



Natural Formation Evaluation Gamma Ray Multiple Propagation Resistivity

Company: Anadarko

Well:

ALVIN 2C-29HZ

Field:

WELD COUNTY (UTM/TRUE NORTH)

Region: Continental US Country: United States

Status:

Surface Location:

Final Print

Latitude: 40° 6' 10.946" N

051234220500

SEC: 29 IWP: 2N RNG: 65W

Other Services:

Directional
VSS

Permanent Datum (P.D.):	Ground Level	Elevation:	4905.00 ft.
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Elevations:

Log Measured From:	Rig Floor	16.00 ft.	Above P.D.
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DF: 4925.00 ft.

Depth Reference: Driller's Depth

Driller's Depth

GL:	4905.00 ft.
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Interval Loggec

1891 ft. Date From

12/Dec/2015 Dip Angle

66.75 ° Azi Reference North

Bottom: 12971 ft. Date To:

14/Dec/2015 Total

May to Reference

Spud Date: 12/Dec/2015 Field Strength: 52650.0 nT North Correction:

 8.10°

Borehole Record

Casing Record

Mud Record

Deviation Record

Acquisition System	Software Version
...	...

Advantage	2.20U4	Rig:	Xtreme 24	/ Xtreme Drilling
PATS	6.4.1.34	Job No:	7682512	
		District / Unit:	RMD	/ D & E

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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	1	1	8.500	PDC	2.000	Steerable	1891	12971	1930	13010	12/Dec/2015 08:13	14/Dec/2015 14:06	47.7

Name	Arrive	Depart	Name	Arrive	Depart	Name	Arrive	Depart
	Wellsite	Wellsite		Wellsite	Wellsite		Wellsite	Wellsite
Matthew Leopold	11/Dec/2015	15/Dec/2015	Mauricio Garcia	11/Dec/2015	15/Dec/2015	Adam Harris	11/Dec/2015	15/Dec/2015
Ryan Kielian	11/Dec/2015	15/Dec/2015						

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+ (%)
11/Dec/2015	18:00	1	1930	Oil Based	9.2	15	N/A	8.3	63/28	Active Mud Pit	39000	N/A
12/Dec/2015	06:00	1	1930	Oil Based	9.1	14	N/A	7.1	63/28	Active Mud Pit	46000	N/A
12/Dec/2015	18:00	1	4917	Oil Based	9.2	14	N/A	7.6	62/28.5	Active Mud Pit	49000	N/A
13/Dec/2015	06:00	1	7225	Oil Based	9.4	15	N/A	6.5	63/26.5	Active Mud Pit	51000	N/A
13/Dec/2015	18:00	1	8978	Oil Based	9.7	18	N/A	7.1	61/27	Active Mud Pit	47500	N/A
14/Dec/2015	06:00	1	11514	Oil Based	9.7	18	N/A	6.8	62.5/25	Active Mud Pit	44000	N/A
14/Dec/2015	18:00	1	13010	Oil Based	9.8	17	N/A	7.3	63/24	Active Mud Pit	41500	N/A

Mud Resistivity Record				Surface				Downhole			
Date / Time		LWD Run No.	Measured Depth (ft.)	Surface Temp (deg F)	Rm (ohm.m)	Rmf (ohm.m)	Rmc (ohm.m)	BHCT (deg F)	Rm @ BHCT (ohm.m)	Rmf @ BHCT (ohm.m)	Rmc @ BHCT (ohm.m)
11/Dec/2015	18:00	1	1930	100	100.00	100.00	100.00	100	100.00	100.00	100.00
12/Dec/2015	06:00	1	1930	100	100.00	100.00	100.00	100	100.00	100.00	100.00
12/Dec/2015	18:00	1	4917	100	100.00	100.00	100.00	142	70.66	70.66	70.66
13/Dec/2015	06:00	1	7225	100	100.00	100.00	100.00	172	58.50	58.50	58.50
13/Dec/2015	18:00	1	8978	100	100.00	100.00	100.00	201	49.88	49.88	49.88
14/Dec/2015	06:00	1	11514	100	100.00	100.00	100.00	234	42.99	42.99	42.99
14/Dec/2015	18:00	1	13010	100	100.00	100.00	100.00	239	42.03	42.03	42.03

Mnemonics		
Curve	Description	Units
GRAM	Gamma Ray Apparent, 0.5 ft. Avg	API
GRIM	Gamma Ray Data Density	unitless
RACHM	Resistivity (AT) (LS) 2 MHz Compensated Borehole Corrected	ohm-m
RACLM	Resistivity (AT) (LS) 400 kHz Compensated Borehole Corrected	ohm-m
RPCHM	Resistivity (PD) (LS) 2 MHz Compensated Borehole Corrected	ohm-m
RPCLM	Resistivity (PD) (LS) 400 kHz Compensated Borehole Corrected	ohm-m
CACLM	Conductivity (AT) (LS) 400 kHz Compensated Borehole Corrected	Mmho/m
RPTHM	Resistivity Time Since Drilled	min
RPSIHM	Resistivity Slide Indicator	unitless
ROPA	Rate of Penetration, 3.0 ft Avg	ft/hr

Equipment and Service Data						
LWD Run No.	Tool	Serial Number	Measurement	Bit Offset (ft)	Max O.D. (in.)	Min I.D. (in.)
1	CS	10184803	-	71.11	7.000	2.250
1	BCPM	11702109	Telemetry	60.87	7.000	2.250
1	FLEX SUB	13598919	-	53.71	6.000	2.250
1	OTK	12563098	Directional	48.98	7.000	2.250

1	OTK	12563098	Resistivity	43.17	7.000	2.250
1	OTK	12563098	Gamma	39.14	7.000	2.250
1	OTK	12563098	Pressure	38.25	7.000	2.250
1	CS	13270819	-	34.90	7.000	2.250

Service and Tool Mnemonics

Mnemonic	Name	Description
BCPM	BCPM	Mud pulse telemetry and downhole tool power module
DIR	Directional	Wellbore directional survey
FLEX SUB	Flex Sub	Flexible sub connection
OTK	OnTrak	Propagation resistivity, propagation conductivity, gamma ray, directional, annular pressure, system memory and VSS
SRIG	Inclination and Gamma	Probe based gamma ray and inclination module
CS	Closure Sub	BHA power ring isolator allowing insertion of inert sub into electrically powered BHA

Comments

<p>1.) Depth measurements were obtained from a depth control system not supplied or operated by Baker Hughes INTEQ. Due to the lack of control by Baker Hughes INTEQ logging engineers, depth calibrations and measurements could not be independently verified.</p> <p>2.) A sliding indicator is shown to the right edge of track 2 as a heavy line. The indicator has been depth-shifted to the Resistivity sensor offset to correspond with Resistivity data aquired while sliding.</p> <p>3.) Baker Hughes INTEQ run 1 utilized a 6.75 inch OnTrak (Multiple Propagation Resistivity, Gamma Ray, and Directional) tool behind an 8.50 inch bit and steerable assembly from 1930 to 13010 feet MD (1889.53 to 7268.23 feet TVD).</p>
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Remarks

Number	Measured Depth (ft)	Hole Section (in.)	LWD Run No.	Remark
1	1832	8.500	1	The logging data appears erratic in the interval from 1832 to 1920 feet MD (1796.58 to 1880.05 feet TVD) due to logging while in casing.
2	1920	8.500	1	9.625 inch casing depth driller: 1920 feet MD (18803.05 feet TVD).
3	5200	8.500	1	The interval from 5200 to 5274 feet MD (4947.04 to 5020.31 feet TVD) was logged intermittently due to measuring while drilling complications caused by drilling with low flow rate due to issues with drilling equipment.
4	8670	8.500	1	No data was logged in the interval from 8670 to 8684 feet MD (7263.47 to 7263.50 feet TVD) due to surface software complication.
5	12266	8.500	1	No data was logged in the interval from 12266 to 12282 feet MD (7266.65 to 7266.49 feet TVD) due to surface software complication.
6	12971	8.500	1	The interval from 12971 to 13010 feet MD (1852.55 to 7268.23 feet TVD) was not logged due to sensor to bit offset at well TD.

<div><div></div><div>Company : Anadarko Well : ALVIN 2C-29HZ Interval : 1825.00 - 13025.00 feet Created : 15/Dec/2015 2:33:21 AM</div></div>			
Gamma Ray Apparent 0.5 ft Avg GRAM	MD feet	Res PD LS 2MHz Corr RPCHM	Con AT LS 400kHz Corr CACLM
0150		0.220	10000
		ohm.m	mmho/m

API

Rate of Penetration 3.0 ft Avg ROPA

1000

0

ft/hr

1:240

0.2

Res PD LS 400kHz Corr RPCLM

20

ohm.m

0.2

Res AT LS 2MHz Corr RACHM

20

ohm.m

0.2

Res AT LS 400kHz Corr RACLM

20

ohm.m

Time Since Drilled RPTHM

0

min

600

See Remark 1

> Run 1

1900

See Remark 2

9-5/8" Casing

RPSIHM

ROPA

GRAM

GRIM

2000

RPCHM

RPCLM

RACHM

RACLM

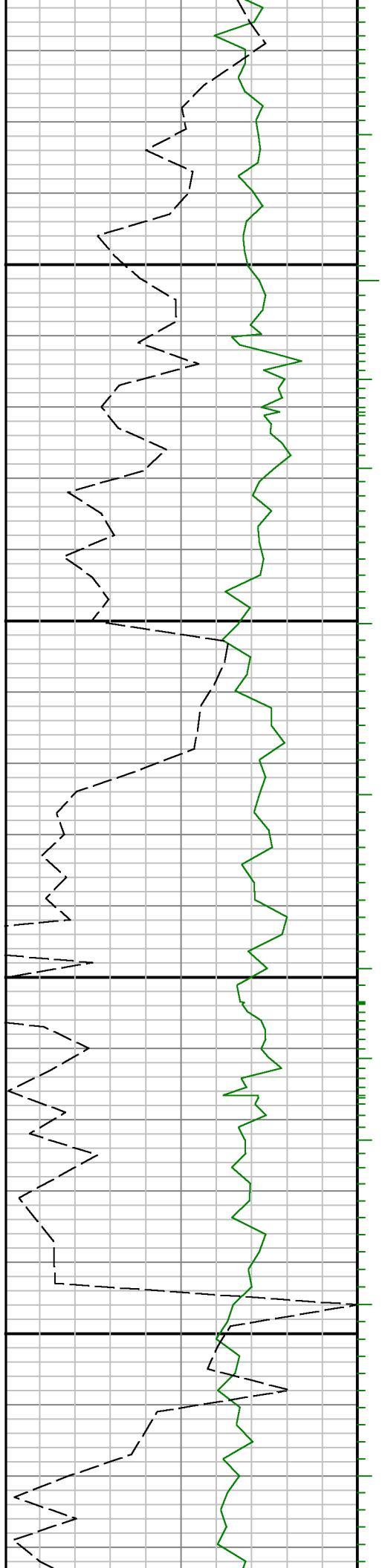
RPTHM

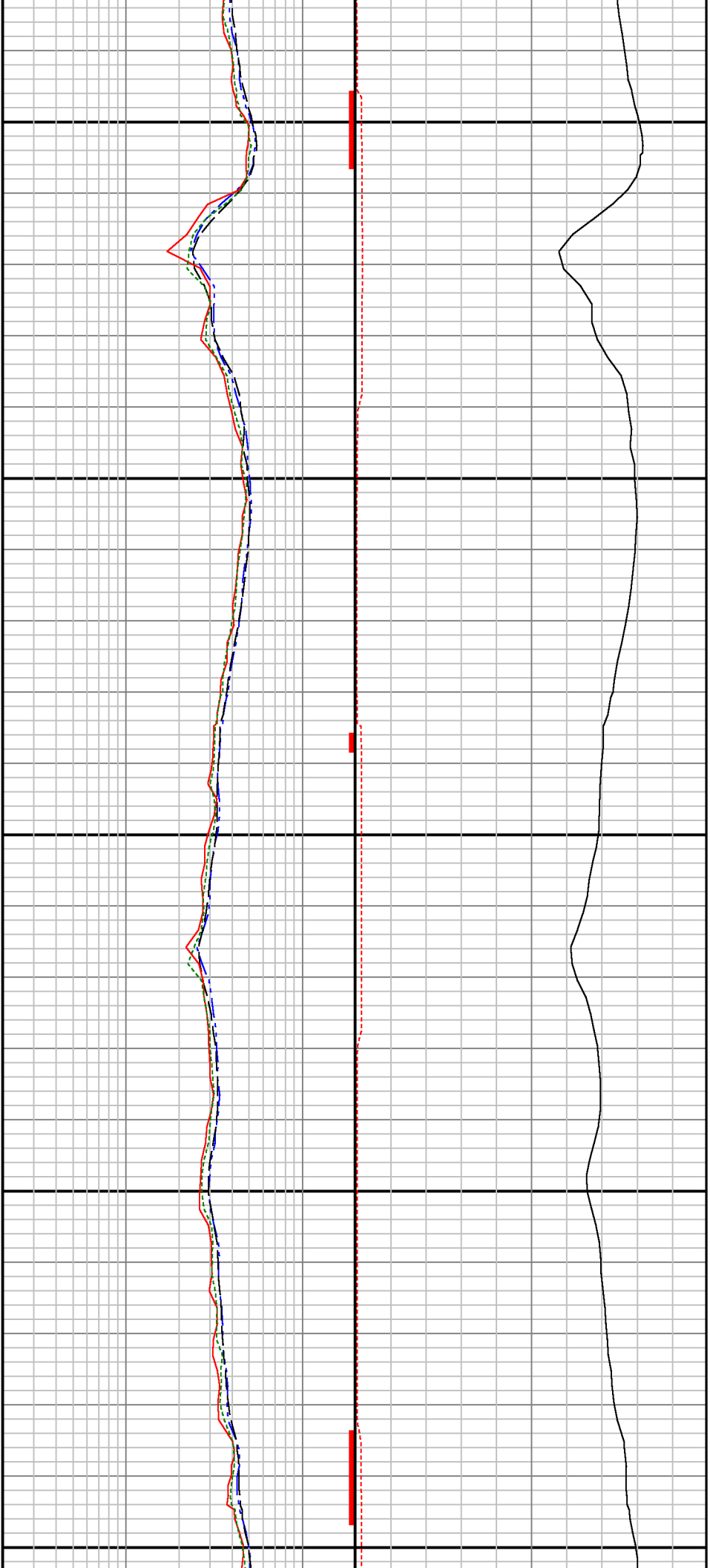
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2100

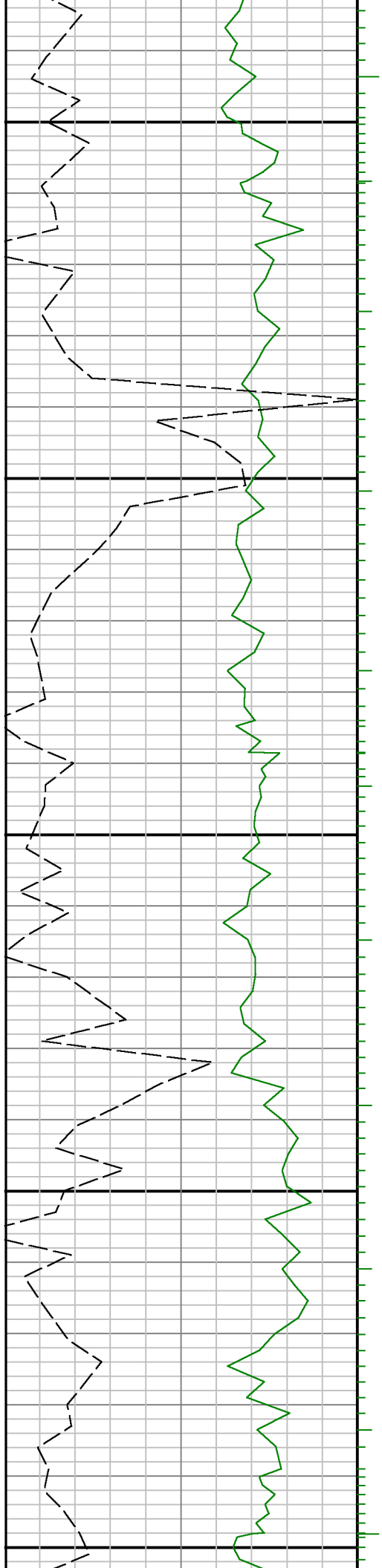
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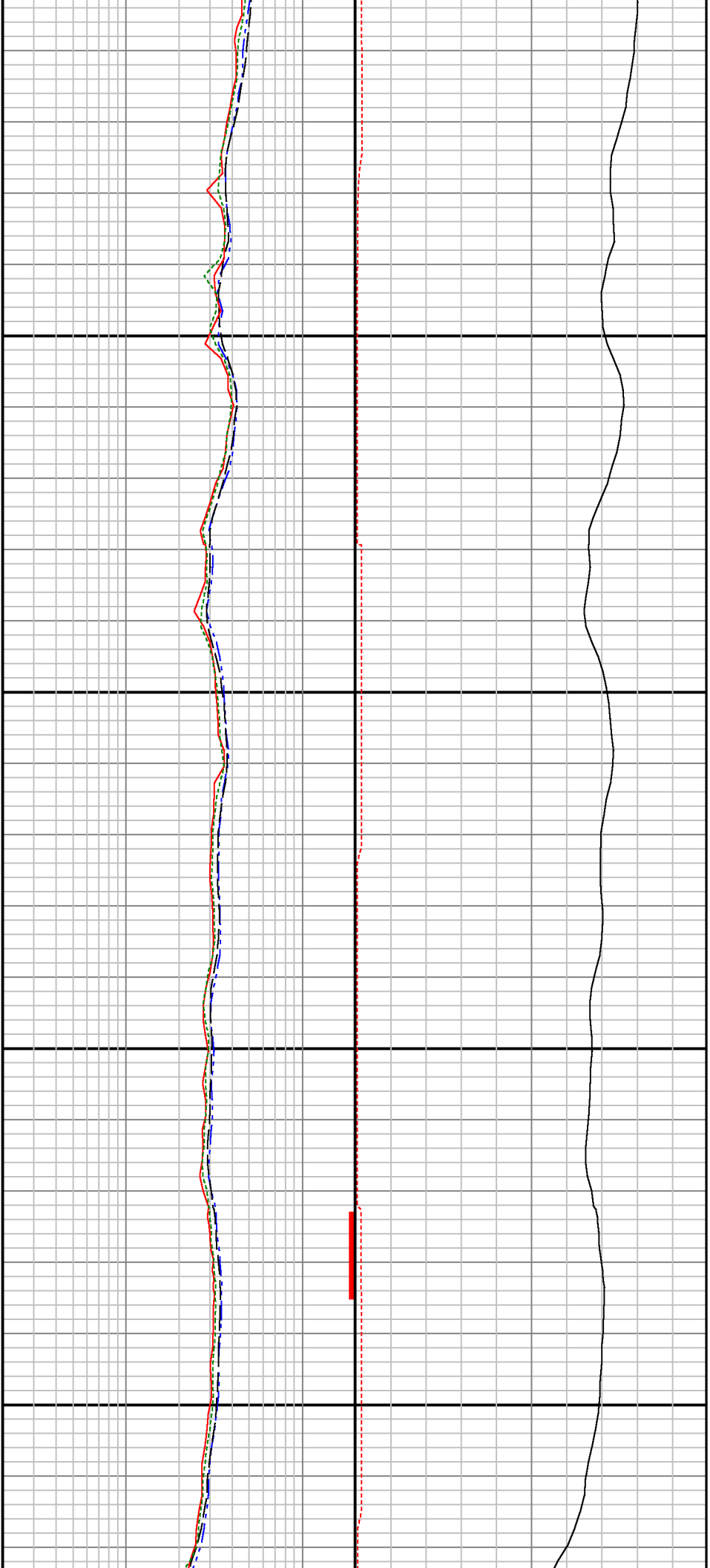




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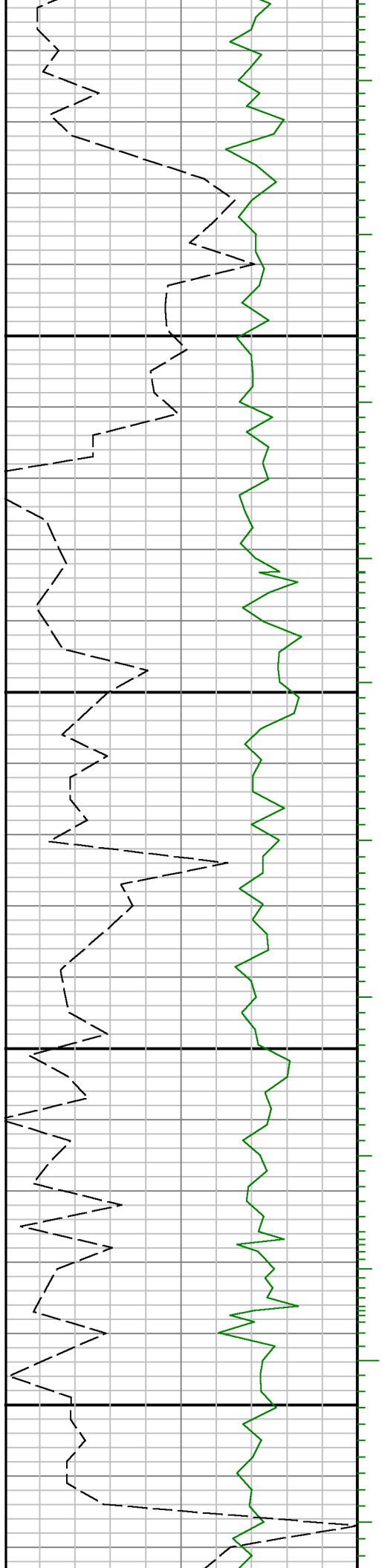
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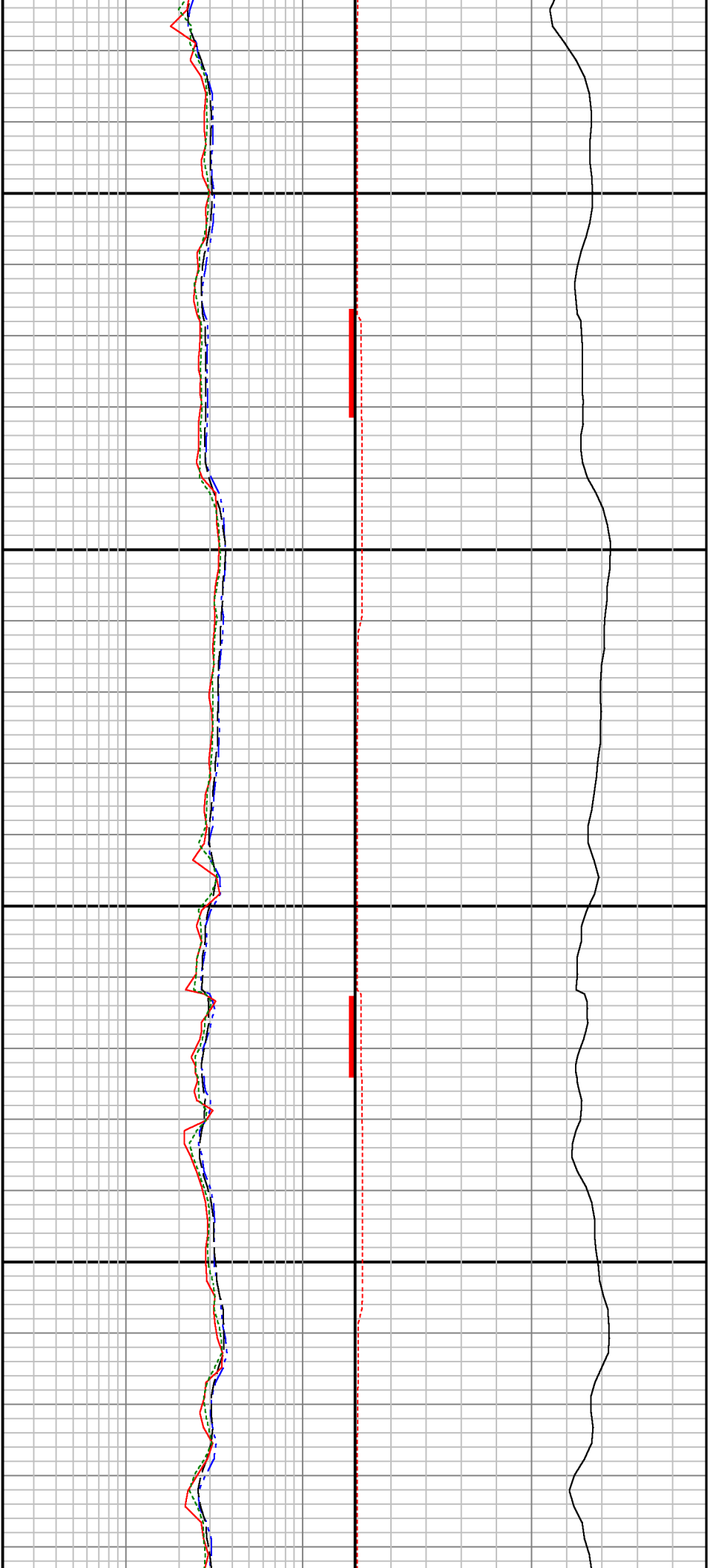




