



Realtime Log

Natural Formation Evaluation
Gamma Ray

Scale: **Company: Anadarko**

1:240

Well: **NRC 3C-4HZ**

Measured Depth

Field: **WELD COUNTY (KERR MCGEE)**

Region: **Rocky Mountains State: Colorado**

Status: **Field Print** Surface Location: Latitude: 40° 3' 33.221" N Other Services:

API Number: 051 23386070100 SEC: 9 TWP: 1N RNG: 67W Directional

Permanent Datum (P.D.): Ground Level Elevation: 5051.00 ft. Elevations: N/A

Log Measured From: Rig Floor 16.00 ft. Above P.D. KB: N/A

Depth Reference: Driller's Depth GL: 5067.00 ft. 5051.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 7000.0 ft. Date From: 01/Mar/2014 Dip Angle: 66.56° Azi Reference North: True

Bottom: 17326.0 ft. Date To: 22/Mar/2014 Total Mag to Reference

Spud Date: 28/Feb/2014 Field Strength: 52851.0 nT North Correction: 8.53°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	1087.0 ft.	8032.0 ft.	9.125 in.	36.00 lb/ft	Surface	1077.0 ft.
6.125 in.	8032.0 ft.	17326.0 ft.	7.000 in.	26.00 lb/ft	Surface	8022.0 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based	Surface	8032.0 ft.	8.750 in.	43.0 ft.	0.8 ° / 163.9 °	0.5 ° / 97.7 °
Innovert	8032.0 ft.	14393.0 ft.	8.750 in.	85.0 ft.	0.5 ° / 97.7 °	86.6 ° / 358.5 °
			6.125 in.	85.0 ft.	86.6 ° / 358.5 °	89.4 ° / 354.3 °
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rig:	Xtremem24	/ Xtreme Coil Drilling
PATS	6.4.1.34	Job No:	6131717	/ 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	Bottom	From	To	Start		End		
							(ft.)	(ft.)	(ft.)	(ft.)					
1	1	1	8.750	PDC	2.000	Steerable	7000.0	7677.0	7000.0	7730.0	01/Mar/2014 23:45	02/Mar/2014 07:00		29	
2	2	2	8.750	PDC	2.000	Steerable	7677.0	7984.0	7730.0	8032.0	02/Mar/2014 17:26	03/Mar/2014 00:10		7.1	
3	3	3	6.125	PDC	6.000	Steerable	7984.0	13763.0	8030.0	13763.0	14/Mar/2014 22:00	18/Mar/2014 14:25		86.7	
4	4	4	6.125	PDC	2.000	Steerable	13763.0	17326.0	13763.0	17375.0	20/Mar/2014 21:15	22/Mar/2014 07:15		57.8	

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Austin Small	02/Mar/2014	03/Mar/2014	Marcus Boucher	28/Feb/2014	03/Mar/2014	Osagie Otoikhine	28/Feb/2014	02/Mar/2014

Austin Small	14/Mar/2014	23/Mar/2014	Osagie Otoikhine	14/Mar/2014	23/Mar/2014	Steven Cano	21/Mar/2014	23/Mar/2014
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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+ (%)
02/Mar/2014 05:19	1	7613.0	Water Based	9.6	12	8.7	N/A	0 / 98	Flowline	700	NA
02/Mar/2014 18:00	2	7738.0	Water Based	9.8	13	8.8	NA	0.5/90.0	Flowline	1000	NA
15/Mar/2014 06:00	3	8831.0	Innovert	9.0	17	NA	NA	52.0/38.0	Flowline	72000	NA
16/Mar/2014 06:00	3	11152.0	Innovert	9.0	16	NA	NA	55.0/35.0	Flowline	78000	NA
17/Mar/2014 06:00	3	12270.0	Innovert	8.9	12	NA	NA	54.0/37.0	Active	87000	NA
19/Mar/2014 06:00	4	14386.0	Innovert	9.0	12	NA	NA	57.0/33.3	Active	78000	NA

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparent 0.5 ft. Avg.	API
GRIX	Gamma Ray 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.	klbf

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12466790	Directional	55.90	6.750	2.850
1	SRIG	12283328	Gamma	52.53	6.750	2.850
2	DIR	12466790	Directional	51.68	6.750	2.850
2	SRIG	12283328	Gamma	48.31	6.750	2.850
3	DIR	12093381	Directional	52.28	4.750	2.250
3	SRIG	10628857	Gamma	48.90	4.750	2.250
4	DIR	10170879	Directional	52.77	4.750	2.688
4	SRIG	SGM-5324	Gamma	49.39	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

1) Baker Hughes INTEQ runs 1 and 2 utilized 6 1/2 inch NaviGamma(Gamma Ray and Directional) behind a 8 3/4 inch bit and steerable assembly from 7000 feet to 8032 feet MD (6975 feet to 7718 feet TVD)
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to 6932 feet MD (6975 feet to 7718 feet TVD).

2) Baker Hughes INTEQ runs 3 and 4 utilized 4 3/4 inch NaviGamma(Gamma Ray and Directional) behind a 6 1/8 inch bit and steerable assembly from 8032 feet to 17375 feet MD (7718 feet to 7731 feet TVD).

3) A sliding indicator is shown to the left edge of track 1 as a heavy line. The indicator has been depth-shifted to the gamma sensor offset to correspond with gamma data acquired while sliding.

Remarks

Number	Measured Depth (ft)	Hole Section (in.)	LWD Run No.	Remark
1	6865	8.750	1	The interval from surface to 7000 feet MD (6975 feet TVD) was not logged since logging services began at kick off point.
2	7730	8.750	2	The interval from 7677 feet to 7730 feet MD (7598 feet to 7632 feet TVD) was logged 10.5 hours after being drilled due to trip out of hole to pick up new motor due to lack of build rates.
3	8032	8.750	2	The interval from 7984 feet to 8032 feet MD (7716 feet to 7718 feet TVD) was logged more than 11 days and 22 hours after drilling due to batch drilling operations and skidding to next well on the pad.
4	13763	6.125	3	The interval from 13763 to 13780 was logged 13 hours after being drilled due to time drilling operations for sidetrack.
5	17326	6.125	4	Interval from 17326 feet to 17375 feet MD (7730 feet to 7731 feet TVD) was not logged due to gamma ray sensor offset at TD.



Company : Anadarko

Well : NRC 3C-4HZ

Interval : 6980.00 - 17390.00 feet DOWN

Created : 22/Mar/2014 12:03:22 PM

Gamma Ray Apparent 0.5 ft Avg [GRAX]

0 150

API

True Vertical Depth [TVD]

7800 6800

ft

MD feet 1:240

Rate of Penetration 3.0 ft Avg [ROPA]

500 0

ft/hr

Gamma Time Since Drilled GRTX

0 600

min

Surface Weight On Bit 1.0 ft Avg [WOBA]

0 150

klbf

Downhole Temperature [TCDX]

100 300

degF

GRAX
TVD

7000
> Run 1

GRIX

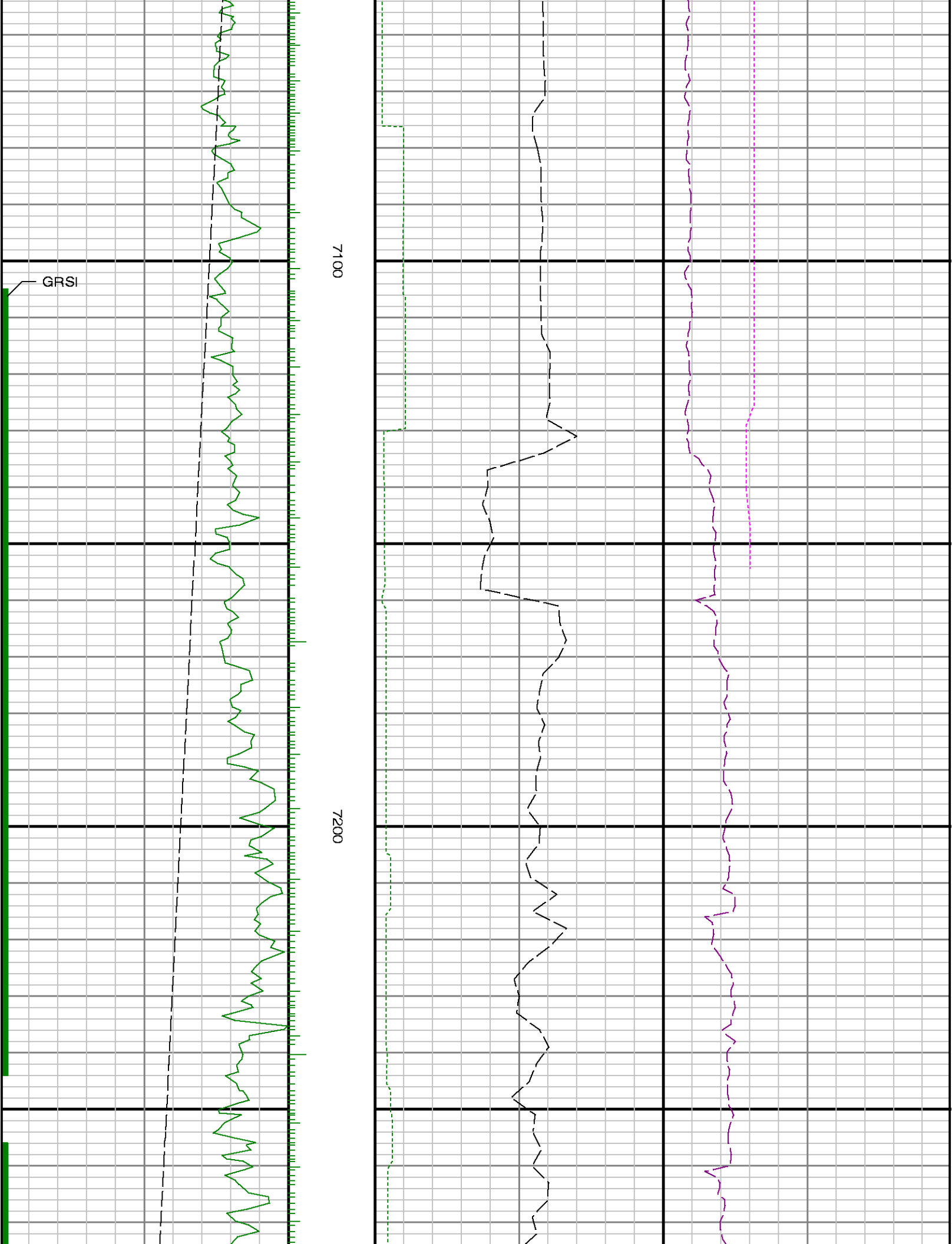
See Remark 1

ROPA

WOBA

TCDX

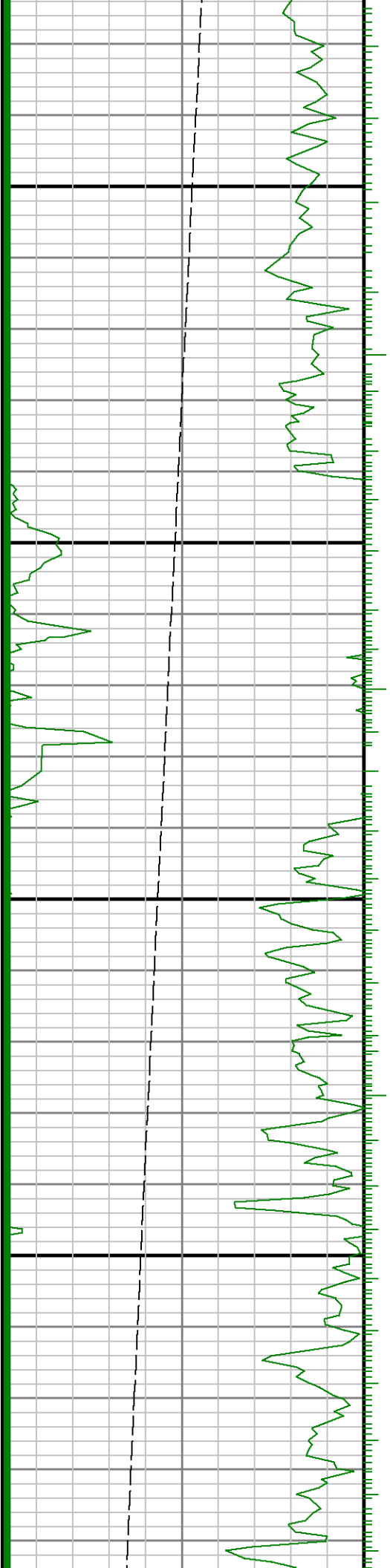
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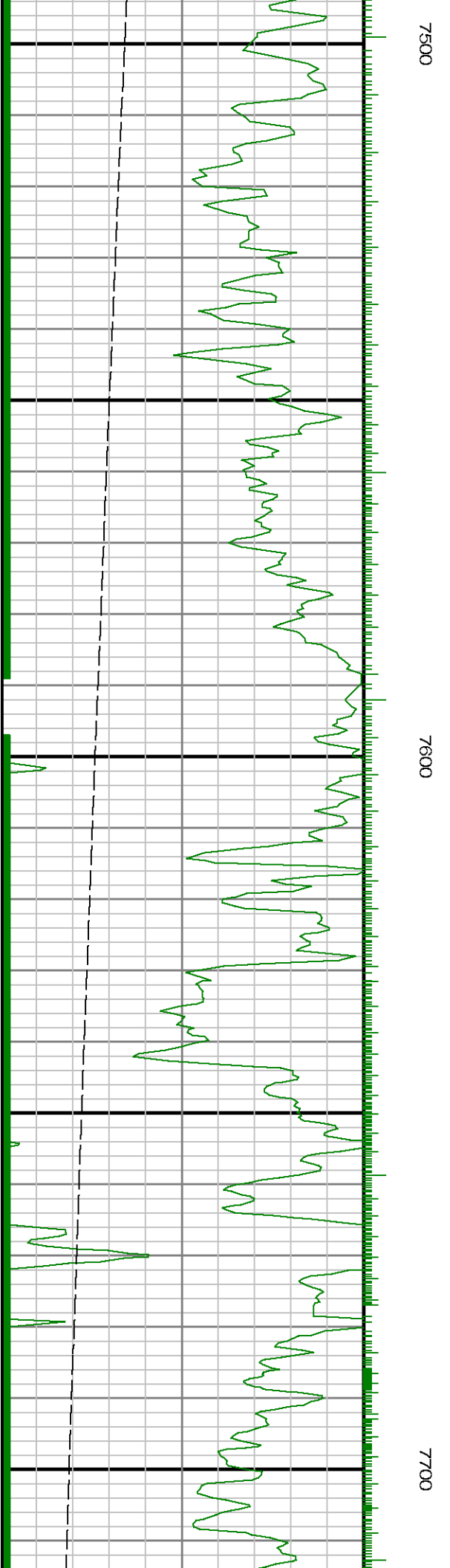
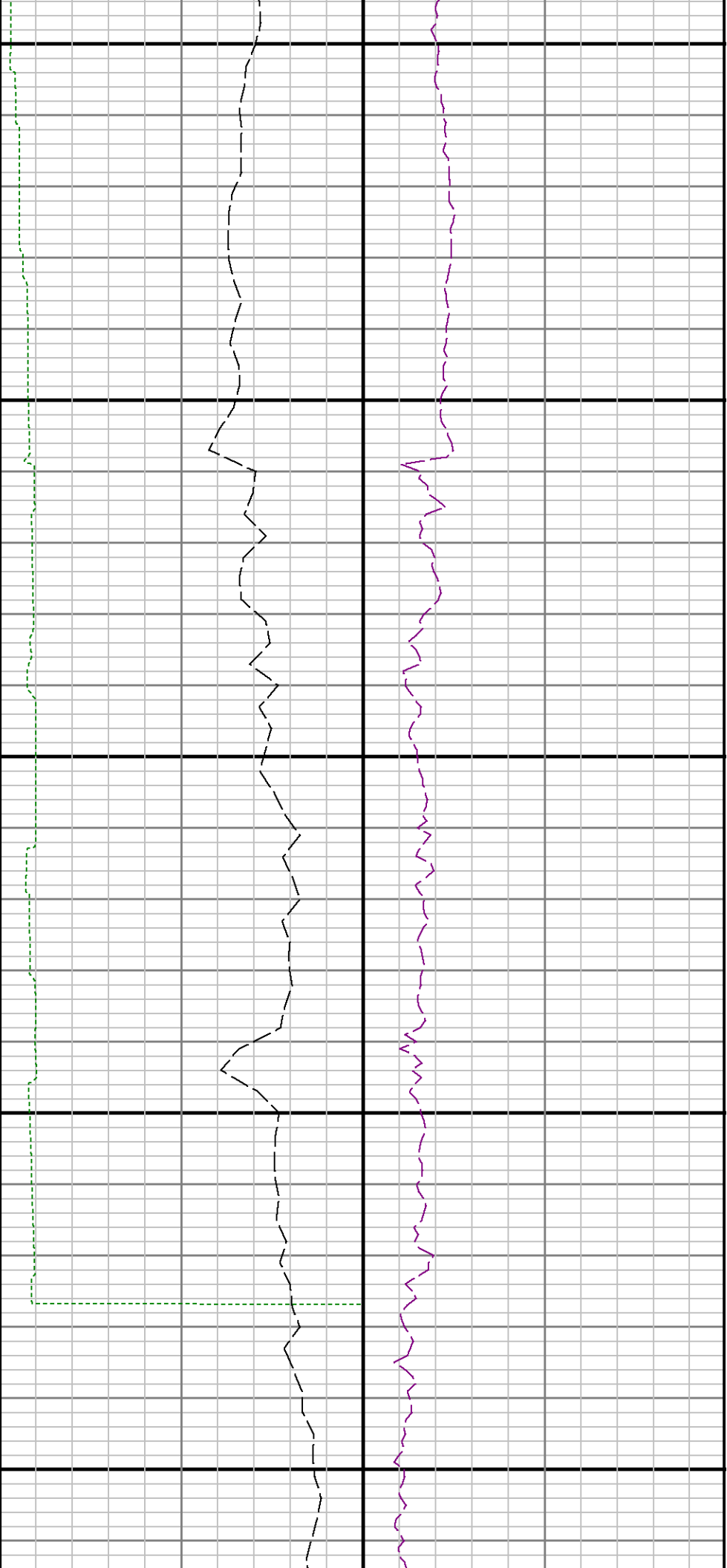


