



Real Time Log

Natural Formation Evaluation
Gamma Ray

Scale:

1:240
Measure Depth

Company: Kerr-McGee Oil & Gas Onshore LP

Well: Wirkner-Vance 35C-1HZ

Field: Weld County (Kerr-McGee)

Region: Continental US Country: United States

Status: Surface Location:

Final Print

Latitude: 40° 10' 30.097" N

Longitude: 104° 50' 42.738" W

Other Services:

Directional
VSS

API Number:
051233788700

Section 36

TWN: 3N

Range 67E

Permanent Datum (P.D.): Ground Level Elevation: 4822.00 ft.

Log Measured From: Kelly Bushing 13.00 ft. Above P.D.

Depth Reference: Driller's Depth

Elevations:
KB: 4835.00 ft.
DF: n/a
GL: 4822.00 ft.

Interval Logged

Dates

Magnetic Field Reference

Top: 6681 ft. Date From: 31/Oct/13 Date To: 27/Nov/13 Dip Angle: 66.97° Az Reference North: True
Bottom: 12879 ft. Date To: 27/Nov/13 Total Mag to Reference
Spud Date: 18/Oct/13 Field Strength: 52794.0 nT North Correction: 8.62°

Borehole Record

Casing Record

Hole Size	From	To	Size	Weight	From	To
8.750 in.	1019 ft.	7762 ft.	9.625 in.	36.00 lb/ft	Surface	1040 ft.
6.000 in.	7762 ft.	12879 ft.	7.000 in.	26.00 lb/ft	1040 ft.	7762 ft.

Mud Record

Deviation Record

Type	From	To	Hole Size	Interval	Inc / Az (Start)	Inc / Az (End)
Water Based - Fresh	1019 ft.	12879 ft.	8.750 in.	6743 ft.	0.0° / 308.2°	82.3° / 180.8°
			6.000 in.	5117 ft.	82.3° / 180.8°	89.6° / 181.2°
					/	/
					/	/
					/	/
					/	/
					/	/

Acquisition System Software Version

Other

Advantage	2.20U4	Rigi / Contractor:	Ensign 138	/ Kerr-McGee Oil & Gas Onshore LP
PATS	6.4.1.34	Job No:	5851225	/ 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	3.000	Steerable	0	0	1019	6662	19/Nov/2013 11:00	31/Oct/2013 17:00	20.73
2	2	3	8.750	PDC	3.000	Steerable	6681	7673	6662	7762	21/Nov/2013 17:45	23/Nov/2013 07:45	20.38
3	3	4	6.000	PDC	6.000	Steerable	7673	12829	7762	12879	23/Nov/2013 16:30	26/Nov/2013 11:12	41.9

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Robert Bartlett	18/Nov/13	27/Nov/2013	William Drake	18/Nov/13	27/Nov/2013	Tyler Wall	22/Nov/2013	27/Nov/2013
David Browning	18/Nov/13	21/Nov/2013	Andrew Overbey	18/Nov/13	27/Nov/2013	Steve Martinez	18/Nov/13	27/Nov/2013

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+ (%)
19/Nov/2013 11:57	1	0	Water Based - Fresh	8.6	29	8.8	N/A	0 / 98	Active Mud Pit	800	0.0
20/Nov/2013 21:00	1	1019	Water Based - Fresh	8.6	29	8.5	N/A	0 / 98	Active Mud Pit	800	0.0
21/Nov/2013 21:00	2	6096	Water Based - Fresh	9.7	35	8.3	N/A	0 / 93	Active Mud Pit	600	0.0
22/Nov/2013 21:00	2	6708	Water Based - Fresh	9.8	36	9.5	N/A	0 / 92	Active Mud Pit	900	0.0
23/Nov/2013 11:42	2	7647	Water Based - Fresh	9.9	34	9.5	N/A	0 / 92	Active Mud Pit	800	0.0
24/Nov/2013 21:00	3	7800	Water Based - Fresh	9.2	37	10.4	N/A	0/94.5	Active Mud Pit	1000	0.0
25/Nov/2013 21:00	3	11950	Water Based - Fresh	9.3	37	8.9	N/A	0/94	Active Mud Pit	1000	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.	klbf

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (m.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	10307183	Directional	57.34	6.750	3.313
1	SRIG	12376056	Gamma	53.96	6.750	3.313
2	DIR	10307183	Directional	54.12	6.750	3.313
2	SRIG	12376056	Gamma	50.74	6.750	3.313
3	DIR	11866045	Directional	53.77	4.750	2.750
3	SRIG	12554657	Gamma	50.45	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

- 1.) 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.
- 2.) Baker Hughes runs 1and 2 utilized 6 3/4 inch NaviTrak services (Directional only) behind an 8 3/4 inch bit and steerable assembly from 1019 to 6762 feet MD (1019 to 6700 feet TVD).

3.) Baker Hughes run 2 utilized 6 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and steerable assembly from 6762 to 7762 feet MD (6700 to 7340 feet TVD).

4.) The interval from 1019 to 6762 feet MD (1019 to 6762 feet TVD) was not logged due to directional only services being provided through the straight-hole and nudge section for Baker Hughes runs 1 and 2.

5.) Baker Hughes run 3 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 inch bit and steerable assembly from 7762 to 12879 feet MD (7340 to 7340 feet TVD).

6.) The interval from 12829 to 12879 feet MD (7135 to 7135 feet TVD) was not logged due gamma ray sensor to bit offset.

Curve Mnemonics

Curve	Description	Units
GRAX	Gamma Ray - Apparent	API
GRIX	Gamma Ray - Data Point Indicator	unitless
GRSIM	Gamma Ray Sliding Indicator	unitless
GRTX	Gamma Time Since Drilled	min
ROPA	AVERAGE Instantaneous ROP - 5 second ROP	ft/hr
TCDX	Downhole Temperature	degF
TVD	True Vertical Depth	ft
WOBA	AVERAGE Weight On Bit	klbf

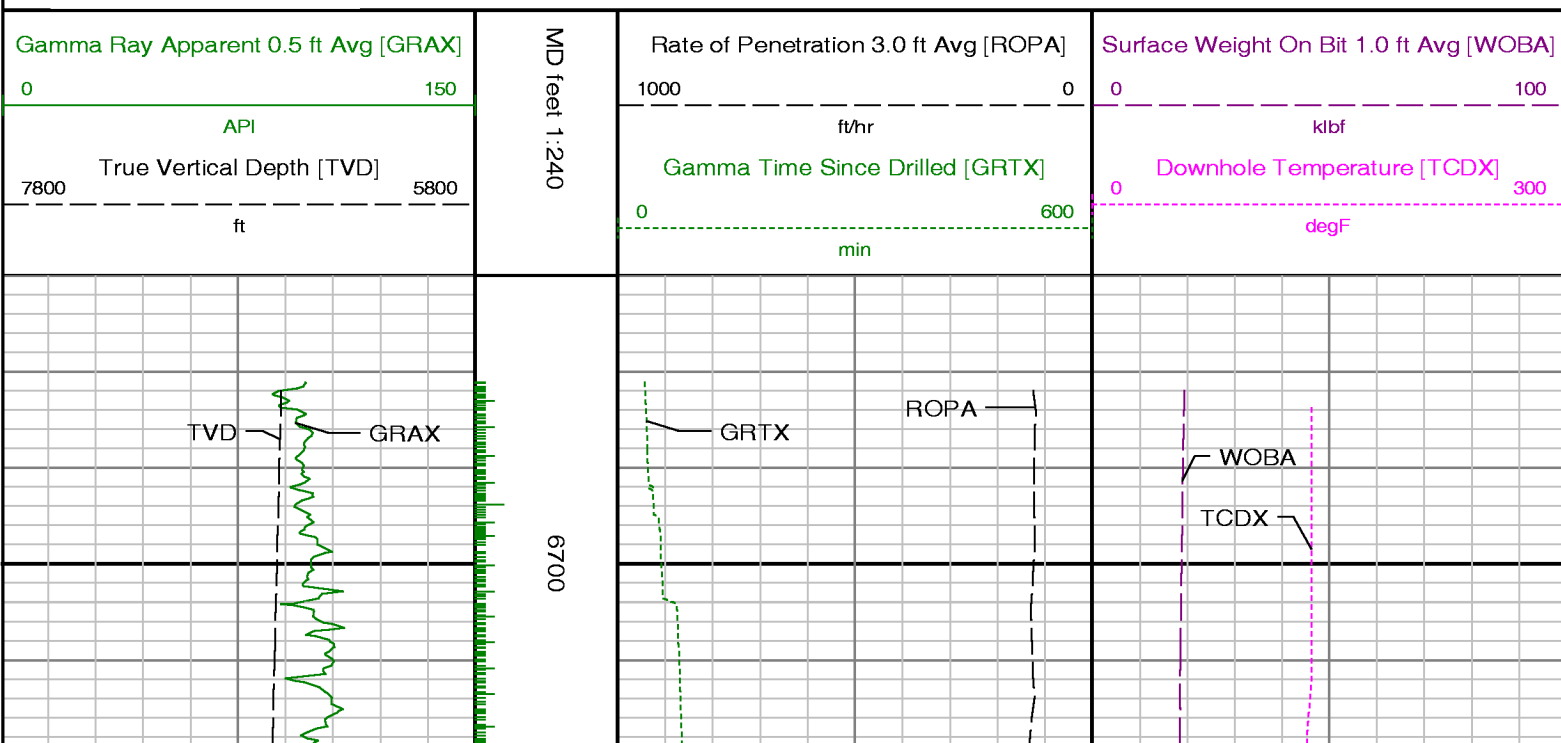


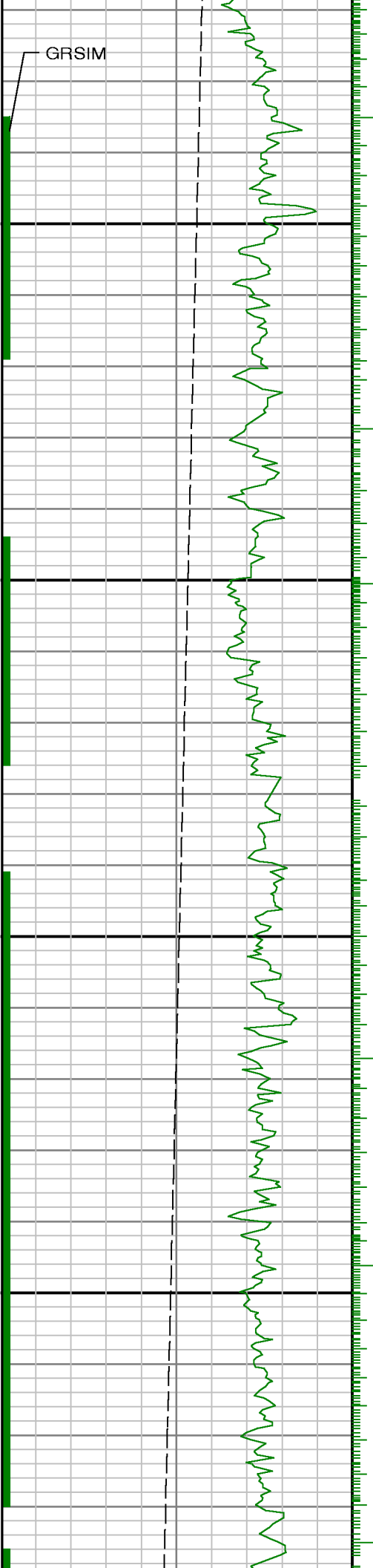
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Well : Wirkner-Vance 35C-1HZ

