



Realtime Log

Natural Formation Evaluation  
Gamma Ray

Scale:	Company: Bonanza Creek Oil Company
1:240	Well: State Antelope T-28-21XRLNB
Measure Depth	Field: Weld County
	County: Weld State: Colorado

Status:	Final Print	Surface Location:	Latitude: 40° 21' 51.804" N Longitude: 104° 19' 26.040" W	Other Services:
API Number:	05-123-36879-0	SEC: 28	TWN: 5N	RGE: 62W
Permanent Datum (P.D.):	Ground Level	Elevation:	4627.00 ft.	Elevations:
Log Measured From:	Rig Floor	17.00 ft.	Above P.D.	N/A
Depth Reference:	Driller's Depth		GL:	4644.00 ft. 4627.00 ft.

Interval Logged	Dates	Magnetic Field Reference
Top: 5600.0 ft.	Date From: 15/Jun/13	Dip Angle: 67.00 °
Bottom: 15670.0 ft.	Date To: 26/Jun/13	Total
	Spud Date: 15/Jun/13	Field Strength: 52846.3 nT
		North Correction: 8.42 °

Borehole Record			Casing Record		
Hole Size	From	To	Size	Weight	From
13.500 in.	Surface	467.0 ft.	9.625 in.	36.00 lb/ft	Surface
8.750 in.	467.0 ft.	6592.0 ft.	7.000 in.	26.00 lb/ft	Surface
6.125 in.	6592.0 ft.	15670.0 ft.			

Mud Record			Deviation Record		
Type	From	To	Hole Size	Interval	Inc / Az (Start)
Water Based	Surface	15670.0 ft.	13.500 in.	467.0 ft.	0.0 ° / 0.0 °
			8.750 in.	5494.0 ft.	0.7 ° / 150.5 °
			8.750 in.	631.0 ft.	20.3 ° / 34.6 °
			6.125 in.	9078.0 ft.	89.2 ° / 353.1 °
					90.7 ° / 359.0 °
					/
					/

Acquisition System	Software Version	Other
Advantage	2.20U4	Rig: / Contractor: Code 22 / Code
PATS	6.4.1.34	Job No: 5572992 / 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 (ft.)	Bottom (ft.)	From (ft.)	To (ft.)	Start	End	
2	2	2	8.750	PDC	1.500	Steerable	5600.0	5917.0	467.0	5961.0	16/Jun/2013 16:00	18/Jun/2013 5:30	24.9
3	3	3	8.750	PDC	4.000	Steerable	5920.0	6551.0	5961.0	6592.0	18/Jun/2013 6:30	19/Jun/2013 6:00	7.4
4	4	4	6.125	PDC	6.000	Steerable	6540.0	15618.0	6592.0	15670.0	19/Jun/2013 23:45	28/Jun/2013 5:30	120.6

Crew								
Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Brent Cass	15 Jun 2013	29 Jun 2013	Gregory Wheeler Jr.	15 Jun 2013	20 Jun 2013	Keegan Lea	20 Jun 2013	24 Jun 2013
Octave Parfait	24 Jun 2013	29 Jun 2013	Adam Merha	15 Jun 2013	29 Jun 2013	Darell Smith	15 Jun 2013	29 Jun 2013

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+  (%)
17 June 2013	2	5335.0	Water Based Mud	9.7	22	9.0	7.2	N/A	Active Mud Pits	700	N/A
18 Jun 2013	3	6529.0	Water Based Mud	9.6	18	8.5	4.8	N/A	Active Mud Pits	20	N/A
24 June 2013	4	13283.0	Water Based Mud	9.4	5	8.0	8.0	N/A	Active Mud Pits	1750	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent 0.5 ft avg	API
GRIX	Gamma Ray Data Density	Points
GRSI	Gamma Ray Slide 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  (m.)	Max O.D.  (in.)	Min I.D.  (in.)
2	DIR	12662925	Directional	46.86	6.940	3.250
2	SRIG	12376063	Gamma	43.49	6.940	3.250
3	DIR	12662925	Directional	43.59	6.940	3.250
3	SRIG	12376063	Gamma	40.22	6.940	3.250
4	DIR	12813115	Directional	54.60	4.875	2.625
4	SRIG	10595781	Gamma	51.22	4.875	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 (VSS, Directional) behind an 13.5 inch bit and steerable assembly from 0 to 467 ft MD (0 to 467 ft TVD).
2.Baker Hughes INTEQ run 2 utilized 6 3/4 inch NaviGamma Services (VSS, Directional) behind an 8 3/4 inch bit and steerable assembly from 467 to 5961 ft MD (467 to 5900.65 ft TVD).
3.Baker Hughes INTEQ run 3 utilized 6 3/4 inch NaviGamma Services (VSS, Gamma Ray, Directional) behind an 8 3/4 inch bit and steerable assembly from 5961 to 6592 ft MD (5727.94 to 6278.57 ft TVD).
4.Baker Hughes INTEQ run 4 utilized 6 3/4 inch NaviGamma Services (VSS, Gamma Ray, Directional) behind an 8 3/4 inch bit and steerable assembly from 6592 to 15670 ft MD (6278.57 to 6281.70 ft TVD).

6. A sliding indicator is shown on the left edge of track 1 as a heavy green line. This indicator has been depth shifted to the Gamma Ray sensor offset to correspond with gamma ray data acquired while sliding.

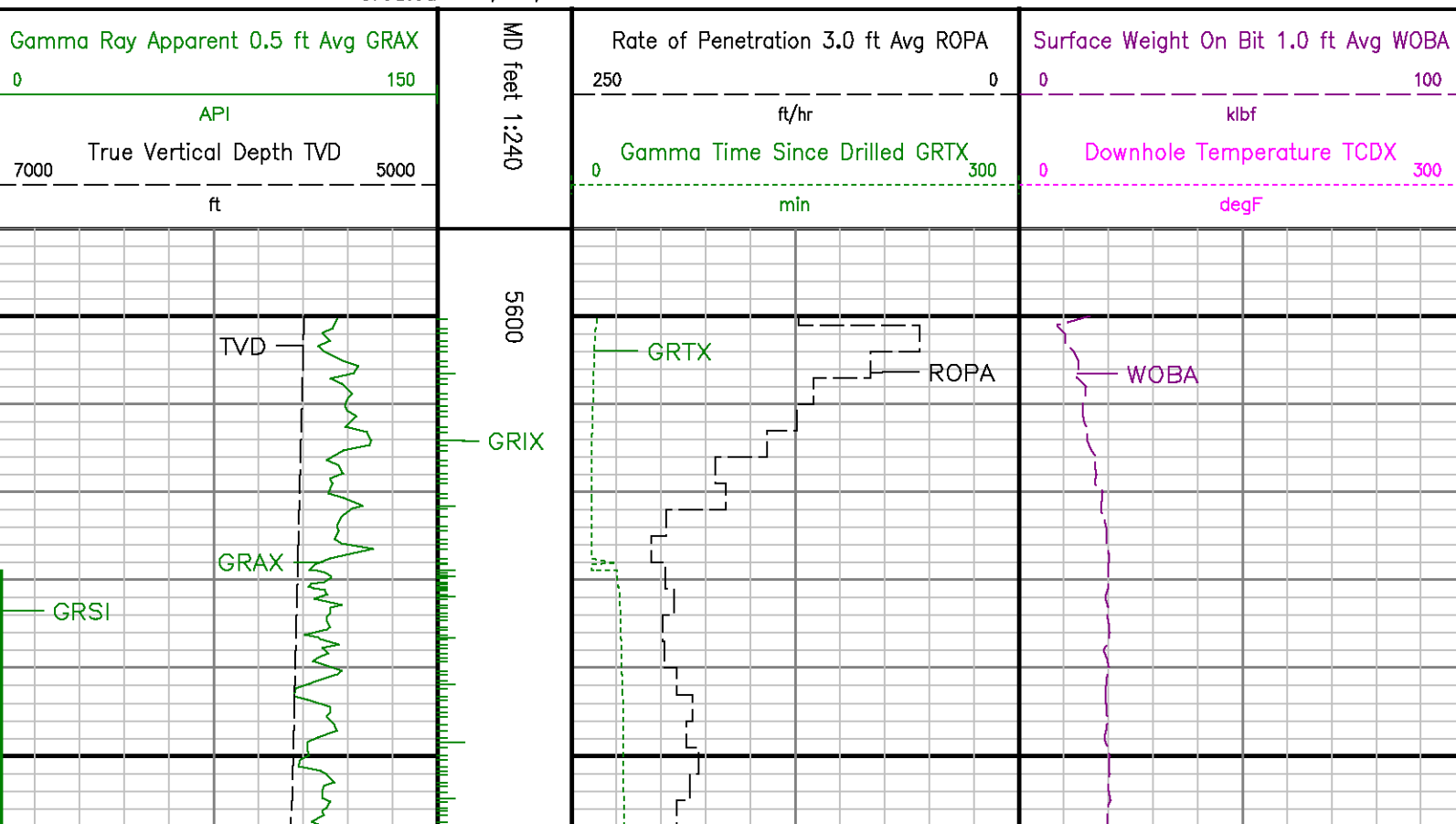
7. Depth measurements were obtained from a depth tracking system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes LWD logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.

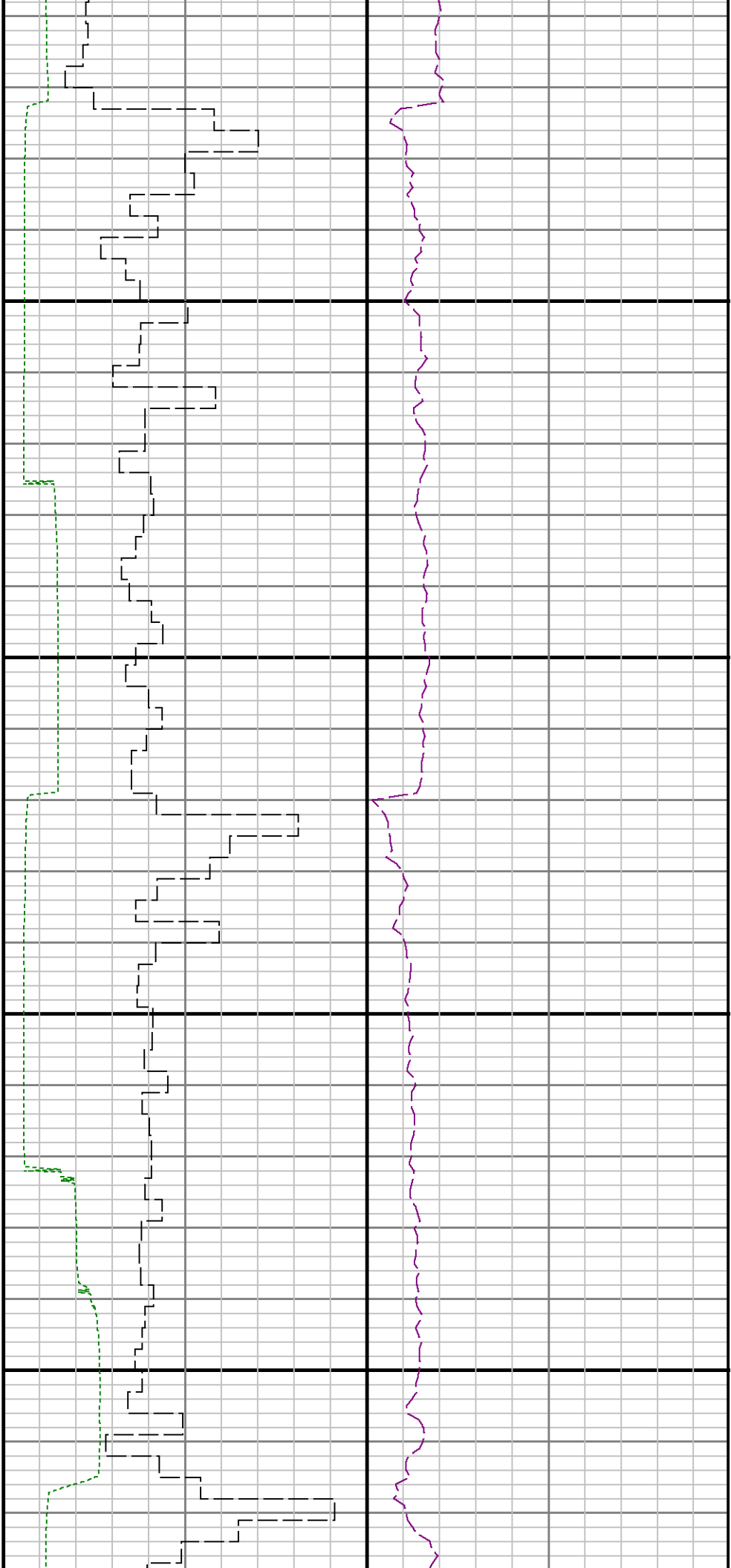
# Remarks

Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	5917	8.750	2-3	The Interval from 5917 to 5961 ft MD (5908 to 5949 ft TVD) was logged up to 7 hours after being drilled due to changing out bit.
2	6309	8.750	3	GRAX reaches a max value of 268.4 API at 6309 ft MD (6218 ft TVD).
3	6790	6.125	4	GRTX values have exceeded the log scale due to tripping out of the hole for lateral assembly.
4	15616	6.125	4	GRAX, GRIX, and GRTX values are not present due to gamma sensor offset.
5	15670	6.125	4	TD of well reached (6281 ft TVD).



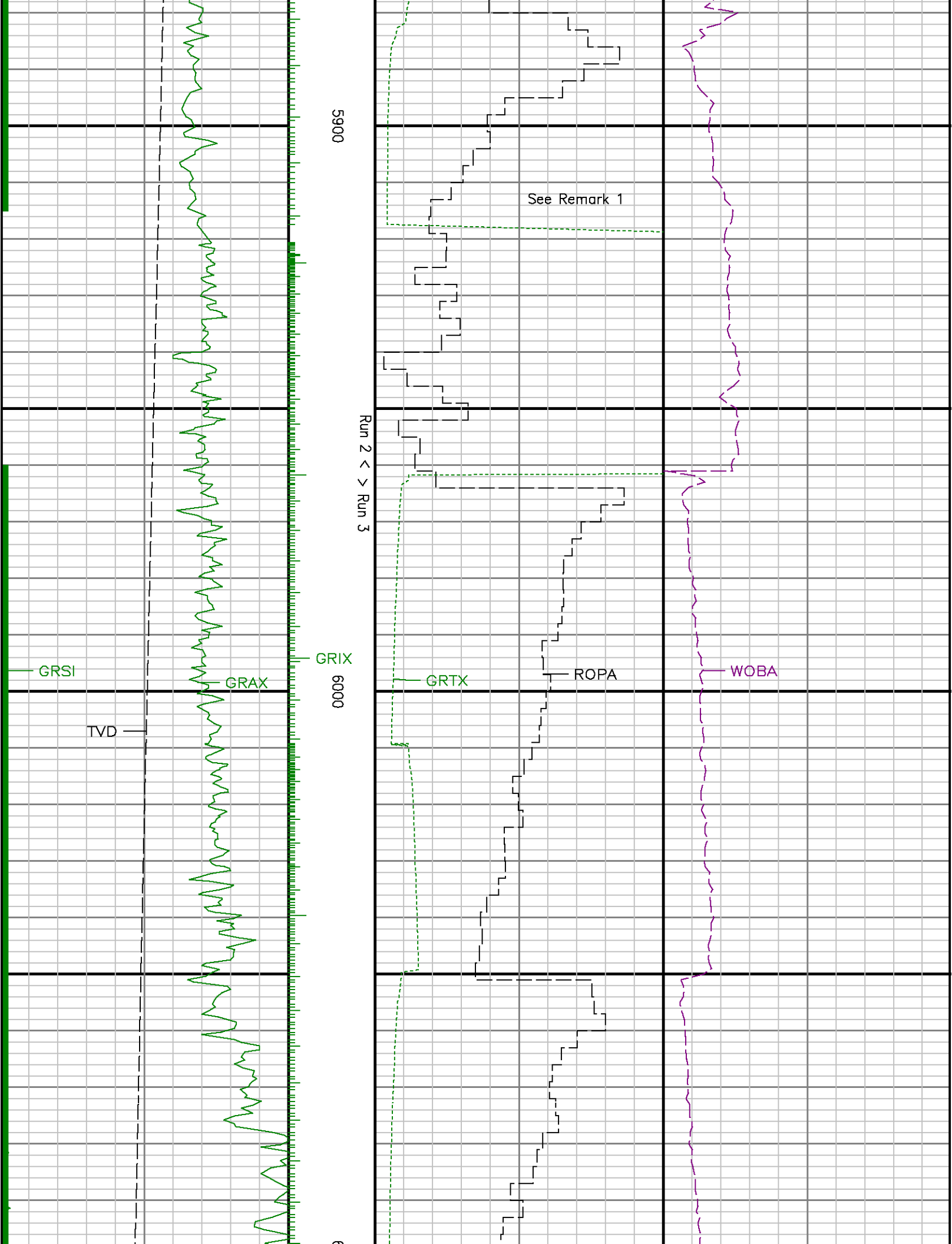
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Well : State Antelope T-28-21XRLNB  
Interval : 5590.00 - 15675.00 feet  
Created : 27/Jun/2013 5:59:42 PM

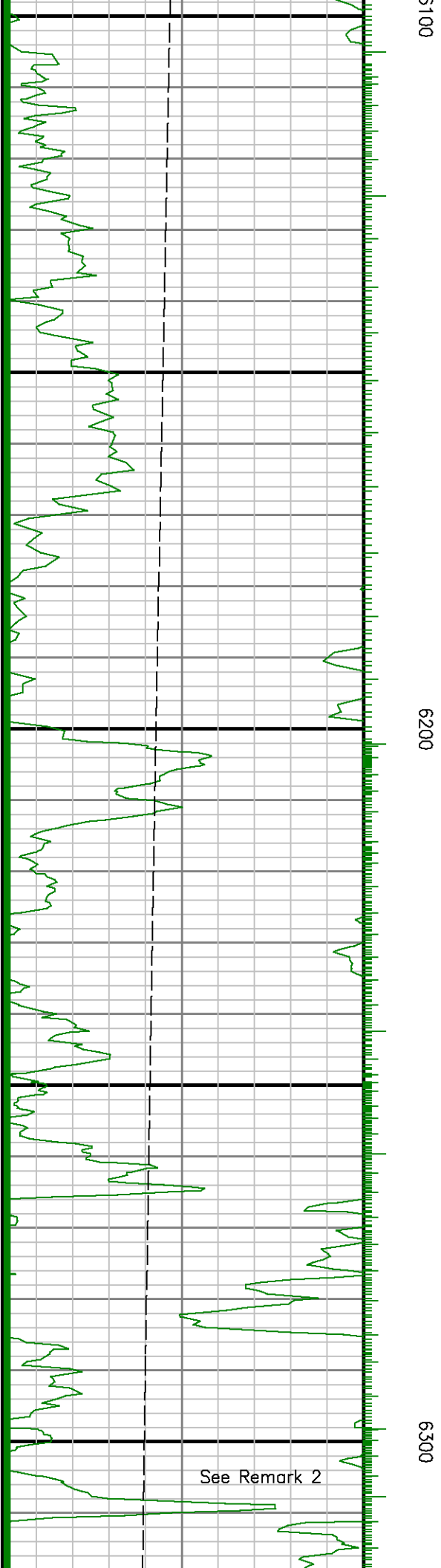
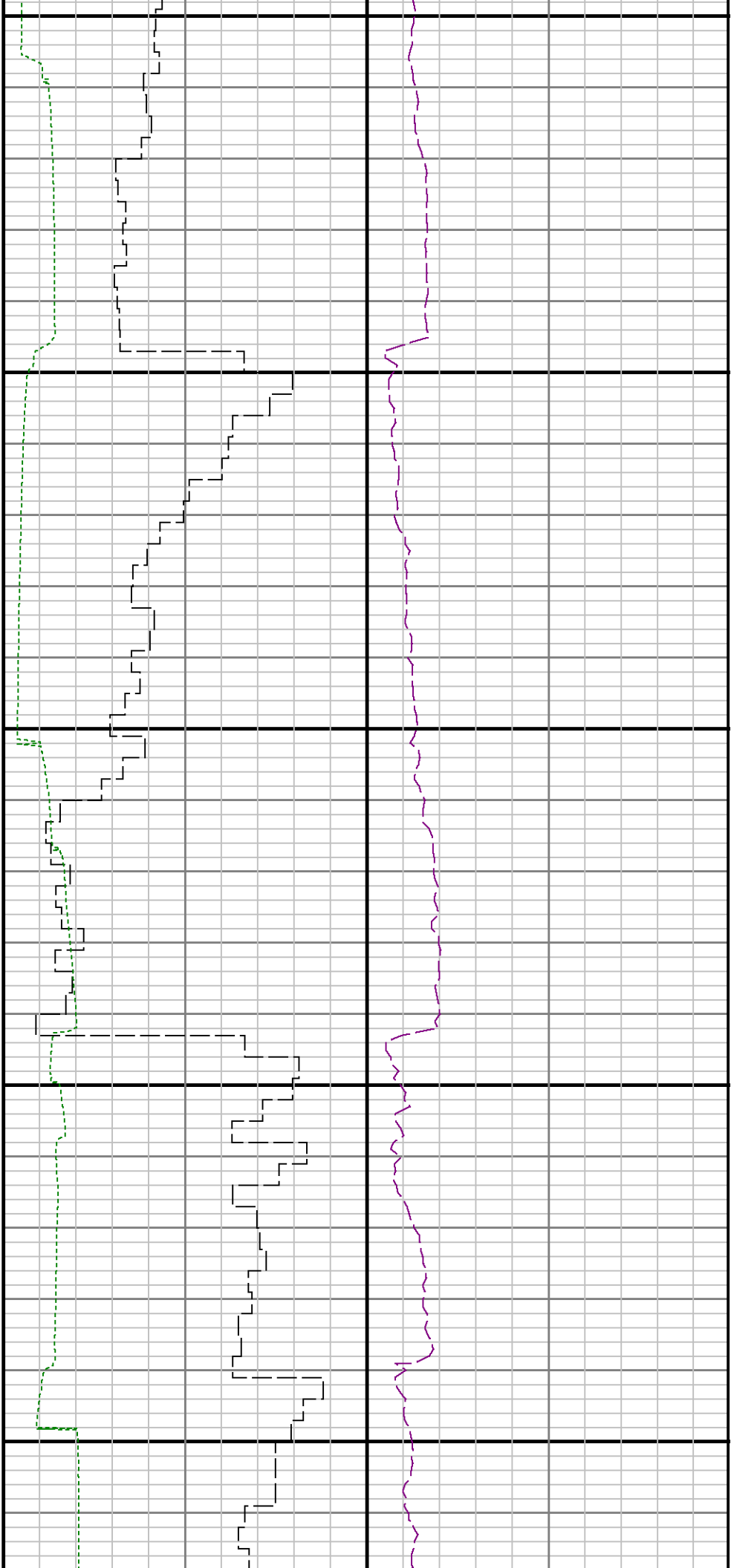


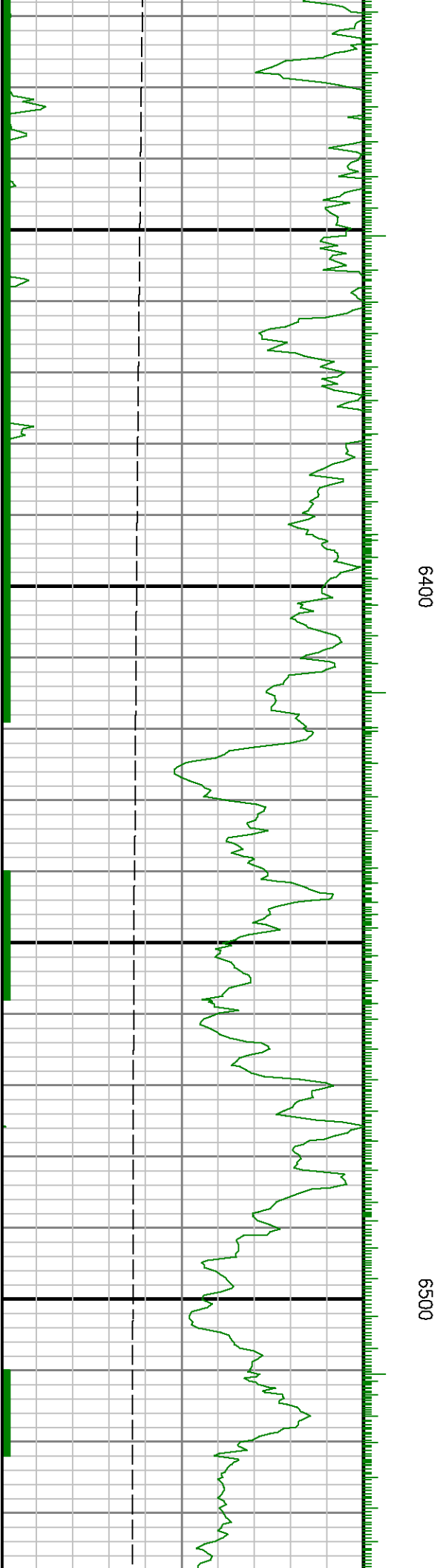
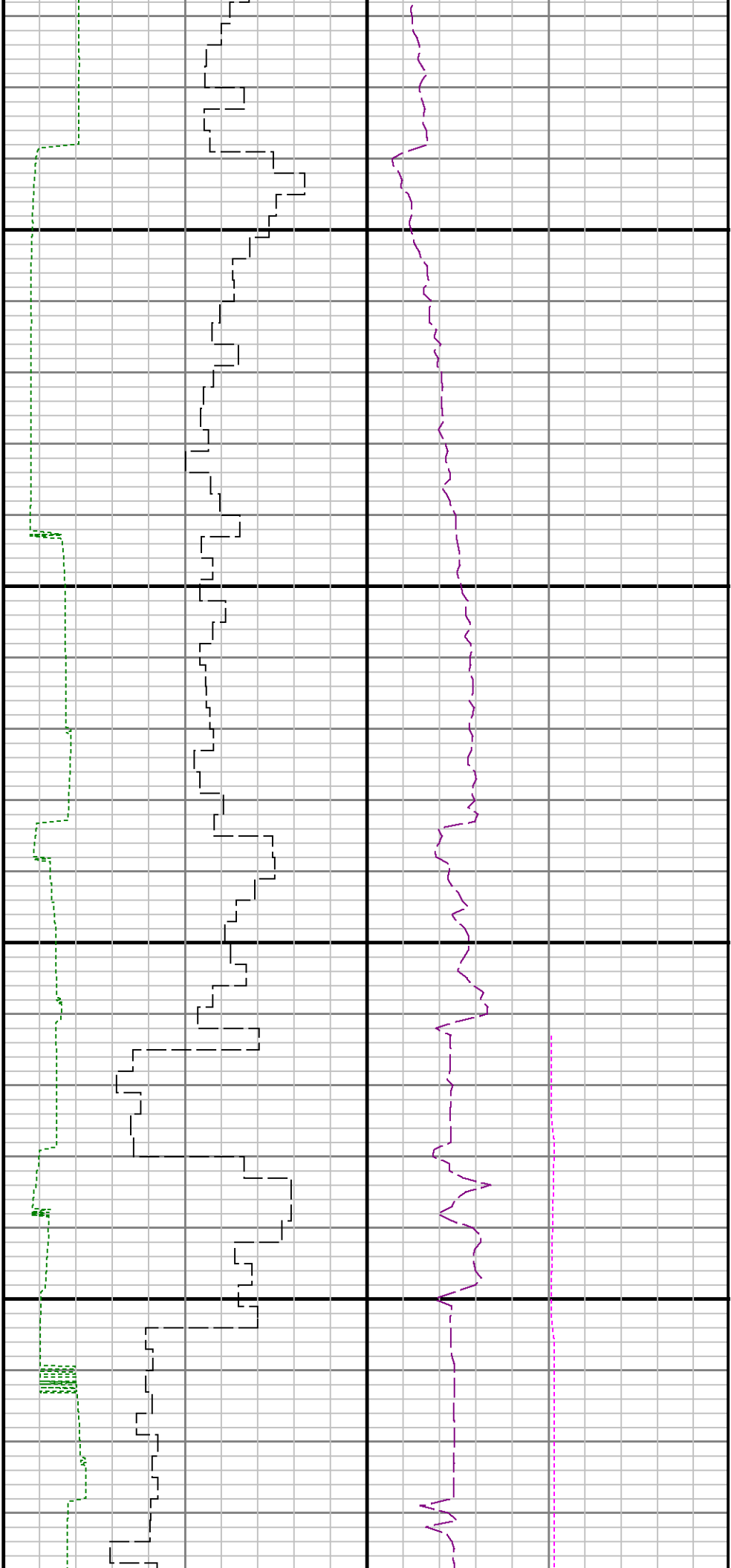


