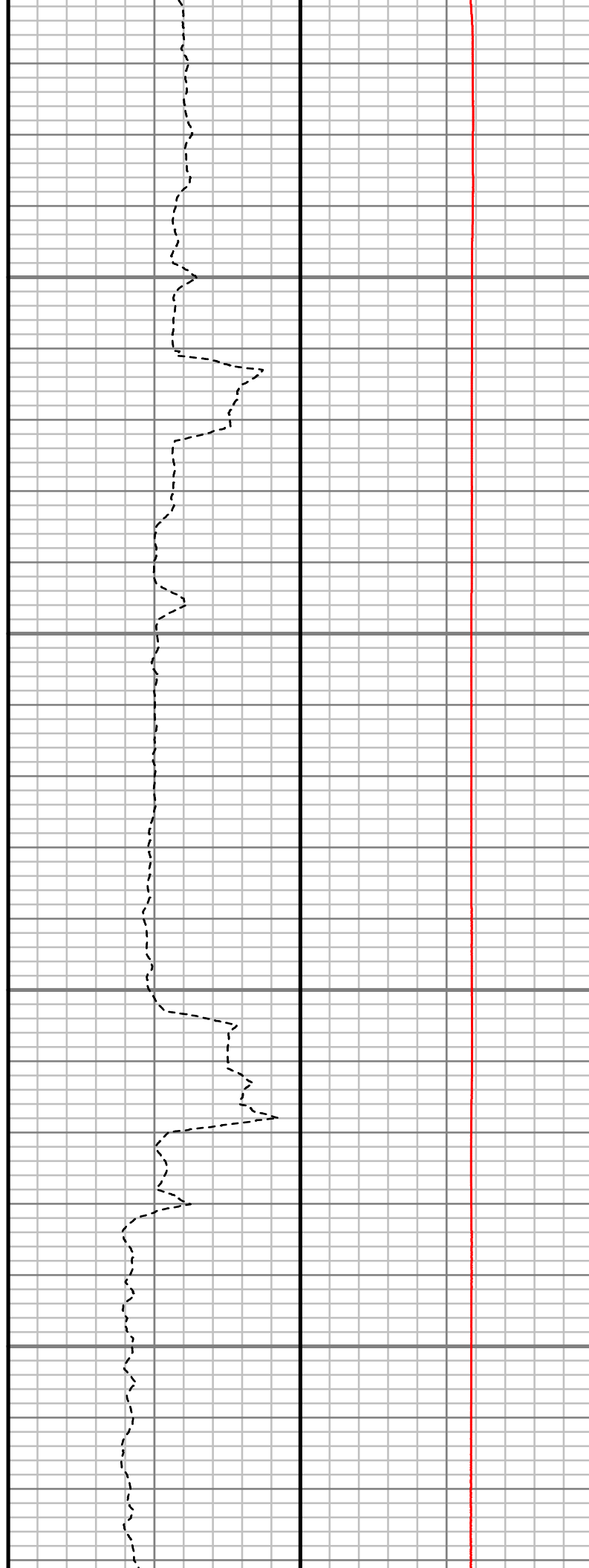
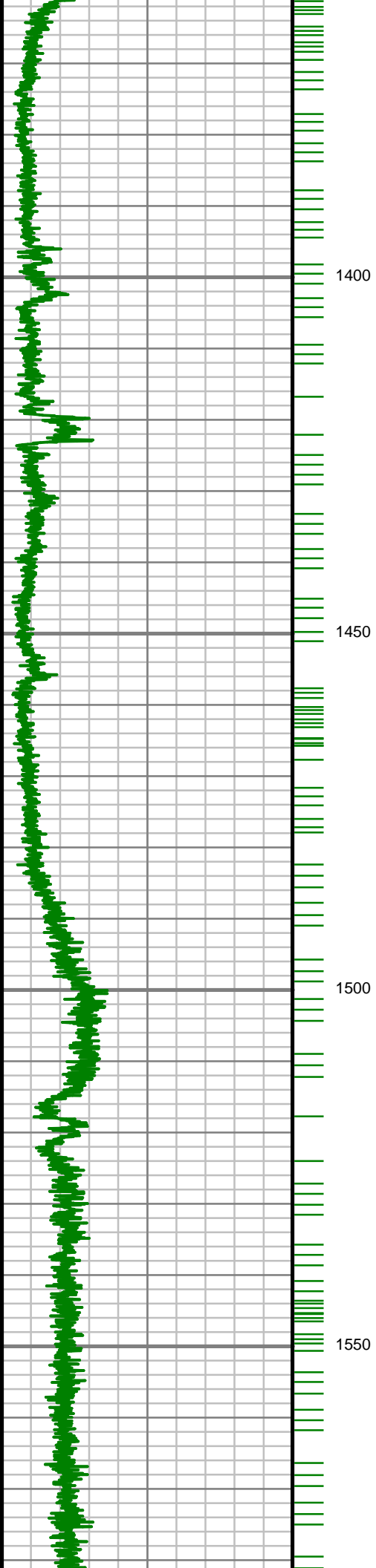


Remarks
ANADARKO E & P ONSHORE LLC PRODUCTION AFE#
SCIENTIFIC DRILLING INTERNATIONAL JOB#
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
RUN # 1 : MWD / GAMMA RAY LOGGING RUN
SENSORS S/N : PULSER = 128-065 / CONT = 863 / MWD EYE = 1019 / GAMMA RAY = 1093
BIT TO SENSOR OFFSETS : SURVEY = 60.48 FT. / GAMMA RAY = 51.23 FT.
RUN # 2 : MWD / GAMMA RAY LOGGING RUN
SENSORS S/N : PULSER = 78-220 / CONT = 221 / MWD EYE = 1020 / GAMMA RAY = 1434
BIT TO SENSOR OFFSETS : SURVEY = 59.99 FT. / GAMMA RAY = 50.74 FT.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO RATE OF PENETRATION CURVE
MNEMONICS LIST:
GR = GAMMA RAY
ROP = RATE OF PENETRATION
T-TEMP = TOOL TEMPERATURE

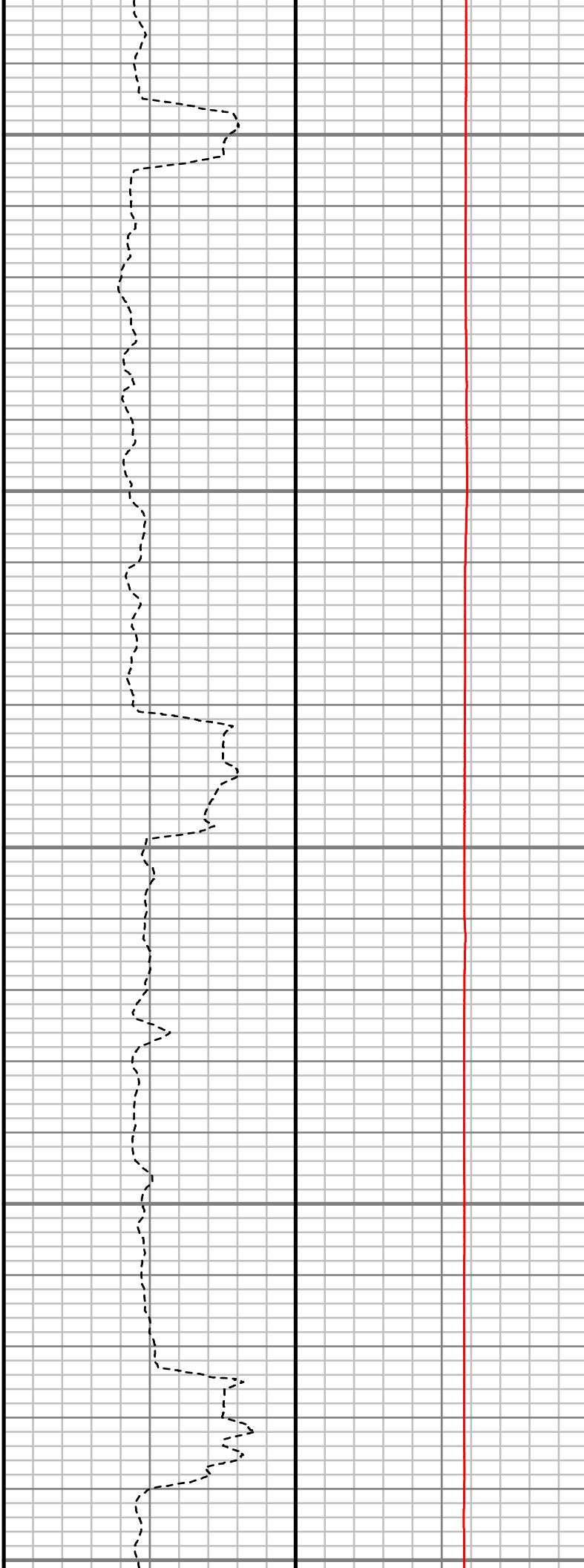
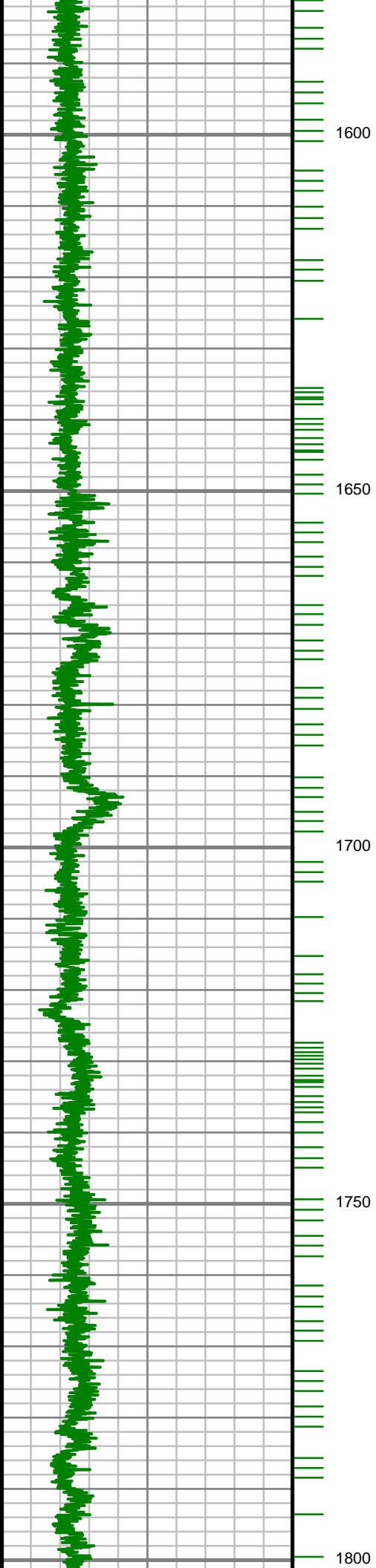
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, 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.

ANADARKO E & P ONSHORE LLC BUFFALO 36C-15HZ WATTENBERG FIELD WELD COUNTY, CO 05-123-36460			
Gamma Ray (GR) Unit = aapi	MEASURED DEPTH 1:240 (ft)	Rate of Penetration (ROP) Unit = ft/hr	Tool Temperature (T-TEMP) Unit = °F
			<p>S: 17 MD: 1348.00 ft Inc: 0.93 deg Az: 42.08 deg TVD: 1347.93 ft</p>



S: 18 MD: 1438.00 ft
Inc: 2.91 deg Az: 72.69
deg TVD: 1437.88 ft

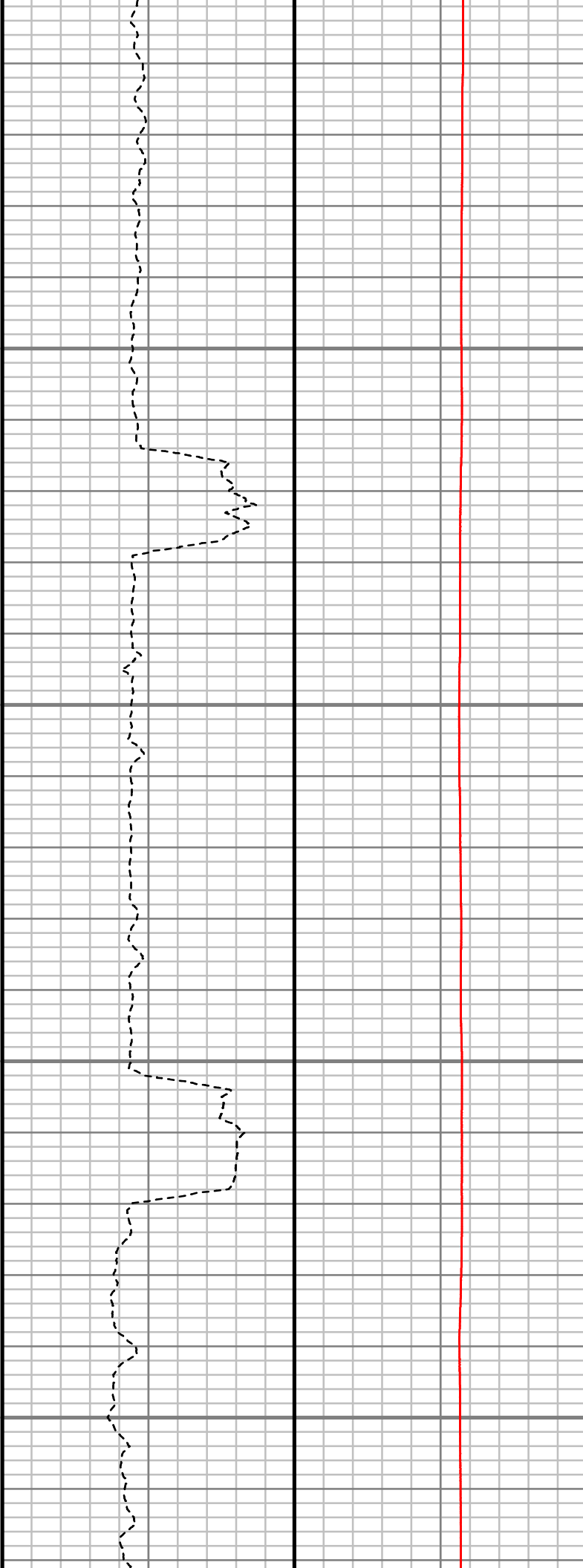
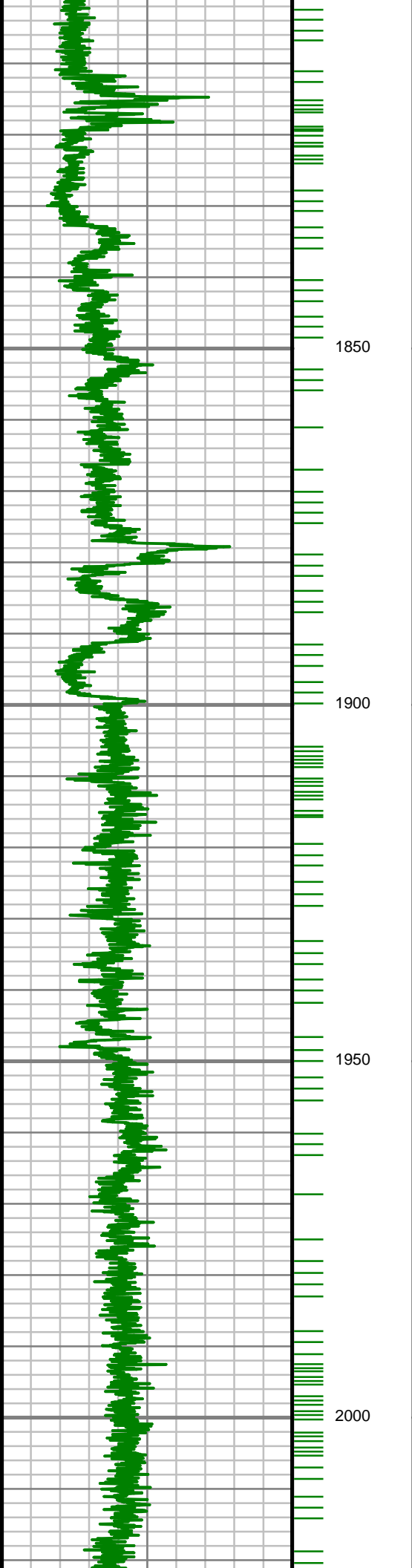
S: 19 MD: 1529.00 ft
Inc: 4.91 deg Az: 66.21
deg TVD: 1528.66 ft



S: 20 MD: 1620.00 ft
Inc: 5.55 deg Az: 56.25
deg TVD: 1619.28 ft

S: 21 MD: 1710.00 ft
Inc: 7.33 deg Az: 58.28
deg TVD: 1708.71 ft

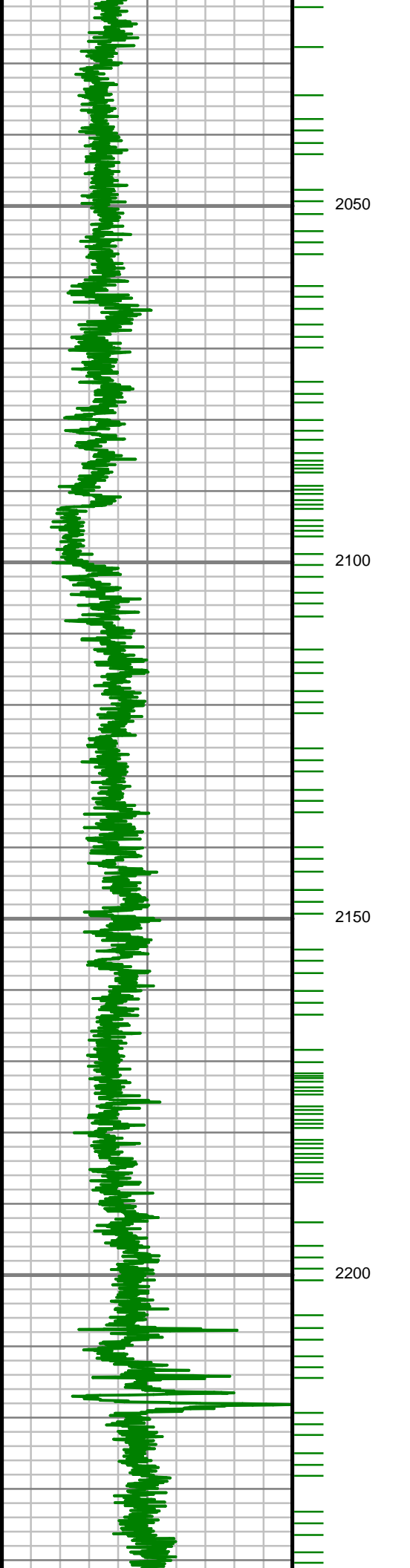
S: 22 MD: 1800.00 ft



S: 22 MD: 1800.00 ft
Inc: 8.79 deg Az: 47.92
deg TVD: 1797.82 ft

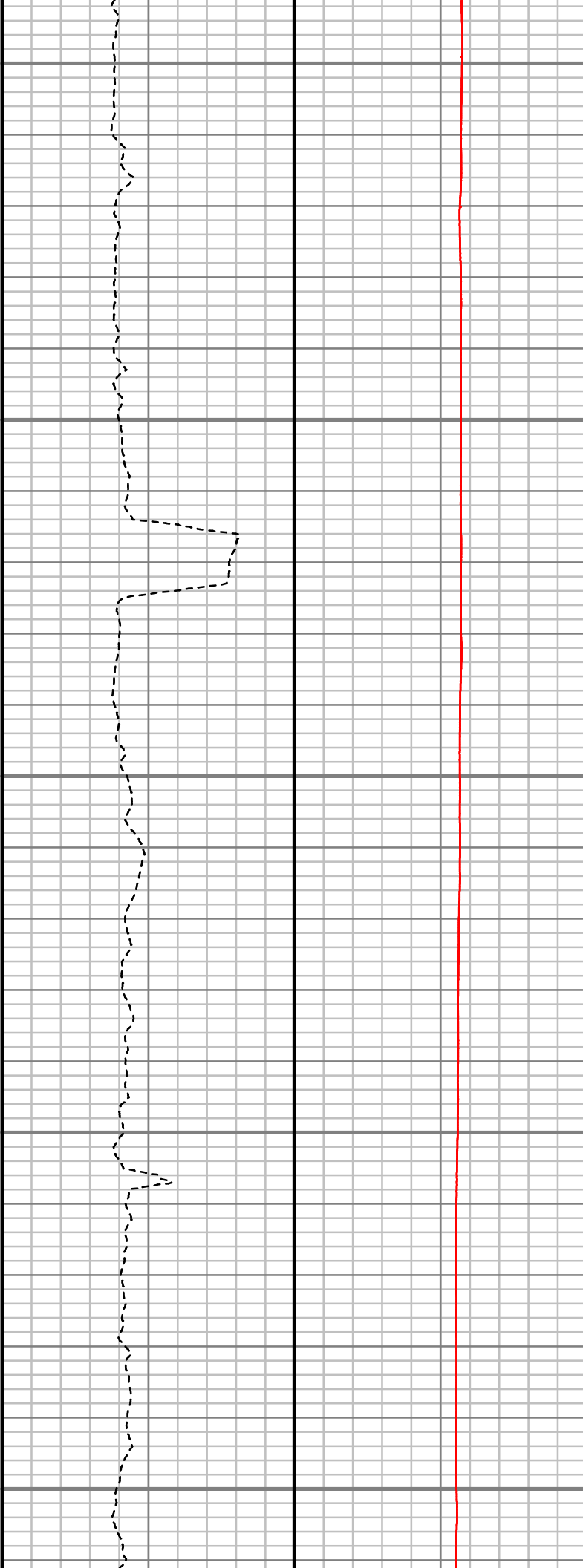
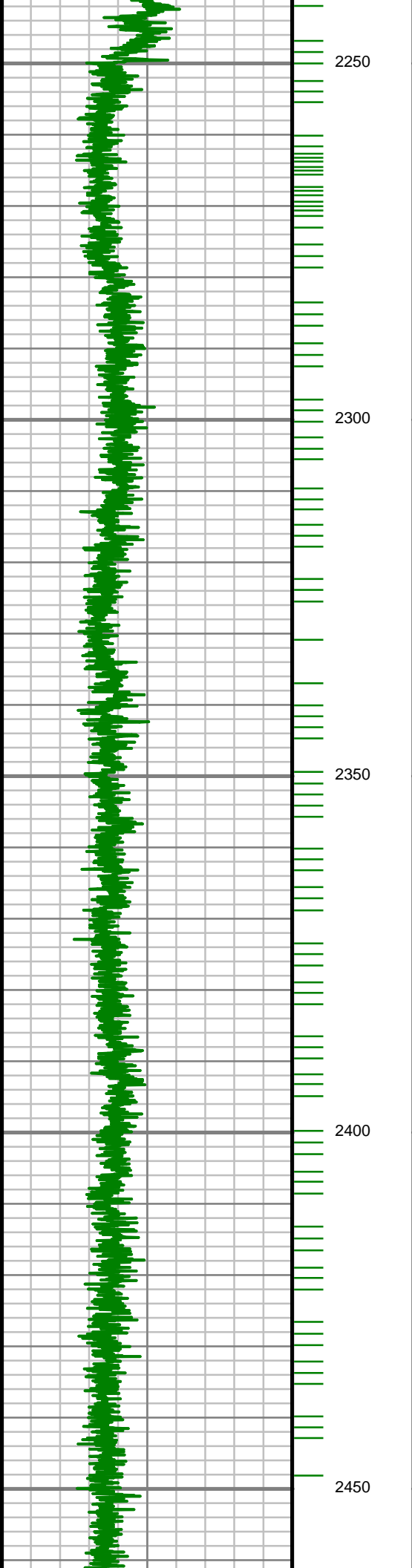
S: 23 MD: 1890.00 ft
Inc: 9.71 deg Az: 31.63
deg TVD: 1886.67 ft

S: 24 MD: 1981.00 ft
Inc: 10.05 deg Az:
37.77 deg TVD:
1976.32 ft



S: 25 MD: 2073.00 ft
Inc: 11.61 deg Az:
50.25 deg TVD:
2066.69 ft

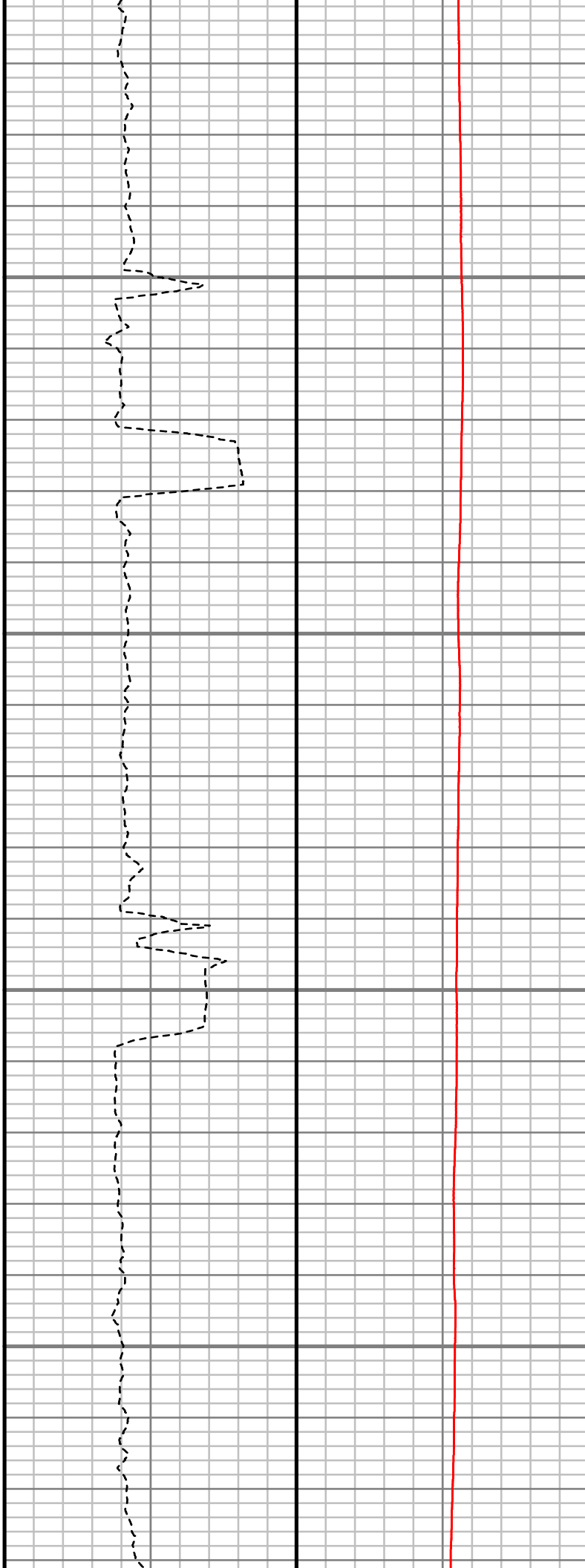
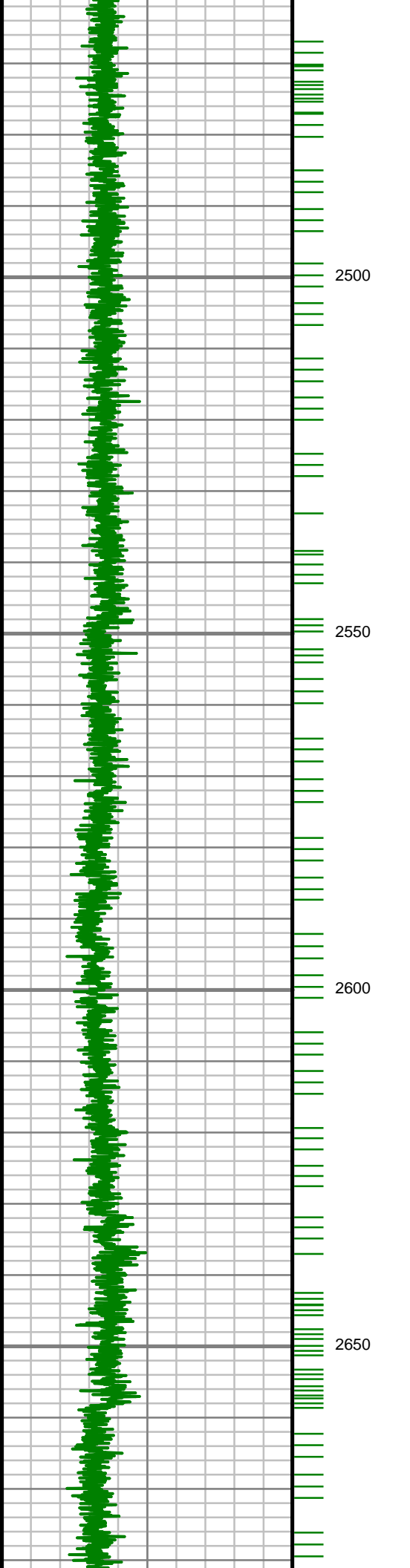
S: 26 MD: 2163.00 ft
Inc: 11.56 deg Az:
63.21 deg TVD:
2154.87 ft



S: 27 MD: 2254.00 ft
Inc: 12.98 deg Az:
72.43 deg TVD:
2243.80 ft

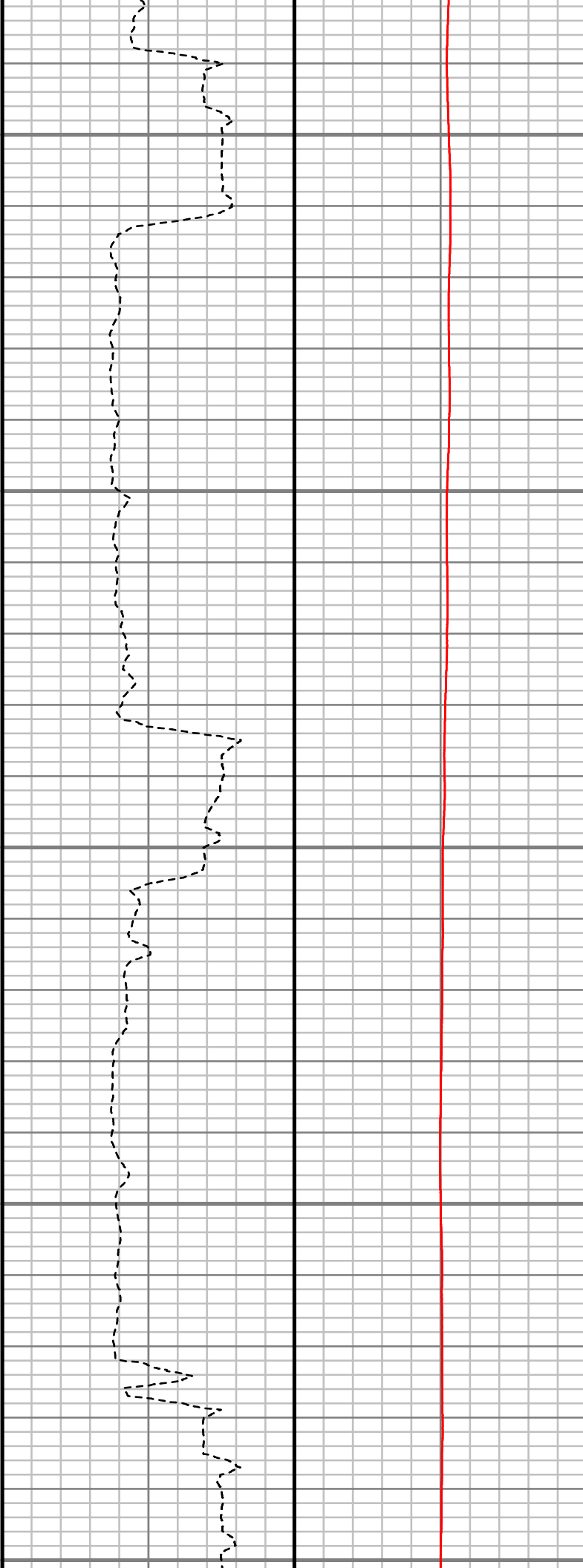
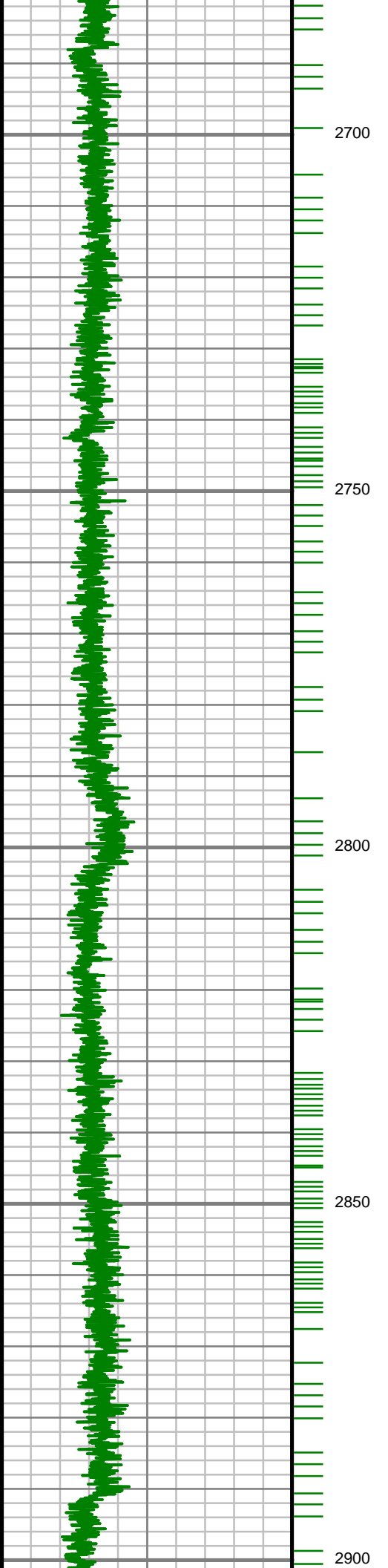
S: 28 MD: 2345.00 ft
Inc: 13.42 deg Az:
77.62 deg TVD:
2332.40 ft