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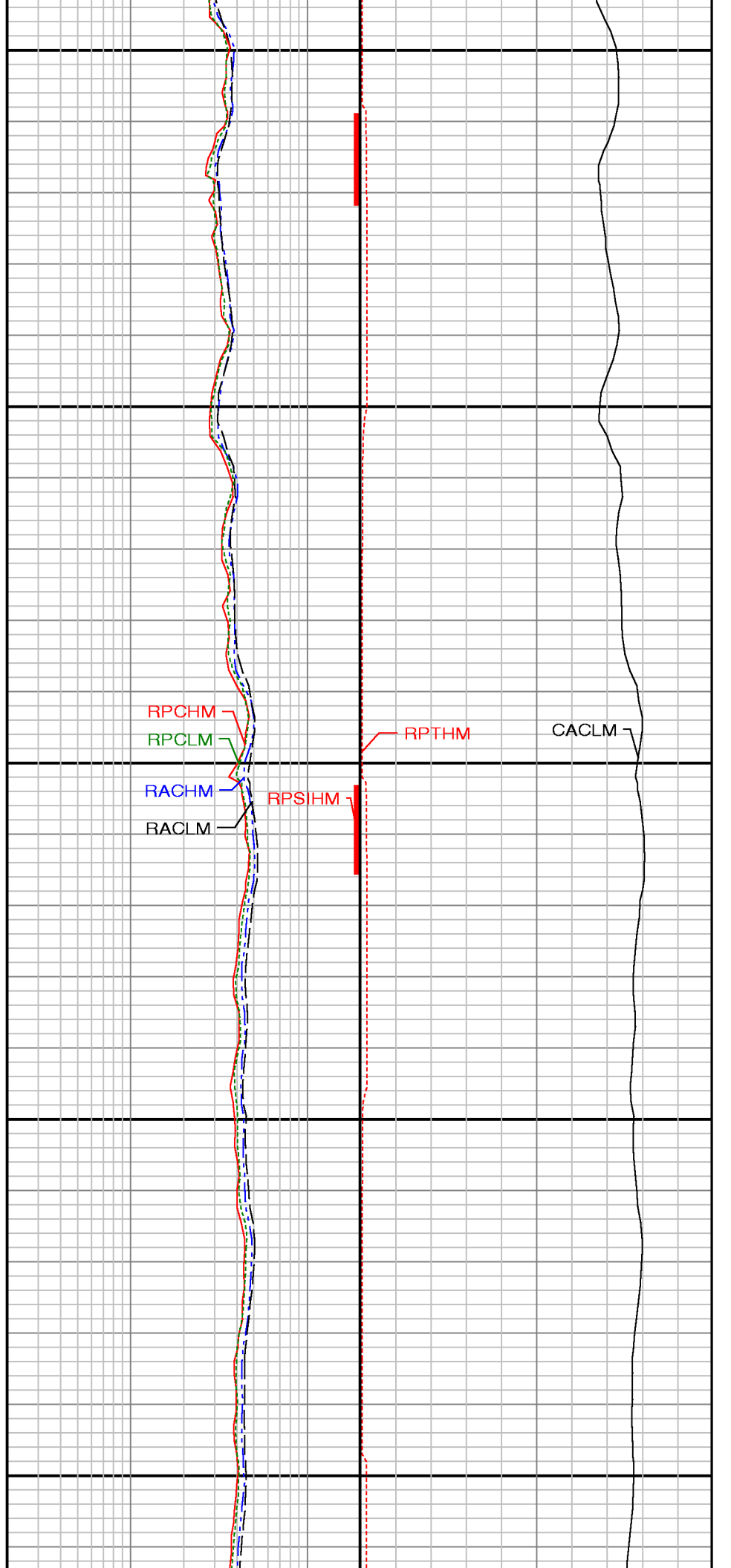
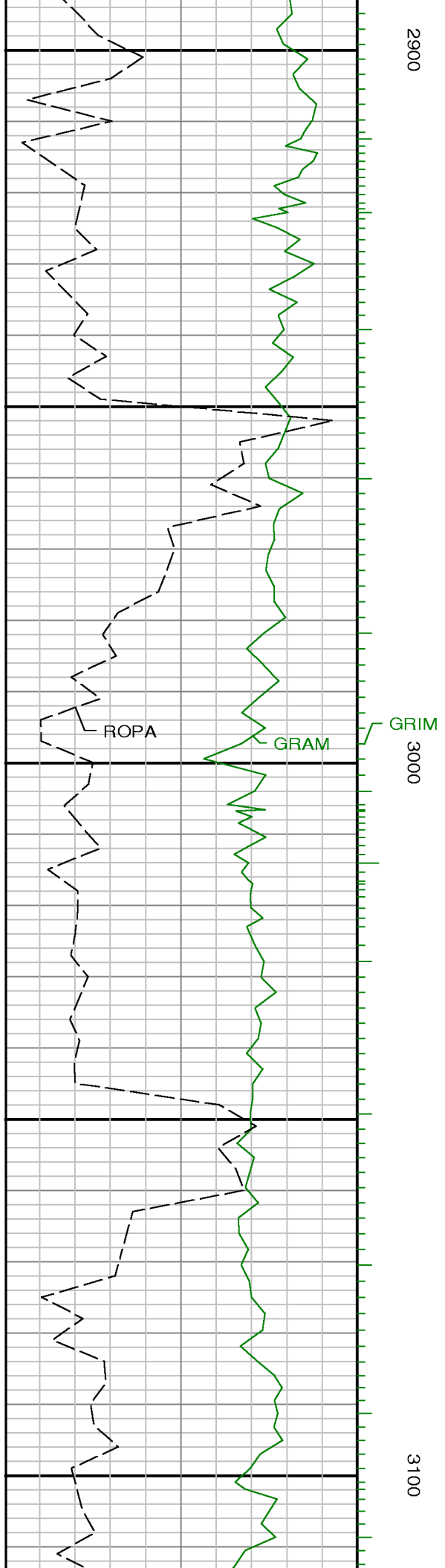
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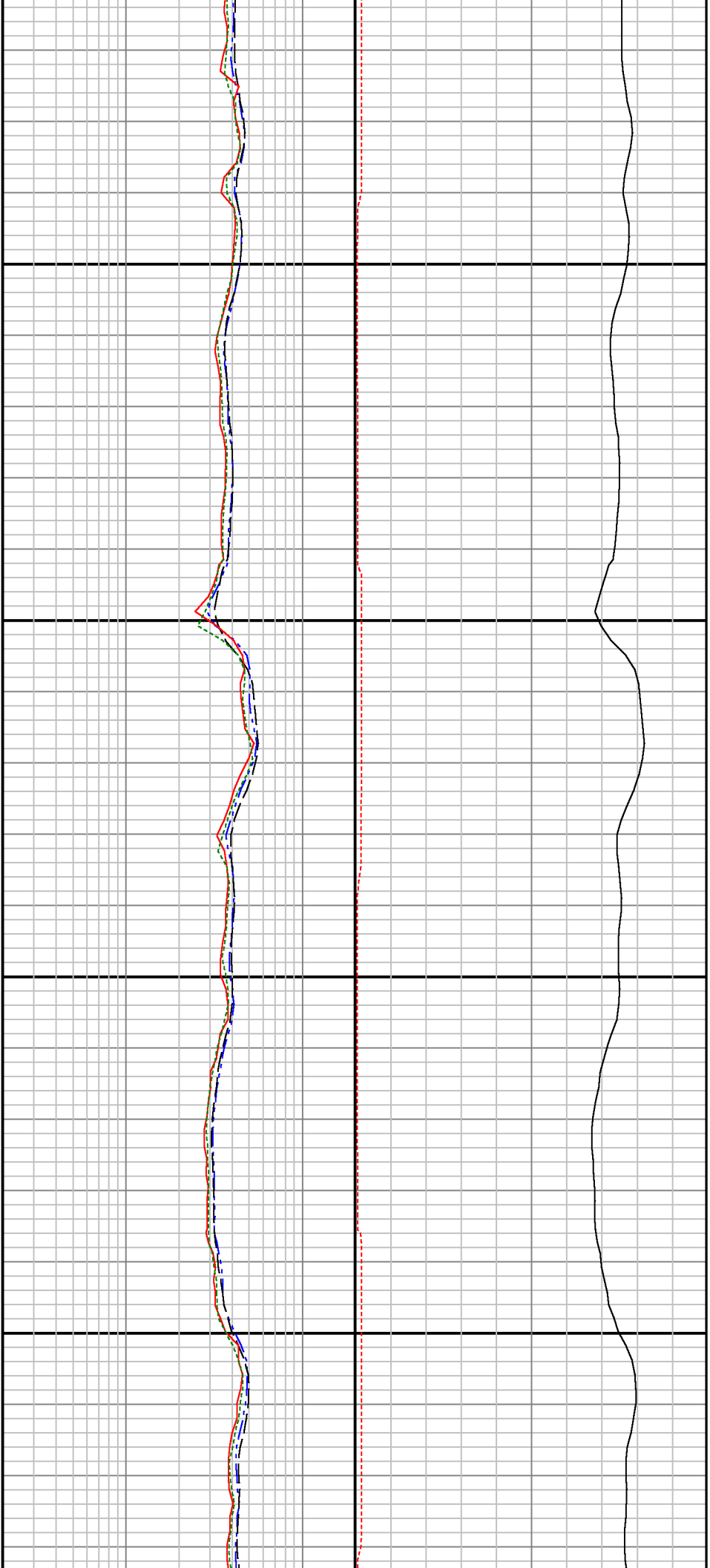




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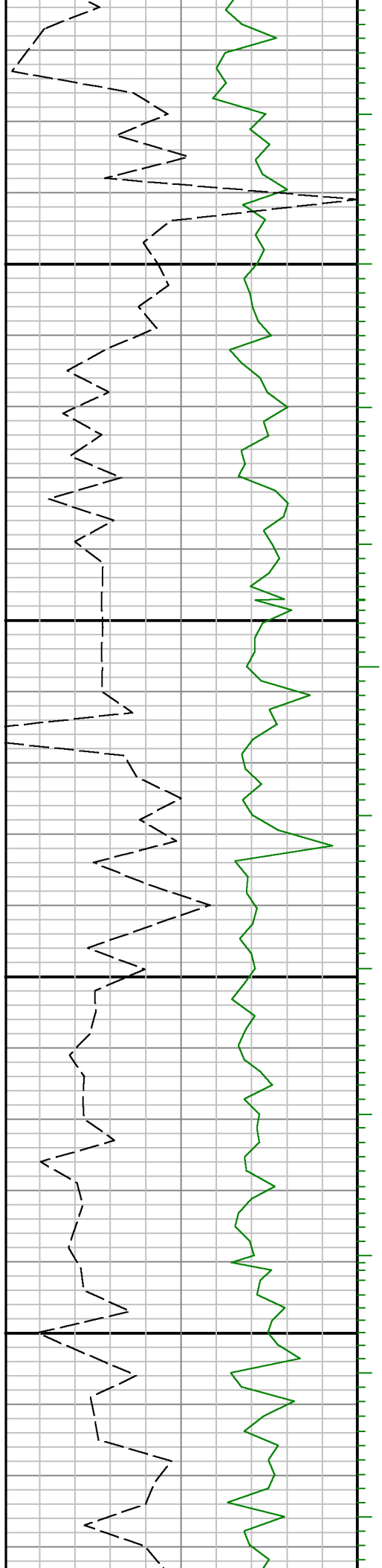
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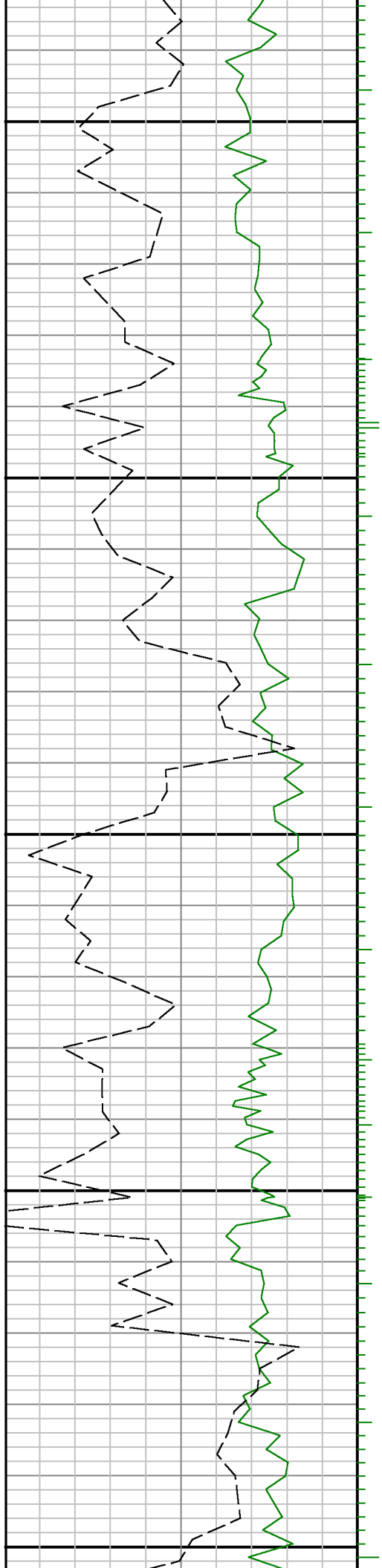
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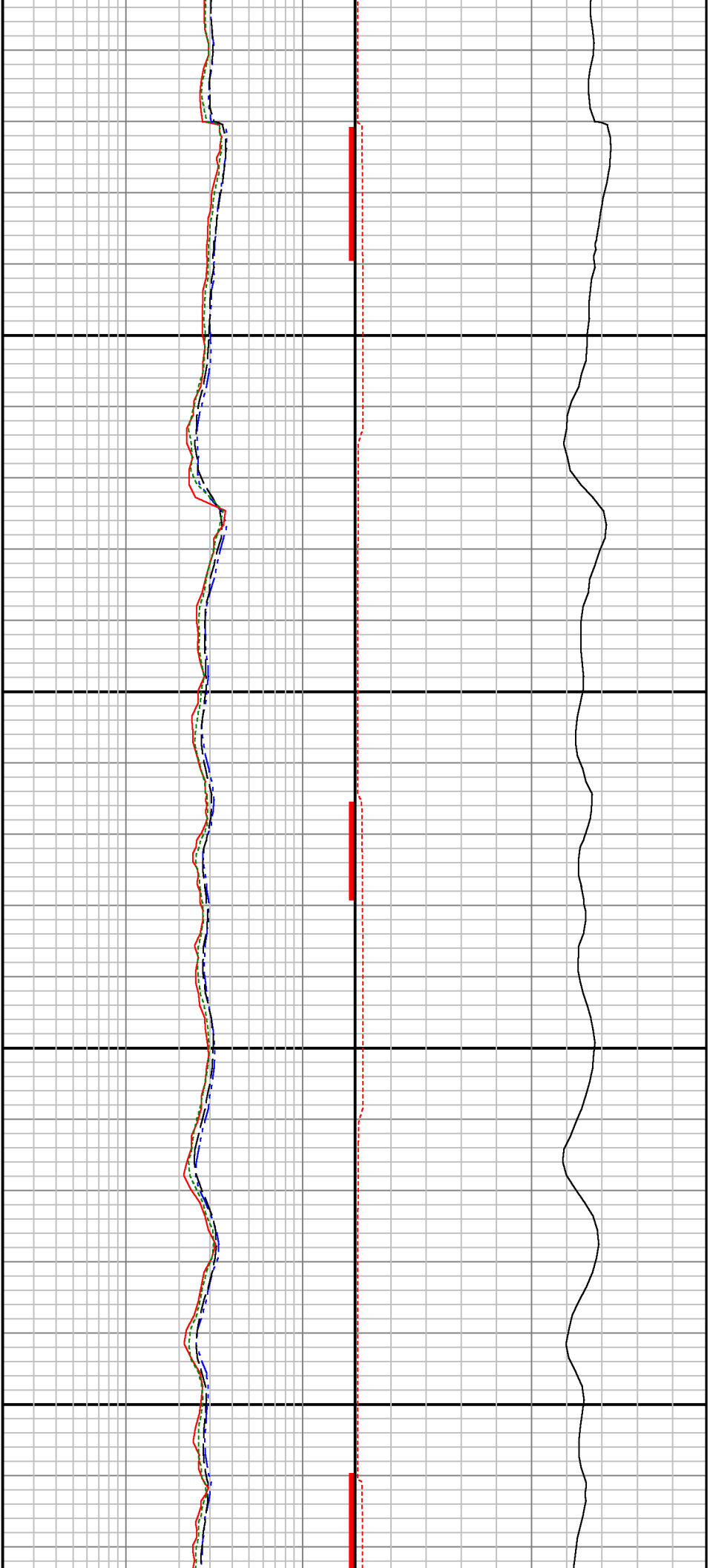




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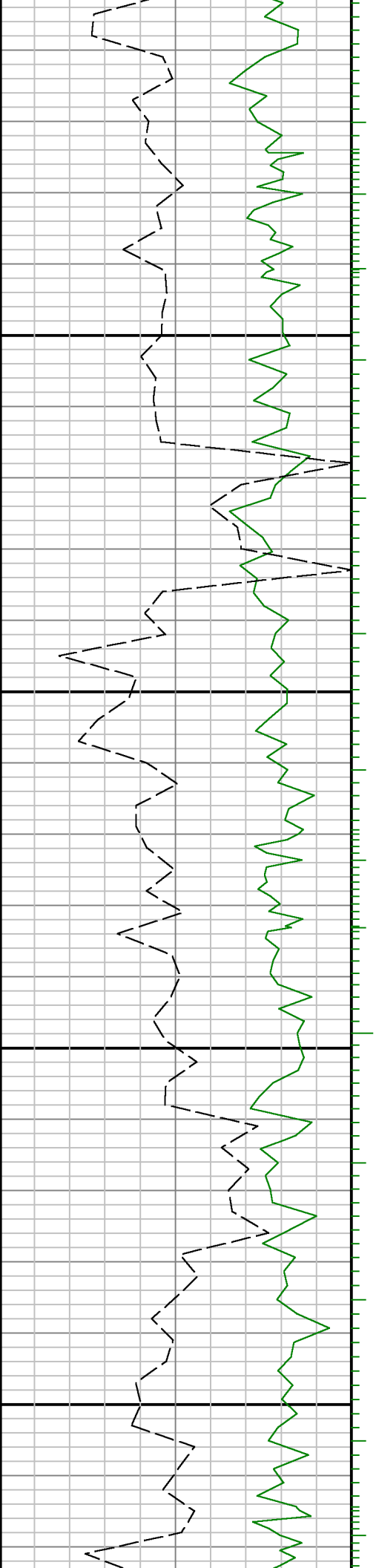
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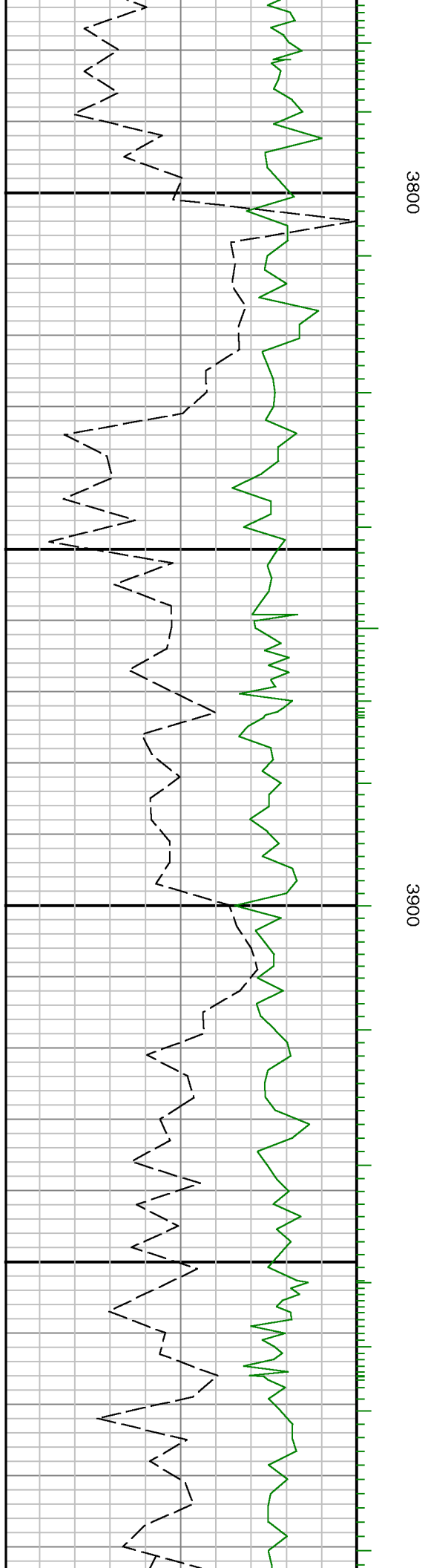


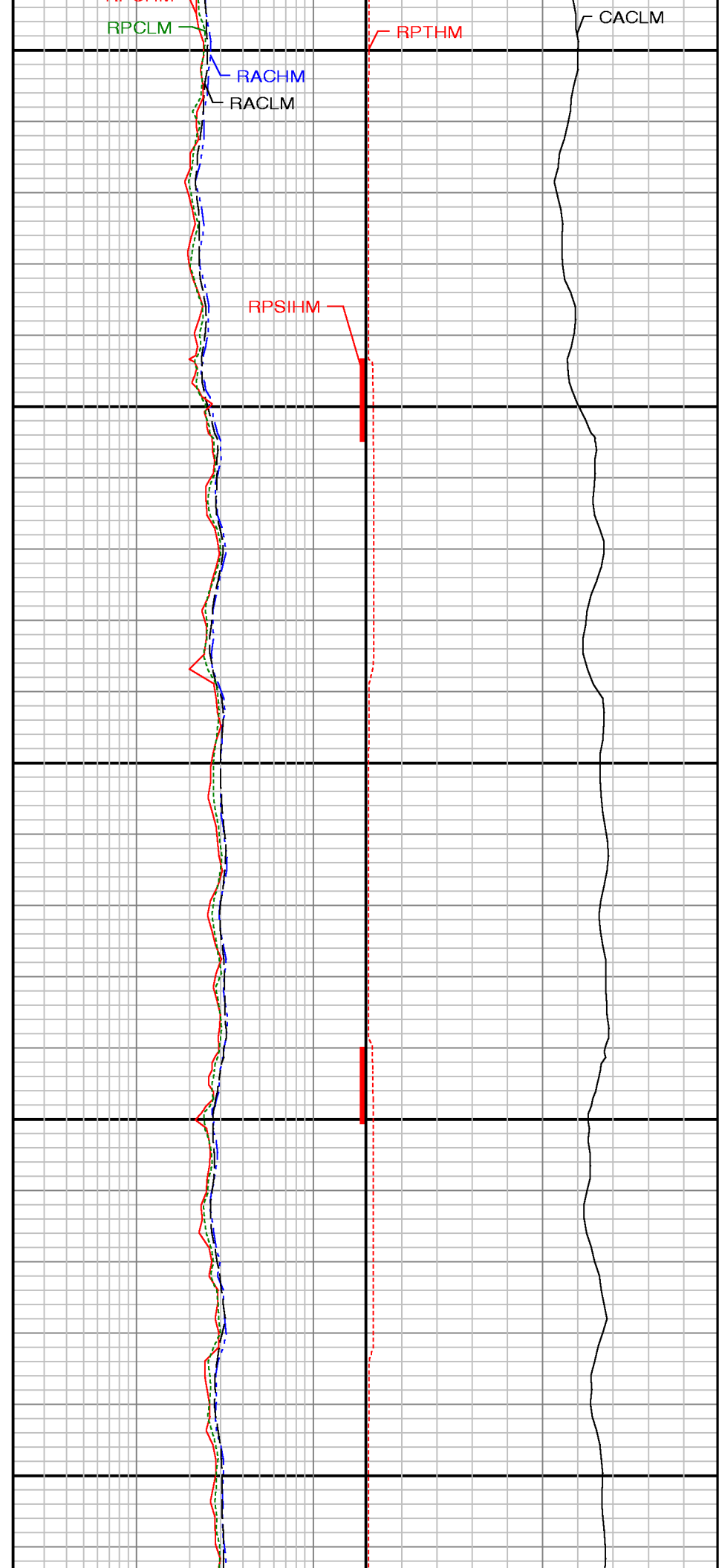
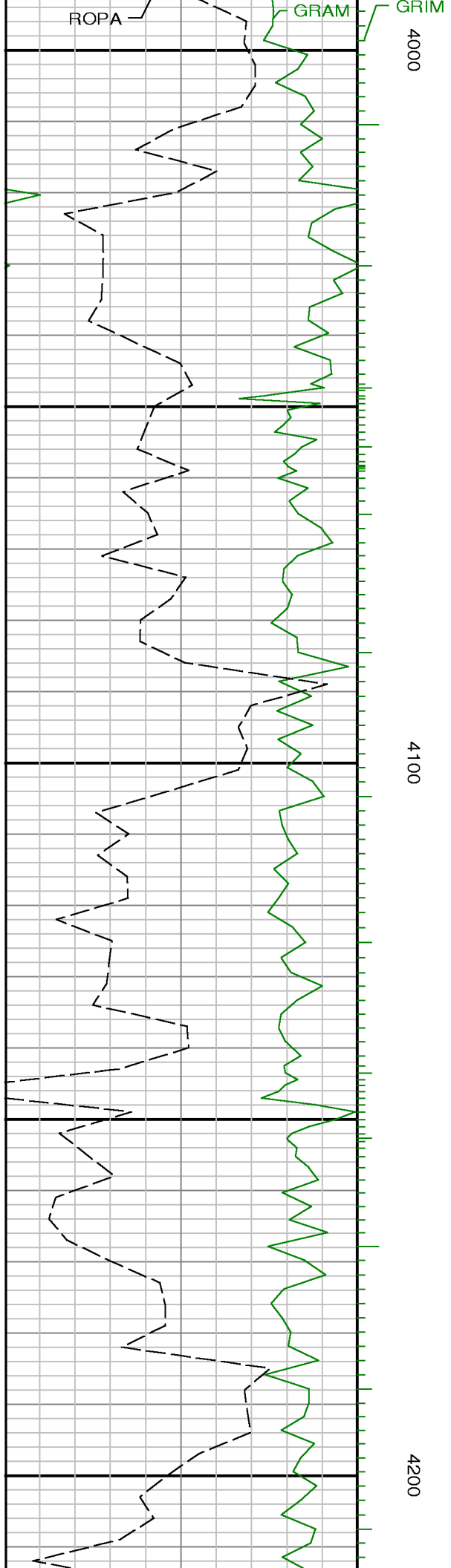


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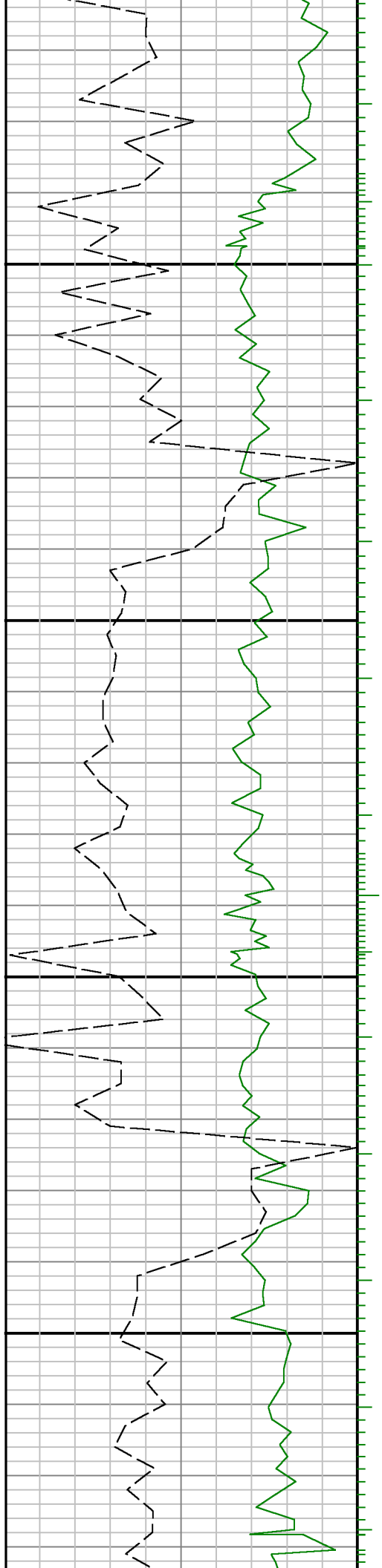


