

5" = 100' FEET TVD

COMPANY : ENCANA OIL AND GAS (U.S.A.) INC WELL : RUHL 1C-32H-B264 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-40279										COMPANY : ENCANA OIL AND GAS (U.S.A.) INC WELL : RUHL 1C-32H-B264 FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05-123-40279									
DEPTH REF. : RKB REF. HEIGHT : 25.000 ft GROUND LEVEL : 4979.000 ft										OTHER SERVICES DIRECTIONAL ROP									
BOREHOLE RECORD										DEVIATION RECORD									
HOLE SIZE in	FROM ft	TO ft	INCLINATION deg							FROM ft	TO ft								
12.25	149	1220	0 - 12							0	1821								
8.75	1220	7450	12 - 0							1821	6605								
6.125	7450	11754	0 - 79							6605	7450								
			79 - 93							7450	11754								
CASING RECORD																			
CASING SIZE in	FROM ft	TO ft																	
16	0	149																	
9.625	0	1210																	
7	0	7435																	
DRILLING CO. : H&P RIG : 278 LWD UNIT NO. : MWD-00046-DISTRICT : CASPER, CASPER SPUD DATE : 12/10/2014 LWD START DATE : 01/12/2015 LWD END DATE : 01/20/2015										DEPTH : 5000 ft DEPTH : 11754 ft TOTAL DEPTH : 11754 ft									

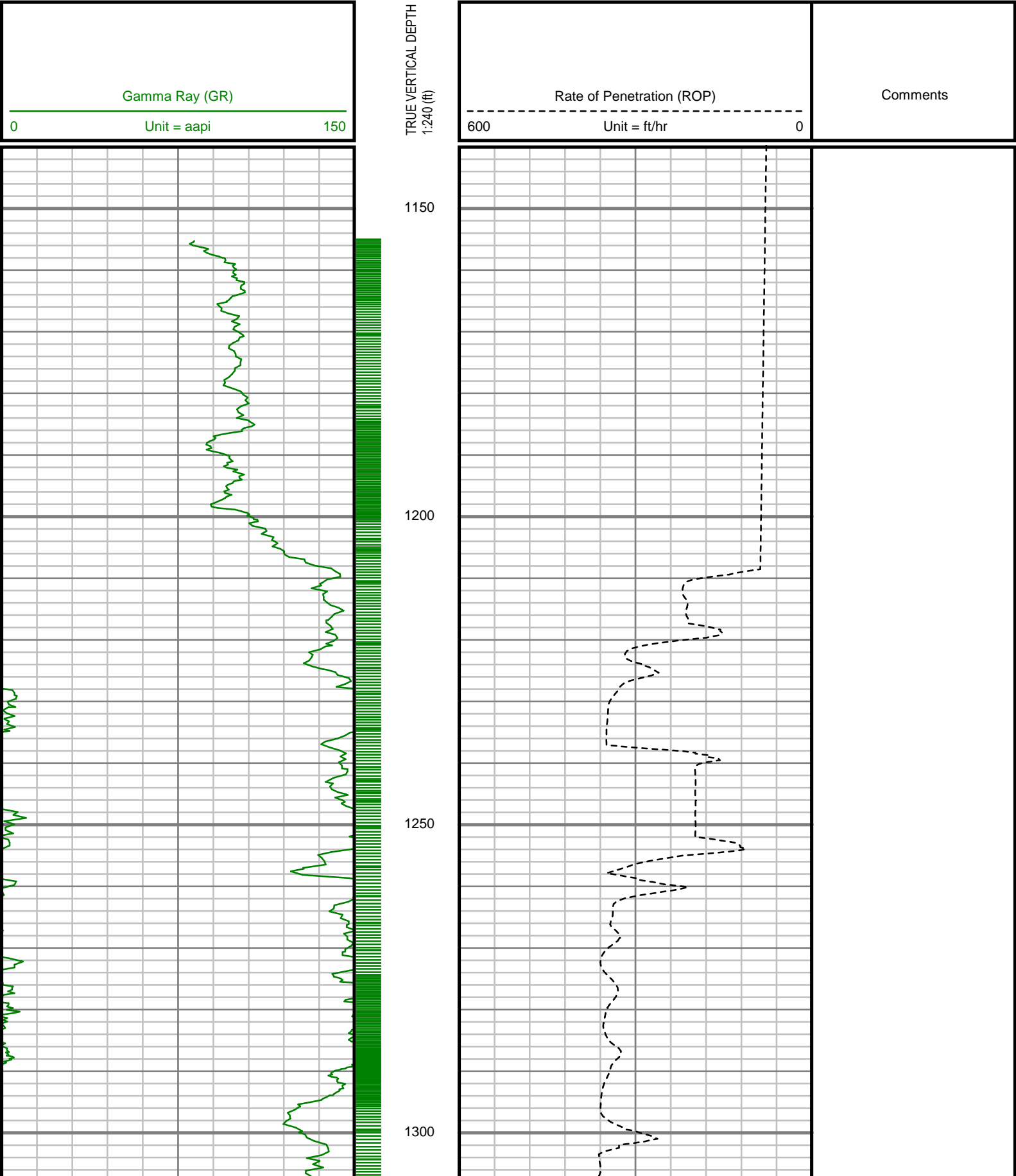
Run Data						
RUN NUMBER	1	2	3	4	5	
START DATE	12/10/2014	01/12/2015	01/13/2015	01/16/2015	01/19/2015	
START TIME	2045	2300	1100	1445	0915	
END DATE	12/11/2014	01/13/2015	01/15/2015	01/19/2015	01/20/2015	
END TIME	0630	1100	0930	0700	0645	
DEPTH IN (ft)	149	1220	2248	7450	11585	
DEPTH OUT (ft)	1220	2248	7450	11585	11754	
LOG TOP (ft)	-	-	5000	7396	11531	
LOG BOTTOM (ft)	-	-	7396	11531	11754	
HOLE SIZE (in)	12.25	8.75	8.75	6.125	6.125	
MUD DATA @ (ft)	1220	1450	7000	10610	11754	
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED	WATER-BASED	WATER-BASED	
DENSITY (lb / gal)	8.95	8.55	10.8	10.9	11.15	
VISCOSITY (s / qt)	28	27	36	39	34	
pH	7	11.65	8.3	7.7	7.55	
FLUID LOSS (cm3 / 30)	-	-	-	-	-	
SALINITY (ppm)	-	-	-	-	-	
Rm (ohmm @ deg F)	-	-	-	-	-	
Rmf (ohmm @ deg F)	-	-	-	-	-	
MAX TEMP (deg F)	90	92	172	224	235	
Rm @ MAX TEMP (ohmm)	-	-	-	-	-	
LWD ENGINEER #1	C. WILSON	C. WILSON	S. WAXLER	S. WAXLER	S. WAXLER	
LWD ENGINEER #2	T. LE	T.LE	T. LE	J. GREGORY	J. GREGORY	
LWD ENGINEER #3	-	-	J. GREGORY	D. PADULA	D. PADULA	
LOG WTINNESS #1	-	-	I. SMITH	I. SMITH	I. SMITH	
LOG WTINNESS #2	-	-	S. GILBERT	S. GILBERT	S. GILBERT	

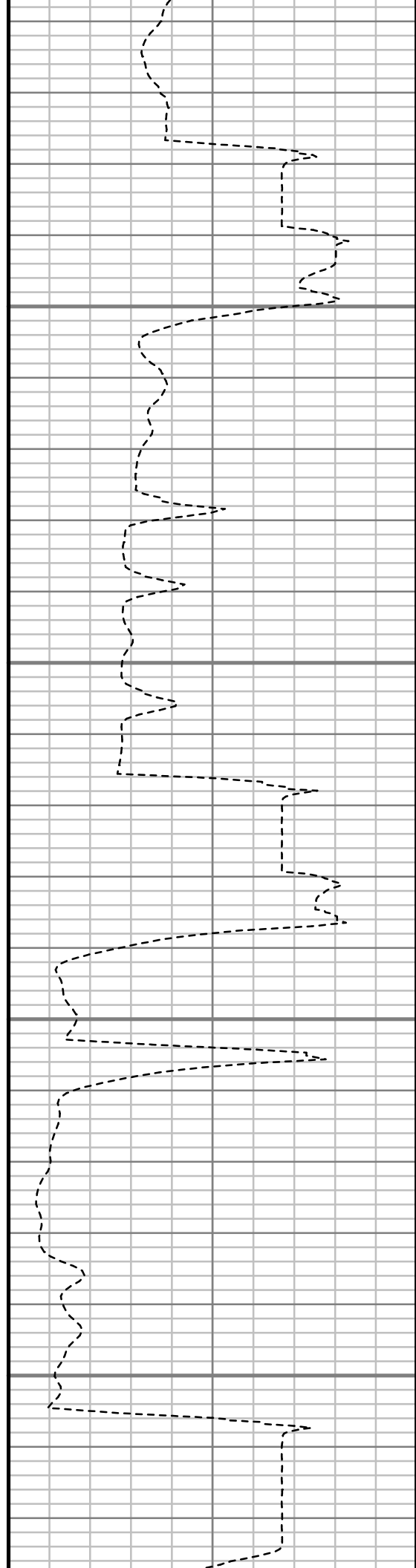
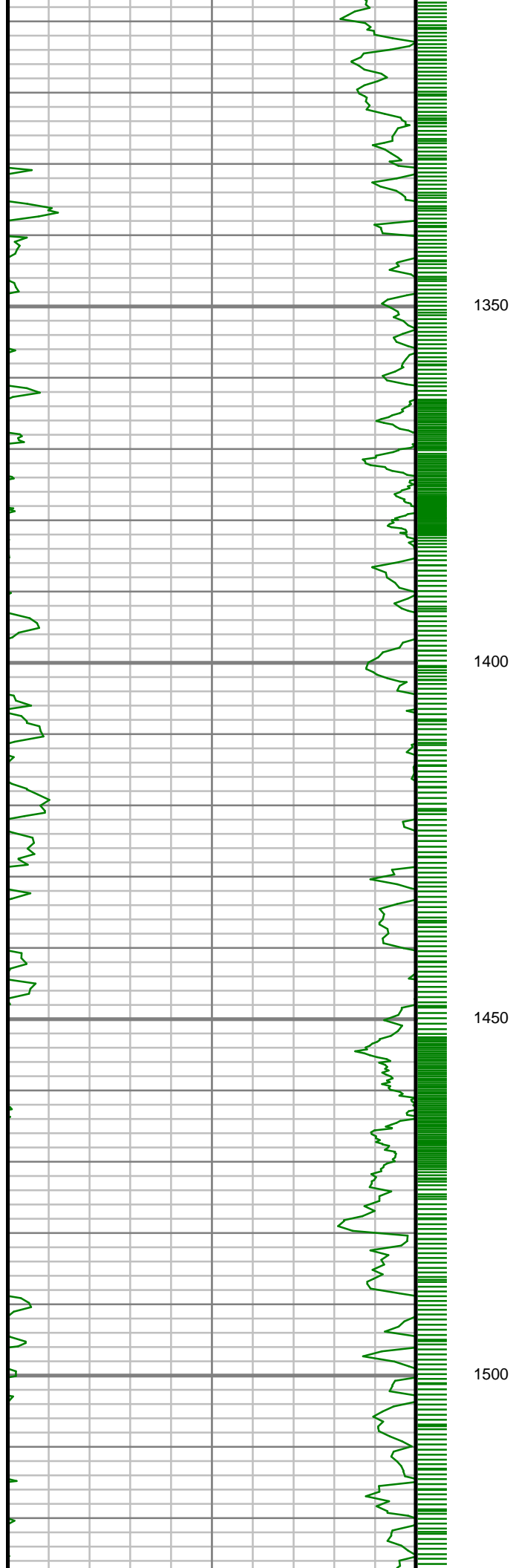
Remarks
ENCANA OIL AND GAS (U.S.A.) INC PRODUCTION AFE# 13179004
SCIENTIFIC DRILLING INTERNATIONAL JOB# 232801, 244541
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO RATE OF PENETRATION CURVE
RUN #1: MWD / DIRECTIONAL RUN
SENSORS S/N: EM5 = 1154 / MWD EYE = 0645
BIT TO SENSOR OFFSET: SURVEY = 60.90 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-062 / CONT = 126 / MWD EYE = 0522 / GAMMA RAY = 1076
BIT TO SENSOR OFFSETS: SURVEY = 62.76 FT. / GAMMA RAY = 54.11 FT.
RUN #3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-350 / CONT = 858 / MWD EYE = 0645 / GAMMA RAY = 1271
BIT TO SENSOR OFFSETS: SURVEY = 62.76 FT. / GAMMA RAY = 54.11 FT.
RUN #4: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-104 / CONT = 126 / MWD EYE = 0522 / GAMMA RAY = 1076
BIT TO SENSOR OFFSETS: SURVEY = 62.76 FT. / GAMMA RAY = 54.11 FT.

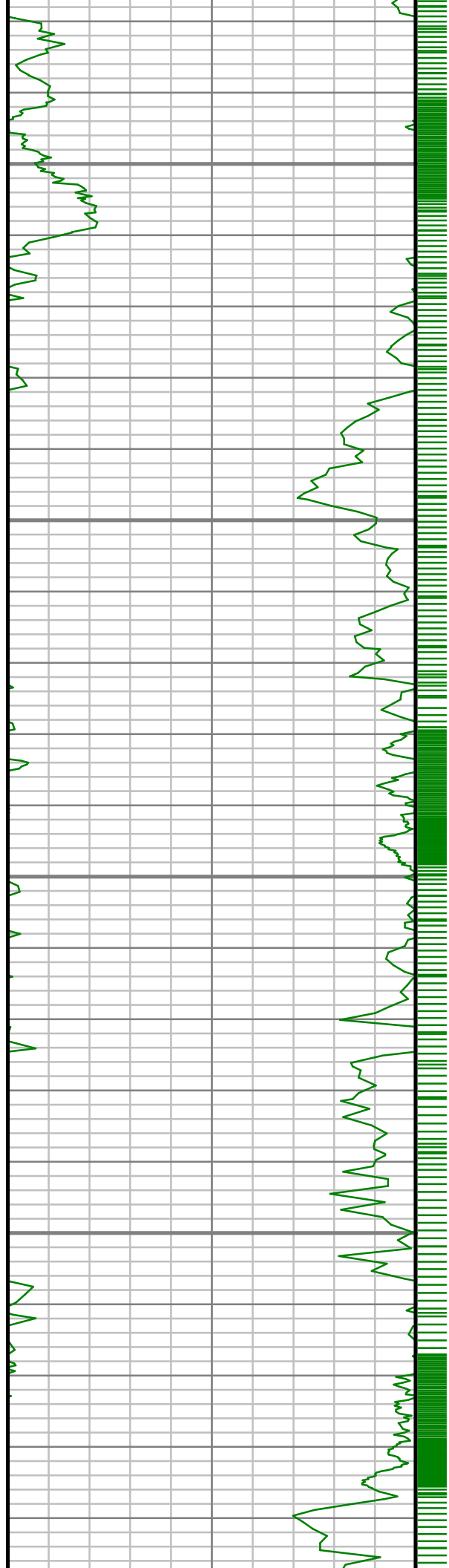
[illegible]

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
RUHL 1C-32H-B264
WATTENBERG FIELD
WELD COUNTY, COLORADO
05-123-40279





