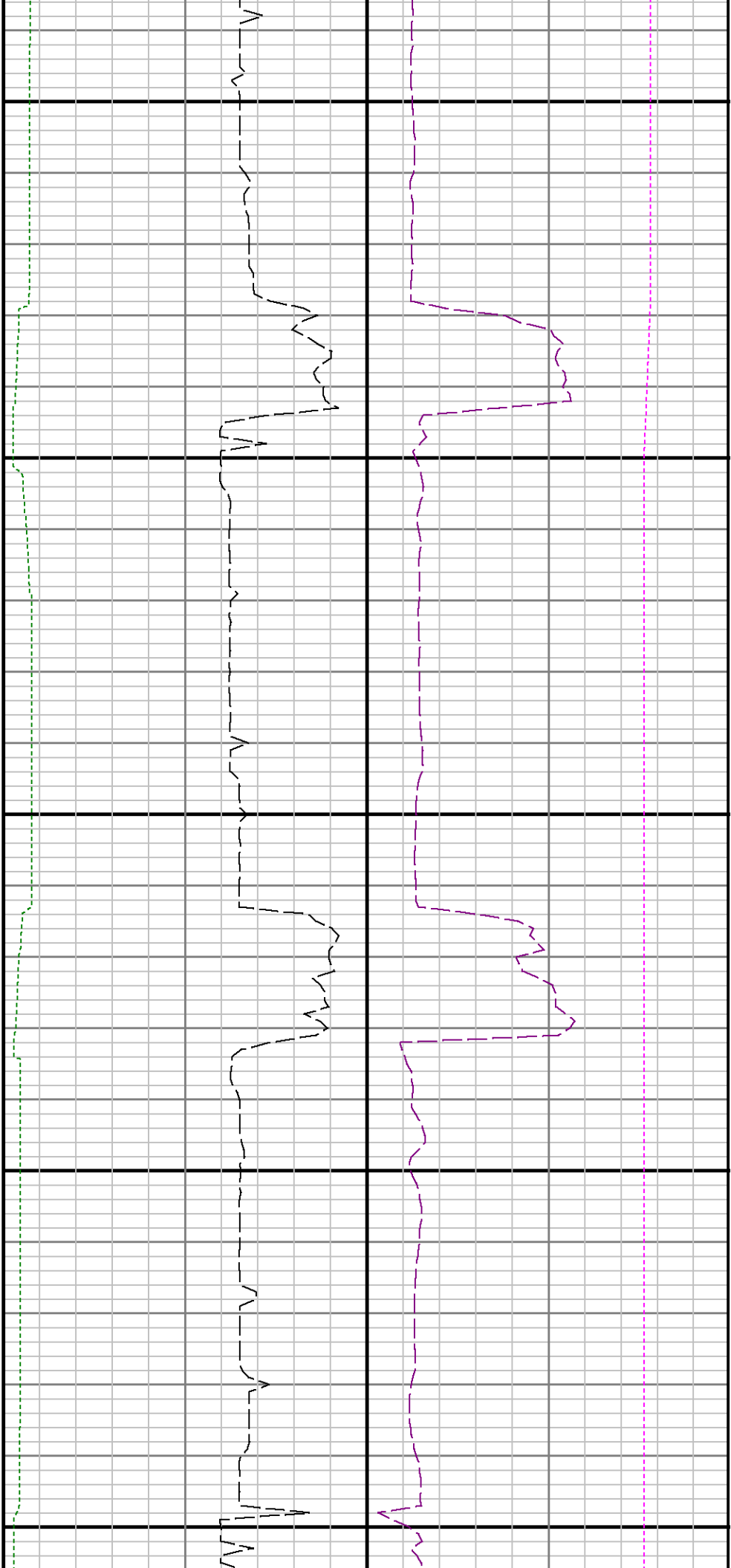


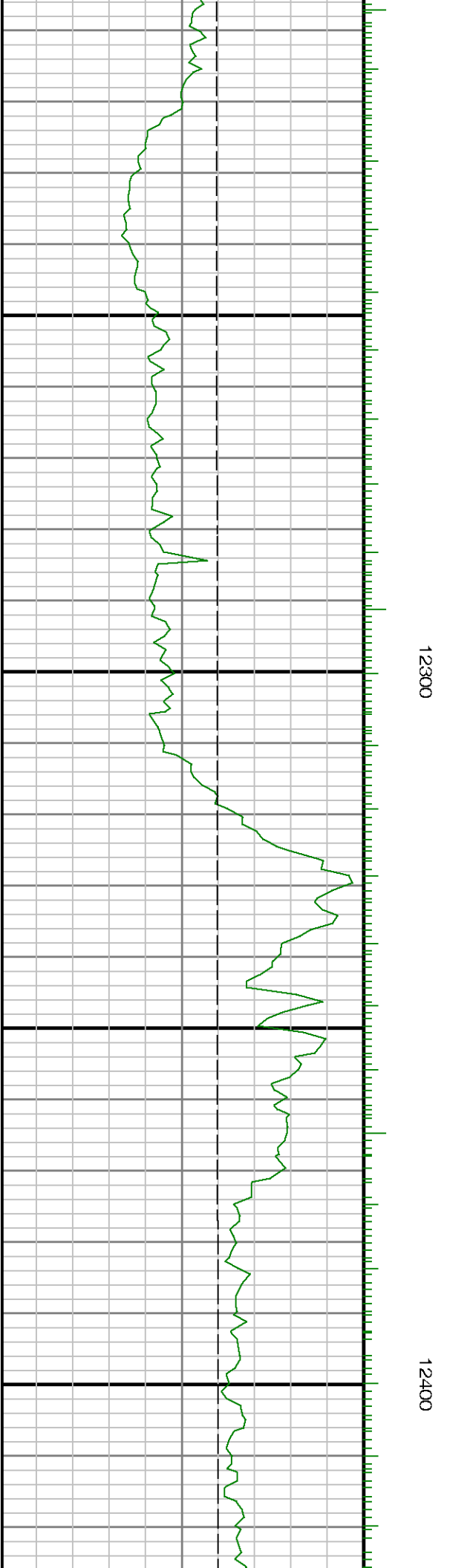
