



**MWD
GAMMA RAY
5 INCH MEASURED DEPTH
RECORDED**

COMPANY: XTO Energy		
WELL: Smith 1H Lower		
FIELD: Fruitland Coal		
RIG: D&J #1		
STATE: Colorado		
COUNTRY: United States		
API: 05 067 0990000		
Latitude: 37.03956°N	X: 0 ft	Mag Dec: 9.55°
Longitude: 107.58306°W	Y: 0 ft	Mag Dip: 63.69°
Other Services: Directional Surveys		

Borehole Record	Casing Record

[illegible]

In interpreting, communicating or providing information and/or making recommendations, either written or oral, as to logs or test or other data, type or amount of material, or Work or other service to be furnished, or manner of performance, or in predicting results to be obtained, Contractor will give Company the benefit of Contractor's best judgment based on its experience and will perform all such Work in a good and workmanlike manner. Any interpretation of test or other data, and any recommendation or reservoir description based upon such interpretations, are opinions based upon inferences from measurements and empirical relationships and assumptions, which inferences and assumptions are not infallible, and with respect to which professional engineers and analysts may differ.

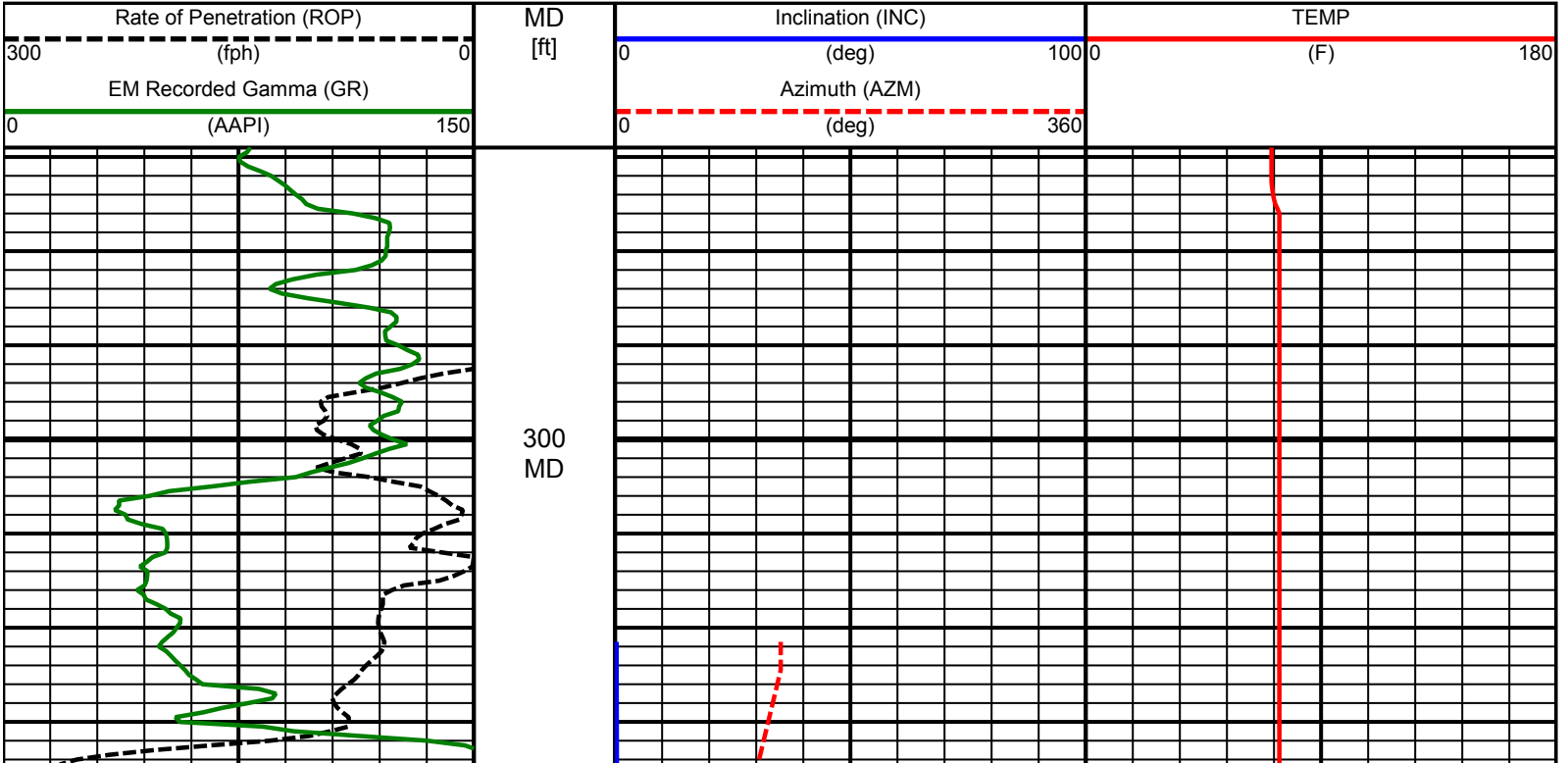
ACCORDINGLY ANY INTERPRETATION OR RECOMMENDATION RESULTING FROM THE SERVICES WILL BE AT THE SOLE RISK OF COMPANY AND CONTRACTOR CANNOT AND DOES NOT WARRANT THE ACCURACY, CORRECTNESS, OR COMPLETENESS OF ANY SUCH INTERPRETATION OR RECOMMENDATION, WHICH INTERPRETATIONS AND RECOMMENDATIONS SHOULD NOT, THEREFORE, UNDER ANY CIRCUMSTANCES BE RELIED UPON AS THE SOLE OR MAIN BASIS FOR ANY DRILLING, COMPLETION, WELL TREATMENT, PRODUCTION, OR FINANCIAL DECISION, OR ANY PROCEDURE INVOLVING ANY RISK TO THE SAFETY OF ANY DRILLING ACTIVITY, DRILLING RIG OR ITS CREW OR ANY OTHER INDIVIDUAL. COMPANY HAS FULL RESPONSIBILITY FOR ALL DECISION CONCERNING THE SERVICES.

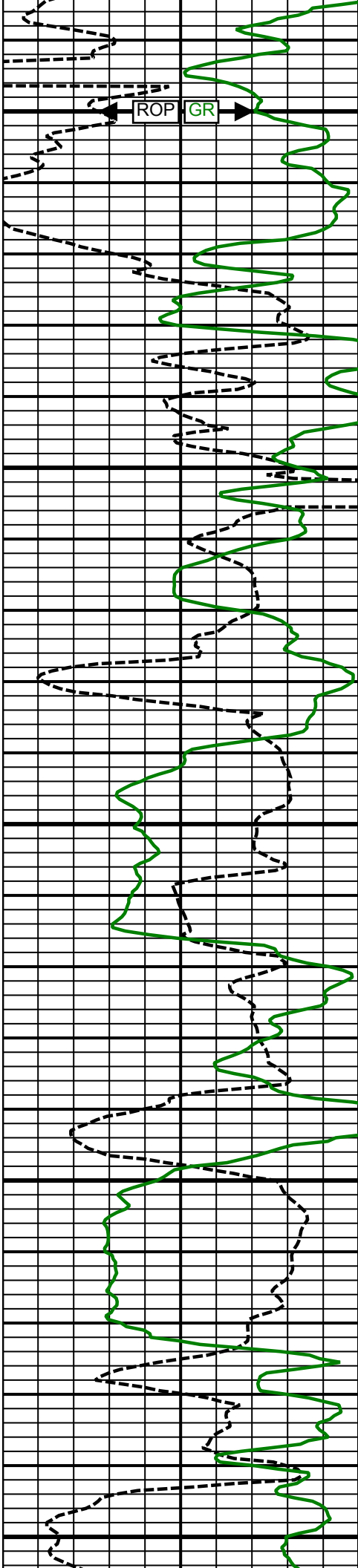
Run Number	01	02	03	04	05	06	07
Bit Size in.	8.75	8.75	6.125	6.125	6.12	6.12	6.13
Bit Type	PDC	PDC	Tri-Cone	Tri-Cone	Tri-Cone	Tri-Cone	PDC
Bit TFA in*2	1.245	1.350	0.750	0.750	0.750	0.750	0.918
Bit Start Depth ft	269	2252	2450	3111	4715	5222	5655
Bit End Depth ft	2252	2912	3111	4715	5222	5655	6125

Top Log Interval	ft	269	2219	2445	3076	4682	5189	5620
Bottom Log Interval	ft	2219	2879	3079	4682	5189	5622	6090
Begin Log Time	hh:mm	10:09	12:25	09:13	22:31	01:20	03:00	01:40
Begin Log Date	DD-MMM-YY	08-May-14	11-May-14	15-May-14	16-May-14	19-May-14	21-May-14	23-May-14
End Log Time	hh:mm	07:10	05:30	13:10	12:56	12:44	08:56	22:22
End Log Date	DD-MMM-YY	11-May-14	12-May-14	16-May-14	18-May-14	20-May-14	22-May-14	23-May-14
Drill or Wipe		Drill	Drill	Drill / Wipe	Drill	Drill	Drill	Drill
Surface/Bit RPM	RPM	40 / 140	50 / 140	30 / 140	40 / 140	40 / 140	45 / 140	45 / 140
Flow Rate	gpm	450	450	250	250	250	250	250
Min Inc @ Depth	deg @ ft	0.30 @ 323	10.77 @ 2774	26.29 @ 2499	90.23 @ 4571	90.86 @ 5061	91.96 @ 5416	91.66 @ 5975
Max Inc @ Depth	deg @ ft	13.67 @ 1473	11.83 @ 2400	90.98 @ 3060	94.03 @ 3119	92.01 @ 5000	97.25 @ 5323	94.55 @ 5634
MUD DATA								
Fluid Type		Water	Water	Water	Water	Water	Water	Water
Mud Weight	ppg	8.9	8.9	10.2	10.3	10.3	10.3	10.5
PV / YP	cp / YP	8 / 5	8 / 3	9 / 5	6 / 5	14 / 10	15 / 10	12 / 8
Solids / Sands	%	3.5 / 0.5	3.5 / 0.5	4.0 / 0.5	8.0 / TR	4.0 / TR	4.0 / TR	4.0 / TR
ph / Fluid Loss								
Oil:Water Ratio	% Vol	97% Water	97% Water	96 % Water	92% Water	96% Water	96% Water	96% Water
Client Representative		Coffee	Coffee	Coffee	Coffee	Coffee	Coffee	Coffee
Weatherford Engineer		Rivera	Rivera	Rivera	Rivera	Rivera	Rivera	Rivera

CURVE SPECIFICATIONS						
MNEMONIC	CURVE TITLE	UNITS	SMOOTHING			GAP FILL
			Window	Resolution	Type	
ROP	Rate of Penetration (ROP)	fph	3 ft	0.5 ft	Exponential	3 ft
GR	Recorded Gamma Ray (GR)	AAPI	3 ft	0.5 ft	Exponential	5 ft
INC	Inclination (INC)	deg	3 ft	0.5 ft	AvgCent	150 ft
AZM	Azimuth (AZM)	deg	3 ft	0.5 ft	AvgCent	150 ft
TEMP	TEMP	F	3 ft	0.5 ft	AvgCent	200 ft

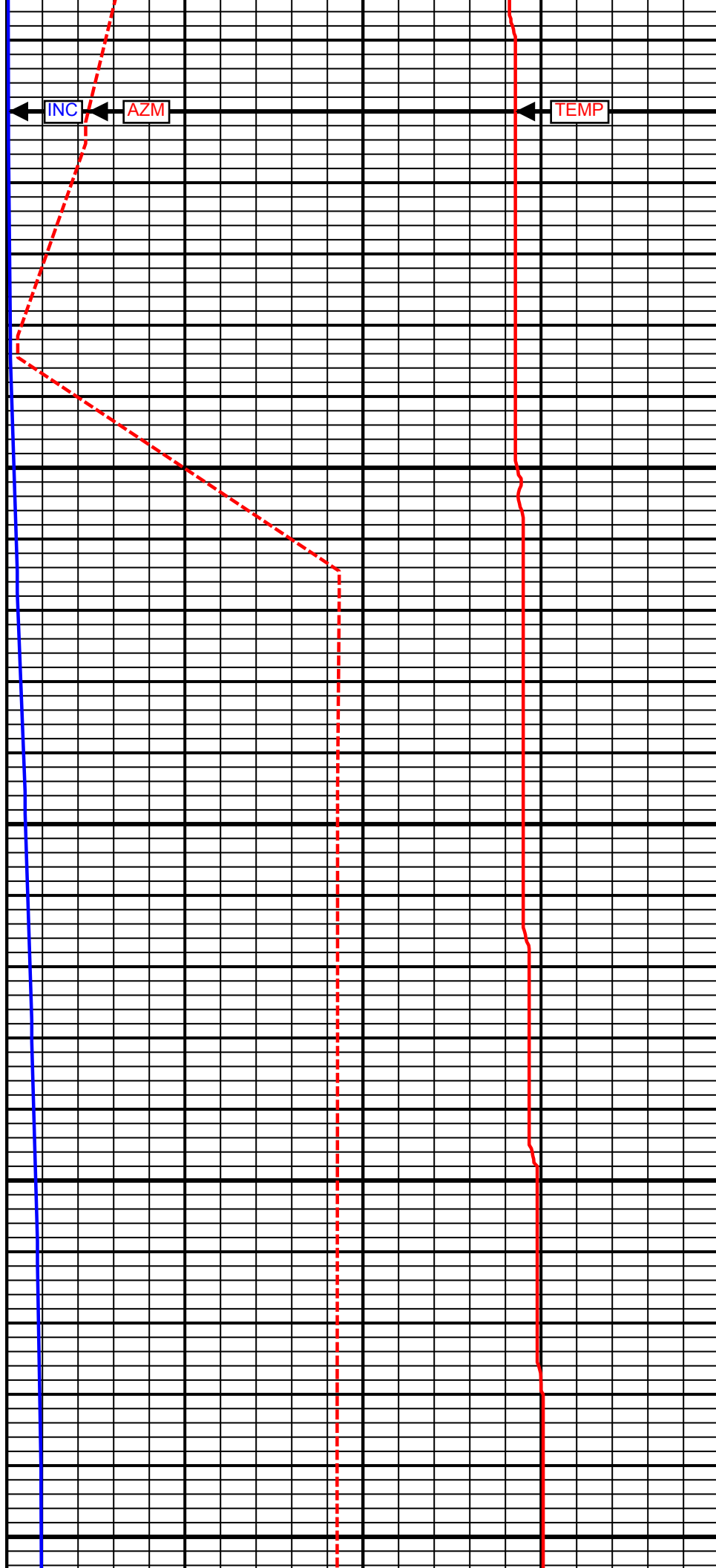
5 Inch - Measured Depth

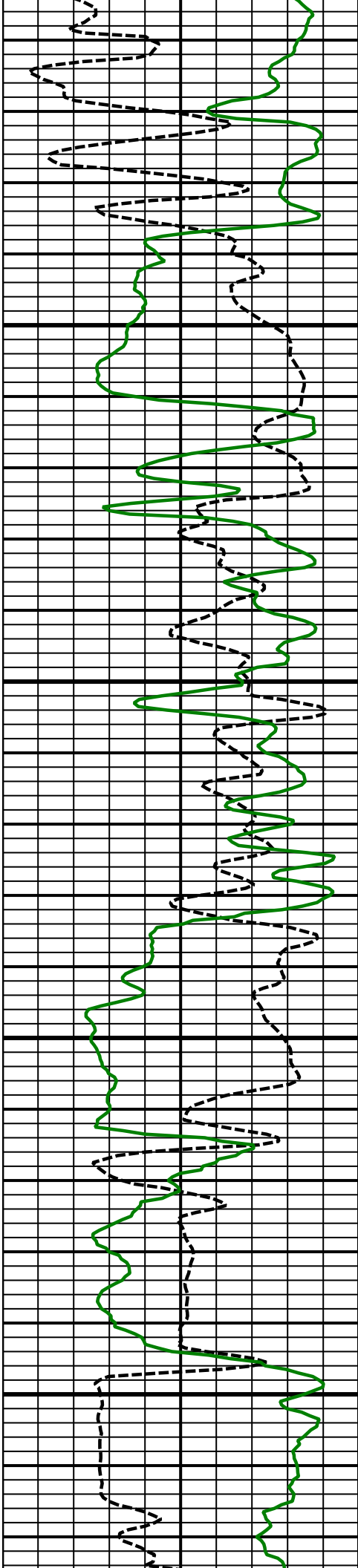




400
MD

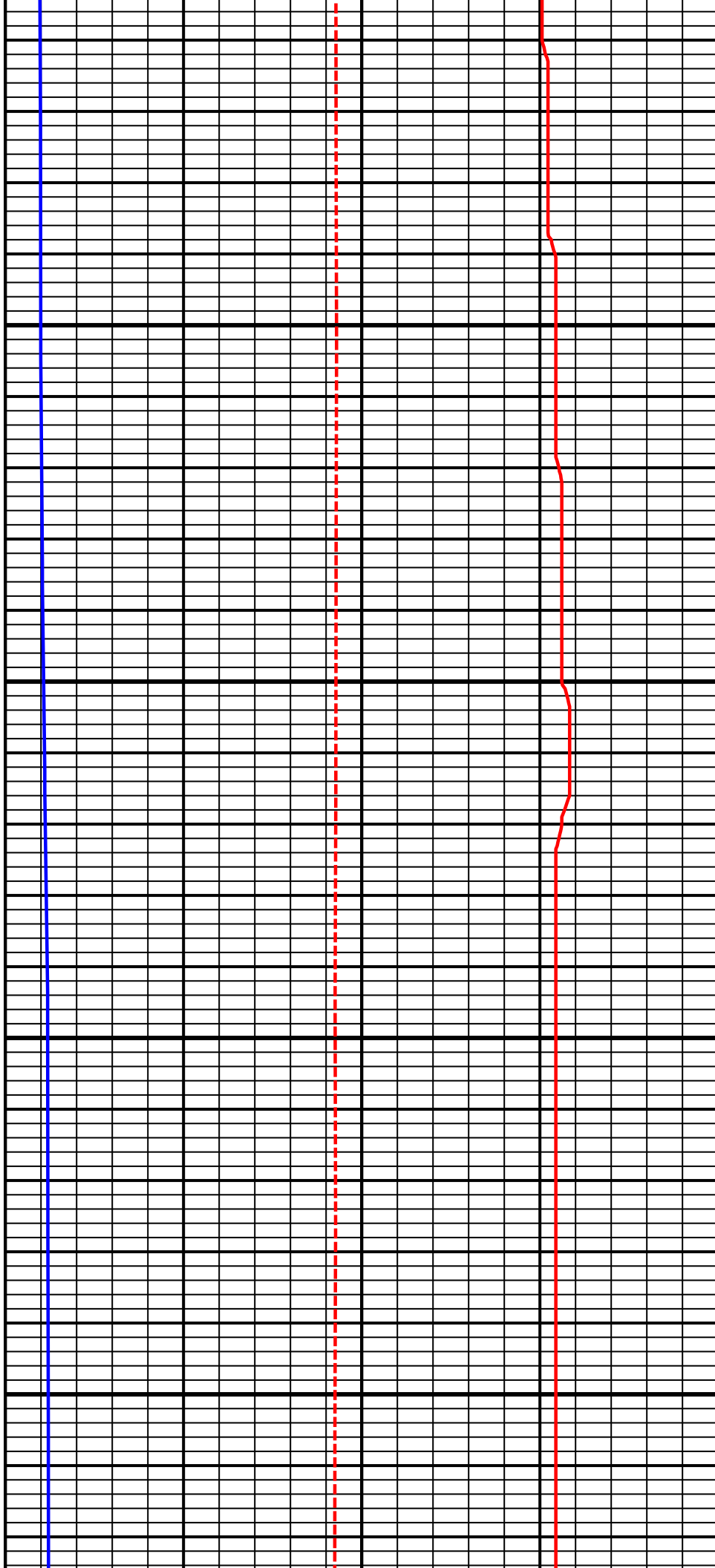
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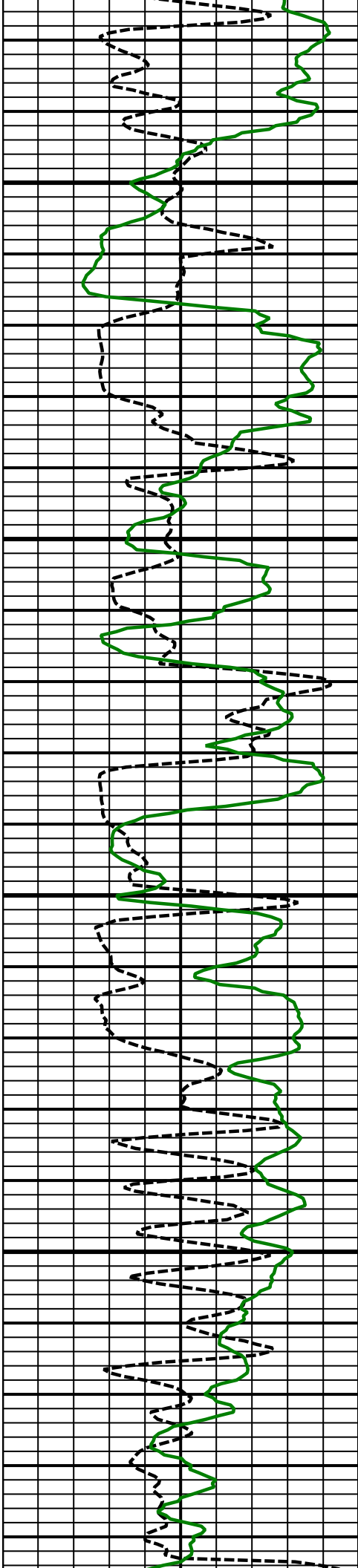




