



**Natural Formation Evaluation  
Gamma Ray**

Realtime Log

Scale: **Company: Anadarko**

**1:240** Well: **Viper Pyro 16N-10HZ**

**MEASURED DEPTH** Field: **Weld County**

Region: **Continental US** State: **Colorado**

Status: **Final Print** Surface Location: Latitude: 40° 13' 52.162" N Longitude: 104° 53' 7.076" W

API Number: 051234142900 Section: 15 TWN: 3N Range 67W

Permanent Datum (P.D.): Ground Level Elevation: 4794.00 ft.

Log Measured From: Rig Floor 20.00 ft. Above P.D. Elevations: N/A

Depth Reference: Driller's Depth KB: DF: GI: 4814.00 ft. 4794.00 ft.

**Interval Logged** **Dates** **Magnetic Field Reference**

Top: 6500.0 ft. Date From: 15/Jul/15 Dip Angle: 66.87° Azi Reference North: True

Bottom: 12609.0 ft. Date To: 20/Jul/15 Total Mag to Reference

Spud Date: 15/Jul/15 Field Strength: 52459.0 nT North Correction: 8.43°

**Borehole Record** **Casing Record**

Hole Size	From	To	Size	Weight	From	To
12,500 in.	Surface	1893.0 ft.	9.625 in.	36.00 lb/ft	Surface	1881.0 ft.
8,500 in.	1893.0 ft.	12609.0 ft.				

**Mud Record**

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Oil-Based	Surface	12609.0 ft.	12,500 in.	1838.0 ft.	0.0° / 42.9°	22.1° / 329.2°
			8,500 in.	10716.0 ft.	23.1° / 328.8°	91.0° / 89.9°
					/	/
					/	/
					/	/
					/	/

**Deviation Record**

Acquisition System	Software Version	Other
Advantage	2.20U4	Rig / Contractor: Precision 462 / Anadarko
PATS	6.4.1.34	Job No.: 7343508 / 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	1	8.500	PDC	3.500	Steerable	6500.0	12544.0	1893.0	12609.0	17/Jul/15 14:47	19/Jul/15 22:30	66.3		

**Crew**

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Andy King	15/Jul/15	20/Jul/15	Donald Delay	15/Jul/15	20/Jul/15	Mike Cleary	15/Jul/15	20/Jul/15
Bill Herbers	15/Jul/15	20/Jul/15	Ken Perry	15/Jul/15	20/Jul/15			

**Mud Properties Record**

Date / Time	LWD Run No.	Measured Depth (ft.)	Mud Type	Density (lb/gal)	Viscosity (sec/qt)	pH	Fluid Loss (cc)	Oil / Water	Source	Total Chlorides (ppm)	K+ (%)
17/Jul/15 06:30	1	5192.0	MEGADRIL	9.3	56	N/A	4.4	70/30	Suction	N/A	N/A
17/Jul/15 18:00	1	6895.0	MEGADRIL	9.3	52	N/A	4.6	71/29	Suction	N/A	N/A
18/Jul/15 07:00	1	8200.0	MEGADRIL	9.5	54	N/A	5.0	73/27	Suction	N/A	N/A
18/Jul/15 18:00	1	9470.0	MEGADRIL	9.6	57	N/A	4.4	72/28	Suction	N/A	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	12617354	Directional	62.93	6.750	3.250
1	SRIG	12899613	Gamma	59.56	6.750	3.250

### 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 Run 1 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 1/2 inch bit and steerable assembly from 1893 to 12609 feet MD (1893 to 6932 feet TVD).

2.) 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.

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 acquired while sliding.

### Remarks

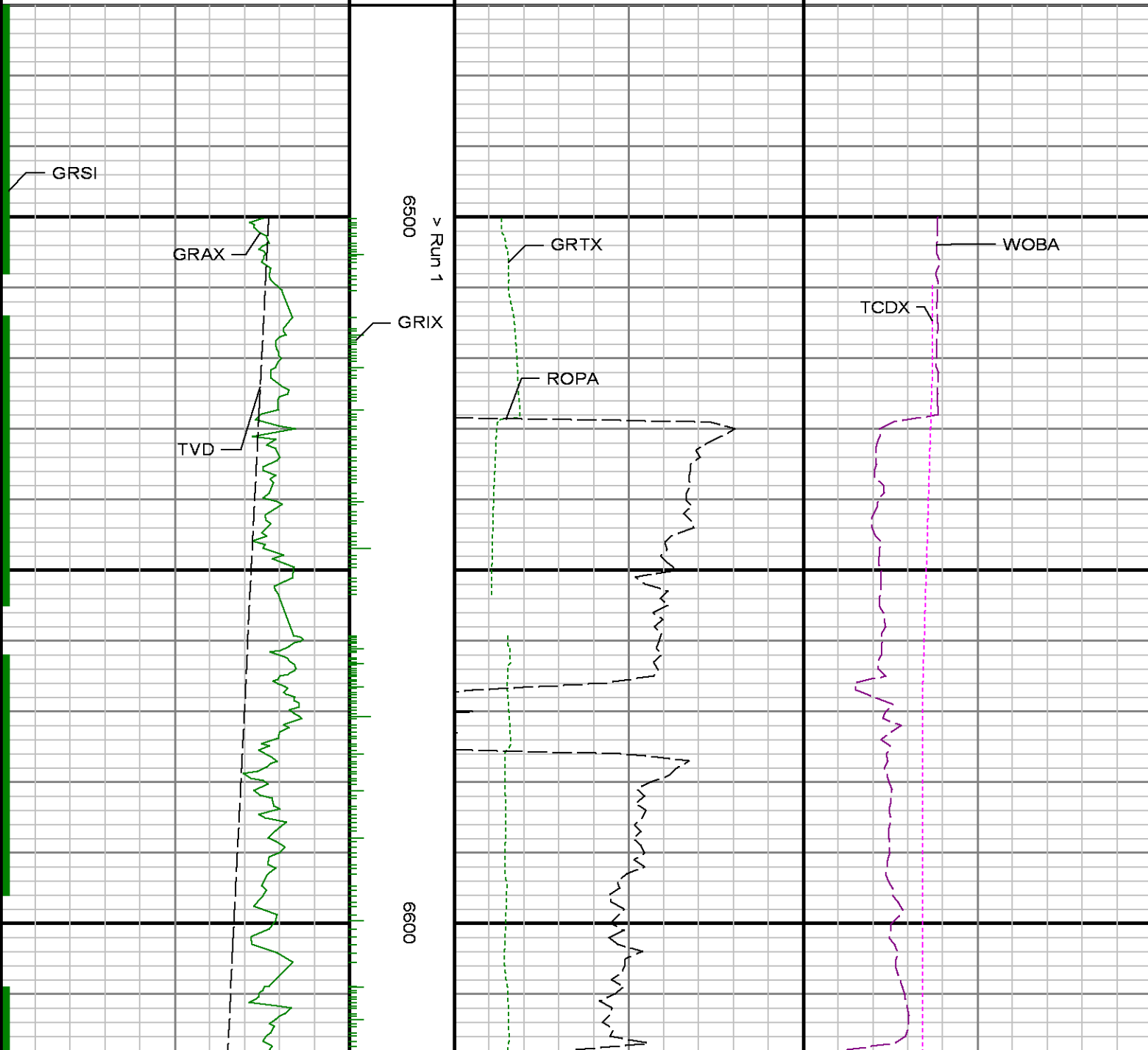
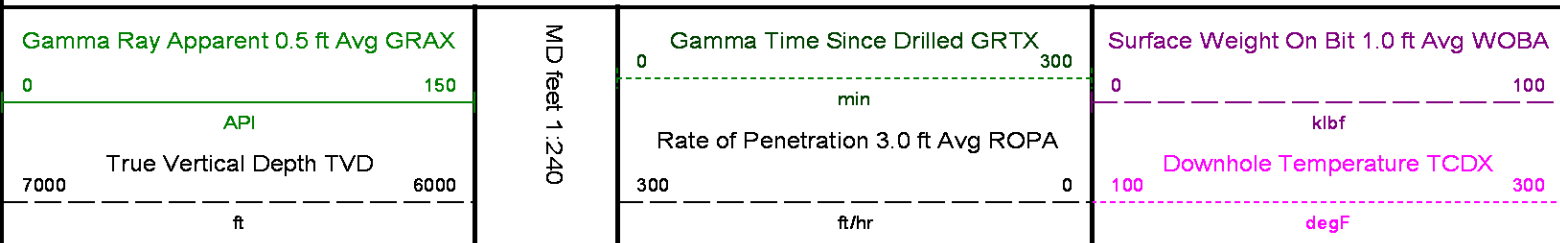
Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
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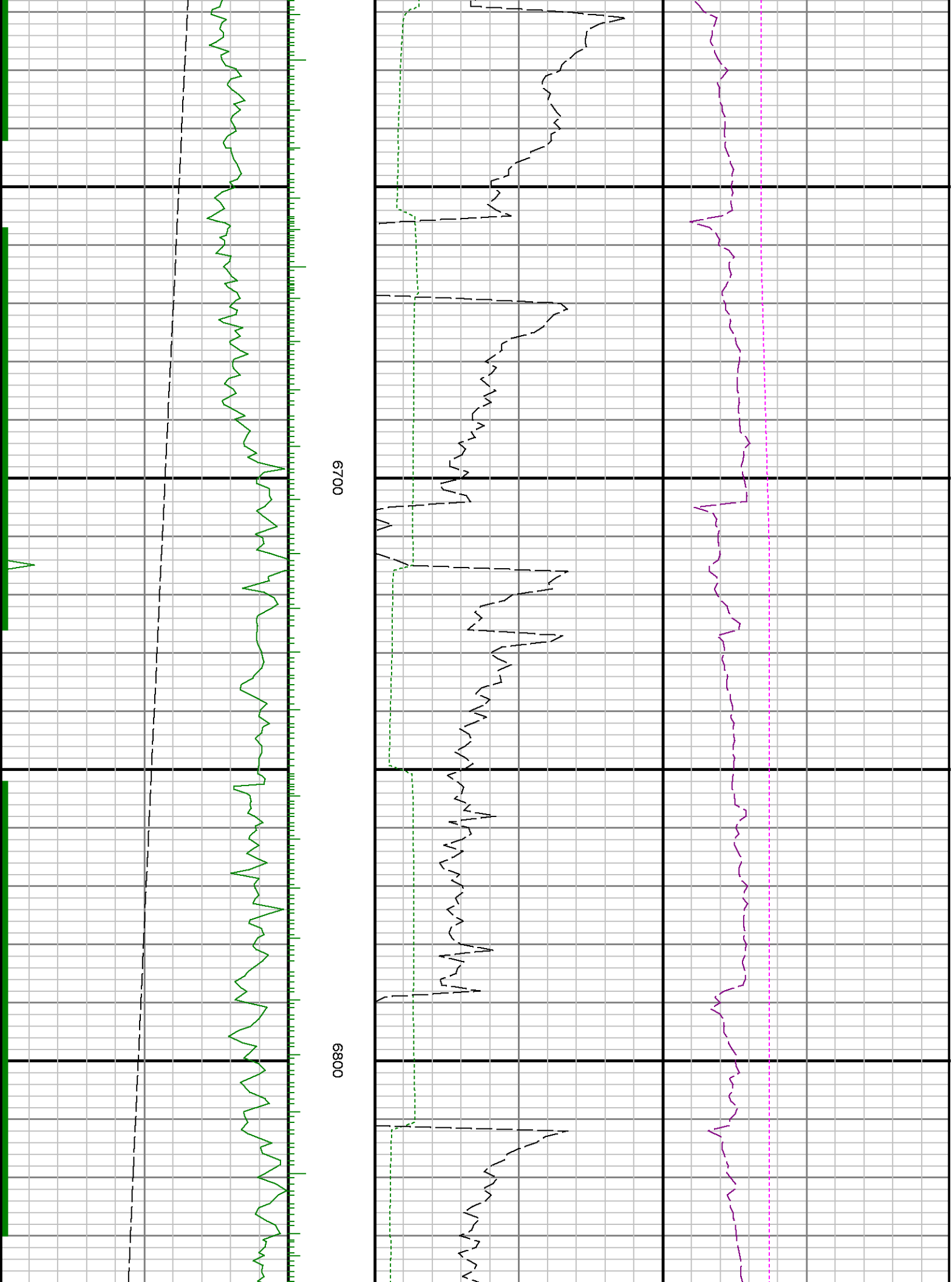
No logging data is available for the interval from 7192 to 7264 ft MD (6822 to 6898 ft TVD) due to sensor offset from the bit at well TD.

2	12565	8.500	1	No logging data is available for the interval from 12550 to 12609 ft MD (6933 to 6932 ft TVD) due to sensor offset from the bit at well TD.
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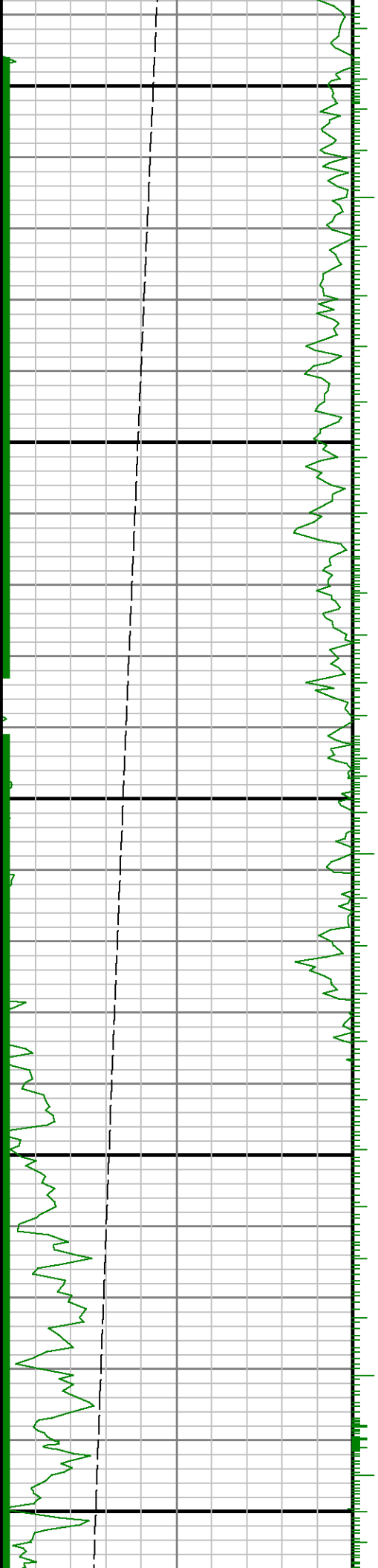
Company : Anadarko  
 Well : Viper Pyro 16N-10HZ  
 Interval : 6470.00 - 12645.00 feet  
 Created : 19/Jul/2015 11:25:07 PM





