



Natural Formation Evaluation
Gamma Ray

Realtime Log

Scale: 1:240 Measured Depth

Company: Anadarko

Well: Brotemarkle 29N-13HZ

Field: Weld County (Kerr McGee)

County: Weld State: Colorado

Status: Final Print Surface Location: Latitude: 40° 13' 7.604" N Longitude: 104° 43' 46.434" W Other Services: Directional VSS

API Number: 05-123-36520-00 SEC: 13 TWP: 3N RNG: 66W

Permanent Datum (P.D.): Ground Level Elevation: 5024.00 ft. Elevations: N/A

Log Measured From: Rig Floor 5040.00 ft. Above P.D. KB: 5040.00 ft. DF: 5024.00 ft. GL: 5024.00 ft.

Depth Reference: Drillers Depth

Interval Logged

Dates

Magnetic Field Reference

Top: 6635.0 ft. Date From: 22/Mar/14 Date To: 27/Mar/14 Dip Angle: 66.83° Azl Reference North: True

Bottom: 11734.0 ft. Date To: 27/Mar/14 Total Mag to Reference

Spud Date: 22/Mar/14 Field Strength: 52570.0 nT North Correction: 8.59°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
13.500 in.	0.0 ft.	1312.0 ft.	9.625 in.	36.00 lb/ft	0.0 ft.	1306.0 ft.
8.750 in.	1312.0 ft.	7645.0 ft.	7.000 in.	26.00 lb/ft	0.0 ft.	7633.0 ft.
6.125 in.	7645.0 ft.	11734.0 ft.				

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Fresh Water	1312.0 ft.	4850.0 ft.	13.500 in.	1312.0 ft.	0.0° / 0.0°	0.2° / 264.8°
Water Based	4850.0 ft.	7645.0 ft.	8.750 in.	6339.0 ft.	0.2° / 266.8°	89.3° / 1.2°
Water Based	7645.0 ft.	11734.0 ft.	6.125 in.	4090.0 ft.	89.3° / 1.2°	88.5° / 2.1°
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig: Xtreme 6	/ Xtreme Coil Drilling Corp
PATS	6.4.1.34	Job No: 6066809	/ 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	2	8.750	PDC	6.000	Steerable	6635.0	7599.0	1312.0	7645.0	22/Mar/2014 13:00	24/Mar/2014 14:30	32
2	2	3	6.125	PDC	4.800	Steerable	7599.0	11687.0	7645.0	11733.0	25/Mar/2014 13:00	27/Mar/2014 17:45	32.2

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Matthew Delmore	22/Mar/2014	28/Mar/2014	Stephen Gray	22/Mar/2014	28/Mar/2014			

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+ (%)
22/Mar/2014 21:00	1	1306.0	Fresh Water	8.5	27	8.2	N/A	0 / 99	Active Mud Pit	700	0.0
23/Mar/2014 10:00	1	4998.0	Fresh Water	8.8	34	8.9	8.9	0 / 97	Active Mud Pit	1400	0.0
23/Mar/2014 22:00	1	7645.0	Water Based	10.2	48	9.0	5.7	0 / 90	Active Mud Pit	2300	0.0
25/Mar/2014 10:00	2	7645.0	Water Based	9.2	42	9.0	5.1	0 / 95	Active Mud Pit	2400	0.0
25/Mar/2014 22:00	2	7695.0	Water Based	9.2	41	9.6	5.1	0 / 95	Active Mud Pit	2600	0.0
26/Mar/2014 22:00	2	10967.0	Water Based	9.3	45	9.3	4.6	0 / 94	Active Mud Pit	2700	0.0

Mnemonics

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

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12546347	Directional	47.26	6.750	3.250
1	SRIG	12622667	Gamma	43.84	6.750	3.250
2	DIR	11801247	Directional	48.51	4.750	2.750
2	SRIG	12554657	Gamma	45.13	4.750	2.750

Service and Tool Mnemonics

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

Comments

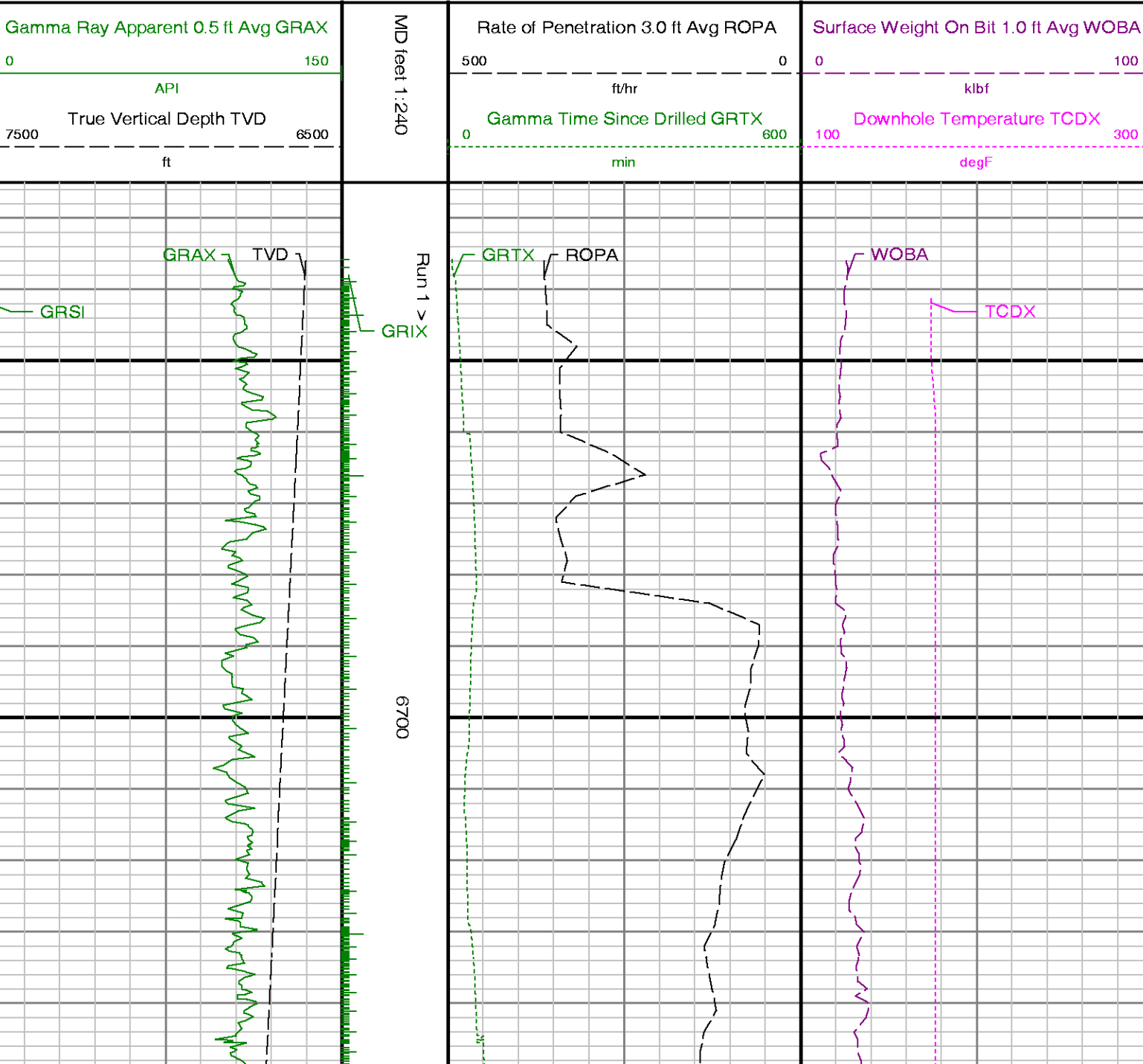
<p>1.) Baker Hughes LWD run 1 utilized 6 3/4 inch NaviTrak Services (VSS, Directional) from 1312 to 6635 ft. MD (1311.99 to 6601.08 ft. TVD) and NaviGamma Services (VSS, Directional, Gamma Ray) from 6635 to 7645 ft. MD (6601.08 to 7244.49 ft. TVD) behind an 8 3/4 inch bit and steerable assembly.</p> <p>2.) Baker Hughes LWD run 2 utilized 4 3/4 inch NaviGamma Services (VSS, Directional, Gamma Ray) from 7645 to 11734 ft. MD (7244.49 to 7258.09 ft. TVD) behind an 6 1/8 inch bit and steerable assembly.</p> <p>3.) 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.</p> <p>4.) Depth measurements 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.</p>
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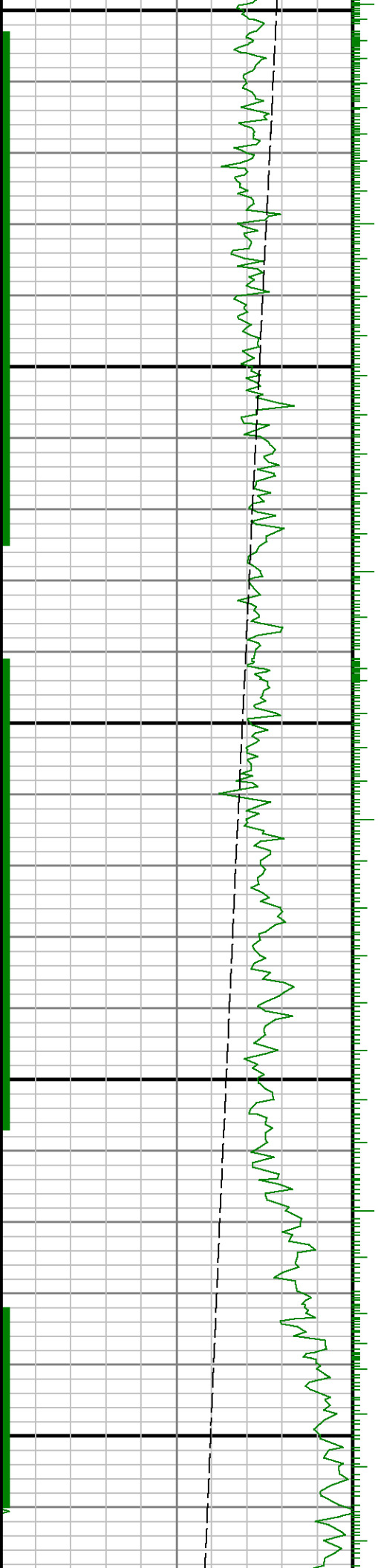
Remarks

Number	Measured Depth (ft)	Hole Section (in.)	LWD Run No.	Remark
1	7625	8.750	1	The interval from 7600 to 7645 ft. MD (6870.48 to 6912.98 ft. TVD) was logged up to 31.15 hours after being drilled due to a trip out of the hole to lay down the curve assembly, run intermediate casing and cementing operations, and to pick up the lateral assembly.
2	11715	6.125	2	The interval from 11687 to 11734 ft. MD (7256.63 to 7258.09 ft. TVD) does not contain GRAX, GRIX or GRTX due to the bit to sensor offset.



