



Realtime Log

Natural Formation Evaluation
Gamma Ray

Scale: **1:240**

MEASURED DEPTH

Company: Anadarko
Well: Cream State 28C-21HZ
Field: Weld County (Kerr McGee)
Region: Continental US State: Colorado

Status: Final Print

API Number: 051234094900

Surface Location: Latitude: 40° 12' 9.108" N Longitude: 104° 39' 52.603" W

Section: 28 TOWN: 3S Range: 65W

Other Services: Directional VSS

Permanent Datum (P.D.): Mean Sea Level Elevation: 4824.00 ft.

Log Measured From: Rig Floor 20.00 ft. Above P.D.

Depth Reference: Driller's Depth

Elevations: KB: N/A DF: 4844.00 ft. GL: 4824.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6600.0 ft. Date From: 19/Jun/2015 Dip Angle: 66.87° Azi Reference North: True

Bottom: 12610.0 ft. Date To: 25/Jun/2015 Total Mag to Reference

Spud Date: 16/Jun/2015 Field Strength: 52506.0 nT North Correction: 8.45°

Borehole Record			Casing Record			
Hole Size	From	To	Size	Weight	From	To
8.750 in.	1232.0 ft.	7511.0 ft.	9.625 in.	36.00 lb/ft	Surface	1206.0 ft.
6.125 in.	7511.0 ft.	12658.0 ft.	7.000 in.	26.00 lb/ft	Surface	7501.0 ft.

Mud Record			Deviation Record			
Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based	Surface	12658.0 ft.	8.750 in.	7511.0 ft.	13.7° / 268.0°	84.4° / 356.7°
			6.125 in.	5147.0 ft.	89.1° / 358.6°	88.7° / 356.0°
					/	/
					/	/
					/	/
					/	/
					/	/

Acquisition System		Software Version		Other	
Advantage	2.20U4	Rig / Contractor:	Precision 462	/ Precision Drilling	
PATS	6.4.1.34	Job No:	7224378	/ 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		
1	1	1	8.750	PDC	3.500	Mud Motor	6600.0	7177.0	6600.0	7221.0	19/Jun/2015 16:11	19/Jun/2015 23:33	27.2
2	2	2	8.750	Tri Cone	N/A	Mud Motor	7177.0	7207.0	7222.0	7243.0	20/Jun/2015 14:48	22/Jun/2015 19:23	5.5
3	3	3	8.750	Tri Cone	N/A	Mud Motor	7208.0	7475.0	7244.0	7510.0	21/Jun/2015 14:43	22/Jun/2015 11:11	21.7
4	4	4	6.125	PDC	5.000	Mud Motor	7475.0	12610.0	7510.0	12658.0	24/Jun/2015 03:45	25/Jun/2015 19:35	35.6

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Andy King	18/Jun/2015	26/Jun/2015	Nick Gerard	18/Jun/2015	26/Jun/2015	Mike Gurnsey	18/Jun/2015	20/Jun/2015

Bill Herbers	21/Jun/2015	26/Jun/2015	Ken Perry	18/Jun/2015	26/Jun/2015			
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Mud Properties Record

Date / Time		LWD Run No.	Measured Depth (ft.)	Mud Type	Density (lb/gal)	Viscosity (s/qt)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (mg/L)	K+ (%)
19/Jun/2015	04:00	1	4400.0	Poly-Plus	9.0	35	9.0	N/A	0/97	Suction	700	N/A
21/Jun/2015	06:00	2	7243.0	Poly-Plus	10.1	53	9.0	5.0	2/88.5	Suction	600	N/A
21/Jun/2015	18:00	3	7298.0	Poly-Plus	10.1	57	9.5	4.8	2.2/88.8	Suction	600	N/A
24/Jun/2015	17:00	4	9461.0	Poly-Plus	9.8	42	9.5	4.8	2.2/89.8	Suction	500	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent, 0.5 ft. Avg.	API
GRTX	Gamma Ray Time Since Drilled	min.
GRIX	Gamma Ray Data Density	points
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.	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	11941435	Directional	47.09	6.750	3.250
1	SRIG	12131401	Gamma	43.72	6.750	3.250
2	DIR	11983381	Directional	39.05	6.770	3.250
2	SRIG	11734840	Gamma	35.68	6.770	3.250
3	DIR	11983381	Directional	39.01	6.770	3.250
3	SRIG	11734840	Gamma	35.64	6.770	3.250
4	DIR	10307183	Directional	51.11	4.790	2.688
4	SRIG	12867701	Gamma	47.69	4.790	2.688

Service and Tool Mnemonics

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

Comments

<p>1) Baker Hughes Runs 1 - 3 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 1232 to 7511 feet MD (1223 to 7156 feet TVD).</p> <p>2) Baker Hughes Run 4 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind a 6 1/8 inch bit and steerable assembly from 7511 to 12658 feet MD (7056 to 7167 feet TVD).</p>

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 on the left edge 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	Began logging Gamma above build section at 6600 feet MD (6506 feet TVD)
2	7190	8.750	2	The interval from 7177 to 7222 feet MD (7030 to 7060 feet TVD) was logged up to 15.5 hours after being drilled due to a trip out of hole to pick up a 2.7 Motor, MWD, and Tri-Cone bit
3	7220	8.750	3	The interval from 7207 to 7244 feet MD (7050 to 7074 feet TVD) was logged up to 19.5 hours after being drilled due to a trip out of hole to pick up a new 2.7 motor and Tri-Cone bit
4	7490	6.125	4	The interval from 7475 to 7510 feet MD (7153 to 7156 feet TVD) was logged up to 40.25 hours after being drilled due to casing / cement operations and picking up Lateral BHA
5	12610	6.125	4	The interval from 12610 to 12658 feet MD (7165 to 7166 feet TVD) contains no logging data due to sensor offset to the bit at well TD

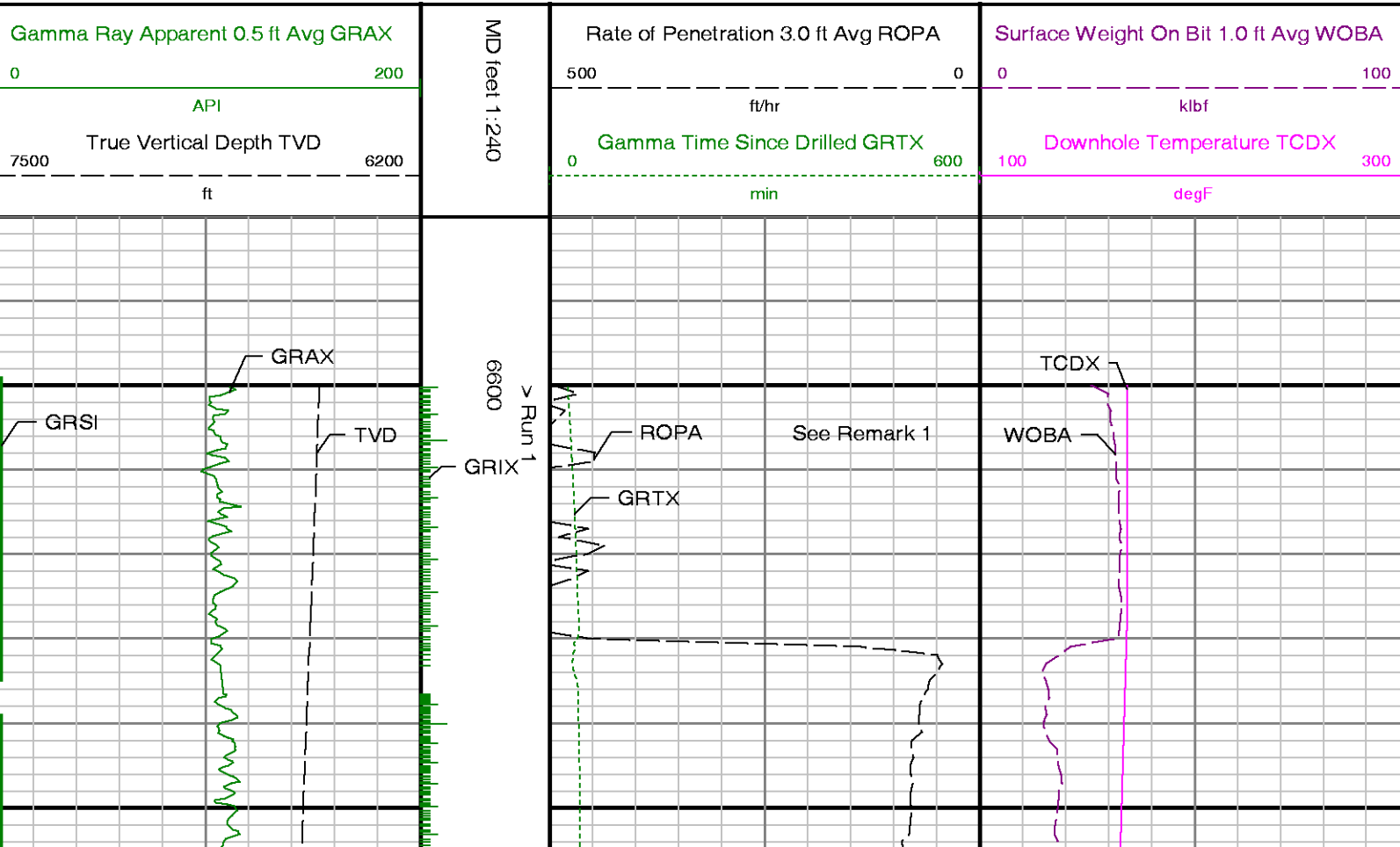


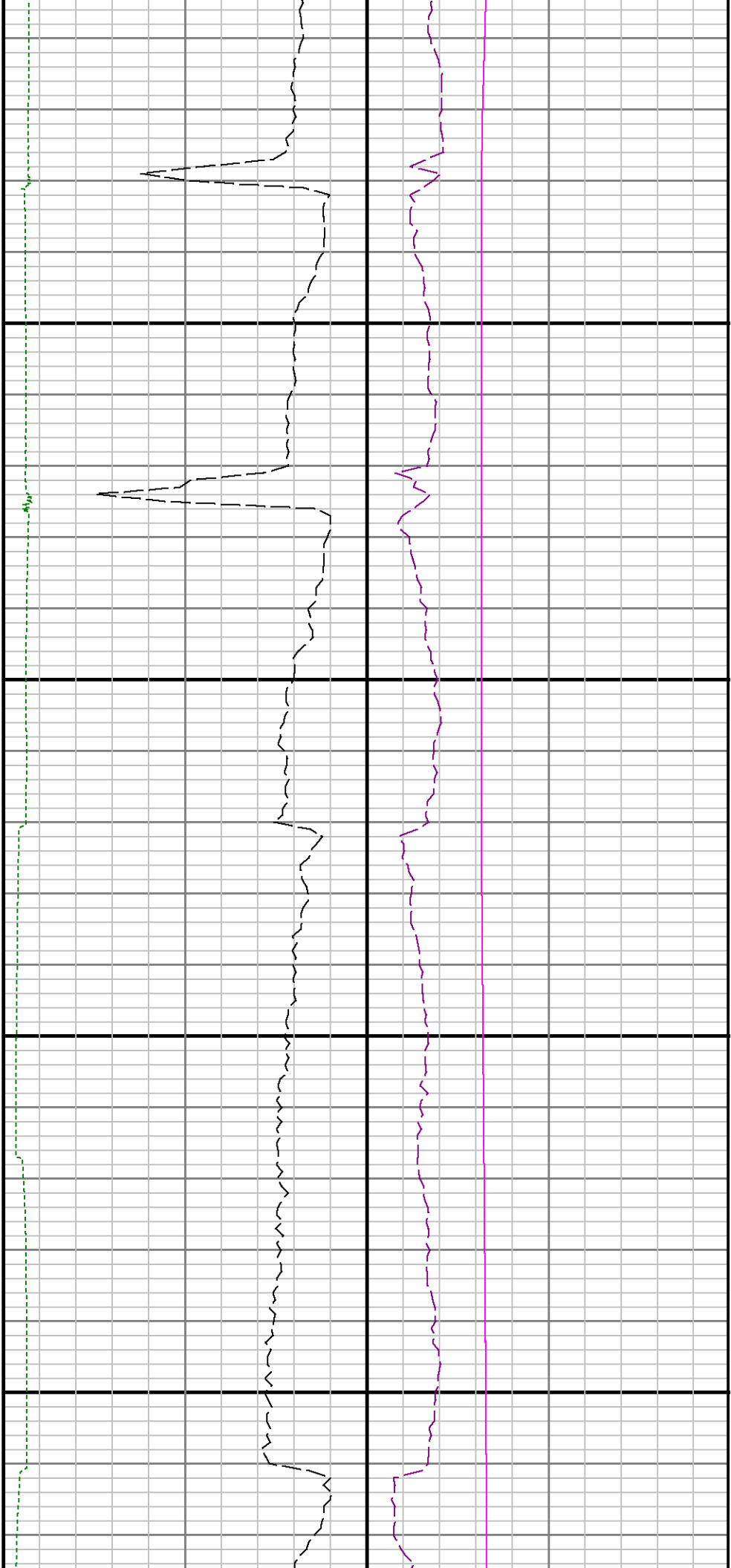
Company : Anadarko

Well : Cream State 28C-21HZ

Interval : 6580.00 - 12680.00 feet

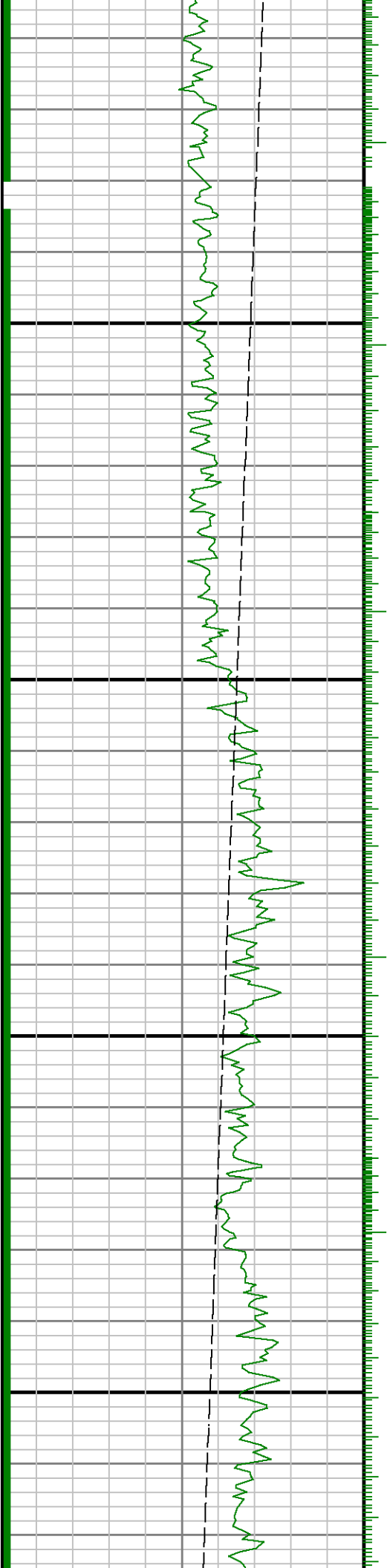
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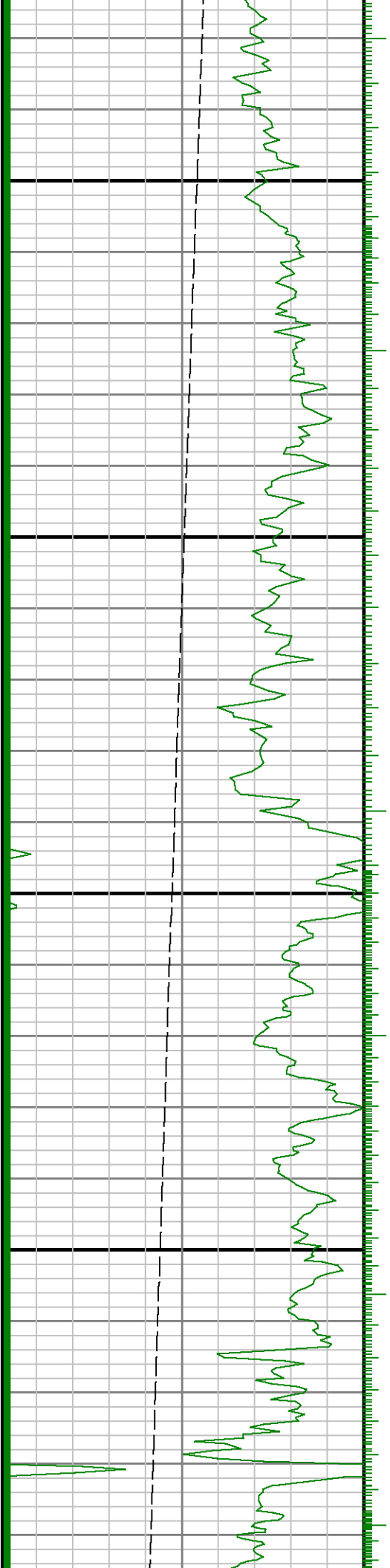




