



Realtime Log

Natural Formation Evaluation
Gamma Ray

Scale: Company: Kerr-McGee Oil & Gas Onshore LP

1:240 Well: Whipsnake 2C-22HZ

Measured Depth Field: Weld County (Kerr-McGee)

County: Weld State: Colorado

Status: Surface Location: Other Services:

Final Print Latitude: 40° 7' 2.179" N

API Number: 05-123-39433-00 Longitude: 104° 52' 33.042" W

SEC: 22 TWP: 2N RNG: 67W

Directional
VSS

Permanent Datum (P.D.): Ground Level Elevation: 5003.00 ft.

Elevations: N/A

Log Measured From: Drill Floor 16.00 ft. Above P.D.

KB: 5003.00 ft.
DF: 4987.00 ft.
GL:

Depth Reference: Driller's Depth

GL: 4987.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 7050.0 ft. Date From: 17/Aug/14 Dip Angle: 66.80° Azi Reference North: True

Bottom: 12809.0 ft. Date To: 21/Aug/14 Total Mag to Reference

Spud Date: 16/Aug/14 Field Strength: 52788.2 nT North Correction: 8.66°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
13.500 in.	Surface	1370.0 ft.	9.625 in.	36.00 lb/ft	Surface	1361.0 ft.
8.750 in.	1370.0 ft.	8010.0 ft.	7.000 in.	26.00 lb/ft	Surface	7993.0 ft.
6.125 in.	8010.0 ft.	12809.0 ft.				

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Fresh Water	Surface	5000.0 ft.	13.500 in.	1370.0 ft.	0.2° / 266.3°	0.5° / 315.0°
Water Based Mud	5000.0 ft.	12809.0 ft.	8.750 in.	6640.0 ft.	0.5° / 315.0°	90.0° / 0.8°
			6.125 in.	4799.0 ft.	90.0° / 0.8°	90.8° / 0.2°
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig:	Xtreme 6	/ Kerr-McGee Oil & Gas Onshore LP
PATS	6.4.1.34	Job No:	6564214	
		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 (ft.)	Bottom (ft.)	From (ft.)	To (ft.)	Start	End	
1	1	2	8.750	PDC	6.000	Steerable	7050.0	8010.0	1369.0	8010.0	16/Aug/2014 16:45	19/Aug/2014 01:00	40.2
2	2	3	6.125	PDC	4.800	Steerable	7962.0	12809.0	8010.0	12809.0	19/Aug/2014 20:20	21/Aug/2014 22:00	29.2

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
David Campbell	16/Aug/2014	21/Aug/2014	Jake Miller	16/Aug/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+
17/Aug/2014 03:33	1	3176.0	Fresh Water	8.5	27	8.6	0.0	0 / 100	Active Mud Pit	2100	0.0
17/Aug/2014 22:53	1	7219.0	Water Based Mud	10.1	40	9.4	9.4	0 / 91	Active Mud Pit	3100	0.0
20/Aug/2014 04:09	2	8054.0	Water Based Mud	9.7	46	9.1	4.4	1 / 92	Active Mud Pit	3000	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	12422312	Directional	47.19	6.750	3.250
1	SRIG	12131373	Gamma	43.82	6.750	3.250
2	DIR	12422317	Directional	49.95	4.750	2.688
2	SRIG	11801241	Gamma	46.57	4.750	2.688

Service and Tool Mnemonics

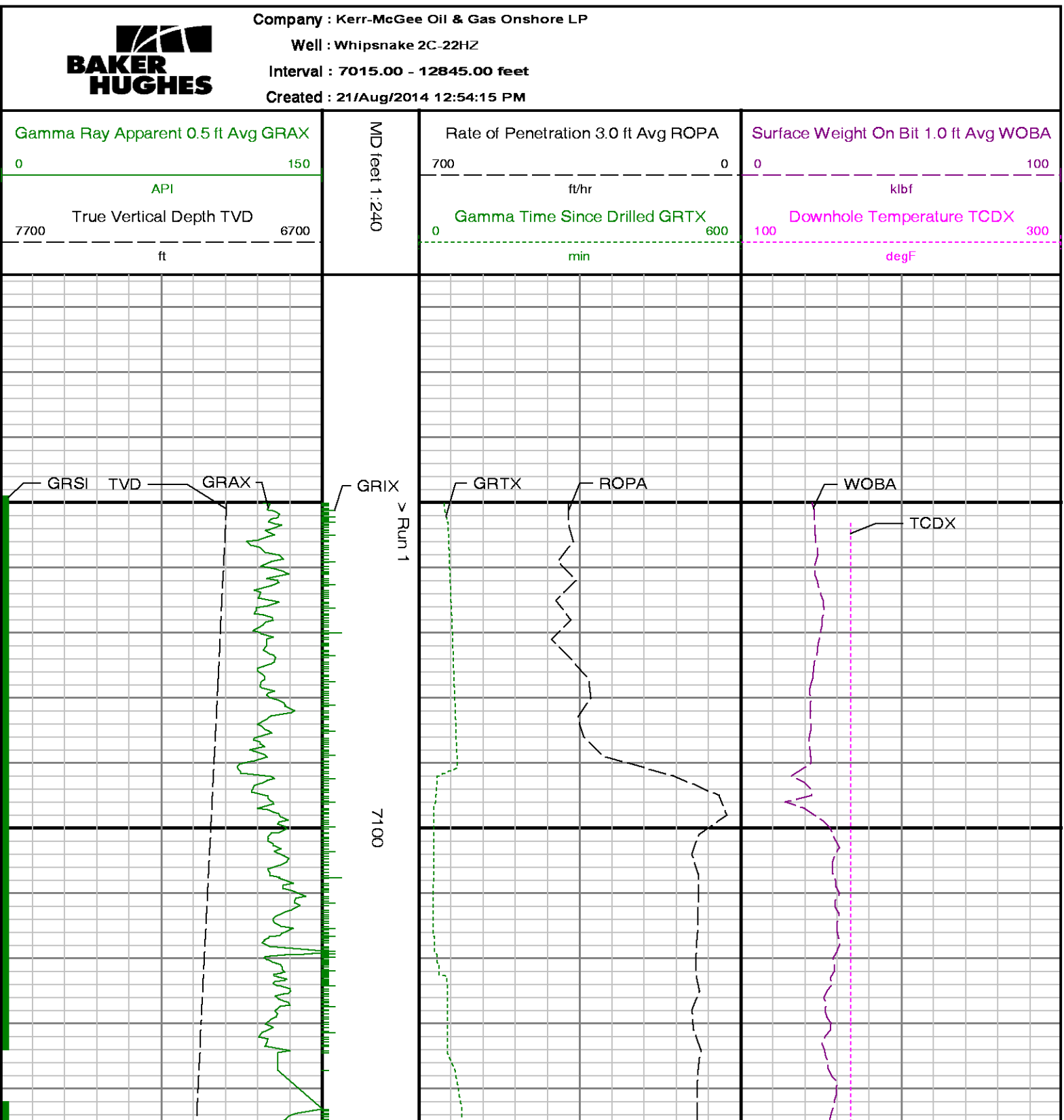
Mnemonic	Name	Description
DIR	Directional	Wellbore directional survey
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module

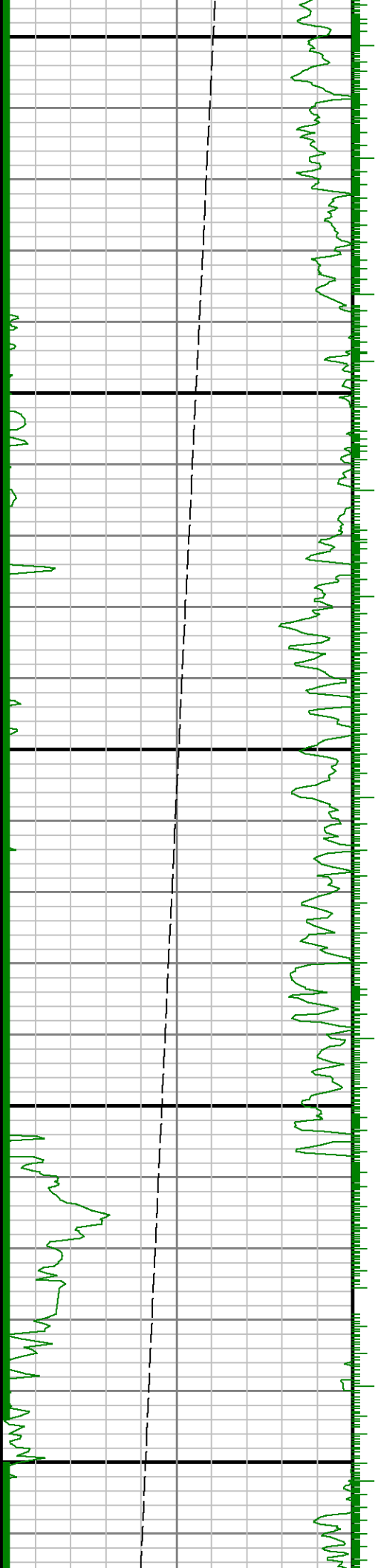
Comments

<p>1.) The interval from 1370 to 7050 feet MD (1369.98 to 6996.88 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes run 1.</p> <p>2.) Baker Hughes run 1 utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly from 1370 to 7050 feet MD (1369.98 to 6996.88 feet TVD) and NaviGamma services (Gamma Ray, Directional and VSS) from 7050 to 8010 feet MD (6996.88 to 7613.37 feet TVD.)</p> <p>3.) Baker Hughes run 2 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and steerable assembly from 8010 to 12809 feet MD (7613.18 to 7617.75 feet TVD).</p> <p>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.</p> <p>5.) 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	Hole	LWD	Remark
	Depth (ft)	Section (in.)	Run No.	
1	7990	6.125	2	The interval from 7965 to 8010 ft. MD (7611.12 to 7613.42 ft. TVD) was logged up to 37.1 hours after being drilled due to a trip out of the hole to lay down the vertical/curve assembly, run intermediate casing, cementing operations, and to pick up the lateral assembly.
2	12770	6.125	2	The interval from 12758 to 12809 ft. MD (7618.47 to 7617.75 ft. TVD) does not contain GRAX, GRIX or GRTX due to the bit to sensor offset.