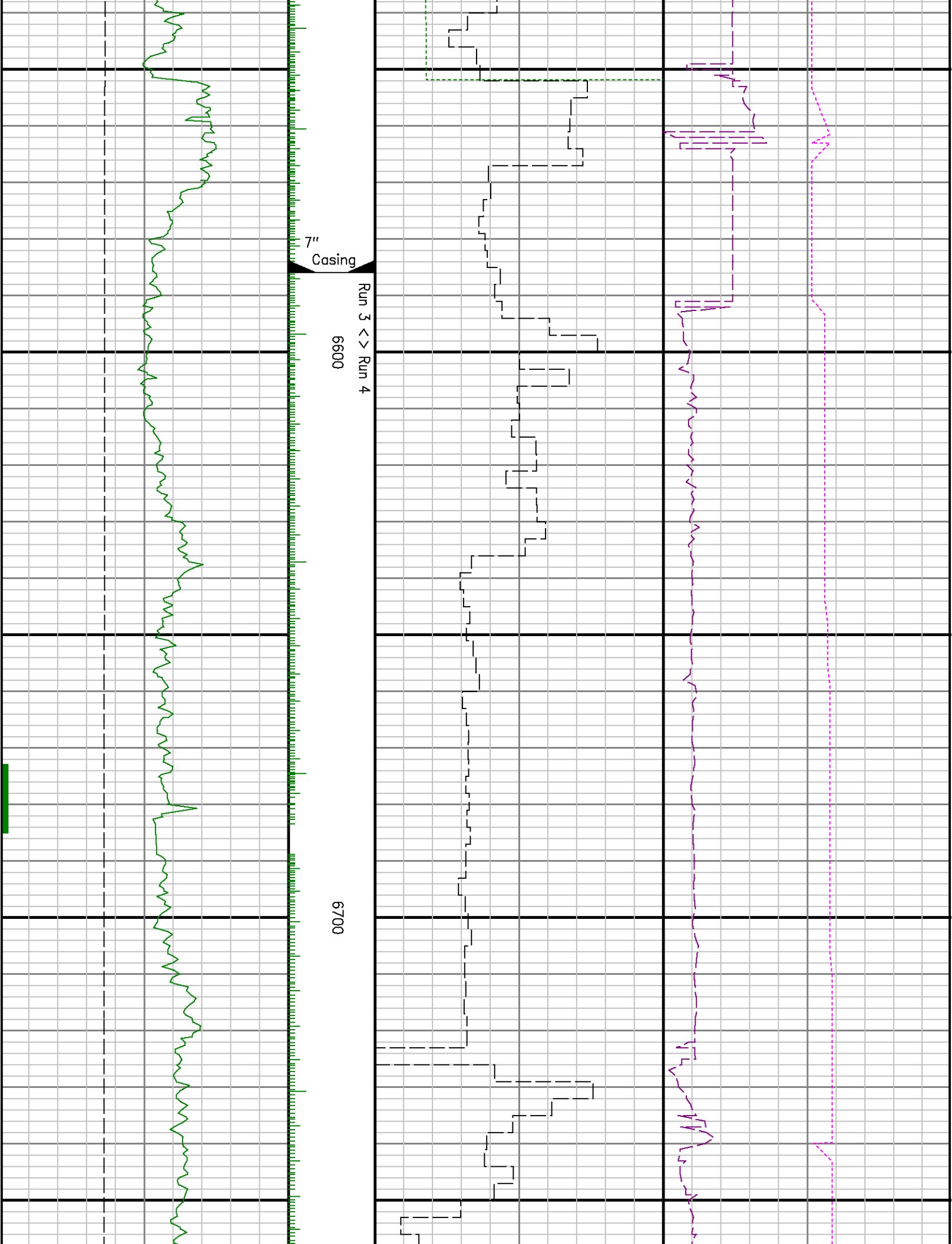
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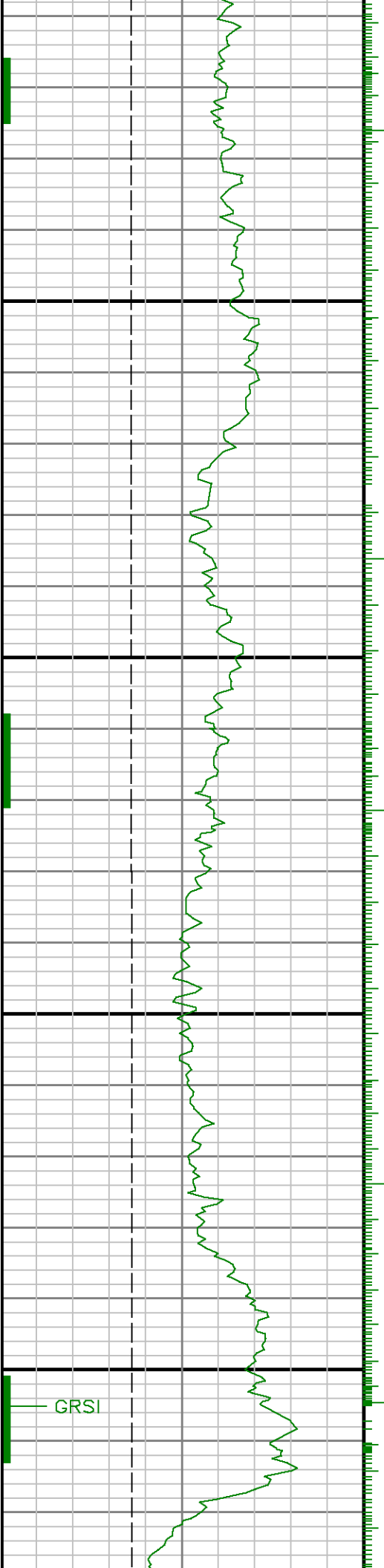
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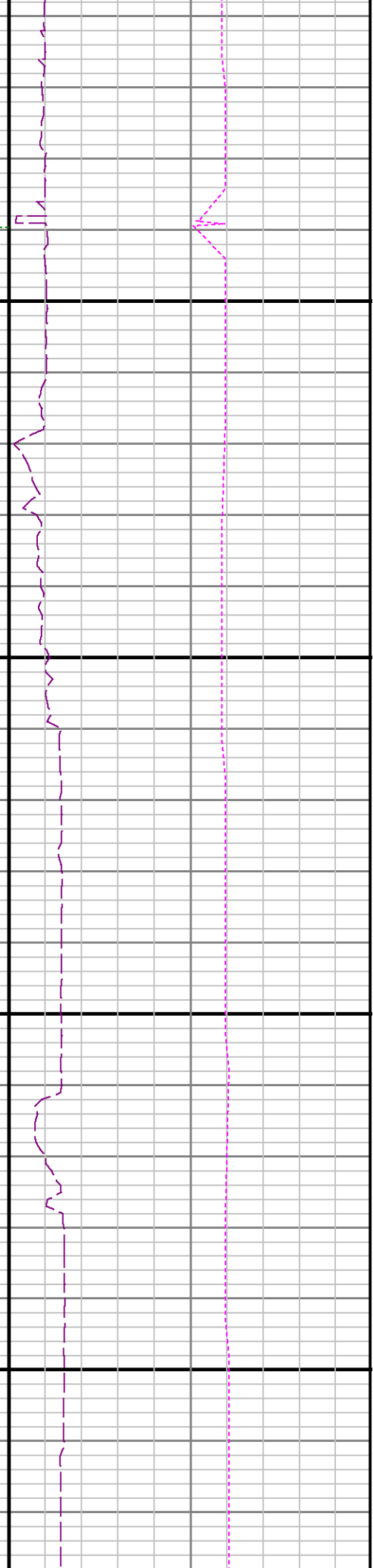
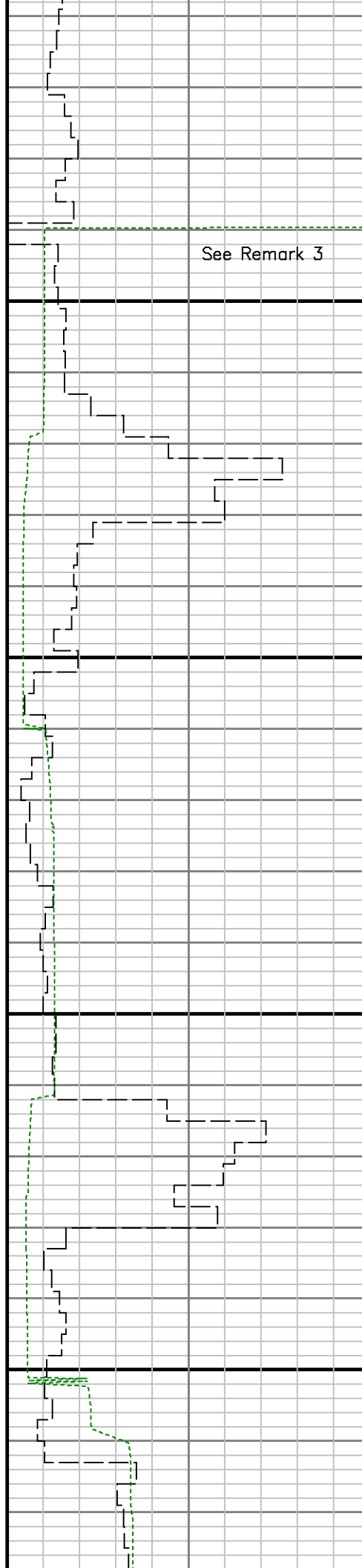


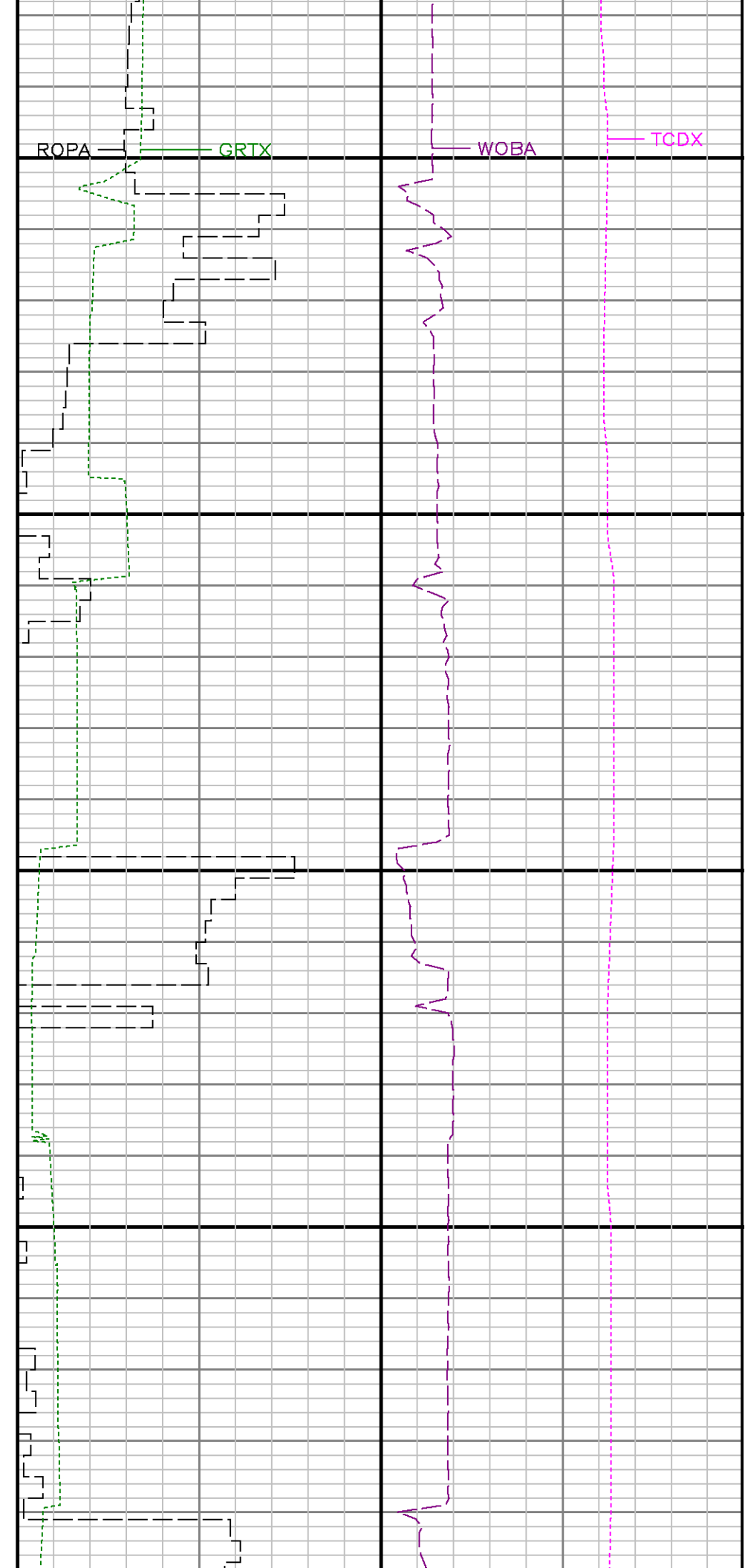
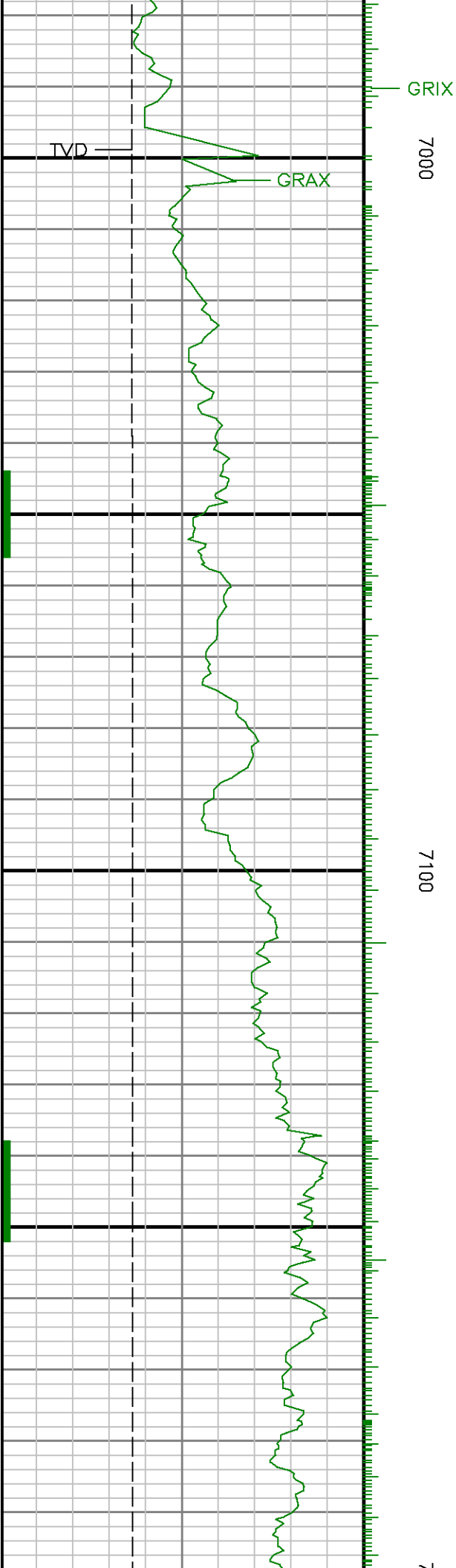


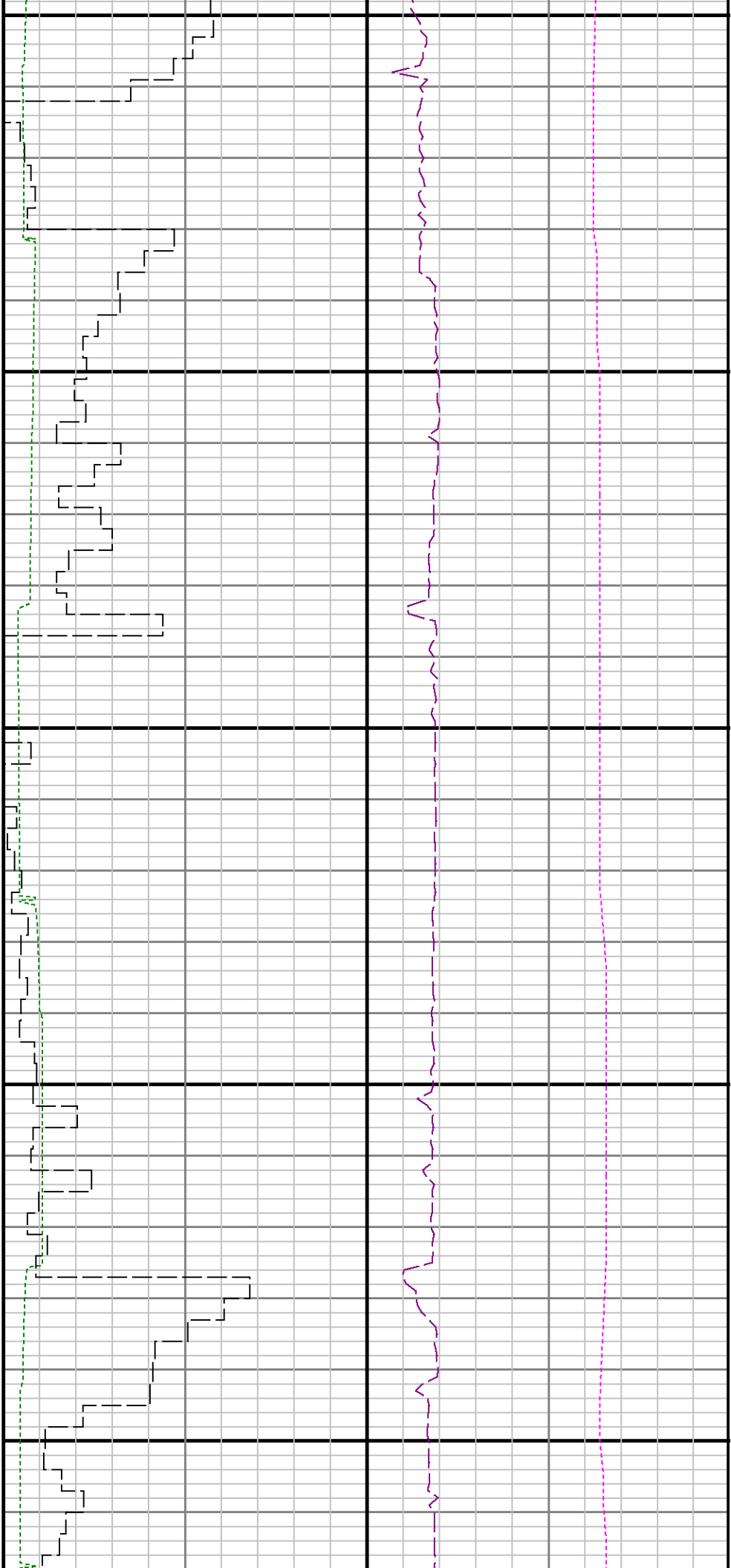


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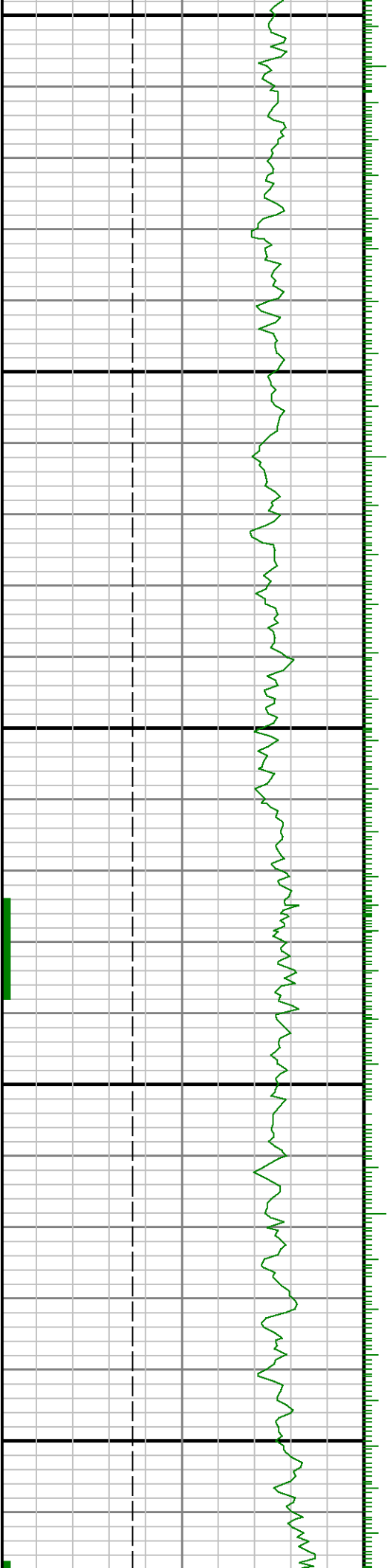


