




GAMMA RAY

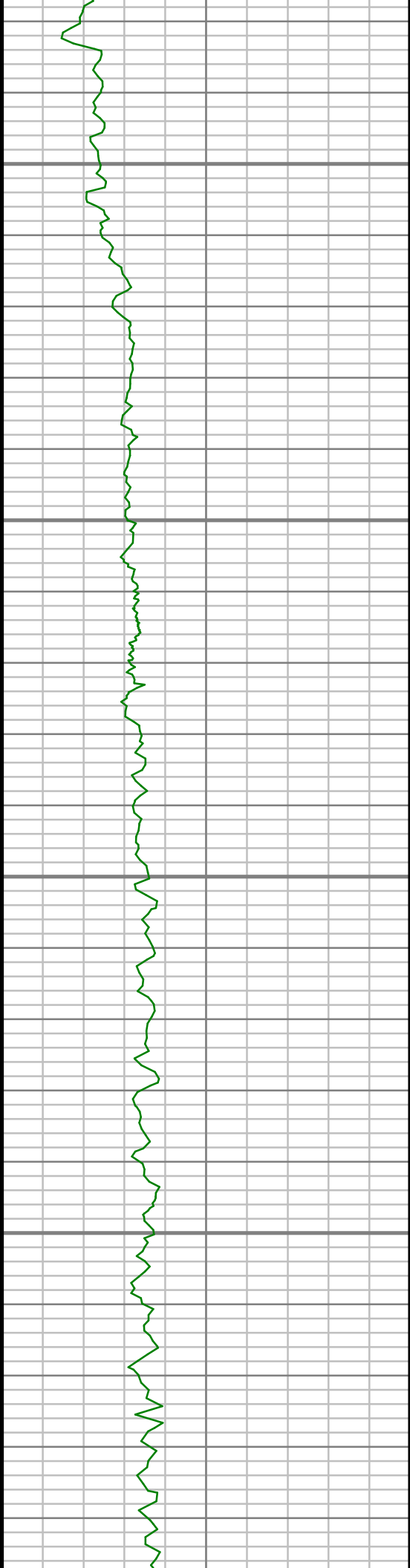
5" = 100' FEET TWD

COMPANY : ENCANA OIL & GAS (U.S.A.) INC WELL : SPRAGUE 3H-9H-N267 PRODUCTION FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39273				COMPANY : ENCANA OIL & GAS (U.S.A.) INC WELL : SPRAGUE 3H-9H-N267 PRODUCTION FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39273			
DEPTH REF. : RKB REF. HEIGHT : 28.500 ft GROUND LEVEL : 4982.000 ft		RKB to Ground Level G.L. to MEAN SEA LEVEL		WELL LOCATION LAT:40°8'49.272"N LONG:104°53'54.168"W N:1296973.24 ft E:3168181.36 ft SEC:9 TWP:2N RANGE:67W		OTHER SERVICES DIRECTIONAL ROP	
BOREHOLE RECORD				DEVIATION RECORD			
HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft		
8.75	862	7835	9 - 65	862	7835		
6.125	7835	13010	65 - 92	7835	13010		
CASING RECORD							
CASING SIZE in	FROM ft	TO ft					
9.625	0	845					
7	0	7815					
			DRILLING CO. : PATTERSON RIG : 272				
			LMD UNIT NO. : C70-EM4#8DISTRICT : CASPER, CASPER SPUD DATE : 03/20/2015				
			LMD START DATE : 04/09/2015 LMD END DATE : 04/15/2015				
			DEPTH : 5000 ft DEPTH : 13010 ft TOTAL DEPTH : 13010 ft				

Remarks
ENCANA OIL & GAS (U.S.A.) INC PRODUCTION AFE# 14180729
SCIENTIFIC DRILLING INTERNATIONAL JOB# 270272
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO RATE OF PENETRATION CURVE
RUN #1: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-255 / CONT = 517 / MWD EYE = 0661 / GAMMA RAY = 1133
BIT TO SENSOR OFFSETS: SURVEY = 61.19 FT. / GAMMA RAY = 57.13 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-242 / CONT = 300 / MWD EYE = 1072 / GAMMA RAY = 1343
BIT TO SENSOR OFFSETS: SURVEY = 61.56 FT. / GAMMA RAY = 57.50 FT.
RUN #3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-297 / CONT = 517 / MWD EYE = 0882 / GAMMA RAY = 1133
BIT TO SENSOR OFFSETS: SURVEY = 61.56 FT. / GAMMA RAY = 57.50 FT.
MNEMONICS LIST:
GR = GAMMA RAY
ROP = RATE OF PENETRATION

All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions as set out in our current price schedule.

ENCANA OIL & GAS (U.S.A.) INC SPRAGUE 3H-9H-N267 PRODUCTION WATTENBERG FIELD WELD COUNTY, COLORADO 05-123-39273					
	Gamma Ray (GR)		Rate of Penetration (ROP)		Comments
TRUE VERTICAL DEPTH 1:240 (ft)	0	Unit = aapi      150	500	Unit = ft/hr      0	
800					

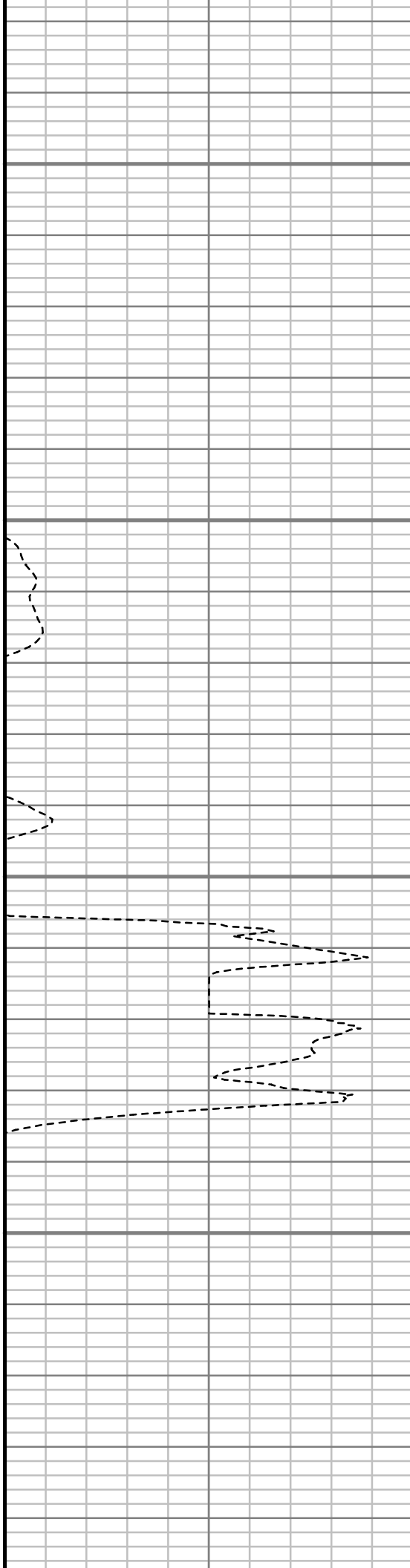


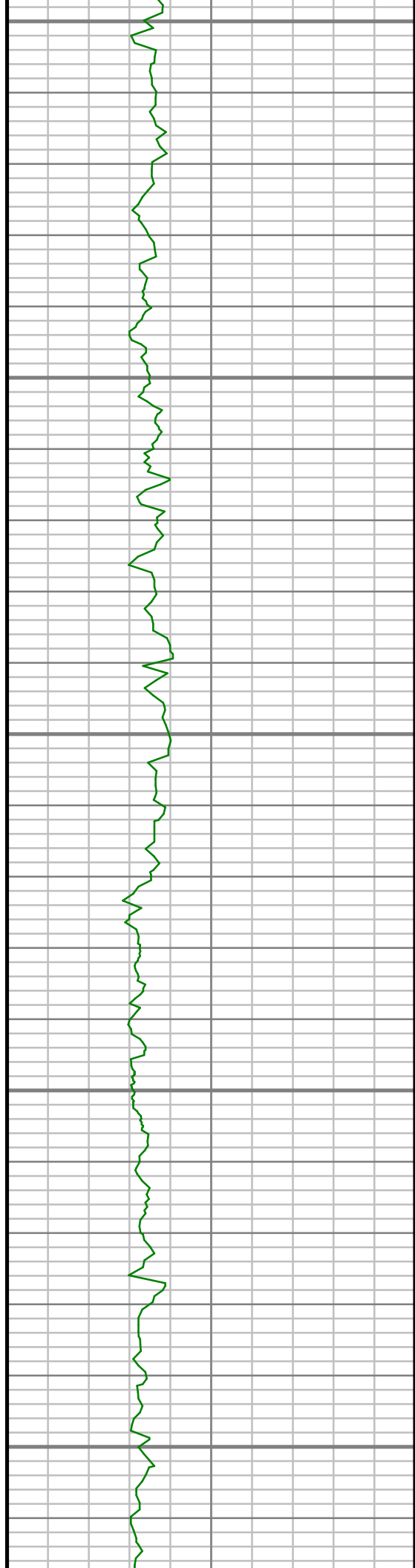
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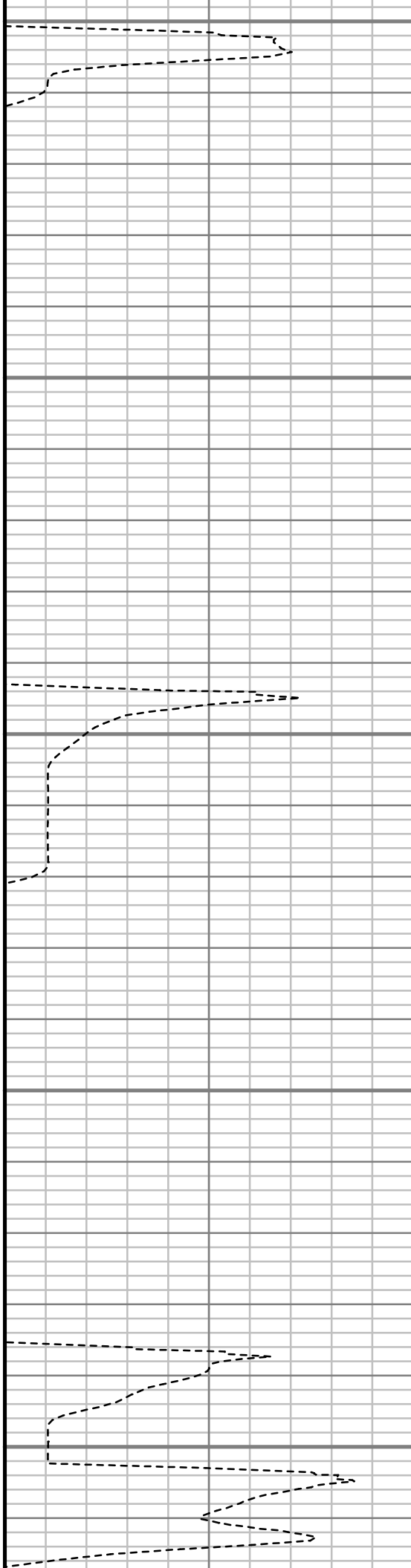
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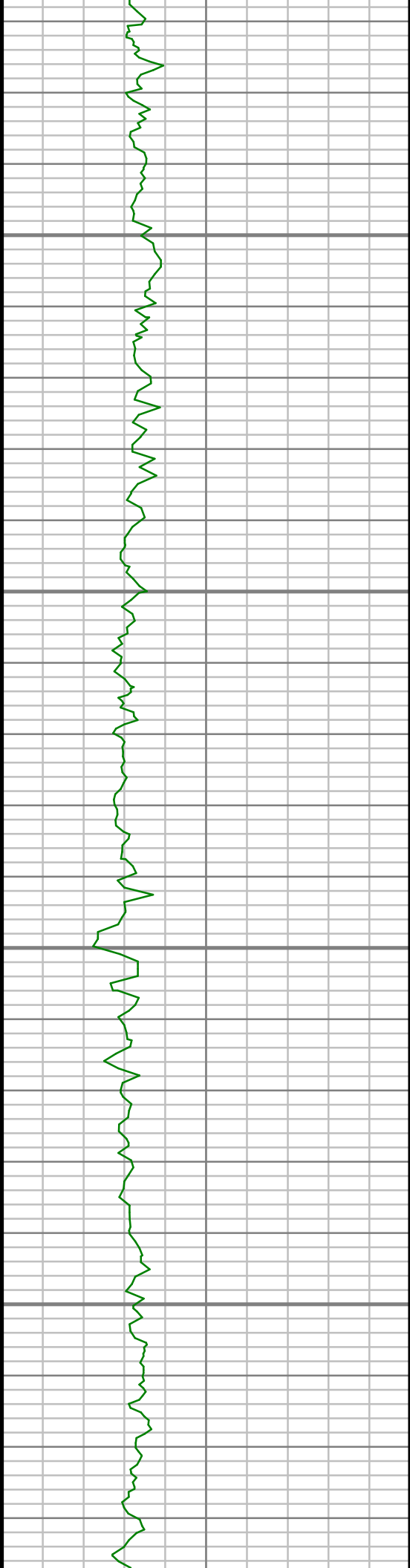


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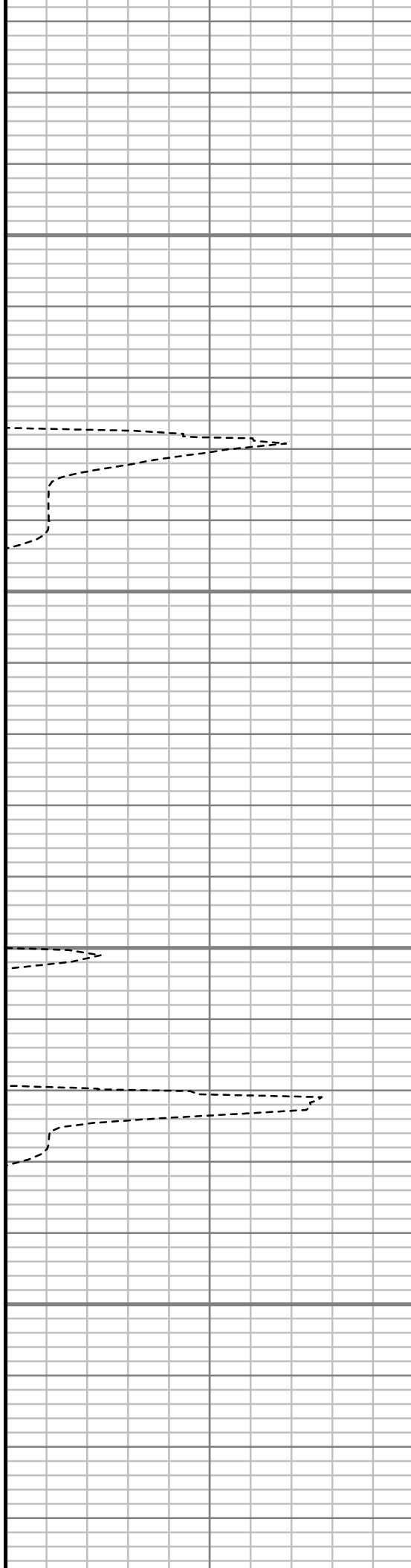