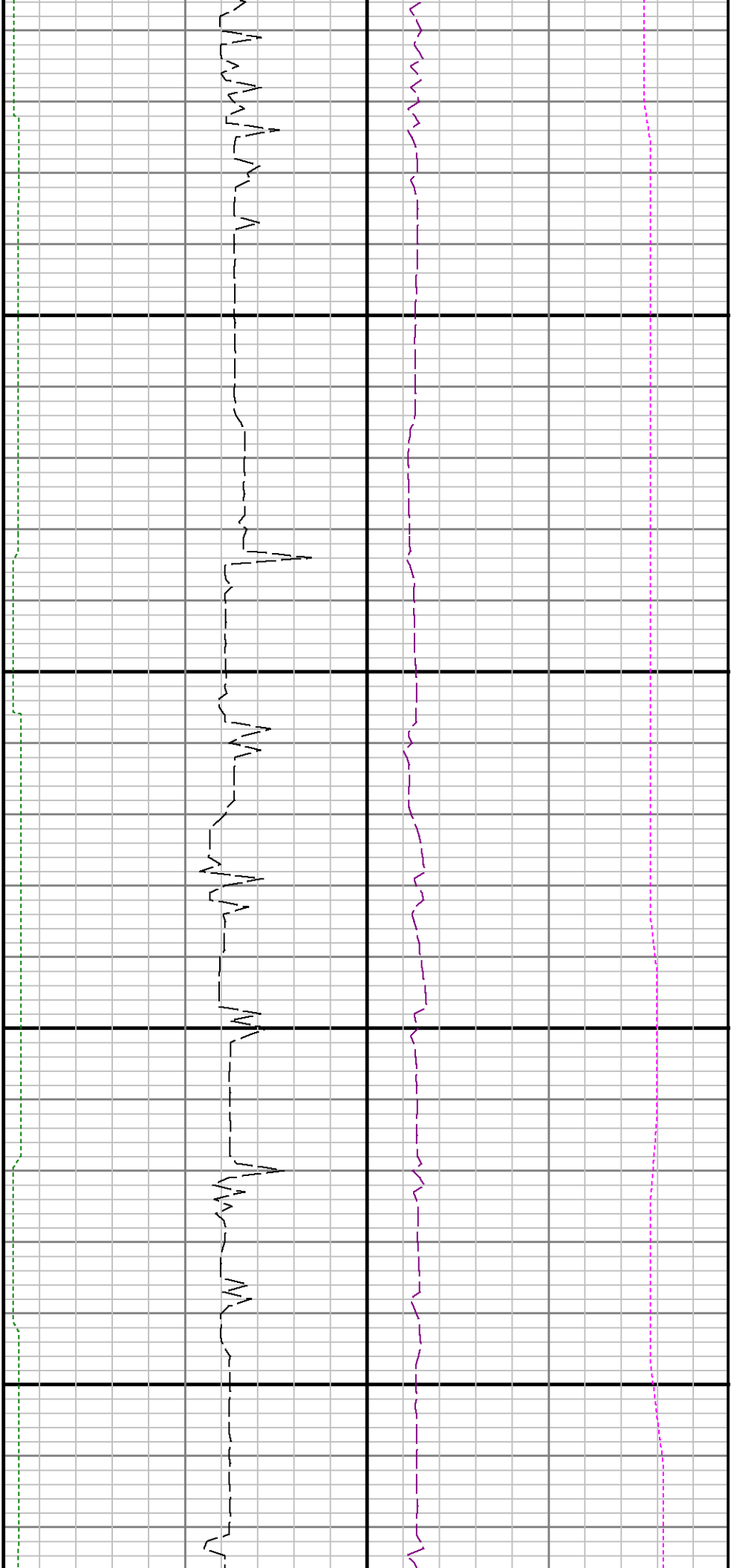


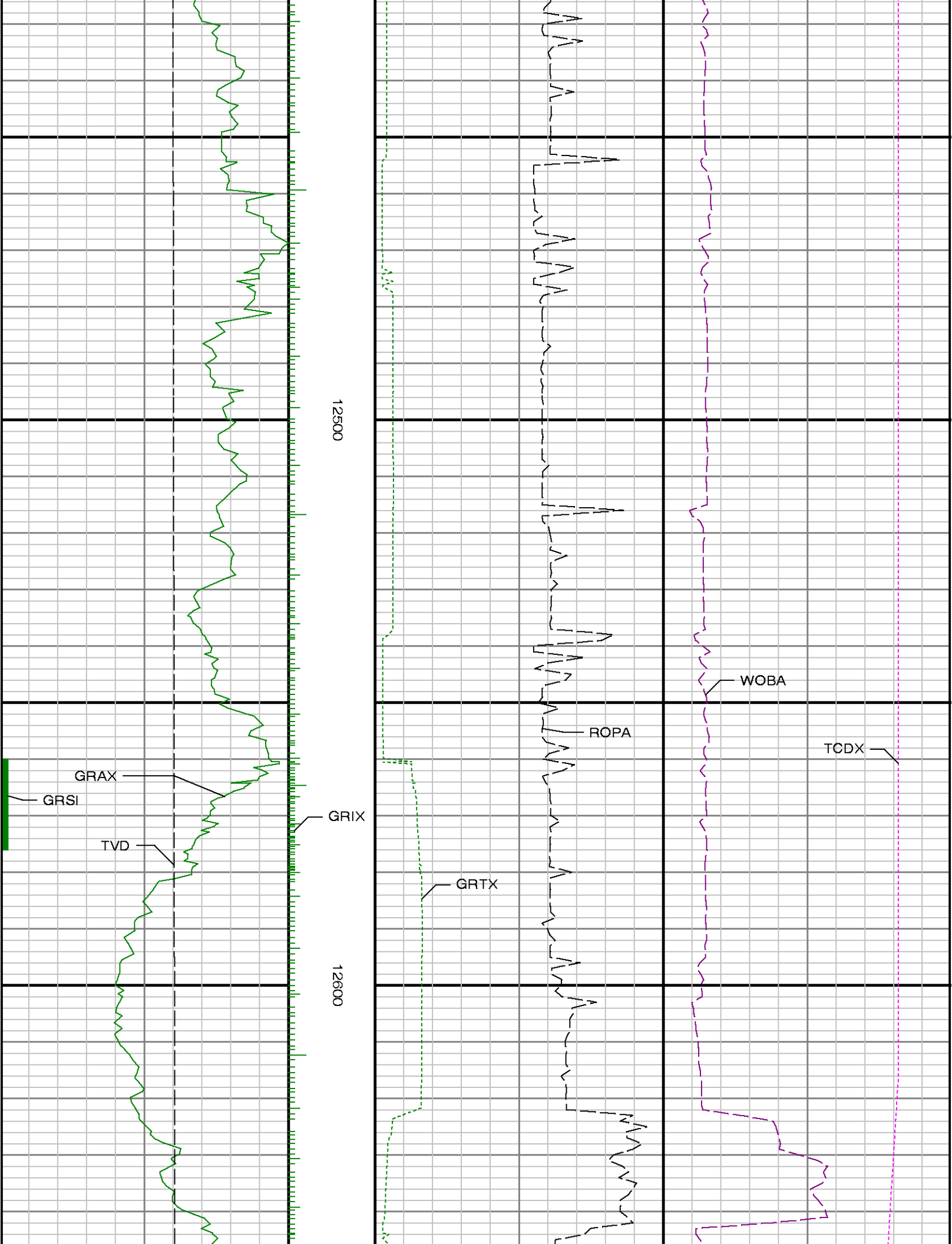