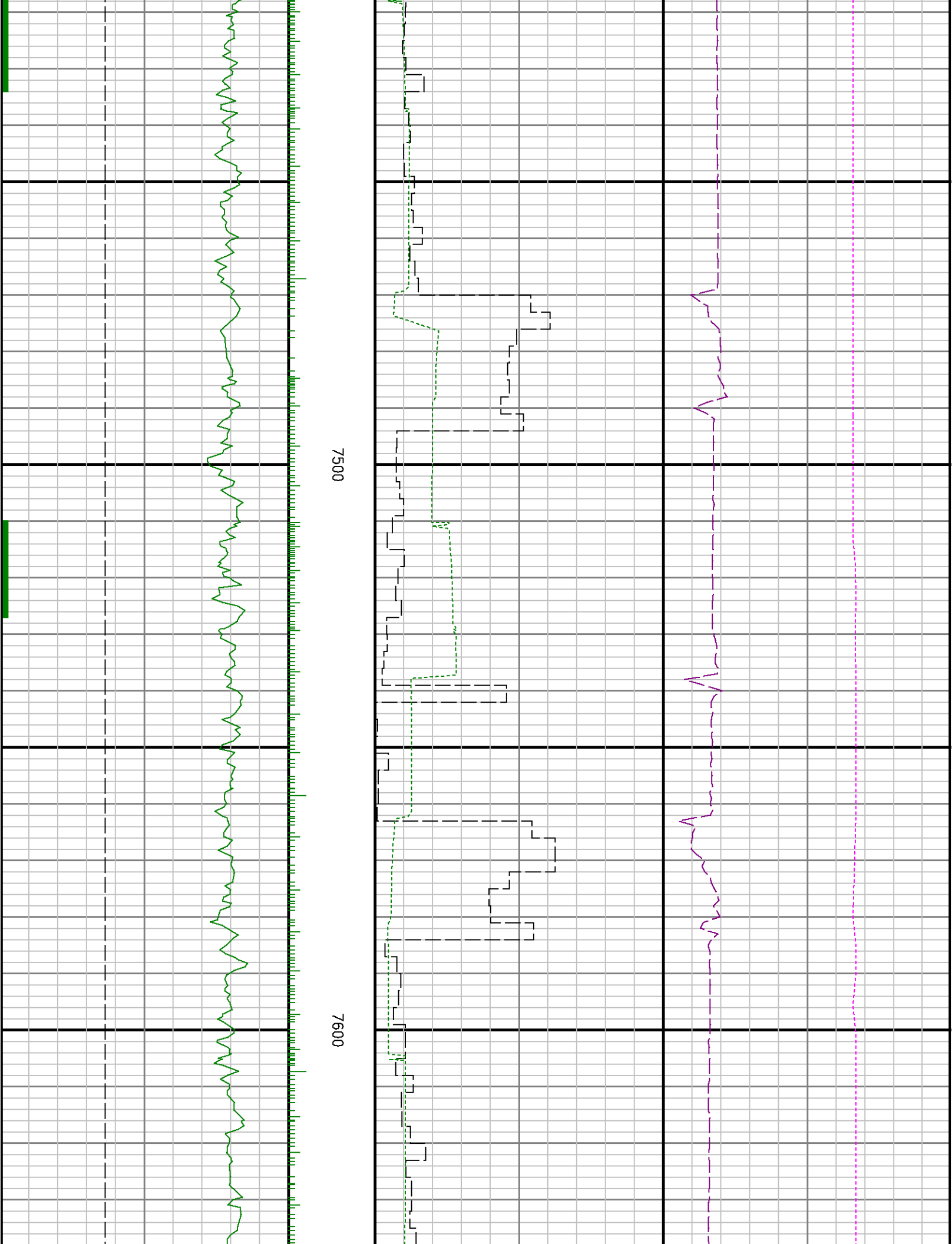


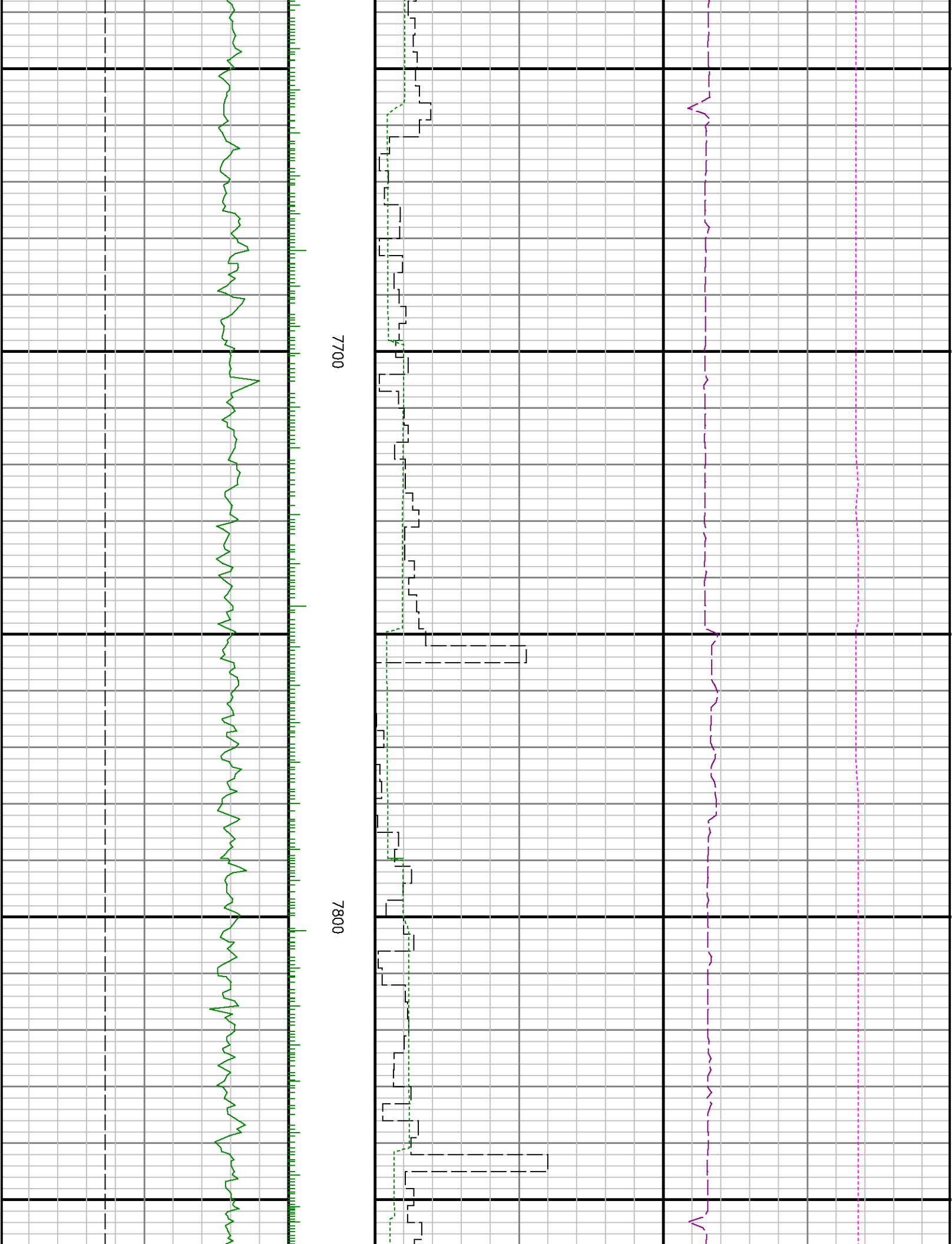
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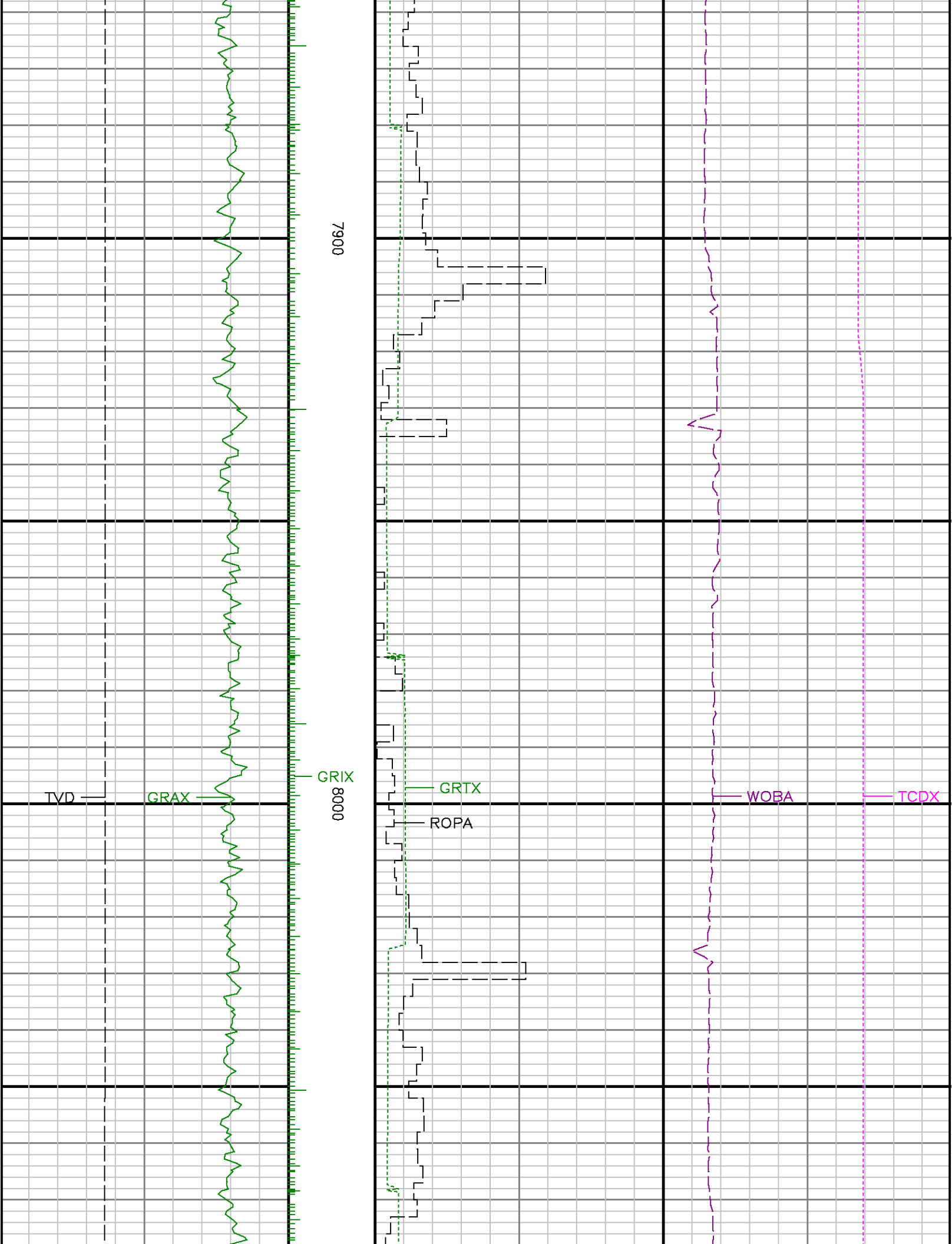
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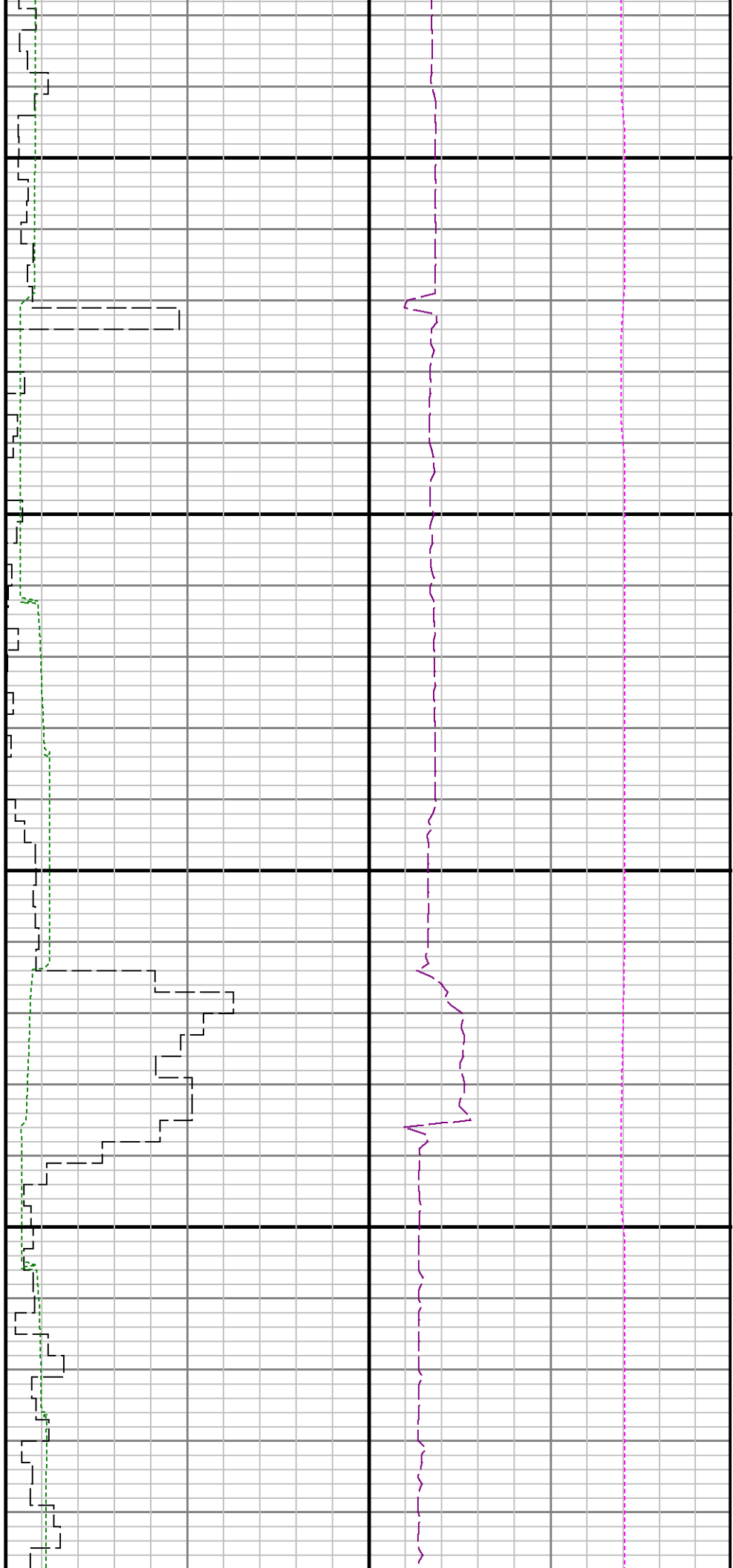
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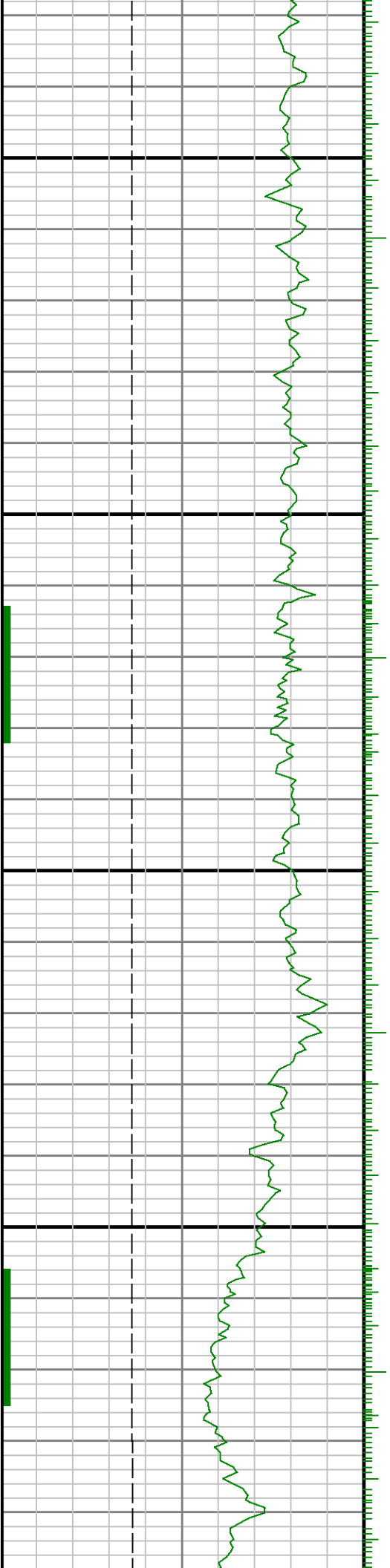


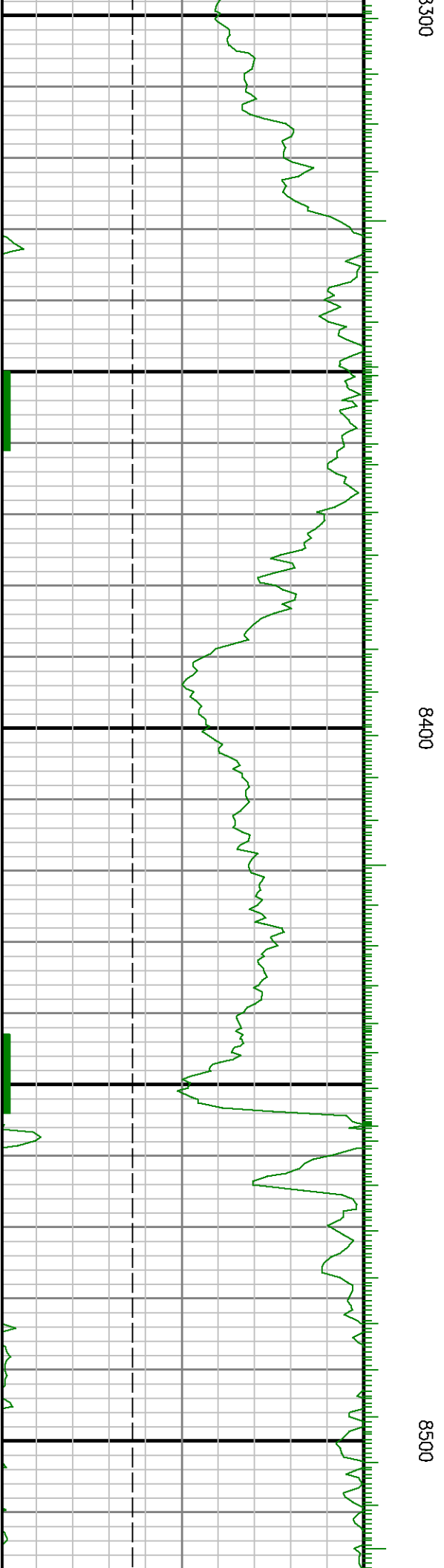
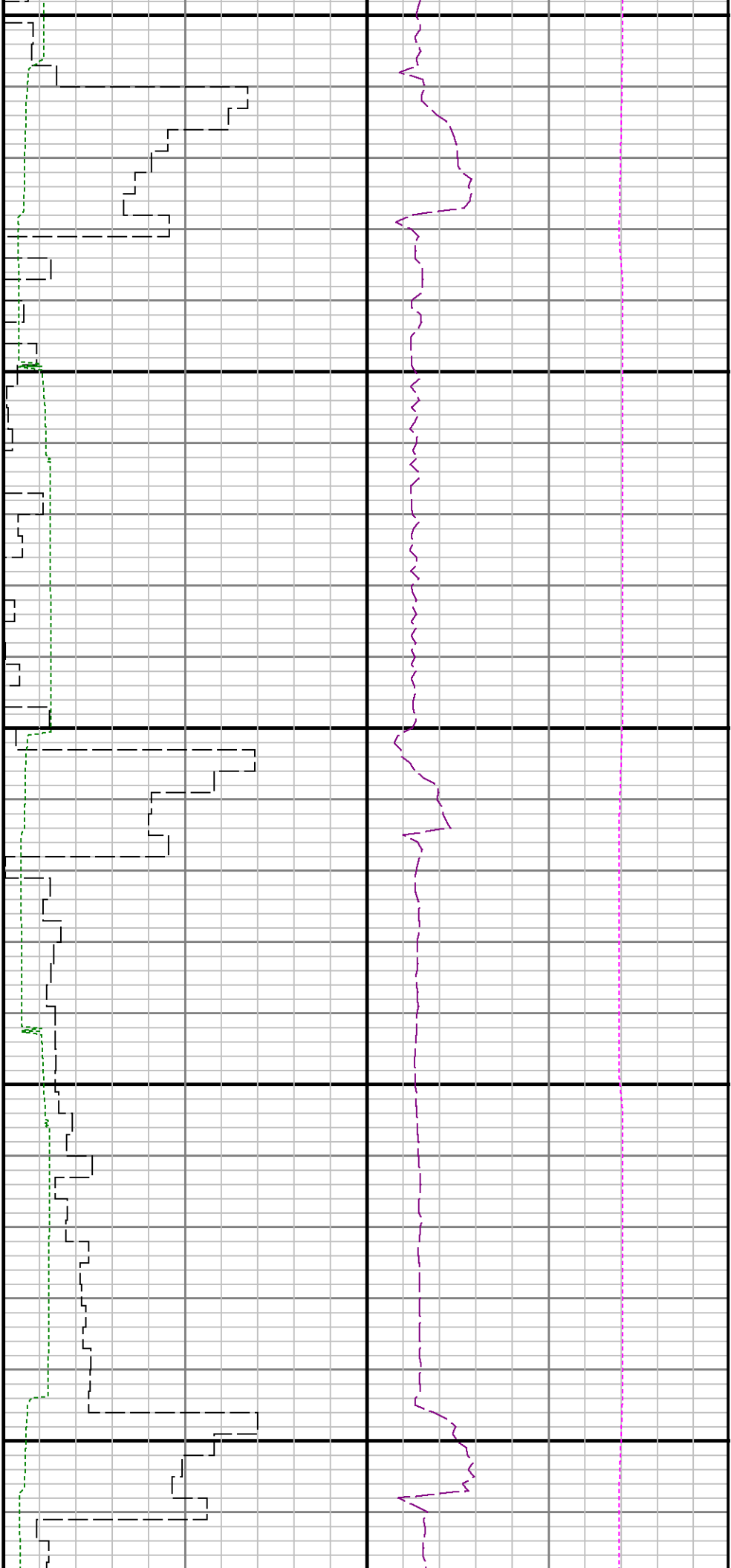


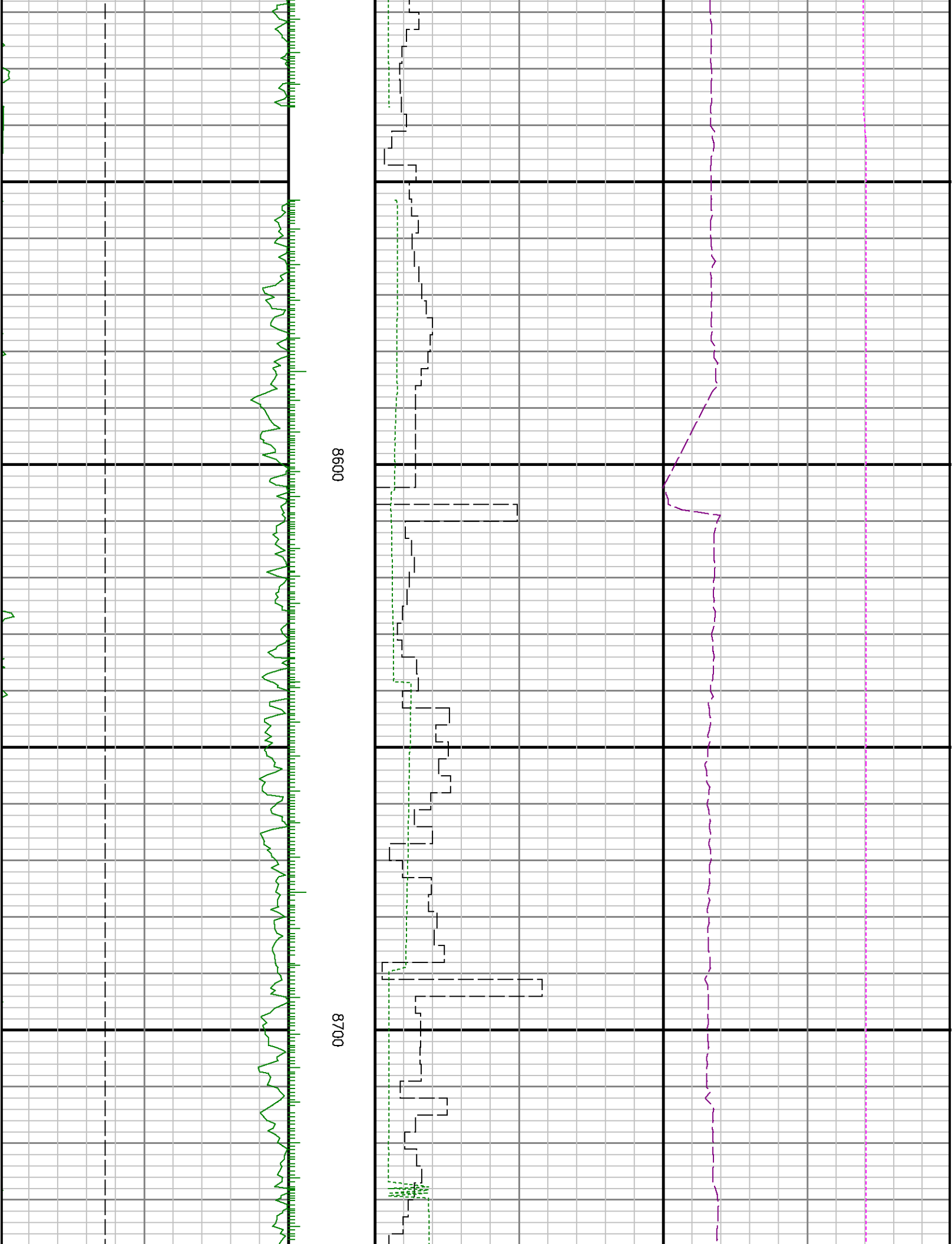
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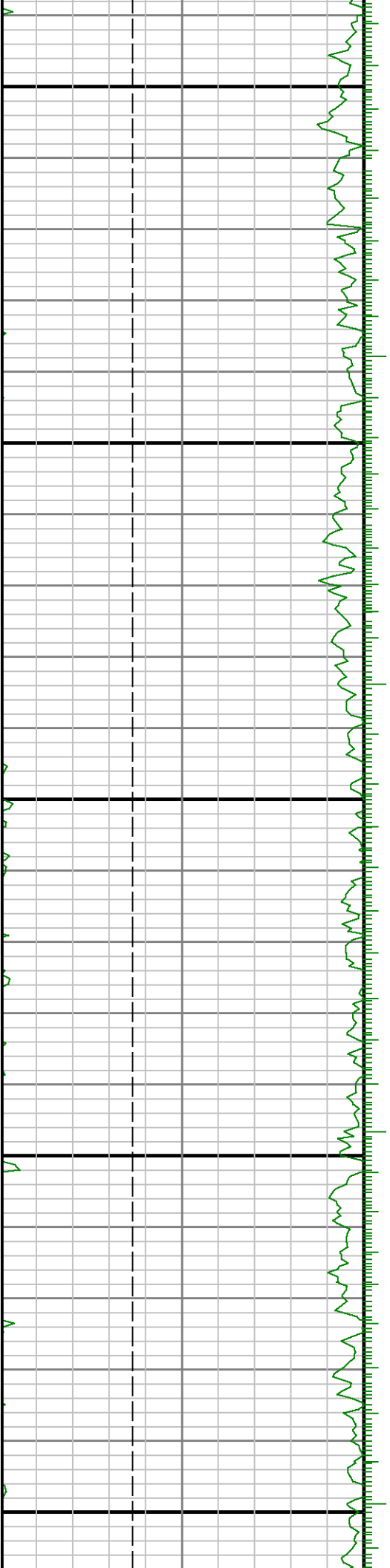
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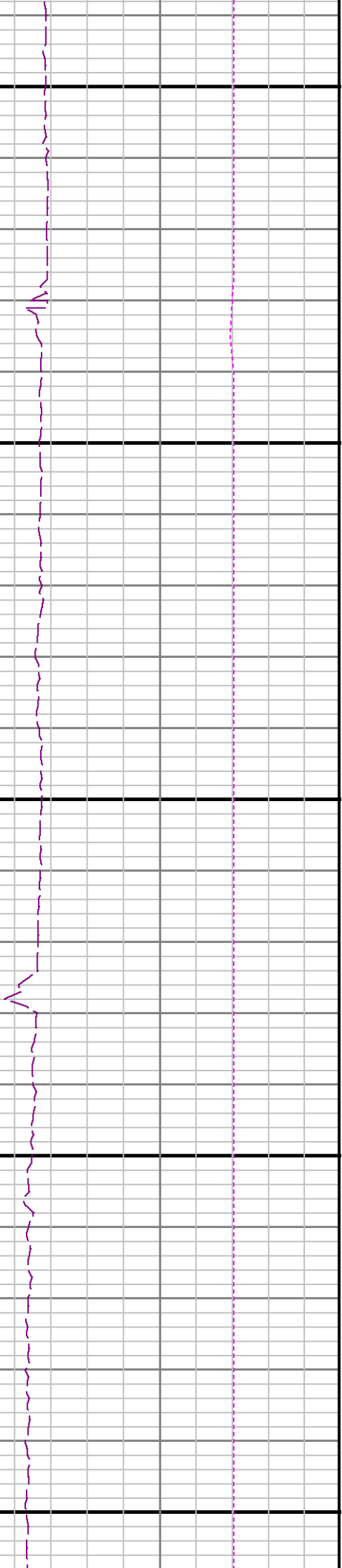
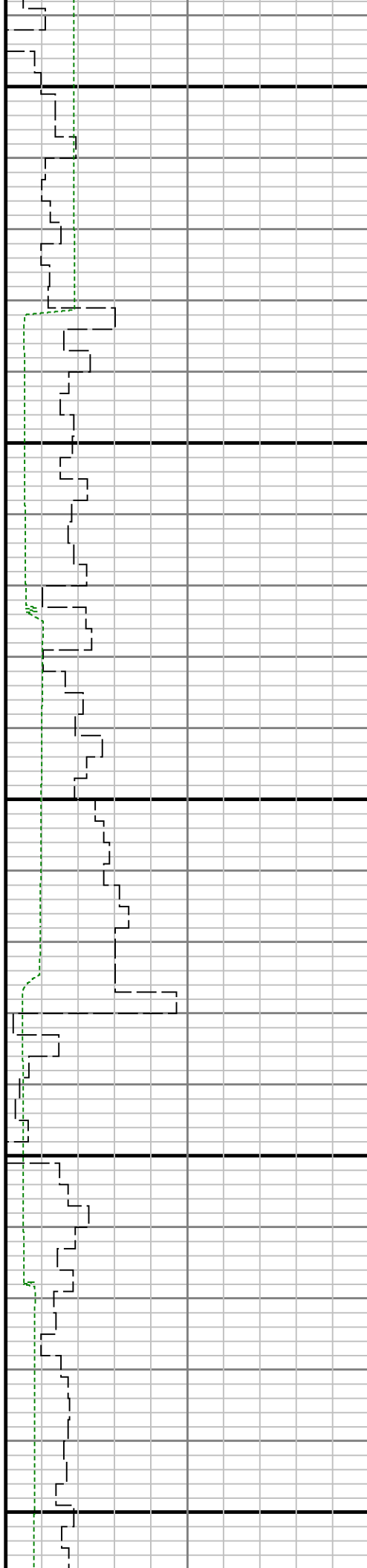


