

Gamma Ray

Scale: **Company: SRC Energy**

**1:240 MD** Well: **Troutd 1N-23B-M**

Depth Reference: Field: **DJ Basin**

Driller's Depth County: **Weld County** Country: **United States**

State: **Colorado**

Status: Surface Location: **040° 27' 52.531" N** Other Services:

**Final Print** Latitude: **104° 46' 02.914" W** Directional

API No: **05-123-46235** Longitude: **104° 46' 02.914" W**

Job ID: **9189266** SEC: **27** TVN: **6N** RGE: **66W**

Permanent Datum (P.D.): **Ground Level** Elevation: **4719.00 ft** Elev. KB: **N/A**

Log Measured From: **Rig Floor** Above P.D. **25.00 ft** Elev. DF: **4744.00 ft**

Dates Interval Drilled Magnetic Field Reference

Date From: **2018-08-07** Top: (ft) **1827.00** Azi Reference North: **True** Dip Angle: (deg) **66.78**

Date To: **2018-08-12** Bottom: (ft) **15505.00** Total Magnetic Field Strength: (mT) **52397**

Spud Date: **2018-05-28** Mag to Reference North Correction: (deg) **7.56**

Borehole Record

Casing Record

Hole Size (in) From (ft) To (ft) Size (in) Weight (lb/ft) From (ft) To (ft)

13.500 25.00 1837.00 9.625 36.00 25.00 1827.00

8.500 1837.00 15505.00

Mud Record

Deviation Record

Type From (ft) To (ft) Hole Size (in) Interval (ft) Inc | Az (Start) Inc | Az (End)

Diesel-Oil Based Mud 1827.00 15505.57 13.500 1816.00 0.00 | 153.76 3.71 | 275.84

8.500 13678.00 3.71 | 275.84 91.08 | 87.84

Acquisition System Software Version Other

Baker Hughes Cadence RT 4.2 PD 562

Plot Studio 4.2.8155.1 Rig: Contractor: Precision Drilling Unit: D&E

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Log Run Summary

Run No	Bit Run No.	Bit Size (in)	Bit Type	Bit Gauge Length (in)	Assembly Type	Logged Interval		Bit Depth Interval		Date / Time		Circ. Hours (h)
						Top (ft)	Bottom (ft)	From (ft)	To (ft)	Start Logging	End Logging	
2	2	8.500	PDC	3.00	Steerable	1827.00	6006.00	1827.00	6064.00	2018-08-07 17:34	2018-08-08 11:55	15.85
3	3	8.500	PDC	3.00	Steerable	6006.00	7630.00	6064.00	7688.00	2018-08-08 21:19	2018-08-09 07:08	9.58
4	4	8.500	PDC	3.00	AutoTrak Curve	7630.00	15493.00	7688.00	15505.00	2018-08-09 23:15	2018-08-11 16:56	43.31

Crew

Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite	Name	Arrive Wellsite	Depart Wellsite
Garrett Gerdson	2018-08-07	2018-08-11						

Mud Properties Record

Date / Time	Run No.	Measured Depth (ft)	Mud Type	Density (ppg)	Viscosity (cP)	pH	Fluid Loss (cm3)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
2018-08-07 14:00	2	1816.00	Diesel-Oil Based Mud	9.5	21	N/A	8.0	75/25	Active Pit	37000	0.00
2018-08-08 02:30	2	4201.00	Diesel-Oil Based Mud	9.6	18	N/A	7.0	77/23	Active Pit	31000	0.00
2018-08-09 15:00	3	7685.00	Diesel-Oil Based Mud	9.6	55	N/A	5.0	75/25	Active Pit	30000	0.00
2018-08-10 10:55	4	10555.00	Diesel-Oil Based Mud	9.7	21	N/A	6.0	75/25	Active Pit	35000	0.00

2018-08-11 03:00	4	13190.00	Diesel-Oil Based Mud	9.9	23	N/A	12.0	75/25	Active Pit	37000	0.00
2018-08-11 15:00	4	15505.00	Diesel-Oil Based Mud	9.8	60	N/A	10.0	75/25	Active Pit	36000	0.00

Equipment and Service Data

Run No.	Tool	Serial Number	Measurement	Sensor Offset (ft)	Bit Offset (ft)	Max O.D. (in)	Min I.D. (in)
2	NaviGamma	6058	Gamma (single)	6.05	57.70	6.750	3.313
2	NaviGamma	6058	VSS	9.51	61.16	6.750	3.313
2	NaviGamma	6058	Directional (mag)	9.51	61.16	6.750	3.313
3	NaviGamma	6058	Gamma (single)	6.05	57.70	6.750	3.313
3	NaviGamma	6058	VSS	9.51	61.16	6.750	3.313
3	NaviGamma	6058	Directional (mag)	9.51	61.16	6.750	3.313
4	ATC_SU	12099245	Near Bit VSS	5.93	6.73	7.000	4.330
4	ATC_SU	12099245	Near Bit Inclination	5.93	6.73	7.000	4.330
4	ATC_MWD	14270075	Gamma (single)	2.74	12.90	7.000	3.250
4	ATC_MWD	14270075	Directional (mag)	12.27	22.43	7.000	3.250

Service and Tool Mnemonics

Mnemonic	Name	Description
GAM	NaviGamma	Probe Based Gamma Module, NaviTrak Platform
ATC_SU	ATC_SU	Auto Trak Curve Steering Unit
ATC_MWD	ATC_MWD	Auto Trak Curve MWD
ATC_LCPM	ATC_LCPM	Auto Trak Curve LCPM

Comments

1	Depth measurements obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified.
2	Baker Hughes LWD Run 1 utilized 8 inch NaviTrak service (Directional only) behind a 13 1/2 inch bit and steerable assembly from surface to 1837 feet MD (surface to 1831 feet TVD). No logging data was acquired during this run.
3	Baker Hughes LWD Run 2 and 3 utilized 6 ¾ inch NaviGamma services (Gamma Ray and Directional) behind an 8 ½ inch bit and steerable assembly from 1837 to 7688 feet MD (1831 to 6920 feet TVD).
4	Baker Hughes LWD Run 4 utilized 6 ¾ inch NaviGamma services (Gamma Ray and Directional) behind an 8 ½ inch bit and rotary steerable assembly from 7688 to 15505 feet MD (6920 to 6959 feet TVD).
5	Gamma Ray Apparent (GRAX & GRAM) is presented 0 to 300 API per customer request.

Remarks

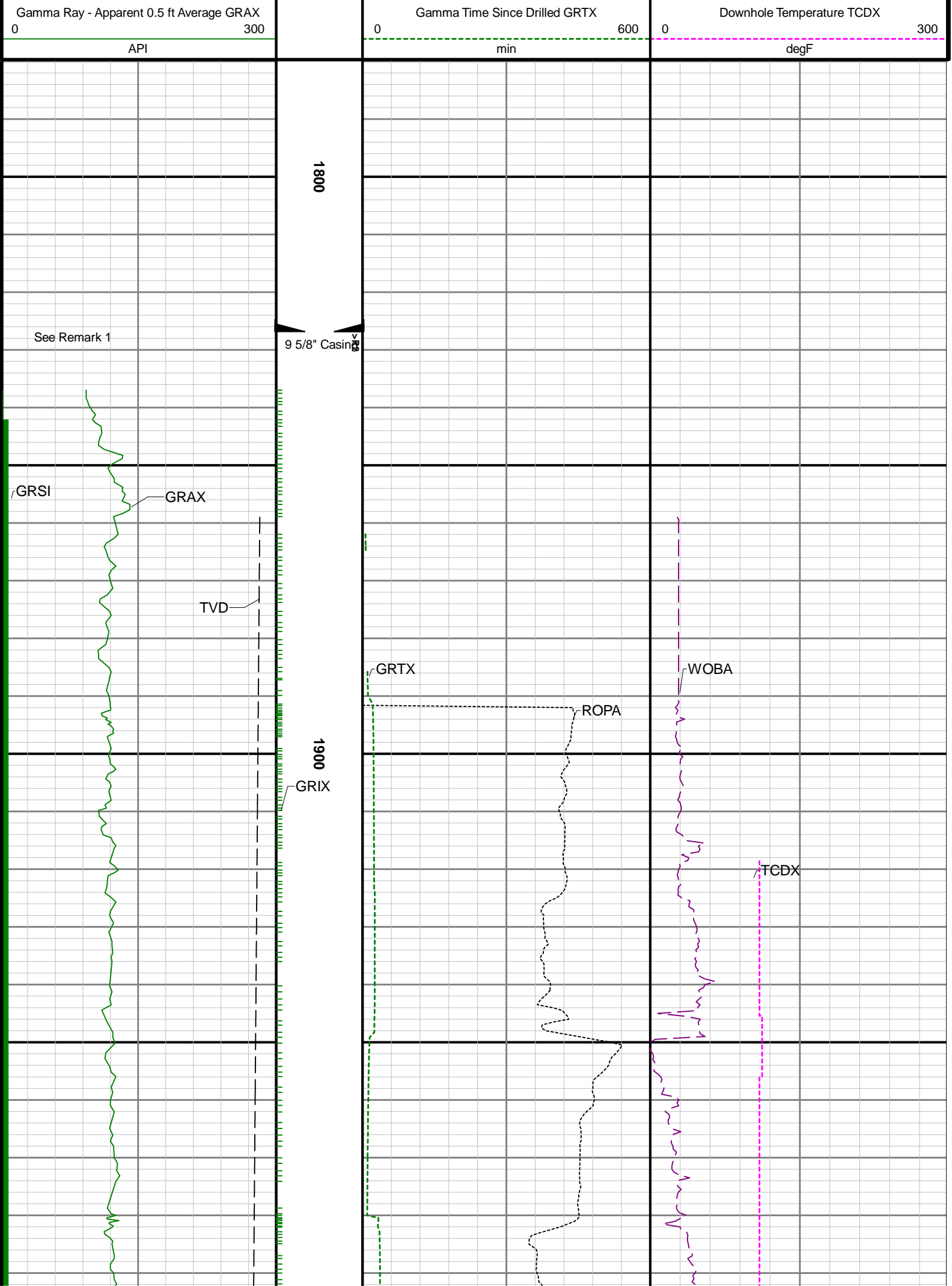
Number	Measured Depth (ft)	Hole Section (in)	Run No.	Remark
1	1827.00	8.500	2	Gamma Ray logging operations began at 1827 feet (1825 feet TVD).
2	7688.00	8.500	4	The interval from 7630 to 7688 feet MD (6885 to 6920 feet TVD) surface data was logged up to 10 hours after being drilled due to a trip out of the hole for a tool failure as well as rig repairs.
3	15495.00	8.500	4	The interval from 15492 to 15505 feet MD (6963 feet TVD) was not logged due to sensor to bit offset at well TD.

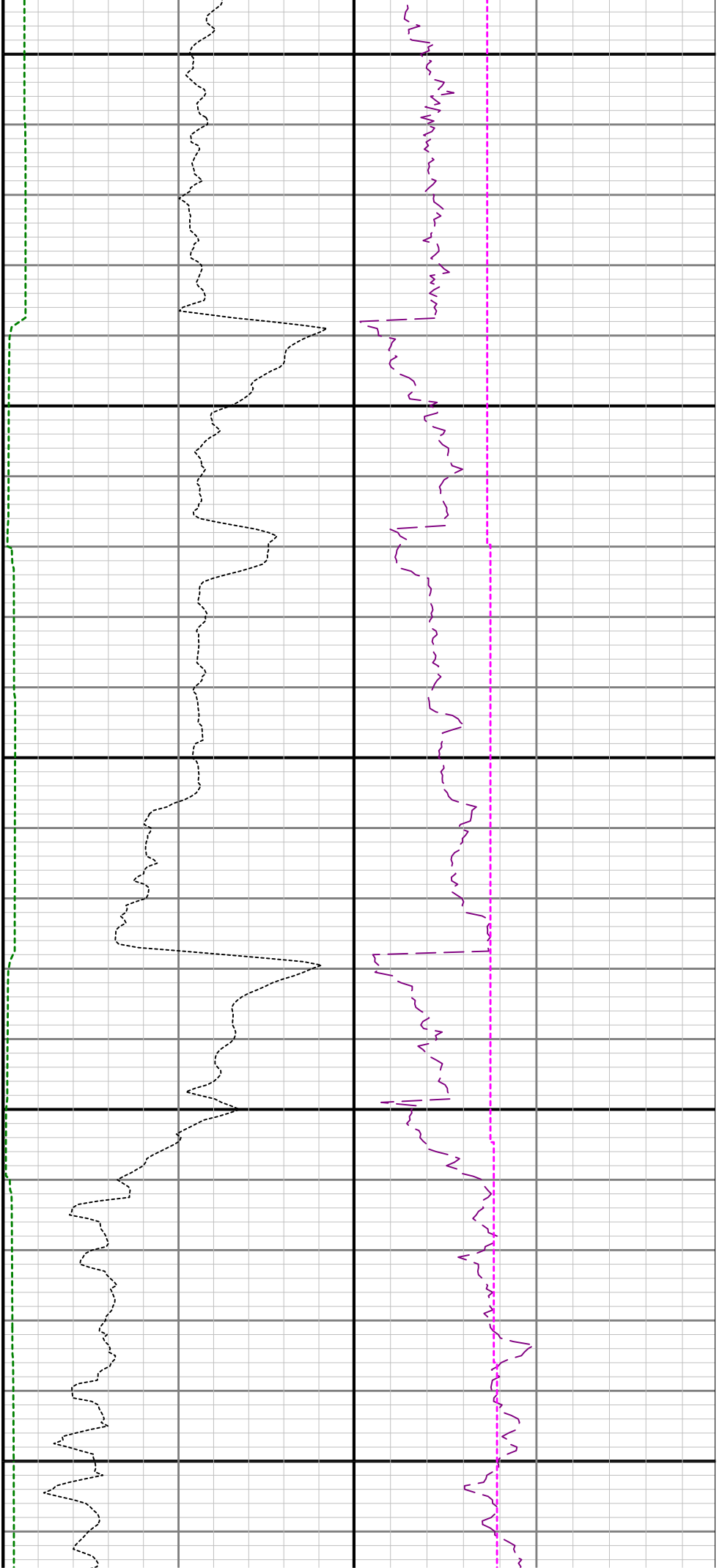
Curve Mnemonics

Presented Curves	Description	Units
TCDX	Downhole Temperature	degF
ROPA	Depth Averaged ROP 3 ft Average	ft/h
TVD	True Vertical Depth	ft
WOBA	Weight On Bit, Average 1 ft Average	klb
GRAM	Gamma Ray - Apparent - Memory 0.5 ft Average	API
GRIM	Gamma Ray - Data Point Indicator - Memory	unitless
GRTM	Gamma Ray - Time Since Drilled - Memory	min
GRAX	Gamma Ray - Apparent - Real-Time 0.5 ft Average	API
GRIX	Gamma Ray - Data Point Indicator - Real-Time	unitless
GRTX	Gamma Ray - Time Since Drilled - Real-Time	min
GRSI	Sliding Indicator Flag	unitless
TCDM	Directional Real-Time Survey Temperature	degF

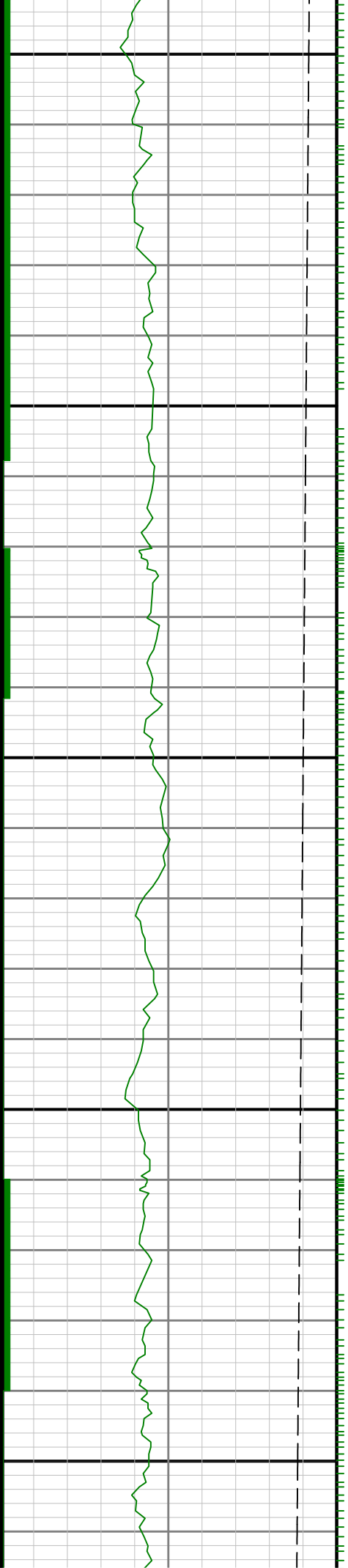
<div> <div>BAKER HUGHES</div> <div>a GE company</div> </div>	Company	SRC Energy	
	Well	Troudtt 1N-23B-M	
	Interval	Date From: 2018-08-07 14:40	Top: 1827.00 ft
	Created	Date To: 2018-08-12 12:53	Bottom: 15505.00 ft
		2018-08-13 15:36:50	

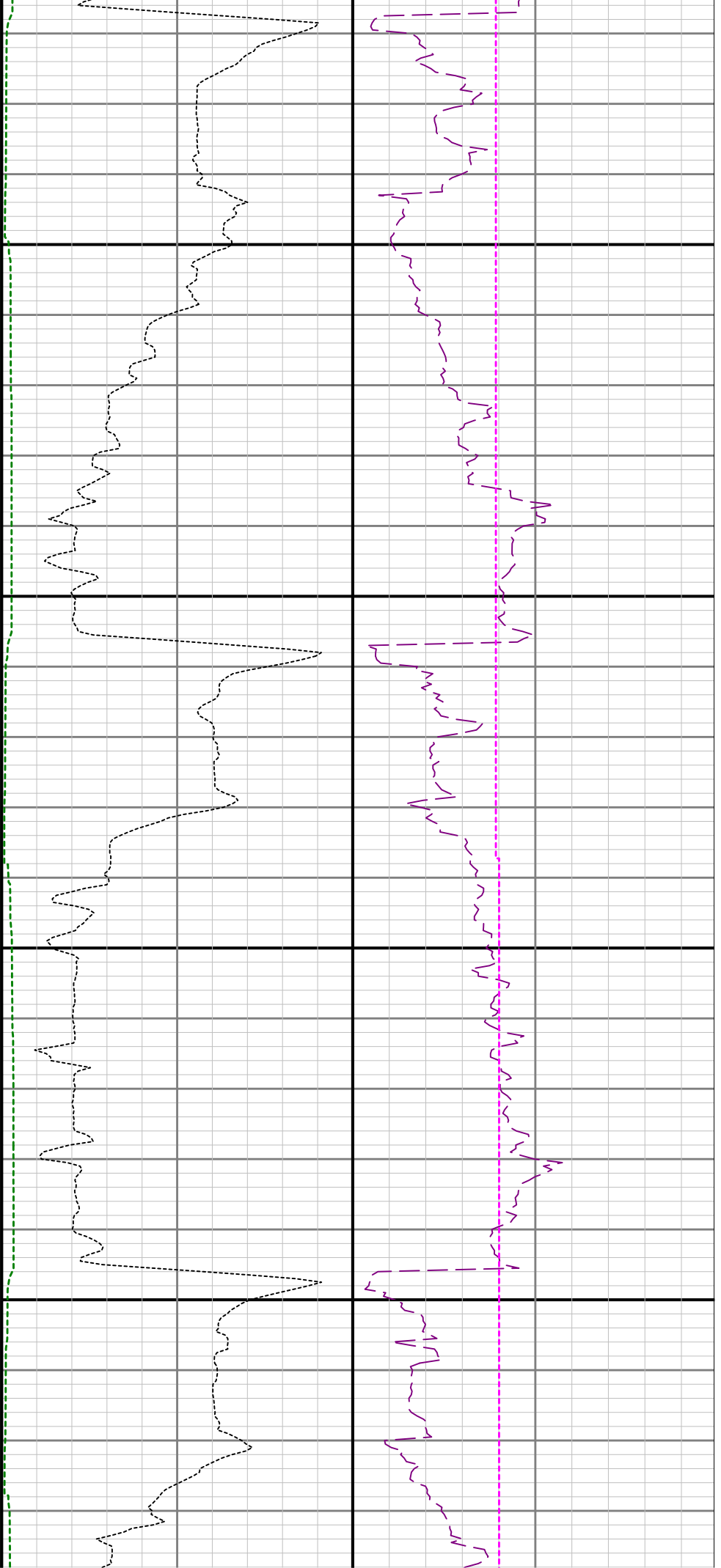
True Vertical Depth TVD	MD 1:240 feet	Depth Averaged ROP 3 ft Average ROPA	Weight On Bit, Average 1 ft Average WOBA
7500 _____ 1500		1000 _____ 0	0 _____ 50
ft		ft/h	klb
Gamma Ray - Apparent 0.5 ft Average GRAM		Gamma Time Since Drilled GRTM	Downhole Temperature TCDM
0 _____ 300		0 _____ 600	0 _____ 300
API		min	degF





2000 2100 2200





2300

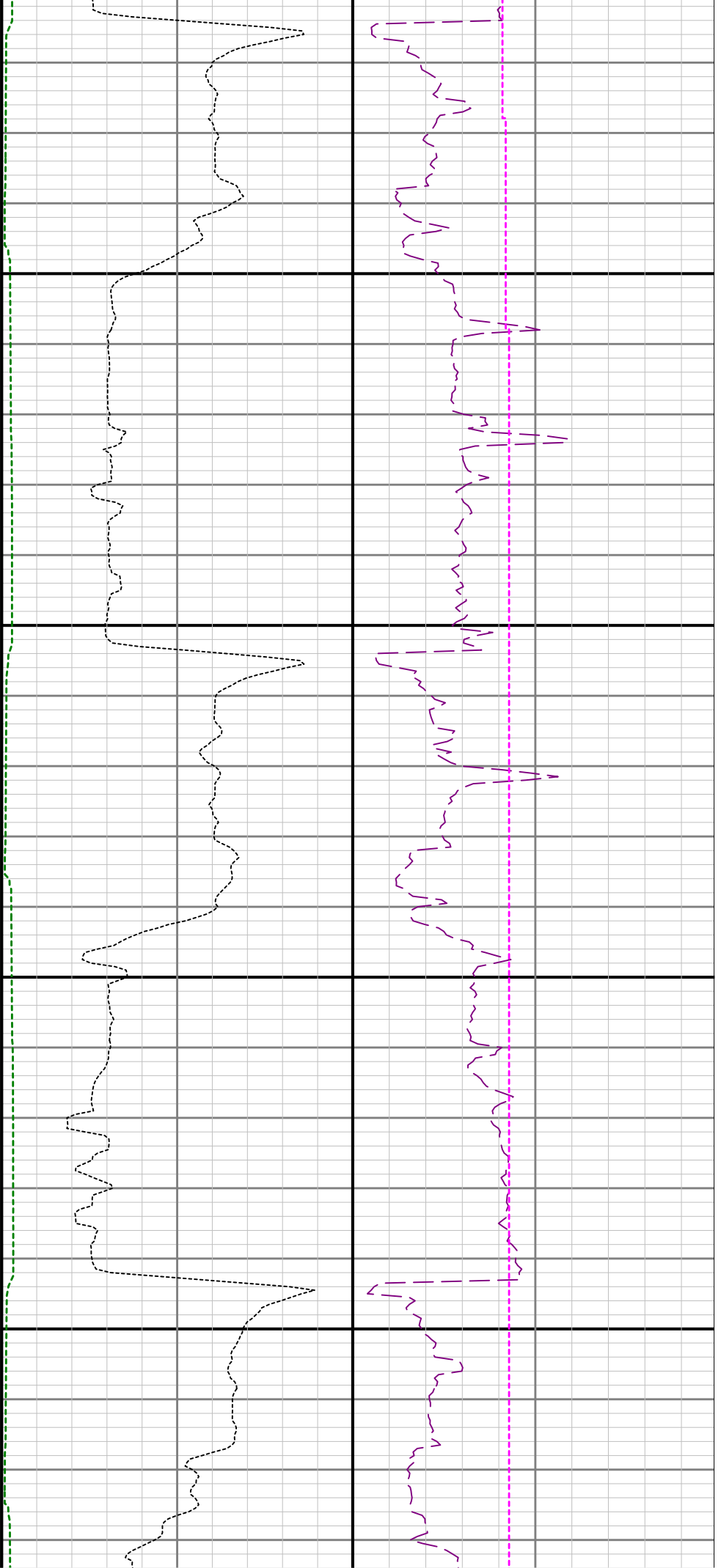
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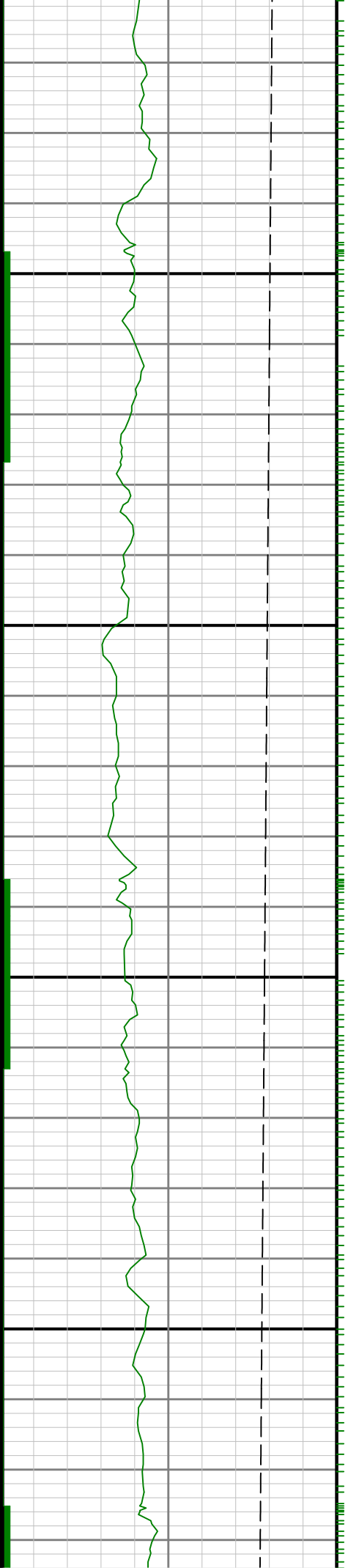
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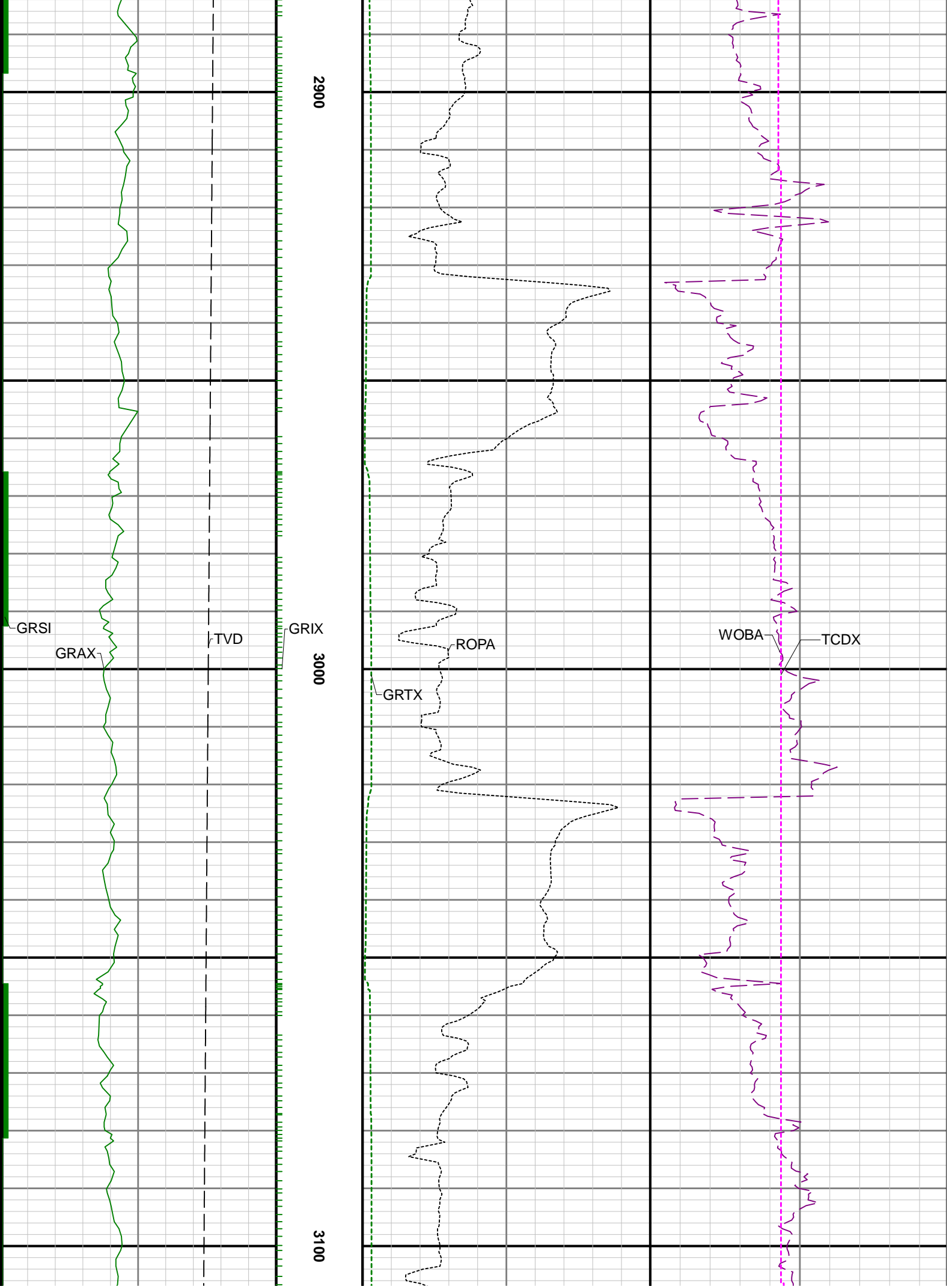




