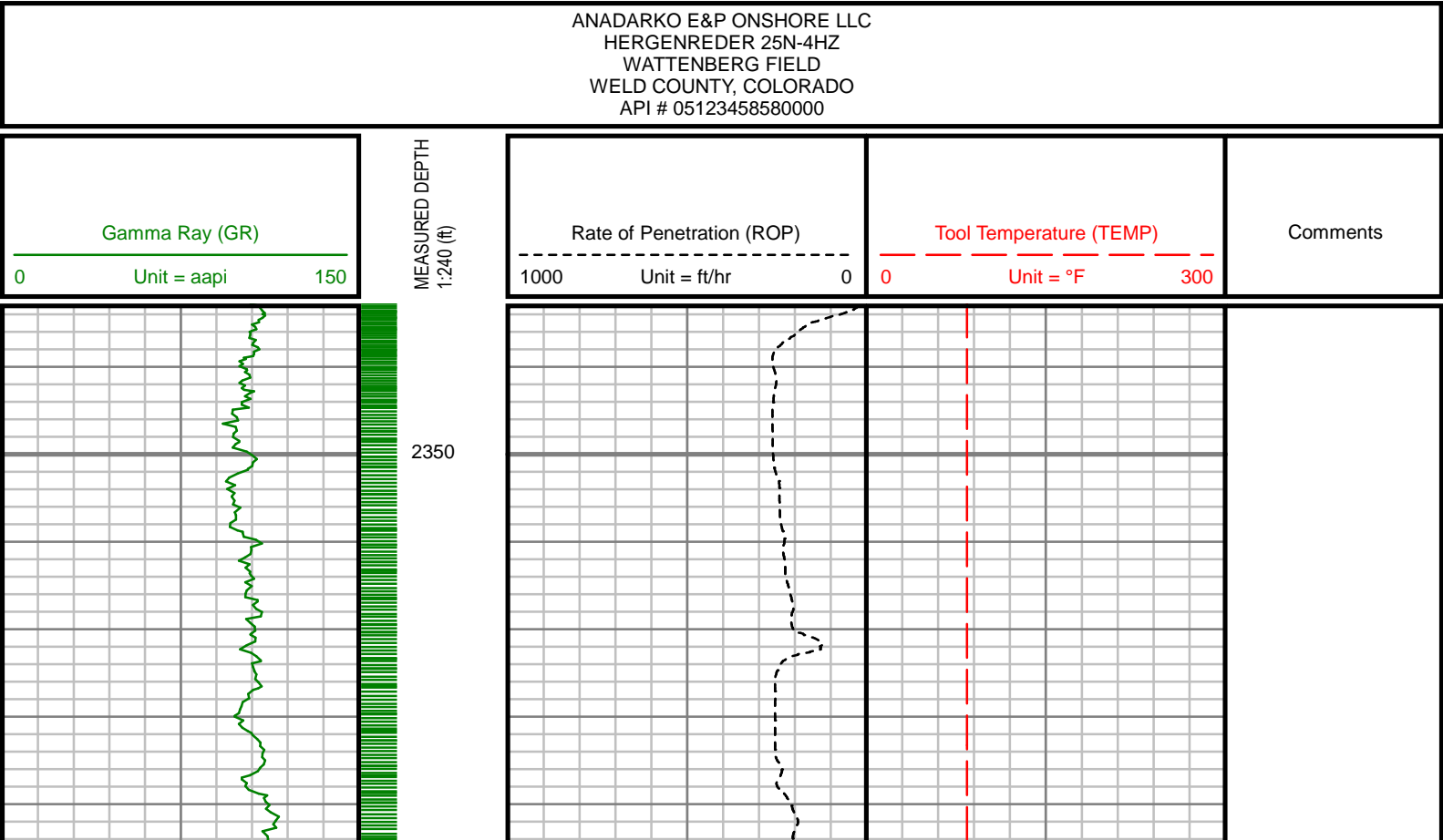


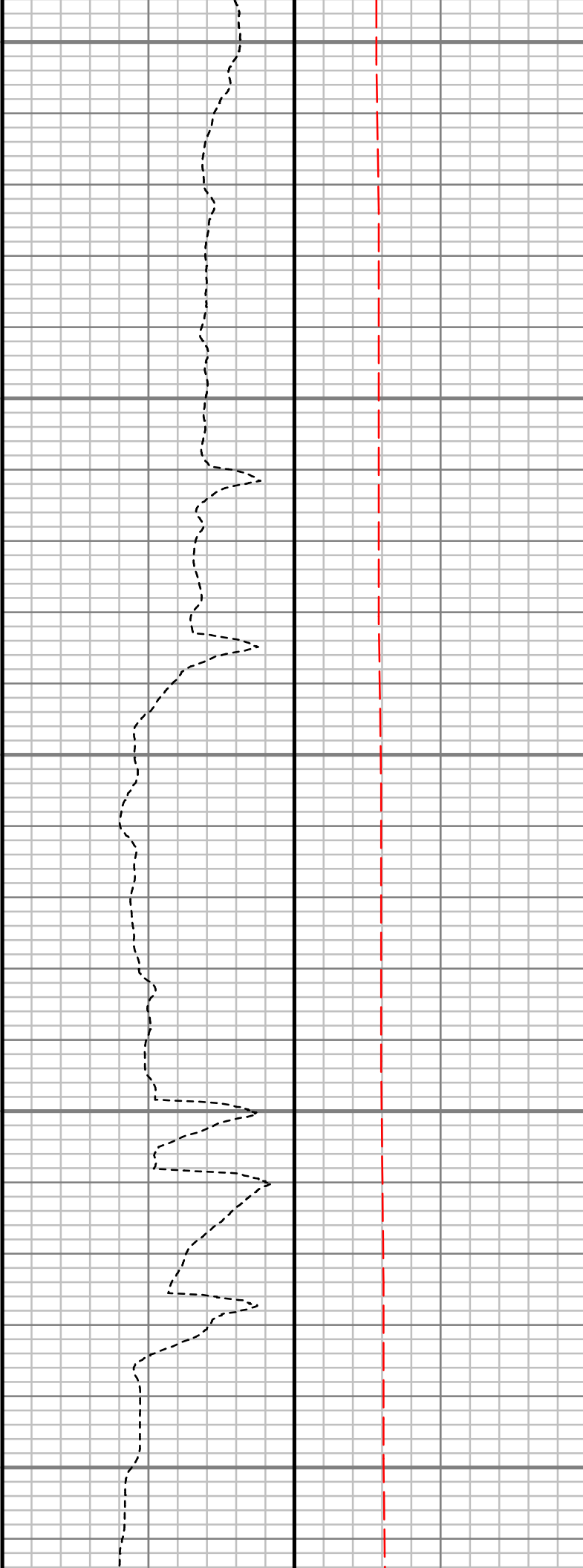
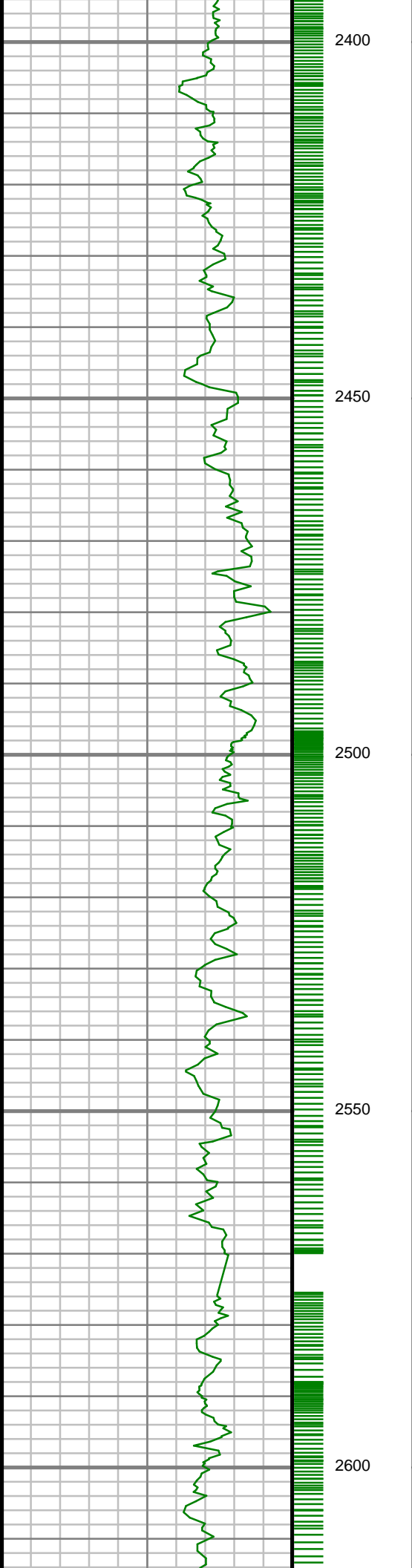
5" = 100' MD

COMPANY : ANADARKO E&P ONSHORE LLC WELL : HERGENREDER 25N-4HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05123458580000										COMPANY : ANADARKO E&P ONSHORE LLC WELL : HERGENREDER 25N-4HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05123458580000									
DEPTH REF. : RKB REF. HEIGHT : 17.000 ft GROUND LEVEL : 4944.000 ft										RKB to Ground Level G.L. to MEAN SEA LEVEL									
BOREHOLE RECORD										DEVIATION RECORD									
HOLE SIZE in		FROM ft		TO ft		INCLINATION deg		FROM ft		TO ft									
13.5		0		2333		0 - 16		0		1202									
7.875		2333		14213		16 - 22		1202		4735									
						22 - 0		4735		6334									
						0 - 85		6334		7490									
						85 - 92		7490		14213									
CASING RECORD																			
CASING SIZE in		FROM ft		TO ft															
9.625		0		2323															
DRILLING CO. : XTREME RLG : 24										LMD UNIT NO. : KIT MDD PLDISTRICT : CASPER SPUD DATE : 01/05/2018 LMD START DATE : 02/02/2018 LMD END DATE : 02/06/2018									
										DEPTH : 2333 ft DEPTH : 14151 ft TOTAL DEPTH : 14213 ft									

Remarks
ANADARKO E&P ONSHORE LLC AFE#2116958
SCIENTIFIC DRILLING INTERNATIONAL JOB# OP.007811
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
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO TOOL TEMPERATURE CURVE
RUN #1: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-253 / CONTROLLER=650 / MWD EYE=1668 / GAMMA RAY=1374
BIT TO SENSOR OFFSETS: MWD EYE=57.99 FT. / GAMMA RAY=62.19 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-253 / CONTROLLER=650 / MWD EYE=1668 / GAMMA RAY=1374
BIT TO SENSOR OFFSETS: MWD EYE=50.14 FT. / GAMMA RAY=54.34 FT.
RUN #3 MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-325 / CONTROLLER=209 / MWD EYE=1508 / GAMMA RAY=1420
BIT TO SENSOR OFFSETS: MWD EYE=58.11 FT. / GAMMA RAY=62.31 FT.
MNEMONICS LIST:
GR = GAMMA RAY
ROP = RATE OF PENETRATION
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.

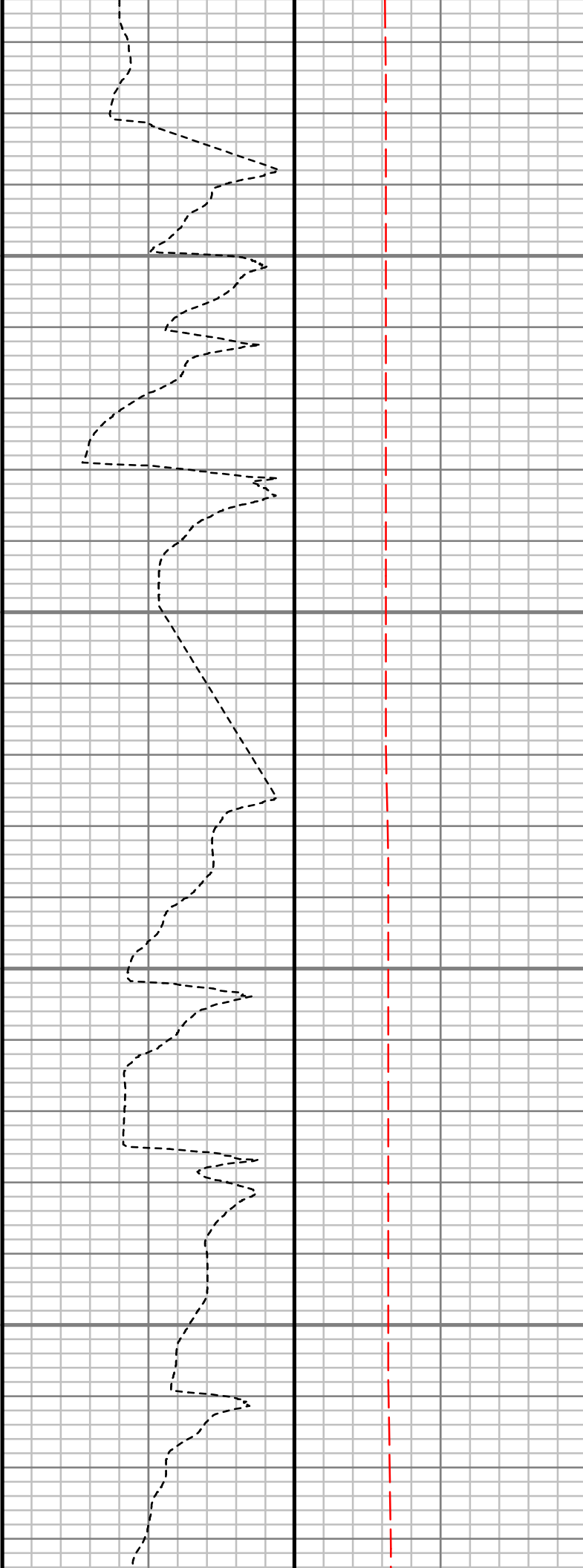
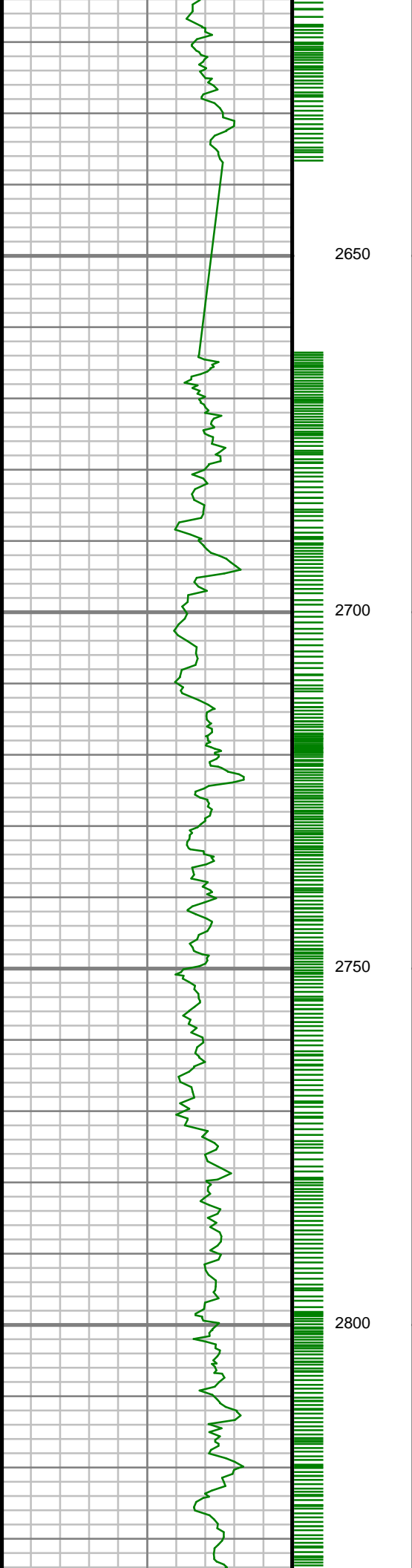




S: 70 MD: 2400.00 ft
Inc: 17.74 deg Az:
74.62 deg TVD:
2327.60 ft

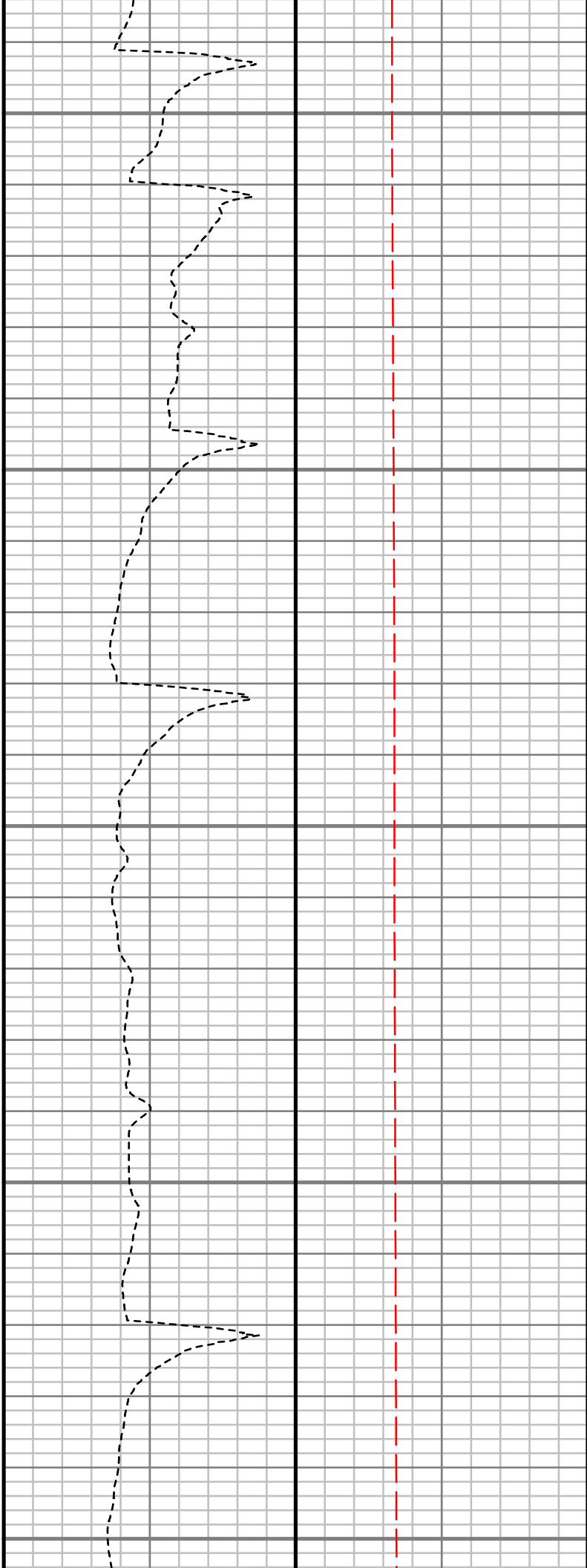
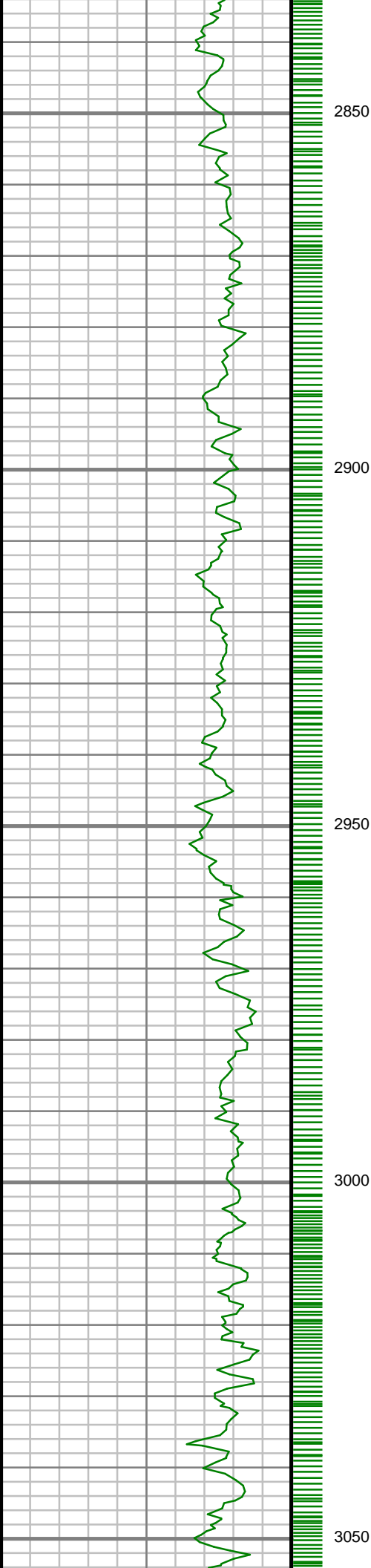
S: 71 MD: 2489.00 ft
Inc: 16.94 deg Az:
68.92 deg TVD:
2412.56 ft

S: 72 MD: 2577.00 ft
Inc: 18.01 deg Az:
73.02 deg TVD:
2496.50 ft



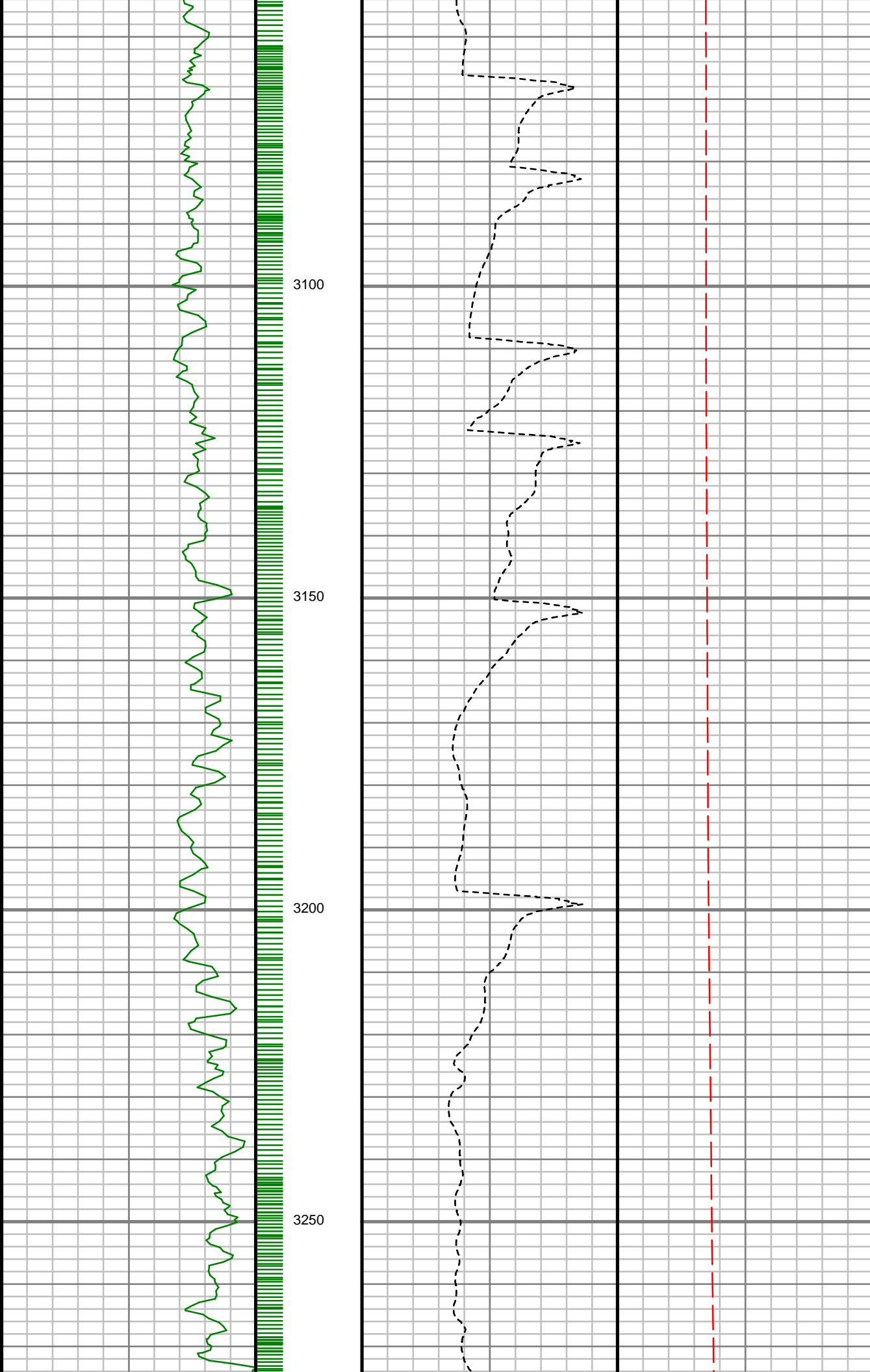
S: 73 MD: 2692.00 ft
Inc: 17.90 deg Az:
78.78 deg TVD:
2605.91 ft

S: 74 MD: 2781.00 ft
Inc: 17.04 deg Az:
78.38 deg TVD:
2690.80 ft



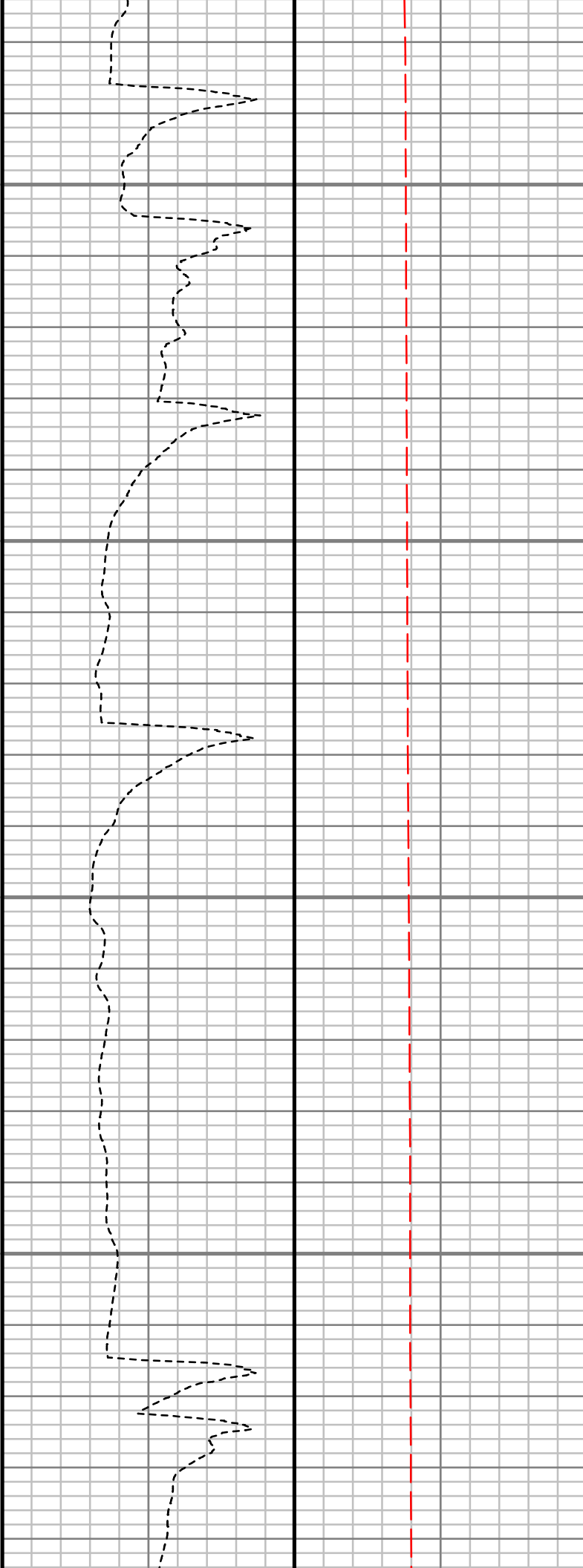
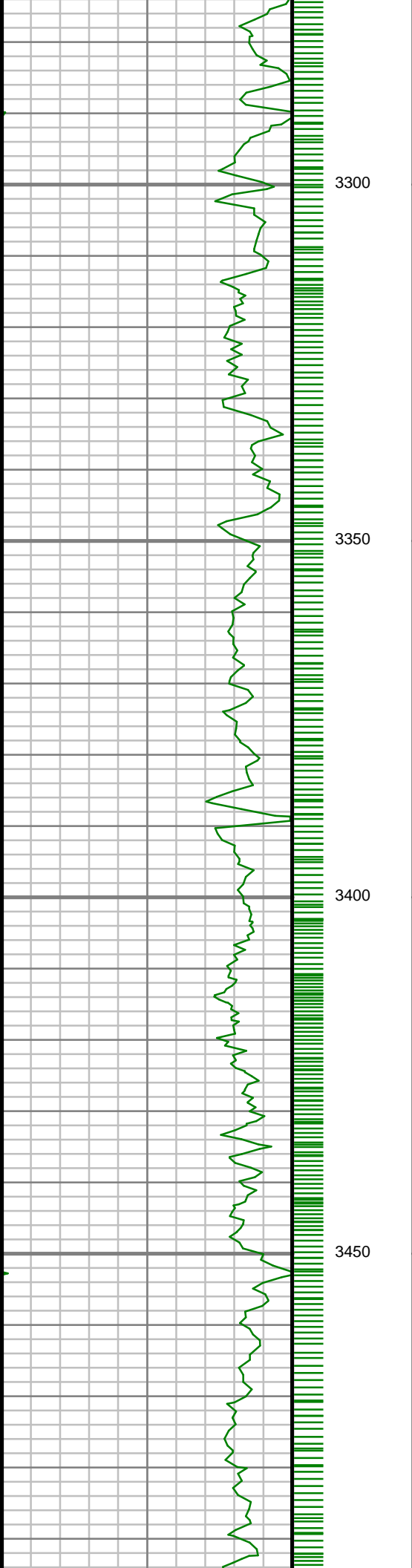
S: 75 MD: 2870.00 ft
Inc: 19.73 deg Az:
80.59 deg TVD:
2775.25 ft

S: 76 MD: 3048.00 ft
Inc: 18.77 deg Az:
80.20 deg TVD:



80.20 deg TVD:
2943.30 ft

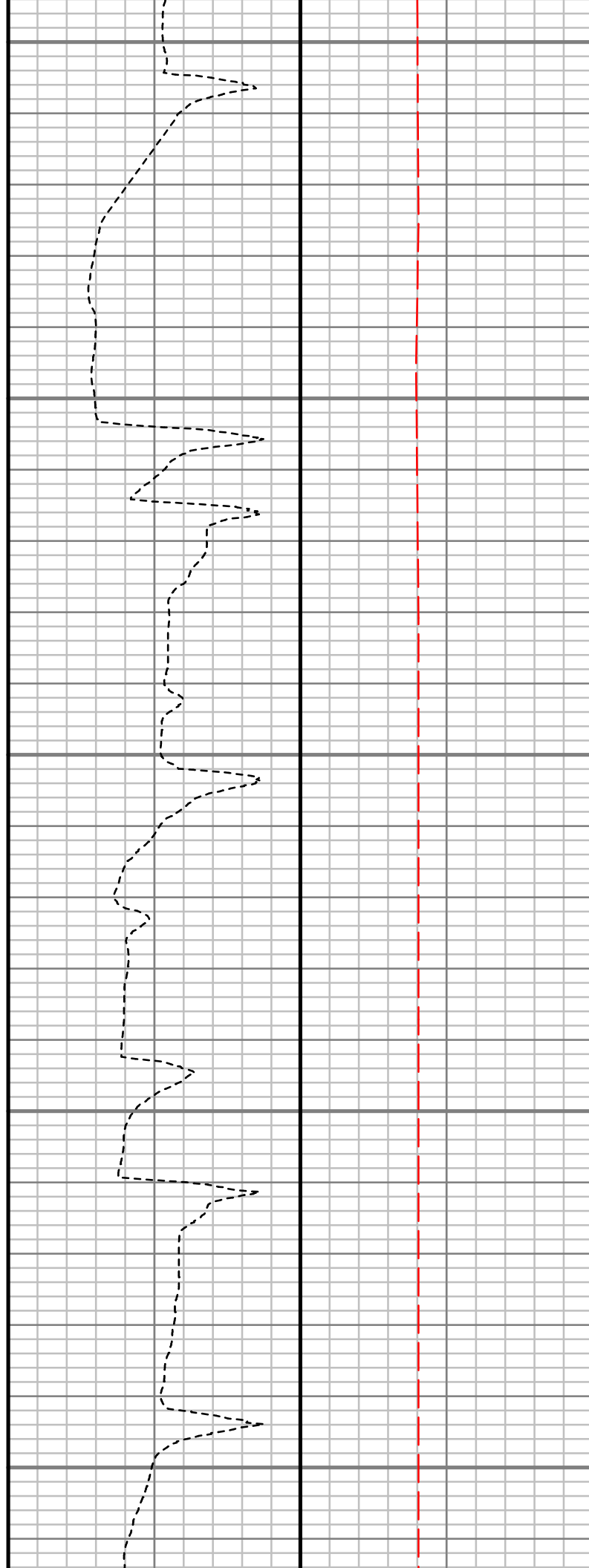
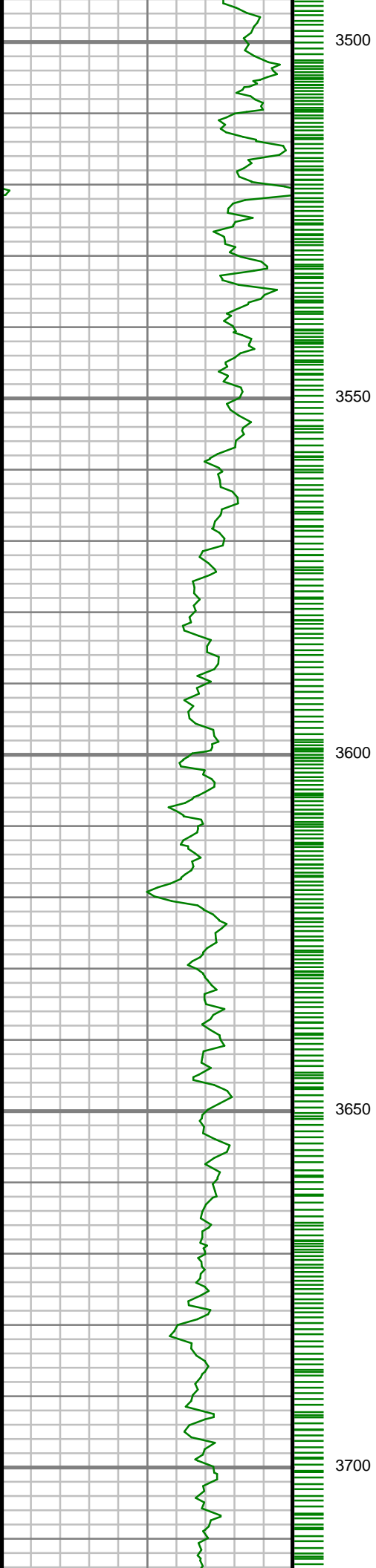
S: 77 MD: 3225.00 ft
Inc: 18.07 deg Az:
77.47 deg TVD:
3111.23 ft



