

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+ (%)
11Jan 15	2130	1	1338.0	Water Based	8.5	29	8.0	N/A	0/98.0	Active Mud Pit	2100	N/A
12 Jan 15	23:00	2	1883.0	Water Based	8.4	29	8.0	N/A	0/98.0	Active Mud Pit	2000	N/A
13 Jan 15	23:00	2	6240.0	Water Based	9.2	35	9.0	N/A	0/97.0	Active Mud Pit	1900	N/A
14 Jan 15	23:00	2	8172.0	Water Based	10.2	48	9.4	N/A	2/89.5	Active Mud Pit	1500	N/A
15 Jan 15	23:00	2	8416.0	Water Based	10.2	48	9.0	N/A	2/89.5	Active Mud Pit	1600	N/A
16 Jan 15	20:00	3	8416.0	Water Based	10.2	50	9.0	N/A	2/89.0	Active Mud Pit	1600	N/A
17 Jan 15	23:00	3	10748.0	Water Based	9.5	41	9.1	N/A	2/92.0	Active Mud Pit	1700	N/A

Mnemonics

Curve	Description	Units
GRAX	Gamma Ray Apparant, 0.5 ft. Avg.	API
GRSI	Gamma Ray Sliding Indicator	Unitless
GRIX	Gamma Ray Data Density	Unitless
TVD	True Vertical Depth	ft
GRTX	Gamma Ray Time Since Drilled	mins
ROPA	Rate of Penetration, 3.0 ft. Avg.	ft/hr
WOBA	Surface Weight on Bit, 1.0 ft. Avg	klbf
TCDX	Downhole Temperature	degF

Equipment and Service Data

LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft.)	Max O.D. (in.)	Min I.D. (in.)
1	DIR	12456778	Directional	46.56	6.750	3.313
1	SRIG	10473320	Gamma	43.19	6.750	3.313
2	DIR	12497612	Directional	54.48	4.813	2.750
2	SRIG	11703934	Gamma	51.10	4.813	2.750
3	DIR	12373454	Directional	52.42	4.750	2.750
3	SRIG	12041109	Gamma	49.04	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 were obtained from a depth control system not supplied or operated by Baker Hughes. Due to the lack of control by Baker Hughes LWD logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to present logging data.
- 2.) Baker Hughes LWD run 1 and 2 utilized 6 1/2 inch NaviGamma services (Gamma Ray and Directional) behind an 8 3/4 inch bit and conventional motor assembly from 1338 to 8416 ft MD (1337 to 7455 ft TVD).
- 3.) Baker Hughes LWD run 3 utilized 4 3/4 inch NaviGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and conventional motor assembly

3.) Baker Hughes LWD run 3 utilized 4 3/4 inch NAVGamma services (Gamma Ray and Directional) behind an 6 1/8 inch bit and conventional motor assembly from 8416 to 13468 ft MD (7454 to 7421 ft TVD).

4.) A sliding indicator shown on the left side of track 1 as a heavy line. This indicator has been shifted to the Gamma Ray sensor offset to correspond to Gamma Ray data acquired while sliding.

Remarks

Number	Measured Depth (ft.)	Hole Section (in.)	LWD Run No.	Remark
1	7400	8.750	2	Gamma Ray logging operations began at 7400 ft MD (6898 ft TVD) as per company's request.
2	8372	6.125	3	Gamma ray was logged inside casing from 8372 to 8416 ft MD (7454 to 7454 ft TVD) due to sensor offset.
3	8416	6.125	3	Gamma ray was logged up to 24 hours after being drilled from 8372 to 8416 ft MD (7454 to 7454 ft TVD) due to casing operations.
4	13417	6.125	3	There is no gamma ray data from 13417 to 13468 ft MD (7421 ft TVD) due to sensor offset at TD.



Company : Anadarko Petroleum Corporation

Well : Copperhead 28N-15HZ

Interval : 7396.00 - 13470.00 feet

Created : 16/Jan/2015 7:02:29 PM

Gamma Ray Apparent 0.5 ft Avg [GRAX]

0 200

API

True Vertical Depth [TVD]

7500 6900

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]

0 100

klbf

Downhole Temperature [TCDX]

100 250

degF

See Remark 1

GRIX

GRAX

TVD

GRSI

7400

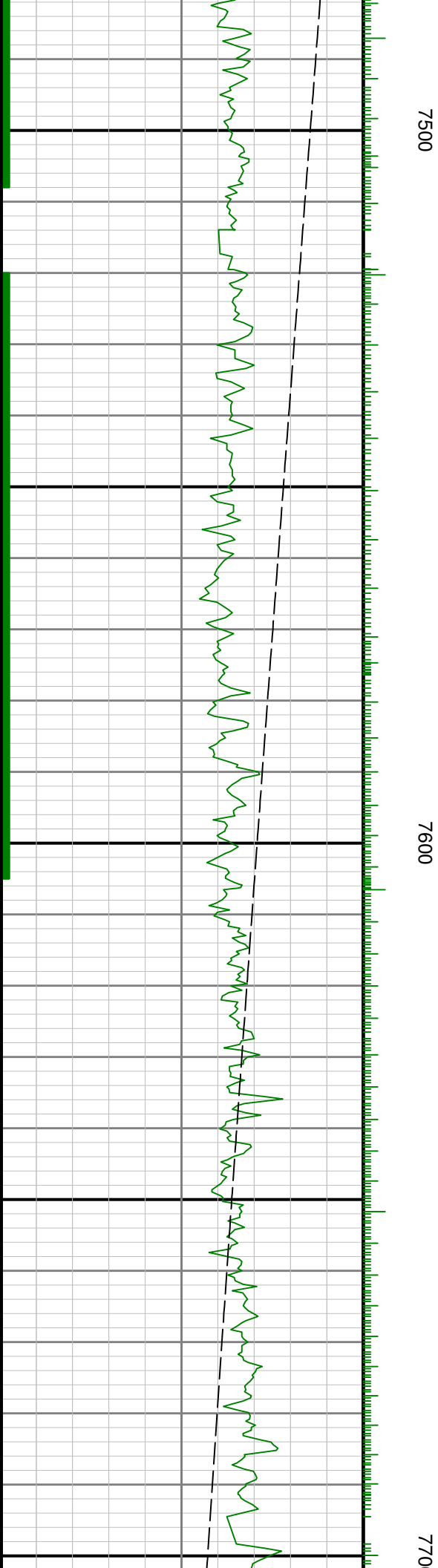
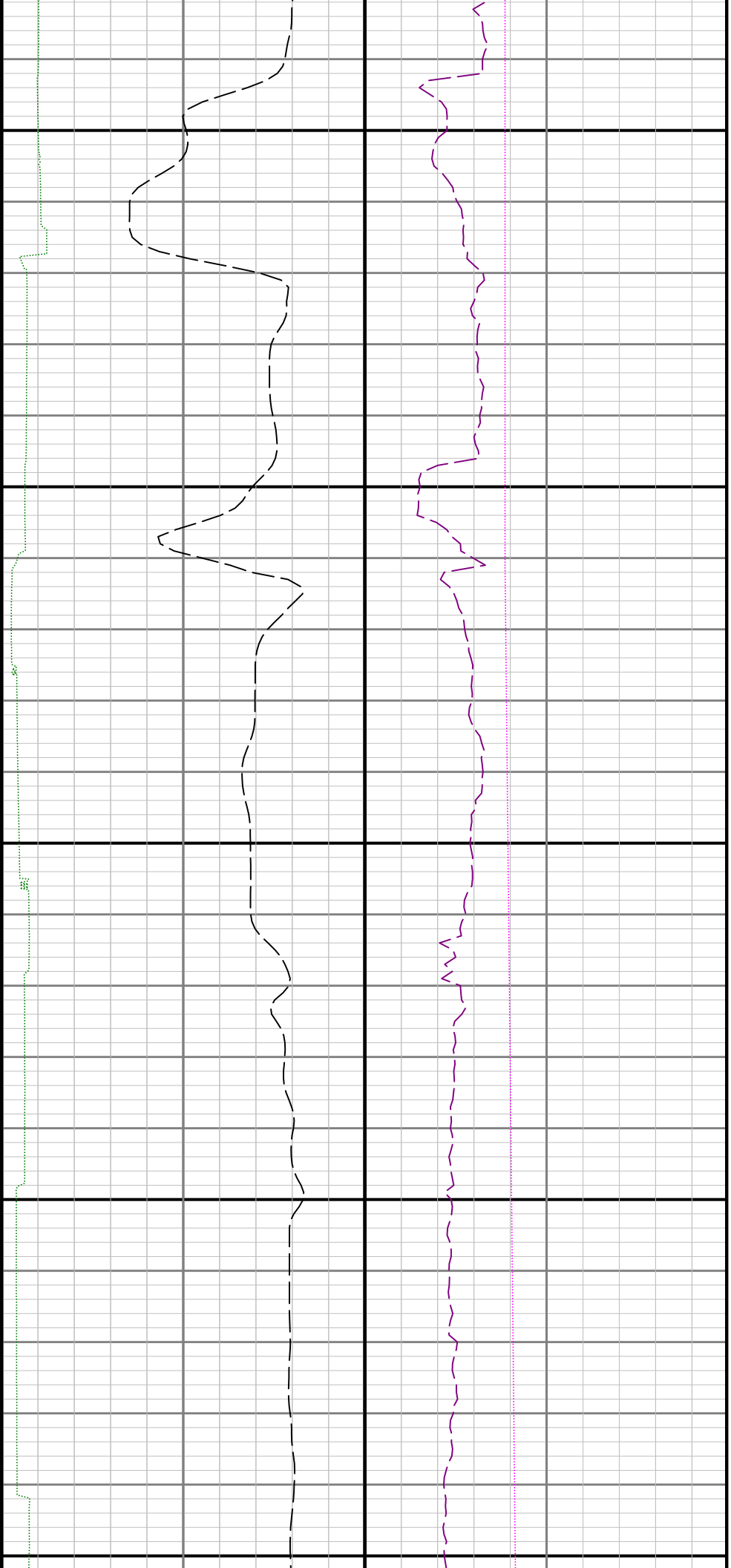
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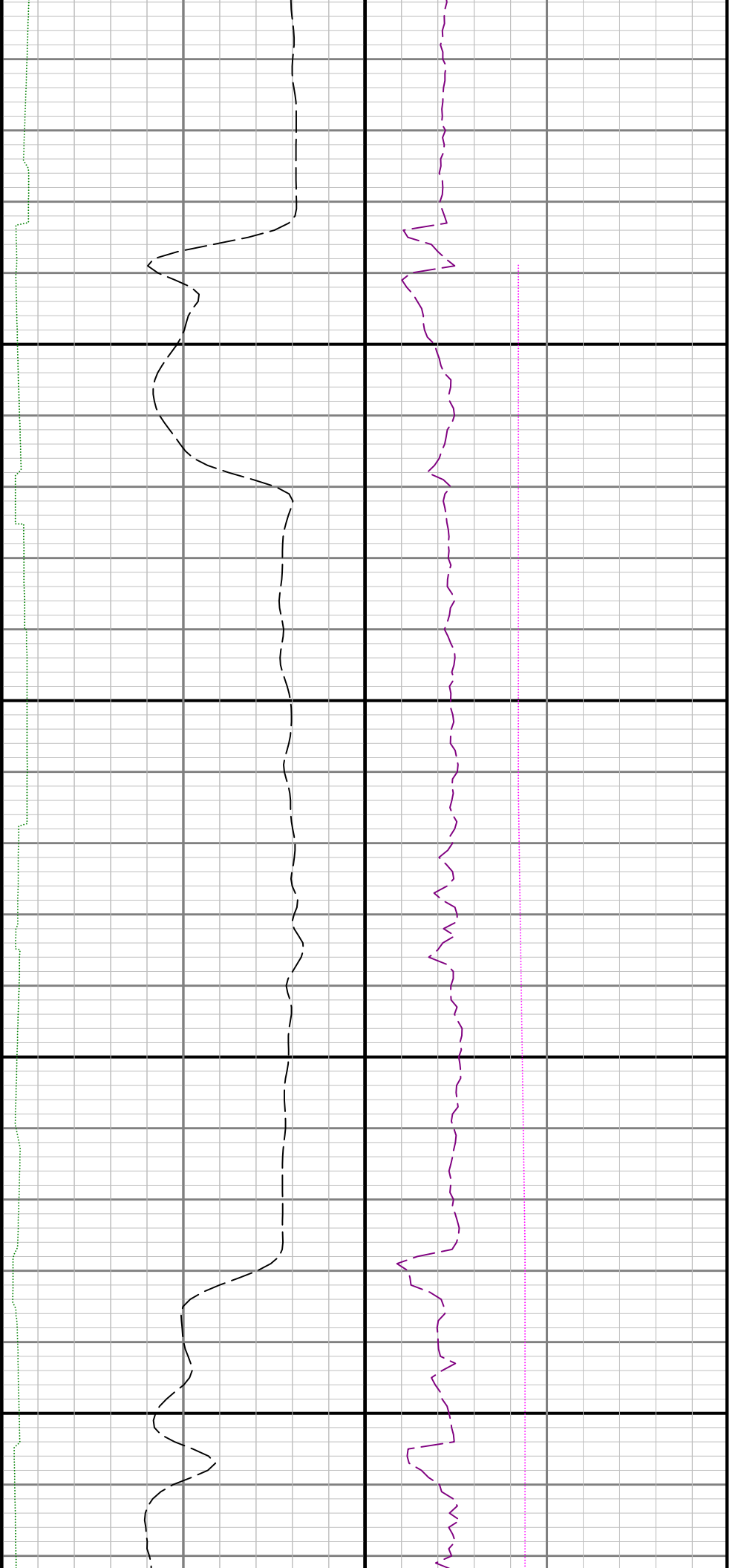
GRTX