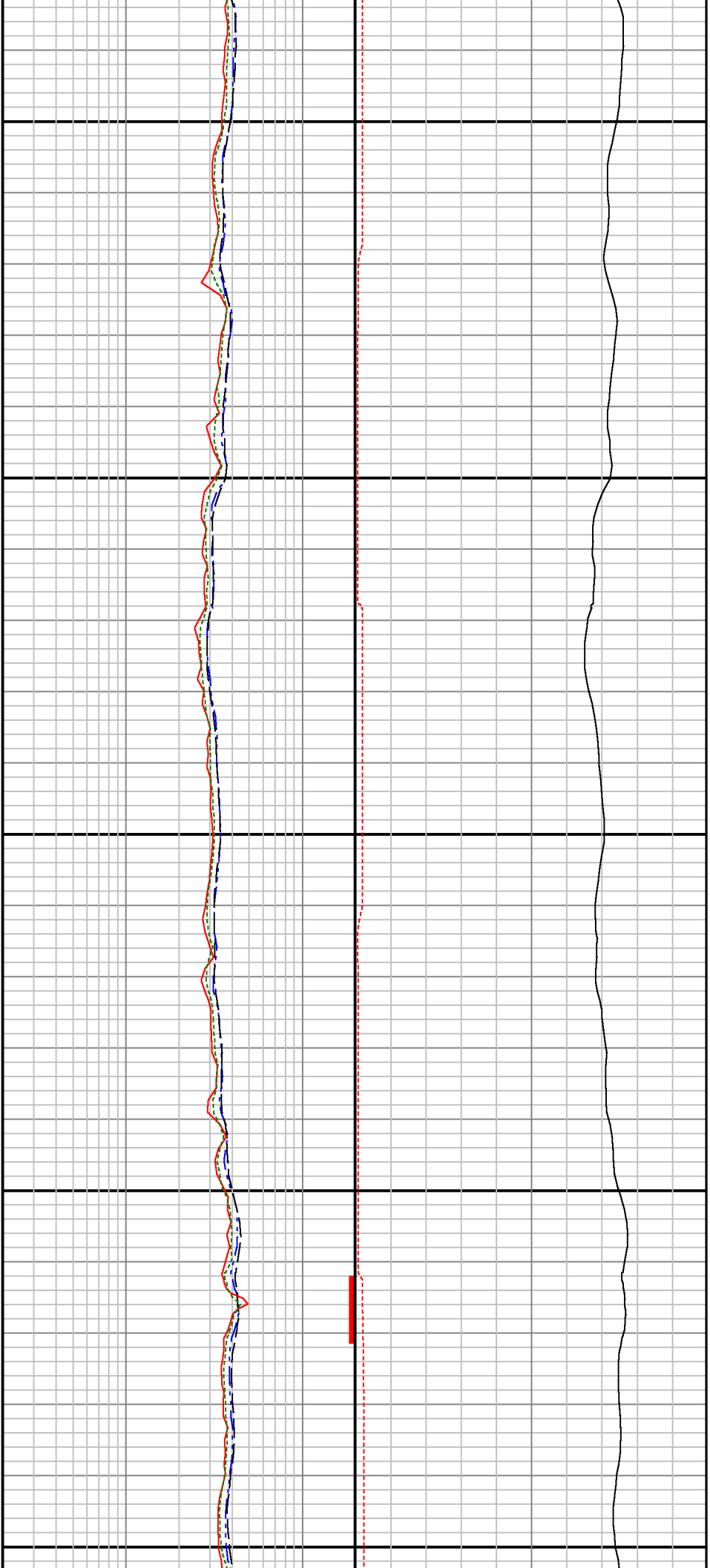




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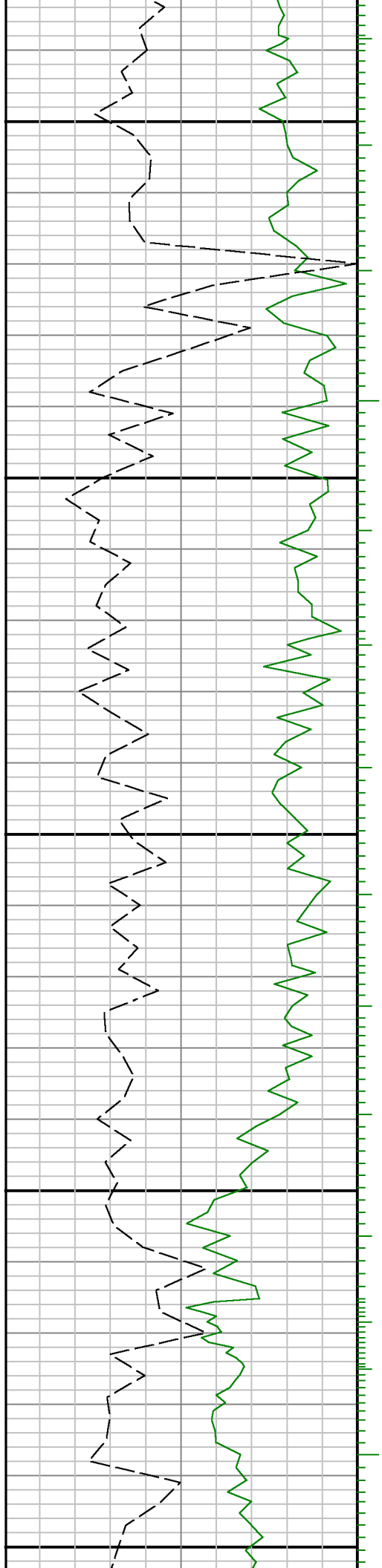
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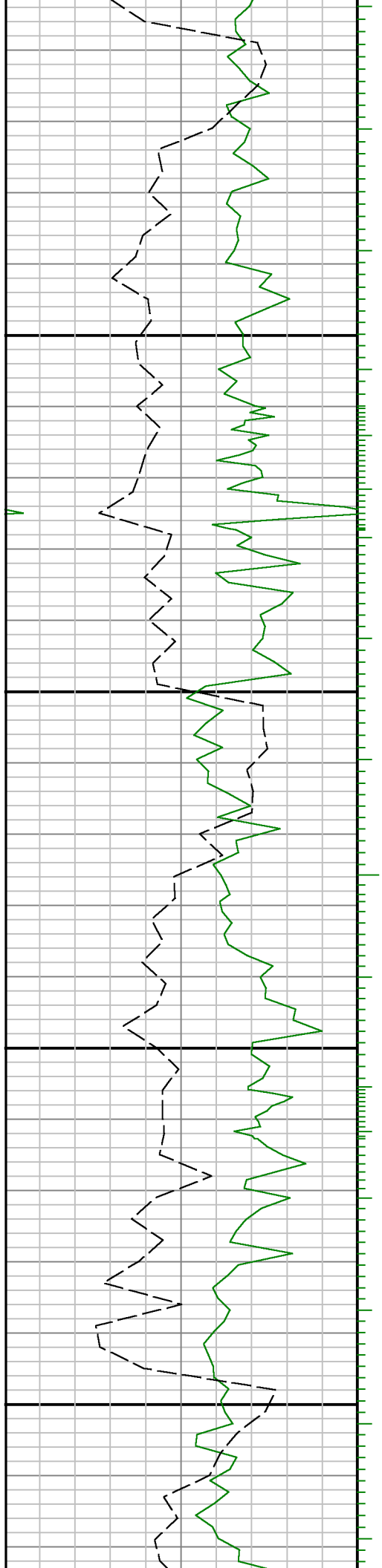
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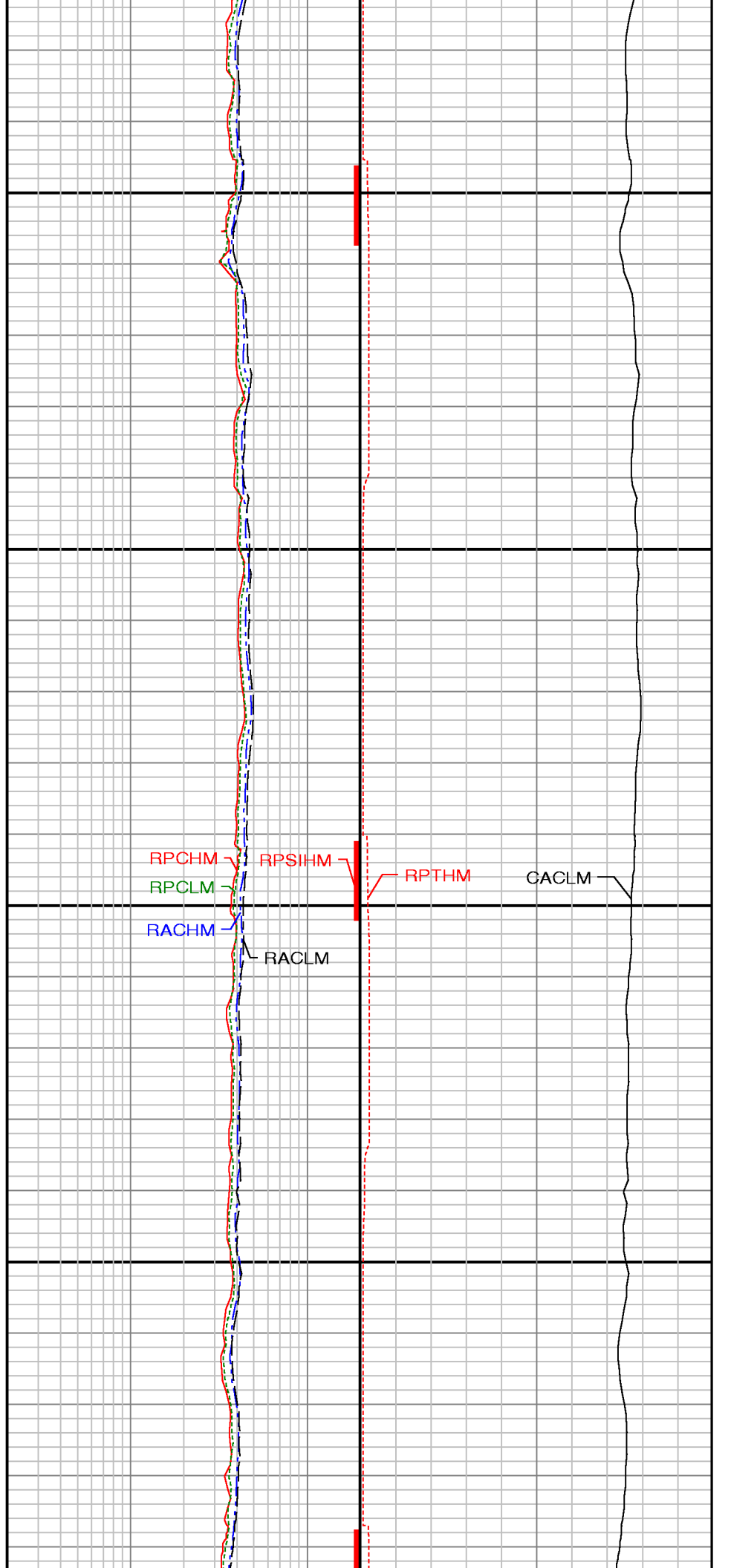
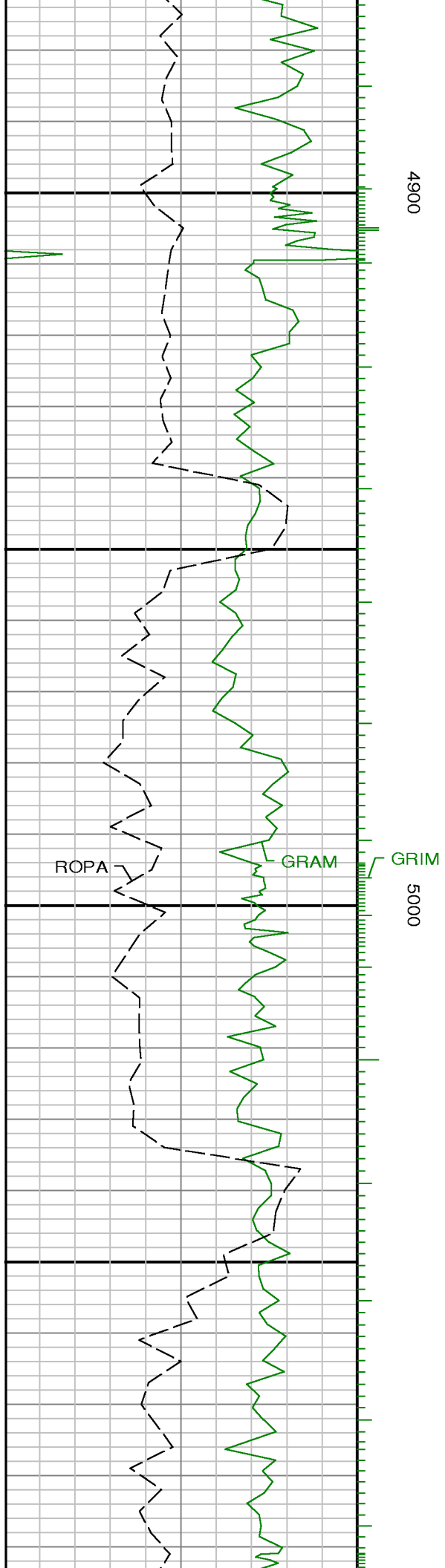


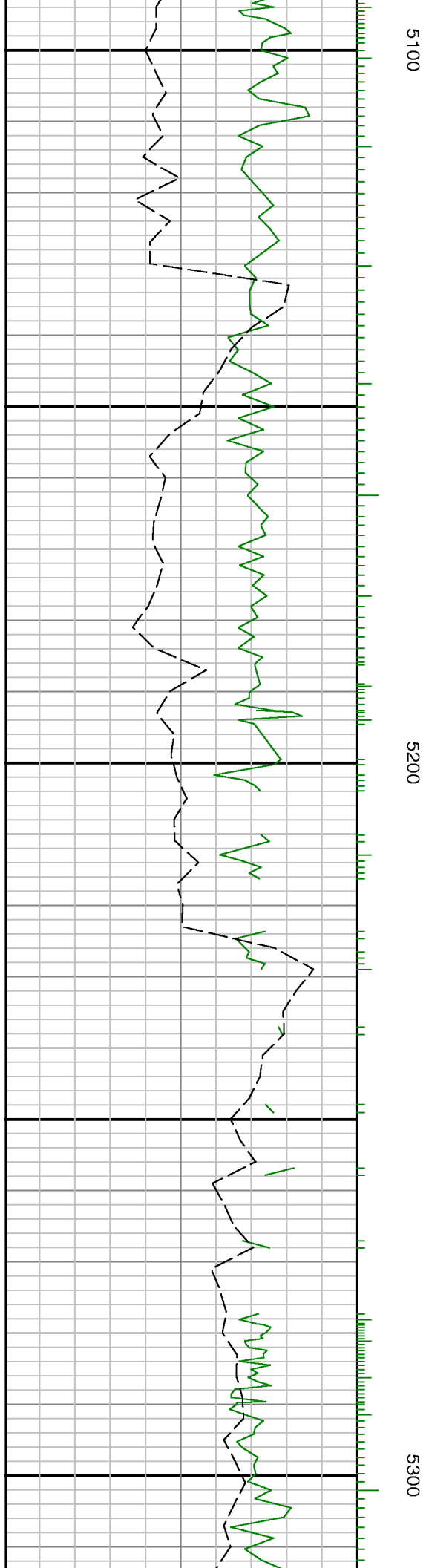
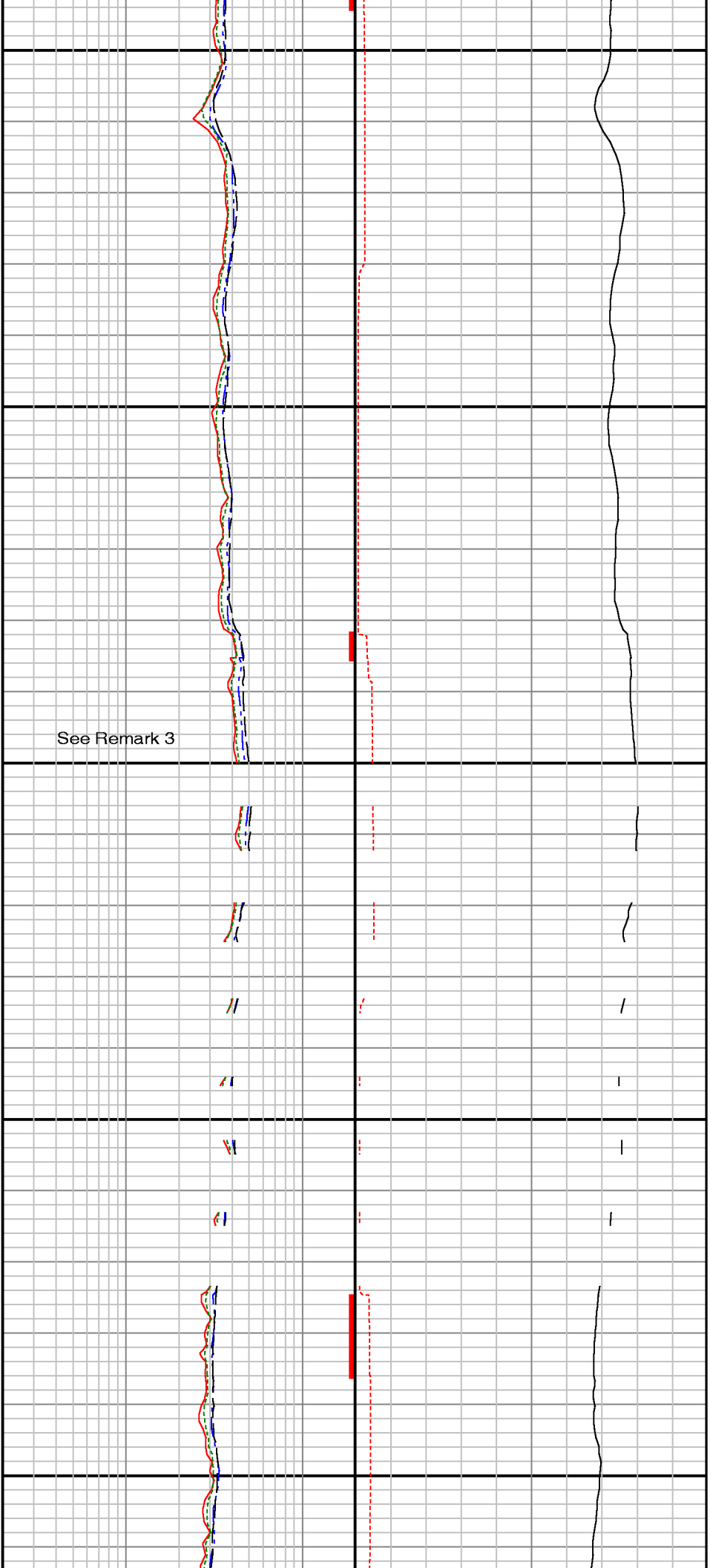


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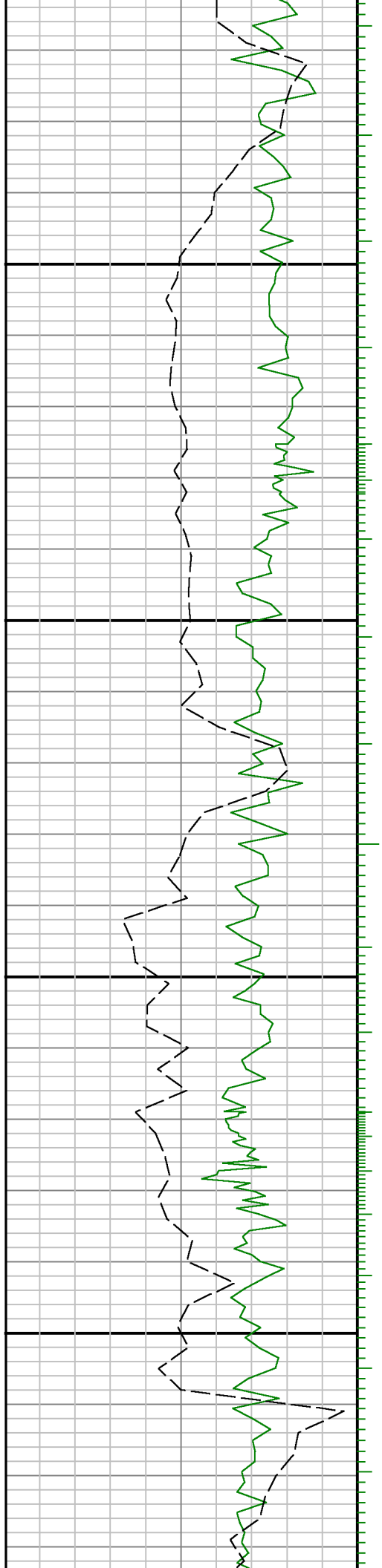






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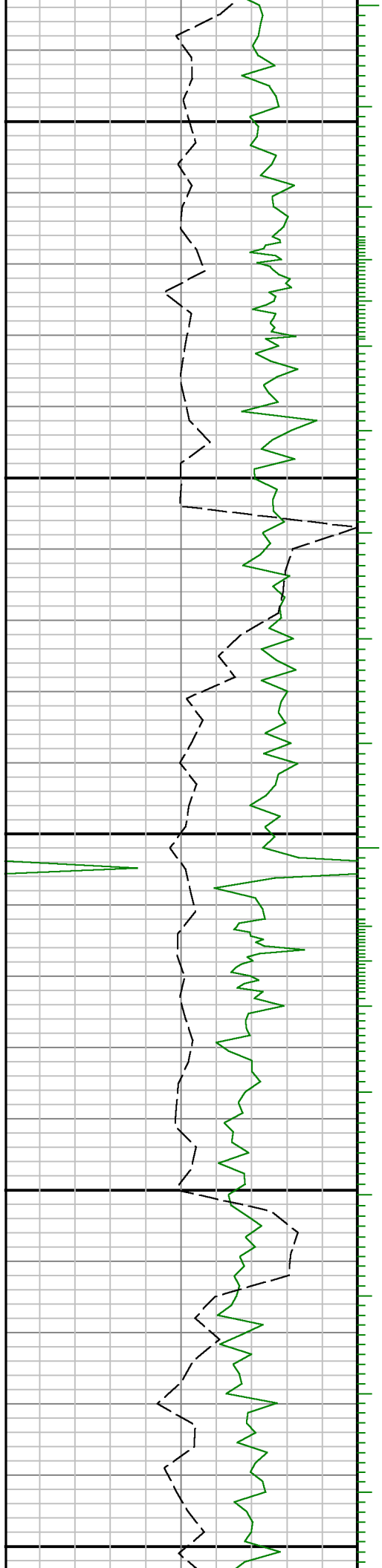
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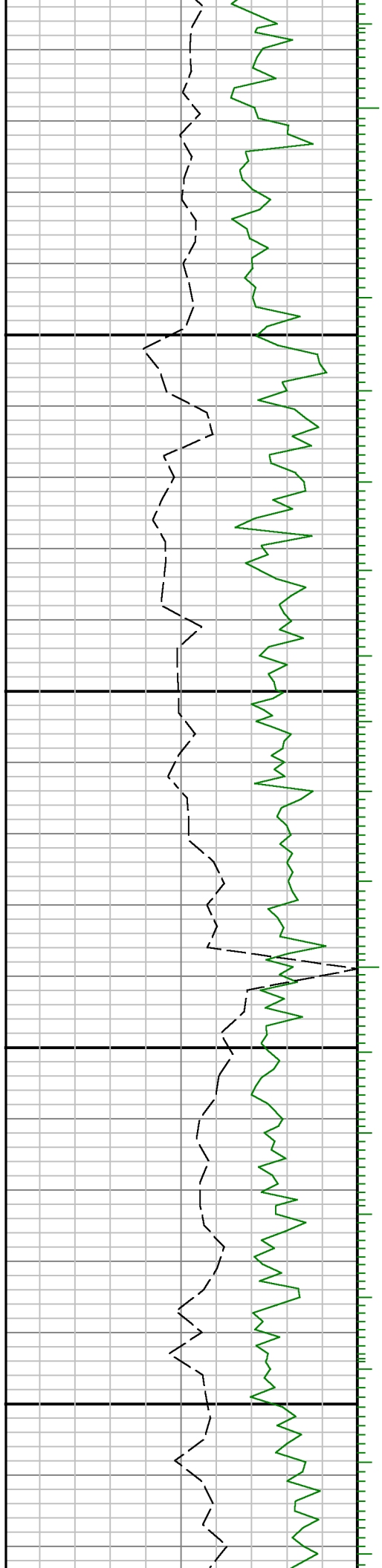
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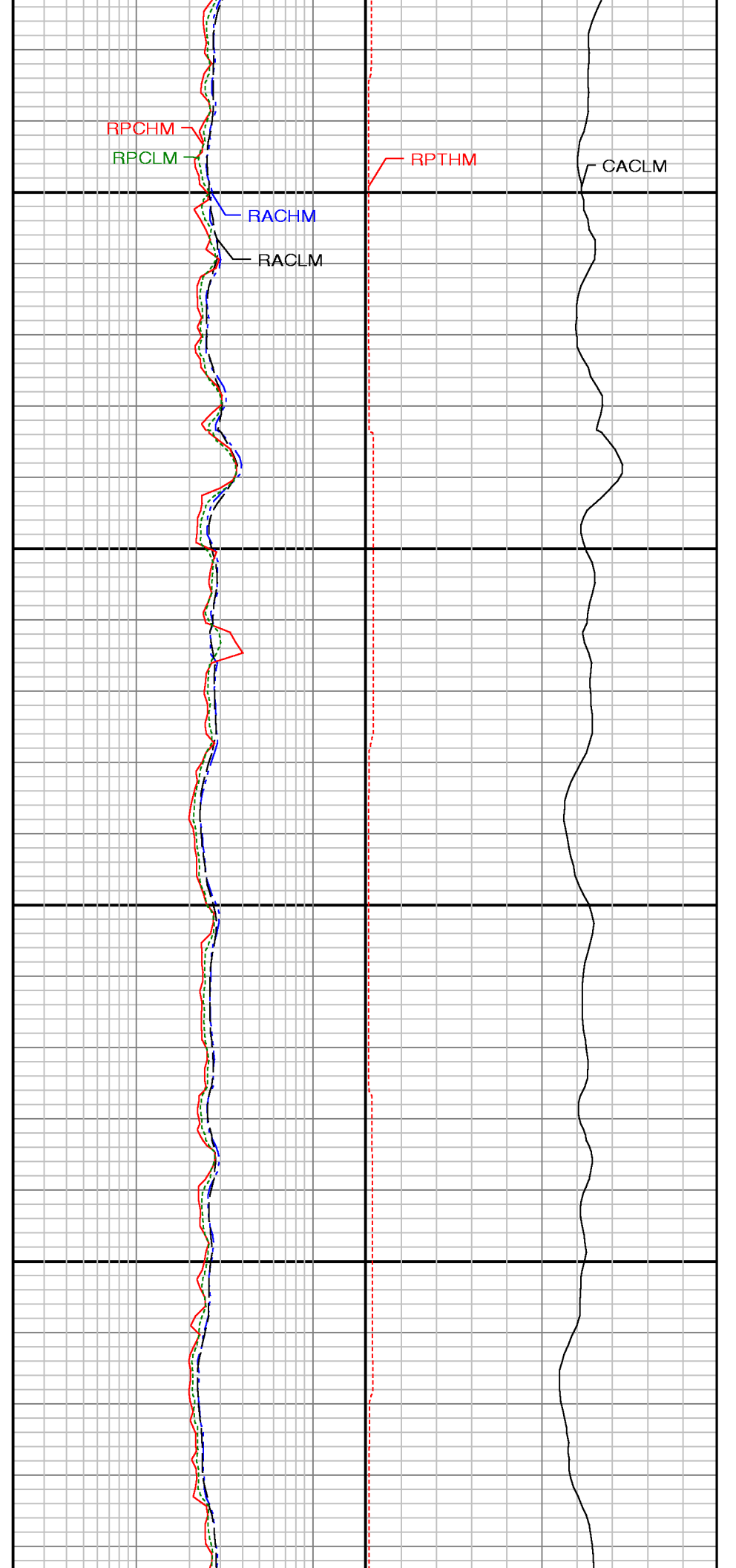
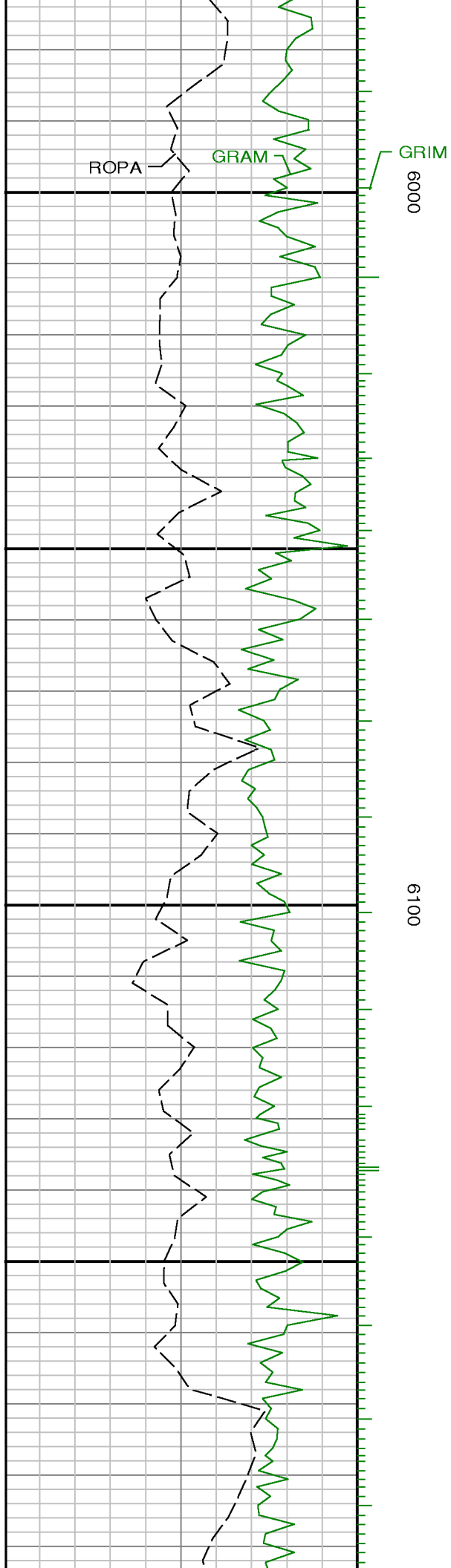