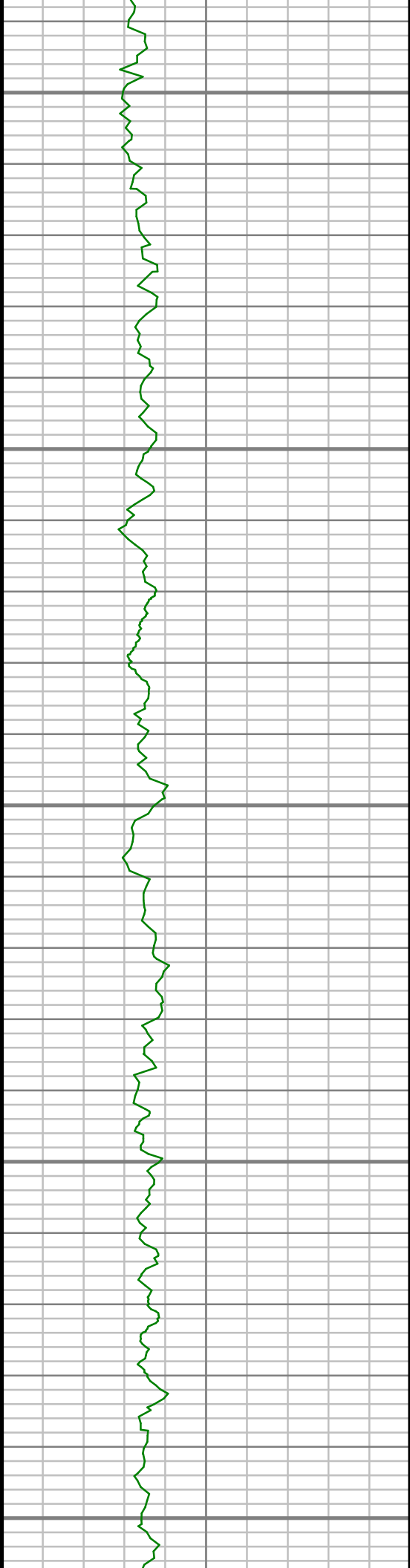
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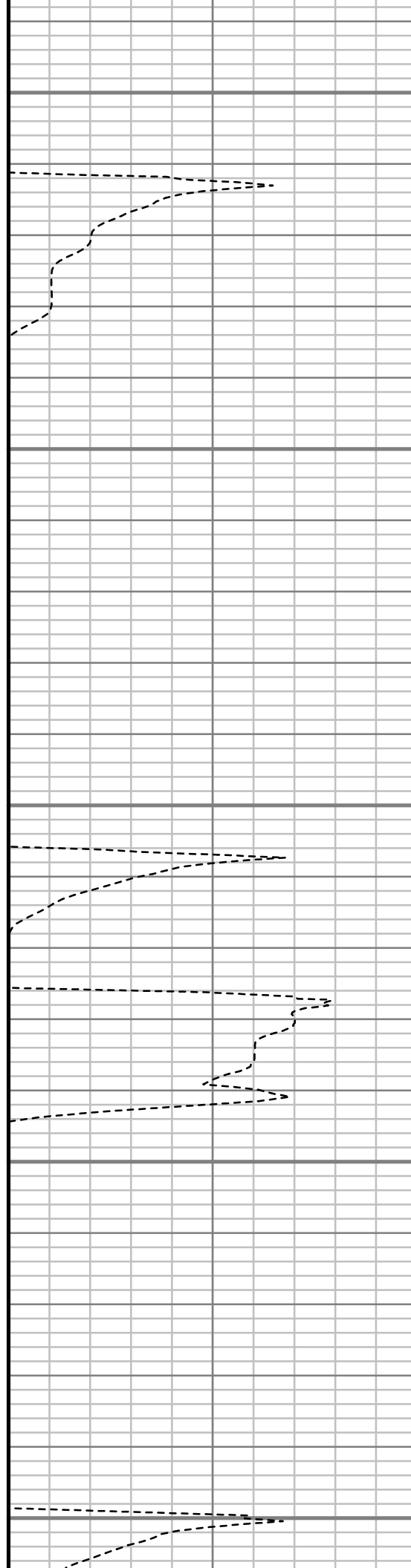
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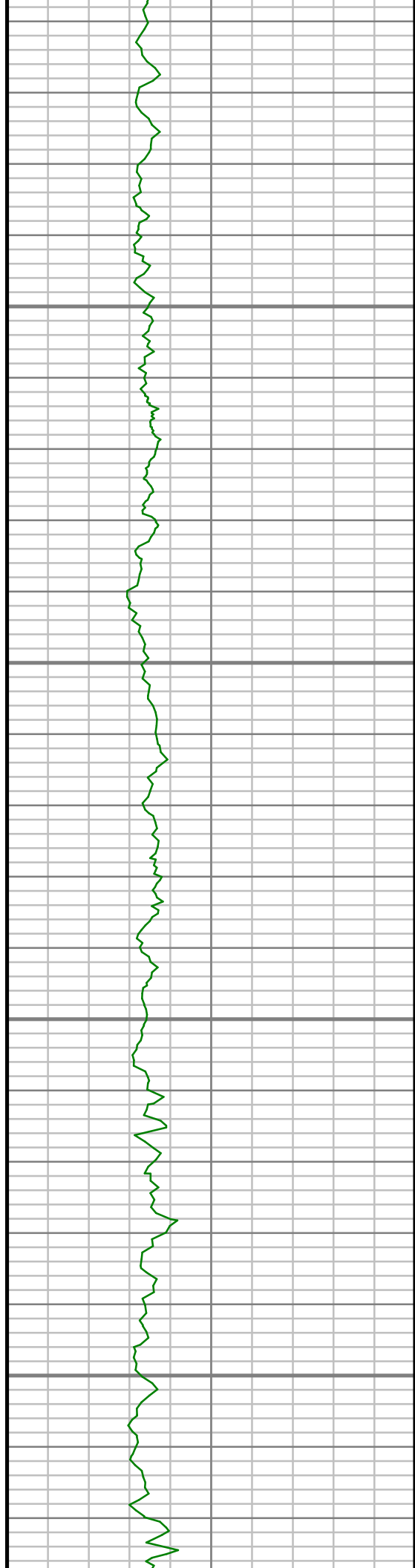
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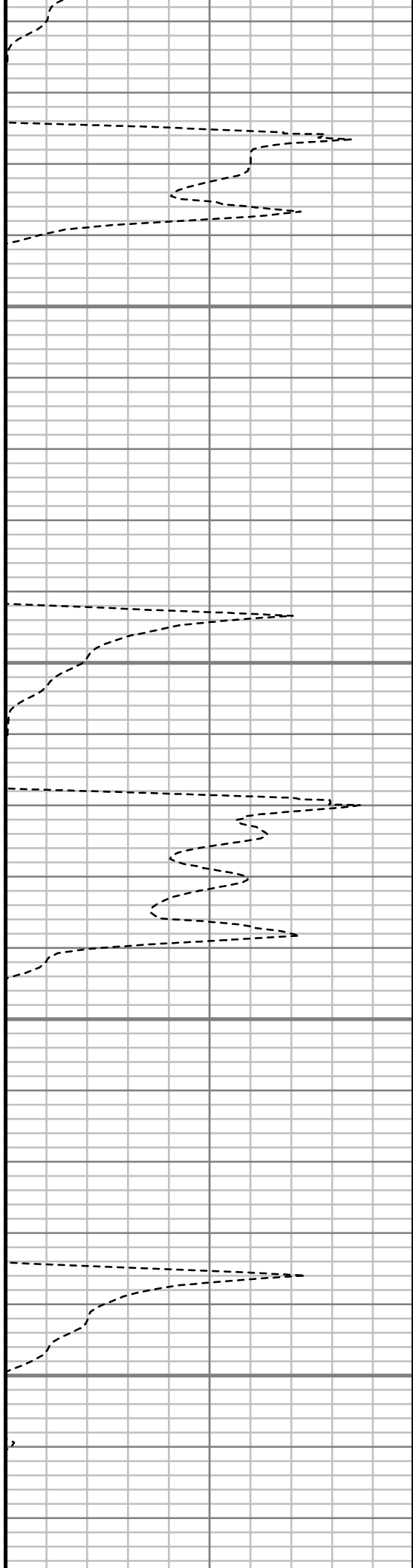


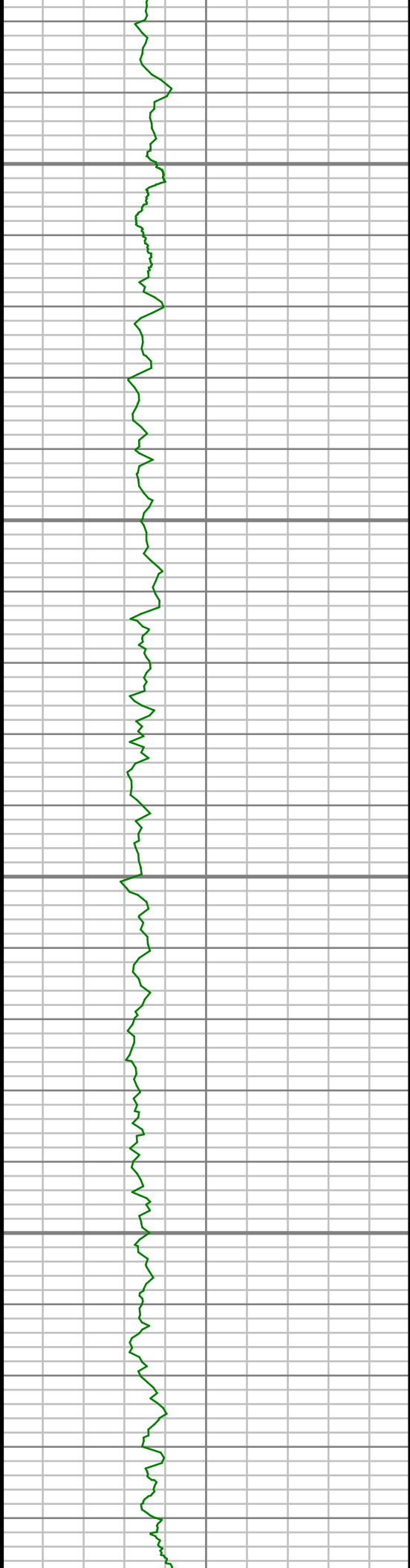
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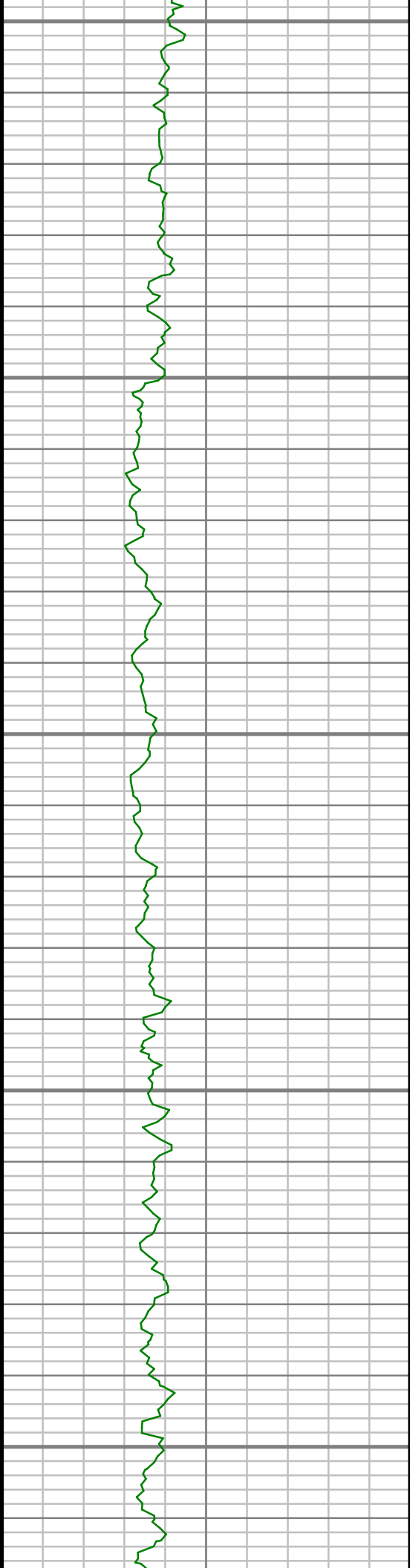
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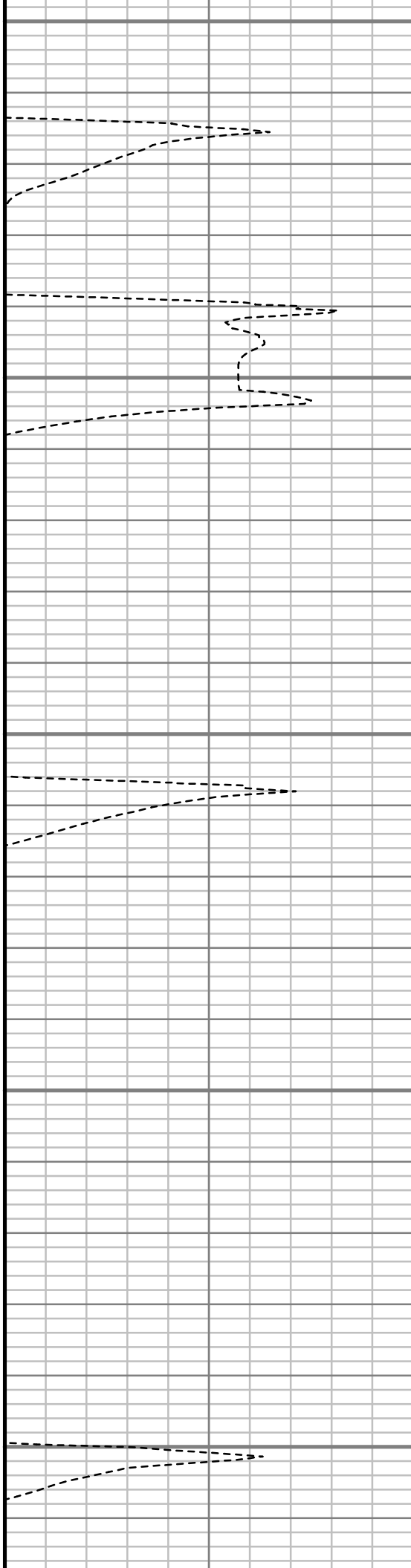
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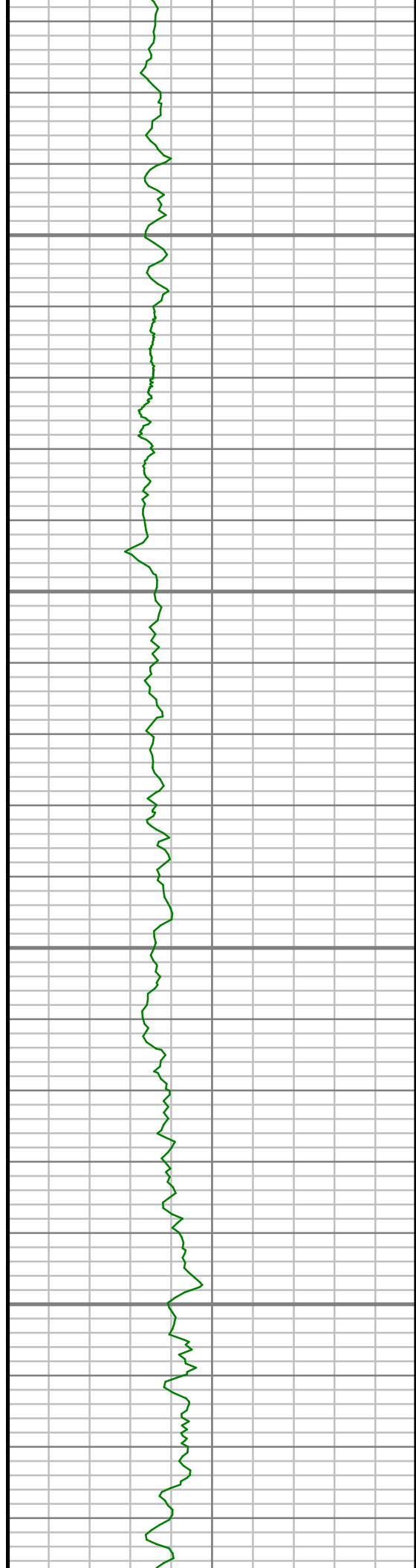


