



Natural Formation Evaluation  
Gamma Ray

Realtime Log

Scale: Company: Anadarko

1:240 Well: COMO 34N-14HZ

MEASURED DEPTH Field: Weld County (Kerr McGee)

Status: Region: Continental US State: Colorado

Surface Location: Other Services:

Final Print Latitude: 40° 4' 6.528" N

API Number: 0512339945000 Longitude: 104° 58' 32.390" W

Section: 11 TWN: 1N Range 68W

Directional VSS

Permanent Datum (P.D.): Mean Sea Level Elevation: 5055.00 ft.

Elevations: N/A

Log Measured From: Rig Floor 5055.00 ft. Above P.D.

KB: 5055.00 ft.

Depth Reference: Driller's Depth

DF: 5025.00 ft.

GL: 5025.00 ft.

Interval Logged Dates Magnetic Field Reference

Top: 7000 ft. Date From: 02/Nov/14 Dip Angle: 66.48 ° Azi Reference North: True

Bottom: 16659 ft. Date To: 09/Nov/14 Total Mag to Reference

Spud Date: 31/Oct/14 Field Strength: 52729.0 nT North Correction: 8.62 °

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	1194 ft.	8139 ft.	9.600 in.	36.00 lb/ft	Surface	1179 ft.
6.125 in.	8139 ft.	16659 ft.	7.000 in.	26.00 lb/ft	Surface	8124 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based Mud	Surface	16700 ft.	8.750 in.	Vert/Curve	0.5 ° / 269.3 °	84.4 ° / 178.9 °
			6.125 in.	Lateral	84.4 ° / 178.9 °	89.3 ° / 179.6 °
					/	/
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage 2.20U4 Rig: / Contractor: H&P 307 / Helmerich & Payne Drilling Co

PATS 6.4.1.34 Job No.: 6777921 / District: / Unit: RMD / D & E

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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	
							(ft.)	(ft.)	(ft.)	(ft.)			
1	1	1	8.750	PDC		Mud Motor	7000	8095	1194	8139	02/Nov/2014 20:08	03/Nov/2014 11:52	48.9
2	2	2	6.125	PDC		Mud Motor	8096	16608	8139	16659	05/Nov/2014 10:30	08/Nov/2014 23:00	75.9

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Dale Miranda	11/5/14	11/09/14	Jake Miller	10/30/14	11/09/14	Andy King	10/30/14	11/4/114

Hans Cary	11/02/14	11/09/14	Mike Gurnsey	10/30/14	11/02/14	Bill Herbers	10/30/14	11/09/14
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Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRTX	Gamma Ray Time Since Drilled	Min.
GRIX	Gamma Ray Density, Points	unitless
GRSI	Gamma Ray Slide Indicator	unitless
ROPA	Rate of Penetration, 3.0 ft. Avg.	Ft./Hr.
TCDX	Downhole Temperature	Deg. F.
TVD	True Vertical Depth	Ft.
WOBA	Surface Weight on Bit, 1.0 ft. Avg.	K. lbs.

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	11954360	Directional	45.67	6.750	3.250
1	SRIG	11801241	Gamma	42.30	6.750	3.250
2	DIR	12373463	Directional	51.44	4.750	2.625
2	SRIG	12131429	Gamma	48.02	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

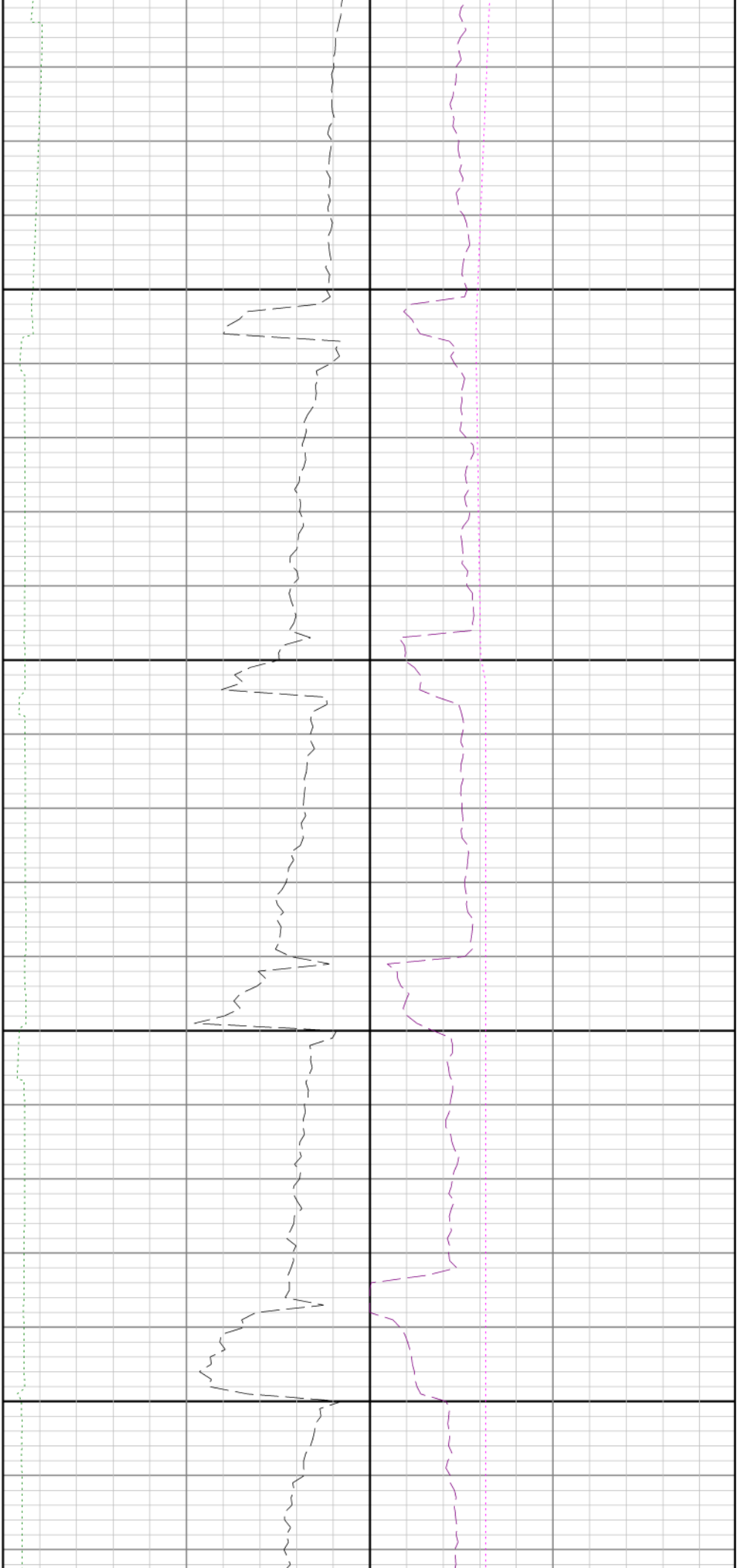
Comments

(1) Baker Hughes INTEQ run 1 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 1194 to 8139 ft MD (1193 to 7658 ft TVD).
(2) Baker Hughes INTEQ runs 2 and 3 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind a 6 1/8 inch bit and steerable assembly from 8140 to 16659 ft MD (7658 to 7678 ft TVD).
(3) Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
(4) A sliding indicator is shown to the left side of track 1 as a heavy line and corresponds to the Gamma Ray sensor offset from the bit.

Remarks

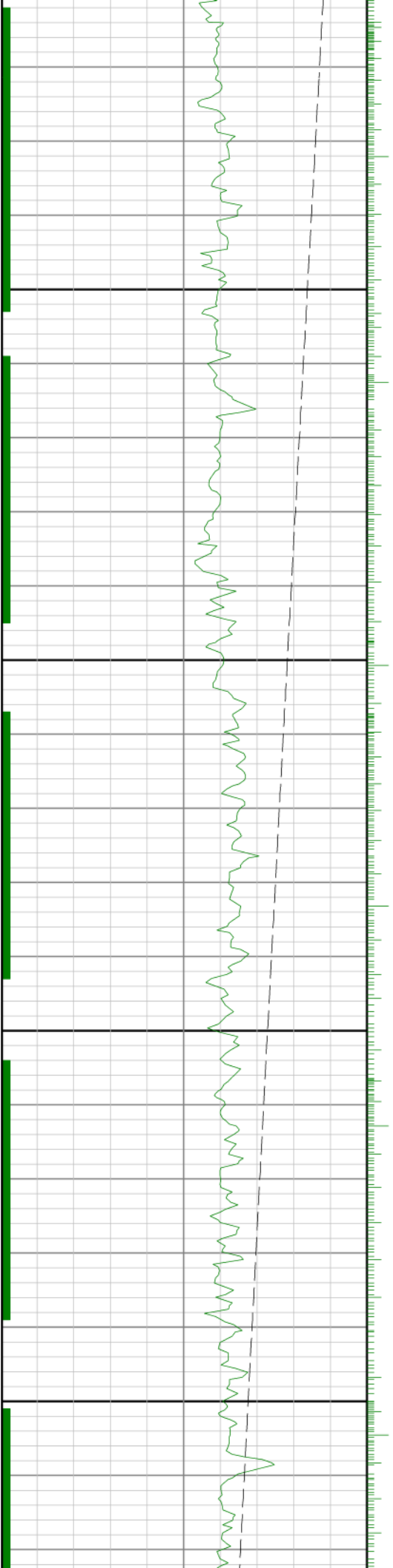
Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	7000	8.750	1	Began logging Gamma from the top of the build section at 7000 ft MD (6806 ft TVD)

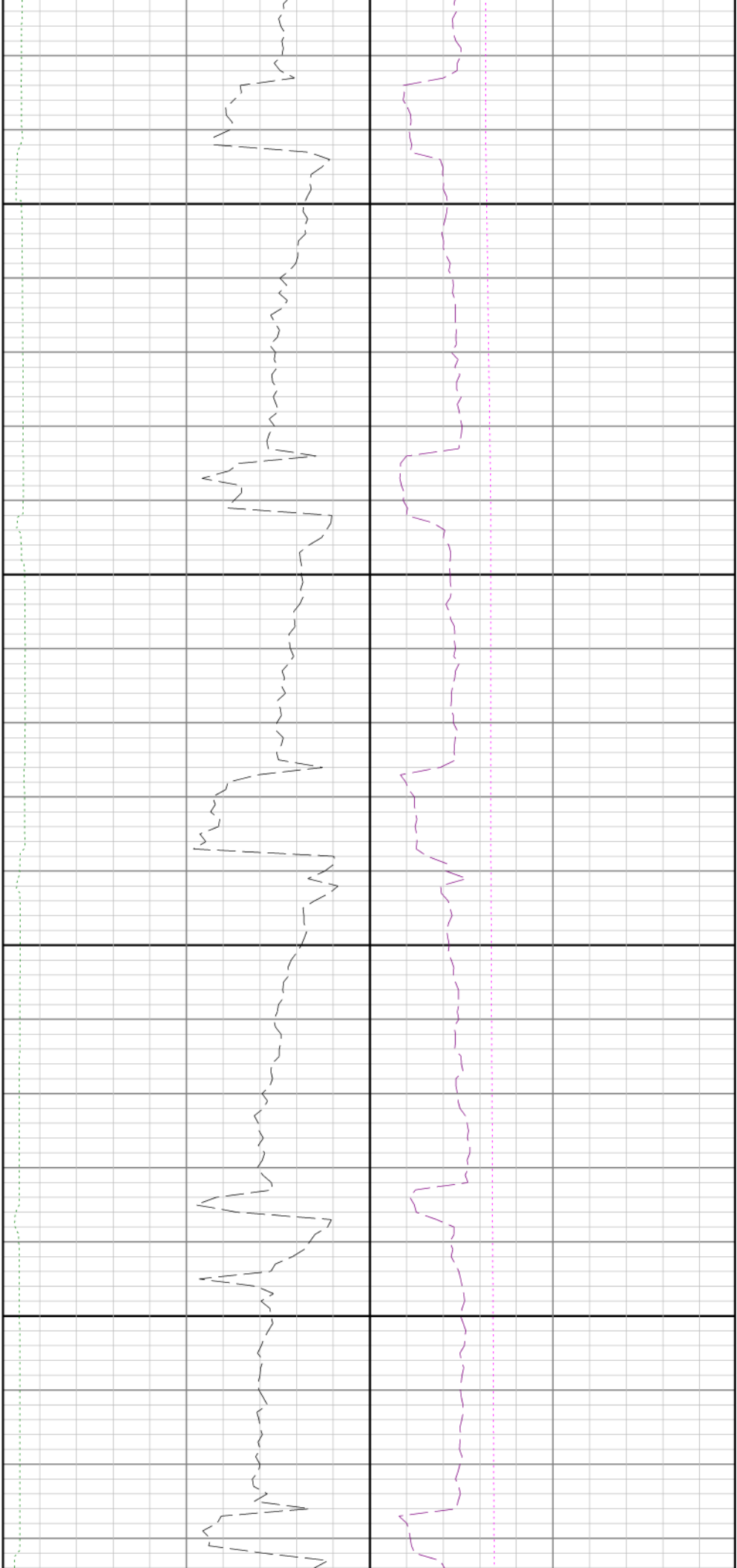




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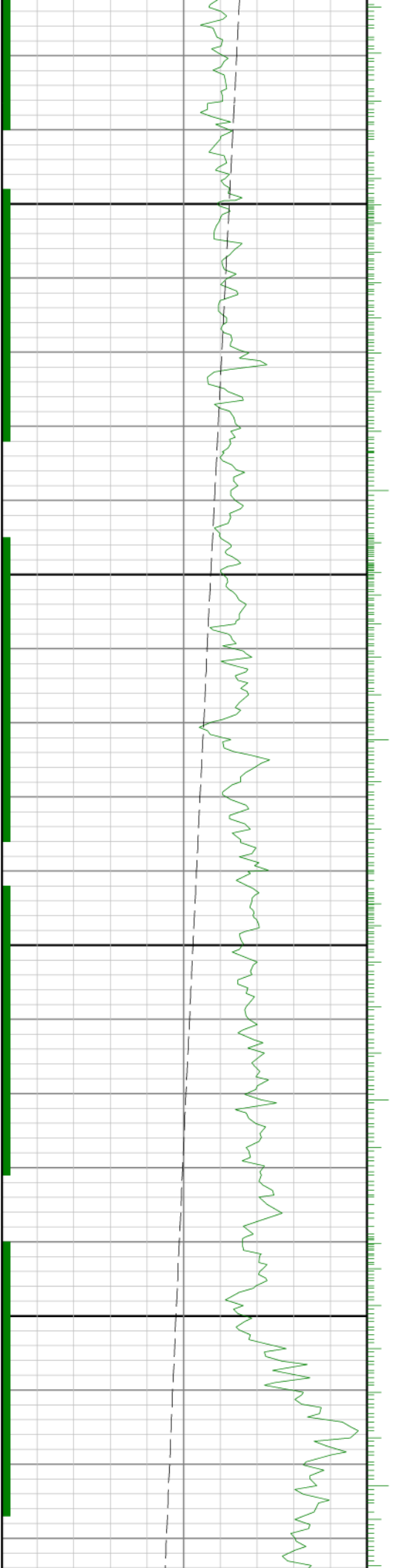
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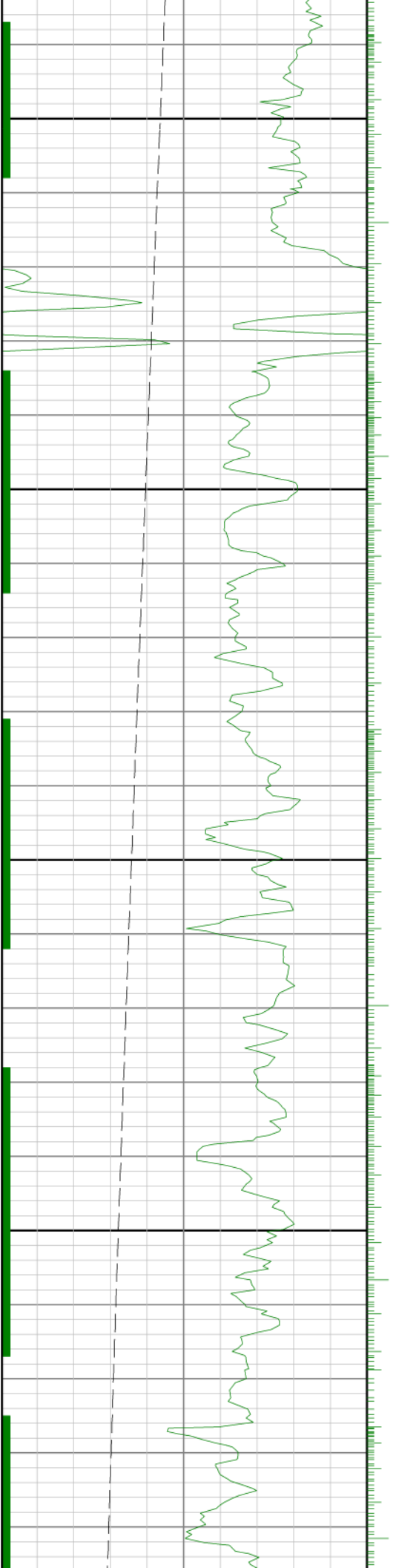




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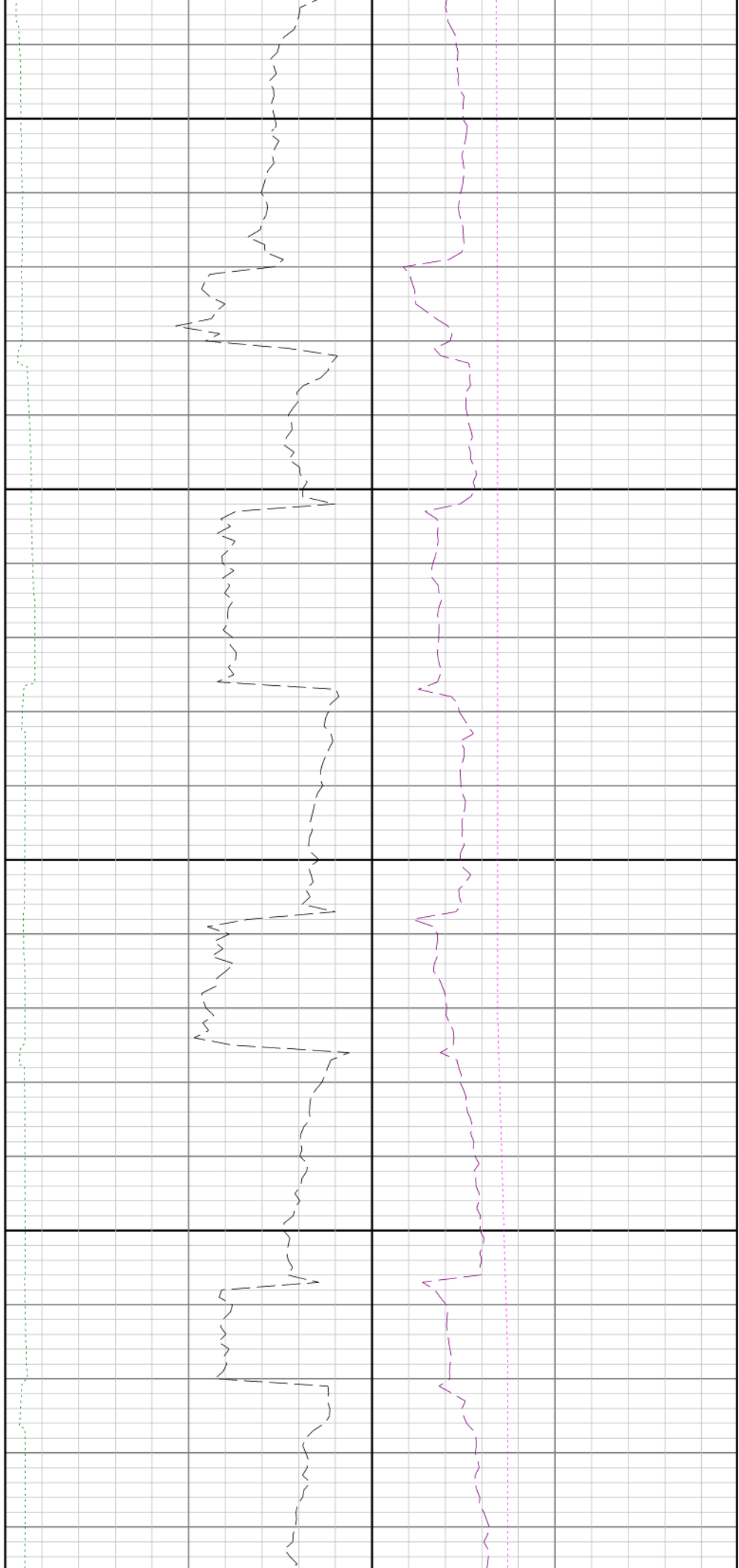
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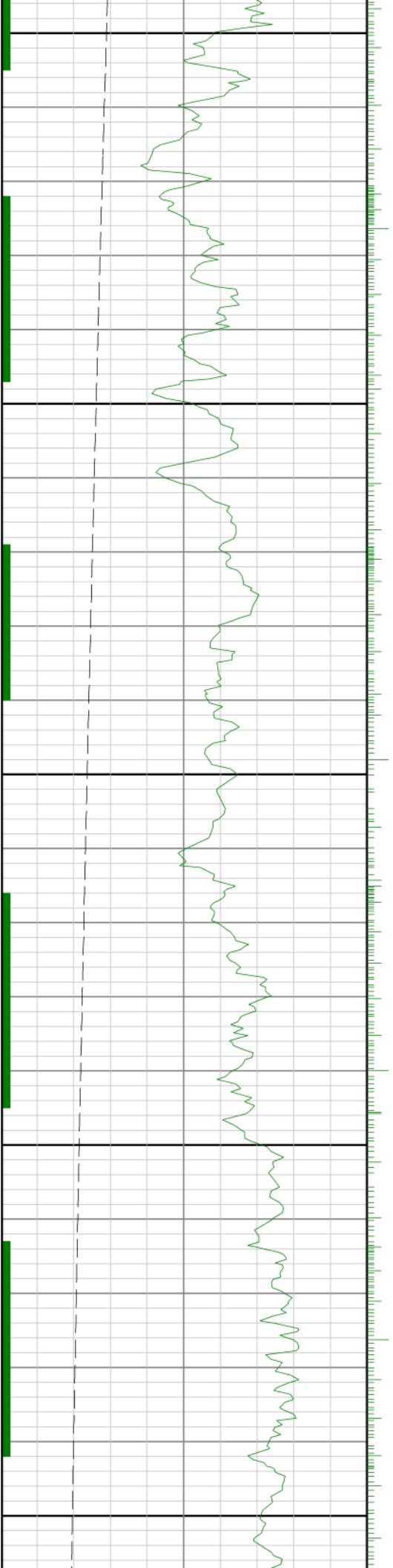




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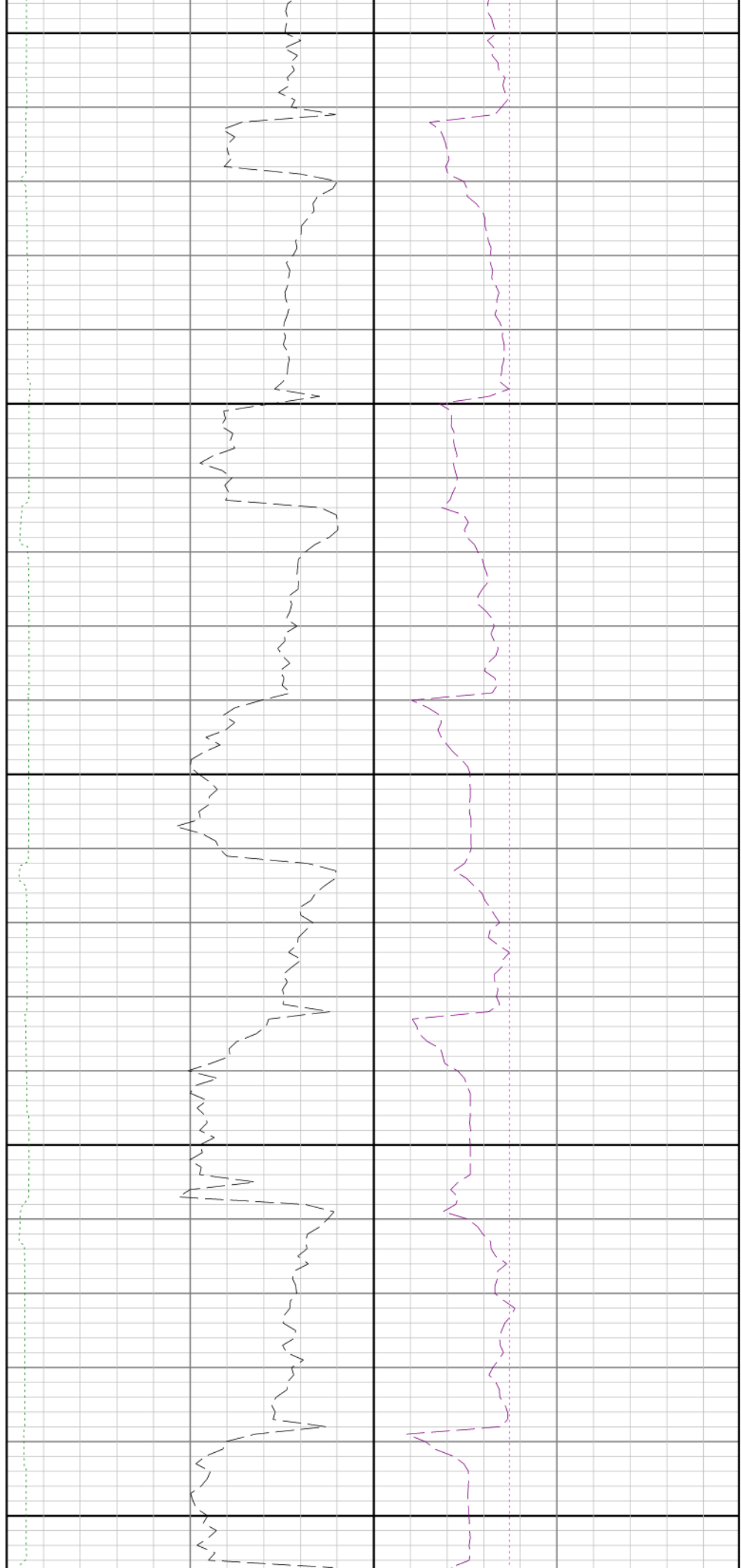
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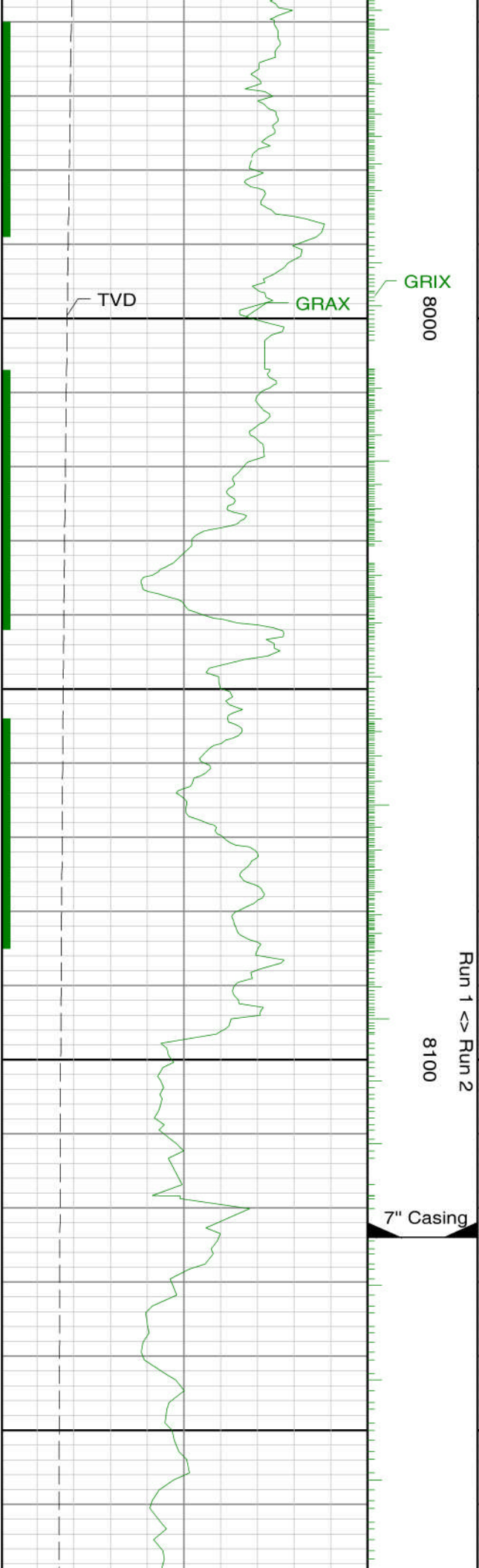


