



Real Time Log

Natural Formation Evaluation

Gamma Ray

Scale: 1:240 Measured Depth	Company: Anadarko		
	Well: Greenleaf 15N-15HZ		
	Field: Weld County/(Kerr McGee)		
	County: Weld	State: Colorado	
	Status:	Surface Location:	Other Services:
Final Print	Latitude: 40° 8' 42.418" N		
API Number: 05123379130000	Longitude: 104° 38' 55.291" W		
	SEC: 15	TWP: 2N	RNG: 65W
Permanent Datum (P.D.):	Mean Sea Level	Elevation:	4884.00 ft.
Log Measured From:	Rig Floor	16.00 ft.	Above P.D.
Depth Reference:	Driller's Depth		
		KB:	Elevations:
		DF:	N/A
		GL:	4900.00 ft.
			4884.00 ft.

Interval Logged		Dates		Magnetic Field Reference			
Top:	6350.0 ft.	Date From:	22 Dec 14	Dip Angle:	66.84 °	Azi Reference North:	True
Bottom:	11535.0 ft.	Date To:	26 Dec 14	Total	Mag to Reference		
	Spud Date:	21 Dec 14	Field Strength:	52677.0 μ T	North Correction:		8.32 °

[illegible][illegible]

Acquisition System		Software Version	Other
Advantage	2.20U4	Rig:	Xtreme 23 / Advance Drilling
PATS	6.4.1.34	Job No:	27LVH18
		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	Bottom	From	To	Start		End		
							(ft.)	(ft.)	(ft.)	(ft.)					
1	2	2	8.750	PDC	3.000	Steerable	6350.0	7327.0	6350.0	7370.0	22 Dec 14	17:01	23 Dec 14	05:06	12
2	2	3	6.125	PDC	3.000	Steerable	7327.0	11493.0	7370.0	11535.0	24 Dec 14	21:50	26 Dec 14	02:43	29

Crew

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Jason Williams	21 Dec 14	26 Dec 14	Jeremiah Ward	21 Dec 14	26 Dec 14			

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+ (%)
22 Dec 14	20:00	1	6707.0	Water Based Mud	10.1	14	8.6	N/A	1/87.5	Active Pits	4,000	N/A
24 Dec 14	20:00	2	7682.0	Water Based Mud	10.2	13	9.4	N/A	2/88	Active Pits	4,000	N/A

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.	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	12373454	Directional	46.82	6.750	3.250
1	SRIG	12041109	Gamma	43.44	6.750	3.250
2	DIR	11866045	Directional	52.82	4.750	2.688
2	SRIG	11801271	Gamma	49.40	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

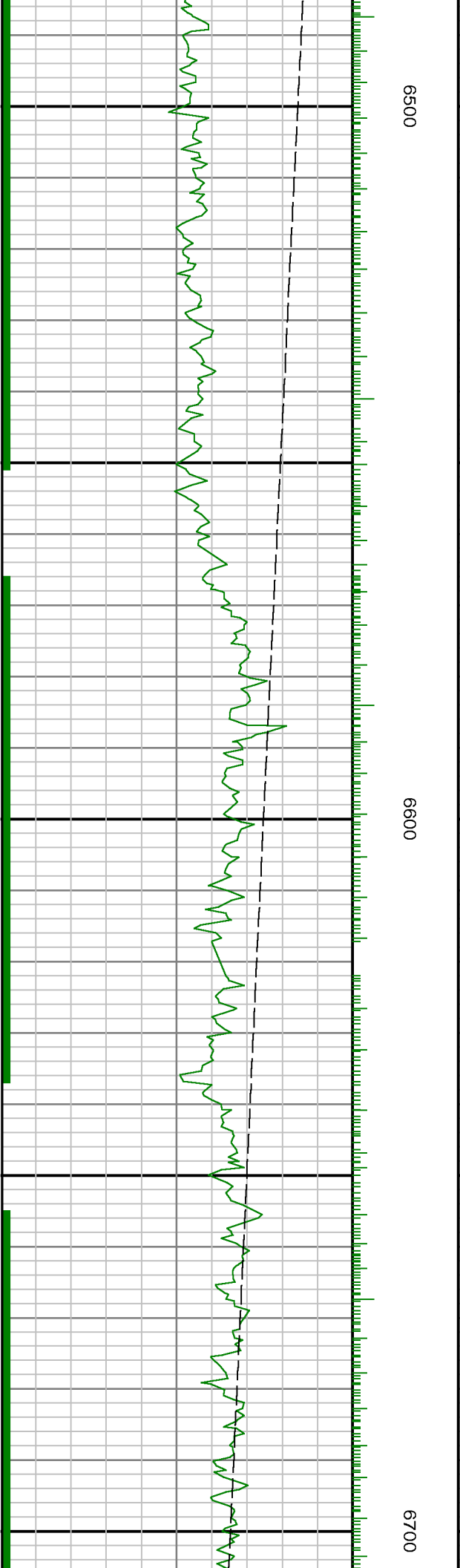
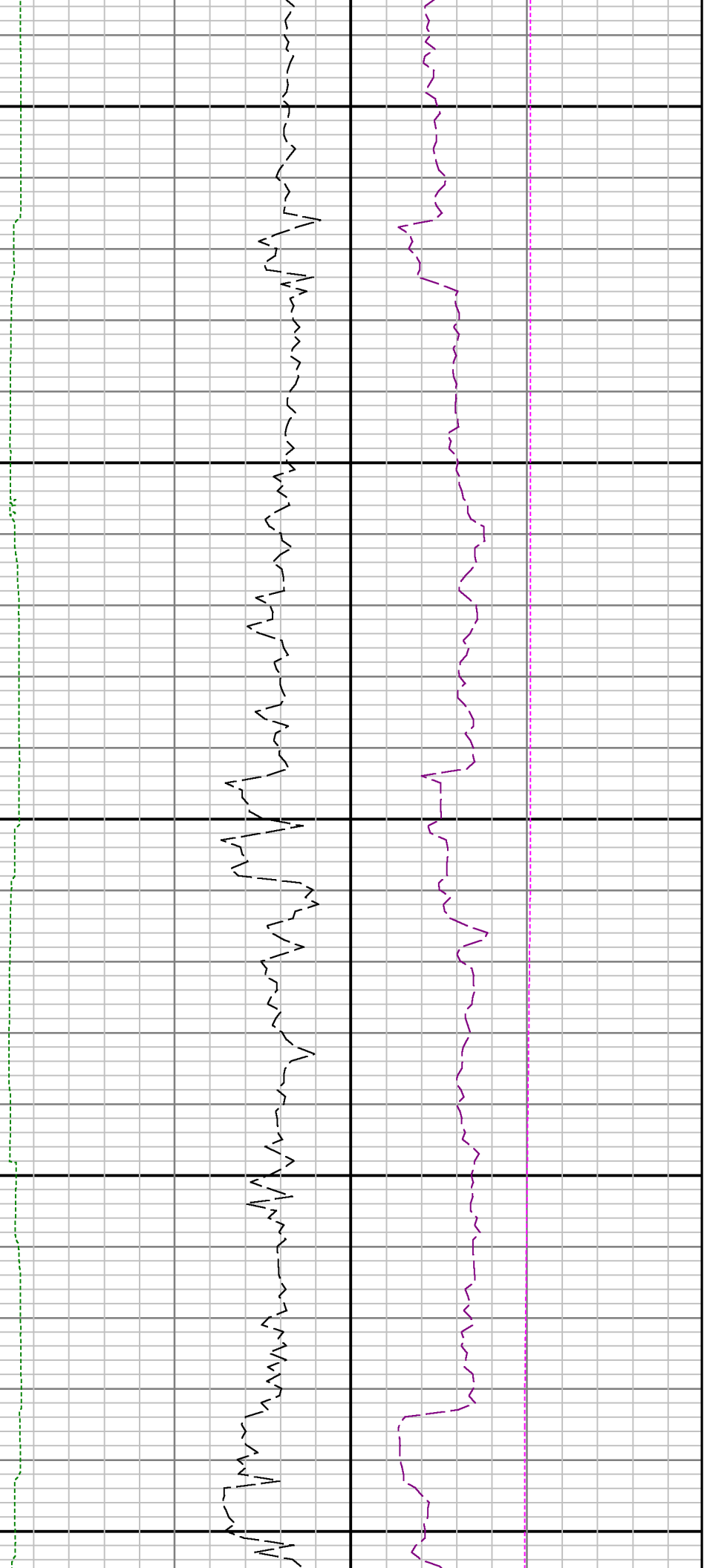
Comments

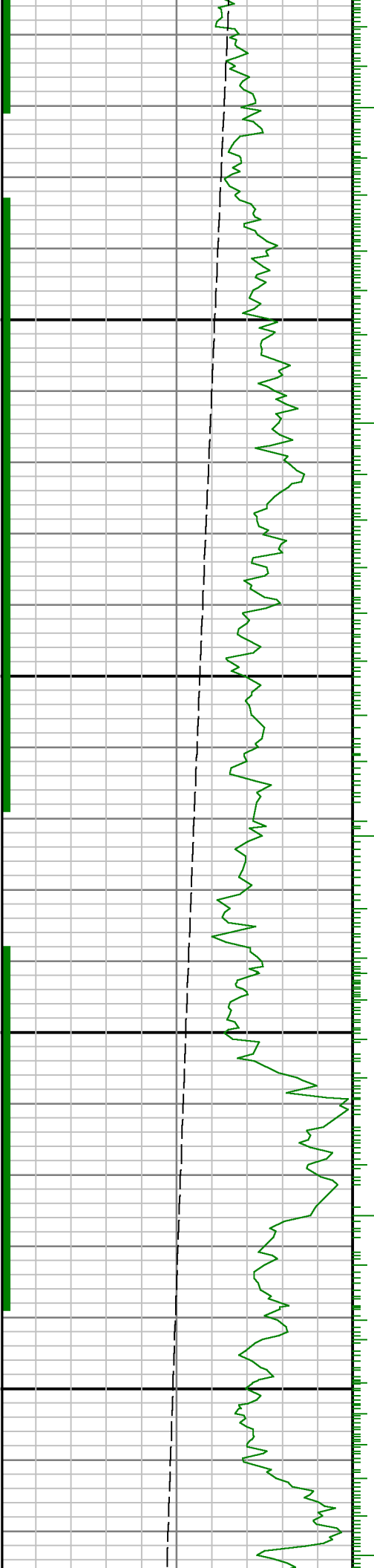
<p>1.) Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes. Due to lack of control by Baker Hughes logging engineers, depth calibrations and measurements could not be independently verified and the unverified depths as supplied to Baker Hughes are being used to represent logging data</p> <p>2.) Baker Hughes Run 1 utilized a 6 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind an 8 3/4 inch bit and steerable assembly from 6350 to 7370 feet MD (6306.78 to 7000.18 feet TVD).</p> <p>3.) Baker Hughes Run 2 utilized a 4 3/4 inch NaviGamma (Directional and Gamma Ray) tool behind an 6.125 inch bit and steerable assembly from 7370 to 11535 feet MD (7000.18.85 to 6994.49 feet TVD).</p> <p>5.) A sliding indicator is shown on the left side 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.</p>
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Remarks

Number	Measured Depth (ft)	Hole Section (in.)	LWD Run No.	Remark

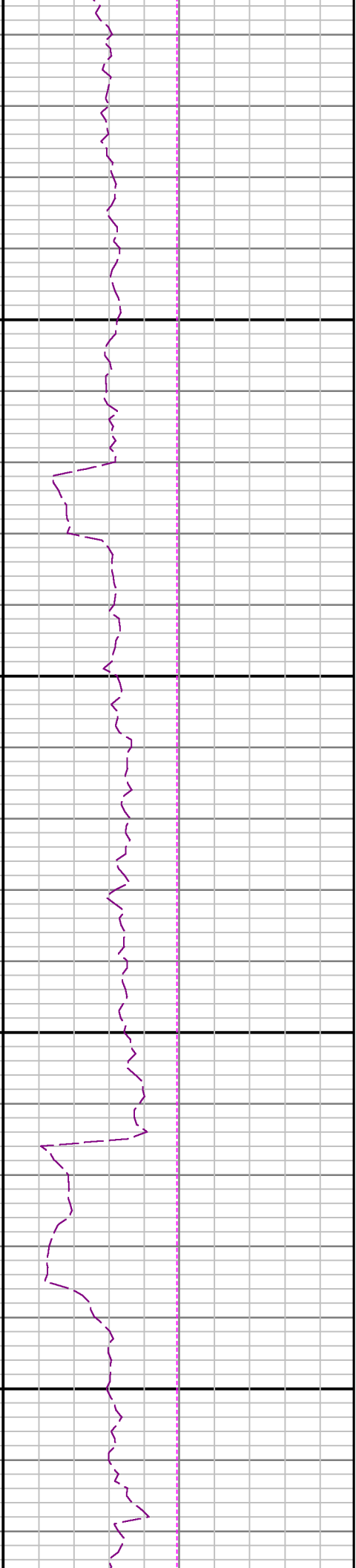
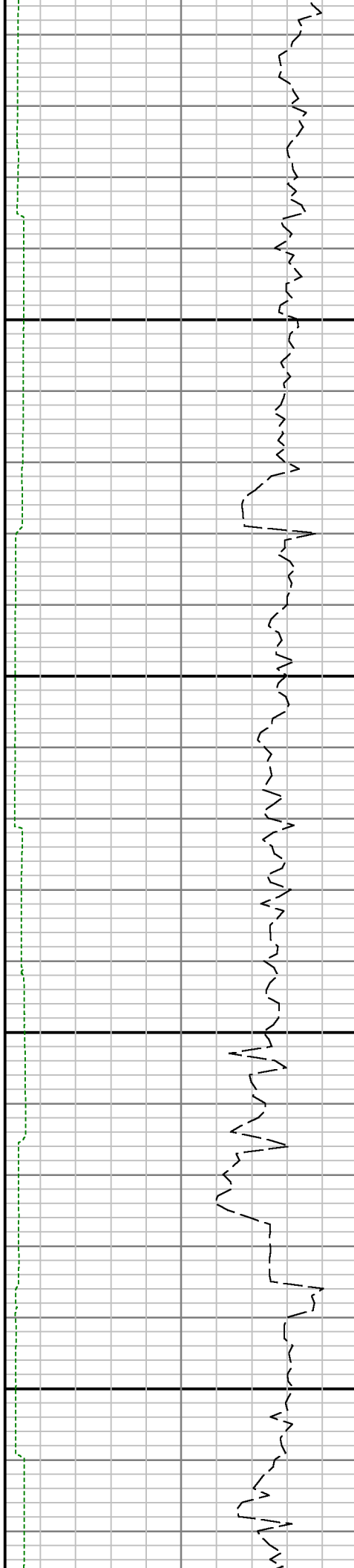
1	6350	8.750	1	No data prior to 6350 per Anadarko do to logging operations started at Kick off Point.
2	7370	8.750	2	GRAX, GRIX and GRTX API values from 7327 to 7370 ft. MD (6998.25 to 7000.18 ft. TVD) were logged up to 19 hours after being drilled due to a trip out of hole to run casing and pick up BHA 2
3	11493	6.125	3	GRAX, GRIX and GRTX API values were not logged from 11493 to 11535 ft. MD (6995.55 to 6994.49 ft. TVD) due to sensor offset to bit position in MWD tool at TD.