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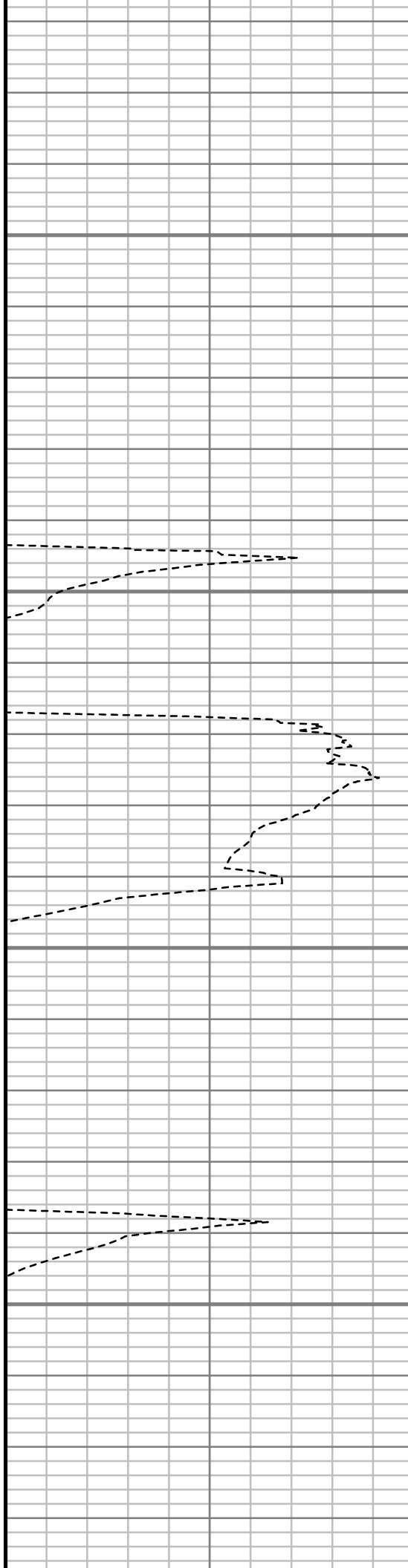


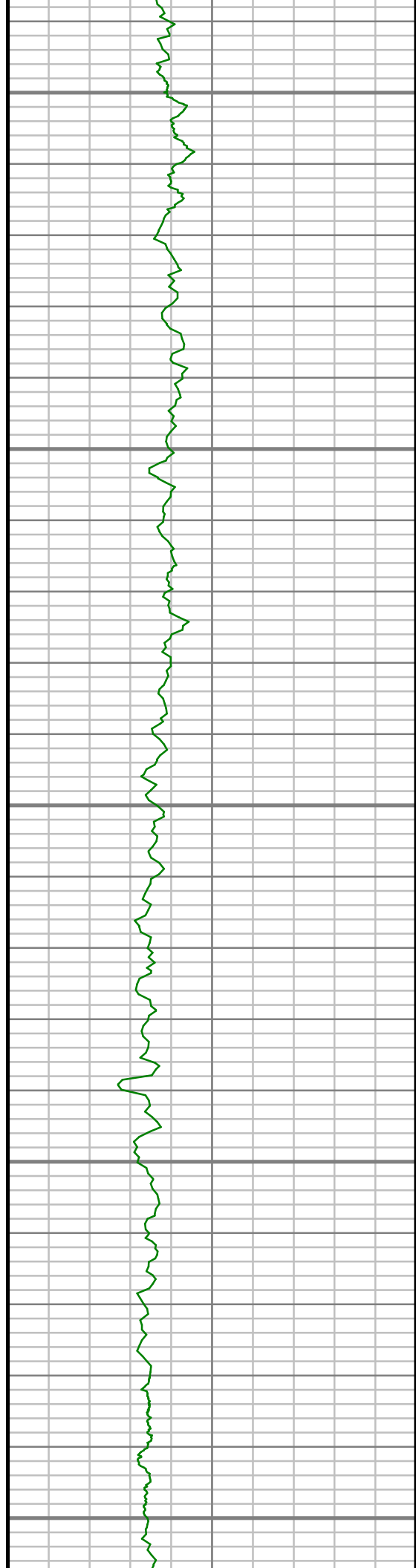
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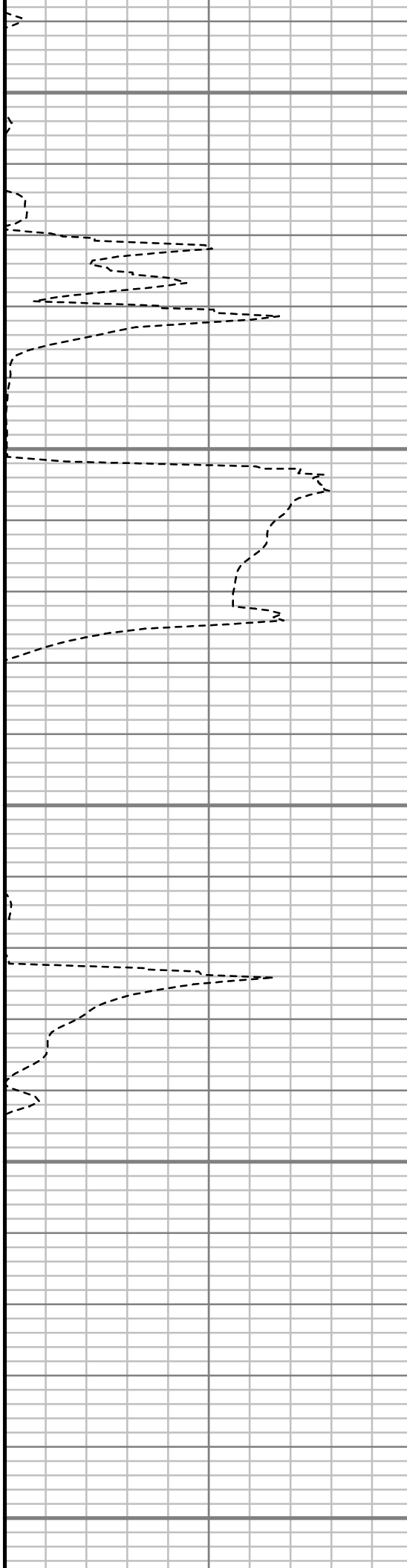
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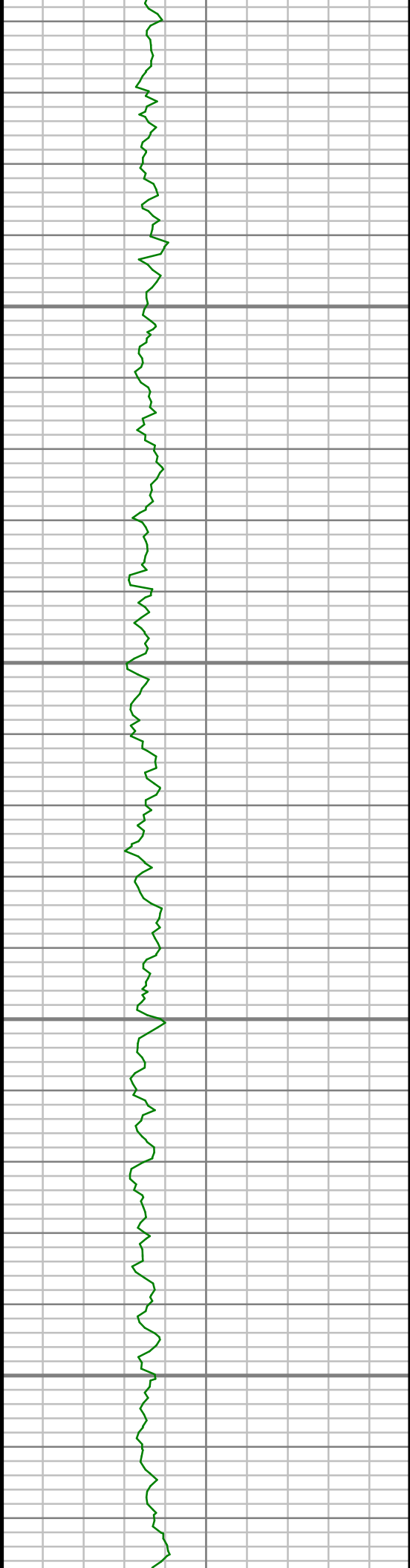
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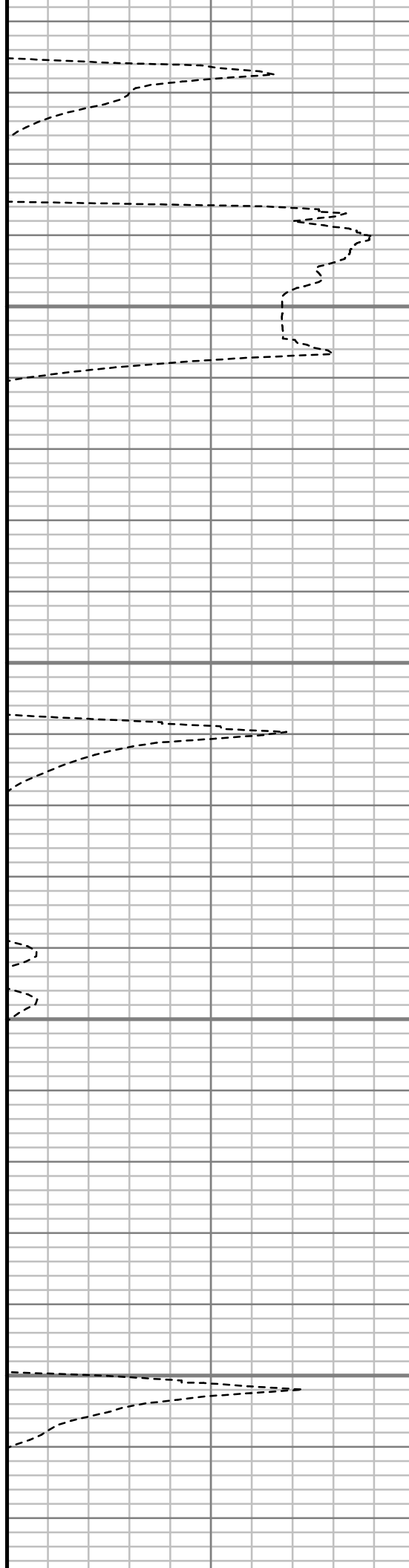


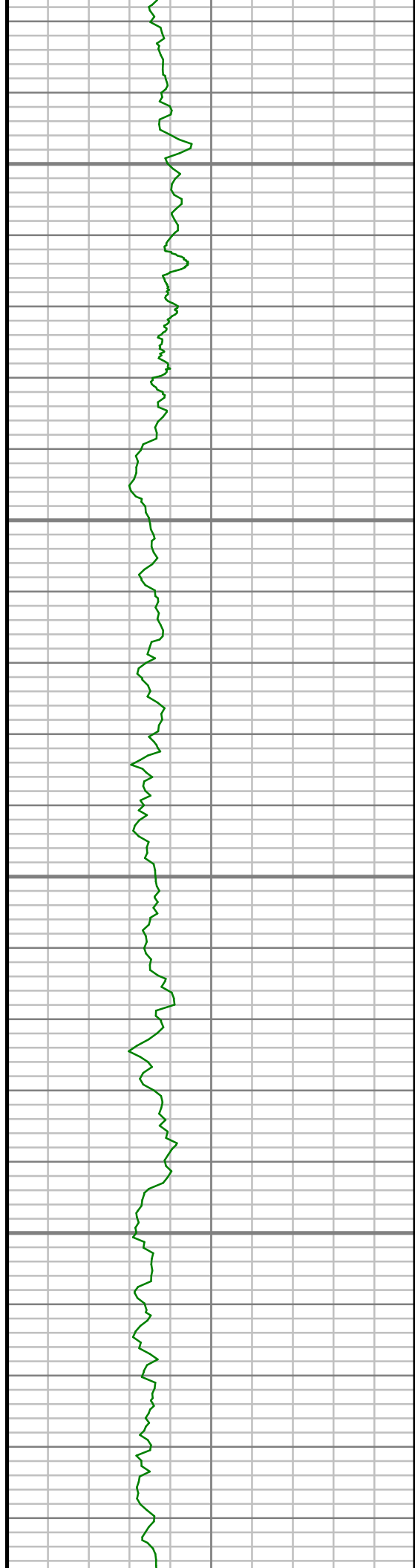
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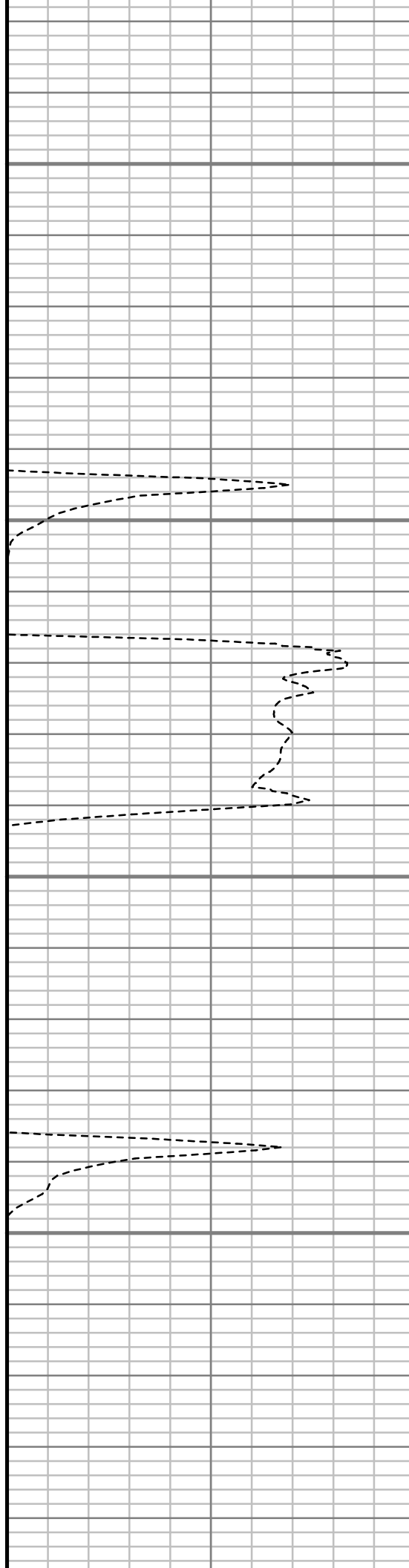