S: 29 MD: 2439.00 ft
Inc: 13.28 deg Az:
76.53 deg TVD:
2423.86 ft



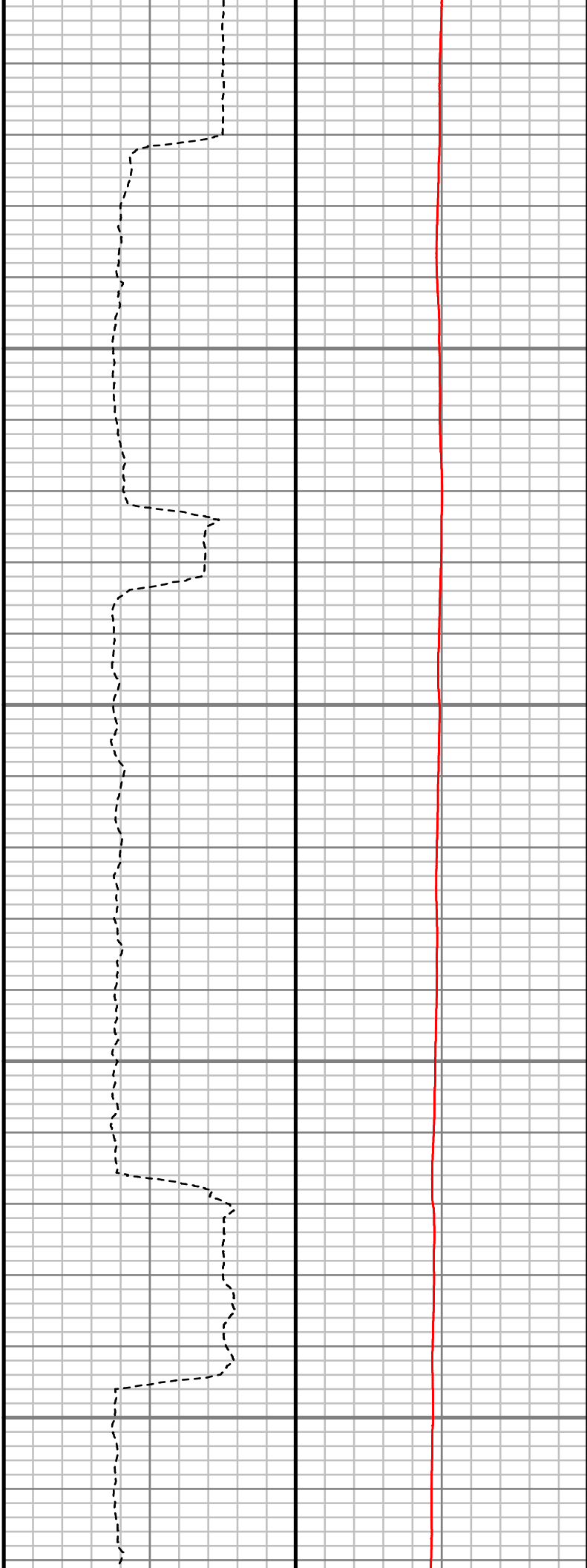
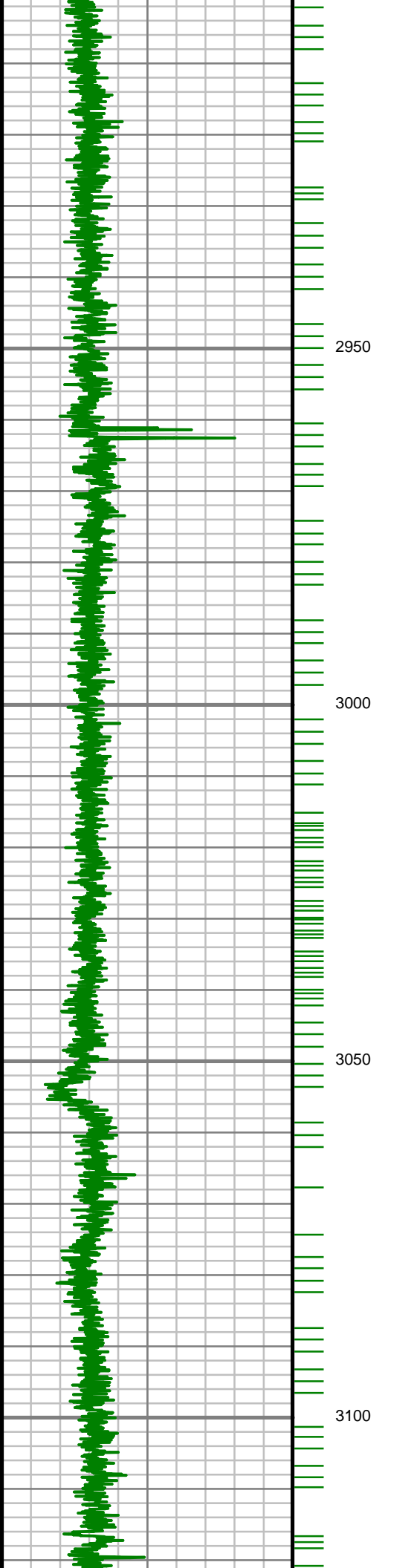
S: 30 MD: 2534.00 ft
Inc: 13.43 deg Az:
77.53 deg TVD:
2516.29 ft

S: 31 MD: 2628.00 ft
Inc: 11.66 deg Az:
79.45 deg TVD:
2608.04 ft



S: 32 MD: 2723.00 ft
Inc: 12.28 deg Az:
74.81 deg TVD:
2700.98 ft

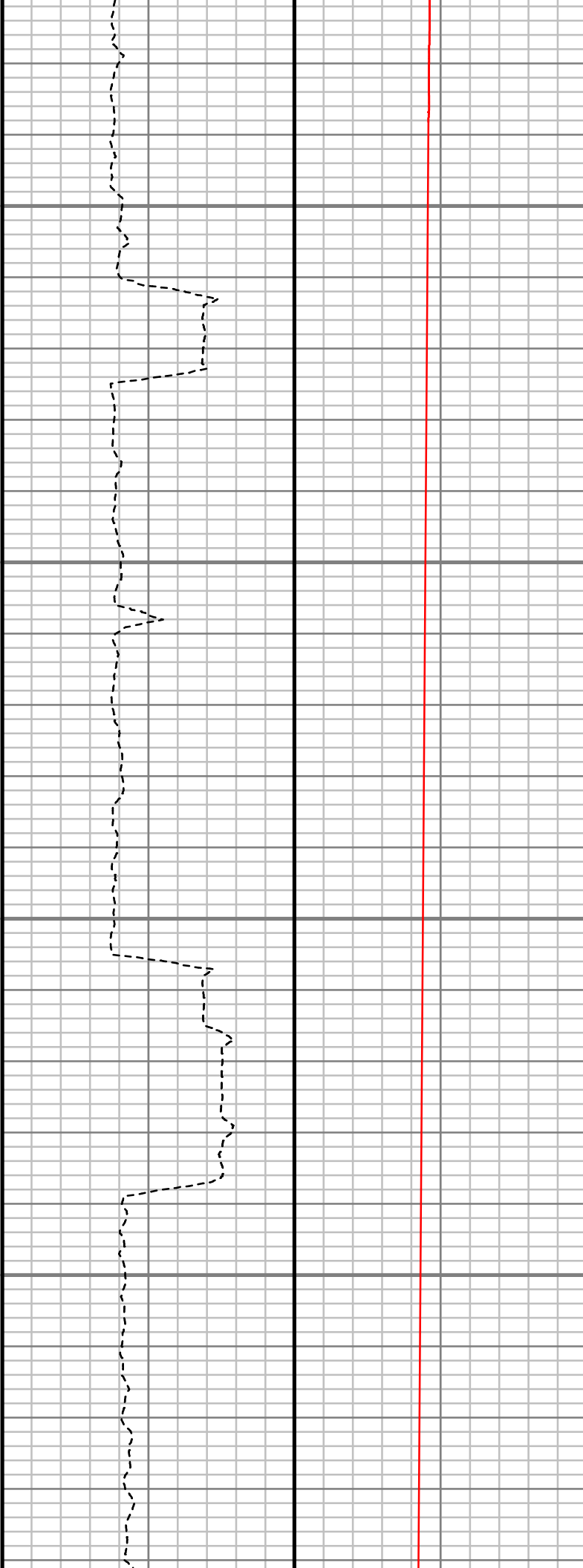
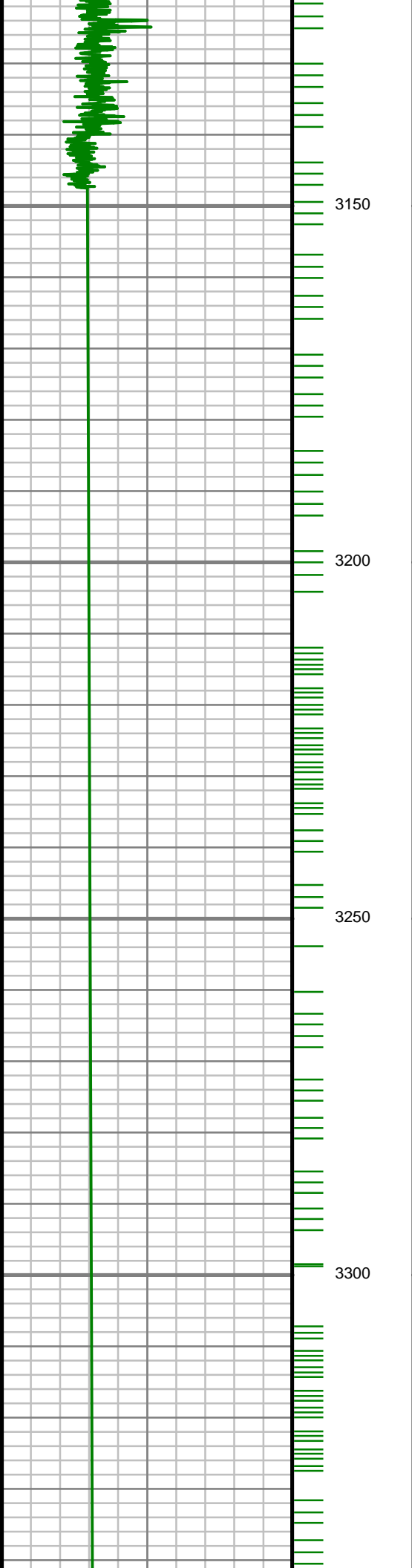
S: 33 MD: 2817.00 ft
Inc: 12.12 deg Az:
79.98 deg TVD:
2792.86 ft



S: 34 MD: 2911.00 ft
Inc: 12.98 deg Az:
80.46 deg TVD:
2884.61 ft

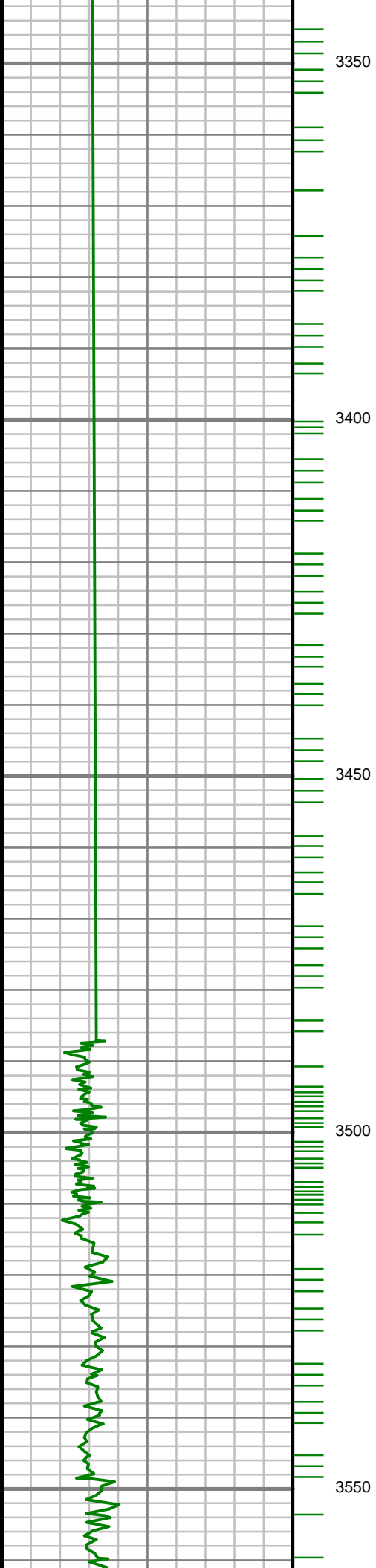
S: 35 MD: 3006.00 ft
Inc: 11.85 deg Az:
79.21 deg TVD:
2977.39 ft

S: 36 MD: 3100.00 ft
Inc: 12.91 deg Az:
78.79 deg TVD:
3069.20 ft



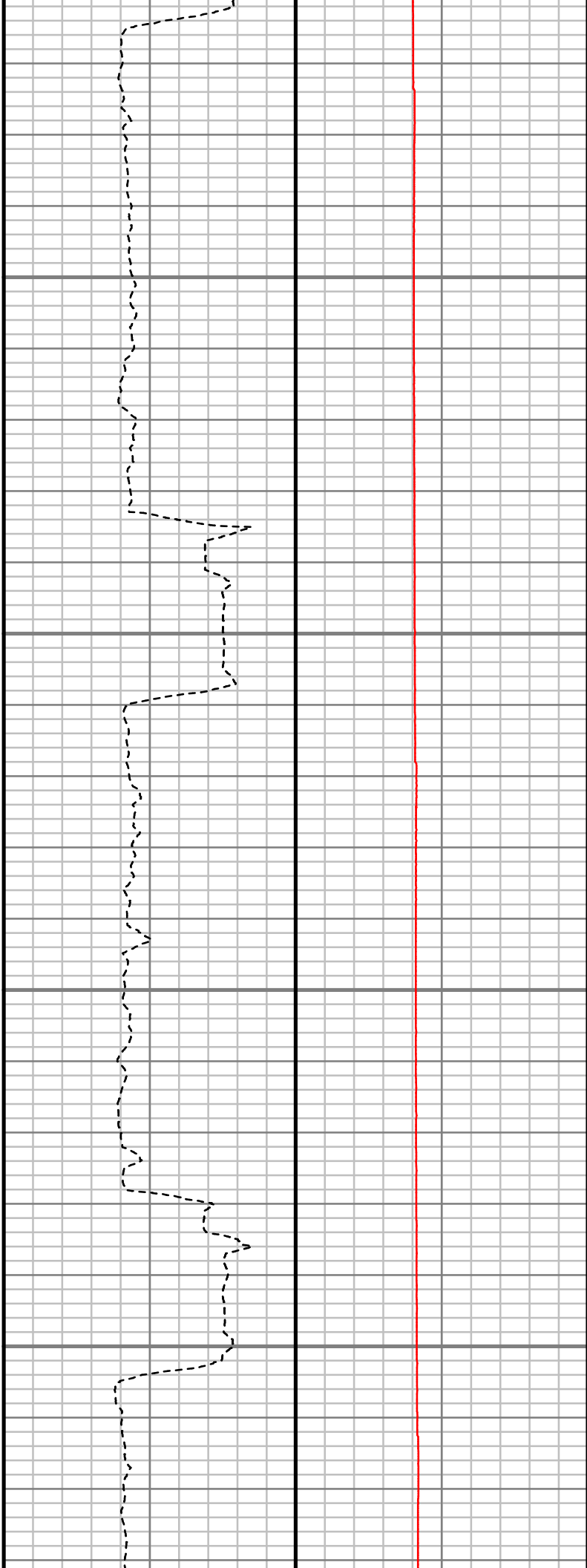
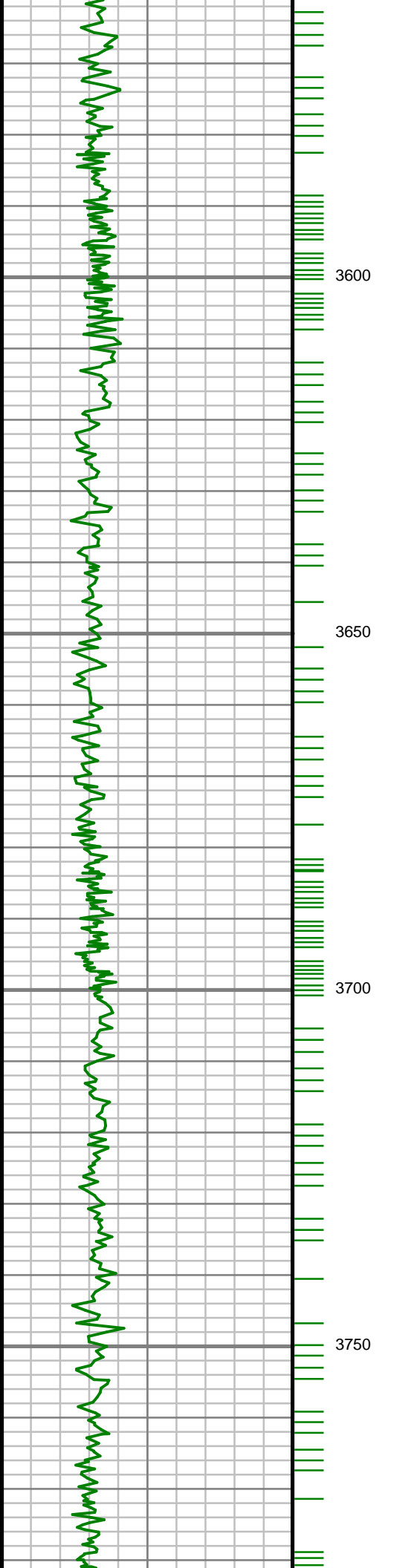
S: 37 MD: 3195.00 ft
Inc: 11.29 deg Az:
76.12 deg TVD:
3162.09 ft

S: 38 MD: 3289.00 ft
Inc: 11.32 deg Az:
70.98 deg TVD:
3254.27 ft



S: 39 MD: 3383.00 ft
Inc: 12.35 deg Az:
76.18 deg TVD:
3346.27 ft

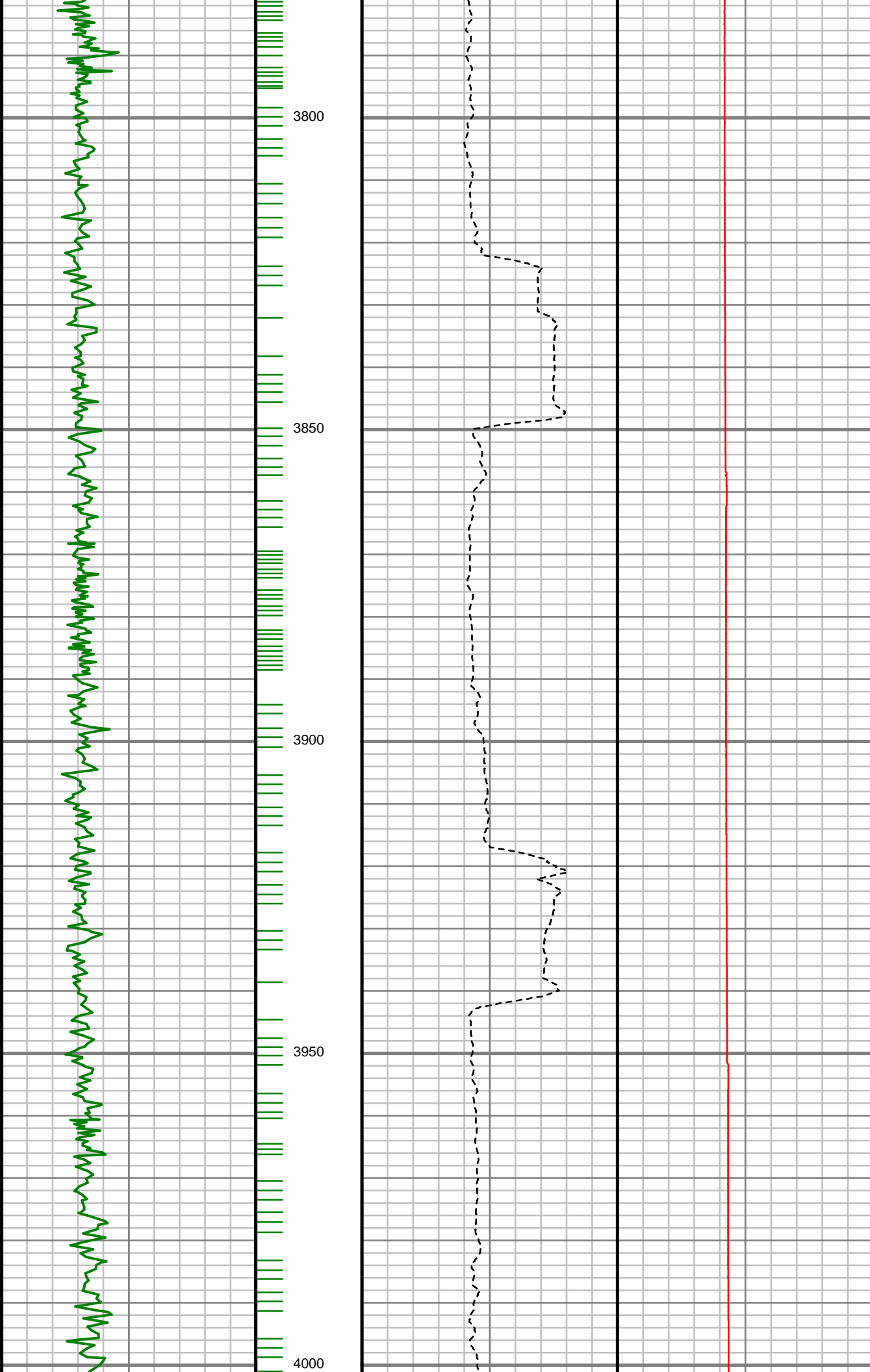
S: 40 MD: 3478.00 ft
Inc: 10.97 deg Az:
76.27 deg TVD:
3439.31 ft



S: 41 MD: 3572.00 ft
Inc: 11.90 deg Az:
78.25 deg TVD:
3531.44 ft

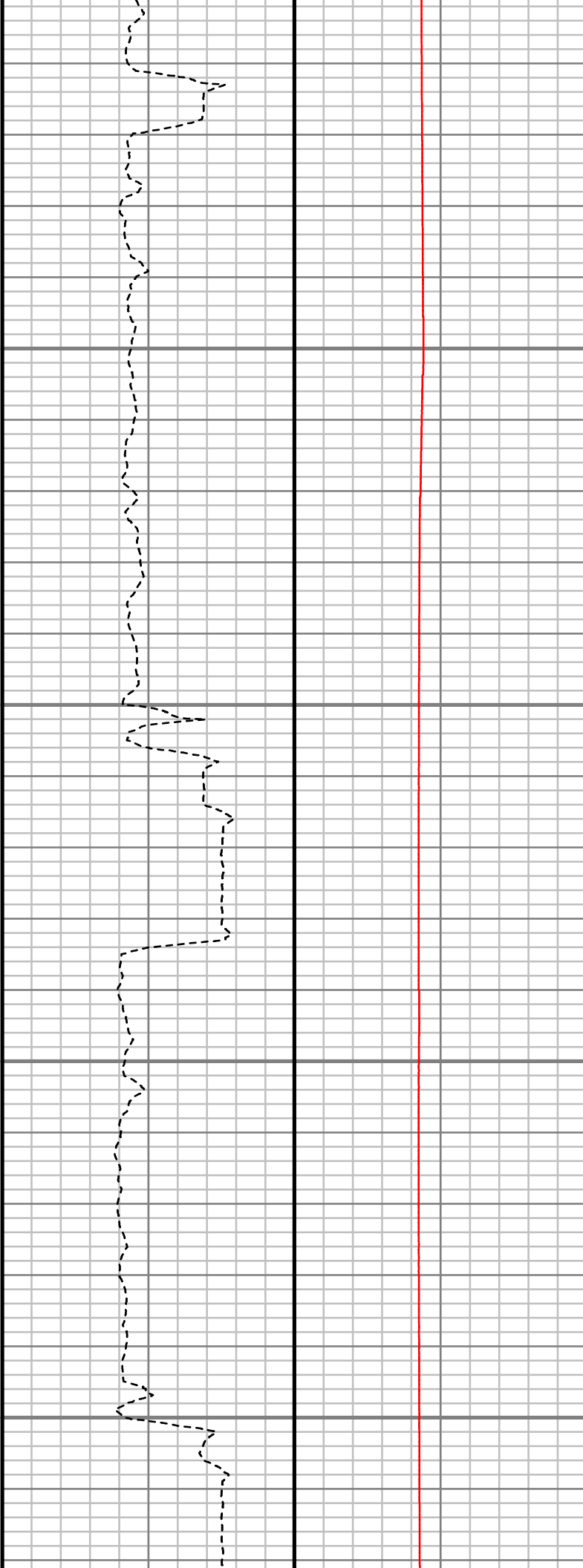
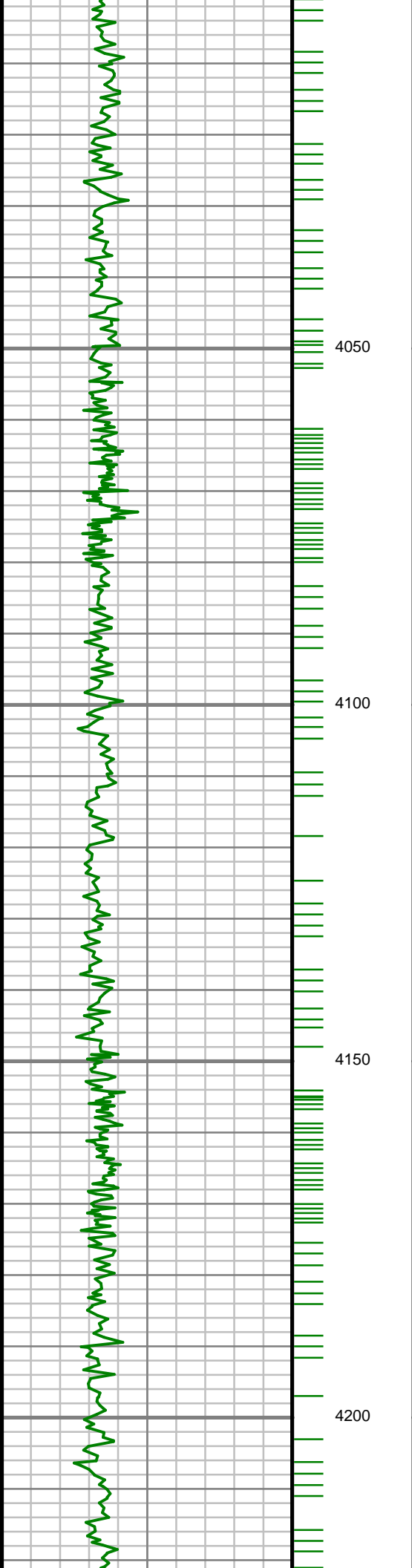
S: 42 MD: 3667.00 ft
Inc: 12.15 deg Az:
72.23 deg TVD:
3624.36 ft

