

Witness	
Name	LWD Run Number
Chris Blodgett	1,2,3
Kevin Moseley	1,2,3

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 (mg/L)	K+ (%)
26/Aug/2016	08:30	2	5214.0	Water Based Mud	9.9	11	9.1	7.6	1.0/90.1	Flow Line	1400	0.0
27/Aug/2016	07:15	2	9081.0	Water Based Mud	10.3	11	9.2	7.2	1.0/88.3	Flow Line	1400	0.0
28/Aug/2016	07:00	3	11439.0	Water Based Mud	10.2	11	9.3	5.8	1.0/88.0	Flow Line	1400	0.0

Mnemonics		
Curve	Description	Units
GRAX	Gamma Ray Apparent 0.5 ft Avg	API
GRIX	Gamma Ray Density	unitless
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	deg F
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	12131653	Directional	50.37	8.250	3.250
1	SRIG	12600749	Gamma	46.95	8.250	3.250
2	DIR	12592561	Directional	44.31	6.750	3.250
2	SRIG	12595025	Gamma	40.94	6.750	3.250
3	DIR	11983381	Directional	44.47	6.750	3.250
3	SRIG	13640750	Gamma	41.06	6.750	3.250

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 the lack of control by Baker Hughes LWD logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.	

2.) Baker Hughes LWD runs 2 and 3 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and steerable assembly from 2110 to 15835 ft MD (2101 to 5615 ft TVD).

3.) Gamma Ray Apparent (GRAX) is presented 0 to 200 API

4.) All surveys were corrected by Surcon Survey Management Services.

5.) A sliding indicator shown on the left side of track 1 as a heavy line. This indicator has been shifted to the Gamma Ray sensor offset to correspond to Gamma Ray data acquired while sliding.

Remarks

Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	4800	8.500	2	Gamma ray logging operations began at 4800 ft MD (4773 ft TVD).
2	4900	8.500	2	The interval from 4900 to 6800 ft MD (4873 to 5615 ft TVD) has poor gamma ray data density due to troubled decoding caused by the downhole agitator.
3	9804	8.500	3	The interval from 9804 to 9848 ft MD (5604 ft TVD) was logged 11.0 hours after being drilled due to a trip out of the hole for a MWD failure.
4	15825	8.500	3	There is no gamma ray data from 15794 to 15835 ft MD (5590 ft TVD) due to sensor to bit offset at well TD.

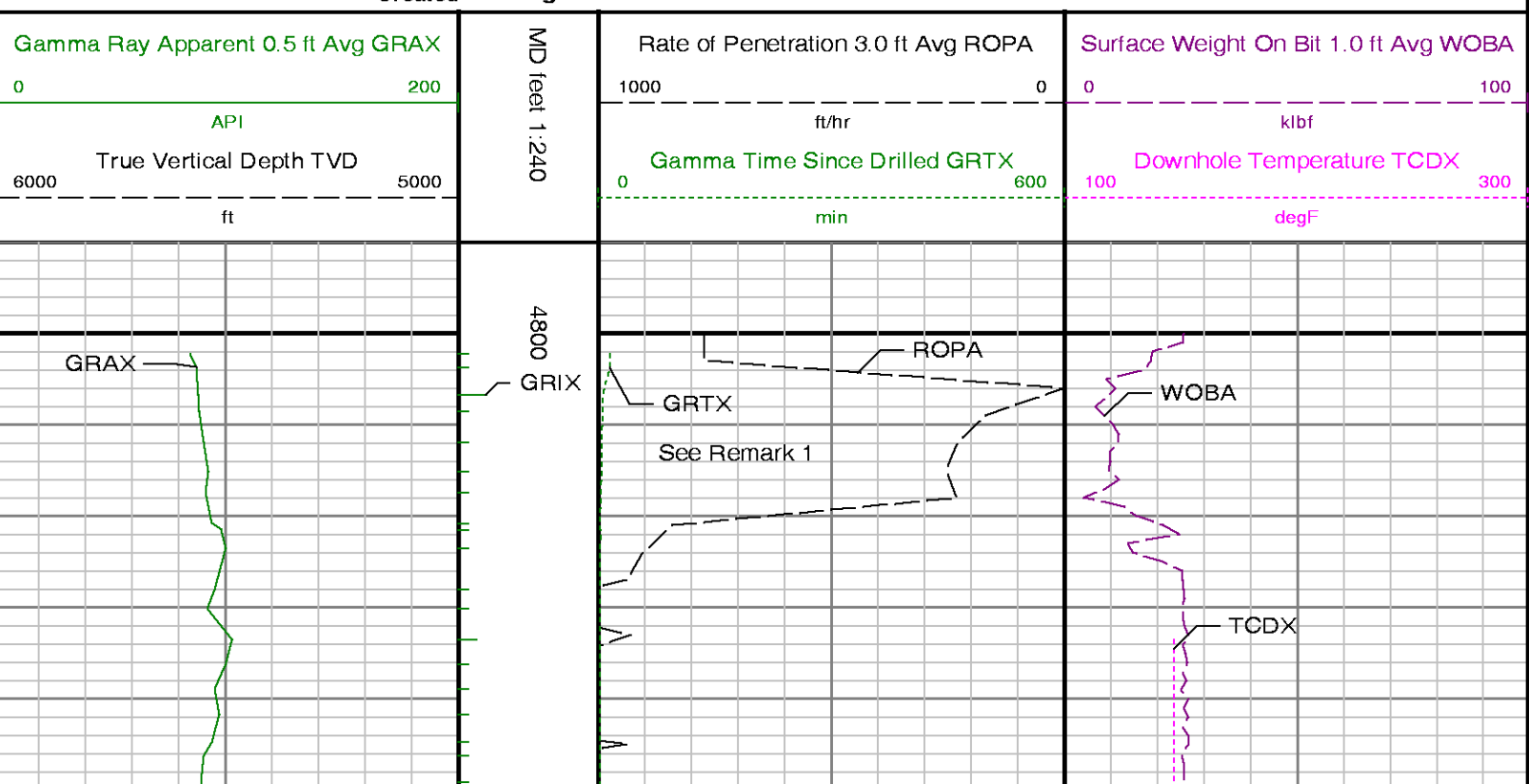


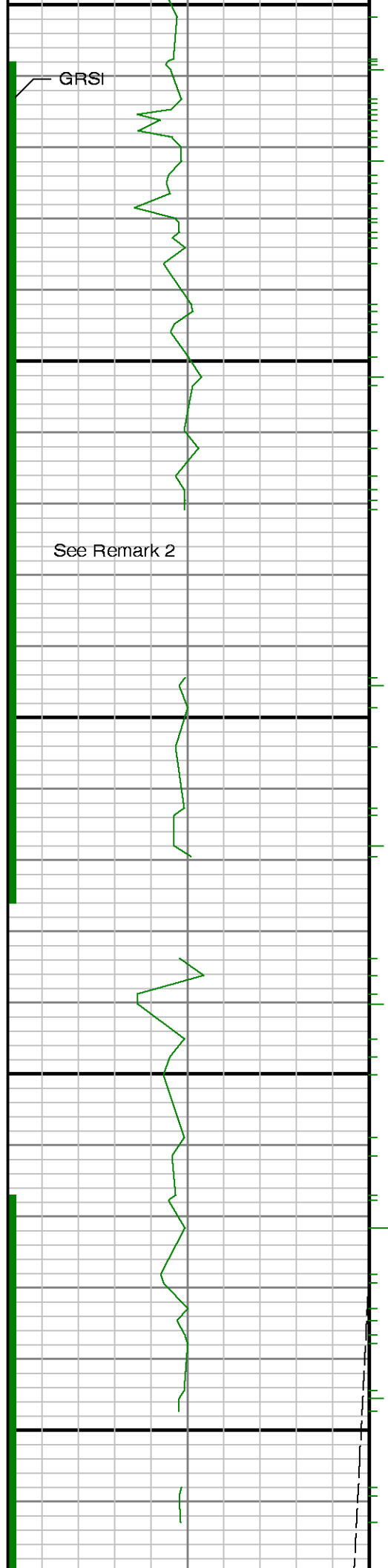
Company : Whiting Oil & Gas Corp.

Well : Razor #250-2412

Interval : 4790.00 - 15850.00 feet

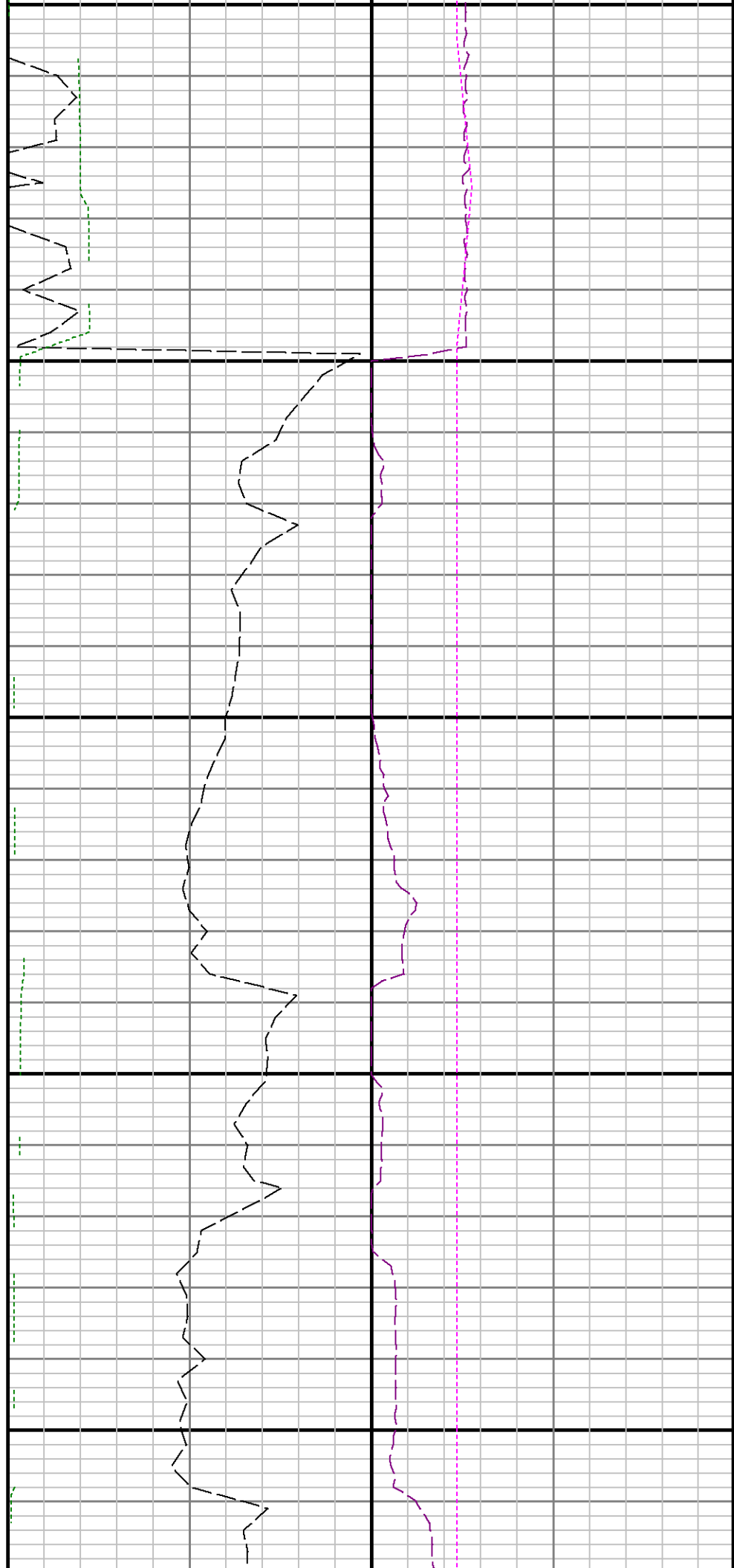
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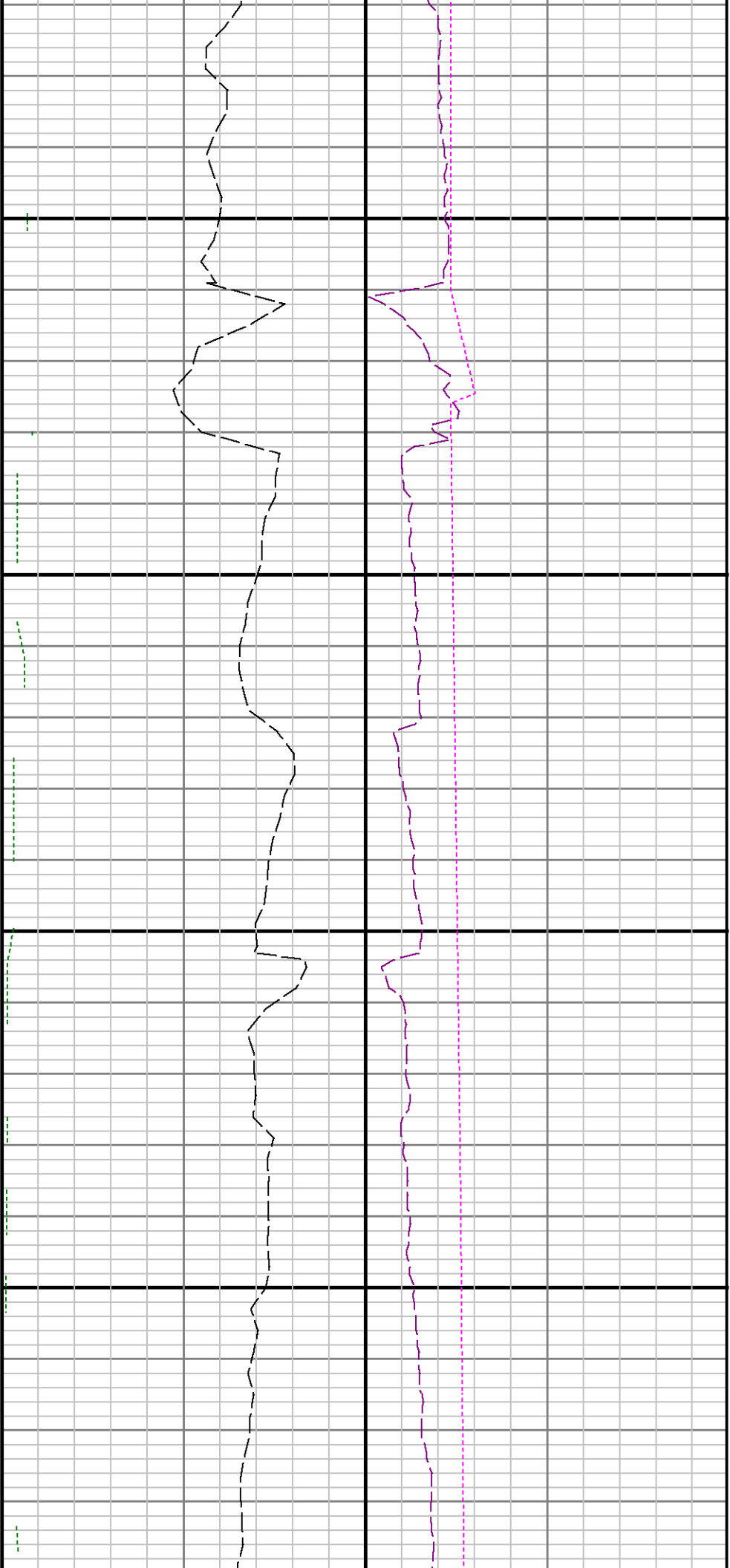




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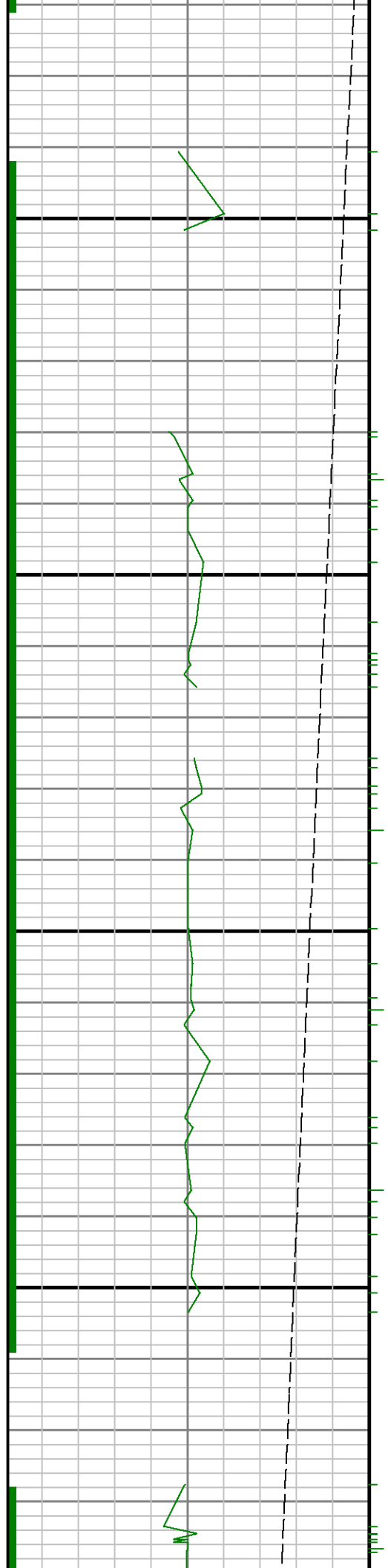
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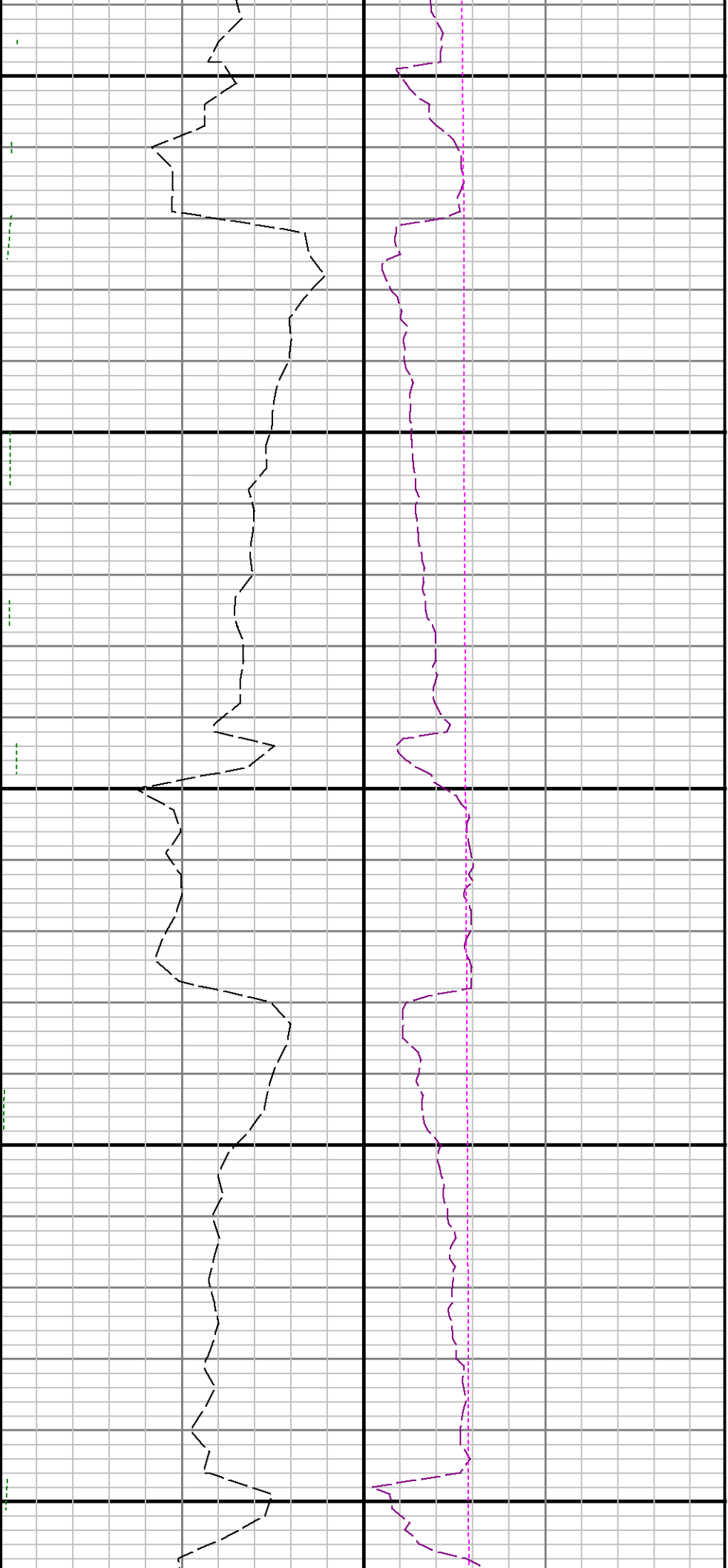




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5200

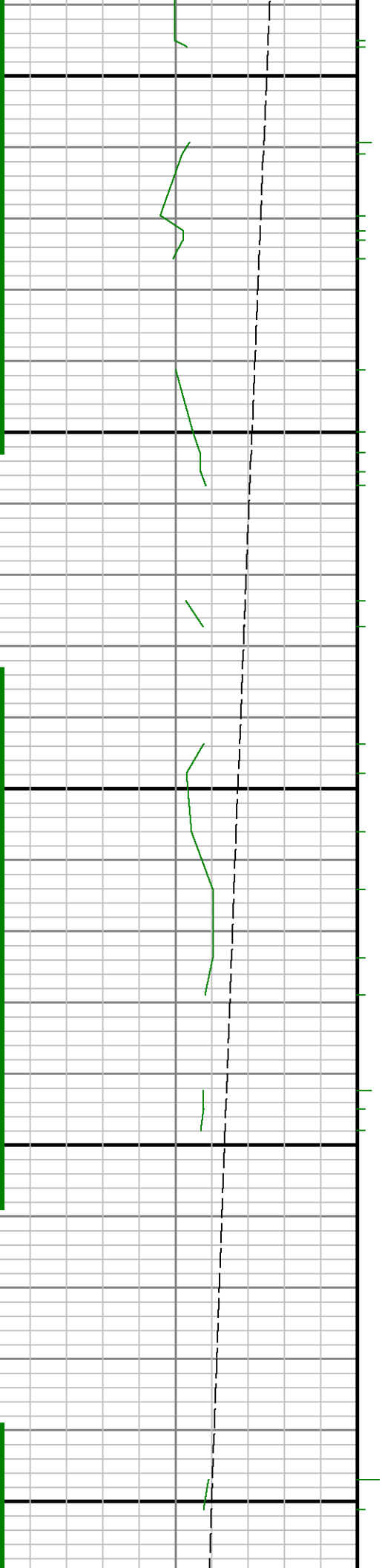


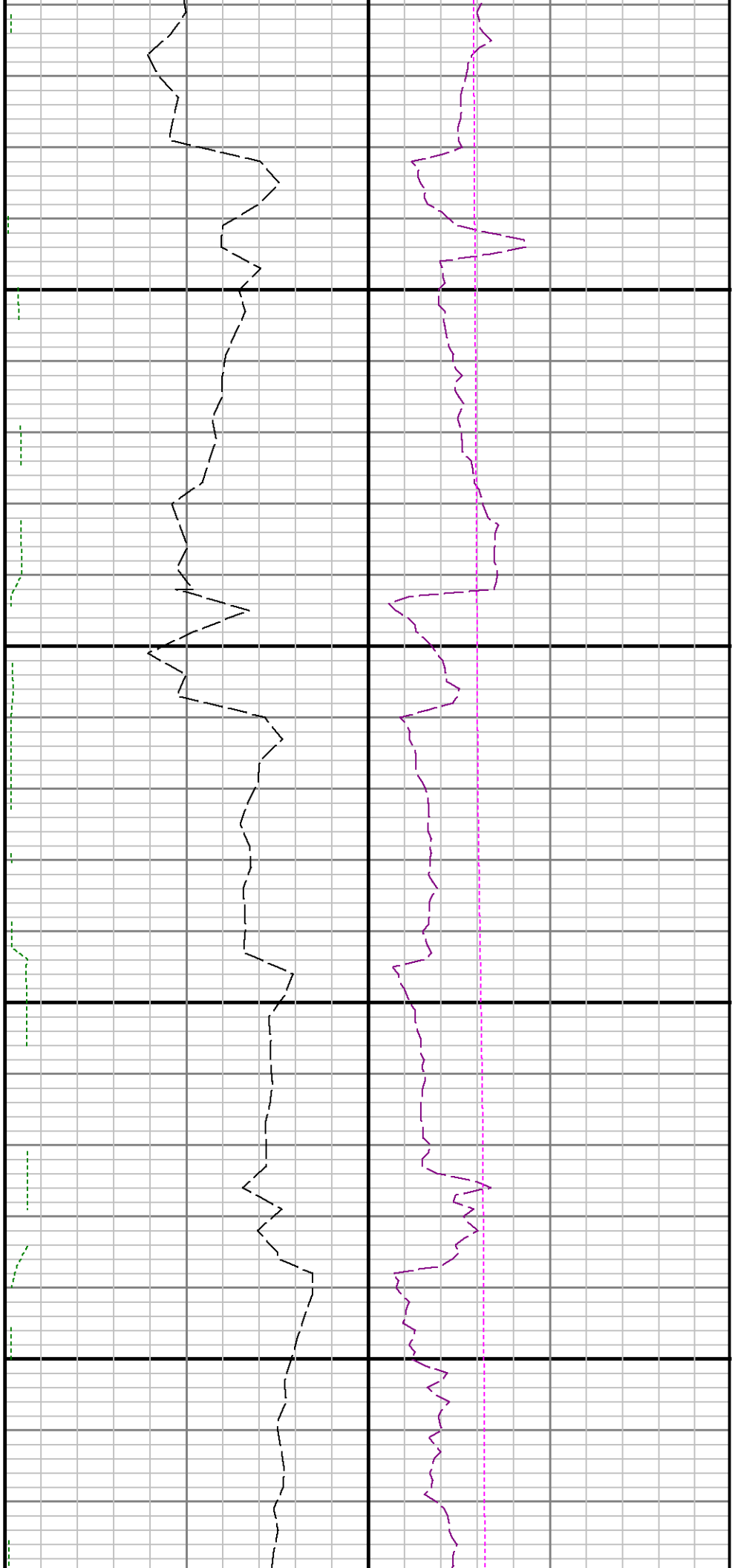


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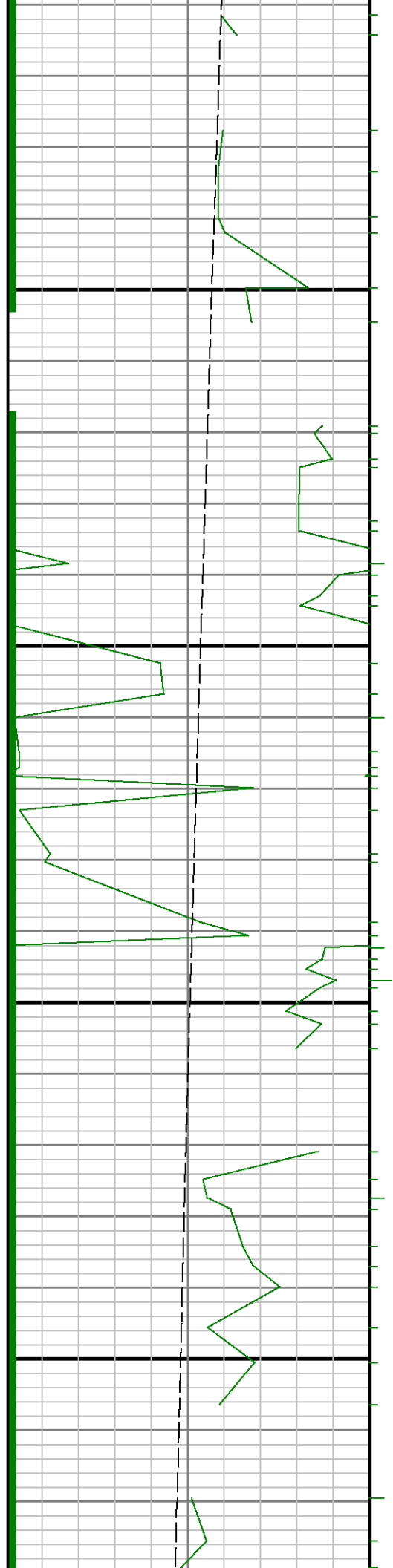
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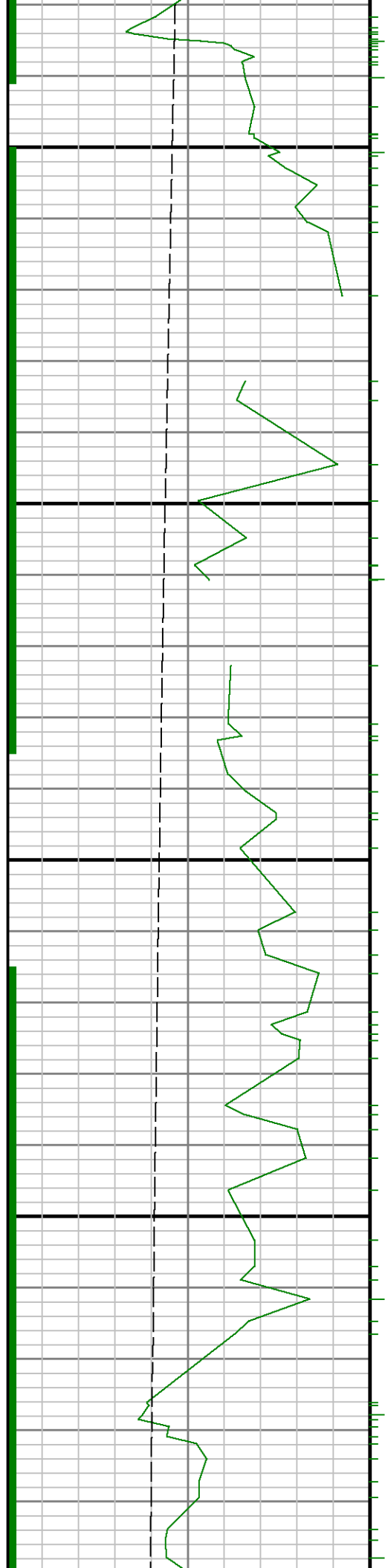