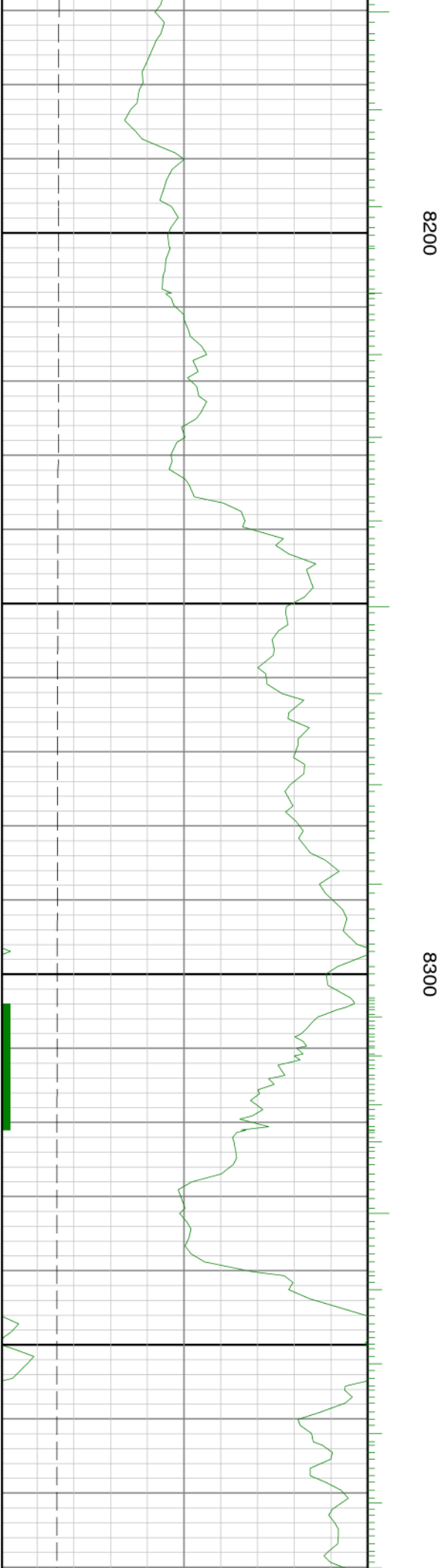
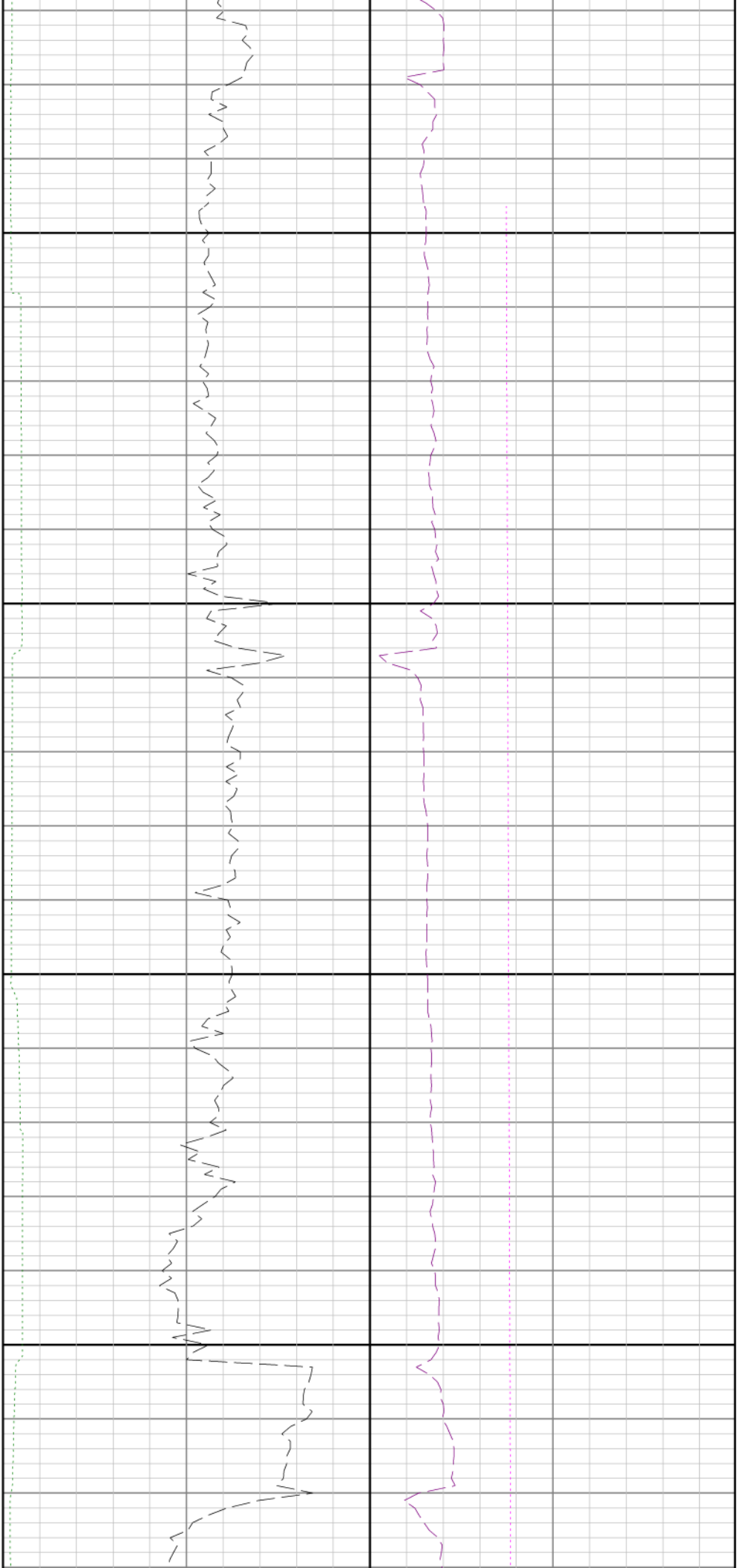


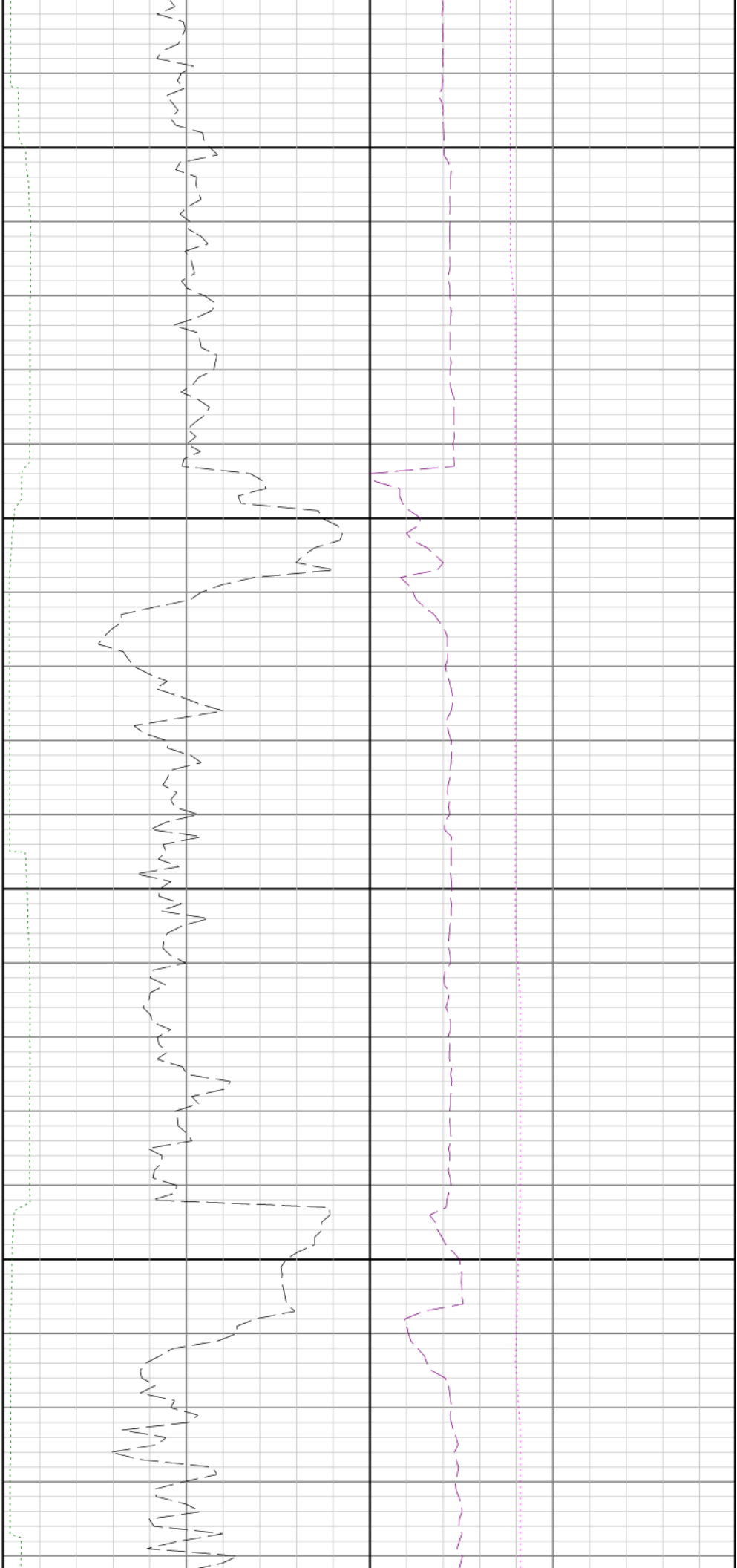
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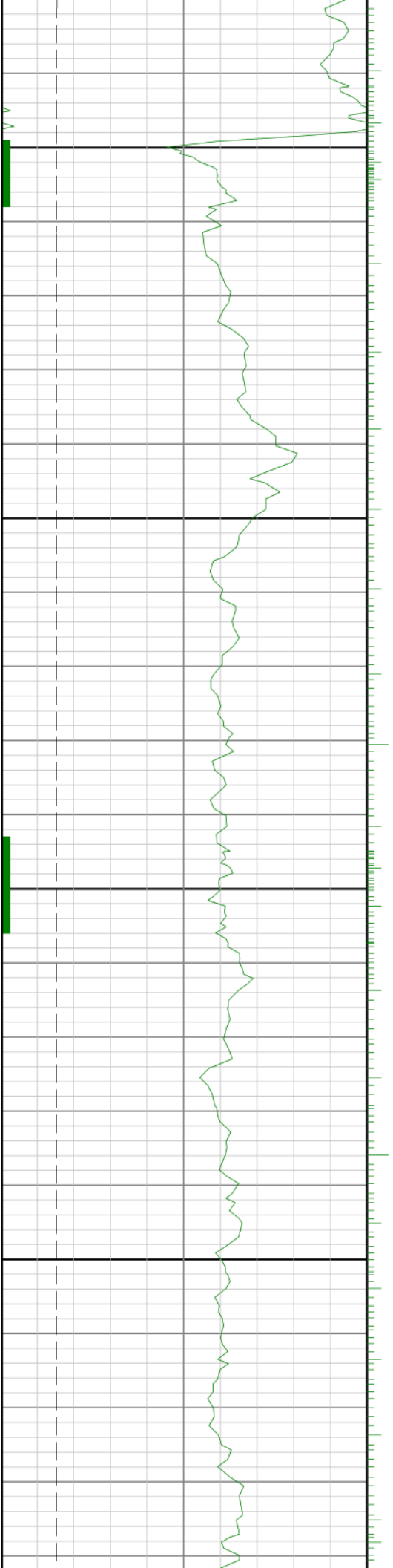


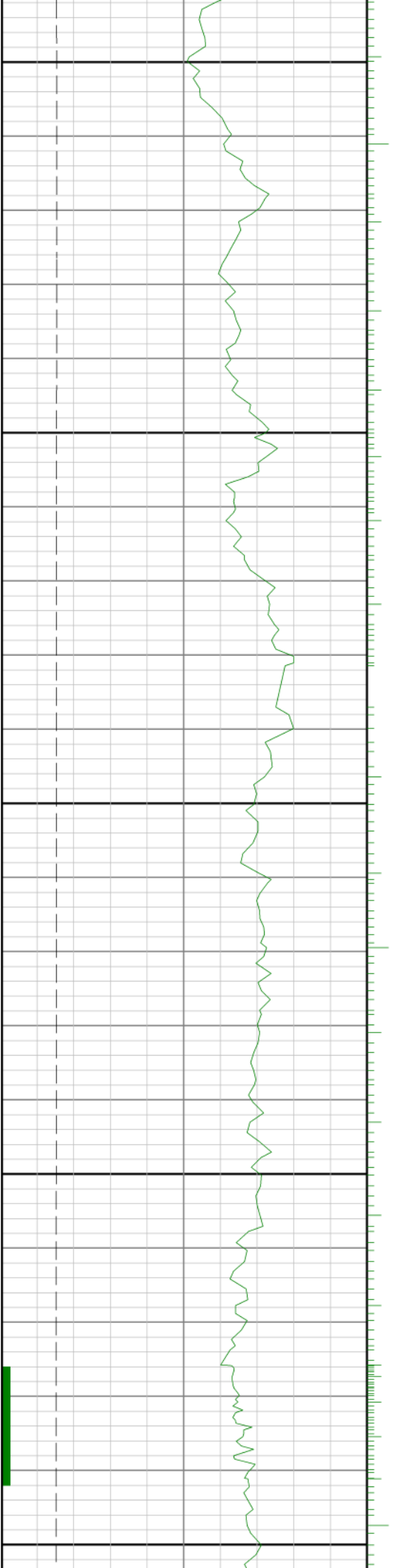




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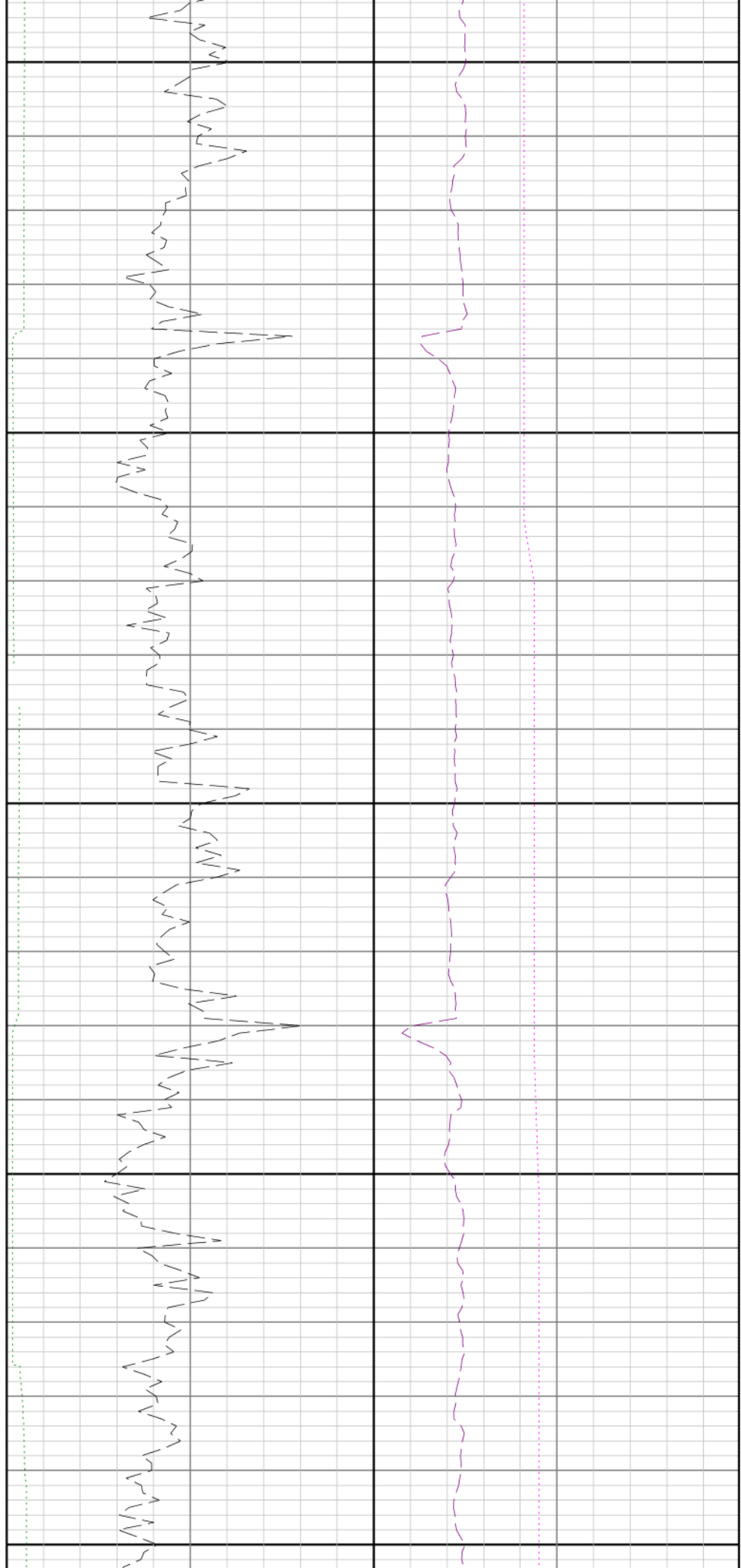


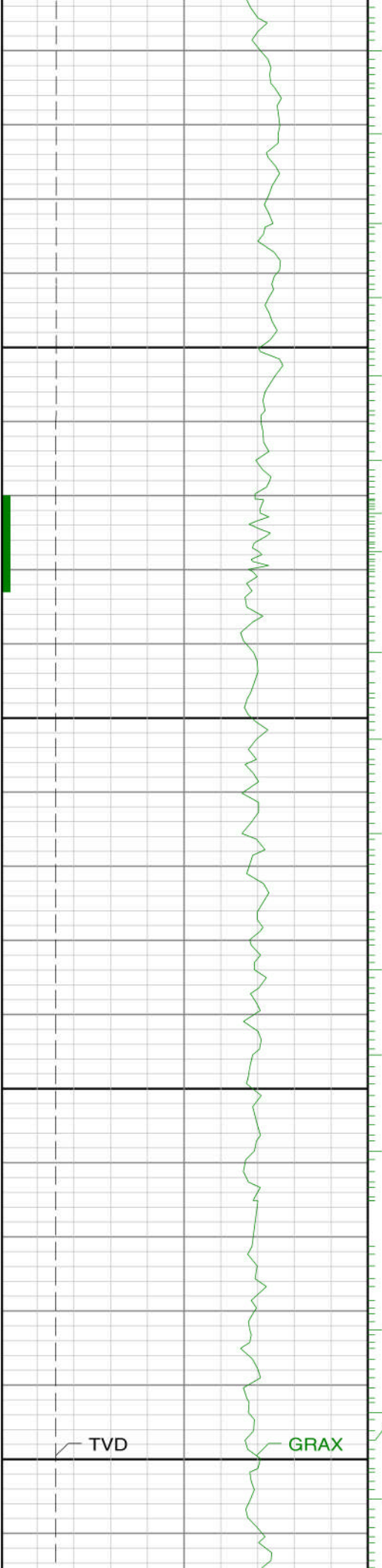


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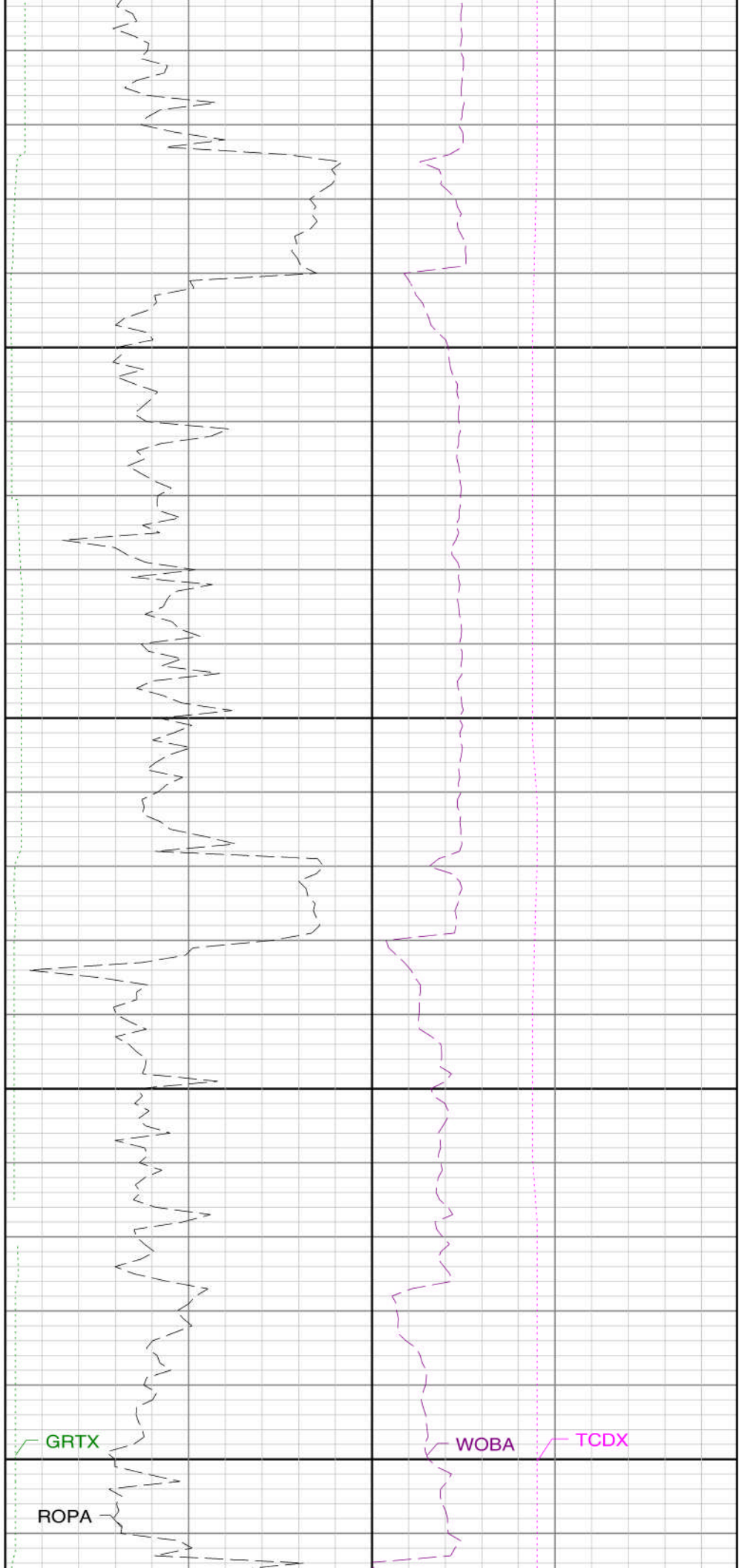
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8900

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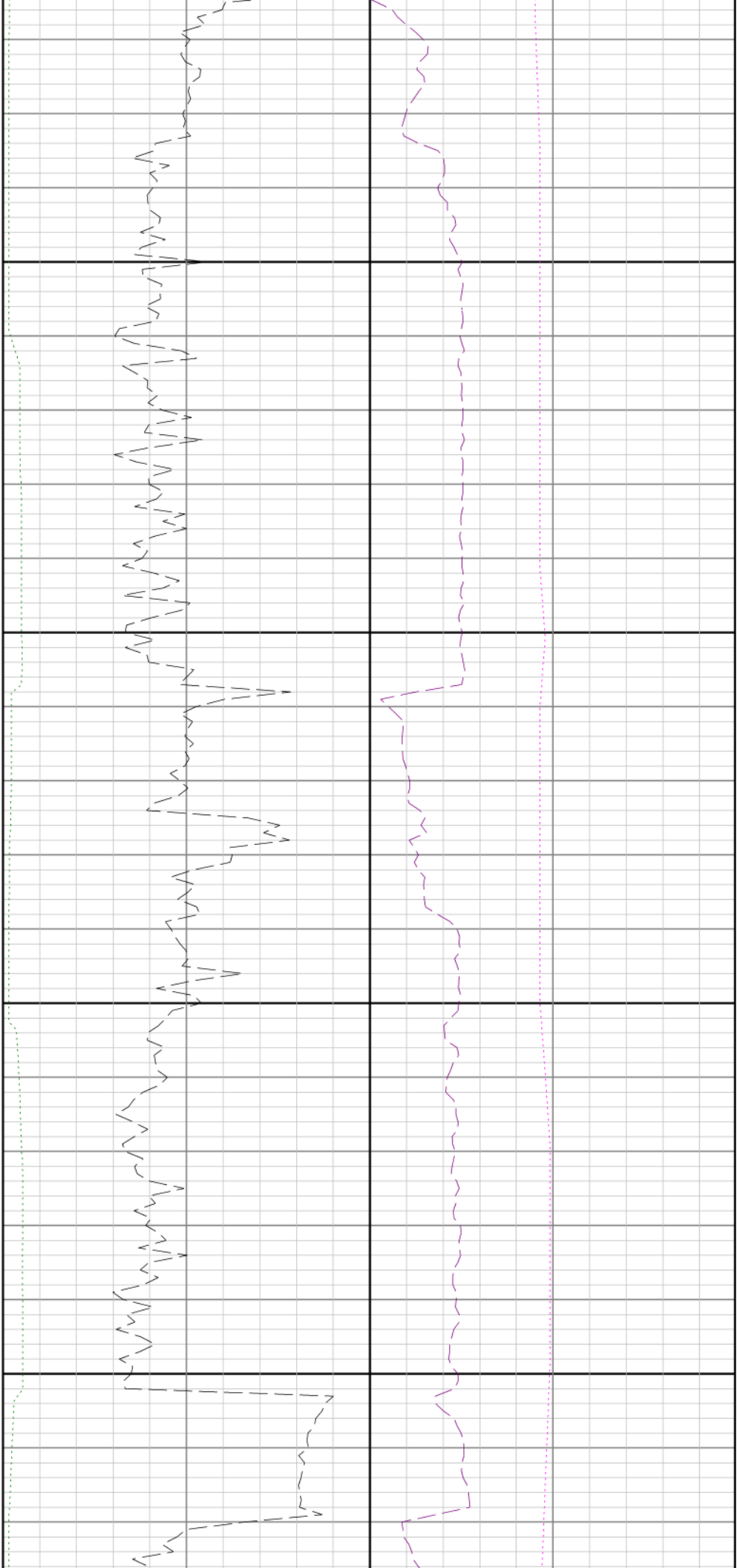


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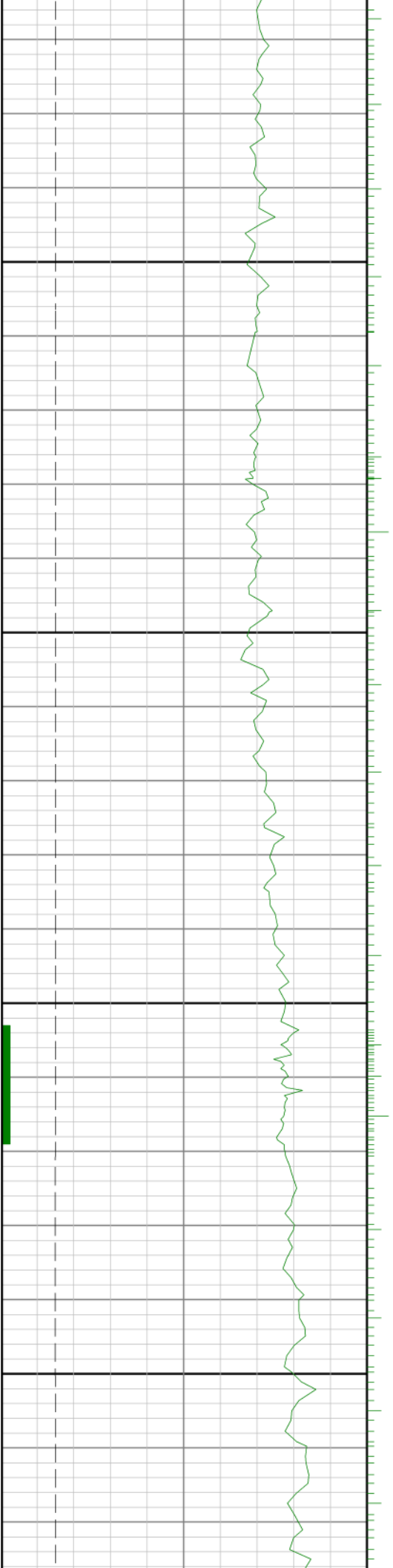
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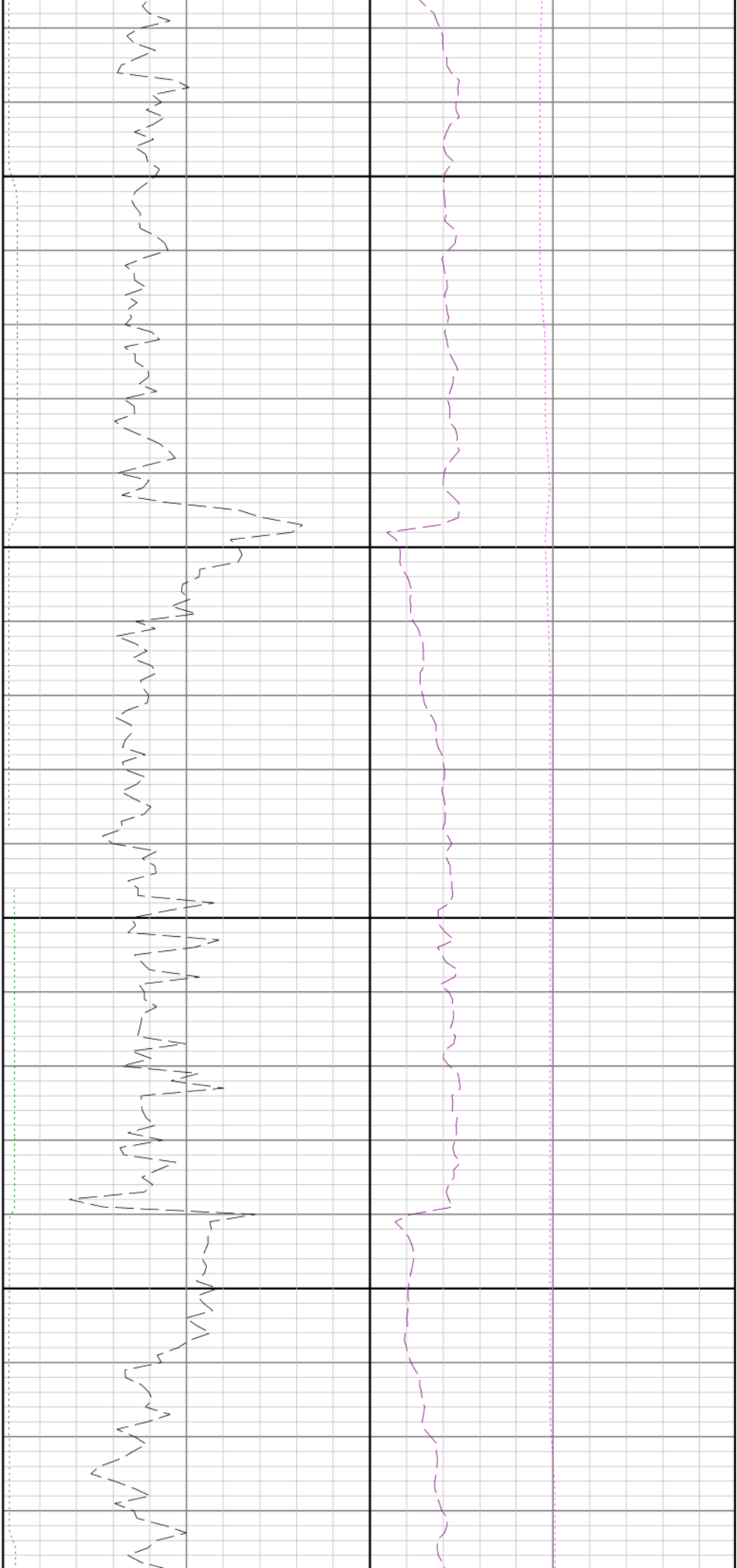
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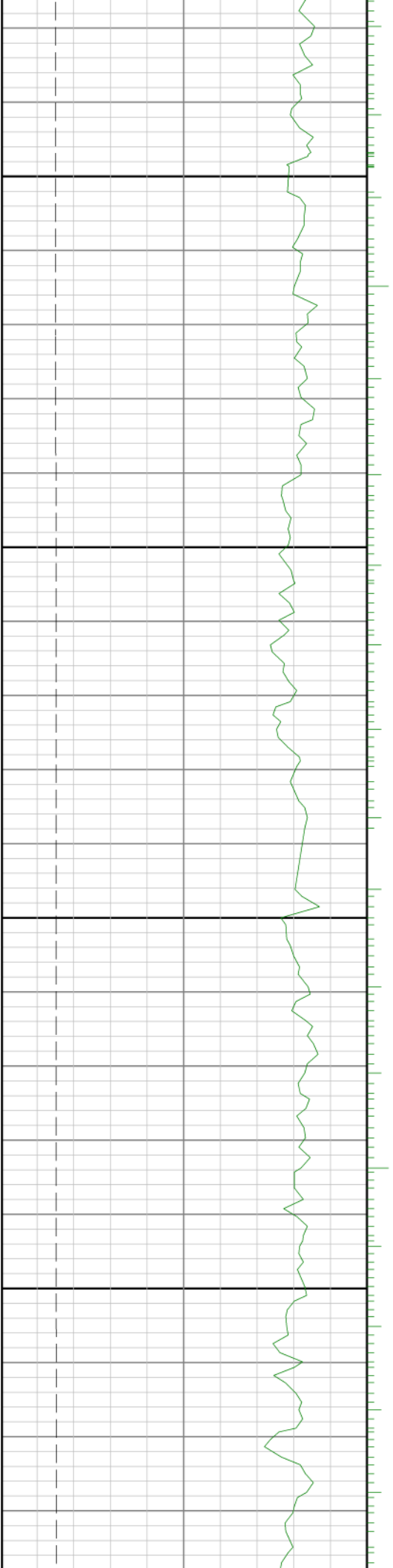
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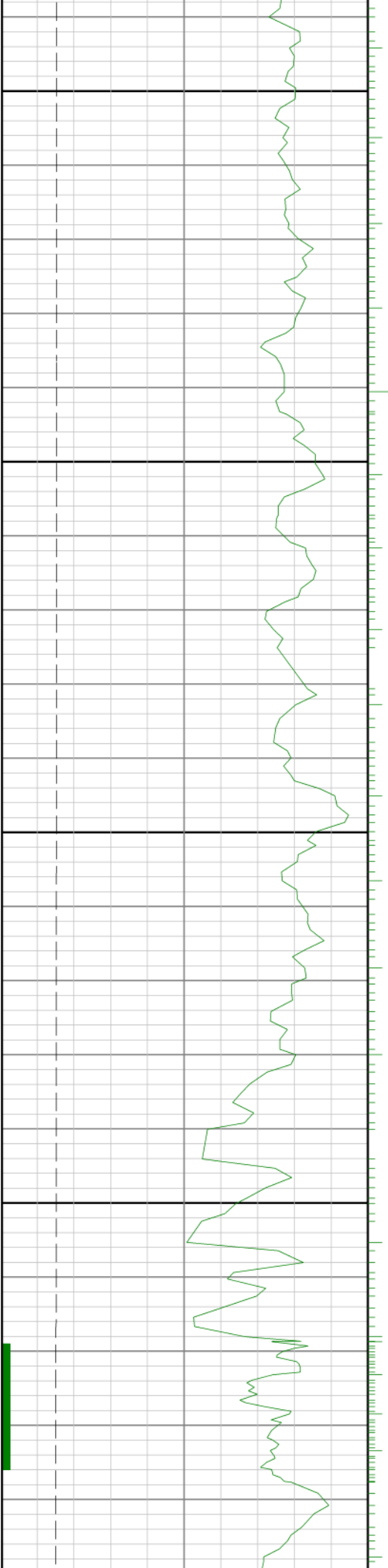