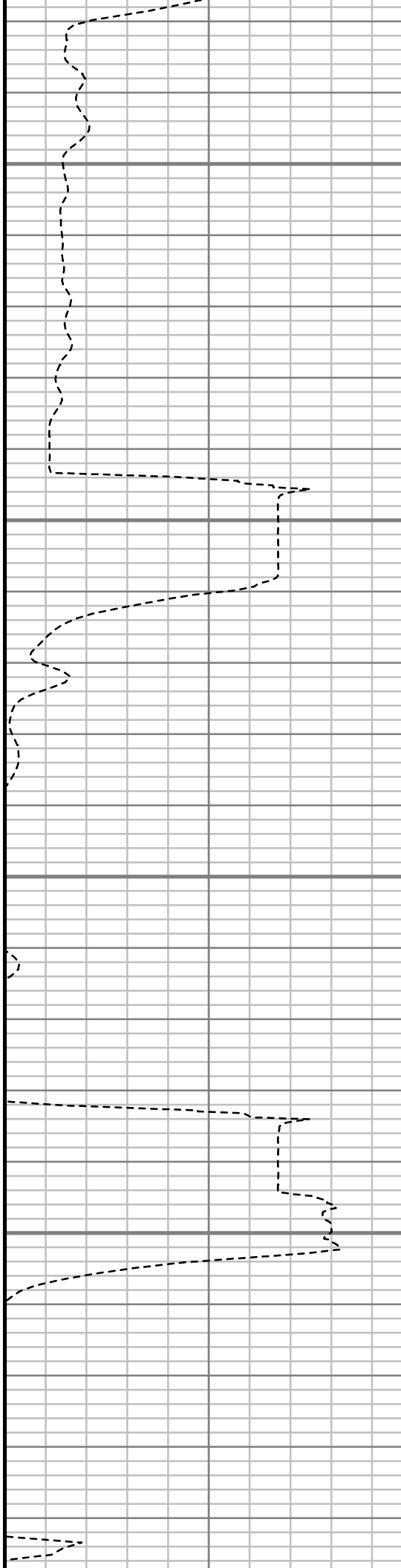


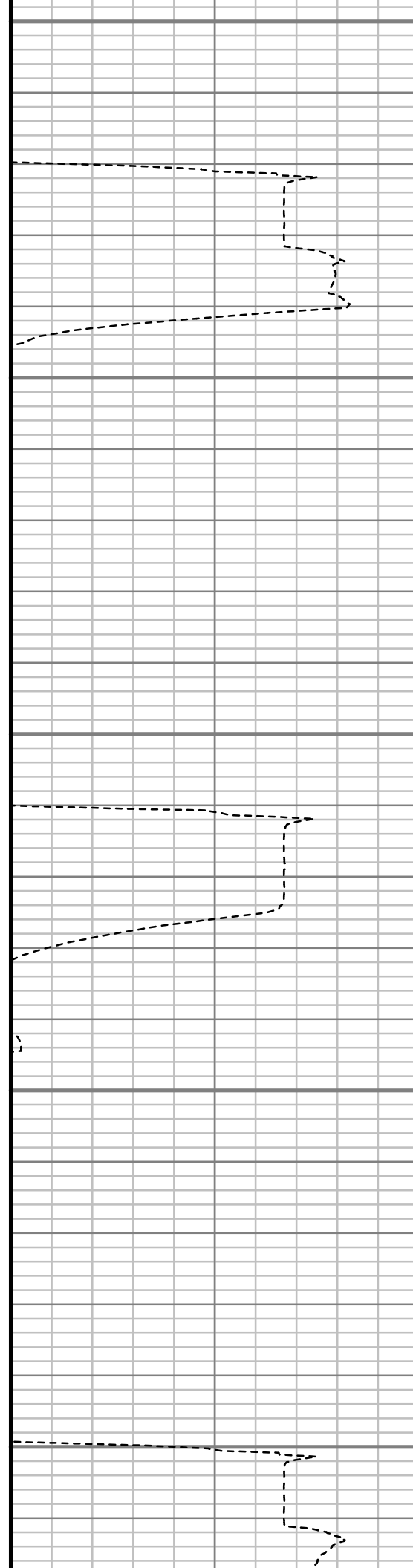
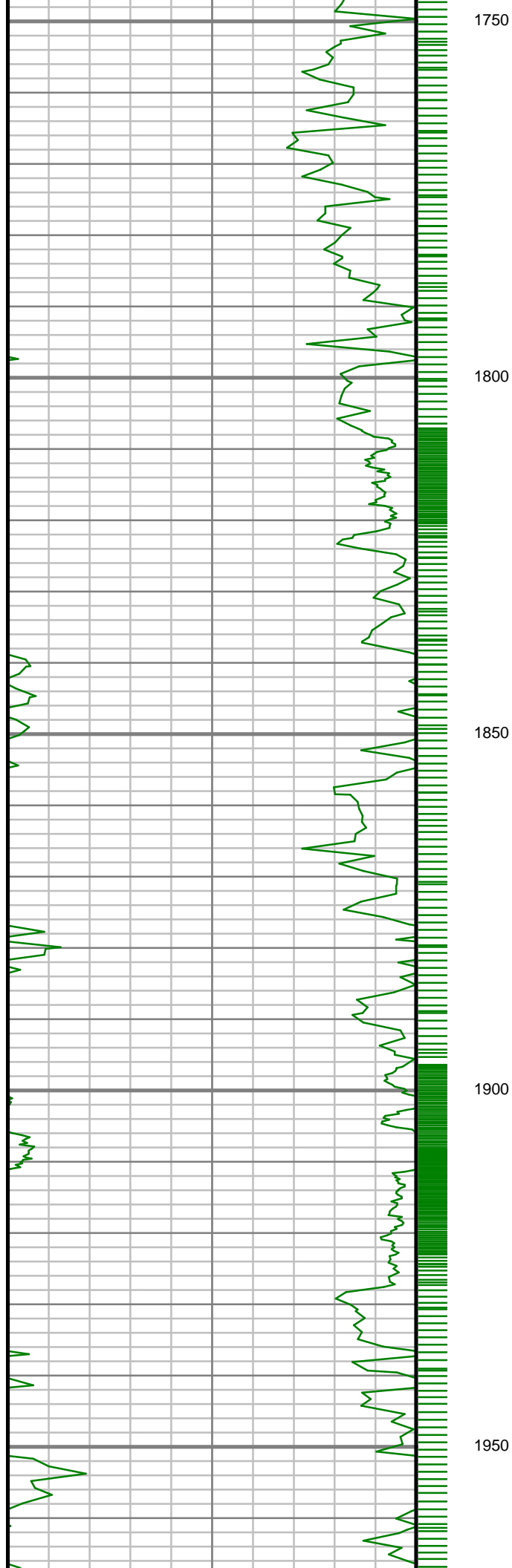
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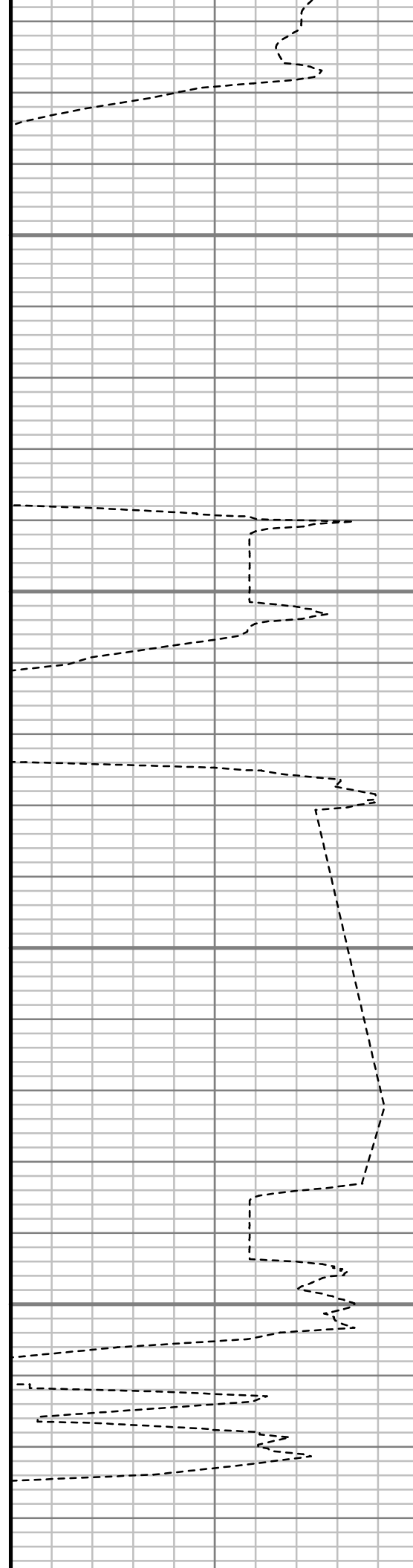
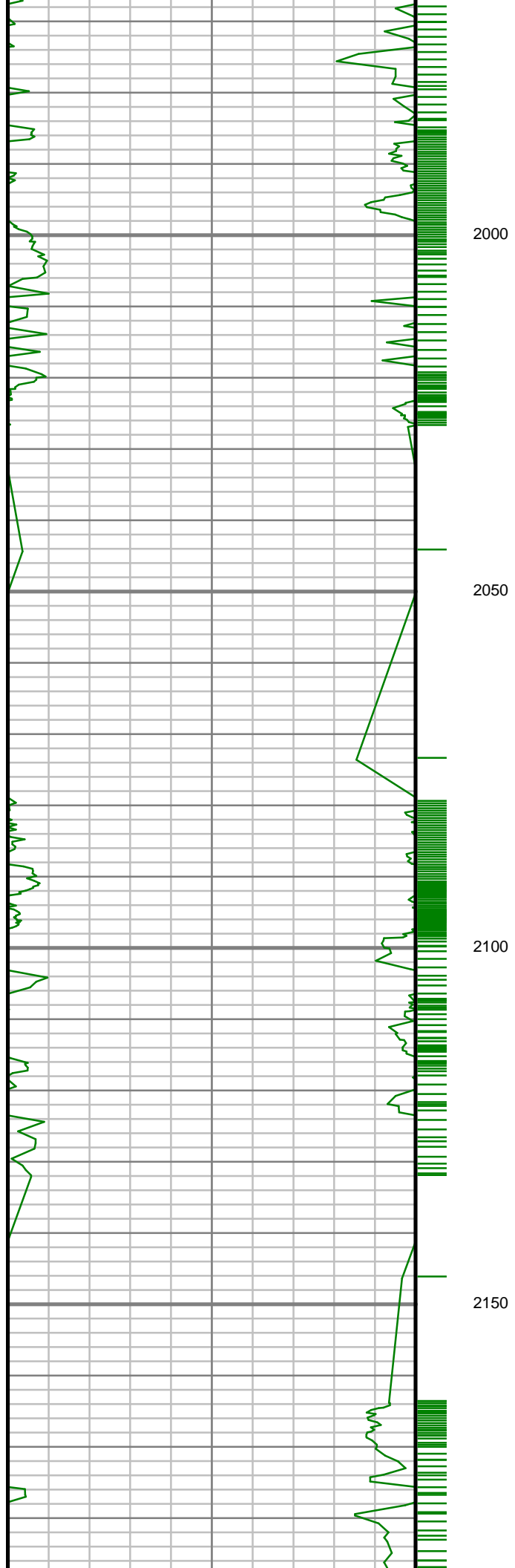
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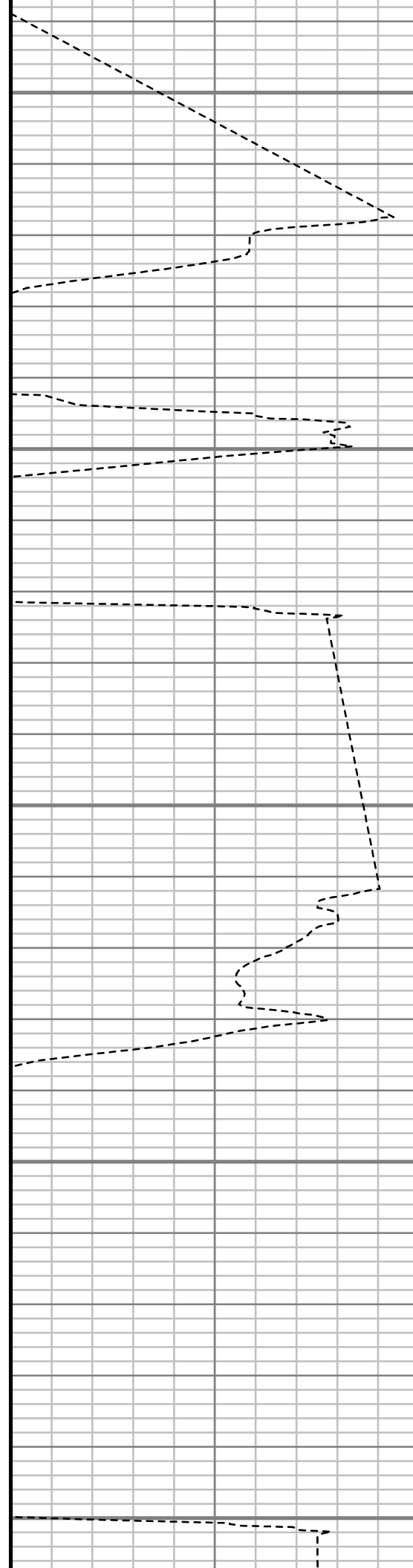
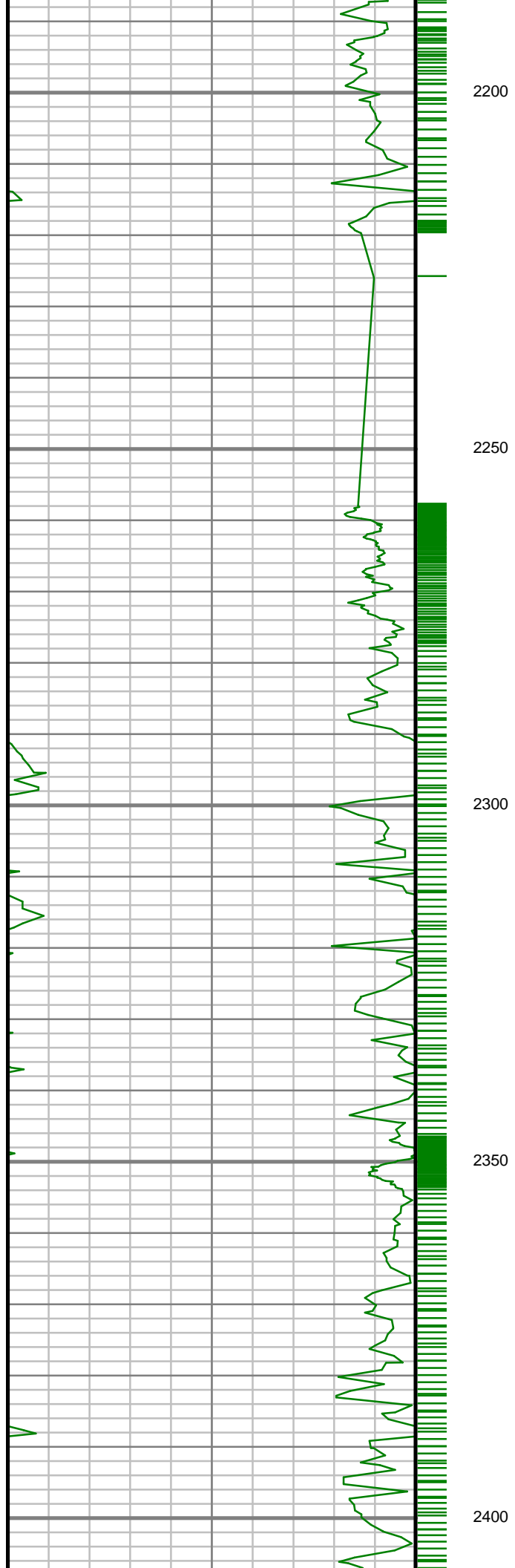
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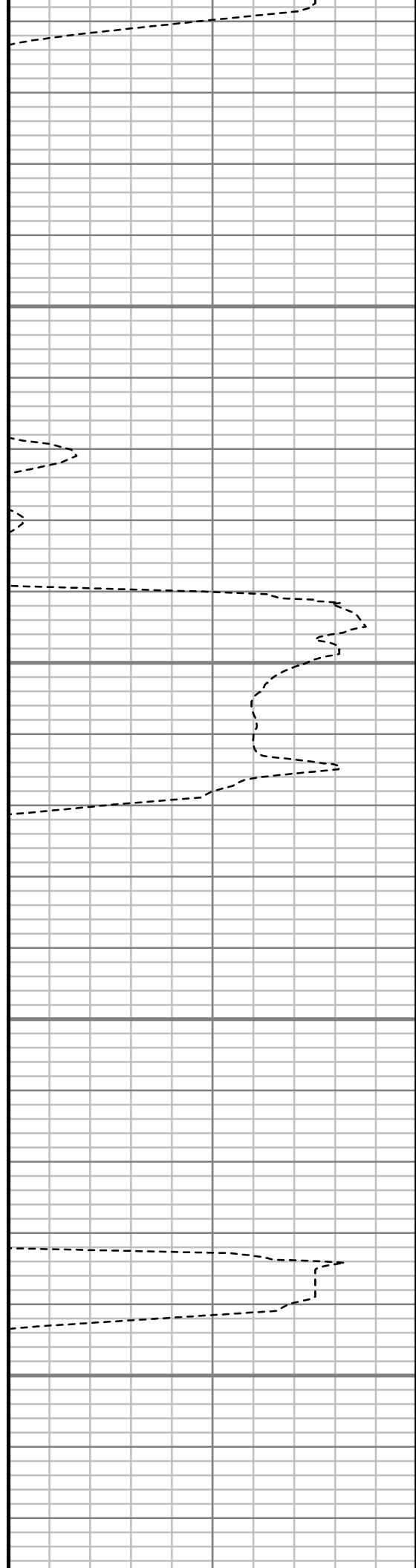
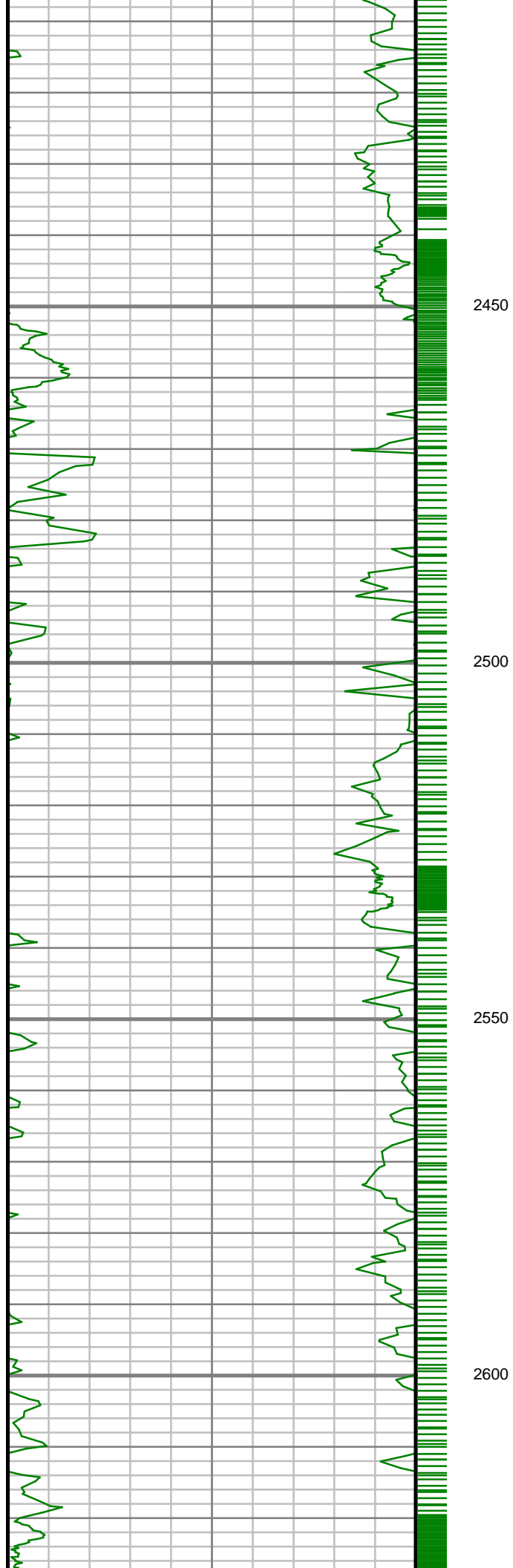
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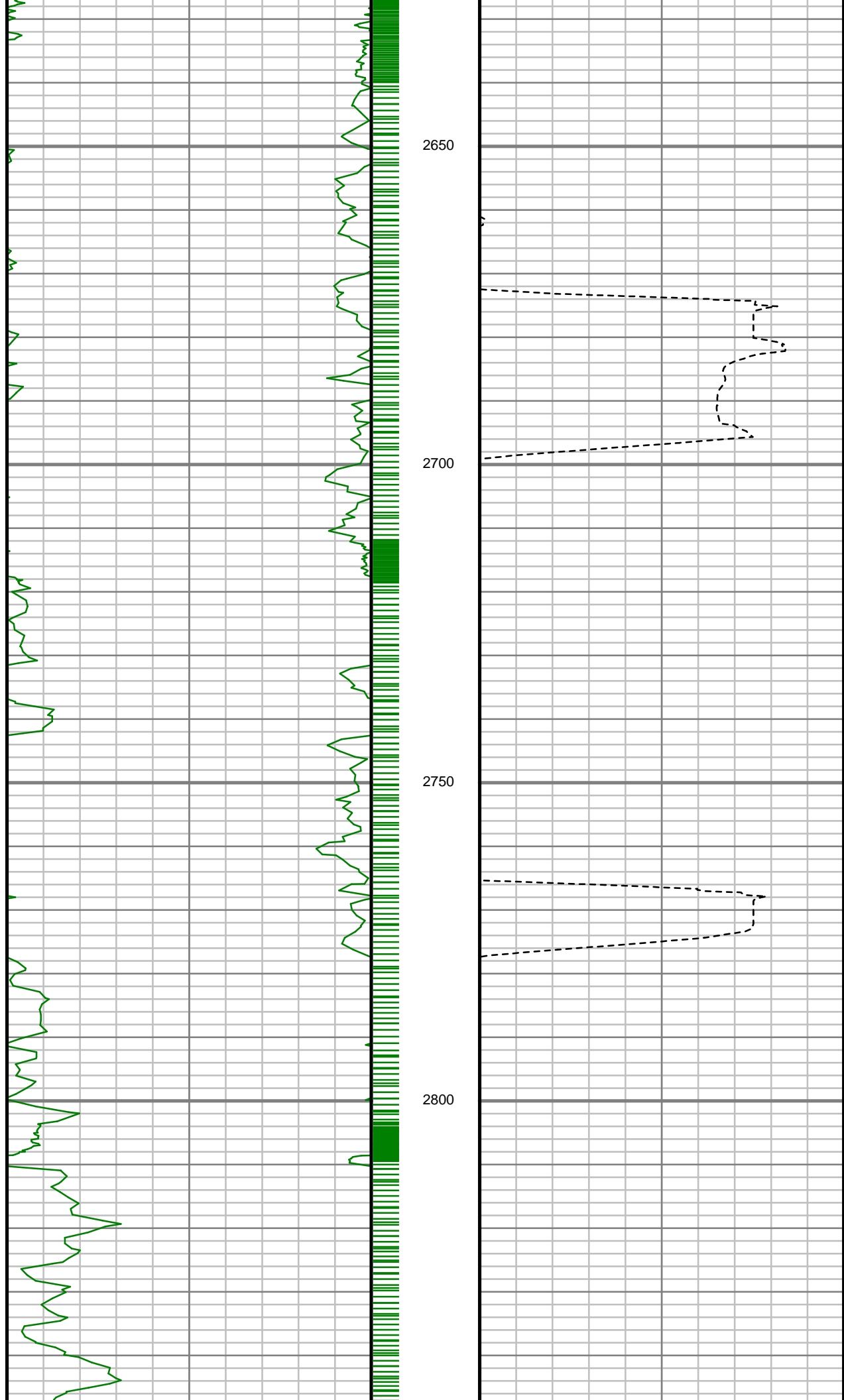