S: 78 MD: 3314.00 ft
Inc: 17.20 deg Az:
78.74 deg TVD:
3196.05 ft

S: 79 MD: 3403.00 ft
Inc: 16.34 deg Az:
81.57 deg TVD:
3281.26 ft

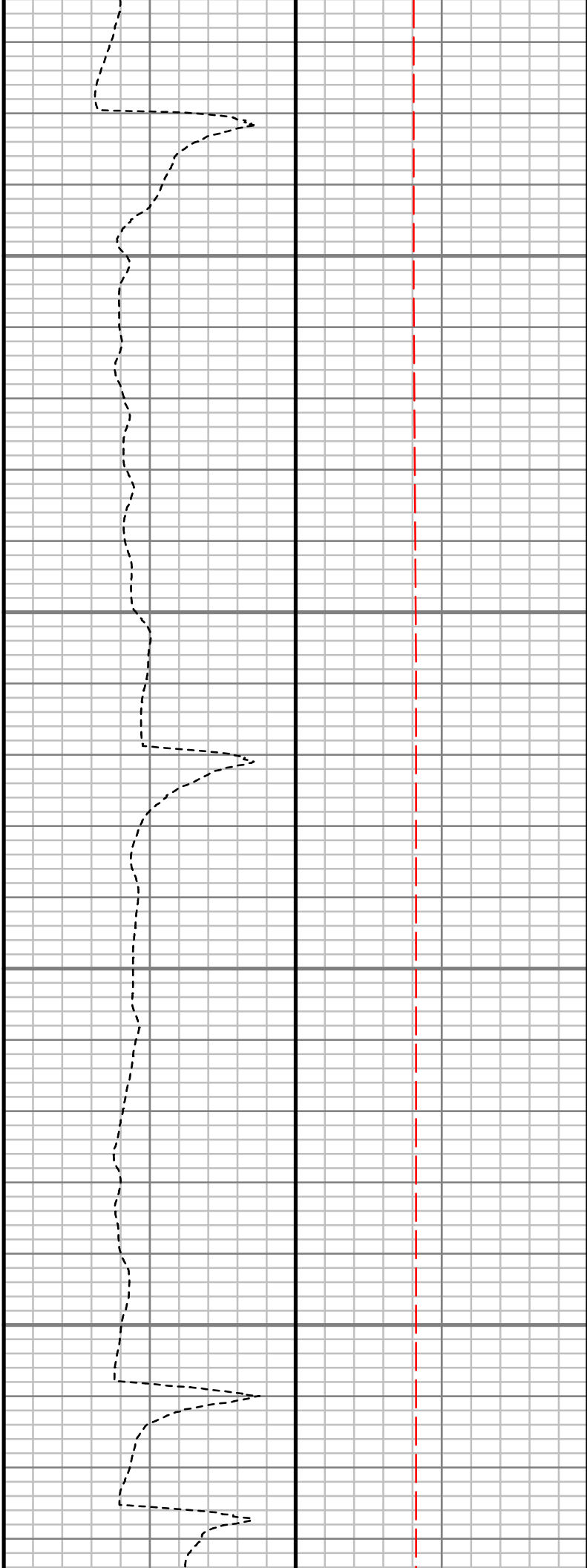
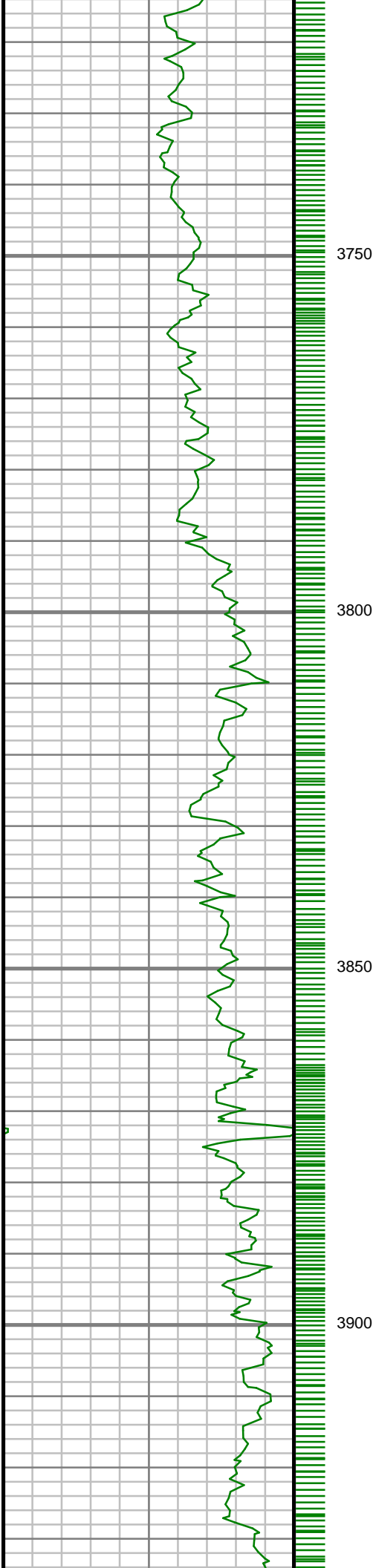
S: 80 MD: 3492.00 ft



Inc: 16.08 deg Az:
82.87 deg TVD:
3366.73 ft

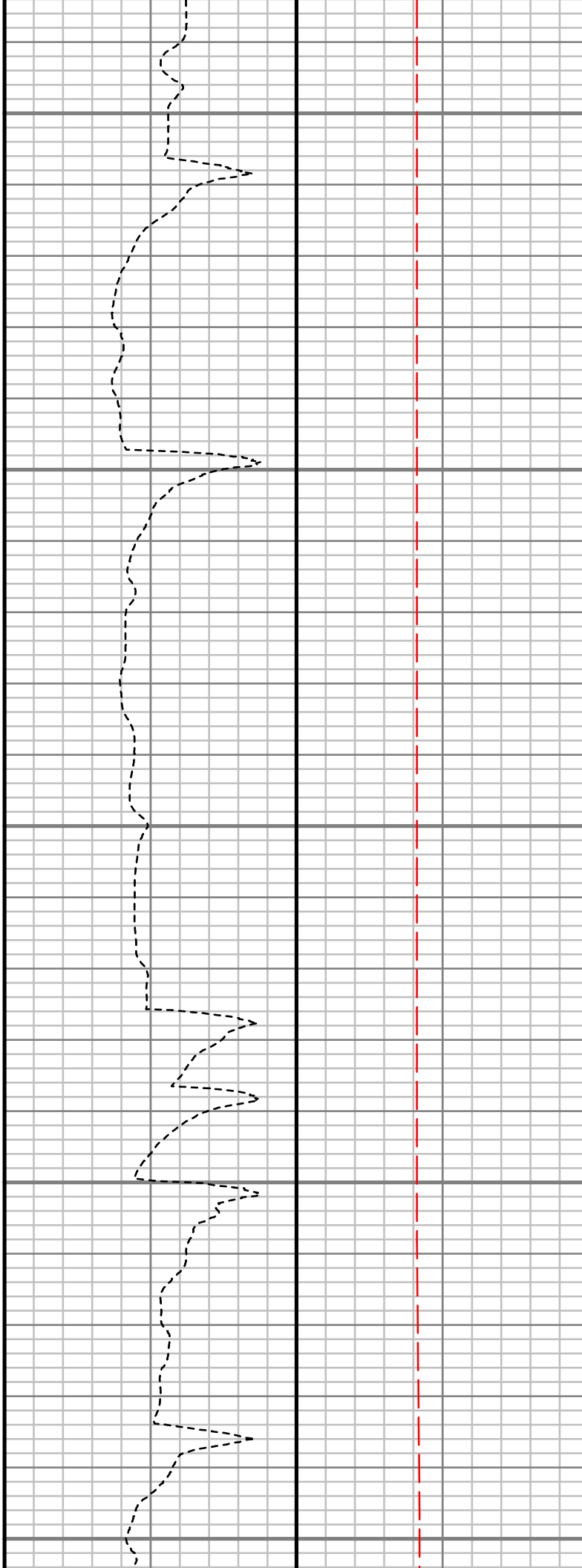
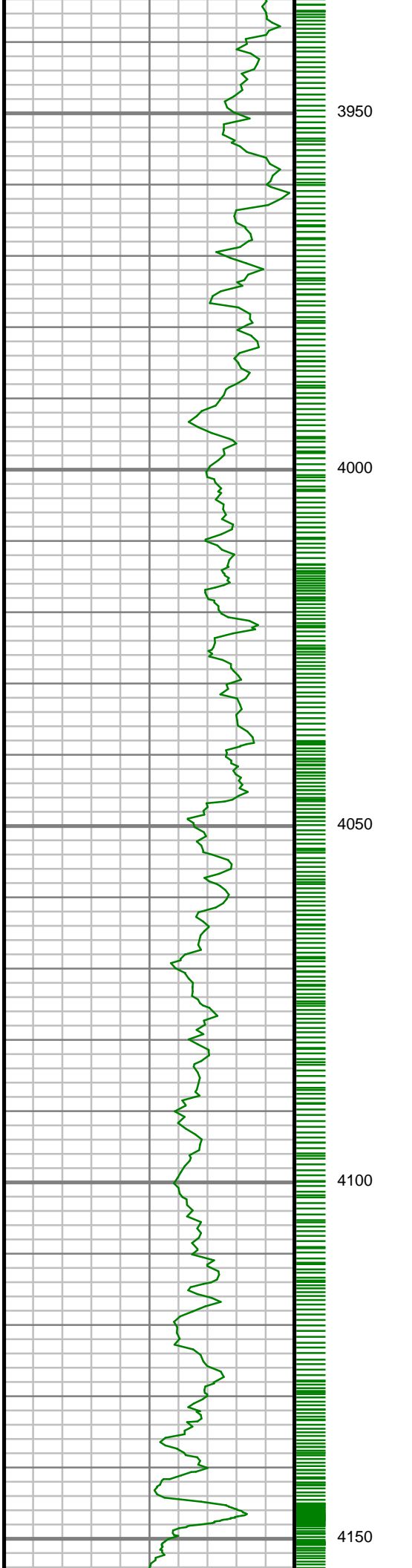
S: 81 MD: 3581.00 ft
Inc: 17.63 deg Az:
80.22 deg TVD:
3451.90 ft

S: 82 MD: 3670.00 ft
Inc: 20.22 deg Az:
77.09 deg TVD:
3536.08 ft



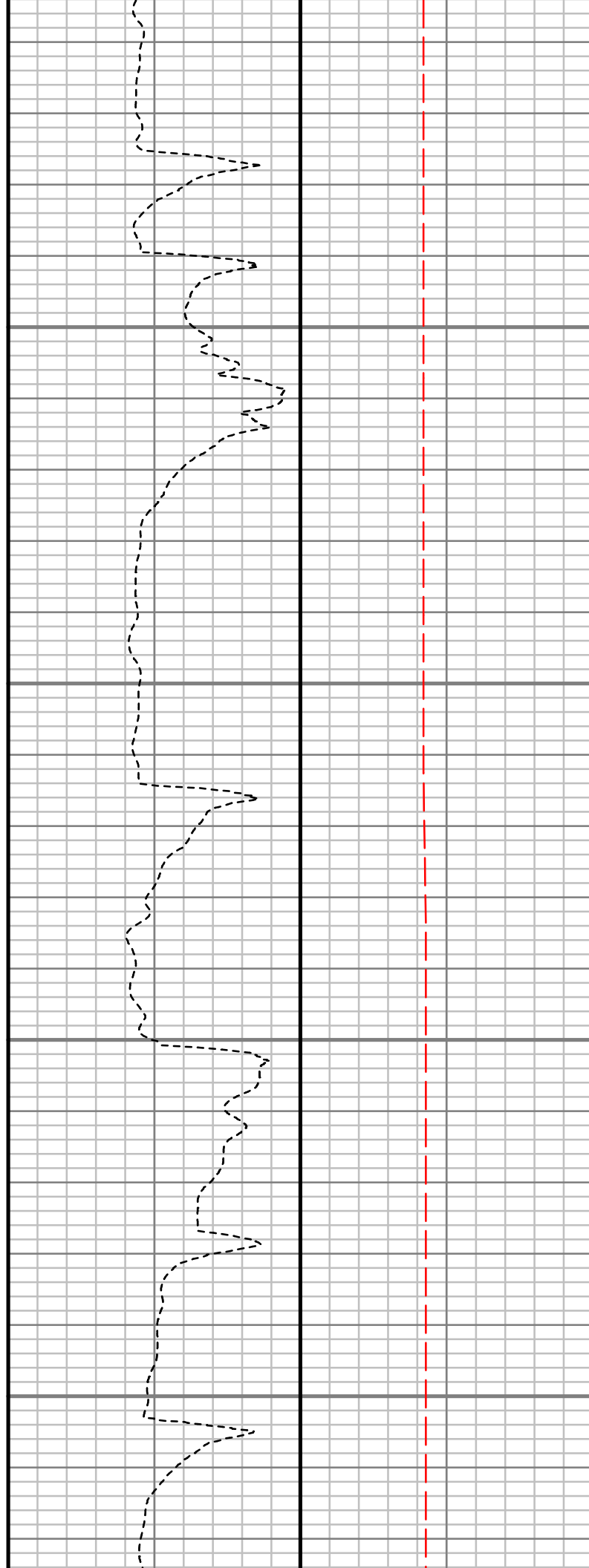
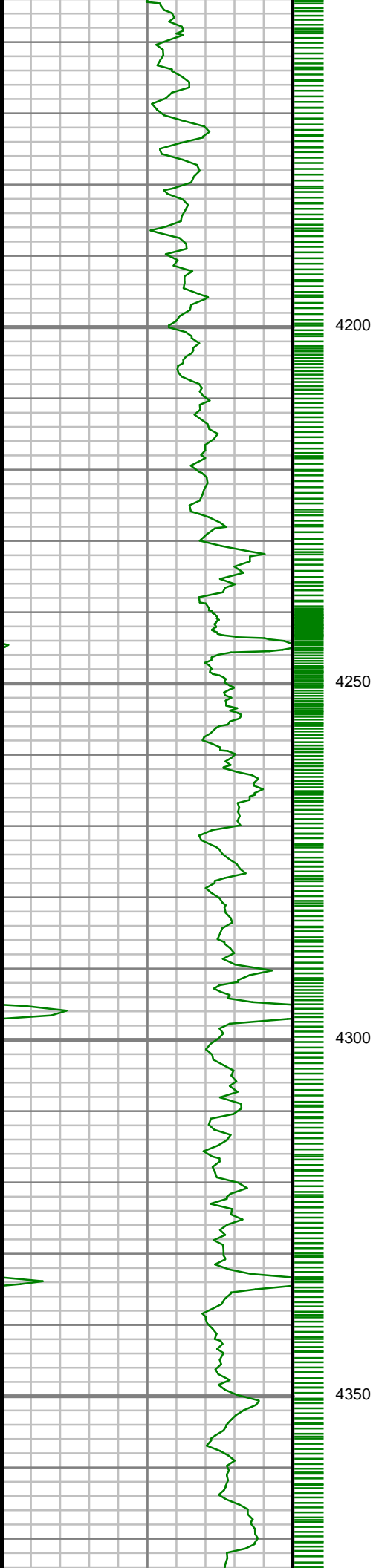
S: 83 MD: 3759.00 ft
Inc: 22.33 deg Az:
77.74 deg TVD:
3619.01 ft

S: 84 MD: 3848.00 ft
Inc: 20.99 deg Az:
76.58 deg TVD:
3701.73 ft

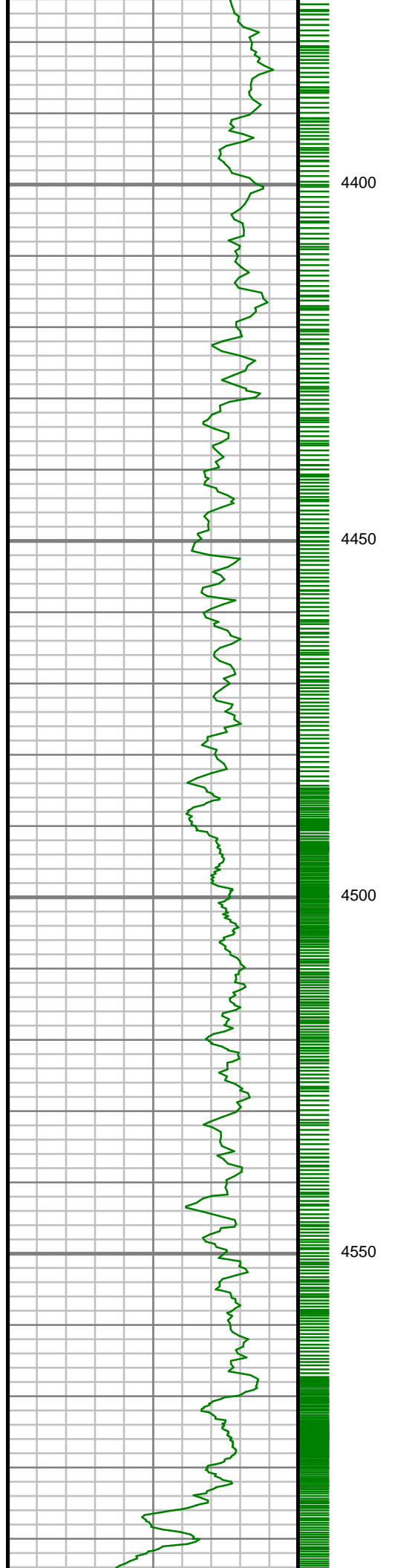


S: 85 MD: 3937.00 ft
Inc: 19.71 deg Az:
77.52 deg TVD:
3785.17 ft

S: 86 MD: 4026.00 ft
Inc: 18.60 deg Az:
80.28 deg TVD:
3869.24 ft



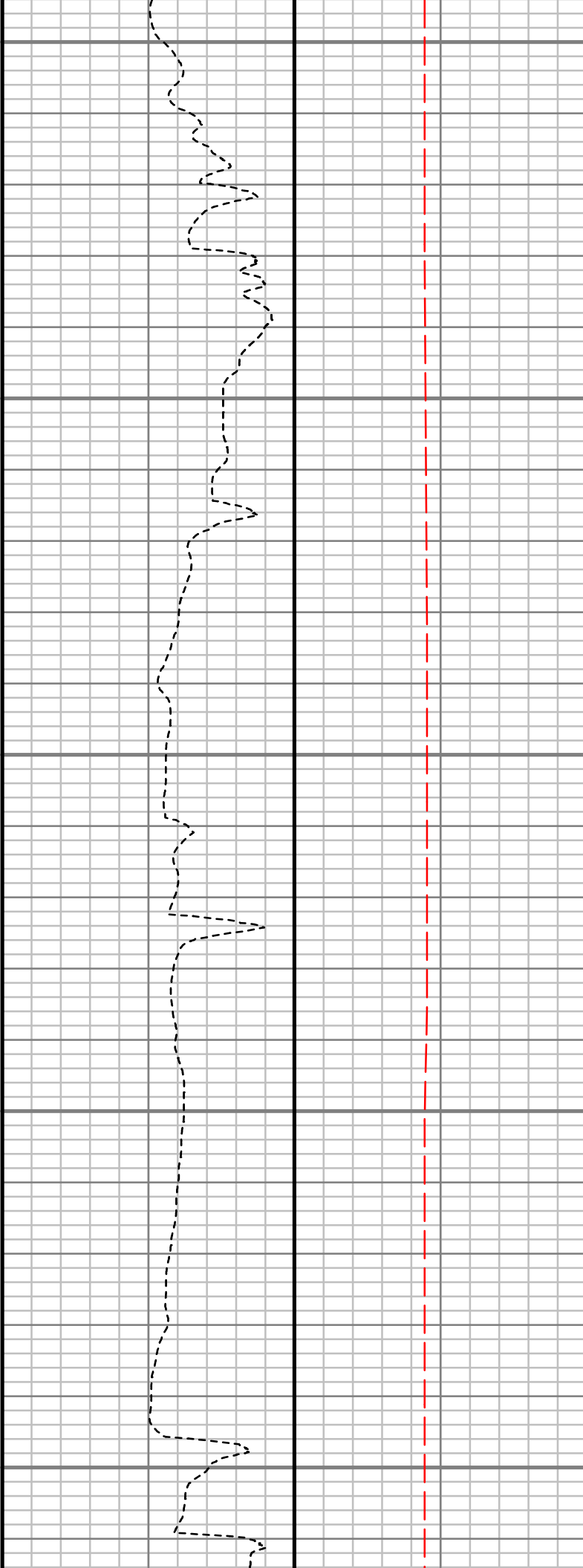
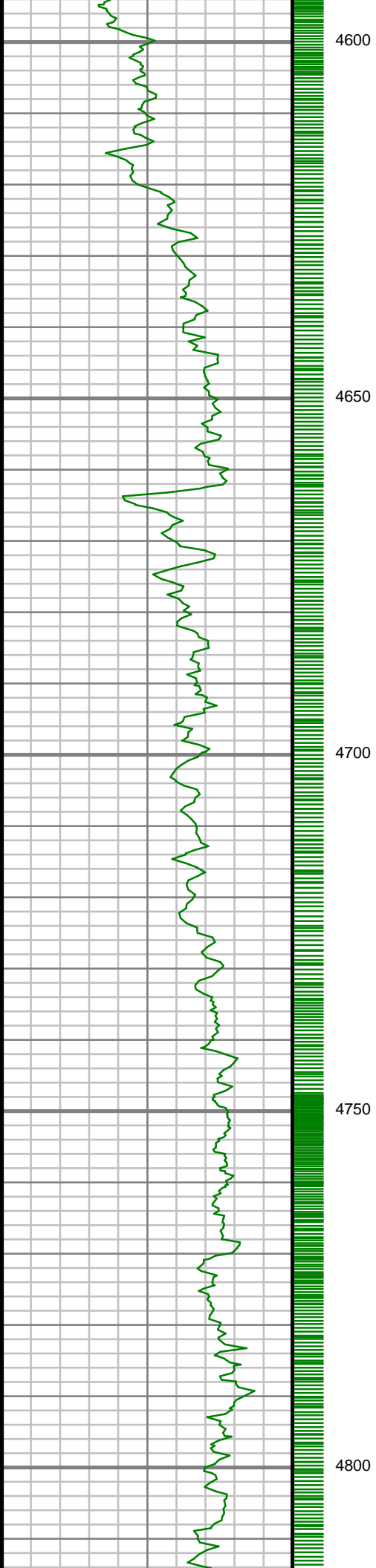
S: 87 MD: 4203.00 ft
Inc: 18.84 deg Az:
71.93 deg TVD:
4036.91 ft



S: 88 MD: 4381.00 ft
Inc: 18.28 deg Az:
77.75 deg TVD:
4205.66 ft

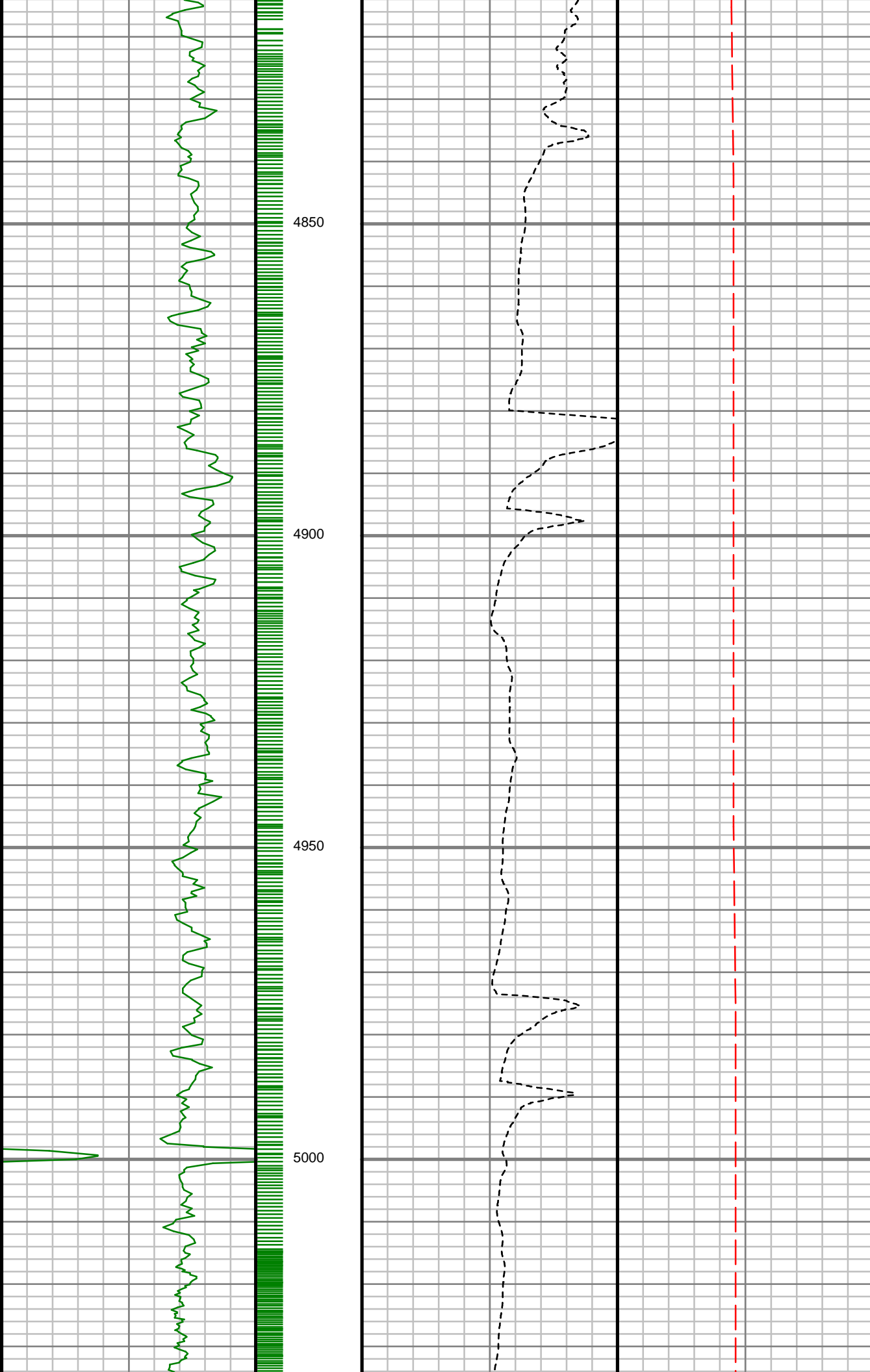
S: 89 MD: 4469.00 ft
Inc: 16.25 deg Az:
76.24 deg TVD:
4289.69 ft

S: 90 MD: 4558.00 ft
Inc: 15.32 deg Az:
74.54 deg TVD:
4375.34 ft



S: 91 MD: 4647.00 ft
Inc: 16.78 deg Az:
84.97 deg TVD:
4460.89 ft

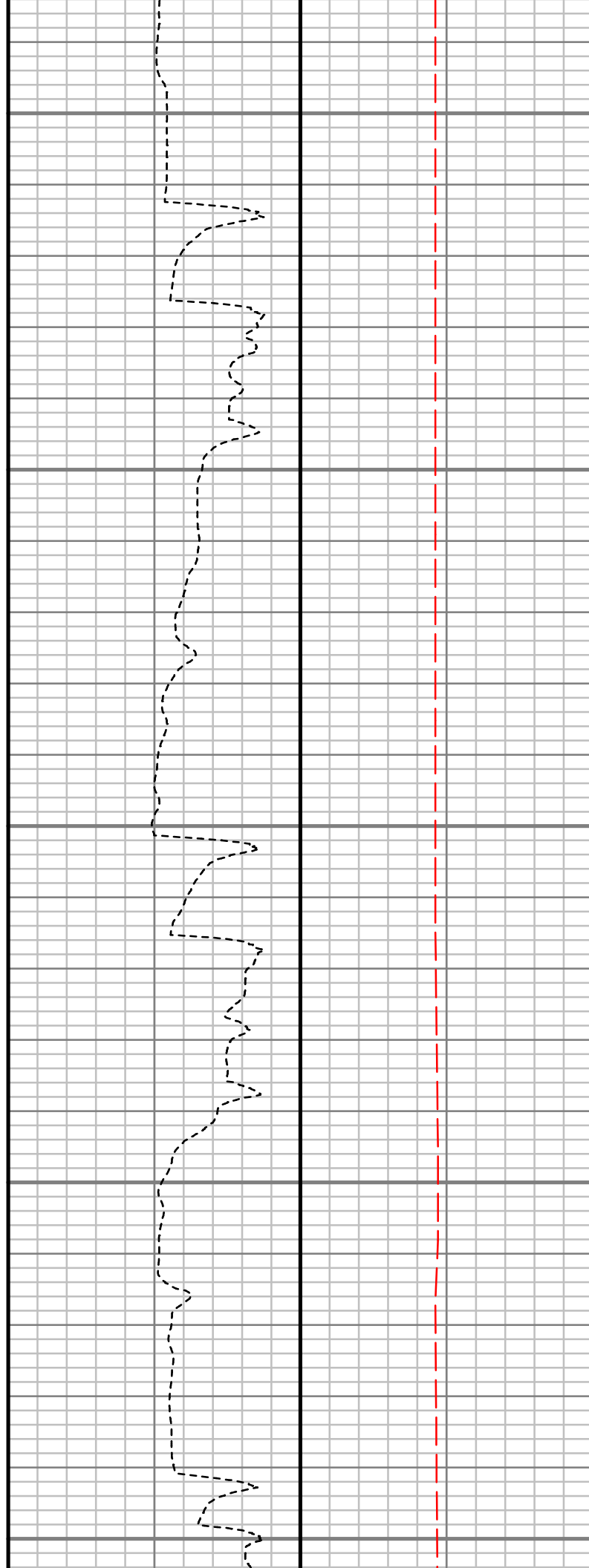
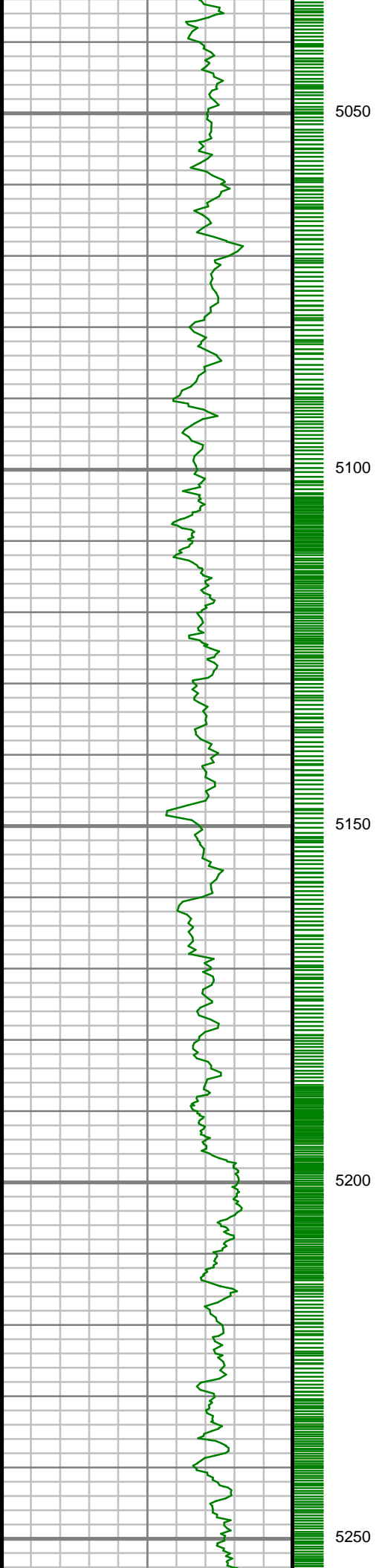
S: 92 MD: 4735.00 ft
Inc: 17.11 deg Az:
89.19 deg TVD:
4545.07 ft



S: 93 MD: 4824.00 ft
Inc: 14.40 deg Az:
82.80 deg TVD:
4630.73 ft

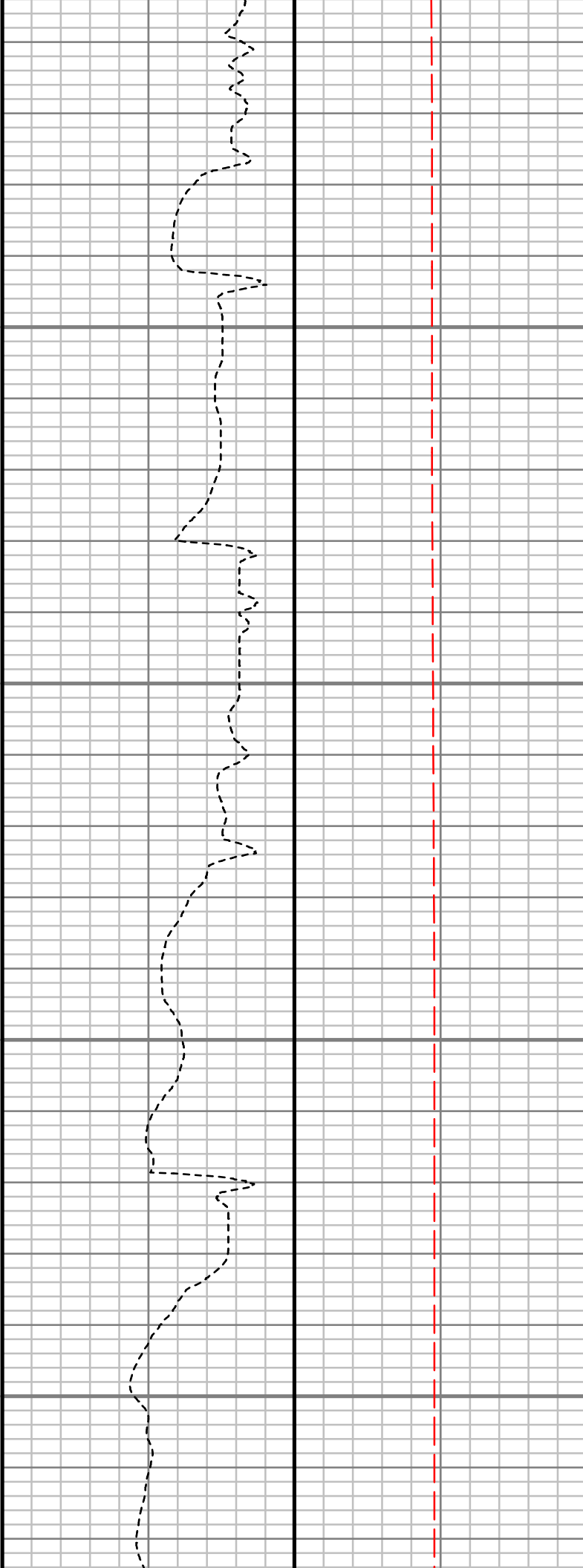
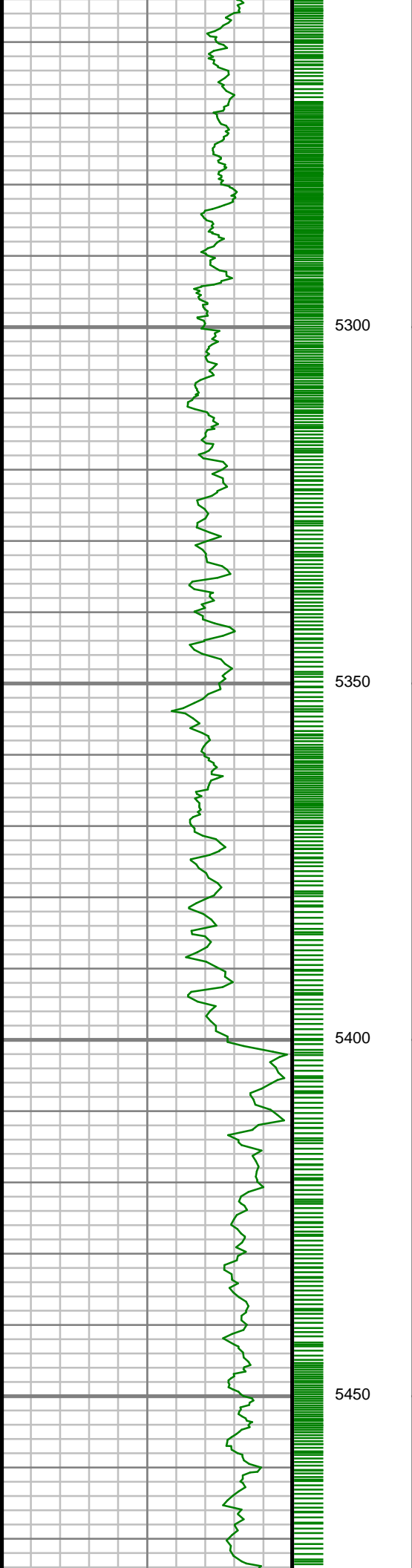
S: 94 MD: 4913.00 ft
Inc: 12.62 deg Az:
76.89 deg TVD:
4717.26 ft