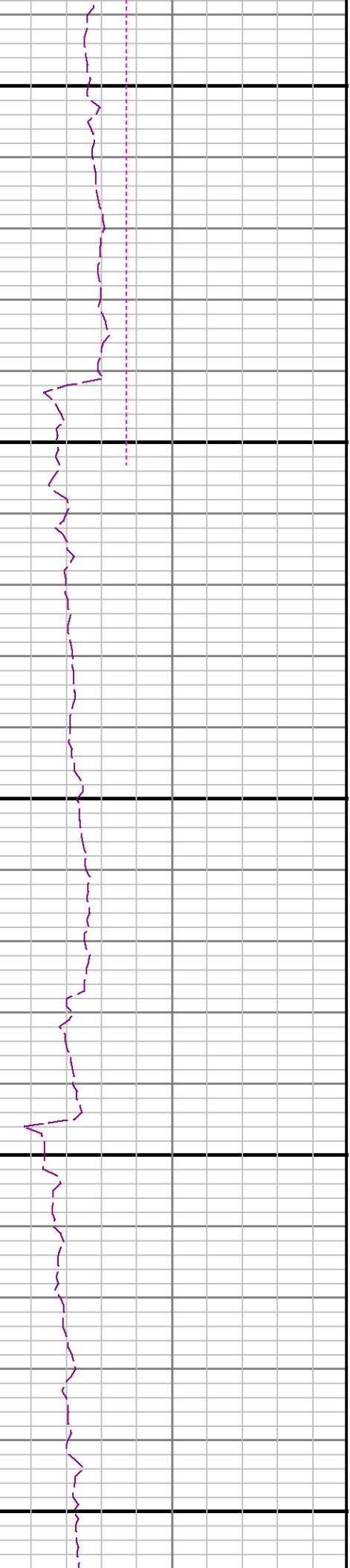
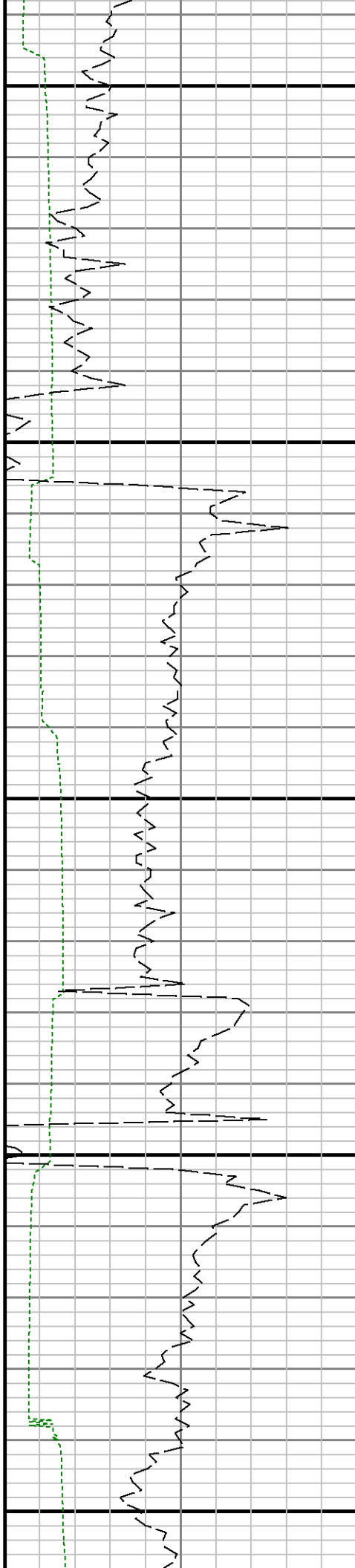
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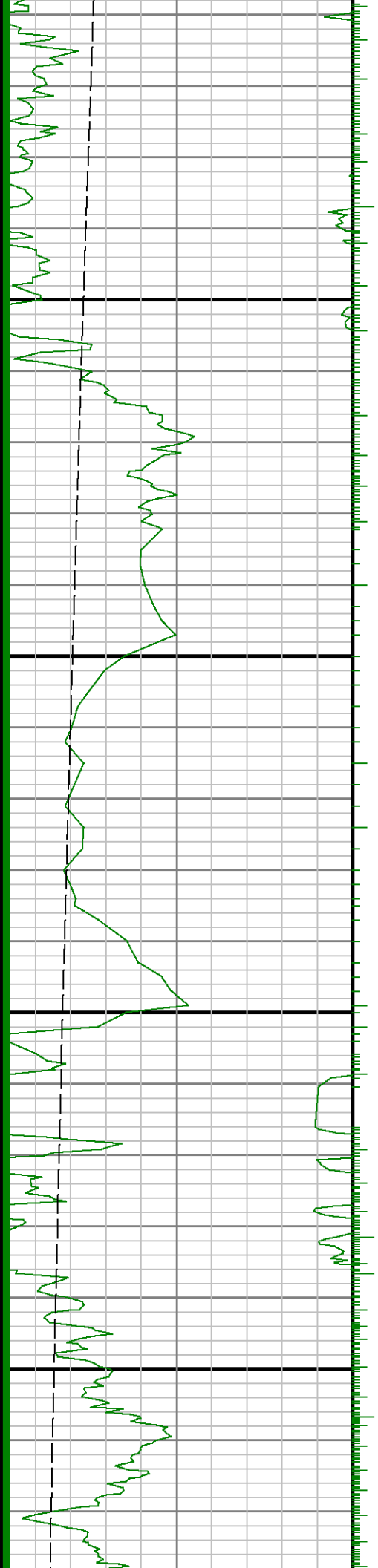
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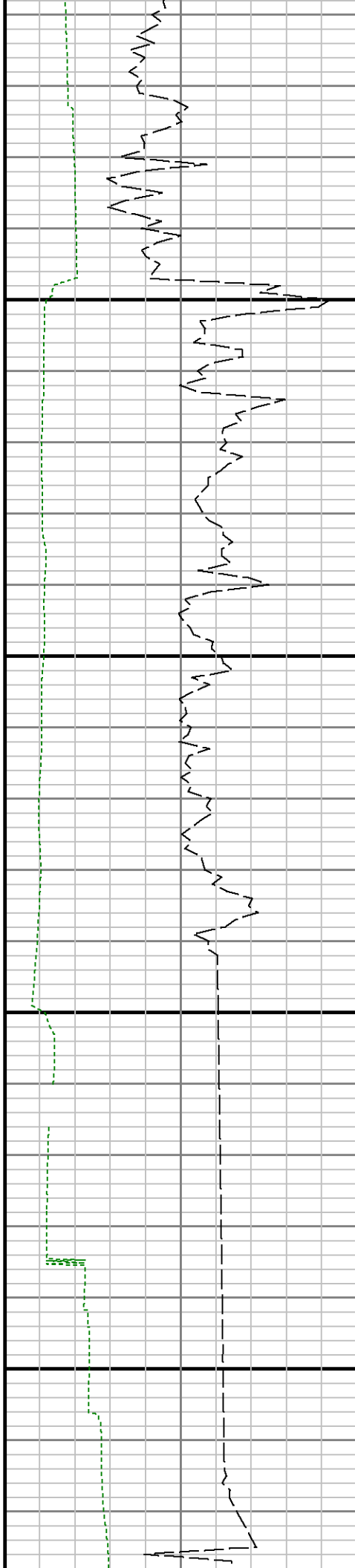
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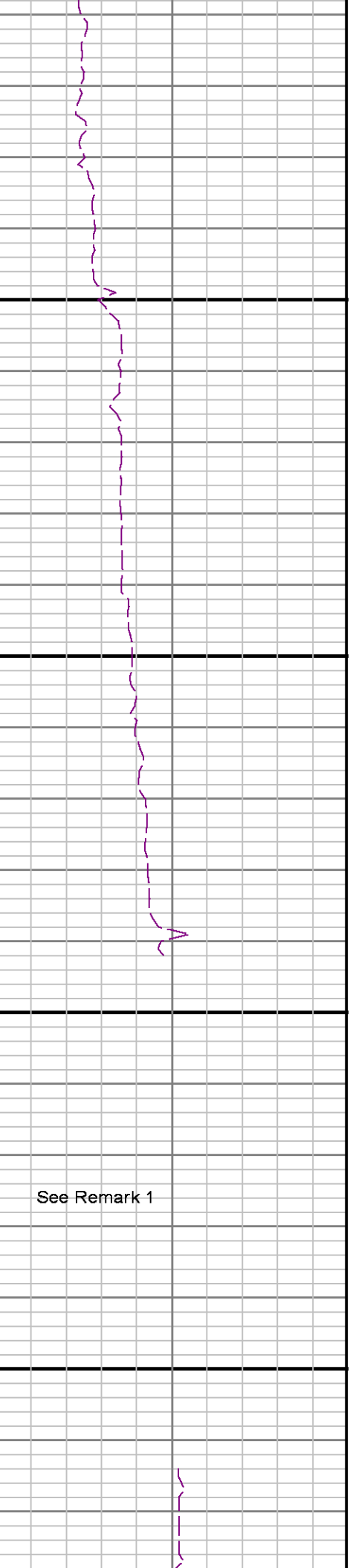


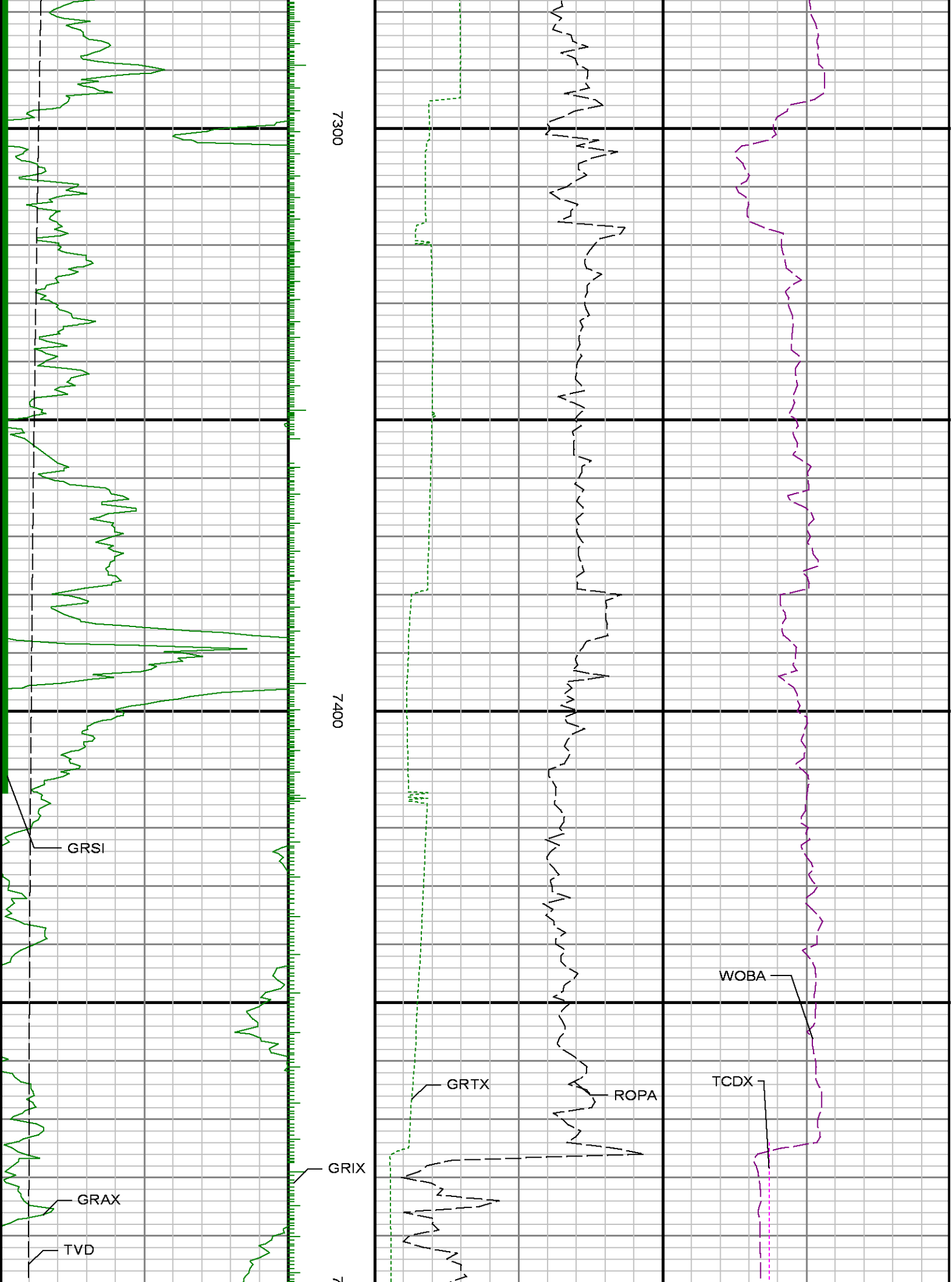
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7200



See Remark 1





7300

7400

GRSI

GRAX

TVD

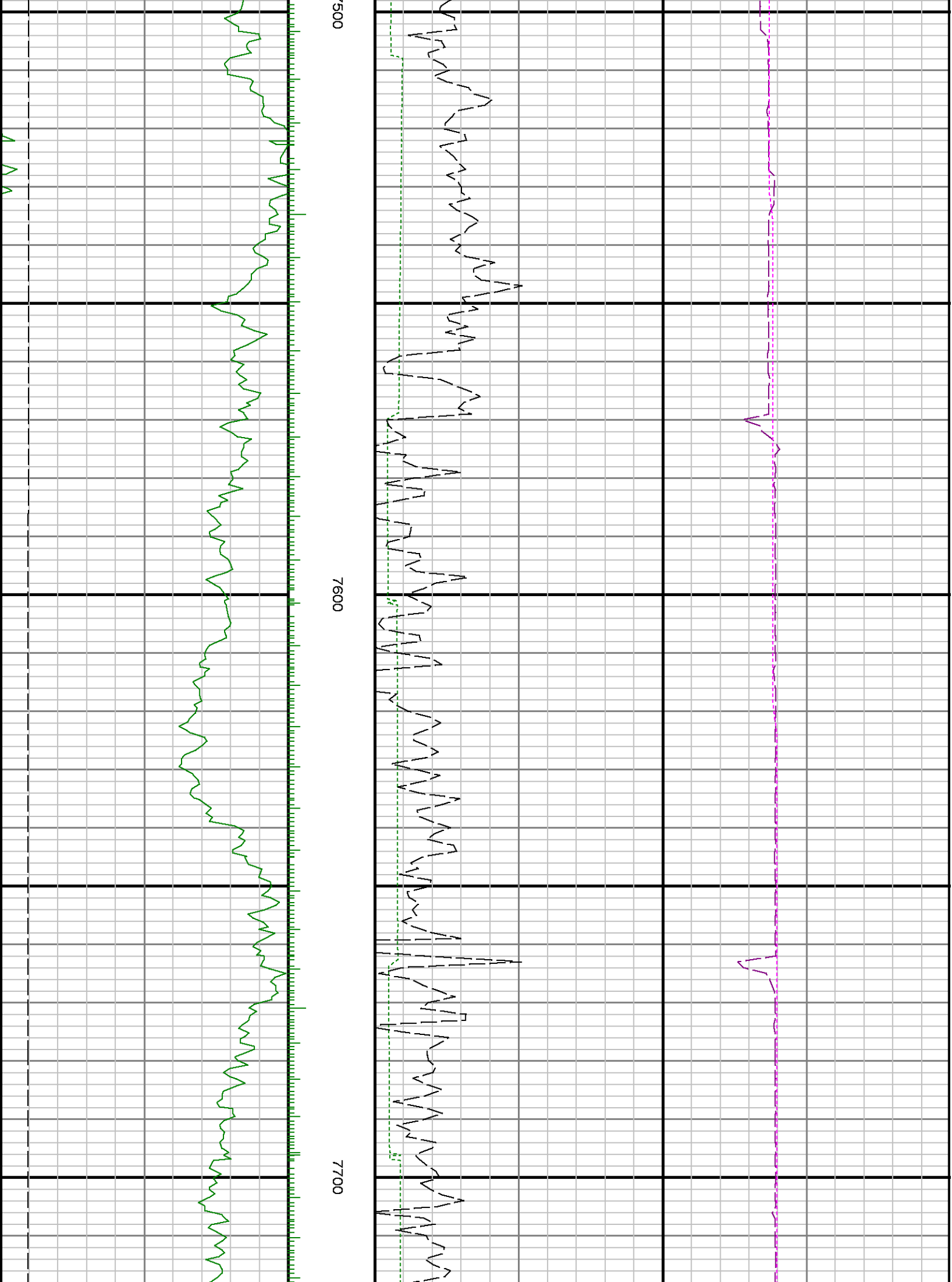
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GRTX