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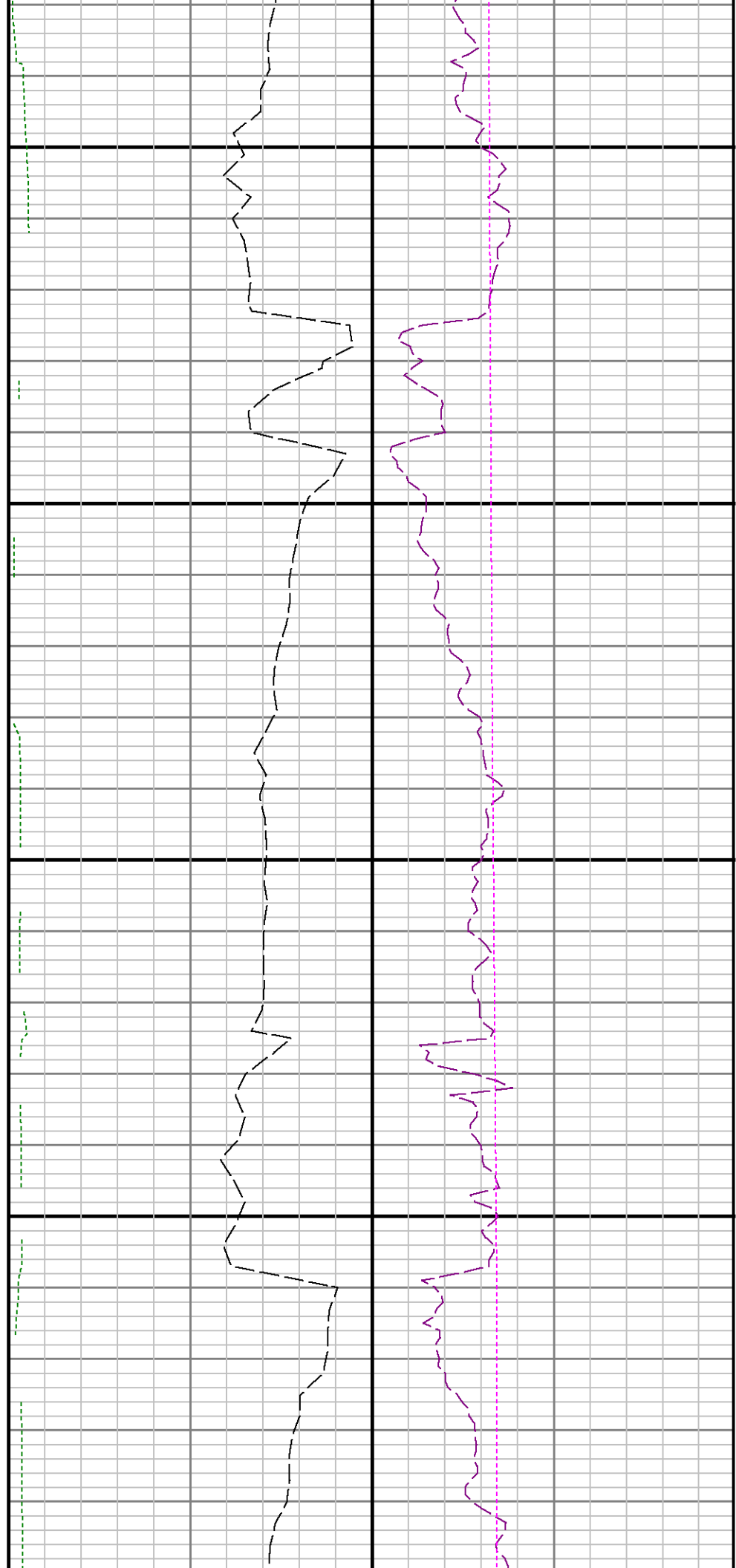
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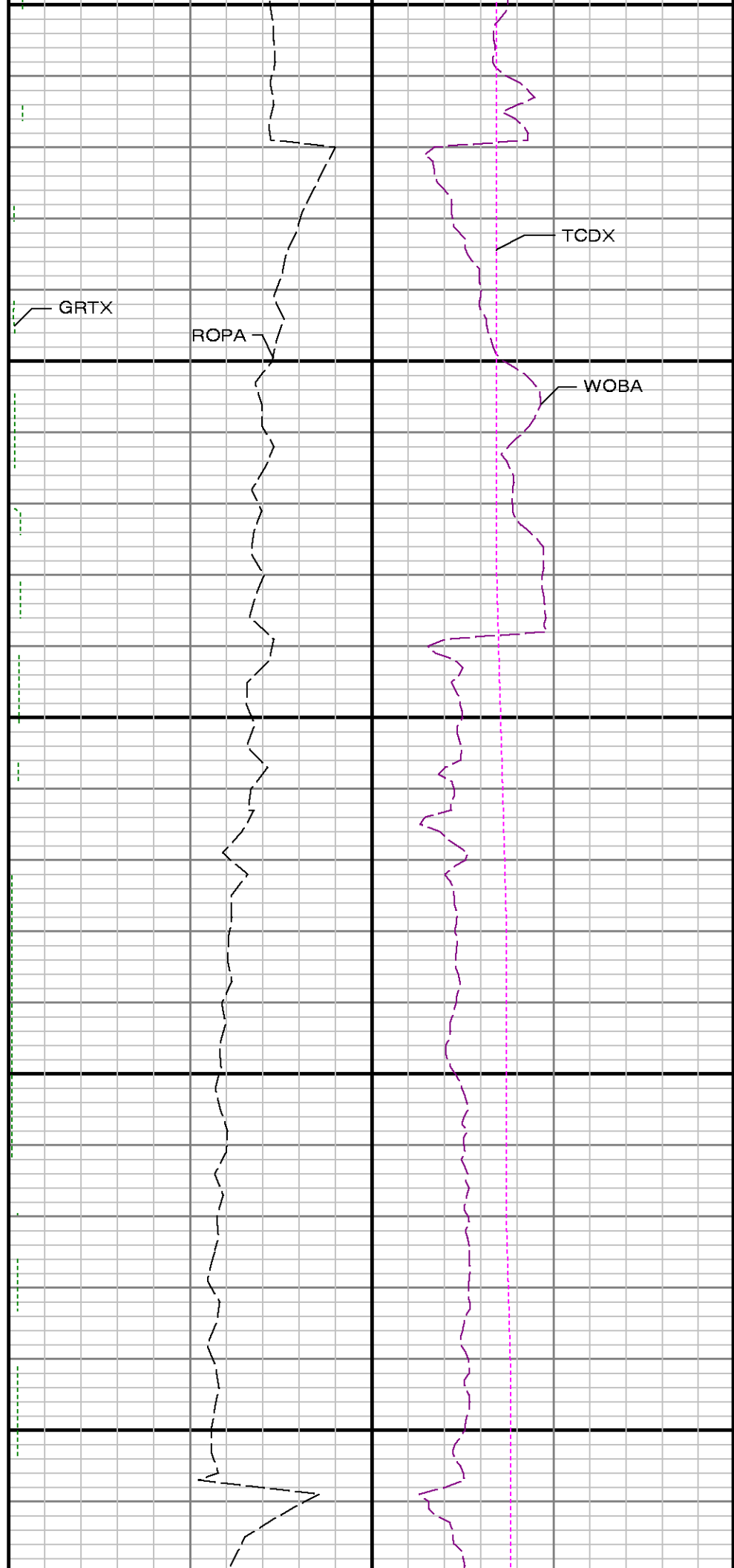
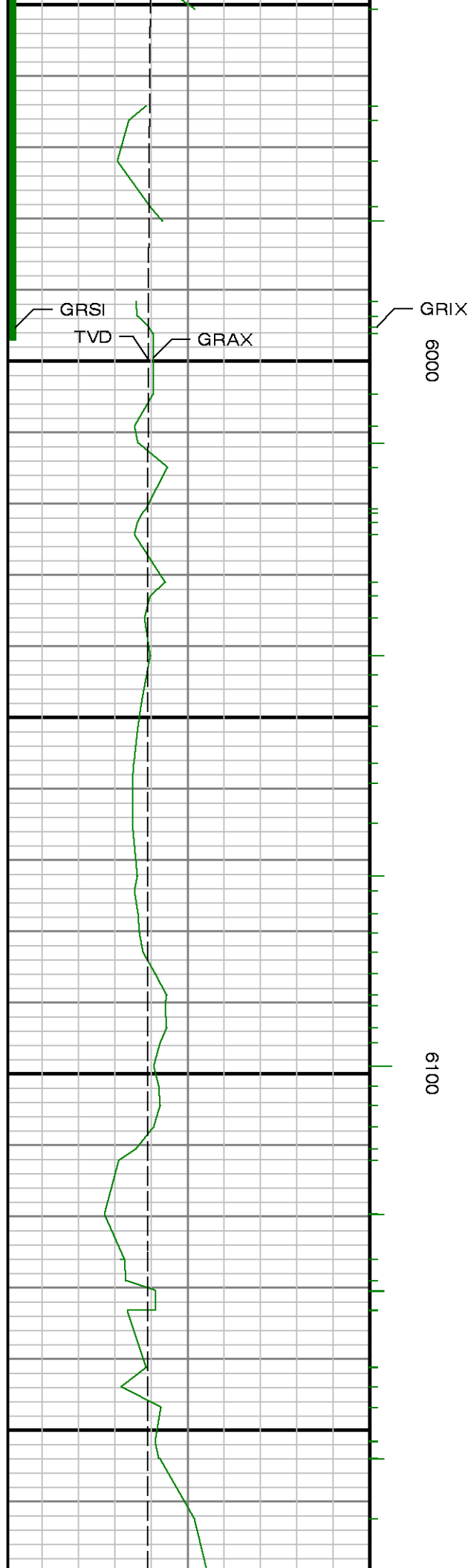




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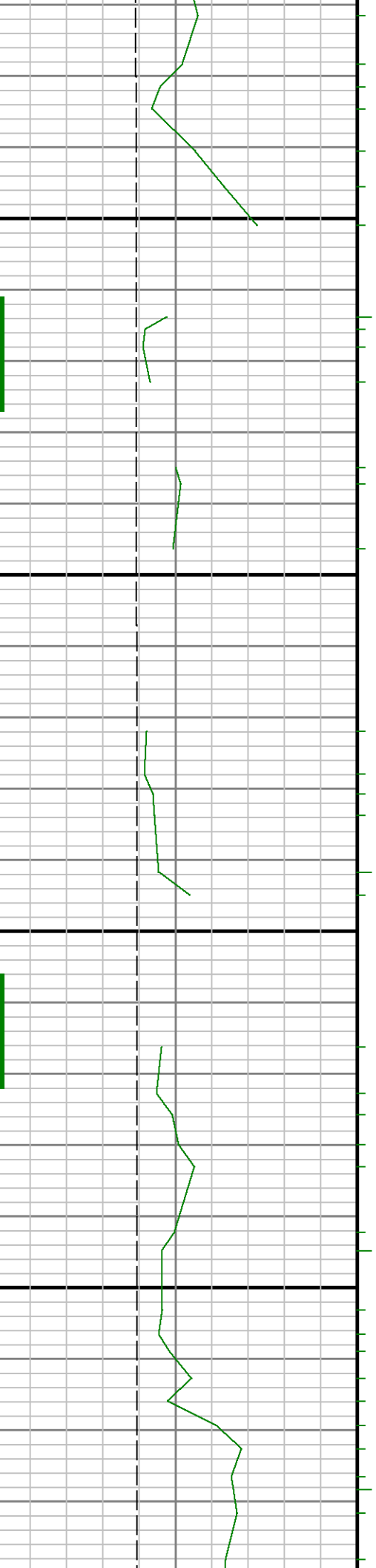


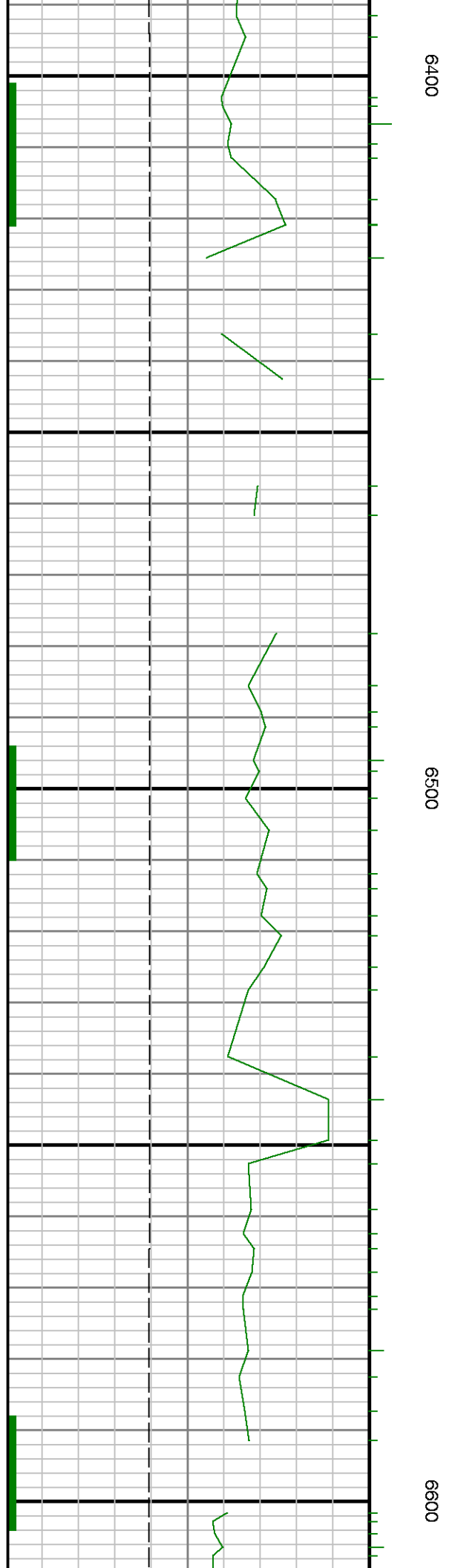
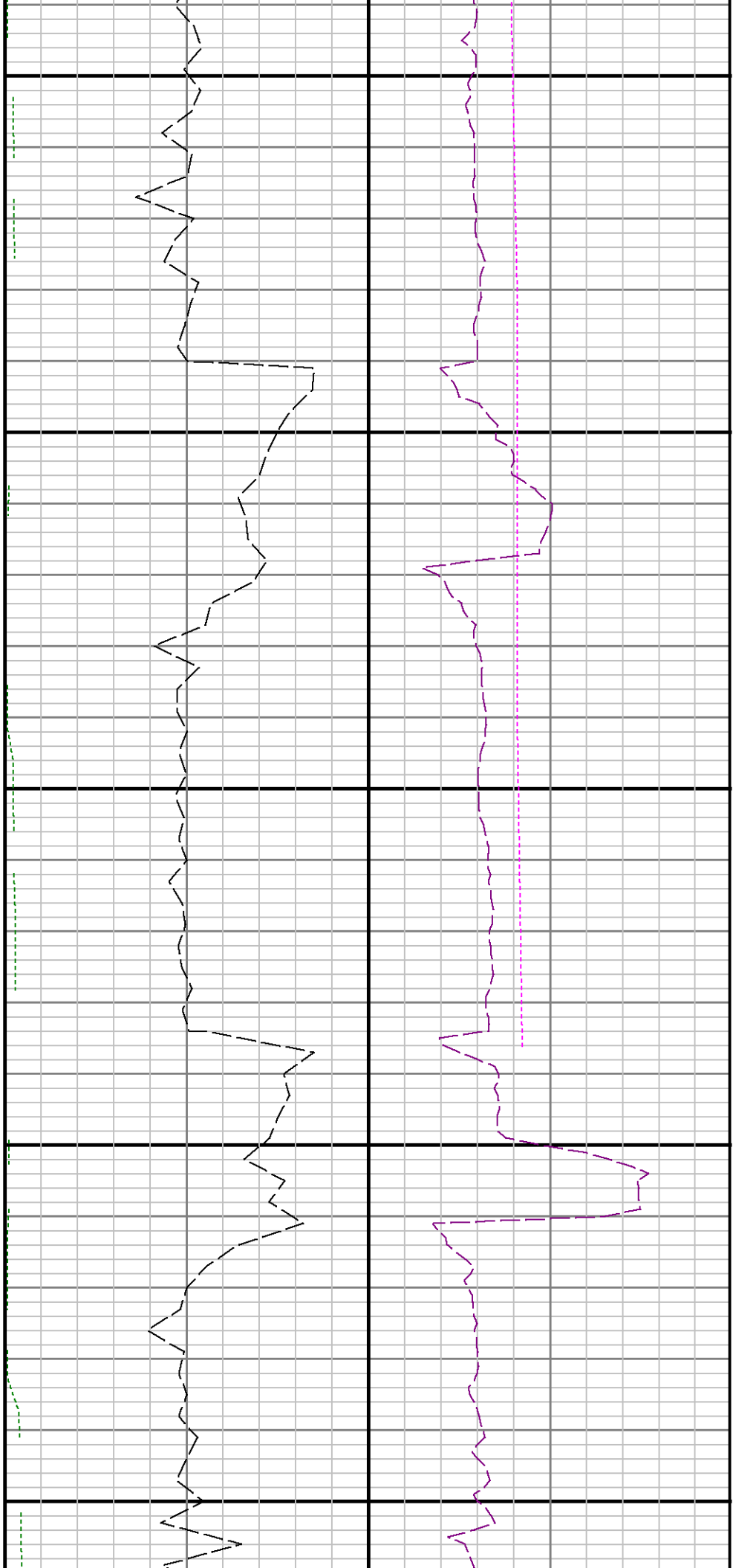


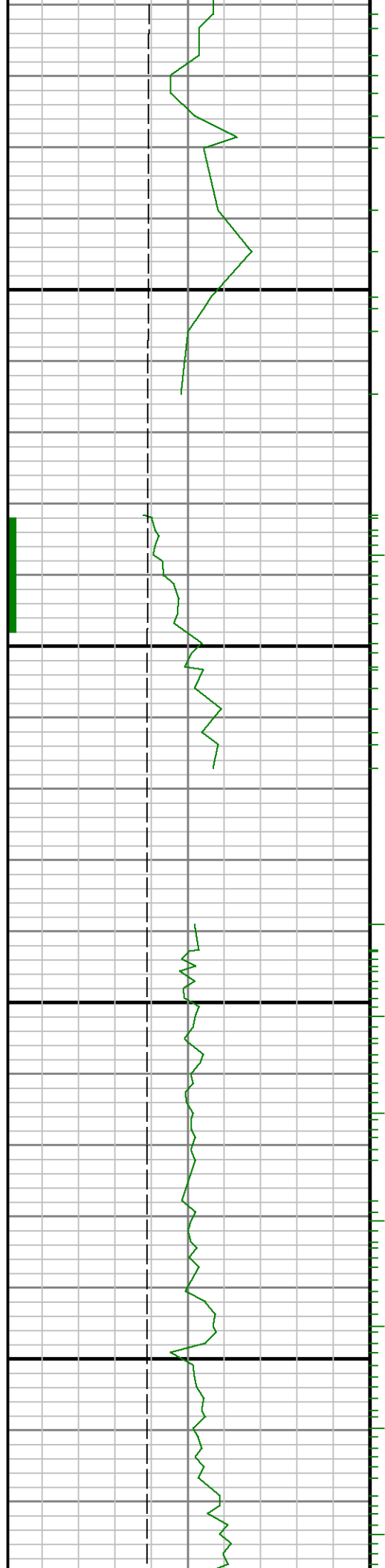


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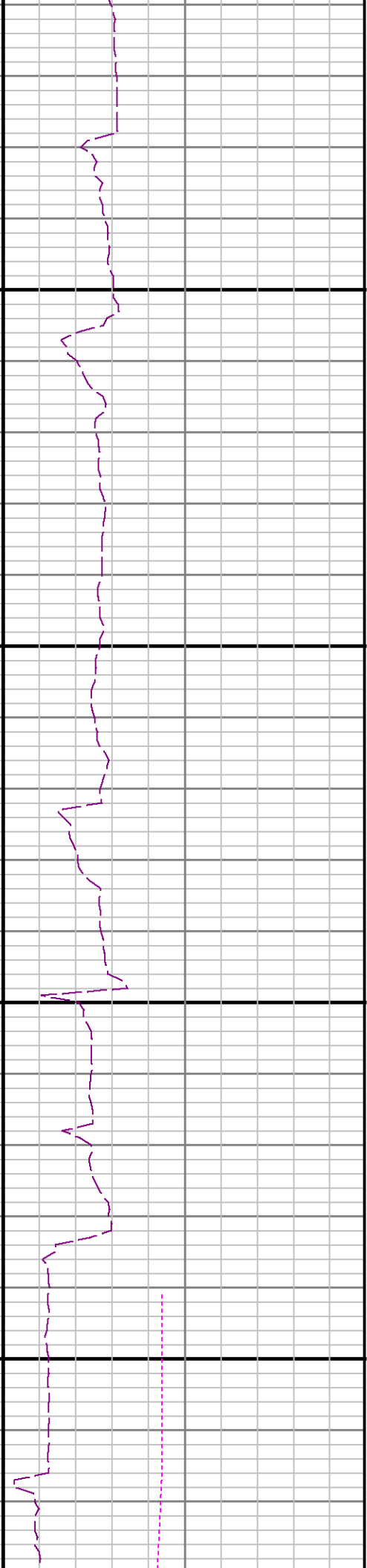