S: 95 MD: 5002.00 ft
Inc: 11.14 deg Az:
74.47 deg TVD:
4804.36 ft



S: 96 MD: 5091.00 ft
Inc: 9.07 deg Az: 74.44
deg TVD: 4891.97 ft

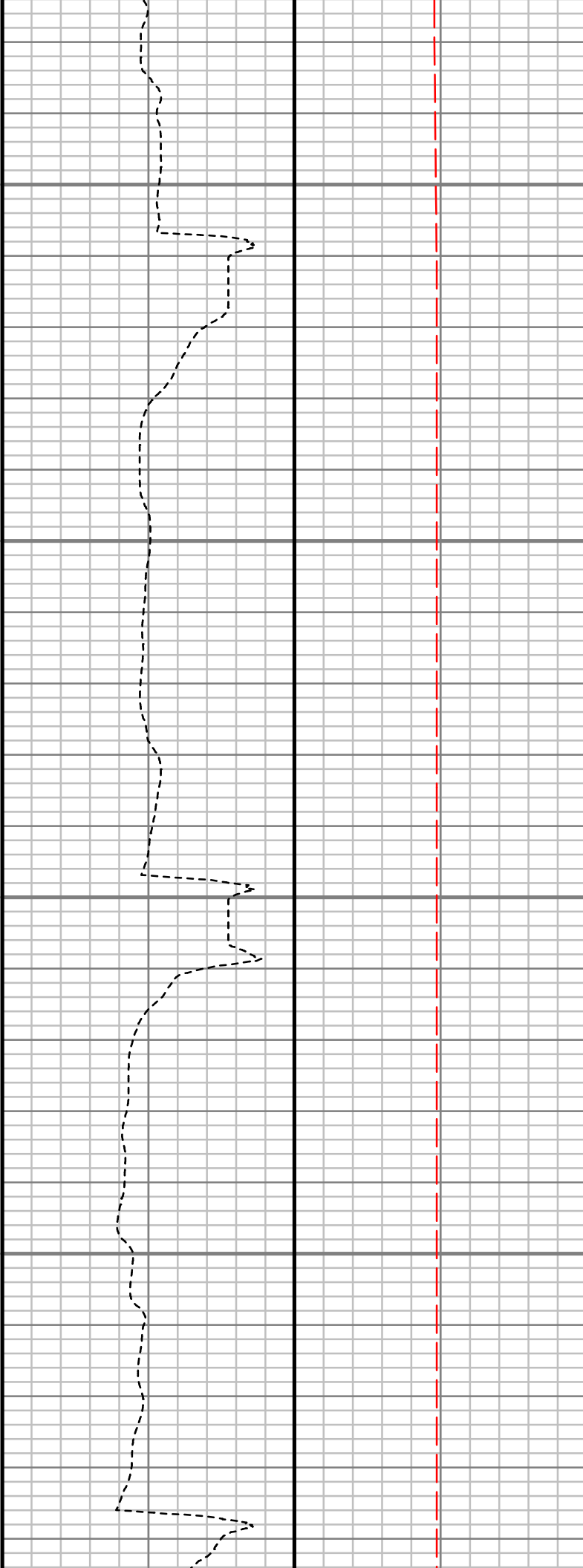
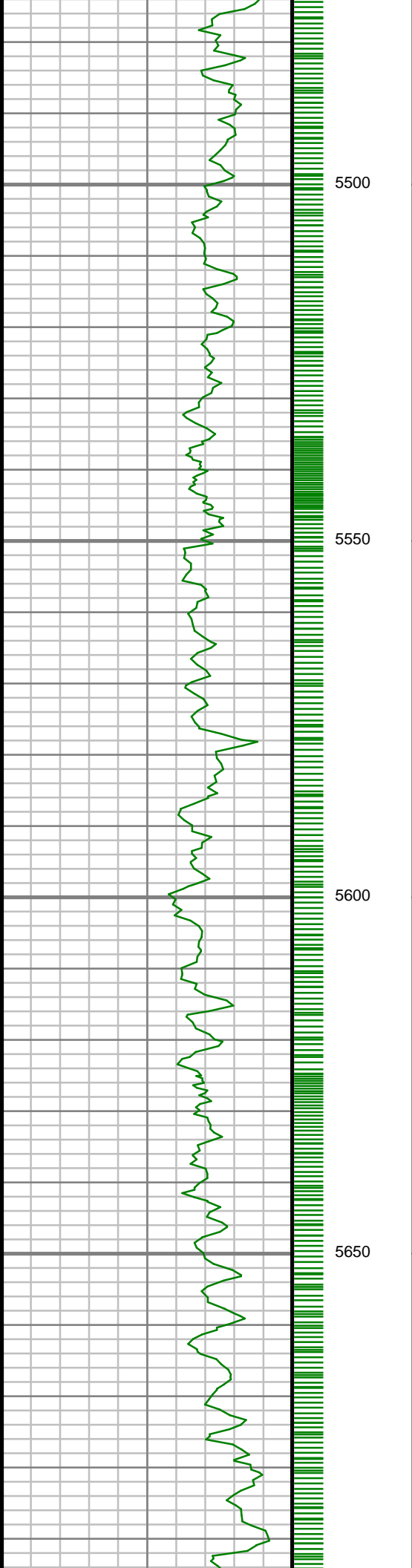
S: 97 MD: 5179.00 ft
Inc: 6.36 deg Az: 79.80
deg TVD: 4979.17 ft



S: 98 MD: 5268.00 ft
Inc: 3.69 deg Az: 95.14
deg TVD: 5067.82 ft

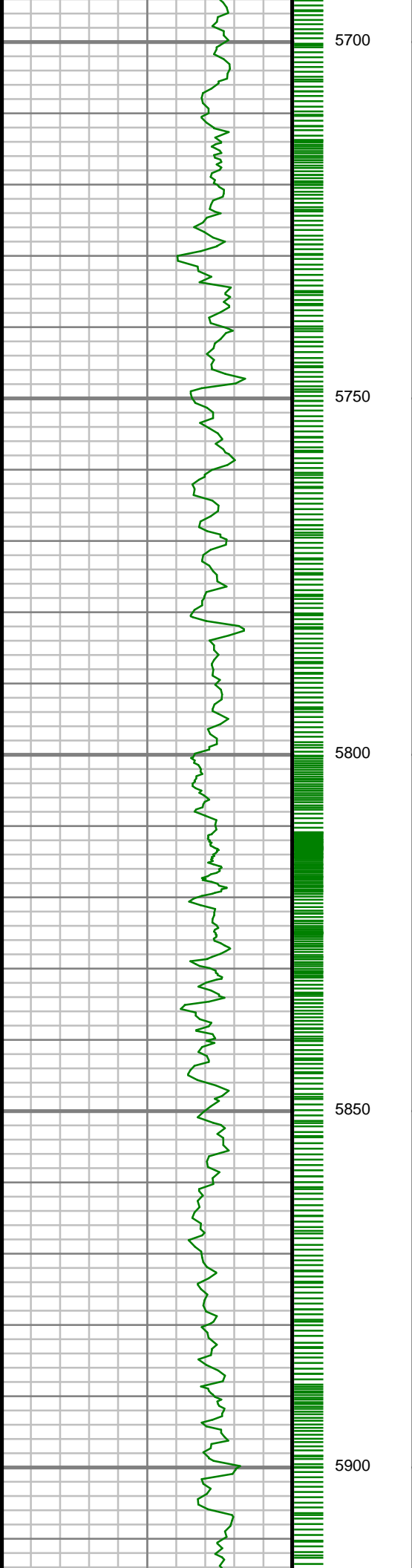
S: 99 MD: 5357.00 ft
Inc: 1.24 deg Az:
182.45 deg TVD:
5156.75 ft

S: 100 MD: 5446.00 ft
Inc: 2.03 deg Az:
228.07 deg TVD:
5245.72 ft



S: 101 MD: 5535.00 ft
Inc: 2.12 deg Az:
228.33 deg TVD:
5334.66 ft

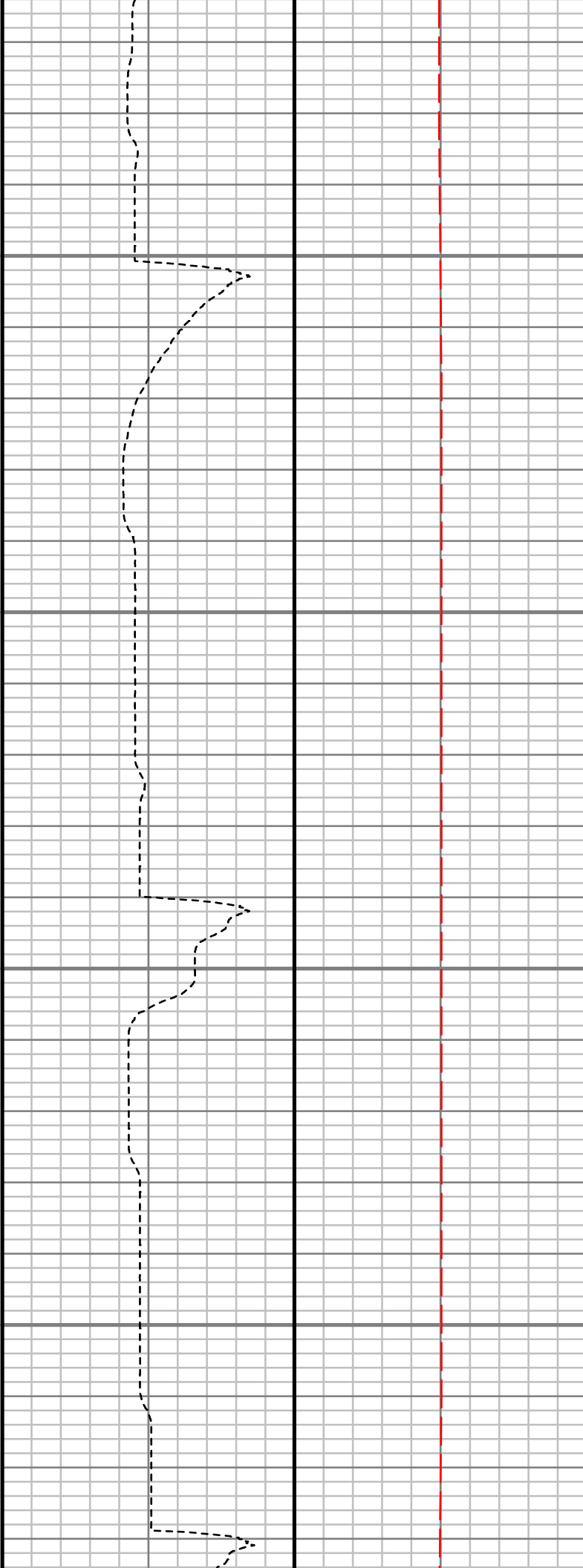
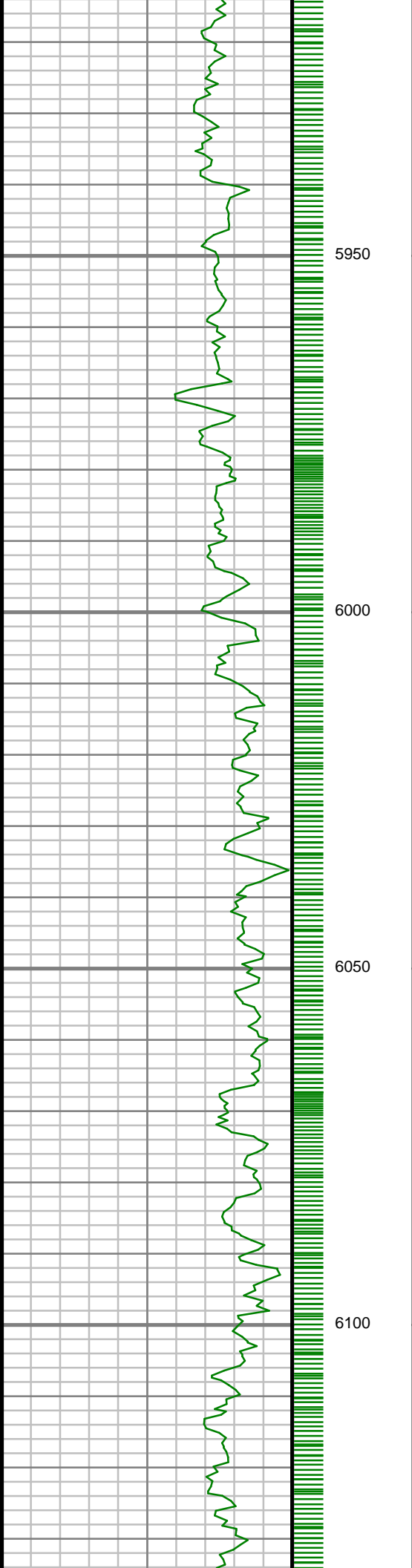
S: 102 MD: 5624.00 ft
Inc: 1.95 deg Az:
233.07 deg TVD:
5423.60 ft



S: 103 MD: 5712.00 ft
Inc: 1.83 deg Az:
242.54 deg TVD:
5511.56 ft

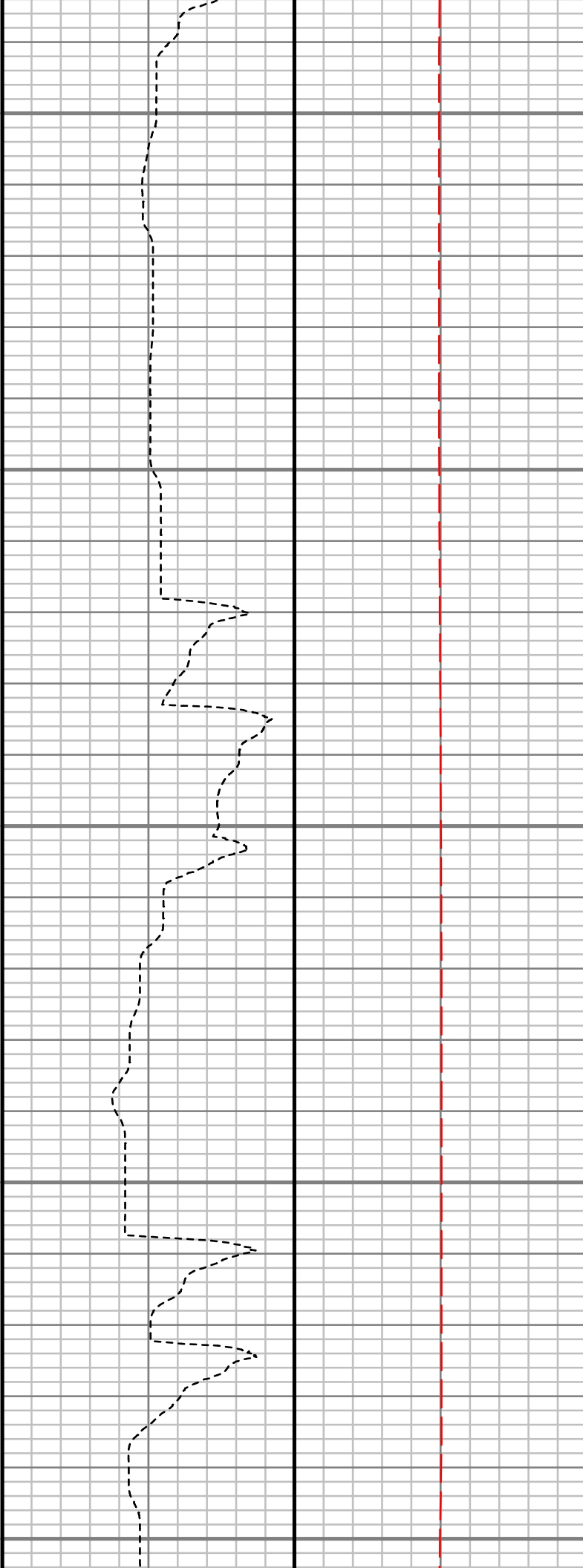
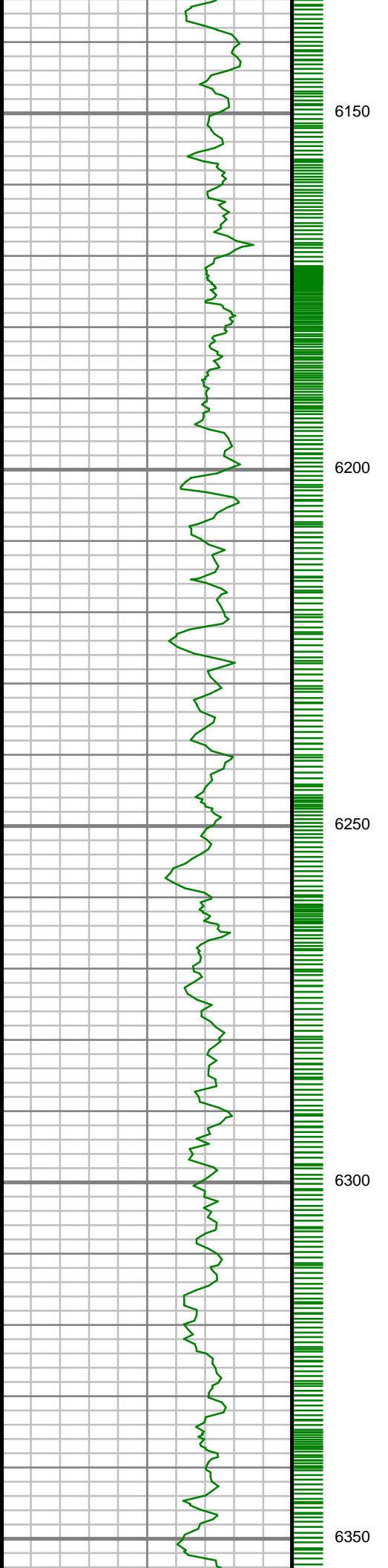
S: 104 MD: 5801.00 ft
Inc: 2.12 deg Az:
240.93 deg TVD:
5600.50 ft

S: 105 MD: 5890.00 ft
Inc: 1.15 deg Az:
289.77 deg TVD:
5689.47 ft



S: 106 MD: 5979.00 ft
Inc: 0.99 deg Az:
289.13 deg TVD:
5778.45 ft

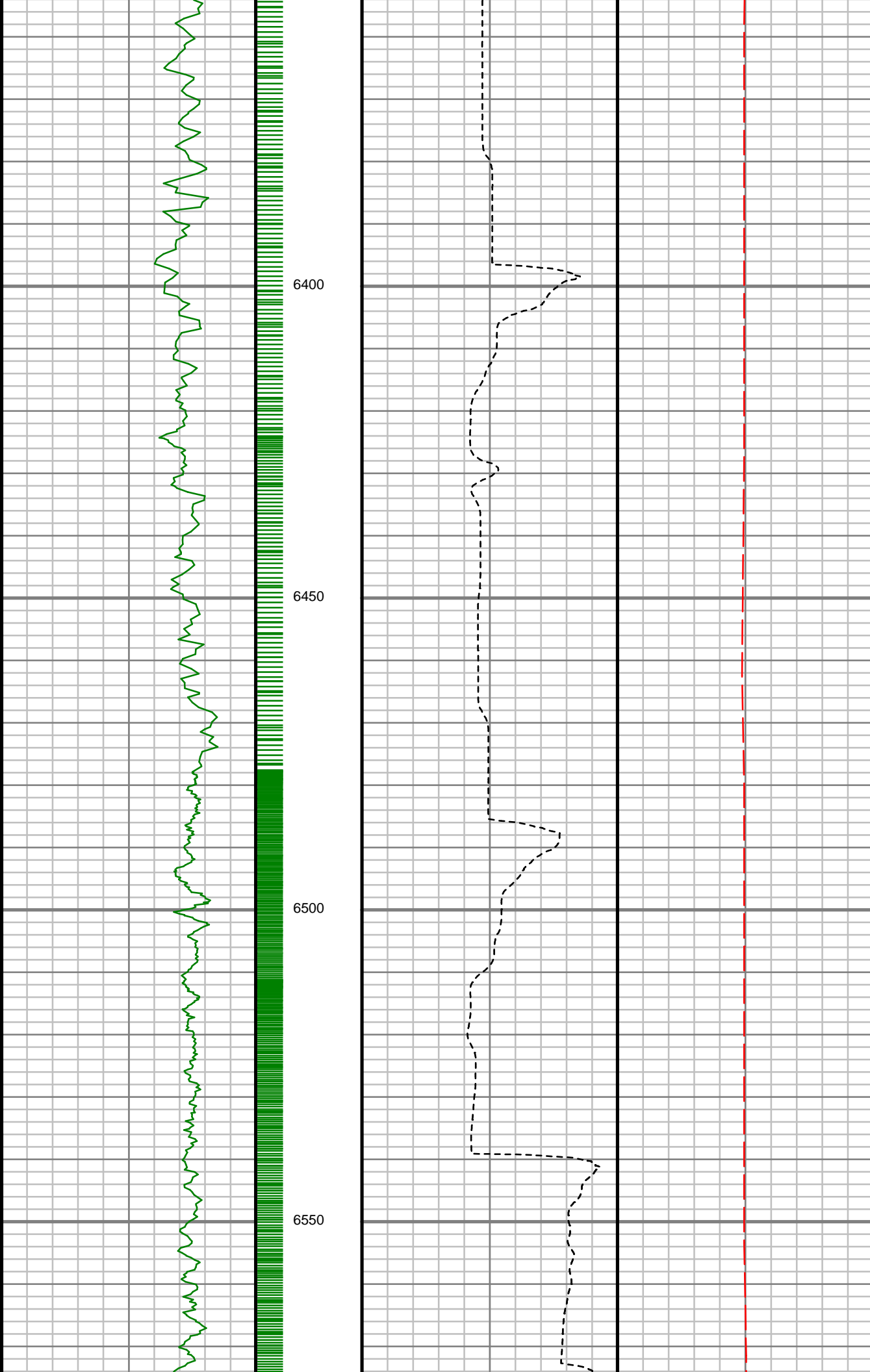
S: 107 MD: 6068.00 ft
Inc: 1.36 deg Az:
278.17 deg TVD:
5867.43 ft



S: 108 MD: 6157.00 ft
Inc: 1.61 deg Az:
272.03 deg TVD:
5956.40 ft

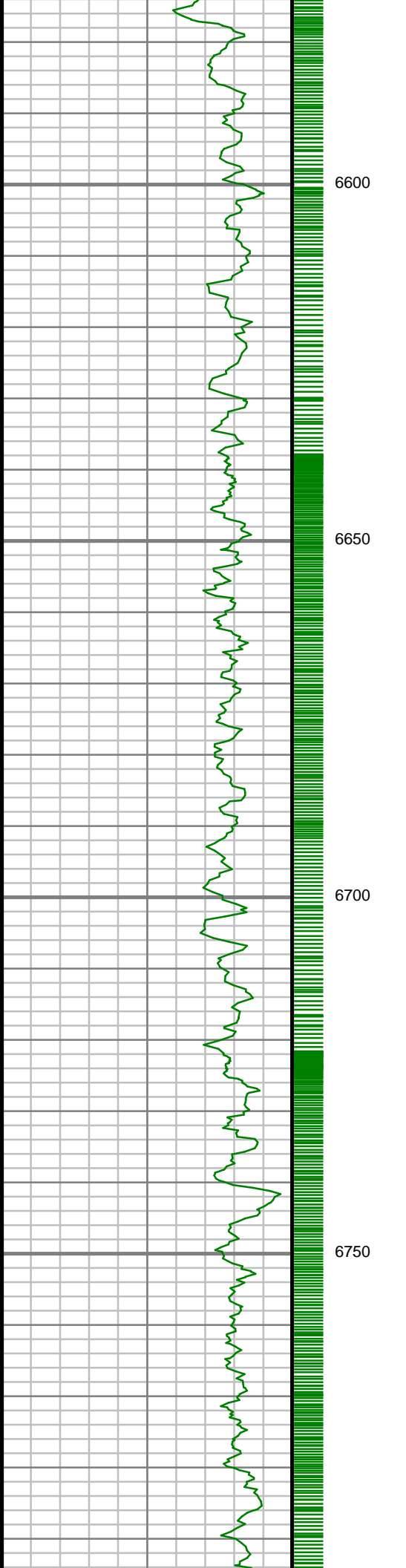
S: 109 MD: 6246.00 ft
Inc: 0.15 deg Az:
259.62 deg TVD:
6045.39 ft

S: 110 MD: 6334.00 ft
Inc: 0.61 deg Az:
276.54 deg TVD:
6133.39 ft



S: 111 MD: 6423.00 ft
Inc: 1.32 deg Az:
266.59 deg TVD:
6222.38 ft

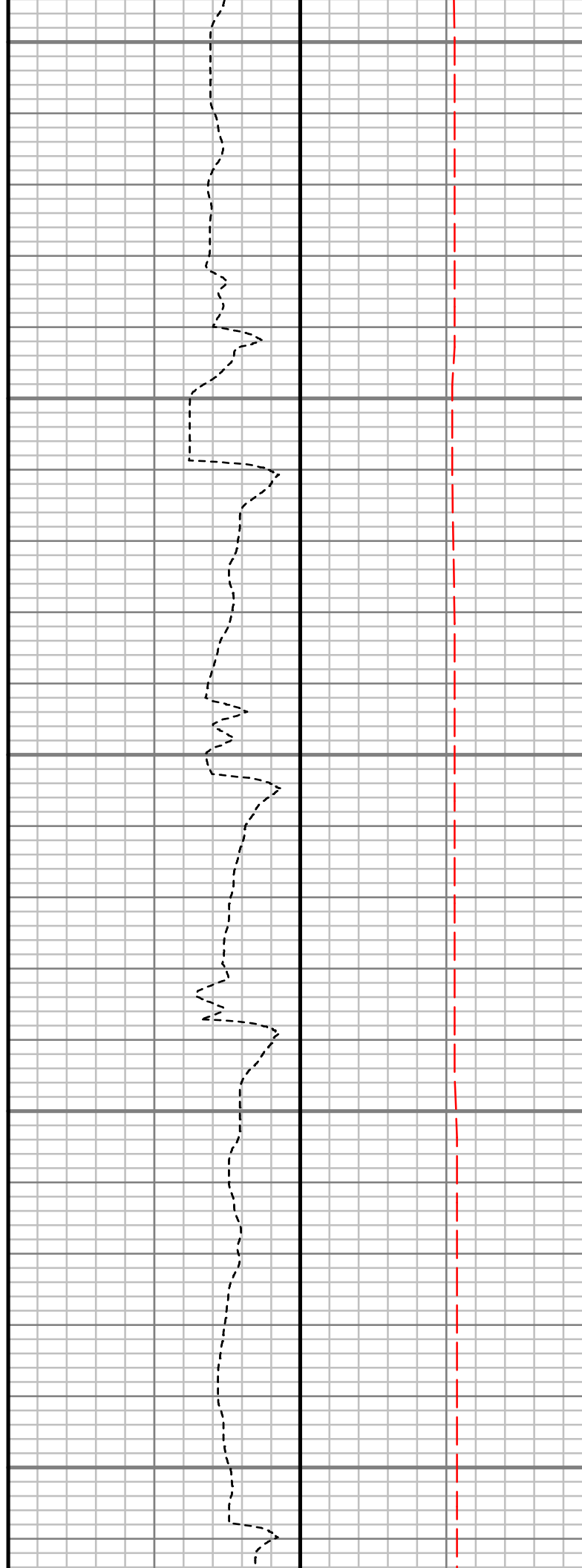
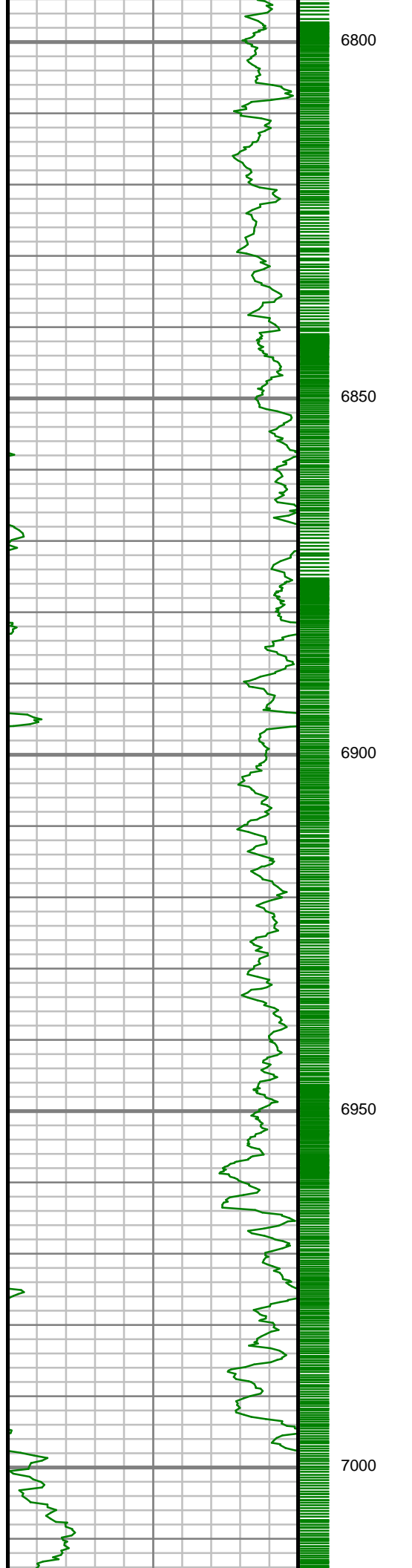
S: 112 MD: 6512.00 ft
Inc: 1.72 deg Az:
259.66 deg TVD:
6311.35 ft



S: 113 MD: 6601.00 ft
Inc: 9.74 deg Az:
193.82 deg TVD:
6399.87 ft

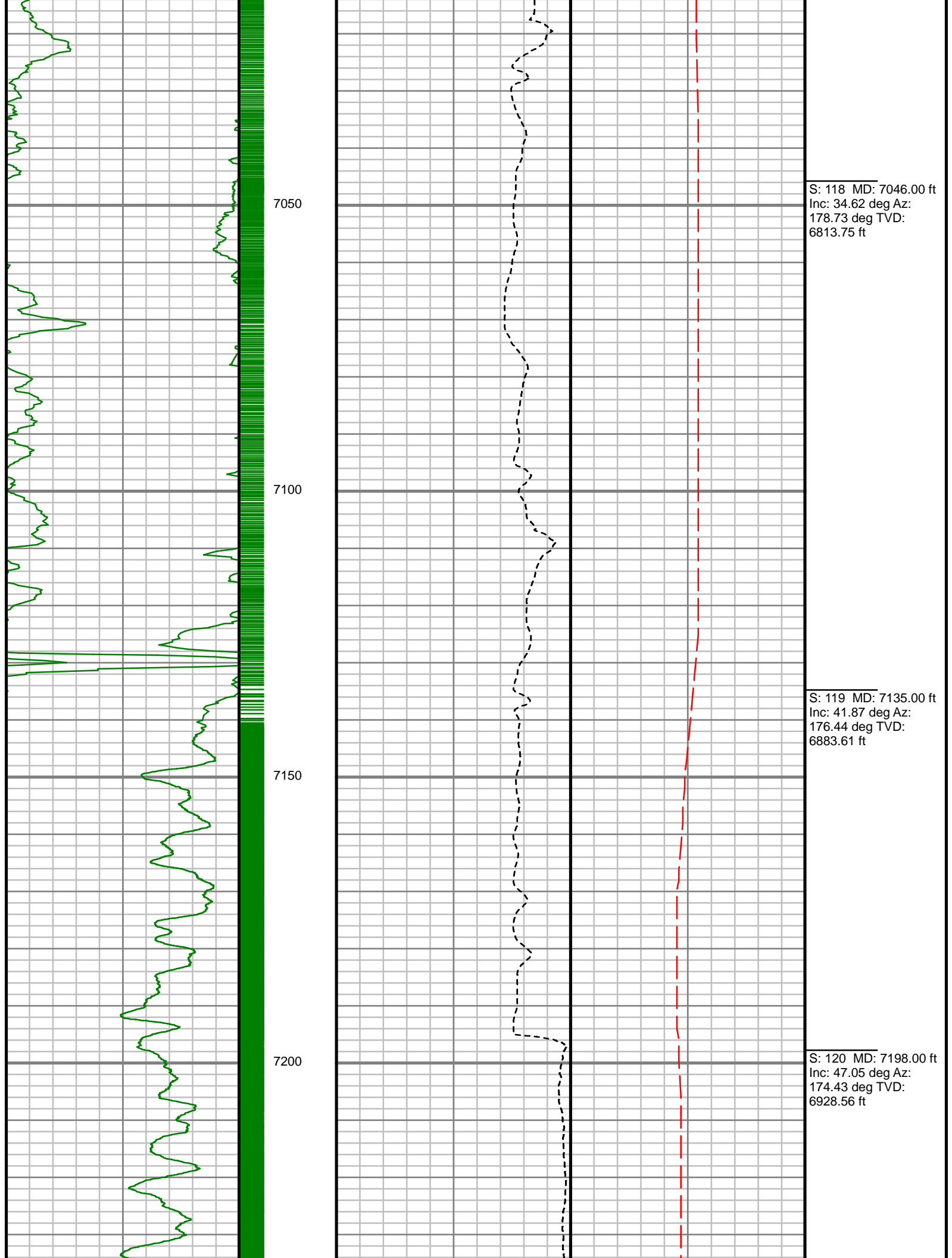
S: 114 MD: 6690.00 ft
Inc: 13.63 deg Az:
192.20 deg TVD:
6487.01 ft

