



GAMMA RAY

5" = 100' FEET TWD

COMPANY : ENCANA OIL & GAS (U.S.A.) INC WELL : DALE 4F-20H-O264 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39731				COMPANY : ENCANA OIL & GAS (U.S.A.) INC WELL : DALE 4F-20H-O264 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-39731			
DEPTH REF. : RKB REF. HEIGHT : 25.000 ft GROUND LEVEL : 4957.000 ft		RKB to Ground Level		DIRECTIONAL ROP		OTHER SERVICES	
G.L. to MEAN SEA LEVEL							
BOREHOLE RECORD				DEVIATION RECORD			
HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft		
12.25	0	1111	0 - 11	0	3373		
8.75	1111	7319	11 - 0	3373	5652		
6.125	7319	11469	0 - 91	5652	11469		
CASING RECORD							
CASING SIZE in	FROM ft	TO ft					
9.625	0	1105					
7	0	7306					
DRILLING CO. : H&P RTG : 278 LMD UNIT NO. : MWD-00046-DISTRICT: CASPER, CASPER SPUD DATE : 08/20/2014 LMD START DATE : 10/09/2014 DEPTH : 5000 ft LMD END DATE : 10/14/2014 DEPTH : 11469 ft TOTAL DEPTH : 11469 ft							

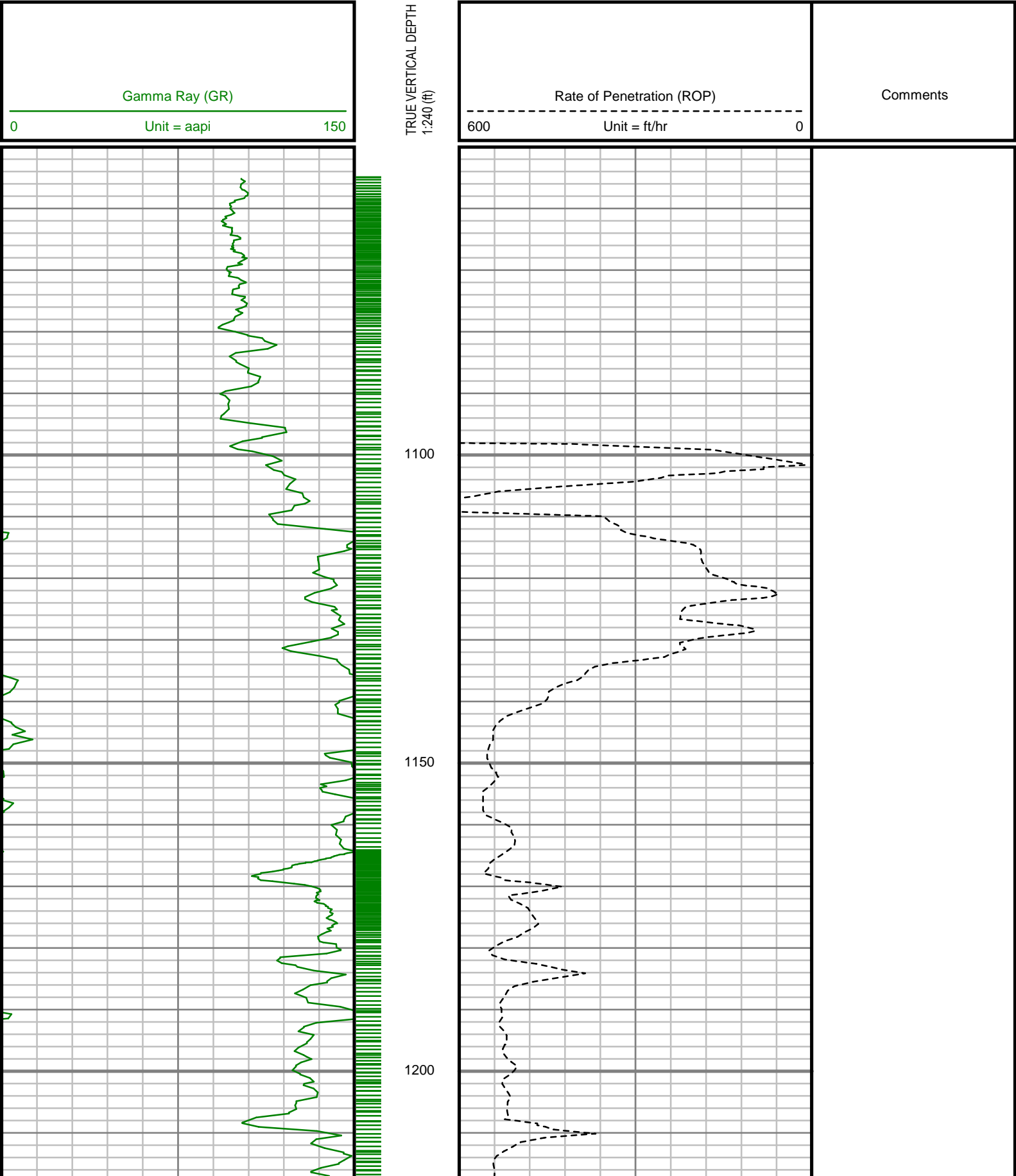
Run Data						
RUN NUMBER	1	2	3	4		
START DATE	08/20/2014	10/08/2014	10/11/2014	10/13/2014		
START TIME	2230	0830	1030	0615		
END DATE	08/21/2014	10/10/2014	10/13/2014	10/14/2014		
END TIME	0605	0415	0300	0330		
DEPTH IN (ft)	0	1111	7319	11302		
DEPTH OUT (ft)	1111	7319	11302	11469		
LOG TOP (ft)	-	5000	7319	11302		
LOG BOTTOM (ft)	-	7319	11302	11469		
HOLE SIZE (in)	12.25	8.75	6.125	6.125		
MUD DATA @ (ft)	1100	7319	8979	11469		
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED	WATER-BASED		
DENSITY (lb / gal)	8.5	10.7	11	11.15		
VISCOSITY (s / qt)	26	37	38	37		
pH	-	8.3	8.7	8.2		
FLUID LOSS (cm3 / 30)	-	-	-	-		
SALINITY (ppm)	-	-	-	-		
Rm (ohmm @ deg F)	-	-	-	-		
Rmf (ohmm @ deg F)	-	-	-	-		
MAX TEMP (deg F)	120	179	225	222		
Rm @ MAX TEMP (ohmm)	-	-	-	-		
LWD ENGINEER #1	S. WAXLER	C. WILSON	C. WILSON	C. WILSON		
LWD ENGINEER #2	C. WILSON	T. LE	T. LE	T. LE		
LWD ENGINEER #3	T. LE	-	-	-		
LOG WITNESS #1	-	-	-	-		
LOG WITNESS #2	-	-	-	-		

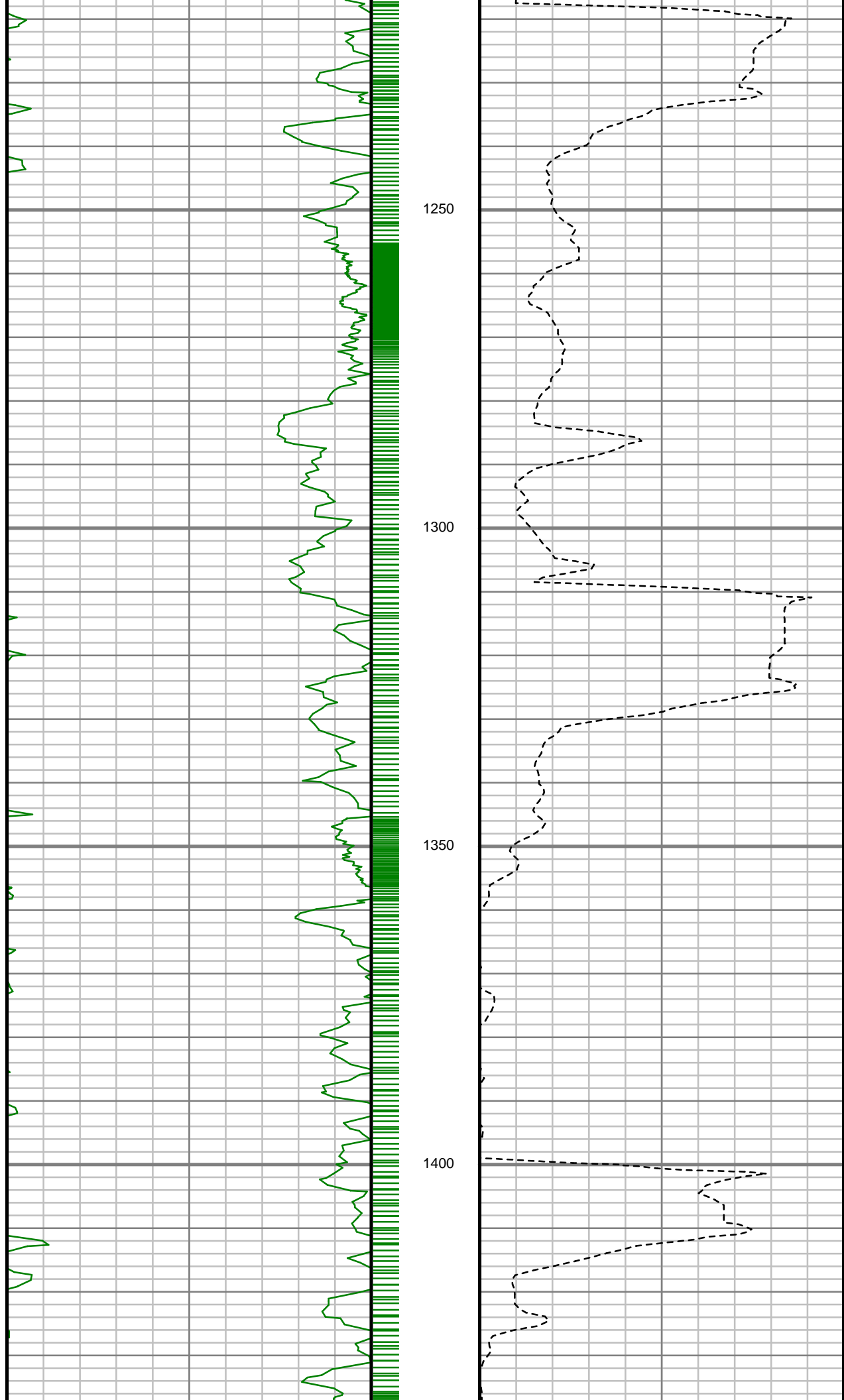
Remarks
ENCANA OIL & GAS (U.S.A.) INC PRODUCTION AFE# 14182130
SCIENTIFIC DRILLING INTERNATIONAL JOB# 186361, 207308
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO RATE OF PENETRATION CURVE
RUN #1 : MWD / DIRECTIONAL RUN
SENSORS S/N: CONT = / EYE = 0809 / GYRO = 034 / PULSER = 890
BIT TO SENSOR OFFSET: SURVEY = 54.92 FT.
RUN #2 : MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-028 / CONT = 858 / MWD EYE = 0522 / GYRO = 387 / GAMMA RAY = 1076
BIT TO SENSOR OFFSETS: SURVEY = 63.26 FT. / GYRO SURVEY = 43.11 FT. / GAMMA RAY = 54.60 FT.
RUN #3 : MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-281 / CONT = 126 / MWD EYE = 0213 / GAMMA RAY = 1271
BIT TO SENSOR OFFSETS: SURVEY = 61.42 FT. / GAMMA RAY = 52.76 FT.
RUN #4 : MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-197 / CONT = 126 / MWD EYE = 0522 / GAMMA RAY = 1076
BIT TO SENSOR OFFSETS: SURVEY = 62.92 FT. / GAMMA RAY = 54.26 FT.

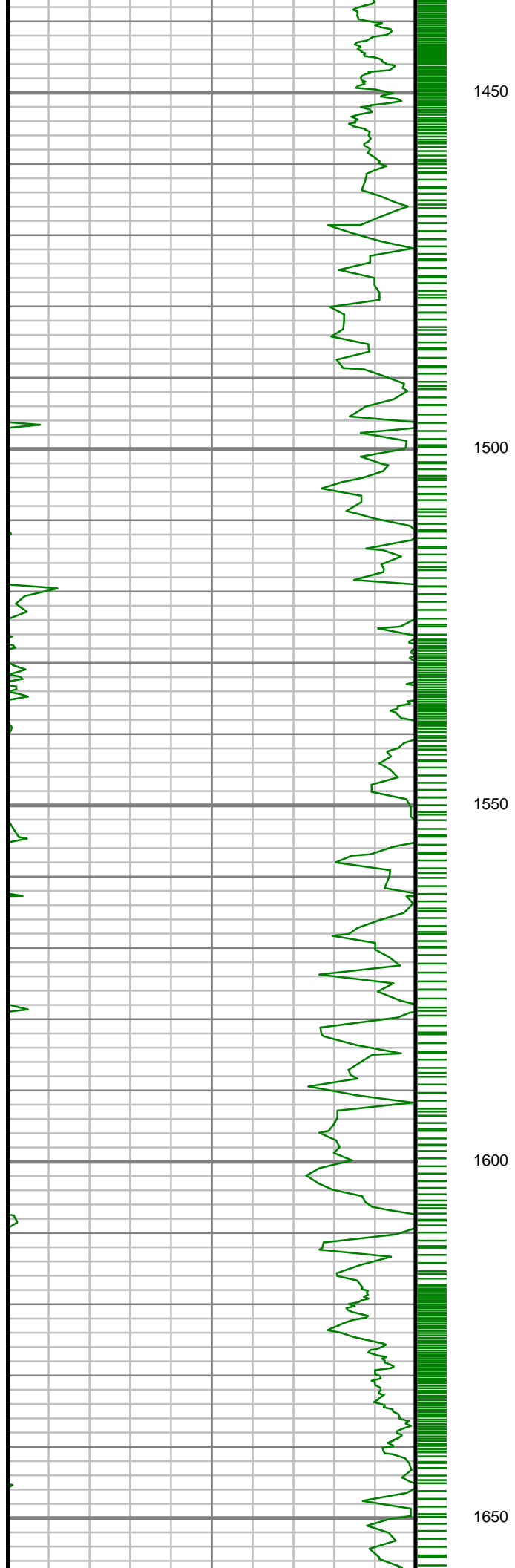
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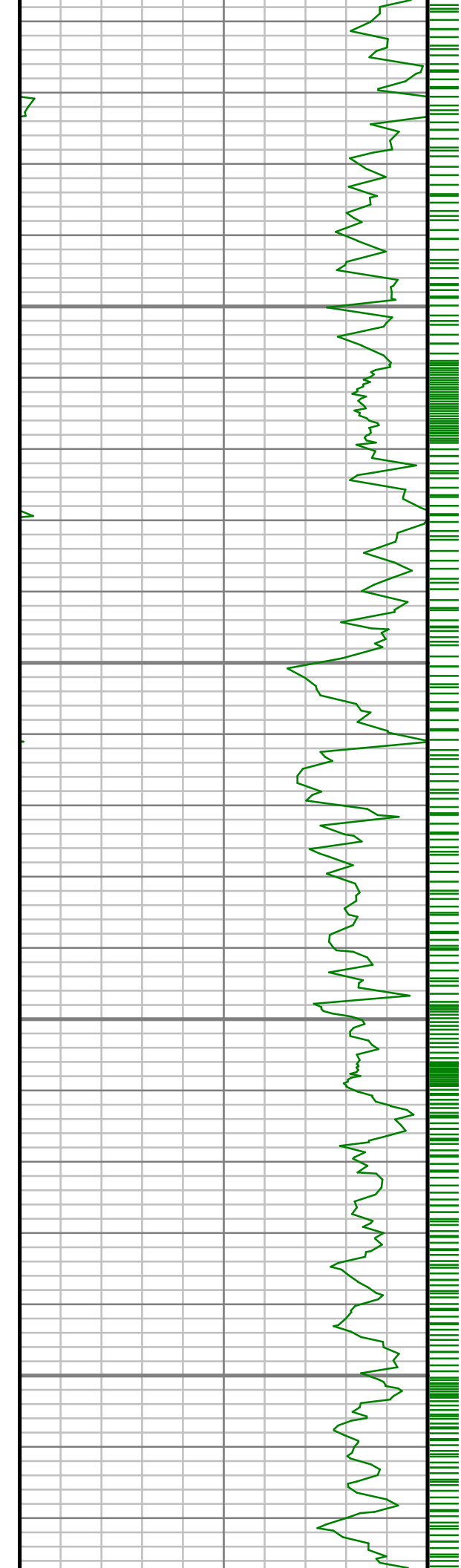
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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 AND GAS (U.S.A.) INC
DALE 4F-20H-O264
WATTENBERG FIELD
WELD COUNTY, COLORADO
05-123-39731