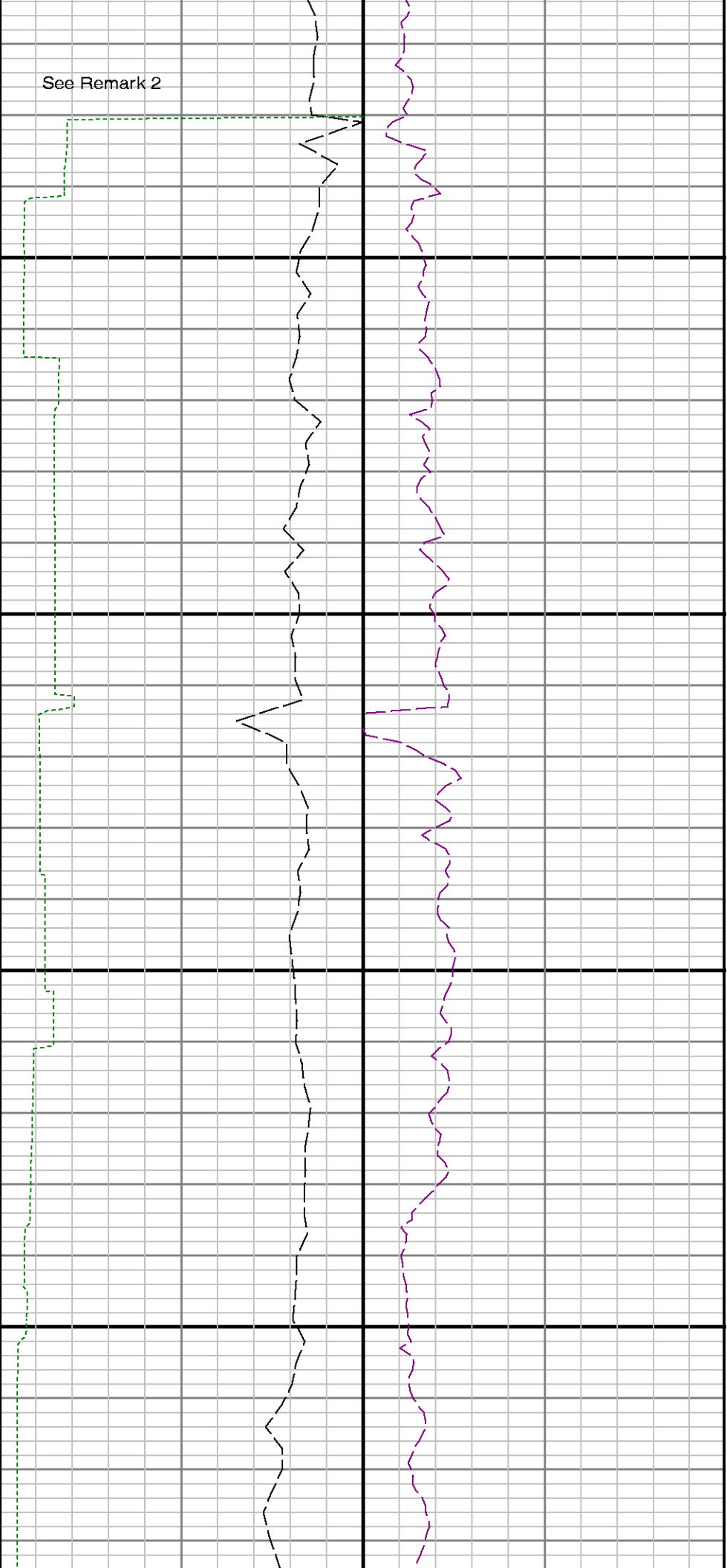


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7400



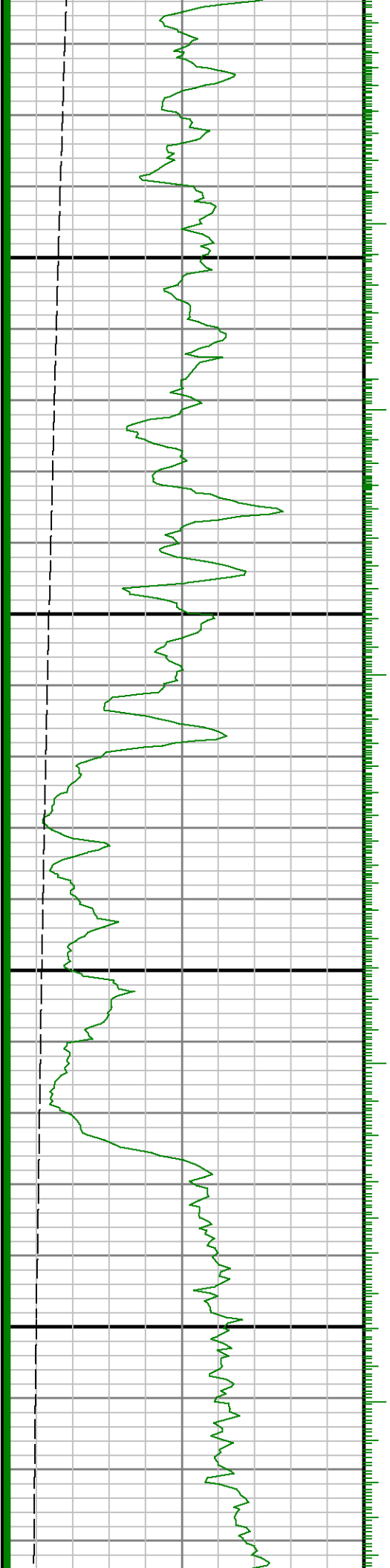


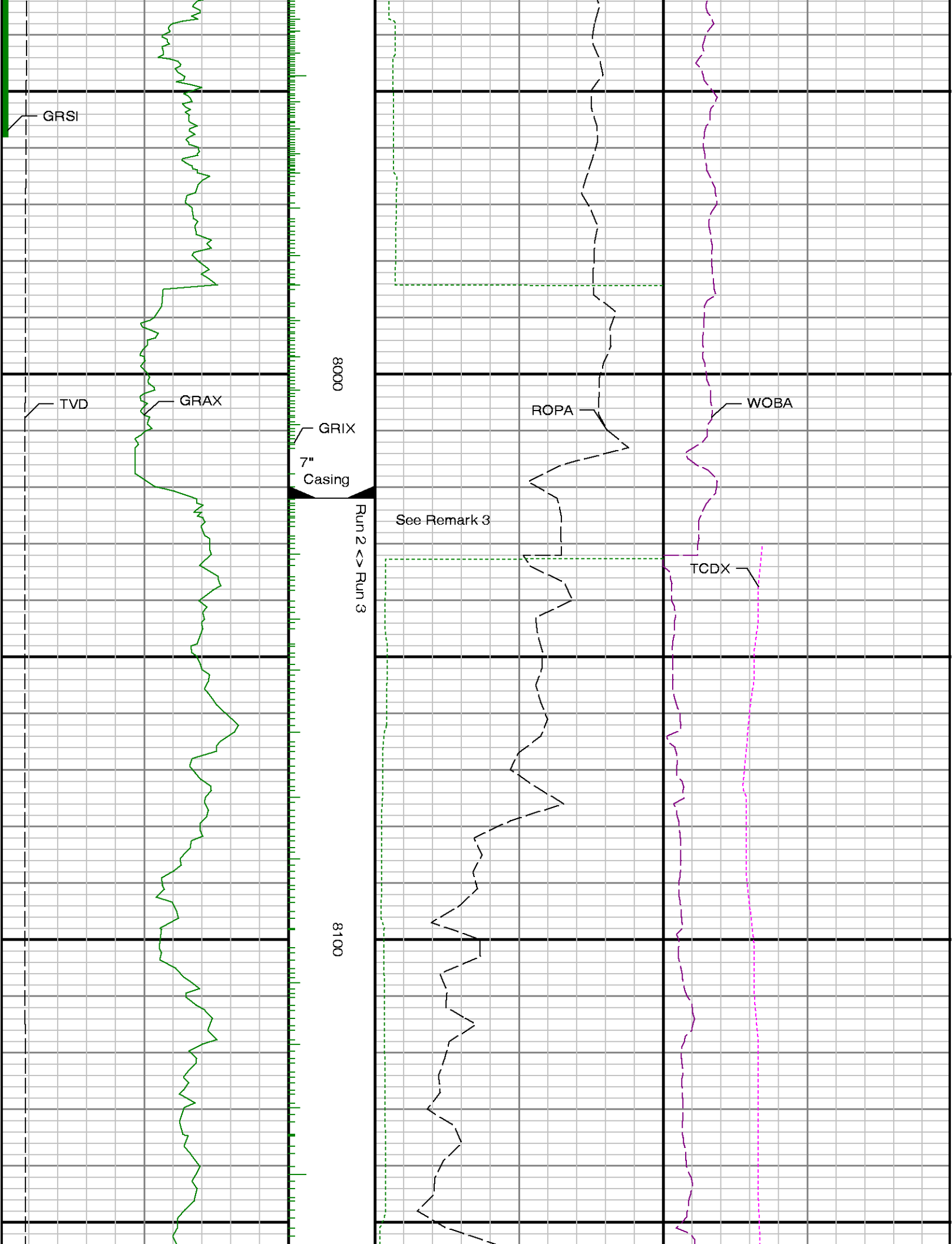


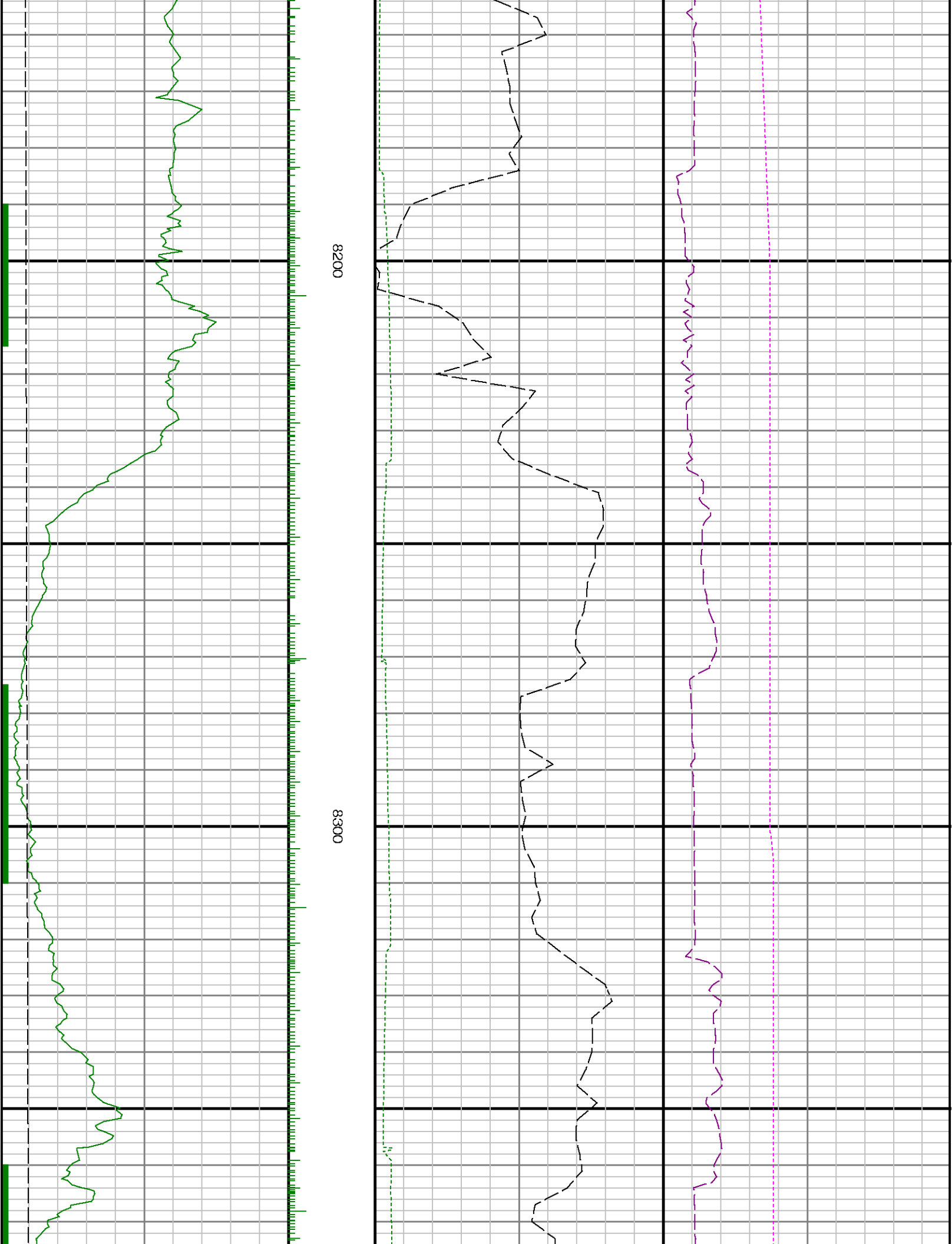
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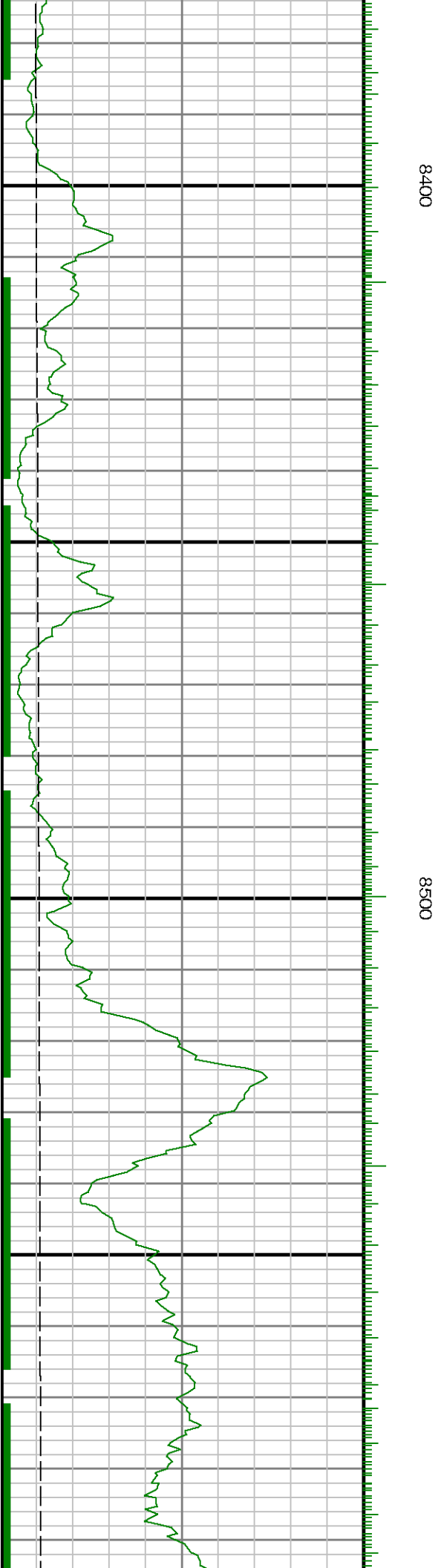
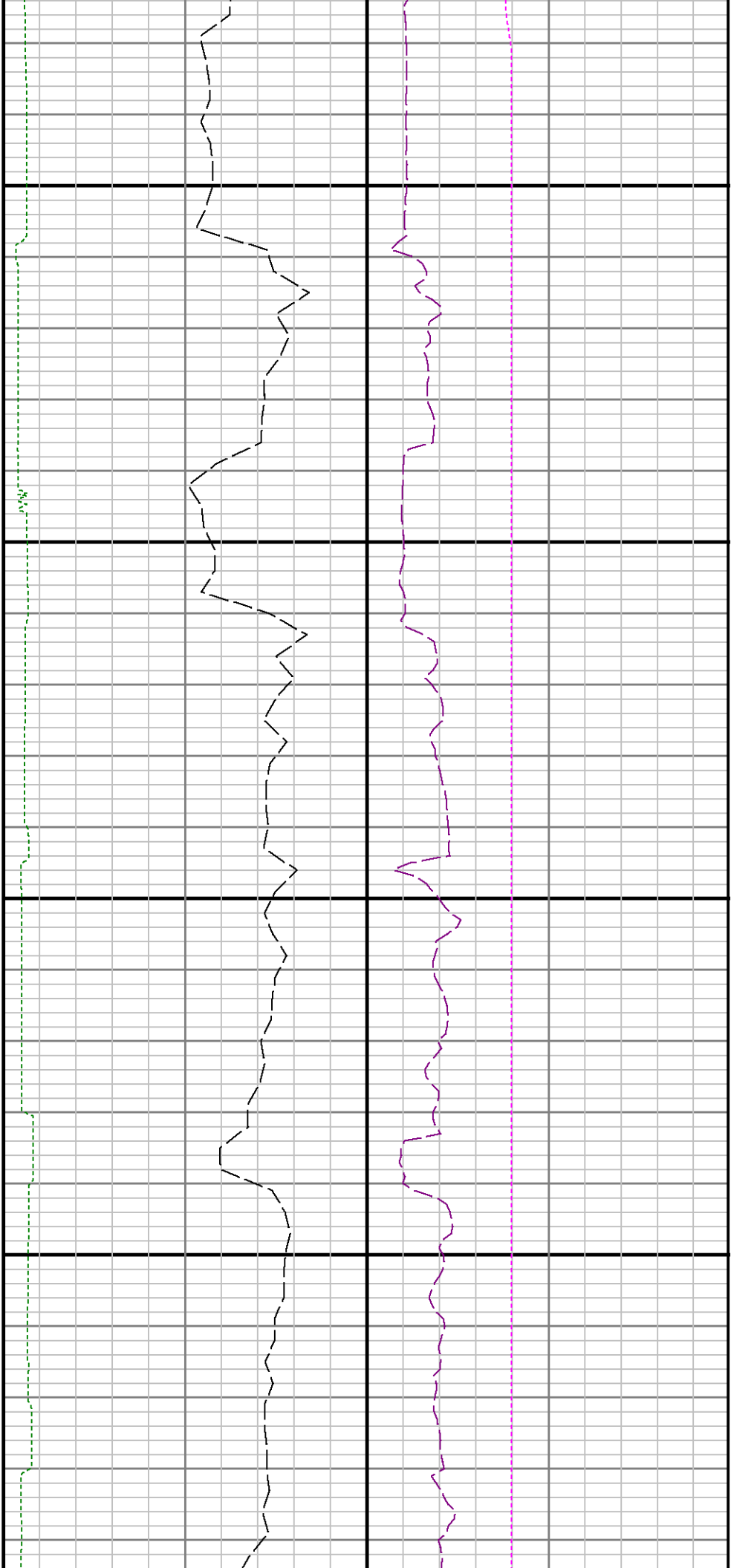
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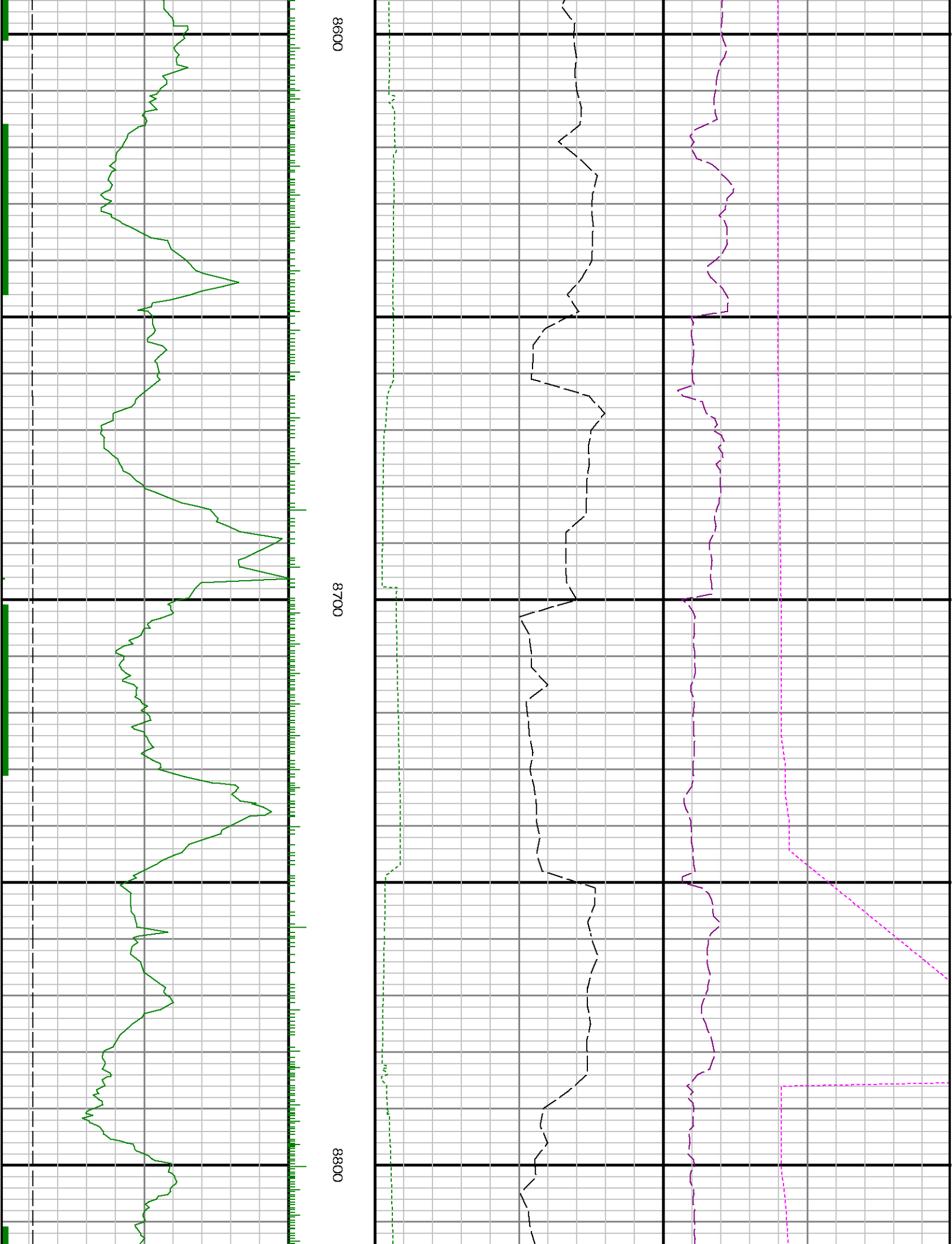
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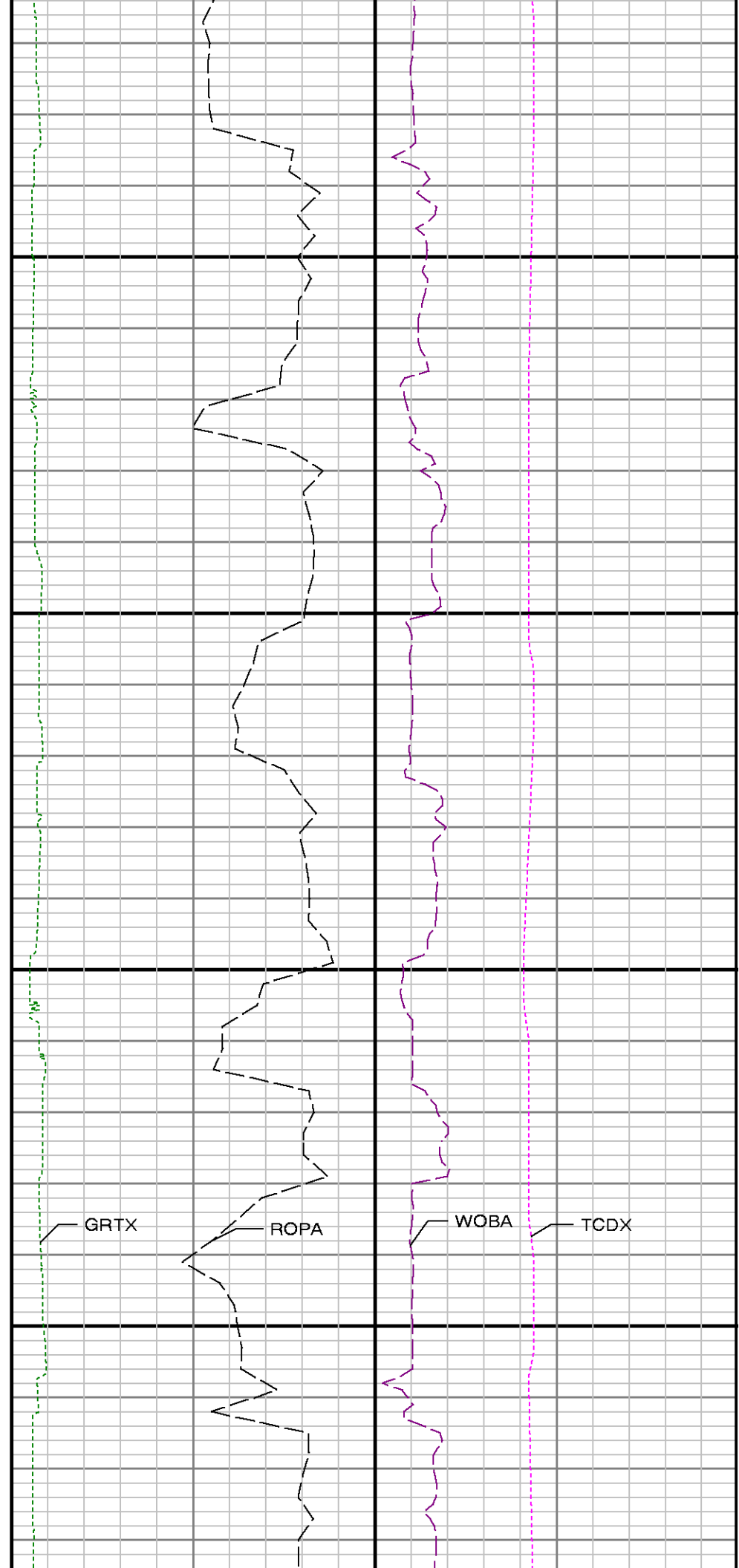
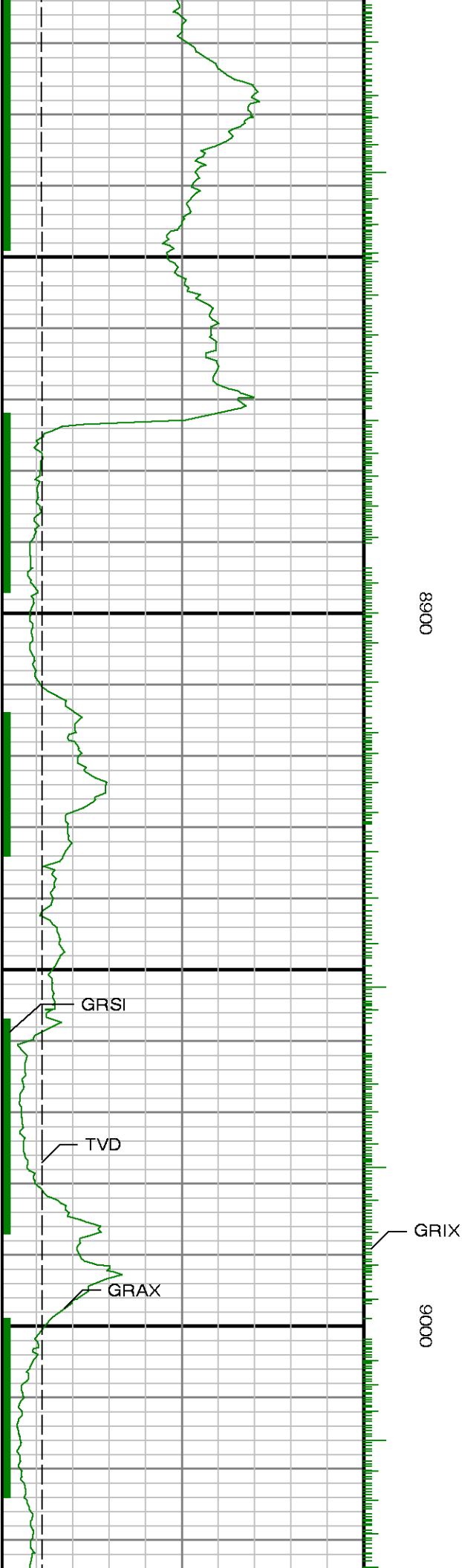