ROPA

WOBA

TCDX

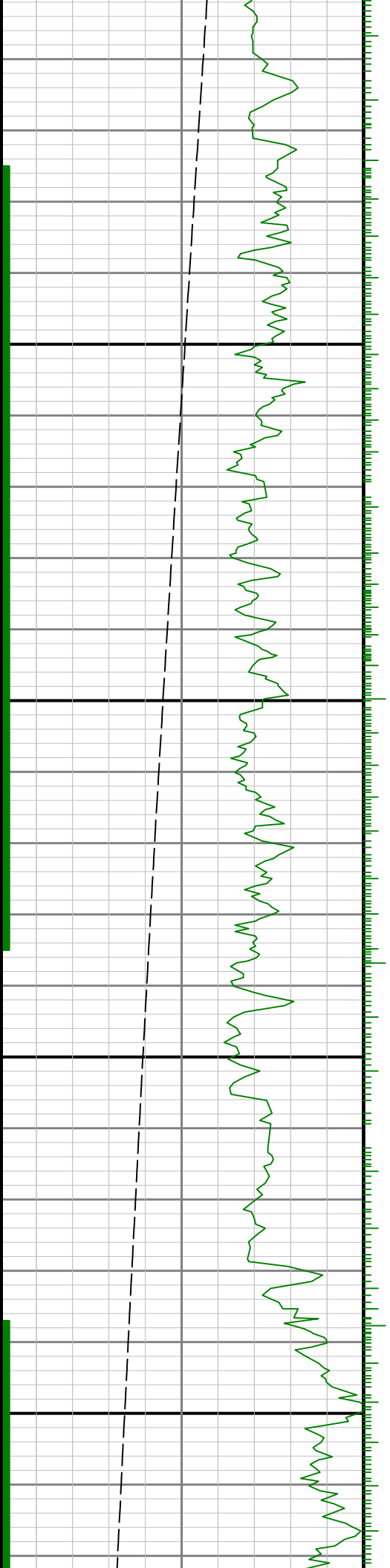


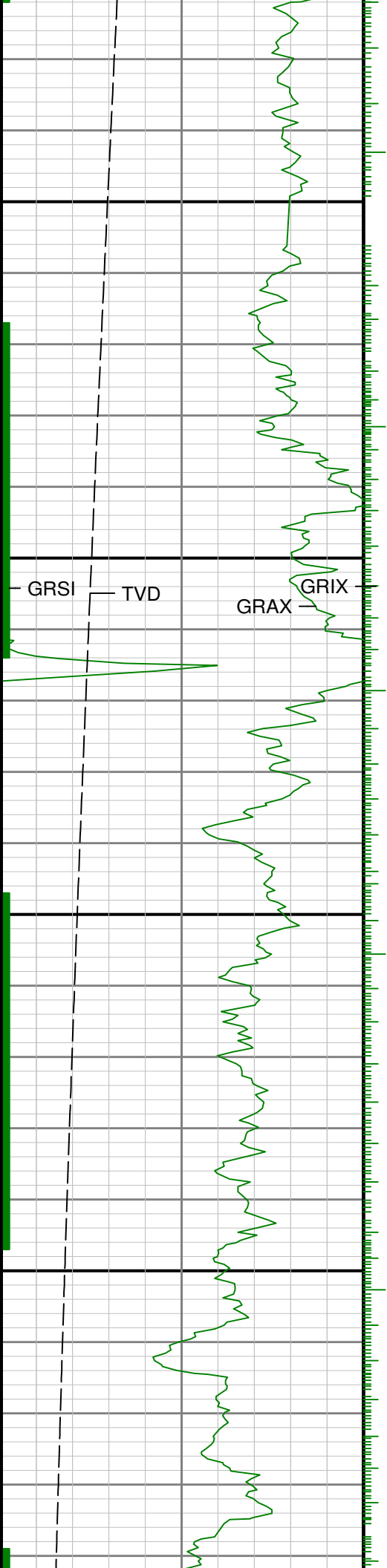


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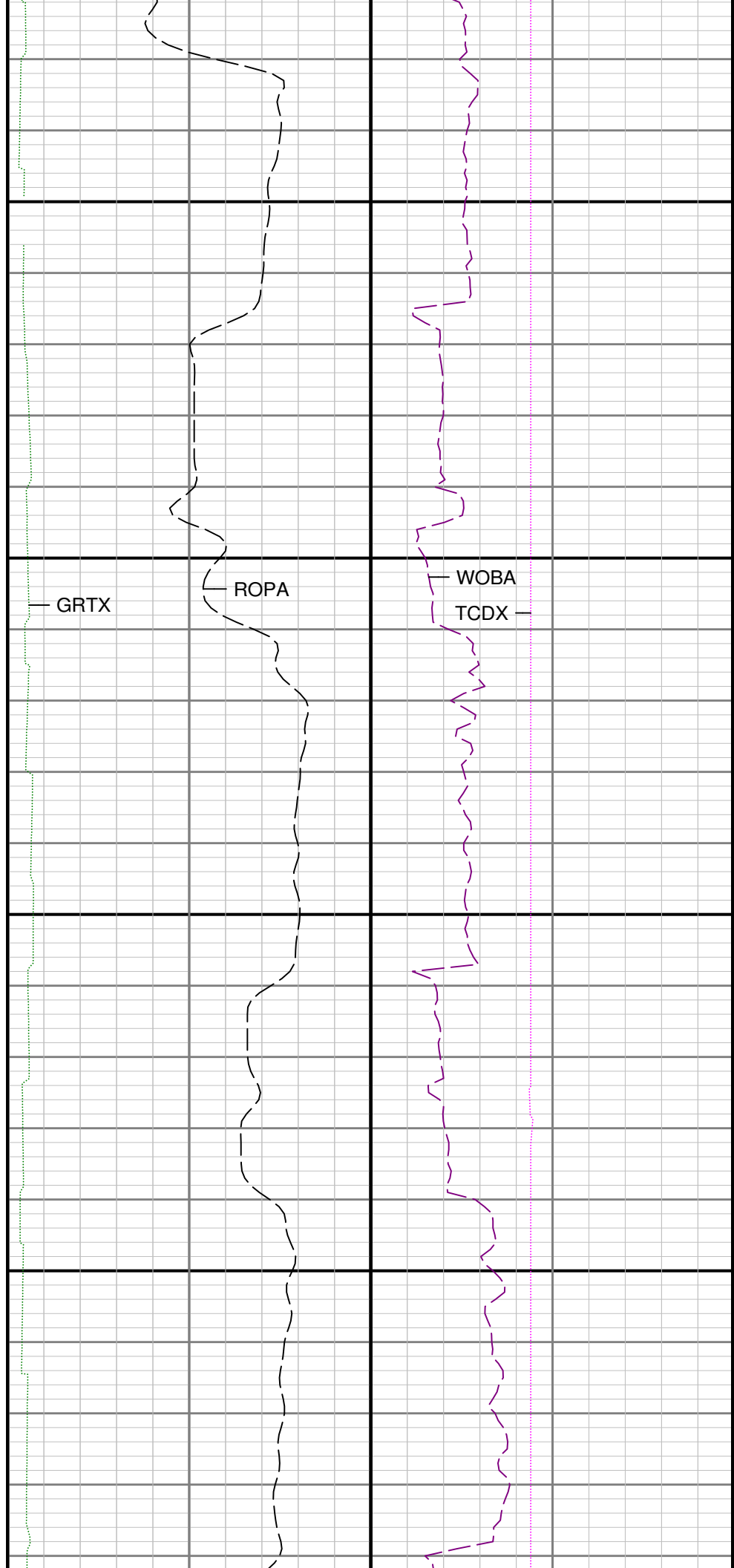
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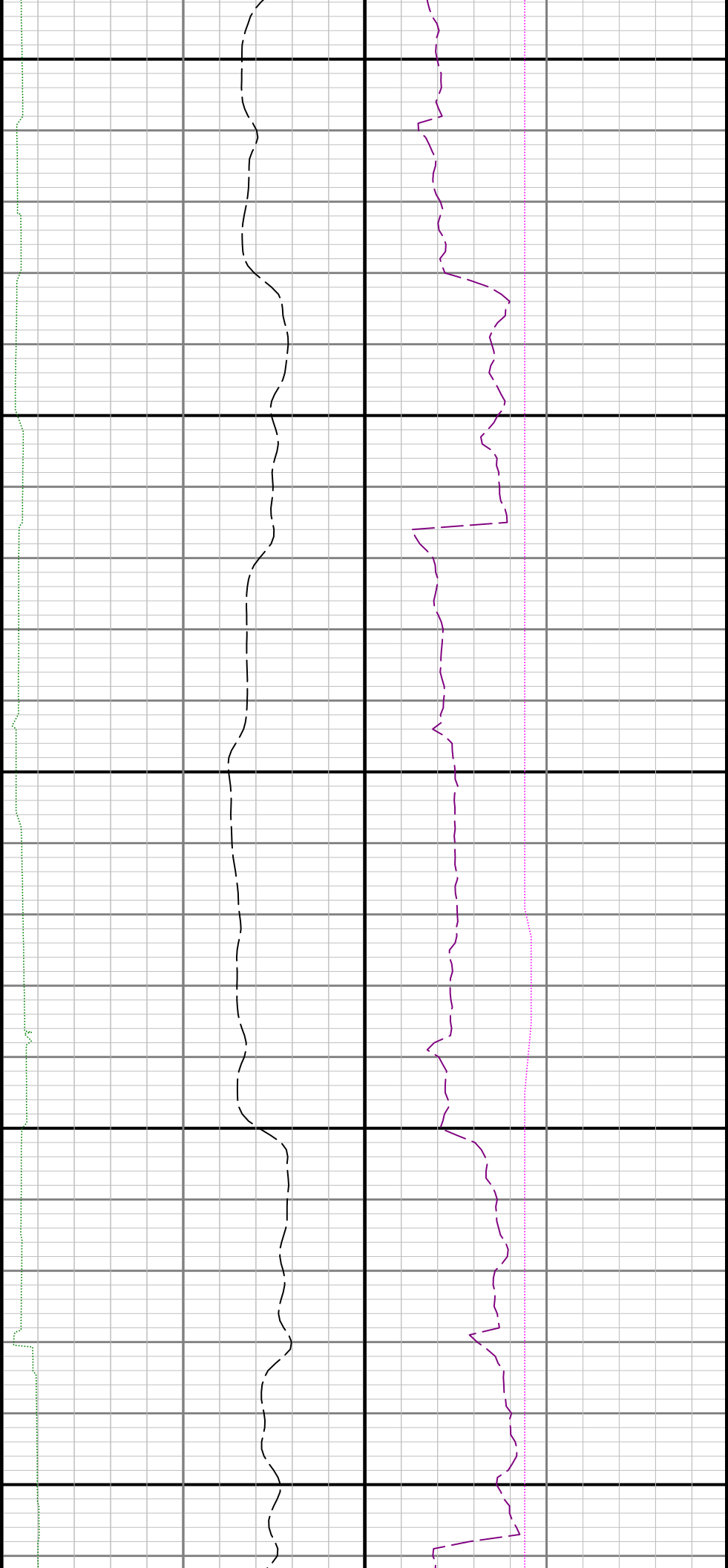




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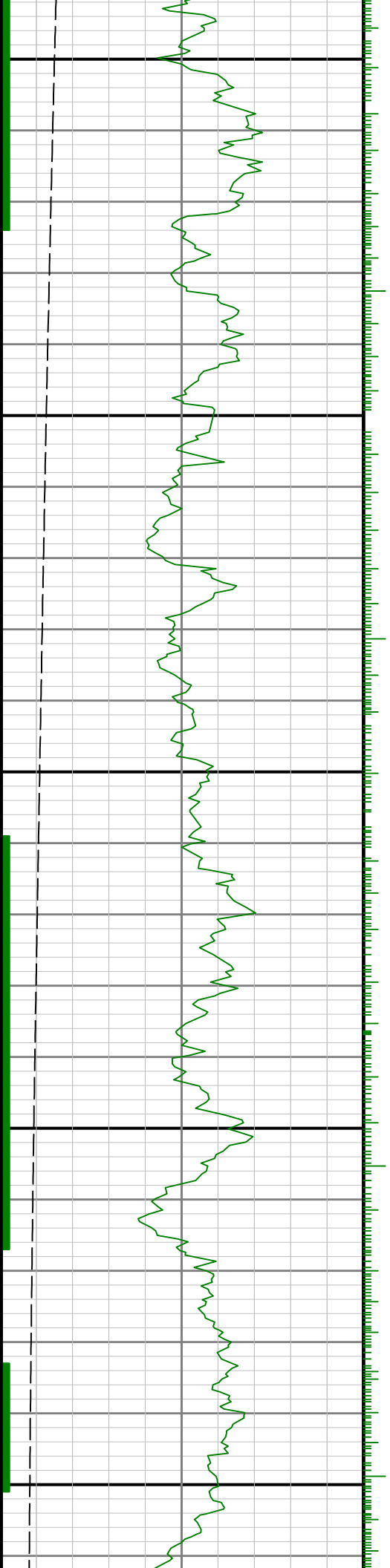
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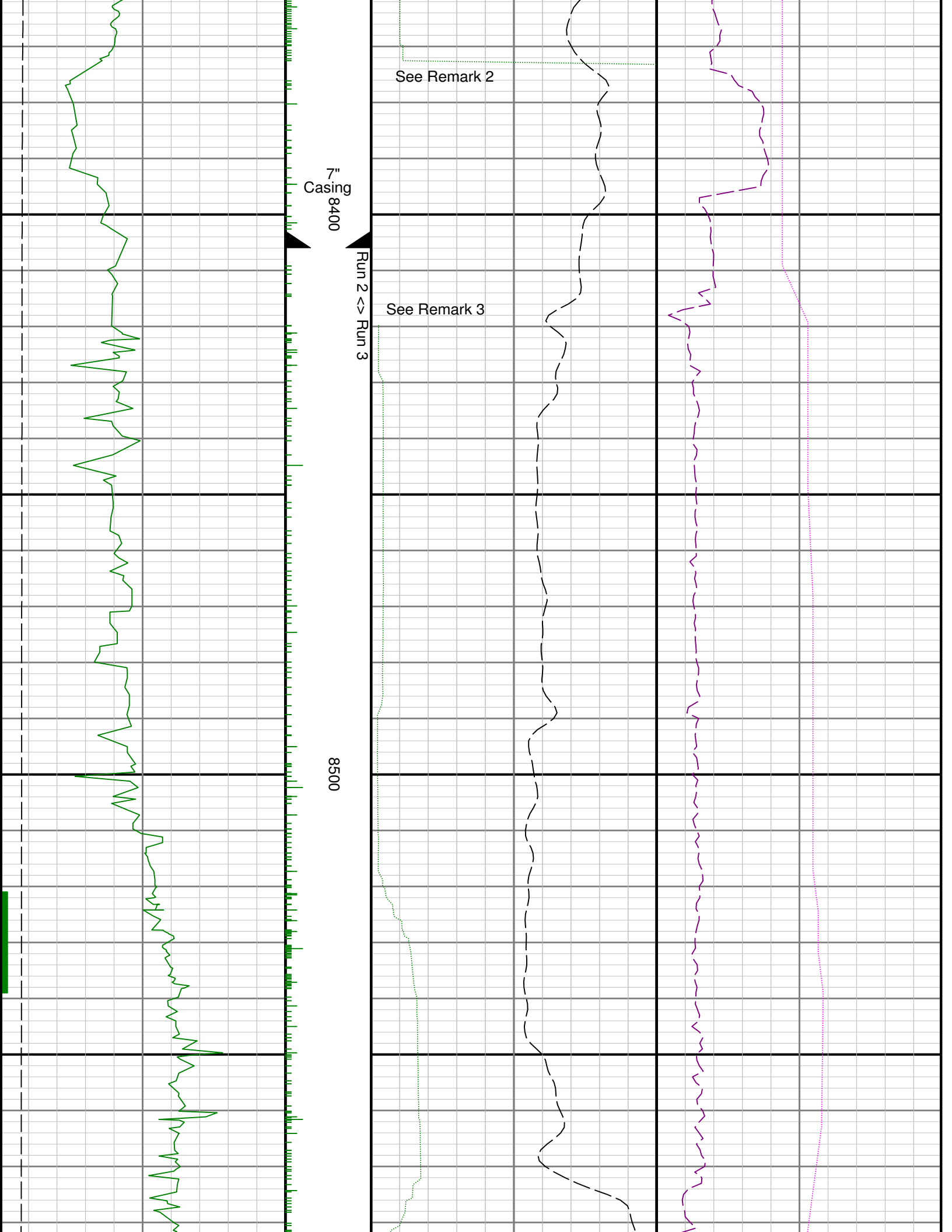