600
MD

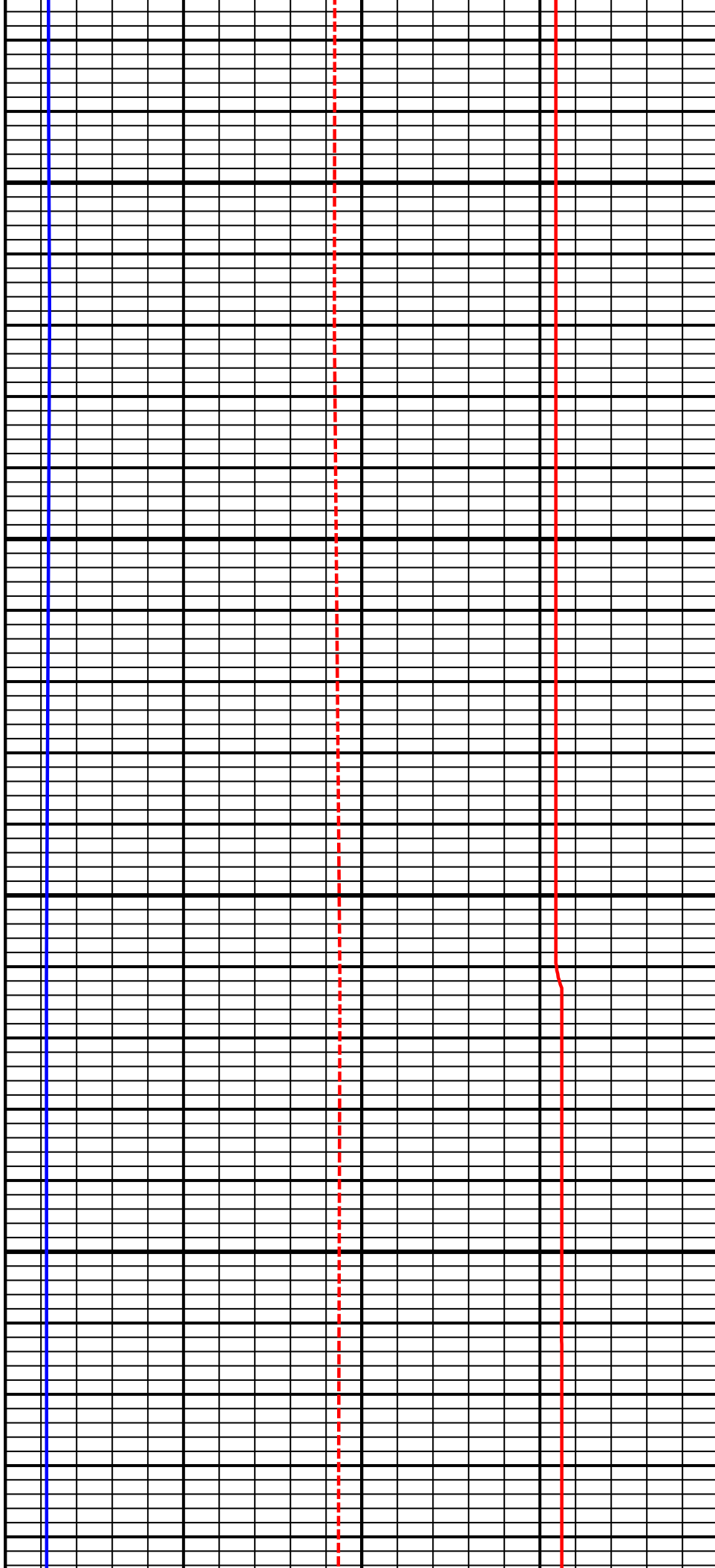
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MD