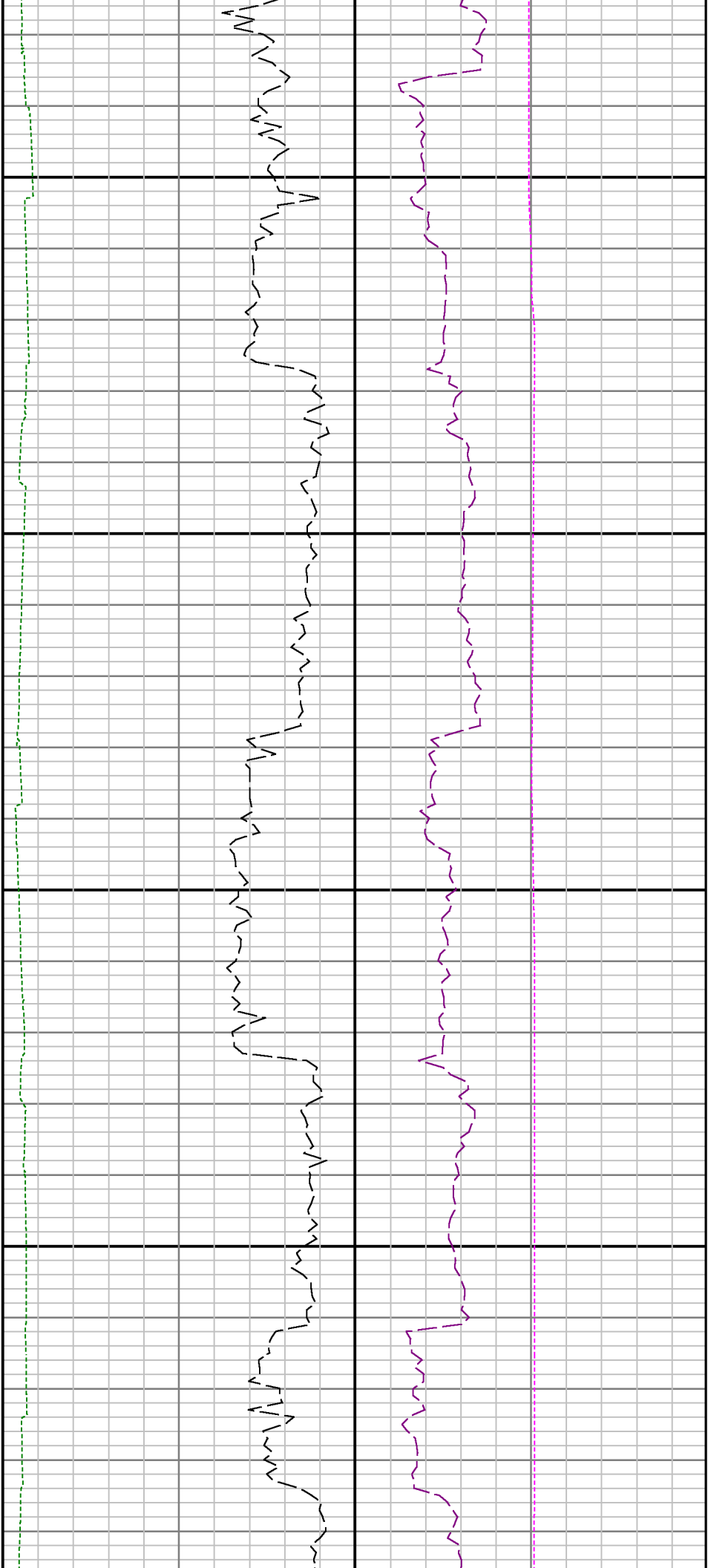




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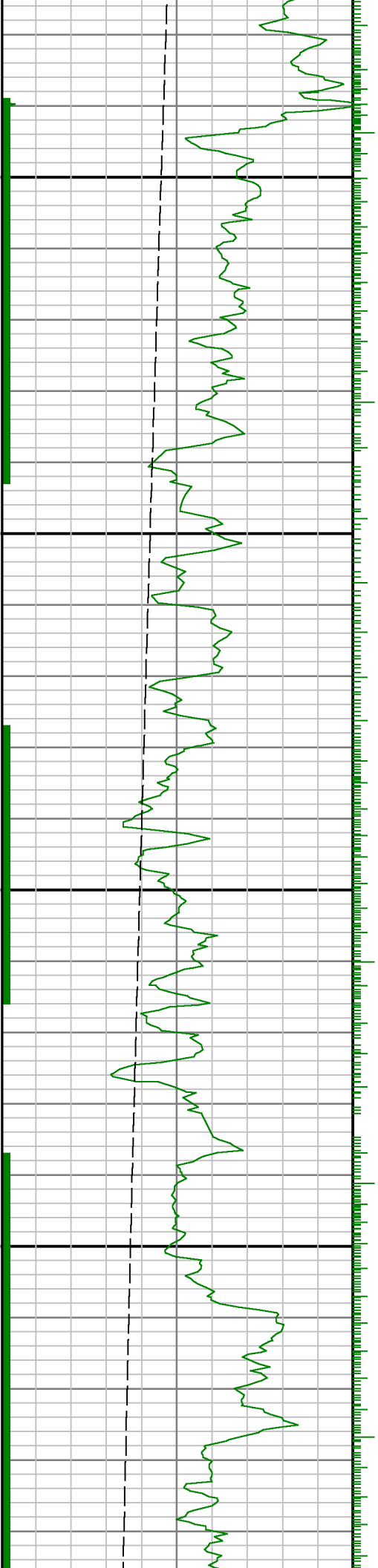
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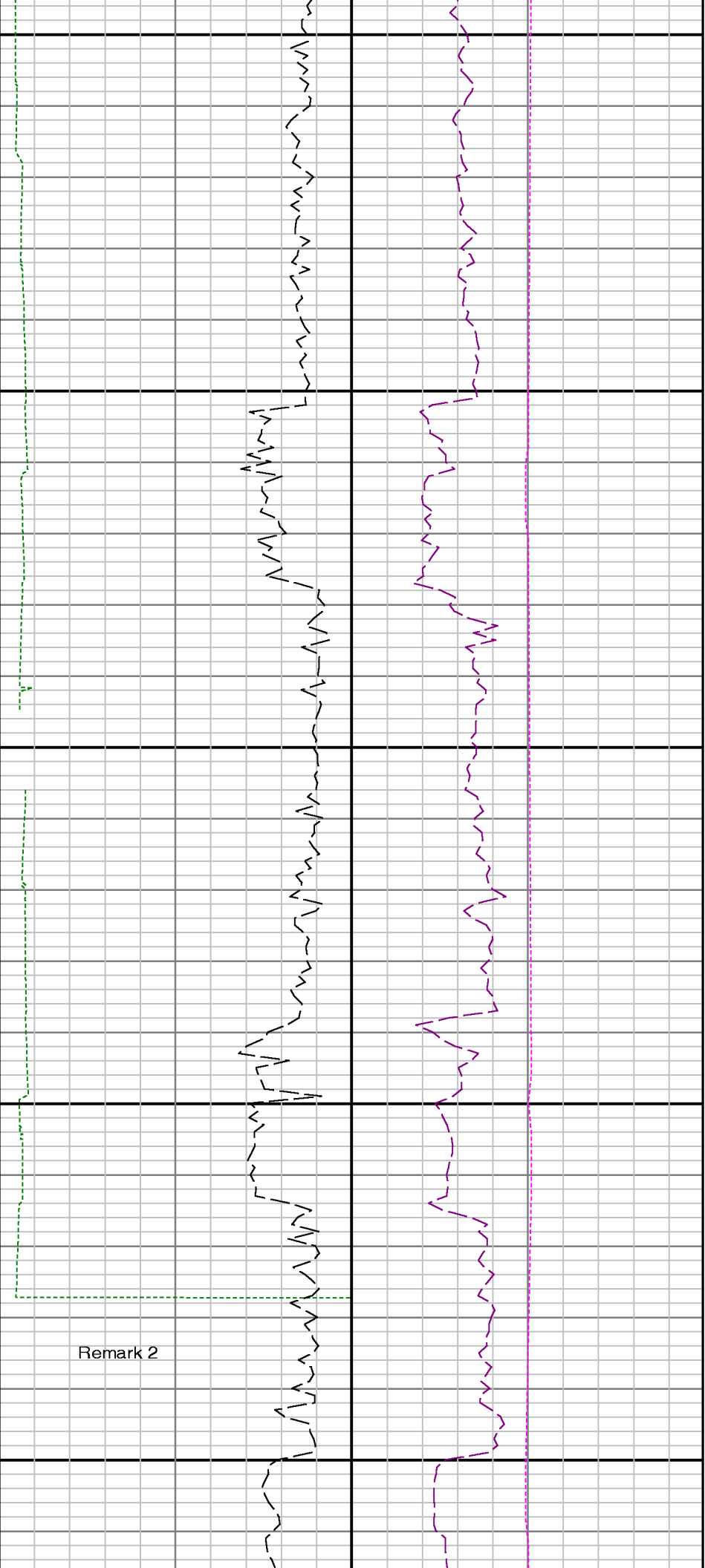