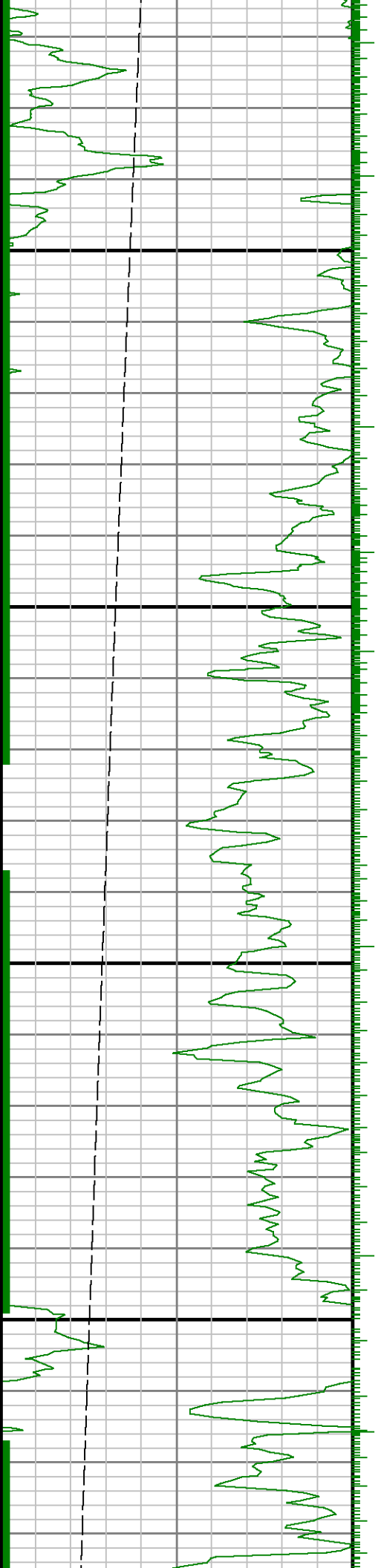


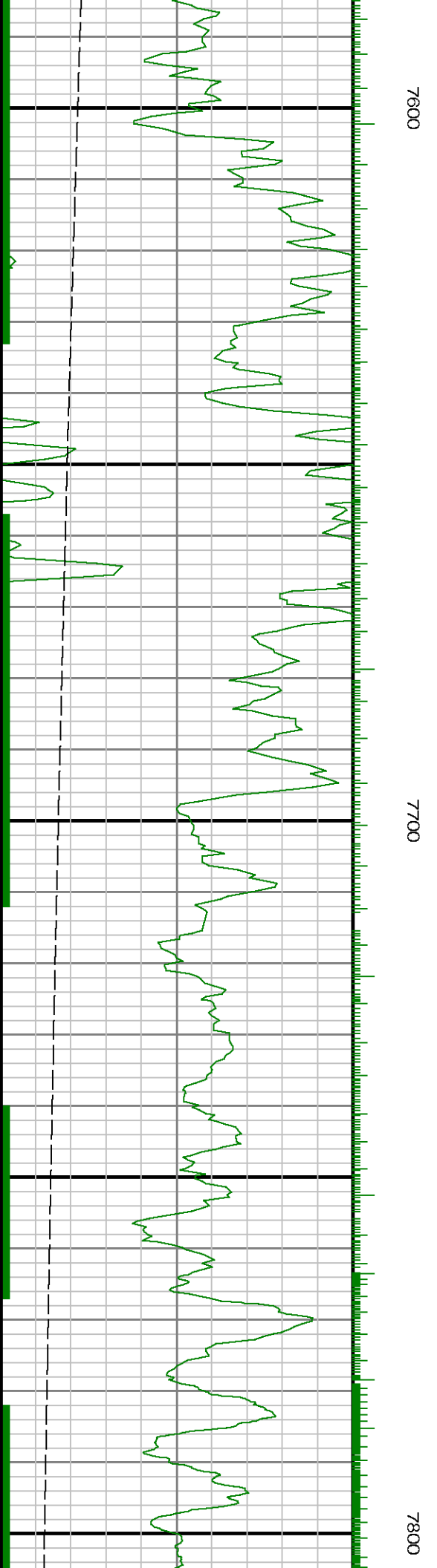
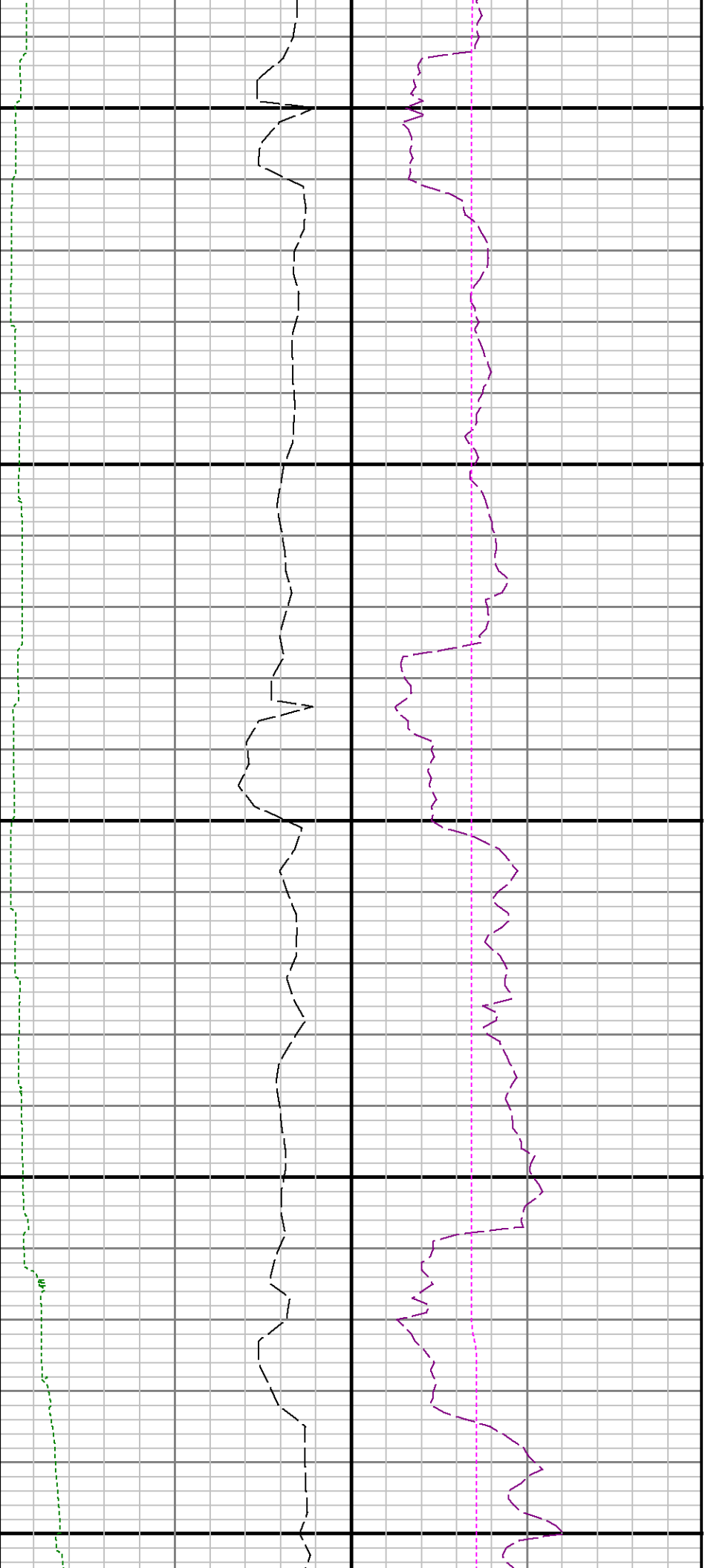


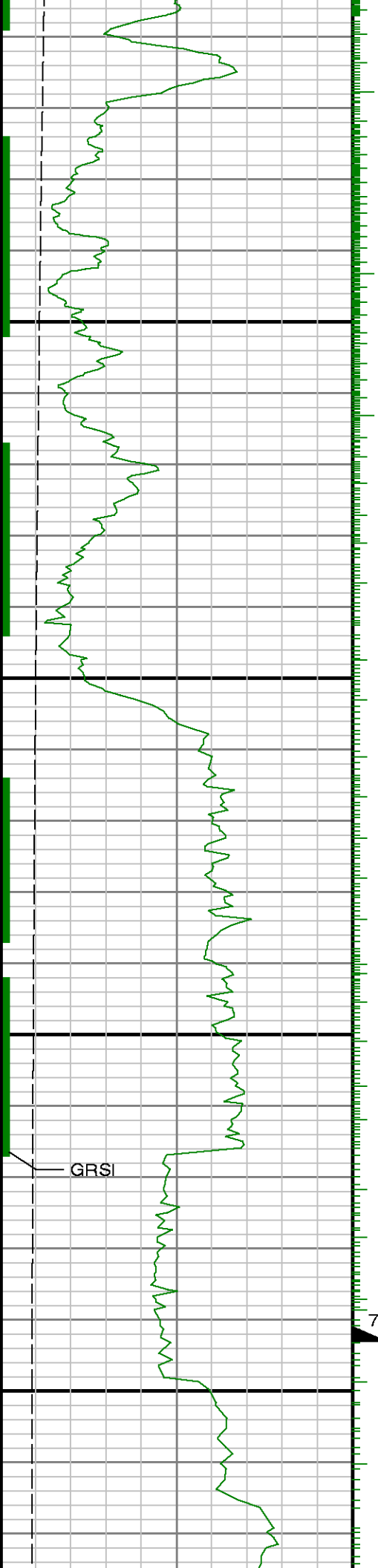


7400

7500







7900

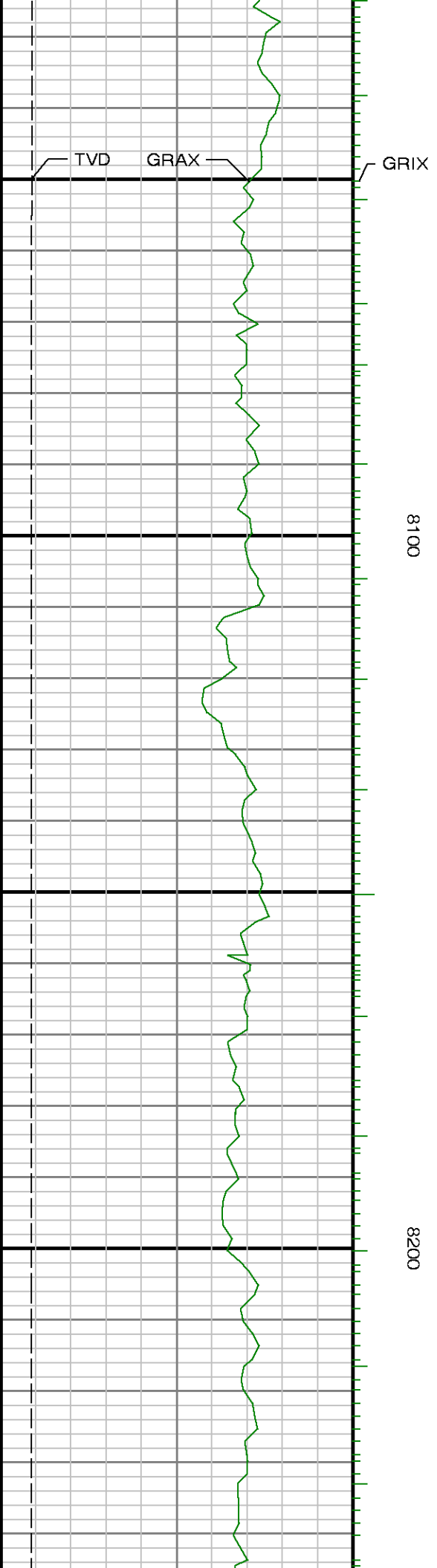
7" Casing

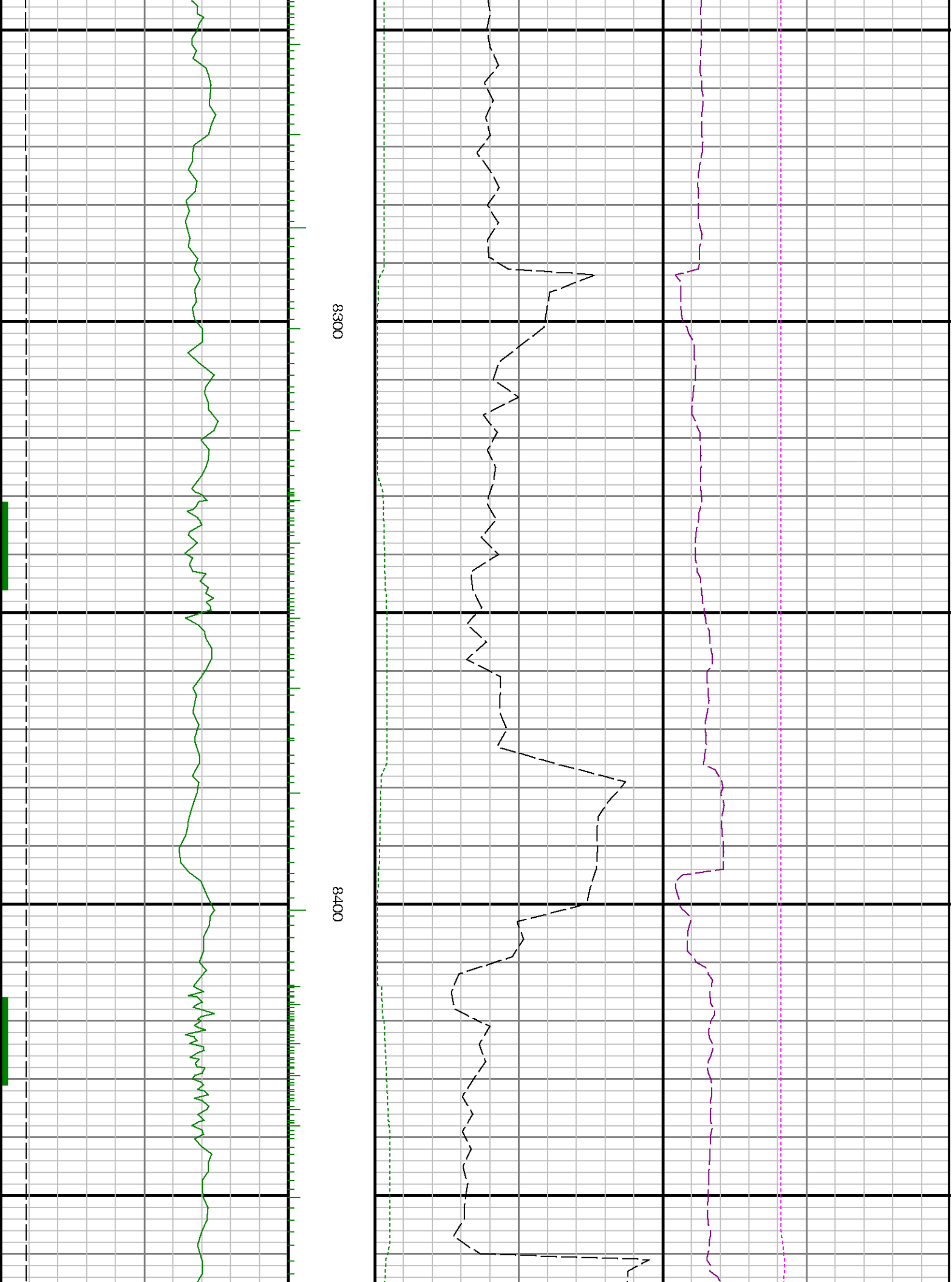
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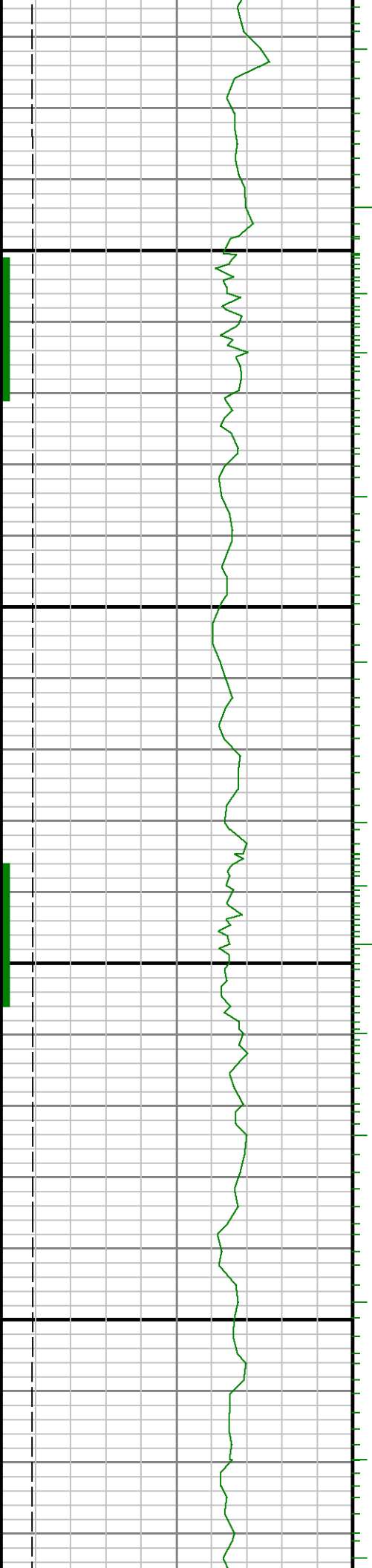
Run 1 <> Run 2

