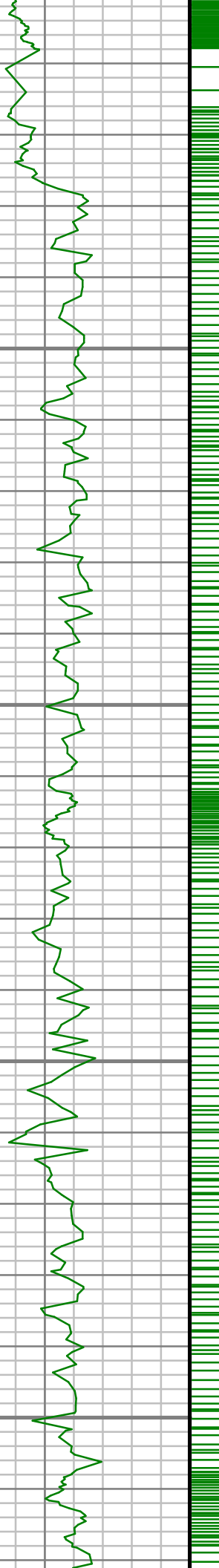


Remarks
ANADARKO PETROLEUM CORPORATION PRODUCTION AFE# 207-4506
SCIENTIFIC DRILLING INTERNATIONAL JOB# 270264
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT APPLIED 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 = 128-183 / CONT = 630 / MWD EYE = 0410 / GAMMA RAY = 1031
BIT TO SENSOR OFFSETS: SURVEY = 51.45 FT. / GAMMA RAY = 42.80 FT.
RUN # 2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-261 / CONT = 277 / MWD EYE = 538 / GAMMA RAY = 1367
BIT TO SENSOR OFFSETS: SURVEY = 58.43 FT. / GAMMA RAY = 49.78 FT.
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 BADGER 22N-3HZ WATTENBERG FIELD WELD COUNTY, COLORADO 05-123-36449			
Gamma Ray (GR) 0 Unit = aapi 150	MEASURED DEPTH 1:240 (ft)	Rate of Penetration (ROP) 0 Unit = ft/hr 1000	Tool Temperature (T-TEMP) 0 Unit = °F 300
	<p>1250</p> <p>1300</p>		<p>S: 17 MD: 1271.00 ft Inc: 0.40 deg Az: 228.20 deg TVD: 1270.99 ft</p>