7000

7100

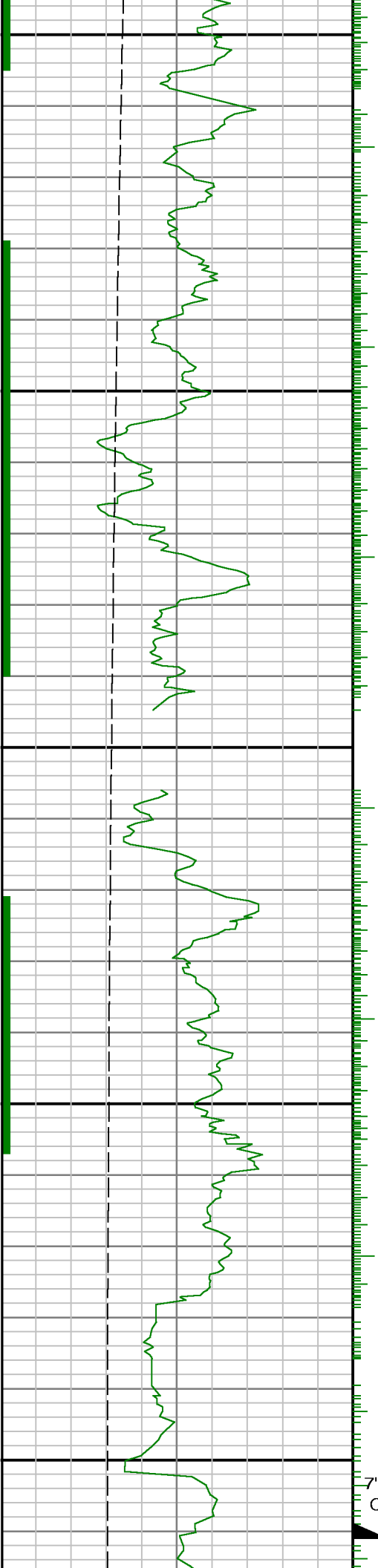




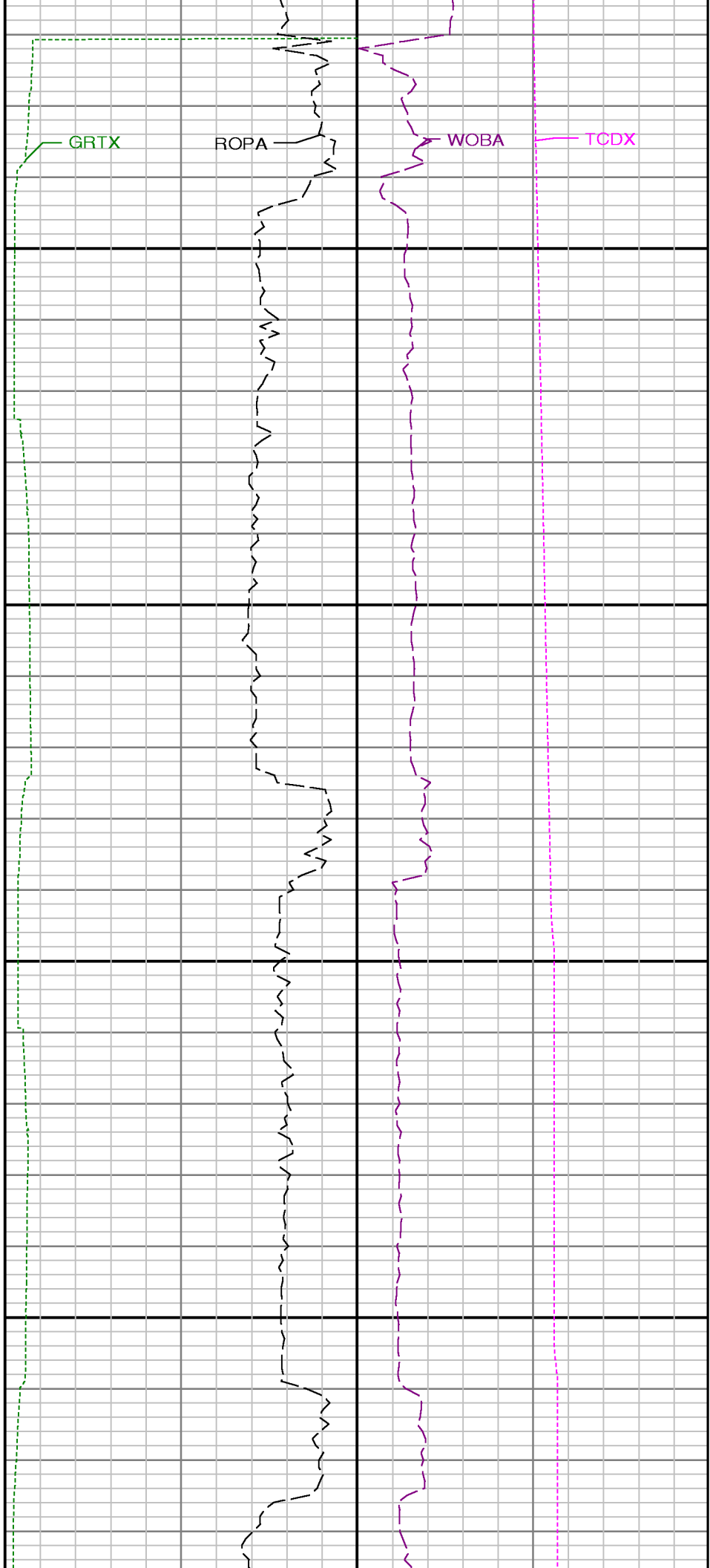
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7300

Casing

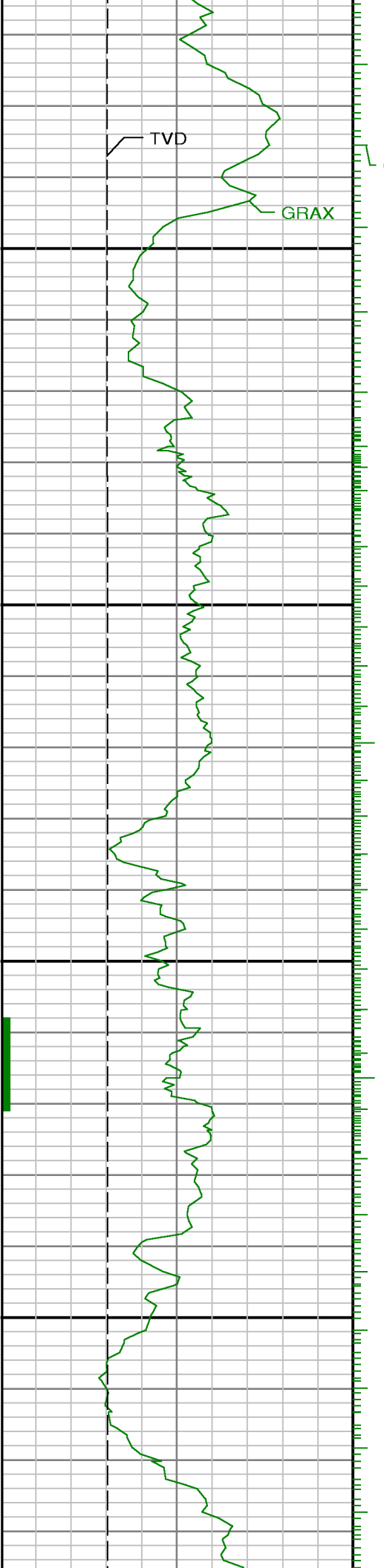


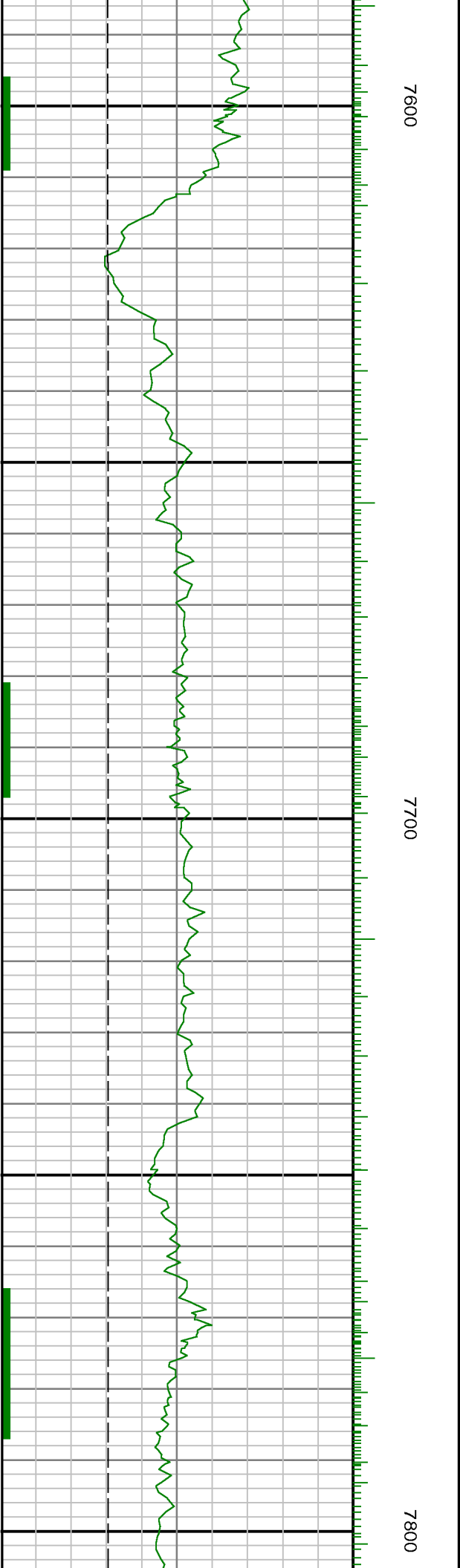
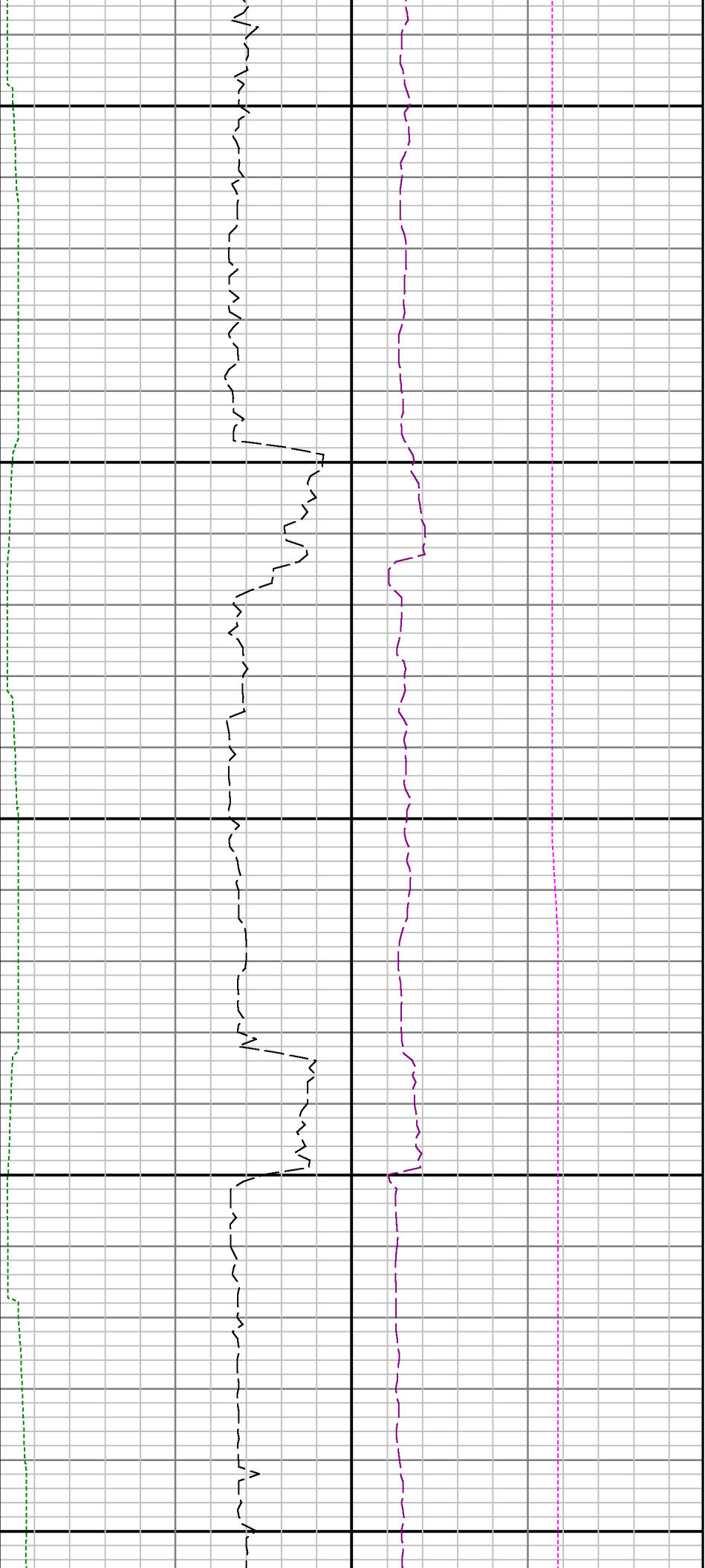
Run 1 < Run 2