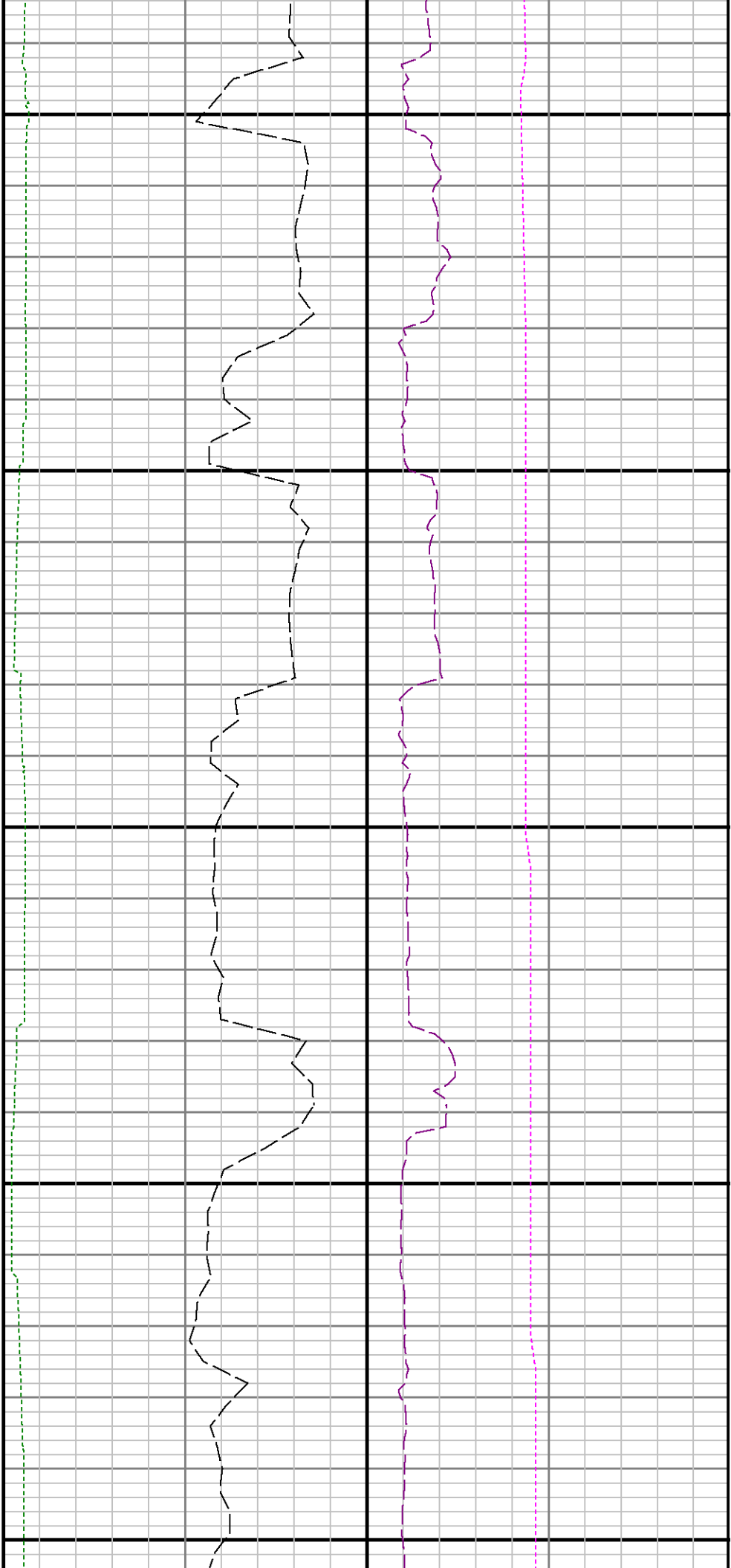






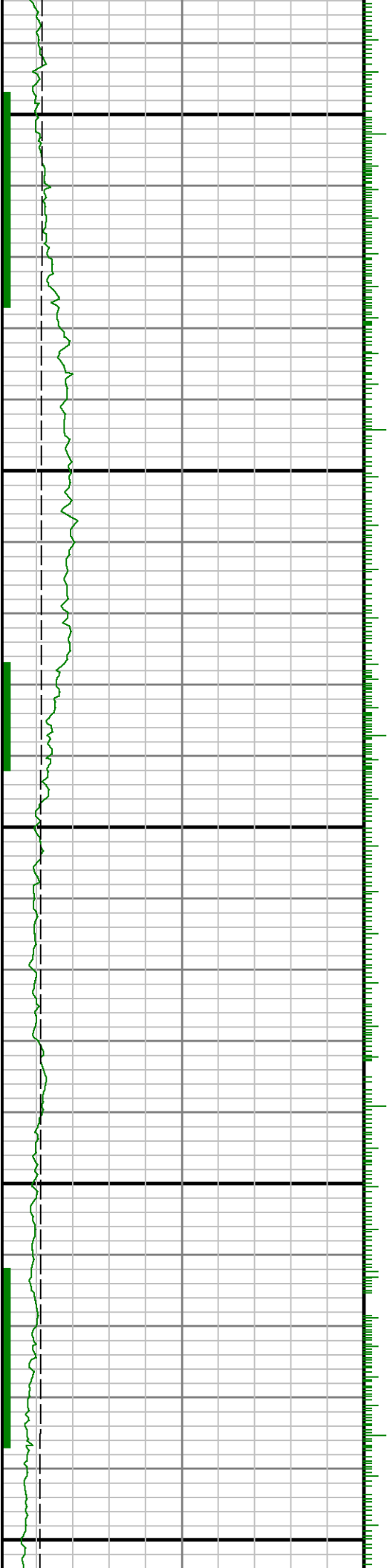


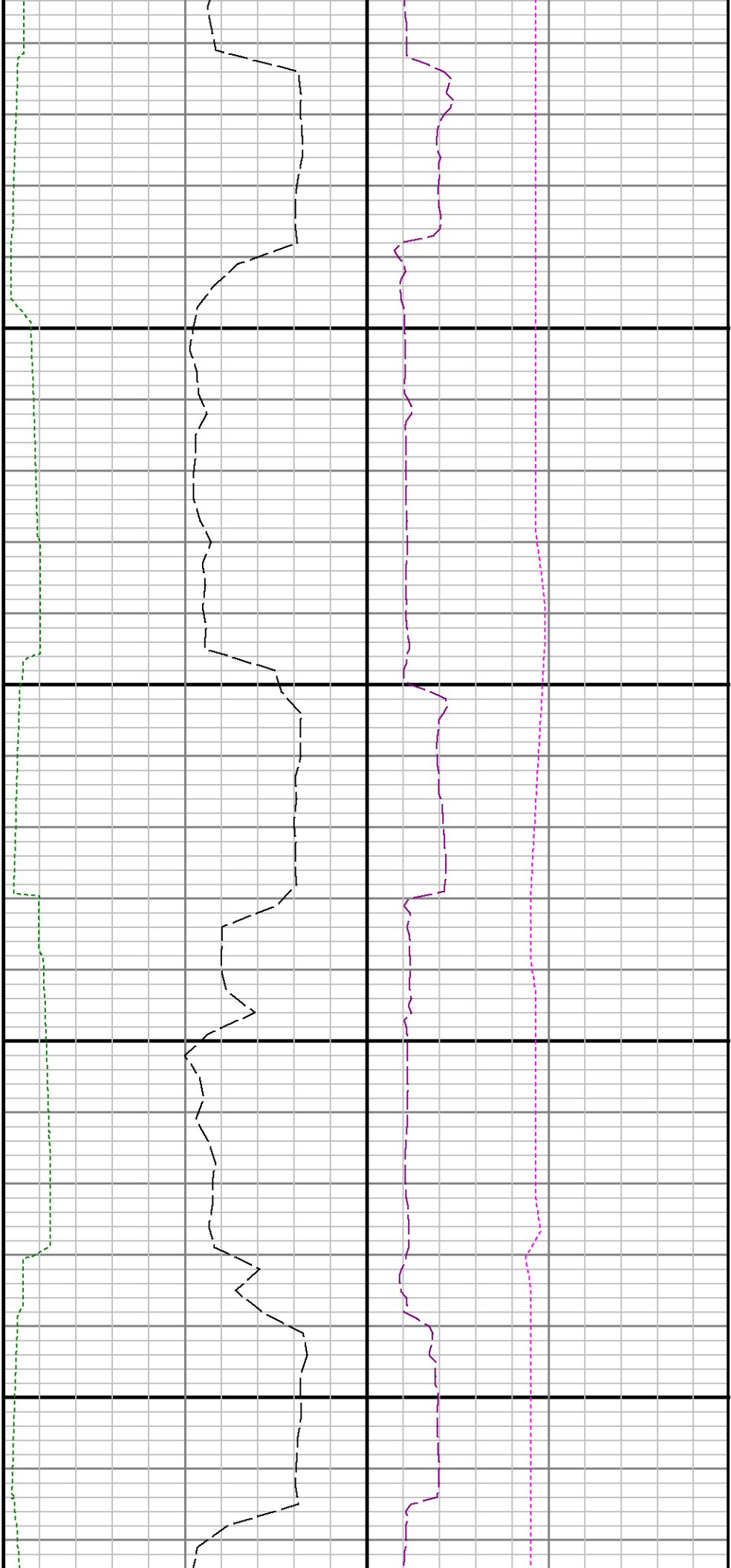




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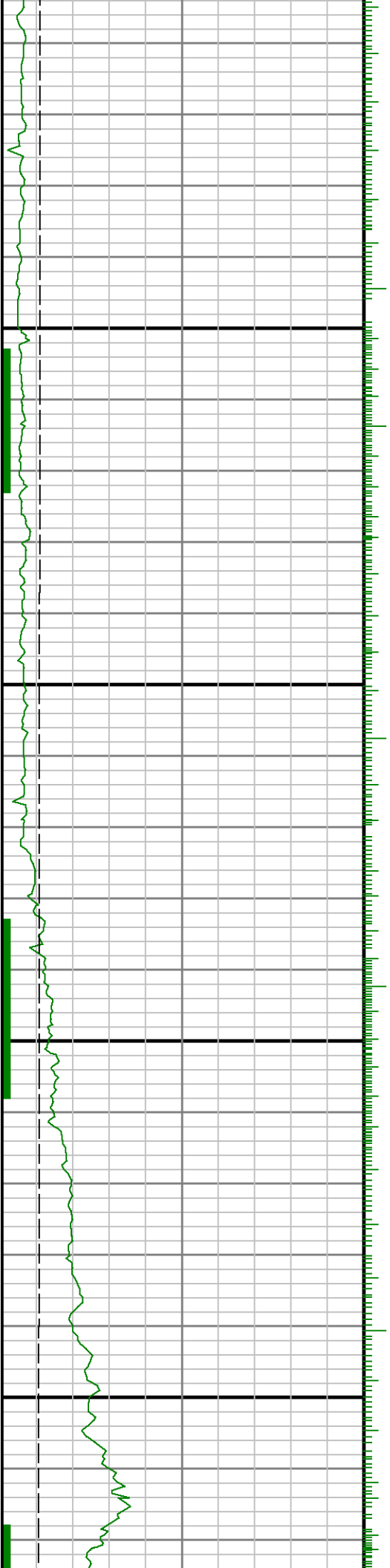
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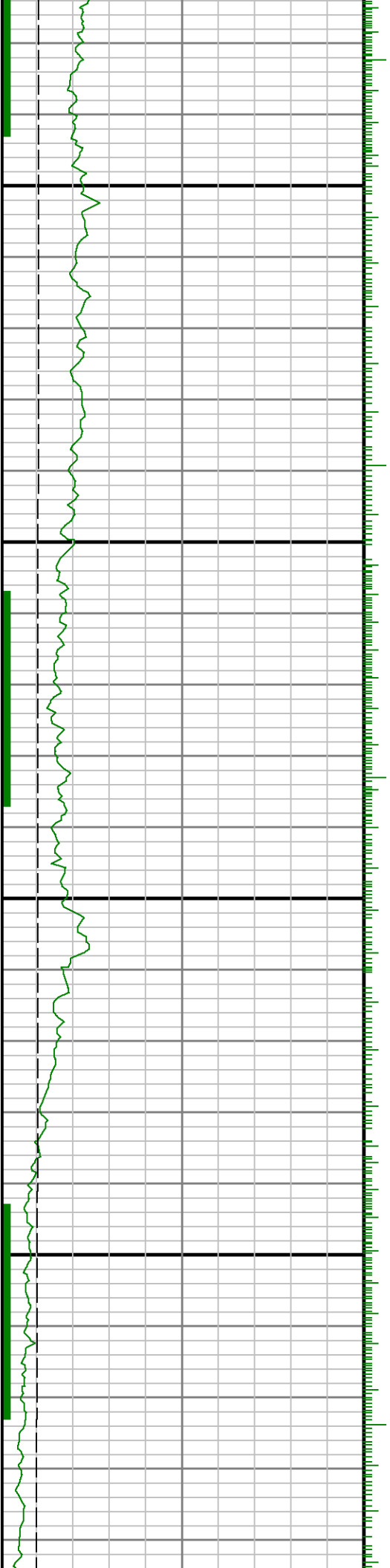




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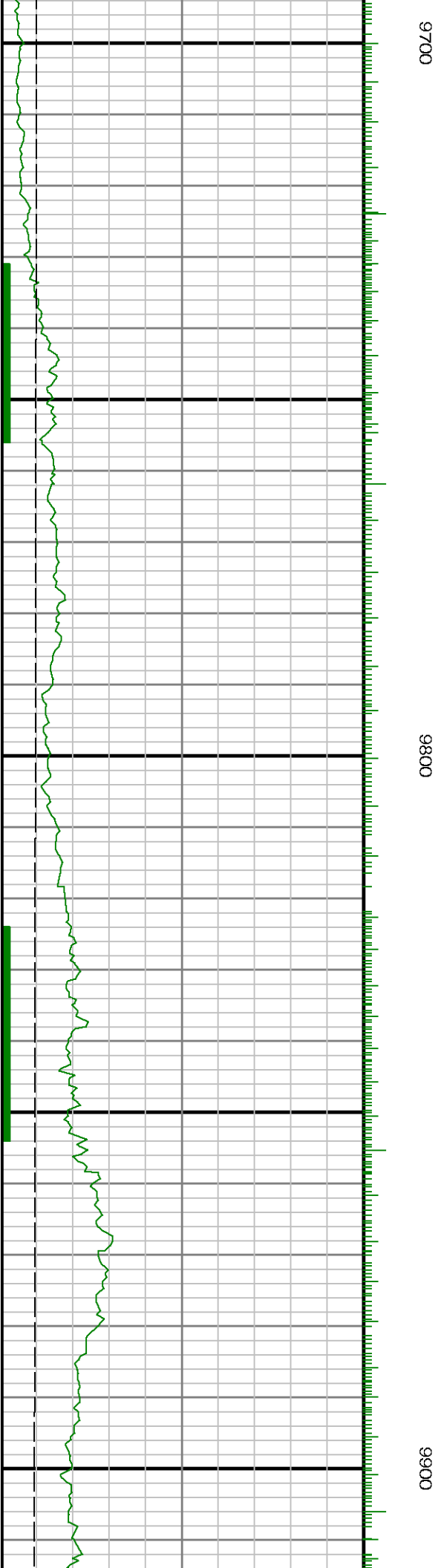
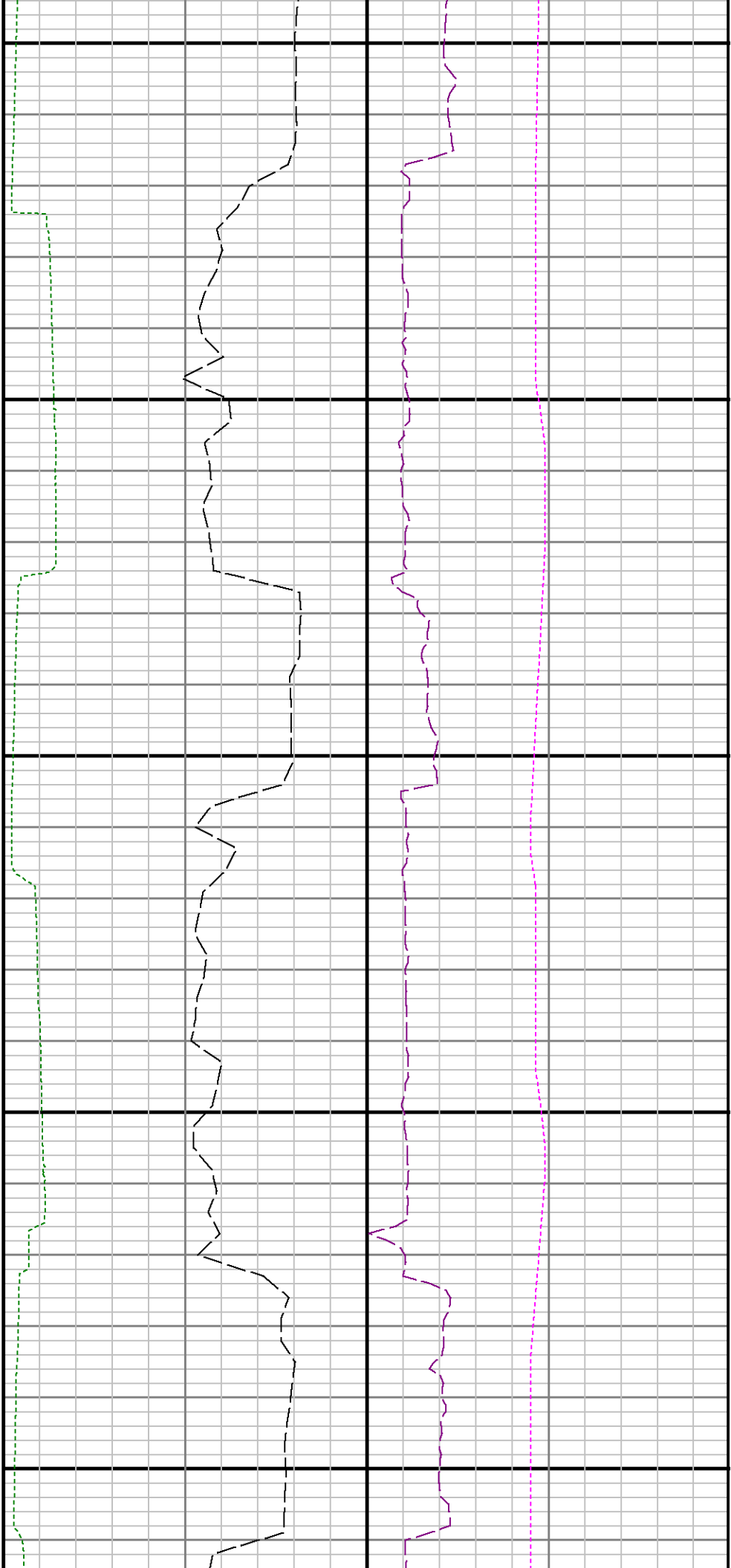