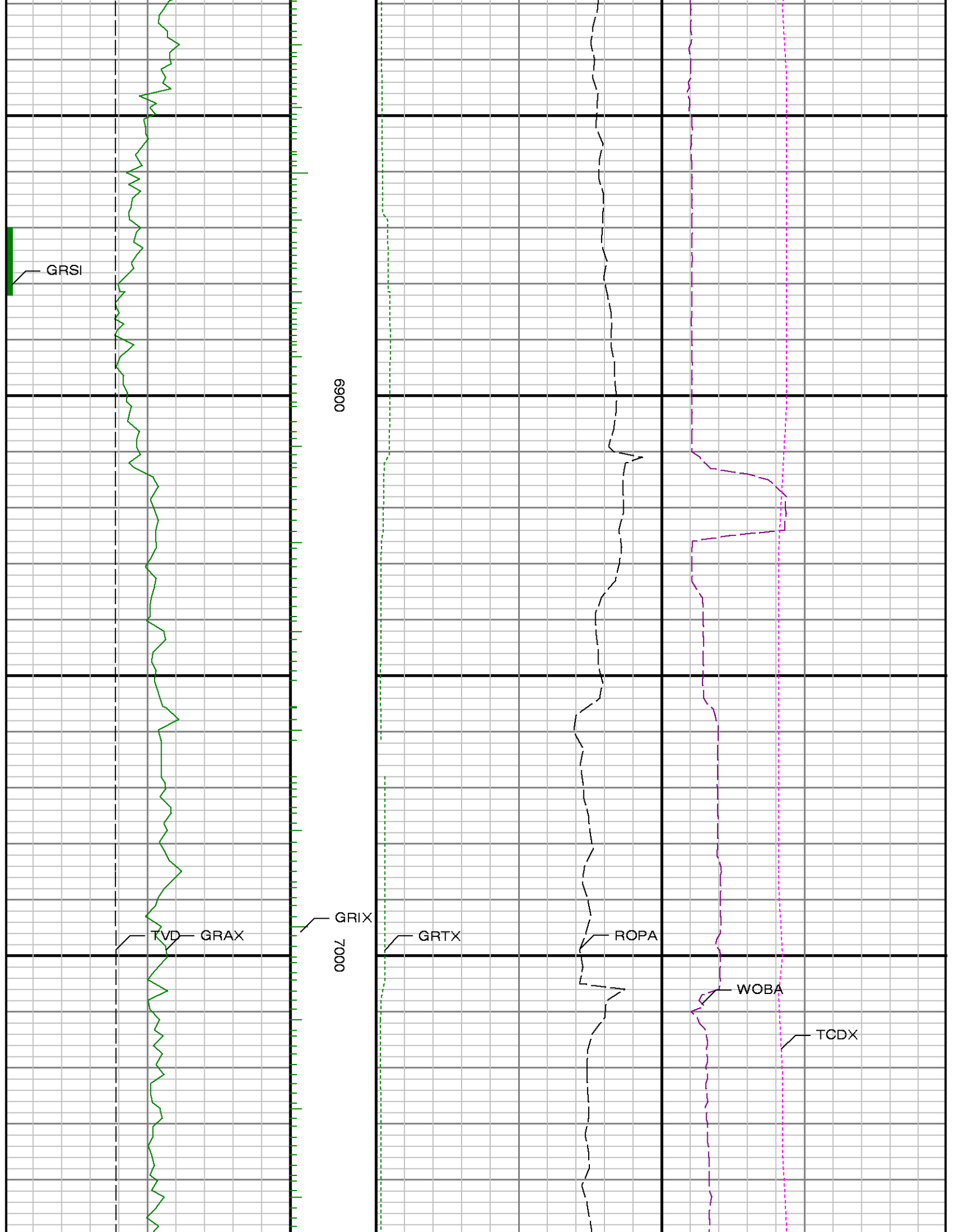


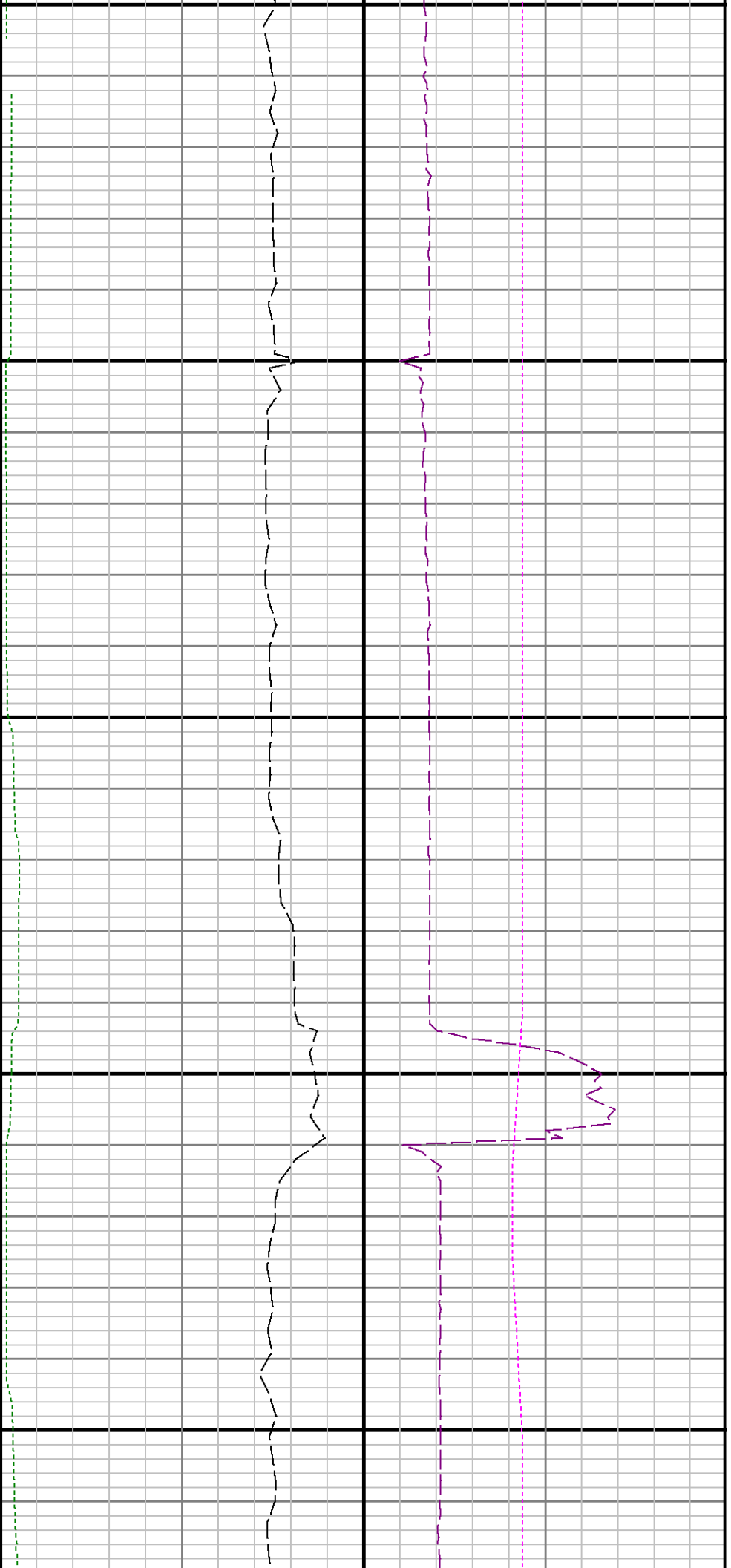


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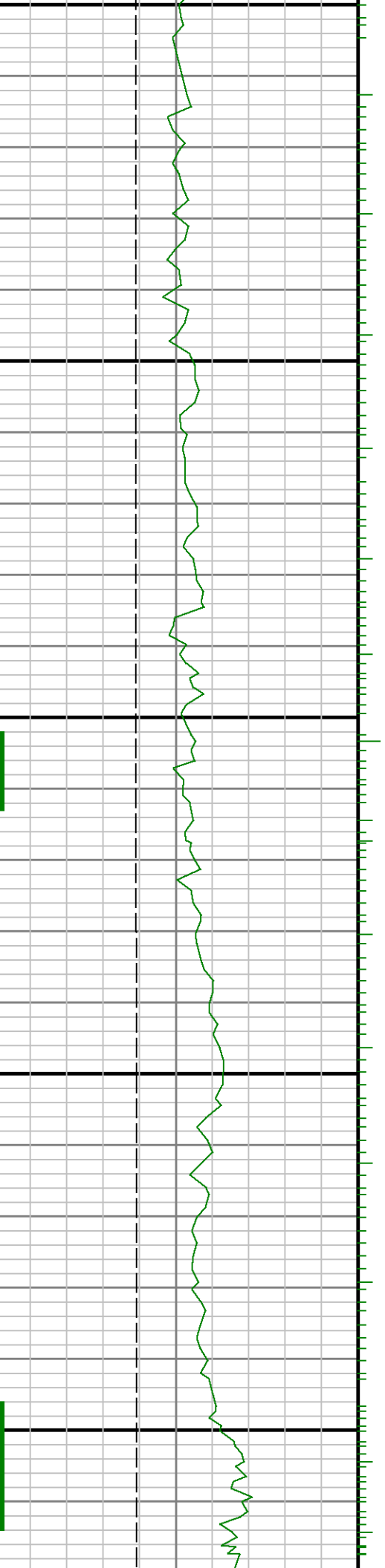


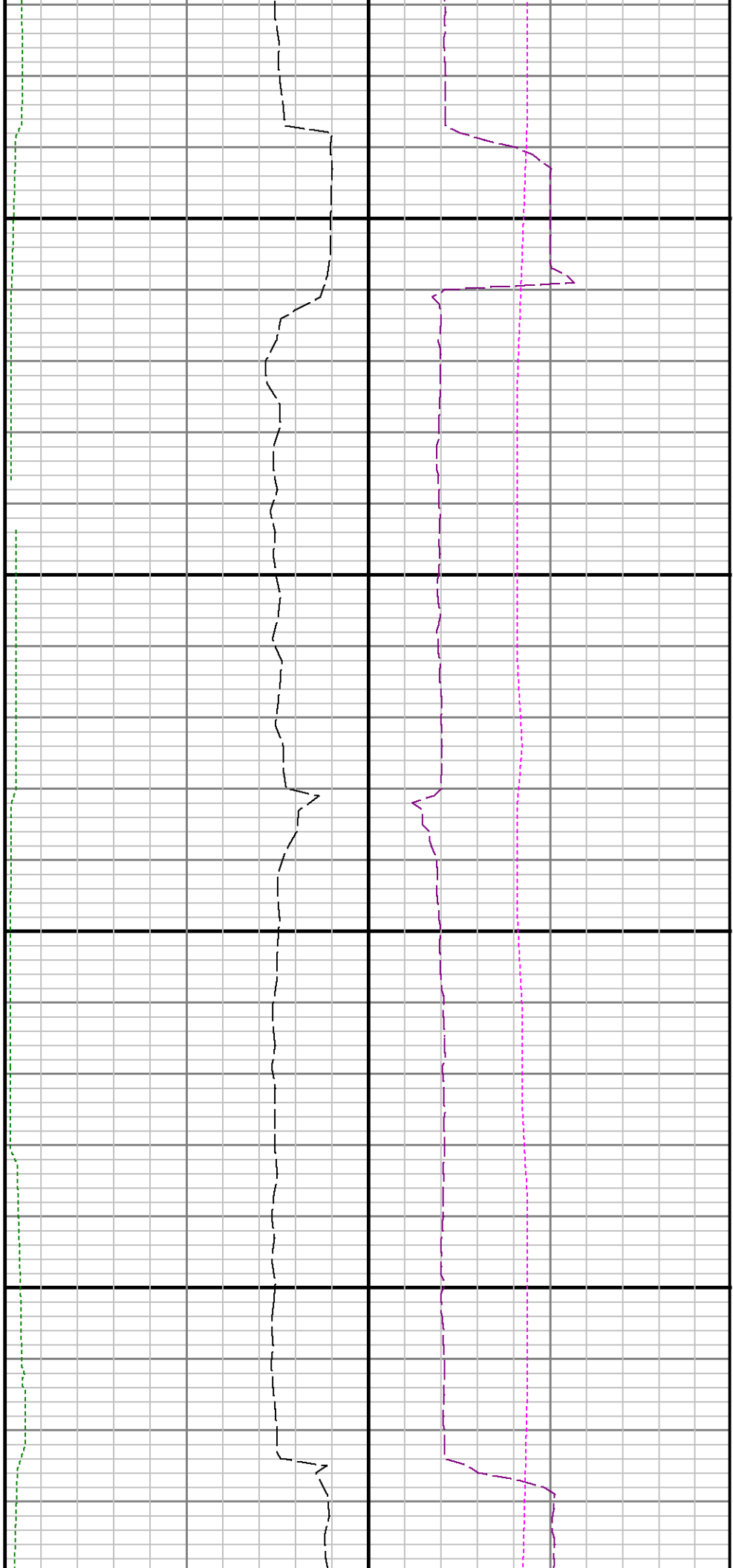




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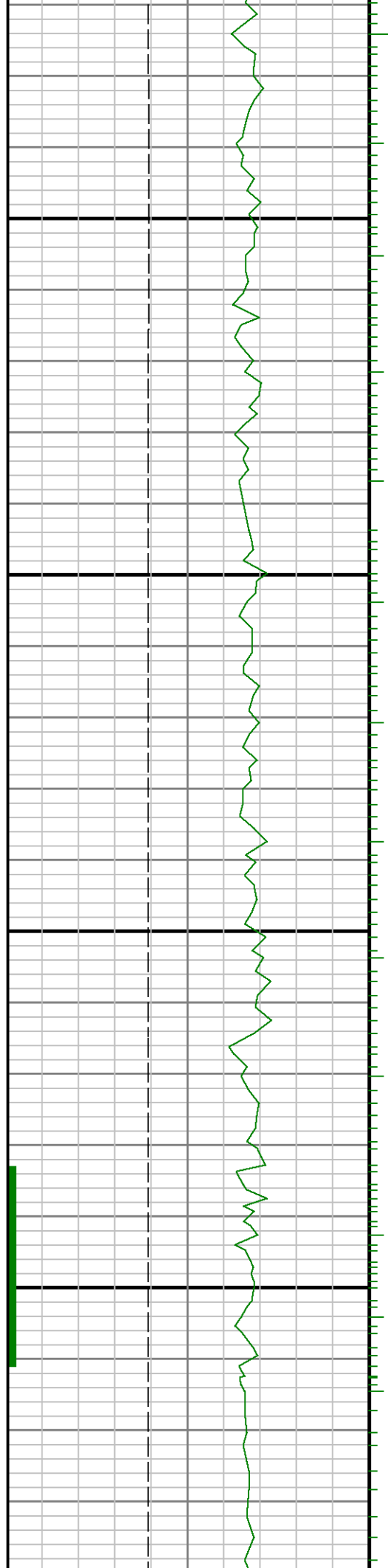
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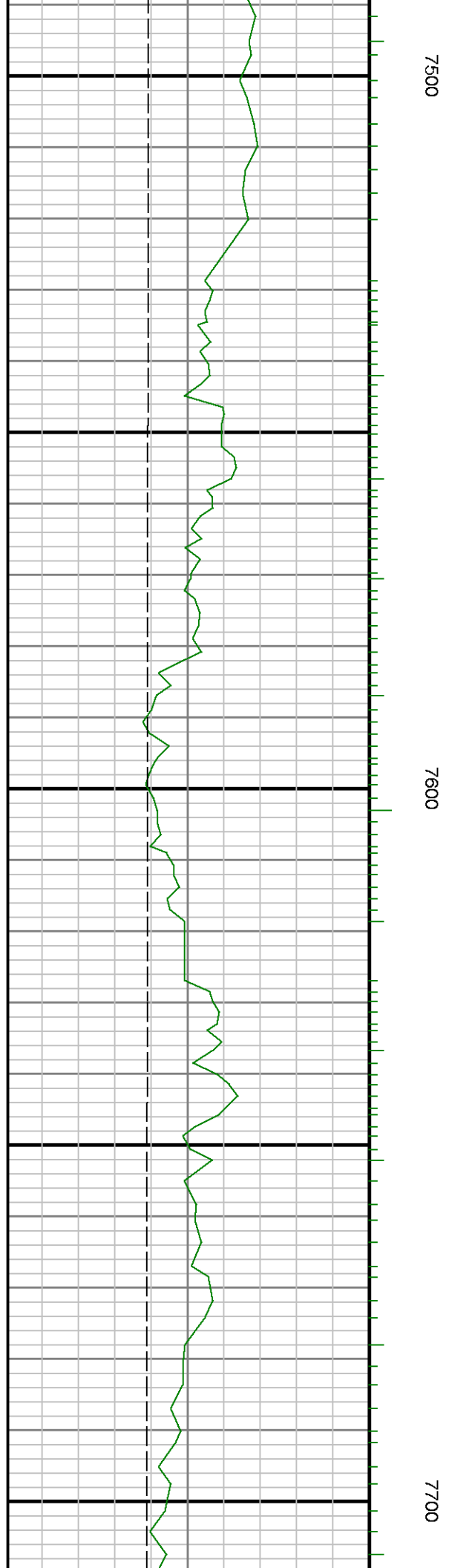
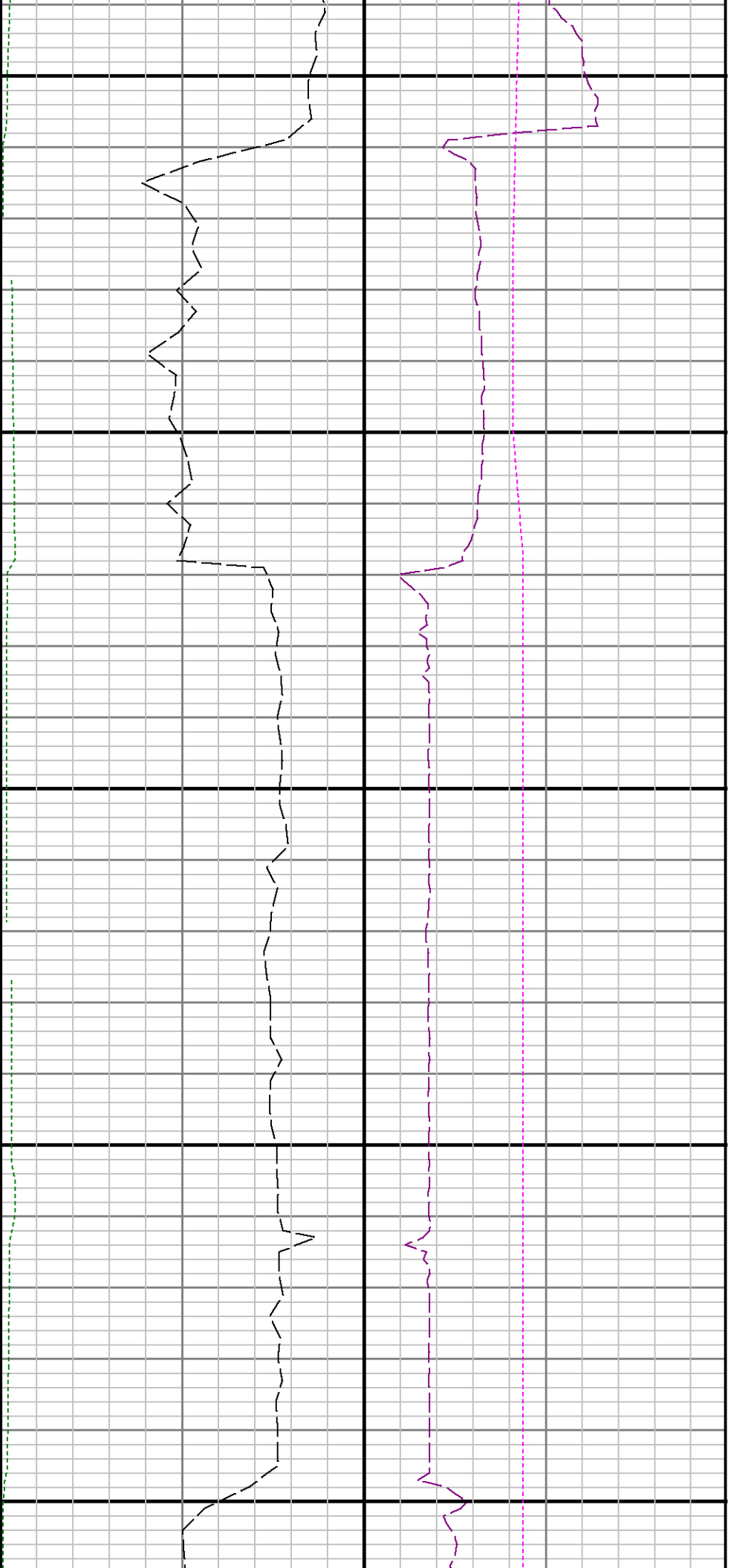


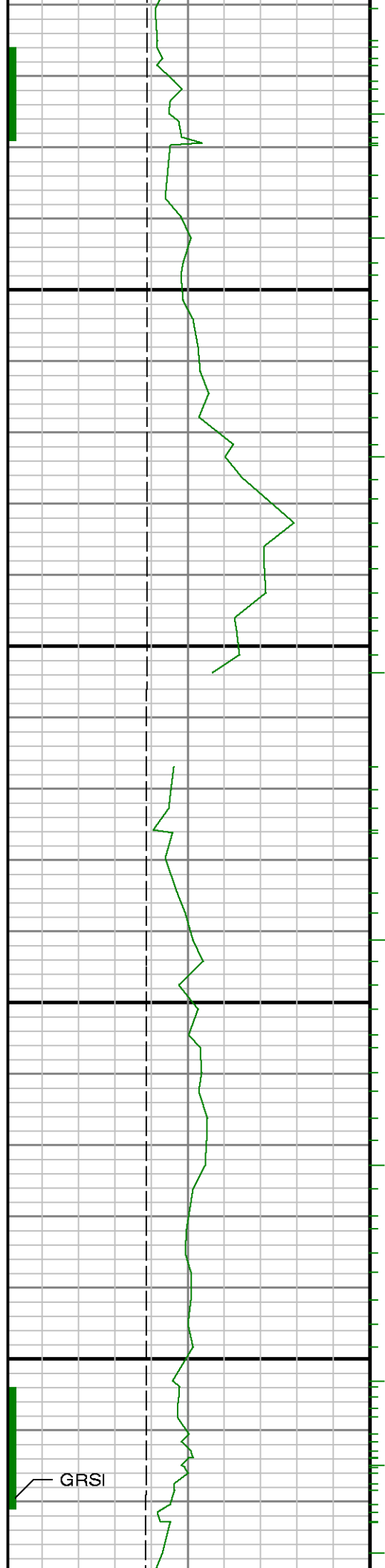


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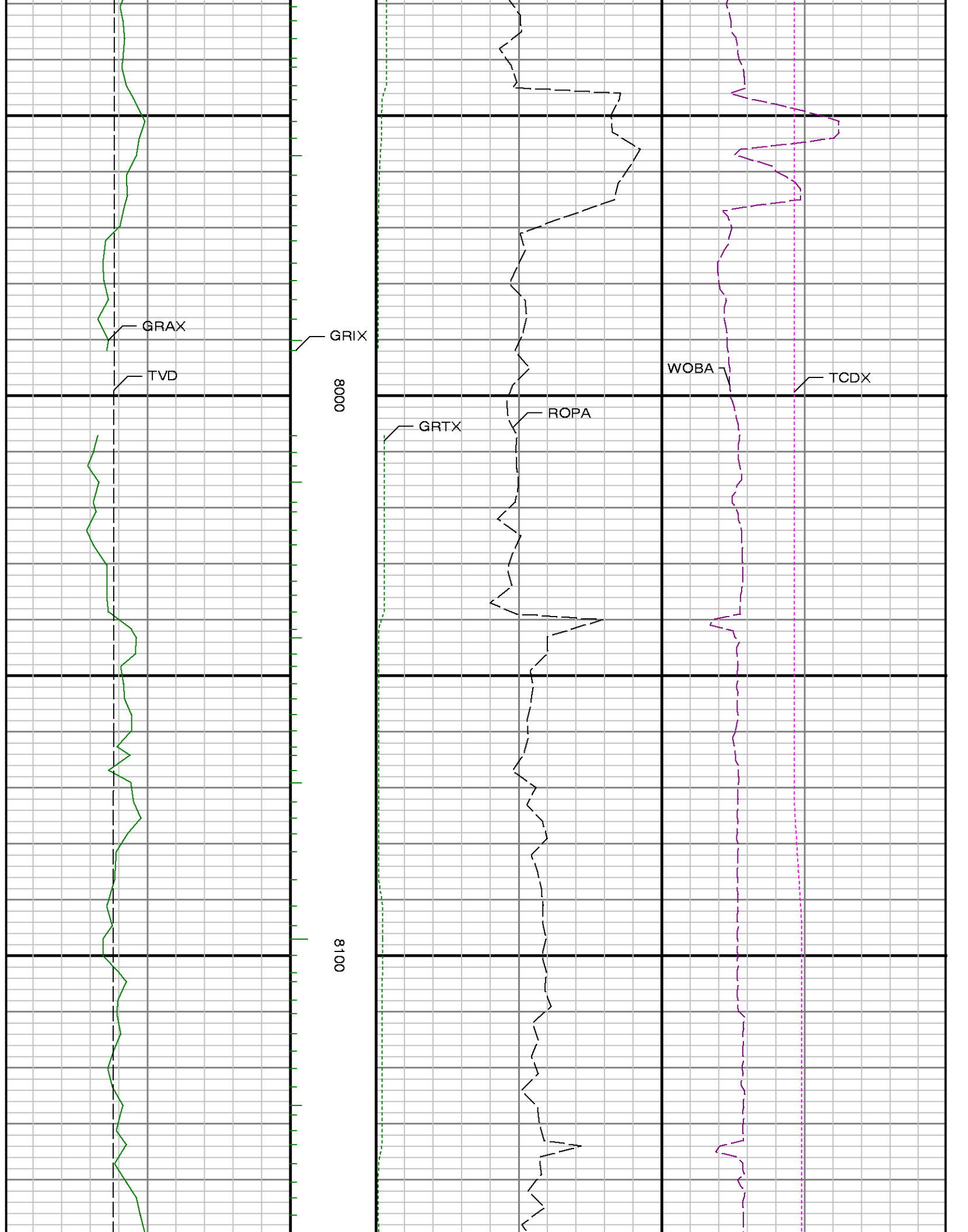




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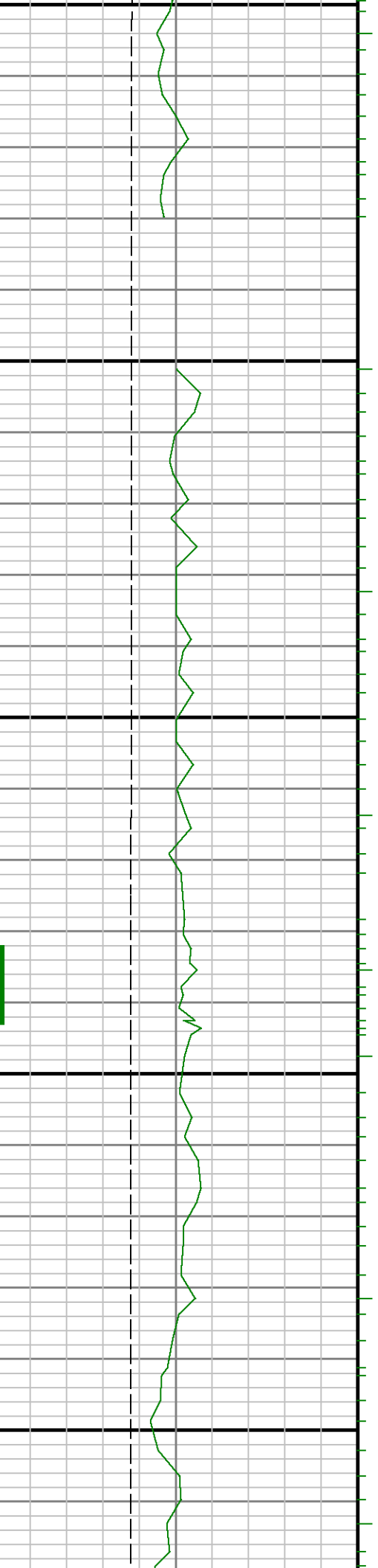