S: 43 MD: 3761.00 ft
Inc: 12.06 deg Az:
71.77 deg TVD:
3716.27 ft



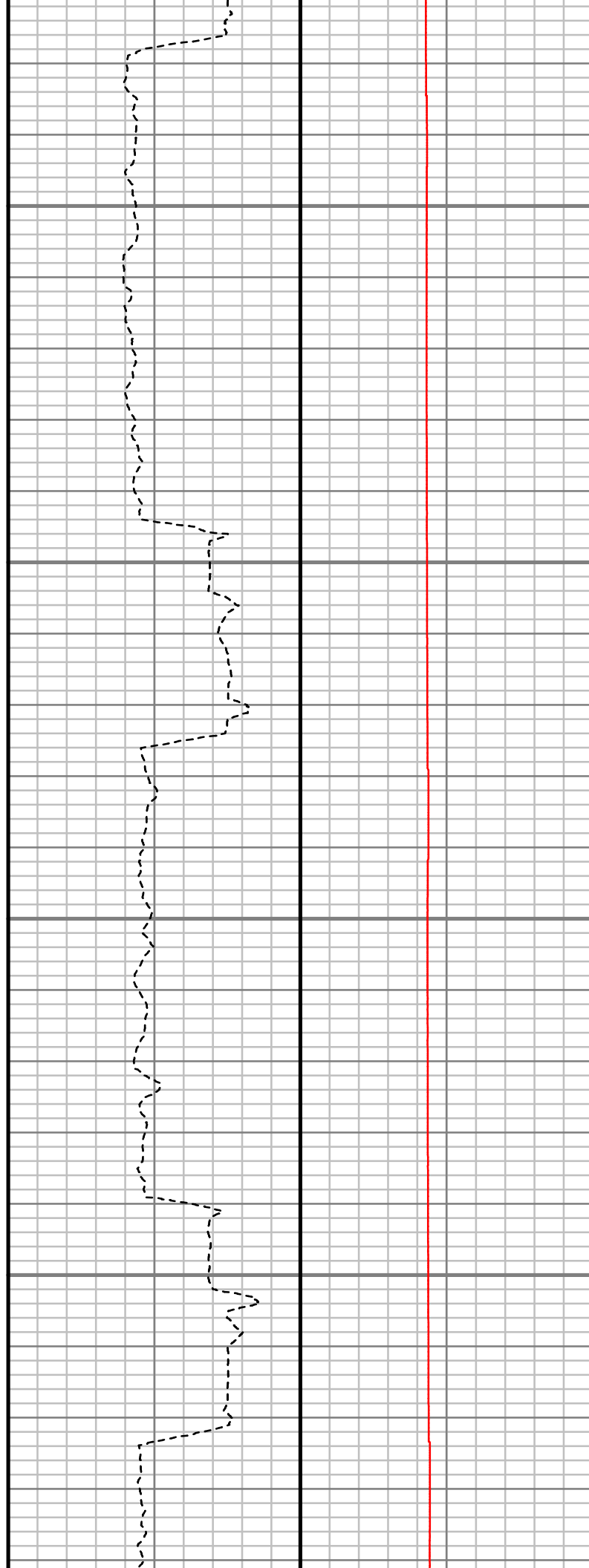
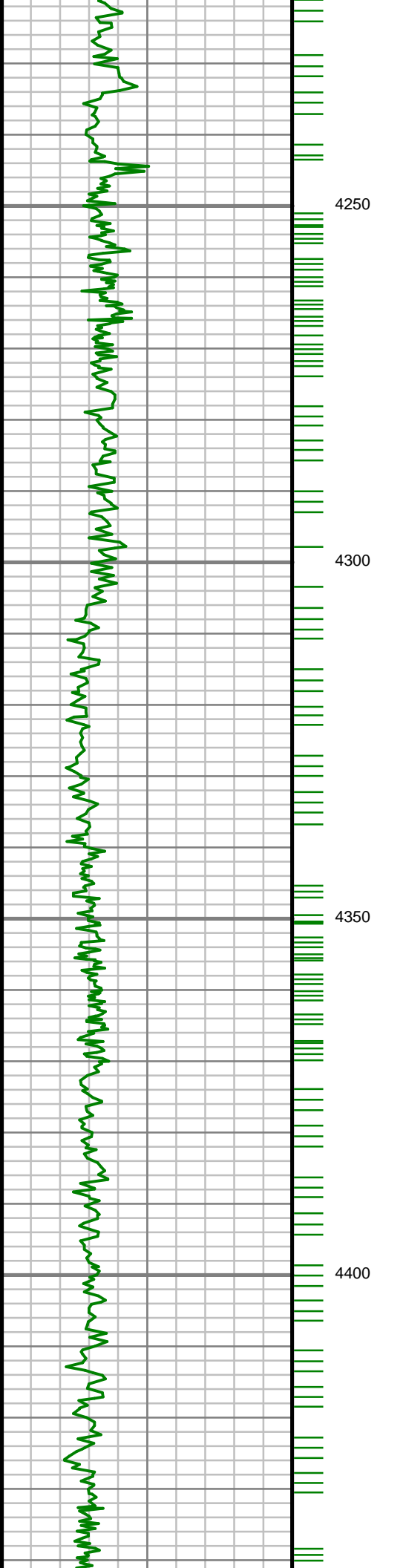
S: 44 MD: 3856.00 ft
Inc: 11.83 deg Az:
74.17 deg TVD:
3809.21 ft

S: 45 MD: 3950.00 ft
Inc: 12.60 deg Az:
77.36 deg TVD:
3901.09 ft



S: 46 MD: 4045.00 ft
Inc: 10.85 deg Az:
72.39 deg TVD:
3994.10 ft

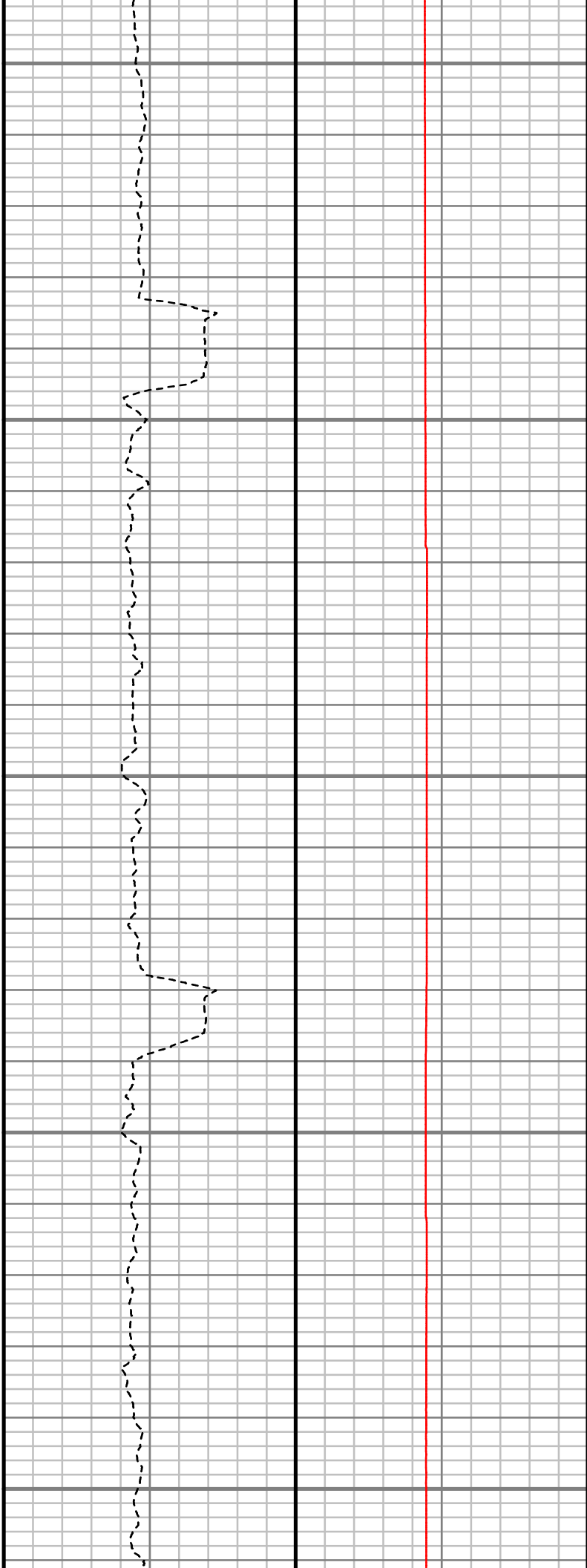
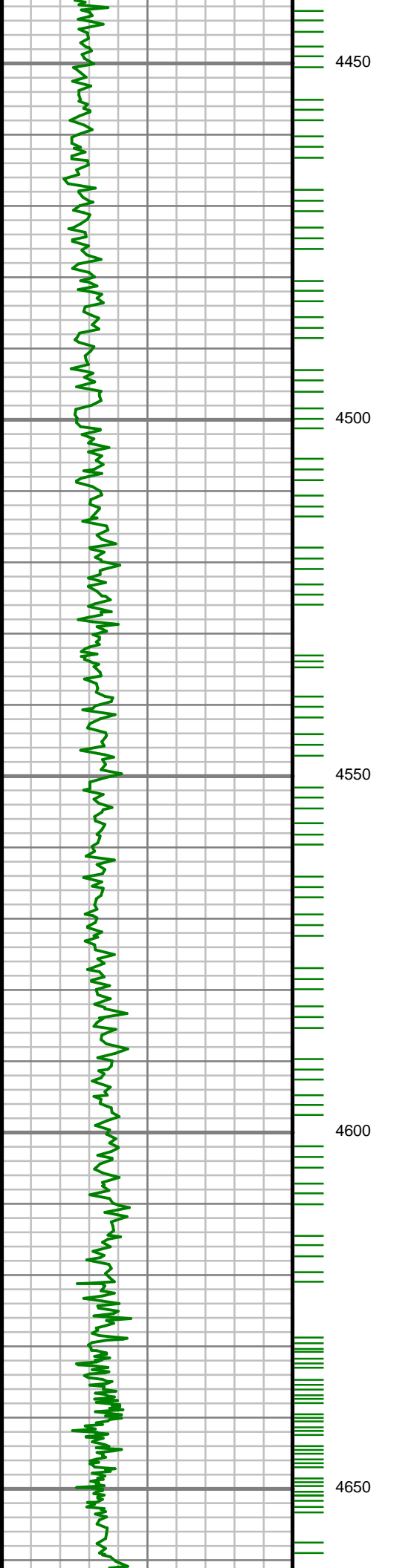
S: 47 MD: 4139.00 ft
Inc: 11.18 deg Az:
67.56 deg TVD:
4086.38 ft



S: 48 MD: 4234.00 ft
Inc: 12.52 deg Az:
69.43 deg TVD:
4179.35 ft

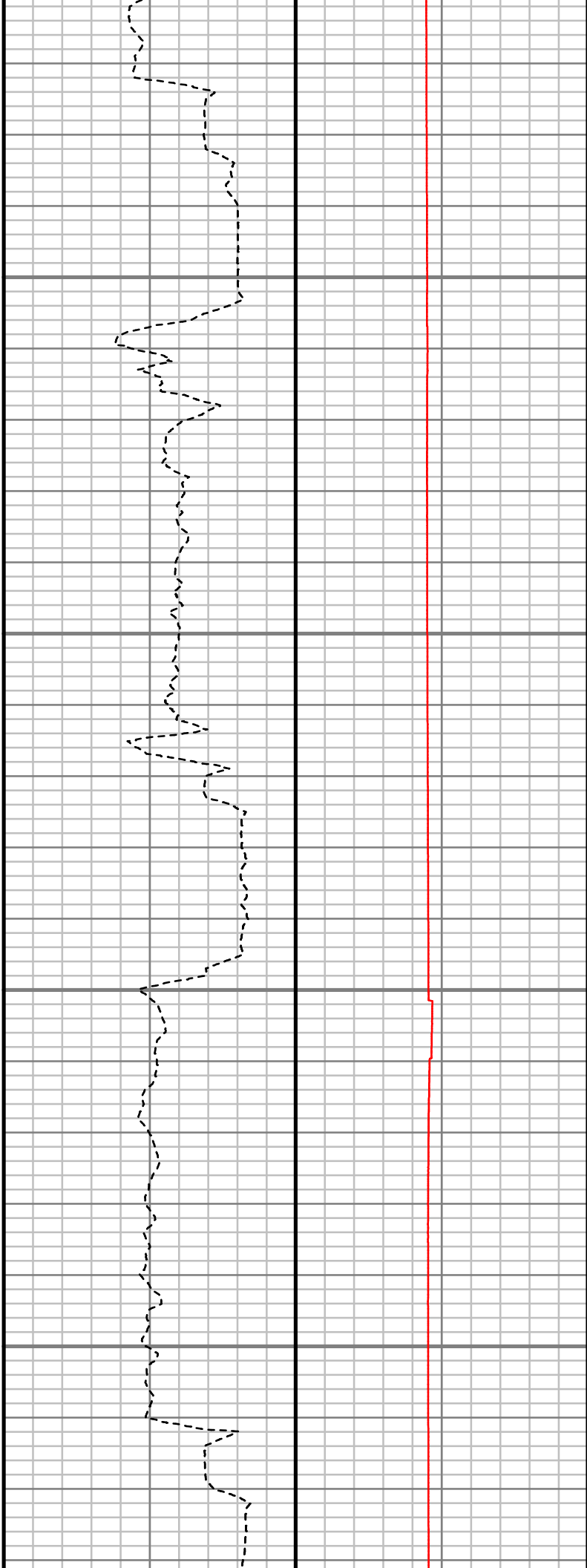
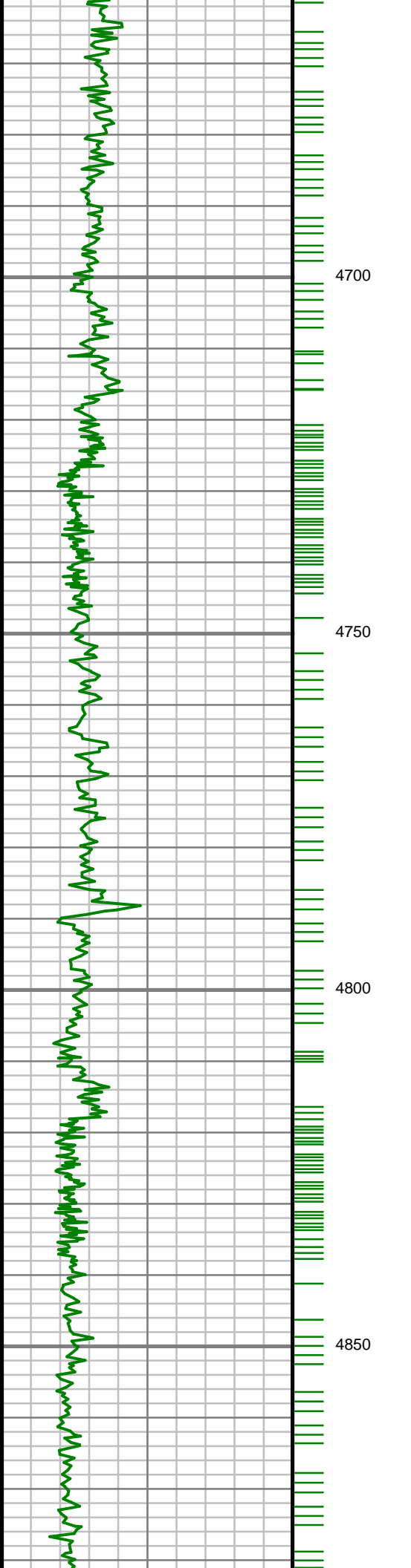
S: 49 MD: 4328.00 ft
Inc: 13.19 deg Az:
68.90 deg TVD:
4270.99 ft

S: 50 MD: 4422.00 ft
Inc: 13.82 deg Az:
74.81 deg TVD:
4362.39 ft



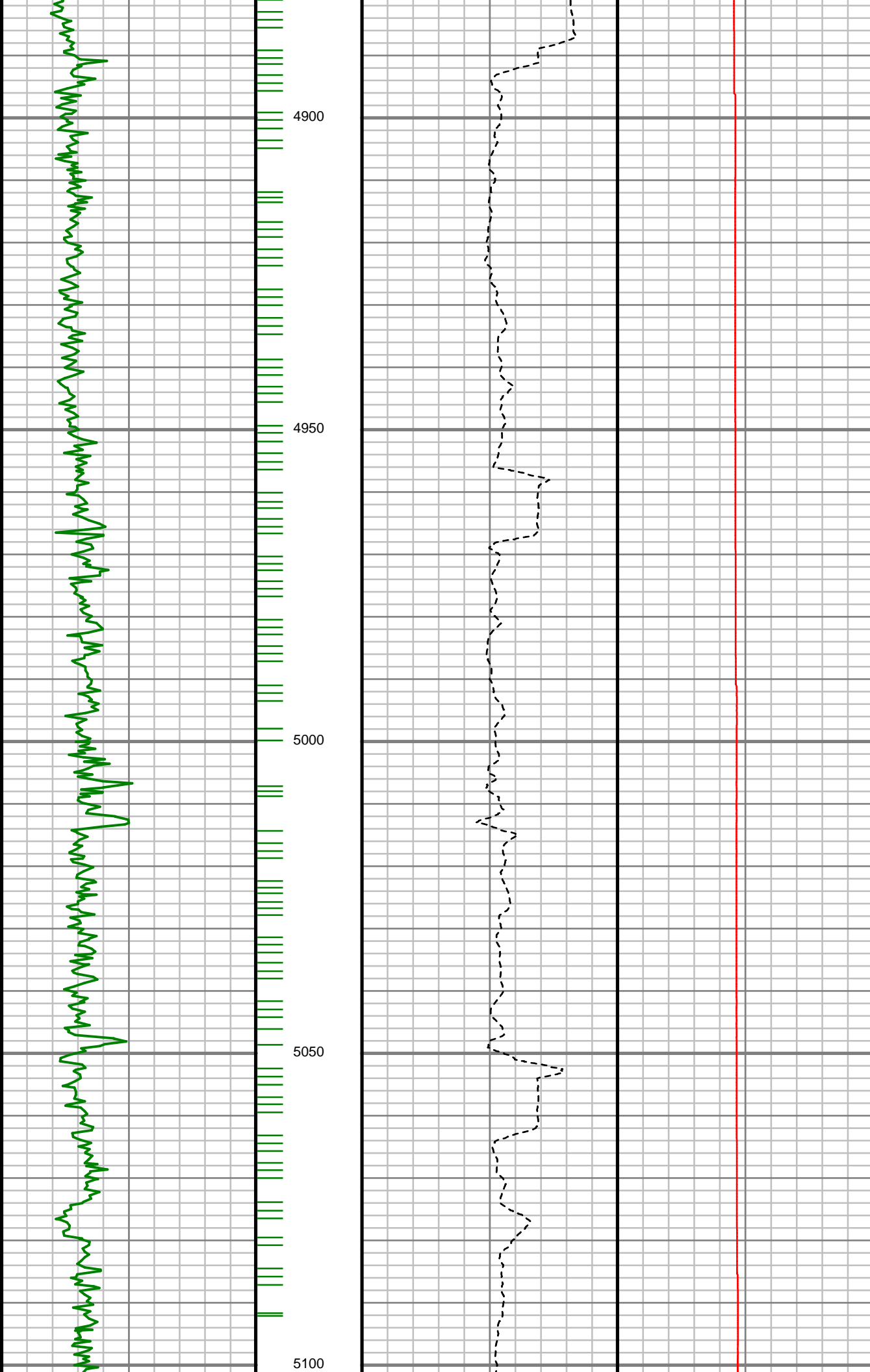
S: 51 MD: 4517.00 ft
Inc: 12.73 deg Az:
76.13 deg TVD:
4454.85 ft

S: 52 MD: 4611.00 ft
Inc: 10.27 deg Az:
76.23 deg TVD:
4546.96 ft



S: 53 MD: 4706.00 ft
Inc: 9.61 deg Az: 66.57
deg TVD: 4640.54 ft

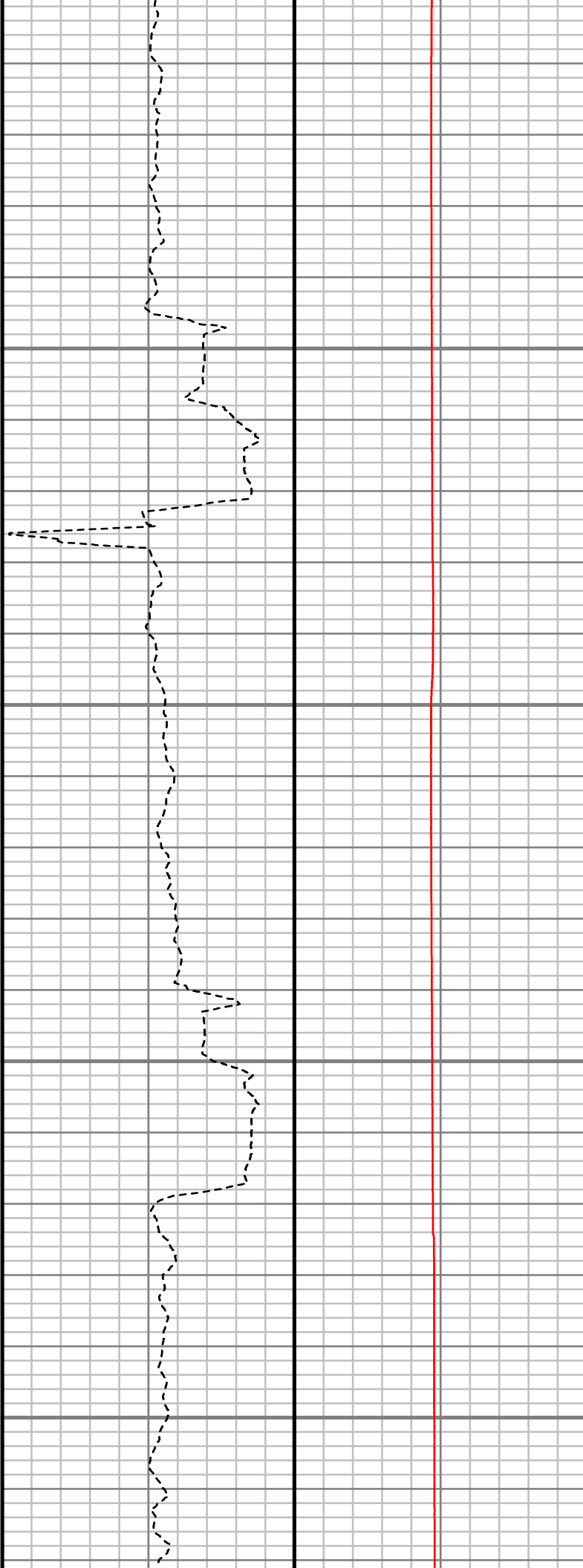
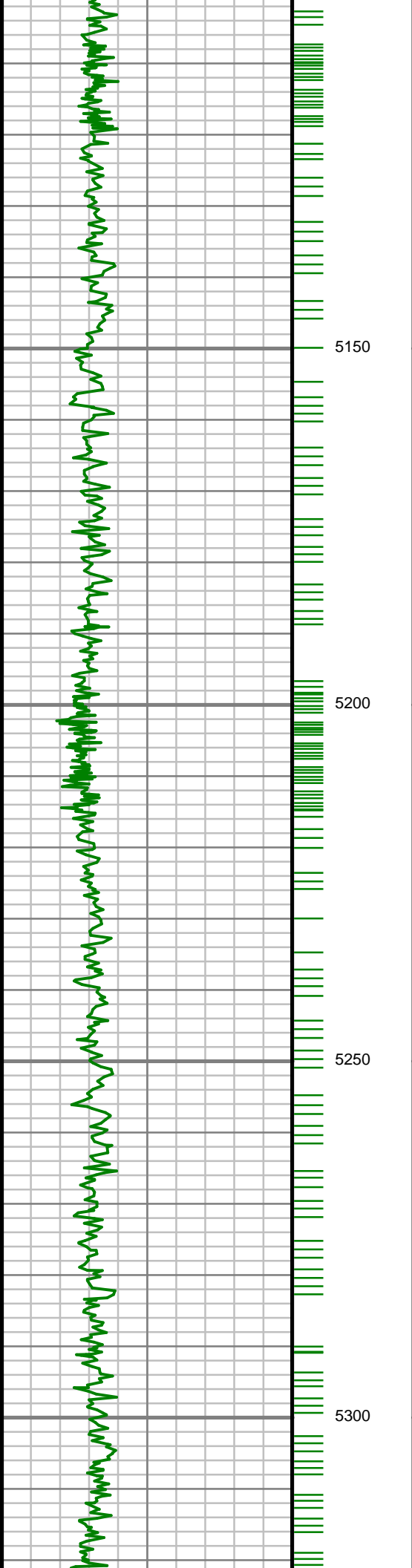
S: 54 MD: 4800.00 ft
Inc: 12.71 deg Az:
61.62 deg TVD:
4732.75 ft



S: 55 MD: 4895.00 ft
Inc: 15.31 deg Az:
67.47 deg TVD:
4824.92 ft

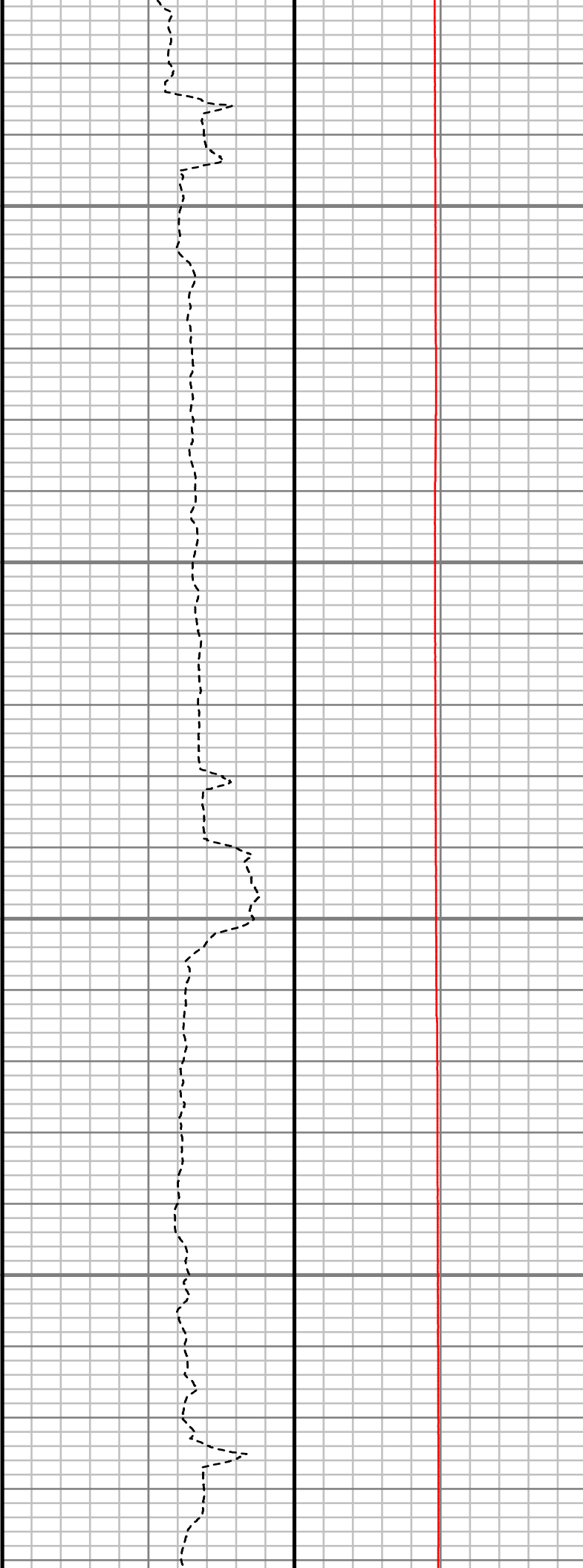
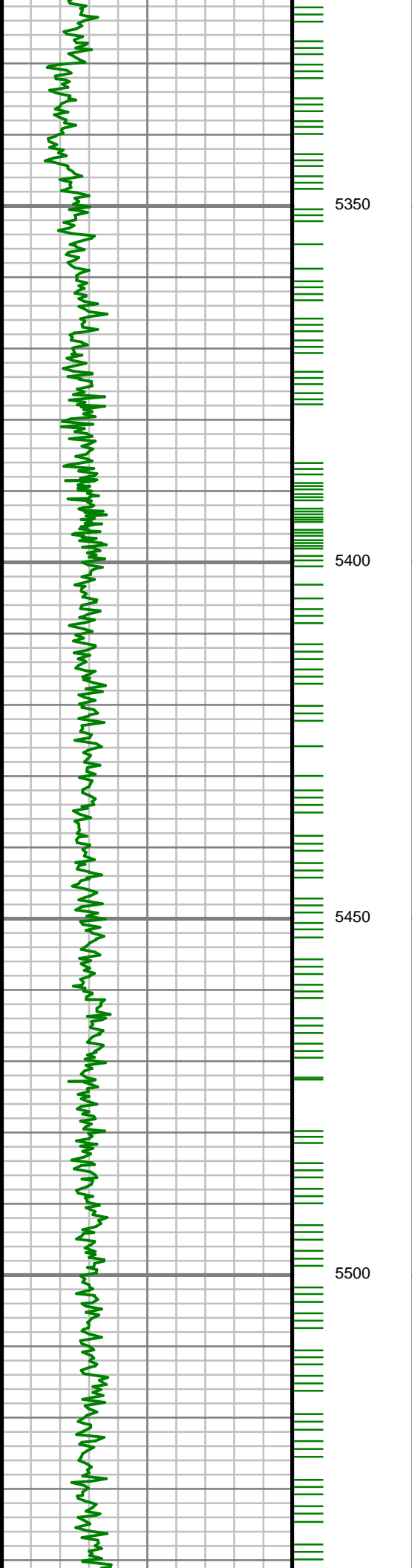
S: 56 MD: 4989.00 ft
Inc: 15.24 deg Az:
69.35 deg TVD:
4915.60 ft

S: 57 MD: 5083.00 ft
Inc: 13.91 deg Az:
69.76 deg TVD:
5006.57 ft



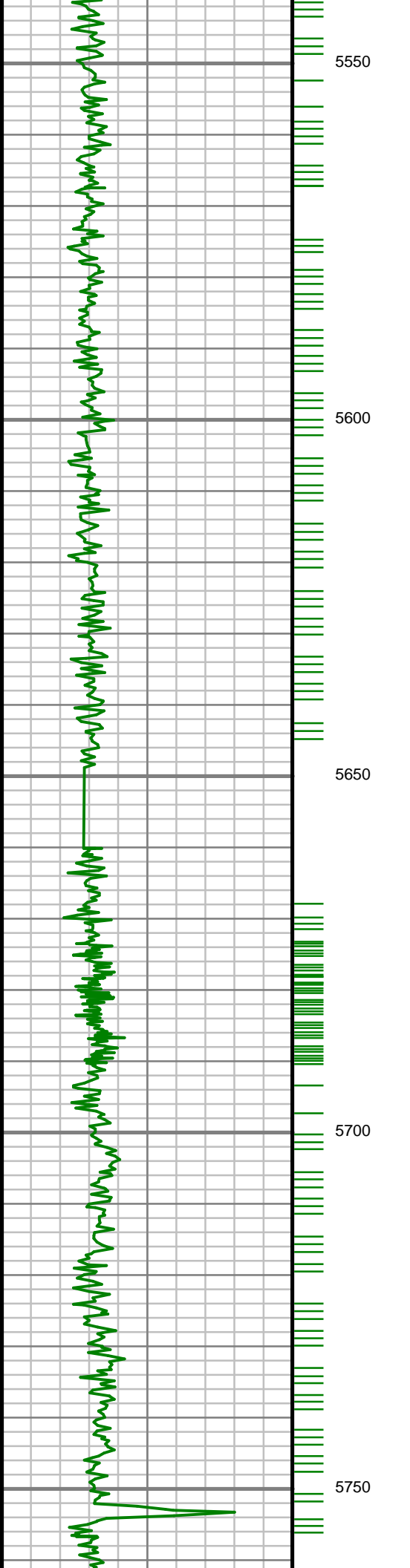
S: 58 MD: 5178.00 ft
Inc: 13.78 deg Az:
69.81 deg TVD:
5098.81 ft