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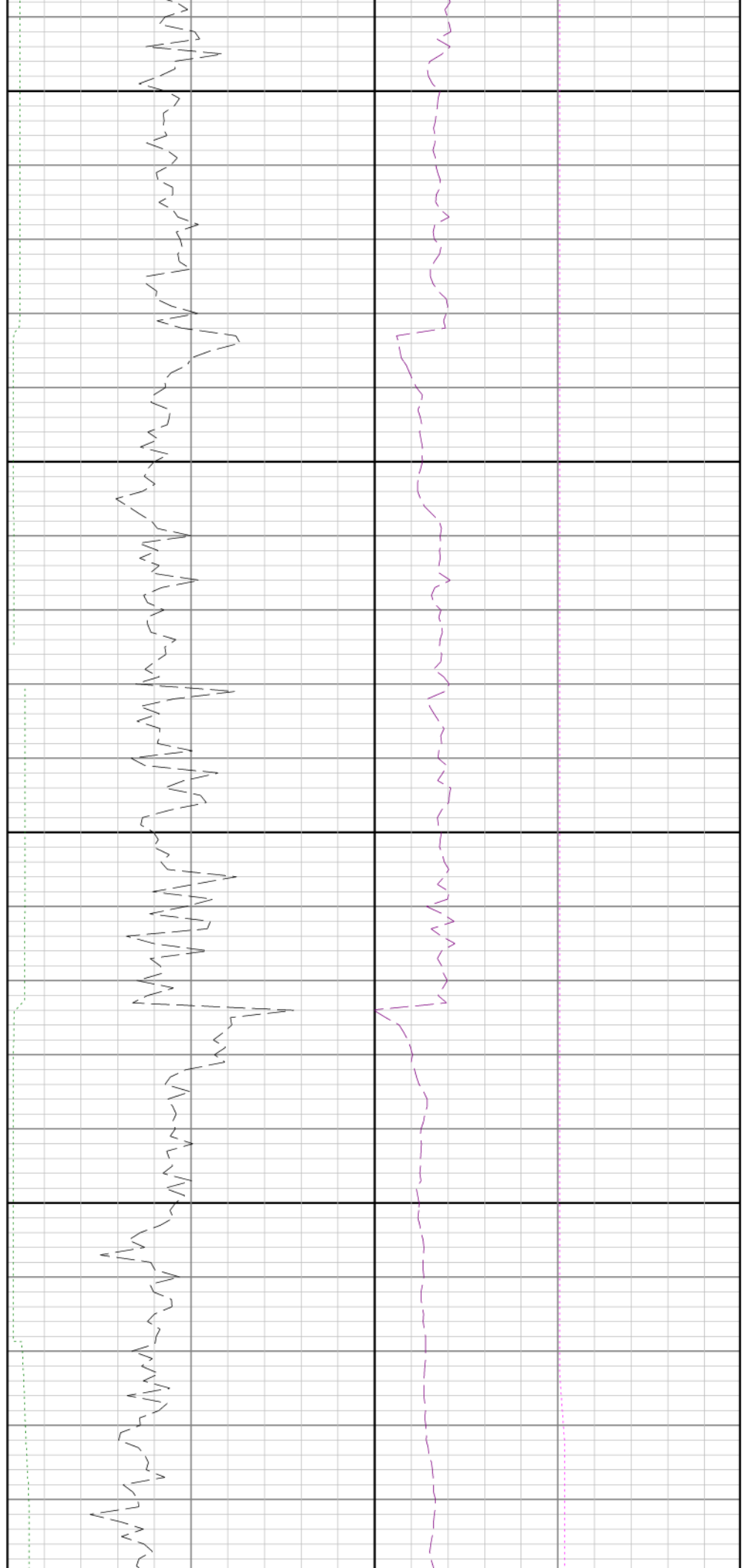
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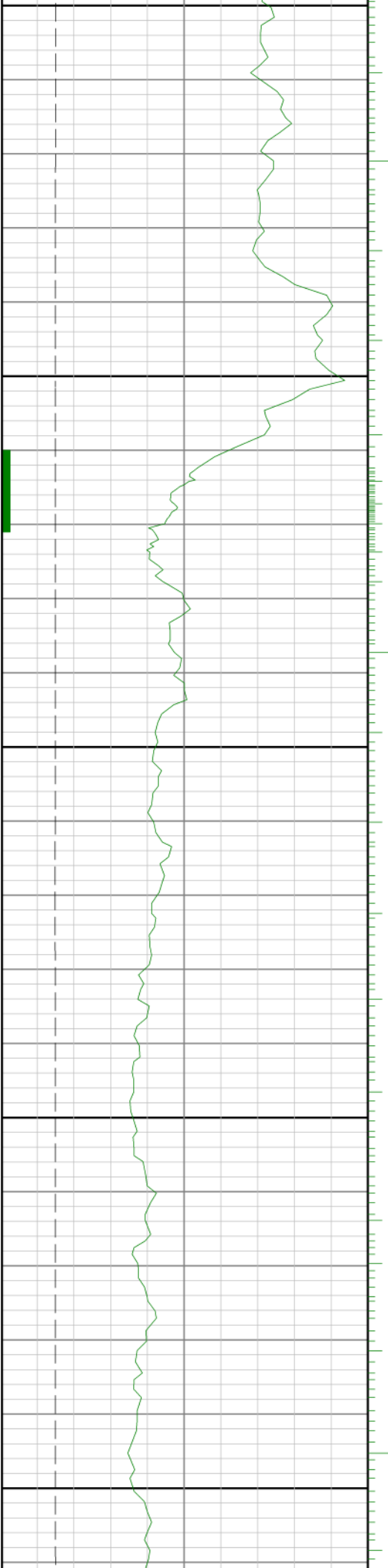




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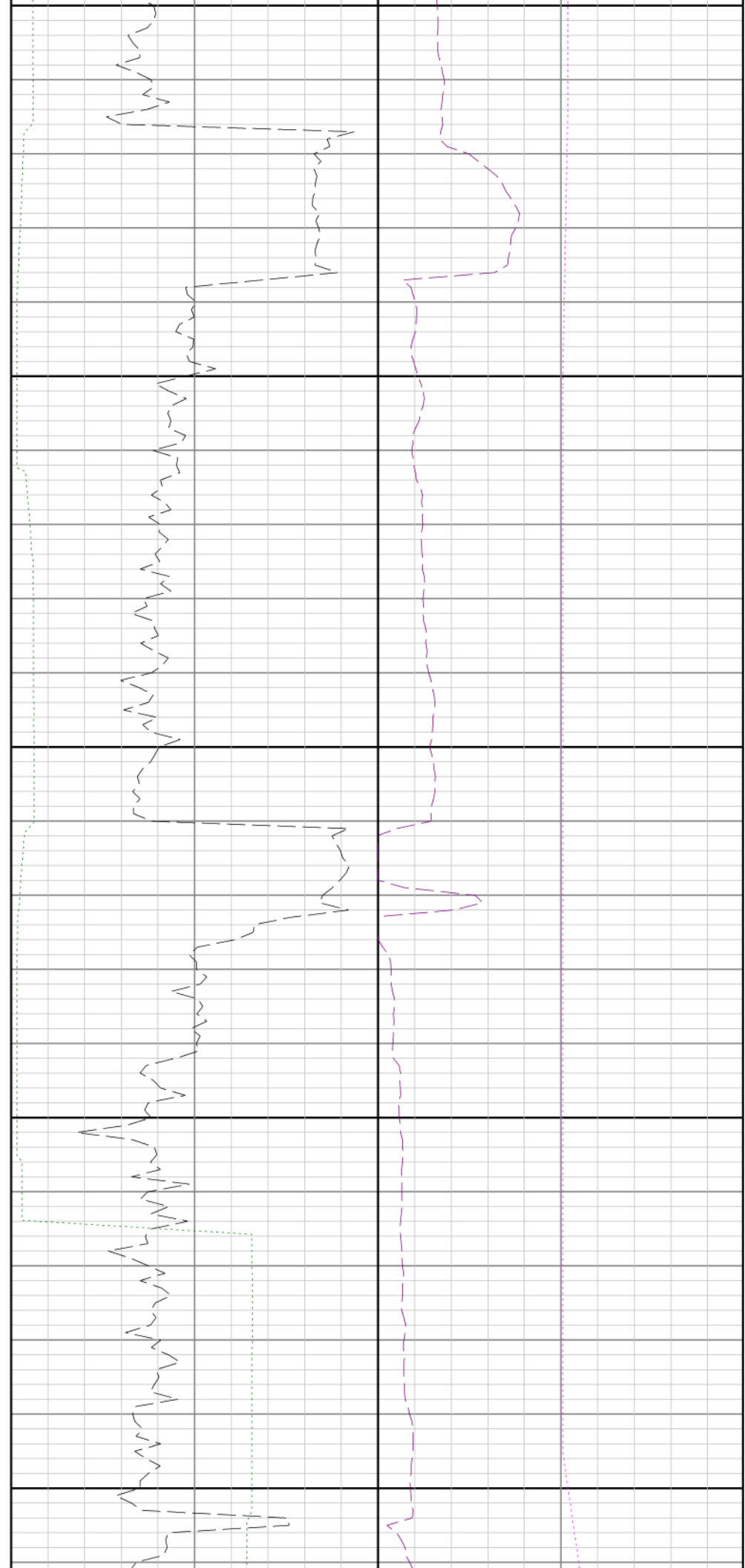
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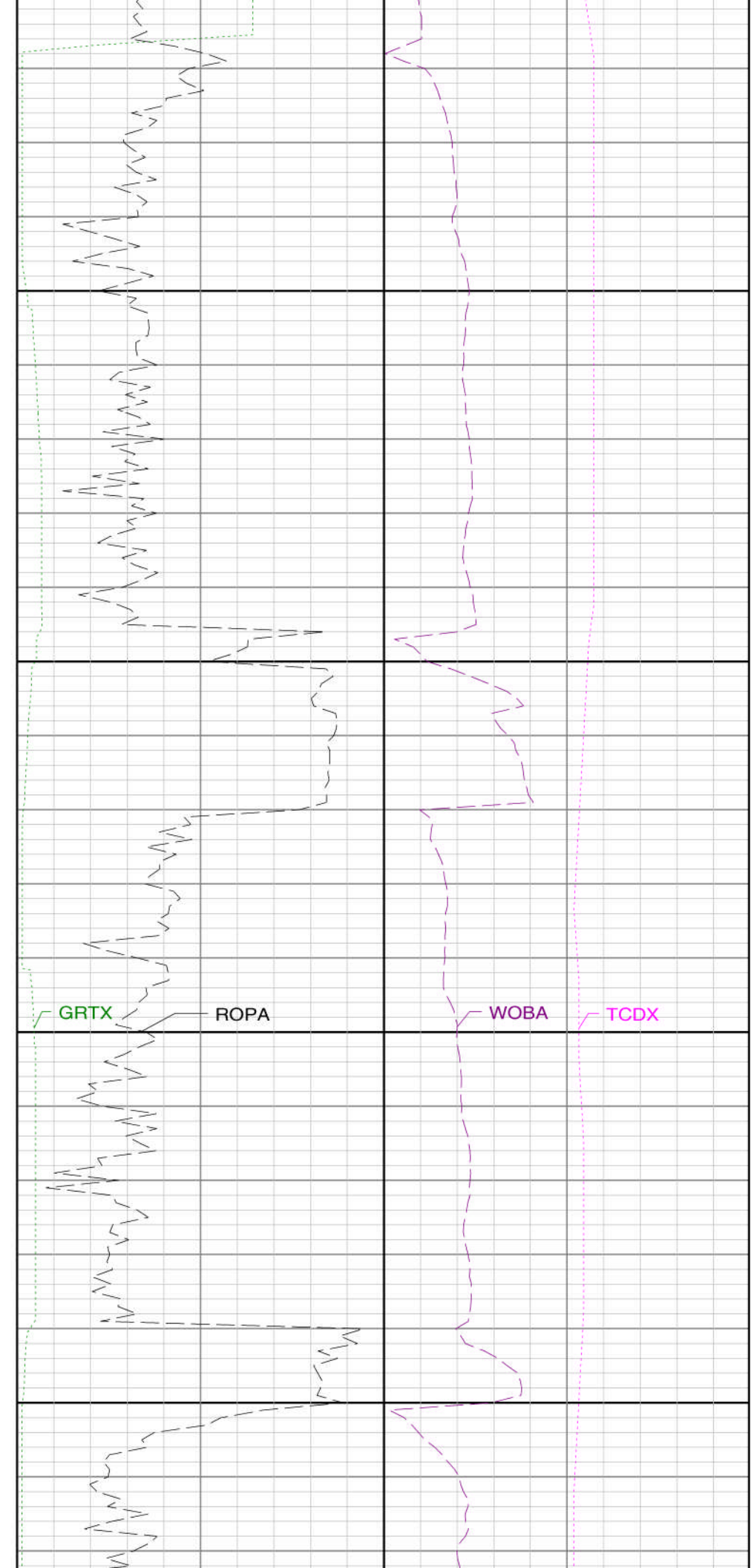
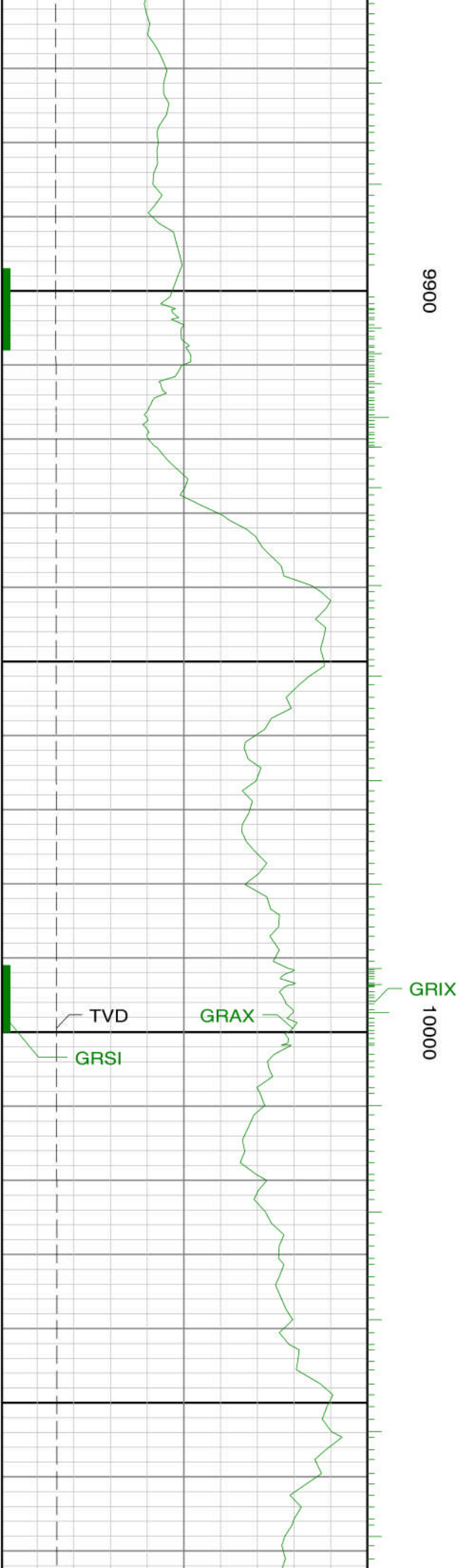


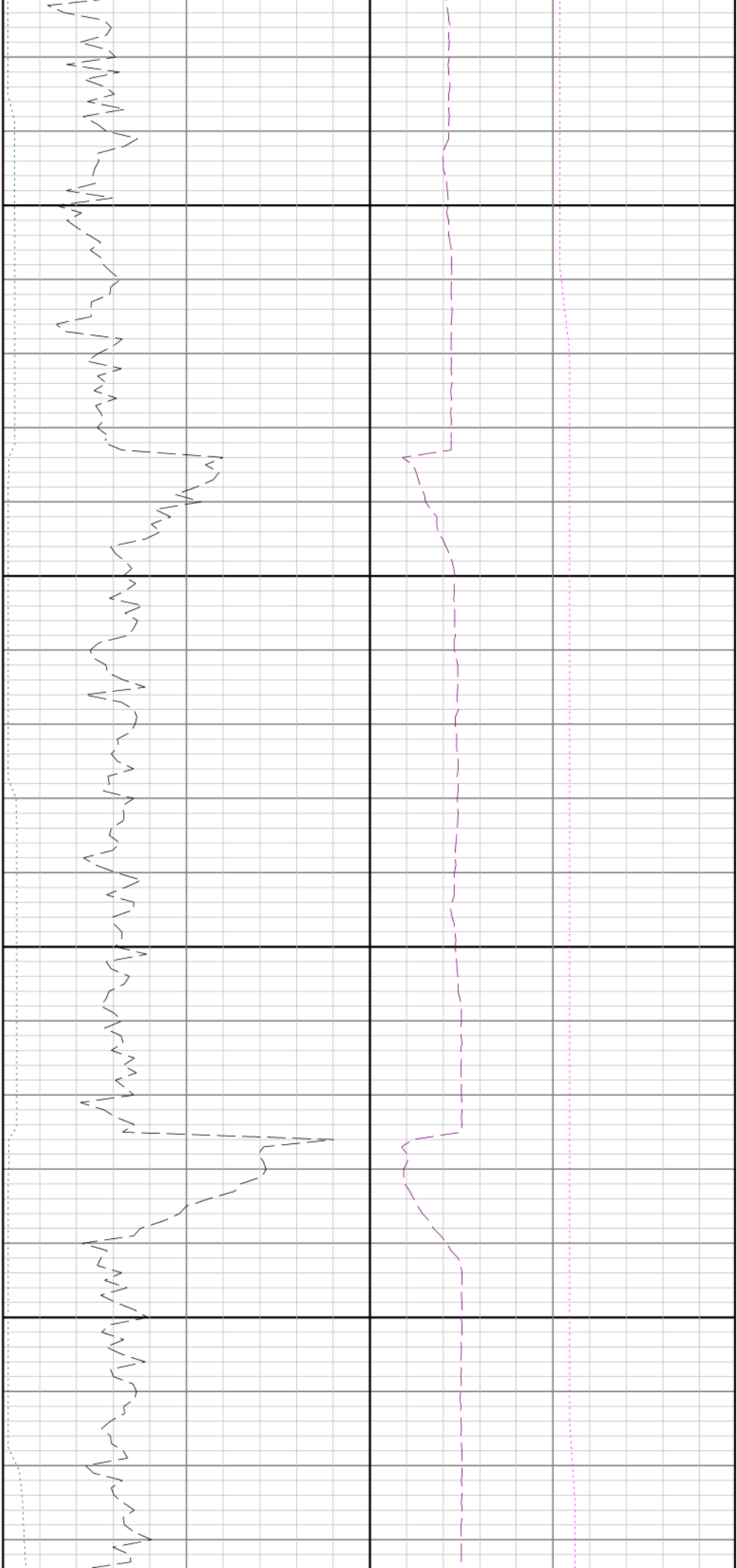


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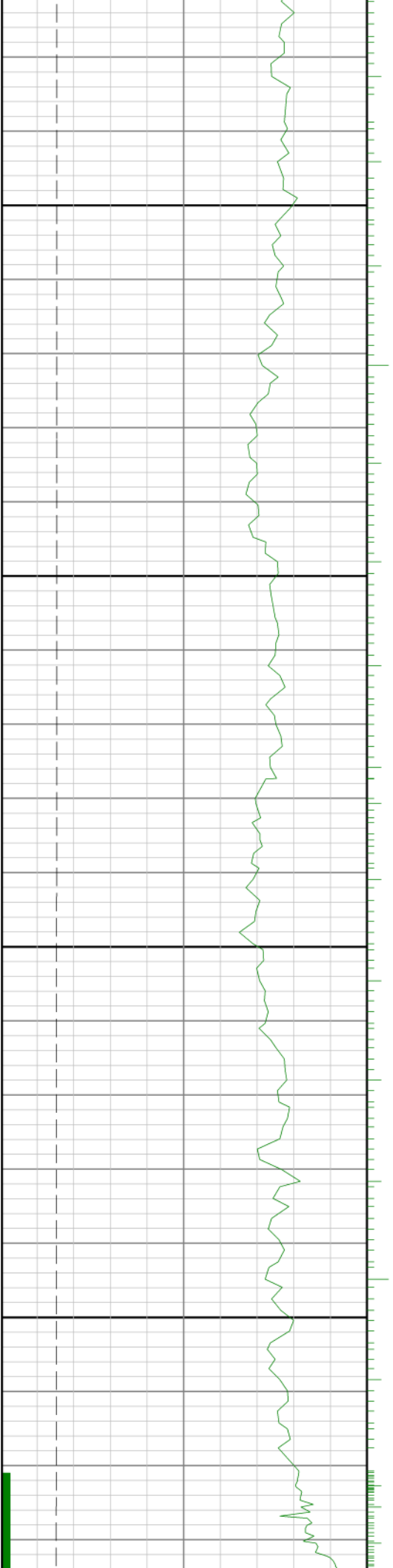


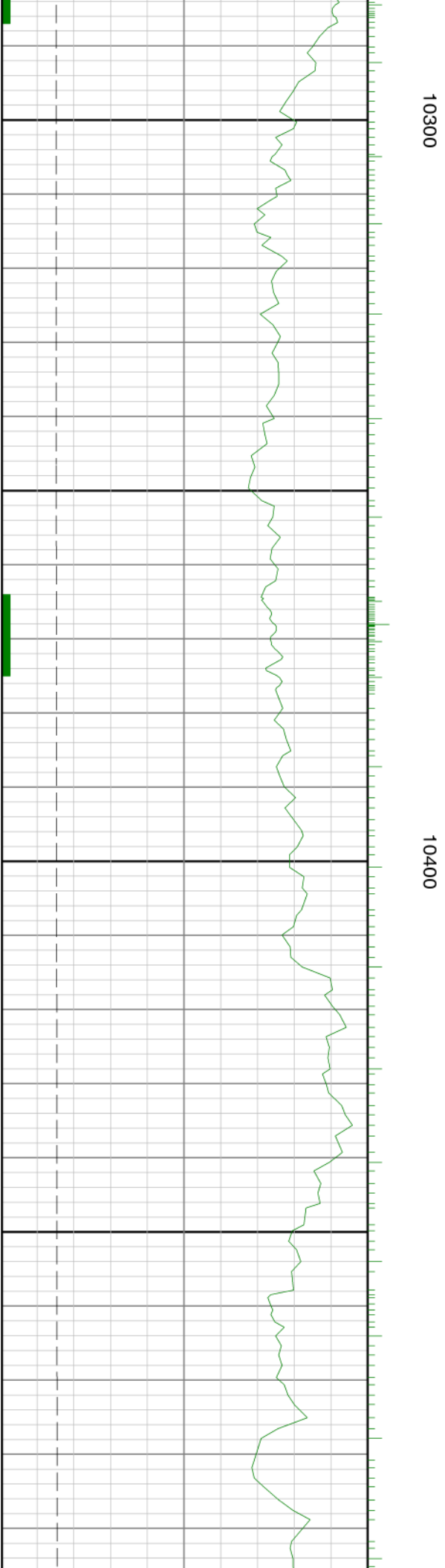
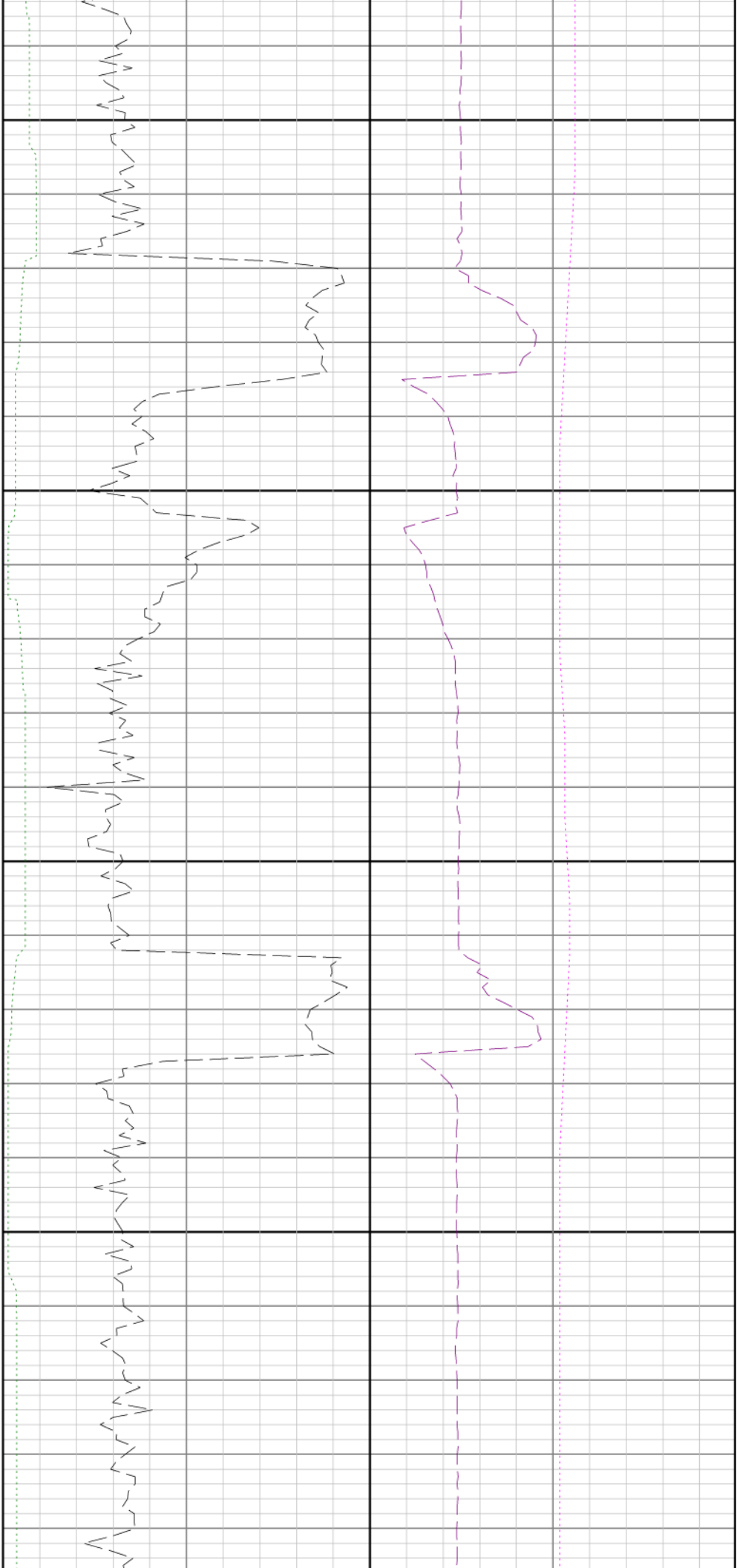