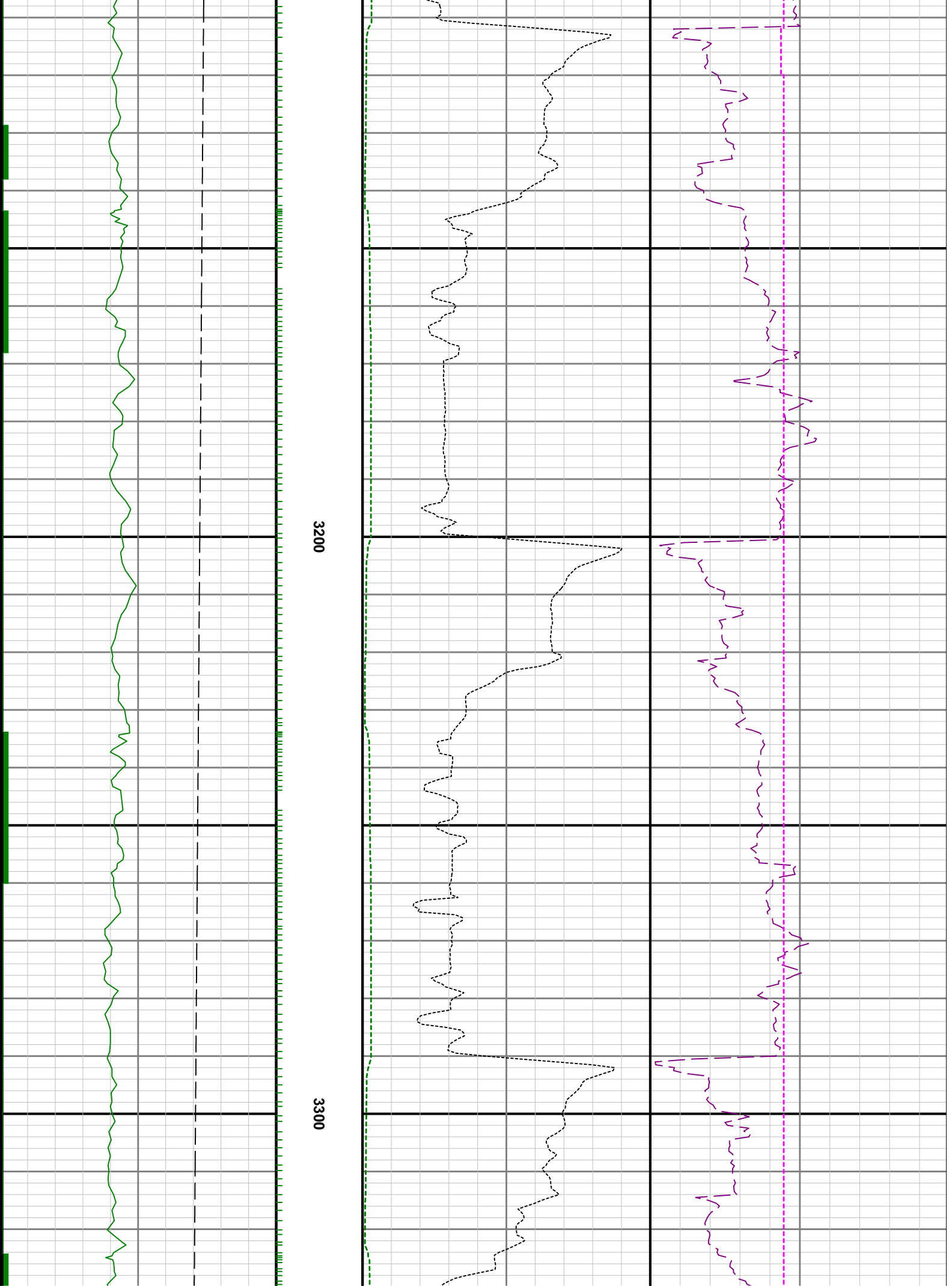
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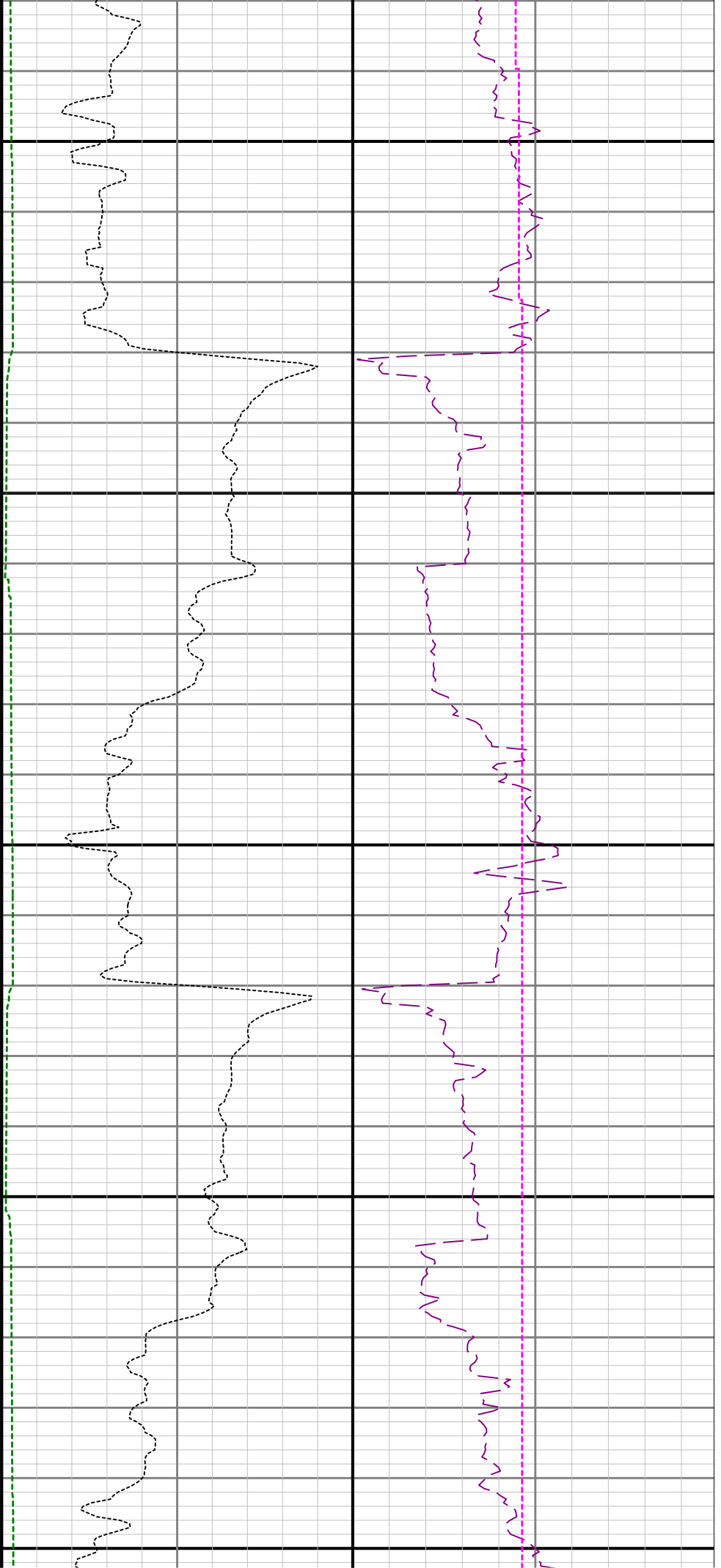
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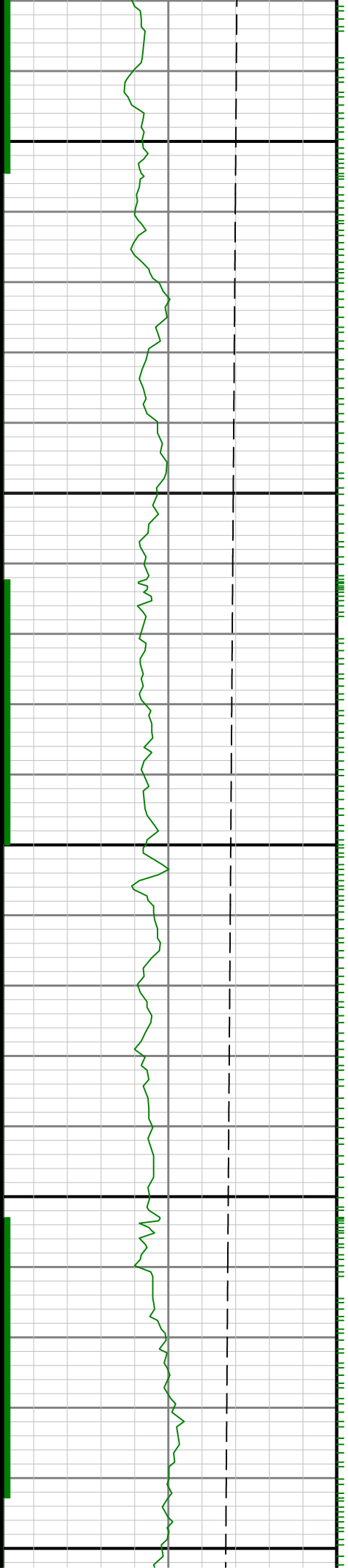


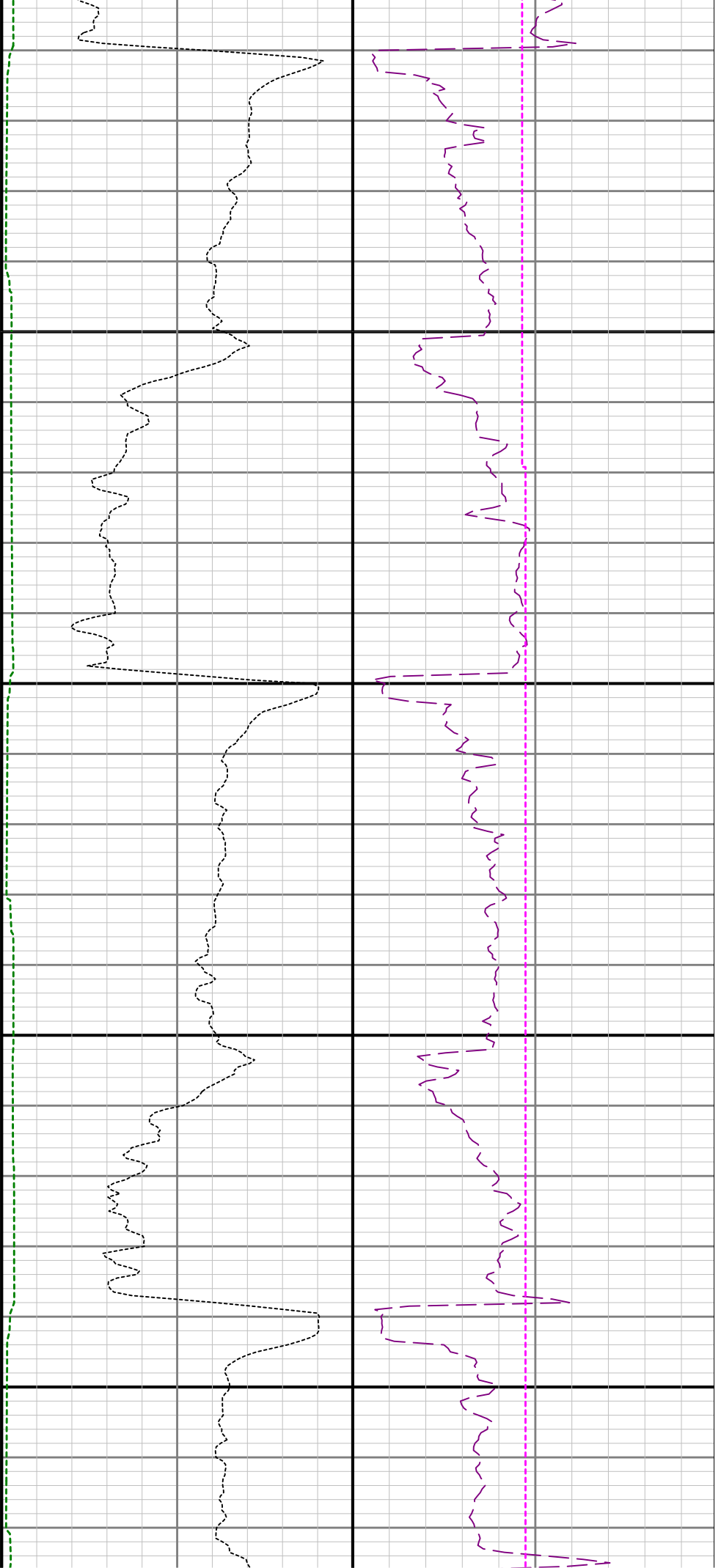




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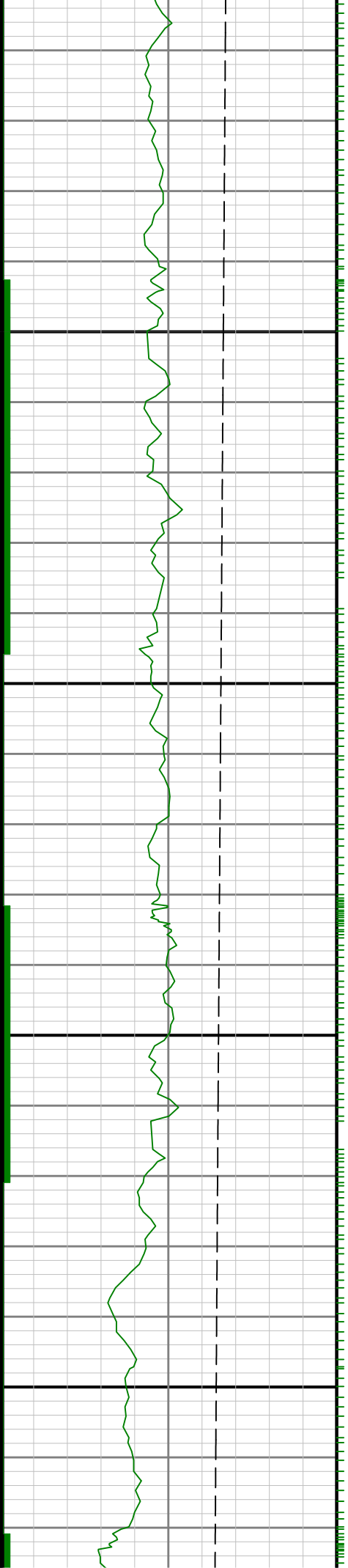
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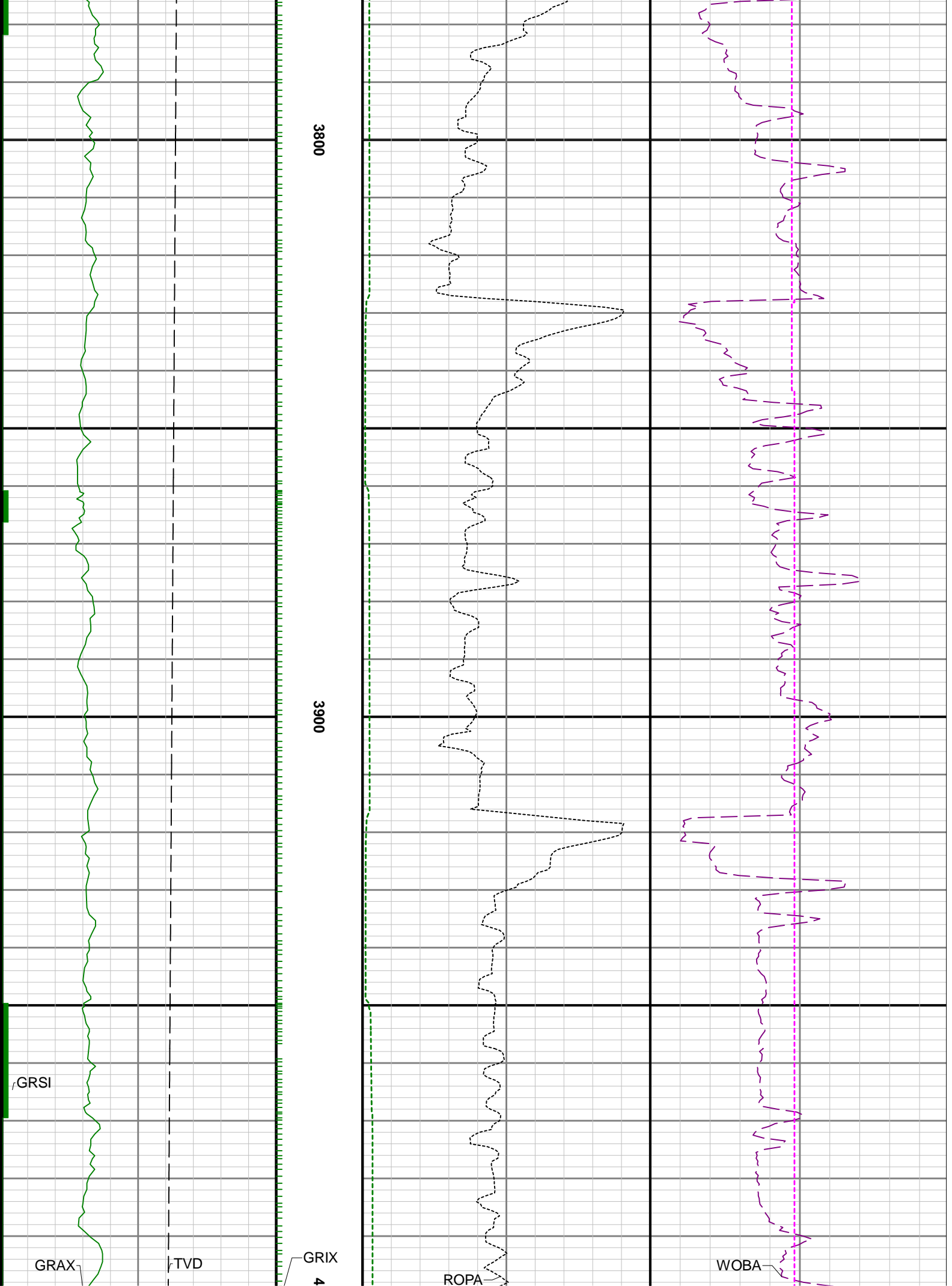


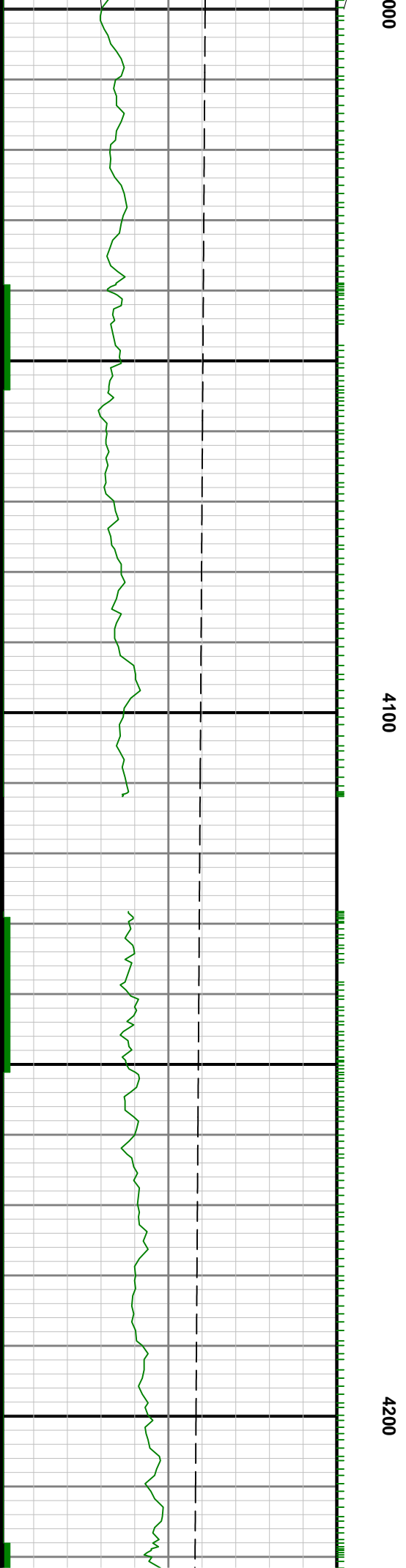
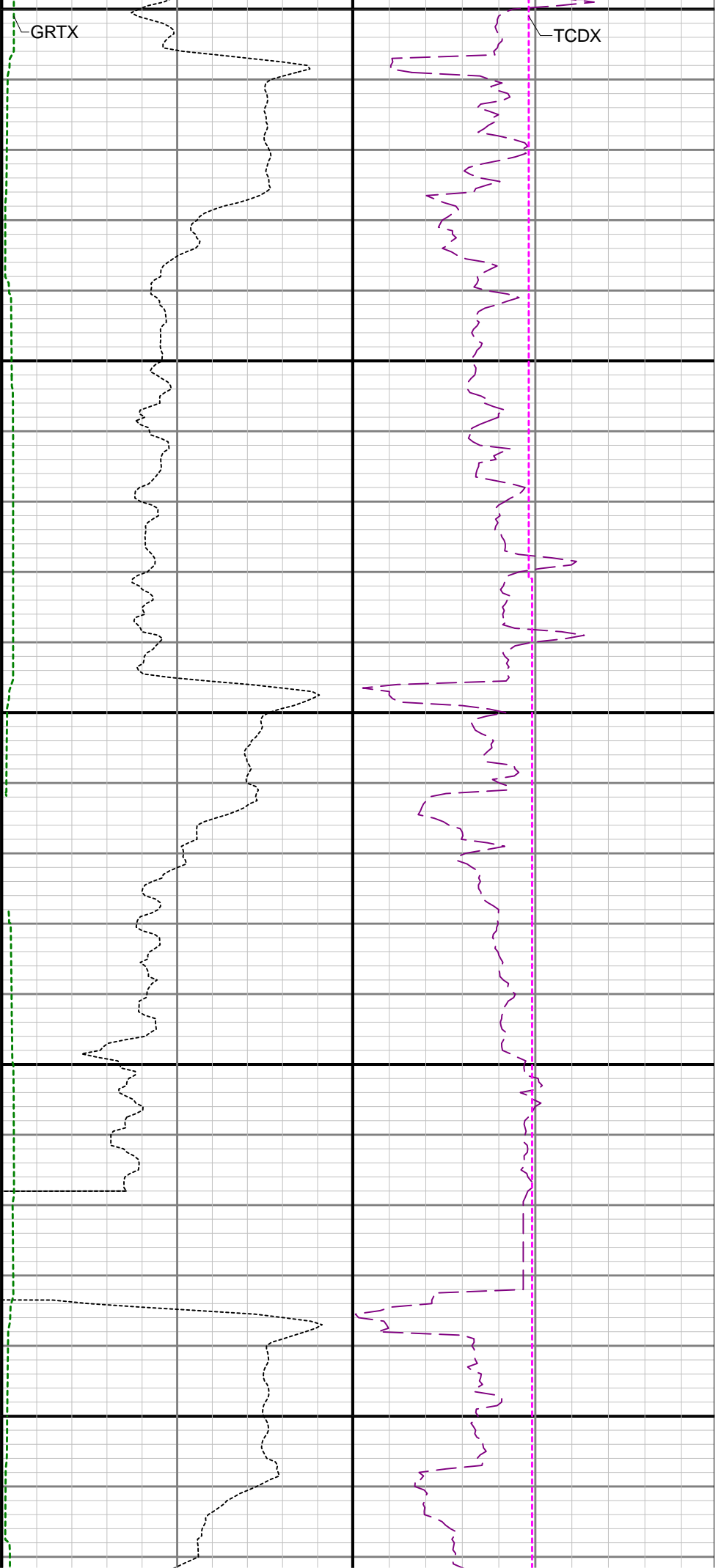


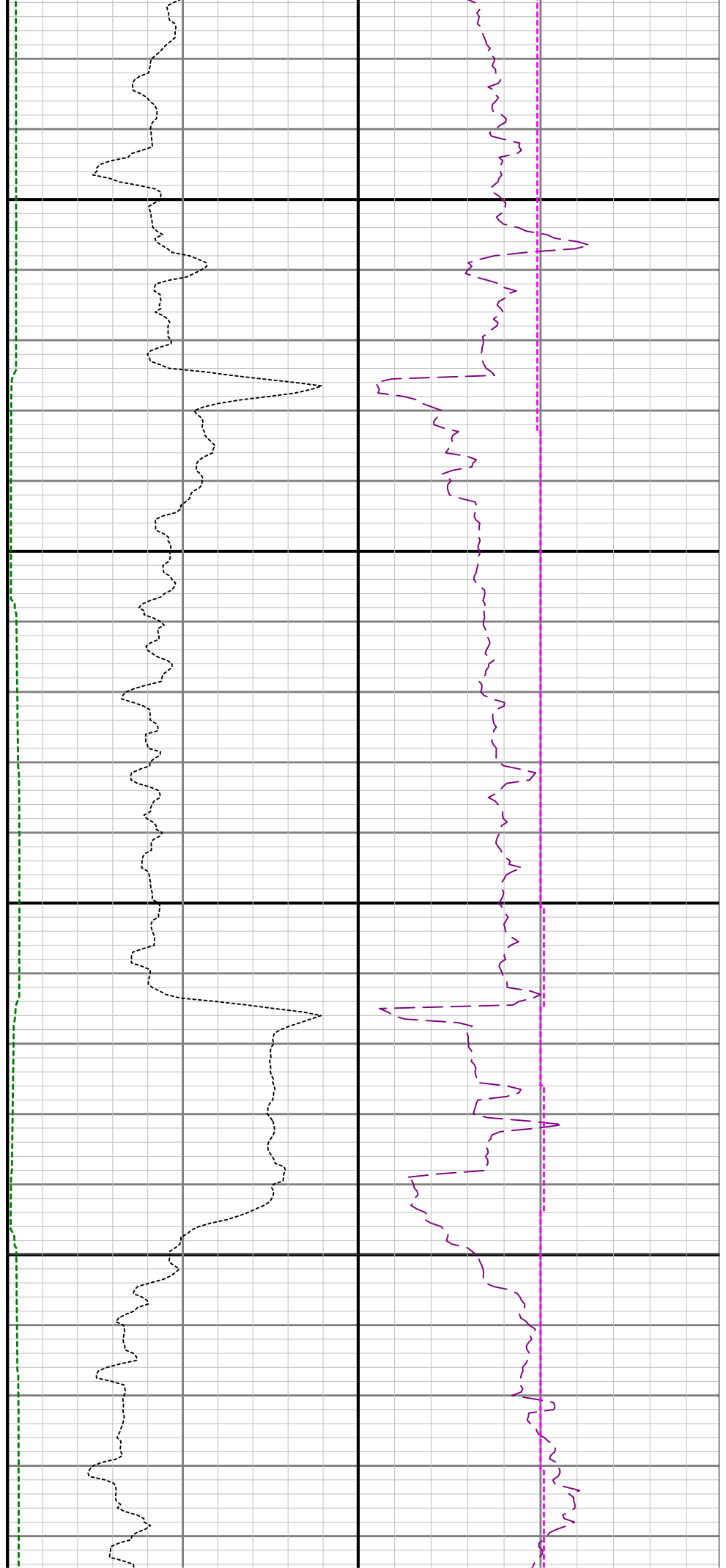
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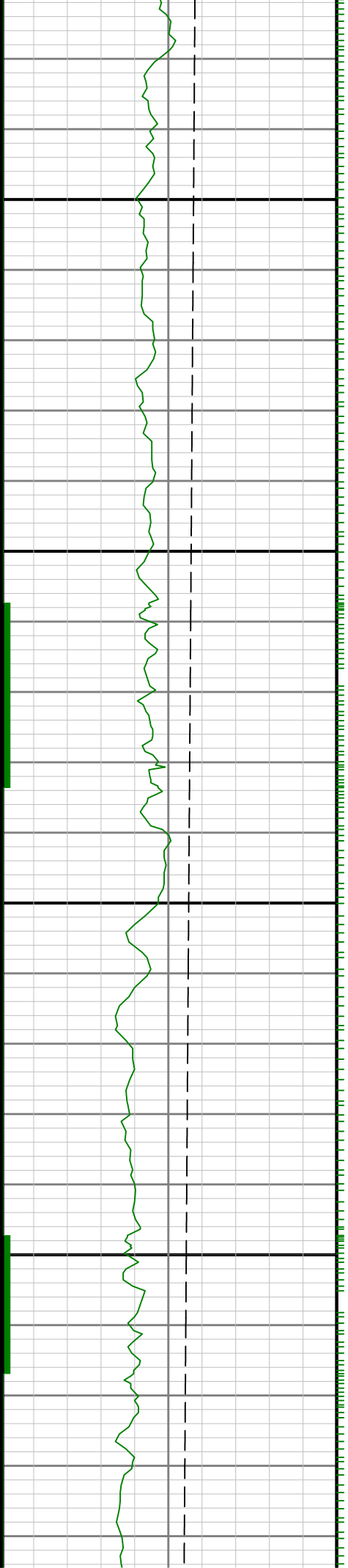


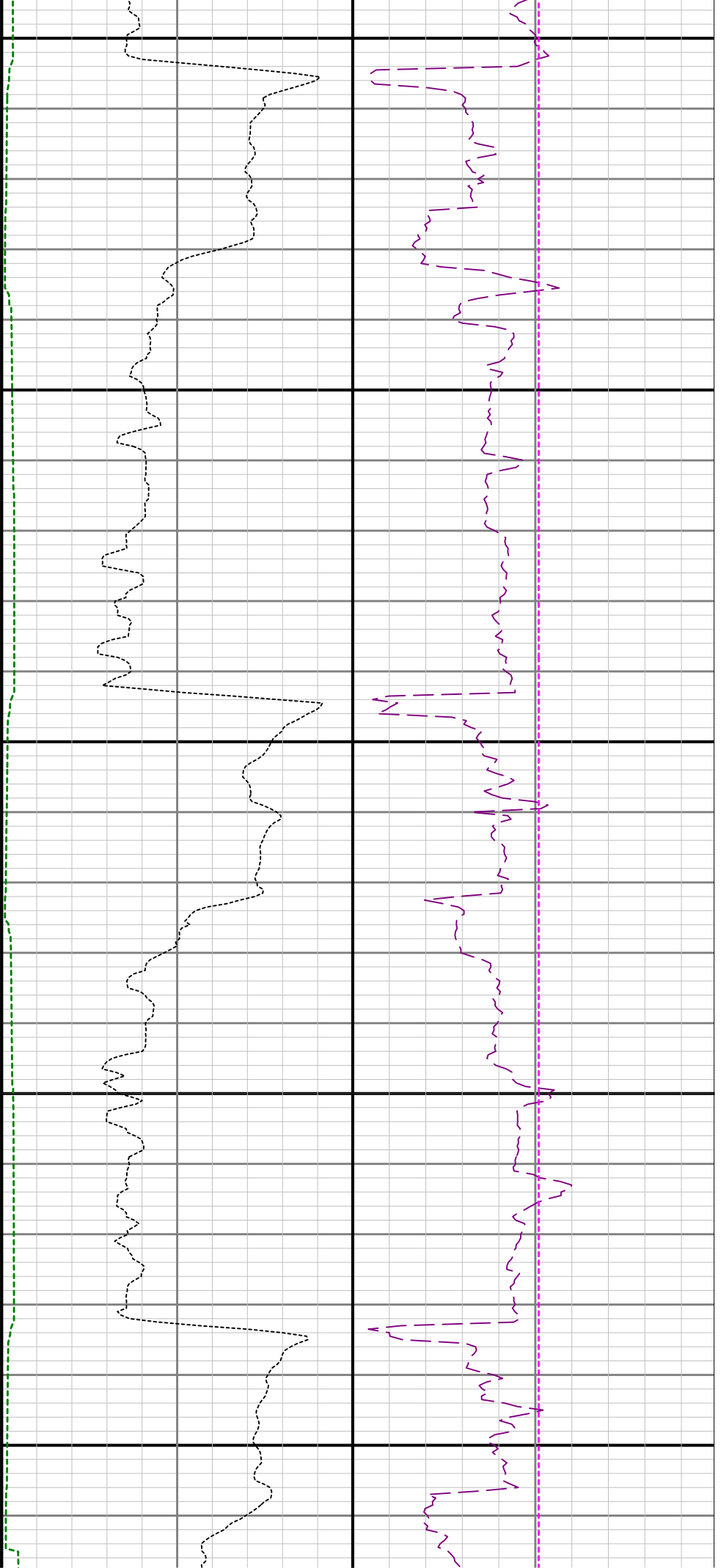




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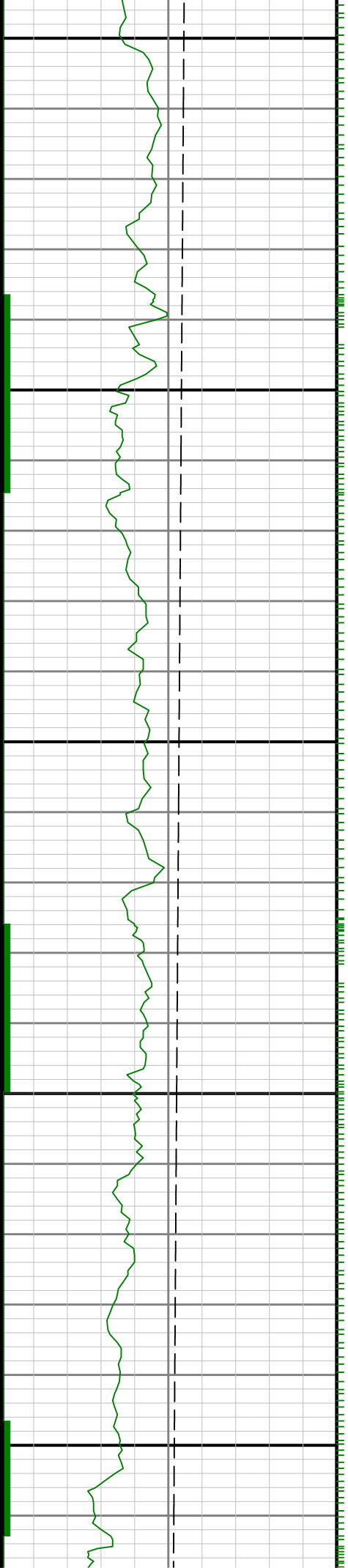
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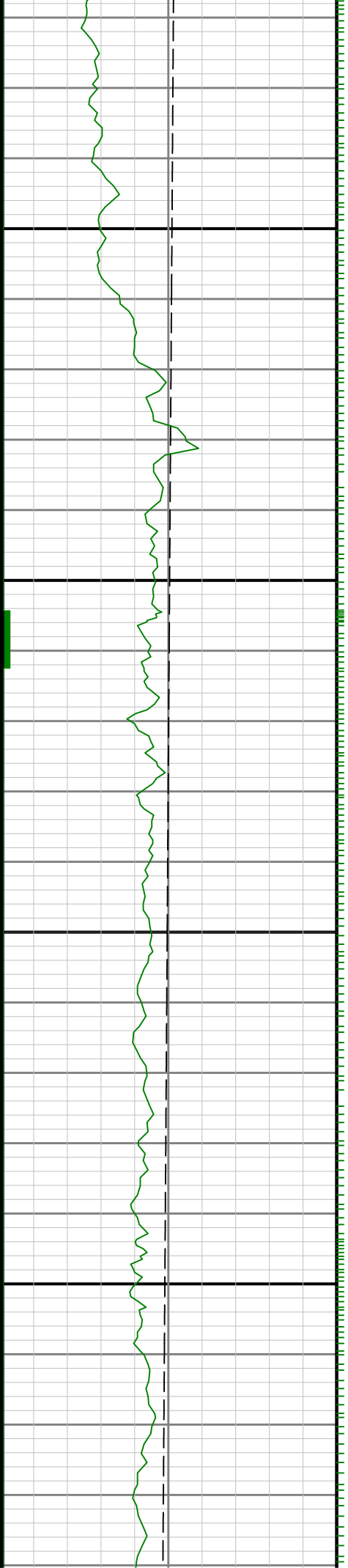
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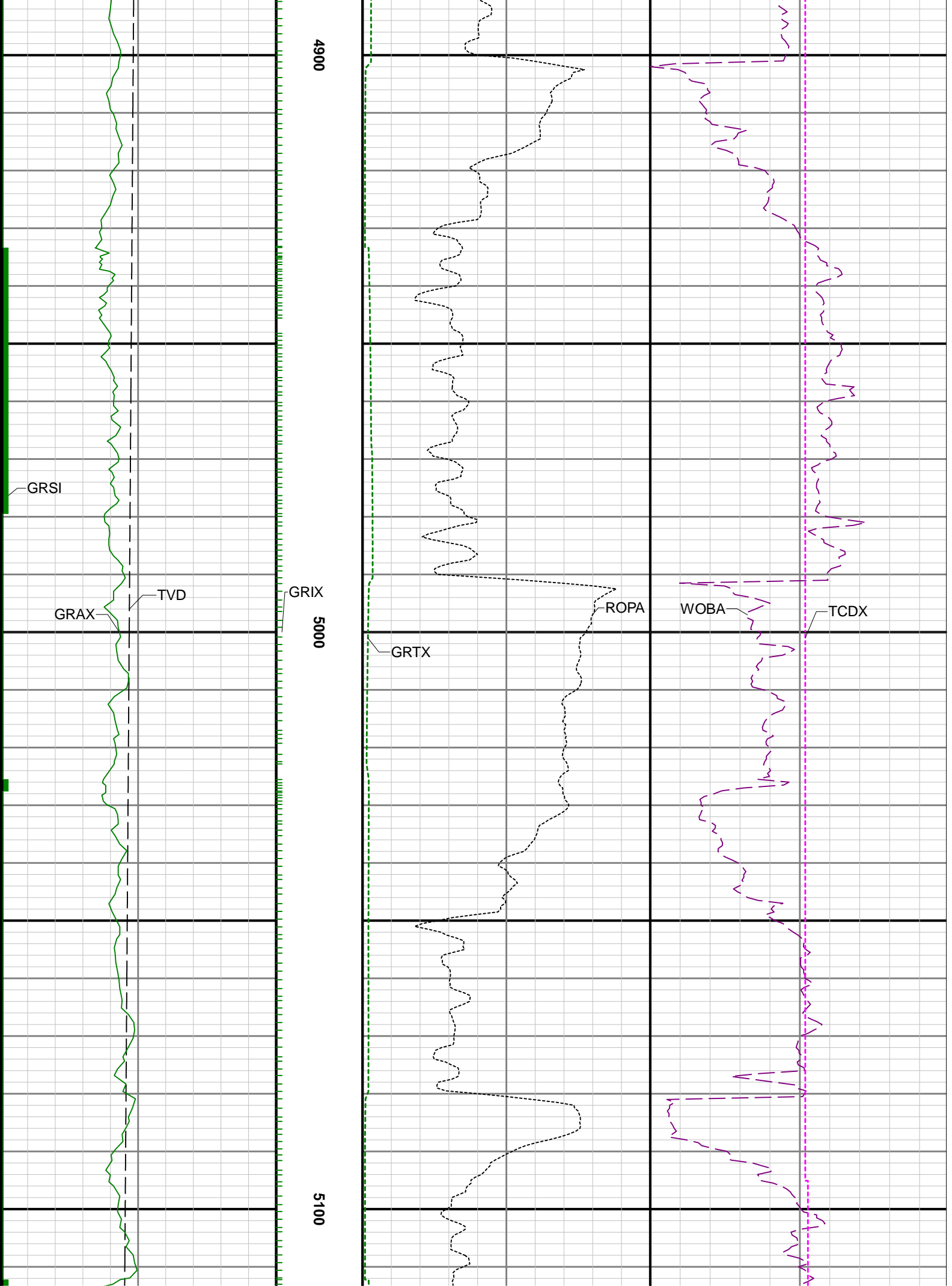