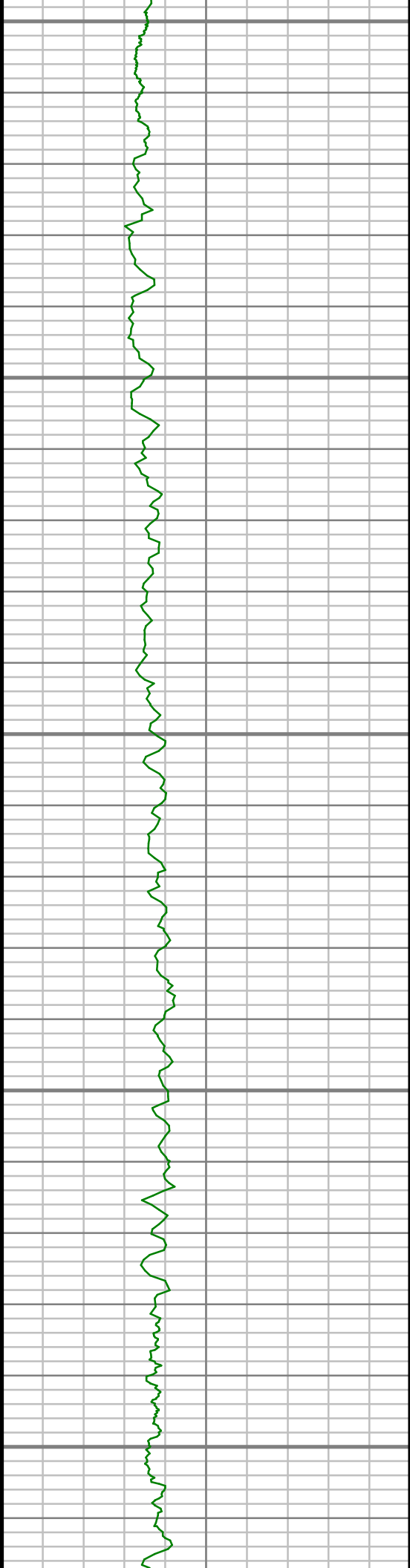
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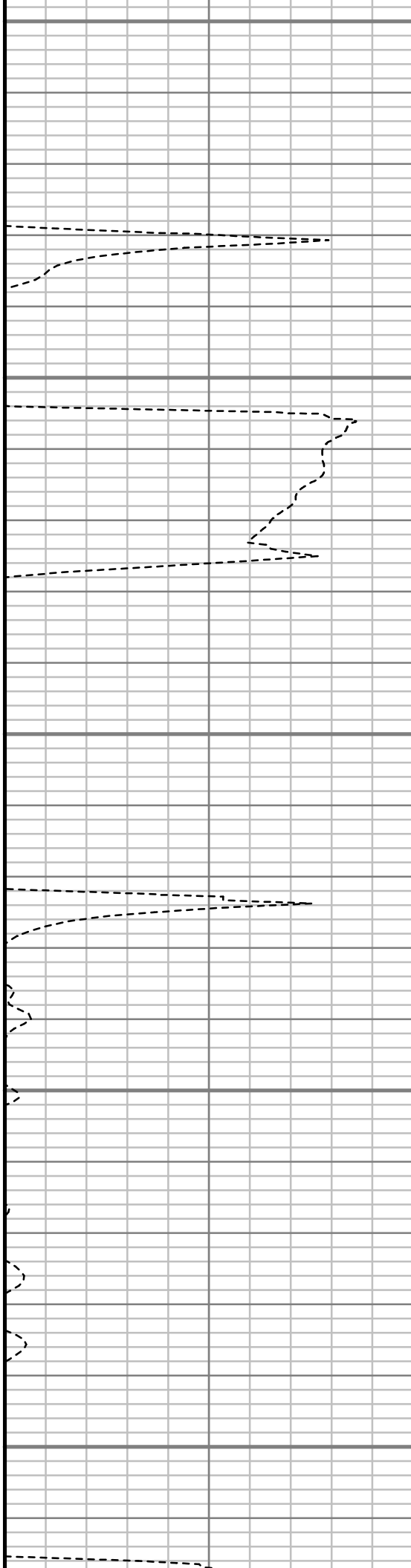
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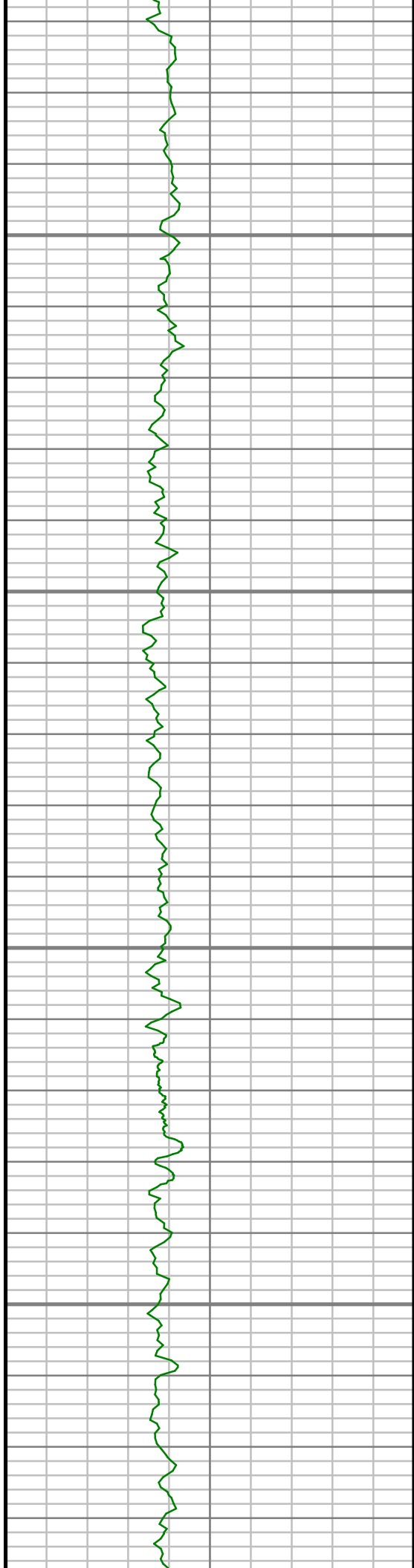


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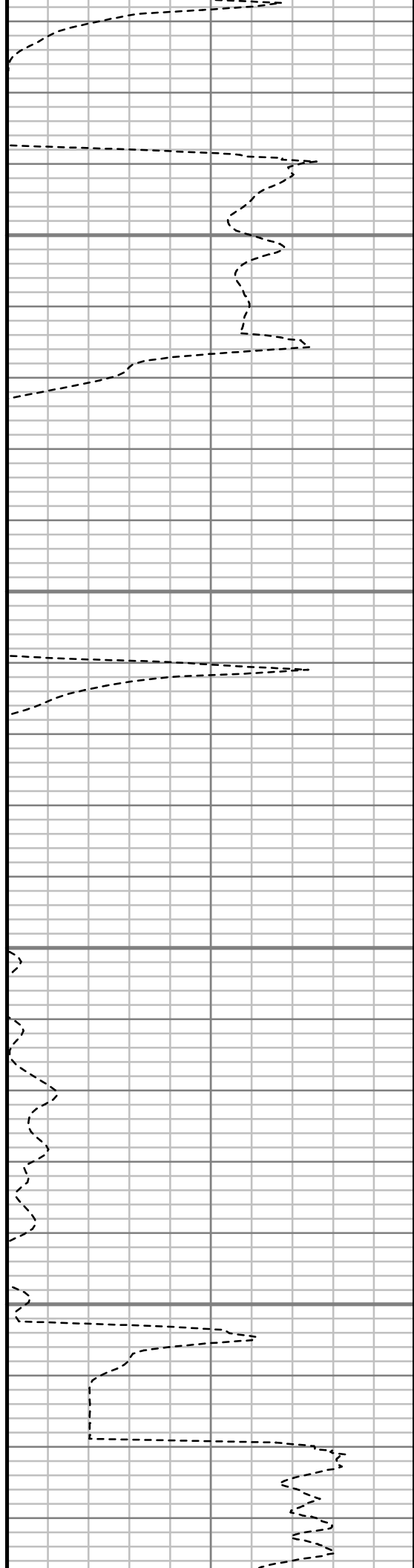


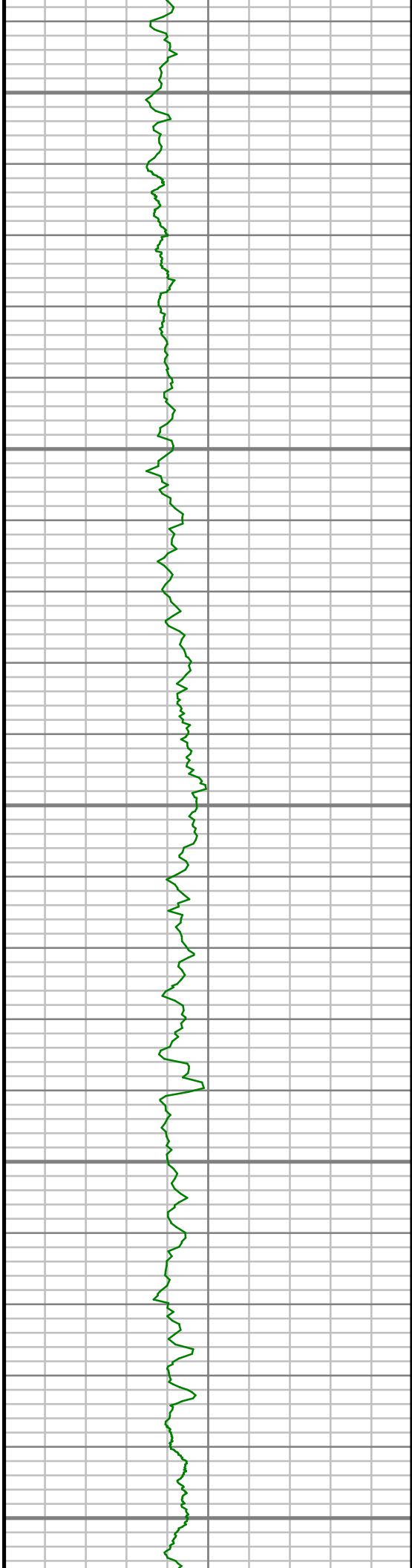
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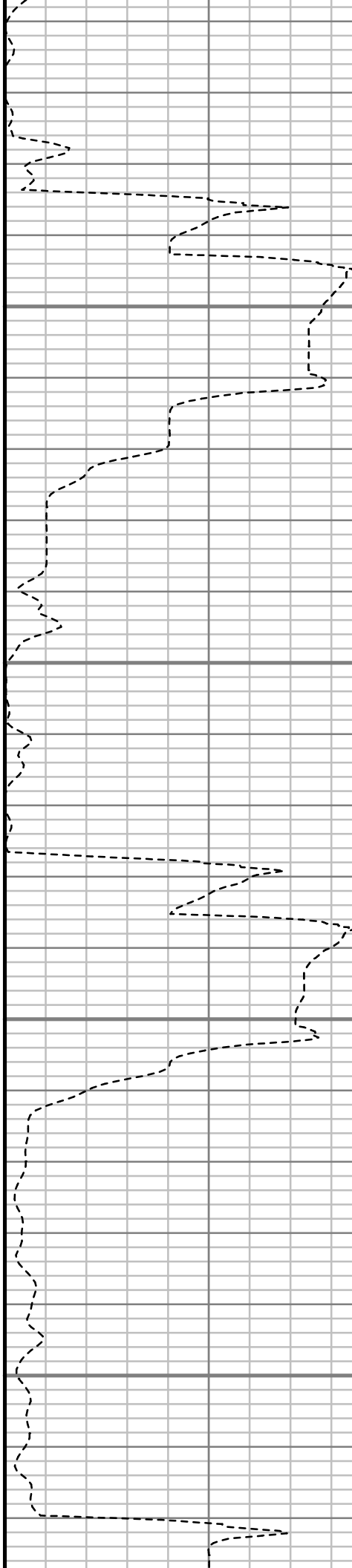


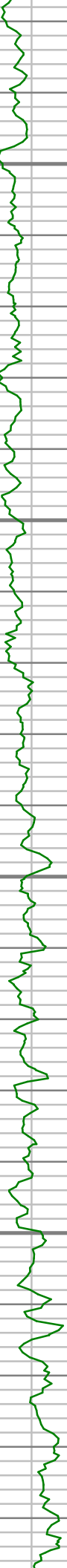
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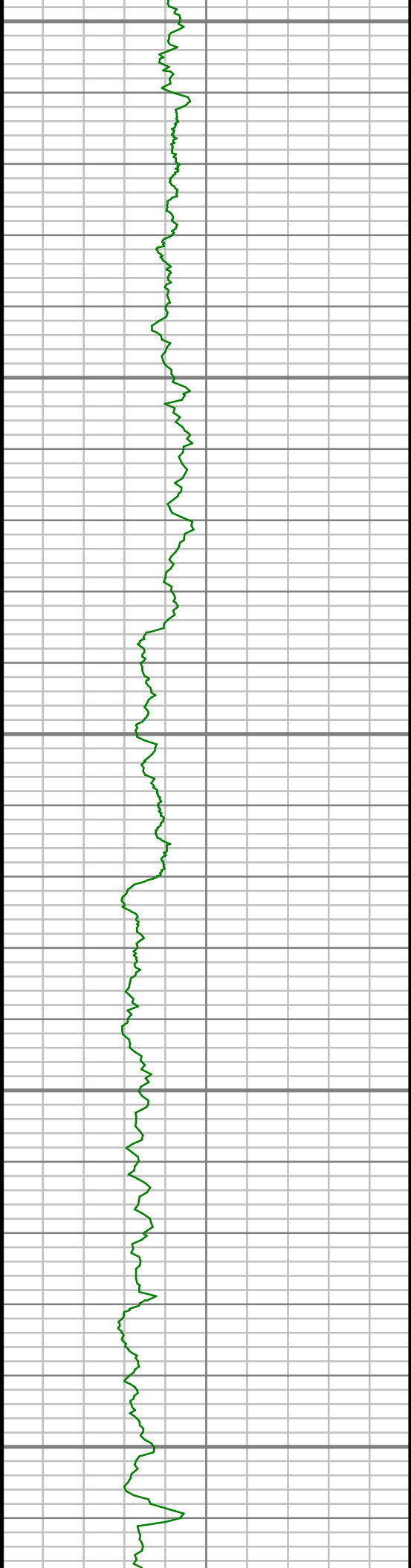
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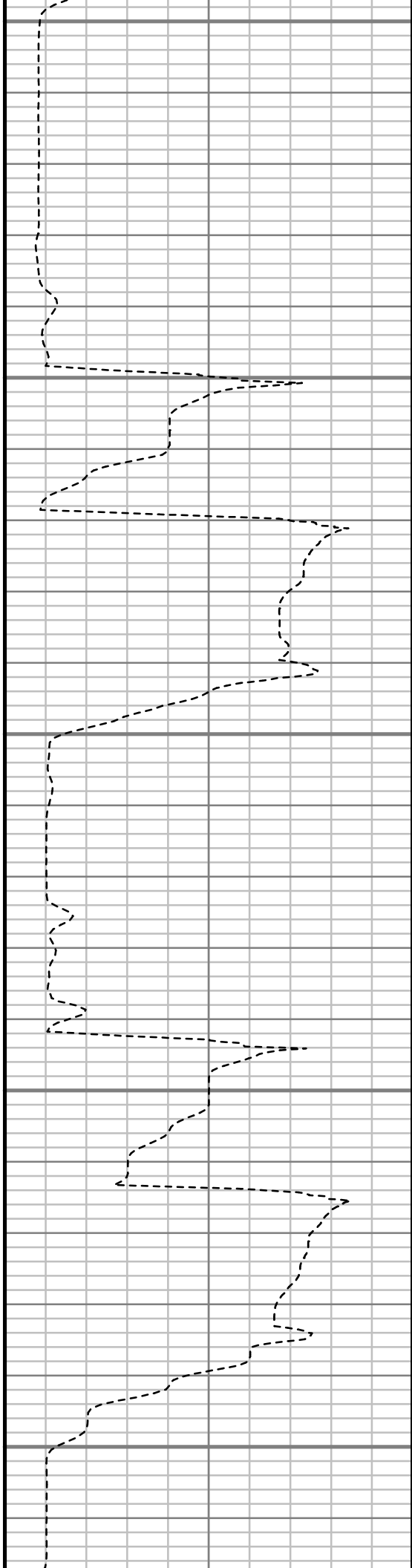
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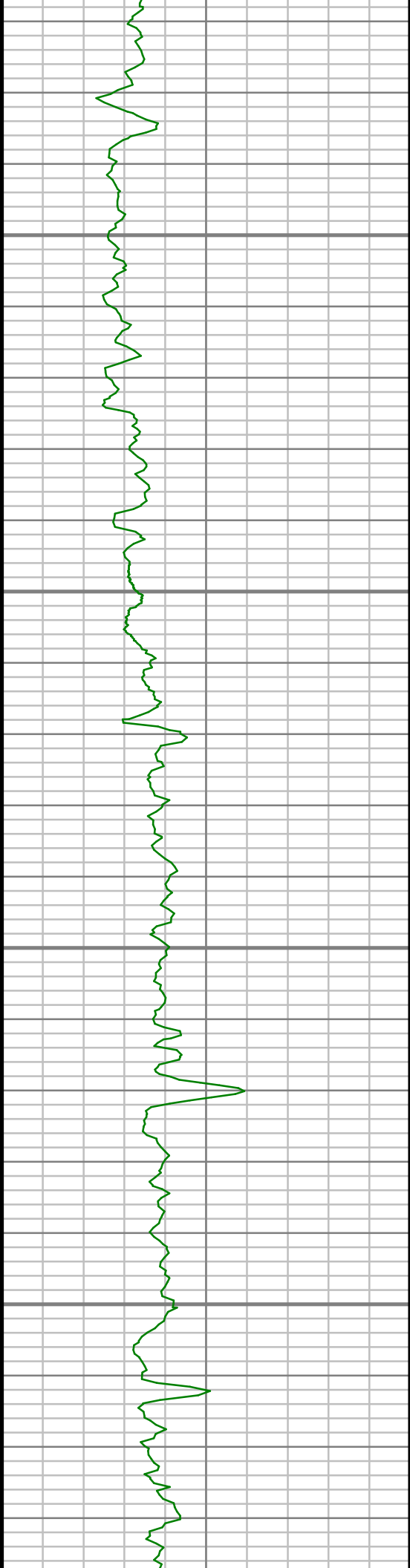
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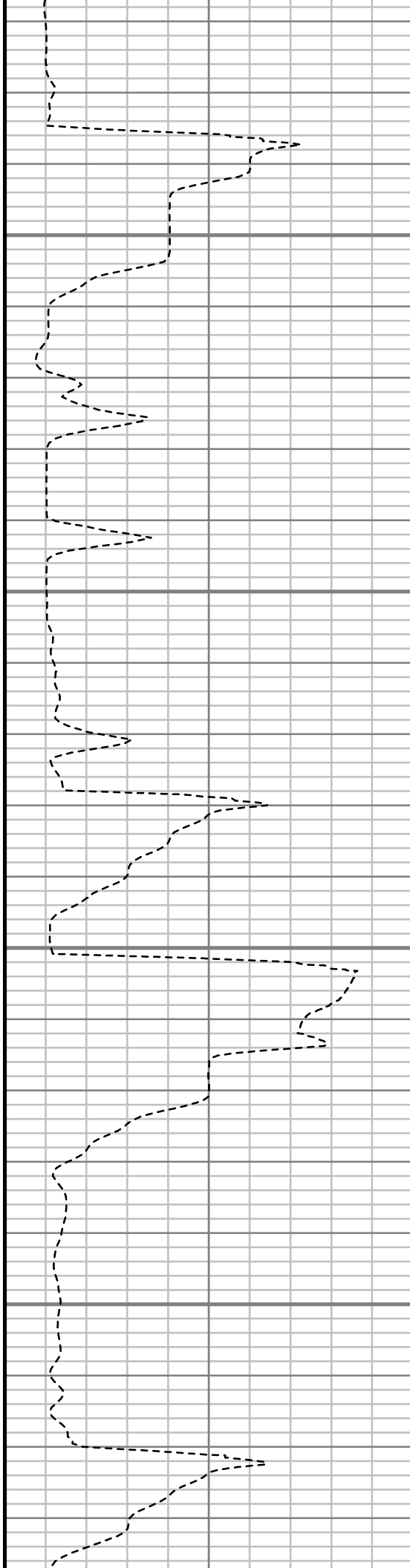