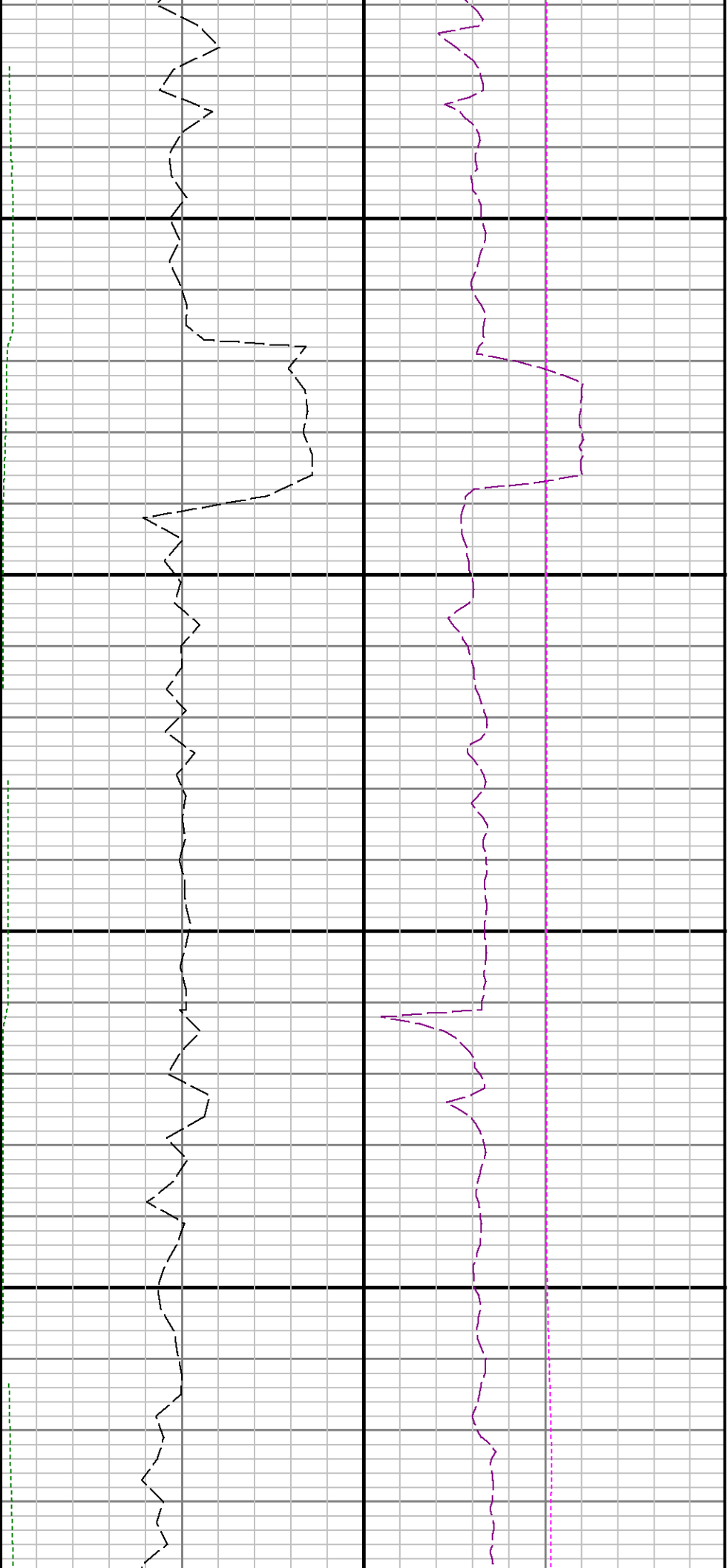




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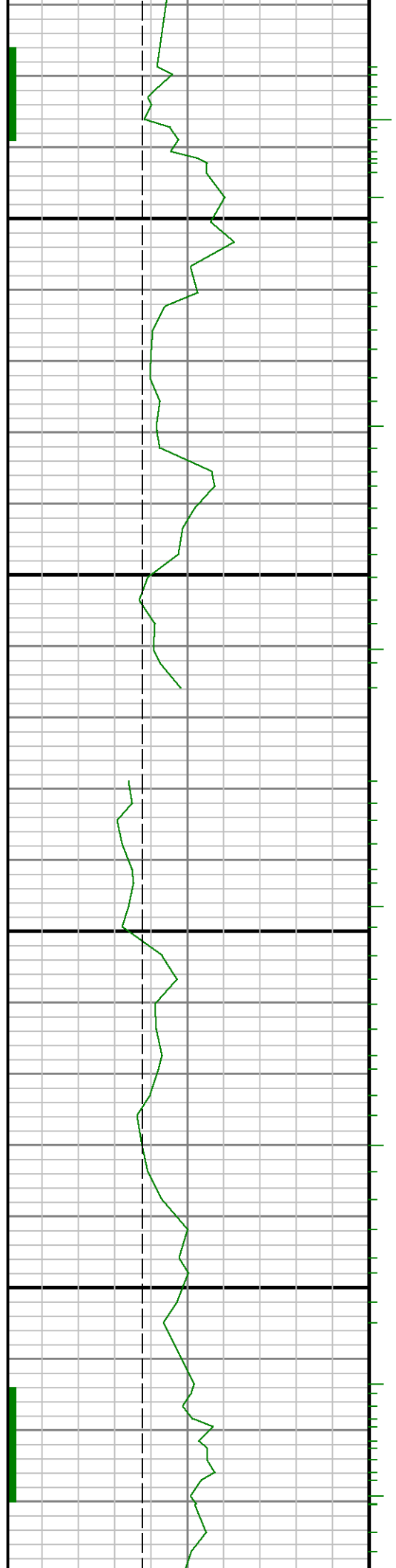
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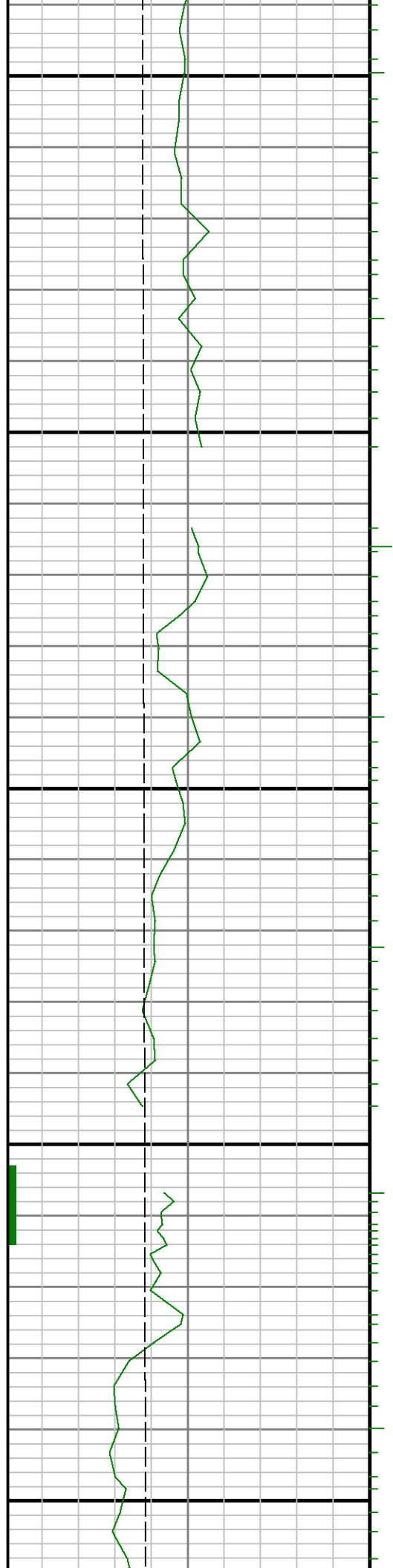




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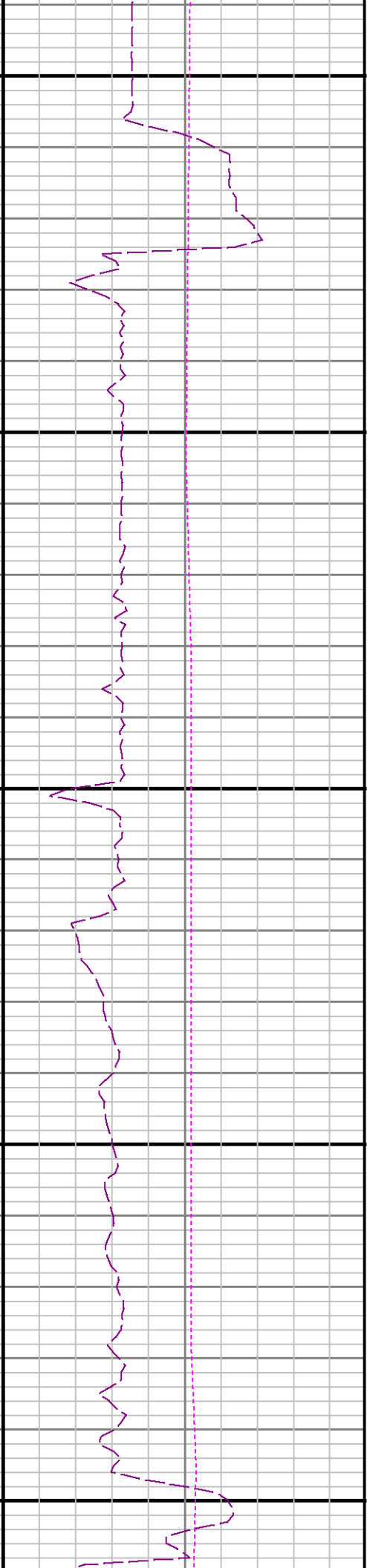


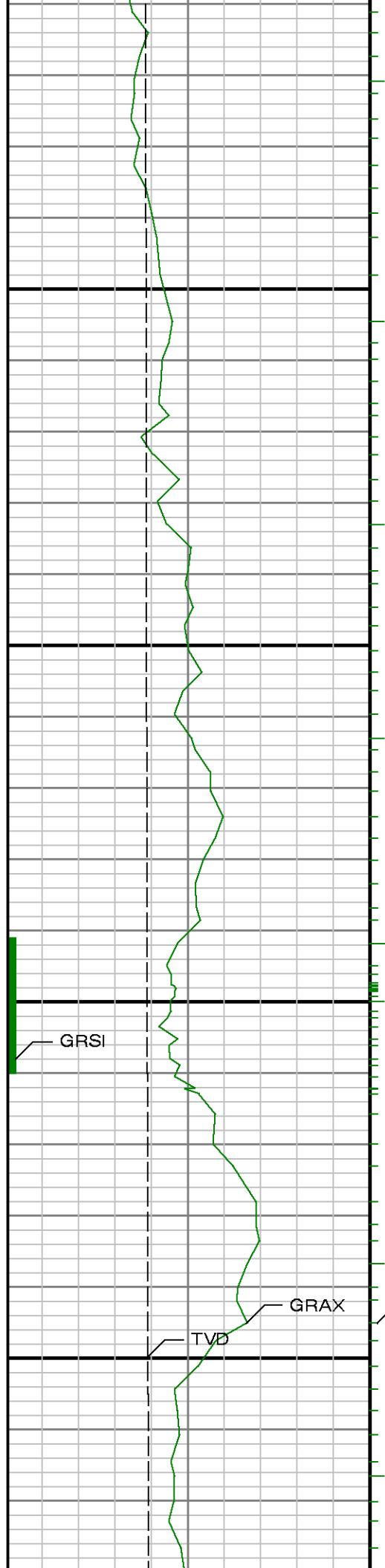


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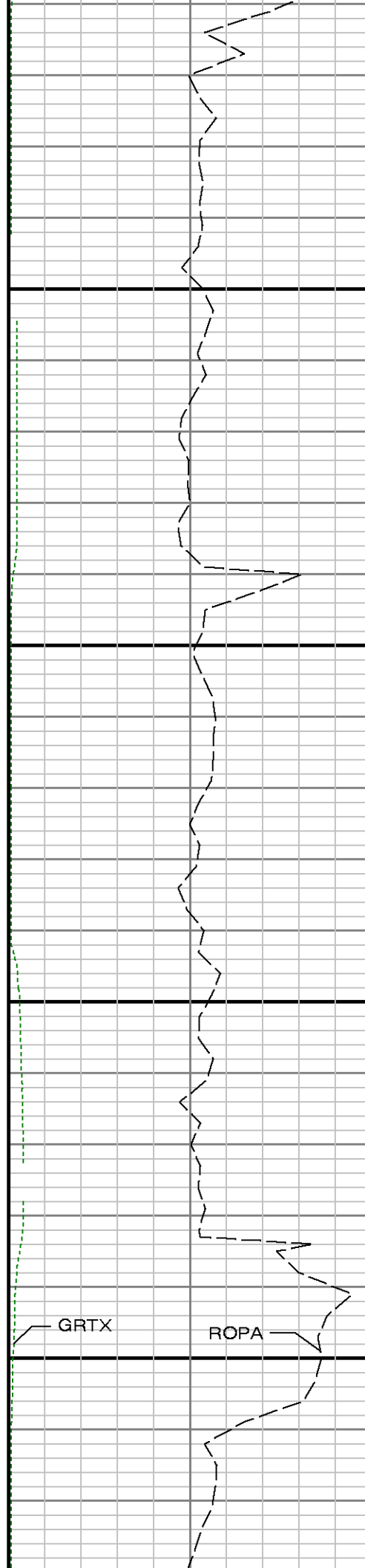
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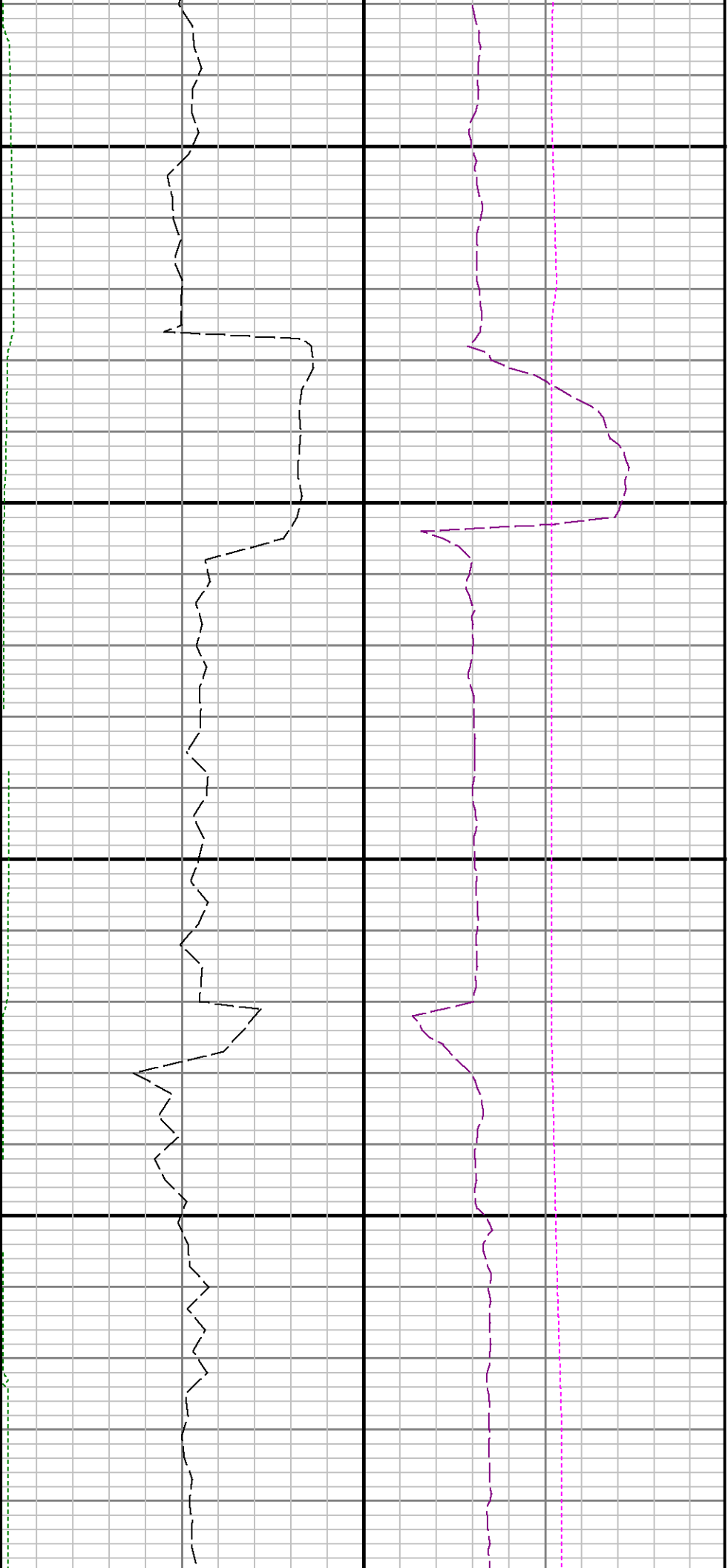
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GRTX

GRAX

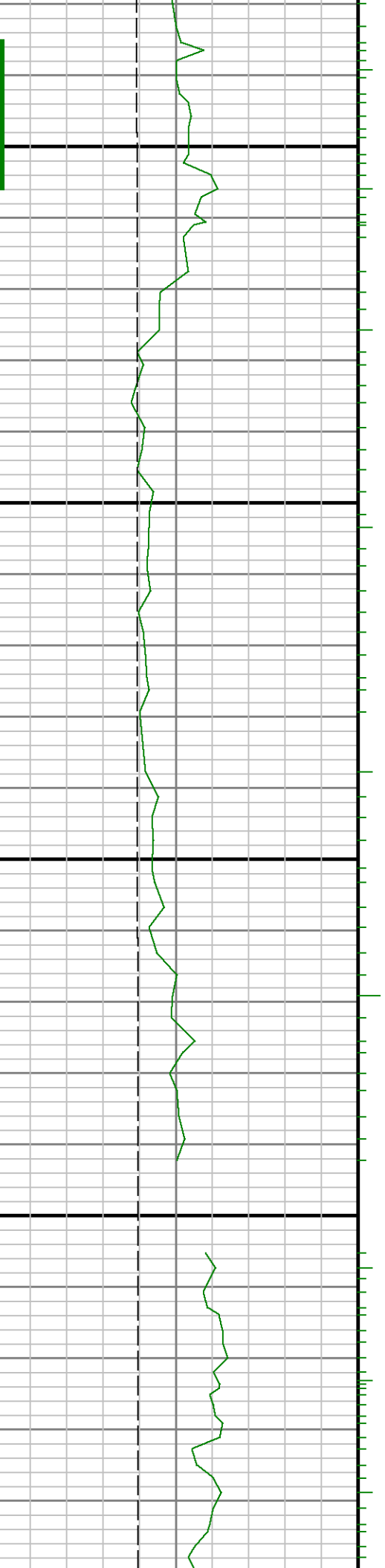
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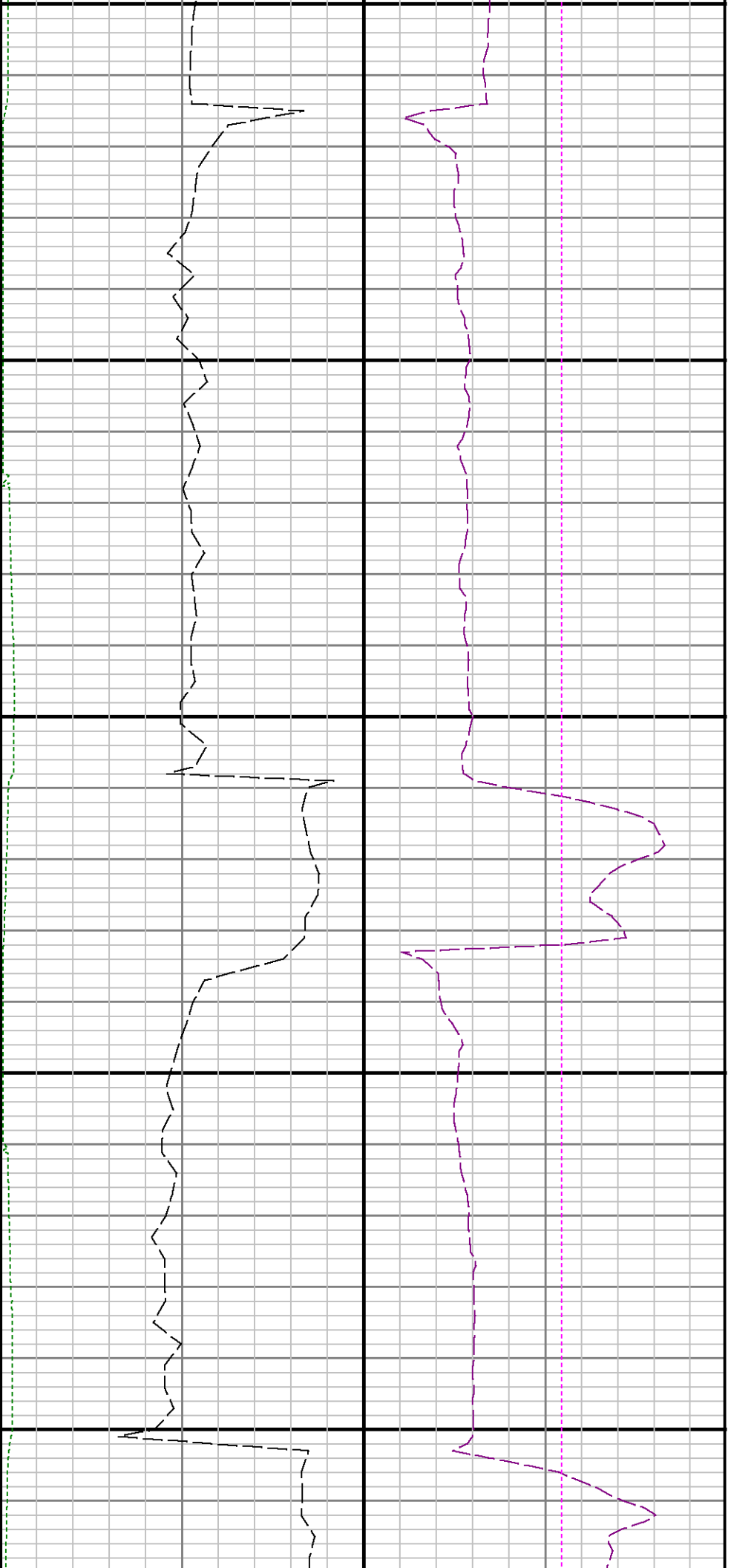
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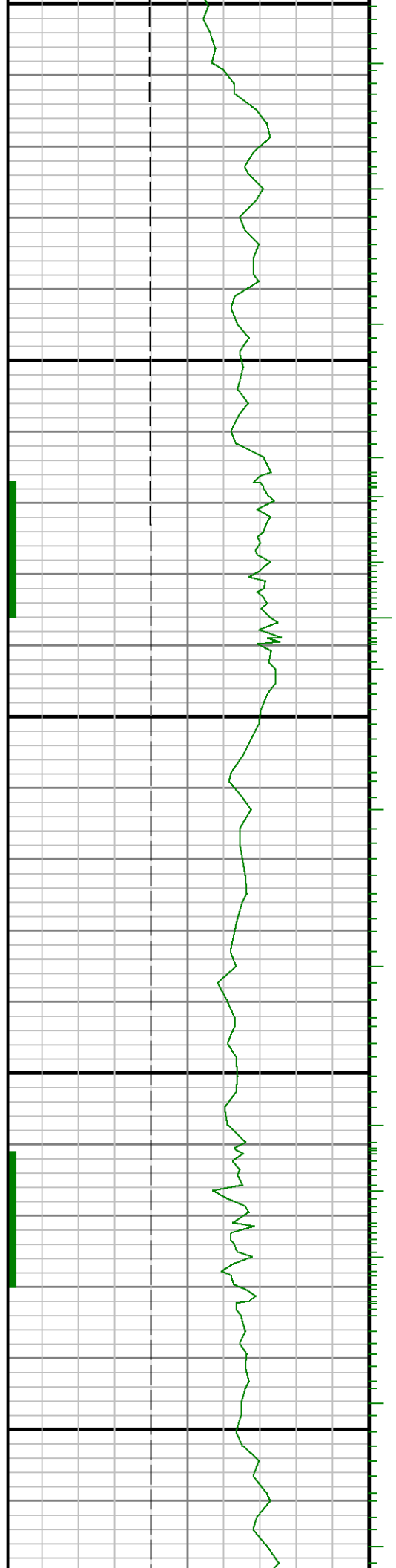
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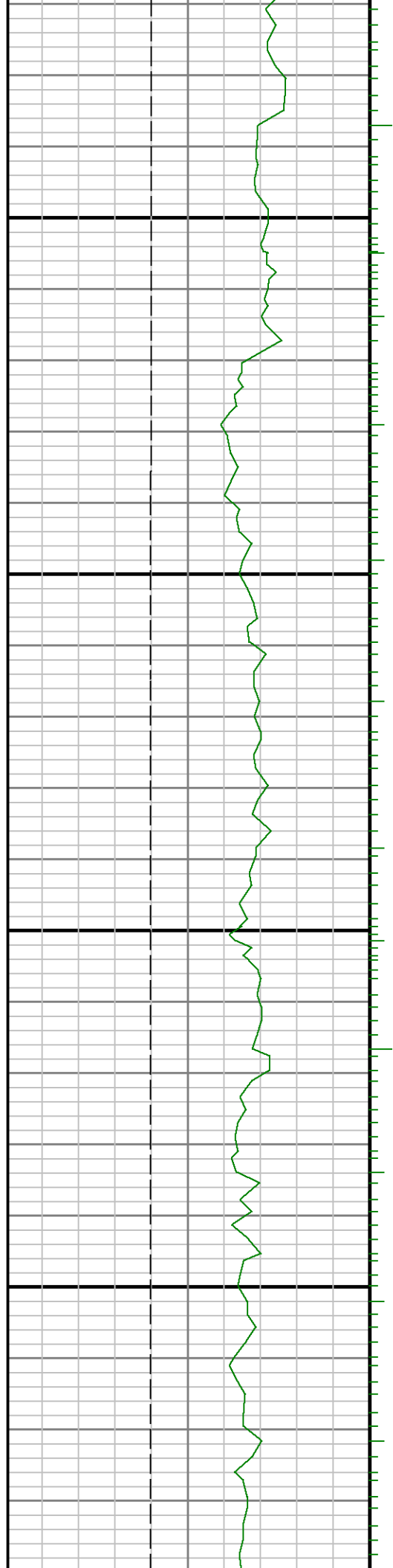




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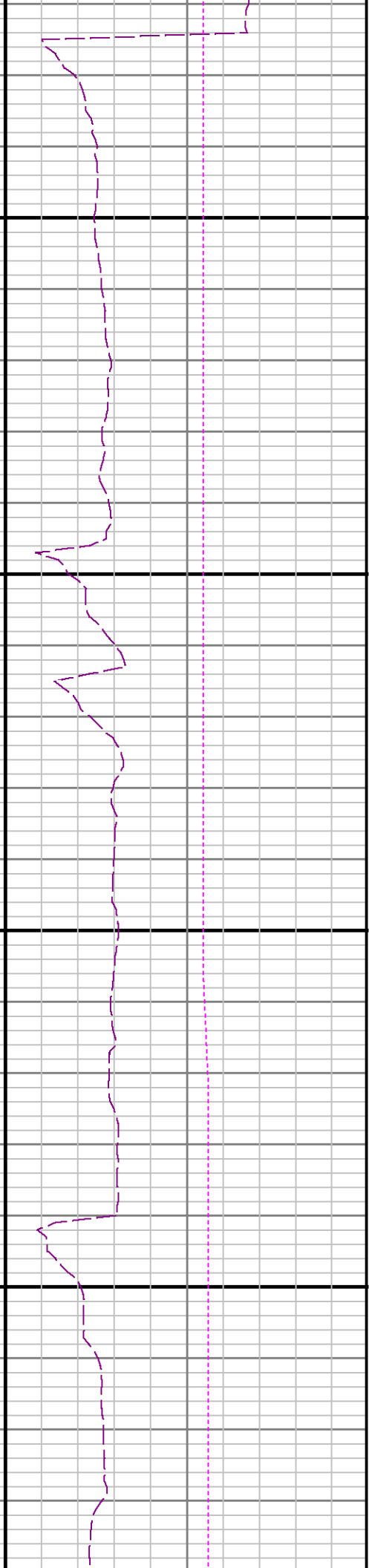
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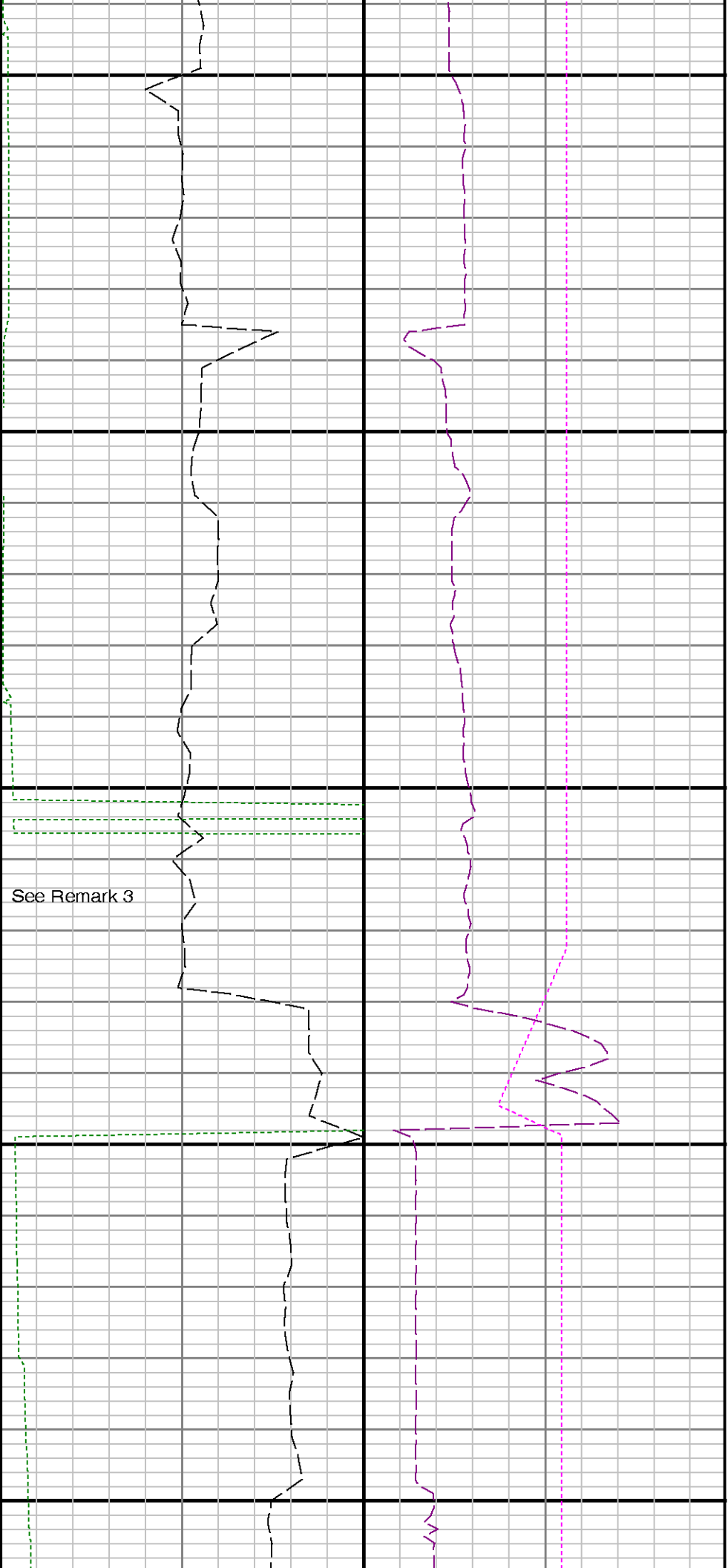