Interval : 6670.00 - 12900.00 feet

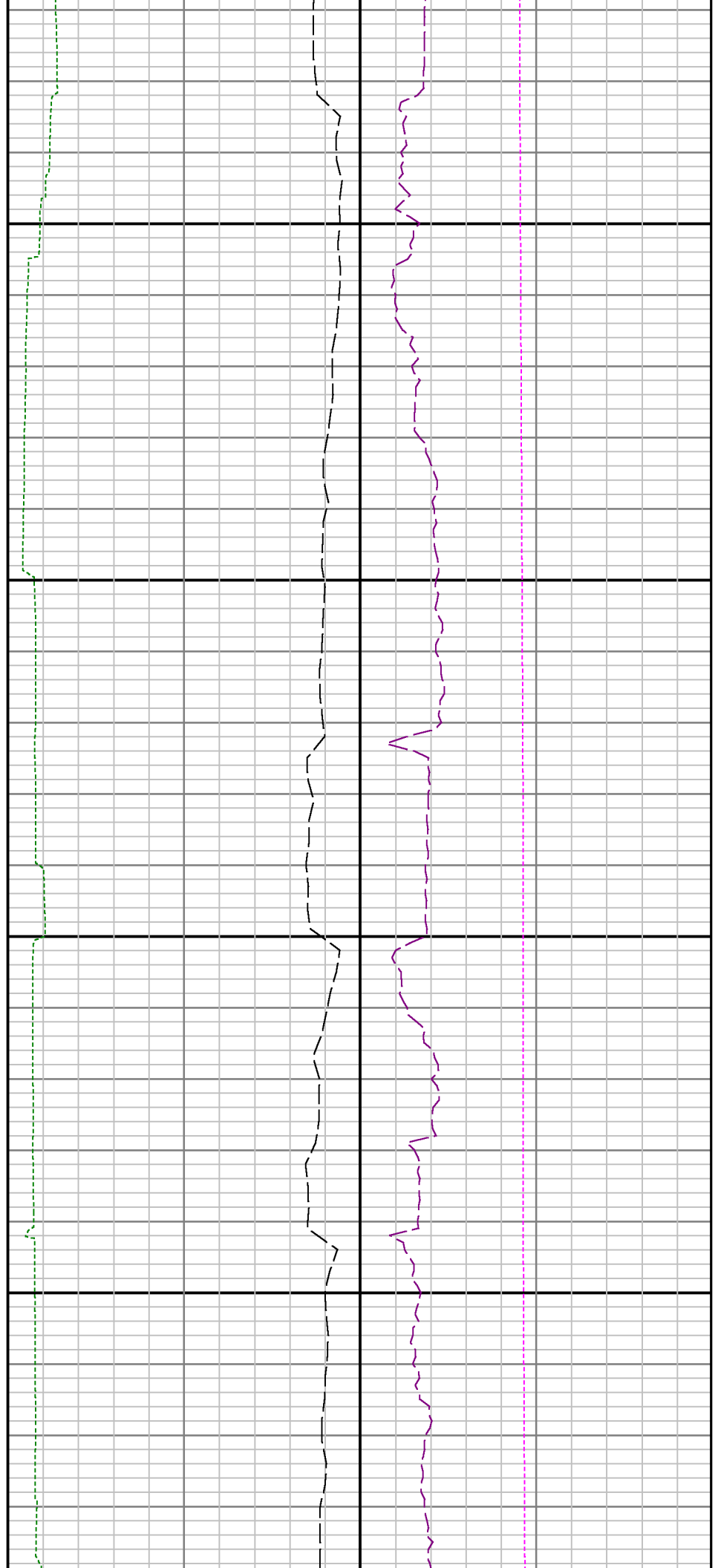
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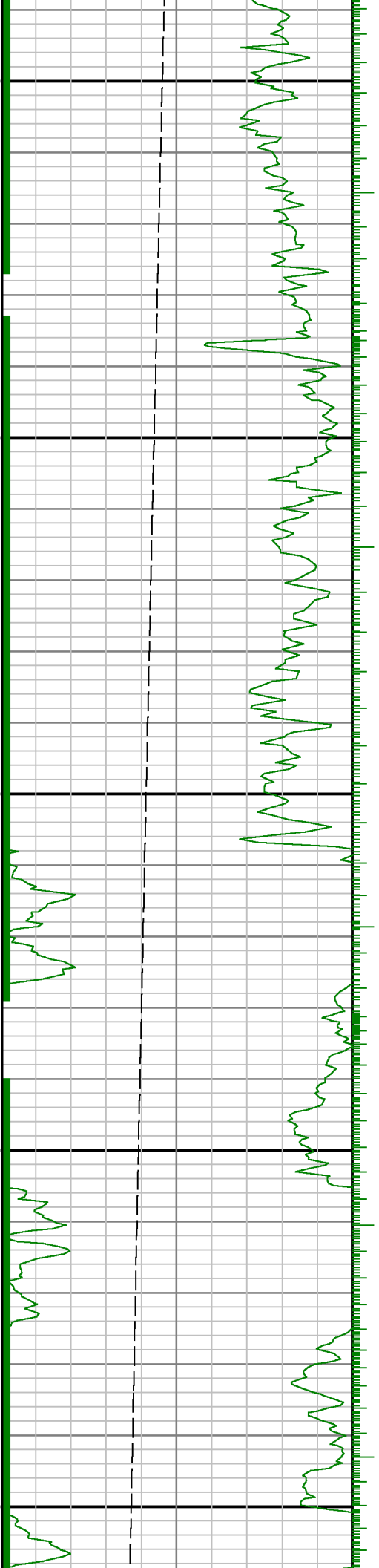
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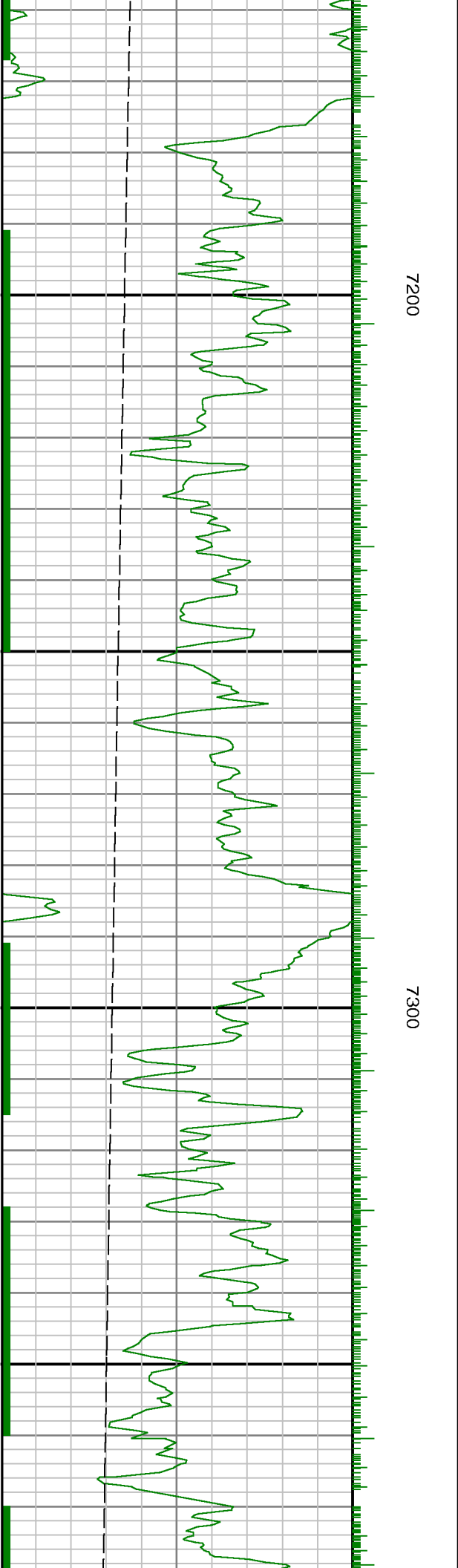
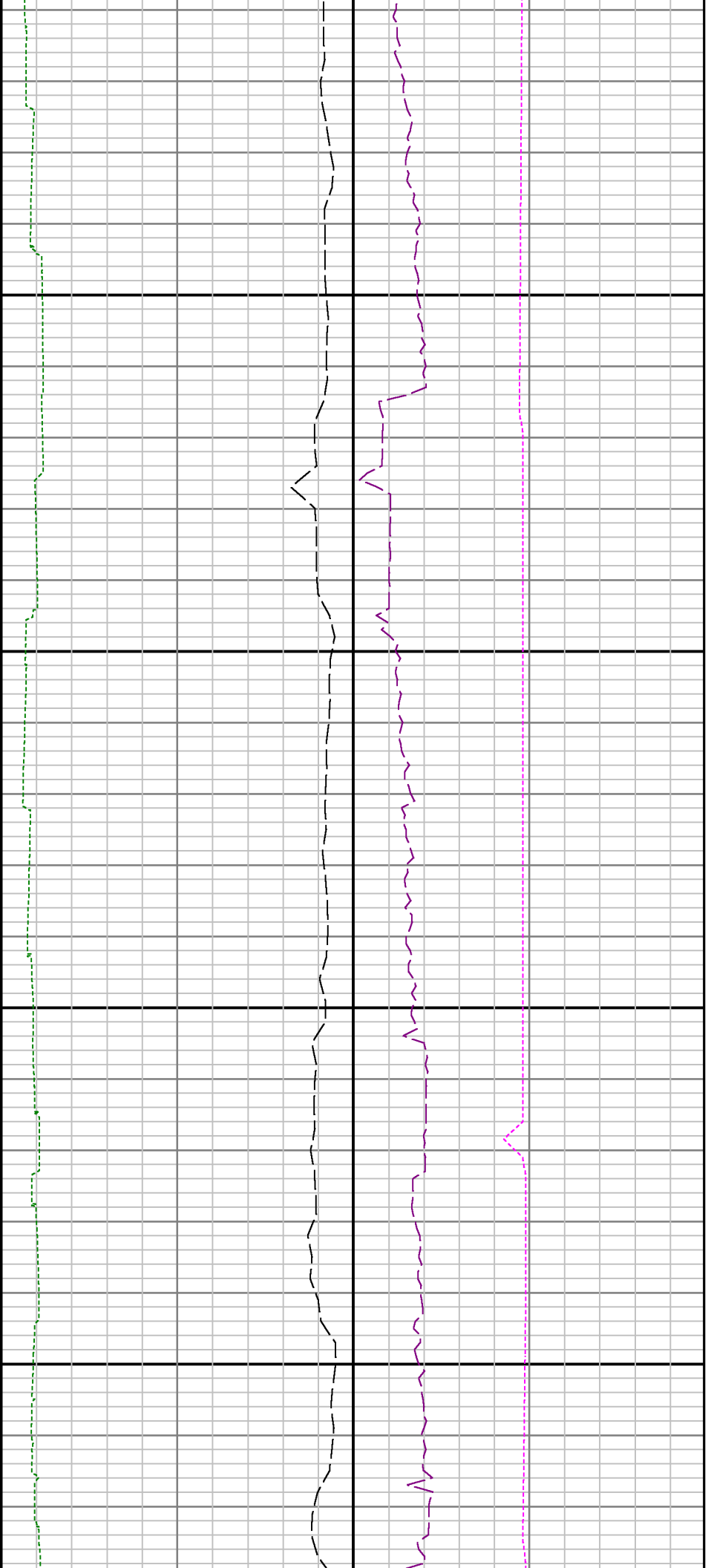


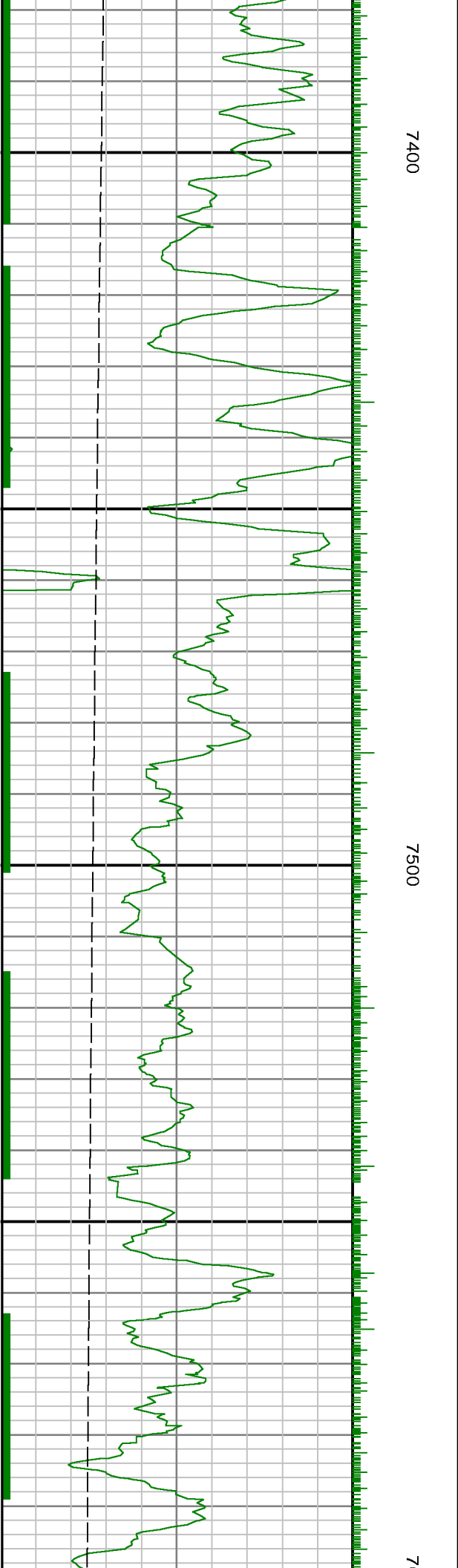
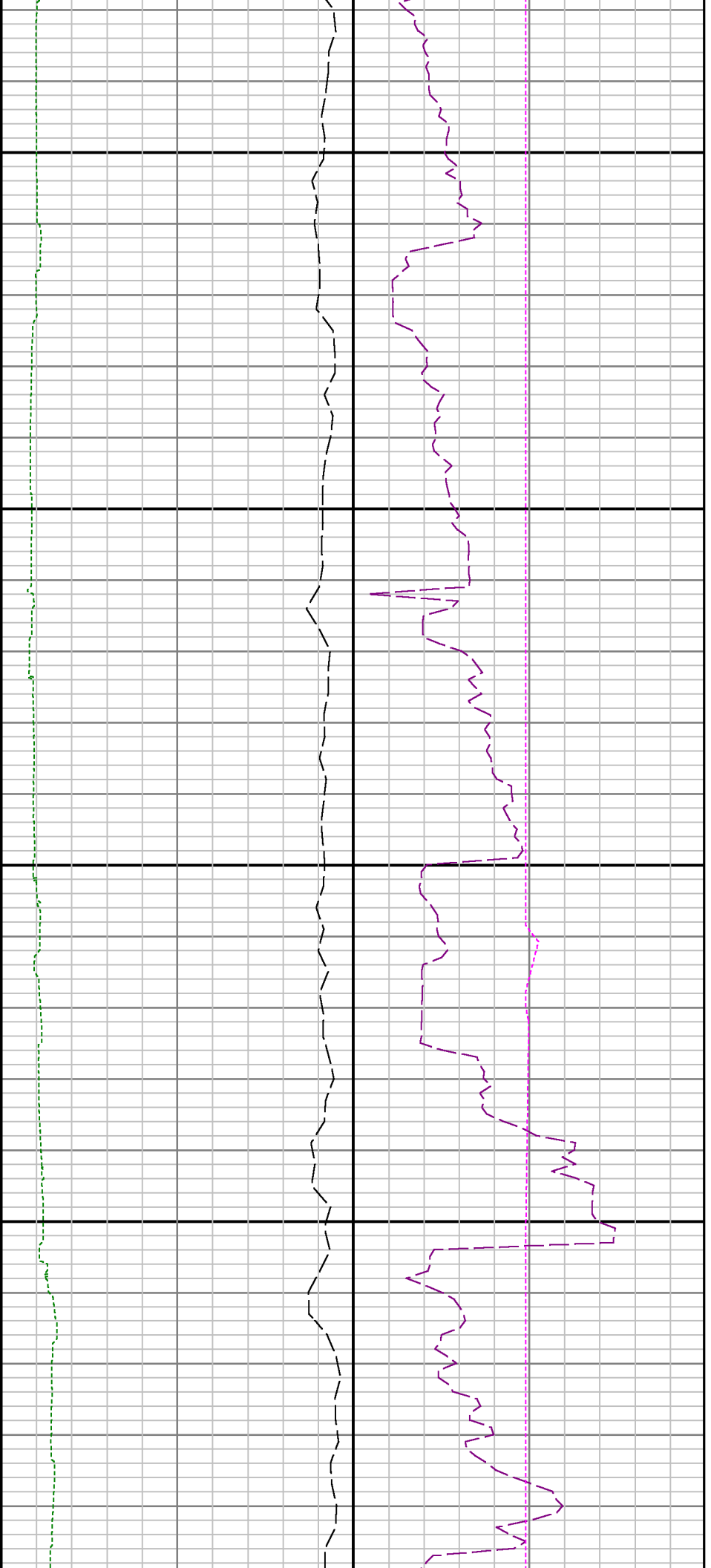