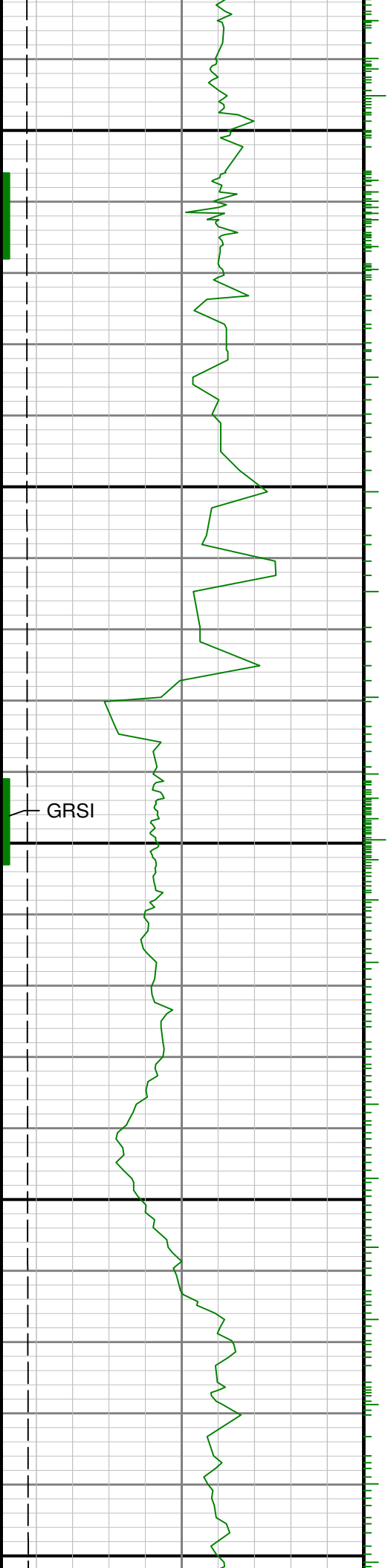


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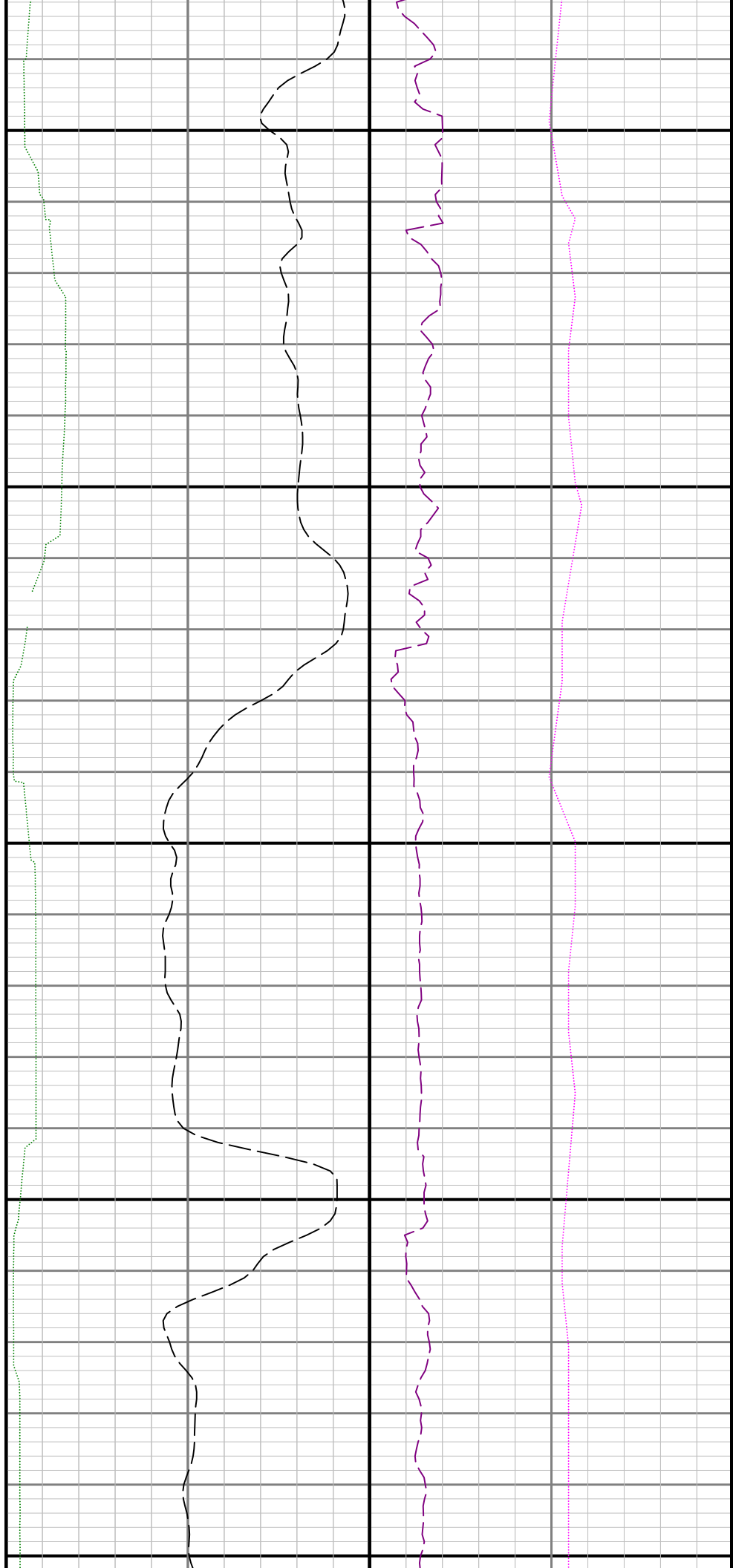


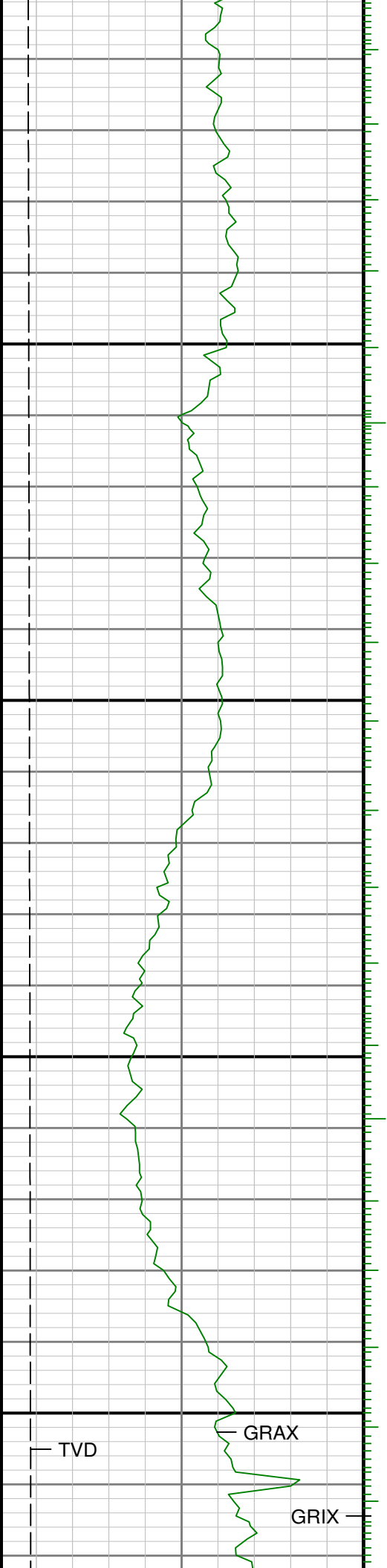


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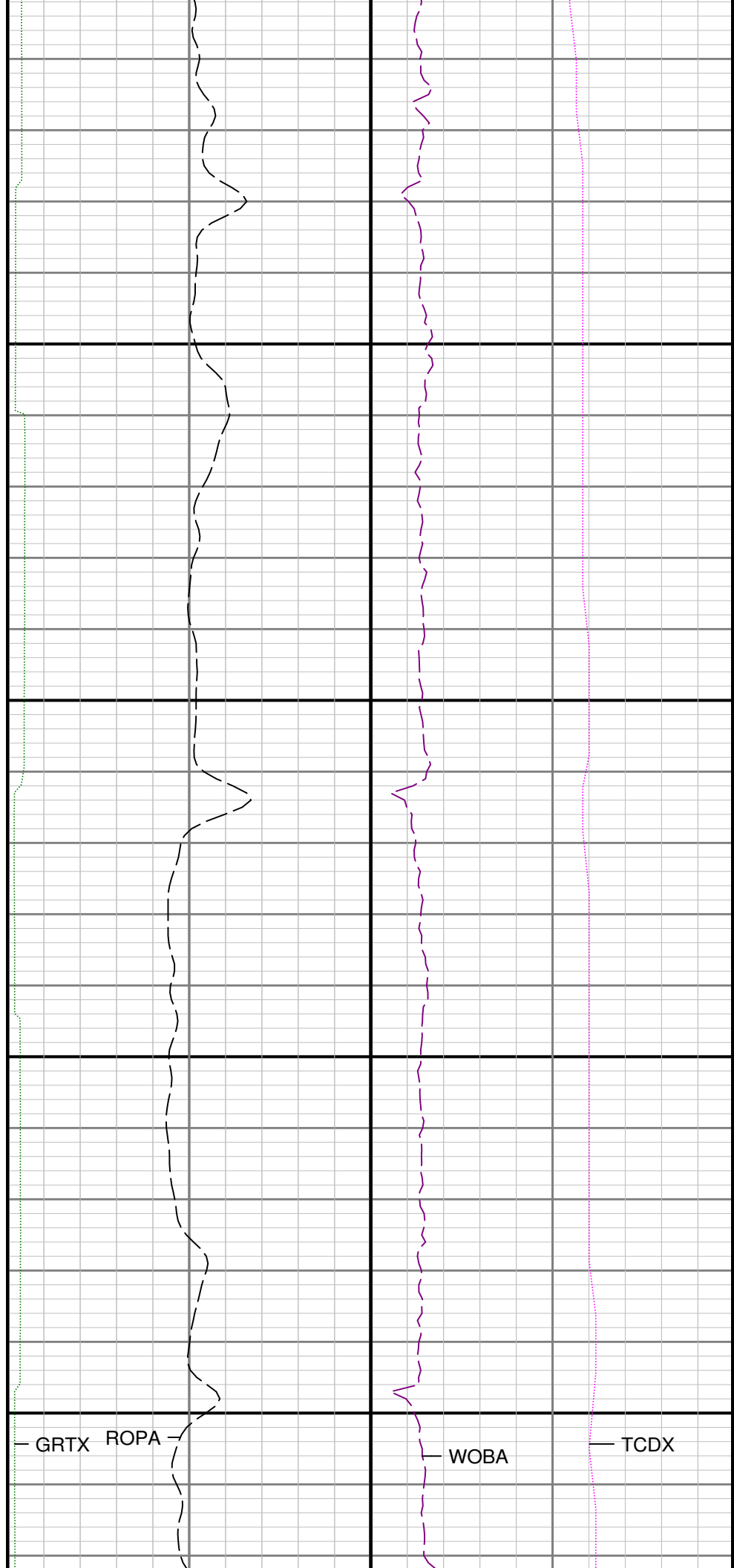
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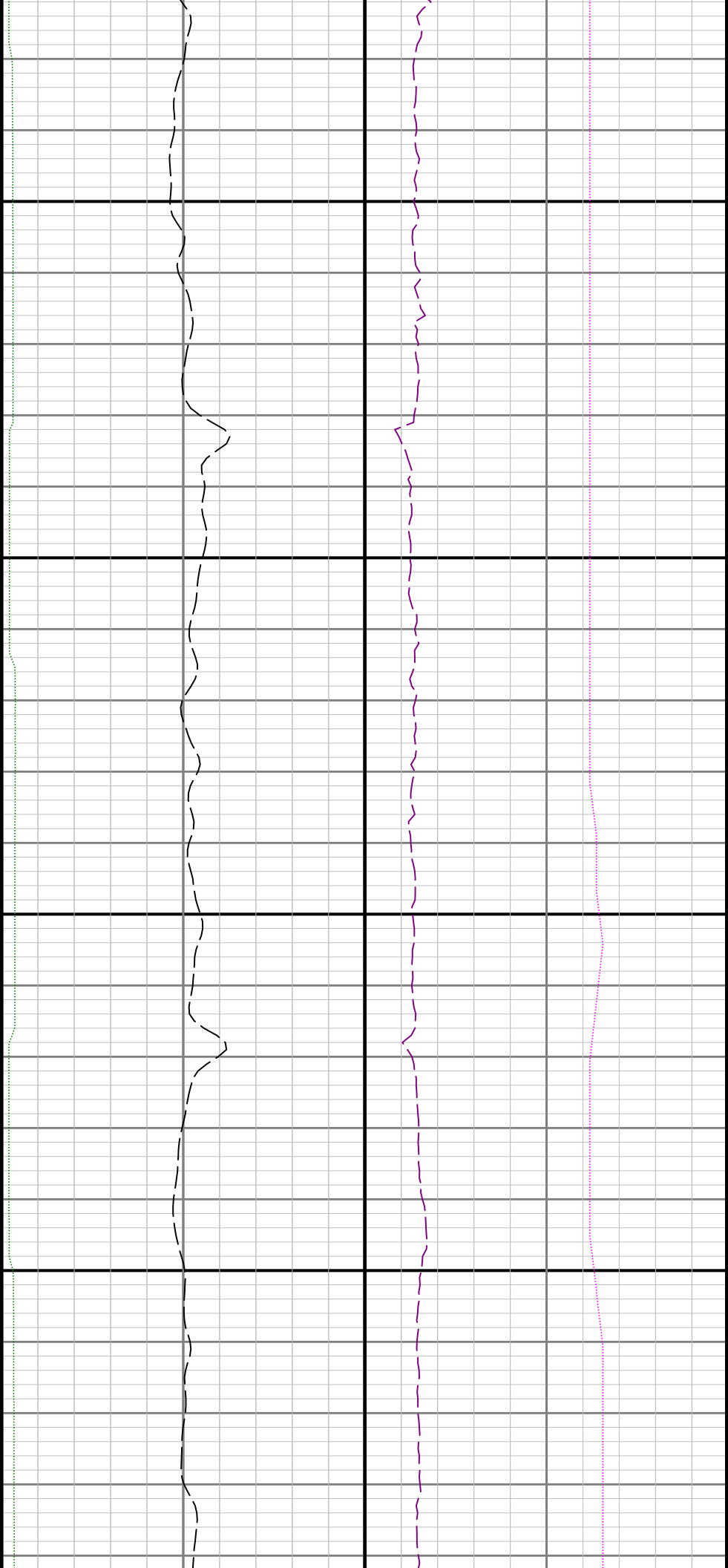
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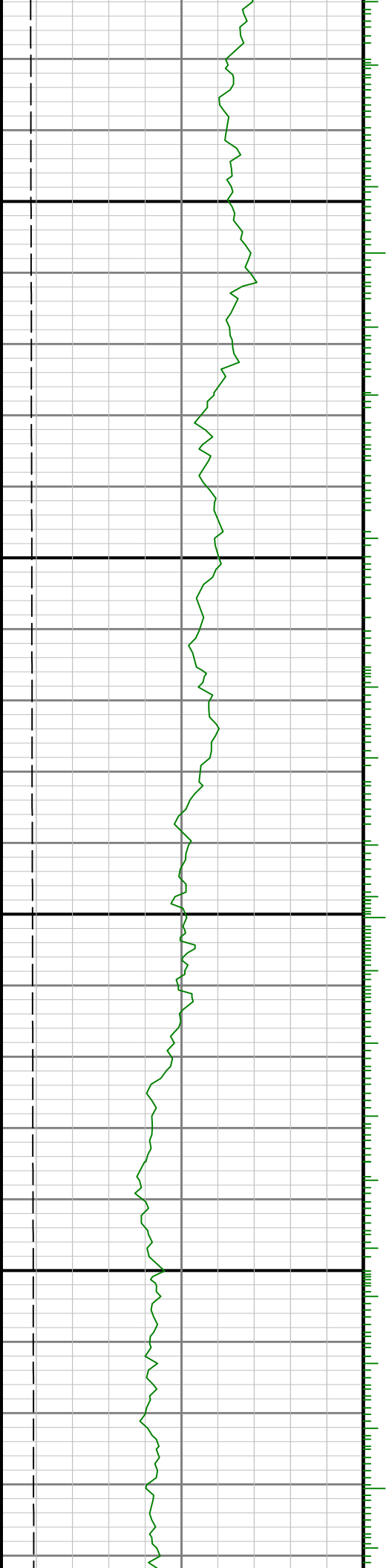
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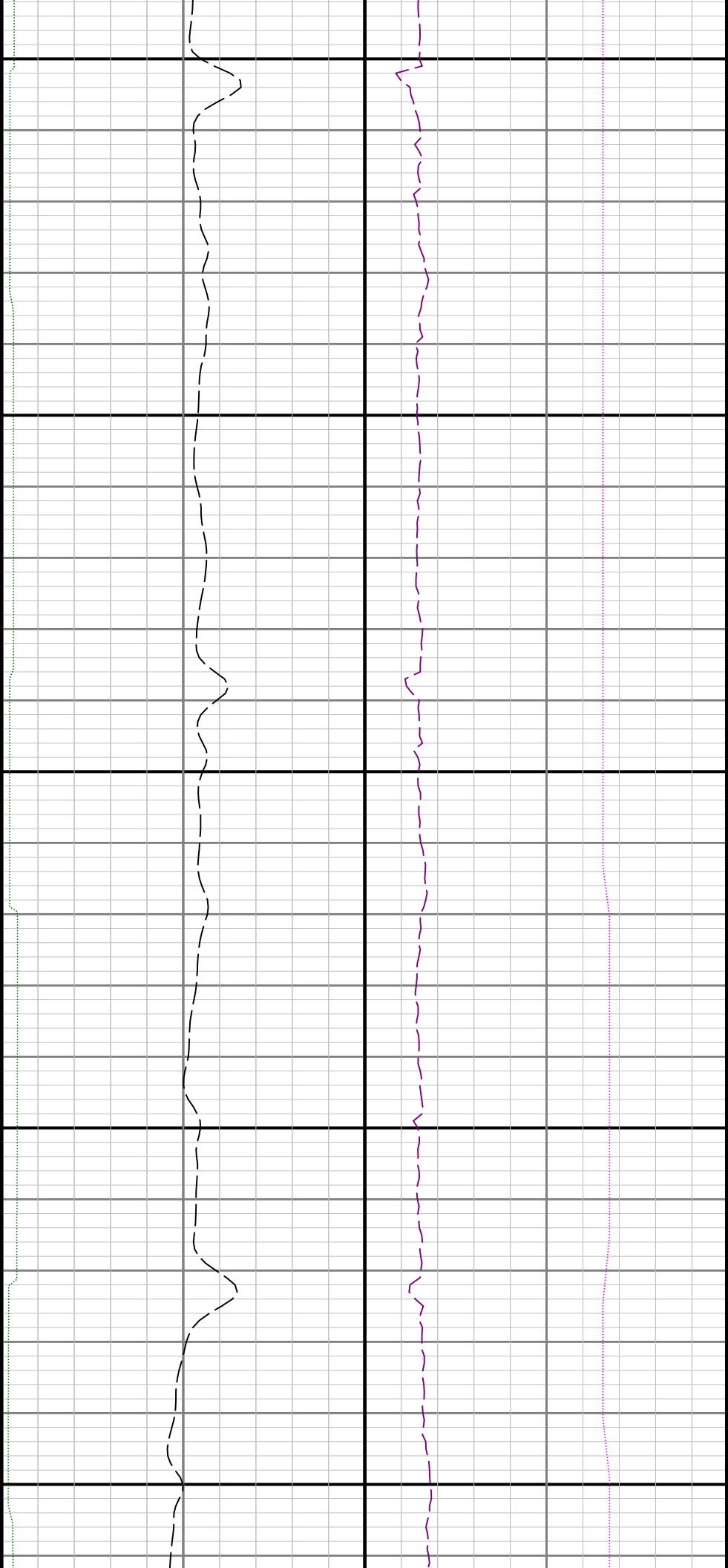




