



Weatherford®

6 3/4 & 4 3/4 in. WeatherfordM/LWD™
Gamma Ray
1 in. & 5 in. MEASURED DEPTH
RECORDED DATA
FINAL PRINT

Company: Anadarko Petroleum Corp.
Well: Howard 24C-22HZ
Field: Wattenberg
Rig: Xtreme 23
County: Weld

COMPANY		Anadarko Petroleum Corp.	
WELL		Howard 24C-22HZ	
FIELD		Wattenberg	
RIG		Xtreme 23	
COUNTY		STATE	
API #		Colorado	
Location			
Latitude:	40.01639° N	x = 3,175,071.52 ft	Mag Decl: 8.60°
Longitude:	-104.87493° W	y = 1,249,433.96ft	Mag Dip: 66.63°
Other Services: Directional and Temperature			

Permanent Datum:	<u>Mean Sea Level</u>		
Log Measured From:	<u>Drill Floor</u>	Elev: <u>5049.0 ft</u>	above perm. datum
Depth Reference:	<u>Drillers Tally</u>	Total Depth: <u>14975.0 ft</u>	
Depth Logged:	7184.0 ft	to 14975.0 ft	Runs: 7
Date Logged:	26-Nov-13	to 7-Dec-13	Spud Date: 25-Nov-13
		Elevation	K.B. Top Drive G.L. 5033.0 ft D.F. 5049.0 ft W.D. Land

Borehole Record				Casing Record			
Hole Size	From	To	Size	Weight	From	To	
13.500 in.	Surface	1228 ft	9.625 in.	36.0 lb/ft	Surface	1225 ft	
8.750 in.	1228 ft	8224 ft	7.000 in.	26.0 lb/ft	Surface	8210 ft	
6.125 in.	8224 ft	14975 ft					

Borehole Deviation Record			Mud Record			
Hole Size	Min. Inc.	Max. Inc.	Type	Weight	From	To
13.500 in.	0.00°	0.41	WBM	8.50 - 8.80 ppq	1228 ft	6500 ft
8.750 in.	0.14°	84.74°	WBM	8.80 - 9.10 ppq	6500 ft	6600 ft
6.125 in.	85.68°	93.33°	WBM	9.10 - 9.40 ppq	6600 ft	6746 ft
			WBM	9.40 - 9.70 ppq	6746 ft	7000 ft
			WBM	9.70 - 10.00 ppq	7000 ft	8210 ft
			WBM	9.30 - 9.60 ppq	8210 ft	14975 ft

All interpretations of log data are opinions based on inferences from electrical or other measurements. Weatherford International does not guarantee the accuracy or correctness of any interpretation or recommendation and we shall not be liable or responsible for any loss, cost, damages or expenses incurred or sustained by anyone resulting from any interpretation or recommendation made by any of our employees or agents.

RUN SUMMARY	
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M/LWD Run Number	1	2	3	4	5	6	7
Bit Size in.	8.750	8.750	8.750	6.125	6.125	6.125	6.125
Bit Type	PDC	PDC	PDC	PDC	PDC	PDC	PDC
Bit TFA sq.in.	1.491	1.491	1.335	1.534	1.534	1.534	1.534
Bit Start Depth ft	1228	7292	7341	8224	10684	10780	10780
Bit End Depth ft	7292	7341	8224	10684	10780	10780	14975
Top Log Interval ft	7184	7251	7291	8171	10630	na	10725
Bottom Log Interval ft	7292	7341	8224	10684	10780	na	14975
Begin Log Time hrs	18:17	9:14	2:04	1:50	0:29	na	14:46
Begin Log Date DD-MMM-YY	26-Nov-13	27-Nov-13	28-Nov-13	1-Dec-13	3-Dec-13	na	5-Dec-13
End Log Time hrs	21:55	15:19	11:53	9:35	1:57	na	18:43
End Log Date DD-MMM-YY	26-Nov-13	27-Nov-13	29-Nov-13	2-Dec-13	3-Dec-13	na	7-Dec-13
Drill or Wipe	Drill	Drill	Drill	Drill	Drill	na	Drill
Flow Rate gal/min	580	589	576	293	300	28	300
Max AV / CV @ MWD ft/min	458 / 129	466 / 136	453 / 333	489 / 325	491 / 360	46 / 361	452 / 406
Min Inc @ Depth deg @ ft	0.14 @ 6505	2.91 @ 7274	9.69 @ 7359	85.68 @ 9968	88.58 @ 10566	93.33 @ 10708	88.21 @ 11336
Max Inc @ Depth deg @ ft	18.44 @ 2665	2.91 @ 7274	84.74 @ 8159	92.65 @ 10310	93.33 @ 10708	93.33 @ 10708	93.33 @ 10708

MUD DATA									
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[illegible]

EQUIPMENT SUMMARY

M/LWD Run Number	1	2	3	4	5
HyperPulse / HEL Serial Number	CP130537PDIRBY-T02	CP130537PDIRBY-T02	CP130537PDIRBY-T02	NW132664PDSBK14.75-M1	NW132664PDSBK14.75-M1
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	65.30 / RT	55.83 / RT	63.94 / RT	49.04 / RT
Gamma Ray	ft / sec	51.09 / 16	41.62 / 16	49.73 / 16	53.14 / 5
Other Information					
Total BHA Length	ft	3841.27	3831.80	3839.91	9426.05
BHA Assembly Type		Steerable	Steerable	Steerable	Steerable
Stabilizer Location	ft	na	na	na	29.68
Run Circulating Time	hr	29.93	7.06	31.55	30.42
Run Drilling Time	hr	20.62	2.98	20.04	16.07

M/LWD Run Number	6	7			
HEL Serial Number	NW132804PDDBKVI4.75	NW132804PDDBKVI4.75			
Sensor to Bit Offsets / Acquisition Rates					
Directional	ft / sec	49.64 / RT	50.83 / RT		
Gamma Ray	ft / sec	54.21 / 5	55.40 / 5		
Other Information					
Total BHA Length	ft	9427.27	9428.46		
BHA Assembly Type		Steerable	Steerable		
Stabilizer Location	ft	30.58	31.77		
Run Circulating Time	hr	0.07	50.68		
Run Drilling Time	hr	0.00	23.95		

MUD SUMMARY

Date and Time	Run	Bit Depth	Mud Weight	% K	Rm @ Temp	Rmf @ Temp	Rmc @ Temp	BHCT
27 Nov 13 @ 02:50	01	7292 ft	9.80 ppg	0	na	na	na	153 F
27 Nov 13 @ 20:15	02	7341 ft	9.50 ppg	0	na	na	na	158 F
30 Nov 13 @ 00:00	03	8224 ft	10.00 ppg	0	na	na	na	171 F
02 Dec 13 @ 16:15	04	10684 ft	9.60 ppg	0	na	na	na	210 F
04 Dec 13 @ 00:00	05	10780 ft	9.20 ppg	0	na	na	na	210 F
04 Dec 13 @ 14:00	06	10780 ft	9.30 ppg	0	na	na	na	60 F
04 Dec 13 @ 09:00	07	14975 ft	9.30 ppg	0	na	na	na	235 F

M/LWD RUN REMARKS			
Run Number: 1 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	8.750 in.	Gamma Ray: Corrected for hole size, mudweight, Collar O.D., Collar I.D. and K1 factor.	
Mud Weight:	9.80 ppg	Collar O.D.:	6.750 in.
K1 Factor:	3.352	Collar I.D.:	3.250 in.
Run Number: 2 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	8.750 in.	Gamma Ray: Corrected for hole size, mudweight, Collar O.D., Collar I.D. and K1 factor.	
Mud Weight:	9.50 ppg	Collar O.D.:	6.750 in.
K1 Factor:	3.352	Collar I.D.:	3.250 in.
Run Number: 3 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	8.750 in.	Gamma Ray: Corrected for hole size, mudweight, Collar O.D., Collar I.D. and K1 factor.	
Mud Weight:	10.00 ppg	Collar O.D.:	6.750 in.
K1 Factor:	3.352	Collar I.D.:	3.250 in.
Run Number: 4 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	6.125 in.	Gamma Ray: Corrected for mud weight, hole size and KCl concentration.	
Mud Weight:	9.60 ppg		
KCl Concentration:	0%		
Run Number: 5 :: RECORDED DATA LOG			
WFT Services Provided: Recorded and Real Time Logging: Gamma Ray and Temperature. Directional Services: On demand Inclination and Azimuth.			
Borehole and Environmental Correction:			
Hole Size:	6.125 in.	Gamma Ray: Corrected for mud weight, hole size and KCl concentration.	
Mud Weight:	9.20 ppg		
KCl Concentration:	0%		

Run Number: 6 :: RECORDED DATA LOG

WFT Services Provided:

Recorded and Real Time Logging: Gamma Ray and Temperature.

Directional Services: On demand Inclination and Azimuth.

Borehole and Environmental Correction:

Hole Size: 6.125 in.

Gamma Ray: Corrected for mud weight, hole size and KCl concentration.

Mud Weight: 9.30 ppg

KCl Concentration: 0%

Run Number: 7 :: RECORDED DATA LOG

WFT Services Provided:

Recorded and Real Time Logging: Gamma Ray and Temperature.

Directional Services: On demand Inclination and Azimuth.

Borehole and Environmental Correction:

Hole Size: 6.125 in.

Gamma Ray: Corrected for mud weight, hole size and KCl concentration.

Mud Weight: 9.30 ppg

KCl Concentration: 0%

M/LWD LOG COMMENTS	
Comment No. 1-1	<p>RECORDED DATA LOG</p> <p>Start of M/LWD Drilling Run 01</p> <p>Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 01.</p> <p>Run 01 started formation drilling November 25, 2013 at 10:29 at 1228 MD / 1227 TVD. Weatherford International logged the 8.750 in. borehole.</p> <p>The WBM at the start of drilling was 8.50 ppg.</p>
Comment No. 1-2	<p>Start of M/LWD Logging Run 01</p> <p>Run 01 started formation logging November 26, 2013 at 18:17 at 7184 MD / 7108 TVD. Weatherford International logged the 8.750 in. borehole.</p> <p>The WBM at the start of logging was 9.50 ppg.</p>
Comment No. 1-3	<p>End of M/LWD Drilling Run 01</p> <p>Run 01 ended drilling formation November 26, 2013 at 21:55 at 7292 MD / 7216 TVD.</p> <p>The WBM at the end of drilling was 10.00 ppg.</p>
Comment No. 2-1	<p>RECORDED DATA LOG</p> <p>Start of M/LWD Drilling Run 02</p> <p>Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 02.</p> <p>Run 02 started formation drilling November 27, 2013 at 09:14 at 7292 MD / 7216 TVD. Weatherford International logged the 8.750 in. borehole.</p> <p>The WBM at the start of drilling was 9.50 ppg.</p>
Comment No. 2-2	<p>End of M/LWD Drilling Run 02</p> <p>Run 02 ended drilling formation November 27, 2013 at 15:19 at 7341 MD / 7265 TVD.</p> <p>The WBM at the end of drilling was 9.50 ppg.</p>
Comment No. 3-1	<p>RECORDED DATA LOG</p> <p>Start of M/LWD Drilling Run 03</p> <p>Weatherford International provided 6 3/4 in. Directional, Gamma Ray, and Temperature for Run 03.</p> <p>Run 03 started formation drilling November 28, 2013 at 02:04 at 7341 MD / 7265 TVD. Weatherford International logged the 8.750 in. borehole.</p> <p>The WBM at the start of drilling was 9.50 ppg.</p>
Comment No. 3-2	<p>End of M/LWD Drilling Run 03</p> <p>Run 03 ended drilling formation November 29, 2013 at 11:53 at 8224 MD / 7766 TVD.</p> <p>The WBM at the end of drilling was 10.00 ppg.</p>

Comment No. 4-1

RECORDED DATA LOG

Start of M/LWD Drilling Run 04

Weatherford International provided 4 3/4 in. Directional, Gamma Ray, and Temperature for Run 04.

Run 04 started formation drilling December 1, 2013 at 01:50 at 8224 MD / 7766 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 9.60 ppg.

Comment No. 4-2

End of M/LWD Drilling Run 04

Run 04 ended drilling formation December 2, 2013 at 09:35 at 10684 MD / 7767 TVD.

The WBM at the end of drilling was 9.60 ppg.

Comment No. 5-1

RECORDED DATA LOG

Start of M/LWD Drilling Run 05

Weatherford International provided 4 3/4 in. Directional, Gamma Ray, and Temperature for Run 05.

Run 05 started formation drilling December 3, 2013 at 00:29 at 10684 MD / 7767 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 9.20 ppg.

Comment No. 5-2

End of M/LWD Drilling Run 05

Run 05 ended drilling formation December 03, 2013 at 01:57 at 10780 MD / 7762 TVD.

The WBM at the end of drilling was 9.20 ppg.

Comment No. 6-1

Weatherford International provided 4 3/4 in. Directional, Gamma Ray, and Temperature for Run 06.

No formation logging occurred during this run. There was circulation issues which resulted in the drill string becoming packed off.

Comment No. 7-1

RECORDED DATA LOG

Start of M/LWD Drilling Run 07

Weatherford International provided 4 3/4 in. Directional, Gamma Ray, and Temperature for Run 07.

Run 07 started formation drilling December 5, 2013 at 14:46 at 10780 MD / 7762 TVD. Weatherford International logged the 6.125 in. borehole.

The WBM at the start of drilling was 9.30 ppg.

Comment No. 7-2

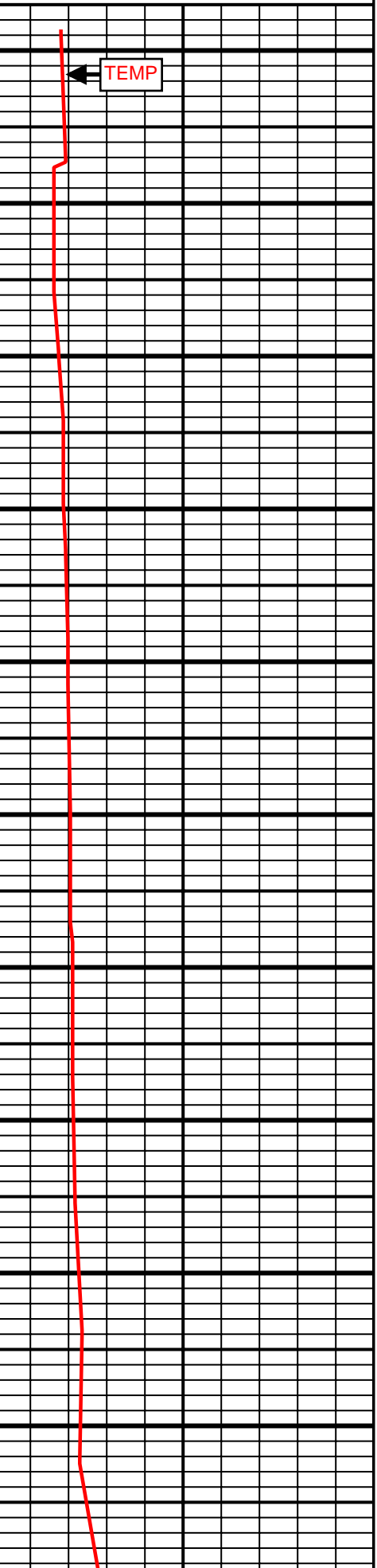
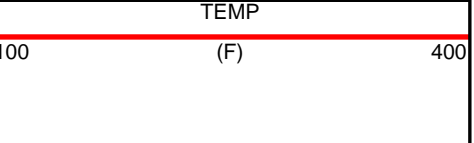
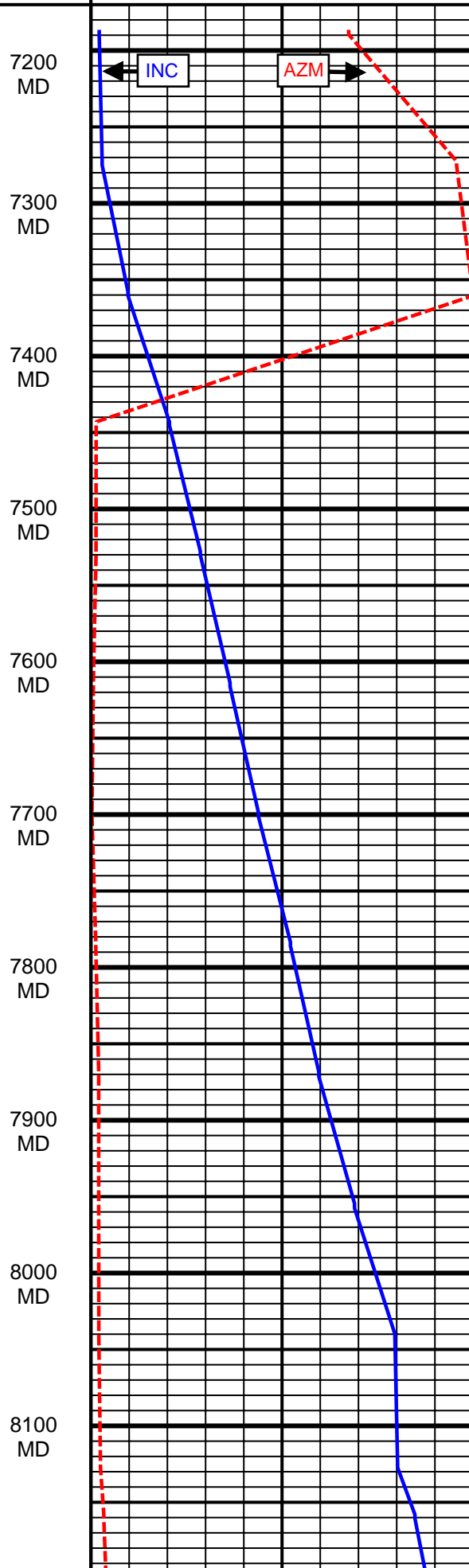
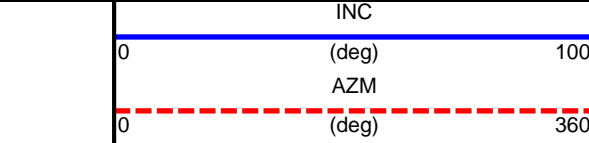
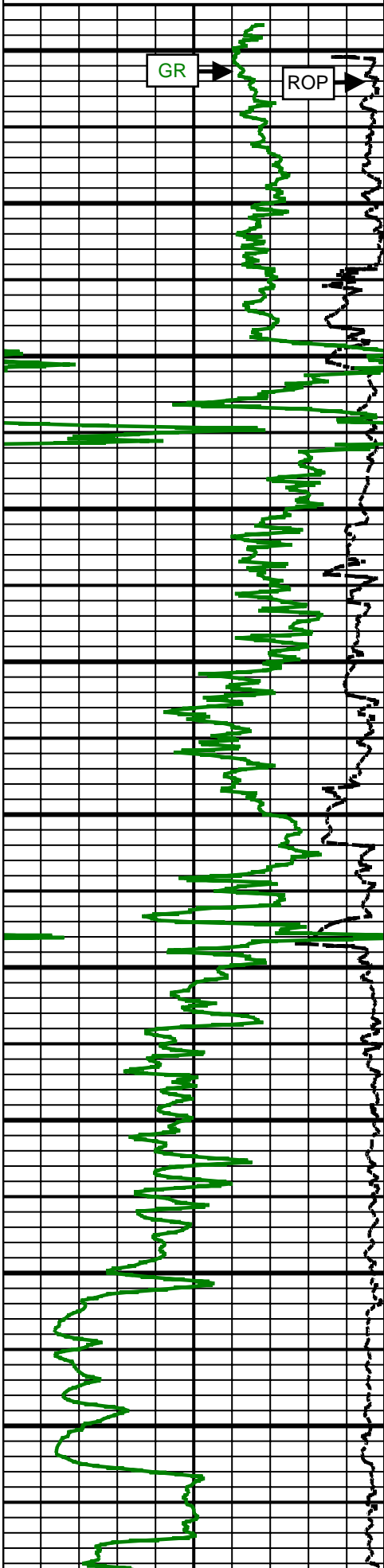
End of M/LWD Drilling Run 07

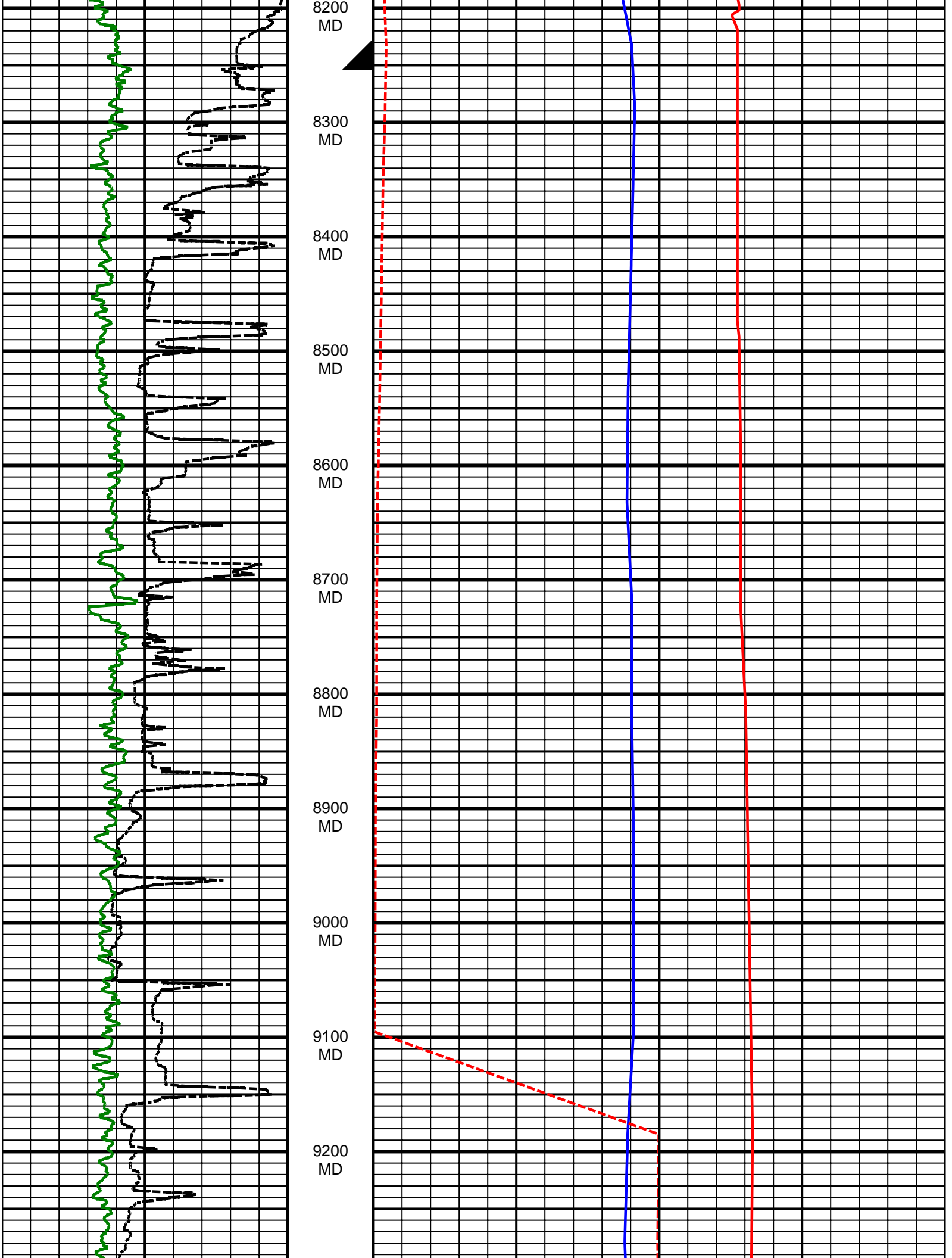
Run 07 ended drilling formation December 07, 2013 at 18:43 at 14975 MD / 7704 TVD.

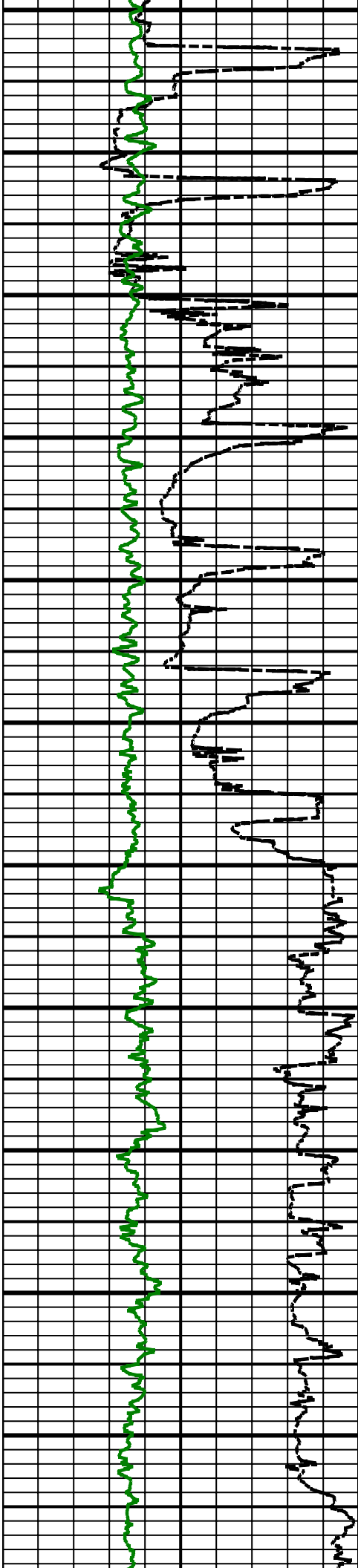
The WBM at the end of drilling was 9.30 ppg.

CURVE SPECIFICATIONS				
CURVE TYPE	MNEMONIC	UNITS	COMMENTS	CORRECTIONS
Rate of Penetration	ROP	fph	Rate of Penetration 3.0 ft window 0.5 ft Exponential Smoothing	None
Gamma Ray	GR	AAPI	Gamma Ray 3.0 ft window 0.5 ft Exponential Smoothing	See M/LWD Run Remarks
Inclination	INC	deg	Survey Inclination No Smoothing	None
Azimuth	AZM	deg	Survey Azimuth No Smoothing	
Temperature	TEMP	F	Borehole Temperature 3.0 ft window 0.5 ft Exponential Smoothing	

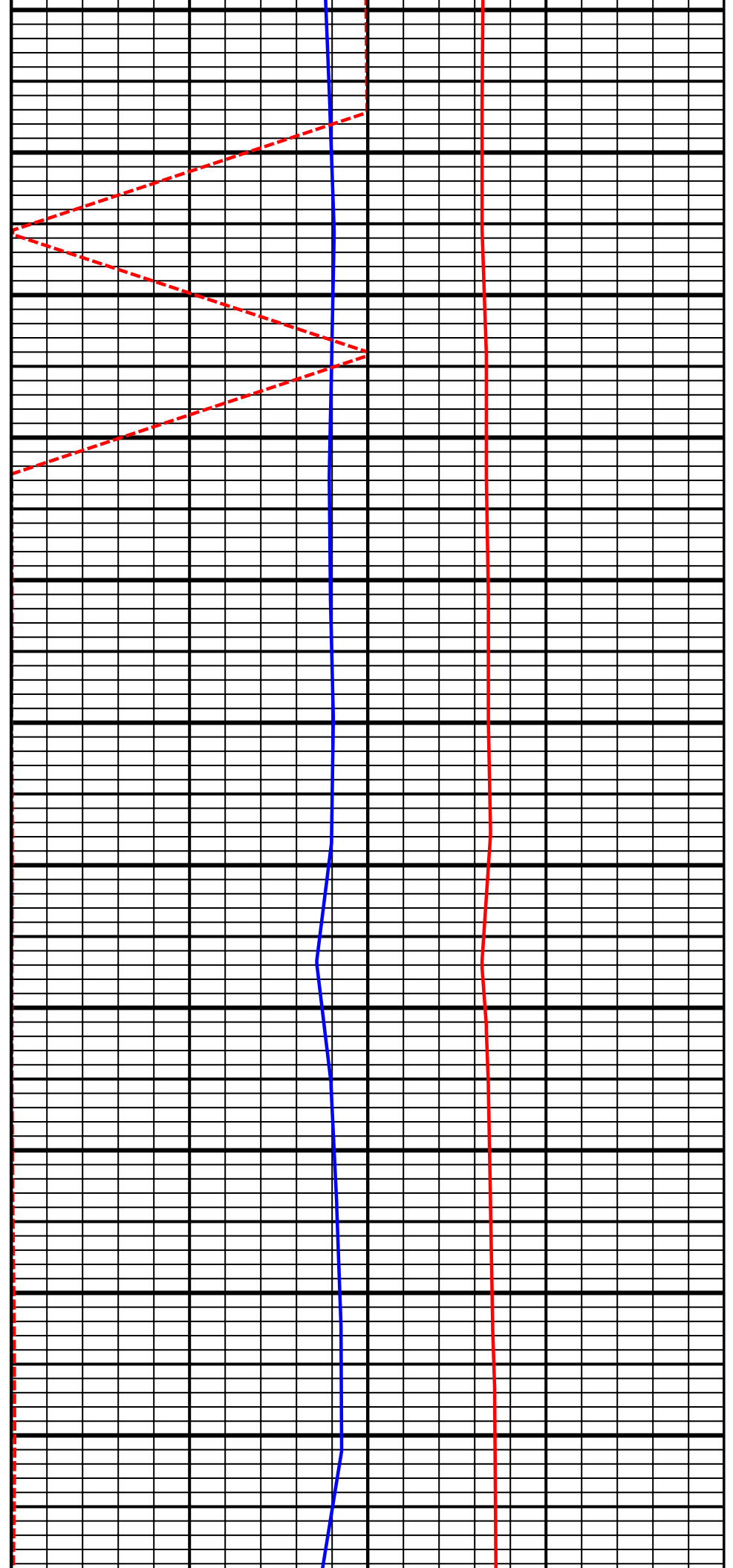
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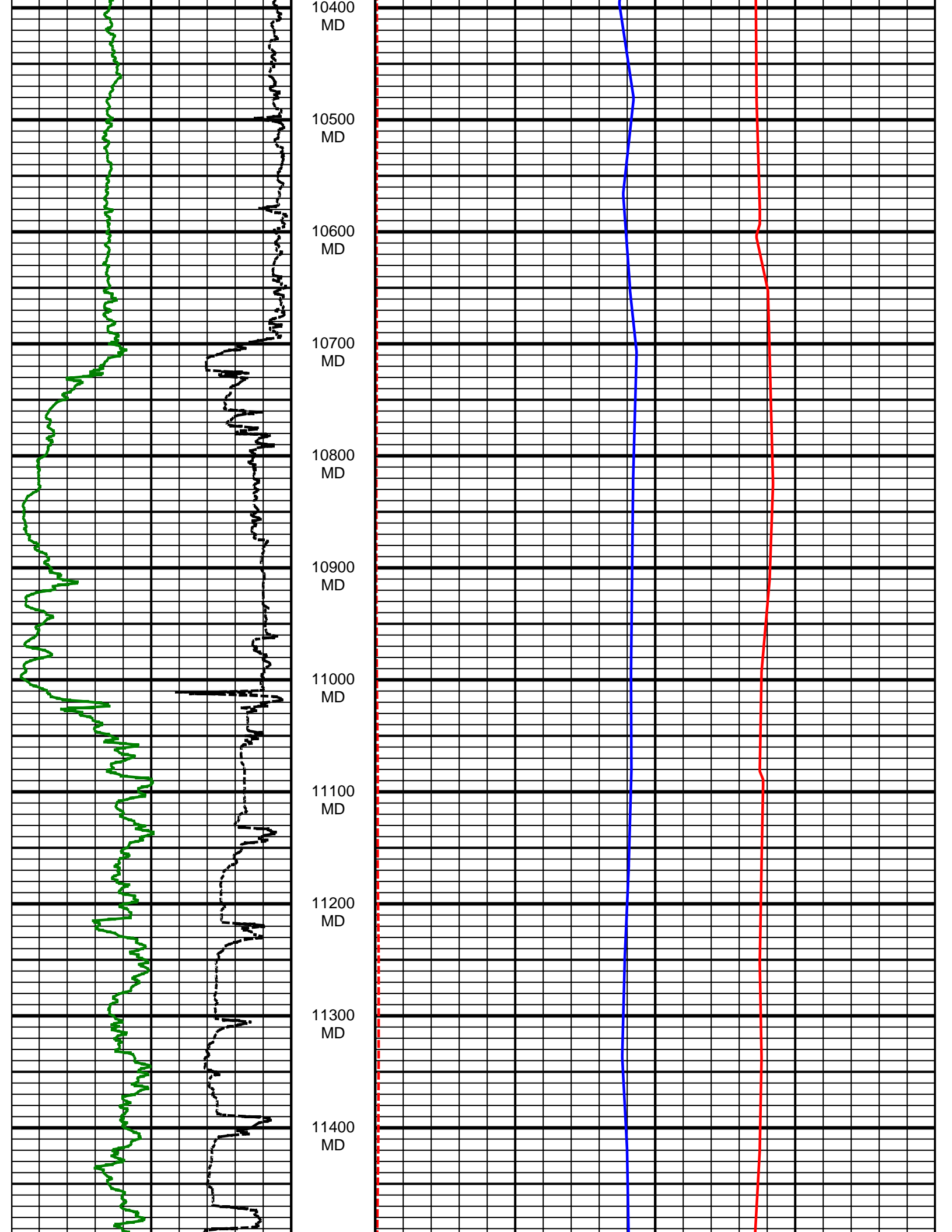