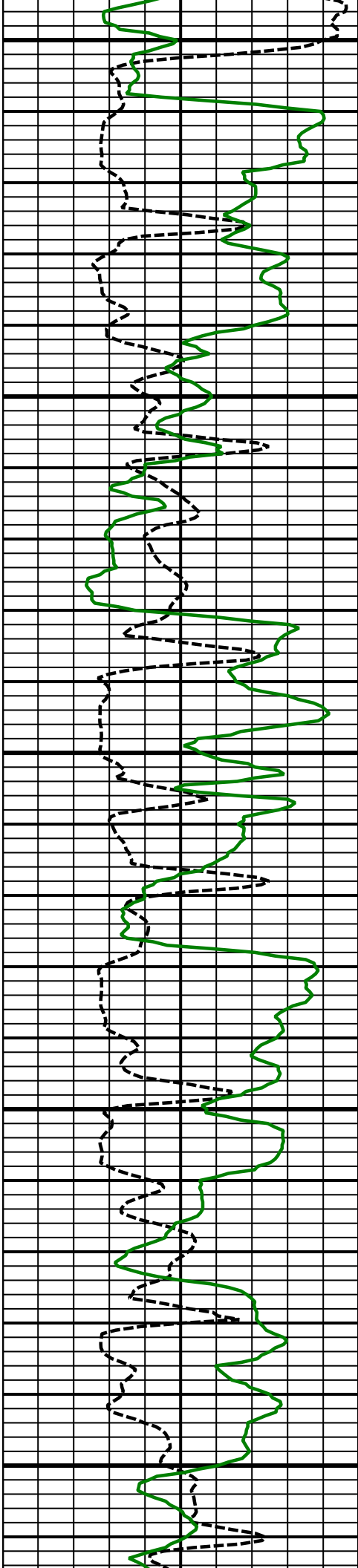




800
MD

900
MD

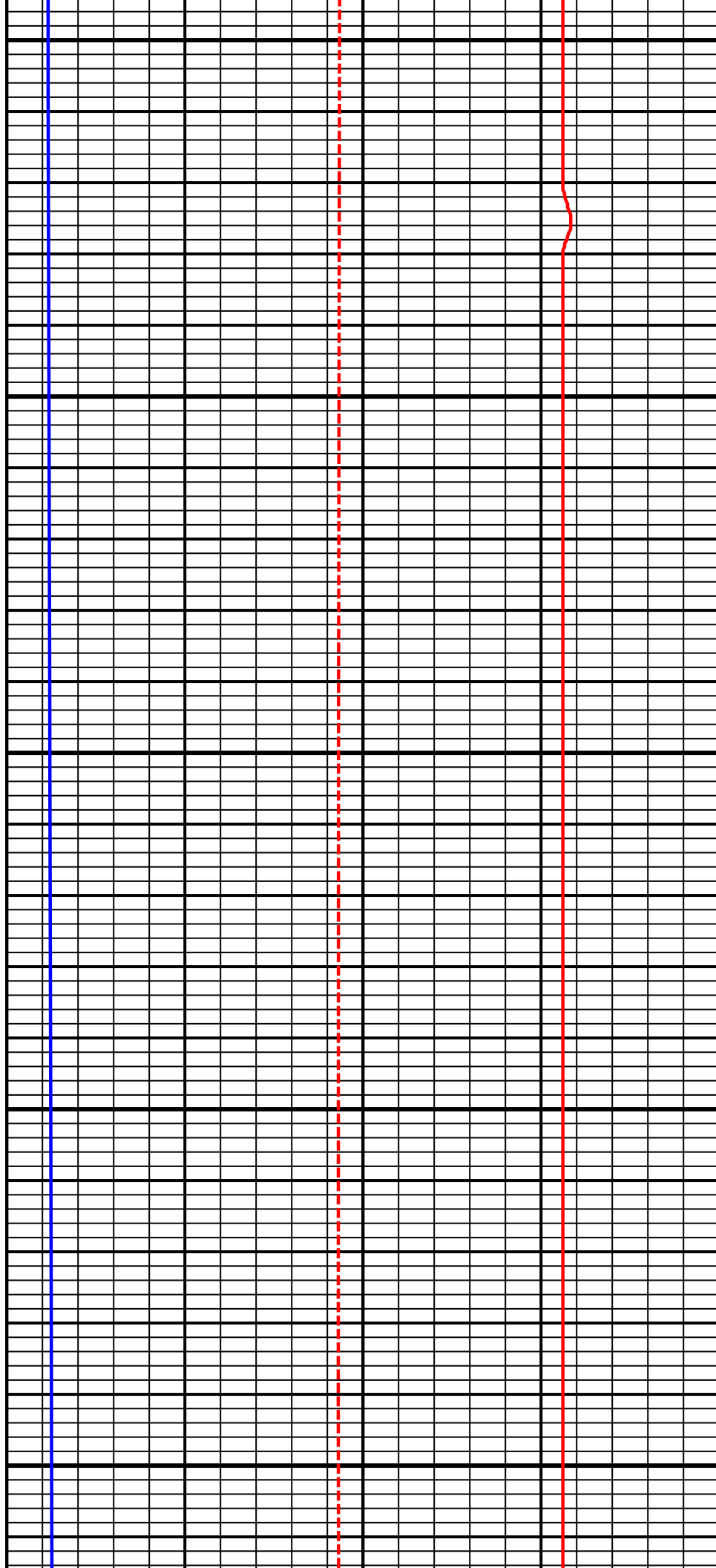


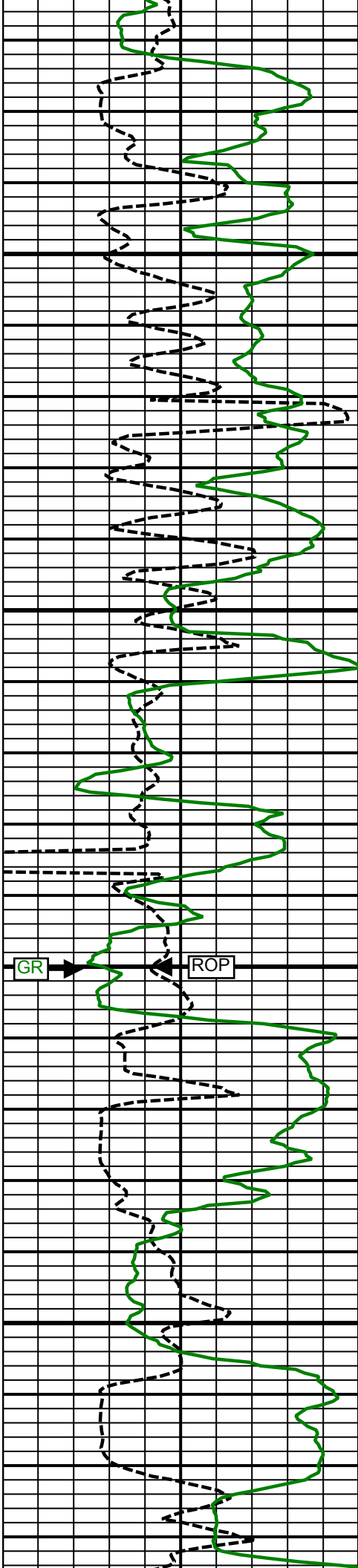


1000
MD

1100
MD

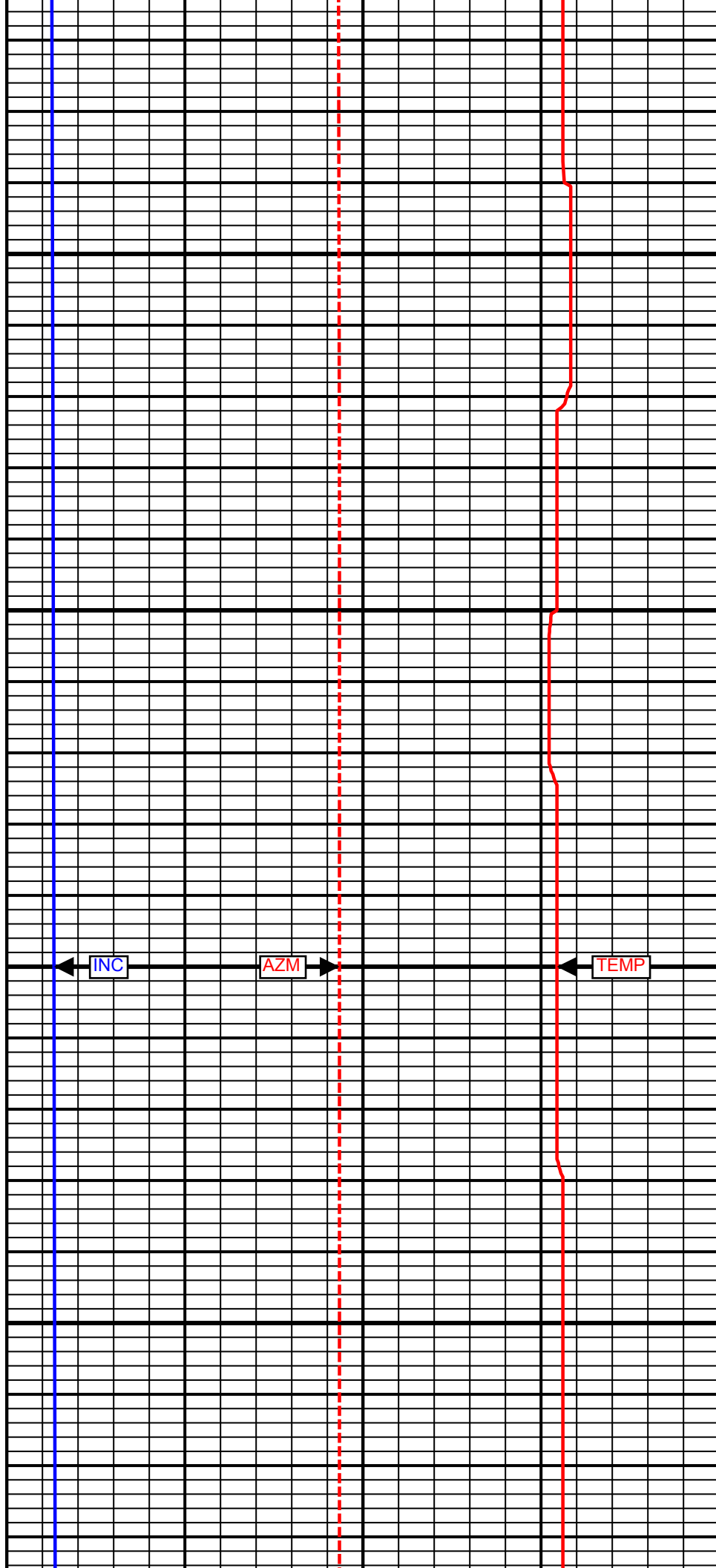
1200
MD





1300
MD

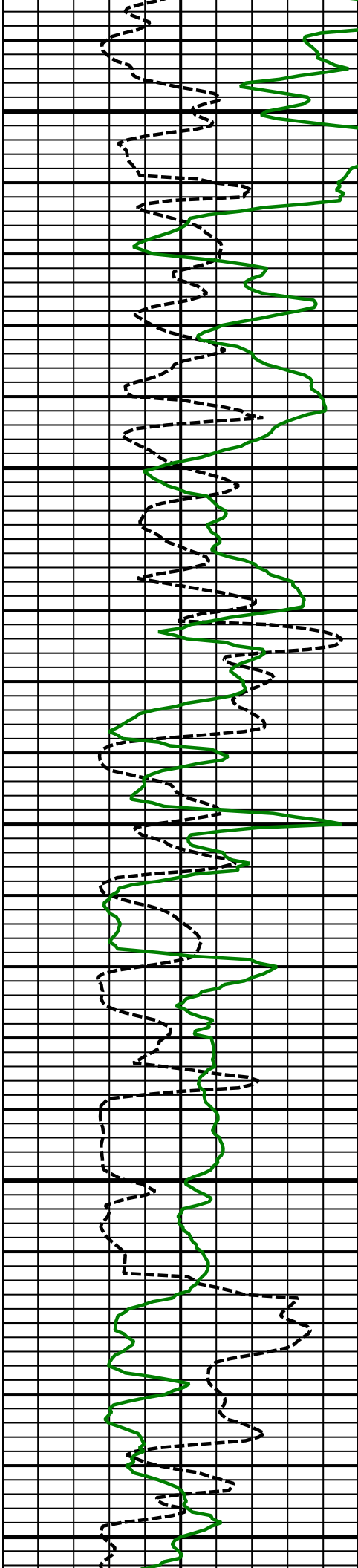
1400
MD



INC

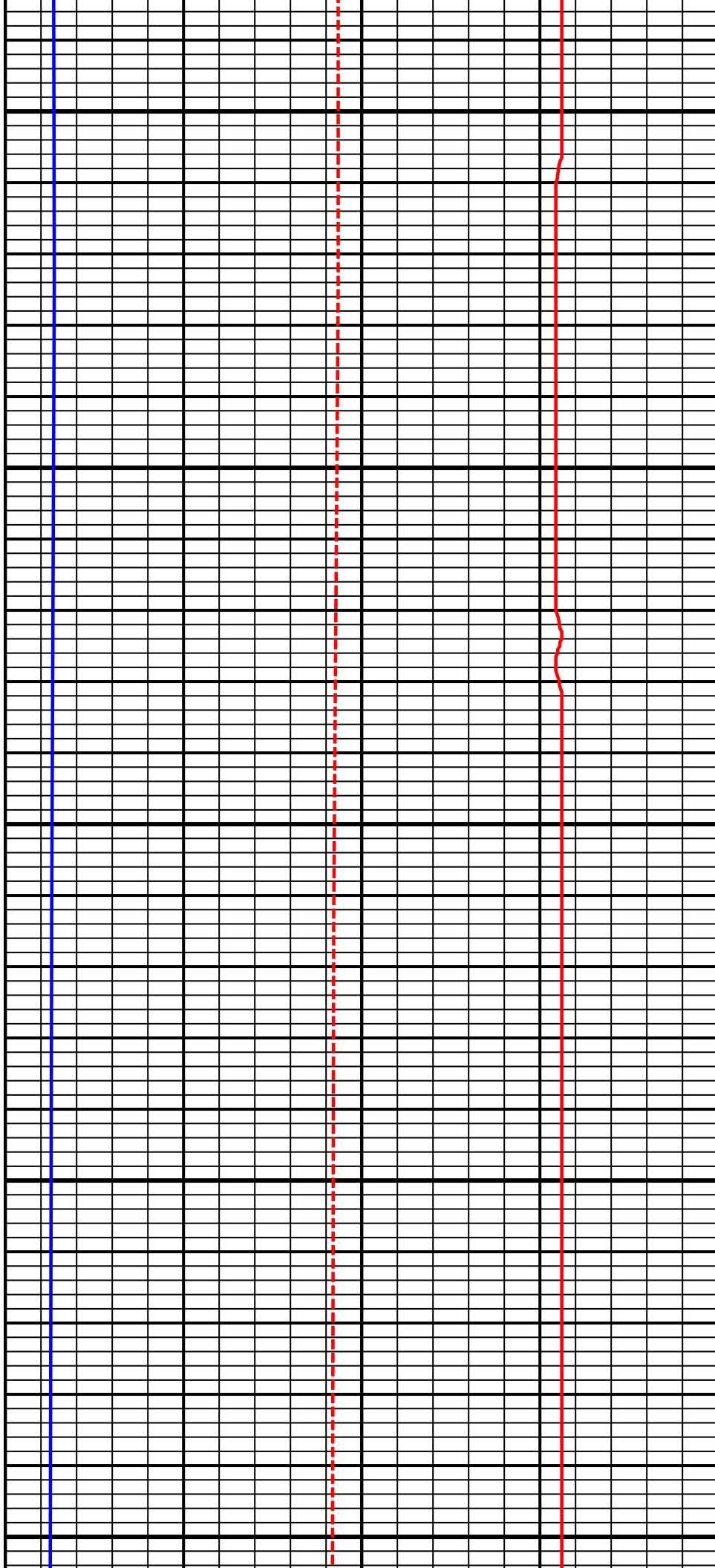
AZM

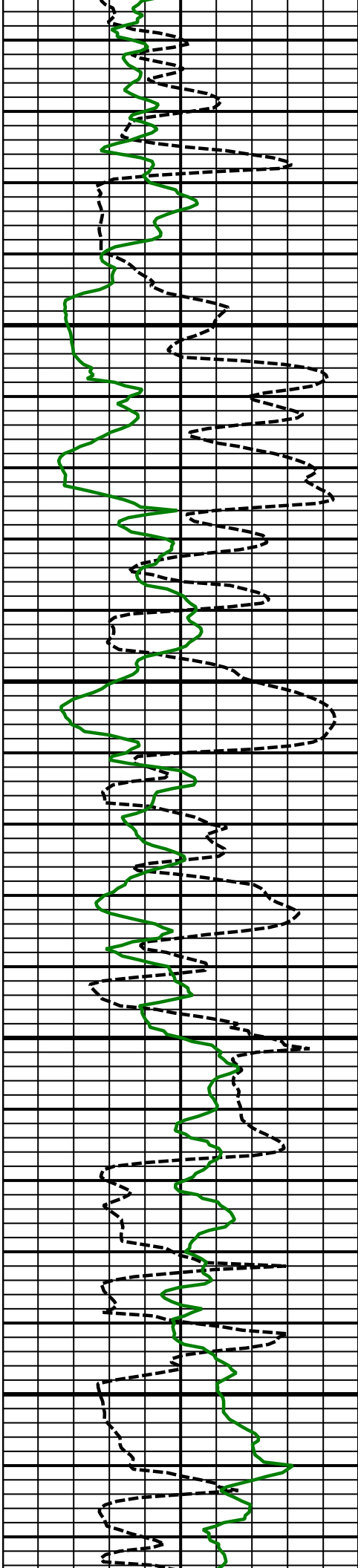
TEMP



1500
MD

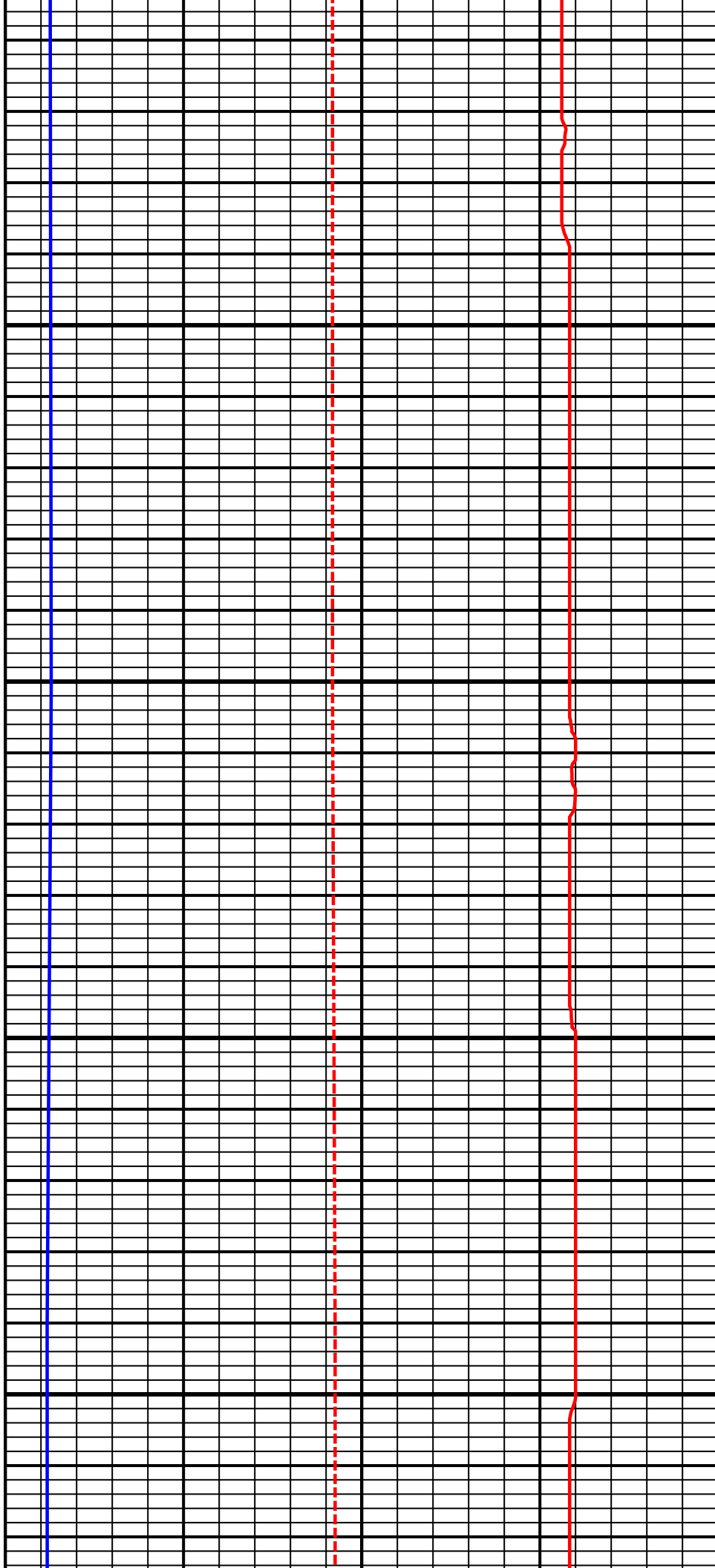
1600
MD

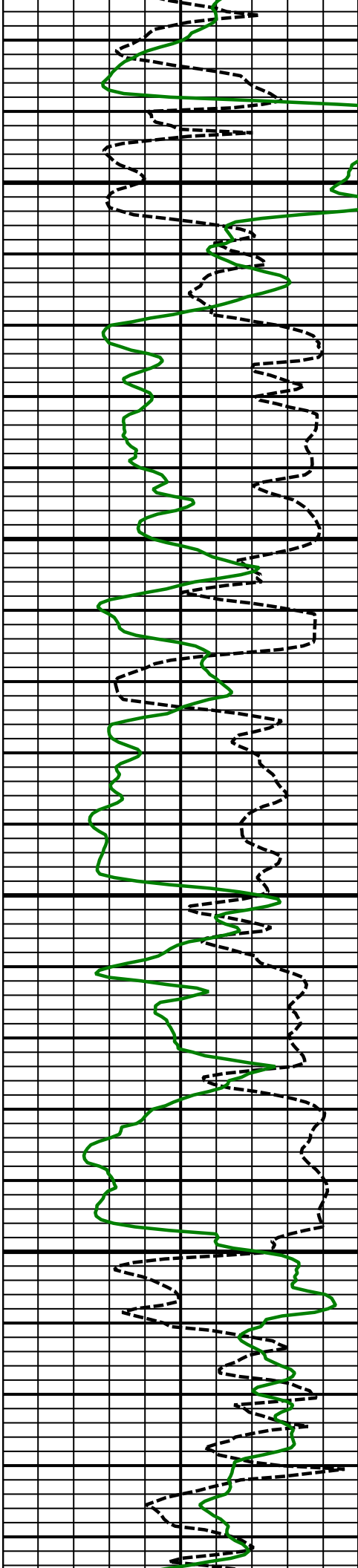




1700
MD

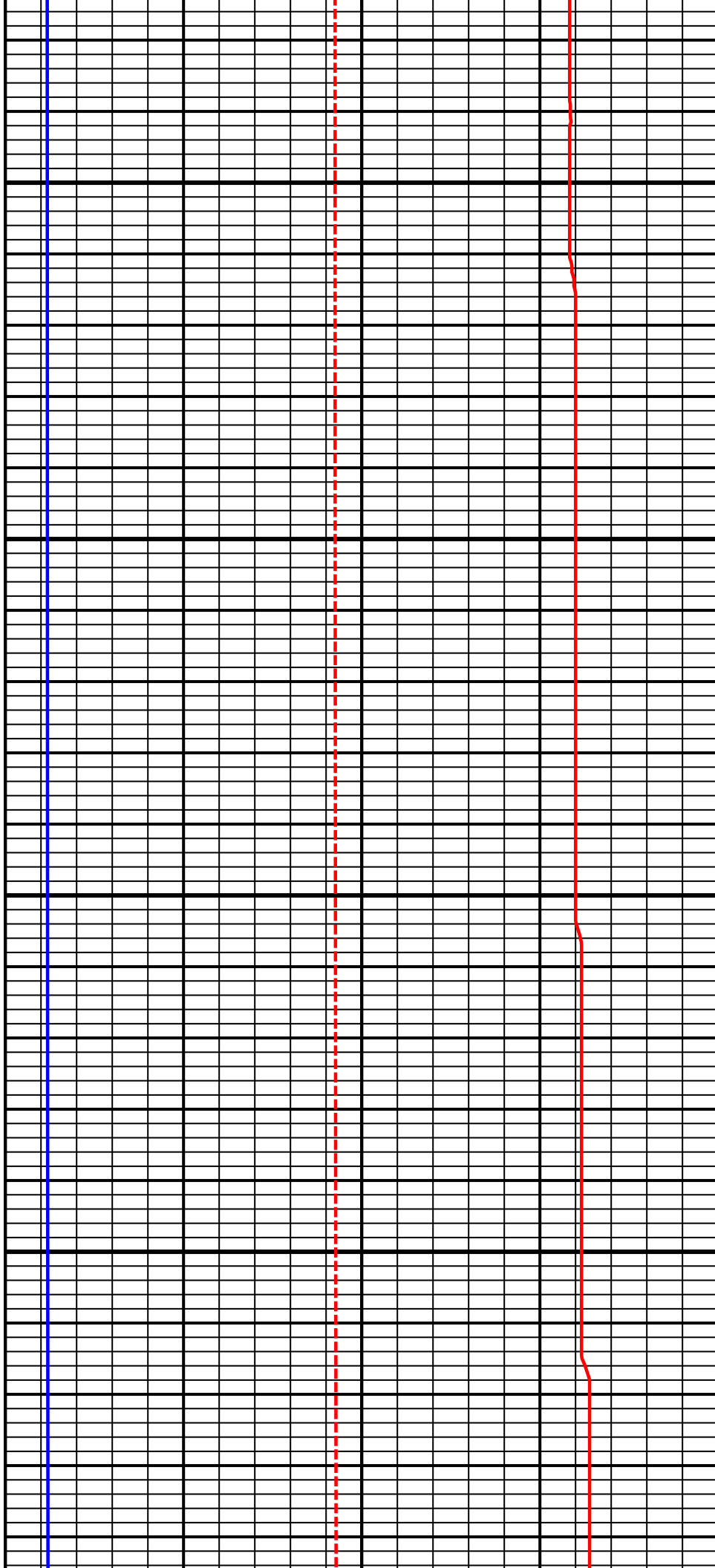
1800
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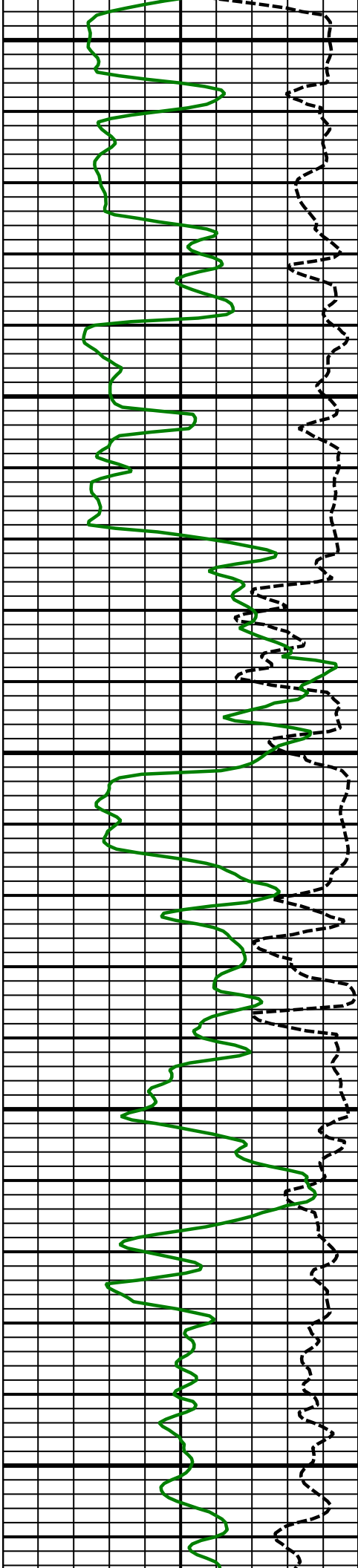