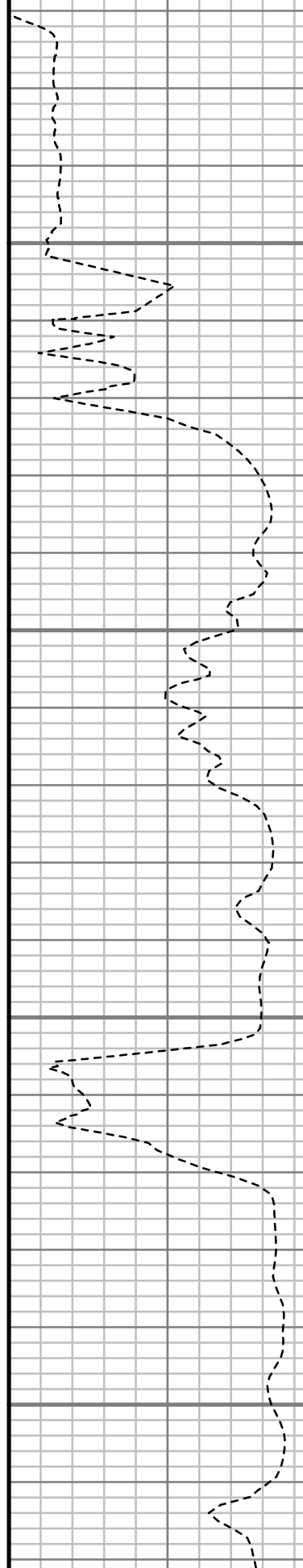


1350

1400

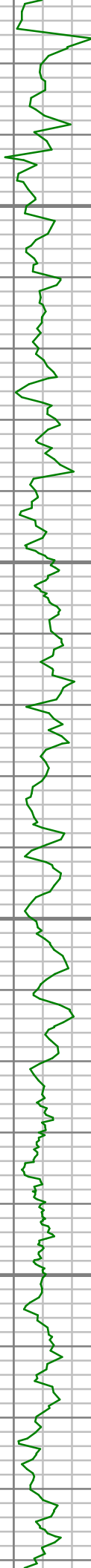
1450

1500



S: 18 MD: 1393.00 ft
Inc: 1.04 deg Az:
352.17 deg TVD:
1392.98 ft

S: 19 MD: 1487.00 ft
Inc: 1.46 deg Az:
248.09 deg TVD:
1486.97 ft

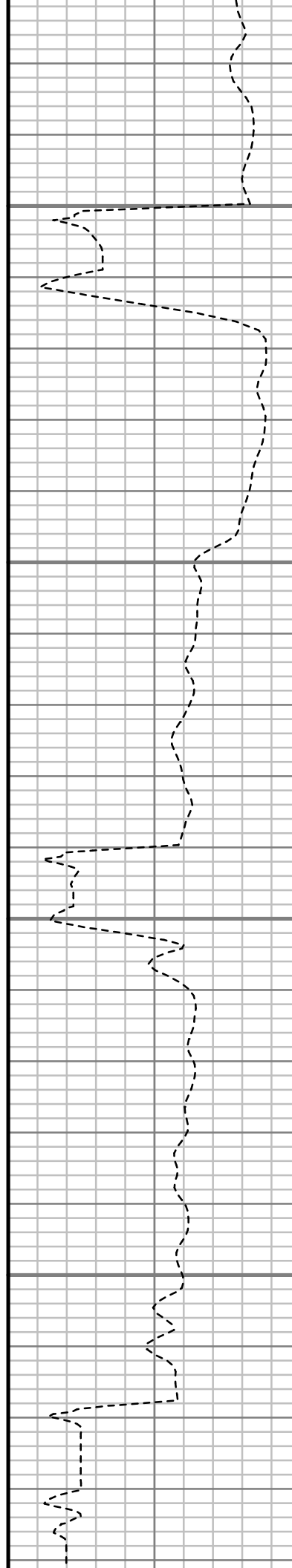


1550

1600

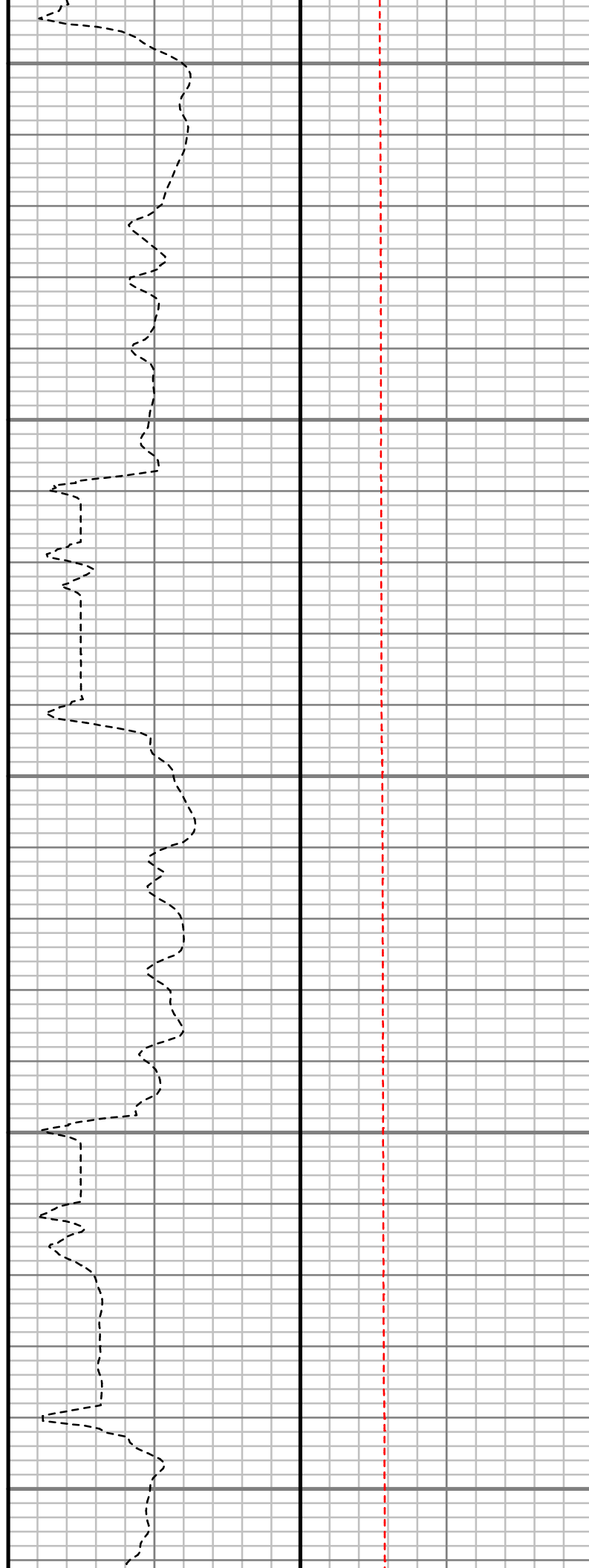
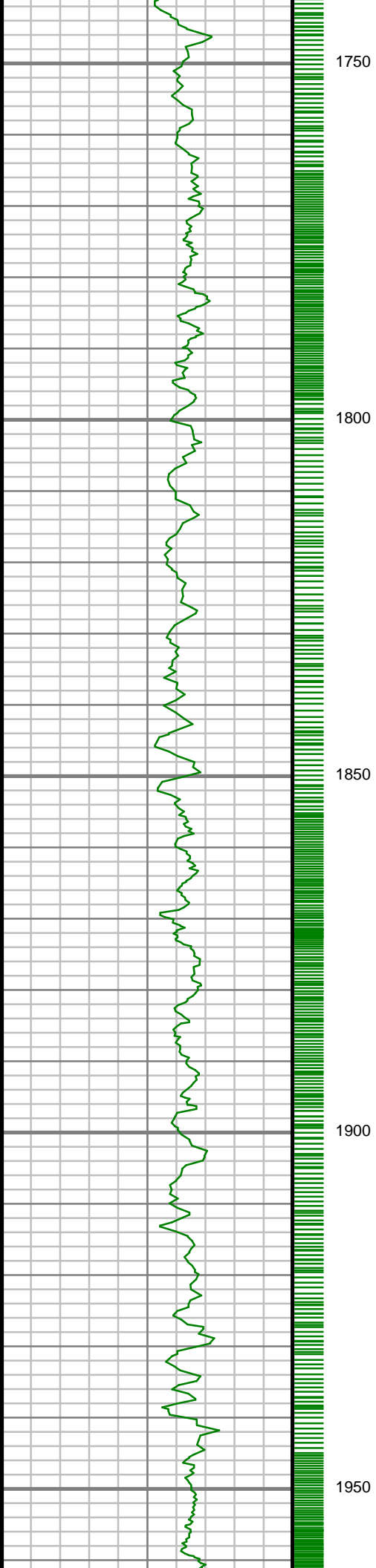
1650