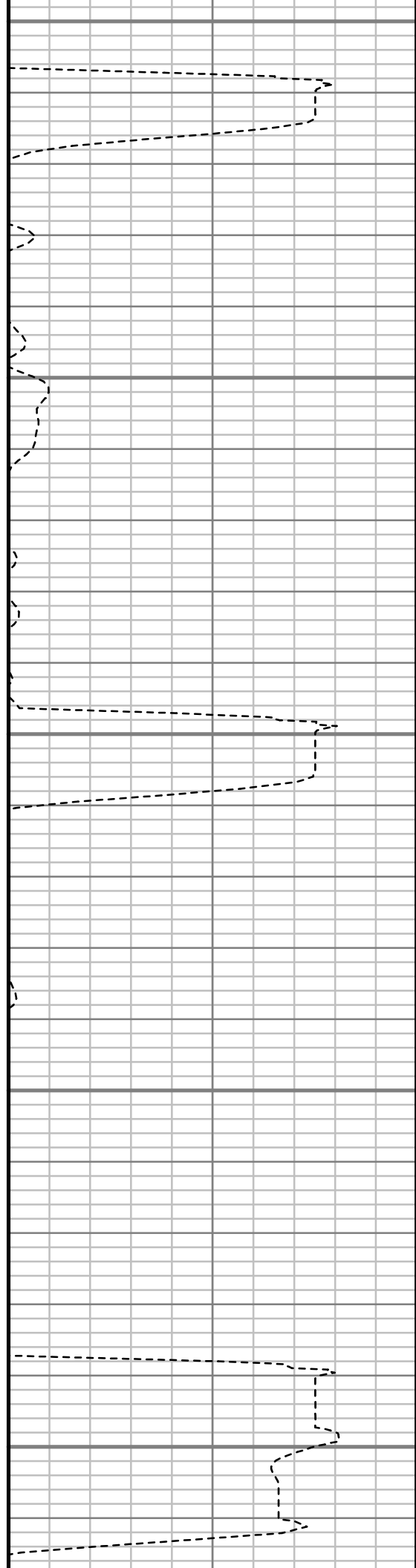
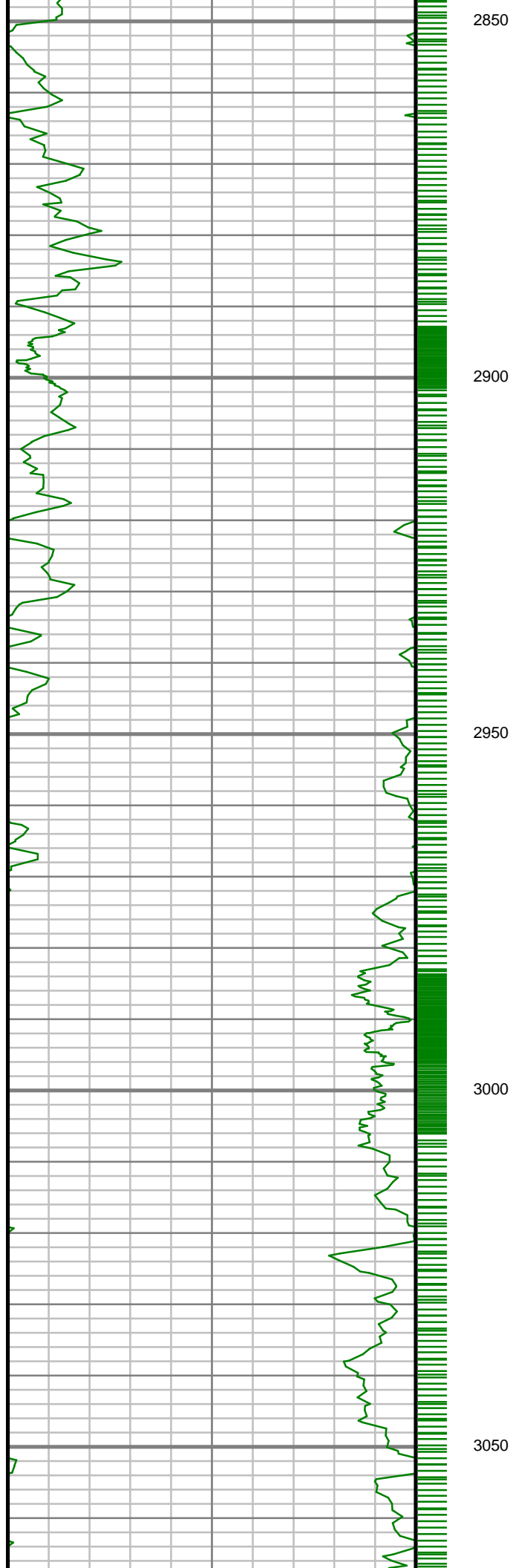


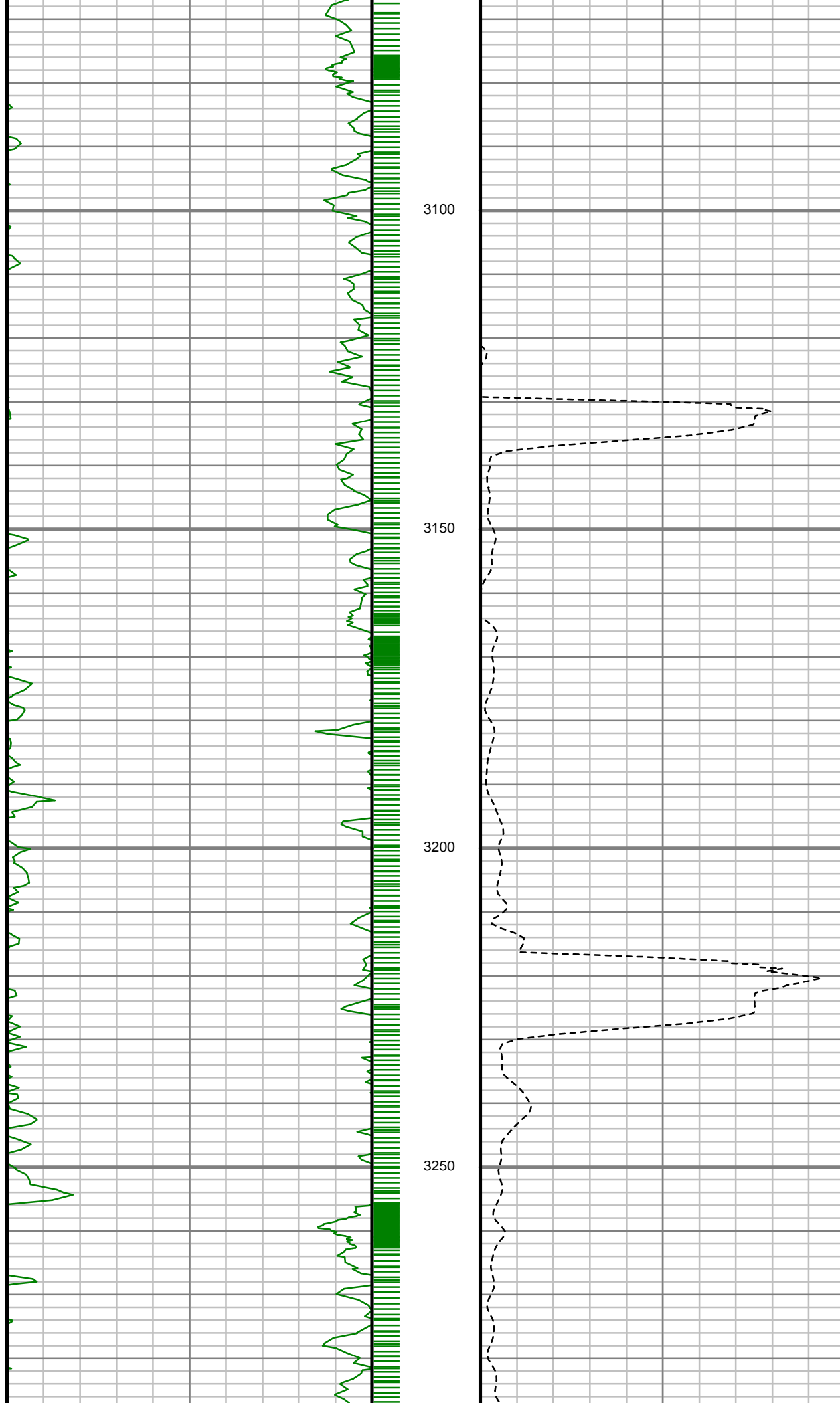


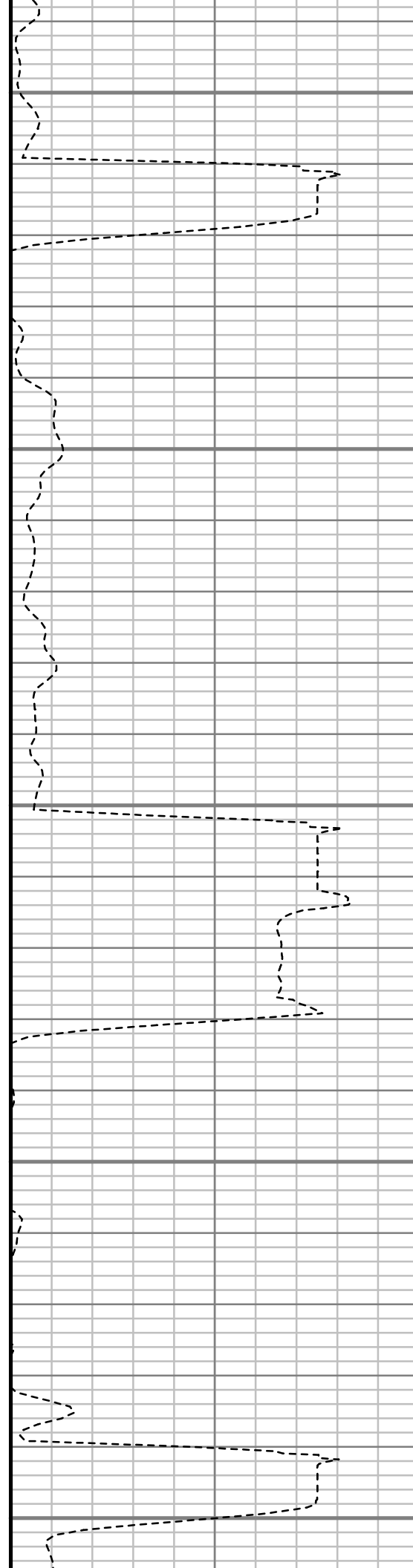
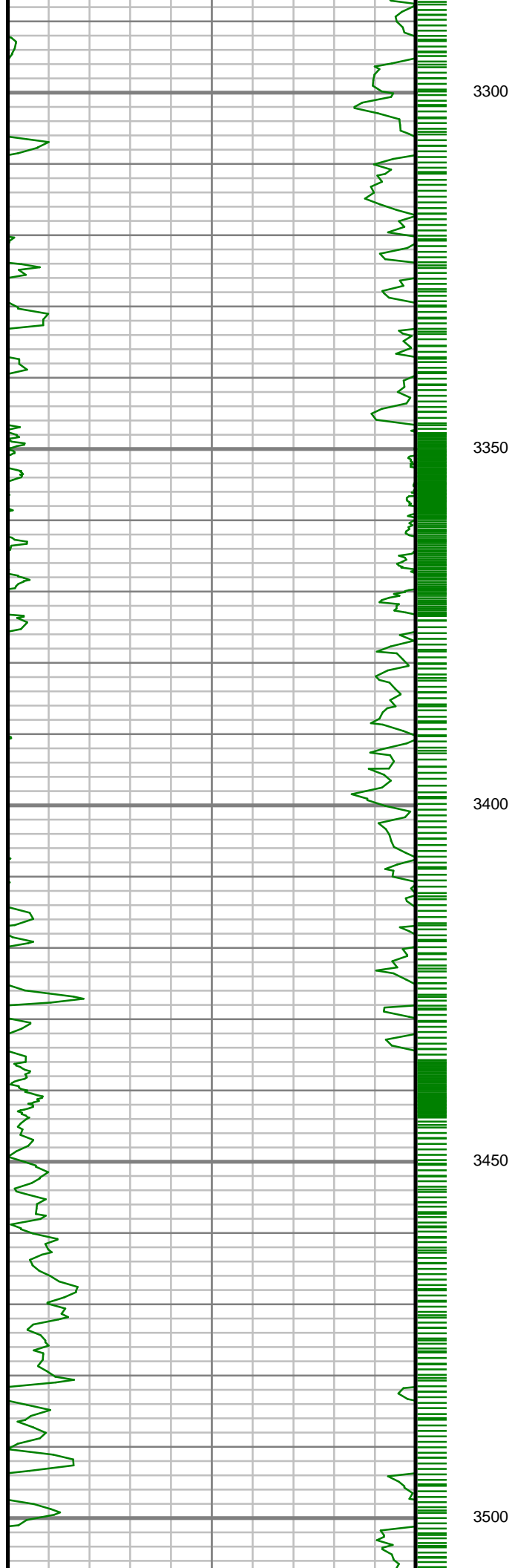