1900
MD

2000
MD

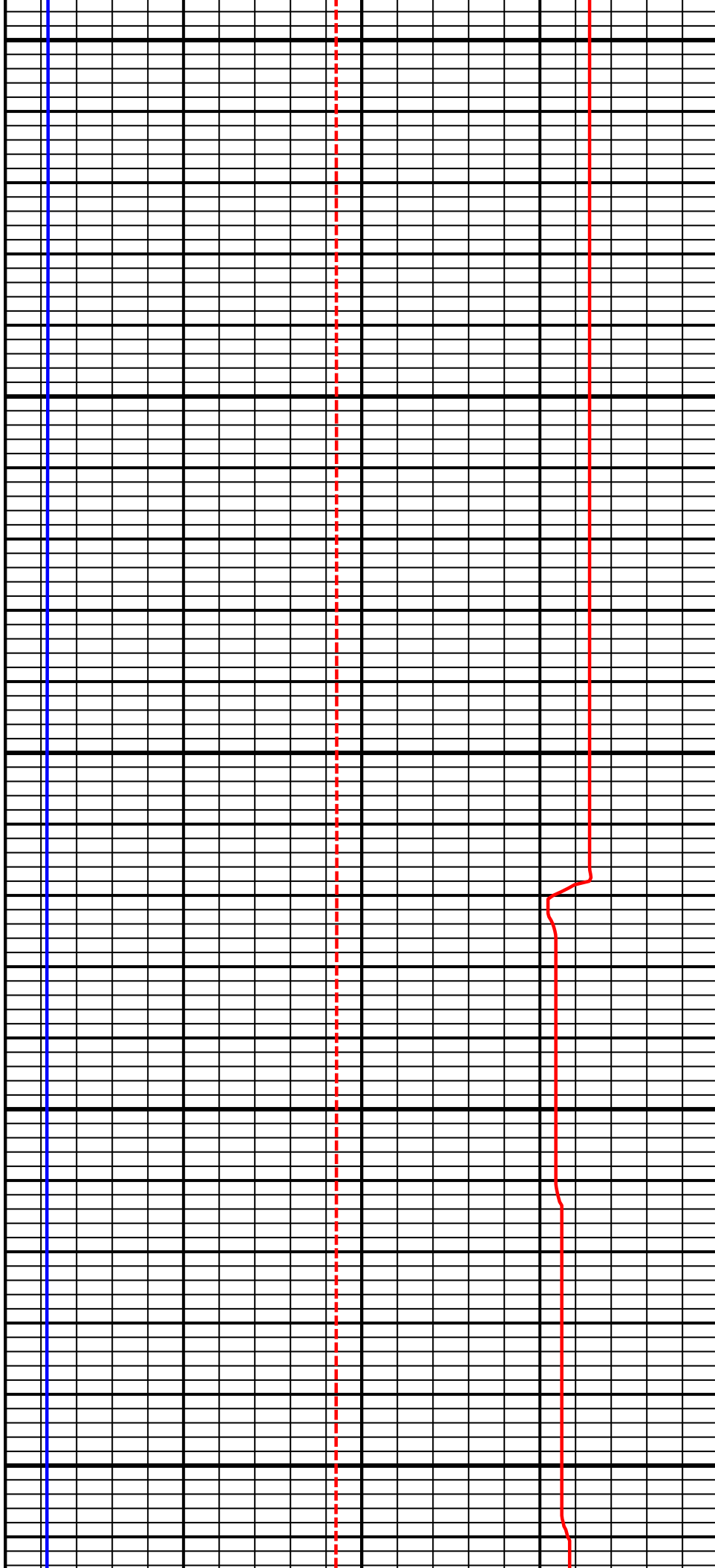


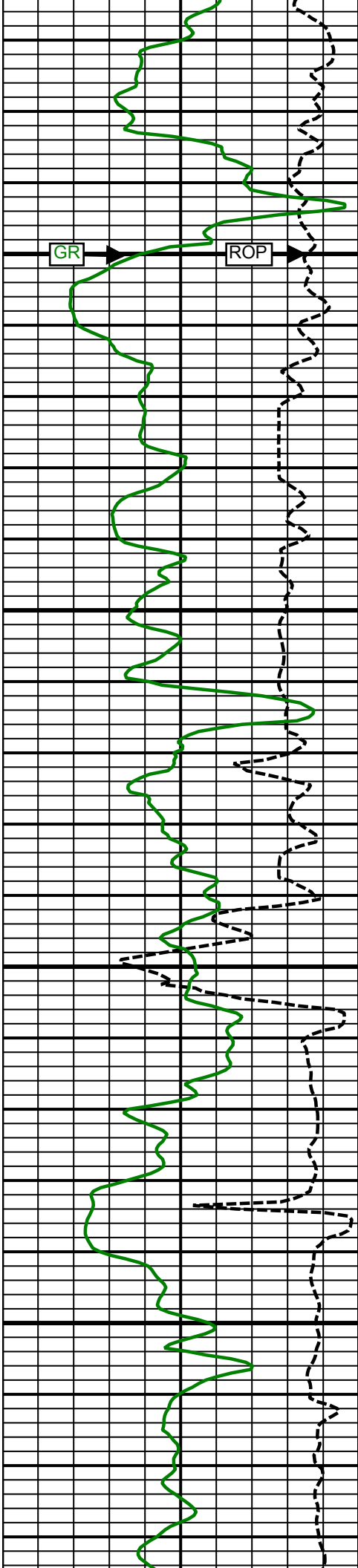


2100
MD

2200
MD

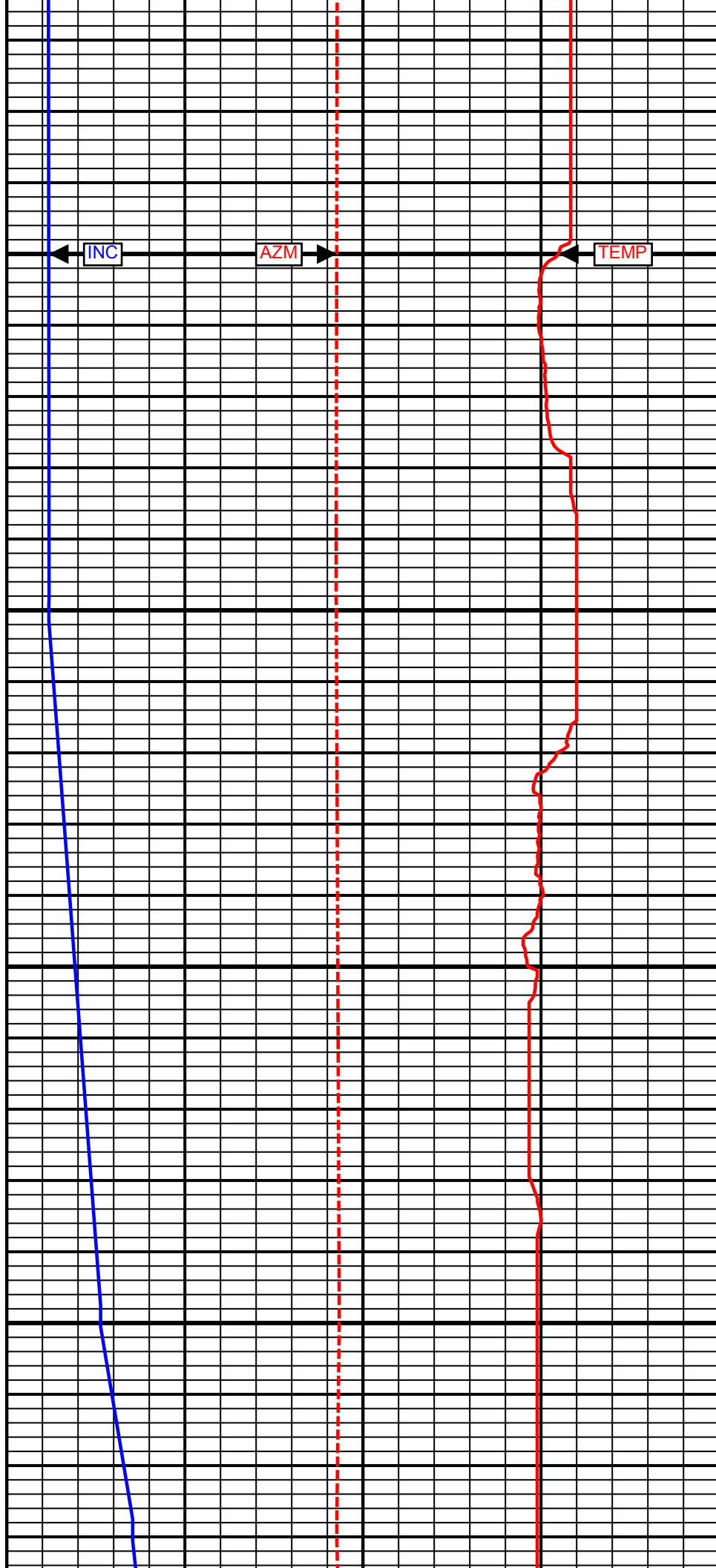
2300
MD

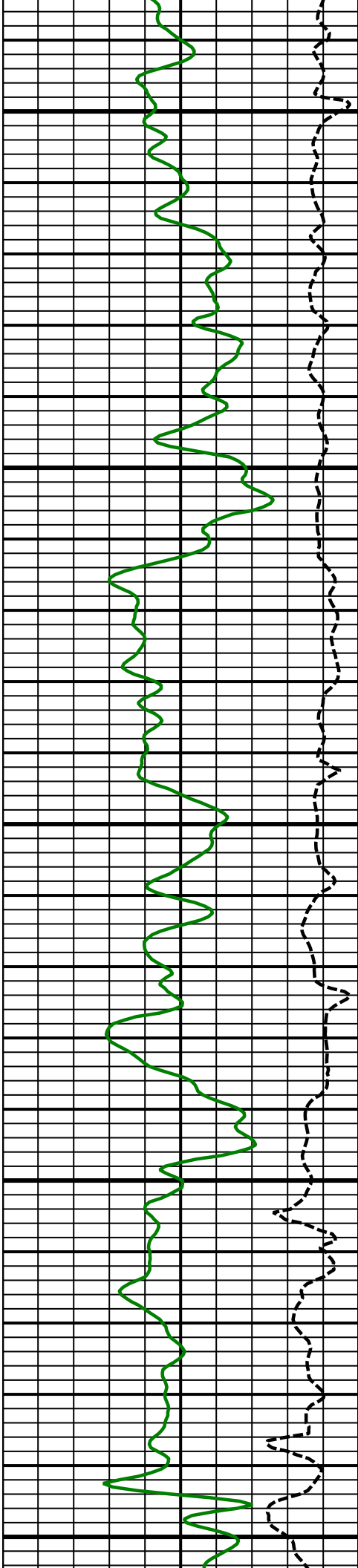




2400
MD

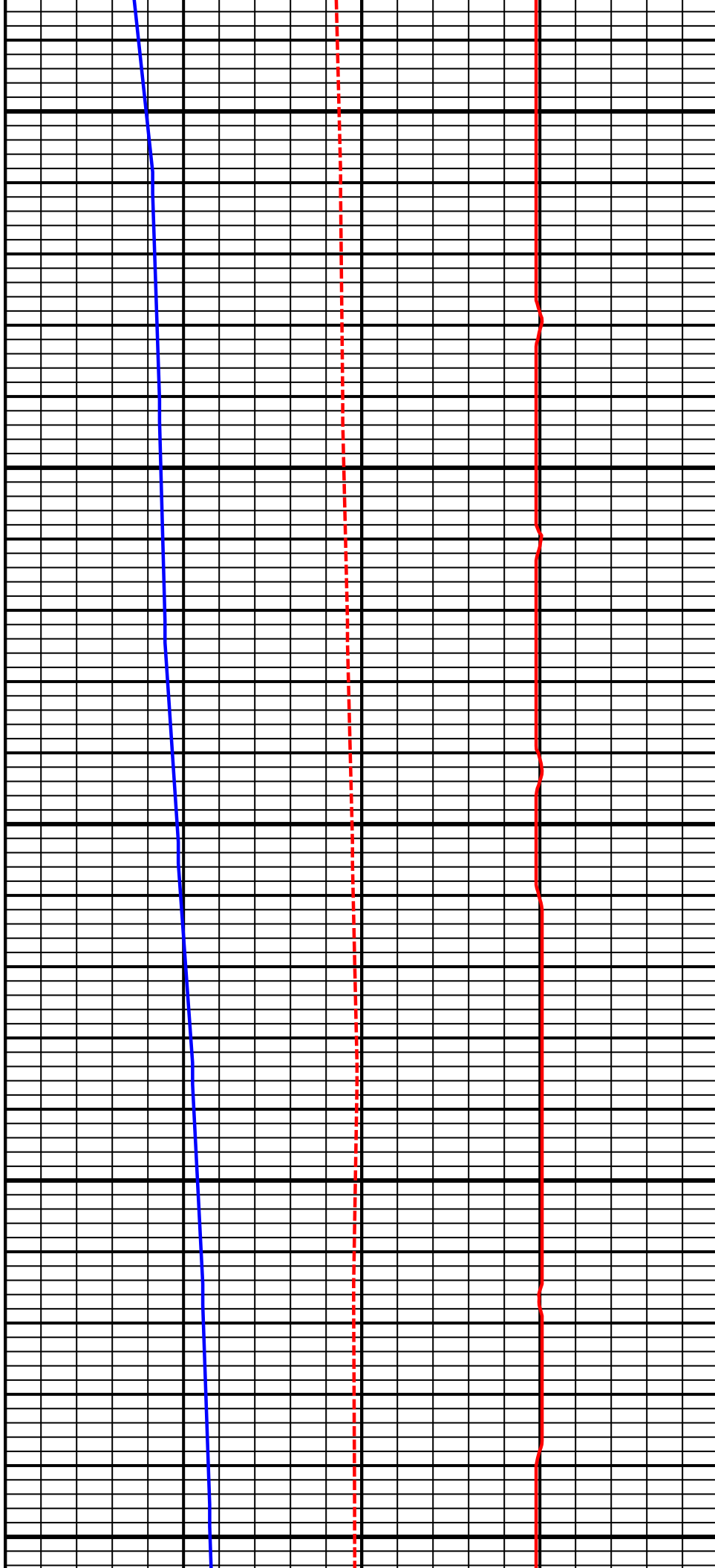
2500
MD

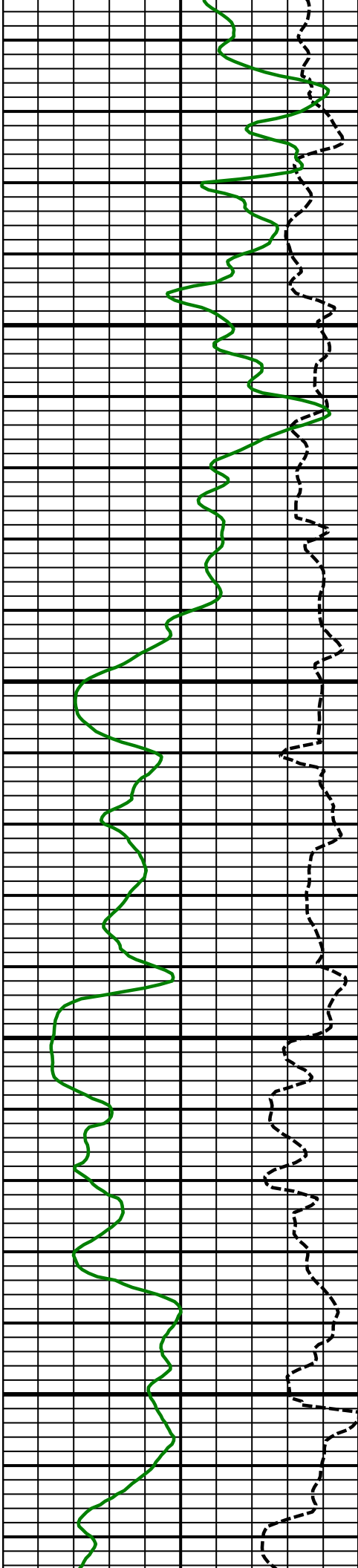




2600
MD

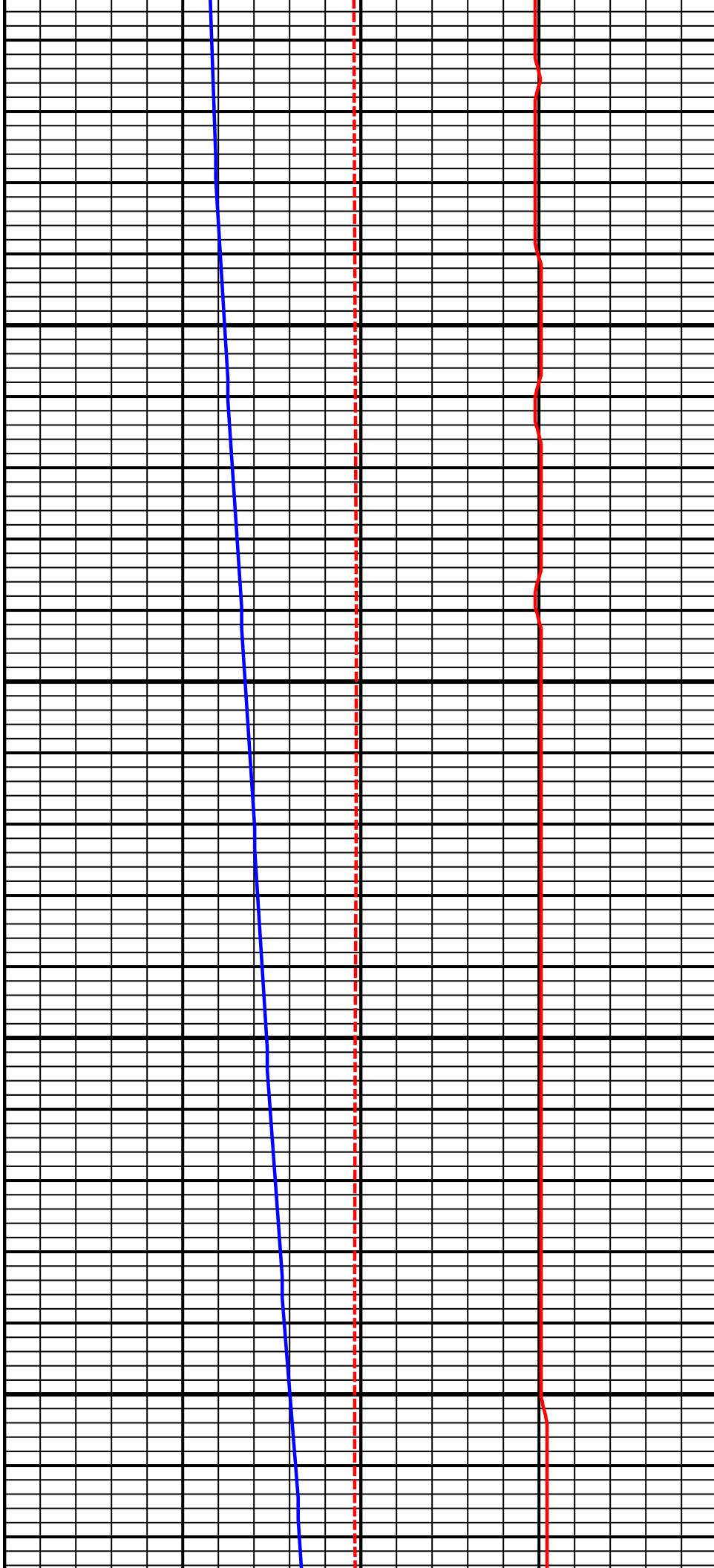
2700
MD

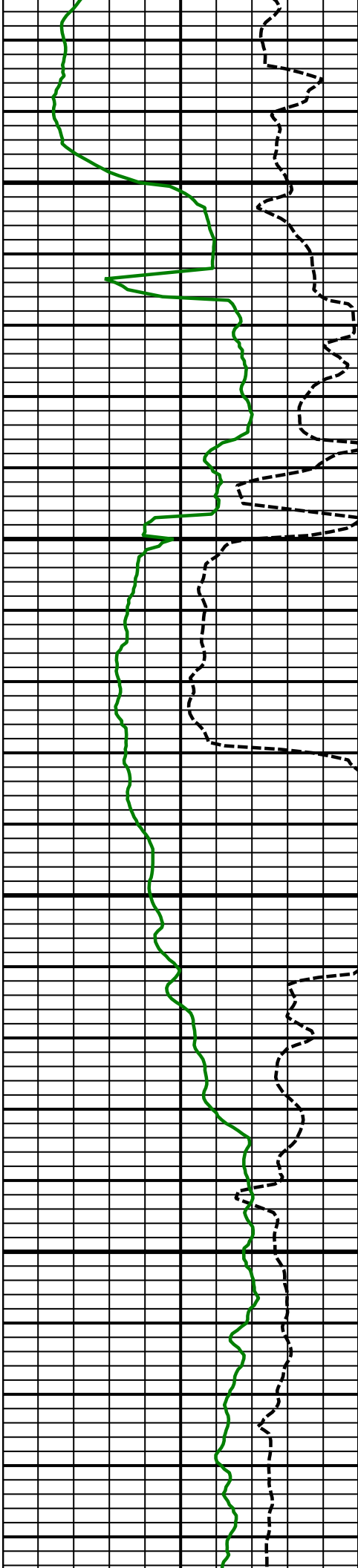




2800
MD

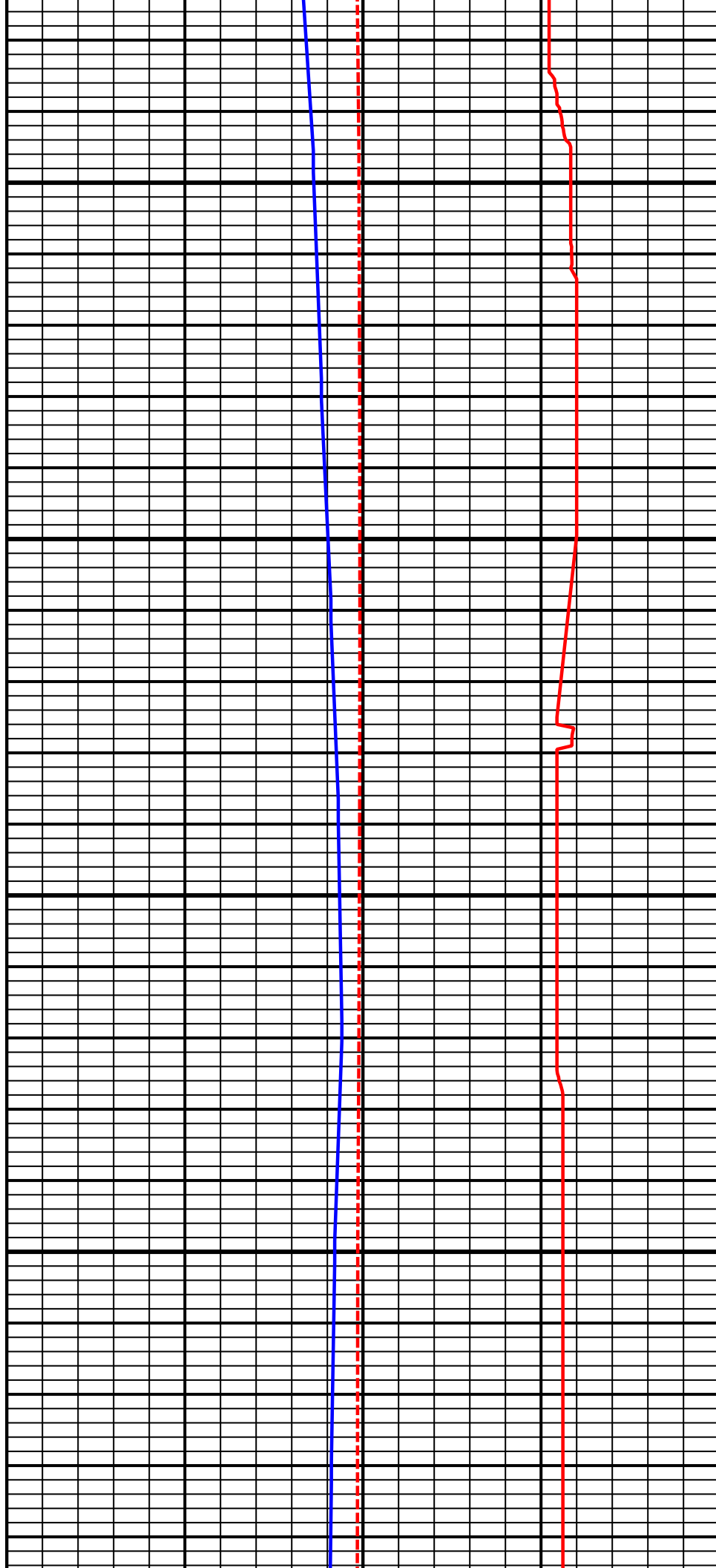
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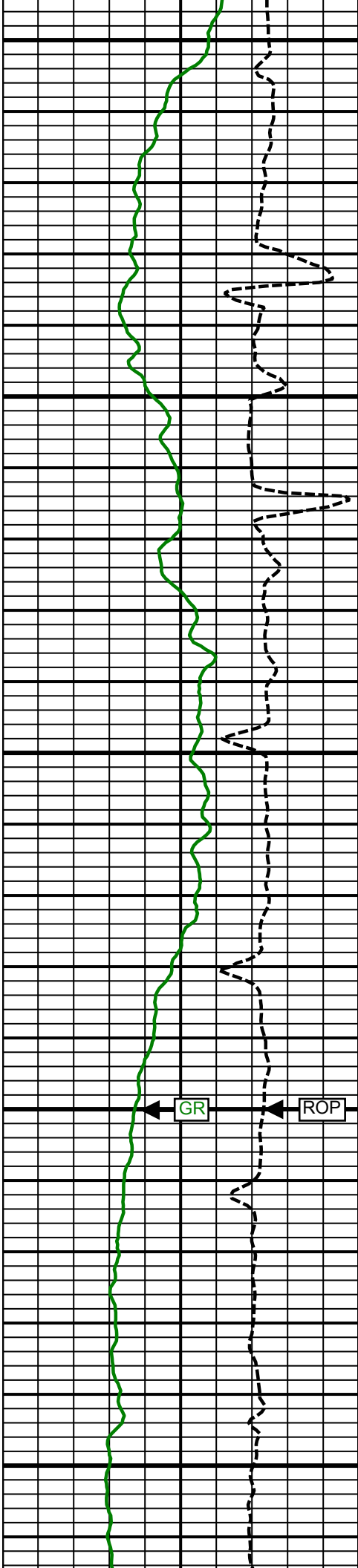