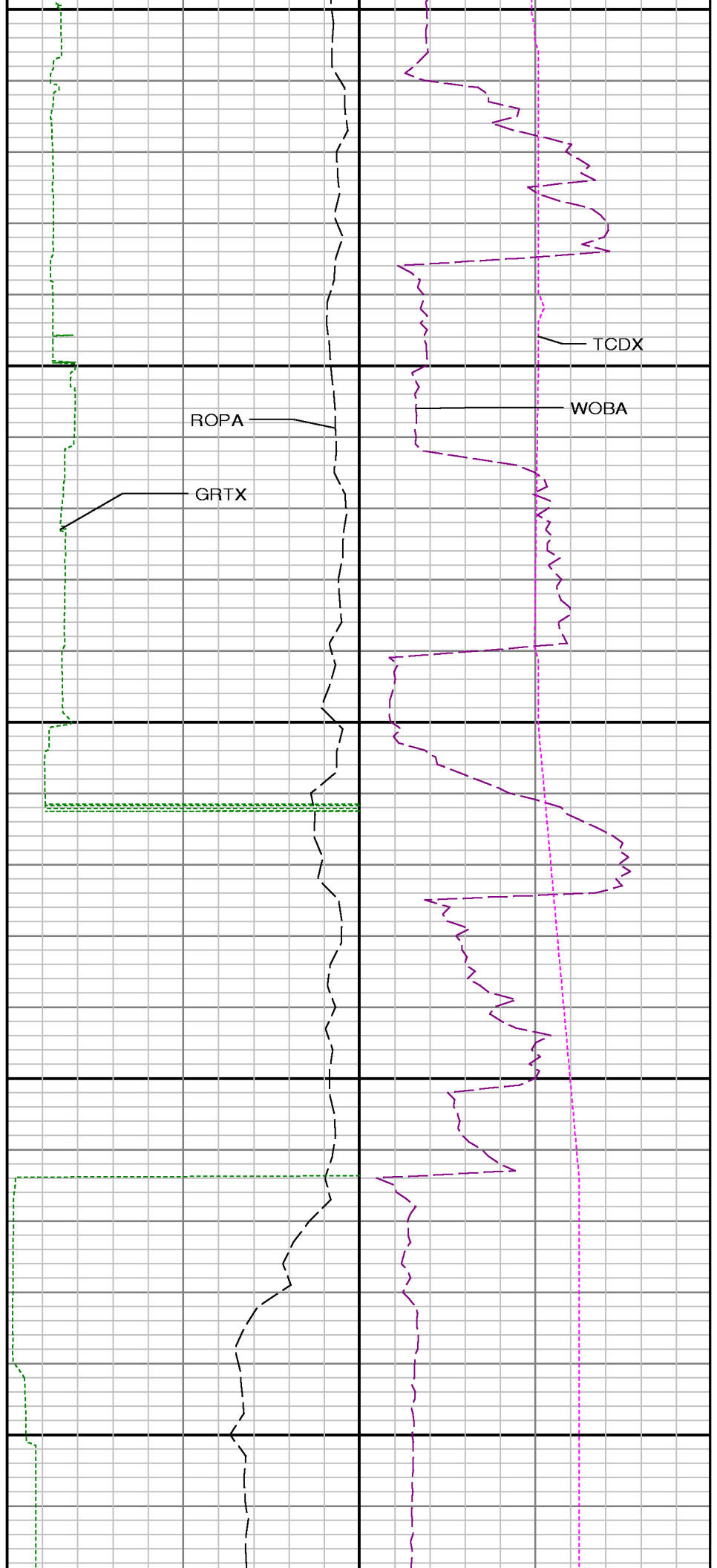
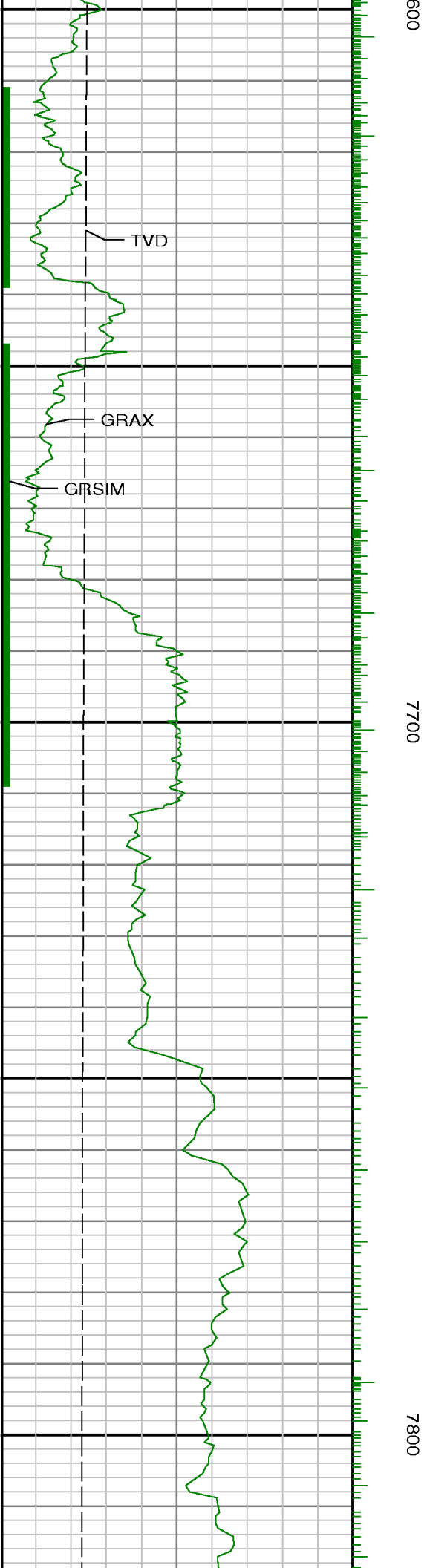
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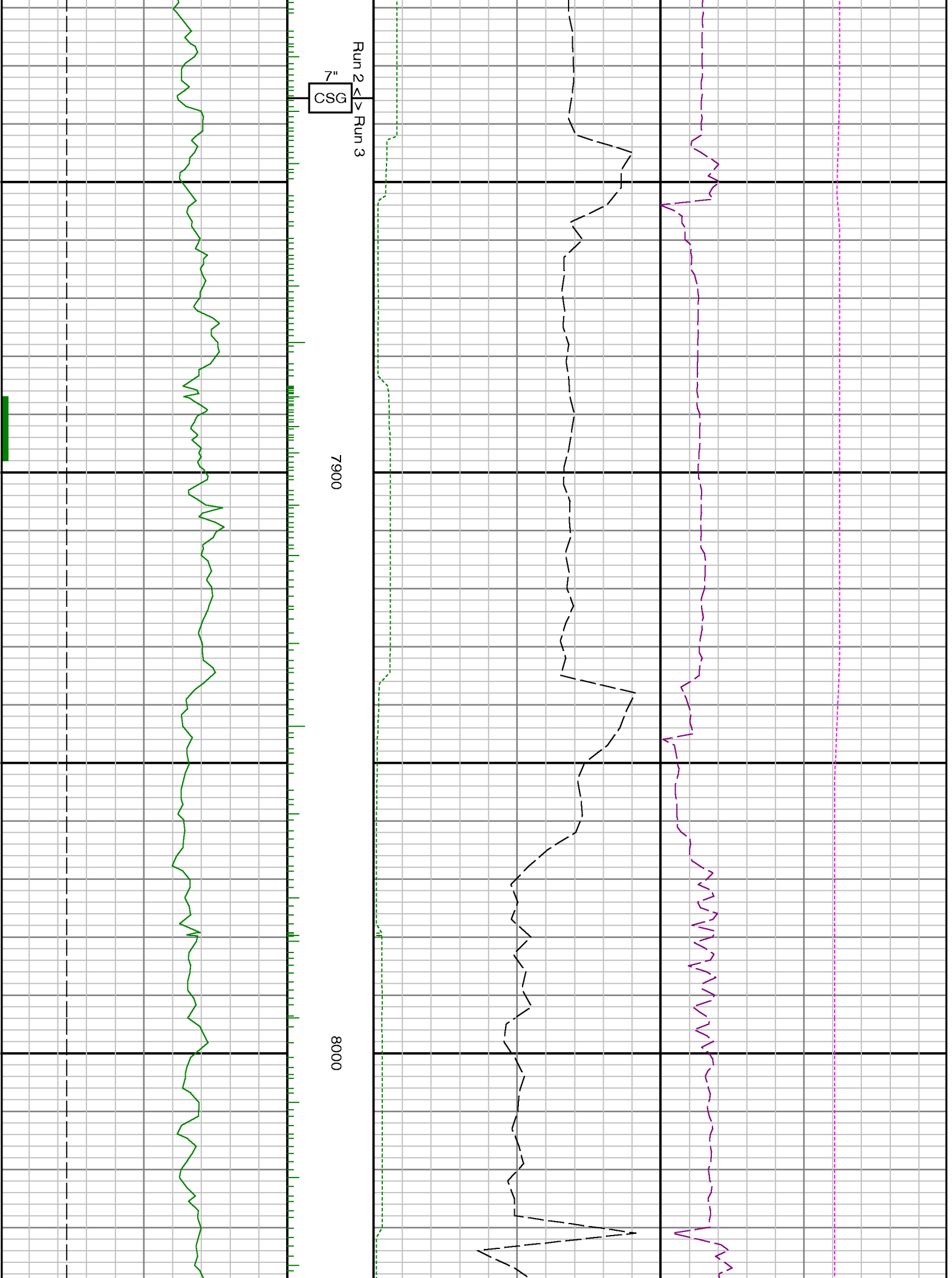
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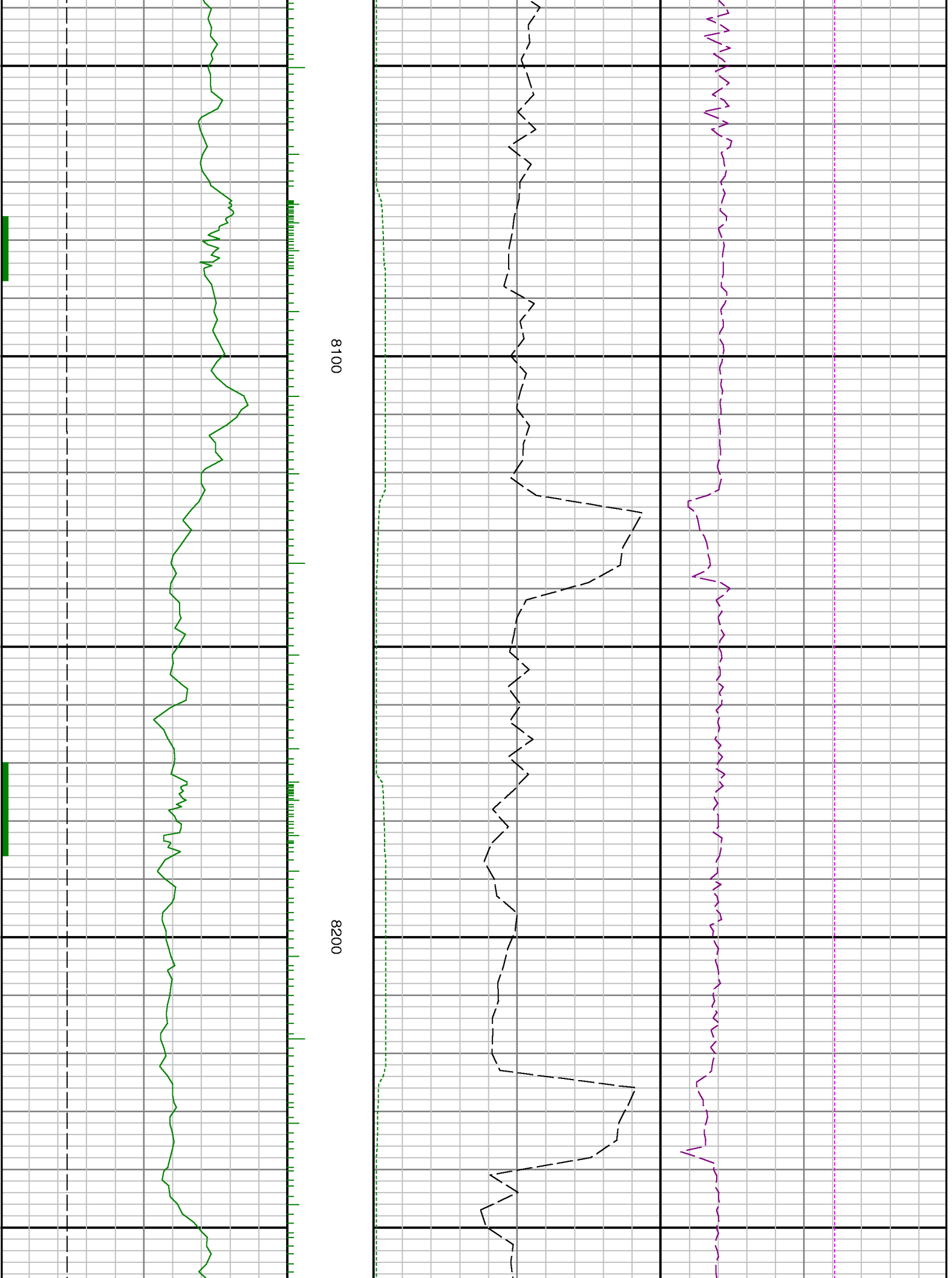


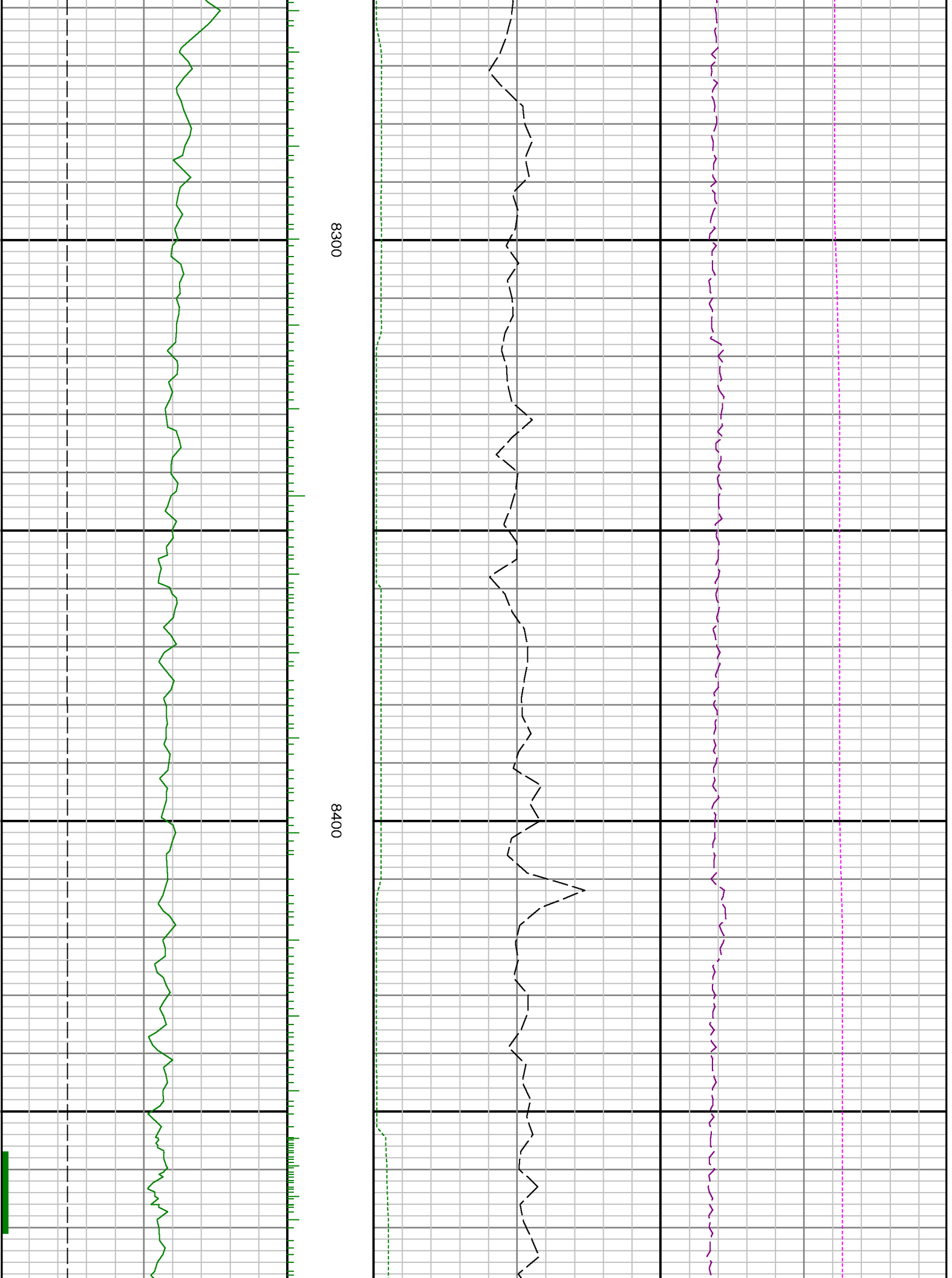


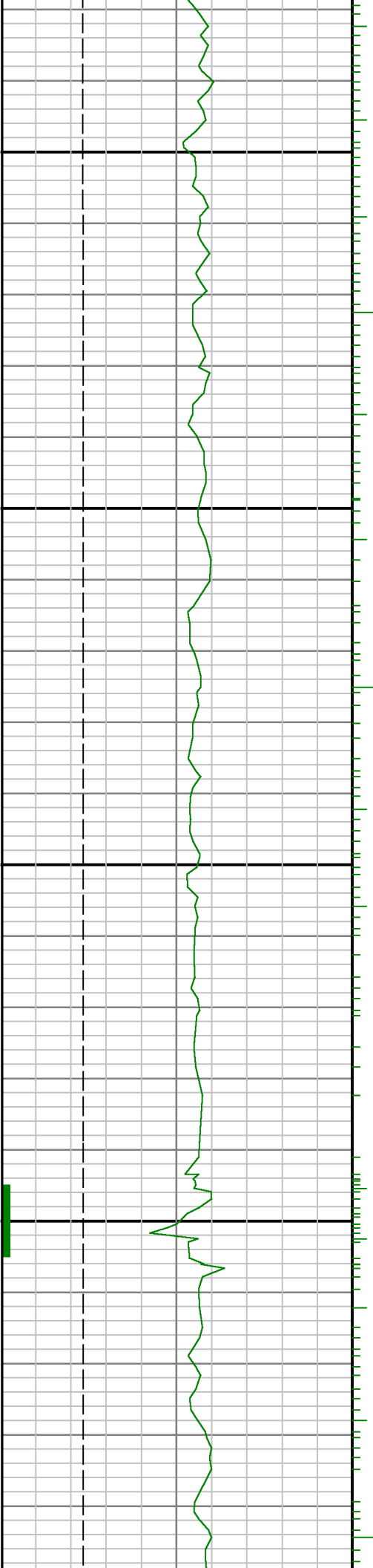








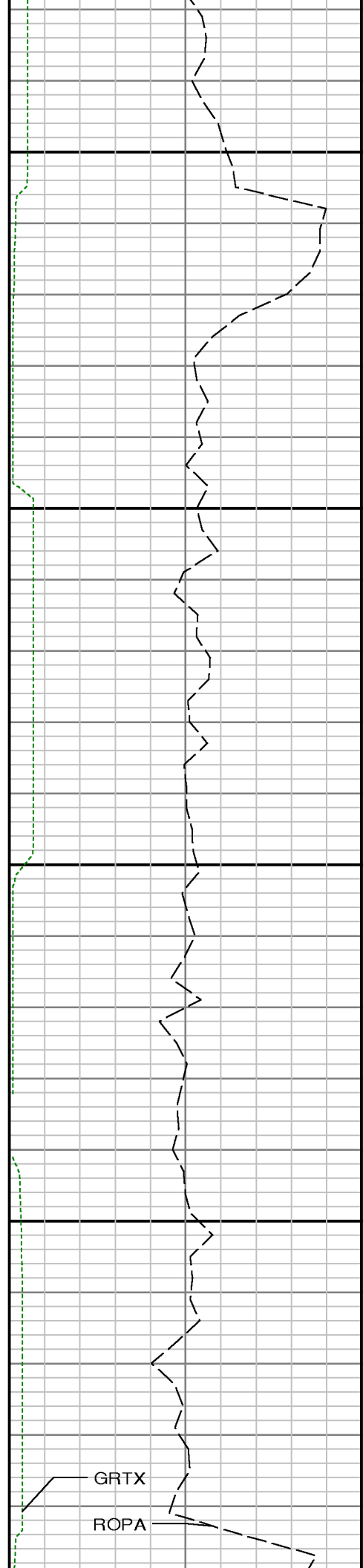




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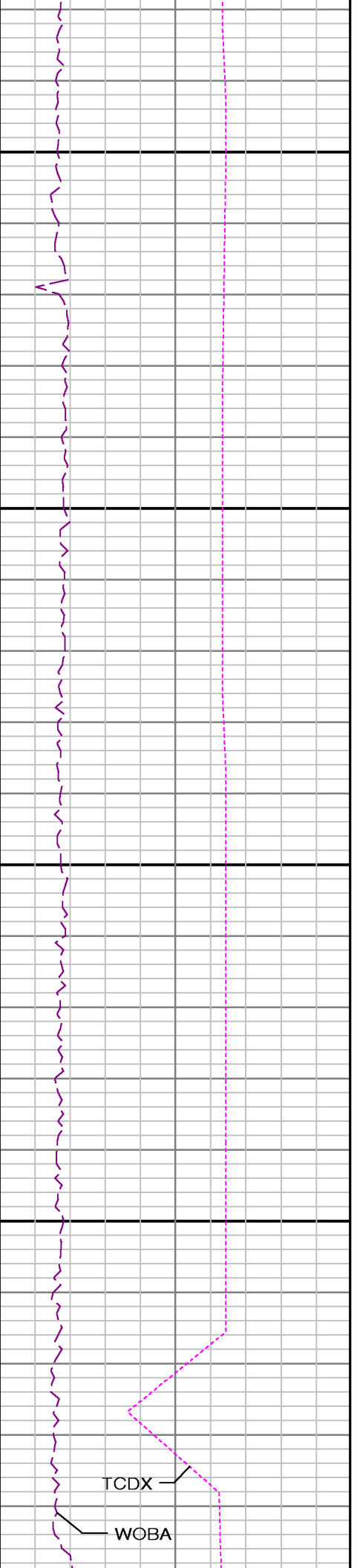