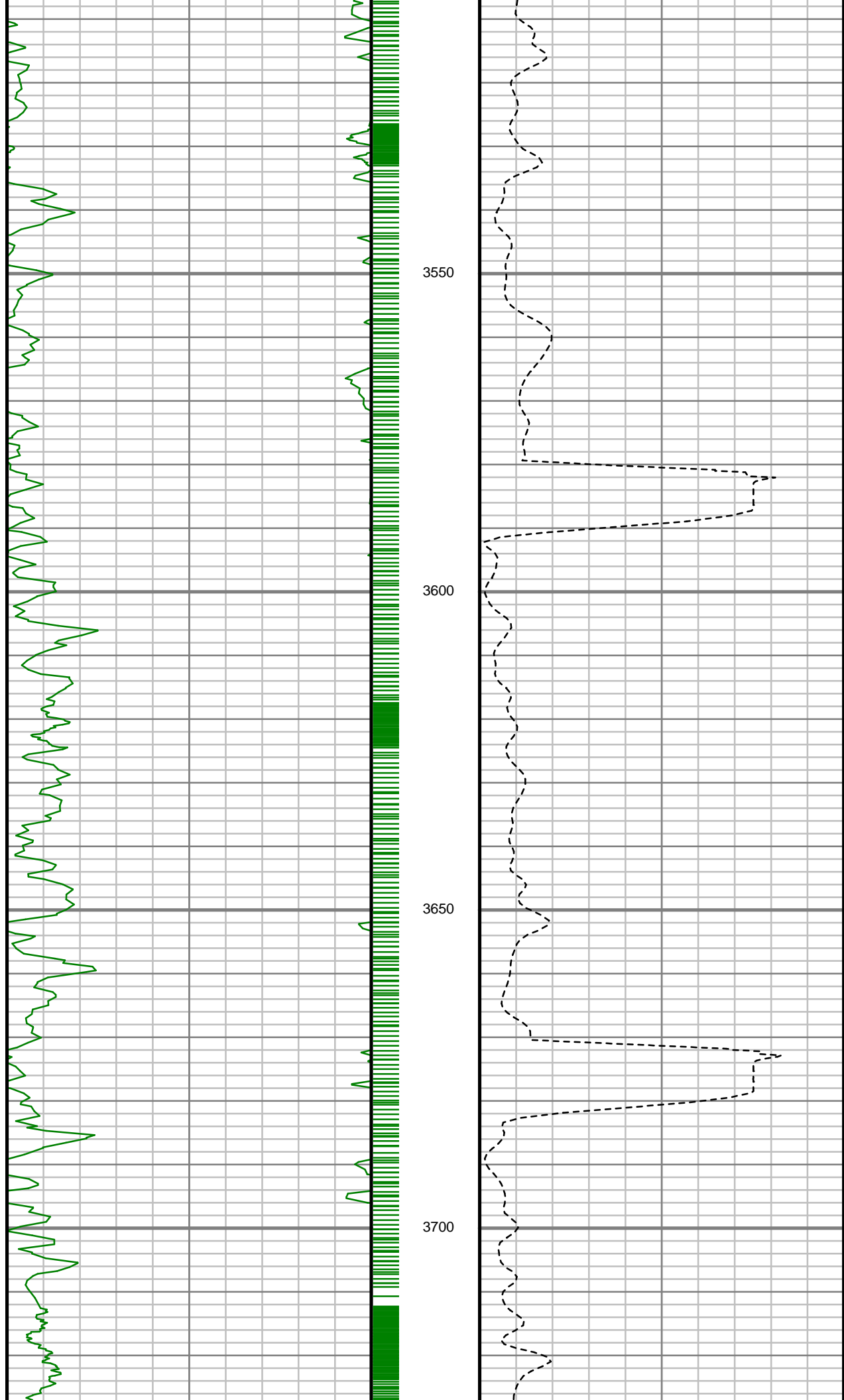


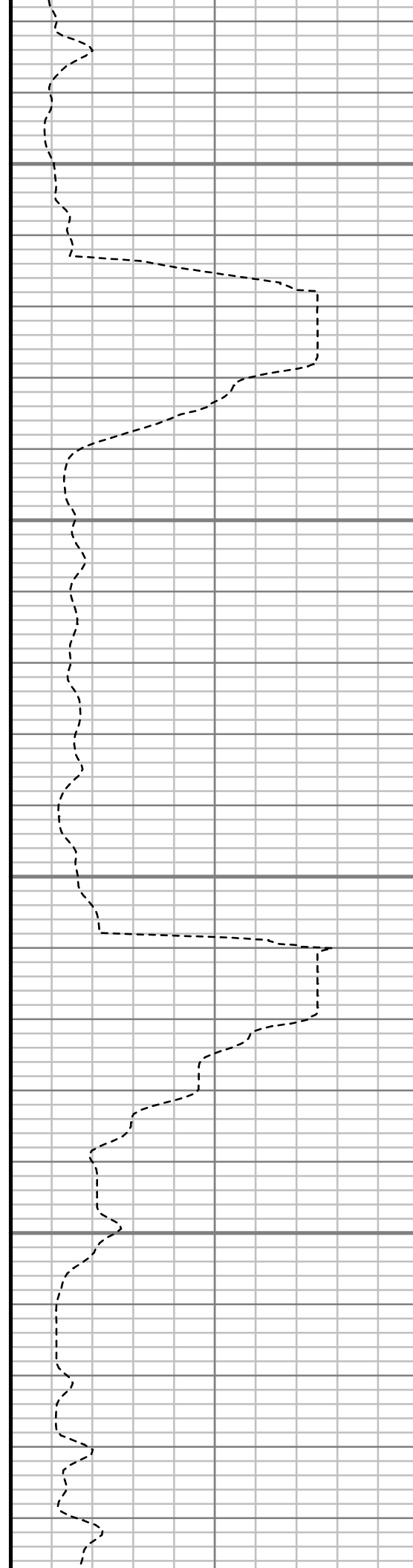
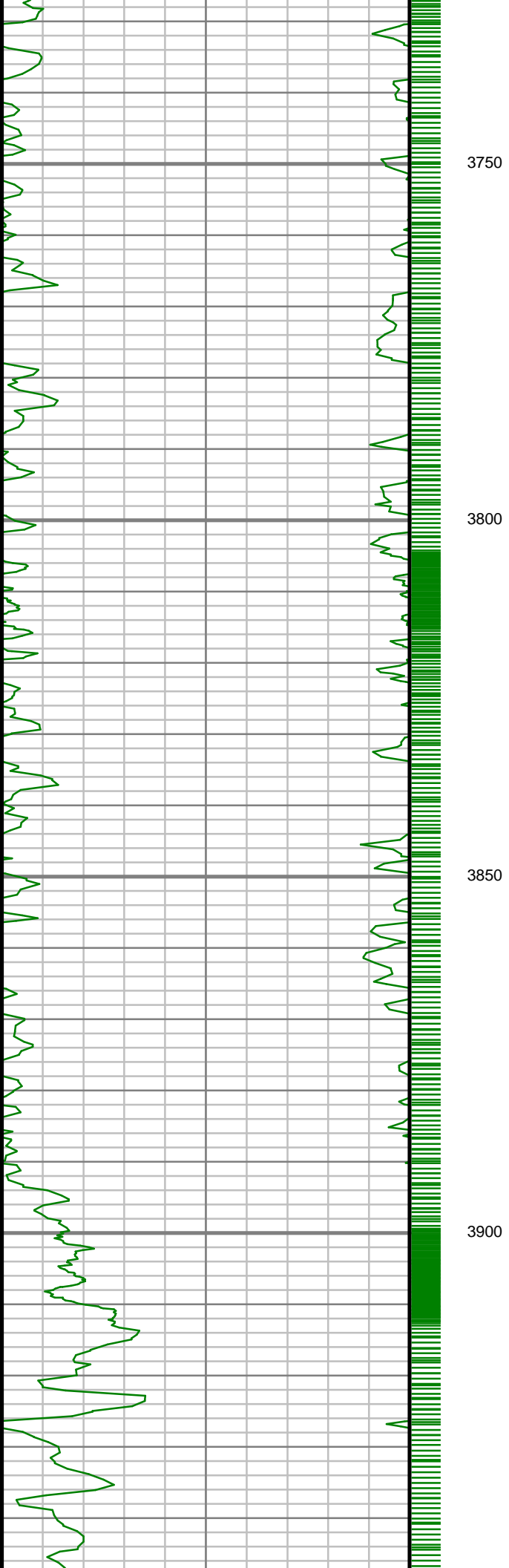


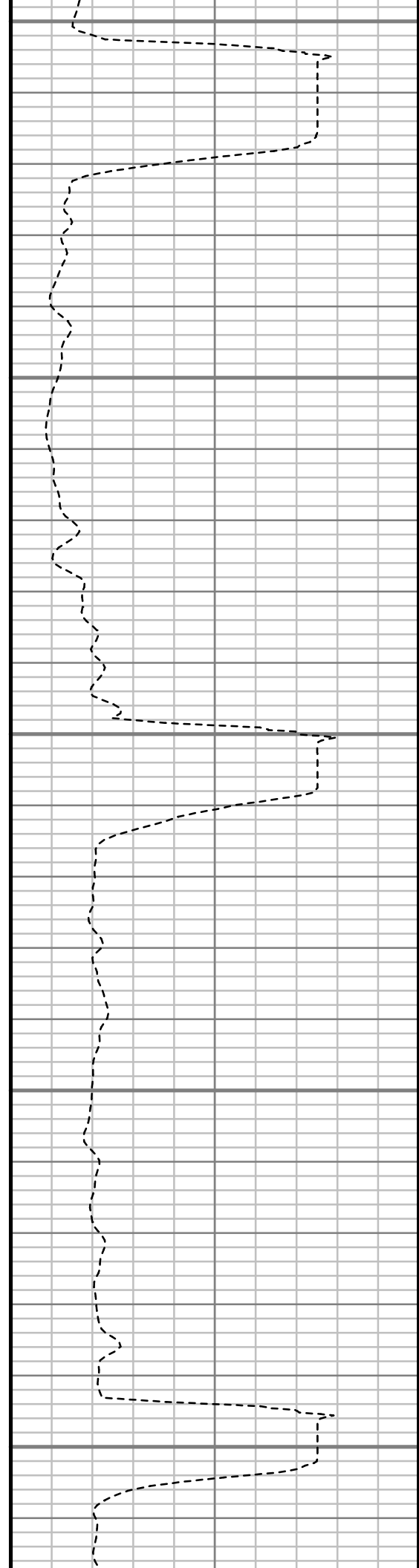
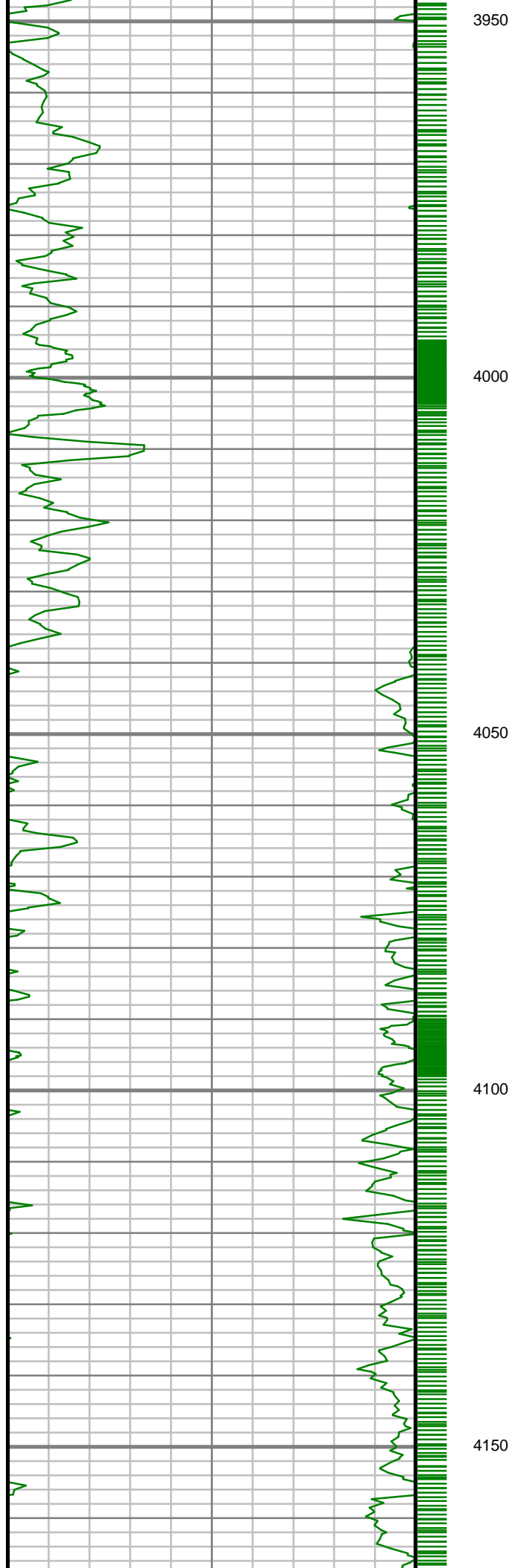


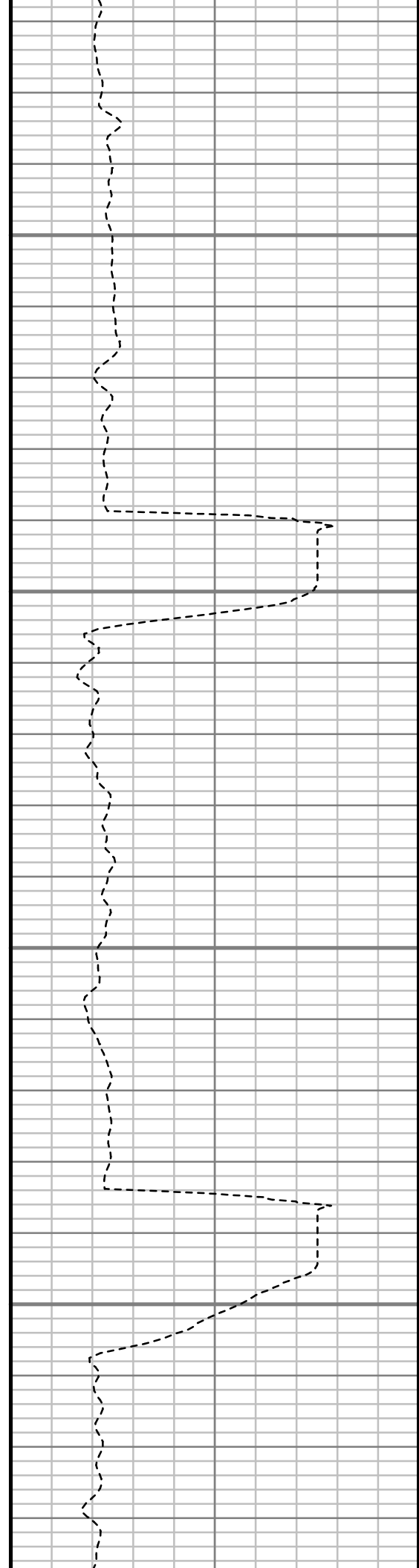
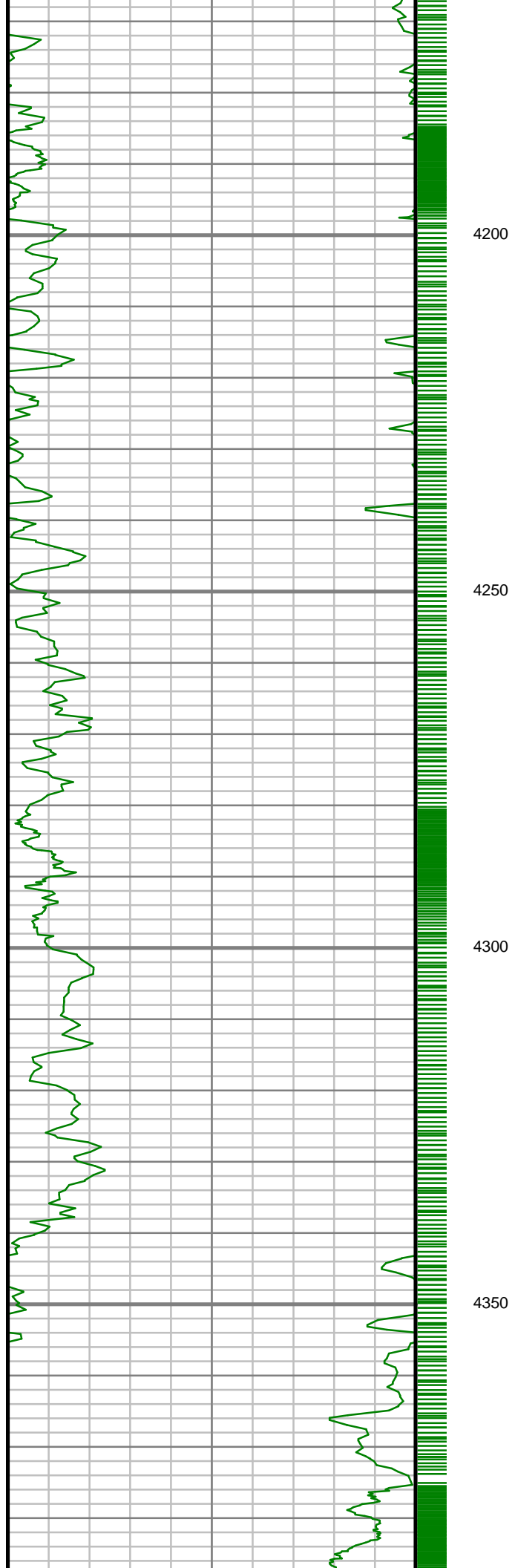