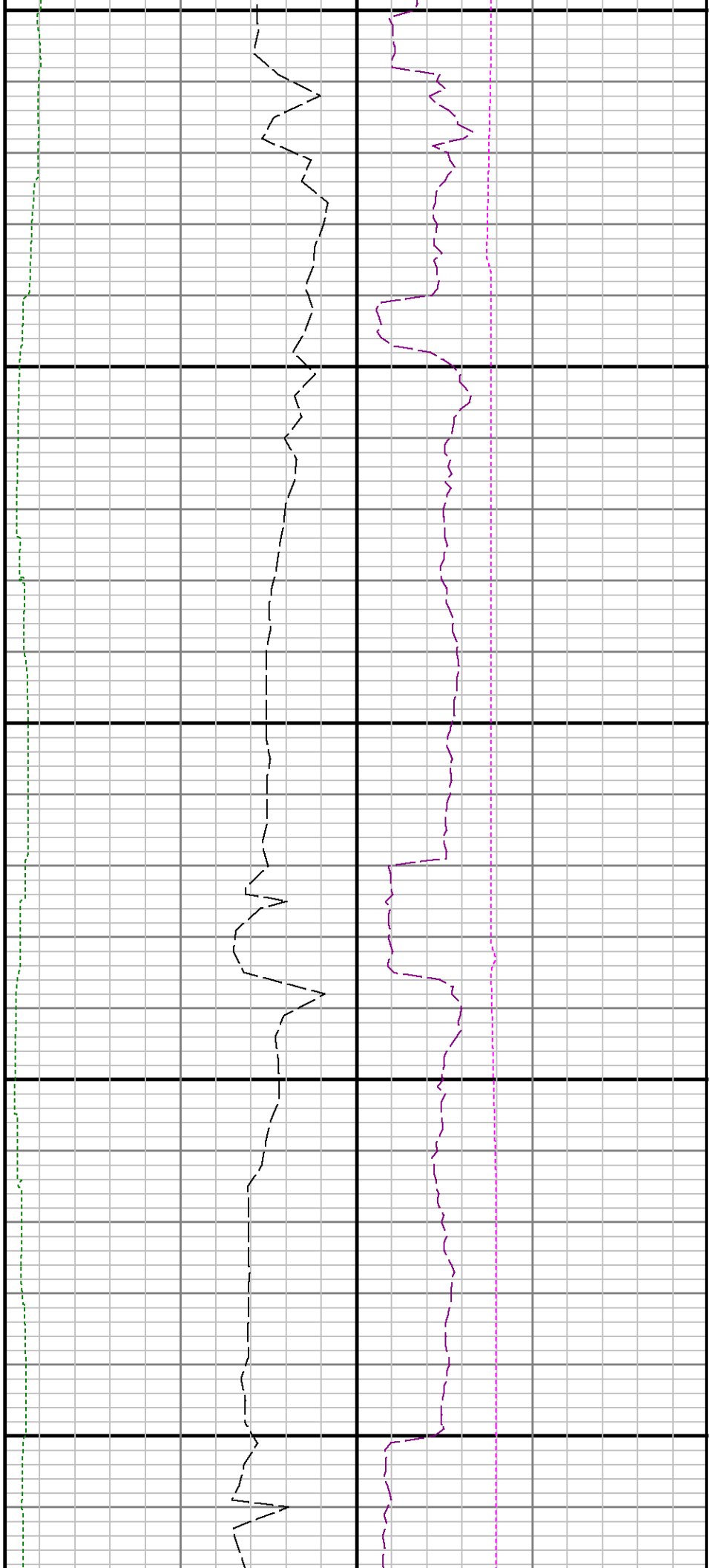
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Well : Brotemarkle 29N-13HZ
Interval : 6625.00 - 11745.00 feet
Created : 27/Mar/2014 1:56:35 PM

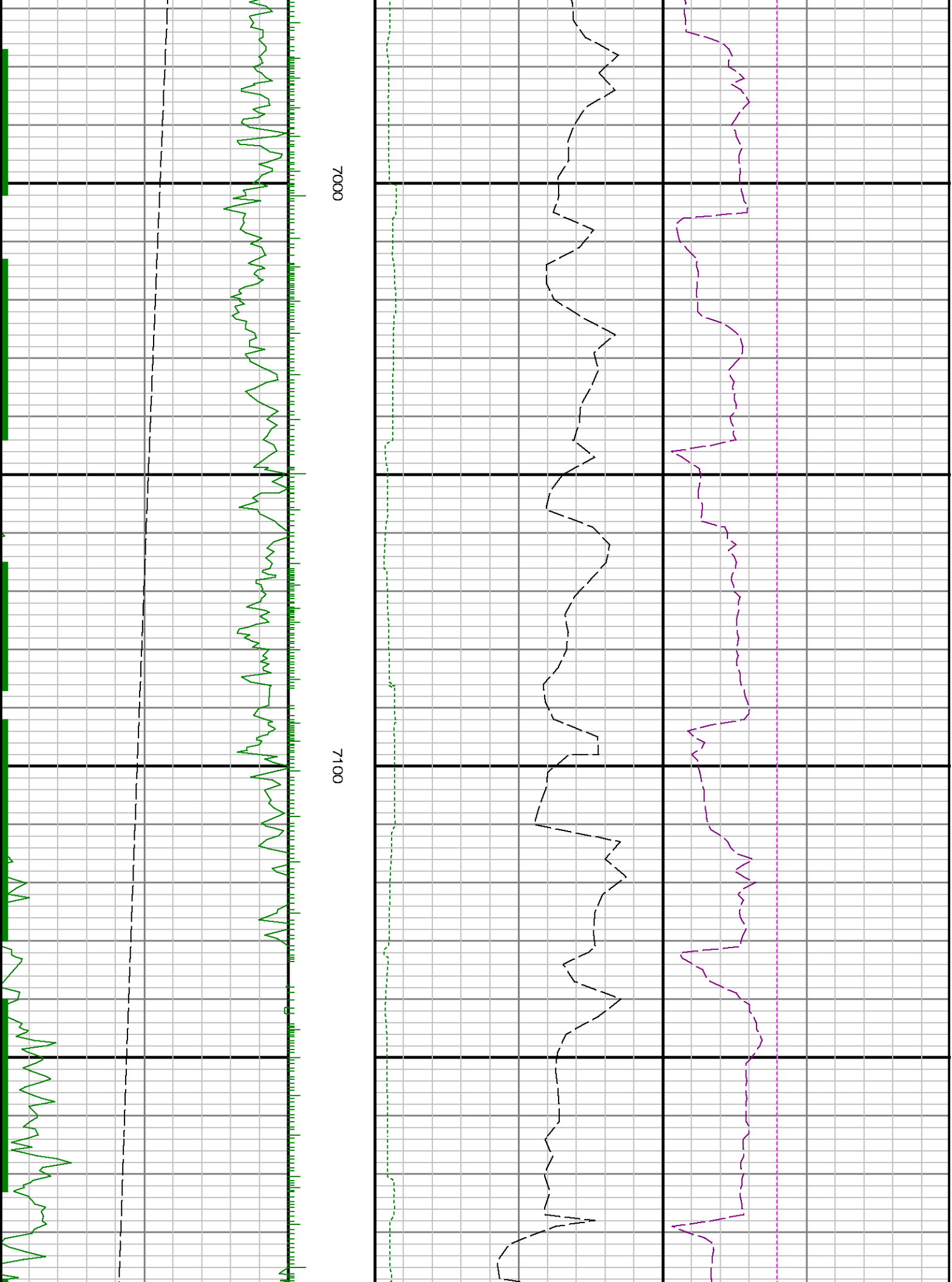


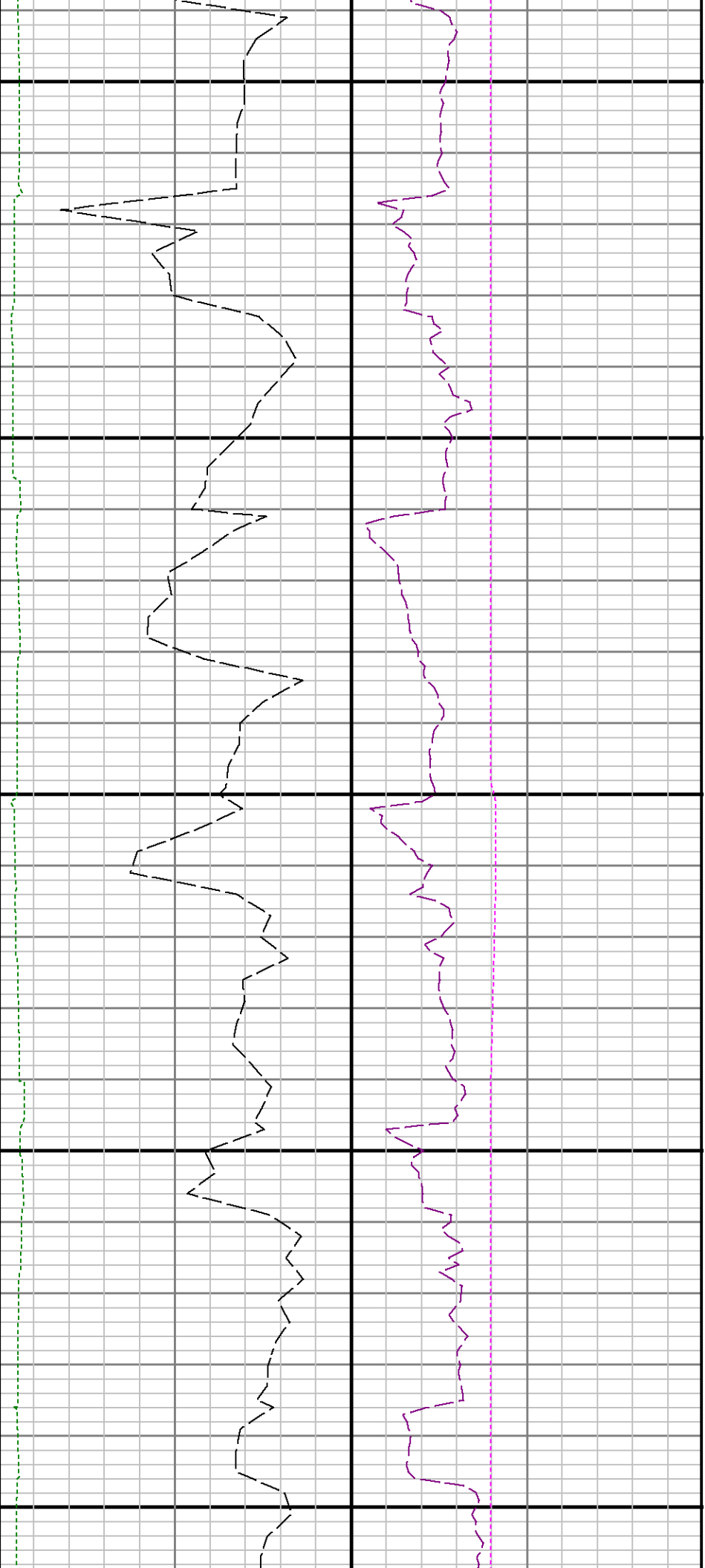


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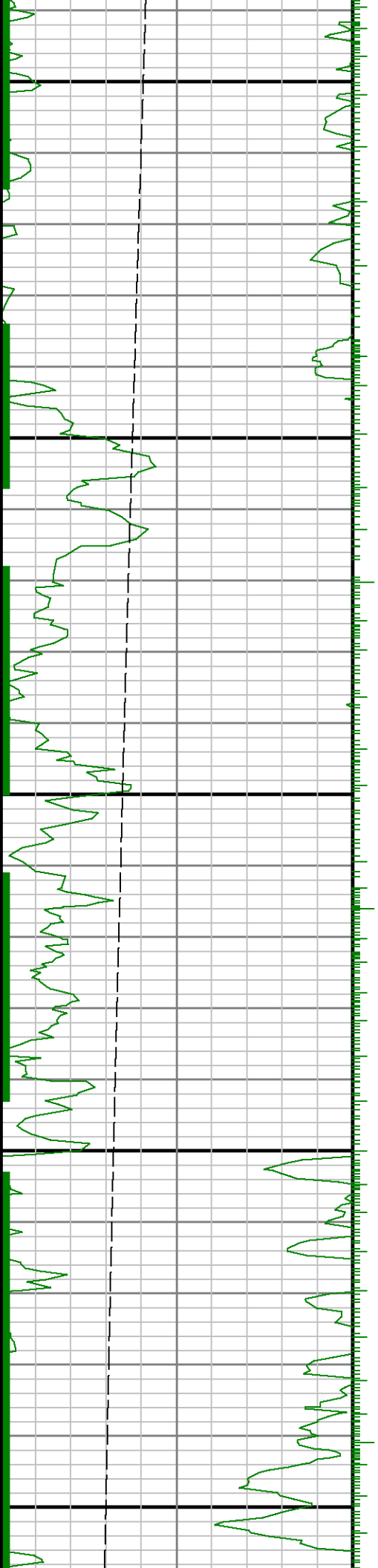