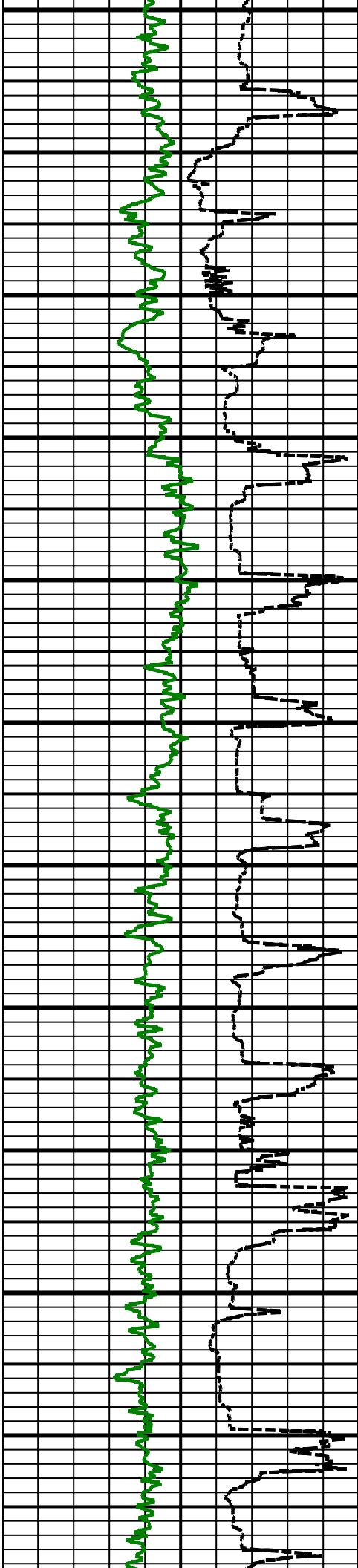




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9400 MD
9500 MD
9600 MD
9700 MD
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10000 MD
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10300 MD







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11600
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11700
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11800
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11900
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12000
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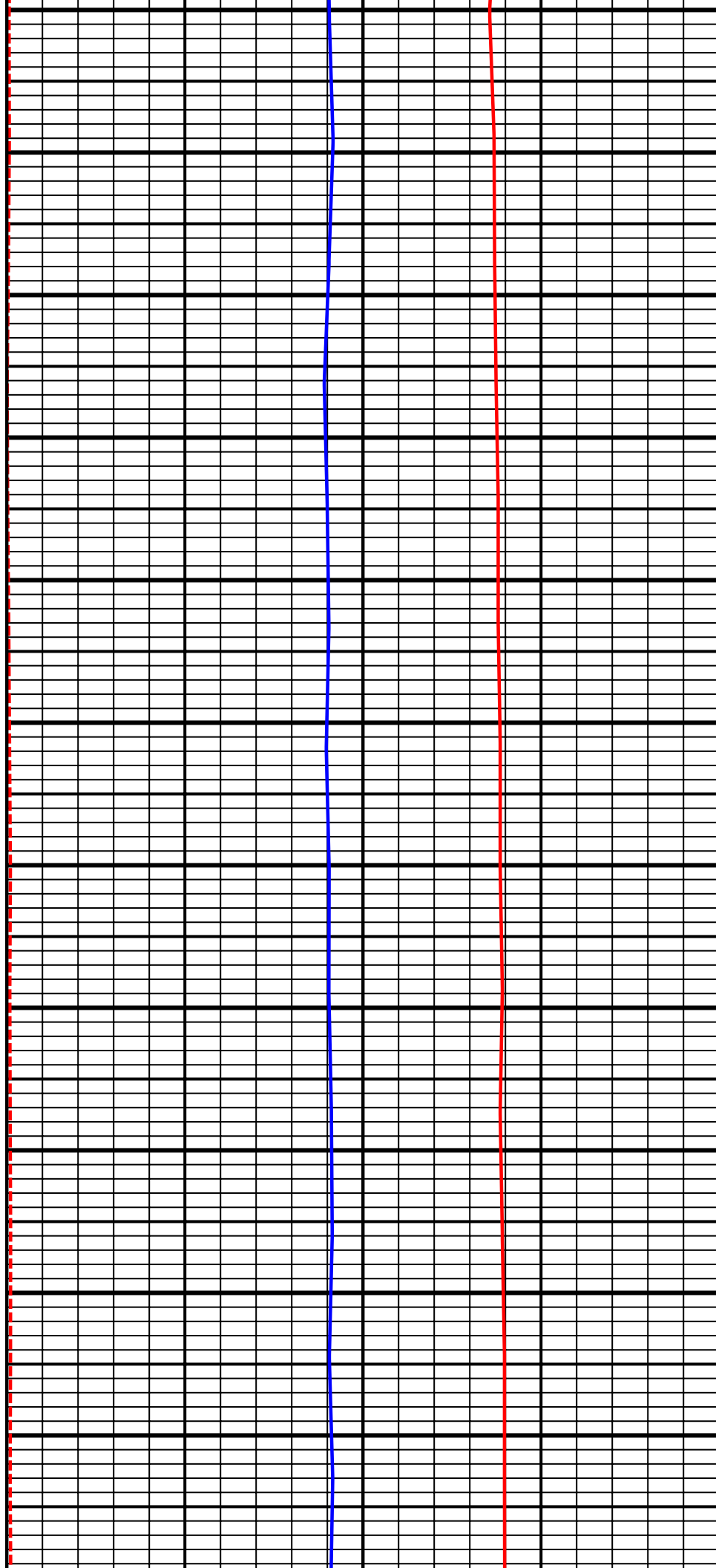
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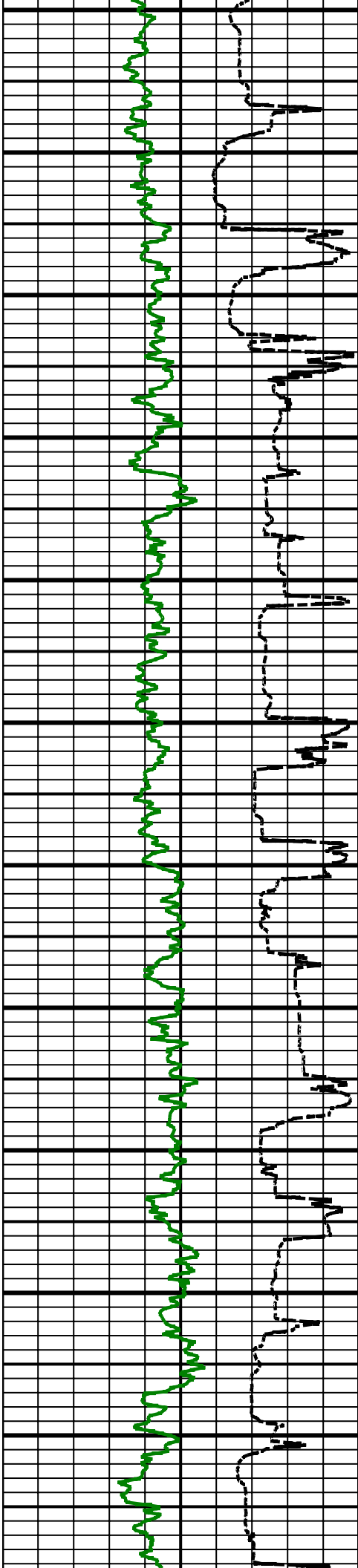
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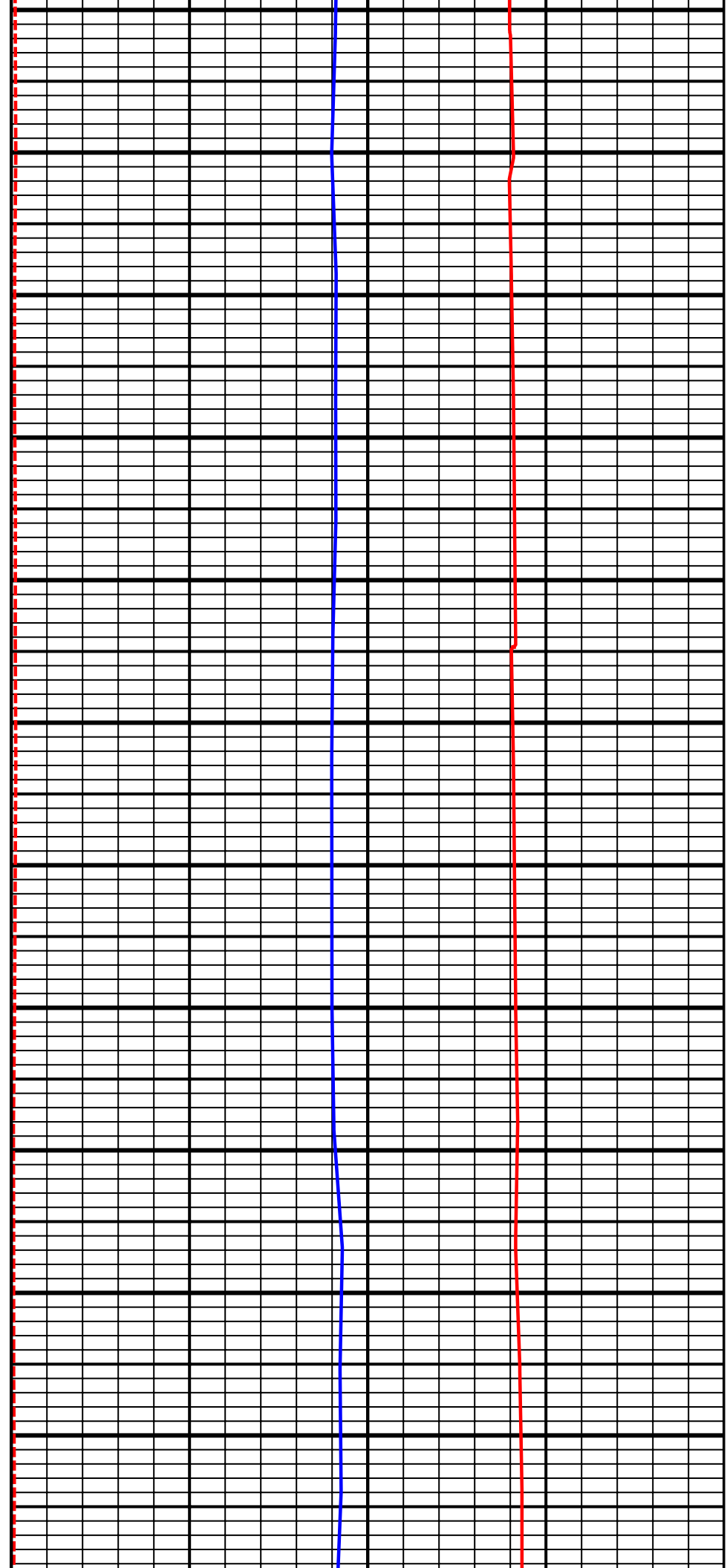
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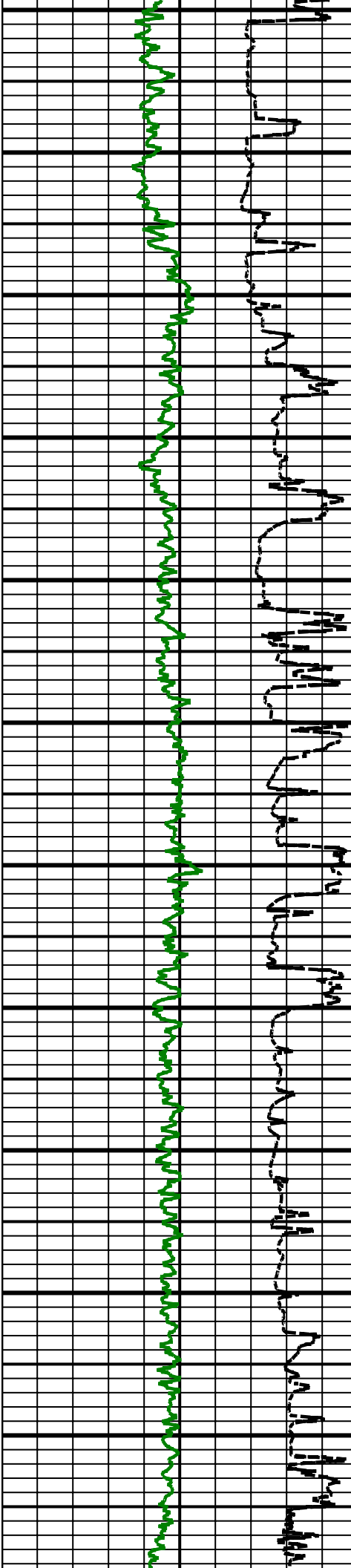
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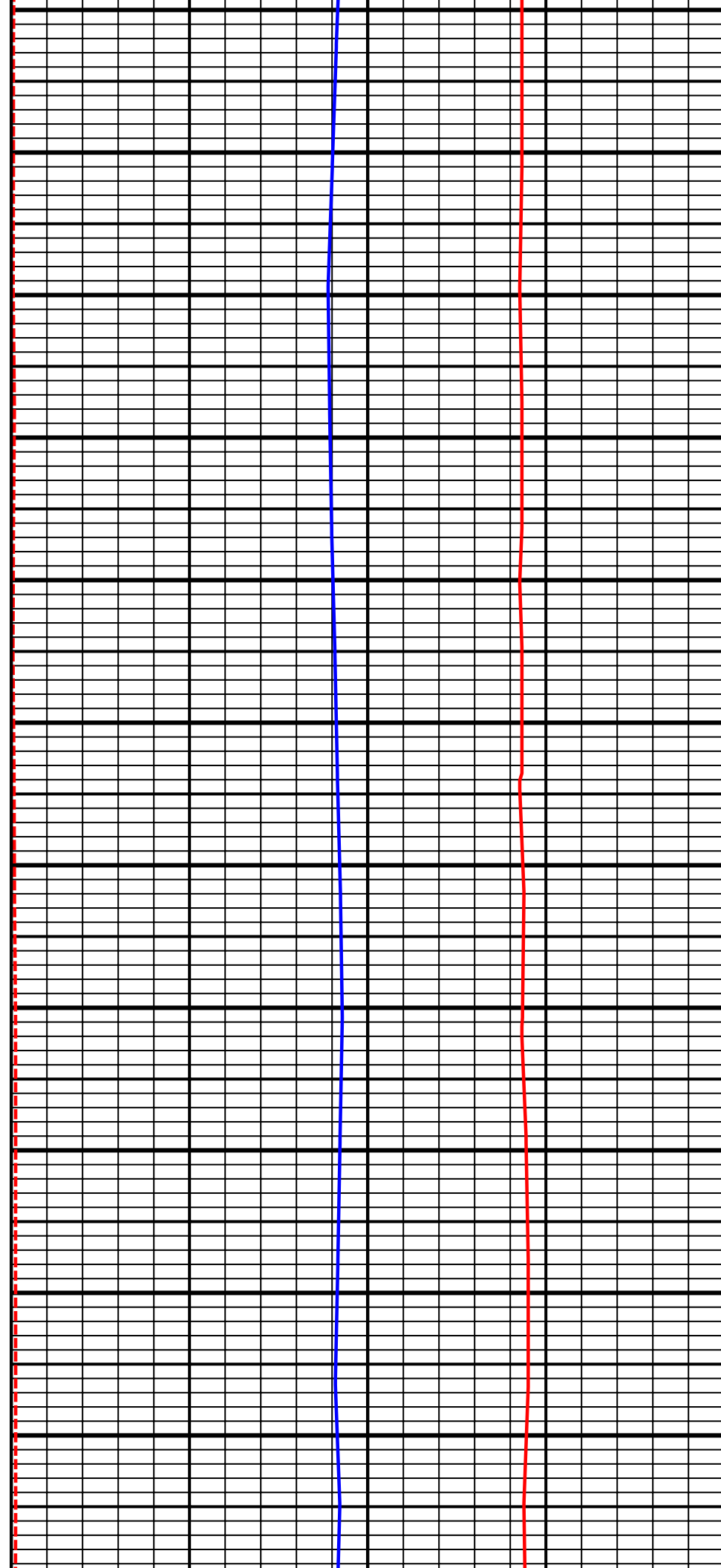
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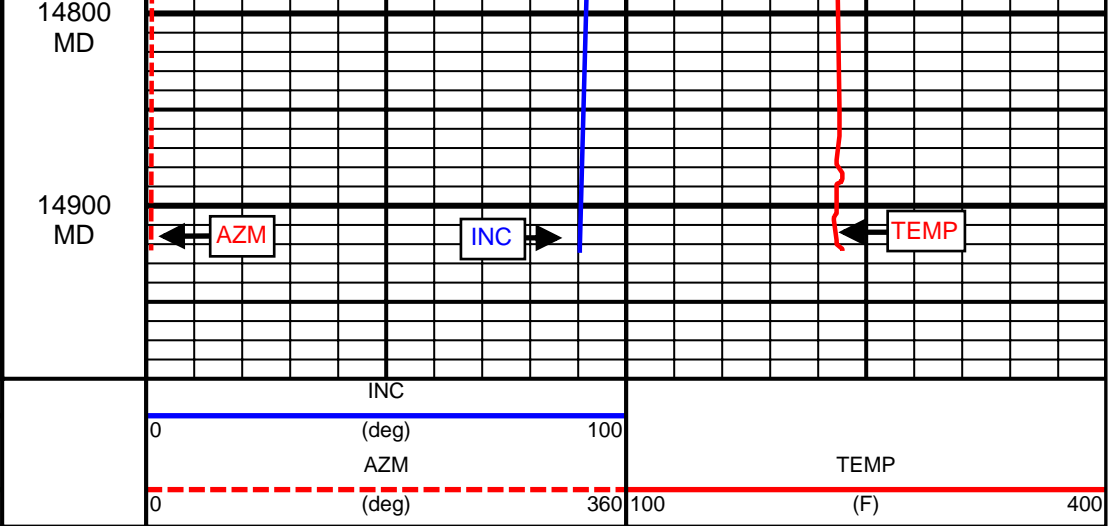
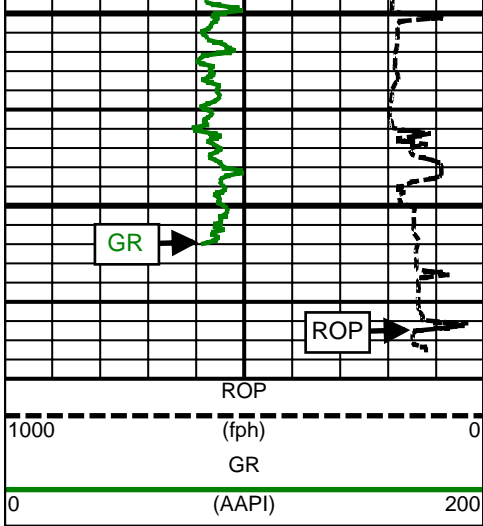
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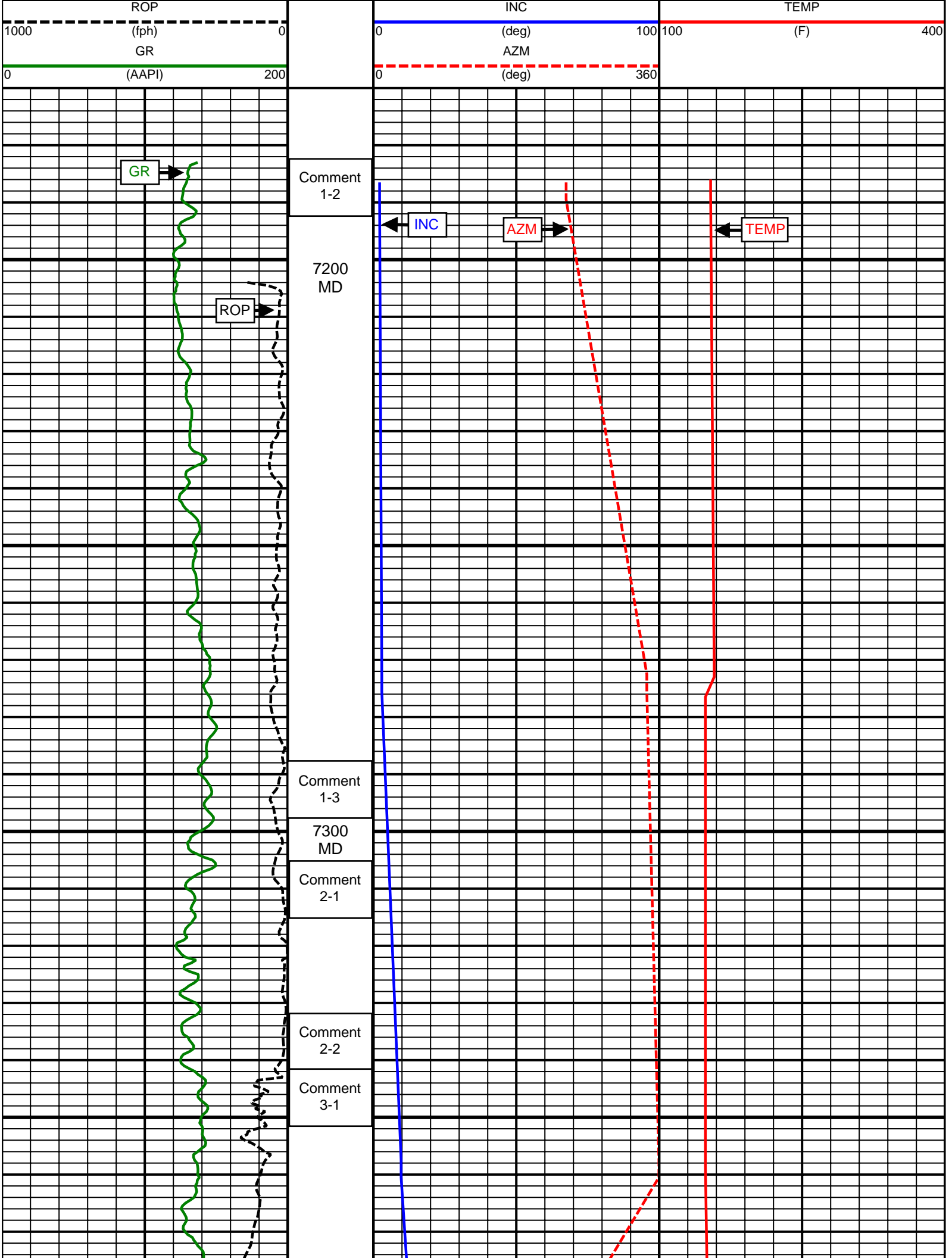
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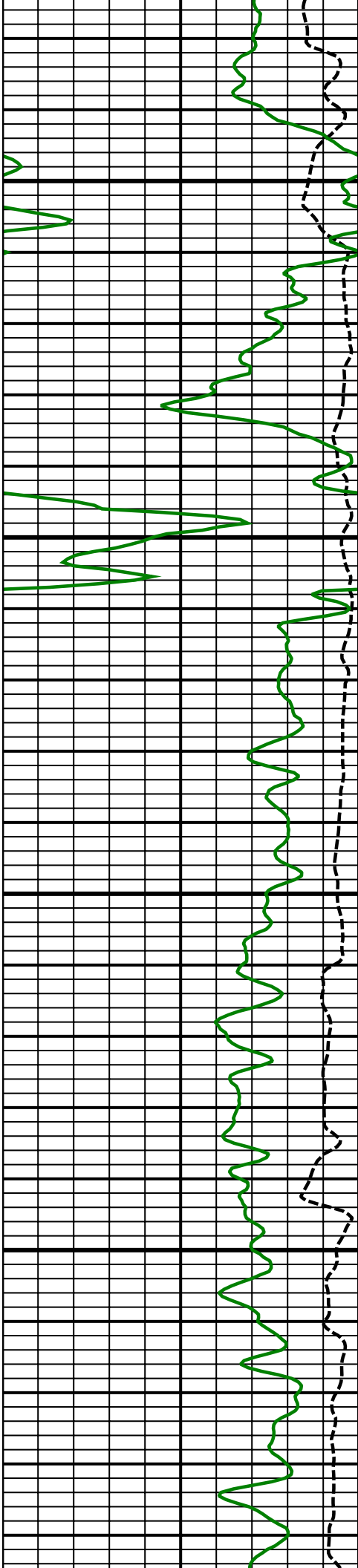
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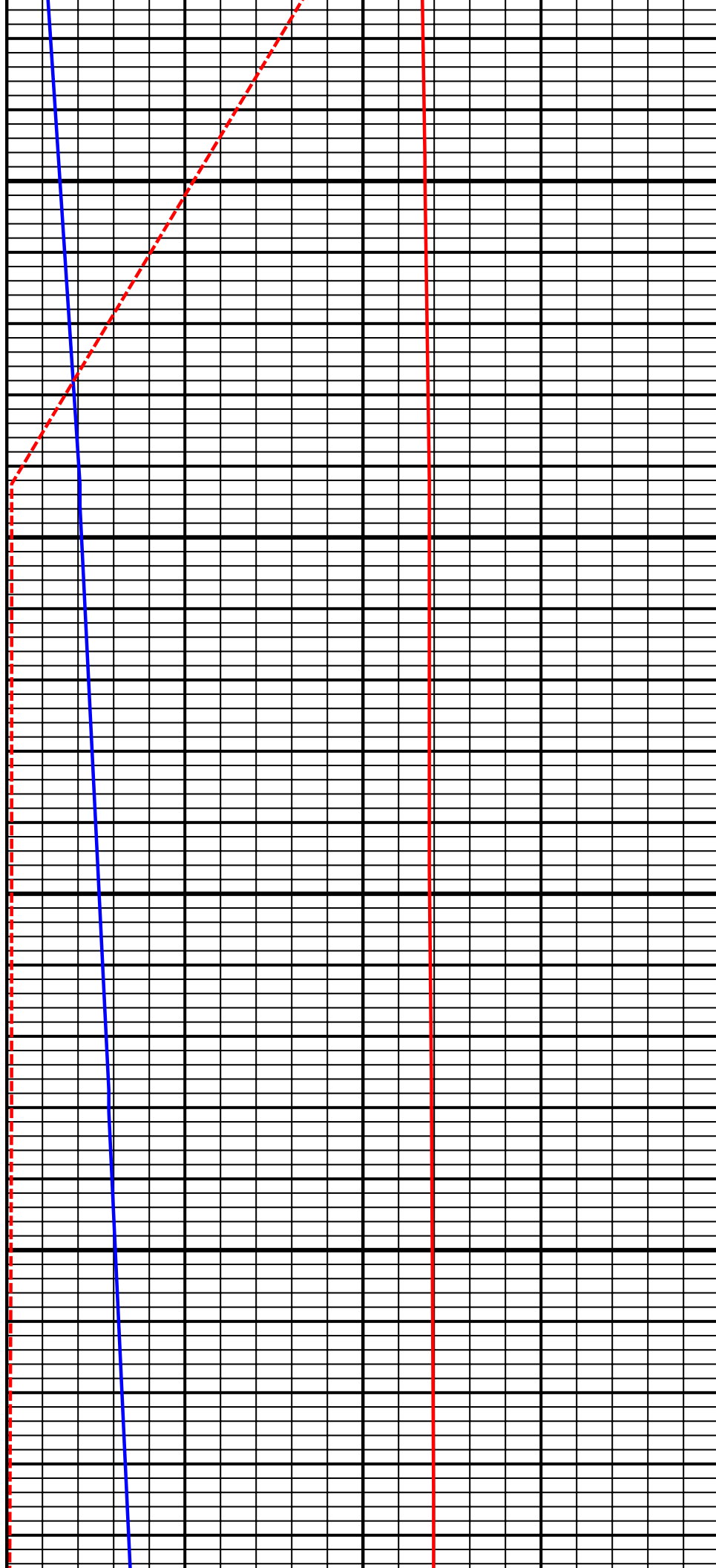
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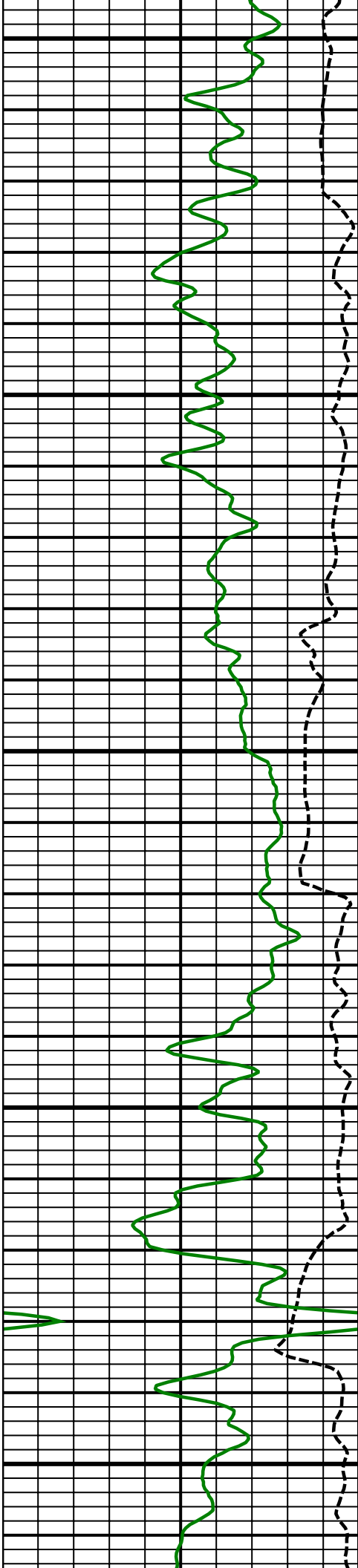