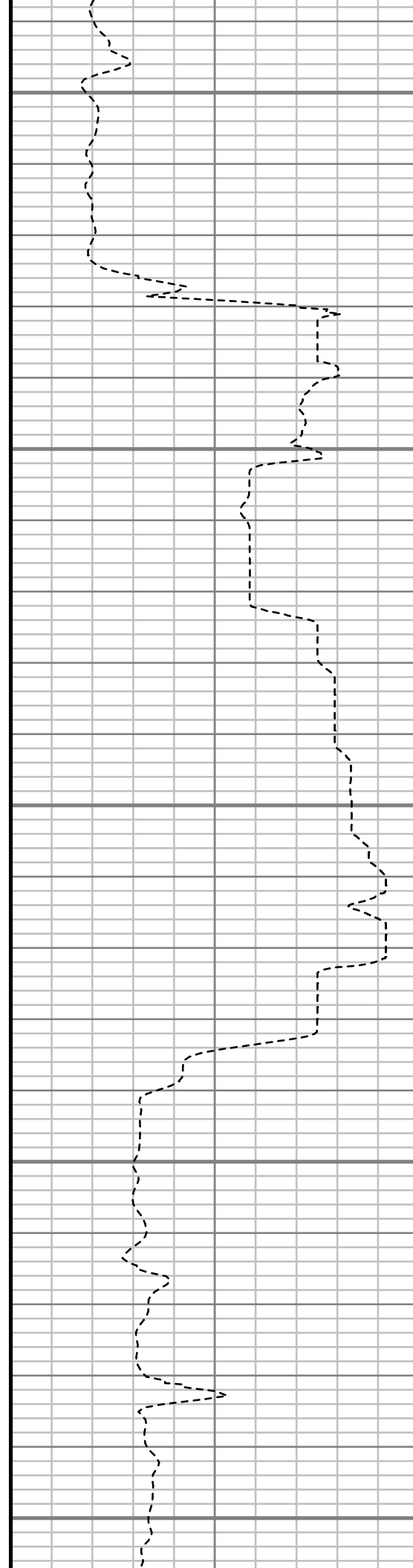
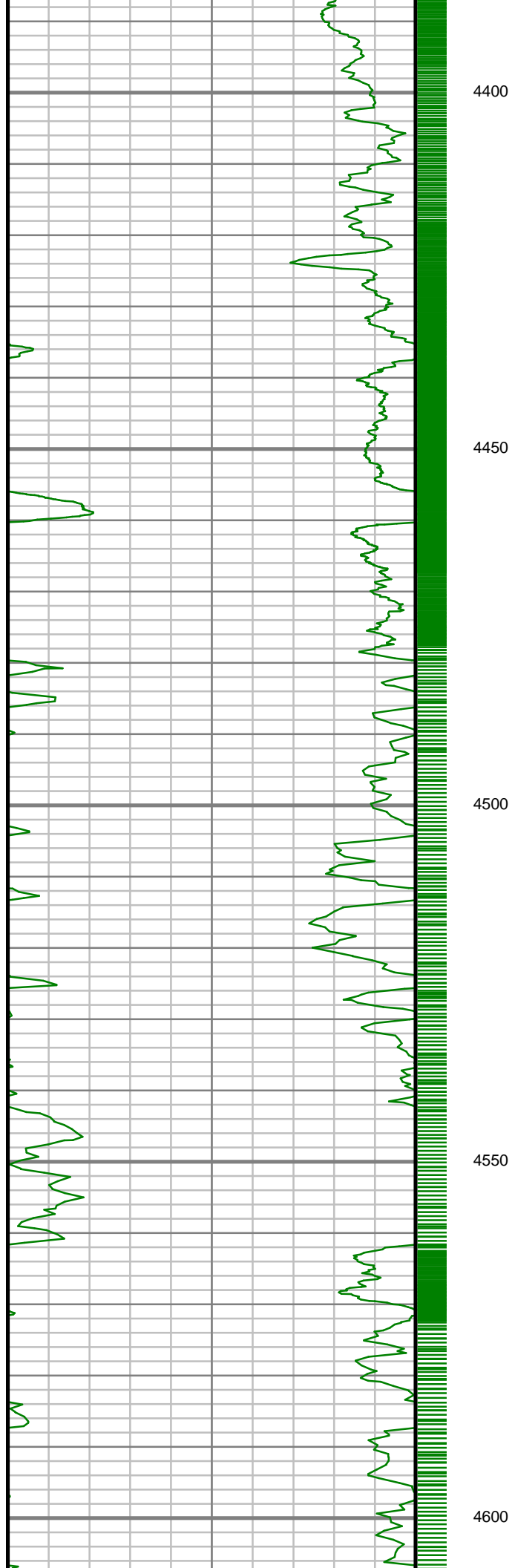


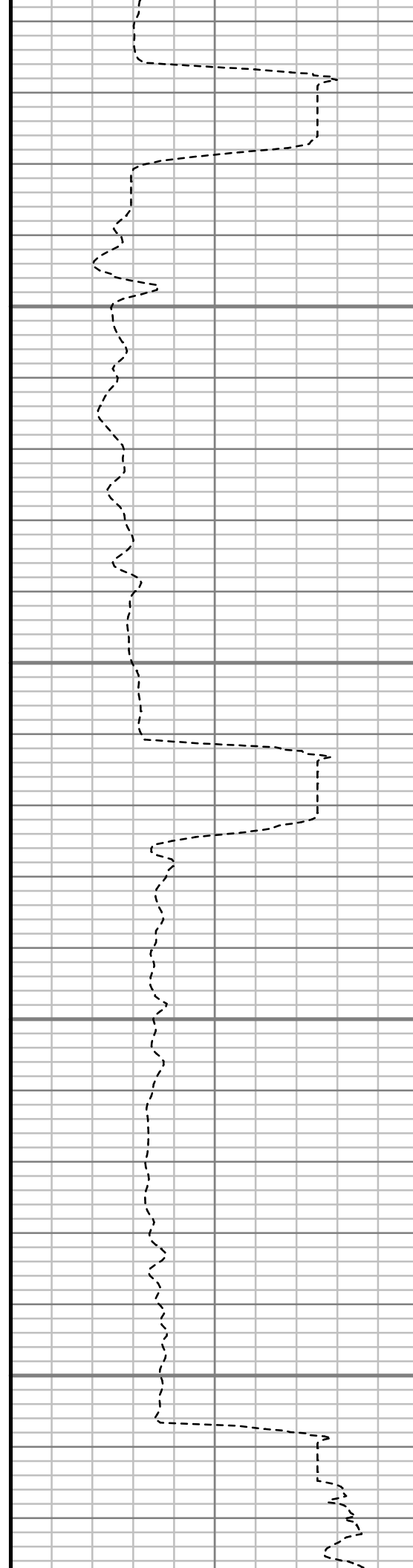
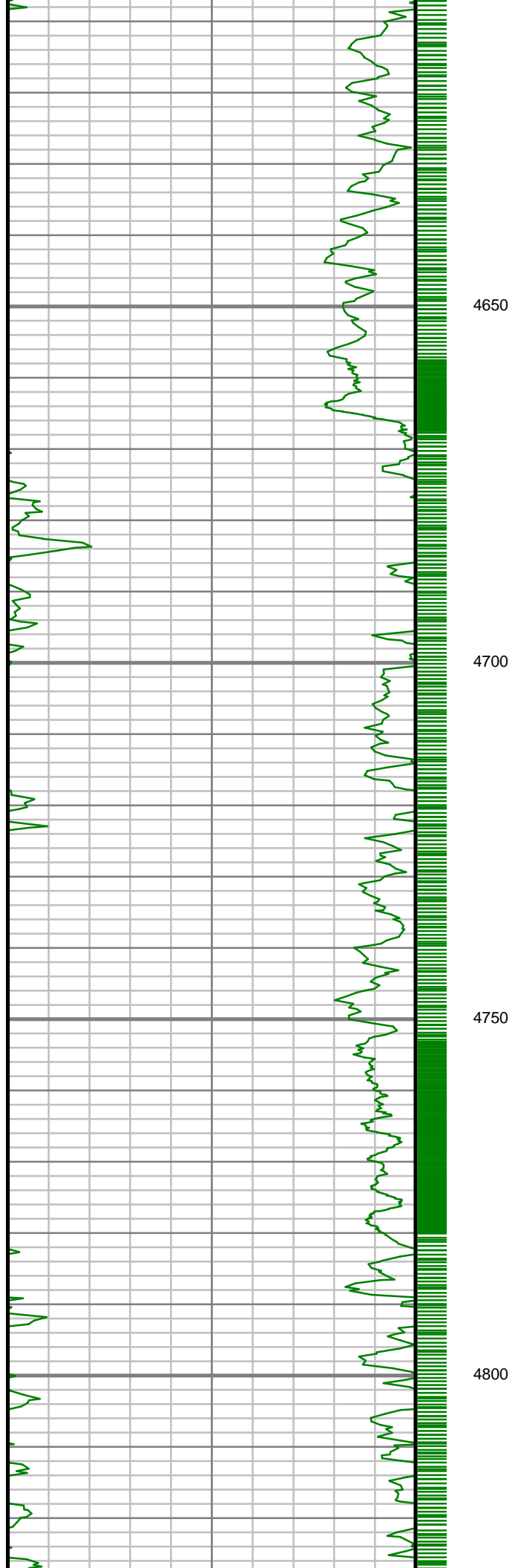


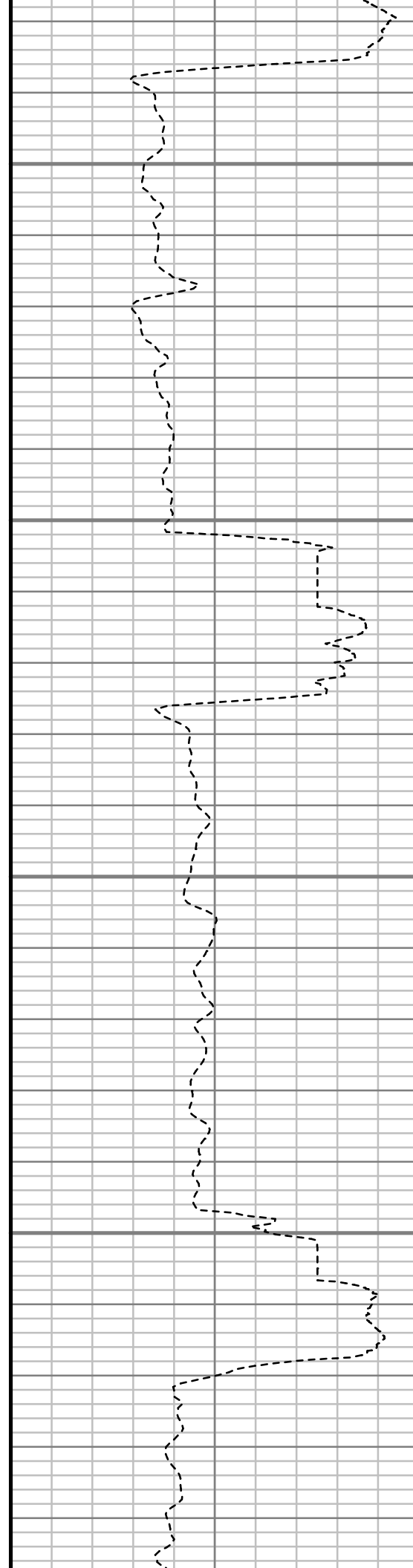
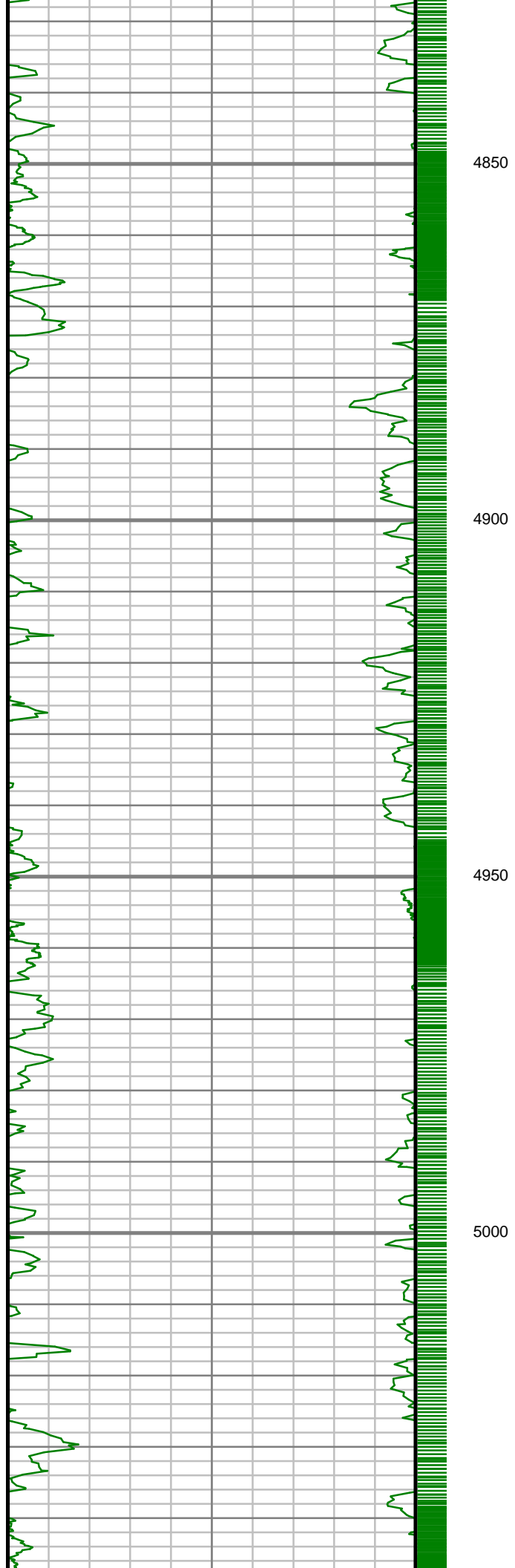


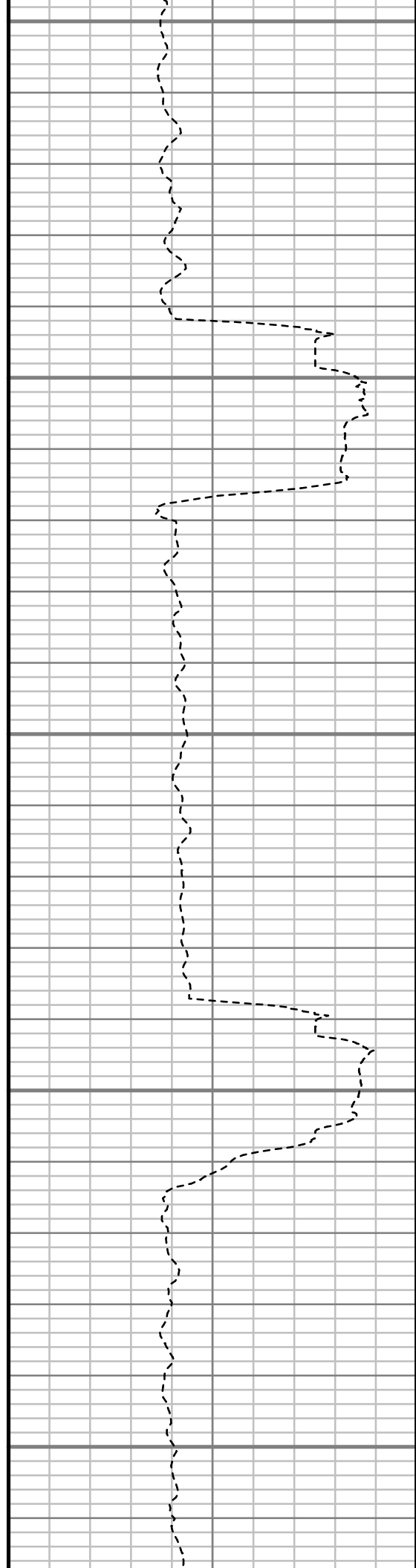
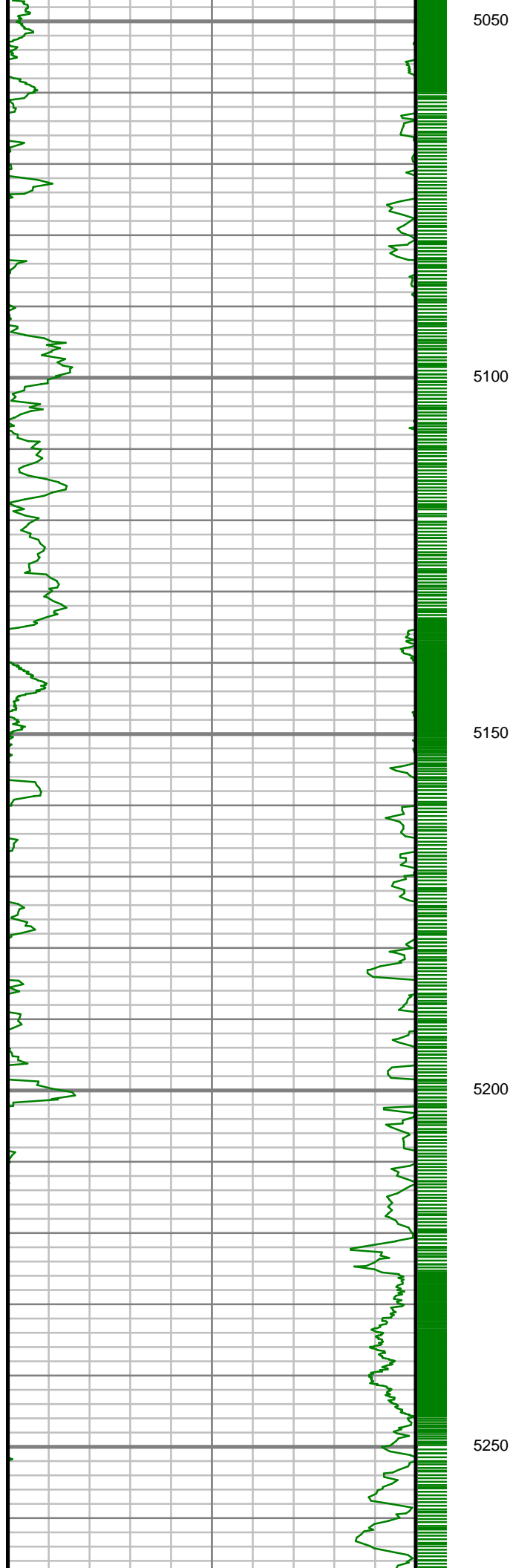