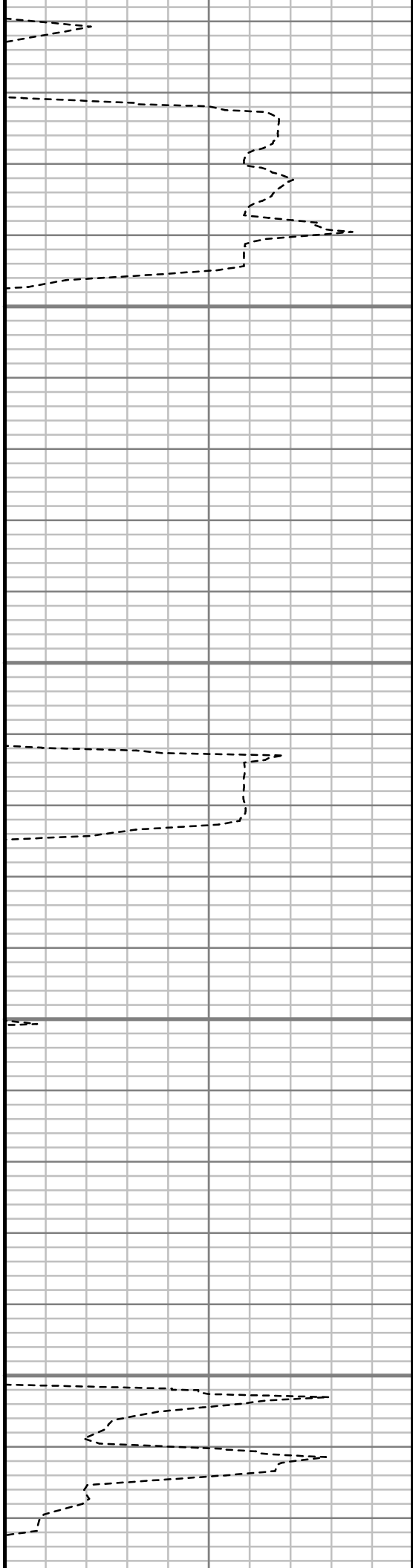


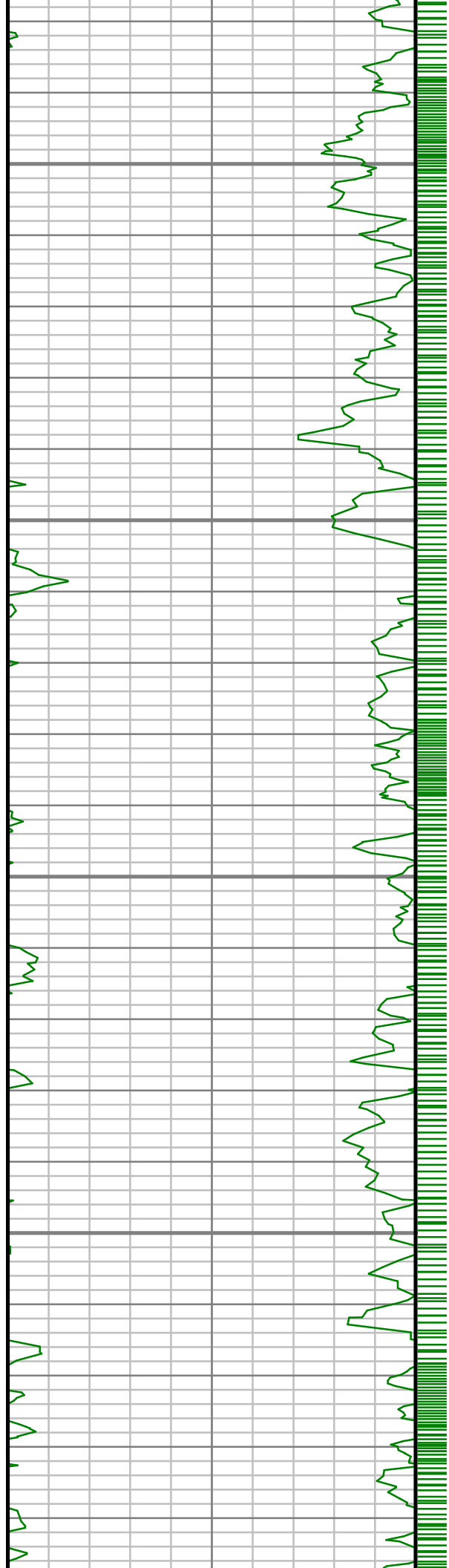
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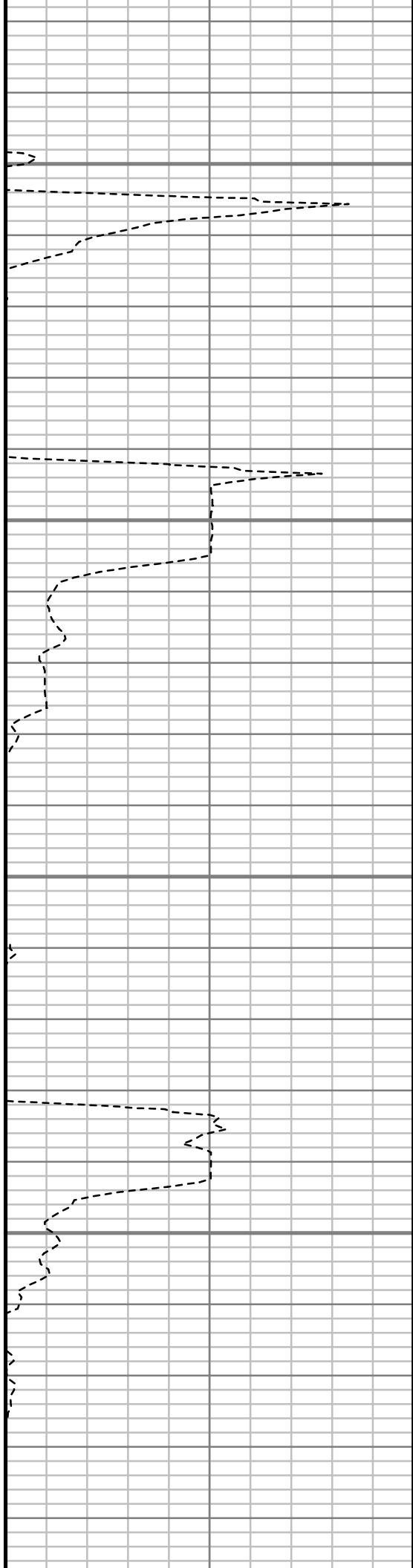


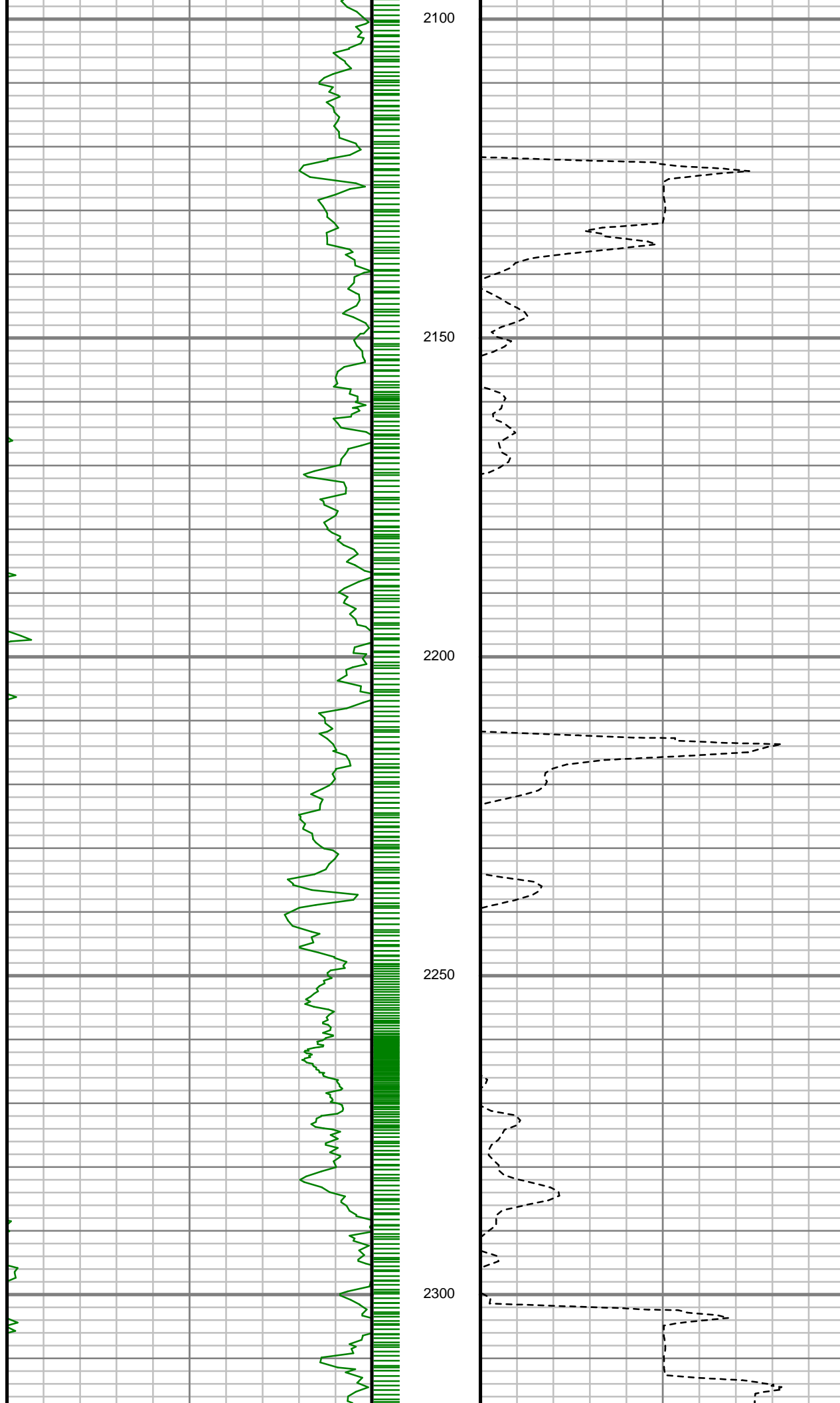
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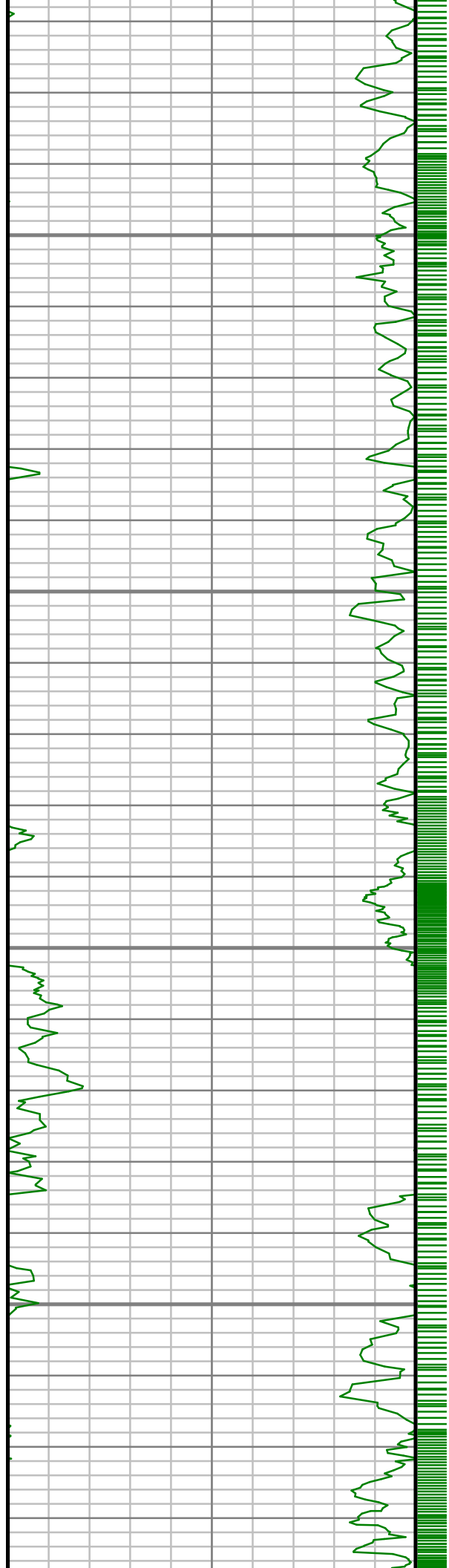
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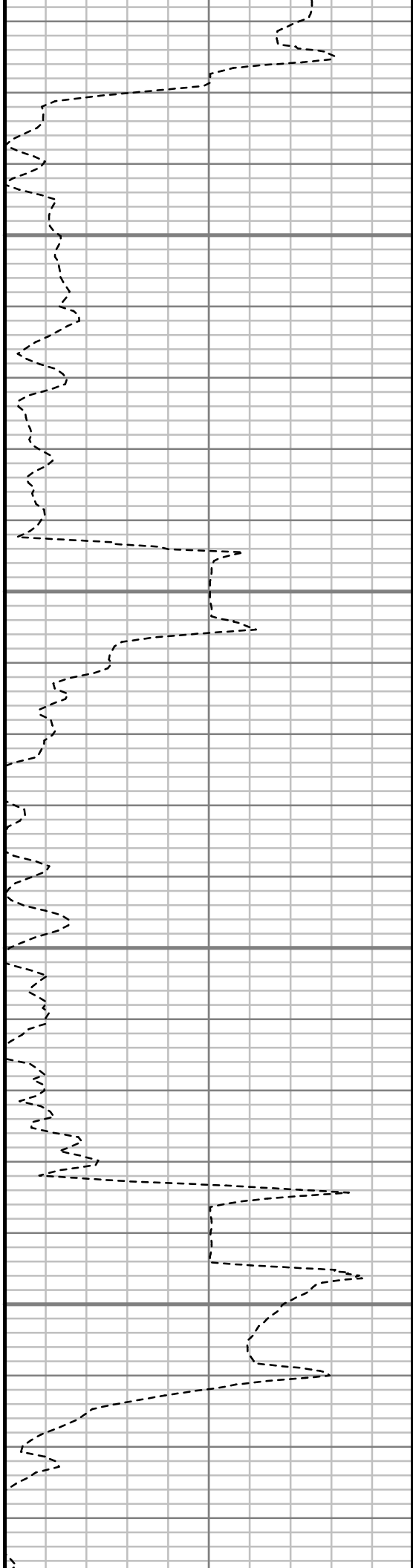