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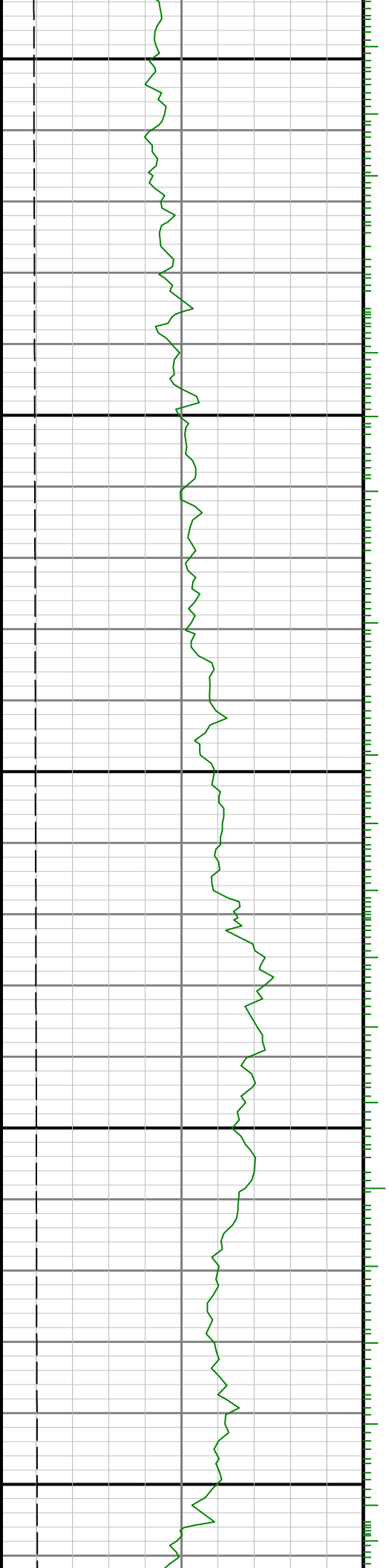
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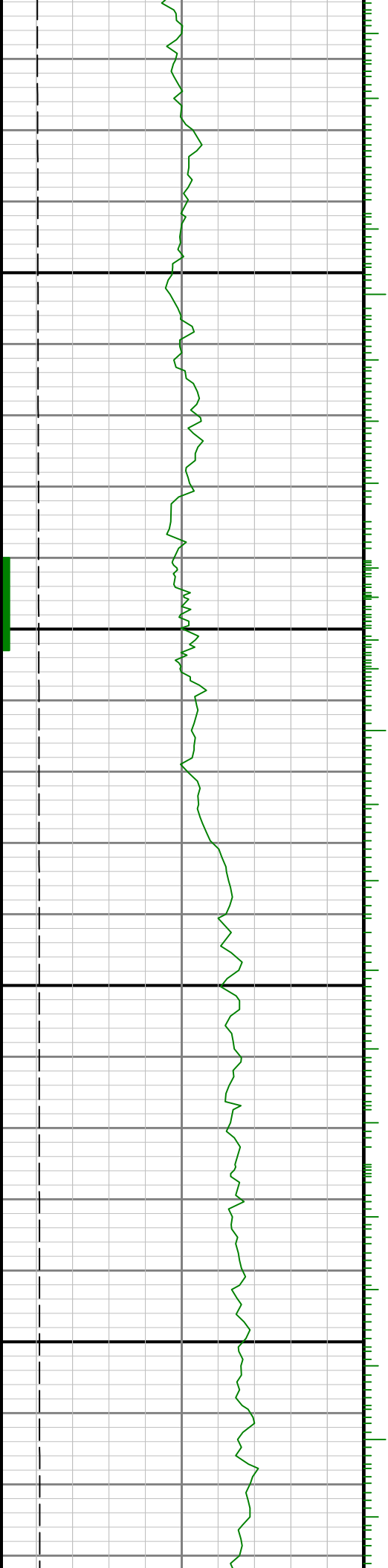




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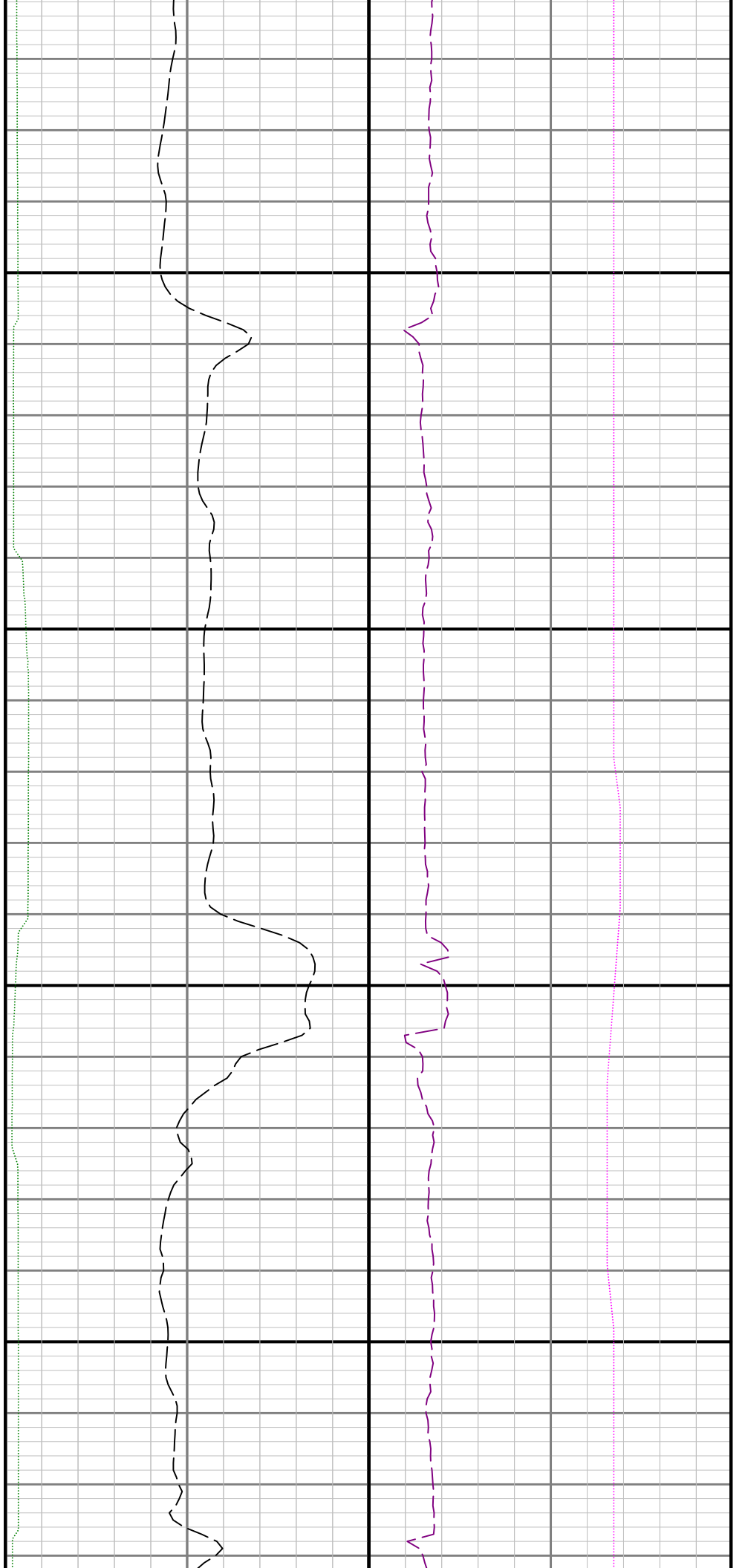
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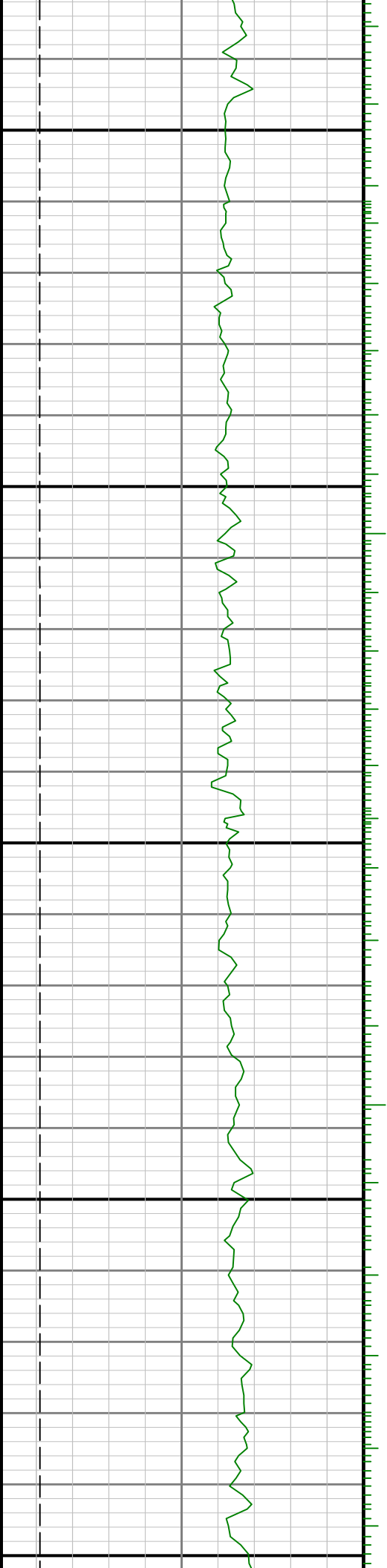




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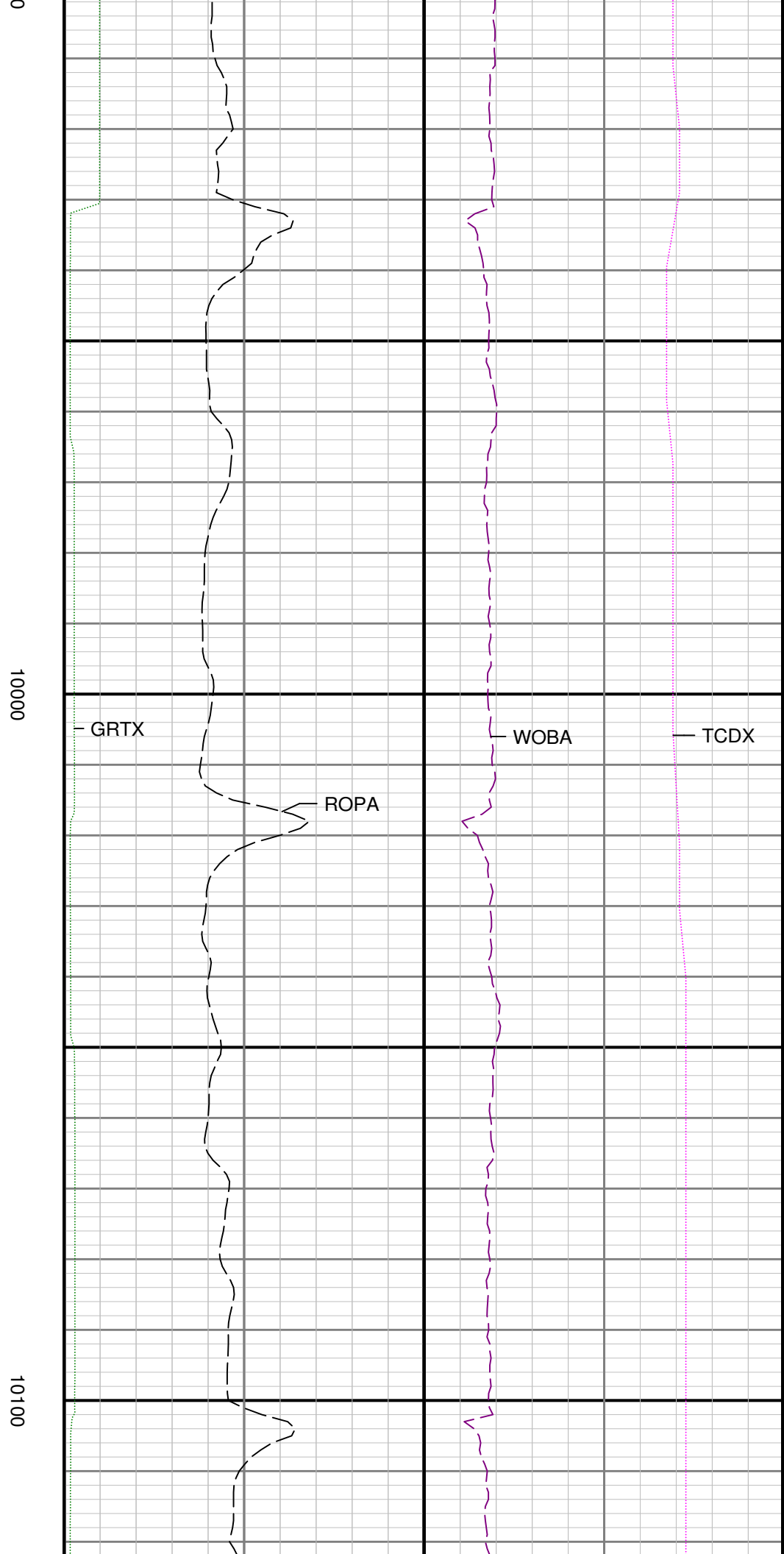
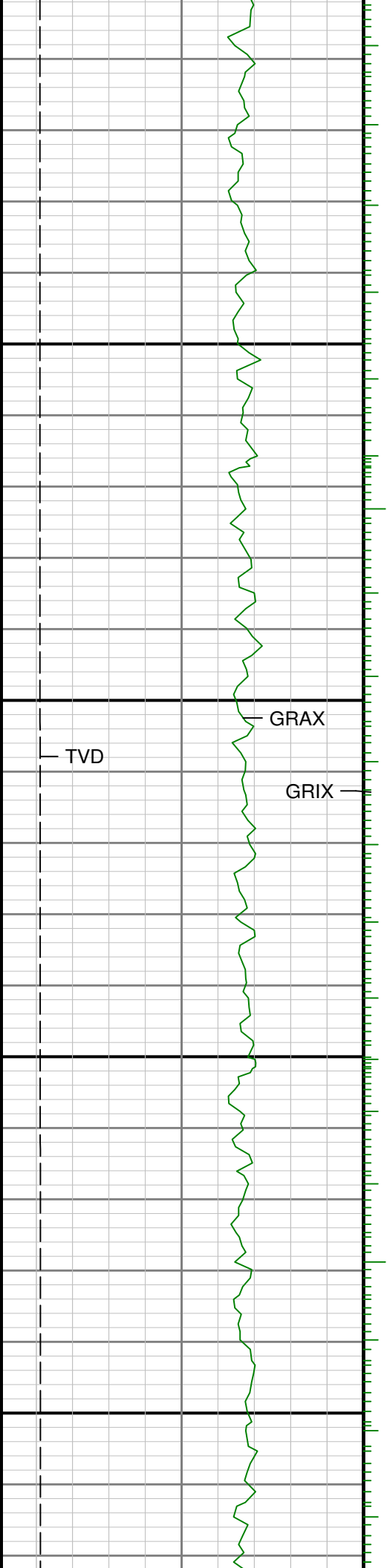