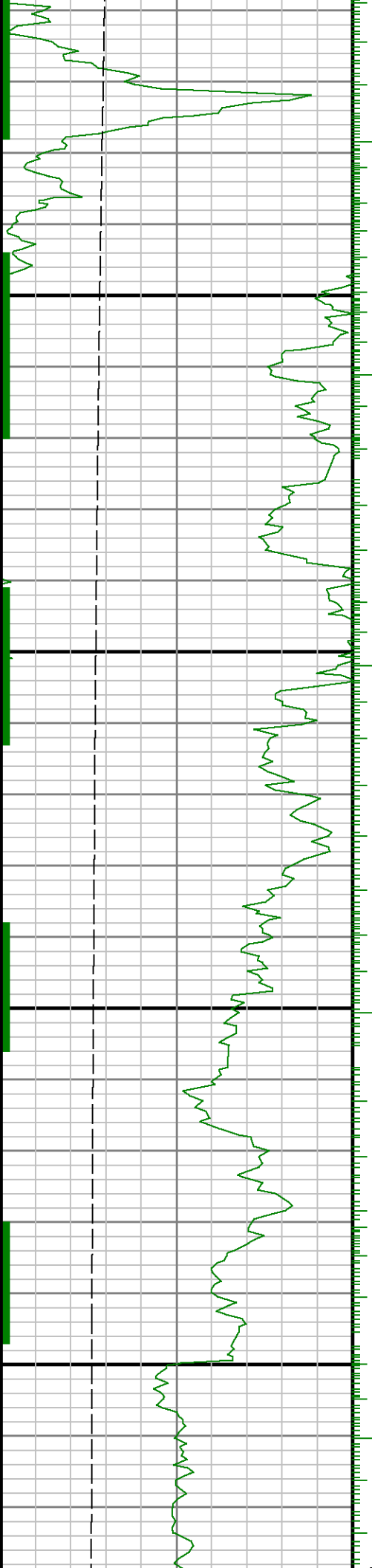


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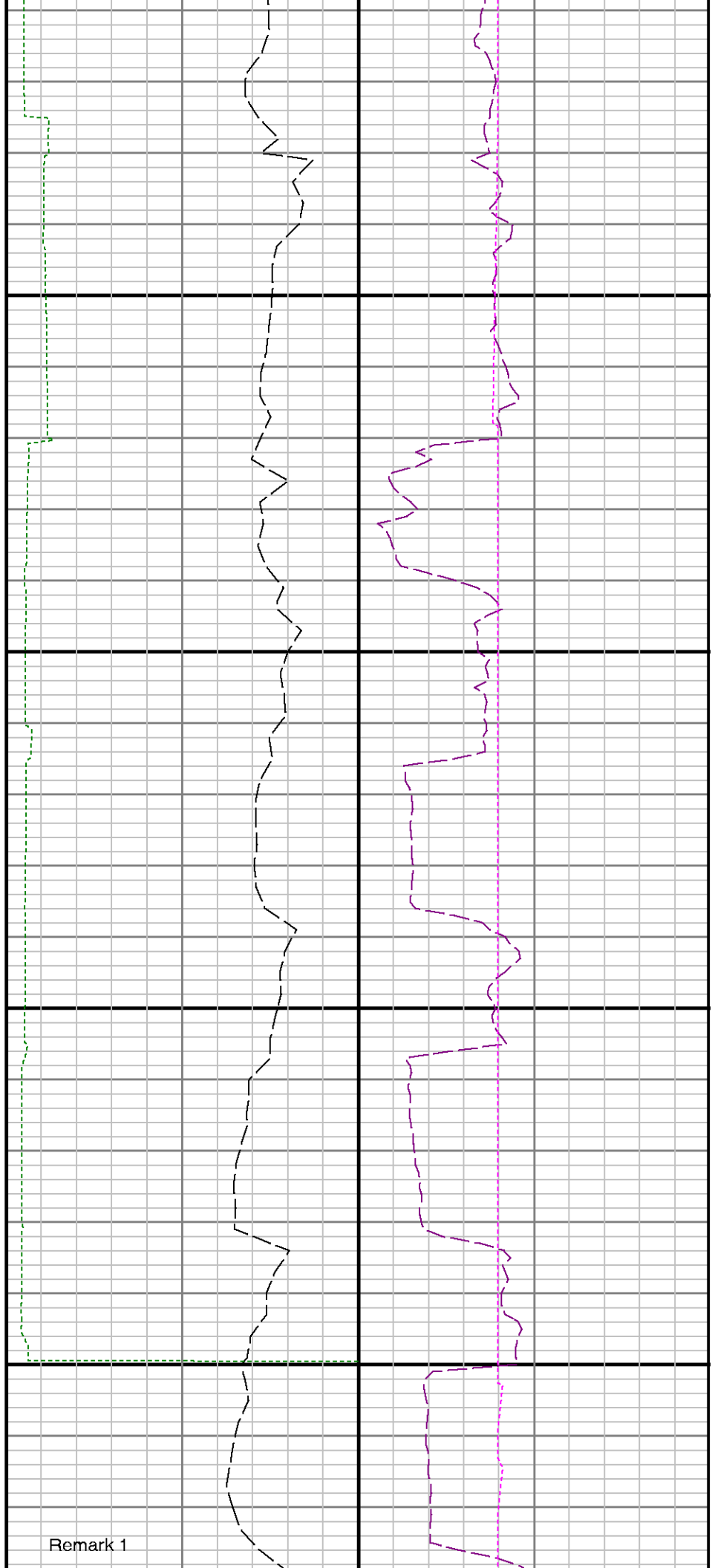
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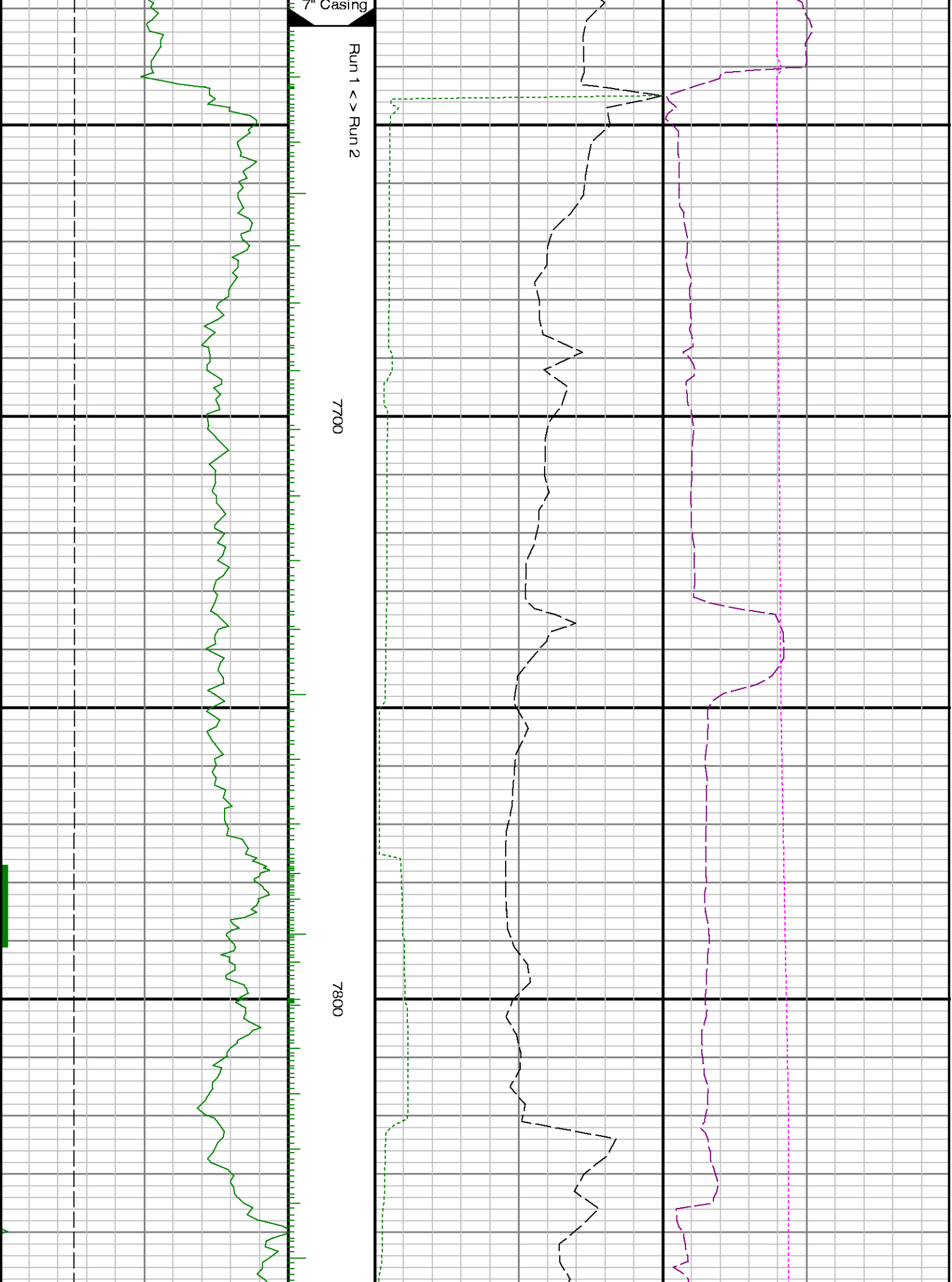
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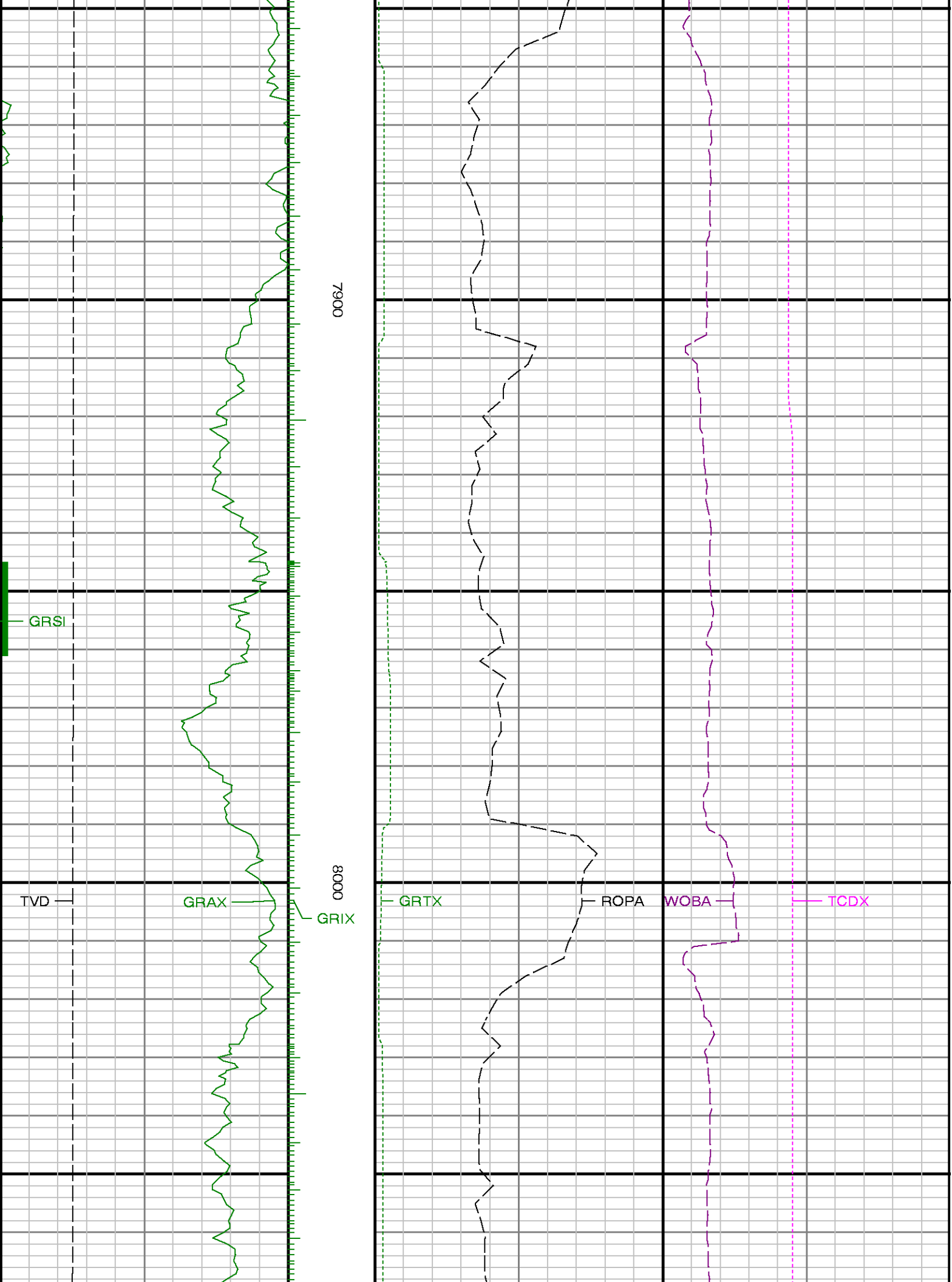
7" Casing