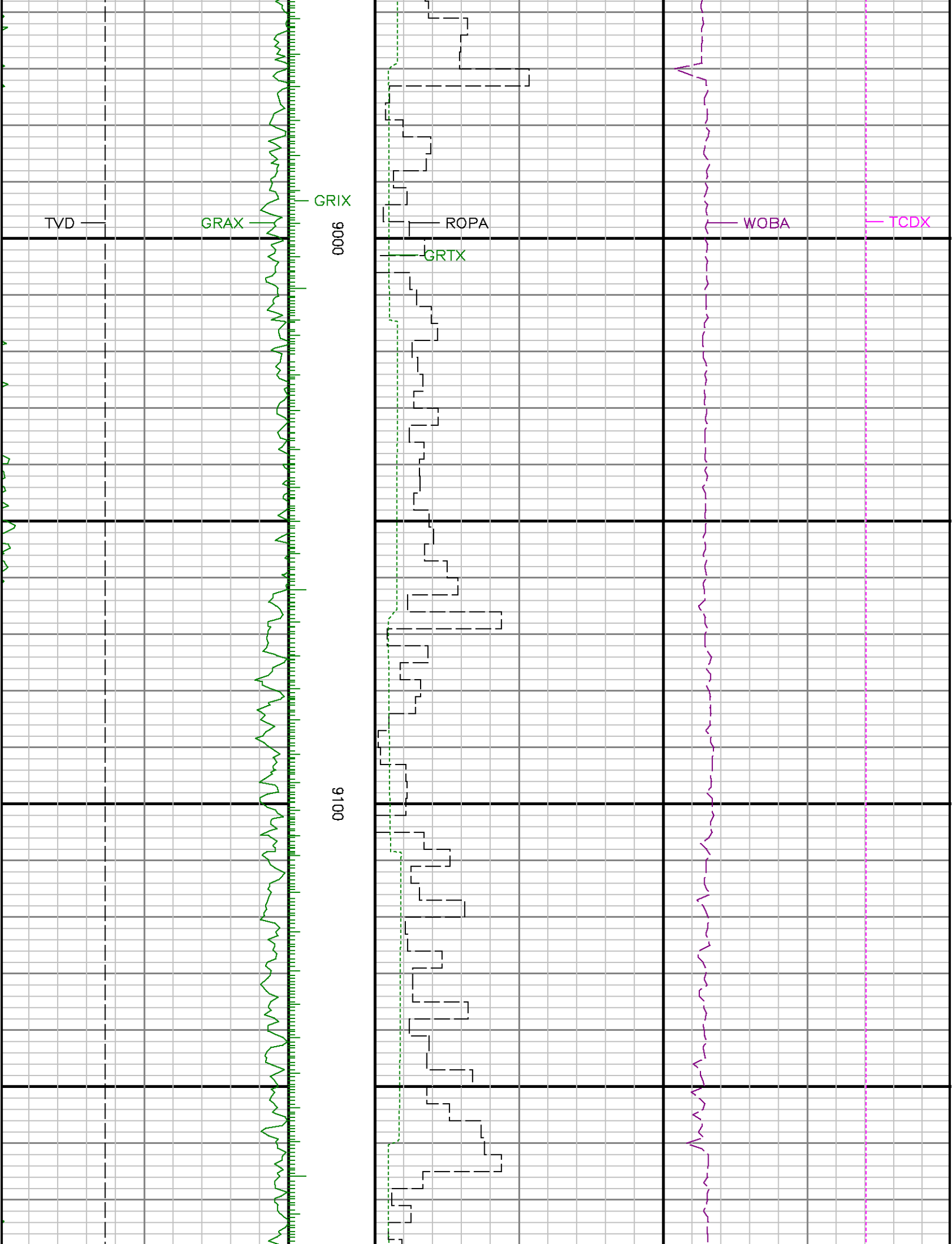


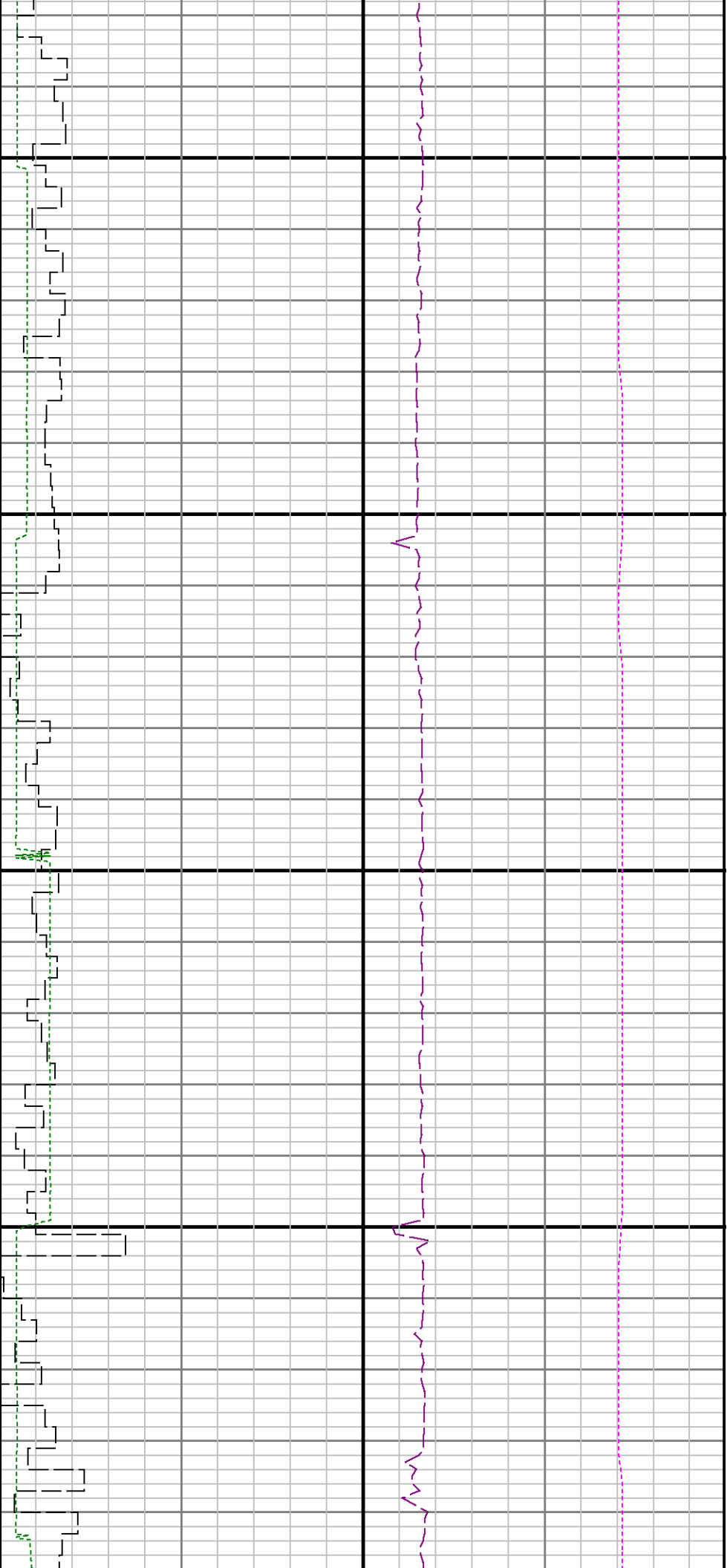


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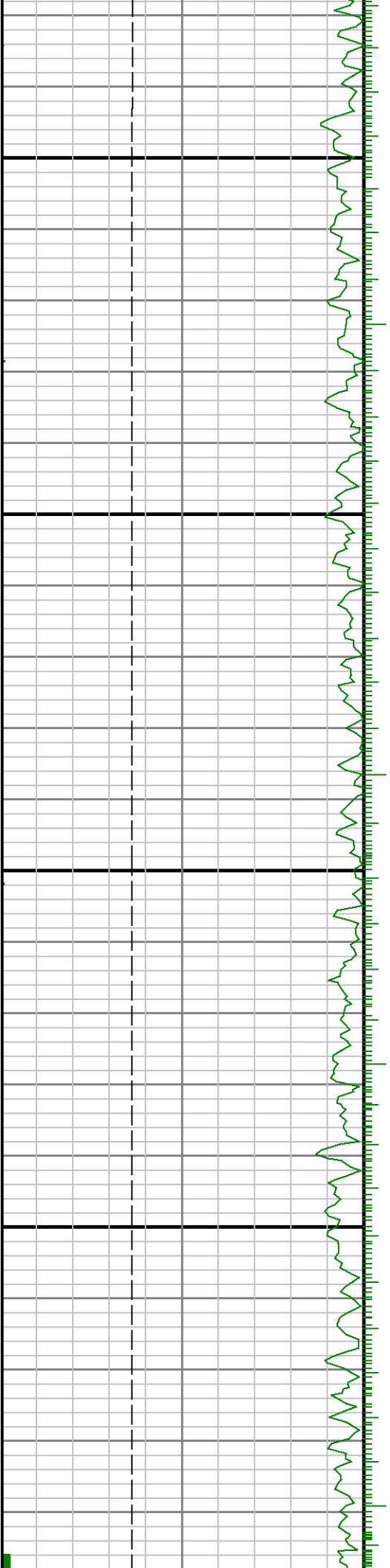


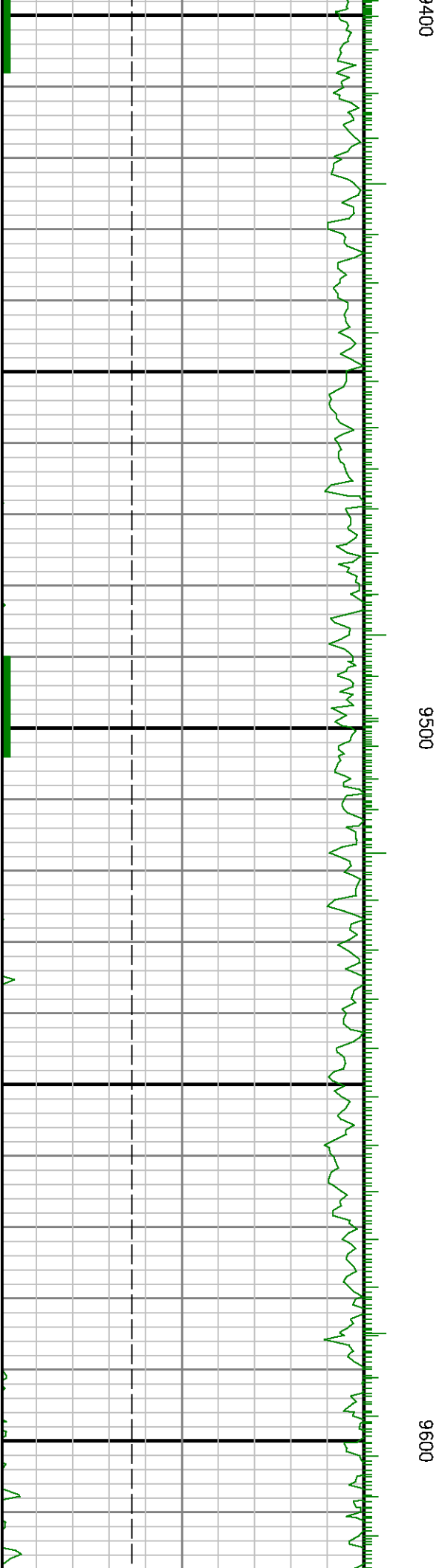
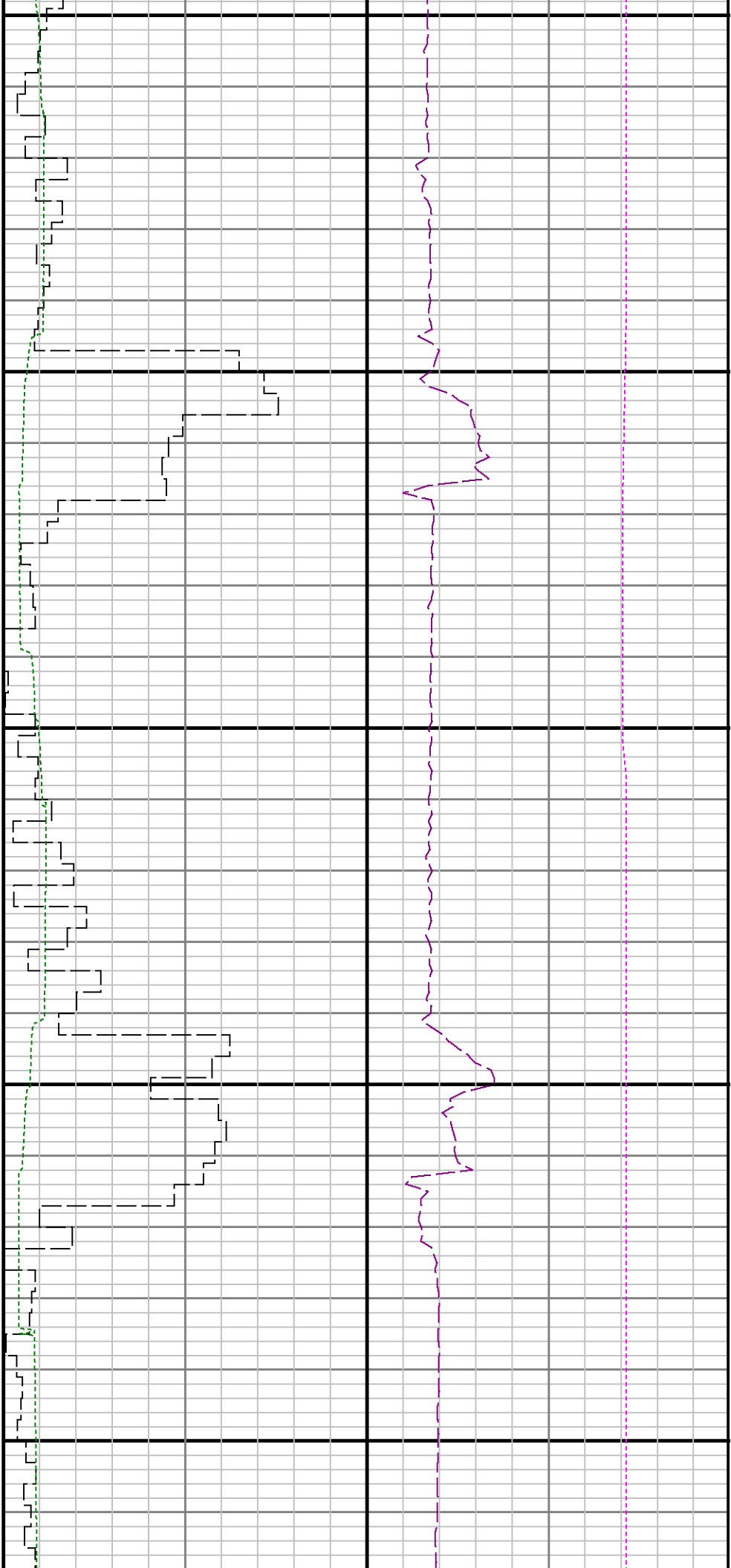


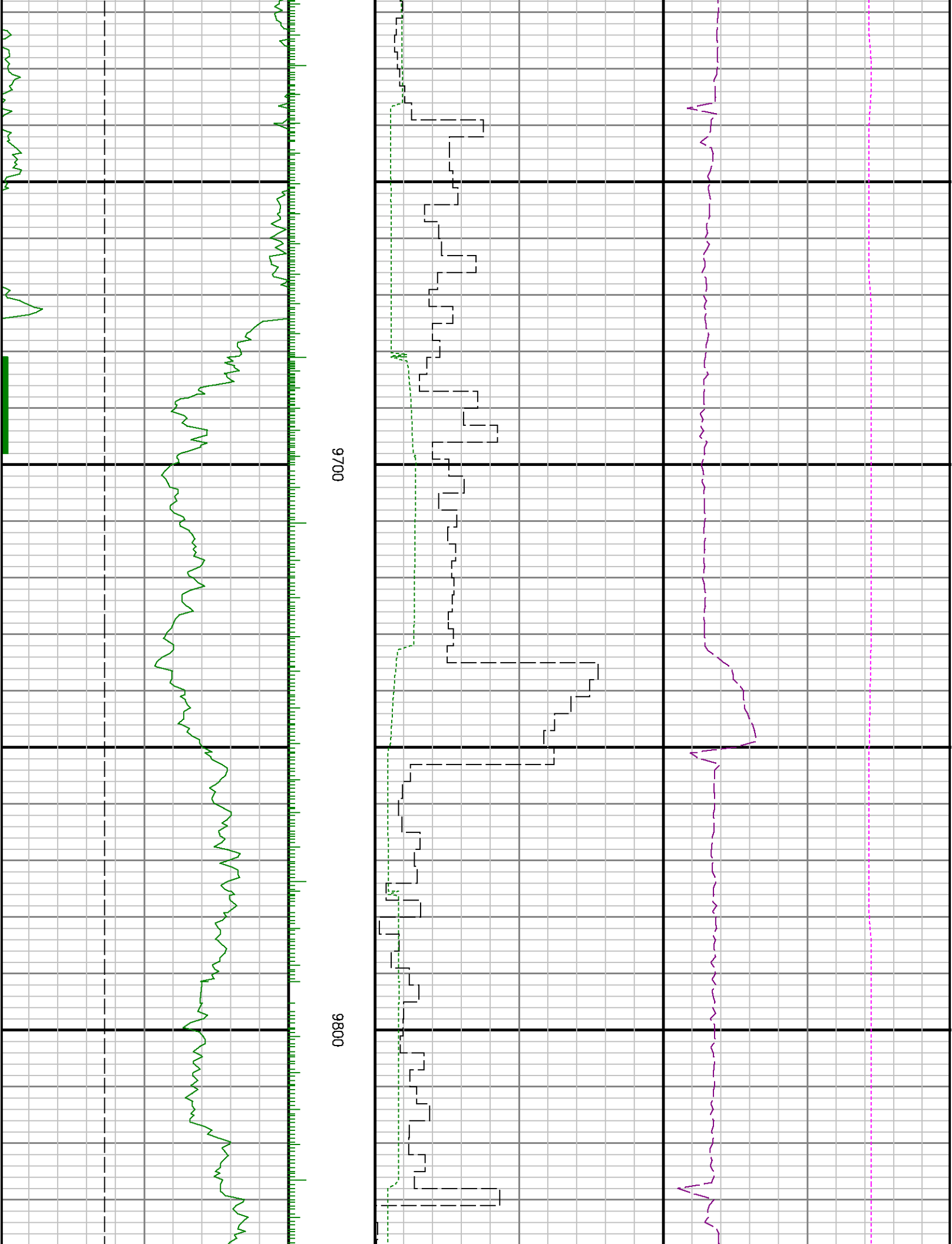
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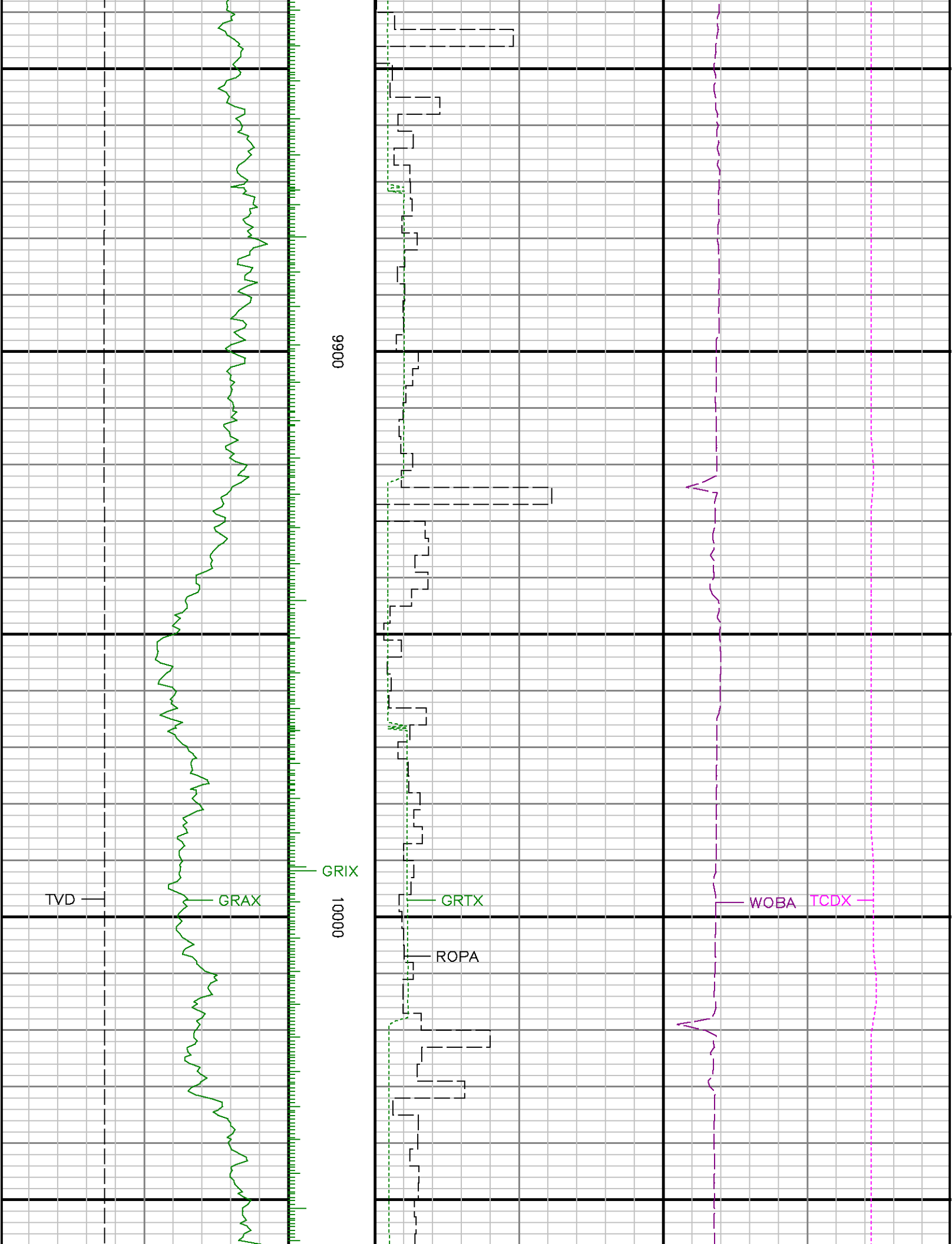
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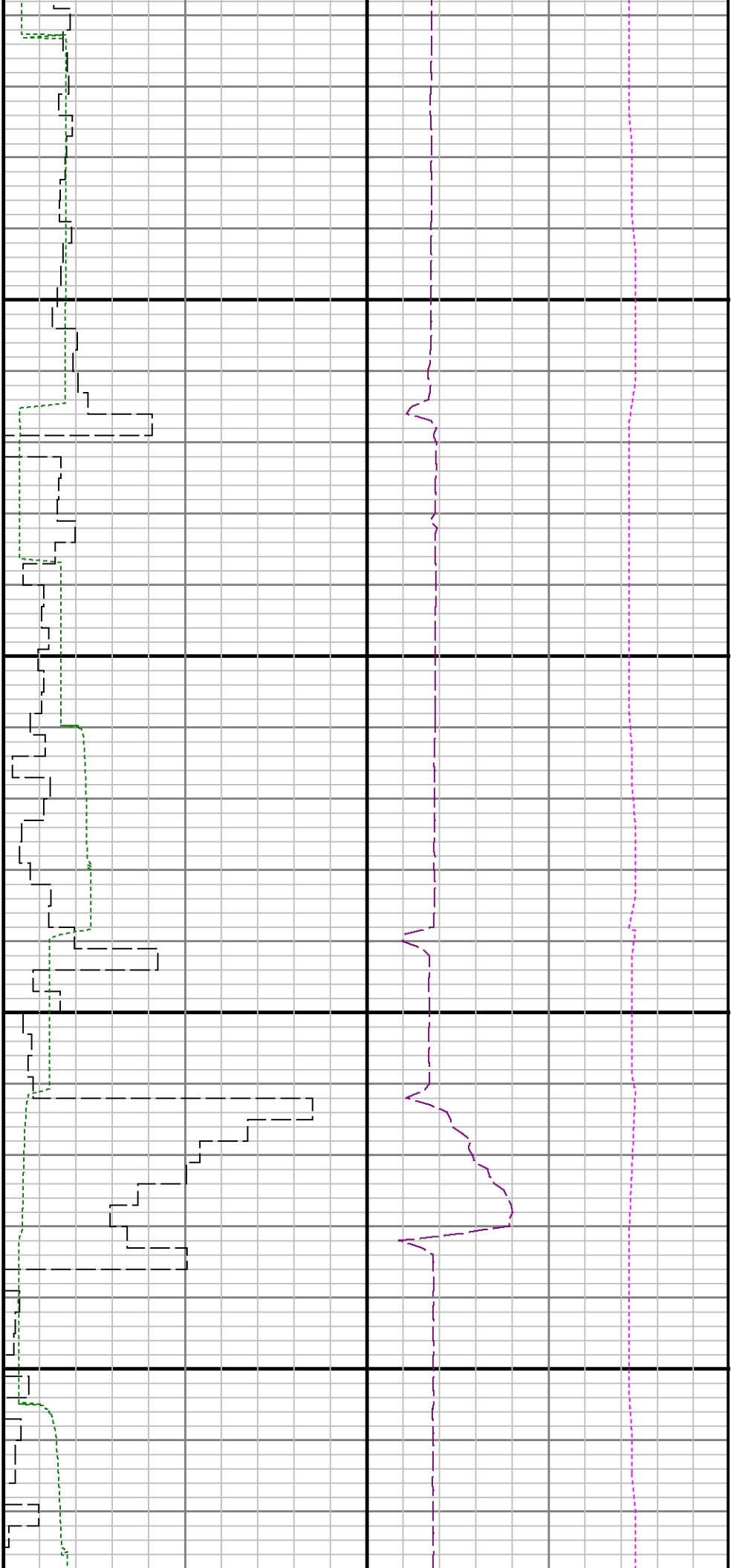
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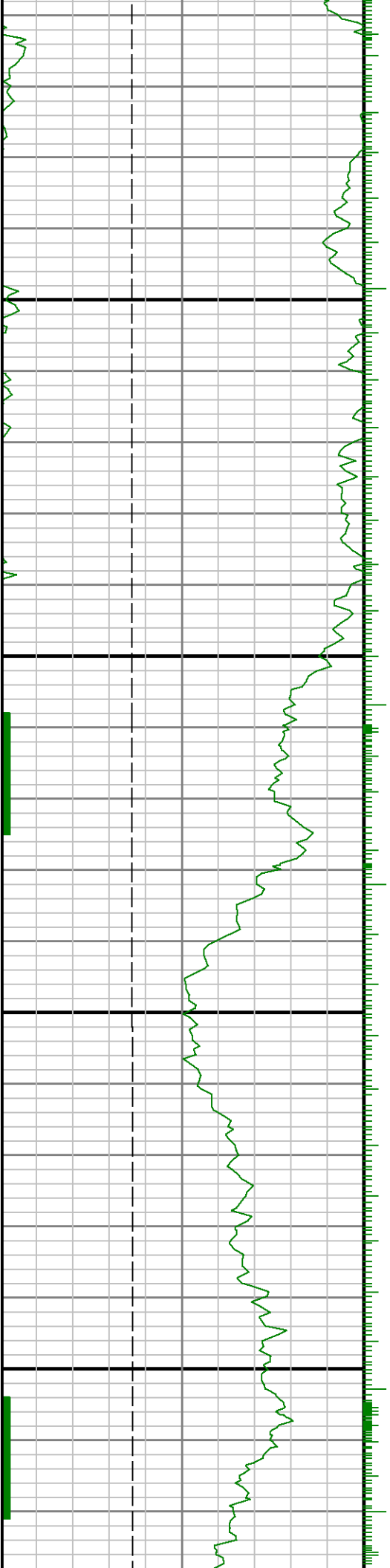




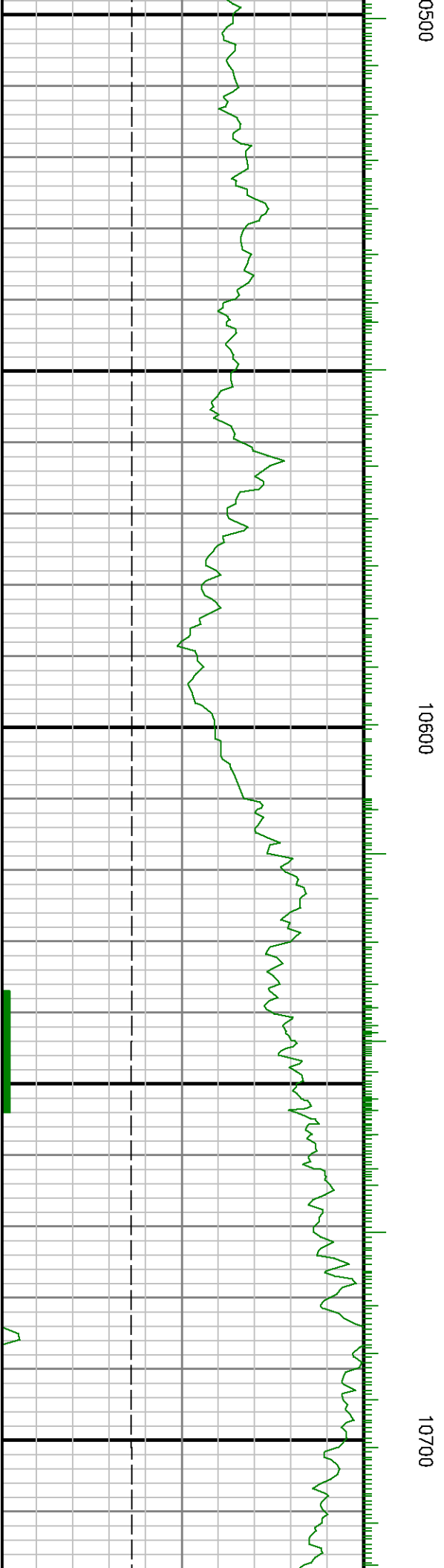
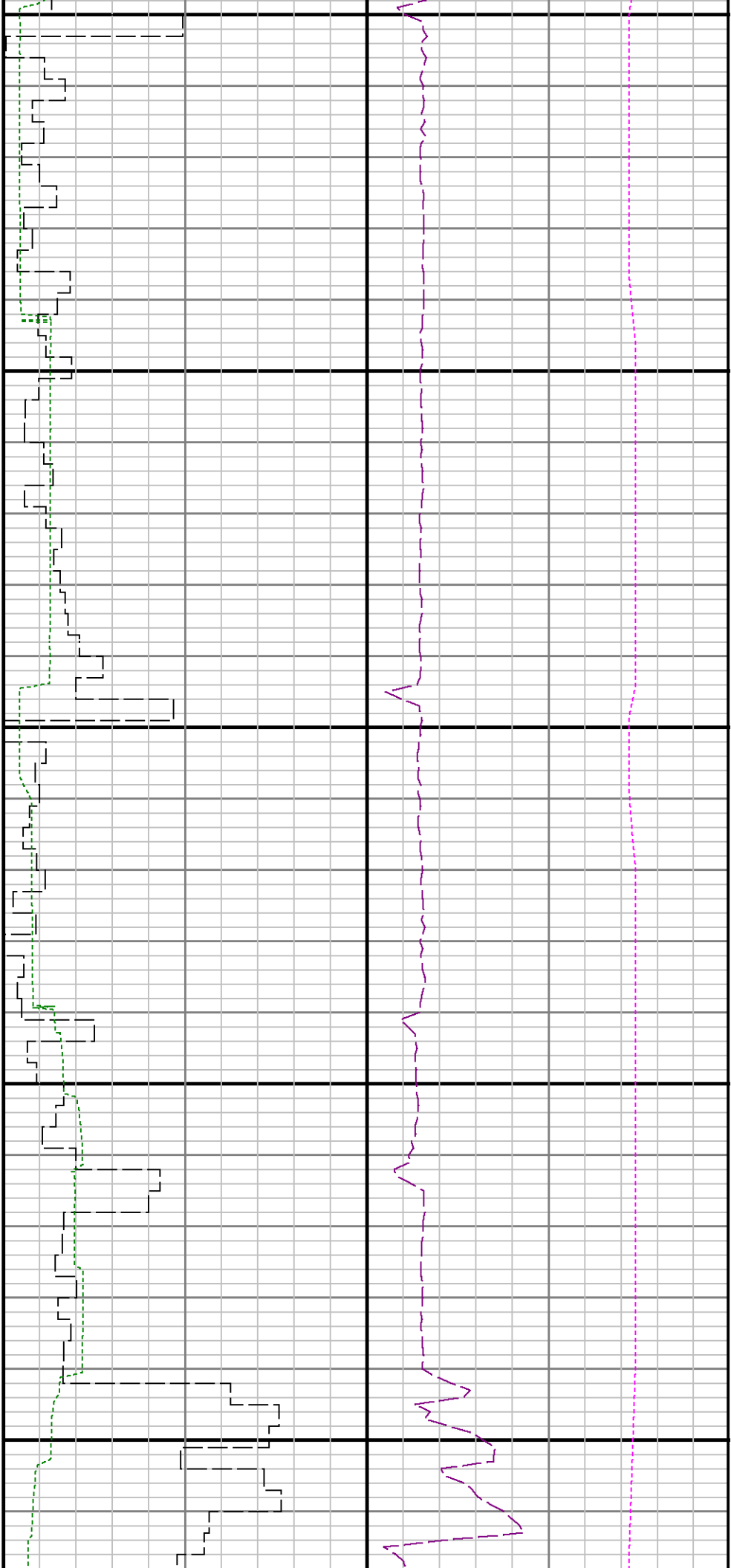