1700



S: 20 MD: 1577.00 ft
Inc: 2.08 deg Az:
190.02 deg TVD:
1576.93 ft

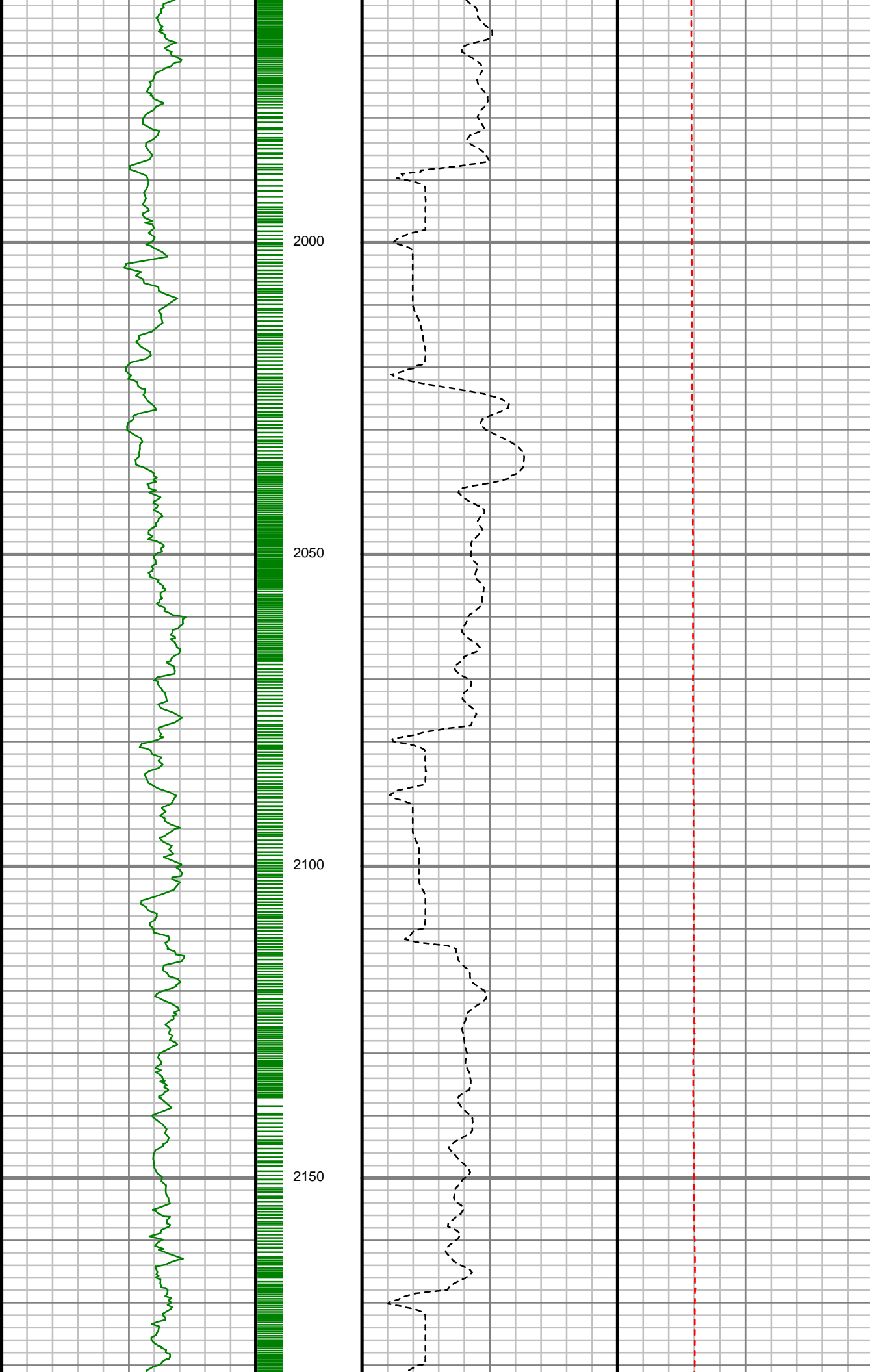
S: 21 MD: 1666.00 ft
Inc: 2.45 deg Az:
167.47 deg TVD:
1665.86 ft



S: 22 MD: 1756.00 ft
Inc: 3.19 deg Az:
160.85 deg TVD:
1755.75 ft

S: 23 MD: 1846.00 ft
Inc: 4.80 deg Az:
157.19 deg TVD:
1845.53 ft

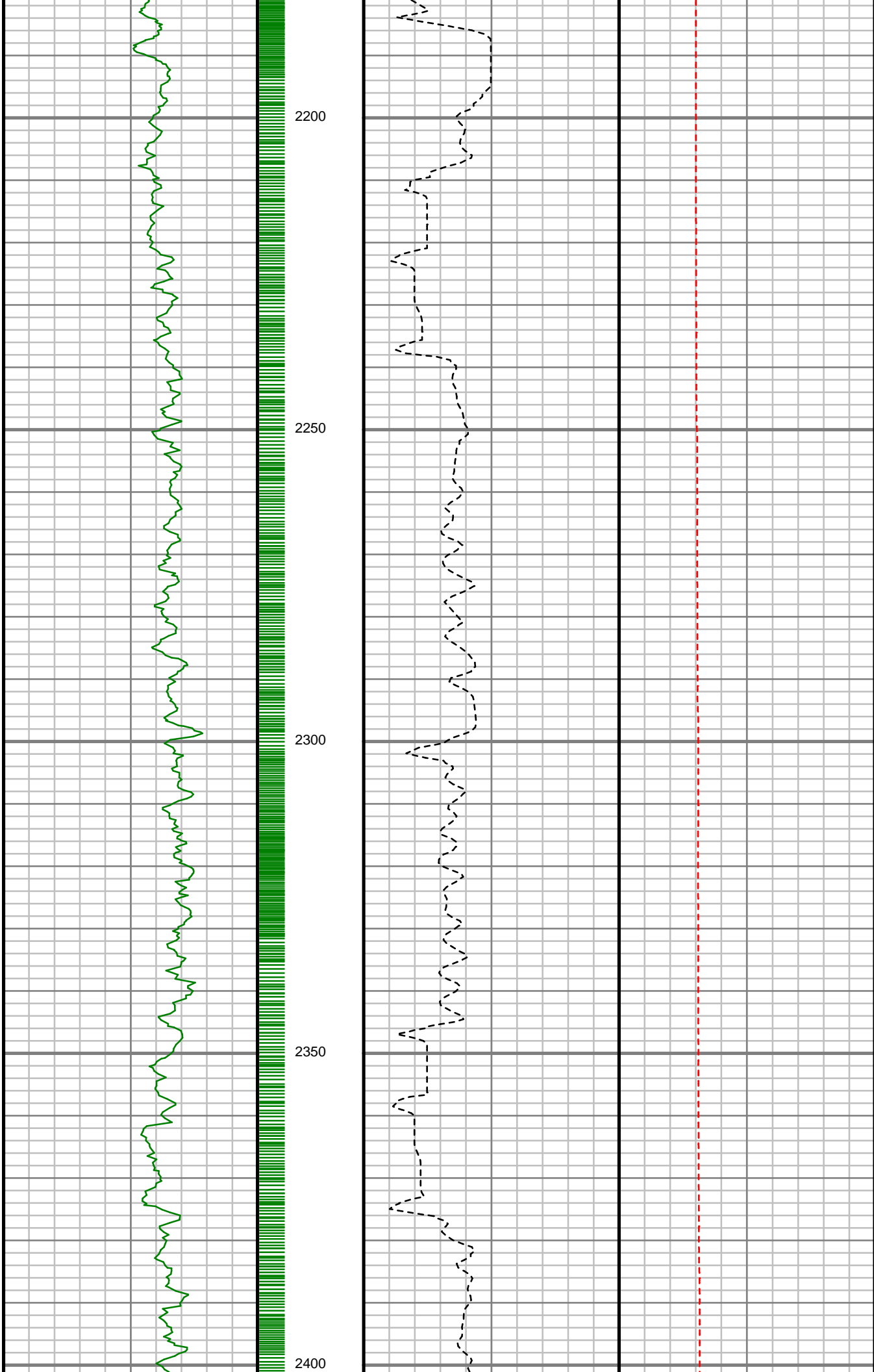
S: 24 MD: 1936.00 ft
Inc: 6.60 deg Az:
166.86 deg TVD:
1935.08 ft