GRSI

See Remark 1

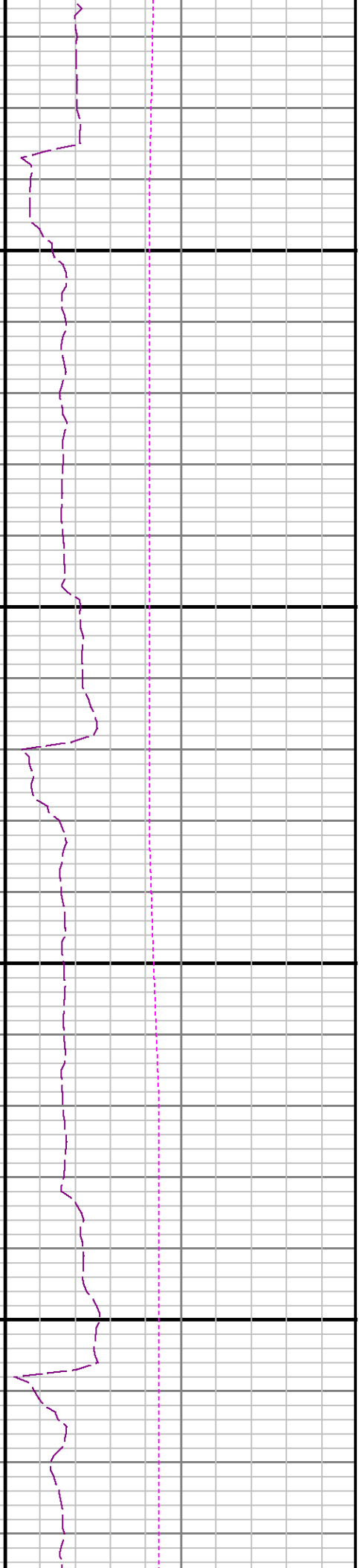
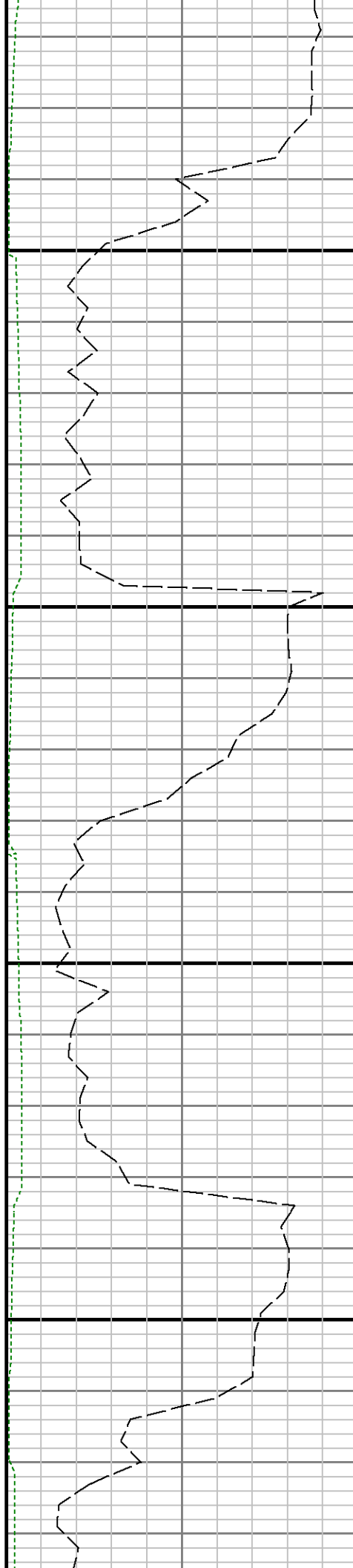


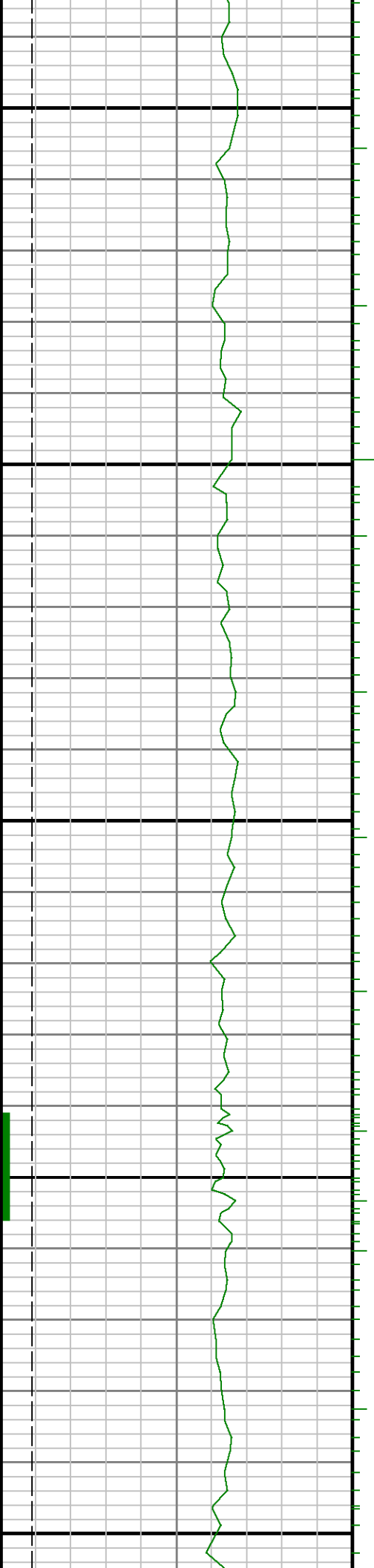




8500

0098



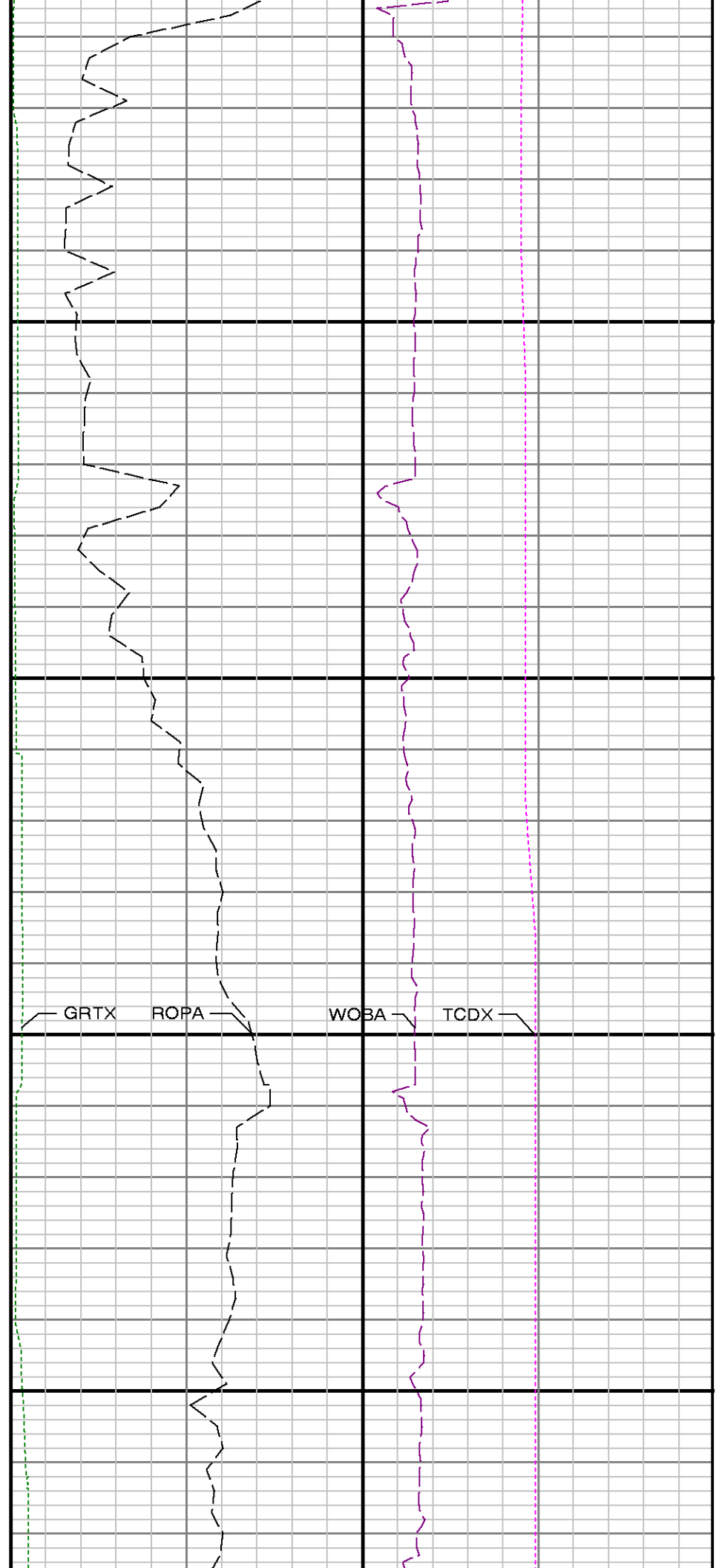
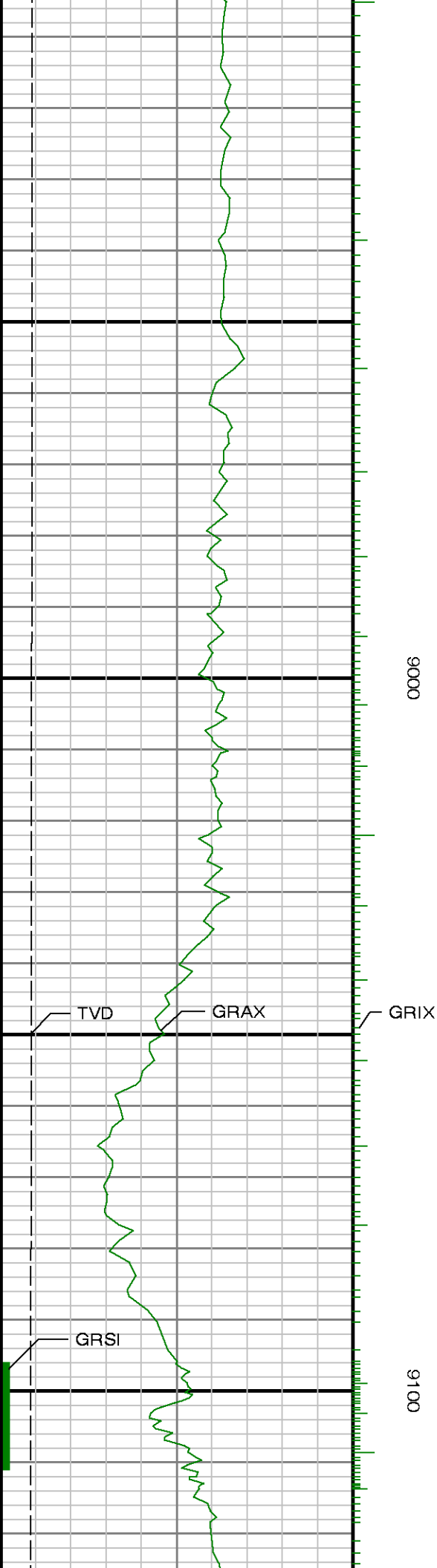