S: 59 MD: 5272.00 ft
Inc: 15.05 deg Az:
74.21 deg TVD:
5189.85 ft



S: 60 MD: 5367.00 ft
Inc: 13.81 deg Az:
73.38 deg TVD:
5281.85 ft

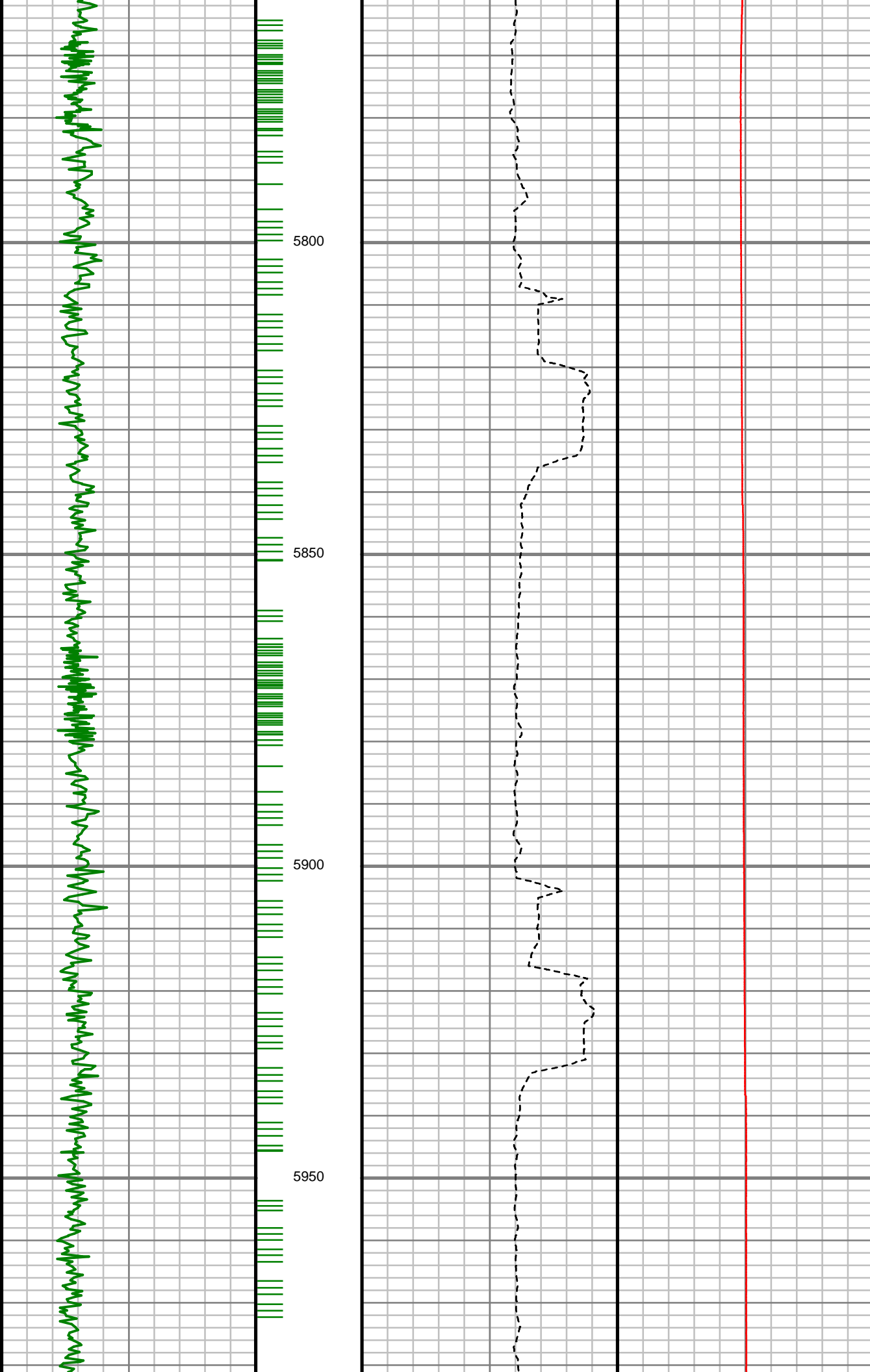
S: 61 MD: 5461.00 ft
Inc: 14.14 deg Az:
77.34 deg TVD:
5373.07 ft



S: 62 MD: 5556.00 ft
Inc: 13.12 deg Az:
76.78 deg TVD:
5465.40 ft

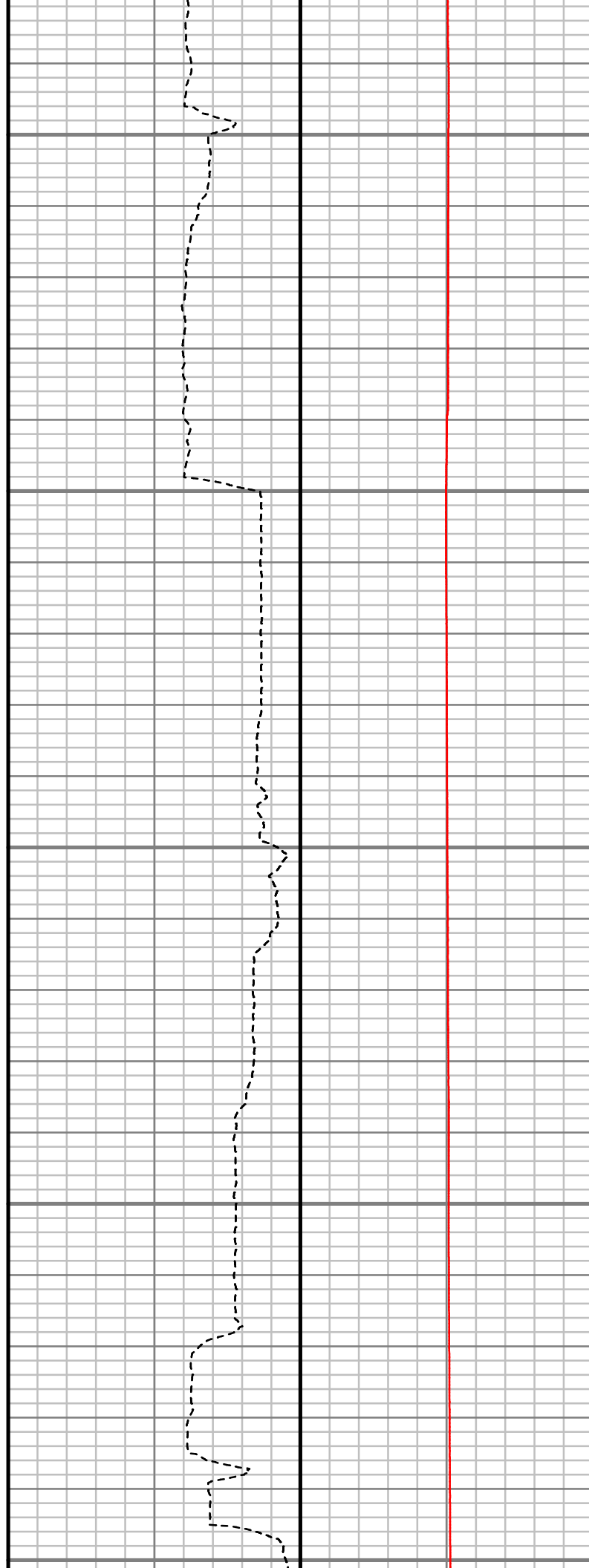
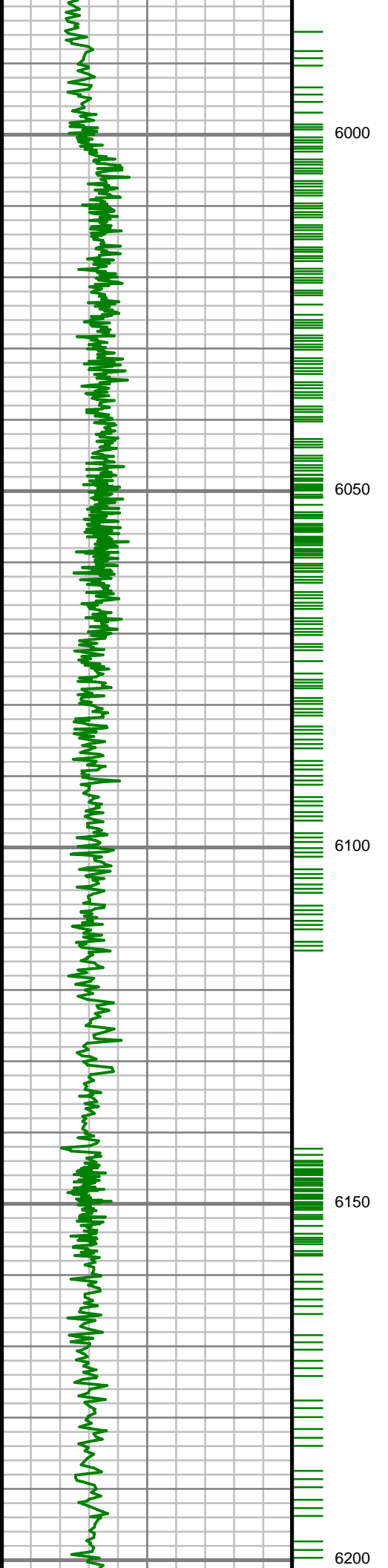
S: 63 MD: 5650.00 ft
Inc: 11.19 deg Az:
75.29 deg TVD:
5557.29 ft

S: 64 MD: 5745.00 ft
Inc: 11.03 deg Az:
79.66 deg TVD:
5650.51 ft



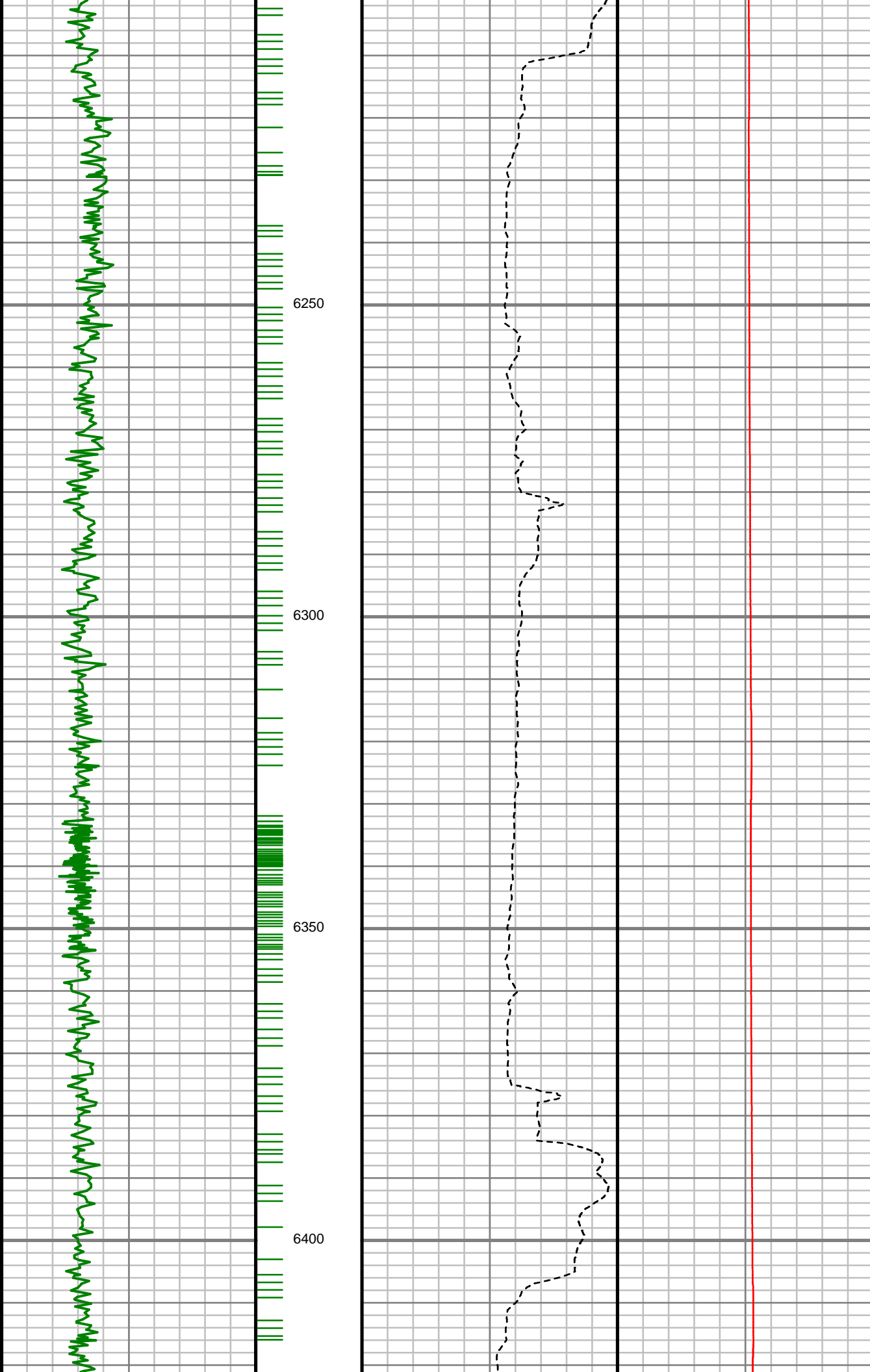
S: 65 MD: 5839.00 ft
Inc: 12.28 deg Az:
81.01 deg TVD:
5742.57 ft

S: 66 MD: 5933.00 ft
Inc: 12.56 deg Az:
76.88 deg TVD:
5834.37 ft



S: 67 MD: 6028.00 ft
Inc: 10.94 deg Az:
75.51 deg TVD:
5927.38 ft

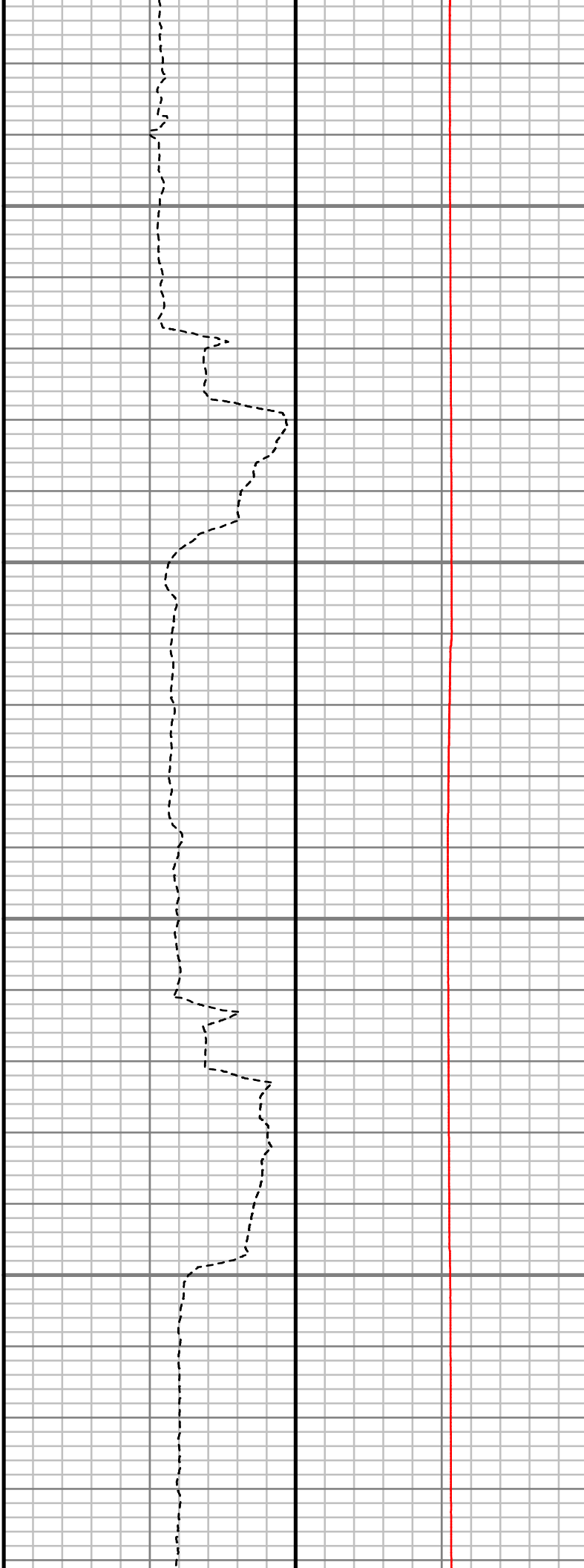
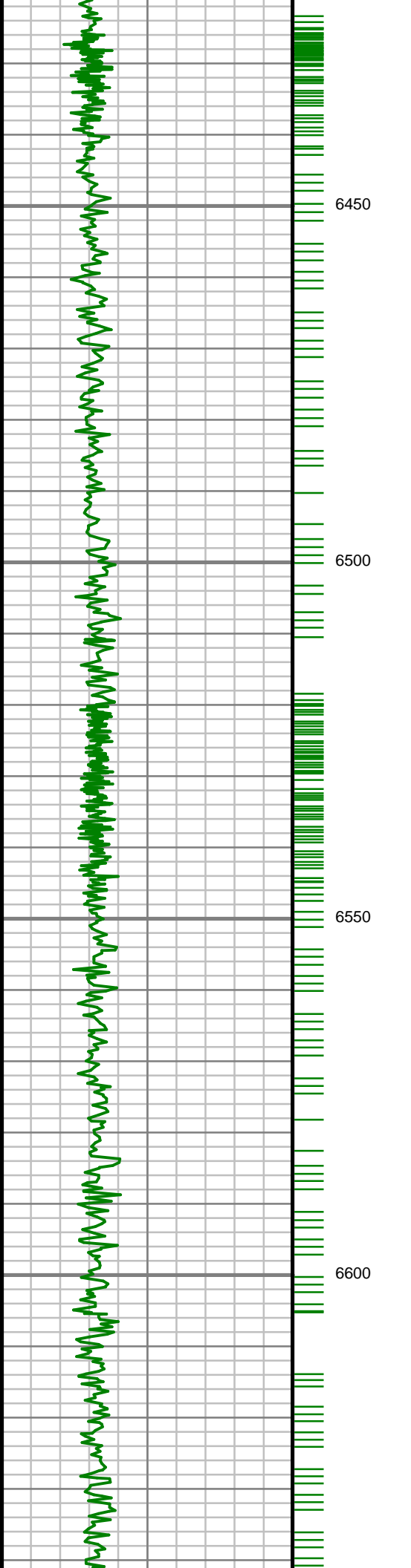
S: 68 MD: 6122.00 ft
Inc: 10.89 deg Az:
71.84 deg TVD:
6019.68 ft



S: 69 MD: 6217.00 ft
Inc: 11.79 deg Az:
69.54 deg TVD:
6112.82 ft

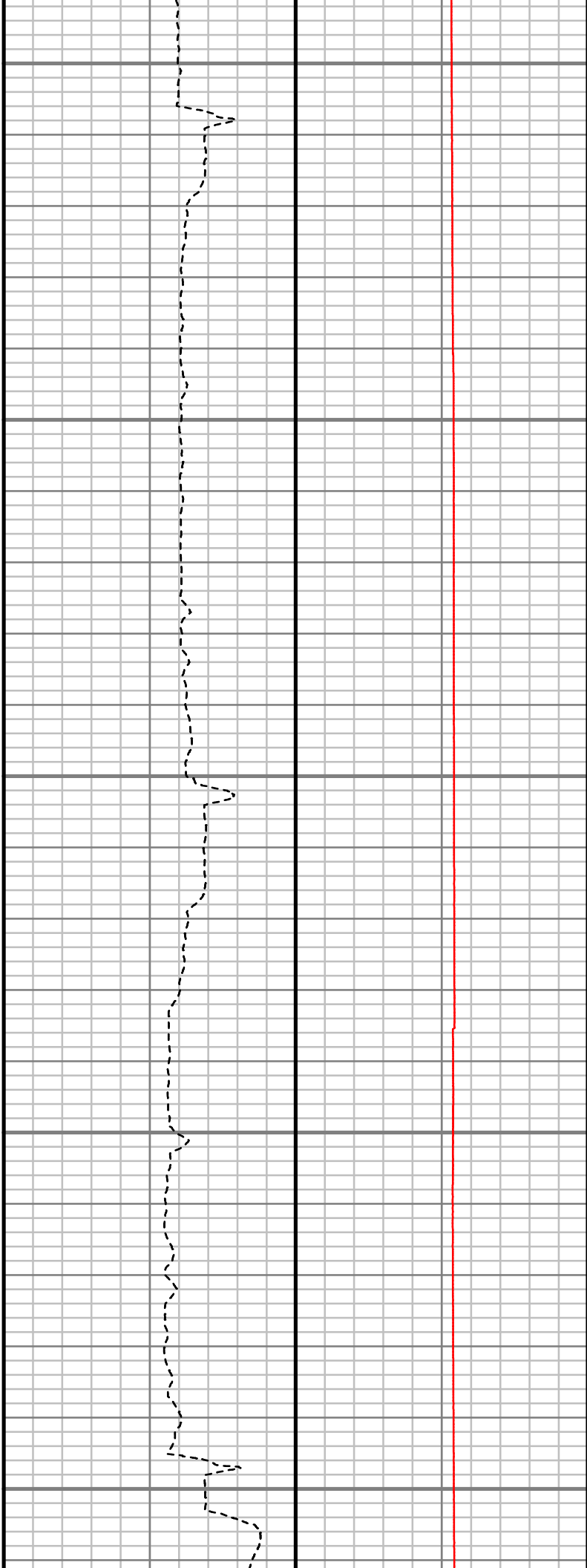
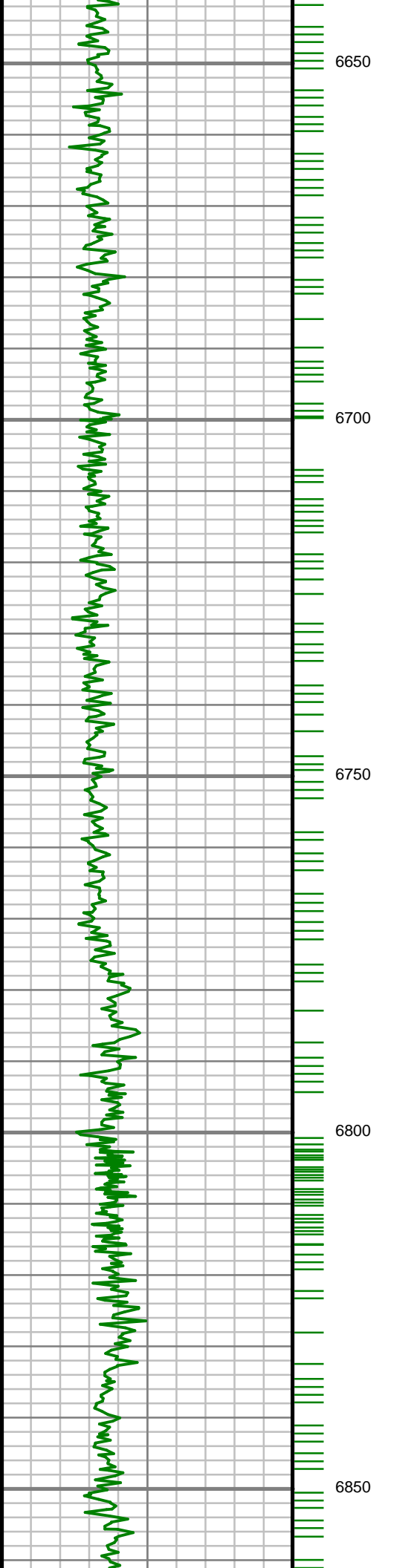
S: 70 MD: 6311.00 ft
Inc: 9.77 deg Az: 69.82
deg TVD: 6205.16 ft

S: 71 MD: 6406.00 ft
Inc: 9.72 deg Az: 70.51
deg TVD: 6298.79 ft



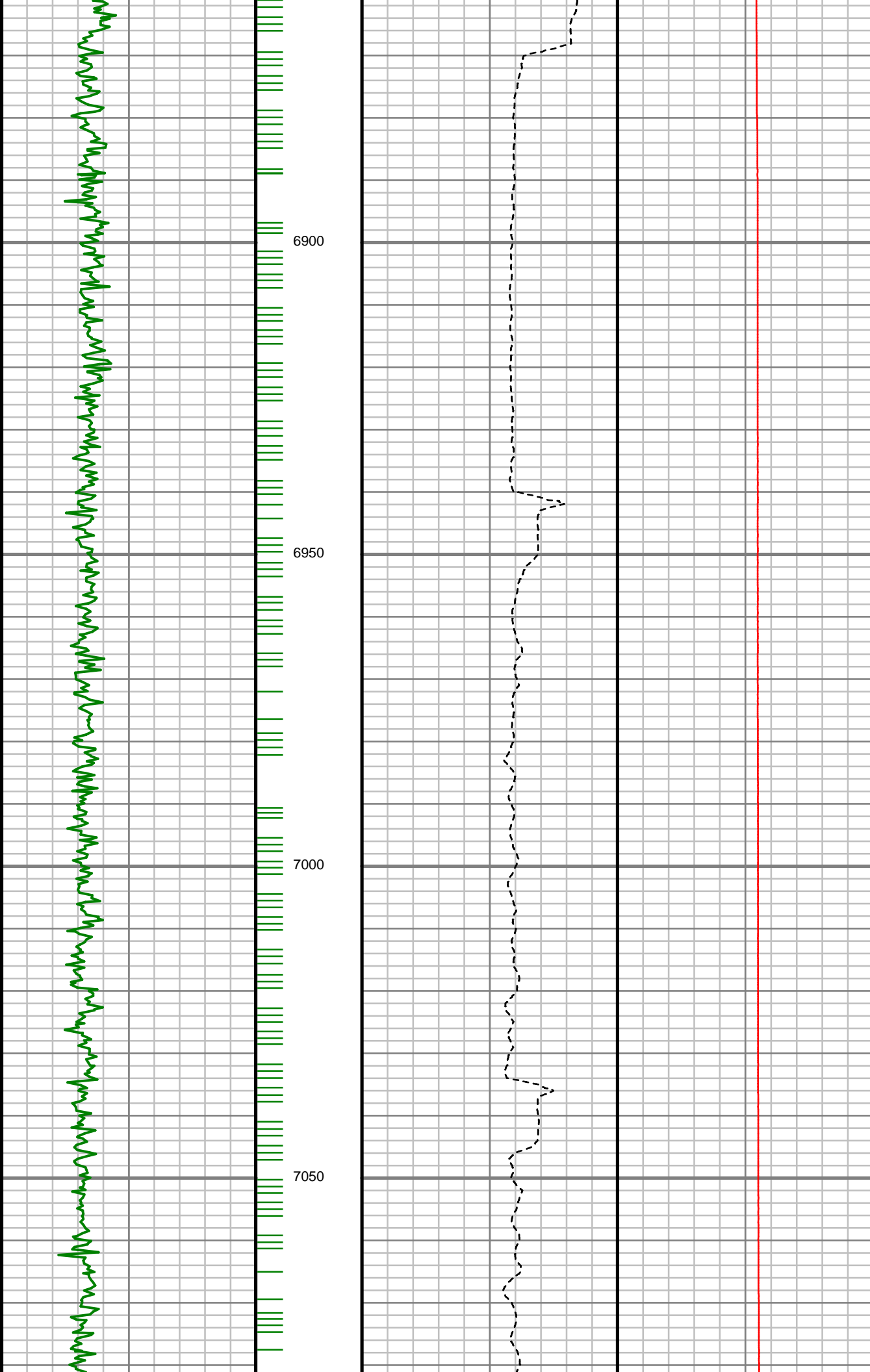
S: 72 MD: 6500.00 ft
Inc: 8.74 deg Az: 70.15
deg TVD: 6391.57 ft

S: 73 MD: 6595.00 ft
Inc: 9.75 deg Az: 67.70
deg TVD: 6485.33 ft



S: 74 MD: 6689.00 ft
Inc: 8.78 deg Az: 62.01
deg TVD: 6578.11 ft

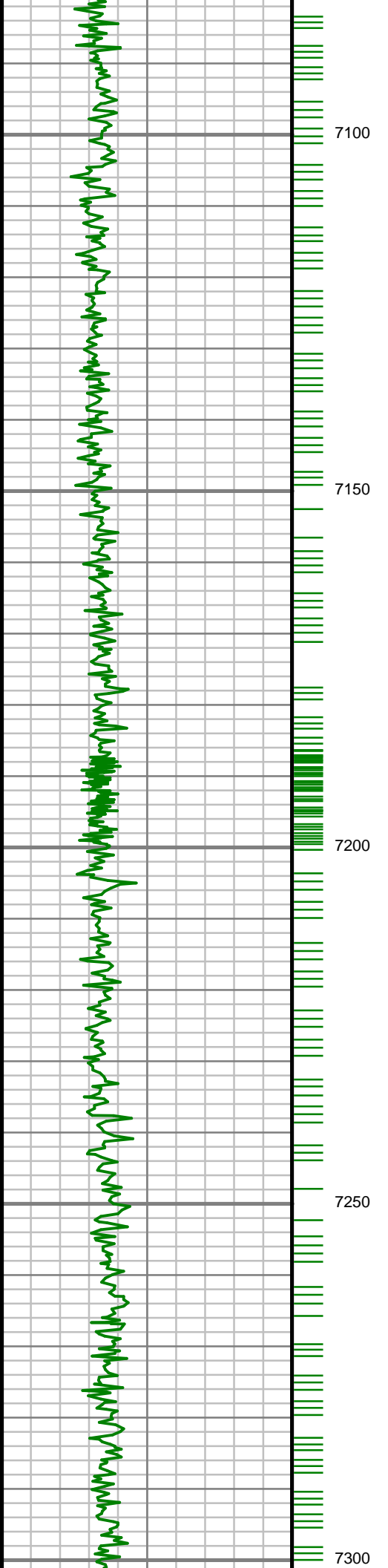
S: 75 MD: 6784.00 ft
Inc: 6.64 deg Az: 59.80
deg TVD: 6672.25 ft



S: 76 MD: 6878.00 ft
Inc: 6.12 deg Az: 75.33
deg TVD: 6765.67 ft

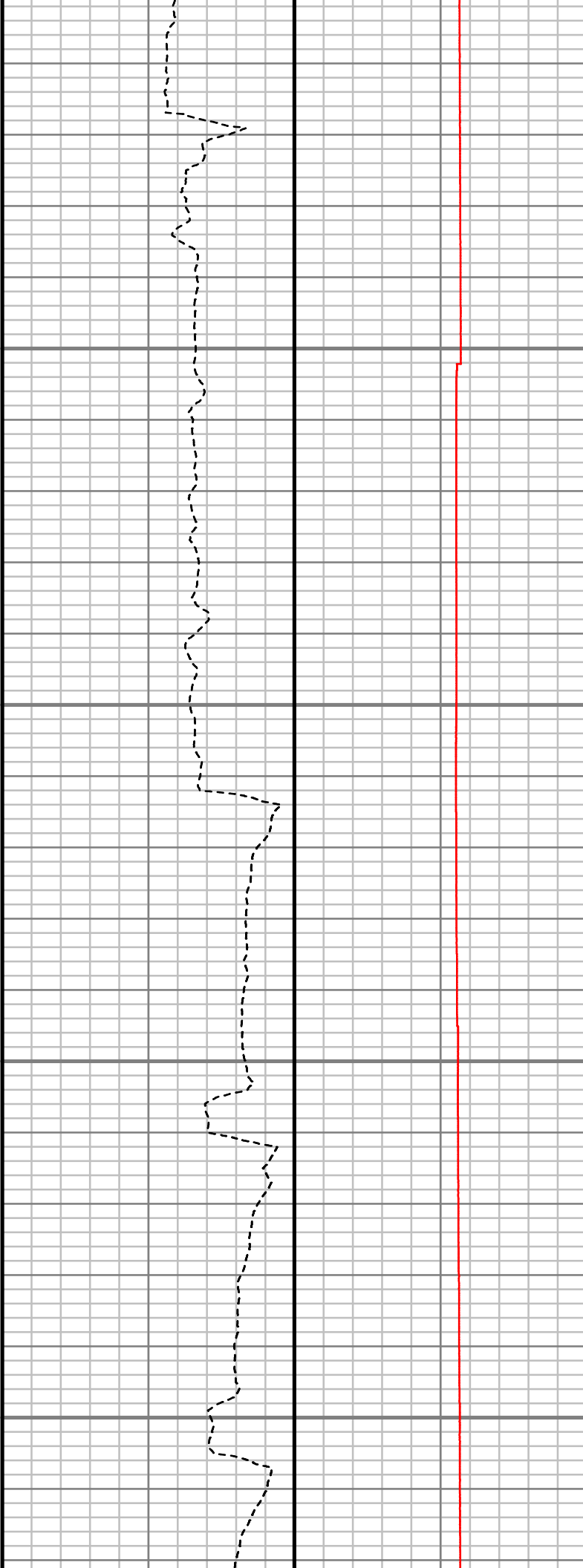
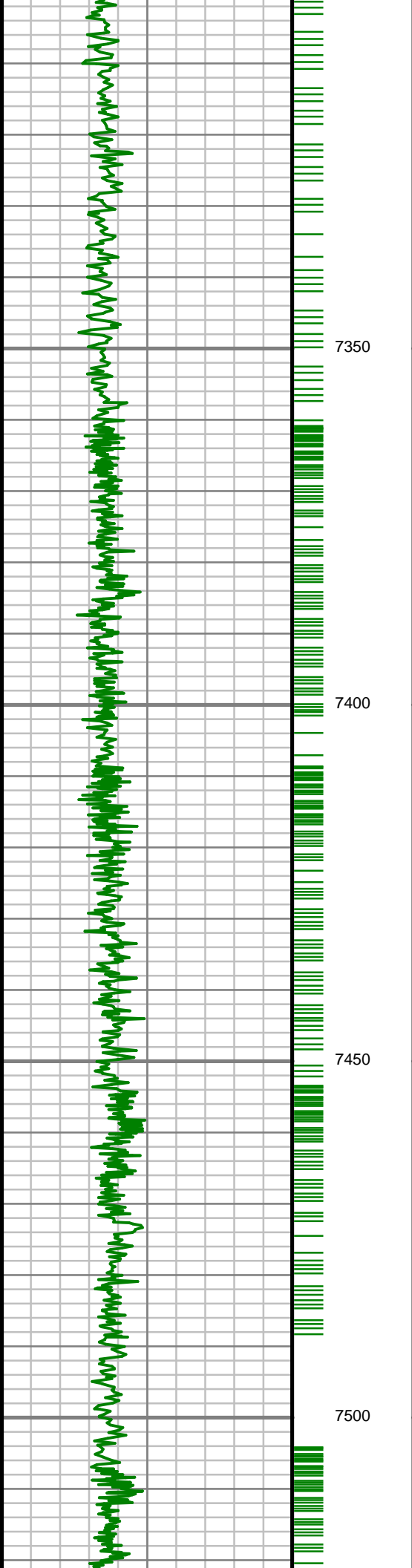
S: 77 MD: 6972.00 ft
Inc: 5.32 deg Az: 72.51
deg TVD: 6859.20 ft