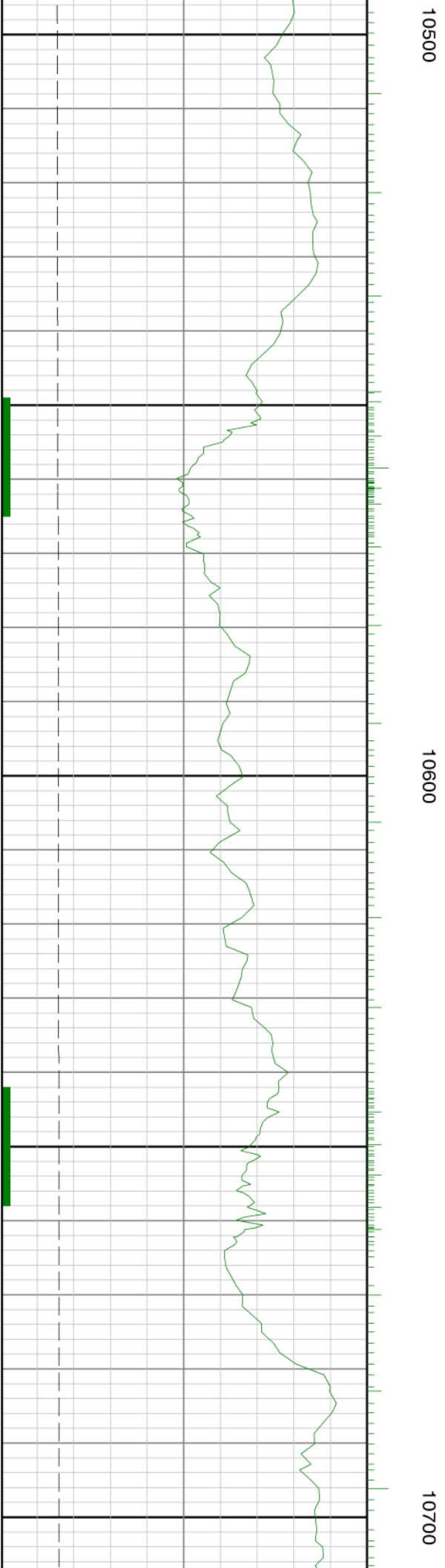
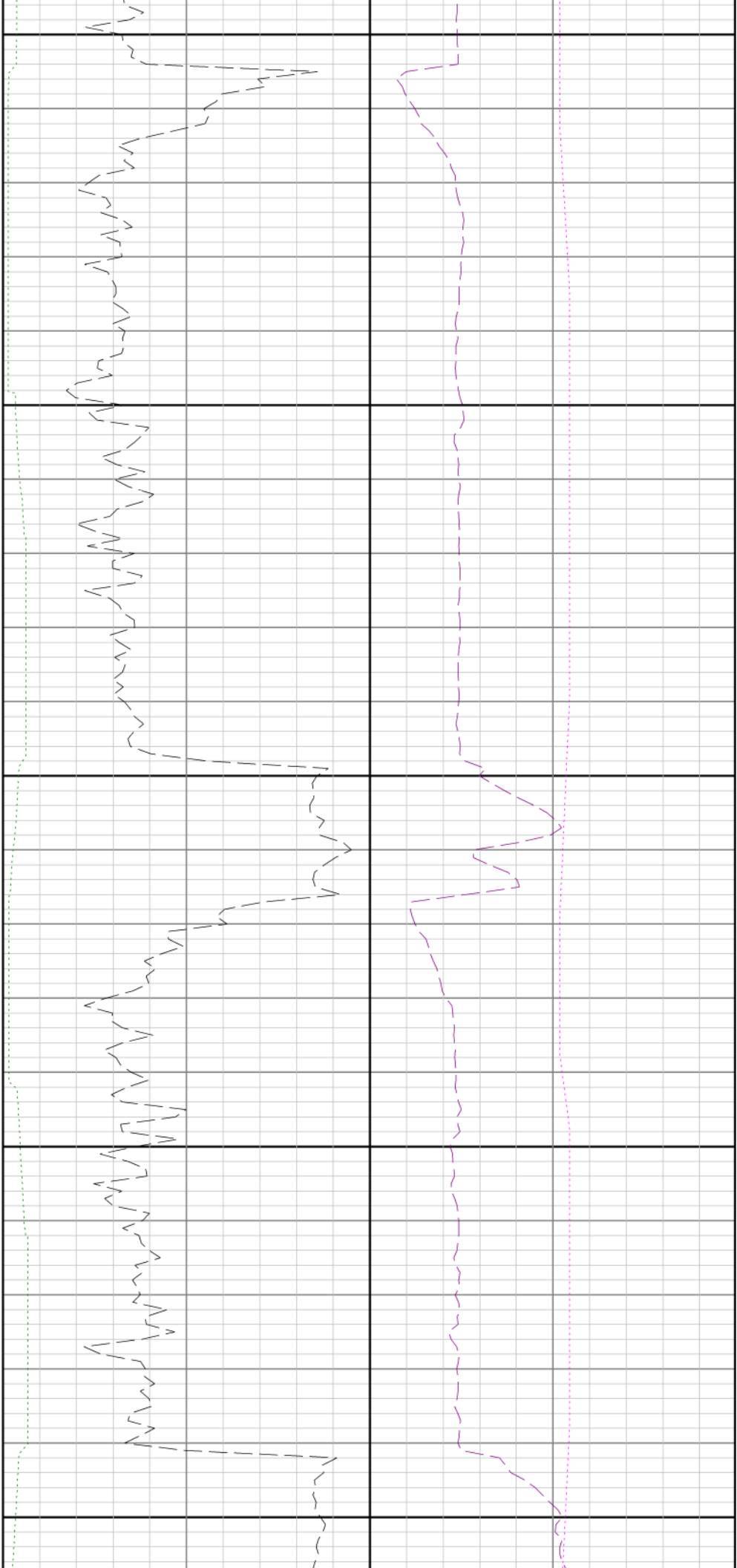


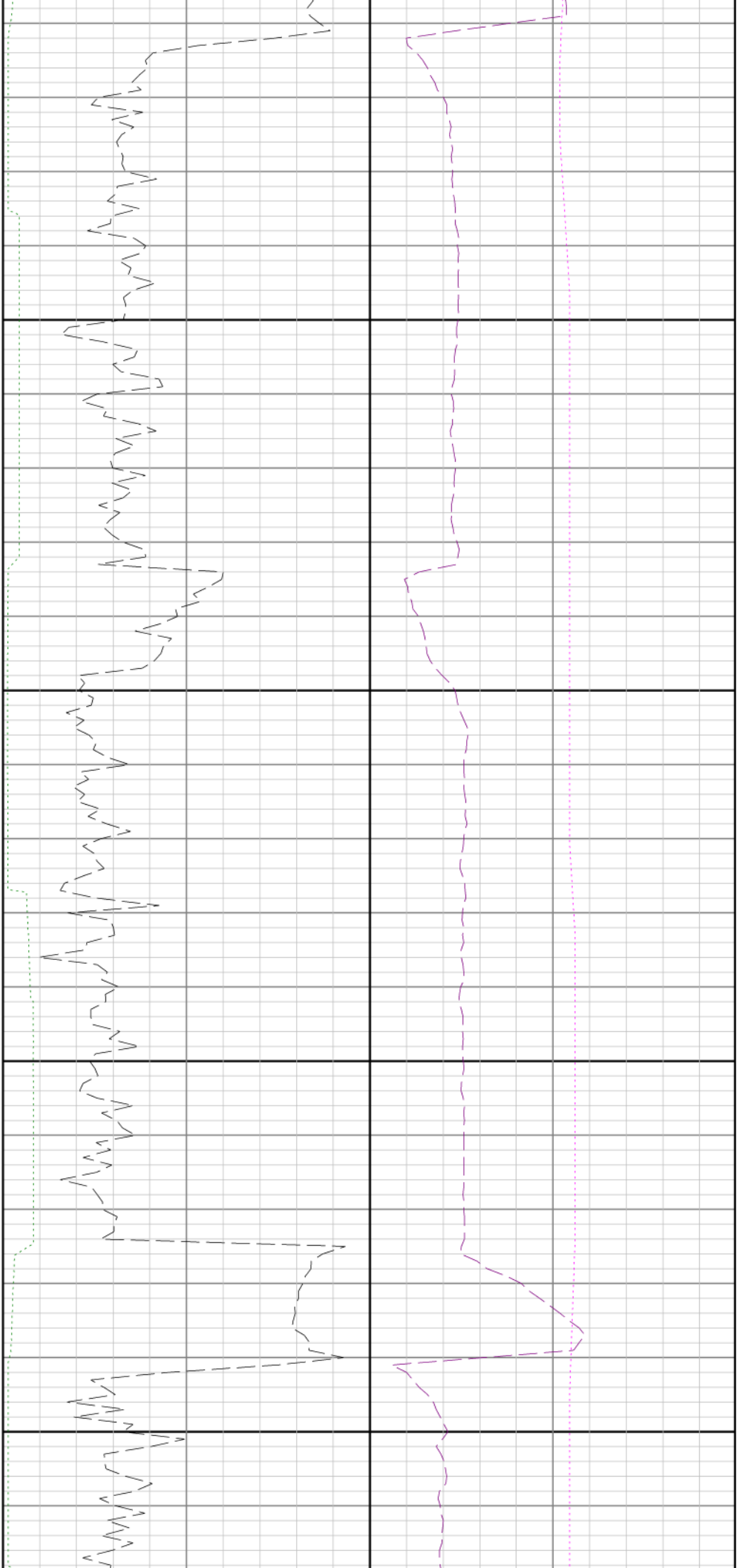
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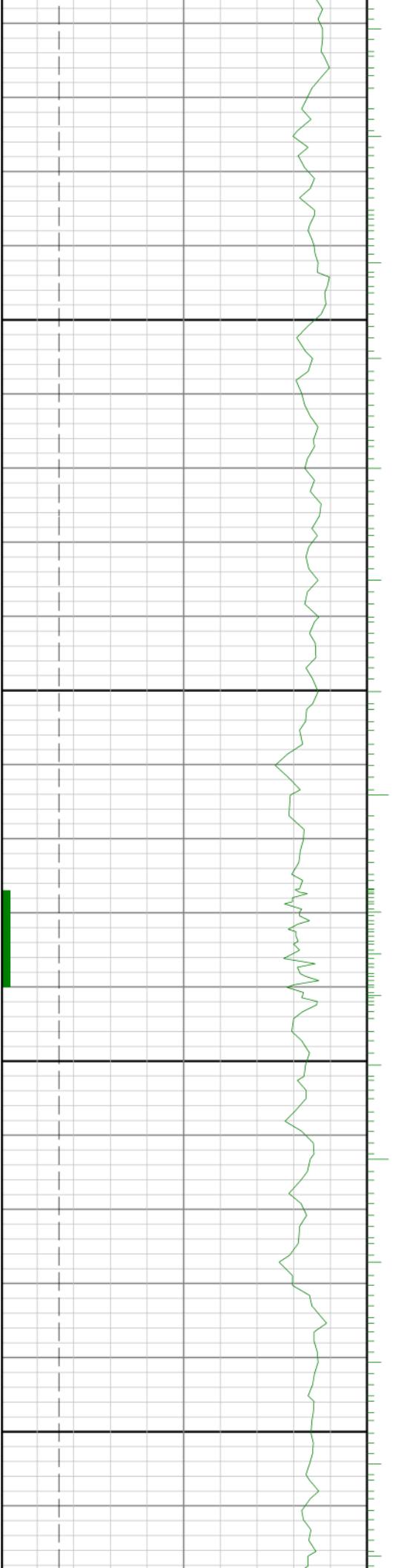


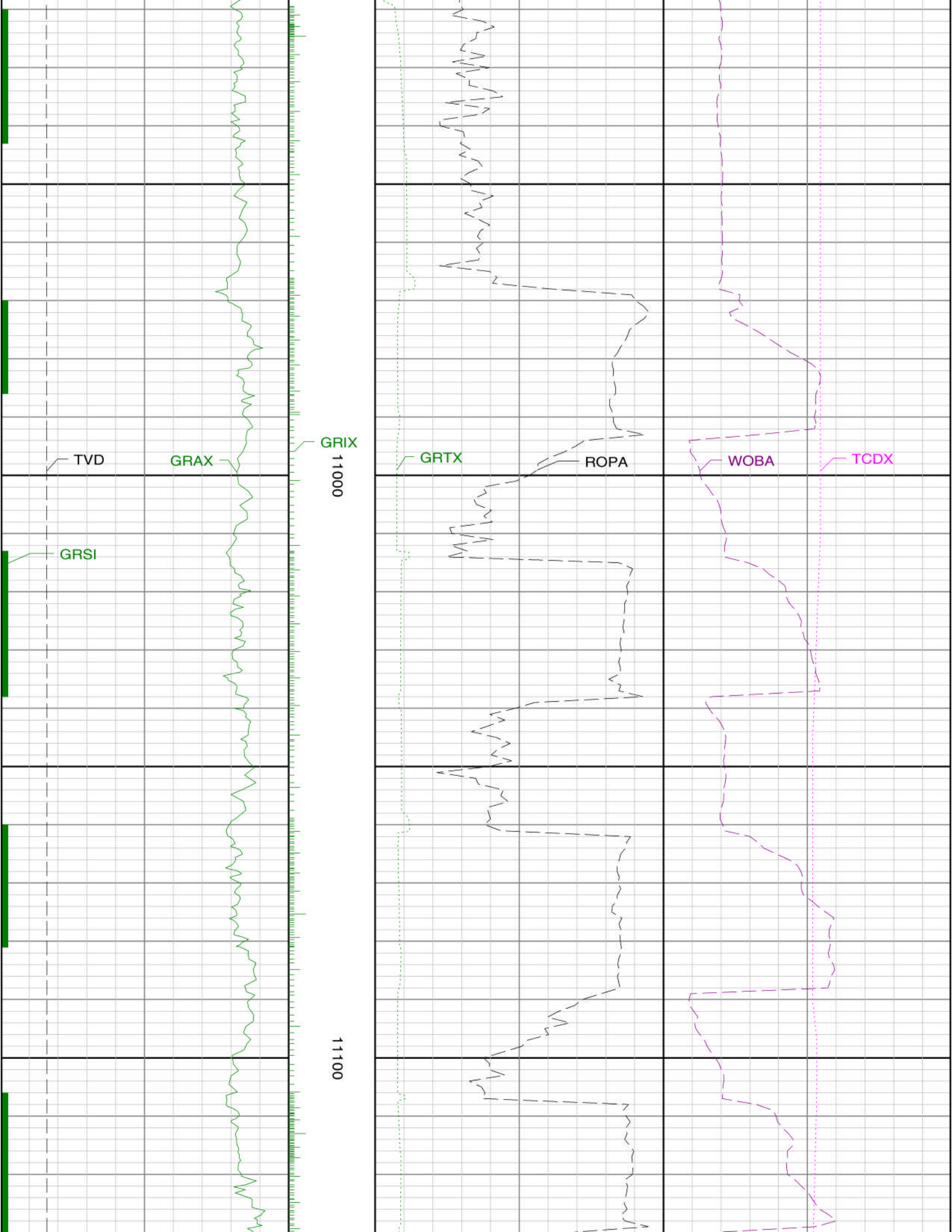


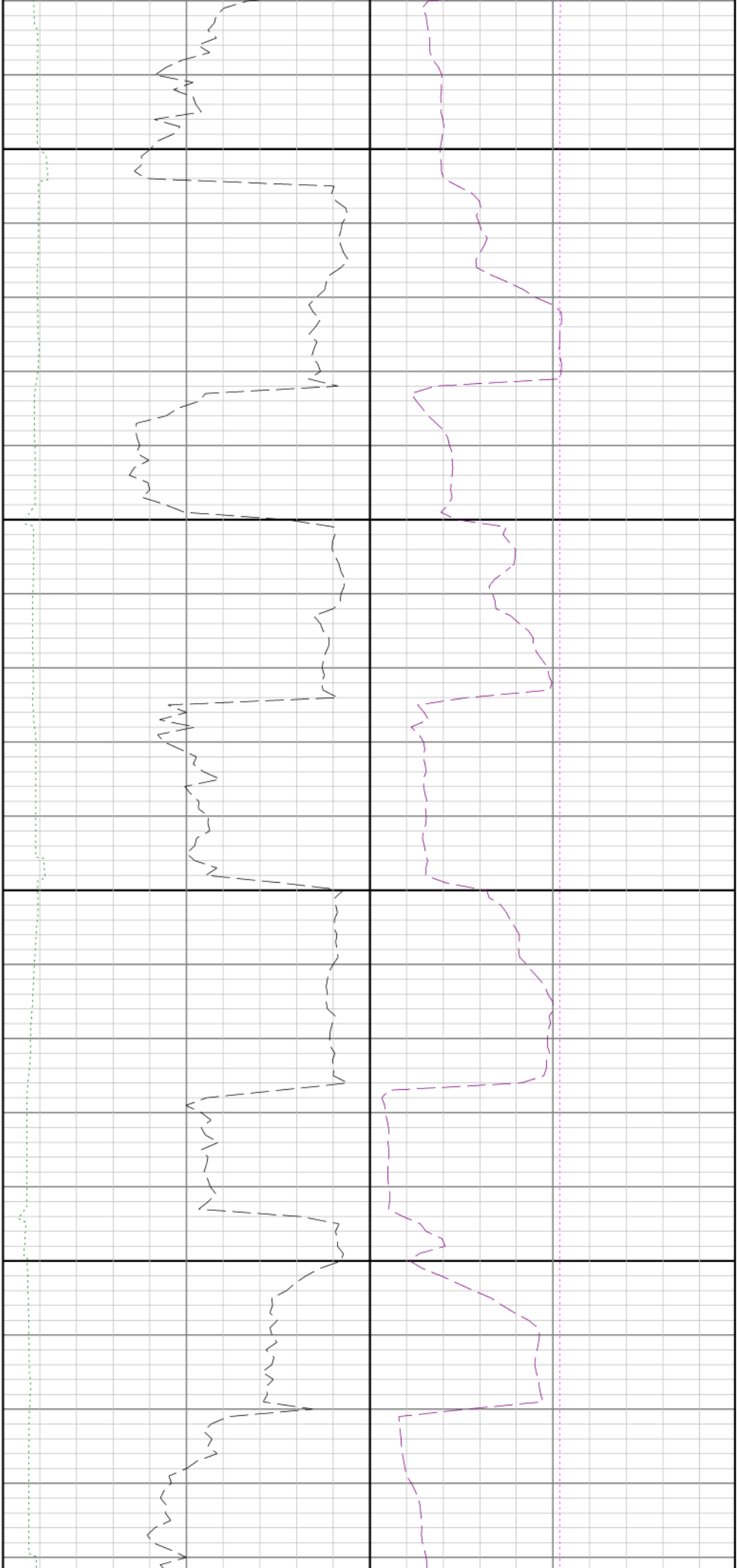


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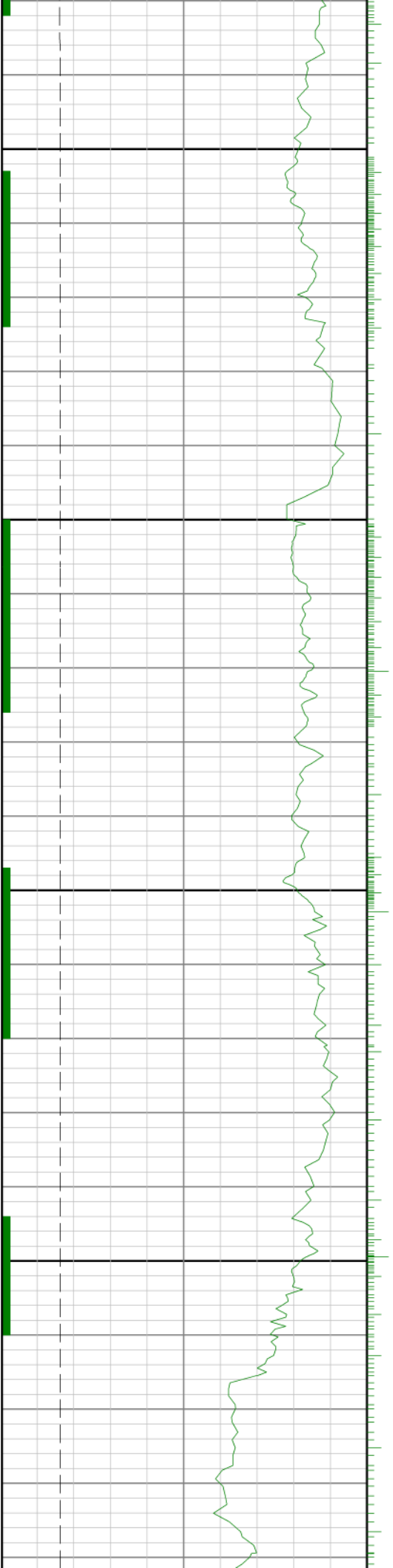


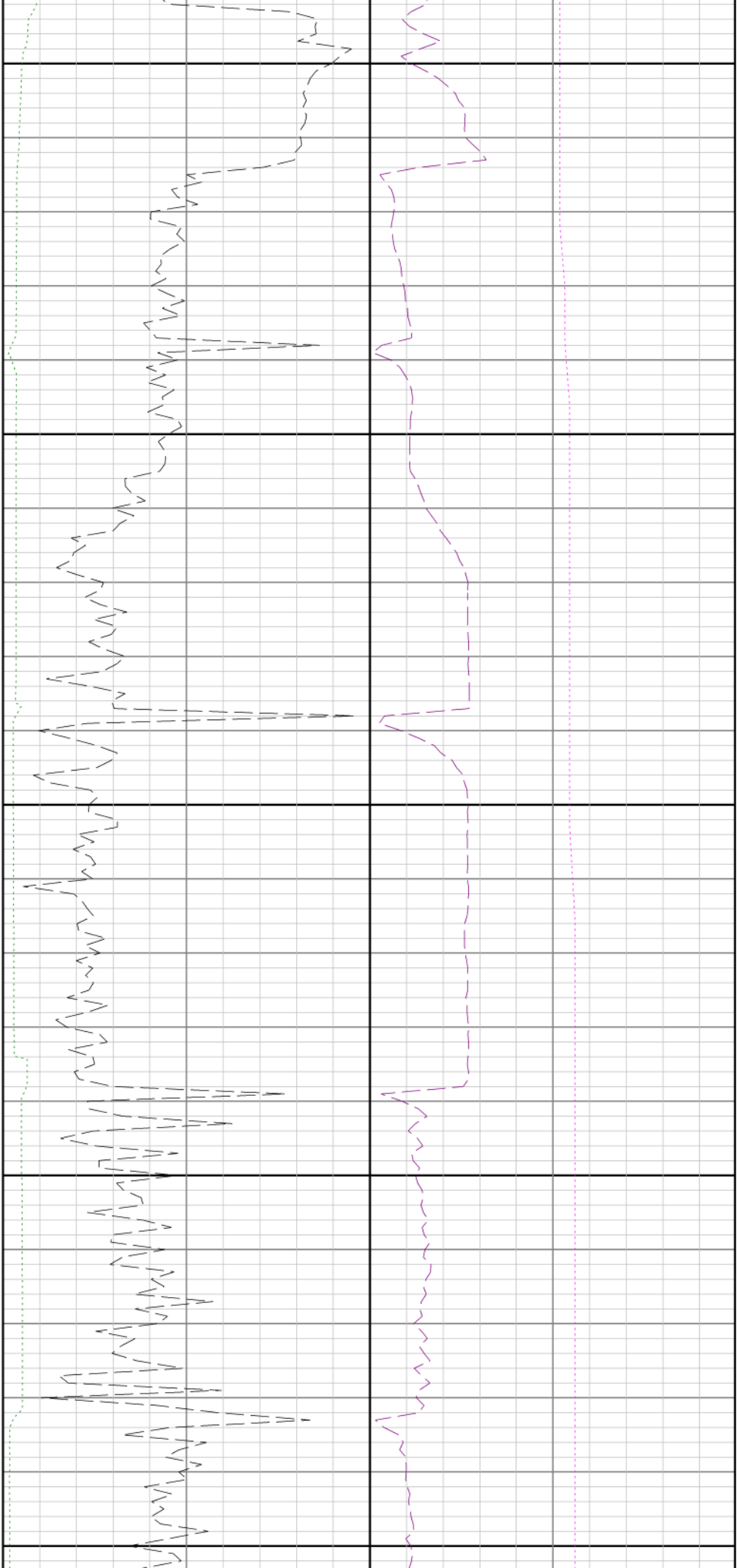




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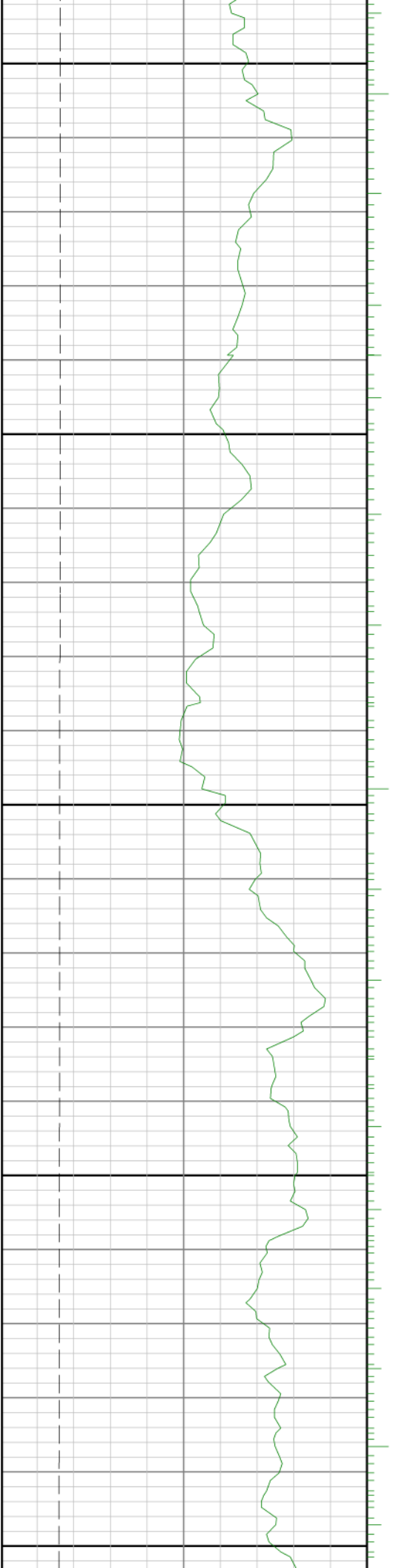
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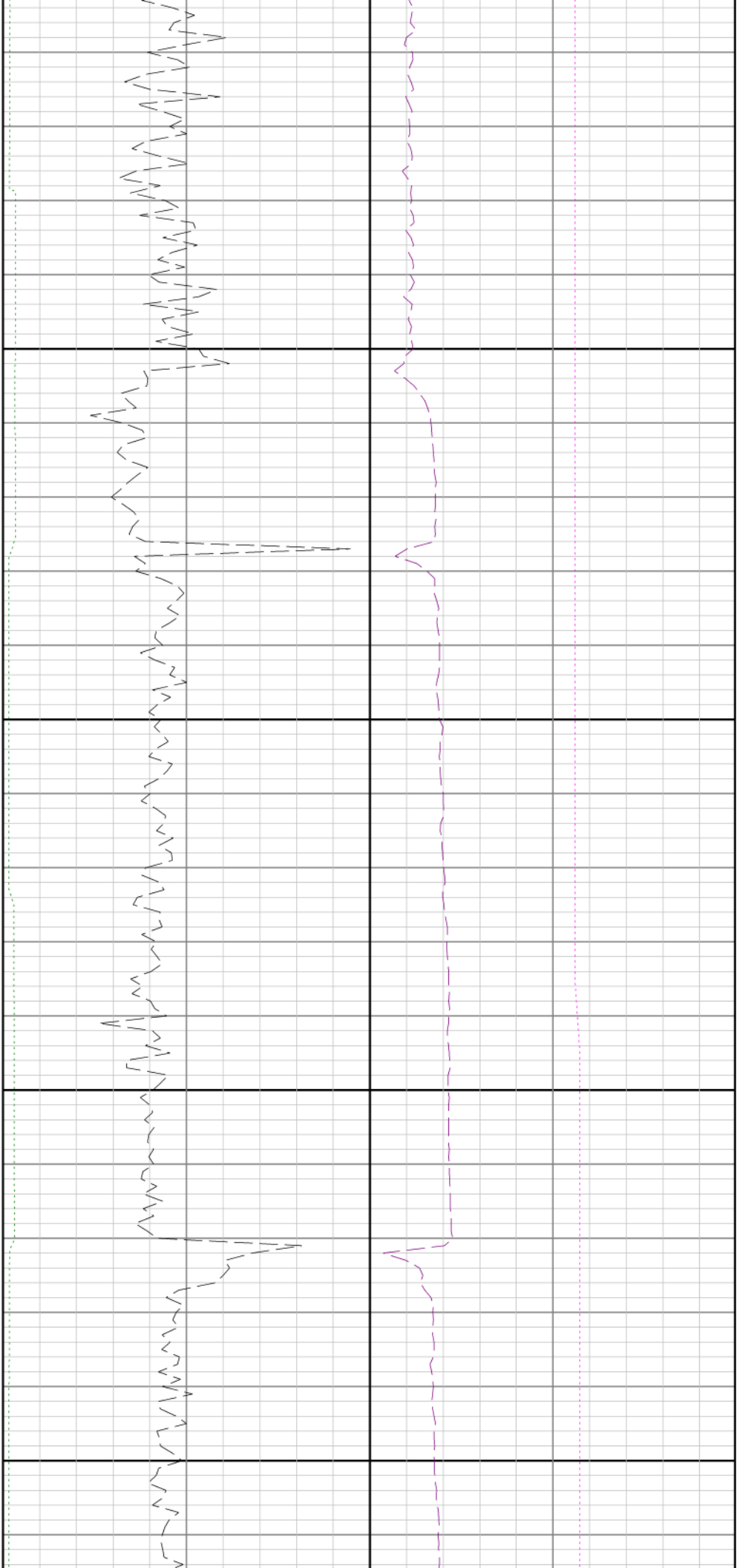