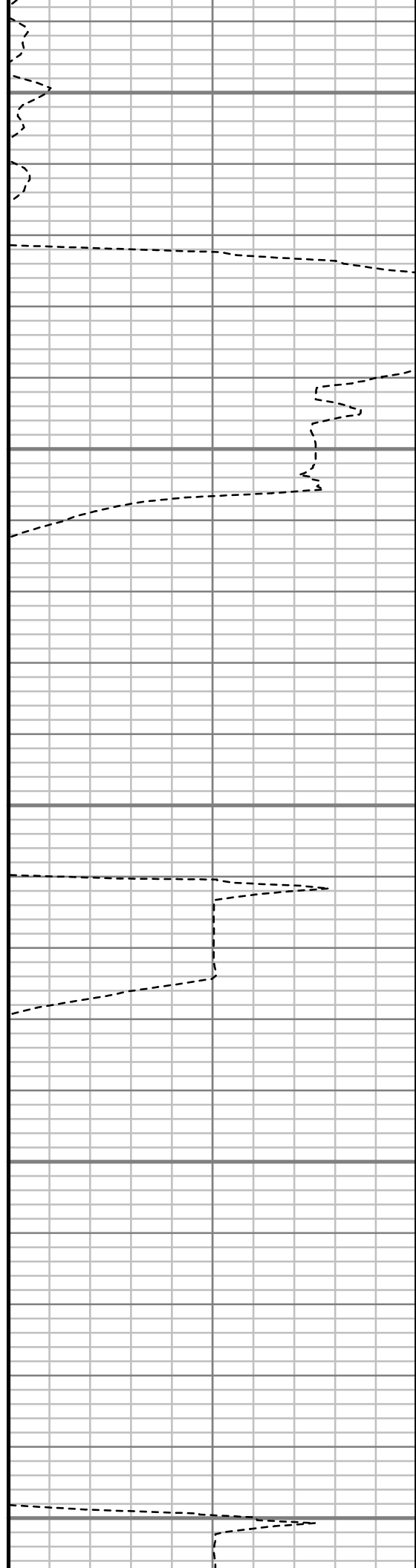
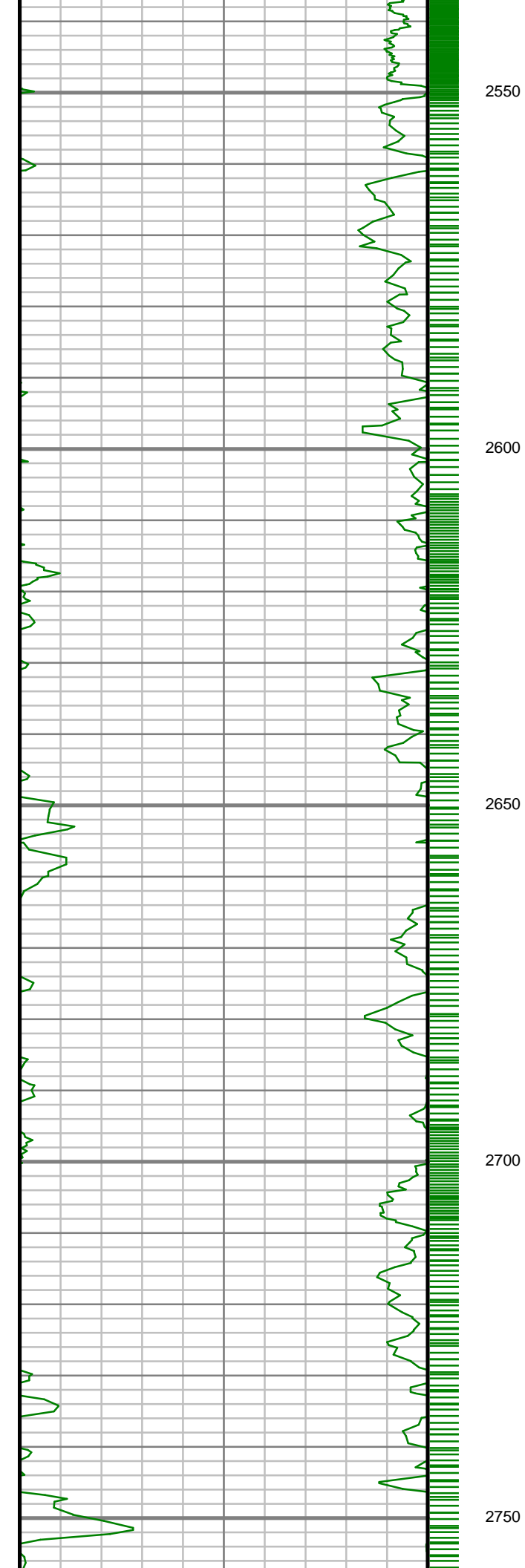
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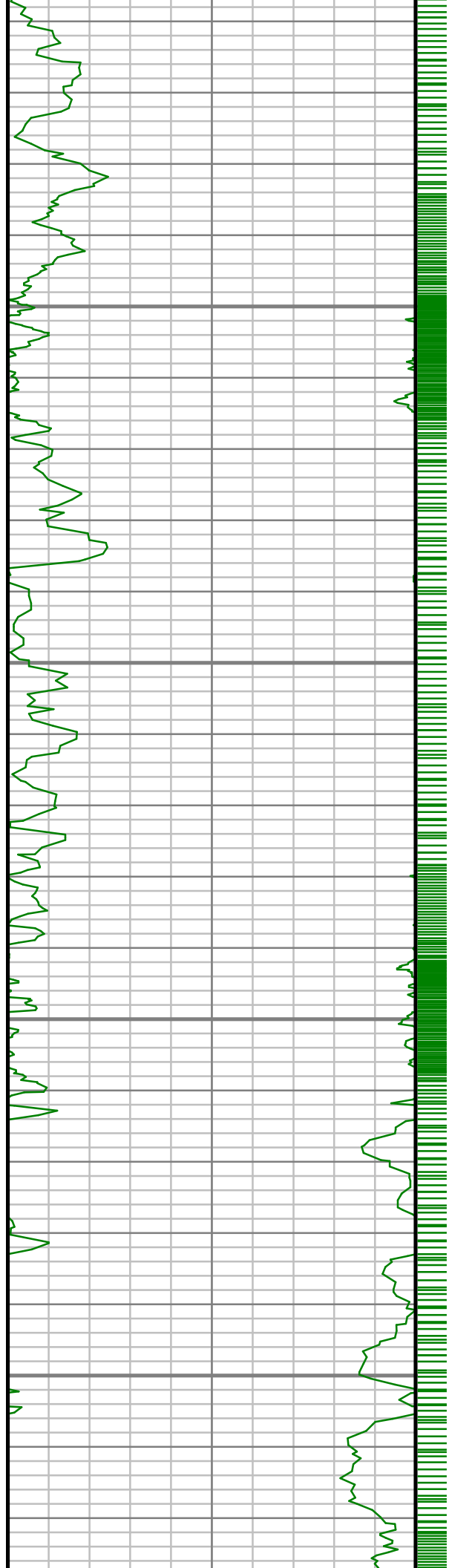
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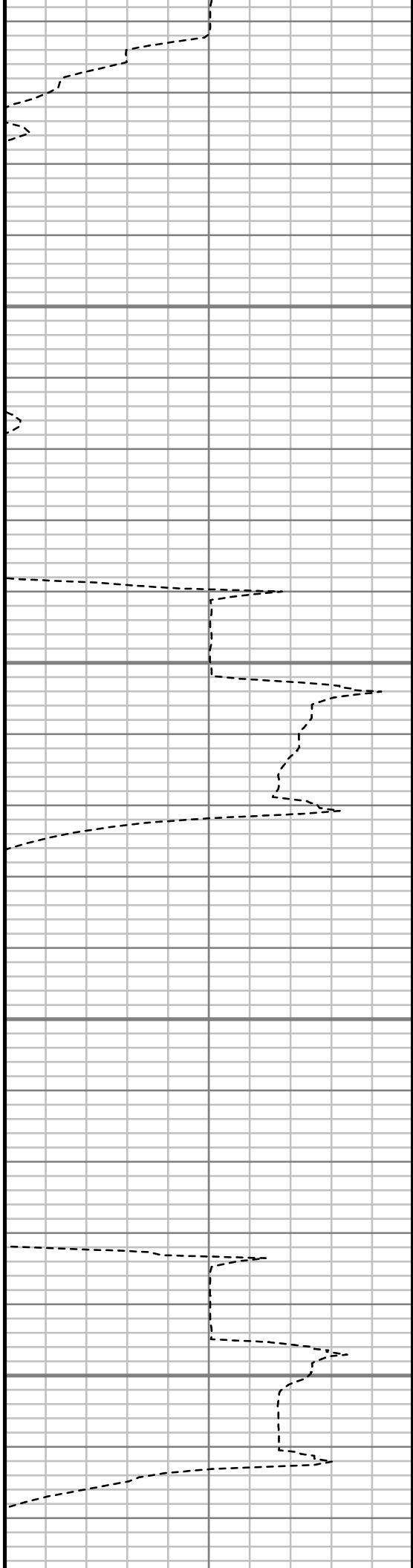


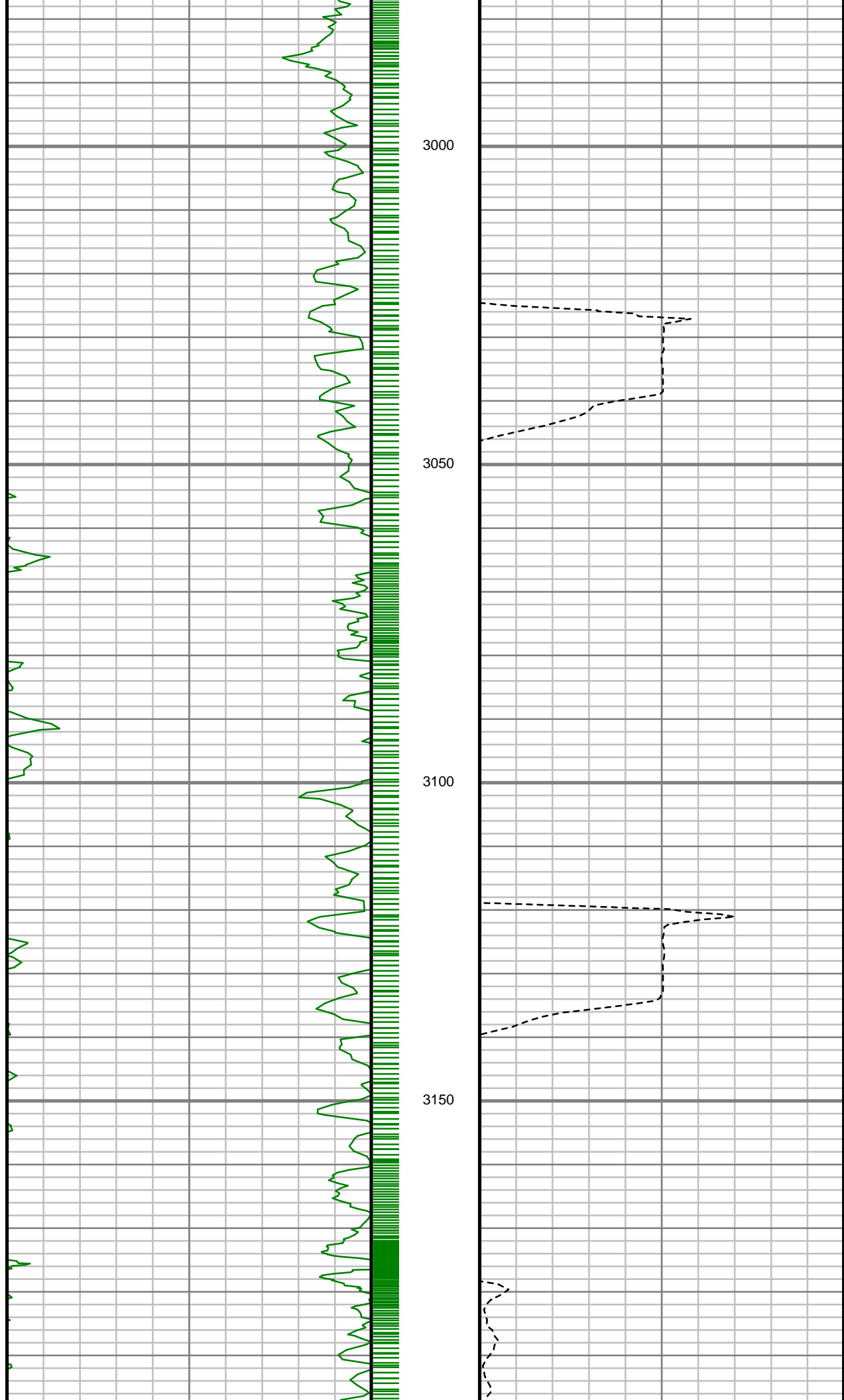
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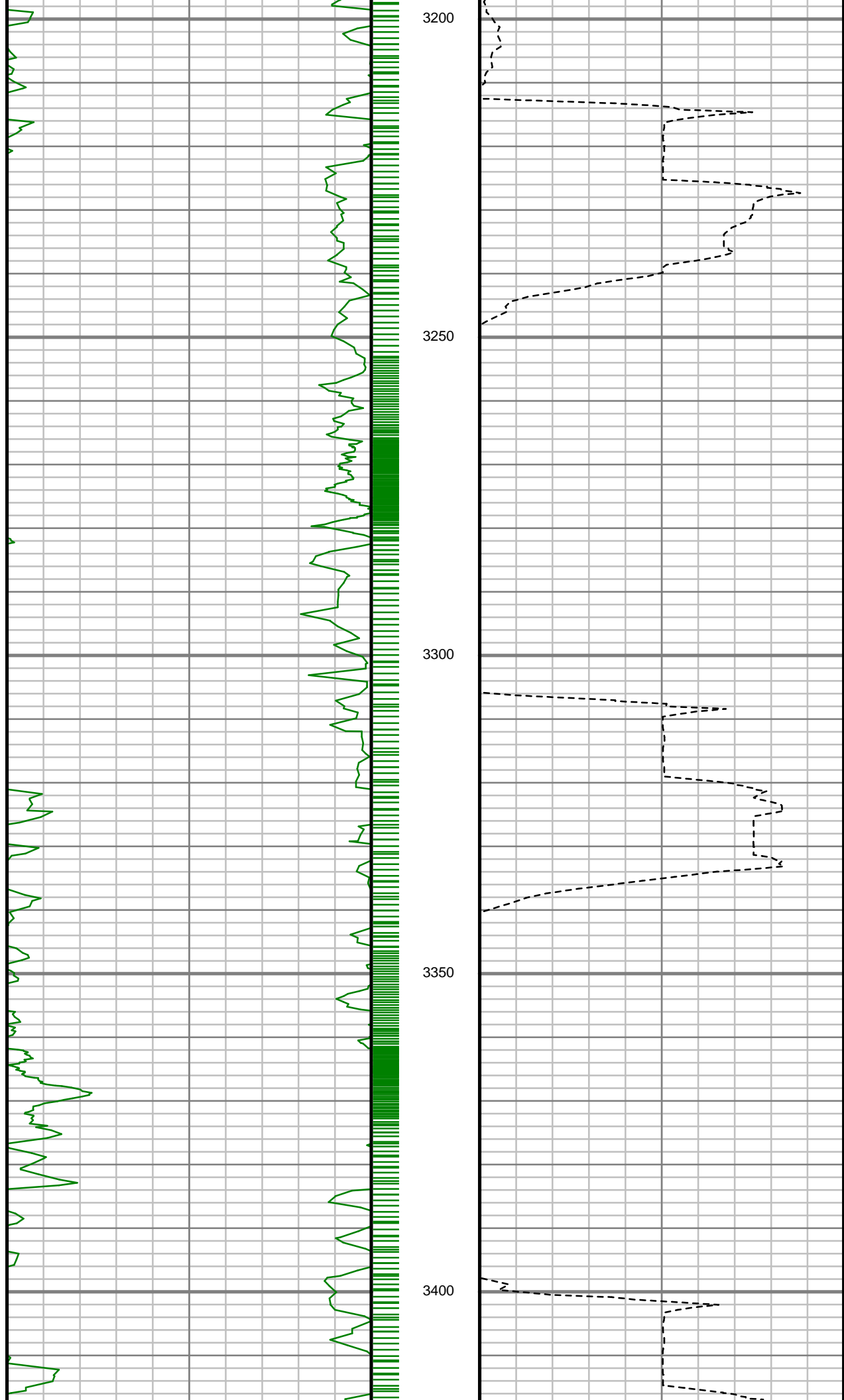
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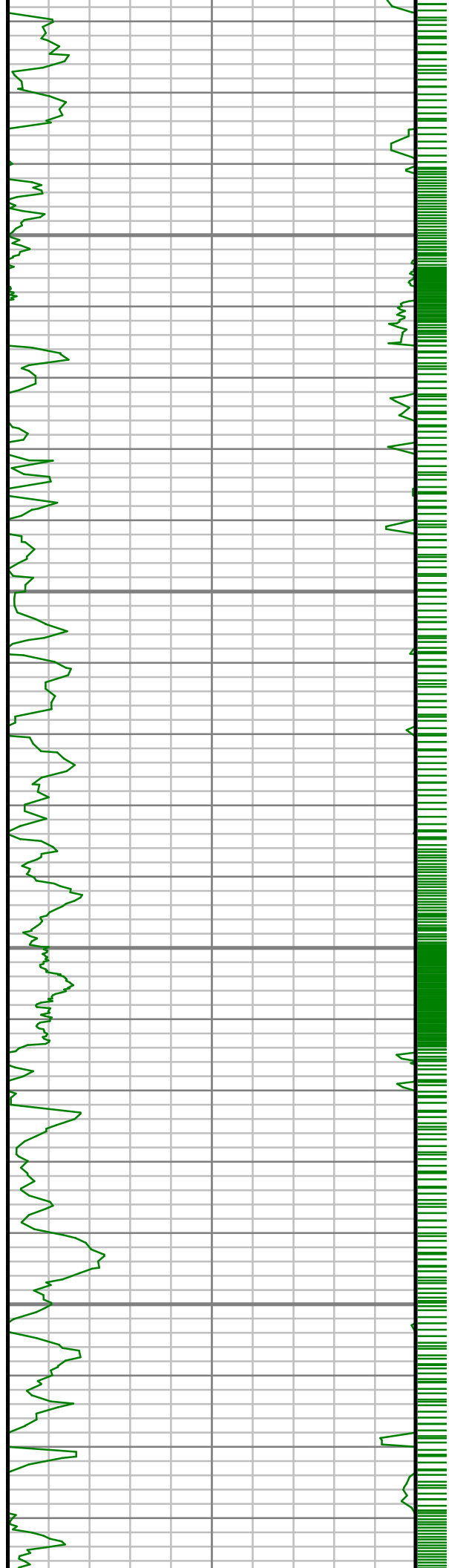
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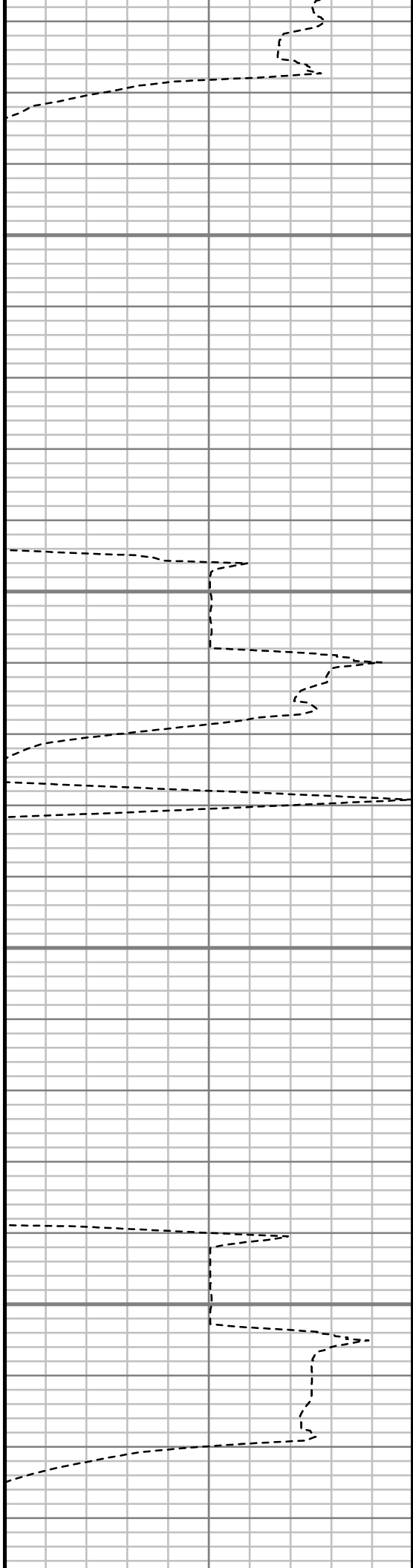