S: 78 MD: 7067.00 ft
Inc: 3.64 deg Az: 70.79
deg TVD: 6953.91 ft



S: 79 MD: 7162.00 ft
Inc: 2.48 deg Az: 72.56
deg TVD: 7048.77 ft

S: 80 MD: 7256.00 ft
Inc: 0.50 deg Az:
152.90 deg TVD:
7142.74 ft

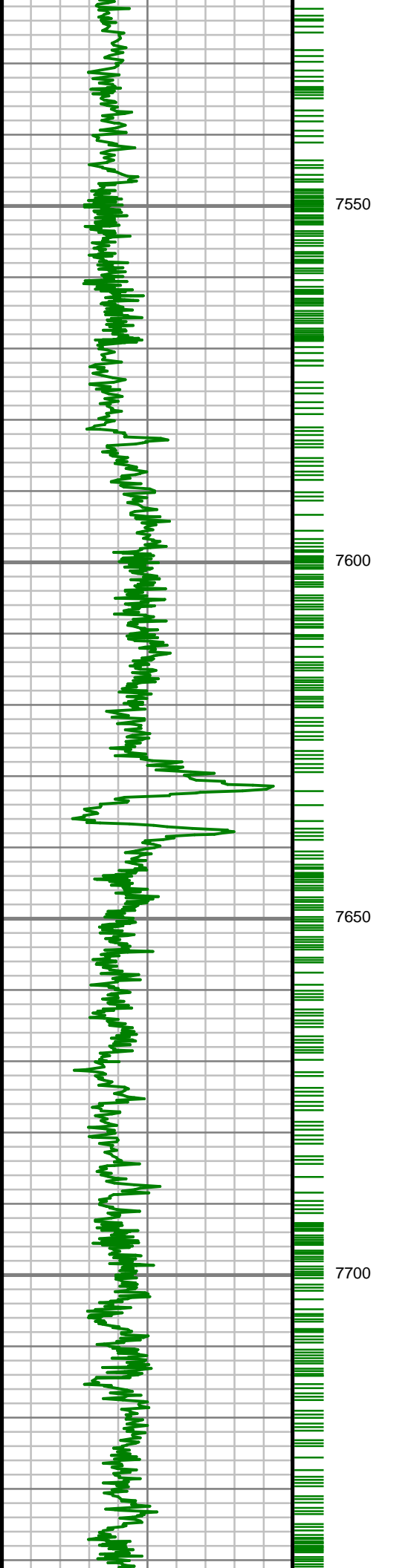


S: 81 MD: 7350.00 ft
Inc: 1.12 deg Az:
176.09 deg TVD:
7236.73 ft

S: 82 MD: 7397.00 ft
Inc: 1.18 deg Az:
192.07 deg TVD:
7283.72 ft

S: 83 MD: 7445.00 ft
Inc: 5.65 deg Az:
172.91 deg TVD:
7331.62 ft

S: 84 MD: 7492.00 ft
Inc: 13.26 deg Az:
172.21 deg TVD:
7377.95 ft



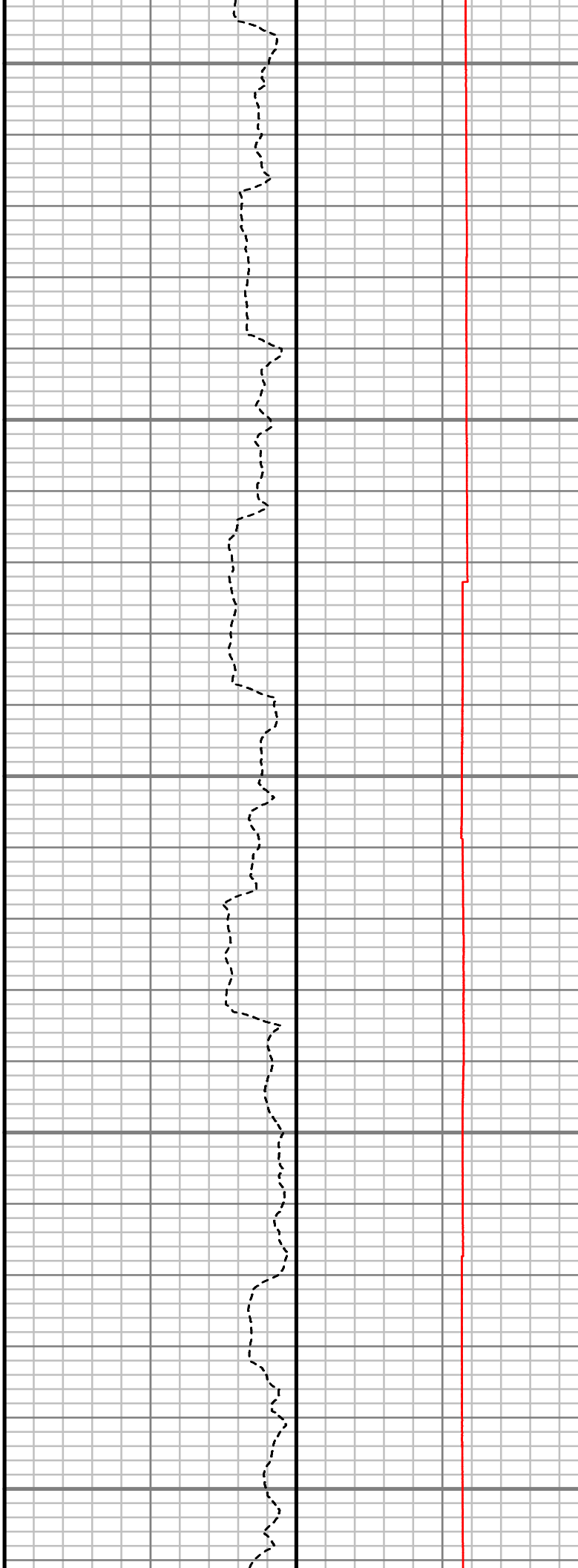
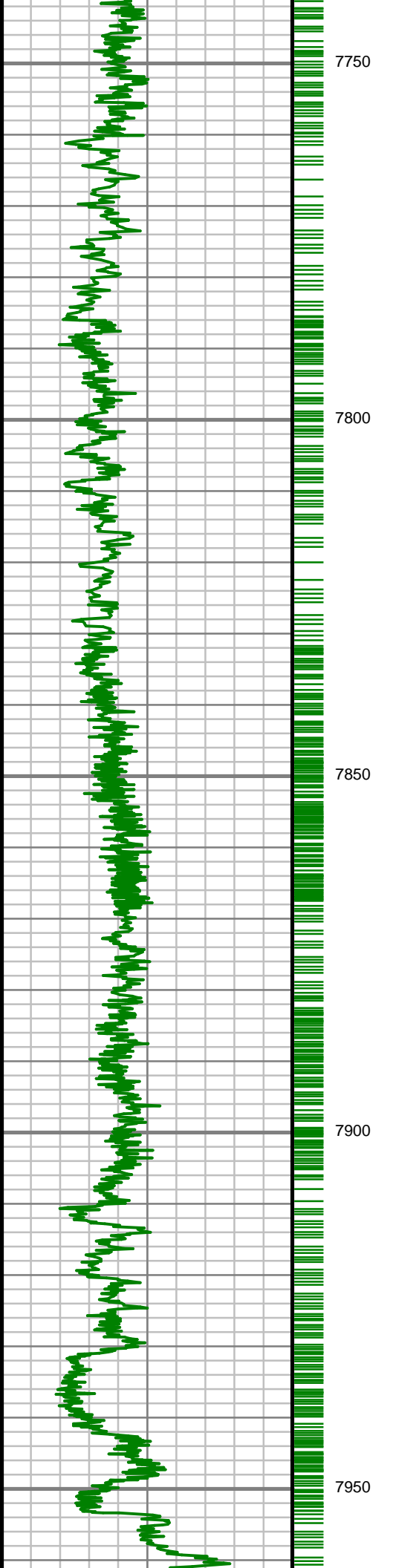
S: 85 MD: 7539.00 ft
Inc: 19.59 deg Az:
178.84 deg TVD:
7423.01 ft

S: 86 MD: 7586.00 ft
Inc: 23.31 deg Az:
181.05 deg TVD:
7466.75 ft

S: 87 MD: 7634.00 ft
Inc: 24.51 deg Az:
183.25 deg TVD:
7510.63 ft

S: 88 MD: 7681.00 ft
Inc: 27.70 deg Az:
178.21 deg TVD:
7552.84 ft

S: 89 MD: 7728.00 ft
Inc: 32.48 deg Az:
174.26 deg TVD:
7593.50 ft

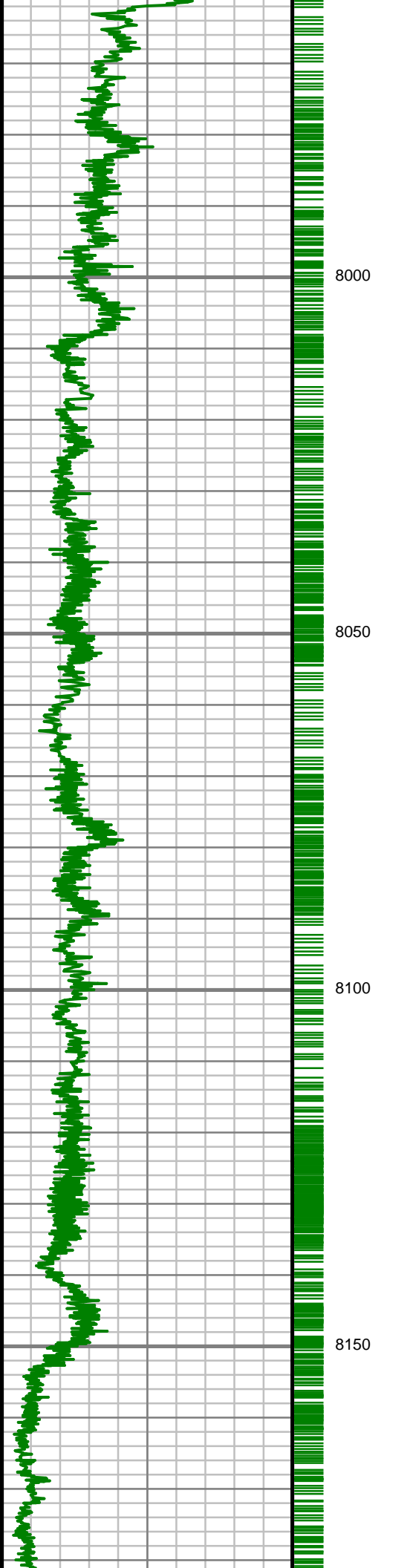


S: 90 MD: 7775.00 ft
Inc: 36.56 deg Az:
175.17 deg TVD:
7632.21 ft

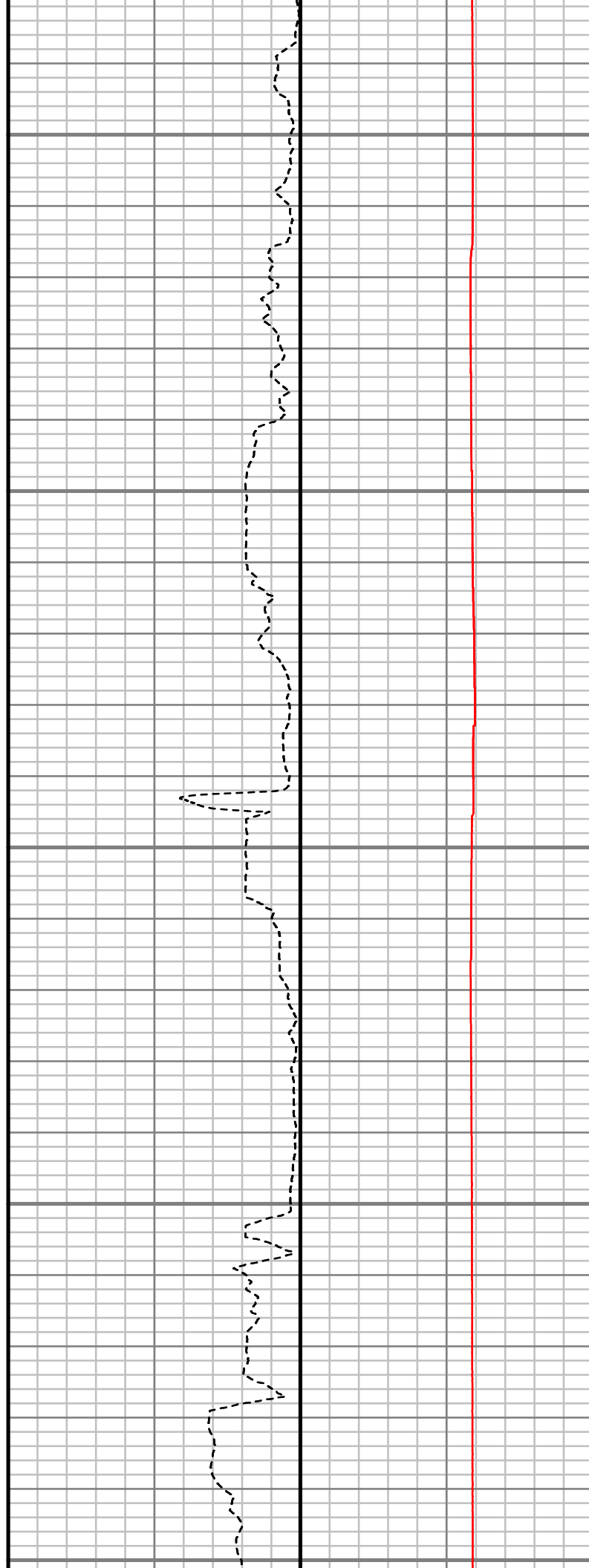
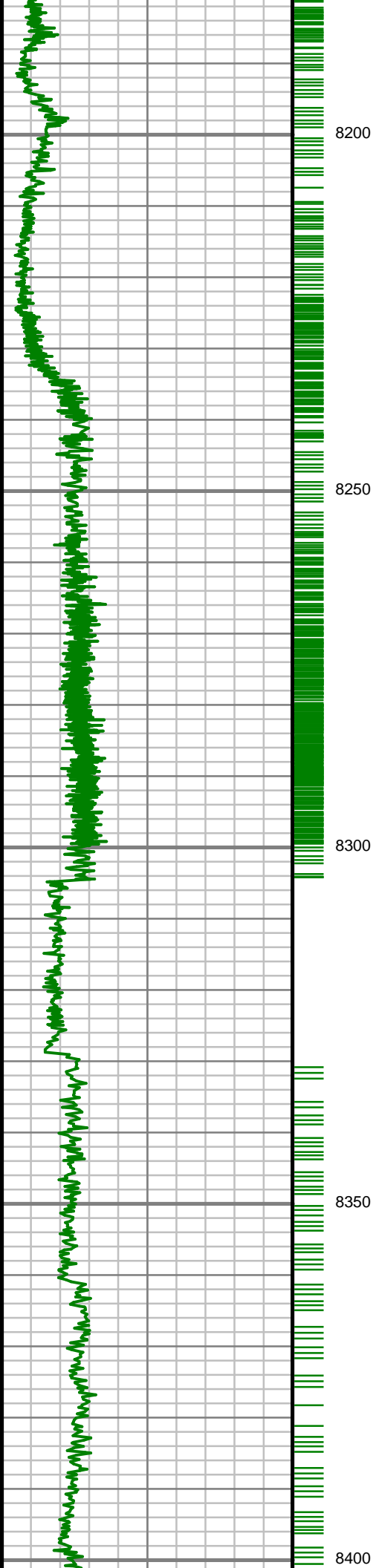
S: 91 MD: 7823.00 ft
Inc: 39.81 deg Az:
175.47 deg TVD:
7669.94 ft

S: 92 MD: 7870.00 ft
Inc: 43.62 deg Az:
177.84 deg TVD:
7705.02 ft

S: 93 MD: 7917.00 ft
Inc: 49.83 deg Az:
179.94 deg TVD:
7737.22 ft



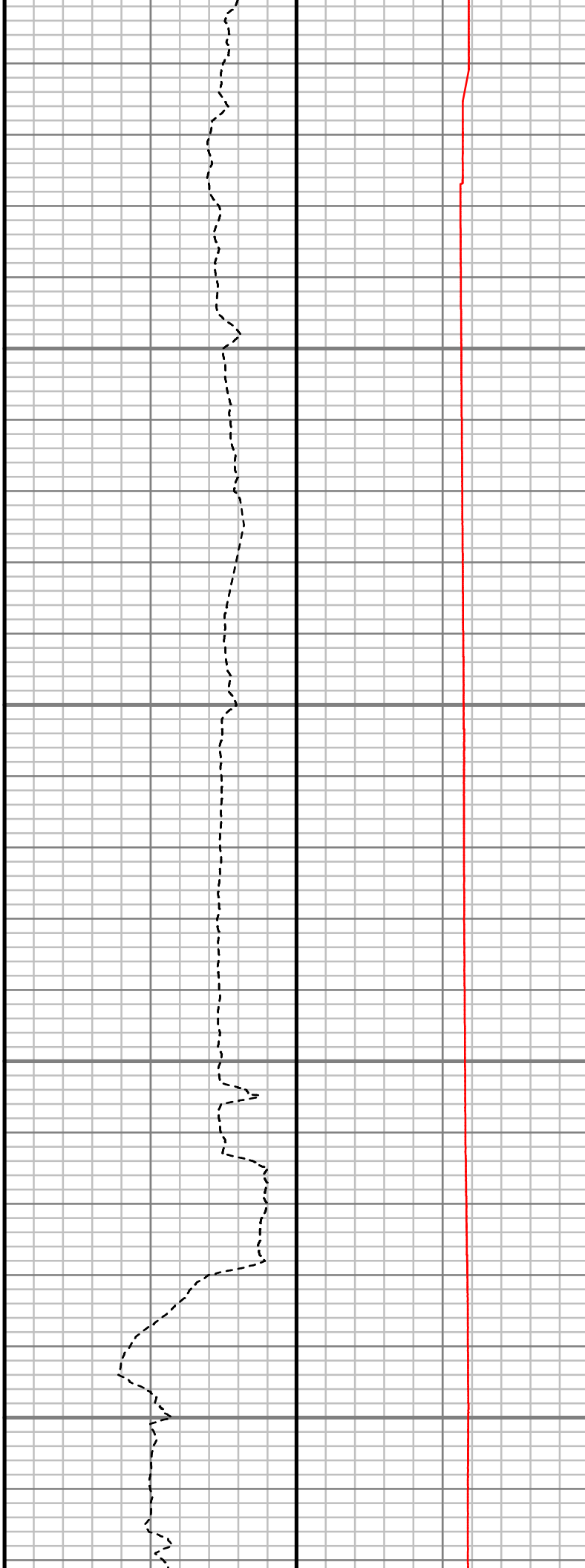
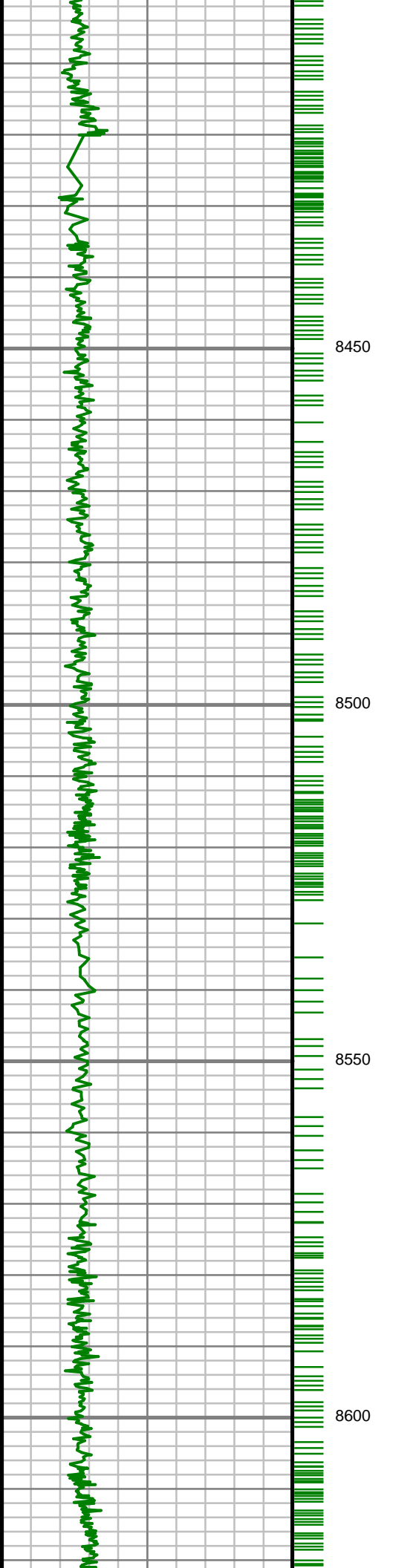
S: 94 MD: 7964.00 ft Inc: 52.94 deg Az: 180.71 deg TVD: 7766.55 ft
S: 95 MD: 8011.00 ft Inc: 57.09 deg Az: 184.35 deg TVD: 7793.50 ft
S: 96 MD: 8058.00 ft Inc: 63.85 deg Az: 184.52 deg TVD: 7816.65 ft
S: 97 MD: 8106.00 ft Inc: 69.71 deg Az: 184.18 deg TVD: 7835.56 ft
S: 98 MD: 8153.00 ft Inc: 73.38 deg Az: 183.25 deg TVD: 7850.44 ft



S: 99 MD: 8200.00 ft
Inc: 76.80 deg Az:
182.33 deg TVD:
7862.53 ft

S: 100 MD: 8245.00 ft
Inc: 80.91 deg Az:
180.59 deg TVD:
7871.22 ft

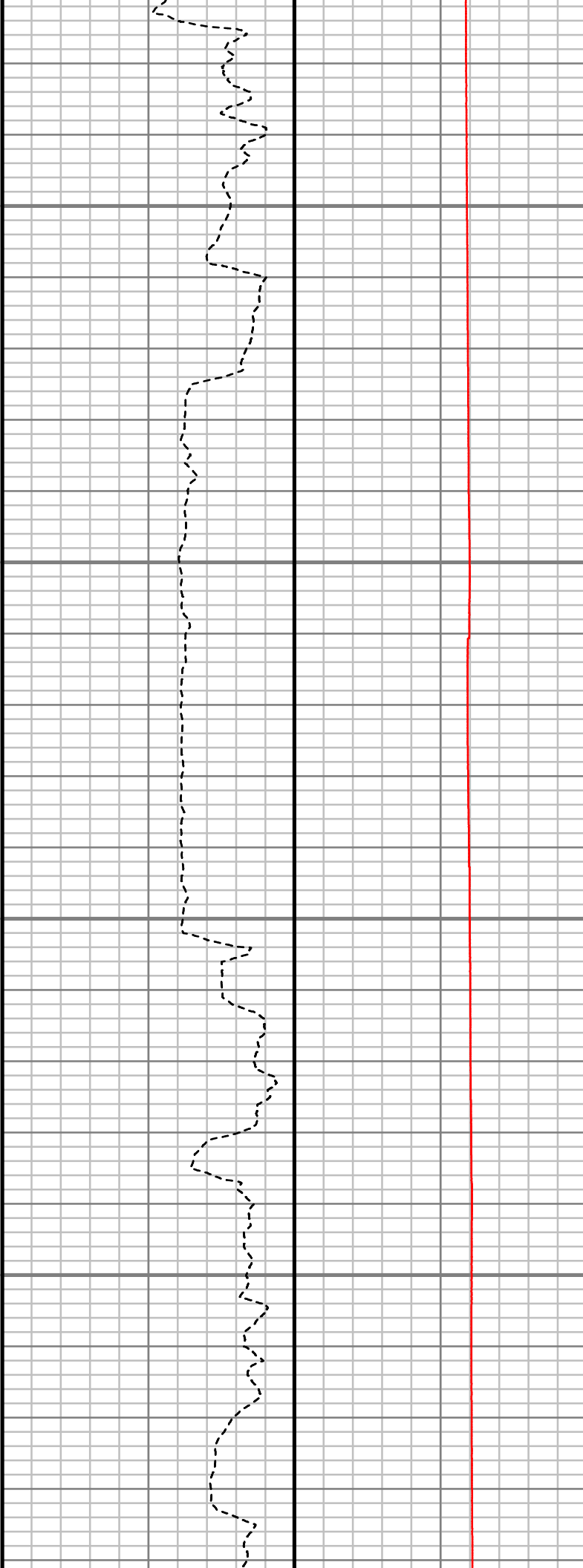
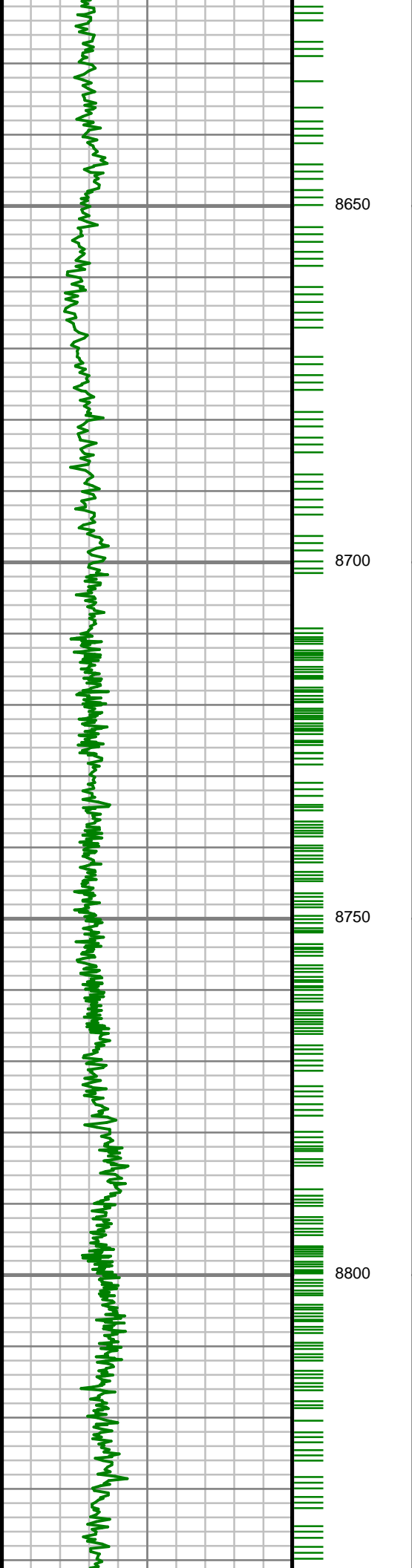
S: 101 MD: 8294.00 ft
Inc: 84.84 deg Az:
178.48 deg TVD:
7877.30 ft



S: 102 MD: 8410.00 ft
Inc: 89.90 deg Az:
176.92 deg TVD:
7882.62 ft

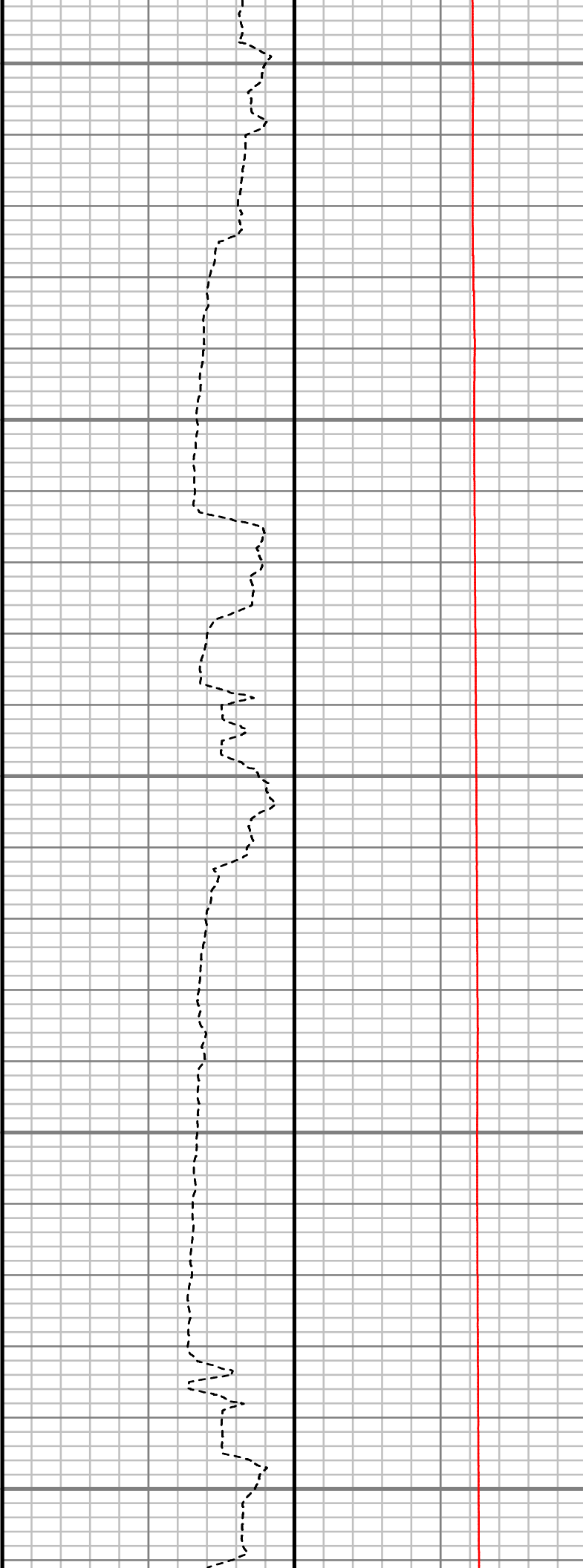
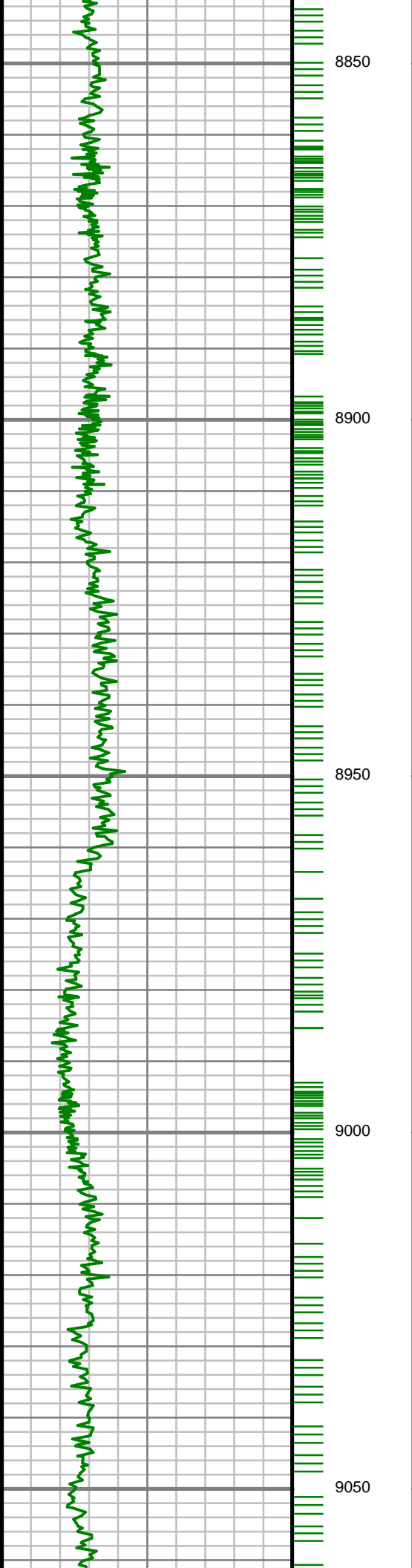
S: 103 MD: 8504.00 ft
Inc: 90.30 deg Az:
177.74 deg TVD:
7882.45 ft