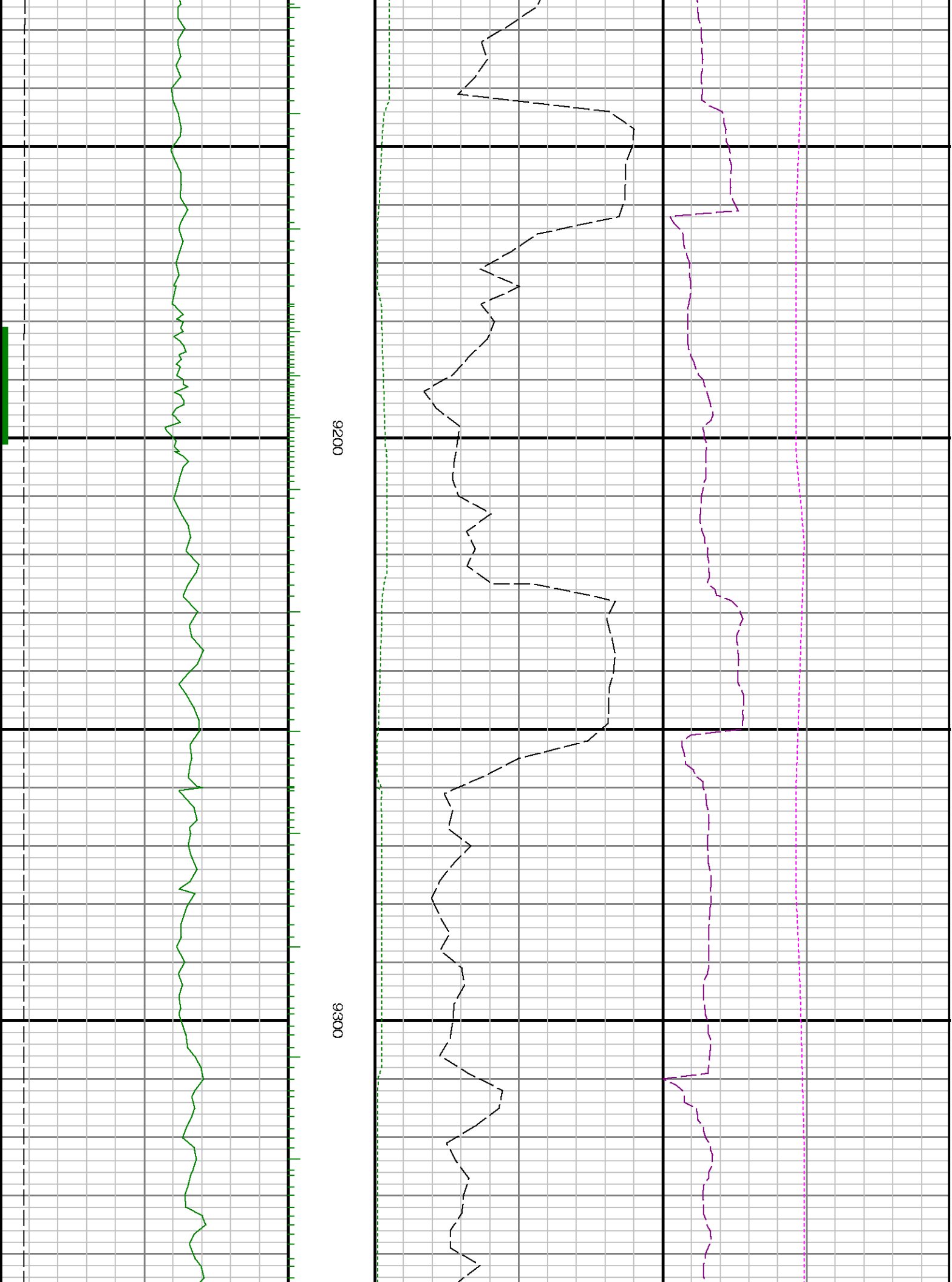
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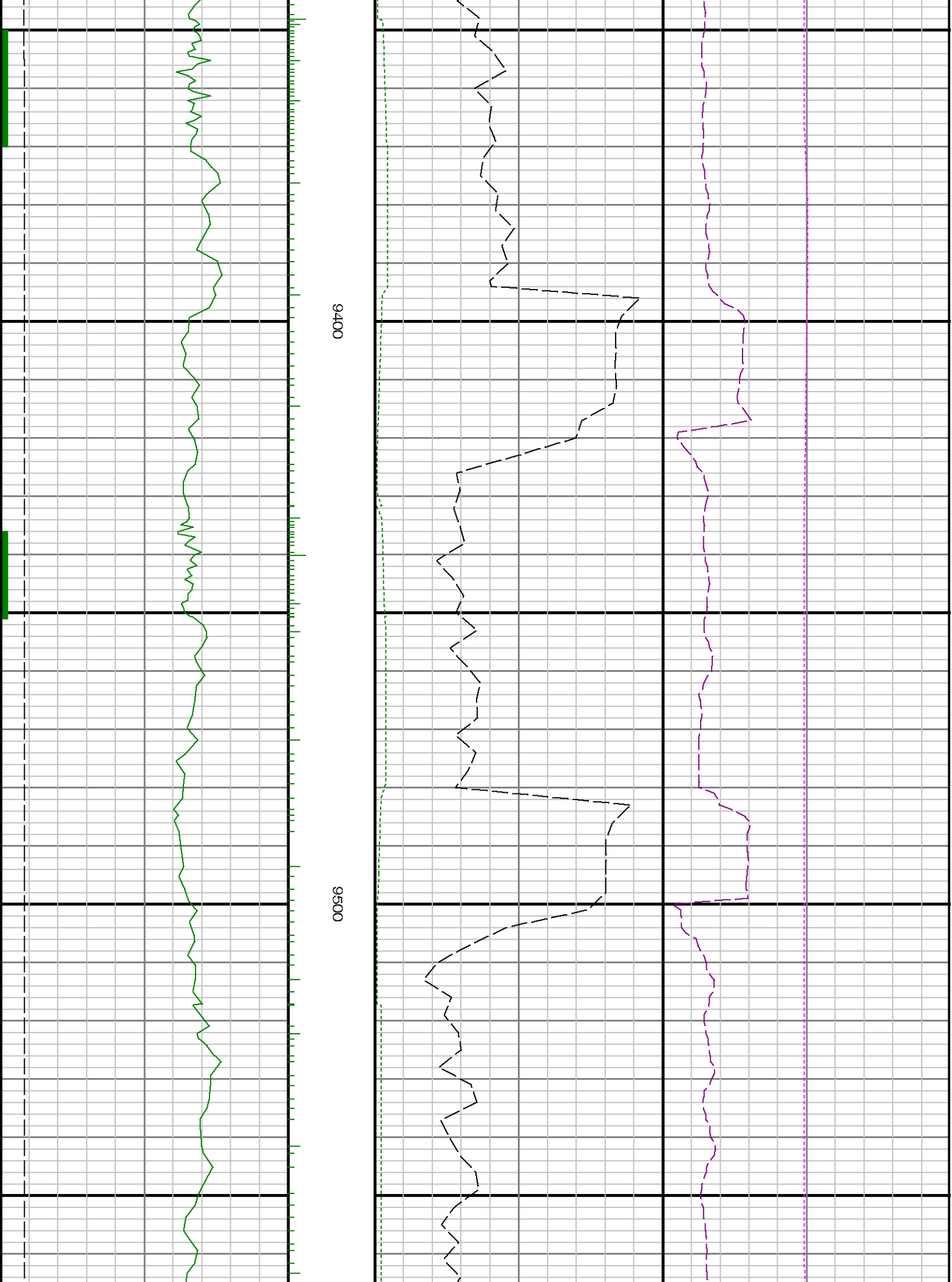
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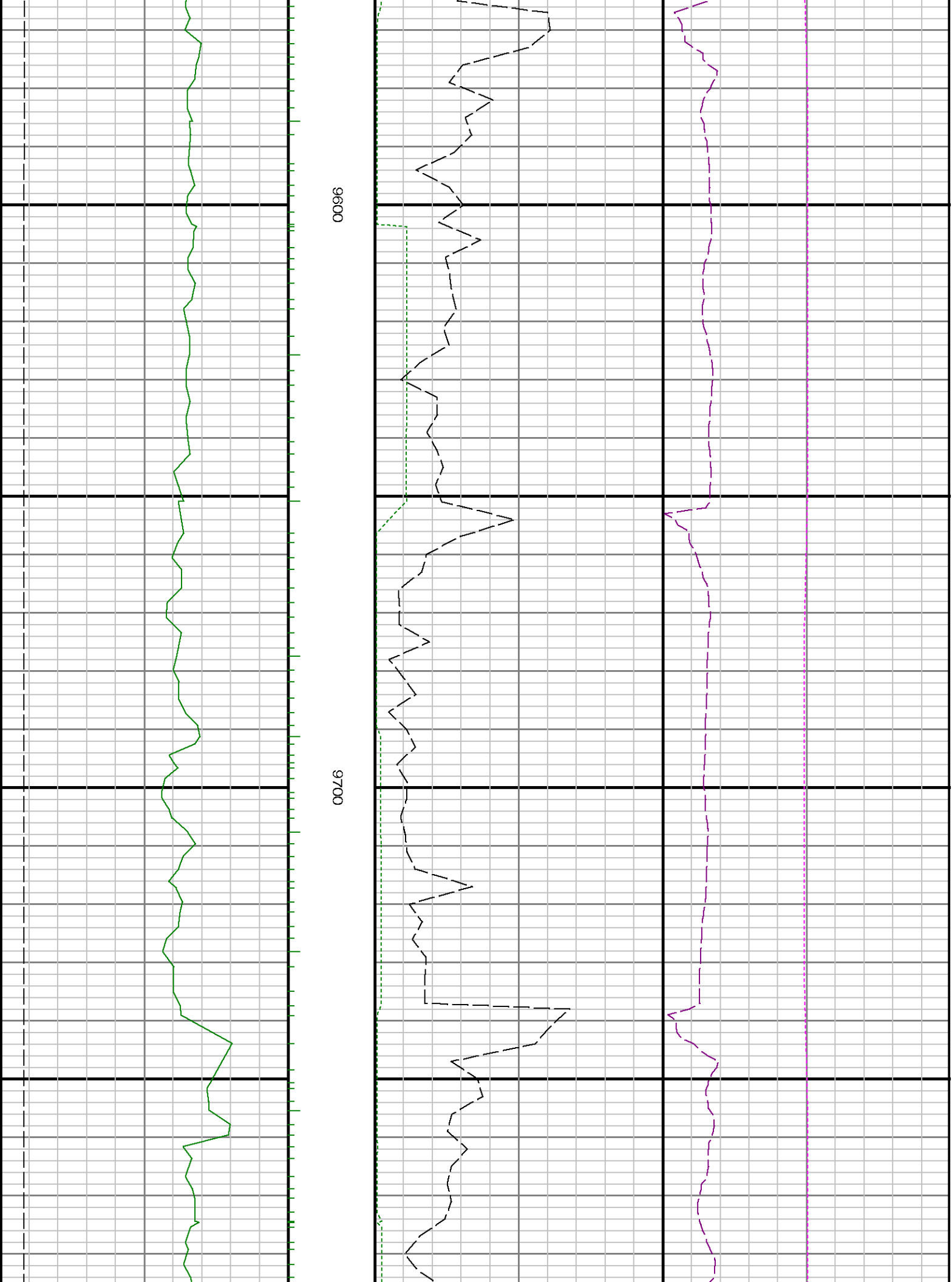
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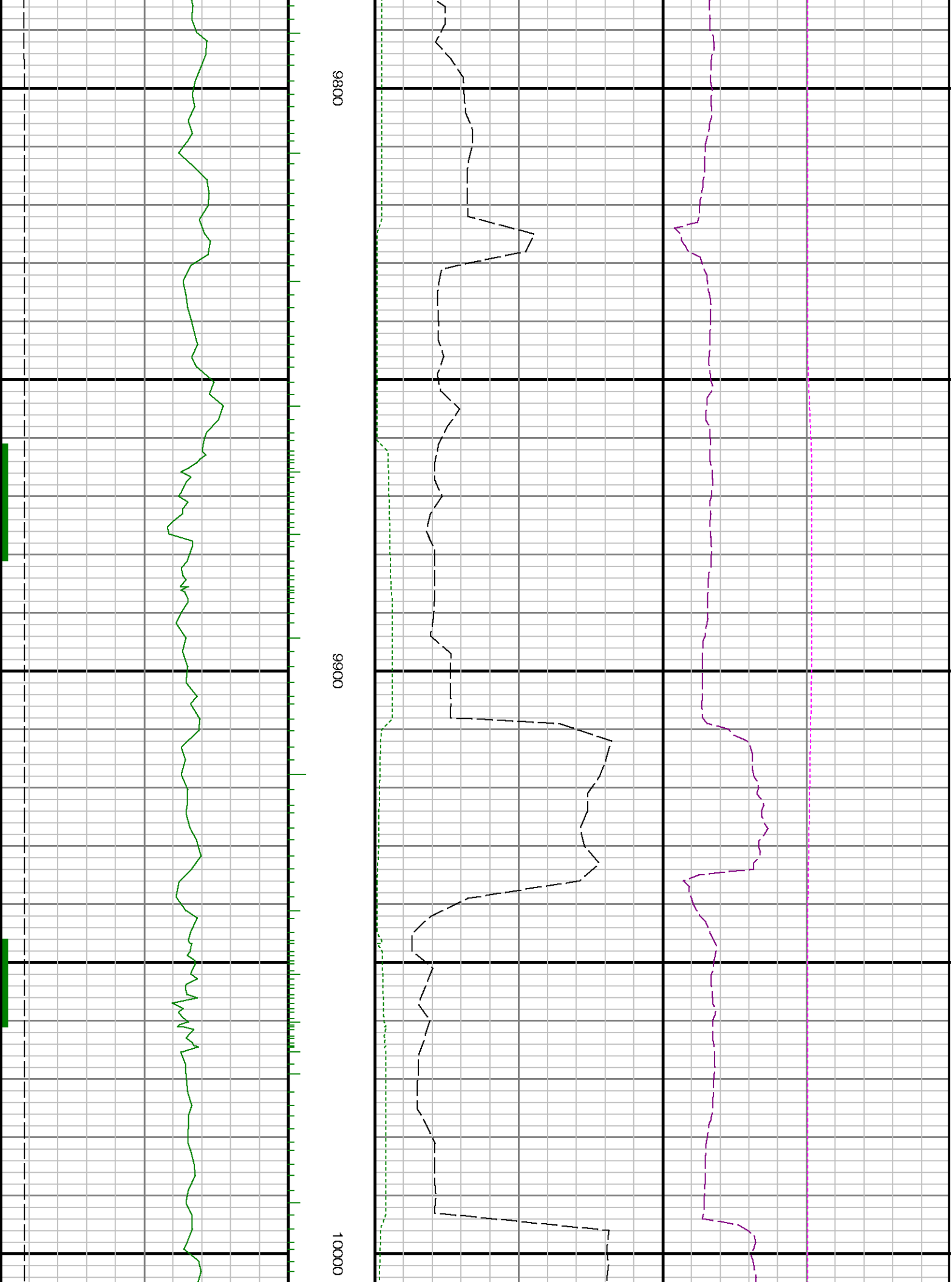