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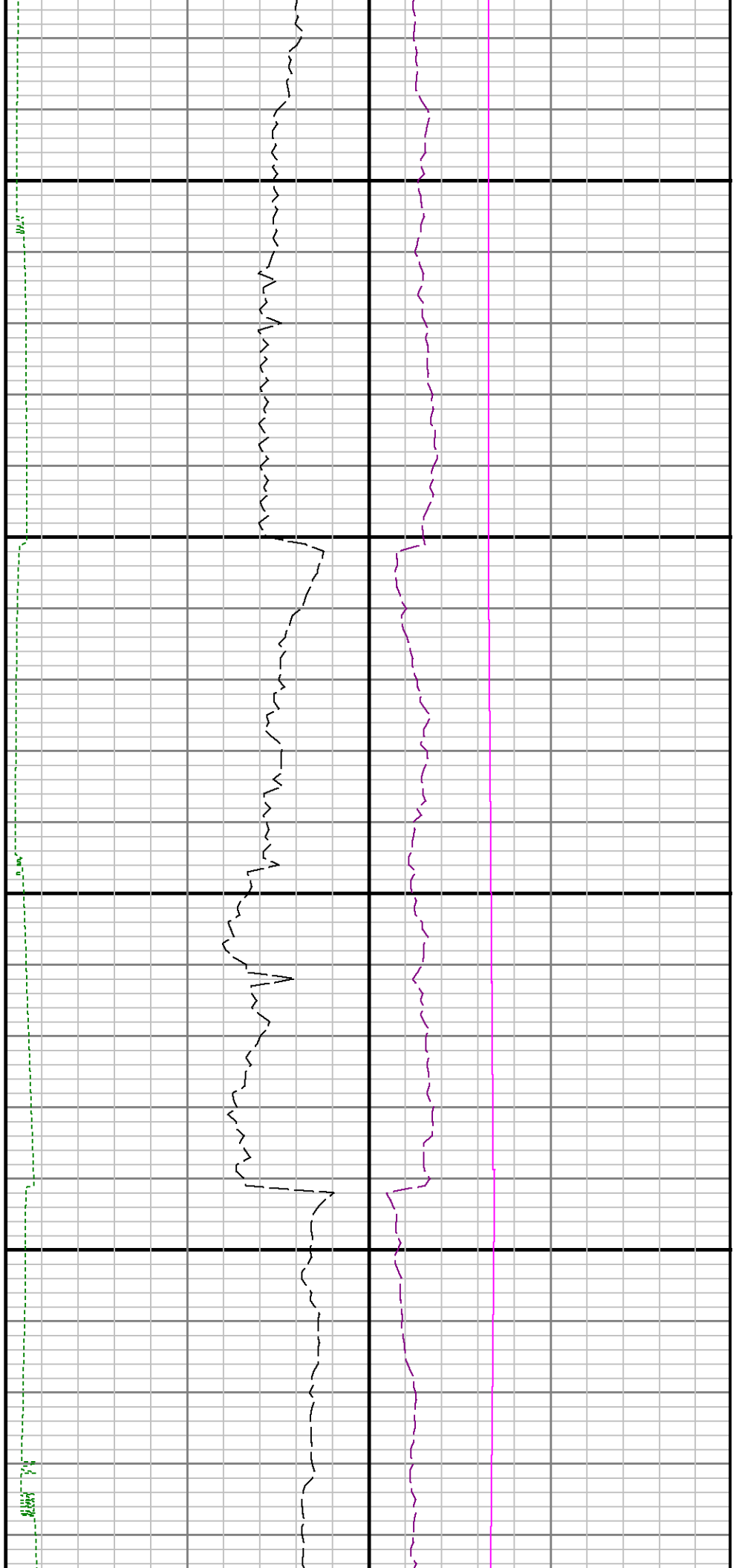
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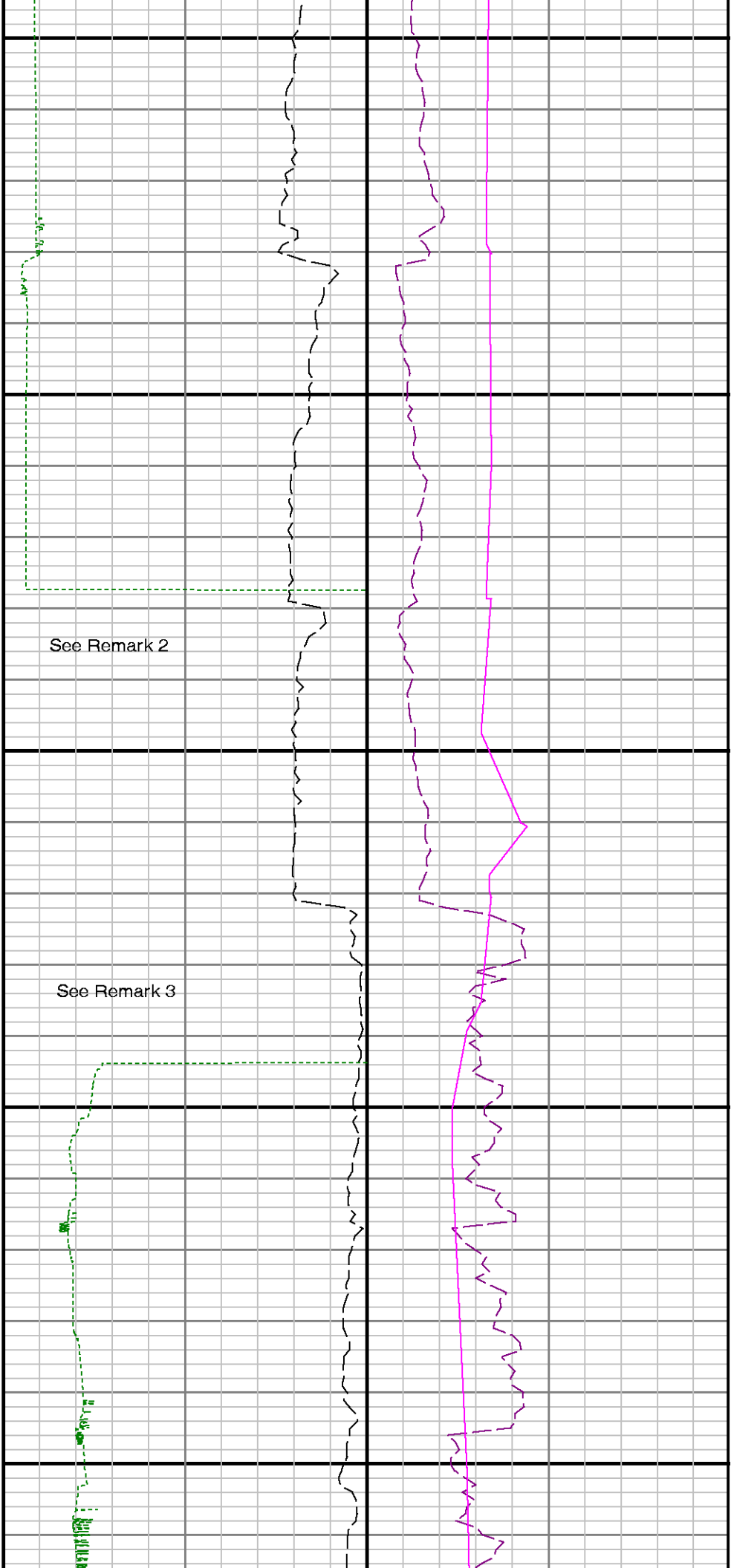
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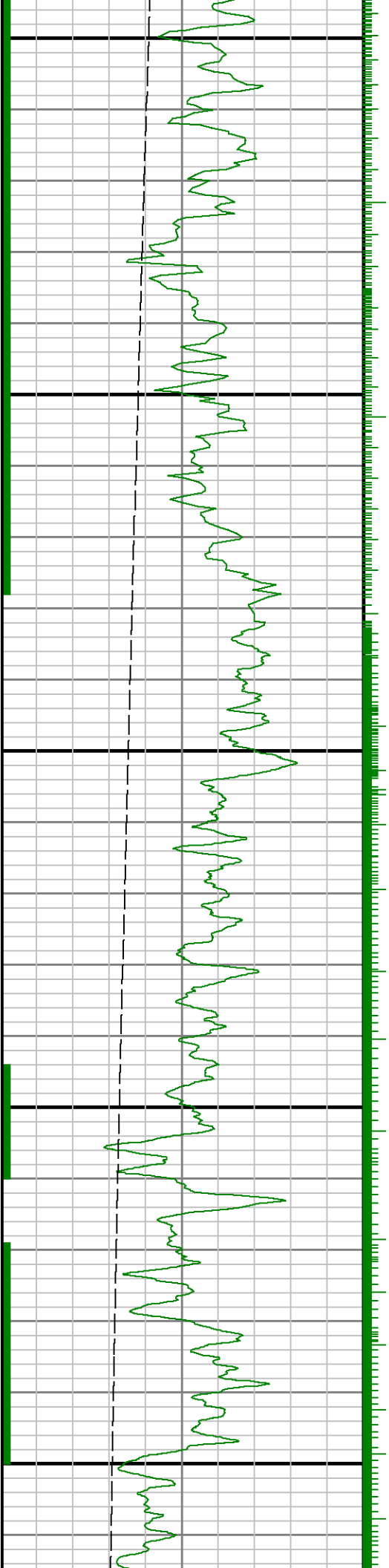


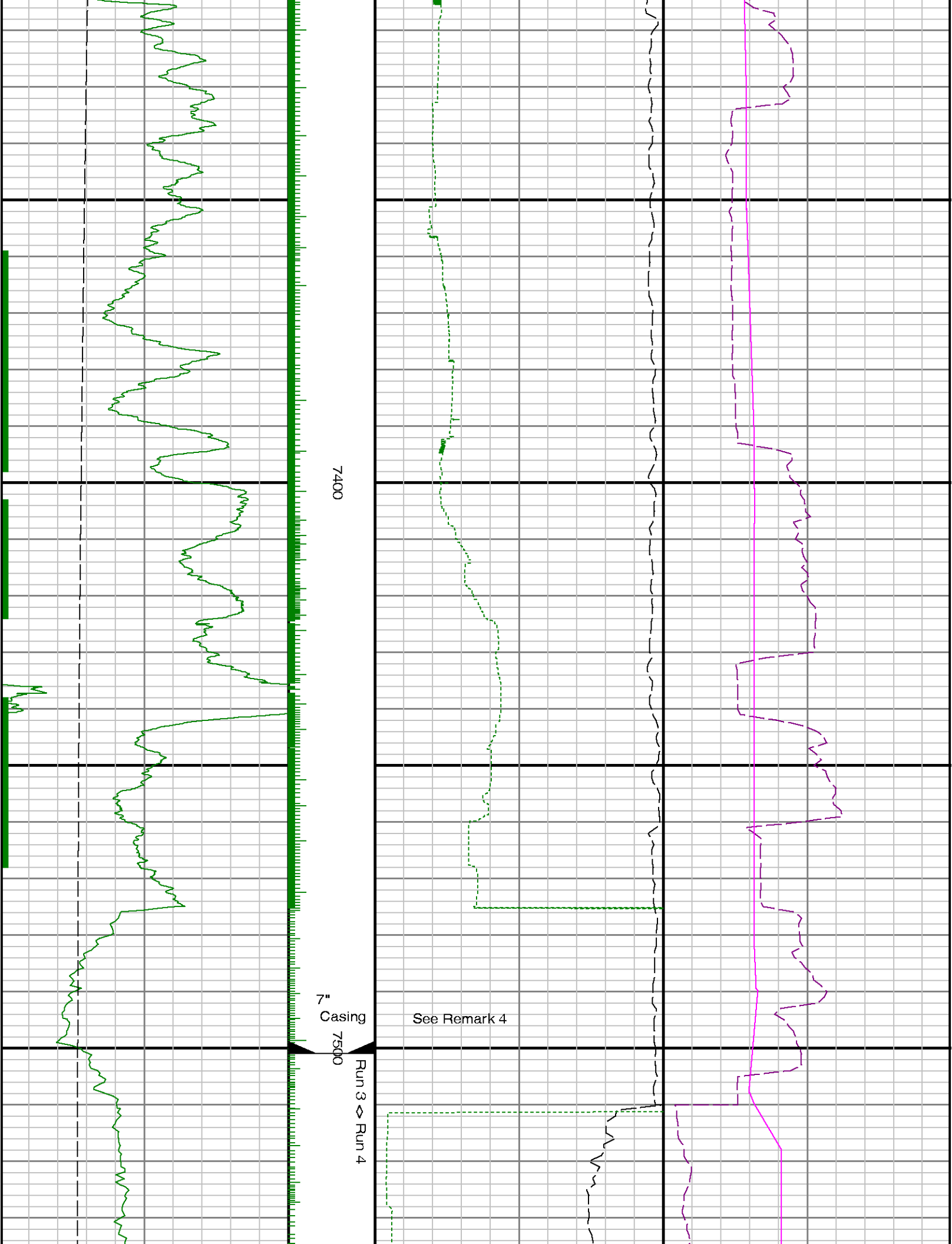
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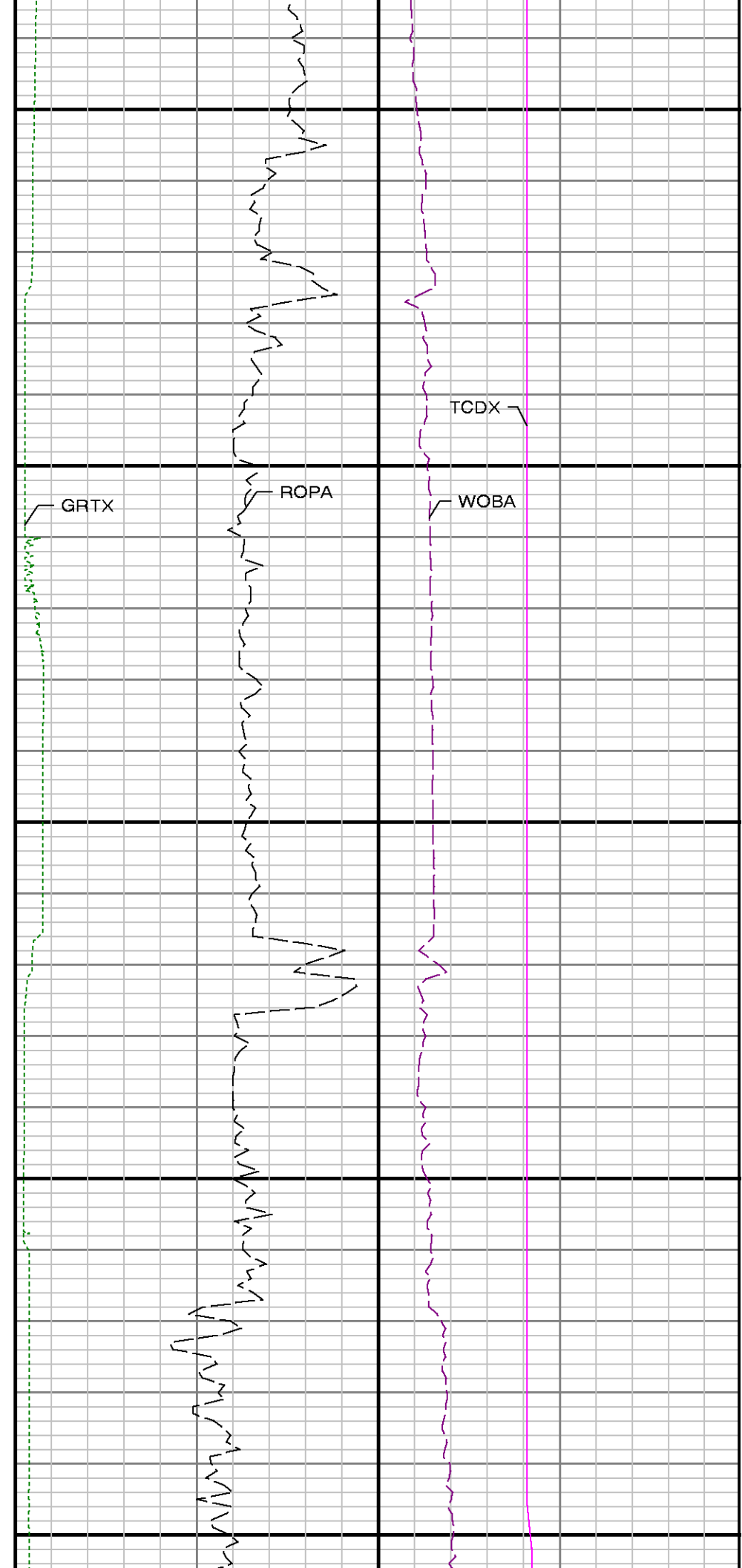
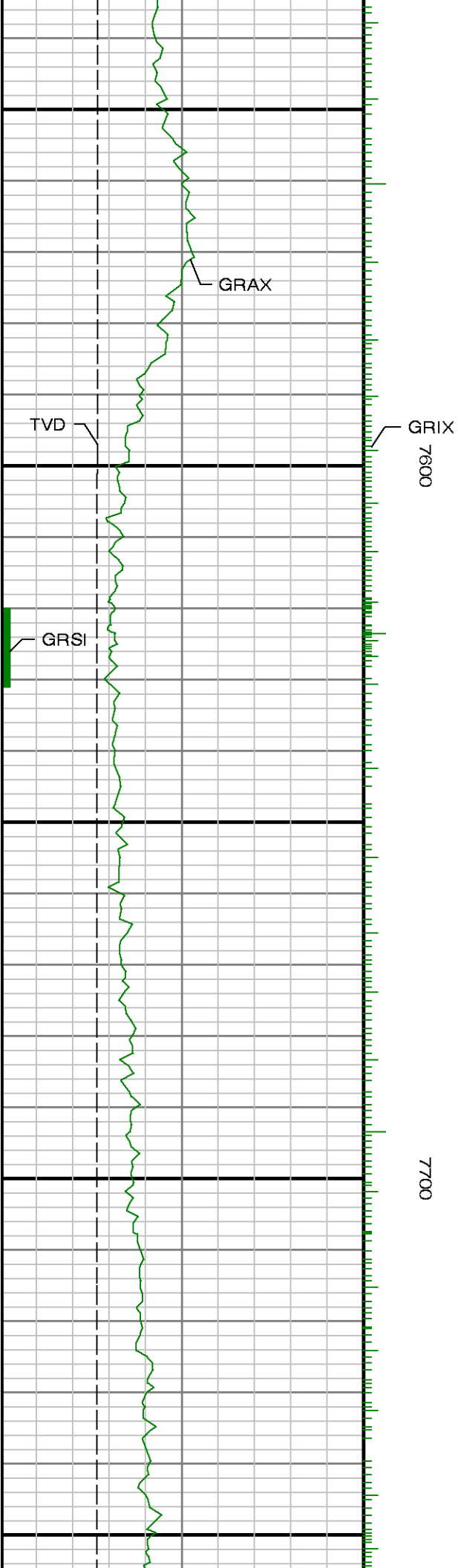
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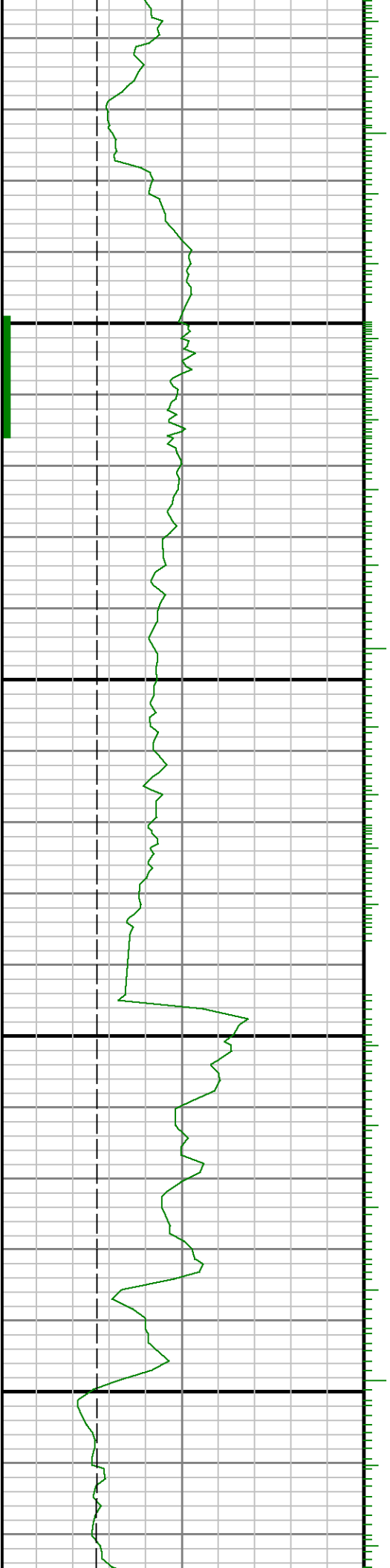
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Run 1 \diamond Run 2 Run 2 \diamond Run 3