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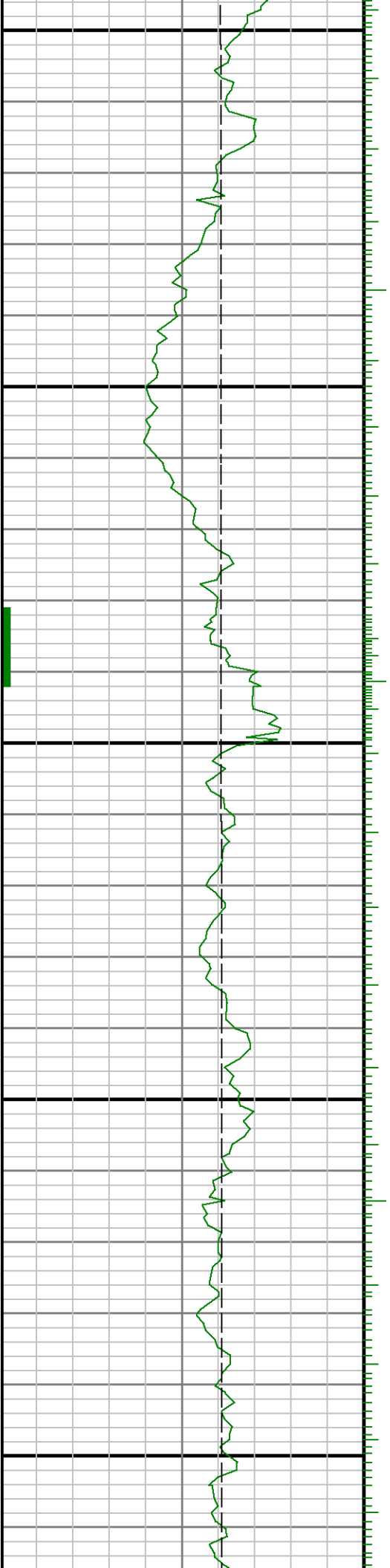