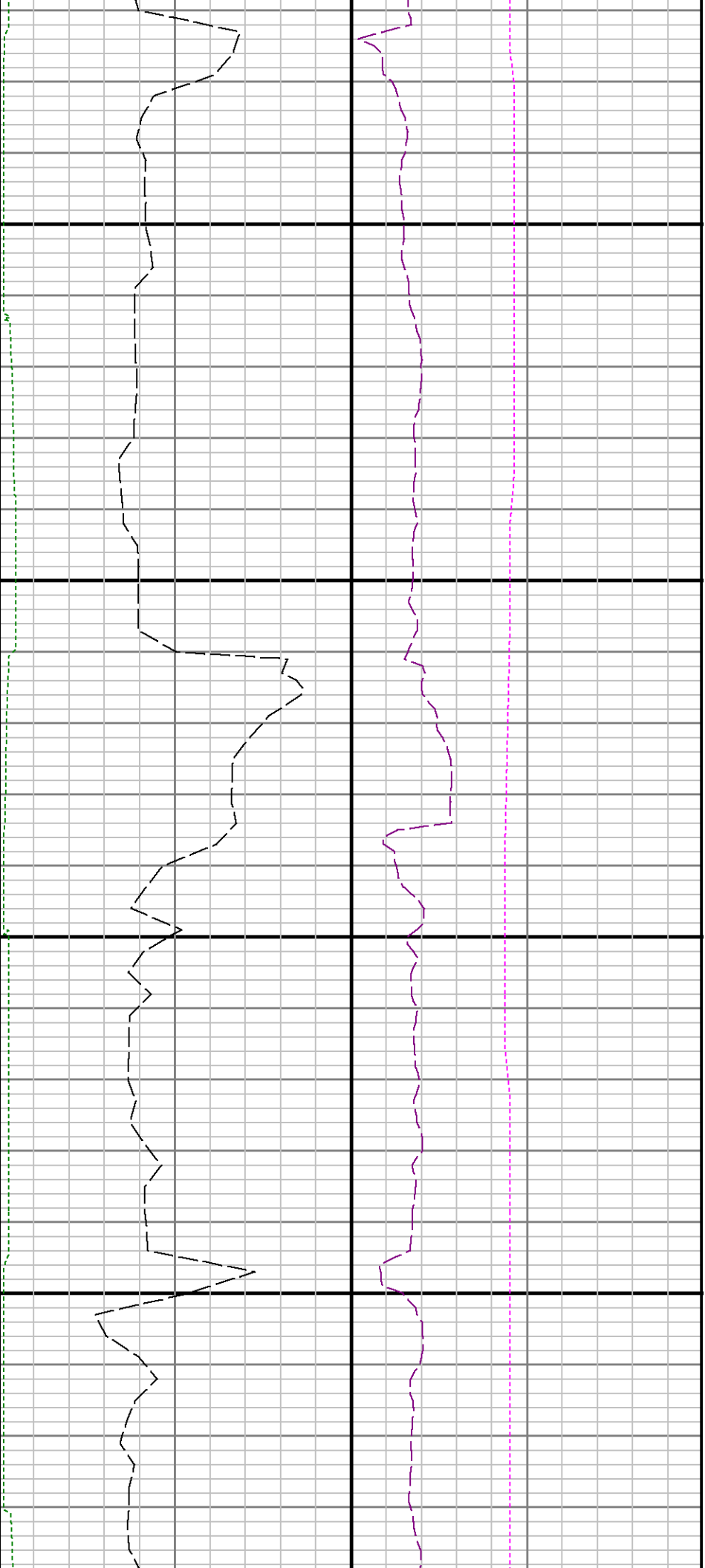
Run 1 < > Run 2

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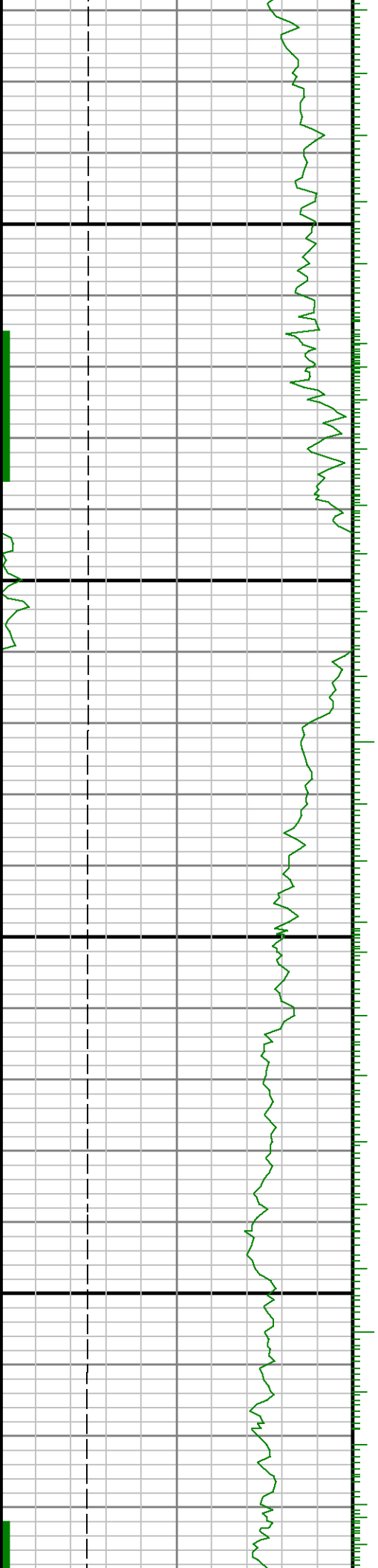


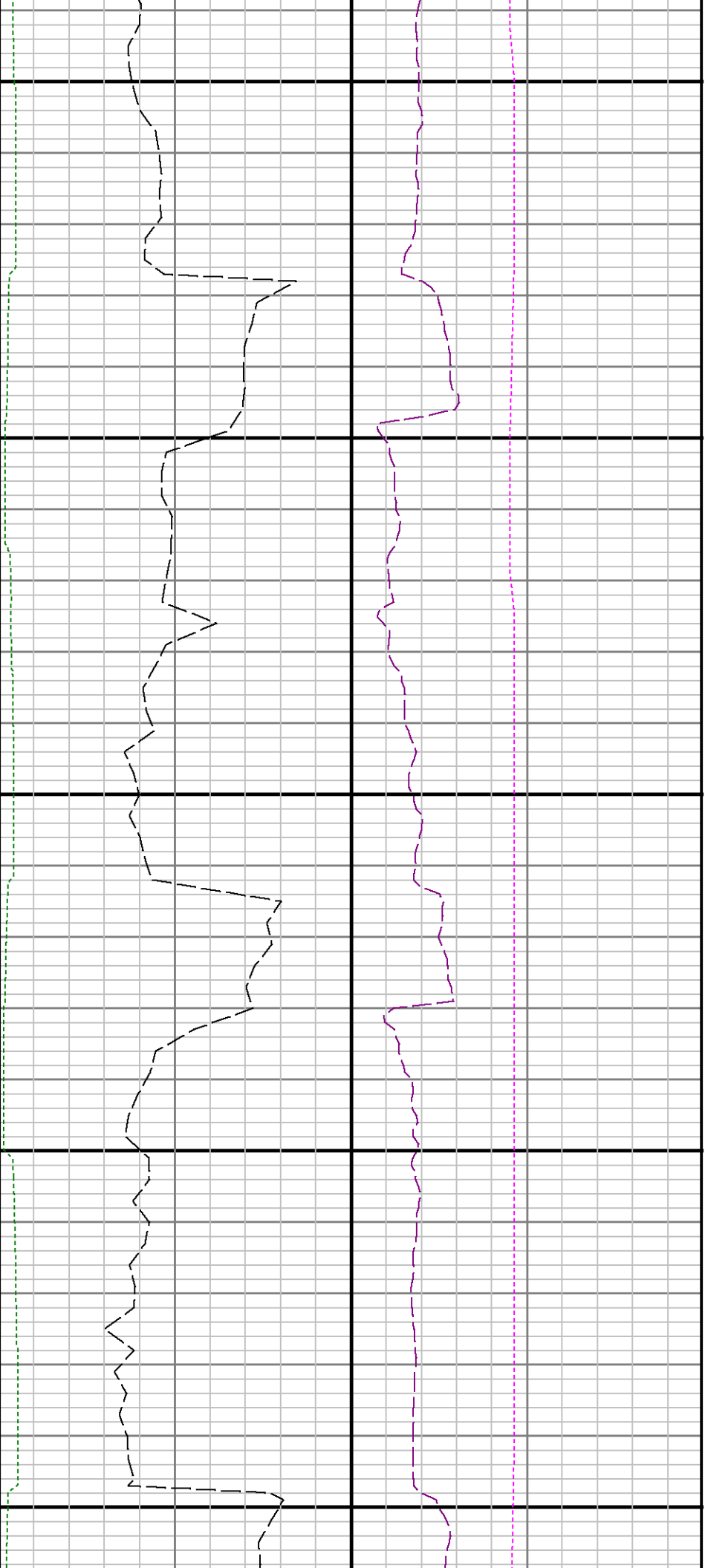




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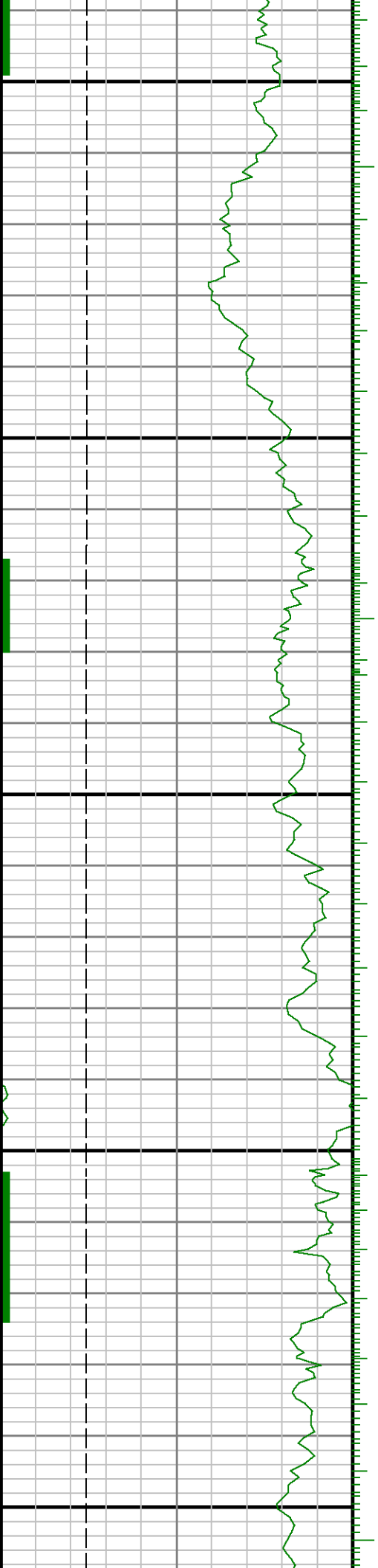