S: 104 MD: 8598.00 ft
Inc: 88.52 deg Az:
177.89 deg TVD:
7883.42 ft



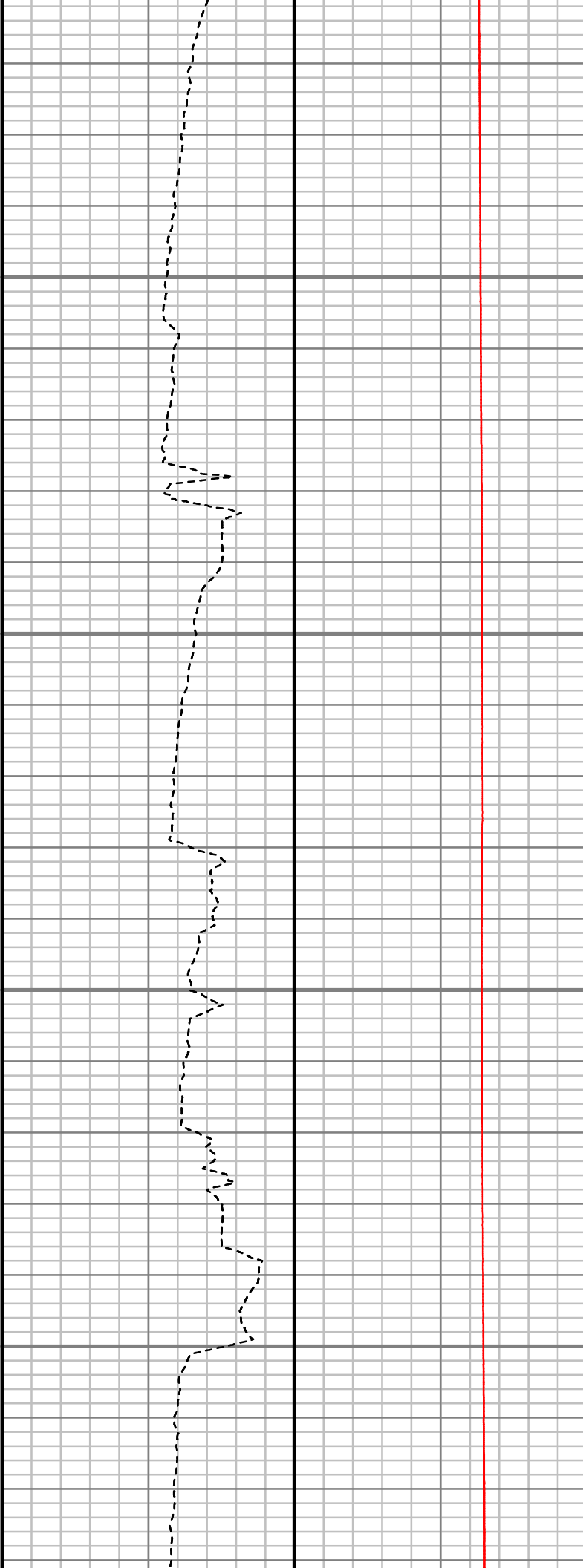
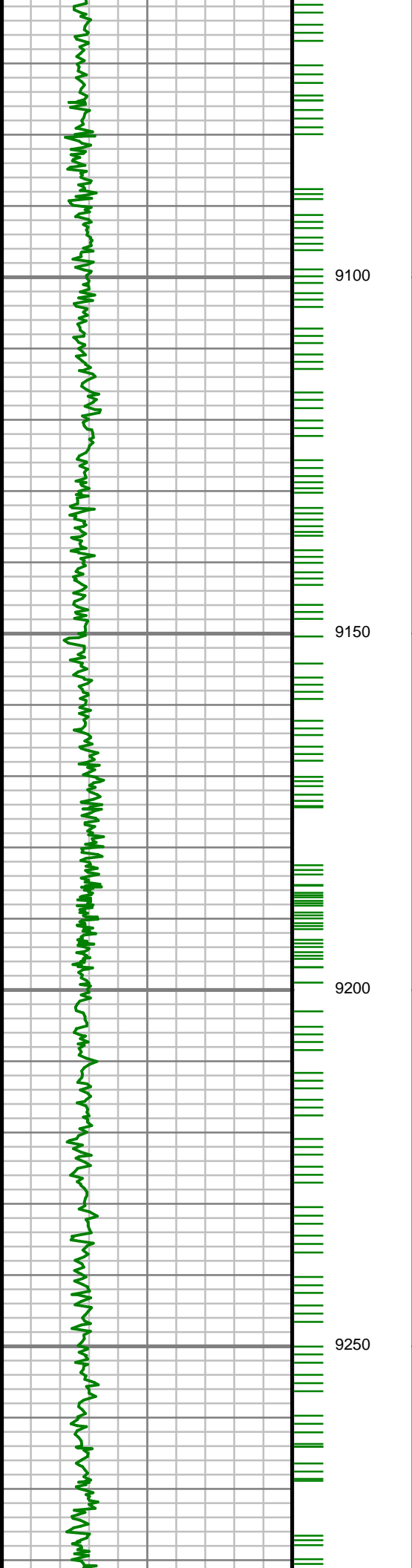
S: 105 MD: 8693.00 ft
Inc: 89.06 deg Az:
178.86 deg TVD:
7885.42 ft

S: 106 MD: 8787.00 ft
Inc: 89.19 deg Az:
179.76 deg TVD:
7886.85 ft



S: 107 MD: 8881.00 ft
Inc: 90.13 deg Az:
181.93 deg TVD:
7887.41 ft

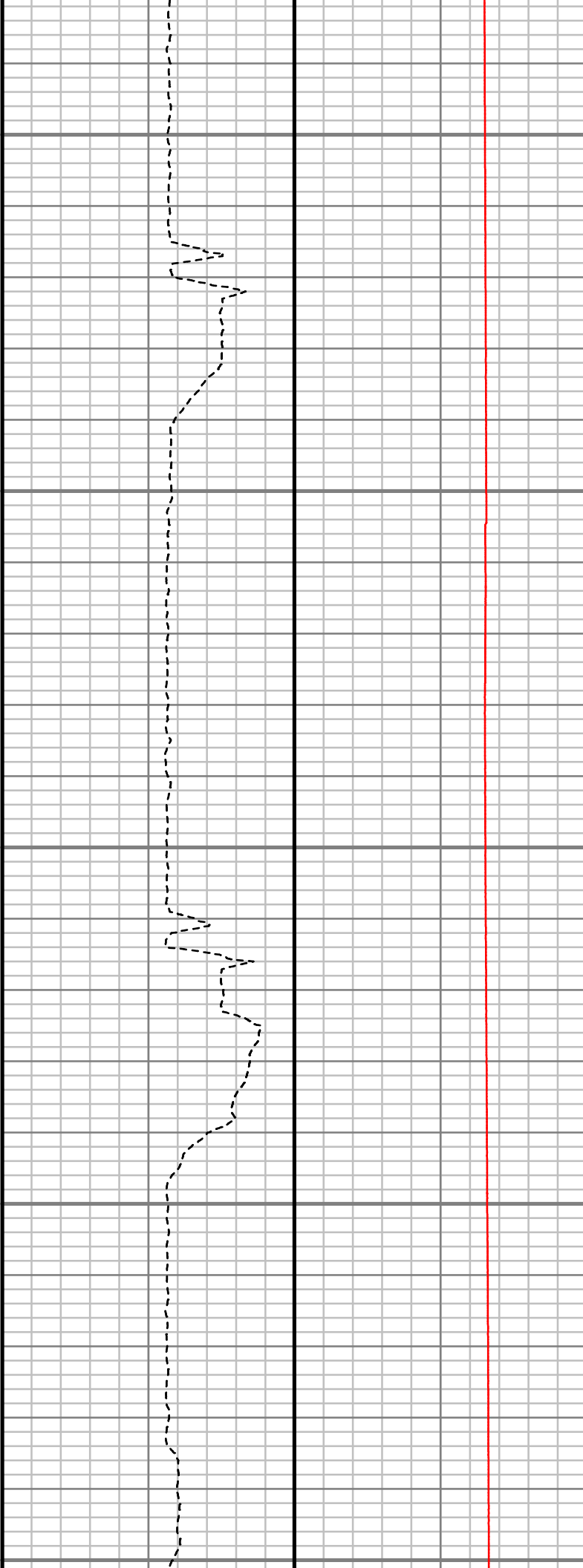
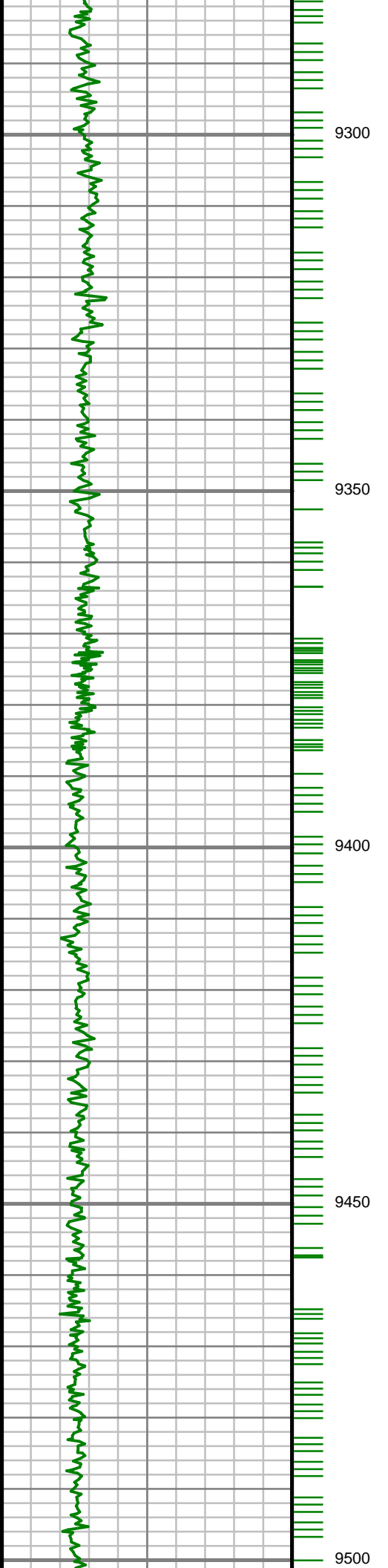
S: 108 MD: 8976.00 ft
Inc: 92.29 deg Az:
182.38 deg TVD:
7885.40 ft



S: 109 MD: 9070.00 ft
Inc: 91.14 deg Az:
182.80 deg TVD:
7882.59 ft

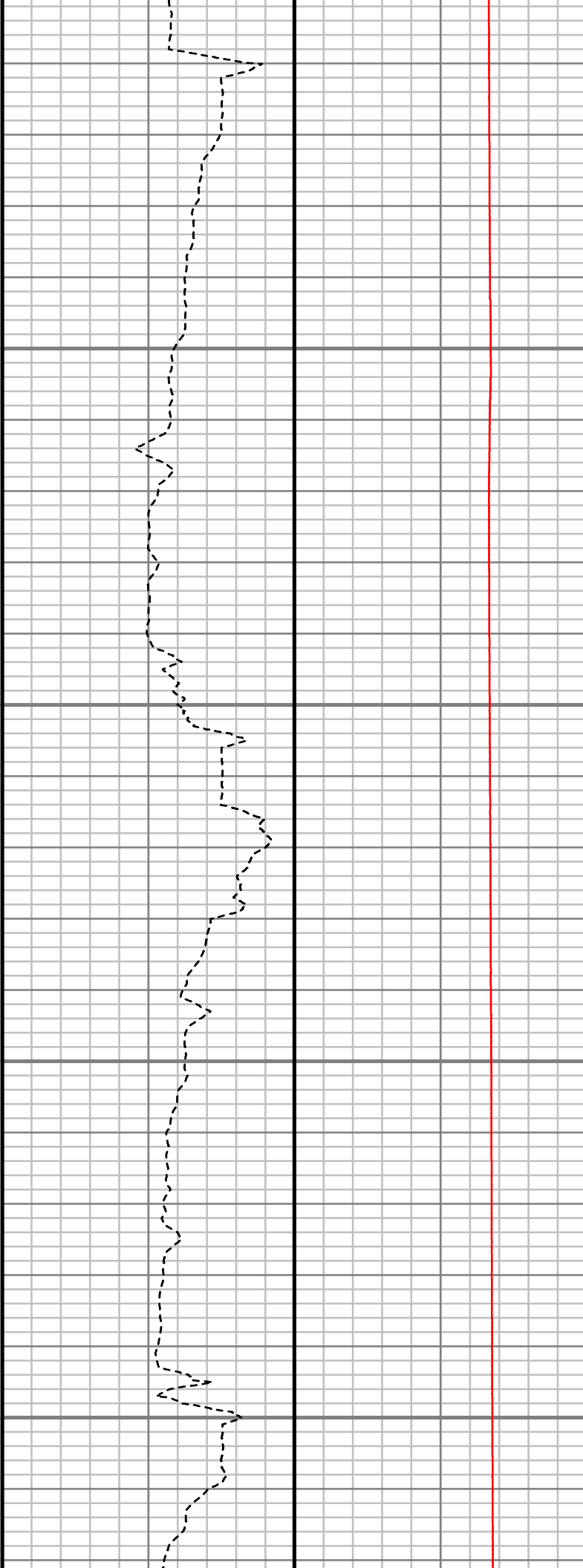
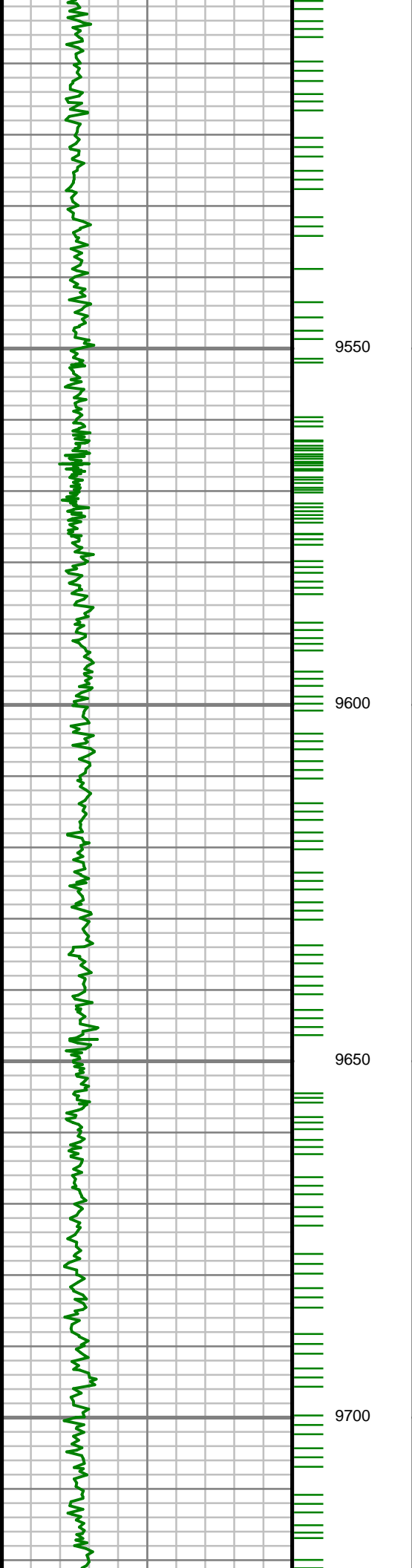
S: 110 MD: 9164.00 ft
Inc: 90.77 deg Az:
182.97 deg TVD:
7881.02 ft

S: 111 MD: 9259.00 ft
Inc: 90.91 deg Az:
181.73 deg TVD:
7879.63 ft



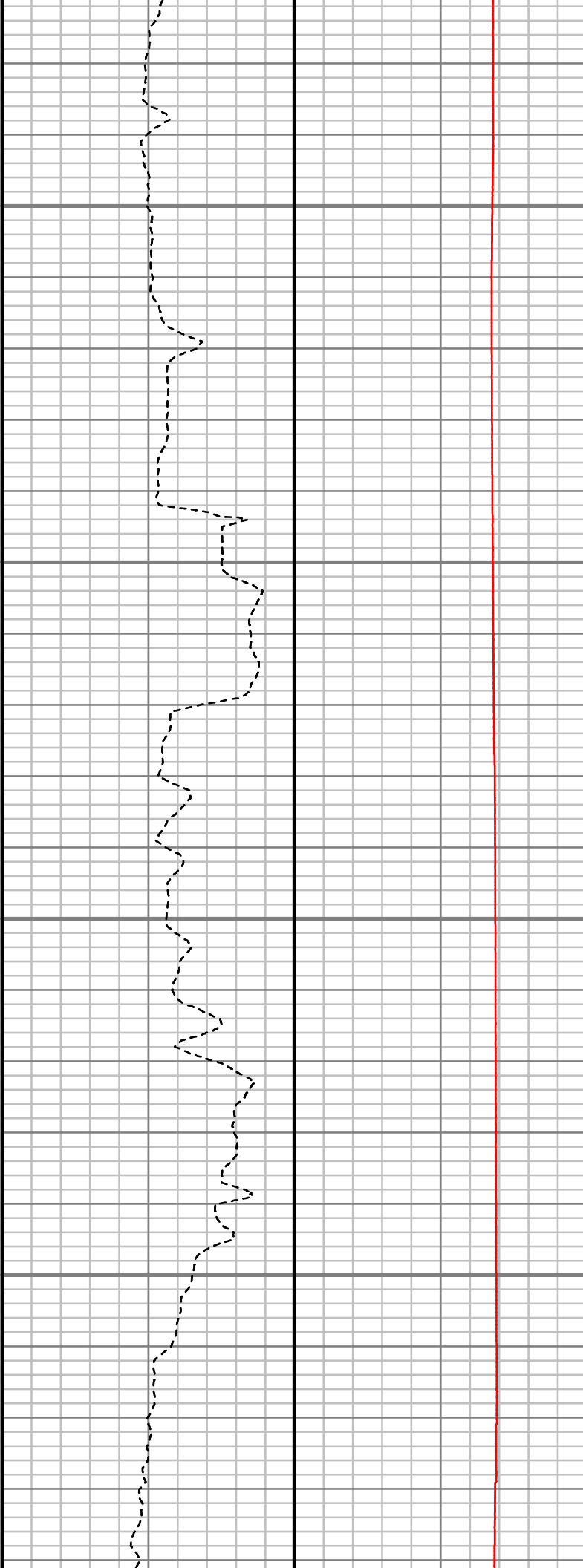
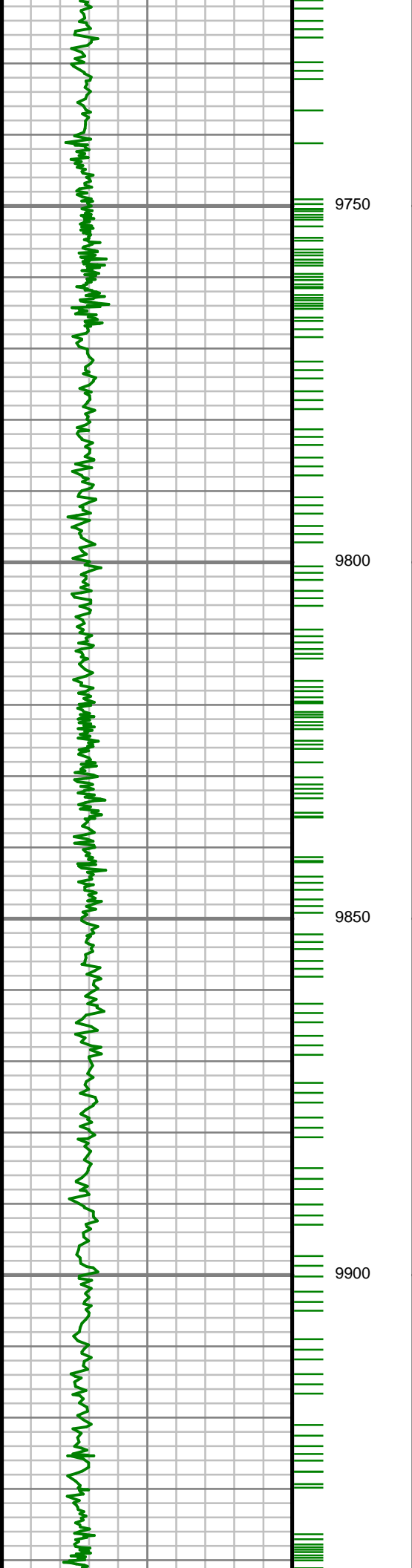
S: 112 MD: 9353.00 ft
Inc: 90.44 deg Az:
182.24 deg TVD:
7878.53 ft

S: 113 MD: 9448.00 ft
Inc: 90.97 deg Az:
180.89 deg TVD:
7877.36 ft



S: 114 MD: 9542.00 ft
Inc: 90.54 deg Az:
181.10 deg TVD:
7876.12 ft

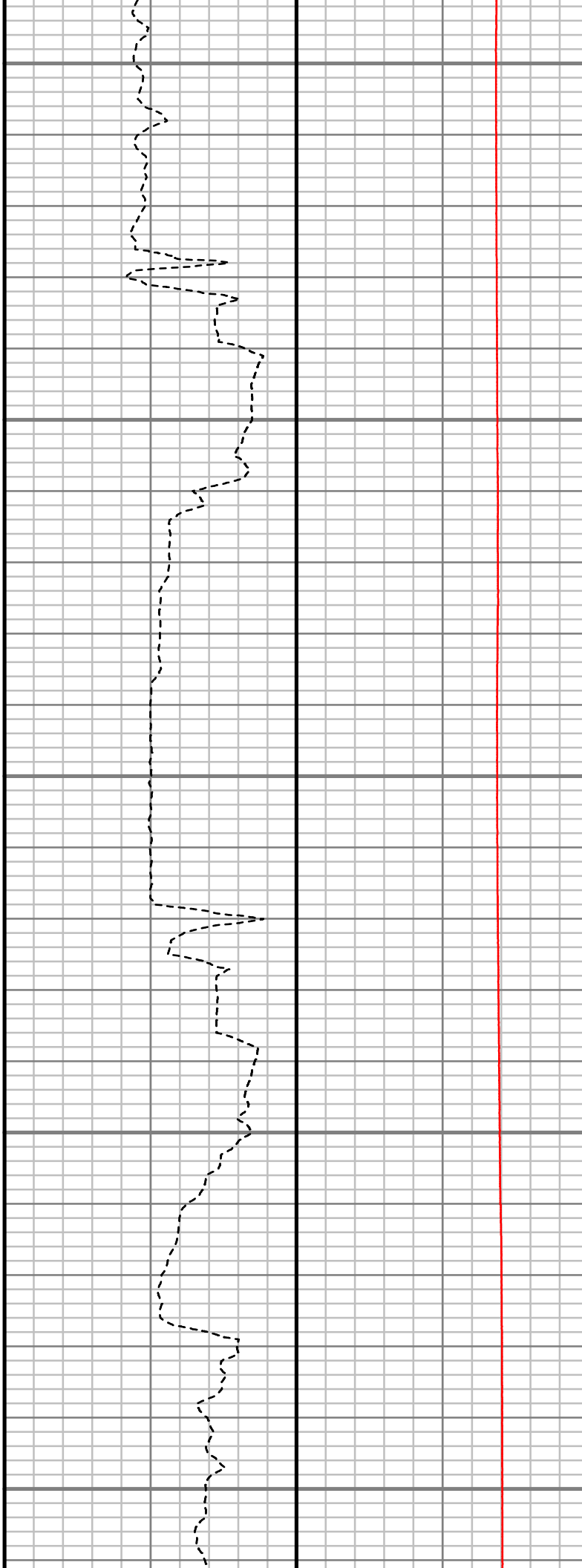
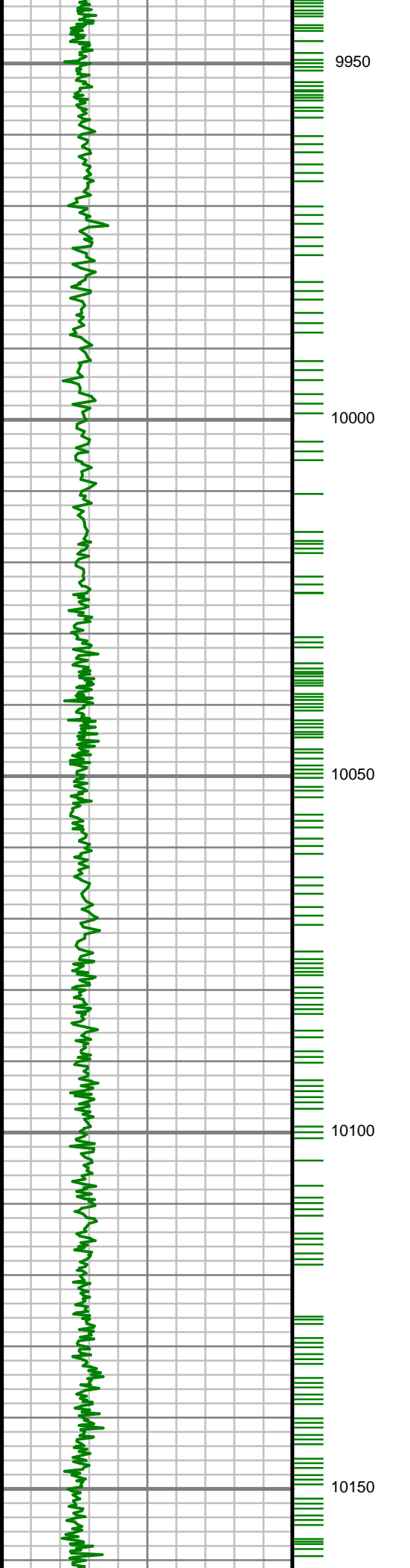
S: 115 MD: 9637.00 ft
Inc: 90.30 deg Az:
180.33 deg TVD:
7875.42 ft



S: 116 MD: 9731.00 ft
Inc: 89.60 deg Az:
180.08 deg TVD:
7875.50 ft

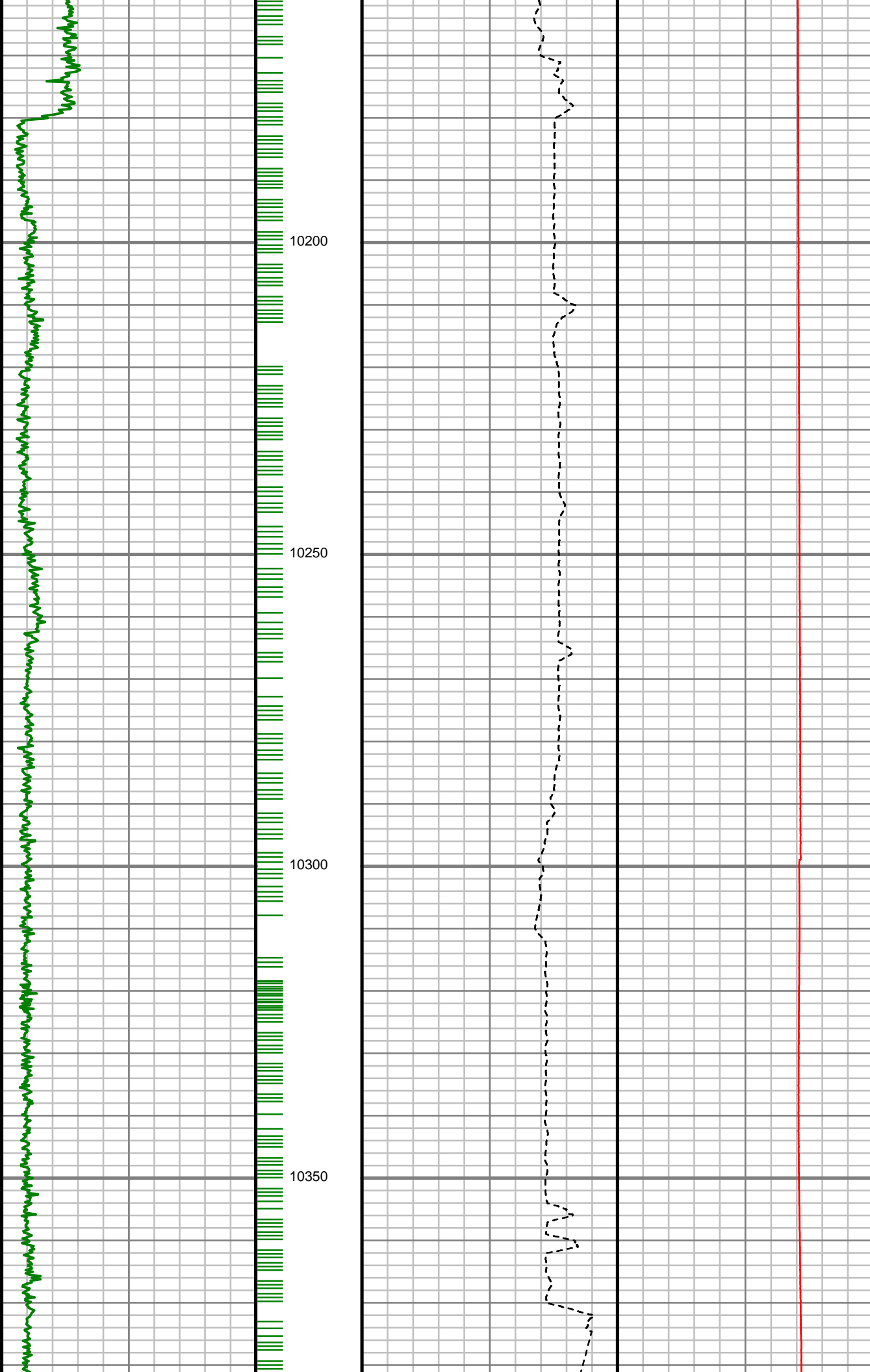
S: 117 MD: 9826.00 ft
Inc: 90.60 deg Az:
179.60 deg TVD:
7875.34 ft