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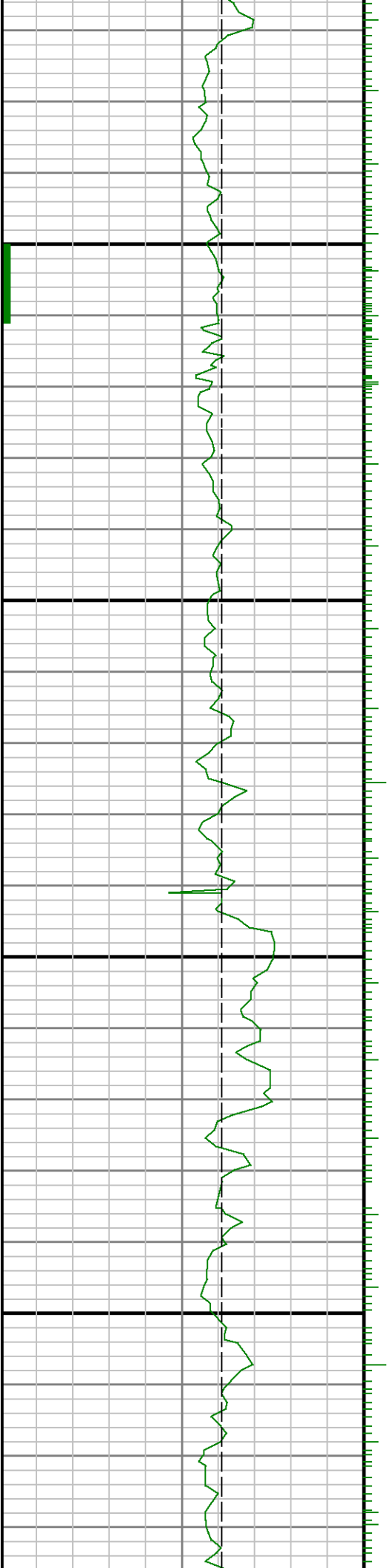