3000
MD

3100
MD





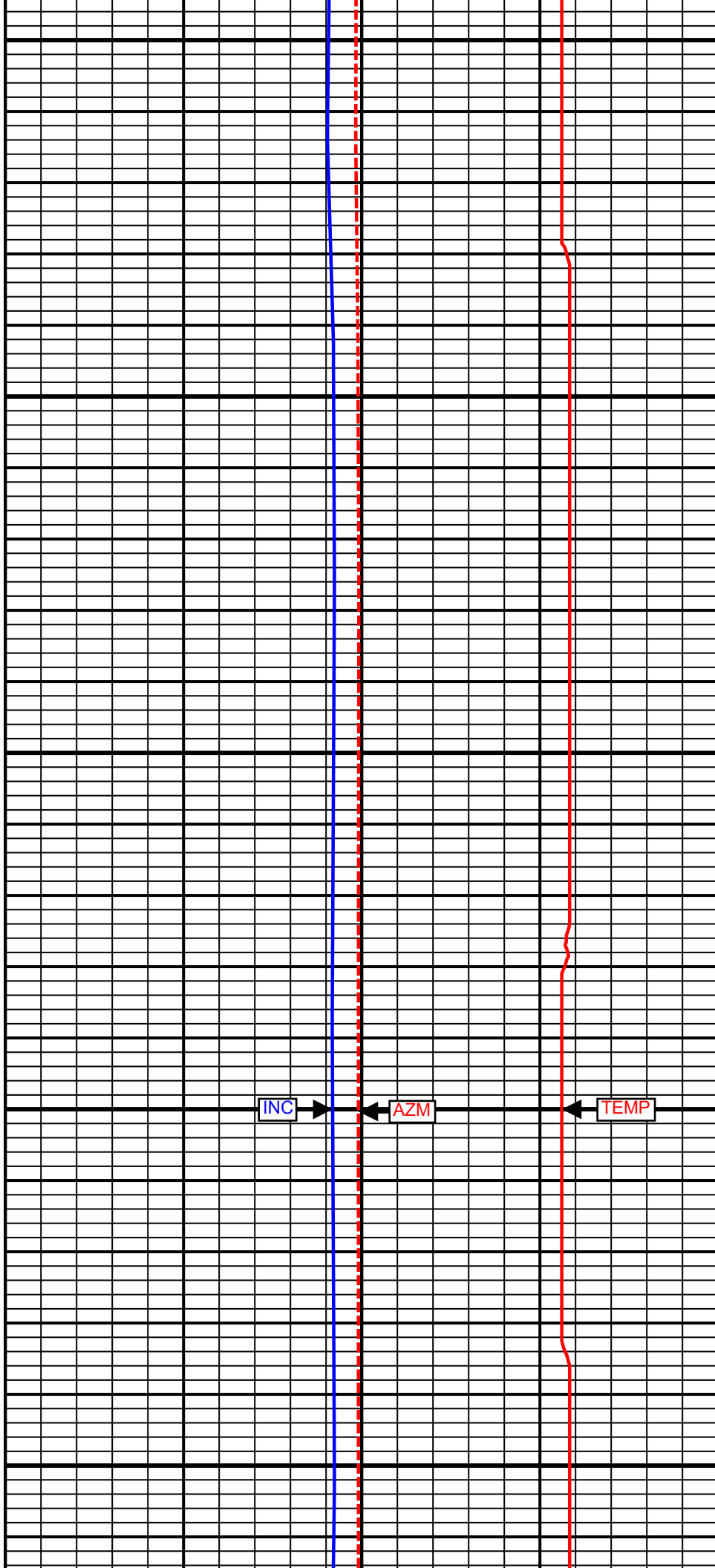
3200
MD

3300
MD

3400
MD

GR

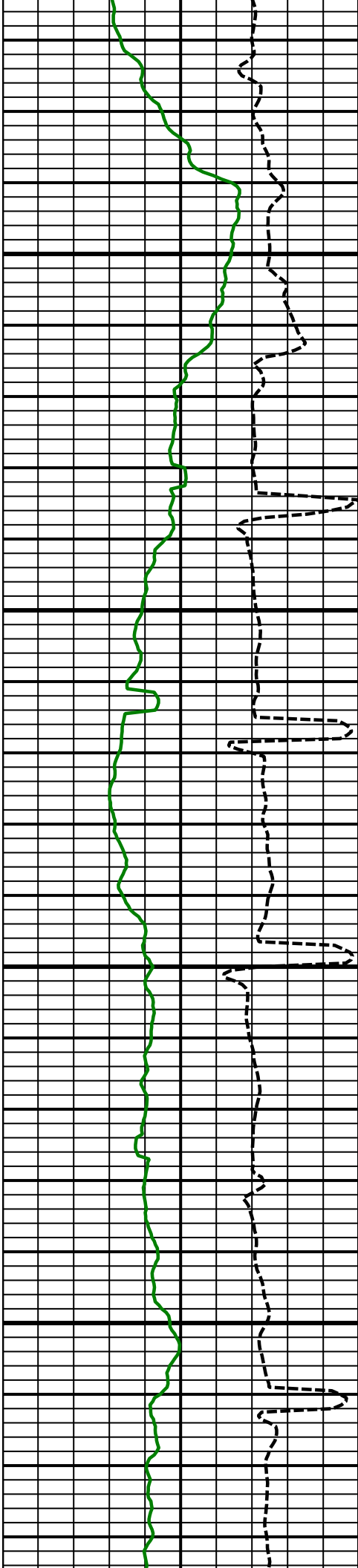
ROP



INC

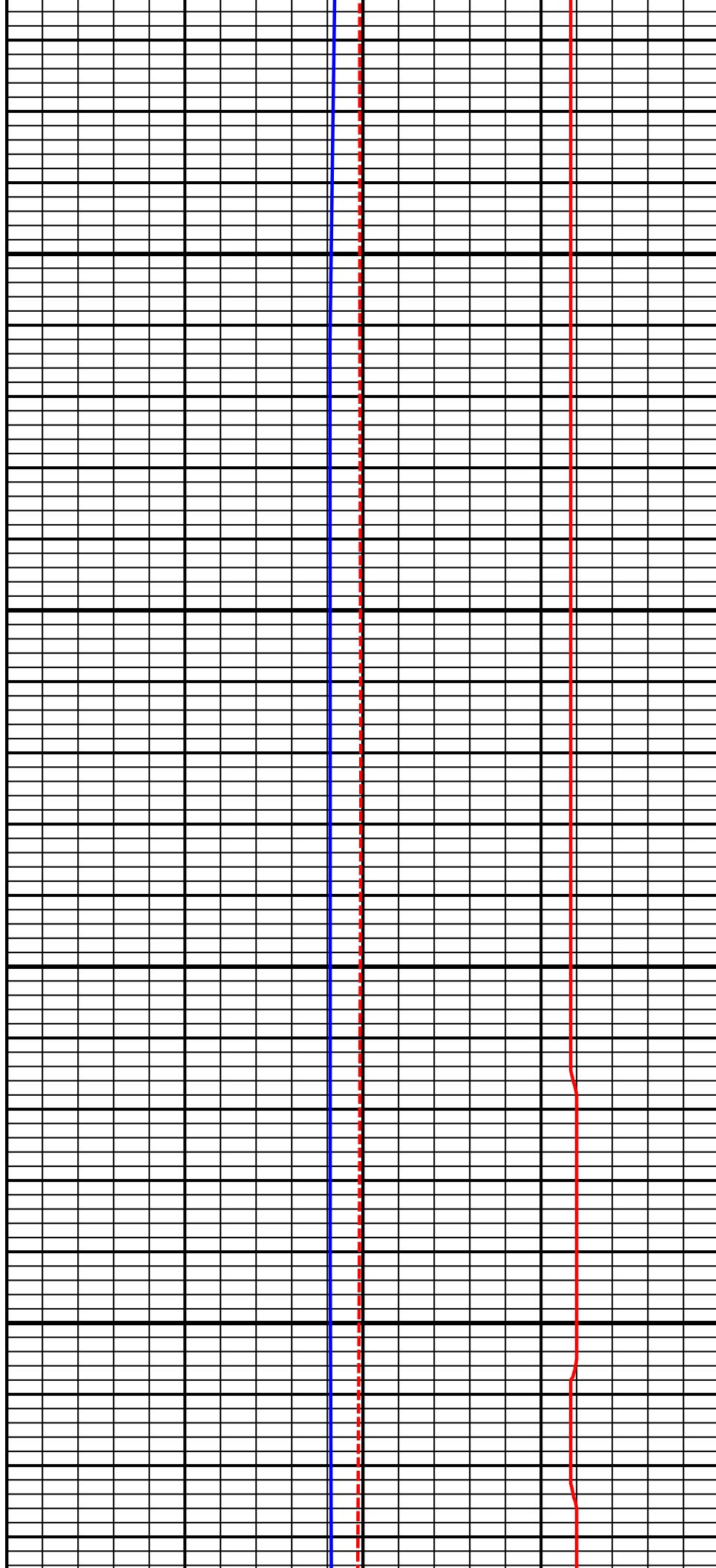
AZM

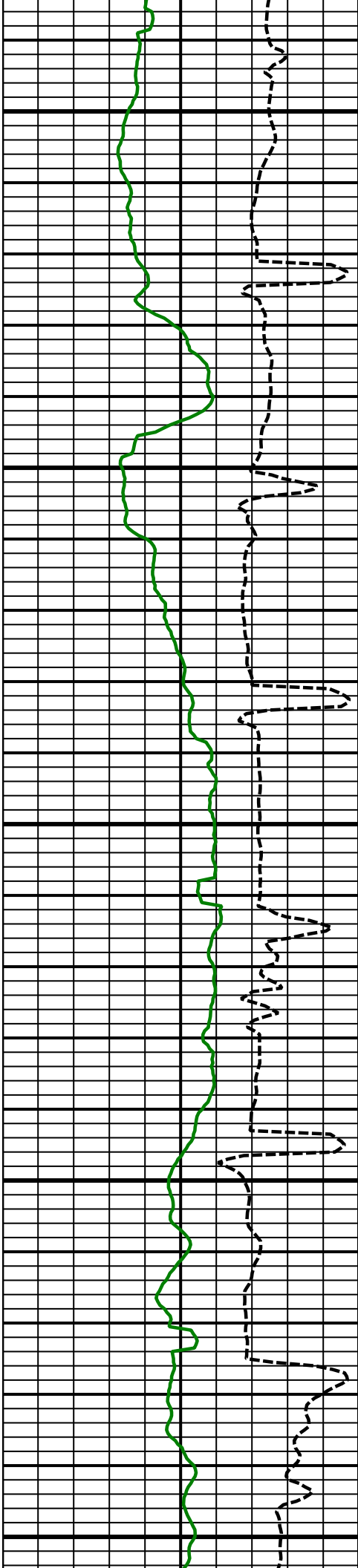
TEMP



3500
MD

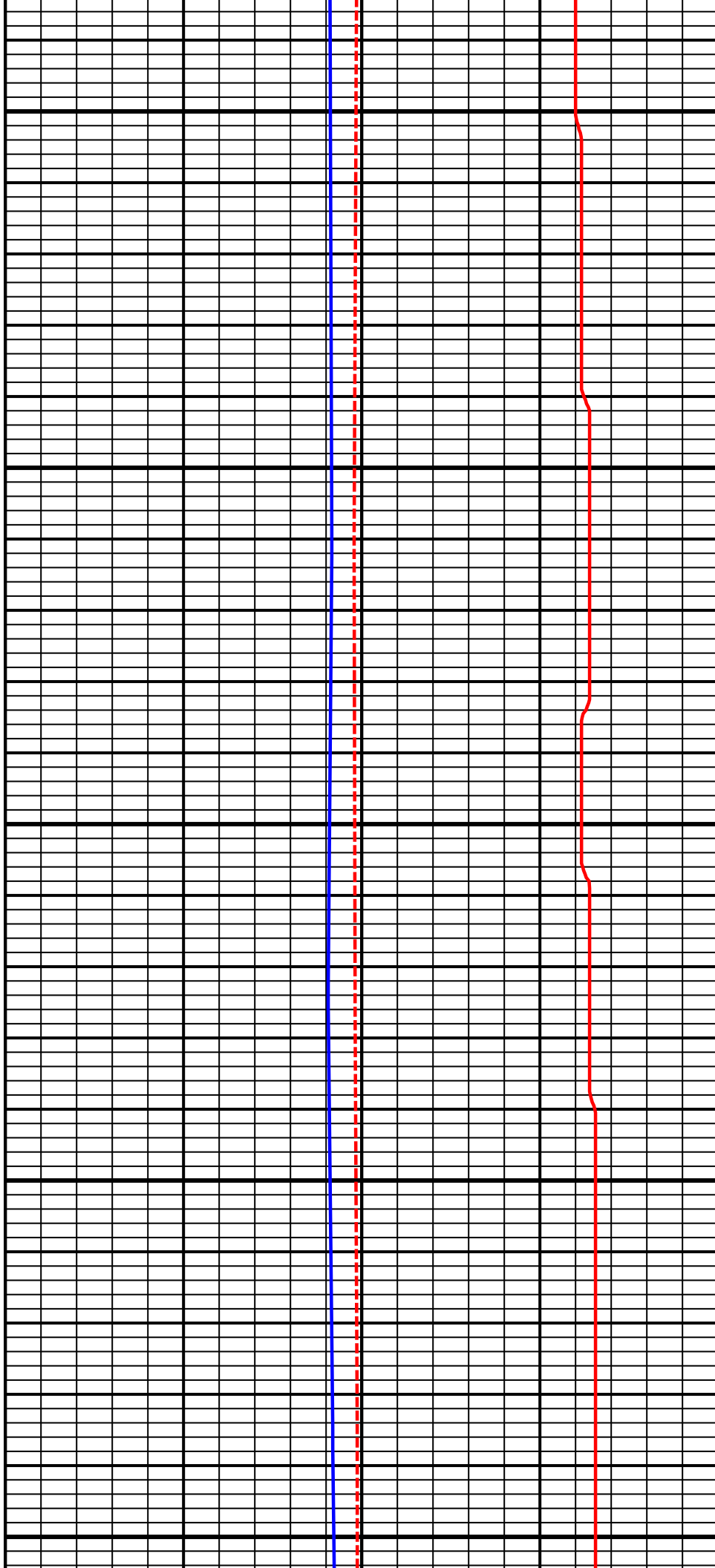
3600
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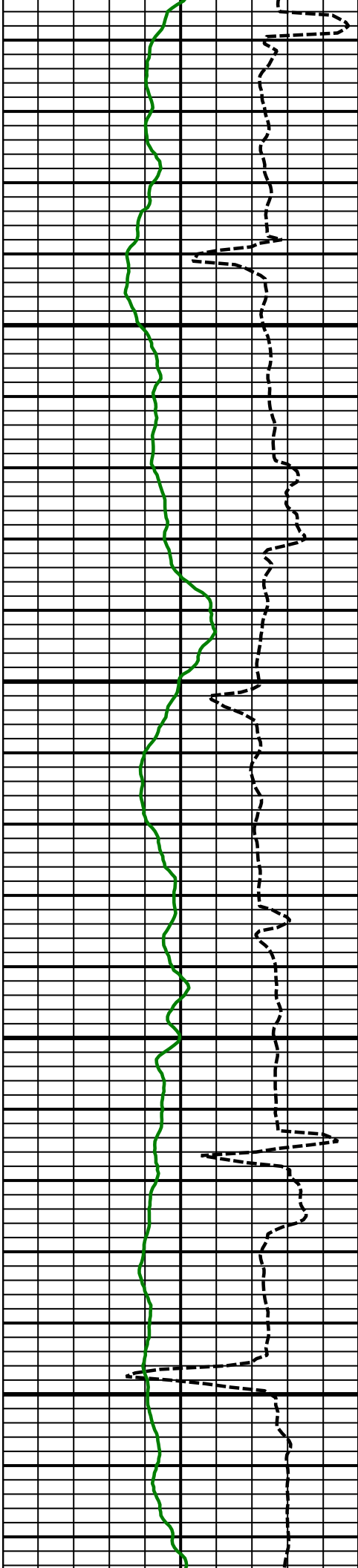