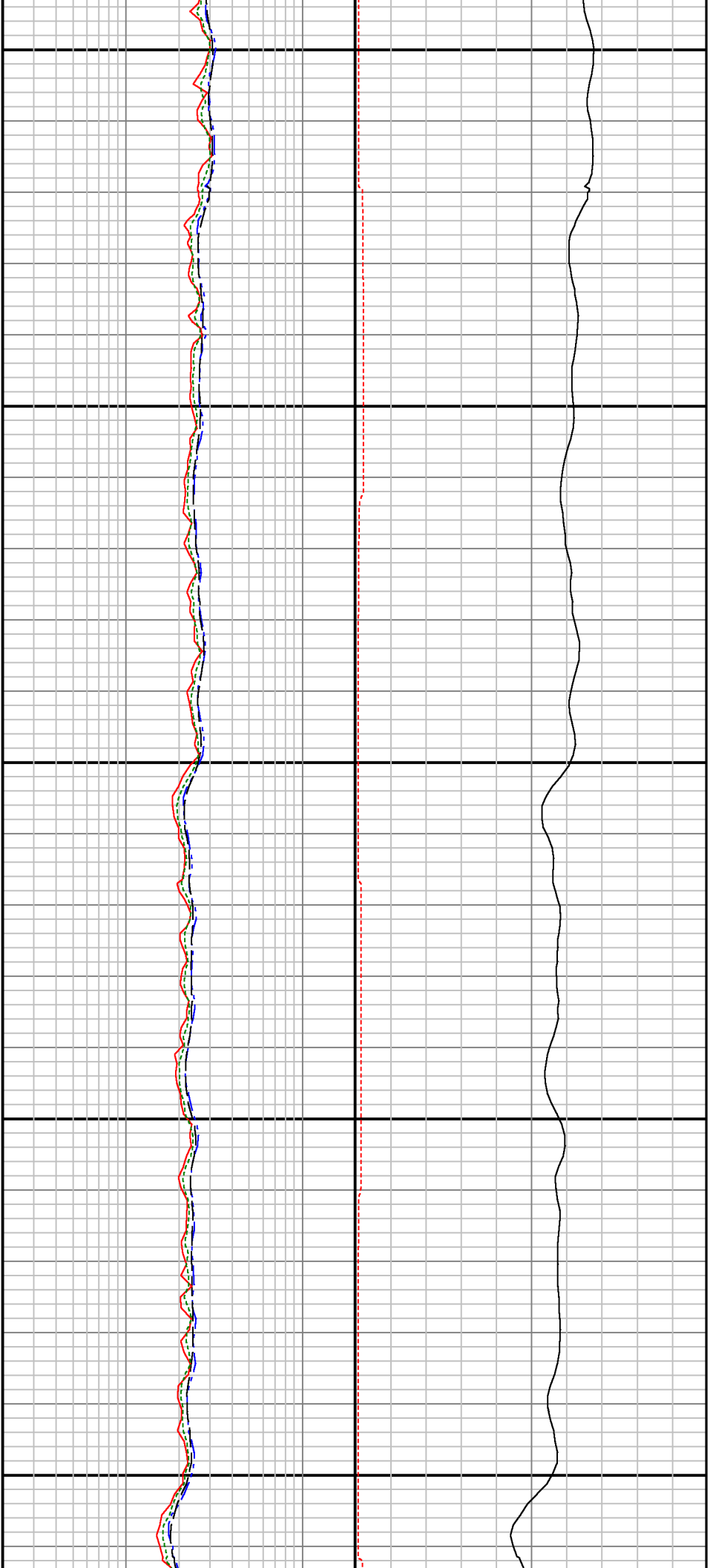


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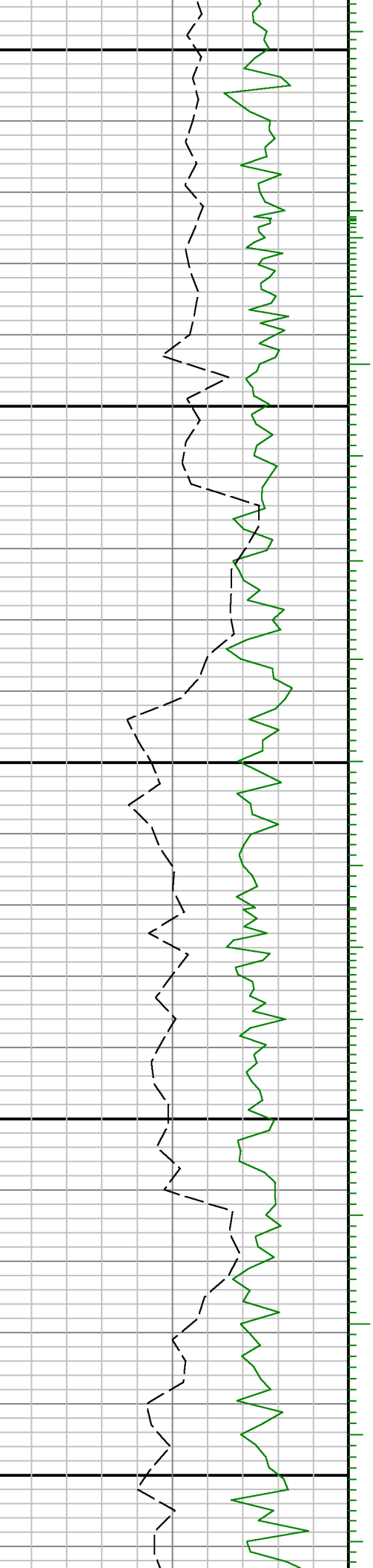


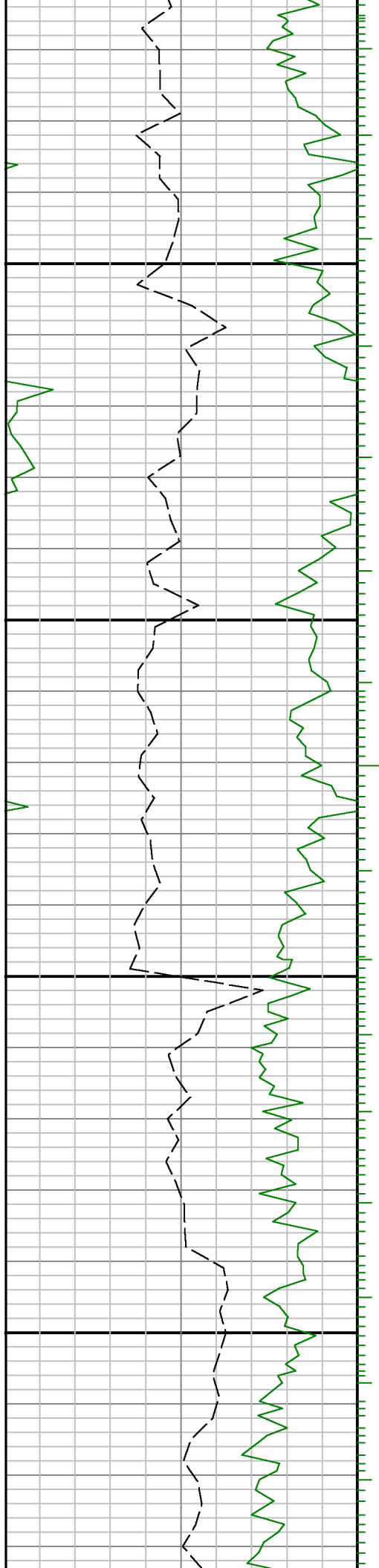


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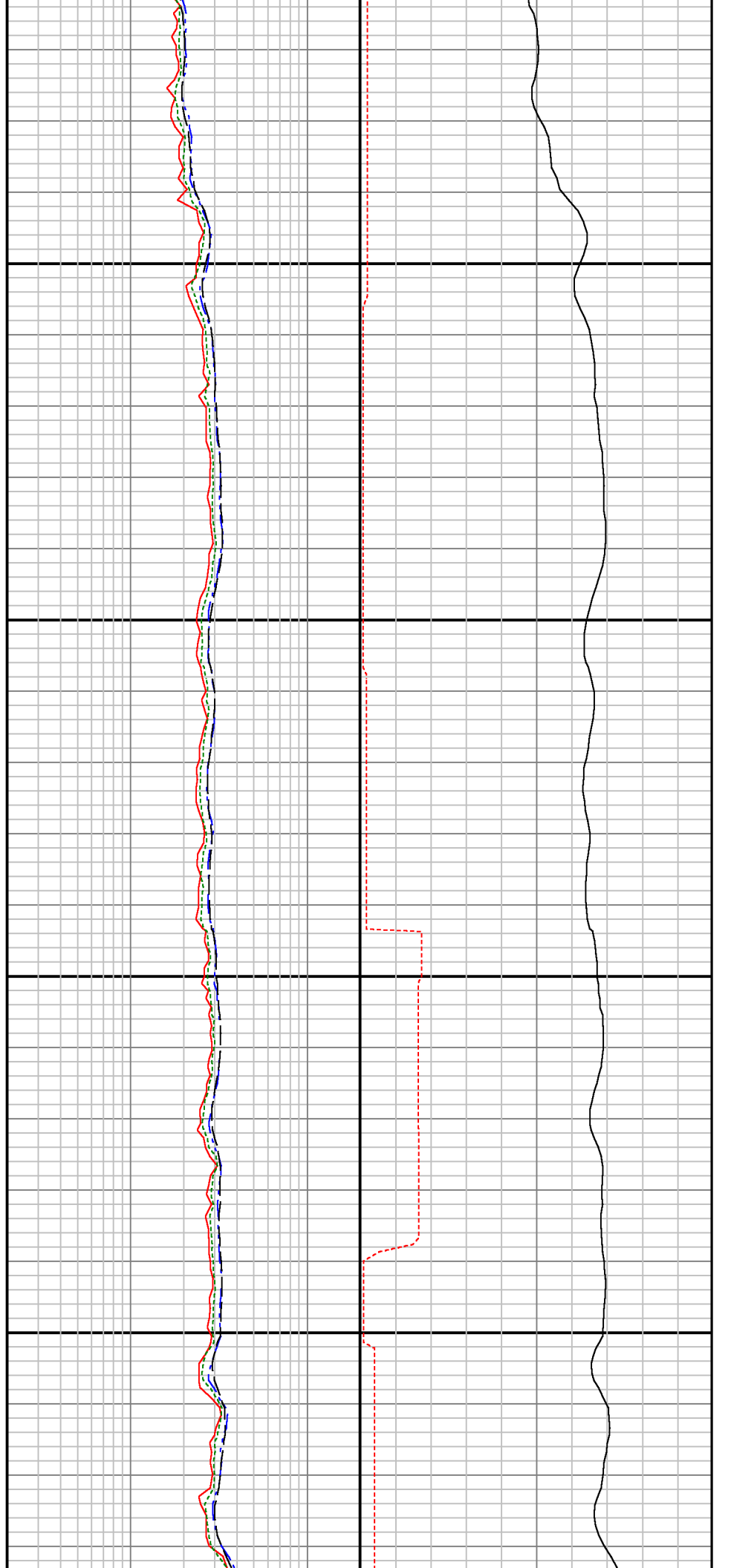
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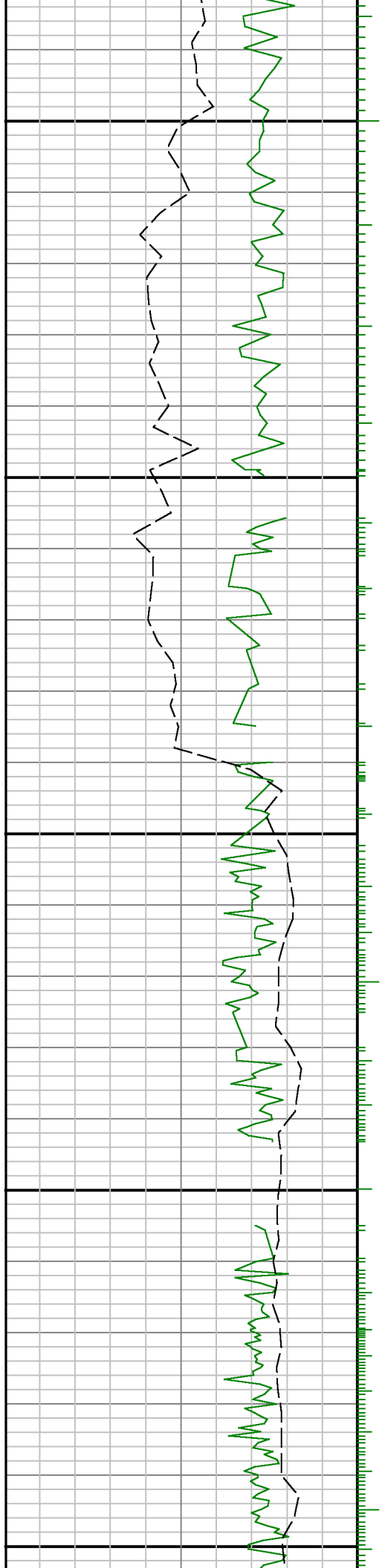
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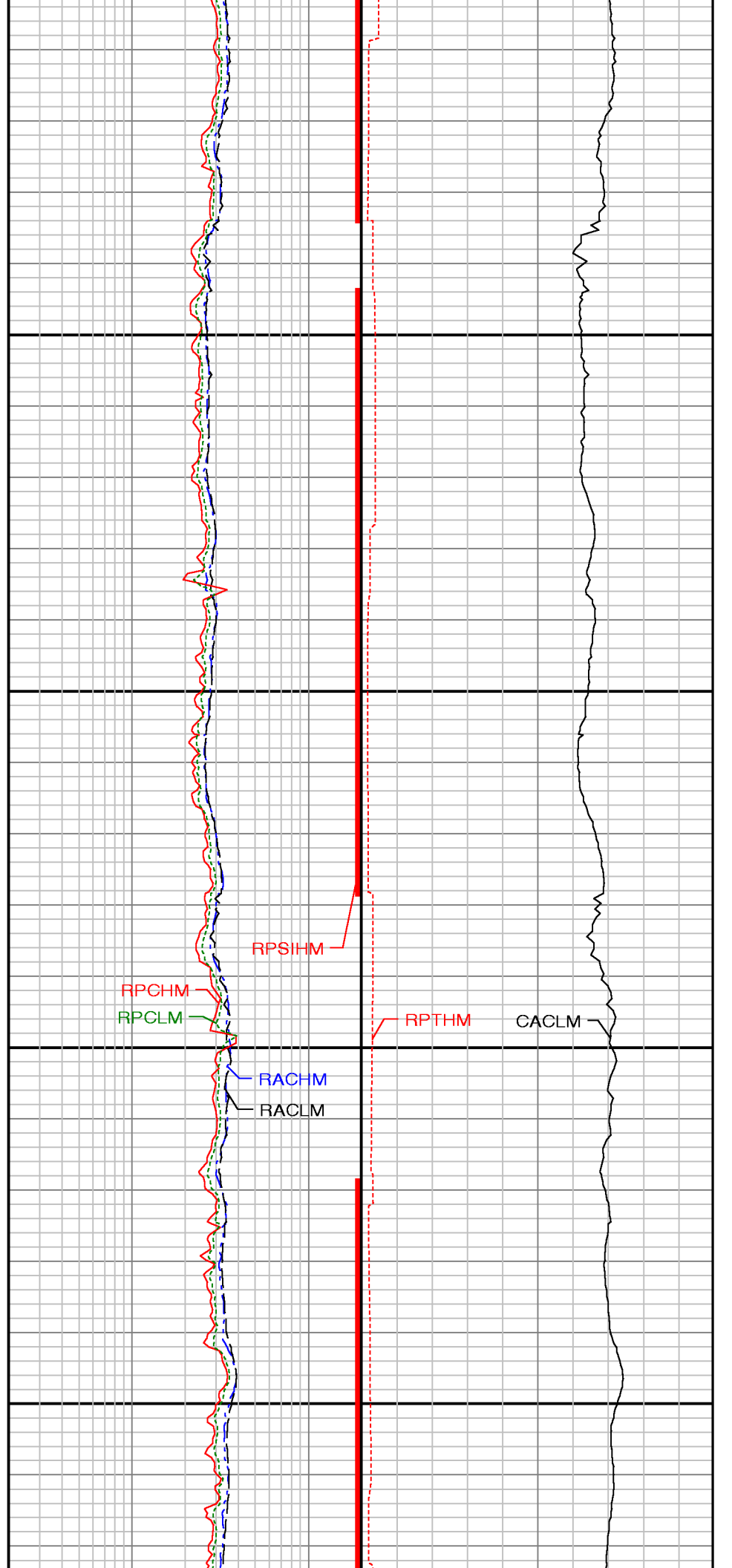
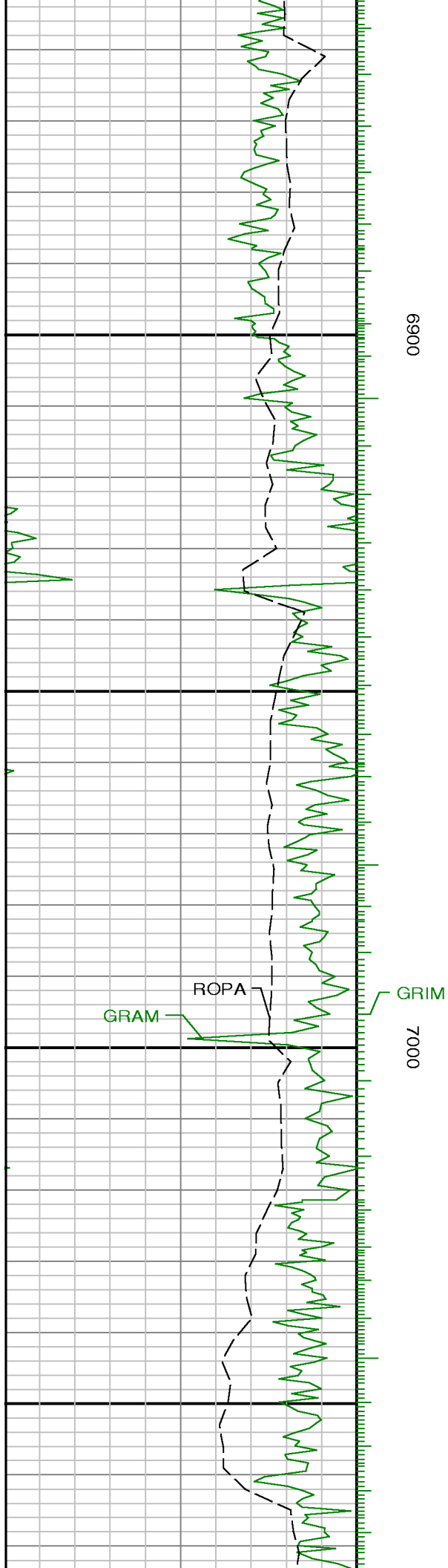


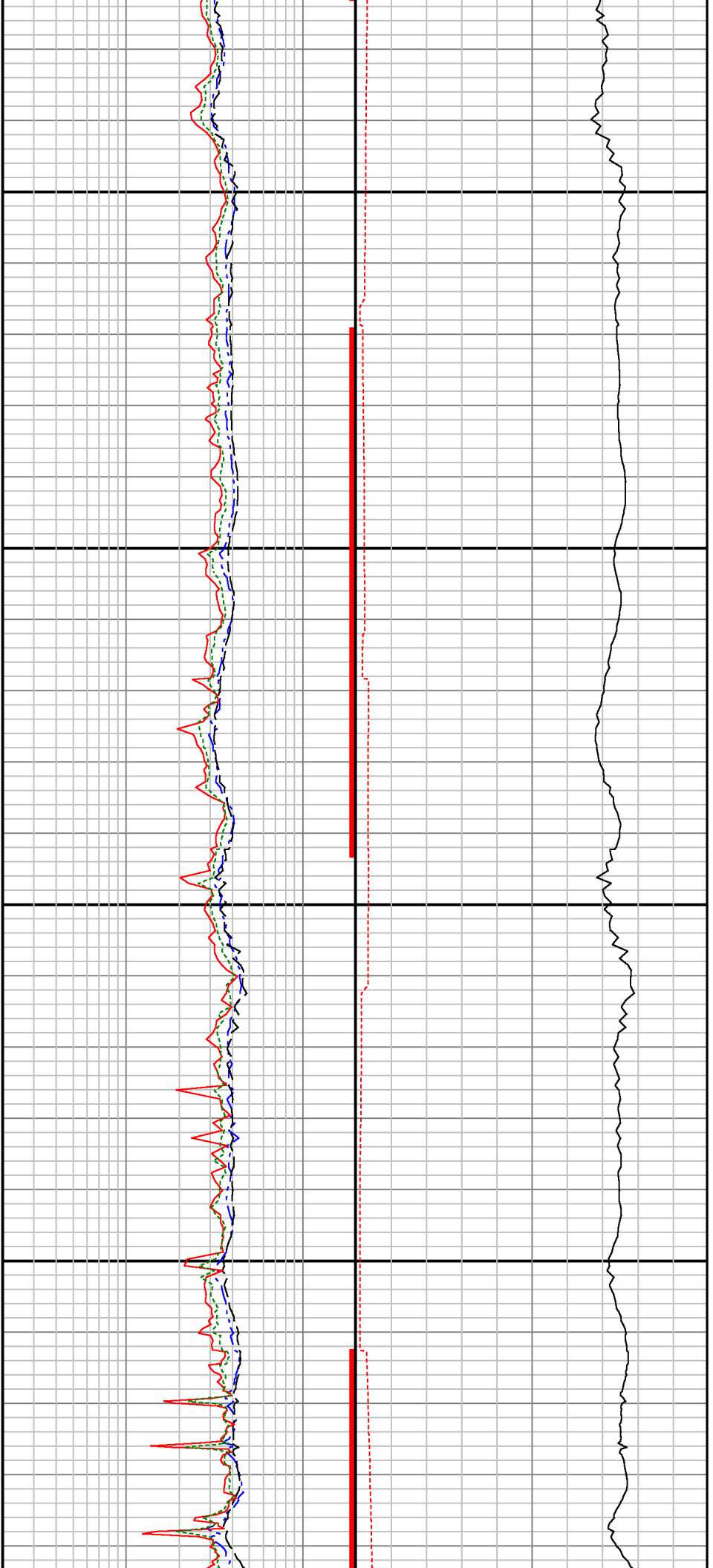


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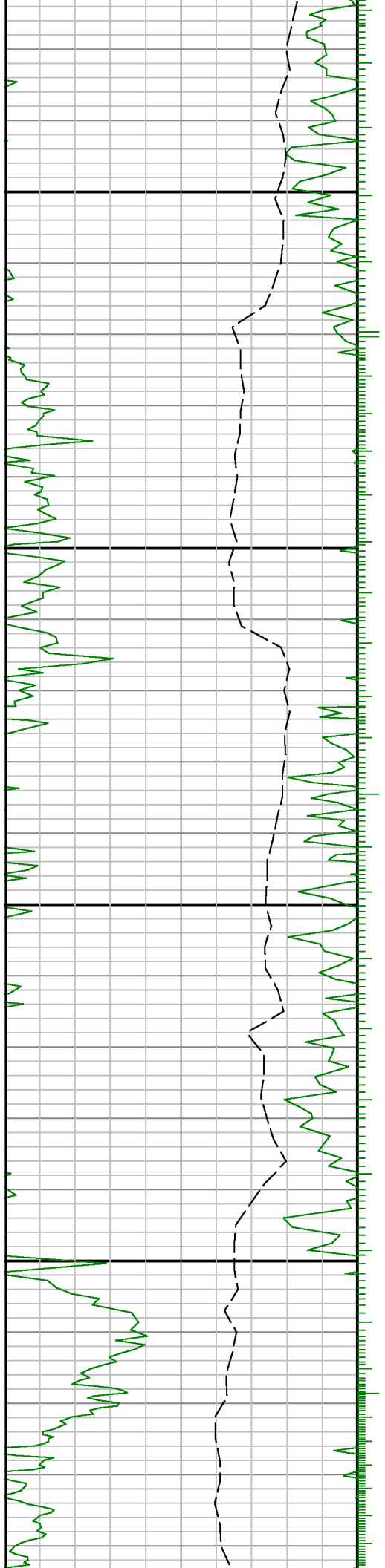


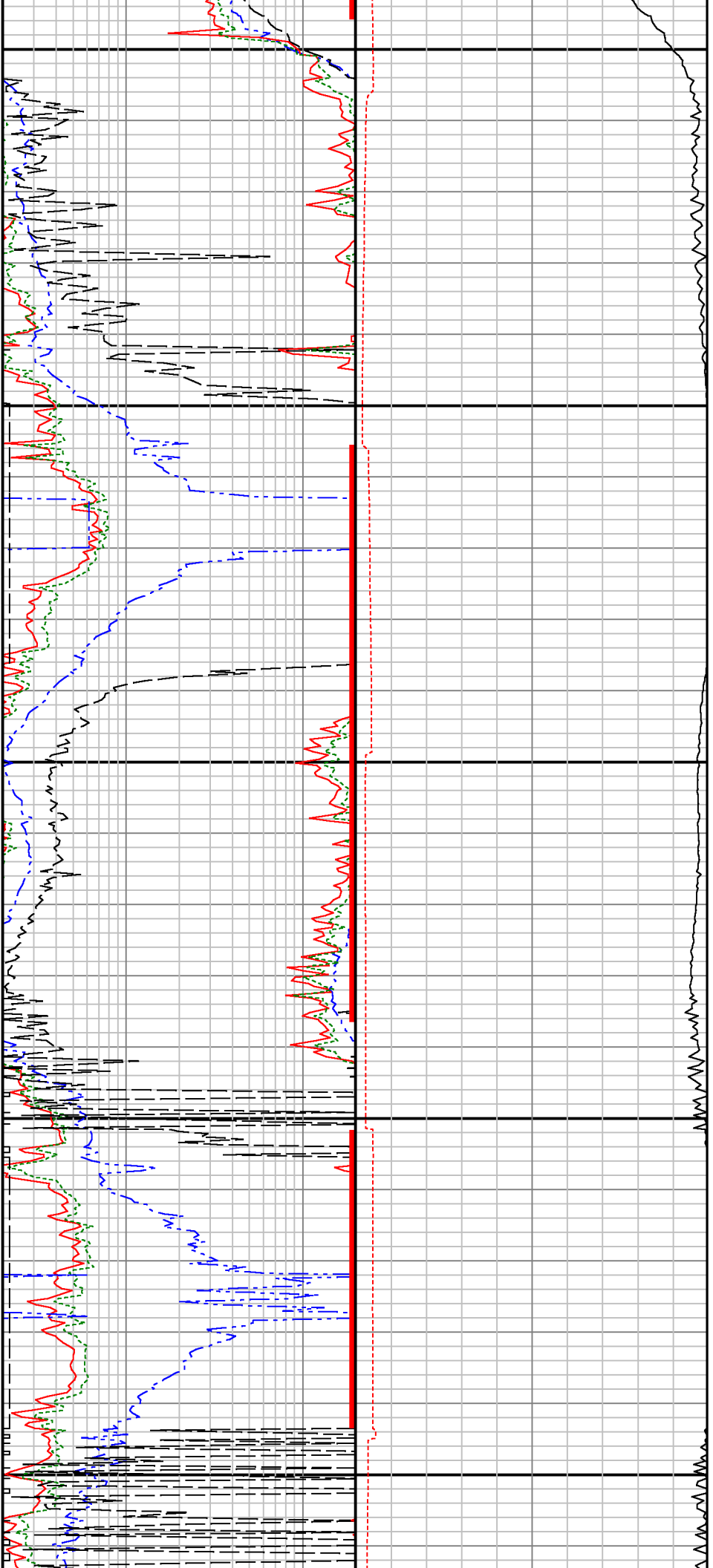




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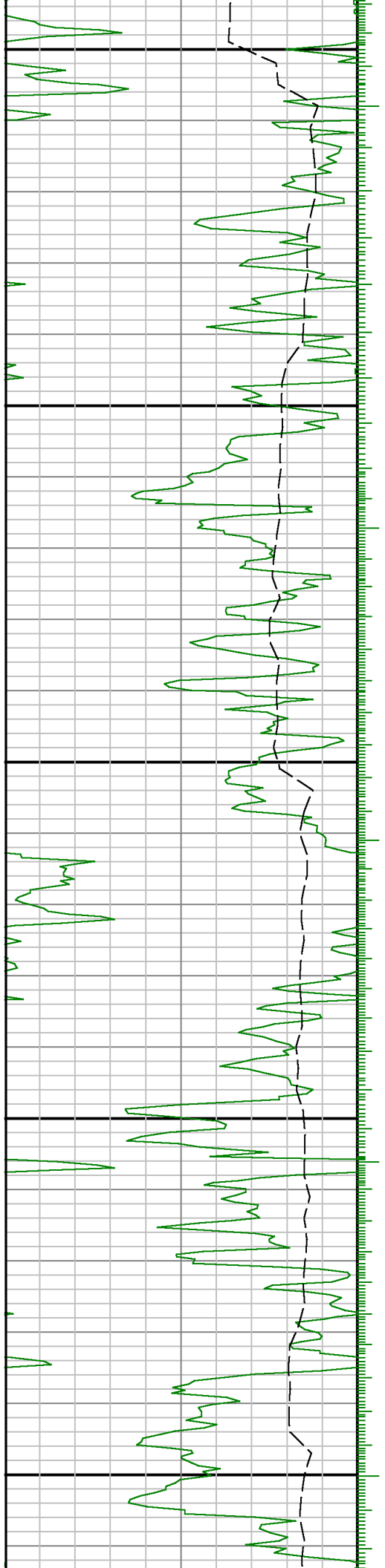