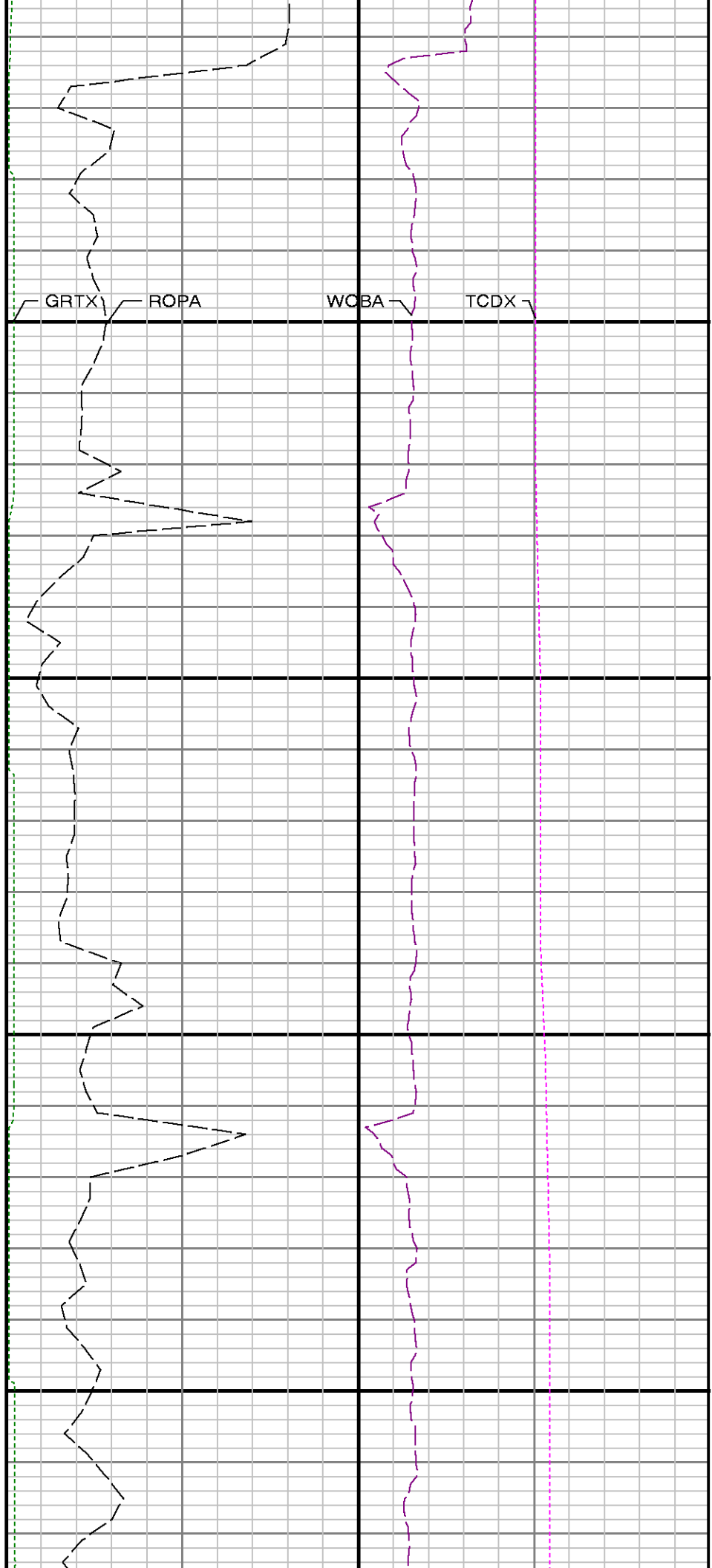
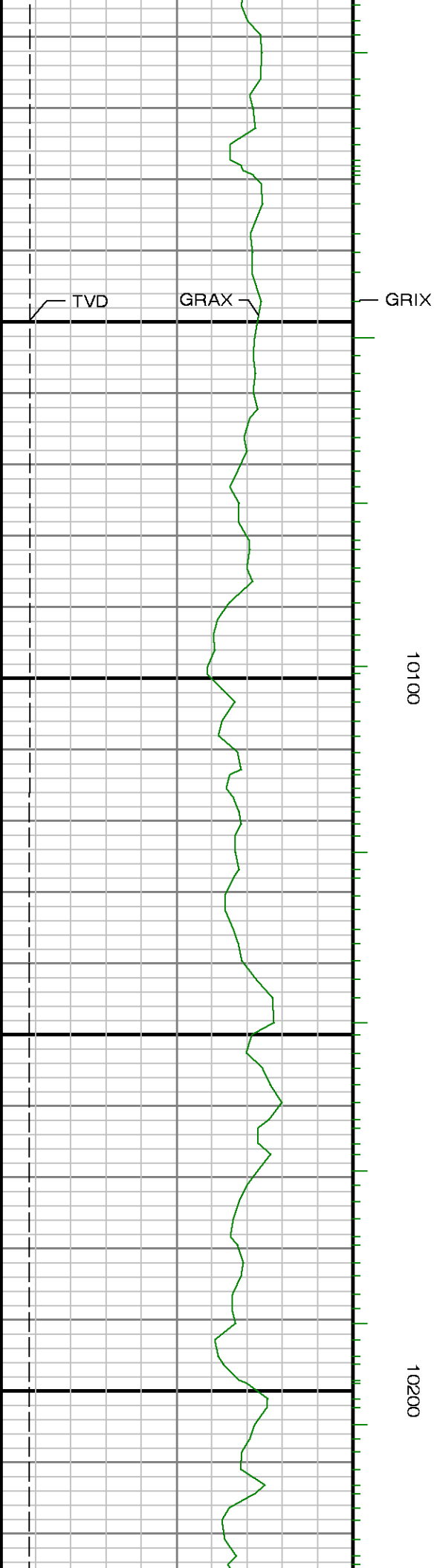