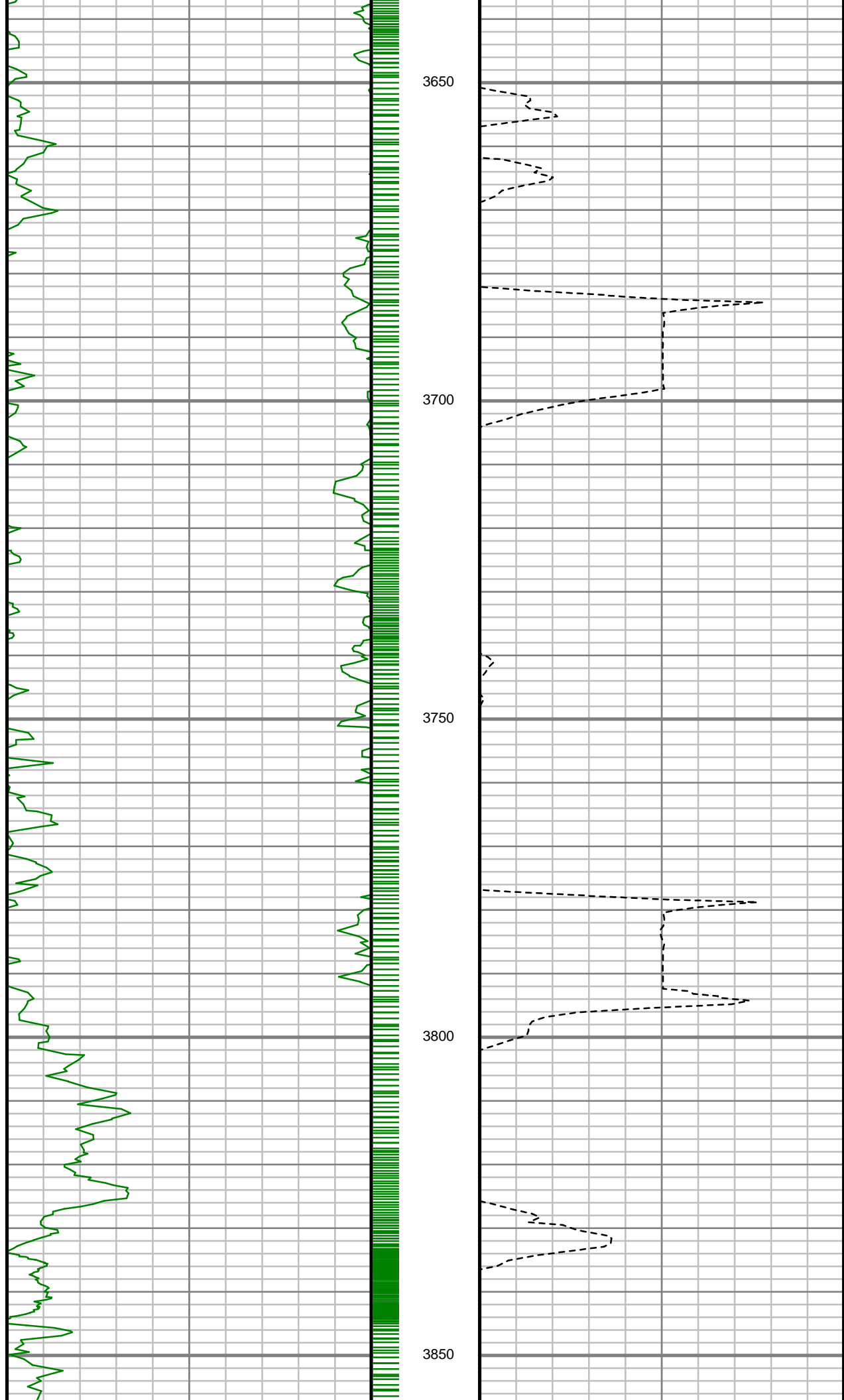
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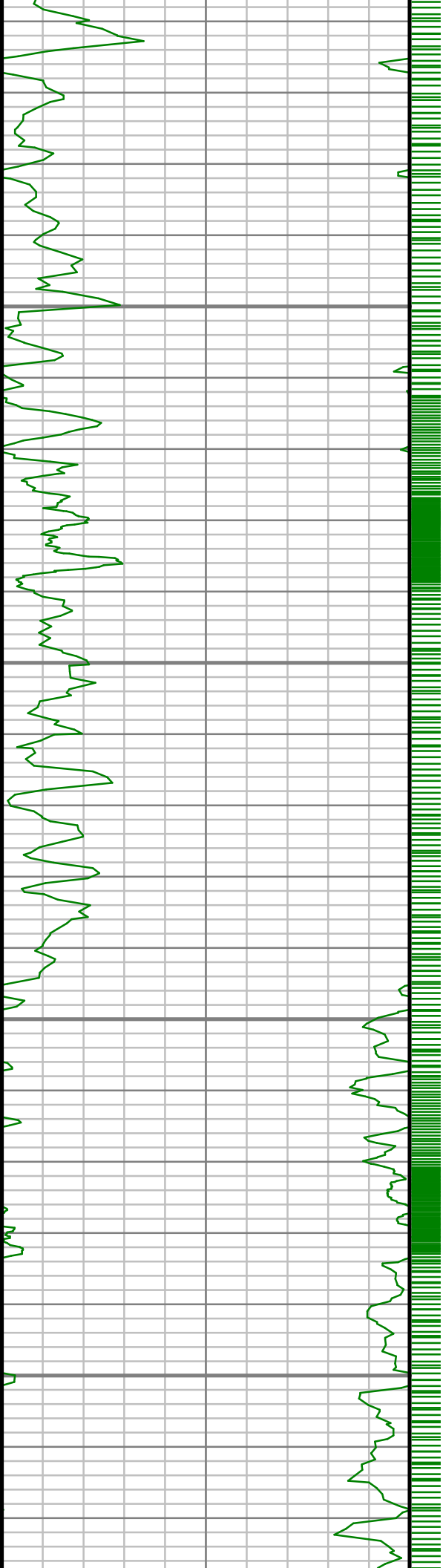
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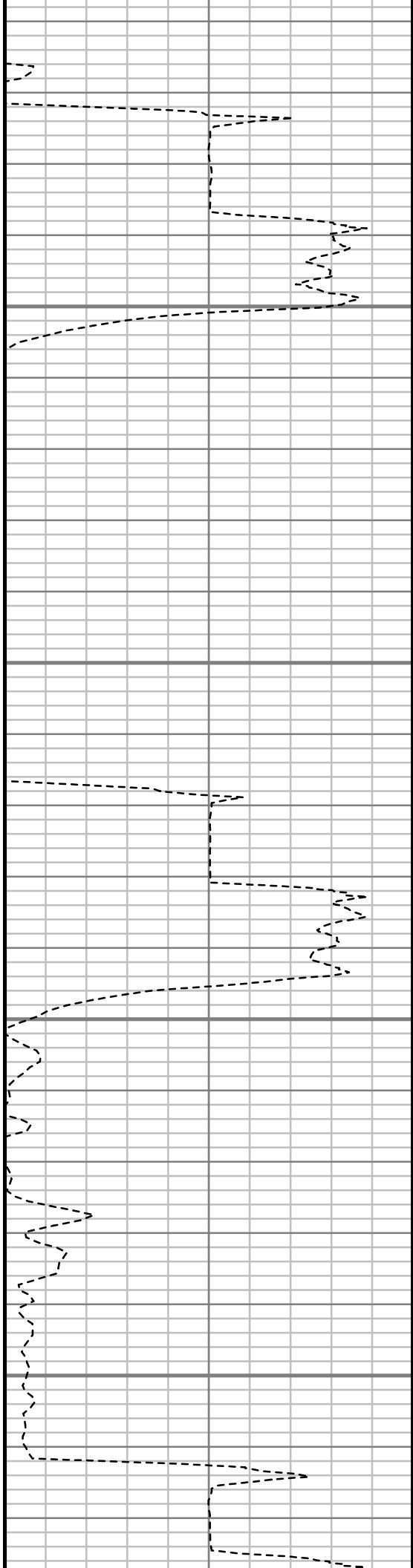


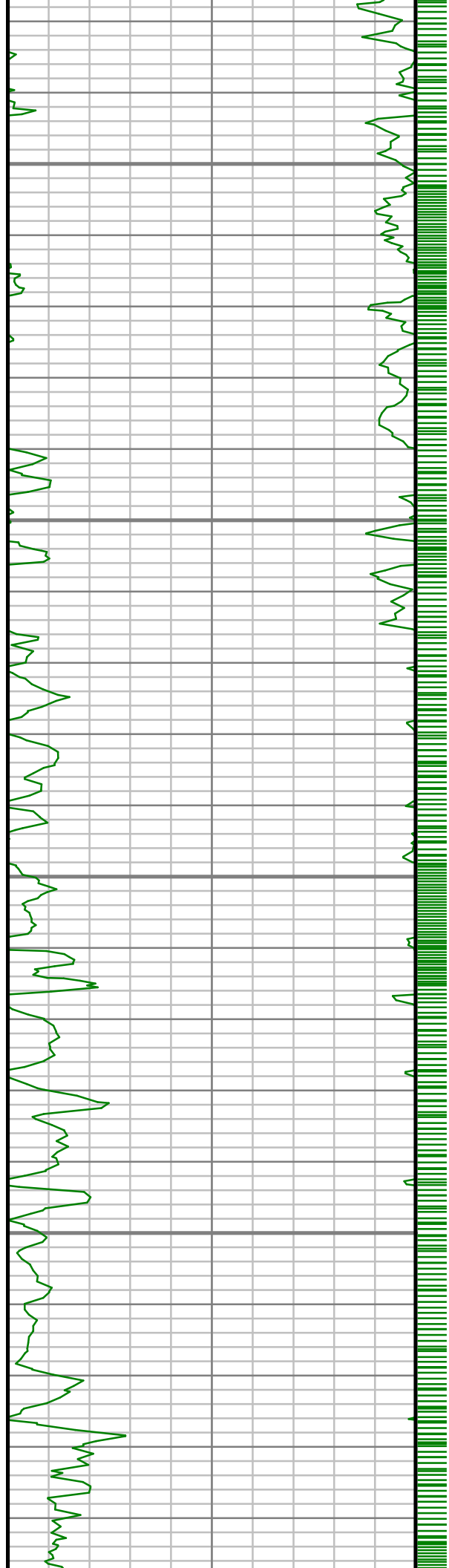
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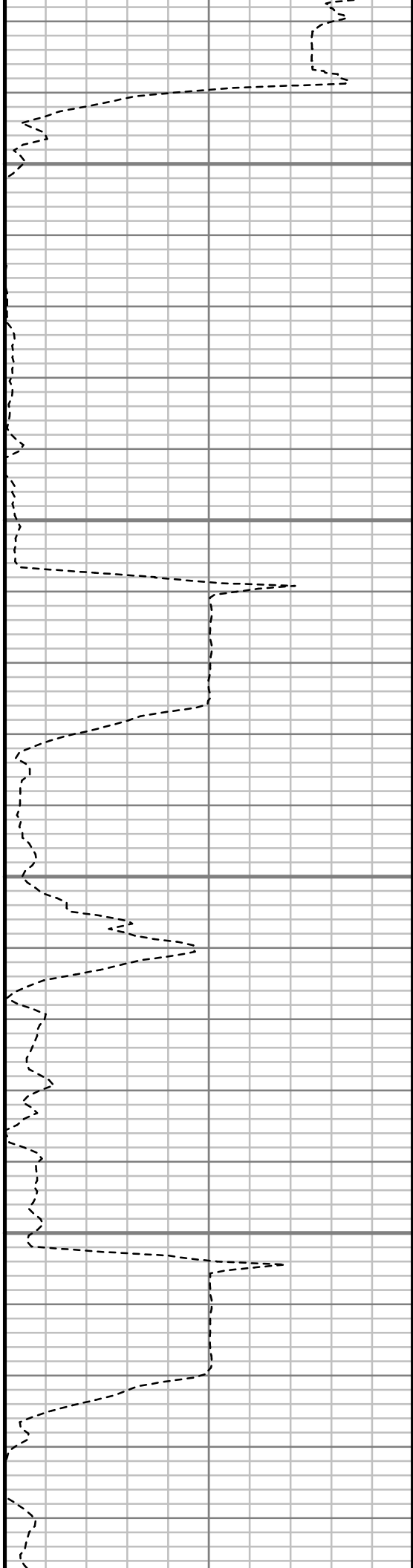