9500

9600





See Remark 3

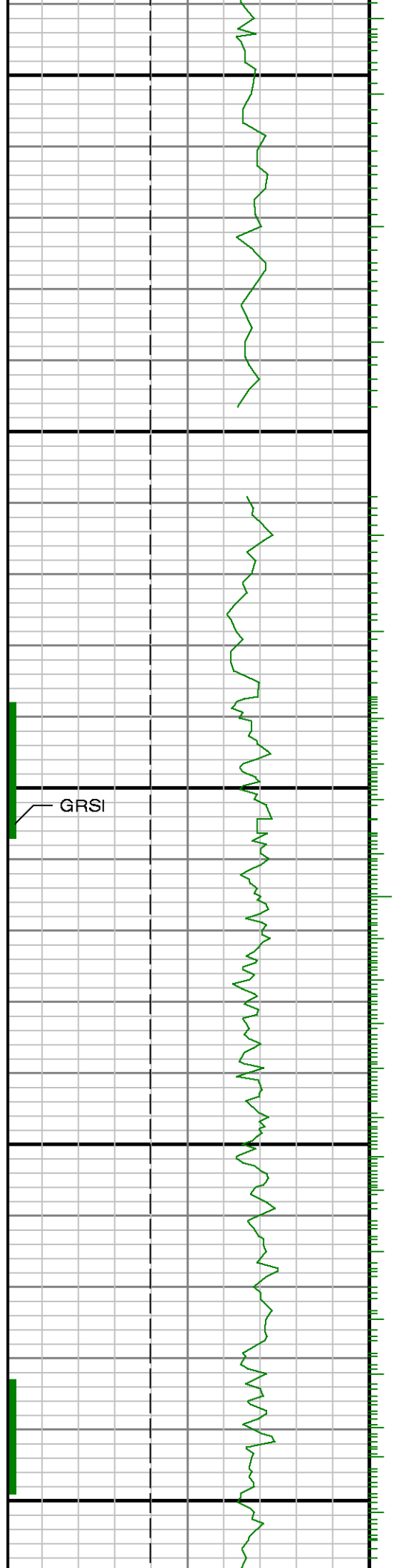
Run 2 <> Run 3

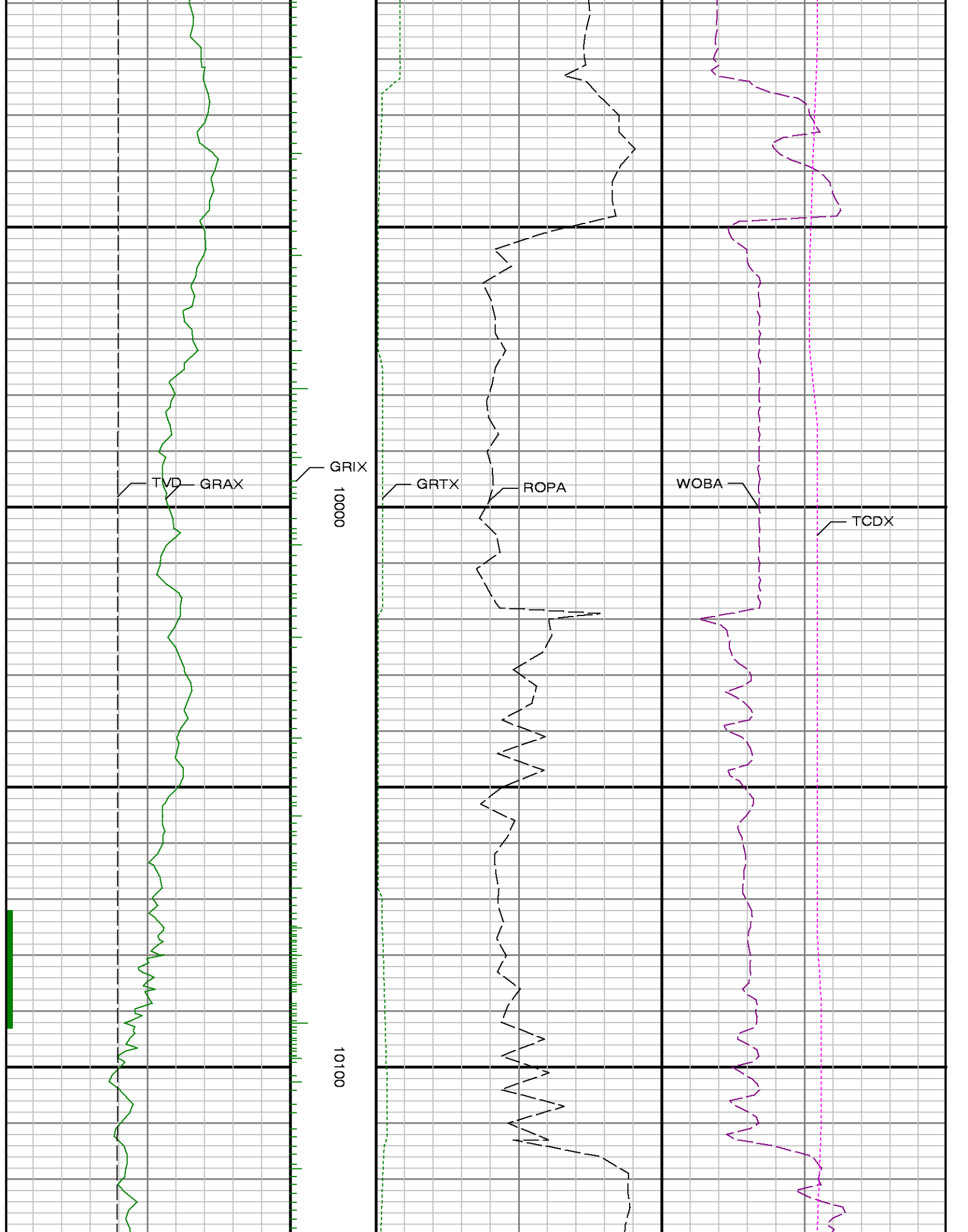
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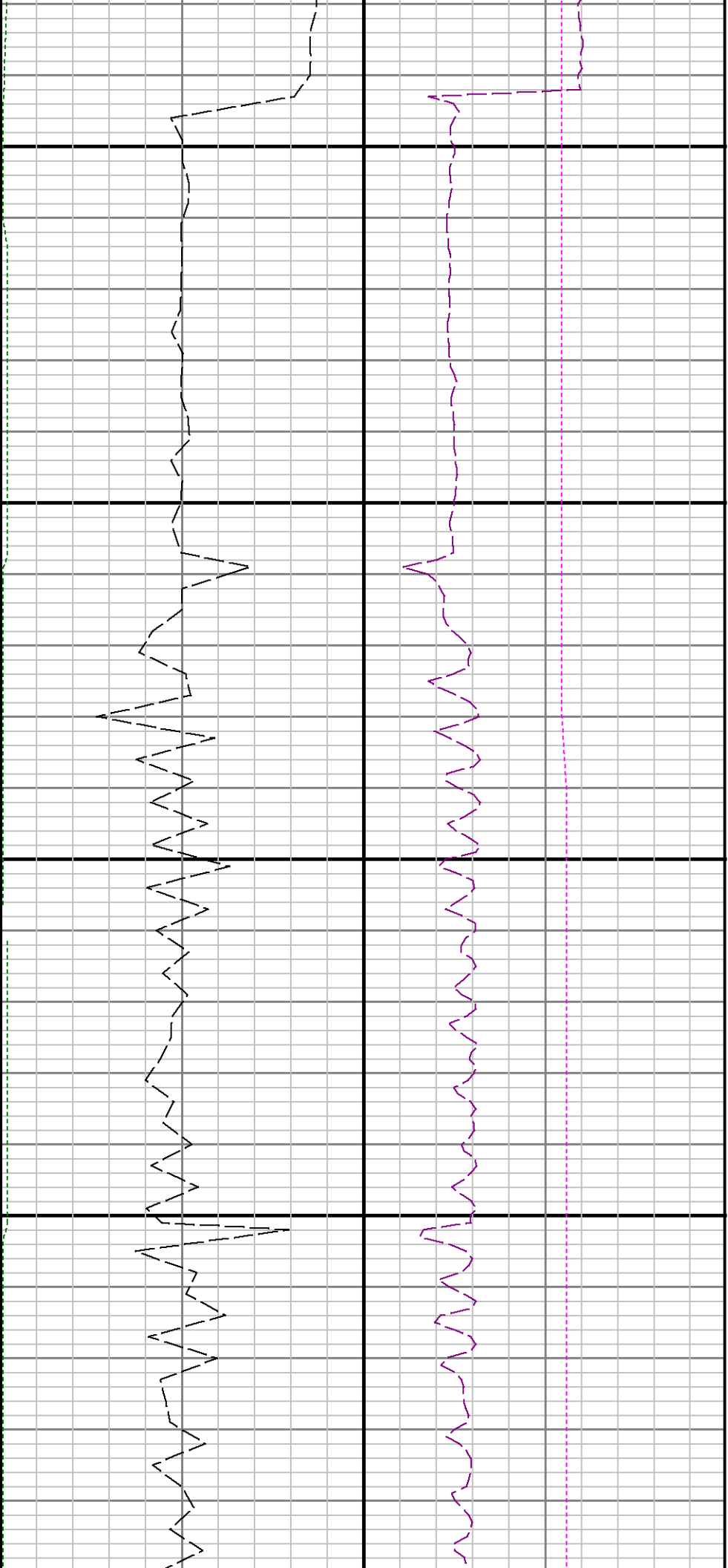
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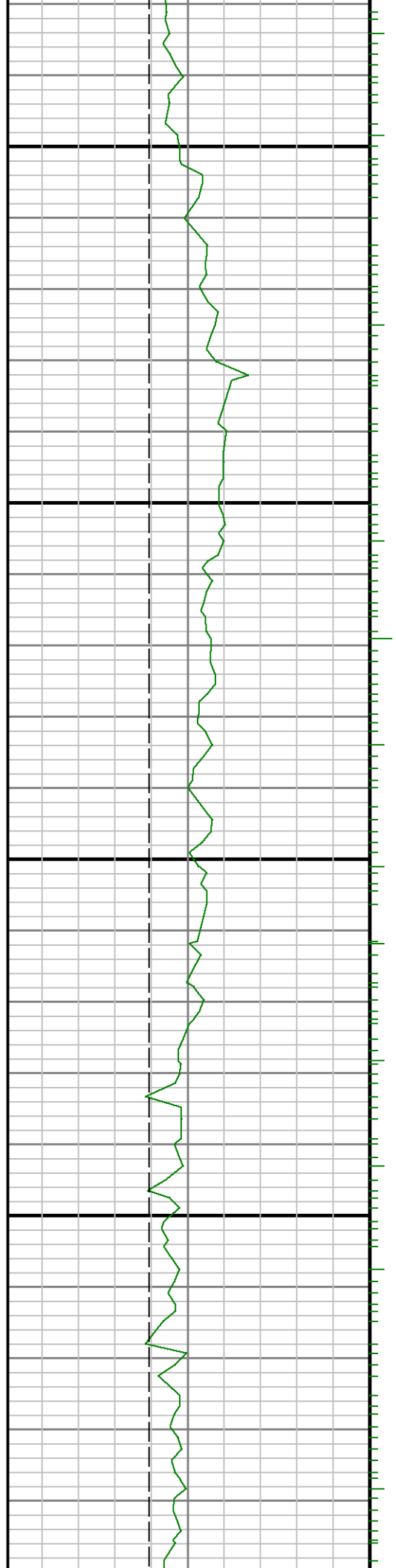


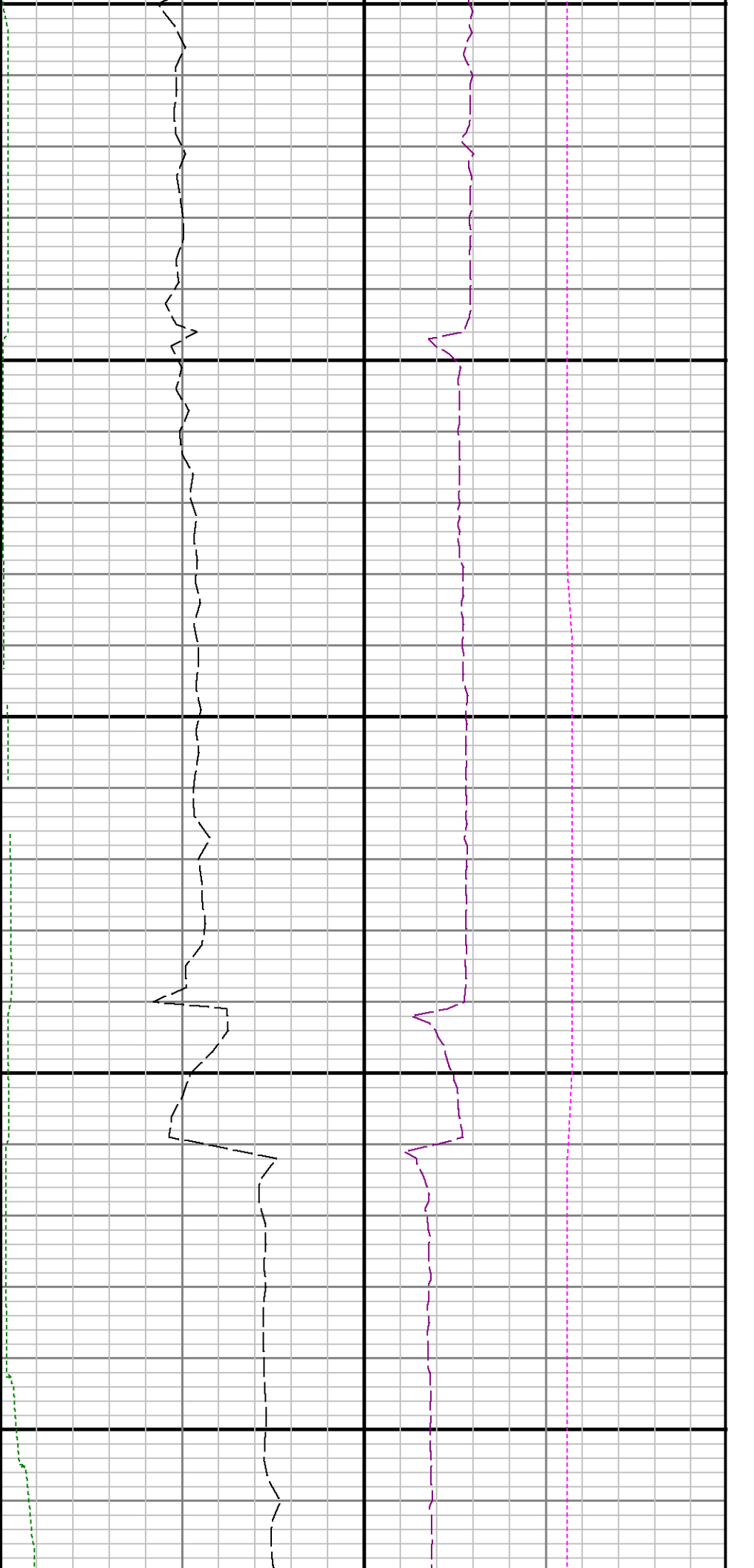




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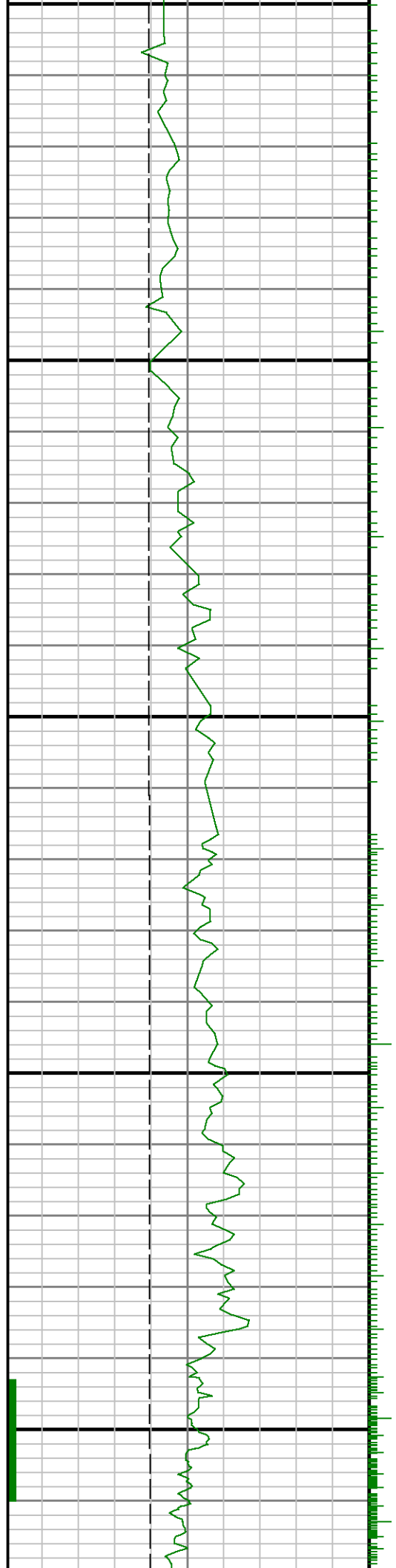
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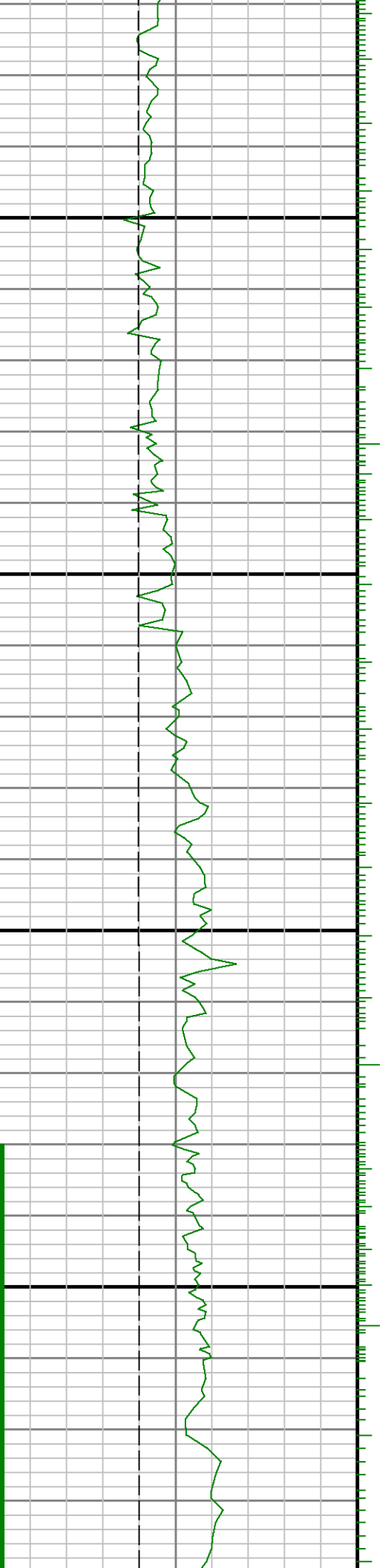
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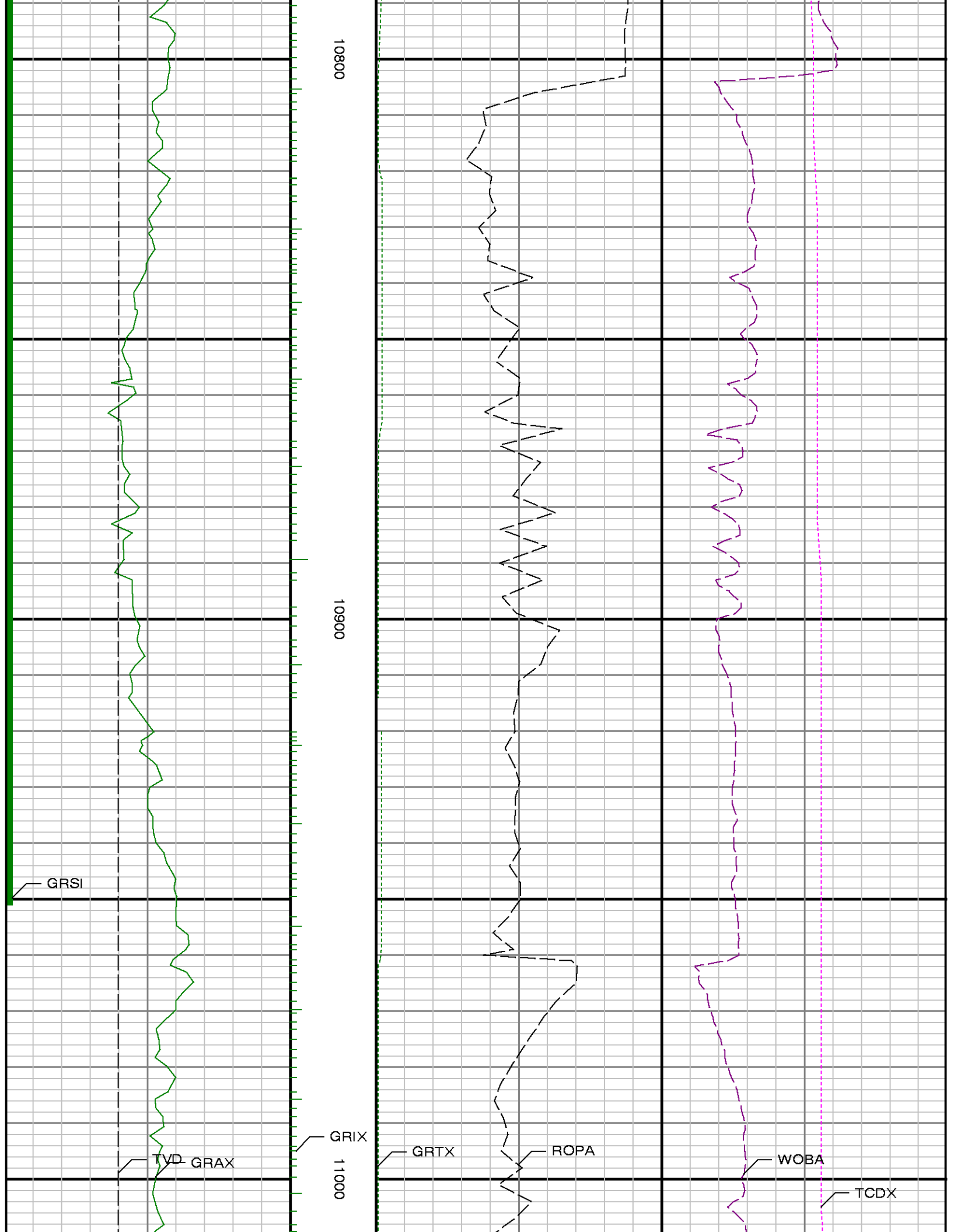