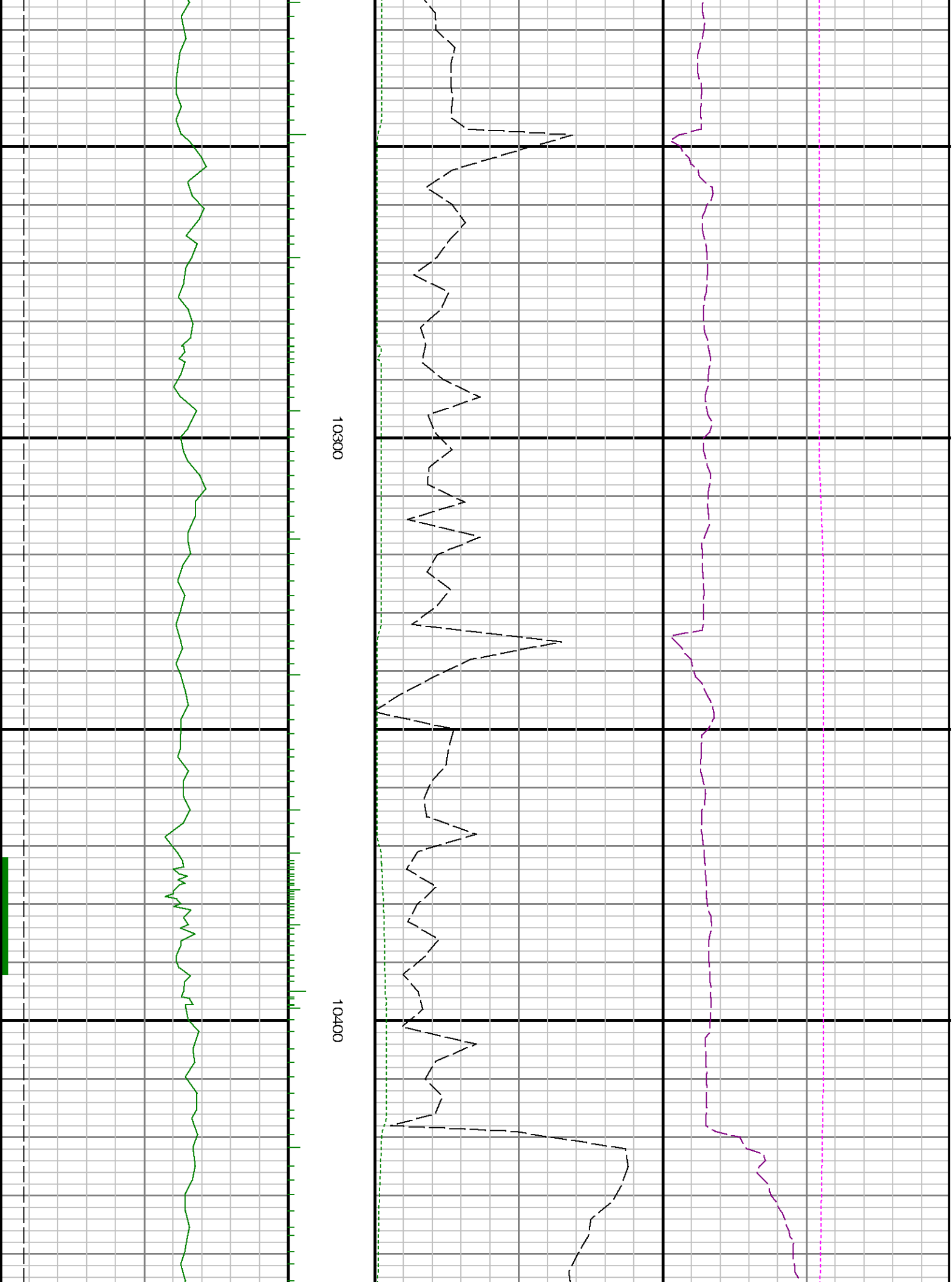


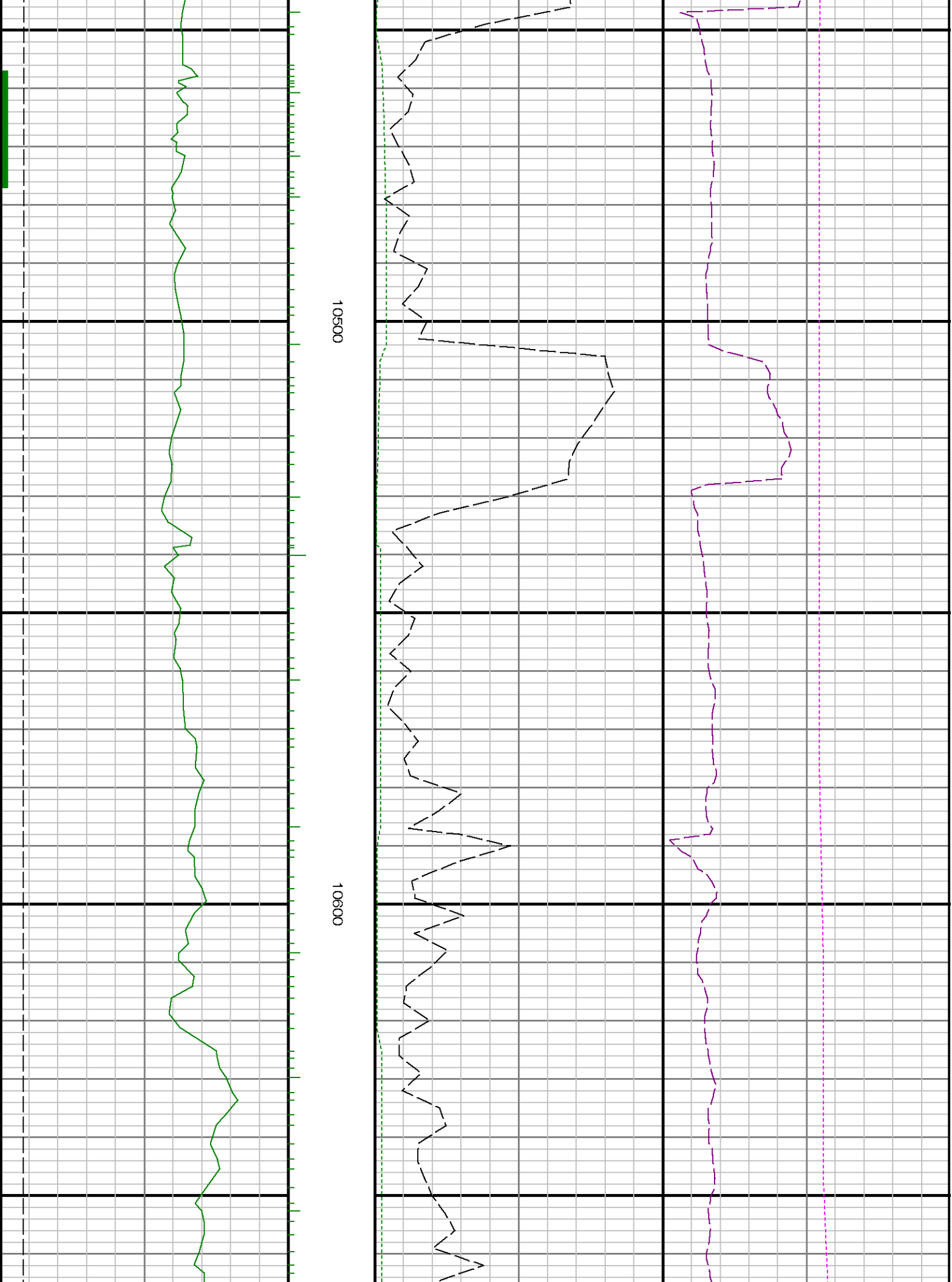








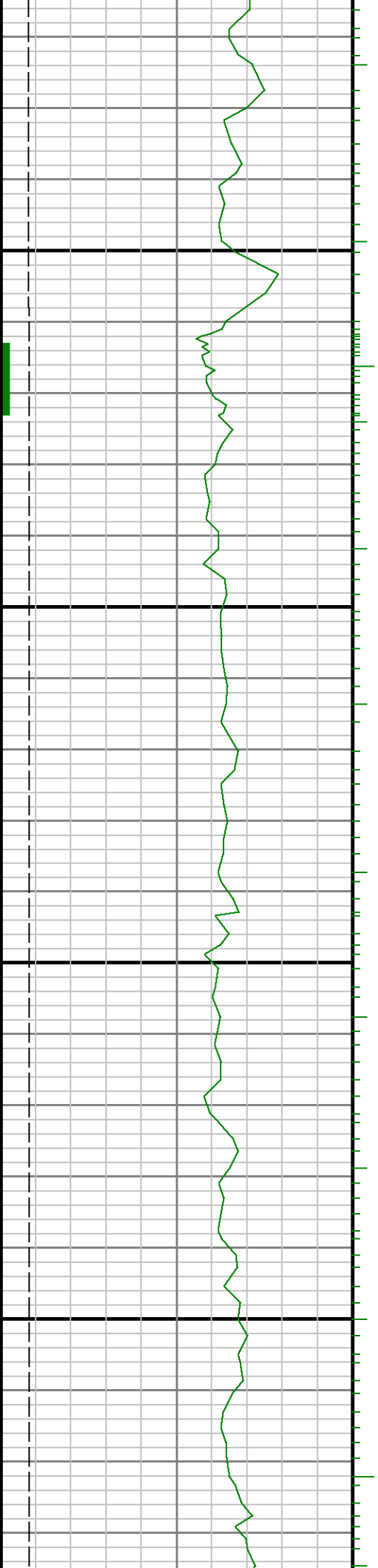


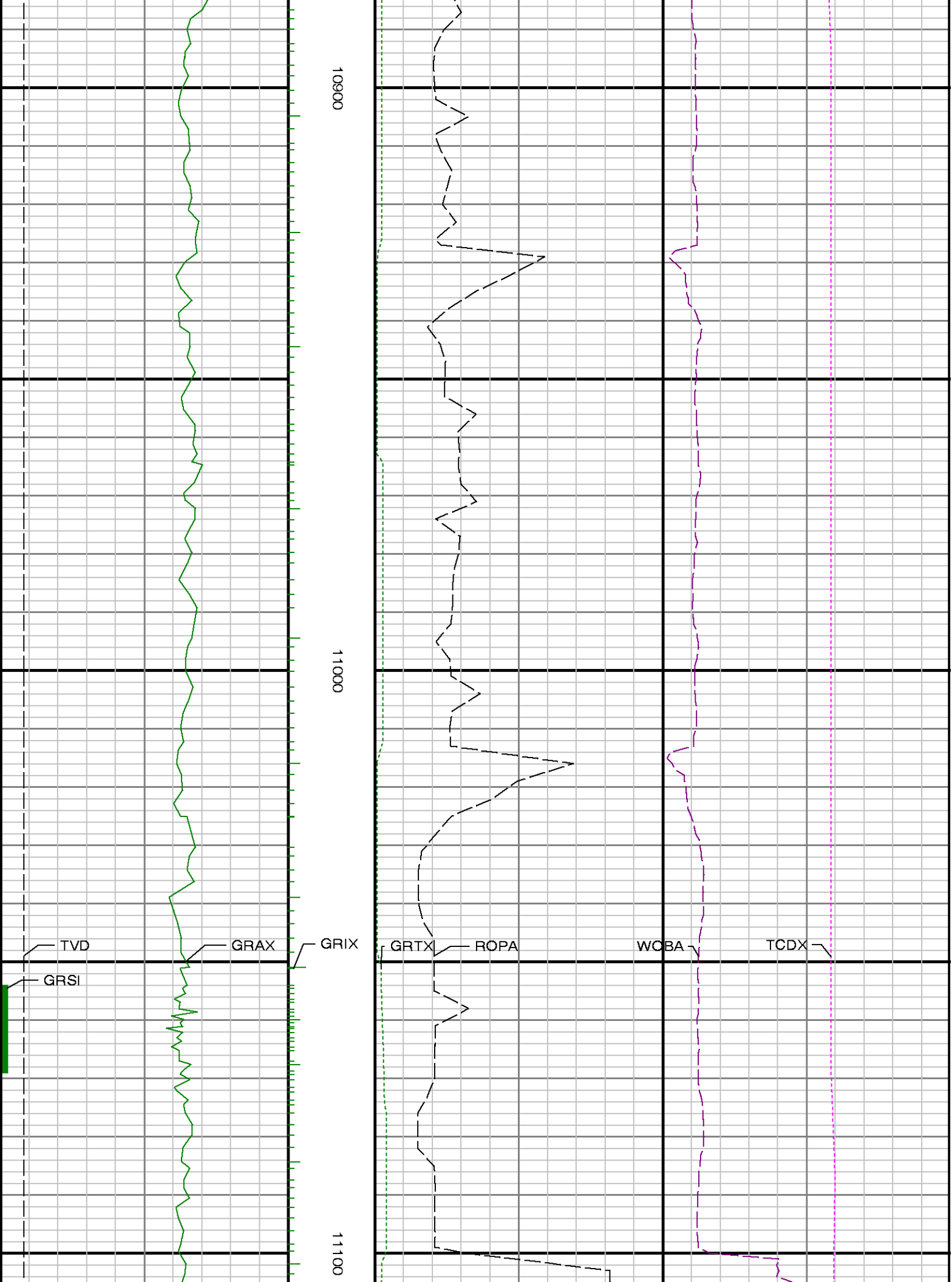


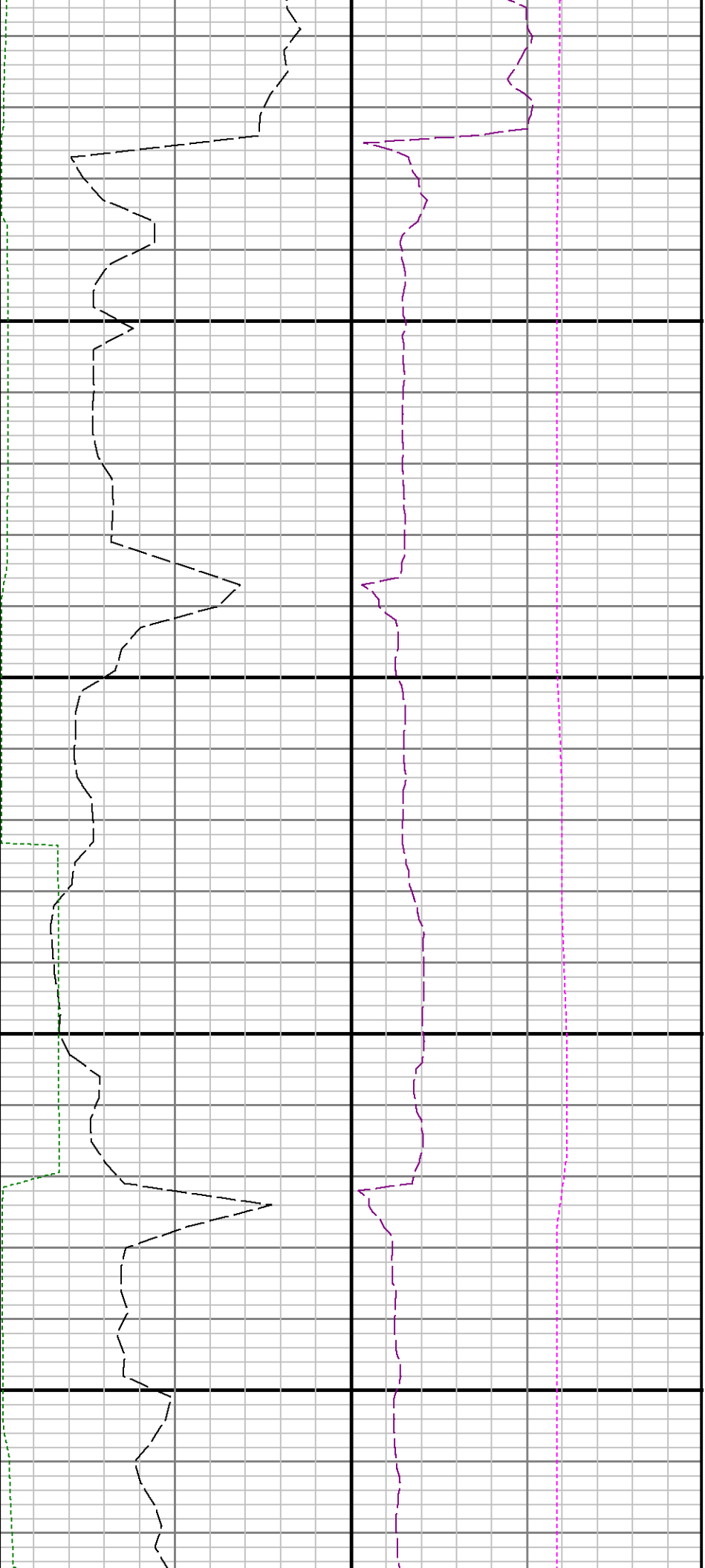


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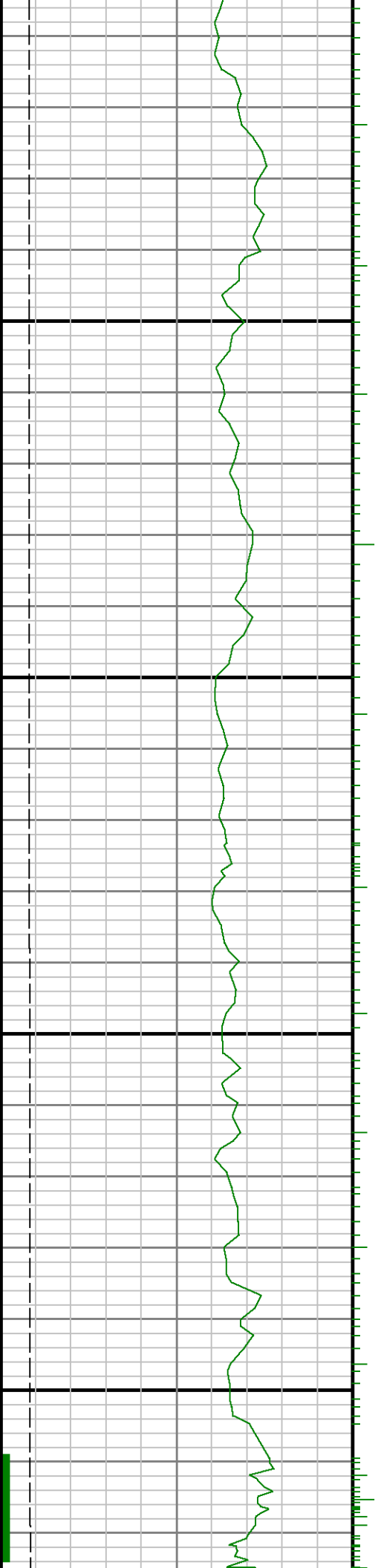