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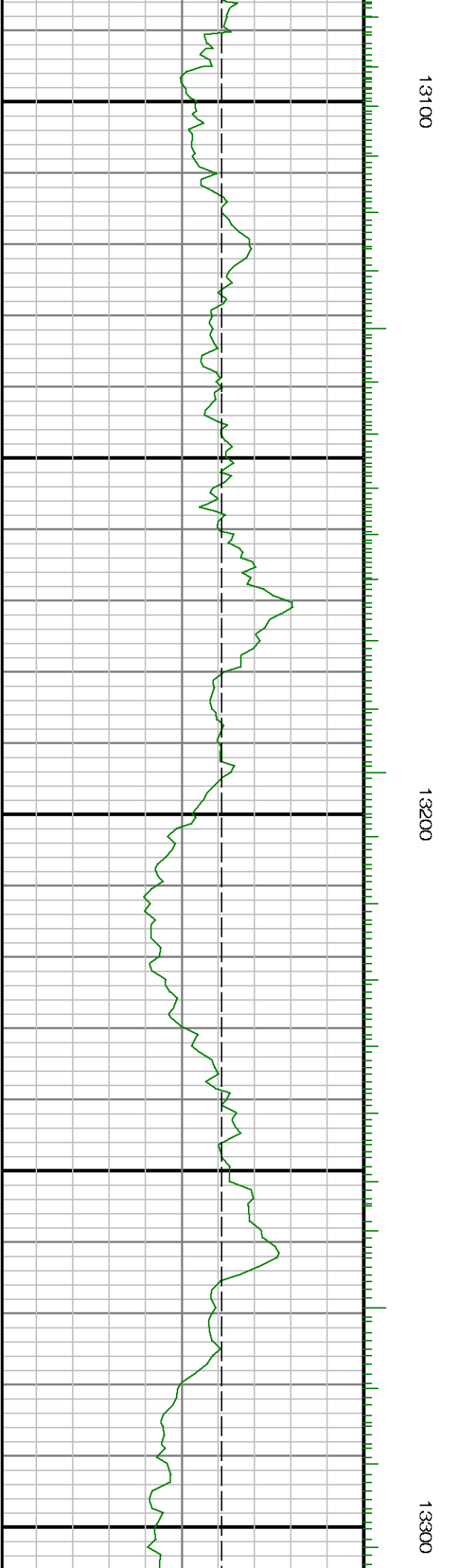