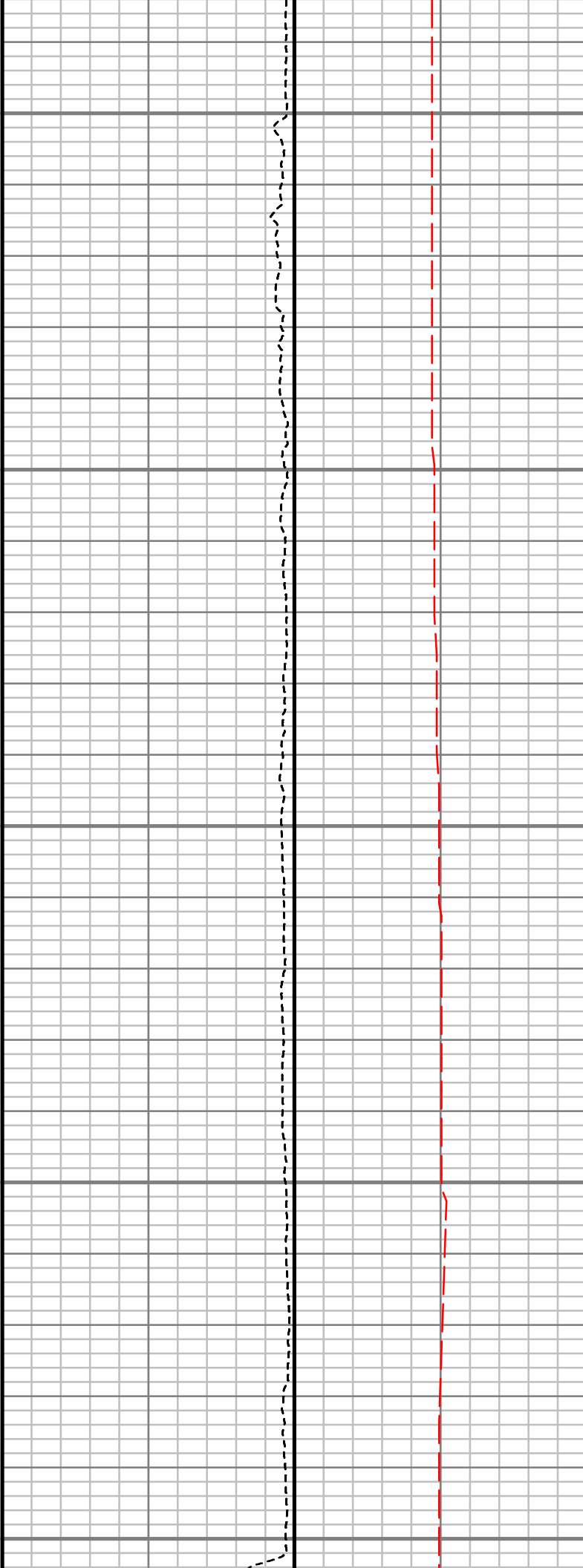
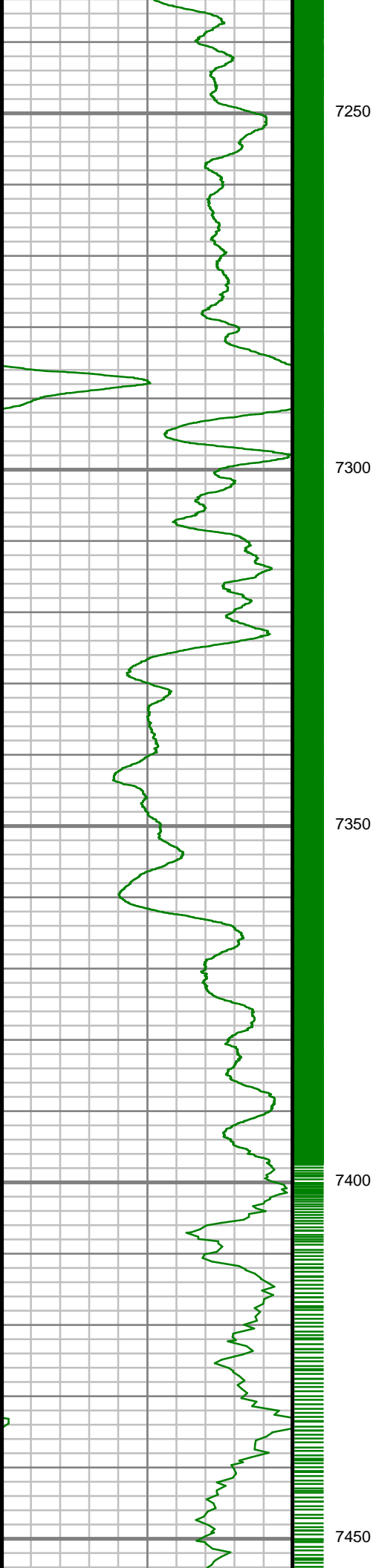
S: 115 MD: 6779.00 ft
Inc: 17.42 deg Az:
187.41 deg TVD:
6572.75 ft



S: 116 MD: 6868.00 ft
Inc: 21.04 deg Az:
178.61 deg TVD:
6656.79 ft

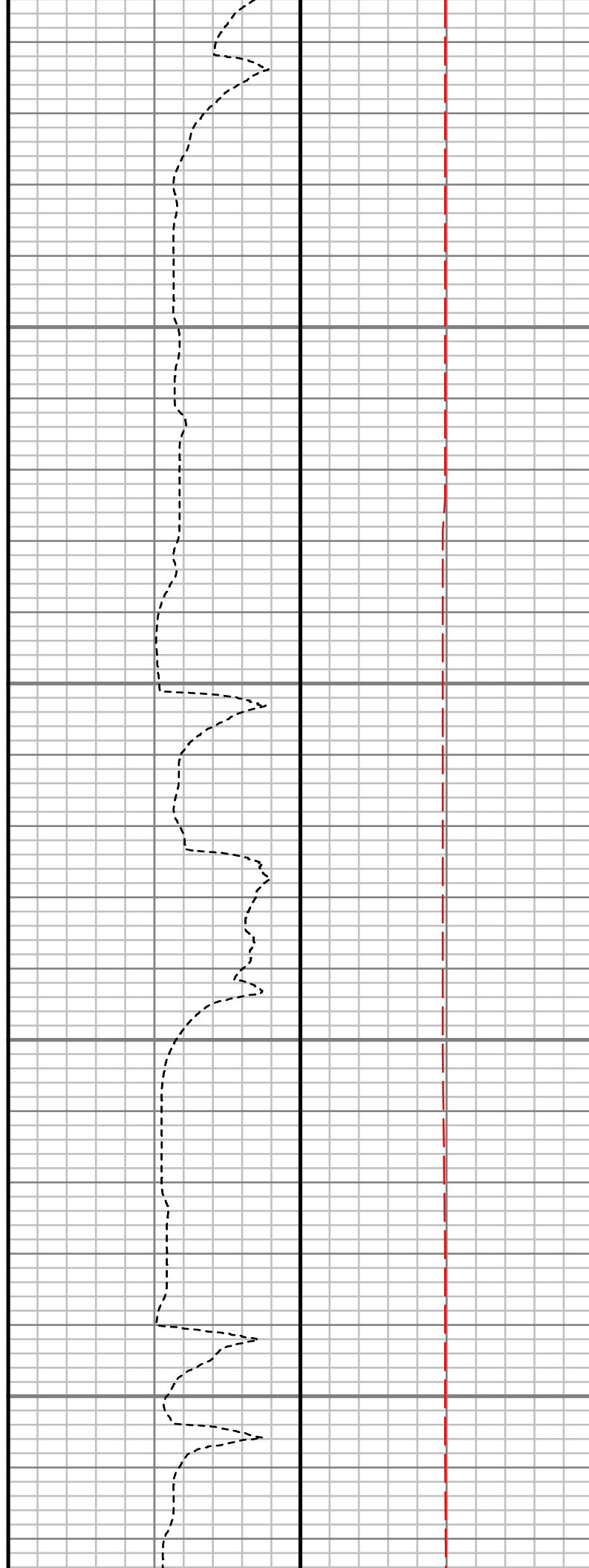
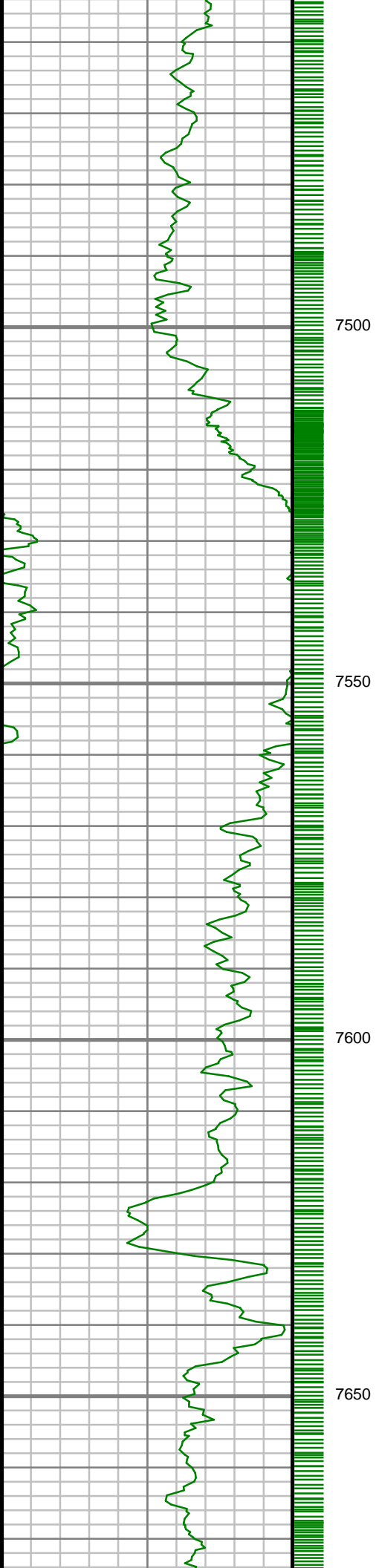
S: 117 MD: 6957.00 ft
Inc: 27.94 deg Az:
177.03 deg TVD:
6737.73 ft





S: 121 MD: 7287.00 ft
Inc: 58.95 deg Az:
173.14 deg TVD:
6982.02 ft

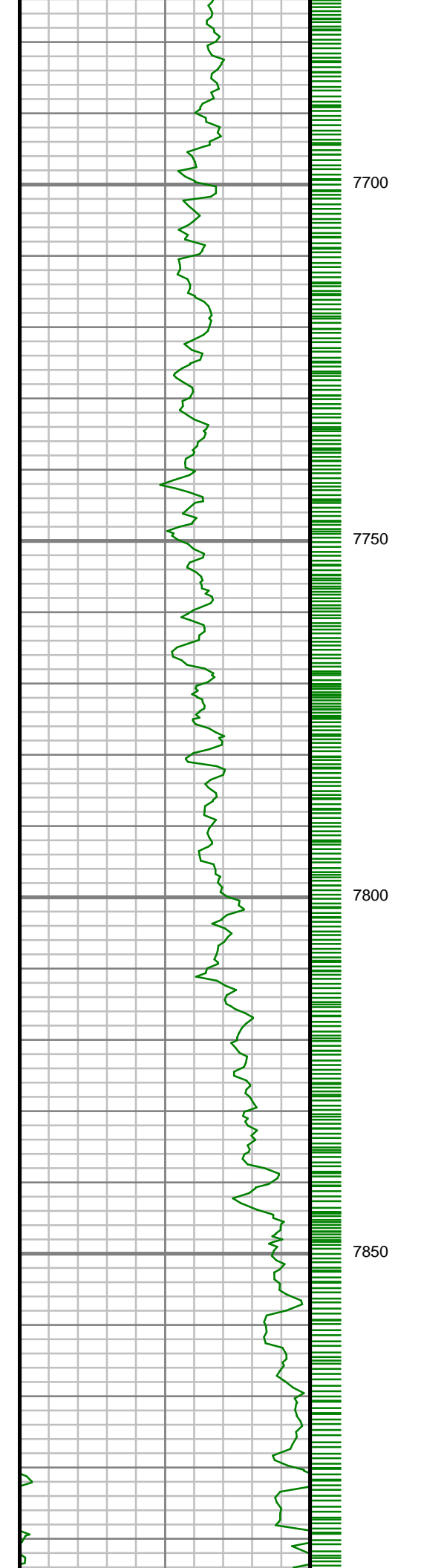
S: 122 MD: 7375.00 ft
Inc: 73.41 deg Az:
174.39 deg TVD:
7017.46 ft



S: 123 MD: 7490.00 ft
Inc: 86.98 deg Az:
178.12 deg TVD:
7037.00 ft

S: 124 MD: 7579.00 ft
Inc: 87.59 deg Az:
178.37 deg TVD:
7041.21 ft

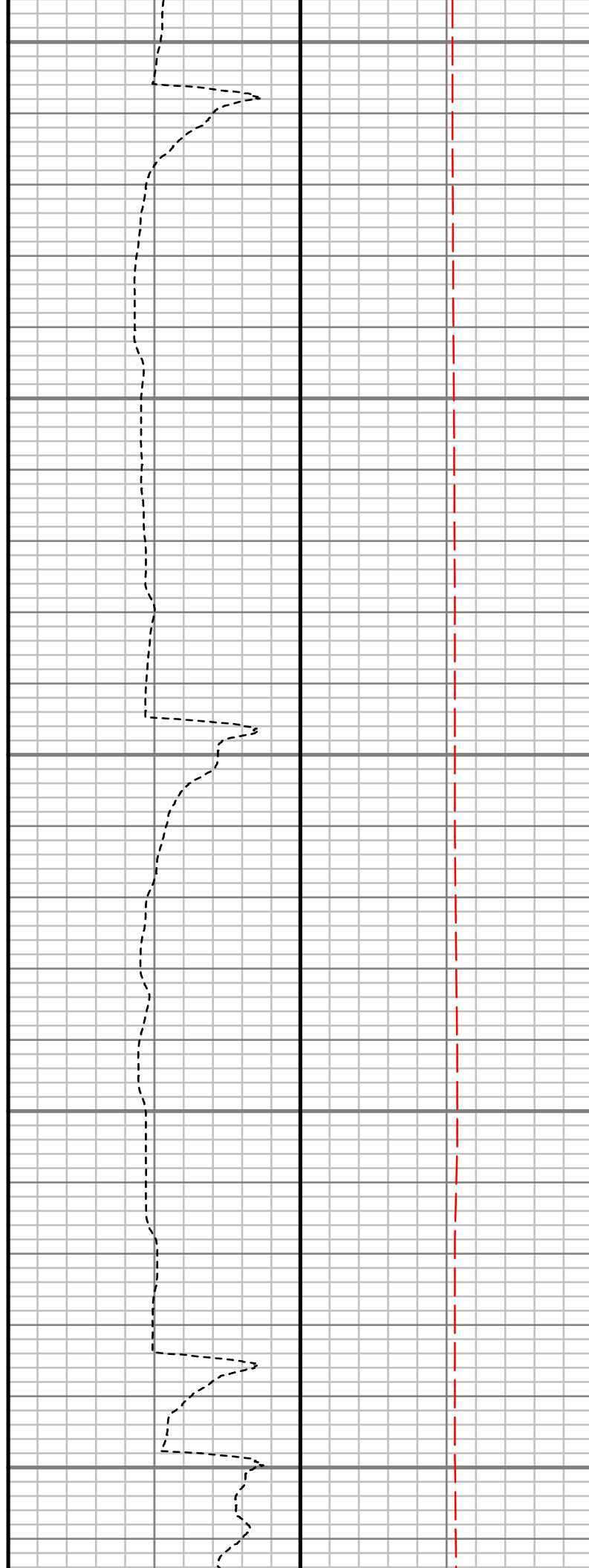
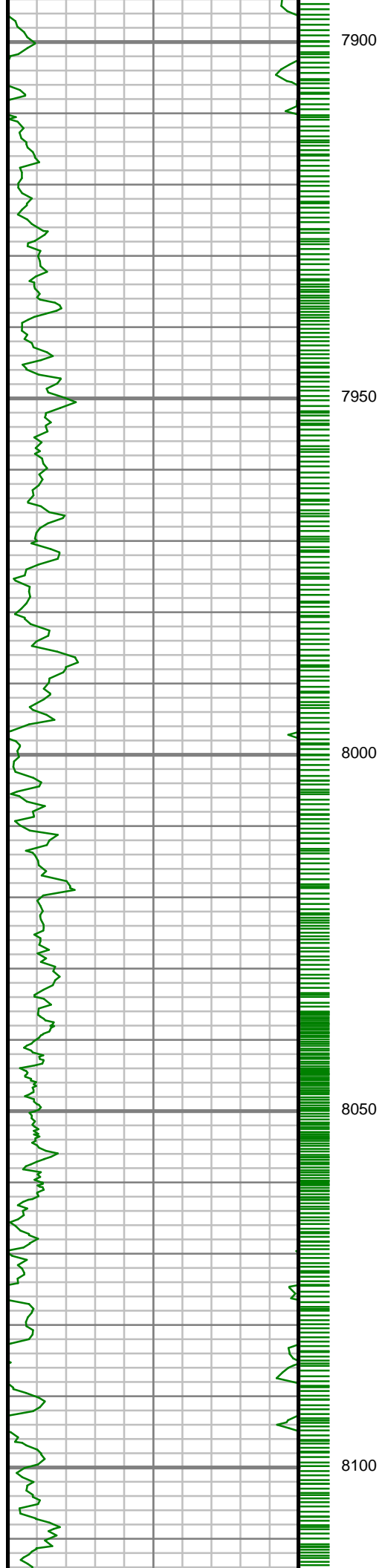
S: 125 MD: 7668.00 ft
Inc: 88.66 deg Az:
178.40 deg TVD:



178.40 deg TVD:
7044.12 ft

S: 126 MD: 7757.00 ft
Inc: 89.00 deg Az:
178.59 deg TVD:
7045.94 ft

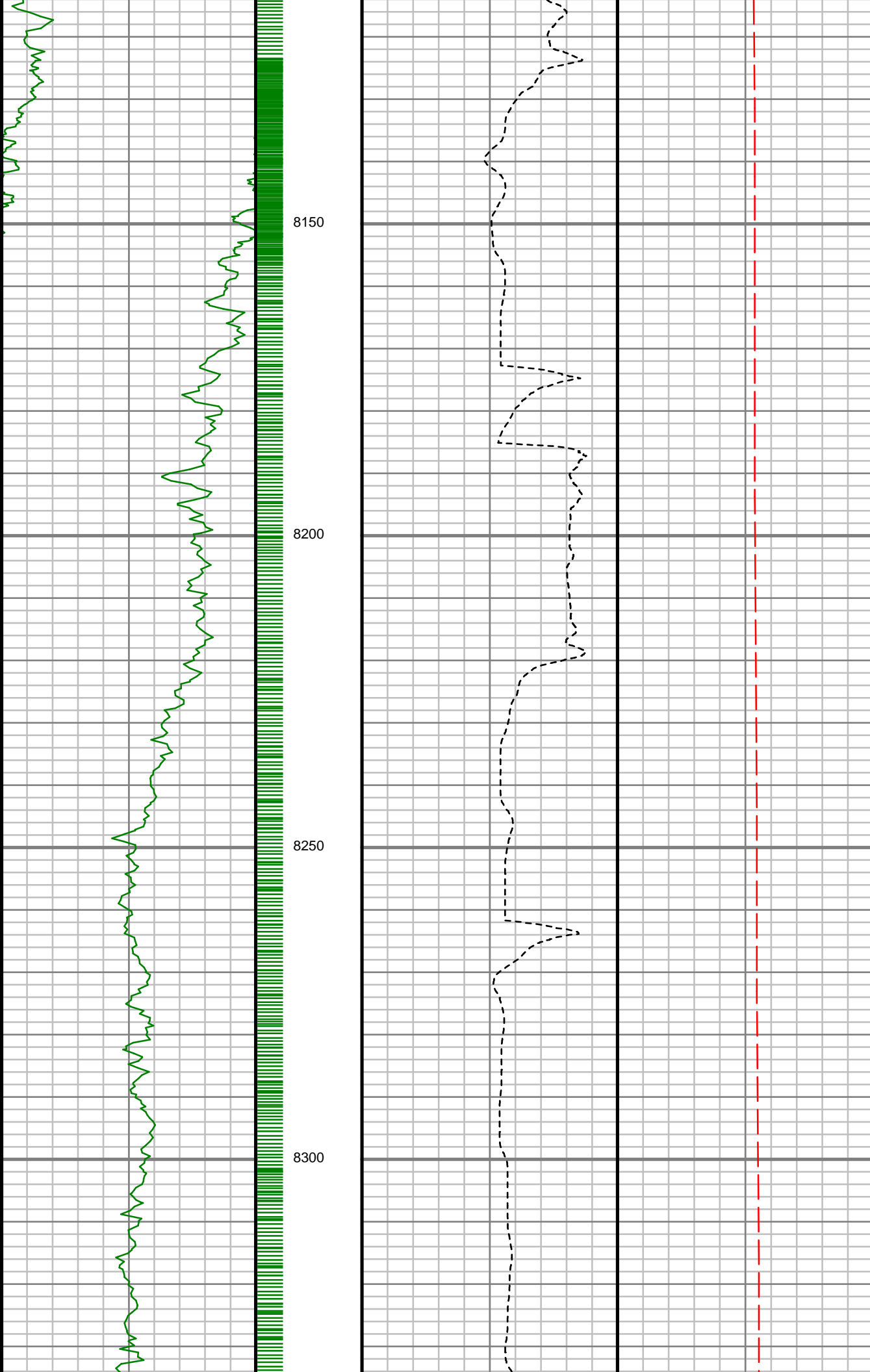
S: 127 MD: 7845.00 ft
Inc: 89.33 deg Az:
178.25 deg TVD:
7047.22 ft



S: 128 MD: 7934.00 ft
Inc: 88.96 deg Az:
176.80 deg TVD:
7048.55 ft

S: 129 MD: 8023.00 ft
Inc: 90.07 deg Az:
178.22 deg TVD:
7049.31 ft

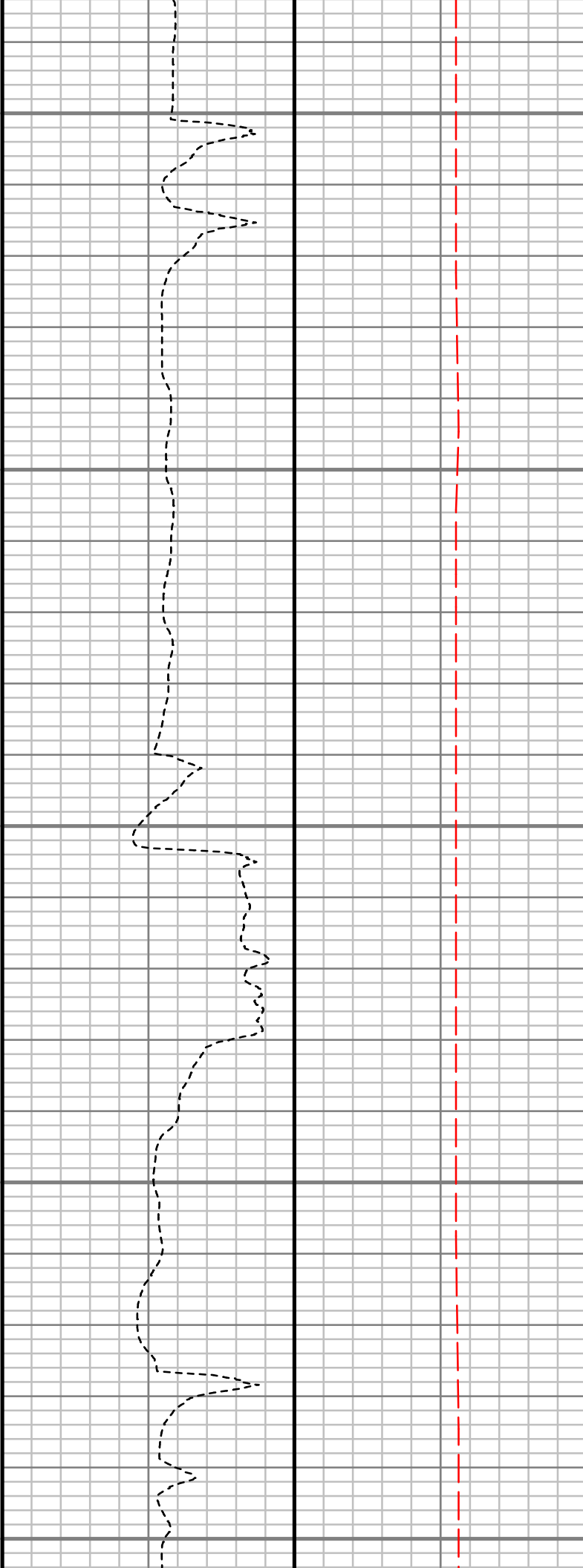
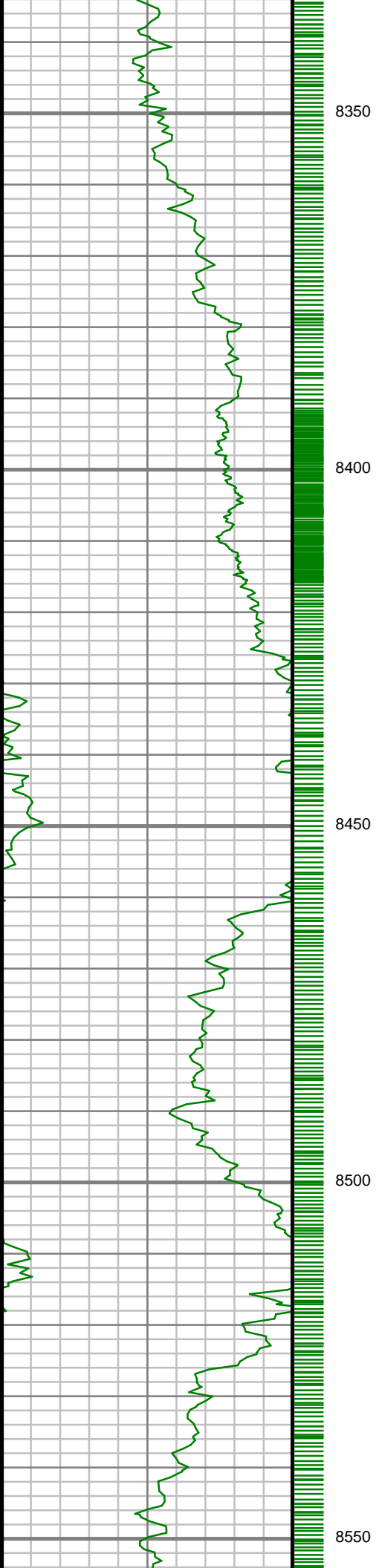
S: 130 MD: 8111.00 ft
Inc: 92.50 deg Az:
179.72 deg TVD:
7050.11 ft



Inc: 88.56 deg Az:
177.79 deg TVD:
7050.37 ft

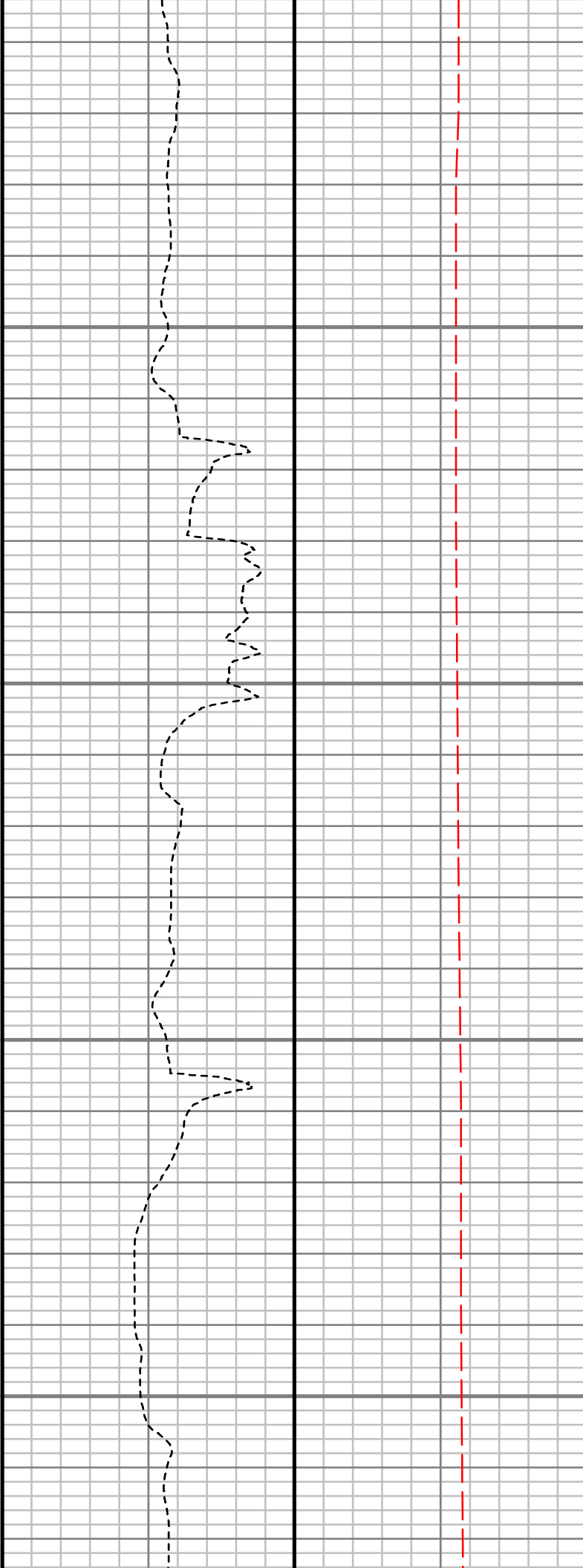
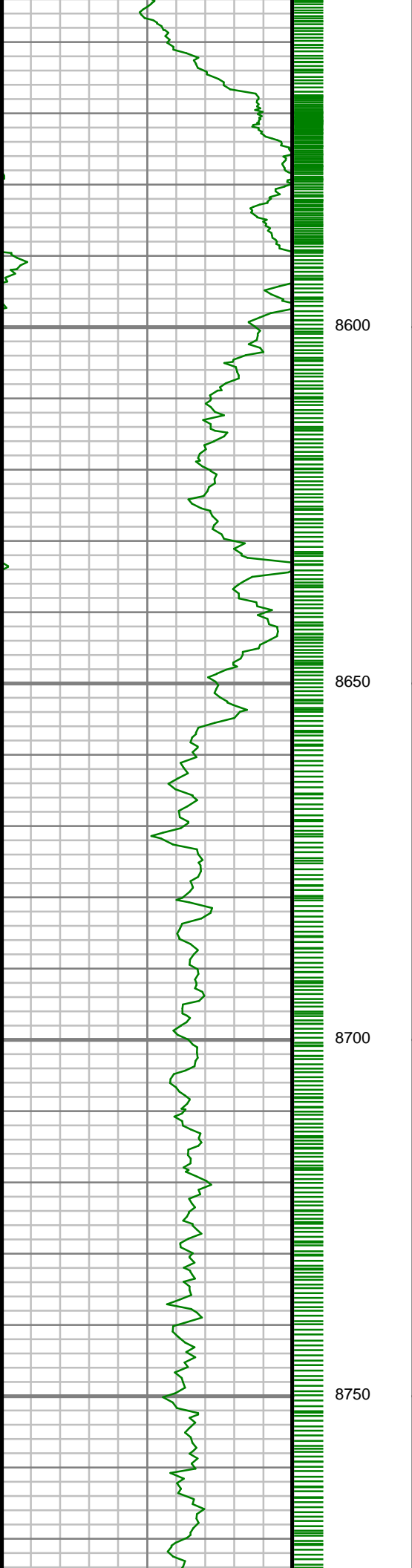
S: 131 MD: 8200.00 ft
Inc: 88.59 deg Az:
182.26 deg TVD:
7052.58 ft

S: 132 MD: 8289.00 ft
Inc: 87.92 deg Az:
183.61 deg TVD:
7055.28 ft



S: 133 MD: 8378.00 ft
Inc: 87.93 deg Az:
184.02 deg TVD:
7058.51 ft

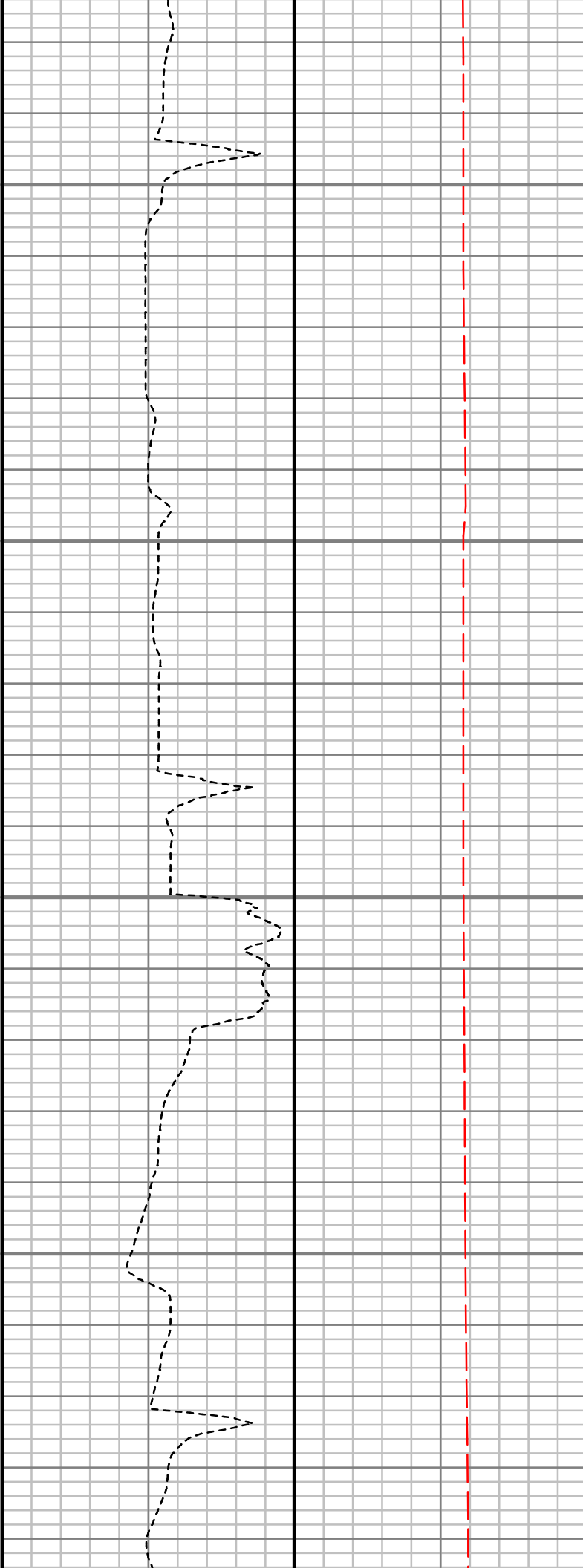
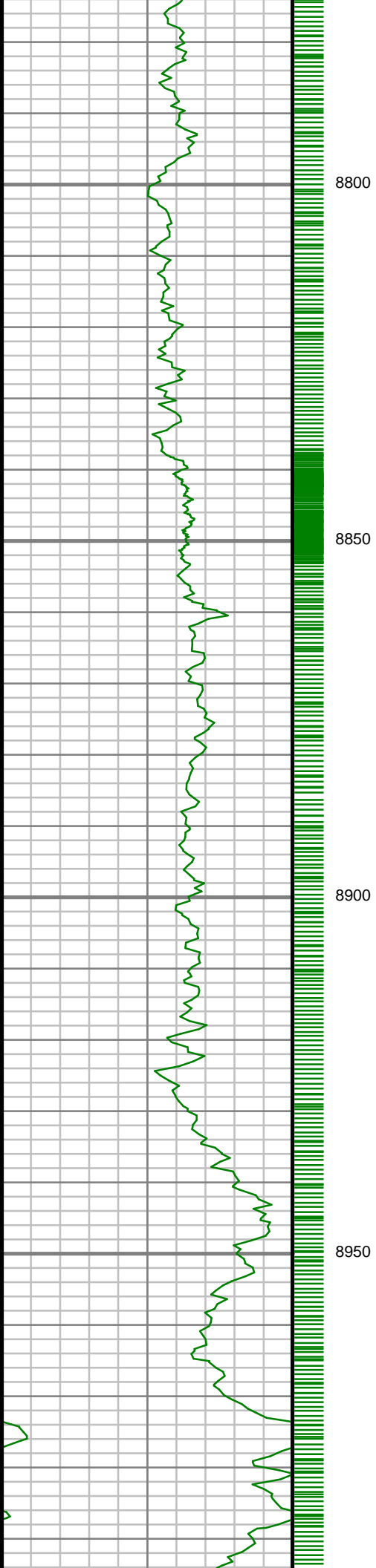
S: 134 MD: 8466.00 ft
Inc: 86.68 deg Az:
182.12 deg TVD:
7062.64 ft