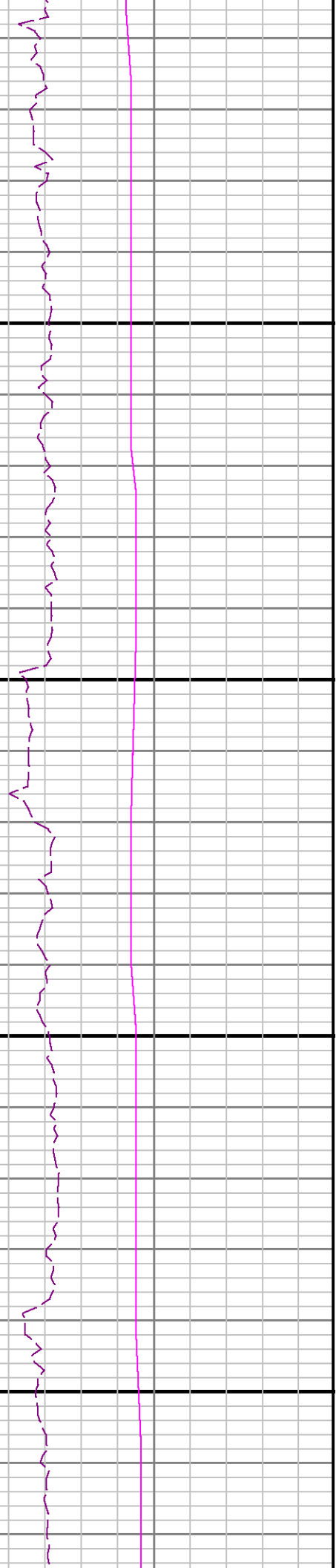
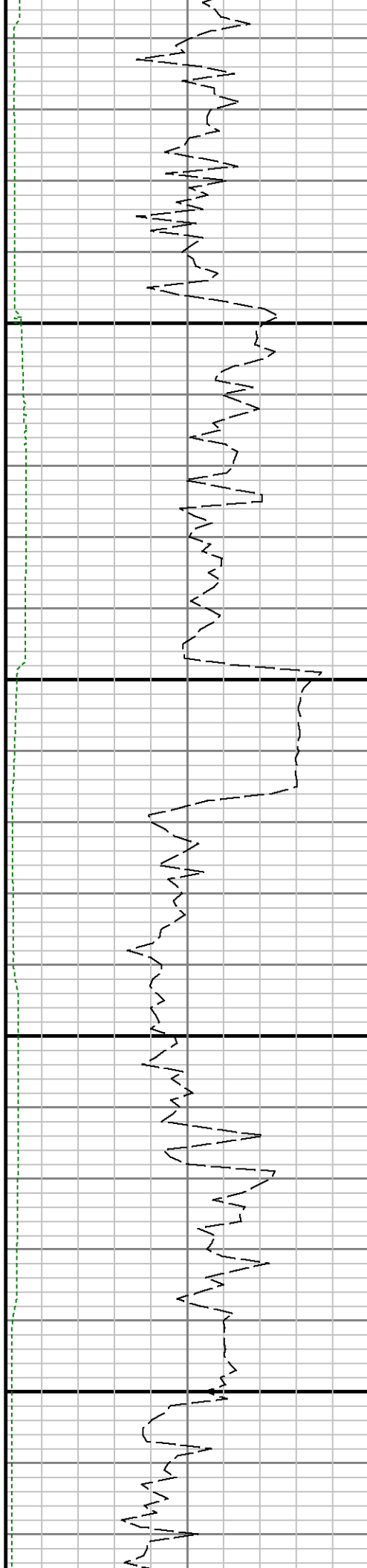


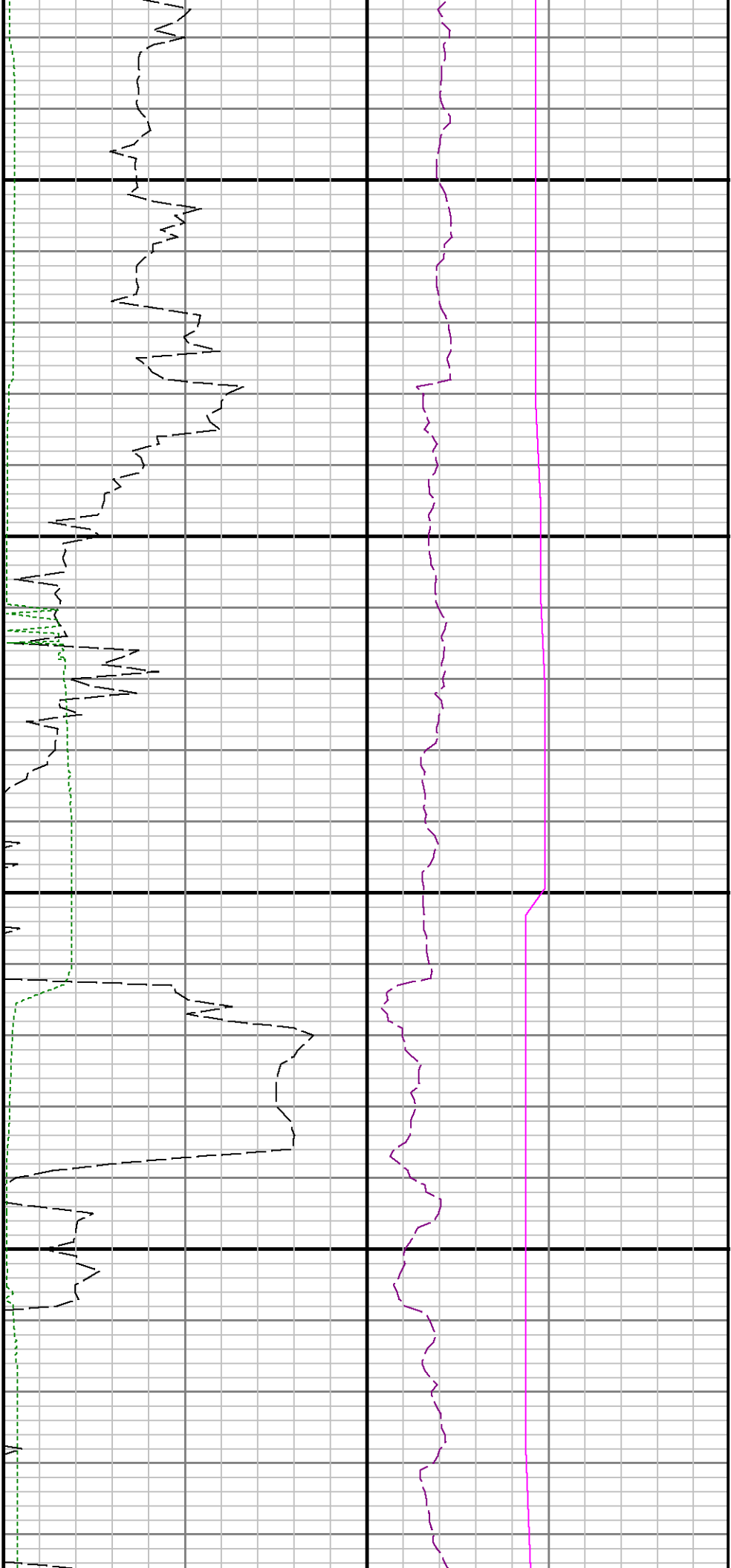




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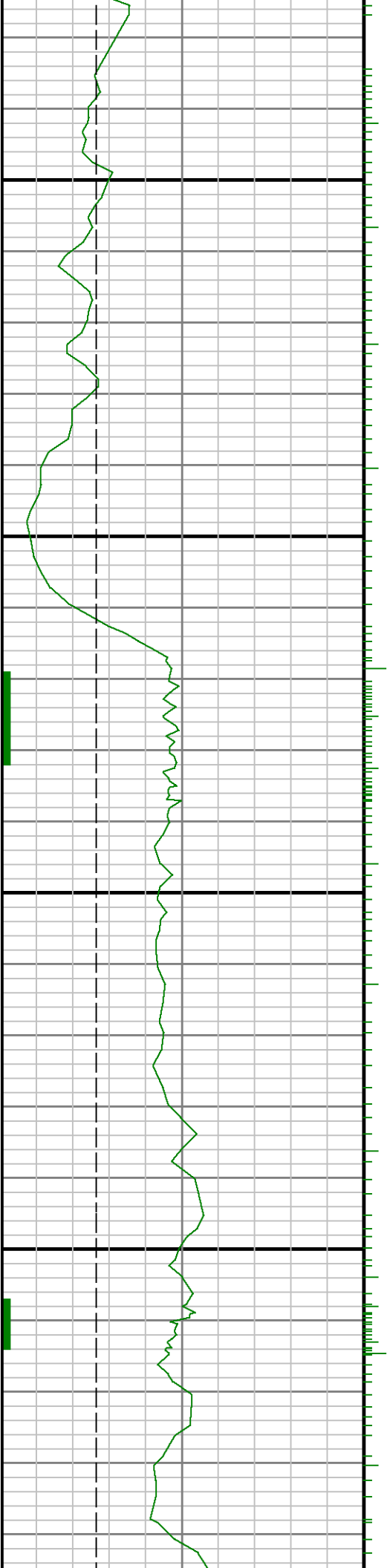
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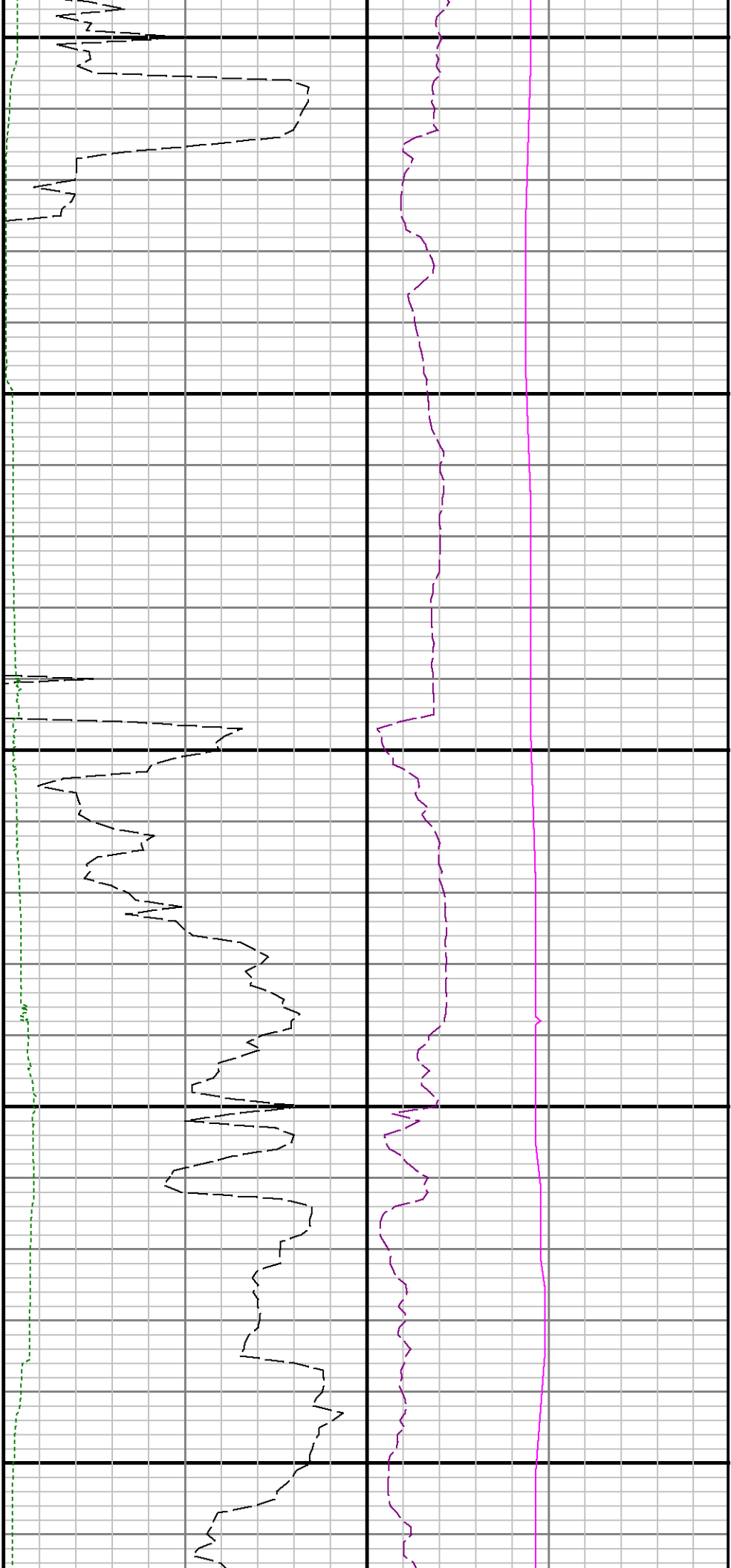