S: 25 MD: 2025.00 ft
Inc: 8.94 deg Az:
177.41 deg TVD:
2023.27 ft

S: 26 MD: 2115.00 ft
Inc: 11.54 deg Az:
179.04 deg TVD:
2111.82 ft

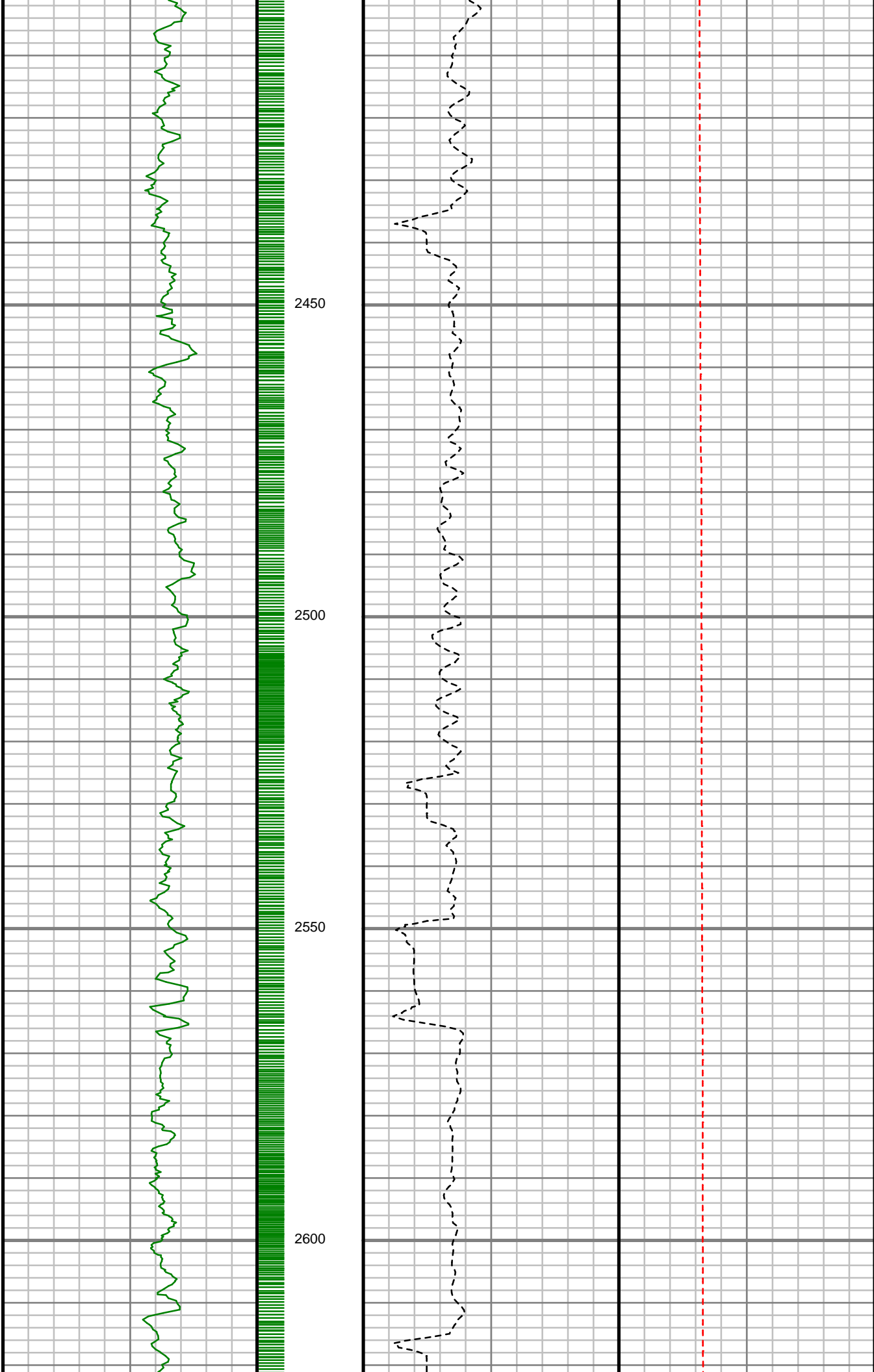
S: 27 MD: 2160.00 ft
Inc: 11.01 deg Az:
179.79 deg TVD:
2155.96 ft



S: 28 MD: 2250.00 ft
Inc: 12.05 deg Az:
177.13 deg TVD:
2244.14 ft

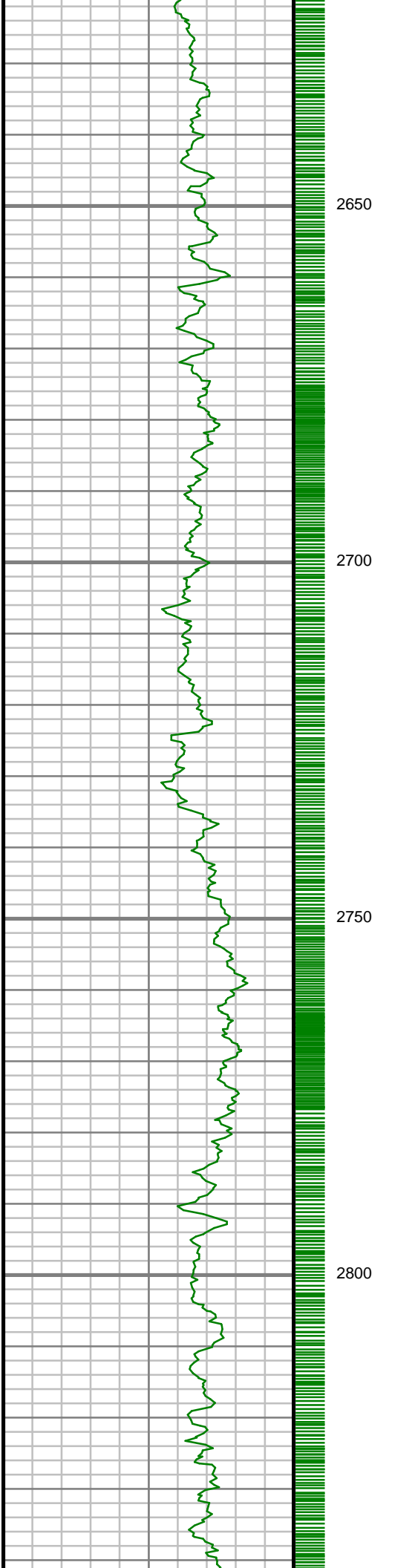
S: 29 MD: 2295.00 ft
Inc: 10.58 deg Az:
175.05 deg TVD:
2288.26 ft