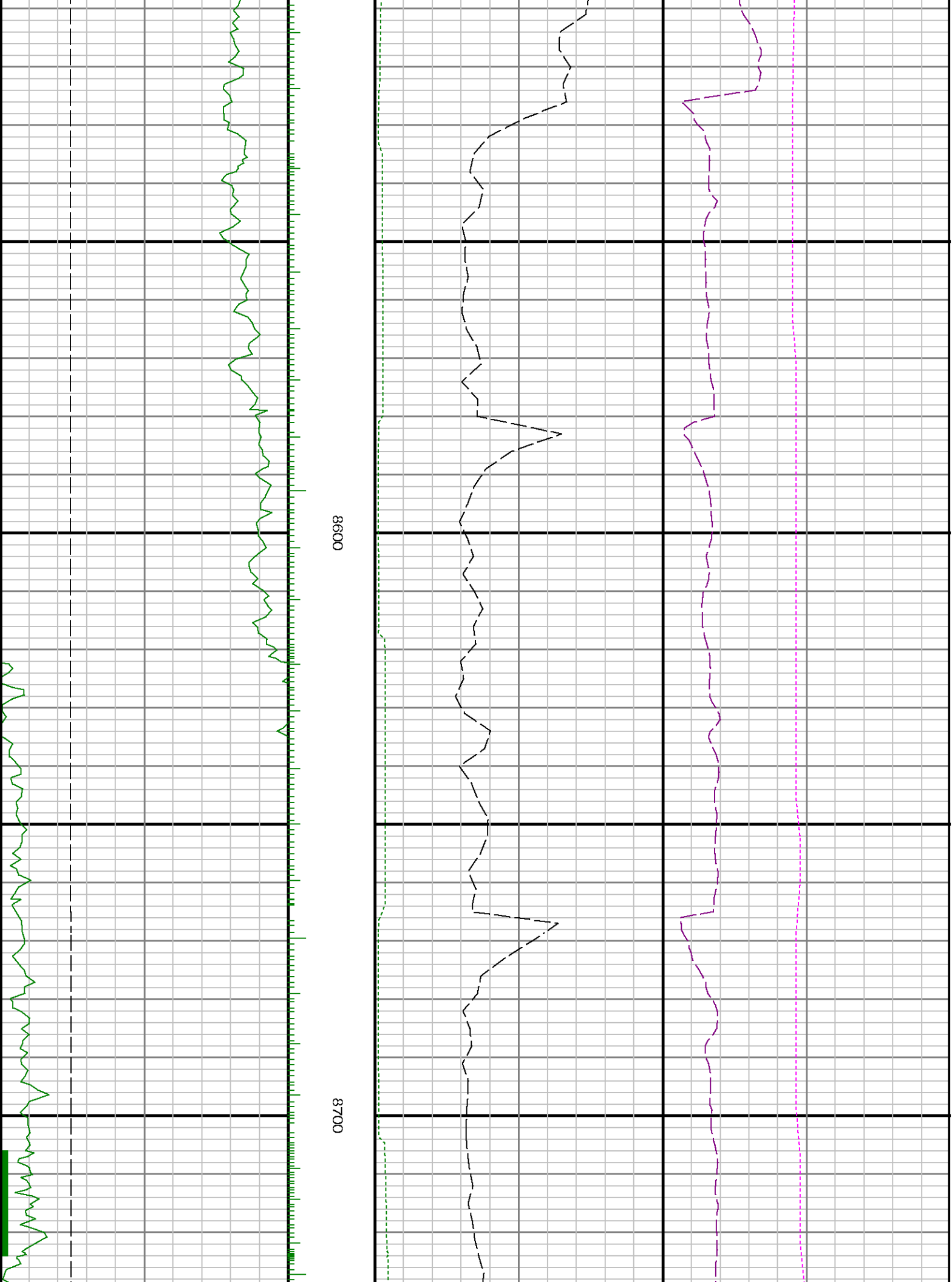


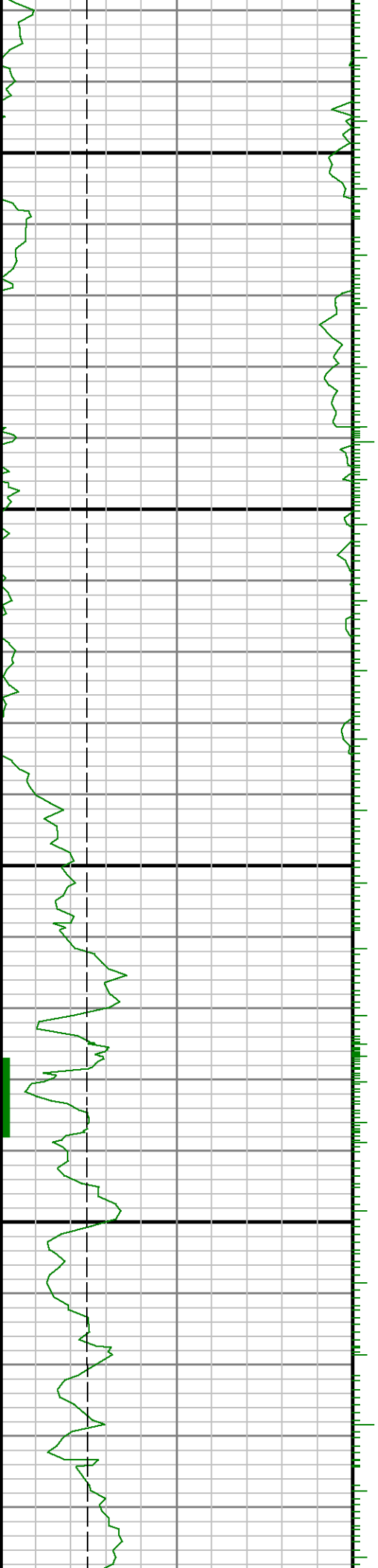
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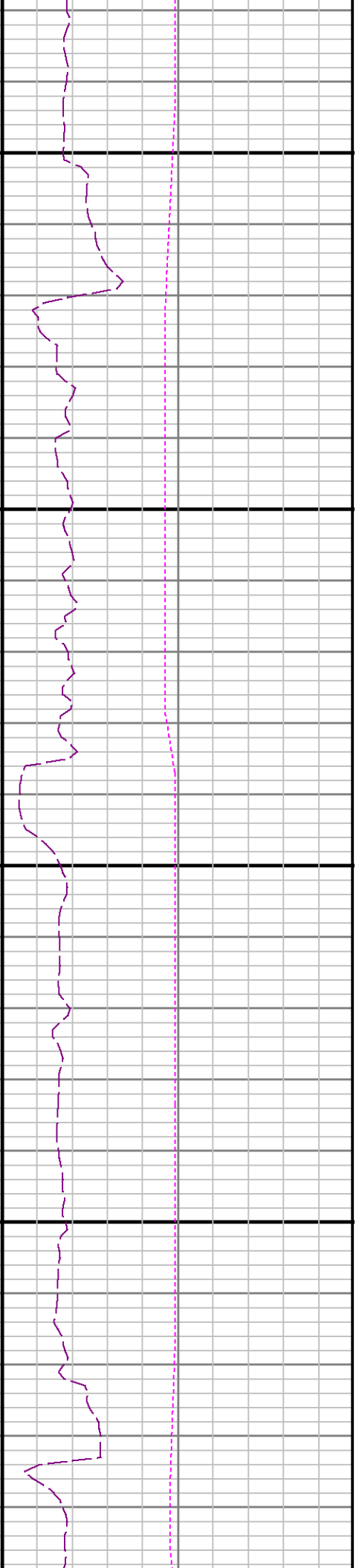
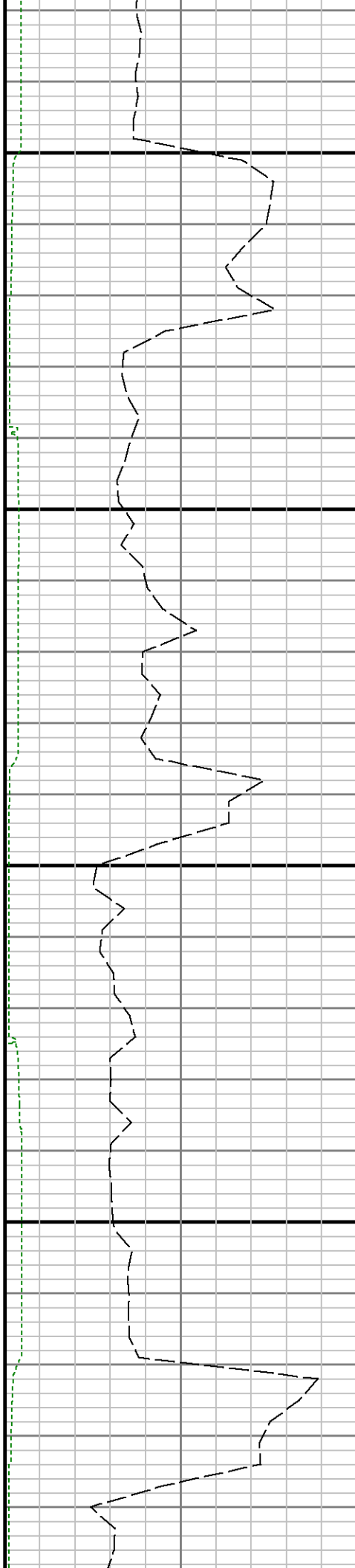