S: 118 MD: 9920.00 ft
Inc: 89.50 deg Az:
179.77 deg TVD:
7875.25 ft



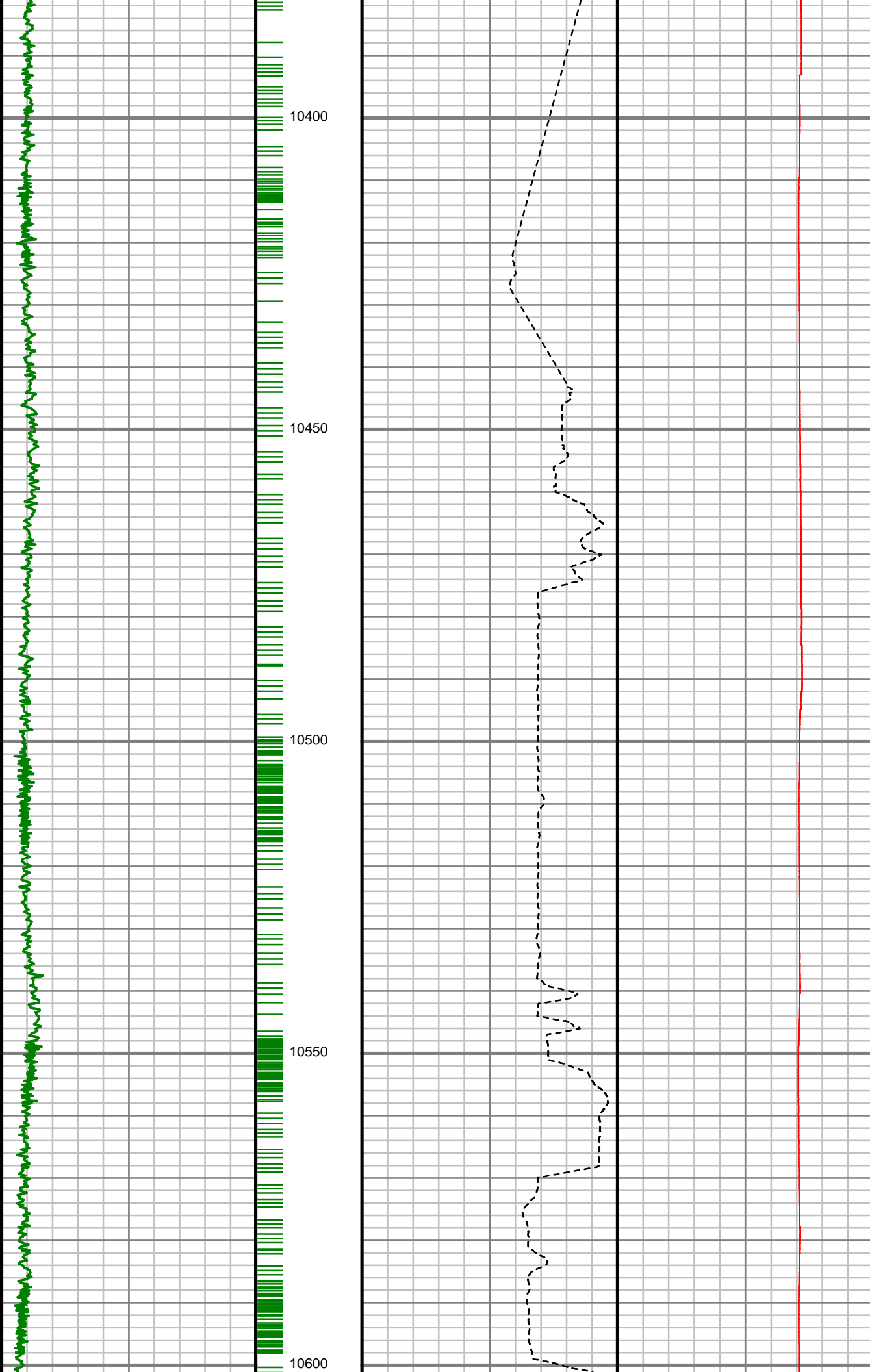
S: 119 MD: 10015.00 ft
Inc: 90.40 deg Az:
179.08 deg TVD:
7875.34 ft

S: 120 MD: 10109.00 ft
Inc: 91.34 deg Az:
179.79 deg TVD:
7873.91 ft



S: 121 MD: 10203.00 ft
Inc: 91.24 deg Az:
179.35 deg TVD:
7871.79 ft

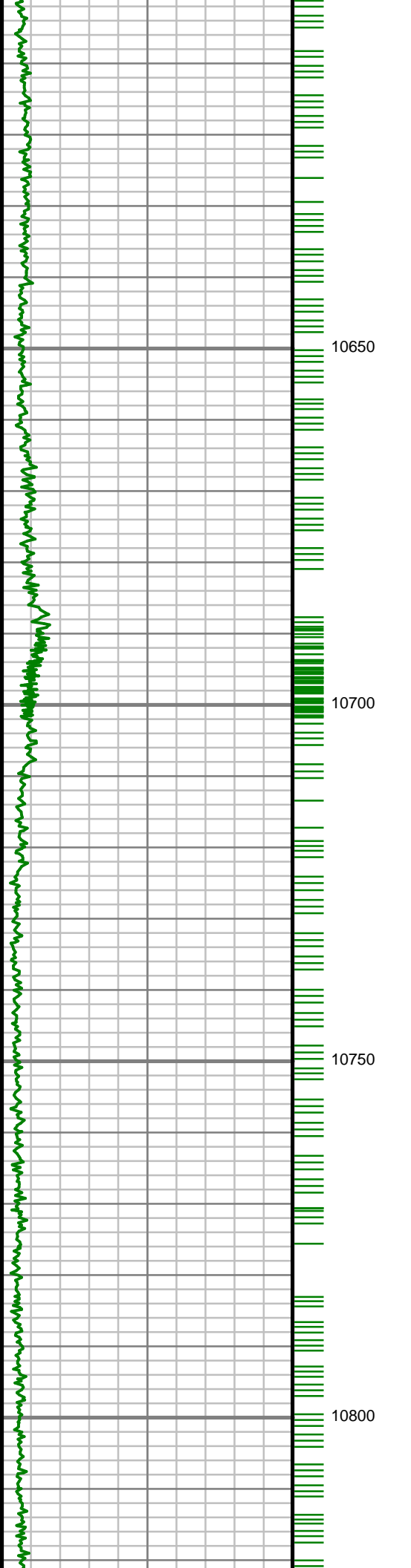
S: 122 MD: 10298.00 ft
Inc: 91.21 deg Az:
179.26 deg TVD:
7869.76 ft



S: 123 MD: 10392.00 ft
Inc: 91.31 deg Az:
178.96 deg TVD:
7867.69 ft

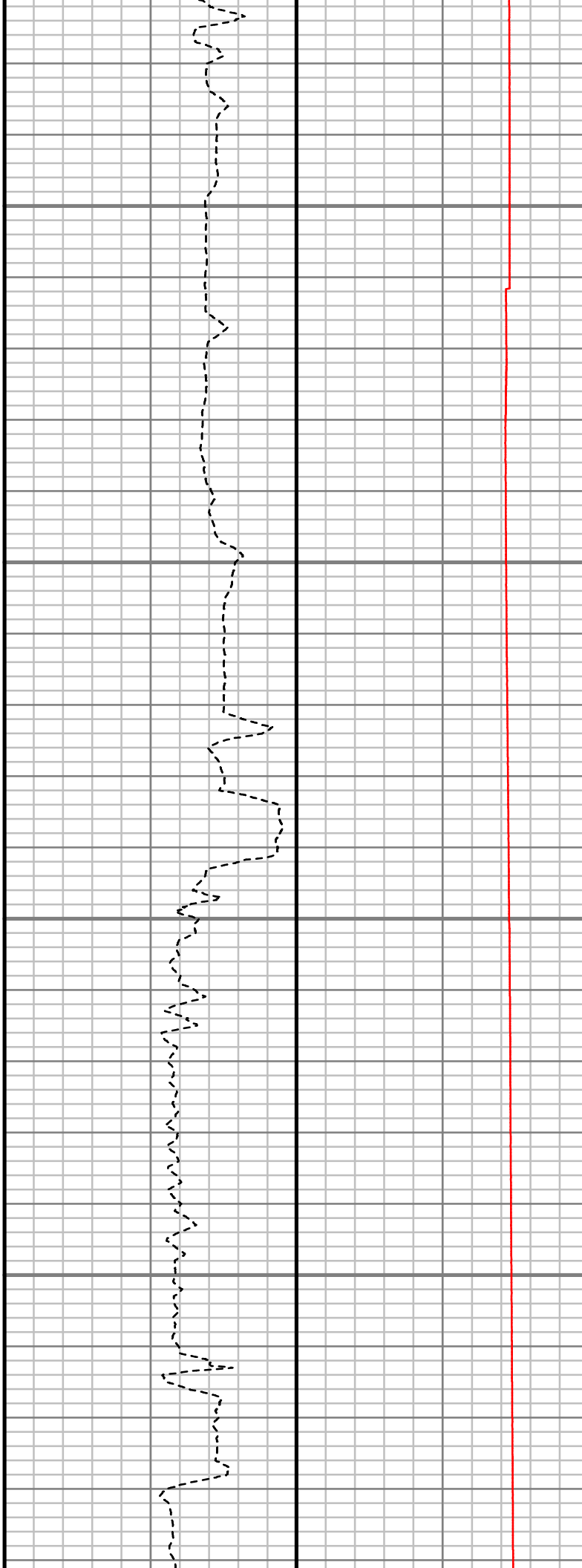
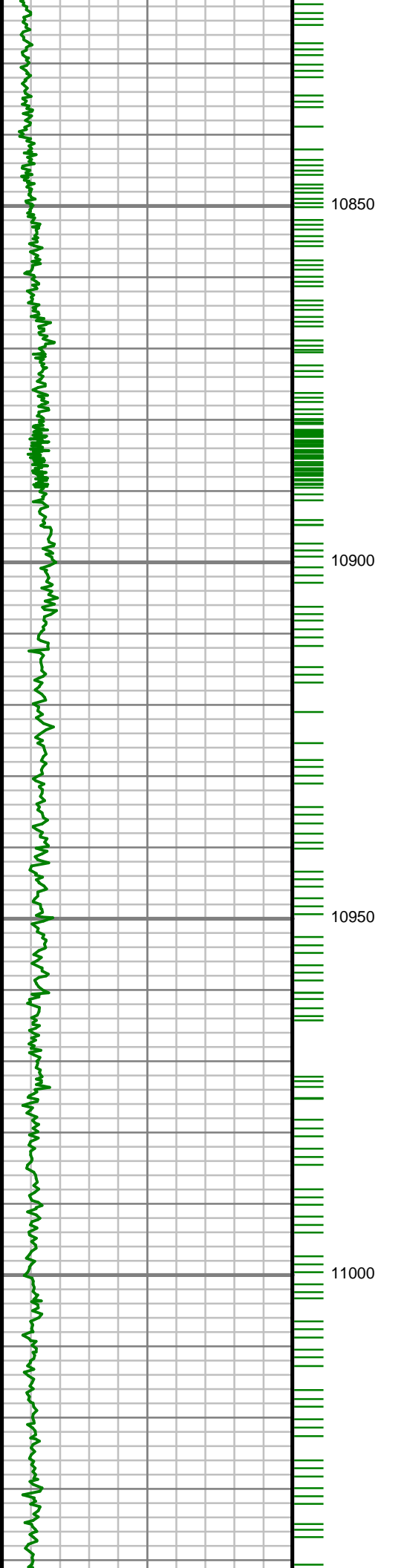
S: 124 MD: 10487.00 ft
Inc: 91.04 deg Az:
179.23 deg TVD:
7865.74 ft

S: 125 MD: 10581.00 ft
Inc: 90.40 deg Az:
179.94 deg TVD:
7864.56 ft



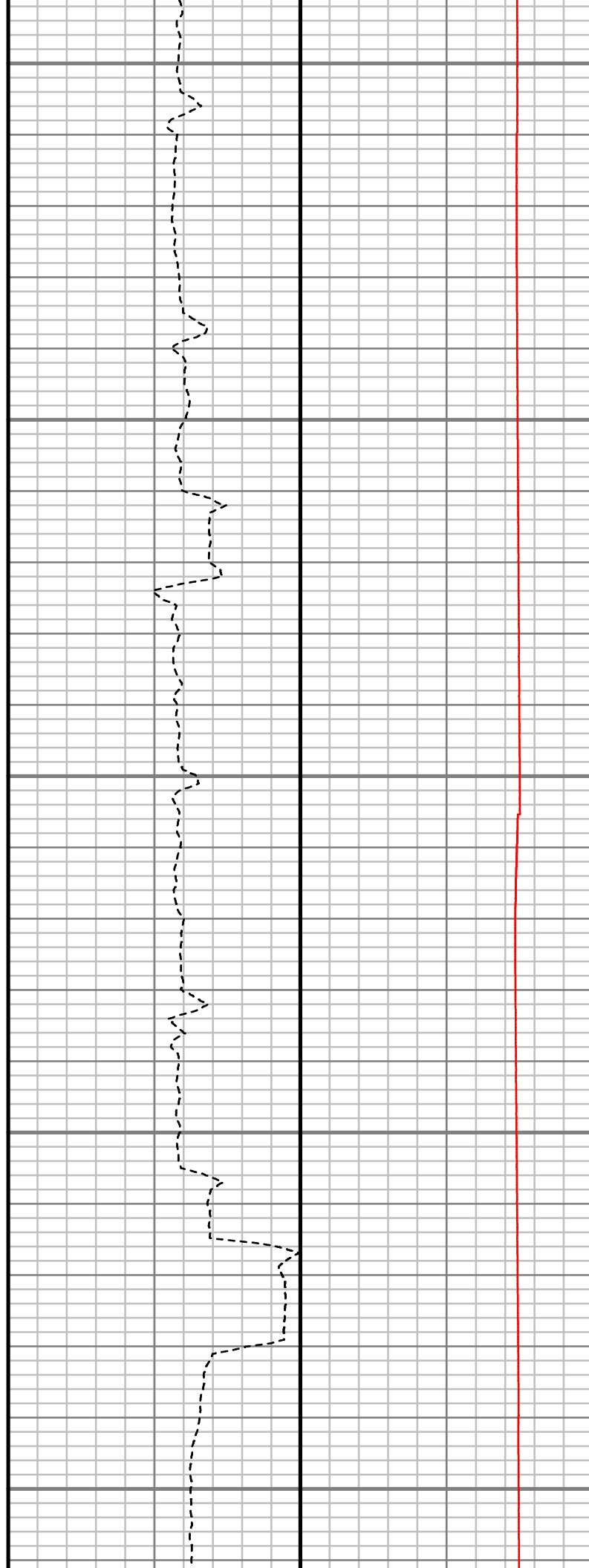
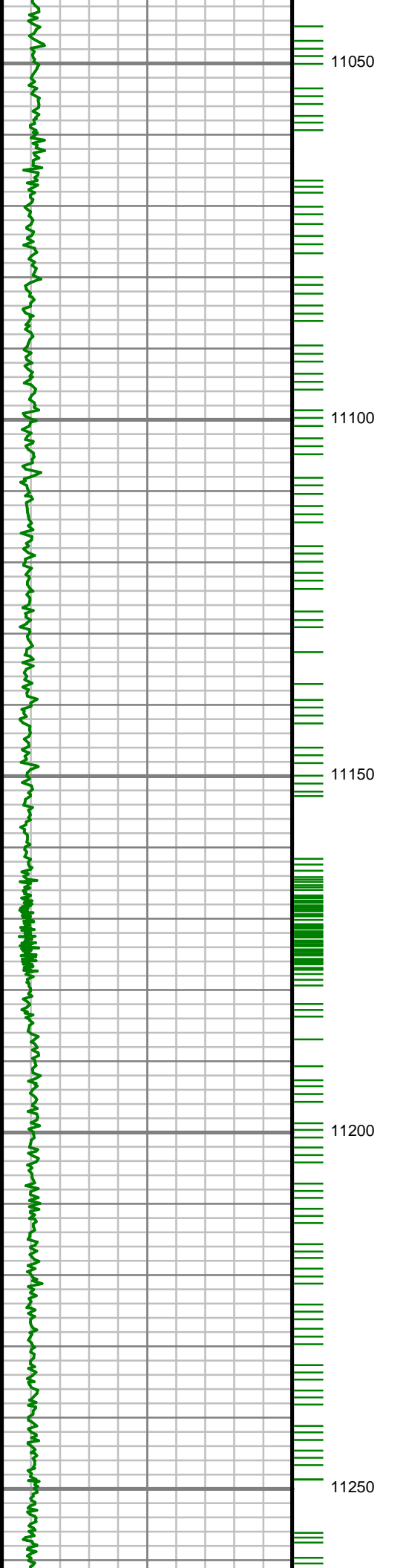
S: 126 MD: 10675.00 ft
Inc: 88.05 deg Az:
179.73 deg TVD:
7865.82 ft

S: 127 MD: 10770.00 ft
Inc: 89.16 deg Az:
181.30 deg TVD:
7868.14 ft



S: 128 MD: 10864.00 ft
Inc: 89.03 deg Az:
181.08 deg TVD:
7869.62 ft

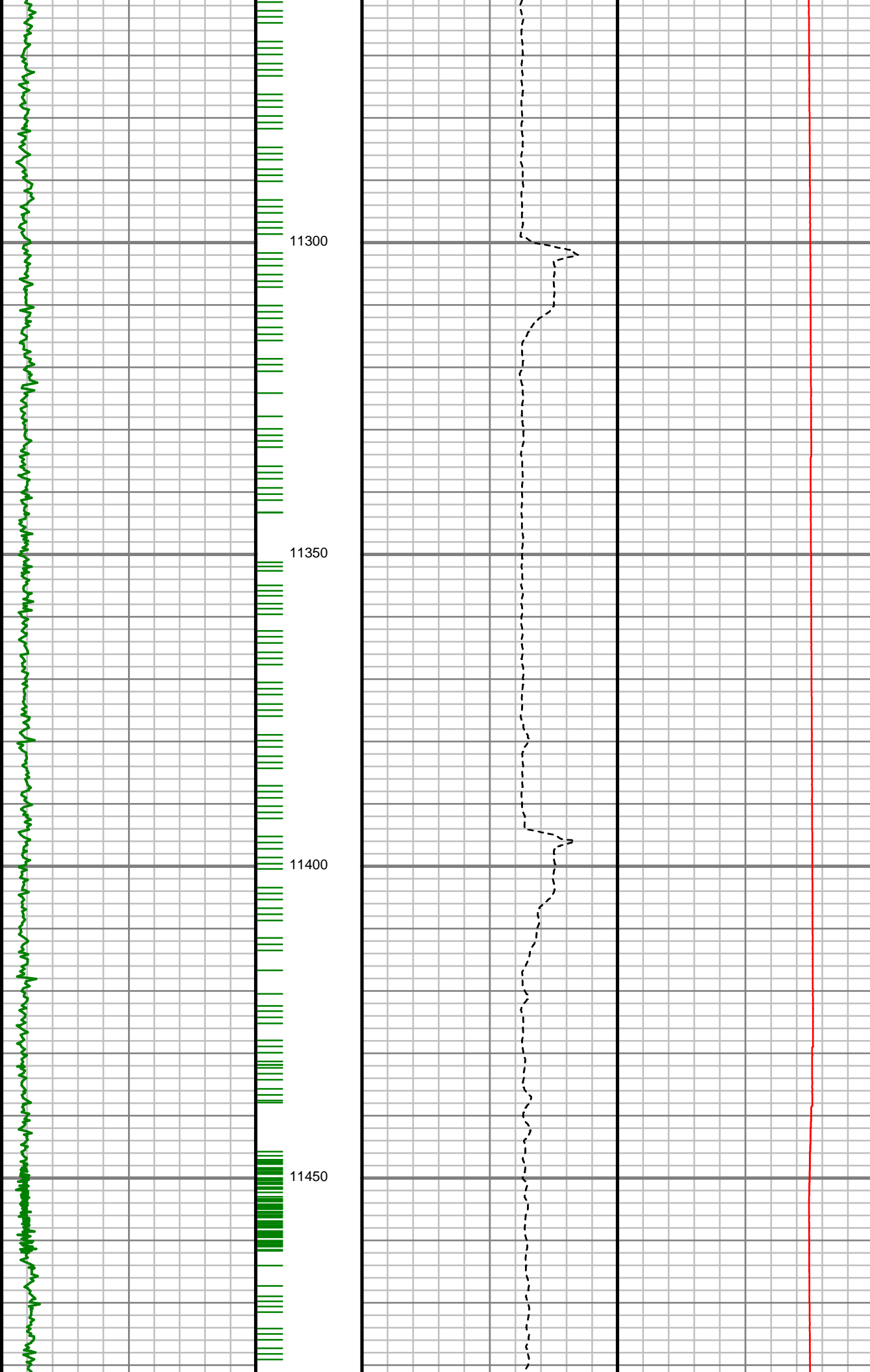
S: 129 MD: 10958.00 ft
Inc: 89.60 deg Az:
180.55 deg TVD:
7870.75 ft



S: 130 MD: 11053.00 ft
Inc: 89.53 deg Az:
180.38 deg TVD:
7871.48 ft

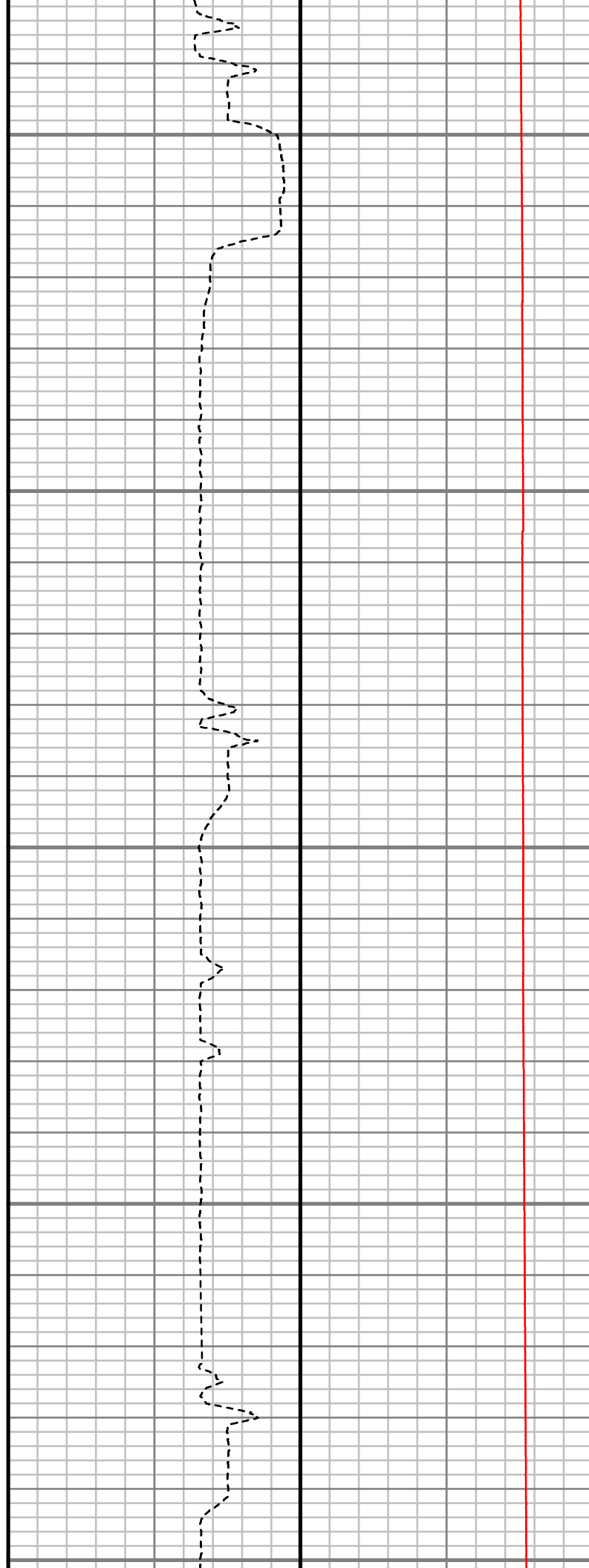
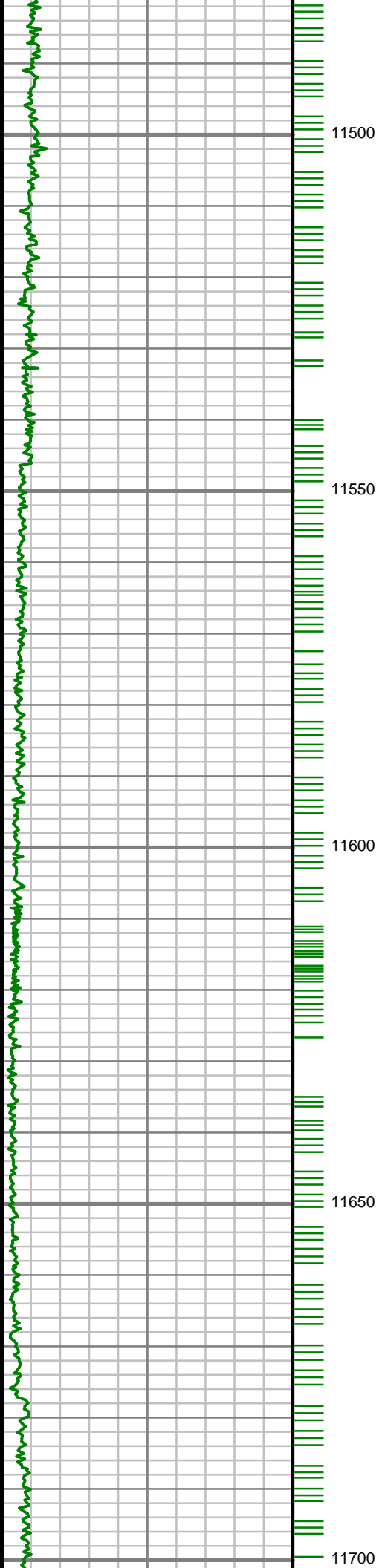
S: 131 MD: 11147.00 ft
Inc: 90.03 deg Az:
180.64 deg TVD:
7871.83 ft

S: 132 MD: 11242.00 ft
Inc: 89.43 deg Az:
179.62 deg TVD:
7872.28 ft



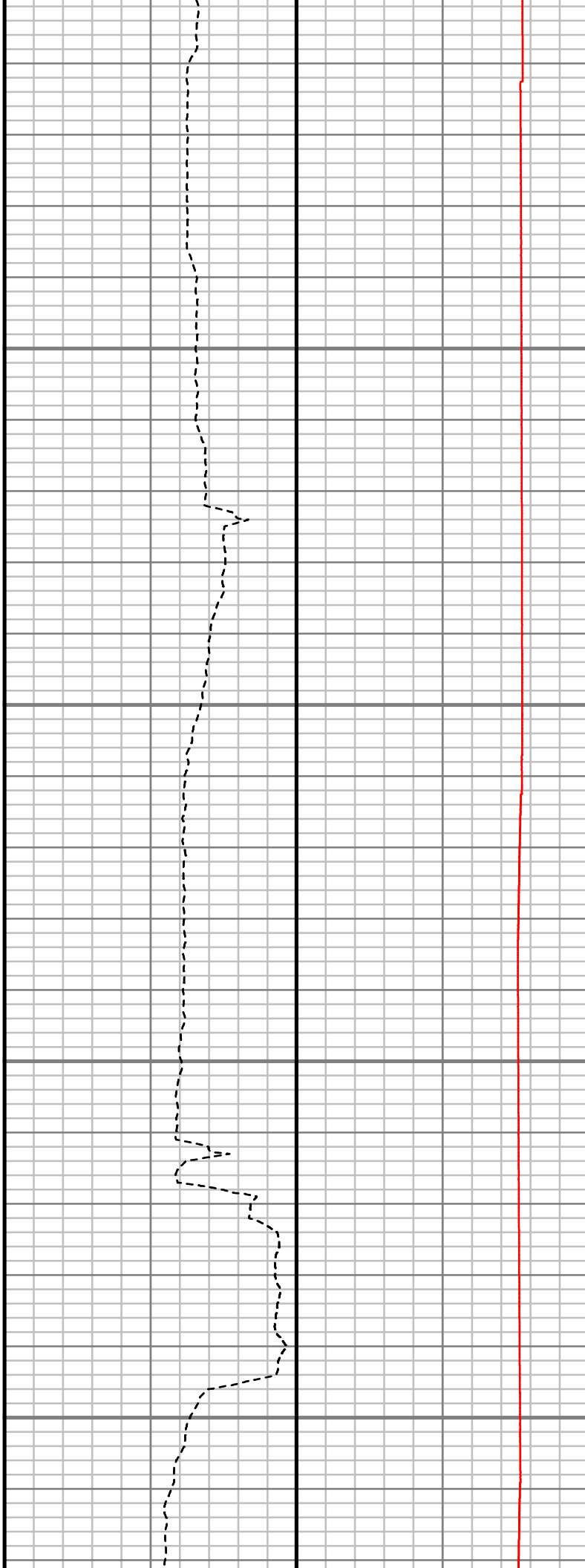
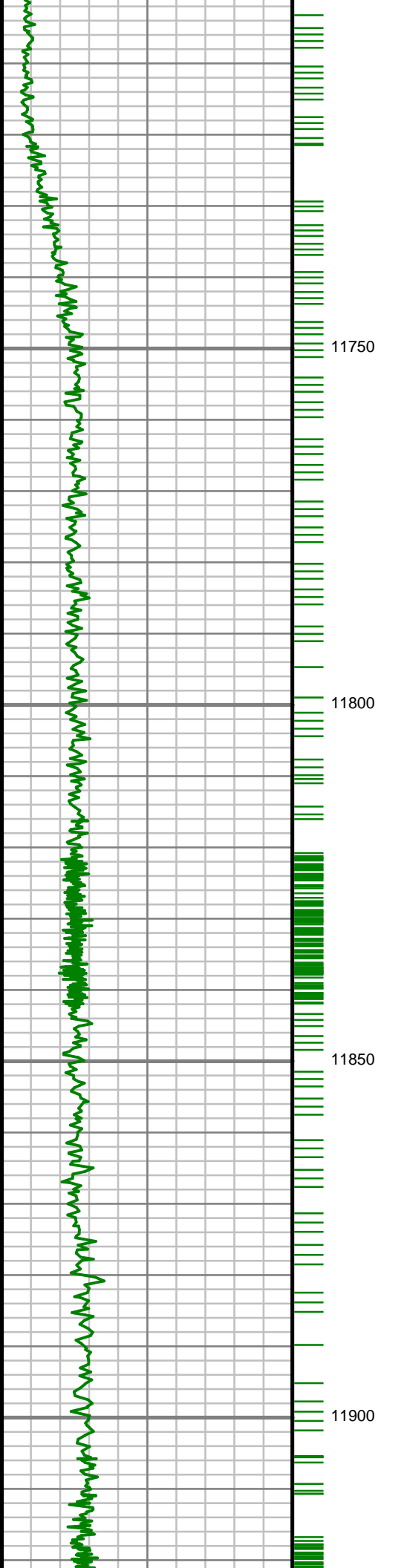
S: 133 MD: 11336.00 ft
Inc: 89.53 deg Az:
179.47 deg TVD:
7873.13 ft