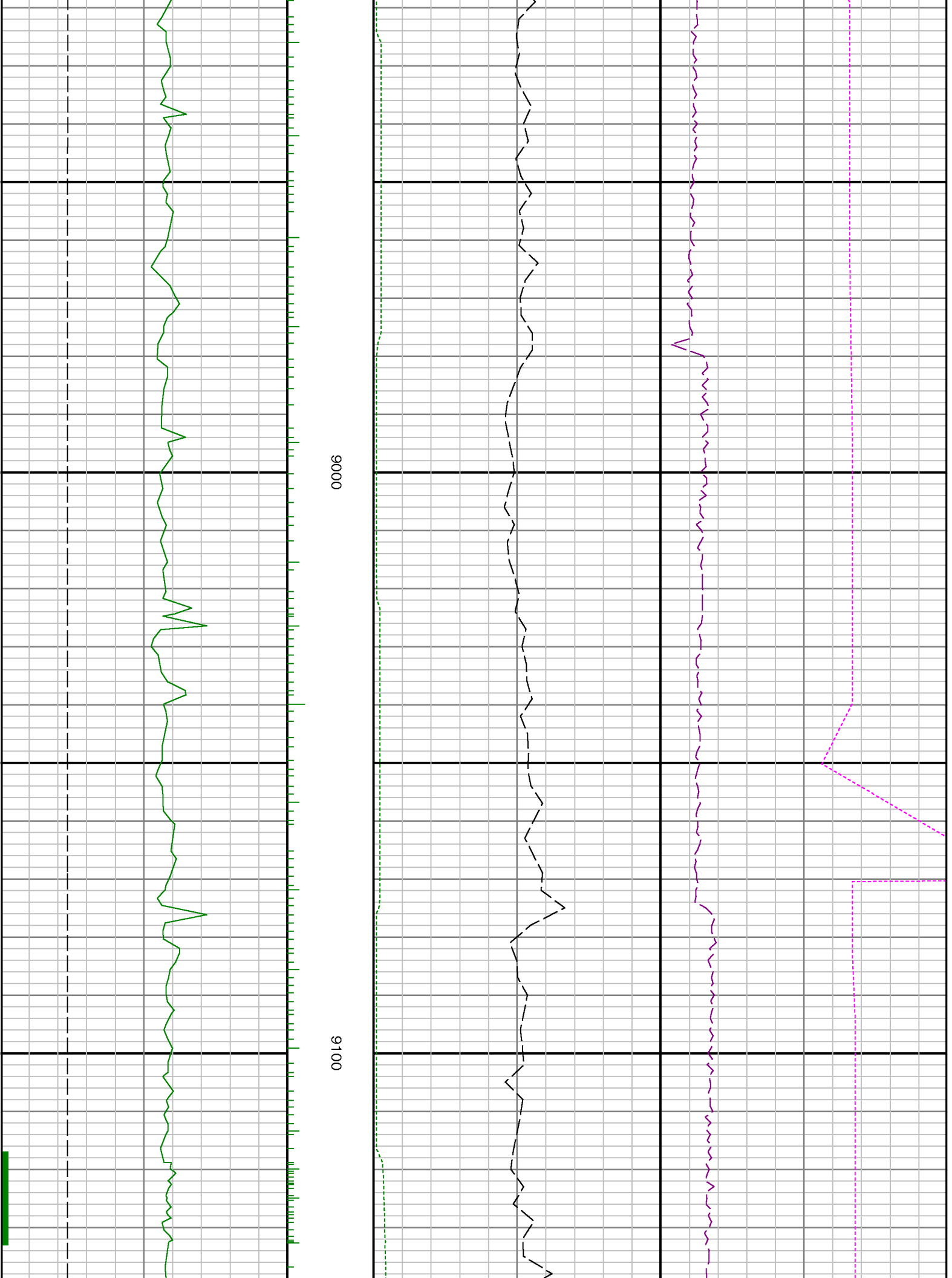
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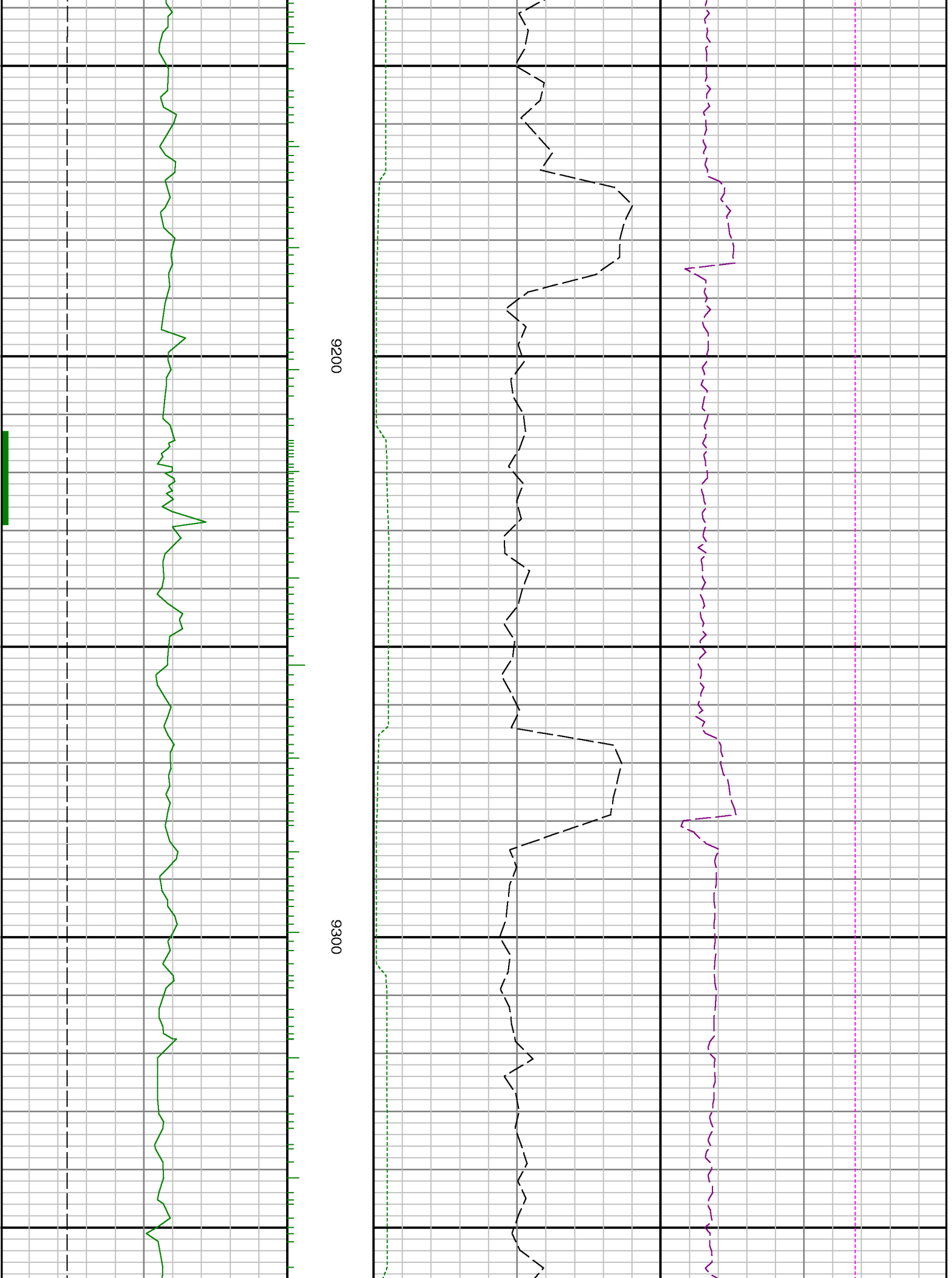
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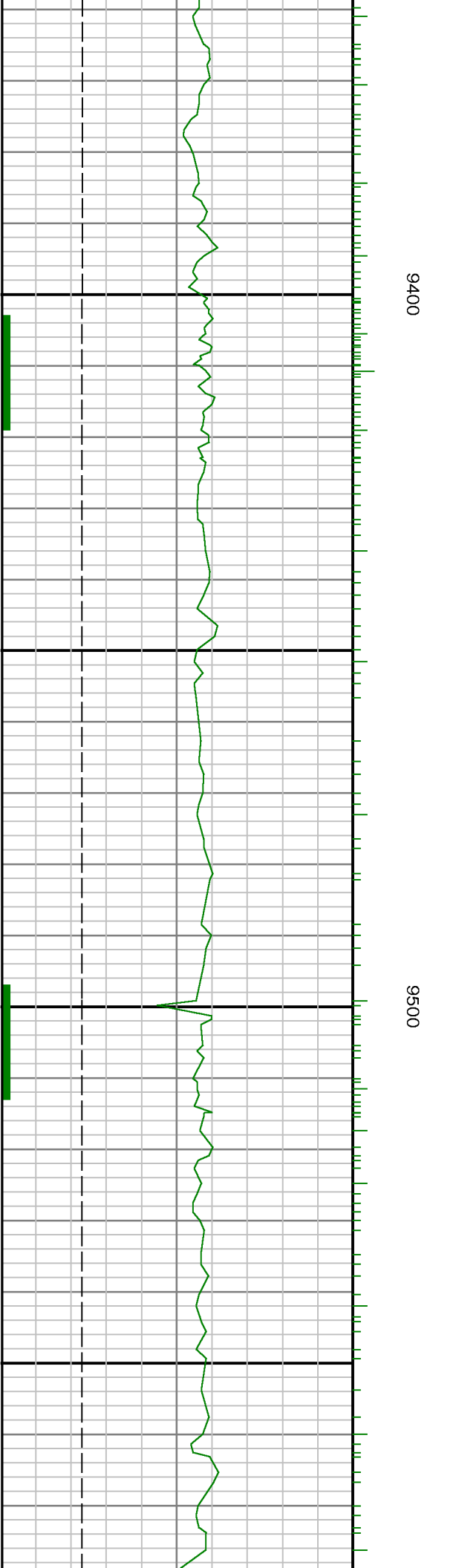
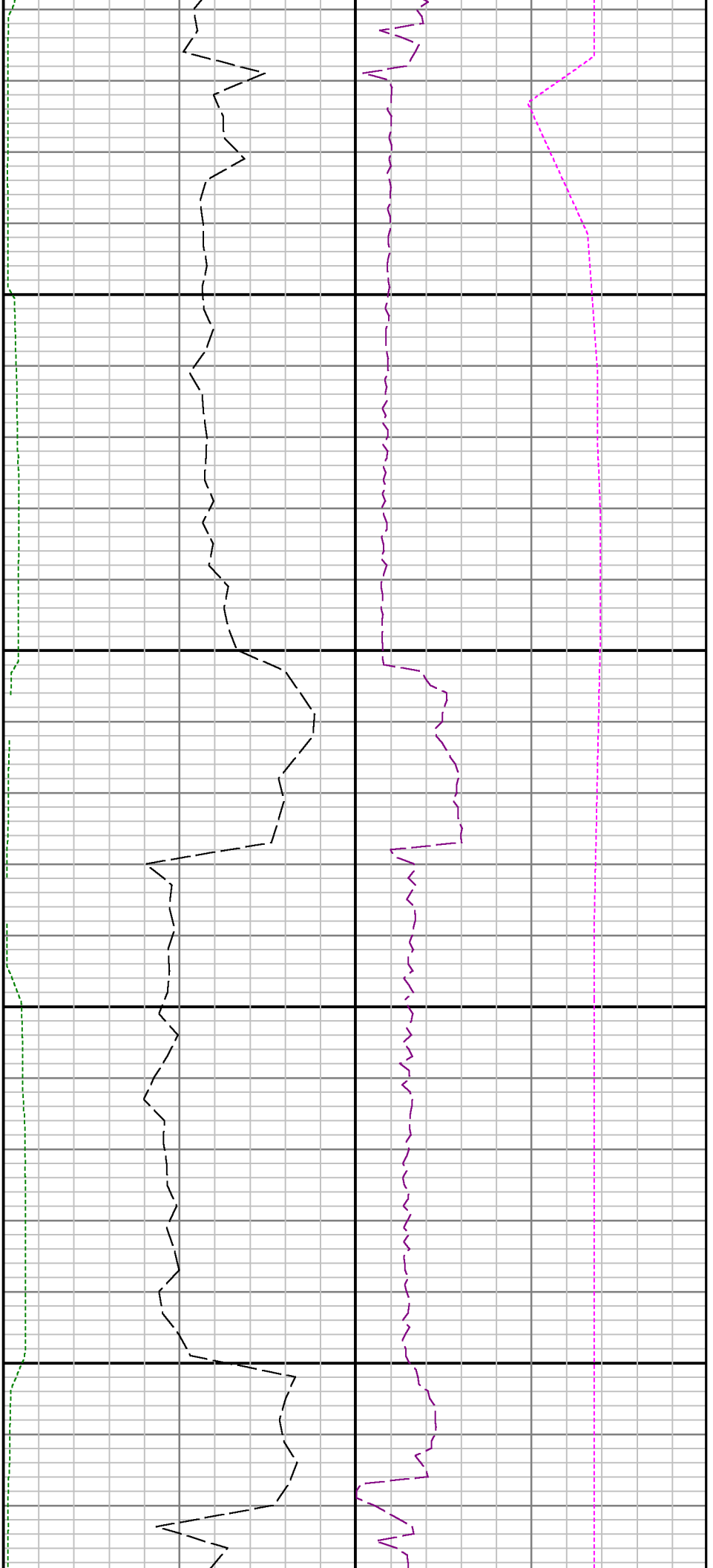
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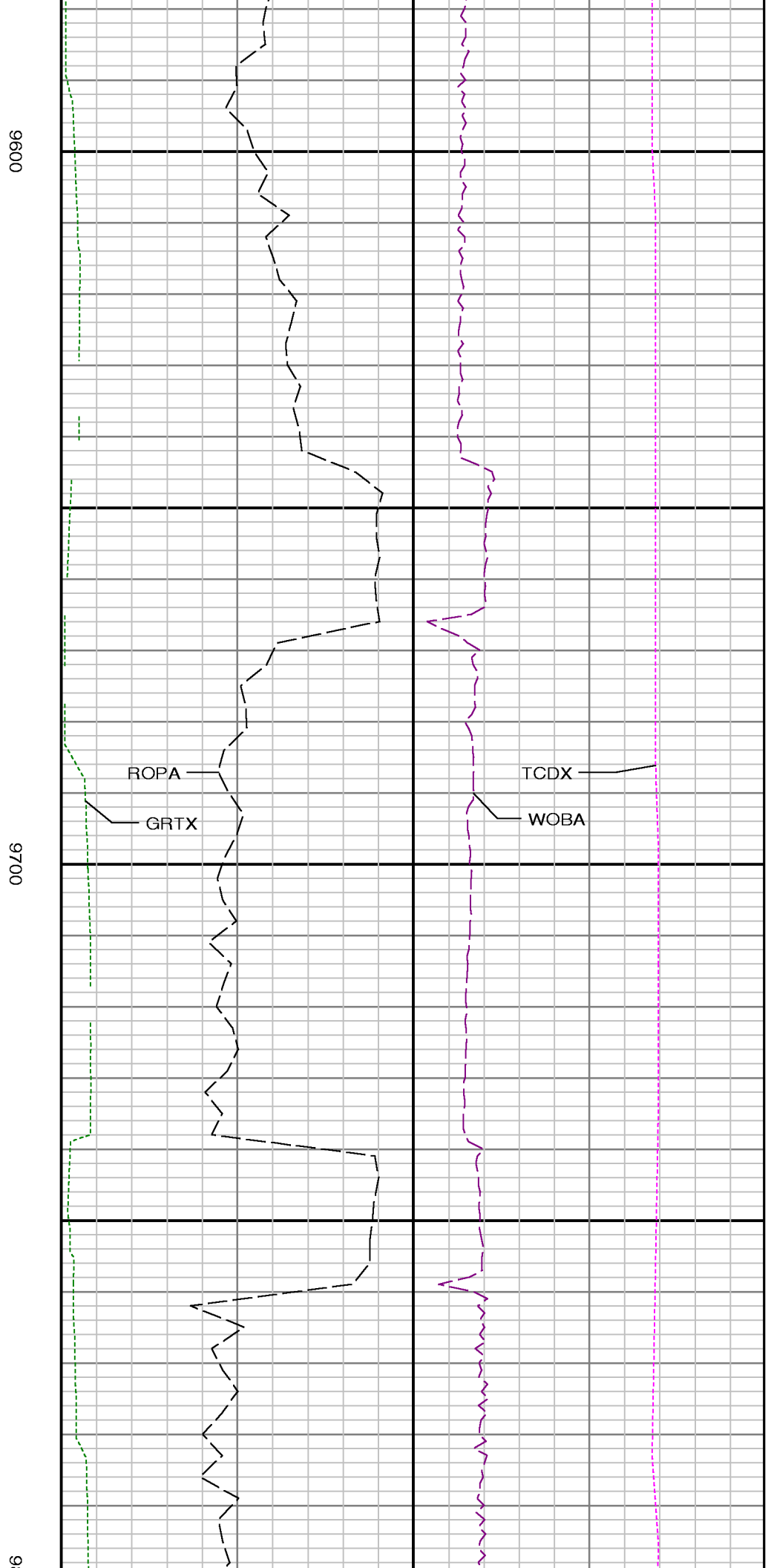
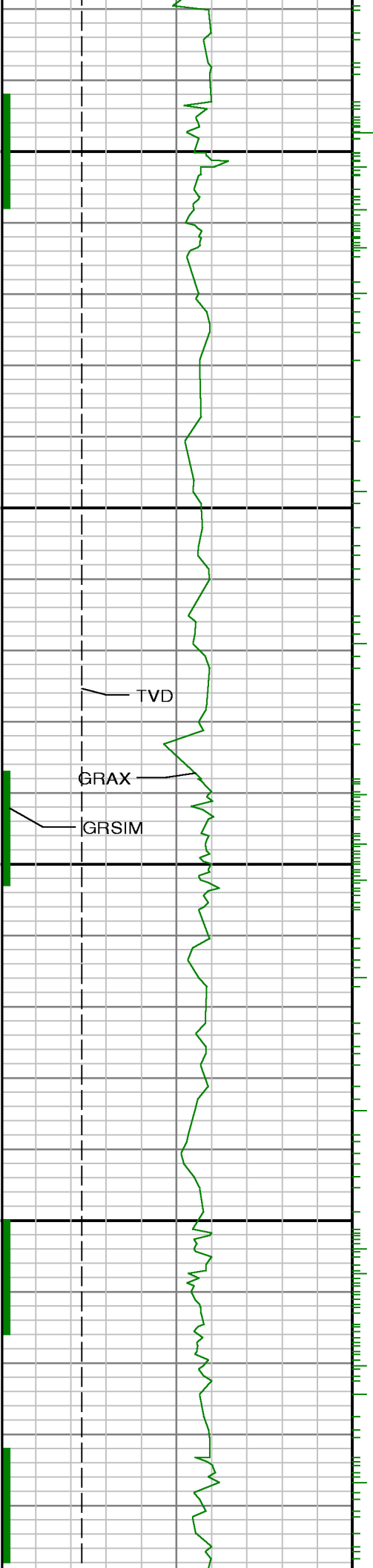
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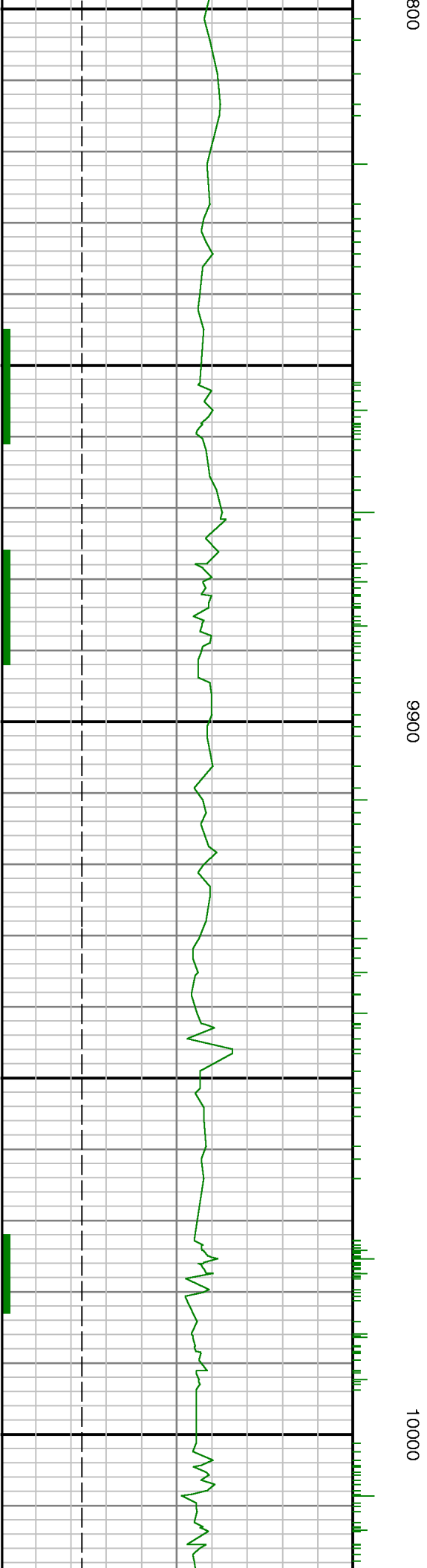