S: 135 MD: 8555.00 ft
Inc: 85.71 deg Az:
181.32 deg TVD:
7068.55 ft

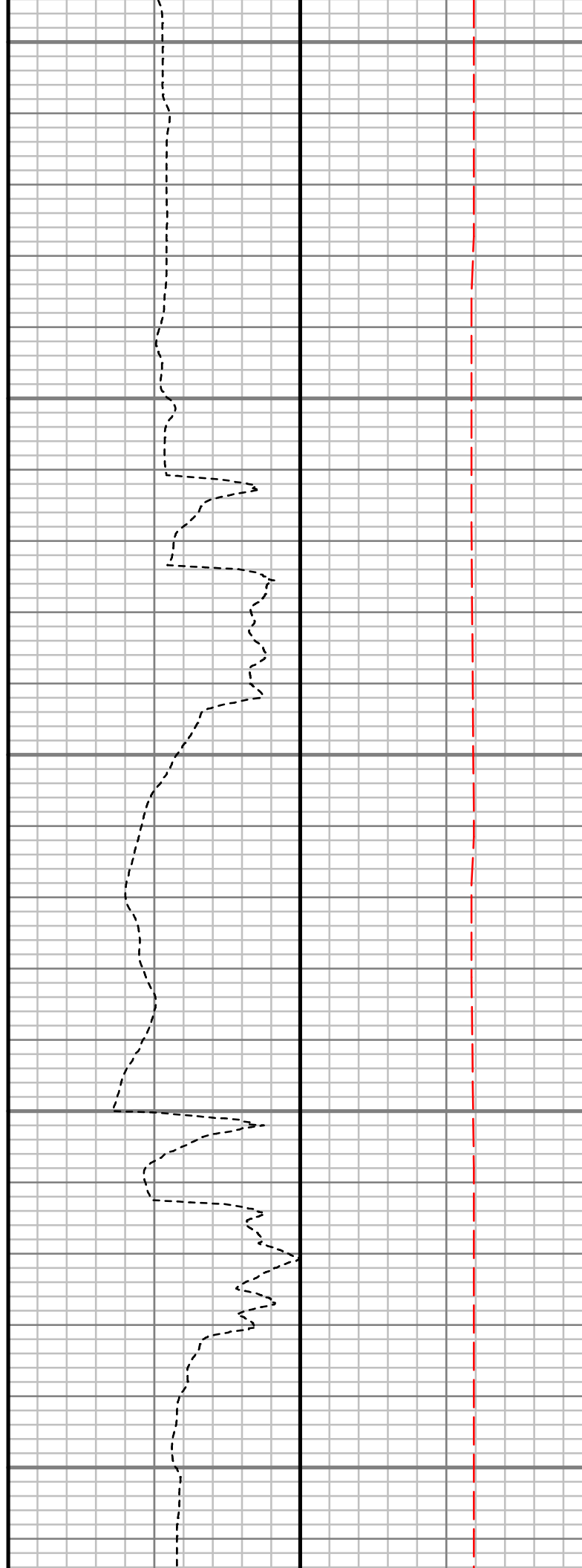
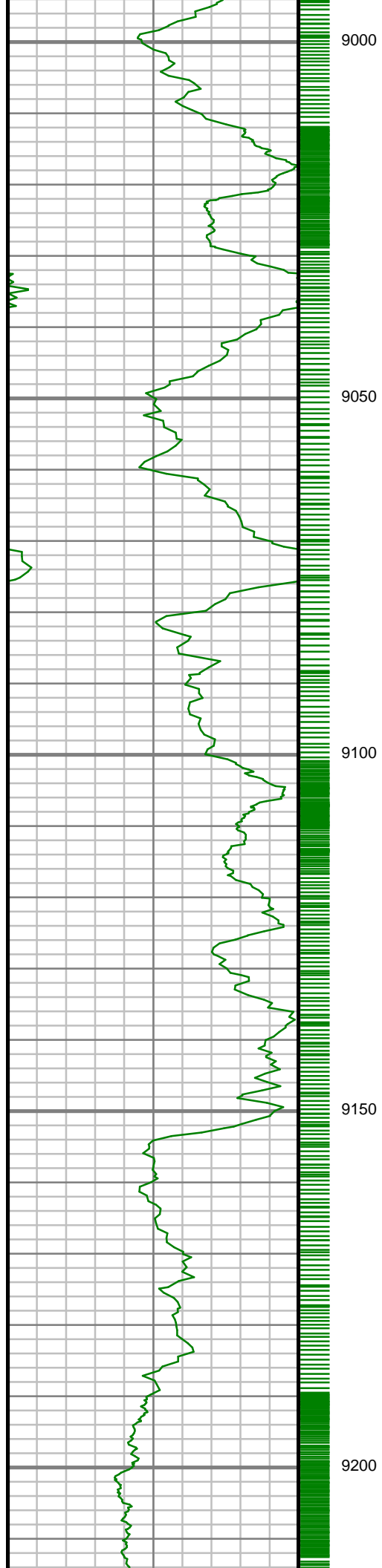
S: 136 MD: 8644.00 ft
Inc: 86.67 deg Az:
180.96 deg TVD:
7074.47 ft

S: 137 MD: 8733.00 ft
Inc: 87.39 deg Az:
181.30 deg TVD:
7079.08 ft



S: 138 MD: 8822.00 ft
Inc: 87.52 deg Az:
181.52 deg TVD:
7083.03 ft

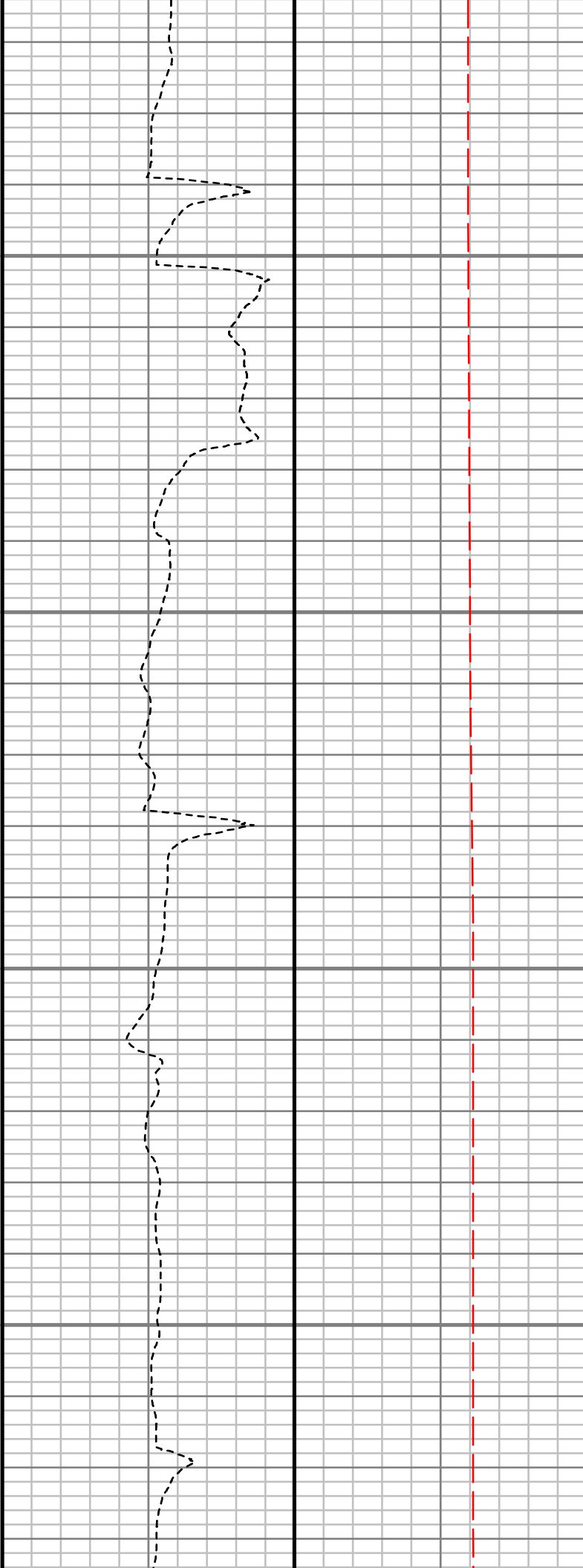
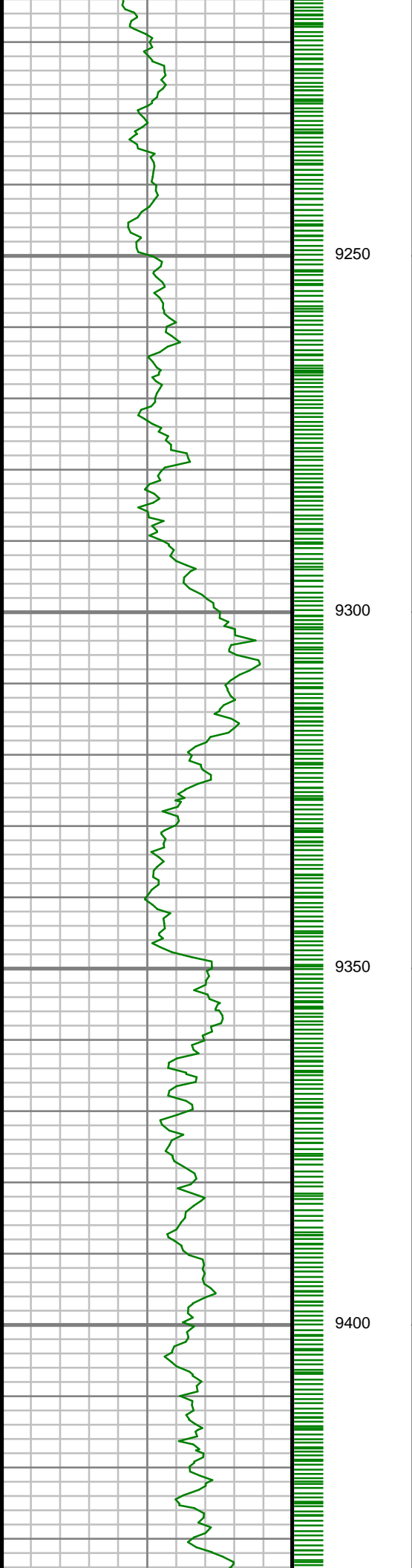
S: 139 MD: 8911.00 ft
Inc: 88.16 deg Az:
181.38 deg TVD:
7086.39 ft



S: 140 MD: 8999.00 ft
Inc: 88.83 deg Az:
180.76 deg TVD:
7088.70 ft

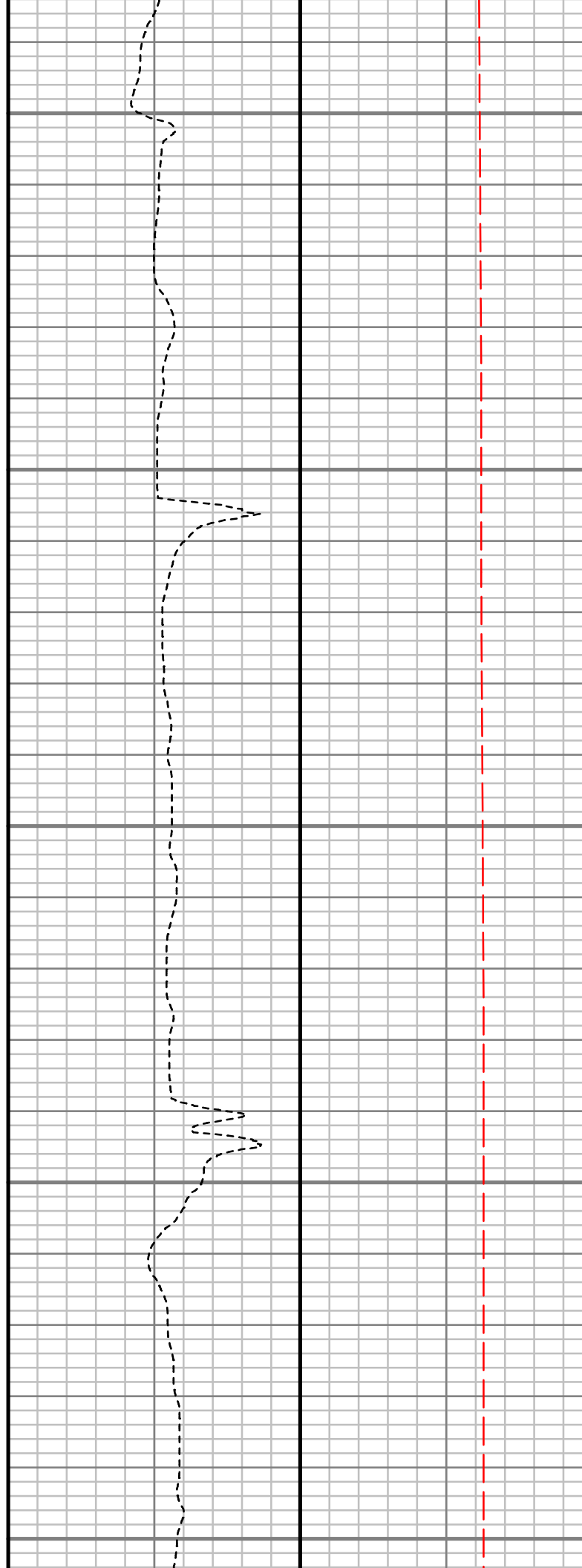
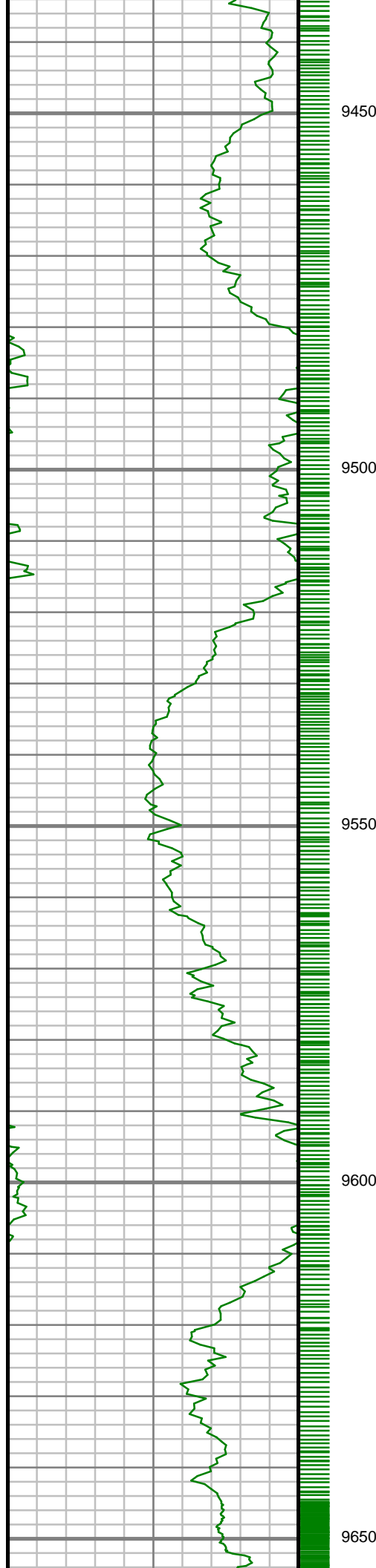
S: 141 MD: 9088.00 ft
Inc: 90.13 deg Az:
178.20 deg TVD:
7089.50 ft

S: 142 MD: 9177.00 ft
Inc: 90.23 deg Az:
177.40 deg TVD:
7089.22 ft



S: 143 MD: 9266.00 ft
Inc: 87.82 deg Az:
177.91 deg TVD:
7090.73 ft

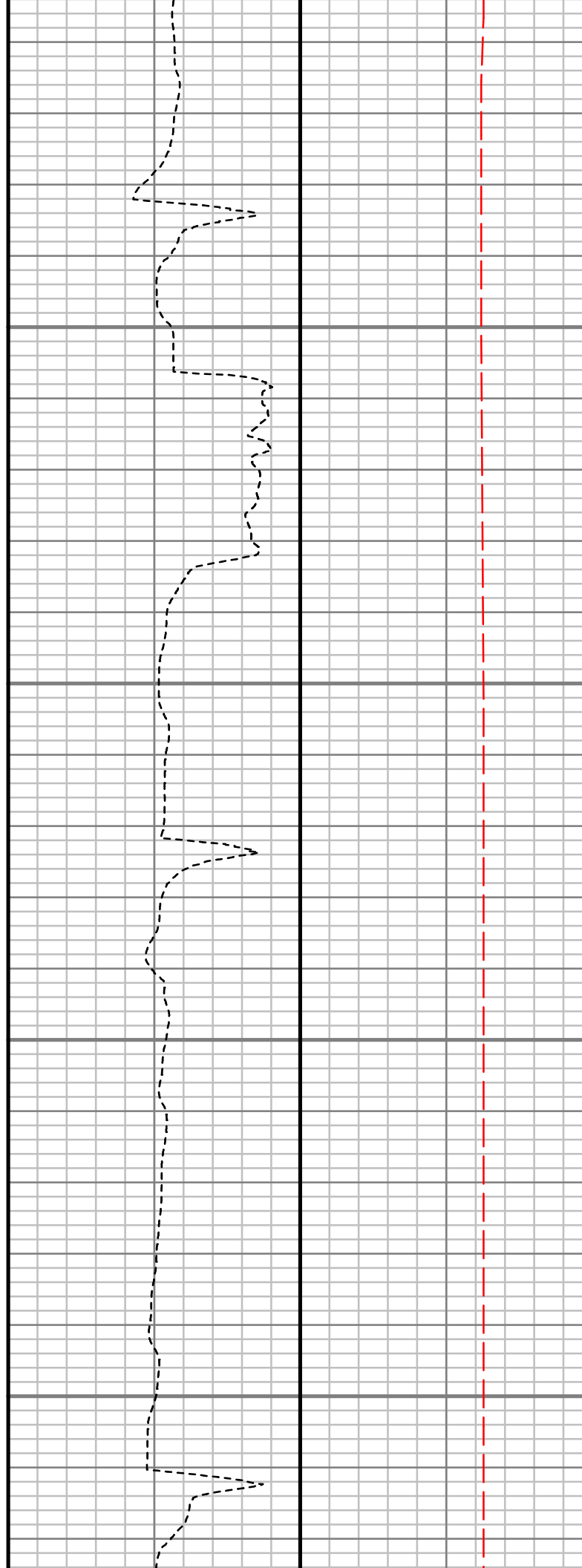
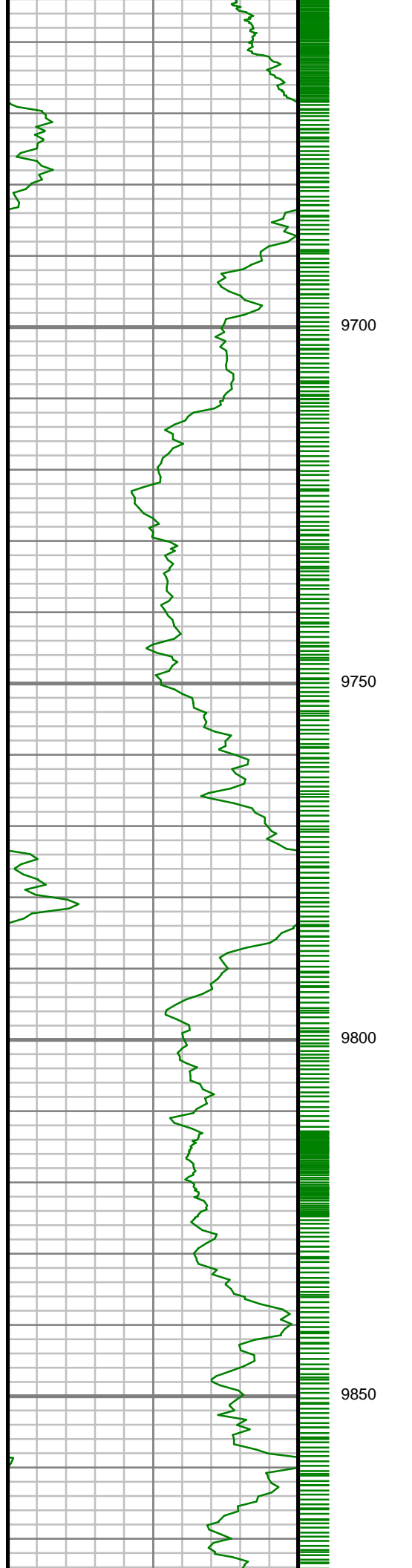
S: 144 MD: 9355.00 ft
Inc: 87.22 deg Az:
178.08 deg TVD:
7094.58 ft



S: 145 MD: 9444.00 ft
Inc: 87.02 deg Az:
177.98 deg TVD:
7099.05 ft

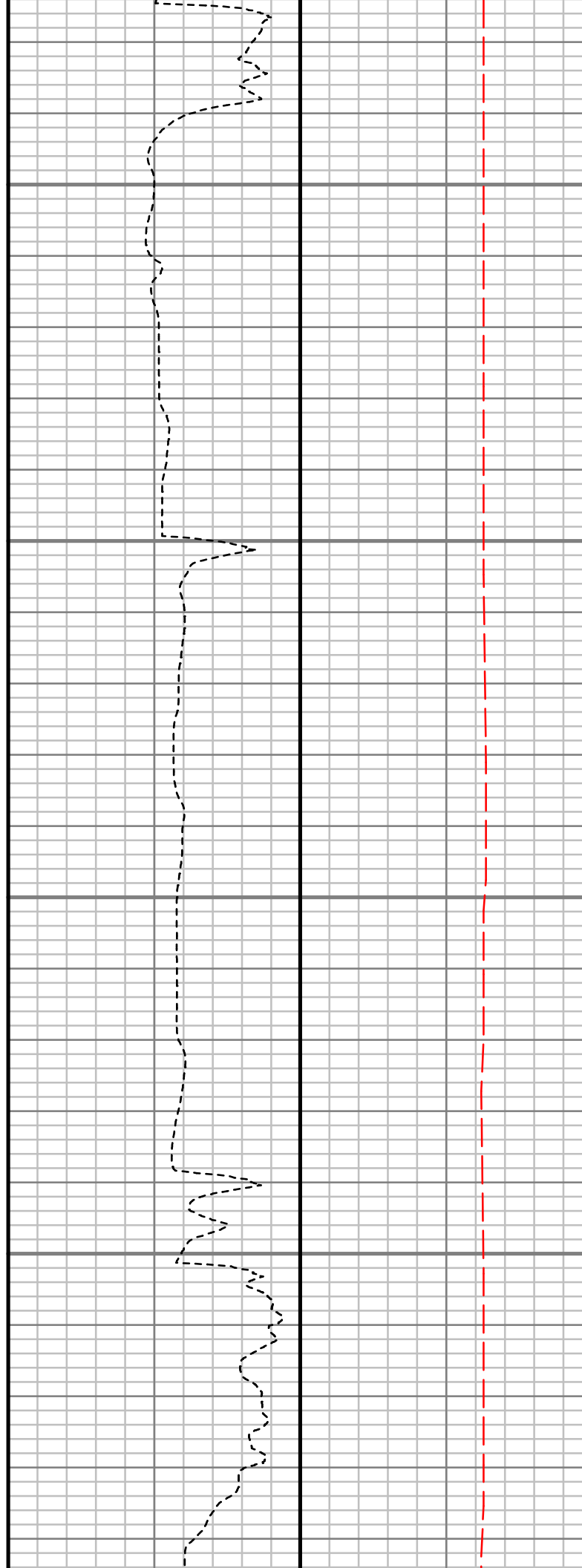
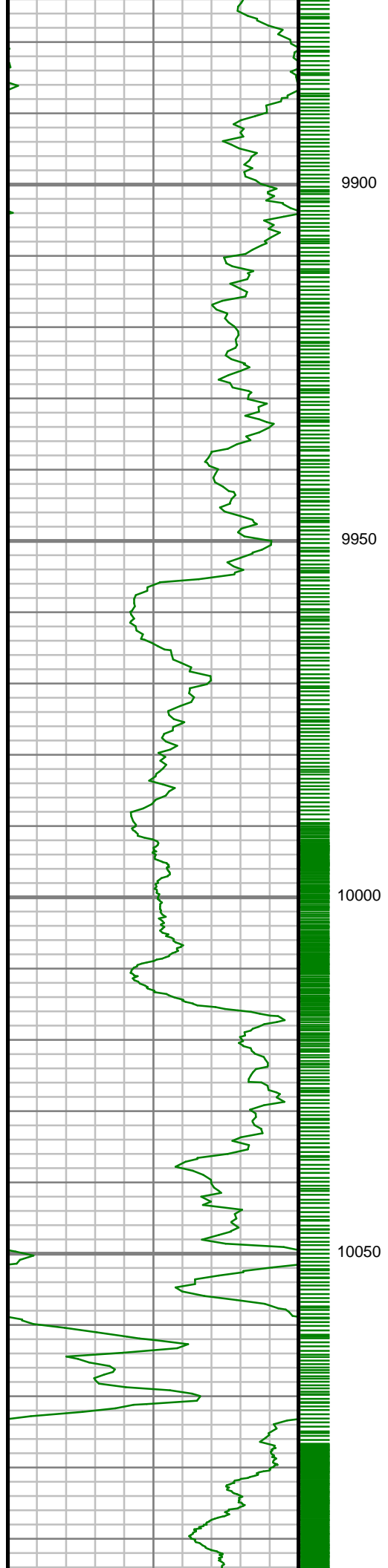
S: 146 MD: 9532.00 ft
Inc: 86.92 deg Az:
177.46 deg TVD:
7103.70 ft

S: 147 MD: 9621.00 ft
Inc: 86.92 deg Az:
176.49 deg TVD:
7108.48 ft



S: 148 MD: 9711.00 ft
Inc: 88.66 deg Az:
176.87 deg TVD:
7111.95 ft

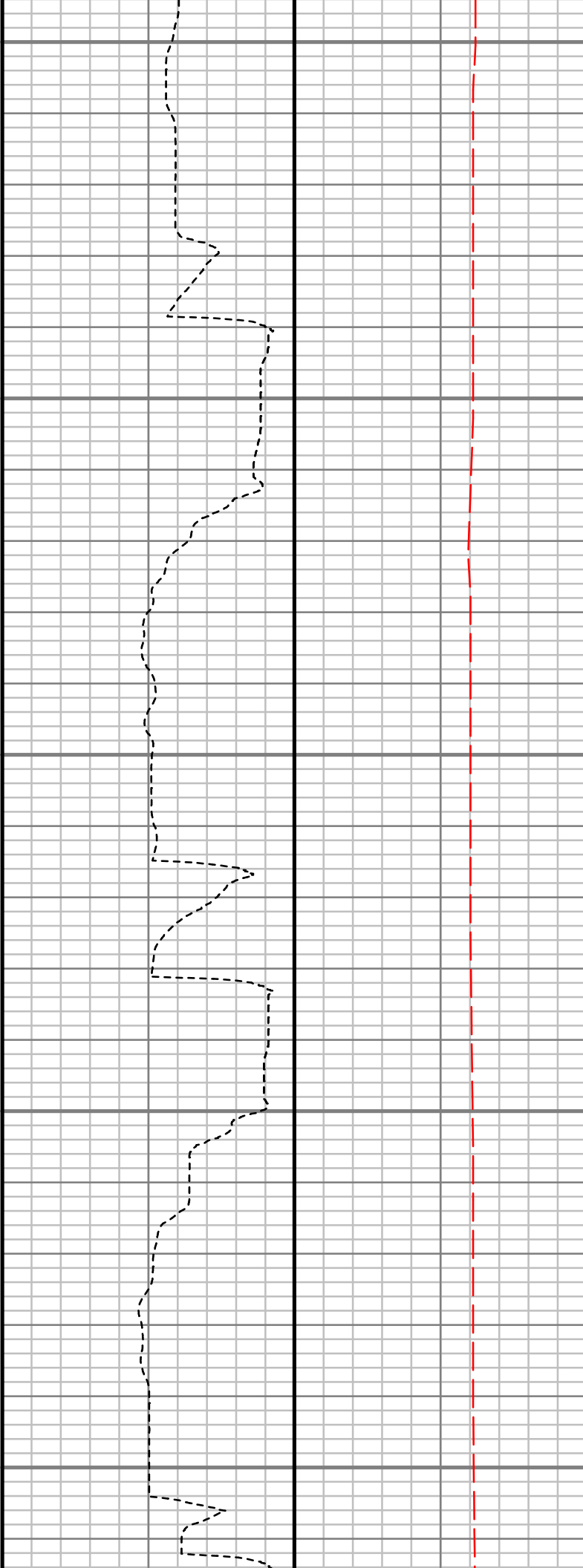
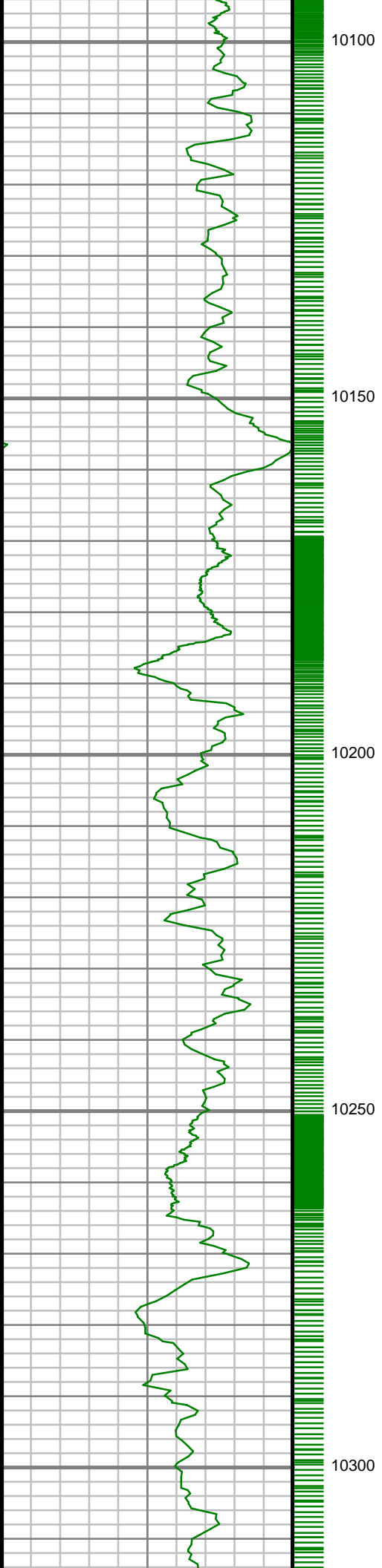
S: 149 MD: 9799.00 ft
Inc: 90.23 deg Az:
178.15 deg TVD:
7112.80 ft



S: 150 MD: 9888.00 ft
Inc: 88.93 deg Az:
178.25 deg TVD:
7113.45 ft

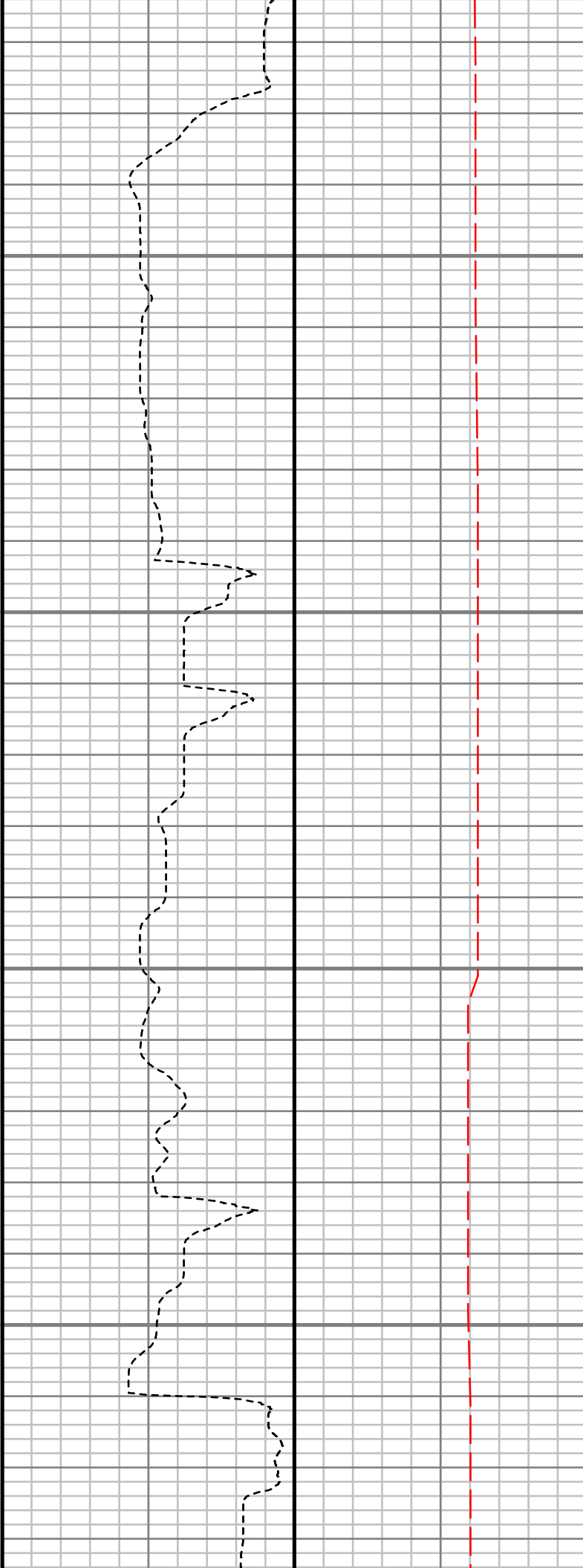
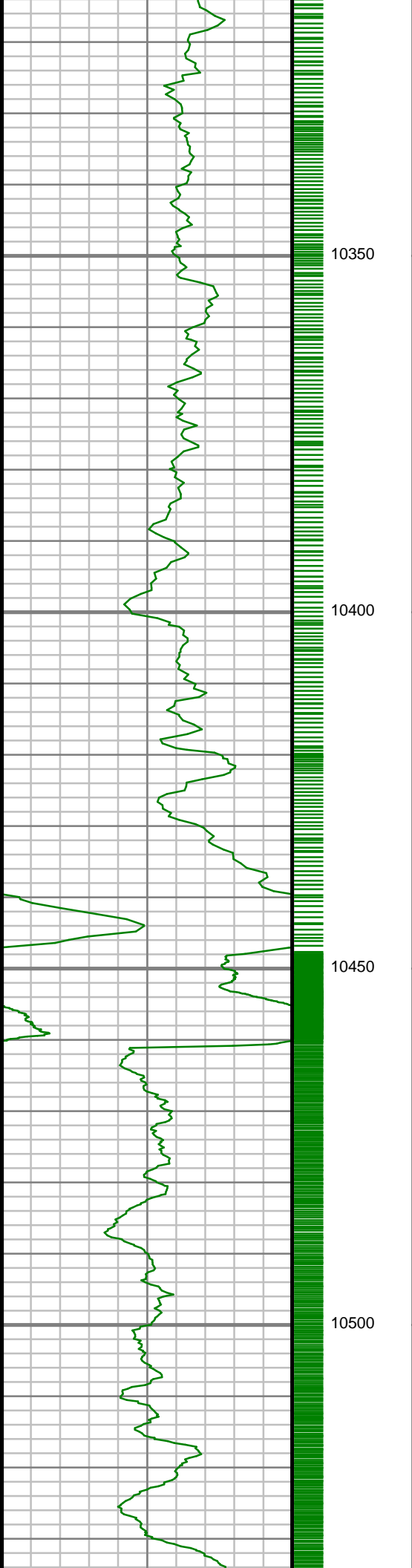
S: 151 MD: 9977.00 ft
Inc: 90.10 deg Az:
176.90 deg TVD:
7114.20 ft