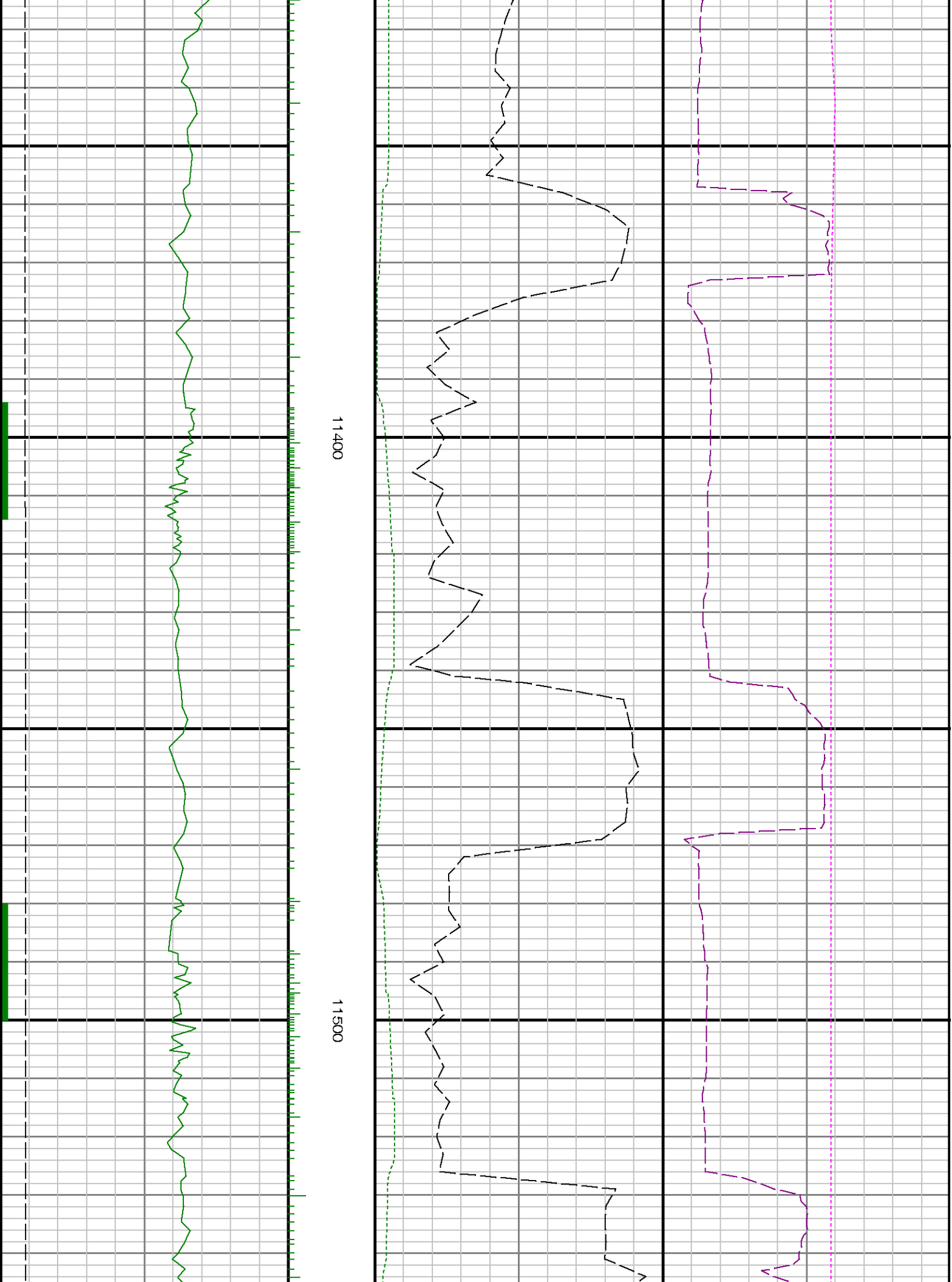


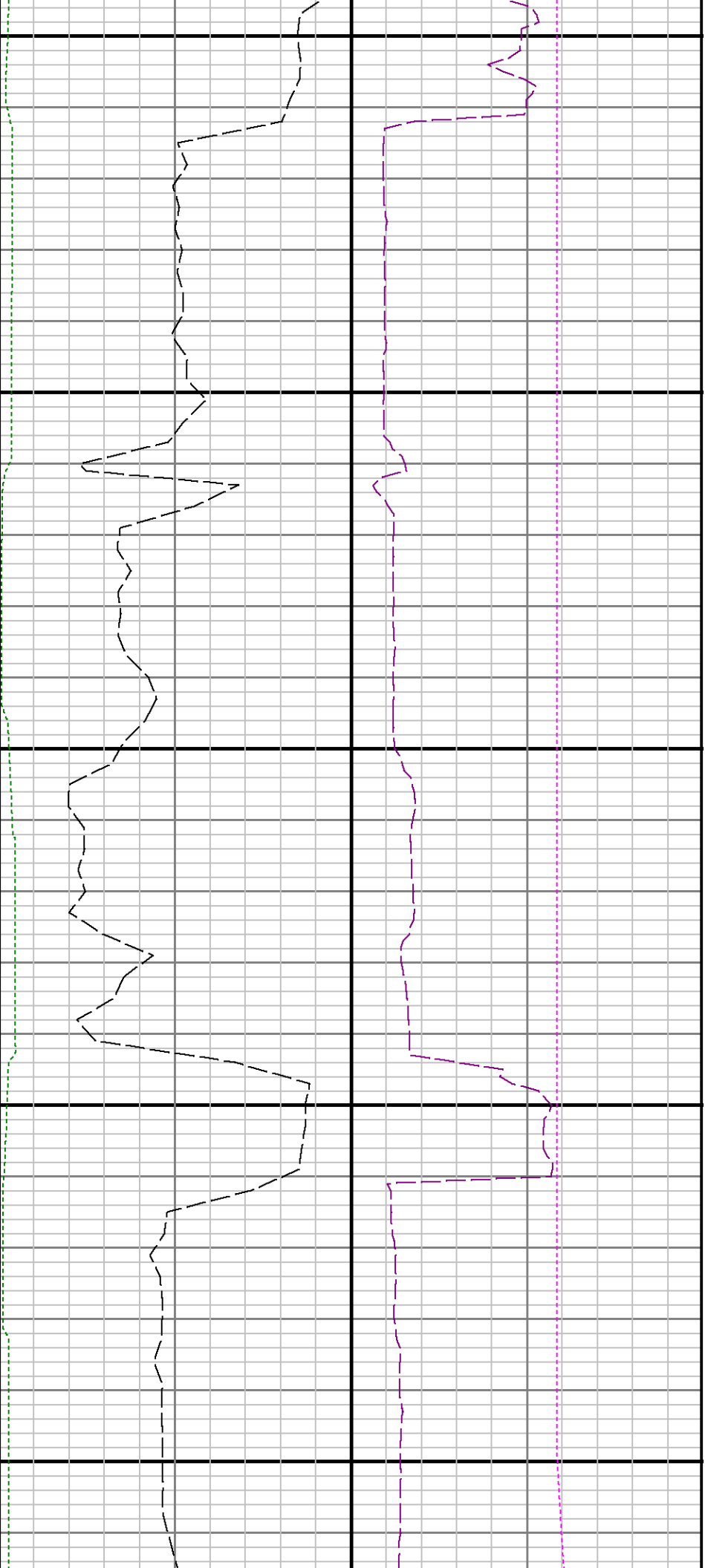


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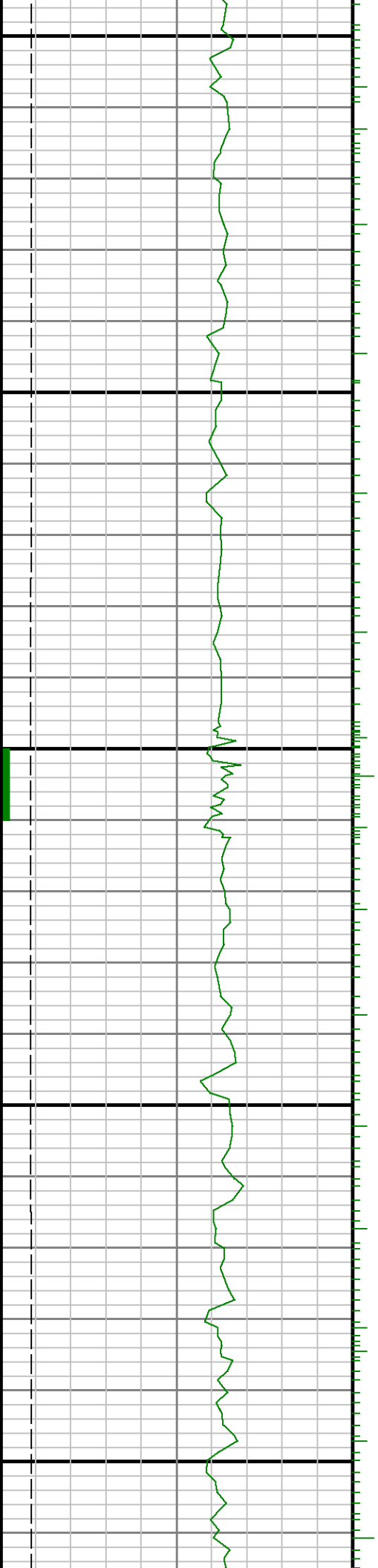