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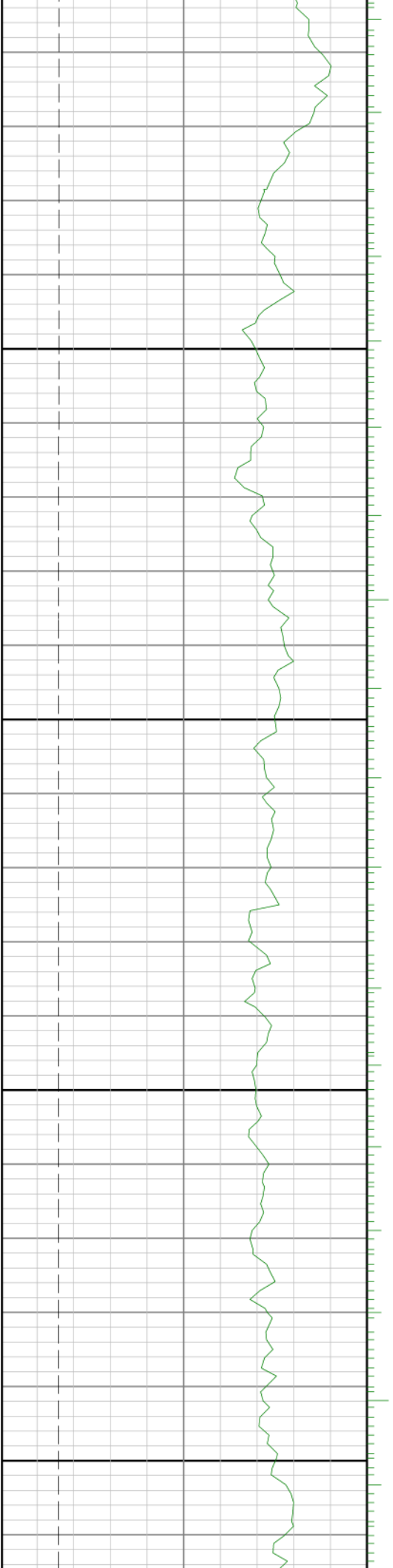
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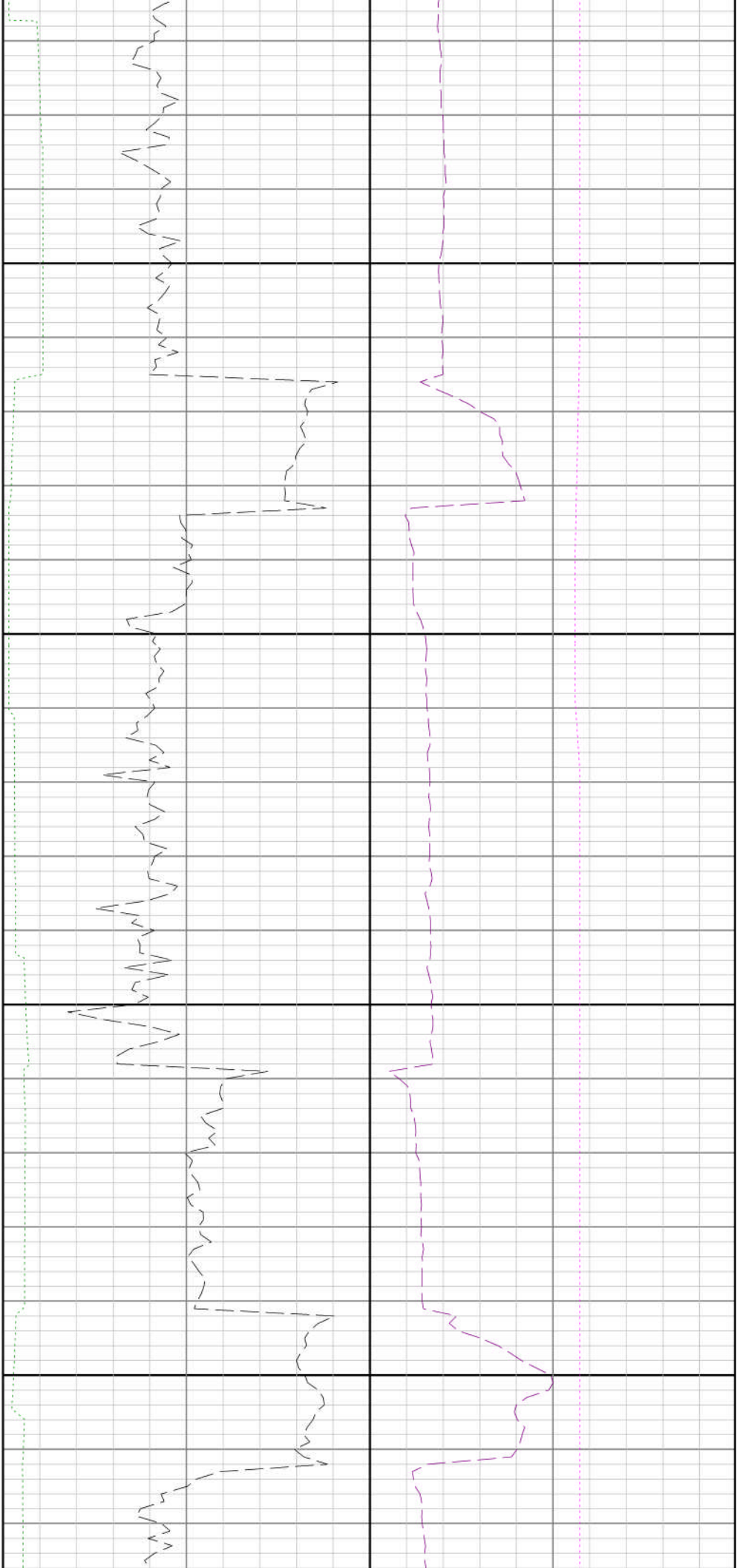




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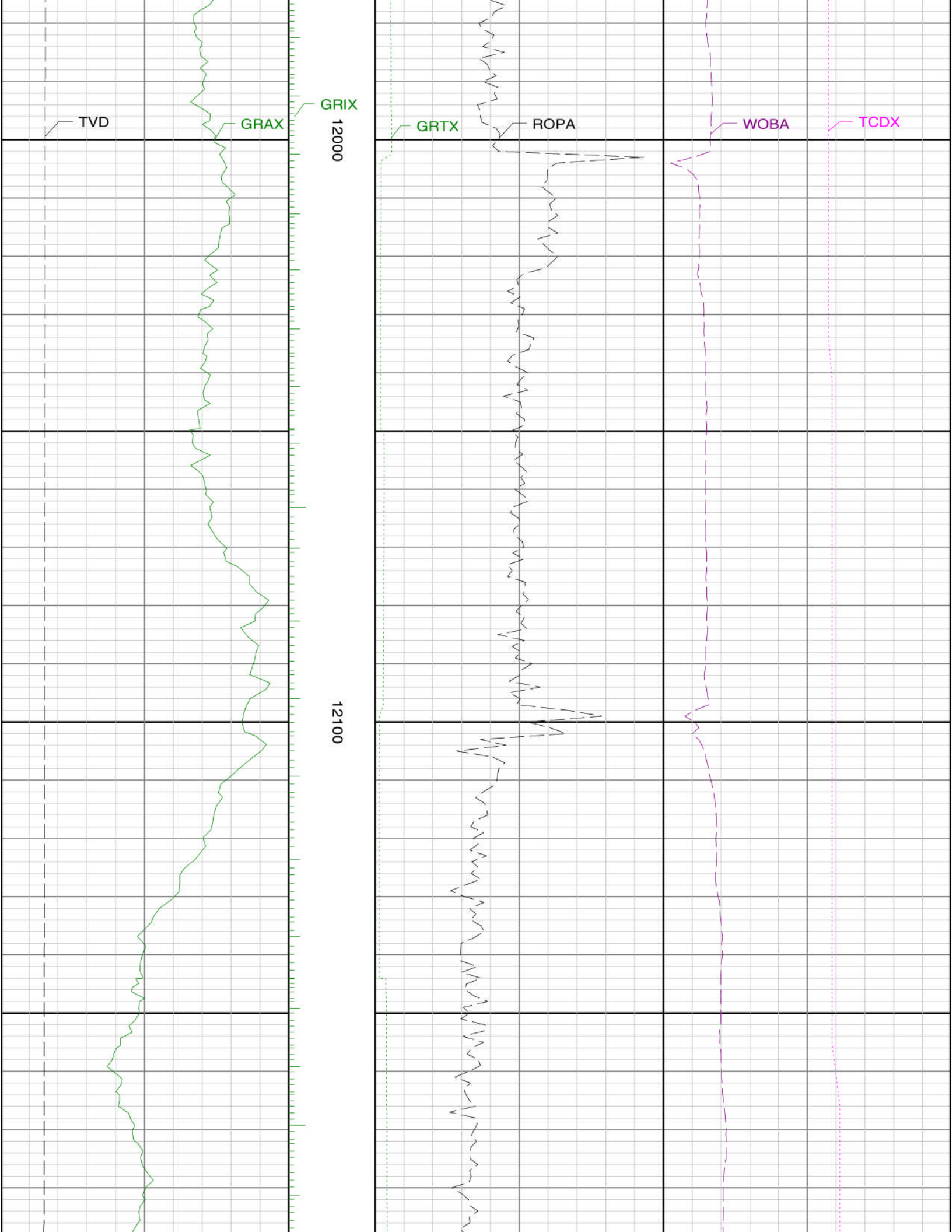


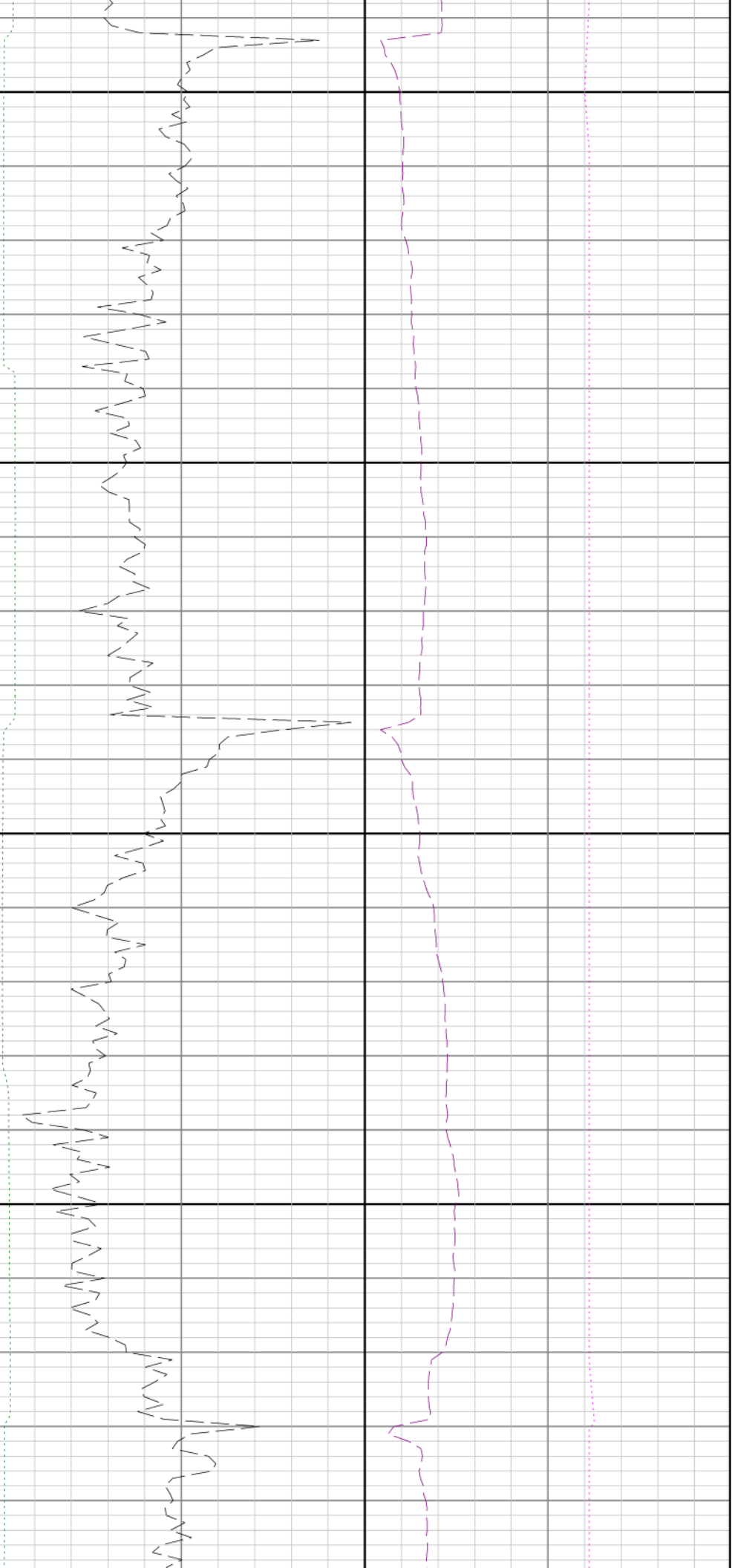


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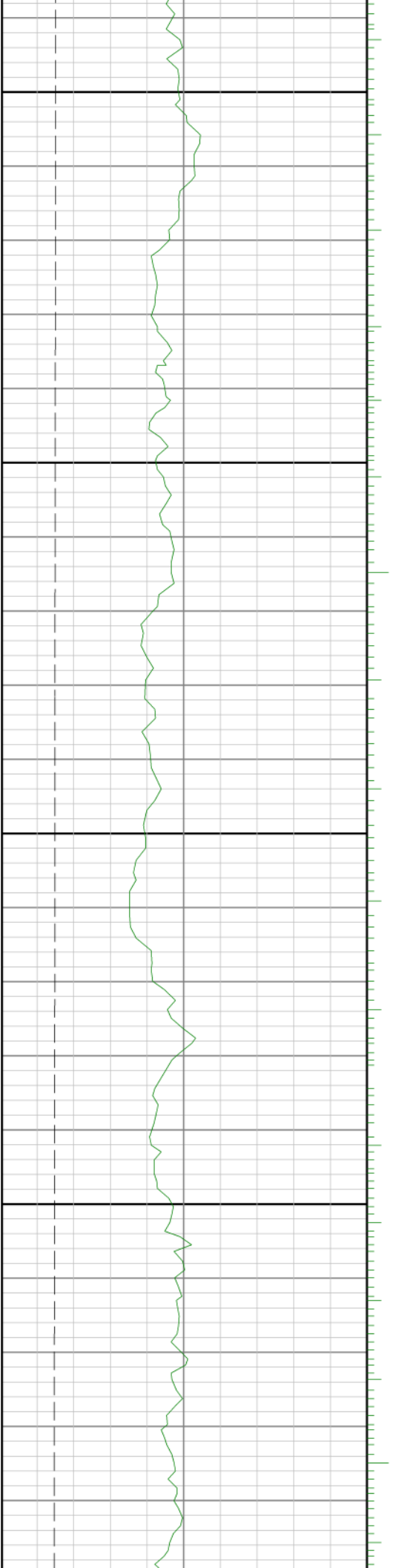


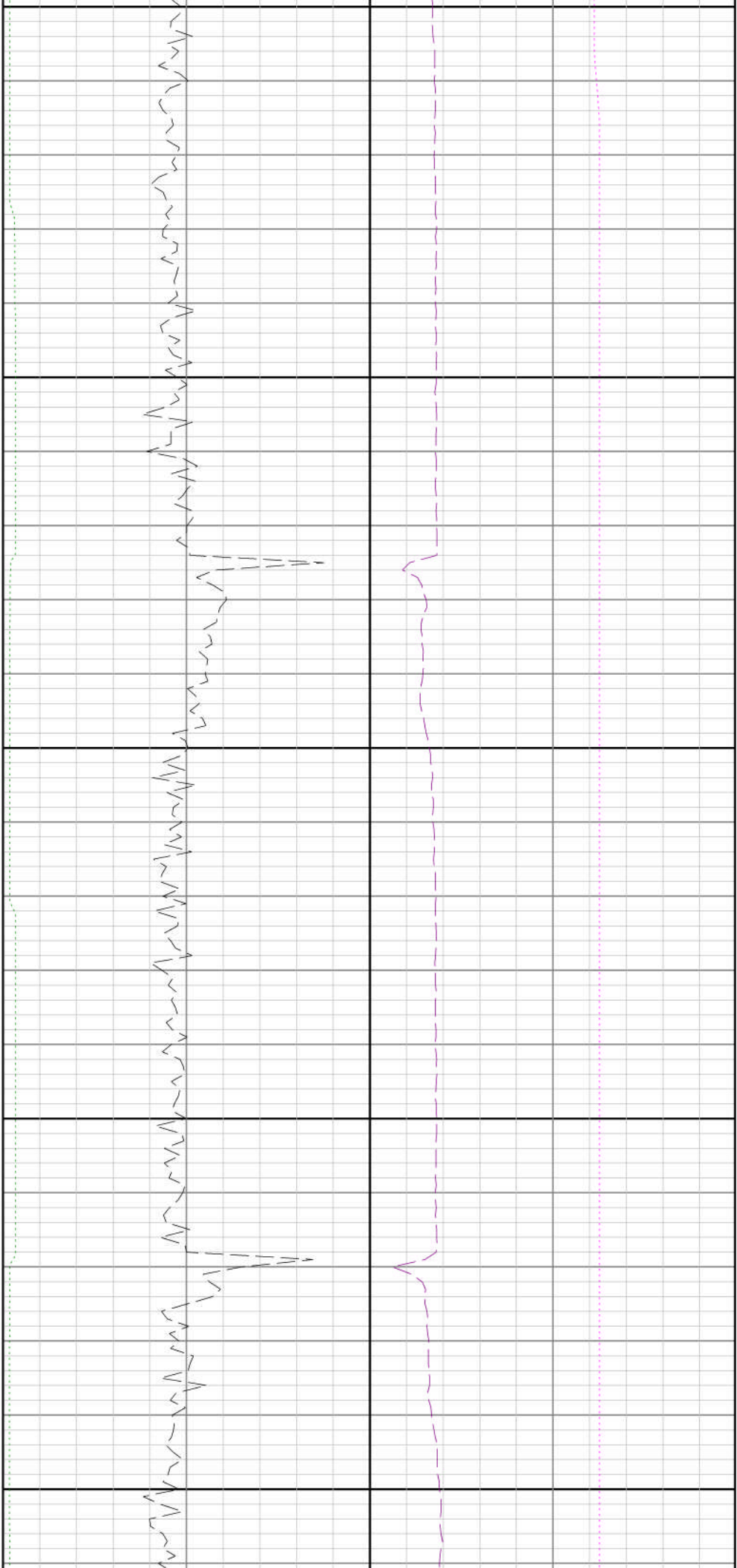


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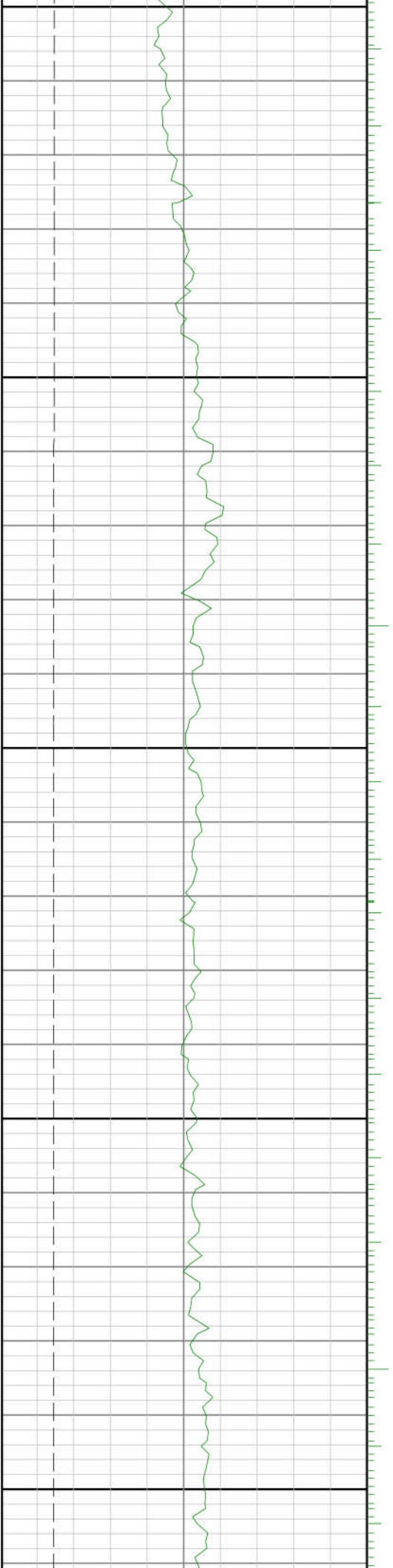


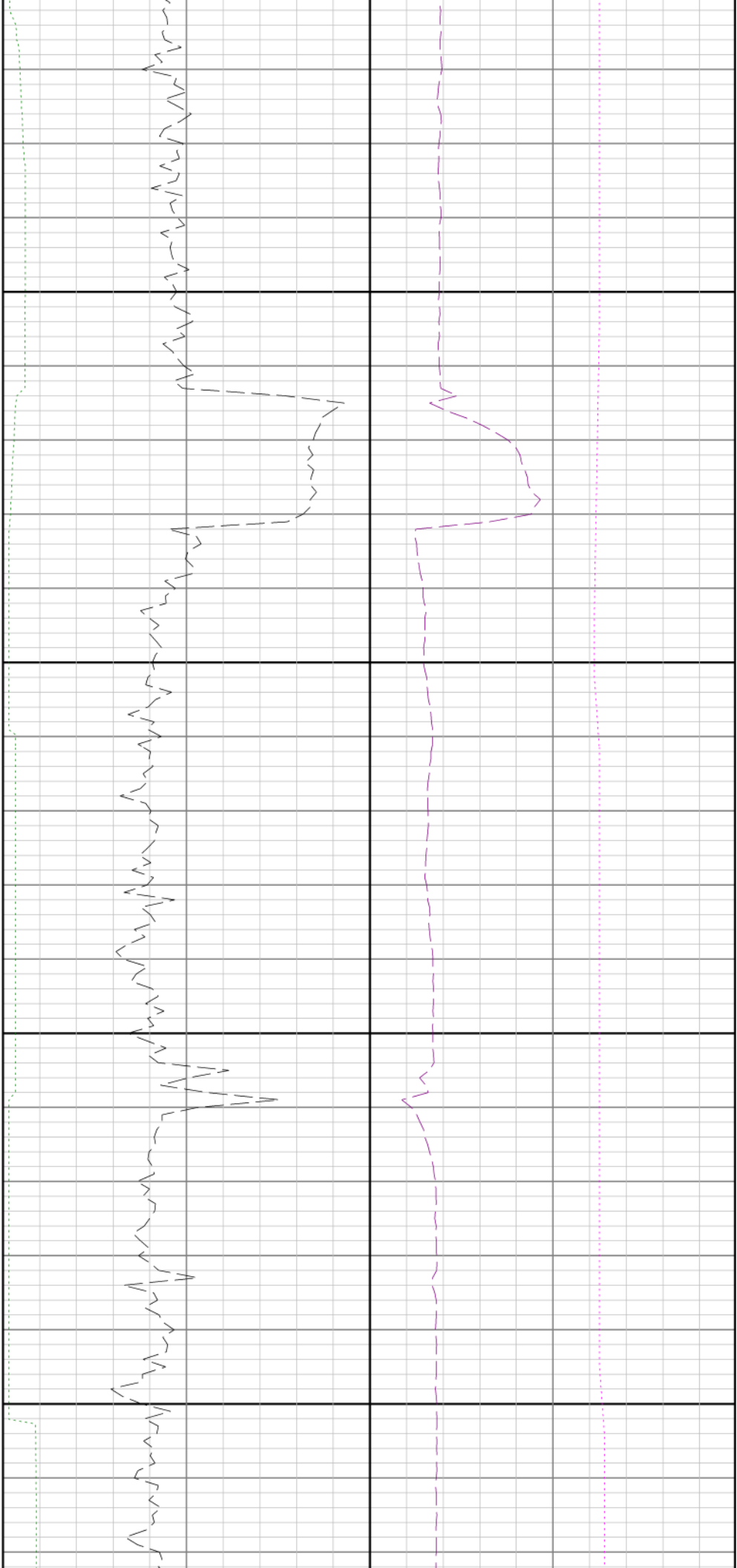


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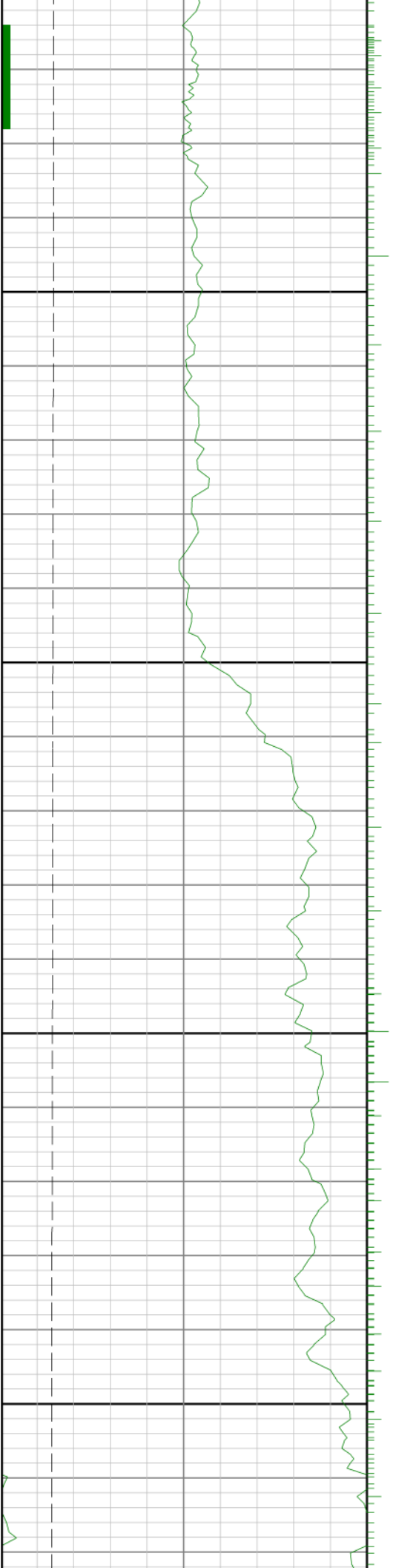
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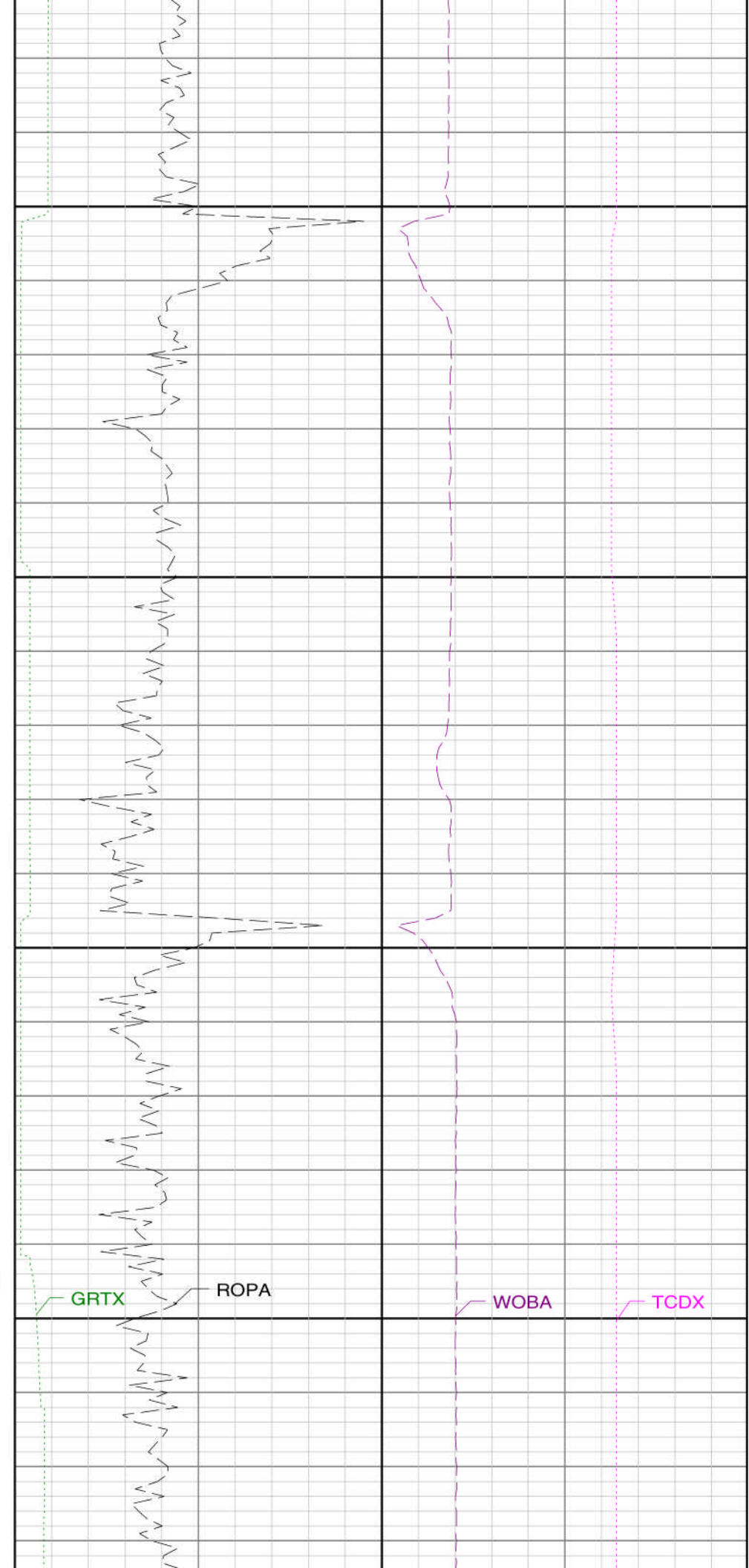
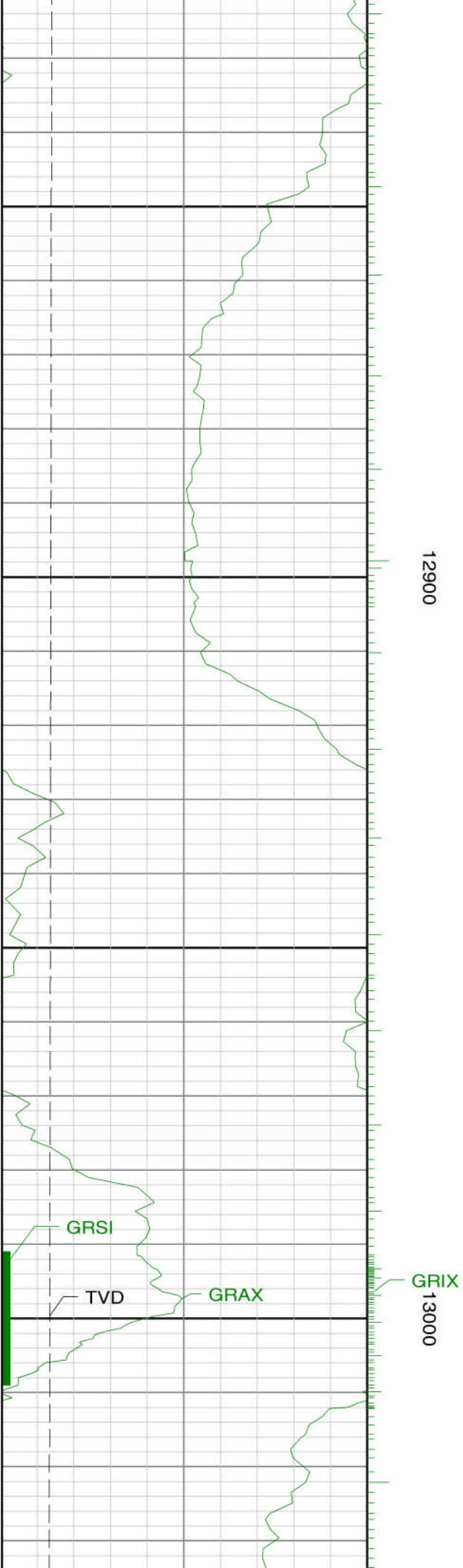