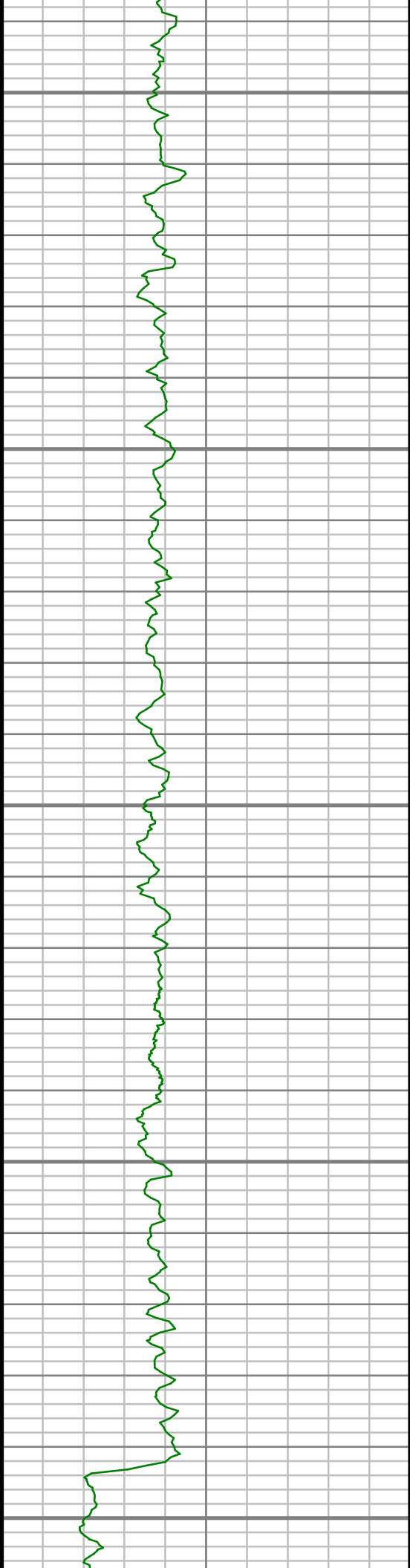
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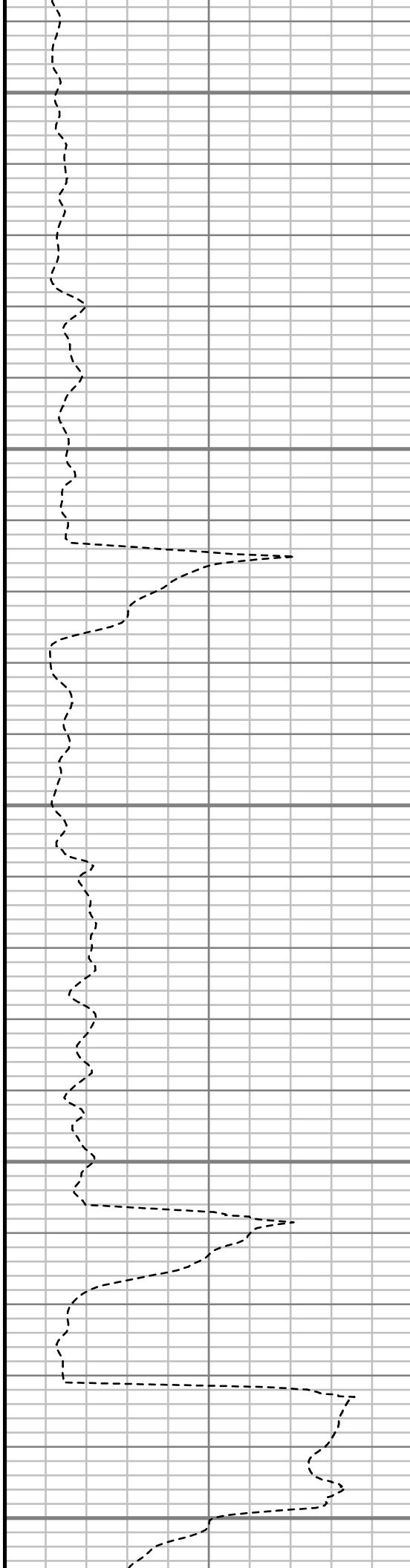
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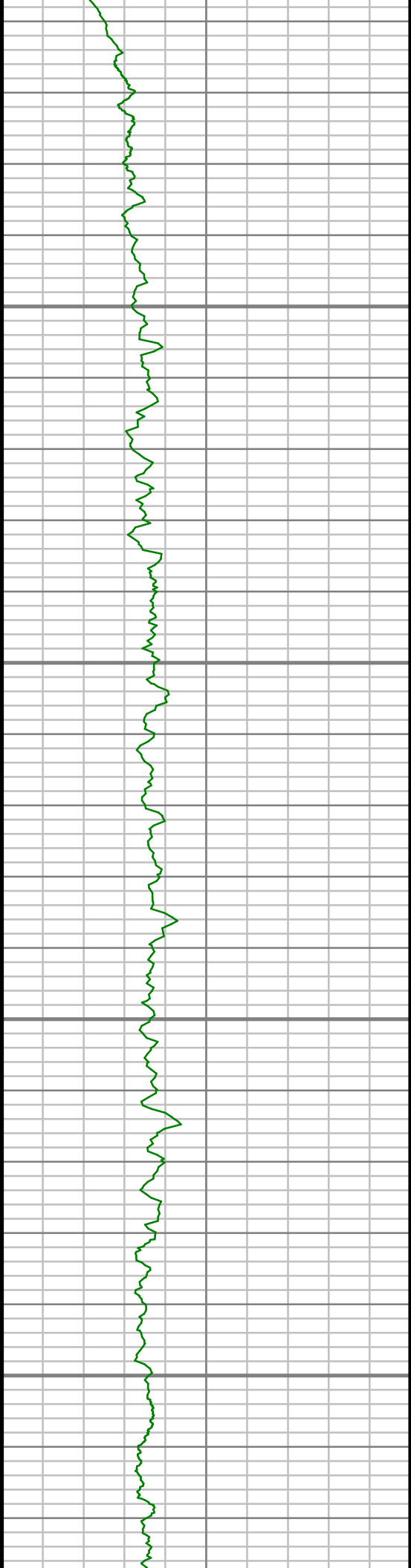
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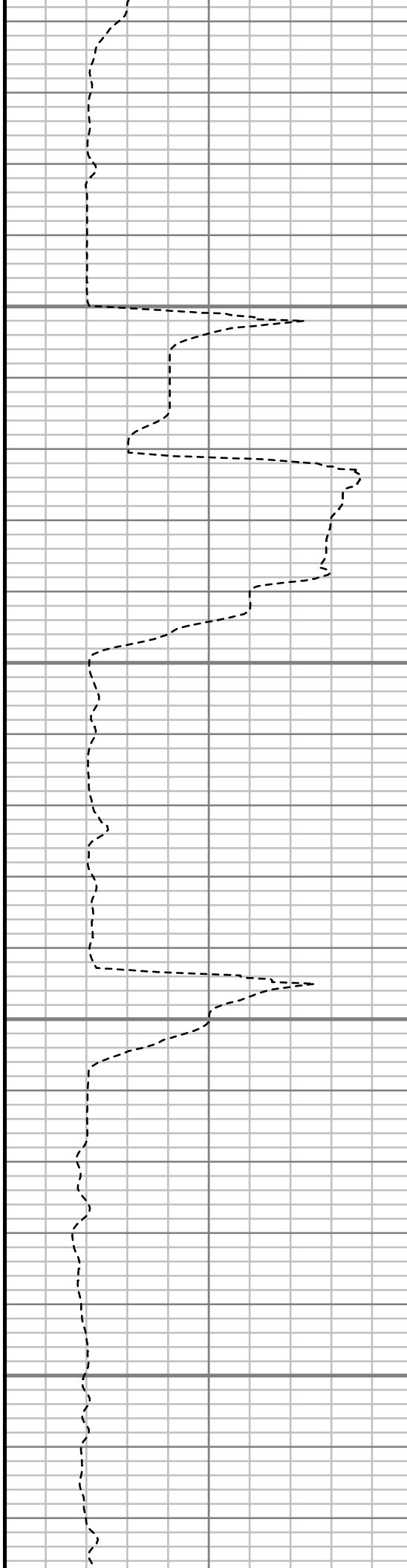


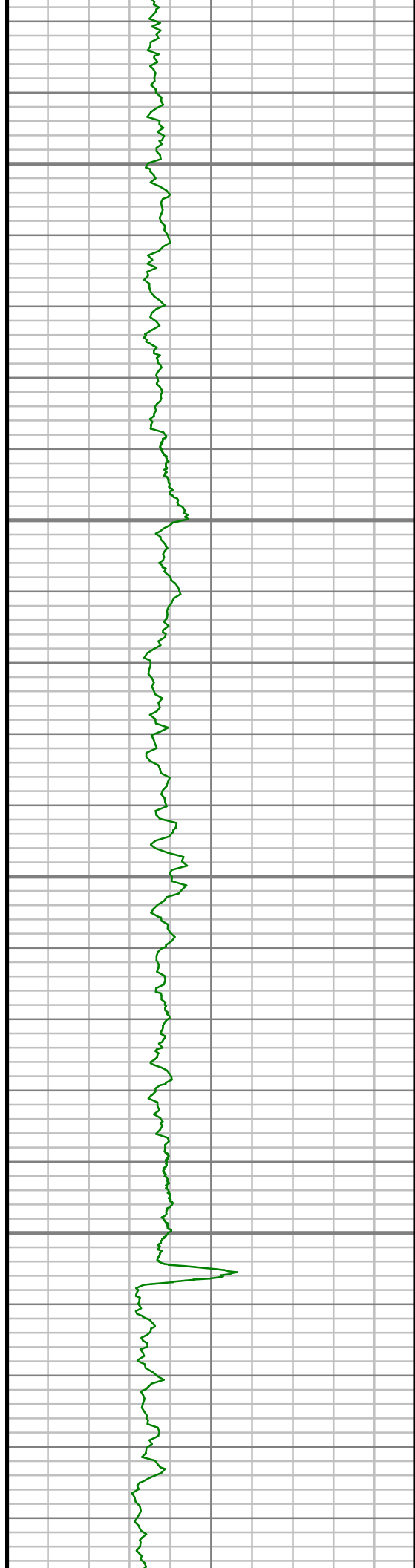
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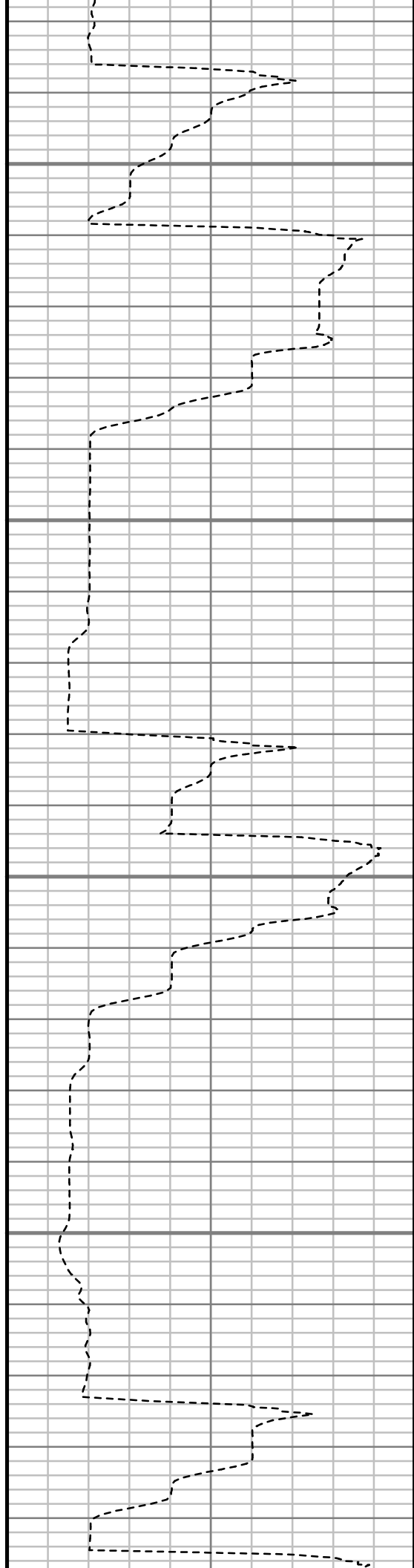