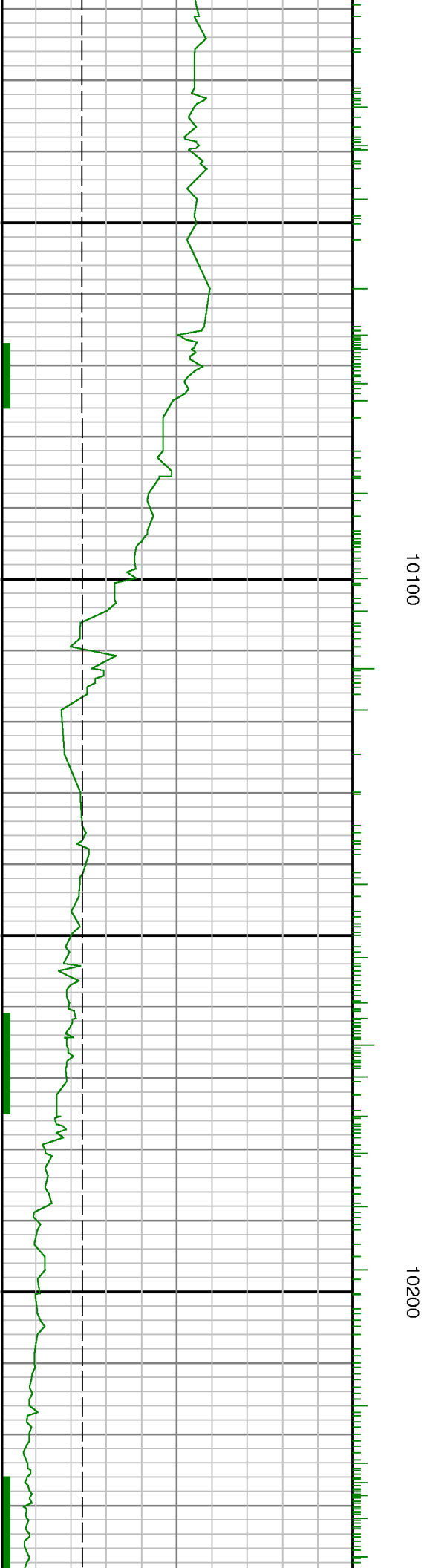
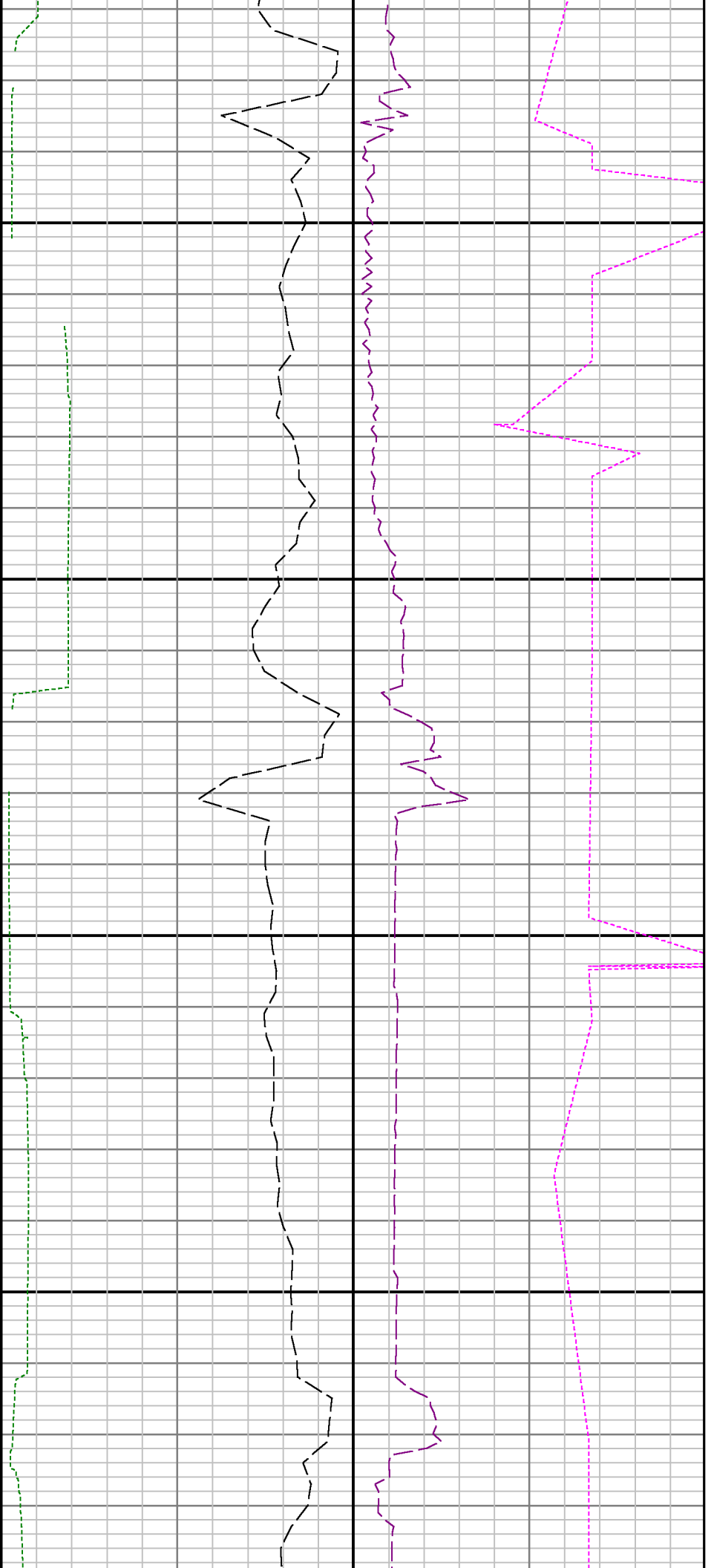