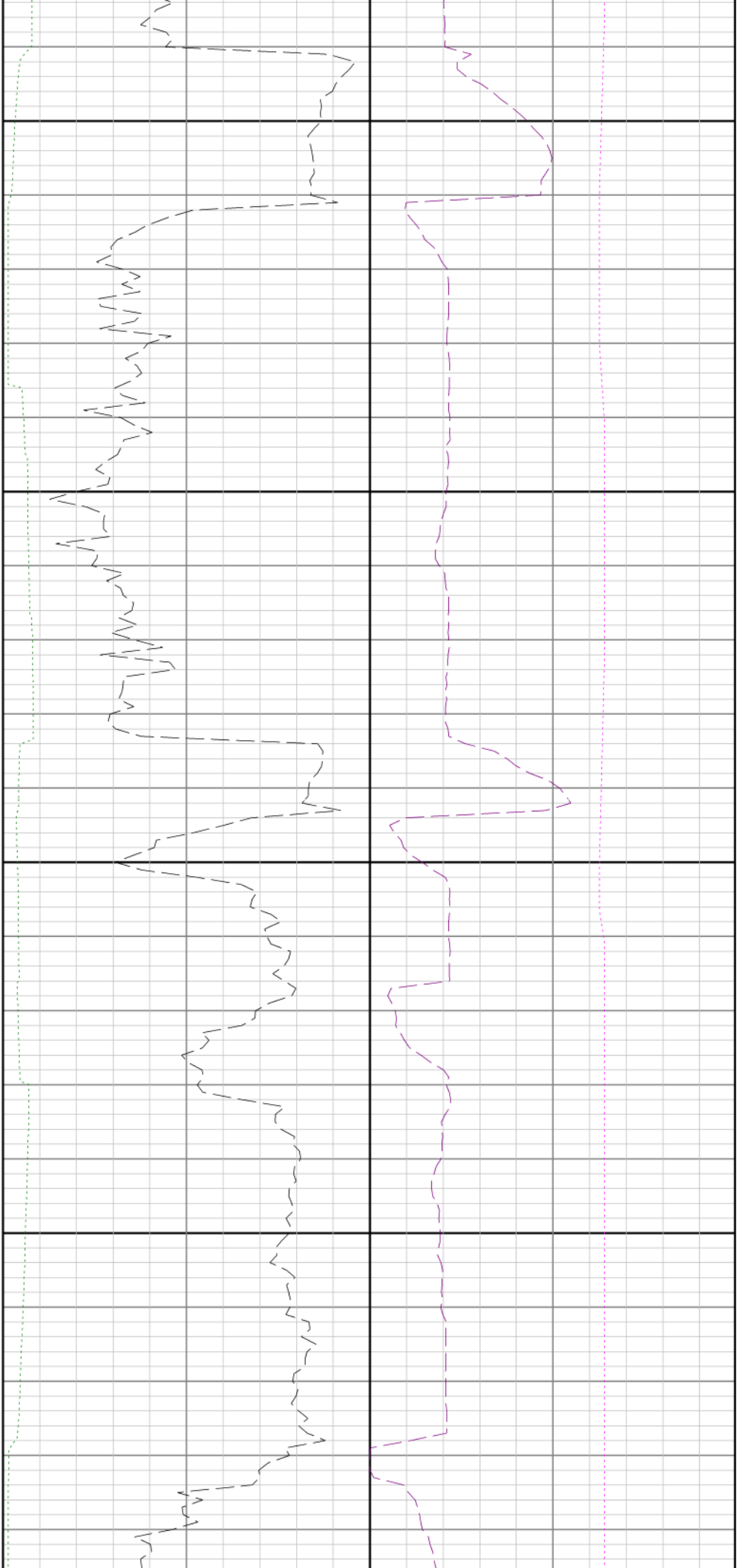


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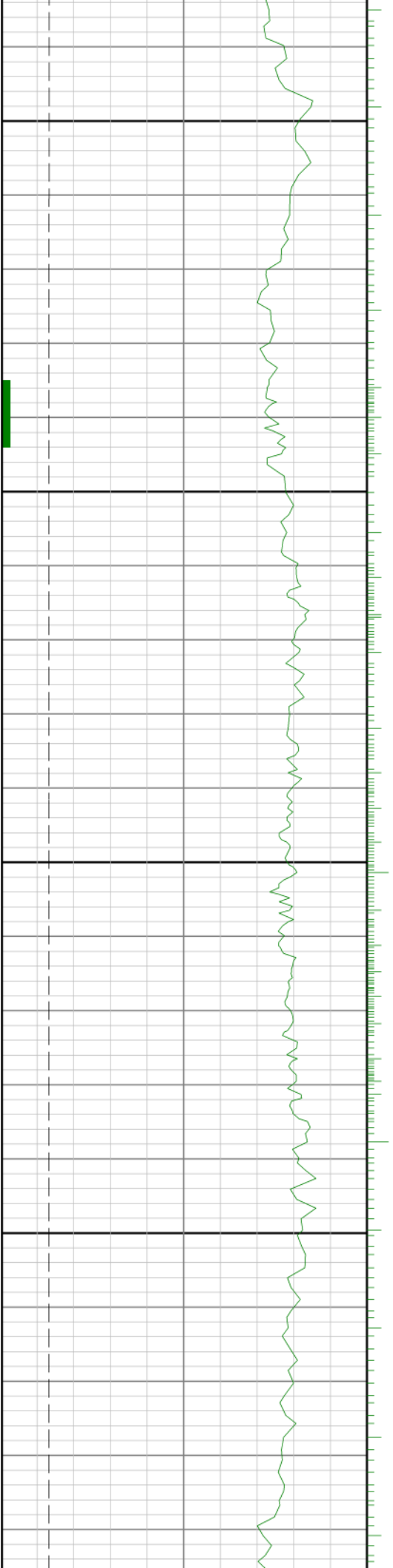


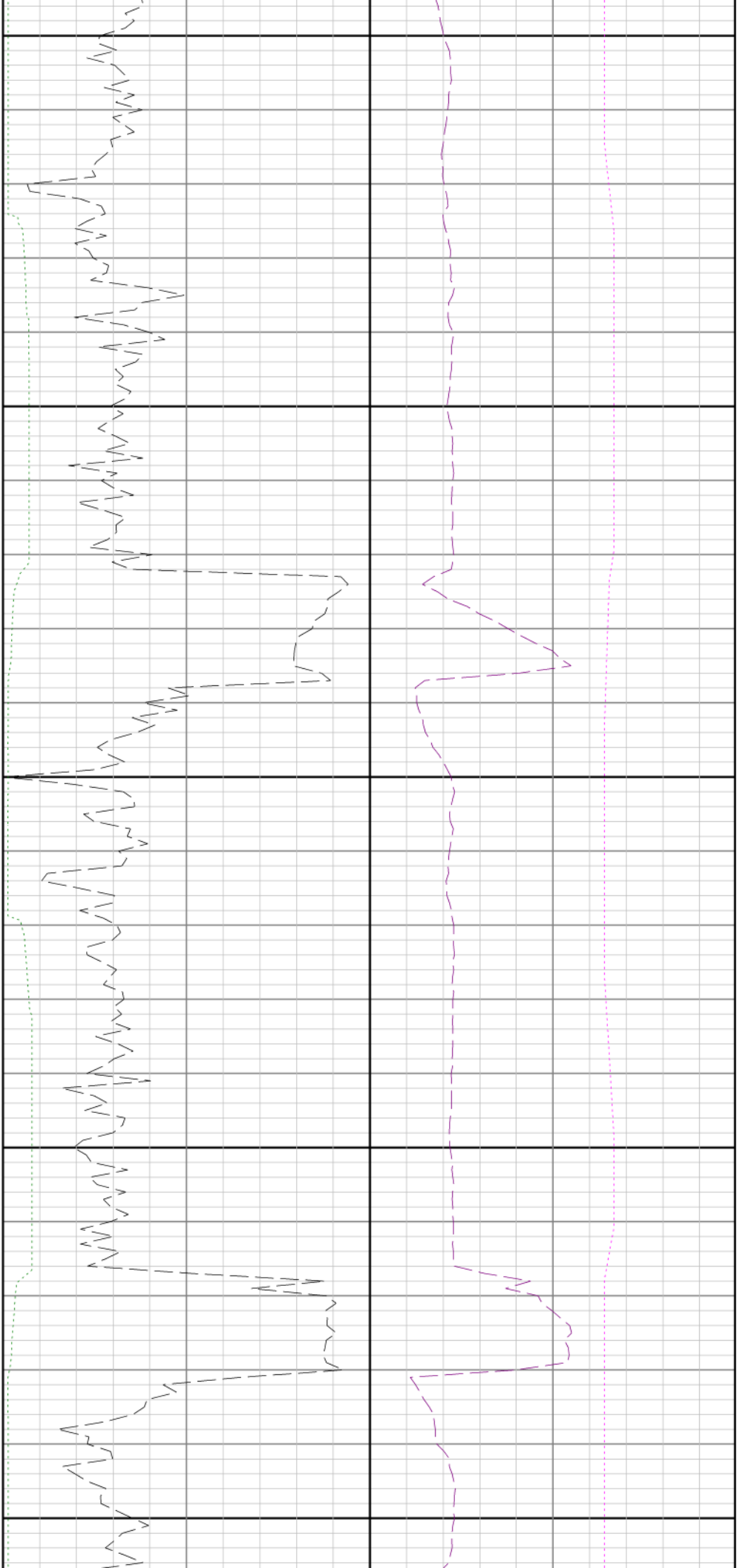




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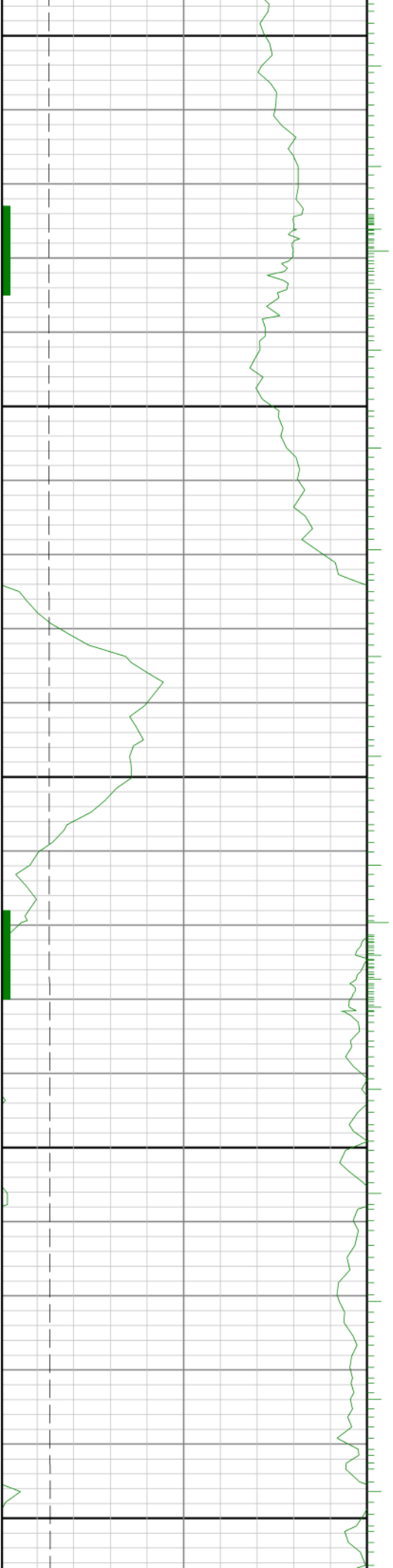
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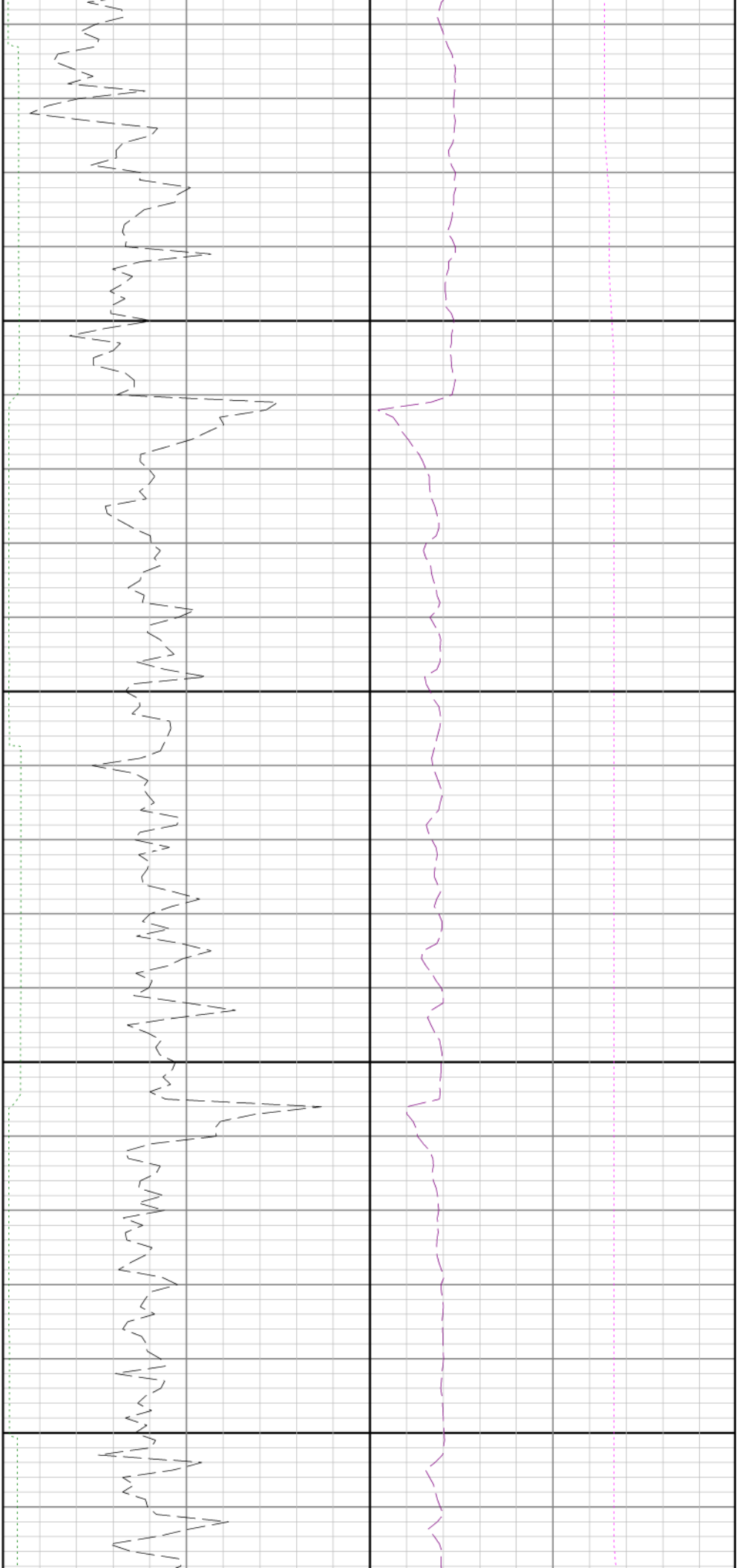




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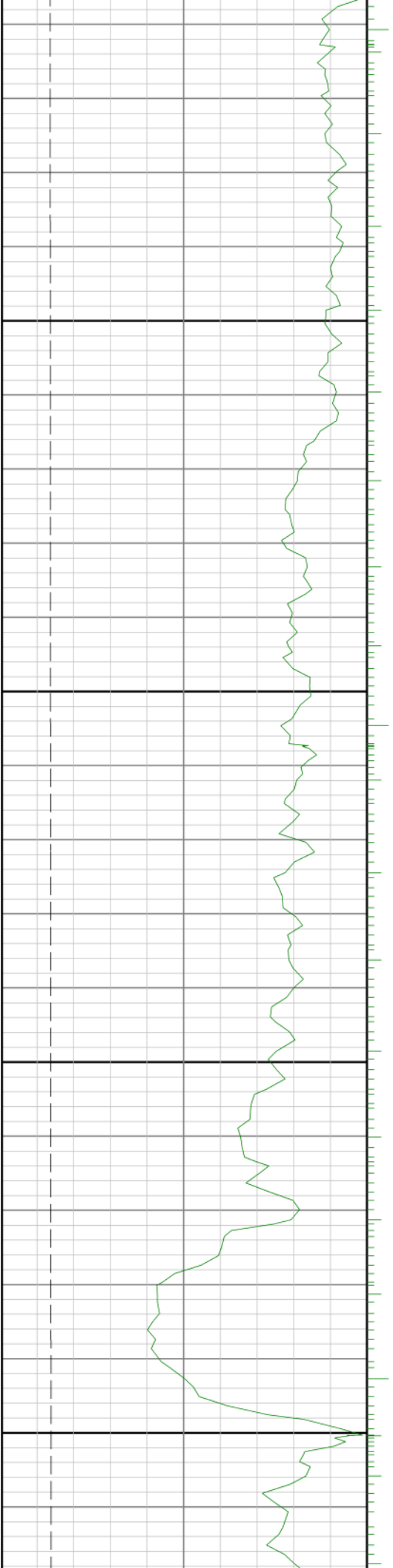
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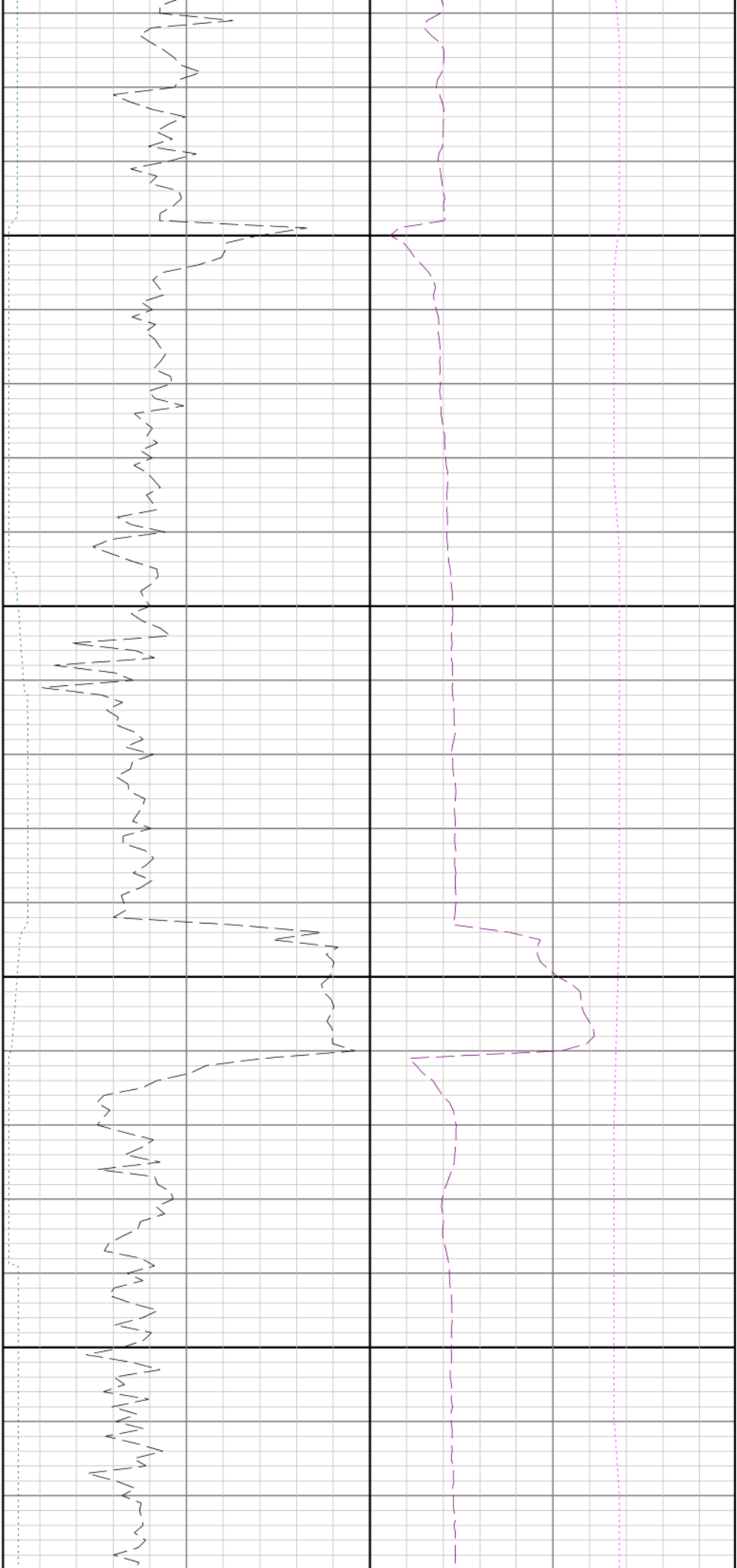




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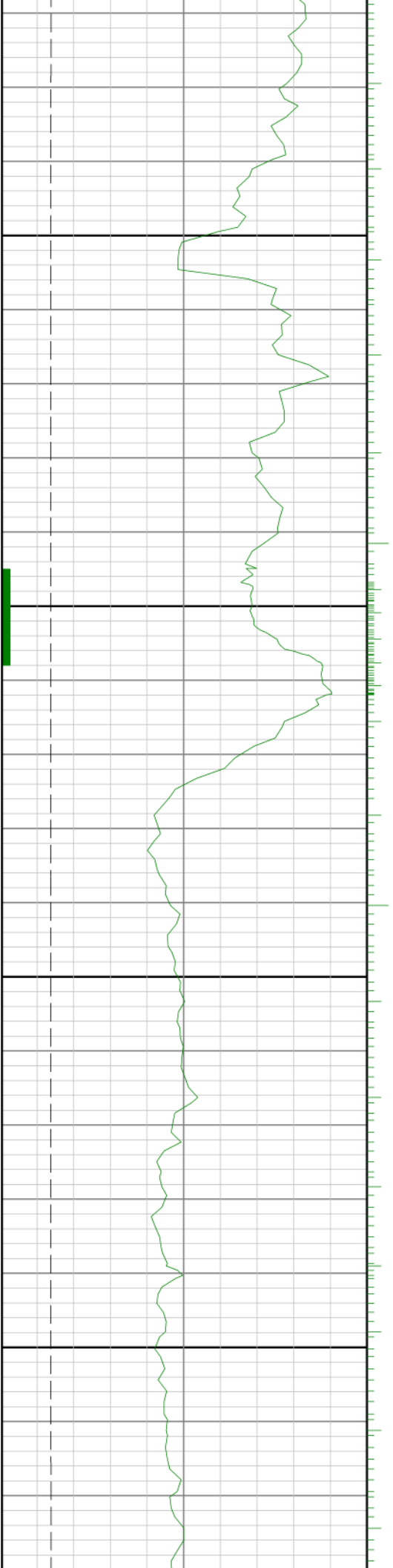
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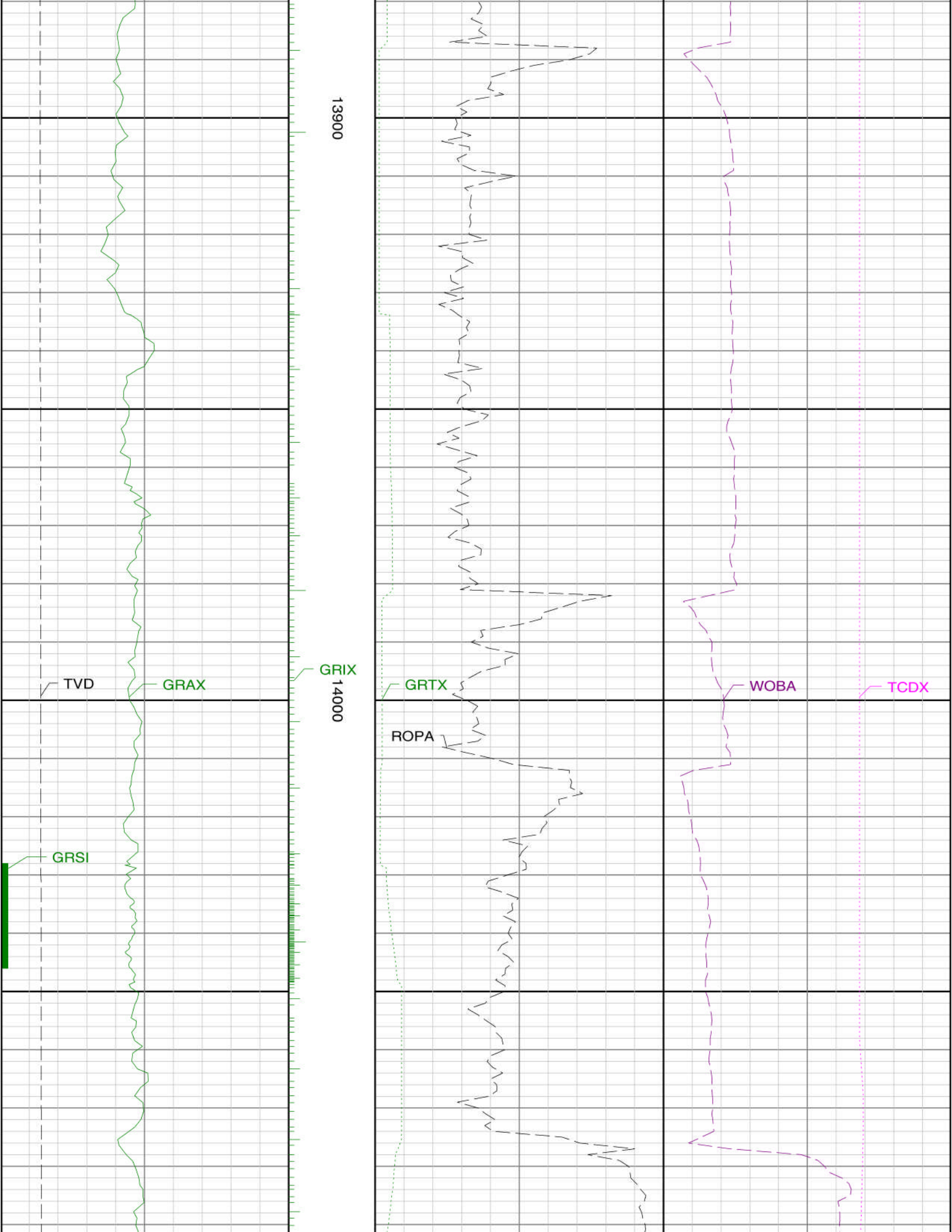


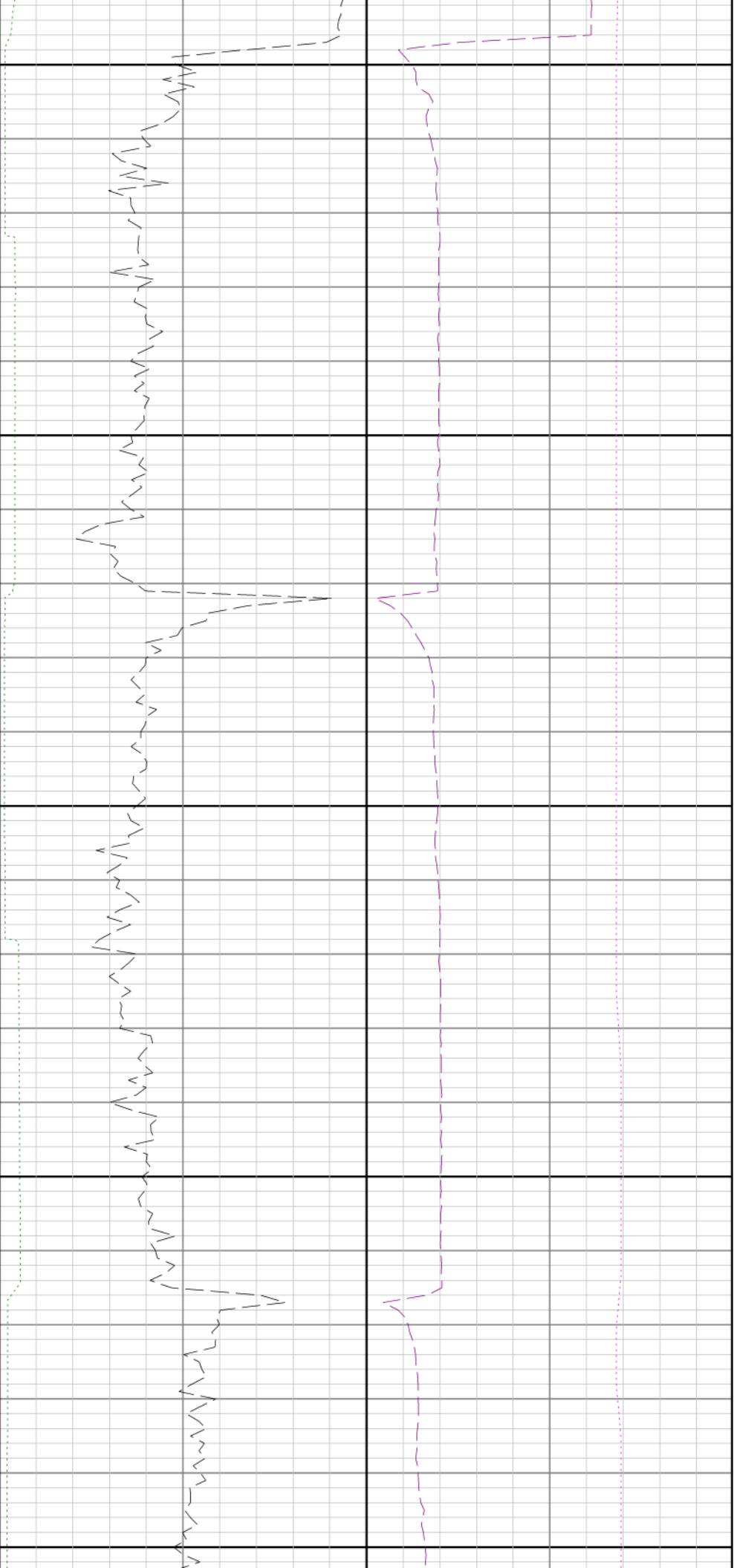


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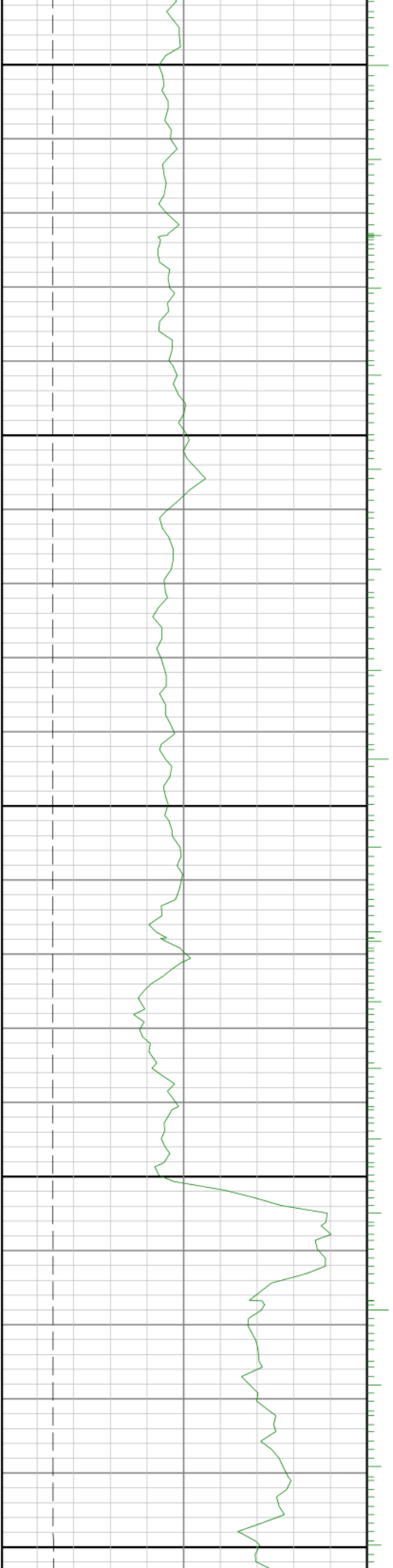