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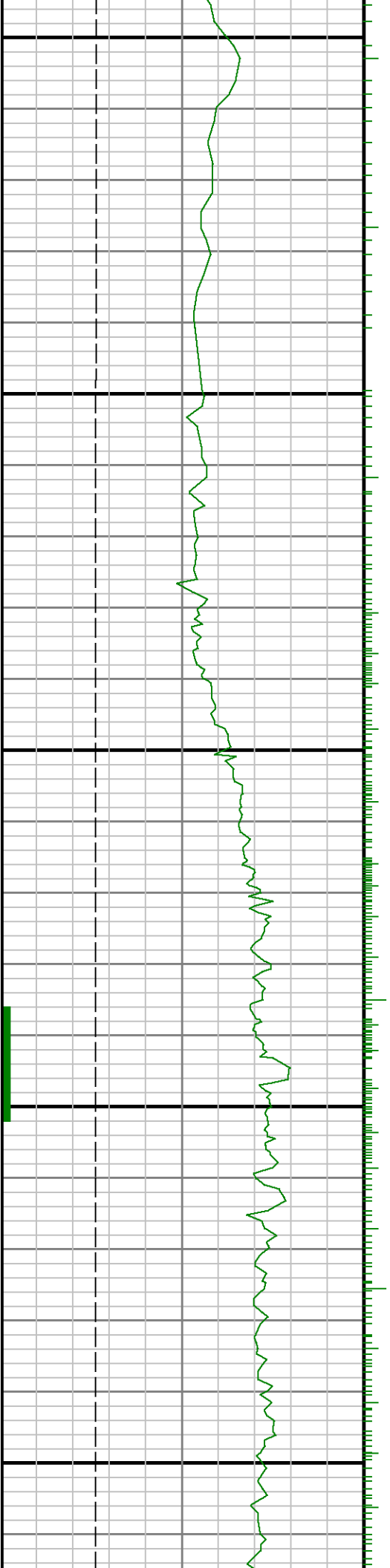


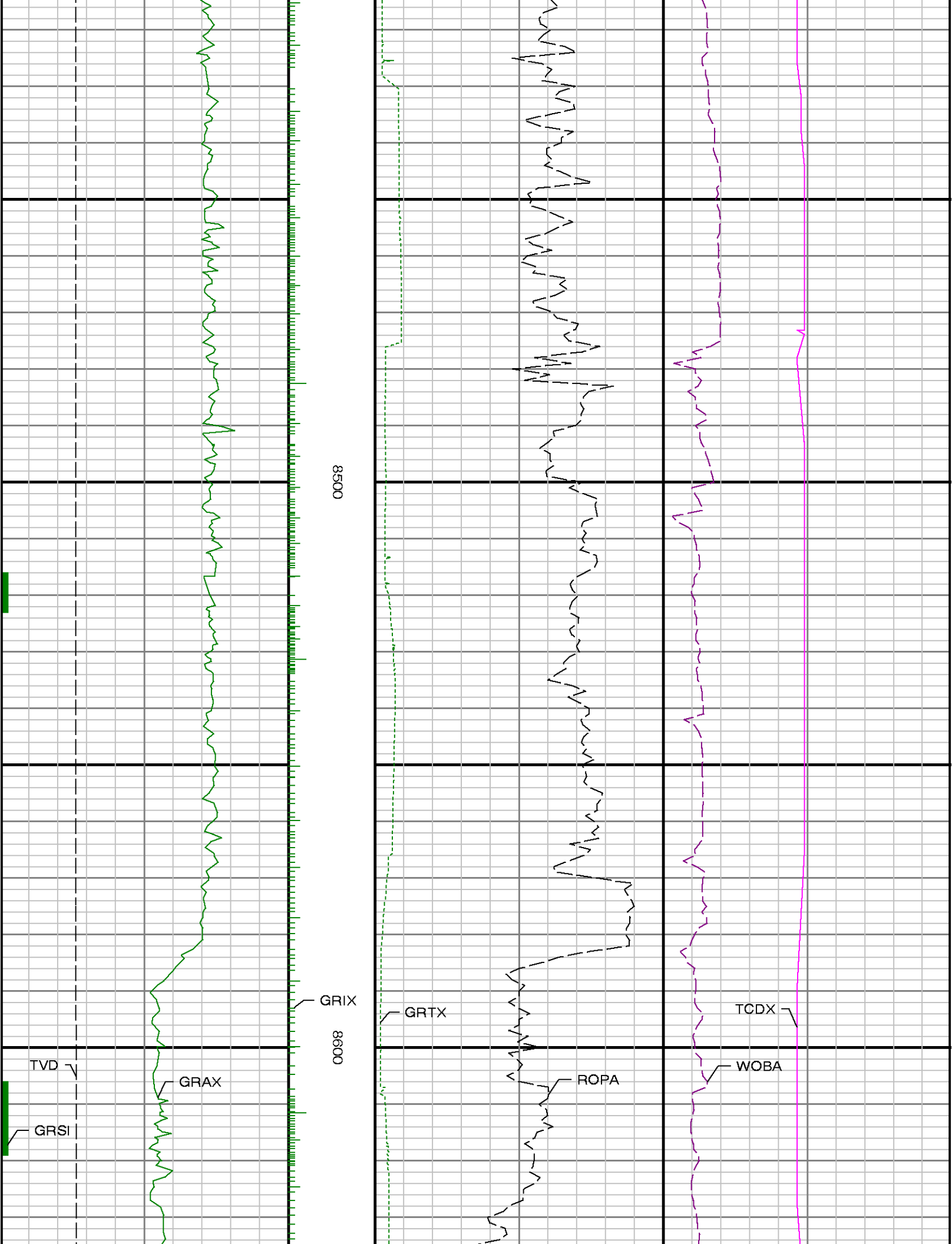


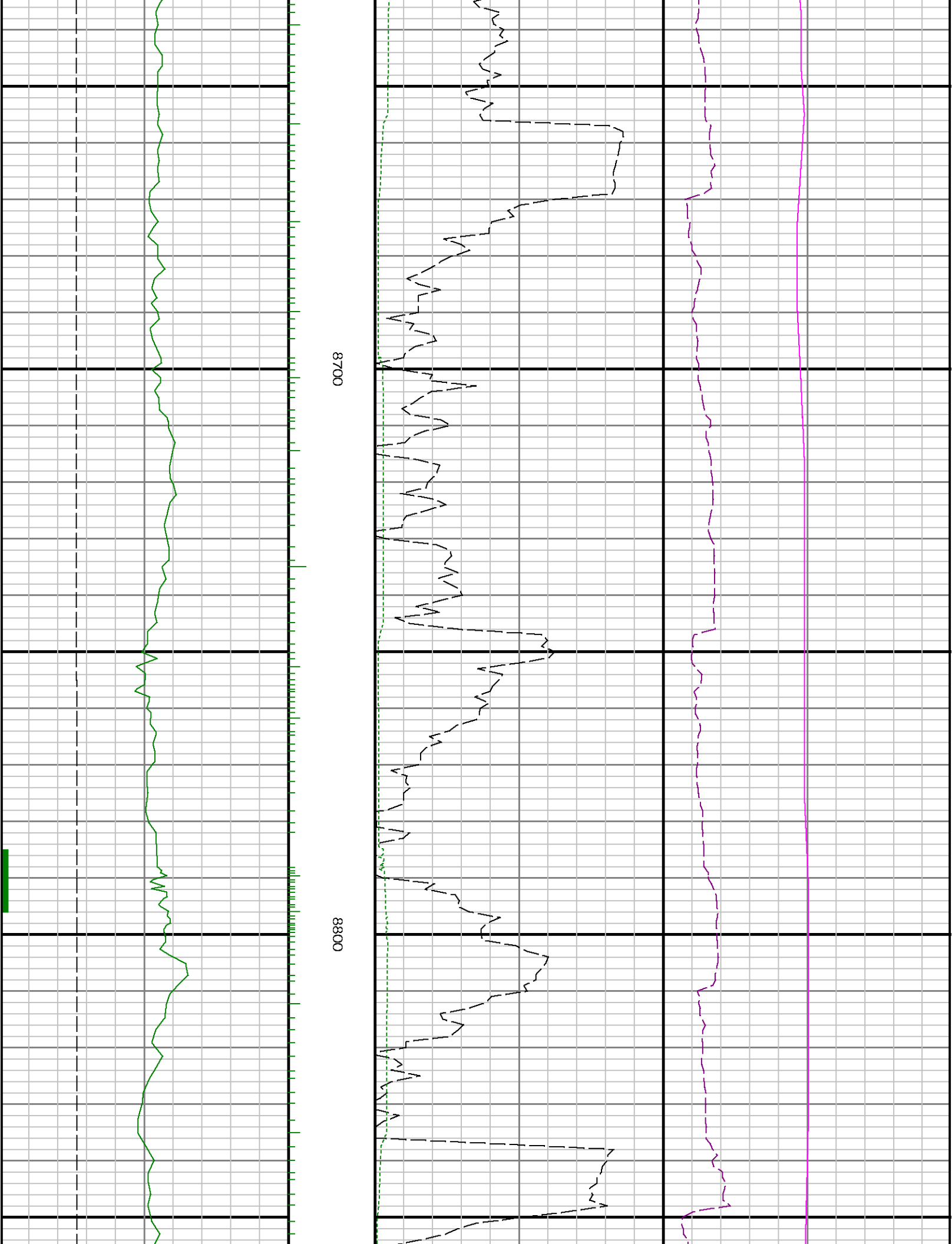
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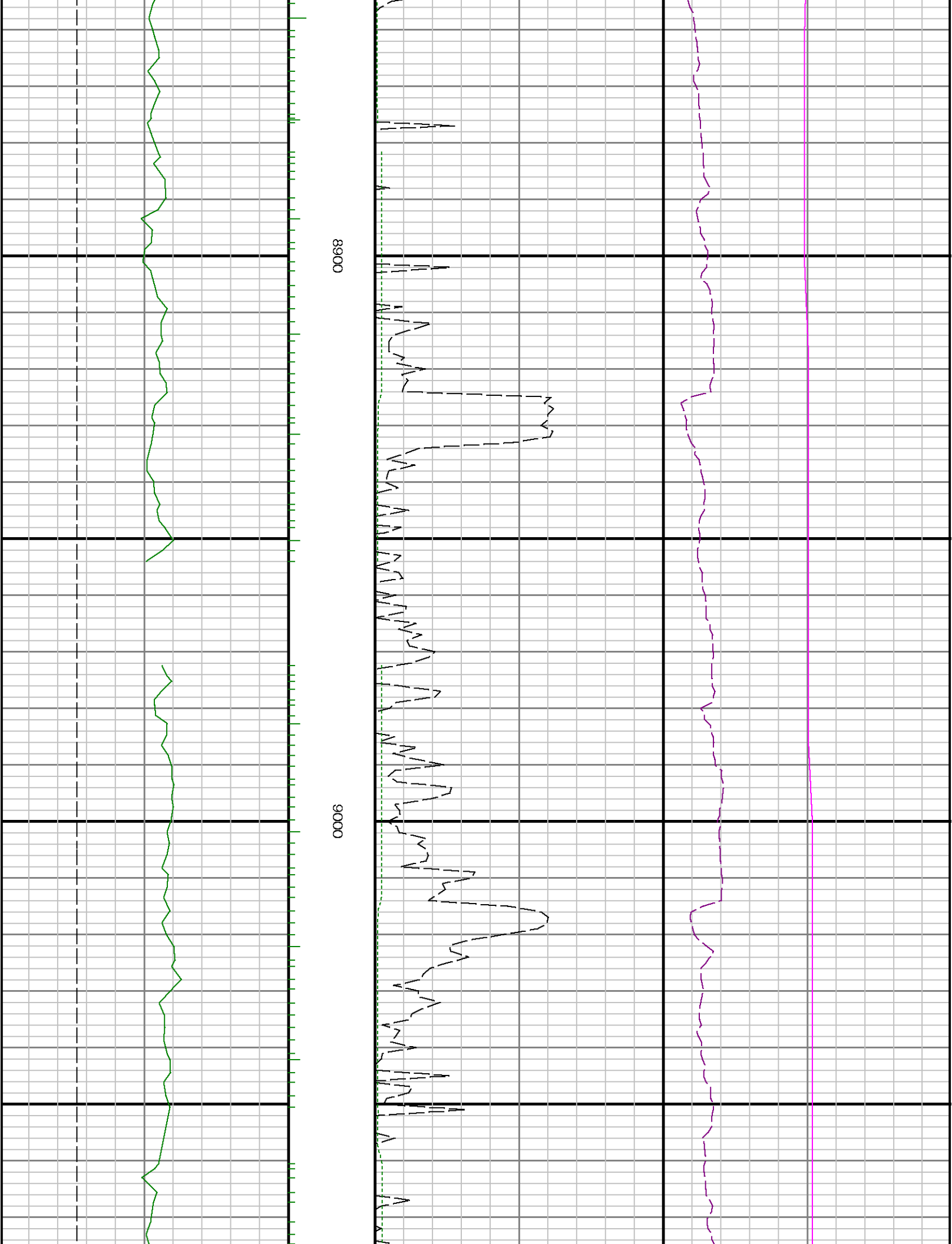
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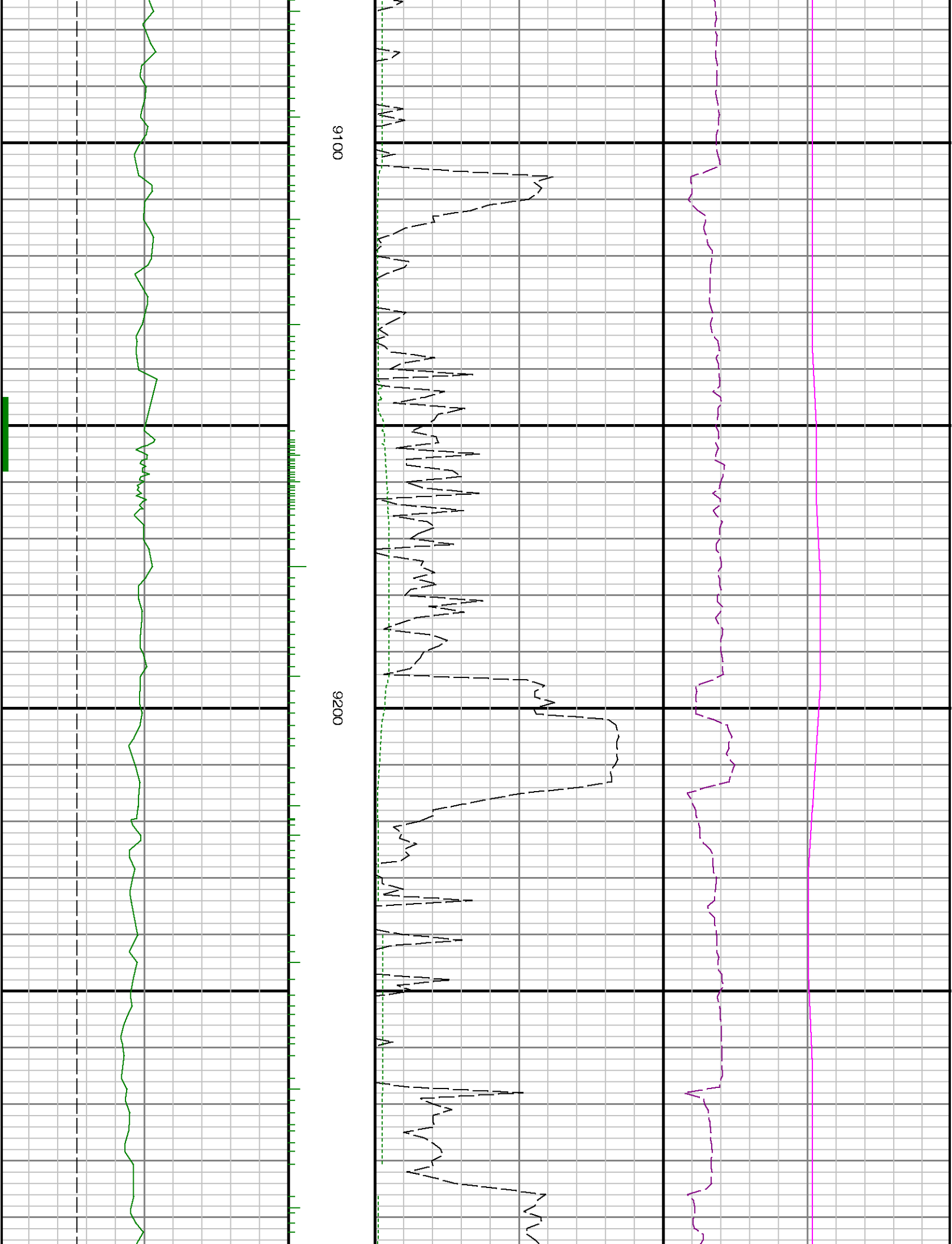
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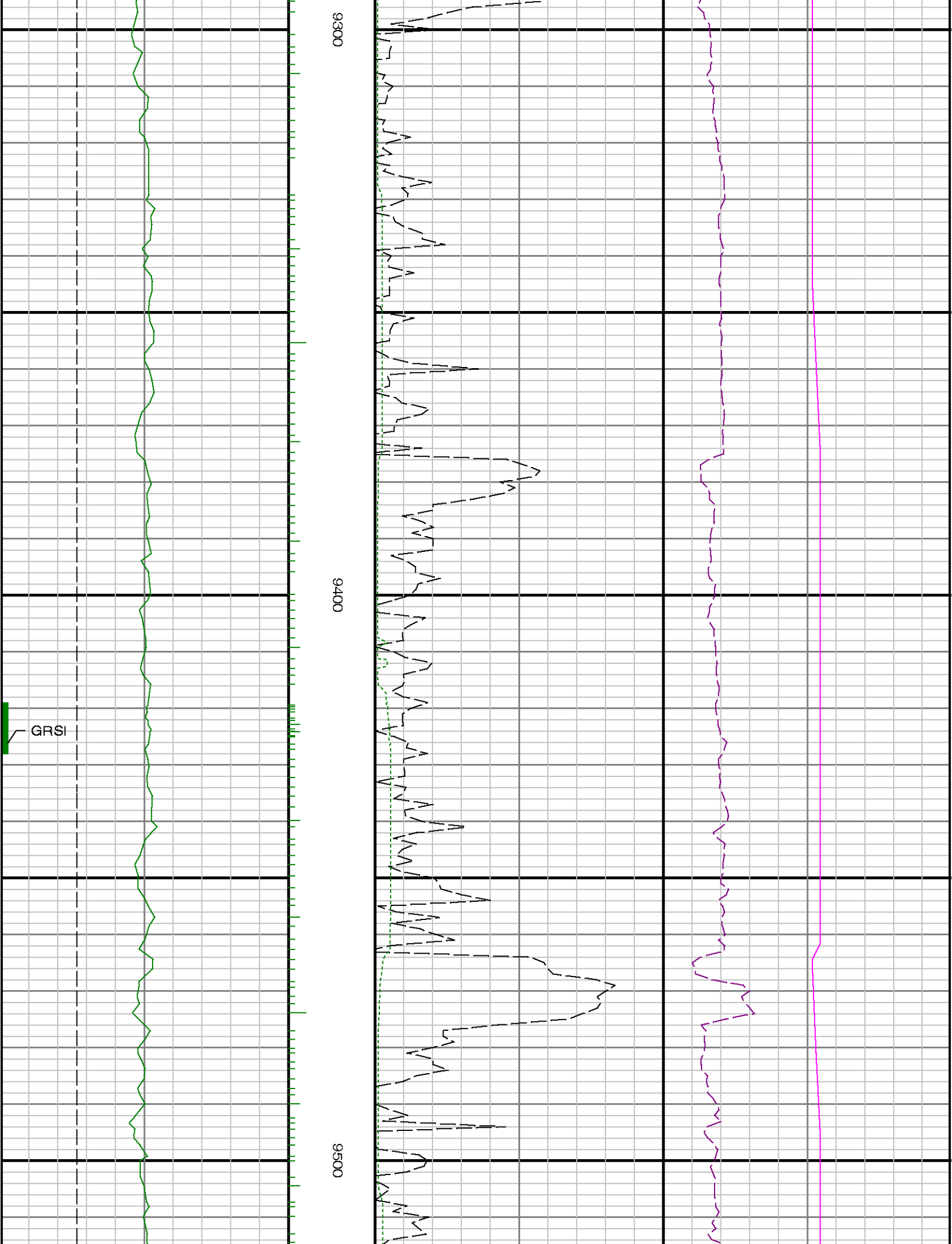