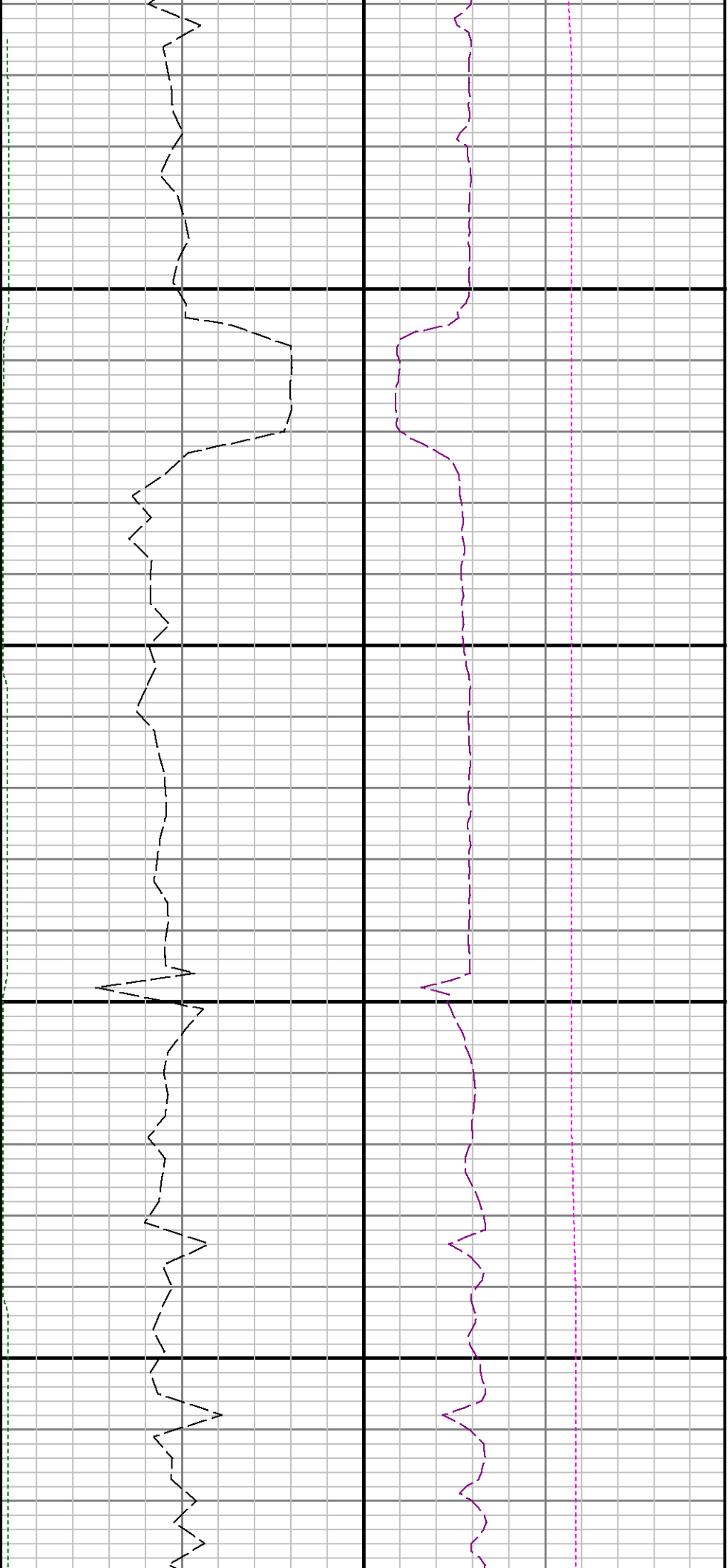


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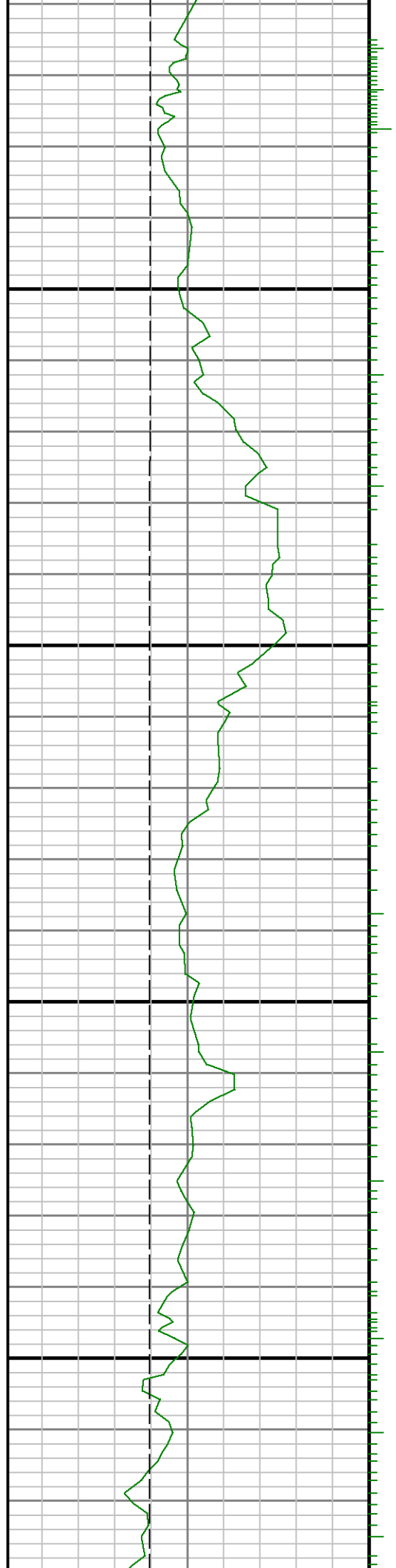






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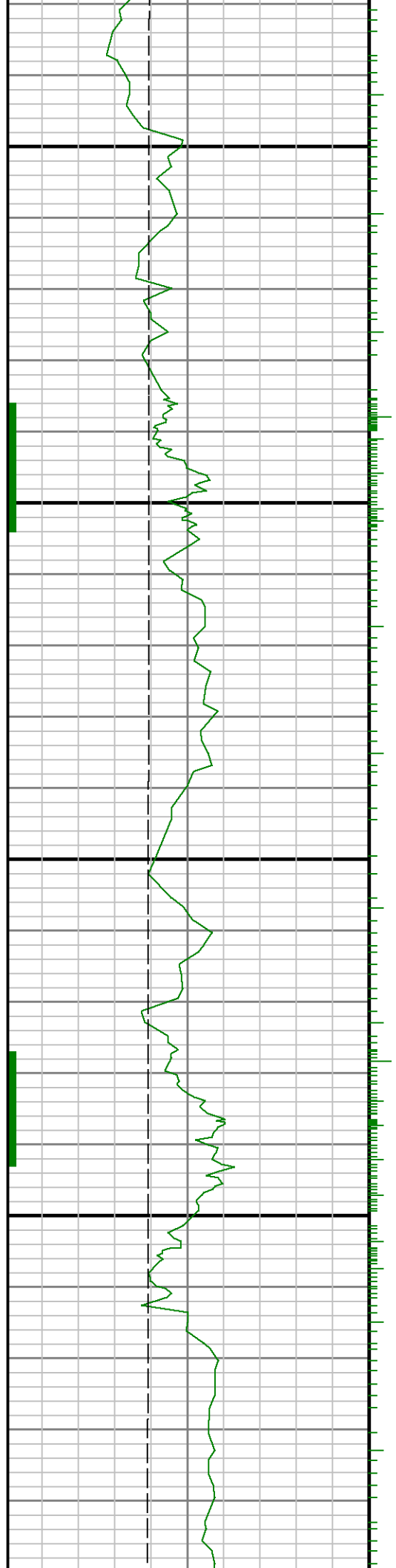
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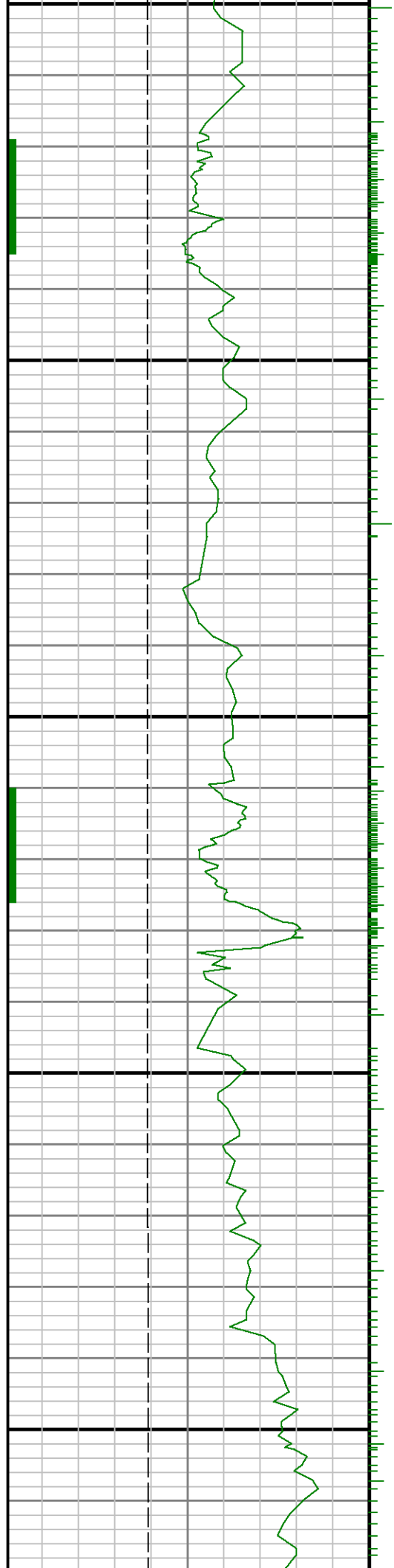
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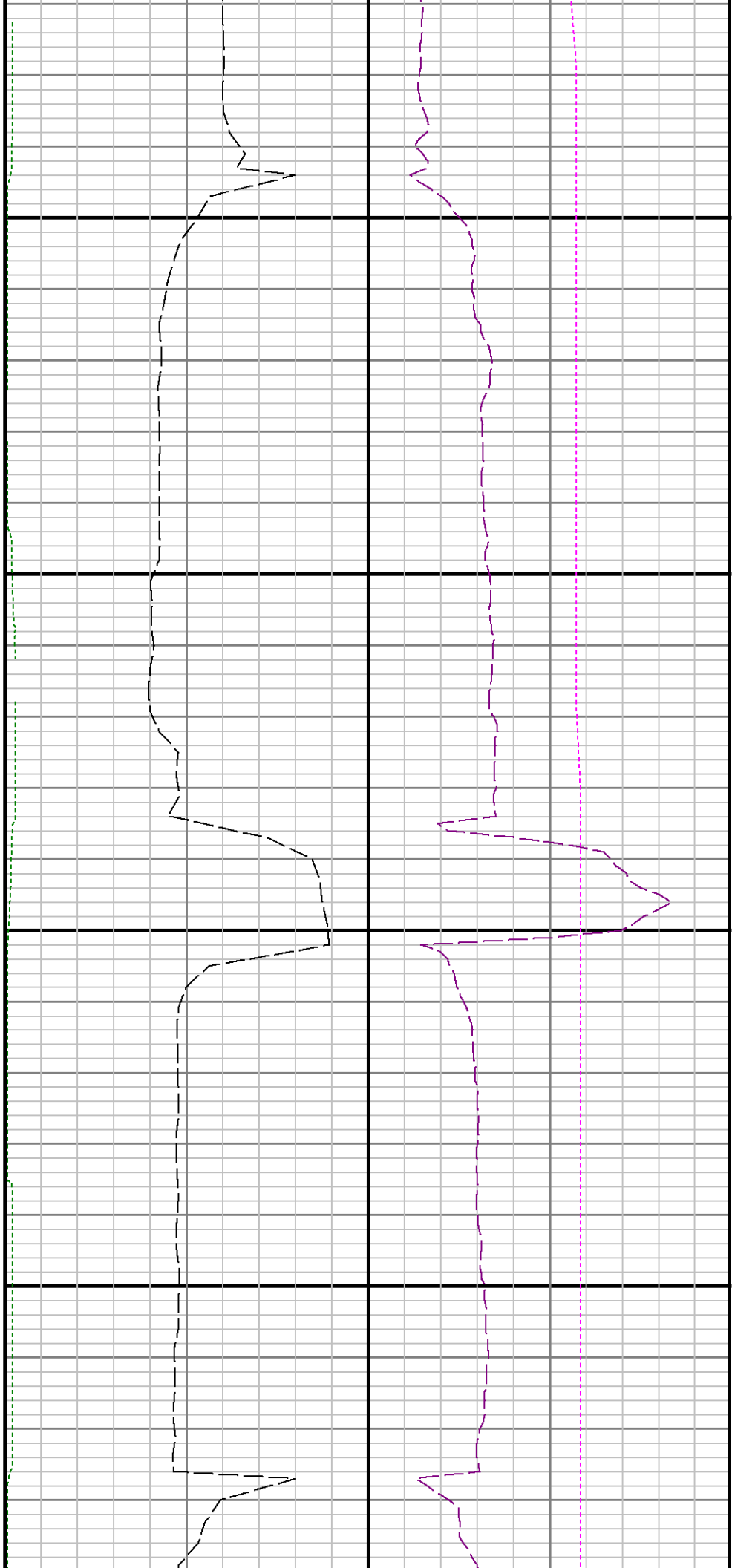




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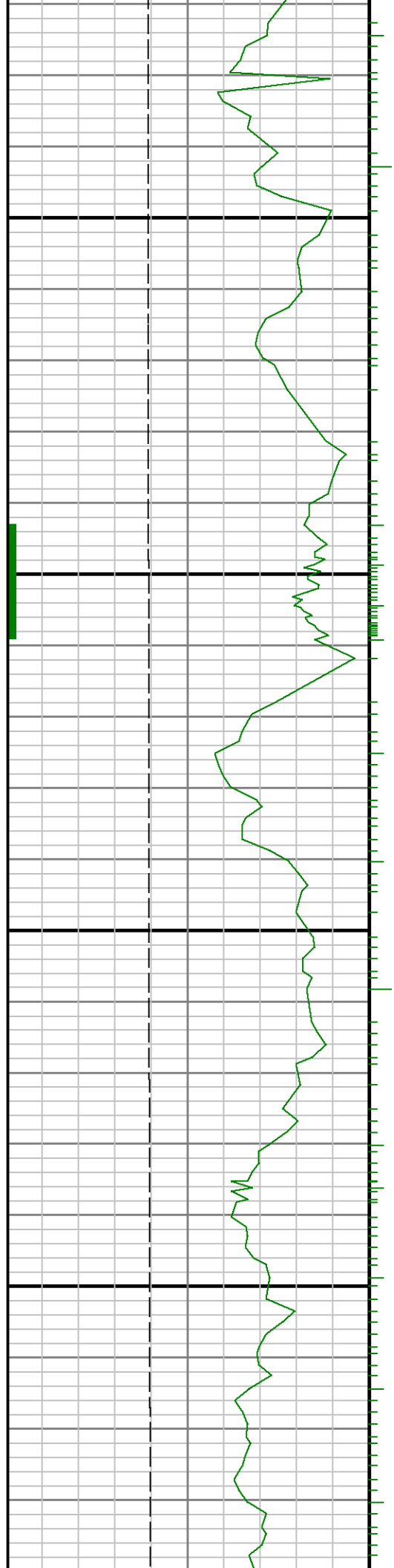
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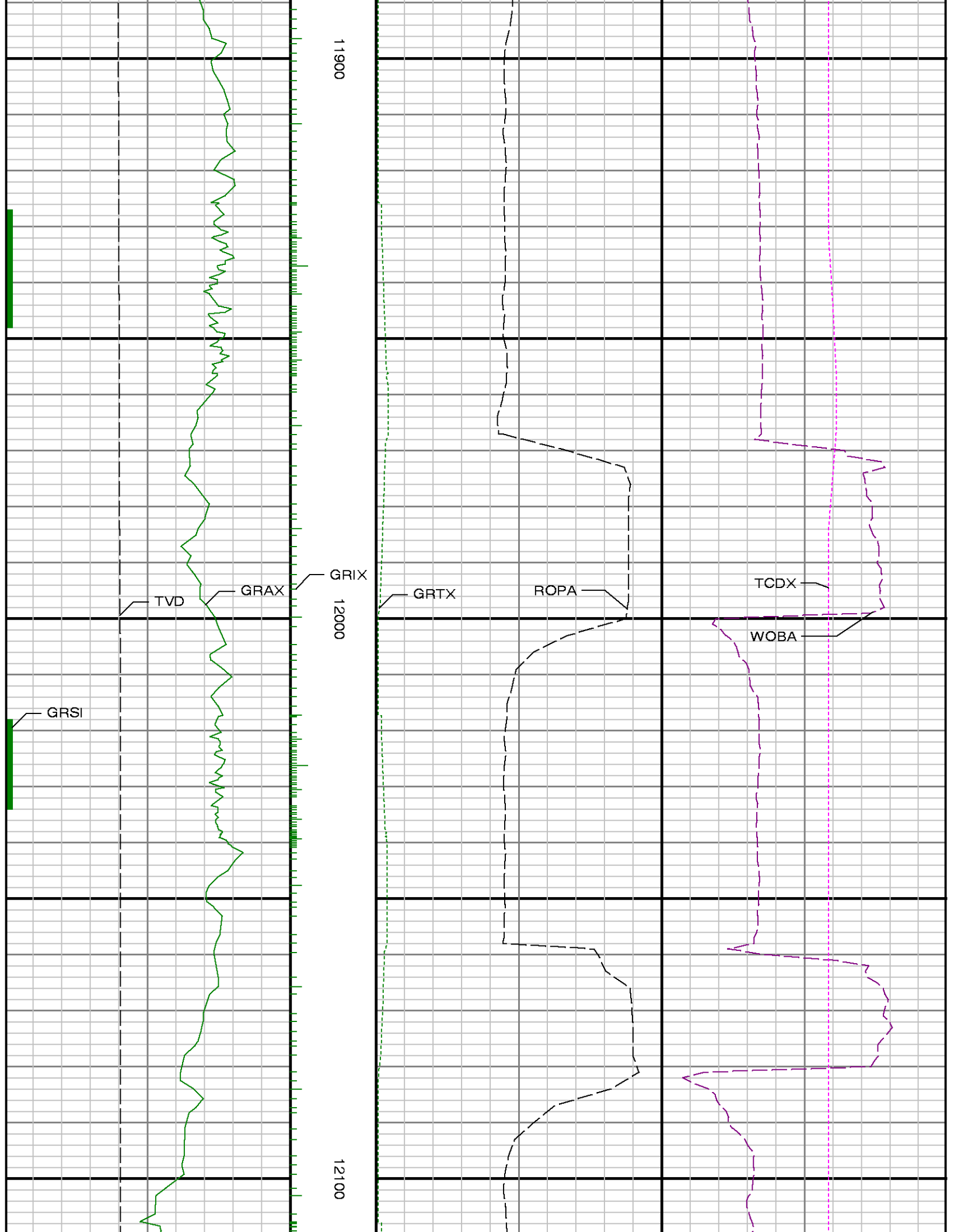




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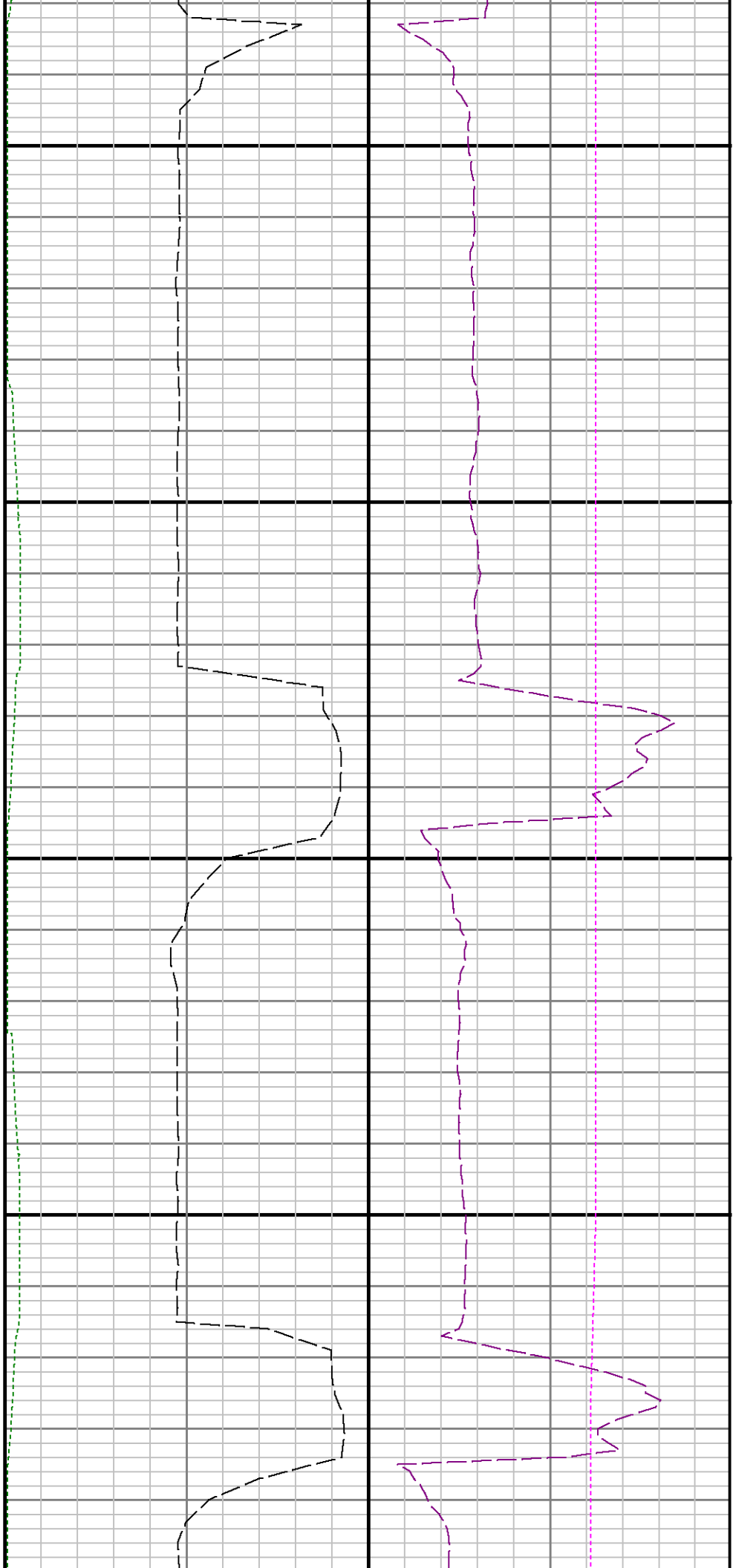






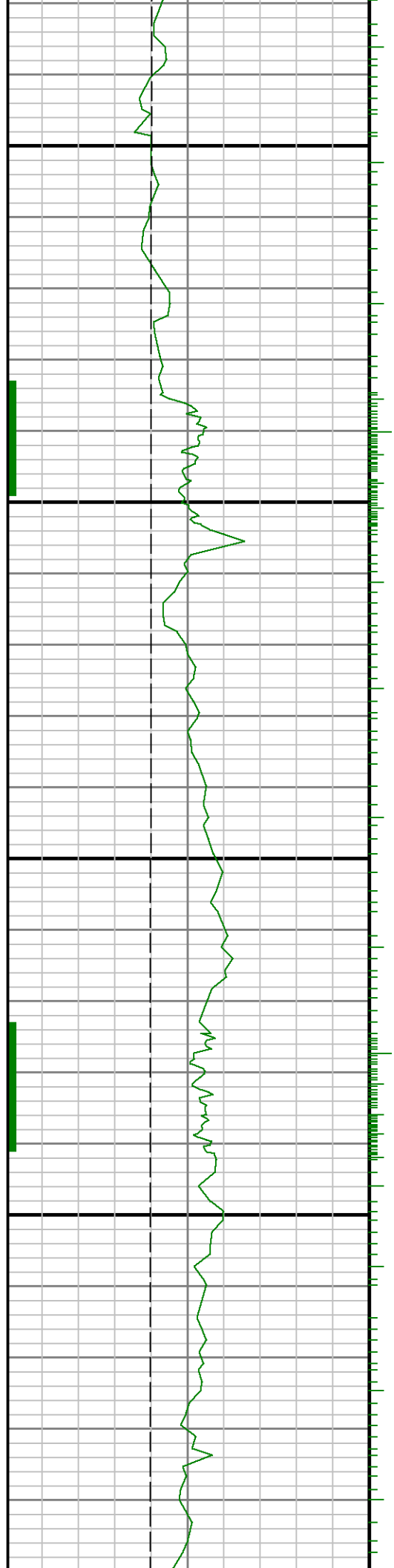
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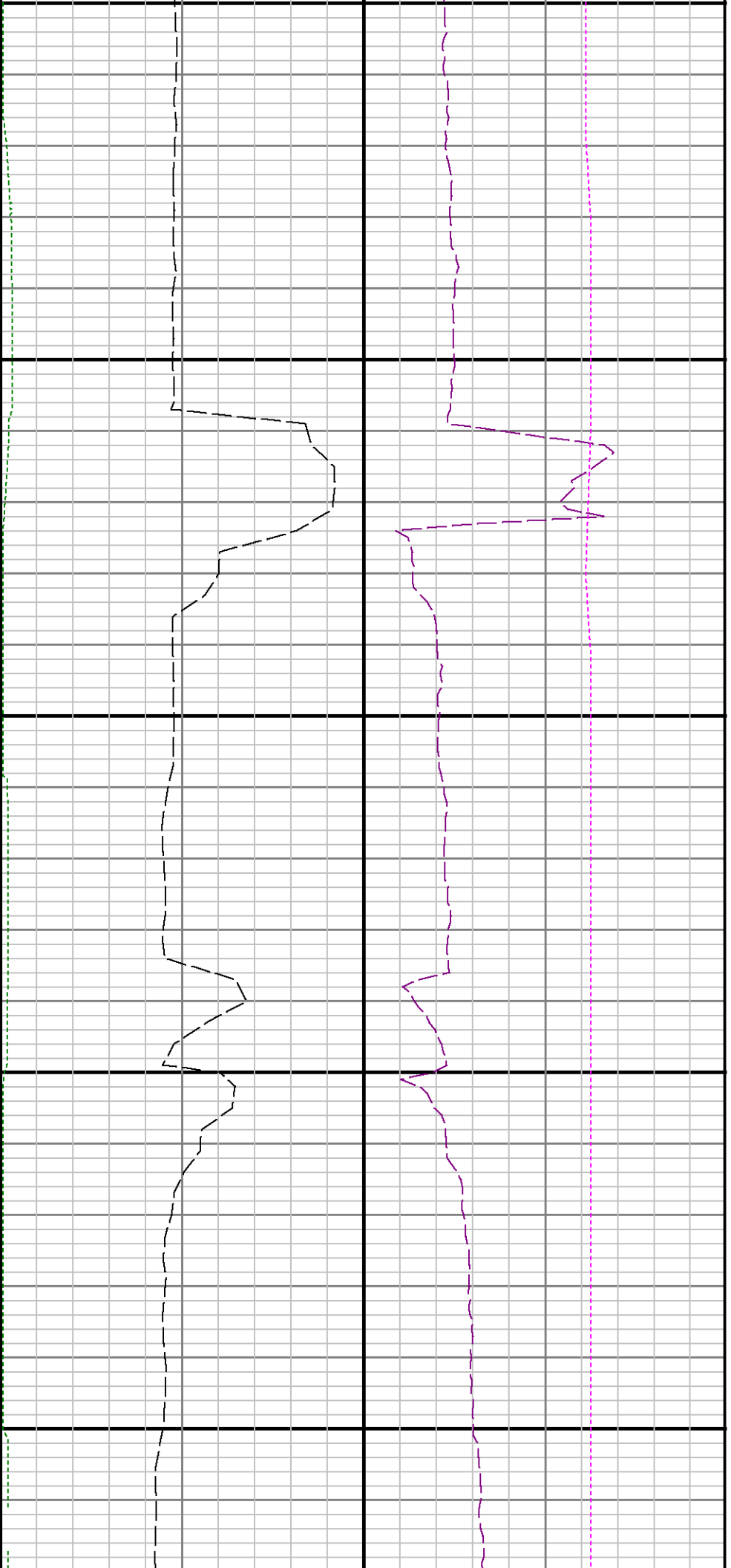
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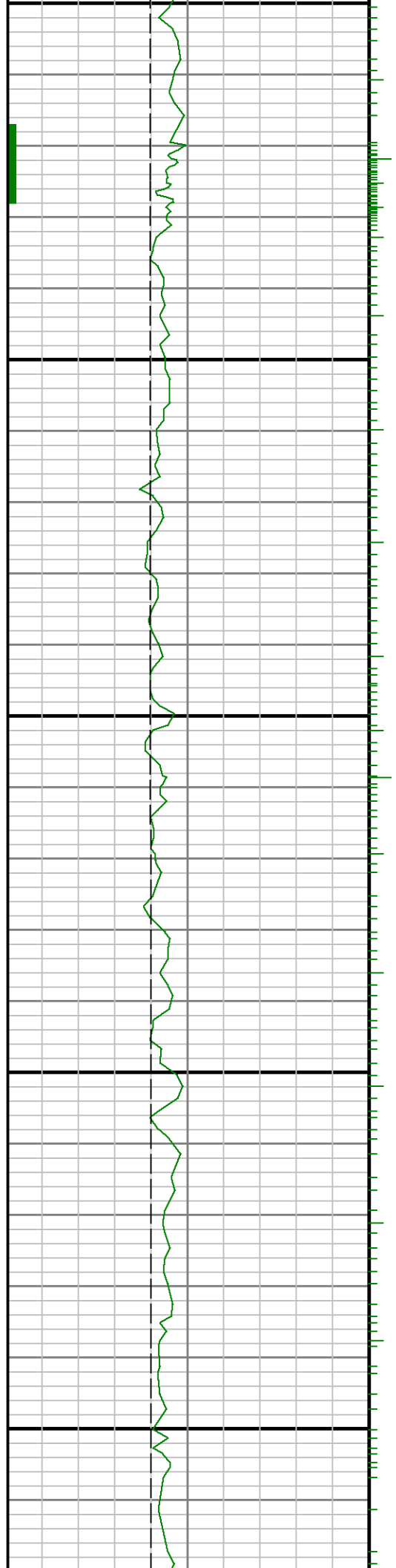
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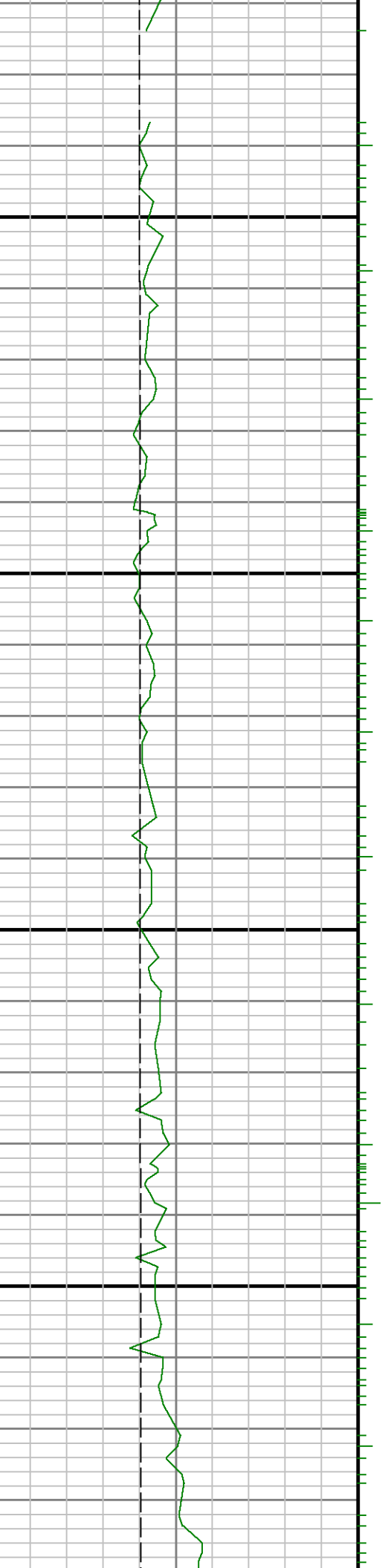
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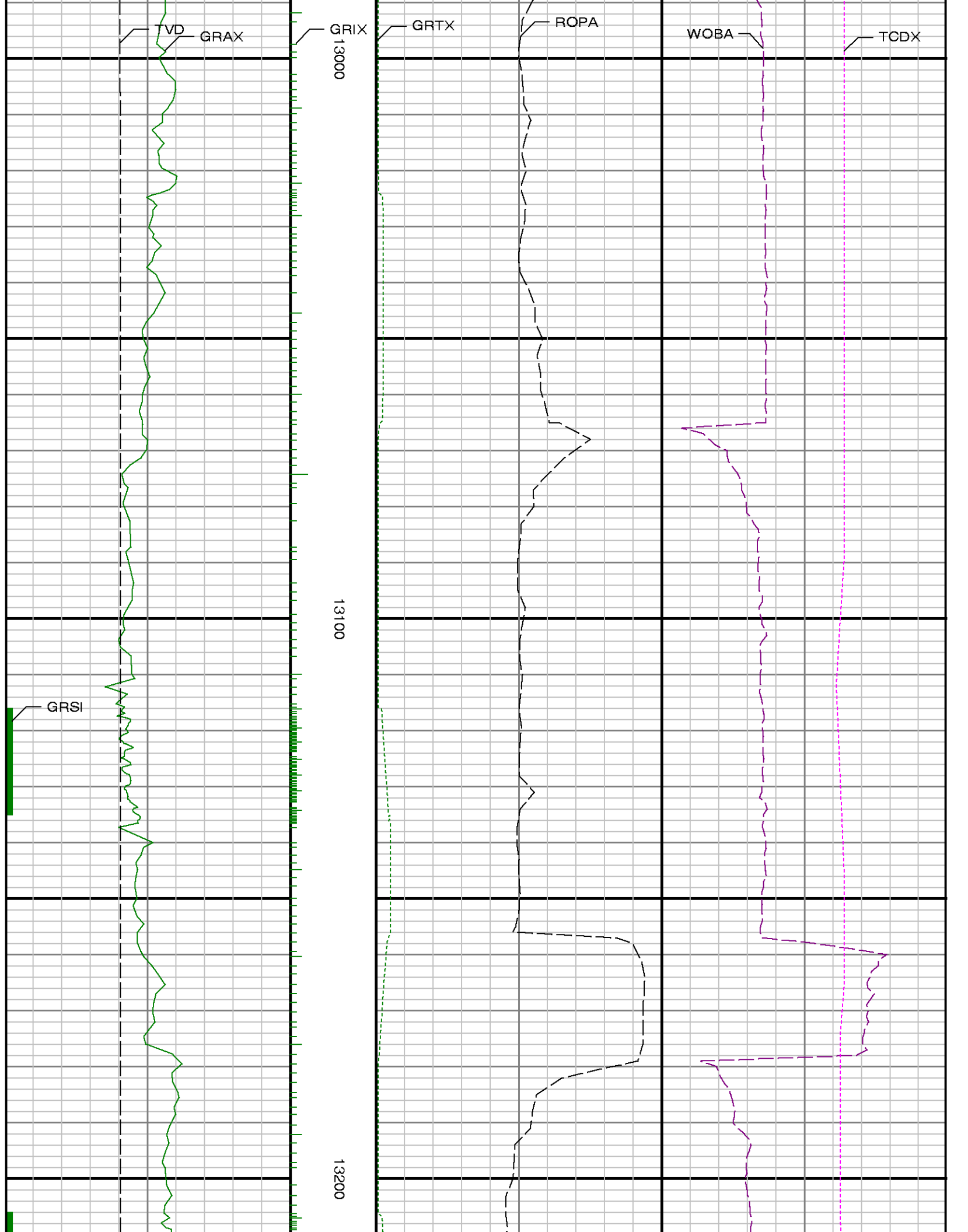