S: 30 MD: 2384.00 ft
Inc: 12.42 deg Az:
176.51 deg TVD:
2375.47 ft



S: 31 MD: 2474.00 ft
Inc: 11.18 deg Az:
175.94 deg TVD:
2463.57 ft

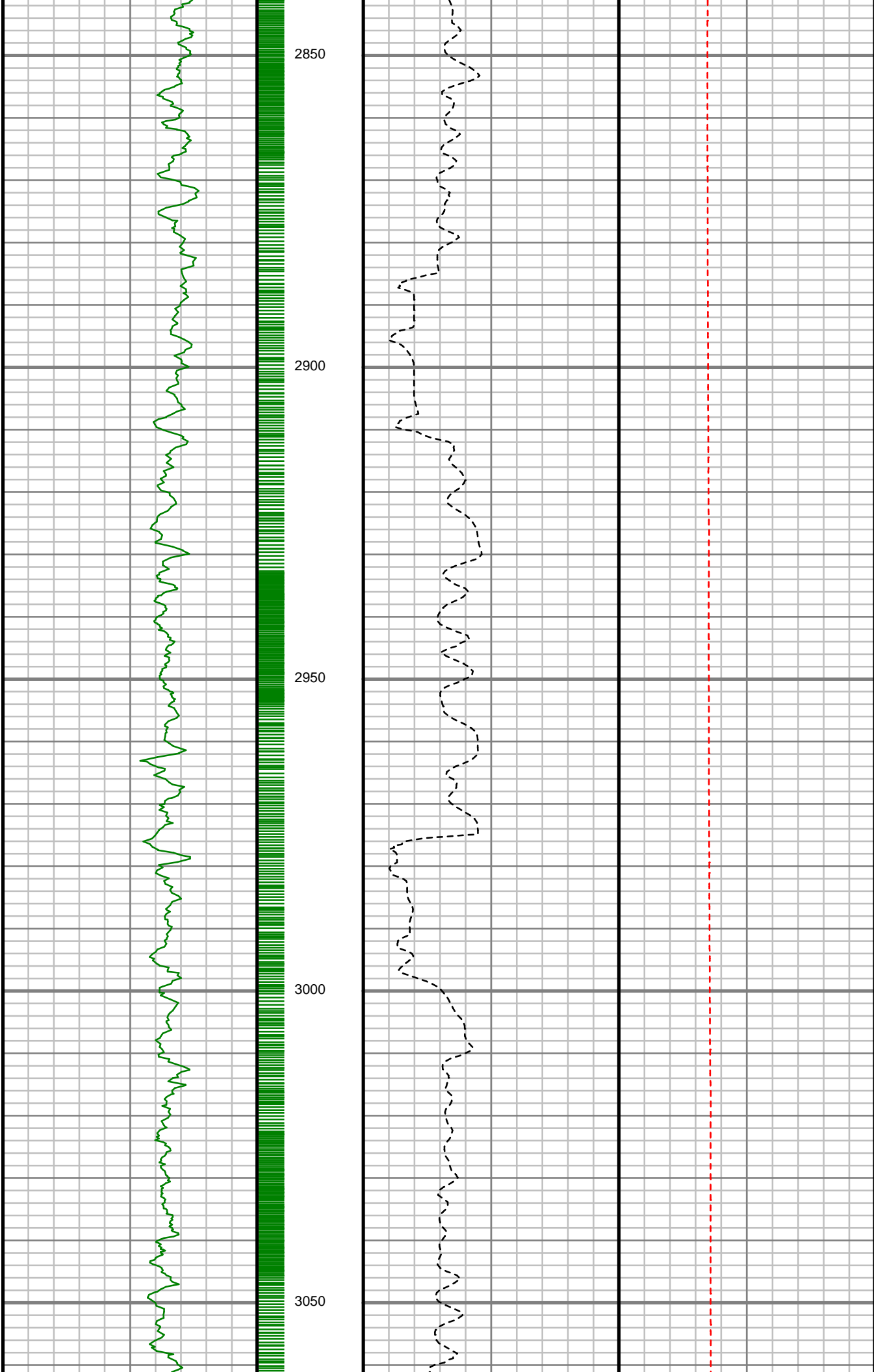
S: 32 MD: 2564.00 ft
Inc: 11.24 deg Az:
175.21 deg TVD:
2551.85 ft



S: 33 MD: 2654.00 ft
Inc: 10.67 deg Az:
177.32 deg TVD:
2640.21 ft

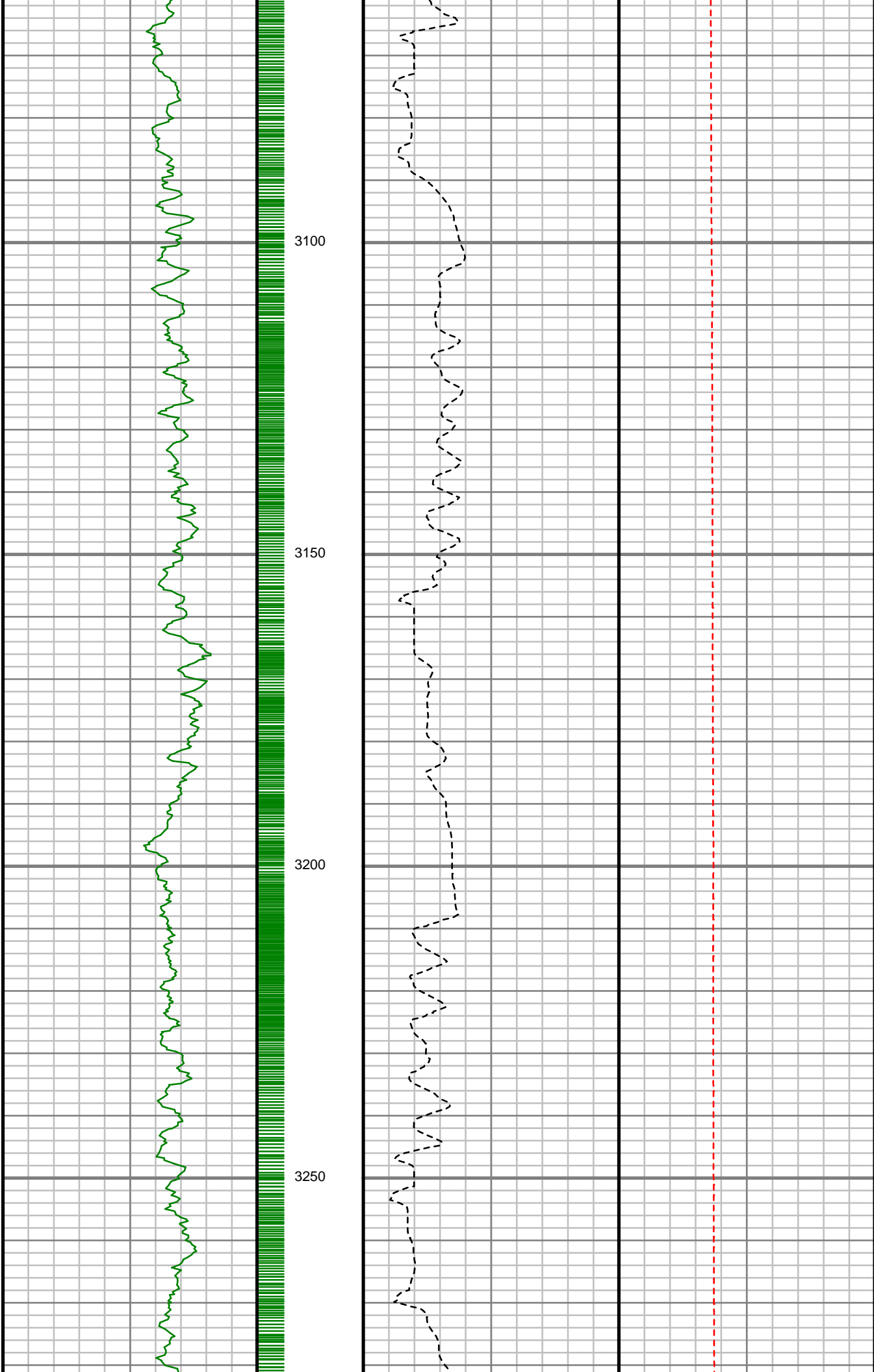
S: 34 MD: 2743.00 ft
Inc: 10.94 deg Az:
179.49 deg TVD:
2727.63 ft