ROPA

WOBA

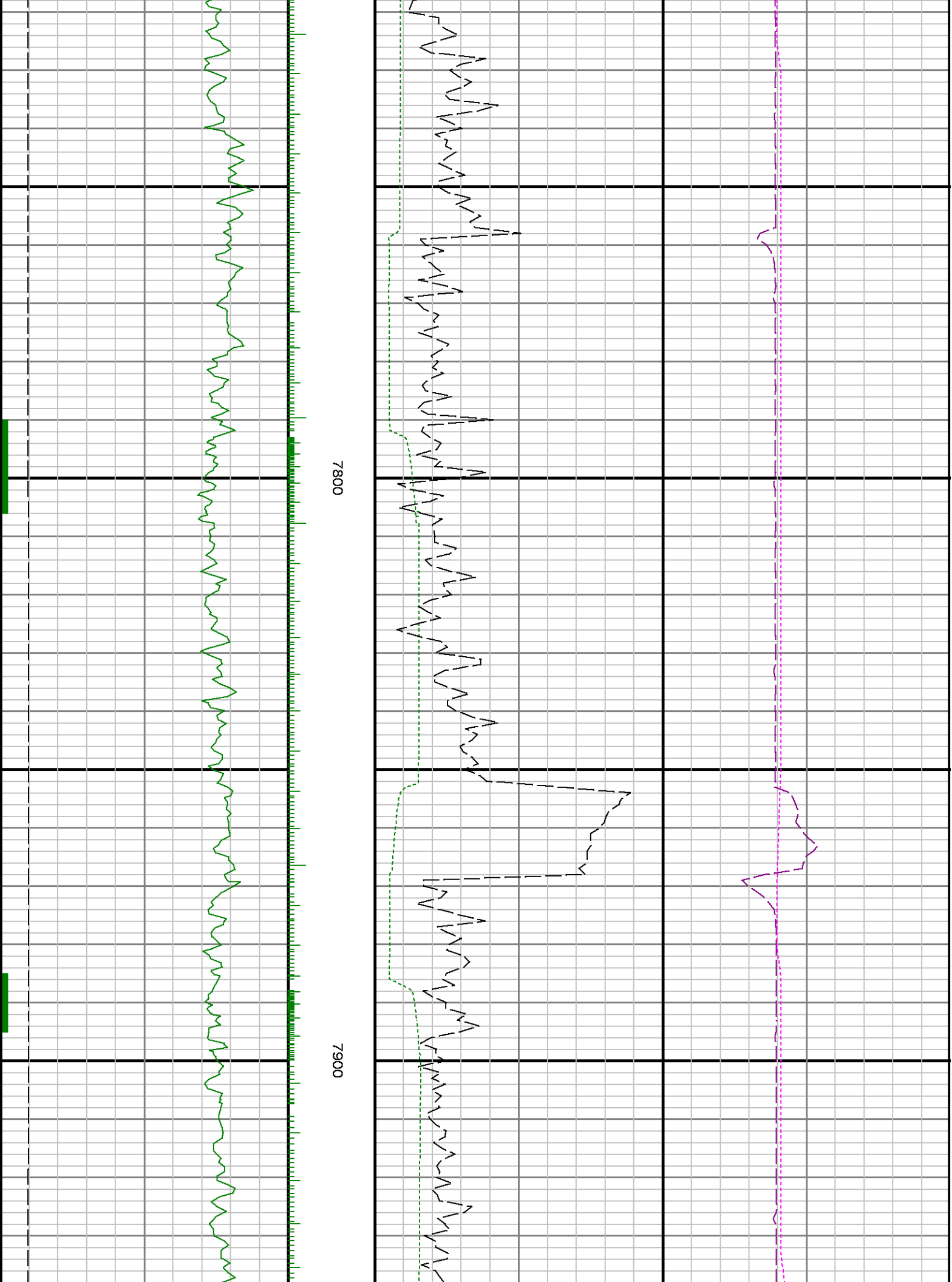
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500

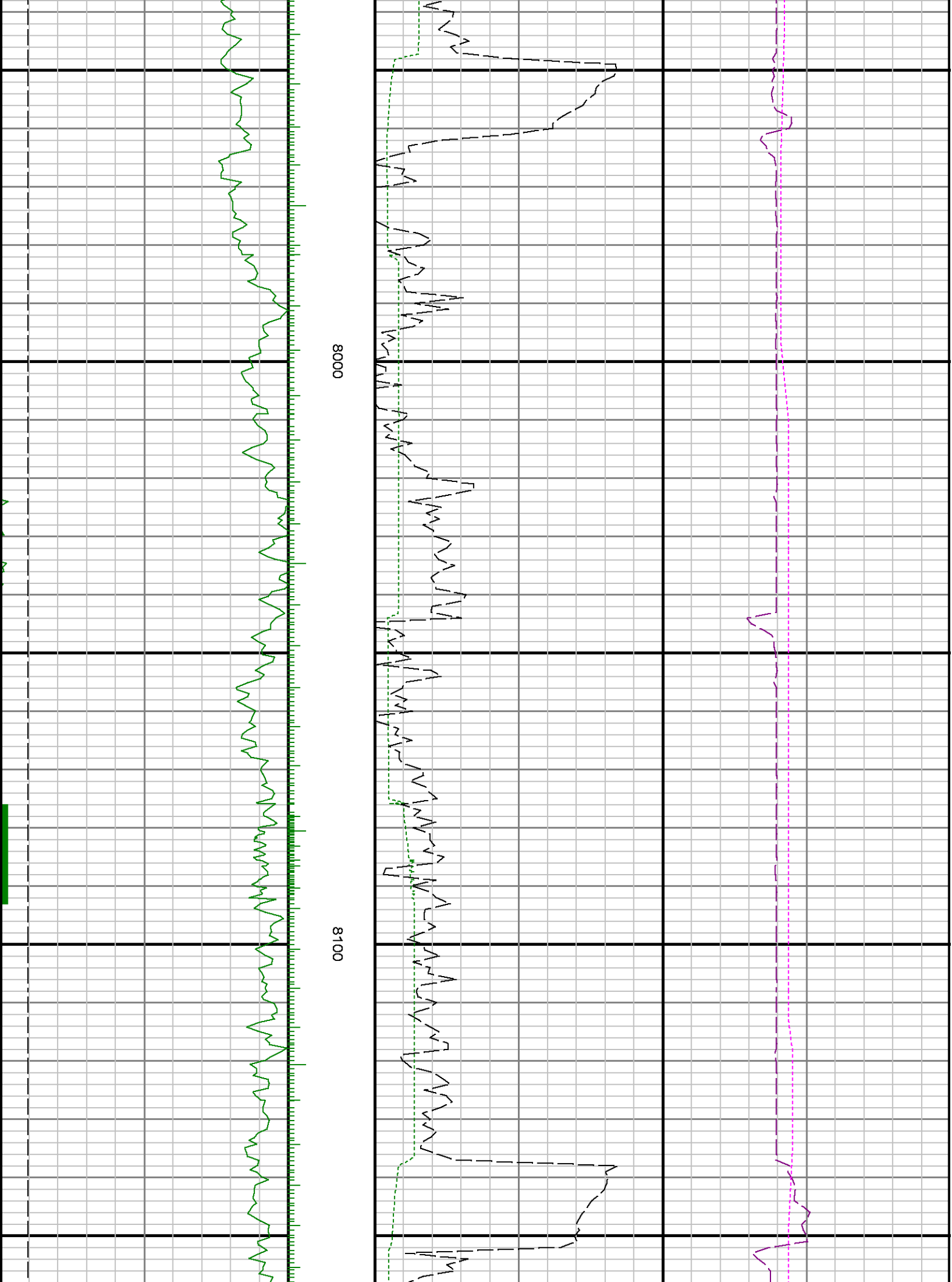
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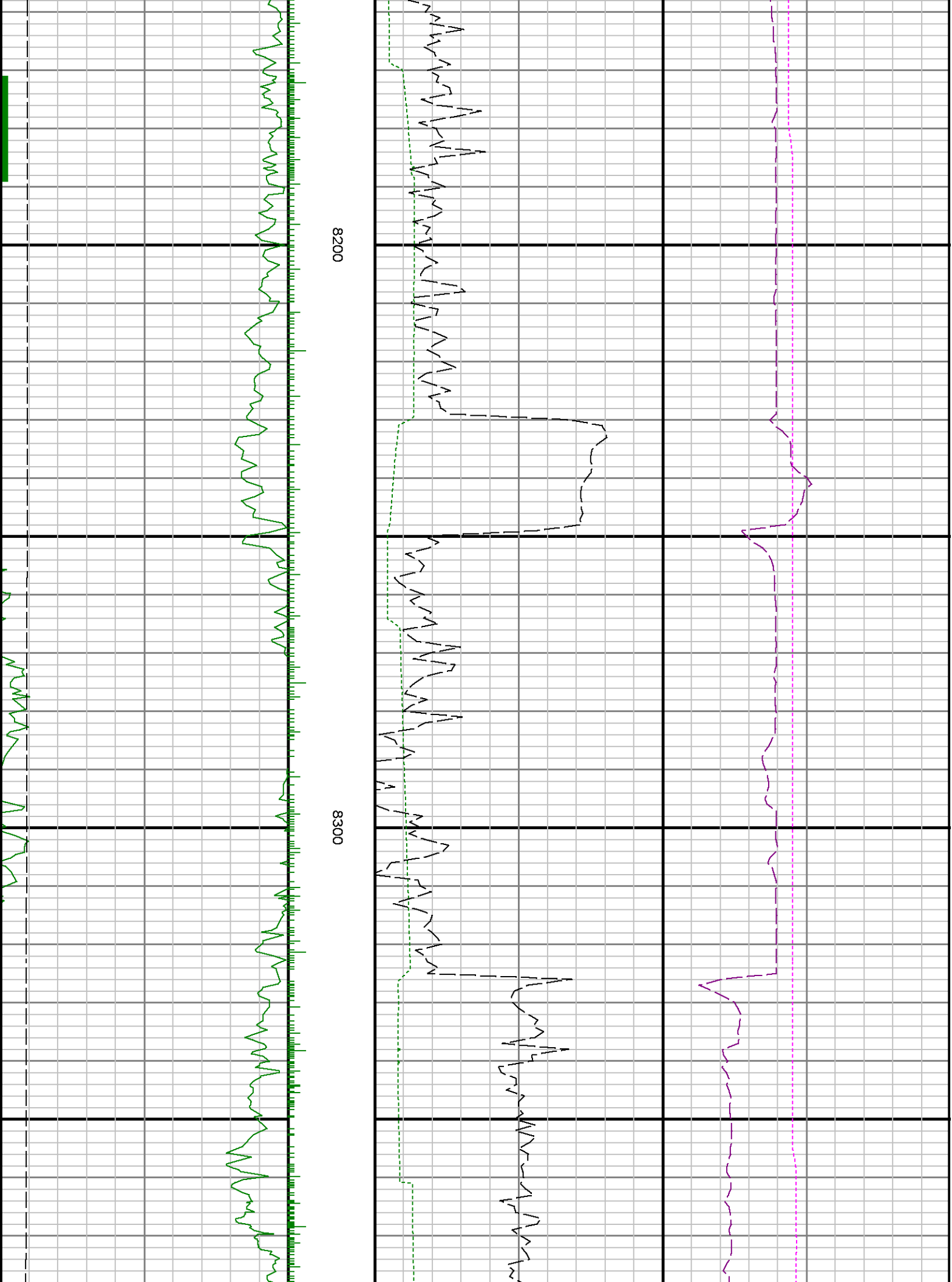
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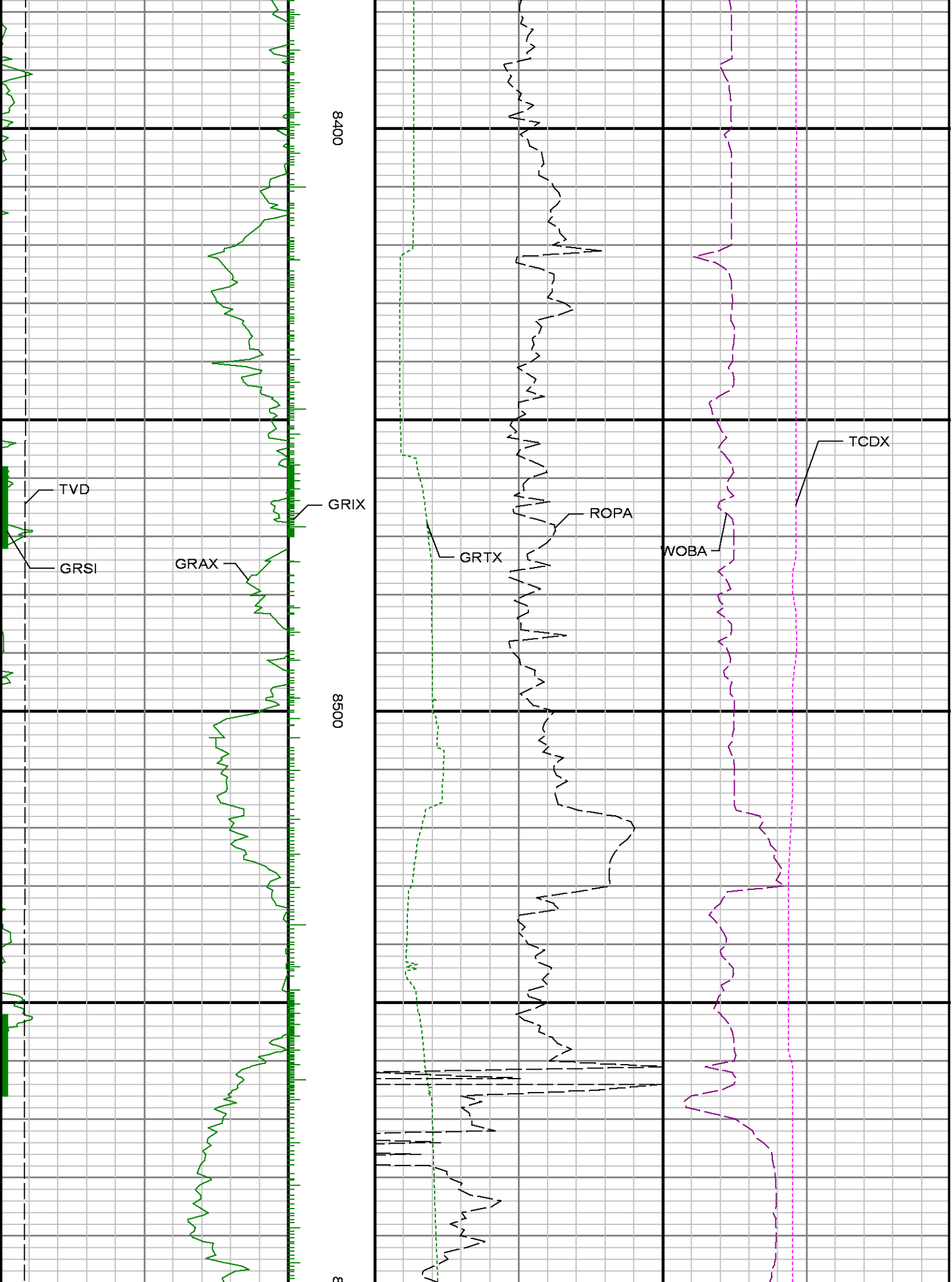
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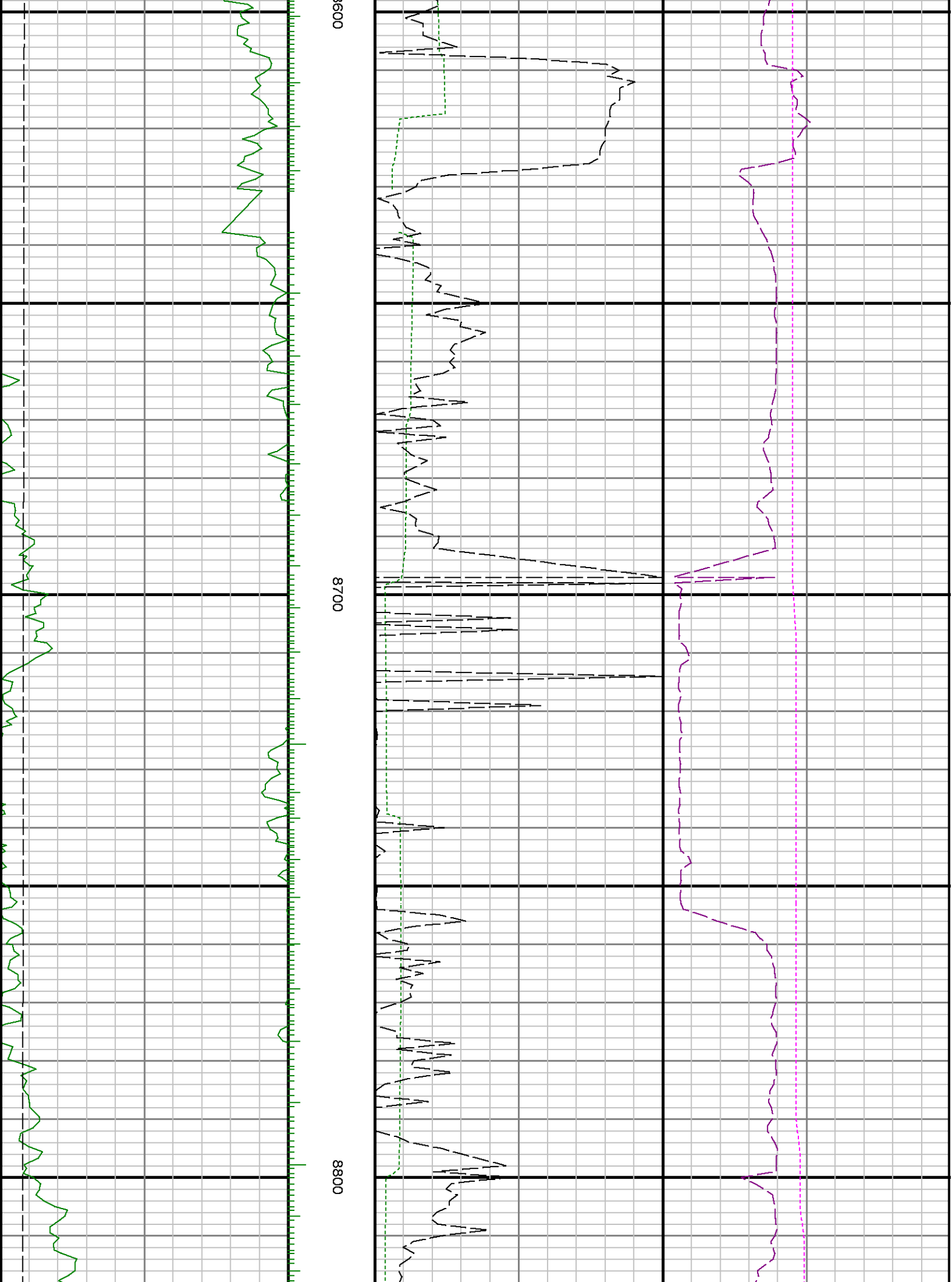