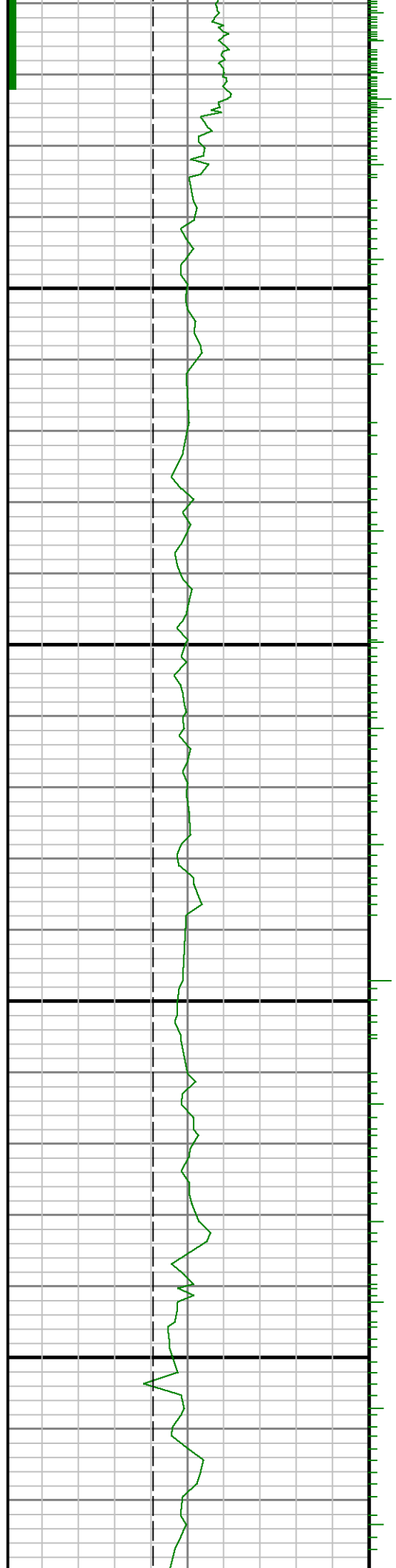
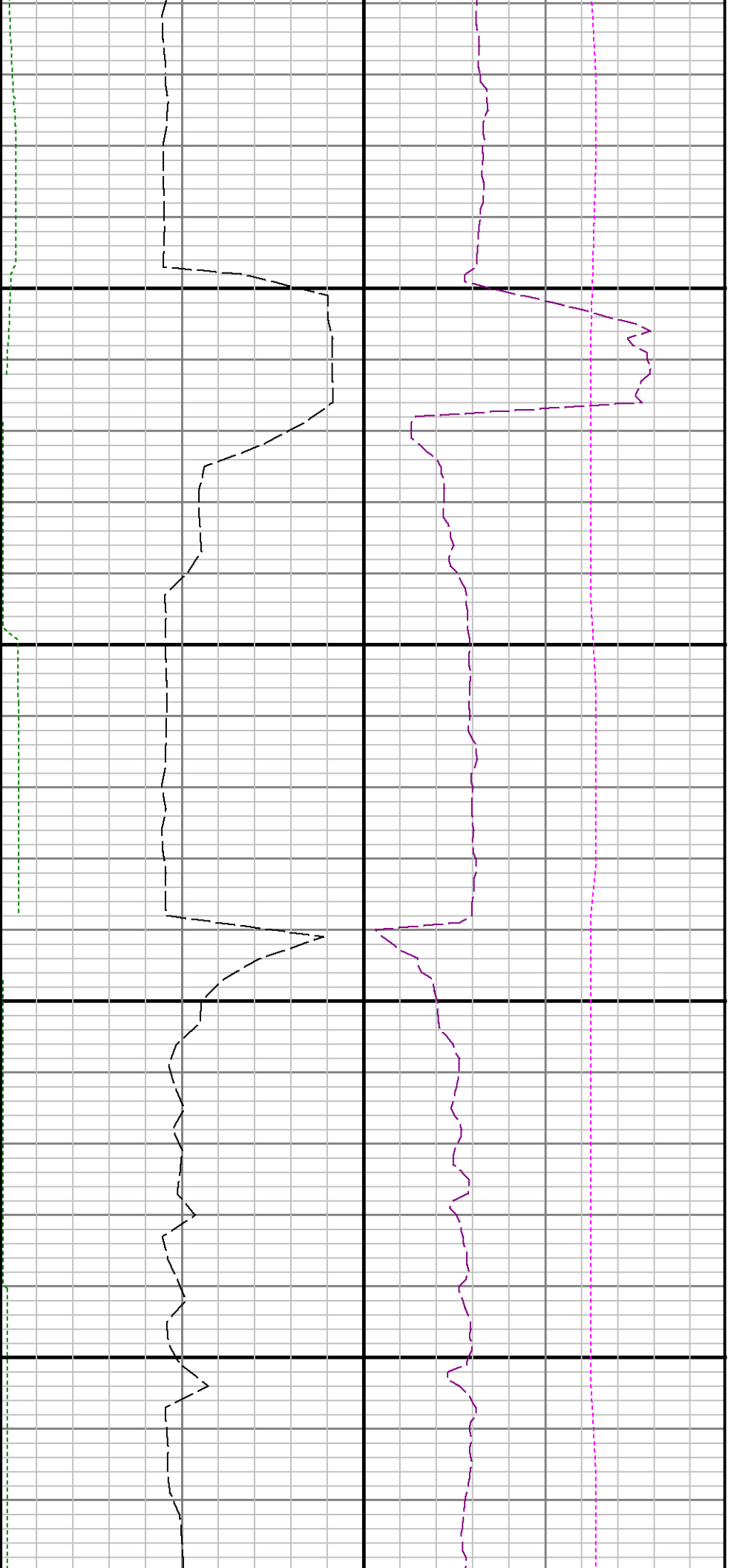


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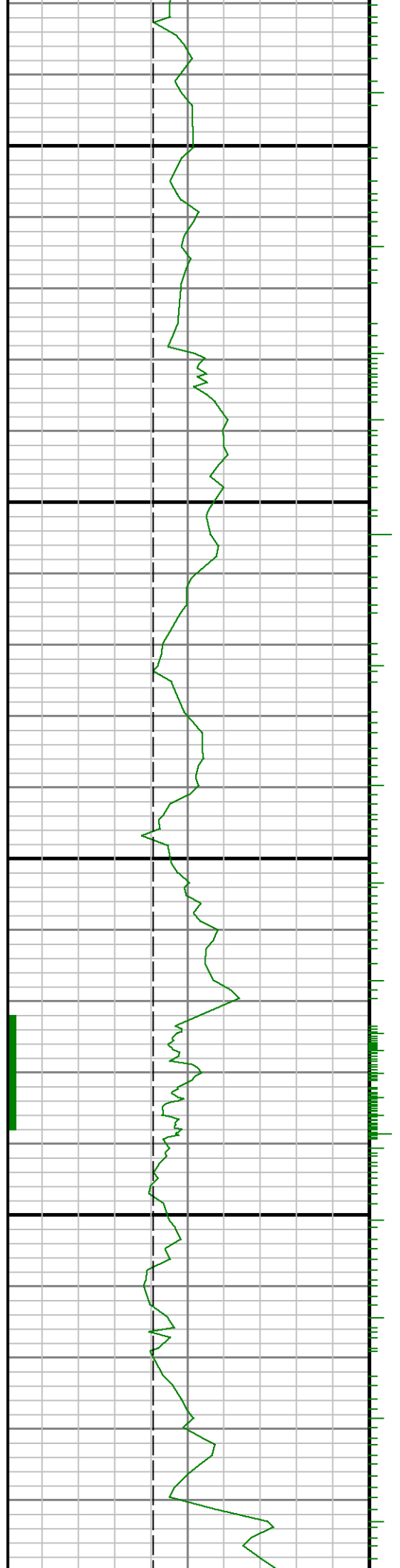


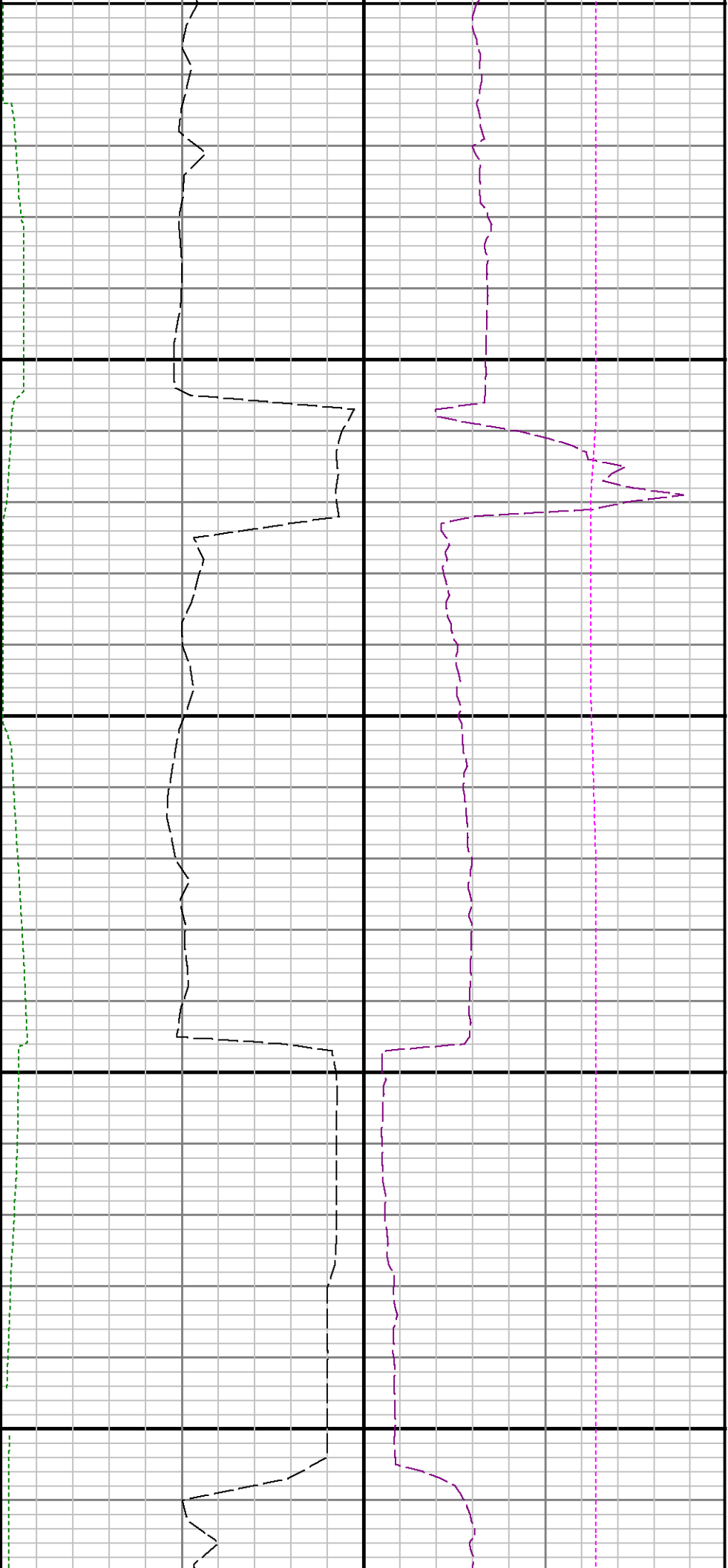




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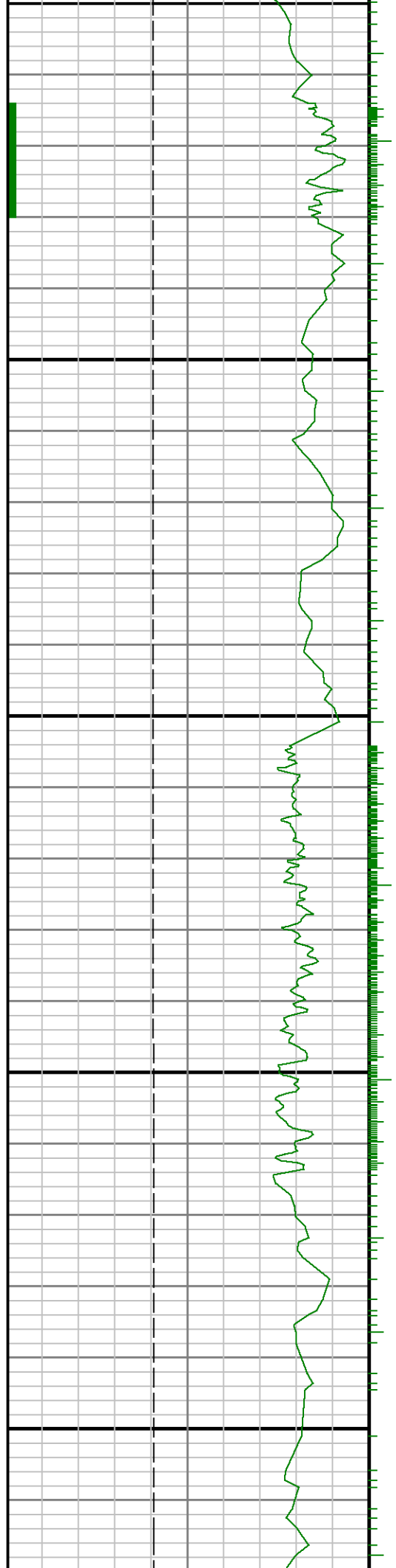
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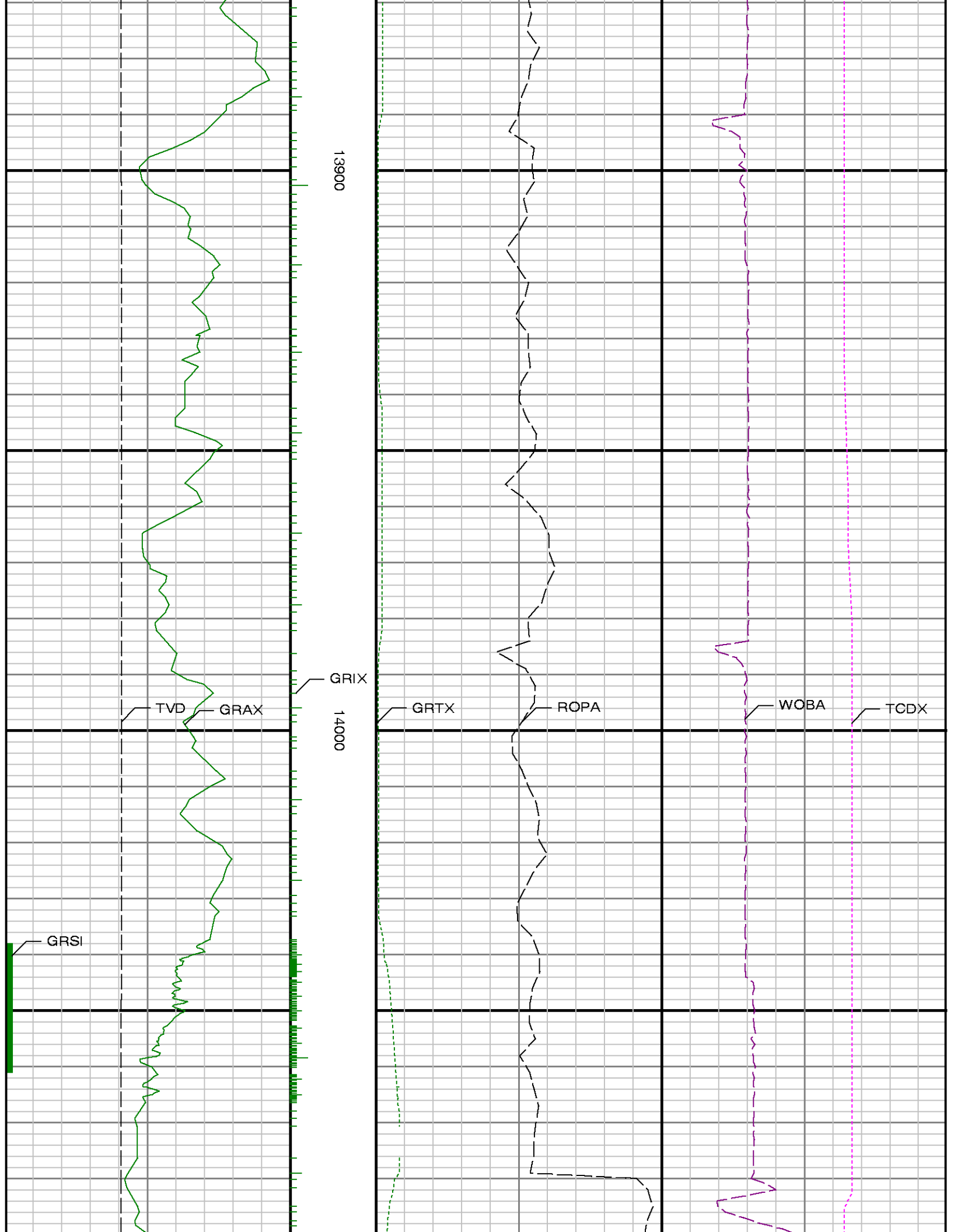