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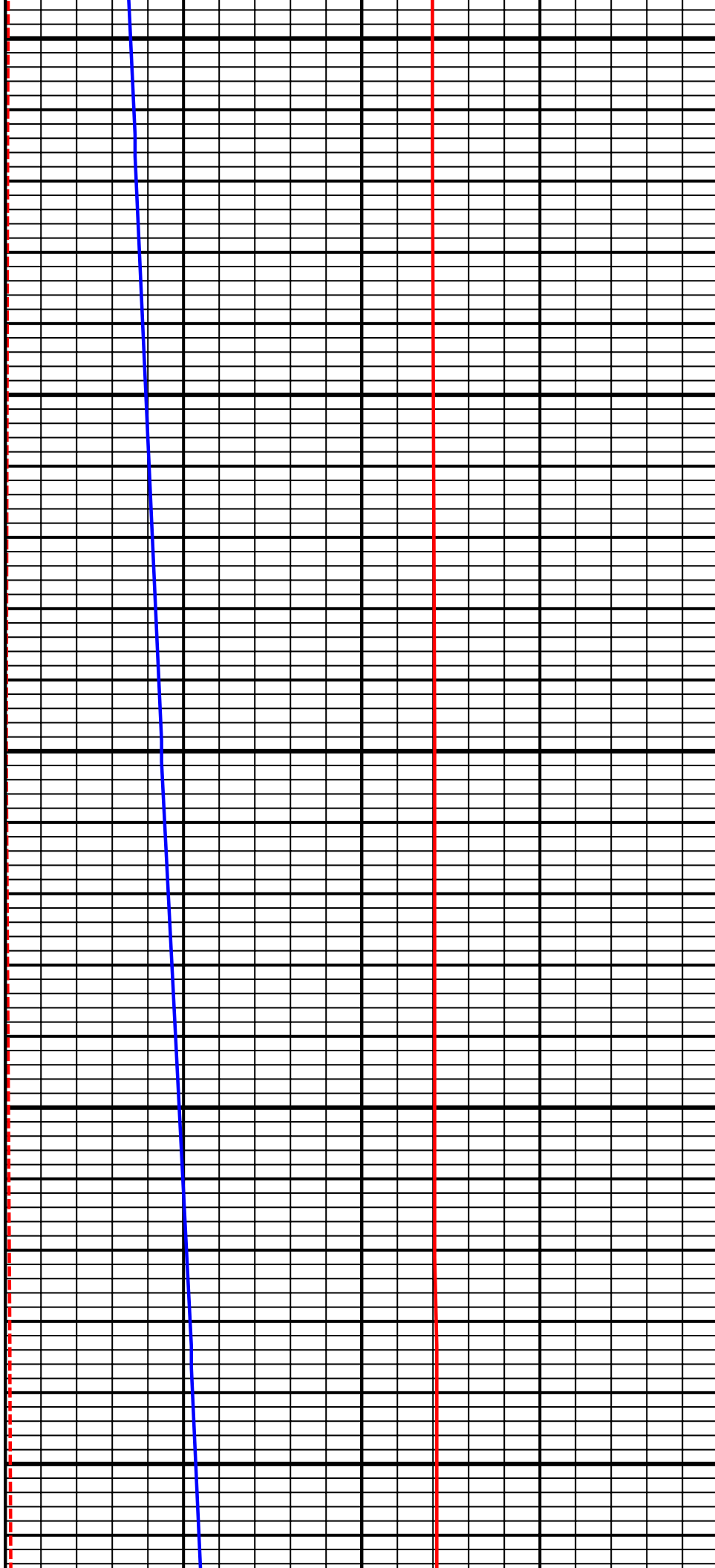


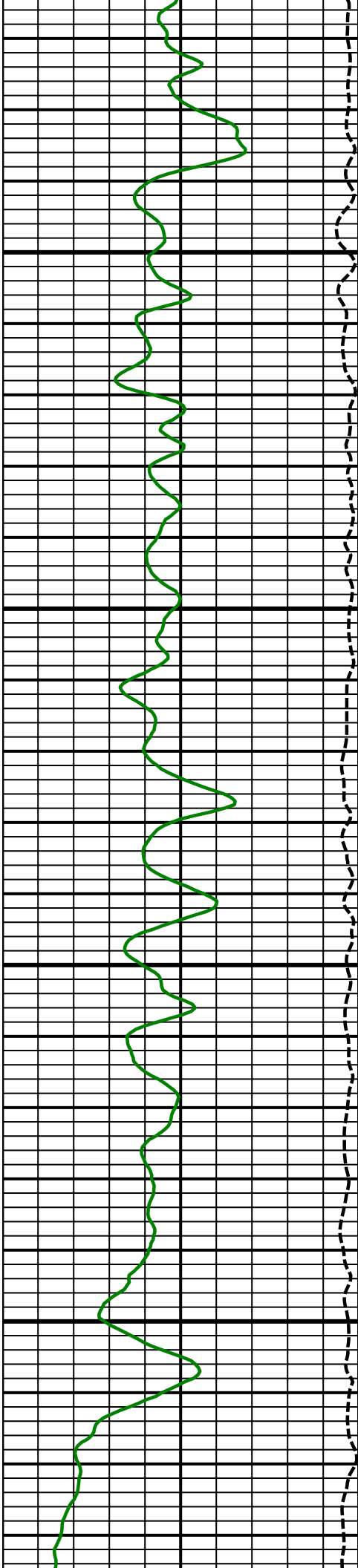


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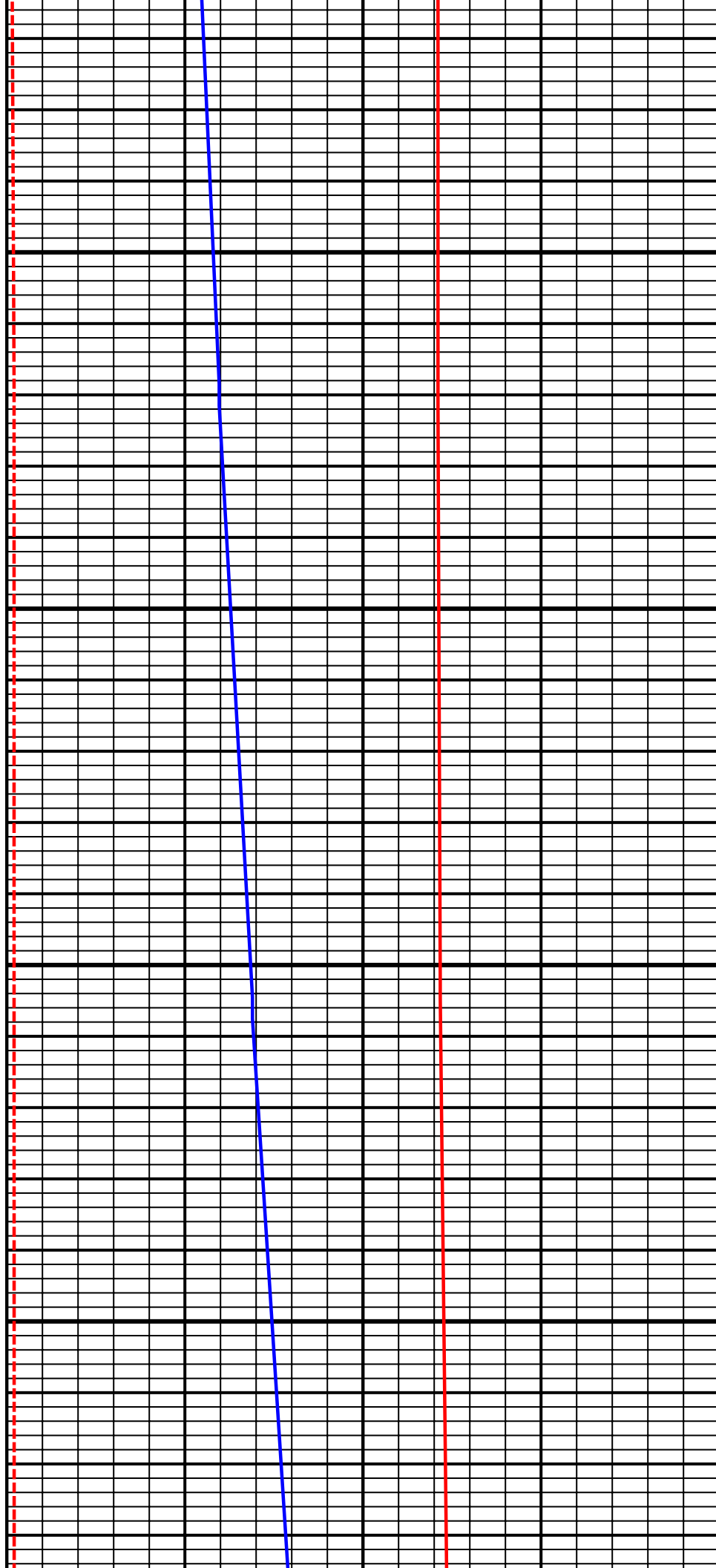
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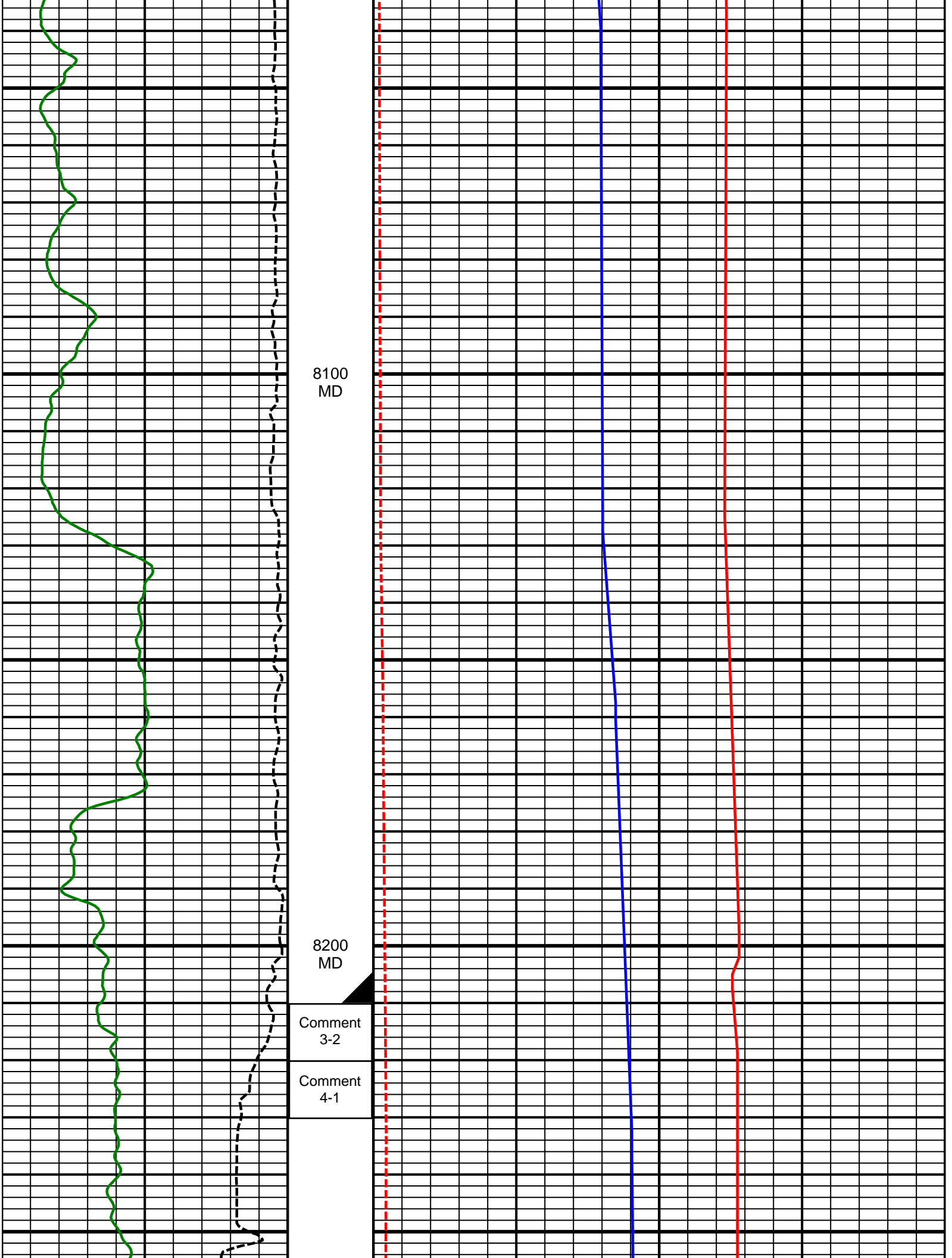


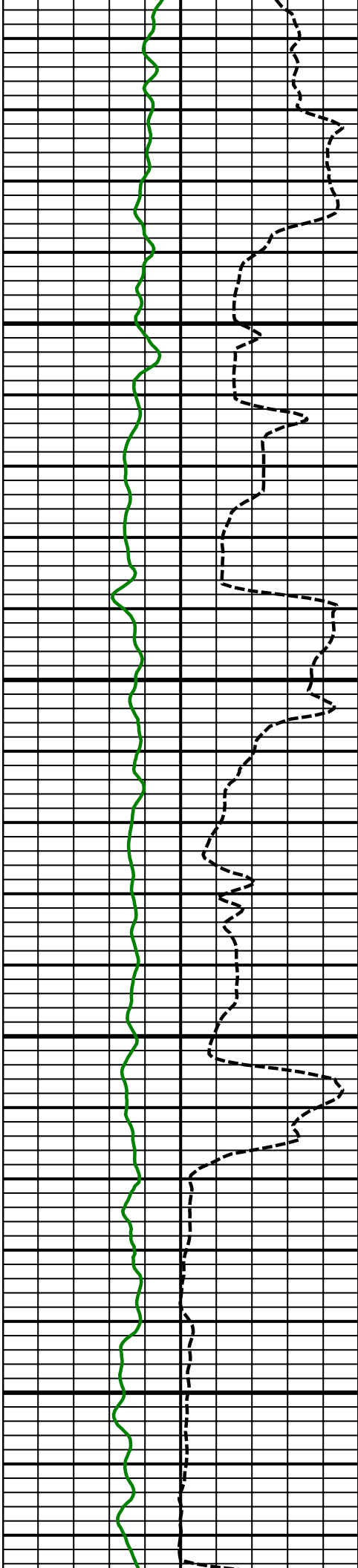


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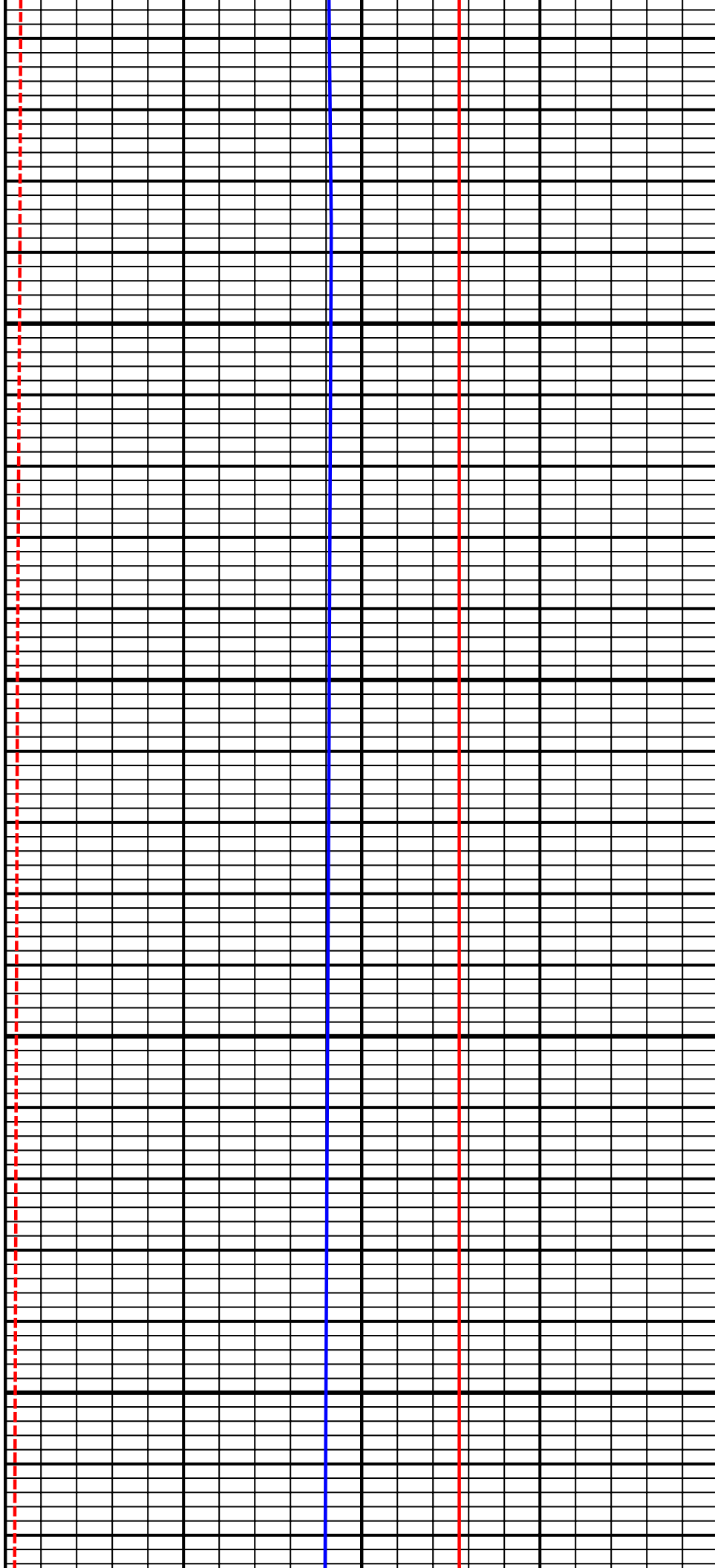


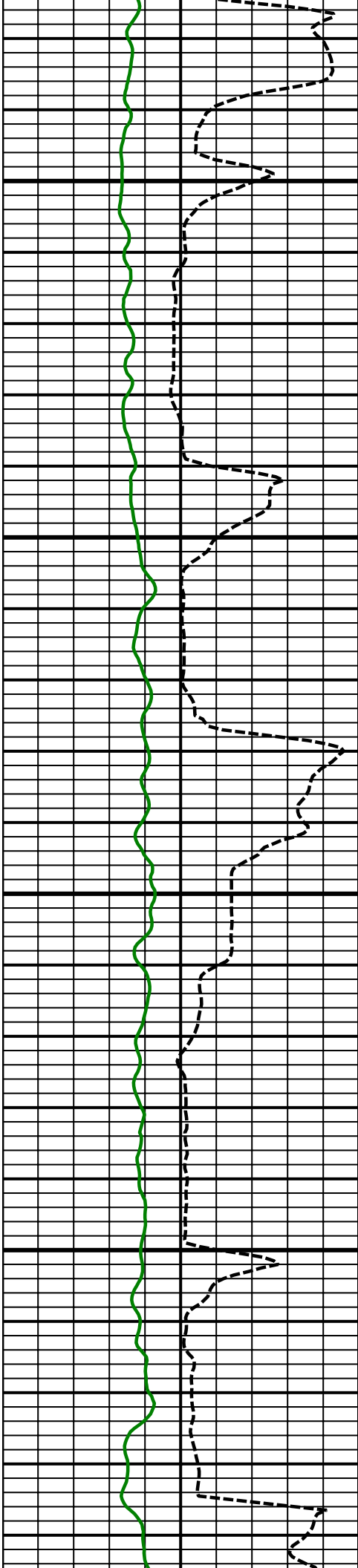




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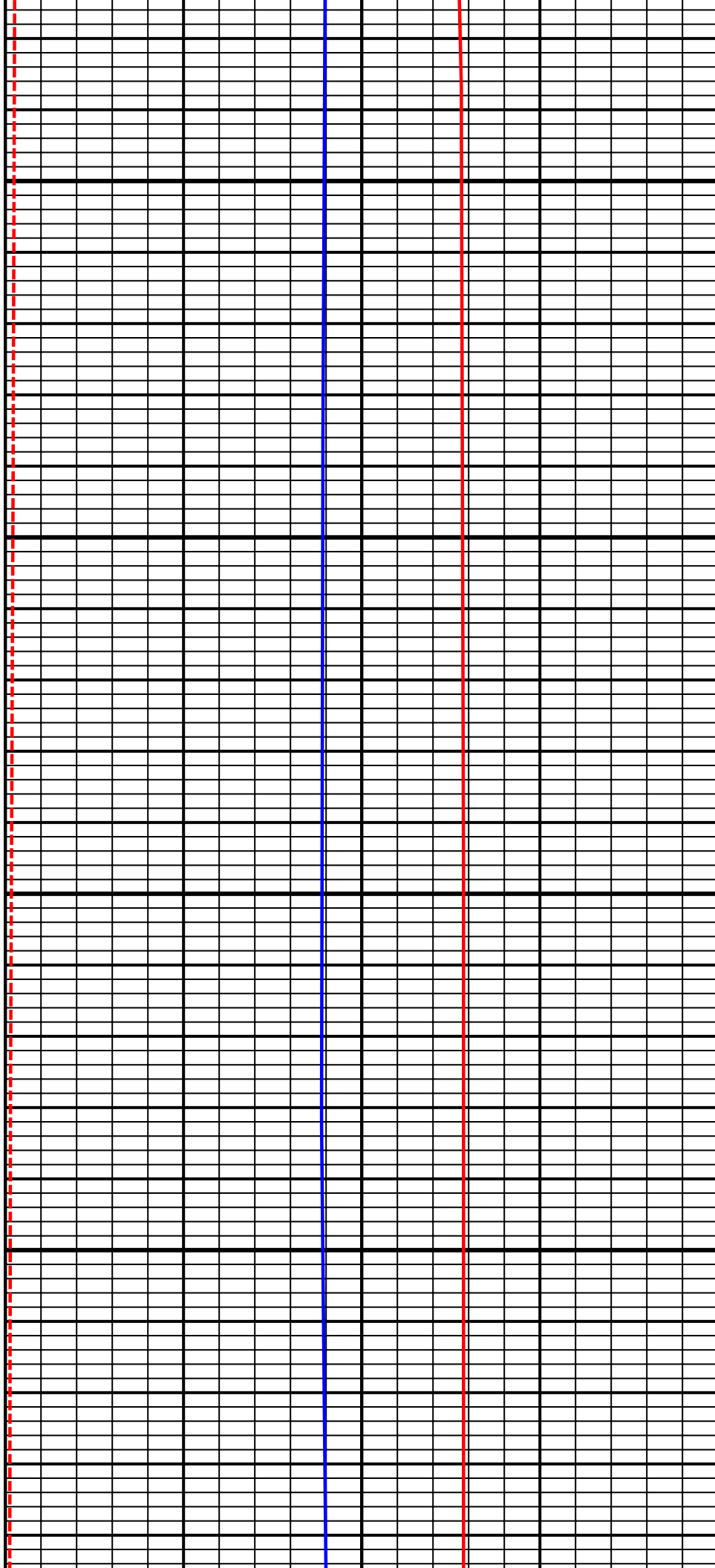
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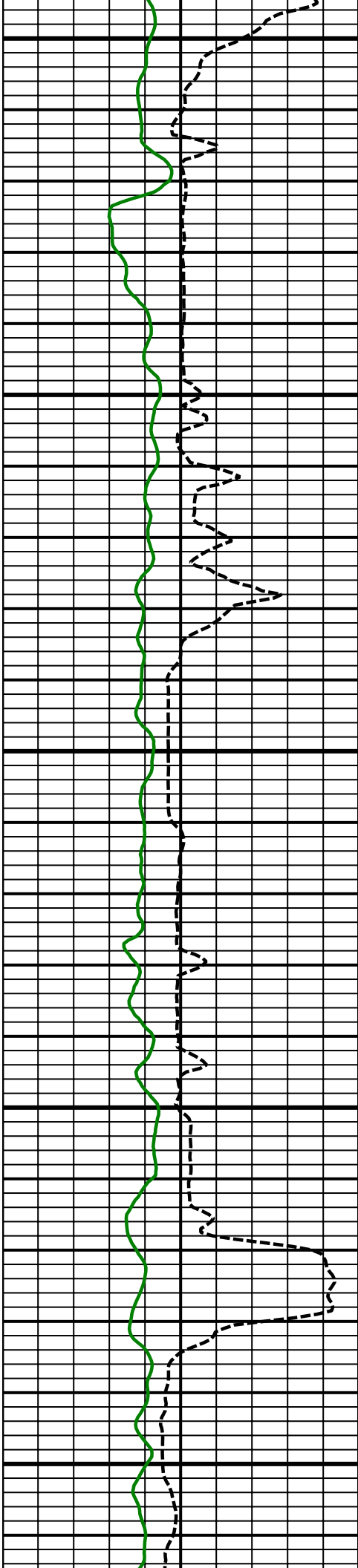




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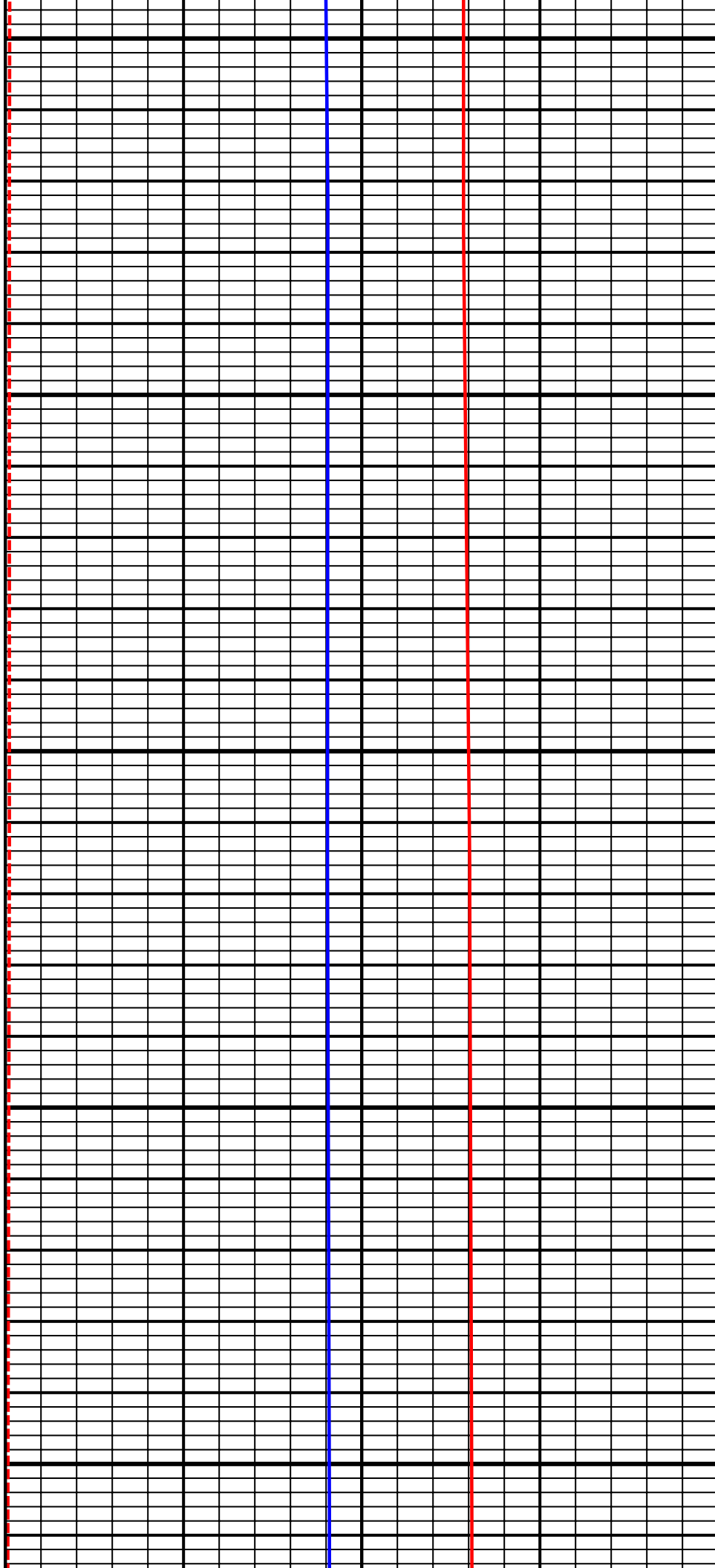