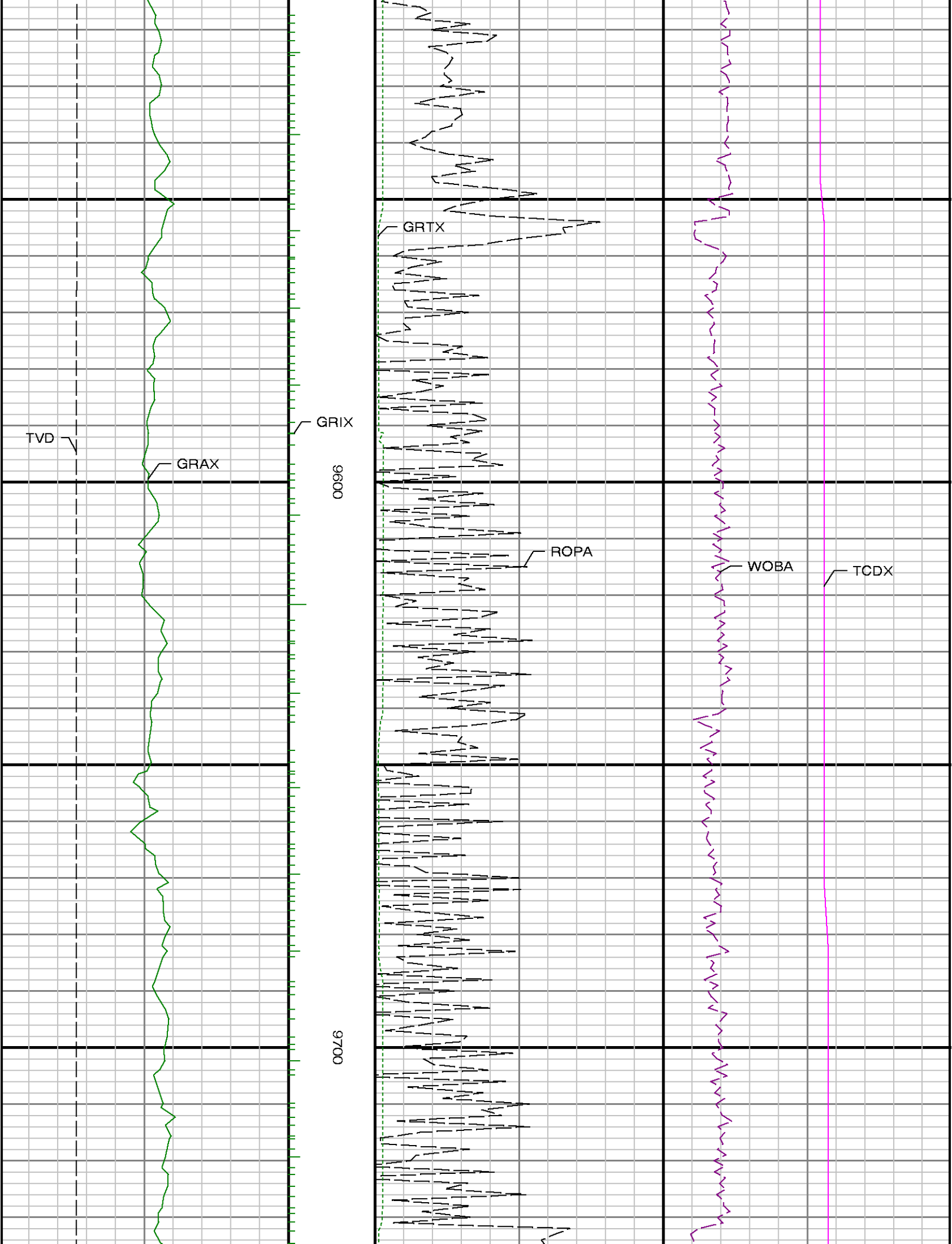


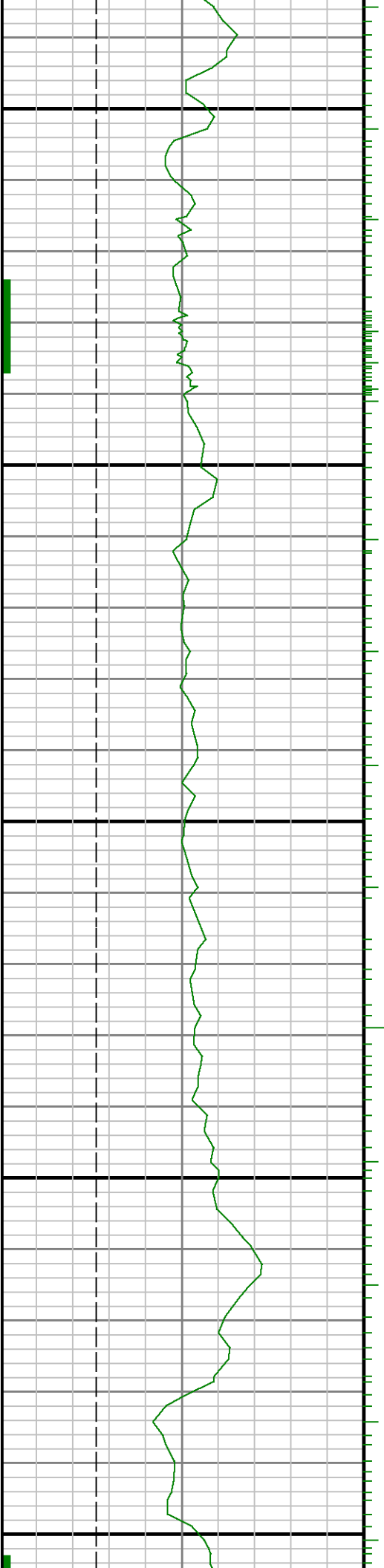






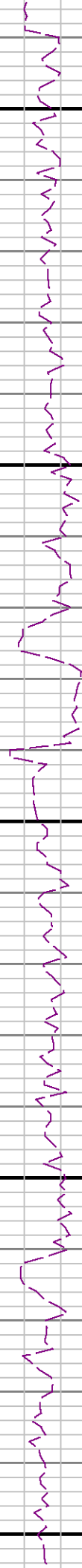
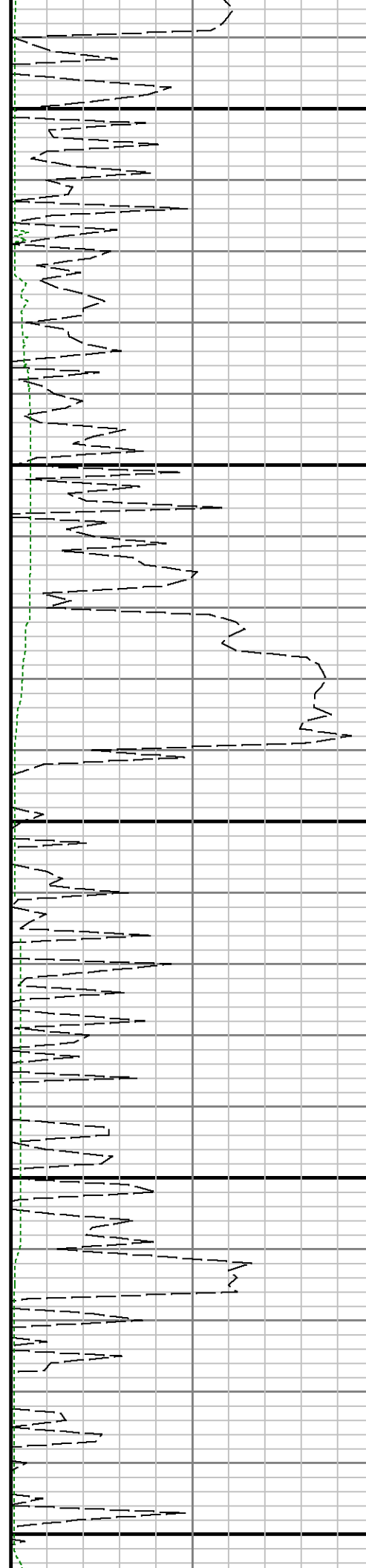