S: 152 MD: 10065.00 ft
Inc: 92.48 deg Az:
178.41 deg TVD:
7112.22 ft



S: 153 MD: 10154.00 ft
Inc: 90.27 deg Az:
178.78 deg TVD:
7110.09 ft

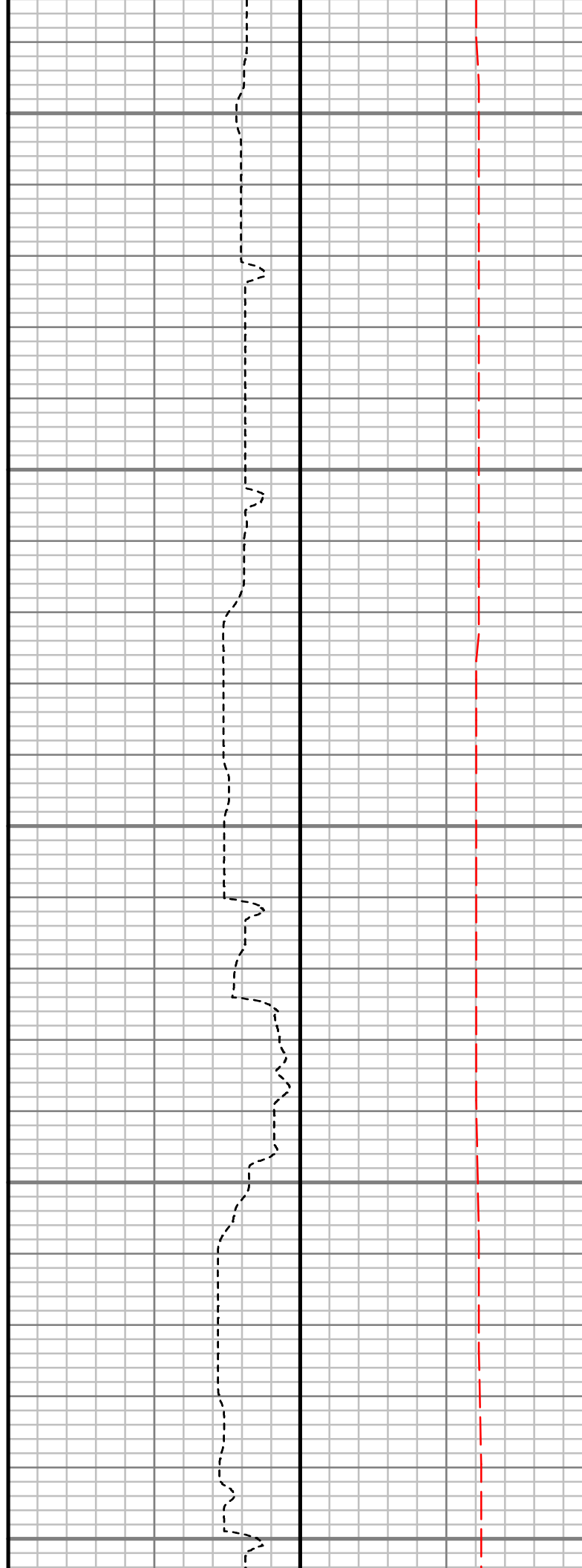
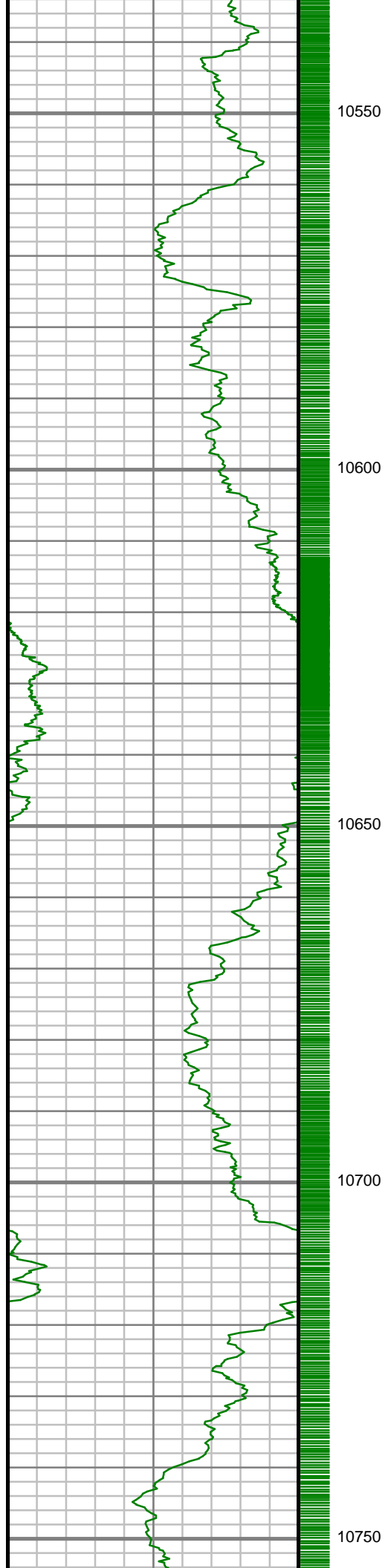
S: 154 MD: 10243.00 ft
Inc: 88.90 deg Az:
179.12 deg TVD:
7110.73 ft



S: 155 MD: 10332.00 ft
Inc: 86.92 deg Az:
178.97 deg TVD:
7113.98 ft

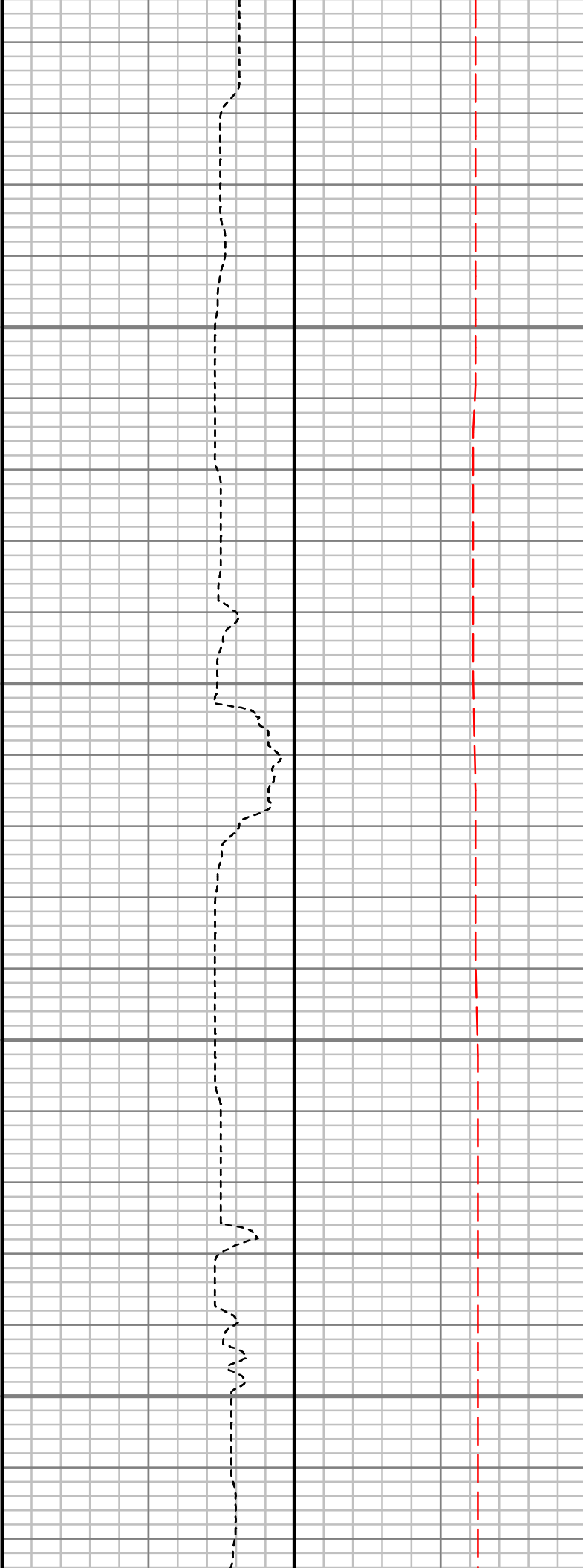
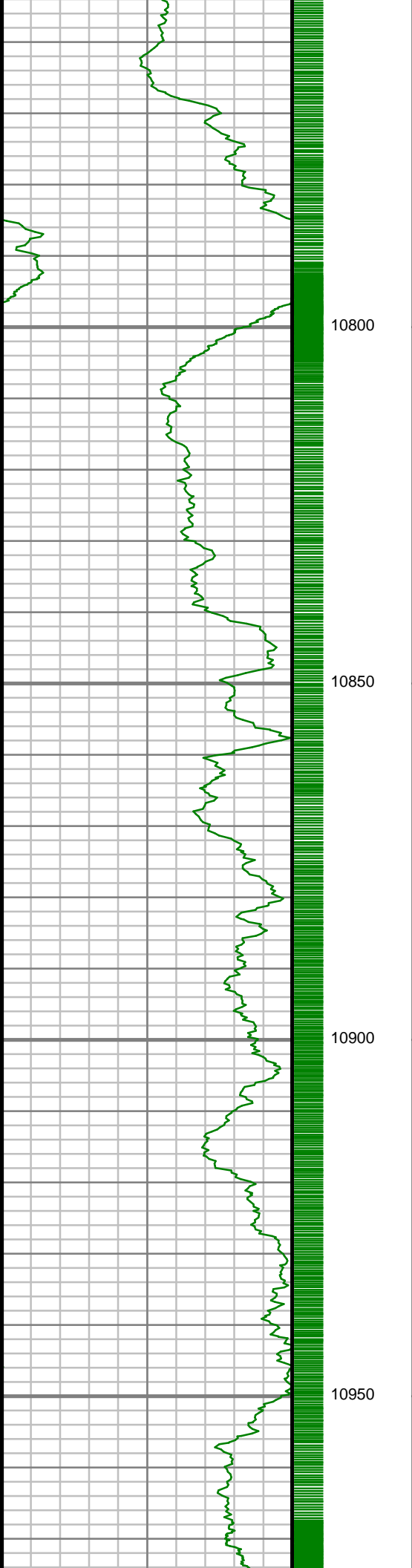
S: 156 MD: 10421.00 ft
Inc: 86.04 deg Az:
178.21 deg TVD:
7119.45 ft

S: 157 MD: 10510.00 ft
Inc: 85.23 deg Az:
178.86 deg TVD:
7126.22 ft



S: 158 MD: 10599.00 ft
Inc: 85.10 deg Az:
179.01 deg TVD:
7133.72 ft

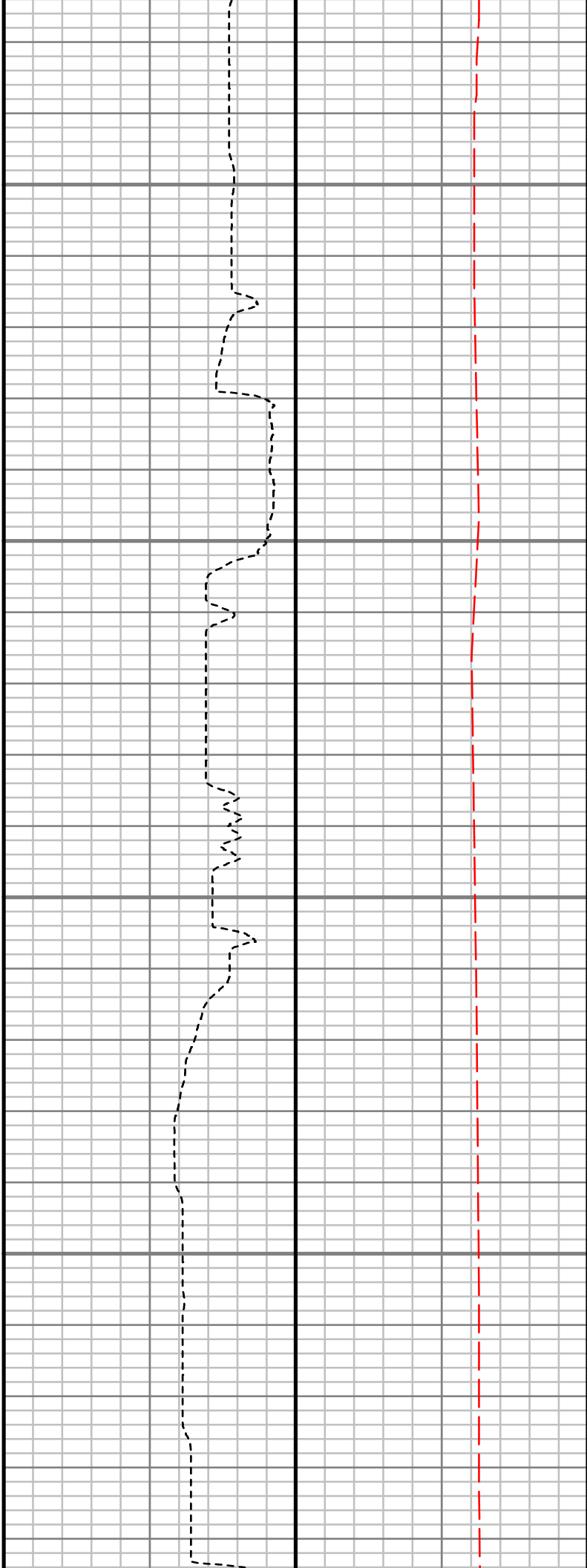
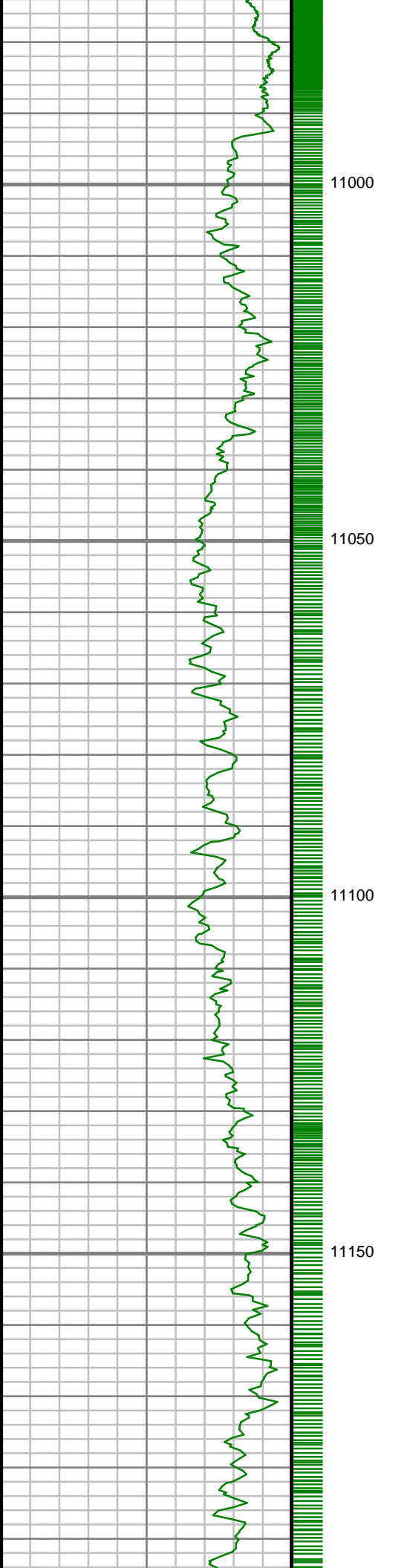
S: 159 MD: 10687.00 ft
Inc: 86.65 deg Az:
180.28 deg TVD:
7140.05 ft



S: 160 MD: 10776.00 ft
Inc: 87.65 deg Az:
180.47 deg TVD:
7144.48 ft

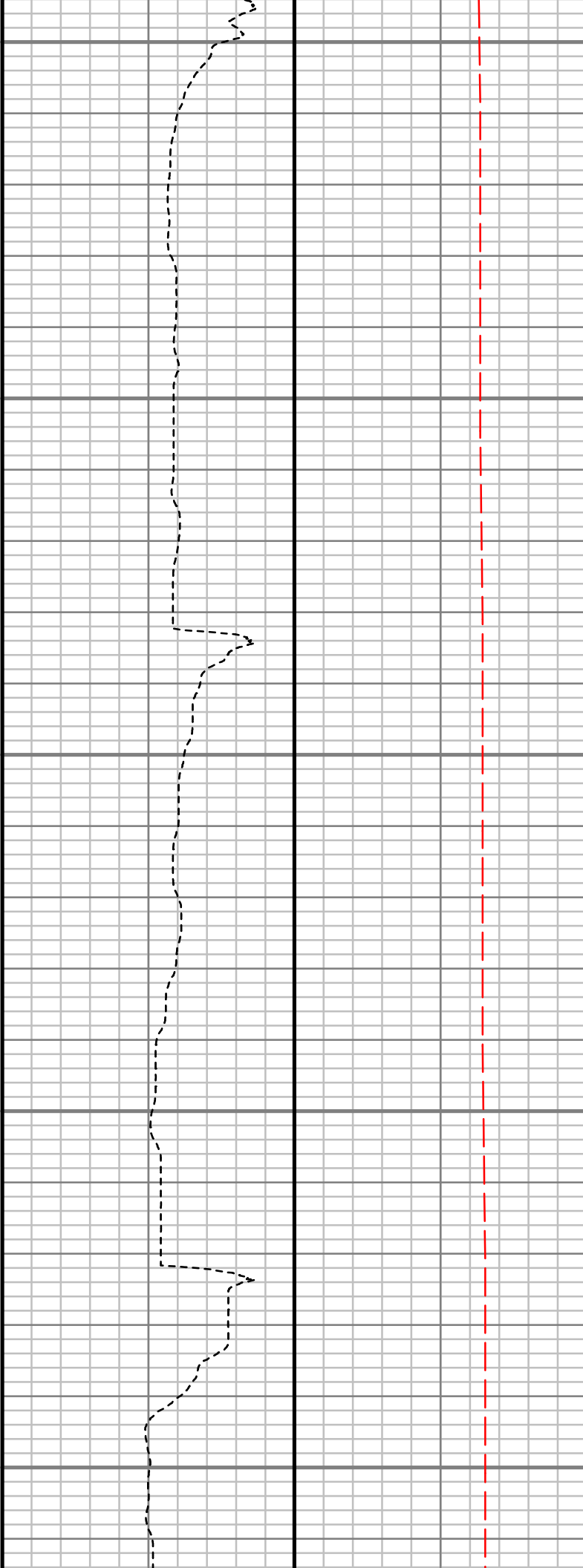
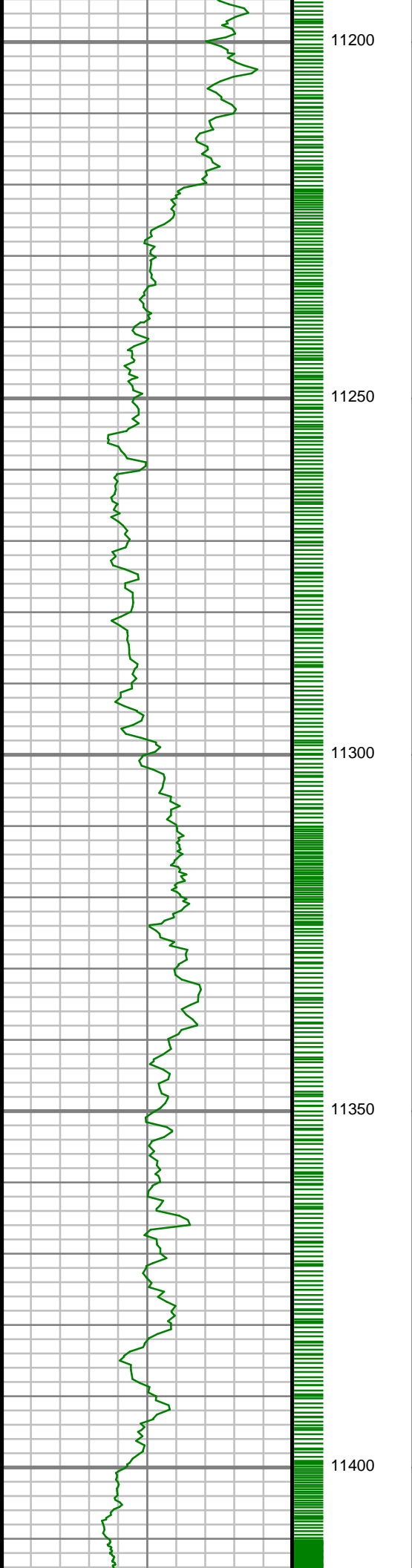
S: 161 MD: 10865.00 ft
Inc: 87.35 deg Az:
181.32 deg TVD:
7148.36 ft

S: 162 MD: 10954.00 ft
Inc: 87.55 deg Az:
181.27 deg TVD:
7152.31 ft



S: 163 MD: 11043.00 ft
Inc: 86.12 deg Az:
179.62 deg TVD:
7157.22 ft

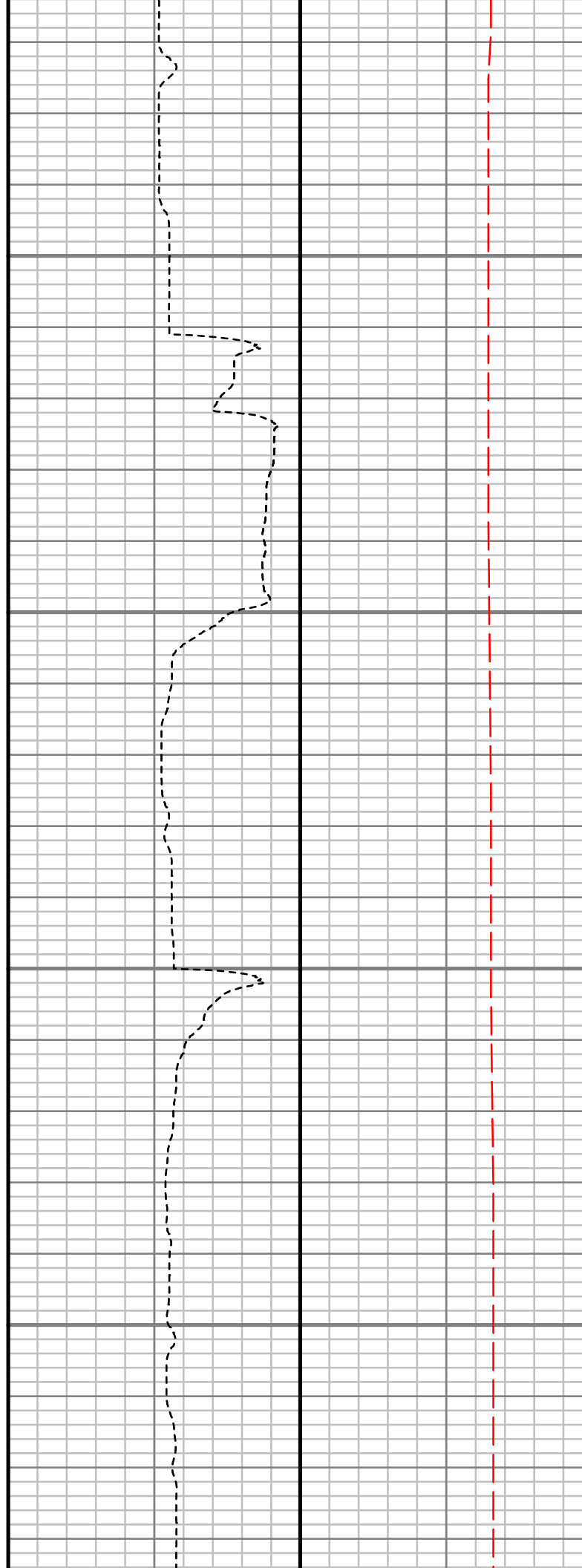
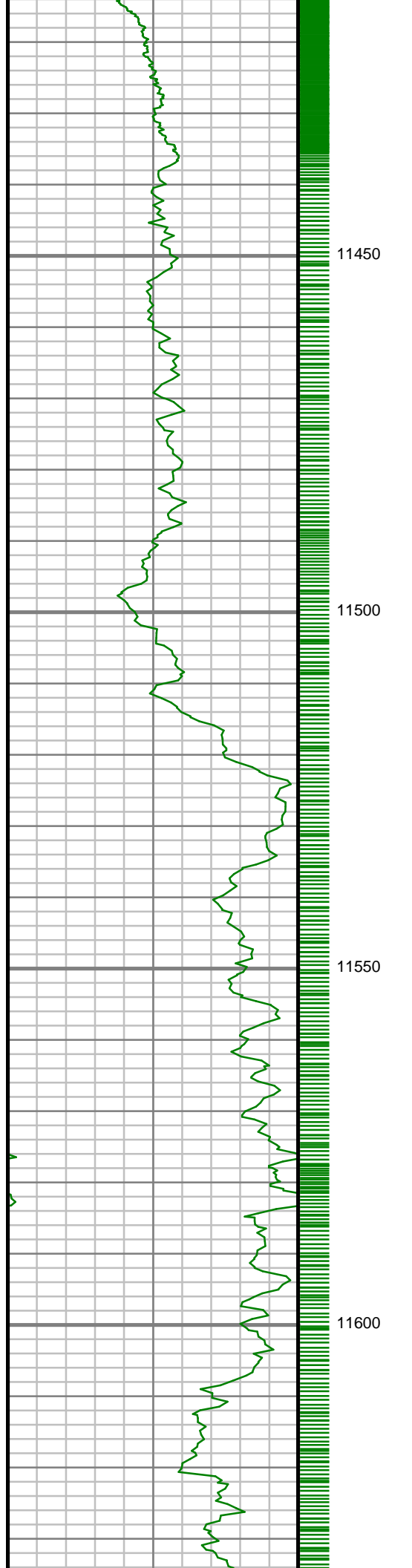
S: 164 MD: 11132.00 ft
Inc: 85.91 deg Az:
179.72 deg TVD:
7163.41 ft



S: 165 MD: 11221.00 ft
Inc: 85.58 deg Az:
178.50 deg TVD:
7170.02 ft

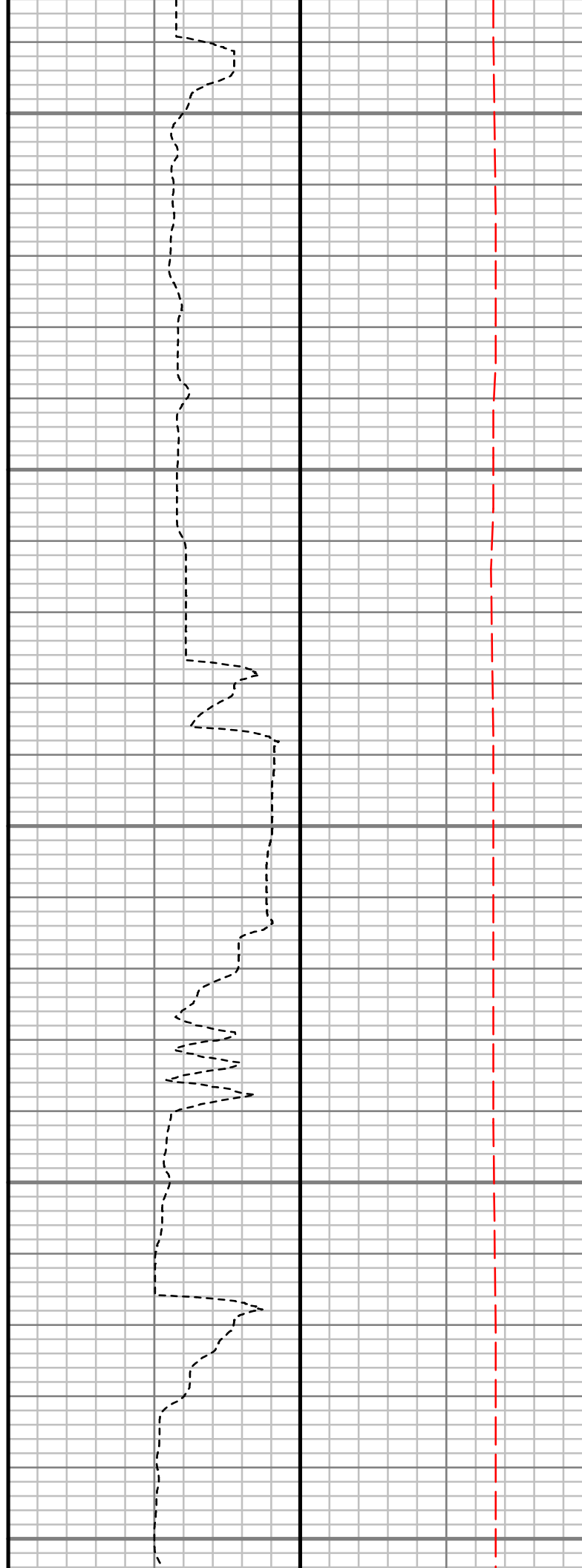
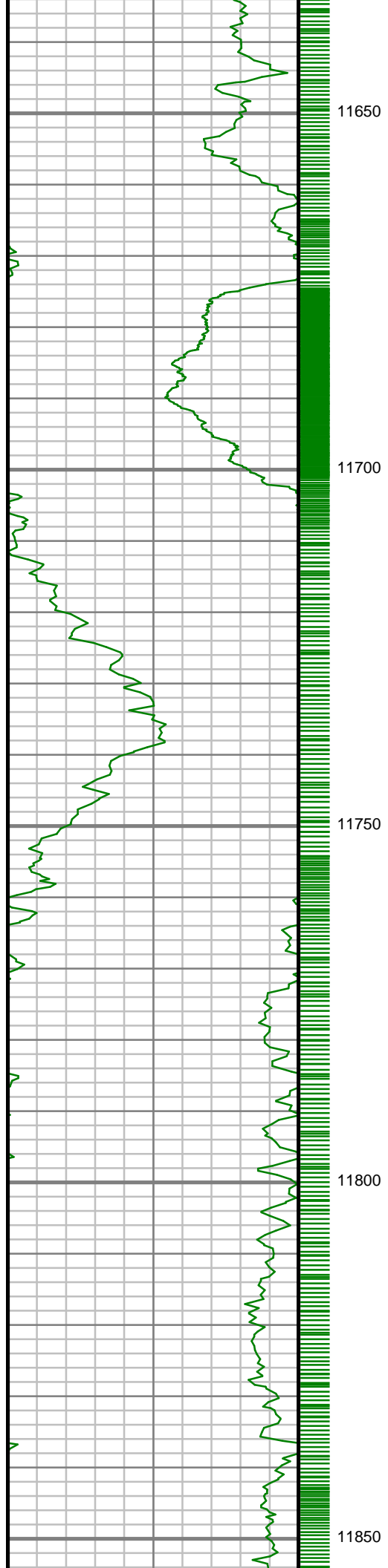
S: 166 MD: 11310.00 ft
Inc: 85.88 deg Az:
178.13 deg TVD:
7176.65 ft

S: 167 MD: 11399.00 ft
Inc: 86.48 deg Az:
177.28 deg TVD:
7182.58 ft



S: 168 MD: 11488.00 ft
Inc: 87.55 deg Az:
179.73 deg TVD:
7187.21 ft

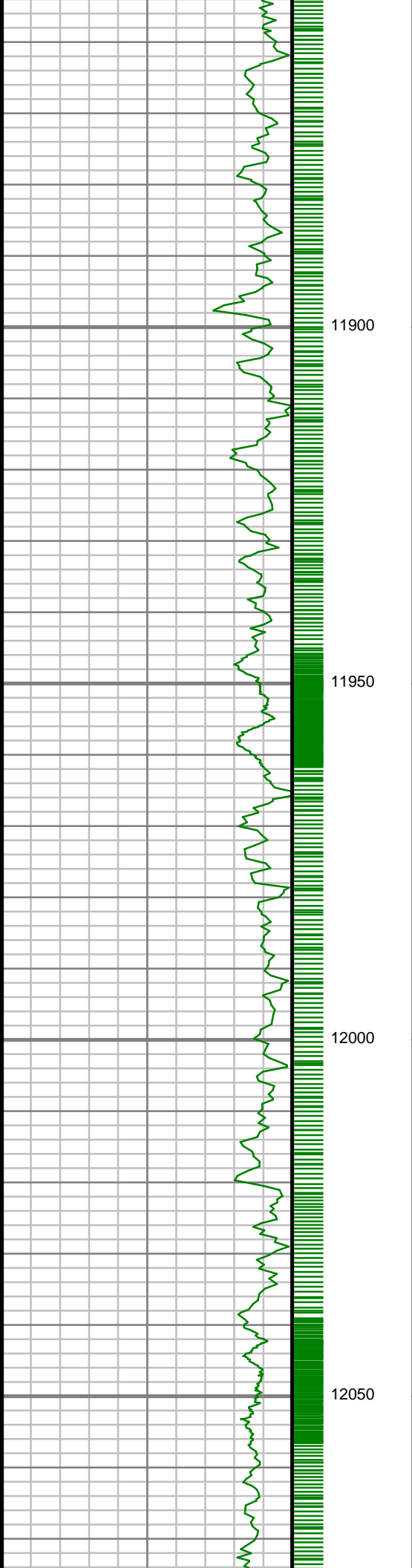
S: 169 MD: 11577.00 ft
Inc: 88.29 deg Az:
180.44 deg TVD:
7190.44 ft