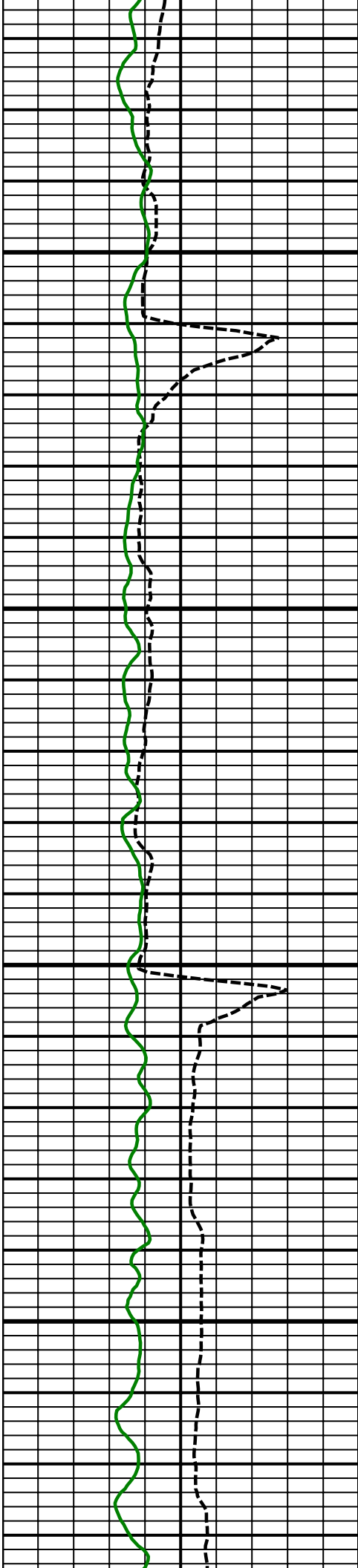


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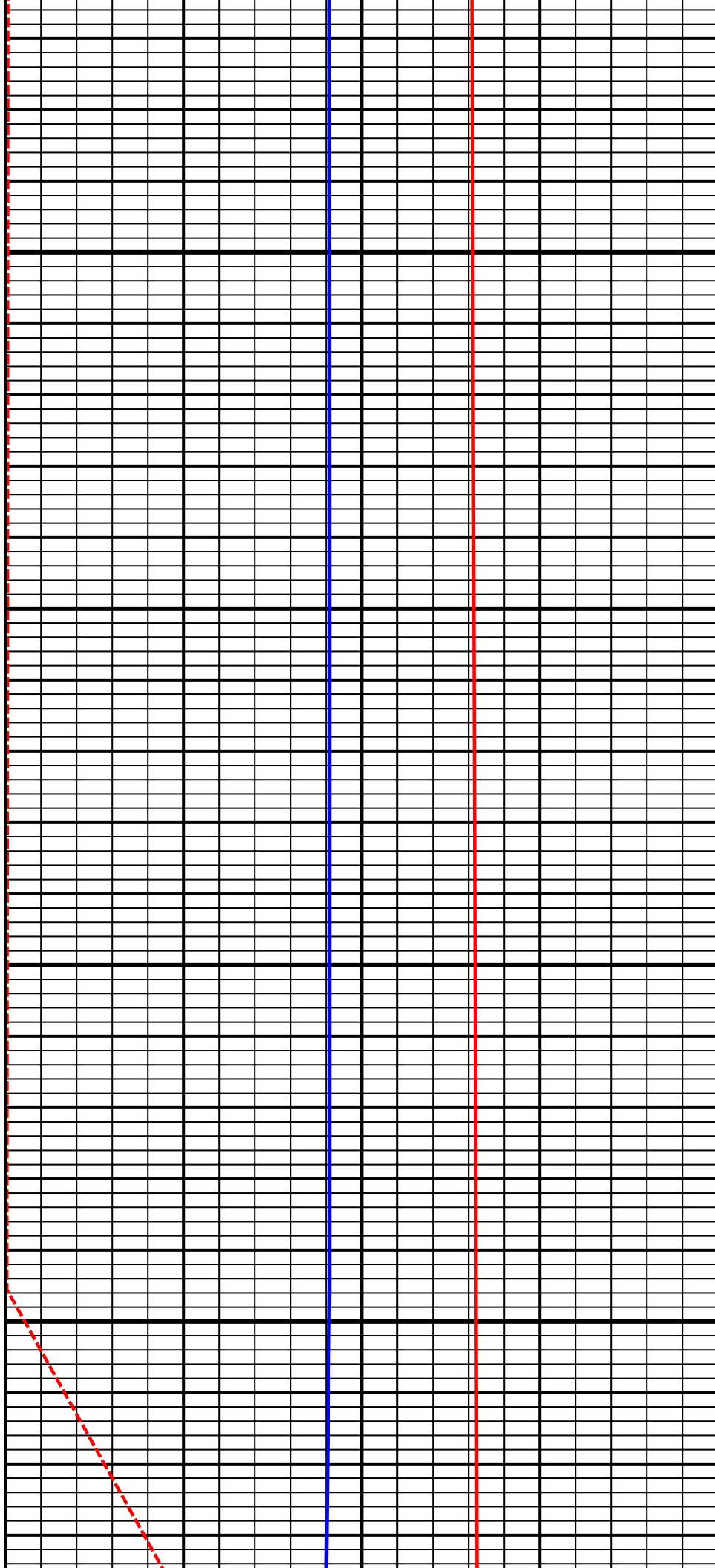
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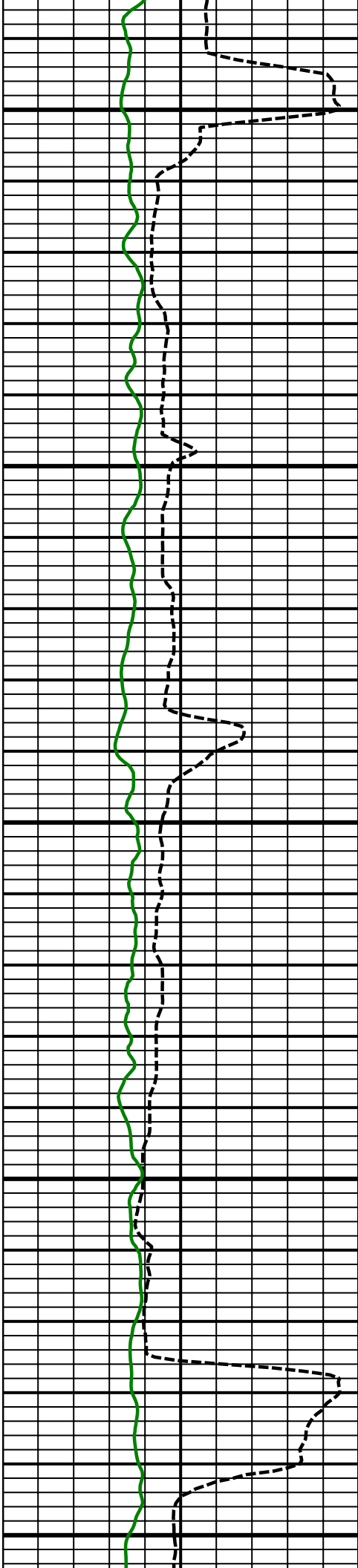




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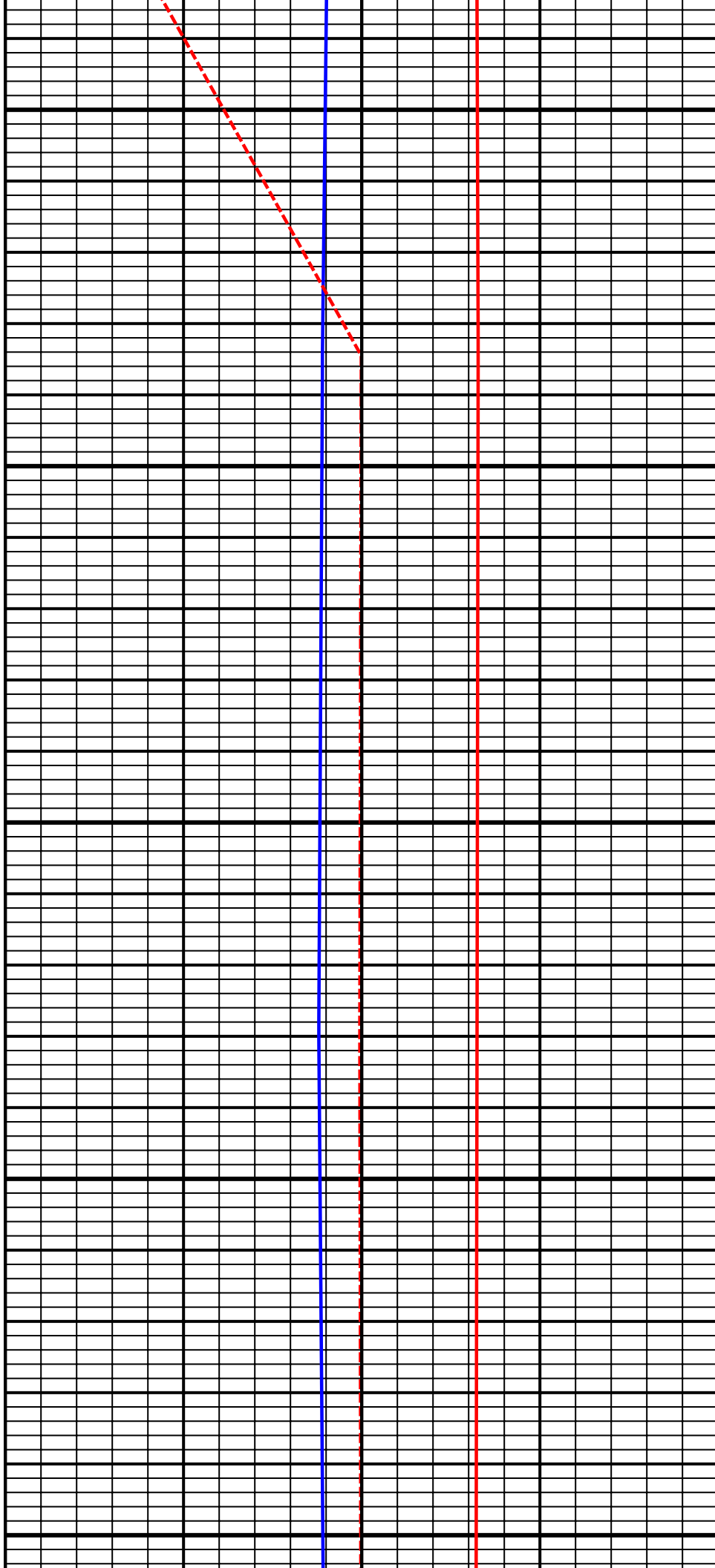
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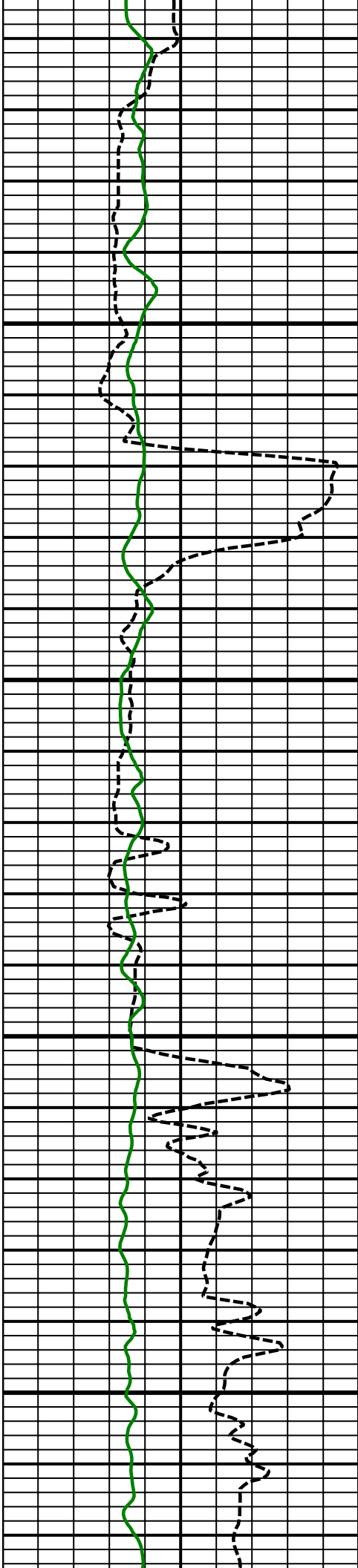




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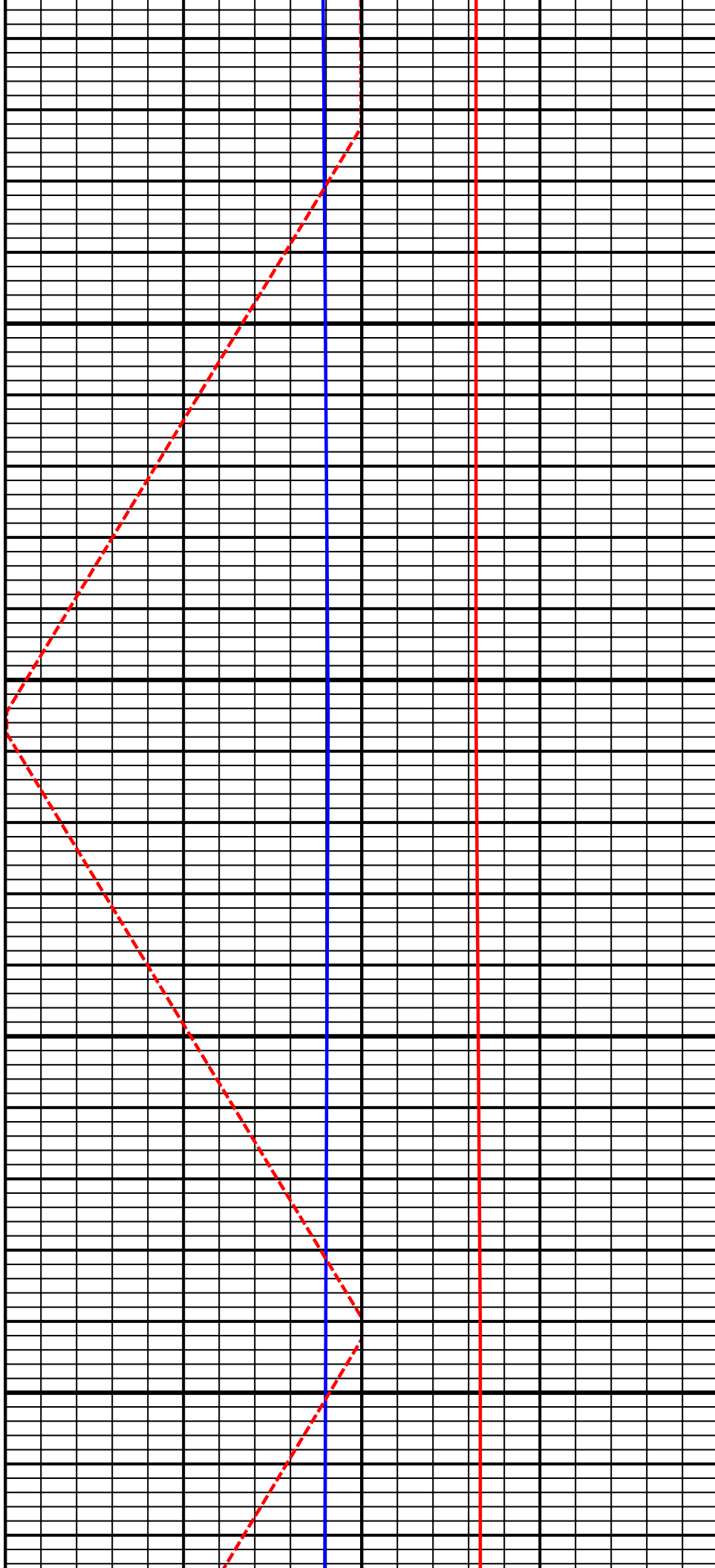
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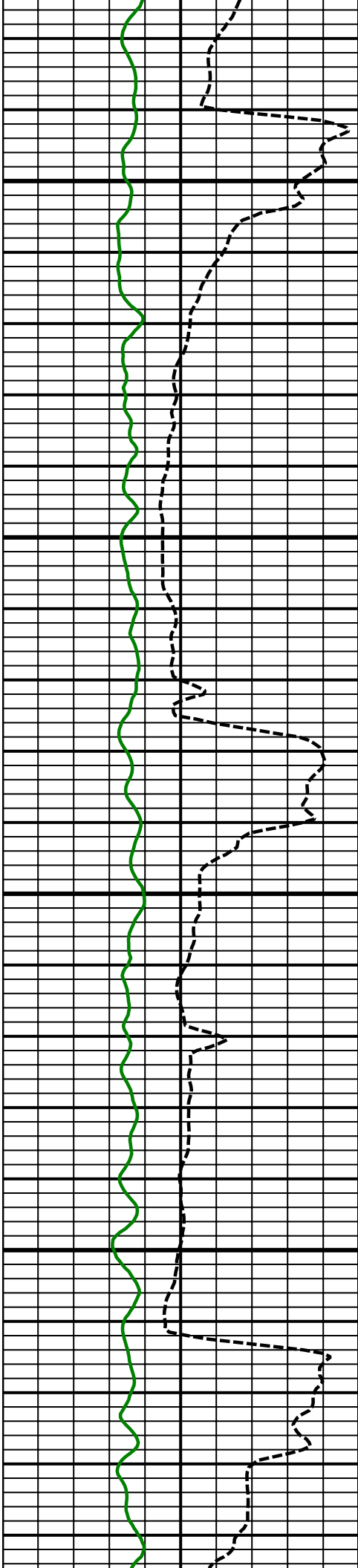




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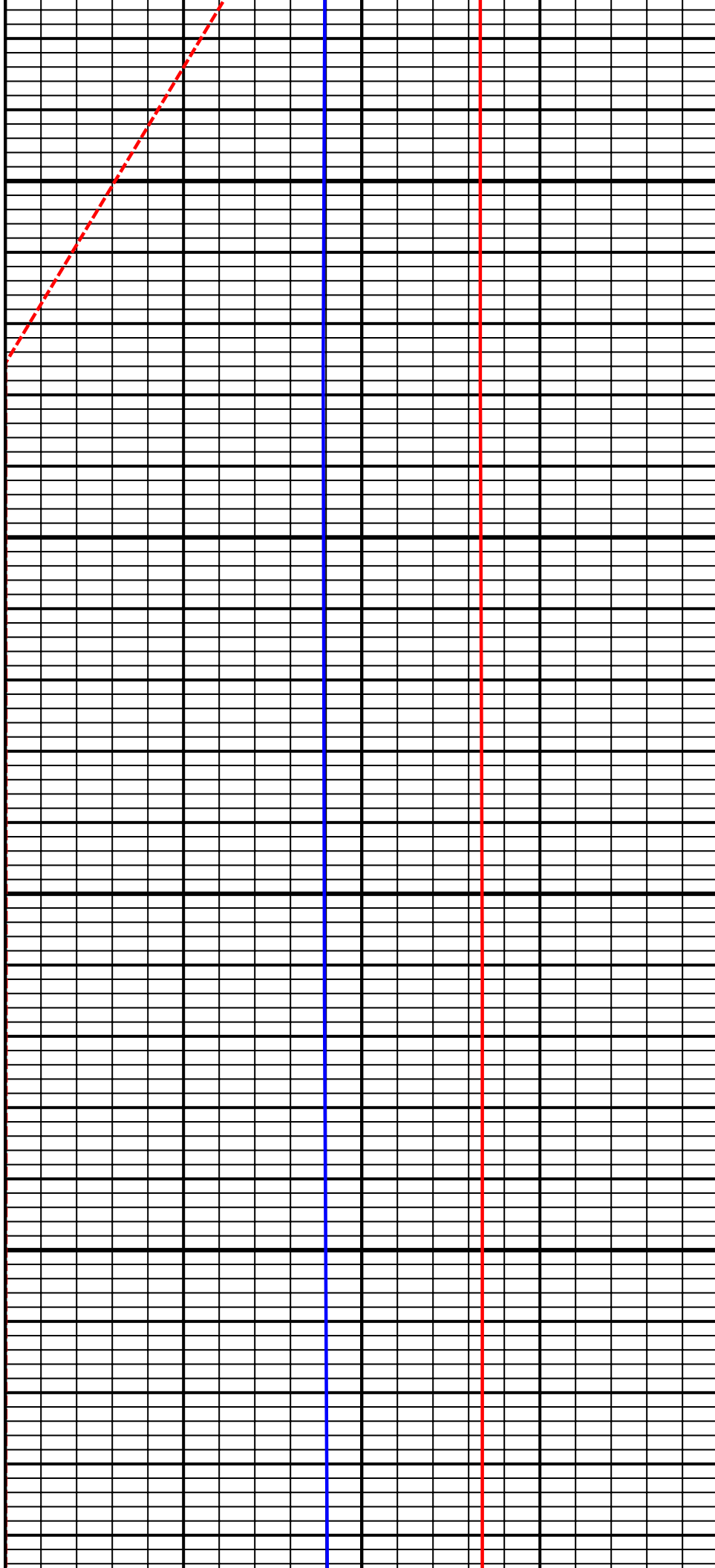
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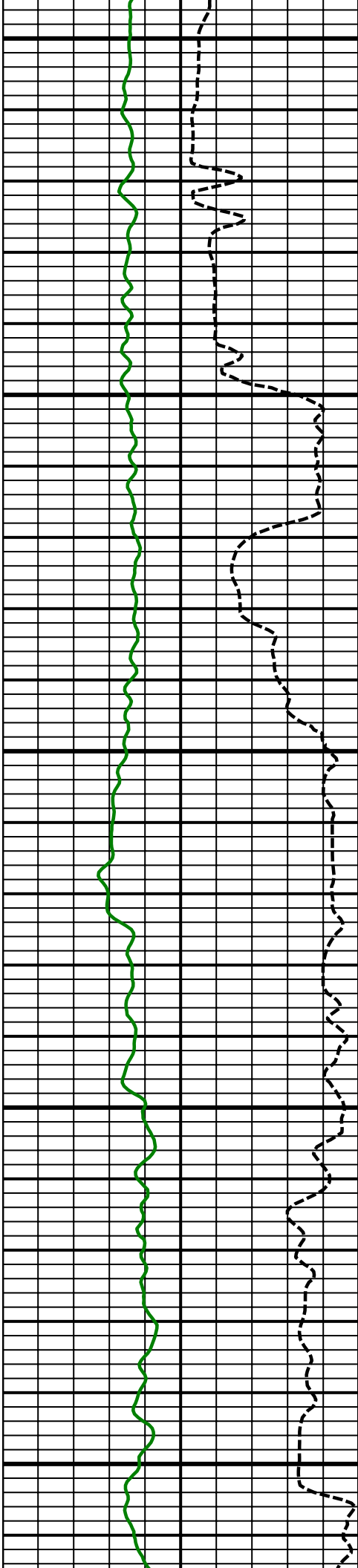




9600
MD

9700
MD

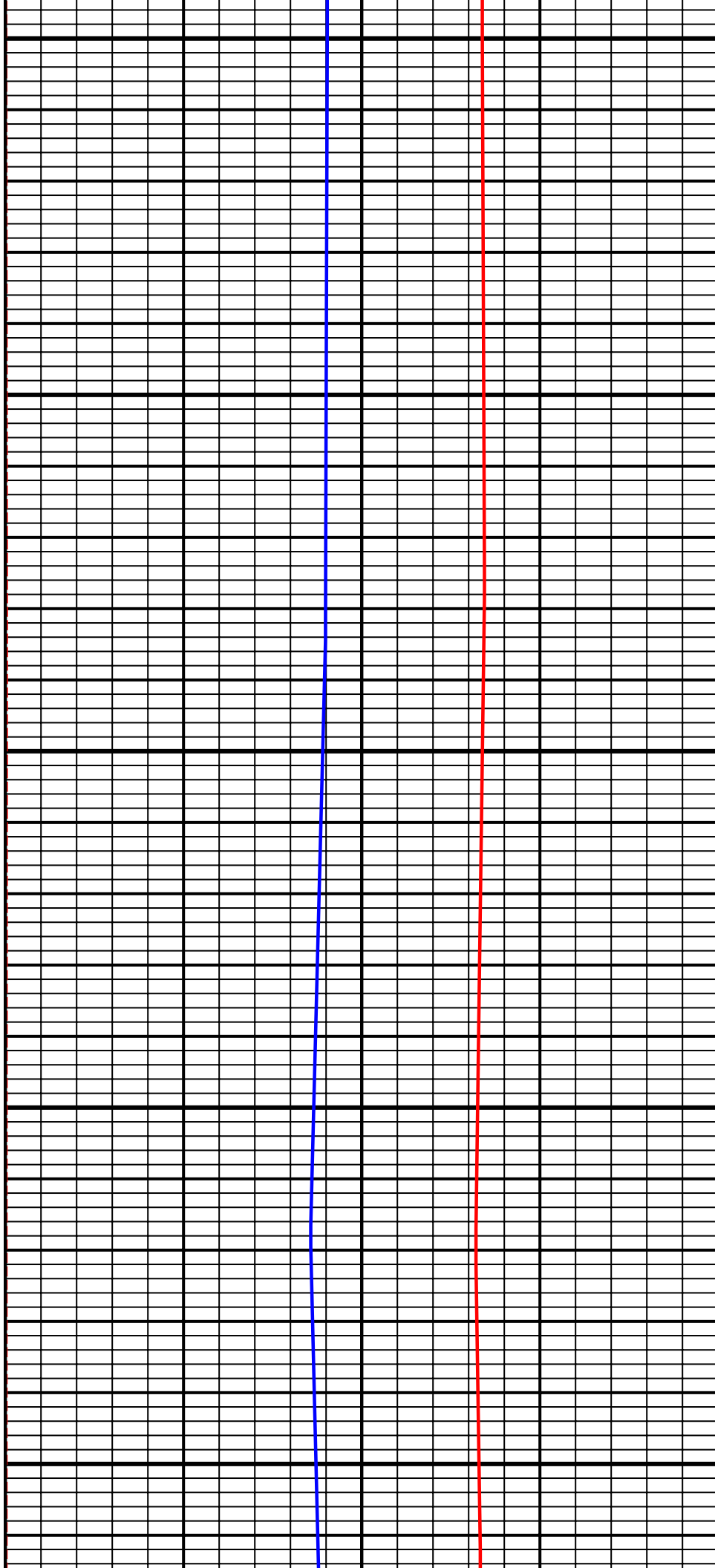


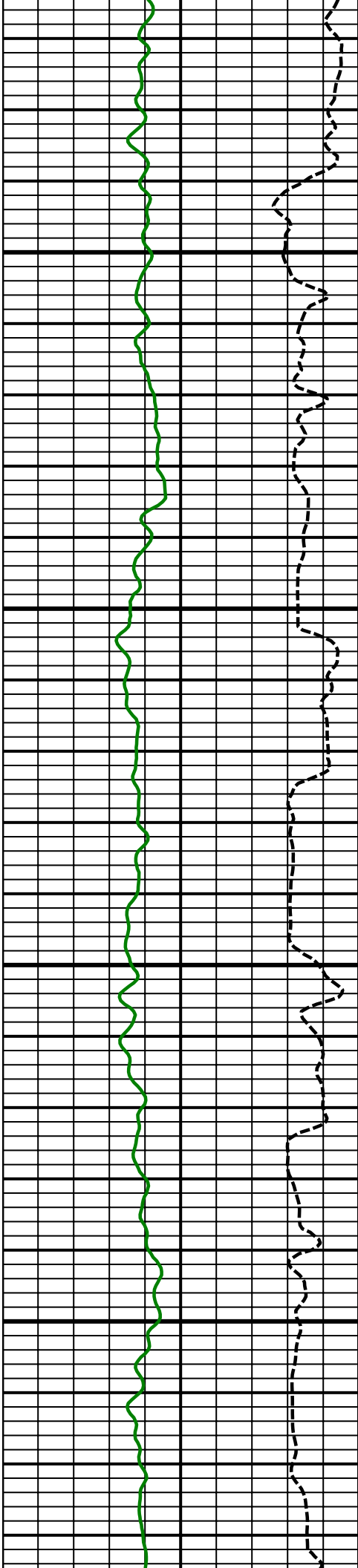


9800
MD

9900
MD

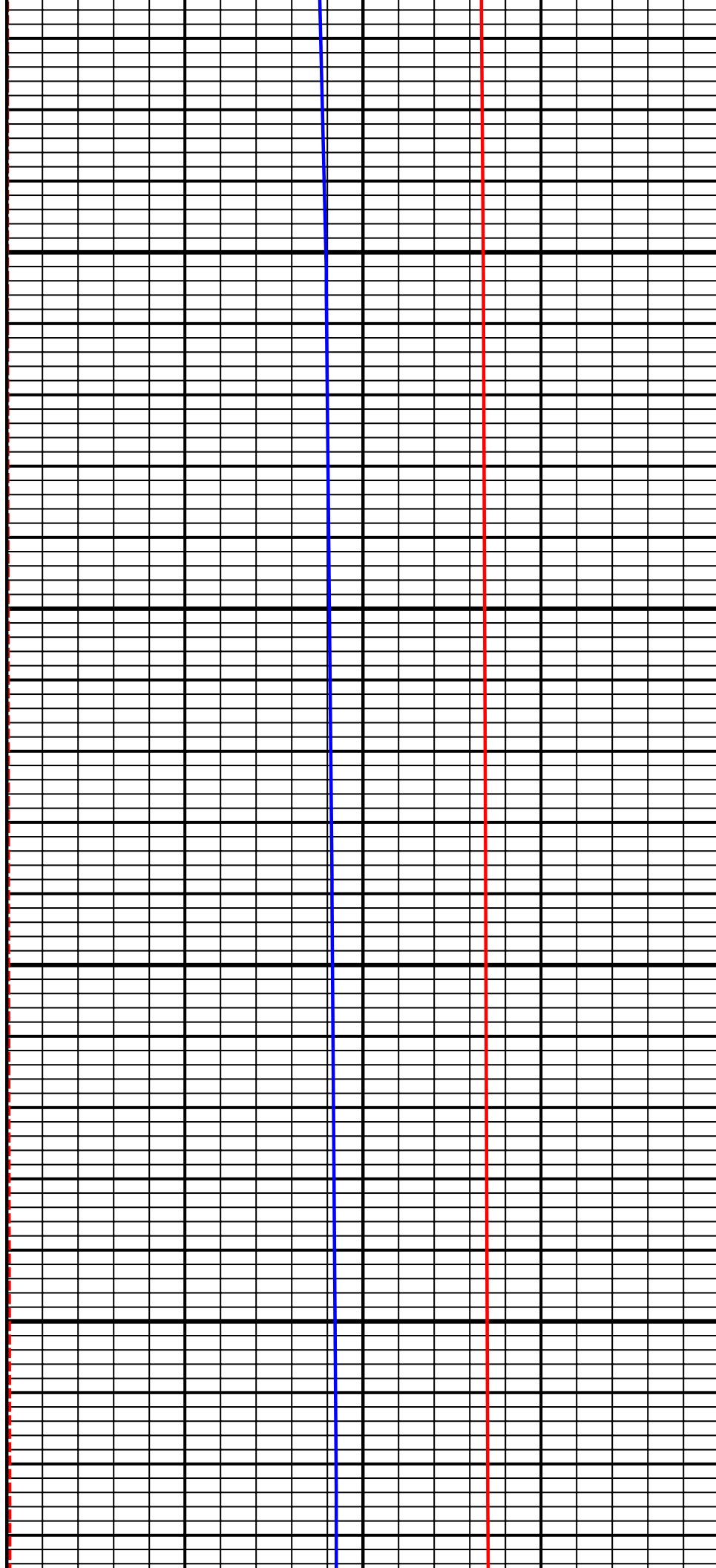
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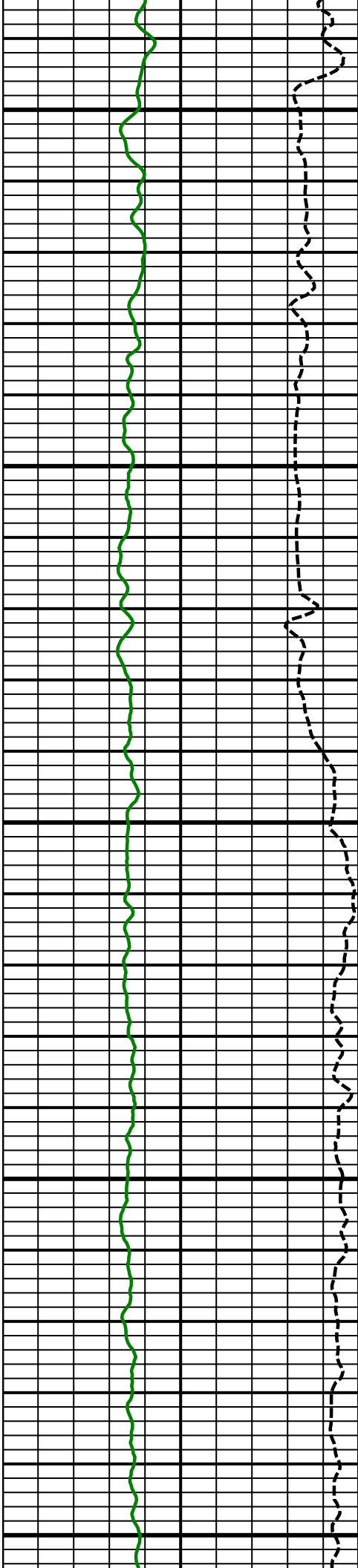