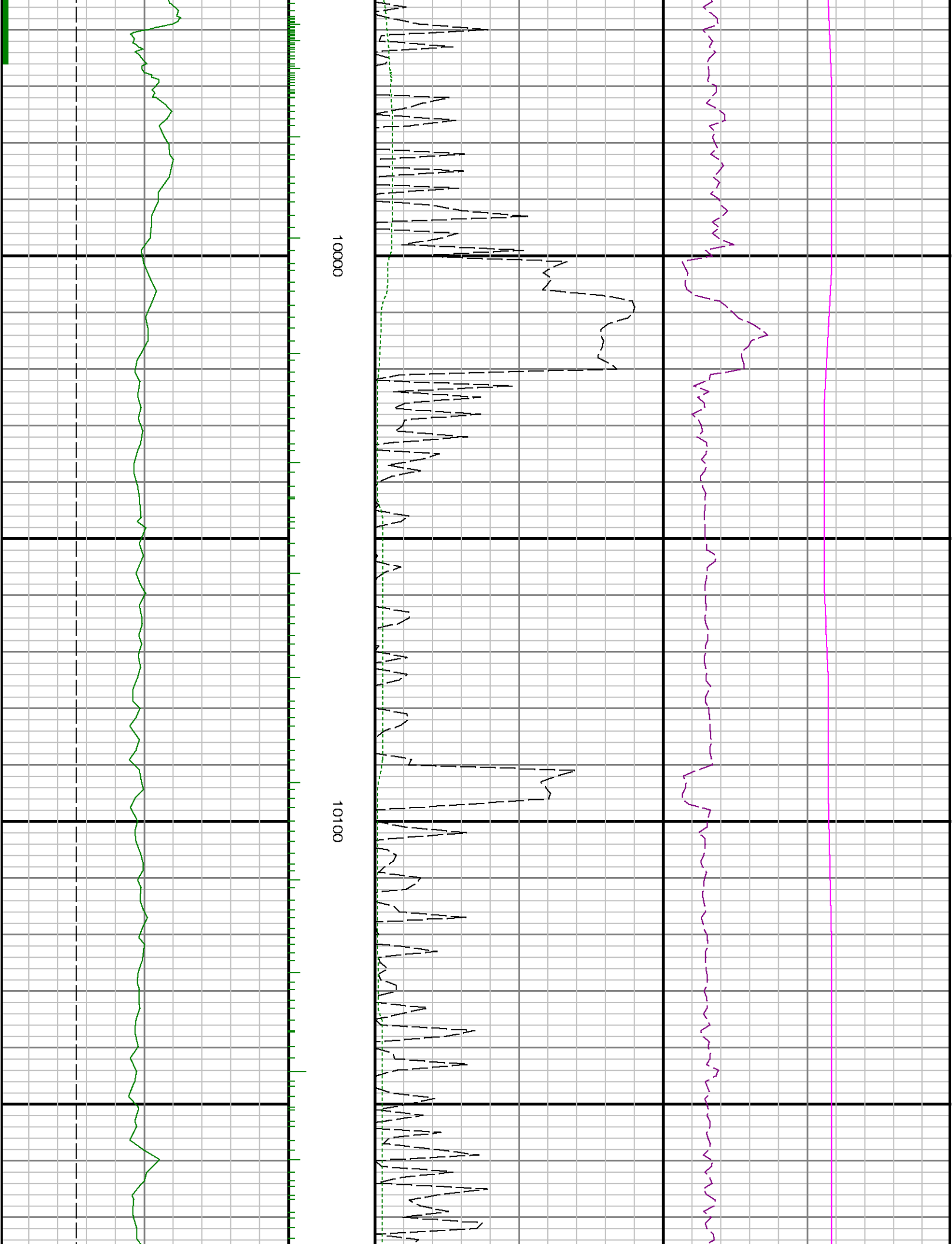


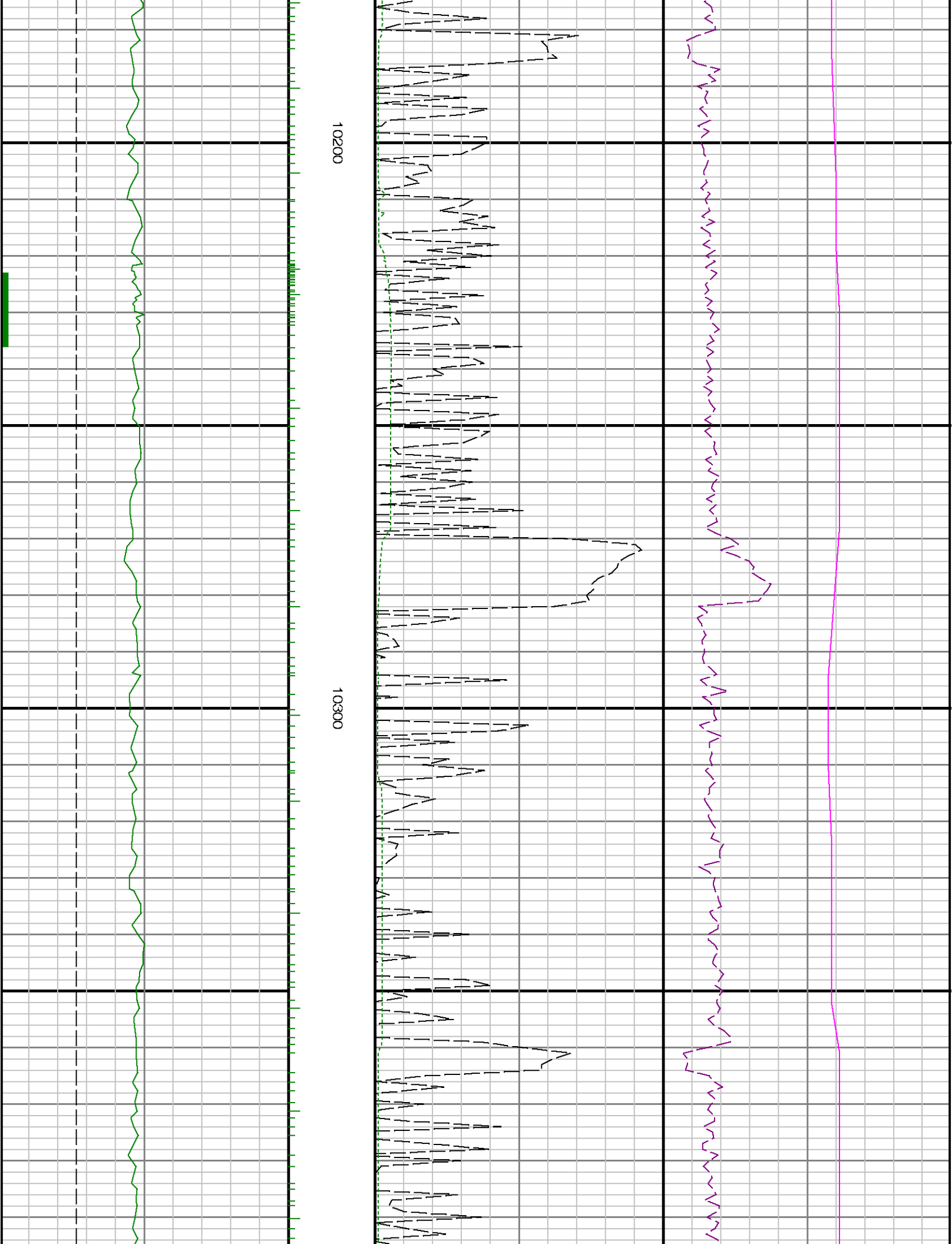


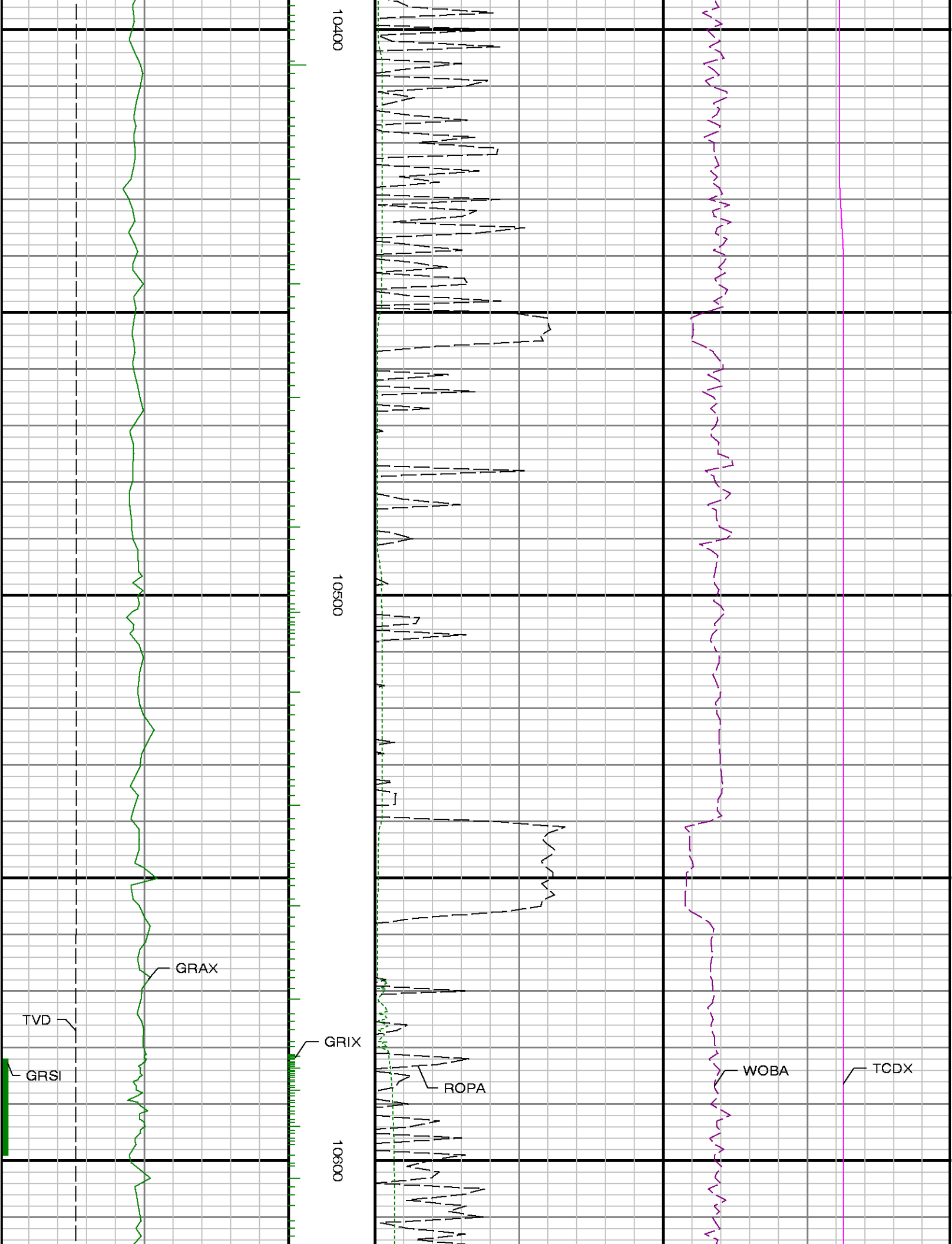
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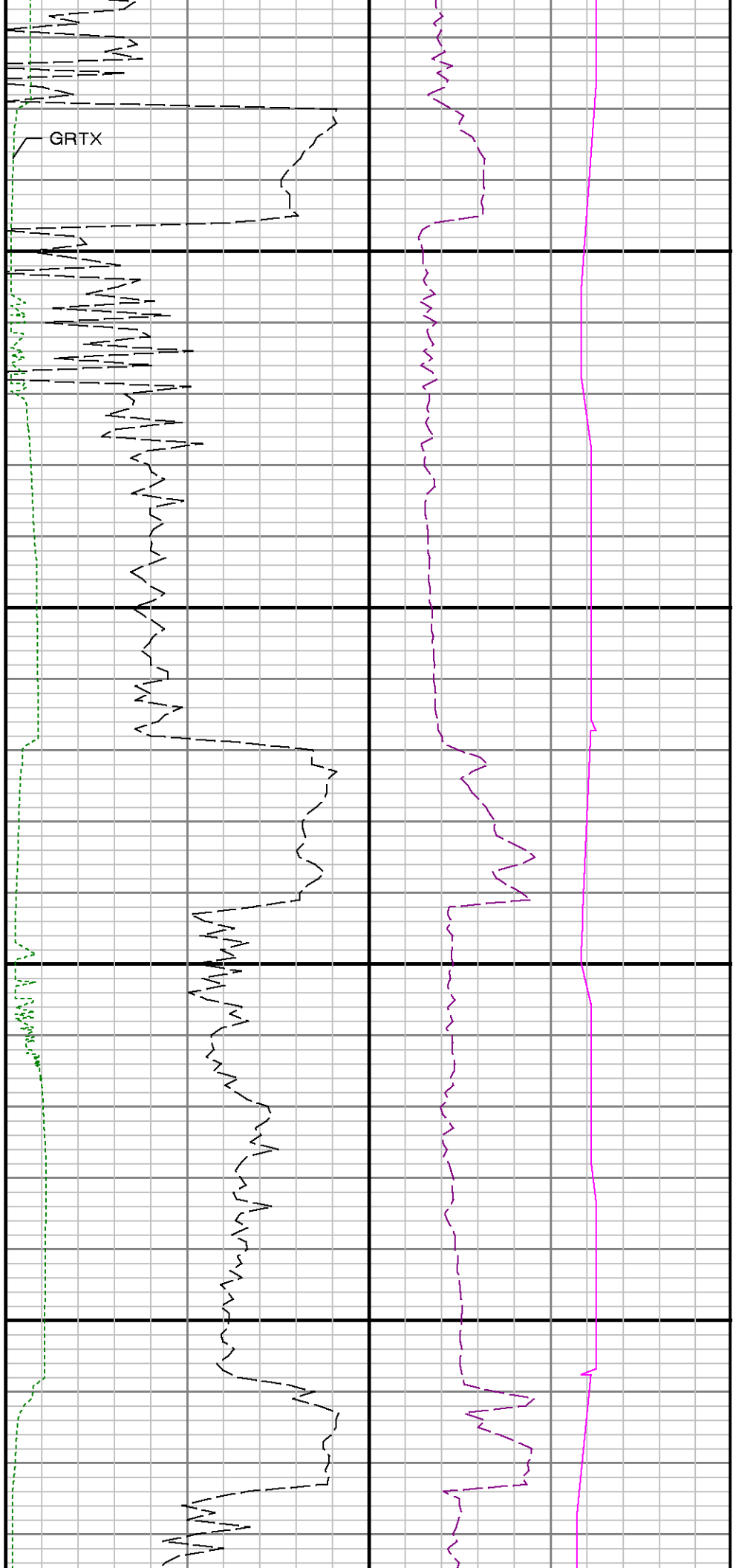
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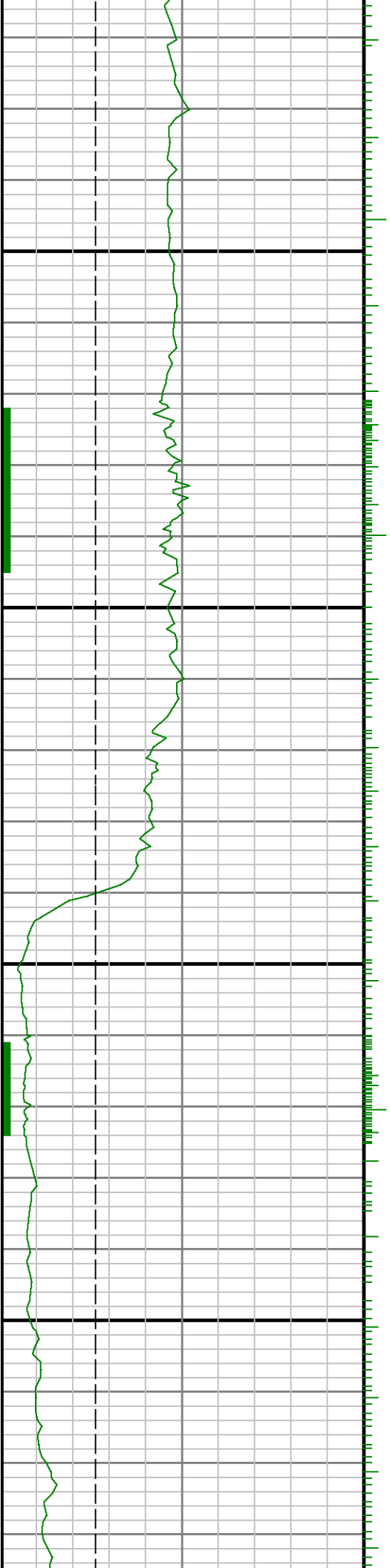