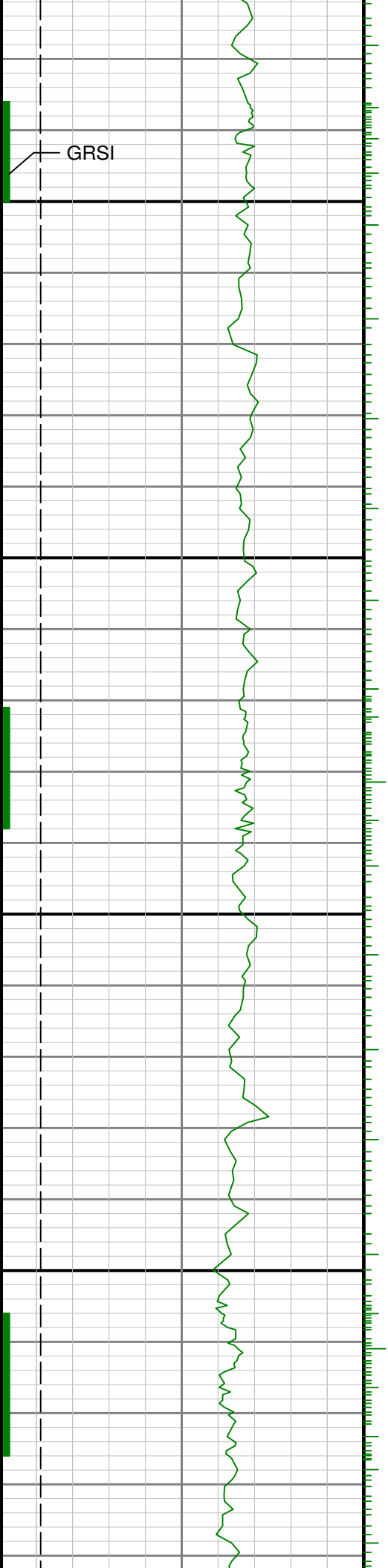
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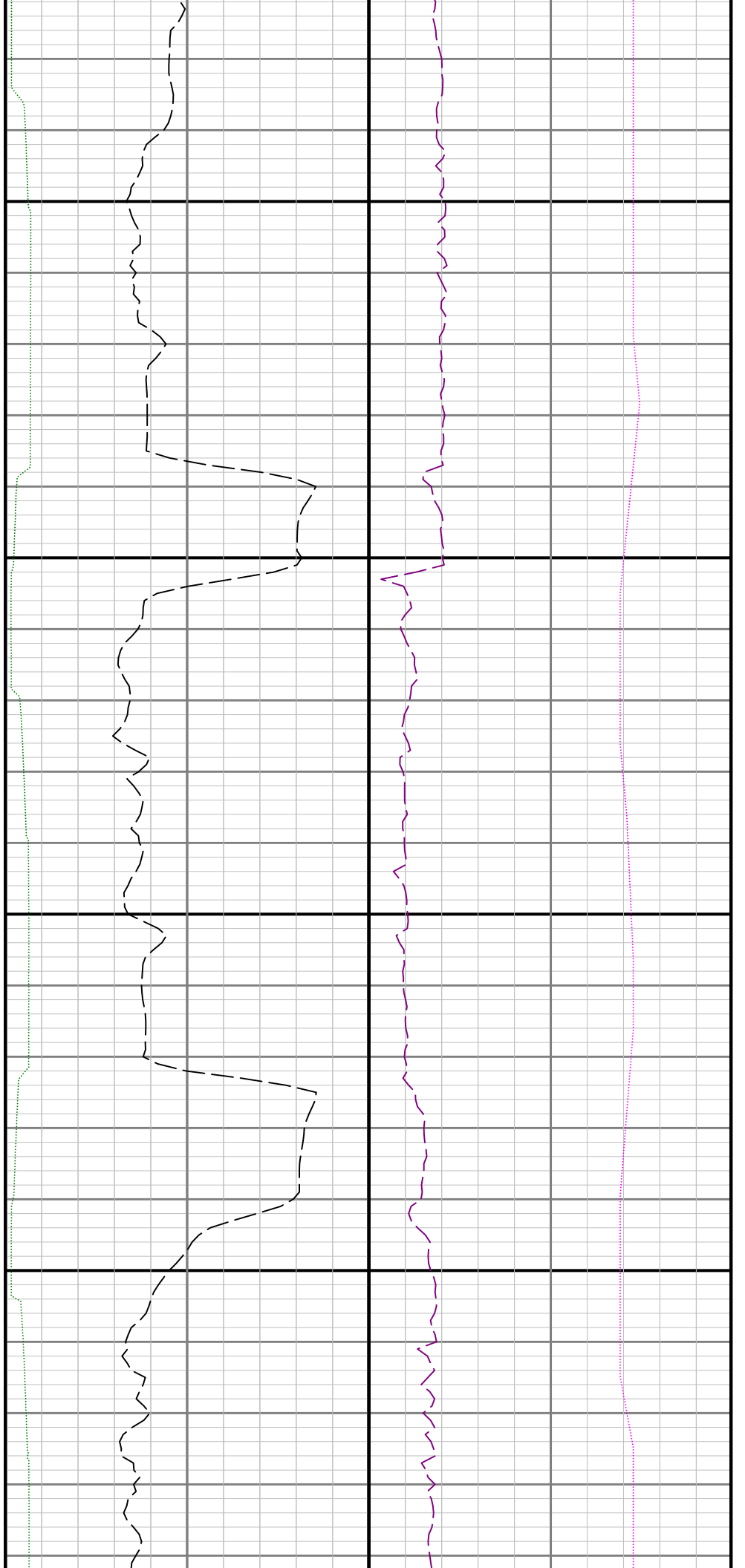


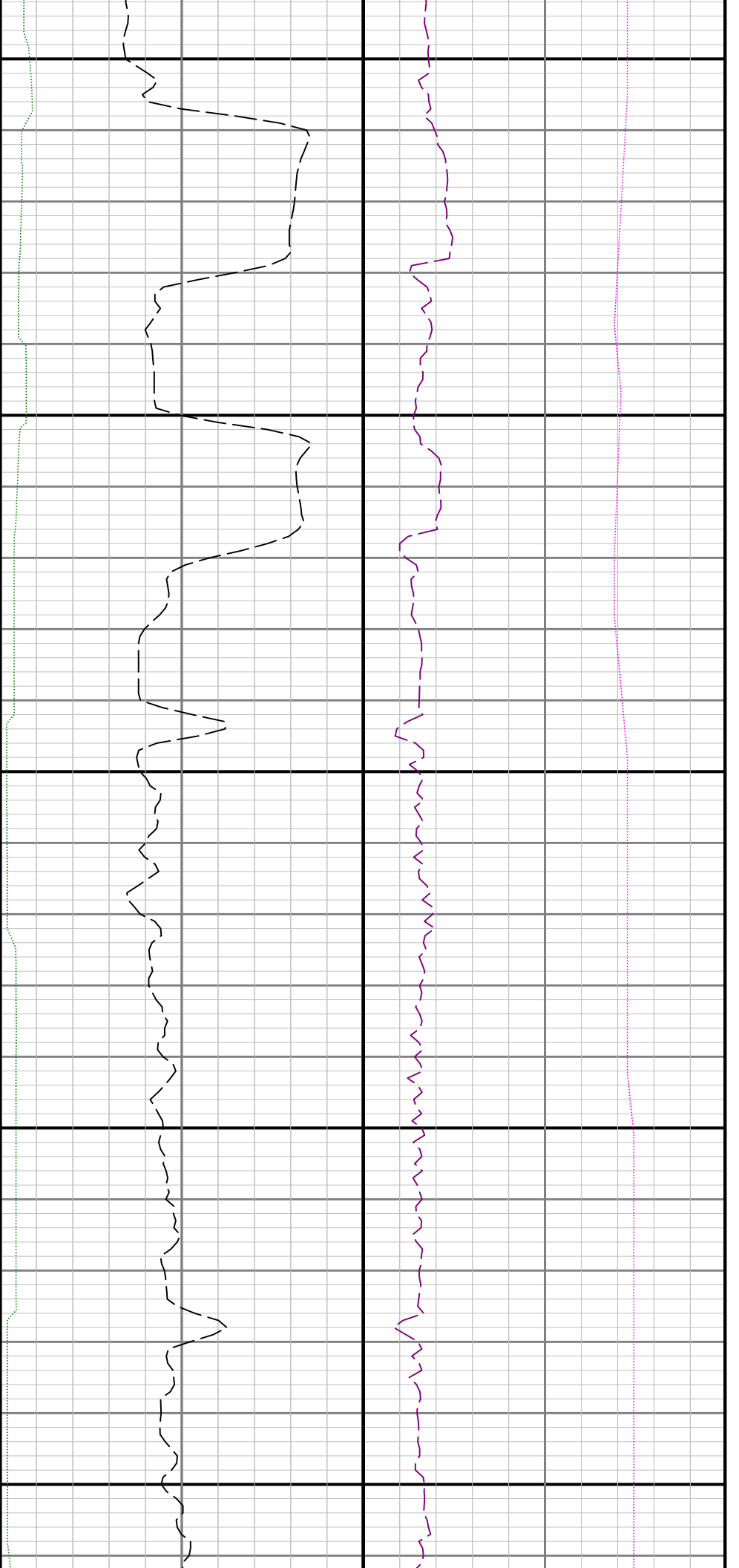




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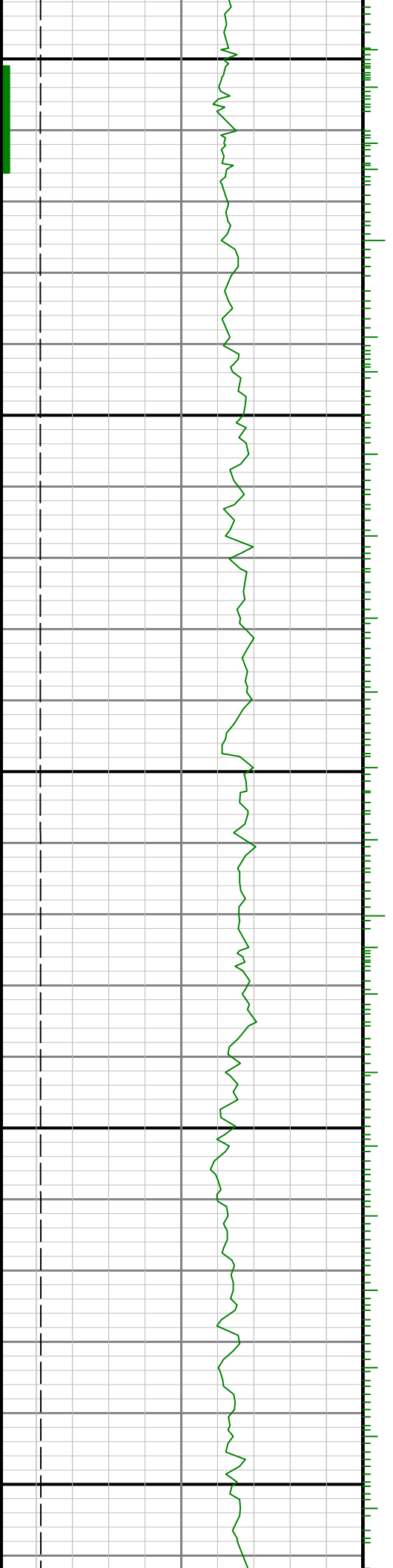
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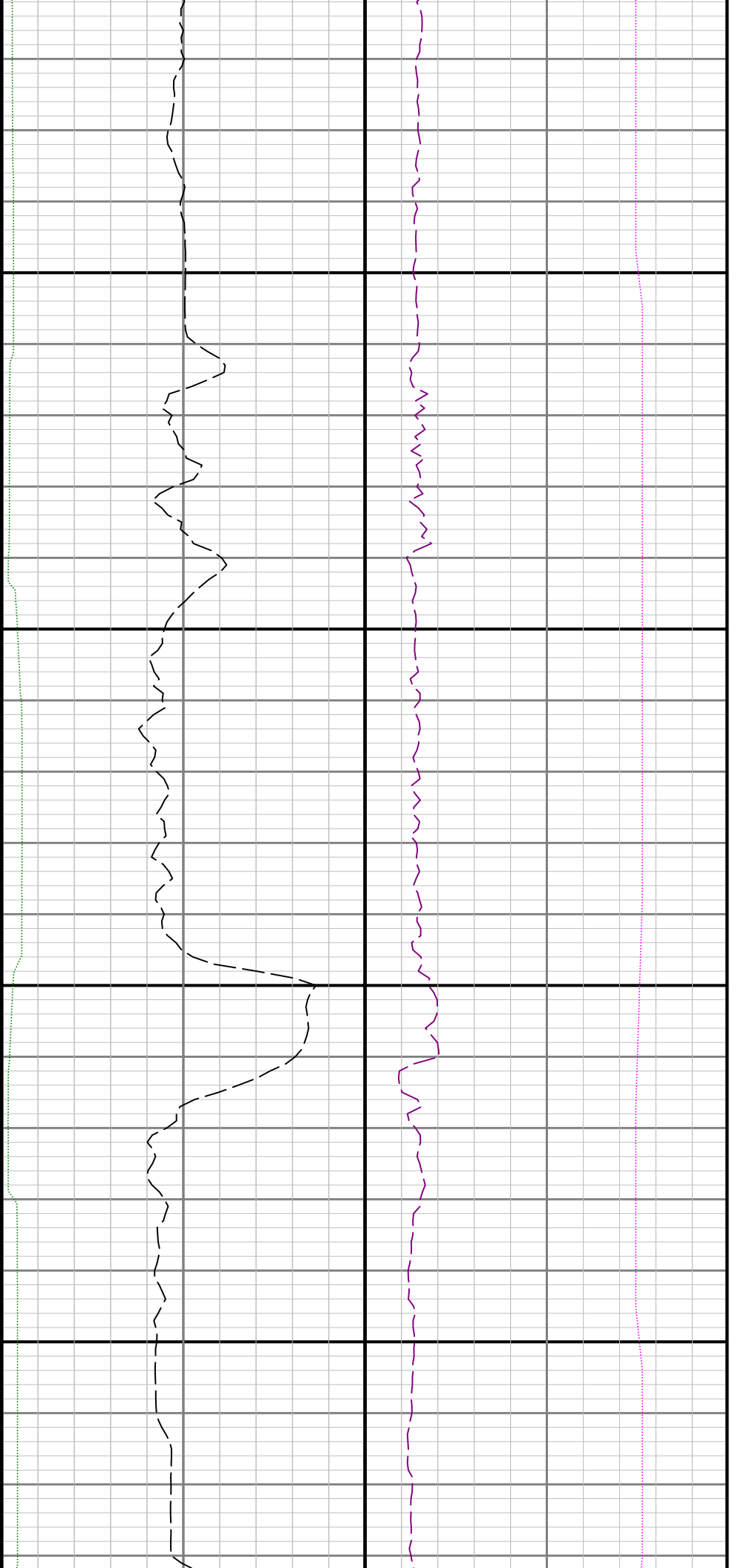