10100
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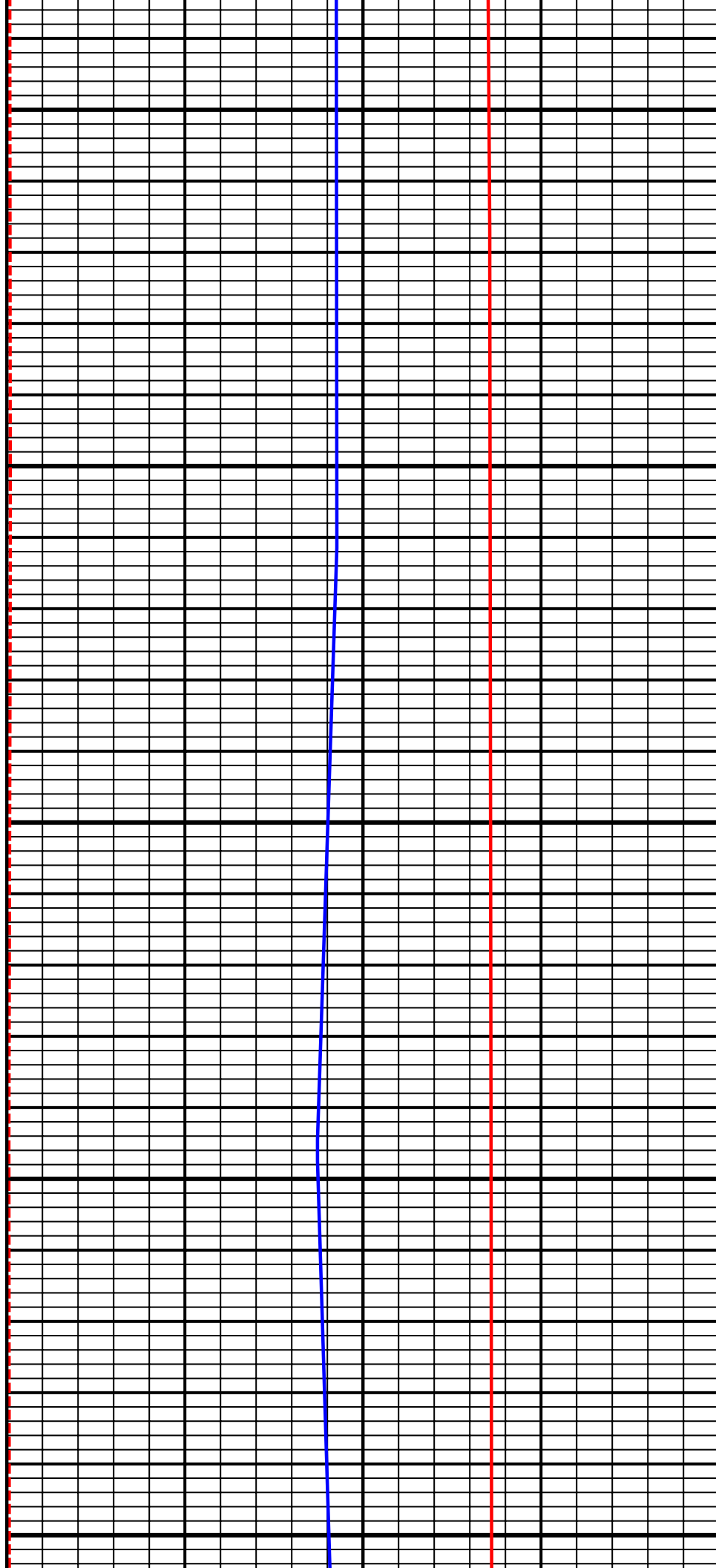
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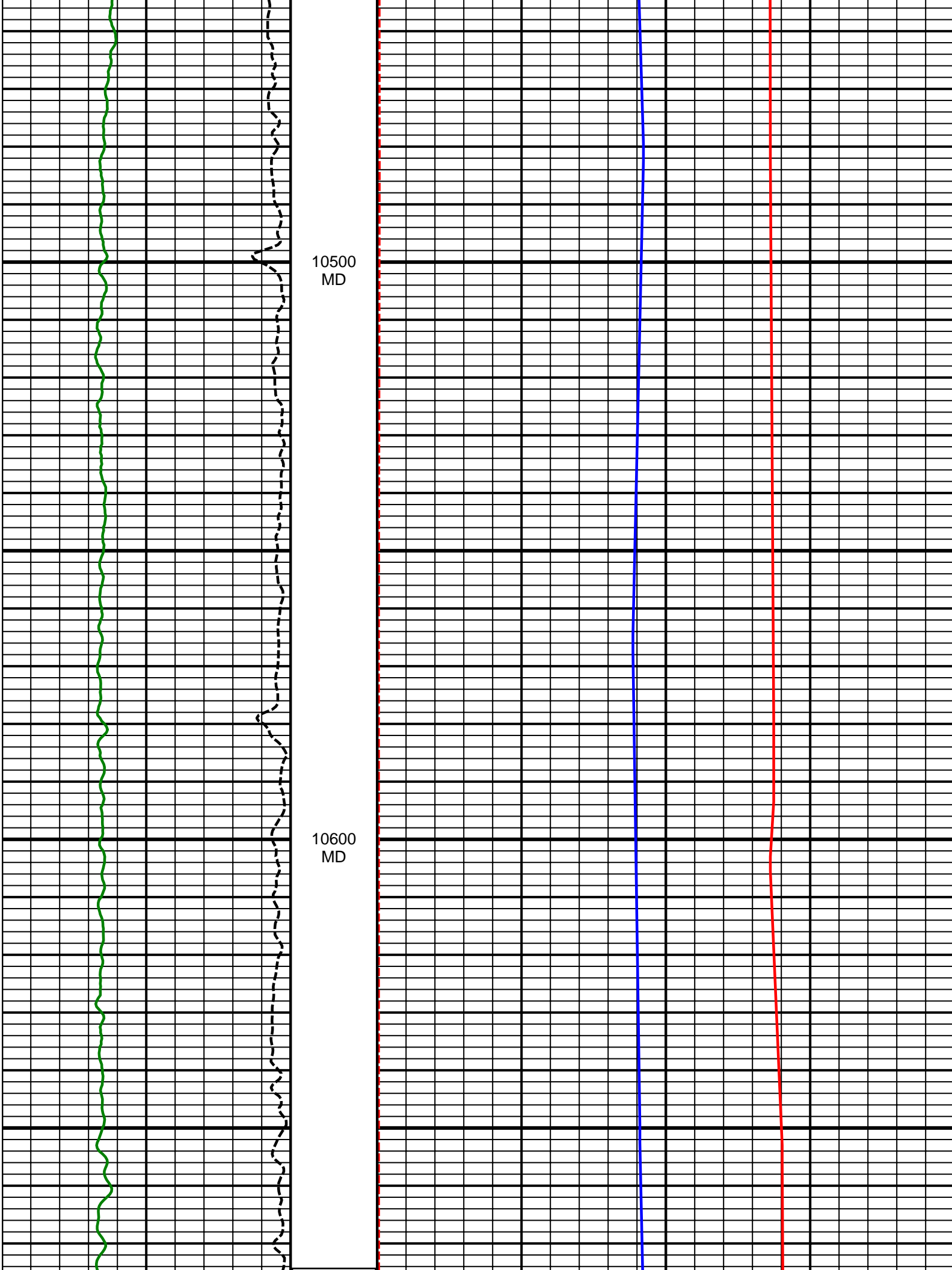


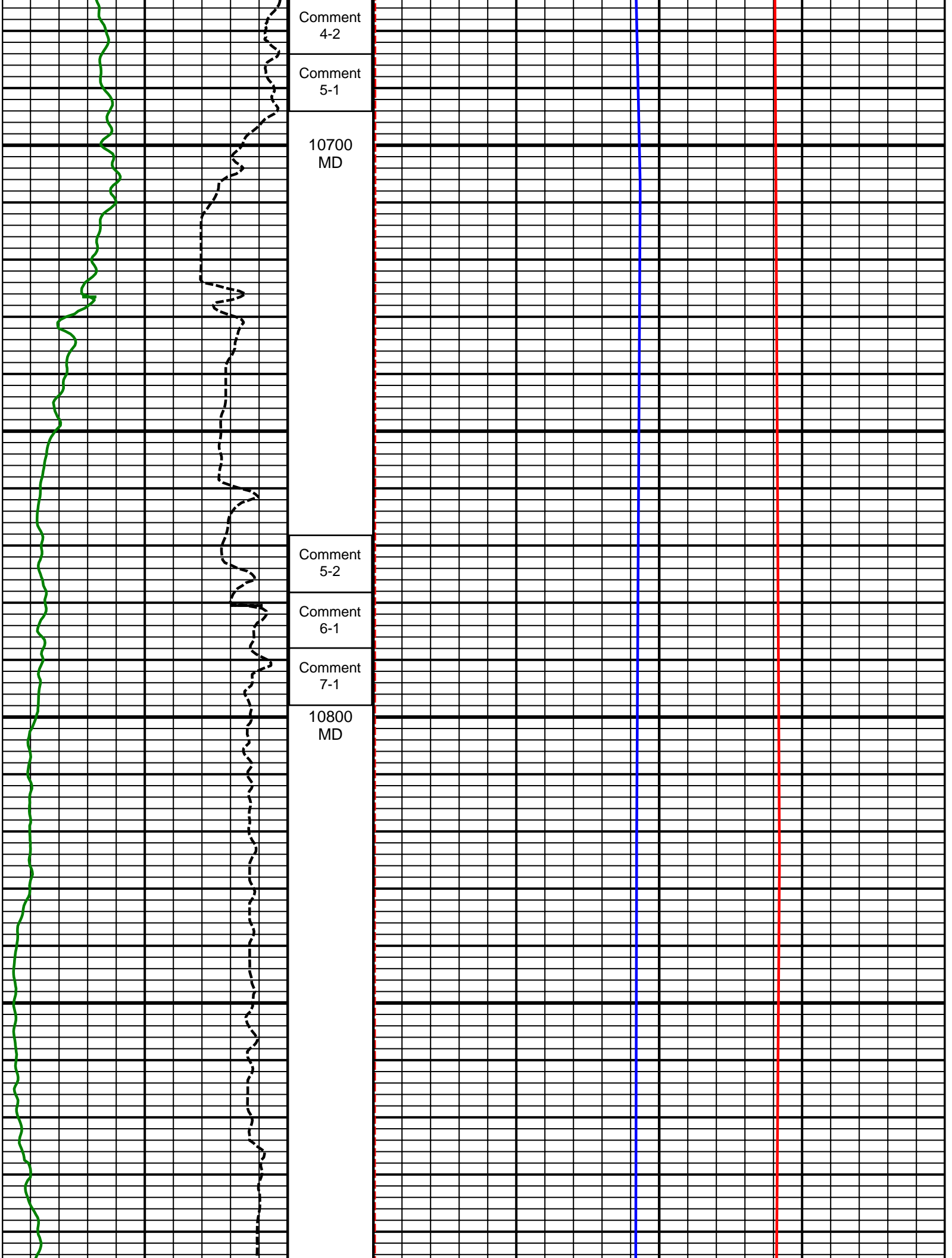


10300
MD

10400
MD







Comment
4-2

Comment
5-1

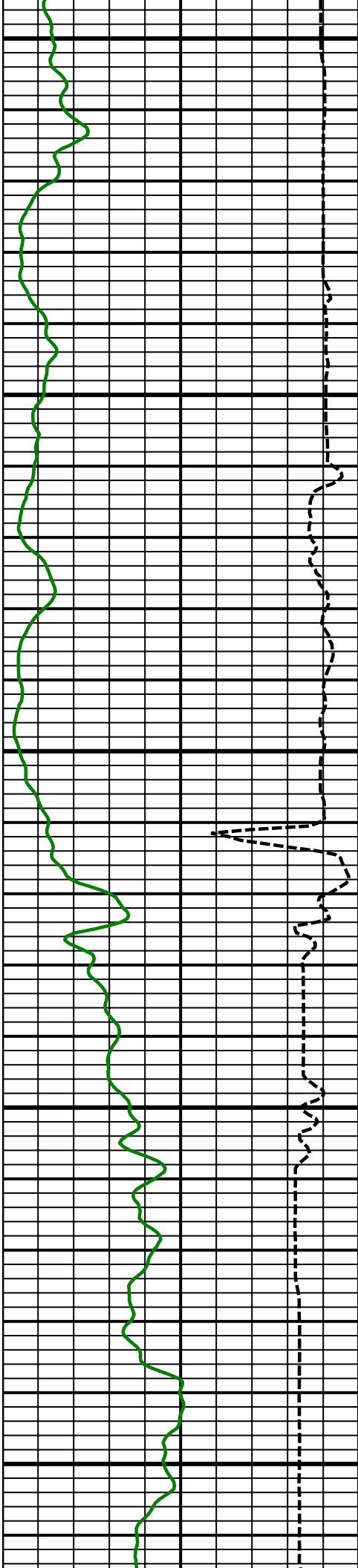
10700
MD

Comment
5-2

Comment
6-1

Comment
7-1

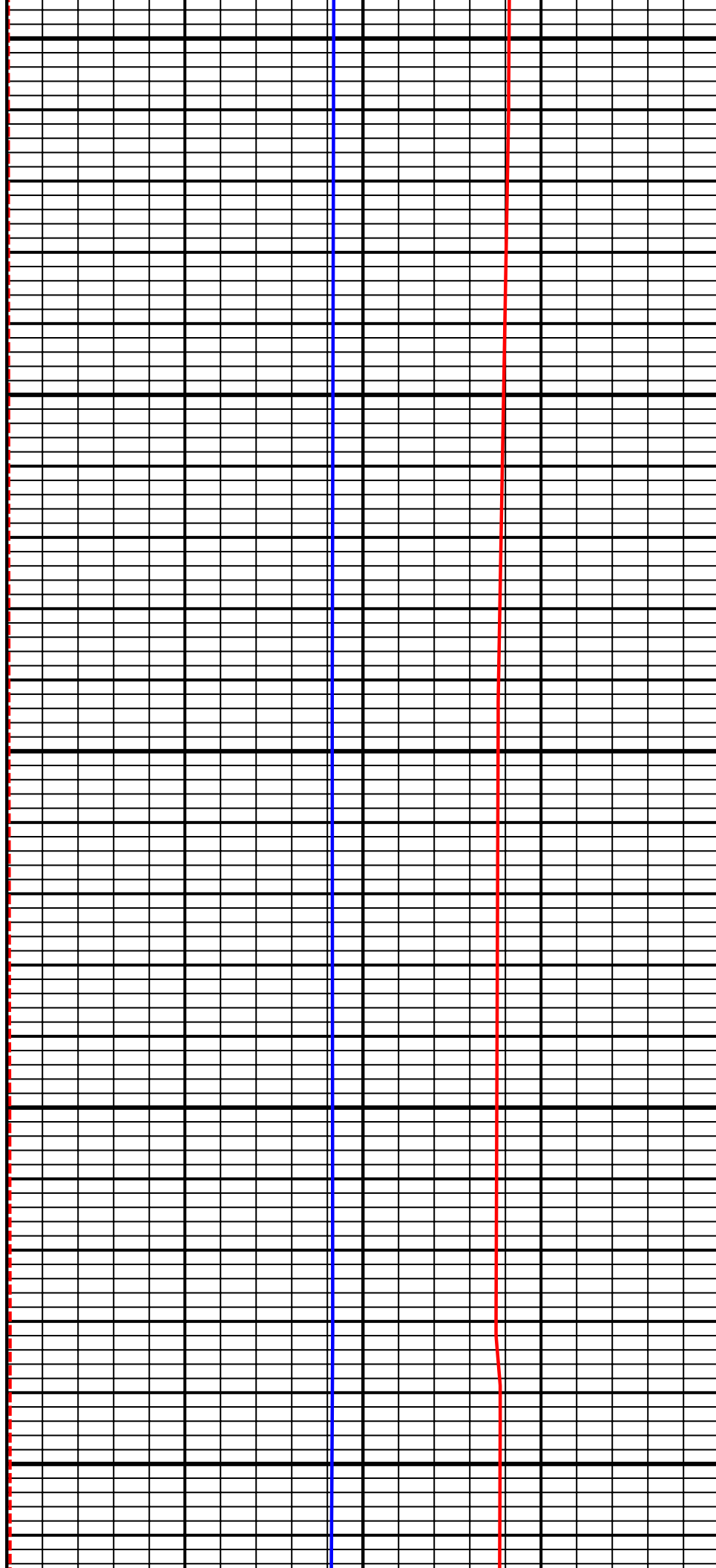
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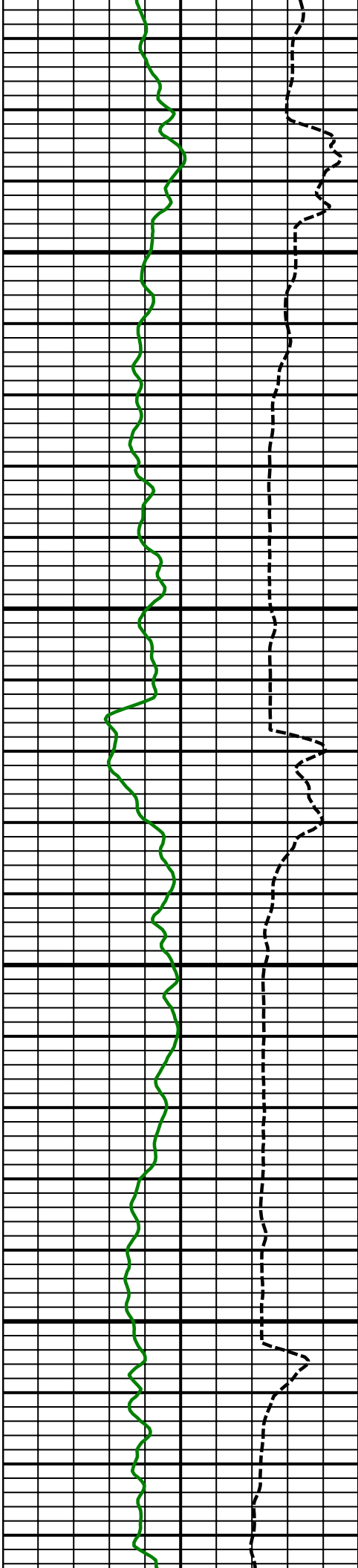


10900
MD

11000
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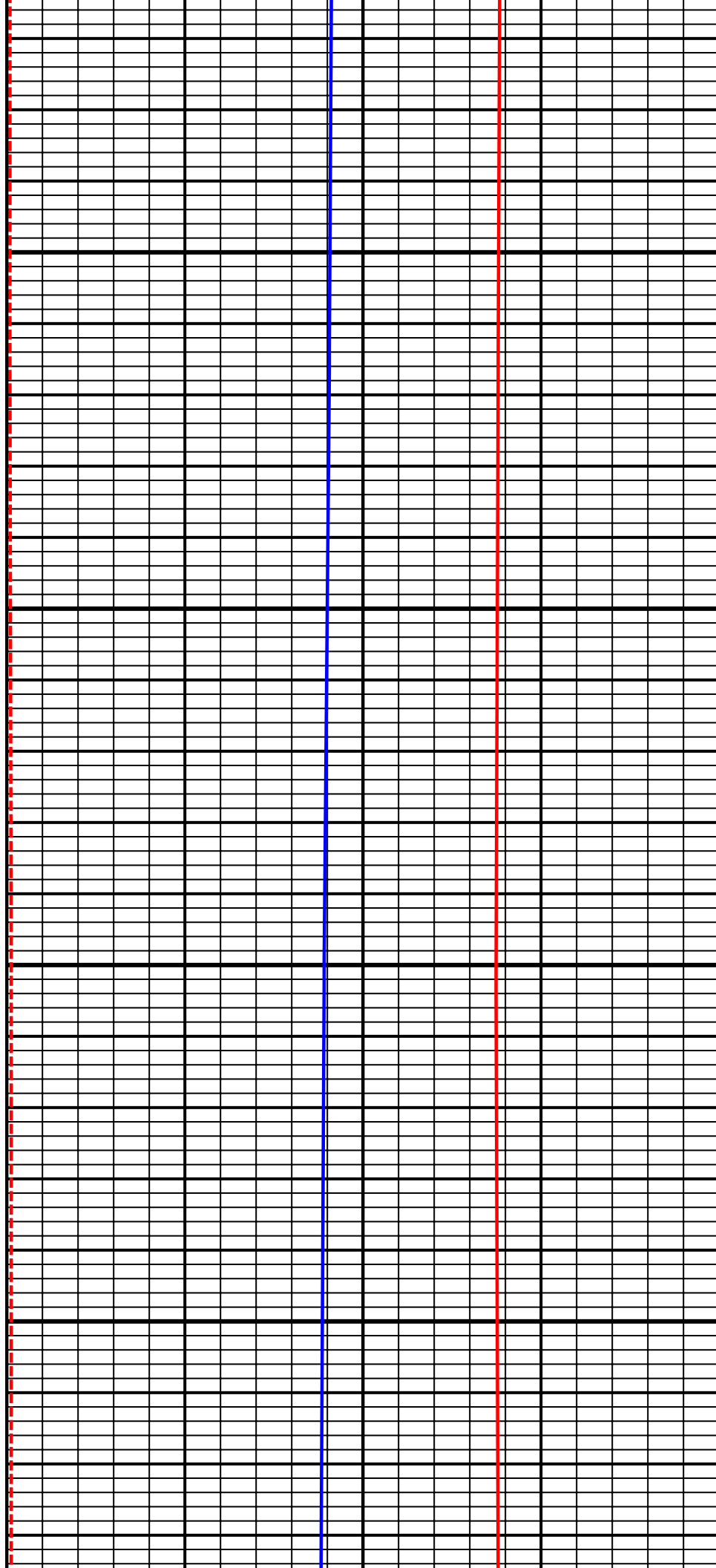
11100
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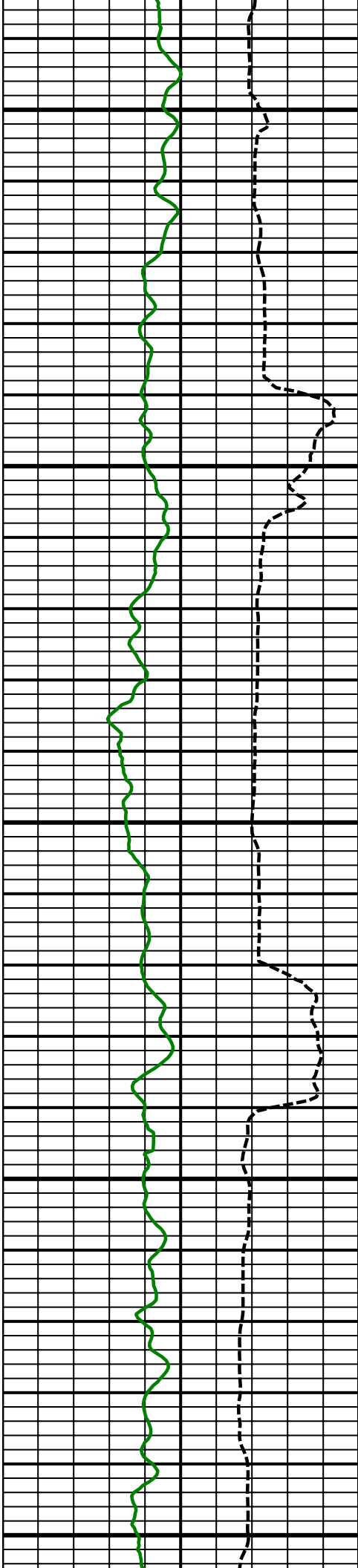




11200
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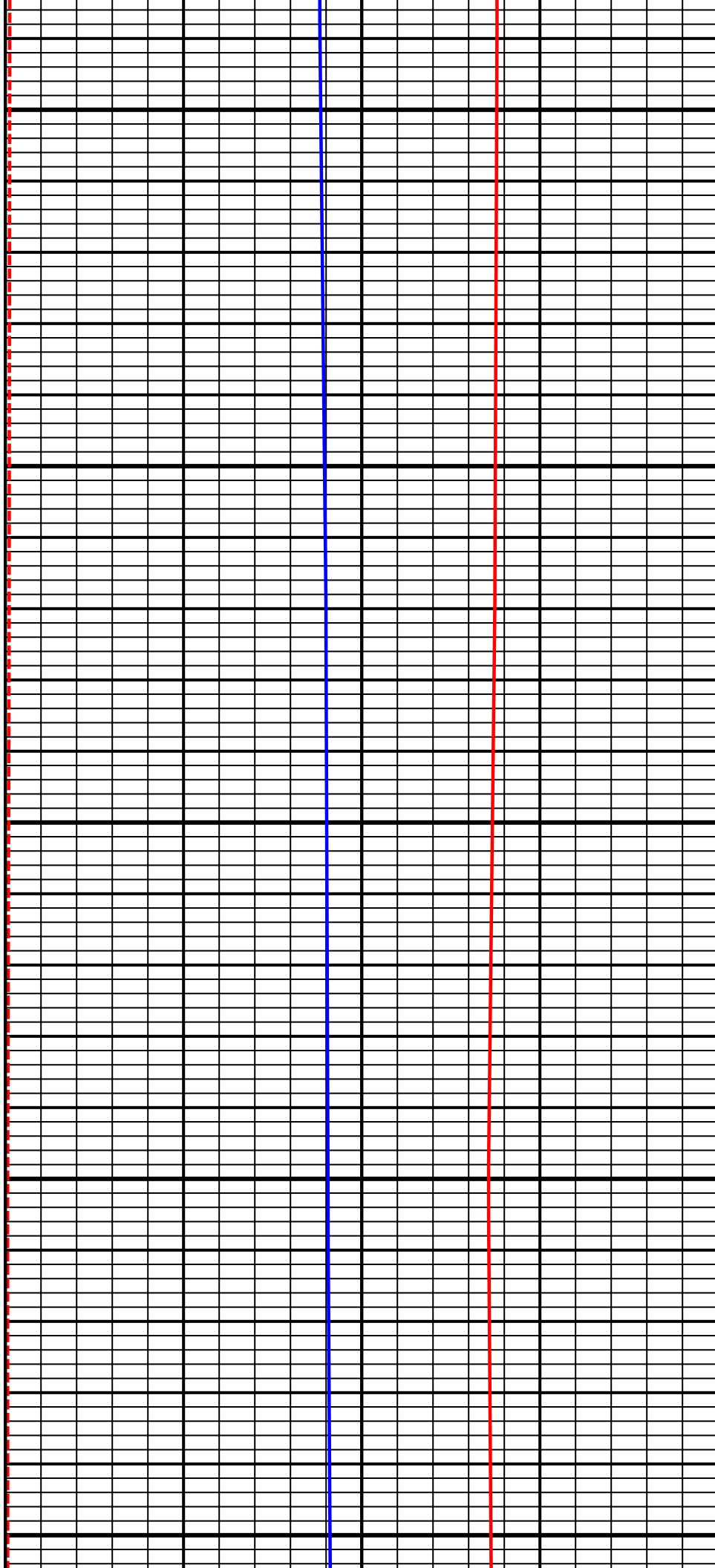
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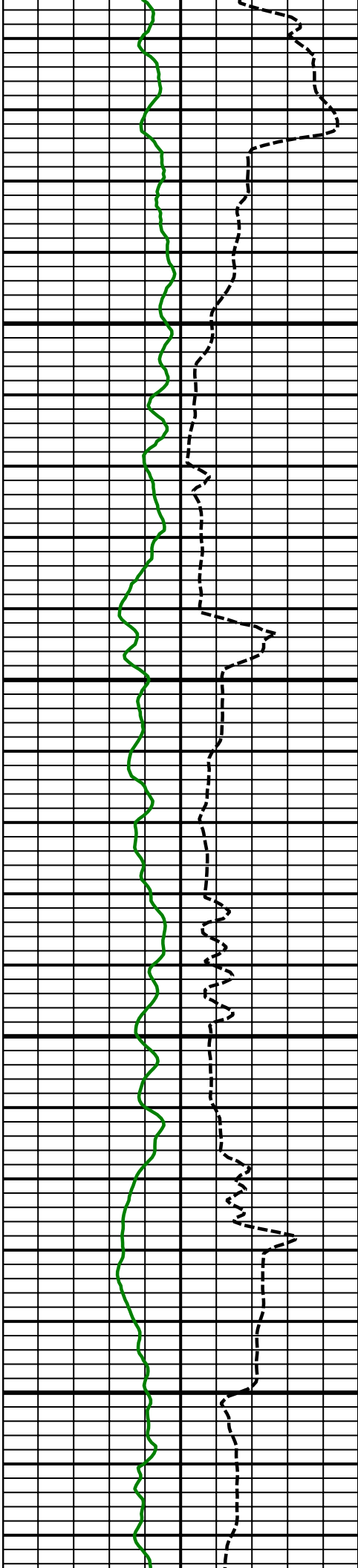