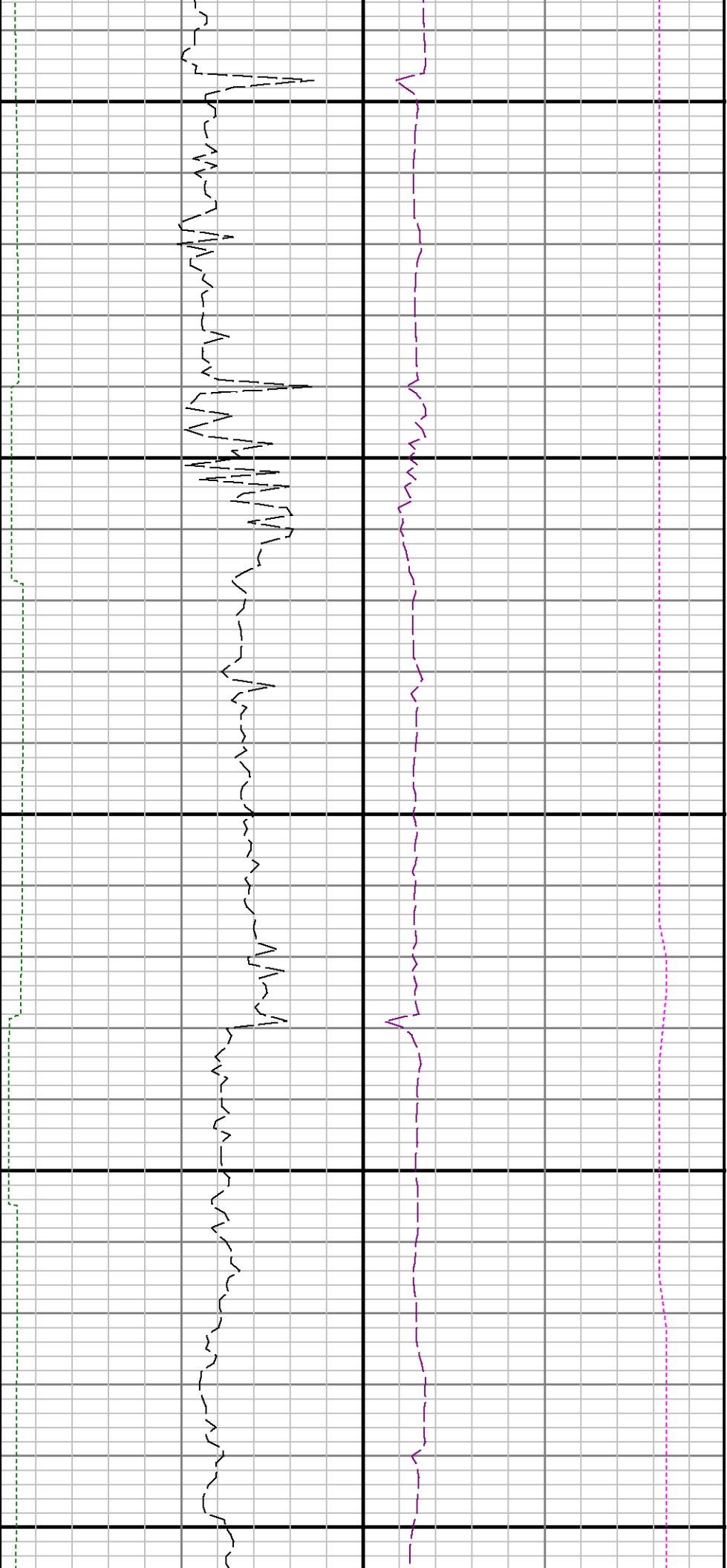


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