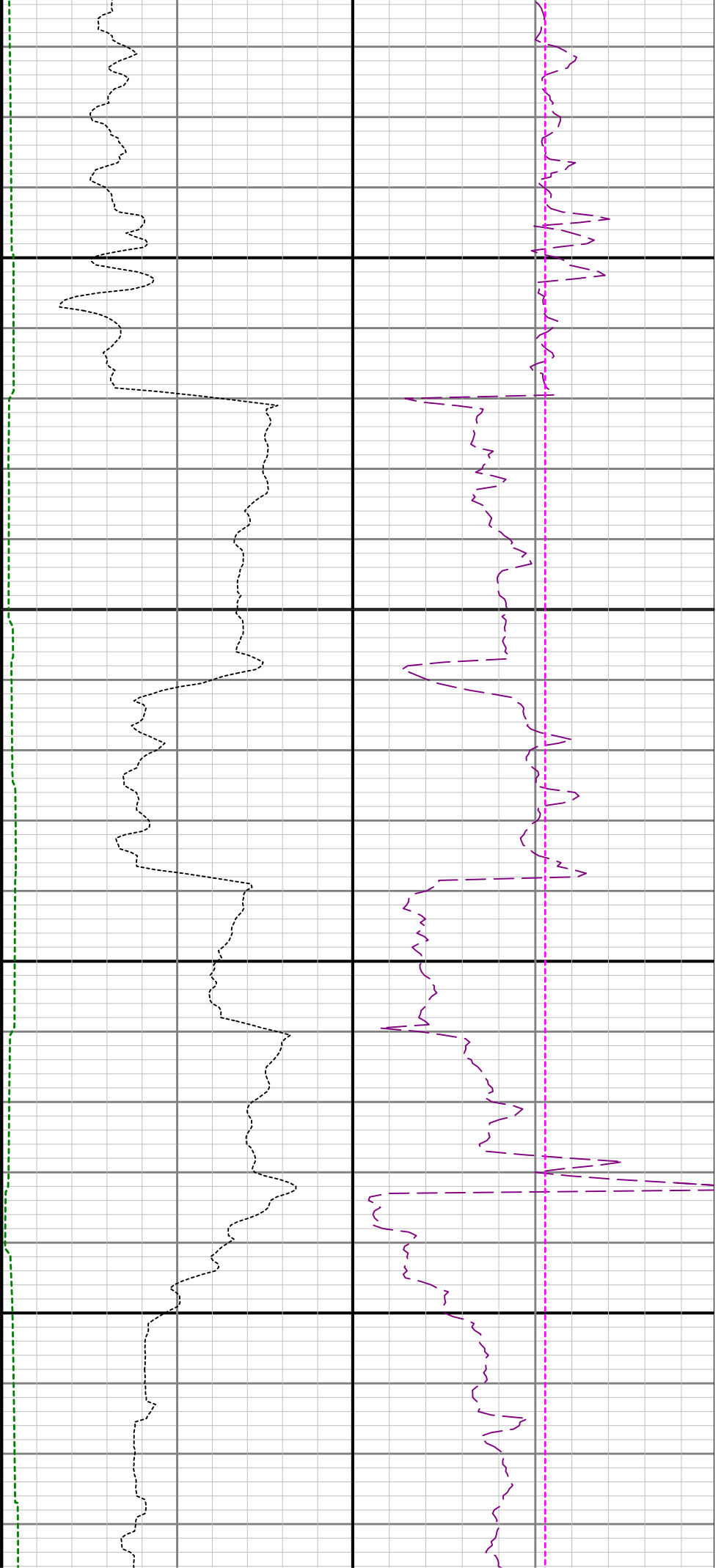
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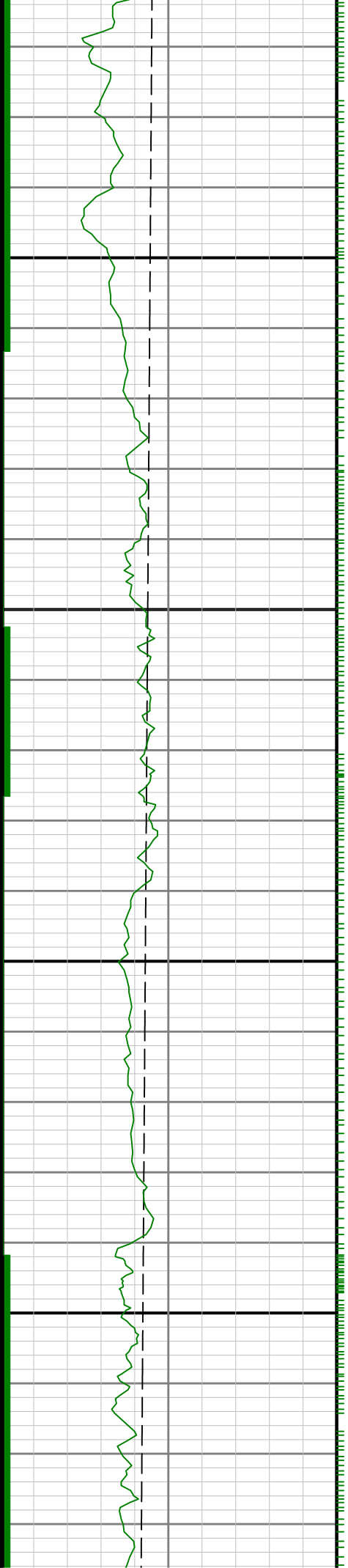


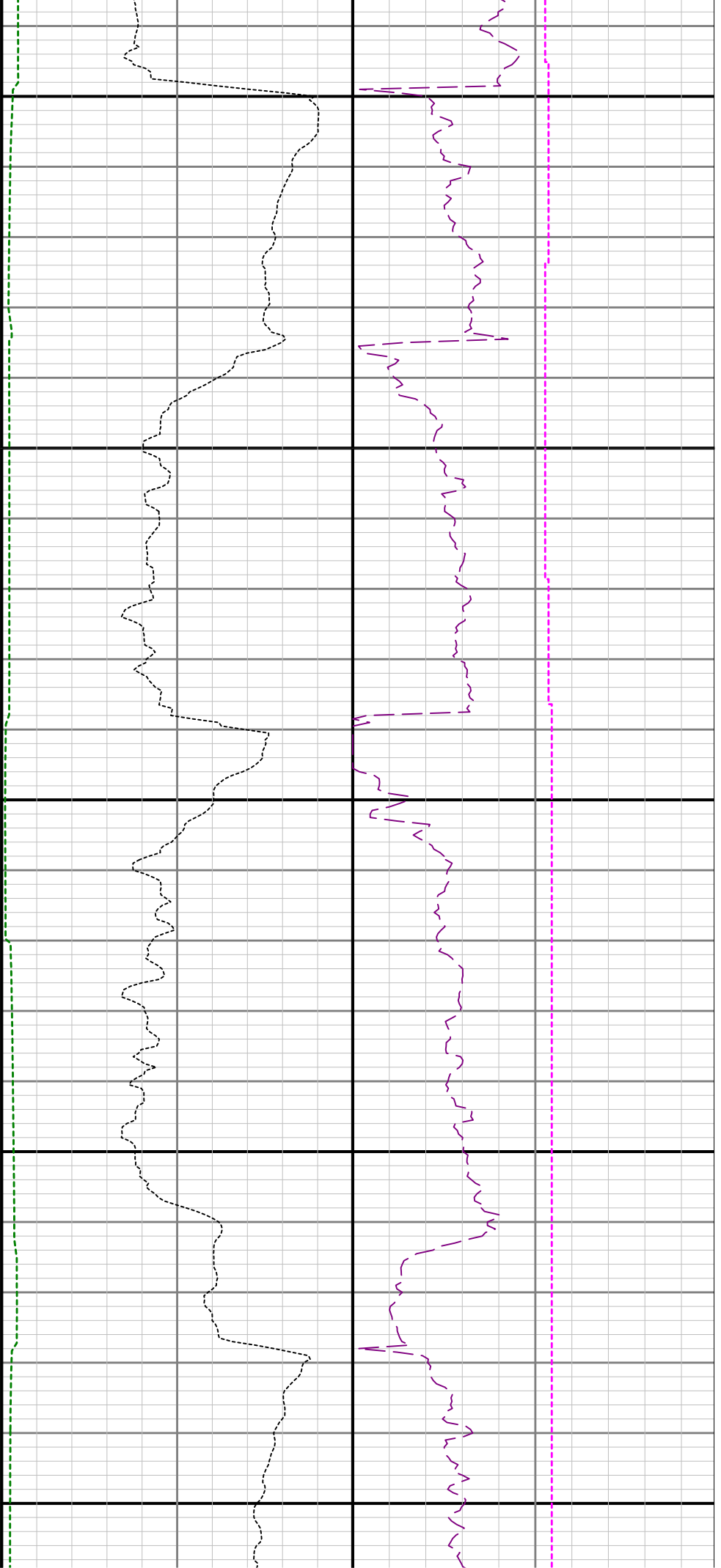




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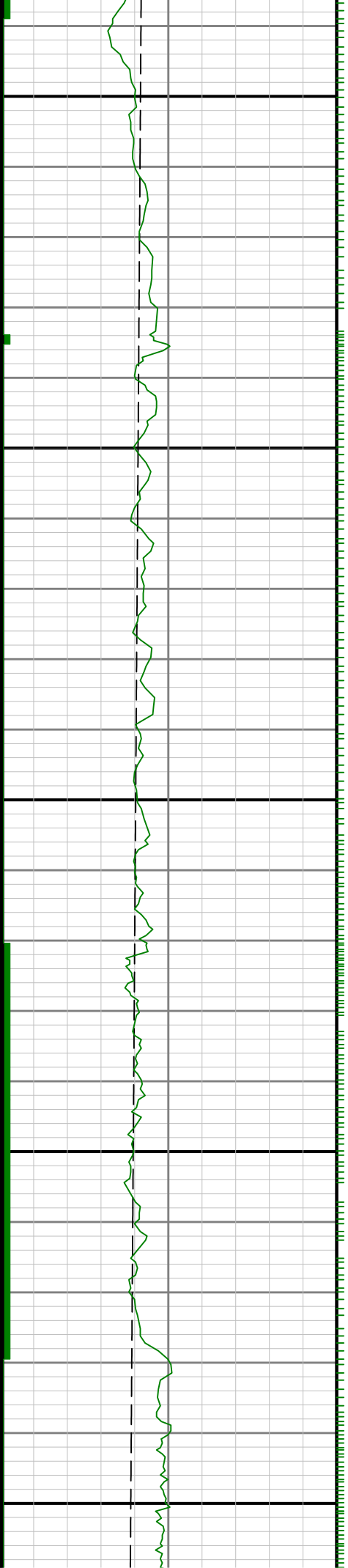
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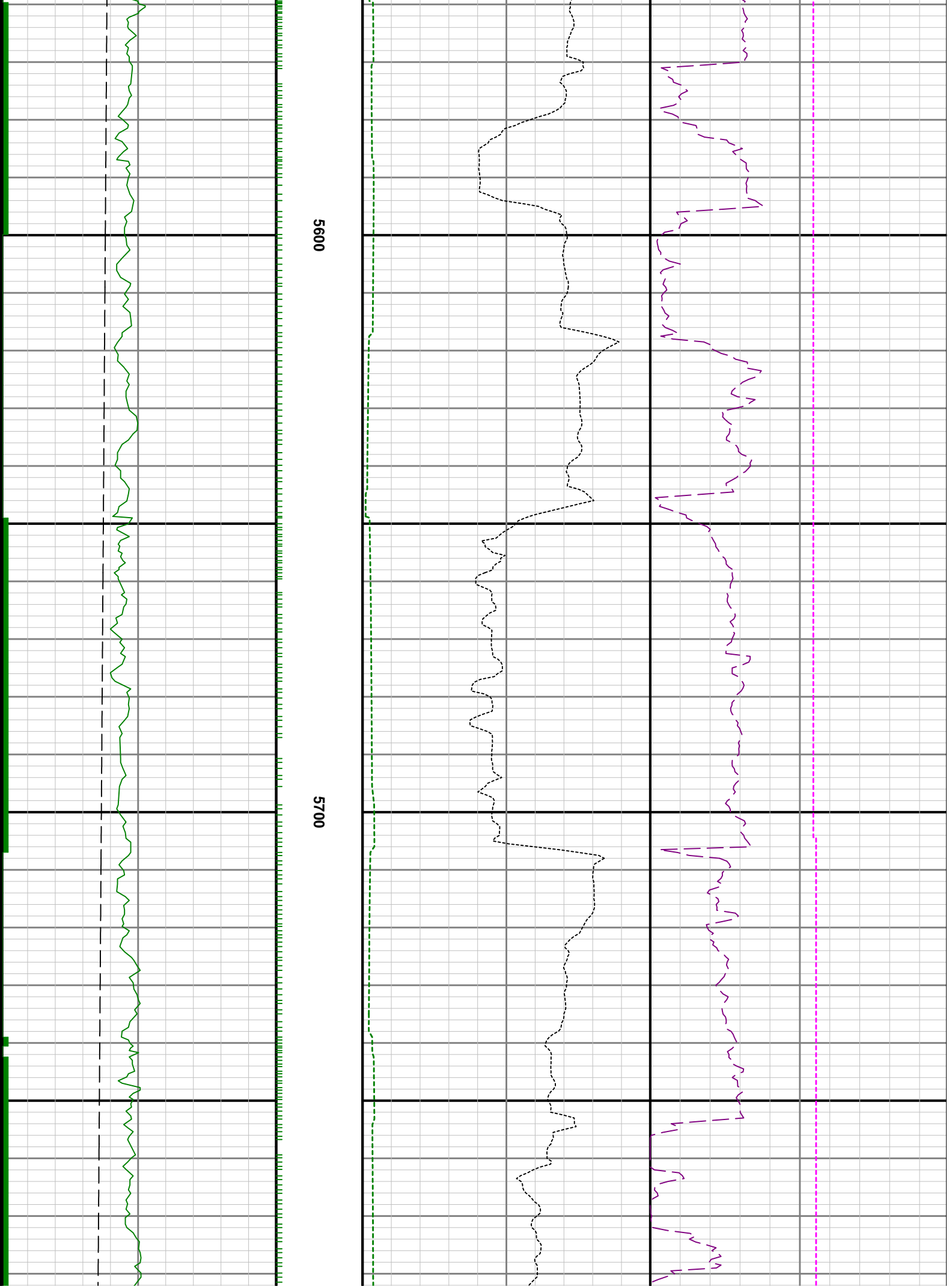


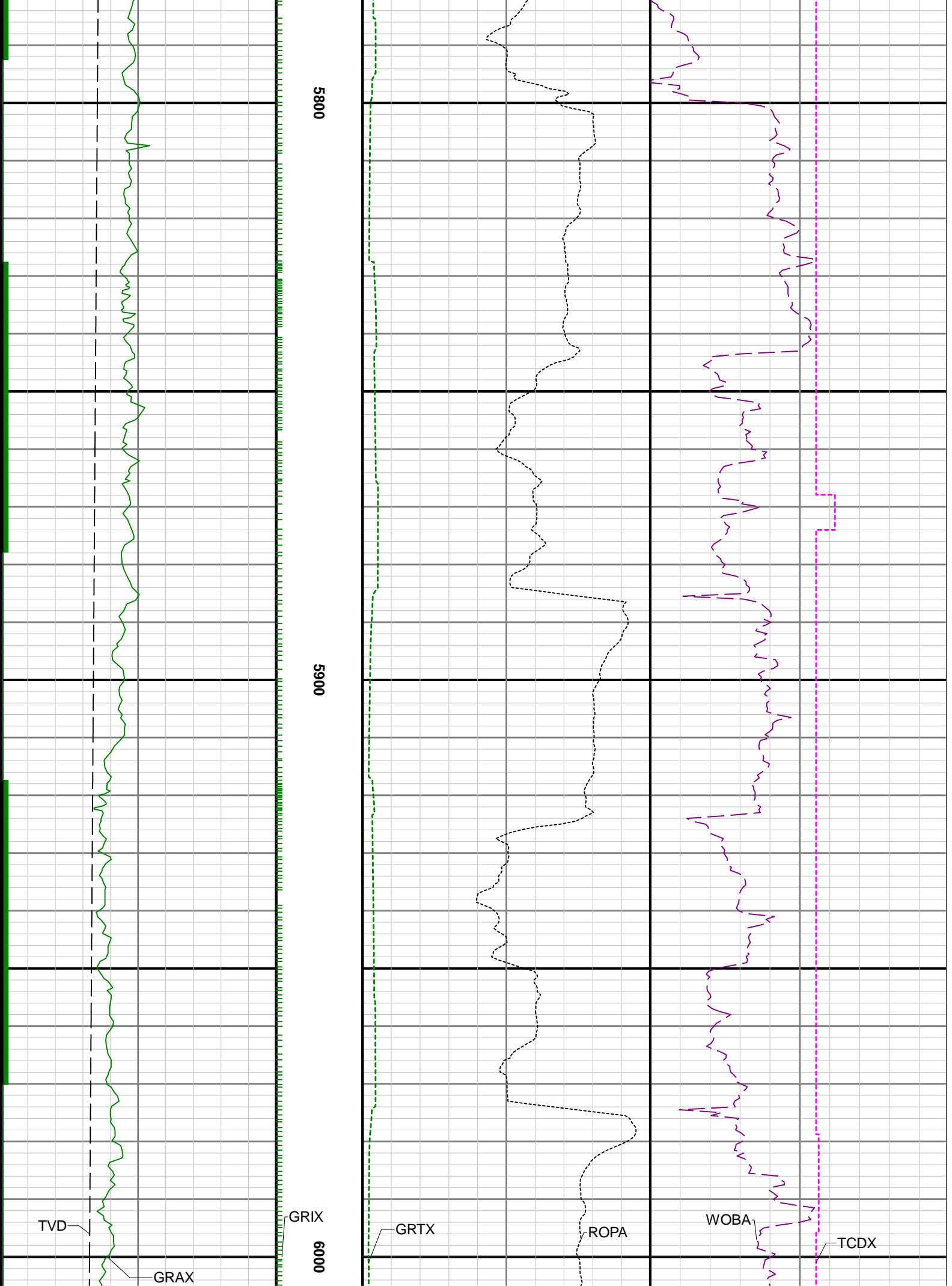


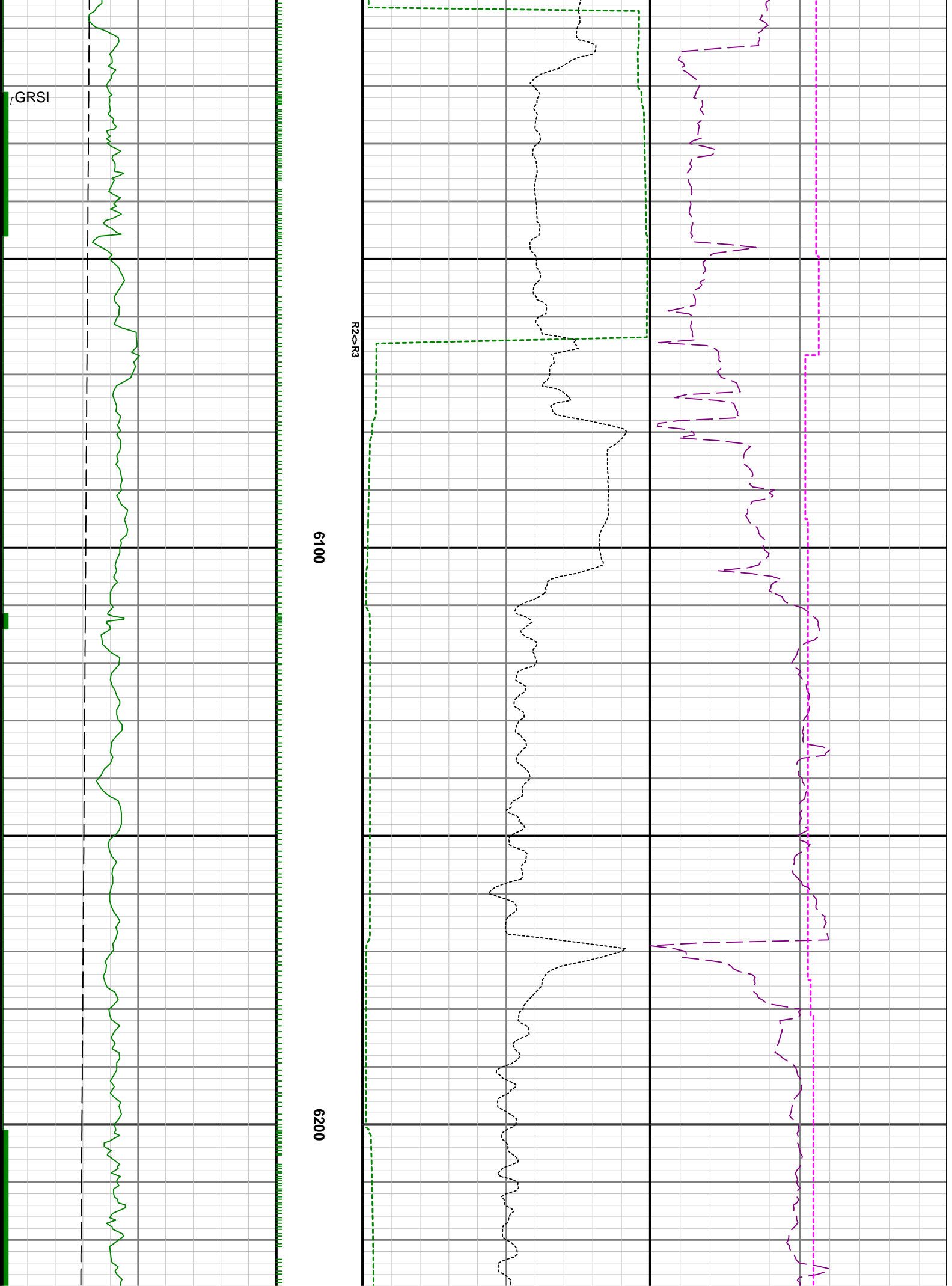
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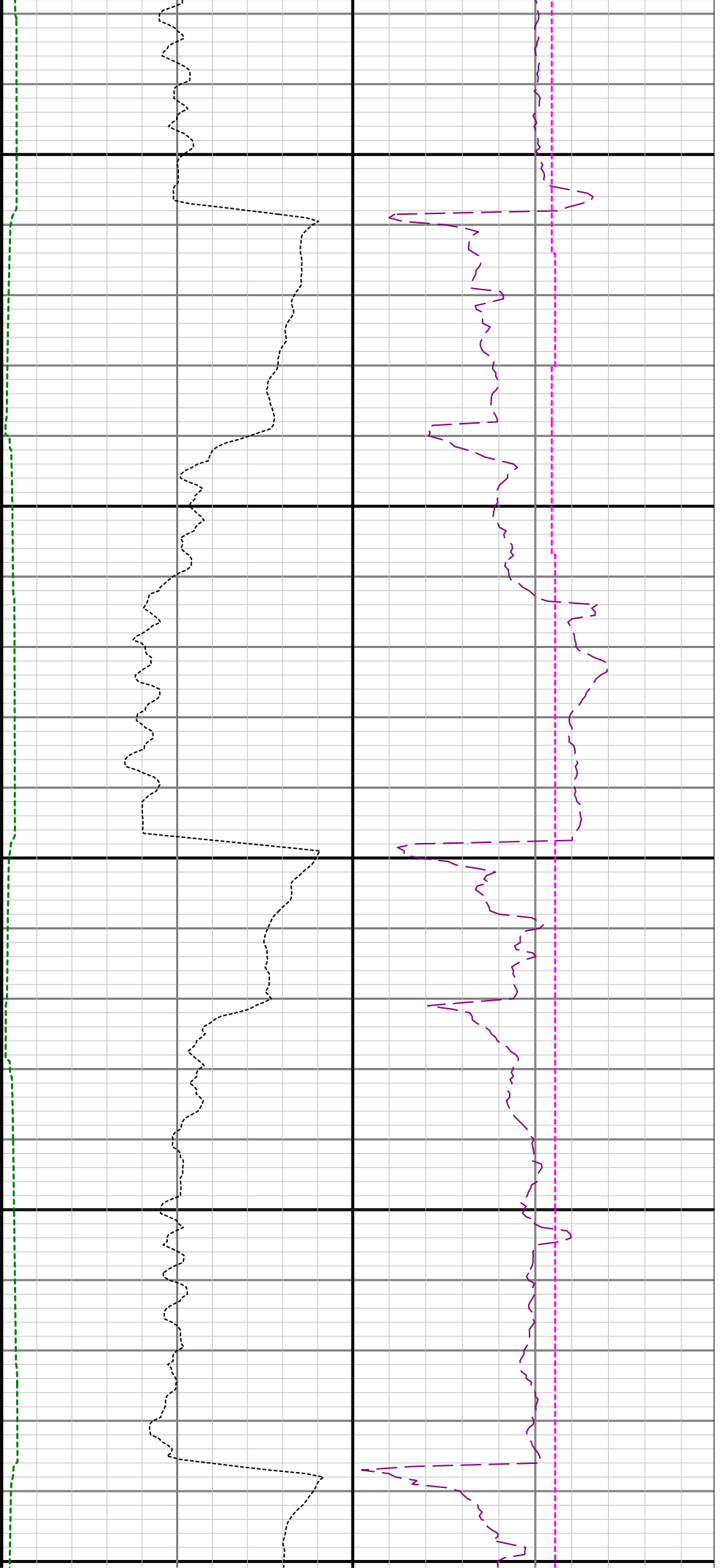
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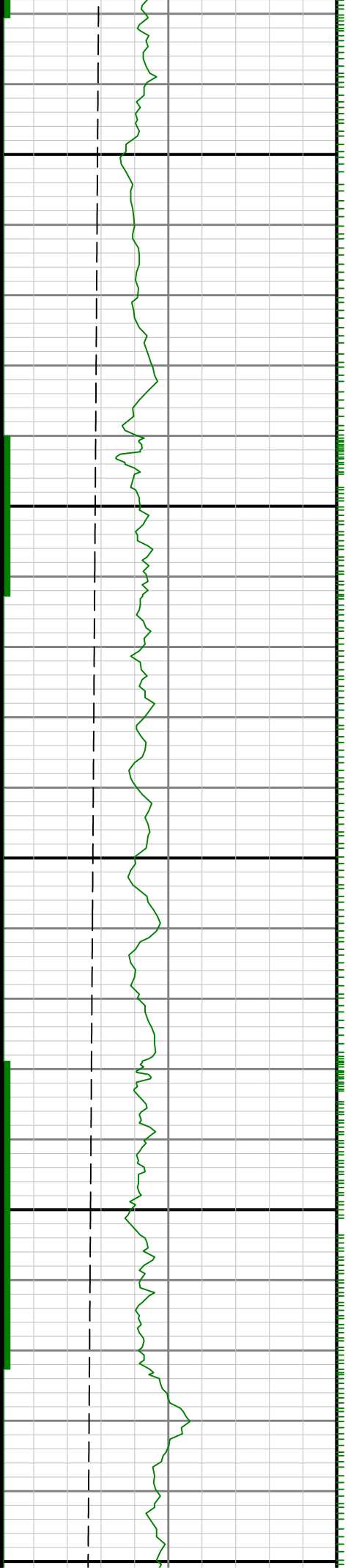