3700
MD

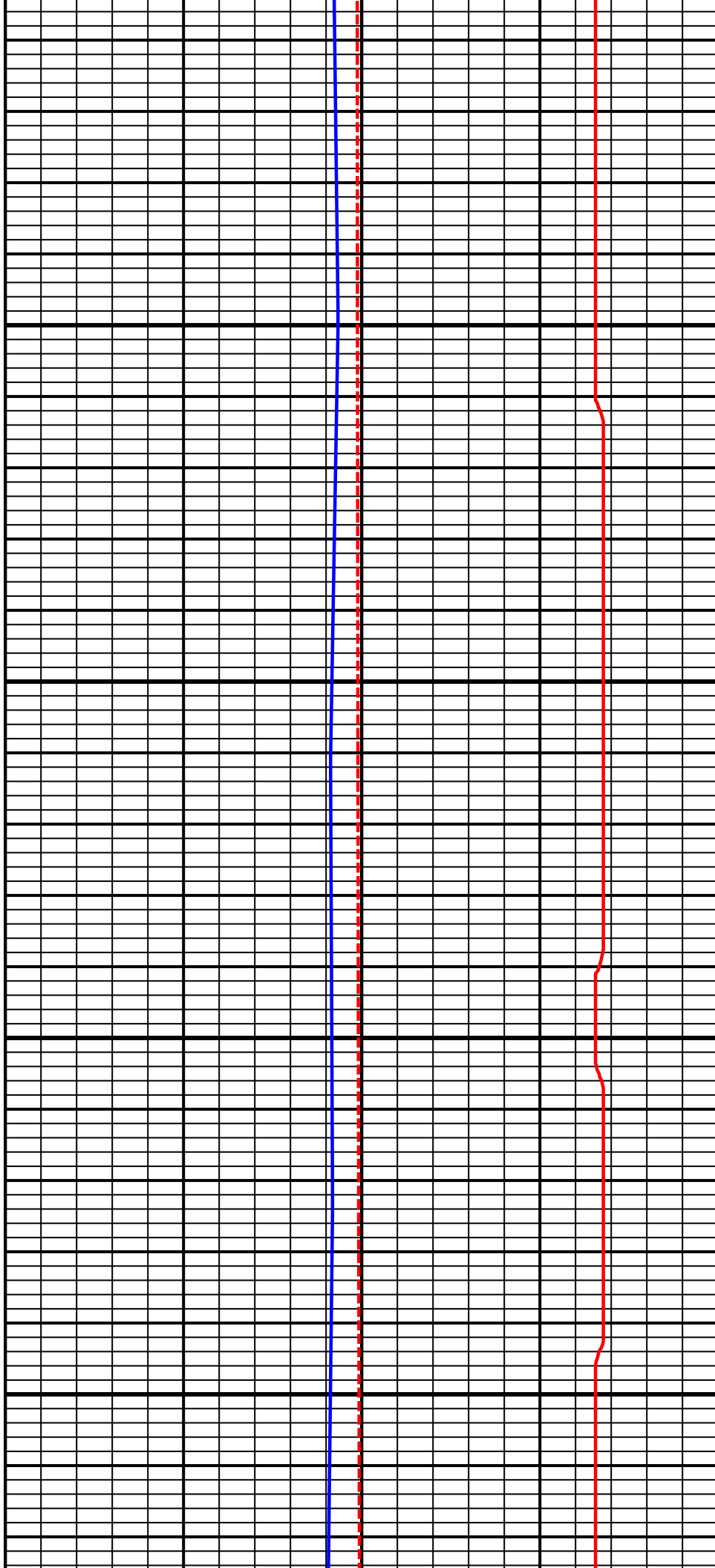
3800
MD

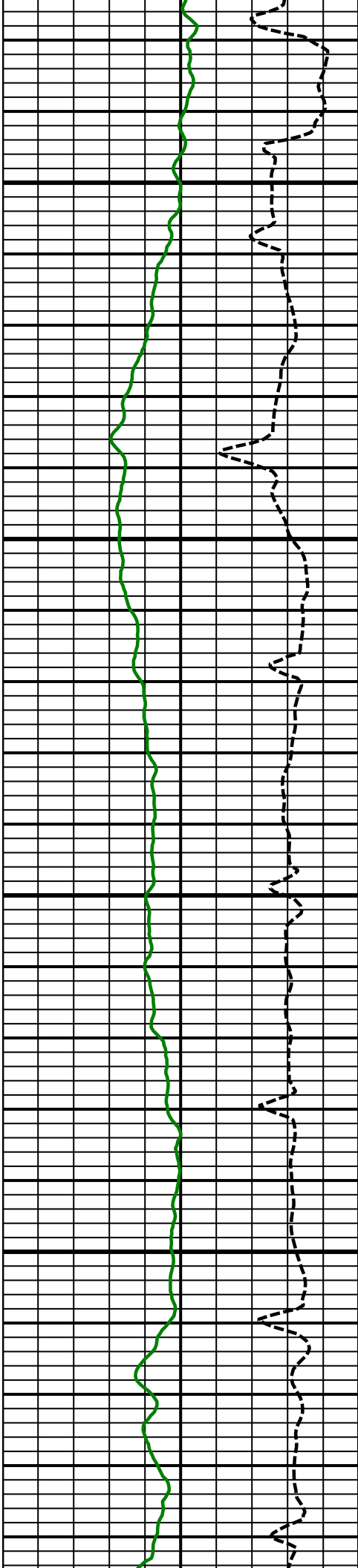




3900
MD

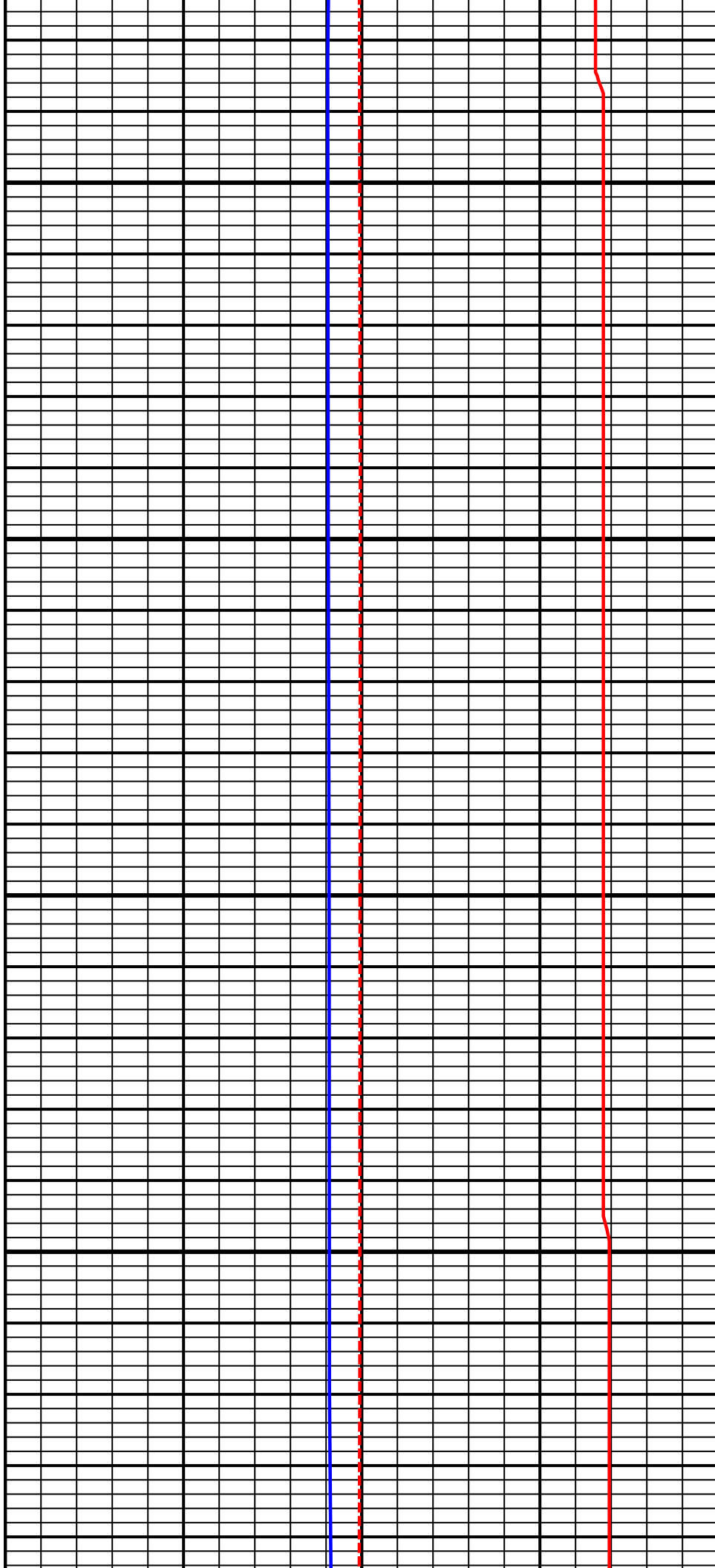
4000
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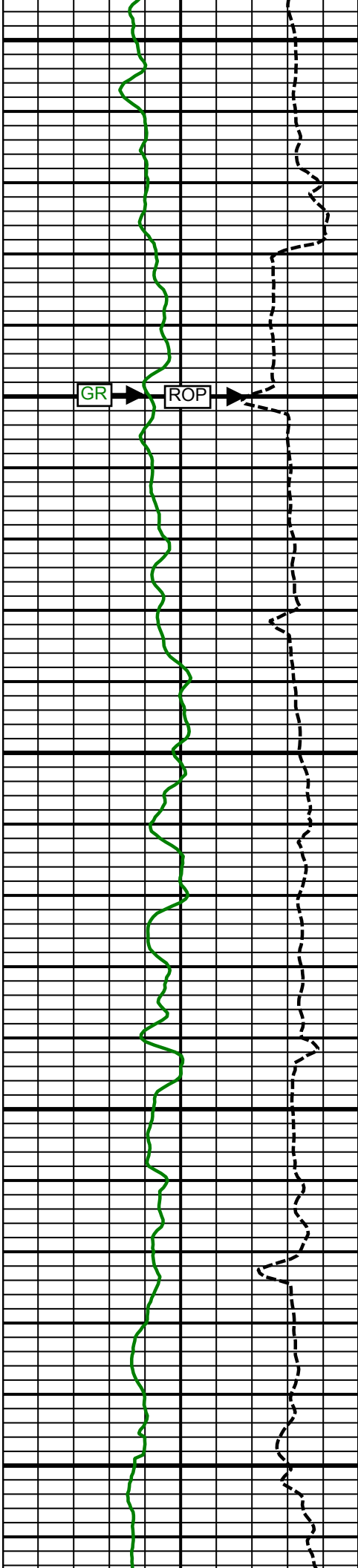