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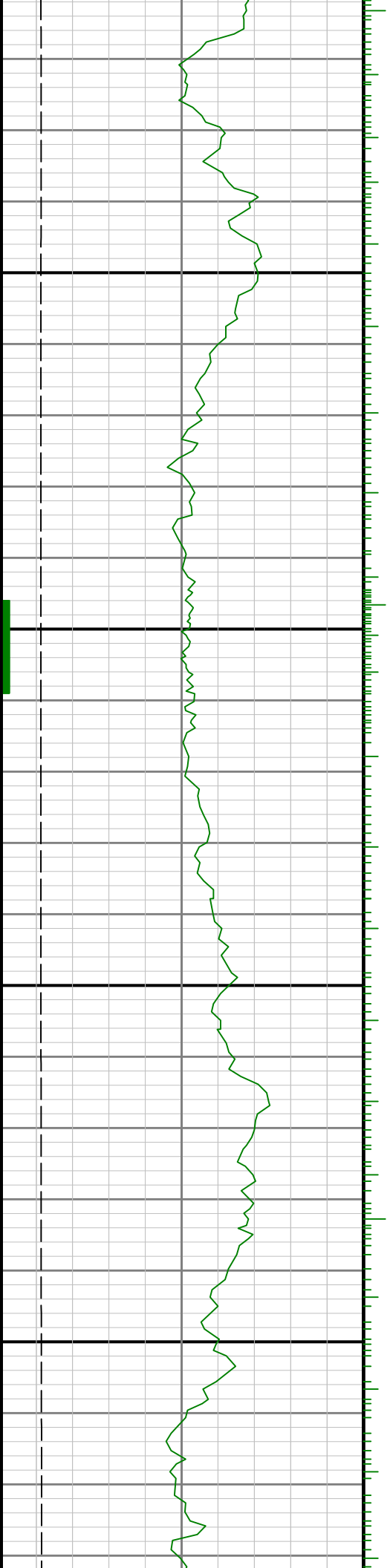
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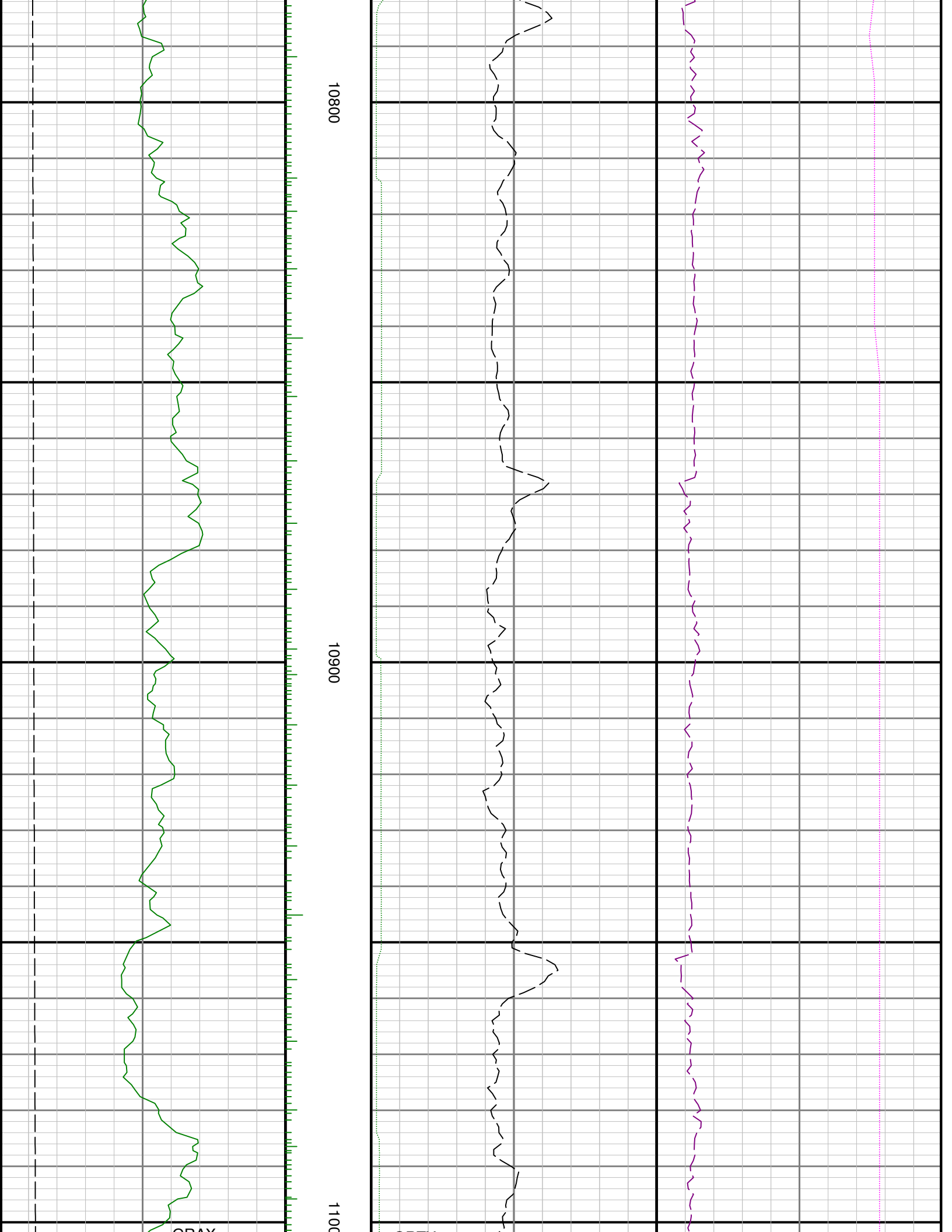


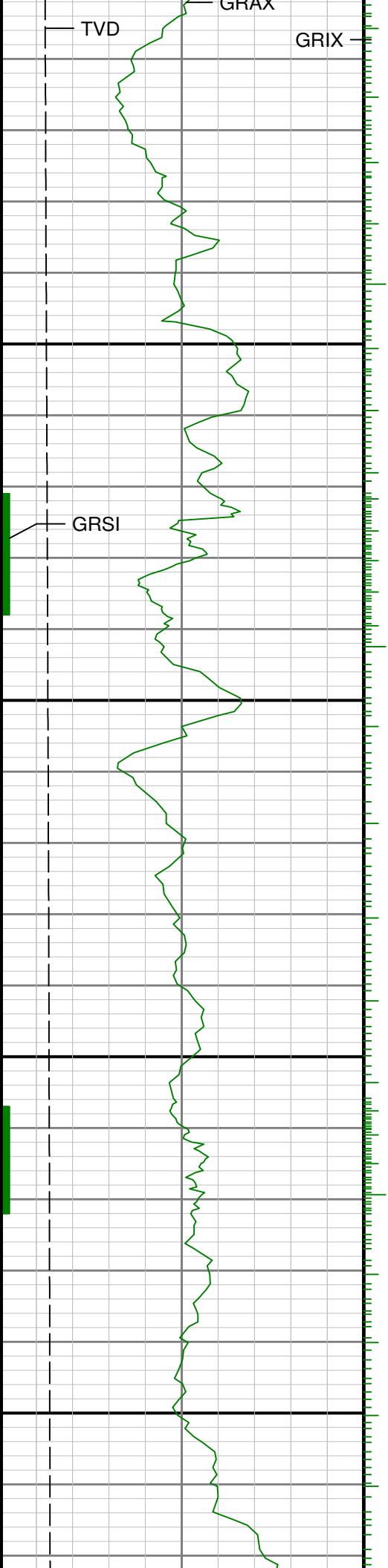


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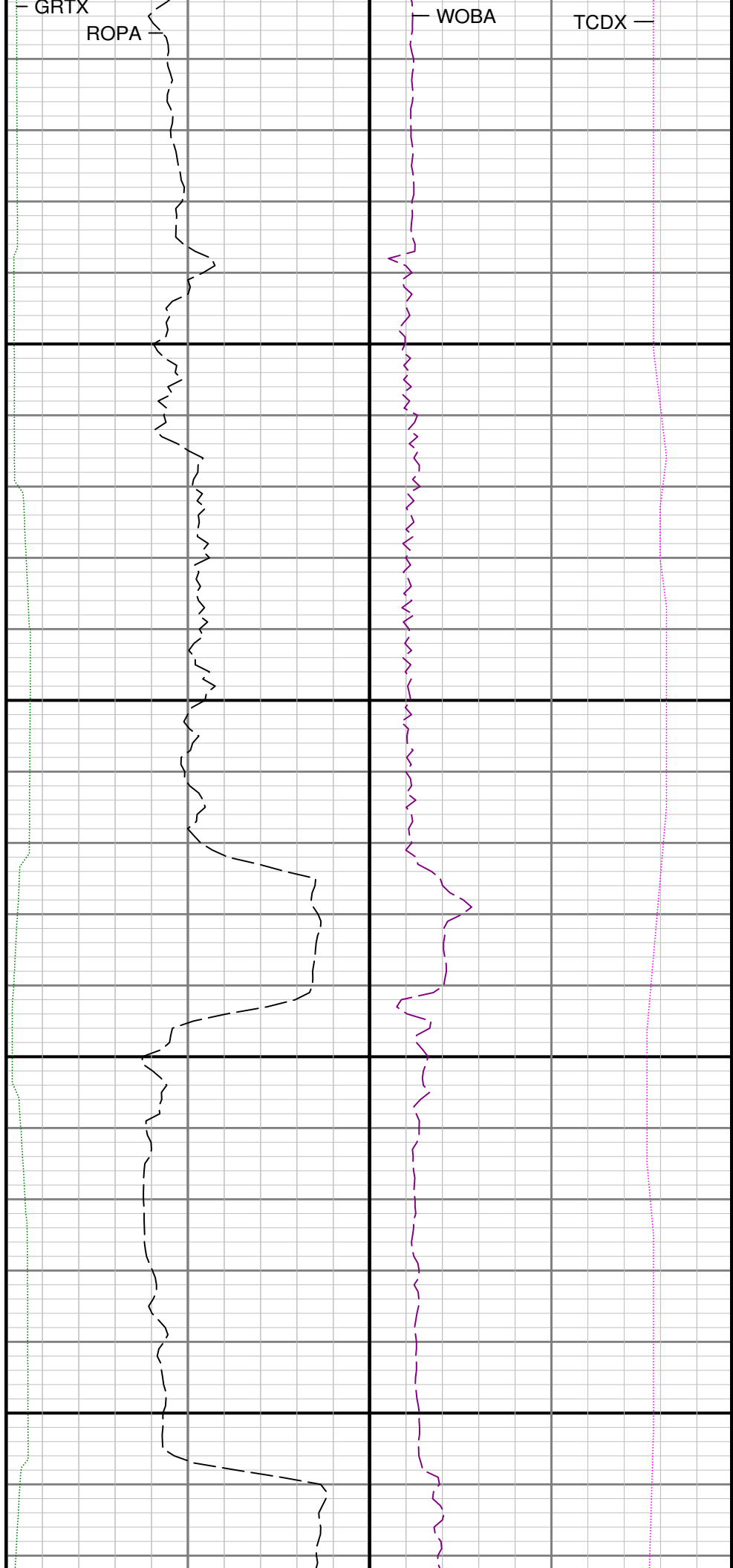
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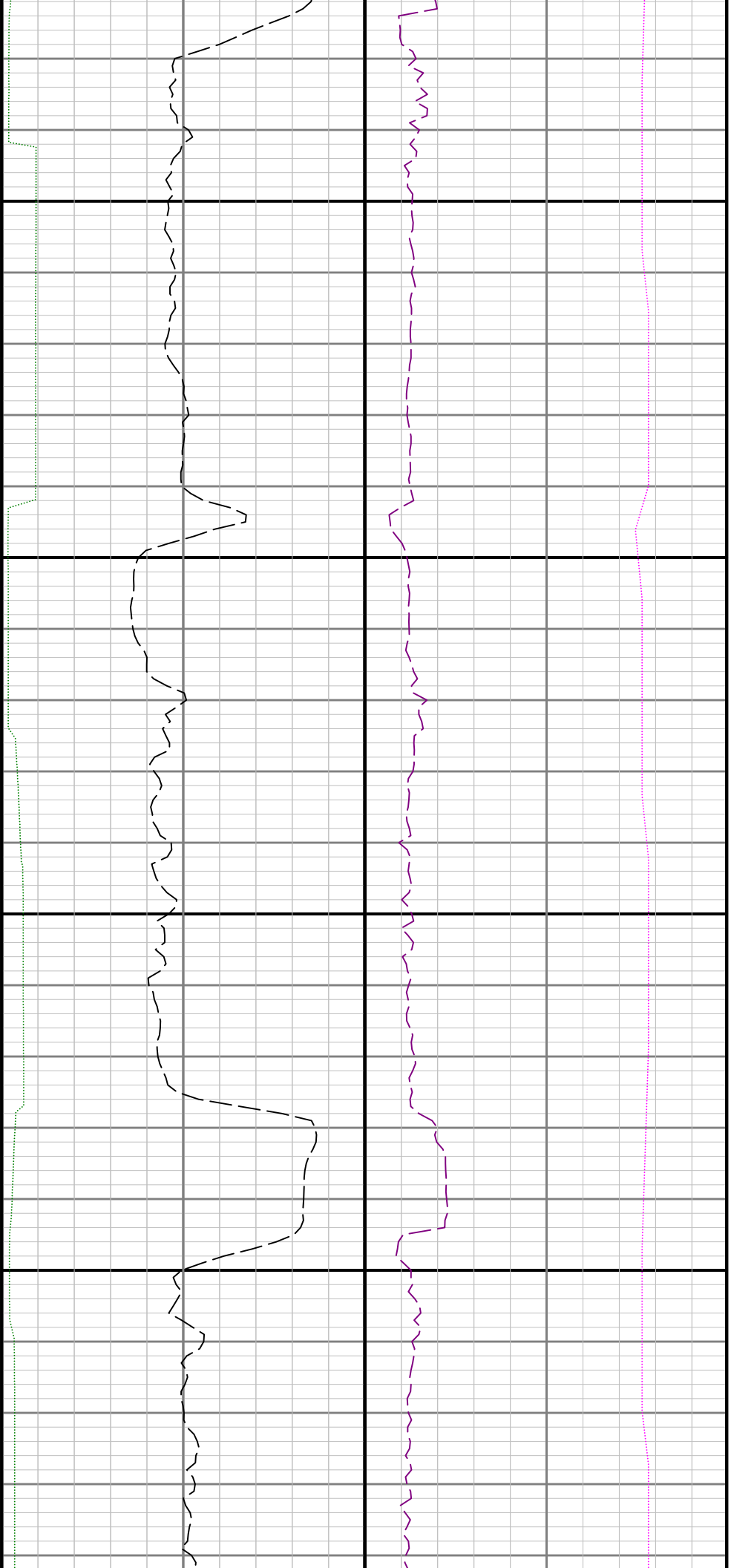






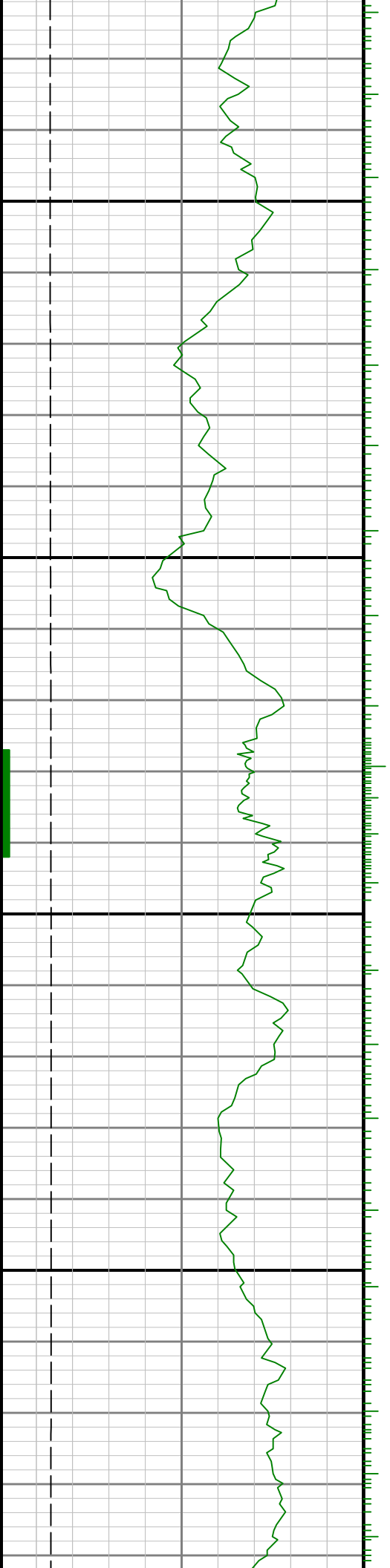
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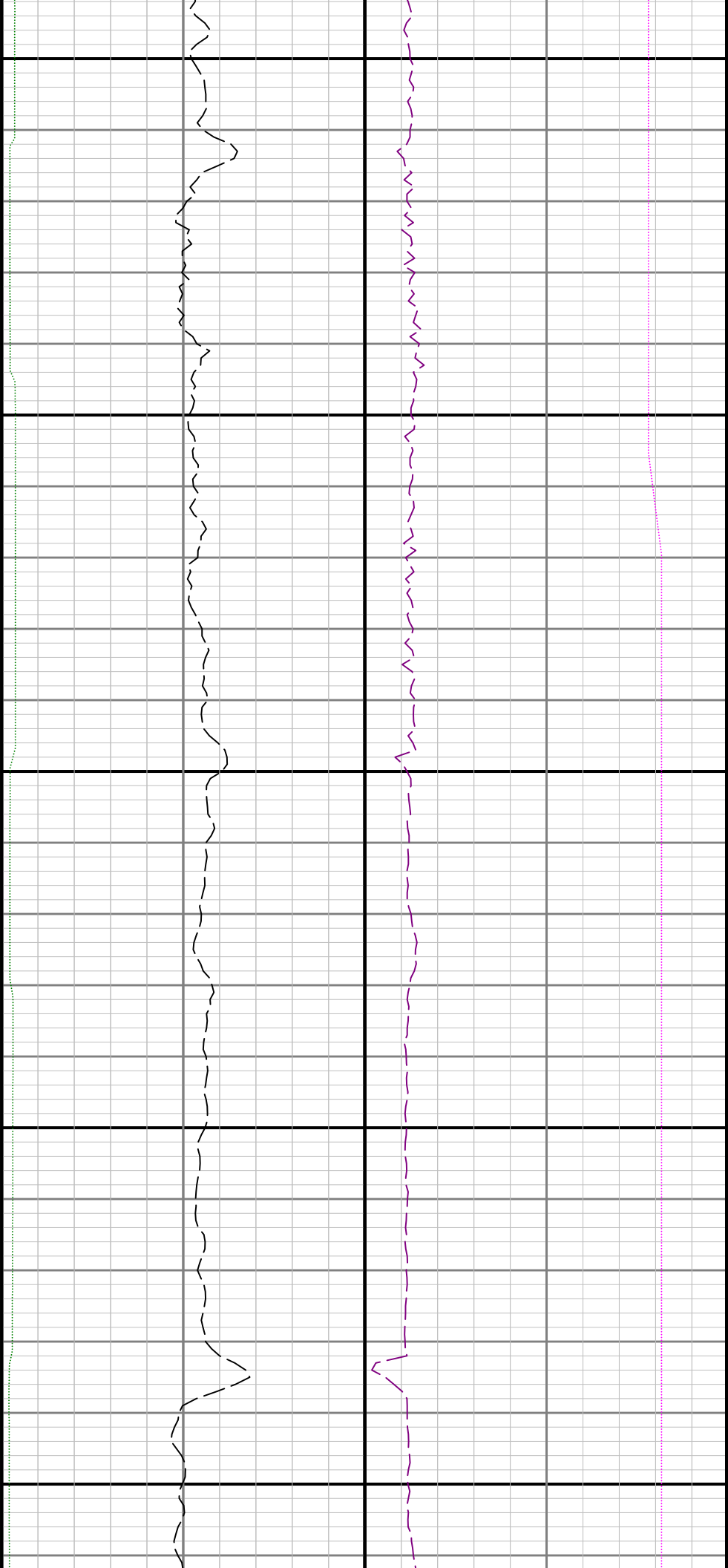