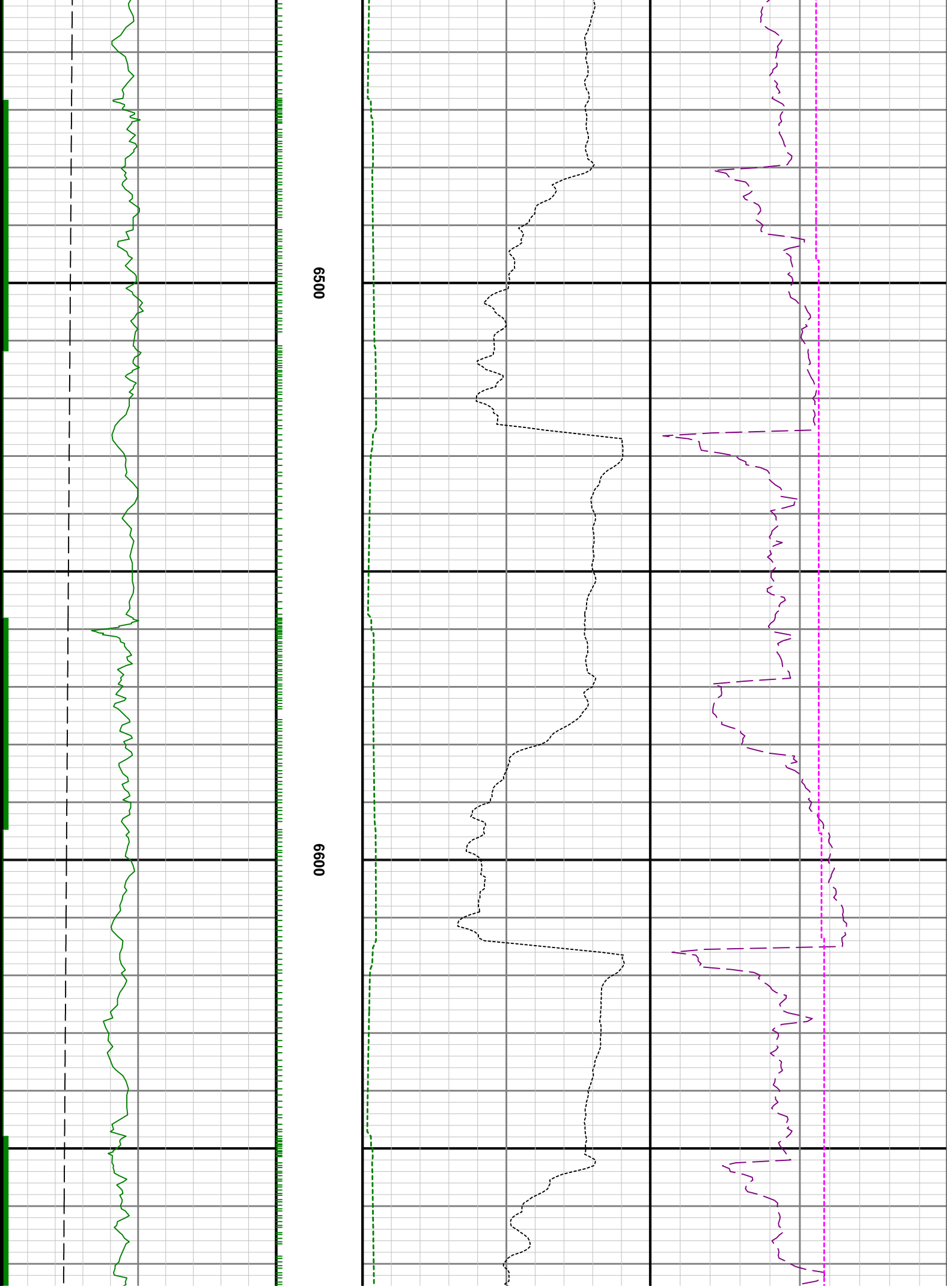




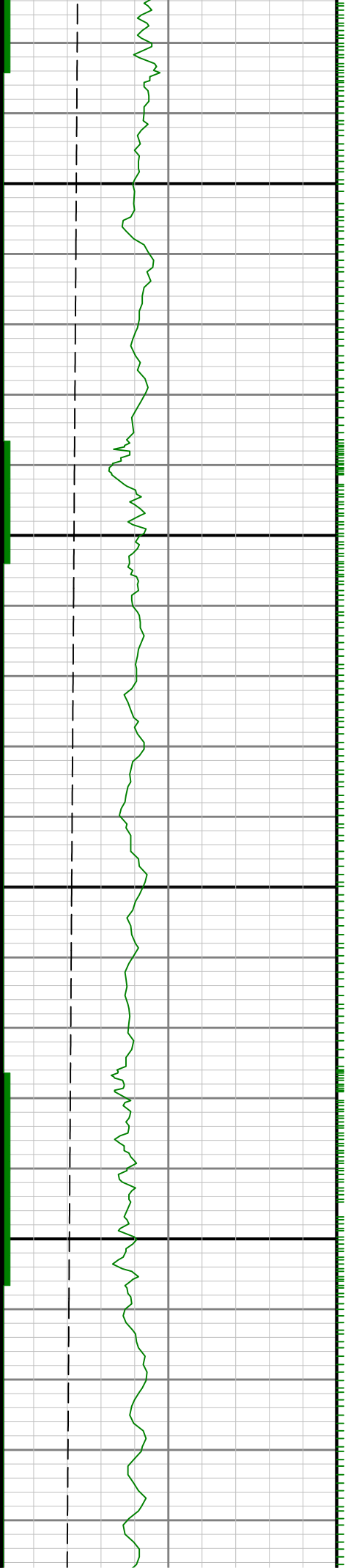
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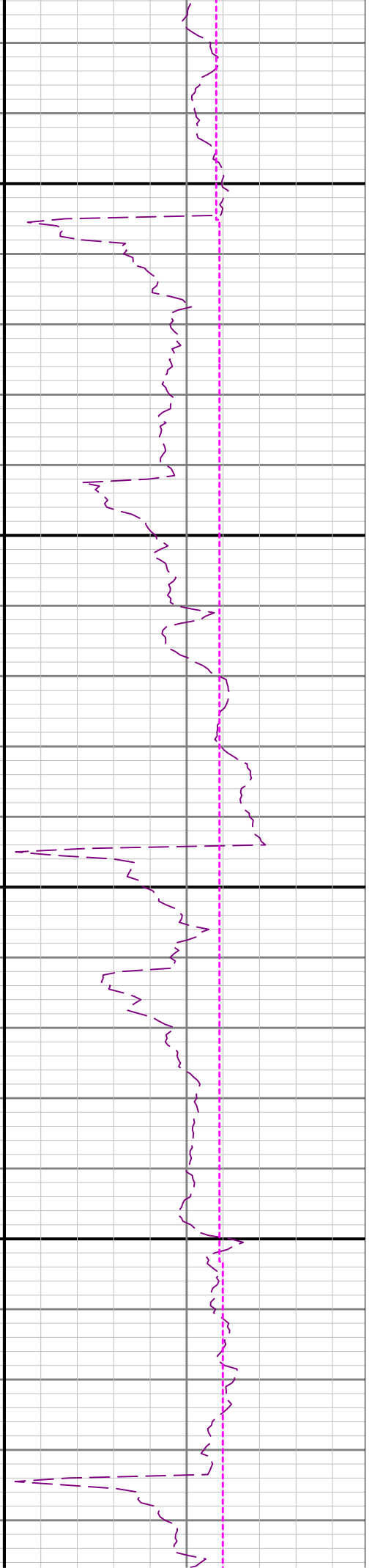


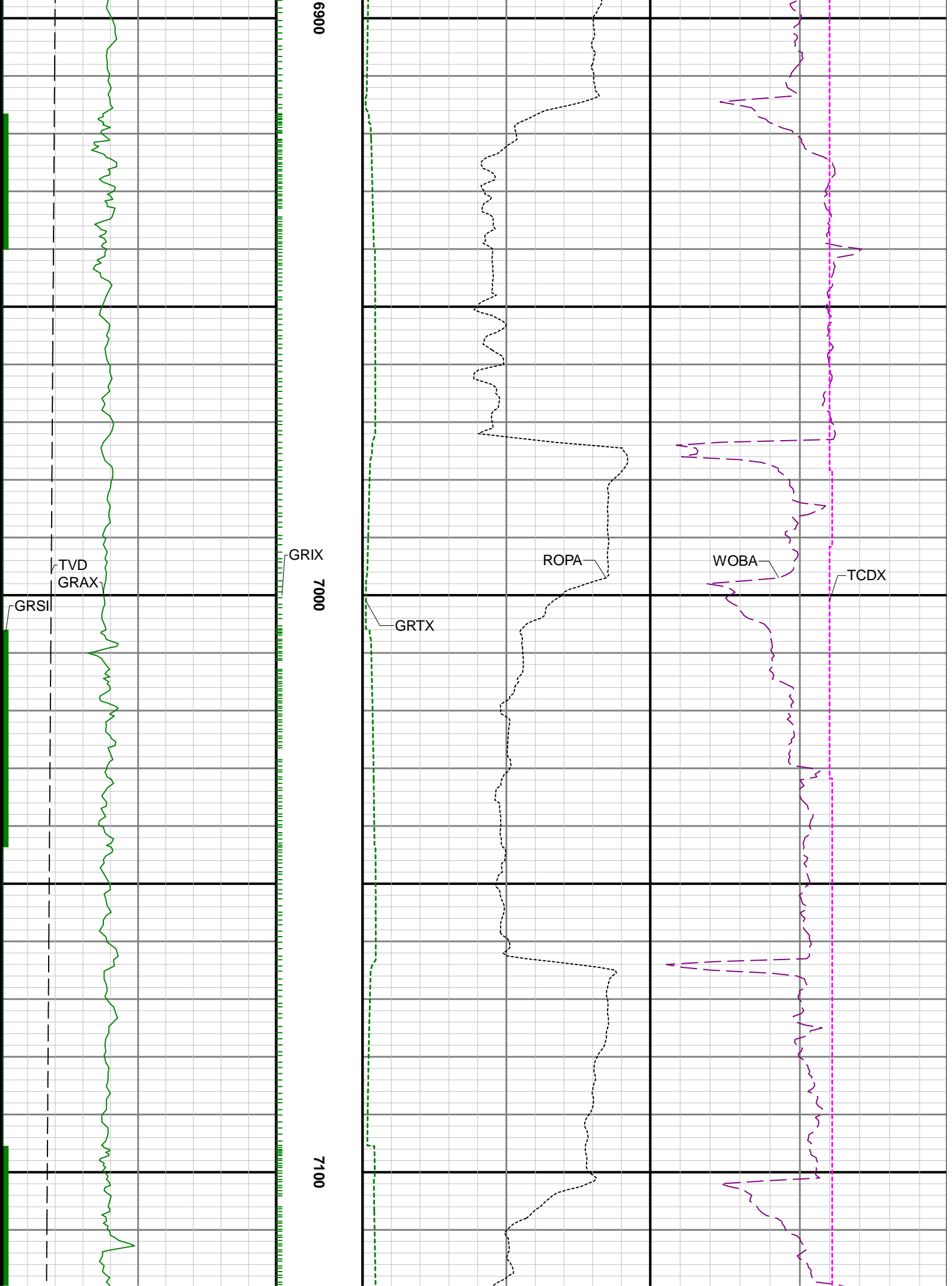


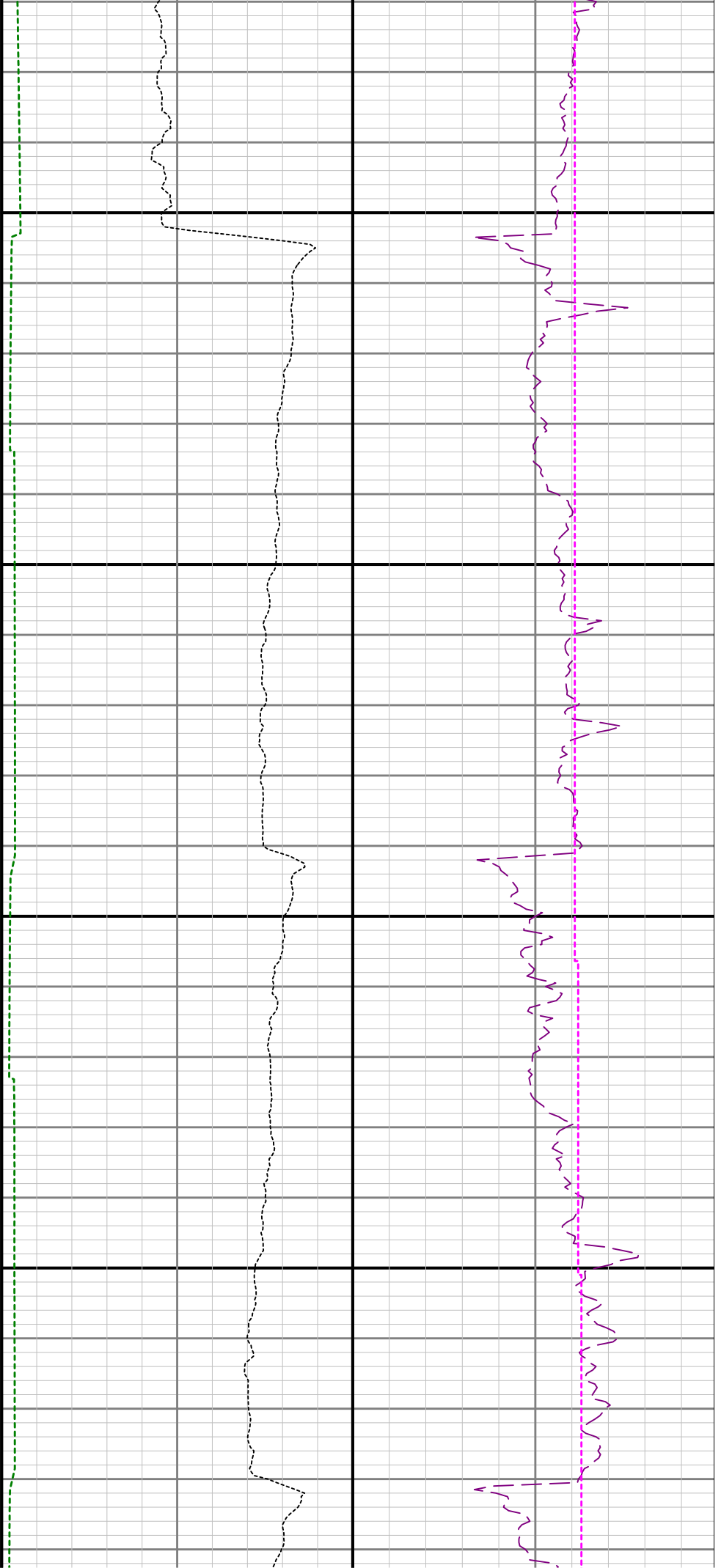


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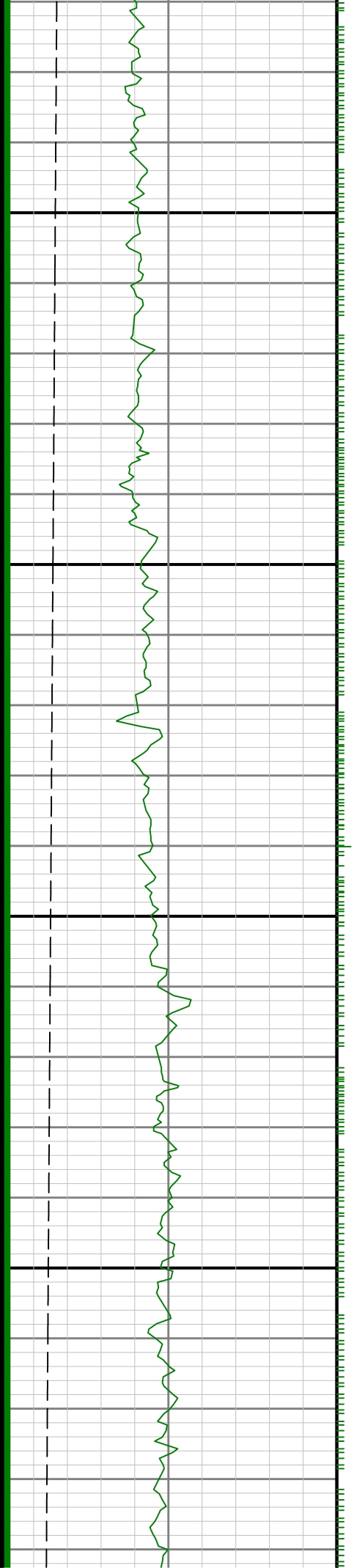


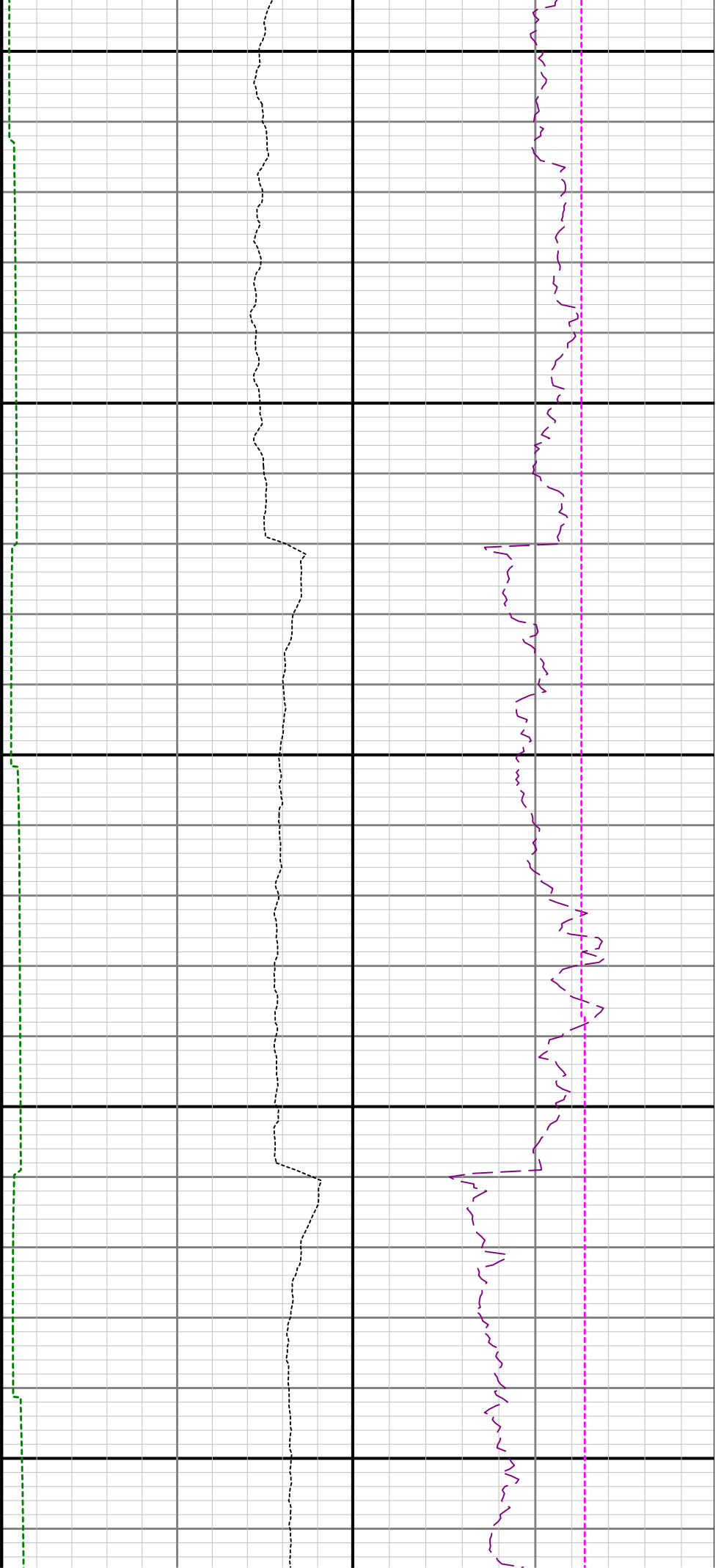




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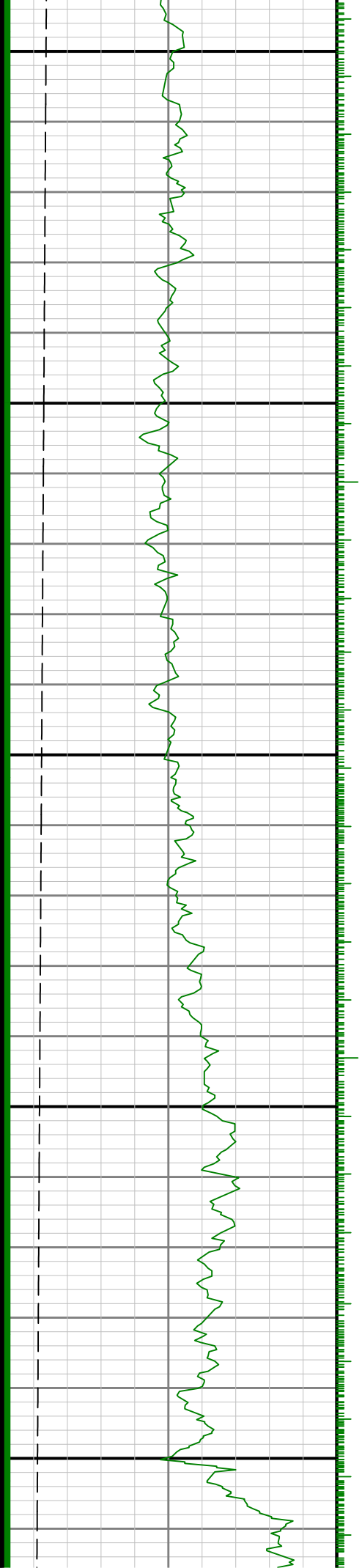
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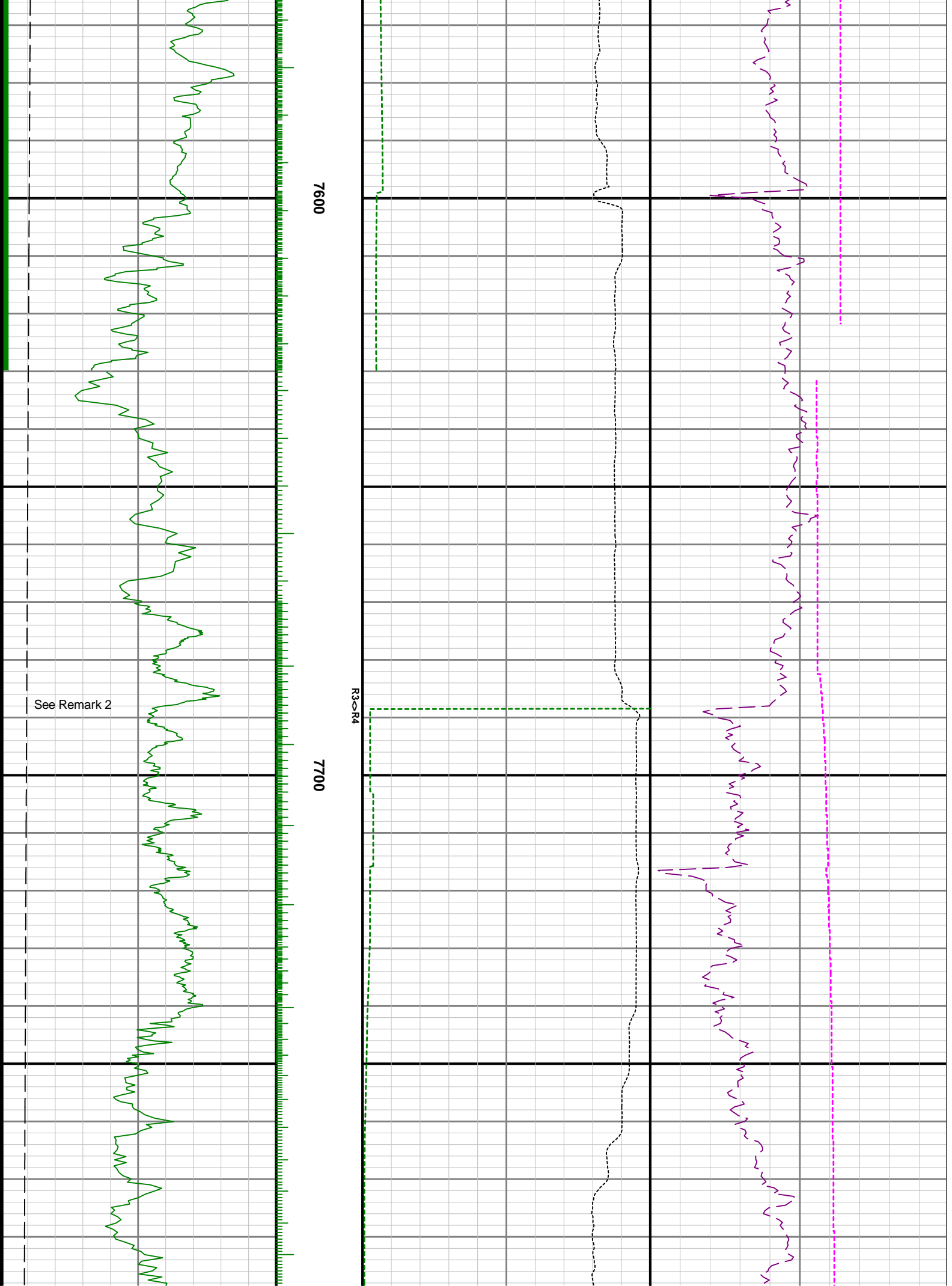


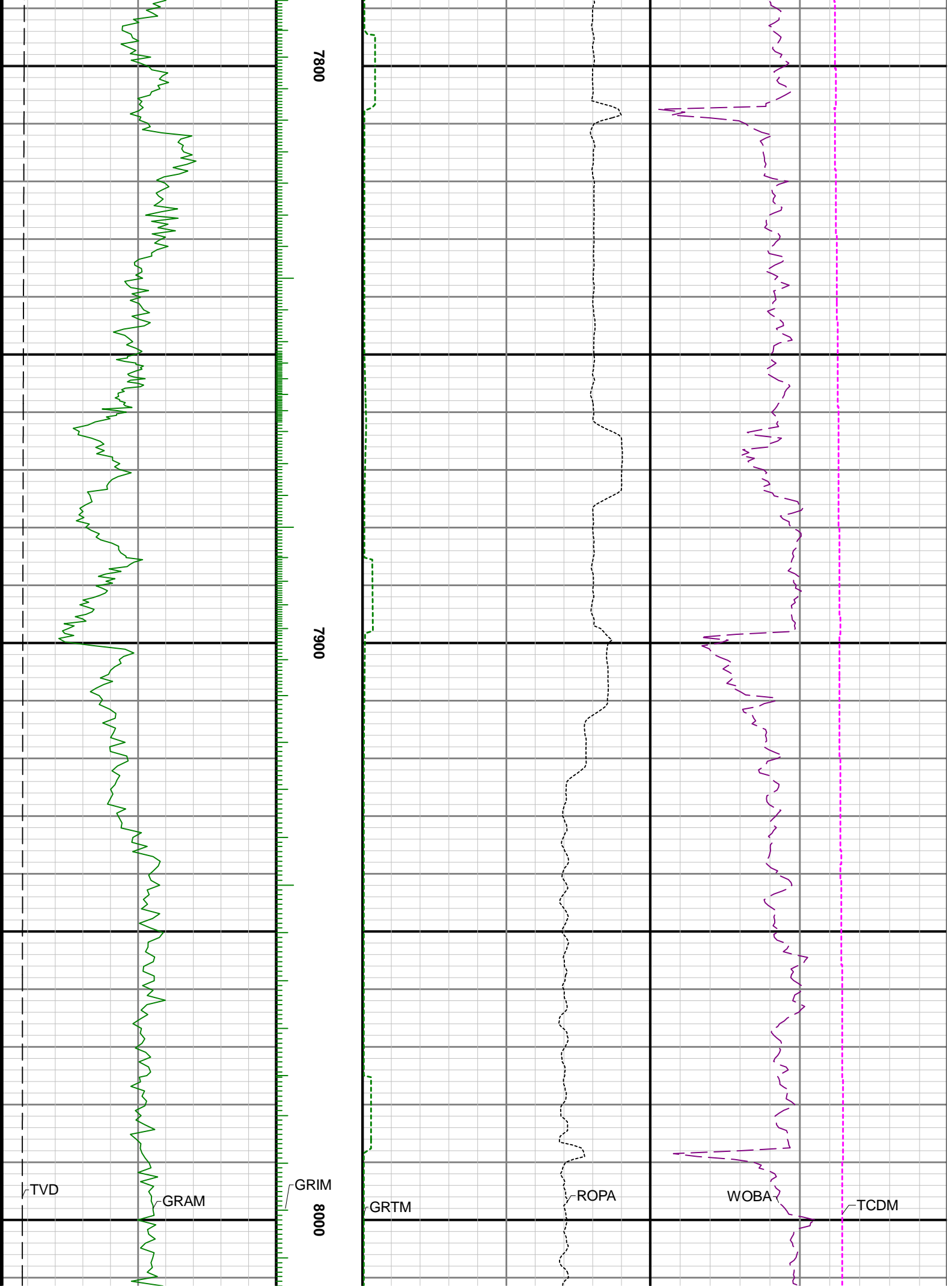


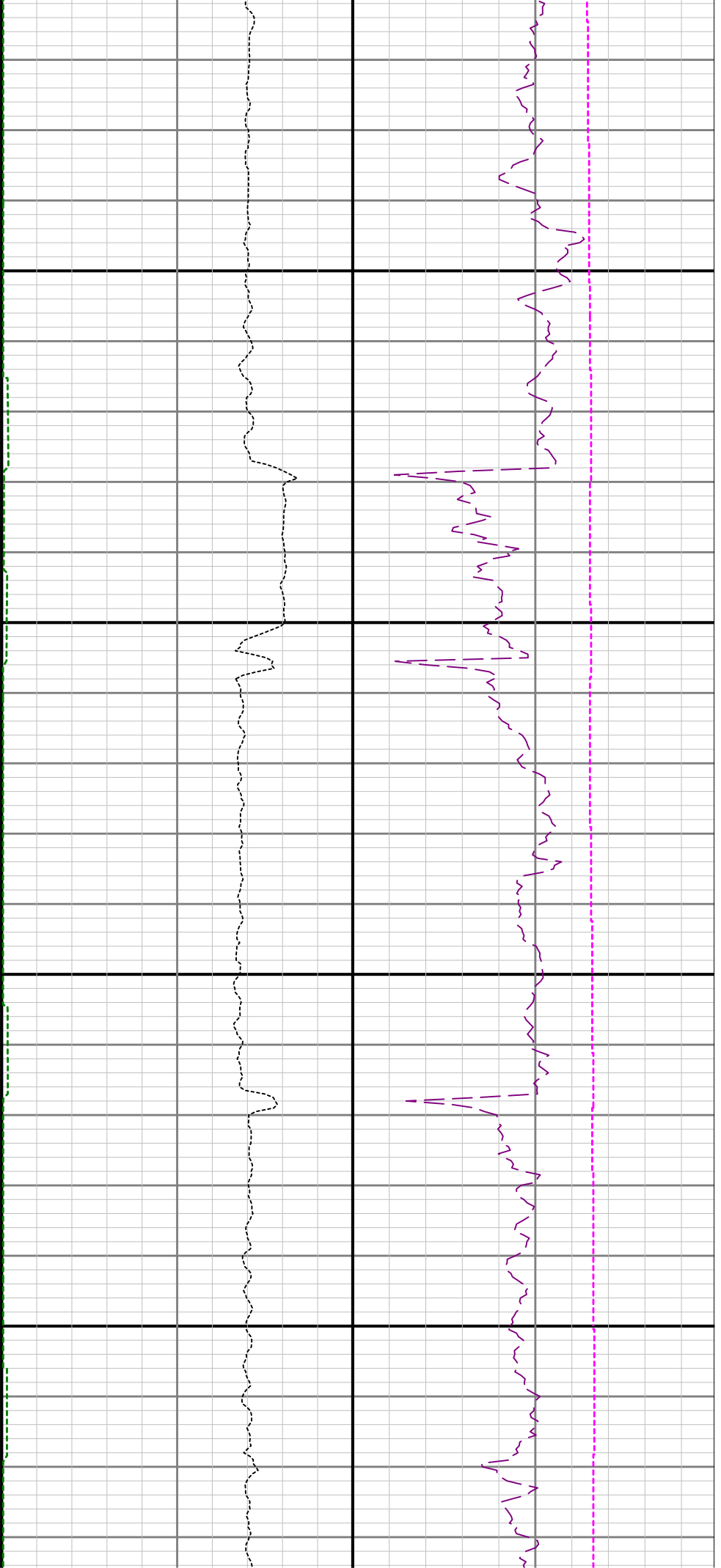
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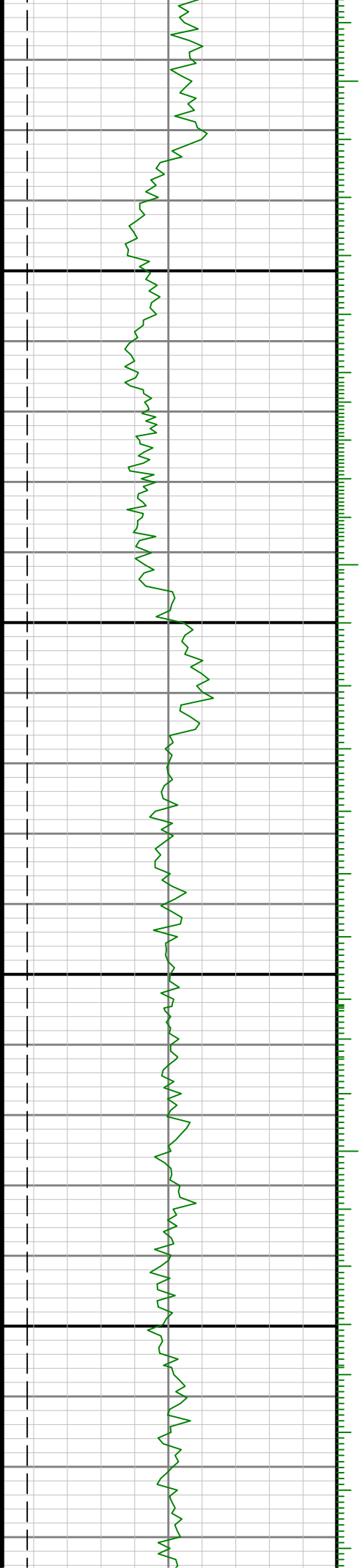