4100
MD

4200
MD

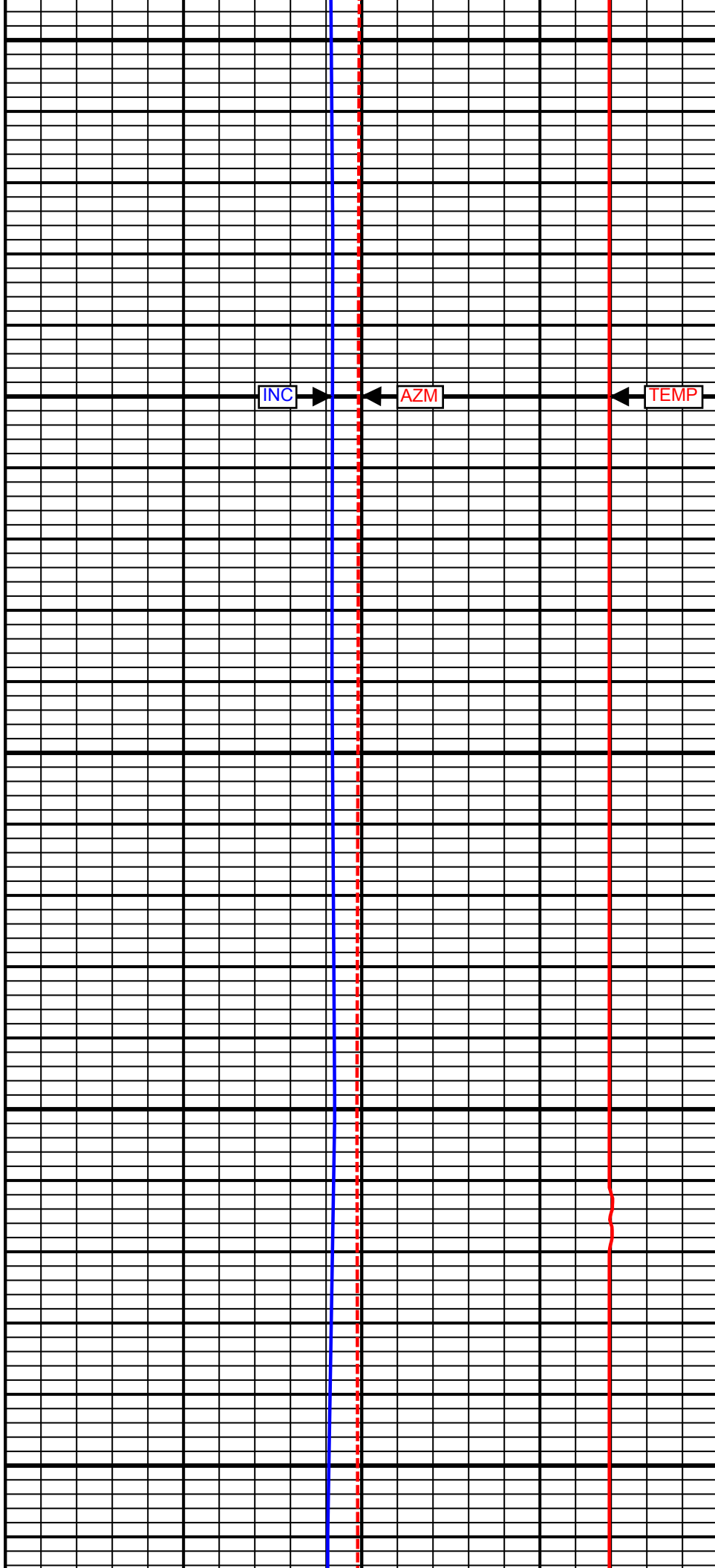




4300
MD

4400
MD

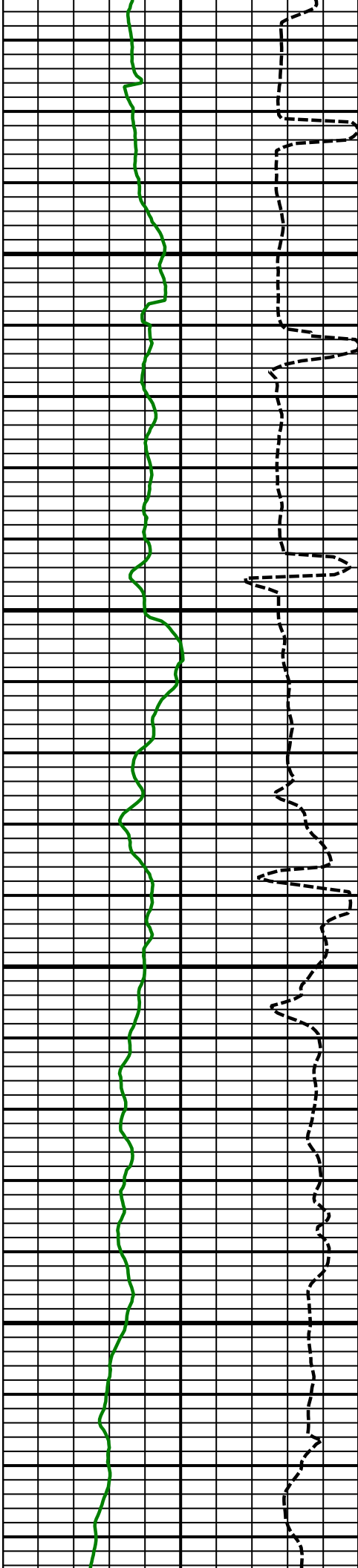
4500
MD



INC

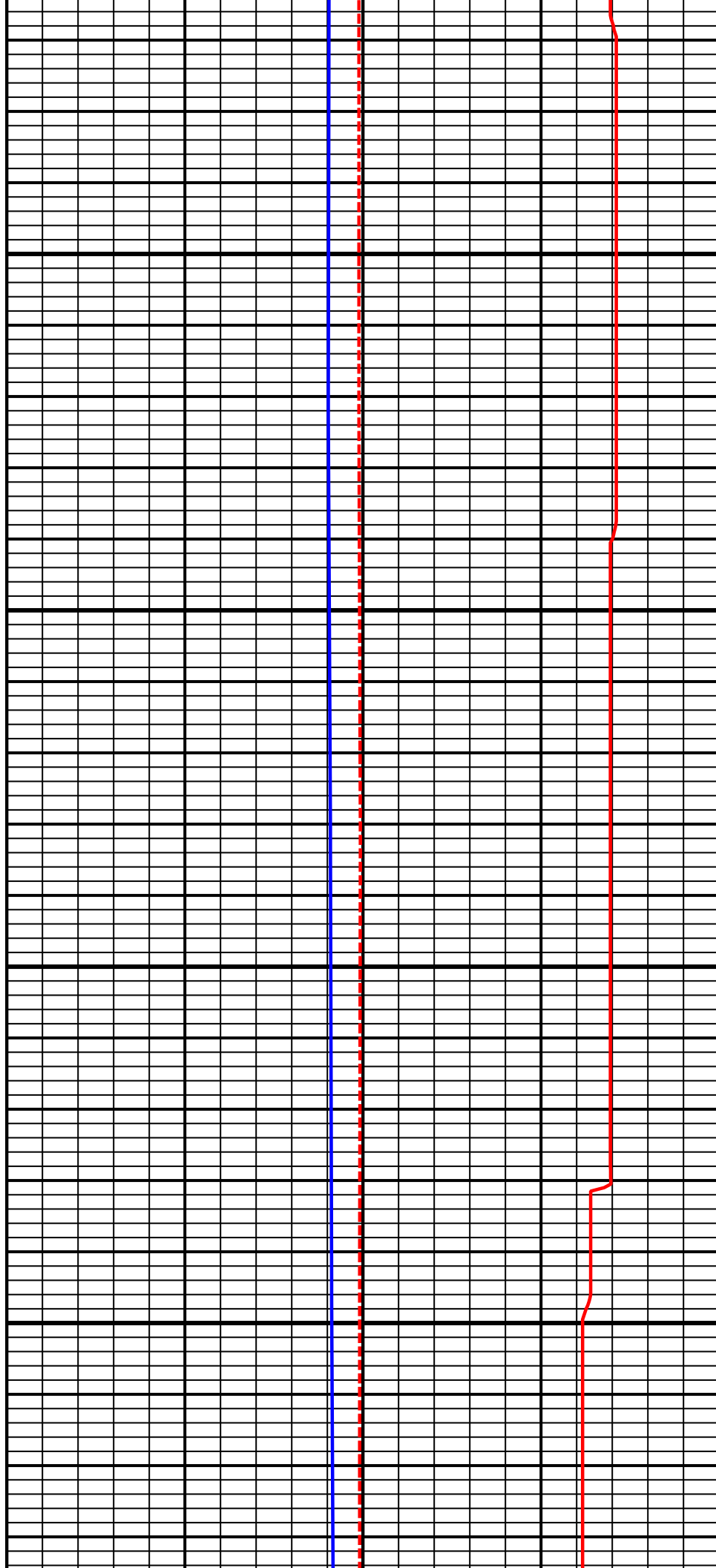
AZM

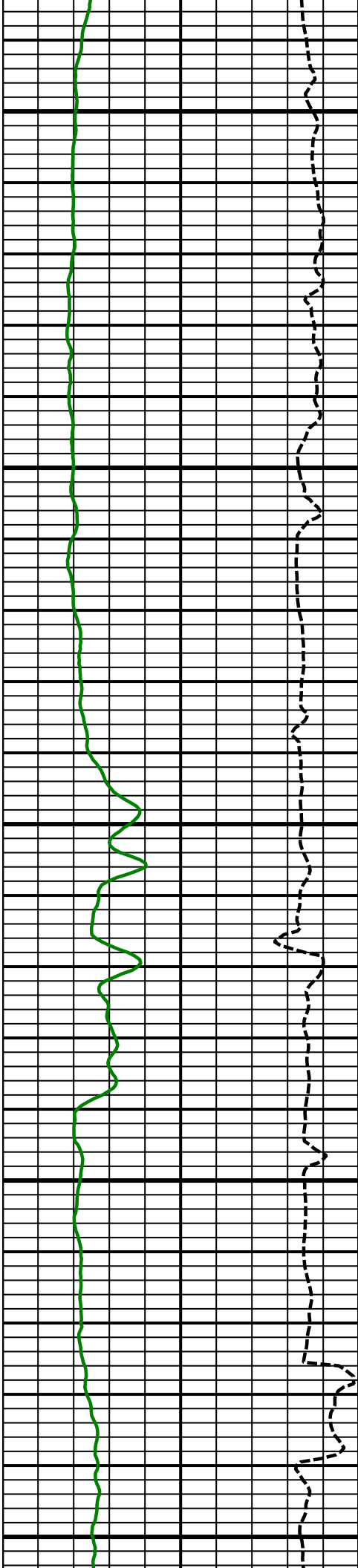
TEMP



4600
MD

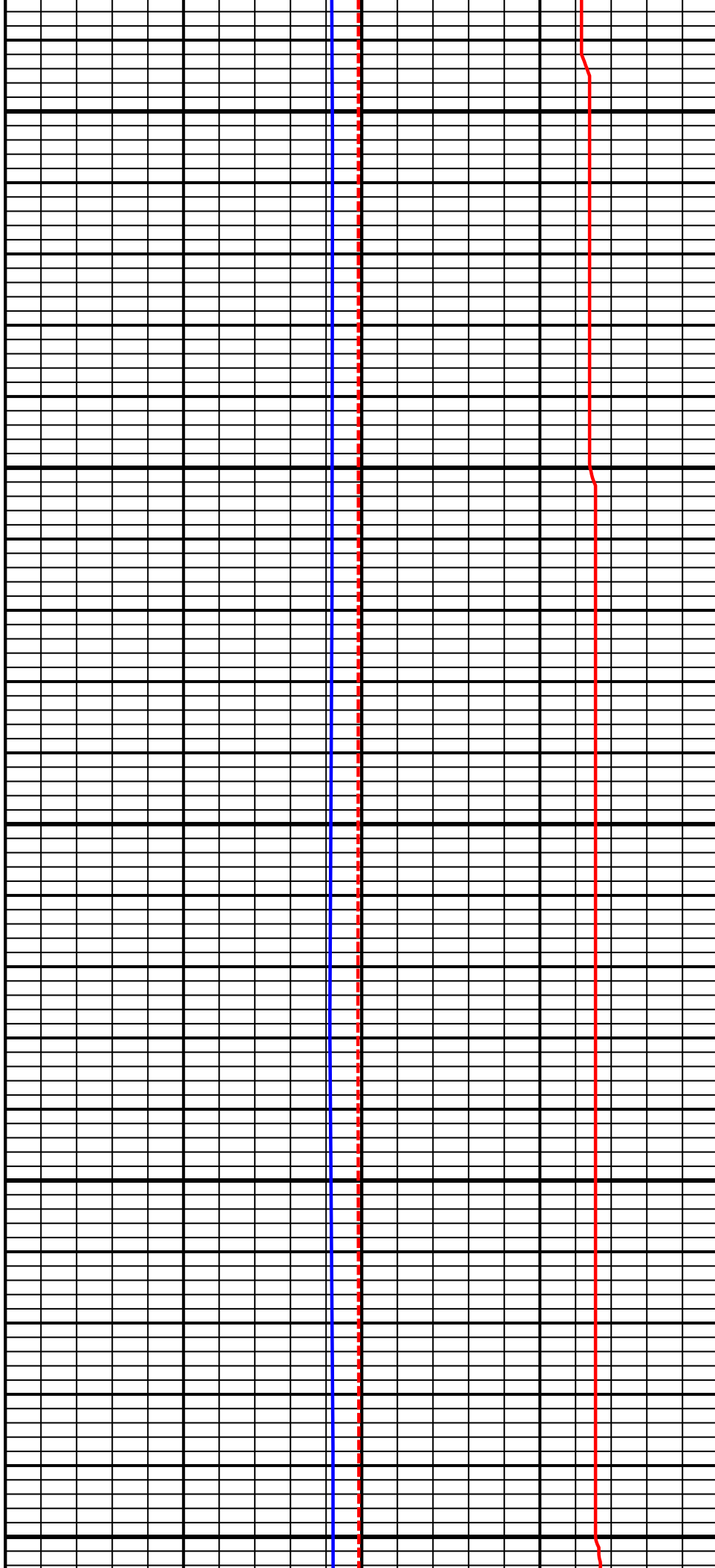
4700
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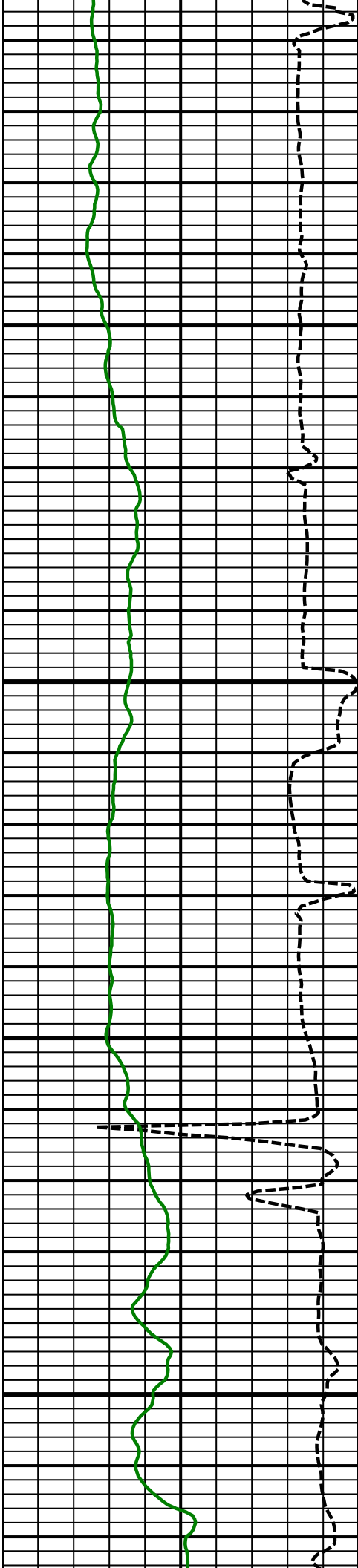




4800
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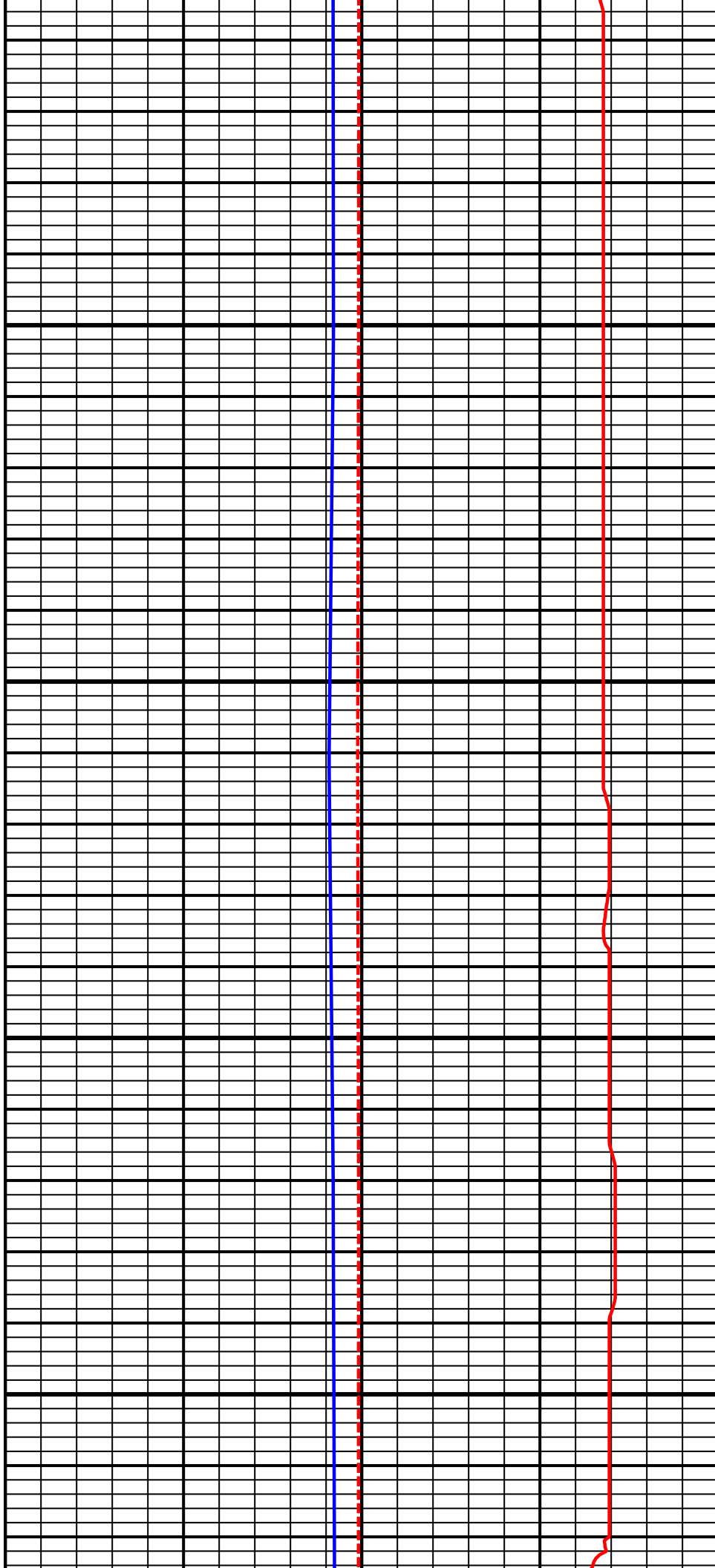
4900
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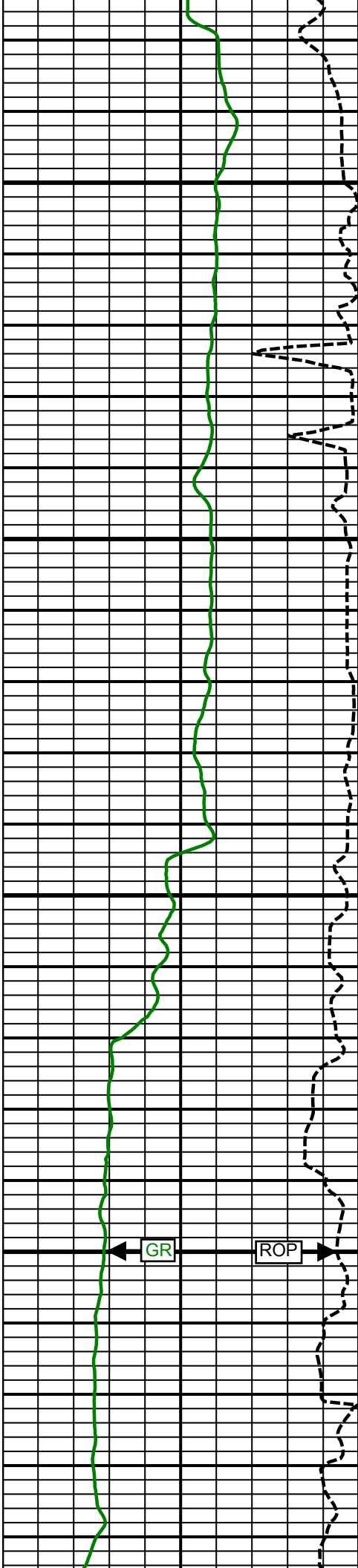