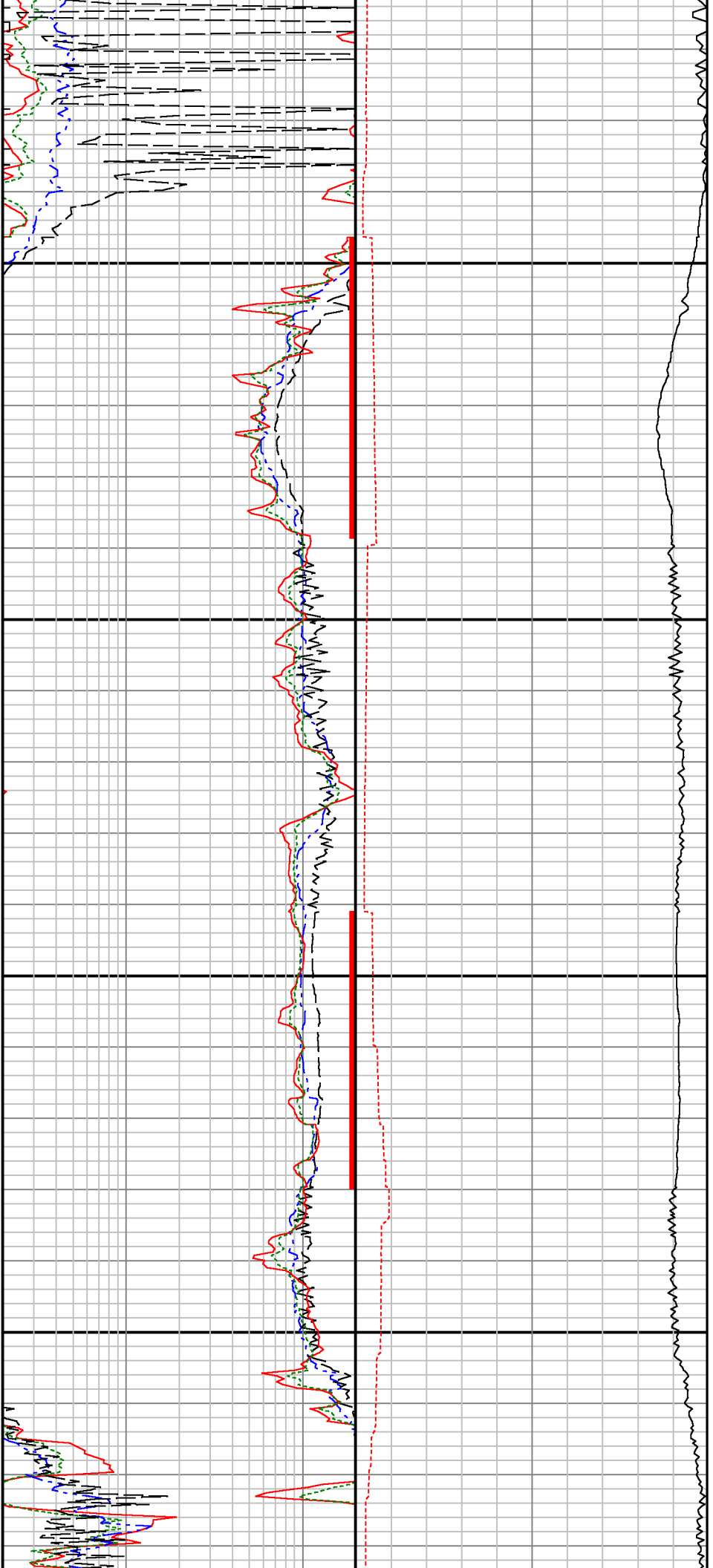


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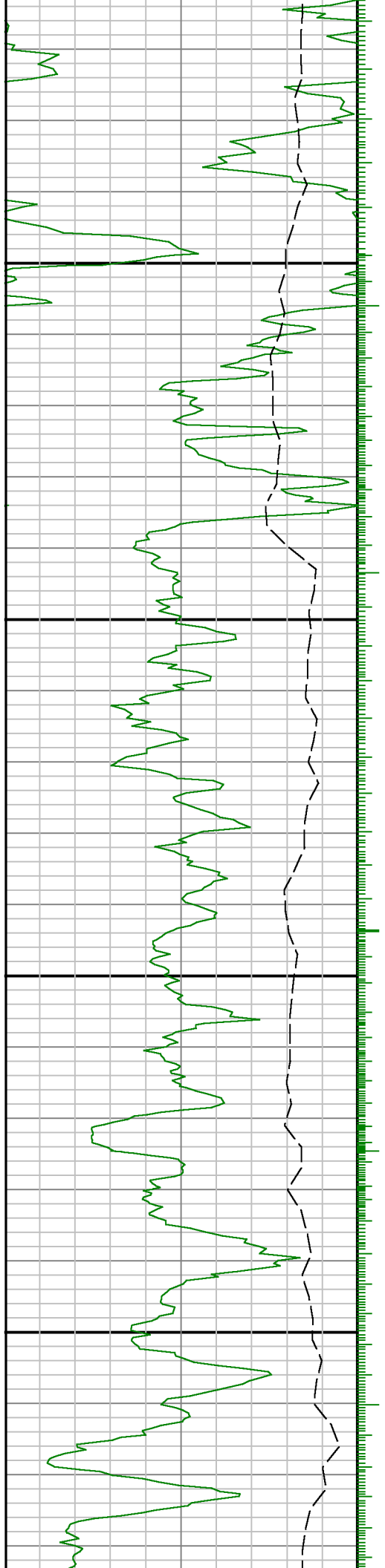
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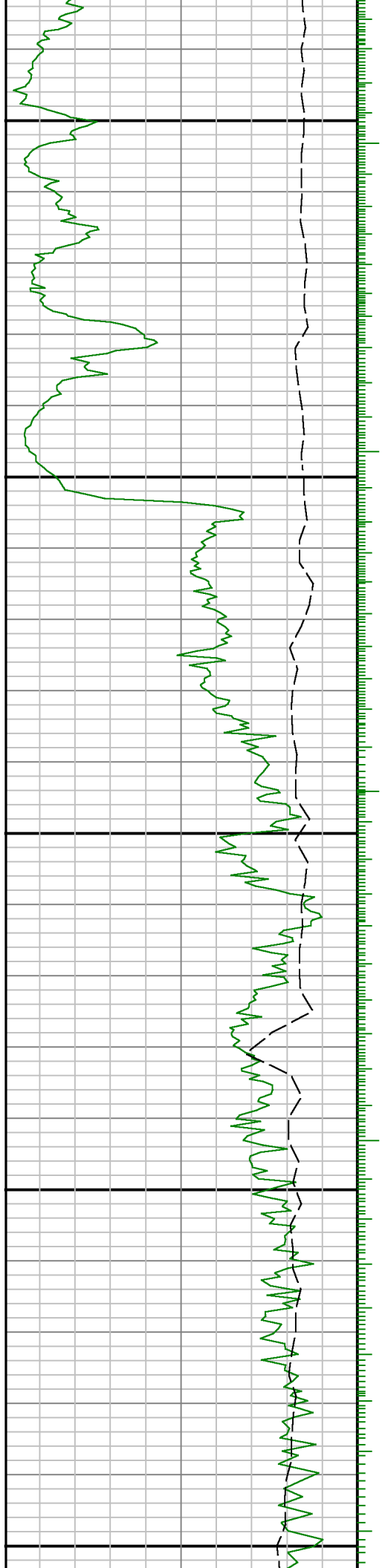
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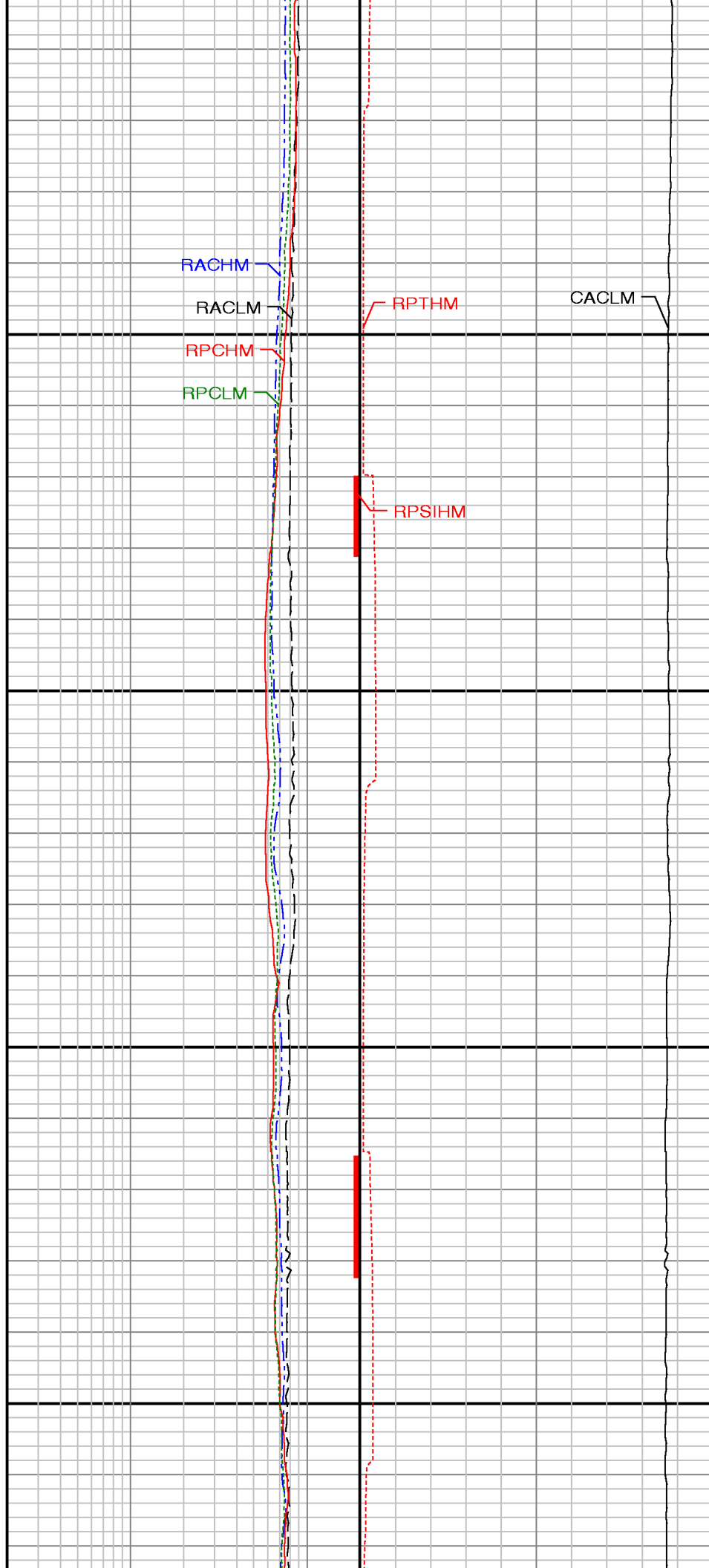
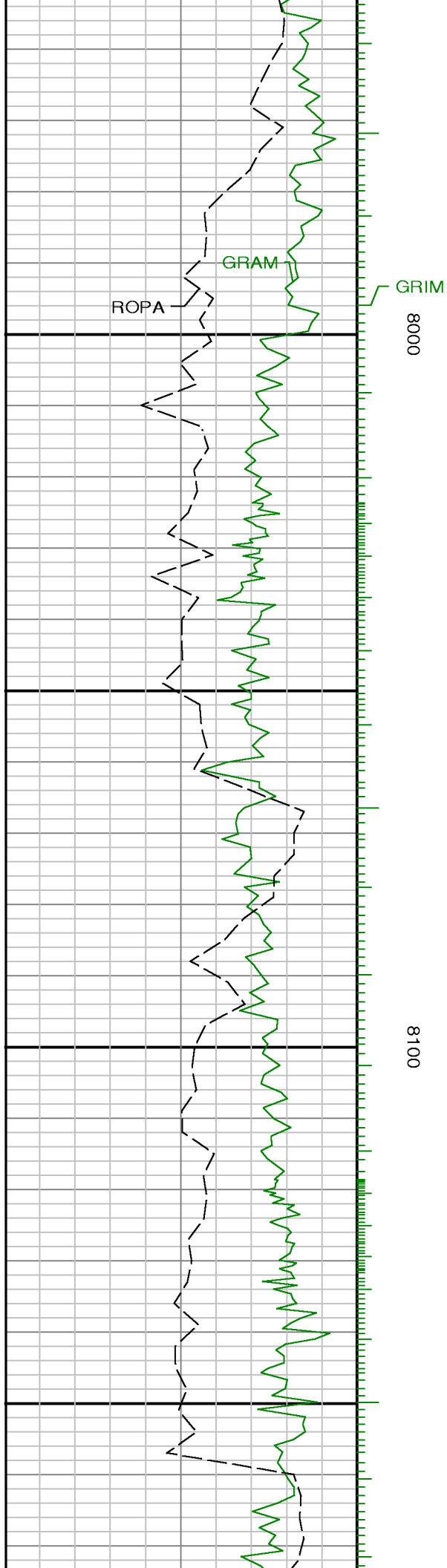


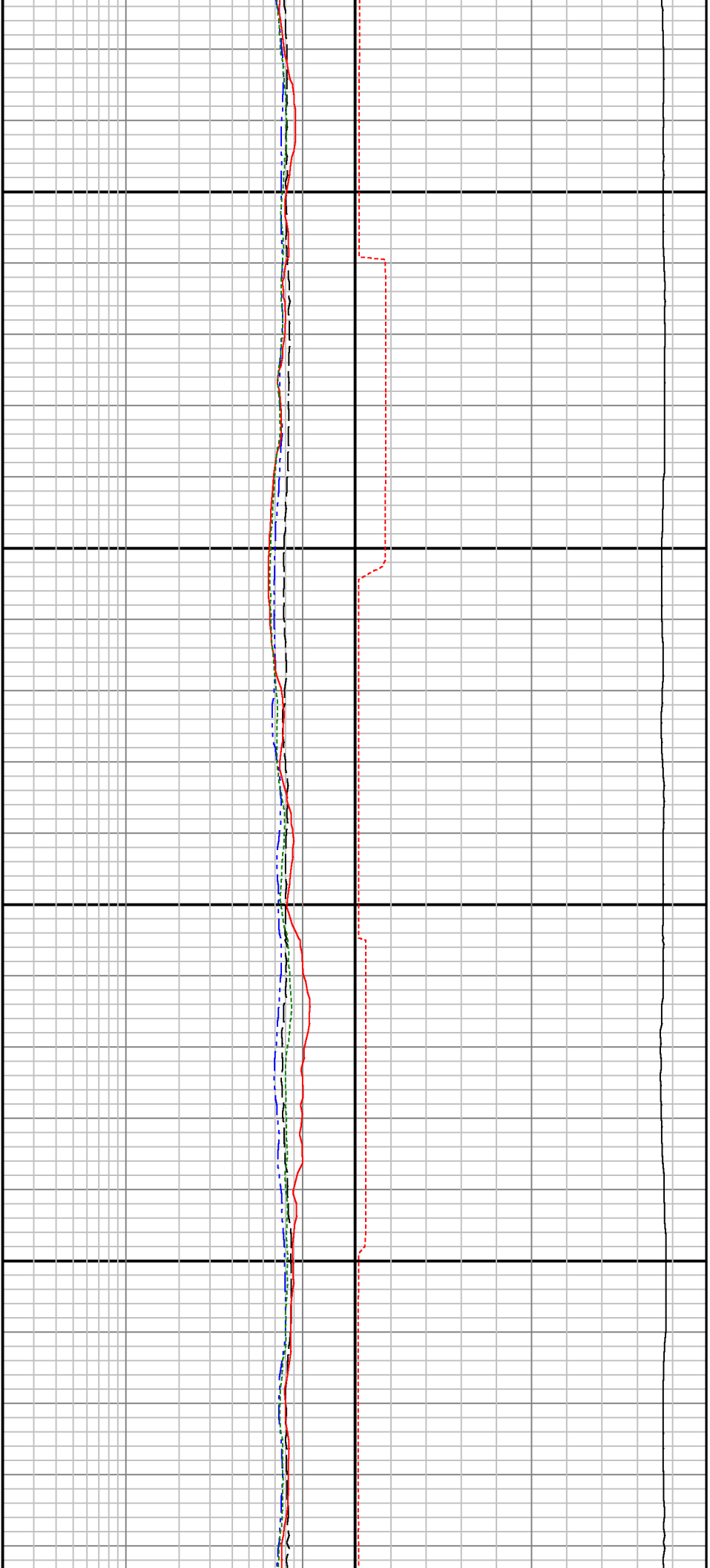


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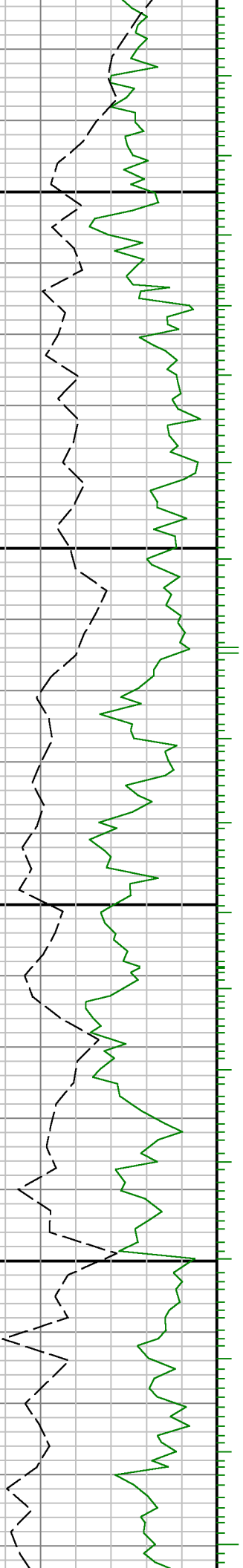


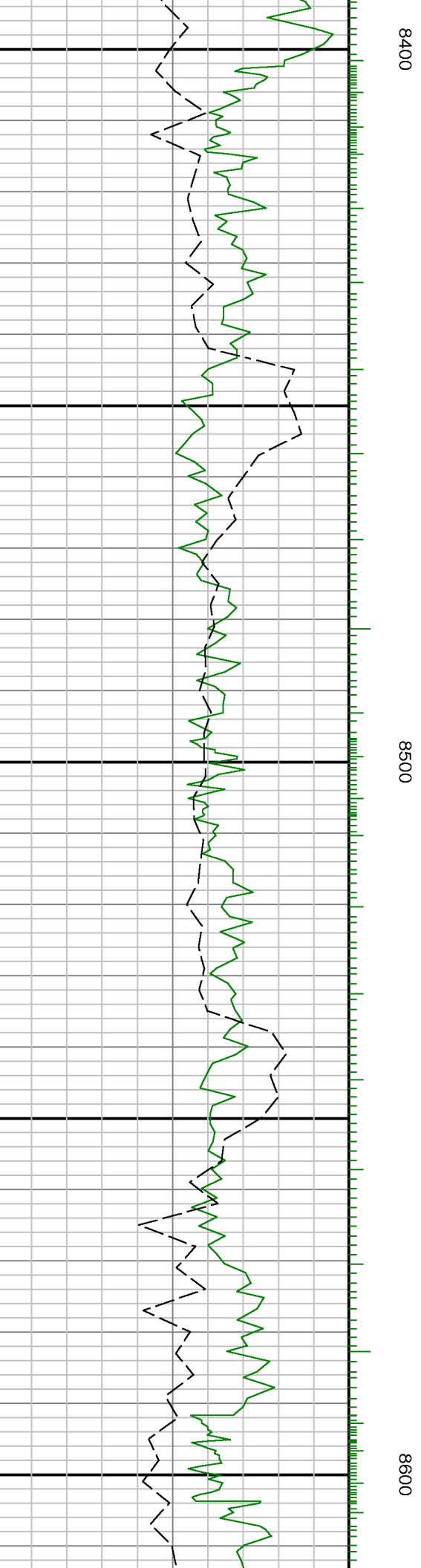


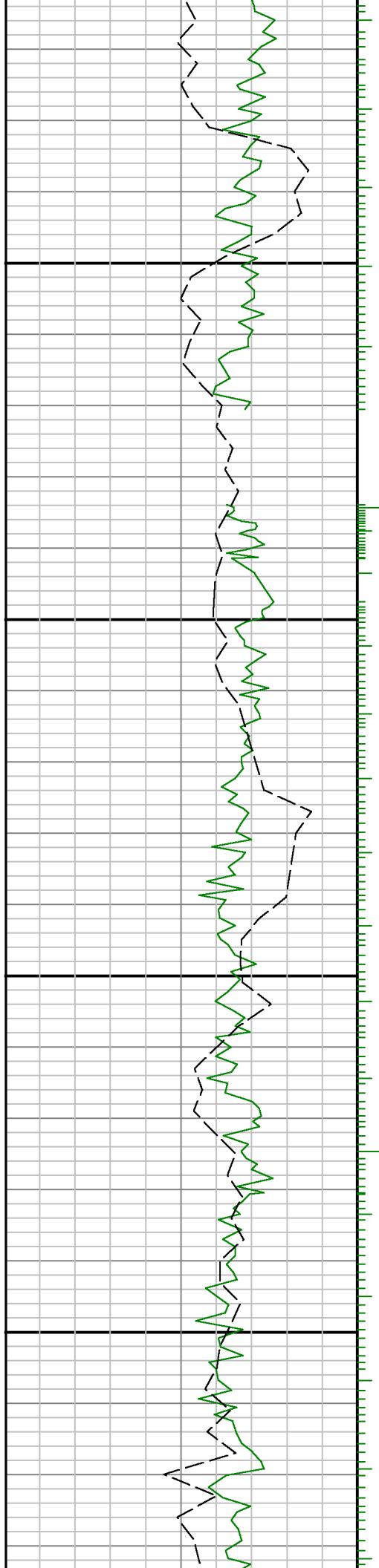


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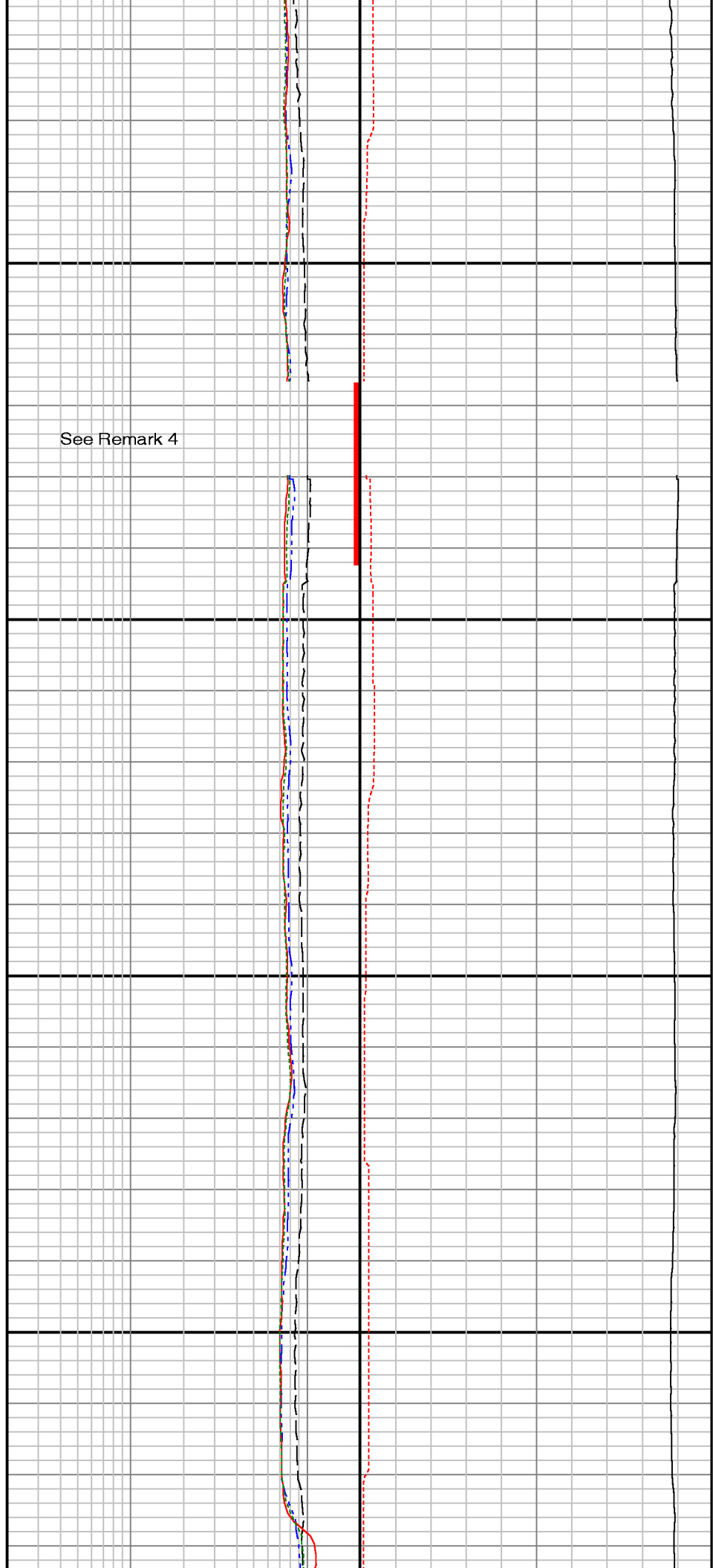