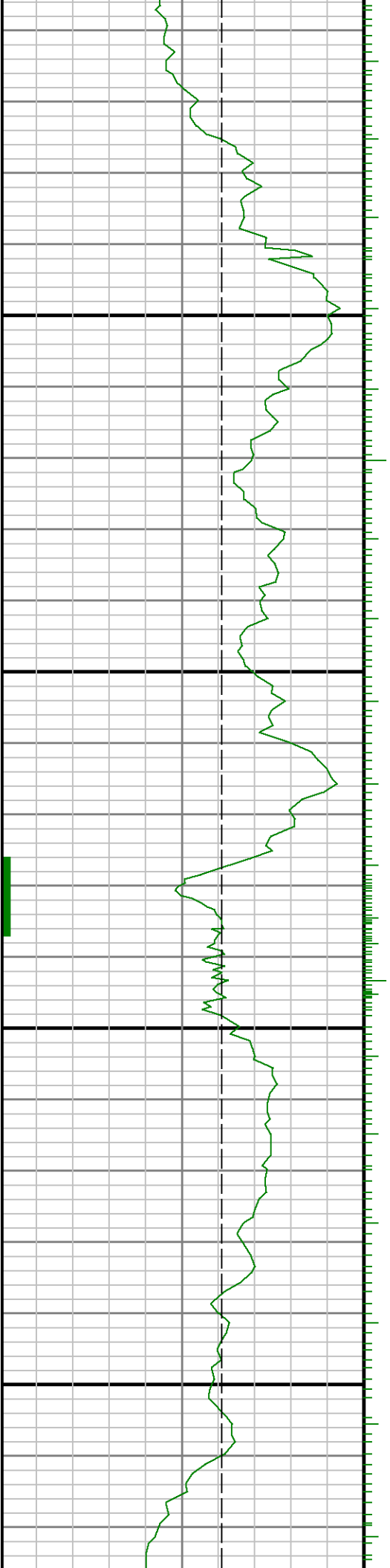


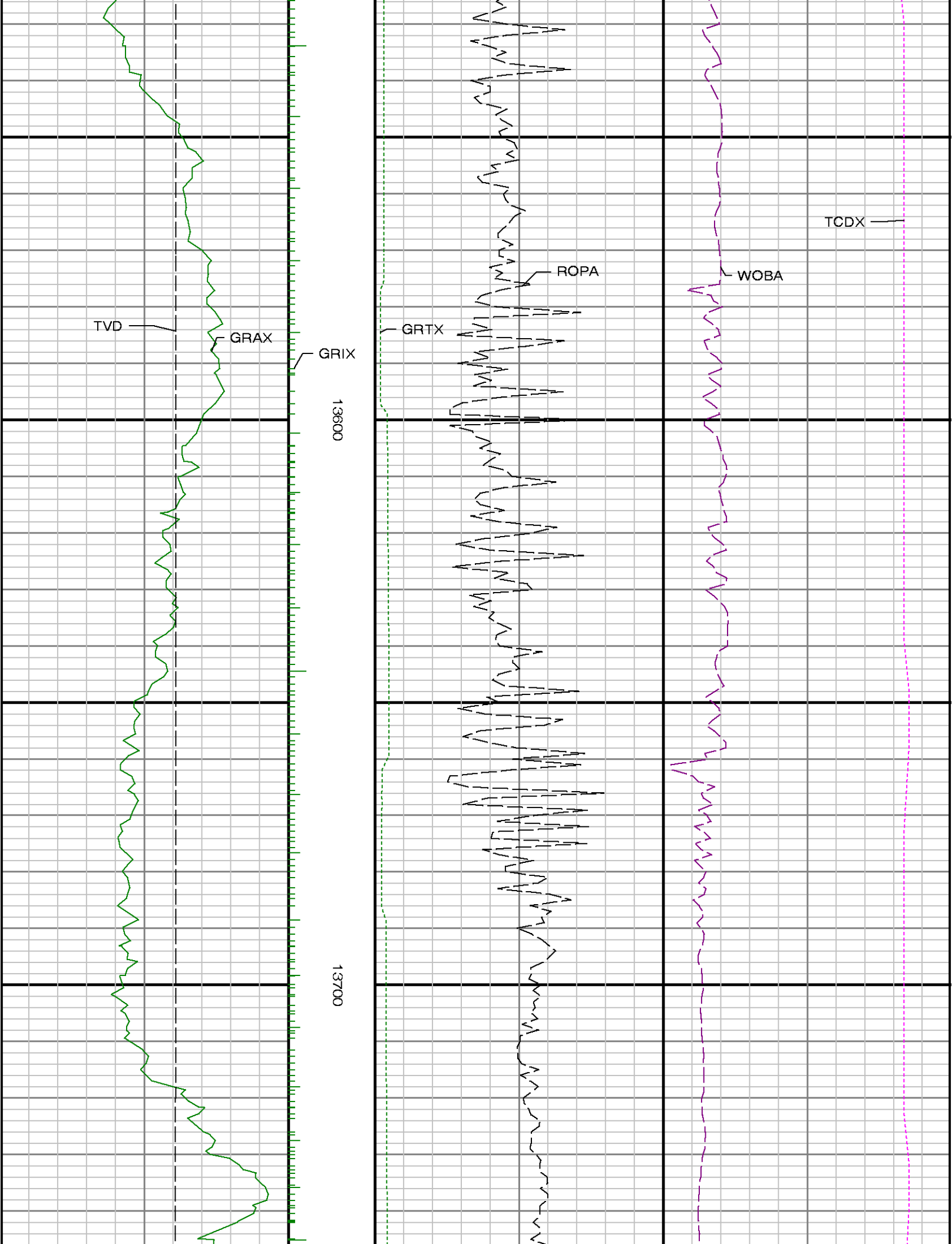