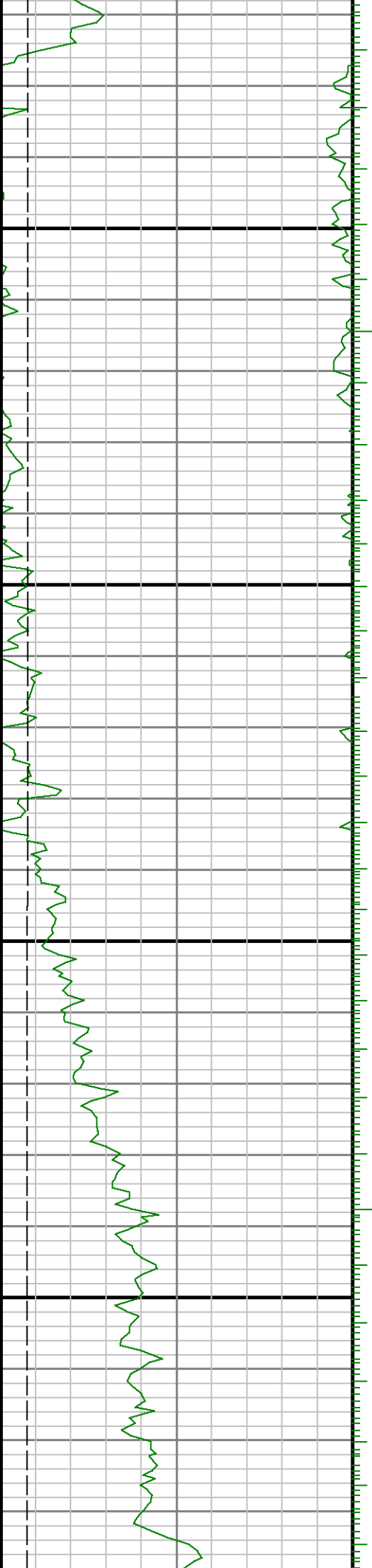
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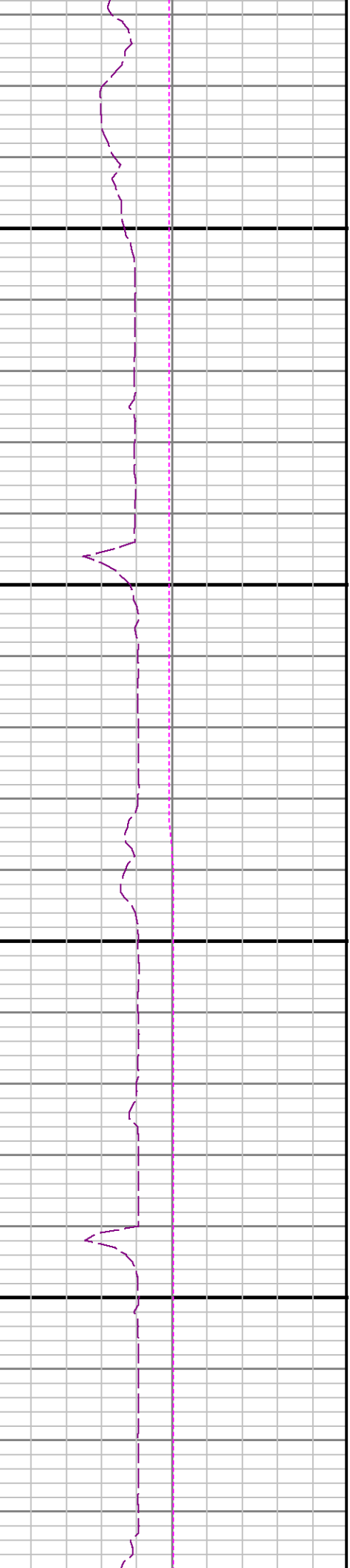
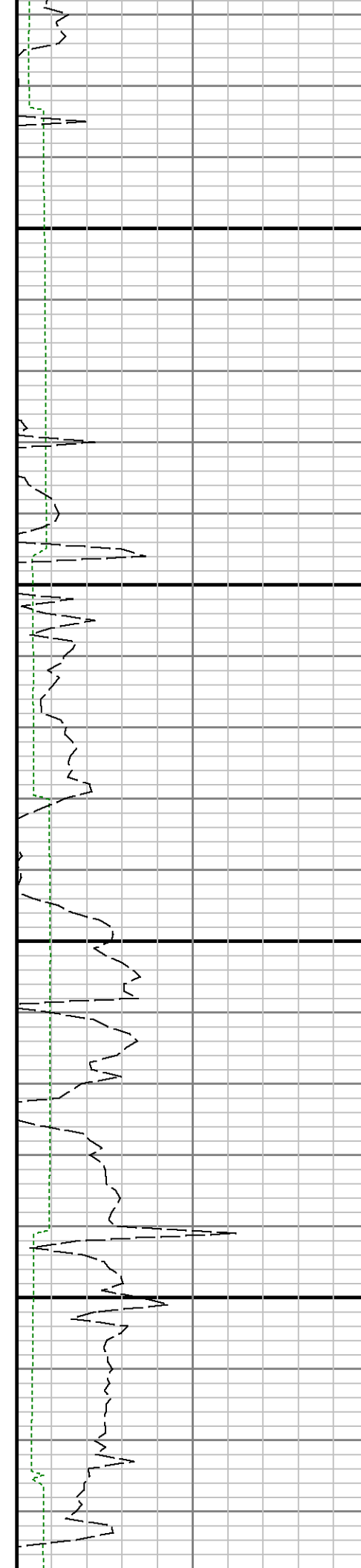