S: 170 MD: 11666.00 ft
Inc: 88.79 deg Az:
179.72 deg TVD:
7192.71 ft

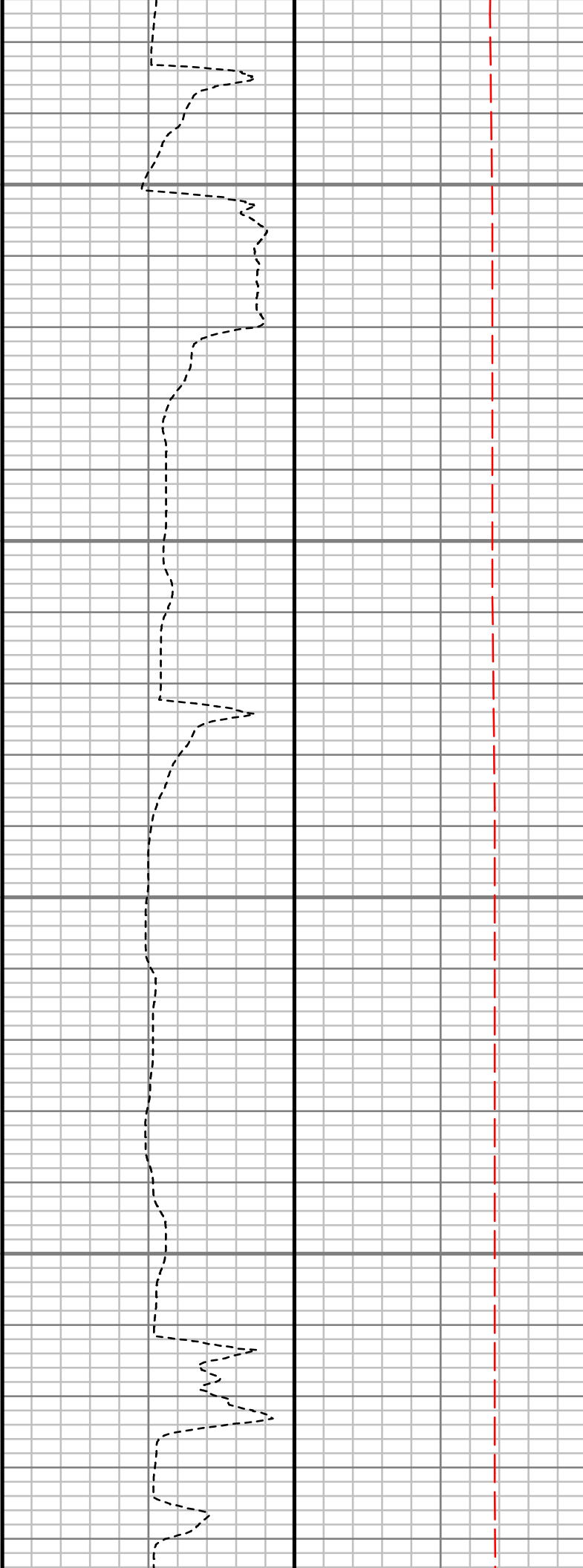
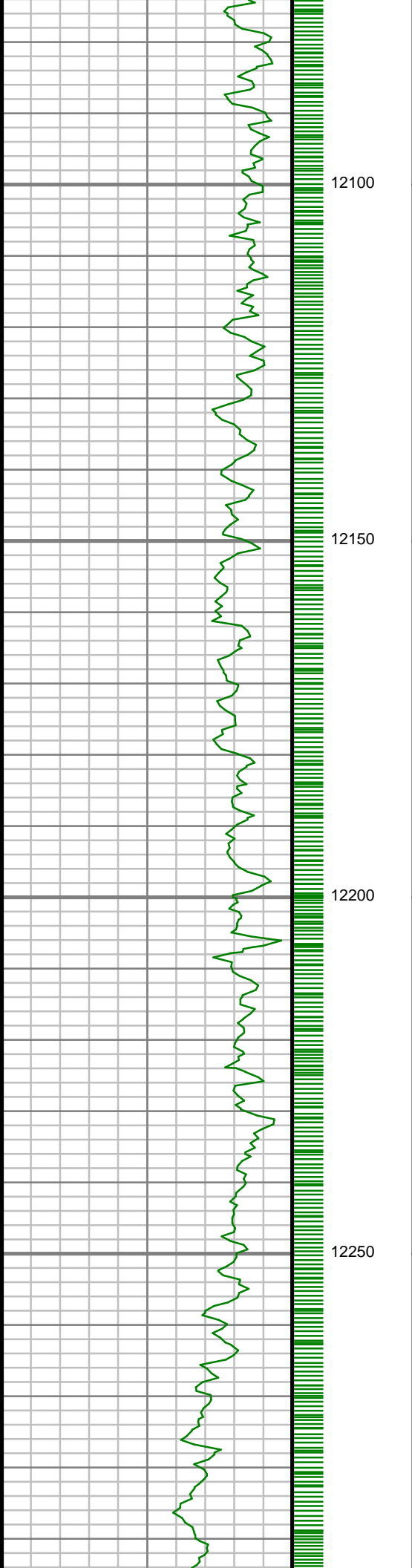
S: 171 MD: 11755.00 ft
Inc: 86.65 deg Az:
180.13 deg TVD:
7196.24 ft

S: 172 MD: 11844.00 ft
Inc: 85.84 deg Az:
180.24 deg TVD:
7202.06 ft



S: 173 MD: 11933.00 ft
Inc: 85.60 deg Az:
179.66 deg TVD:
7208.70 ft

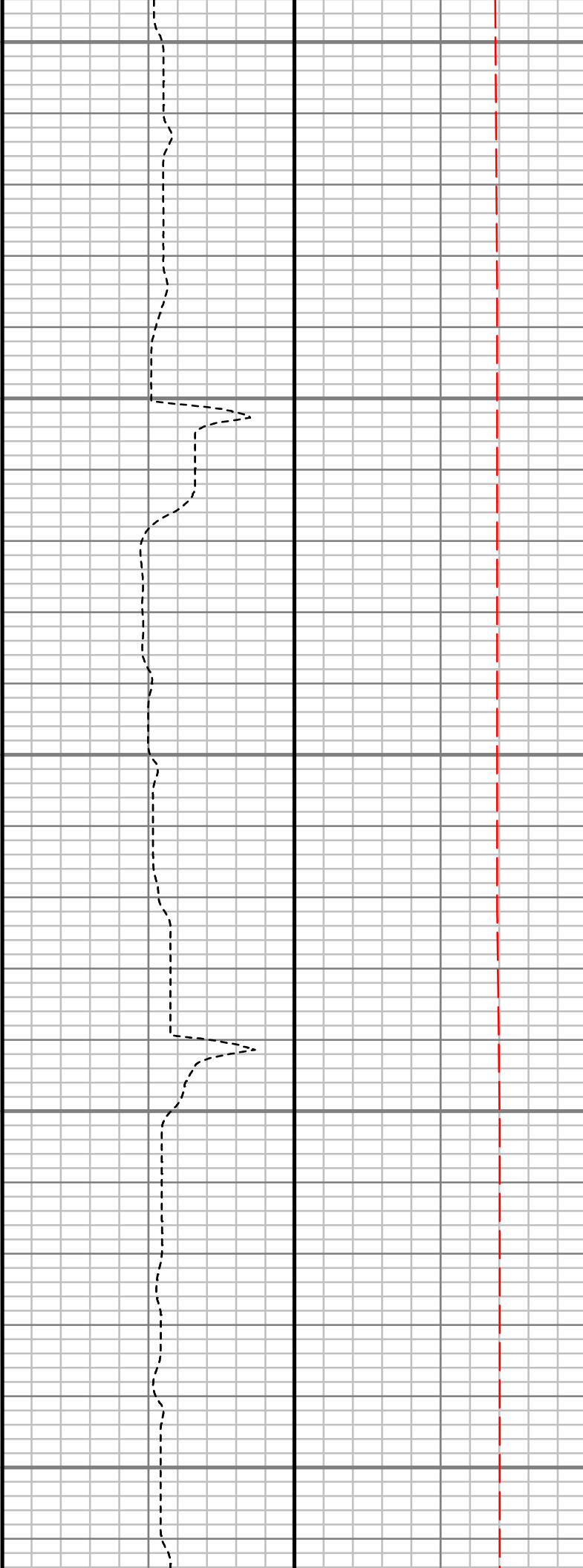
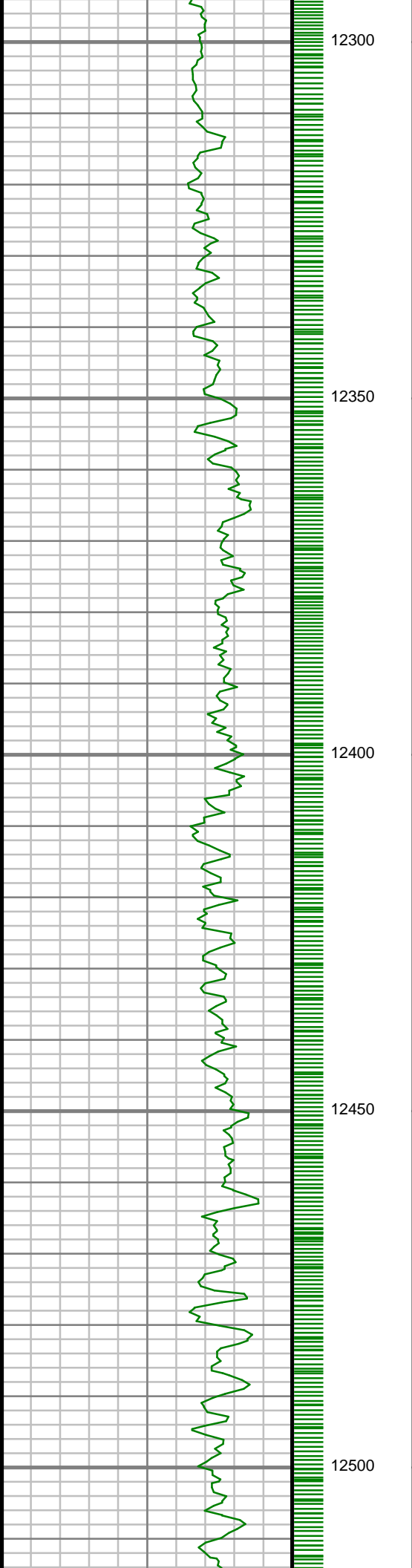
S: 174 MD: 12022.00 ft
Inc: 85.81 deg Az:
180.47 deg TVD:
7215.37 ft



S: 175 MD: 12110.00 ft
Inc: 86.98 deg Az:
180.69 deg TVD:
7220.90 ft

S: 176 MD: 12199.00 ft
Inc: 88.06 deg Az:
181.85 deg TVD:
7224.75 ft

S: 177 MD: 12288.00 ft
Inc: 87.99 deg Az:
180.00 deg TVD:



180.90 deg TVD:
7227.82 ft

S: 178 MD: 12377.00 ft
Inc: 88.56 deg Az:
180.69 deg TVD:
7230.50 ft

S: 179 MD: 12466.00 ft
Inc: 88.49 deg Az:
179.95 deg TVD:
7232.79 ft

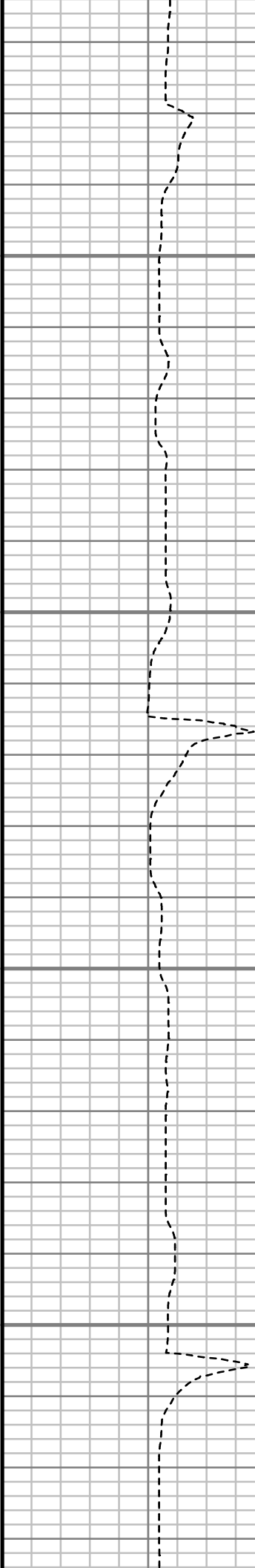


12550

12600

12650

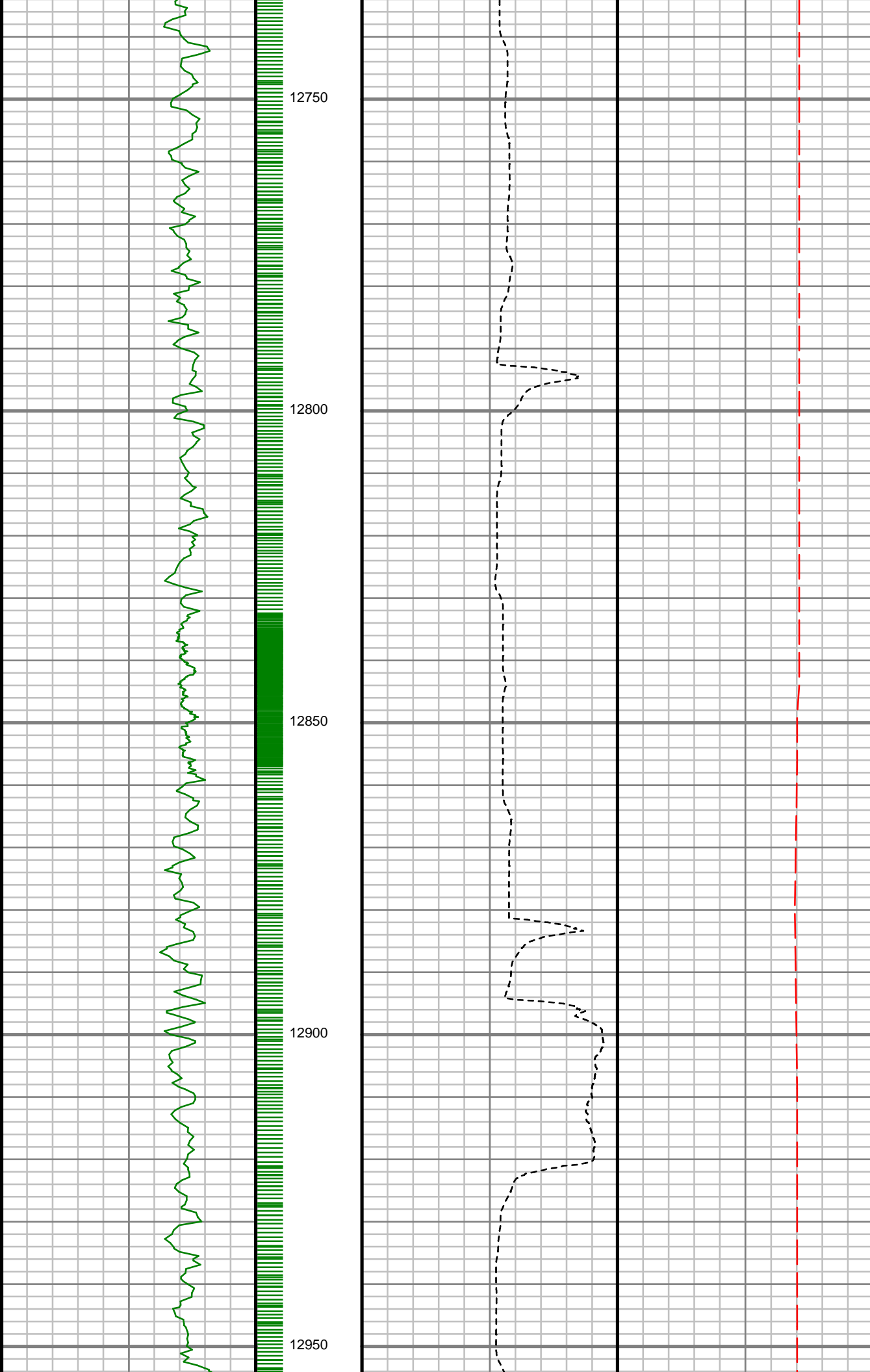
12700



S: 180 MD: 12554.00 ft
Inc: 88.56 deg Az:
179.71 deg TVD:
7235.06 ft

S: 181 MD: 12643.00 ft
Inc: 88.73 deg Az:
178.92 deg TVD:
7237.16 ft

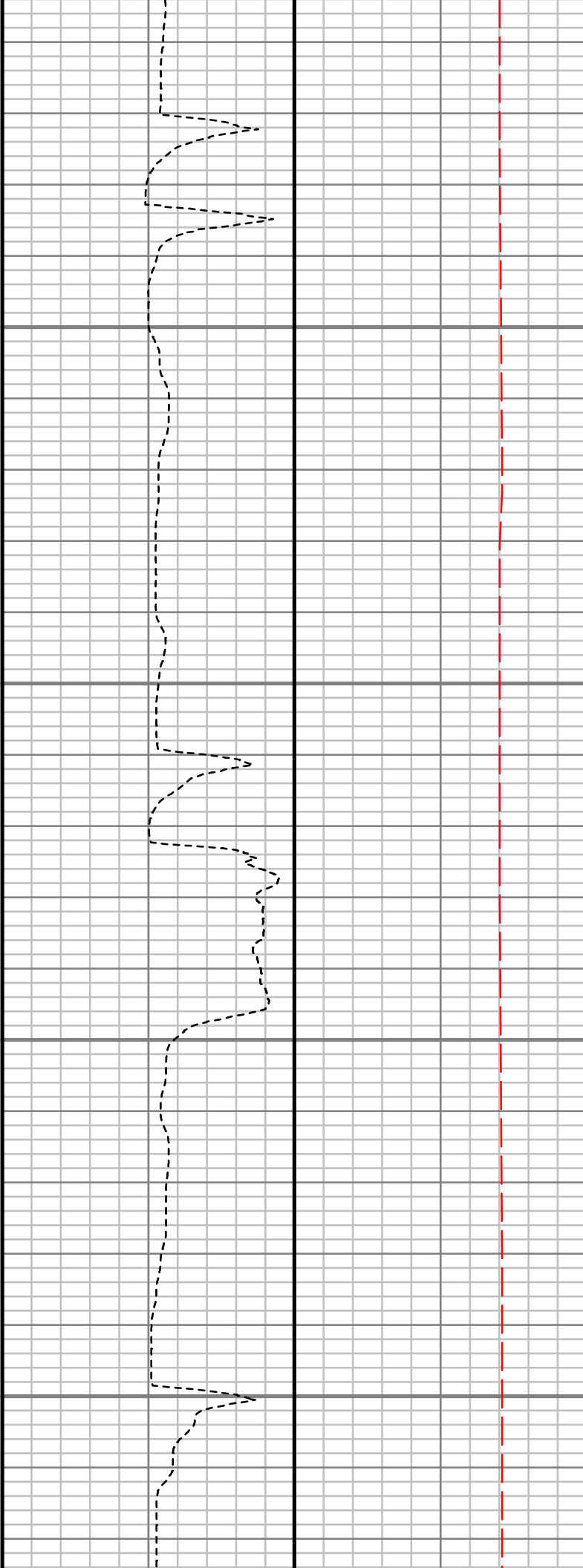
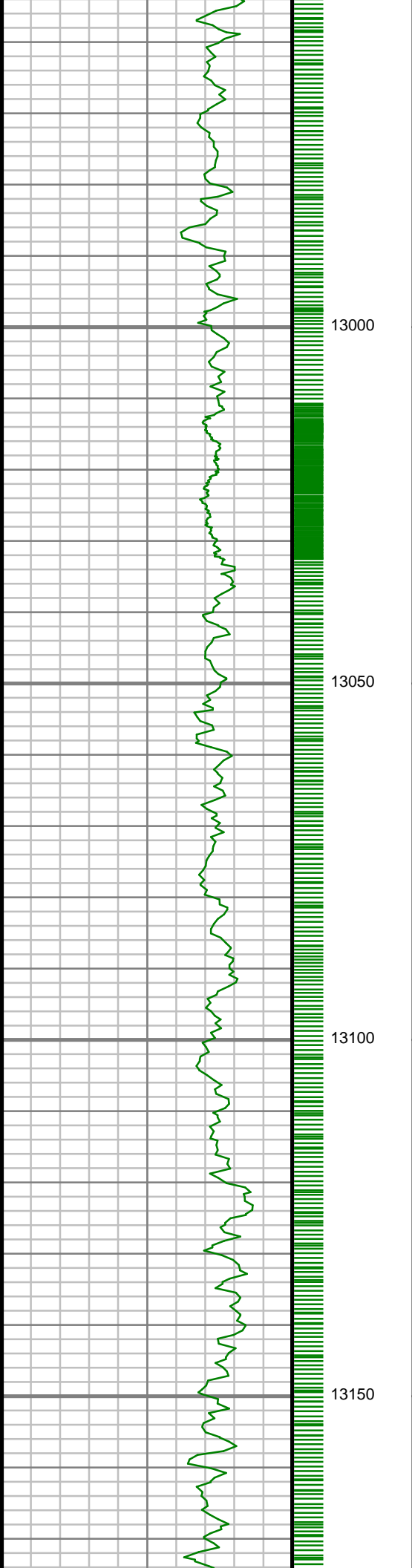
S: 182 MD: 12732.00 ft



Inc: 88.96 deg Az:
178.72 deg TVD:
7238.96 ft

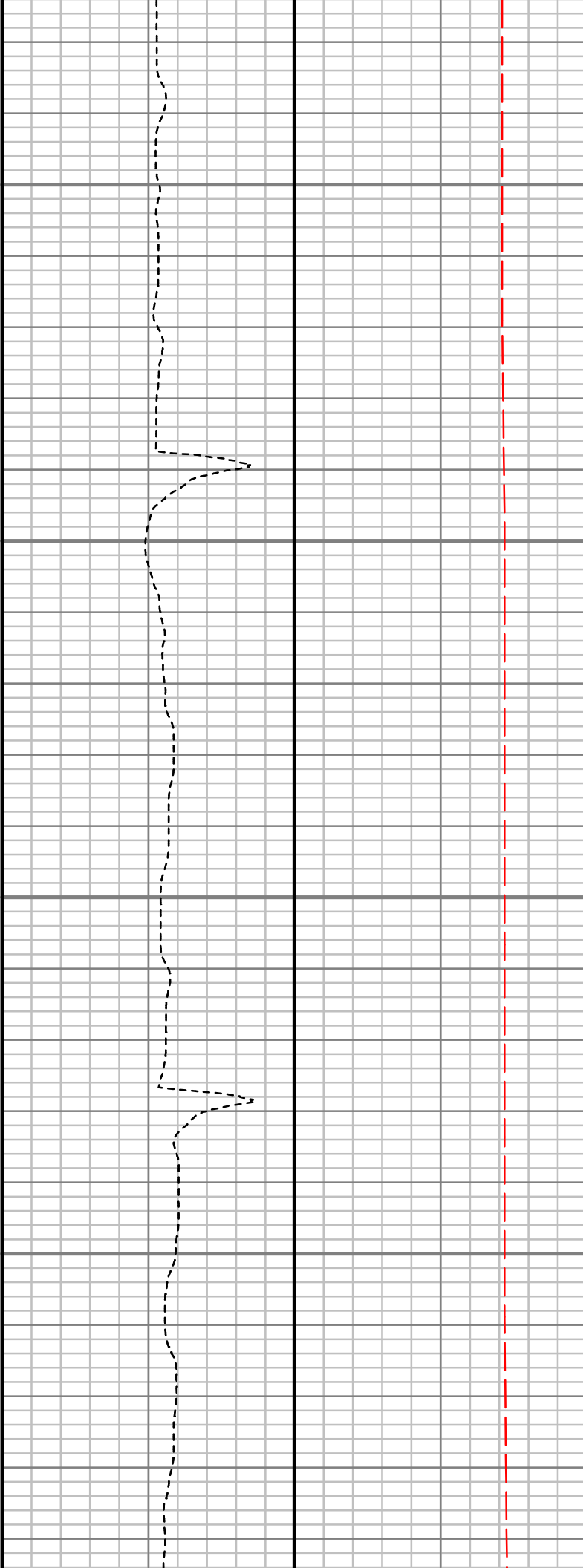
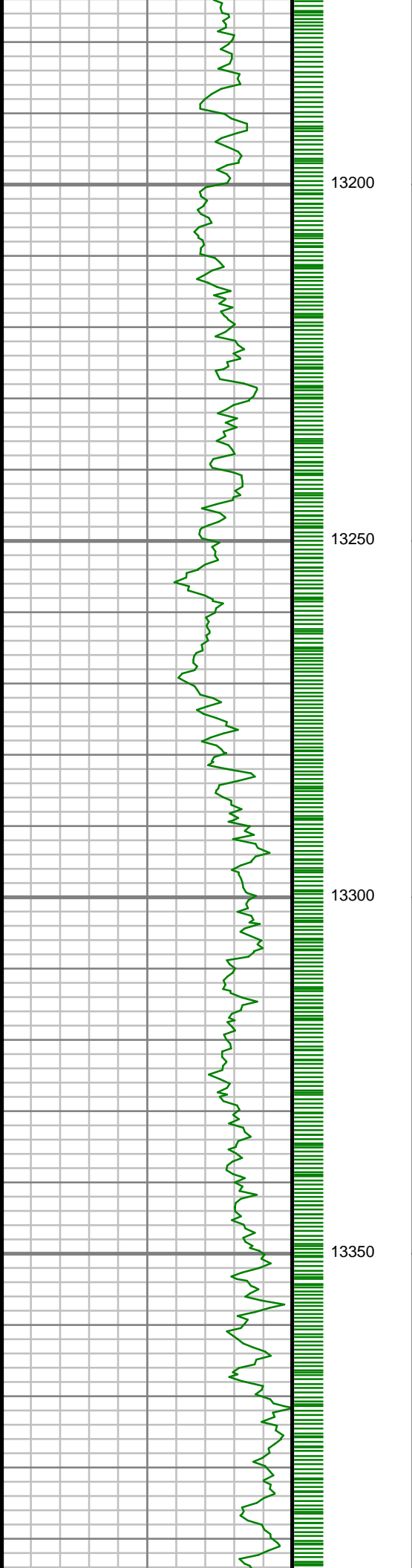
S: 183 MD: 12820.00 ft
Inc: 89.03 deg Az:
178.27 deg TVD:
7240.51 ft

S: 184 MD: 12909.00 ft
Inc: 88.15 deg Az:
177.90 deg TVD:
7242.70 ft



S: 185 MD: 12998.00 ft
Inc: 87.29 deg Az:
178.73 deg TVD:
7246.24 ft

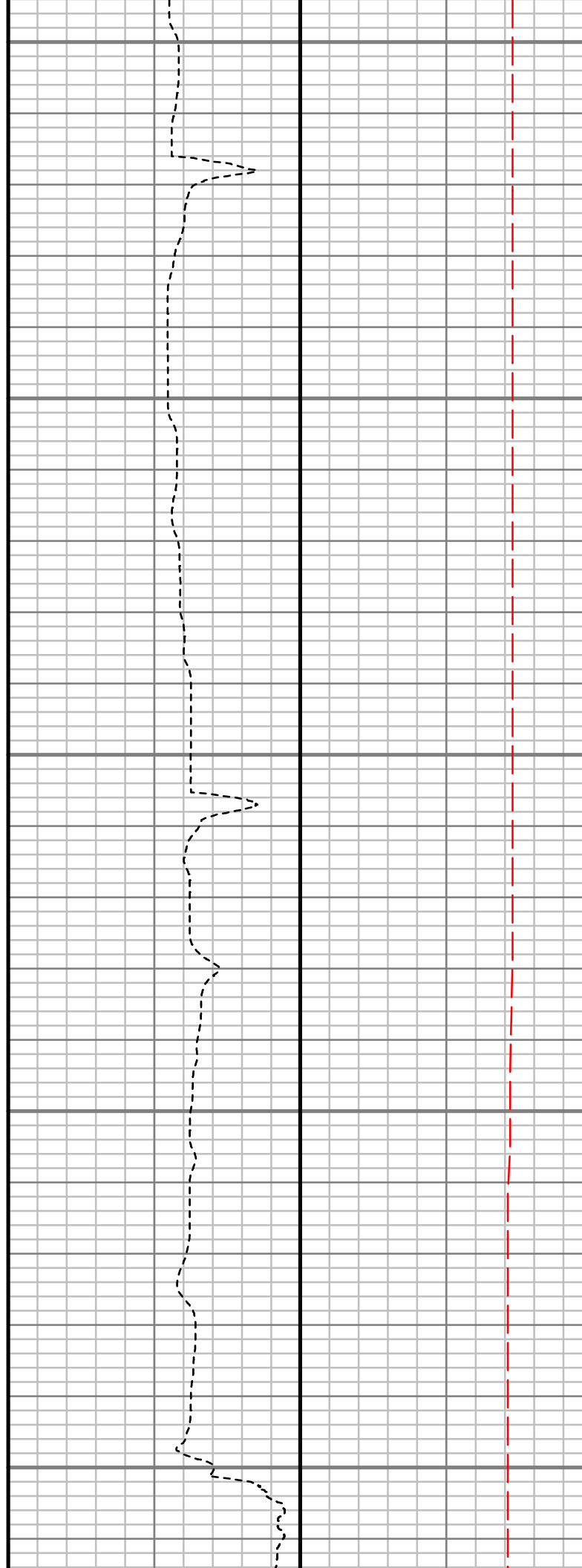
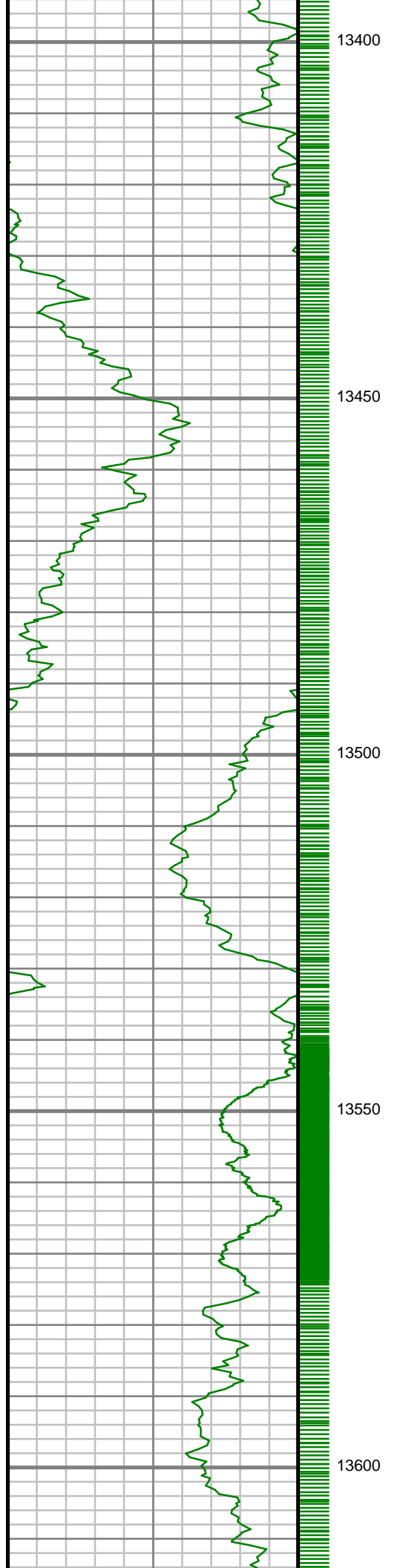
S: 186 MD: 13087.00 ft
Inc: 86.45 deg Az:
179.92 deg TVD:
7251.10 ft



S: 187 MD: 13176.00 ft
Inc: 86.18 deg Az:
179.96 deg TVD:
7256.83 ft

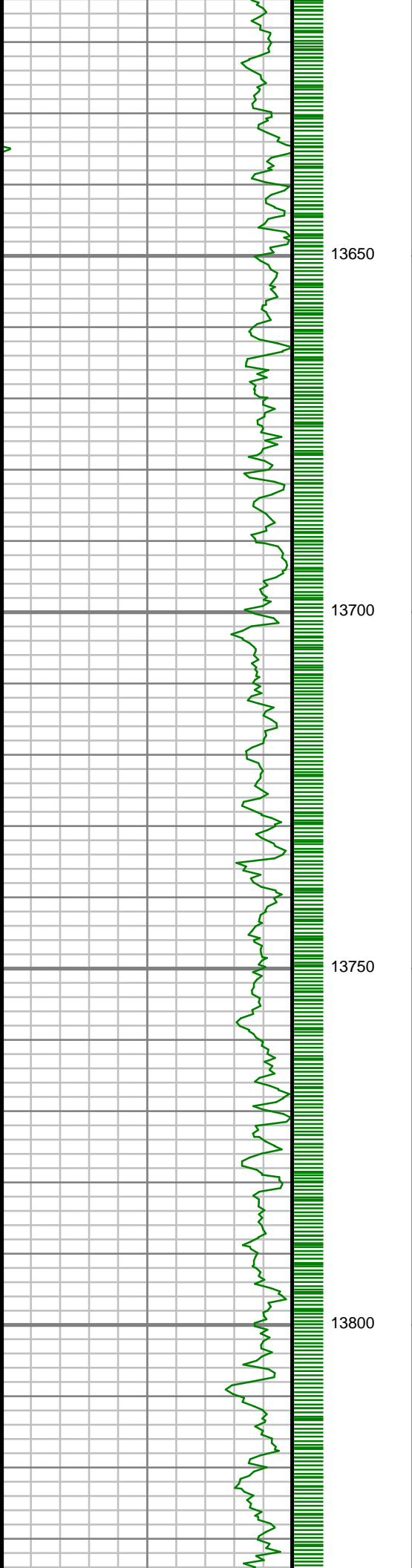
S: 188 MD: 13265.00 ft
Inc: 86.15 deg Az:
179.93 deg TVD:
7262.79 ft