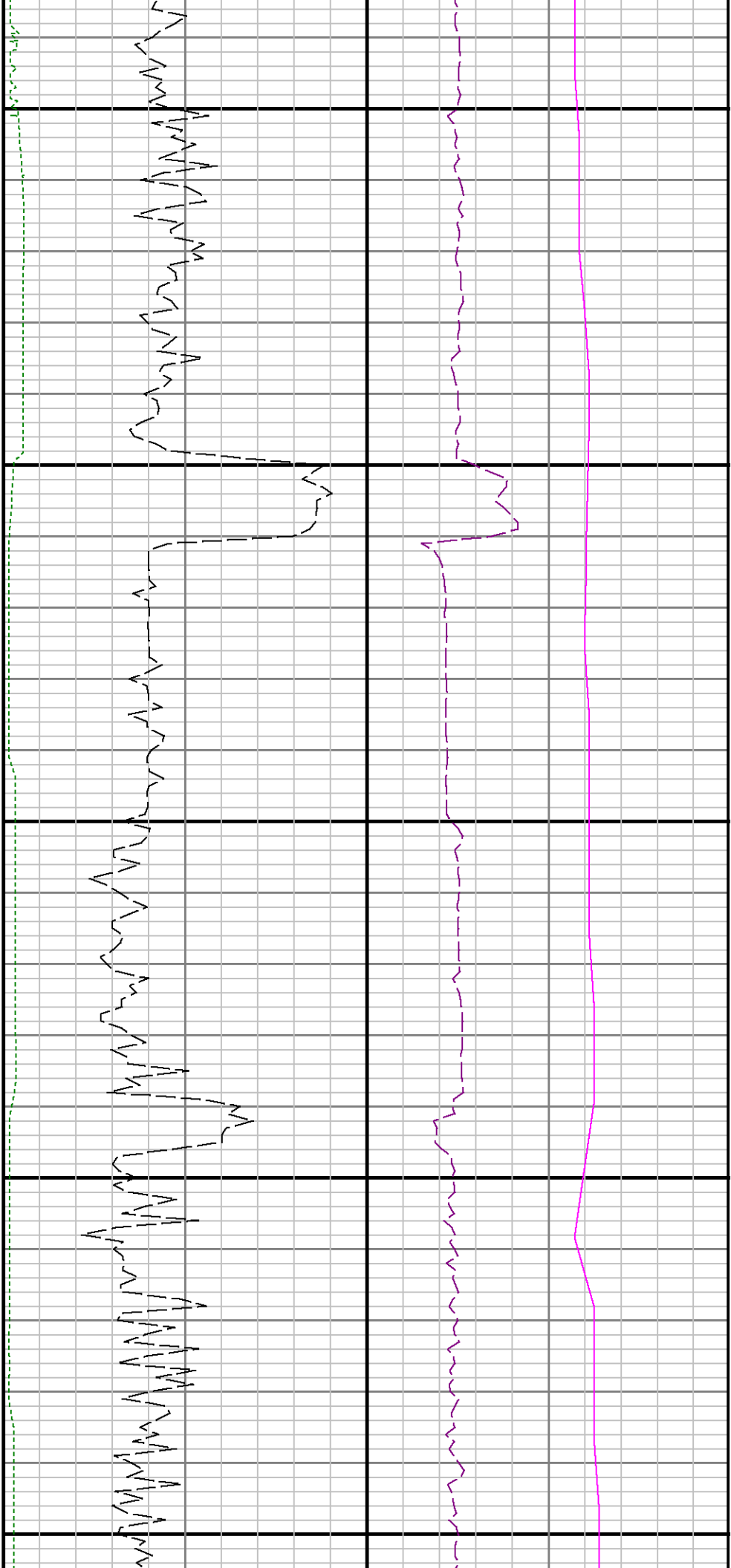




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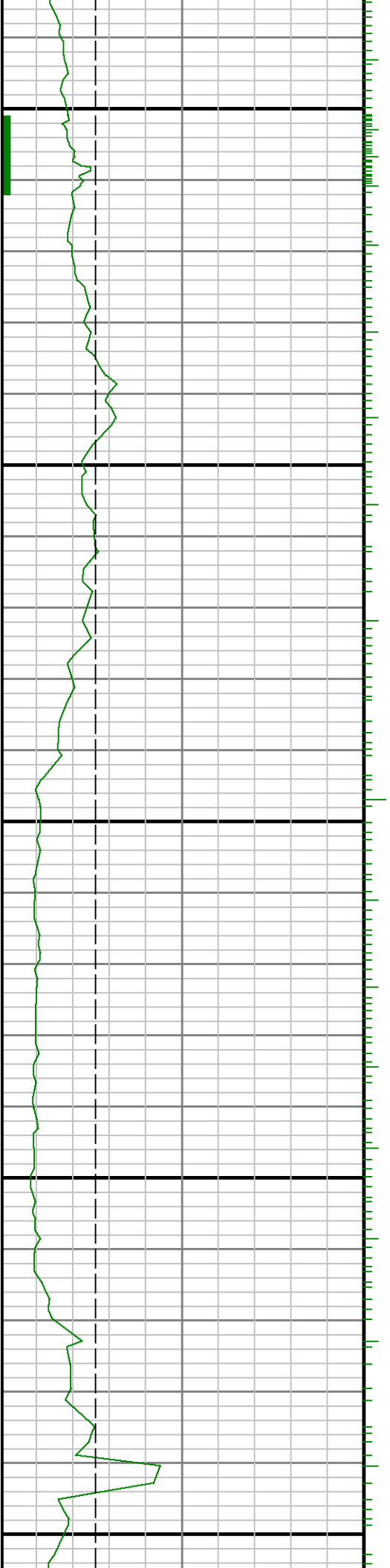
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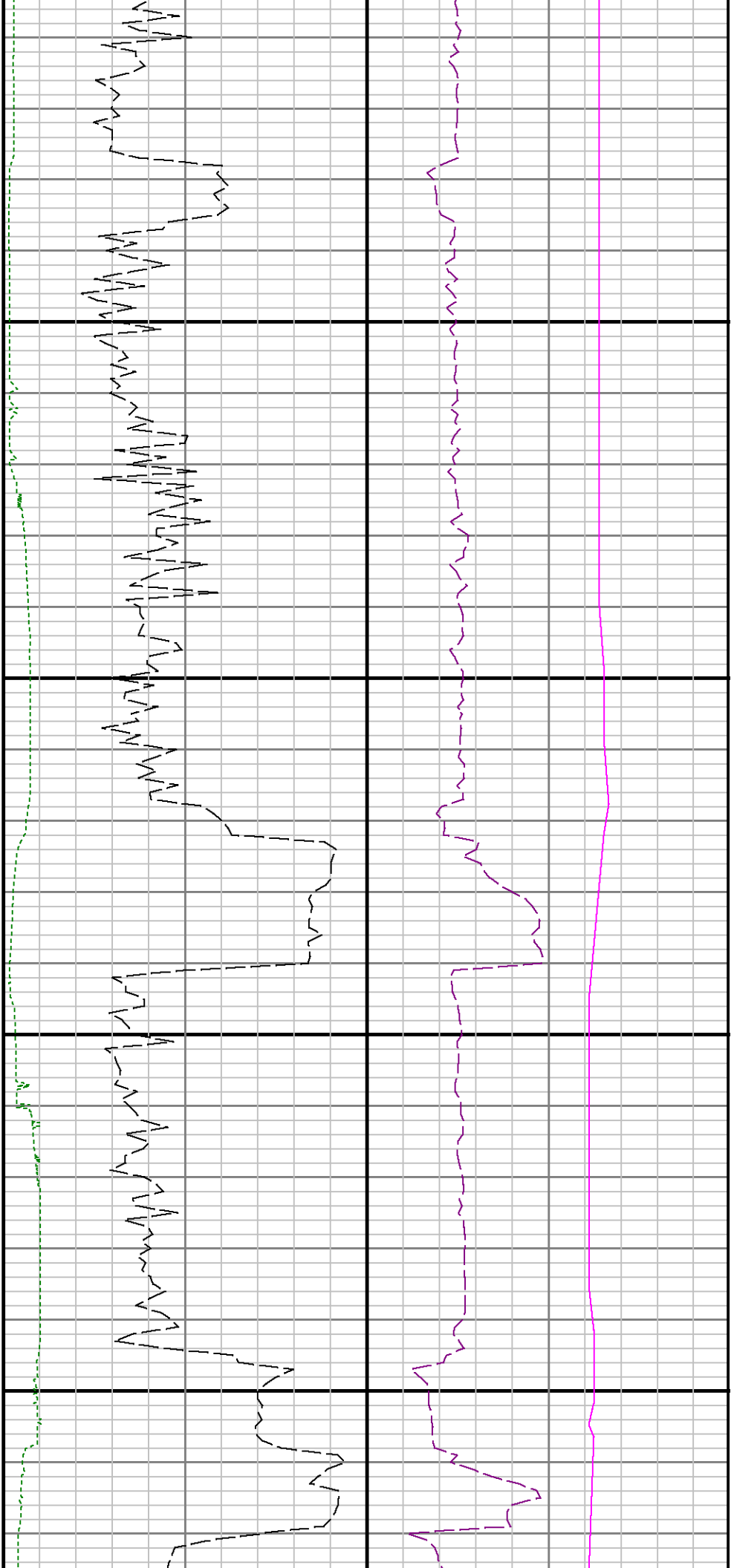




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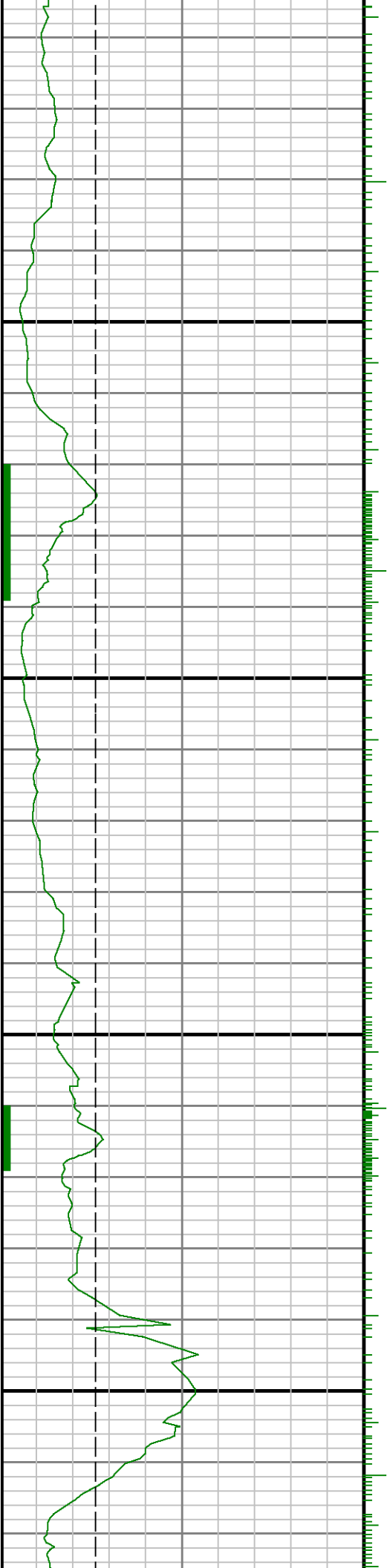
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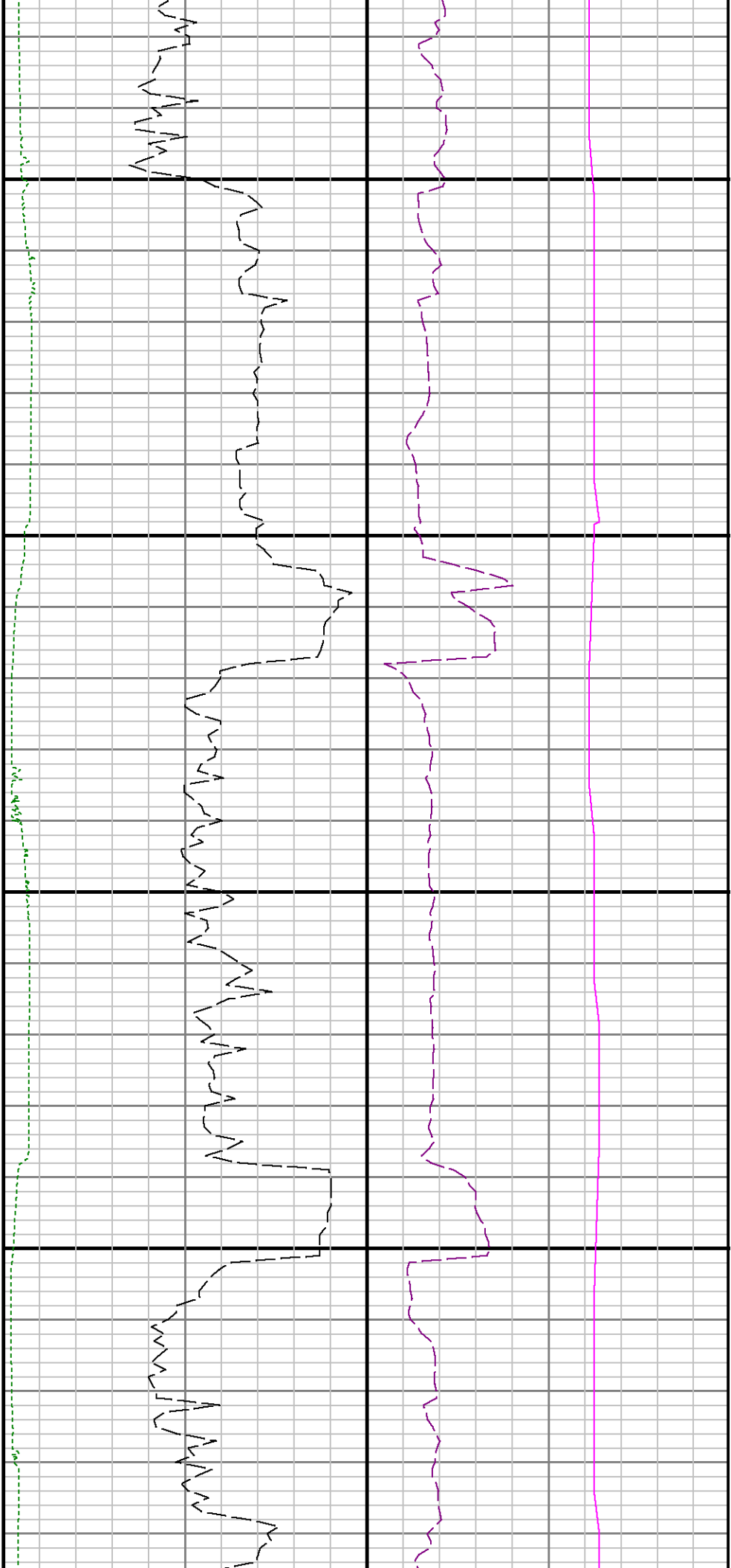




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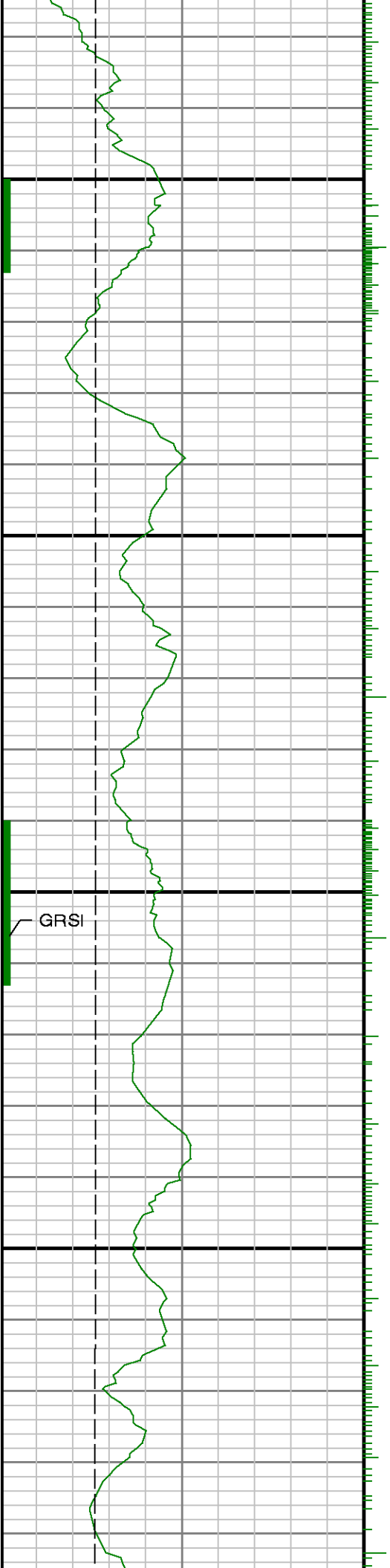
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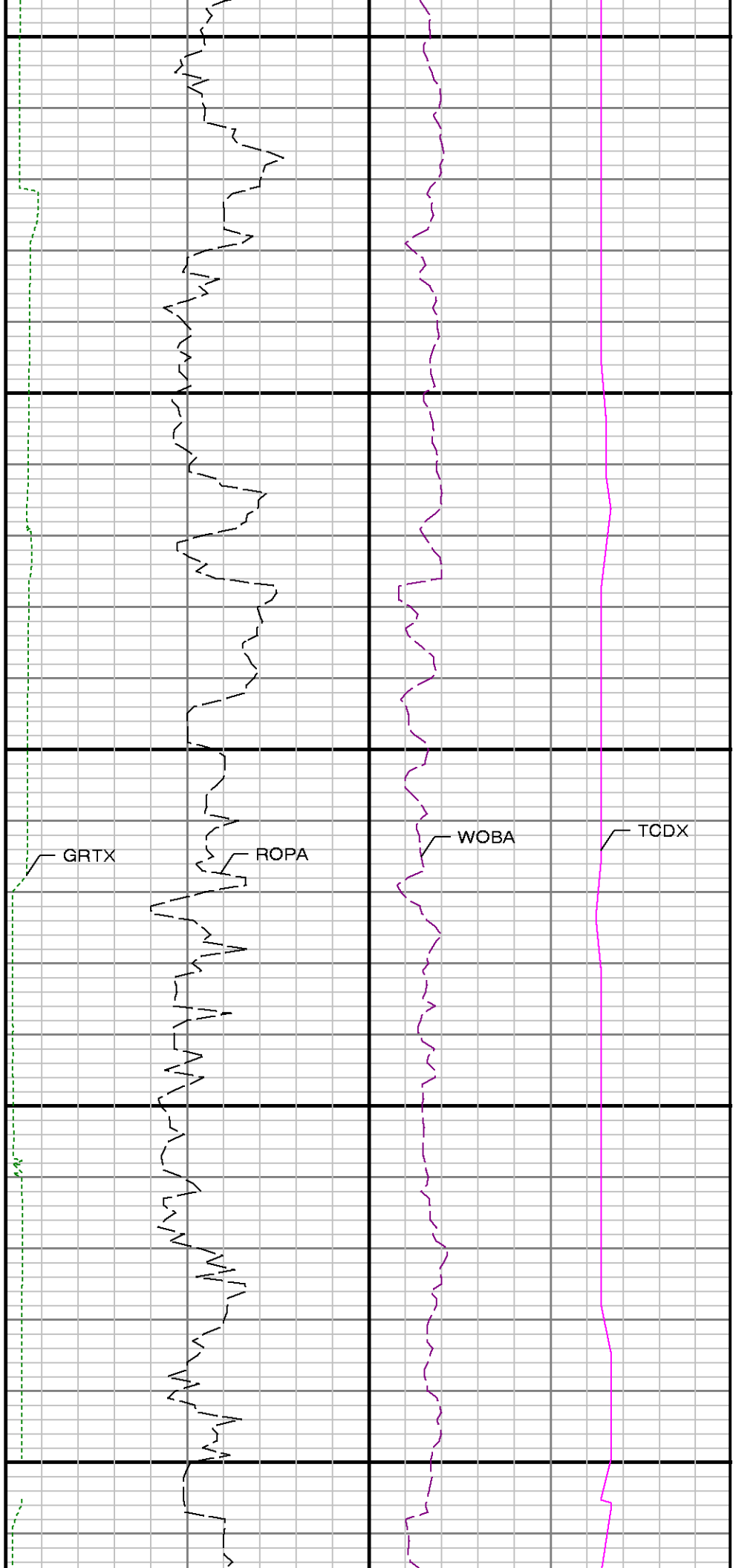