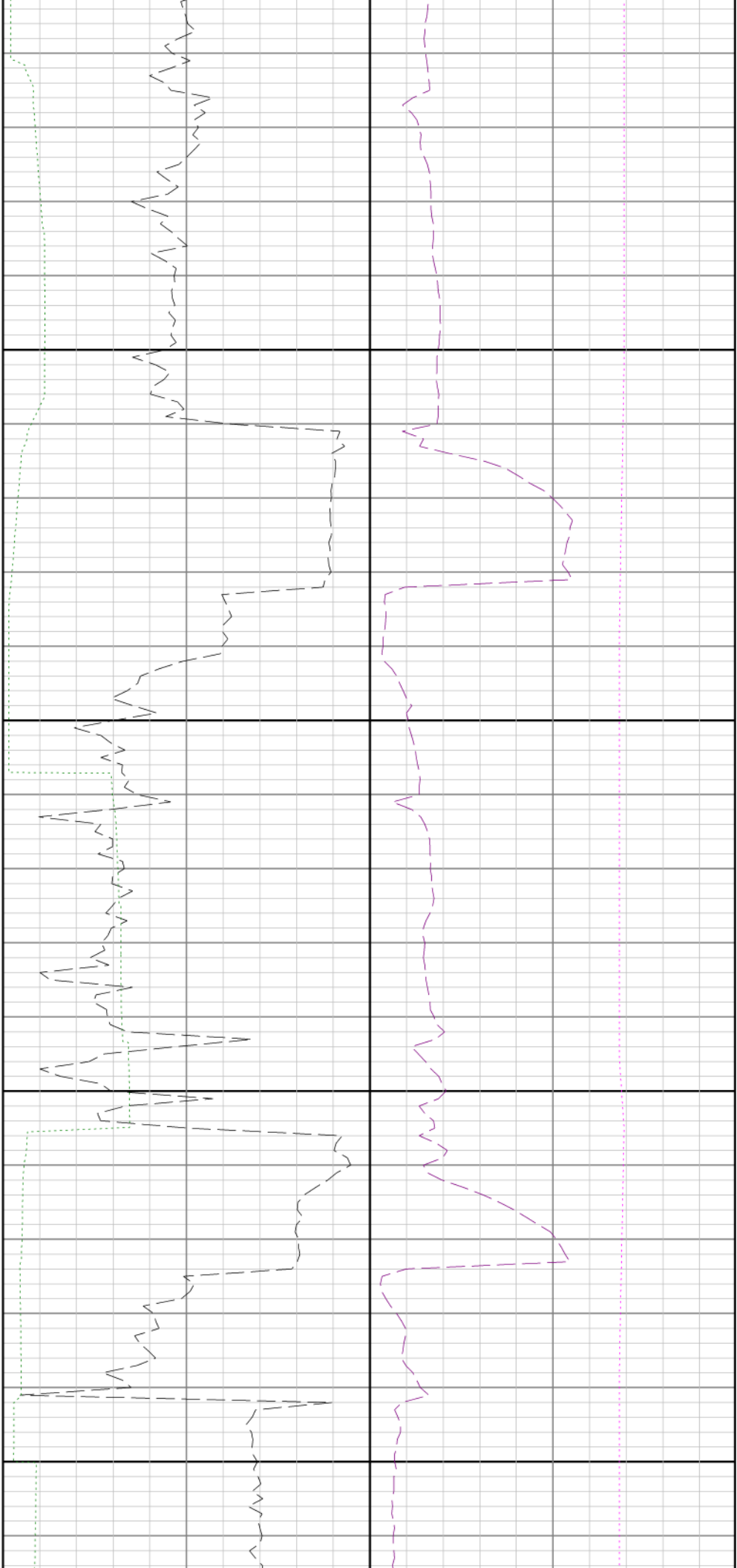


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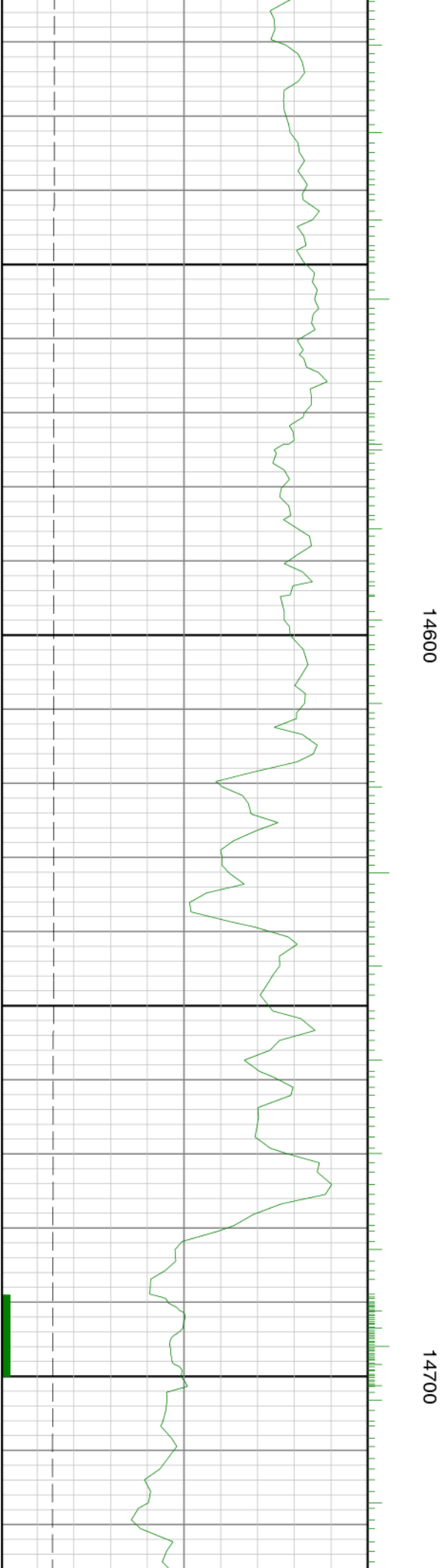
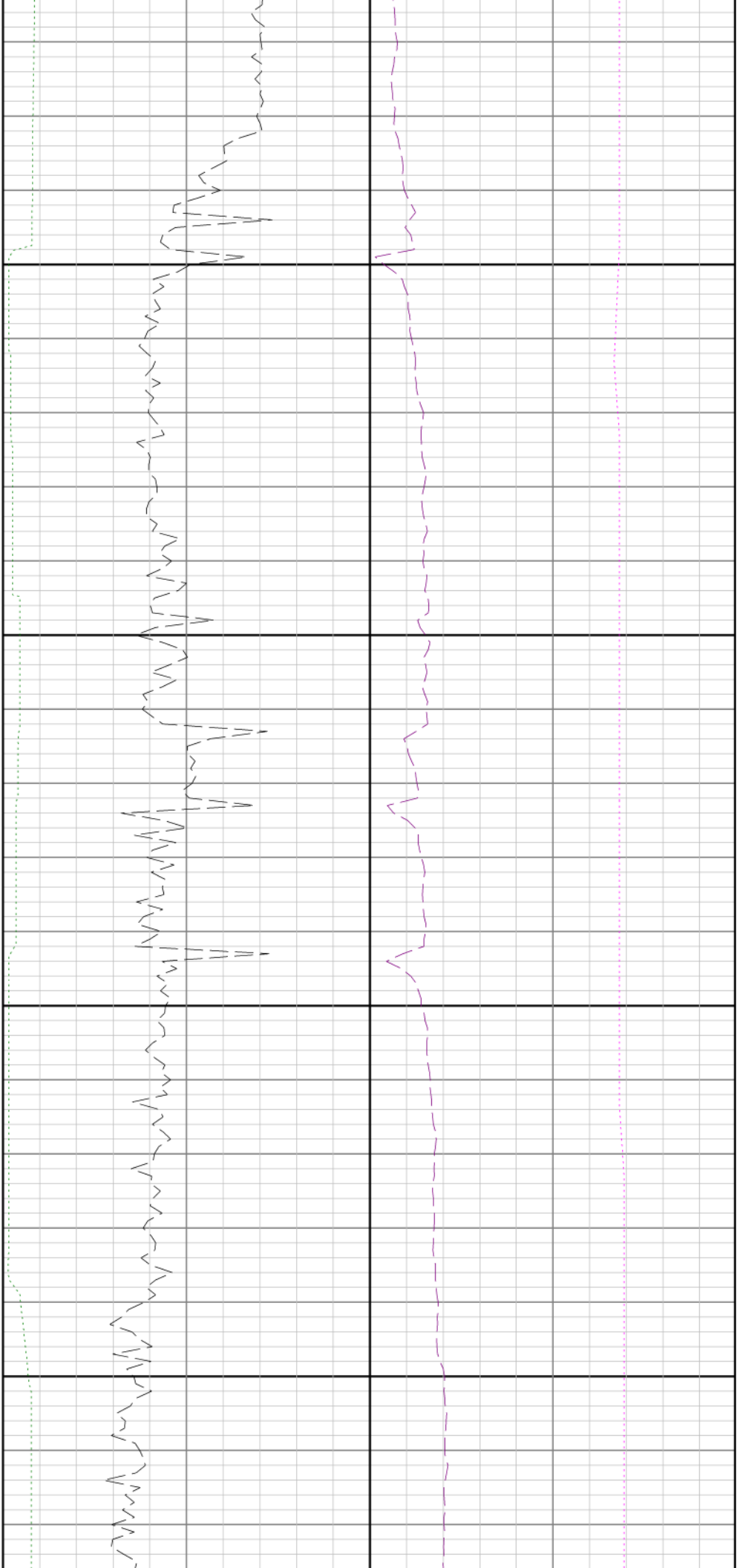


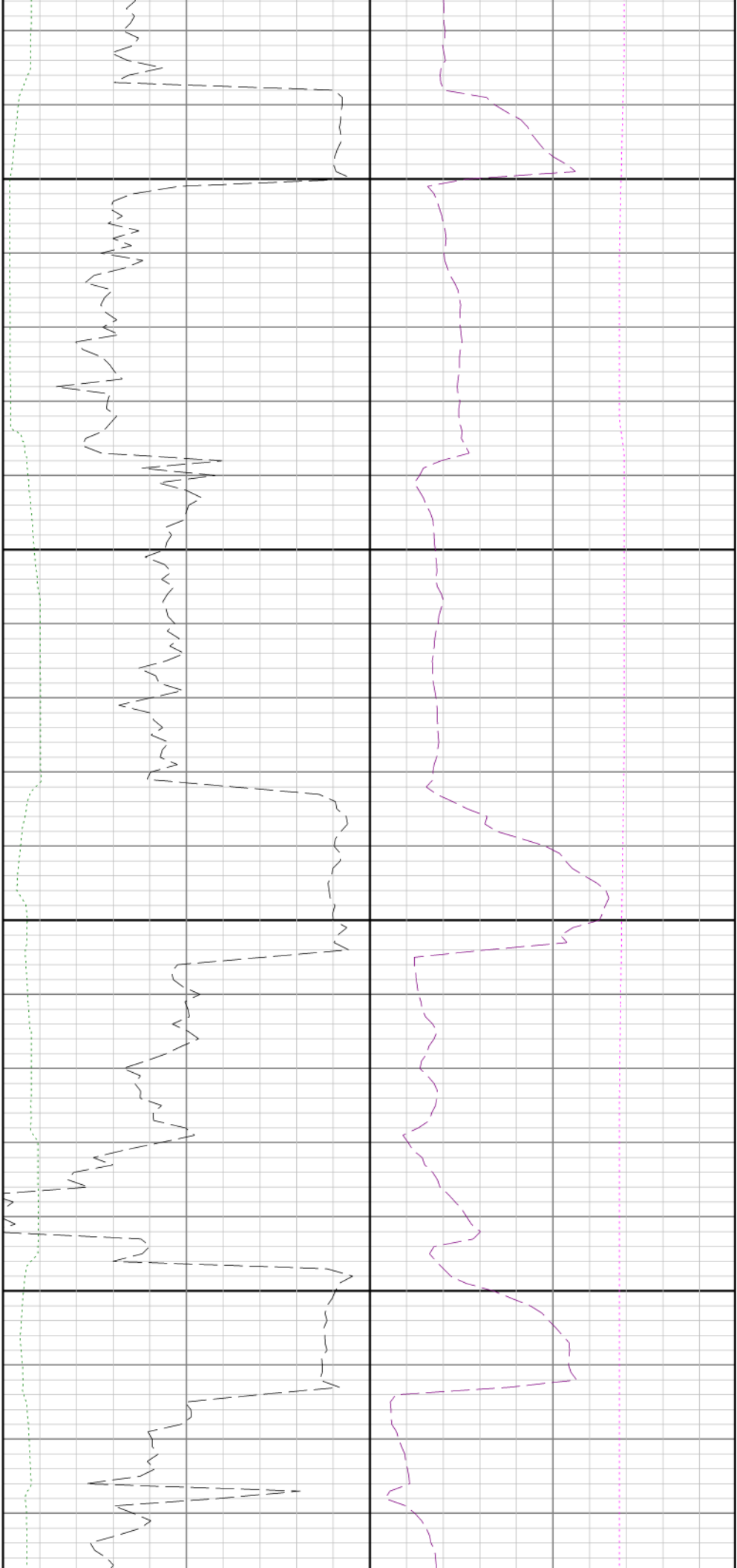


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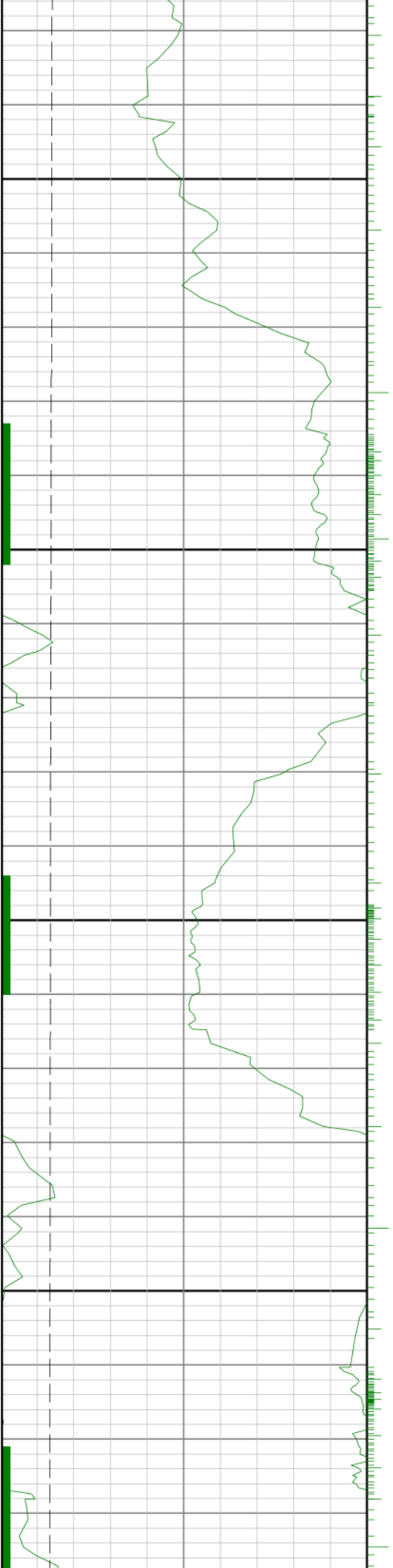


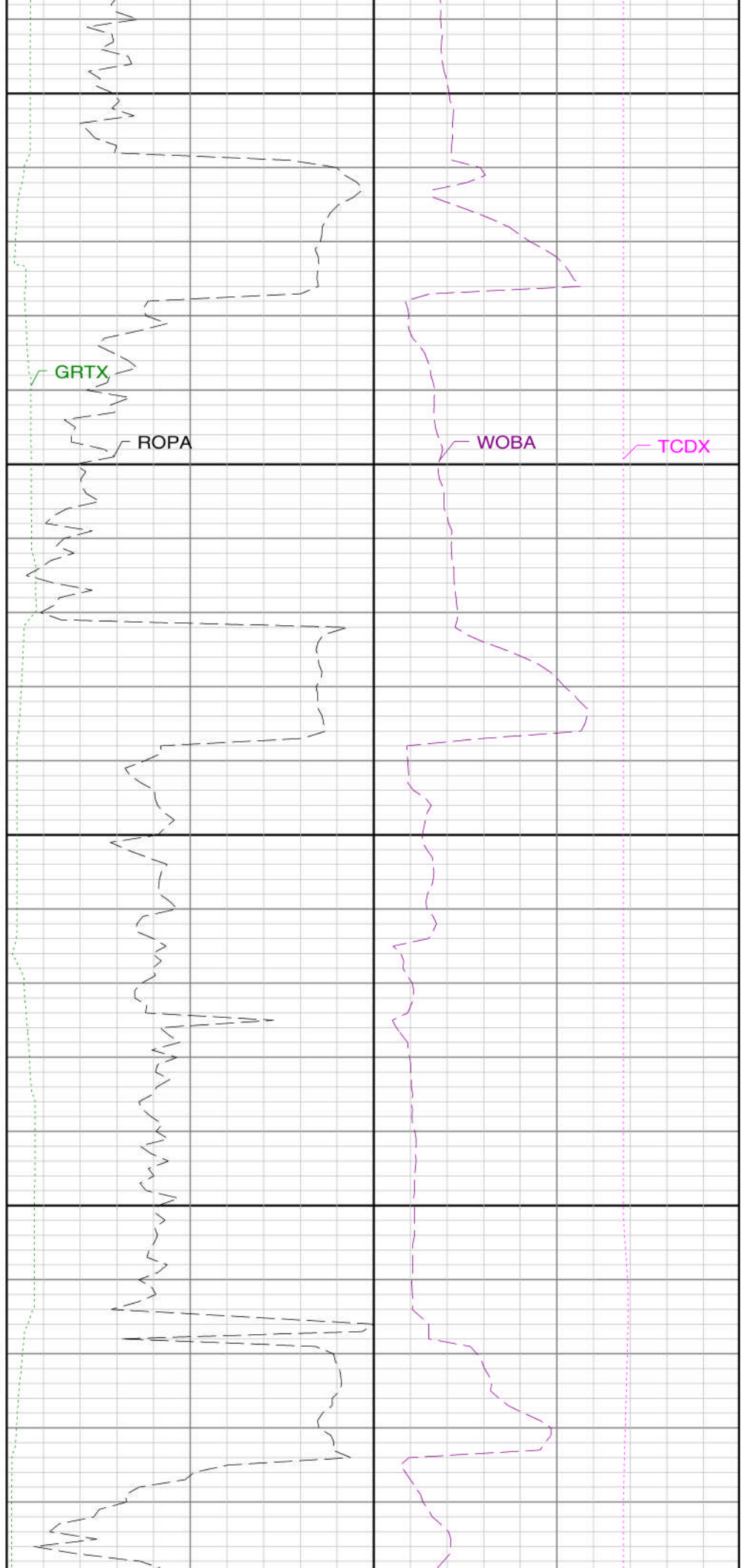
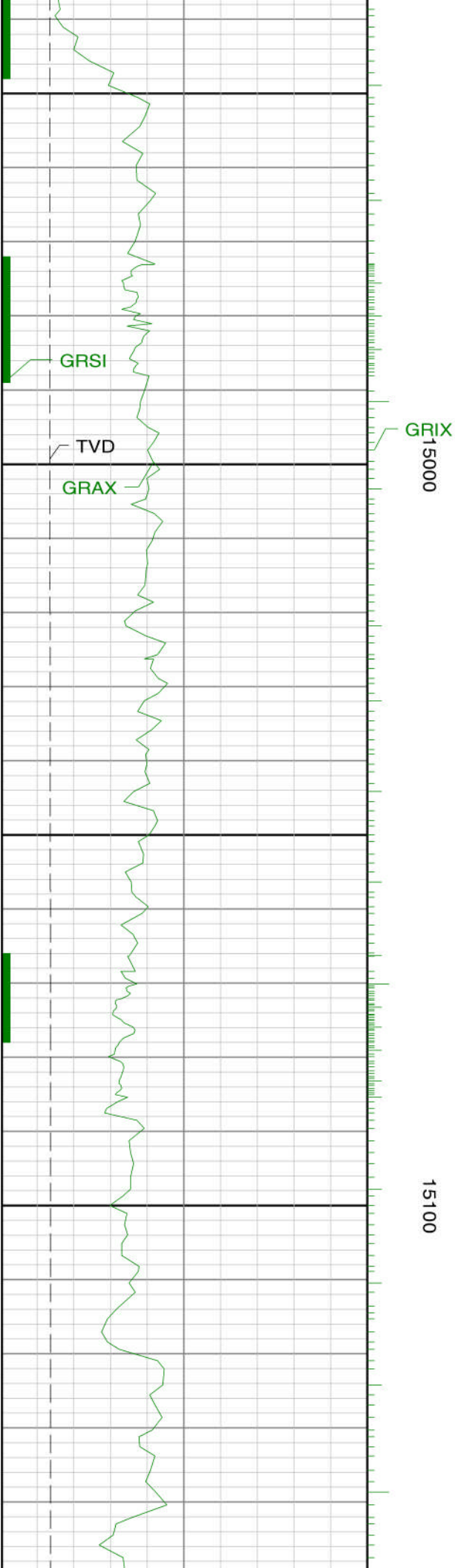


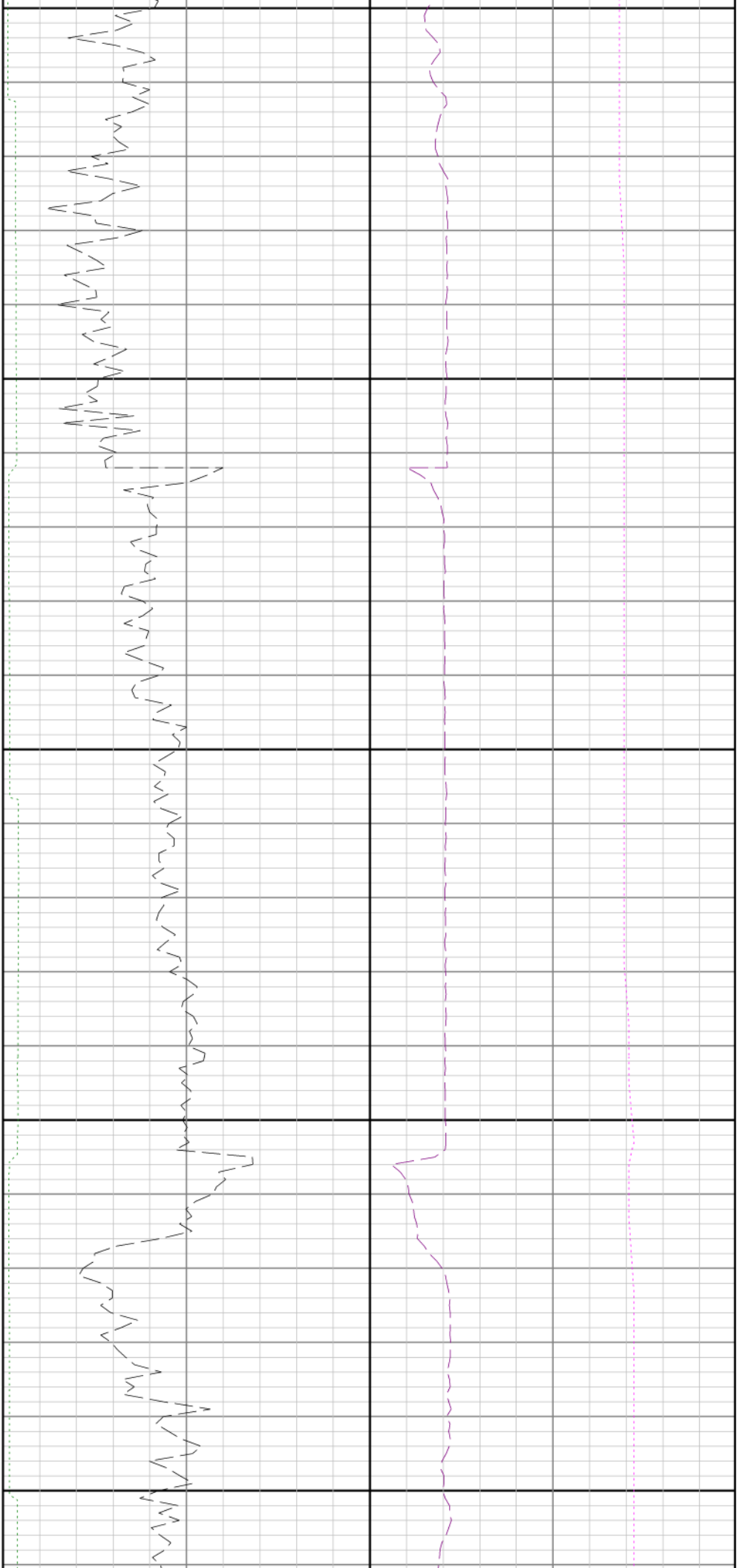


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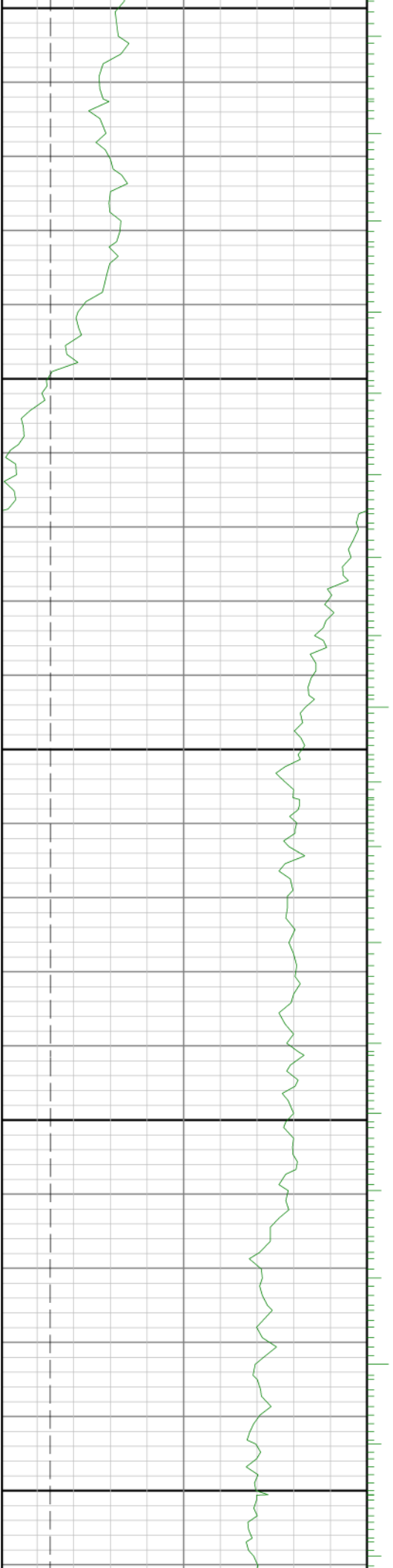