S: 35 MD: 2833.00 ft
Inc: 10.88 deg Az:
173.82 deg TVD:
2820.61 ft



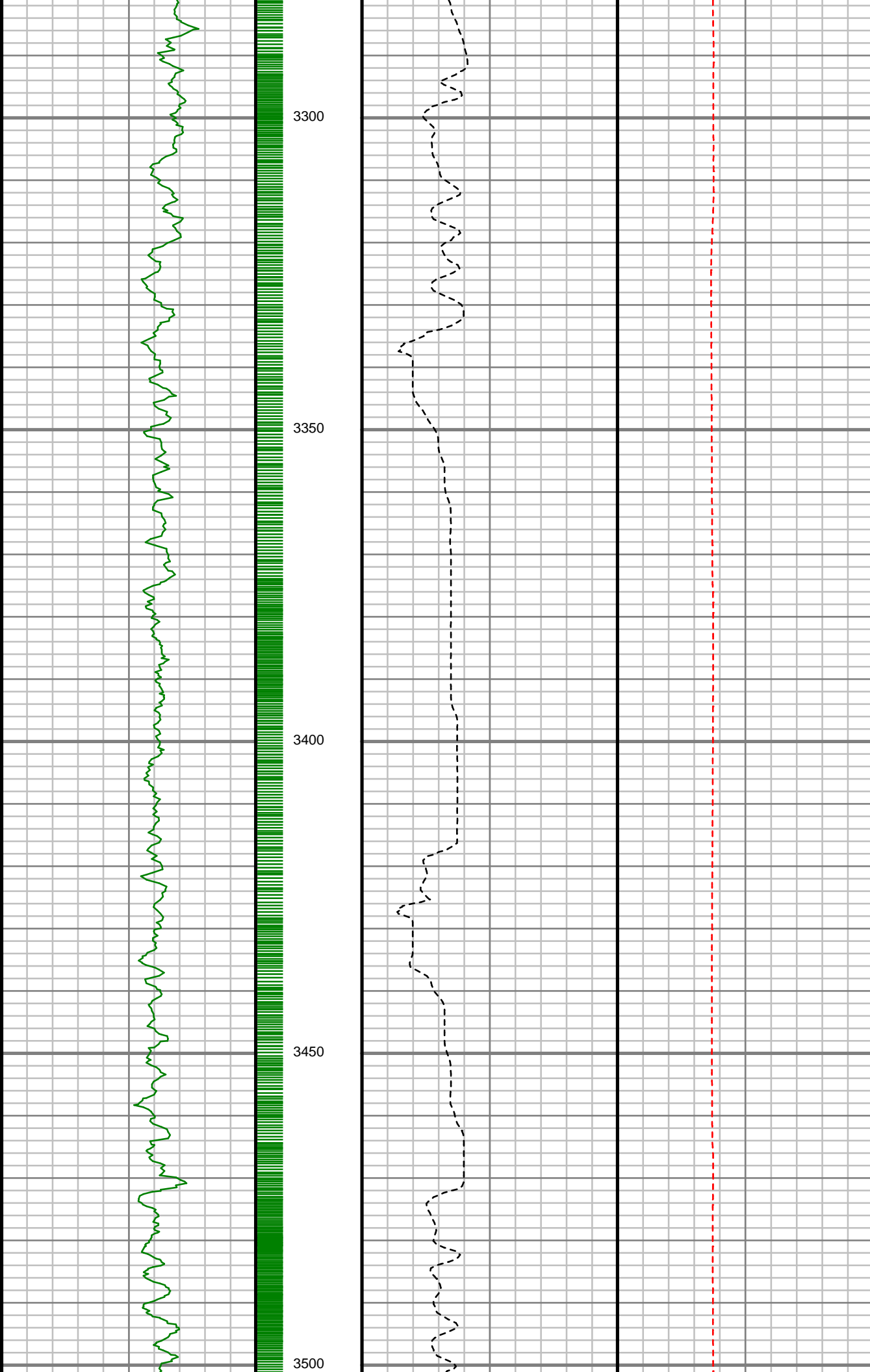
S: 36 MD: 2923.00 ft
Inc: 11.01 deg Az:
171.67 deg TVD:
2904.37 ft