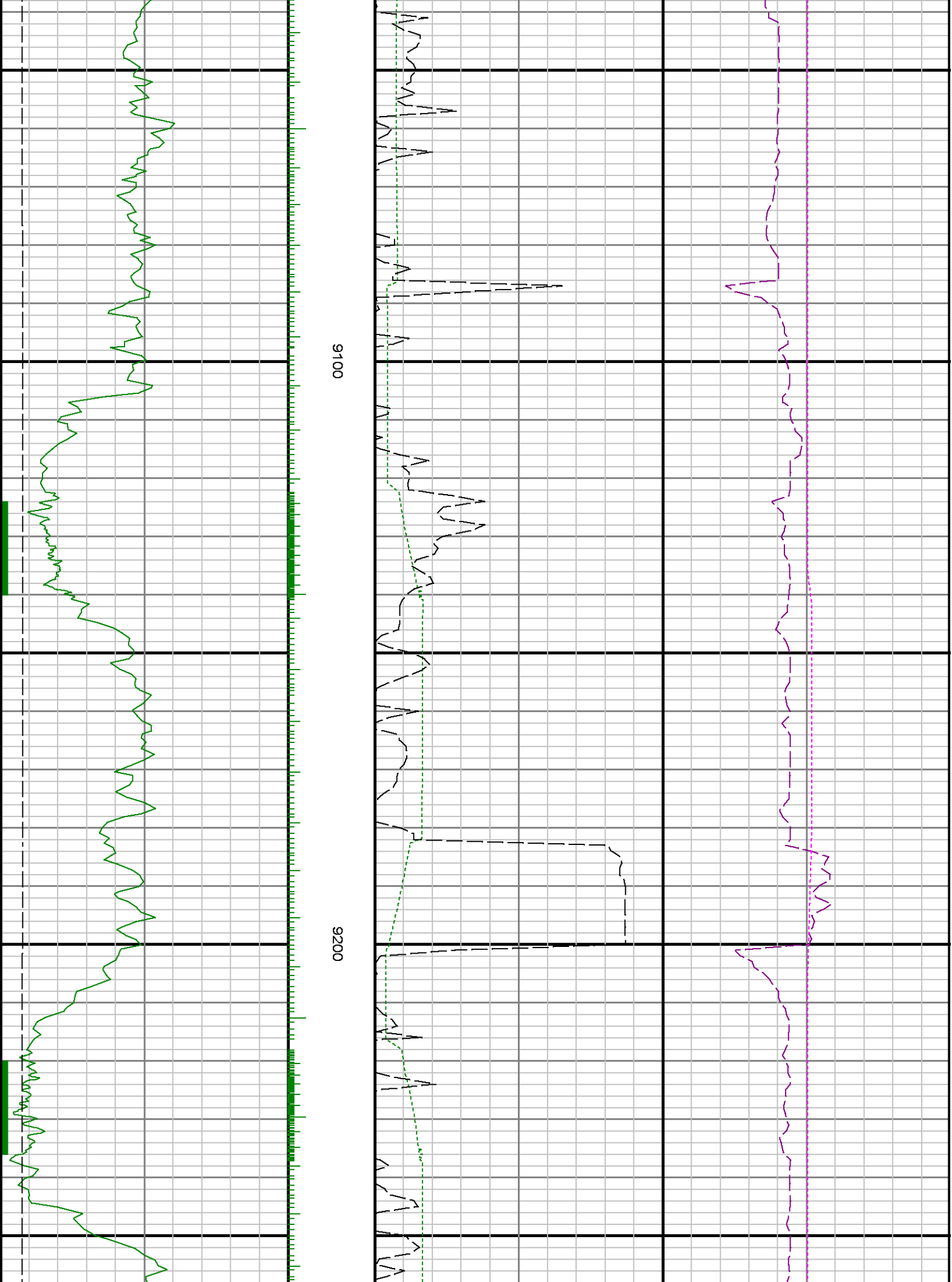




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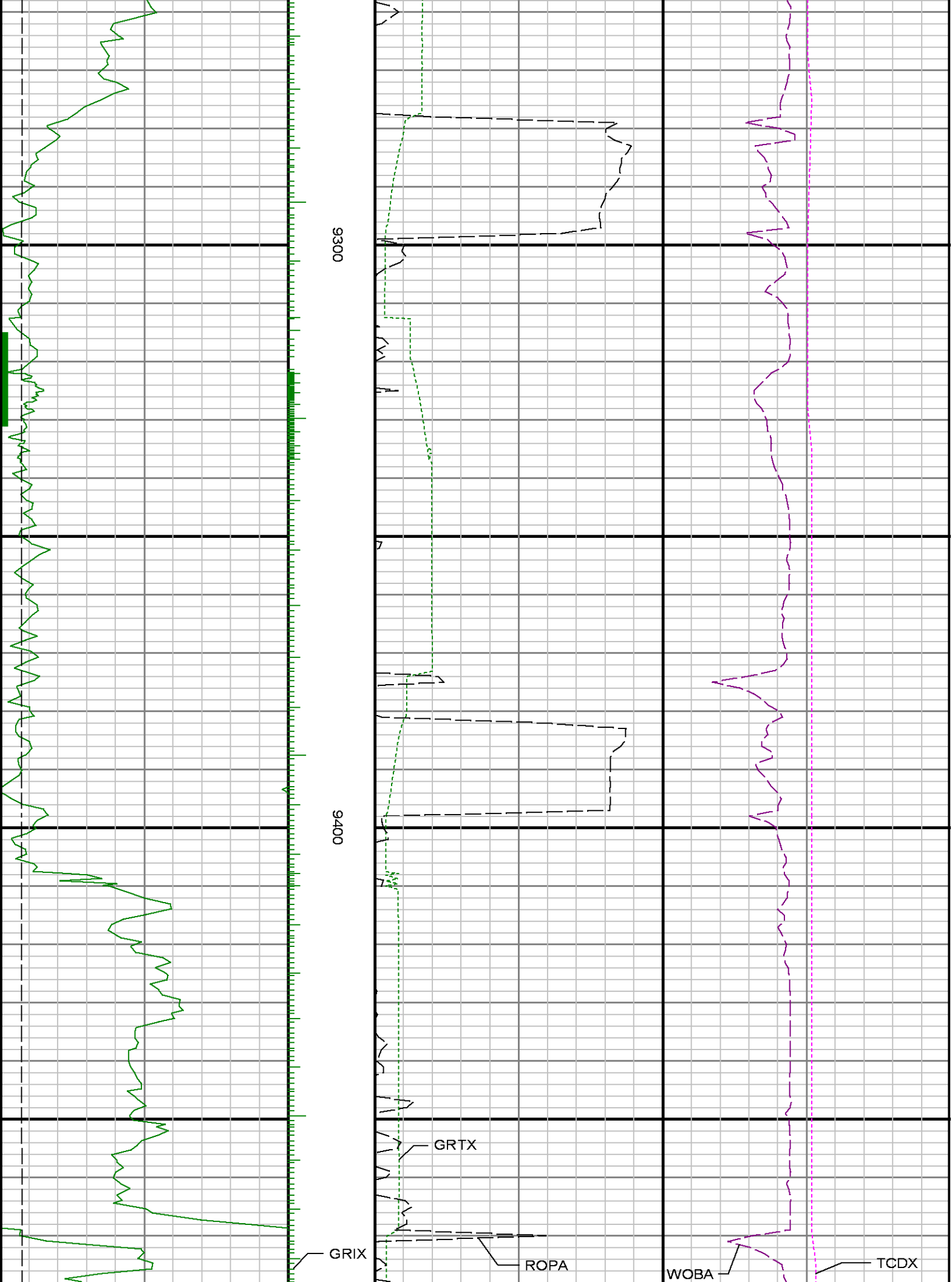
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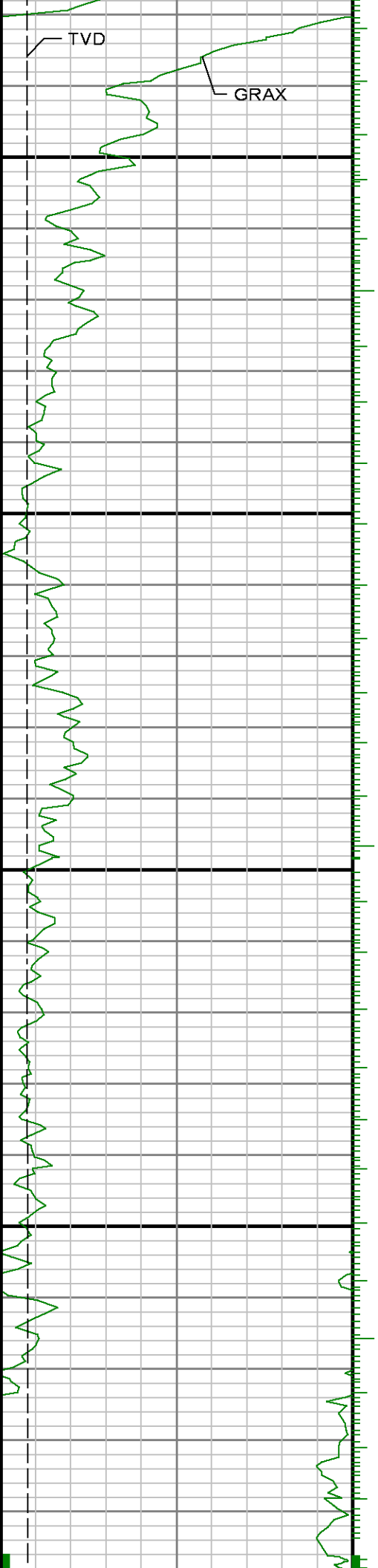




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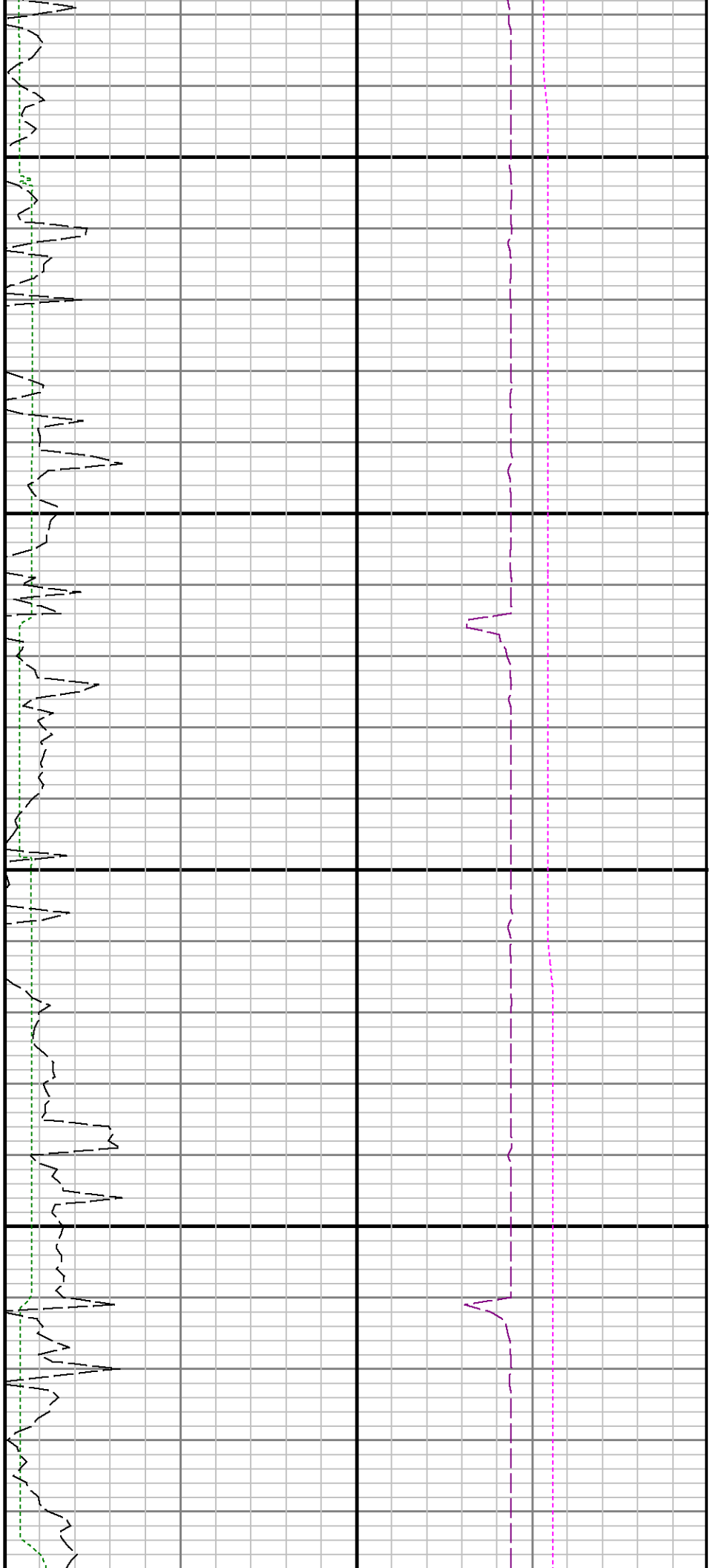


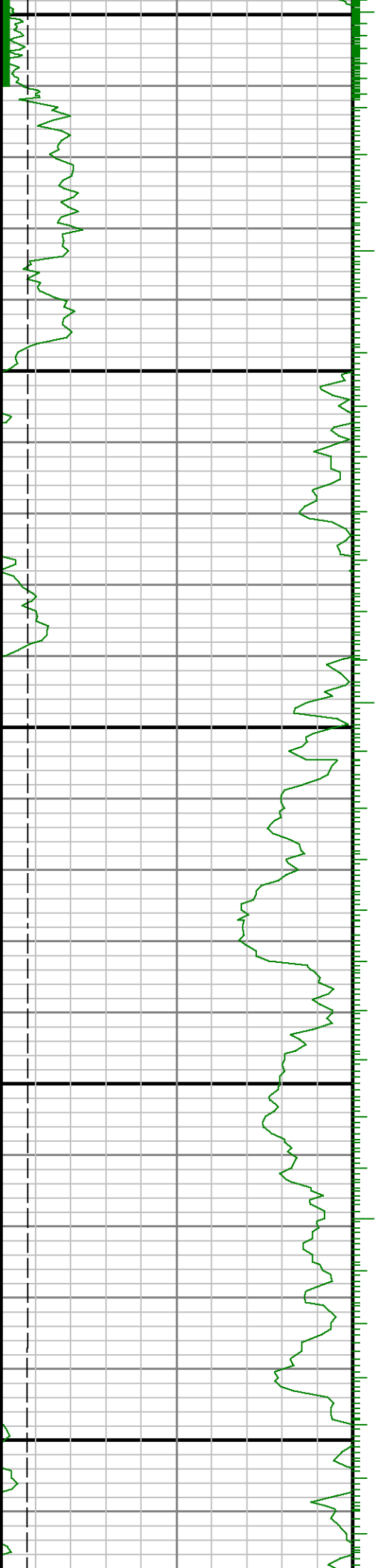


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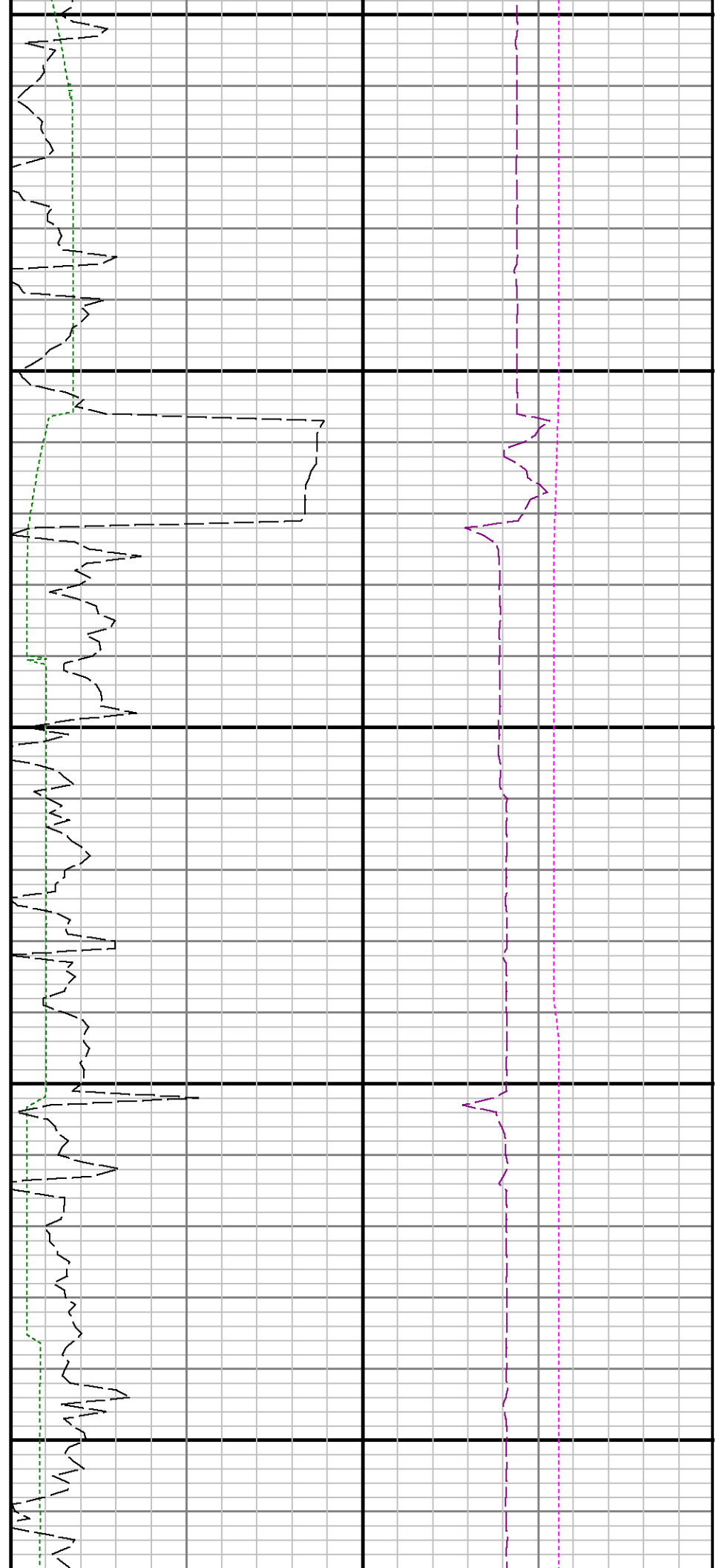