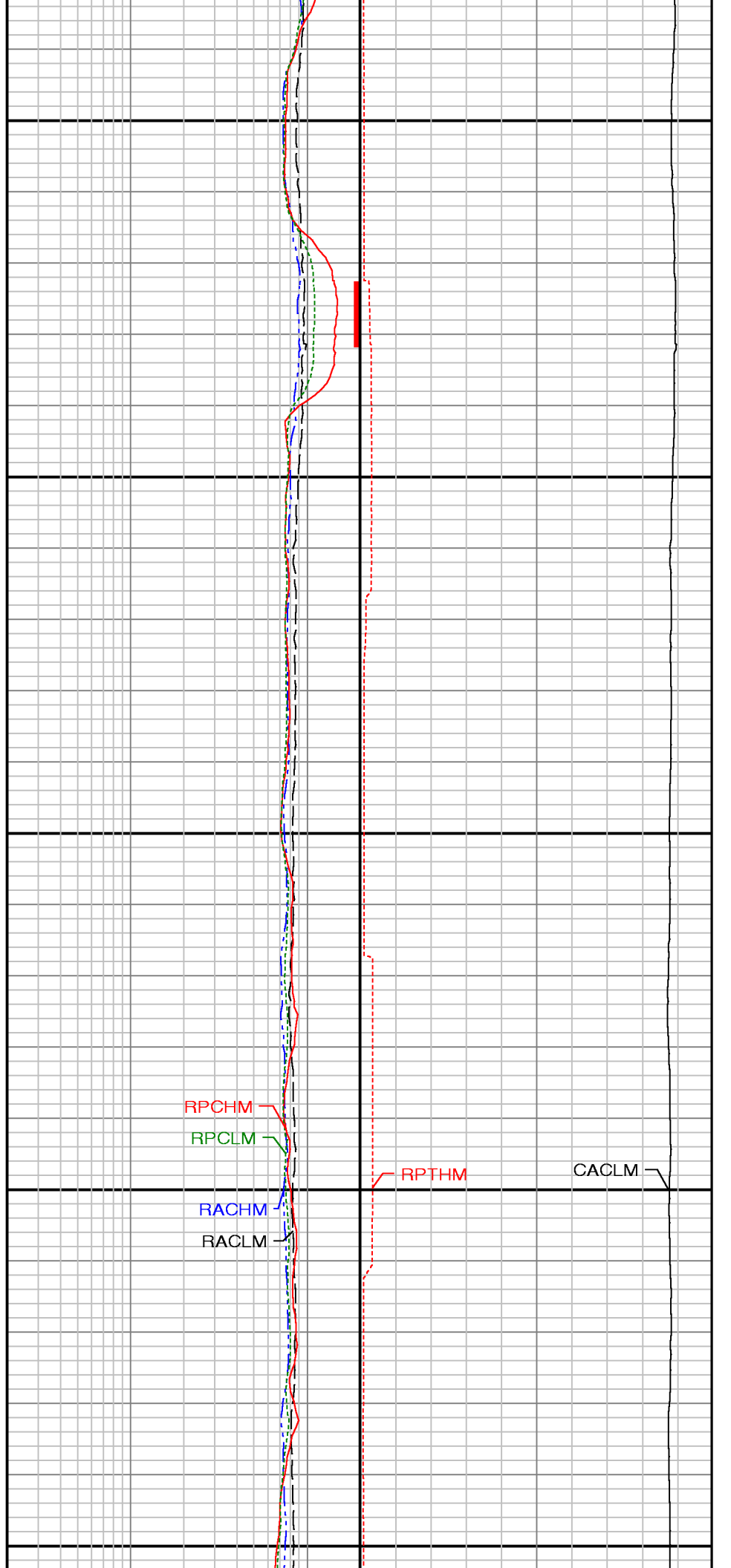
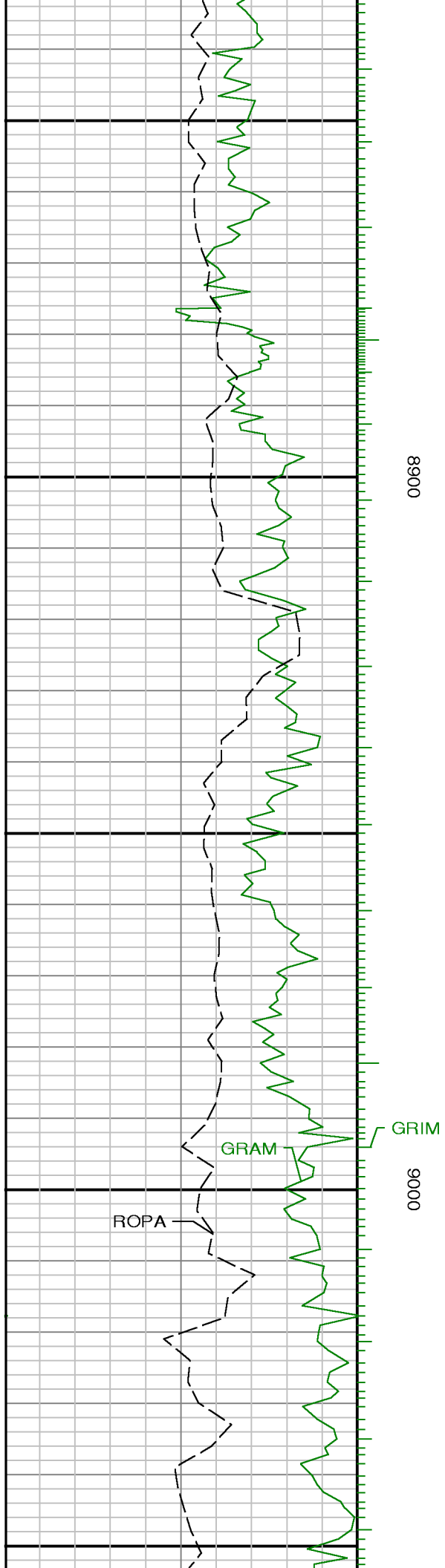


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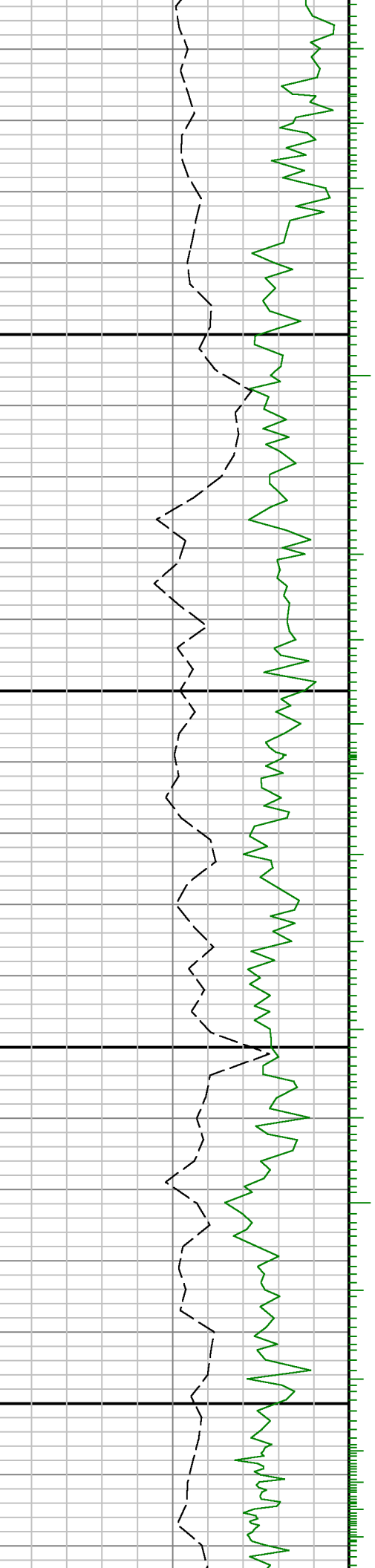
See Remark 4





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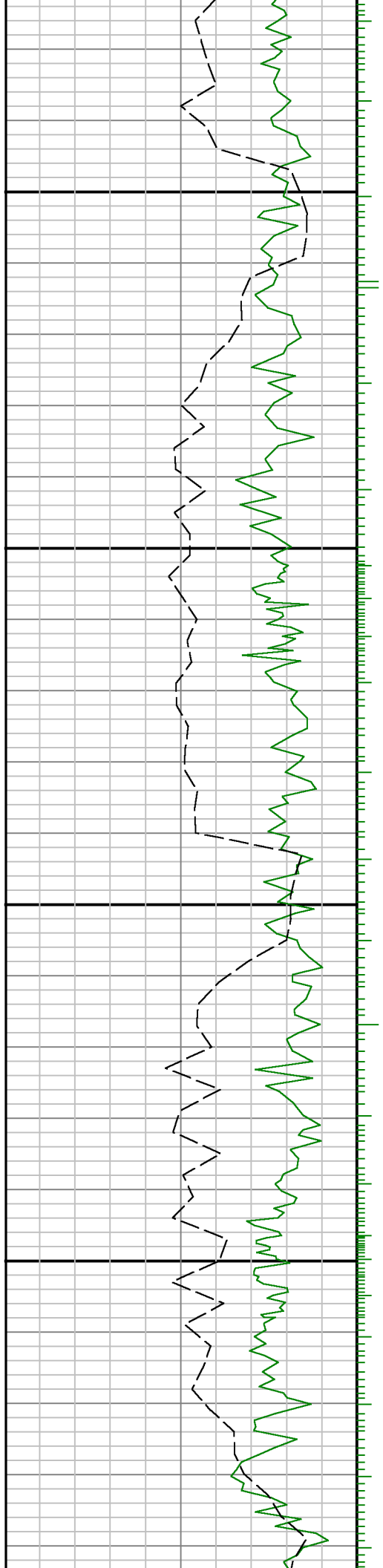
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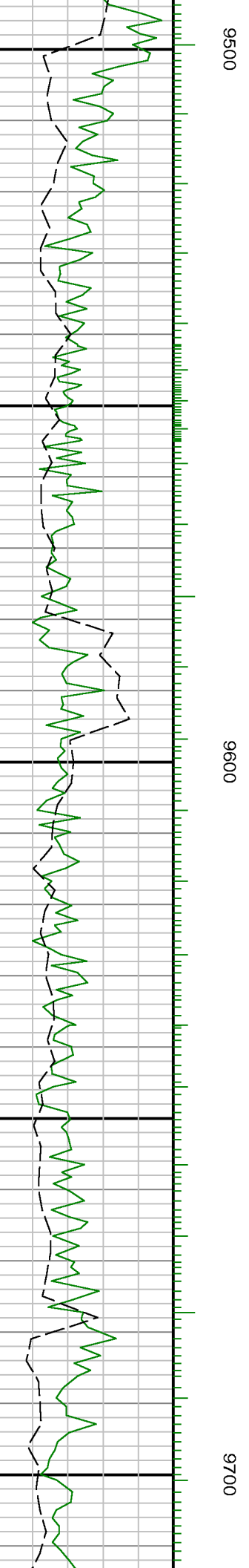


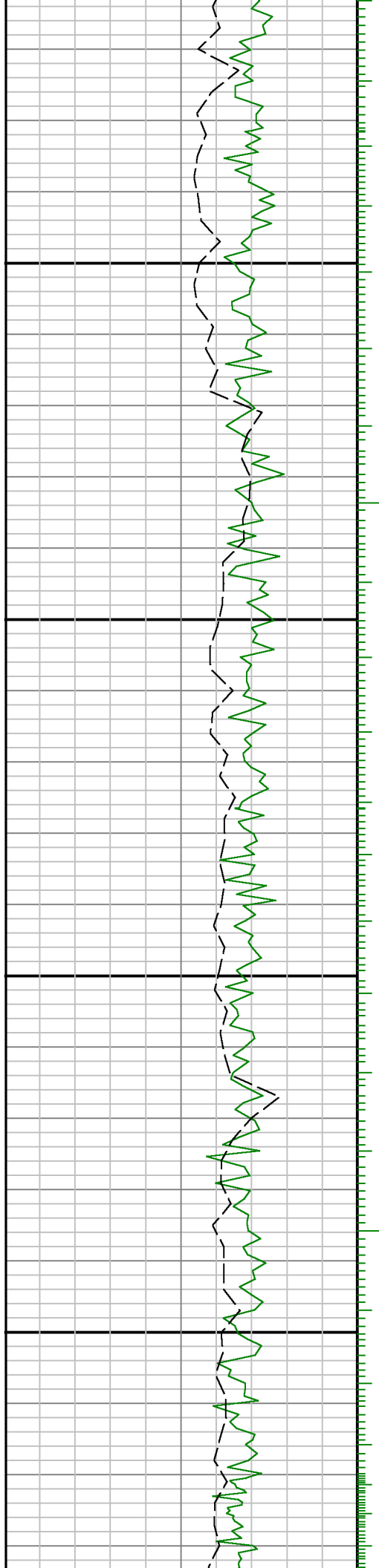


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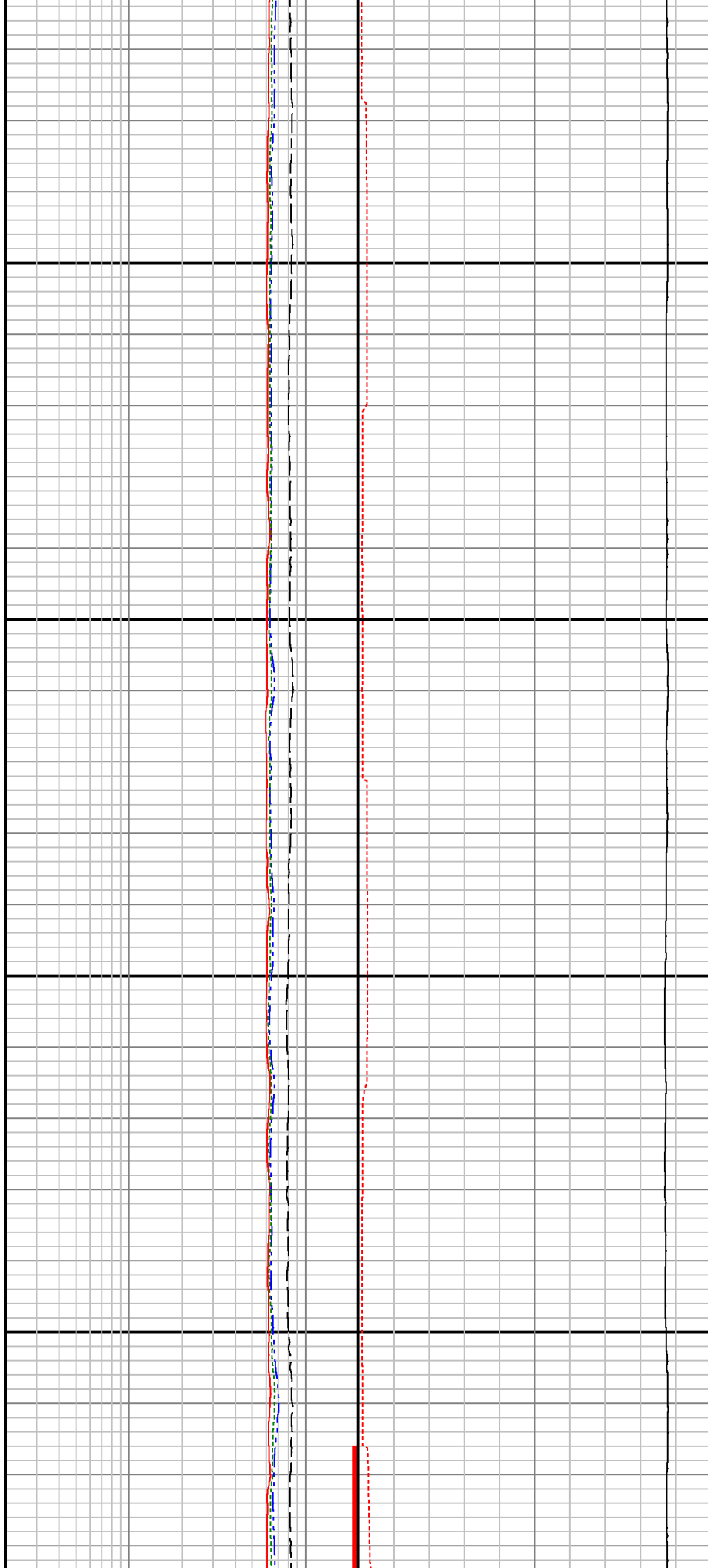


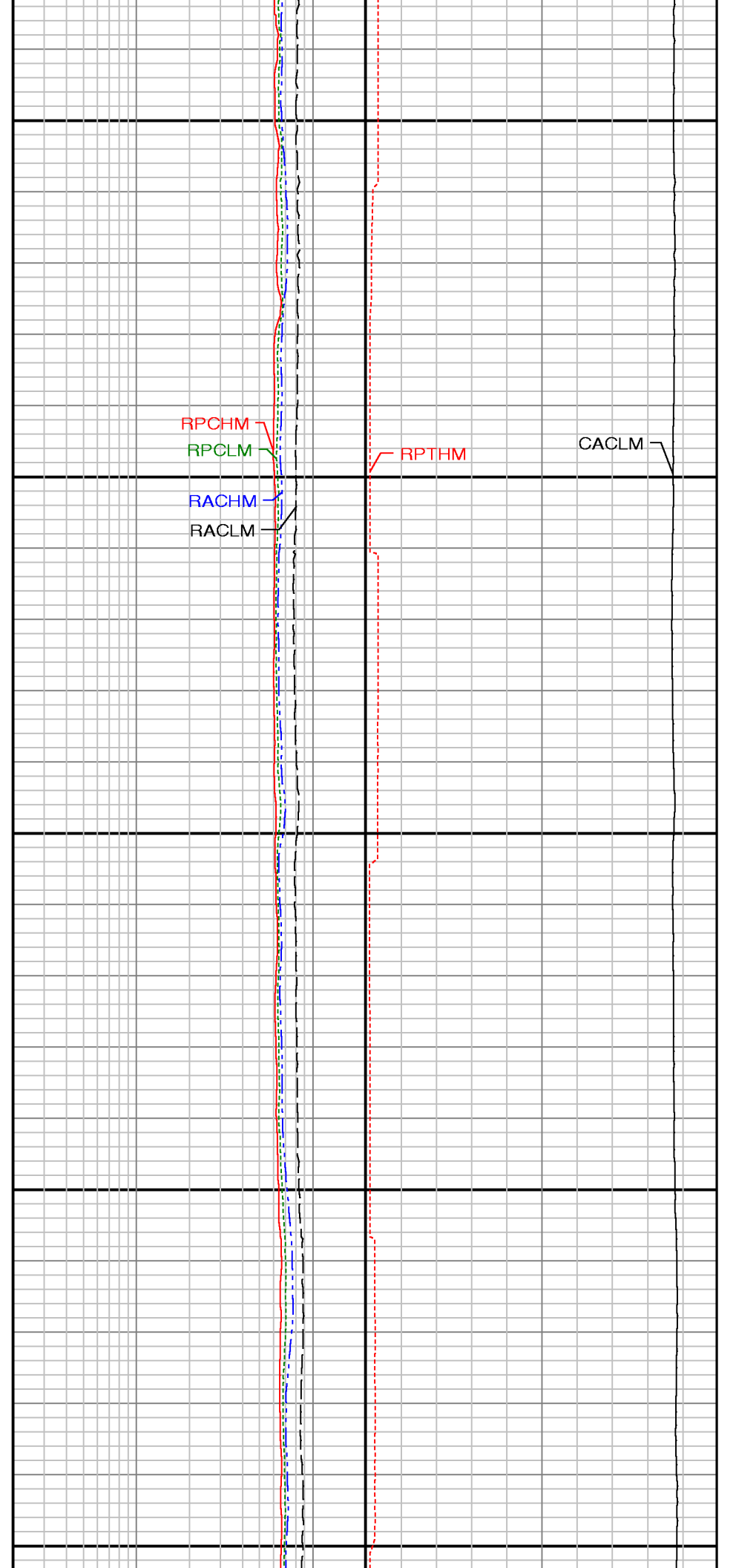
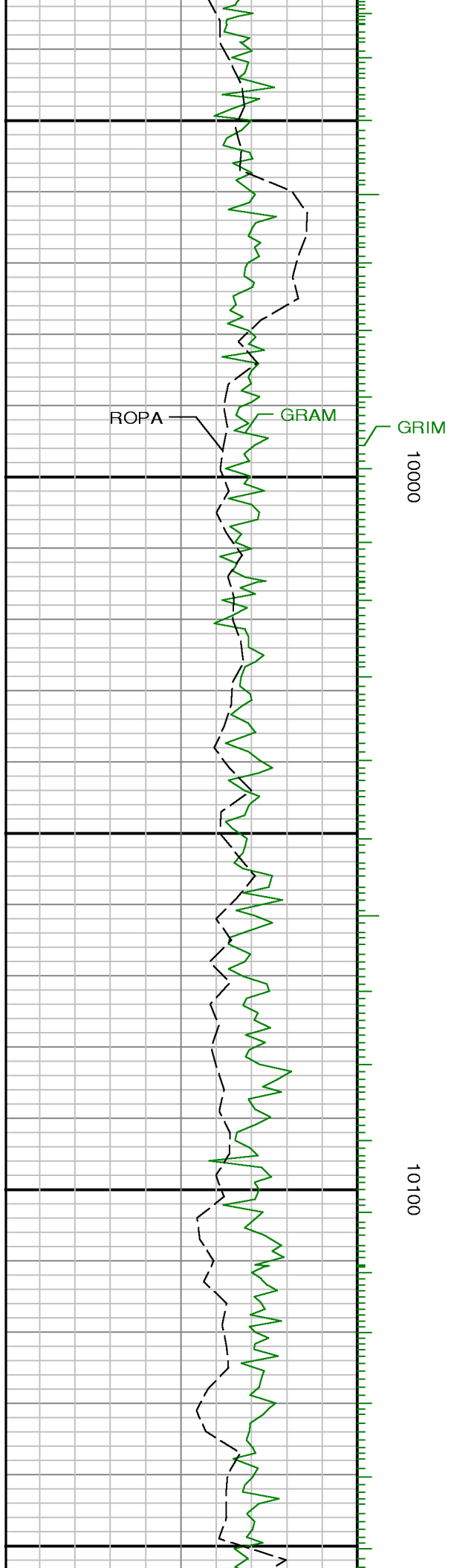


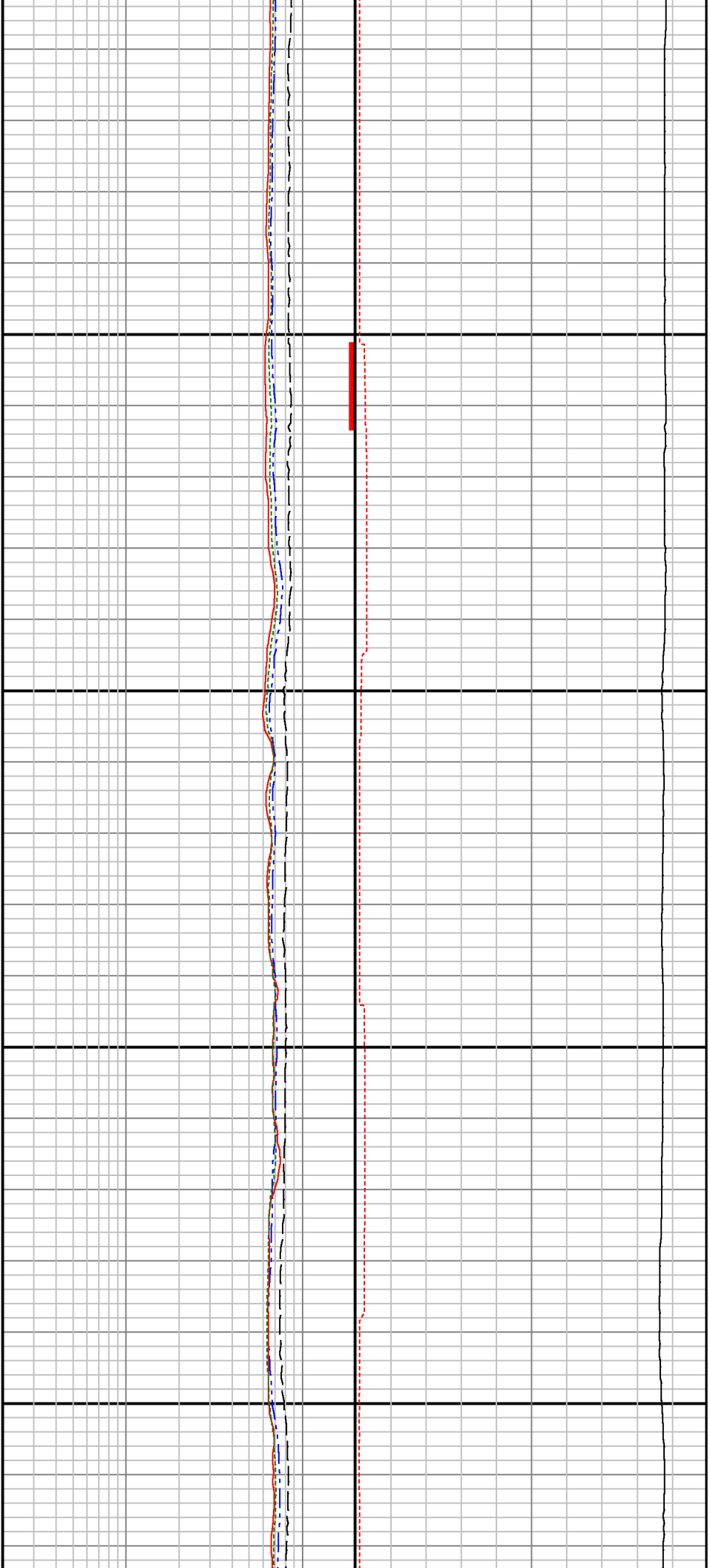


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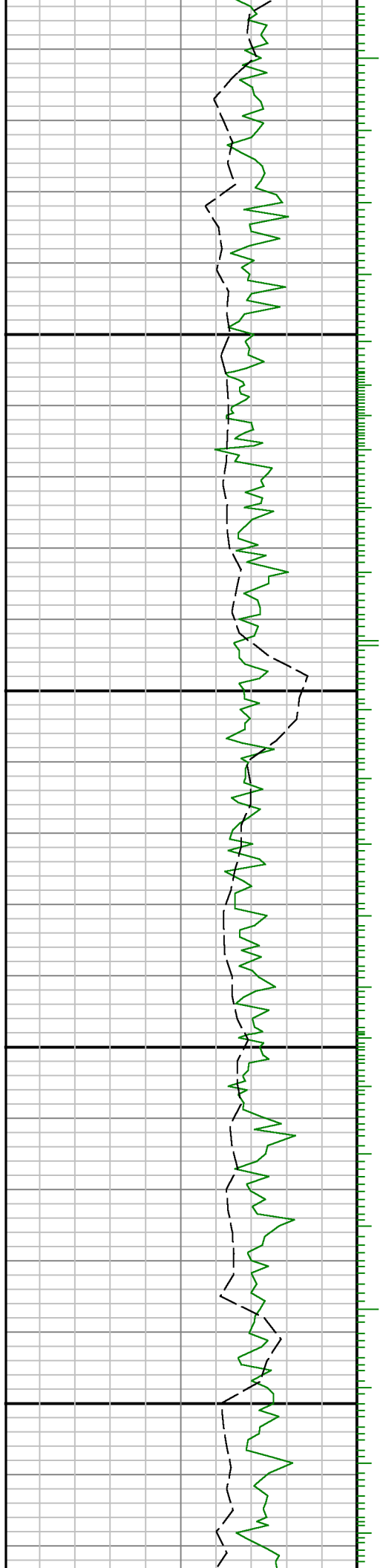