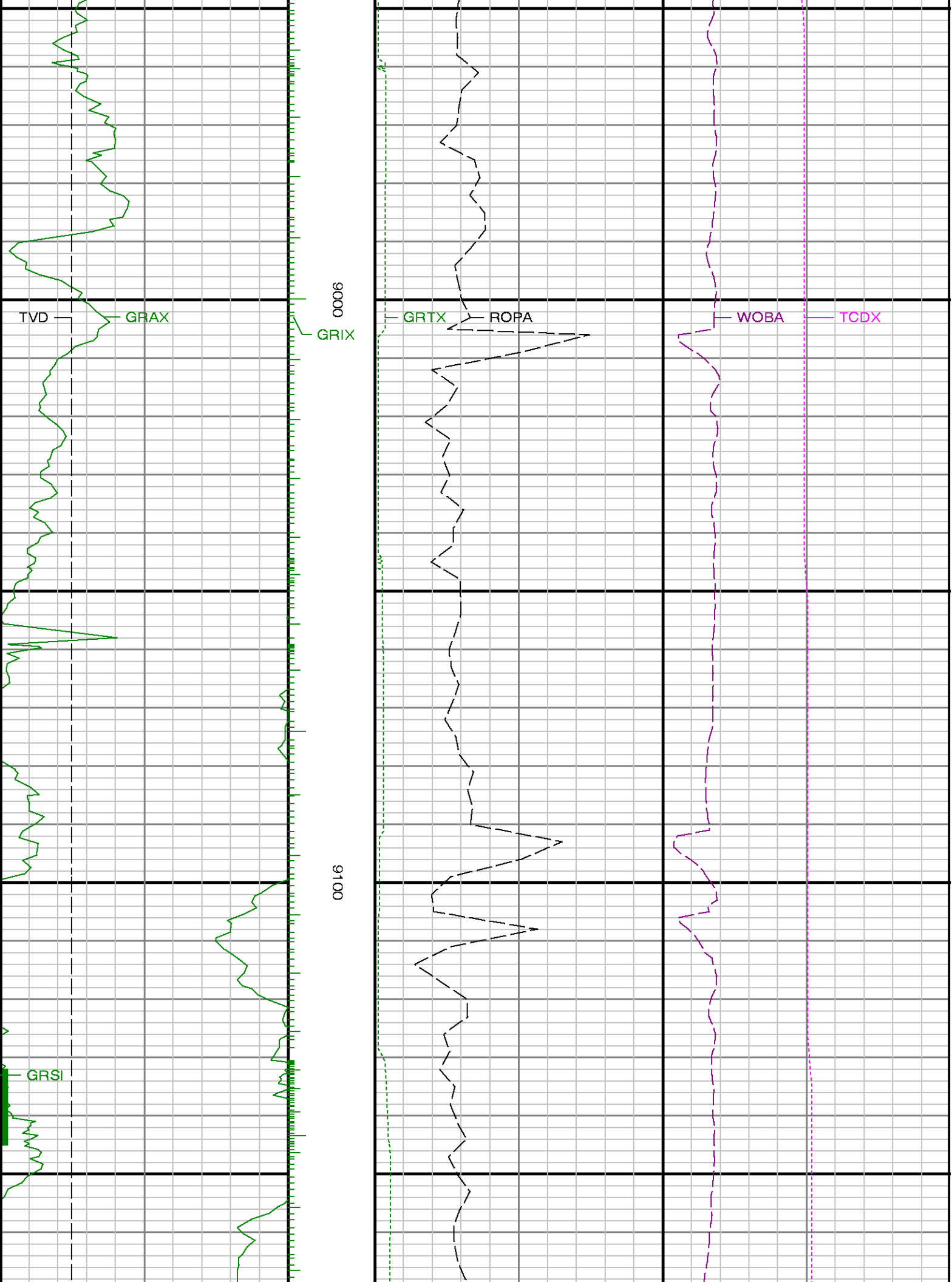


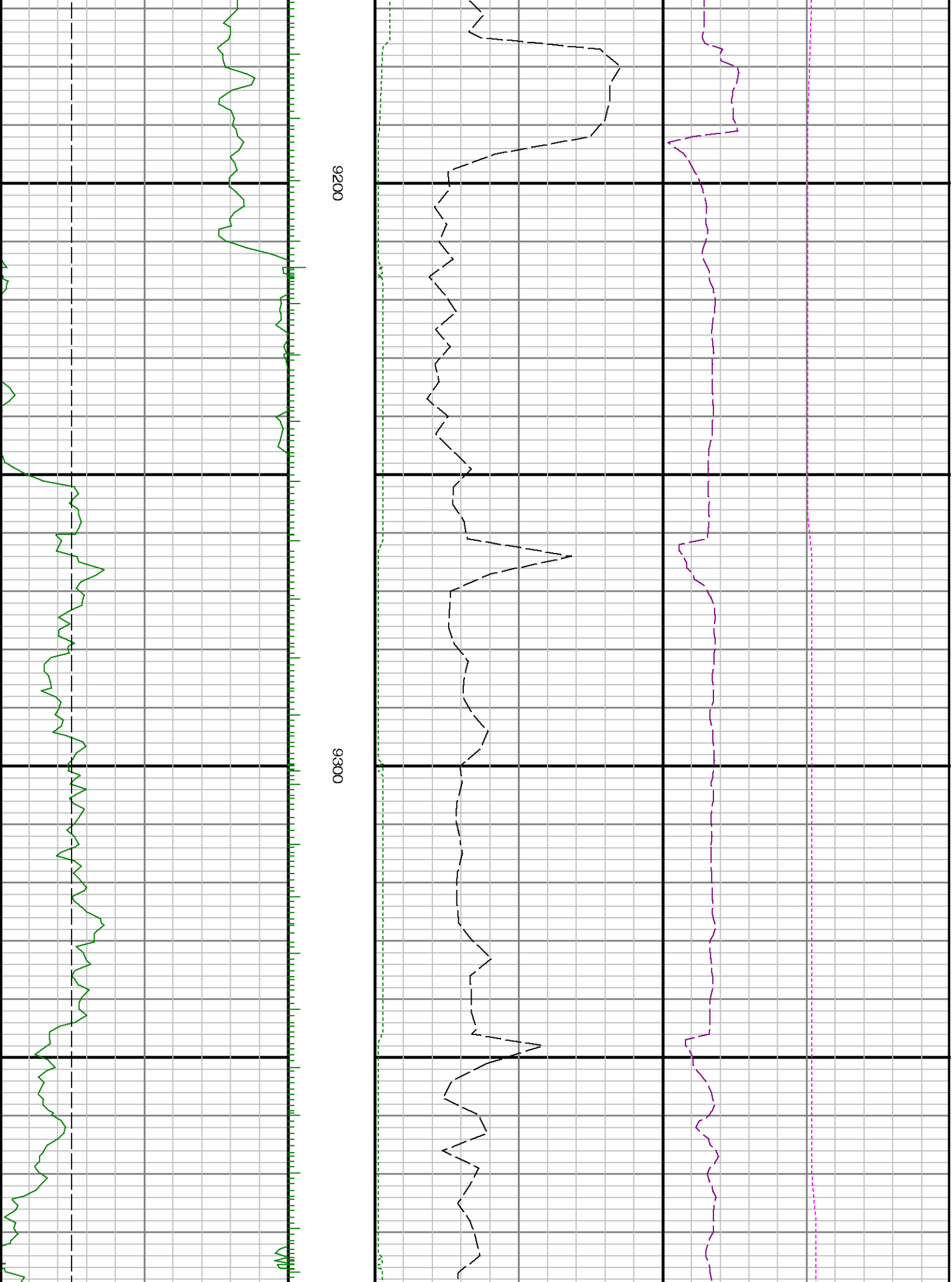


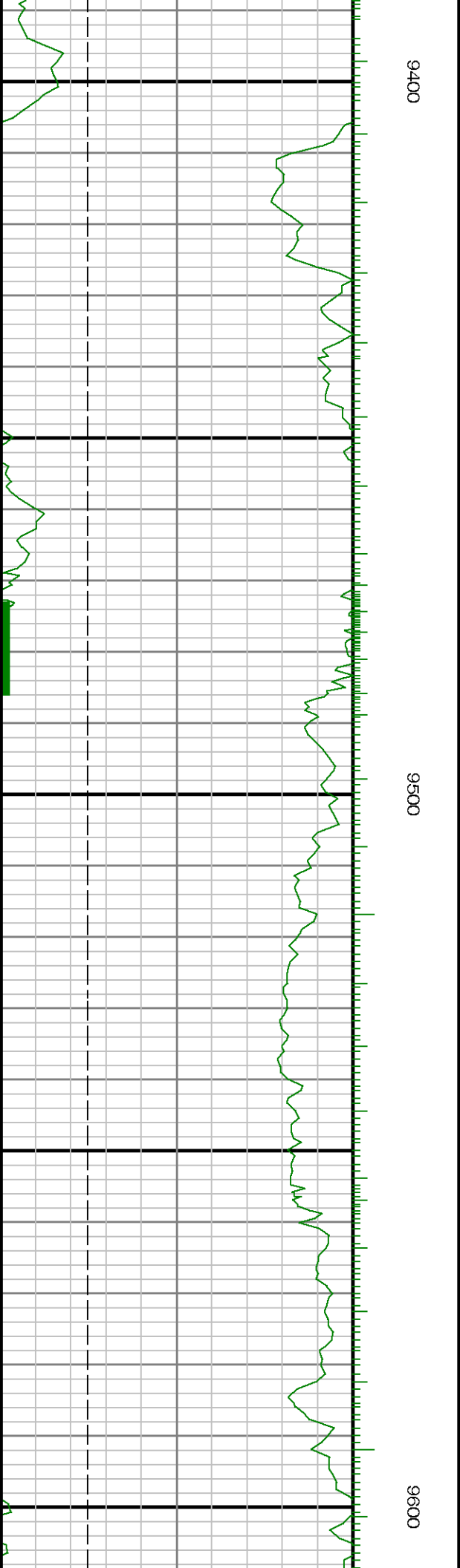
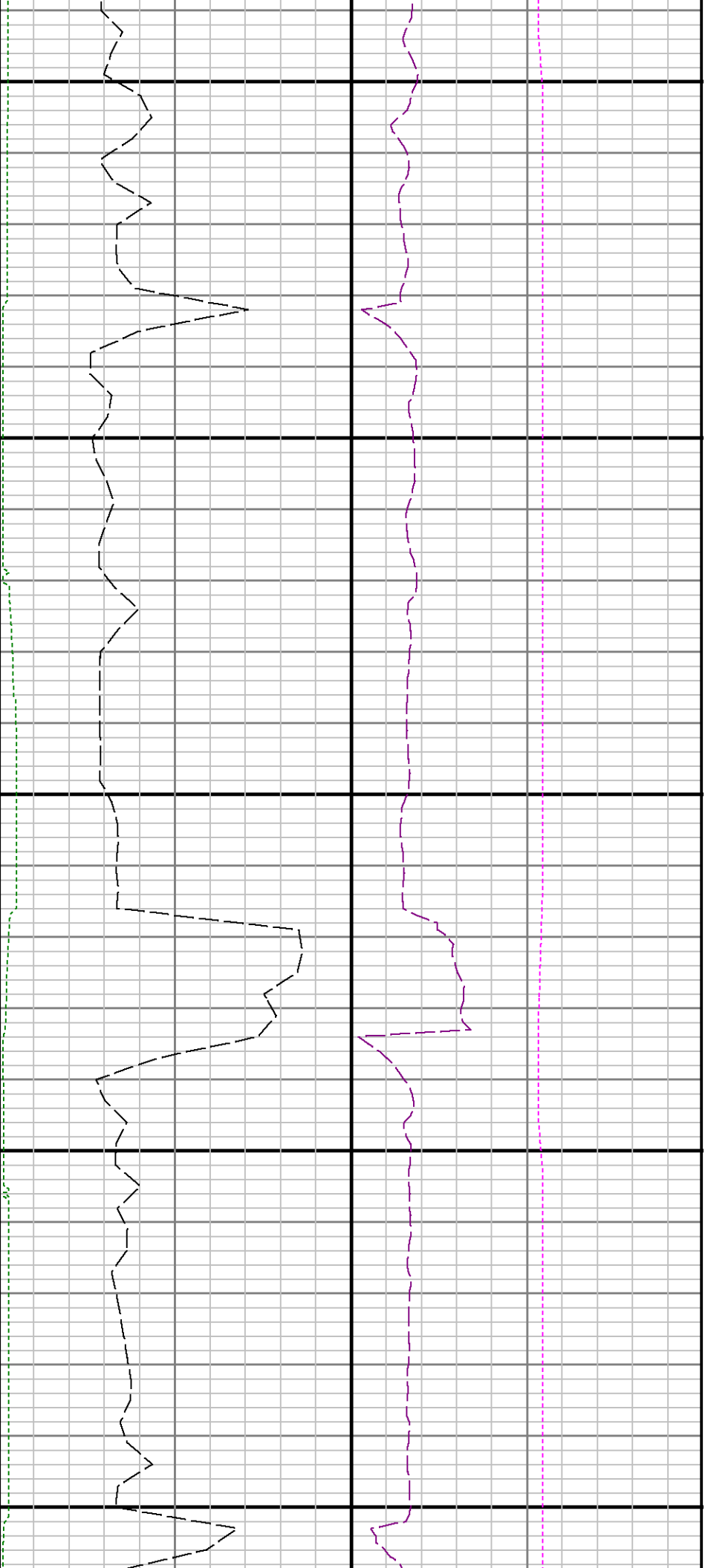
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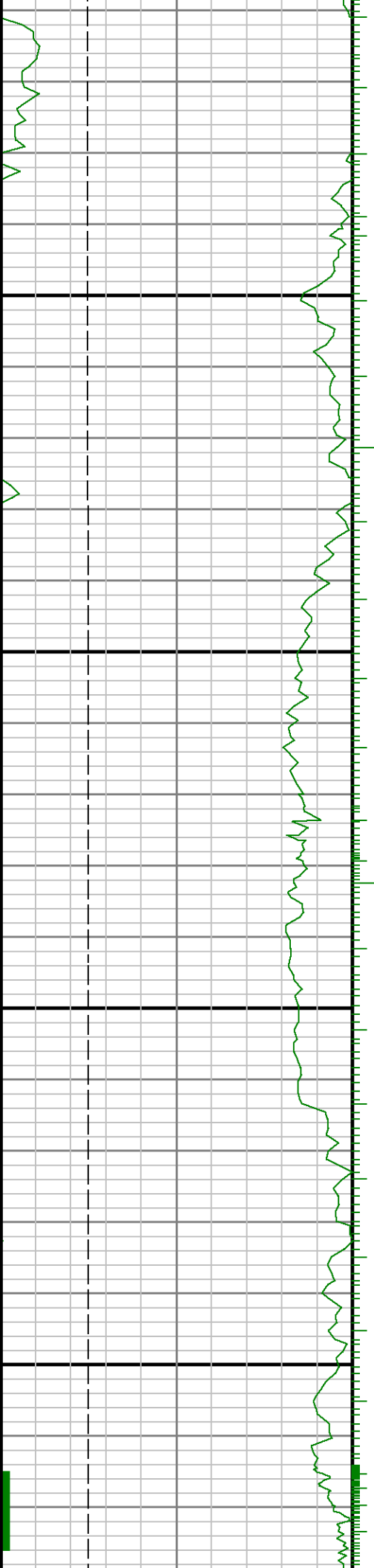
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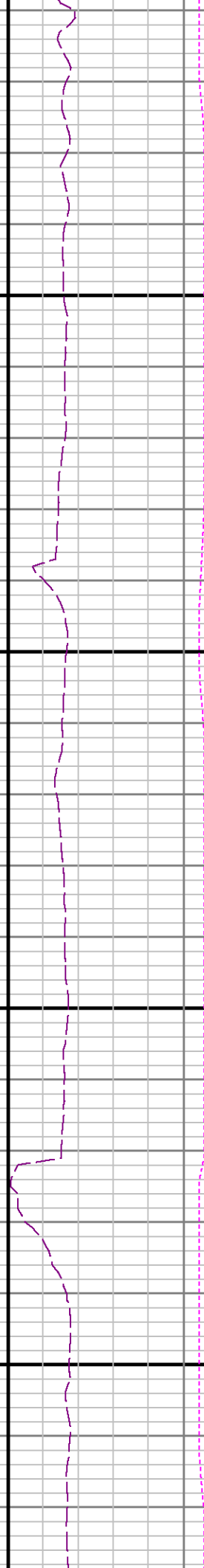
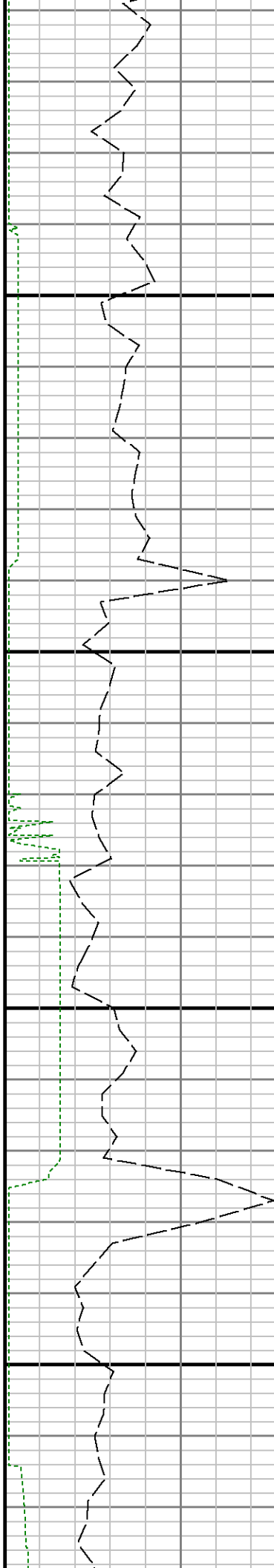