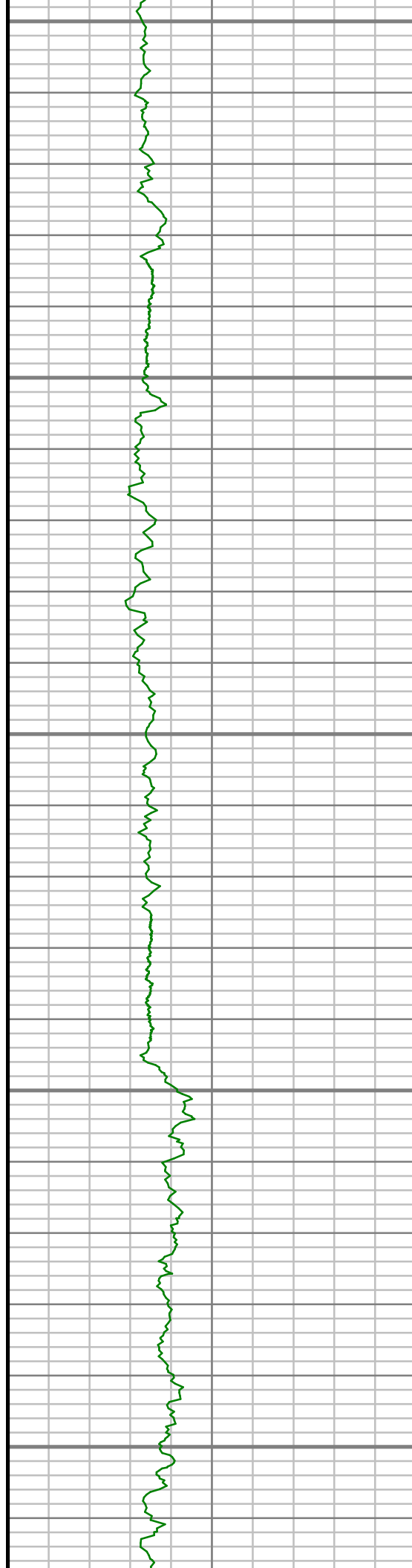
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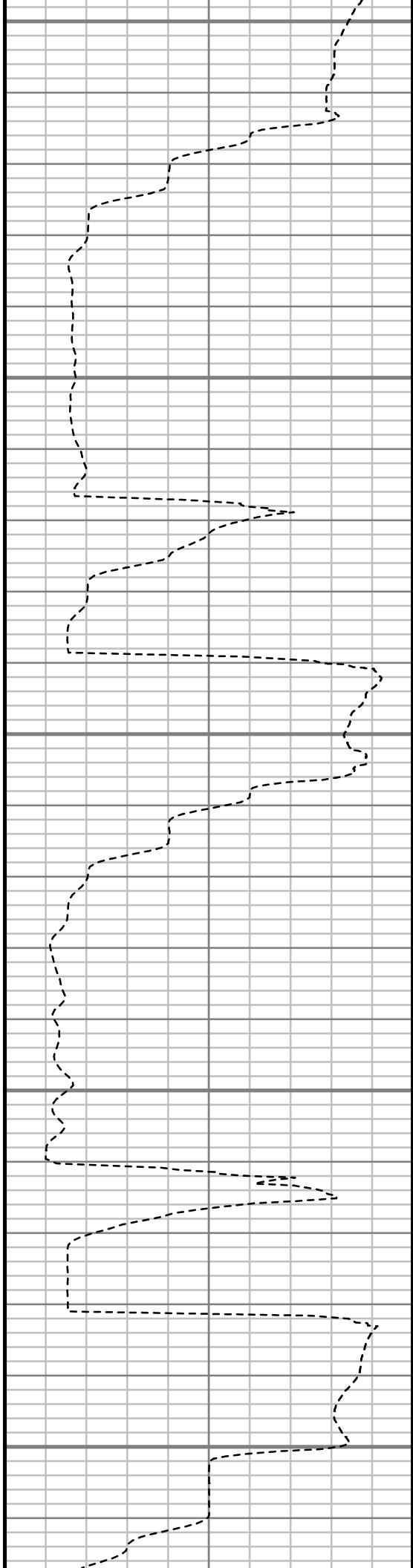
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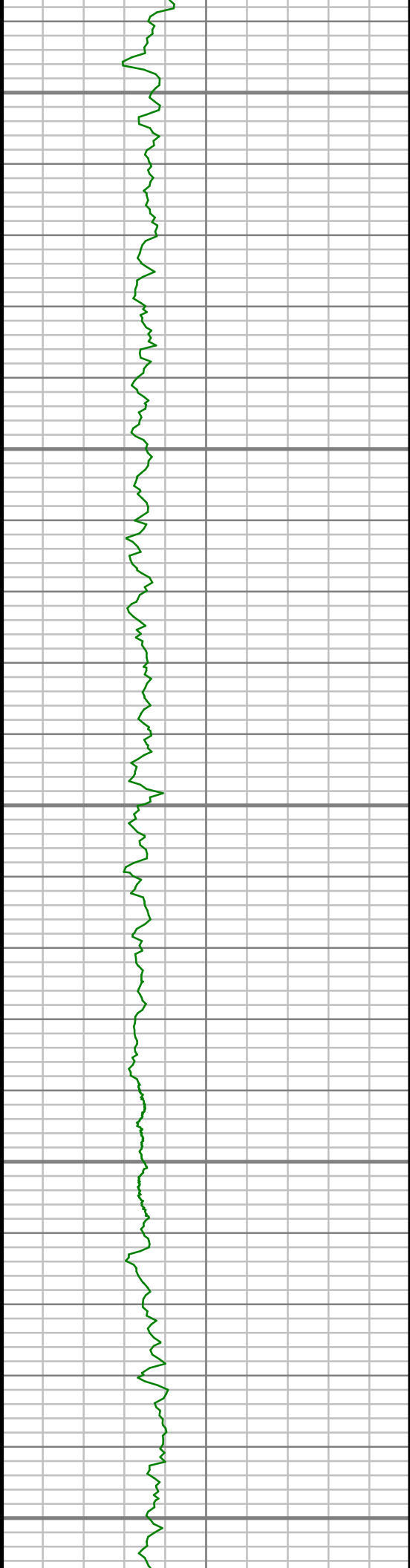
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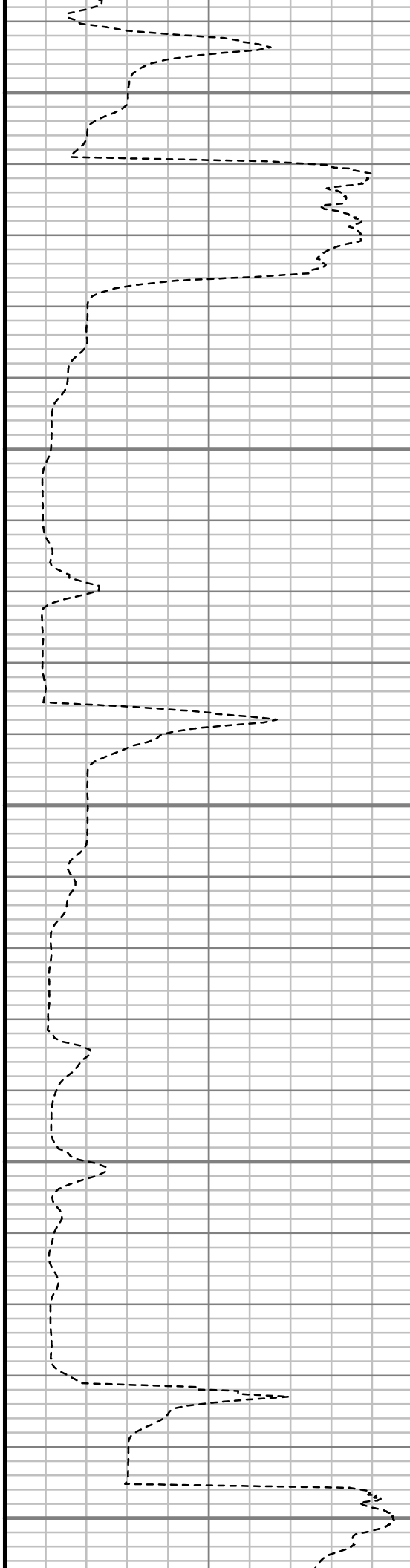
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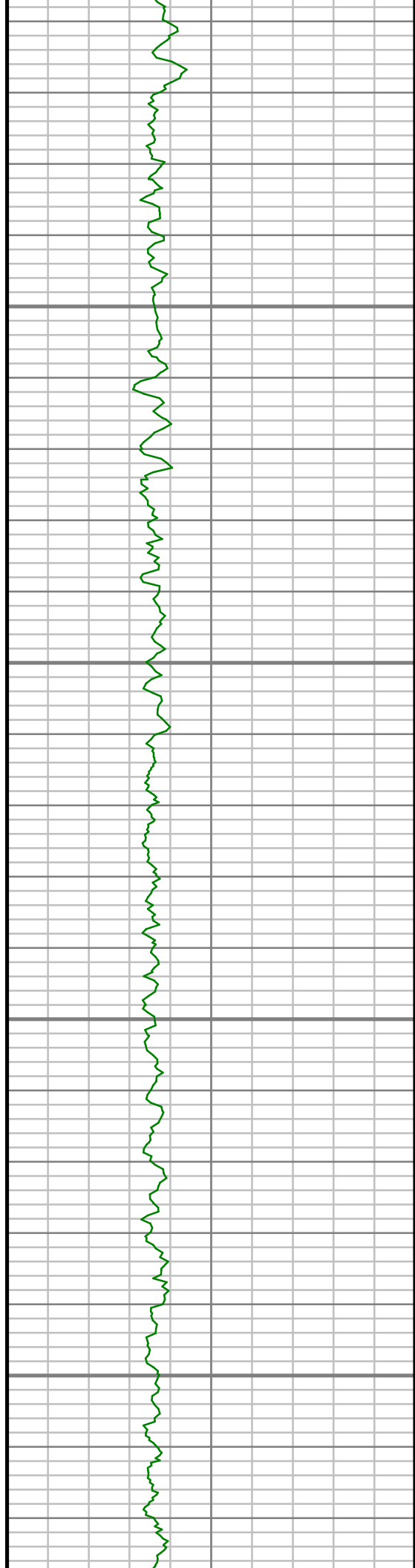
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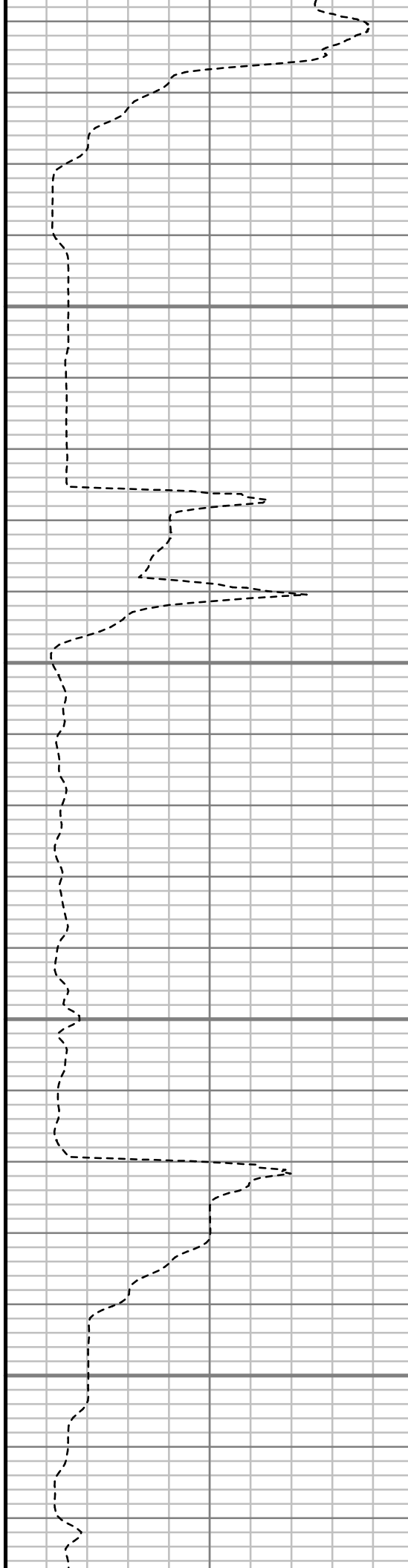


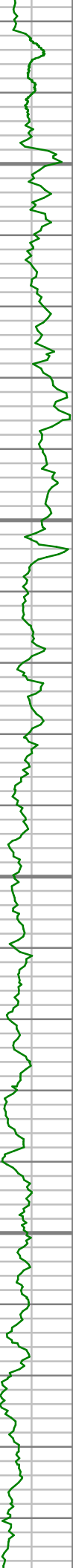
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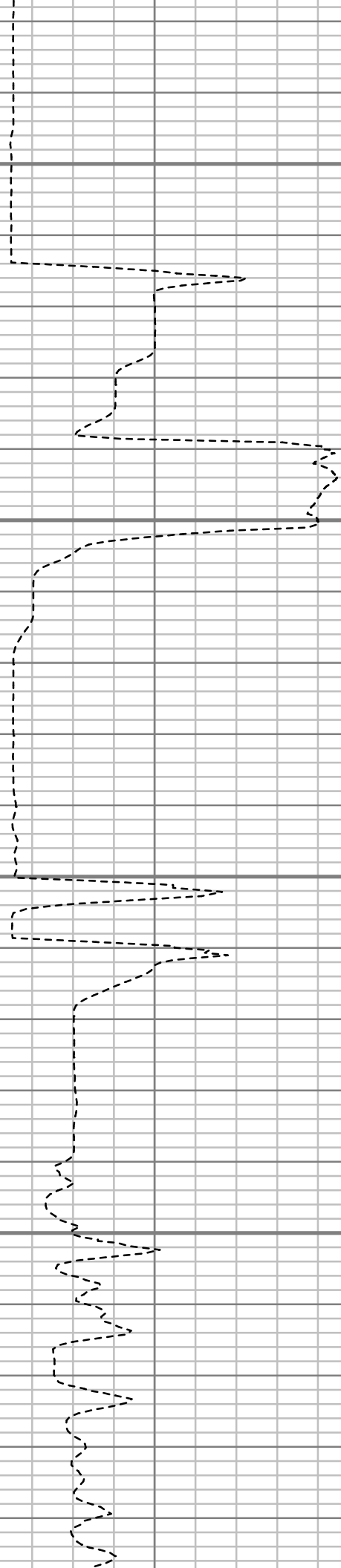


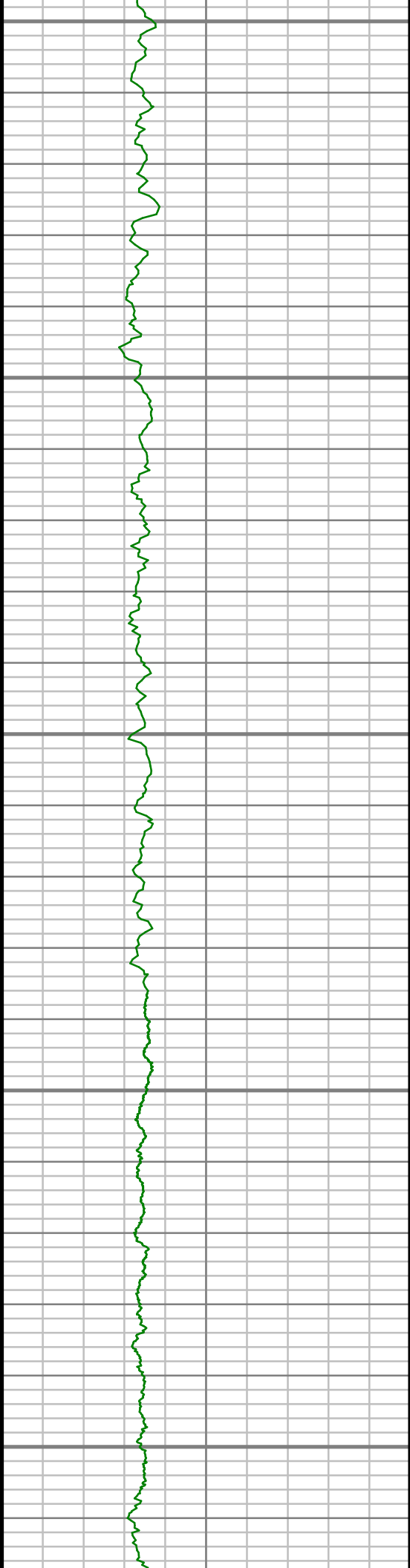
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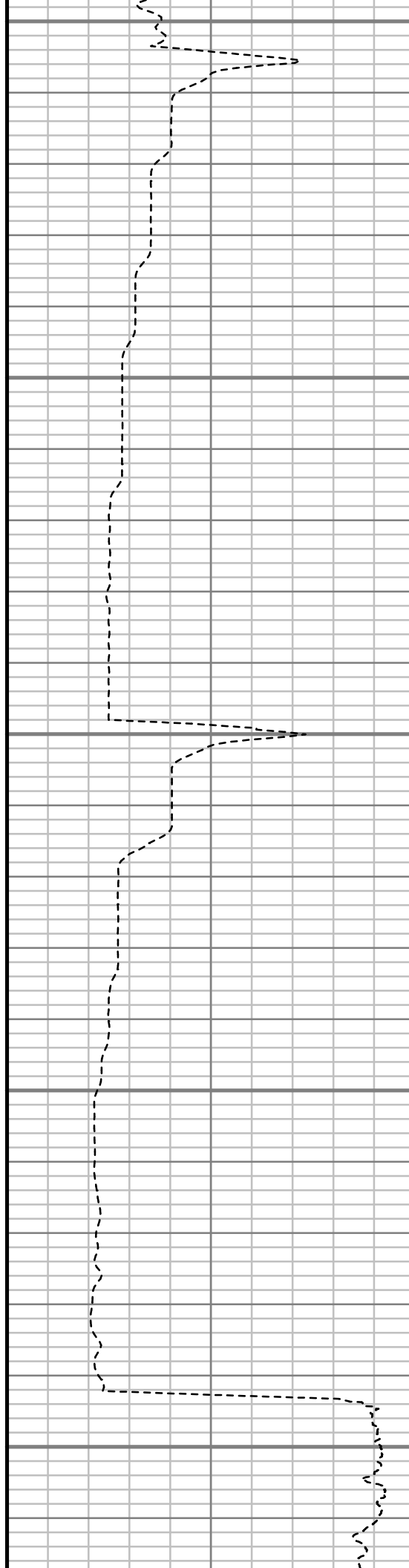
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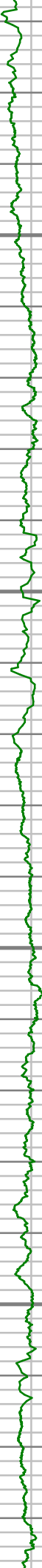
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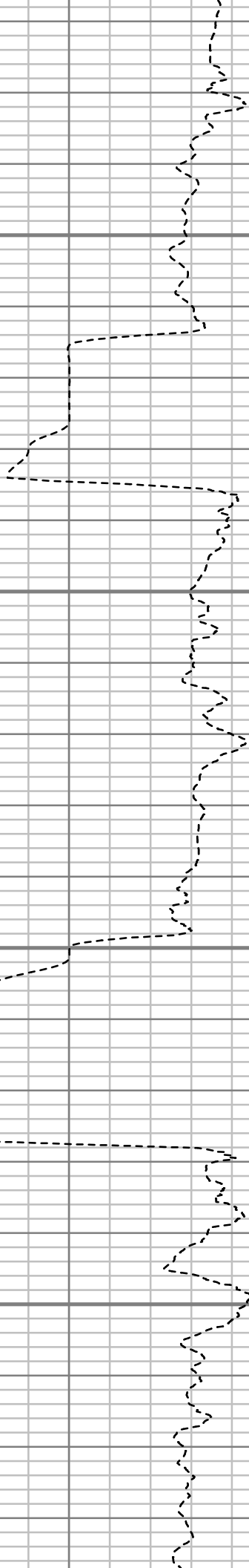