11400
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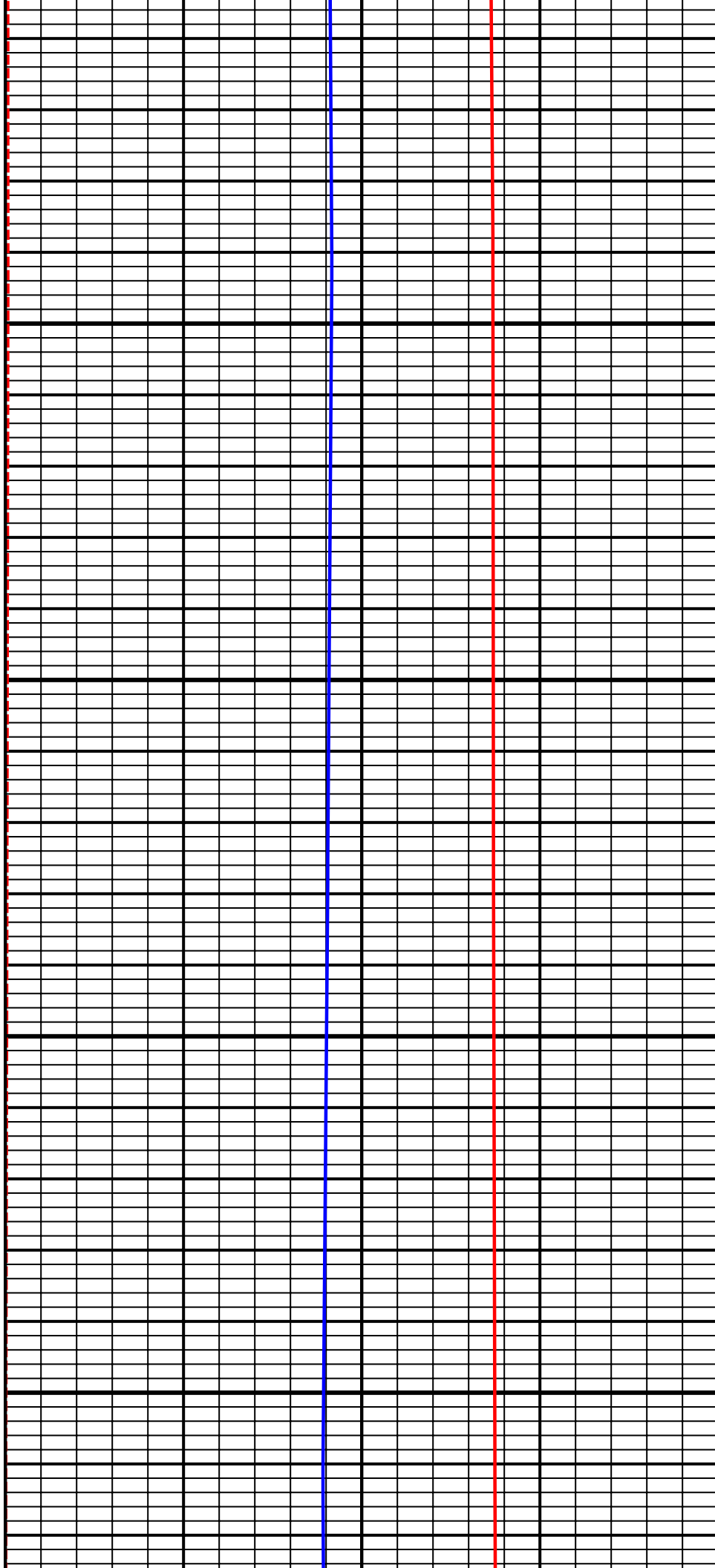
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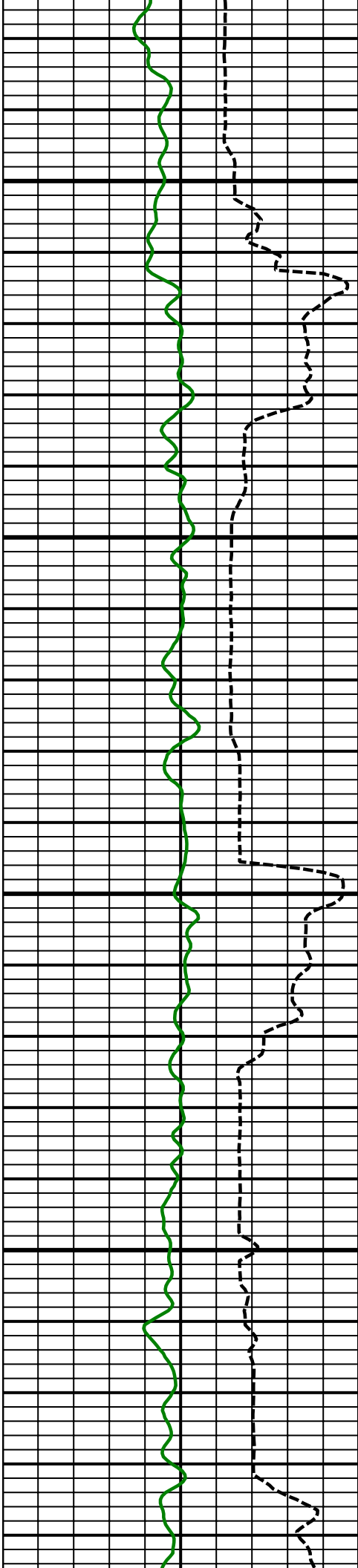




11600
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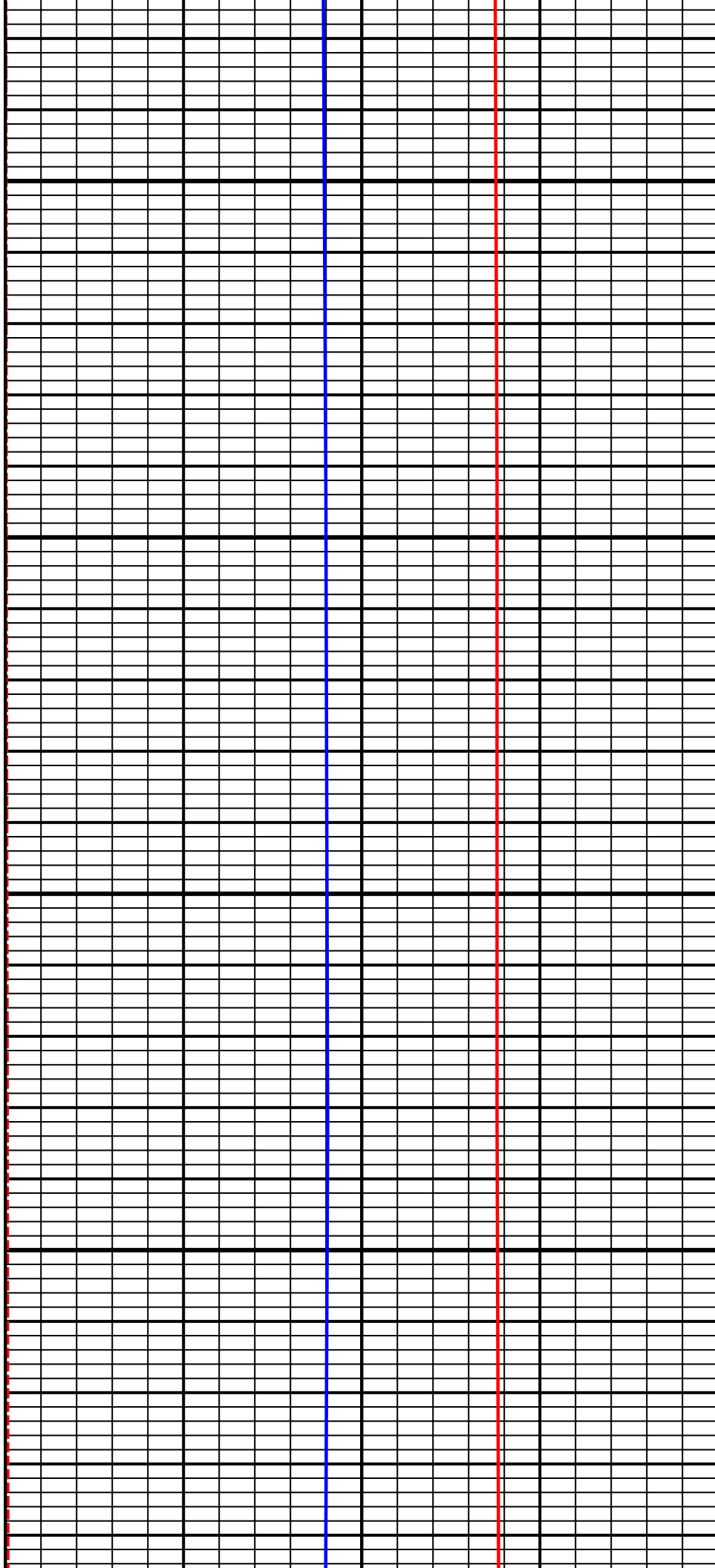
11700
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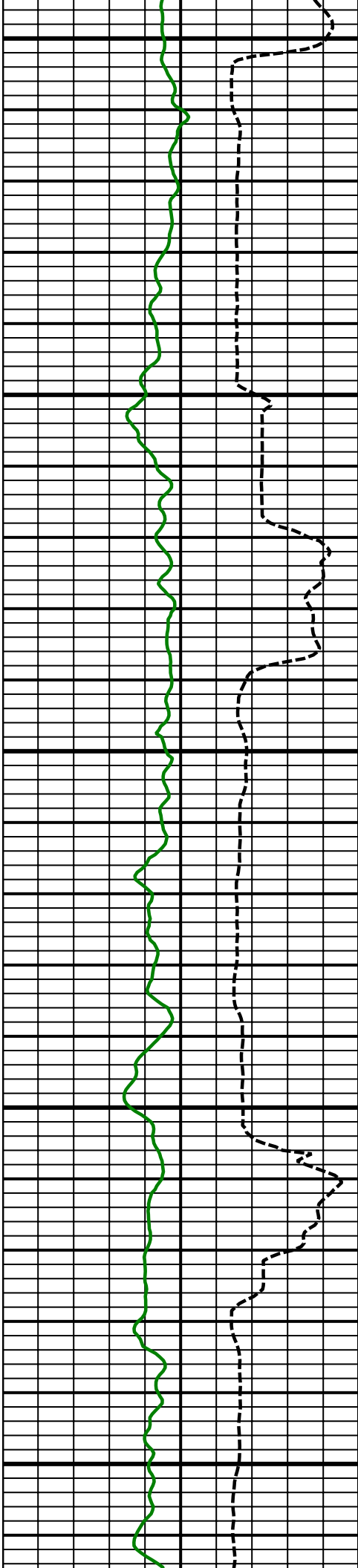




11800
MD

11900
MD

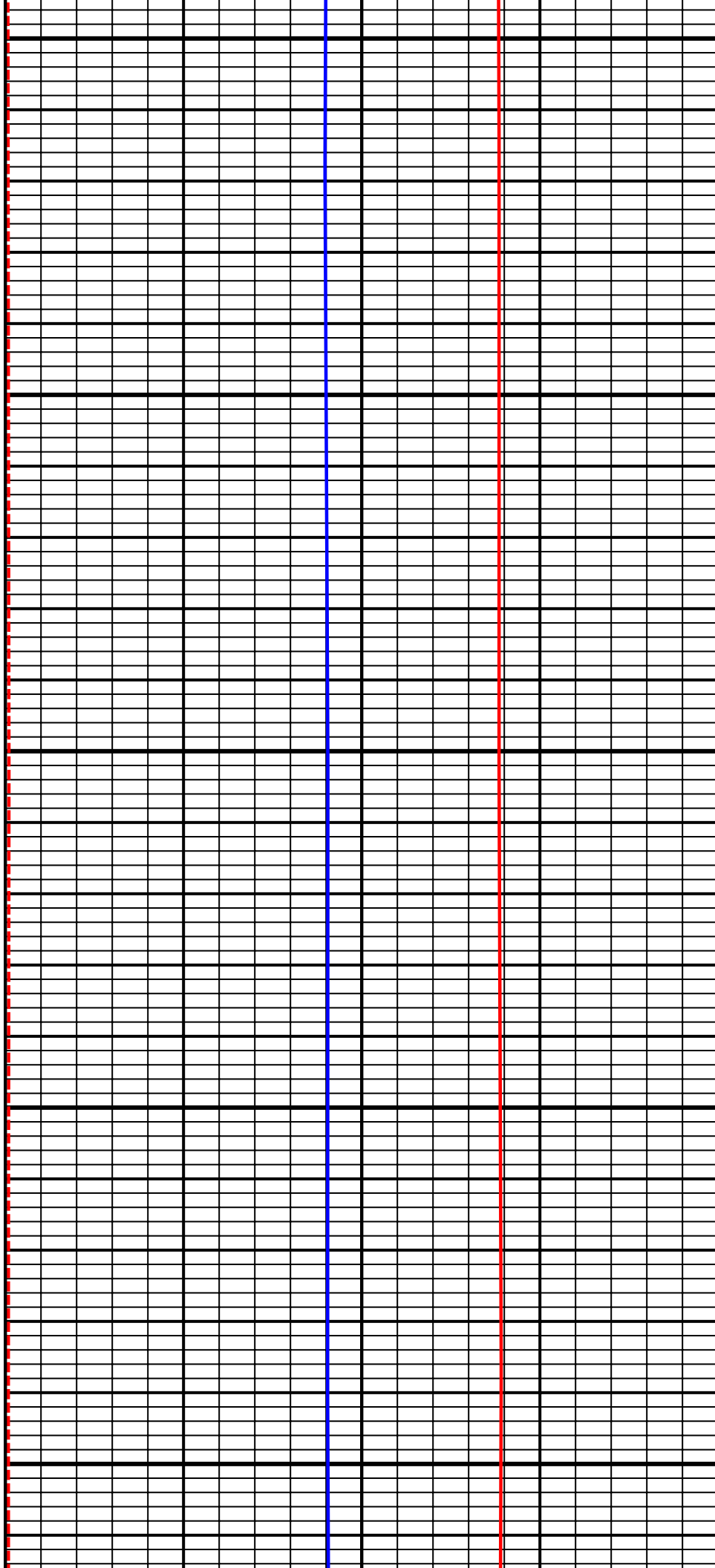


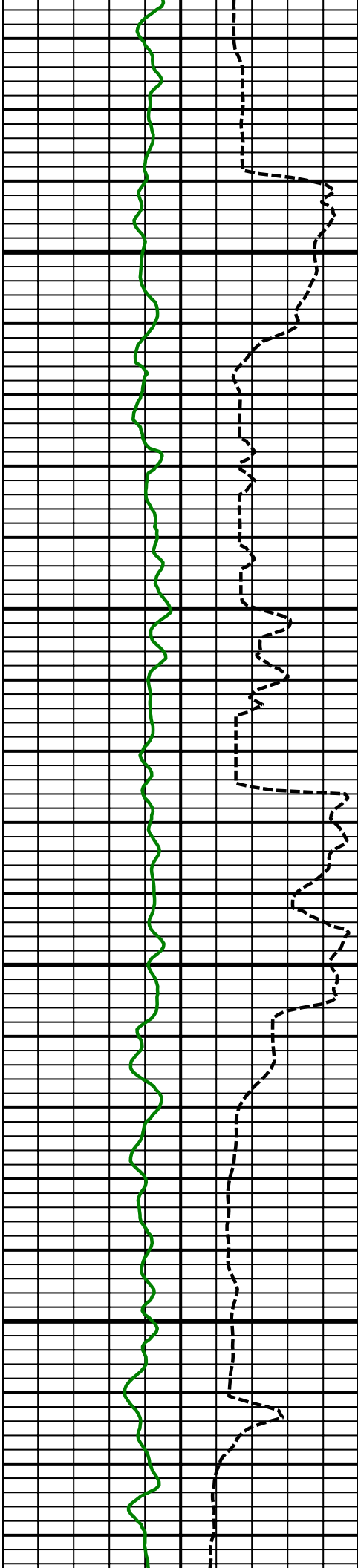


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12100
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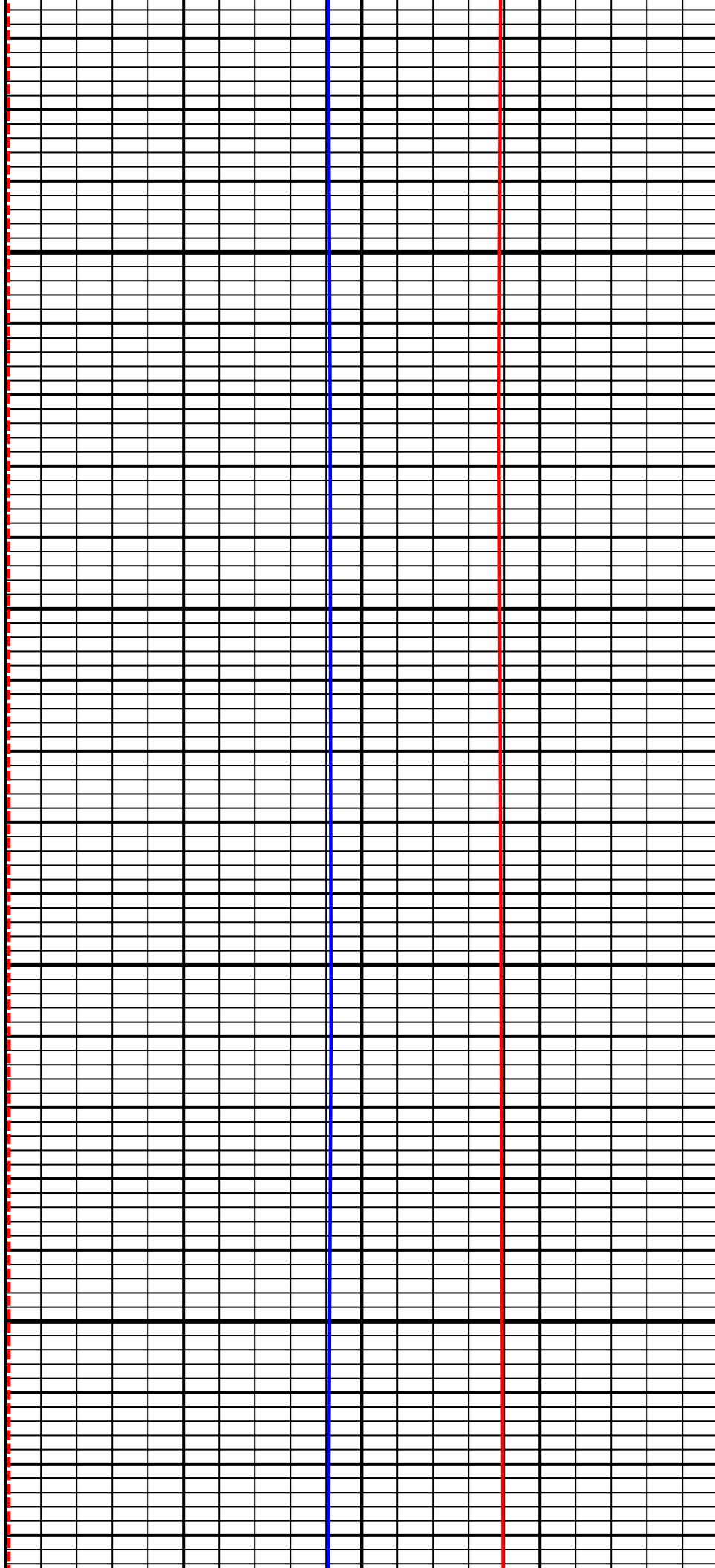
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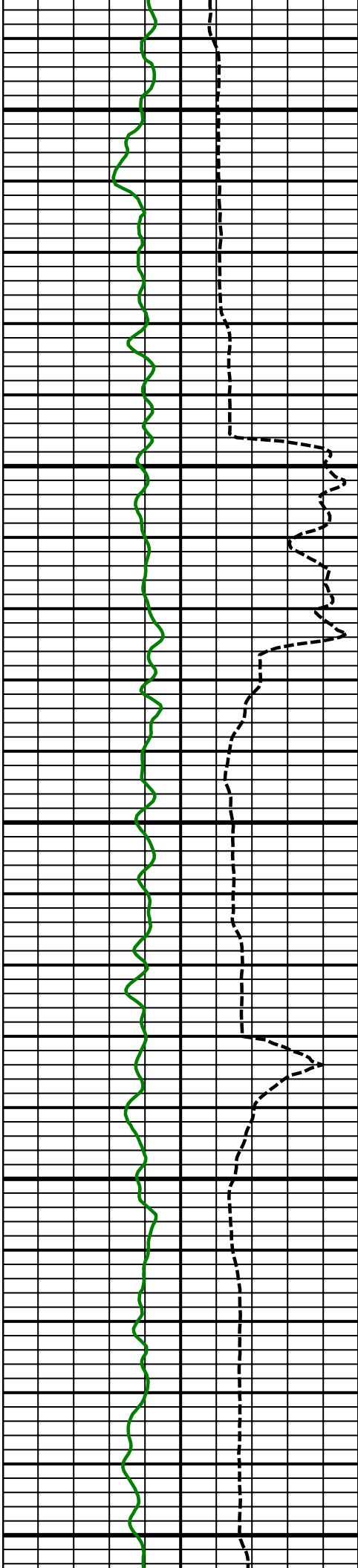




12300
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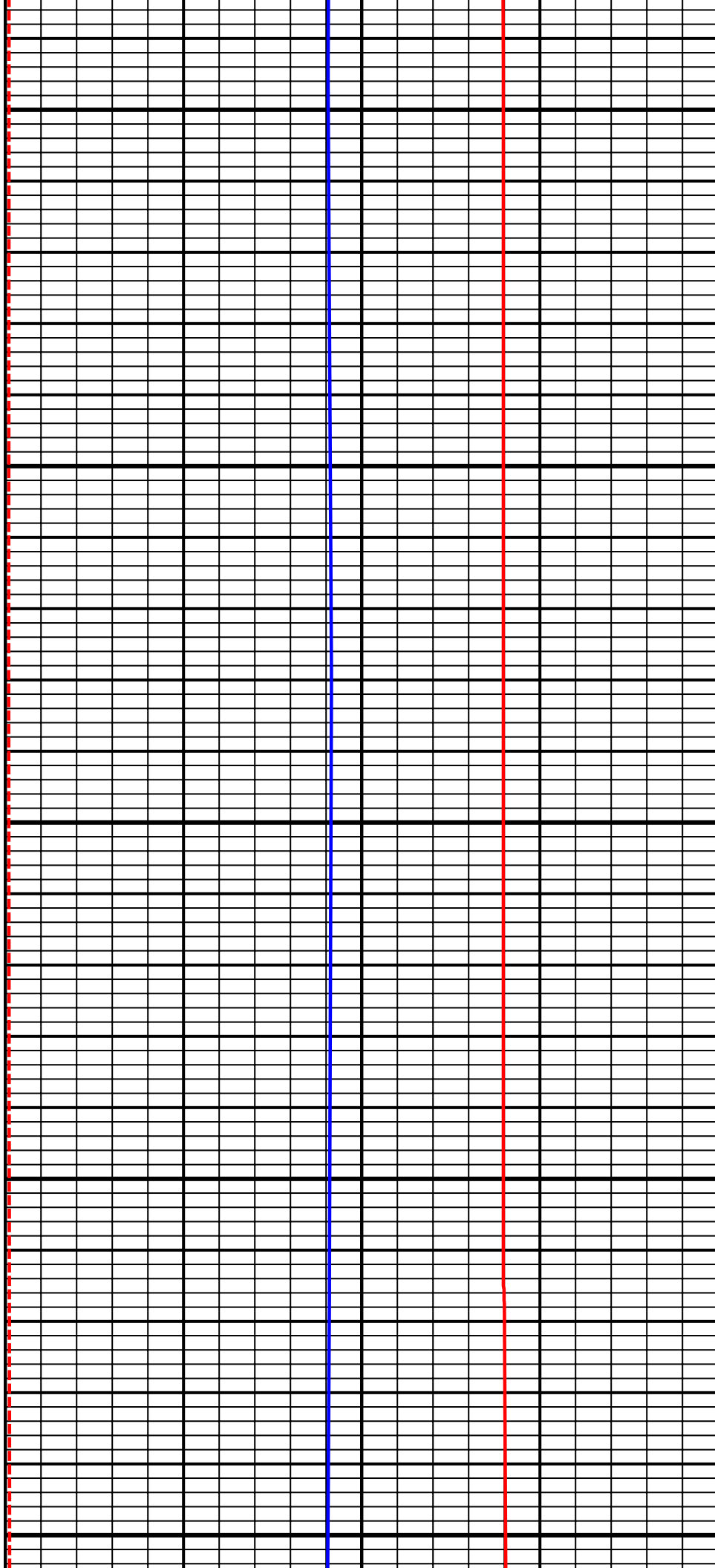
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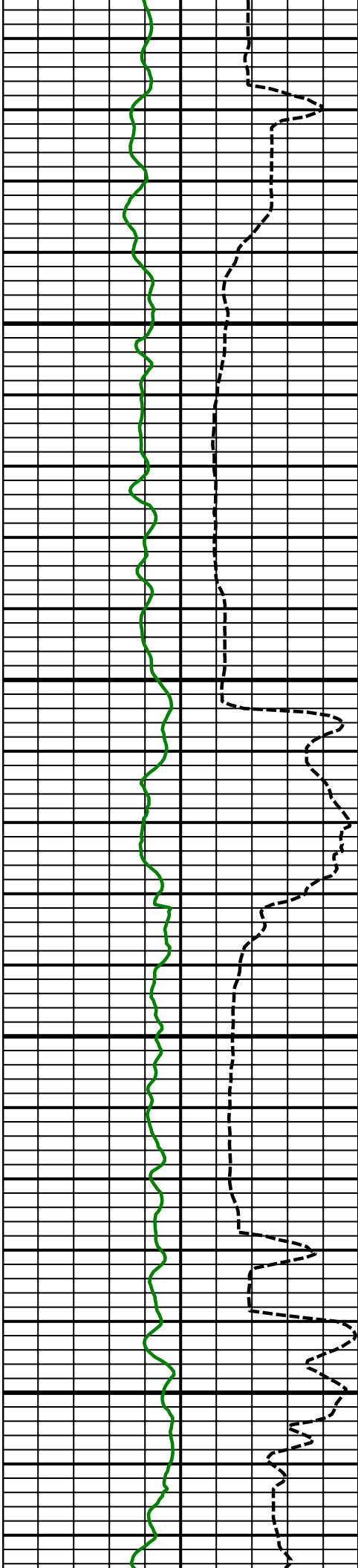




12500
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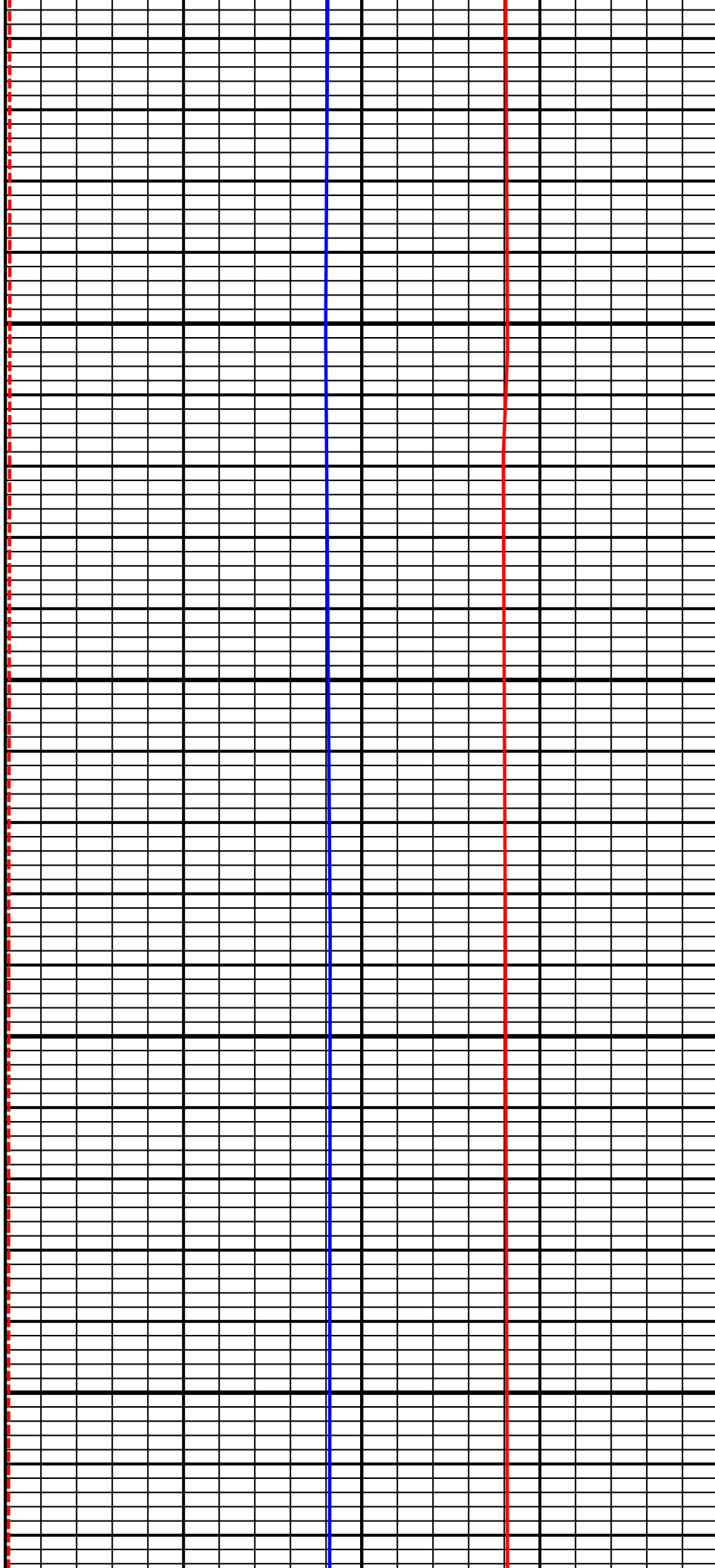
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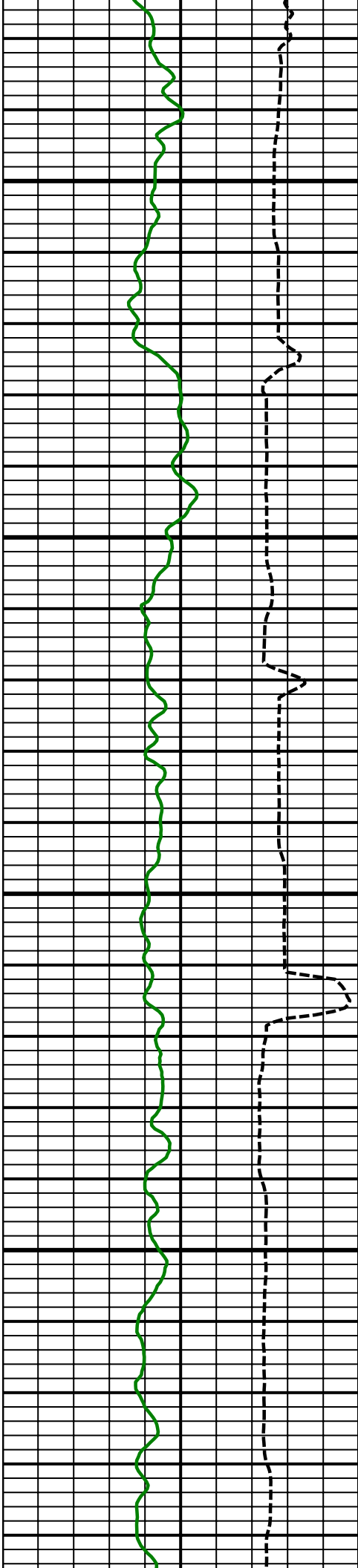