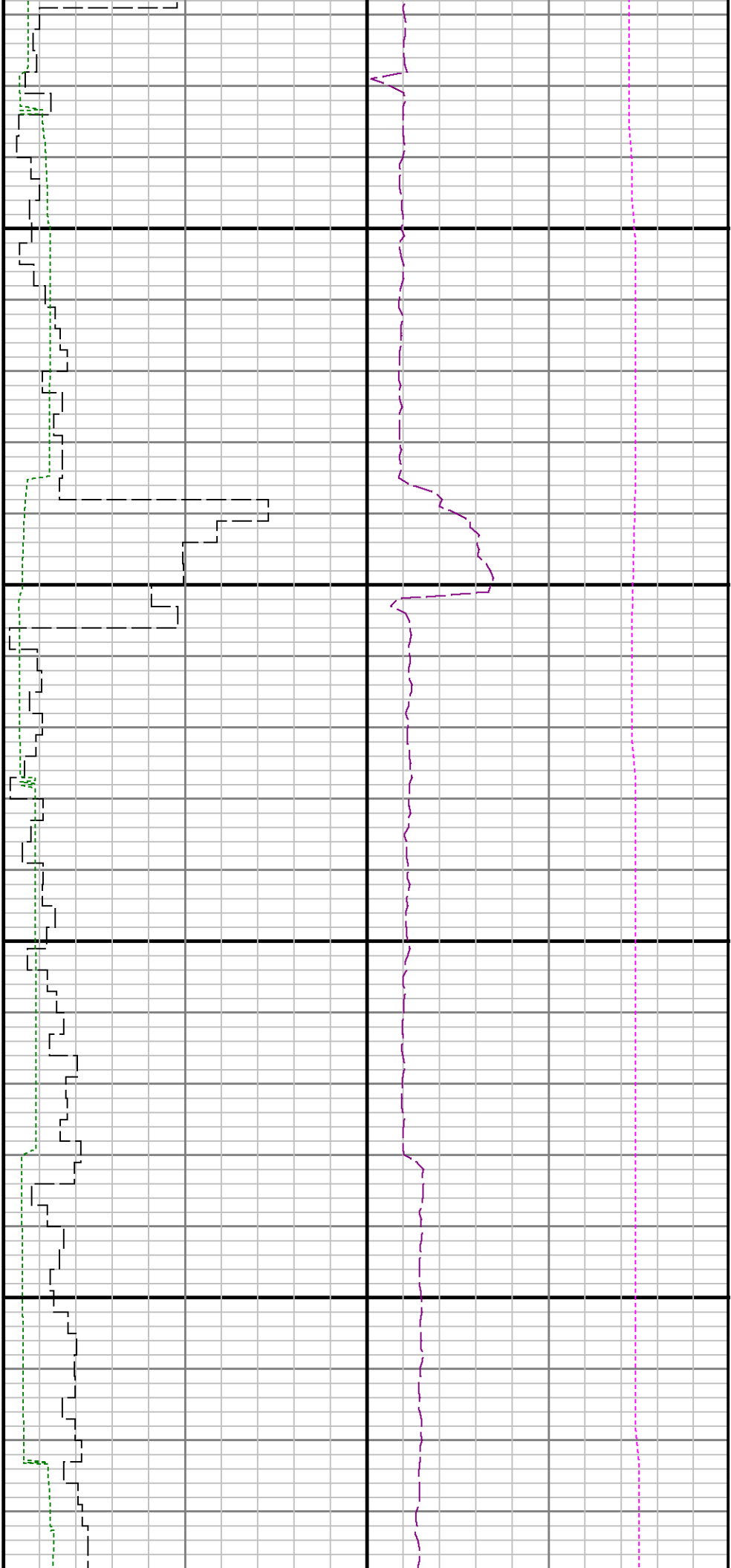
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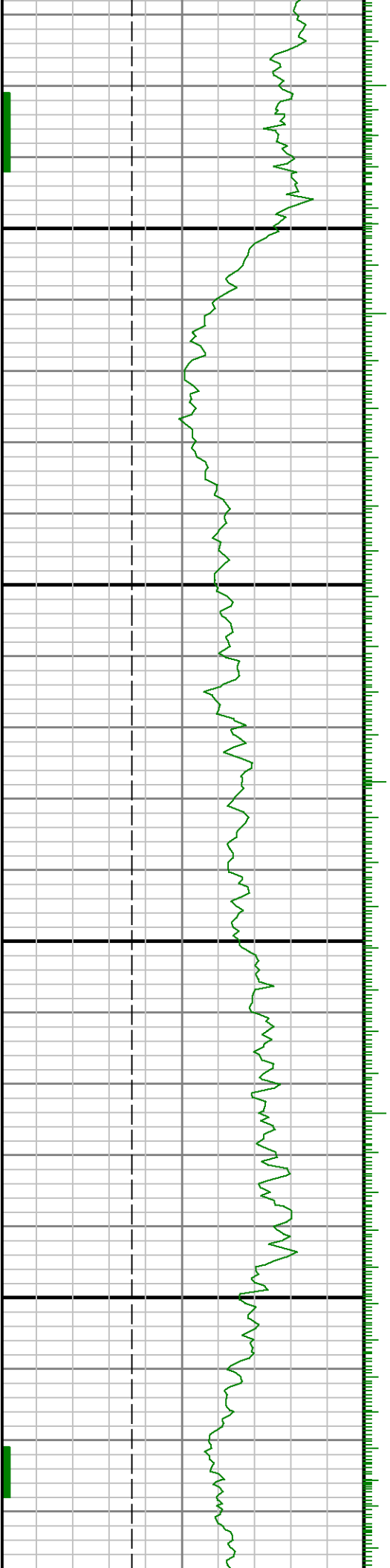


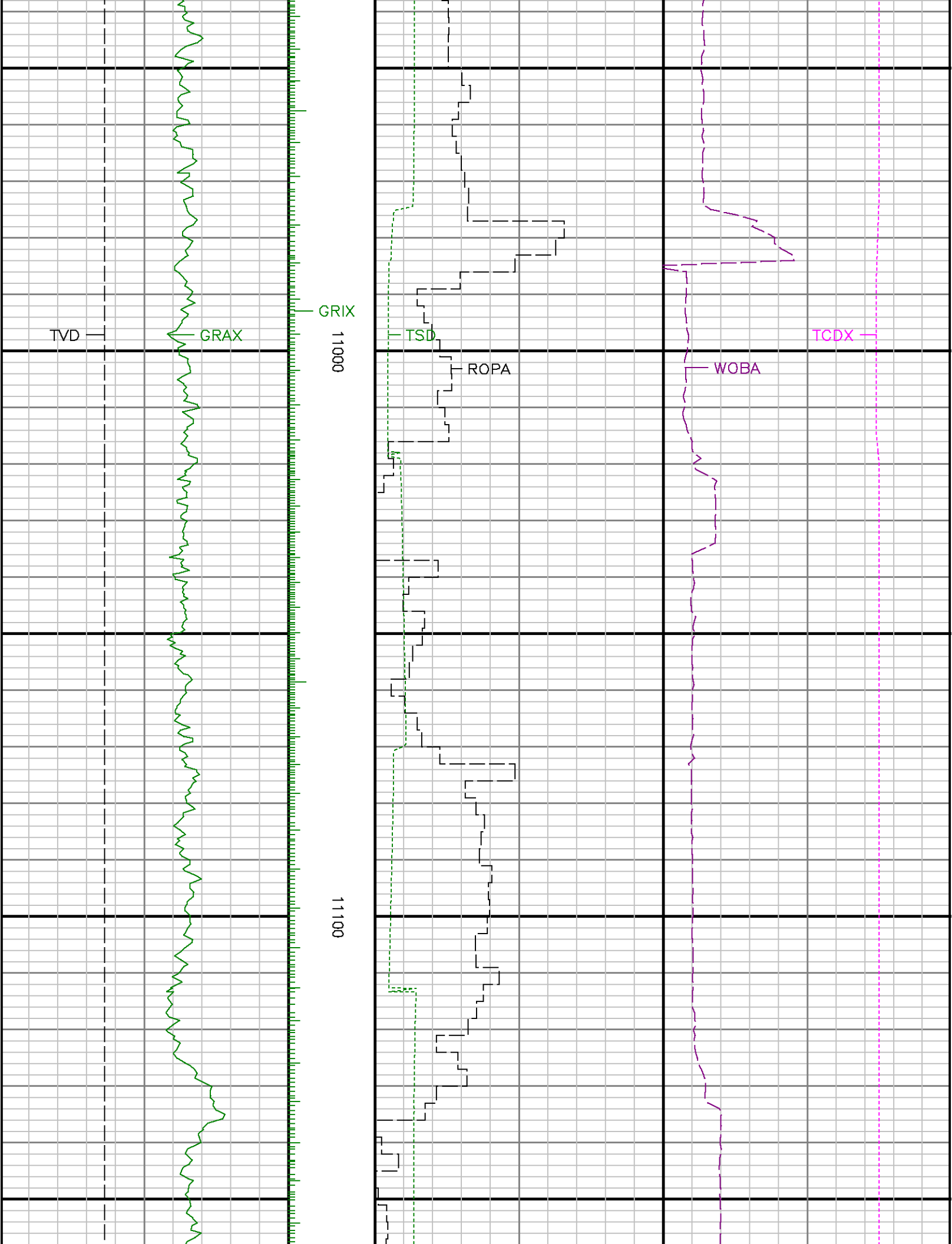


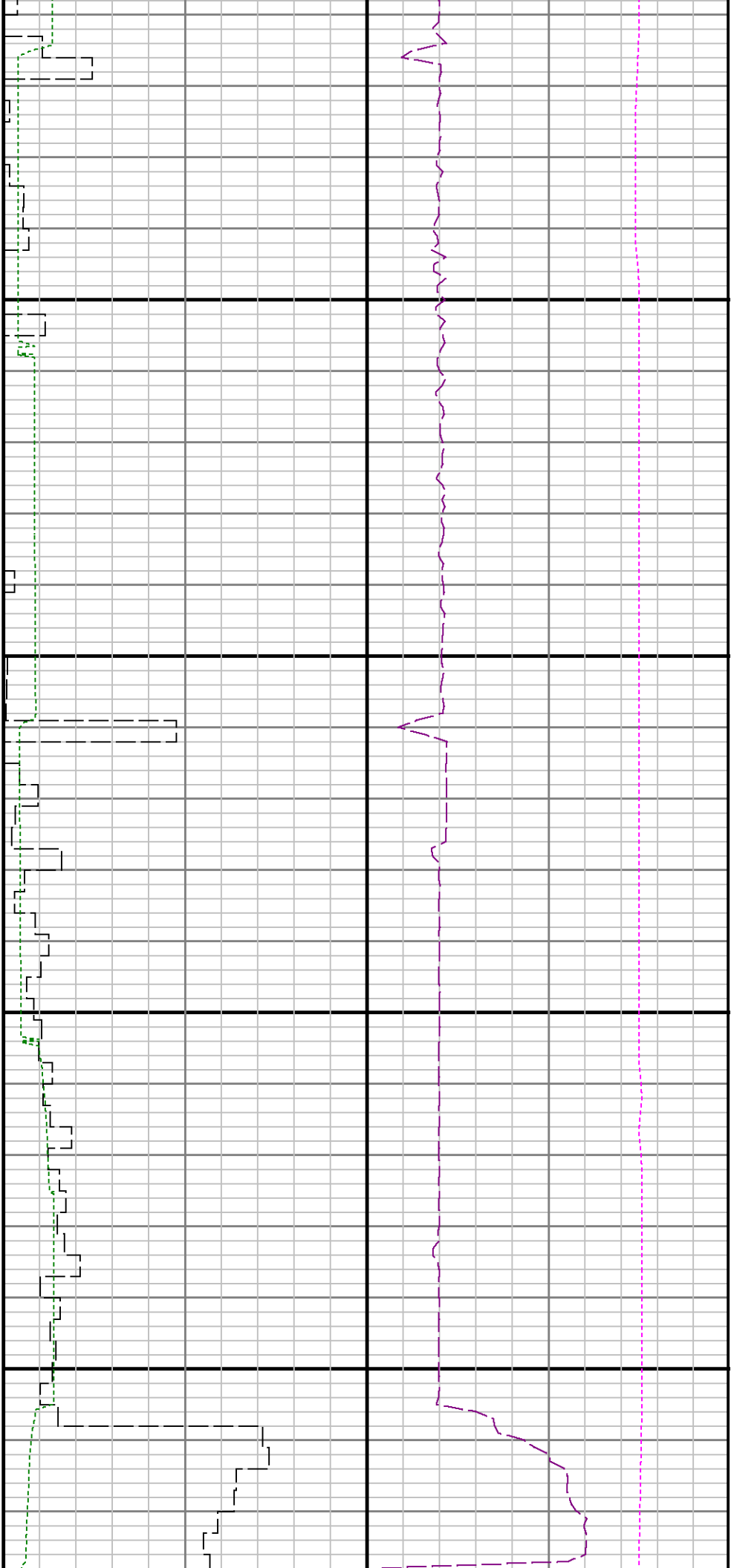


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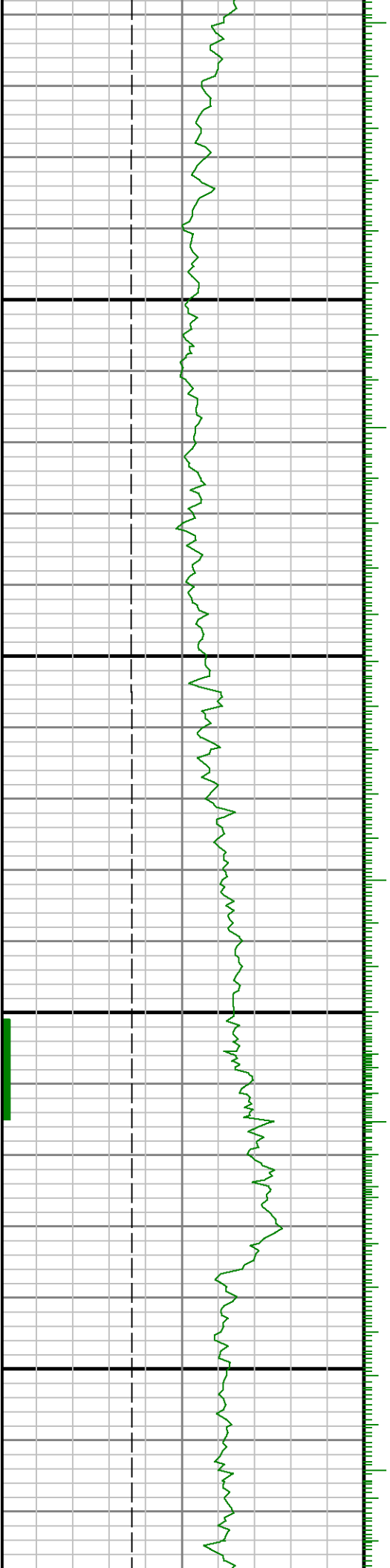


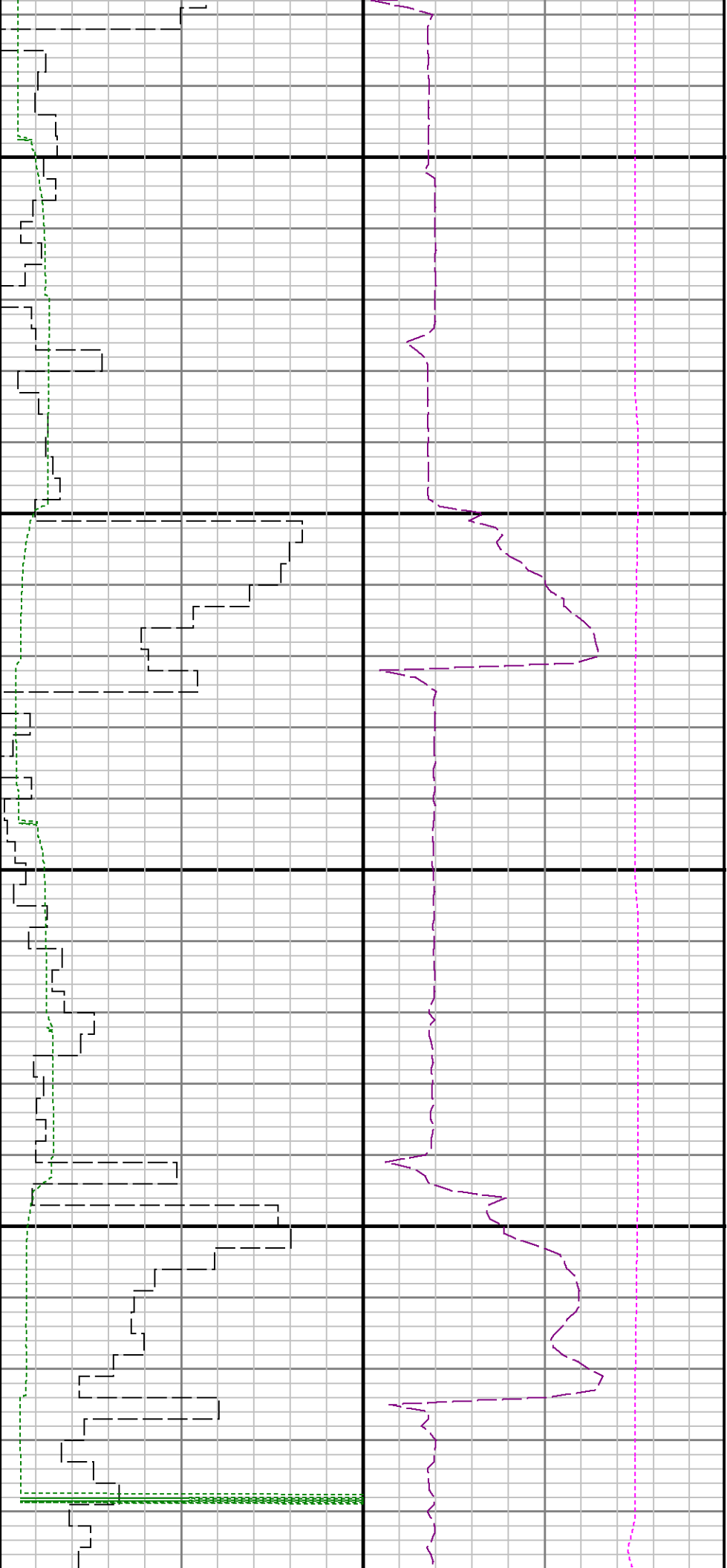




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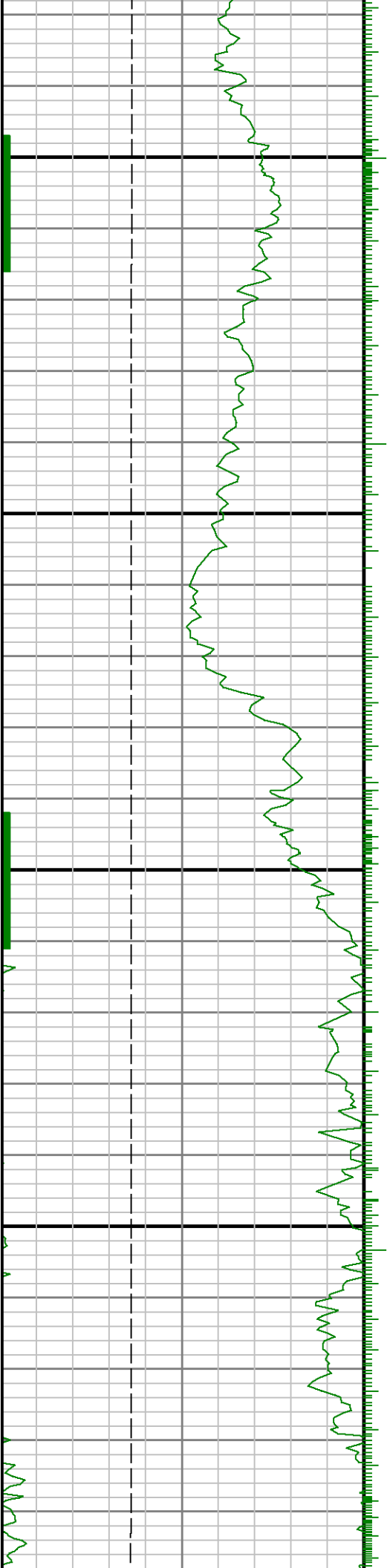


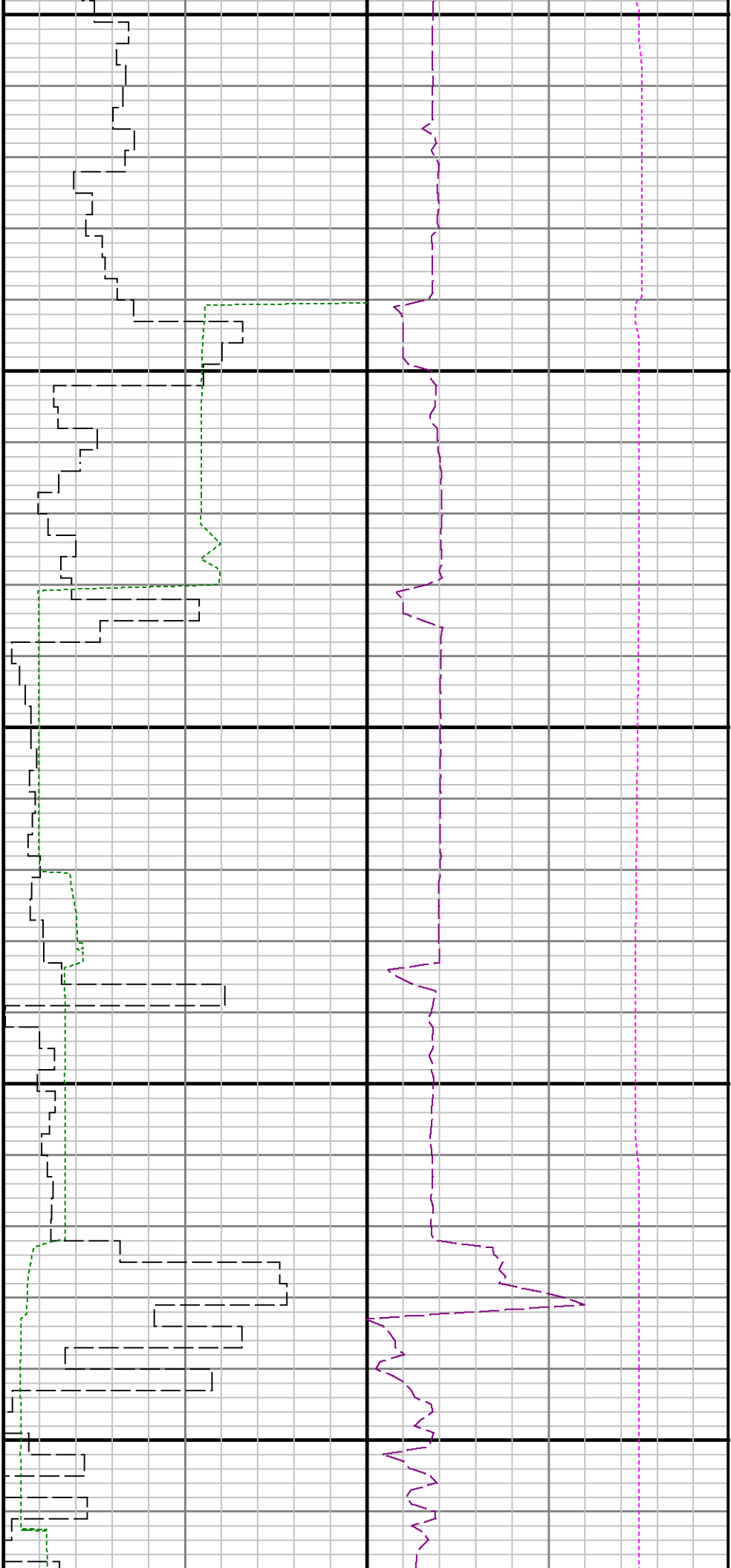


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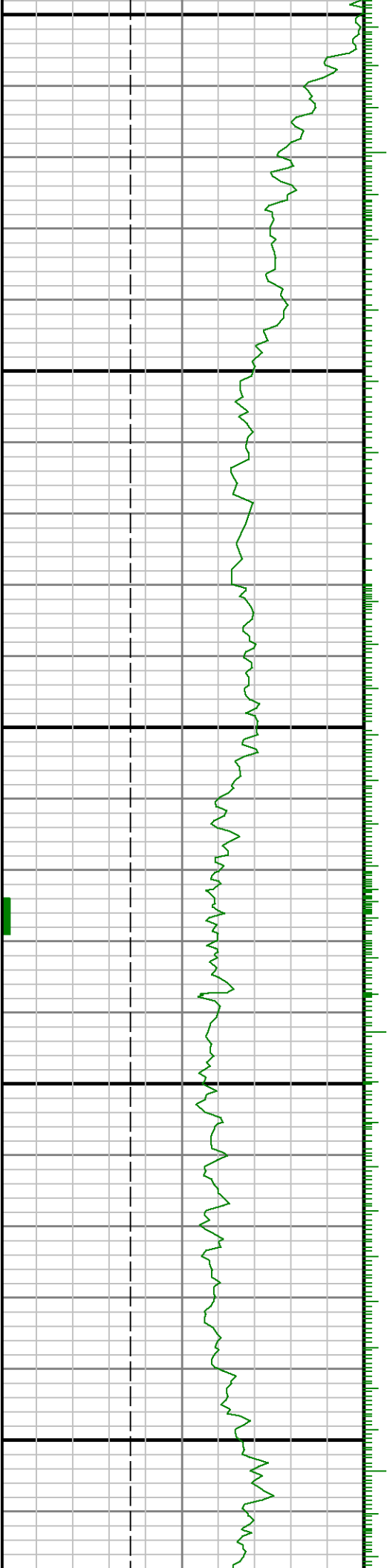