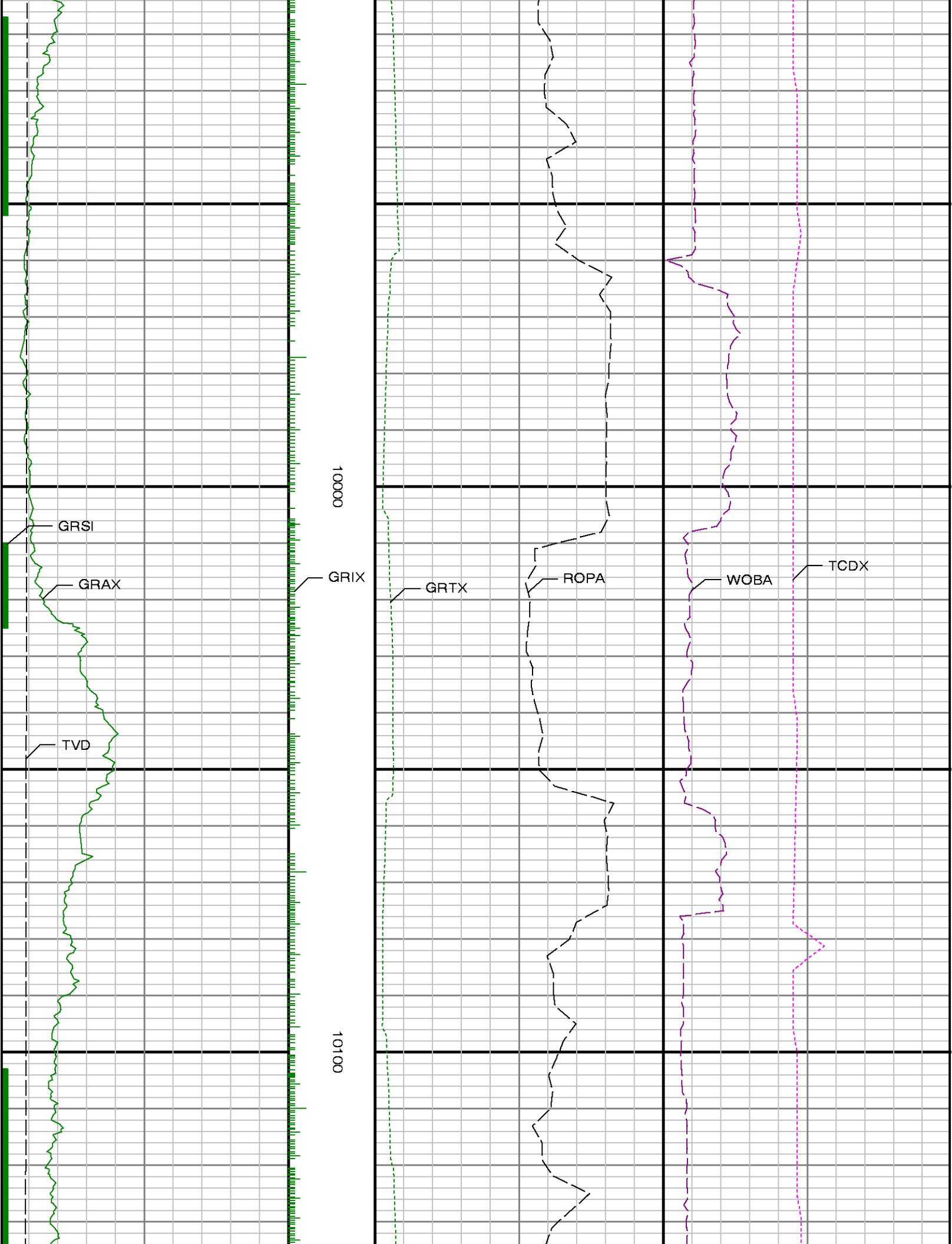


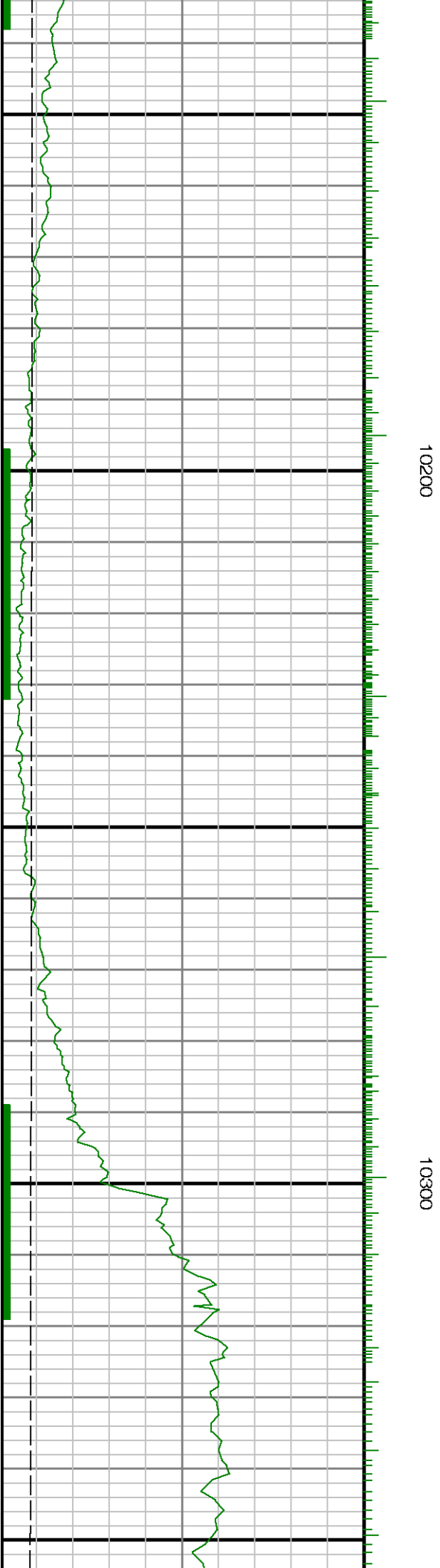
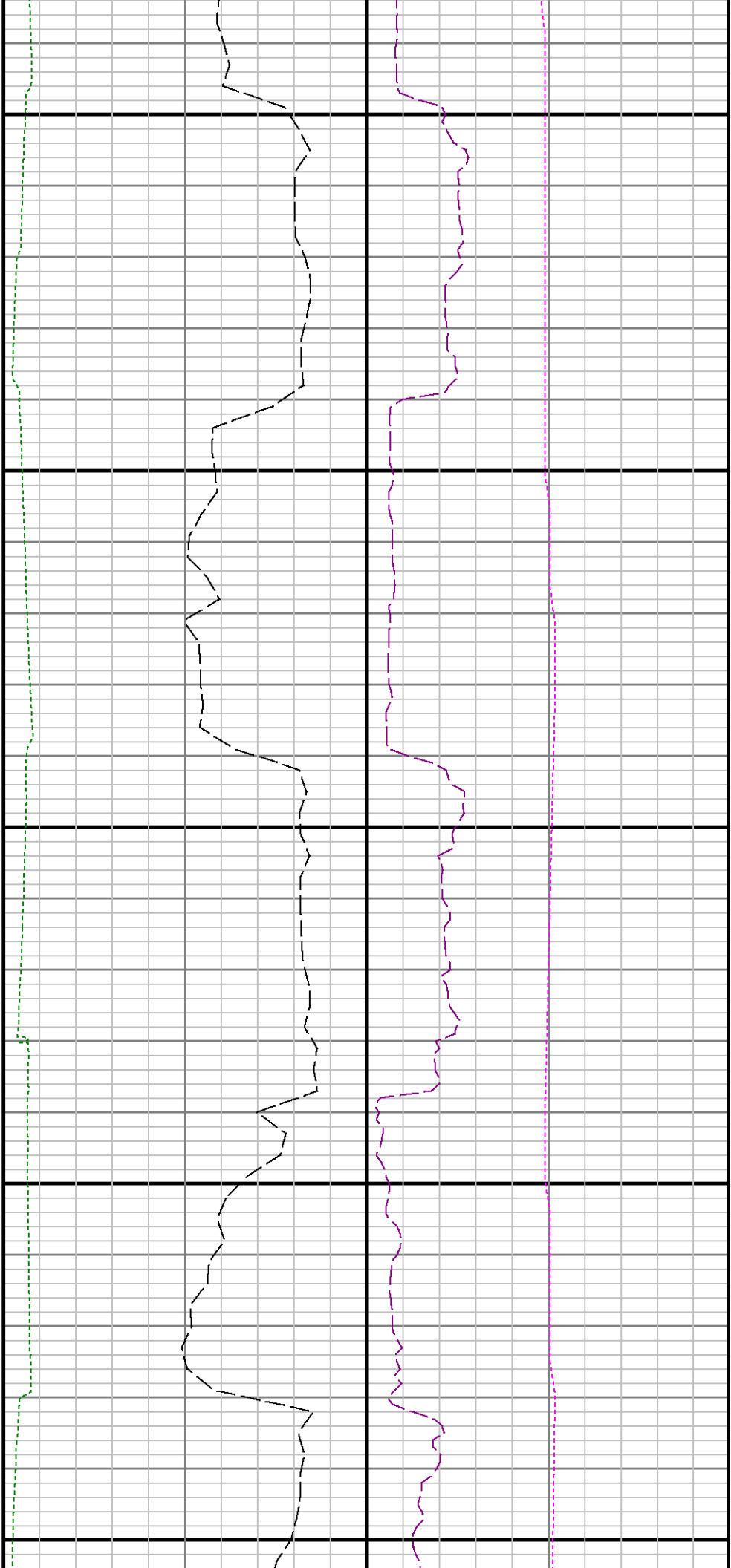
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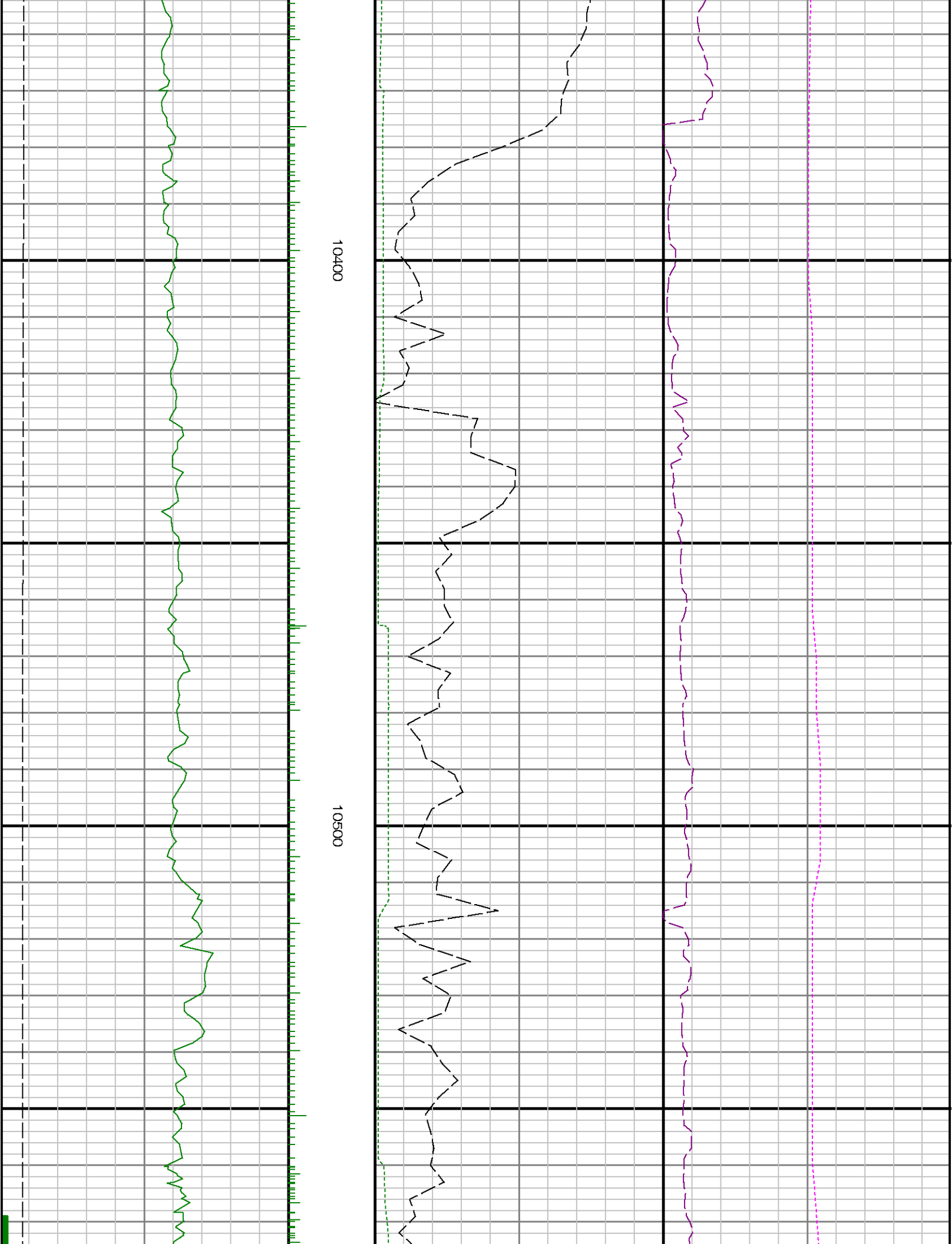
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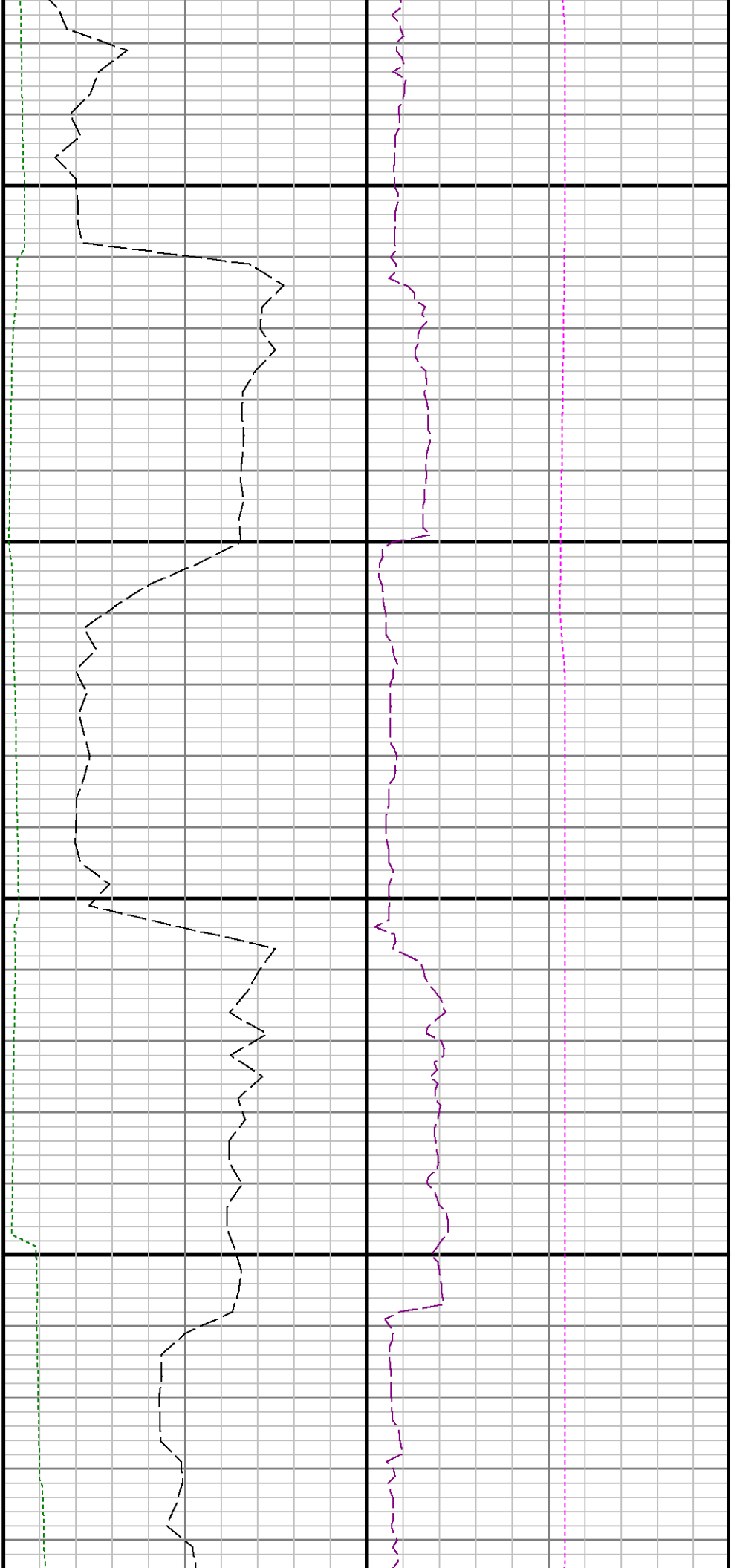






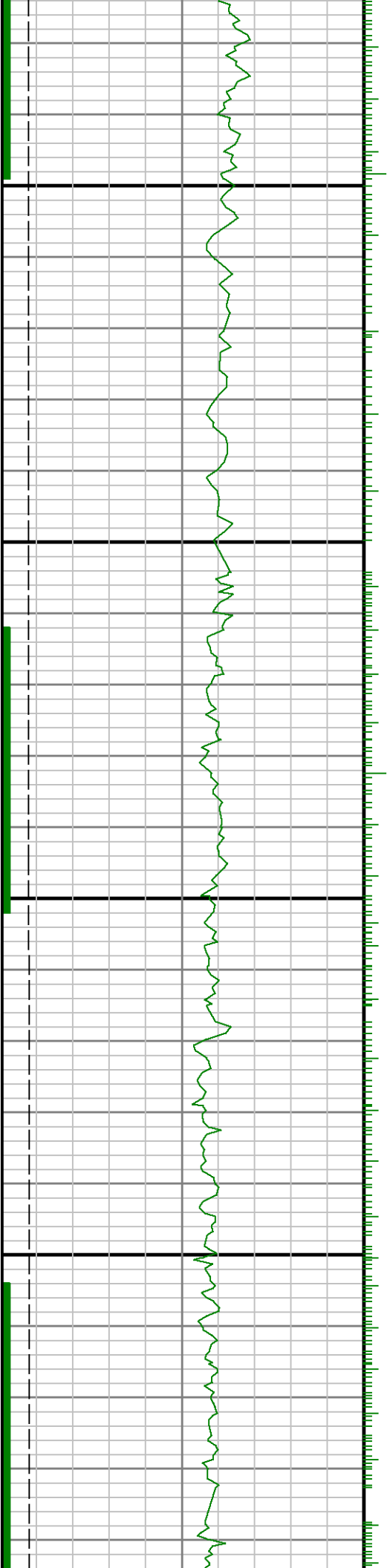


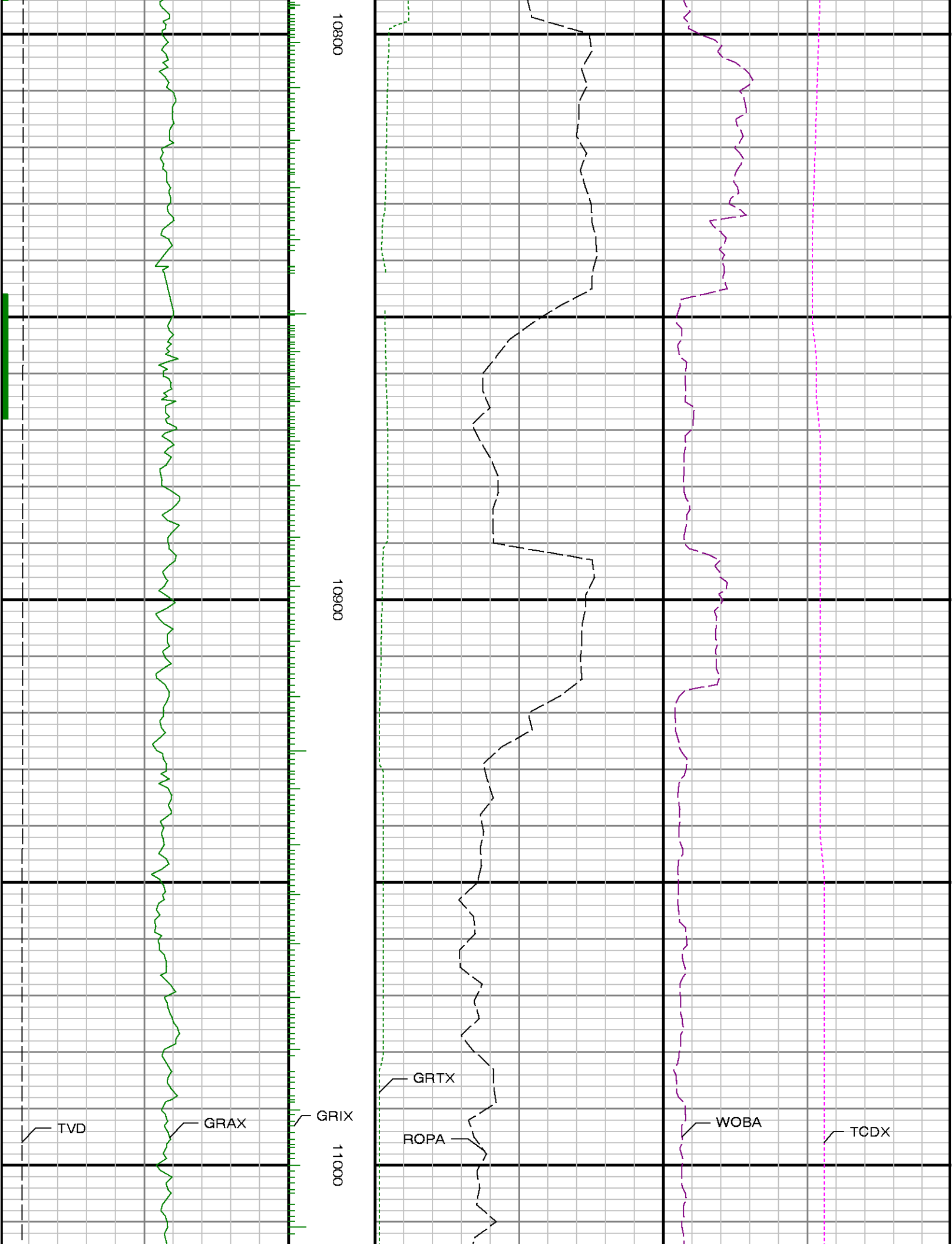


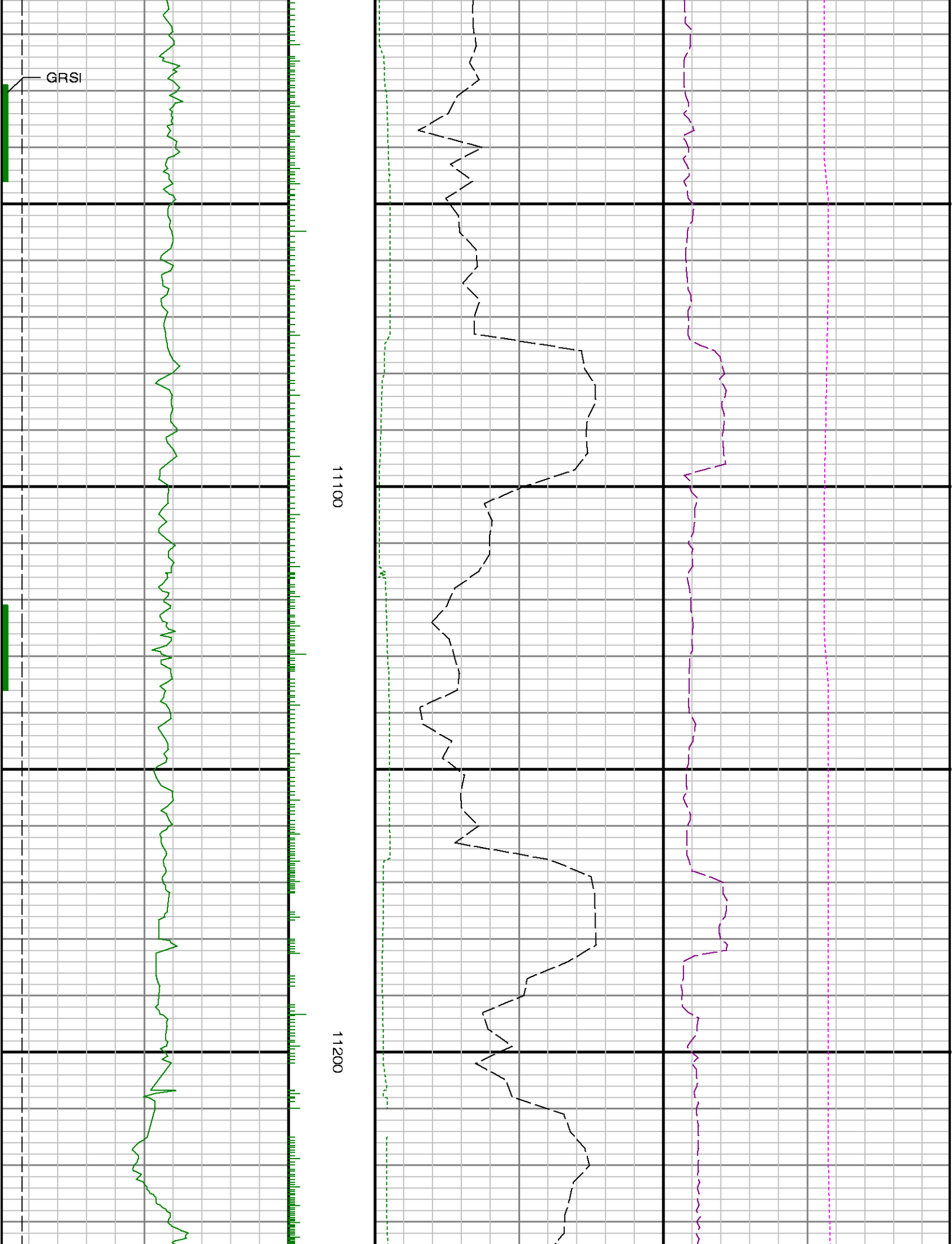


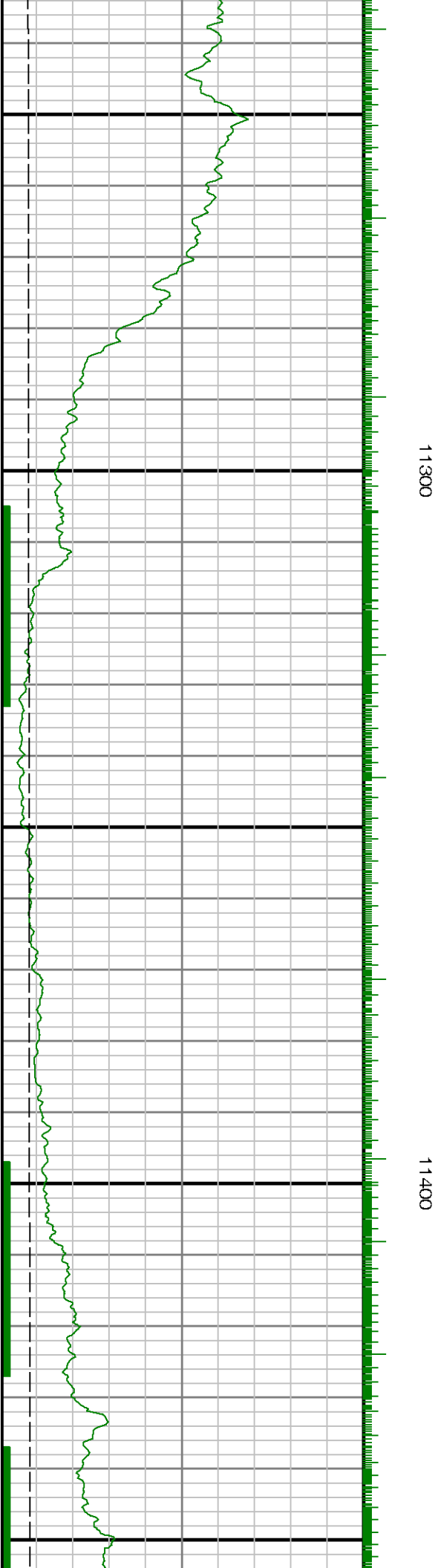
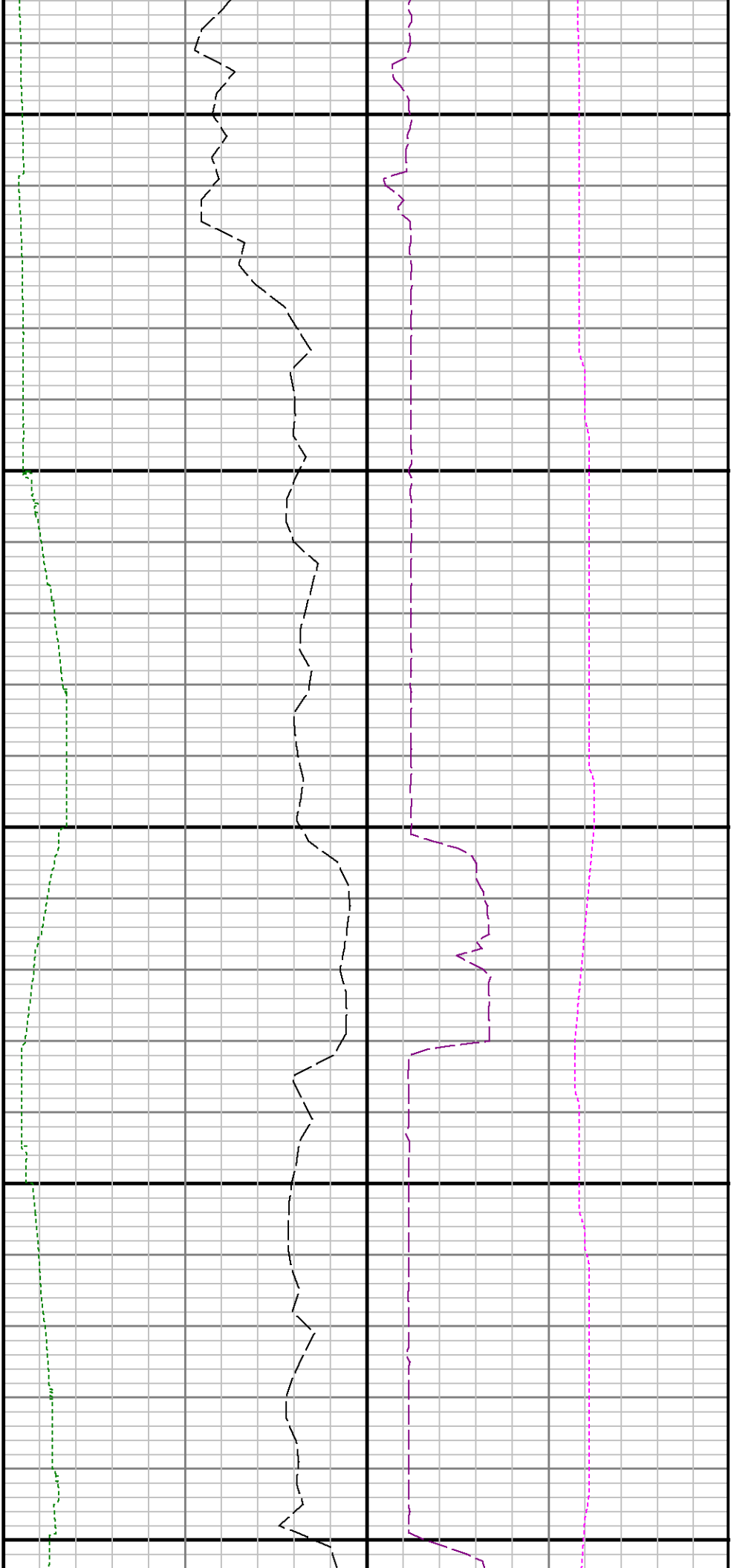
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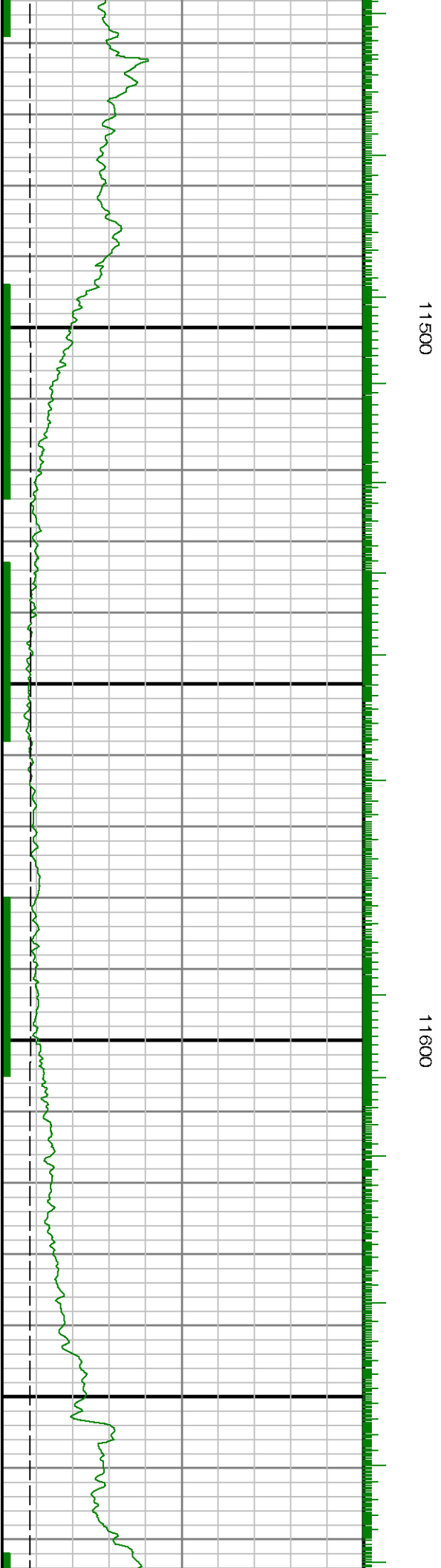
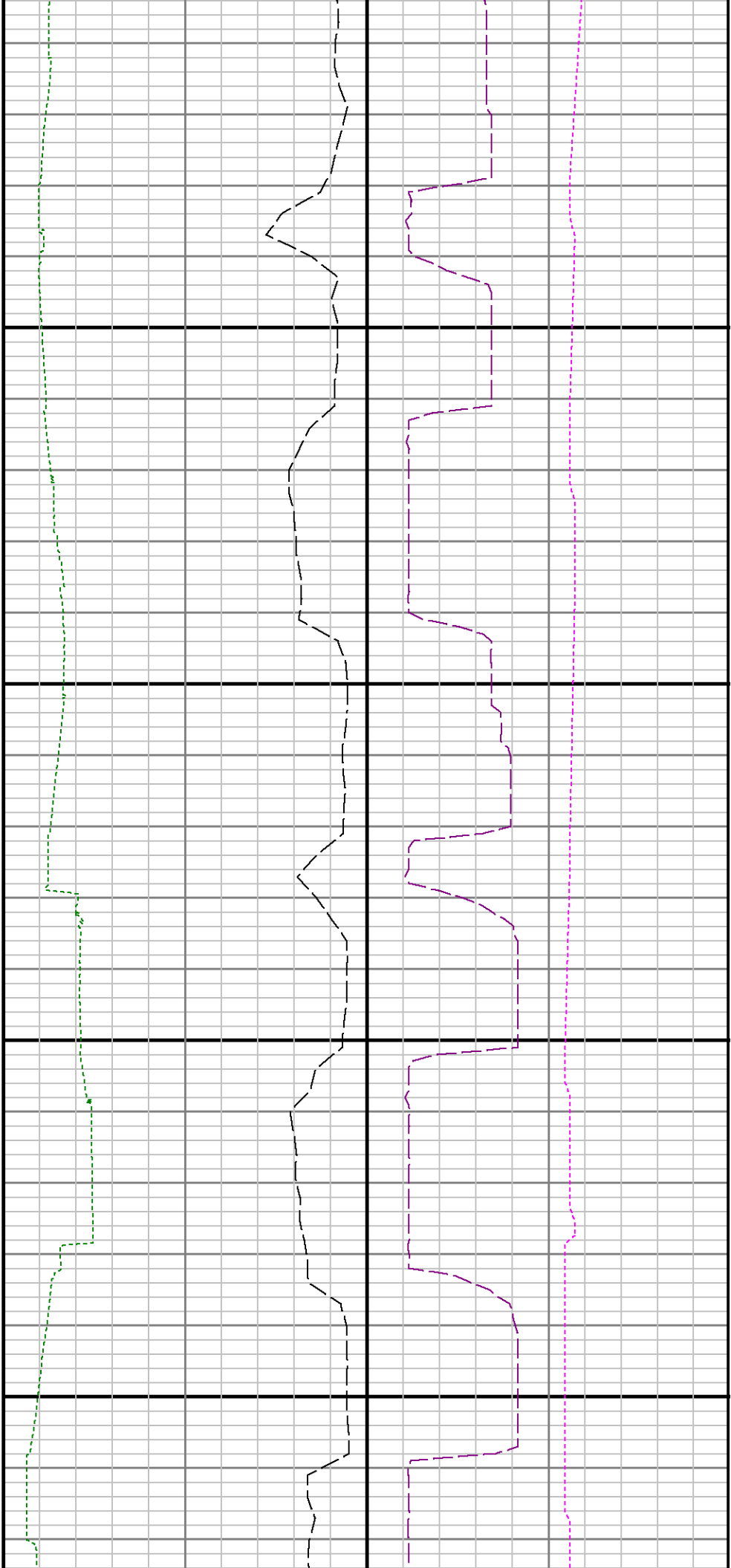
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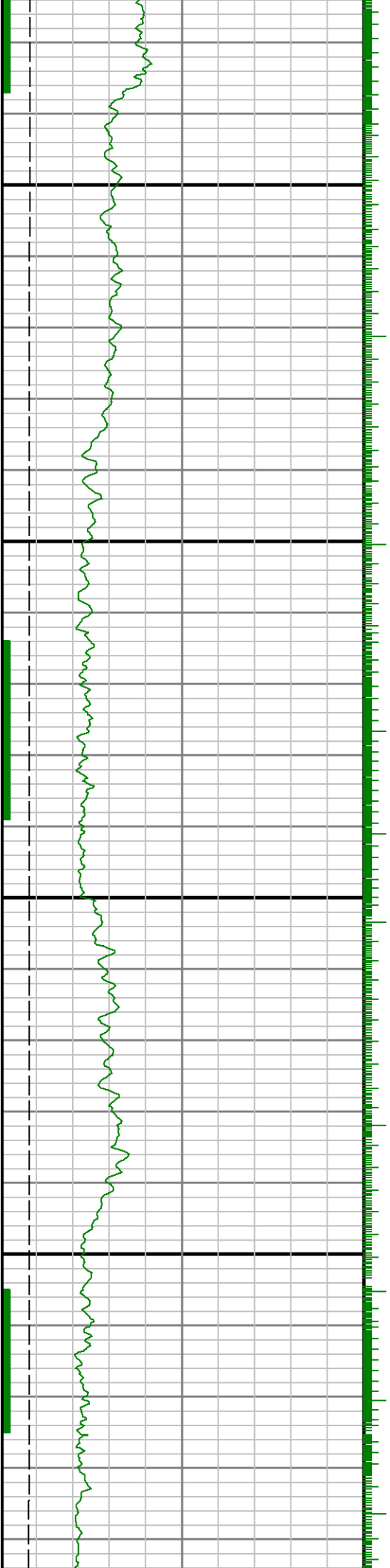