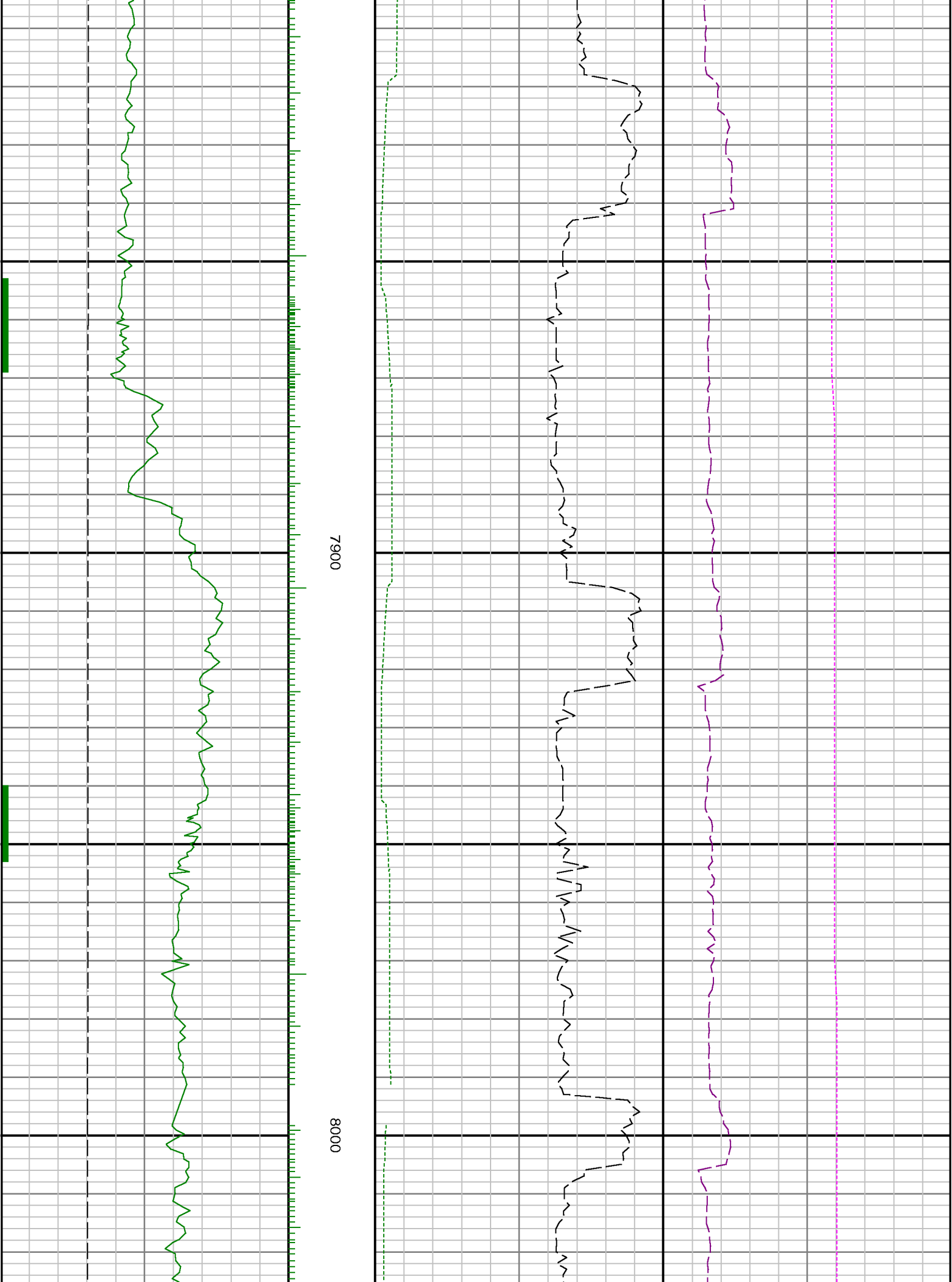


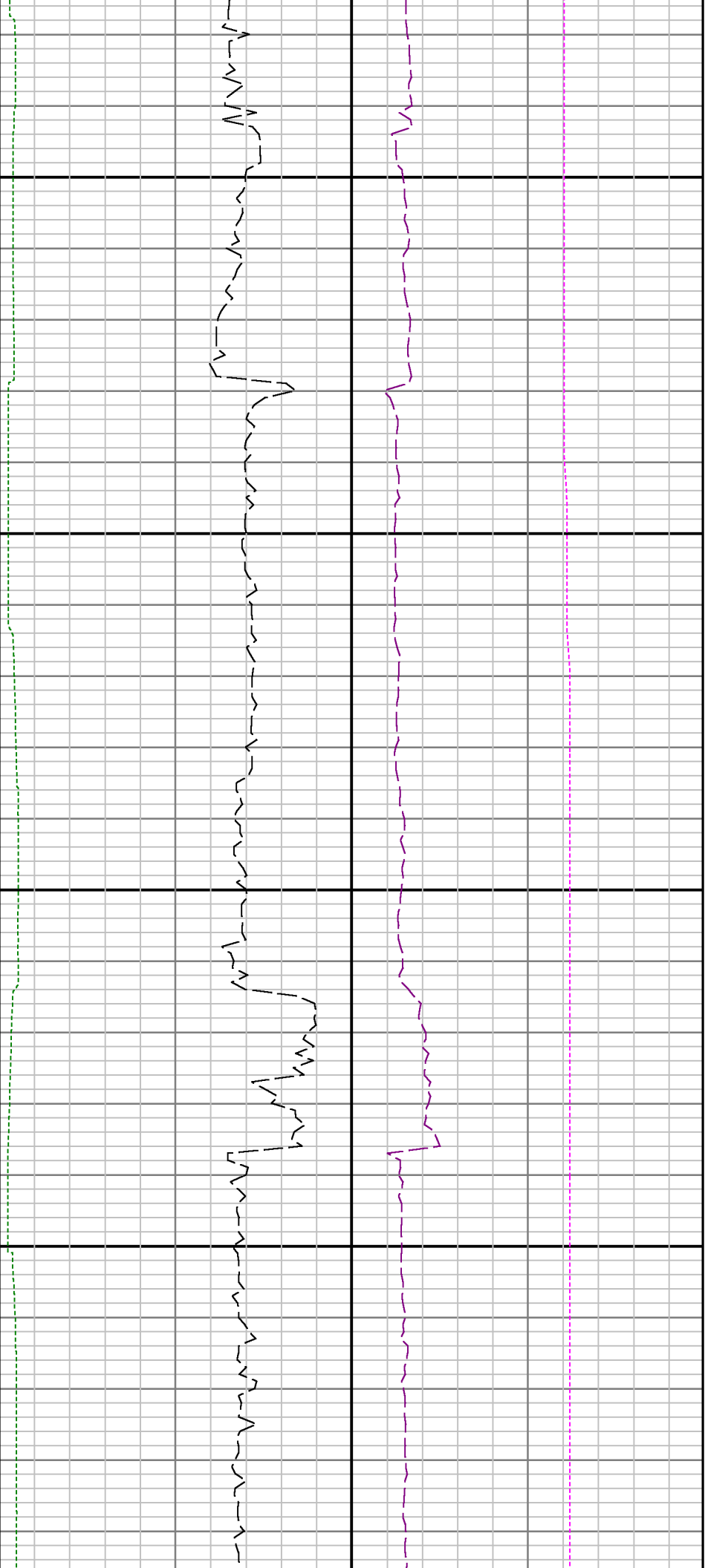
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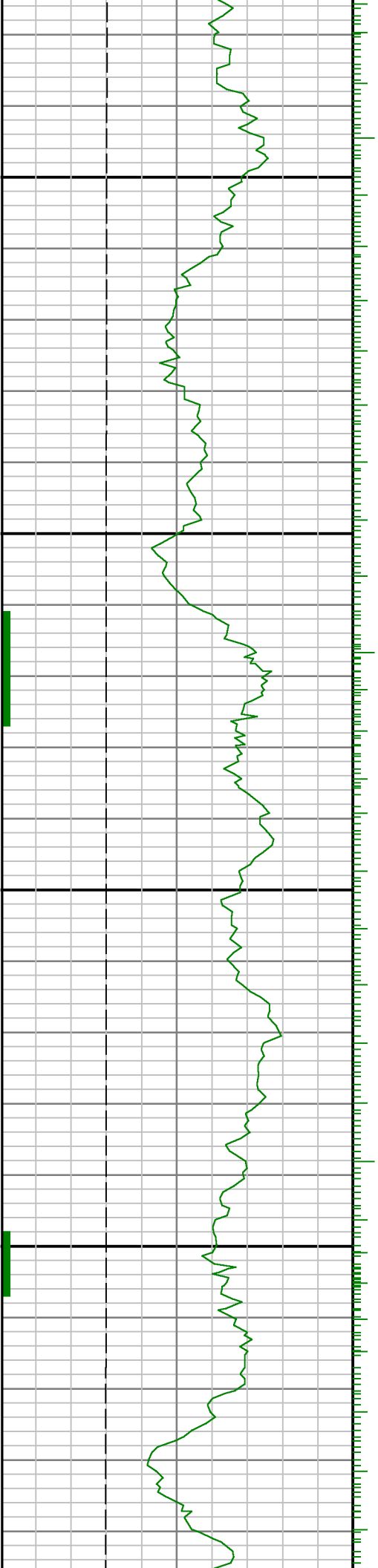


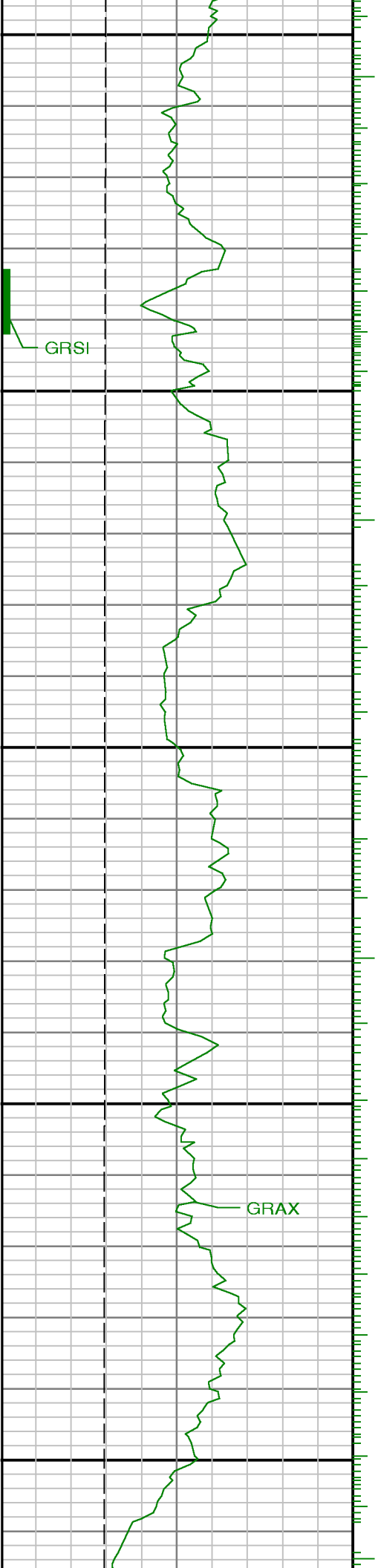




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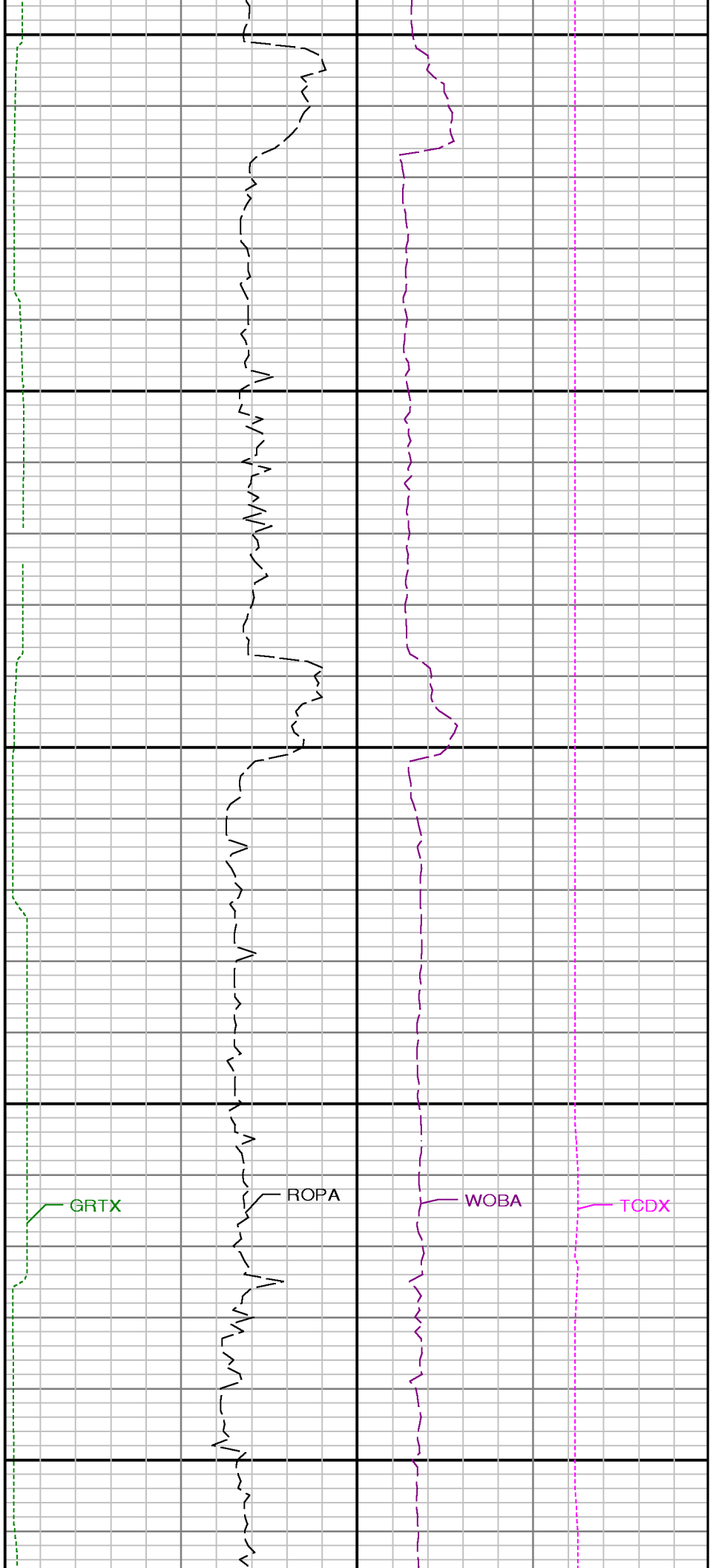
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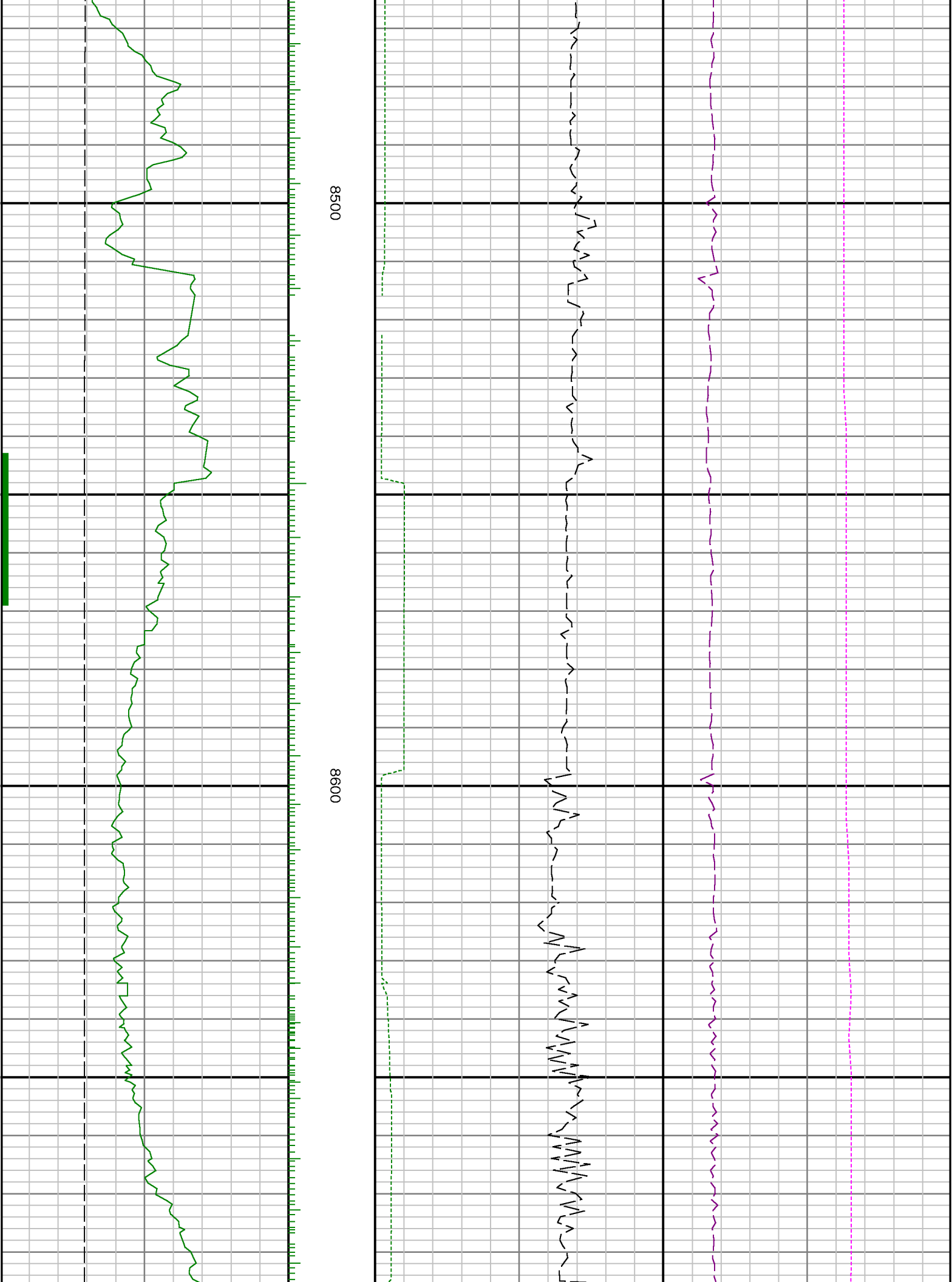