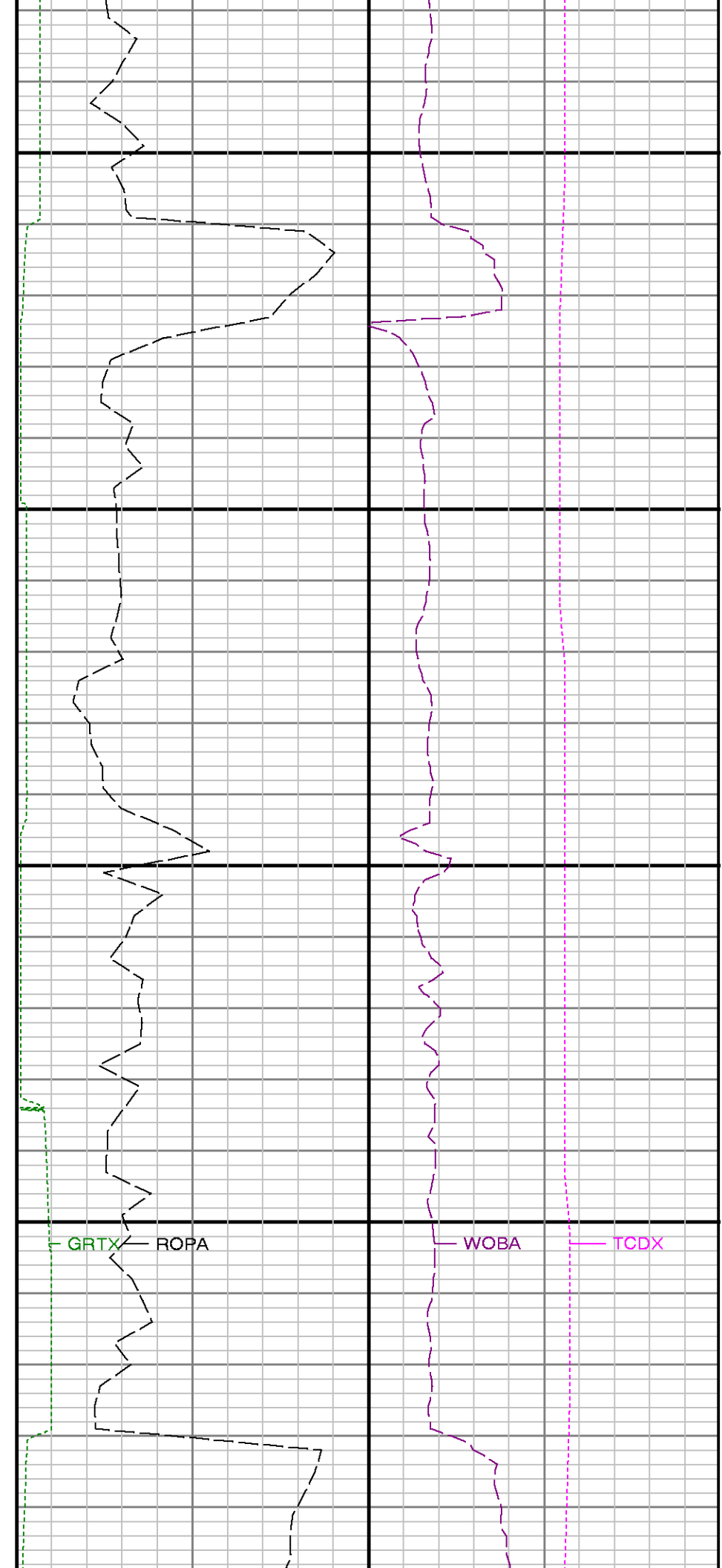
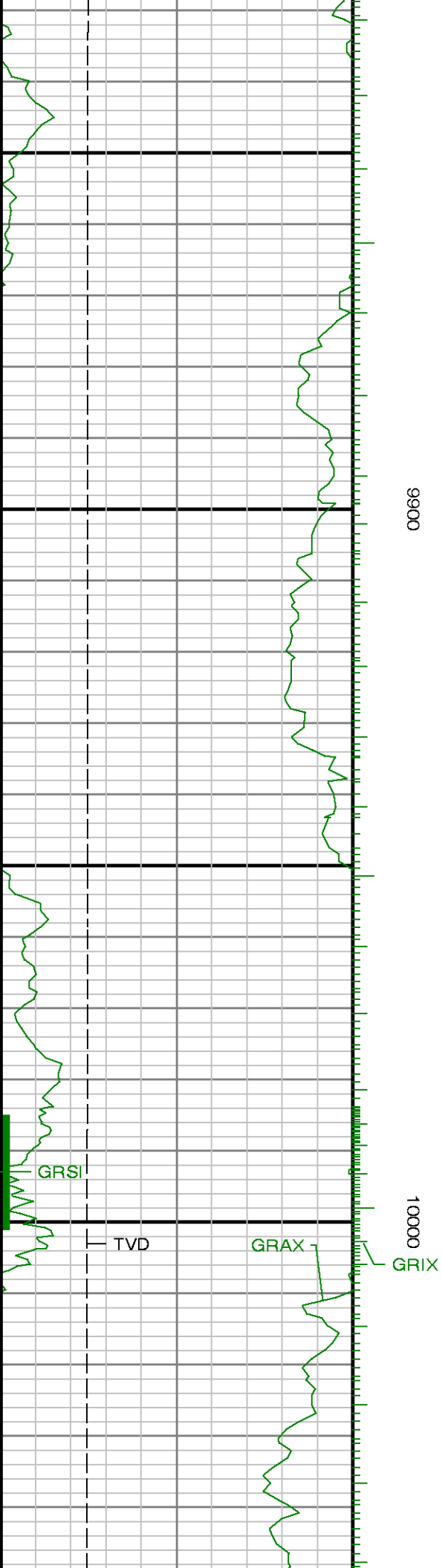