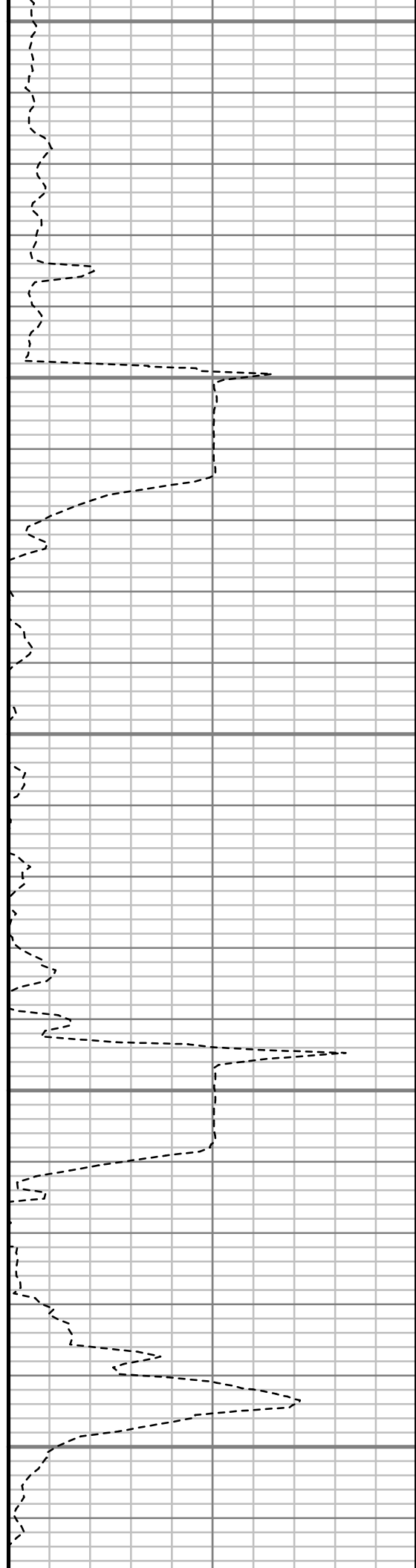
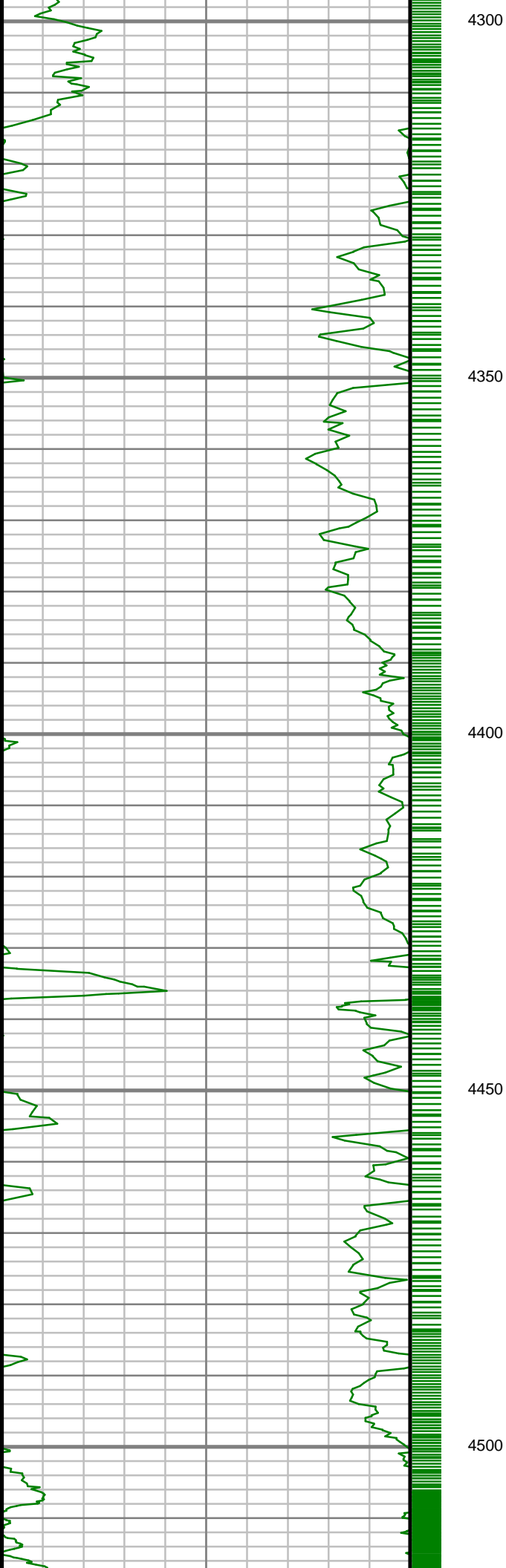
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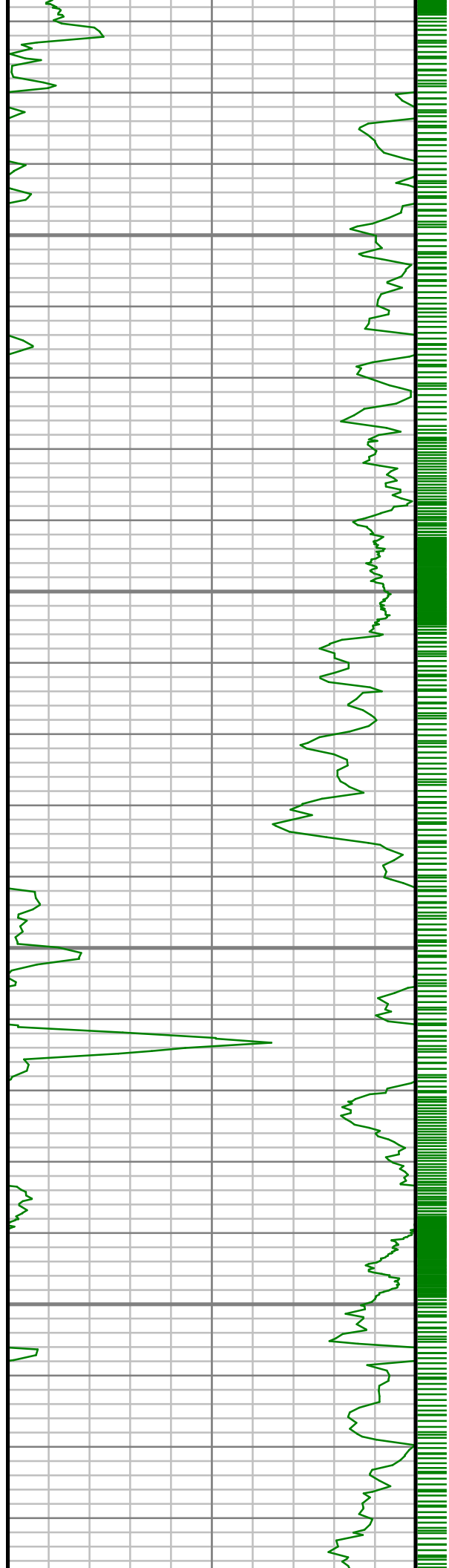
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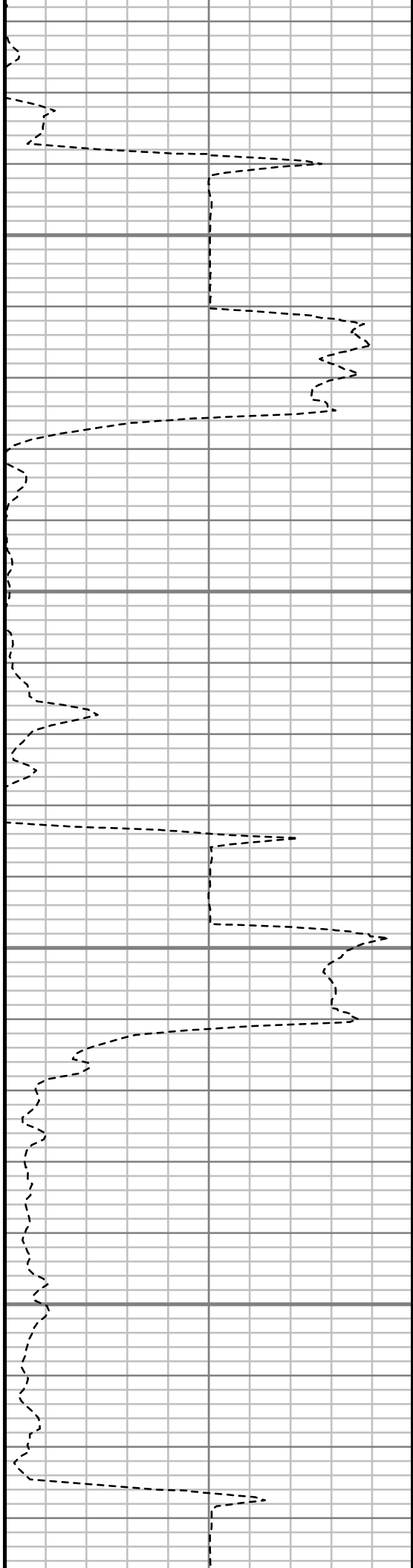