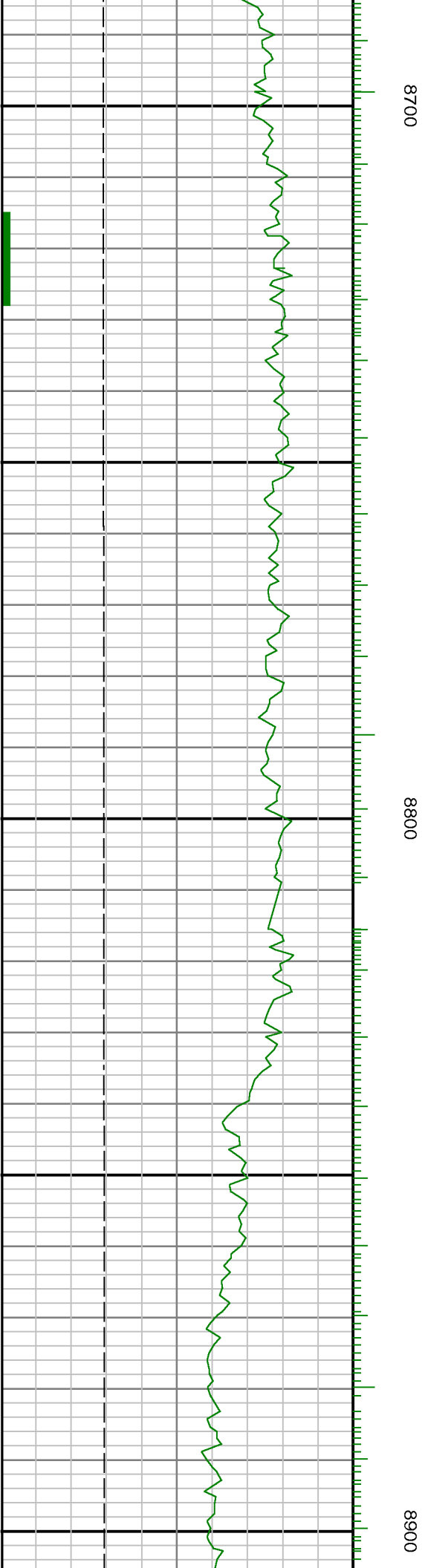
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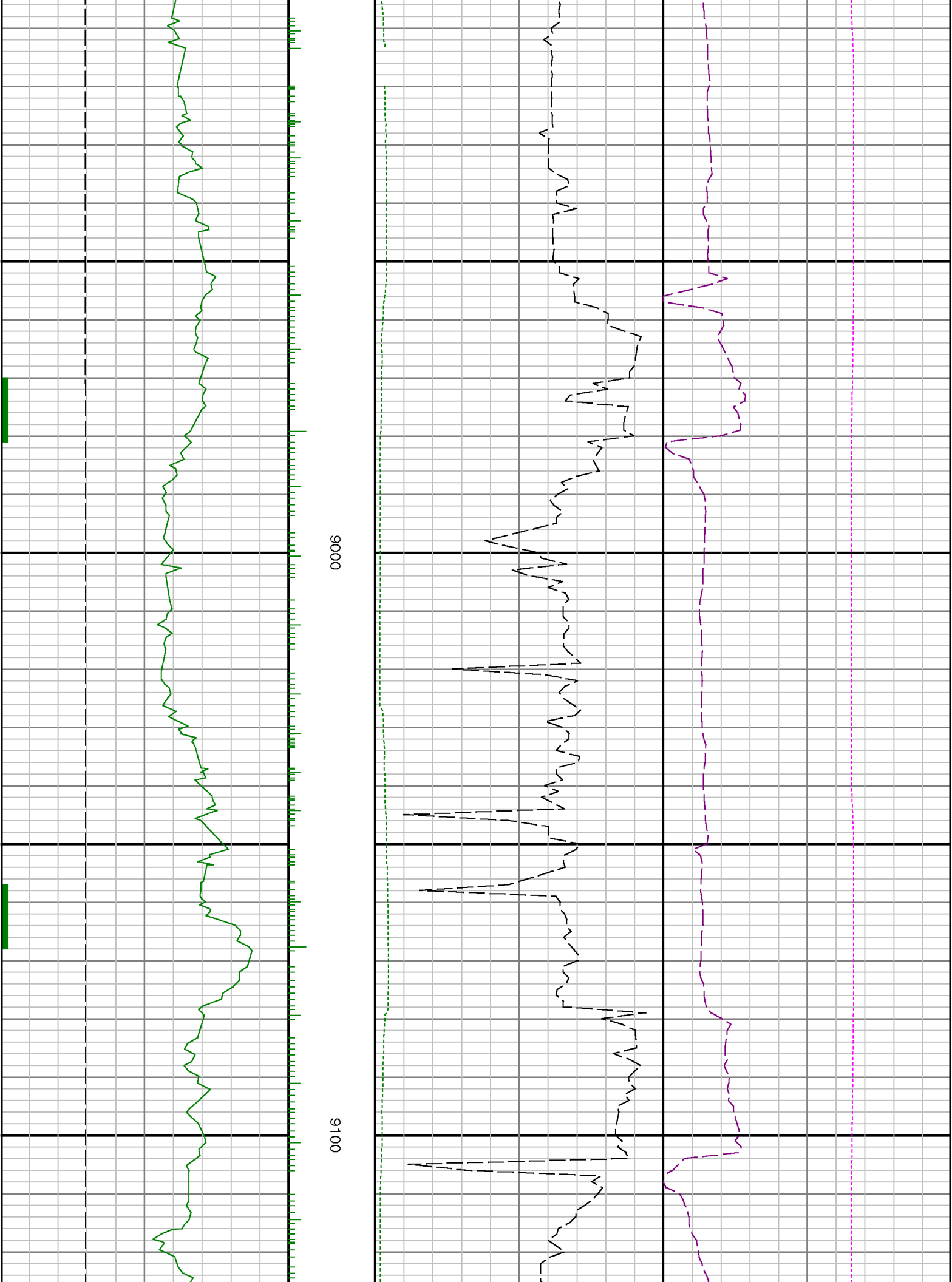
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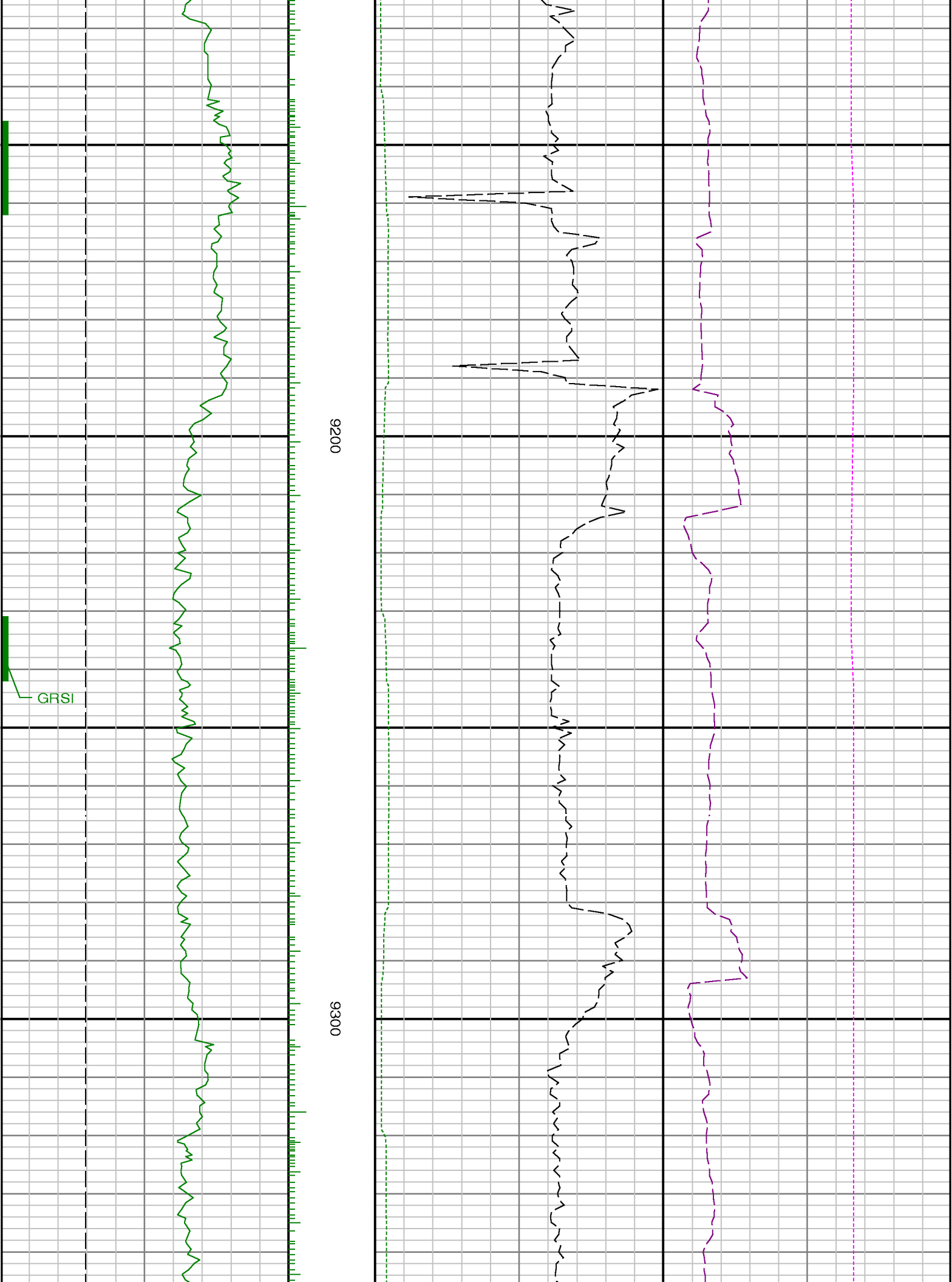