S: 189 MD: 13354.00 ft
Inc: 85.82 deg Az:
179.09 deg TVD:
7269.02 ft

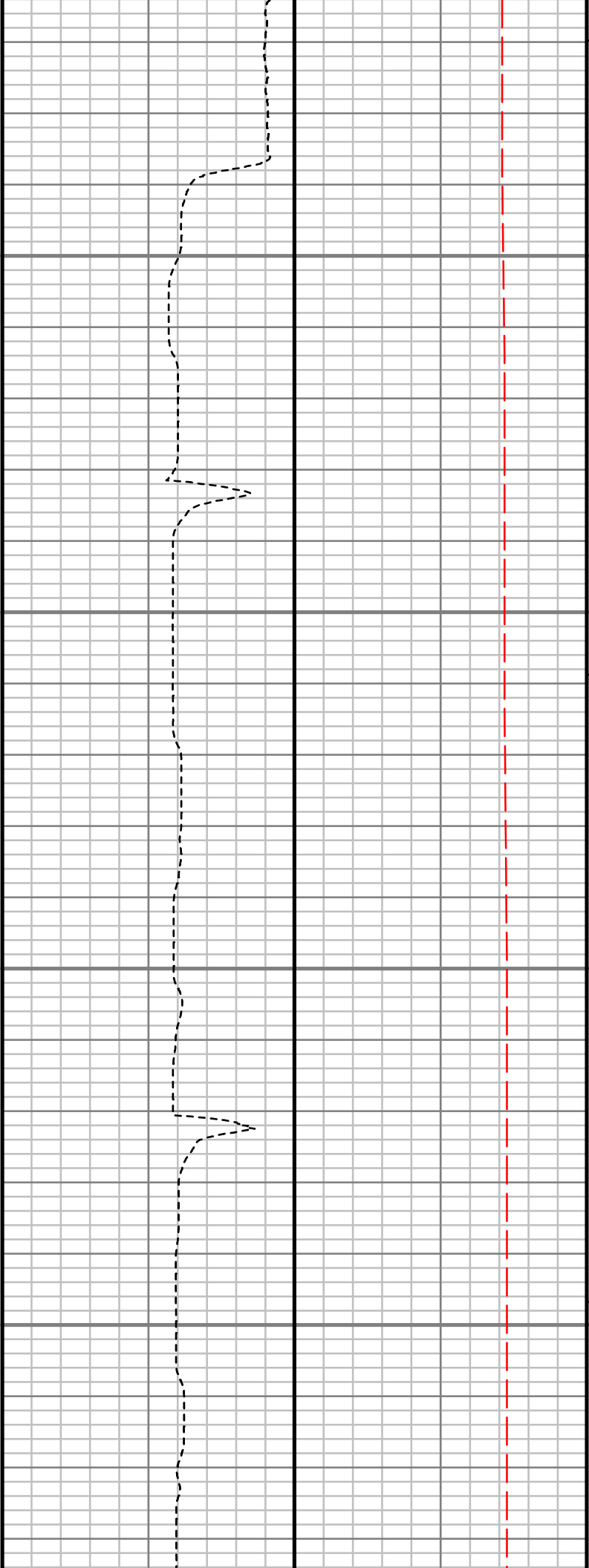


S: 190 MD: 13443.00 ft
Inc: 85.62 deg Az:
179.09 deg TVD:
7275.67 ft

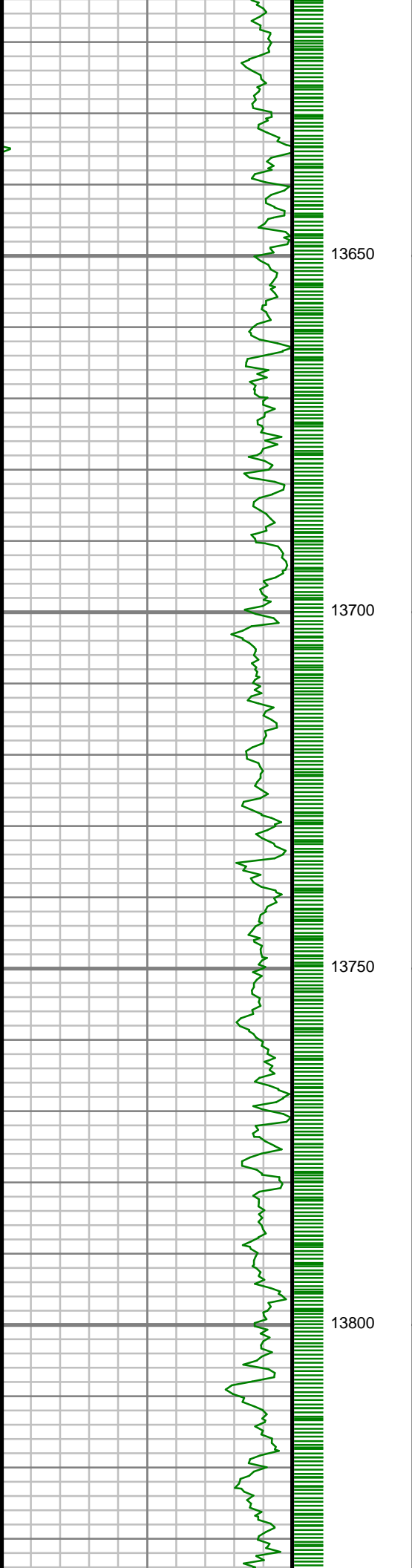
S: 191 MD: 13532.00 ft
Inc: 85.21 deg Az:
178.56 deg TVD:
7282.78 ft



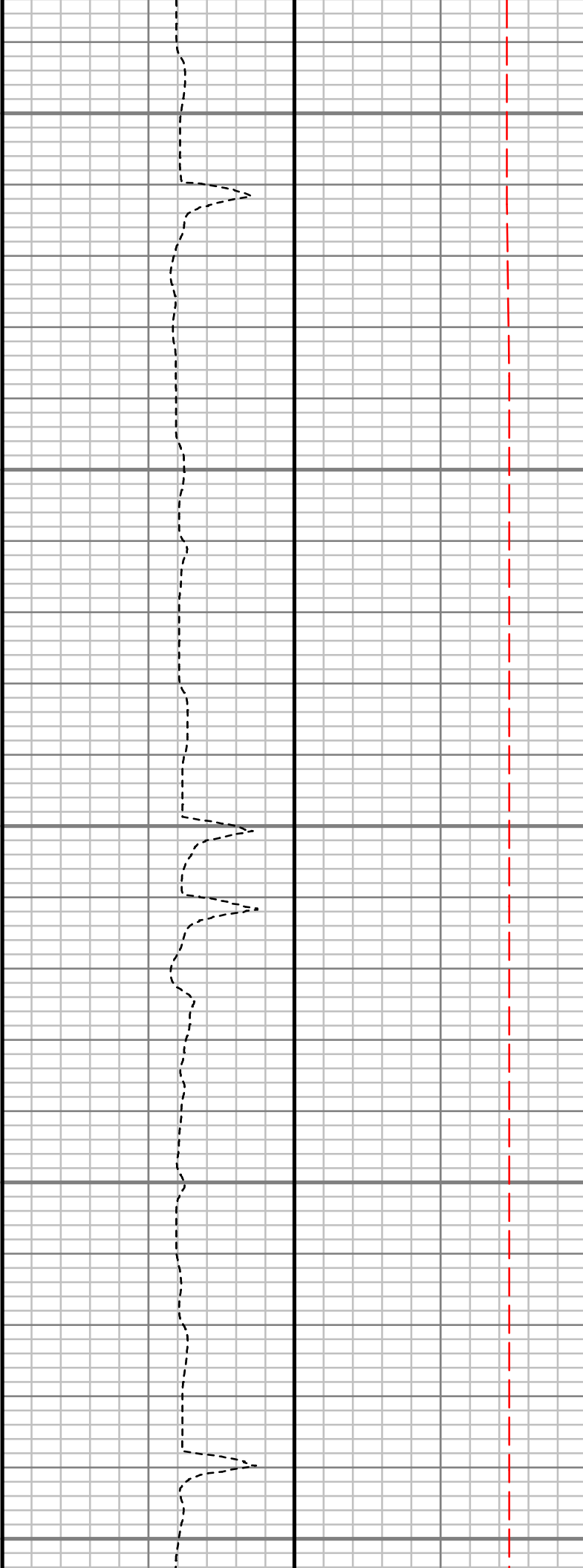
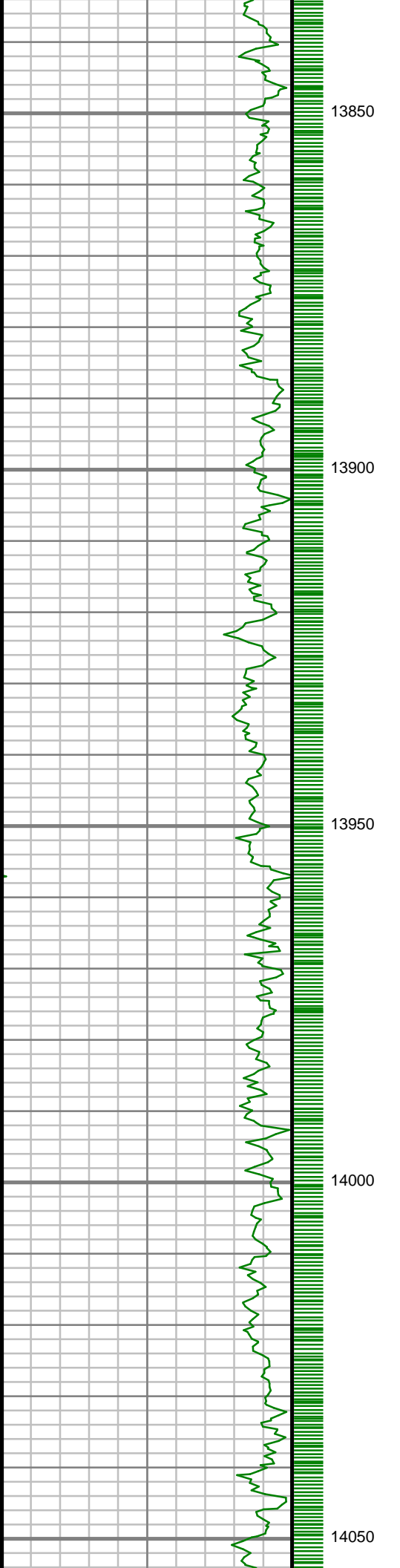
S: 192 MD: 13620.00 ft
Inc: 87.62 deg Az:
180.74 deg TVD:
7288.28 ft



S: 193 MD: 13709.00 ft
Inc: 88.30 deg Az:
182.01 deg TVD:
7291.45 ft

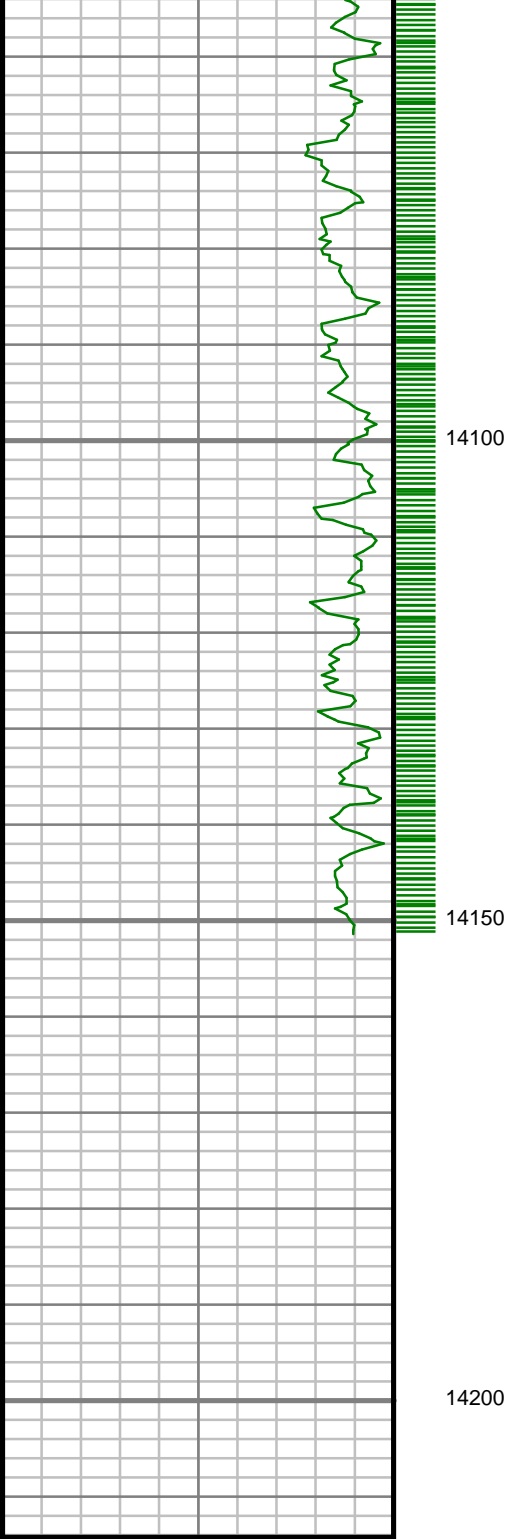


S: 194 MD: 13797.00 ft
Inc: 88.90 deg Az:
181.61 deg TVD:
7293.61 ft

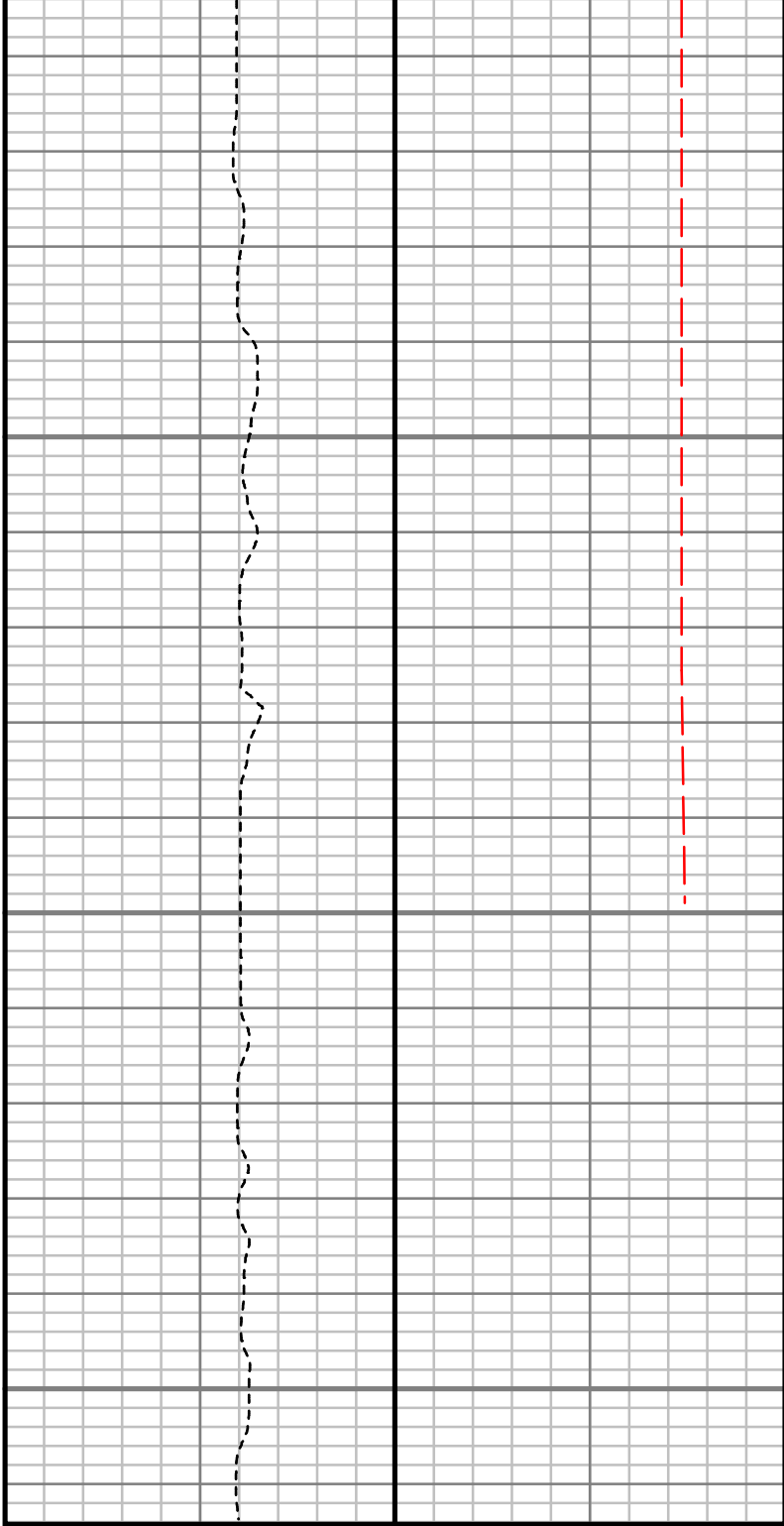


S: 195 MD: 13886.00 ft
Inc: 89.43 deg Az:
181.41 deg TVD:
7294.91 ft

S: 196 MD: 13975.00 ft
Inc: 89.83 deg Az:
181.21 deg TVD:
7295.48 ft



Gamma Ray (GR)		
0	Unit = aapi	150



Rate of Penetration (ROP)		
1000	Unit = ft/hr	0

Tool Temperature (TEMP)		
0	Unit = °F	300

S: 197 MD: 14064.00 ft
Inc: 89.60 deg Az:
181.13 deg TVD:
7295.92 ft

S: 198 MD: 14150.00 ft
Inc: 89.46 deg Az:
181.55 deg TVD:
7296.63 ft

Comments

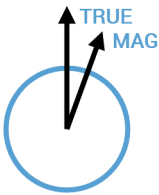
SURVEY REPORT

CUSTOMER ANADARKO E&P ONSHORE LLC
PROJECT HERGENREDER 25N-4HZ
FIELD WATTENBERG

WELL INFORMATION
Lat/Long 40.188519° N, 105.013815° W
Northing 14,595,382.27 ft
Easting 1,636,584.67 ft
UWI 05123458580000

MAP INFORMATION
North Reference True North
Grid Correction System Universal Transverse Mercator (US Survey Feet)
Datum North American Datum 1983 (GRS 1980)
Map Zone Zone 13N (108 W to 102 W)

VERTICAL SECTION REFERENCE
+N/-S 0 ft
+E/-W 0 ft
Proposal Direction 179.59°
Calculation Method Minimum Curvature



GEOMAGNETIC REFERENCE INFORMATION Local Gravity: 999.050 mG [computed]

MD	MODEL	DATE	DECLINATION	MAG TO TRUE
0-4822 ft	MagVAR	31 Jan 2018	8.36°	add 8.36°
4822-14150 ft	MagVAR	31 Jan 2018	8.37°	add 8.37°

WELL NOTES **OPERATORS**
J. MEYERS, J. WALSH, M BAILY, M. BAILY

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
125.00	1.19	144.59	124.99	1.06	-1.06	0.75	0.95
157.00	1.23	135.18	156.98	1.58	-1.57	1.19	0.63
188.00	1.32	124.72	187.98	2.02	-2.01	1.71	0.80
220.00	1.41	107.85	219.97	2.36	-2.34	2.39	1.28
251.00	1.67	94.93	250.96	2.52	-2.50	3.21	1.39
283.00	2.07	91.94	282.94	2.59	-2.56	4.25	1.29
314.00	1.93	88.60	313.92	2.60	-2.56	5.33	0.59
346.00	2.37	85.53	345.90	2.55	-2.50	6.53	1.42
377.00	2.68	83.59	376.87	2.42	-2.37	7.89	1.04
409.00	2.37	82.80	408.84	2.27	-2.20	9.29	0.97
441.00	1.89	77.26	440.82	2.08	-2.00	10.46	1.63
472.00	1.71	77.09	471.80	1.87	-1.79	11.41	0.58
504.00	1.93	69.09	503.78	1.58	-1.49	12.38	1.05
535.00	2.46	71.02	534.76	1.18	-1.08	13.49	1.73
567.00	3.08	70.32	566.72	0.68	-0.57	14.95	1.94
599.00	3.43	67.51	598.67	0.04	0.08	16.65	1.20
631.00	4.09	72.17	630.60	-0.67	0.80	18.62	2.27
663.00	5.01	71.29	662.50	-1.45	1.60	21.03	2.88
694.00	6.02	71.02	693.36	-2.39	2.56	23.85	3.26

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
726.00	6.50	71.81	725.17	-3.48	3.67	27.15	1.52
758.00	7.47	76.03	756.93	-4.52	4.74	30.89	3.43
790.00	8.61	75.15	788.61	-5.60	5.85	35.23	3.58
822.00	9.36	77.44	820.22	-6.75	7.03	40.08	2.60
853.00	10.11	76.65	850.78	-7.89	8.21	45.19	2.46
885.00	10.50	78.23	882.26	-9.09	9.45	50.78	1.51
917.00	11.25	78.41	913.68	-10.27	10.68	56.69	2.35
948.00	12.00	77.62	944.05	-11.53	11.97	62.80	2.47
980.00	12.66	78.14	975.31	-12.91	13.41	69.48	2.09
1012.00	12.44	78.93	1006.55	-14.24	14.79	76.30	0.87
1044.00	12.83	78.67	1037.77	-15.56	16.15	83.16	1.23
1075.00	13.75	76.82	1067.94	-17.02	17.67	90.12	3.27
1107.00	14.28	77.53	1098.99	-18.69	19.39	97.68	1.74
1139.00	14.72	76.74	1129.97	-20.42	21.17	105.49	1.51
1170.00	15.29	77.44	1159.91	-22.15	22.96	113.31	1.93
1202.00	16.30	77.44	1190.70	-23.99	24.86	121.82	3.16
1234.00	16.96	77.53	1221.36	-25.91	26.84	130.76	2.06
1266.00	17.49	78.67	1251.93	-27.79	28.79	140.03	1.96
1298.00	17.14	78.67	1282.48	-29.60	30.67	149.37	1.09
1329.00	17.05	79.64	1312.11	-31.25	32.38	158.32	0.96

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
1361.00	17.84	80.69	1342.64	-32.82	34.02	167.77	2.66
1393.00	18.63	79.64	1373.03	-34.46	35.73	177.63	2.67
1425.00	19.29	80.25	1403.29	-36.20	37.54	187.87	2.15
1456.00	20.08	79.37	1432.48	-37.97	39.39	198.15	2.72
1488.00	19.91	77.44	1462.55	-40.09	41.59	208.87	2.13
1519.00	19.82	75.07	1491.71	-42.52	44.09	219.10	2.61
1551.00	20.39	74.80	1521.76	-45.31	46.95	229.72	1.80
1583.00	19.82	74.36	1551.81	-48.15	49.88	240.32	1.84
1615.00	19.47	76.12	1581.95	-50.82	52.62	250.72	2.15
1646.00	18.90	76.82	1611.23	-53.14	55.00	260.63	1.98
1678.00	18.68	78.49	1641.52	-55.27	57.21	270.69	1.82
1710.00	18.98	78.67	1671.81	-57.24	59.25	280.82	0.95
1742.00	19.20	79.90	1702.05	-59.11	61.20	291.10	1.43
1773.00	17.89	79.72	1731.44	-60.79	62.94	300.81	4.23
1805.00	17.23	78.93	1761.95	-62.51	64.73	310.29	2.19
1837.00	17.05	78.85	1792.53	-64.26	66.54	319.55	0.57
1869.00	17.36	79.55	1823.09	-65.96	68.32	328.84	1.16
1900.00	17.53	79.90	1852.67	-67.55	69.98	337.99	0.64
1932.00	17.80	79.29	1883.16	-69.24	71.73	347.54	1.02
1964.00	18.06	77.62	1913.61	-71.14	73.70	357.19	1.80

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
1995.00	18.24	77.09	1943.06	-73.19	75.82	366.61	0.79
2027.00	18.37	77.26	1973.44	-75.35	78.05	376.41	0.44
2059.00	18.59	77.26	2003.79	-77.52	80.28	386.31	0.69
2091.00	18.81	77.88	2034.10	-79.65	82.49	396.32	0.93
2122.00	18.02	76.30	2063.52	-81.77	84.68	405.87	3.01
2154.00	17.84	75.59	2093.96	-84.09	87.07	415.43	0.88
2185.00	17.75	76.21	2123.48	-86.34	89.38	424.61	0.68
2217.00	18.33	75.42	2153.91	-88.70	91.81	434.22	1.97
2249.00	19.03	76.82	2184.22	-91.08	94.26	444.17	2.60
2281.00	18.54	76.03	2214.52	-93.43	96.68	454.19	1.73
2400.00	17.74	74.62	2327.60	-102.55	106.06	490.02	0.77
2489.00	16.94	68.92	2412.56	-110.62	114.31	515.19	2.11
2577.00	18.01	73.02	2496.50	-119.03	122.90	540.16	1.86
2692.00	17.90	78.78	2605.91	-127.42	131.53	574.51	1.55
2781.00	17.04	78.38	2690.80	-132.52	136.82	600.70	0.98
2870.00	19.73	80.59	2775.25	-137.41	141.91	628.30	3.13
3048.00	18.77	80.20	2943.30	-146.78	151.69	686.17	0.54
3225.00	18.07	77.47	3111.23	-157.19	162.49	741.03	0.63
3314.00	17.20	78.74	3196.05	-162.56	168.06	767.41	1.06
3403.00	16.34	81.57	3281.26	-166.79	172.47	792.70	1.34

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
3492.00	16.08	82.87	3366.73	-169.98	175.83	817.31	0.50
3581.00	17.63	80.22	3451.90	-173.61	179.65	842.83	1.95
3670.00	20.22	77.09	3536.08	-179.14	185.38	871.11	3.12
3759.00	22.33	77.74	3619.01	-185.94	192.41	902.62	2.39
3848.00	20.99	76.58	3701.73	-193.01	199.70	934.66	1.58
3937.00	19.71	77.52	3785.17	-199.74	206.64	964.82	1.49
4026.00	18.60	80.28	3869.24	-205.17	212.28	993.46	1.61
4203.00	18.84	71.93	4036.91	-218.41	225.92	1048.47	1.52
4381.00	18.28	77.75	4205.66	-232.86	240.76	1103.08	1.09
4469.00	16.25	76.24	4289.69	-238.54	246.62	1128.52	2.36
4558.00	15.32	74.54	4375.34	-244.46	252.71	1151.95	1.17
4647.00	16.78	84.97	4460.89	-248.55	256.97	1176.08	3.63
4735.00	17.11	89.19	4545.07	-249.66	258.27	1201.67	1.45
4824.00	14.40	82.80	4630.73	-251.06	259.84	1225.75	3.61
4913.00	12.62	76.89	4717.26	-254.51	263.43	1246.20	2.53
5002.00	11.14	74.47	4804.36	-258.89	267.94	1263.96	1.76
5091.00	9.07	74.44	4891.97	-262.96	272.12	1279.00	2.33
5179.00	6.36	79.80	4979.17	-265.61	274.85	1290.48	3.18
5268.00	3.69	95.14	5067.82	-266.17	275.46	1298.19	3.33
5357.00	1.24	182.45	5156.75	-264.93	274.25	1301.00	4.31

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
5446.00	2.03	228.07	5245.72	-262.92	272.23	1299.79	1.64
5535.00	2.12	228.33	5334.66	-260.79	270.08	1297.39	0.09
5624.00	1.95	233.07	5423.60	-258.81	268.08	1294.95	0.26
5712.00	1.83	242.54	5511.56	-257.28	266.53	1292.50	0.38
5801.00	2.12	240.93	5600.50	-255.84	265.08	1289.81	0.33
5890.00	1.15	289.77	5689.47	-255.36	264.58	1287.53	1.81
5979.00	0.99	289.13	5778.45	-255.93	265.13	1285.97	0.17
6068.00	1.36	278.17	5867.43	-256.34	265.54	1284.19	0.48
6157.00	1.61	272.03	5956.40	-256.55	265.73	1281.90	0.34
6246.00	0.15	259.62	6045.39	-256.58	265.75	1280.53	1.65
6334.00	0.61	276.54	6133.39	-256.62	265.79	1279.96	0.53
6423.00	1.32	266.59	6222.38	-256.62	265.78	1278.46	0.82
6512.00	1.72	259.66	6311.35	-256.34	265.48	1276.12	0.49
6601.00	9.74	193.82	6399.87	-248.80	257.91	1273.01	10.30
6690.00	13.63	192.20	6487.01	-231.26	240.35	1268.99	4.39
6779.00	17.42	187.41	6572.75	-207.81	216.87	1265.05	4.49
6868.00	21.04	178.61	6656.79	-178.63	187.67	1263.72	5.19
6957.00	27.94	177.03	6737.73	-141.78	150.83	1265.19	7.80
7046.00	34.62	178.73	6813.75	-95.61	104.68	1266.84	7.57
7135.00	41.87	176.44	6883.61	-40.60	49.68	1269.24	8.30

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
7198.00	47.05	174.43	6928.56	3.39	5.71	1272.79	8.52
7287.00	58.95	173.14	6982.02	73.98	-64.81	1280.54	13.42
7375.00	73.41	174.39	7017.46	153.86	-144.64	1289.21	16.48
7490.00	86.98	178.12	7037.00	266.70	-257.43	1296.52	12.23
7579.00	87.59	178.37	7041.21	355.58	-346.29	1299.24	0.74
7668.00	88.66	178.40	7044.12	444.51	-435.21	1301.75	1.20
7757.00	89.00	178.59	7045.94	533.48	-524.16	1304.08	0.43
7845.00	89.33	178.25	7047.22	621.45	-612.12	1306.51	0.54
7934.00	88.96	176.80	7048.55	710.38	-701.02	1310.36	1.68
8023.00	90.07	178.22	7049.31	799.31	-789.93	1314.23	2.03
8111.00	88.56	177.79	7050.37	887.27	-877.87	1317.30	1.79
8200.00	88.59	182.26	7052.58	976.22	-966.82	1317.26	5.02
8289.00	87.92	183.61	7055.28	1065.02	-1055.66	1312.71	1.69
8378.00	87.93	184.02	7058.51	1153.72	-1144.40	1306.80	0.46
8466.00	86.68	182.12	7062.64	1241.46	-1232.17	1302.10	2.58
8555.00	85.71	181.32	7068.55	1330.20	-1320.93	1299.43	1.41
8644.00	86.67	180.96	7074.47	1418.97	-1409.72	1297.66	1.16
8733.00	87.39	181.30	7079.08	1507.82	-1498.58	1295.91	0.89
8822.00	87.52	181.52	7083.03	1596.68	-1587.47	1293.72	0.29
8911.00	88.16	181.38	7086.39	1685.57	-1676.37	1291.46	0.73

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
8999.00	88.83	180.76	7088.70	1773.51	-1764.33	1289.83	1.04
9088.00	90.13	178.20	7089.50	1862.50	-1853.31	1290.64	3.22
9177.00	90.23	177.40	7089.22	1951.45	-1942.24	1294.05	0.90
9266.00	87.82	177.91	7090.73	2040.38	-2031.15	1297.69	2.77
9355.00	87.22	178.08	7094.58	2129.26	-2120.01	1300.81	0.70
9444.00	87.02	177.98	7099.05	2218.12	-2208.85	1303.87	0.25
9532.00	86.92	177.46	7103.70	2305.95	-2296.65	1307.36	0.60
9621.00	86.92	176.49	7108.48	2394.73	-2385.40	1312.06	1.09
9711.00	88.66	176.87	7111.95	2484.54	-2475.18	1317.27	1.98
9799.00	90.23	178.15	7112.80	2572.47	-2563.09	1321.09	2.30
9888.00	88.93	178.25	7113.45	2661.44	-2652.04	1323.89	1.47
9977.00	90.10	176.90	7114.20	2750.38	-2740.95	1327.66	2.00
10065.00	92.48	178.41	7112.22	2838.30	-2828.85	1331.26	3.20
10154.00	90.27	178.78	7110.09	2927.25	-2917.79	1333.44	2.52
10243.00	88.90	179.12	7110.73	3016.24	-3006.77	1335.07	1.59
10332.00	86.92	178.97	7113.98	3105.18	-3095.69	1336.56	2.23
10421.00	86.04	178.21	7119.45	3193.99	-3184.50	1338.75	1.30
10510.00	85.23	178.86	7126.22	3282.72	-3273.21	1341.03	1.16
10599.00	85.10	179.01	7133.72	3371.40	-3361.88	1342.68	0.23
10687.00	86.65	180.28	7140.05	3459.16	-3449.64	1343.22	2.27

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
10776.00	87.65	180.47	7144.48	3548.04	-3538.53	1342.64	1.15
10865.00	87.35	181.32	7148.36	3636.94	-3627.43	1341.25	1.01
10954.00	87.55	181.27	7152.31	3725.81	-3716.32	1339.24	0.23
11043.00	86.12	179.62	7157.22	3814.66	-3805.18	1338.55	2.45
11132.00	85.91	179.72	7163.41	3903.44	-3893.96	1339.06	0.26
11221.00	85.58	178.50	7170.02	3992.19	-3982.70	1340.44	1.41
11310.00	85.88	178.13	7176.65	4080.92	-4071.42	1343.05	0.53
11399.00	86.48	177.28	7182.58	4169.68	-4160.15	1346.60	1.16
11488.00	87.55	179.73	7187.21	4258.53	-4248.99	1348.91	3.00
11577.00	88.29	180.44	7190.44	4347.47	-4337.93	1348.78	1.15
11666.00	88.79	179.72	7192.71	4436.44	-4426.90	1348.66	0.99
11755.00	86.65	180.13	7196.24	4525.36	-4515.82	1348.78	2.45
11844.00	85.84	180.24	7202.06	4614.16	-4604.63	1348.49	0.92
11933.00	85.60	179.66	7208.70	4702.91	-4693.38	1348.56	0.71
12022.00	85.81	180.47	7215.37	4791.66	-4782.13	1348.47	0.94
12110.00	86.98	180.69	7220.90	4879.47	-4869.95	1347.58	1.35
12199.00	88.06	181.85	7224.75	4968.35	-4958.84	1345.62	1.77
12288.00	87.99	180.90	7227.82	5057.25	-5047.76	1343.49	1.07
12377.00	88.56	180.69	7230.50	5146.19	-5136.71	1342.26	0.68
12466.00	88.49	179.95	7232.79	5235.15	-5225.68	1341.77	0.84

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	°/100ft
12554.00	88.56	179.71	7235.06	5323.12	-5313.65	1342.03	0.28
12643.00	88.73	178.92	7237.16	5412.09	-5402.62	1343.09	0.91
12732.00	88.96	178.72	7238.96	5501.07	-5491.58	1344.92	0.34
12820.00	89.03	178.27	7240.51	5589.04	-5579.54	1347.23	0.53
12909.00	88.15	177.90	7242.70	5677.98	-5668.46	1350.20	1.06
12998.00	87.29	178.73	7246.24	5766.89	-5757.35	1352.81	1.34
13087.00	86.45	179.92	7251.10	5855.75	-5846.21	1353.85	1.64
13176.00	86.18	179.96	7256.83	5944.56	-5935.03	1353.94	0.31
13265.00	86.15	179.93	7262.79	6033.36	-6023.83	1354.03	0.04
13354.00	85.82	179.09	7269.02	6122.14	-6112.60	1354.79	1.01
13443.00	85.62	179.09	7275.67	6210.89	-6201.34	1356.20	0.23
13532.00	85.21	178.56	7282.78	6299.60	-6290.04	1358.02	0.74
13620.00	87.62	180.74	7288.28	6387.41	-6377.85	1358.55	3.69
13709.00	88.30	182.01	7291.45	6476.31	-6466.77	1356.42	1.62
13797.00	88.90	181.61	7293.61	6564.22	-6554.70	1353.64	0.82
13886.00	89.43	181.41	7294.91	6653.16	-6643.66	1351.30	0.64
13975.00	89.83	181.21	7295.48	6742.12	-6732.63	1349.26	0.50
14064.00	89.60	181.13	7295.92	6831.08	-6821.61	1347.44	0.28
14150.00	89.46	181.55	7296.63	6917.04	-6907.59	1345.43	0.51

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

5" = 100' MD