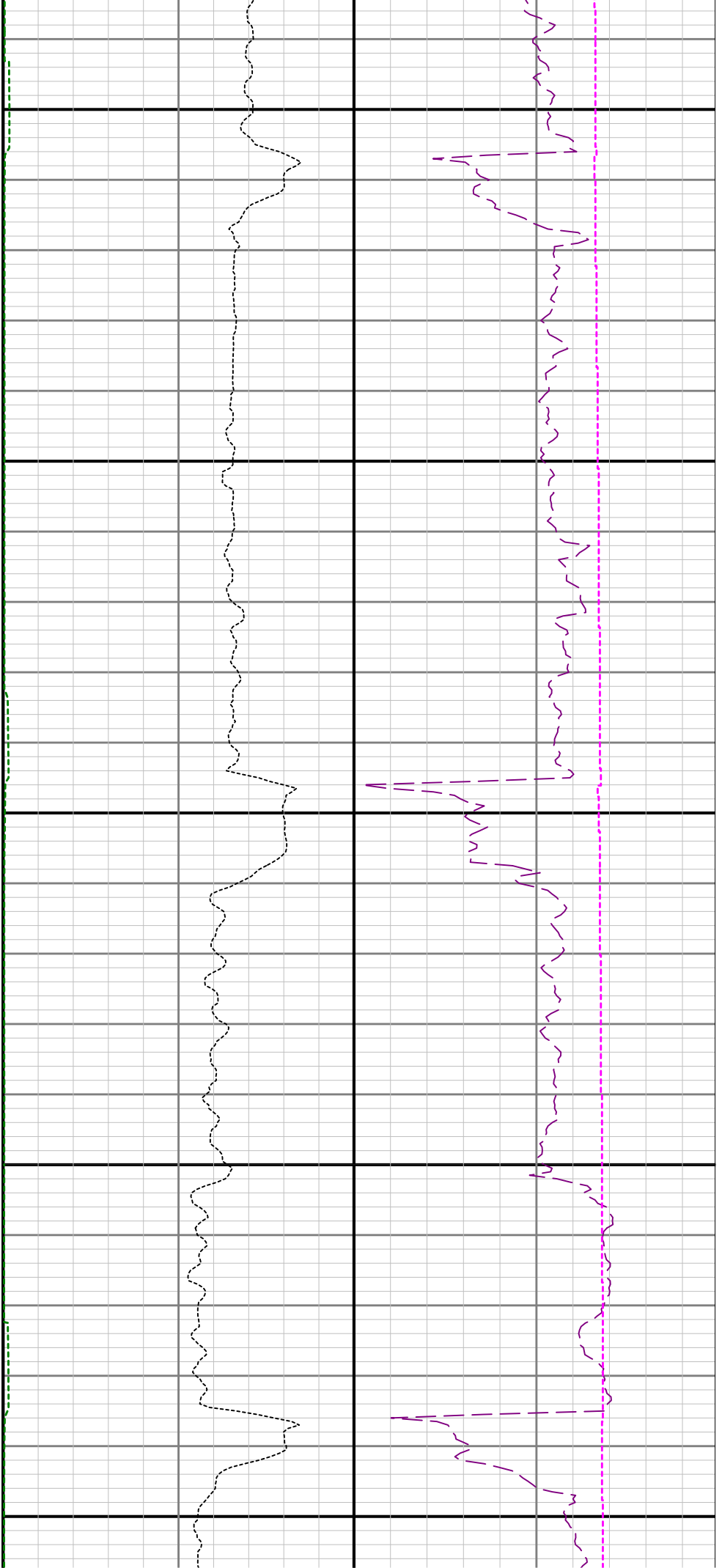




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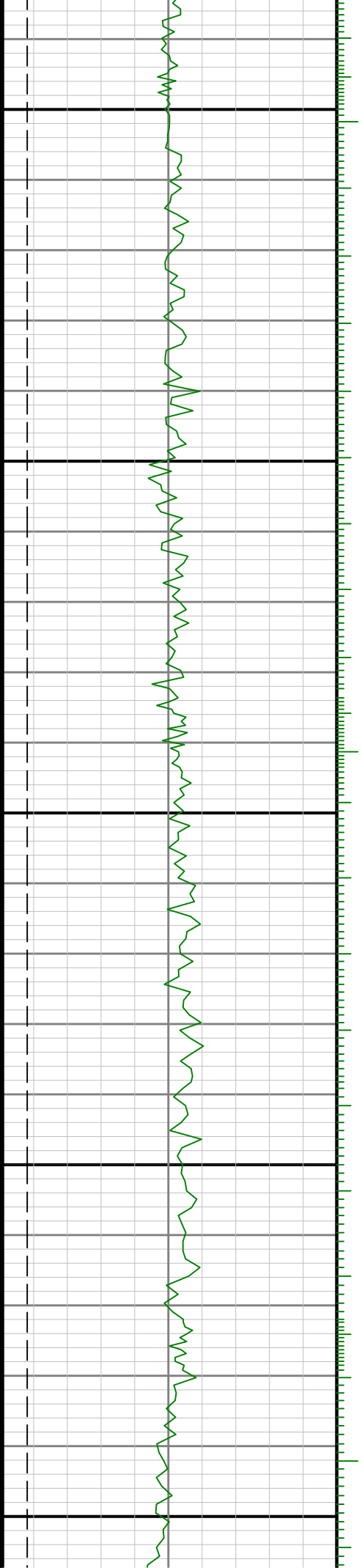
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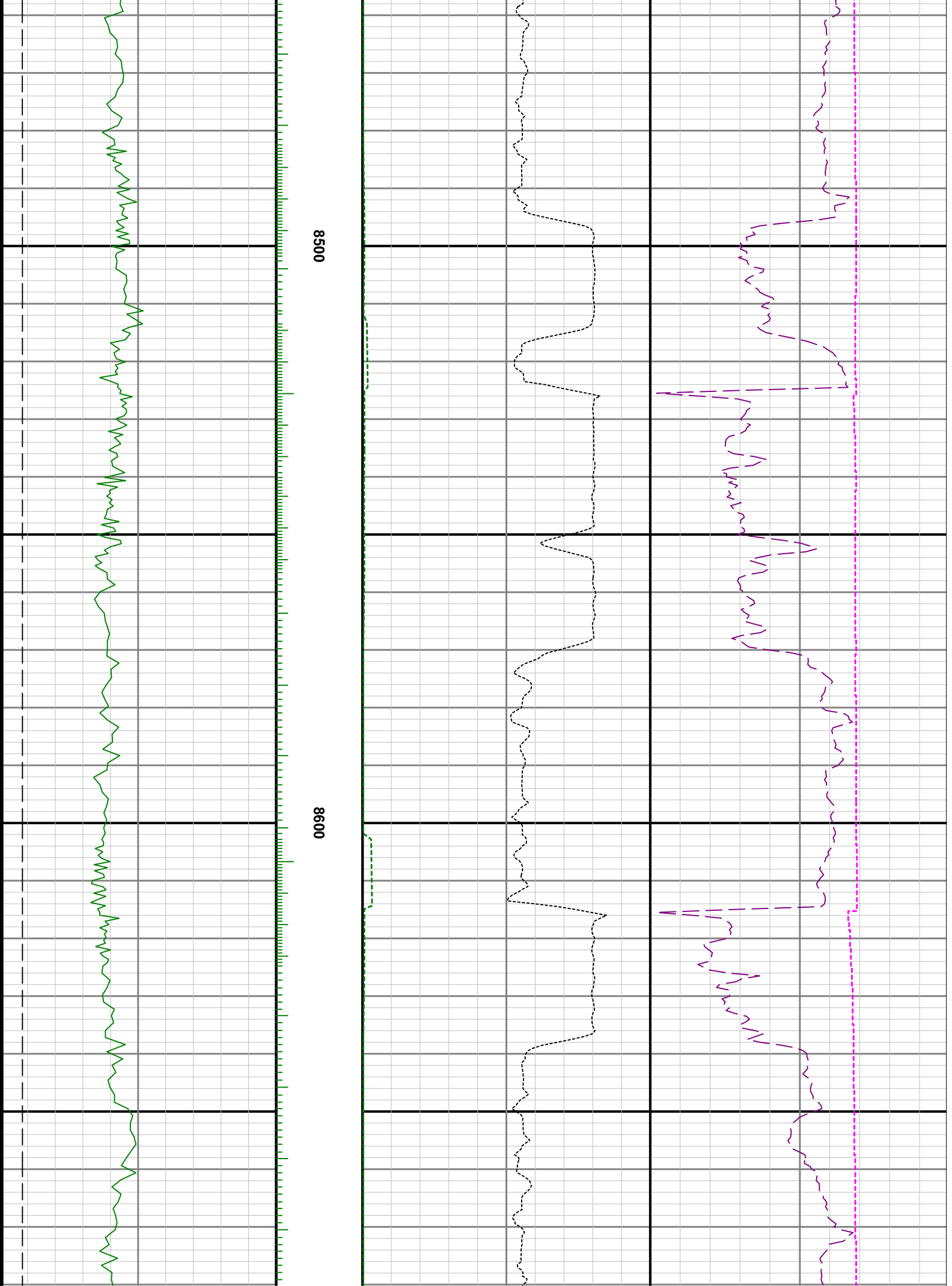


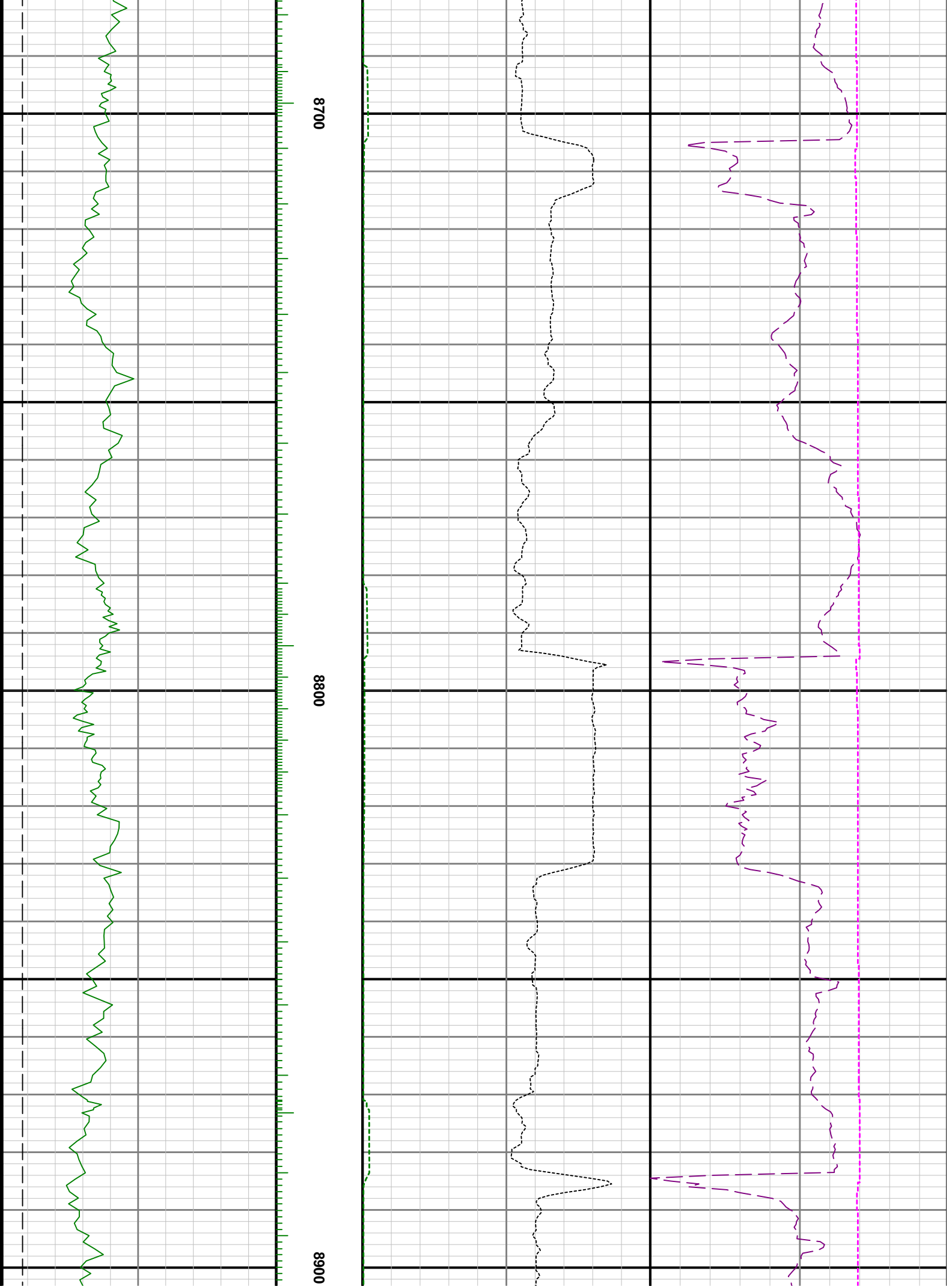
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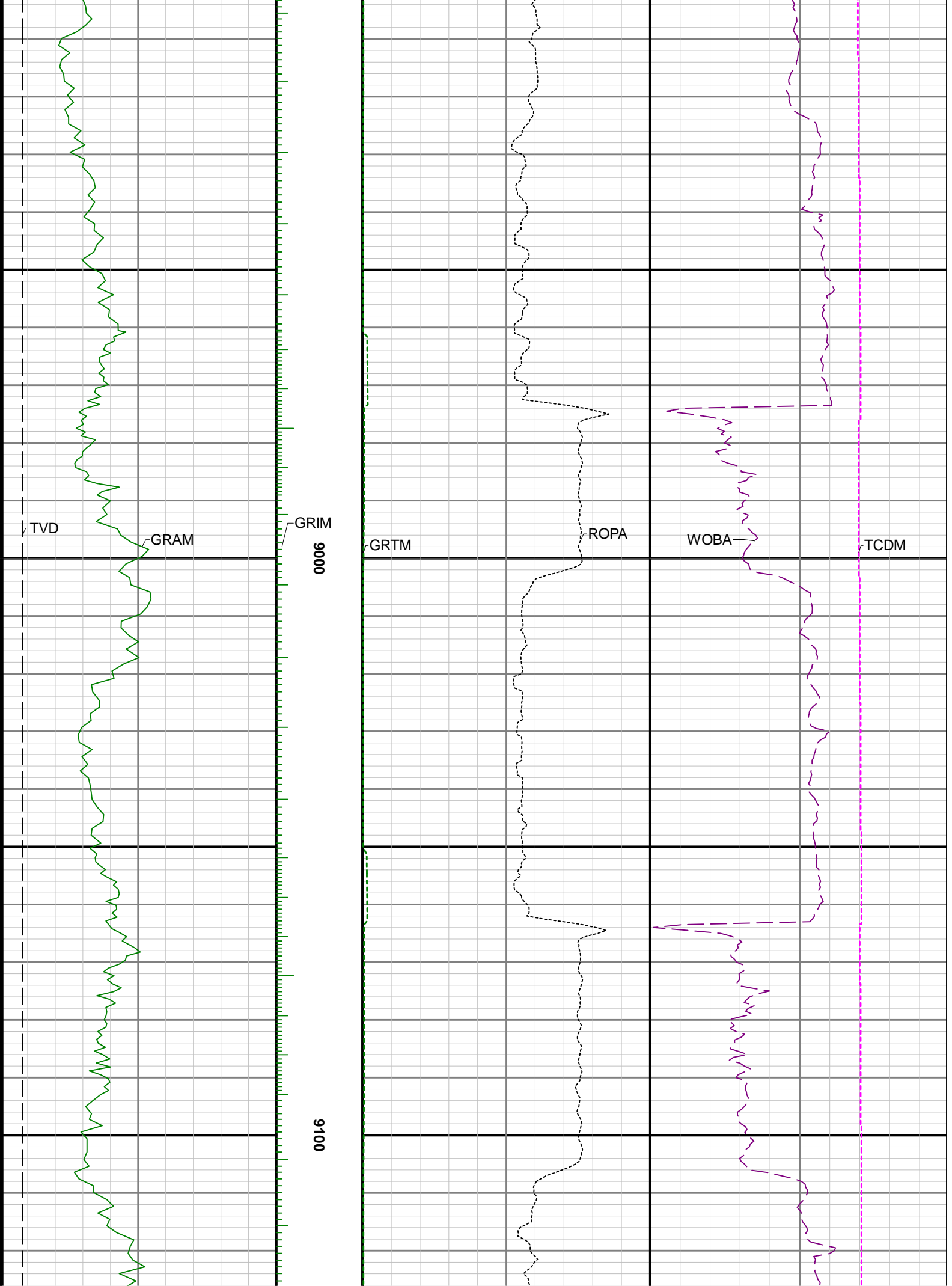
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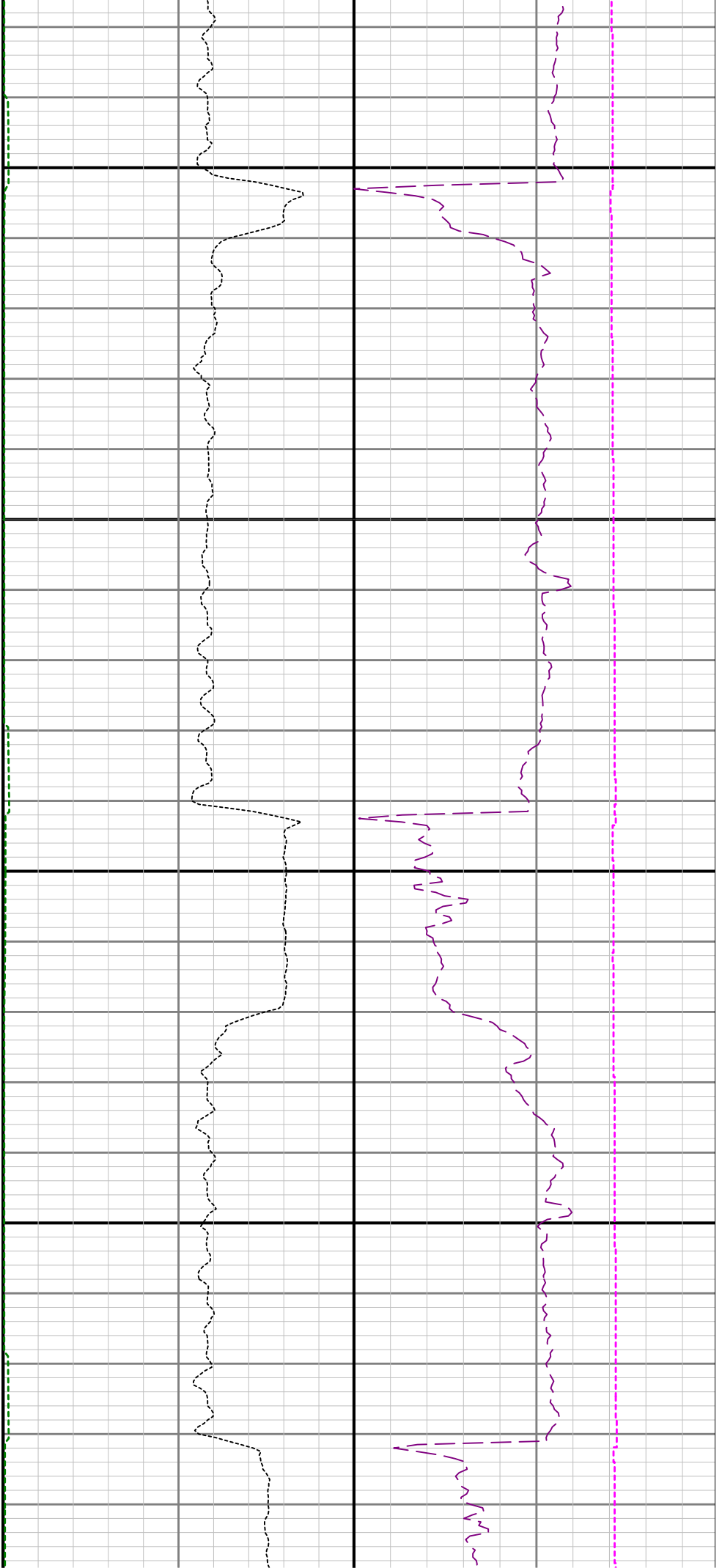






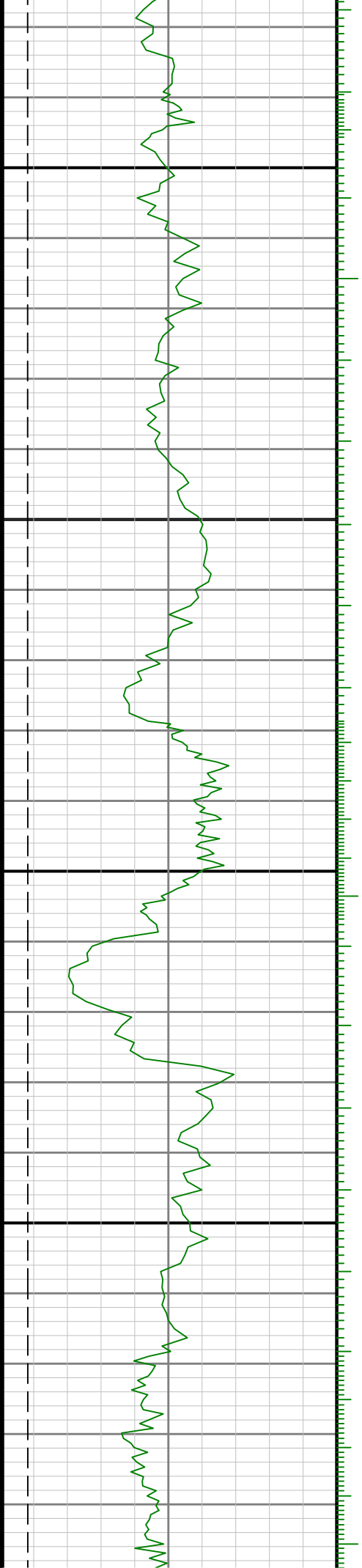


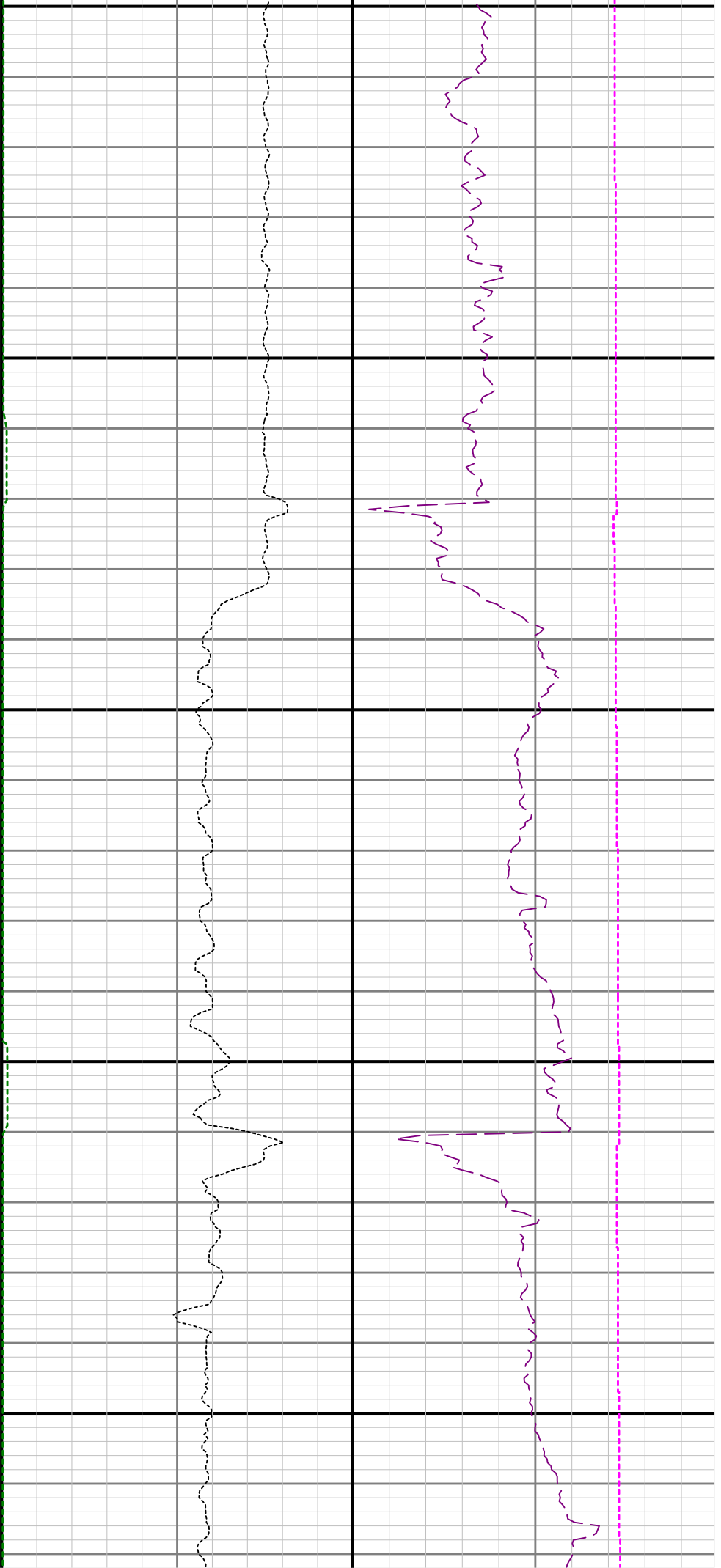




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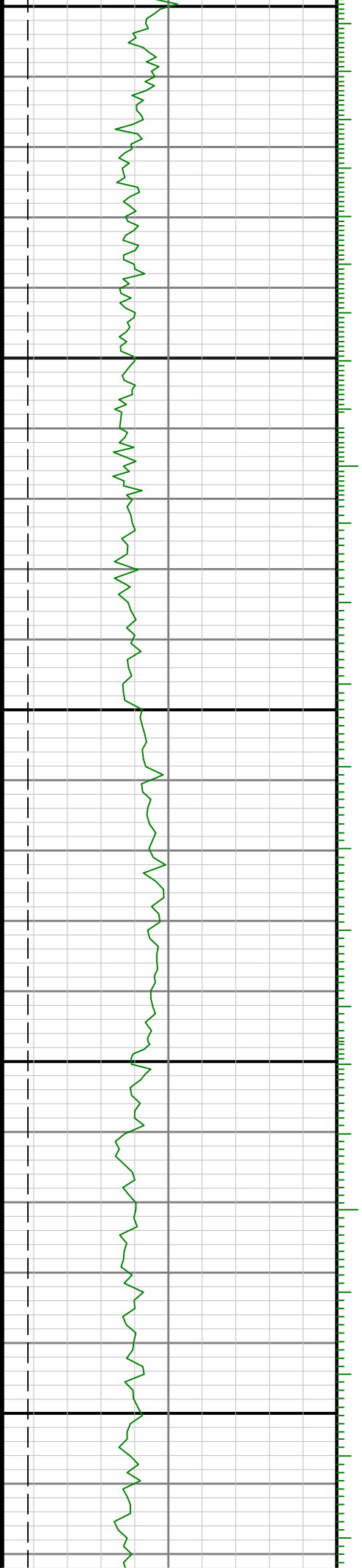
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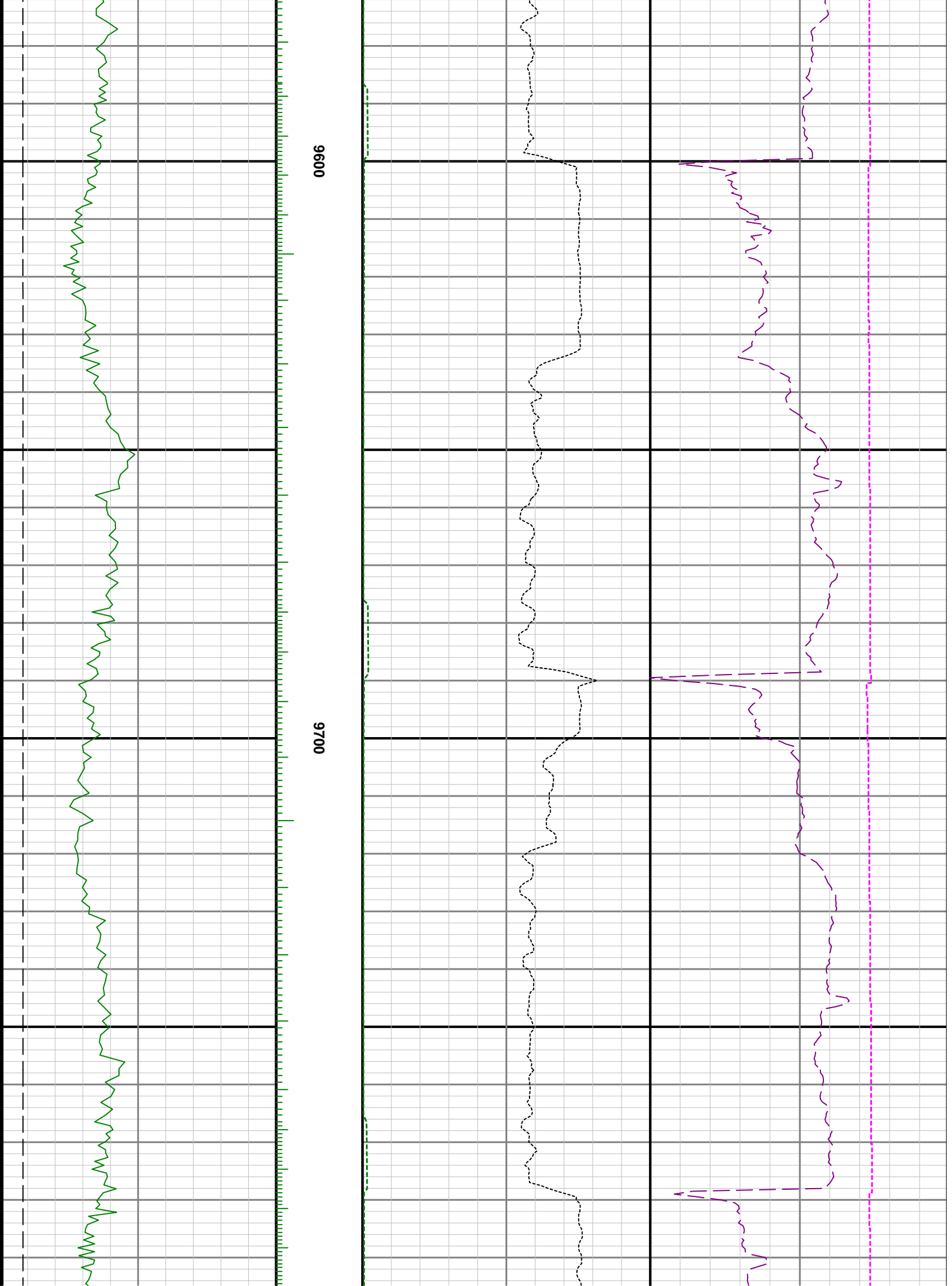