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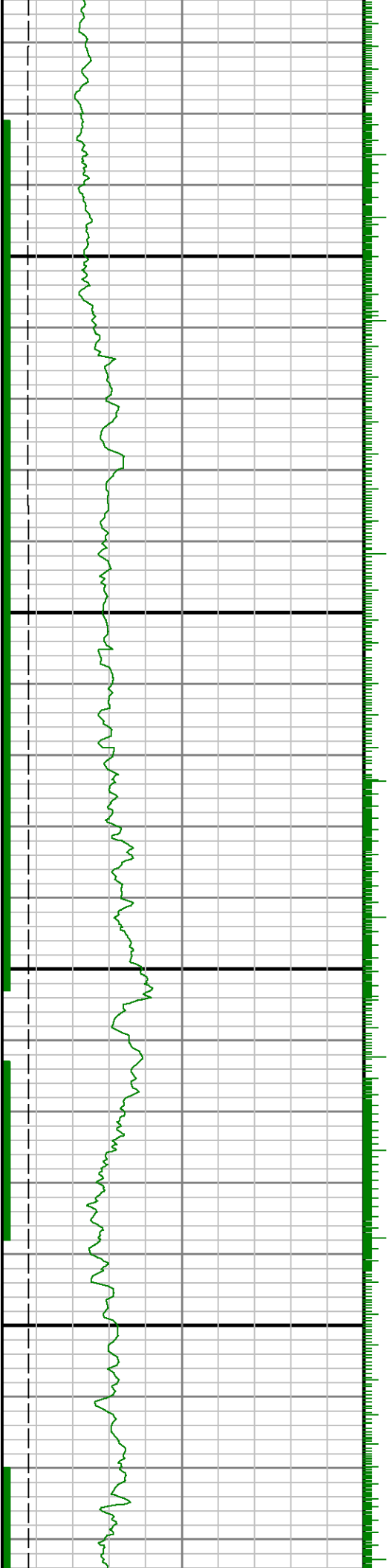


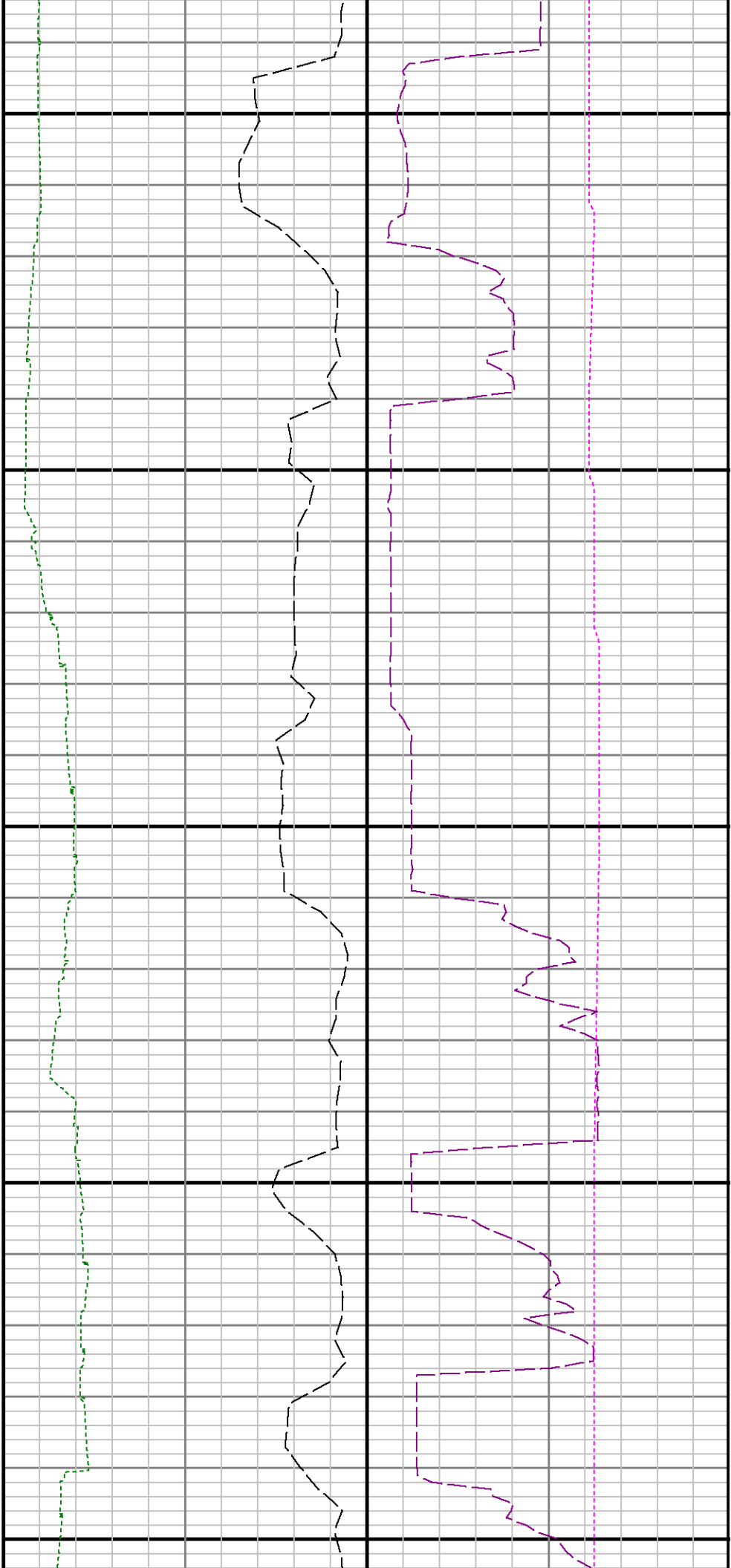




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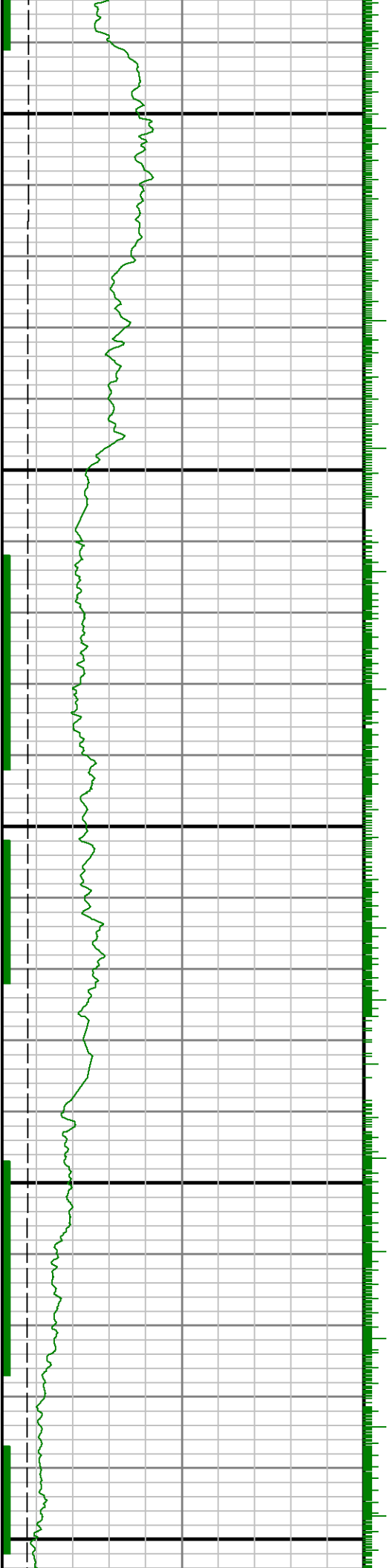
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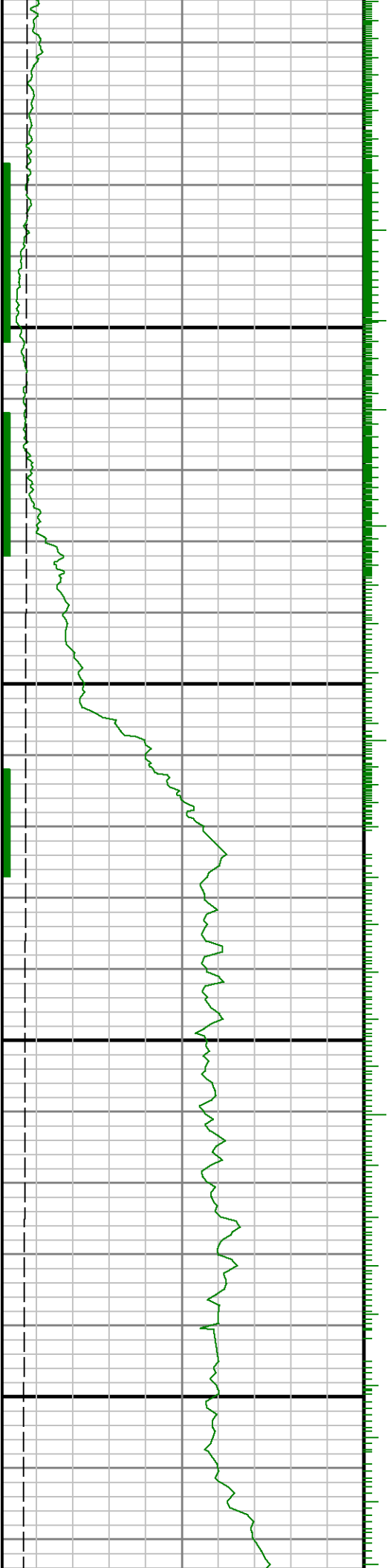
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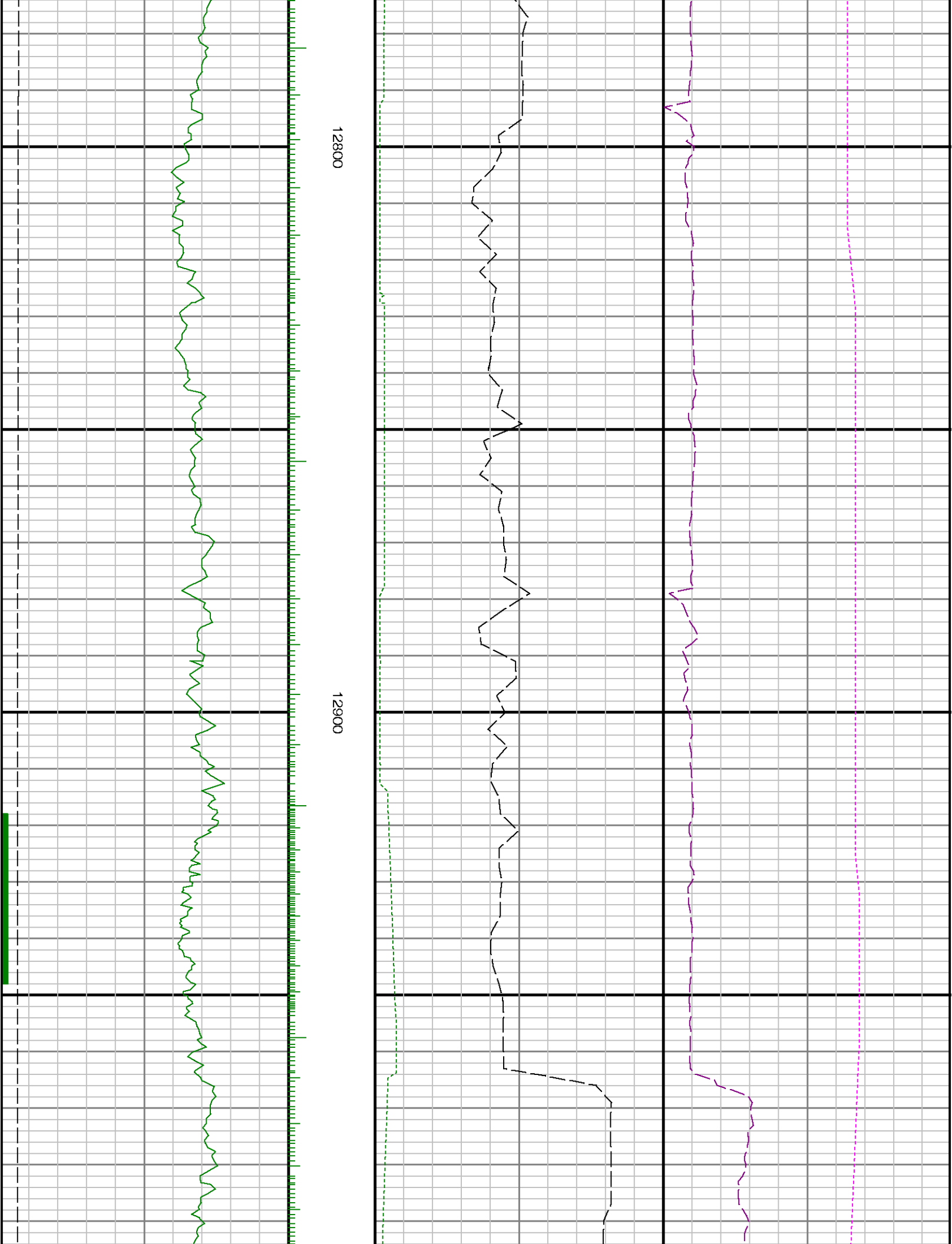


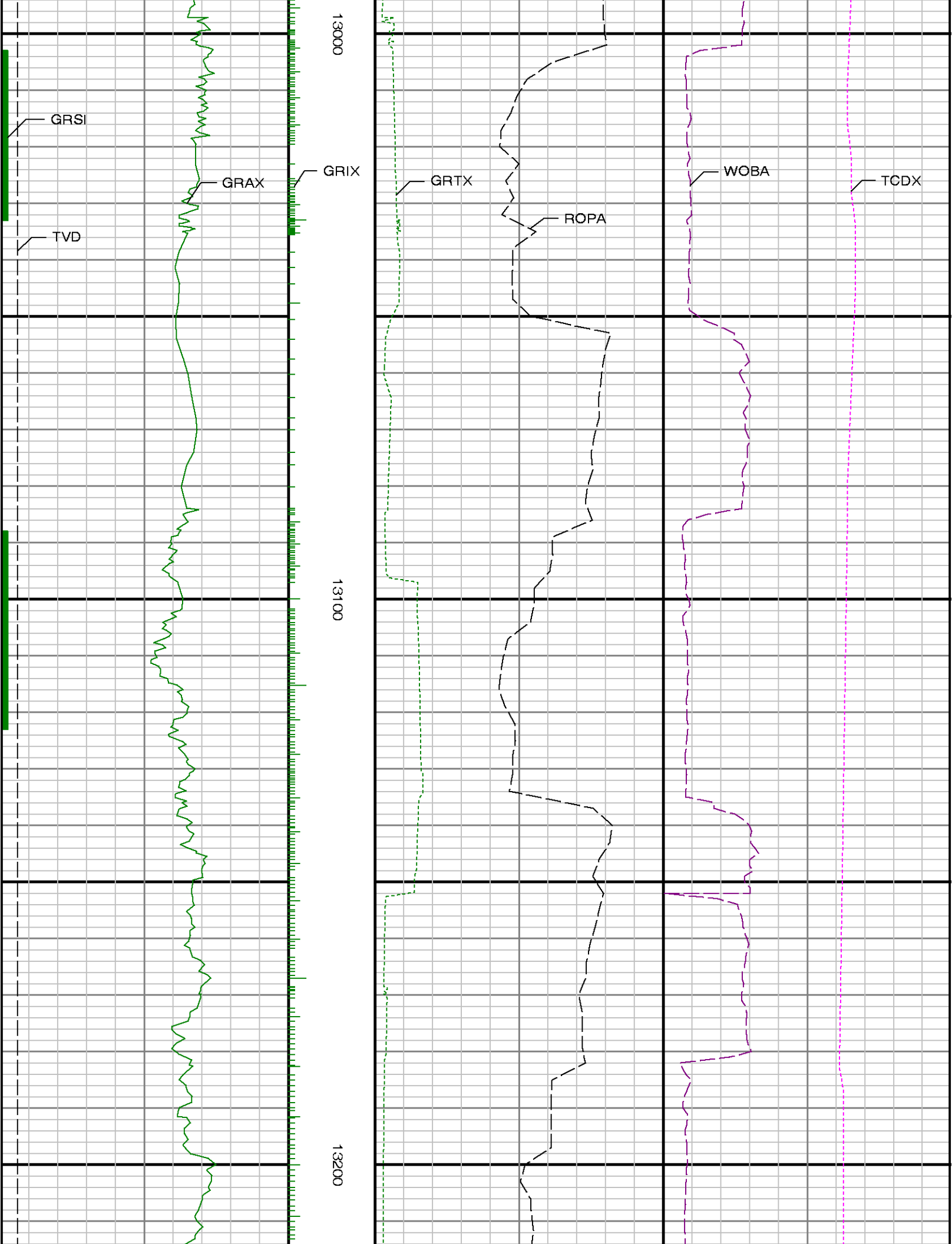


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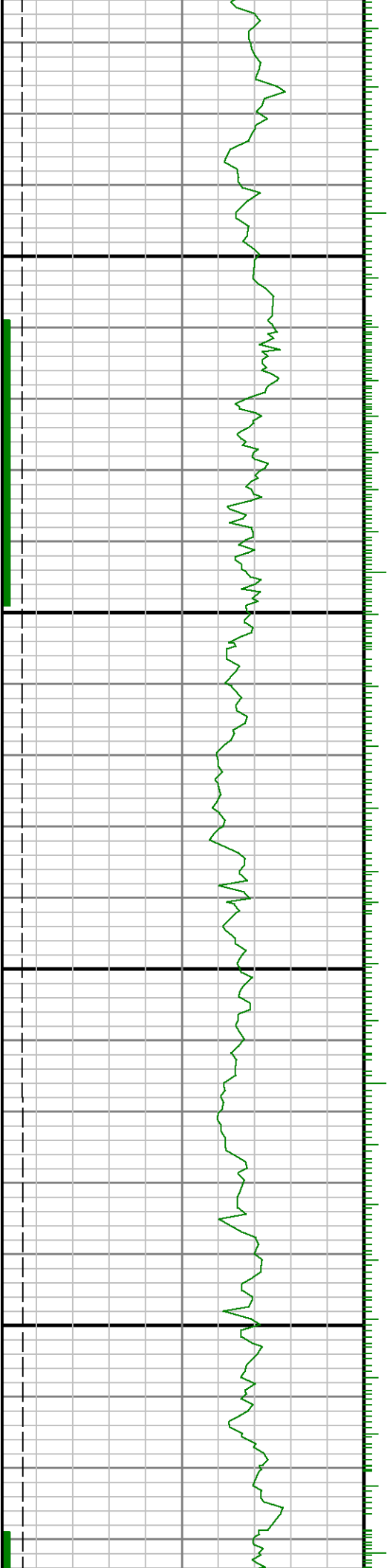