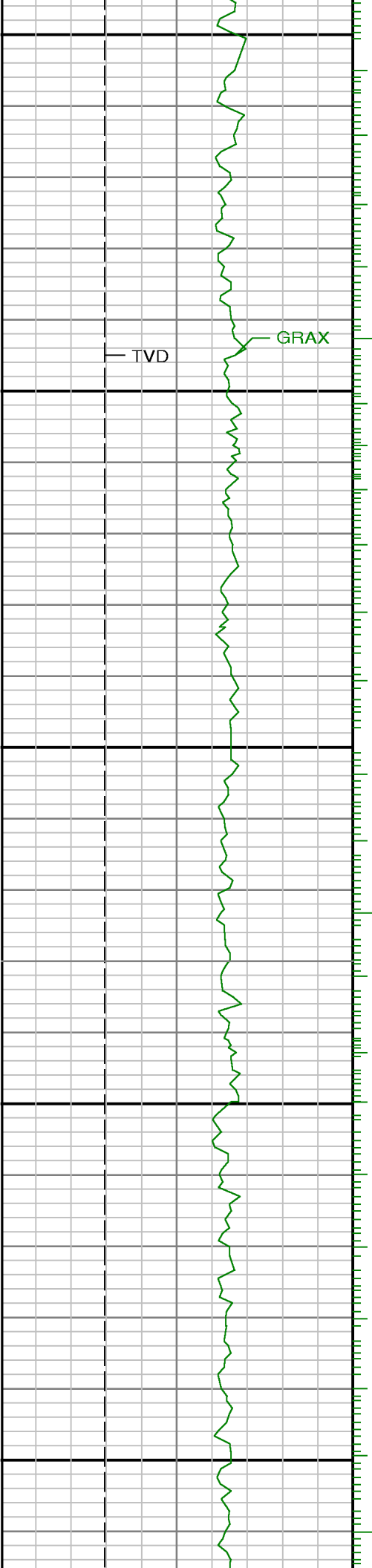
GRTX





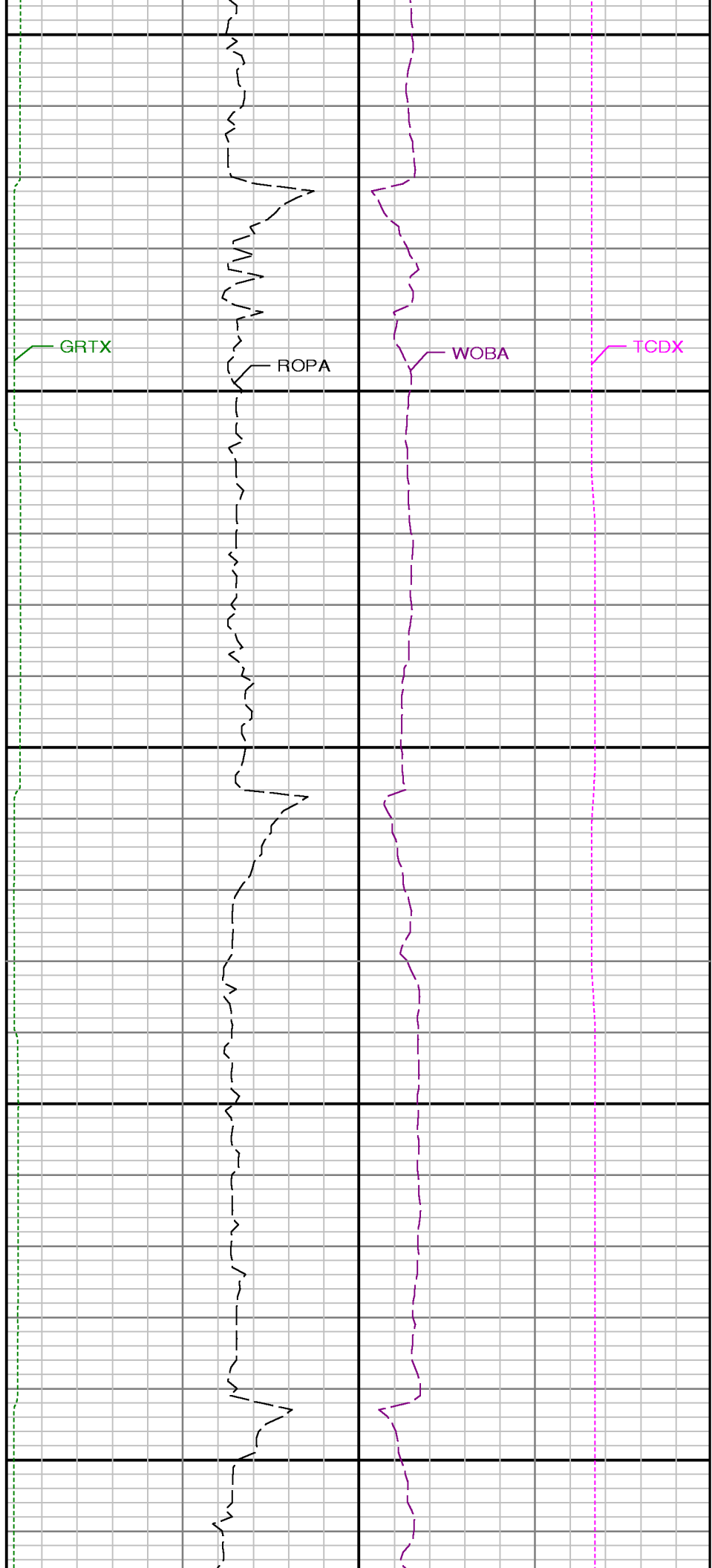


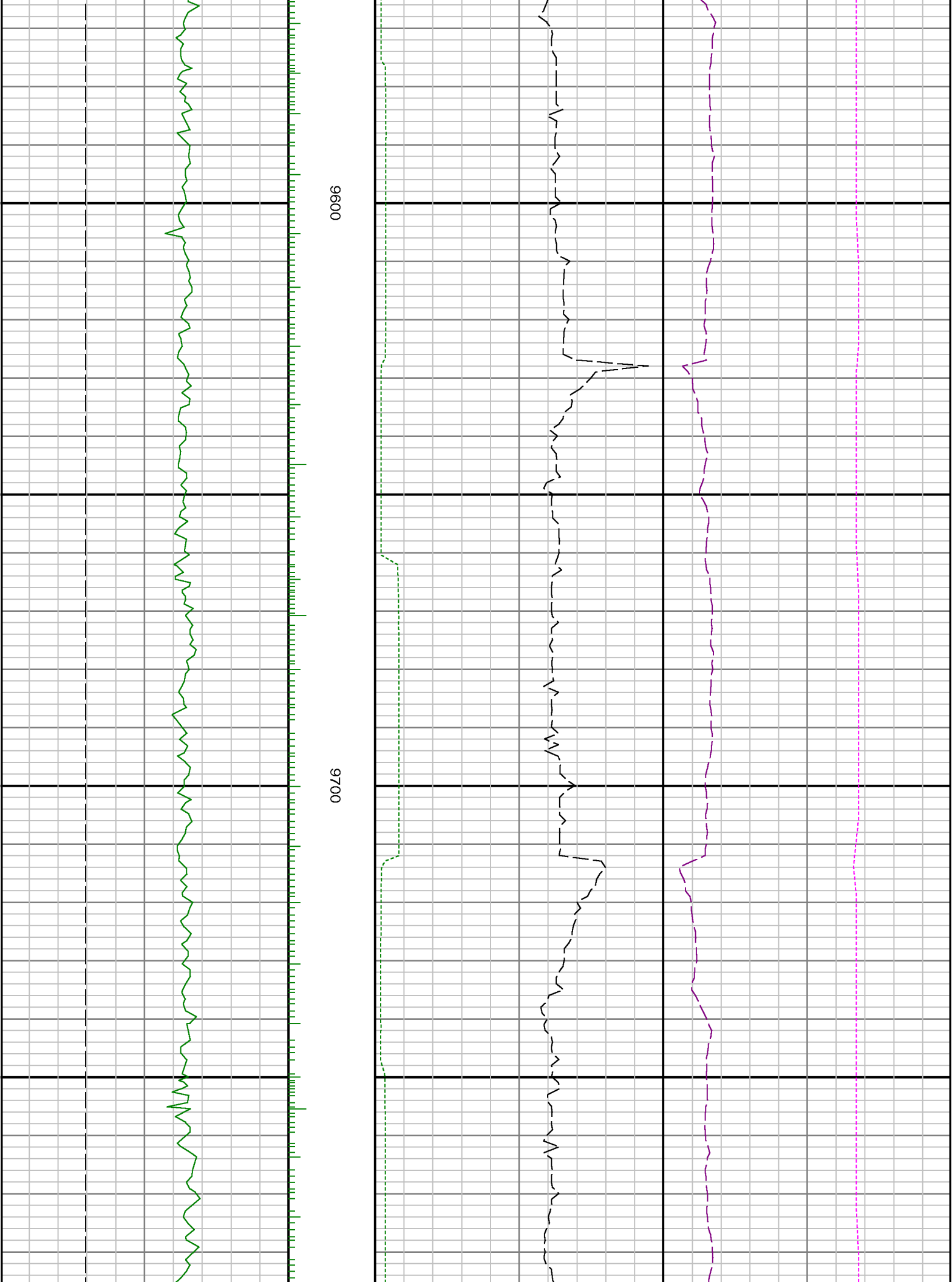


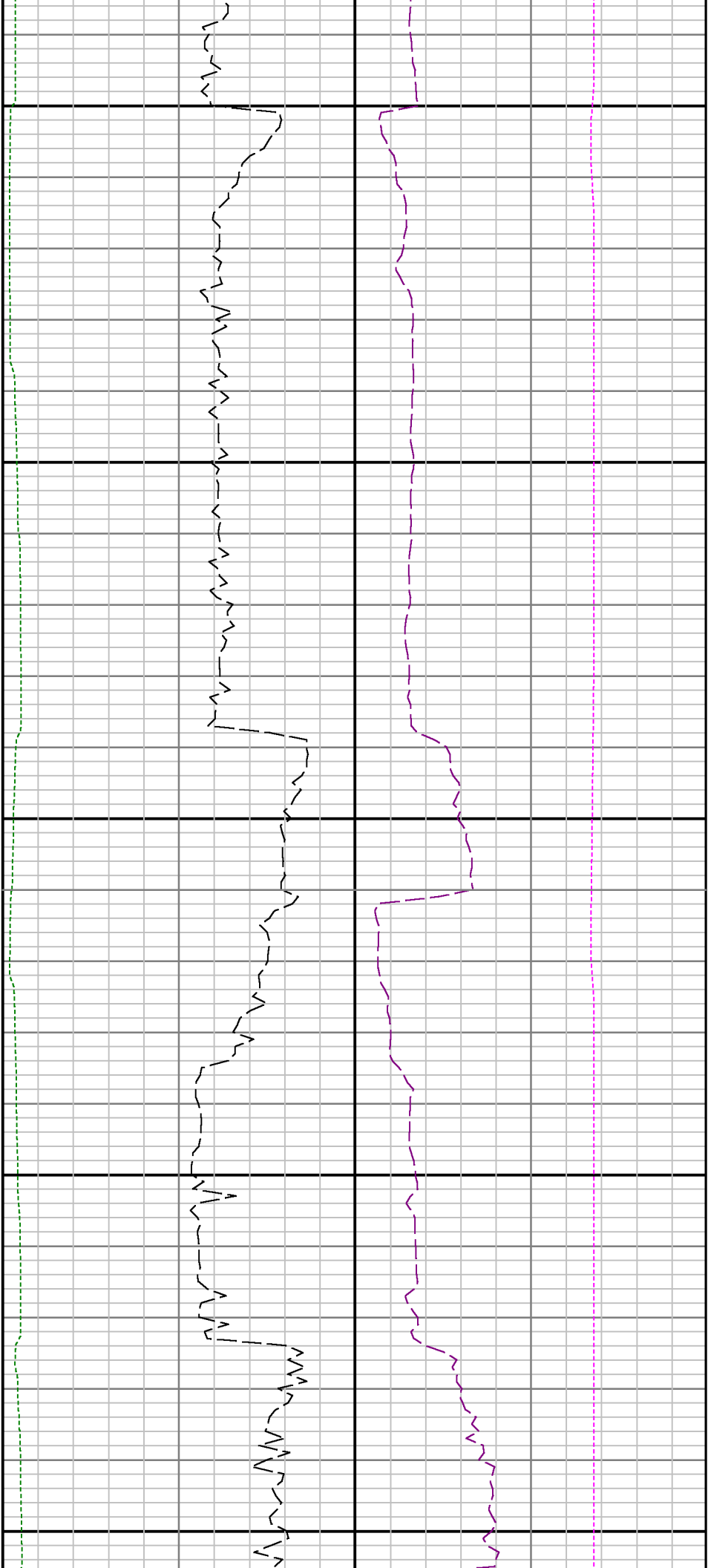


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9500



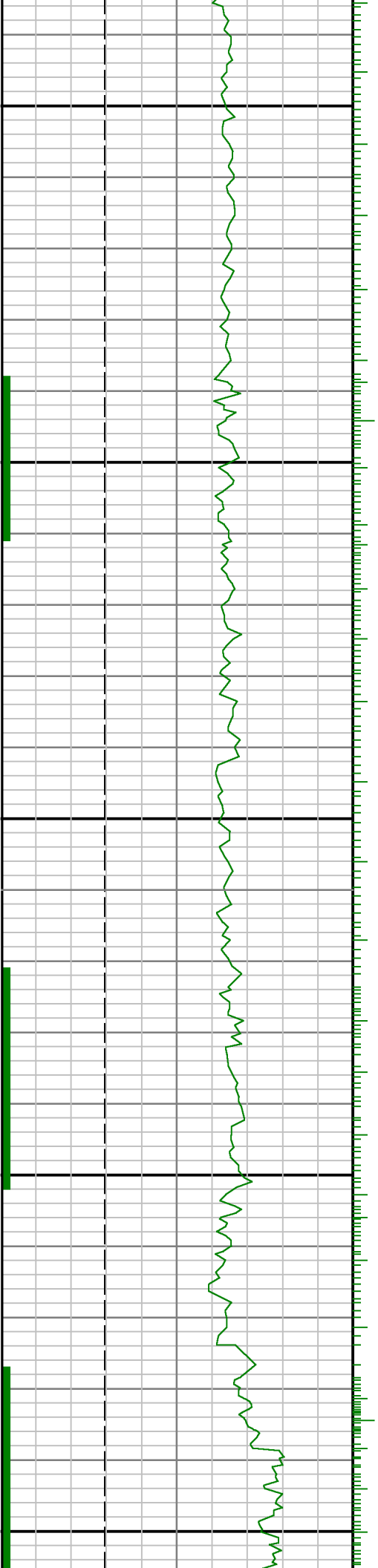


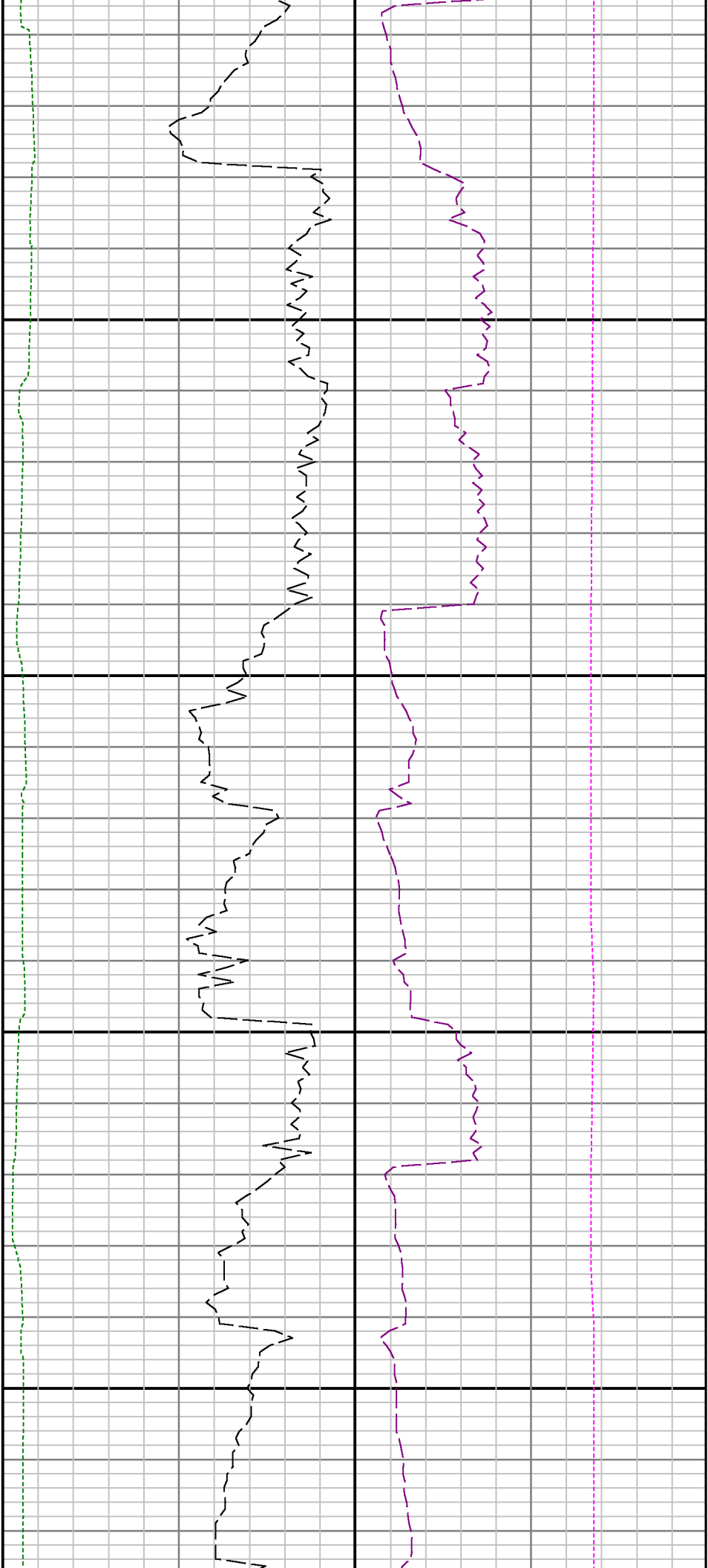