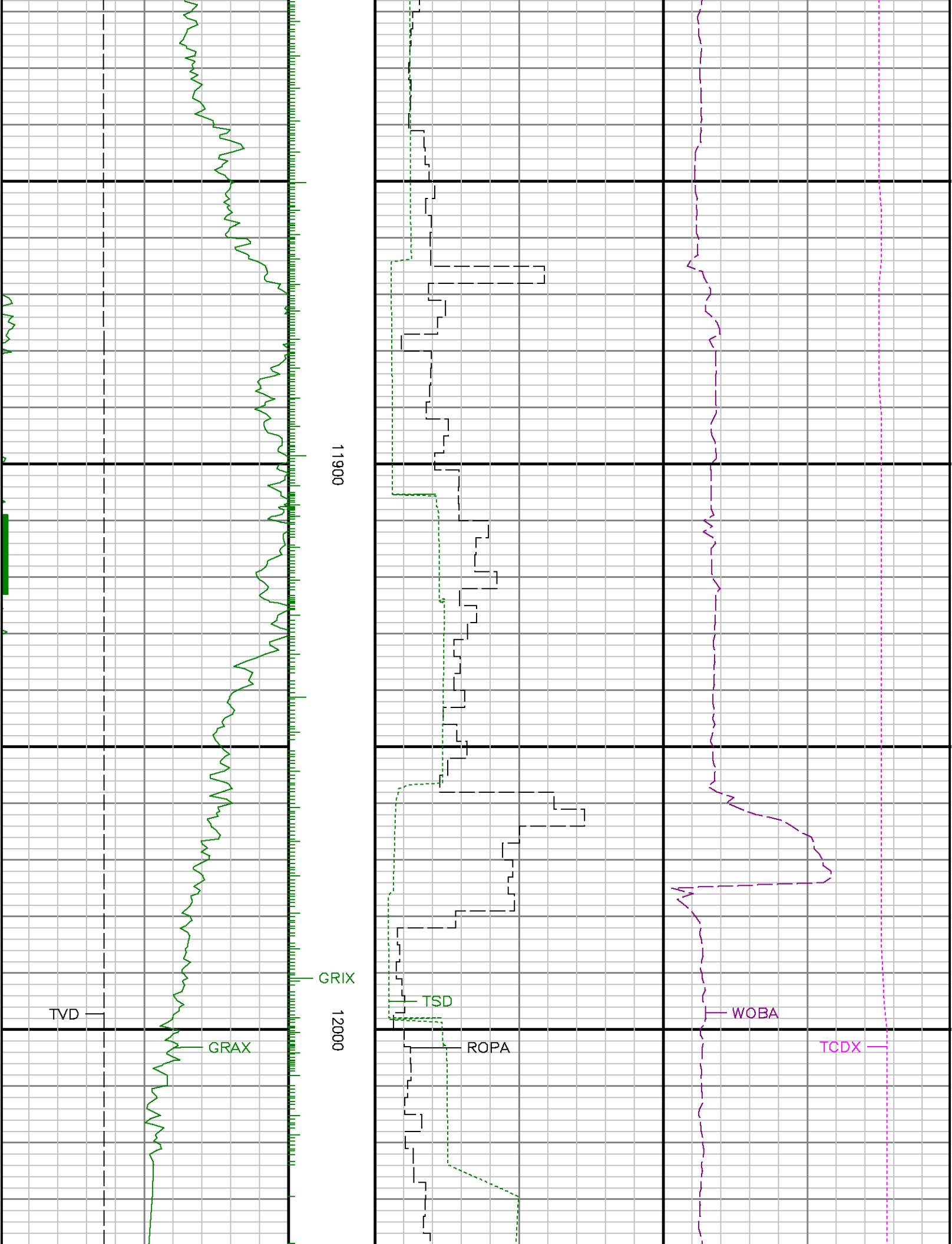


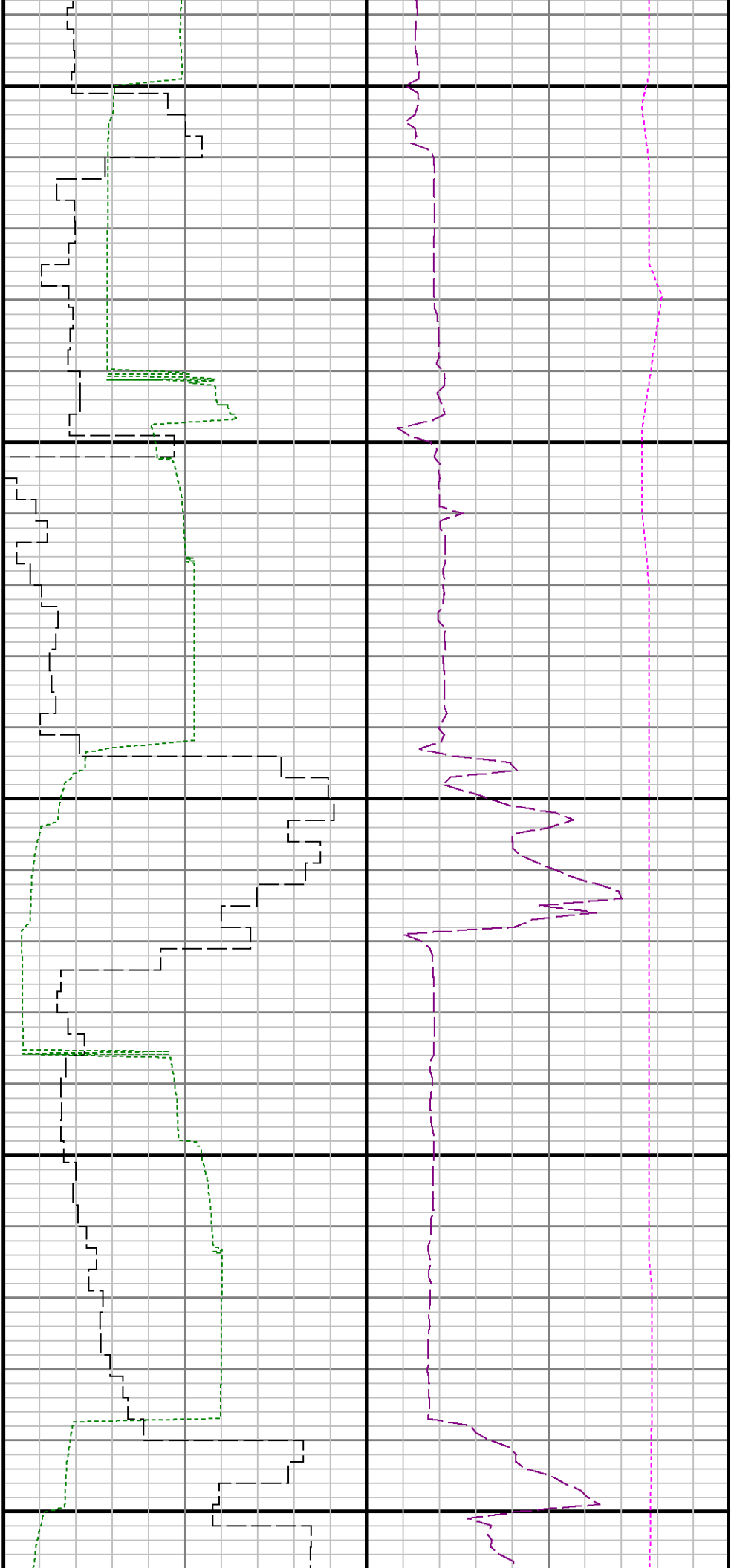
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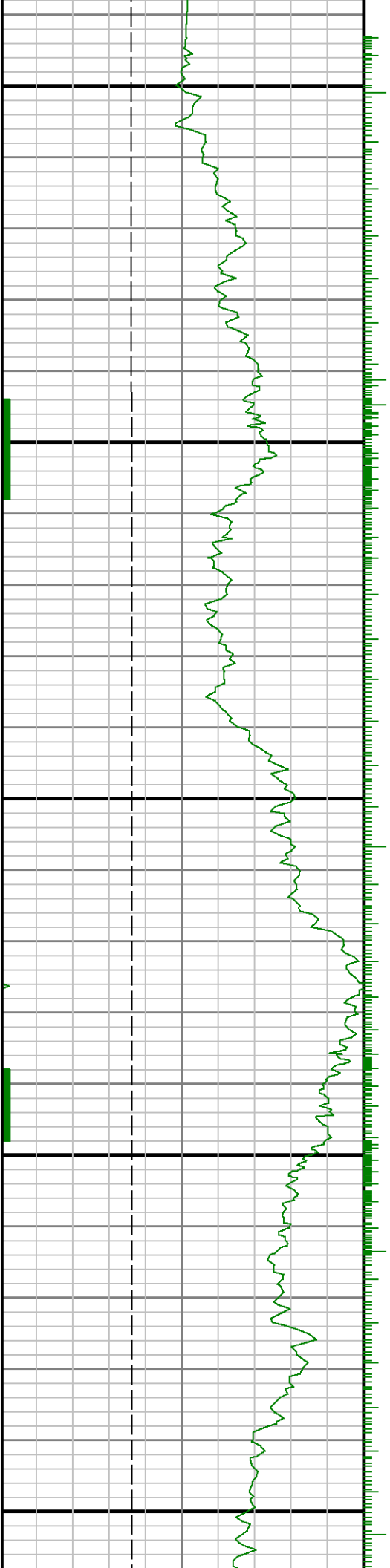


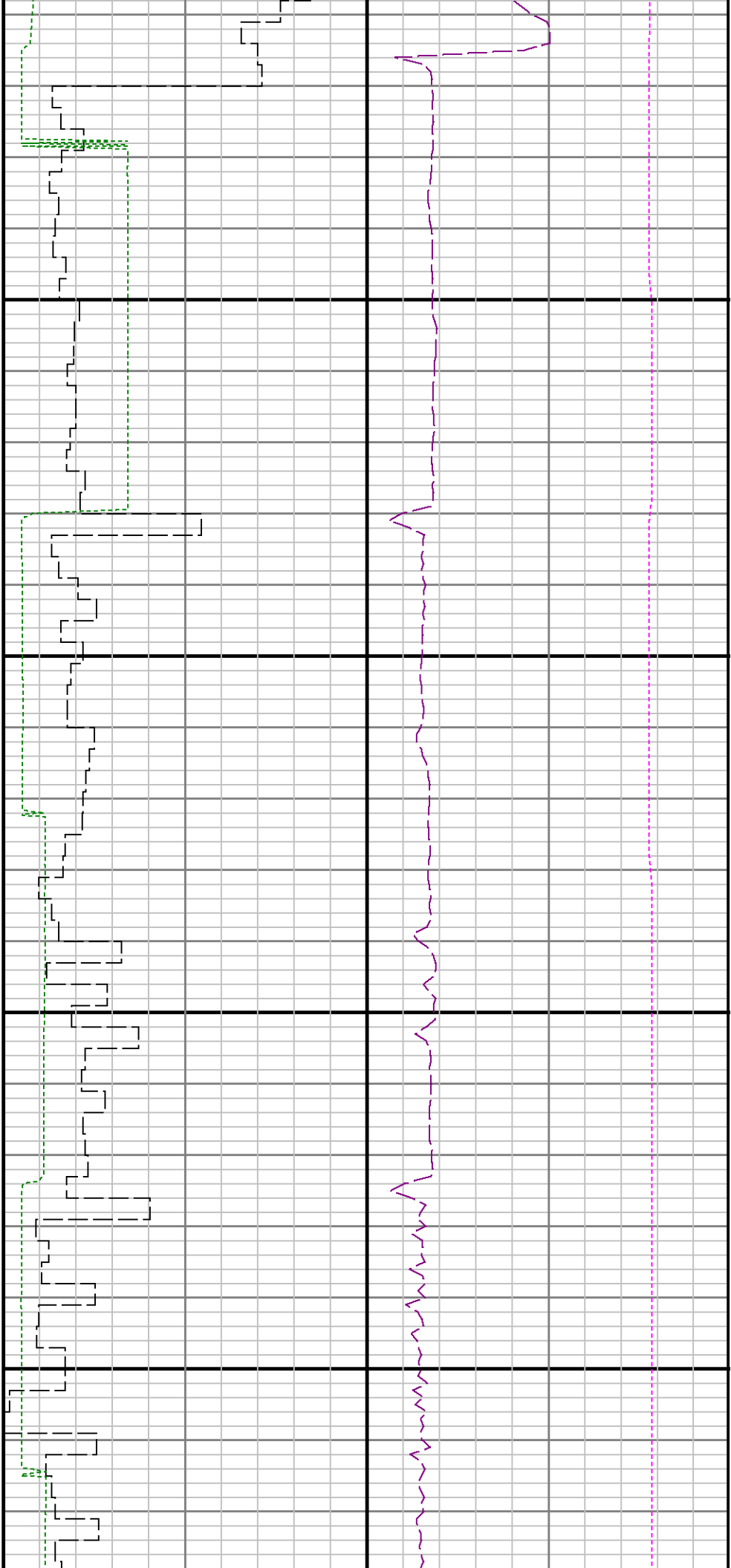




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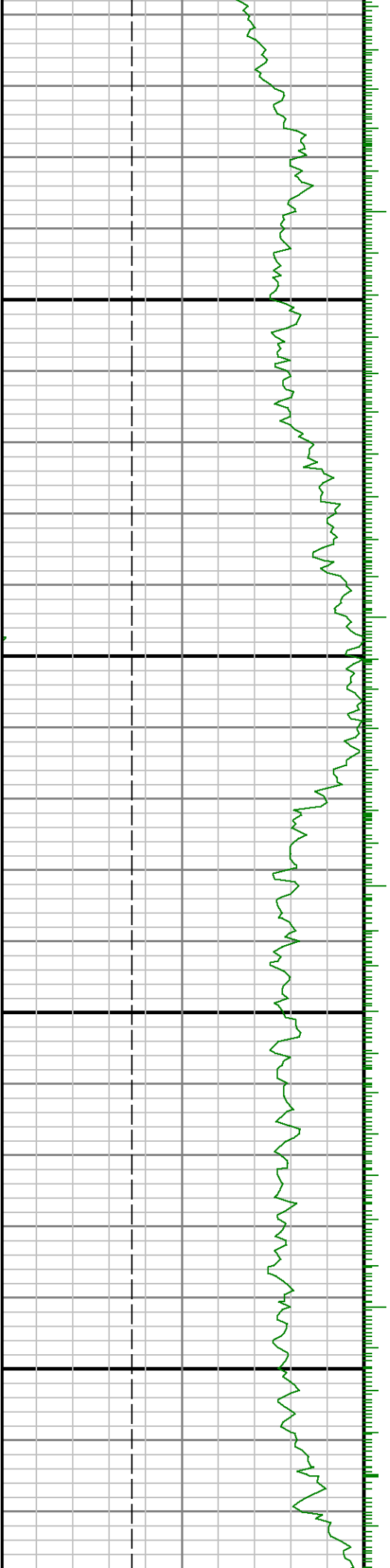
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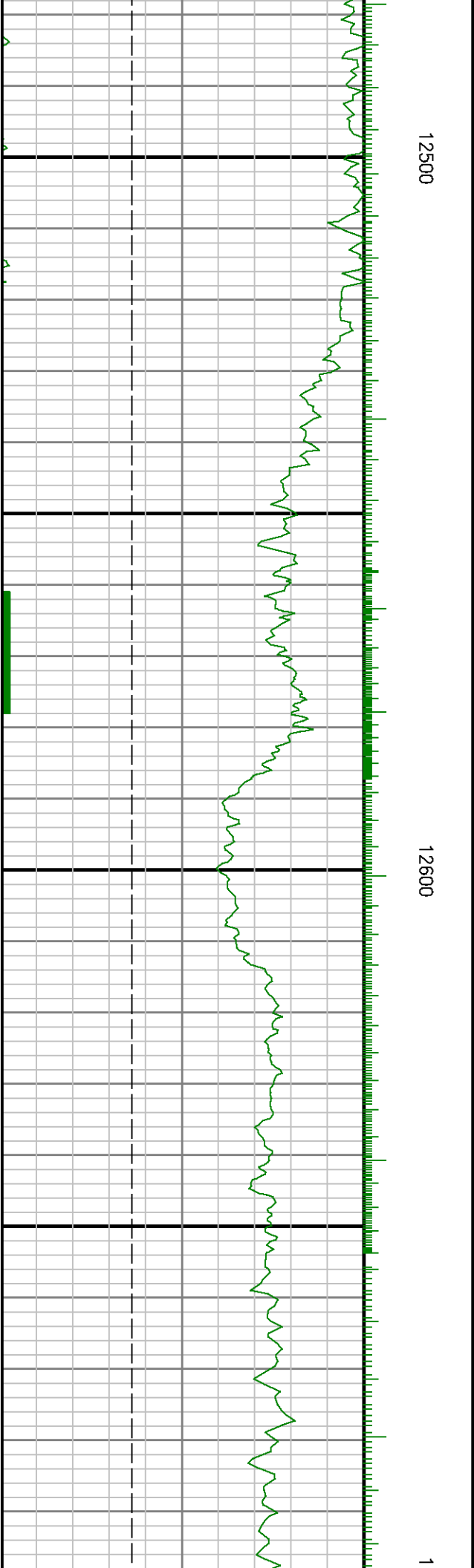
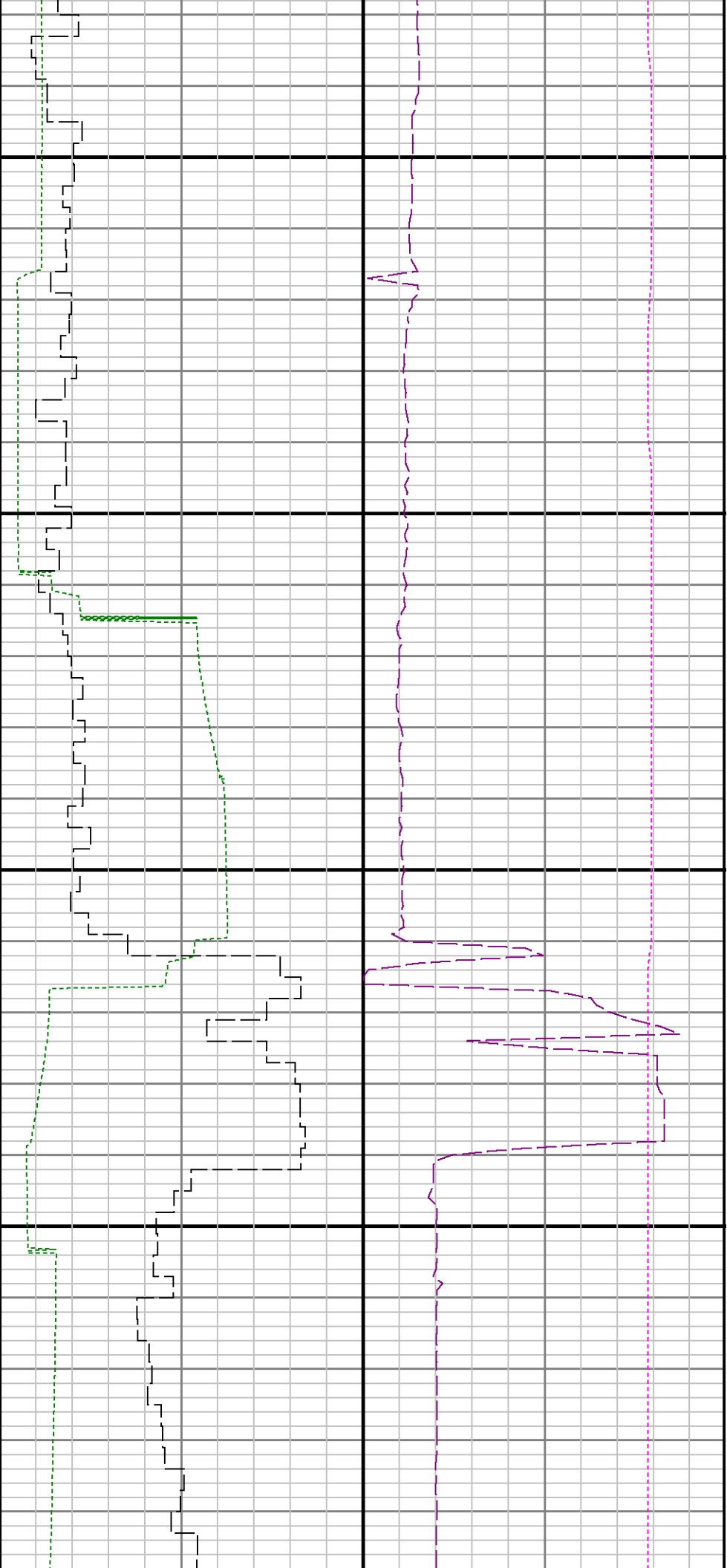


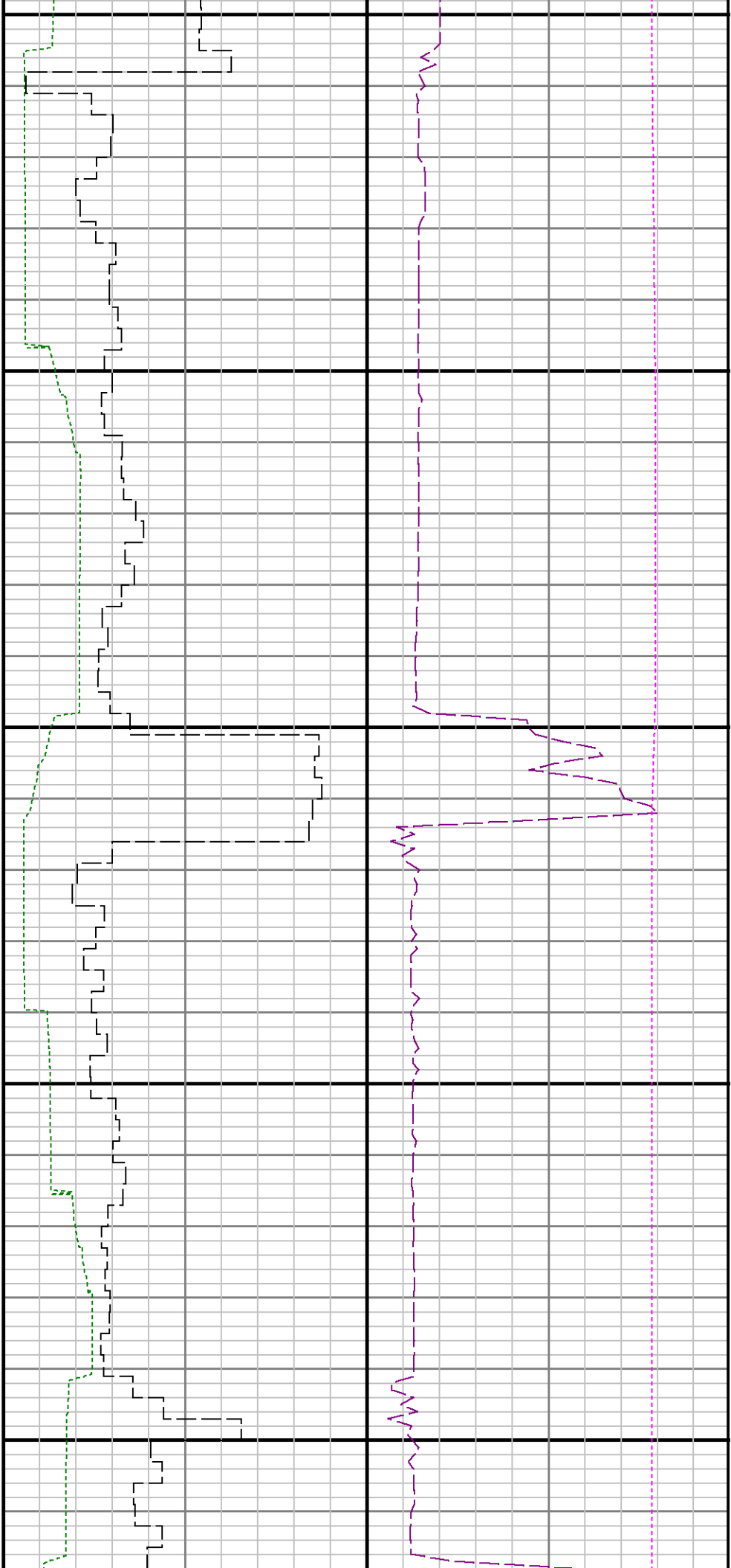


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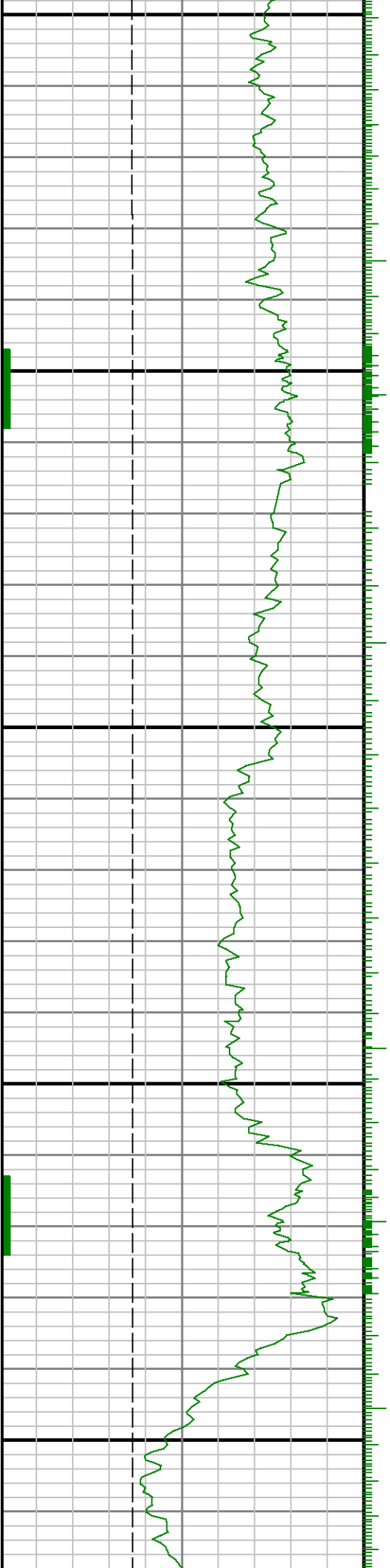