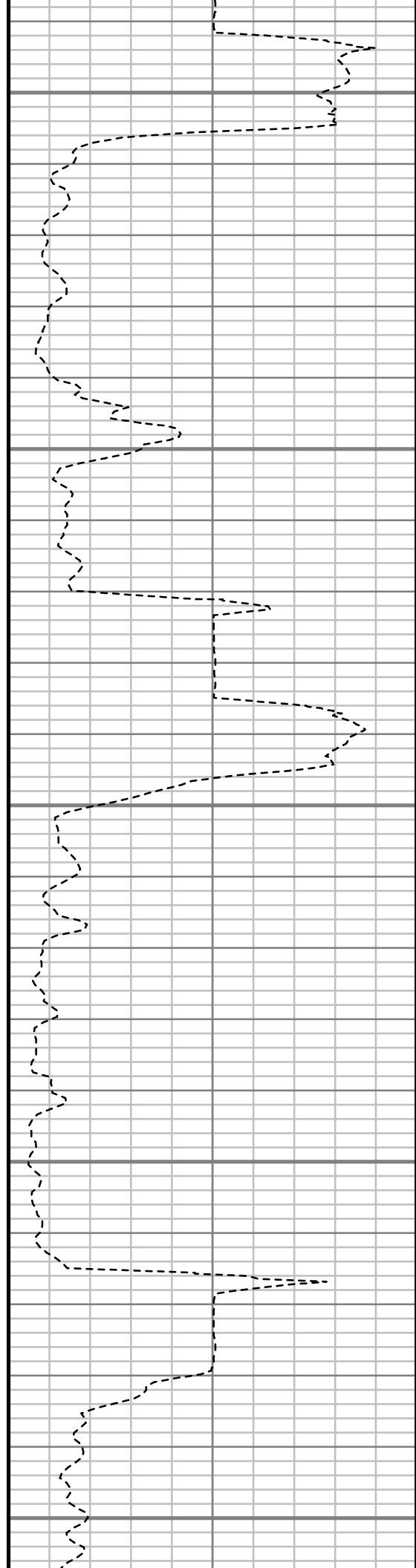
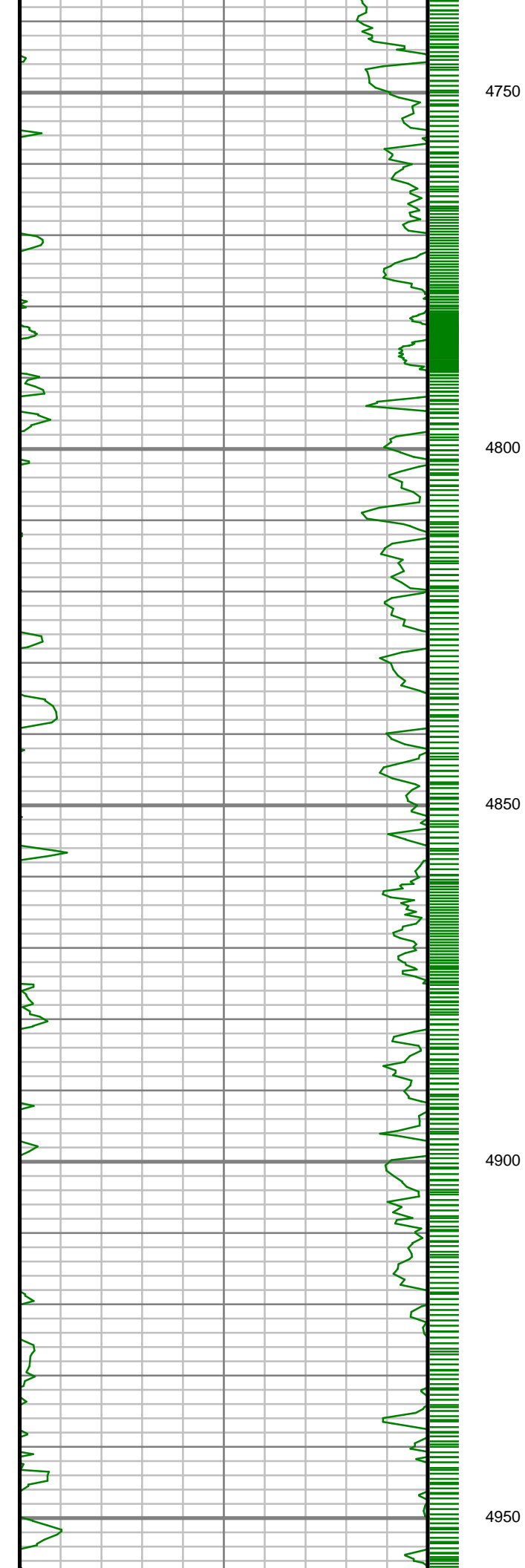
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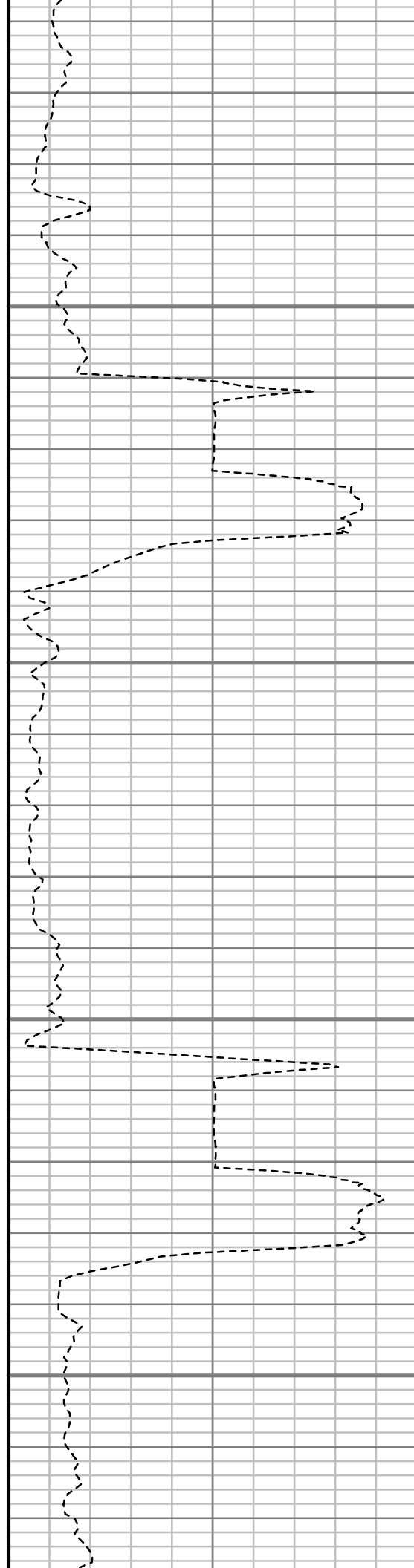
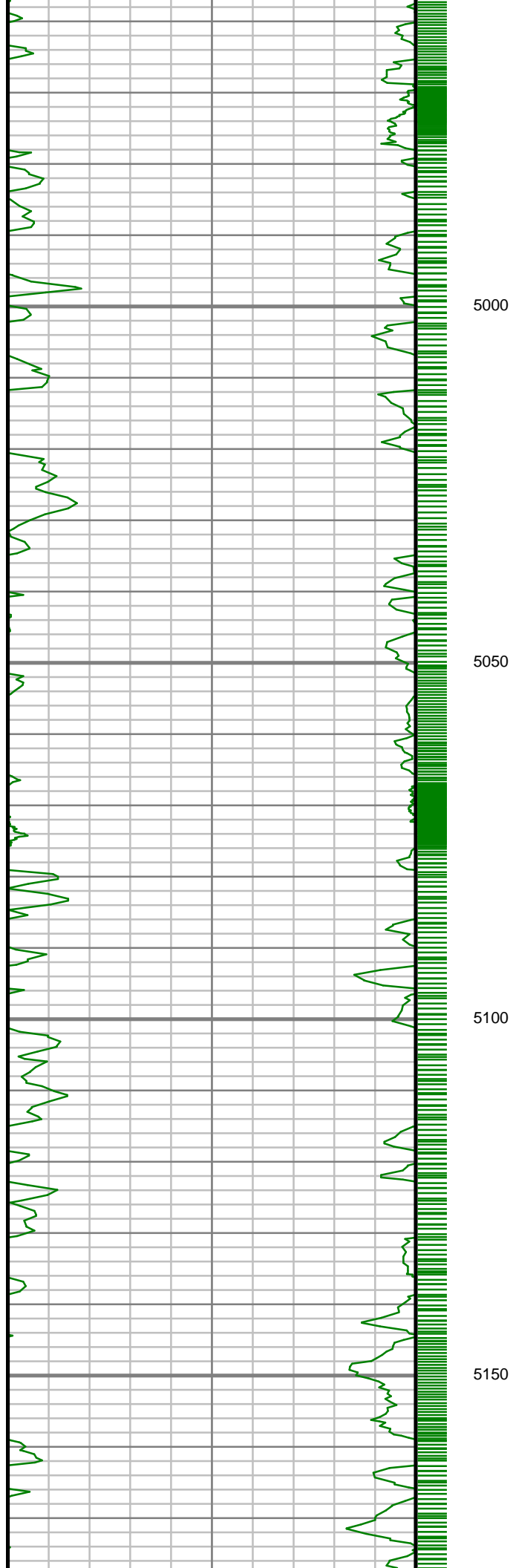
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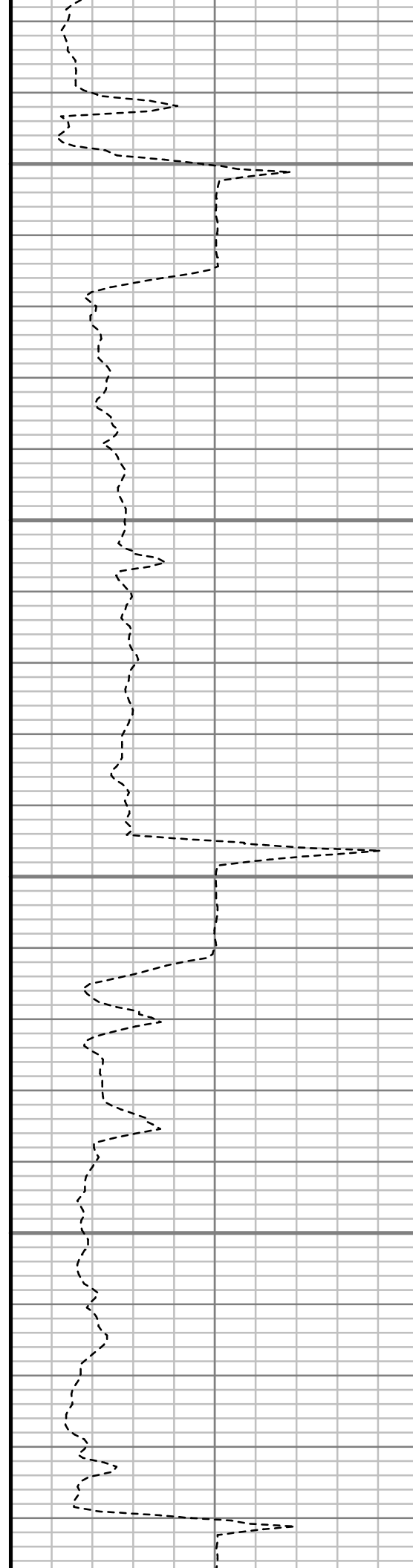
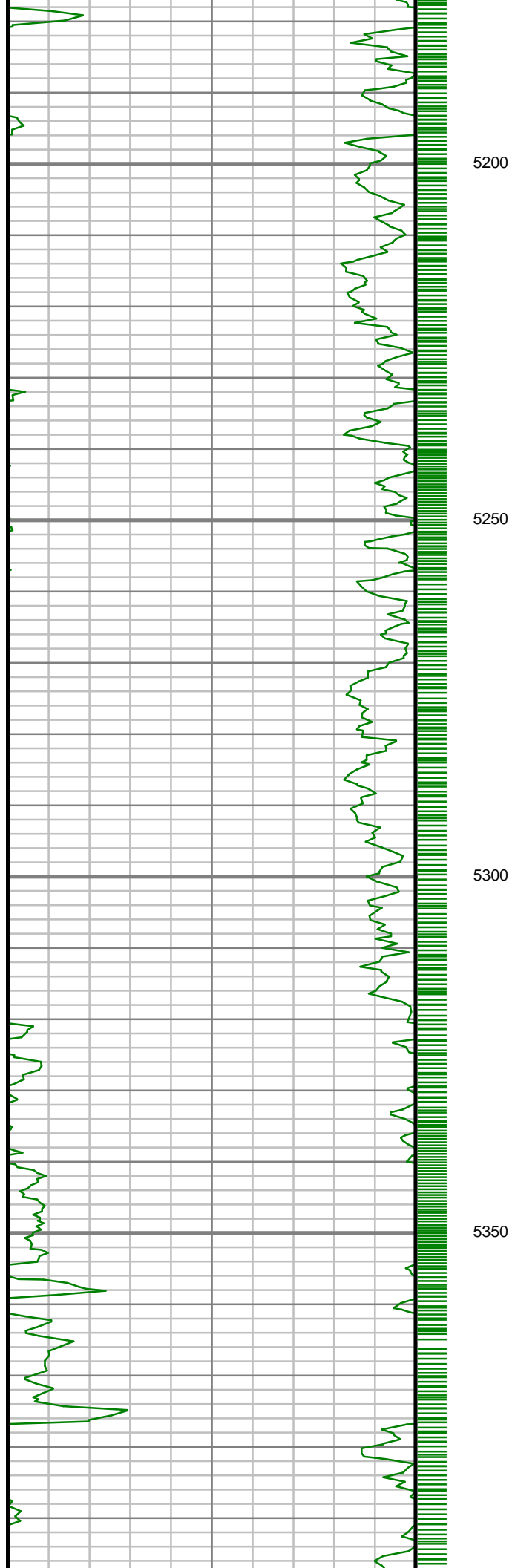
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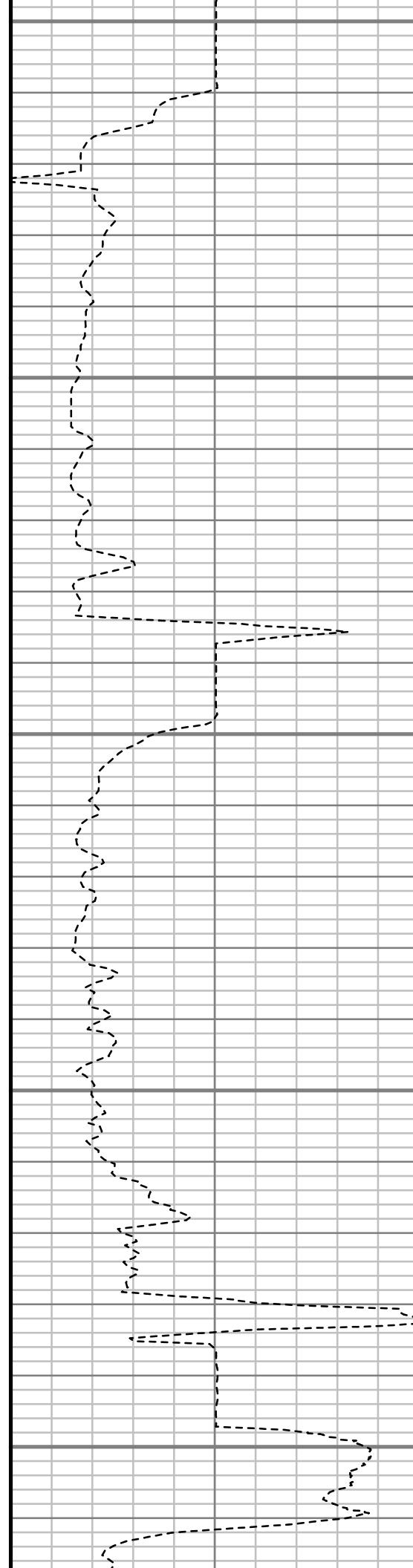
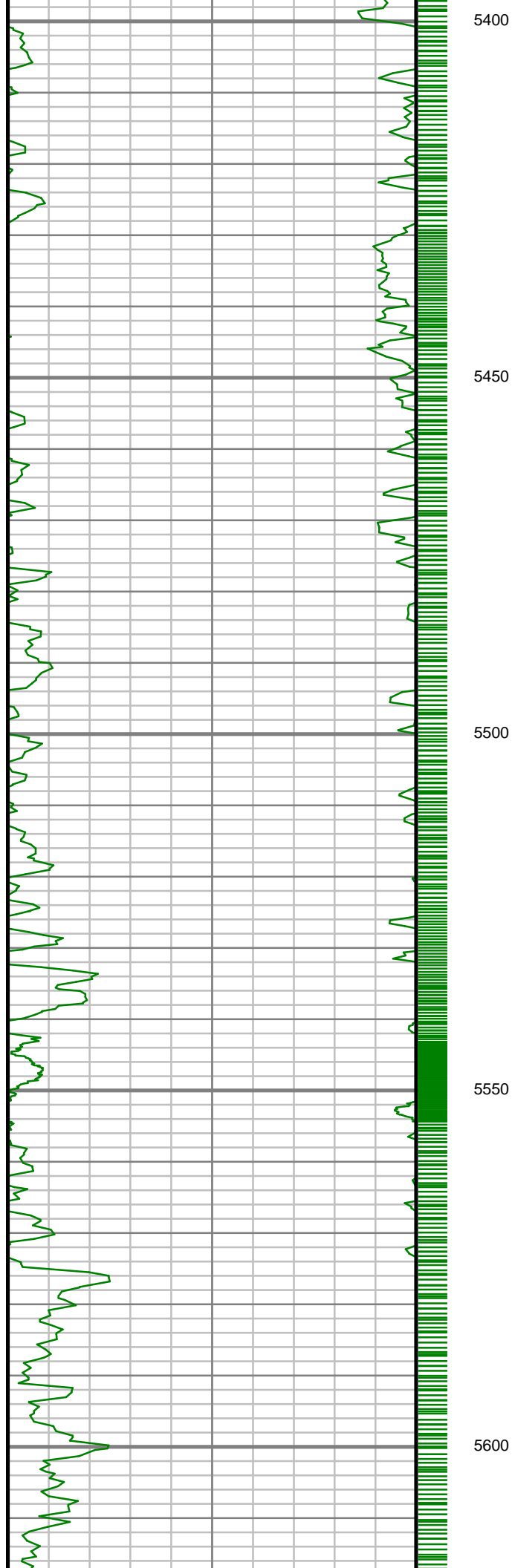
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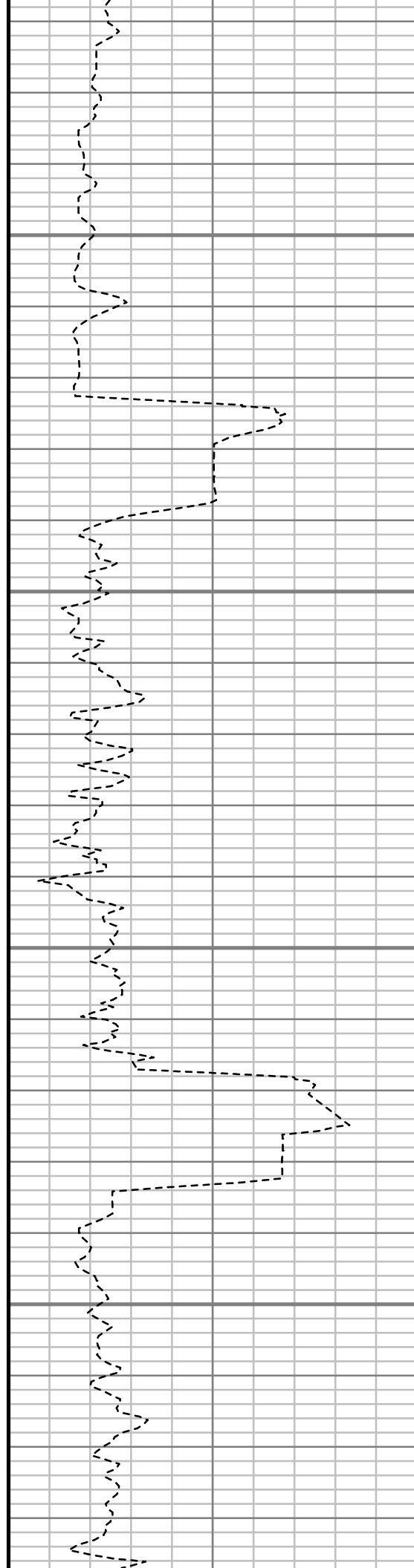
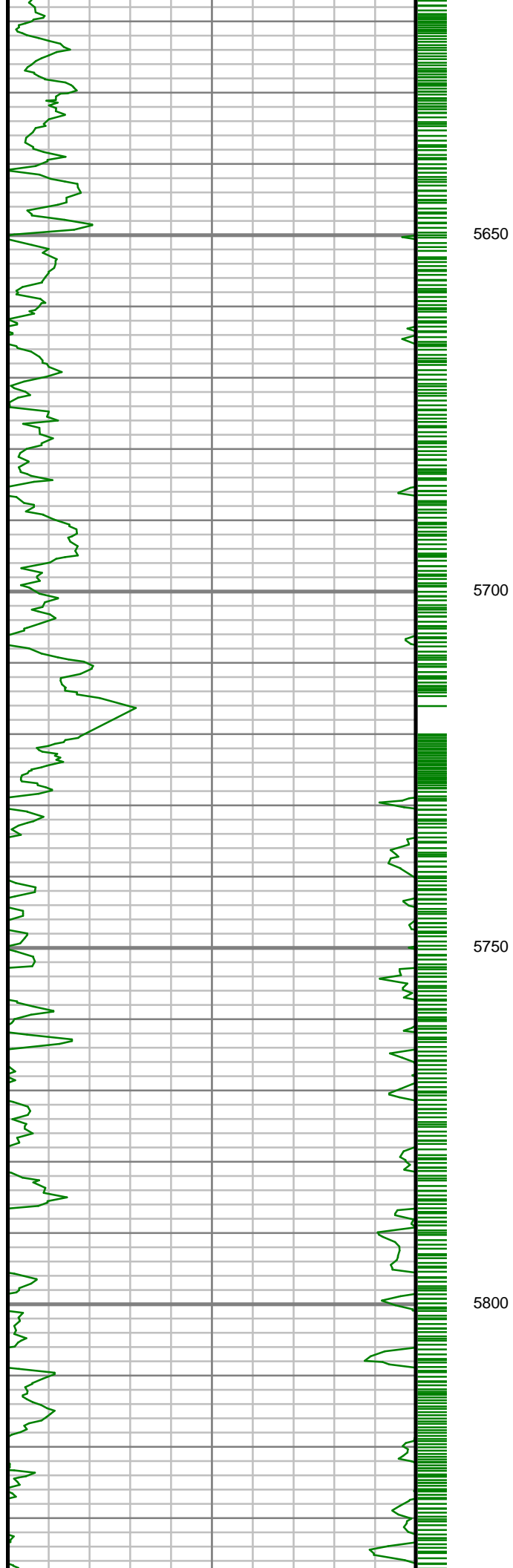