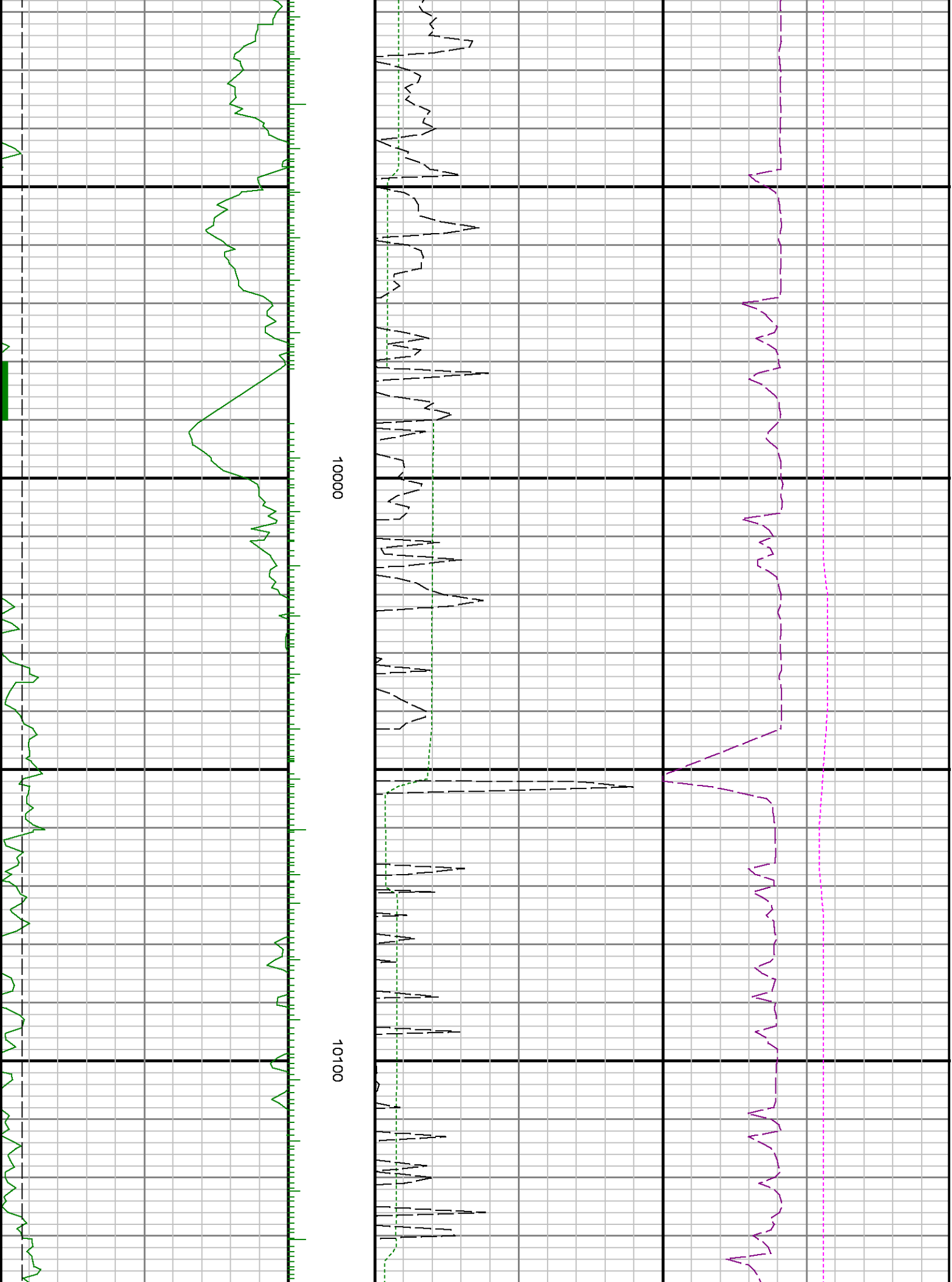


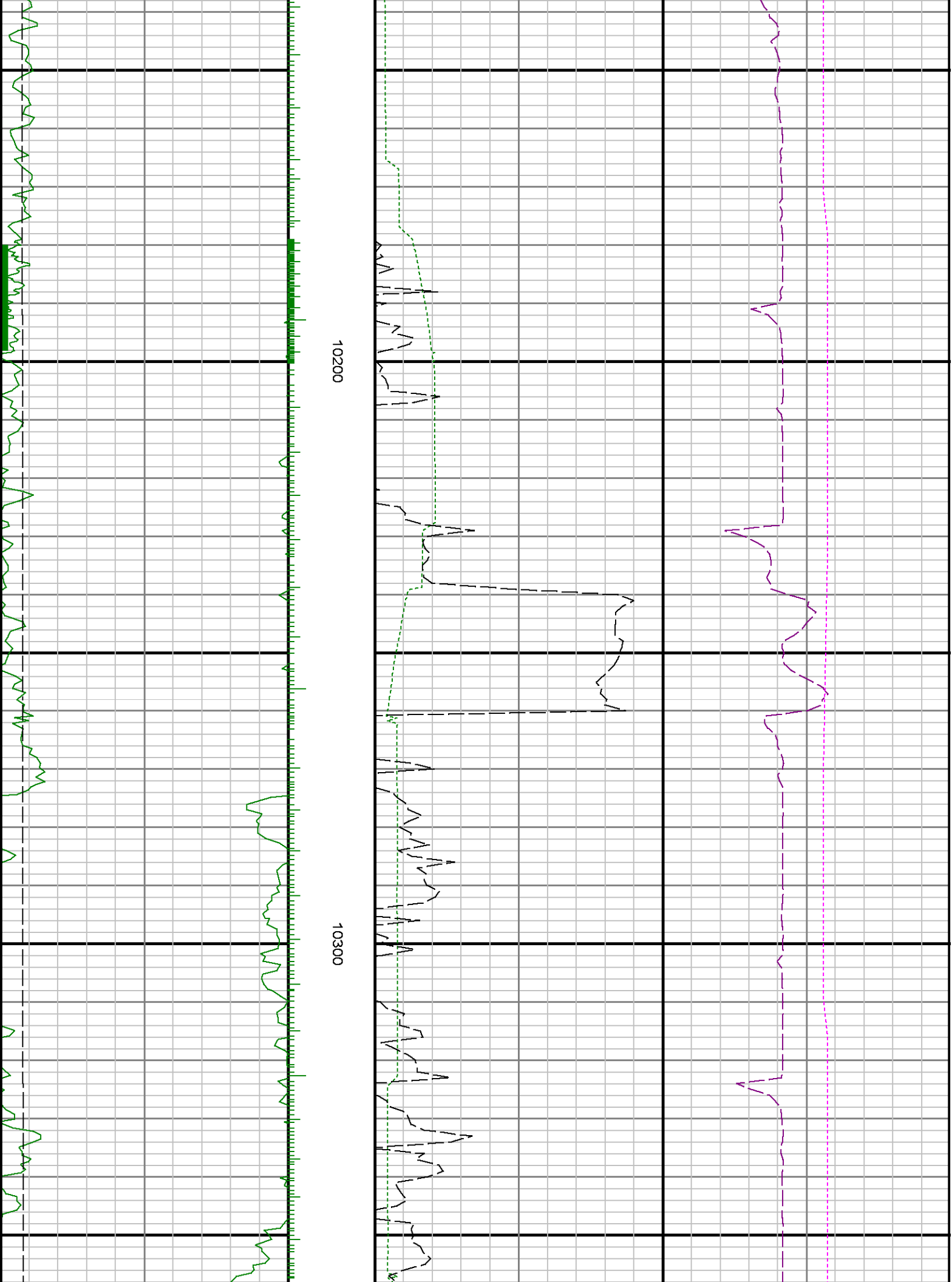
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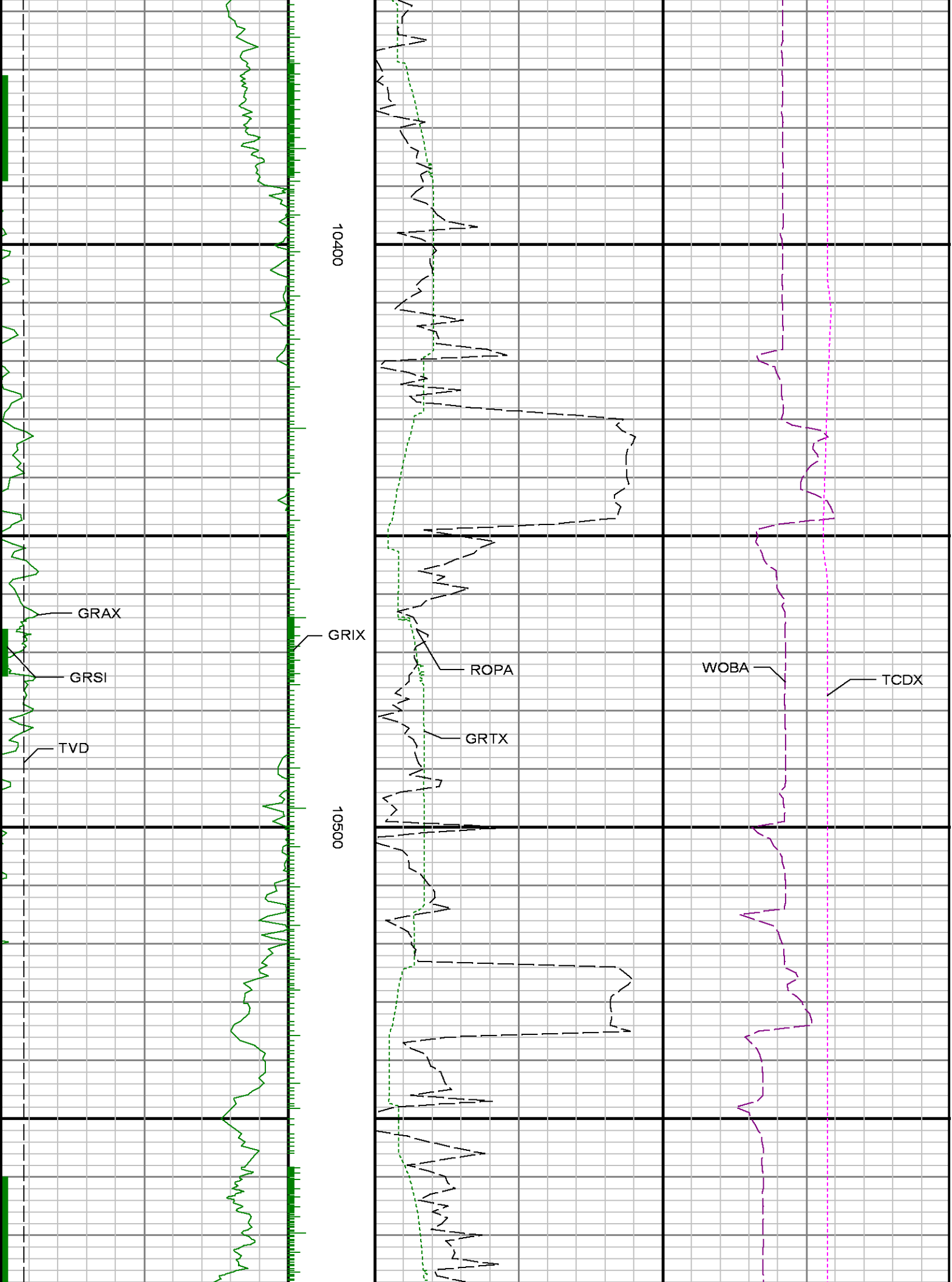






10200

10300



10400

10500

GRAX

GRSI

TVD

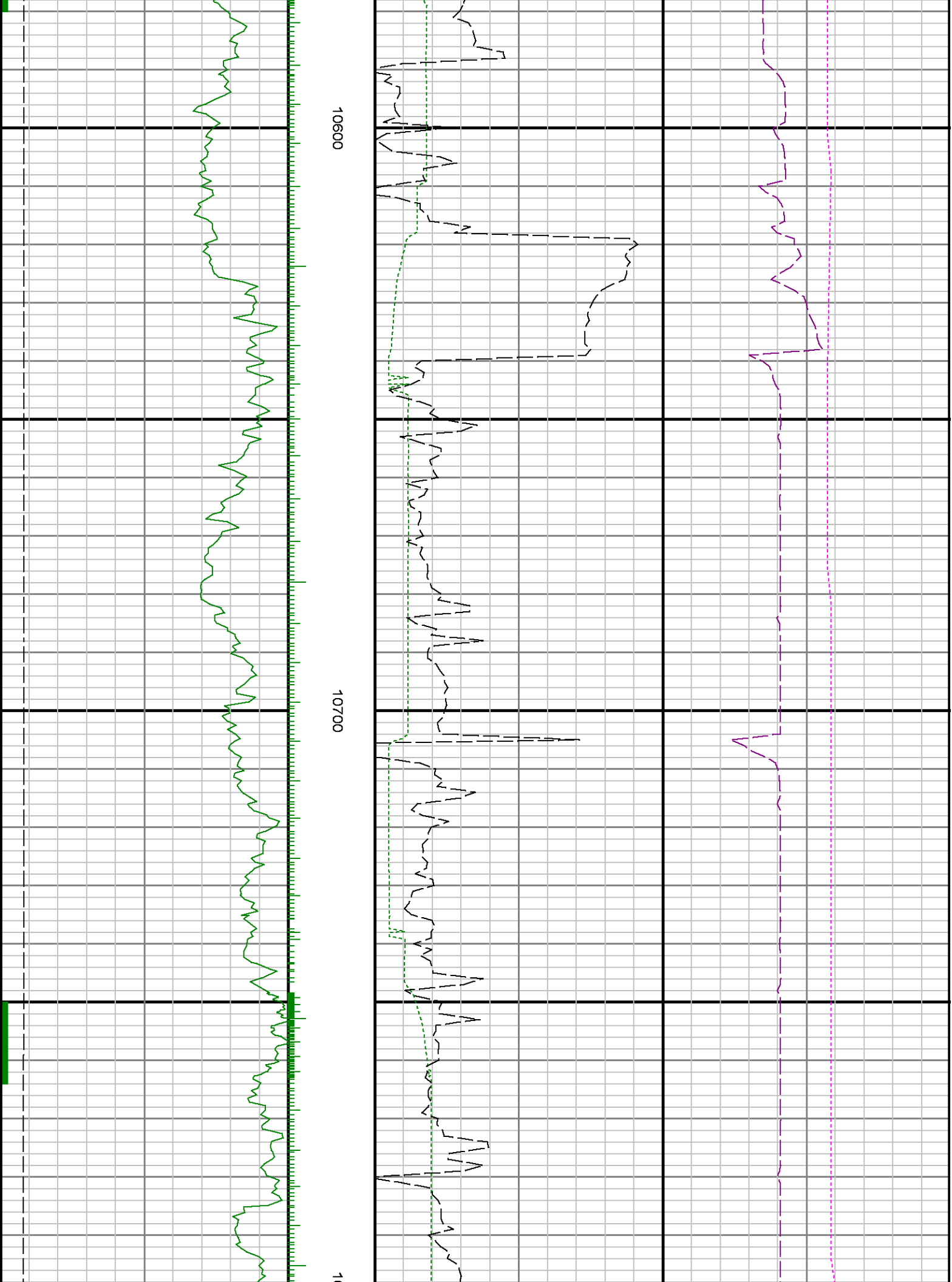
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ROPA

GRTX

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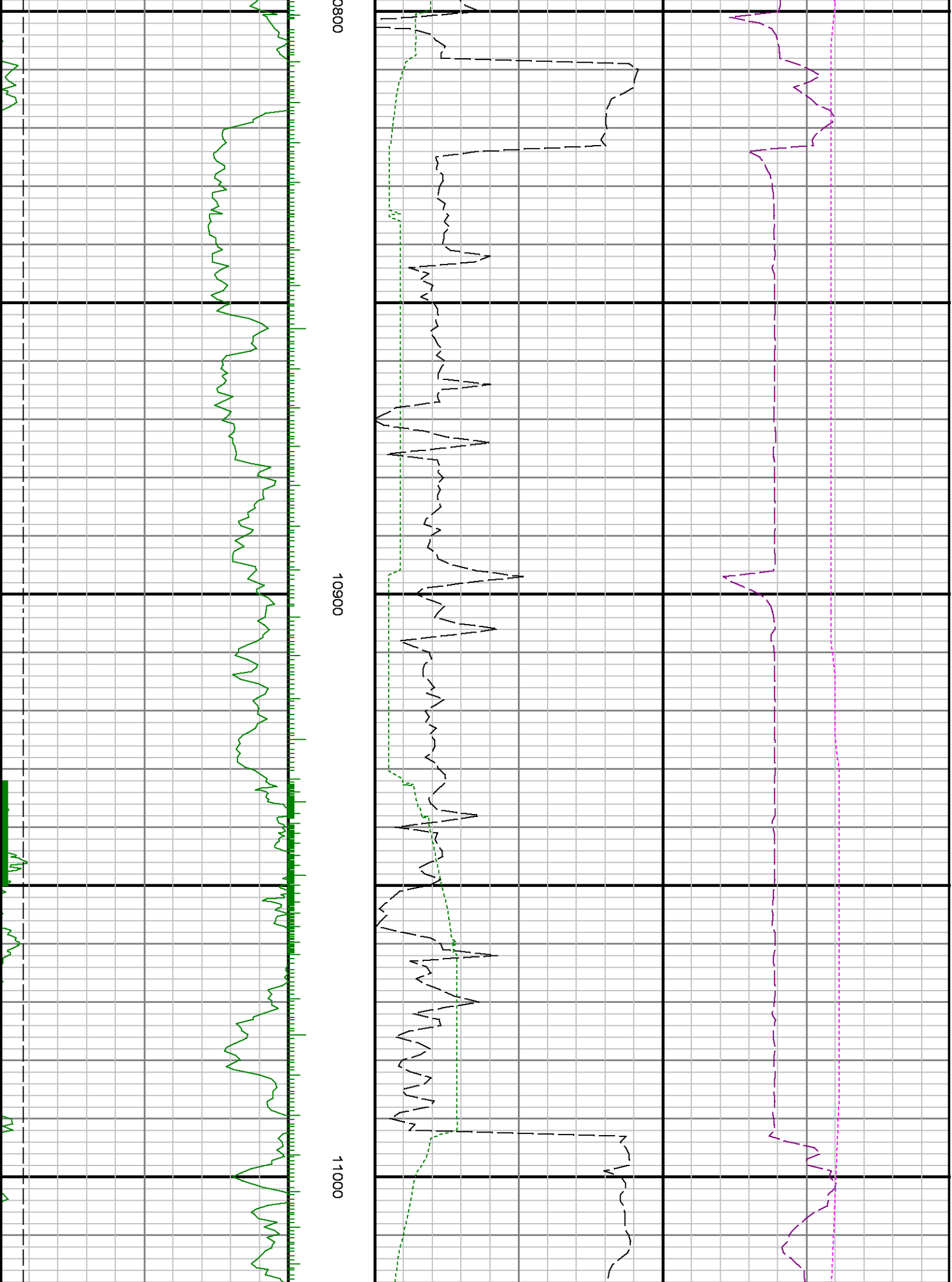
TCDX