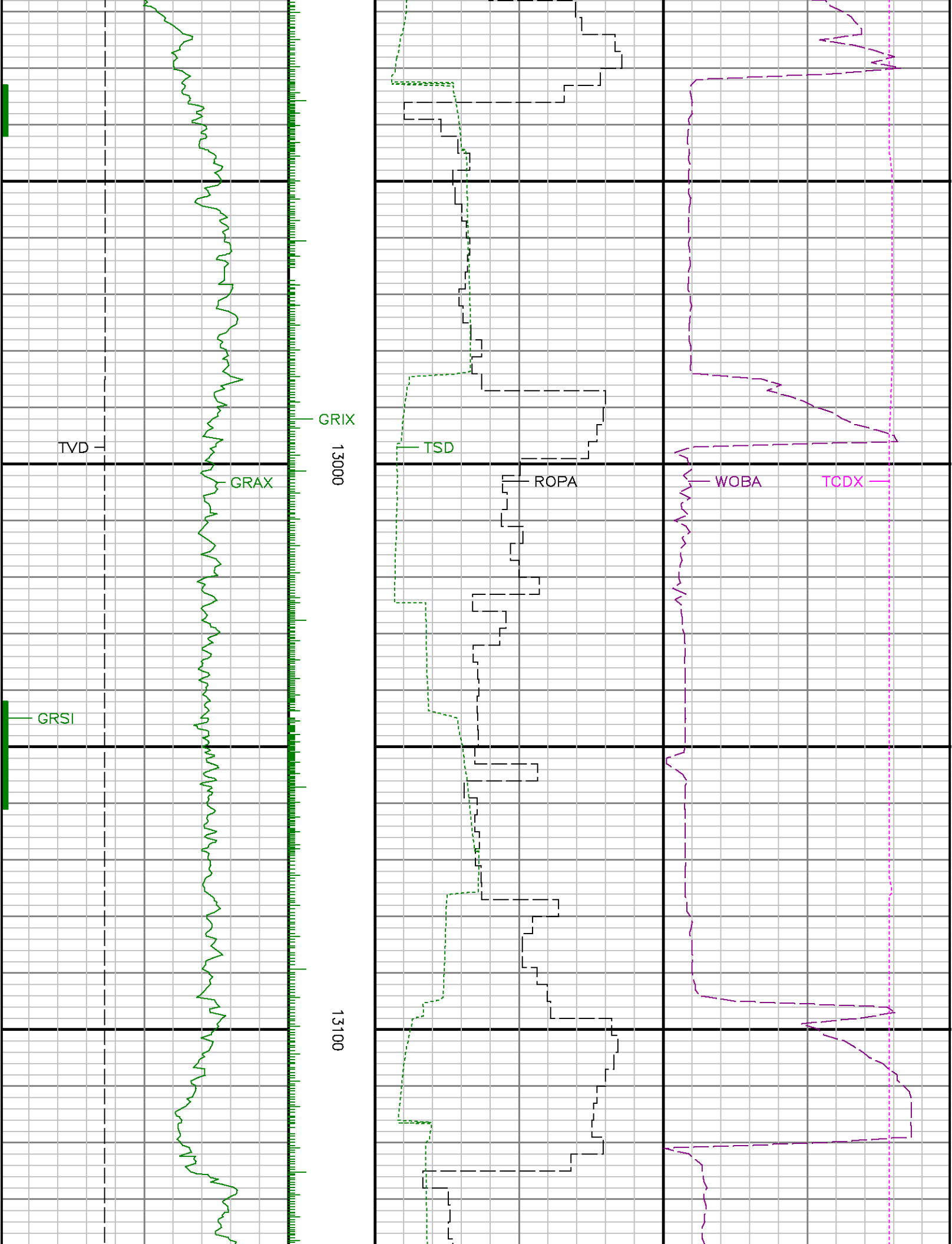


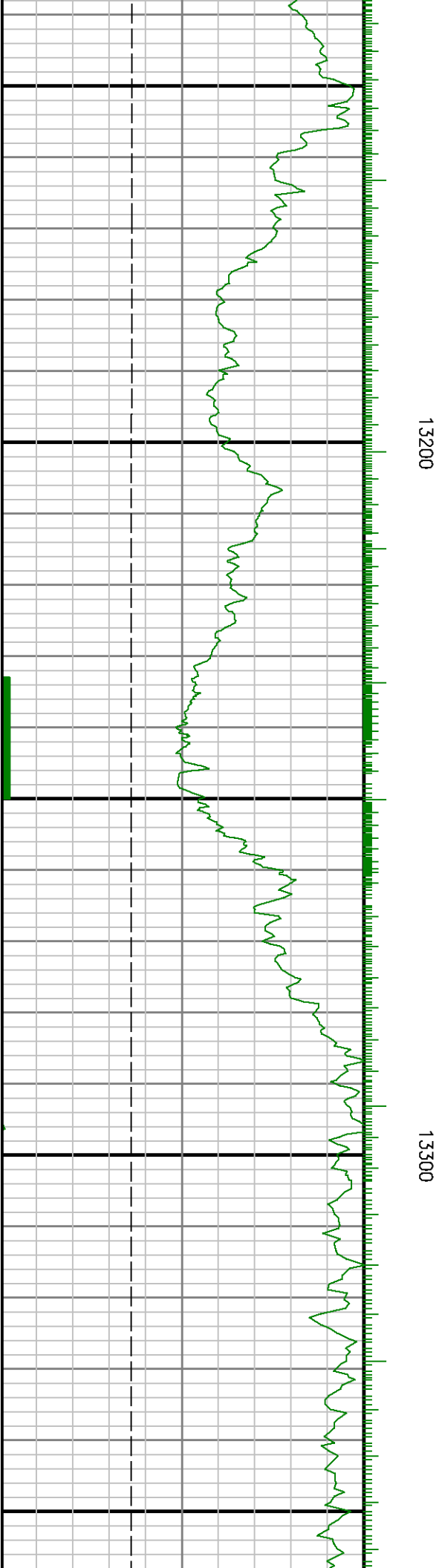
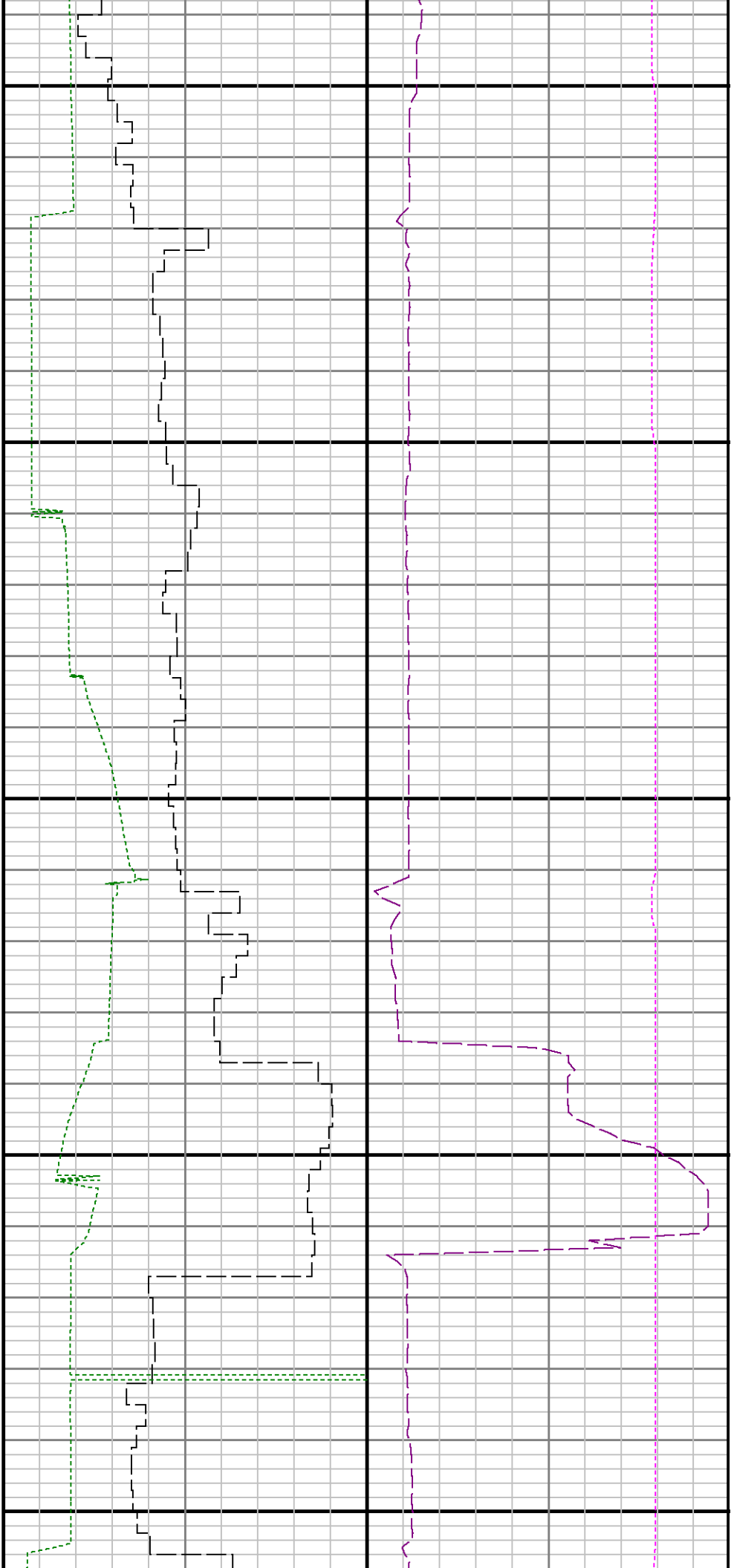
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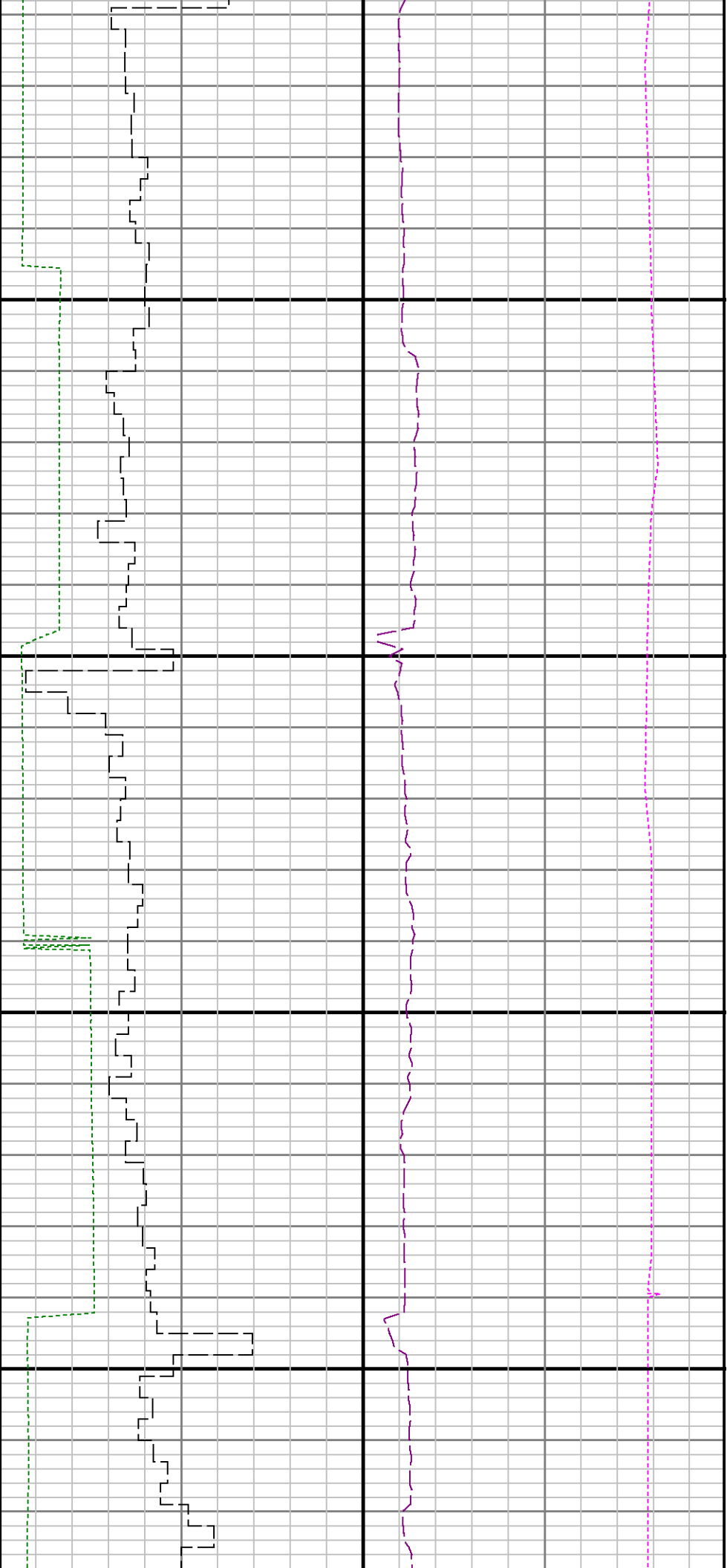
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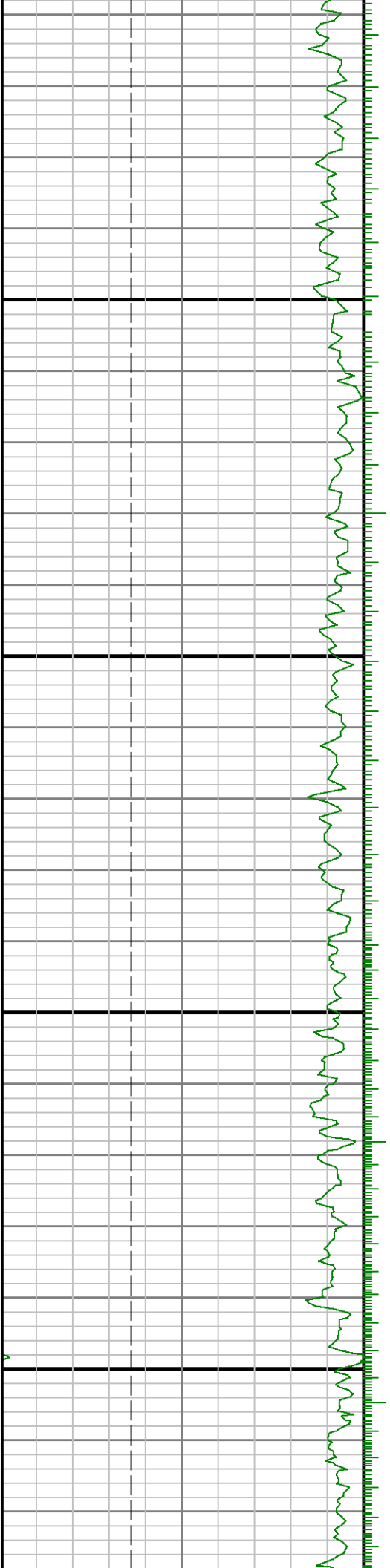


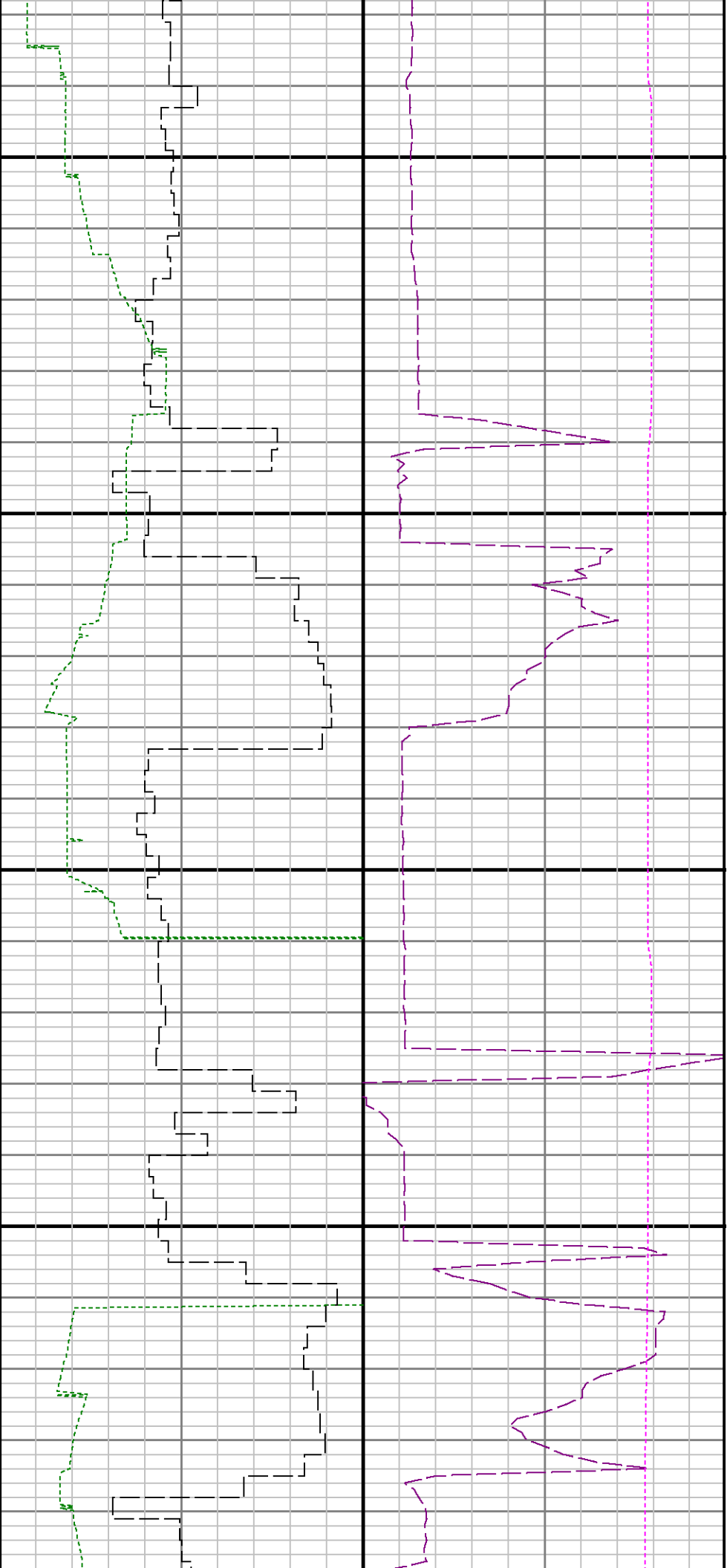




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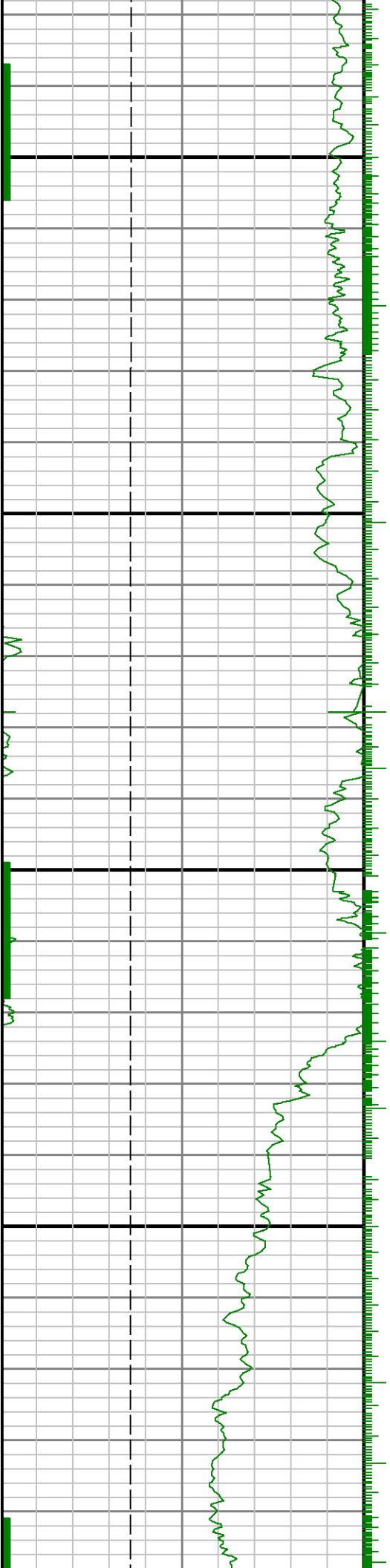


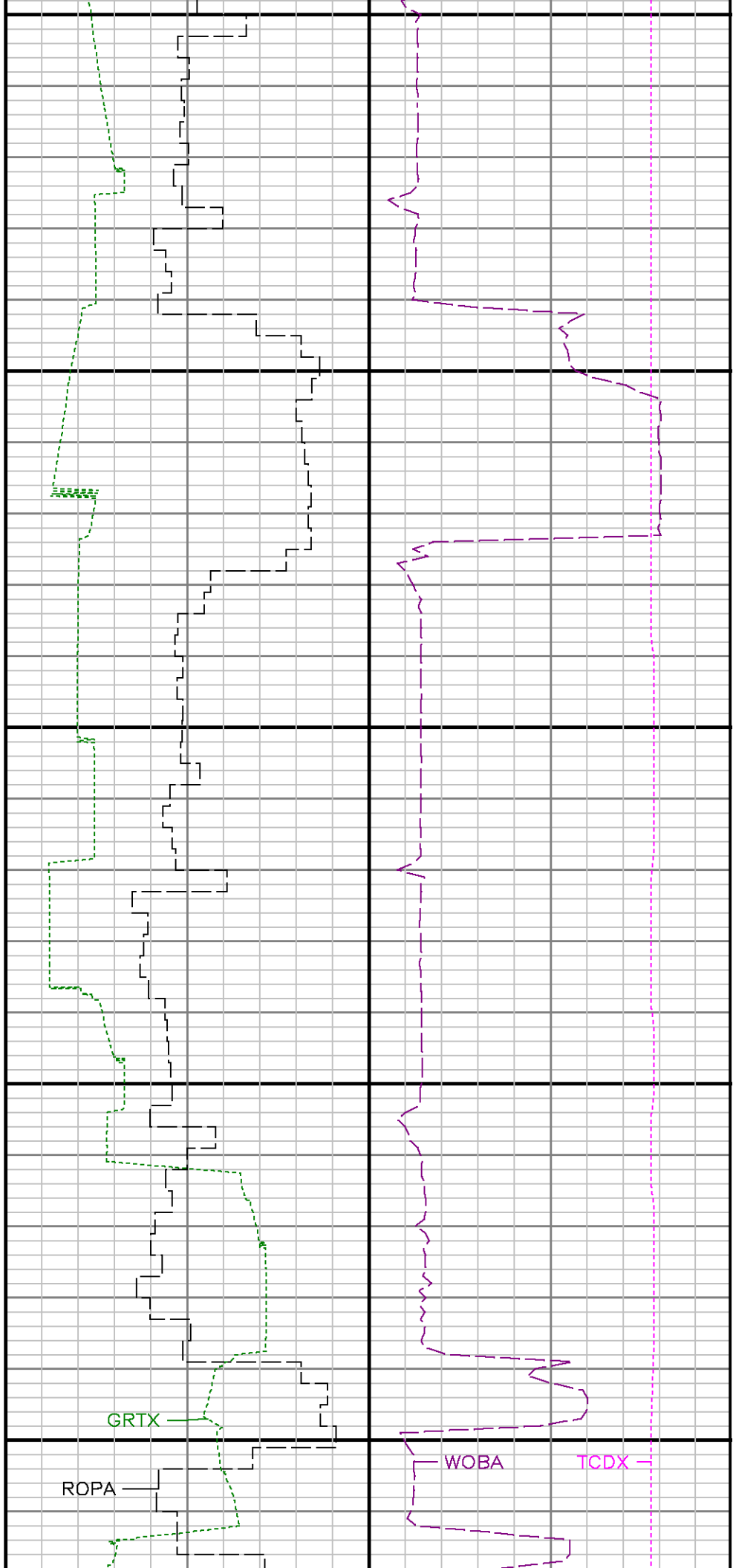
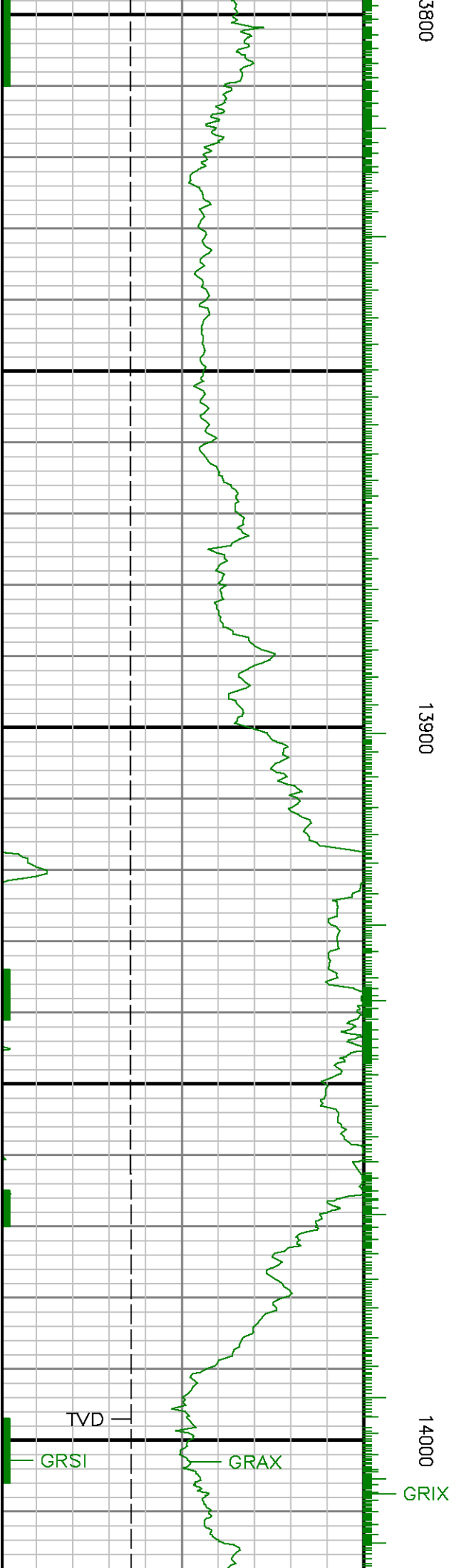


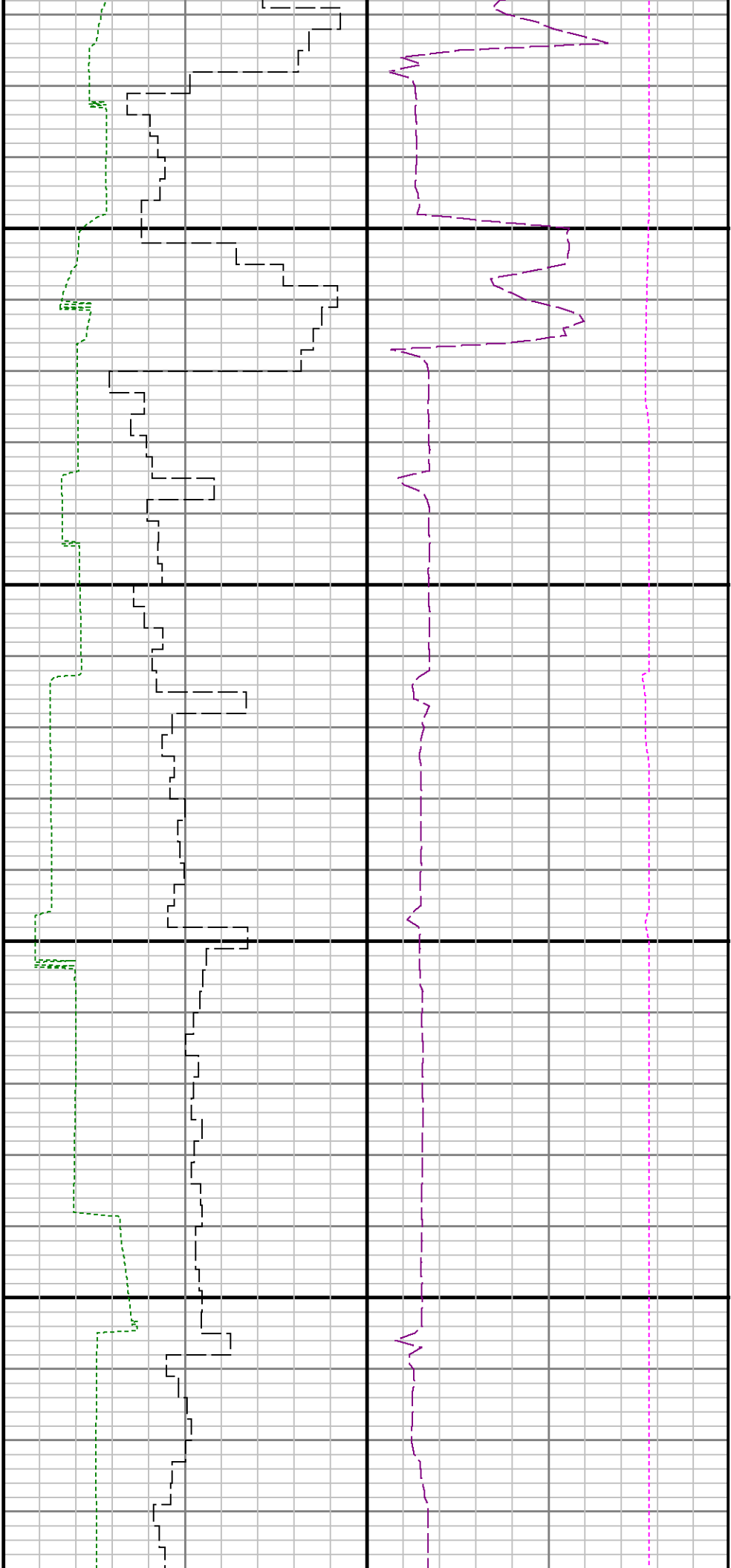
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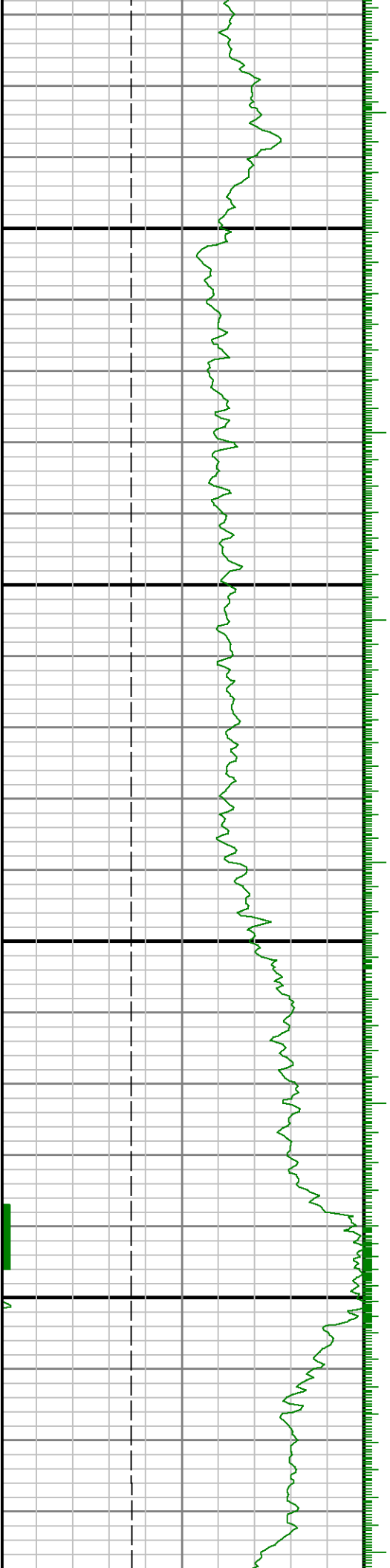