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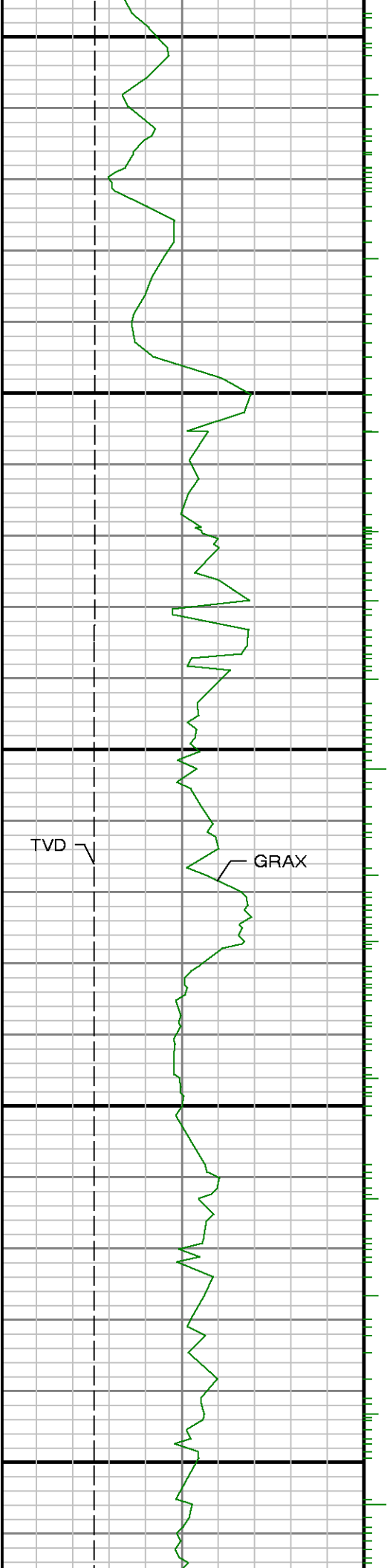
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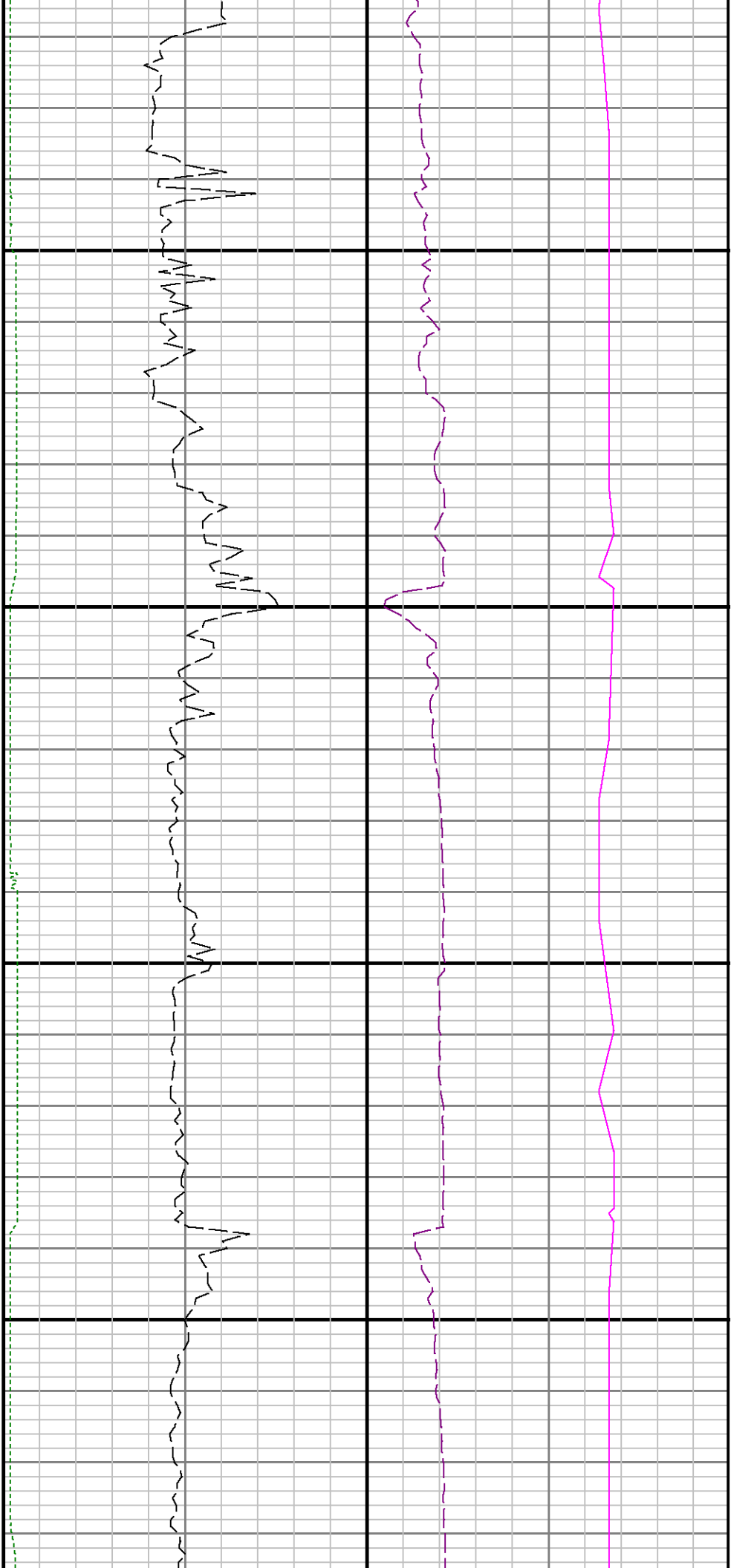
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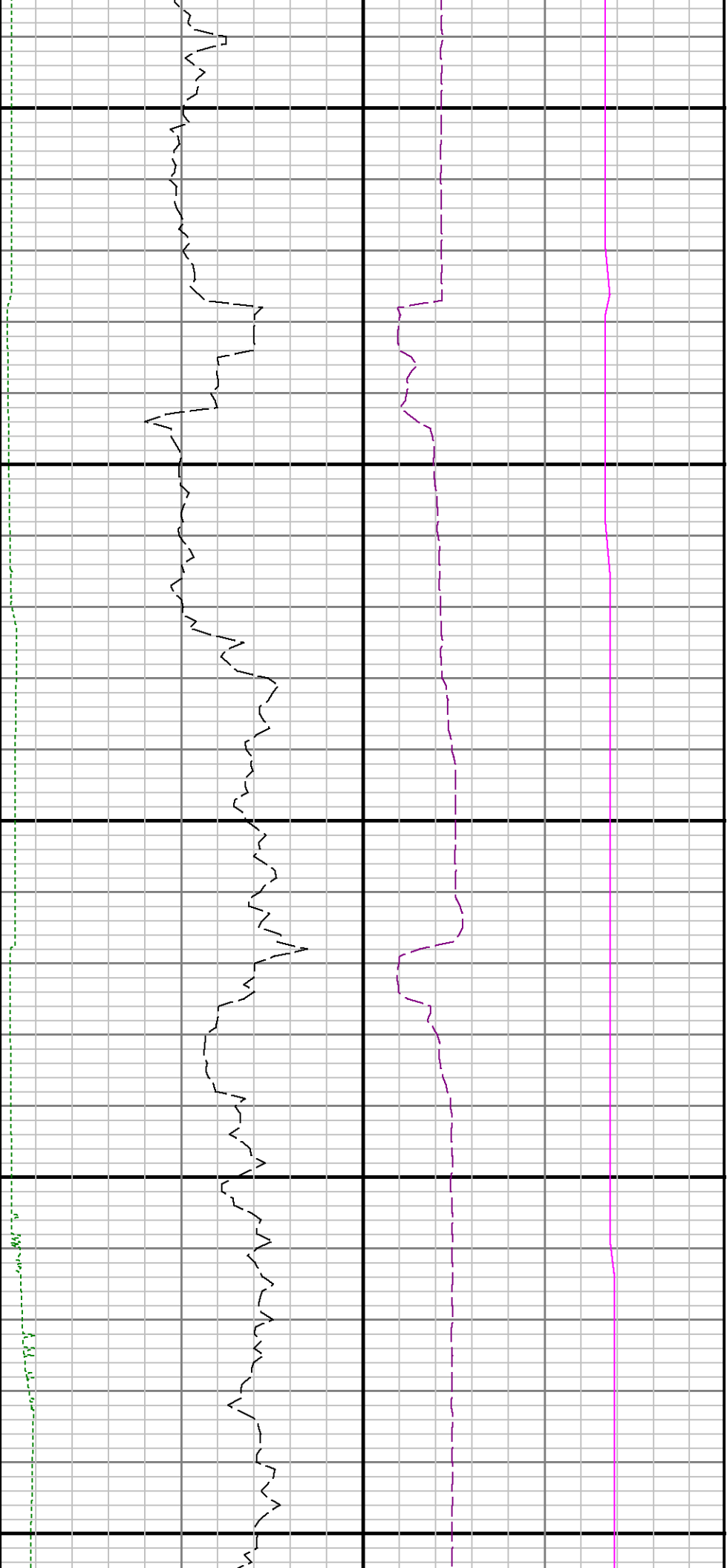
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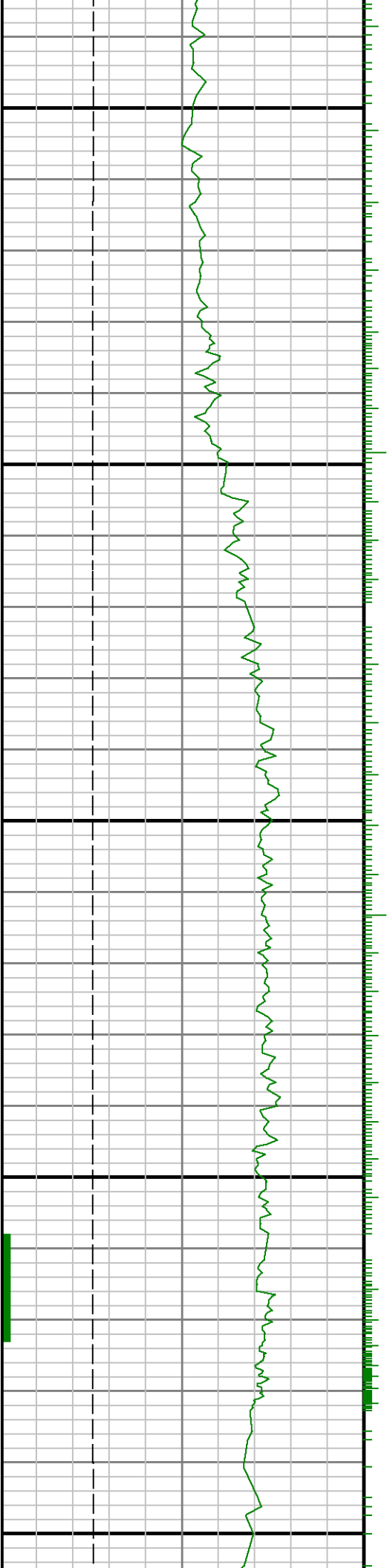
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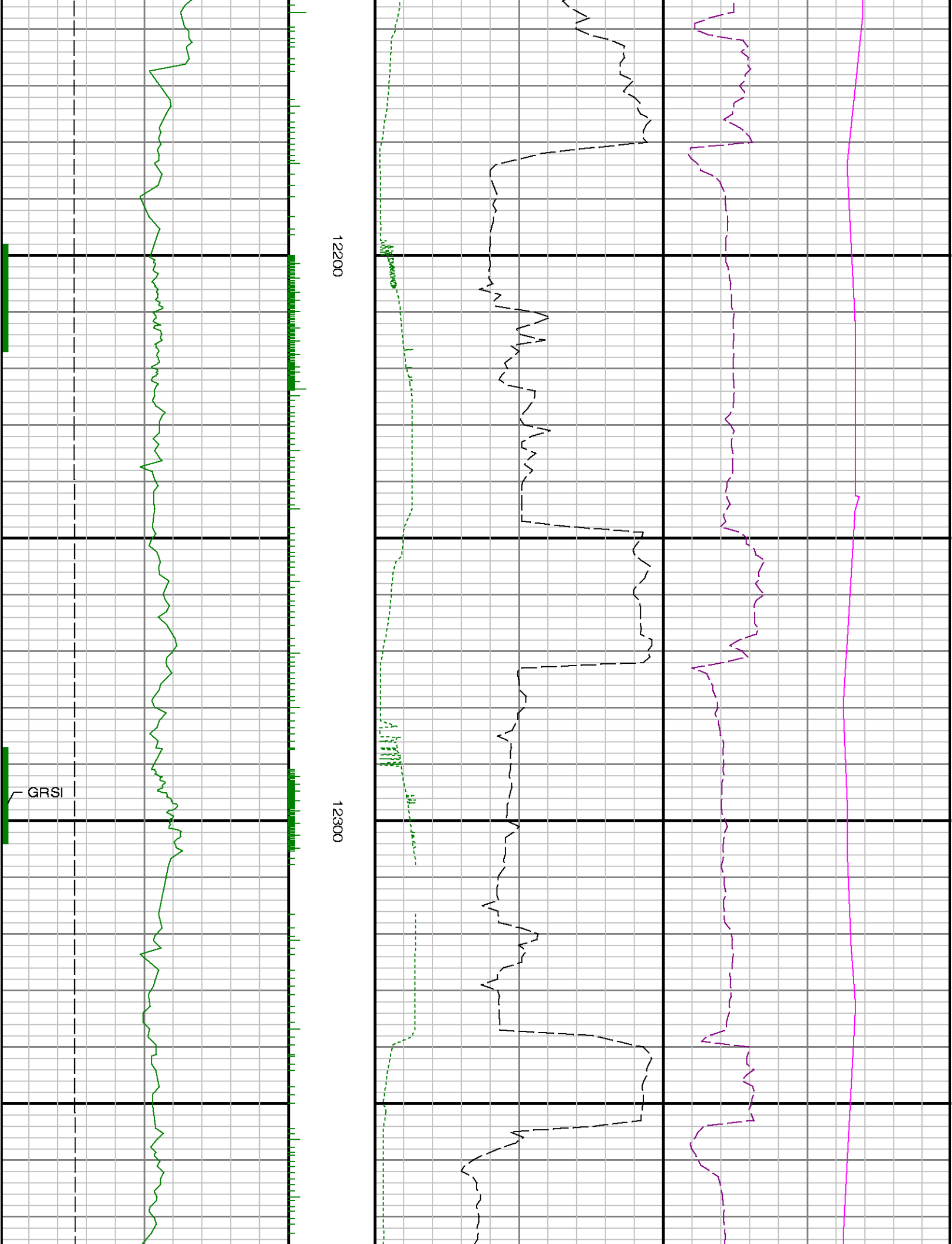
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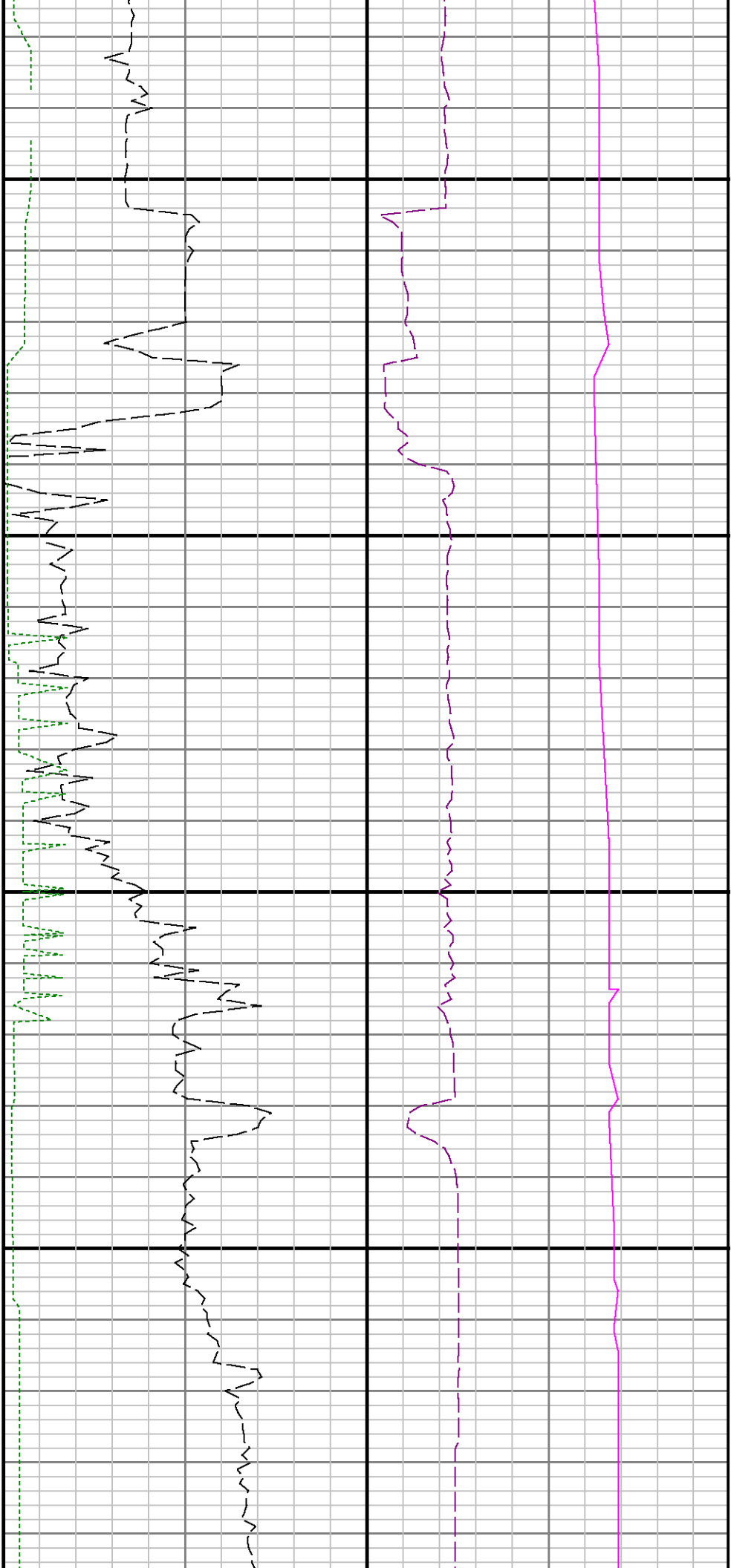


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