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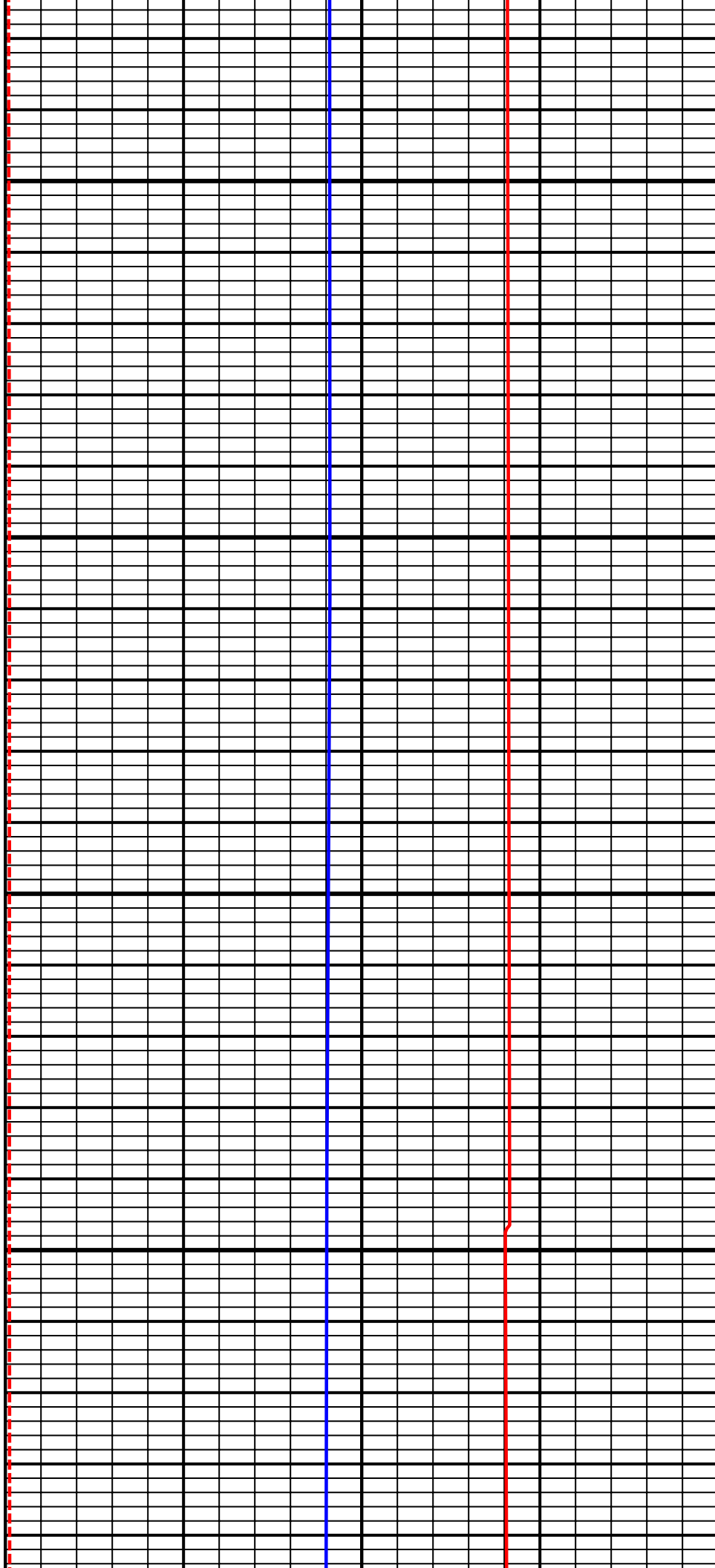
12800
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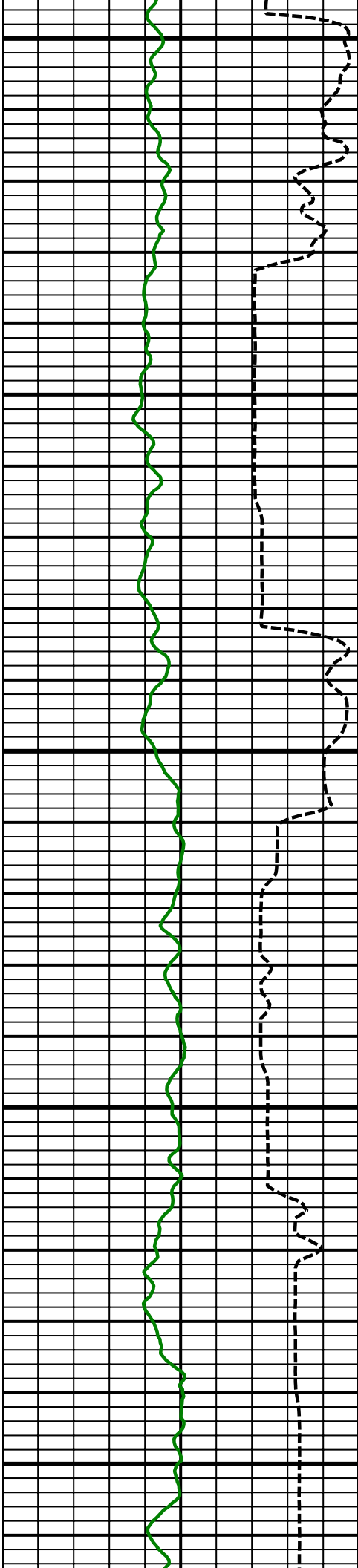




12900
MD

13000
MD

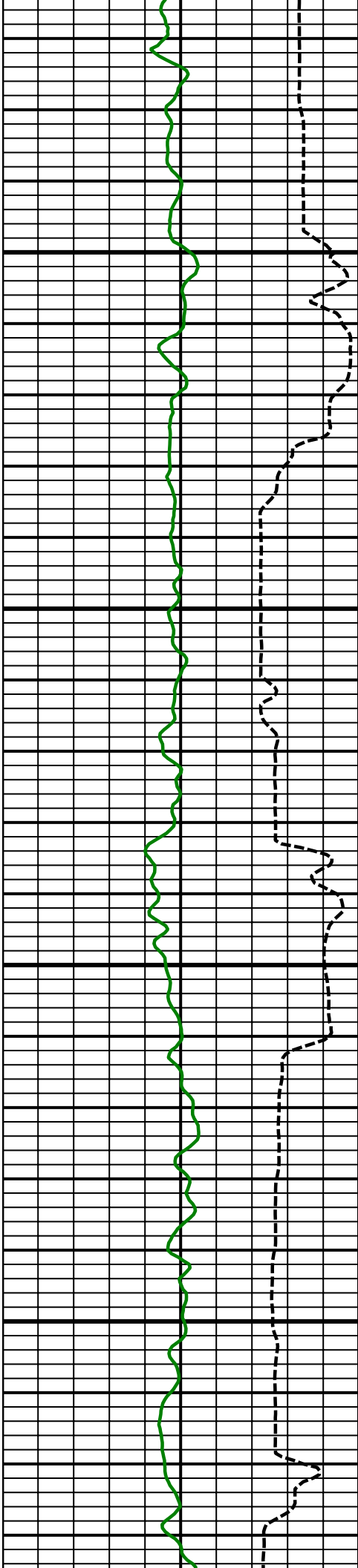




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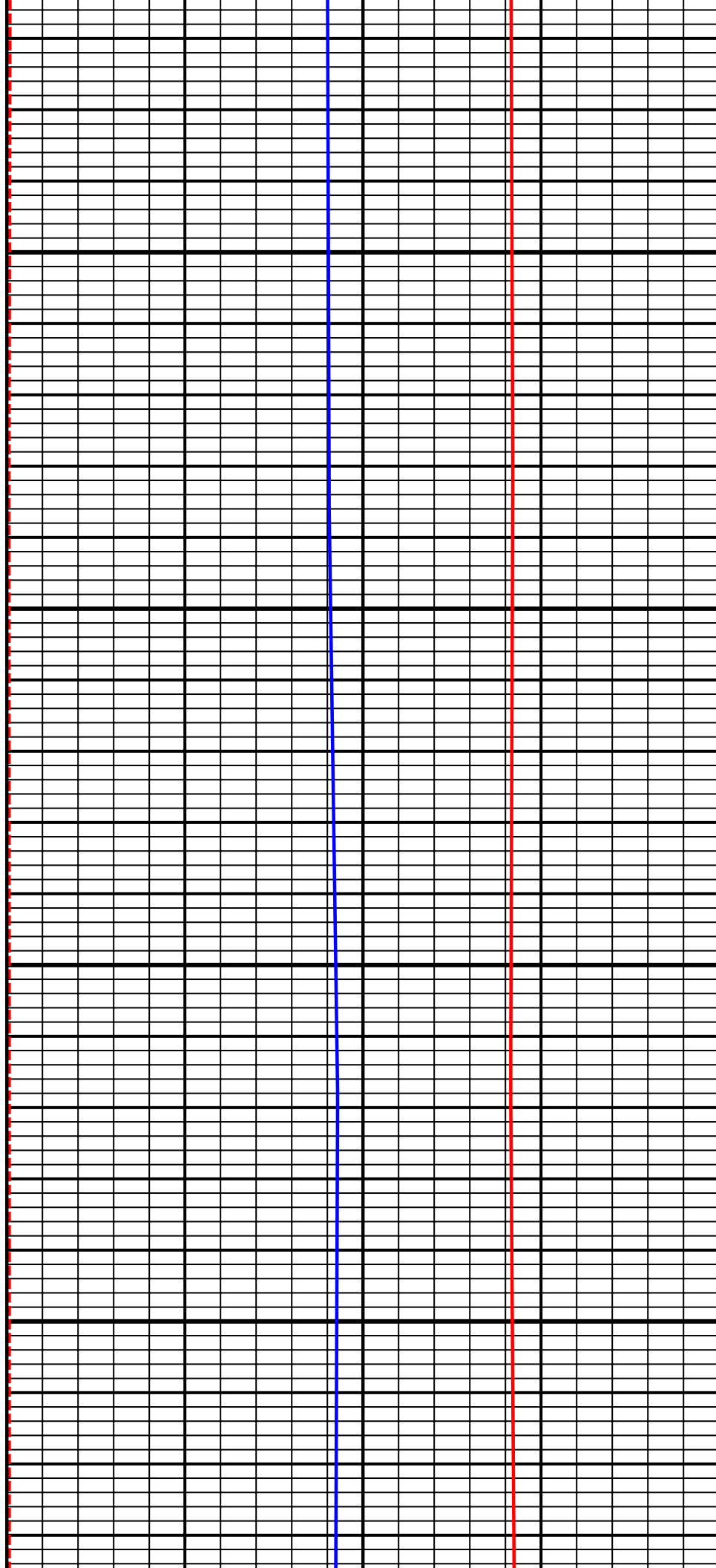
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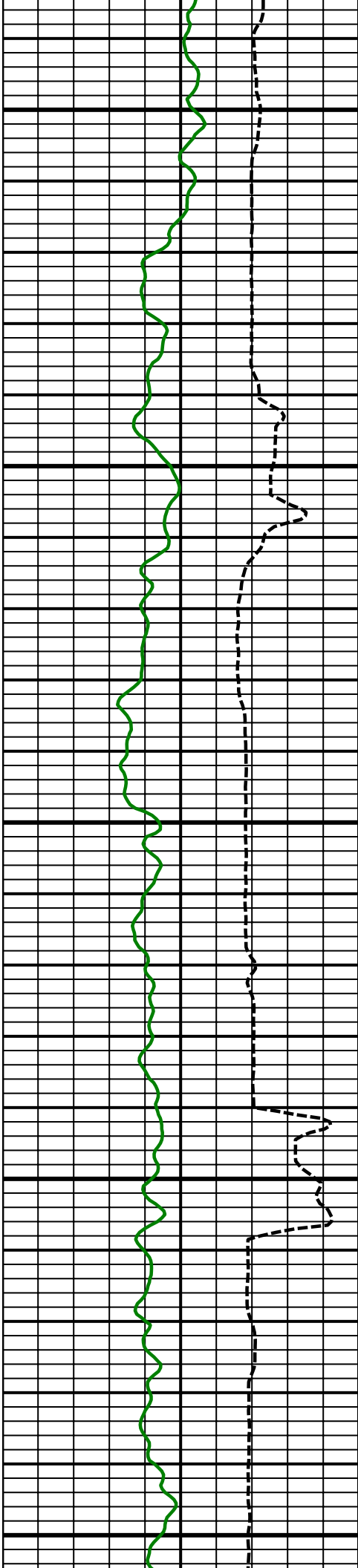
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13400
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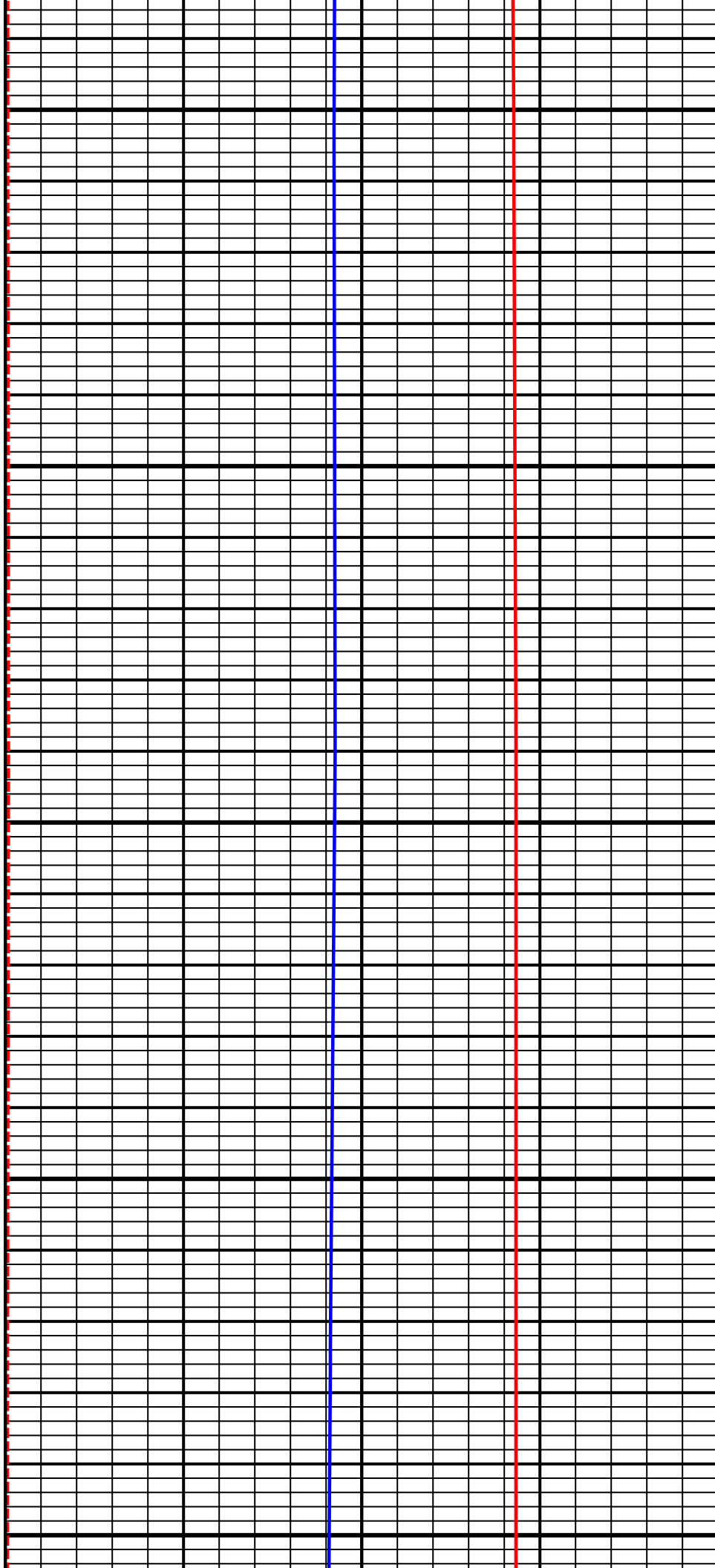
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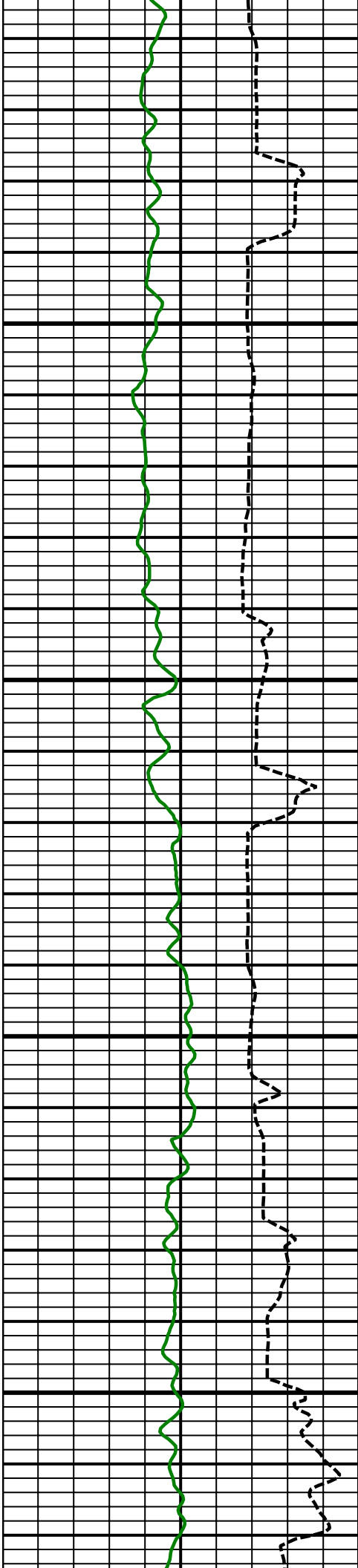




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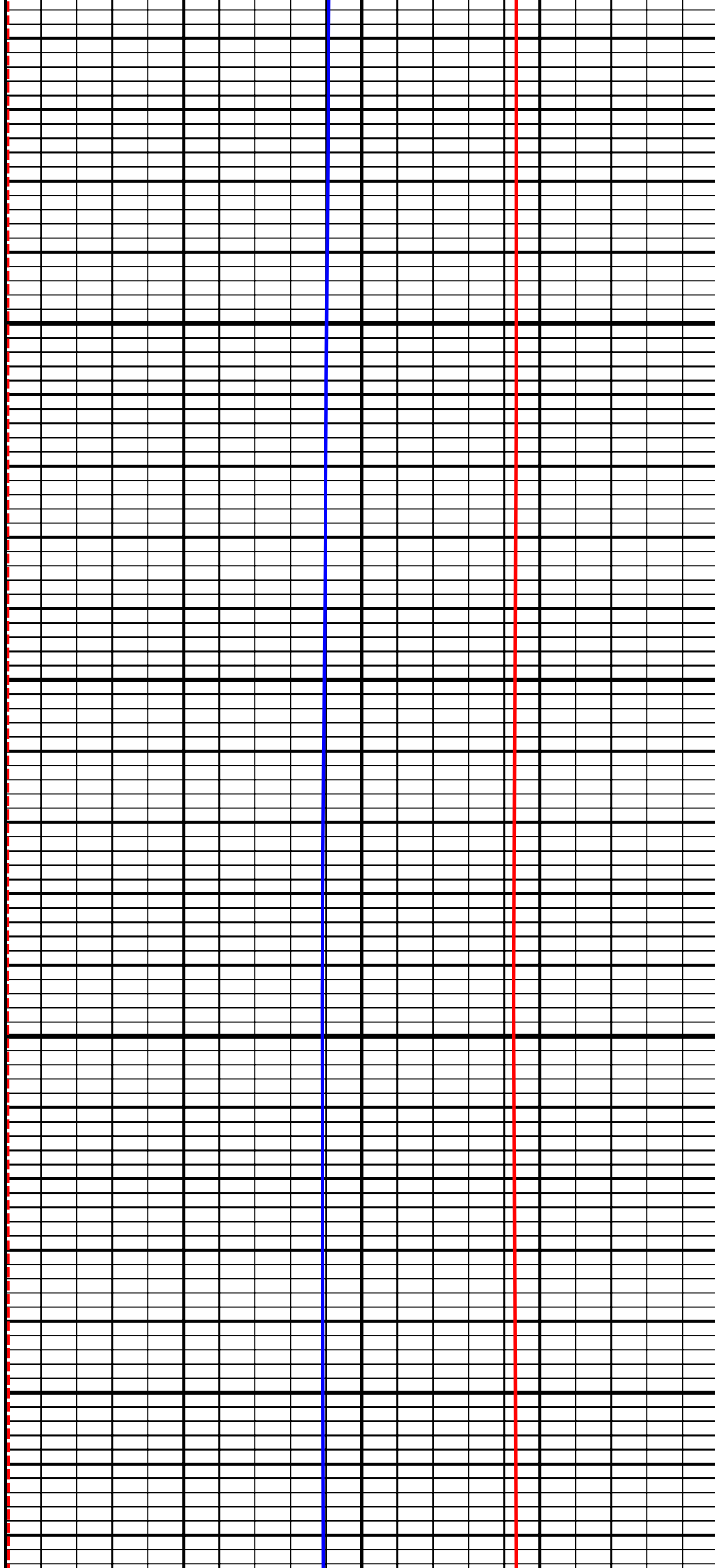
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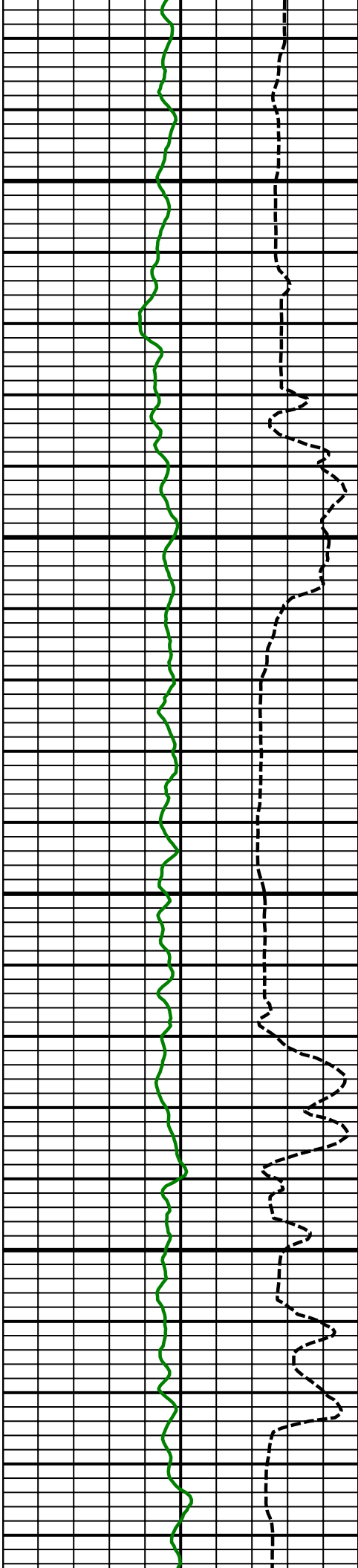




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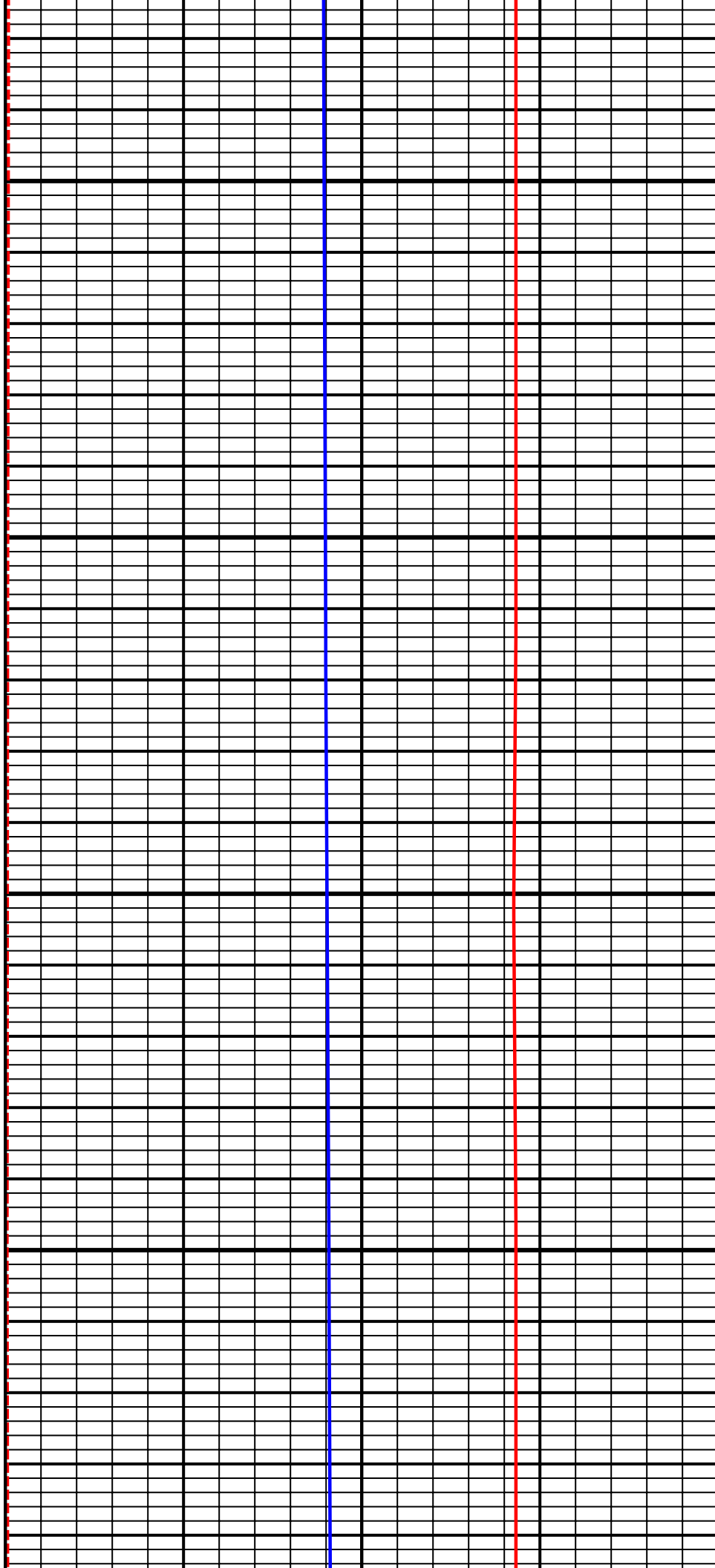
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MD