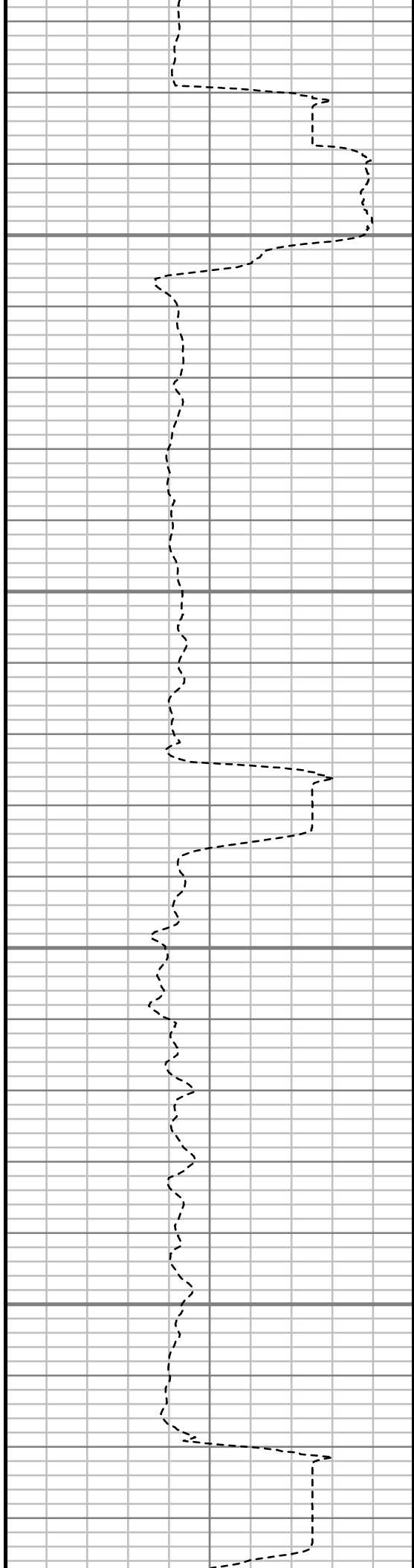
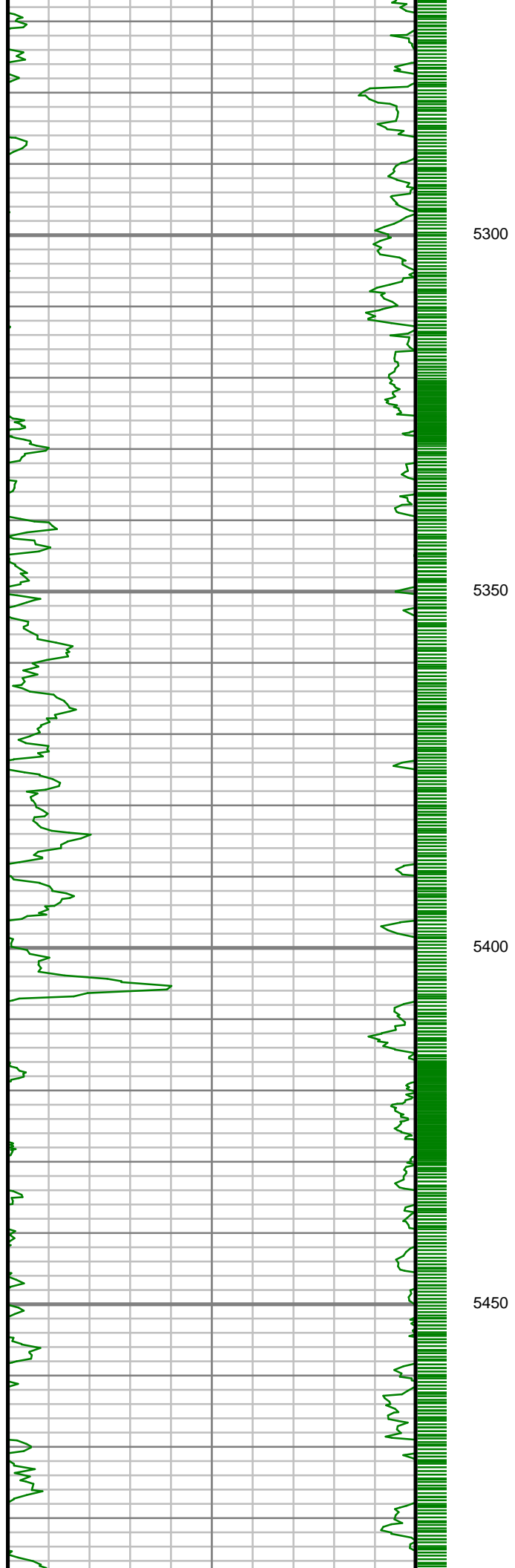


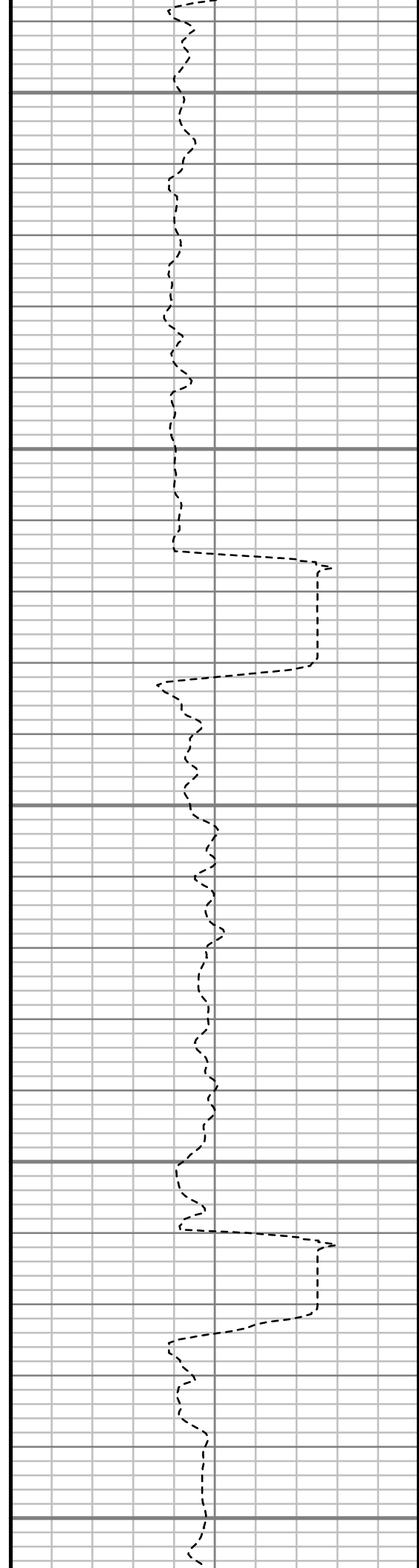
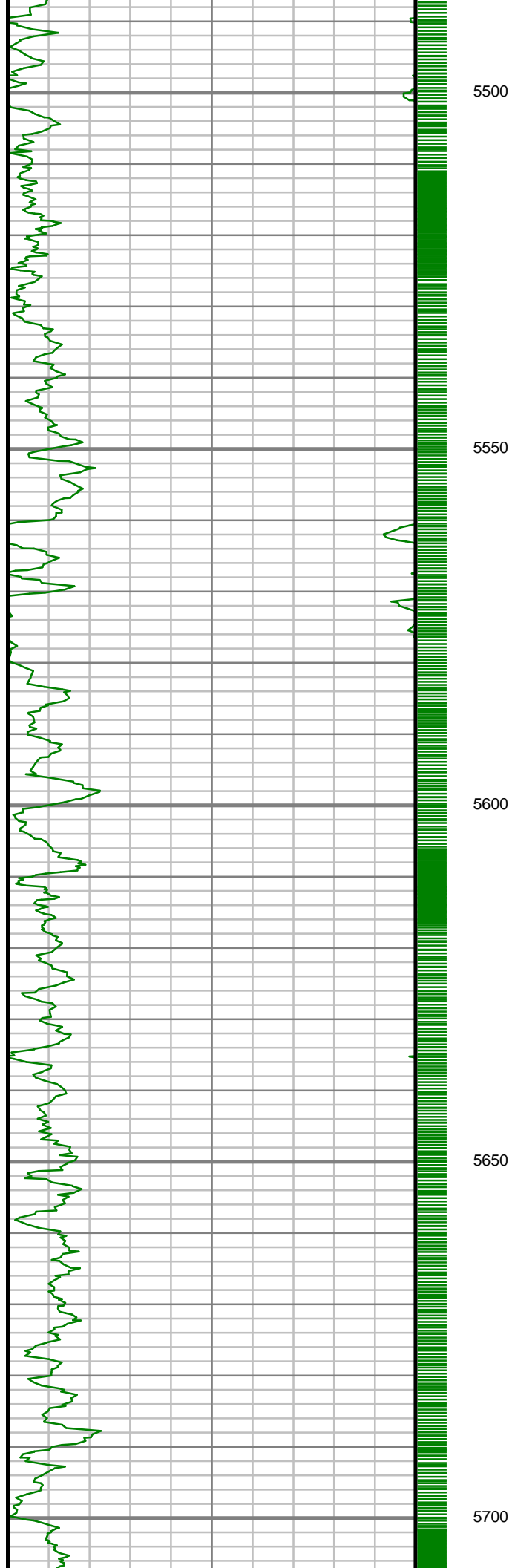


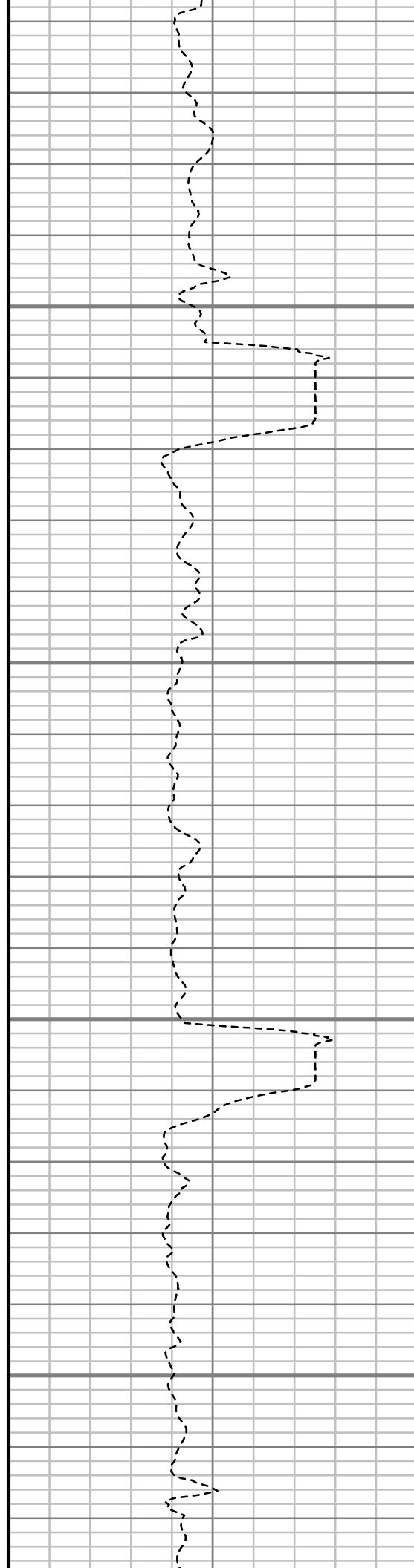
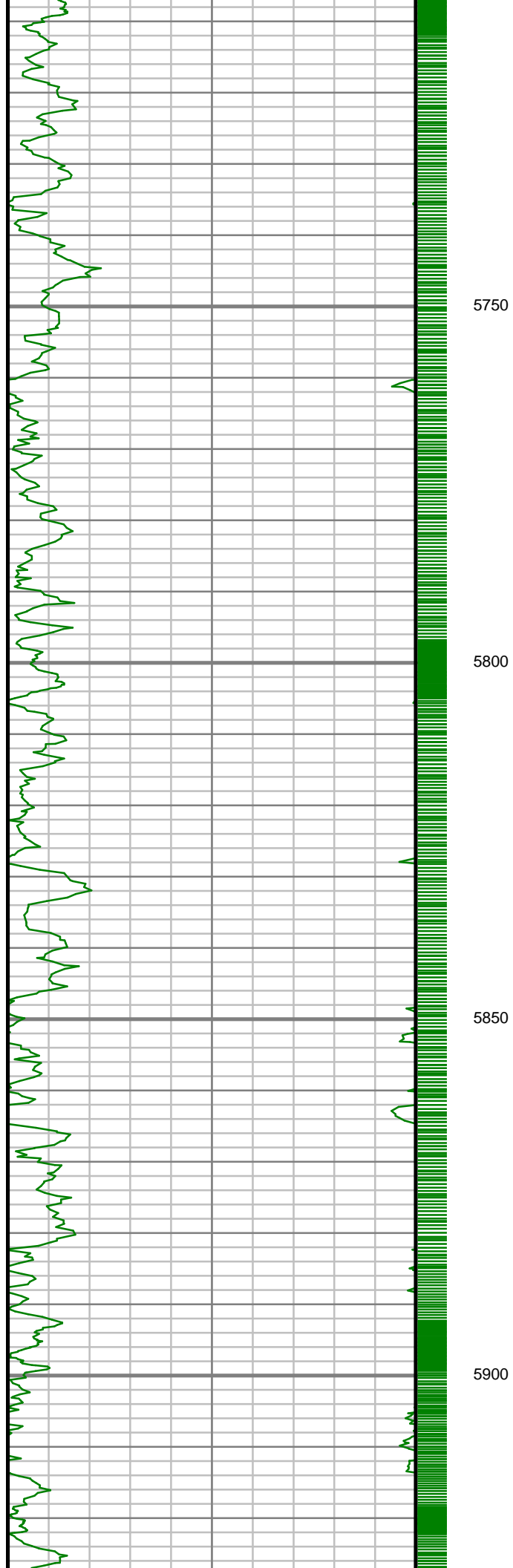


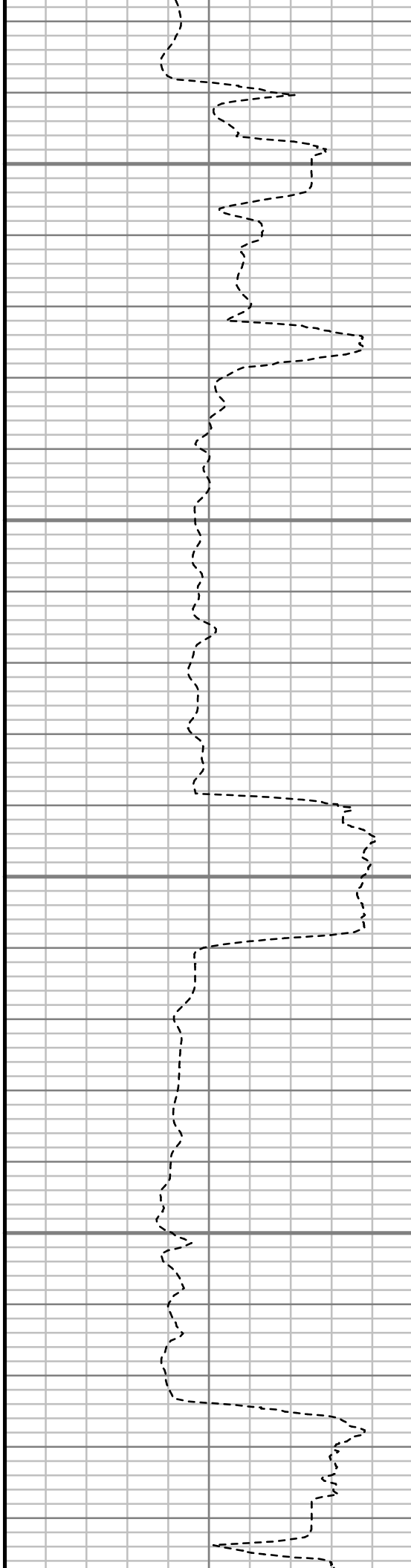
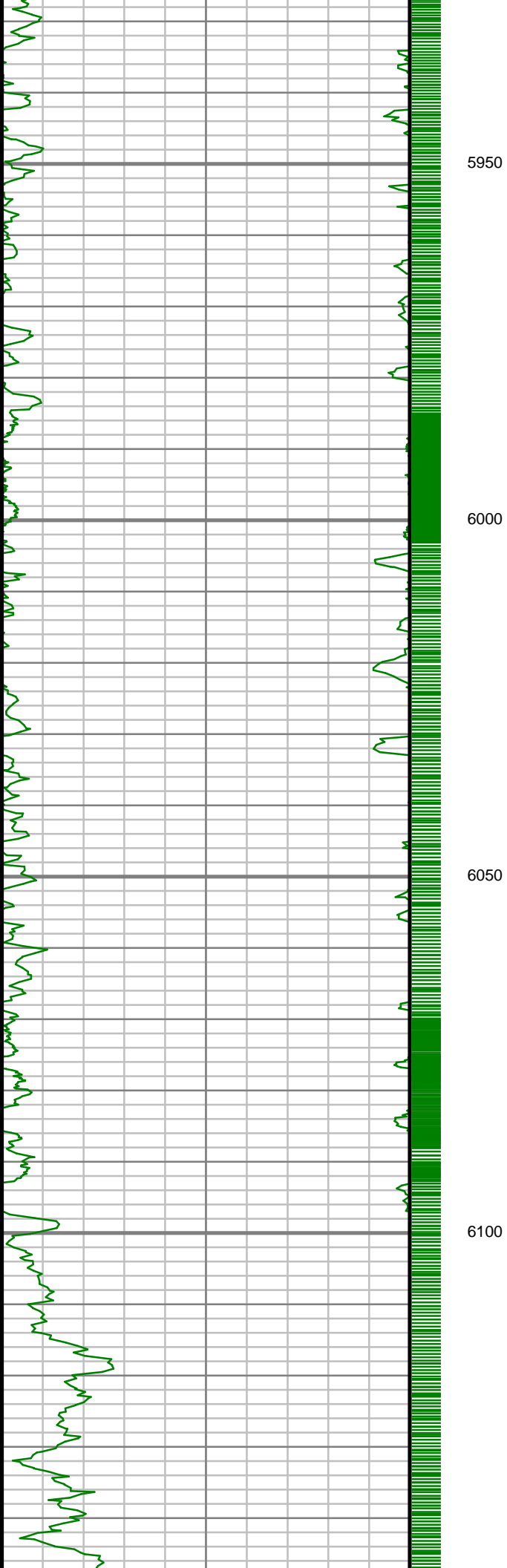