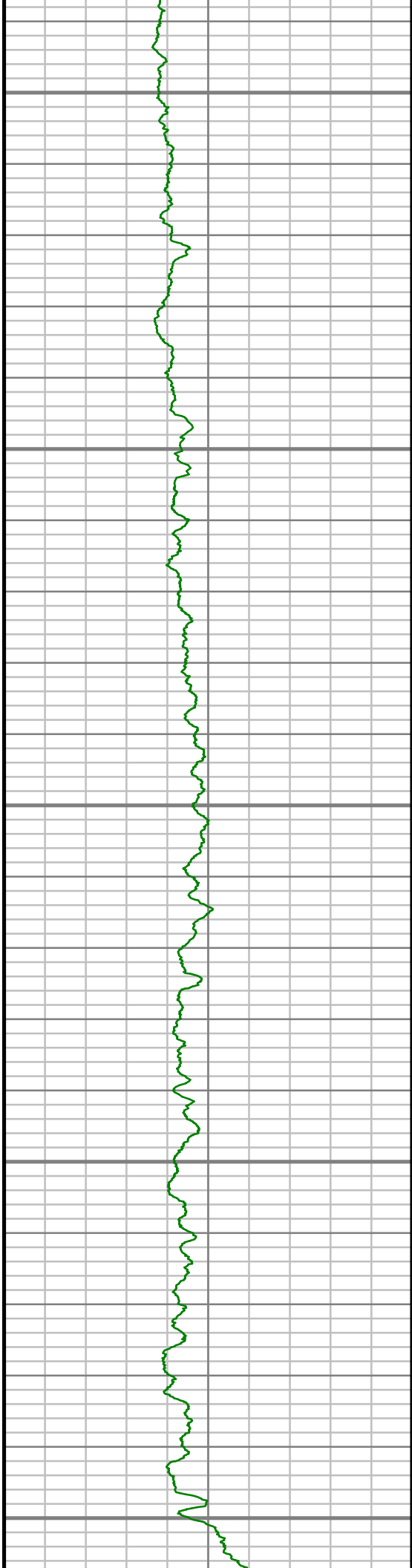
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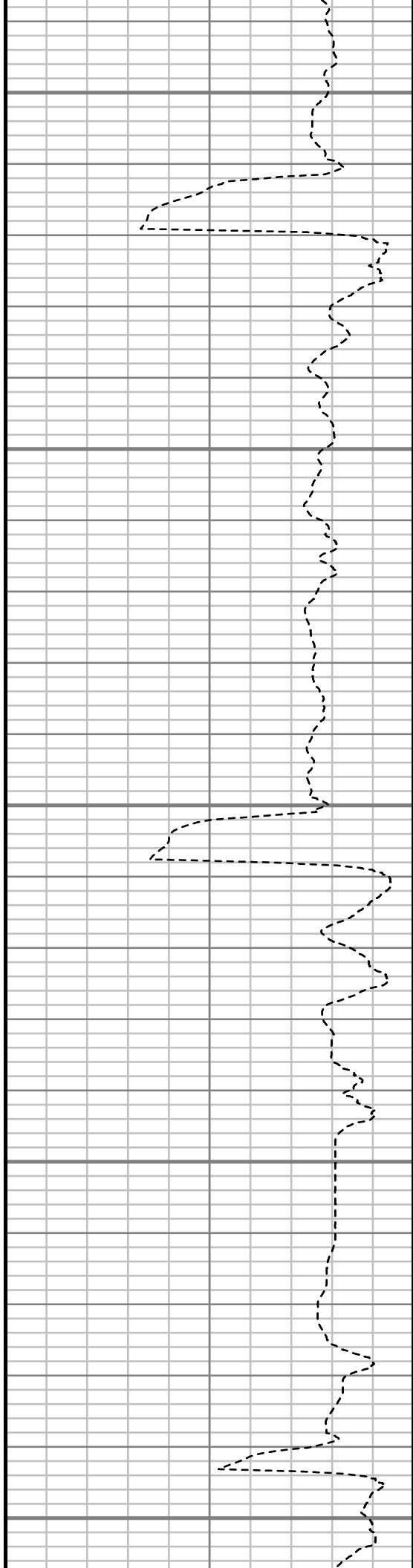
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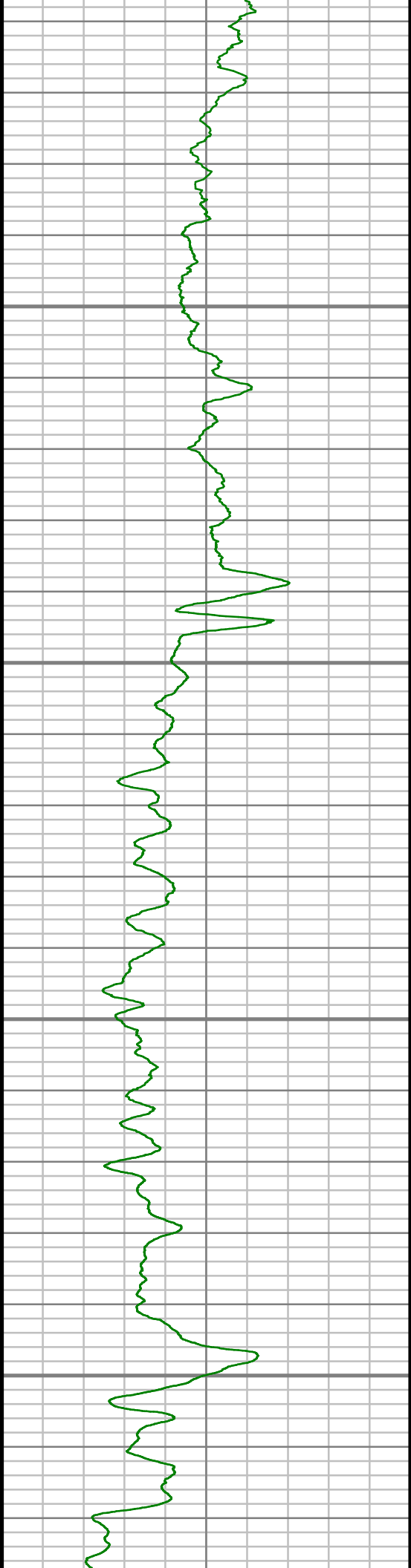
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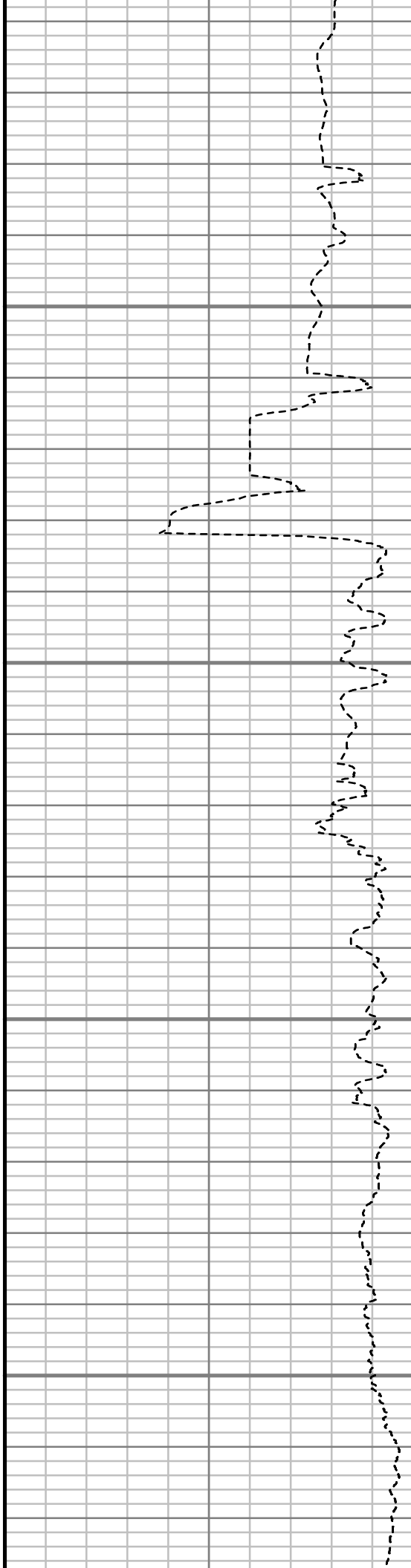


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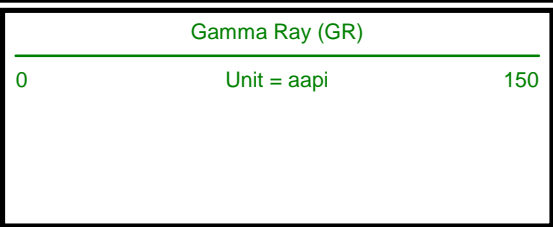
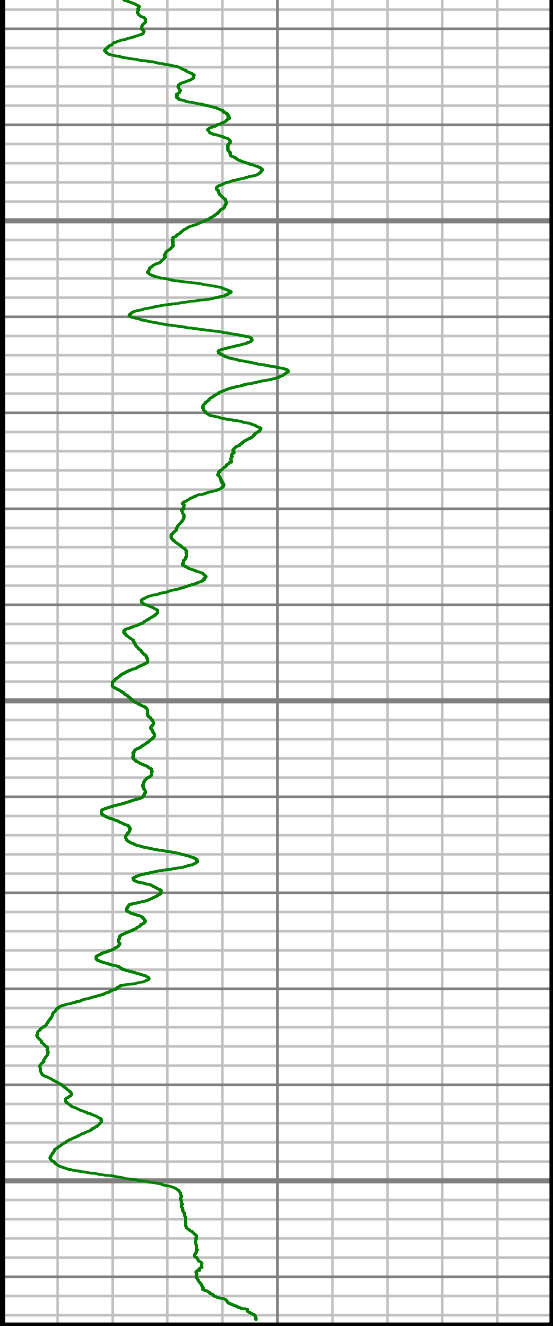
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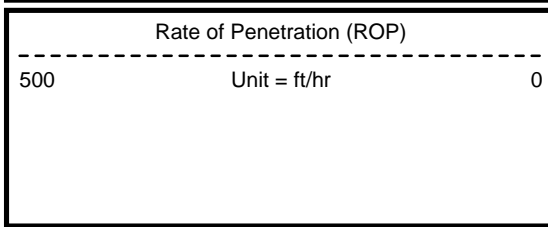
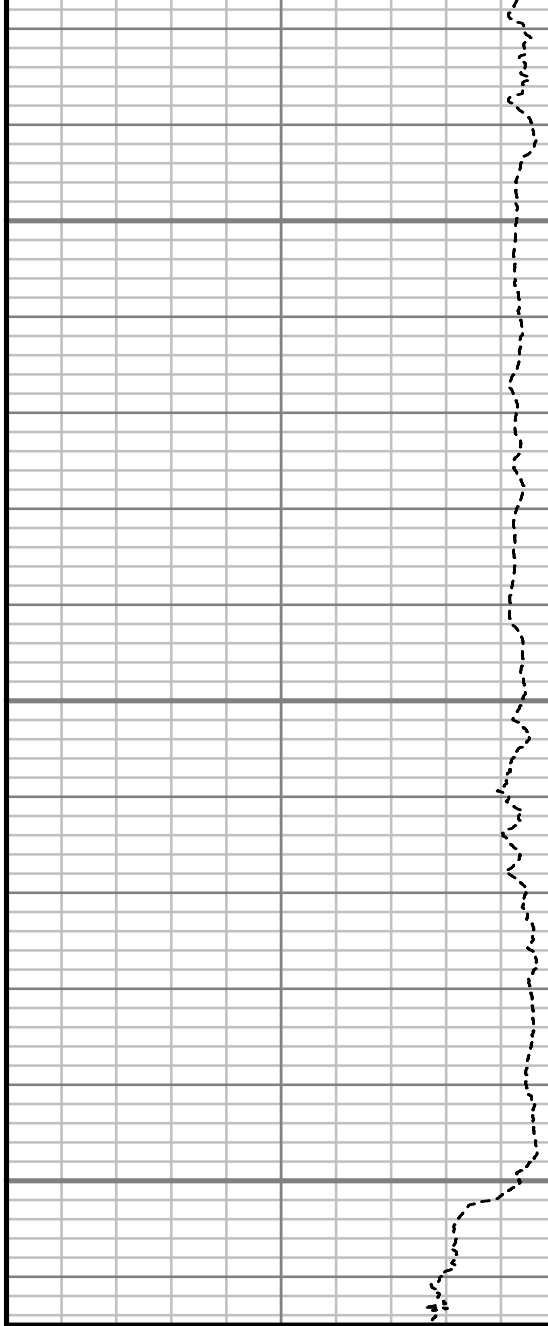