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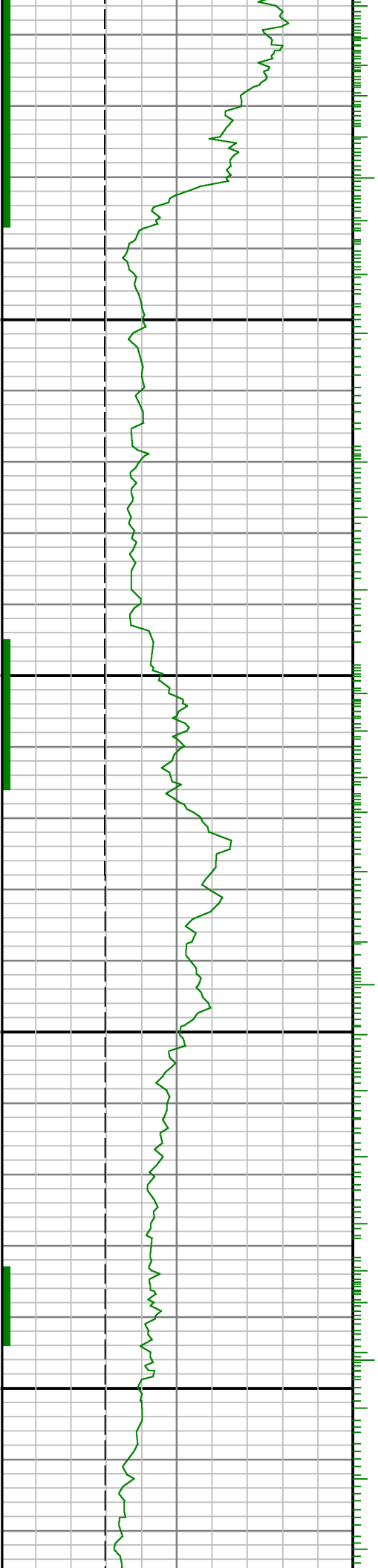
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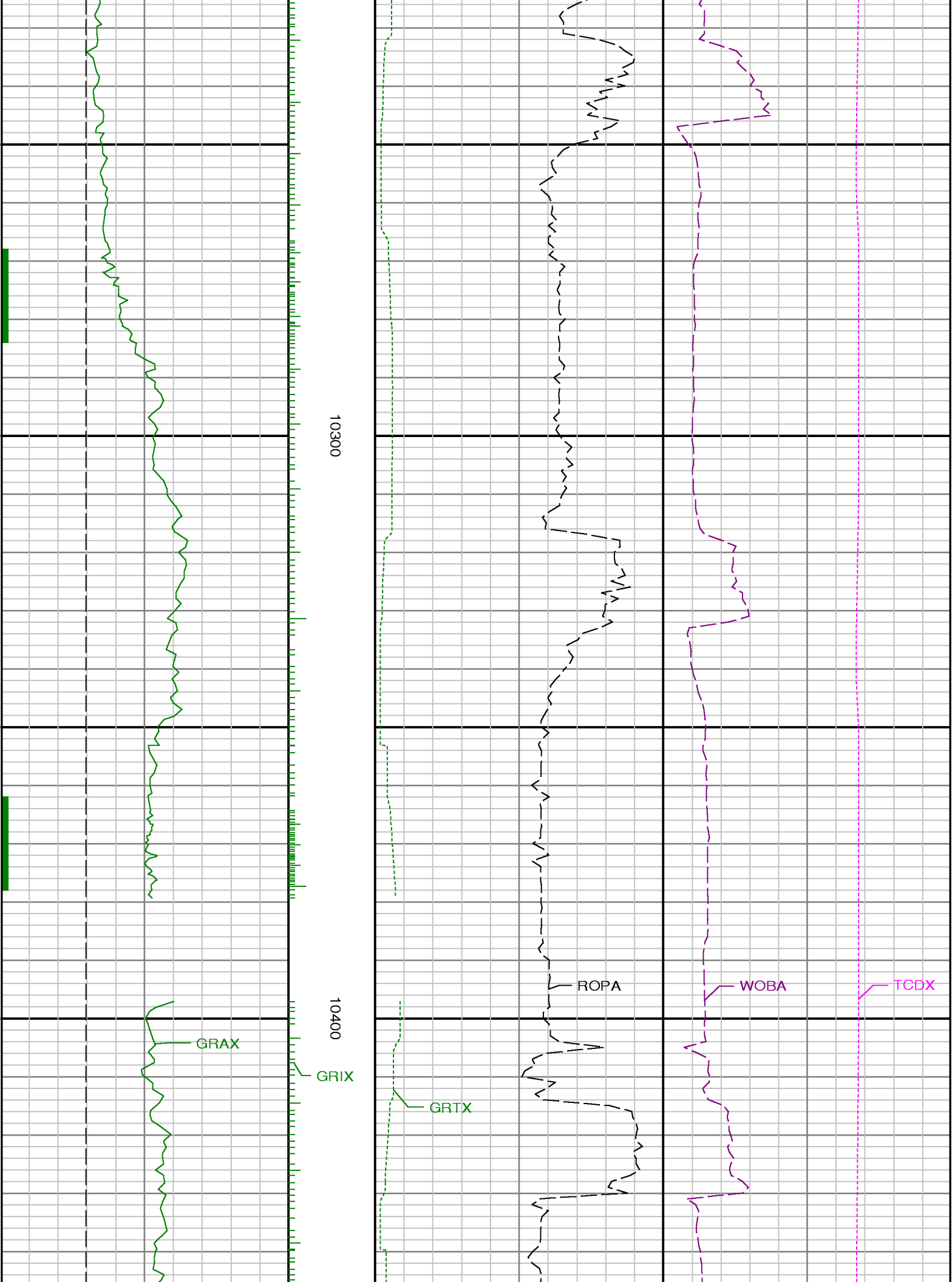




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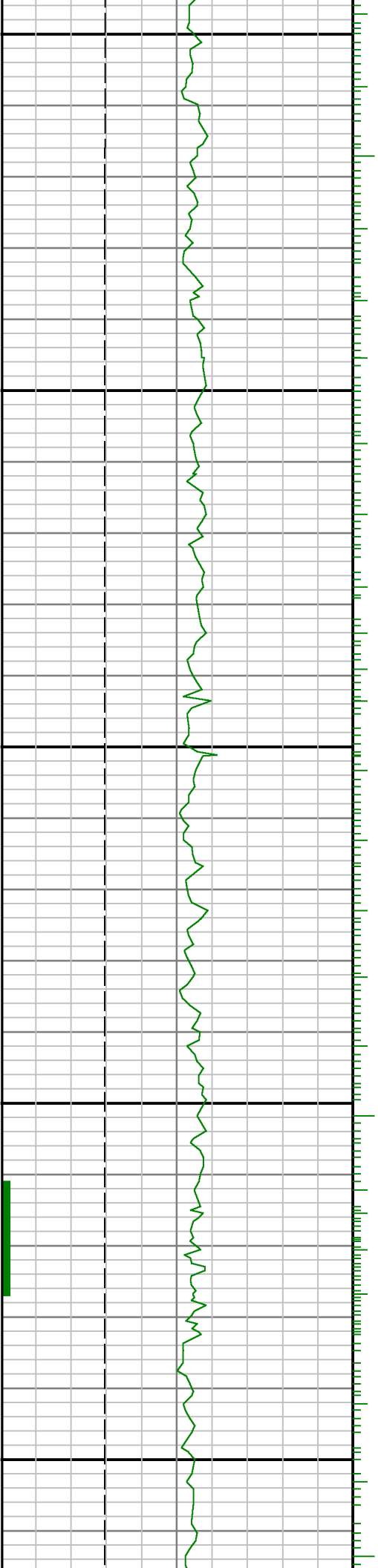