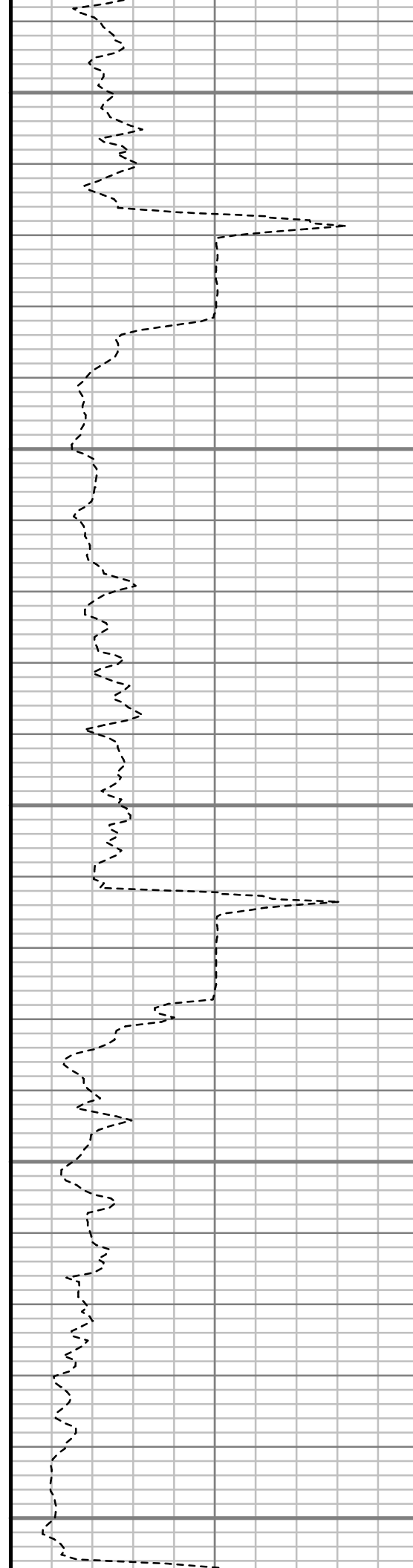
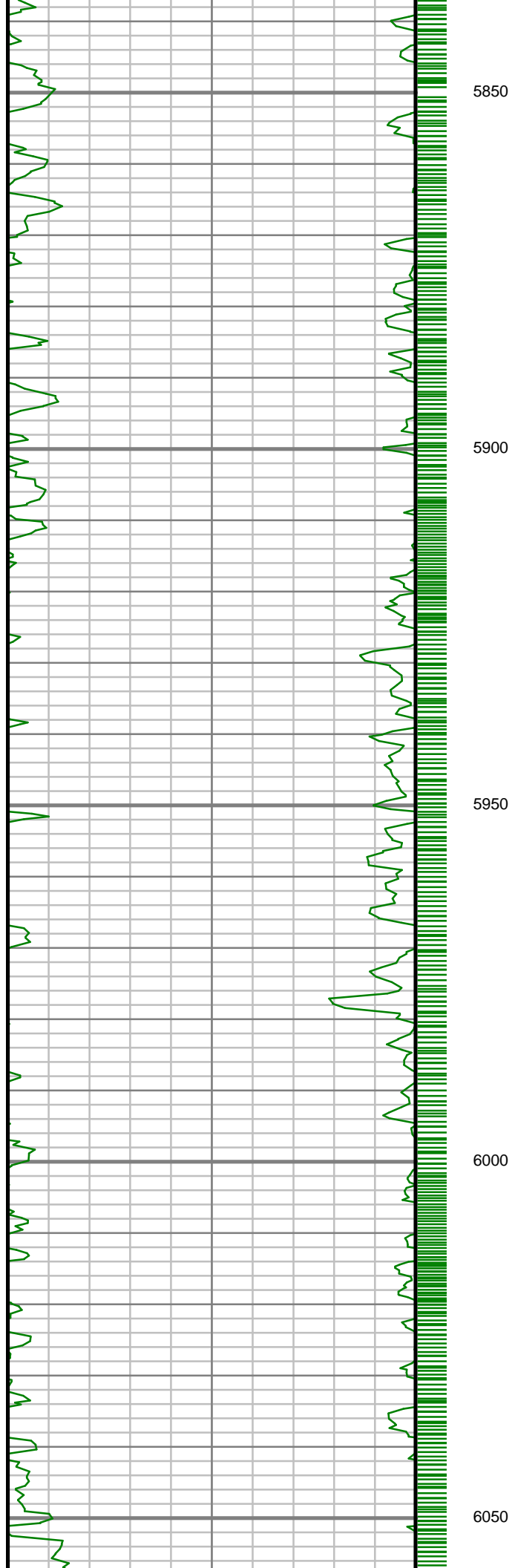


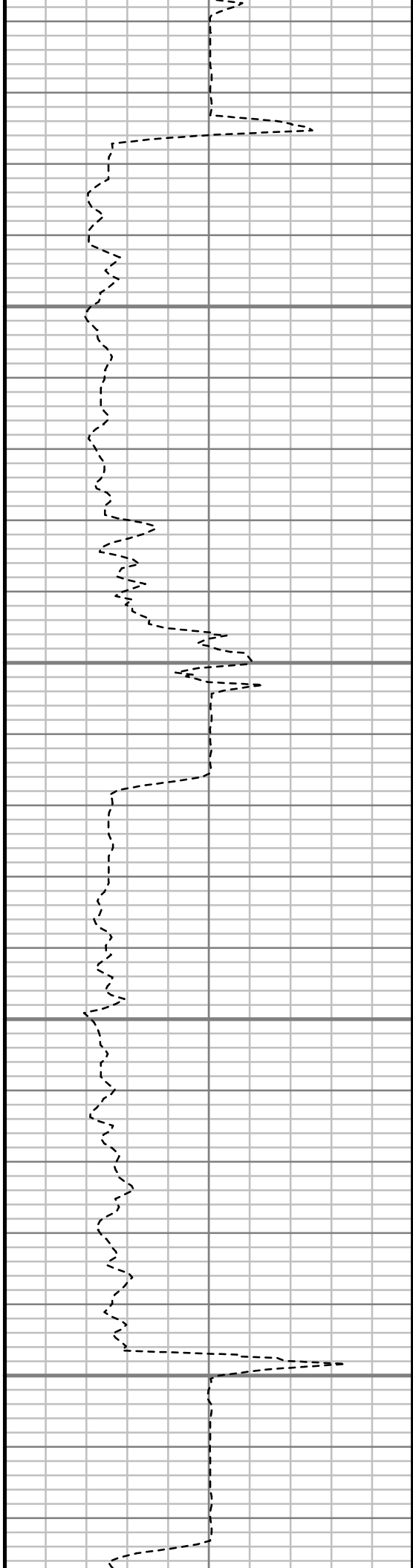
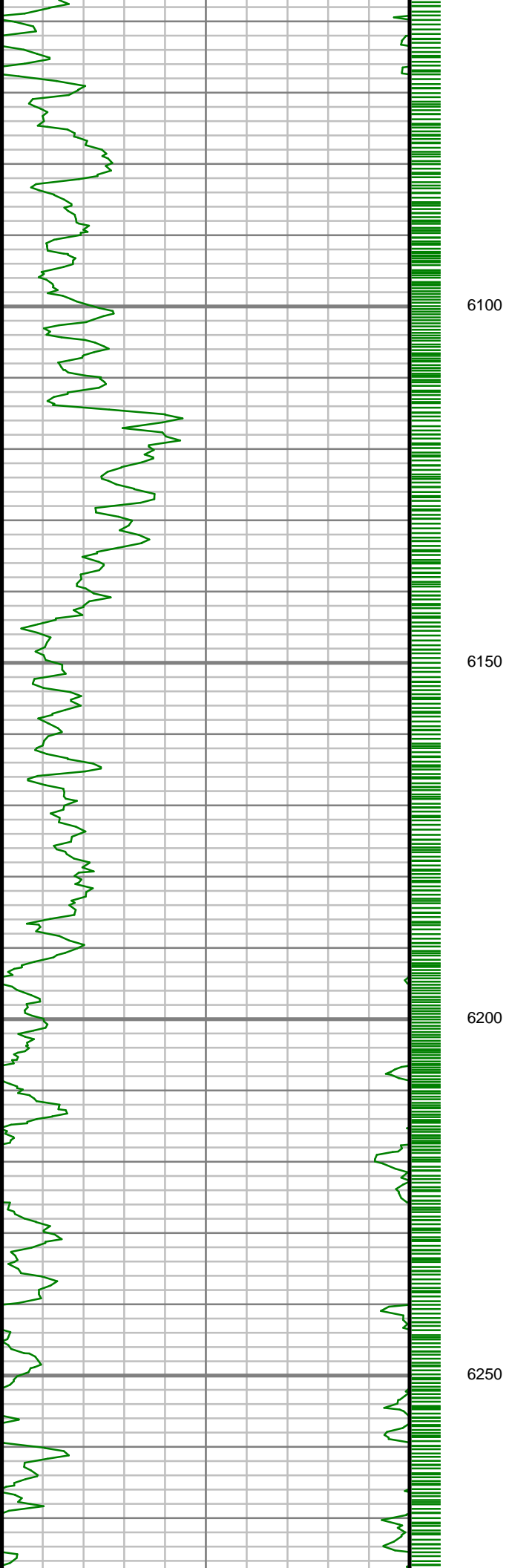