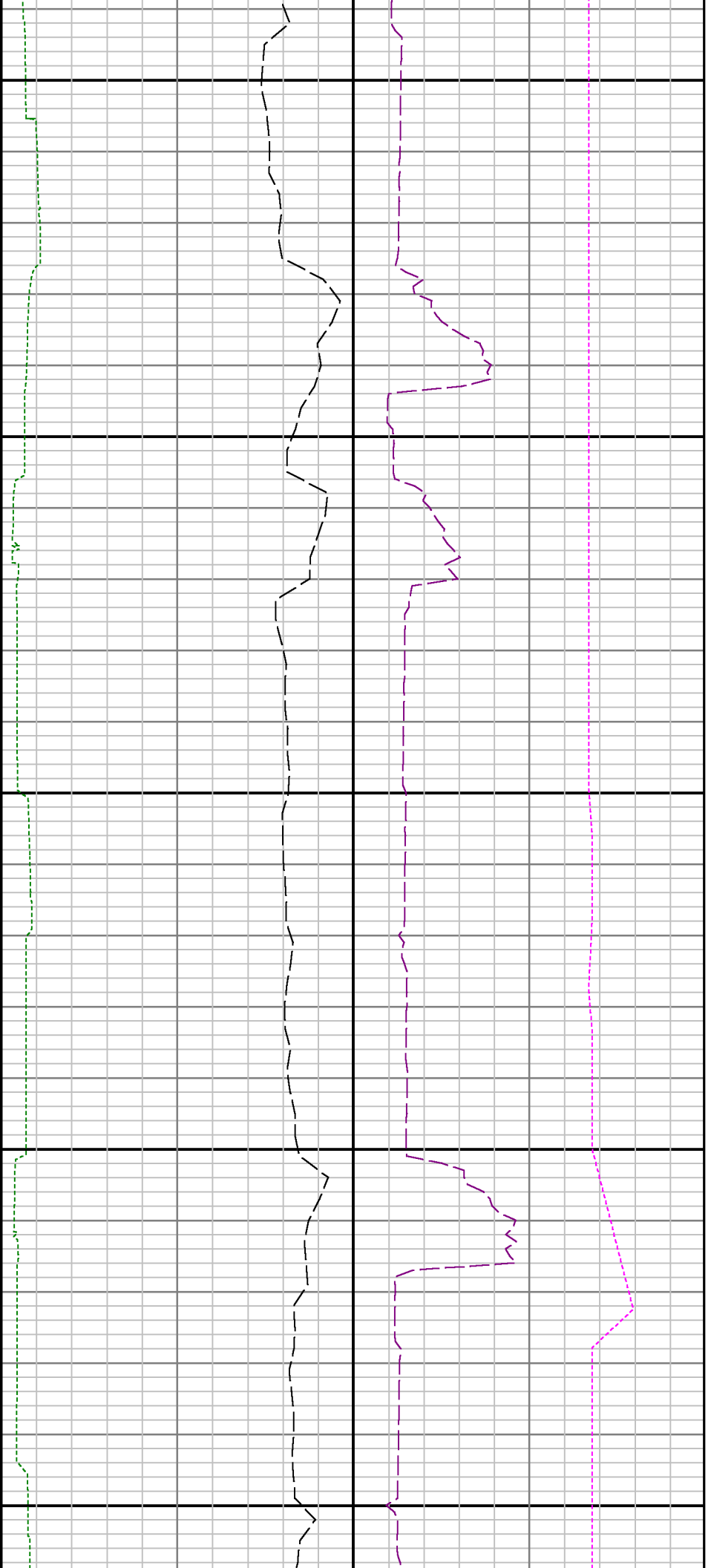






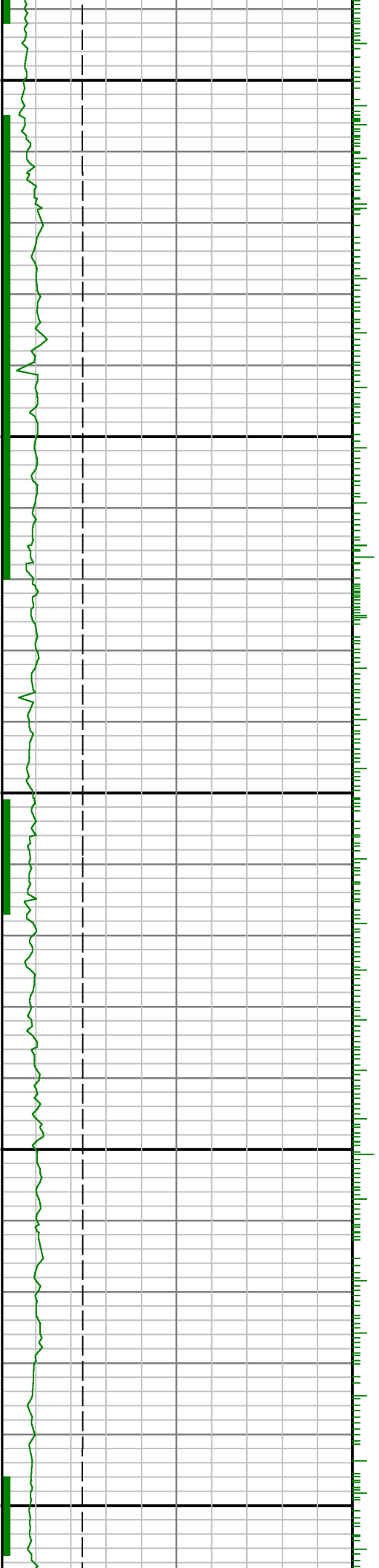


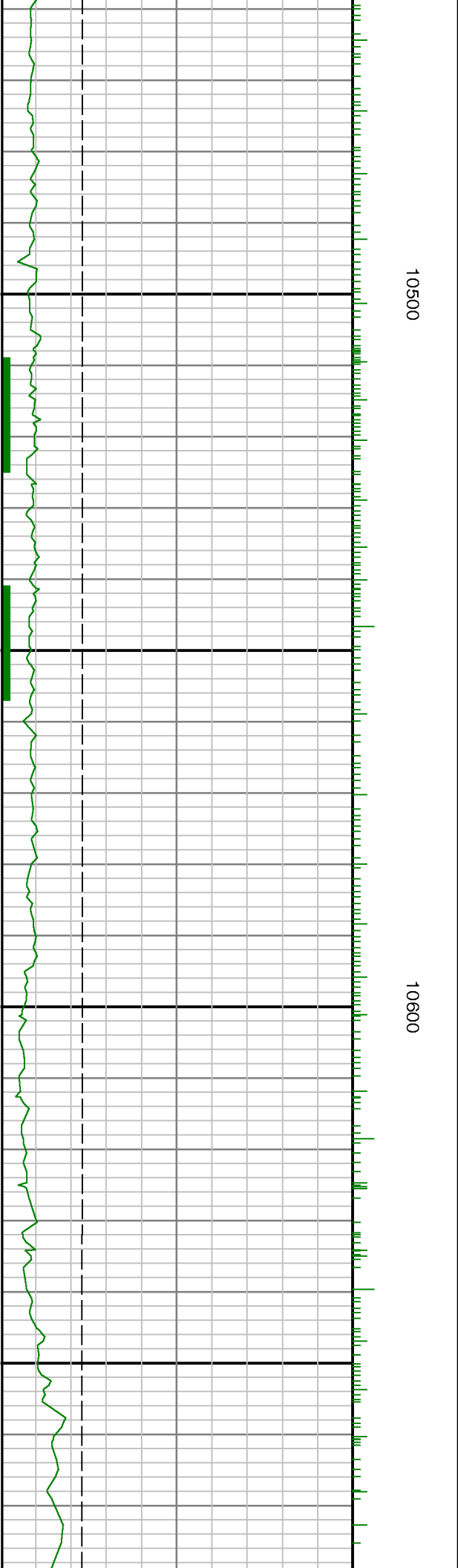
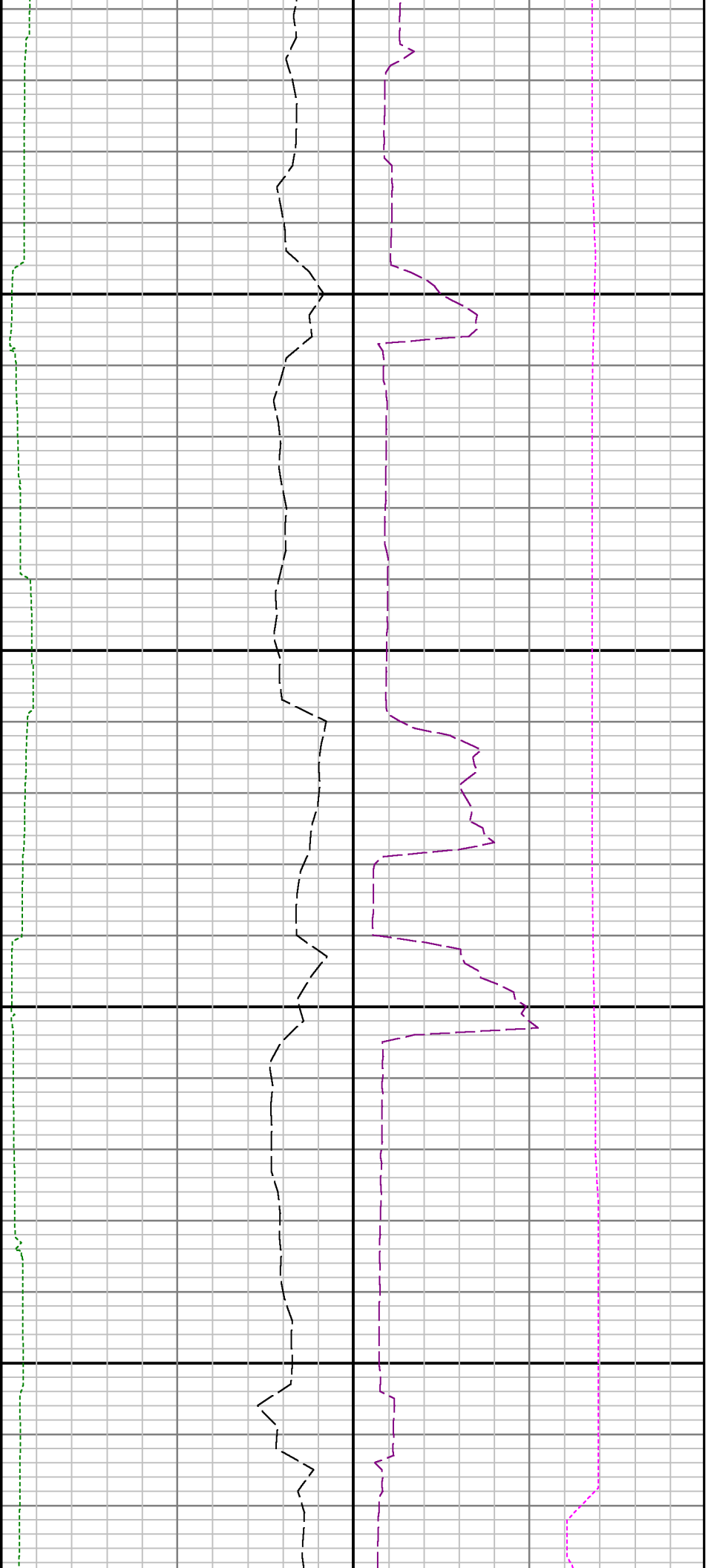


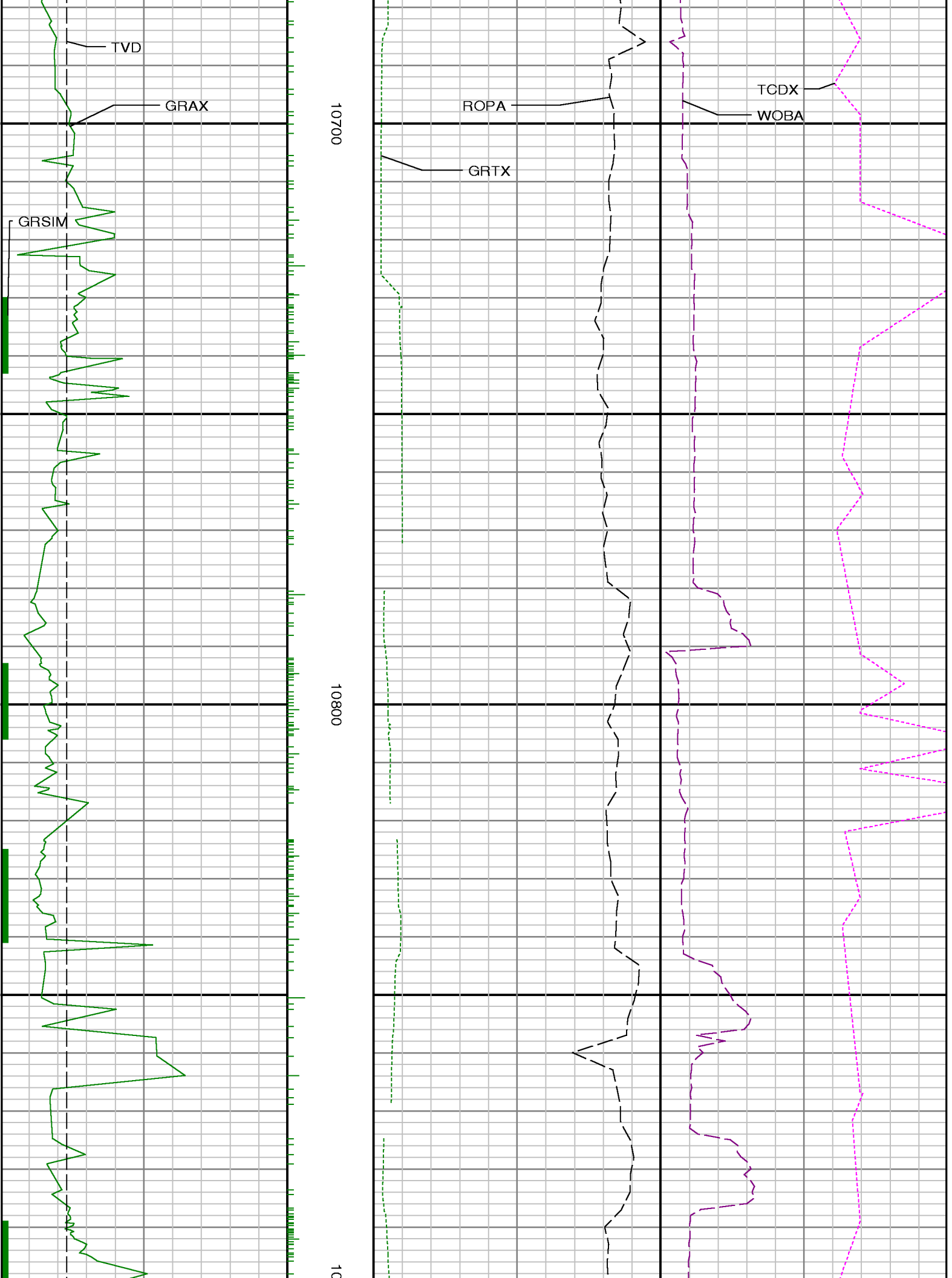


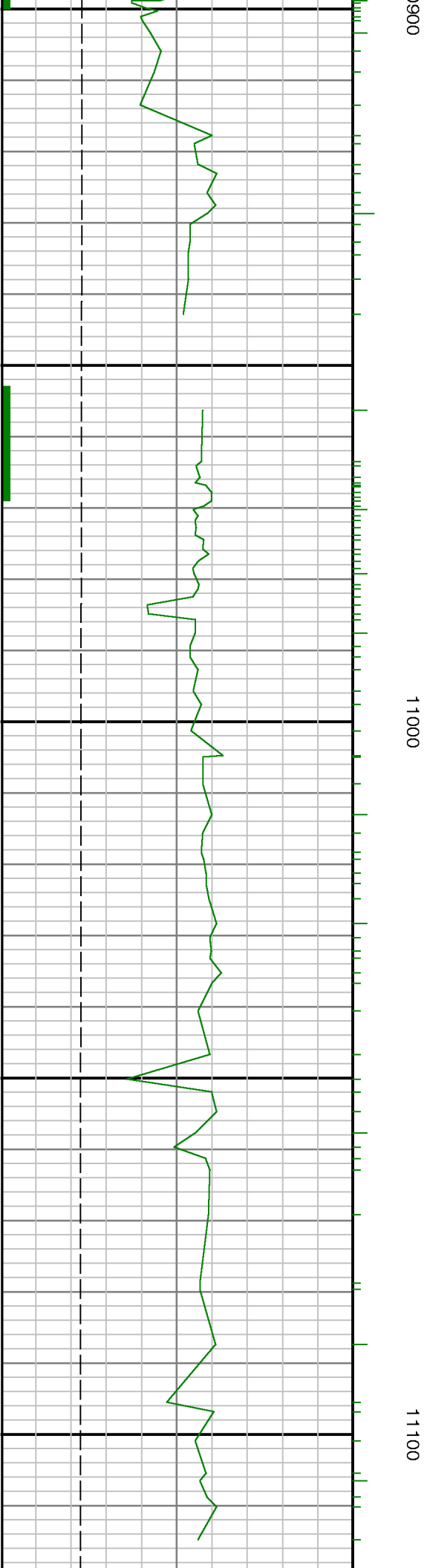
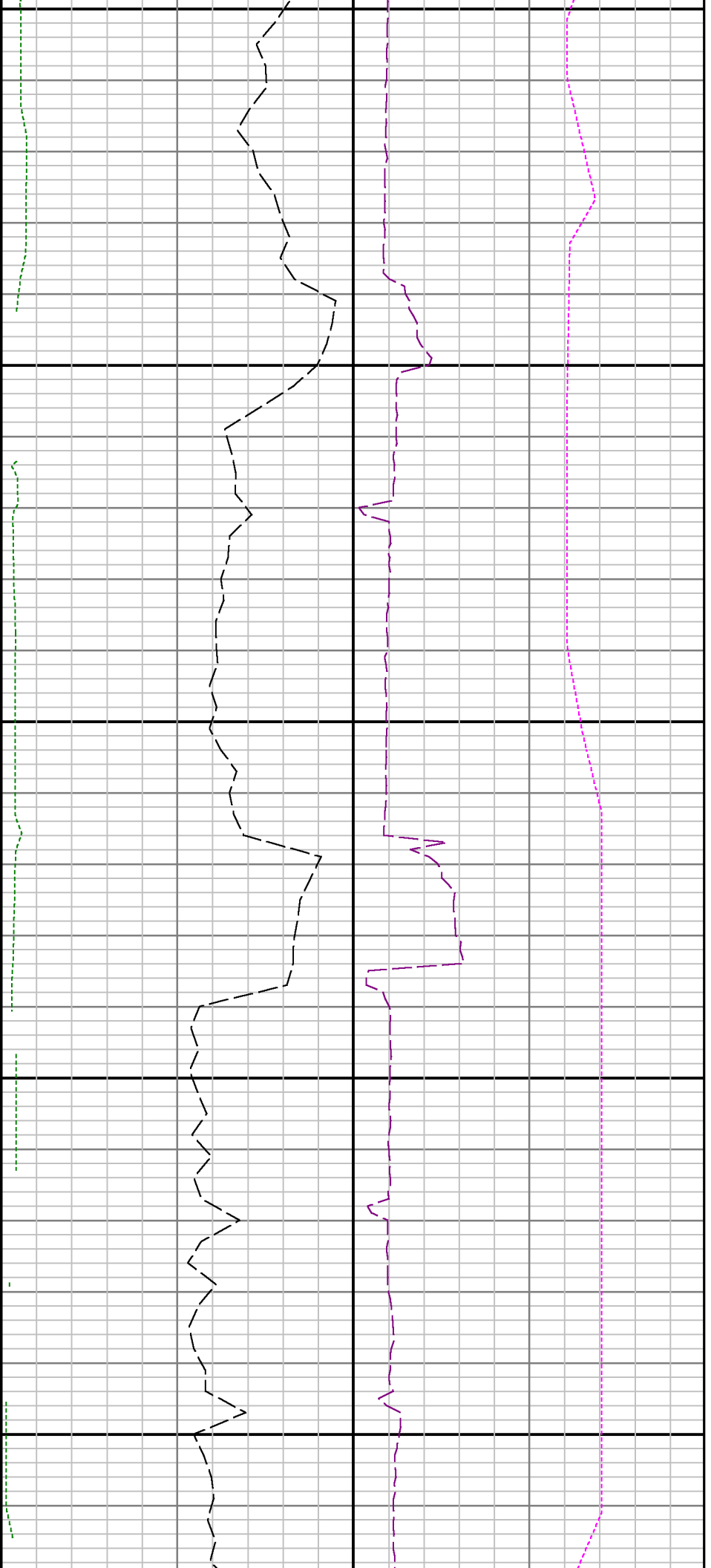
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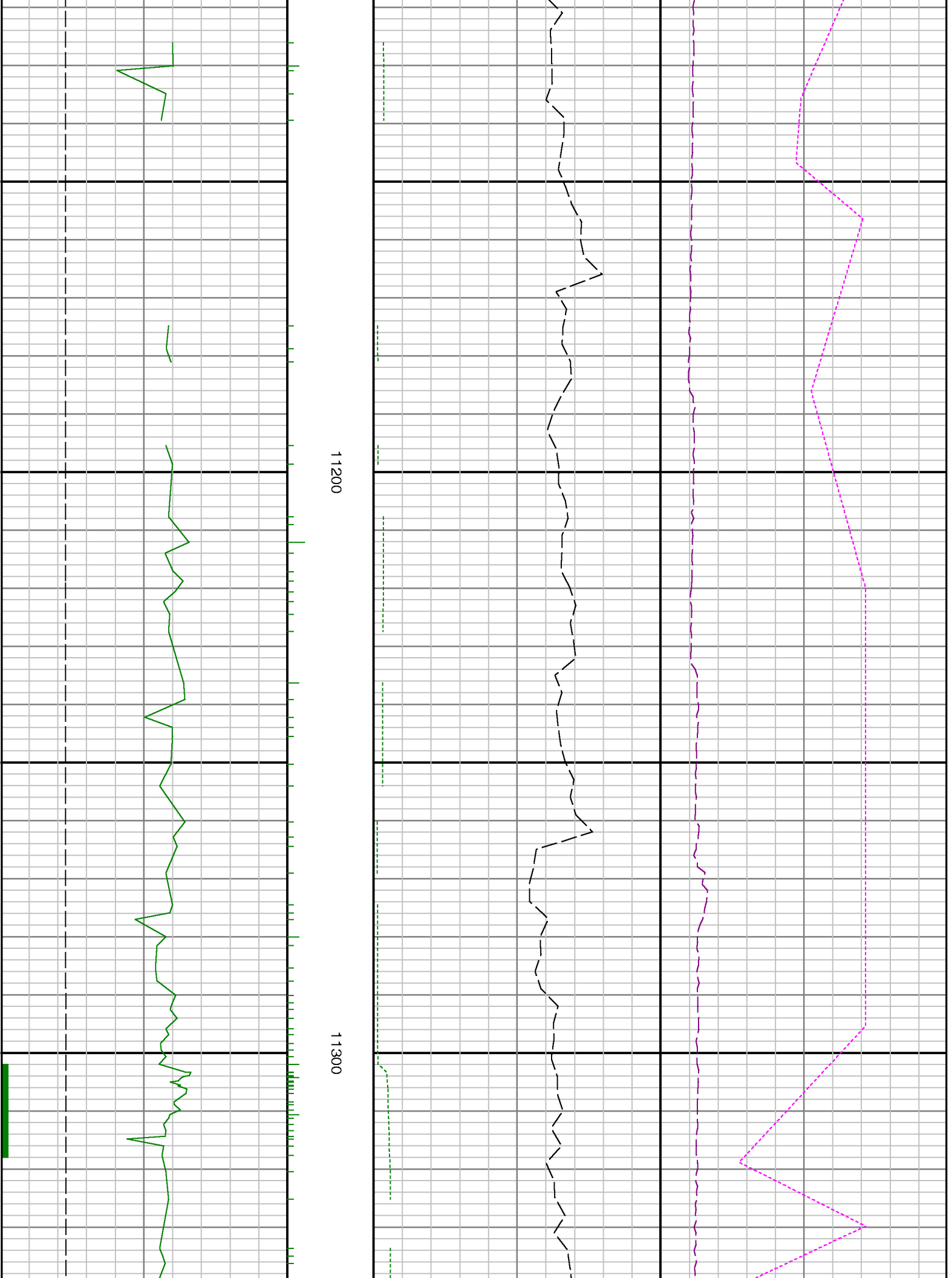
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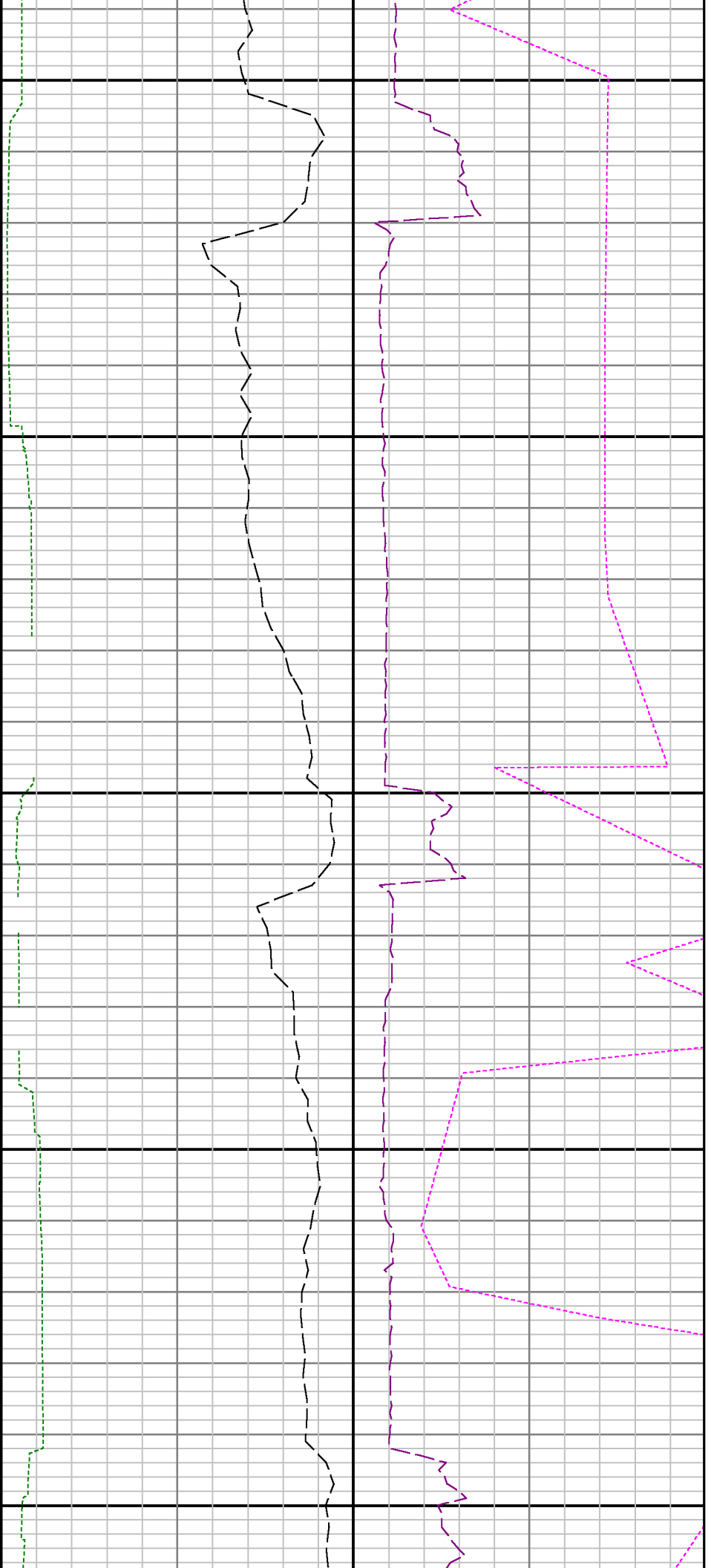