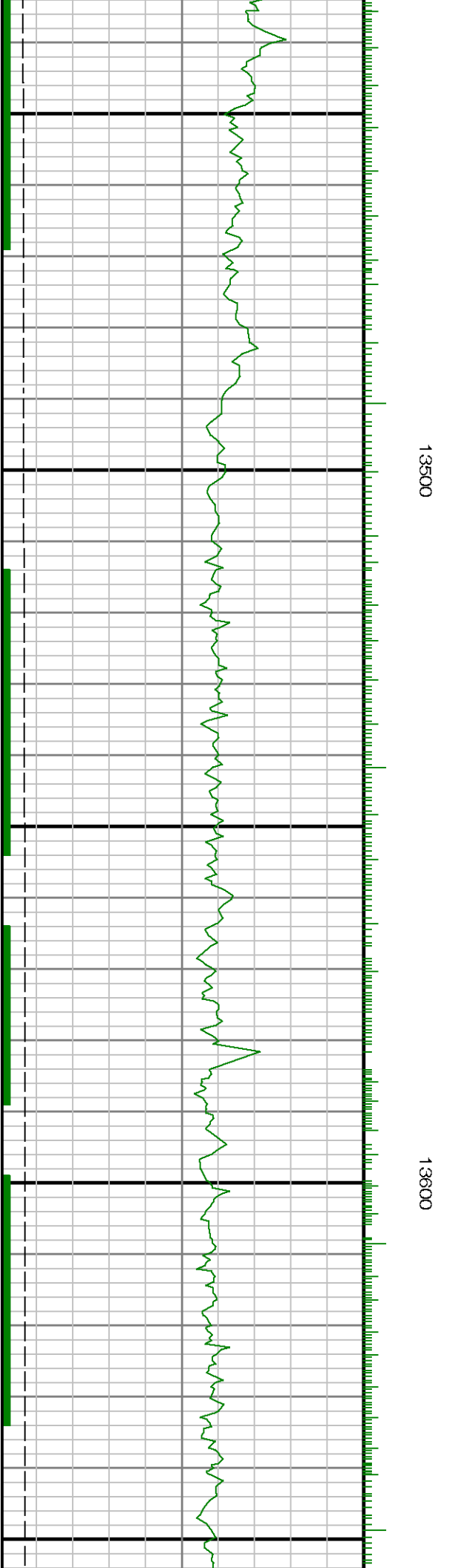
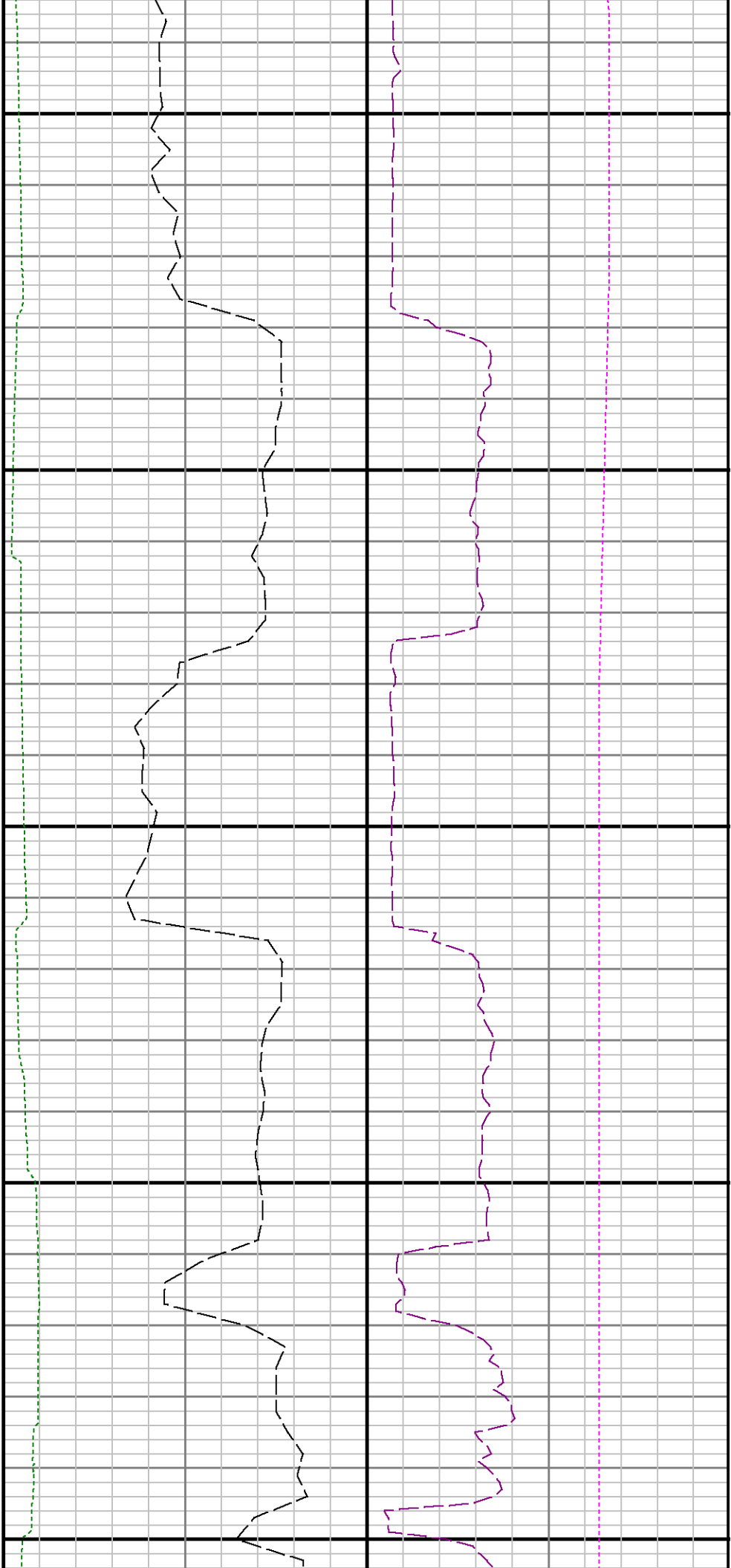


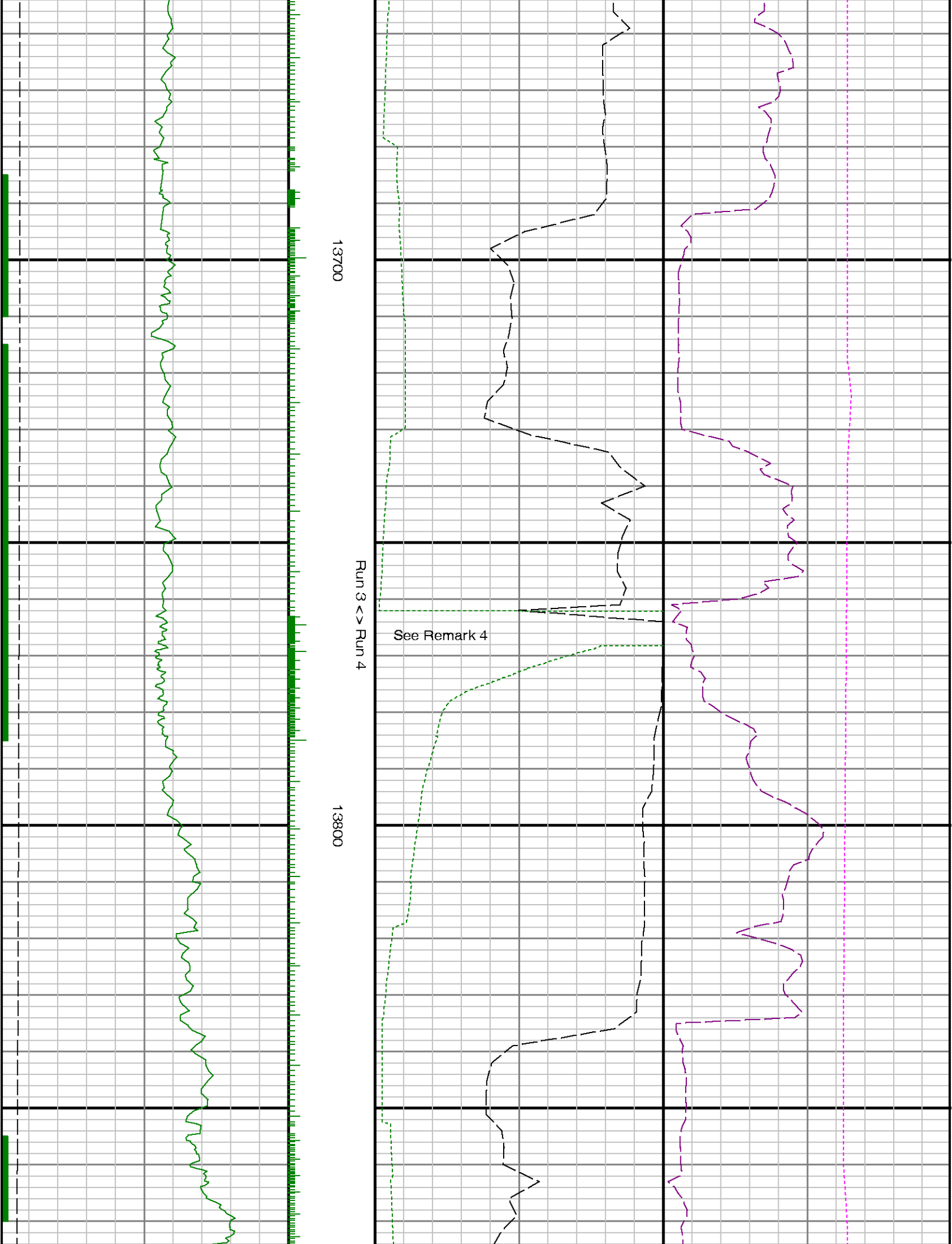


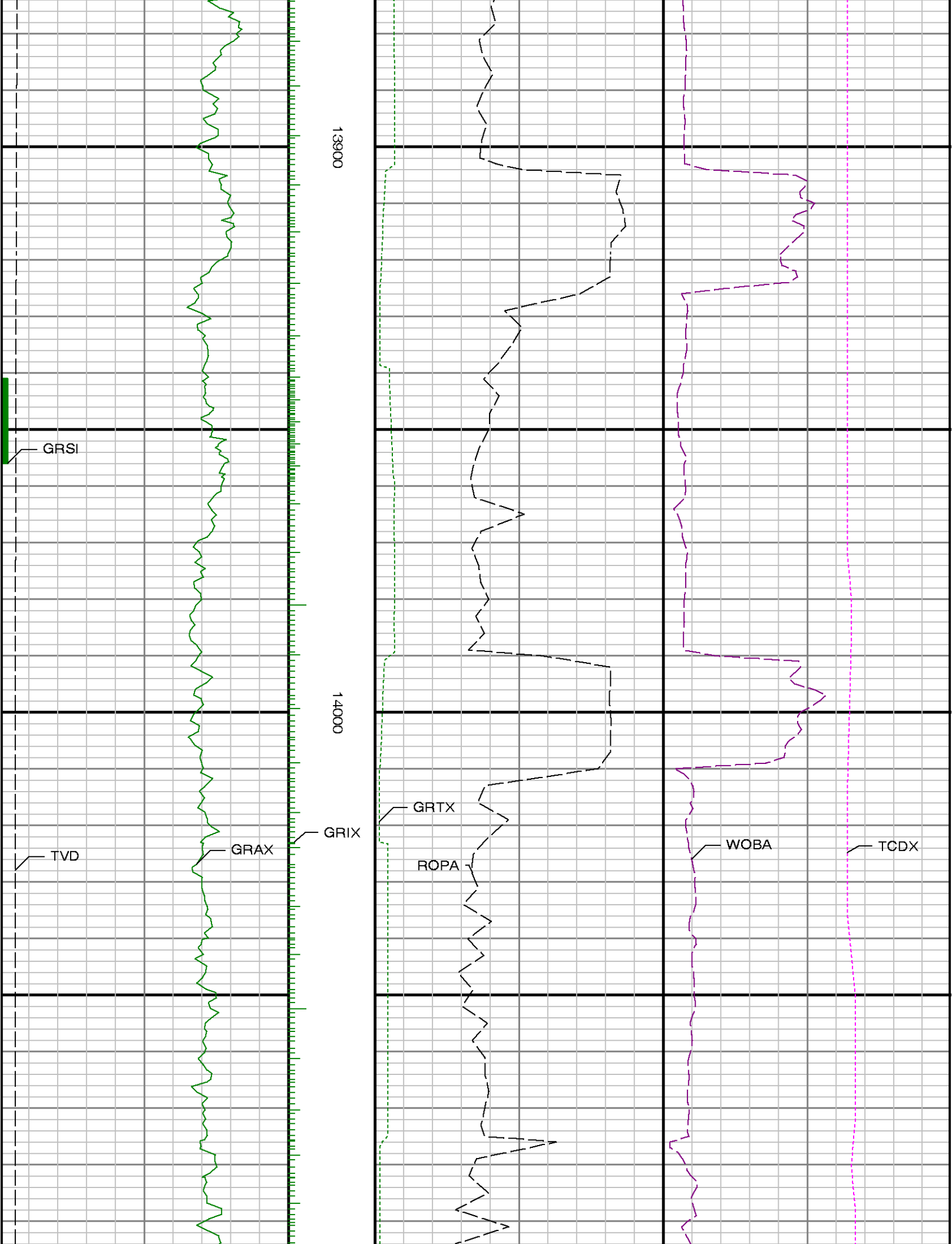
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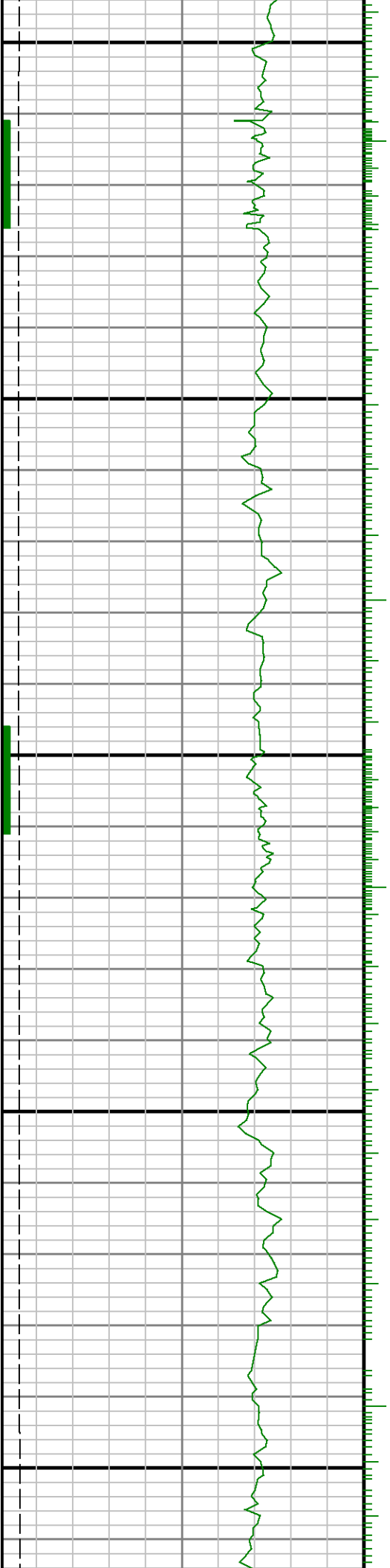


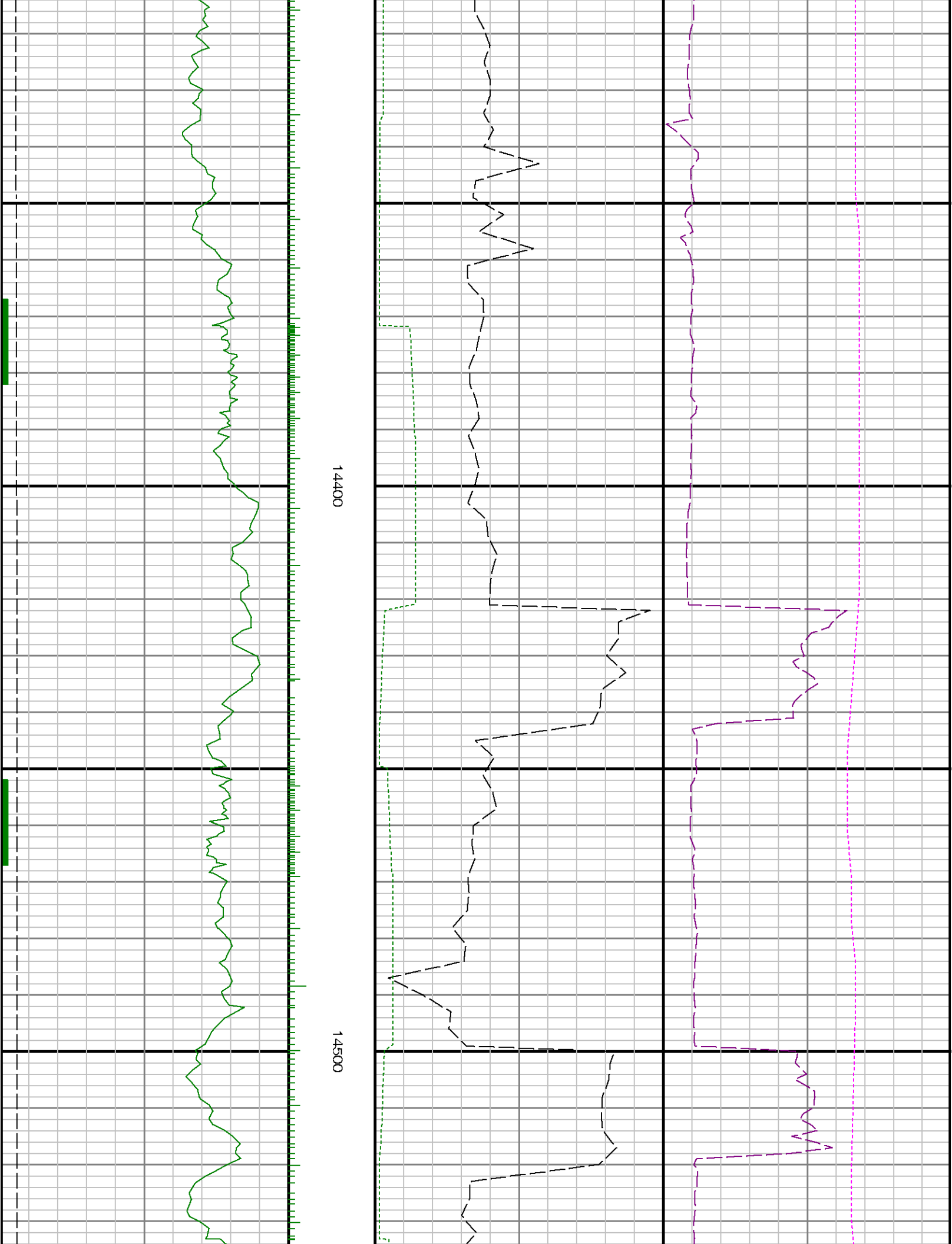


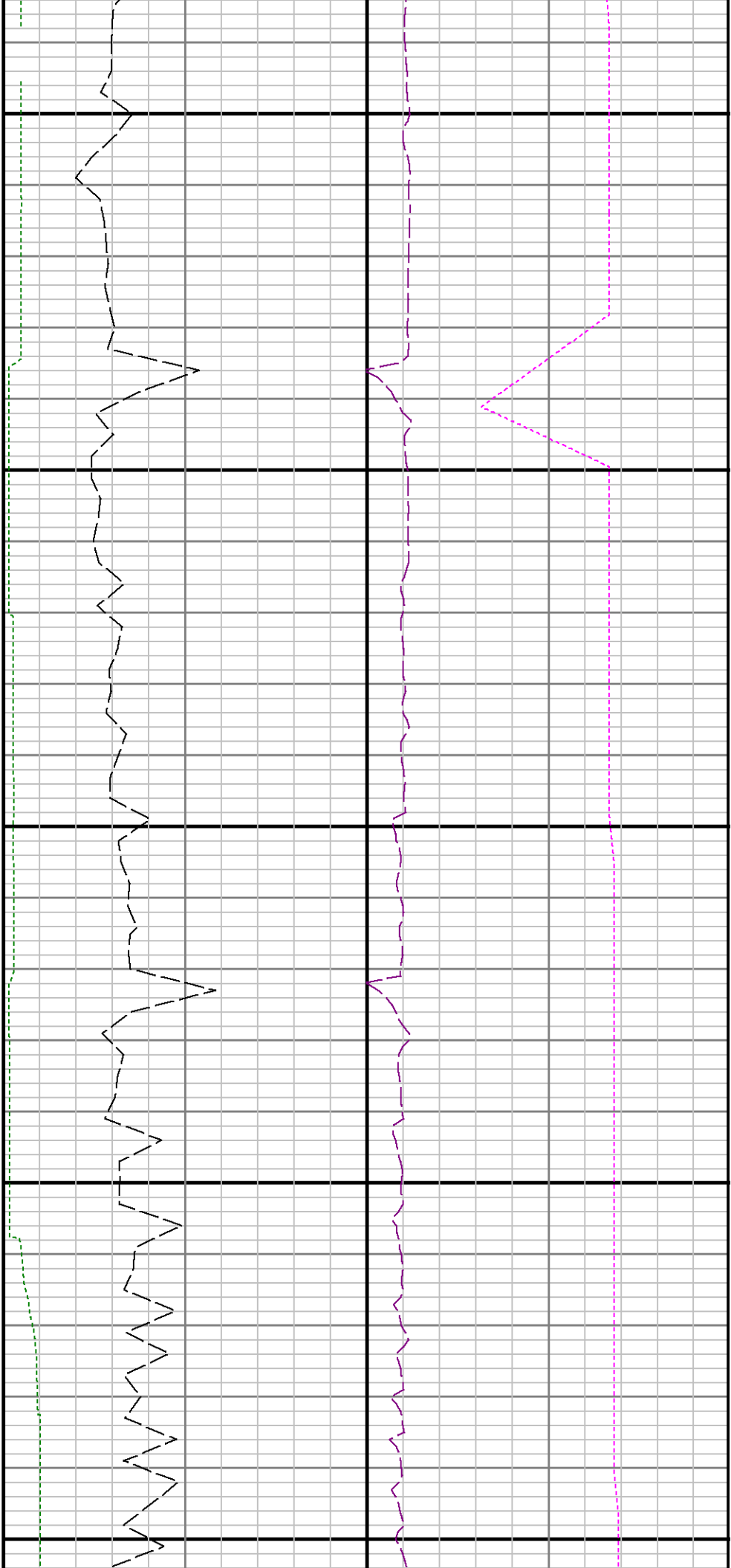
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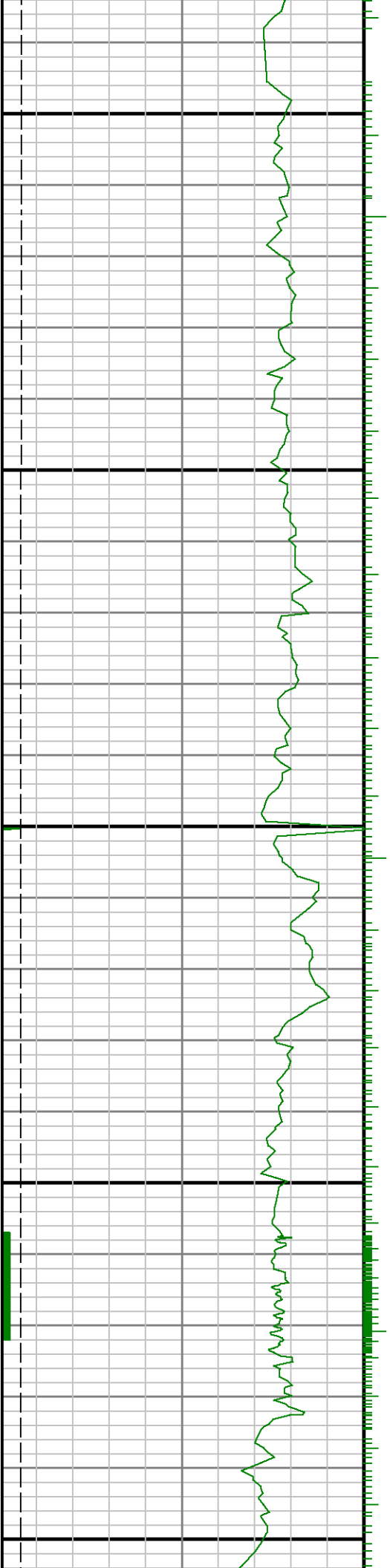