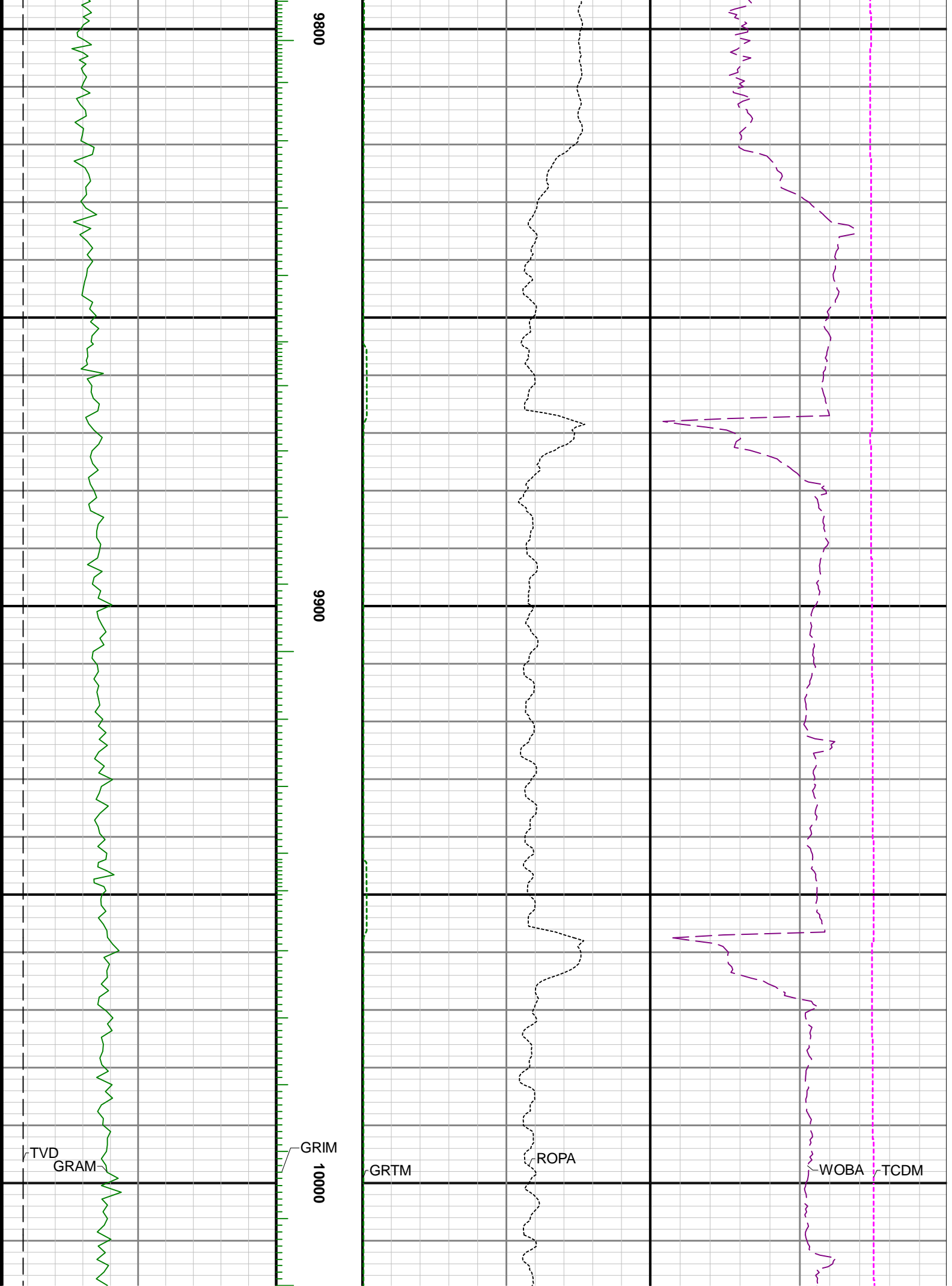


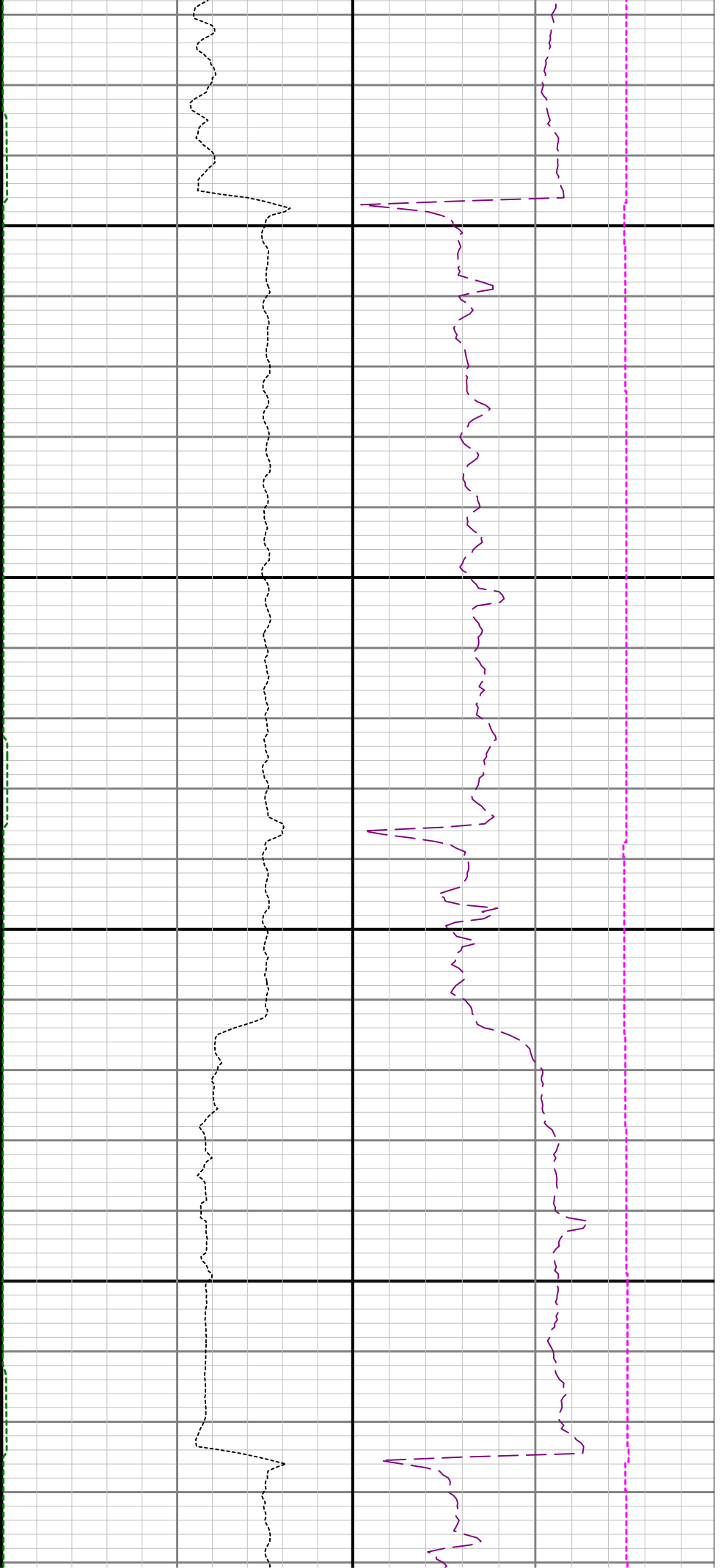
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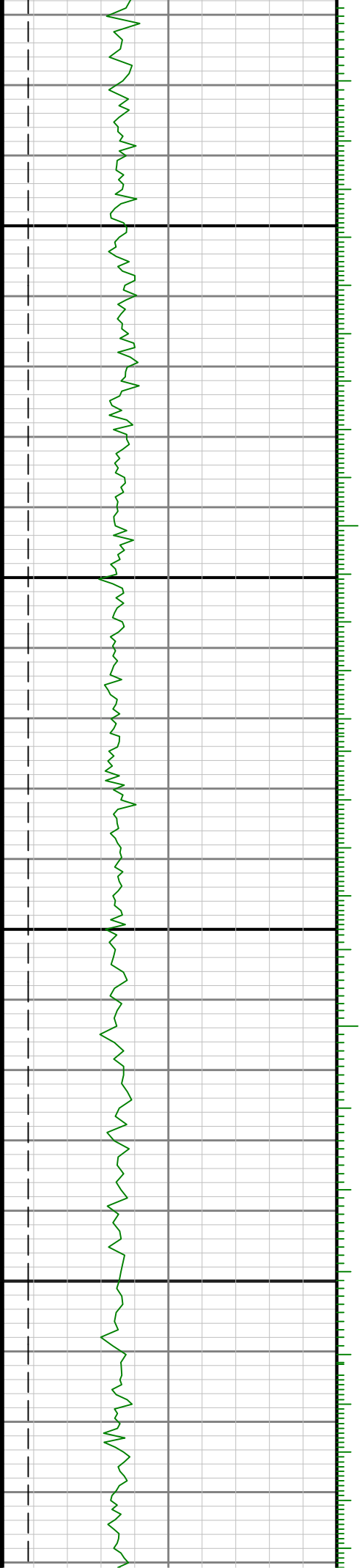






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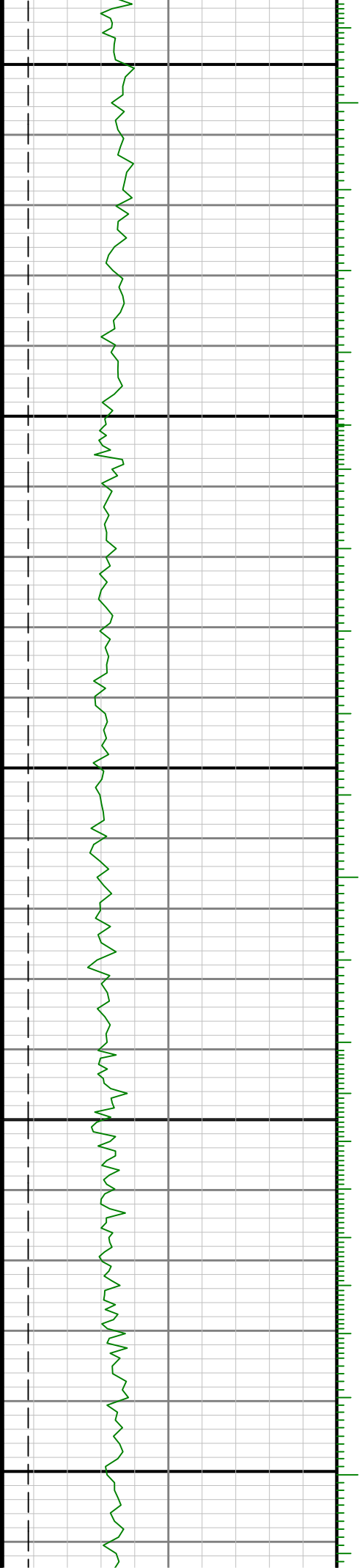


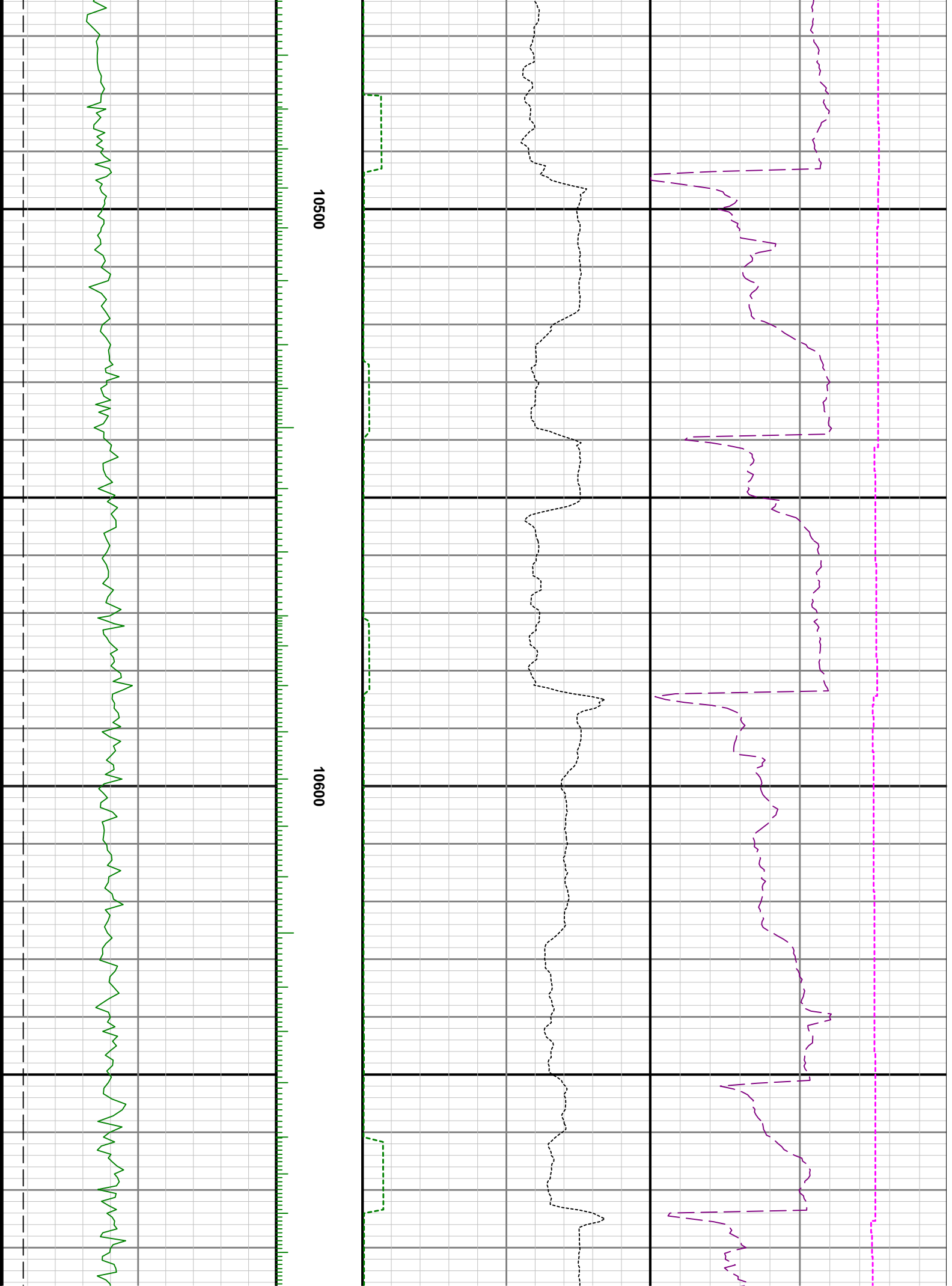




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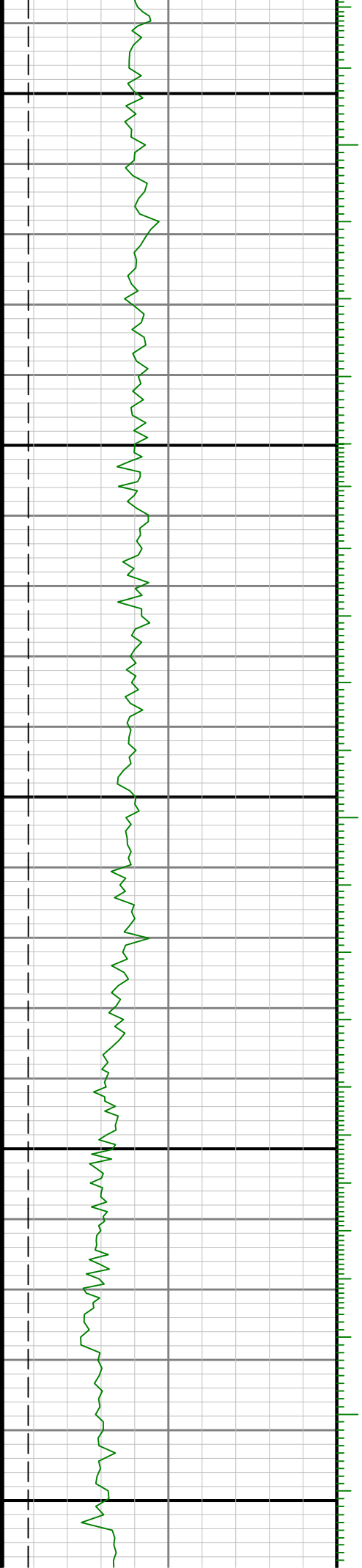


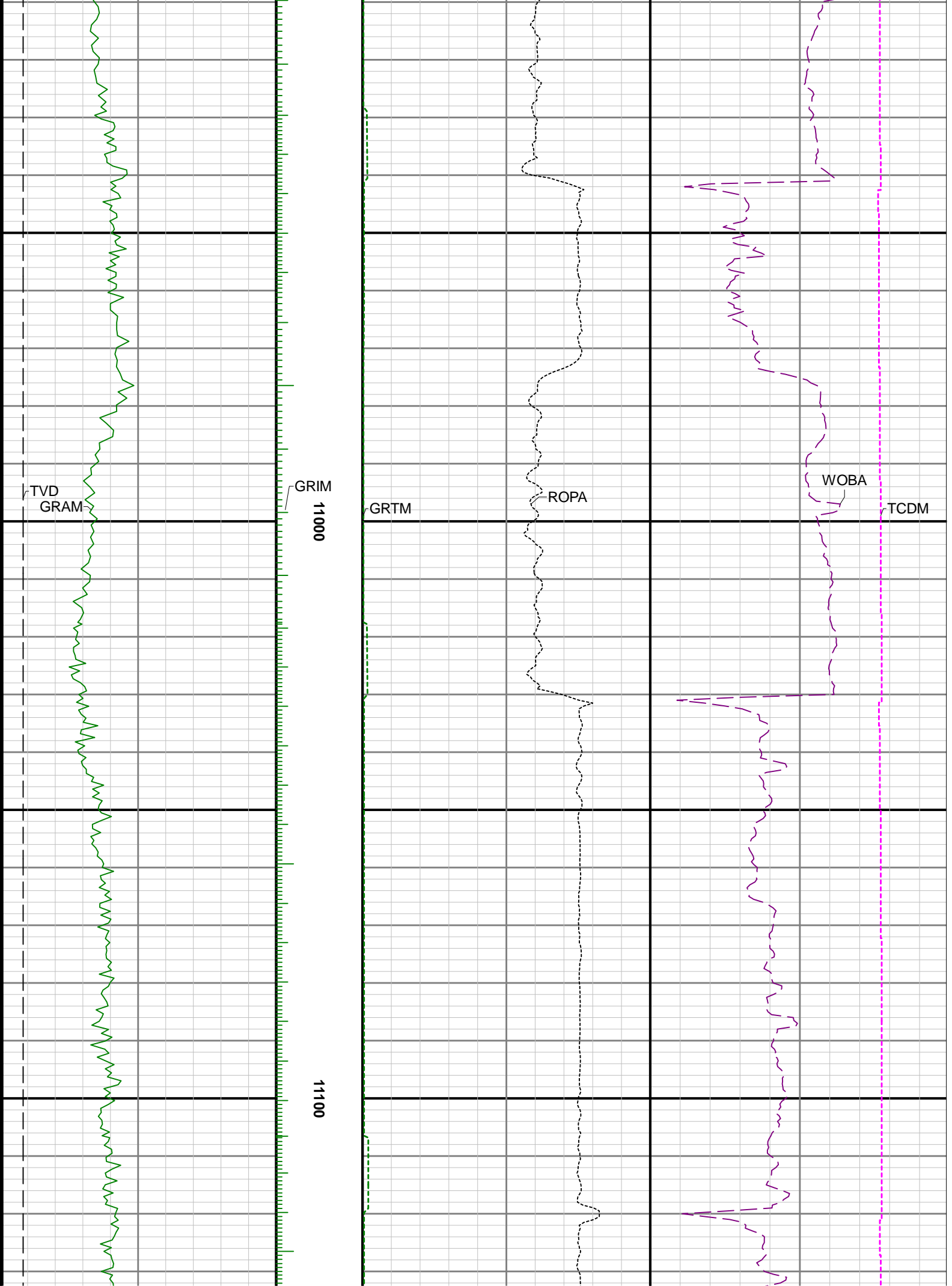


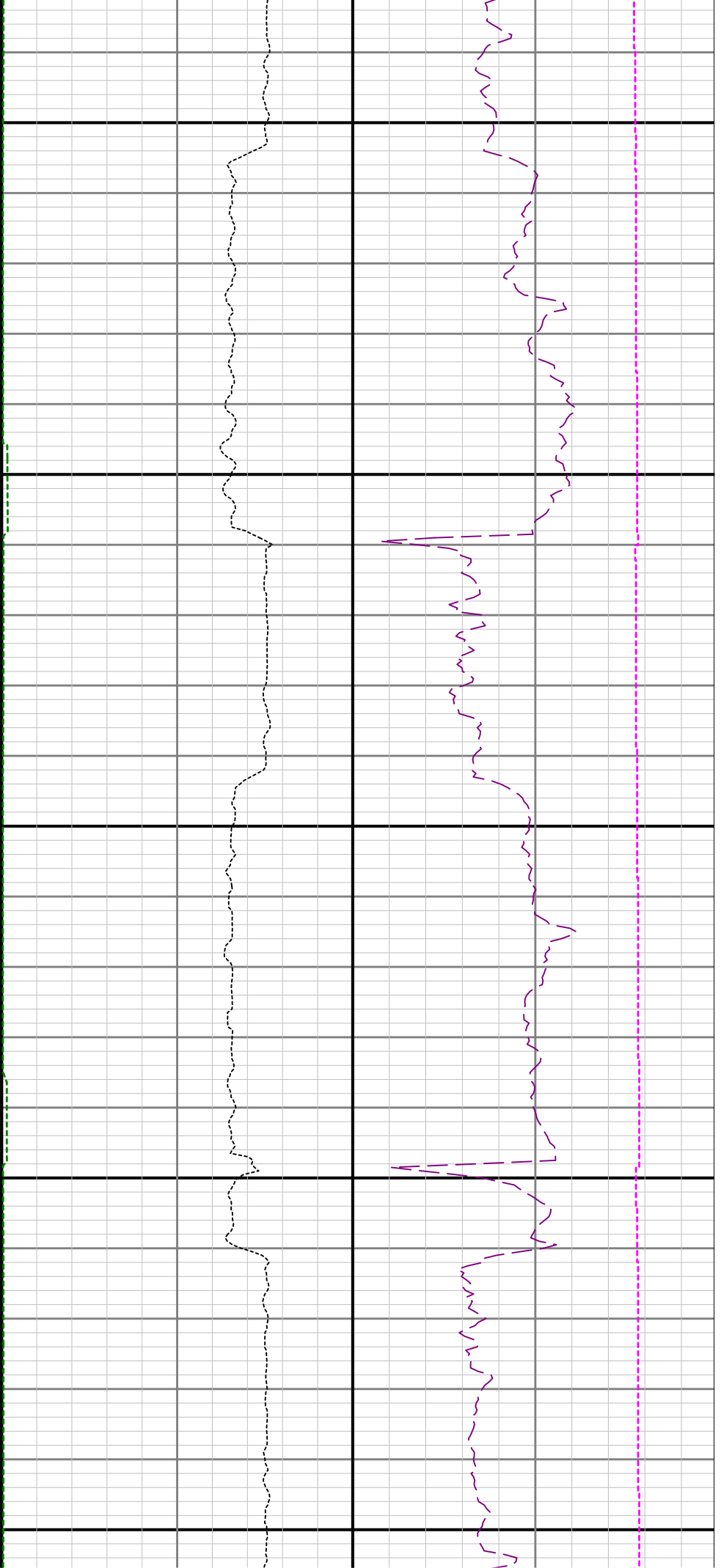
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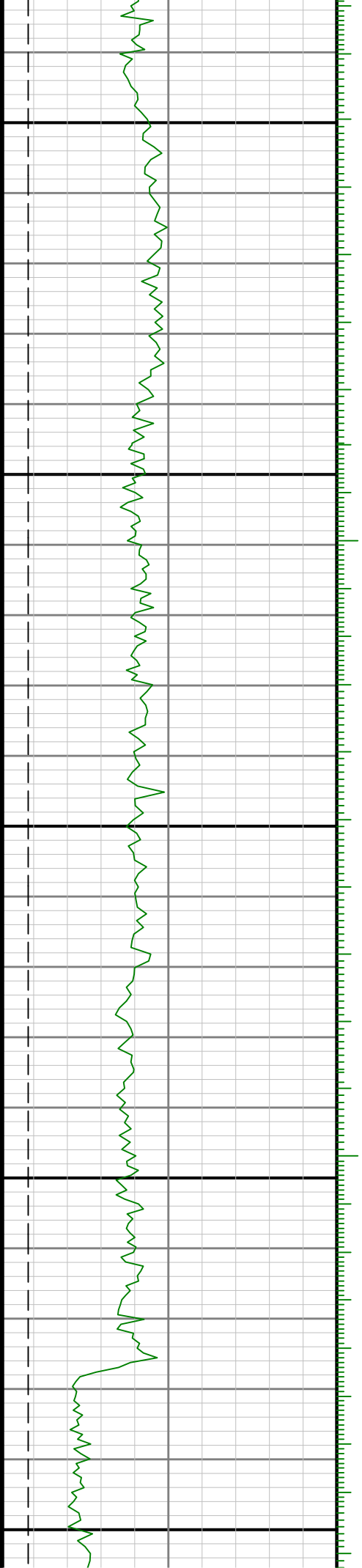


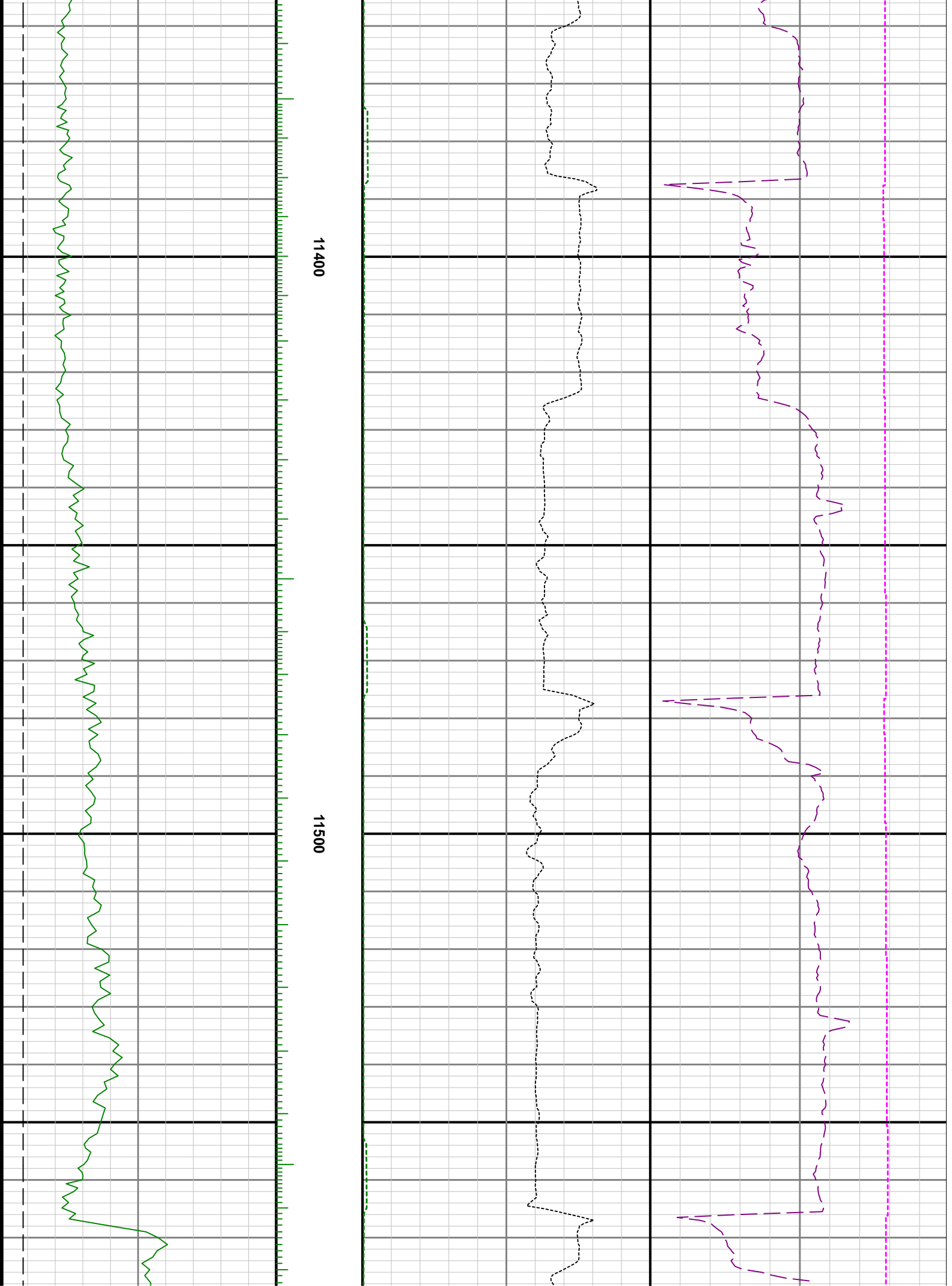


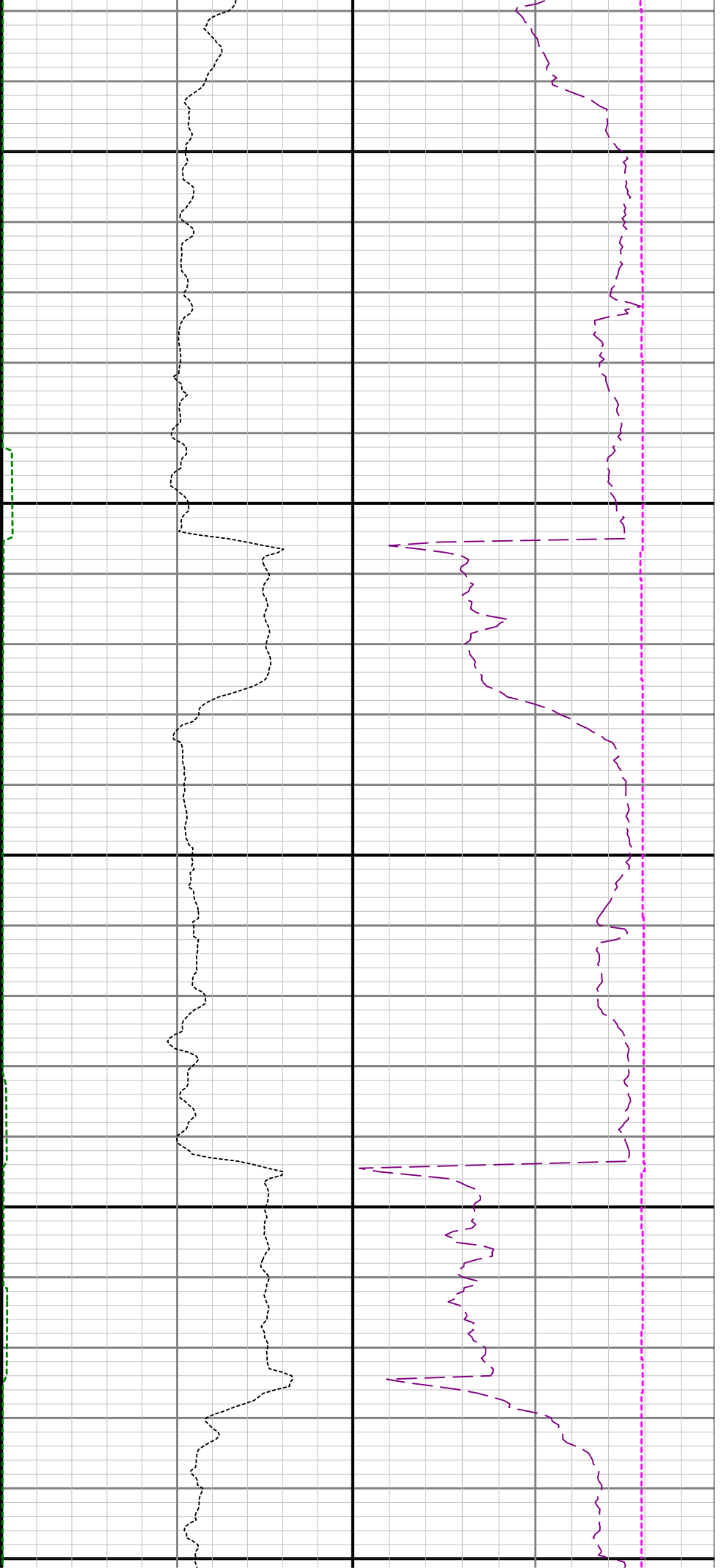


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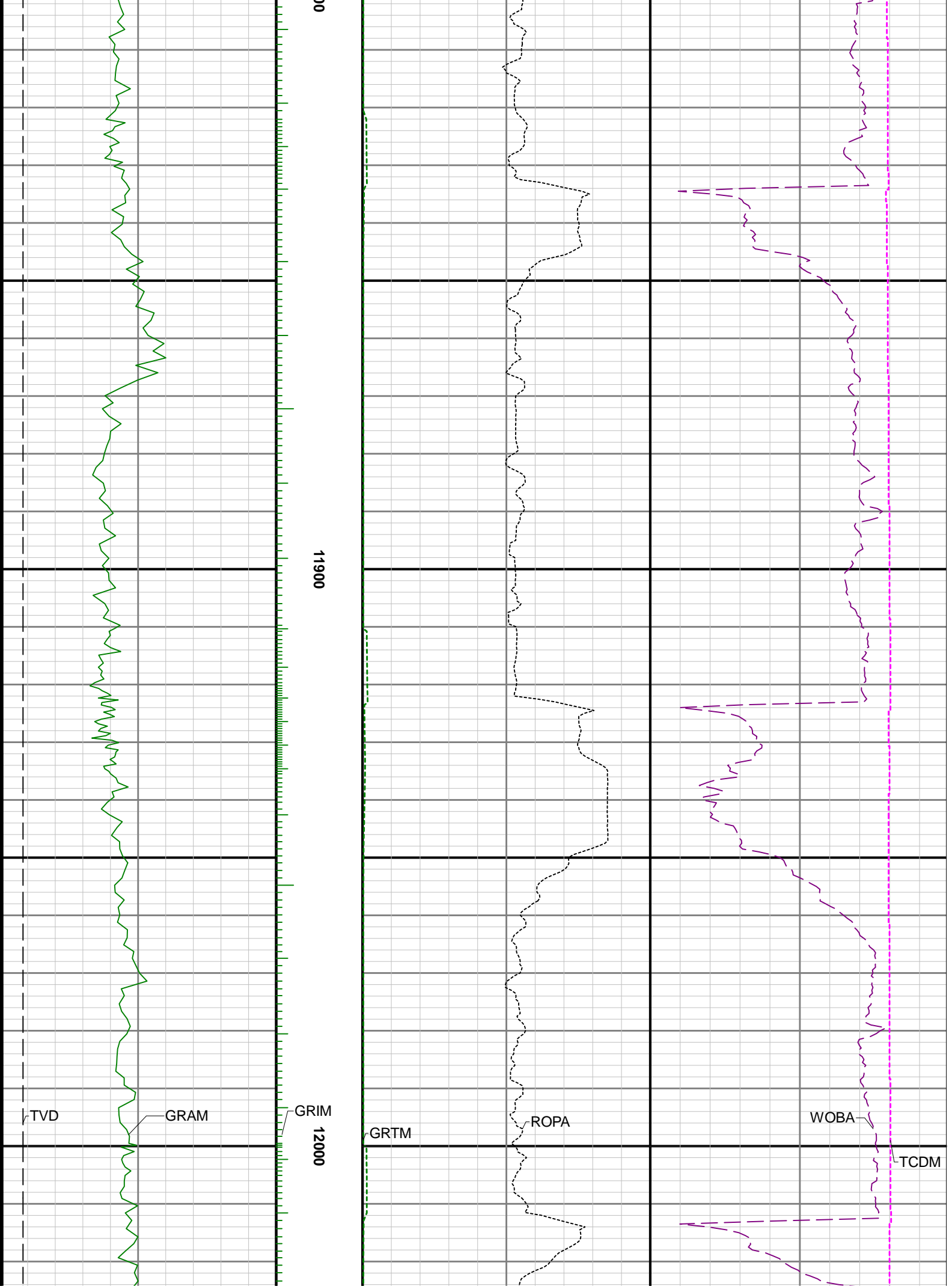