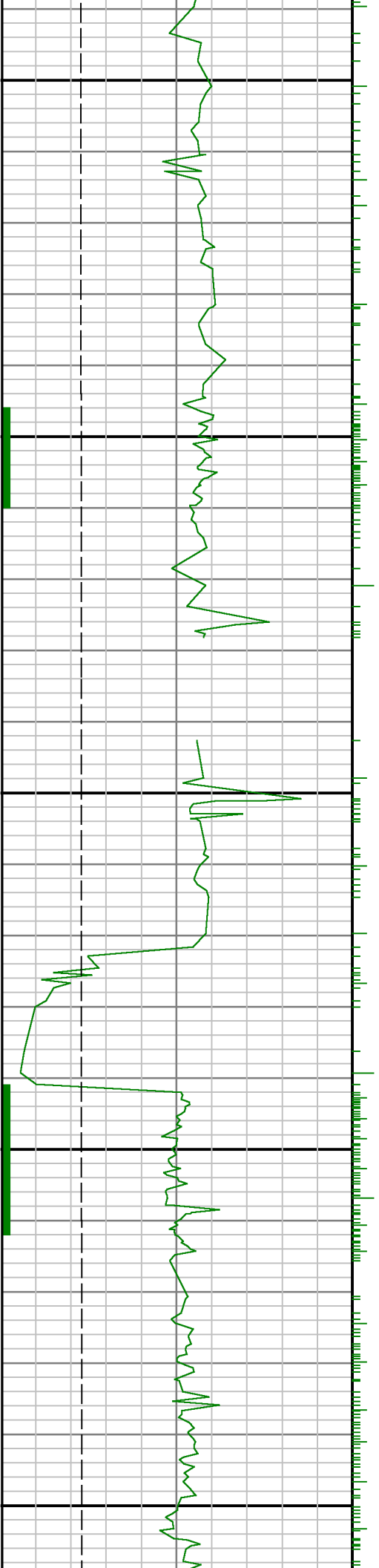


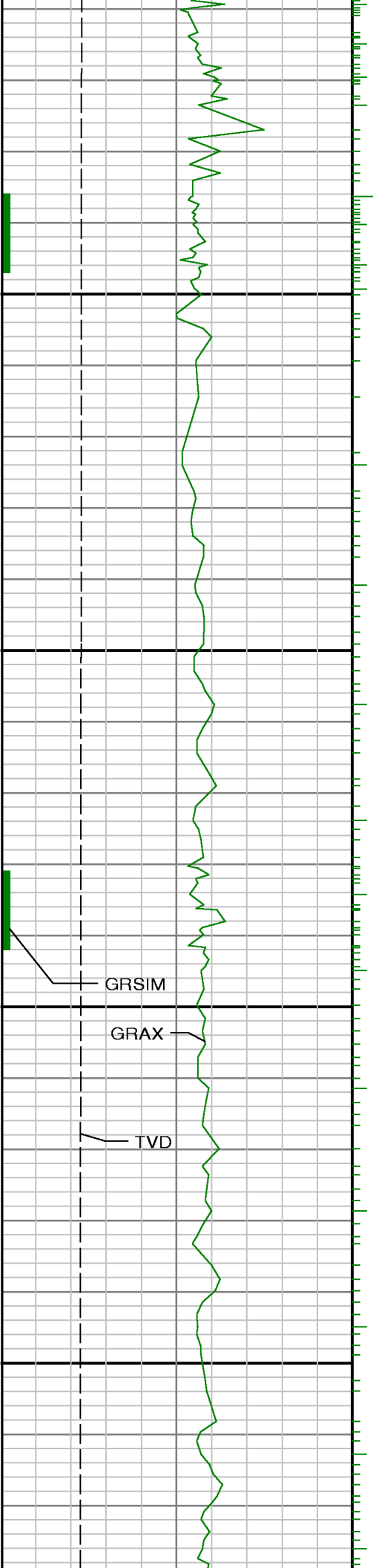




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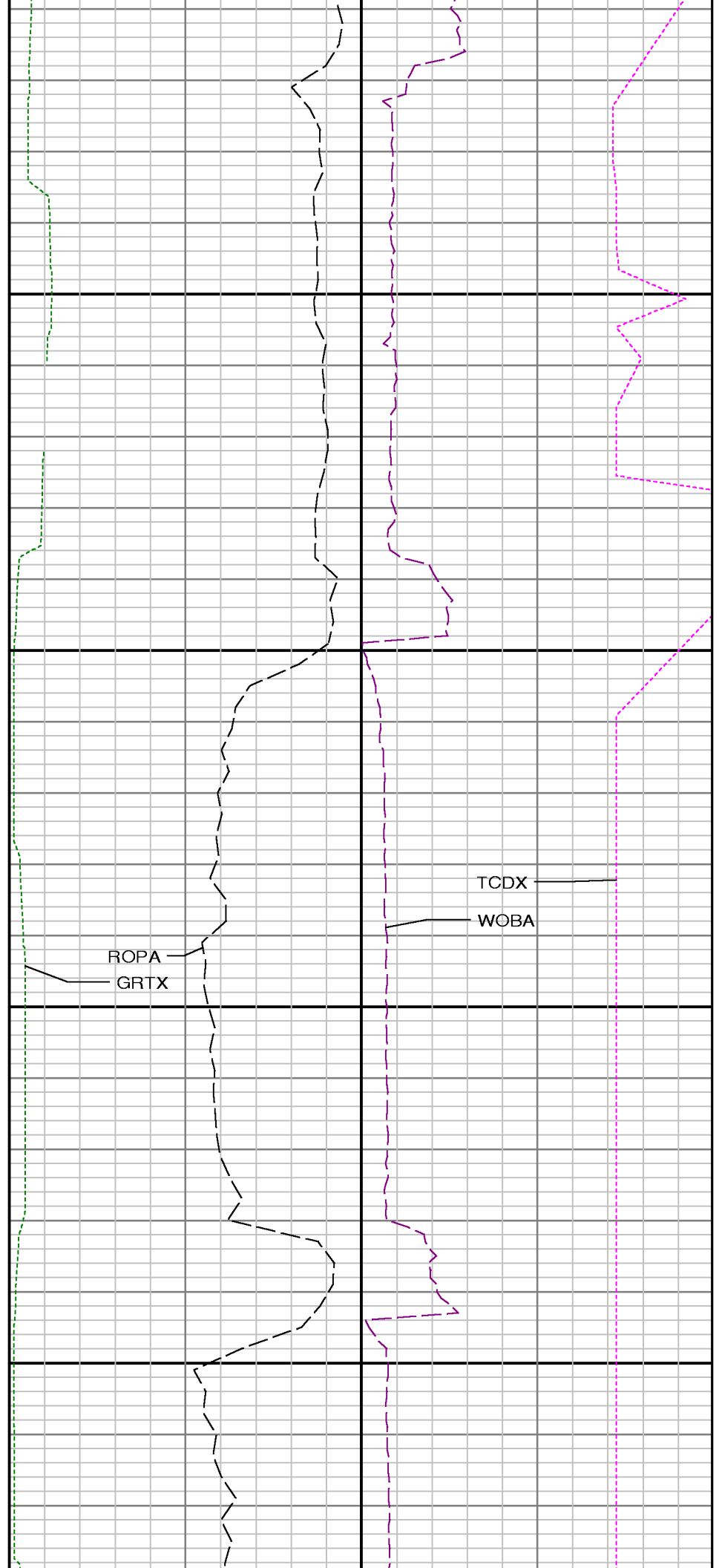
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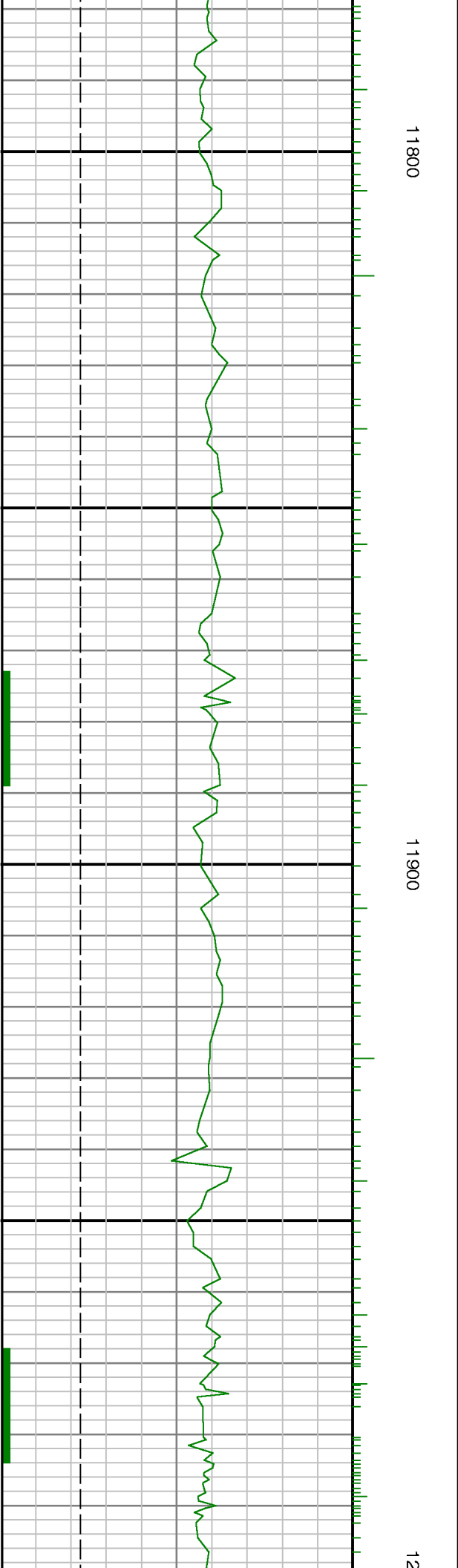
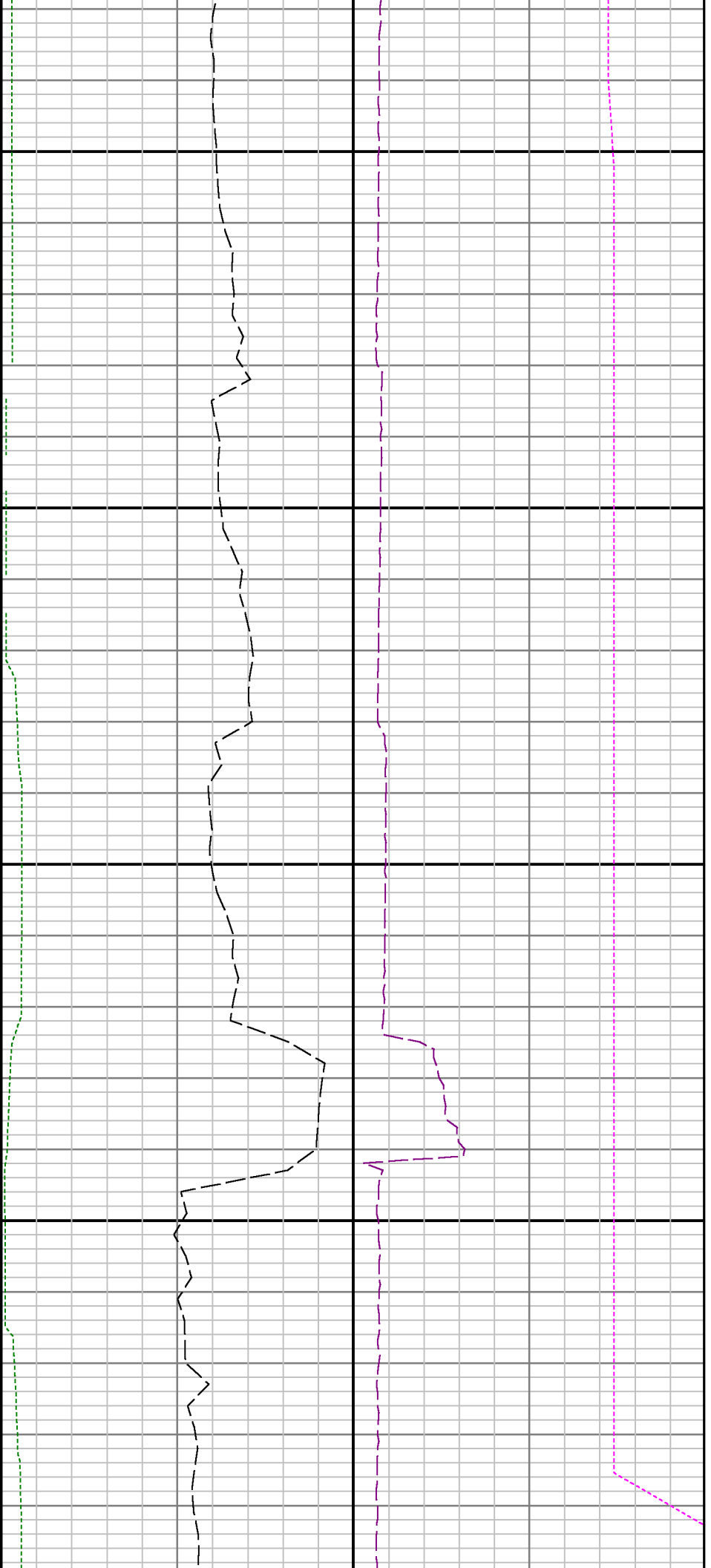