S: 37 MD: 3013.00 ft
Inc: 11.14 deg Az:
177.77 deg TVD:
2992.70 ft



S: 38 MD: 3102.00 ft
Inc: 11.28 deg Az:
172.79 deg TVD:
3080.00 ft

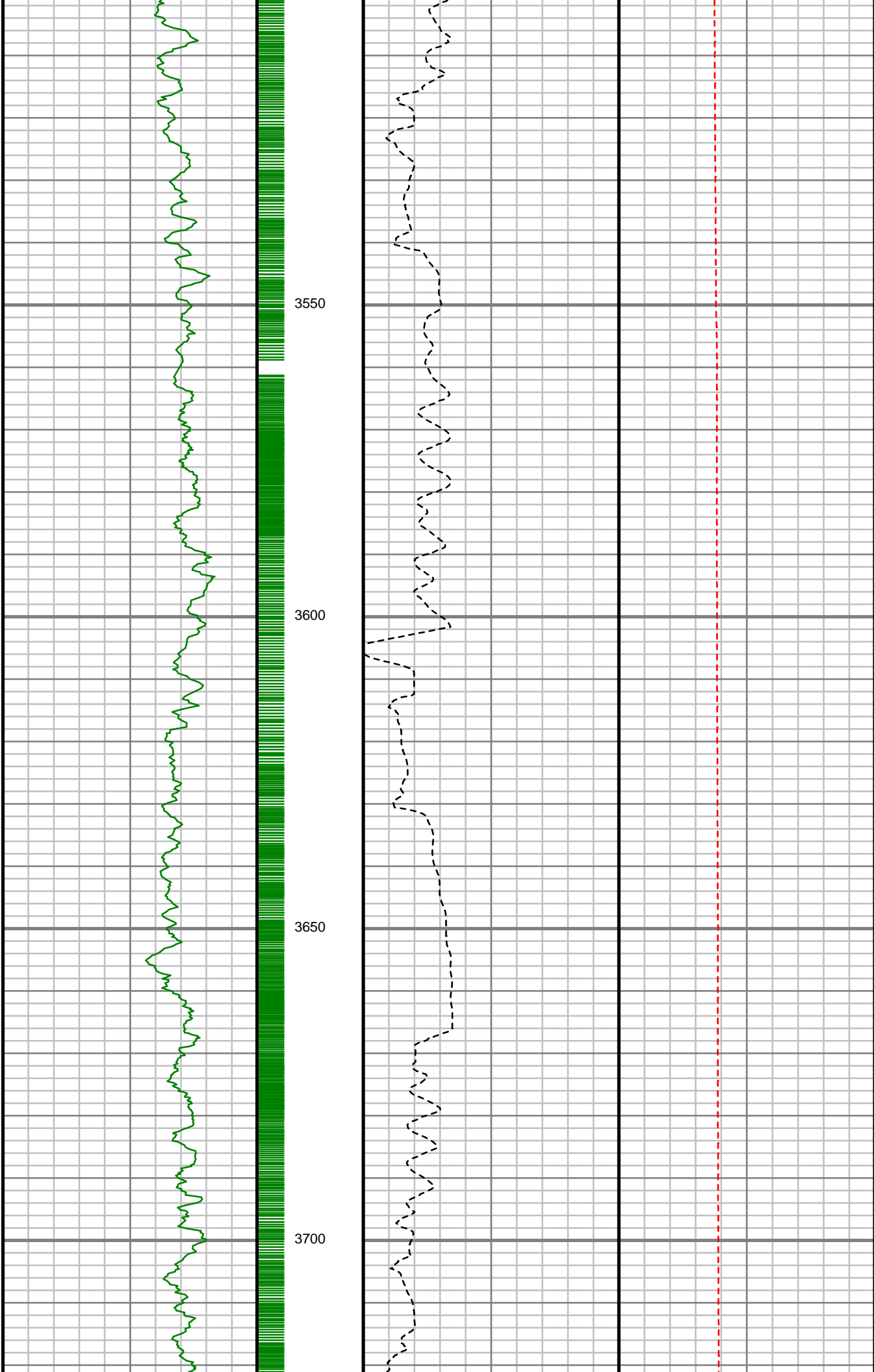
S: 39 MD: 3192.00 ft
Inc: 9.91 deg Az:
172.73 deg TVD:
3168.47 ft



S: 40 MD: 3282.00 ft
Inc: 11.16 deg Az:
176.53 deg TVD:
3256.95 ft

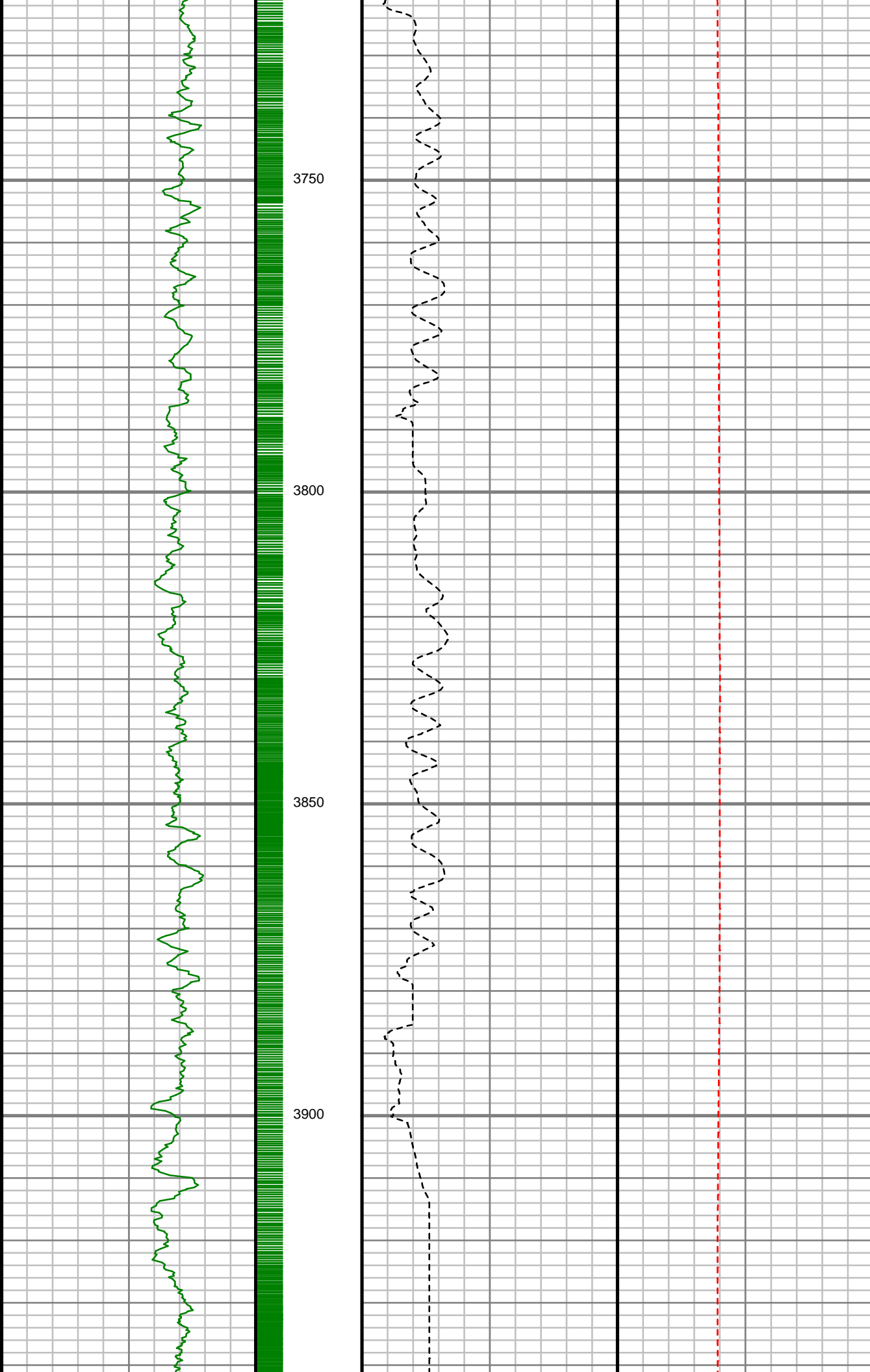
S: 41 MD: 3372.00 ft
Inc: 10.70 deg Az:
175.81 deg TVD:
3345.32 ft