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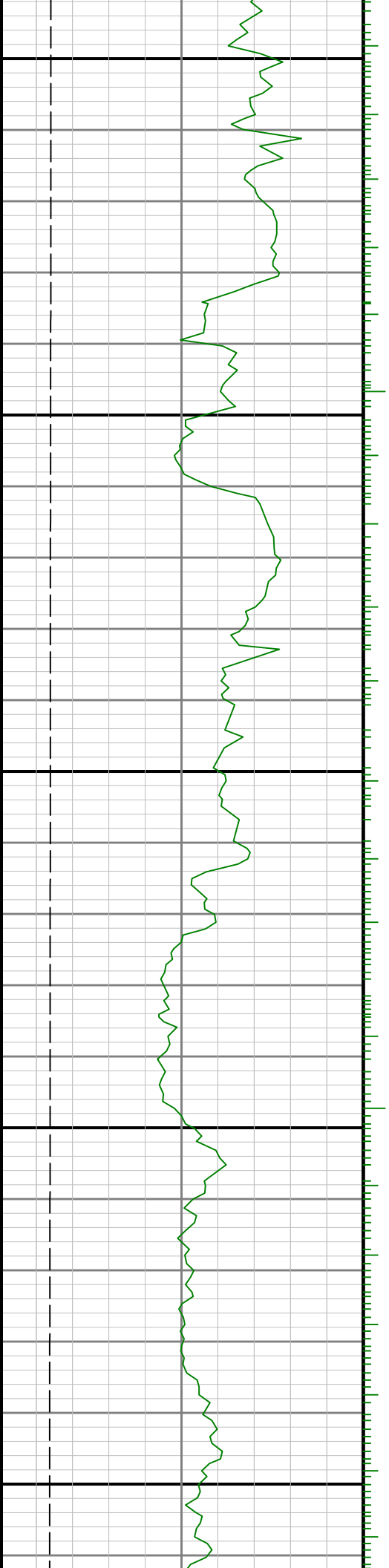
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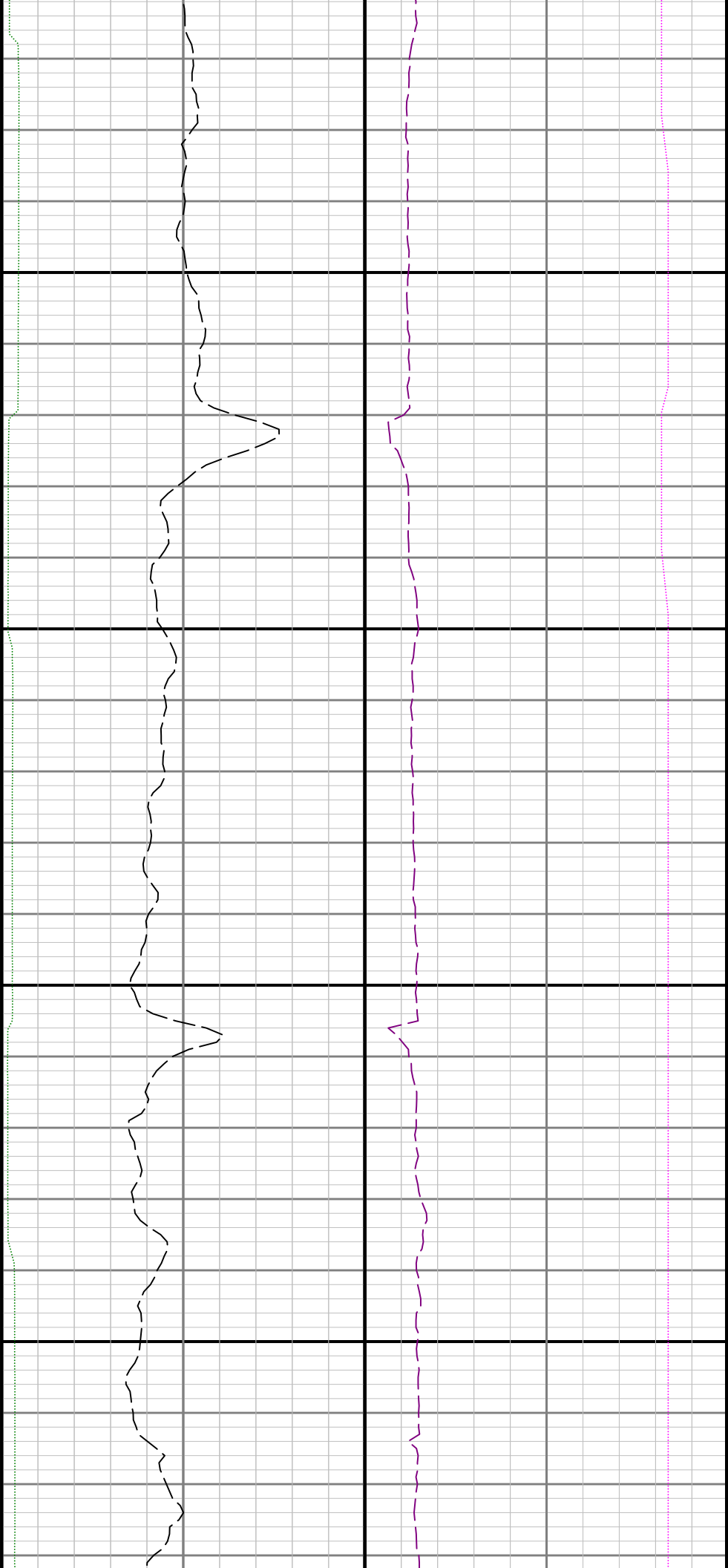




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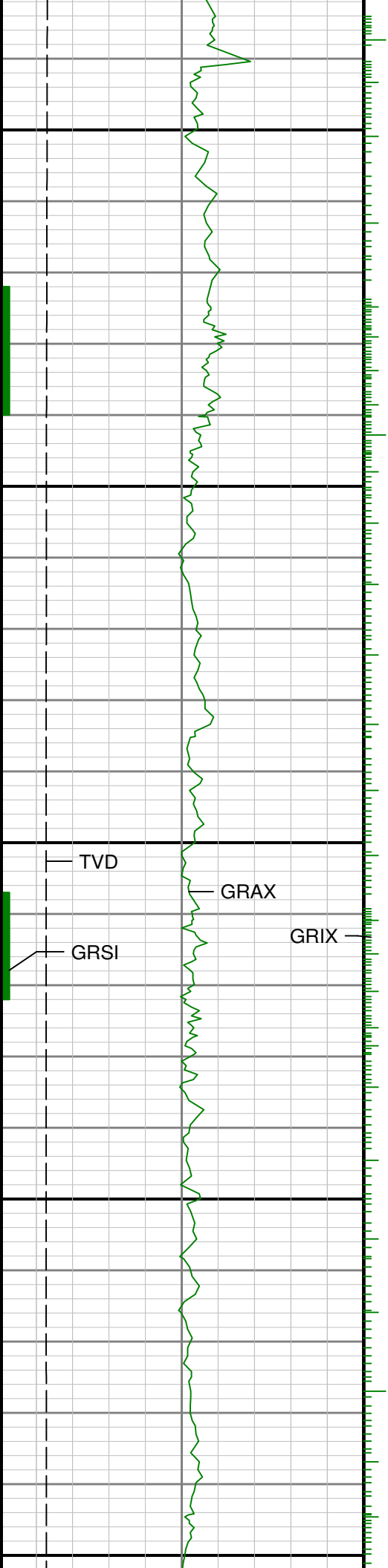
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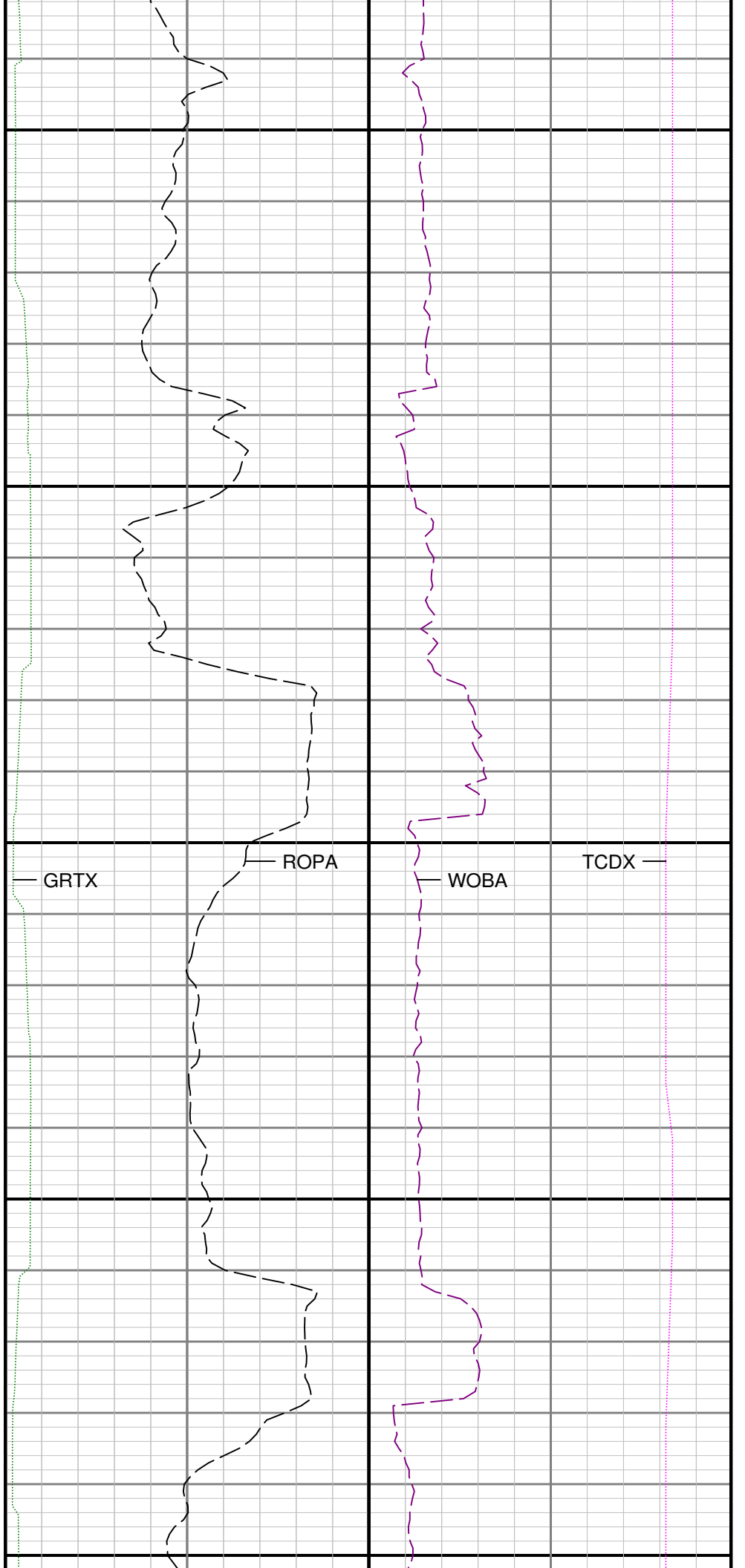
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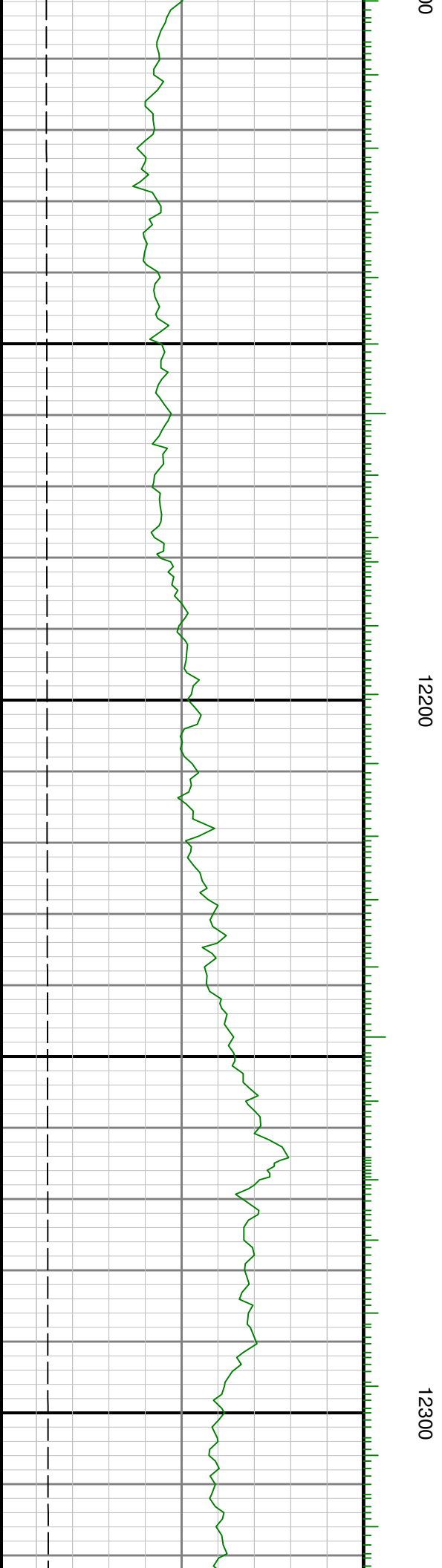
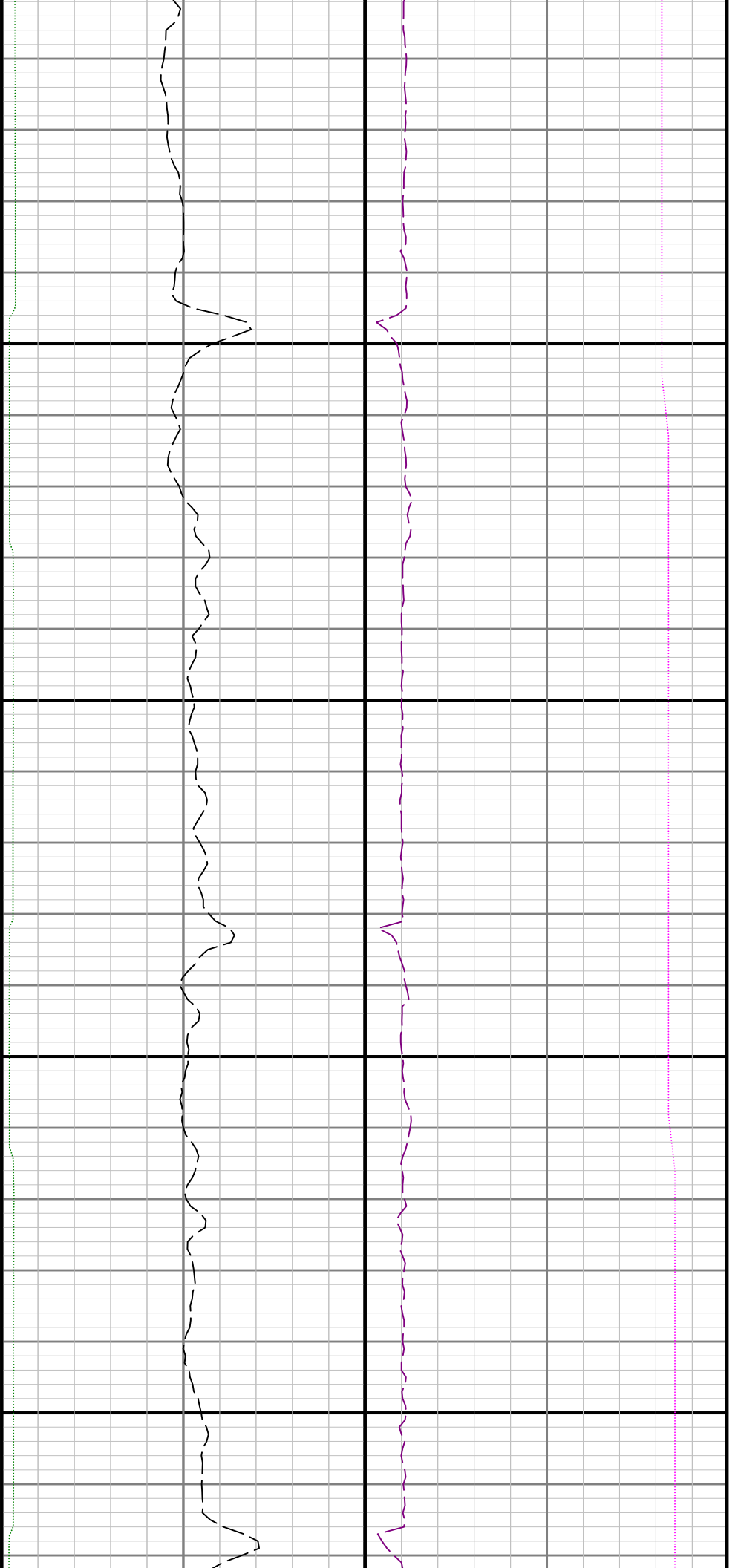