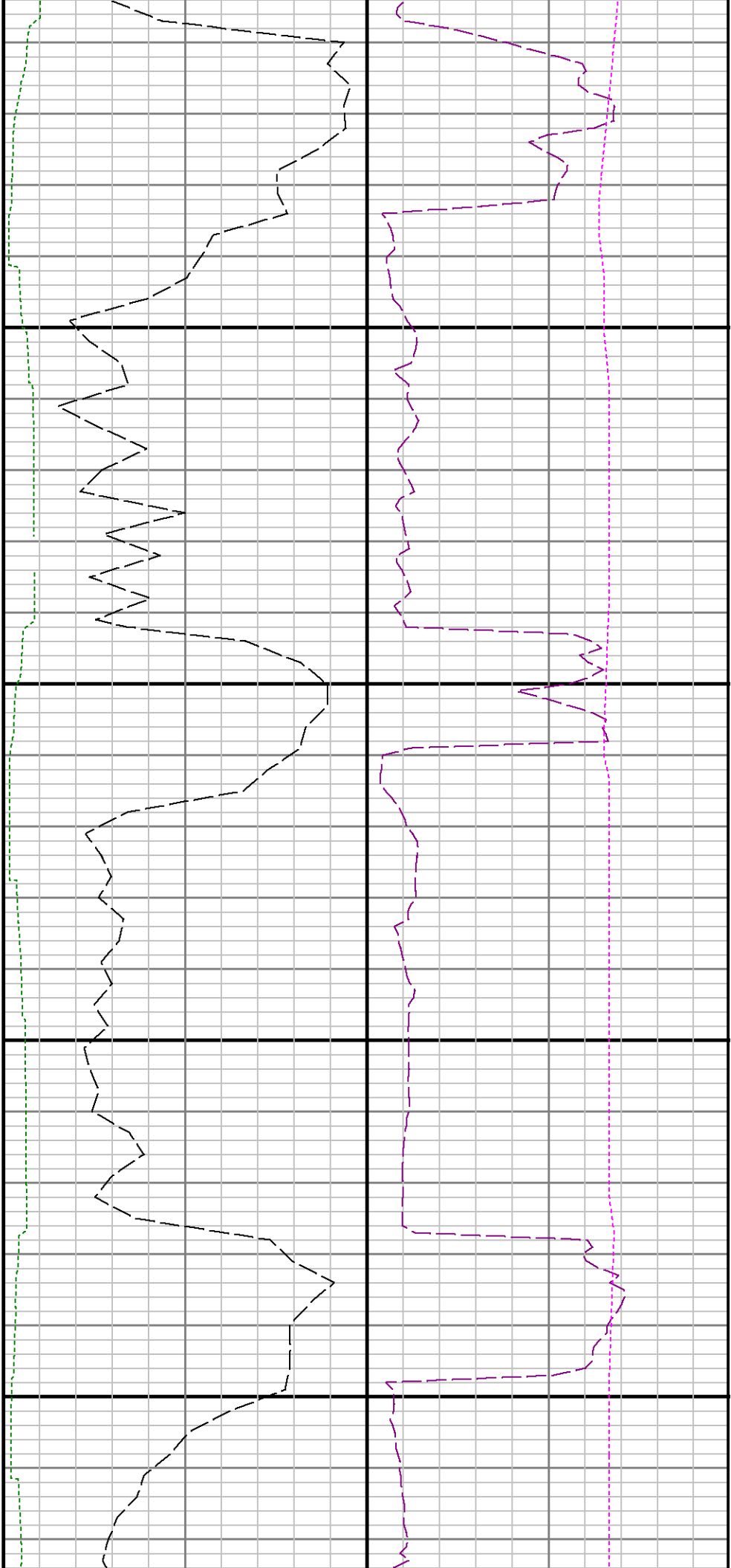




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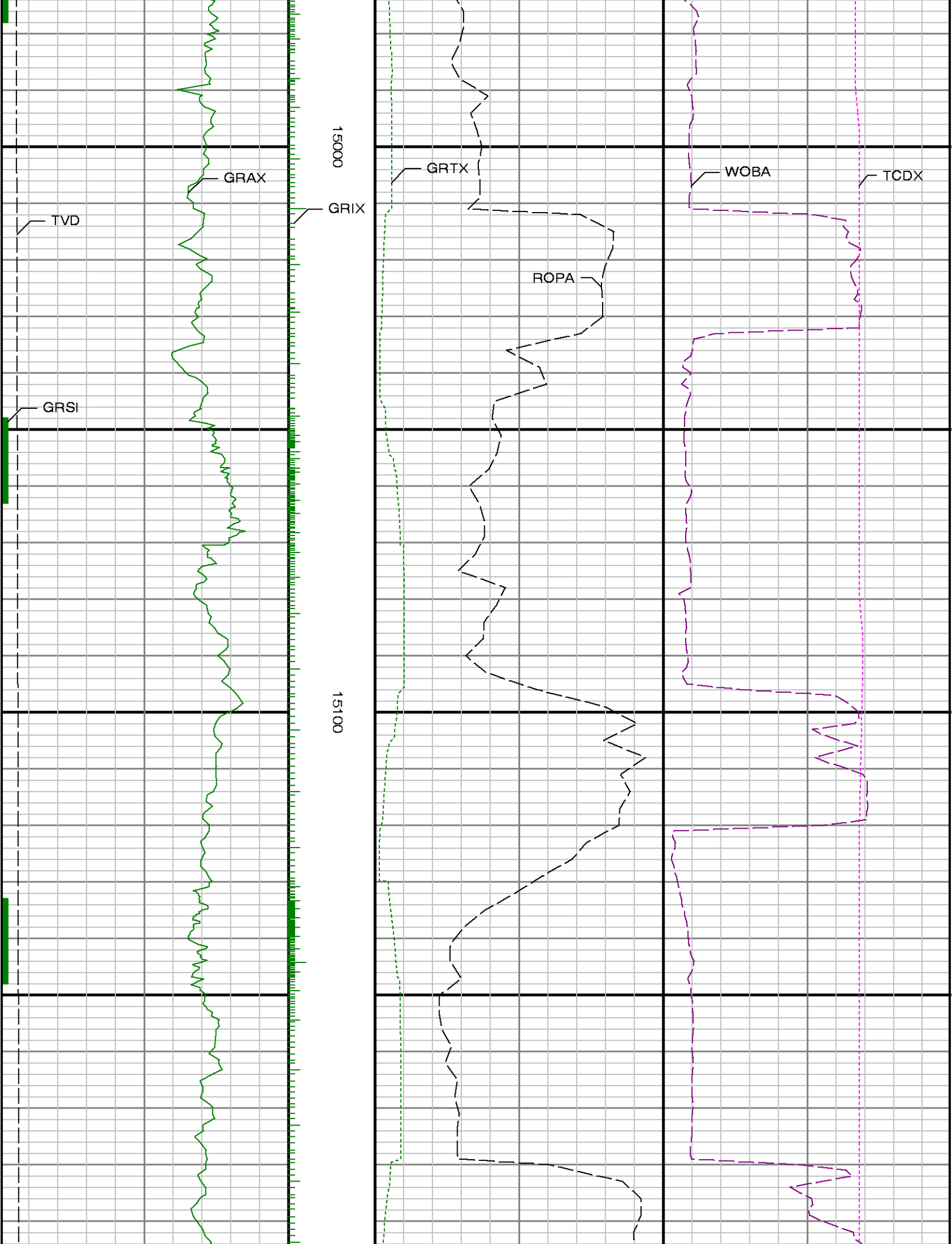
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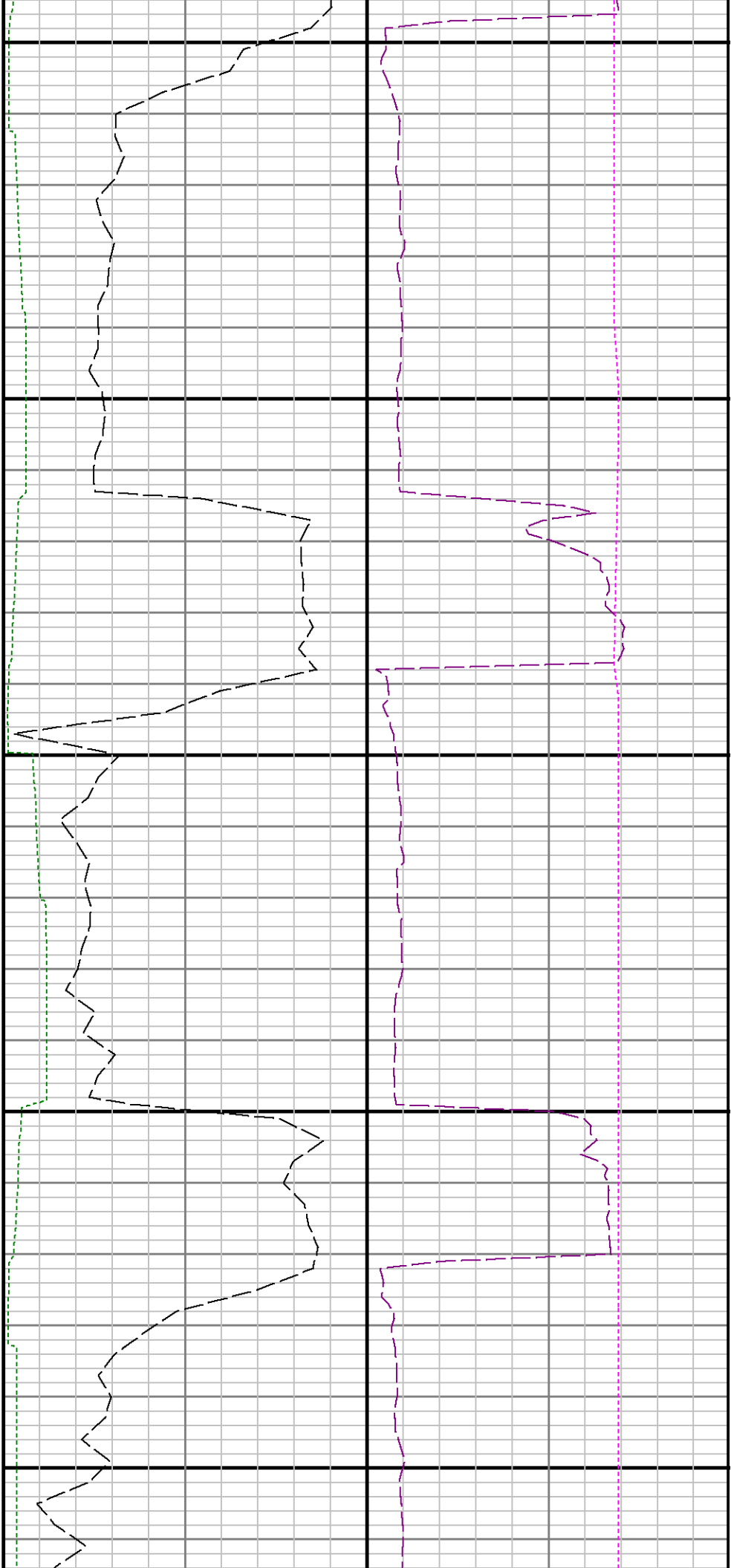




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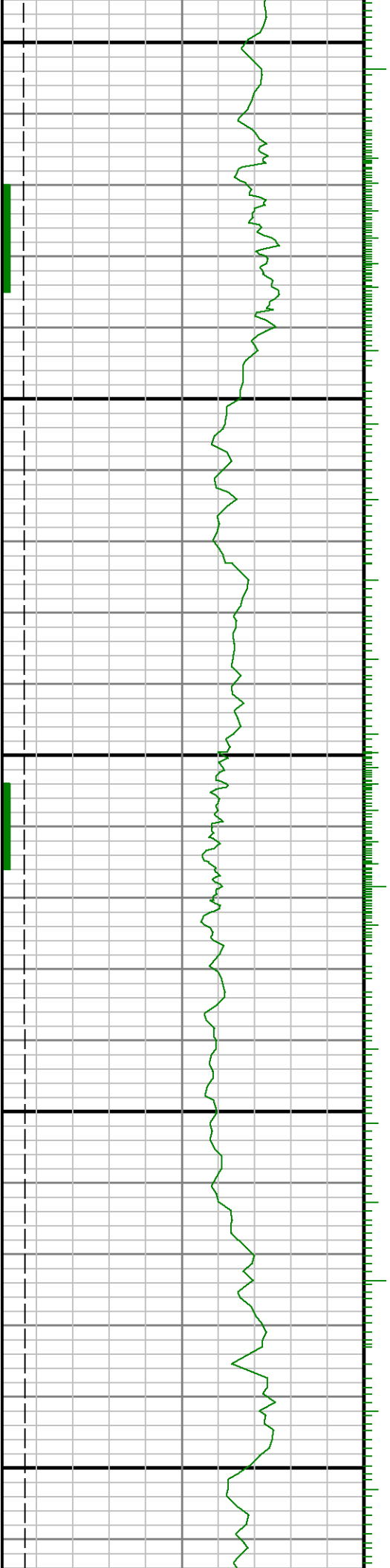


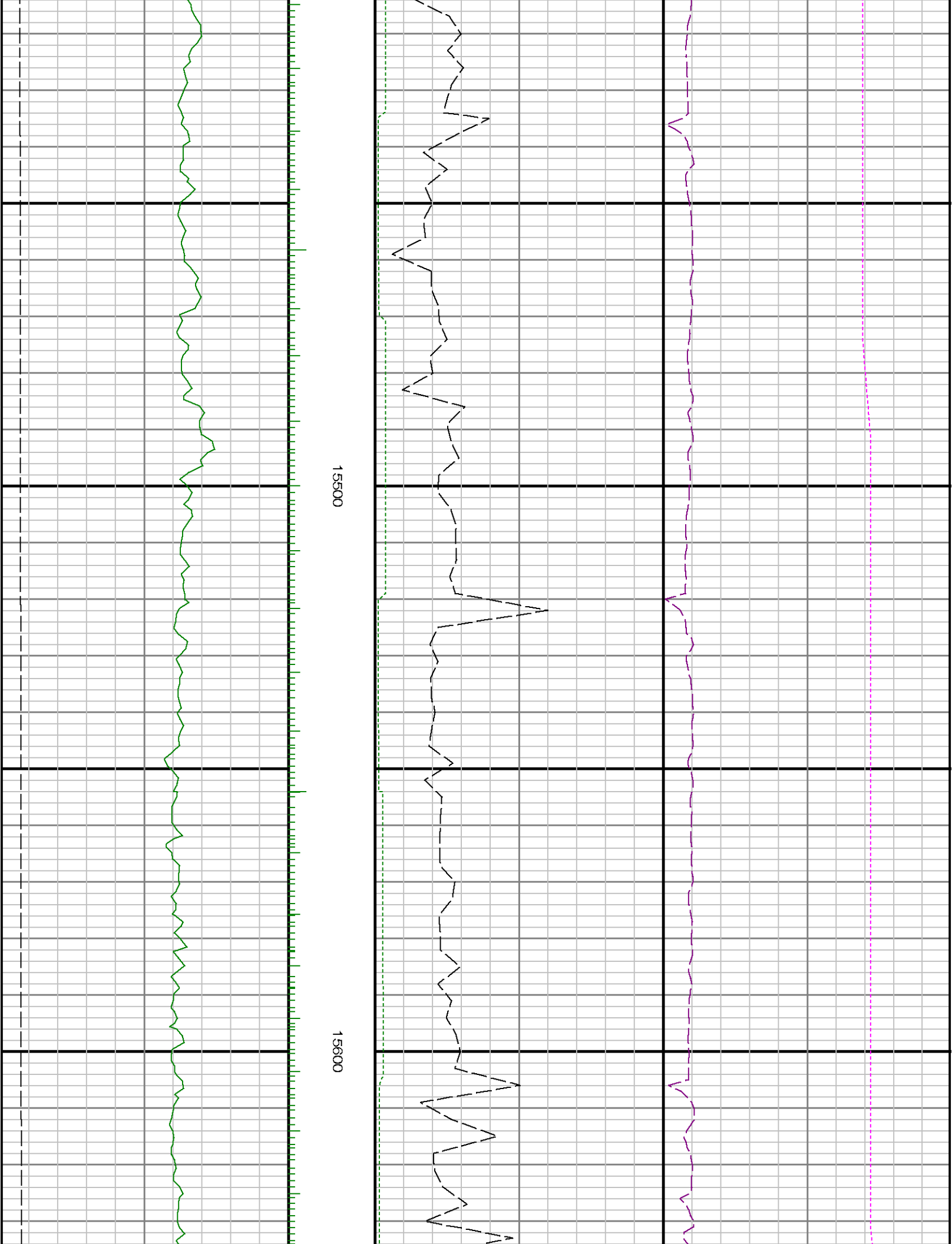


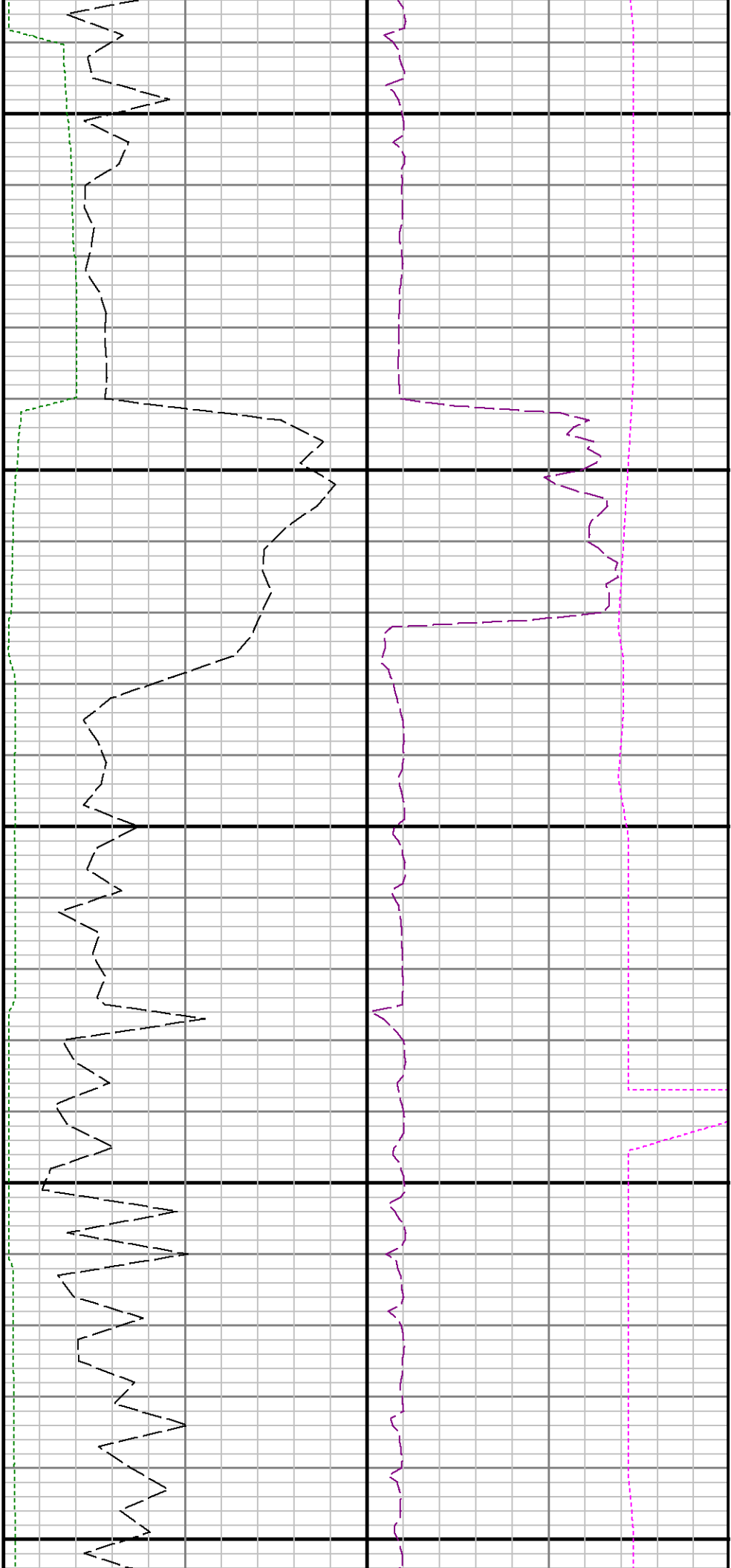
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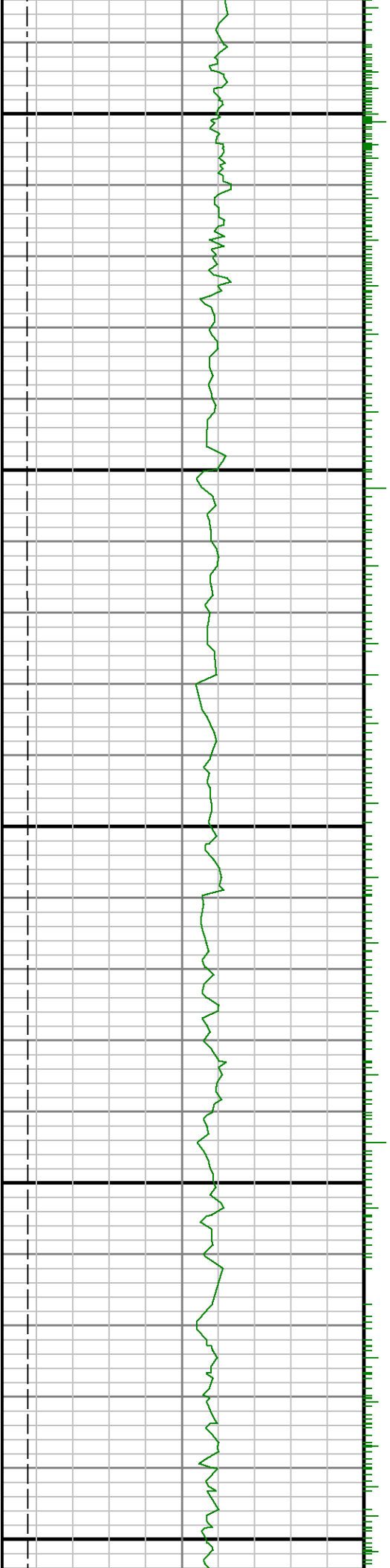