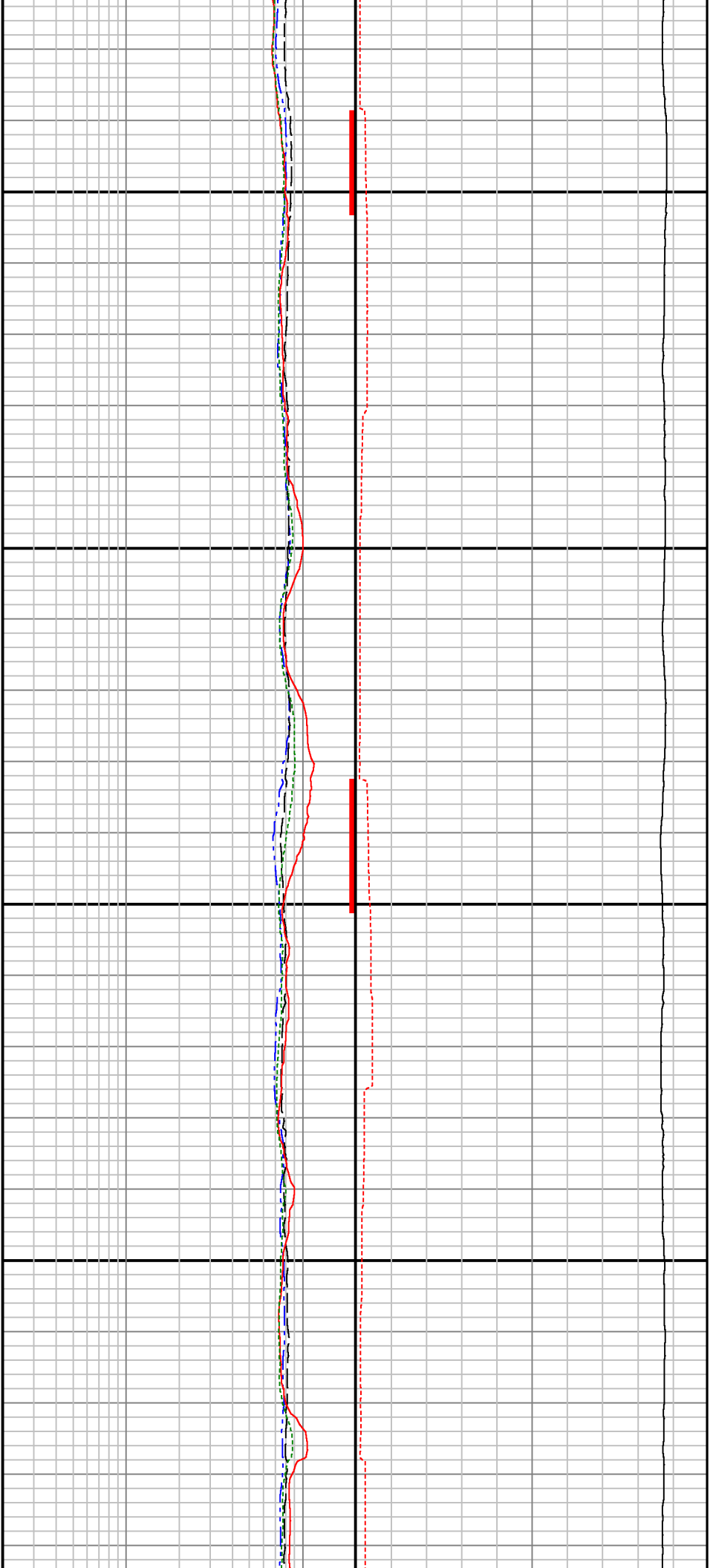




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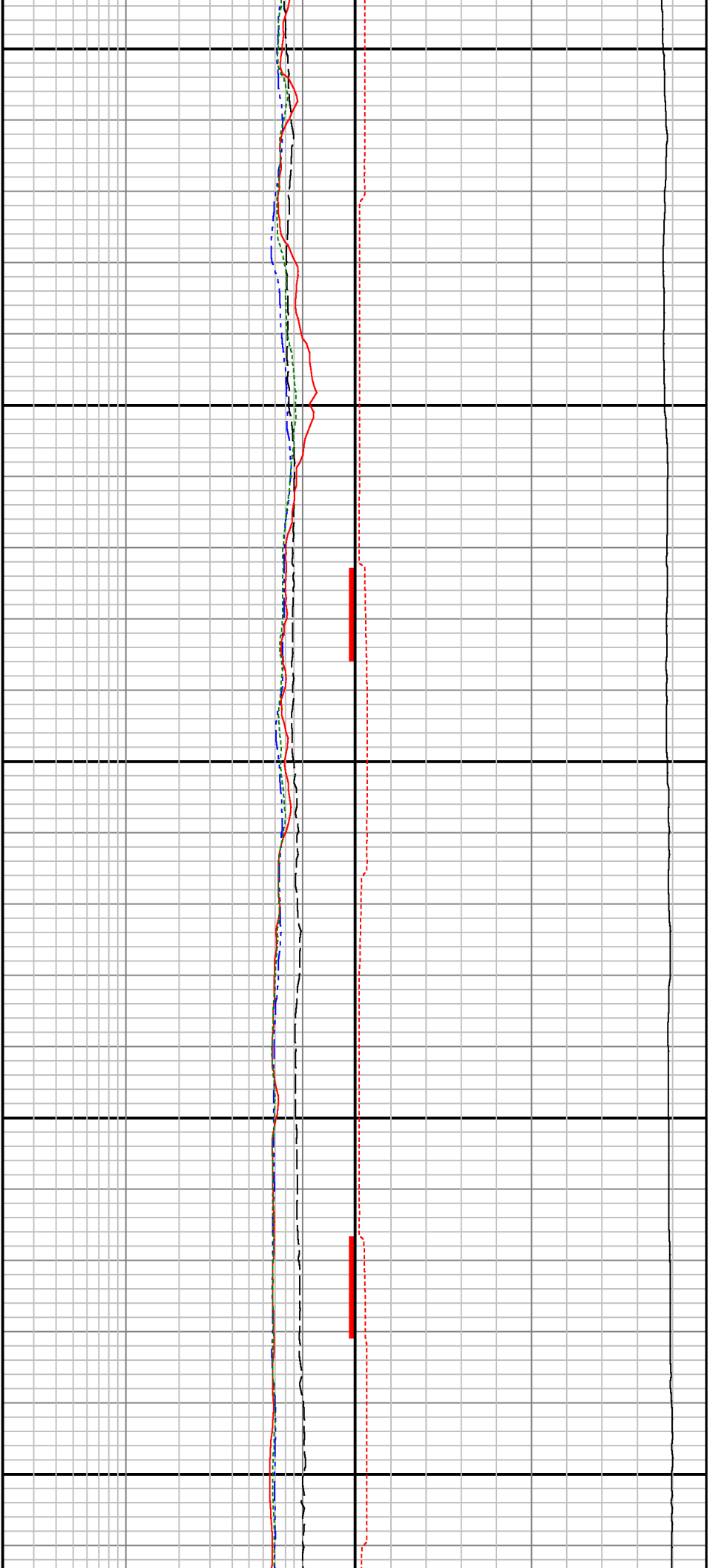
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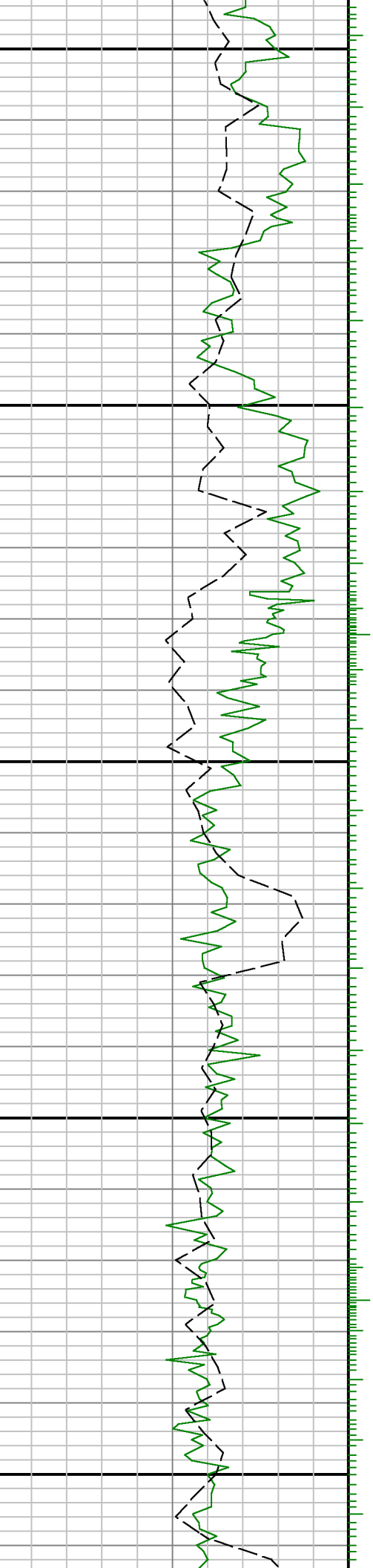
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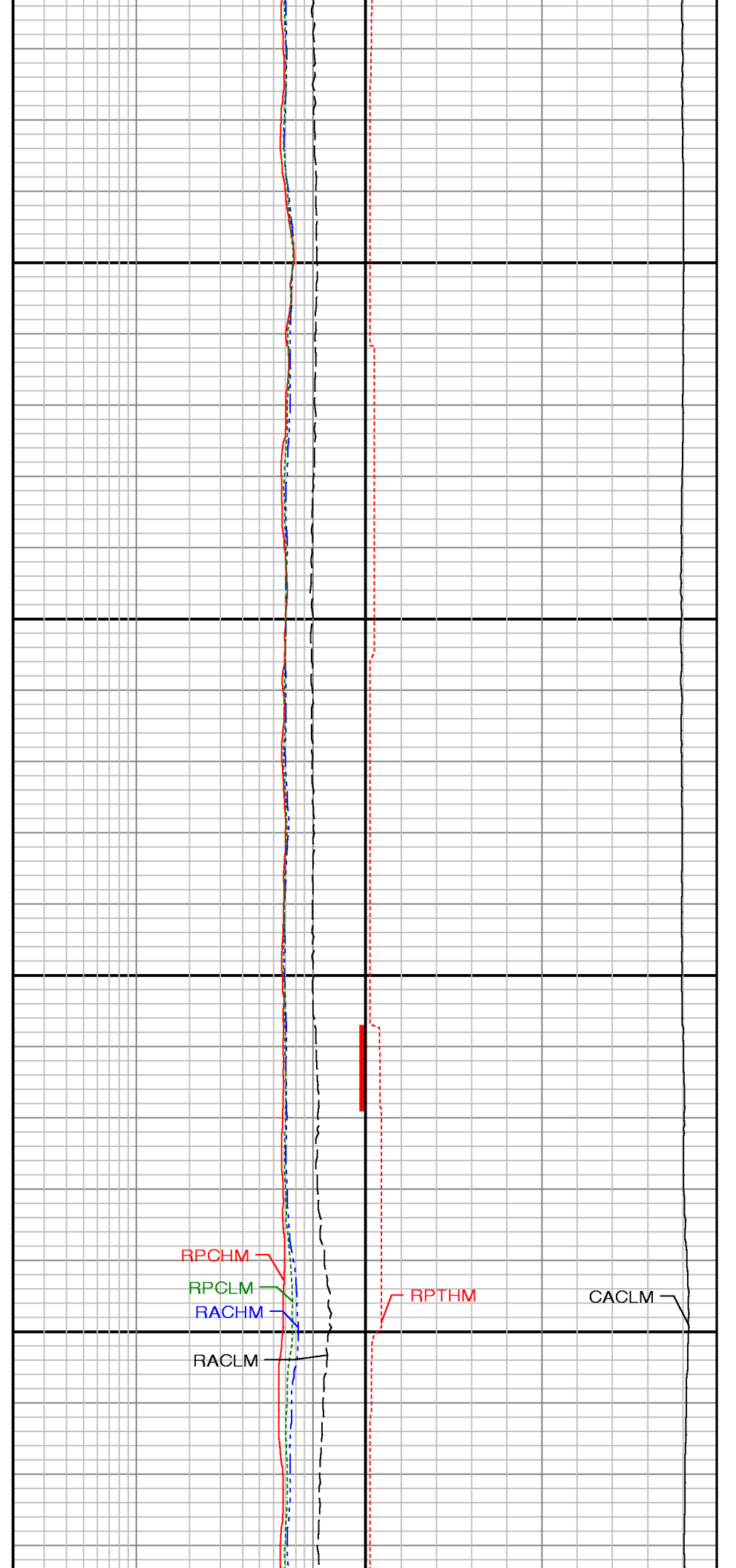
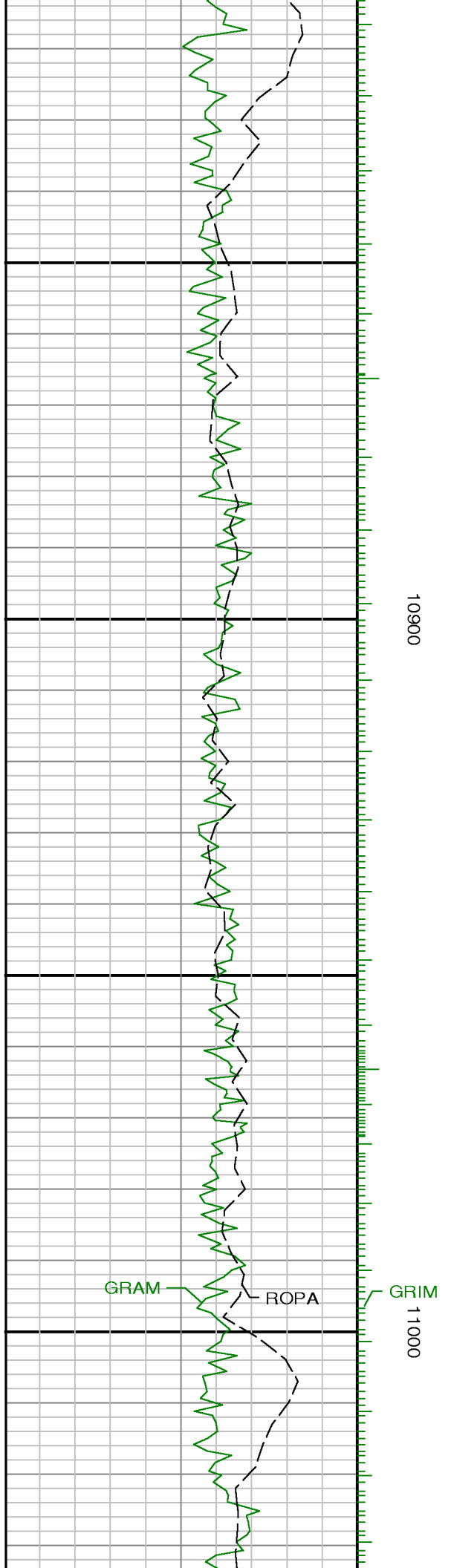


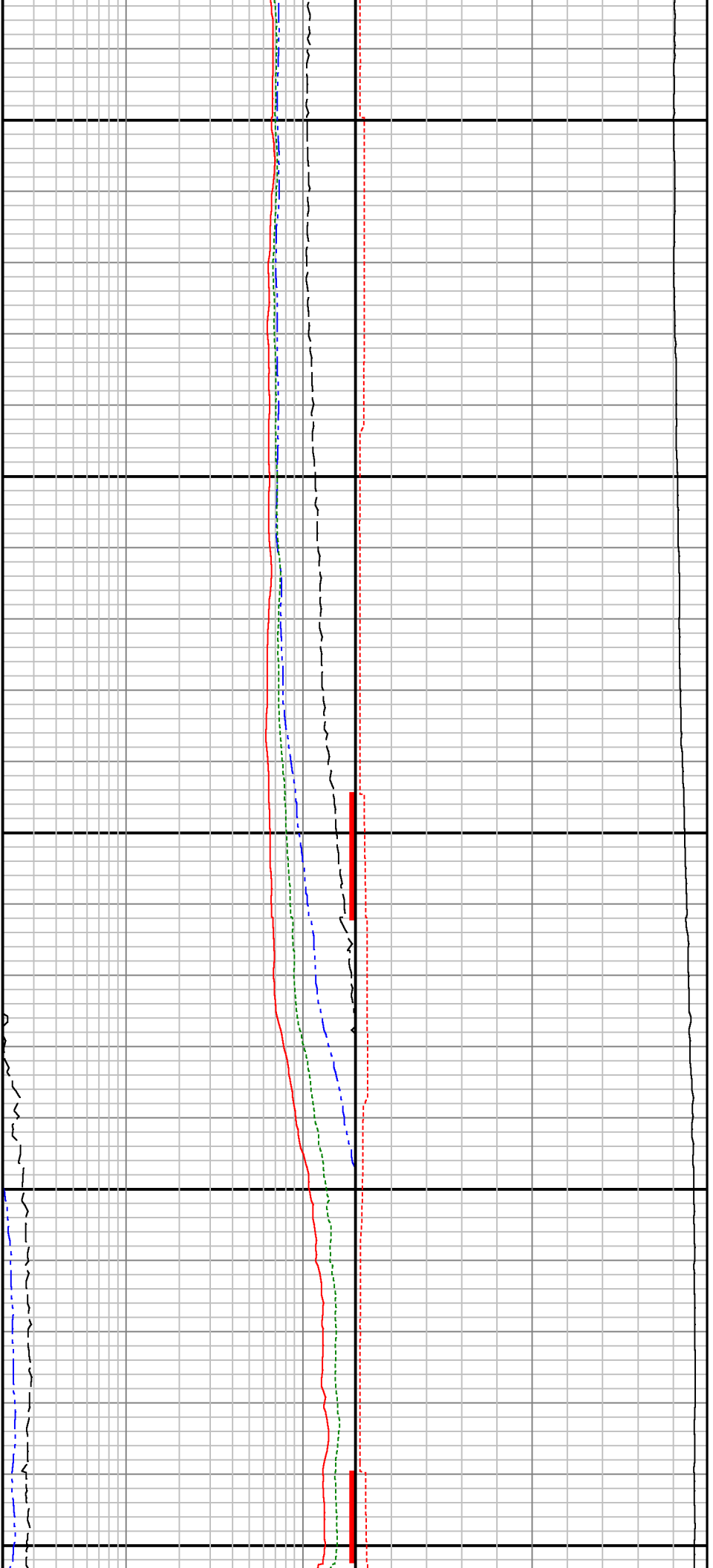
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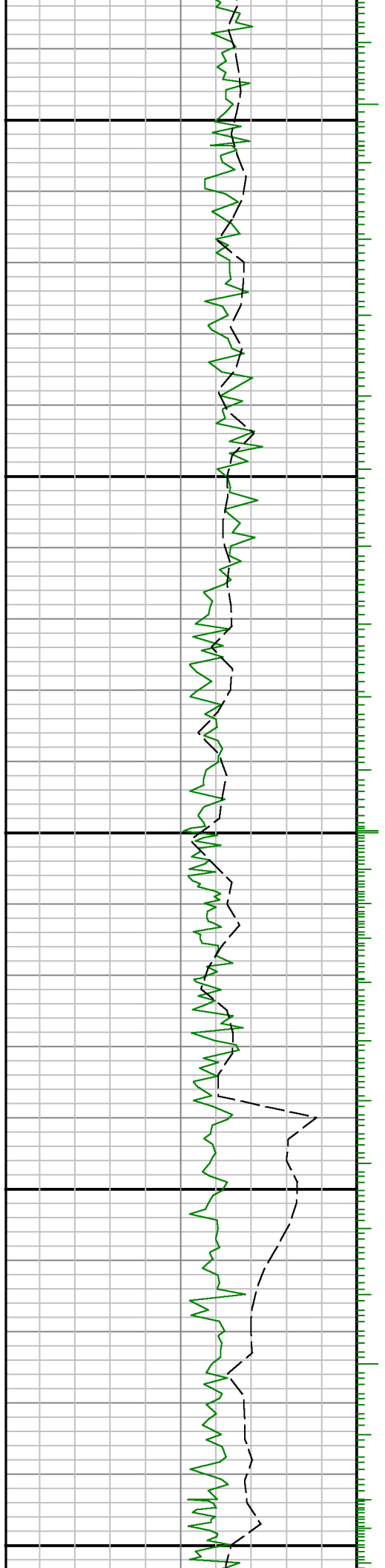


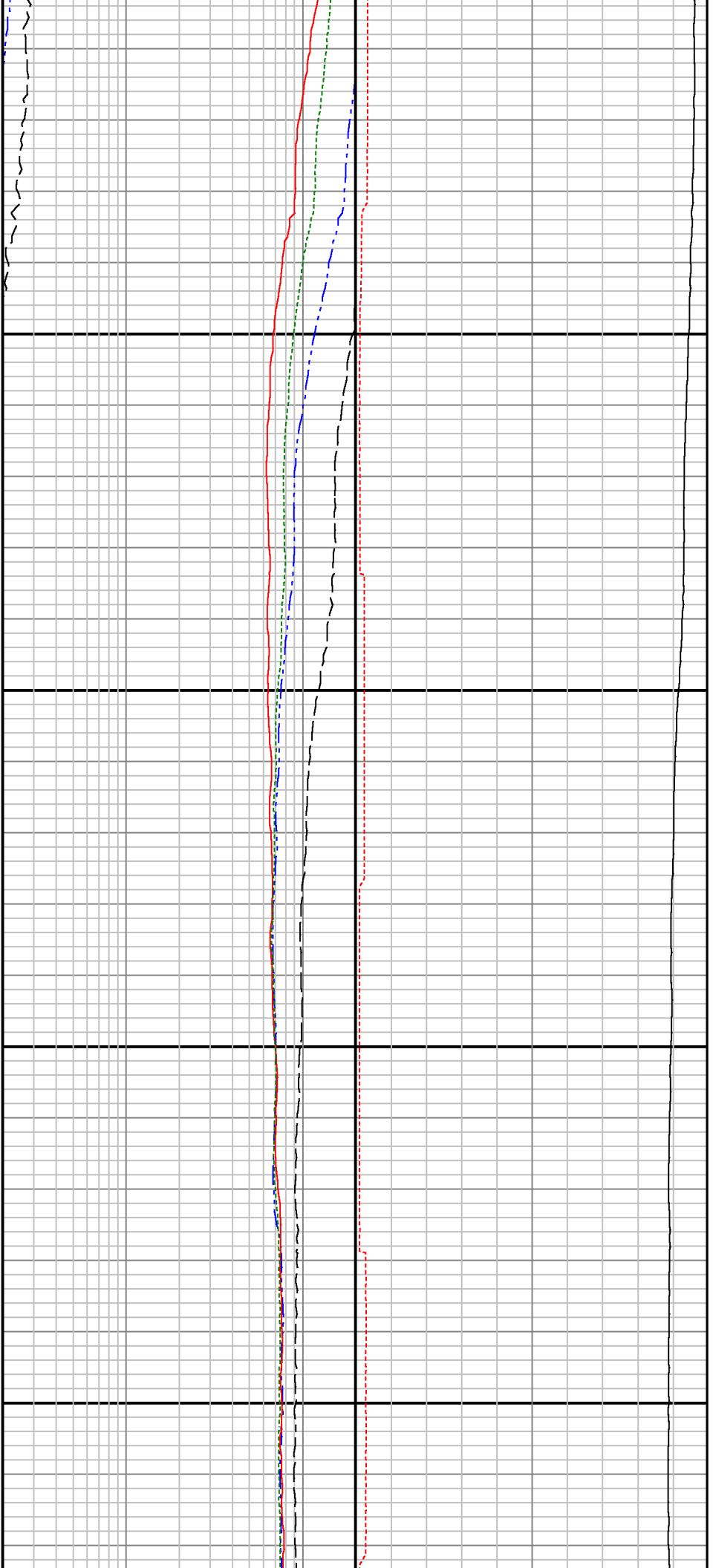




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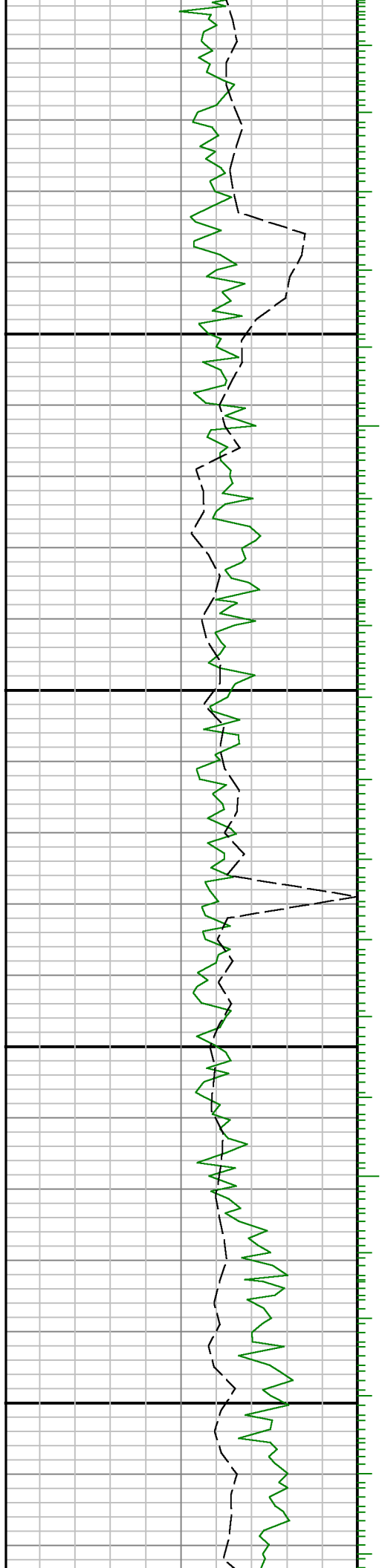
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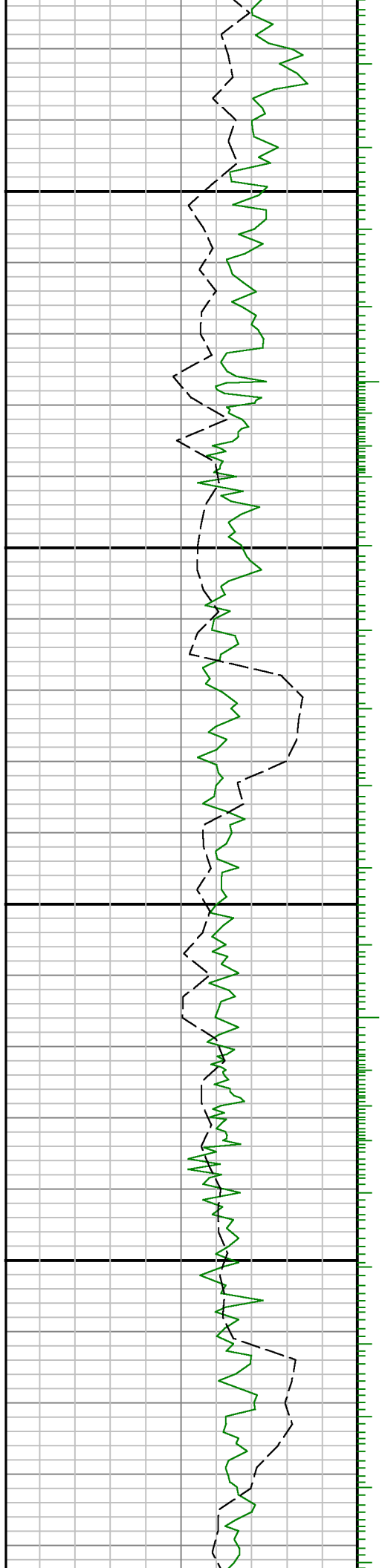
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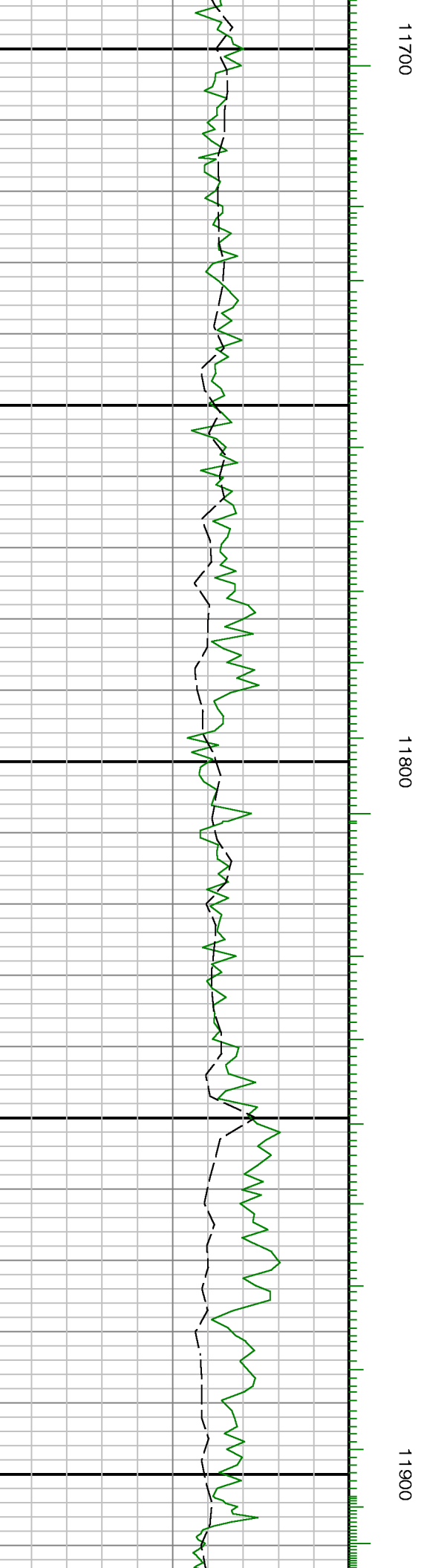
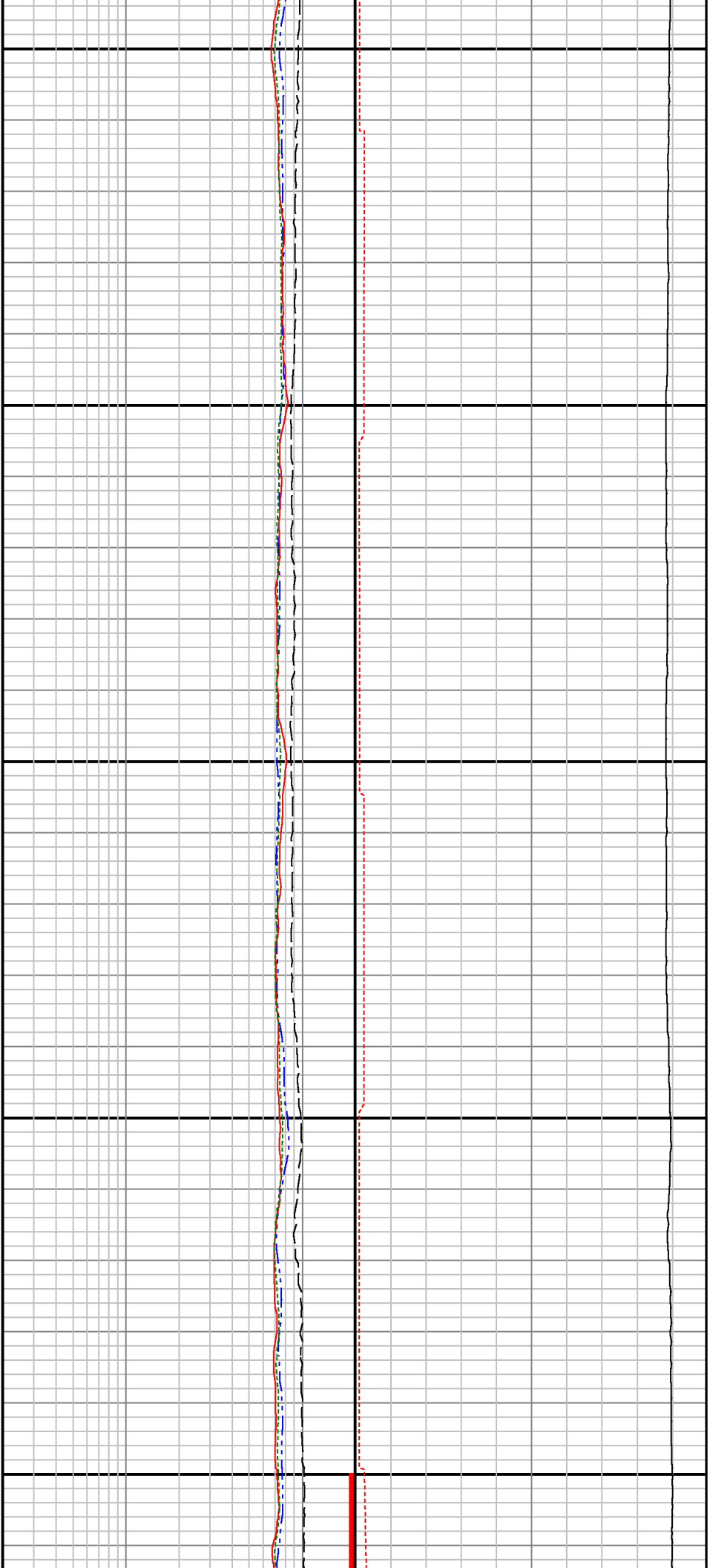