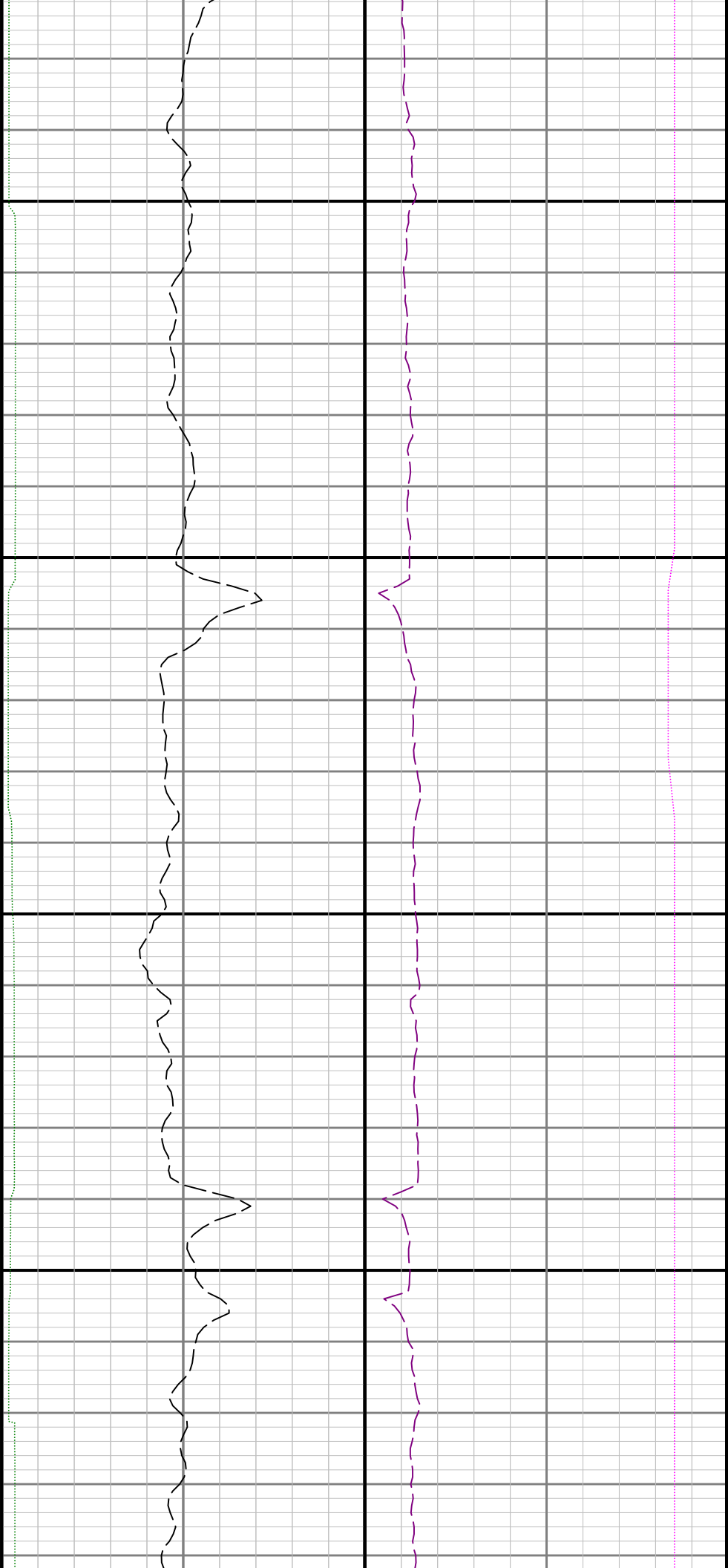
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ROPA

WOBA

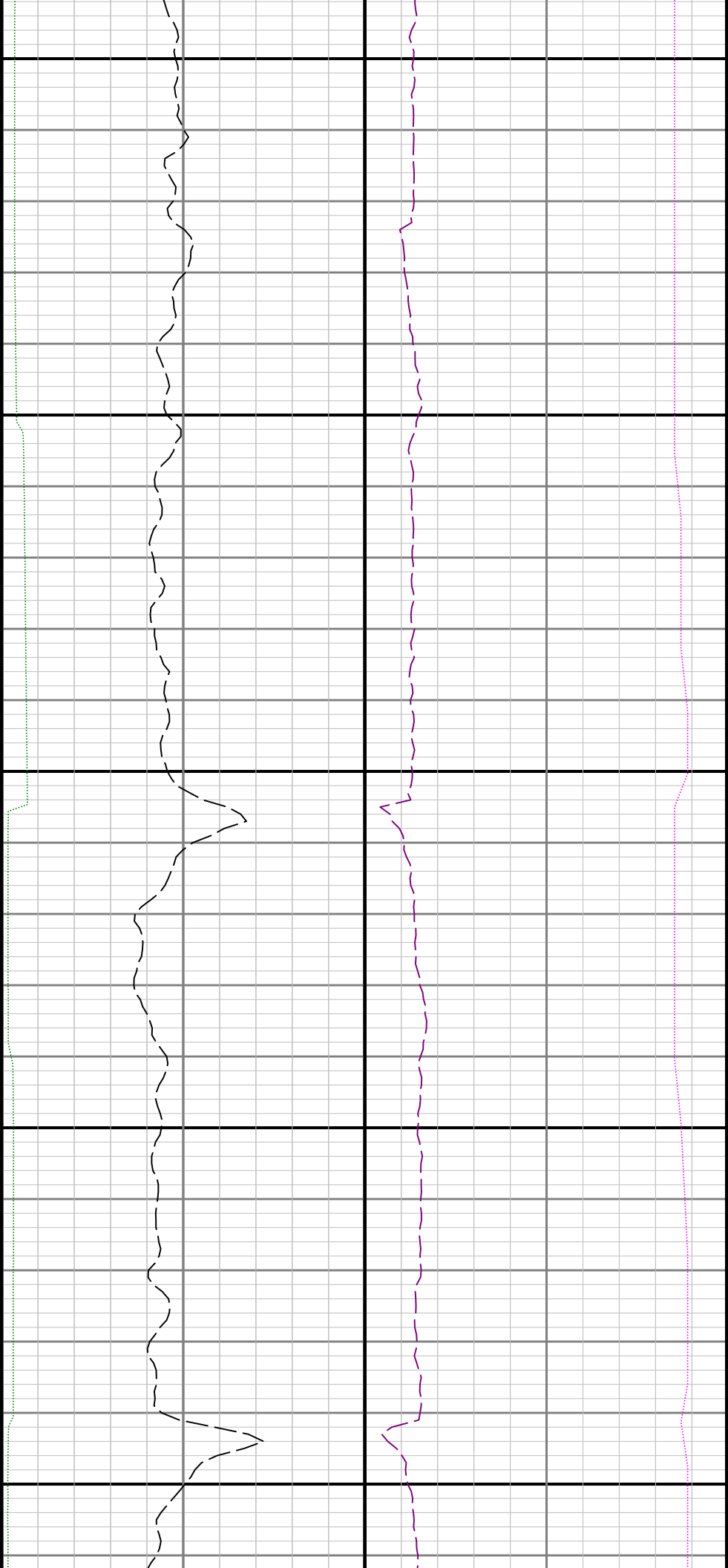
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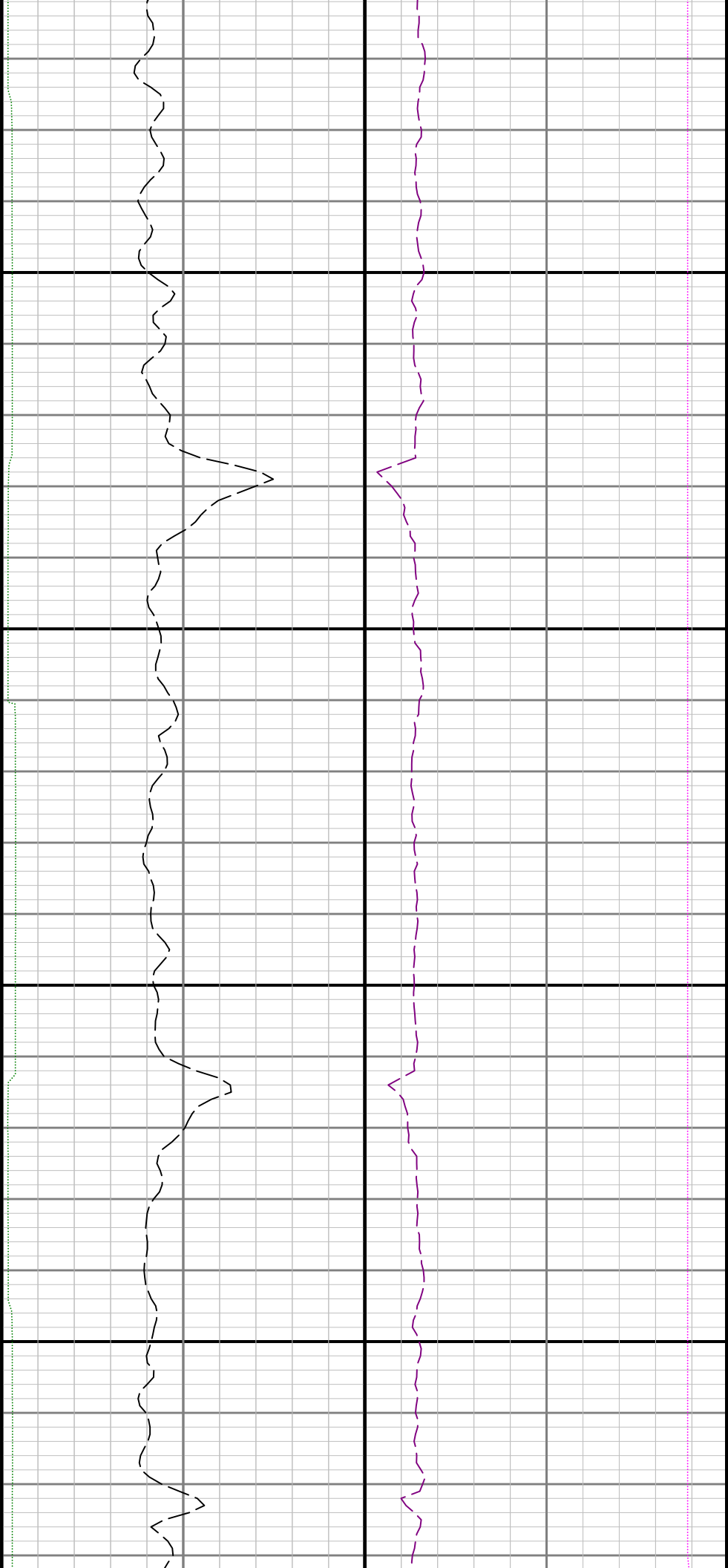
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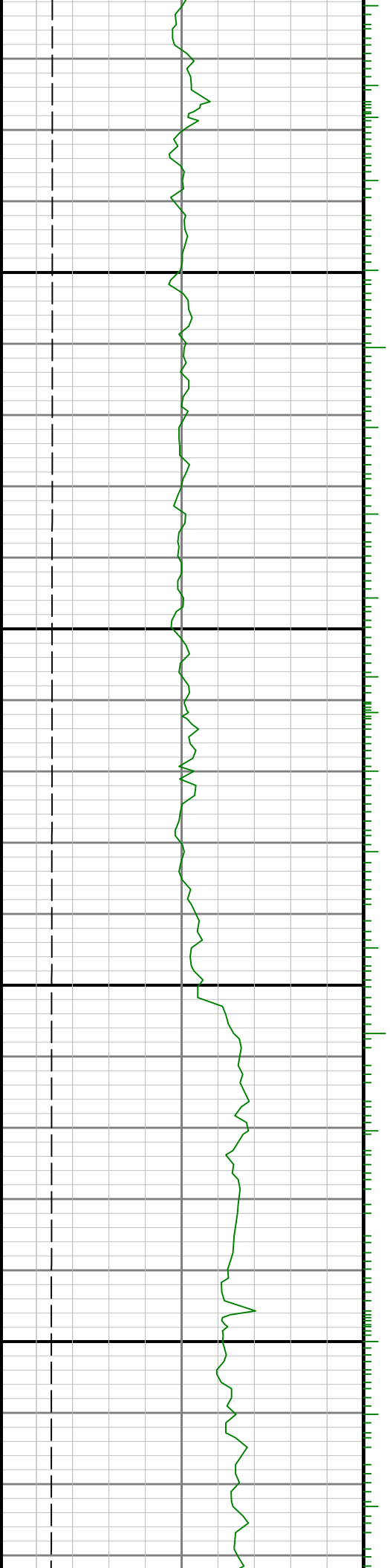
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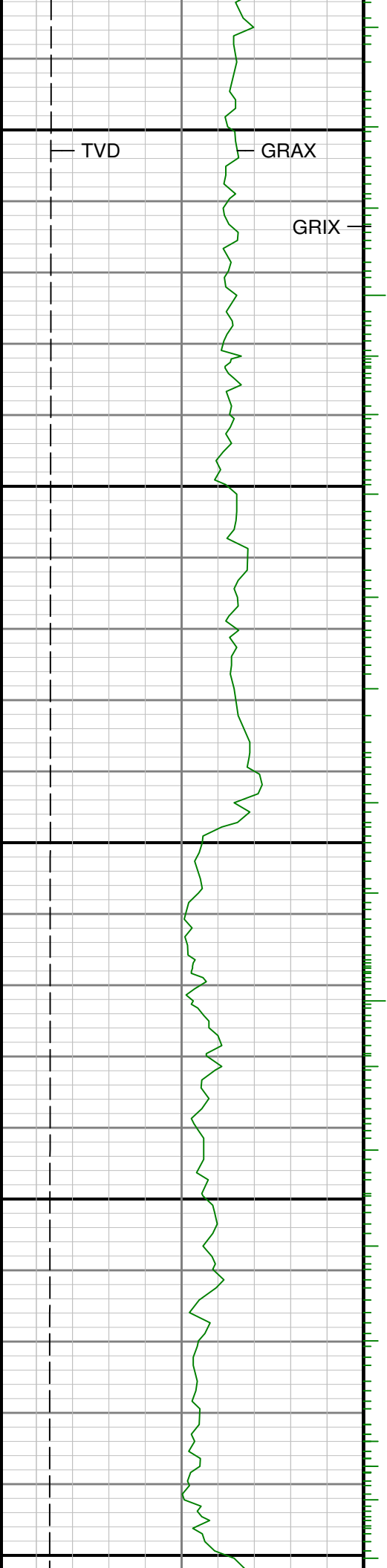
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