5000
MD

5100
MD



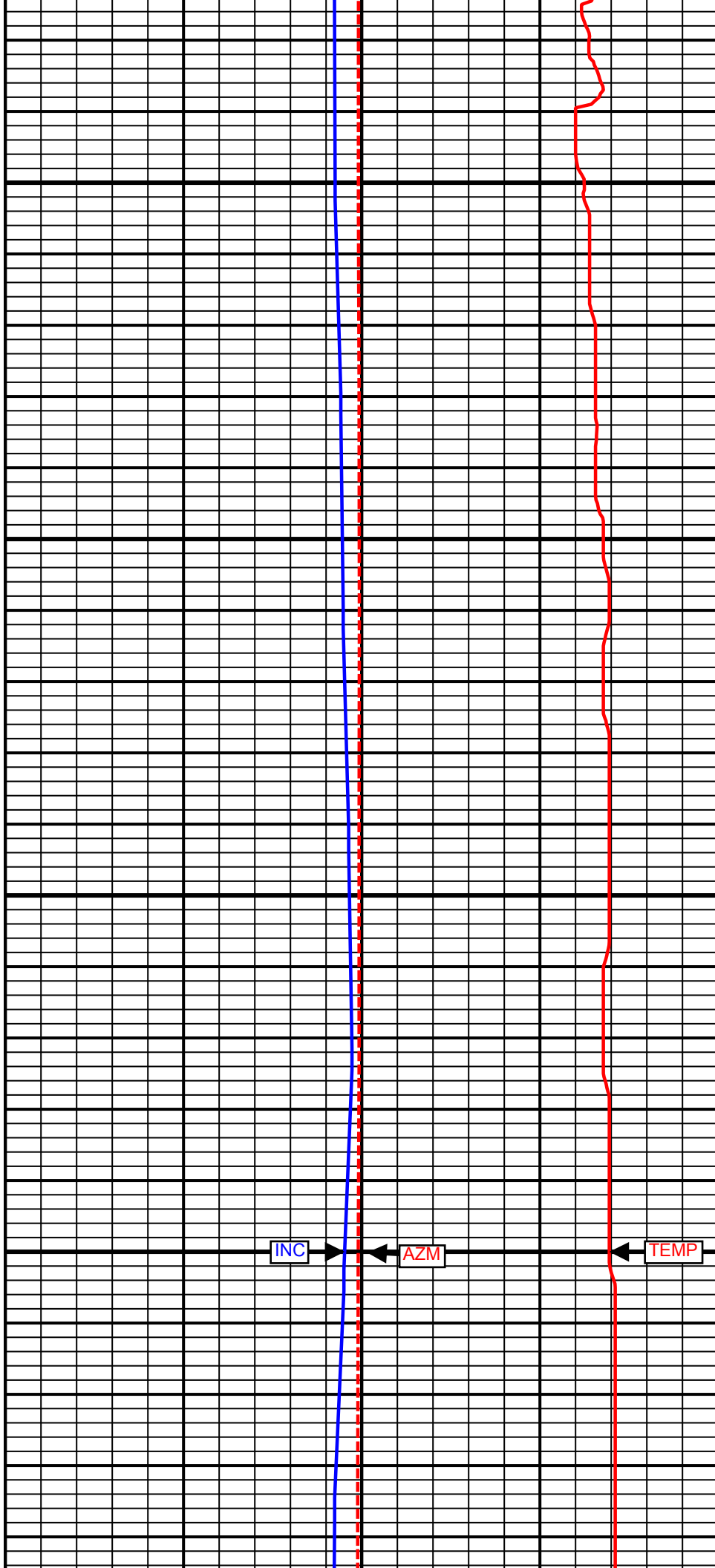


5200
MD

5300
MD

GR

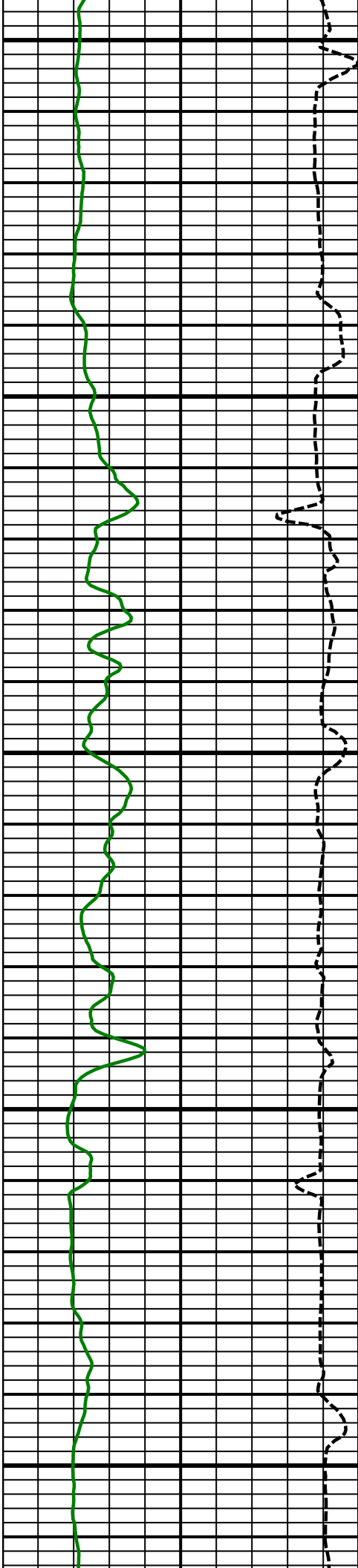
ROP



INC

AZM

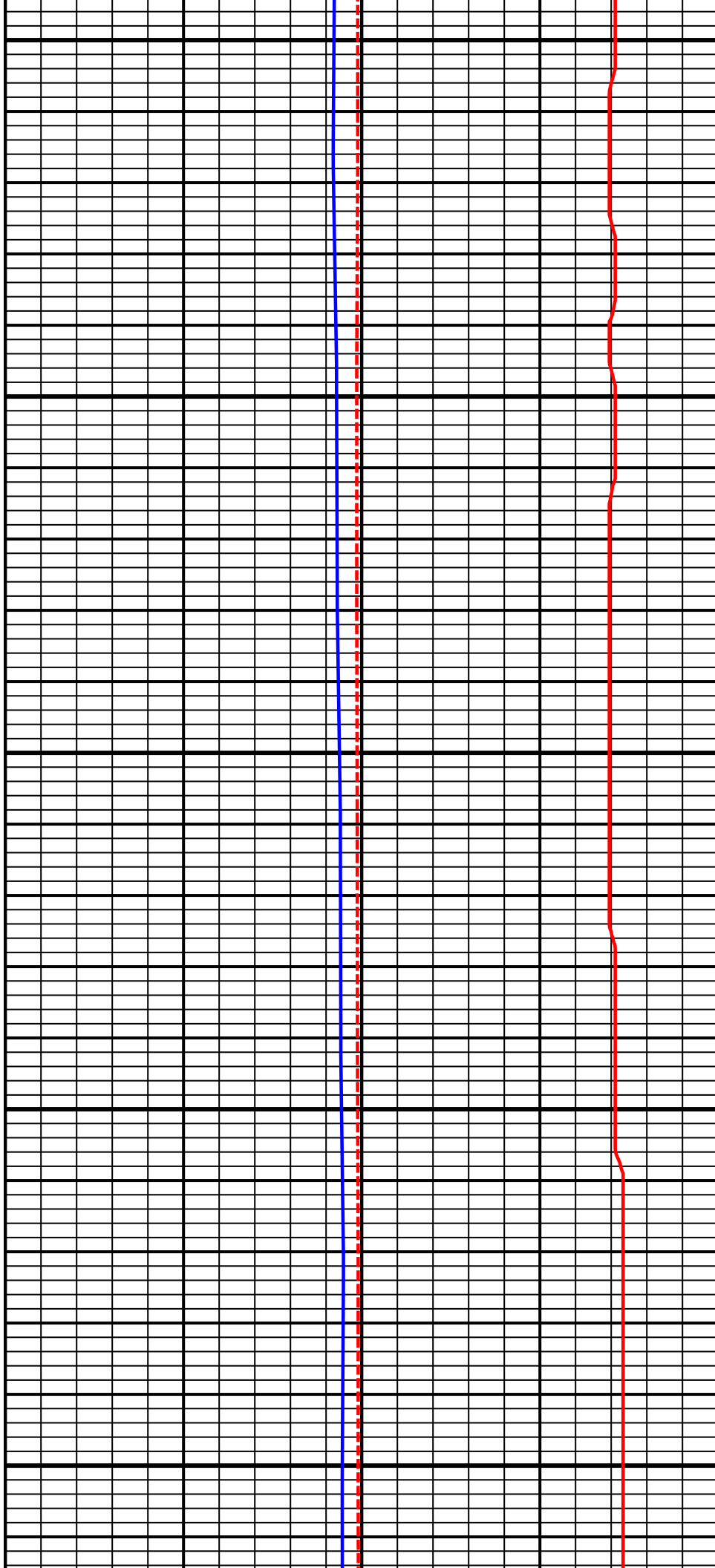
TEMP

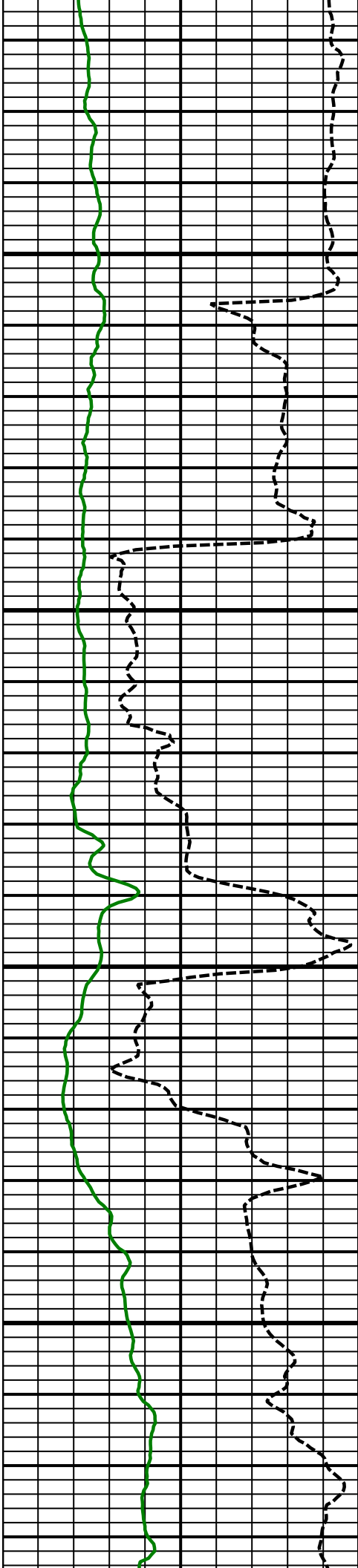


5400
MD

5500
MD

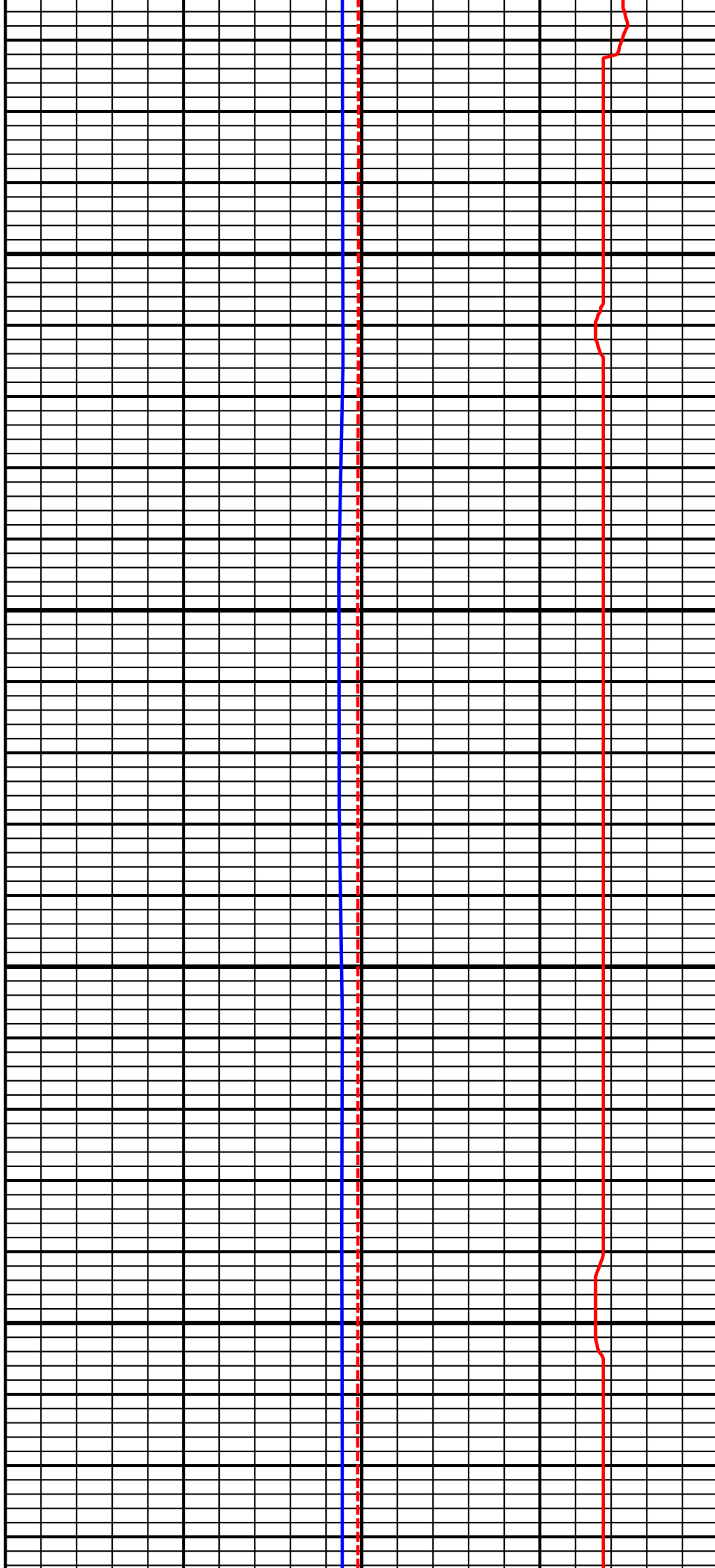
5600
MD

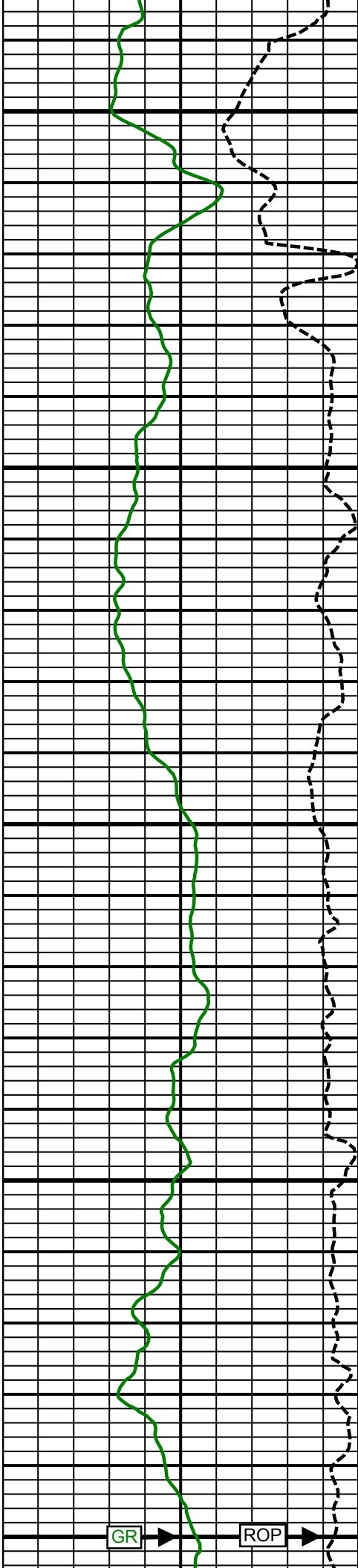




5700
MD

5800
MD



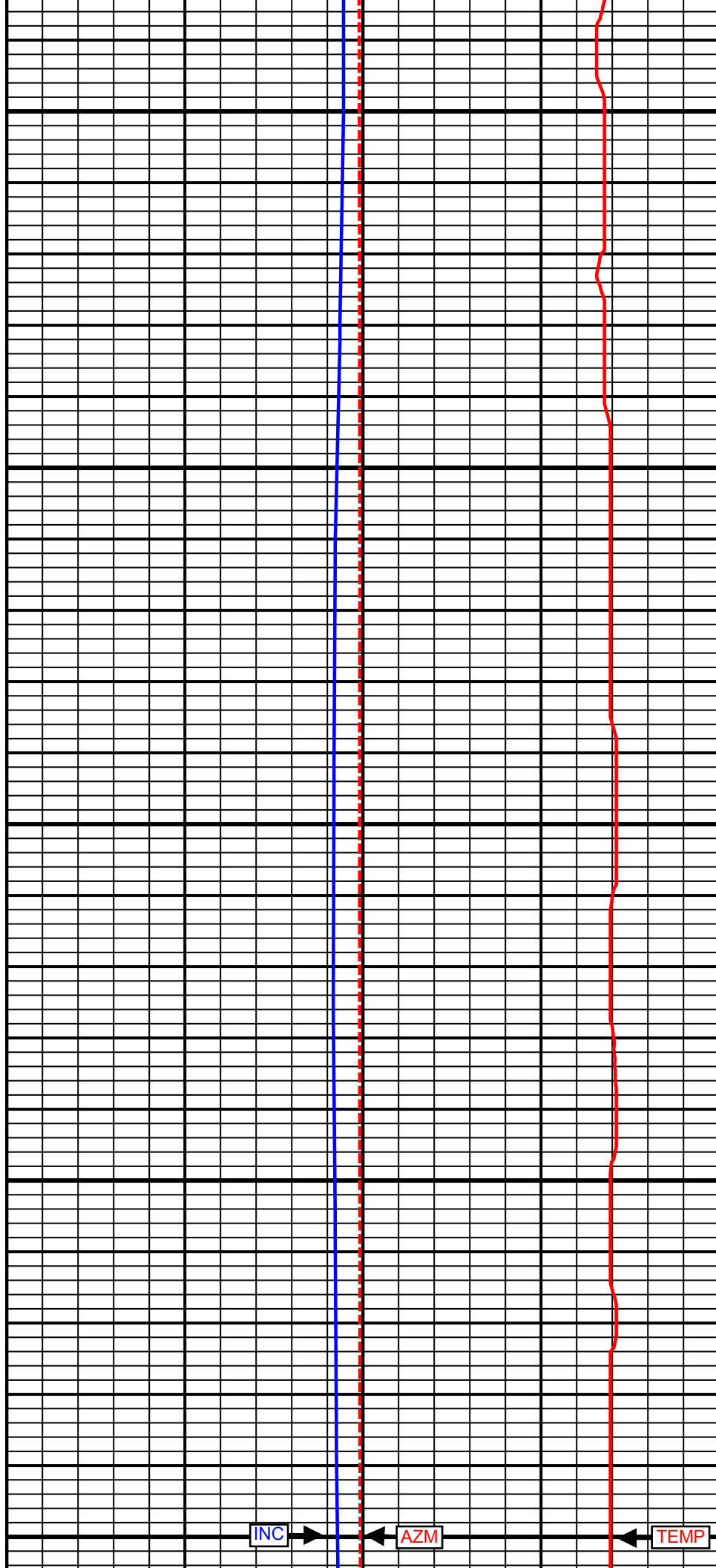


5900
MD

6000
MD

GR

ROP



INC

AZM

TEMP

1097.00	12.51	335.04	1176.84	131.58	-61.49	137.77	0.50
1191.00	12.51	335.04	1176.84	131.58	-61.49	137.77	0.50
1285.00	12.99	336.20	1268.52	150.47	-70.05	157.53	0.58
1379.00	13.30	336.15	1360.06	170.03	-78.68	177.95	0.33
1473.00	13.67	336.14	1451.46	190.08	-87.55	198.88	0.39
1565.00	12.96	331.47	1540.99	209.08	-96.87	218.83	1.40
1656.00	12.59	330.45	1629.74	226.68	-106.64	237.43	0.48
1750.00	12.81	330.43	1721.44	244.65	-116.83	256.46	0.23
1842.00	11.69	333.08	1811.35	261.83	-126.09	274.59	1.36
1936.00	11.74	332.92	1903.39	278.84	-134.75	292.48	0.06
2030.00	11.84	333.60	1995.40	295.99	-143.39	310.51	0.18
2121.00	11.94	334.26	2084.45	312.83	-151.63	328.19	0.19
2215.00	11.62	334.71	2176.47	330.15	-159.90	346.34	0.35
2400.00	11.83	332.83	2357.61	363.87	-176.52	381.75	0.24
2499.00	26.29	335.90	2450.98	392.95	-190.08	412.20	14.81
2529.00	35.27	333.55	2476.73	406.80	-196.66	426.71	30.20
2560.00	41.32	338.43	2501.06	424.35	-204.42	445.03	21.81
2592.00	43.21	340.77	2524.74	444.52	-211.91	465.93	7.69
2623.00	44.76	345.44	2547.05	465.11	-218.15	487.11	11.59
2654.00	48.50	350.48	2568.34	487.14	-222.82	509.52	16.88
2685.00	52.51	355.06	2588.06	510.86	-225.80	533.43	17.24
2716.00	55.36	351.79	2606.31	535.74	-228.68	558.48	12.54
2747.00	57.33	352.74	2623.49	561.31	-232.15	584.28	6.85
2778.00	59.24	353.47	2639.78	587.49	-235.32	610.64	6.48
2809.00	62.61	354.33	2654.85	614.43	-238.19	637.73	11.14
2841.00	66.53	355.41	2668.59	643.21	-240.77	666.62	12.62
2872.00	70.19	355.01	2680.02	671.92	-243.18	695.41	11.87
2903.00	73.73	354.09	2689.61	701.25	-245.98	724.88	11.76
2935.00	77.91	353.57	2697.45	732.09	-249.31	755.89	13.16
2966.00	82.39	353.70	2702.75	762.44	-252.70	786.43	14.46
2997.00	86.03	355.89	2705.88	793.15	-255.49	817.26	13.68
3029.00	88.29	356.42	2707.47	825.03	-257.64	849.18	7.25
3060.00	90.98	356.70	2707.66	855.97	-259.50	880.13	8.72
3088.00	93.05	356.54	2706.68	883.91	-261.15	908.06	7.41
3119.00	94.03	355.81	2704.76	914.78	-263.21	938.97	3.94
3150.00	92.05	354.50	2703.12	945.62	-265.83	969.91	7.66
3181.00	91.09	354.29	2702.27	976.46	-268.85	1000.89	3.17
3213.00	90.39	353.78	2701.86	1008.28	-272.18	1032.89	2.71
3244.00	92.06	356.08	2701.20	1039.15	-274.92	1063.86	9.17
3276.00	92.29	356.91	2699.98	1071.07	-276.87	1095.79	2.69
3338.00	91.72	356.47	2697.81	1132.93	-280.45	1157.65	1.16
3402.00	92.33	356.62	2695.55	1196.77	-284.30	1221.52	0.98
3464.00	90.72	356.78	2693.90	1258.64	-287.87	1283.39	2.61
3526.00	90.80	357.67	2693.08	1320.57	-290.87	1345.25	1.44
3589.00	90.79	356.26	2692.20	1383.47	-294.21	1408.12	2.24
3649.00	91.19	354.02	2691.17	1443.24	-299.29	1468.08	3.79
3711.00	91.58	352.10	2689.67	1504.77	-306.78	1530.05	3.16
3774.00	90.58	353.24	2688.48	1567.24	-314.81	1593.04	2.41
3836.00	91.85	355.31	2687.17	1628.91	-321.00	1655.01	3.92
3899.00	93.32	355.52	2684.32	1691.64	-326.03	1717.90	2.36
3962.00	91.24	356.02	2681.82	1754.42	-330.67	1780.80	3.40
4023.00	91.80	356.74	2680.20	1815.27	-334.52	1841.69	1.50
4084.00	90.45	357.62	2679.00	1876.19	-337.52	1902.55	2.64
4144.00	90.54	358.53	2678.48	1936.15	-339.54	1962.34	1.52
4206.00	90.86	358.16	2677.73	1998.12	-341.33	2024.11	0.79
4267.00	90.87	357.93	2676.81	2059.08	-343.41	2084.90	0.38
4328.00	91.82	356.88	2675.37	2120.00	-346.17	2145.73	2.32
4388.00	91.61	356.19	2673.58	2179.86	-349.79	2205.62	1.20
4450.00	92.36	355.09	2671.43	2241.64	-354.50	2267.53	2.15
4511.00	90.44	355.69	2669.94	2302.42	-359.41	2328.47	3.30
4571.00	90.23	355.77	2669.59	2362.25	-363.87	2388.42	0.37
4632.00	90.82	357.20	2669.03	2423.14	-367.61	2449.33	2.54
4695.00	91.14	356.48	2667.95	2486.03	-371.08	2512.21	1.25
4756.00	91.79	356.52	2666.39	2546.90	-374.81	2573.10	1.07
4816.00	91.61	356.46	2664.61	2606.76	-378.48	2632.98	0.32
4878.00	91.05	356.07	2663.17	2668.61	-382.52	2694.89	1.10
4939.00	91.93	356.93	2661.59	2729.47	-386.24	2755.78	2.02
5000.00	92.01	356.87	2659.49	2790.35	-389.54	2816.63	0.16
5061.00	90.86	355.91	2657.96	2851.21	-393.38	2877.52	2.46
5122.00	91.94	356.69	2656.47	2912.06	-397.31	2938.43	2.18
5201.00	92.52	356.60	2653.40	2990.86	-401.93	3017.24	0.74
5231.00	94.13	357.14	2651.66	3020.77	-403.57	3047.13	5.66
5261.00	94.74	357.52	2649.34	3050.64	-404.96	3076.97	2.39

5201.00	94.74	357.32	2649.34	3050.84	-404.98	3070.97	2.39
5292.00	96.32	357.19	2646.35	3081.47	-406.38	3107.75	5.21
5323.00	97.25	357.23	2642.69	3112.21	-407.88	3138.47	3.00
5354.00	94.97	356.25	2639.39	3142.98	-409.64	3169.24	8.00
5386.00	92.38	355.70	2637.34	3174.84	-411.88	3201.14	8.27
5416.00	91.96	355.80	2636.20	3204.73	-414.10	3231.09	1.44
5447.00	92.87	354.93	2634.90	3235.60	-416.60	3262.04	4.06
5478.00	93.13	354.86	2633.27	3266.44	-419.36	3292.99	0.87
5510.00	93.94	355.39	2631.30	3298.26	-422.07	3324.91	3.02
5541.00	94.12	355.67	2629.12	3329.09	-424.48	3355.82	1.07
5572.00	94.83	356.38	2626.70	3359.92	-426.62	3386.69	3.23
5603.00	94.50	356.34	2624.18	3390.76	-428.58	3417.54	1.07
5634.00	94.55	356.80	2621.74	3421.60	-430.43	3448.40	1.49
5664.00	94.70	356.42	2619.32	3451.45	-432.20	3478.26	1.36
5695.00	93.54	355.90	2617.09	3482.30	-434.27	3509.14	4.10
5726.00	93.64	355.98	2615.15	3513.17	-436.46	3540.05	0.41
5758.00	94.48	356.11	2612.88	3545.01	-438.66	3571.93	2.66
5787.00	94.39	356.05	2610.64	3573.85	-440.64	3600.82	0.37
5819.00	94.50	355.79	2608.16	3605.68	-442.91	3632.69	0.88
5849.00	94.50	356.34	2605.81	3635.51	-444.96	3662.56	1.83
5881.00	93.50	356.56	2603.58	3667.37	-446.94	3694.44	3.20
5912.00	92.15	356.76	2602.05	3698.28	-448.74	3725.35	4.40
5943.00	91.82	356.54	2600.97	3729.21	-450.55	3756.28	1.28
5975.00	91.66	356.56	2600.00	3761.14	-452.48	3788.22	0.50
6006.00	92.19	356.67	2598.96	3792.07	-454.31	3819.15	1.75
6036.00	92.50	356.83	2597.73	3821.99	-456.01	3849.08	1.16
6068.00	93.21	357.69	2596.14	3853.92	-457.54	3880.96	3.48

* Weatherford surveys from 323.00 ft MD to 6068.00 ft MD *

* TD at 6125.34 ft MD *

* The total correction is 9.55 deg relative to Grid North *



COMPANY: **XTO Energy**

WELL: **Smith 1H Lower**

FIELD: **Ignacio**

COUNTRY: **United States**

STATE: **Colorado**