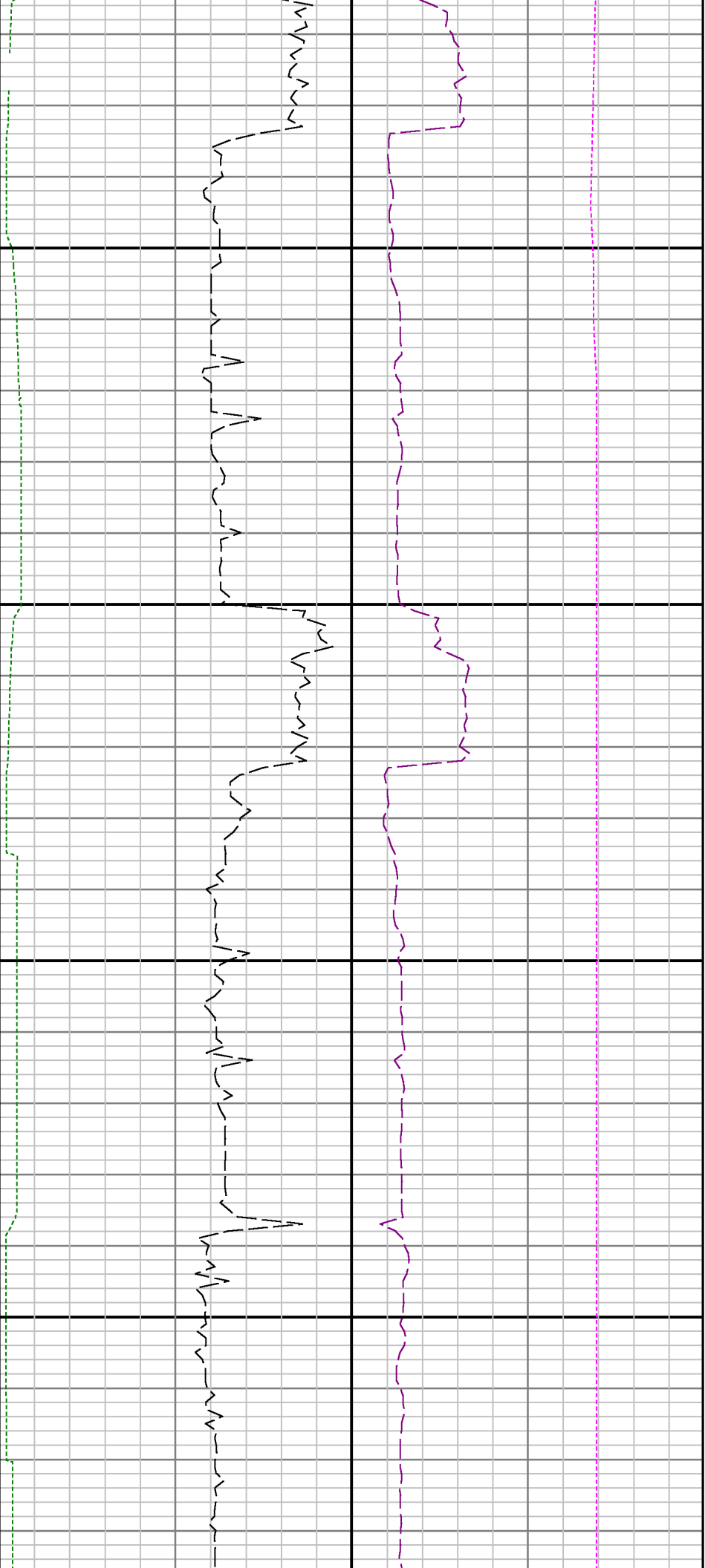




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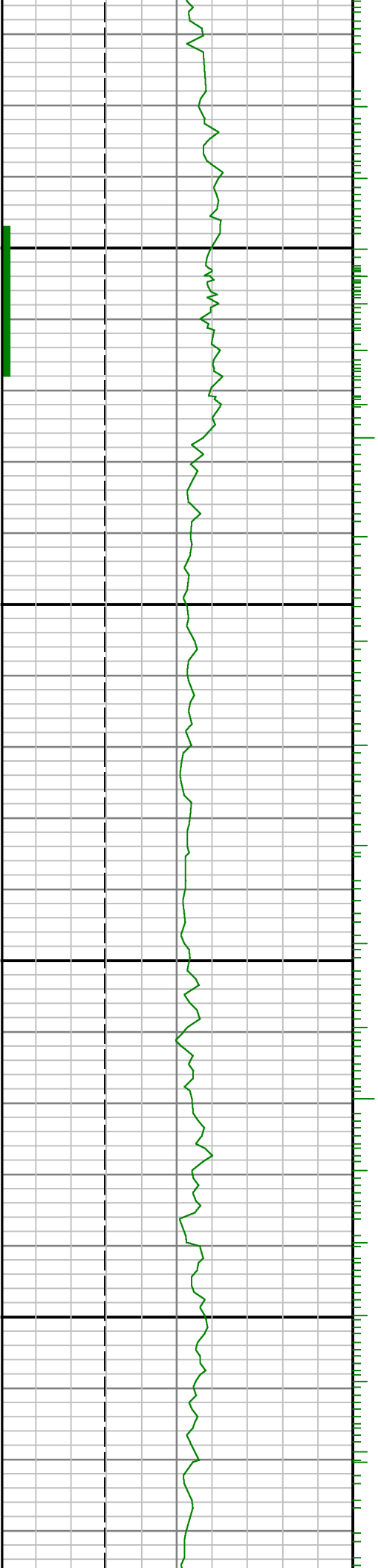
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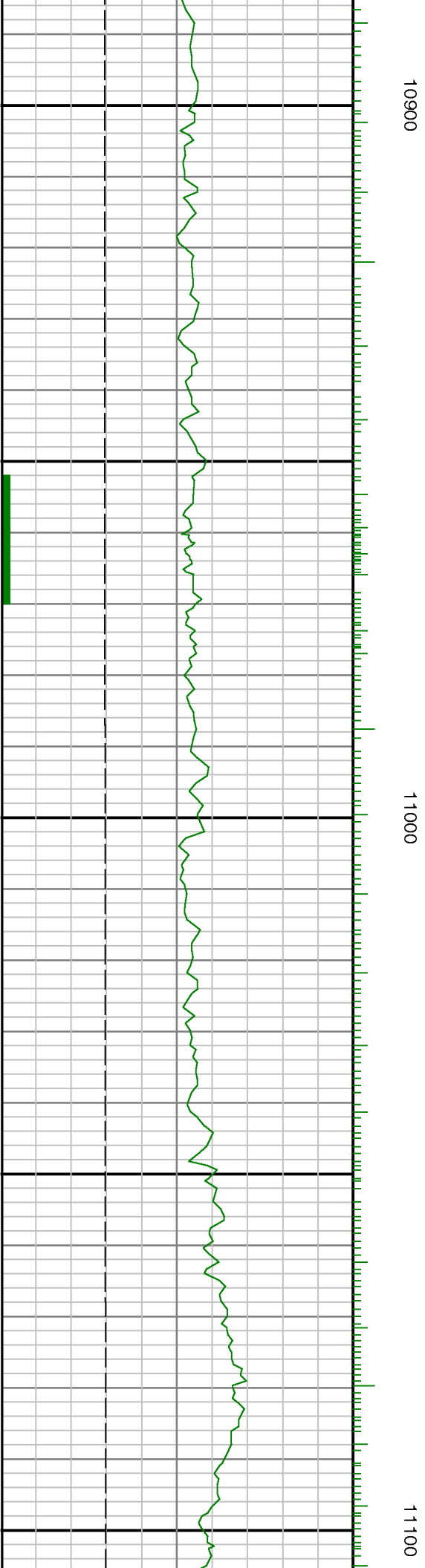


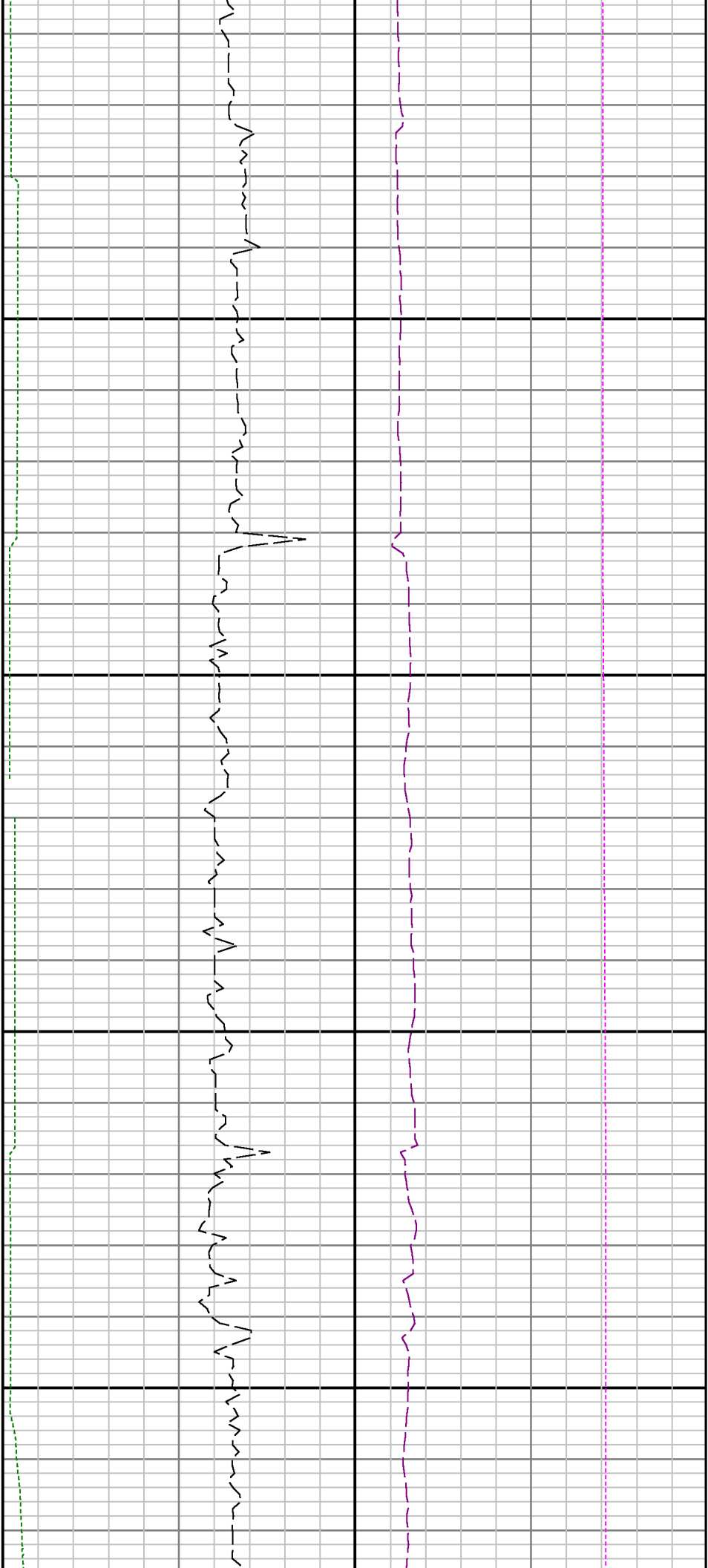


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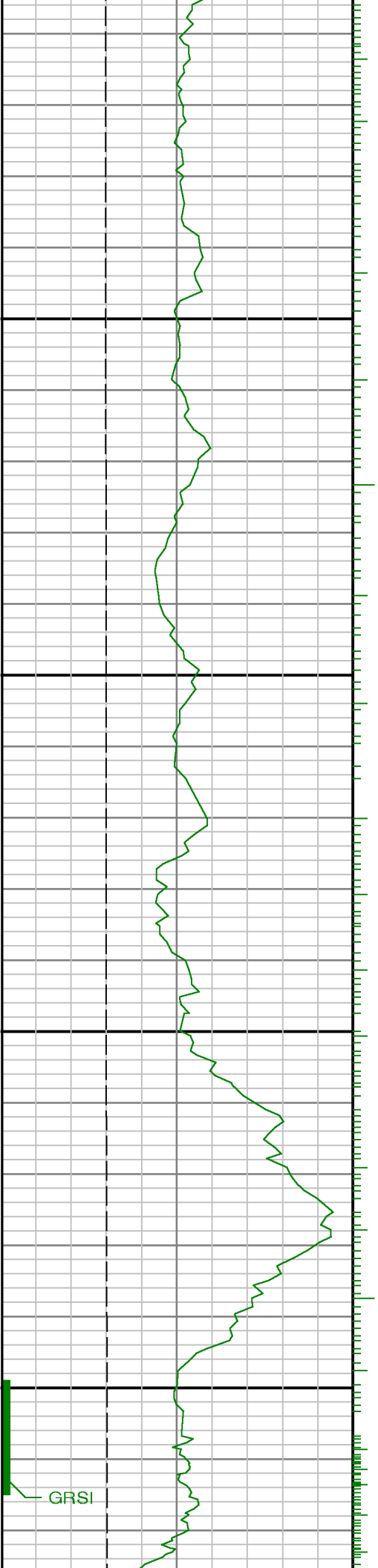




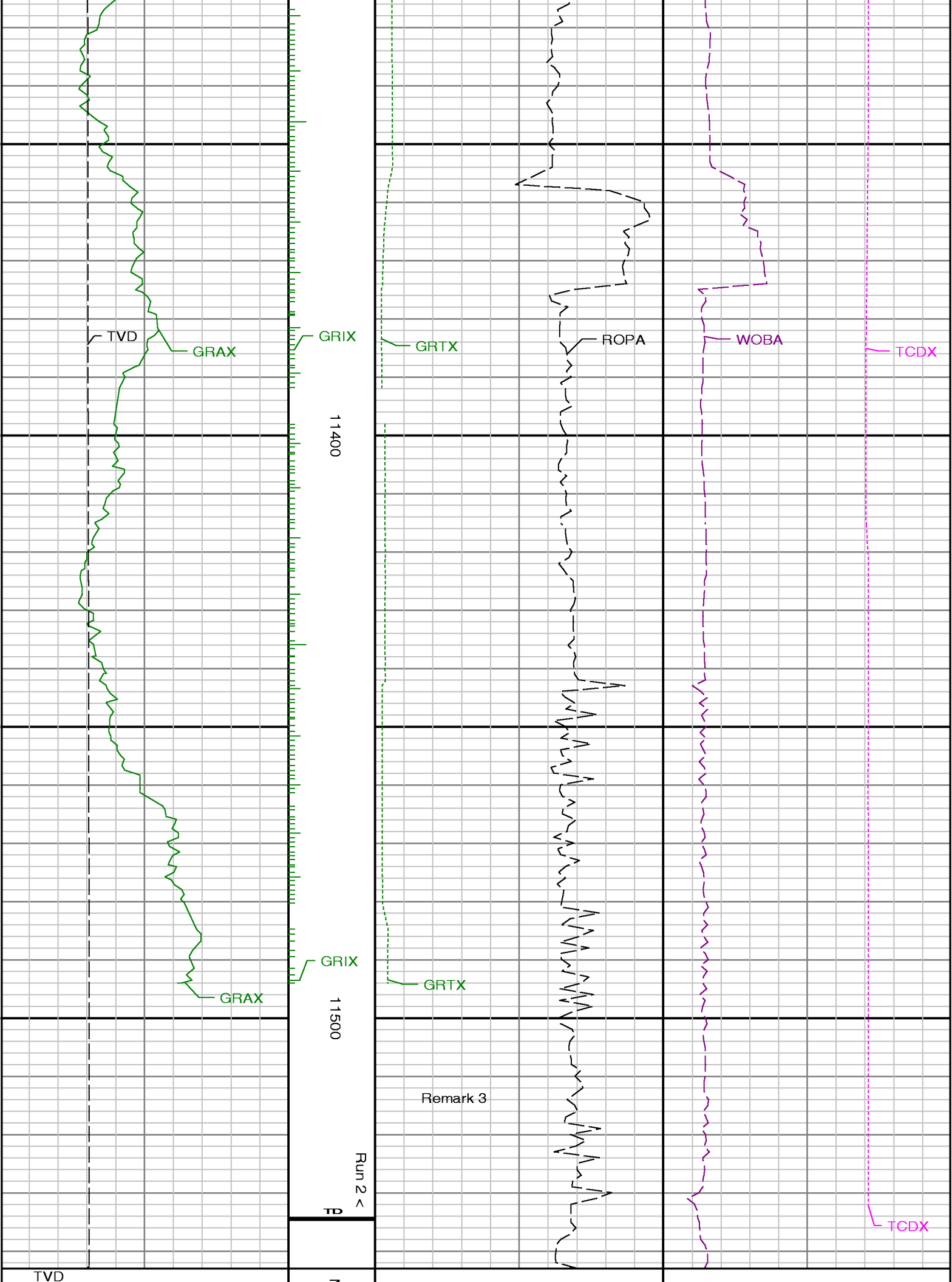


11200

11300



GRSI



Gamma Ray Apparent 0.5 ft Avg GRAX	MD feet 1:240	Gamma Time Since Drilled GRTX	Surface Weight On Bit 1.0 ft Avg WOBA
0200		0600	0100
API		min	klbf
True Vertical Depth TVD		Rate of Penetration 3.0 ft Avg ROPA	Downhole Temperature TCDX
73006300		6500	0320
ft		ft/hr	degF