S: 134 MD: 11430.00 ft
Inc: 90.40 deg Az:
179.97 deg TVD:
7873.19 ft



S: 135 MD: 11525.00 ft
Inc: 88.86 deg Az:
179.64 deg TVD:
7873.80 ft

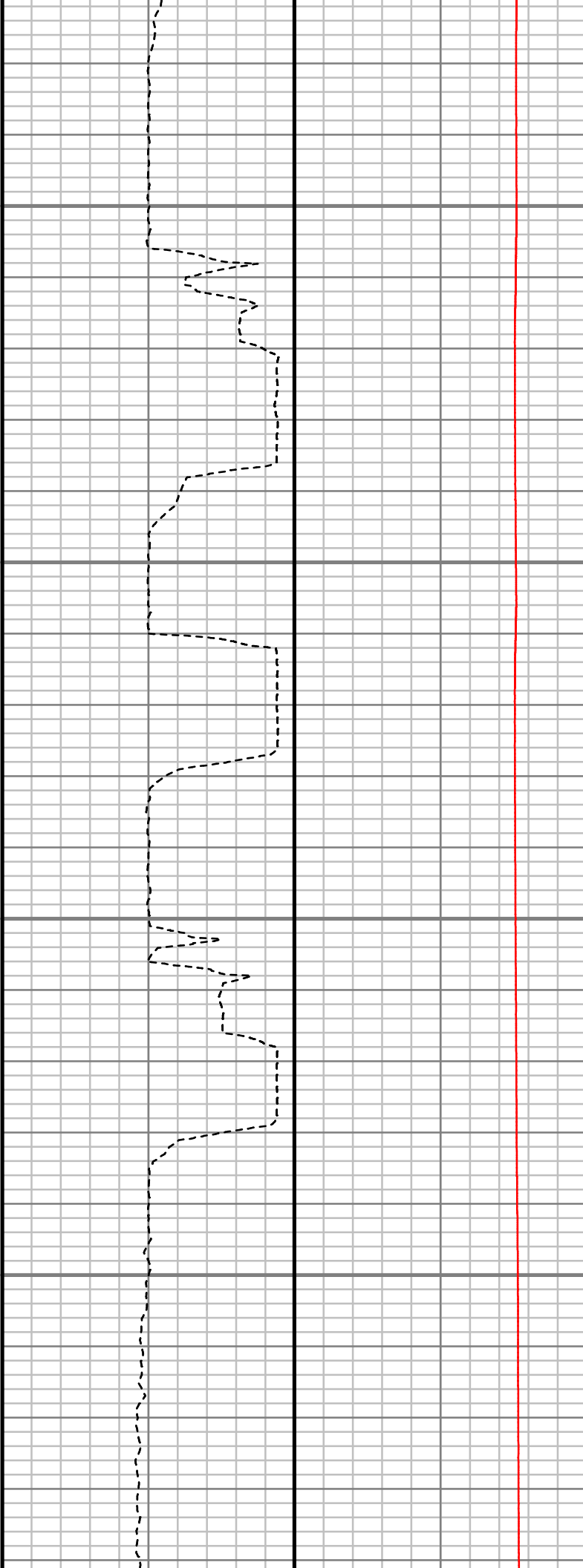
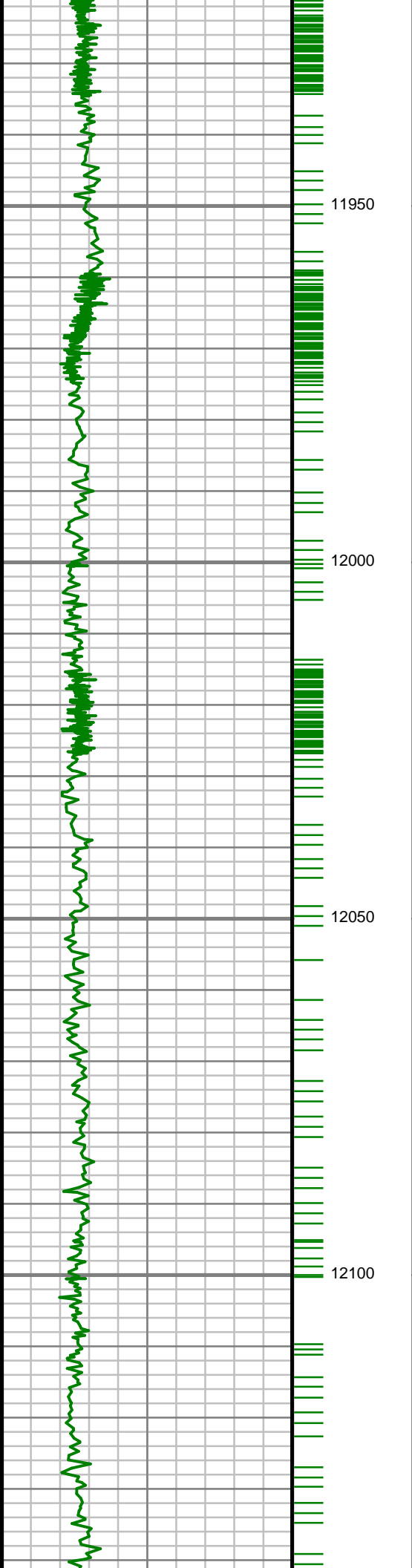
S: 136 MD: 11619.00 ft
Inc: 88.86 deg Az:
179.62 deg TVD:
7875.67 ft



S: 137 MD: 11714.00 ft
Inc: 88.29 deg Az:
179.42 deg TVD:
7878.04 ft

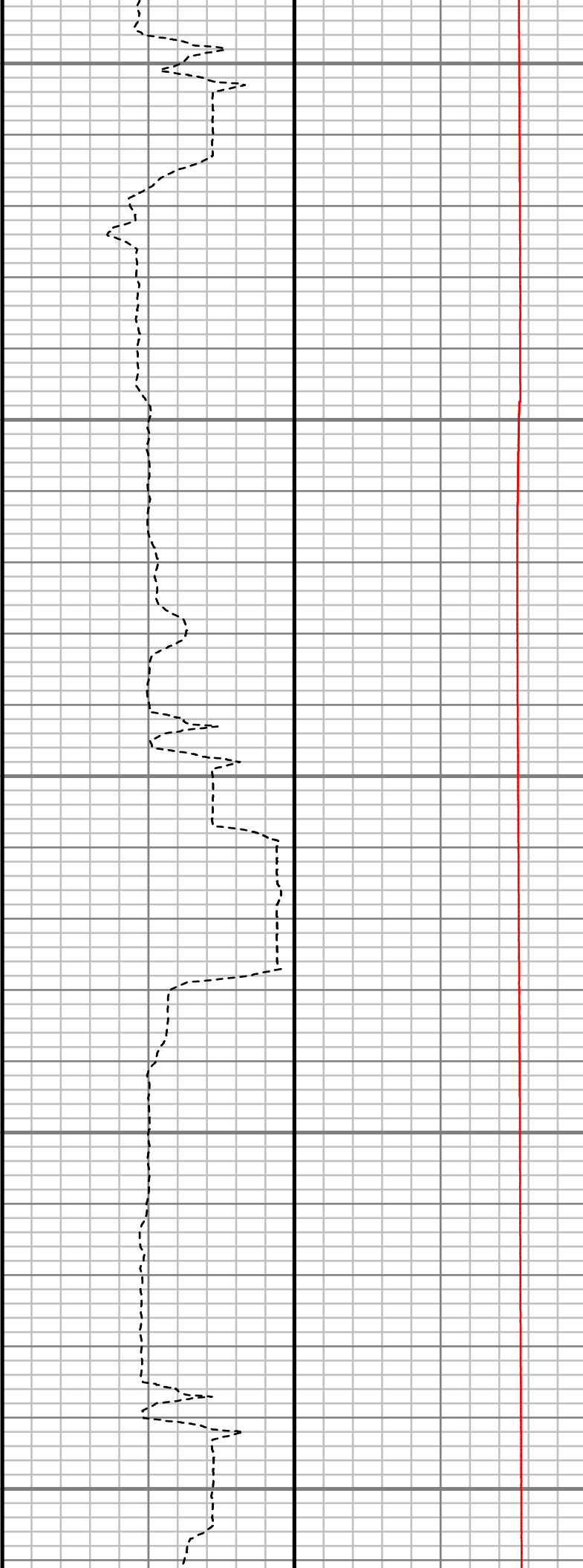
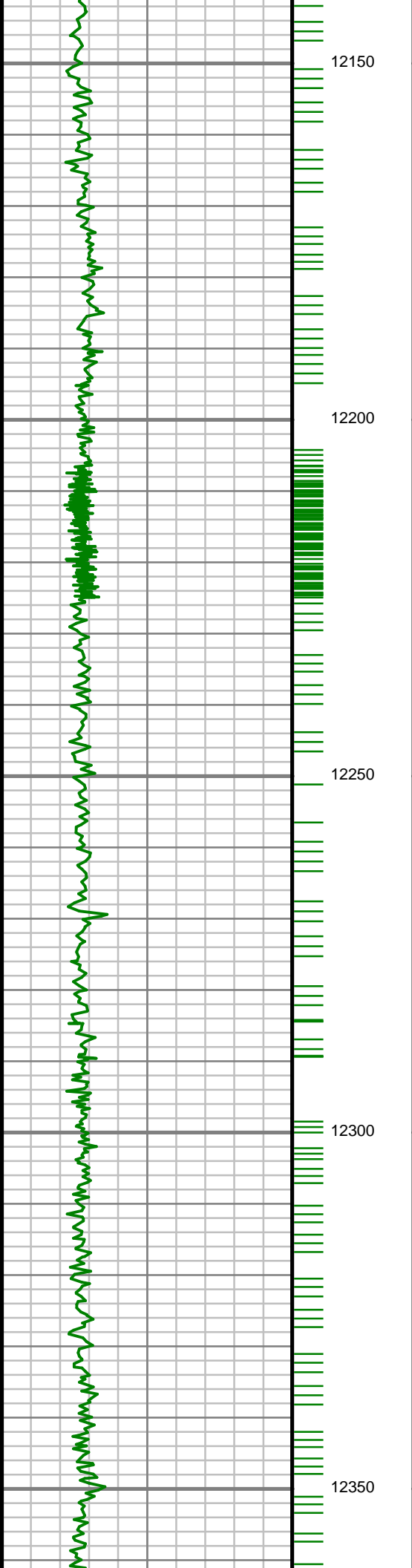
S: 138 MD: 11808.00 ft
Inc: 87.18 deg Az:
179.13 deg TVD:
7881.75 ft

S: 139 MD: 11902.00 ft
Inc: 87.75 deg Az:
180.61 deg TVD:
7885.91 ft



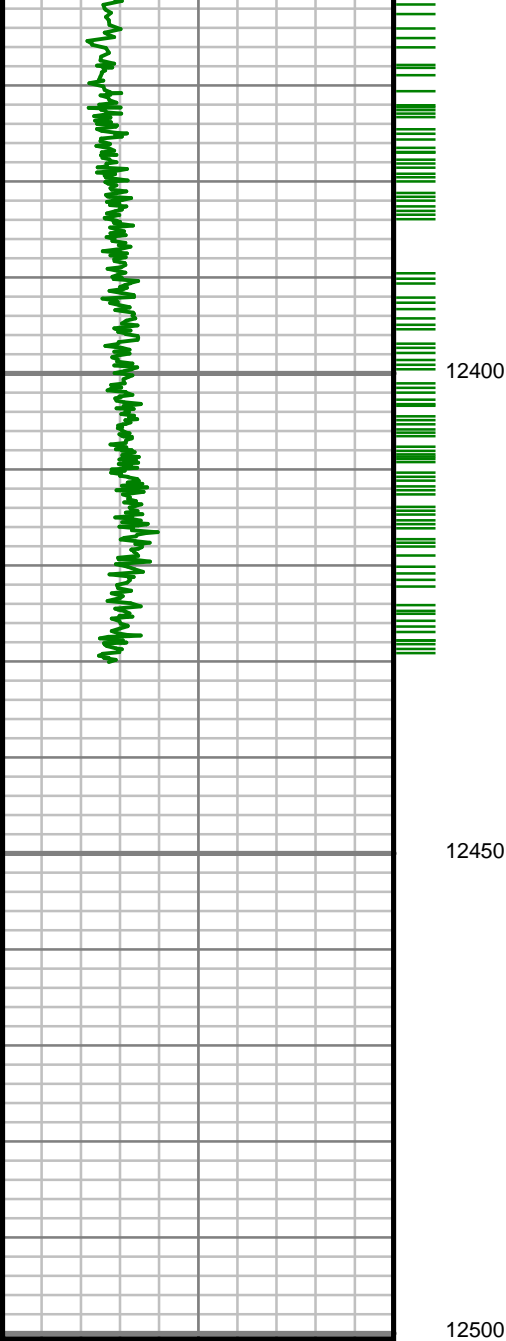
S: 140 MD: 11996.00 ft
Inc: 88.99 deg Az:
180.61 deg TVD:
7888.58 ft

S: 141 MD: 12091.00 ft
Inc: 90.71 deg Az:
180.38 deg TVD:
7888.83 ft

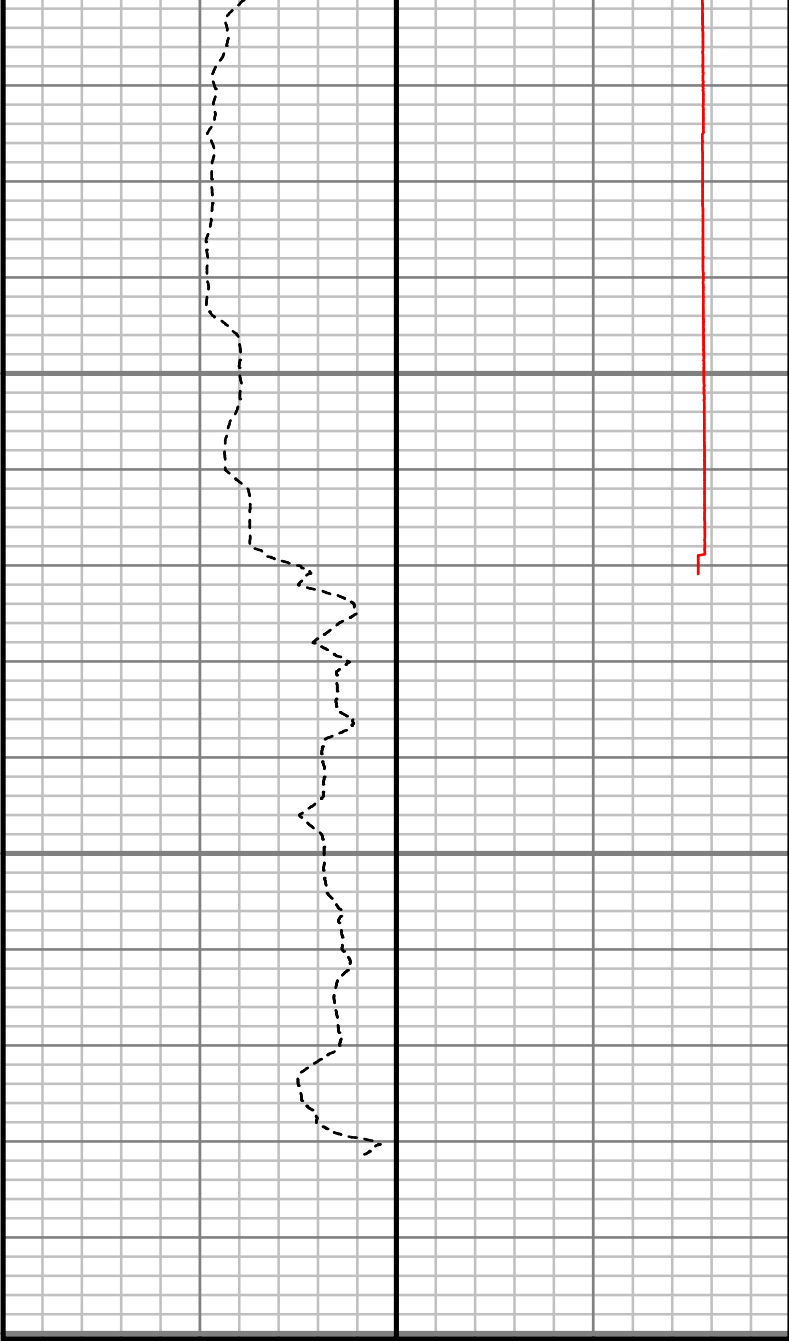


S: 142 MD: 12186.00 ft
Inc: 90.03 deg Az:
180.22 deg TVD:
7888.22 ft

S: 143 MD: 12280.00 ft
Inc: 90.64 deg Az:
178.66 deg TVD:
7887.67 ft



Gamma Ray (GR)		
0	Unit = aapi	300



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

Tool Temperature (T-TEMP)		
0	Unit = °F	300

S: 144 MD: 12374.00 ft
Inc: 89.93 deg Az:
178.78 deg TVD:
7887.20 ft

S: 145 MD: 12417.00 ft
Inc: 89.30 deg Az:
178.37 deg TVD:
7887.49 ft

Comments

MWD Survey Report

Well Location	BUFFALO 36C-15HZ
Well Name	BUFFALO 36C-15HZ
Survey Date	12/23/2014
Latitude	40°3'26.514"N
Longitude	104°59'38.360"W
Btotal	52635, 52677, 52728 nT
Dip	66.52, 66.54 deg
Magnetic Declination	8.63, 8.65, 8.66 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)	A. LAW, J. MEYERS, M. SHARKER

Well Notes

SURVEYS FROM 0 FT. TO 1285 FT. WERE ACQUIRED BY CATHEDRAL INTERNATIONAL MWD.

SURVEYS FROM 1285 FT. TO 12417 FT. WERE ACQUIRED BY SCIENTIFIC DRILLING INTERNATIONAL MWD.

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid	Invalid
19.00	0.00	0.00	19.00	0.00	0.00	0.00	0.00	19.00
71.00	0.80	260.30	71.00	0.06	-0.06	-0.36	1.54	52.00
161.00	0.80	282.00	160.99	0.04	-0.04	-1.59	0.33	90.00
258.00	0.40	289.10	257.98	-0.22	0.22	-2.57	0.42	97.00
337.00	0.40	245.50	336.98	-0.19	0.19	-3.09	0.38	79.00
417.00	0.40	170.80	416.98	0.20	-0.20	-3.30	0.61	80.00
497.00	0.40	153.80	496.98	0.73	-0.73	-3.13	0.15	80.00
577.00	0.50	169.70	576.98	1.32	-1.32	-2.94	0.20	80.00
657.00	0.40	150.60	656.97	1.91	-1.91	-2.74	0.22	80.00
737.00	0.40	157.30	736.97	2.41	-2.41	-2.50	0.06	80.00
817.00	0.60	115.10	816.97	2.84	-2.84	-2.01	0.51	80.00
897.00	0.70	127.30	896.96	3.32	-3.32	-1.24	0.21	80.00
977.00	0.60	98.50	976.96	3.68	-3.68	-0.44	0.42	80.00
1057.00	0.50	85.90	1056.96	3.71	-3.71	0.32	0.20	80.00
1137.00	0.90	48.30	1136.95	3.27	-3.27	1.14	0.74	80.00
1240.00	0.60	47.60	1239.94	2.37	-2.37	2.14	0.29	103.00
1348.00	0.93	42.08	1347.93	1.34	-1.34	3.15	0.31	108.00
1438.00	2.91	72.69	1437.88	0.11	-0.11	5.82	2.41	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
1529.00	4.91	66.21	1528.66	-2.15	2.15	11.60	2.25	91.00
1620.00	5.55	56.25	1619.28	-6.16	6.16	18.82	1.22	91.00
1710.00	7.33	58.28	1708.71	-11.60	11.60	27.33	2.00	90.00
1800.00	8.79	47.92	1797.82	-19.23	19.23	37.32	2.28	90.00
1890.00	9.71	31.63	1886.67	-30.31	30.31	46.41	3.07	90.00
1981.00	10.05	37.77	1976.32	-43.12	43.12	55.30	1.21	91.00
2073.00	11.61	50.25	2066.69	-55.39	55.39	67.34	3.06	92.00
2163.00	11.56	63.21	2154.87	-65.25	65.25	82.36	2.89	90.00
2254.00	12.98	72.43	2243.80	-72.44	72.44	100.24	2.65	91.00
2345.00	13.42	77.62	2332.40	-77.80	77.80	120.30	1.39	91.00
2439.00	13.28	76.53	2423.86	-82.65	82.65	141.46	0.31	94.00
2534.00	13.43	77.53	2516.29	-87.57	87.57	162.84	0.29	95.00
2628.00	11.66	79.45	2608.04	-91.67	91.67	182.83	1.93	94.00
2723.00	12.28	74.81	2700.98	-96.07	96.07	202.01	1.21	95.00
2817.00	12.12	79.98	2792.86	-100.41	100.41	221.38	1.18	94.00
2911.00	12.98	80.46	2884.61	-103.87	103.87	241.51	0.92	94.00
3006.00	11.85	79.21	2977.39	-107.47	107.47	261.61	1.22	95.00
3100.00	12.91	78.79	3069.20	-111.32	111.32	281.39	1.13	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
3195.00	11.29	76.12	3162.09	-115.61	115.61	300.83	1.81	95.00
3289.00	11.32	70.98	3254.27	-120.82	120.82	318.48	1.07	94.00
3383.00	12.35	76.18	3346.27	-126.23	126.23	336.97	1.58	94.00
3478.00	10.97	76.27	3439.31	-130.81	130.81	355.62	1.46	95.00
3572.00	11.90	78.25	3531.44	-134.90	134.90	373.80	1.08	94.00
3667.00	12.15	72.23	3624.36	-139.95	139.95	392.91	1.35	95.00
3761.00	12.06	71.77	3716.27	-146.04	146.04	411.66	0.14	94.00
3856.00	11.83	74.17	3809.21	-151.80	151.80	430.45	0.58	95.00
3950.00	12.60	77.36	3901.09	-156.67	156.67	449.72	1.09	94.00
4045.00	10.85	72.39	3994.10	-161.65	161.65	468.36	2.12	95.00
4139.00	11.18	67.56	4086.38	-167.80	167.80	485.21	1.04	94.00
4234.00	12.52	69.43	4179.35	-174.93	174.93	503.36	1.47	95.00
4328.00	13.19	68.90	4270.99	-182.38	182.38	522.91	0.73	94.00
4422.00	13.82	74.81	4362.39	-189.18	189.18	543.76	1.61	94.00
4517.00	12.73	76.13	4454.85	-194.67	194.67	564.88	1.20	95.00
4611.00	10.27	76.23	4546.96	-199.15	199.15	583.08	2.61	94.00
4706.00	9.61	66.57	4640.54	-204.32	204.32	598.58	1.89	95.00
4800.00	12.71	61.62	4732.75	-212.35	212.35	614.89	3.45	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
4895.00	15.31	67.47	4824.92	-222.13	222.13	635.67	3.11	95.00
4989.00	15.24	69.35	4915.60	-231.24	231.24	658.70	0.53	94.00
5083.00	13.91	69.76	5006.57	-239.51	239.51	680.87	1.42	94.00
5178.00	13.78	69.81	5098.81	-247.37	247.37	702.20	0.14	95.00
5272.00	15.05	74.21	5189.85	-254.55	254.55	724.46	1.78	94.00
5367.00	13.81	73.38	5281.85	-261.15	261.15	747.19	1.33	95.00
5461.00	14.14	77.34	5373.07	-266.87	266.87	769.14	1.08	94.00
5556.00	13.12	76.78	5465.40	-271.88	271.88	790.96	1.08	95.00
5650.00	11.19	75.29	5557.29	-276.64	276.64	810.17	2.08	94.00
5745.00	11.03	79.66	5650.51	-280.61	280.61	828.03	0.90	95.00
5839.00	12.28	81.01	5742.57	-283.79	283.79	846.75	1.36	94.00
5933.00	12.56	76.88	5834.37	-287.67	287.67	866.58	0.99	94.00
6028.00	10.94	75.51	5927.38	-292.27	292.27	885.36	1.73	95.00
6122.00	10.89	71.84	6019.68	-297.27	297.27	902.44	0.74	94.00
6217.00	11.79	69.54	6112.82	-303.46	303.46	920.06	1.06	95.00
6311.00	9.77	69.82	6205.16	-309.57	309.57	936.55	2.15	94.00
6406.00	9.72	70.51	6298.79	-315.03	315.03	951.67	0.13	95.00
6500.00	8.74	70.15	6391.57	-320.10	320.10	965.87	1.05	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
6595.00	9.75	67.70	6485.33	-325.60	325.60	980.10	1.15	95.00
6689.00	8.78	62.01	6578.11	-331.99	331.99	993.79	1.42	94.00
6784.00	6.64	59.80	6672.25	-338.15	338.15	1004.94	2.27	95.00
6878.00	6.12	75.33	6765.67	-342.15	342.15	1014.48	1.91	94.00
6972.00	5.32	72.51	6859.20	-344.73	344.73	1023.49	0.90	94.00
7067.00	3.64	70.79	6953.91	-347.05	347.05	1030.54	1.77	95.00
7162.00	2.48	72.56	7048.77	-348.66	348.66	1035.35	1.23	95.00
7256.00	0.50	152.90	7142.74	-348.91	348.91	1037.48	2.60	94.00
7350.00	1.12	176.09	7236.73	-347.63	347.63	1037.73	0.73	94.00
7397.00	1.18	192.07	7283.72	-346.70	346.70	1037.66	0.69	47.00
7445.00	5.65	172.91	7331.62	-343.87	343.87	1037.85	9.49	48.00
7492.00	13.26	172.21	7377.95	-336.22	336.22	1038.87	16.19	47.00
7539.00	19.59	178.84	7423.01	-322.99	322.99	1039.76	14.04	47.00
7586.00	23.31	181.05	7466.75	-305.81	305.81	1039.75	8.08	47.00
7634.00	24.51	183.25	7510.63	-286.37	286.37	1039.01	3.12	48.00
7681.00	27.70	178.21	7552.84	-265.72	265.72	1038.80	8.28	47.00
7728.00	32.48	174.26	7593.50	-242.22	242.22	1040.40	11.00	47.00
7775.00	36.56	175.17	7632.21	-215.71	215.71	1042.84	8.76	47.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
7823.00	39.81	175.47	7669.94	-186.14	186.14	1045.26	6.77	48.00
7870.00	43.62	177.84	7705.02	-154.92	154.92	1047.06	8.79	47.00
7917.00	49.83	179.94	7737.22	-120.73	120.73	1047.70	13.59	47.00
7964.00	52.94	180.71	7766.55	-84.01	84.01	1047.48	6.75	47.00
8011.00	57.09	184.35	7793.50	-45.56	45.56	1045.76	10.86	47.00
8058.00	63.85	184.52	7816.65	-4.81	4.81	1042.60	14.39	47.00
8106.00	69.71	184.18	7835.56	39.16	-39.16	1039.26	12.22	48.00
8153.00	73.38	183.25	7850.44	83.64	-83.64	1036.37	8.03	47.00
8200.00	76.80	182.33	7862.53	128.99	-128.99	1034.16	7.52	47.00
8245.00	80.91	180.59	7871.22	173.12	-173.12	1033.04	9.88	45.00
8294.00	84.84	178.48	7877.30	221.73	-221.73	1033.44	9.09	49.00
8410.00	89.90	176.92	7882.62	337.47	-337.47	1038.09	4.56	116.00
8504.00	90.30	177.74	7882.45	431.37	-431.37	1042.48	0.97	94.00
8598.00	88.52	177.89	7883.42	525.29	-525.29	1046.06	1.90	94.00
8693.00	89.06	178.86	7885.42	620.23	-620.23	1048.75	1.16	95.00
8787.00	89.19	179.76	7886.85	714.21	-714.21	1049.88	0.97	94.00
8881.00	90.13	181.93	7887.41	808.19	-808.19	1048.50	2.52	94.00
8976.00	92.29	182.38	7885.40	903.10	-903.10	1044.92	2.31	95.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
9070.00	91.14	182.80	7882.59	996.96	-996.96	1040.67	1.29	94.00
9164.00	90.77	182.97	7881.02	1090.83	-1090.83	1035.94	0.43	94.00
9259.00	90.91	181.73	7879.63	1185.73	-1185.73	1032.05	1.31	95.00
9353.00	90.44	182.24	7878.53	1279.67	-1279.67	1028.79	0.74	94.00
9448.00	90.97	180.89	7877.36	1374.62	-1374.62	1026.19	1.53	95.00
9542.00	90.54	181.10	7876.12	1468.60	-1468.60	1024.56	0.51	94.00
9637.00	90.30	180.33	7875.42	1563.59	-1563.59	1023.37	0.85	95.00
9731.00	89.60	180.08	7875.50	1657.59	-1657.59	1023.04	0.80	94.00
9826.00	90.60	179.60	7875.34	1752.59	-1752.59	1023.30	1.17	95.00
9920.00	89.50	179.77	7875.25	1846.58	-1846.58	1023.81	1.19	94.00
10015.00	90.40	179.08	7875.34	1941.58	-1941.58	1024.77	1.20	95.00
10109.00	91.34	179.79	7873.91	2035.56	-2035.56	1025.69	1.25	94.00
10203.00	91.24	179.35	7871.79	2129.53	-2129.53	1026.40	0.49	94.00
10298.00	91.21	179.26	7869.76	2224.51	-2224.51	1027.55	0.09	95.00
10392.00	91.31	178.96	7867.69	2318.47	-2318.47	1029.01	0.34	94.00
10487.00	91.04	179.23	7865.74	2413.44	-2413.44	1030.51	0.40	95.00
10581.00	90.40	179.94	7864.56	2507.43	-2507.43	1031.18	1.02	94.00
10675.00	88.05	179.73	7865.82	2601.41	-2601.41	1031.45	2.51	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
10770.00	89.16	181.30	7868.14	2696.38	-2696.38	1030.59	2.03	95.00
10864.00	89.03	181.08	7869.62	2790.34	-2790.34	1028.64	0.28	94.00
10958.00	89.60	180.55	7870.75	2884.33	-2884.33	1027.31	0.82	94.00
11053.00	89.53	180.38	7871.48	2979.32	-2979.32	1026.53	0.20	95.00
11147.00	90.03	180.64	7871.83	3073.32	-3073.32	1025.70	0.60	94.00
11242.00	89.43	179.62	7872.28	3168.31	-3168.31	1025.48	1.25	95.00
11336.00	89.53	179.47	7873.13	3262.31	-3262.31	1026.23	0.19	94.00
11430.00	90.40	179.97	7873.19	3356.30	-3356.30	1026.68	1.07	94.00
11525.00	88.86	179.64	7873.80	3451.30	-3451.30	1027.00	1.66	95.00
11619.00	88.86	179.62	7875.67	3545.28	-3545.28	1027.61	0.02	94.00
11714.00	88.29	179.42	7878.04	3640.25	-3640.25	1028.40	0.64	95.00
11808.00	87.18	179.13	7881.75	3734.16	-3734.16	1029.60	1.22	94.00
11902.00	87.75	180.61	7885.91	3828.07	-3828.07	1029.81	1.69	94.00
11996.00	88.99	180.61	7888.58	3922.02	-3922.02	1028.81	1.32	94.00
12091.00	90.71	180.38	7888.83	4017.01	-4017.01	1027.99	1.82	95.00
12186.00	90.03	180.22	7888.22	4112.01	-4112.01	1027.49	0.73	95.00
12280.00	90.64	178.66	7887.67	4206.00	-4206.00	1028.41	1.78	94.00
12374.00	89.93	178.78	7887.20	4299.98	-4299.98	1030.51	0.76	94.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
12417.00	89.30	178.37	7887.49	4342.96	-4342.96	1031.58	1.77	43.00

5" = 100' FEET MD