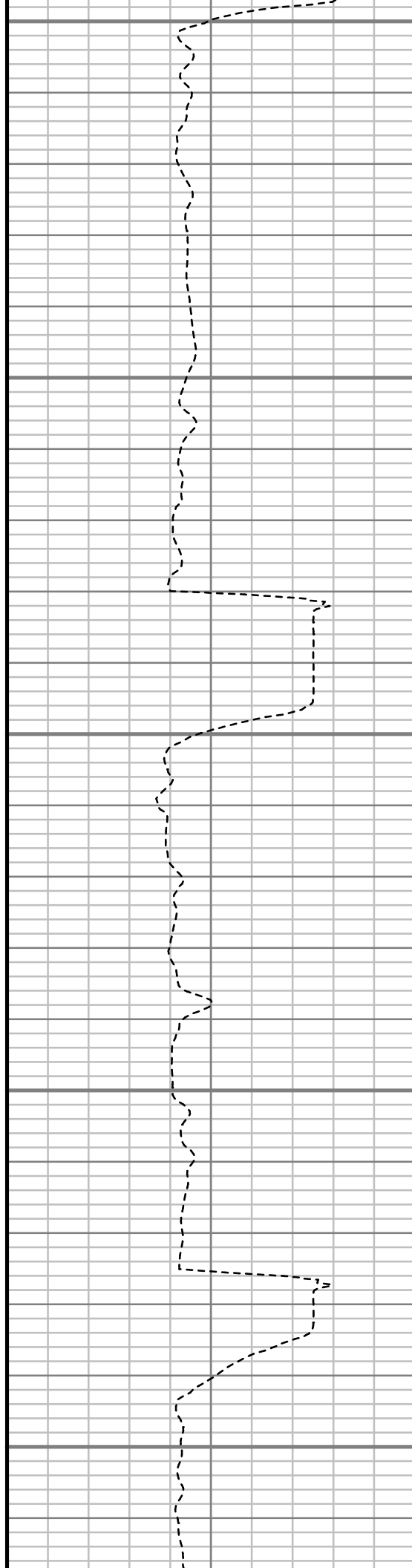
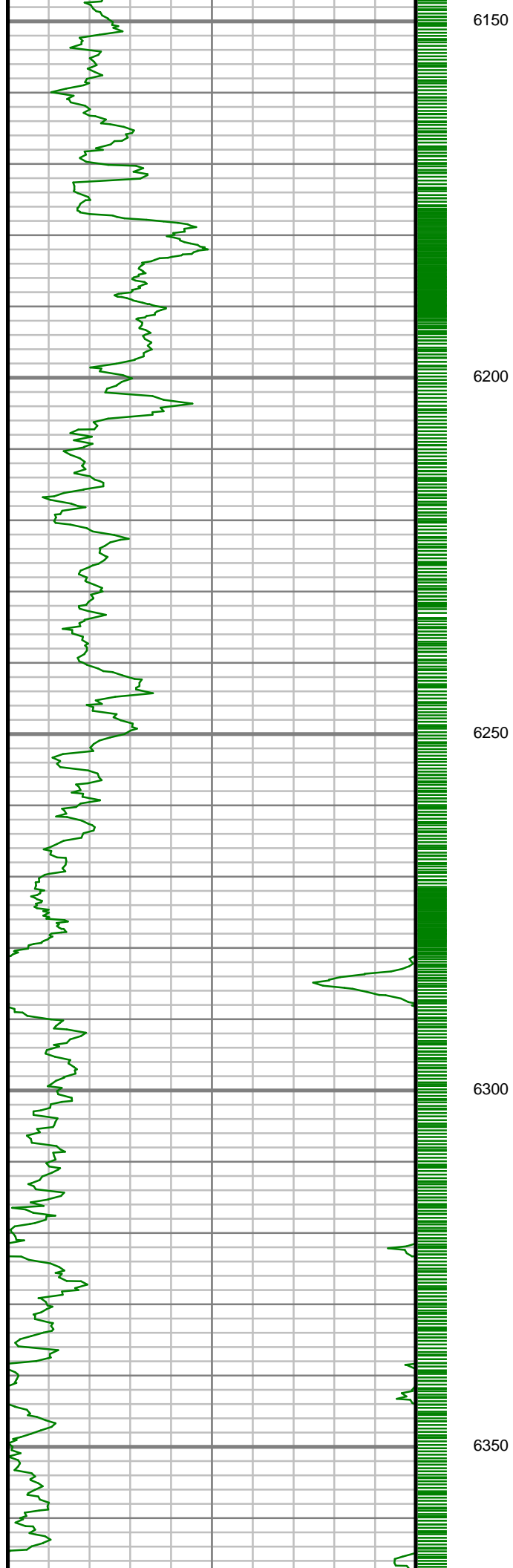


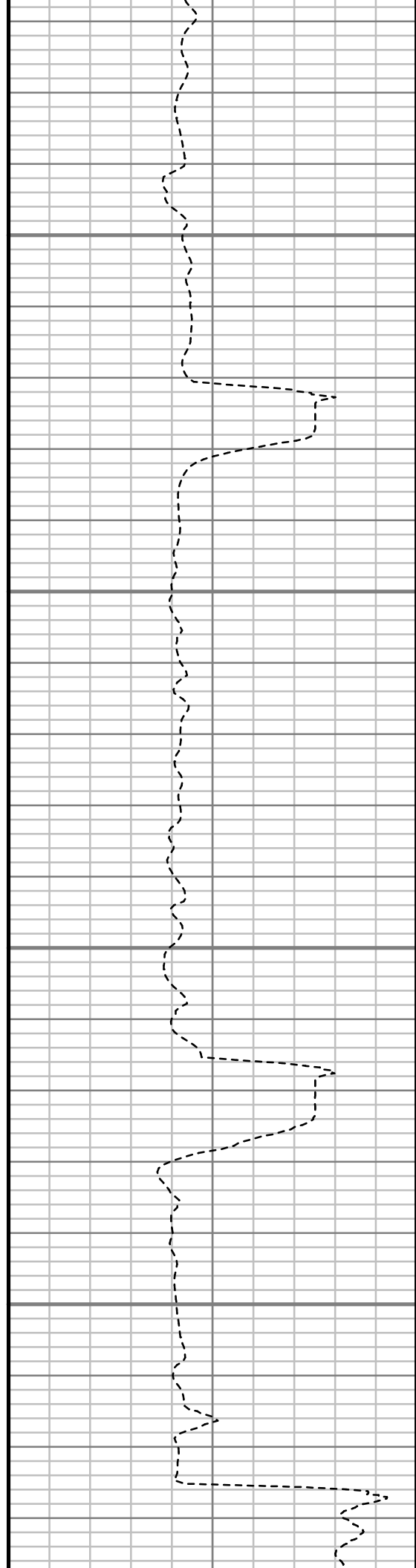
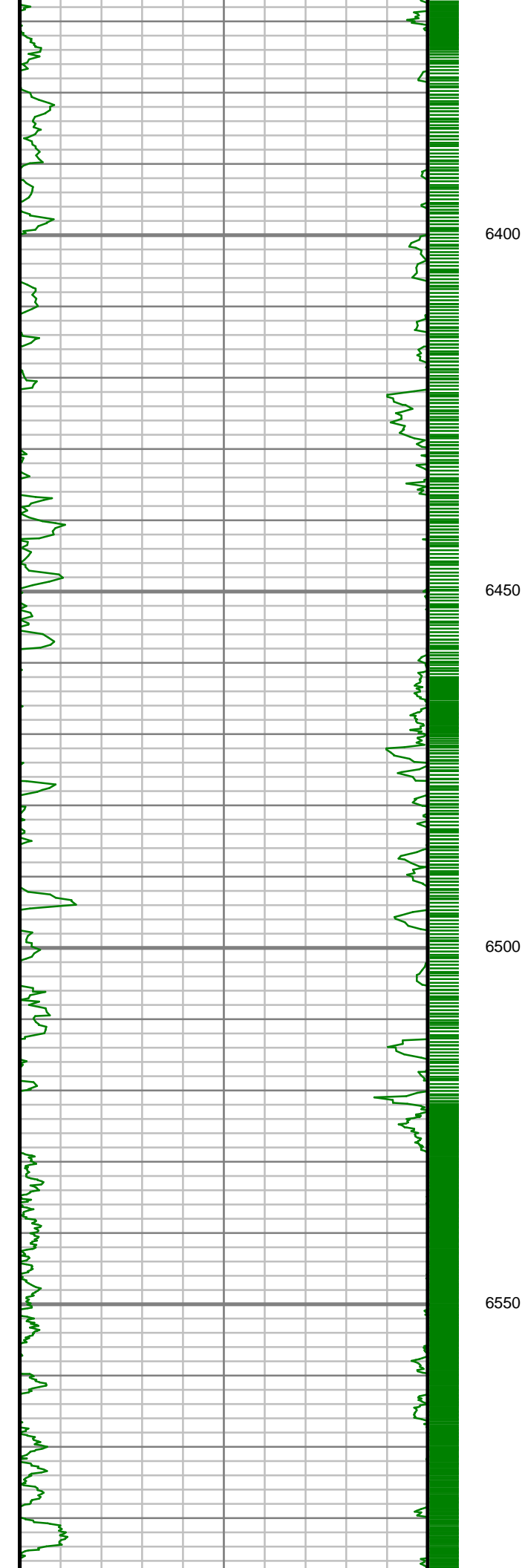


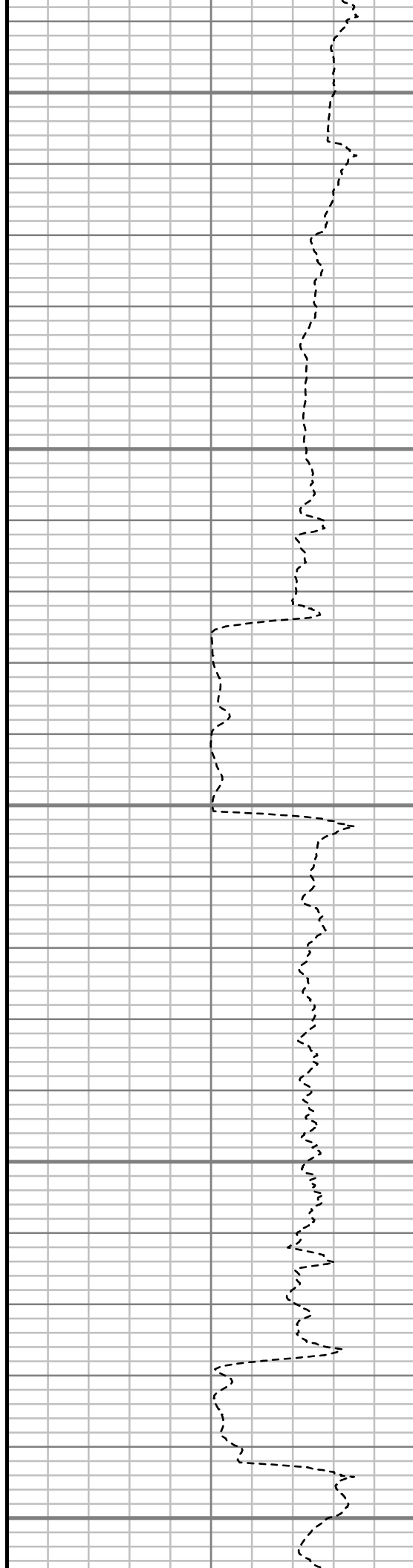
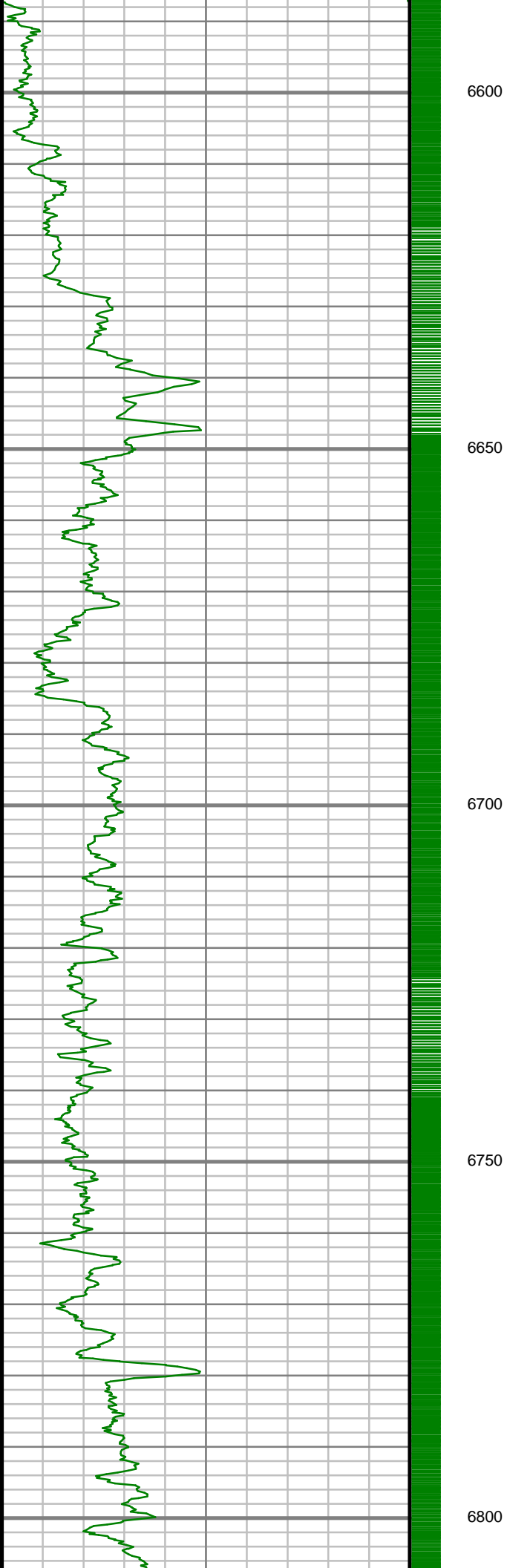