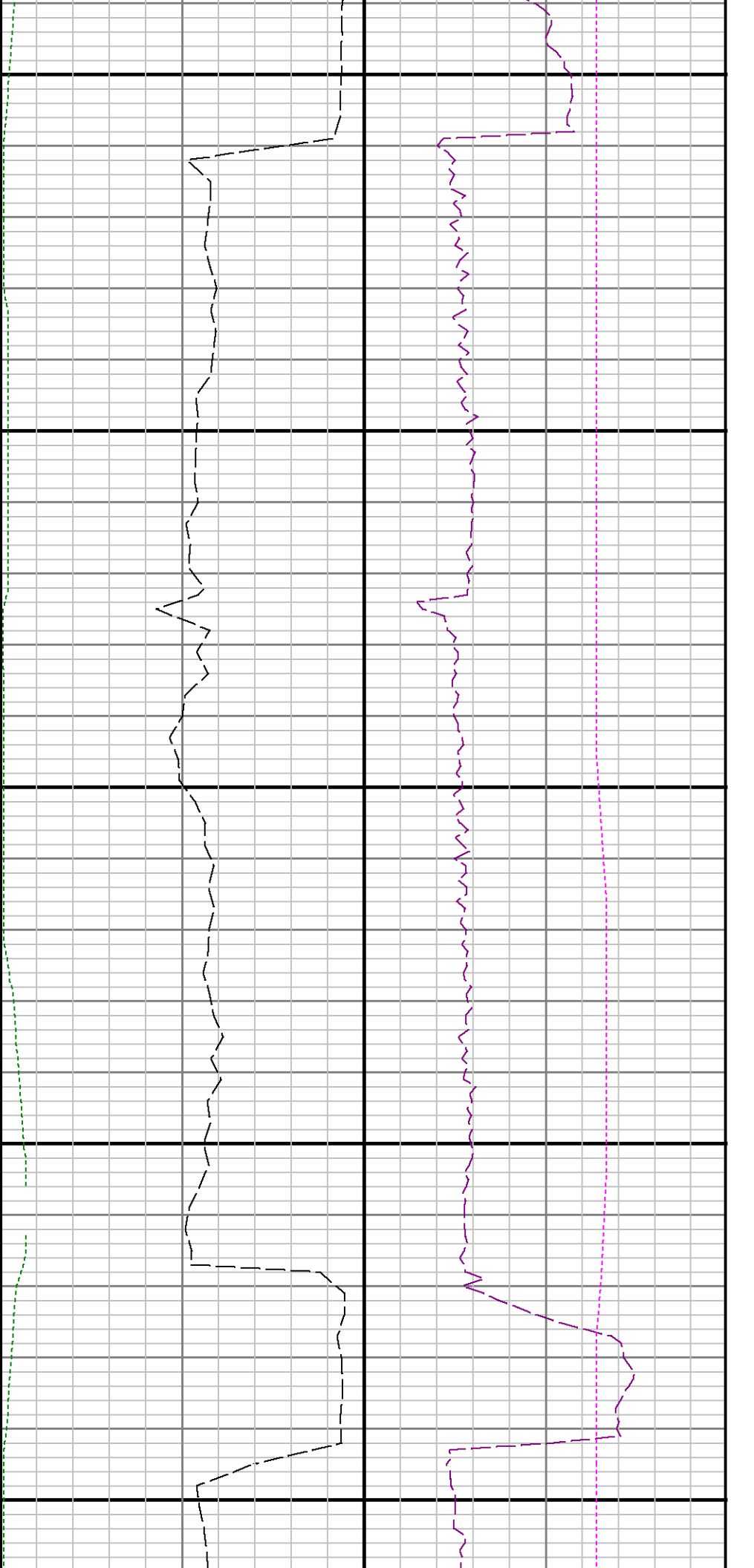


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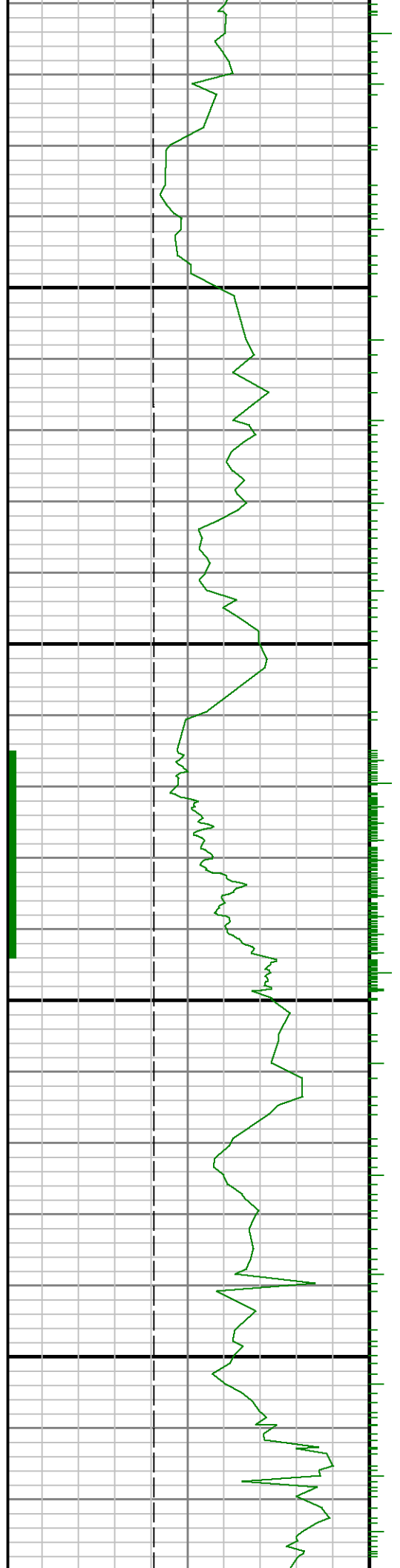
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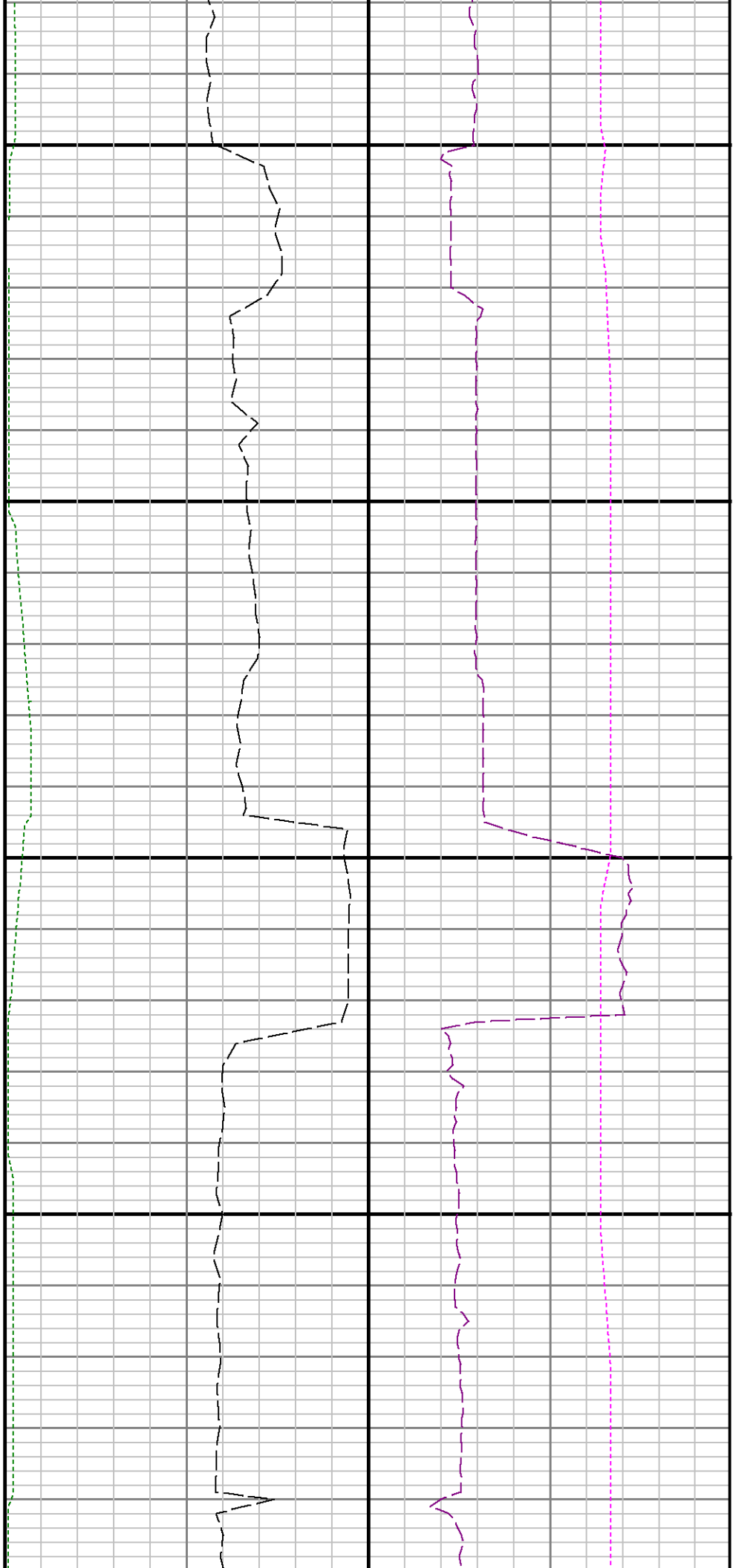
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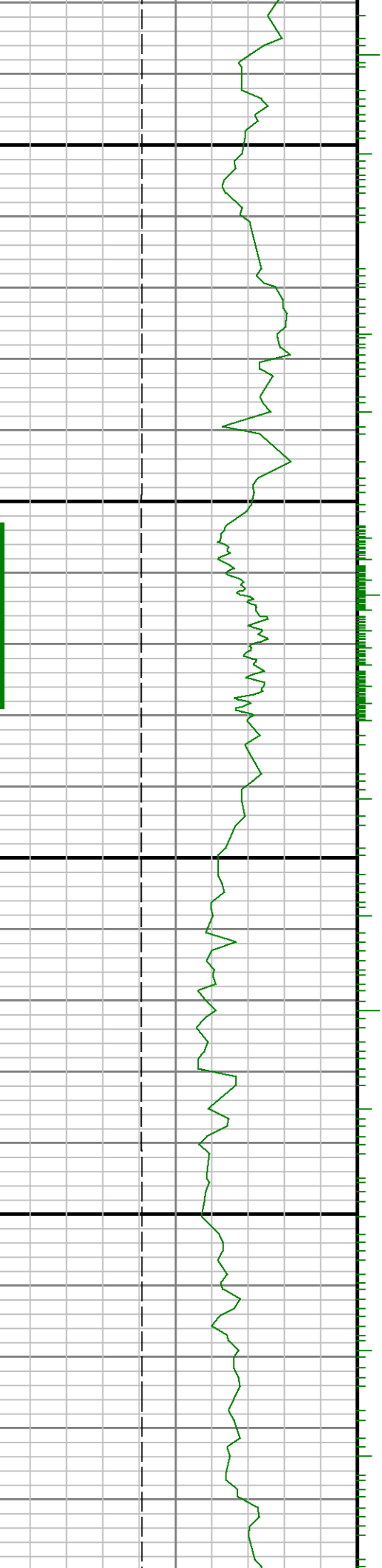
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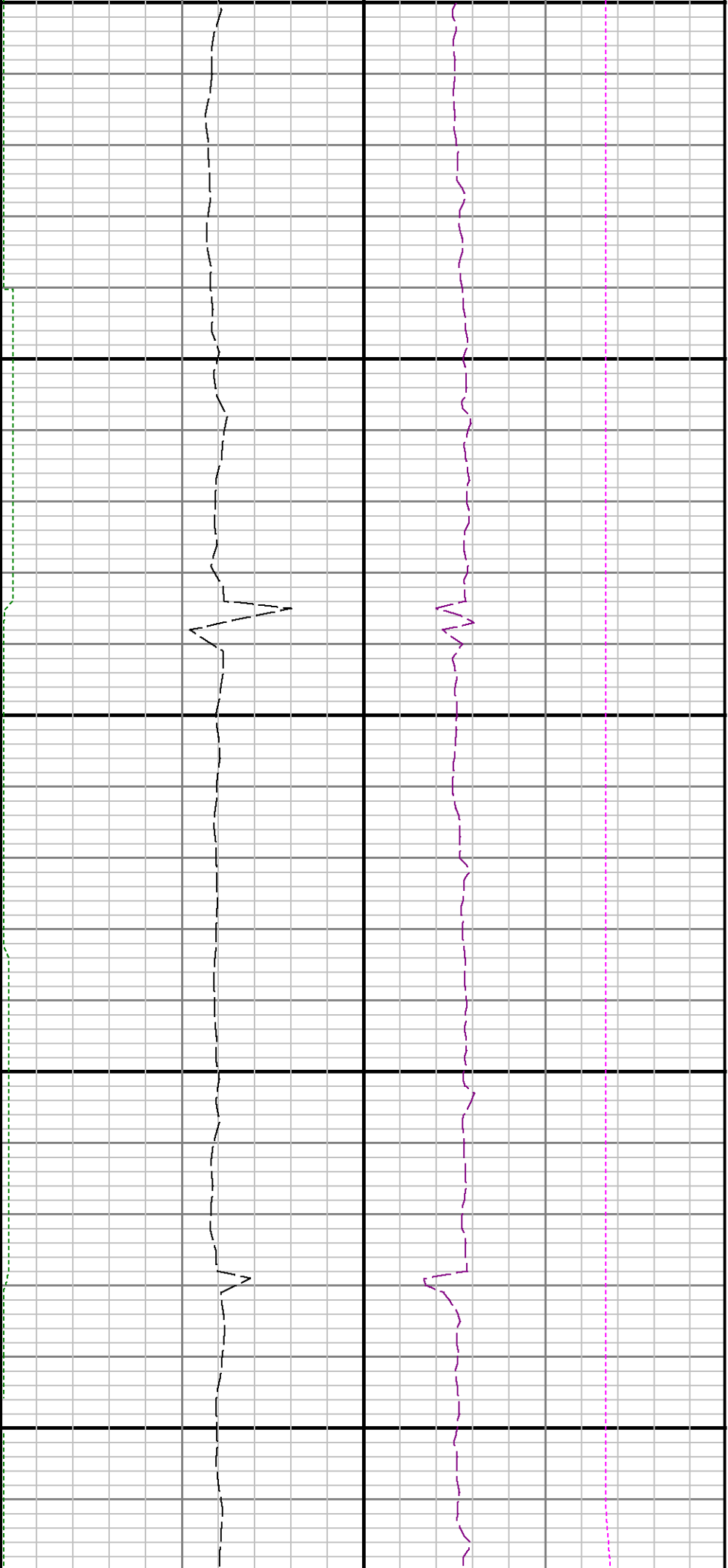




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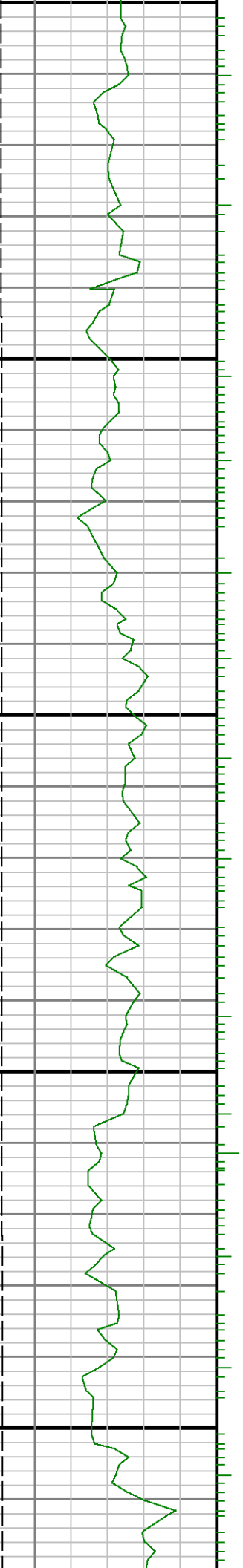
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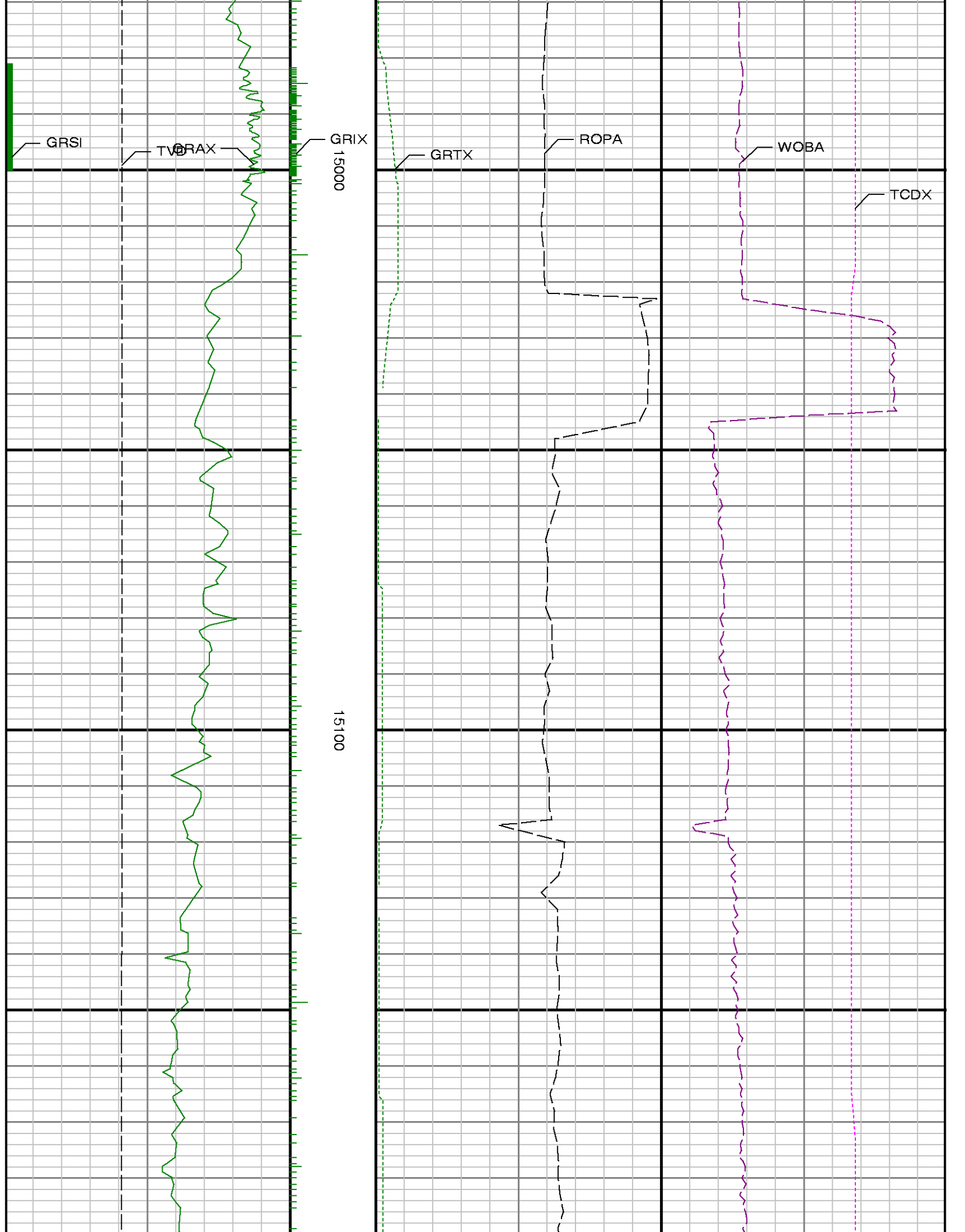


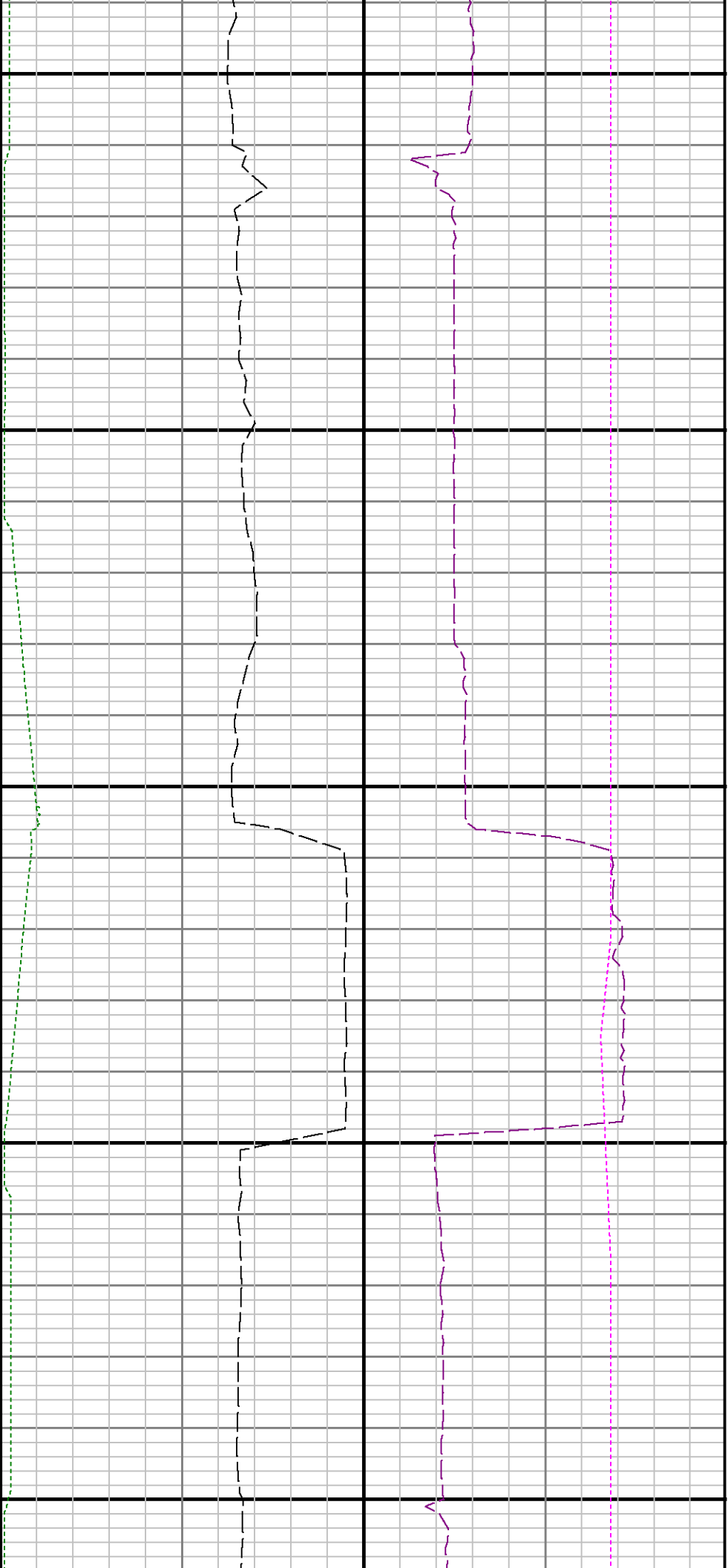


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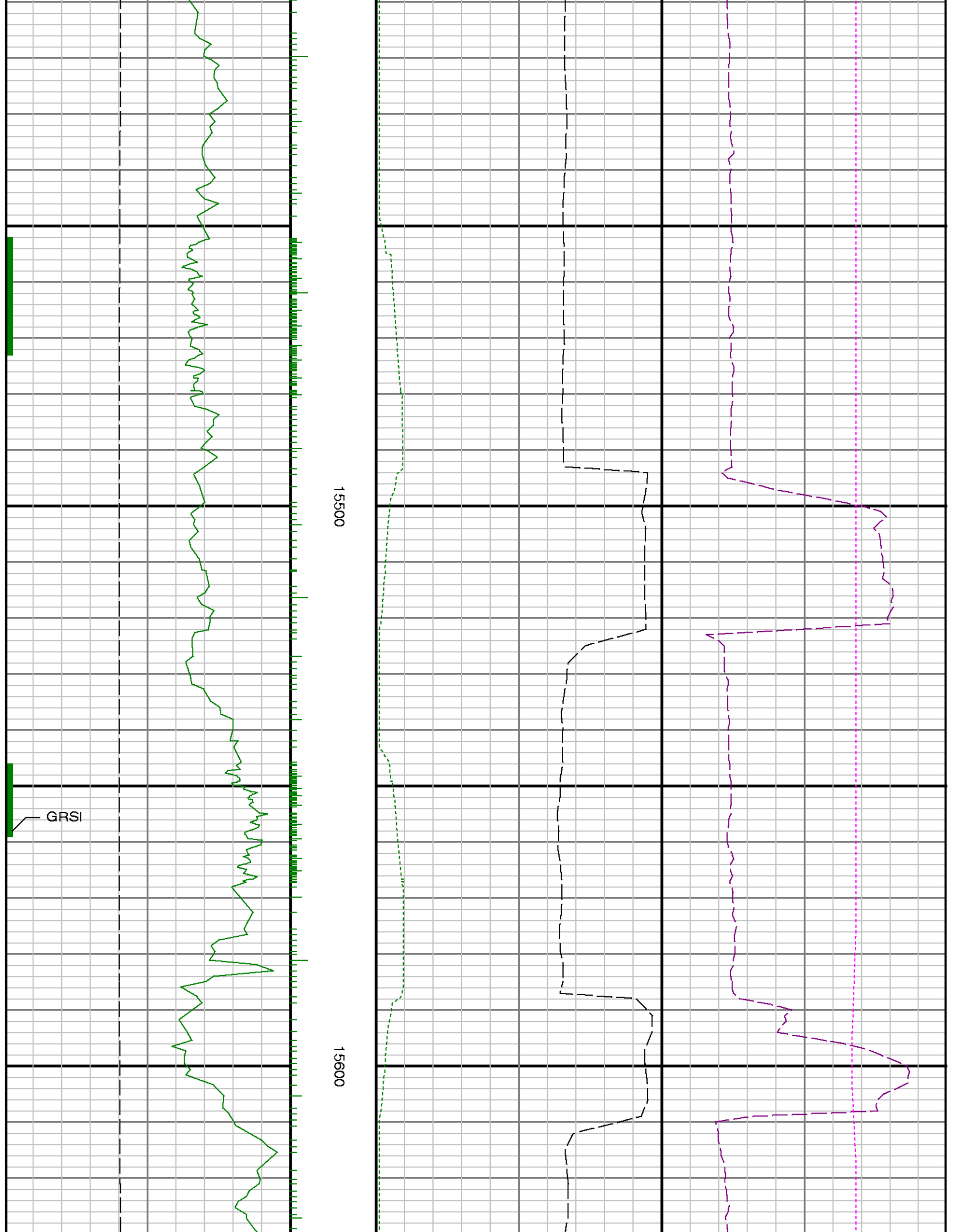


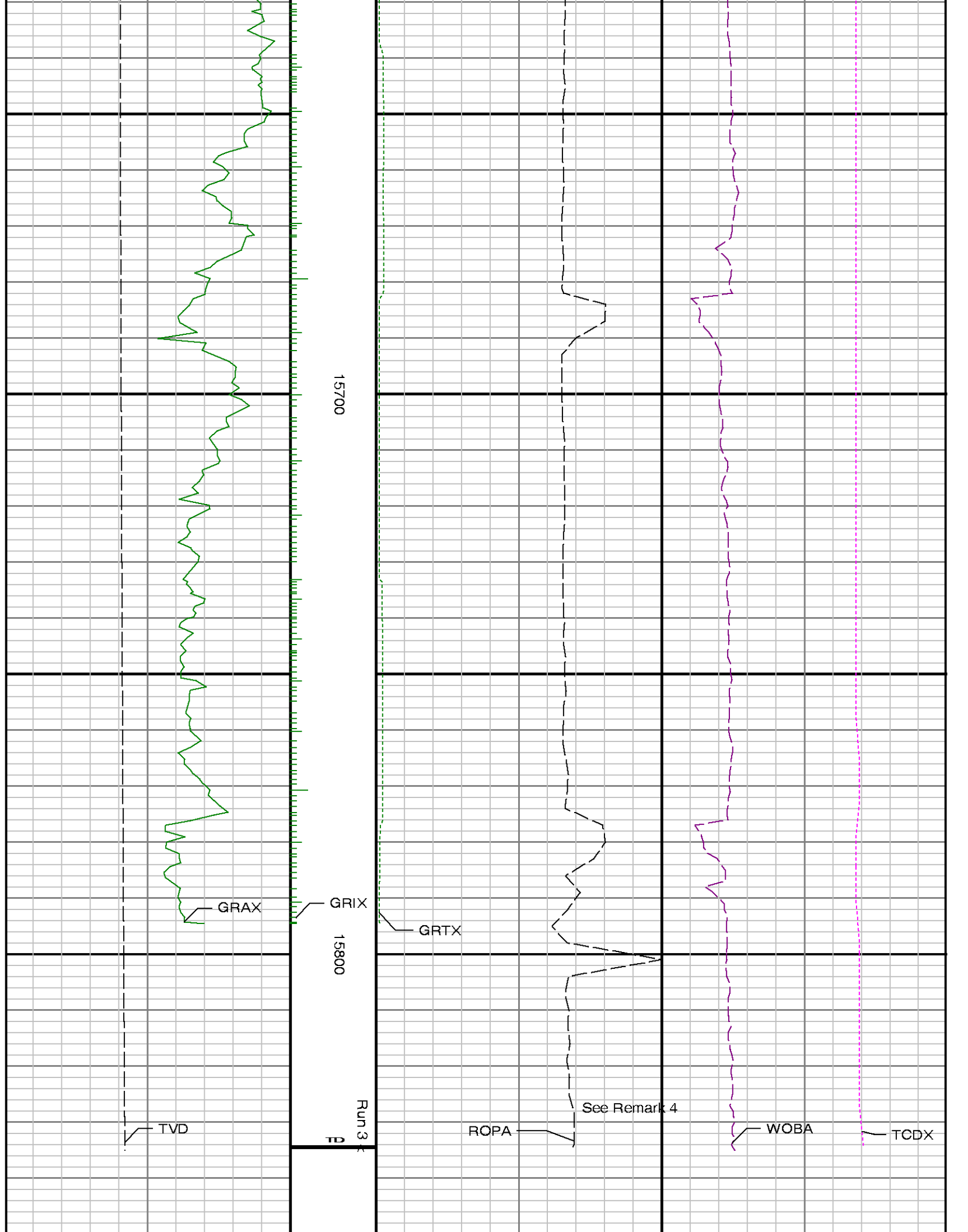


15200

15300

15400





<div>Gamma Ray Apparent 0.5 ft Avg GRAX</div> <div>0200</div> <div>API</div> <div>True Vertical Depth TVD</div> <div>60005000</div> <div>ft</div>	<div>MD feet 1:240</div>	<div>Rate of Penetration 3.0 ft Avg ROPA</div> <div>10000</div> <div>ft/hr</div> <div>Gamma Time Since Drilled GRTX</div> <div>0600</div> <div>min</div>	<div>Surface Weight On Bit 1.0 ft Avg WOBA</div> <div>0100</div> <div>klbf</div> <div>Downhole Temperature TCDX</div> <div>100300</div> <div>degF</div>
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