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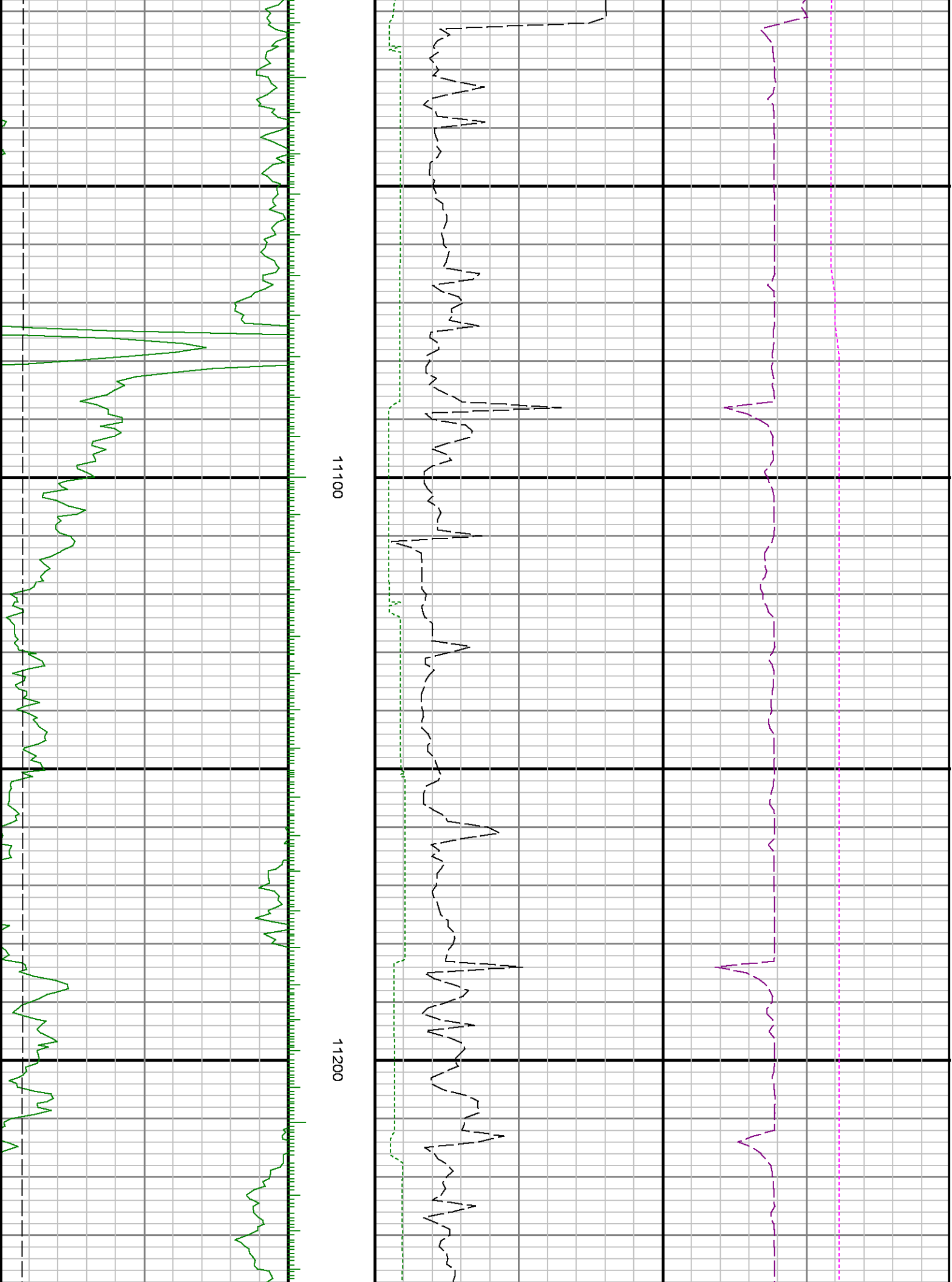
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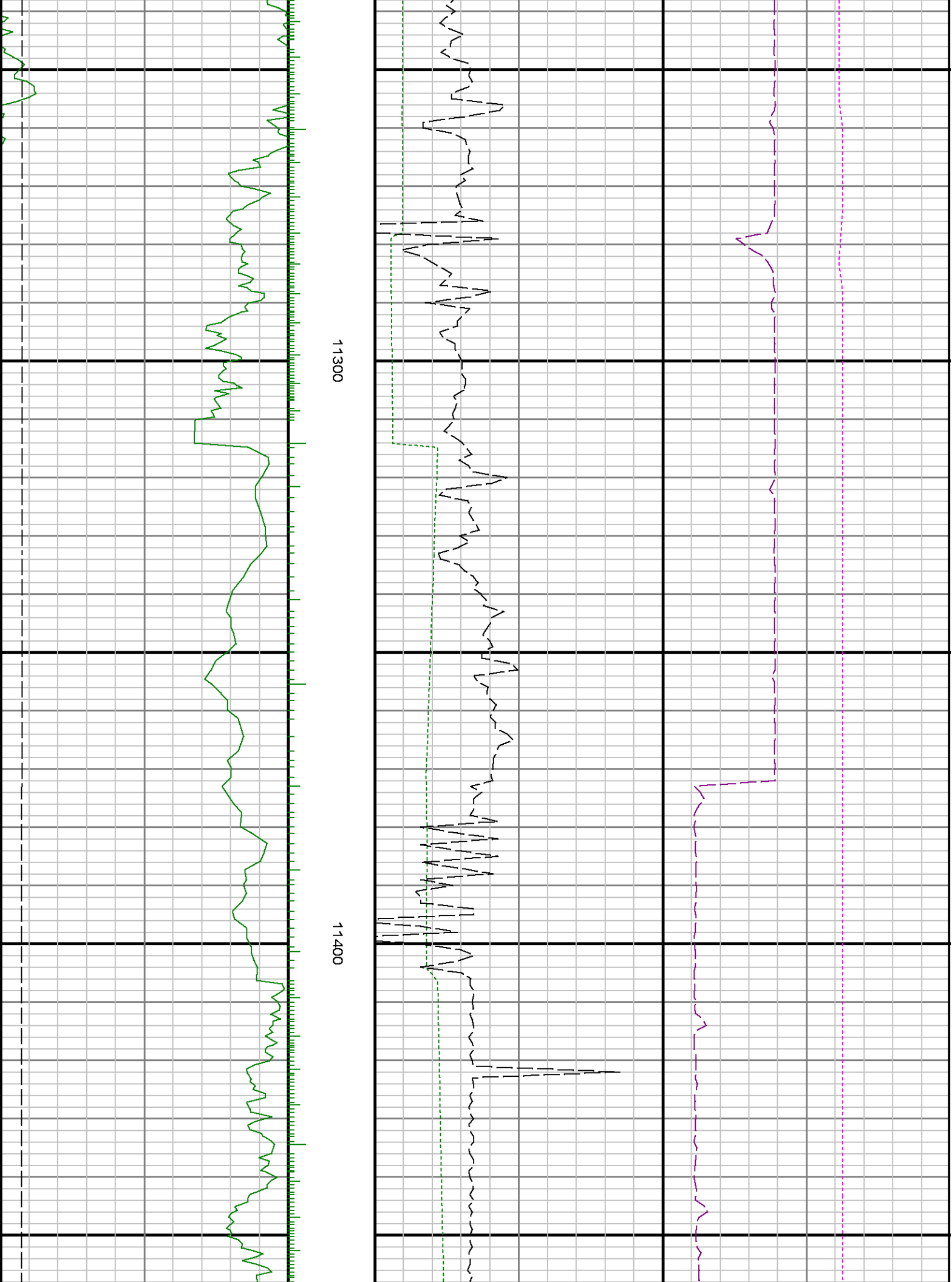
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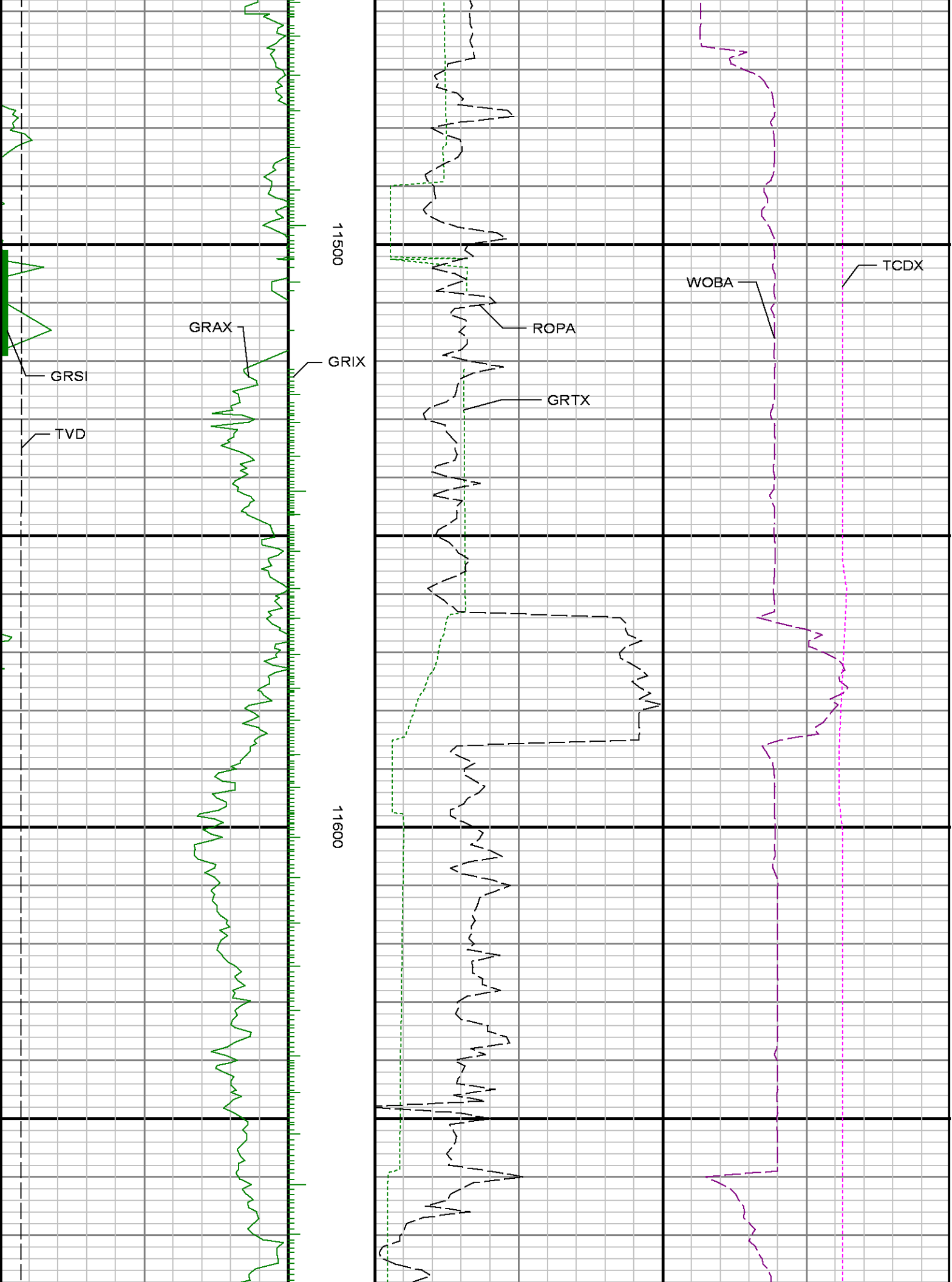
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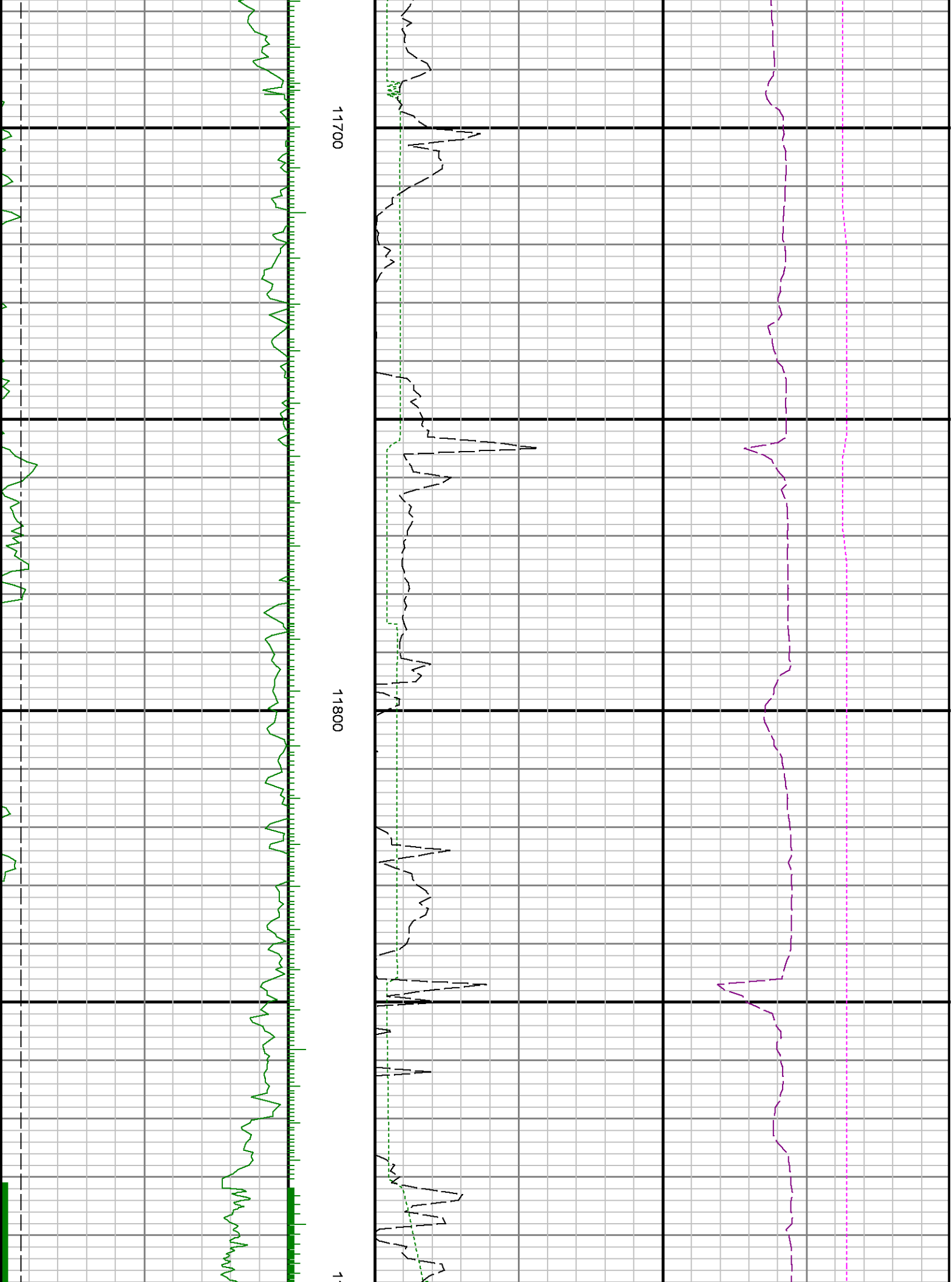
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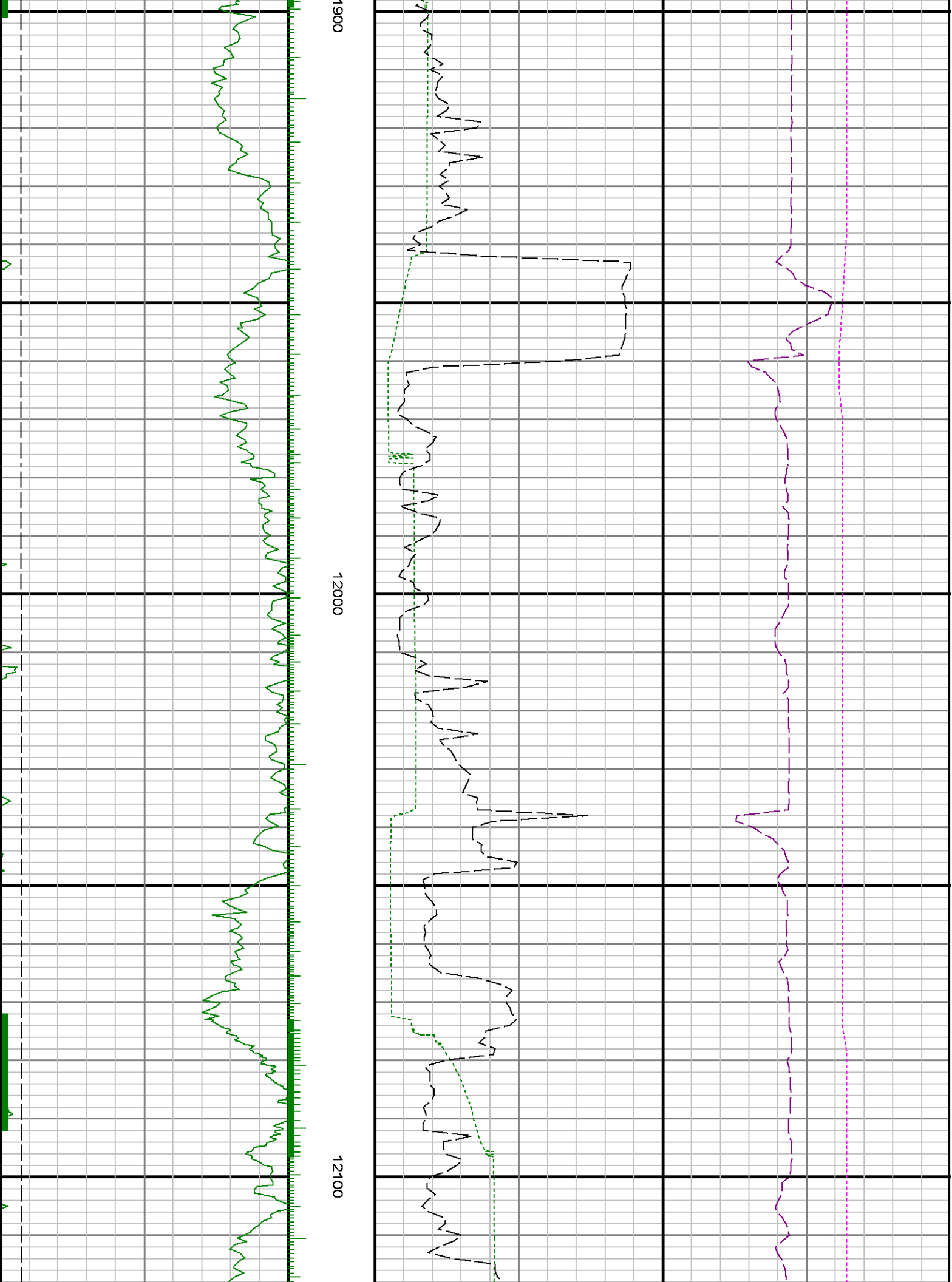