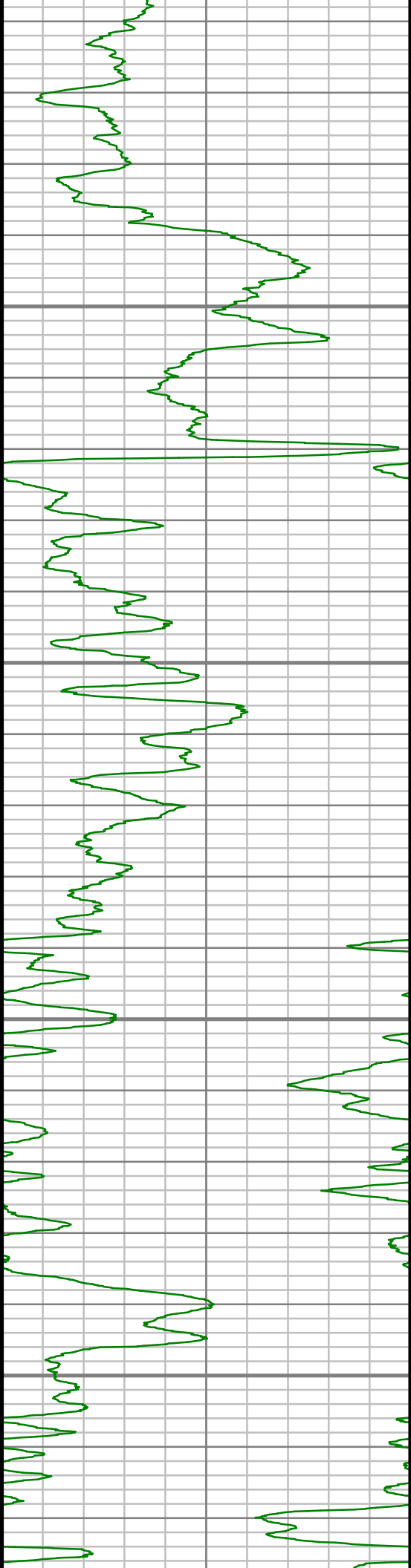










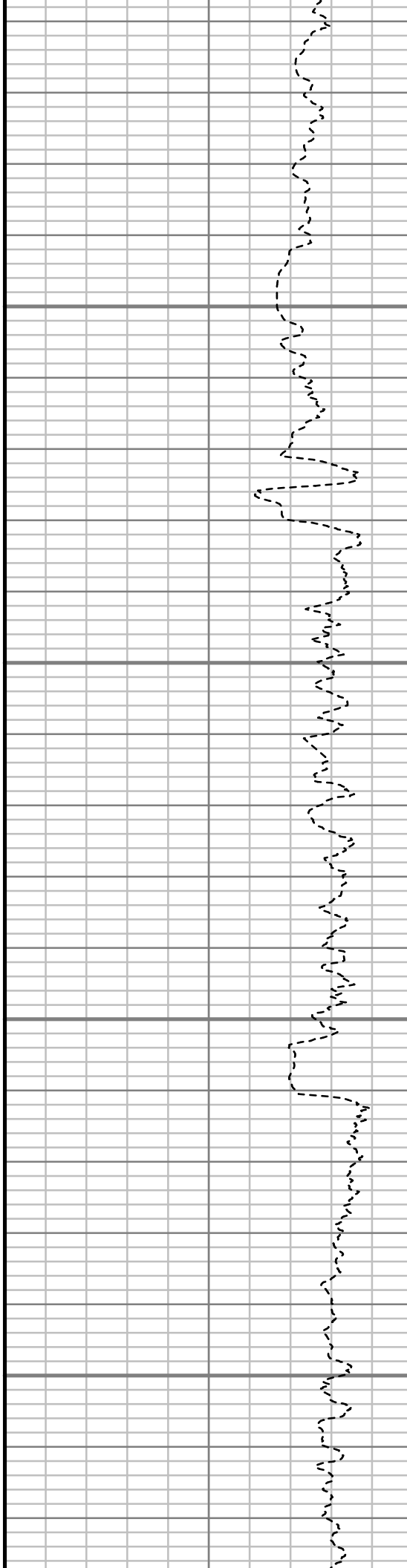


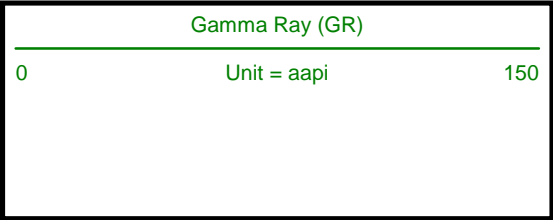
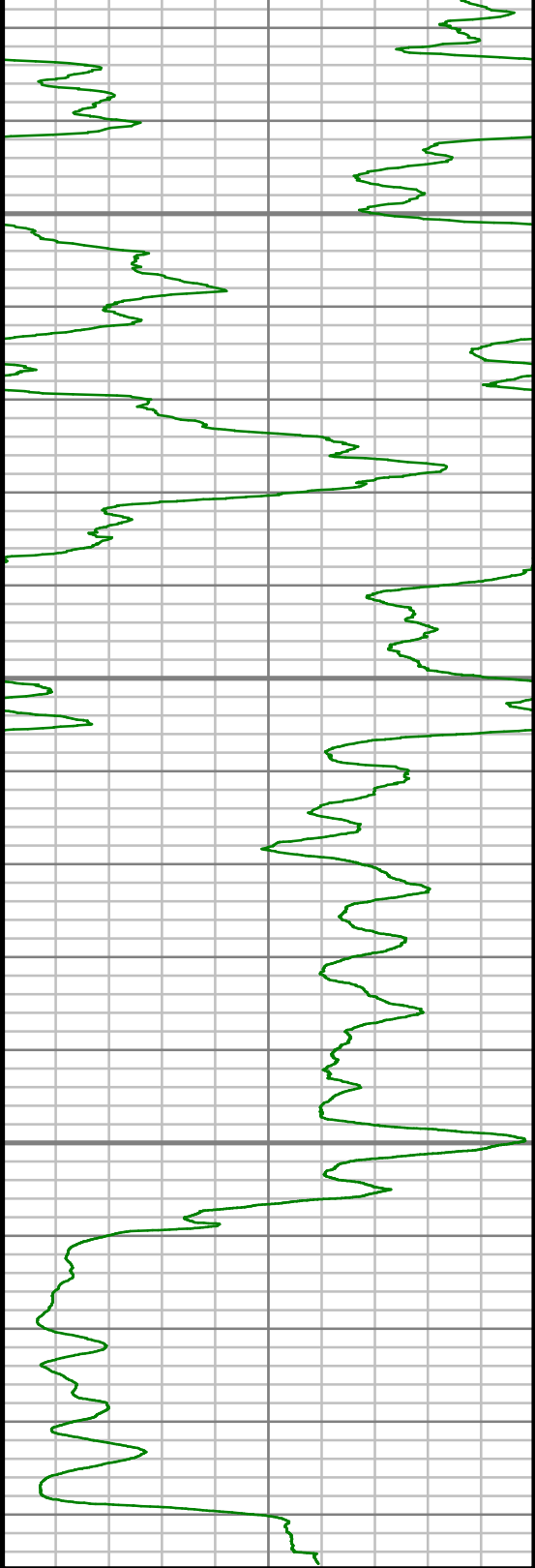
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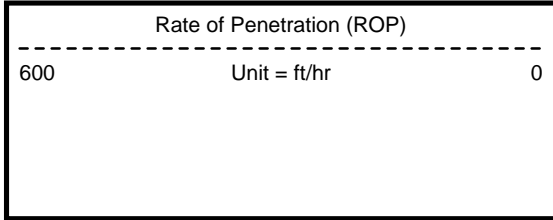
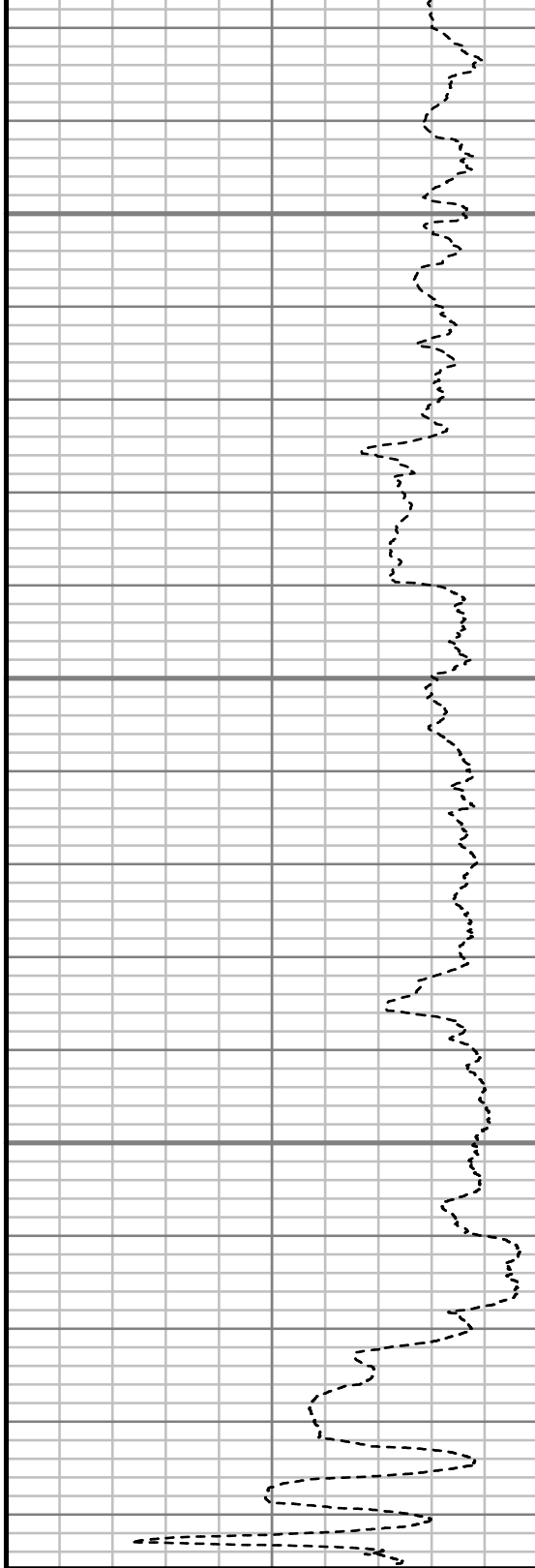


7050

7100

7150

TRUE VERTICAL DEPTH
1:240 (ft)



Comments



MWD Survey Report

Well Location	RUHL PAD
Well Name	RUHL 1C-32H-B264
Survey Date	12/10/2014
Latitude	40°6'5.180"N
Longitude	104°34'25.208"W
Btotal	52499, 52503, 52514 nT
Dip	66.71 deg
Magnetic Declination	8.36, 8.37 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), 180.00Azim (deg)
Operator(s)	C. WILSON, J. GREGORY, 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
244.00	1.31	45.90	243.98	-1.94	1.94	2.01	2.79	45.90	0.54
336.00	2.39	31.78	335.93	-4.31	4.31	3.77	5.72	41.22	1.26
428.00	3.80	33.93	427.79	-8.47	8.47	6.48	10.67	37.45	1.55
519.00	5.50	24.71	518.49	-14.93	14.93	9.99	17.97	33.79	2.03
611.00	6.90	30.17	609.95	-23.71	23.71	14.61	27.85	31.64	1.65
701.00	8.68	33.85	699.12	-34.03	34.03	21.11	40.05	31.82	2.05
791.00	11.56	39.34	787.71	-46.64	46.64	30.61	55.79	33.28	3.37
882.00	11.32	40.18	876.91	-60.51	60.51	42.15	73.75	34.86	0.32
973.00	11.82	40.38	966.06	-74.44	74.44	53.95	91.93	35.94	0.56
1062.00	11.42	37.36	1053.23	-88.38	88.38	65.21	109.83	36.42	0.82
1153.00	10.74	36.49	1142.54	-102.36	102.36	75.71	127.32	36.49	0.77
1276.00	10.15	37.00	1263.50	-120.22	120.22	89.05	149.61	36.53	0.49
1367.00	11.84	42.24	1352.83	-133.54	133.54	100.15	166.92	36.87	2.16
1459.00	10.48	41.79	1443.09	-146.76	146.76	112.07	184.66	37.37	1.48
1552.00	10.69	41.00	1534.50	-159.58	159.58	123.36	201.70	37.71	0.27
1641.00	11.36	39.61	1621.86	-172.56	172.56	134.36	218.70	37.91	0.81
1821.00	10.76	42.29	1798.52	-198.63	198.63	156.97	253.17	38.32	0.44
2003.00	9.02	33.80	1977.82	-223.06	223.06	176.33	284.34	38.33	1.24

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
2183.00	7.75	33.95	2155.89	-244.85	244.85	190.96	310.51	37.95	0.71
2366.00	5.33	46.42	2337.70	-260.95	260.95	204.01	331.23	38.02	1.52
2549.00	2.27	60.33	2520.28	-268.60	268.60	213.32	343.01	38.46	1.74
2731.00	0.50	153.59	2702.23	-269.68	269.68	216.80	346.02	38.80	1.29
2912.00	1.10	144.33	2883.21	-267.57	267.57	218.16	345.24	39.19	0.34
3092.00	1.00	101.57	3063.18	-265.86	265.86	220.69	345.53	39.70	0.43
3275.00	0.81	97.00	3246.16	-265.38	265.38	223.54	346.98	40.11	0.11
3457.00	0.91	300.24	3428.15	-265.95	265.95	223.57	347.44	40.05	0.92
3637.00	0.40	327.90	3608.14	-267.21	267.21	222.00	347.40	39.72	0.32
3823.00	0.51	227.07	3794.14	-267.20	267.20	221.05	346.79	39.60	0.38
4013.00	0.20	243.06	3984.13	-266.48	266.48	220.13	345.64	39.56	0.17
4202.00	0.26	290.32	4173.13	-266.47	266.47	219.44	345.19	39.47	0.10
4391.00	1.01	339.82	4362.12	-268.18	268.18	218.47	345.90	39.17	0.46
4581.00	0.30	236.80	4552.11	-269.48	269.48	217.47	346.29	38.90	0.59
4770.00	1.19	329.94	4741.09	-270.91	270.91	216.07	346.53	38.58	0.66
4961.00	2.11	327.06	4932.01	-275.58	275.58	213.17	348.40	37.72	0.48
5150.00	1.01	276.63	5120.95	-278.69	278.69	209.63	348.73	36.95	0.88
5340.00	0.65	81.42	5310.94	-279.04	279.04	209.03	348.65	36.84	0.87

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
5530.00	0.13	172.28	5500.94	-278.98	278.98	210.13	349.26	36.99	0.35
5720.00	0.24	74.63	5690.93	-278.87	278.87	210.55	349.42	37.05	0.15
5909.00	0.26	70.36	5879.93	-279.12	279.12	211.34	350.10	37.13	0.01
6100.00	0.85	118.61	6070.92	-278.59	278.59	212.99	350.68	37.40	0.37
6289.00	0.41	135.55	6259.91	-277.44	277.44	214.69	350.81	37.73	0.25
6478.00	0.39	290.80	6448.91	-277.19	277.19	214.55	350.53	37.74	0.41
6573.00	0.54	274.65	6543.91	-277.35	277.35	213.80	350.19	37.63	0.21
6668.00	7.12	162.31	6638.67	-271.77	271.77	215.14	346.62	38.37	7.73
6763.00	14.31	174.13	6731.96	-254.45	254.45	218.14	335.16	40.61	7.88
6858.00	21.42	177.84	6822.33	-225.40	225.40	220.00	314.97	44.30	7.58
6952.00	29.98	181.17	6906.95	-184.69	184.69	220.16	287.37	50.01	9.23
7047.00	39.26	172.76	6985.09	-130.99	130.99	223.48	259.04	59.62	10.97
7142.00	50.43	179.67	7052.38	-64.30	64.30	227.49	236.40	74.22	12.81
7237.00	61.18	180.22	7105.69	14.16	-14.16	227.54	227.98	93.56	11.33
7332.00	72.32	183.46	7143.14	101.24	-101.24	224.64	246.40	114.26	12.13
7385.00	78.76	183.98	7156.37	152.43	-152.43	221.31	268.73	124.56	12.19
7513.00	83.47	183.84	7176.13	278.56	-278.56	212.69	350.48	142.64	3.68
7604.00	85.26	183.38	7185.06	368.94	-368.94	206.99	423.04	150.71	2.03

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
7695.00	87.01	183.86	7191.19	459.55	-459.55	201.25	501.69	156.35	1.99
7790.00	88.69	182.19	7194.75	554.34	-554.34	196.25	588.06	160.51	2.49
7885.00	91.41	180.93	7194.67	649.30	-649.30	193.66	677.56	163.39	3.15
7980.00	91.08	180.50	7192.61	744.27	-744.27	192.47	768.75	165.50	0.57
8075.00	91.88	179.14	7190.15	839.23	-839.23	192.77	861.09	167.06	1.67
8169.00	92.05	177.89	7186.93	933.14	-933.14	195.21	953.34	168.18	1.34
8264.00	91.71	177.49	7183.81	1028.01	-1028.01	199.03	1047.10	169.04	0.55
8358.00	92.79	177.79	7180.12	1121.86	-1121.86	202.90	1140.06	169.75	1.19
8453.00	91.82	176.45	7176.30	1216.66	-1216.66	207.66	1234.26	170.31	1.74
8548.00	91.38	177.41	7173.66	1311.49	-1311.49	212.75	1328.63	170.79	1.11
8643.00	90.91	179.54	7171.76	1406.43	-1406.43	215.28	1422.81	171.30	2.30
8737.00	90.17	178.91	7170.88	1500.41	-1500.41	216.56	1515.96	171.79	1.03
8833.00	92.45	181.07	7168.68	1596.38	-1596.38	216.58	1611.00	172.27	3.28
8928.00	89.90	180.31	7166.73	1691.34	-1691.34	215.43	1705.01	172.74	2.81
9023.00	89.70	180.58	7167.07	1786.34	-1786.34	214.70	1799.19	173.15	0.36
9117.00	88.76	180.04	7168.33	1880.33	-1880.33	214.19	1892.49	173.50	1.15
9212.00	88.49	179.69	7170.62	1975.30	-1975.30	214.41	1986.90	173.81	0.46
9307.00	89.19	180.14	7172.54	2070.28	-2070.28	214.55	2081.37	174.08	0.88

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
9402.00	90.20	180.13	7173.04	2165.28	-2165.28	214.32	2175.86	174.35	1.06
9497.00	90.10	179.65	7172.79	2260.28	-2260.28	214.51	2270.43	174.58	0.51
9592.00	91.88	180.81	7171.14	2355.25	-2355.25	214.12	2364.97	174.81	2.23
9687.00	90.84	180.12	7168.89	2450.22	-2450.22	213.35	2459.49	175.02	1.32
9782.00	89.56	179.49	7168.56	2545.22	-2545.22	213.68	2554.17	175.20	1.50
9876.00	89.87	178.99	7169.03	2639.21	-2639.21	214.94	2647.95	175.34	0.62
9972.00	90.47	179.82	7168.75	2735.20	-2735.20	215.93	2743.71	175.49	1.08
10067.00	90.54	180.11	7167.91	2830.20	-2830.20	215.99	2838.43	175.64	0.31
10161.00	90.77	180.13	7166.84	2924.19	-2924.19	215.79	2932.14	175.78	0.25
10256.00	89.76	180.49	7166.39	3019.19	-3019.19	215.28	3026.85	175.92	1.12
10351.00	89.70	180.34	7166.84	3114.19	-3114.19	214.60	3121.57	176.06	0.17
10446.00	91.38	181.94	7165.95	3209.16	-3209.16	212.72	3216.20	176.21	2.44
10540.00	88.15	180.19	7166.33	3303.12	-3303.12	210.97	3309.85	176.35	3.90
10635.00	90.77	182.08	7167.23	3398.09	-3398.09	209.08	3404.51	176.48	3.40
10730.00	89.93	180.14	7166.64	3493.06	-3493.06	207.24	3499.20	176.60	2.23
10825.00	90.20	175.89	7166.53	3587.98	-3587.98	210.52	3594.15	176.64	4.48
10920.00	89.80	177.22	7166.53	3682.81	-3682.81	216.23	3689.15	176.64	1.46
11014.00	89.03	178.28	7167.49	3776.73	-3776.73	219.92	3783.13	176.67	1.39

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	Closure Distance	Closure Direction	DLS
ft	deg	deg	ft	ft	ft	ft	ft	deg	°/100ft
11109.00	89.83	179.24	7168.44	3871.70	-3871.70	221.97	3878.06	176.72	1.32
11204.00	89.46	180.85	7169.03	3966.70	-3966.70	221.89	3972.90	176.80	1.74
11299.00	88.63	181.49	7170.61	4061.66	-4061.66	219.95	4067.61	176.90	1.11
11394.00	88.42	180.96	7173.06	4156.61	-4156.61	217.93	4162.32	177.00	0.60
11489.00	88.42	180.11	7175.67	4251.57	-4251.57	217.04	4257.10	177.08	0.89
11583.00	88.13	180.25	7178.50	4345.52	-4345.52	216.75	4350.93	177.14	0.35
11678.00	88.02	180.02	7181.70	4440.47	-4440.47	216.54	4445.75	177.21	0.27
11689.00	87.95	180.22	7182.08	4451.46	-4451.46	216.51	4456.73	177.22	1.92

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