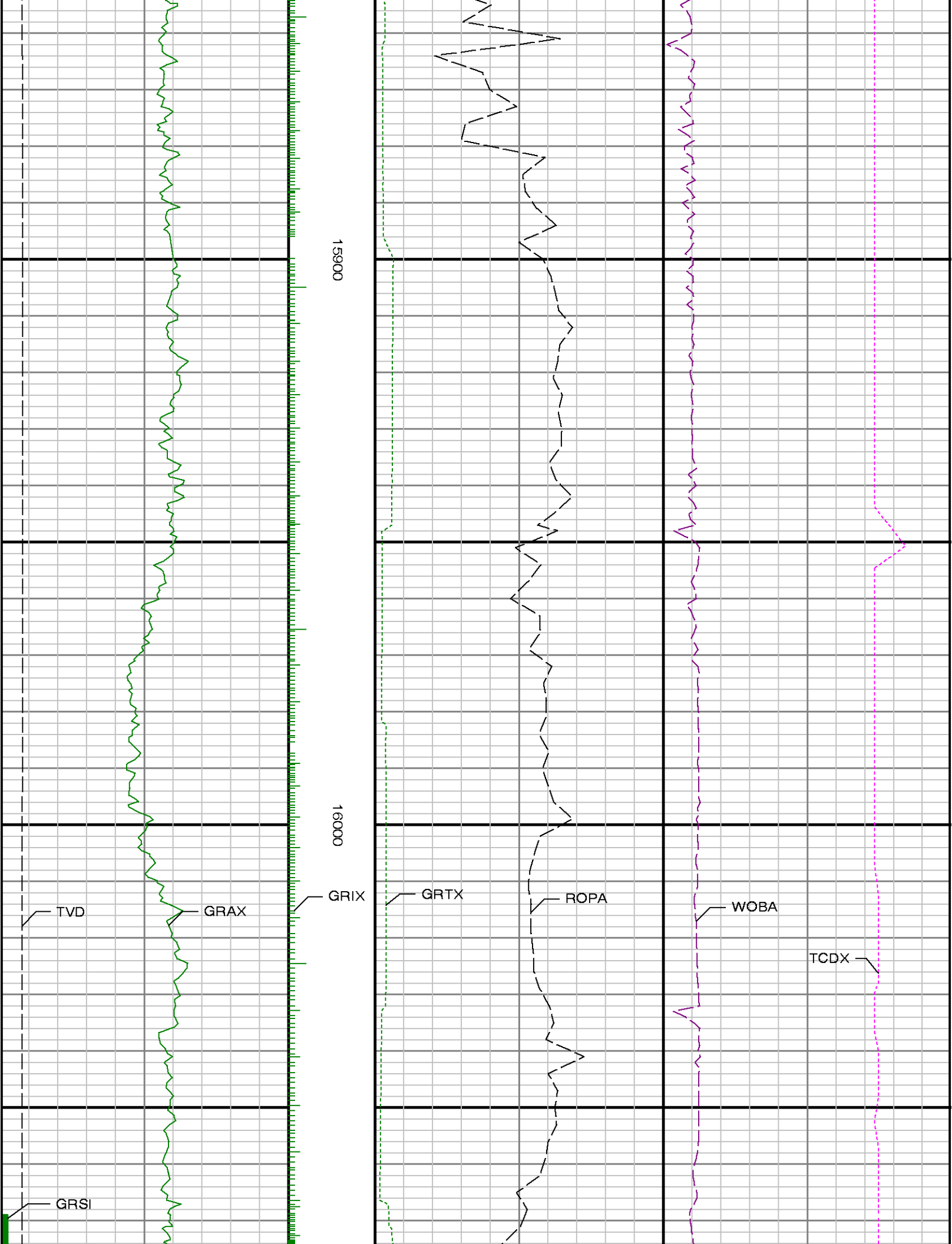


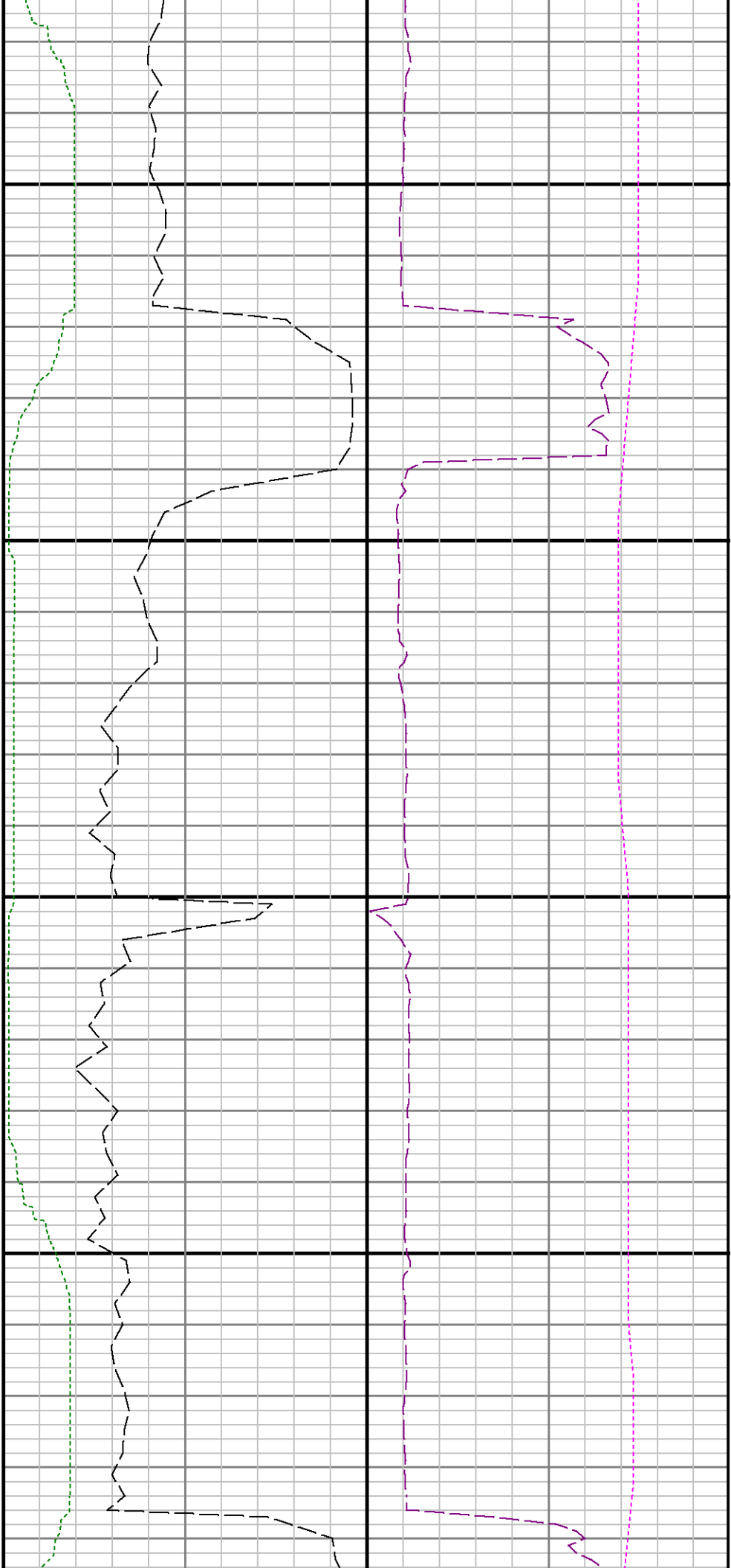


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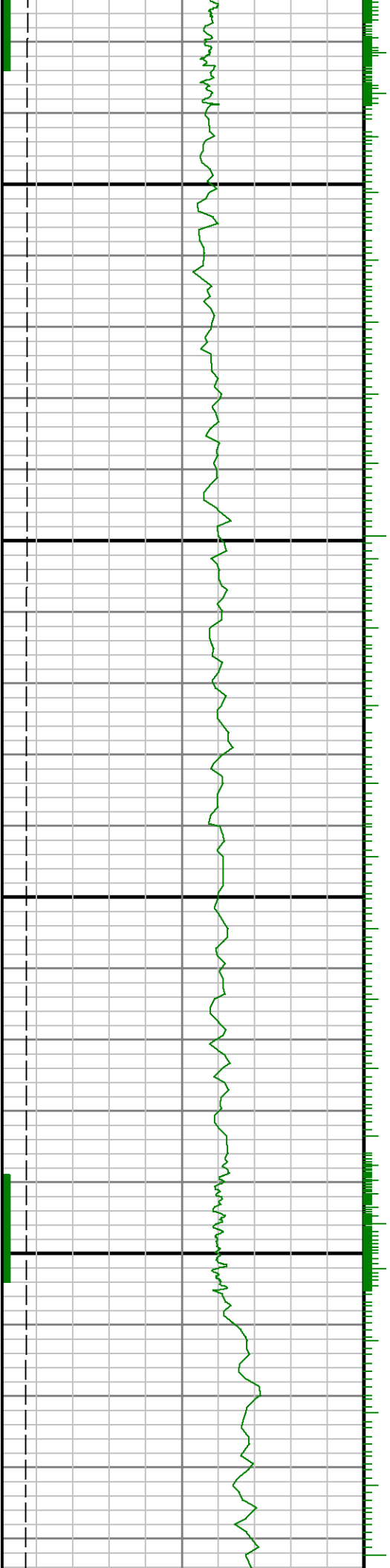


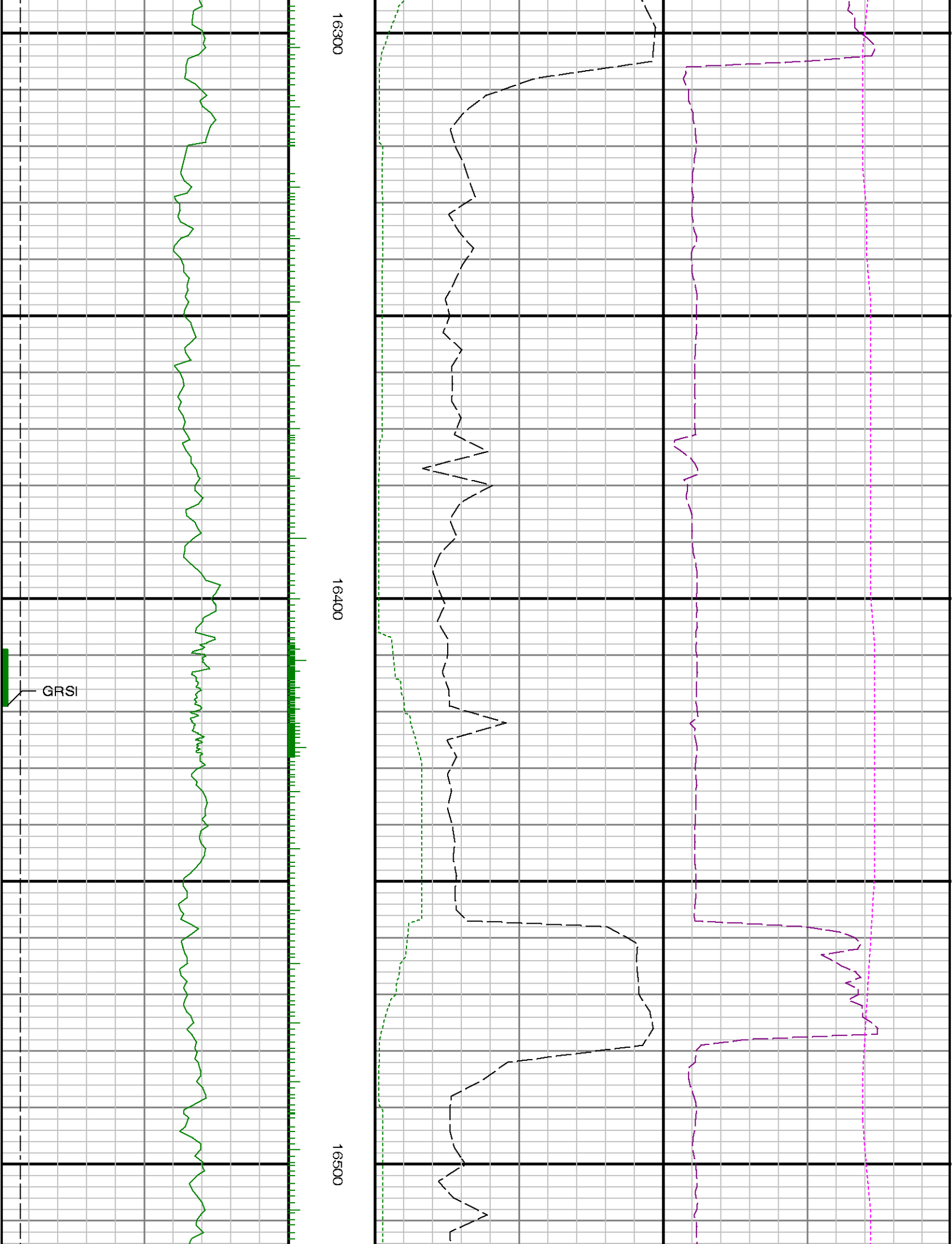


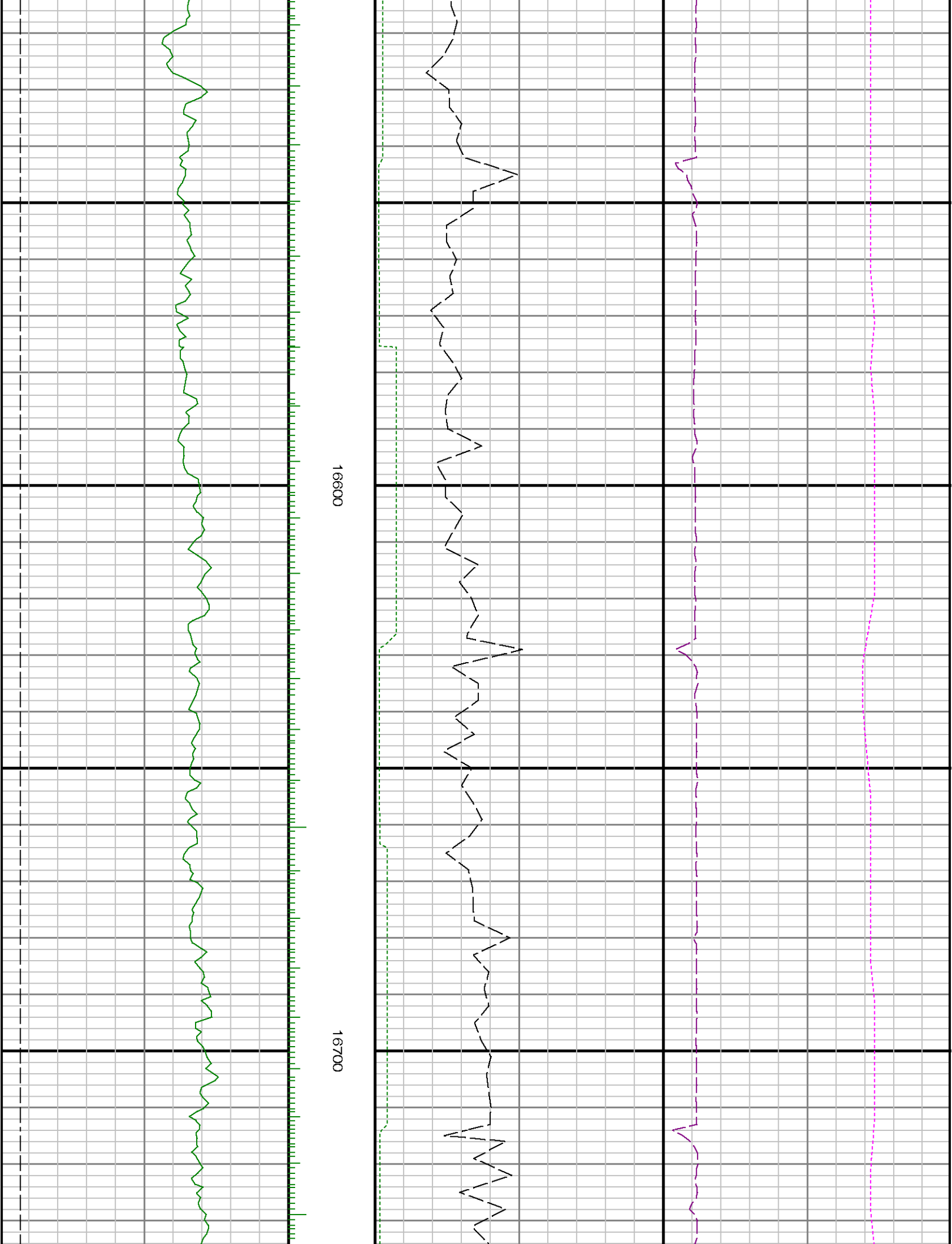


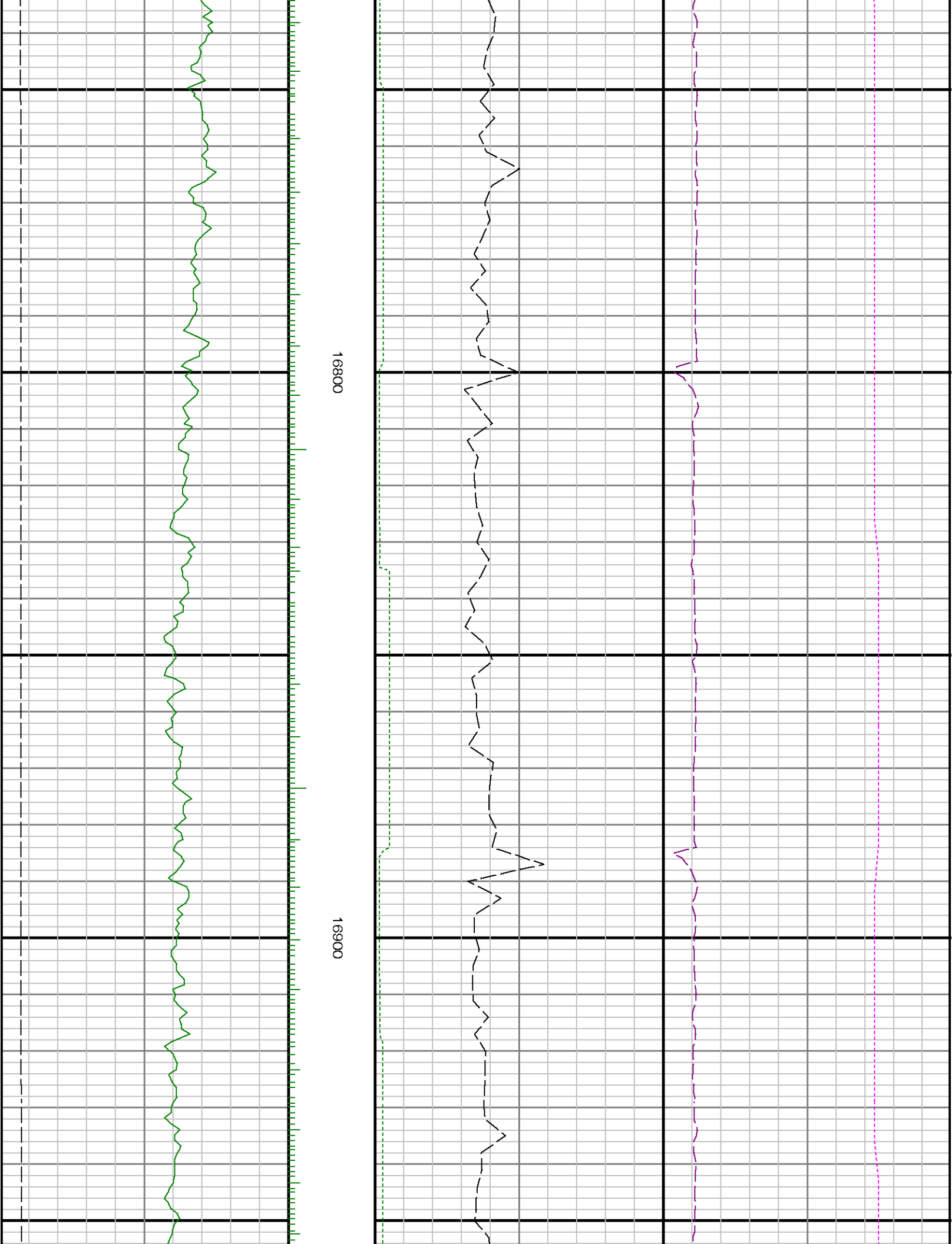
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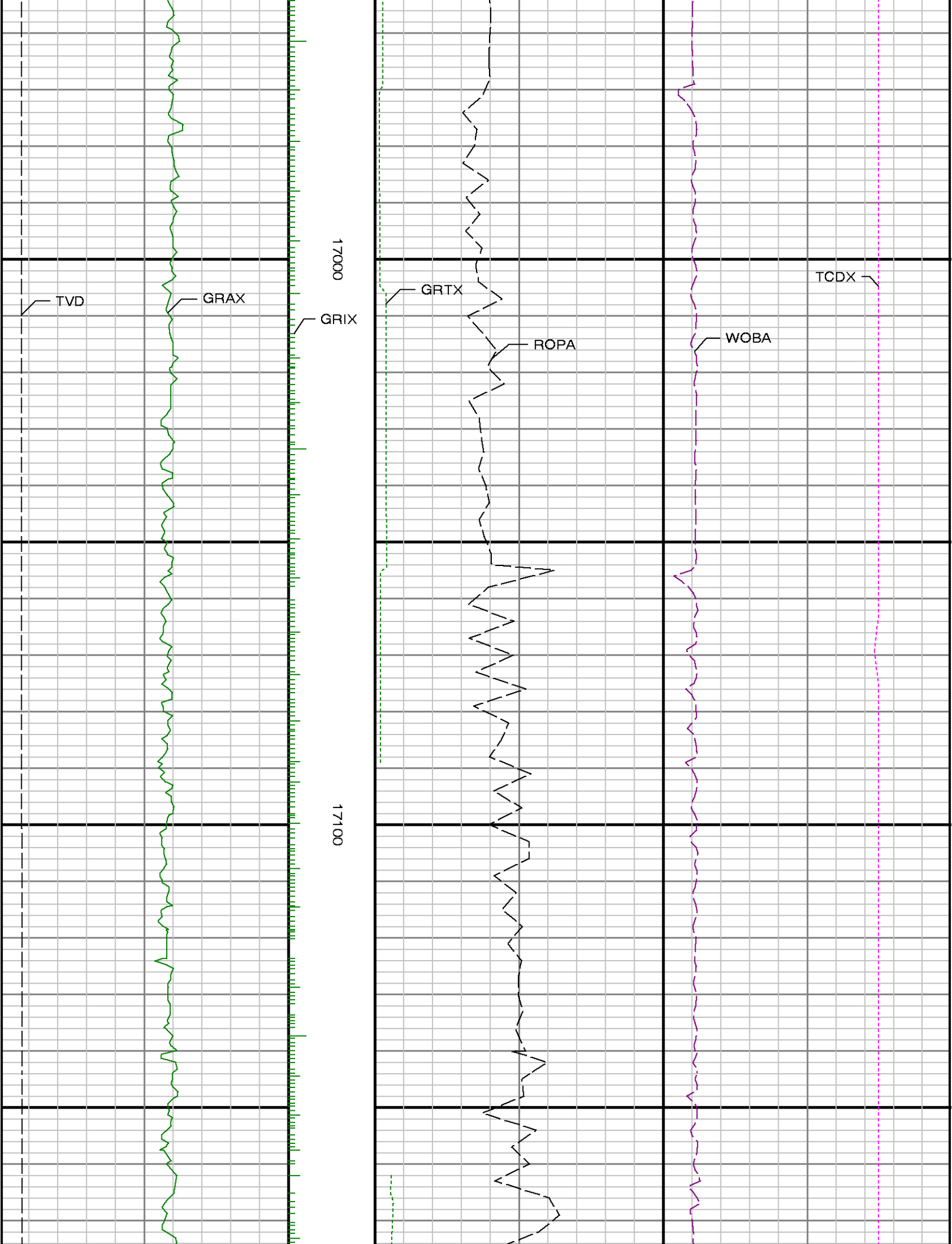
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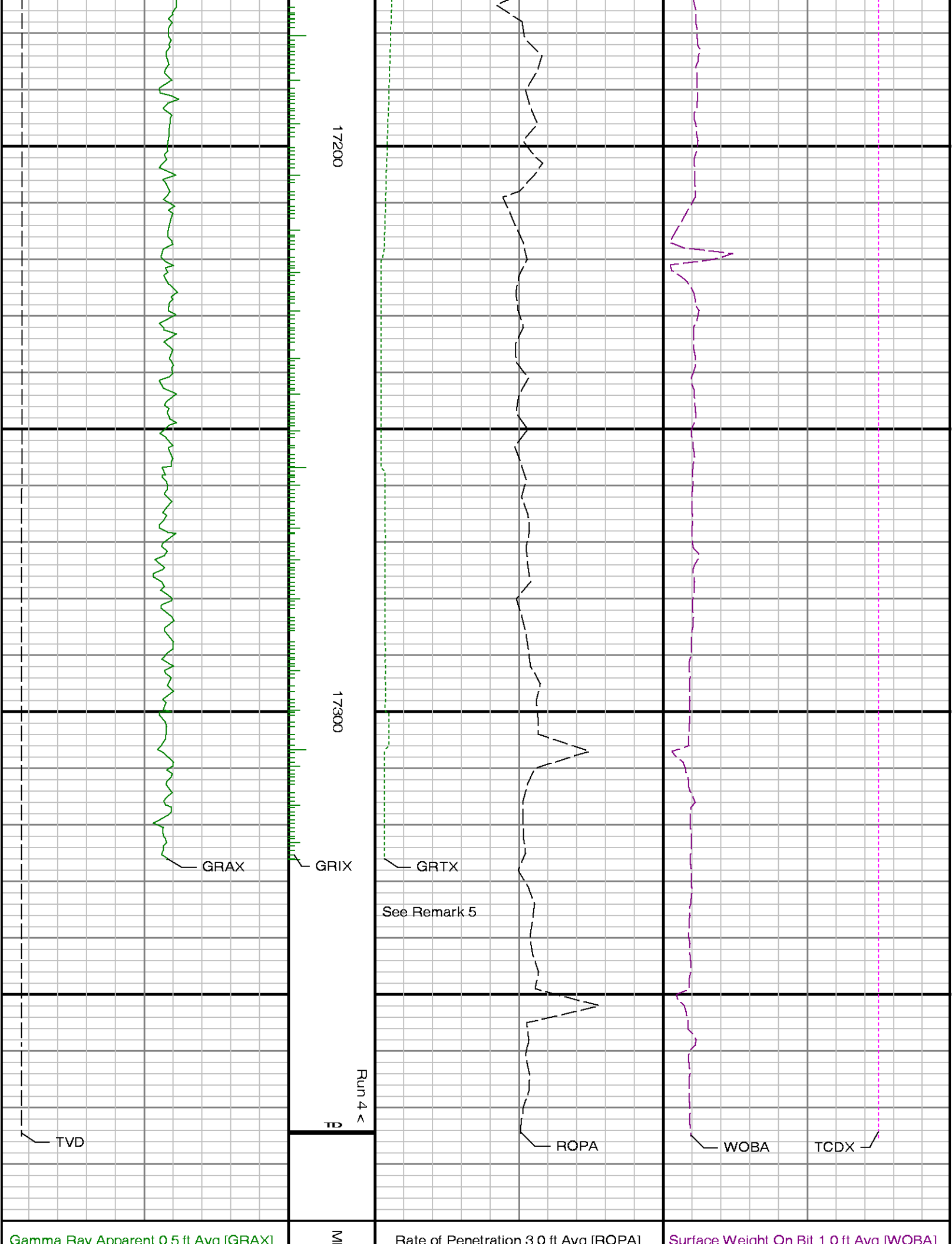












17200

17300

GRAX

GRIX

GRTX

See Remark 5

ROPA

WOBA

TCDX

TVD

Run 4 < 10

Gamma Ray Apparent 0.5 ft Avg [GRAX]

M

Rate of Penetration 3.0 ft Avg [ROPA]

Surface Weight On Bit 1.0 ft Avg [WOBA]

Gamma Ray / Apparent GRTX [GRTX]	D feet 1:240	Rate of Penetration GRTX [GRTX]	Gamma Weight on Drilling [GRTX]
0 150		500 0	0 150
API		ft/hr	klbf
True Vertical Depth [TVD]		Gamma Time Since Drilled GRTX	Downhole Temperature [TCDX]
7800 6800		0 600	100 300
ft		min	degF