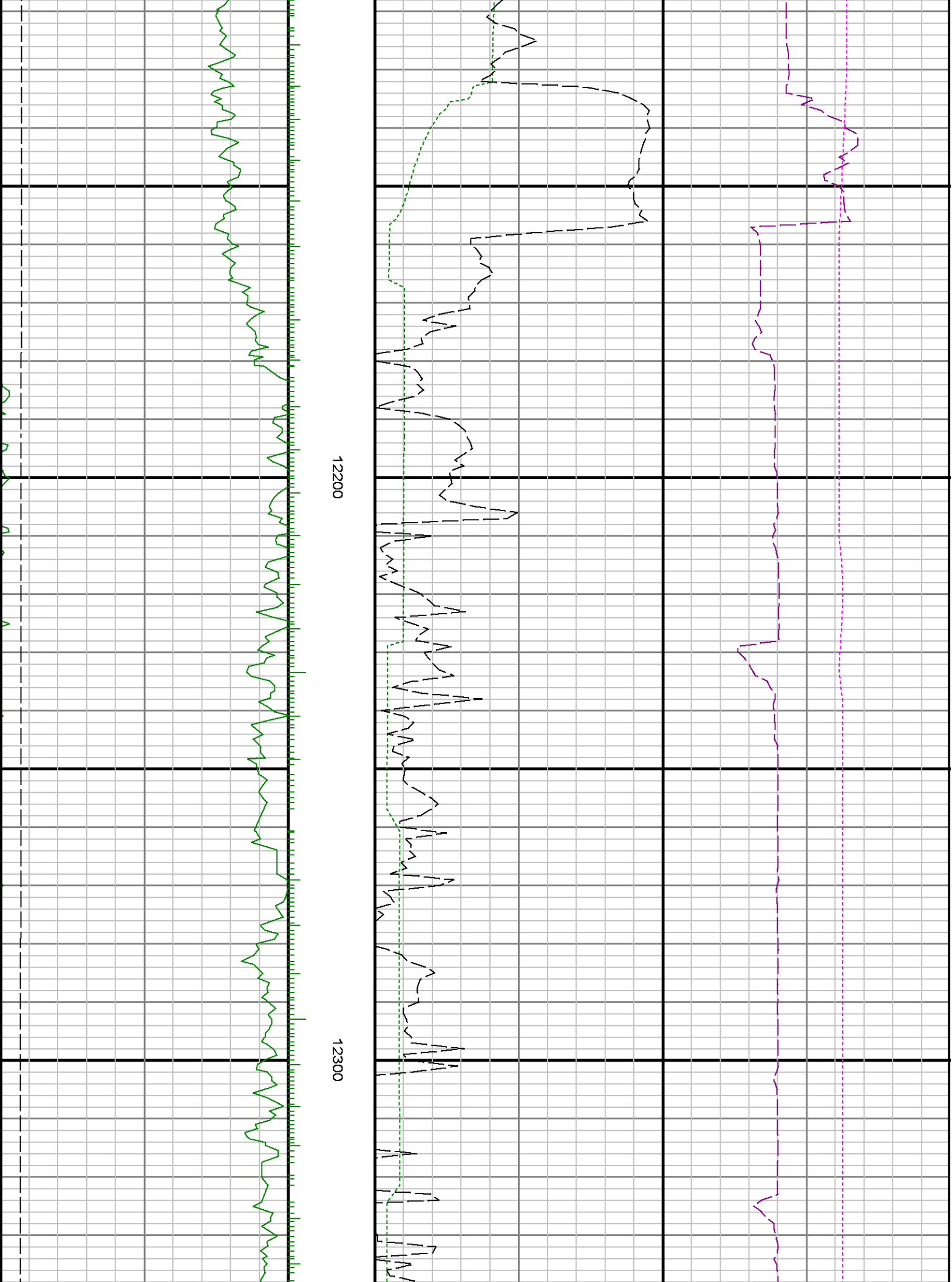


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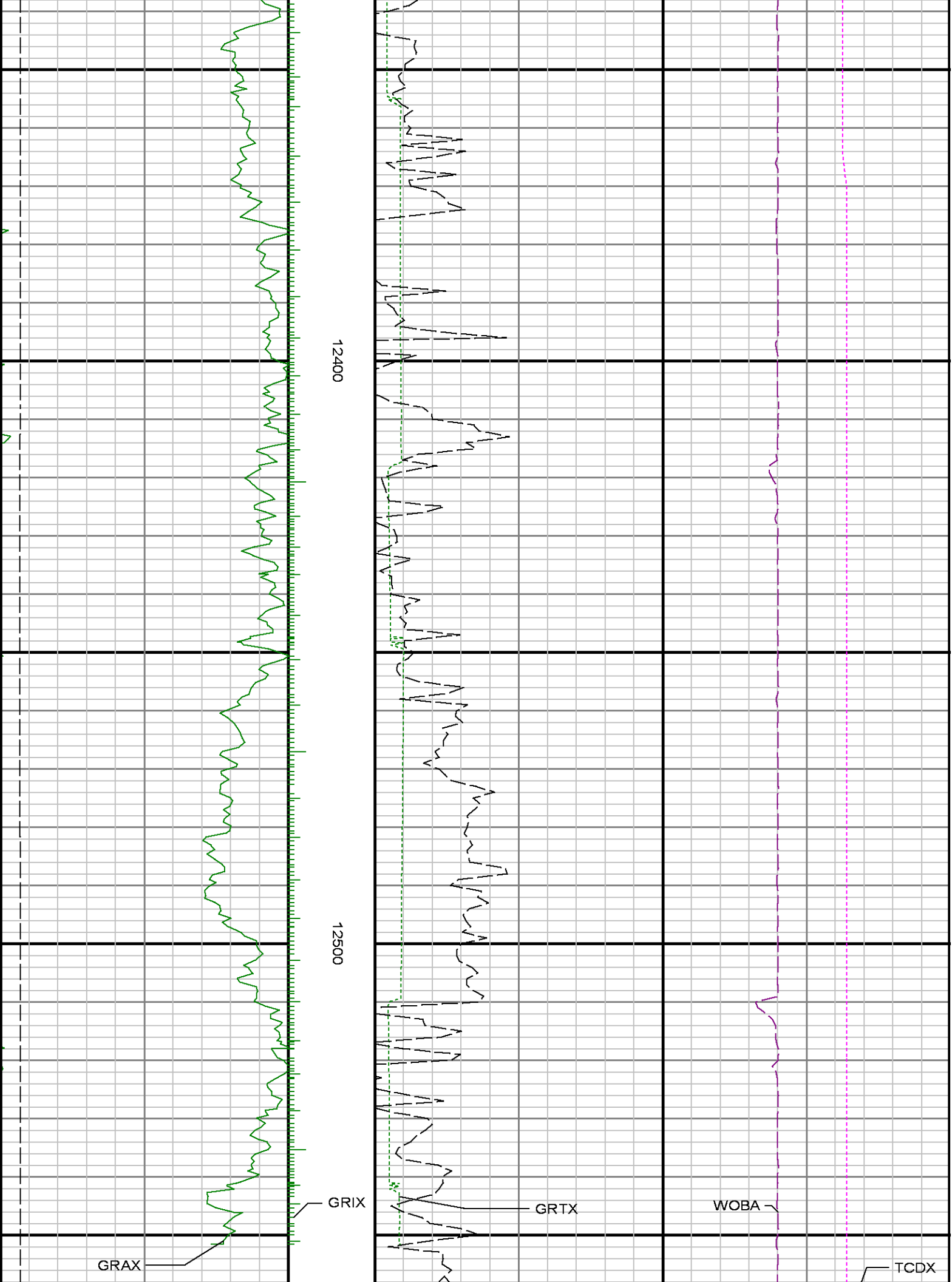
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12200

12300

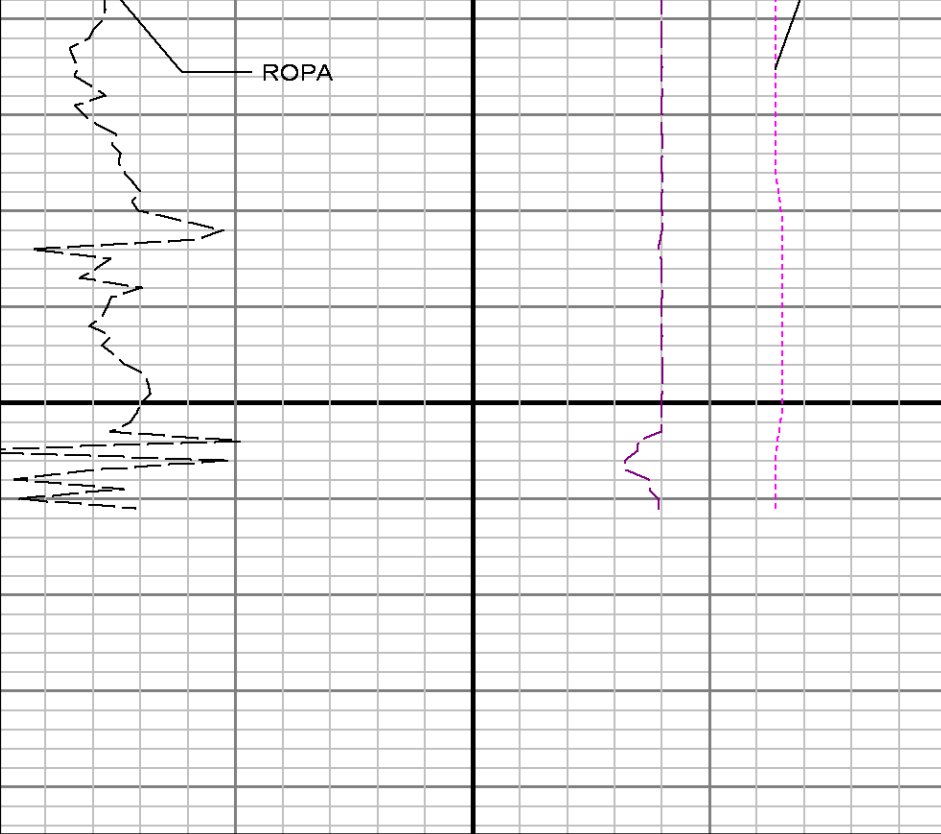


See Remark 2

TVD

ROPA

Run 1 <  
12600



Gamma Ray Apparent 0.5 ft Avg GRAX

0 150

API

True Vertical Depth TVD

7000 6000

ft

MD feet 1:240

Gamma Time Since Drilled GRTX

0 300

min

Rate of Penetration 3.0 ft Avg ROPA

300 0

ft/hr

Surface Weight On Bit 1.0 ft Avg WOBA

0 100

kibf

Downhole Temperature TCDX

100 300

degF