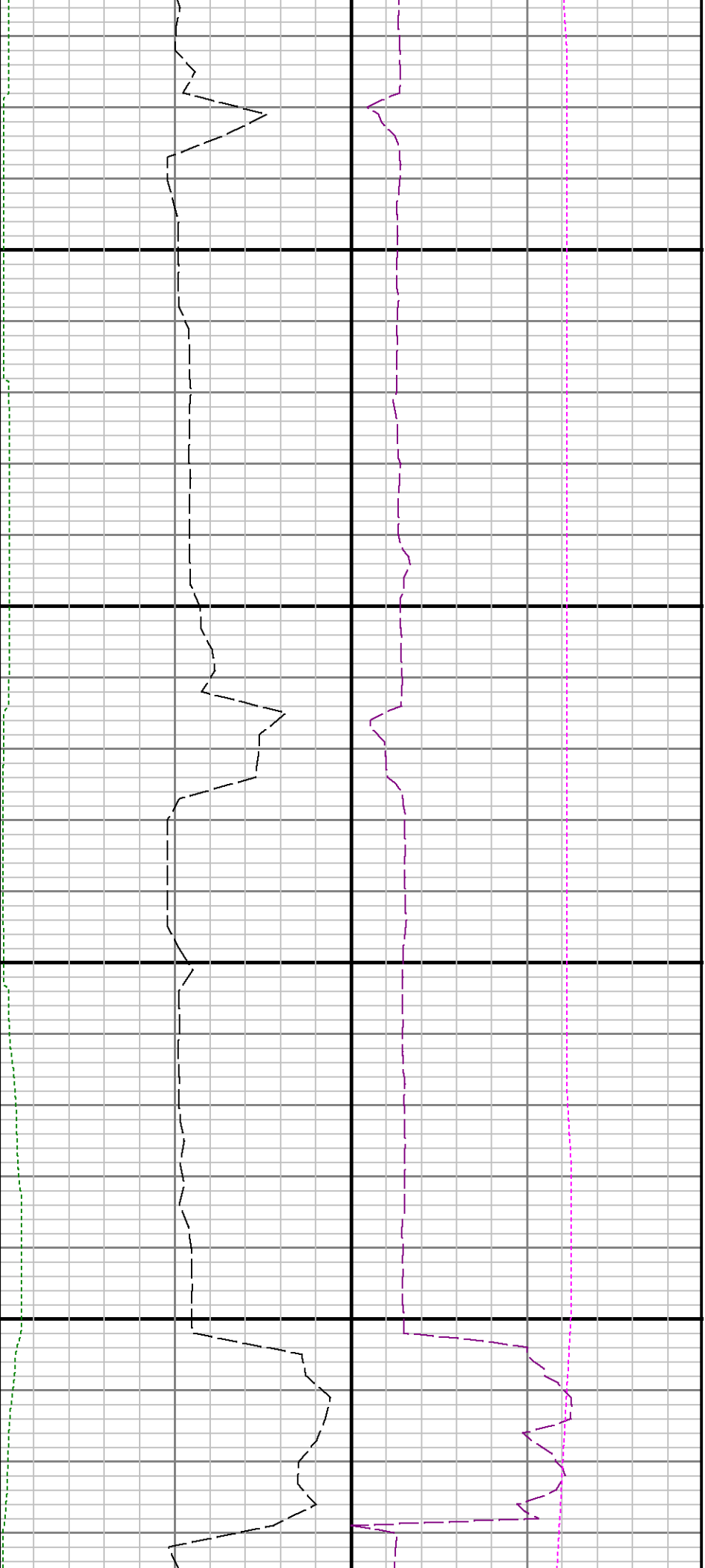




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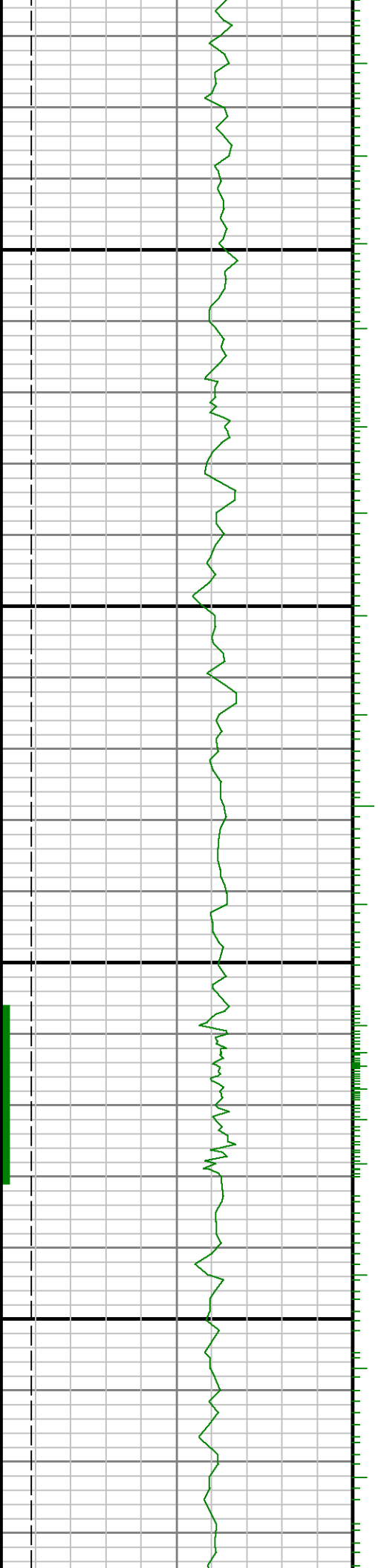
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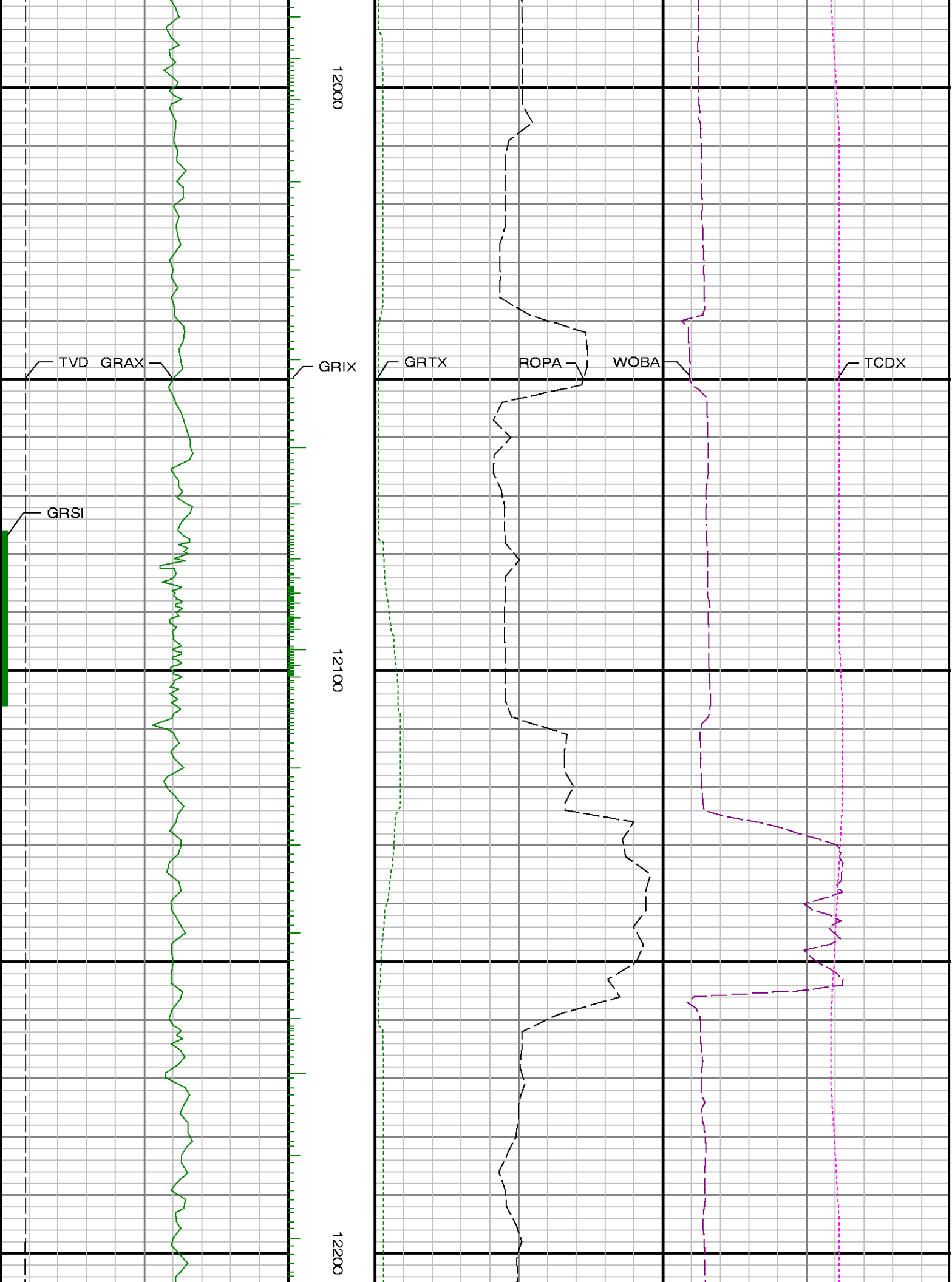




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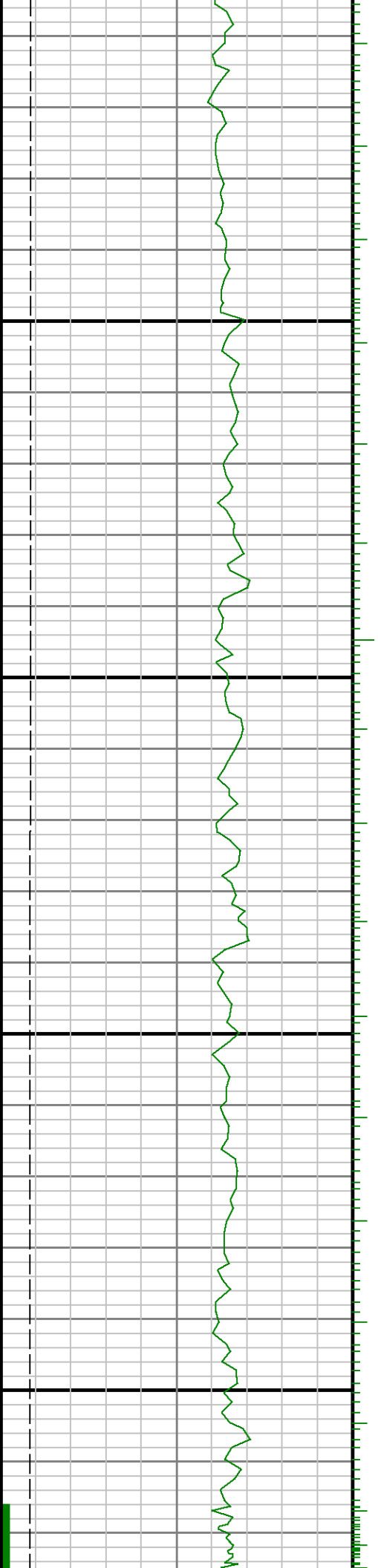


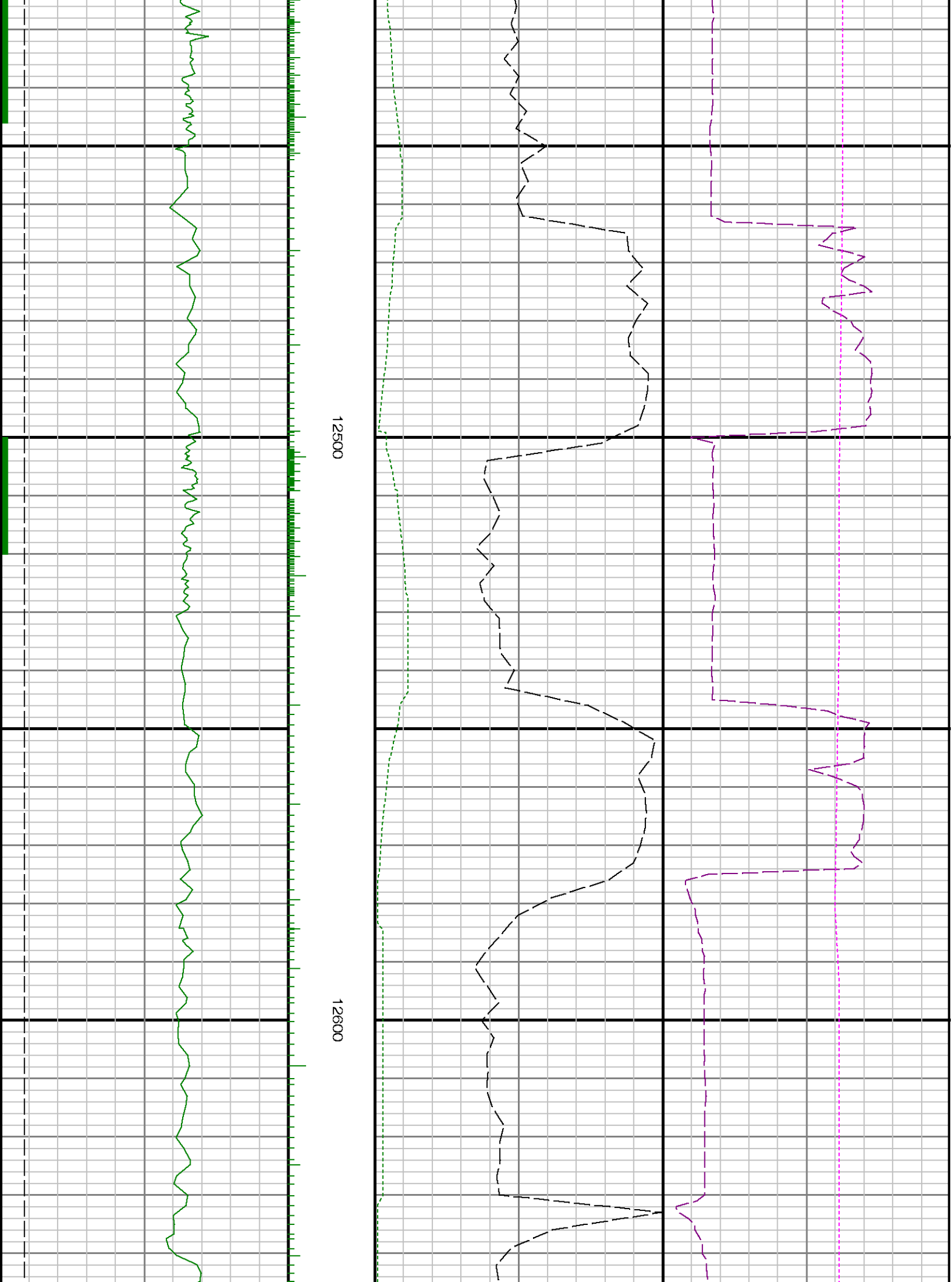


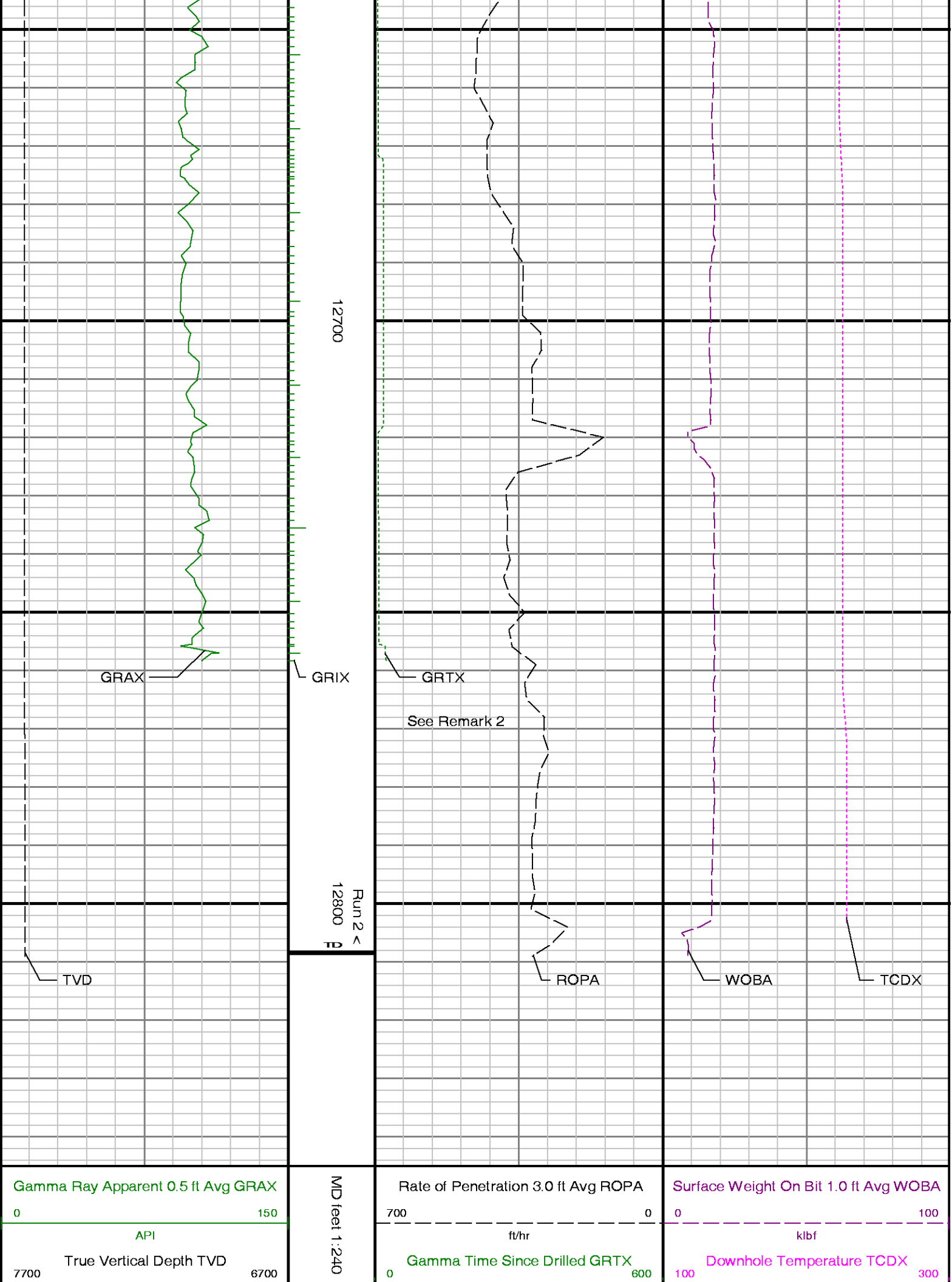


12300

12400







ft		min	degF
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