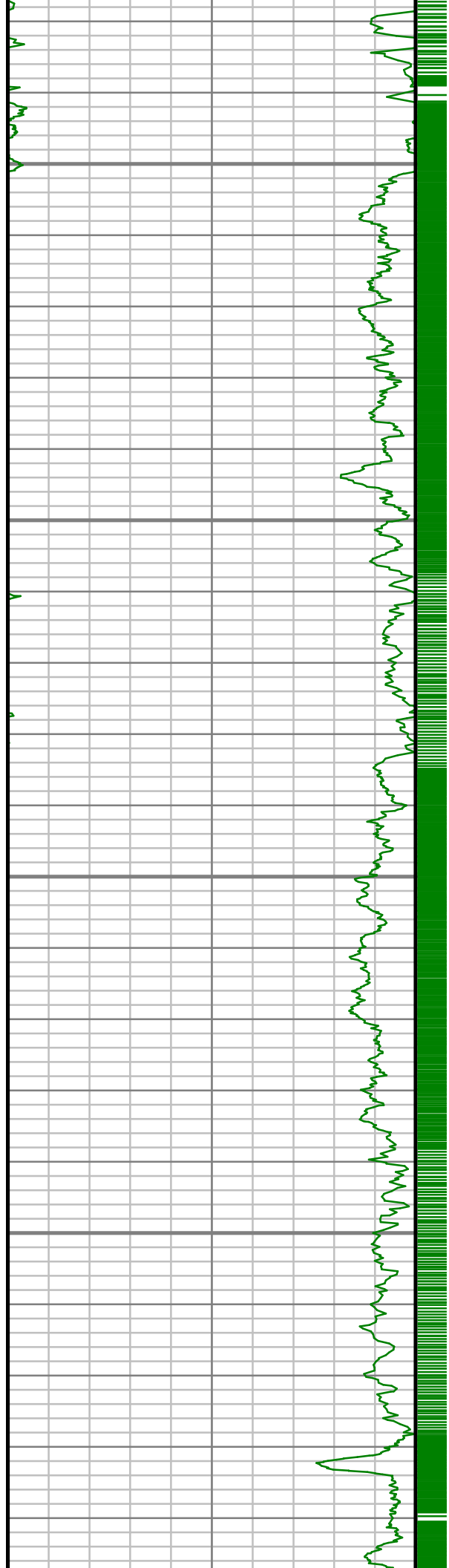










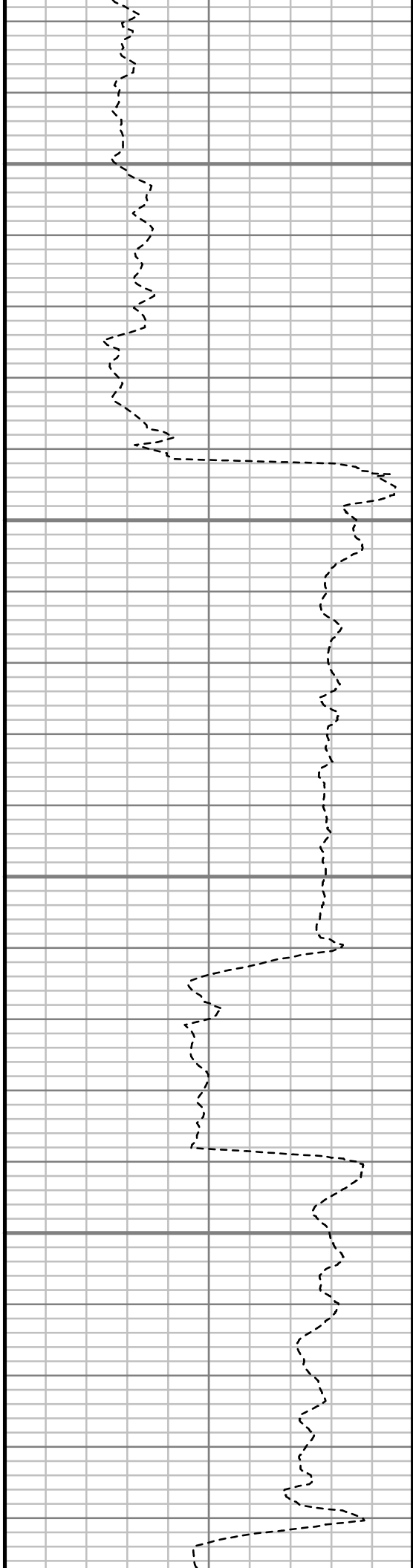


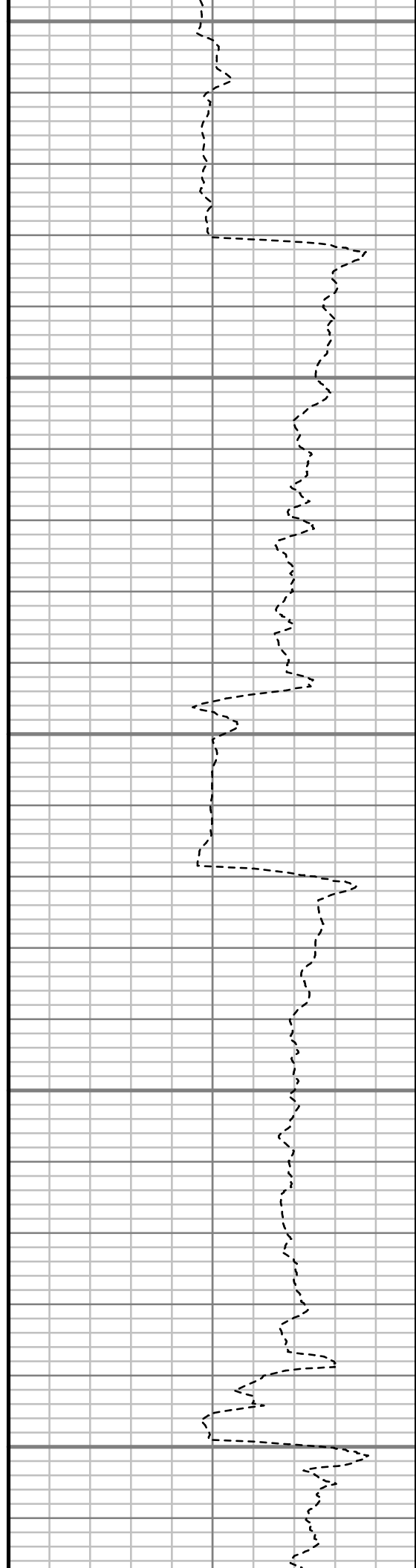
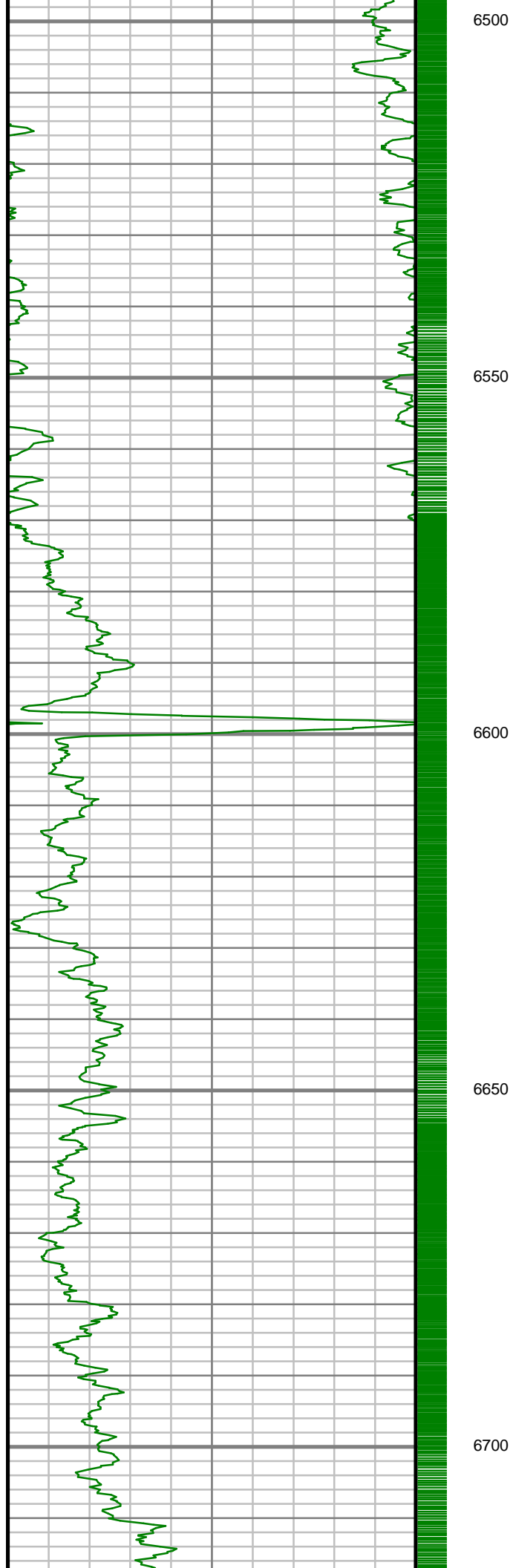
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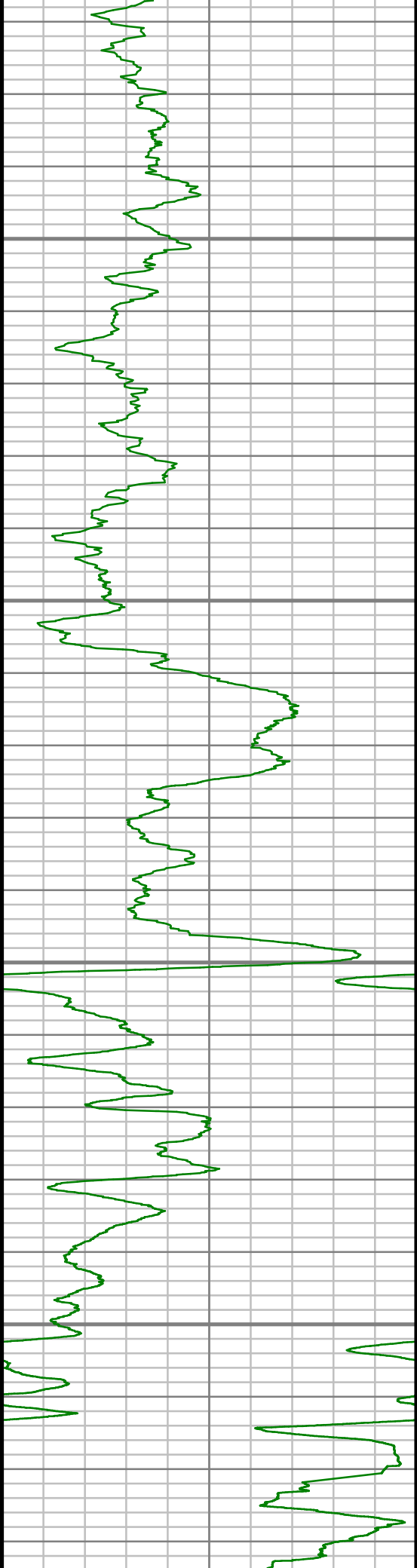
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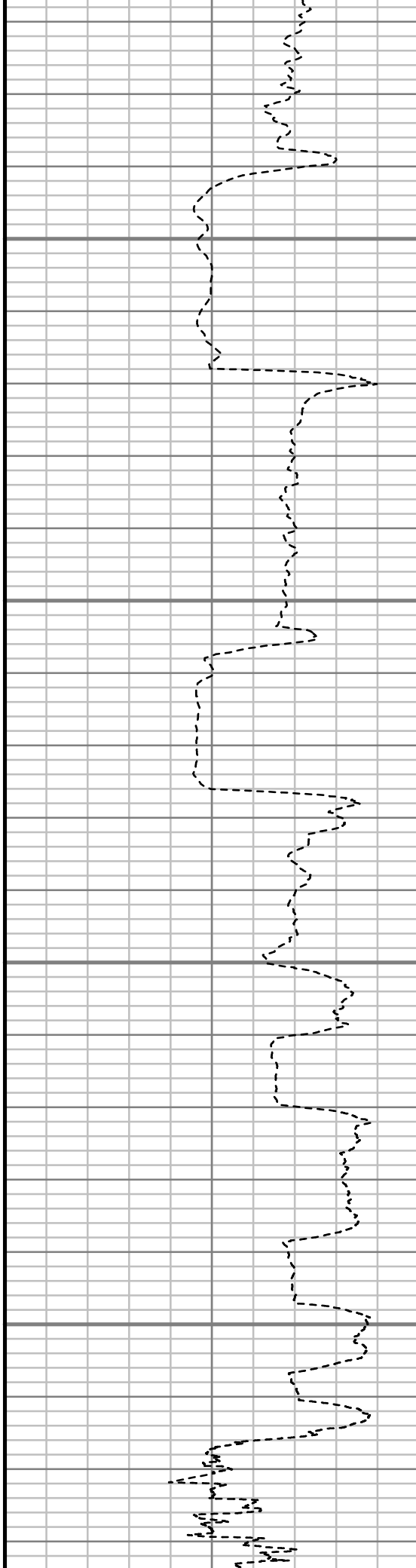
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1



2

Gamma Ray (GR)		
0	Unit = aapi	150

TRUE VERTICAL DEPTH
240 (ft)

Rate of Penetration (ROP)		
600	Unit = ft/hr	0
Comments		

MWD Survey Report

Well Location	DALE PAD
Well Name	DALE 4F-20H-O264
Survey Date	8/20/2014
Latitude	40°7'3.508"N
Longitude	104°34'18.793"W
Btotal	52544 nT
Dip	66.73 deg
Magnetic Declination	8.38 deg
North Reference	True North
Grid Correction	None
Depth Reference	RKB (25.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 4.87Azim (deg)
Operator(s)	C. WILSON, S. WAXLER, T. LE

Well Notes

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	"/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
140.00	0.35	15.47	140.00	0.42	0.41	0.11	0.43	15.47	0.25
232.00	0.18	260.33	232.00	0.66	0.66	0.05	0.66	4.38	0.50
323.00	0.53	124.98	323.00	0.42	0.40	0.26	0.47	32.72	0.73
415.00	0.26	348.84	415.00	0.41	0.36	0.56	0.67	57.10	0.81
507.00	0.79	105.03	506.99	0.50	0.41	1.14	1.21	70.28	1.02
598.00	1.58	146.34	597.97	-0.59	-0.80	2.44	2.57	108.21	1.23
690.00	2.82	129.46	689.91	-2.87	-3.30	4.89	5.90	123.99	1.50
781.00	3.78	130.87	780.75	-5.90	-6.68	8.88	11.12	126.94	1.07
873.00	4.75	136.23	872.50	-10.20	-11.42	13.82	17.92	129.57	1.14
964.00	5.81	134.12	963.11	-15.61	-17.34	19.73	26.27	131.32	1.18
1055.00	5.19	128.76	1053.69	-20.82	-23.13	26.24	34.98	131.39	0.88
1086.00	5.01	129.99	1084.57	-22.38	-24.87	28.37	37.73	131.24	0.67
1177.00	4.84	127.00	1175.23	-26.71	-29.74	34.48	45.54	130.78	0.34
1269.00	6.25	136.05	1266.80	-32.07	-35.68	41.06	54.39	130.99	1.80
1340.00	8.65	134.35	1337.20	-38.01	-42.20	47.56	63.58	131.58	3.40
1524.00	9.37	139.38	1518.93	-57.31	-63.24	67.21	92.28	133.26	0.58
1706.00	10.59	134.25	1698.18	-78.31	-86.16	88.83	123.75	134.12	0.83
1889.00	10.54	131.12	1878.08	-98.87	-108.90	113.49	157.28	133.82	0.31

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
2072.00	10.03	129.74	2058.13	-117.87	-130.09	138.35	189.90	133.24	0.31
2254.00	9.45	126.34	2237.51	-134.73	-149.07	162.57	220.57	132.52	0.45
2437.00	9.04	130.46	2418.14	-150.95	-167.31	185.61	249.89	132.03	0.42
2621.00	10.92	132.77	2599.34	-170.07	-188.53	209.41	281.77	132.00	1.04
2804.00	8.30	129.24	2779.76	-188.17	-208.65	232.36	312.29	131.92	1.47
2994.00	11.27	132.00	2966.98	-207.12	-229.75	256.78	344.55	131.82	1.58
3183.00	9.44	128.67	3152.90	-226.89	-251.79	282.60	378.50	131.70	1.02
3373.00	10.37	122.22	3340.07	-243.41	-270.64	309.23	410.94	131.19	0.76
3563.00	8.35	118.81	3527.53	-256.87	-286.41	335.79	441.34	130.46	1.10
3753.00	7.38	122.97	3715.74	-268.21	-299.70	358.12	466.97	129.92	0.59
3942.00	4.59	127.00	3903.70	-277.95	-310.86	374.34	486.59	129.71	1.49
4131.00	0.99	146.08	4092.44	-283.26	-316.77	381.31	495.72	129.72	1.94
4320.00	0.69	152.89	4281.42	-285.50	-319.15	382.74	498.34	129.82	0.17
4510.00	0.43	197.25	4471.41	-287.17	-320.85	383.05	499.67	129.95	0.26
4700.00	2.30	43.63	4661.37	-284.89	-318.77	385.47	500.20	129.59	1.42
4890.00	0.65	290.21	4851.32	-281.63	-315.63	387.08	499.46	129.19	1.38
5081.00	1.18	302.33	5042.30	-280.44	-314.21	384.40	496.48	129.26	0.29
5271.00	0.87	266.00	5232.27	-279.76	-313.26	381.31	493.49	129.40	0.37

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
5461.00	0.96	338.37	5422.25	-278.56	-311.88	379.28	491.04	129.43	0.57
5652.00	0.74	56.87	5613.23	-276.37	-309.72	379.72	490.01	129.20	0.57
5842.00	1.07	56.76	5803.21	-274.52	-308.08	382.23	490.93	128.87	0.18
6033.00	1.41	73.11	5994.16	-272.54	-306.41	385.98	492.82	128.44	0.26
6223.00	1.60	77.63	6184.10	-270.88	-305.16	390.81	495.84	127.98	0.12
6319.00	1.91	77.86	6280.05	-270.02	-304.54	393.69	497.73	127.72	0.32
6414.00	4.53	3.09	6374.93	-265.80	-300.45	395.45	496.64	127.23	4.67
6509.00	13.37	355.36	6468.68	-251.18	-285.72	394.76	487.31	125.90	9.37
6605.00	19.59	351.70	6560.69	-224.53	-258.71	391.53	469.29	123.45	6.56
6700.00	29.33	356.53	6647.07	-185.91	-219.62	387.82	445.69	119.52	10.47
6795.00	42.41	0.30	6723.89	-130.70	-164.11	386.57	419.97	113.00	13.95
6890.00	50.66	357.12	6789.19	-62.24	-95.26	384.90	396.51	103.90	9.01
6985.00	60.06	359.07	6843.14	15.29	-17.24	382.38	382.77	92.58	10.03
7080.00	72.18	0.70	6881.53	101.66	69.46	382.26	388.52	79.70	12.86
7176.00	80.99	1.76	6903.78	194.76	162.73	384.27	417.31	67.05	9.23
7253.00	86.03	3.28	6912.48	271.18	239.13	387.64	455.47	58.33	6.84
7357.00	89.36	1.38	6916.66	374.97	342.95	391.86	520.74	48.81	3.68
7449.00	89.63	0.89	6917.47	466.78	434.92	393.68	586.64	42.15	0.61

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
7541.00	89.46	359.77	6918.20	558.48	526.92	394.21	658.06	36.80	1.24
7633.00	88.66	359.23	6919.71	650.06	618.90	393.41	733.35	32.44	1.05
7728.00	90.44	0.10	6920.46	744.67	713.89	392.85	814.85	28.82	2.08
7823.00	90.97	359.76	6919.29	839.31	808.88	392.74	899.19	25.90	0.67
7918.00	90.27	359.34	6918.27	933.89	903.87	392.00	985.22	23.45	0.87
8013.00	90.47	359.26	6917.65	1028.44	998.87	390.83	1072.61	21.37	0.23
8109.00	89.77	359.86	6917.46	1124.03	1094.86	390.10	1162.28	19.61	0.97
8204.00	88.99	0.23	6918.48	1218.68	1189.85	390.17	1252.19	18.15	0.90
8299.00	88.96	0.34	6920.18	1313.36	1284.84	390.64	1342.91	16.91	0.12
8394.00	89.09	0.16	6921.79	1408.04	1379.82	391.05	1434.17	15.82	0.23
8489.00	88.69	0.15	6923.63	1502.70	1474.81	391.31	1525.84	14.86	0.42
8584.00	89.13	0.81	6925.44	1597.40	1569.78	392.11	1618.01	14.02	0.84
8680.00	89.23	0.40	6926.82	1693.13	1665.77	393.12	1711.53	13.28	0.44
8775.00	88.39	1.00	6928.80	1787.86	1760.74	394.28	1804.34	12.62	1.09
8871.00	89.40	1.24	6930.66	1883.63	1856.70	396.15	1898.49	12.04	1.08
8966.00	88.59	359.92	6932.33	1978.35	1951.68	397.11	1991.67	11.50	1.62
9061.00	89.87	359.76	6933.60	2072.97	2046.67	396.85	2084.79	10.97	1.35
9156.00	90.10	359.48	6933.63	2167.57	2141.67	396.21	2178.01	10.48	0.38

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
9252.00	90.27	359.28	6933.32	2263.13	2237.66	395.18	2272.29	10.02	0.27
9347.00	90.13	359.06	6932.99	2357.66	2332.65	393.81	2365.66	9.58	0.27
9442.00	90.97	359.01	6932.07	2452.16	2427.63	392.21	2459.11	9.18	0.88
9537.00	91.71	358.54	6929.85	2546.60	2522.58	390.19	2552.58	8.79	0.92
9632.00	91.58	358.80	6927.12	2641.01	2617.52	387.98	2646.12	8.43	0.30
9727.00	90.54	358.15	6925.37	2735.40	2712.47	385.45	2739.72	8.09	1.29
9822.00	89.76	359.42	6925.12	2829.86	2807.44	383.44	2833.51	7.78	1.56
9917.00	89.46	0.76	6925.76	2924.52	2902.44	383.59	2927.68	7.53	1.45
10013.00	88.42	0.26	6927.53	3020.23	2998.42	384.45	3022.96	7.31	1.21
10108.00	88.62	359.29	6929.98	3114.82	3093.38	384.07	3117.13	7.08	1.04
10203.00	89.60	0.10	6931.46	3209.42	3188.37	383.57	3211.36	6.86	1.33
10298.00	89.53	359.63	6932.18	3304.05	3283.36	383.35	3305.67	6.66	0.50
10393.00	90.03	358.81	6932.54	3398.59	3378.35	382.05	3399.89	6.45	1.01
10488.00	90.67	358.39	6931.96	3493.02	3473.32	379.73	3494.02	6.24	0.81
10583.00	89.93	358.88	6931.45	3587.46	3568.29	377.47	3588.20	6.04	0.94
10678.00	90.00	0.37	6931.51	3682.06	3663.29	376.85	3682.62	5.87	1.56
10774.00	89.03	0.60	6932.32	3777.77	3759.28	377.66	3778.20	5.74	1.04
10869.00	89.40	0.19	6933.63	3872.47	3854.27	378.31	3872.79	5.61	0.58

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
10964.00	90.07	1.06	6934.08	3967.21	3949.26	379.34	3967.44	5.49	1.16
11059.00	90.77	0.89	6933.38	4061.98	4044.24	380.96	4062.15	5.38	0.76
11154.00	89.77	0.75	6932.93	4156.75	4139.23	382.31	4156.85	5.28	1.07
11250.00	89.87	0.33	6933.24	4252.47	4235.23	383.21	4252.53	5.17	0.45
11346.08	90.34	359.58	6933.07	4348.20	4331.31	383.13	4348.22	5.06	0.92
11404.00	90.27	0.06	6932.77	4405.89	4389.22	382.95	4405.90	4.99	0.83

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

5" = 100' FEET TVD