7450

7500

7550

TRUE VERTICAL DEPTH  
1:240 (ft)



Comments



## MWD Survey Report

Well Location	SPRAGUE
Well Name	SPRAGUE 3H-9H-N267 PRODUCTION
Survey Date	4/8/2015
Latitude	40°8'49.272"N
Longitude	104°53'54.168"W
Btotal	52468 nT
Dip	66.69 deg
Magnetic Declination	8.52 deg
North Reference	True North
Grid Correction	None
Depth Reference	RKB (28.50 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 0.00Azim (deg)
Operator(s)	J. GREGORY, J. PARISEE, M. SMITH

Well Notes

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
316.00	0.36	77.15	316.00	0.22	0.22	0.97	77.15	0.99	0.11
410.00	2.06	123.54	409.97	-0.65	-0.65	2.66	103.65	2.74	1.95
503.00	4.19	135.52	502.83	-4.00	-4.00	6.44	121.82	7.58	2.38
597.00	6.76	135.24	596.40	-10.37	-10.37	12.74	129.16	16.43	2.73
690.00	8.96	135.16	688.52	-19.40	-19.40	21.70	131.79	29.11	2.37
802.00	9.19	126.17	799.12	-30.86	-30.86	35.07	131.34	46.72	1.28
903.00	9.13	115.33	898.84	-39.05	-39.05	48.83	128.65	62.52	1.71
996.00	10.03	123.48	990.54	-46.68	-46.68	62.25	126.86	77.81	1.75
1090.00	9.48	123.83	1083.19	-55.50	-55.50	75.51	126.32	93.72	0.59
1183.00	8.94	125.75	1174.99	-63.99	-63.99	87.74	126.10	108.60	0.66
1276.00	10.47	122.36	1266.65	-72.74	-72.74	100.75	125.83	124.26	1.75
1370.00	10.60	122.71	1359.07	-81.98	-81.98	115.23	125.43	141.42	0.15
1464.00	10.24	119.88	1451.52	-90.81	-90.81	129.75	124.99	158.37	0.67
1558.00	9.05	114.67	1544.19	-98.06	-98.06	143.71	124.31	173.98	1.57
1654.00	10.09	114.44	1638.85	-104.69	-104.69	158.23	123.49	189.72	1.09
1748.00	9.82	116.04	1731.44	-111.62	-111.62	172.93	122.84	205.82	0.41
1843.00	10.54	117.85	1824.94	-119.24	-119.24	187.89	122.40	222.54	0.83
1937.00	10.45	117.99	1917.37	-127.26	-127.26	203.03	122.08	239.61	0.10

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
2032.00	11.11	120.04	2010.69	-135.89	-135.89	218.57	121.87	257.36	0.80
2126.00	10.58	124.70	2103.01	-145.34	-145.34	233.51	121.90	275.04	1.09
2221.00	11.13	119.98	2196.31	-154.89	-154.89	248.62	121.92	292.92	1.10
2316.00	11.07	119.60	2289.54	-163.97	-163.97	264.49	121.80	311.19	0.10
2410.00	10.27	117.59	2381.91	-172.31	-172.31	279.76	121.63	328.57	0.94
2505.00	10.02	115.45	2475.43	-179.78	-179.78	294.73	121.38	345.23	0.48
2601.00	9.97	119.26	2569.97	-187.43	-187.43	309.52	121.20	361.84	0.69
2695.00	10.61	132.13	2662.47	-197.21	-197.21	323.03	121.40	378.48	2.53
2789.00	11.02	131.09	2754.80	-208.92	-208.92	336.22	121.86	395.85	0.48
2885.00	12.00	127.65	2848.87	-221.05	-221.05	351.04	122.20	414.84	1.25
2979.00	11.70	126.33	2940.87	-232.66	-232.66	366.45	122.41	434.07	0.43
3073.00	10.25	122.07	3033.15	-242.75	-242.75	381.22	122.49	451.94	1.76
3168.00	10.62	122.93	3126.58	-251.99	-251.99	395.73	122.49	469.15	0.42
3262.00	10.29	125.82	3219.02	-261.61	-261.61	409.80	122.55	486.18	0.66
3357.00	11.03	124.65	3312.38	-271.74	-271.74	424.15	122.65	503.73	0.81
3451.00	9.38	123.73	3404.89	-281.11	-281.11	437.92	122.70	520.38	1.76
3547.00	9.67	125.43	3499.57	-290.13	-290.13	451.00	122.75	536.26	0.42
3641.00	8.78	126.19	3592.35	-298.94	-298.94	463.22	122.84	551.30	0.96

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
3737.00	9.24	121.29	3687.17	-307.27	-307.27	475.71	122.86	566.32	0.93
3831.00	10.20	120.35	3779.82	-315.39	-315.39	489.35	122.80	582.18	1.04
3926.00	8.88	122.54	3873.50	-323.59	-323.59	502.79	122.76	597.92	1.44
4020.00	9.71	124.90	3966.27	-332.03	-332.03	515.41	122.79	613.09	0.97
4115.00	10.73	118.71	4059.76	-340.86	-340.86	529.73	122.76	629.92	1.58
4210.00	11.34	117.27	4153.00	-349.39	-349.39	545.79	122.63	648.04	0.71
4304.00	11.08	120.34	4245.21	-358.18	-358.18	561.80	122.52	666.27	0.69
4398.00	9.26	117.44	4337.73	-366.23	-366.23	576.31	122.44	682.83	2.00
4493.00	9.22	120.14	4431.50	-373.58	-373.58	589.68	122.36	698.05	0.46
4587.00	10.96	120.85	4524.04	-381.94	-381.94	603.86	122.31	714.51	1.86
4682.00	11.26	119.60	4617.26	-391.16	-391.16	619.68	122.26	732.81	0.40
4776.00	11.64	121.04	4709.39	-400.58	-400.58	635.78	122.21	751.45	0.51
4871.00	11.33	119.39	4802.49	-410.09	-410.09	652.12	122.16	770.35	0.48
4965.00	9.35	121.89	4894.96	-418.66	-418.66	666.64	122.13	787.20	2.16
5060.00	8.36	117.68	4988.83	-425.94	-425.94	679.31	122.09	801.80	1.24
5154.00	10.35	111.47	5081.58	-432.20	-432.20	693.22	121.94	816.92	2.37
5249.00	9.54	109.95	5175.15	-438.02	-438.02	708.56	121.72	833.02	0.90
5344.00	8.84	116.81	5268.93	-443.99	-443.99	722.47	121.57	848.00	1.37

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
5438.00	7.91	126.66	5361.93	-451.11	-451.11	734.11	121.57	861.64	1.81
5533.00	8.44	126.78	5455.97	-459.19	-459.19	744.94	121.65	875.09	0.55
5627.00	8.78	127.66	5548.91	-467.70	-467.70	756.14	121.74	889.10	0.39
5722.00	8.89	117.61	5642.79	-475.54	-475.54	768.39	121.75	903.63	1.62
5816.00	7.80	111.64	5735.79	-481.25	-481.25	780.75	121.65	917.15	1.48
5912.00	5.54	106.05	5831.14	-484.94	-484.94	791.25	121.50	928.03	2.44
6006.00	4.46	106.50	5924.78	-487.23	-487.23	799.12	121.37	935.94	1.15
6100.00	3.42	100.45	6018.56	-488.77	-488.77	805.38	121.25	942.09	1.19
6195.00	3.33	125.05	6113.40	-490.87	-490.87	810.42	121.20	947.49	1.51
6290.00	2.66	123.13	6208.27	-493.66	-493.66	814.52	121.22	952.44	0.71
6384.00	1.73	110.07	6302.20	-495.34	-495.34	817.68	121.21	956.01	1.11
6478.00	1.74	124.63	6396.15	-496.63	-496.63	820.18	121.20	958.83	0.47
6573.00	1.78	124.77	6491.11	-498.29	-498.29	822.58	121.21	961.74	0.05
6667.00	1.64	127.02	6585.07	-499.94	-499.94	824.86	121.22	964.53	0.17
6761.00	1.39	121.82	6679.03	-501.35	-501.35	826.90	121.23	967.01	0.30
6856.00	3.58	87.10	6773.94	-501.80	-501.80	830.84	121.13	970.62	2.70
6950.00	9.67	91.45	6867.27	-501.85	-501.85	841.68	120.81	979.94	6.49
7045.00	12.51	77.00	6960.51	-499.74	-499.74	859.69	120.17	994.39	4.17

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
7139.00	19.34	54.51	7050.93	-488.39	-488.39	882.34	118.97	1008.48	9.67
7234.00	24.34	36.41	7139.18	-463.46	-463.46	906.81	117.07	1018.38	8.77
7328.00	30.78	23.21	7222.55	-425.69	-425.69	927.82	114.65	1020.82	9.41
7423.00	35.92	13.84	7301.93	-376.23	-376.23	944.09	111.73	1016.30	7.65
7517.00	42.52	12.05	7374.72	-318.32	-318.32	957.33	108.39	1008.87	7.11
7612.00	50.04	7.55	7440.35	-250.72	-250.72	968.84	104.51	1000.75	8.62
7658.00	54.19	4.63	7468.60	-214.64	-214.64	972.66	102.44	996.06	10.33
7691.00	57.21	3.90	7487.19	-187.45	-187.45	974.68	100.89	992.55	9.30
7706.00	58.54	3.30	7495.17	-174.78	-174.78	975.48	100.16	991.02	9.55
7772.00	65.31	2.97	7526.21	-116.66	-116.66	978.66	96.80	985.59	10.26
7872.00	78.98	1.76	7556.79	-21.78	-21.78	982.54	91.27	982.78	13.72
7911.00	85.20	1.82	7562.16	16.81	16.81	983.75	89.02	983.89	15.94
7942.00	88.29	0.90	7563.92	47.74	47.74	984.48	87.22	985.64	10.39
8005.00	91.17	0.02	7564.22	110.73	110.73	984.99	83.59	991.19	4.80
8100.00	91.72	359.49	7561.82	205.70	205.70	984.58	78.20	1005.84	0.80
8194.00	91.81	357.93	7558.93	299.63	299.63	982.46	73.04	1027.14	1.66
8288.00	89.83	357.86	7557.58	393.55	393.55	979.01	68.10	1055.15	2.11
8383.00	89.66	358.26	7558.00	488.50	488.50	975.79	63.41	1091.24	0.45

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
8477.00	89.87	0.12	7558.38	582.48	582.48	974.46	59.13	1135.28	2.00
8572.00	88.96	1.95	7559.36	677.46	677.46	976.18	55.24	1188.23	2.15
8667.00	90.24	2.49	7560.03	772.38	772.38	979.86	51.75	1247.68	1.46
8761.00	89.66	3.51	7560.11	866.25	866.25	984.77	48.66	1311.55	1.25
8856.00	90.00	0.67	7560.39	961.18	961.18	988.24	45.80	1378.58	3.01
8950.00	90.87	1.36	7559.67	1055.16	1055.16	989.90	43.17	1446.81	1.18
9045.00	90.64	359.41	7558.42	1150.14	1150.14	990.54	40.74	1517.89	2.06
9139.00	90.10	356.75	7557.81	1244.08	1244.08	987.39	38.44	1588.29	2.89
9234.00	90.24	355.67	7557.53	1338.87	1338.87	981.11	36.23	1659.87	1.15
9328.00	90.84	356.59	7556.65	1432.65	1432.65	974.76	34.23	1732.82	1.17
9423.00	90.64	358.09	7555.43	1527.54	1527.54	970.35	32.43	1809.68	1.59
9517.00	89.50	358.42	7555.32	1621.49	1621.49	967.48	30.82	1888.19	1.27
9612.00	90.07	357.74	7555.68	1716.44	1716.44	964.29	29.33	1968.76	0.93
9706.00	88.99	357.63	7556.45	1810.36	1810.36	960.49	27.95	2049.37	1.15
9801.00	88.79	358.67	7558.29	1905.29	1905.29	957.42	26.68	2132.31	1.11
9895.00	89.97	358.47	7559.31	1999.25	1999.25	955.06	25.53	2215.66	1.27
9990.00	90.27	356.75	7559.11	2094.16	2094.16	951.10	24.43	2300.02	1.84
10084.00	89.97	359.53	7558.92	2188.10	2188.10	948.04	23.43	2384.66	2.98

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft
10179.00	90.30	0.34	7558.70	2283.10	2283.10	947.93	22.55	2472.07	0.93
10273.00	90.87	359.98	7557.73	2377.10	2377.10	948.20	21.75	2559.23	0.72
10368.00	90.84	359.30	7556.31	2472.08	2472.08	947.61	20.97	2647.48	0.71
10463.00	91.48	358.84	7554.39	2567.05	2567.05	946.07	20.23	2735.84	0.83
10558.00	89.83	357.67	7553.31	2662.00	2662.00	943.19	19.51	2824.15	2.13
10652.00	89.97	358.55	7553.47	2755.94	2755.94	940.09	18.84	2911.87	0.94
10747.00	90.27	358.62	7553.28	2850.92	2850.92	937.74	18.21	3001.18	0.33
10842.00	91.51	359.84	7551.80	2945.89	2945.89	936.46	17.63	3091.16	1.83
10936.00	90.13	359.17	7550.45	3039.88	3039.88	935.65	17.11	3180.61	1.63
11030.00	90.23	358.70	7550.15	3133.86	3133.86	933.90	16.59	3270.05	0.51
11125.00	91.04	359.03	7549.09	3228.83	3228.83	932.02	16.10	3360.66	0.92
11219.00	91.58	358.56	7546.94	3322.79	3322.79	930.04	15.64	3450.49	0.76
11314.00	90.50	358.11	7545.22	3417.73	3417.73	927.28	15.18	3541.29	1.22
11408.00	90.84	357.33	7544.12	3511.65	3511.65	923.54	14.73	3631.06	0.91
11502.00	91.65	358.51	7542.08	3605.56	3605.56	920.13	14.32	3721.12	1.52
11597.00	89.66	359.65	7541.00	3700.54	3700.54	918.61	13.94	3812.85	2.41
11692.00	90.03	358.78	7541.25	3795.53	3795.53	917.31	13.59	3904.80	1.00
11786.00	90.91	359.81	7540.47	3889.51	3889.51	916.16	13.25	3995.96	1.43

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	"/100ft
11880.00	90.54	358.26	7539.29	3983.49	3983.49	914.59	12.93	4087.13	1.69
11975.00	89.36	355.08	7539.37	4078.32	4078.32	909.07	12.57	4178.40	3.58
12069.00	91.58	354.50	7538.60	4171.92	4171.92	900.53	12.18	4268.00	2.43
12164.00	92.02	355.76	7535.63	4266.53	4266.53	892.48	11.81	4358.87	1.40
12259.00	91.71	358.41	7532.54	4361.35	4361.35	887.65	11.50	4450.76	2.80
12353.00	89.03	358.75	7531.93	4455.31	4455.31	885.32	11.24	4542.42	2.88
12448.00	89.06	359.73	7533.52	4550.28	4550.28	884.05	10.99	4635.37	1.03
12542.00	90.47	359.69	7533.90	4644.28	4644.28	883.57	10.77	4727.58	1.50
12637.00	90.47	0.39	7533.12	4739.27	4739.27	883.64	10.56	4820.95	0.74
12731.00	89.60	357.19	7533.07	4833.24	4833.24	881.66	10.34	4913.00	3.53
12826.00	90.27	358.94	7533.18	4928.18	4928.18	878.45	10.11	5005.86	1.97
12920.00	90.54	357.12	7532.52	5022.12	5022.12	875.22	9.89	5097.81	1.96
12946.00	89.93	356.58	7532.41	5048.08	5048.08	873.79	9.82	5123.15	3.11

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Direction	Closure Distance	DLS
ft	deg	deg	ft	ft	ft	ft	deg	ft	°/100ft

5" = 100' FEET TVD