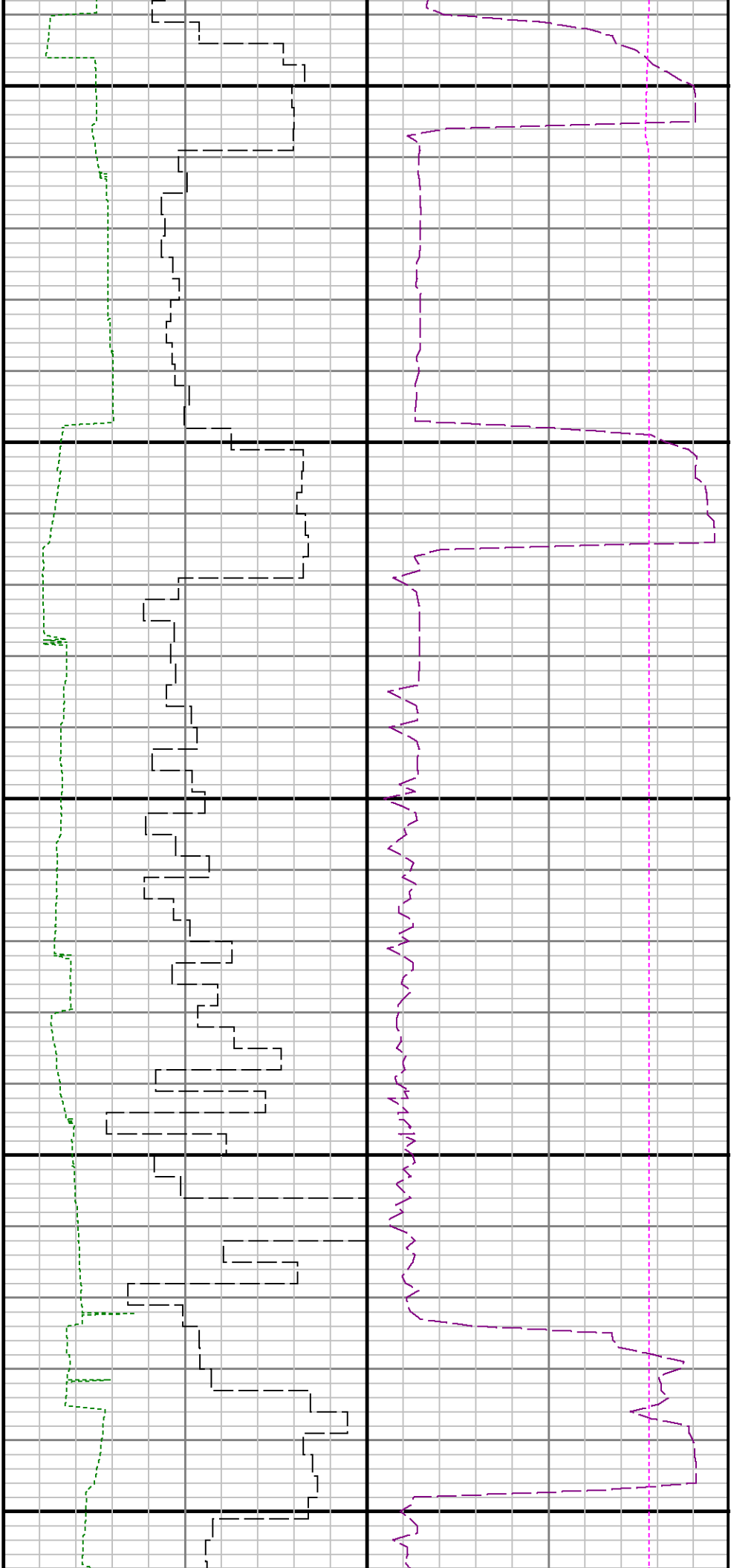




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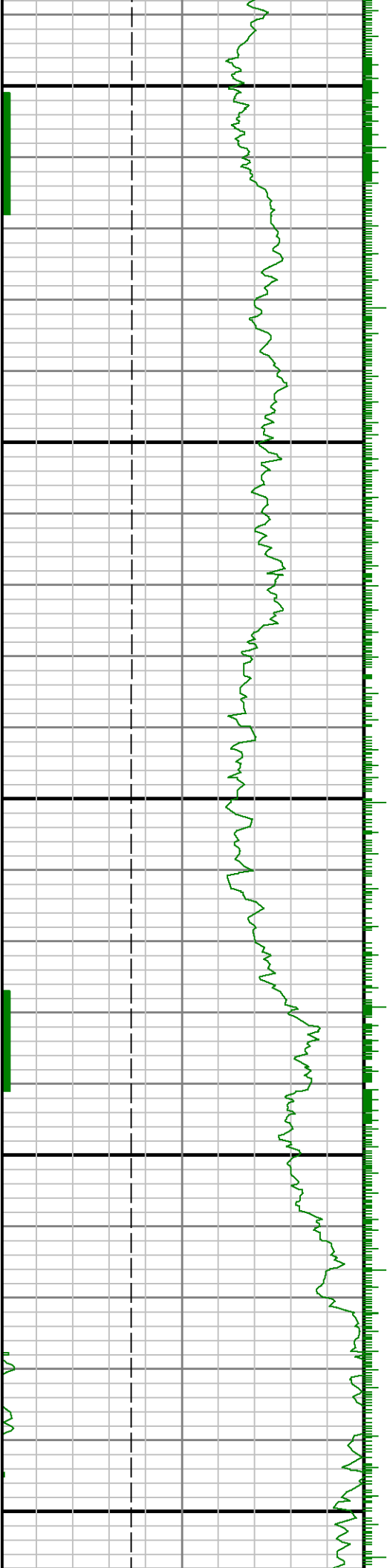
14200

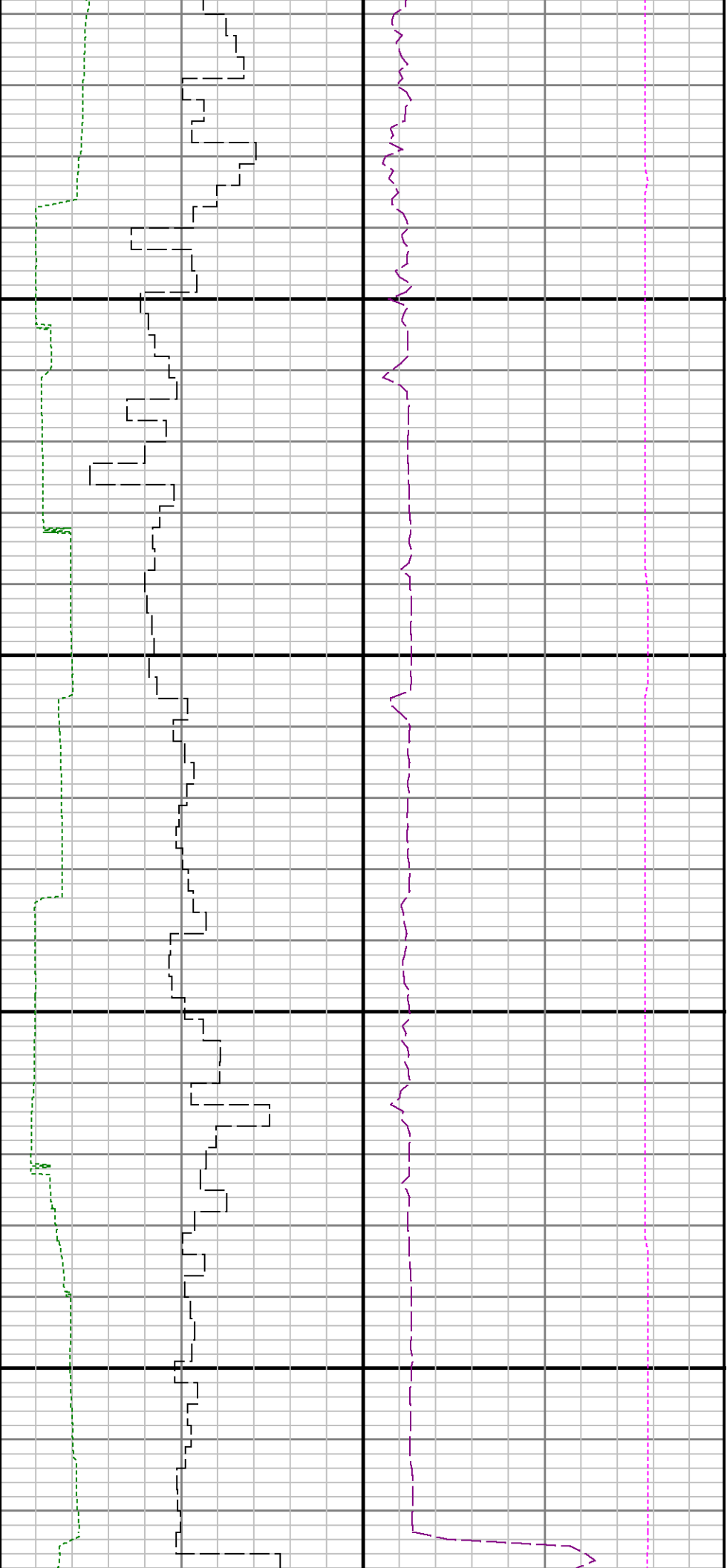




14300

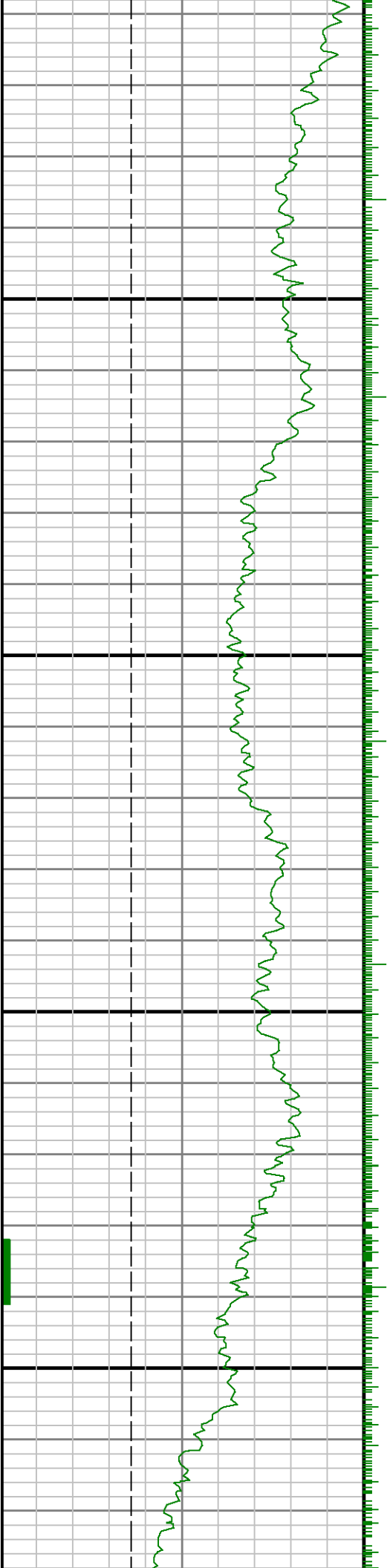
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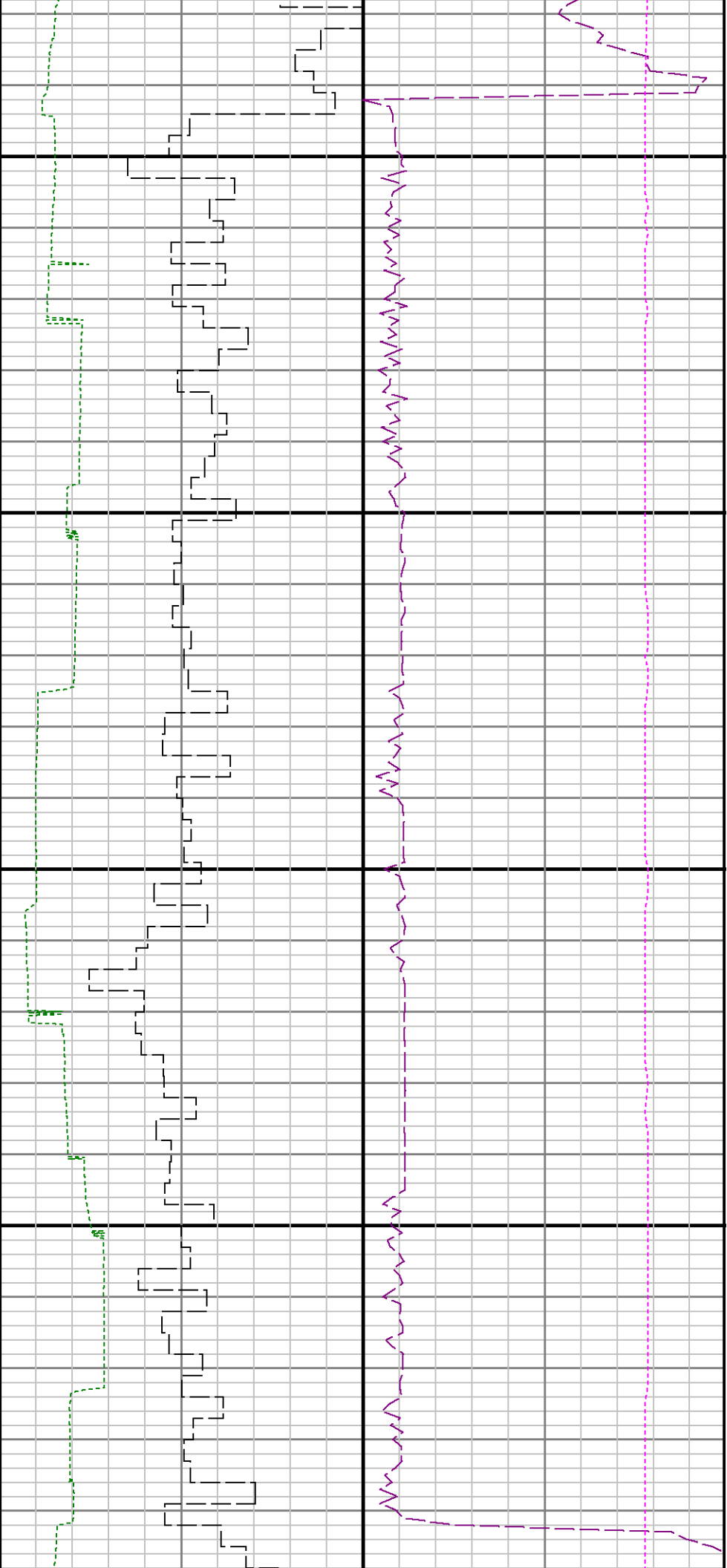




14500

14600

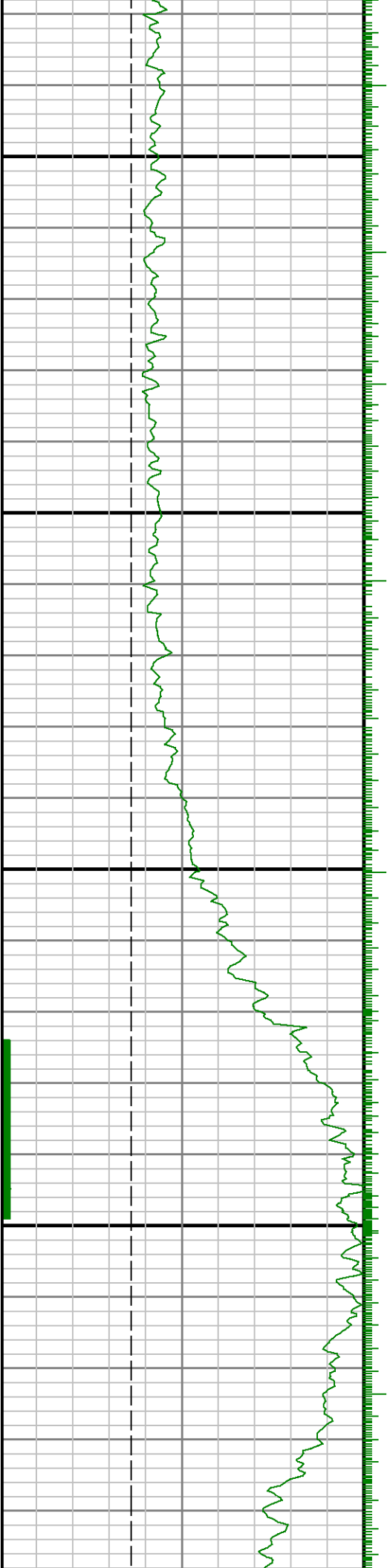


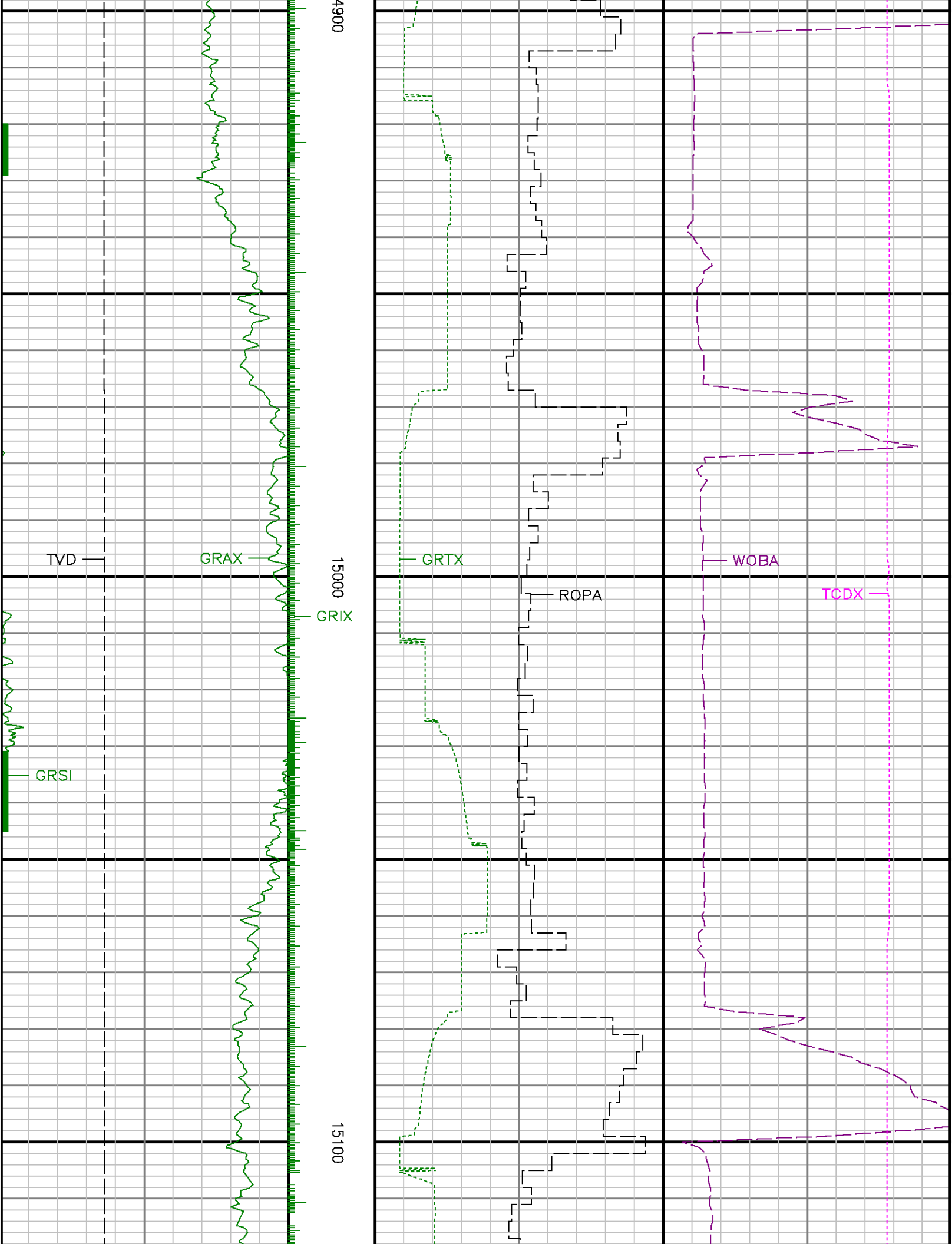


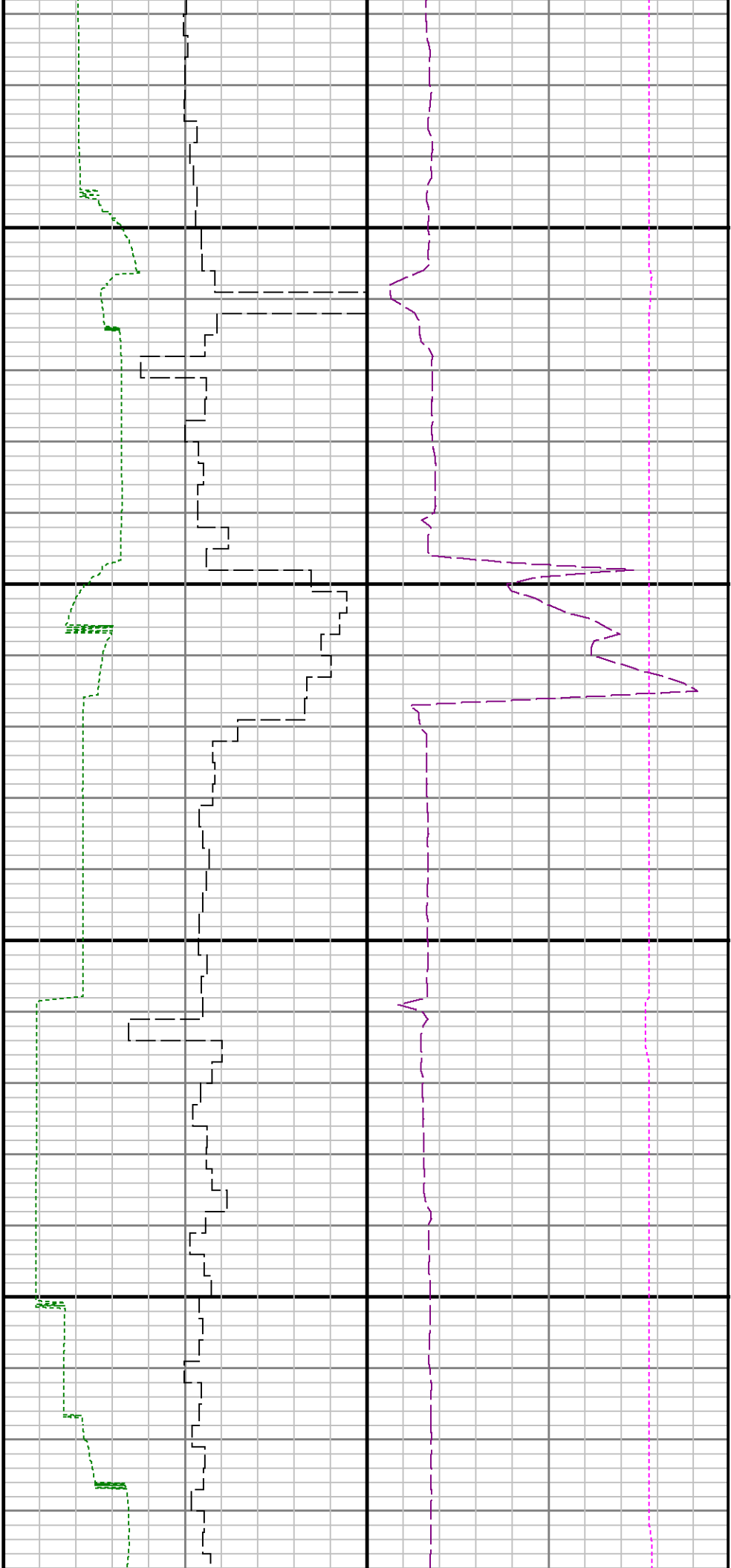
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14800

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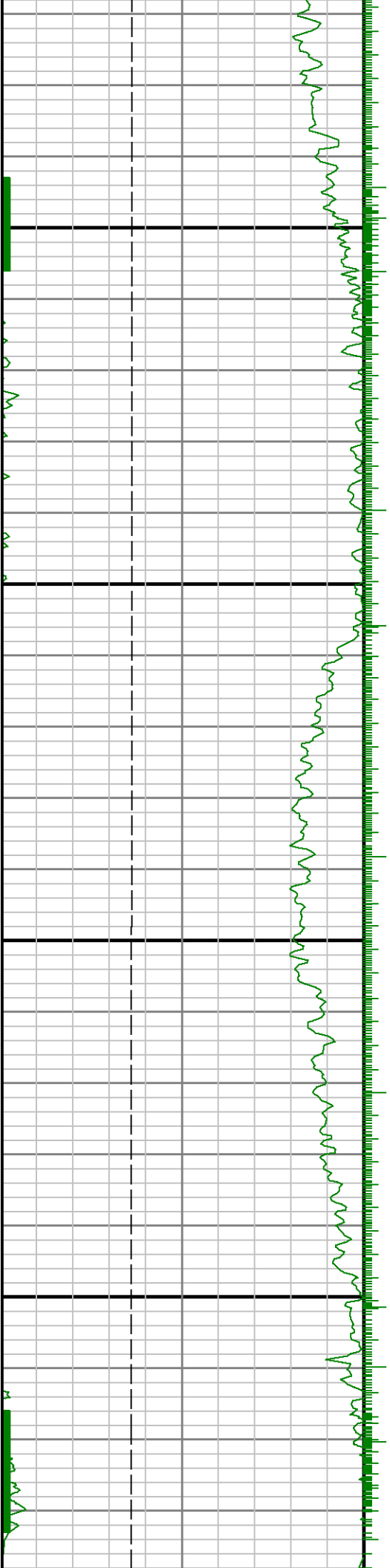


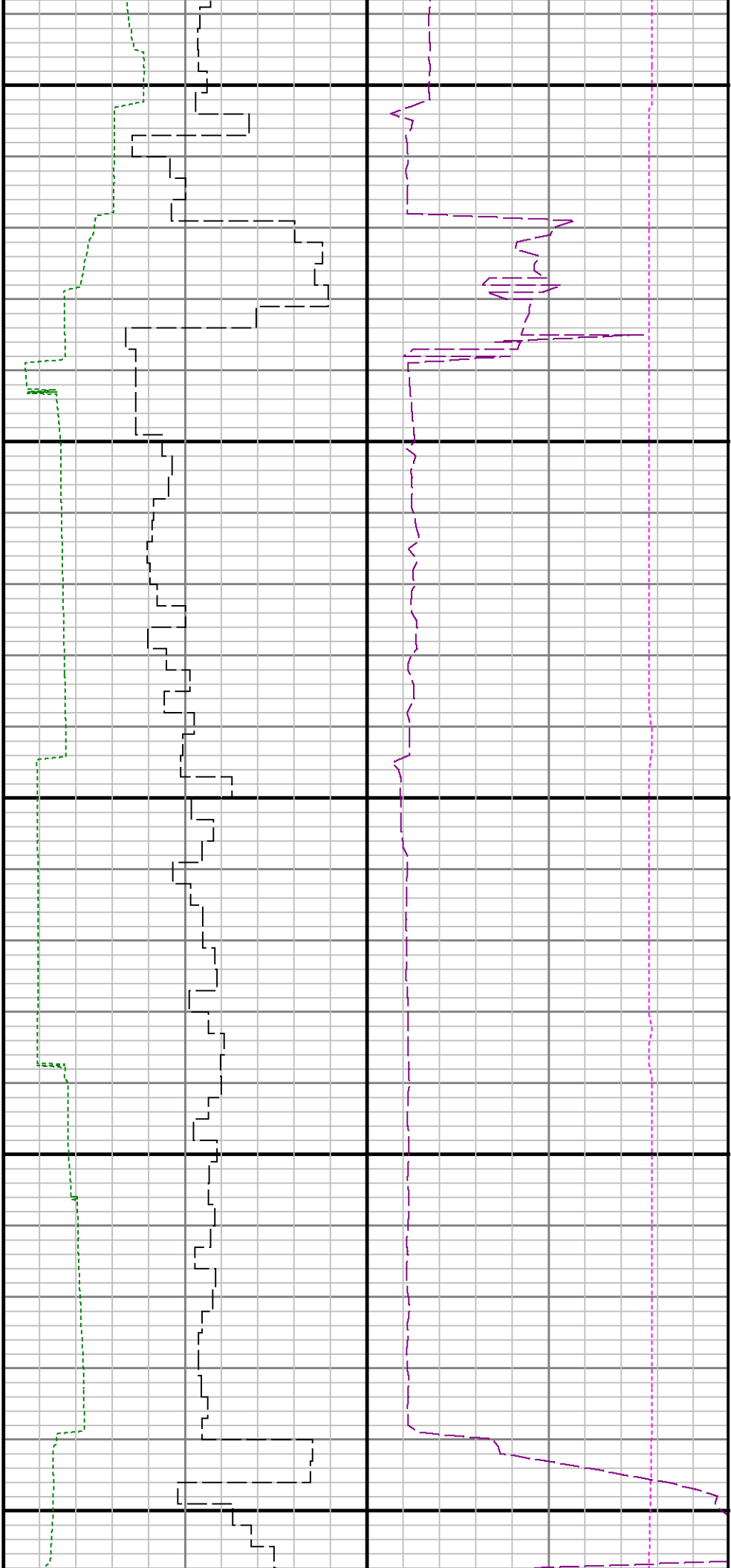




15200

15300





15400

15500