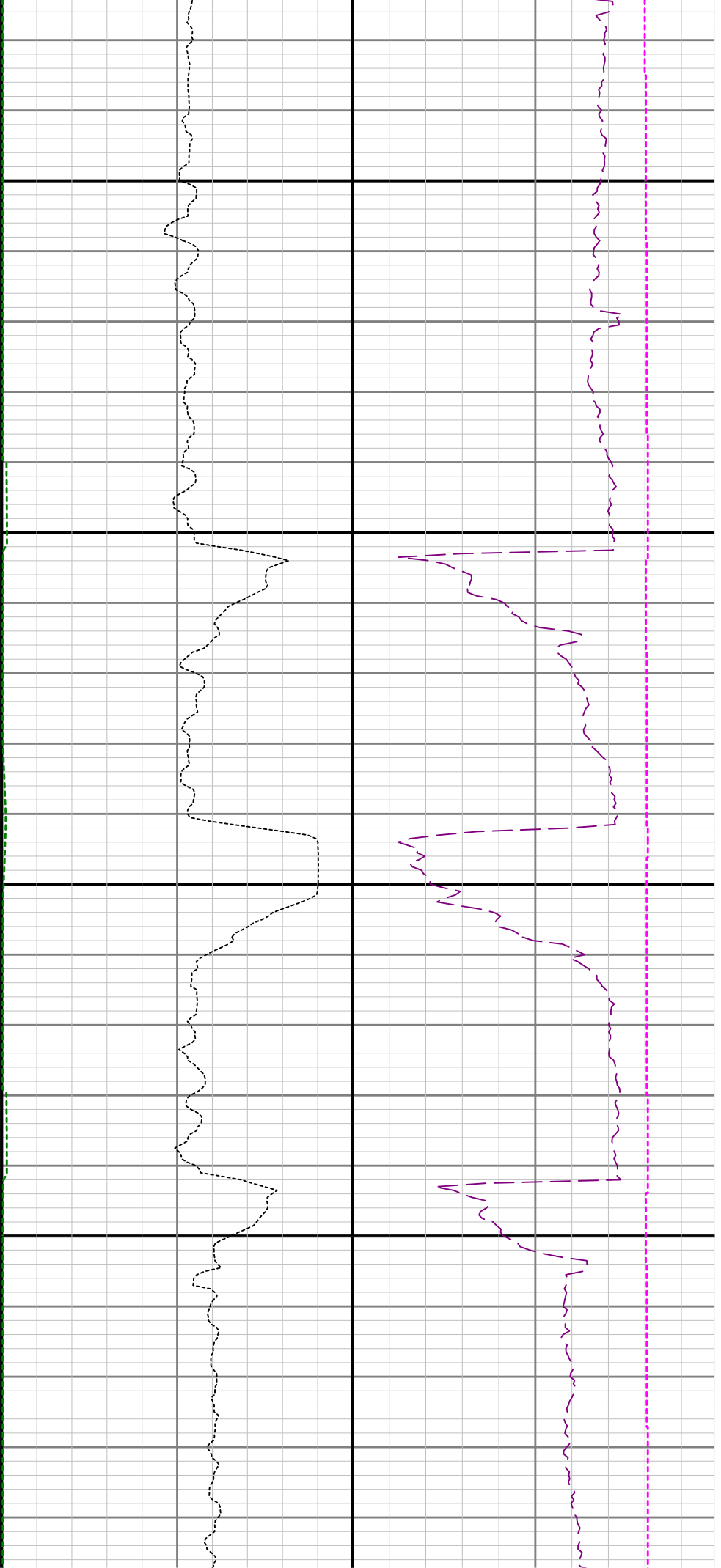
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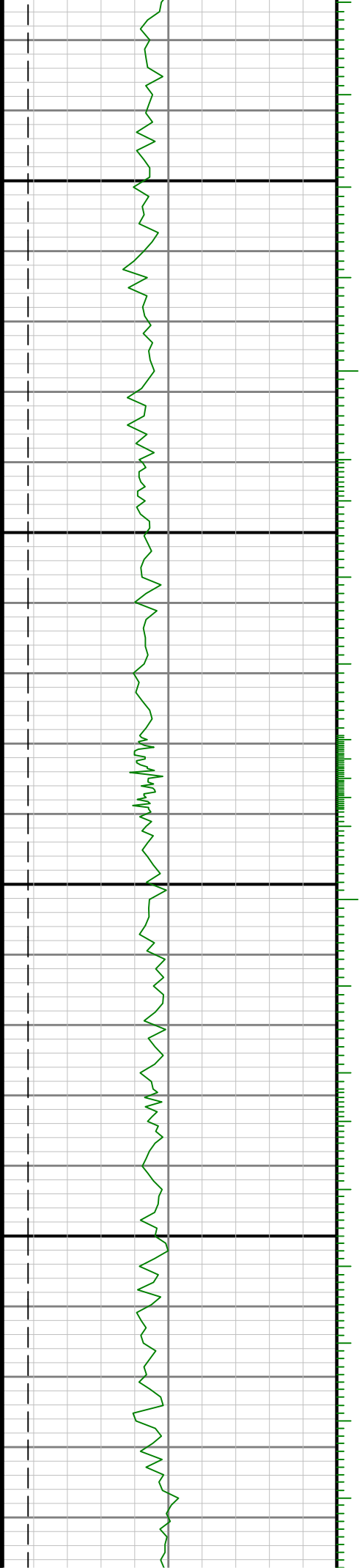


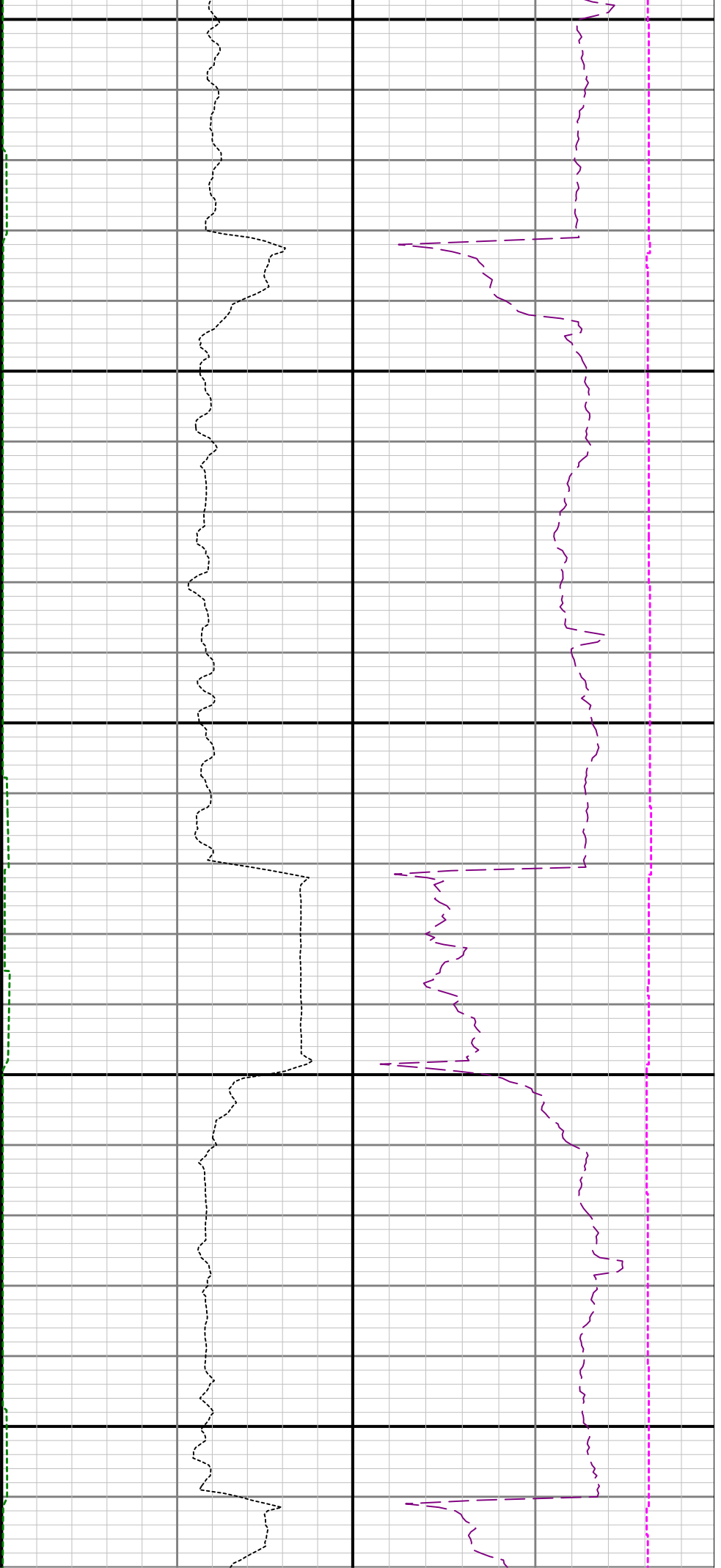




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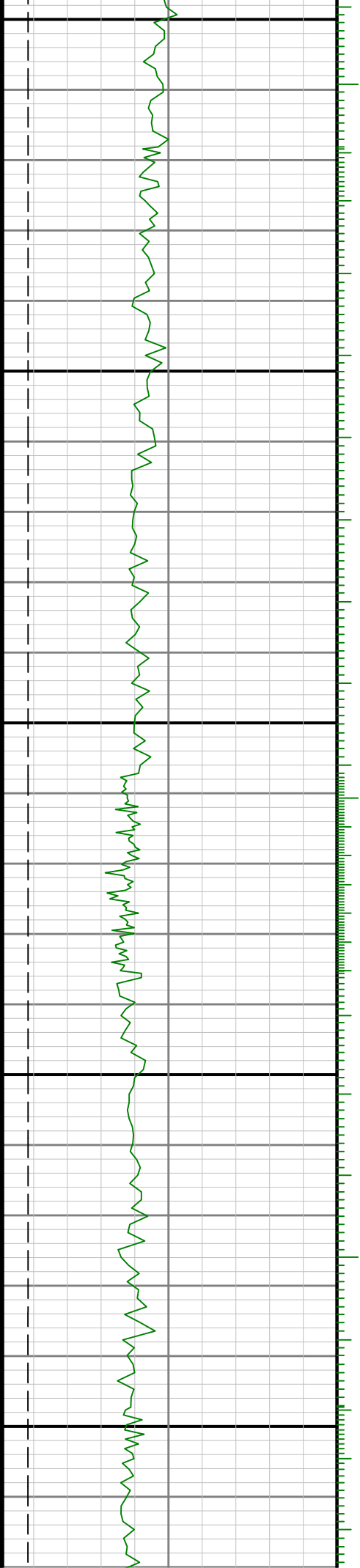
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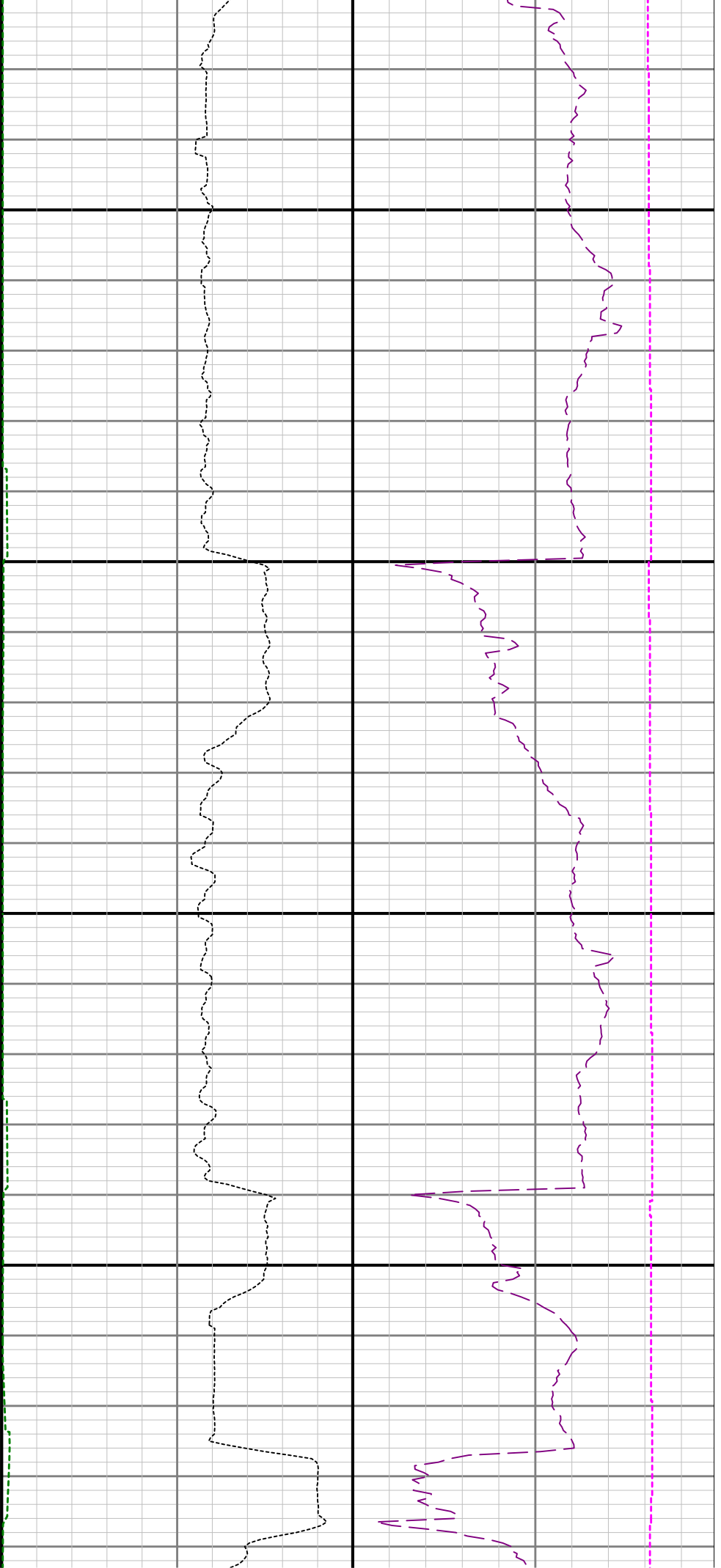




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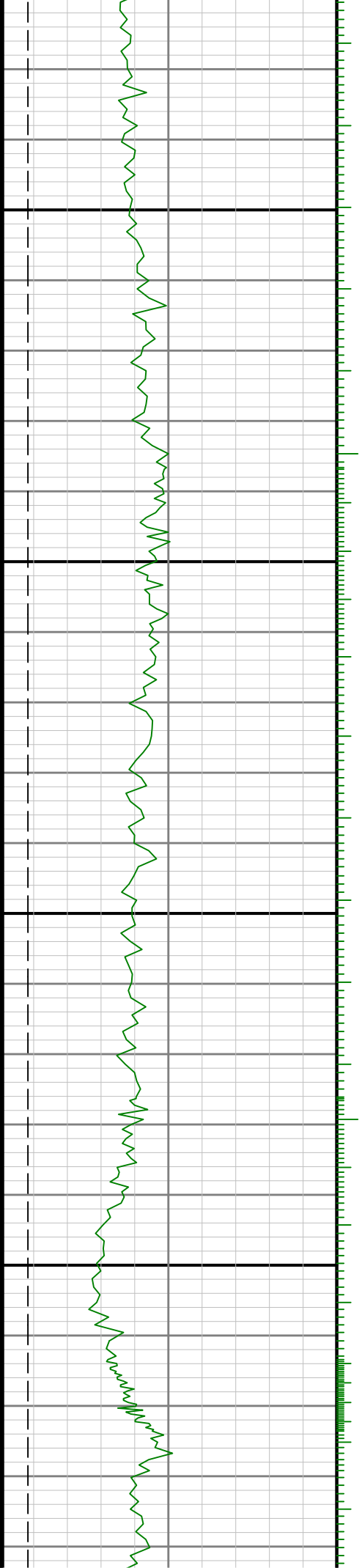
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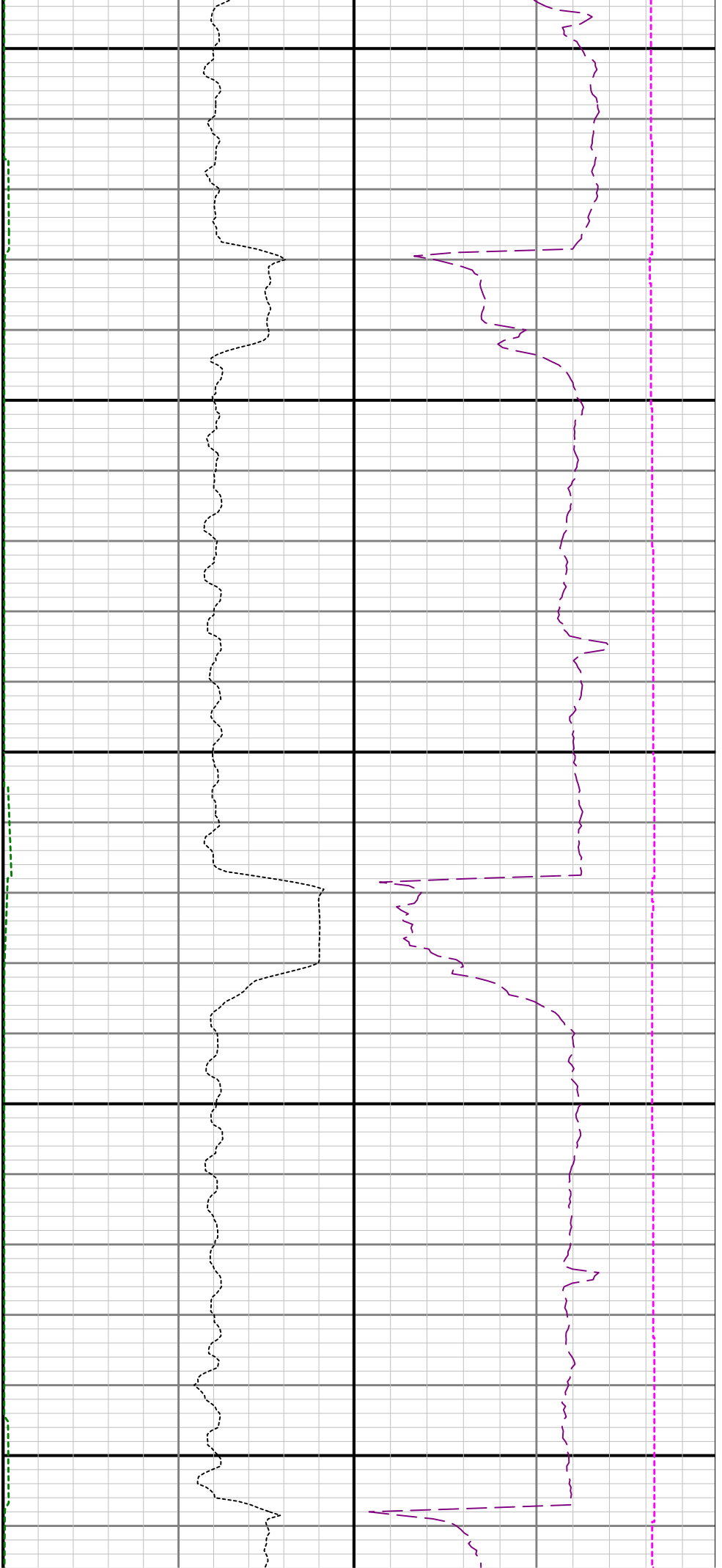




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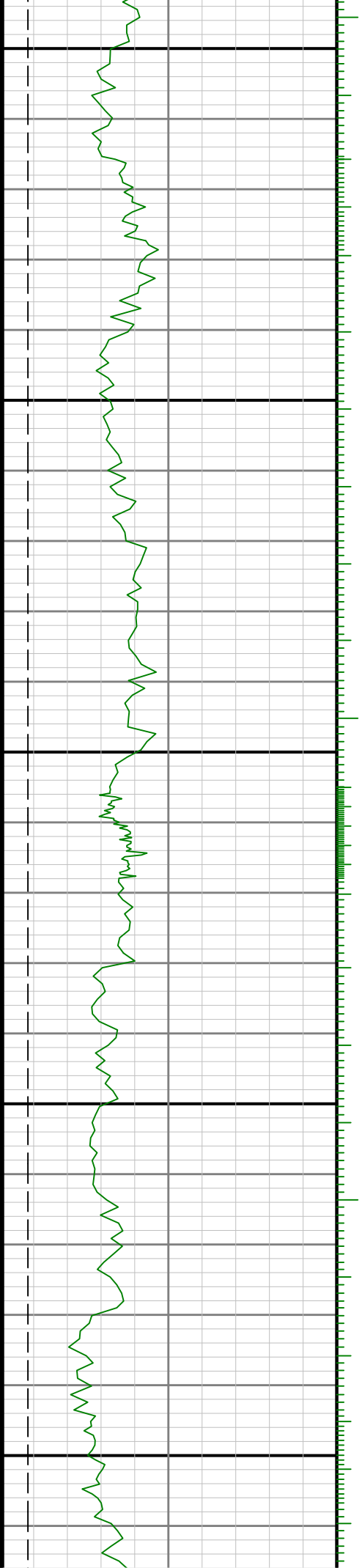


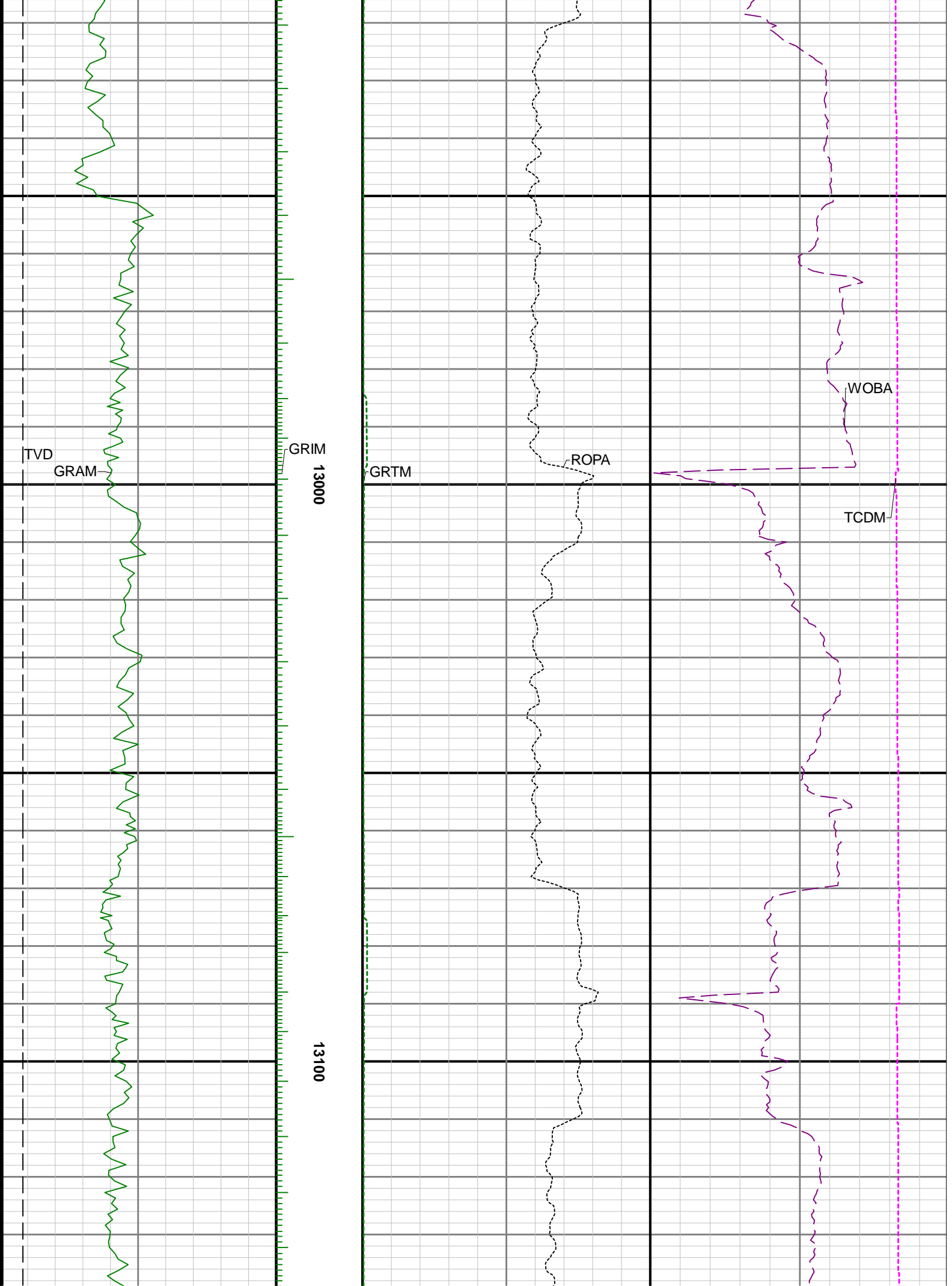


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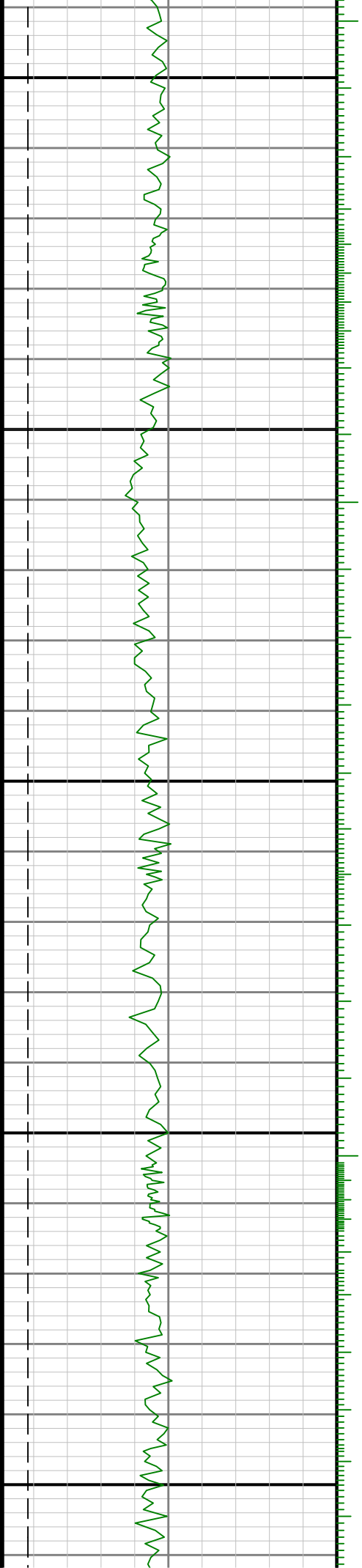


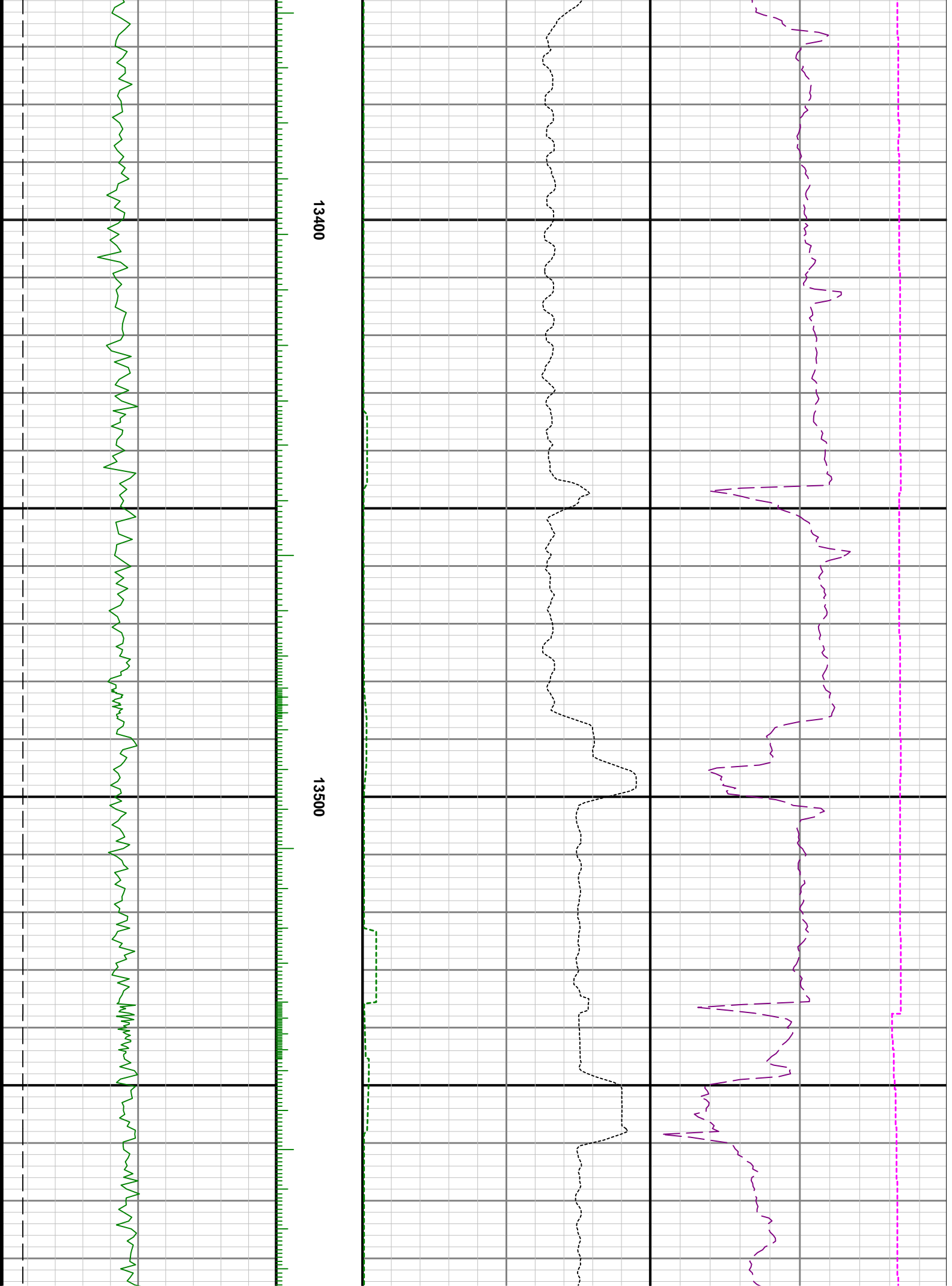


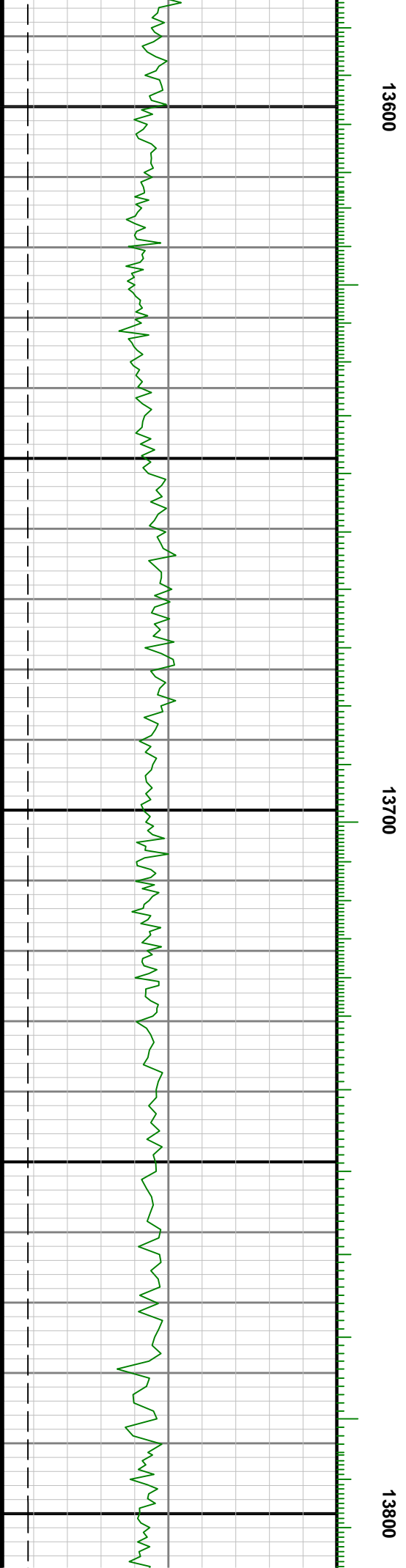
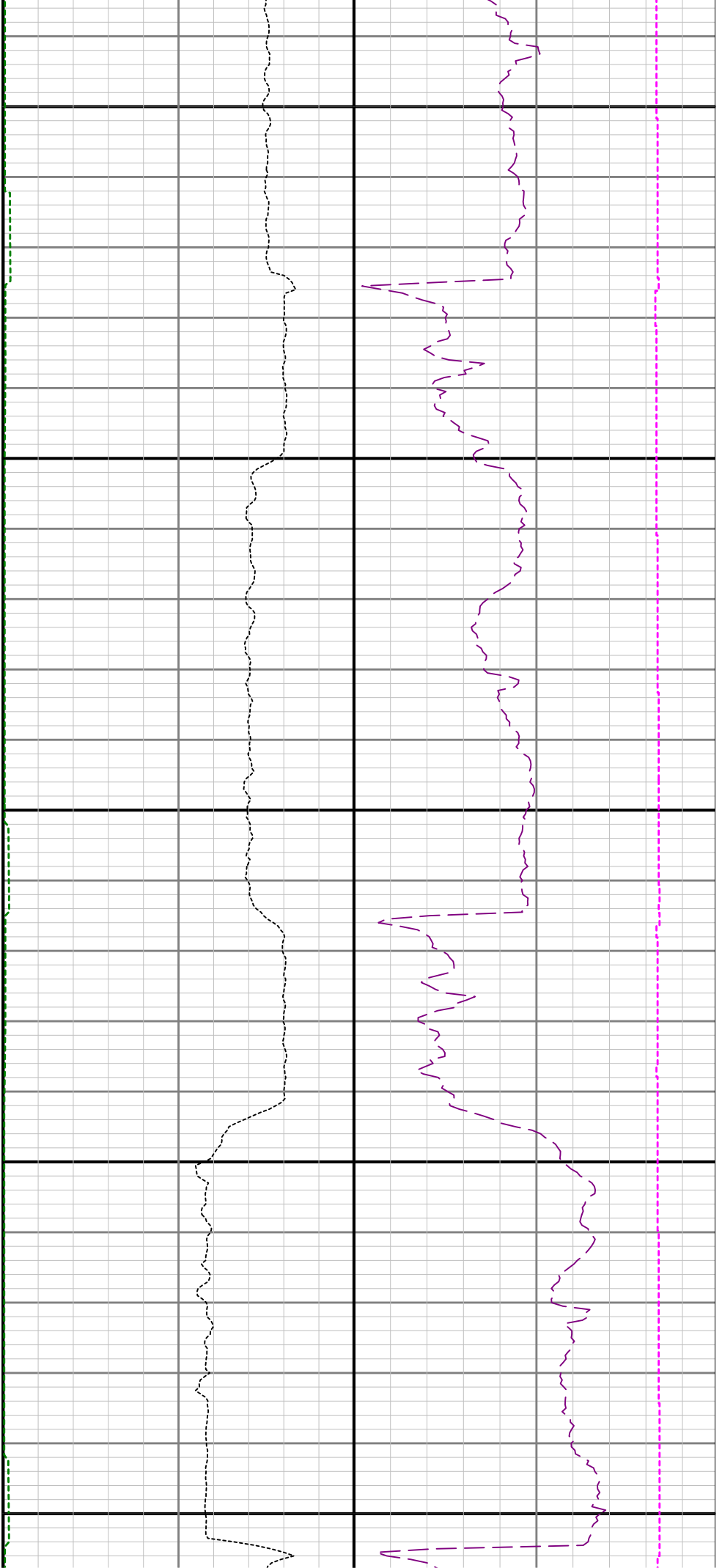