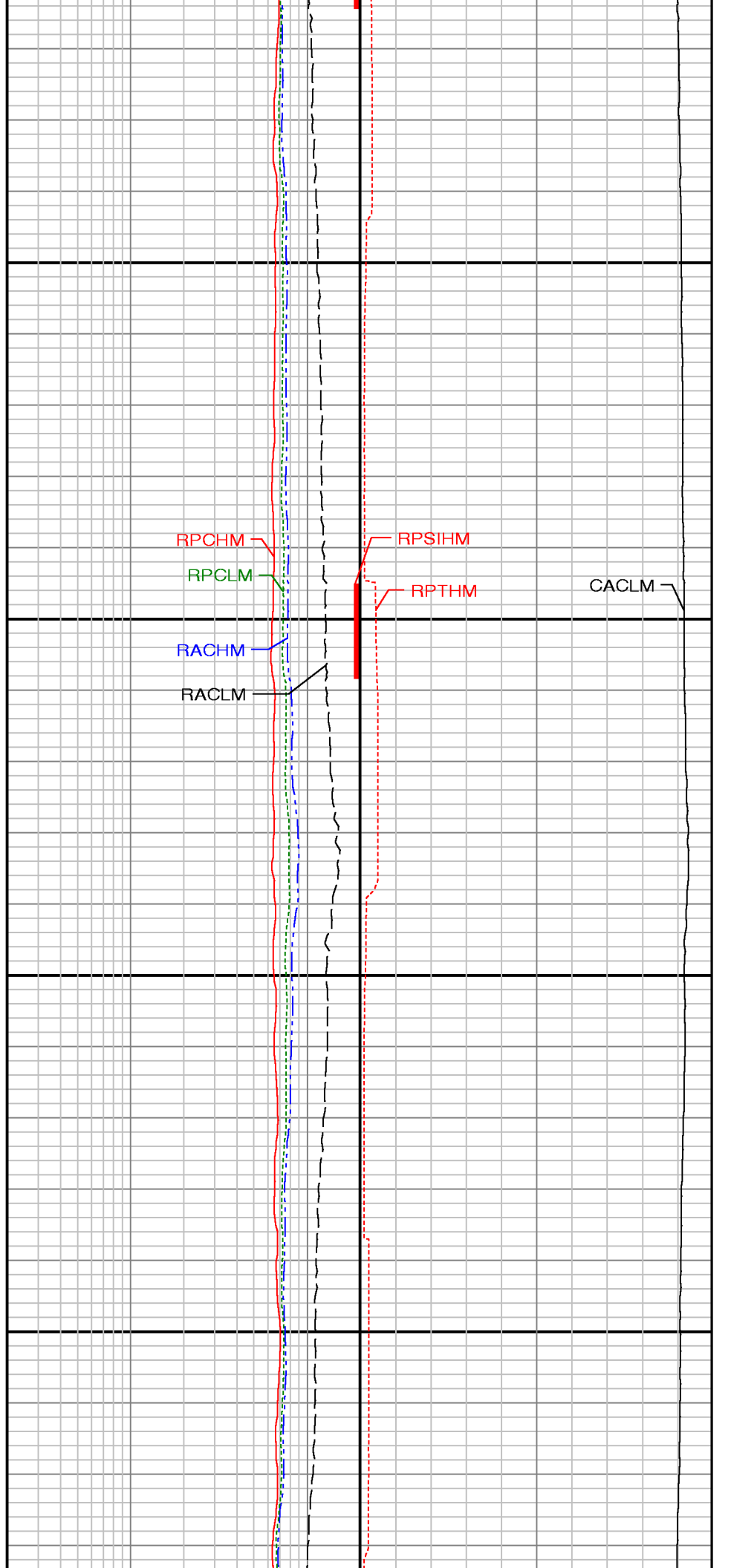
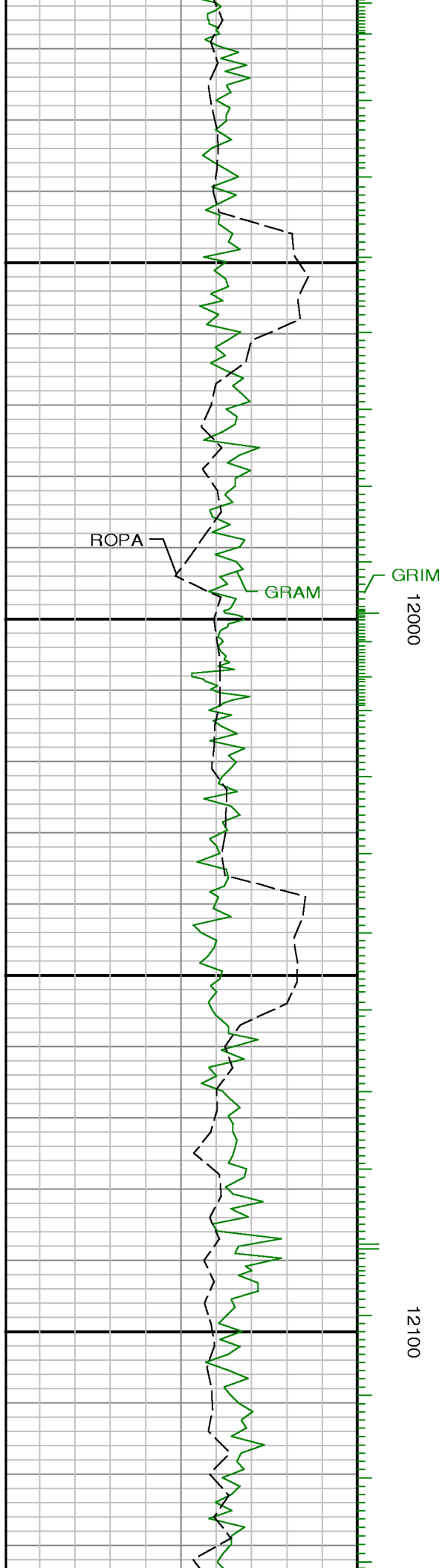


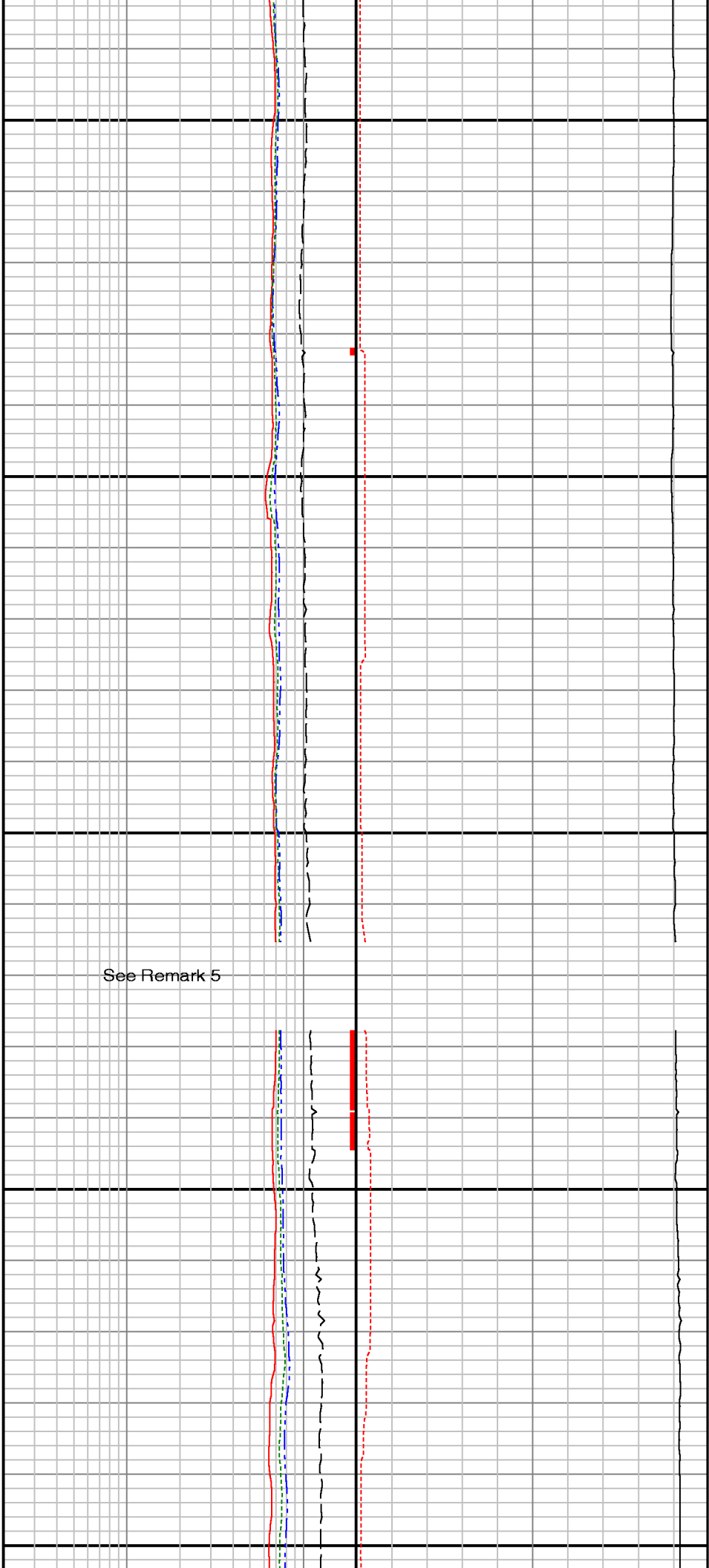
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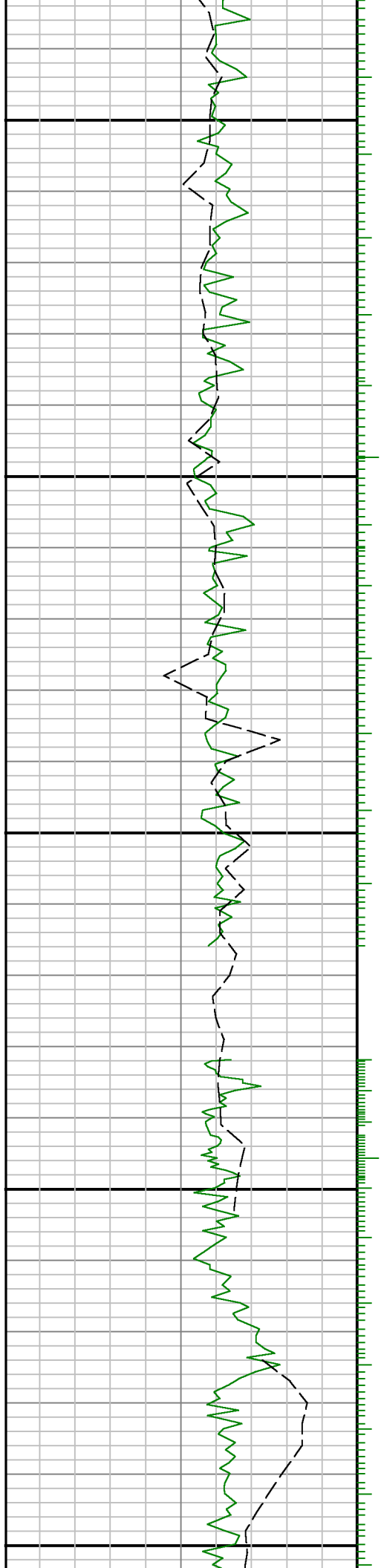


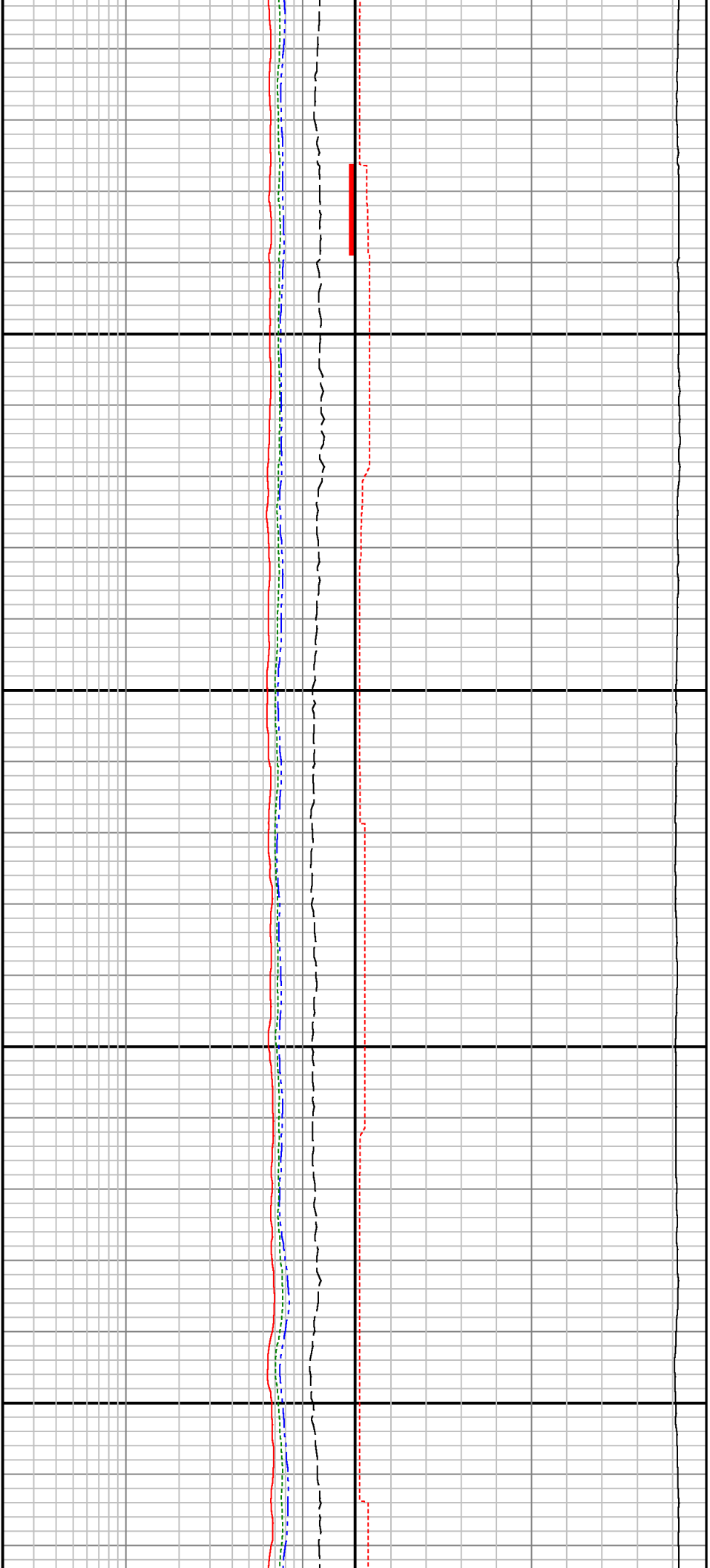




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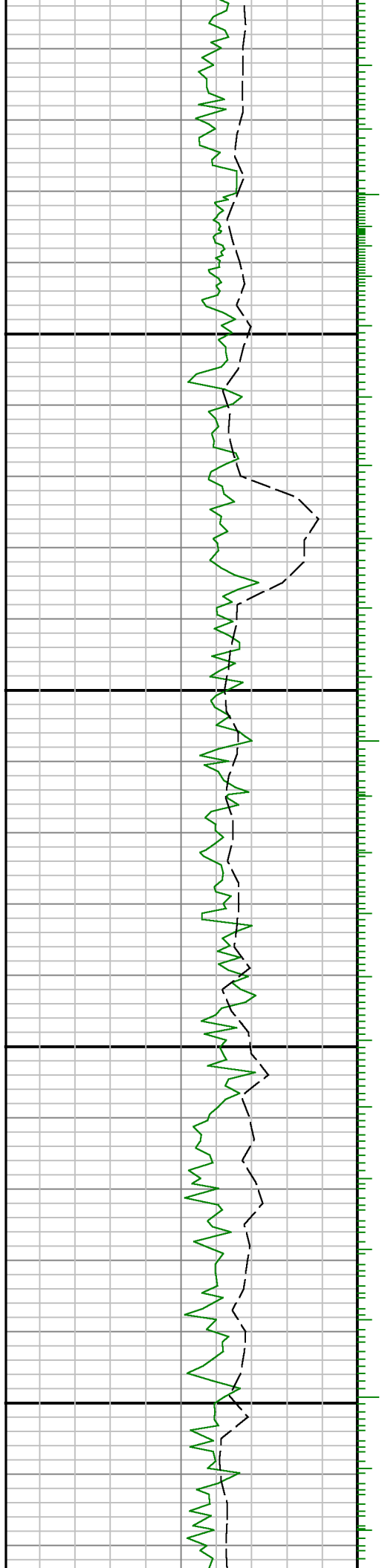
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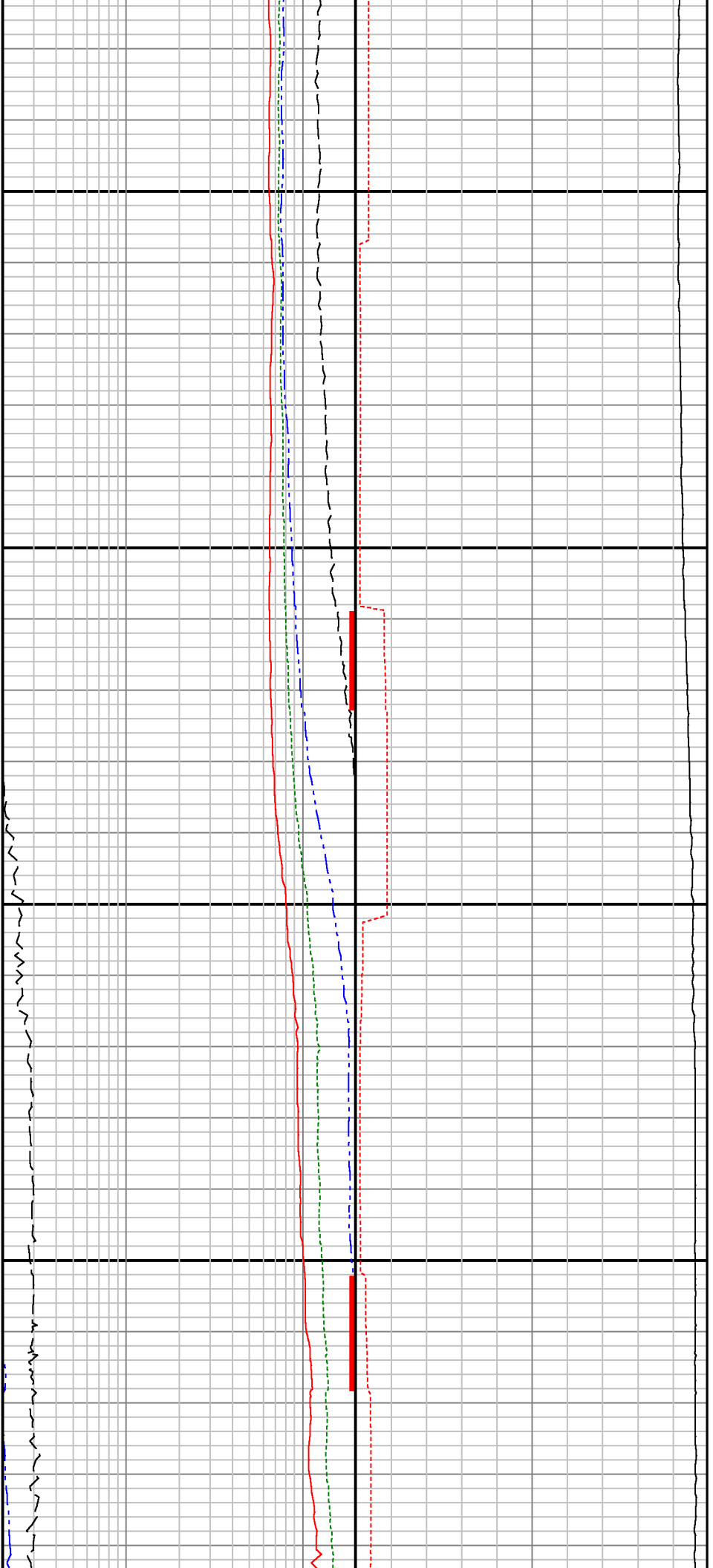




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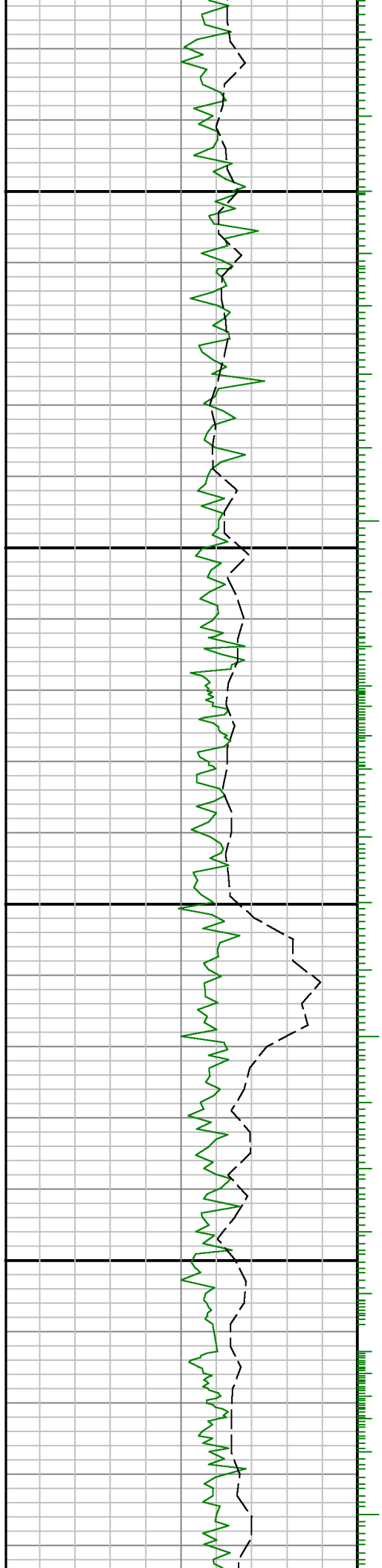
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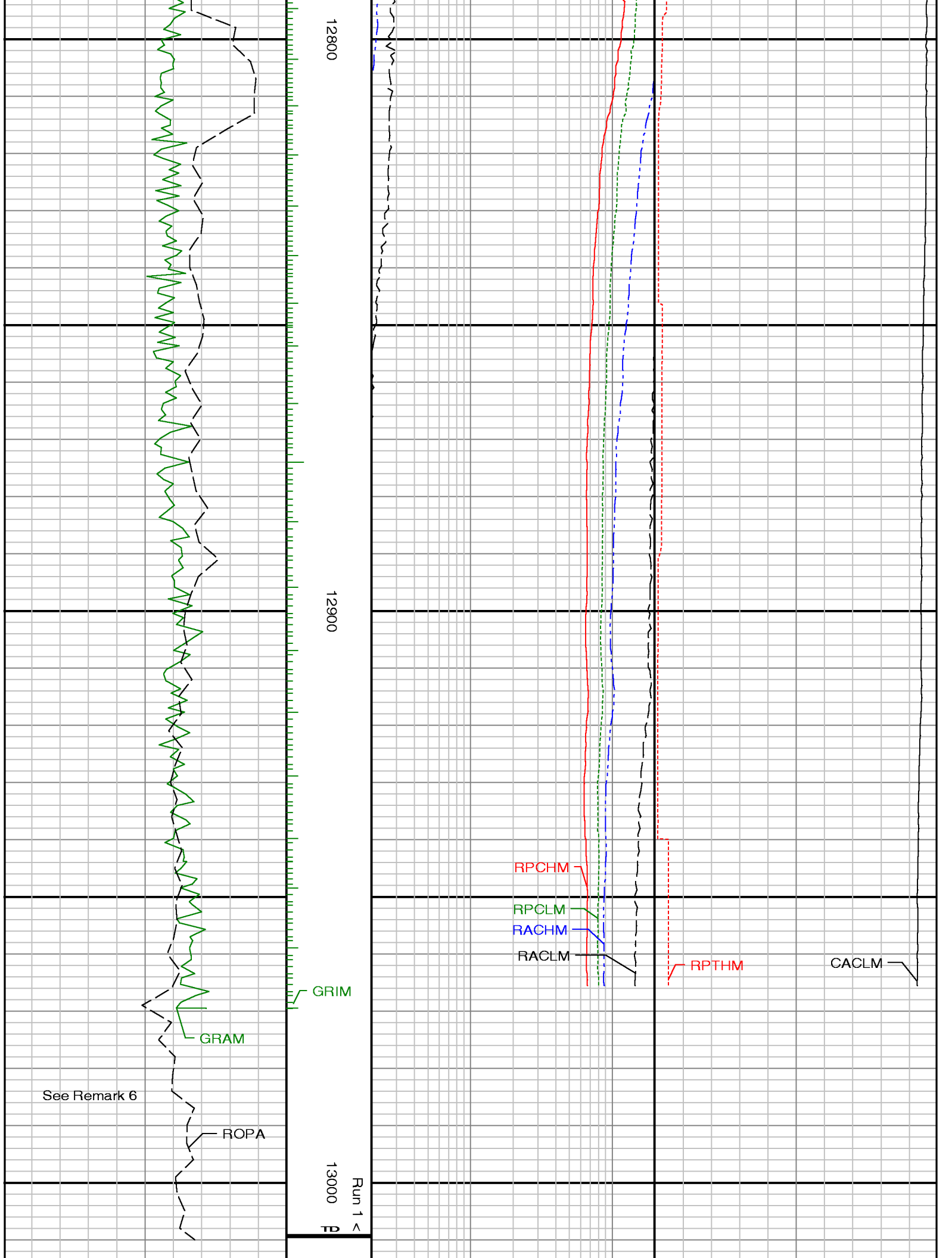




12600

12700





Gamma Ray Apparent 0.5 ft Avg GRAM		MD feet 1:240	Res PD LS 2MHz Corr RPCHM		Con AT LS 400kHz Corr CACLM	
0 150			0.2 20		1000 0	
API			ohm.m		mmho/m	
Rate of Penetration 3.0 ft Avg ROPA			Res PD LS 400kHz Corr RPCLM		Time Since Drilled RPTHM	
1000 0			0.2 20		0 600	
ft/hr		ohm.m		min		
		Res AT LS 2MHz Corr RACHM				
		0.2 20				
		ohm.m				
		Res AT LS 400kHz Corr RACLM				
		0.2 20				
		ohm.m				