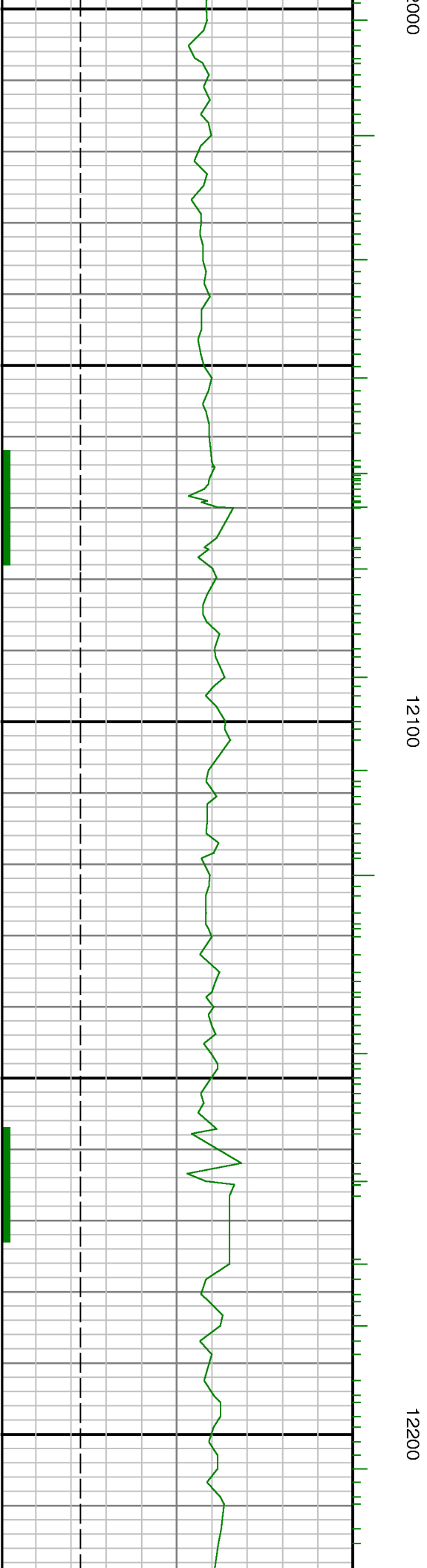
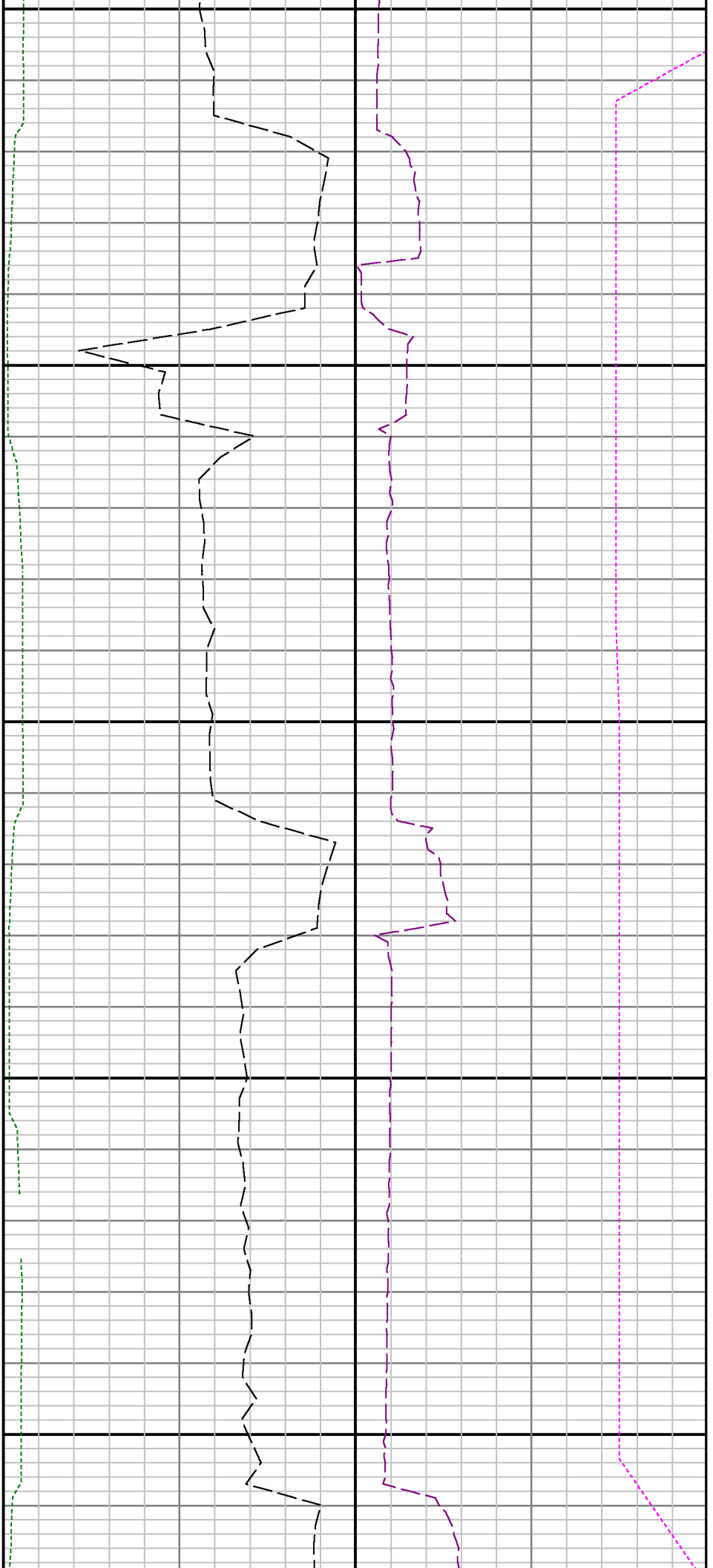


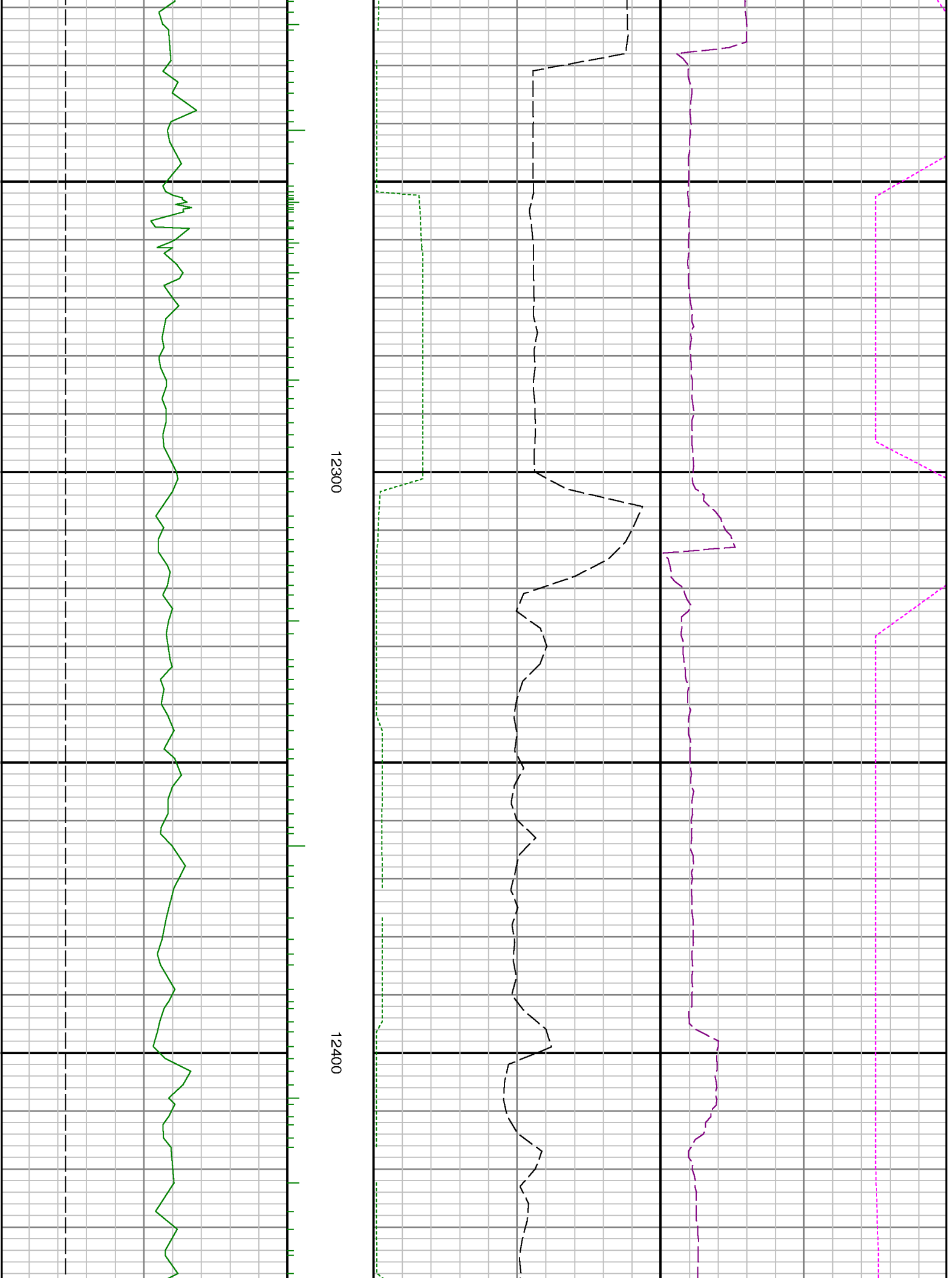
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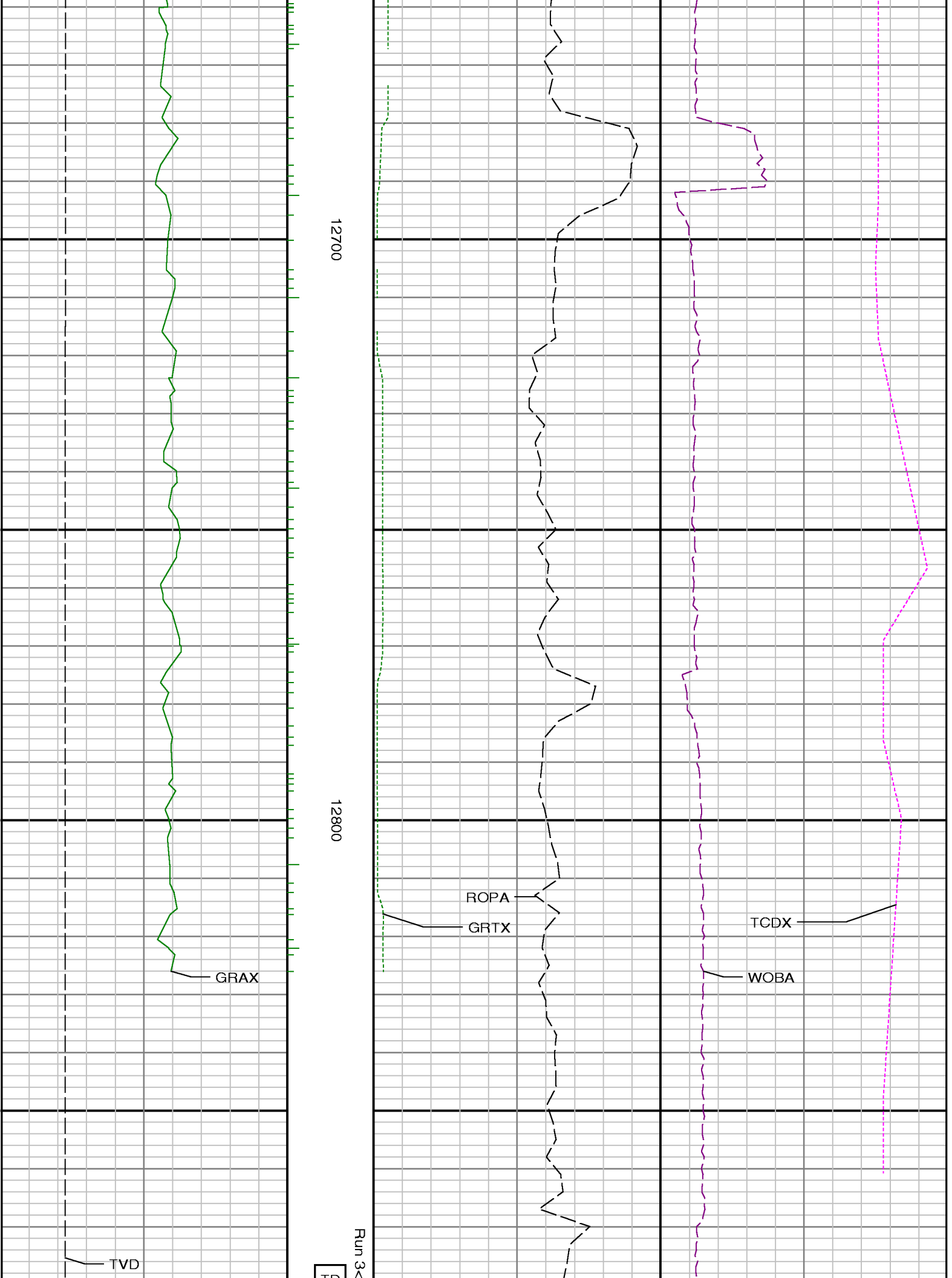












12700

12800

Run 3<

5

GRAX

TVD

ROPA

GRTX

TCDX

WOBA

<p>Gamma Ray Apparent 0.5 ft Avg [GRAX]</p> <p>0 150</p> <p>API</p> <p>True Vertical Depth [TVD]</p> <p>7800 5800</p> <p>ft</p>	<p>12900 feet 1:240</p>	<p>Rate of Penetration 3.0 ft Avg [ROPA]</p> <p>1000 0</p> <p>ft/hr</p> <p>Gamma Time Since Drilled [GRTX]</p> <p>0 600</p> <p>min</p>	<p>Surface Weight On Bit 1.0 ft Avg [WOBA]</p> <p>0 100</p> <p>klbf</p> <p>Downhole Temperature [TCDX]</p> <p>0 300</p> <p>degF</p>