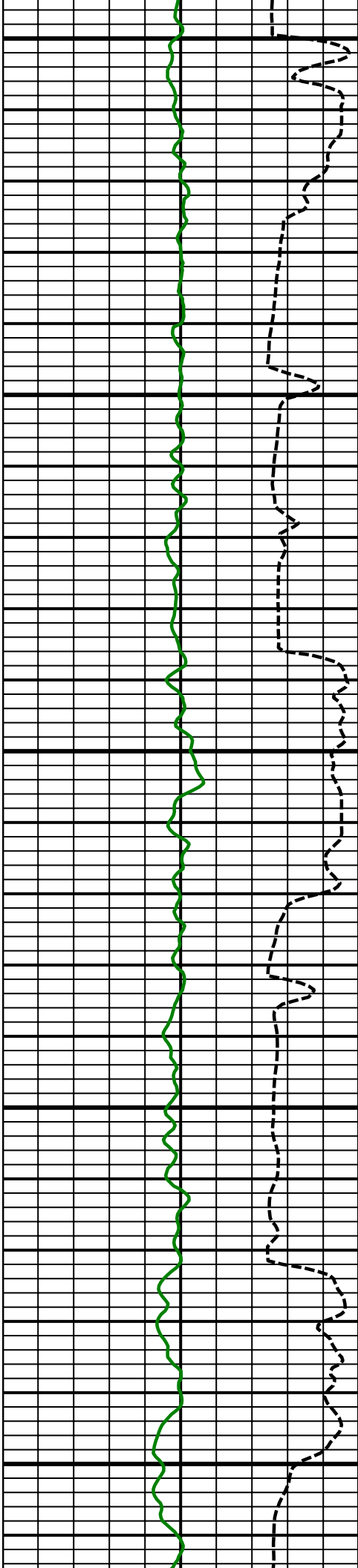




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MD

14100
MD

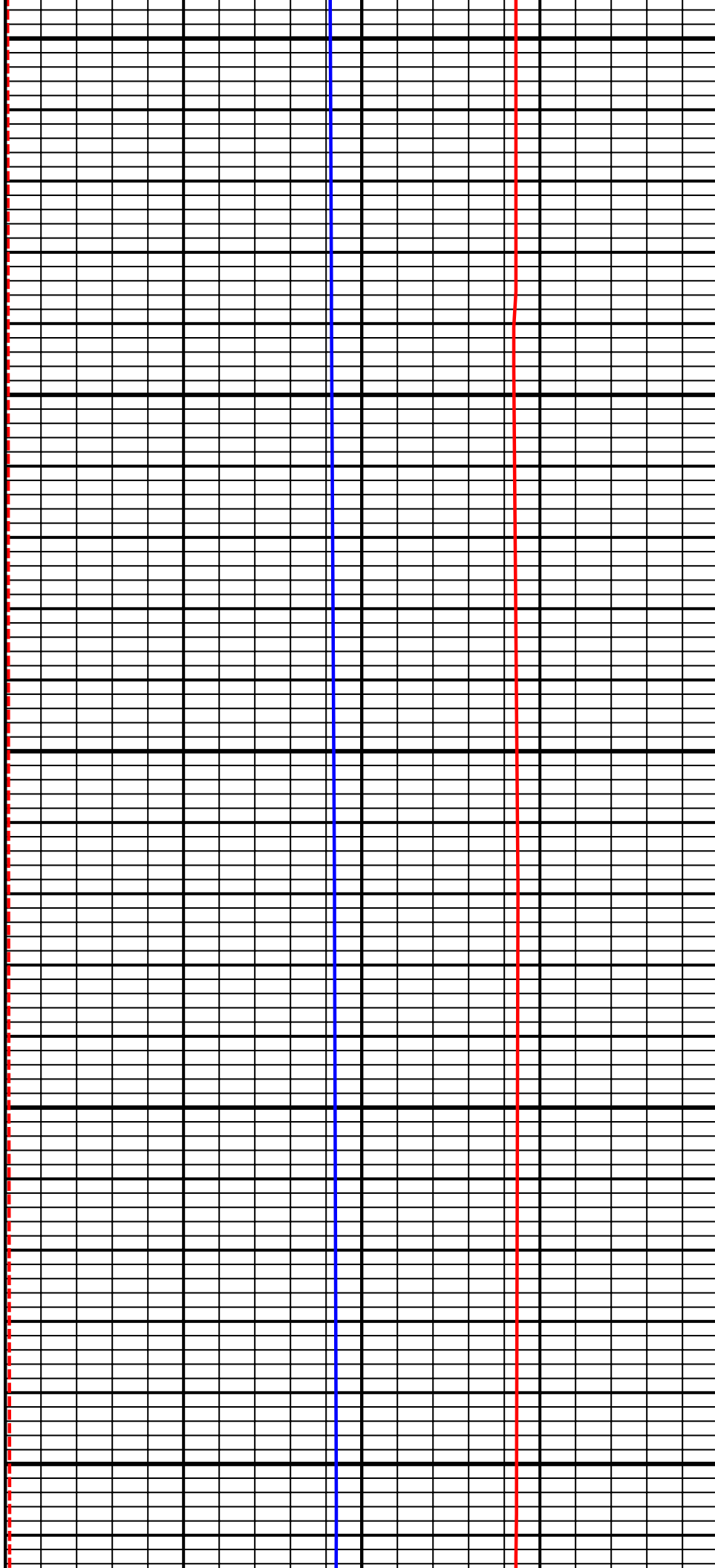


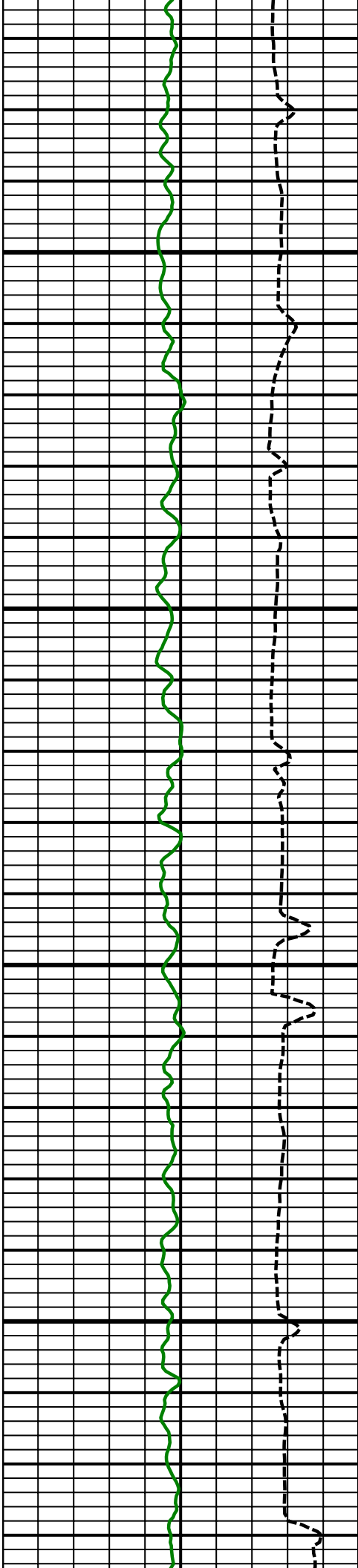


14200
MD

14300
MD

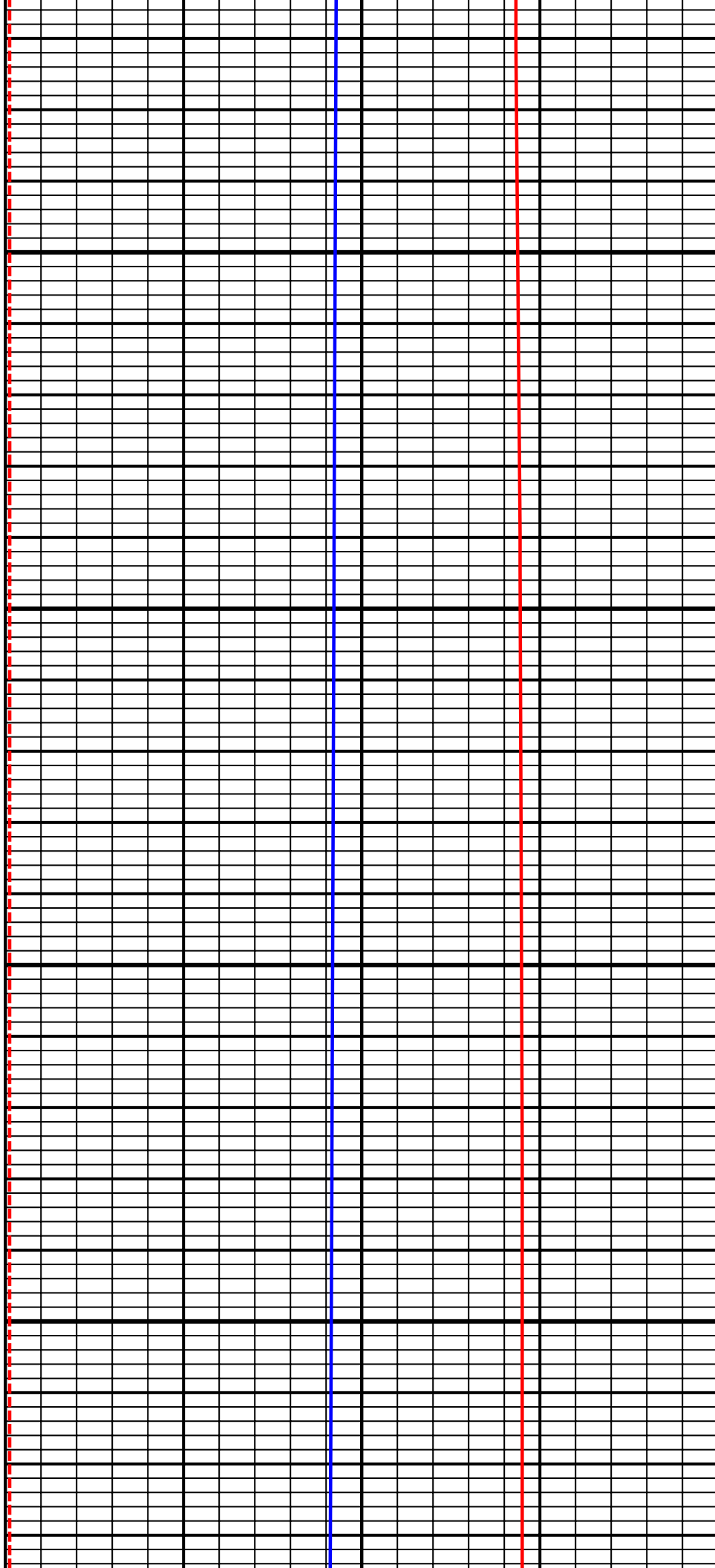
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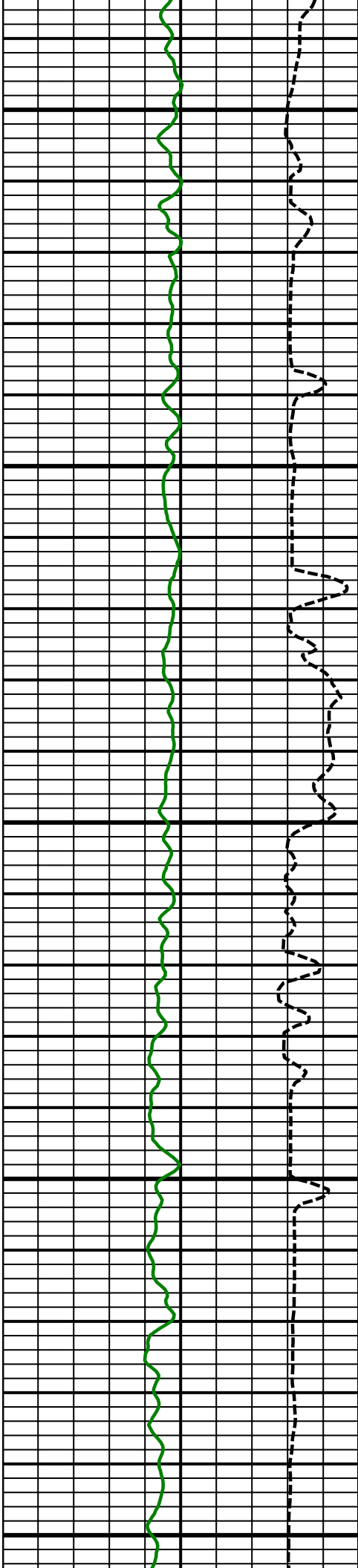




14500
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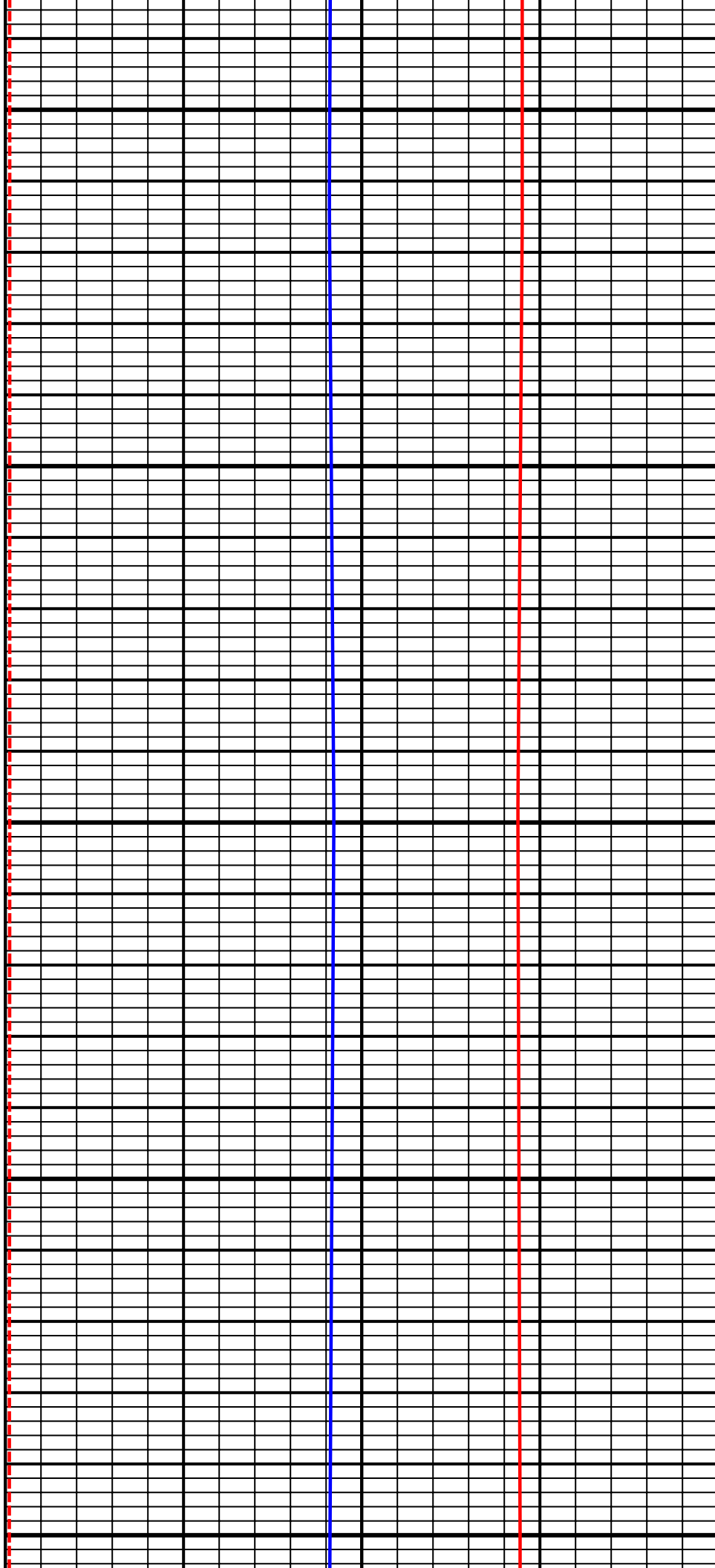
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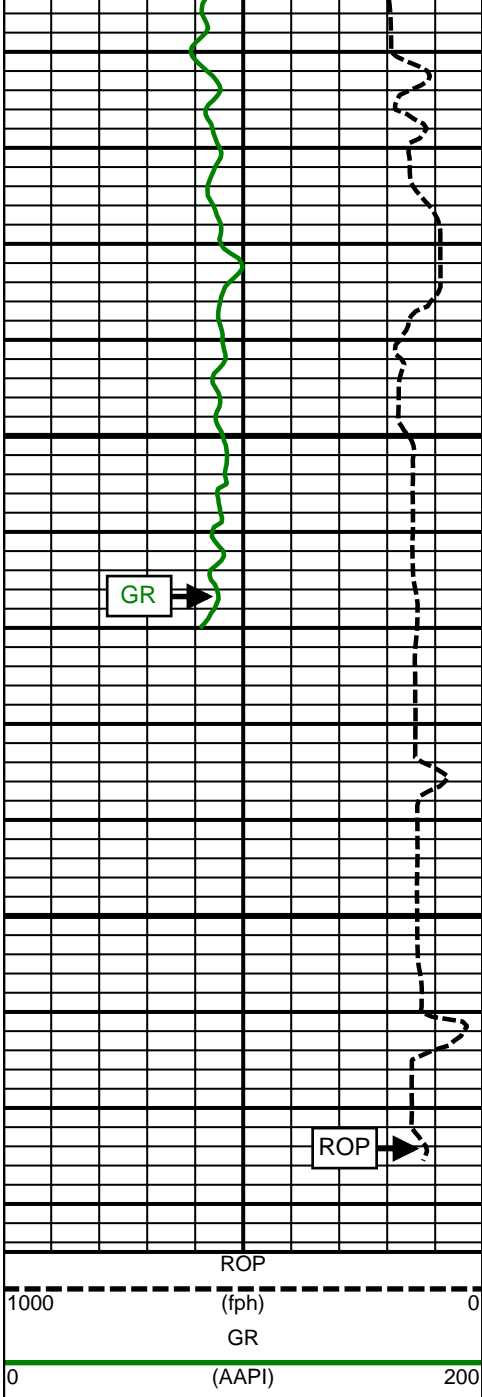




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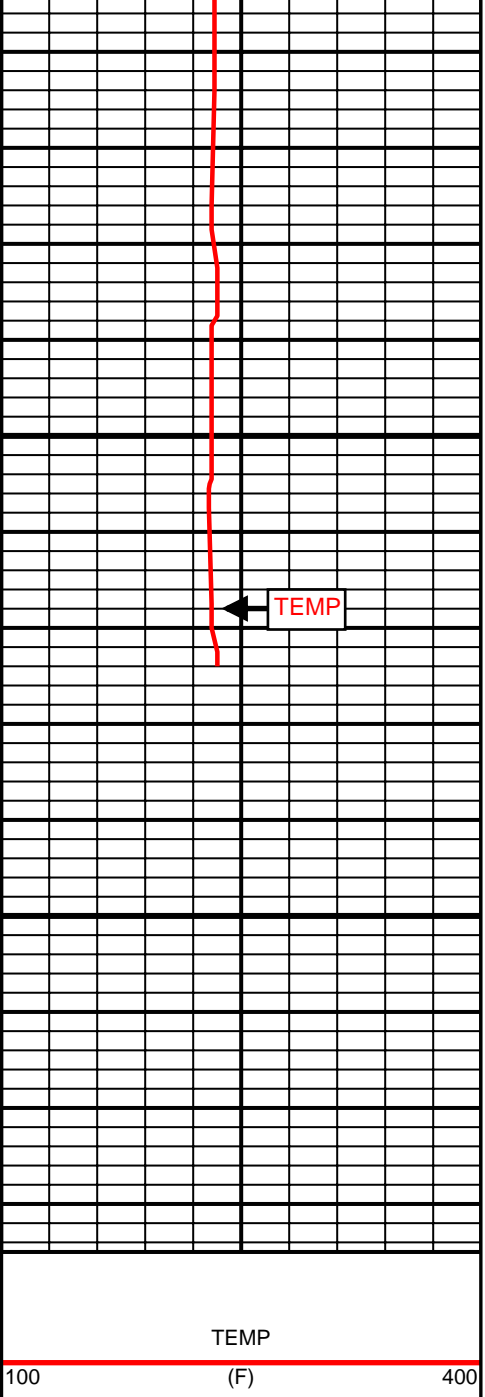
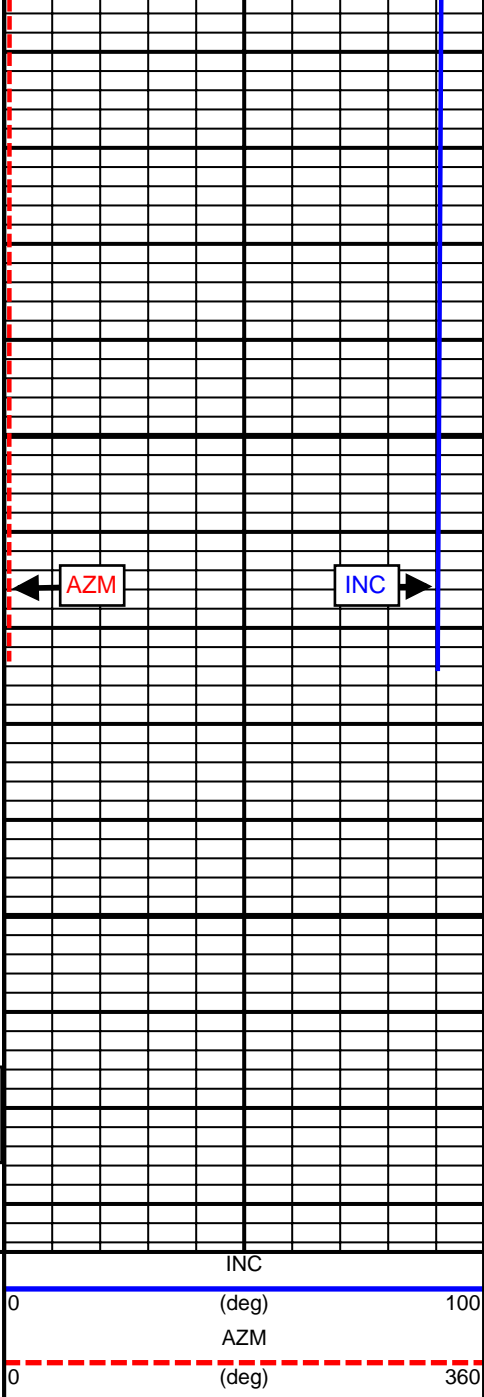
14800
MD





14900 MD

Comment 7-2



SURVEY						
Survey Calculation Method: Minimum Curvature						
Magnetic Reference	Target Direction	Total Magnetic Field	Magnetic Dip Angle	Magnetic Declination	Grid Convergence	Total Correction
True North	2.93 deg	52586 nT	66.63 deg	8.60 deg	0.00 deg	8.60 deg
Survey Tie-On	Depth	INC	AZ	TVD	NS	EW
	0.00 ft	0.00 deg	0.00 deg	0.00 ft	0.00 ft	0.00 ft

Well Head							
Depth (ft)	Inc (deg)	Azm (deg)	TVD (ft)	NS (ft)	EW (ft)	VSect (ft)	Dogleg (deg/100ft)
16.00	0.00	0.00	16.00	0.00	0.00	0.00	0.00
116.00	0.28	337.47	116.00	0.23	-0.09	0.22	0.28
216.00	0.29	242.29	216.00	0.33	-0.41	0.31	0.42
316.00	0.28	167.54	316.00	-0.02	-0.58	-0.05	0.35
416.00	0.24	144.74	416.00	-0.43	-0.41	-0.45	0.11
516.00	0.28	119.57	516.00	-0.72	-0.08	-0.73	0.12
616.00	0.19	79.58	615.99	-0.81	0.30	-0.80	0.18
716.00	0.41	267.09	715.99	-0.80	0.11	-0.80	0.60
816.00	0.33	254.87	815.99	-0.90	-0.53	-0.92	0.11
916.00	0.14	166.32	915.99	-1.09	-0.78	-1.13	0.36
1016.00	0.08	90.02	1015.99	-1.21	-0.68	-1.24	0.14
1116.00	0.19	9.27	1115.99	-1.04	-0.58	-1.07	0.19
1131.00	0.24	0.21	1130.99	-0.99	-0.58	-1.02	0.40
1271.00	0.47	289.44	1270.99	-0.50	-1.12	-0.56	0.32
1365.00	2.13	144.79	1364.97	-1.80	-0.48	-1.83	2.69
1459.00	3.57	137.44	1458.85	-5.39	2.51	-5.25	1.58
1553.00	4.30	140.48	1552.63	-10.26	6.73	-9.90	0.81
1647.00	5.66	143.39	1646.27	-16.70	11.74	-16.08	1.47
1741.00	6.43	140.58	1739.75	-24.49	17.85	-23.54	0.88
1835.00	8.54	141.33	1832.94	-34.00	25.55	-32.65	2.25
1929.00	9.32	131.86	1925.81	-44.53	35.58	-42.66	1.77
2024.00	9.79	138.91	2019.49	-55.75	46.62	-53.30	1.33
2115.00	10.65	140.05	2109.05	-68.03	57.10	-65.02	0.97
2206.00	12.05	141.38	2198.27	-81.90	68.43	-78.30	1.57
2298.00	14.46	141.08	2287.81	-98.34	81.64	-94.04	2.62
2389.00	15.09	140.11	2375.80	-116.27	96.38	-111.19	0.74
2481.00	15.39	142.79	2464.57	-135.18	111.44	-129.31	0.83
2574.00	16.87	144.18	2553.90	-155.95	126.80	-149.27	1.64
2665.00	18.44	140.45	2640.62	-177.76	143.70	-170.18	2.13
2756.00	14.42	137.63	2727.88	-197.24	160.50	-188.77	4.50
2850.00	14.56	134.40	2818.90	-214.15	176.83	-204.83	0.87
2942.00	13.91	135.34	2908.07	-230.11	192.87	-219.95	0.75
3034.00	14.40	140.29	2997.28	-246.78	207.95	-235.82	1.42
3127.00	17.70	141.93	3086.64	-266.81	224.06	-255.00	3.58
3218.00	16.92	143.77	3173.52	-288.38	240.42	-275.71	1.05
3311.00	16.16	139.98	3262.68	-309.21	256.74	-295.68	1.42
3404.00	15.59	143.41	3352.13	-329.15	272.51	-314.79	1.18
3497.00	15.60	142.89	3441.71	-349.16	287.51	-334.01	0.15
3589.00	16.37	144.67	3530.15	-369.60	302.47	-353.66	0.99
3682.00	14.21	139.45	3619.86	-388.97	317.47	-372.24	2.75
3774.00	14.45	141.31	3708.99	-406.51	331.99	-389.01	0.56
3859.00	12.90	144.02	3791.58	-422.47	344.19	-404.32	1.97

3945.00	12.59	142.18	3875.46	-437.64	355.58	-418.89	0.59
4029.00	10.07	142.64	3957.82	-450.71	365.65	-431.43	3.00
4115.00	6.52	141.41	4042.91	-460.51	373.26	-440.83	4.13
4200.00	7.54	149.39	4127.27	-469.08	379.11	-449.09	1.66
4285.00	7.56	145.07	4211.53	-478.46	385.15	-458.15	0.67
4370.00	5.51	146.77	4295.98	-486.46	390.59	-465.86	2.42
4456.00	3.69	153.66	4381.70	-492.40	394.08	-471.61	2.21
4541.00	2.83	167.71	4466.56	-496.90	395.74	-476.02	1.37
4626.00	2.74	184.29	4551.46	-500.97	396.04	-480.08	0.95
4714.00	2.68	202.04	4639.36	-504.98	395.11	-484.12	0.95
4799.00	2.15	193.87	4724.29	-508.37	393.98	-487.57	0.74
4884.00	1.78	209.12	4809.24	-511.07	392.95	-490.32	0.75
4969.00	2.38	231.20	4894.18	-513.33	390.94	-492.67	1.17
5226.00	1.68	230.34	5151.02	-519.08	383.88	-498.78	0.27
5396.00	1.15	246.15	5320.97	-521.36	380.40	-501.23	0.38
5482.00	2.02	272.46	5406.94	-521.64	378.09	-501.63	1.29
5652.00	0.77	233.18	5576.88	-522.20	374.19	-502.39	0.89
5737.00	0.98	171.13	5661.88	-523.26	373.84	-503.46	1.08
5822.00	0.69	162.22	5746.87	-524.46	374.11	-504.65	0.37
5908.00	0.25	148.68	5832.86	-525.12	374.37	-505.29	0.52
6079.00	0.30	311.77	6003.86	-525.14	374.23	-505.32	0.32
6164.00	0.25	332.62	6088.86	-524.82	373.97	-505.02	0.13
6249.00	0.20	333.71	6173.86	-524.53	373.82	-504.73	0.06
6334.00	0.22	4.49	6258.86	-524.23	373.77	-504.44	0.13
6420.00	0.31	8.56	6344.86	-523.84	373.82	-504.04	0.11
6505.00	0.14	356.13	6429.86	-523.51	373.84	-503.71	0.21
6591.00	0.14	7.75	6515.86	-523.30	373.85	-503.50	0.03
6676.00	0.42	27.27	6600.86	-522.92	374.01	-503.12	0.34
6761.00	0.45	354.06	6685.86	-522.31	374.12	-502.50	0.29
6847.00	1.19	282.13	6771.85	-521.78	373.21	-502.02	1.32
7017.00	2.83	248.43	6941.74	-522.96	367.58	-503.48	1.15
7103.00	2.77	243.88	7027.64	-524.65	363.74	-505.37	0.27
7188.00	2.16	242.75	7112.56	-526.29	360.47	-507.18	0.72
7274.00	2.91	344.40	7198.51	-524.93	358.44	-505.92	4.60
7359.00	9.69	359.55	7282.95	-515.69	357.81	-496.72	8.14
7444.00	20.52	4.90	7364.90	-493.62	359.03	-474.62	12.83
7529.00	28.63	4.77	7442.13	-458.43	362.00	-439.32	9.54
7615.00	36.40	2.19	7514.60	-412.32	364.69	-393.14	9.18
7700.00	43.82	0.92	7579.56	-357.62	366.13	-338.44	8.78
7785.00	52.20	4.48	7636.39	-294.60	369.23	-275.34	10.34
7870.00	59.62	7.22	7684.00	-224.64	376.47	-205.10	9.13
7956.00	68.96	7.24	7721.27	-147.85	386.21	-127.92	10.86
8041.00	79.51	7.33	7744.33	-66.82	396.57	-46.47	12.41
8126.00	80.23	9.00	7759.28	16.00	408.46	36.86	2.11
8159.00	84.74	12.11	7763.60	48.15	414.45	69.27	16.55
8234.00	90.43	15.99	7766.76	120.80	432.64	142.75	9.18
8287.00	91.42	14.70	7765.90	171.90	446.66	194.50	3.07
8353.00	90.86	12.11	7764.59	236.08	461.96	259.39	4.01
8424.00	90.19	10.52	7763.94	305.70	475.89	329.62	2.43
8538.00	89.07	7.91	7764.67	418.21	494.14	442.92	2.49
8631.00	88.71	5.14	7766.48	510.58	504.71	535.71	3.00
8724.00	90.49	4.06	7767.13	603.27	512.16	628.67	2.24
8815.00	90.37	4.02	7766.44	694.05	518.57	719.65	0.14
8908.00	90.93	2.48	7765.39	786.89	523.85	812.64	1.76
9001.00	90.99	2.06	7763.83	879.80	527.53	905.62	0.46
9094.00	90.99	1.36	7762.22	972.75	530.30	998.58	0.75
9186.00	88.95	359.47	7762.27	1064.73	530.97	1090.48	3.02
9279.00	87.96	357.99	7764.78	1157.67	528.91	1183.20	1.91
9371.00	89.38	359.26	7766.91	1249.62	526.70	1274.91	2.07
9456.00	90.56	1.30	7766.96	1334.61	527.12	1359.81	2.77
9541.00	89.88	359.97	7766.63	1419.60	528.06	1444.74	1.76

9627.00	89.20	0.32	7767.32	1505.60	528.28	1530.63	0.89
9712.00	89.51	0.66	7768.28	1590.59	529.01	1615.55	0.54
9797.00	90.31	0.31	7768.41	1675.59	529.73	1700.47	1.03
9883.00	89.81	0.93	7768.32	1761.58	530.66	1786.40	0.93
9968.00	85.68	0.59	7771.67	1846.49	531.78	1871.26	4.88
10054.00	89.69	0.58	7775.14	1932.40	532.66	1957.10	4.66
10139.00	91.30	1.48	7774.41	2017.38	534.19	2042.04	2.17
10225.00	92.47	2.84	7771.58	2103.26	537.43	2127.99	2.09
10310.00	92.65	3.39	7767.78	2188.05	542.04	2212.90	0.68
10396.00	87.22	2.00	7767.88	2273.92	546.08	2298.87	6.52
10481.00	92.22	2.59	7768.29	2358.83	549.49	2383.83	5.92
10566.00	88.58	1.67	7767.70	2443.75	552.64	2468.81	4.42
10651.00	90.99	1.68	7768.02	2528.71	555.13	2553.78	2.84
10708.00	93.33	2.03	7765.87	2585.63	556.97	2610.72	4.15
10824.00	92.10	1.36	7760.38	2701.45	560.40	2726.56	1.21
10909.00	91.73	1.41	7757.54	2786.38	562.45	2811.49	0.44
10995.00	91.36	1.97	7755.22	2872.31	564.99	2897.43	0.78
11080.00	91.48	3.22	7753.11	2957.19	568.84	2982.40	1.48
11165.00	90.56	3.10	7751.60	3042.05	573.52	3067.39	1.09
11251.00	89.08	4.43	7751.87	3127.86	579.17	3153.38	2.31
11336.00	88.21	4.37	7753.88	3212.59	585.69	3238.32	1.03
11421.00	89.94	3.74	7755.25	3297.36	591.70	3323.29	2.17
11506.00	90.56	2.28	7754.88	3382.24	596.16	3408.29	1.87
11592.00	91.60	2.49	7753.26	3468.15	599.74	3494.27	1.23
11677.00	90.44	1.55	7751.74	3553.08	602.73	3579.24	1.76
11762.00	89.12	0.31	7752.07	3638.06	604.11	3664.19	2.13
11848.00	89.94	0.77	7752.78	3724.05	604.92	3750.11	1.09
11933.00	90.43	1.87	7752.50	3809.03	606.88	3835.07	1.42
12018.00	89.69	2.74	7752.41	3893.96	610.30	3920.07	1.34
12103.00	90.49	3.55	7752.28	3978.83	614.96	4005.06	1.34
12189.00	90.43	3.00	7751.59	4064.69	619.87	4091.06	0.64
12274.00	91.11	3.35	7750.45	4149.55	624.58	4176.05	0.90
12359.00	91.36	3.75	7748.61	4234.36	629.84	4261.02	0.55
12445.00	90.56	3.66	7747.17	4320.17	635.40	4347.00	0.94
12530.00	91.48	3.34	7745.66	4405.00	640.59	4431.98	1.15
12615.00	90.93	4.08	7743.87	4489.80	646.09	4516.96	1.08
12701.00	89.88	4.45	7743.27	4575.56	652.48	4602.93	1.29
12786.00	91.11	3.45	7742.53	4660.35	658.34	4687.91	1.86
12872.00	90.99	3.24	7740.95	4746.19	663.36	4773.89	0.28
12957.00	91.05	4.11	7739.44	4831.00	668.80	4858.87	1.03
13042.00	90.18	4.02	7738.53	4915.78	674.83	4943.85	1.03
13127.00	89.88	4.48	7738.48	5000.55	681.13	5028.83	0.65
13298.00	89.94	3.34	7738.75	5171.15	692.79	5199.80	0.67
13384.00	90.49	2.13	7738.43	5257.05	696.89	5285.80	1.55
13469.00	92.84	2.35	7735.96	5341.94	700.21	5370.75	2.78
13554.00	92.22	2.37	7732.21	5426.78	703.71	5455.66	0.73
13639.00	92.53	3.07	7728.69	5511.62	707.74	5540.59	0.90
13725.00	91.17	2.14	7725.91	5597.48	711.64	5626.54	1.92
13810.00	90.06	2.13	7725.00	5682.41	714.81	5711.52	1.31
13895.00	88.89	1.92	7725.78	5767.36	717.81	5796.51	1.40
13981.00	89.32	3.02	7727.12	5853.26	721.52	5882.49	1.37
14066.00	89.88	2.08	7727.71	5938.18	725.30	5967.49	1.29
14151.00	90.80	1.59	7727.21	6023.13	728.02	6052.47	1.23
14237.00	91.48	2.67	7725.50	6109.05	731.22	6138.44	1.48
14322.00	92.34	3.17	7722.67	6193.89	735.55	6223.39	1.17
14407.00	92.84	4.23	7718.82	6278.63	741.03	6308.30	1.38
14493.00	92.22	4.35	7715.03	6364.30	747.45	6394.19	0.73
14578.00	91.61	4.27	7712.19	6449.01	753.84	6479.12	0.72
14663.00	90.92	4.43	7710.31	6533.75	760.28	6564.07	0.83
14749.00	92.16	4.33	7708.00	6619.46	766.85	6650.01	1.45
14923.00	90.31	3.68	7704.25	6792.99	779.00	6823.93	1.13

Projected to Total Depth:

14975.00

90.31

3.68

7703.97

6844.88

782.33

6879.93

0.00

Weatherford Surveys from 1271 ft MD to 14923 ft MD.

TD @ 14975 ft MD.

The total correction is 8.60 deg relative to True North.



Weatherford®

Final Print

COMPANY	<u>Anadarko Petroleum Corp.</u>		
WELL	<u>Howard 24C-22HZ</u>		
FIELD	<u>Wattenberg</u>		
RIG	<u>Xtreme 23</u>		
LOC.	<u>Colorado</u>	COUNTY	<u>Weld</u>