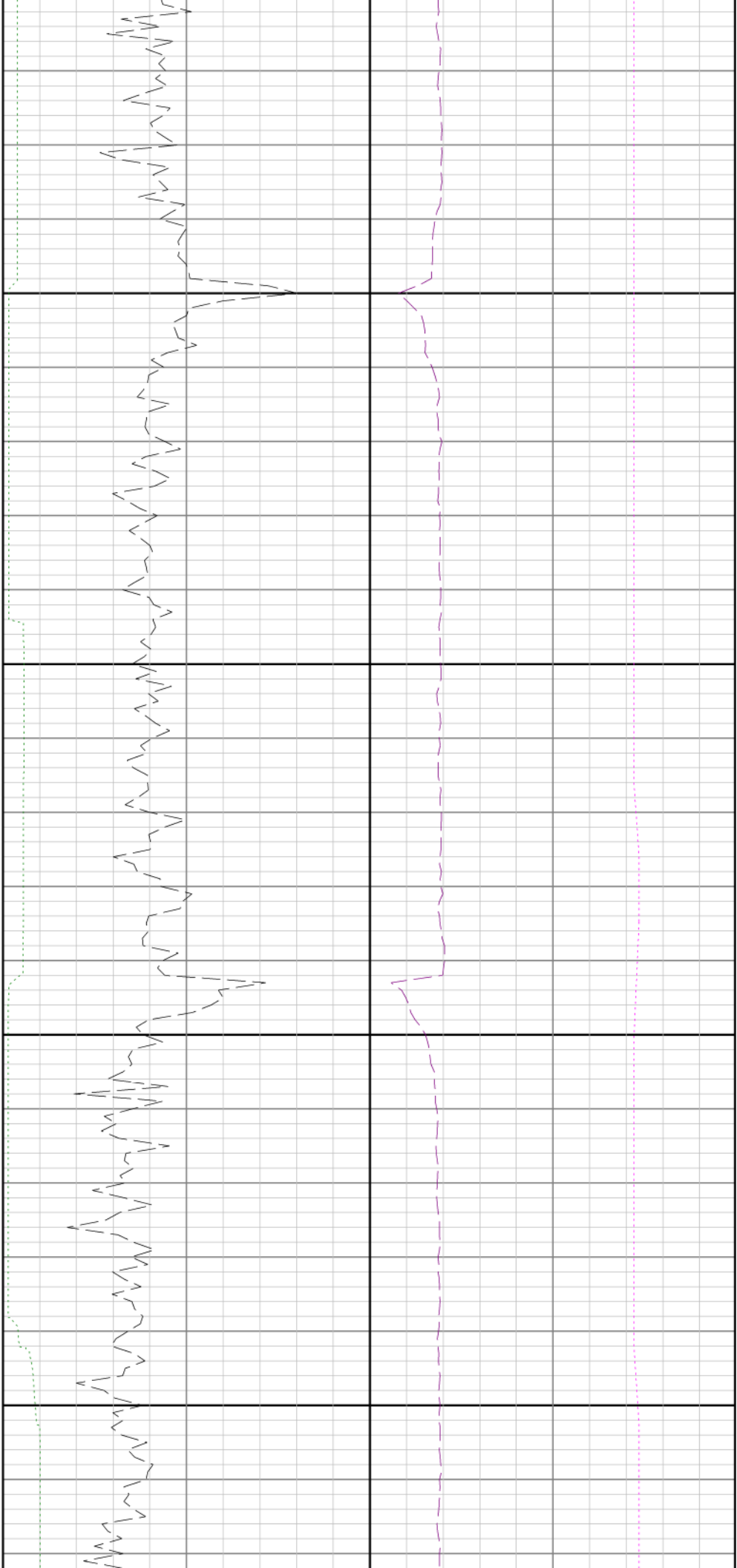




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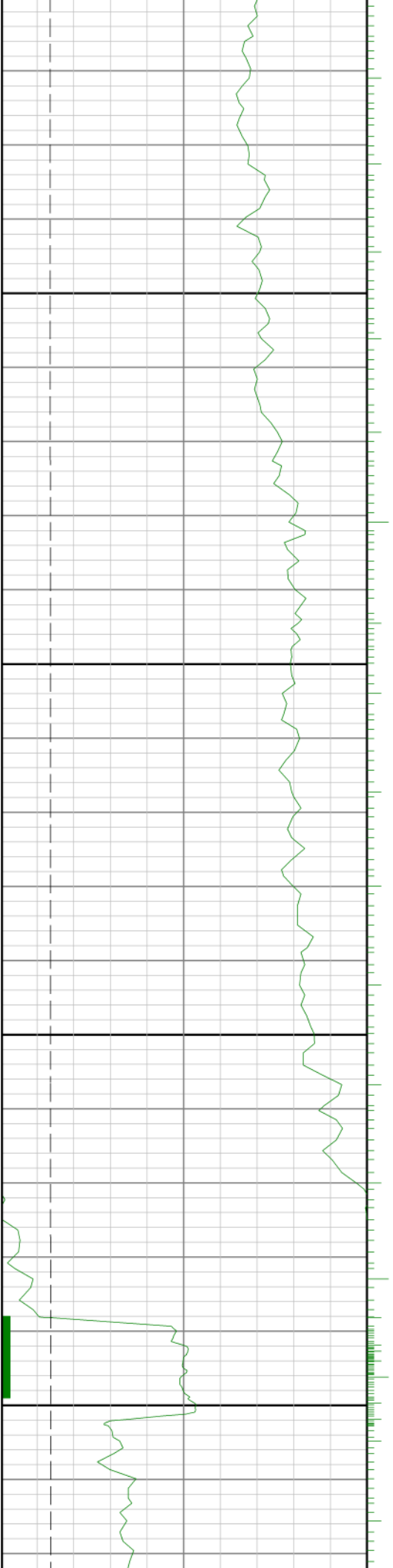
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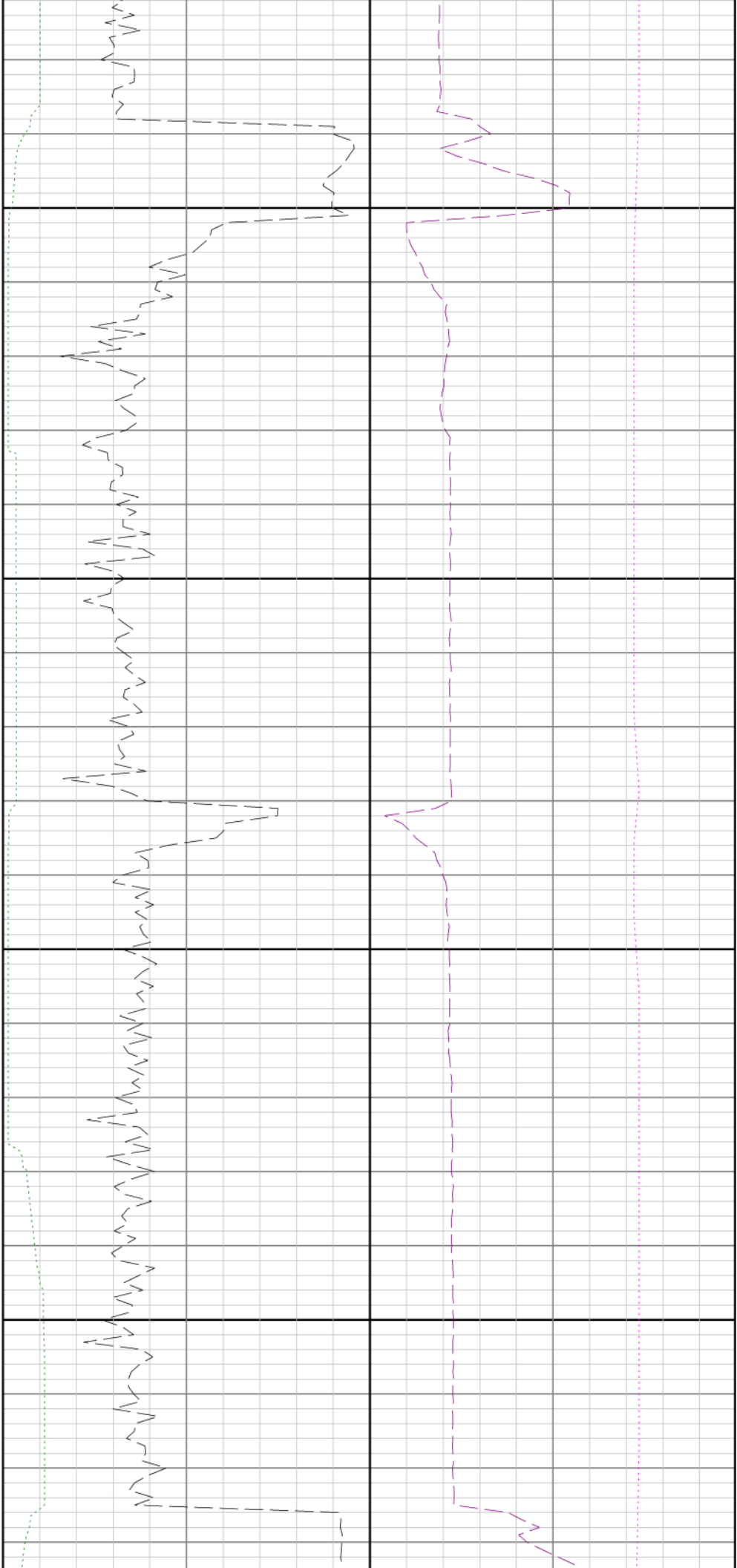




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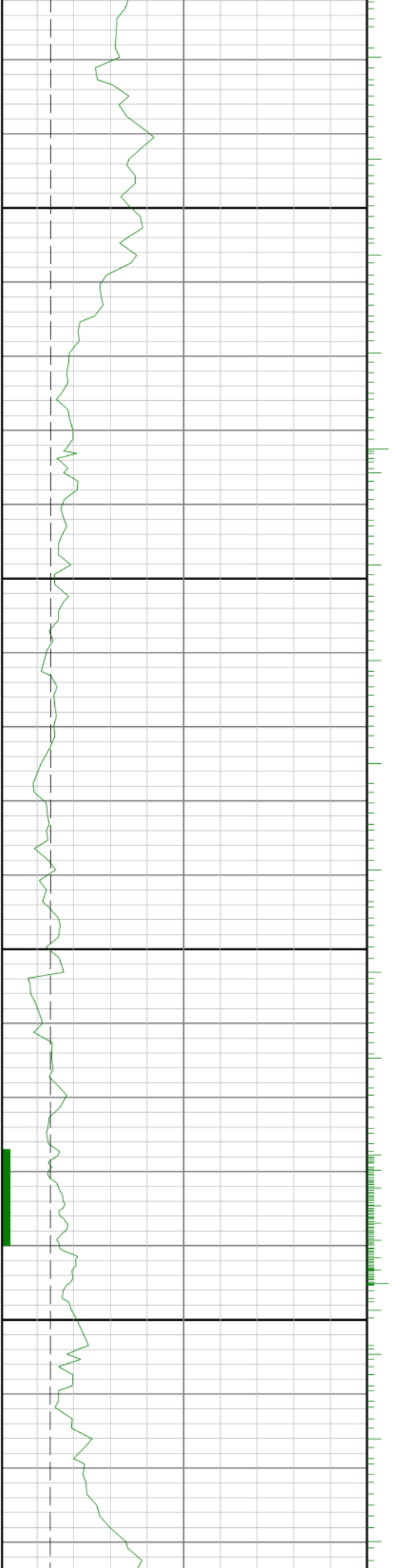
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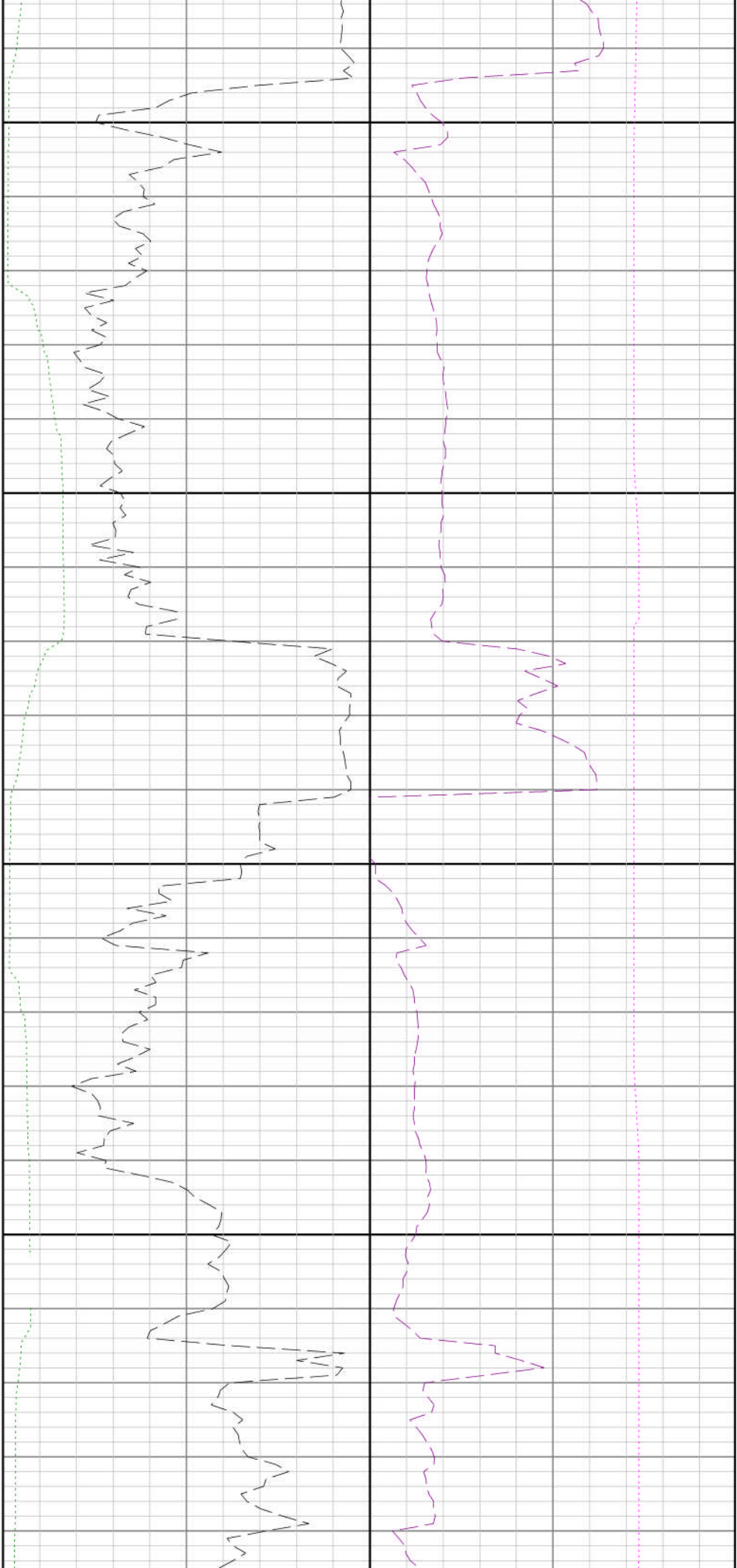




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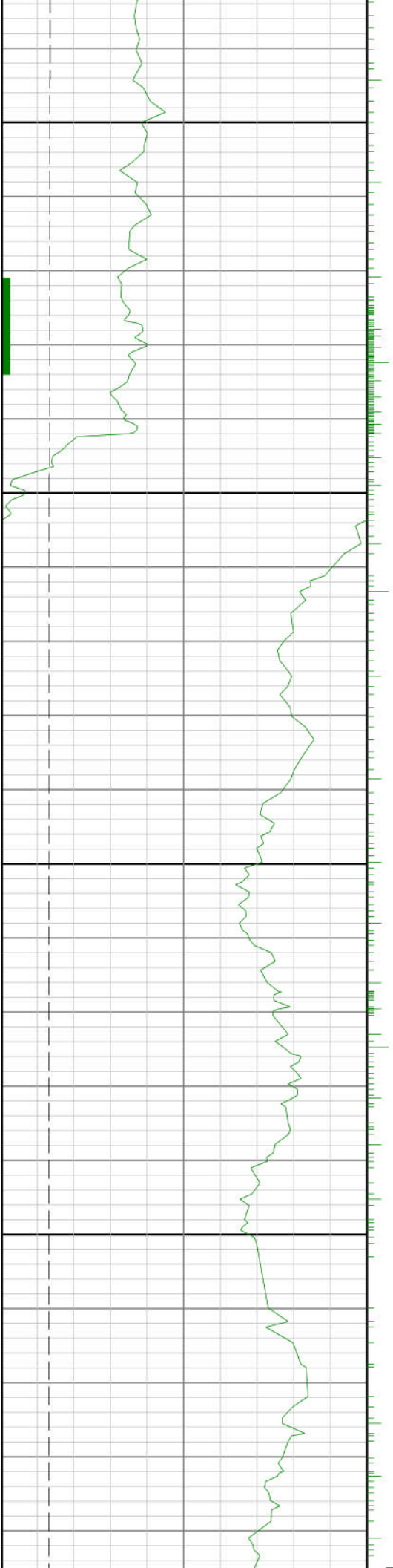
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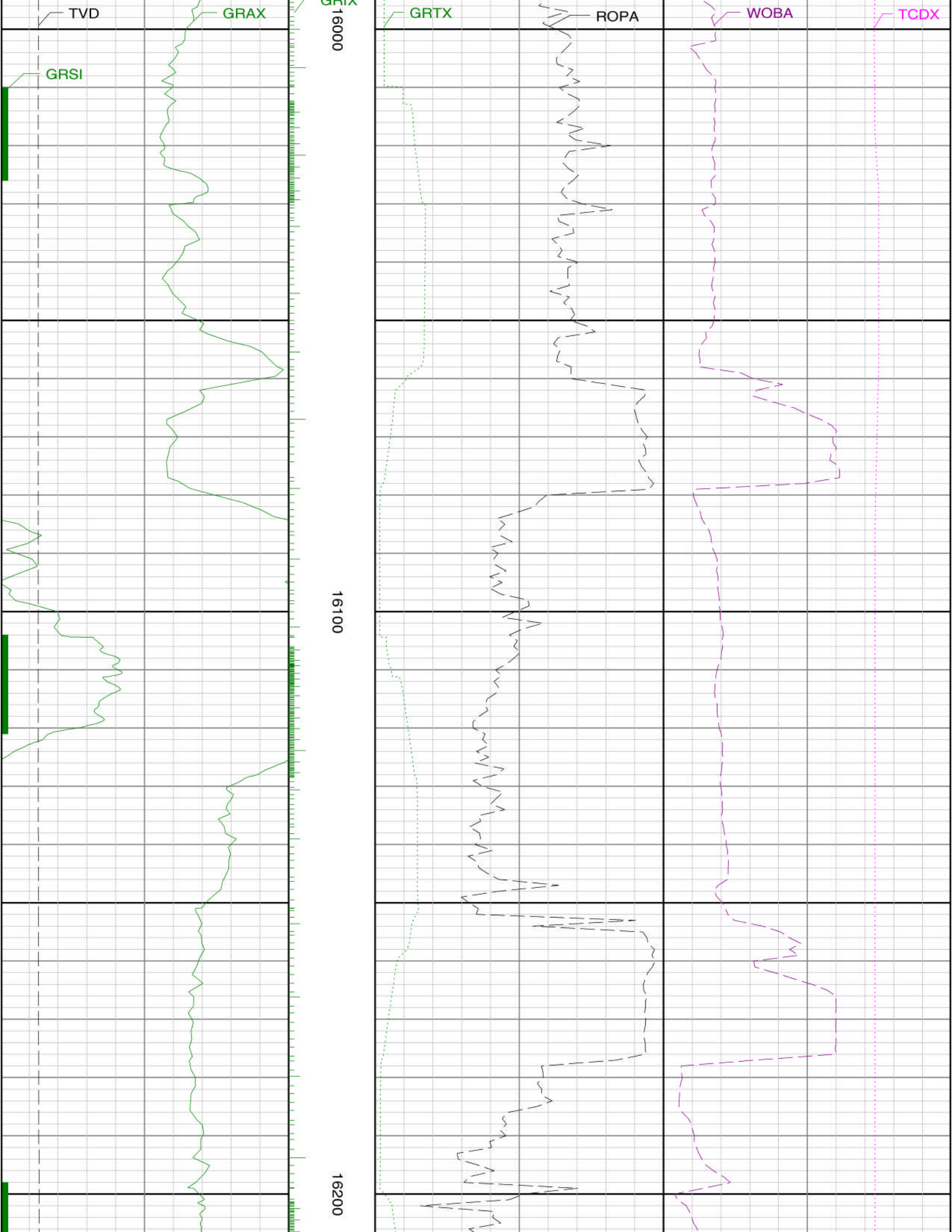


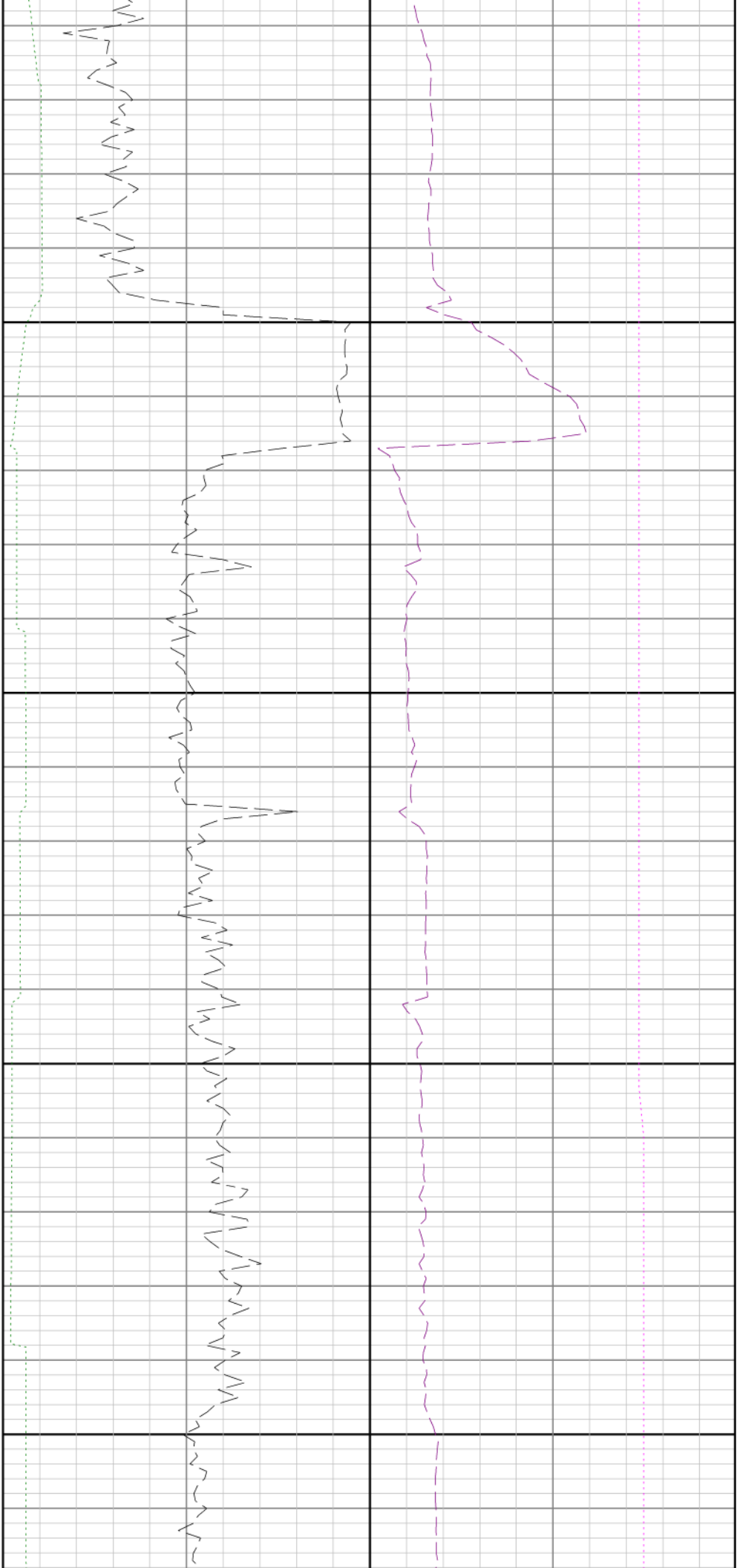


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15900

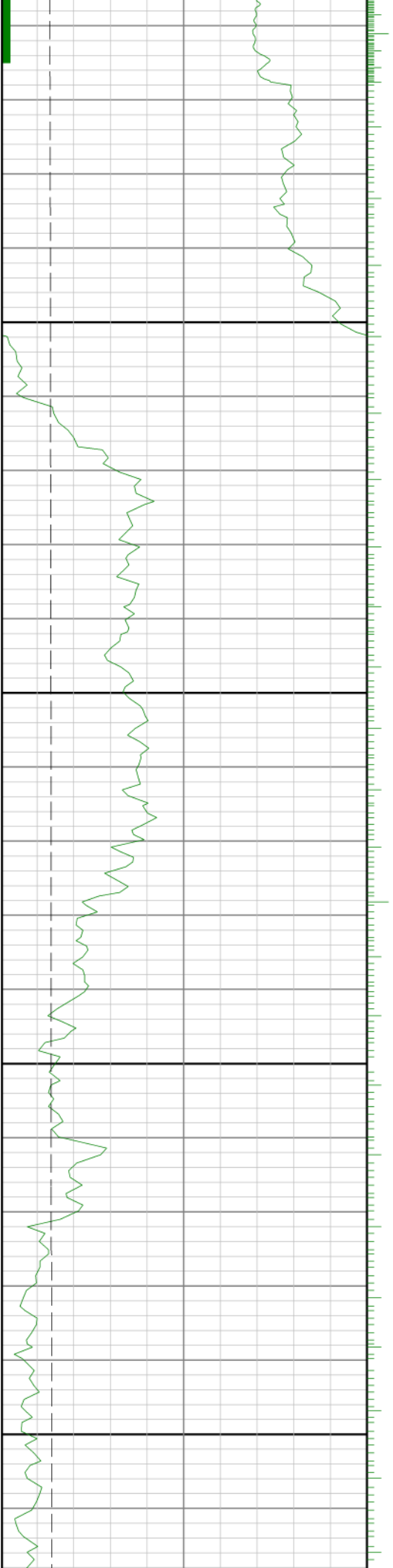


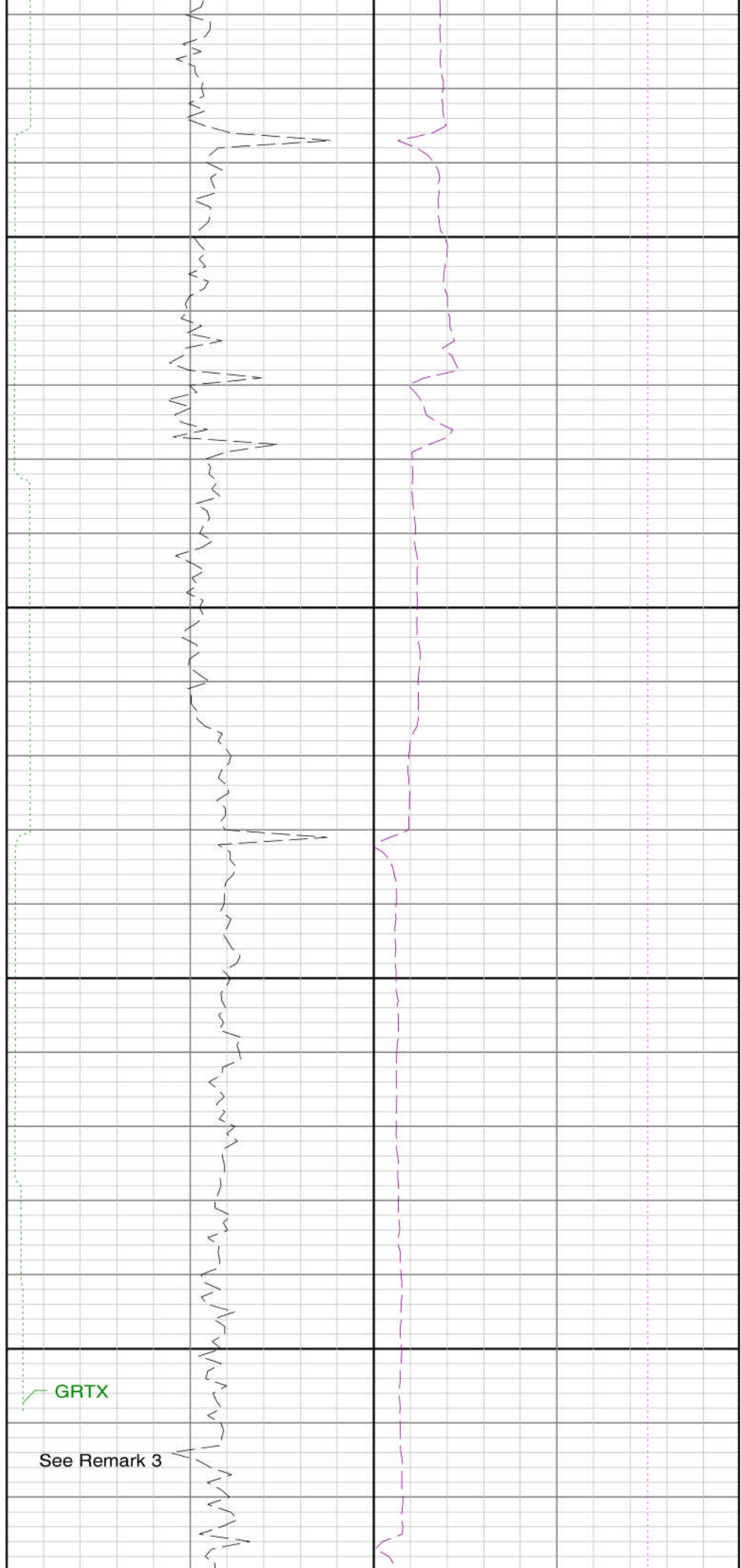
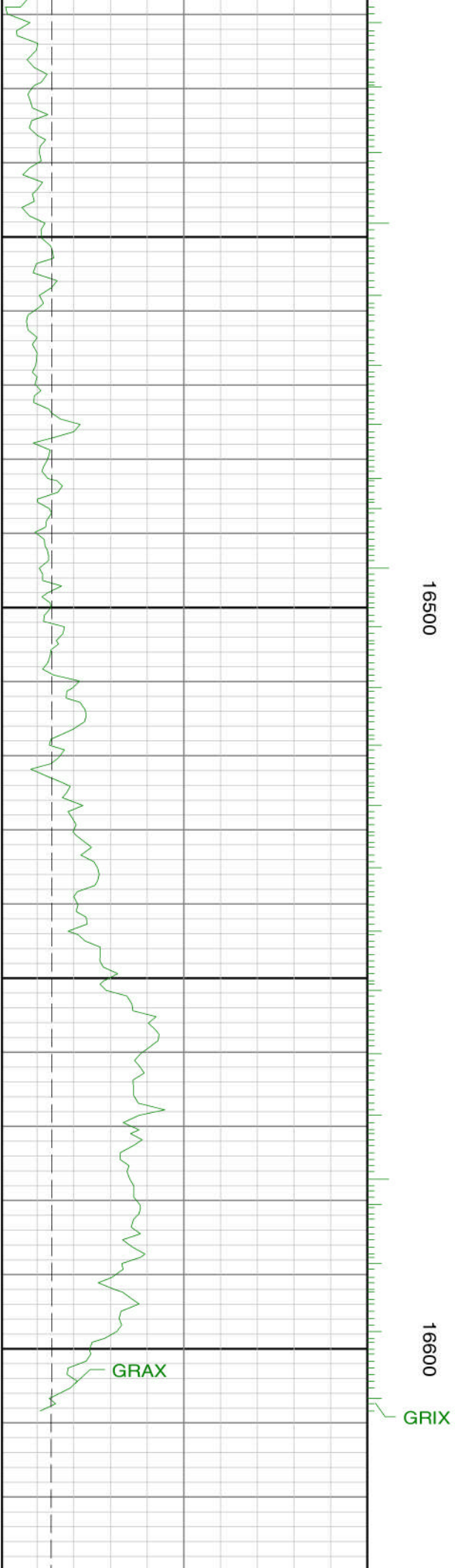




16300

16400





<div> <div>TVD</div> </div>	<div> <div>Run 2 &lt;</div> <div>TD</div> </div>	<div> <div>ROPA</div> </div>	<div> <div>WOBA</div> </div>	<div> <div>TCDX</div> </div>
<div> <div>Gamma Ray Apparent 0.5 ft Avg GRAX</div> <div>0200</div> <div>API</div> <div>True Vertical Depth TVD</div> <div>78006900</div> <div>ft</div> </div>	<div> <div>MD feet 1:240</div> </div>	<div> <div>Rate of Penetration 3.0 ft Avg ROP_AVG</div> <div>5000</div> <div>ft/hr</div> <div>Gamma Time Since Drilled GRTX</div> <div>0600</div> <div>min</div> </div>	<div> <div>Surface Weight On Bit 1.0 ft Avg WOB_AVG</div> <div>0100</div> <div>klbf</div> <div>Downhole Temperature TCDX</div> <div>100300</div> <div>degF</div> </div>	