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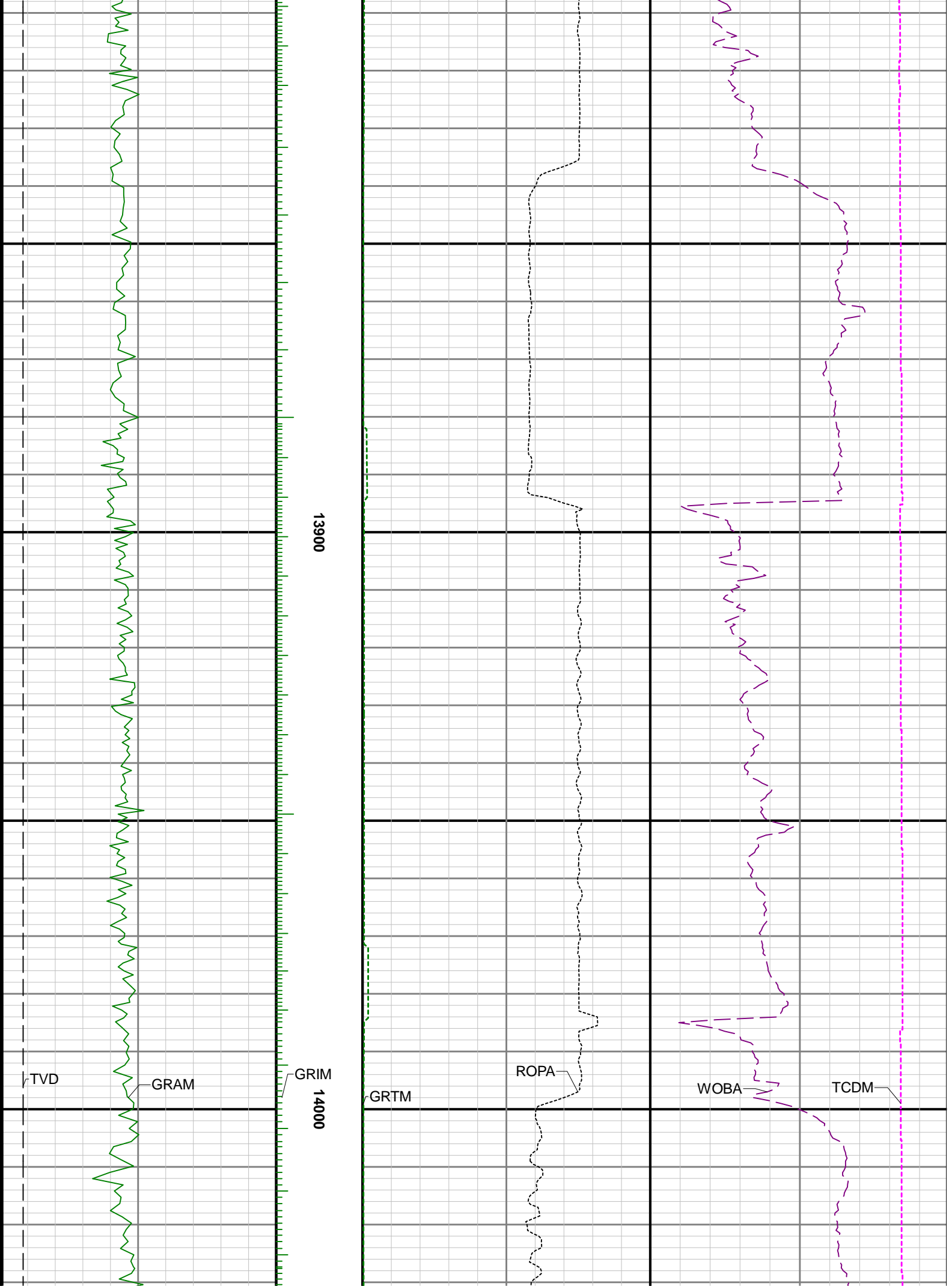
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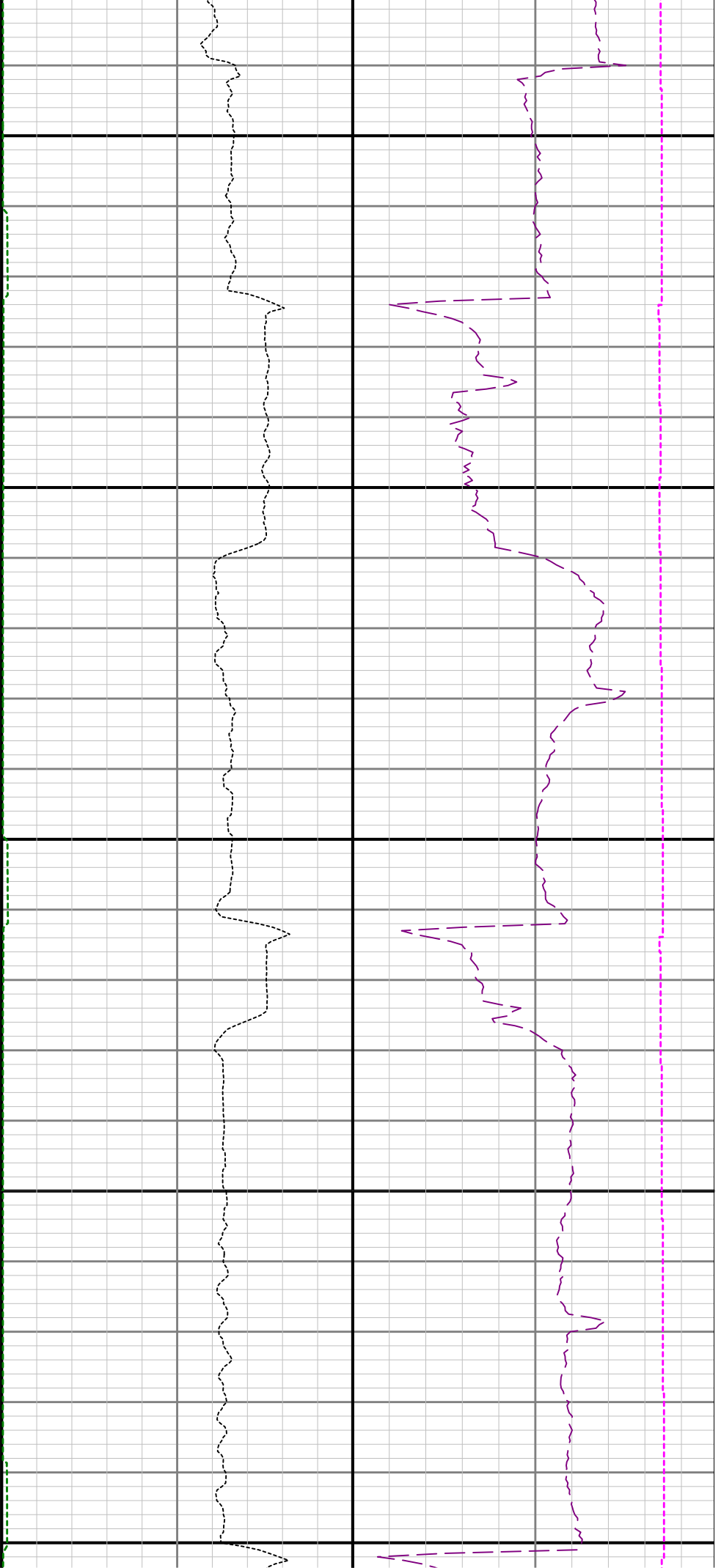






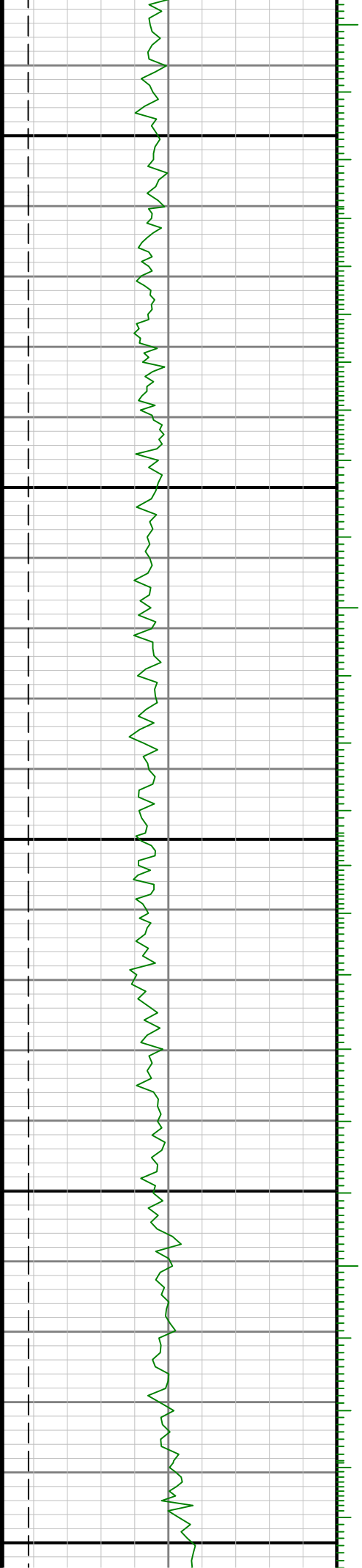


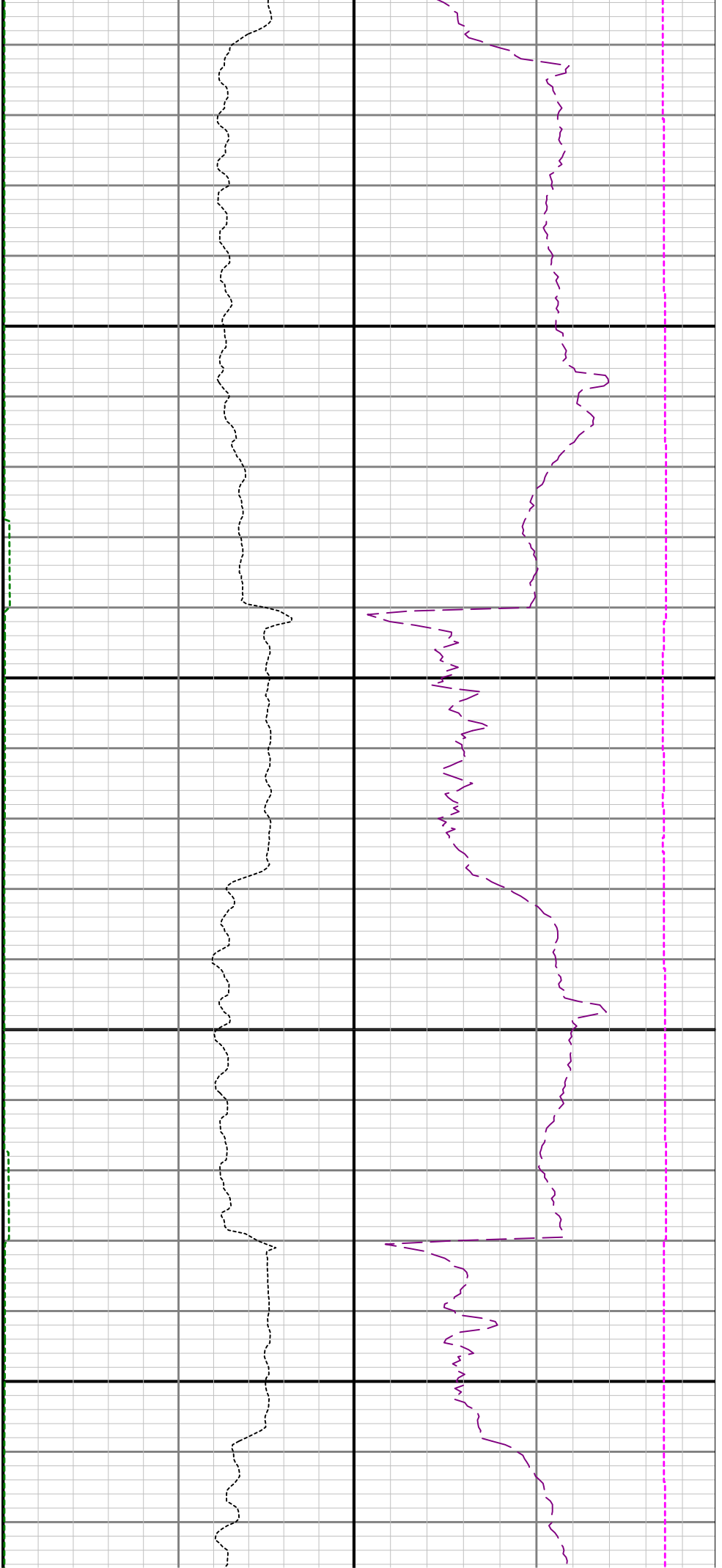




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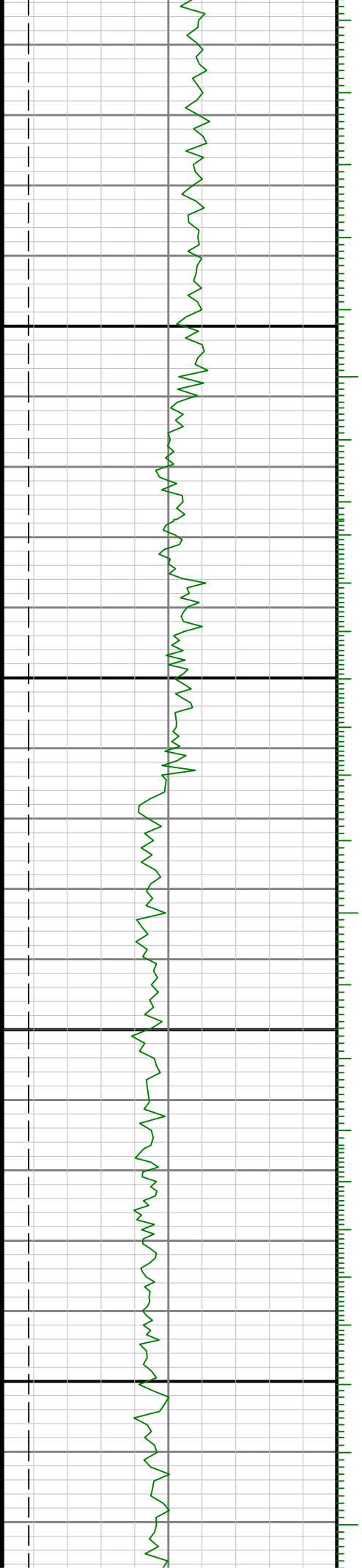
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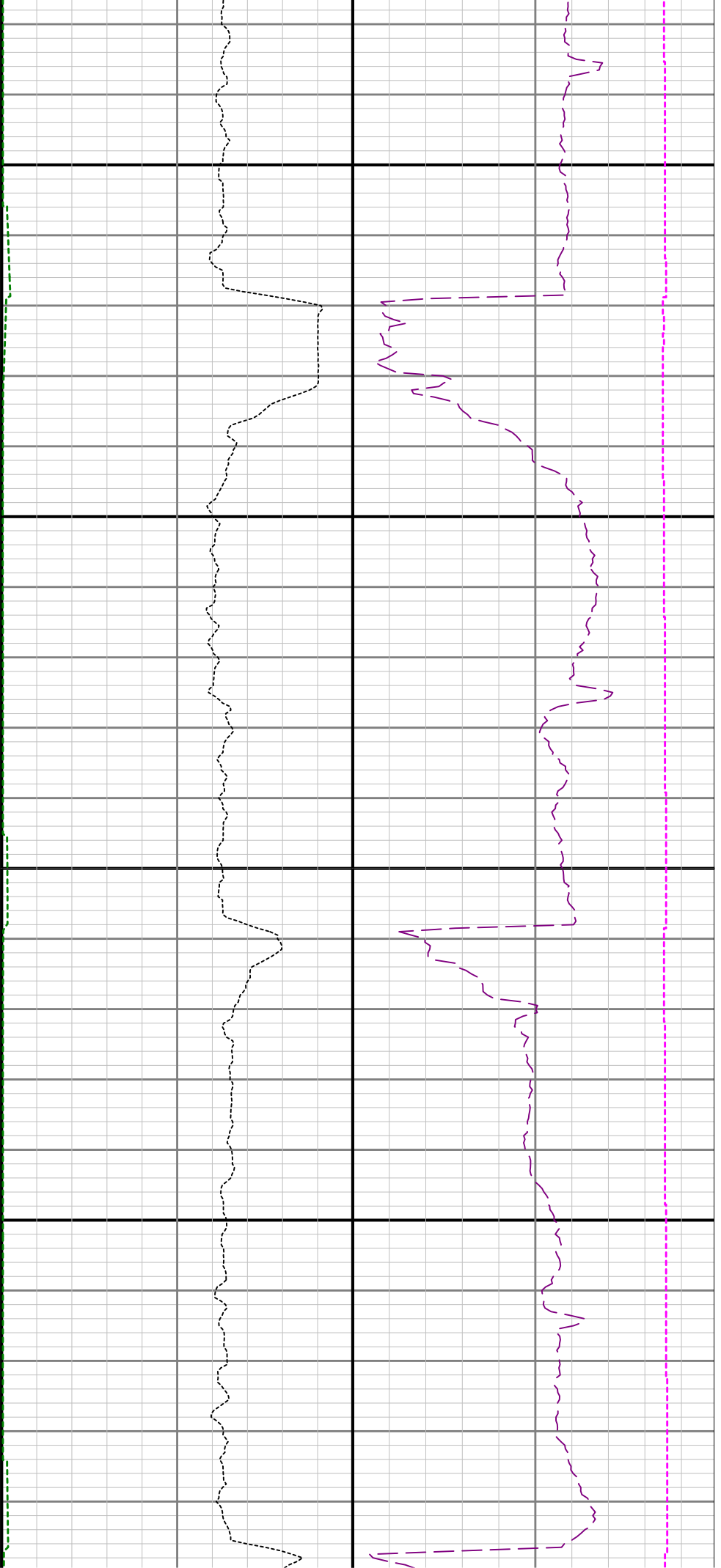




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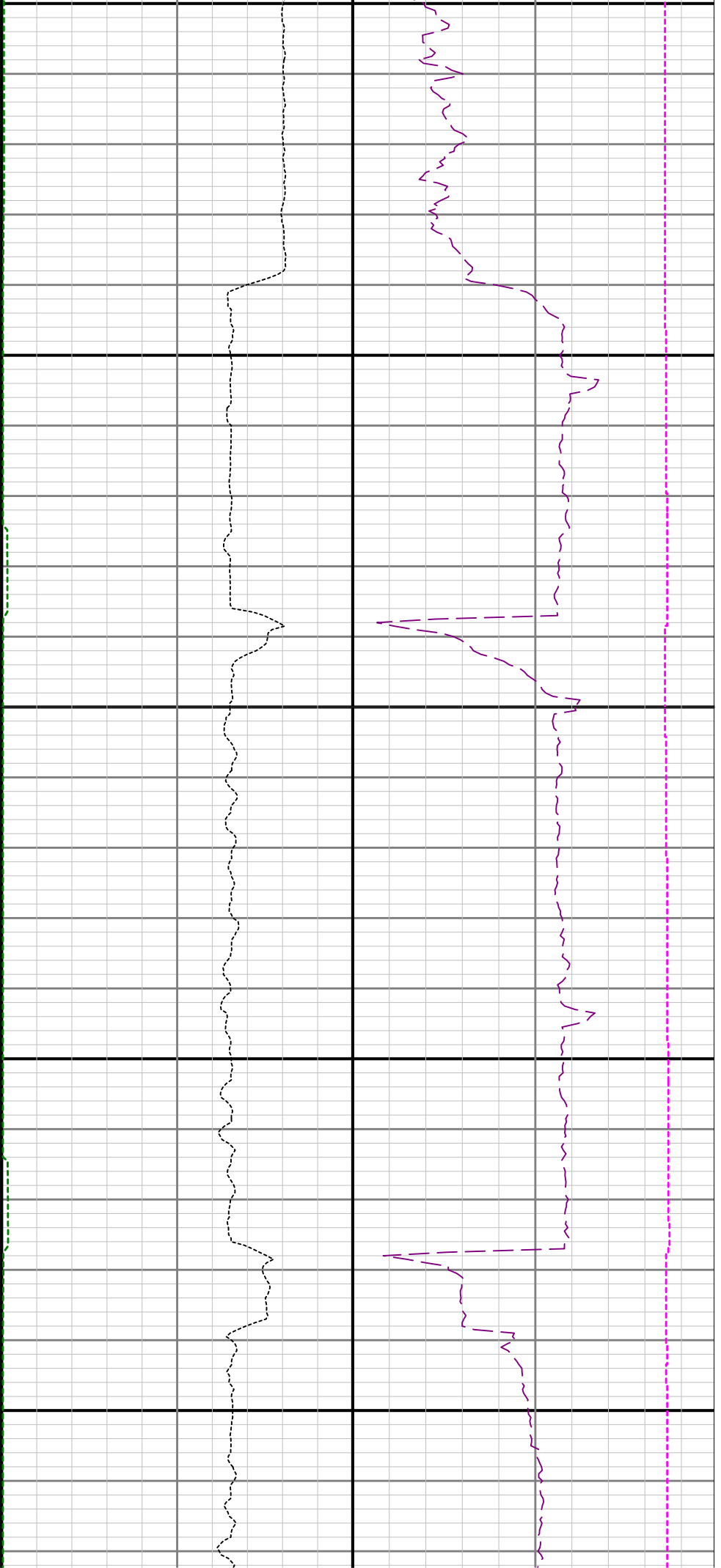




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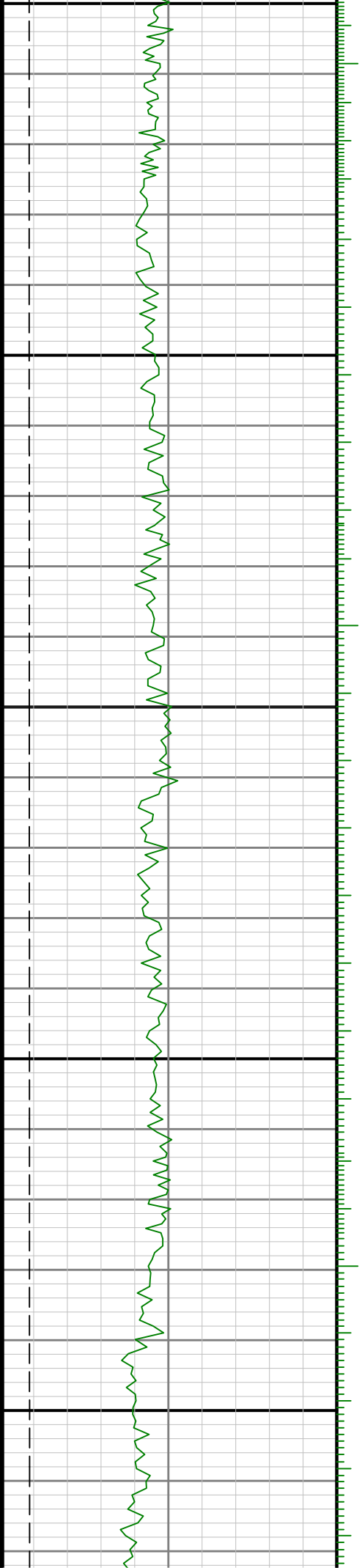
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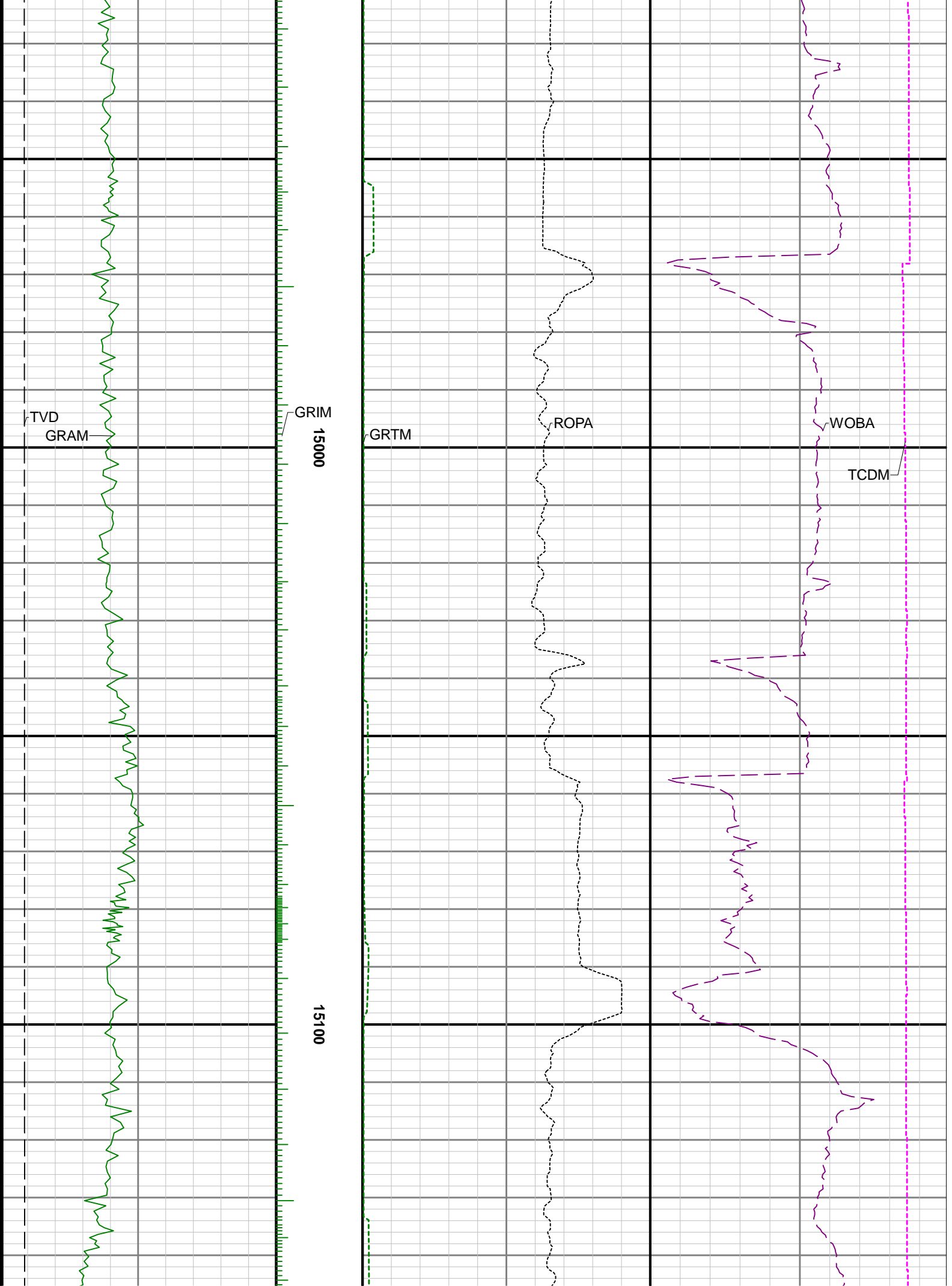


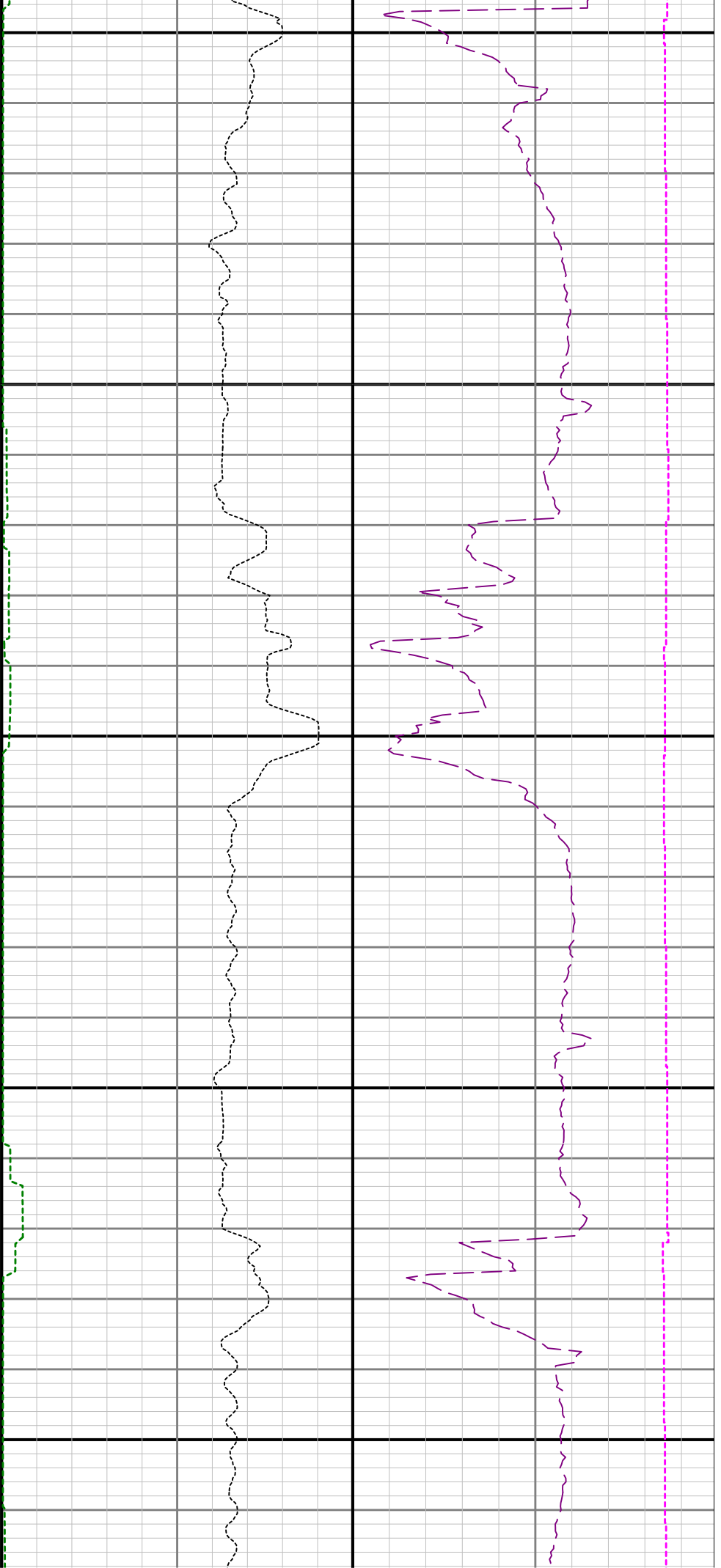
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15300