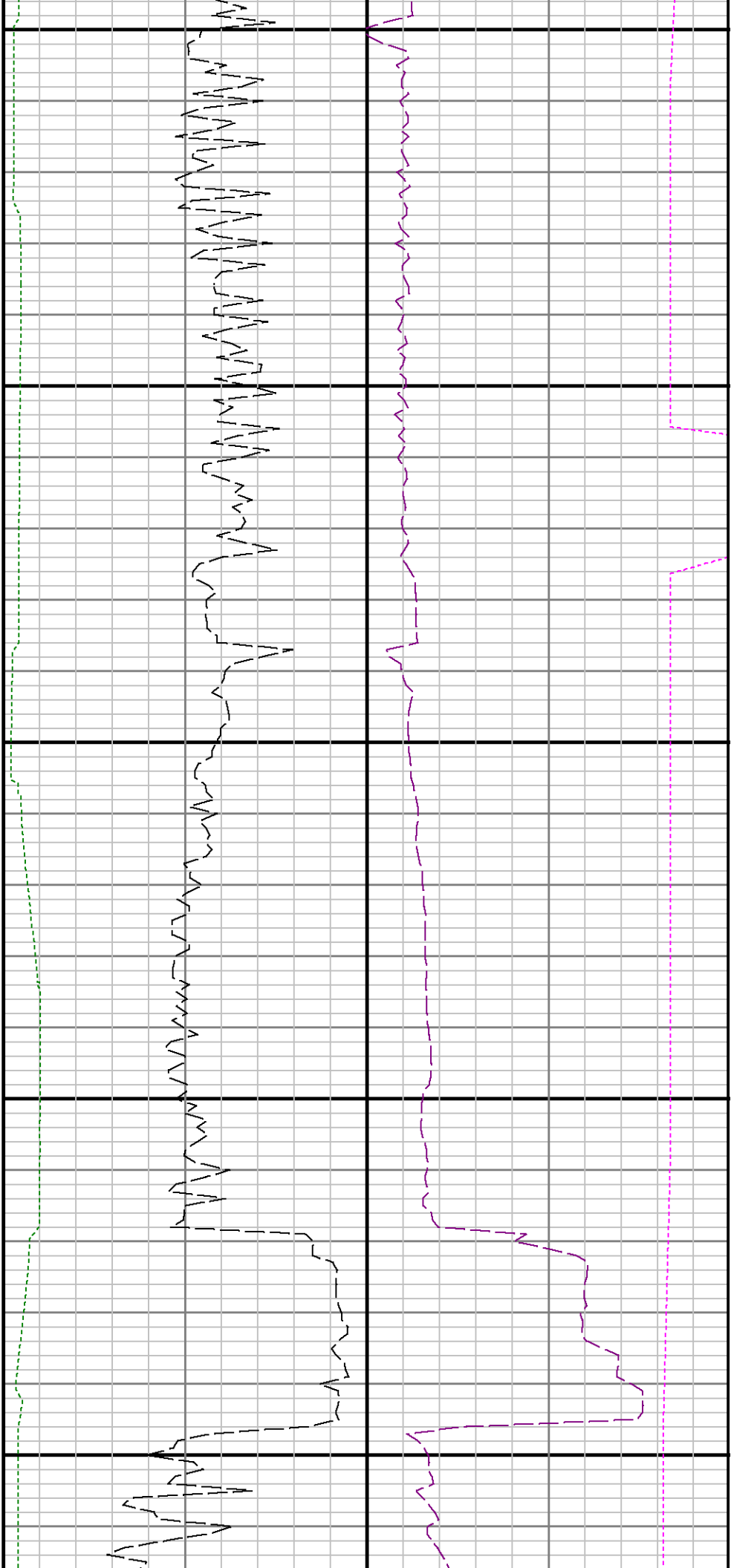


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