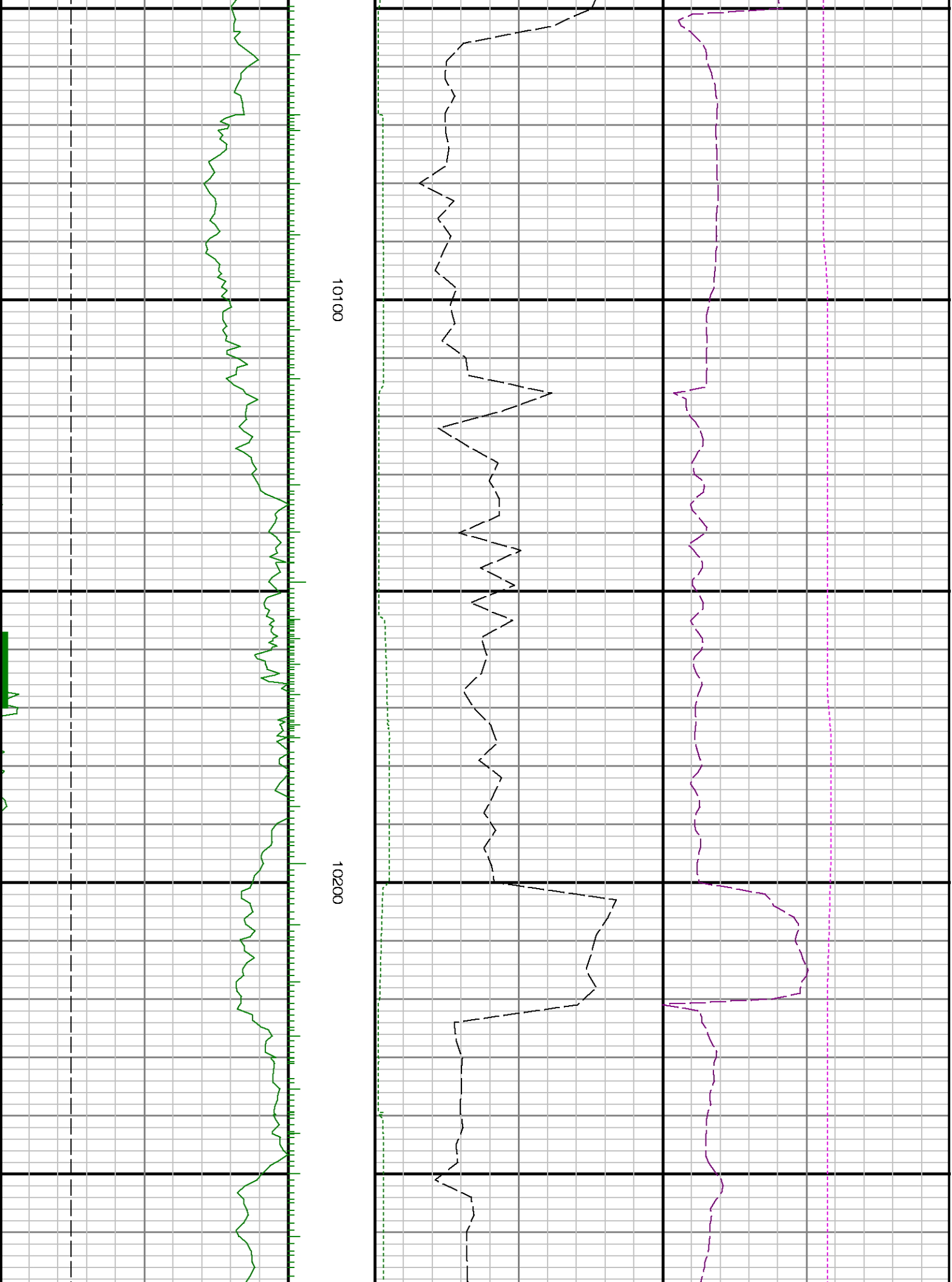


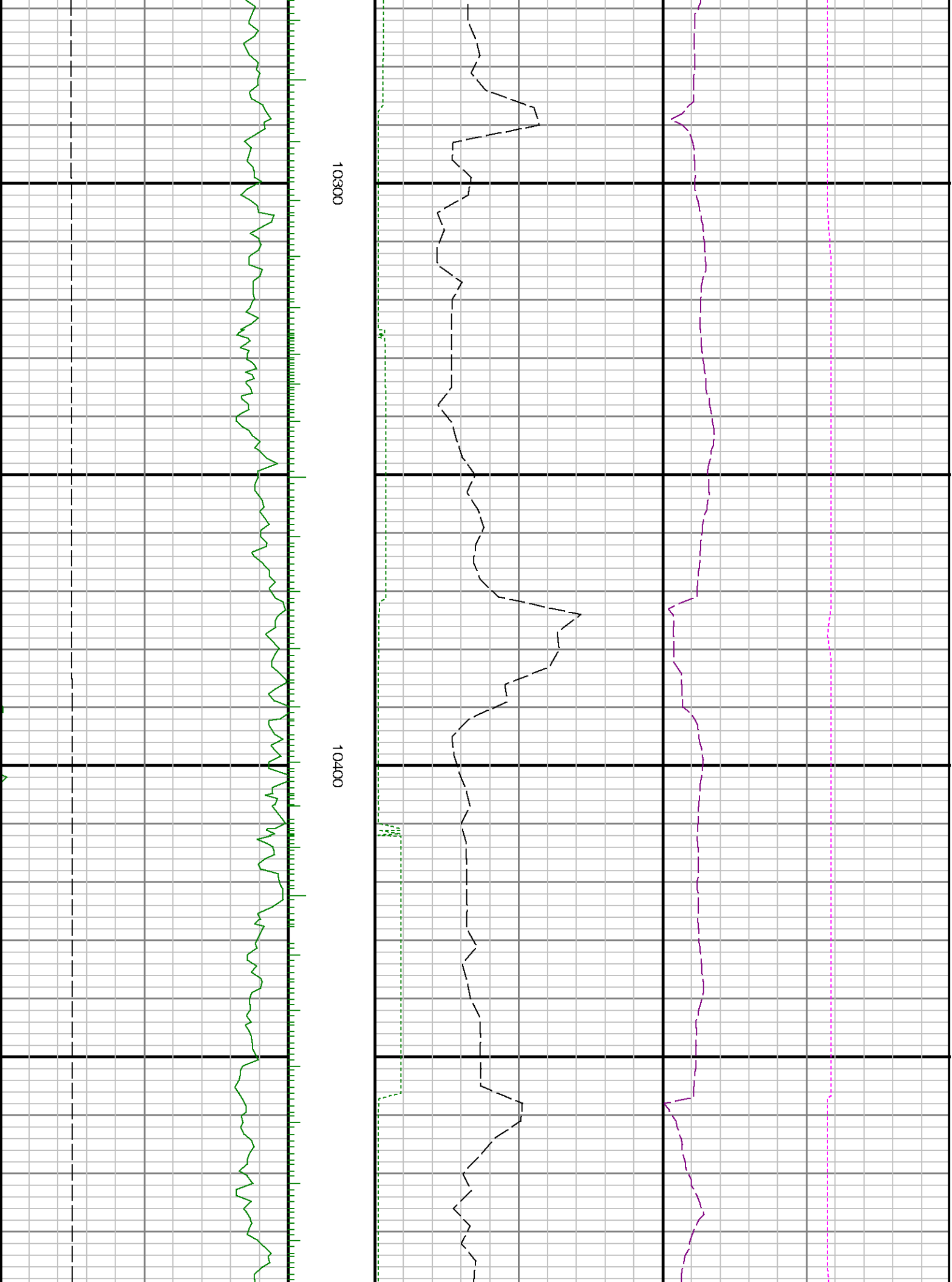
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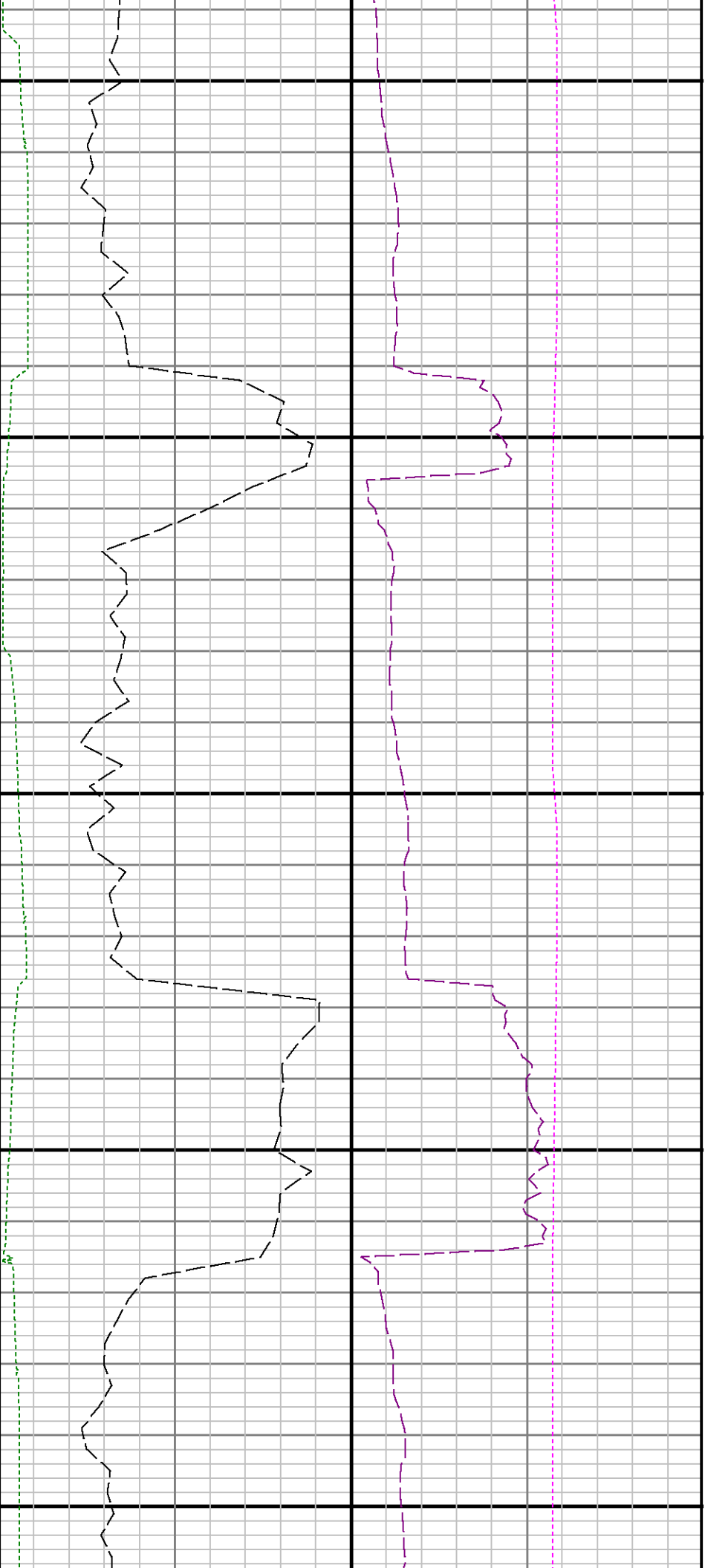
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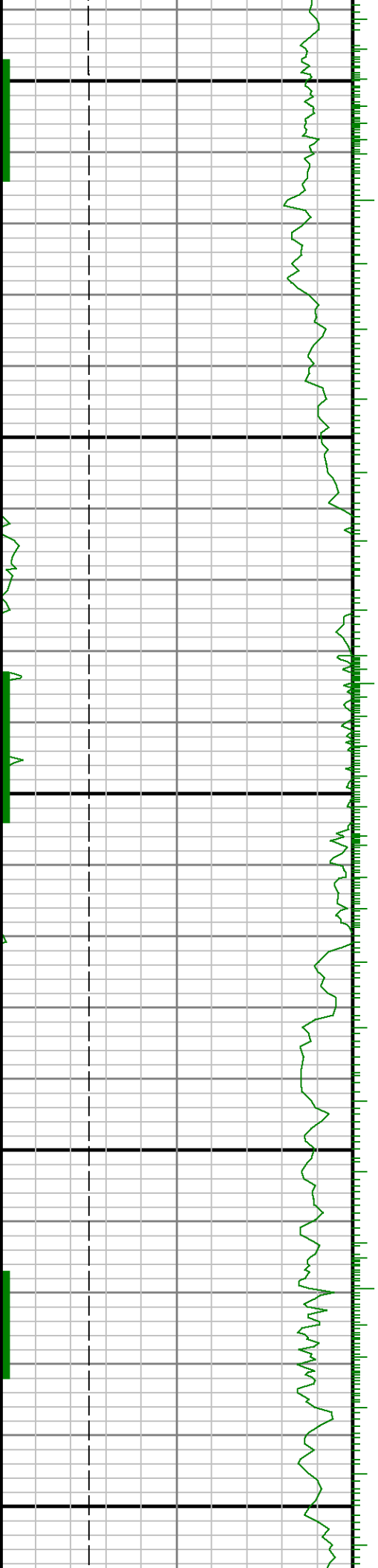


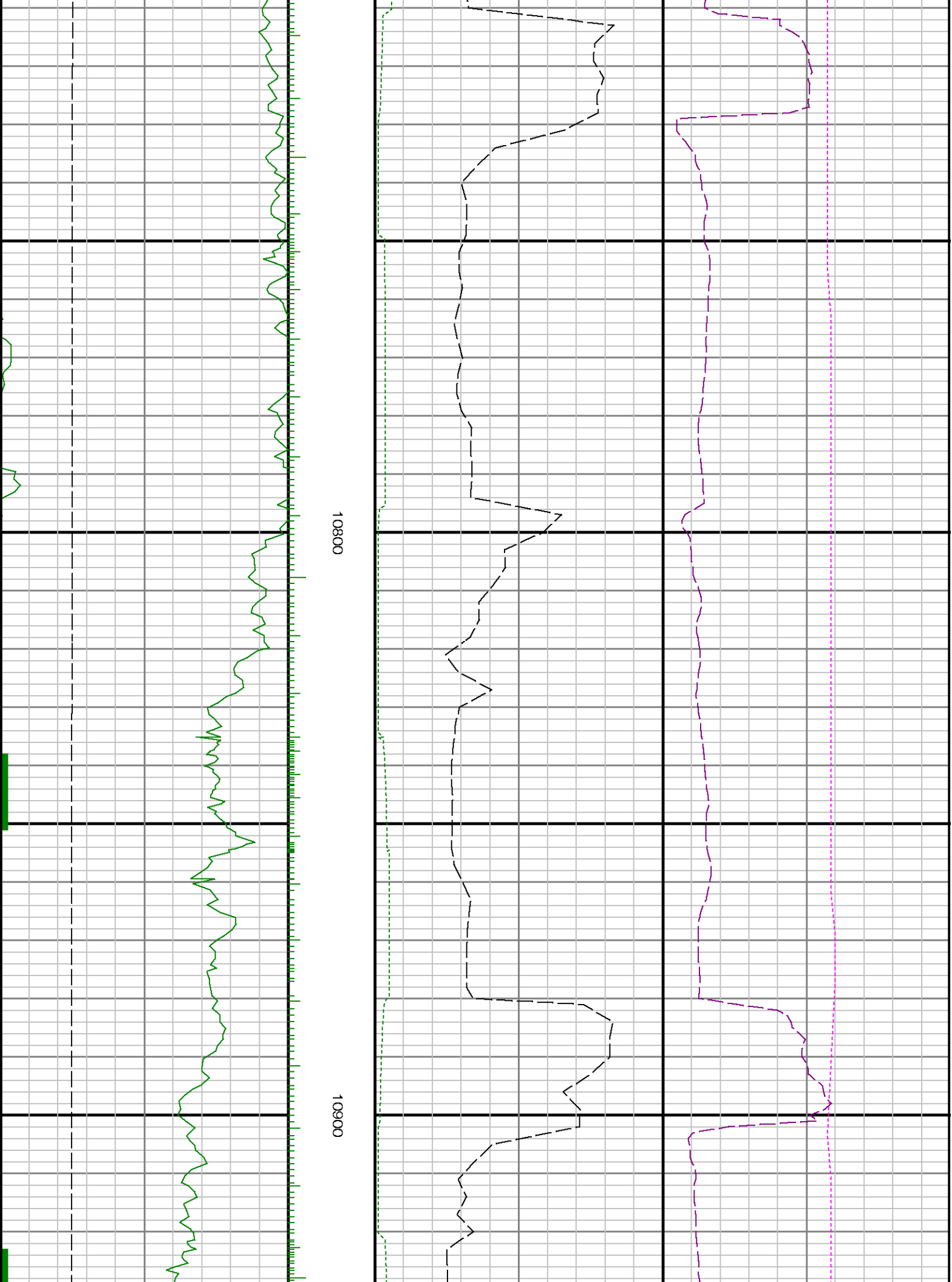


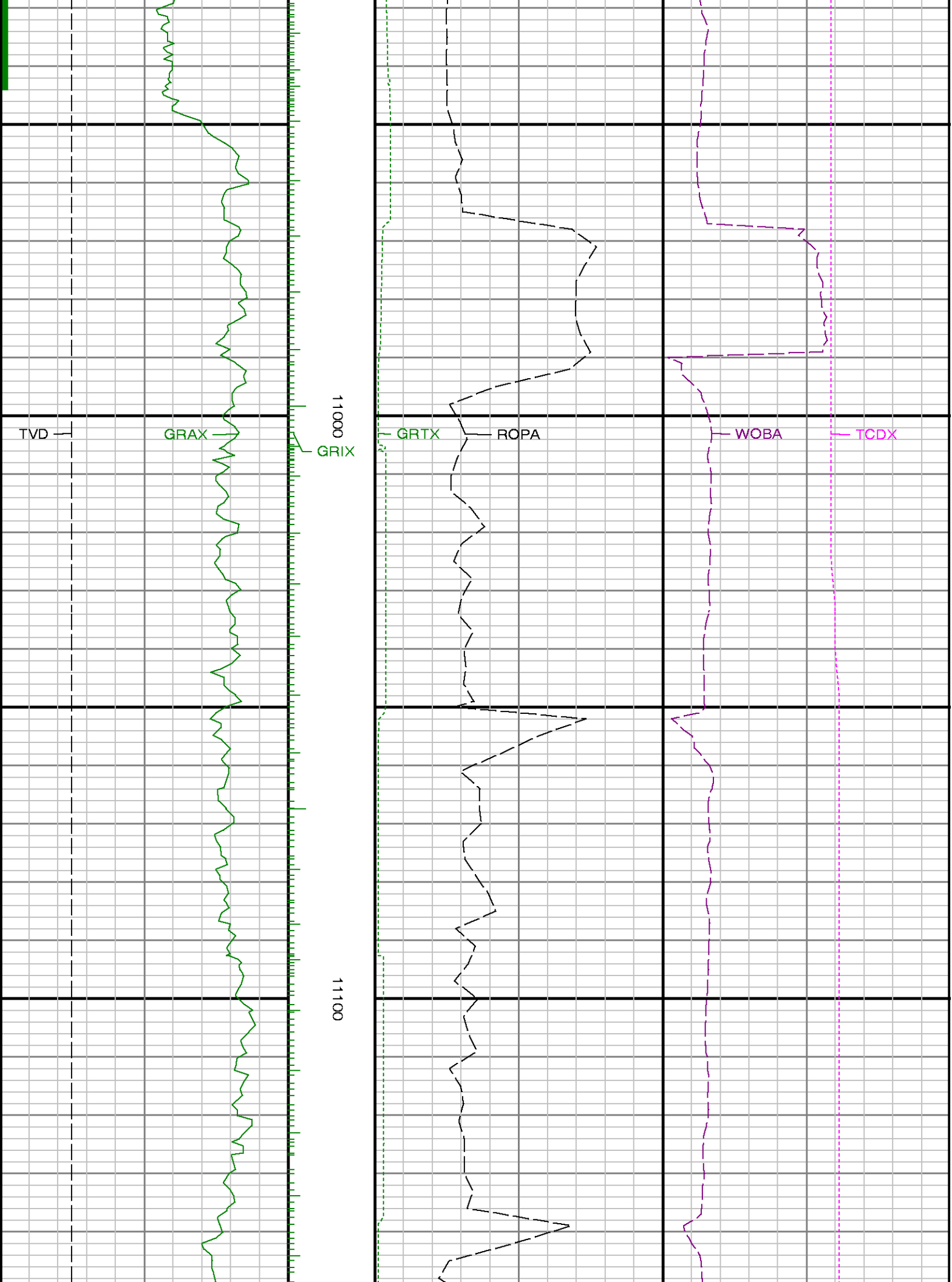
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