S: 42 MD: 3461.00 ft
Inc: 9.72 deg Az:
172.91 deg TVD:
3432.91 ft



S: 43 MD: 3551.00 ft
Inc: 9.48 deg Az:
176.51 deg TVD:
3521.65 ft

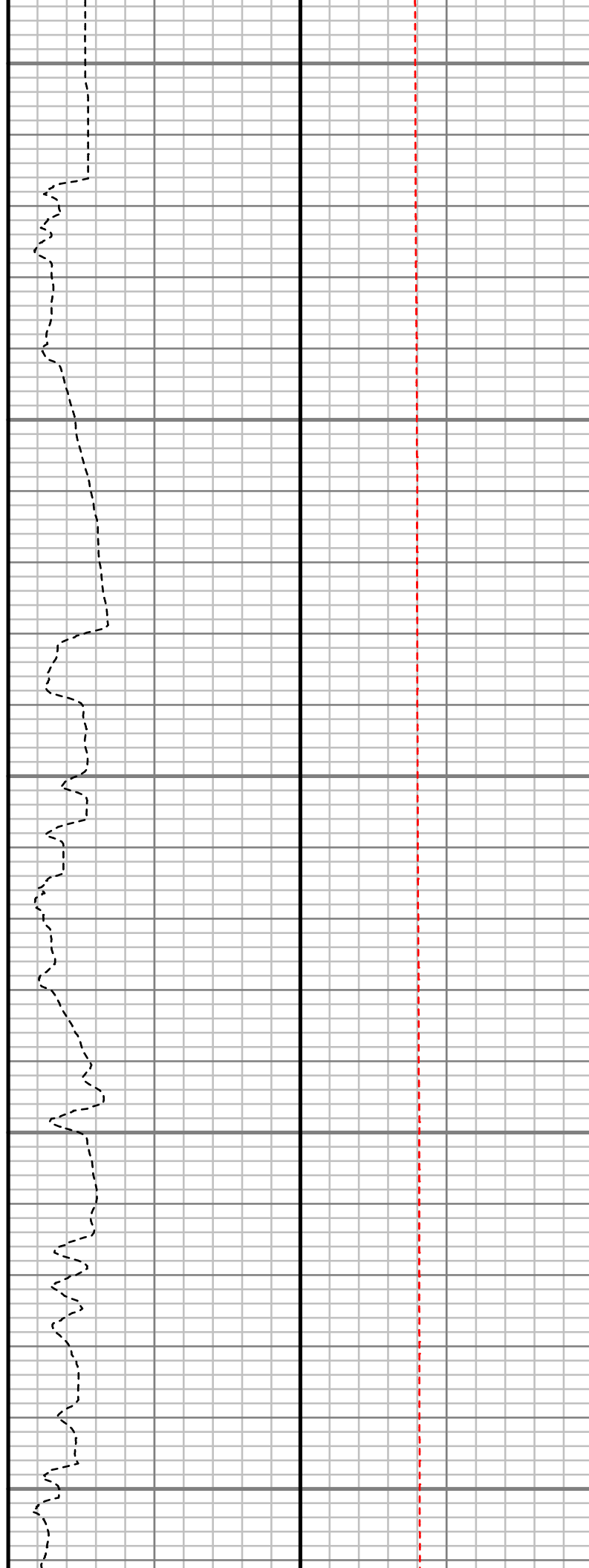
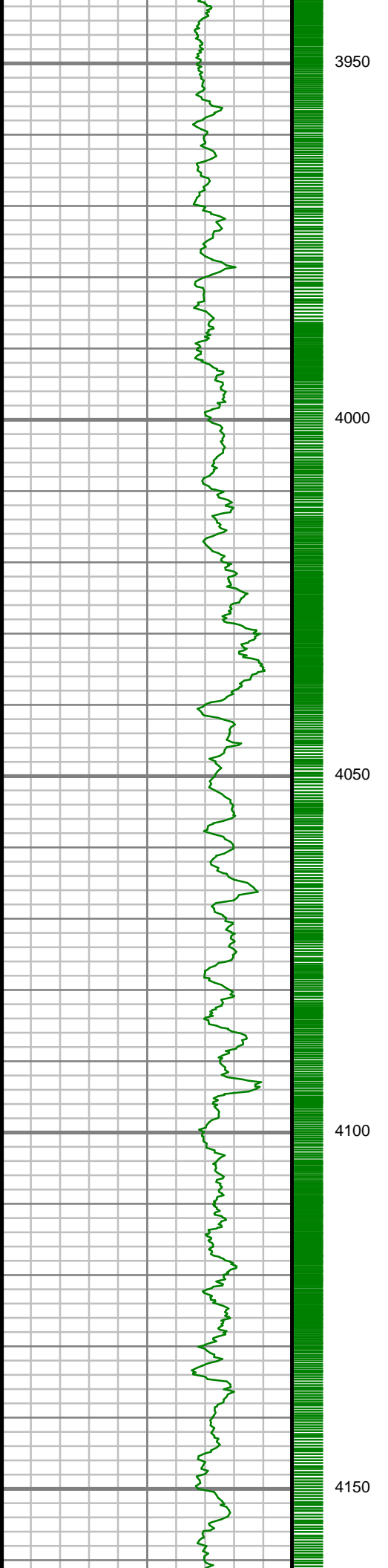
S: 44 MD: 3641.00 ft
Inc: 9.62 deg Az:
164.69 deg TVD:
3610.41 ft



S: 45 MD: 3730.00 ft
Inc: 11.39 deg Az:
168.96 deg TVD:
3697.92 ft

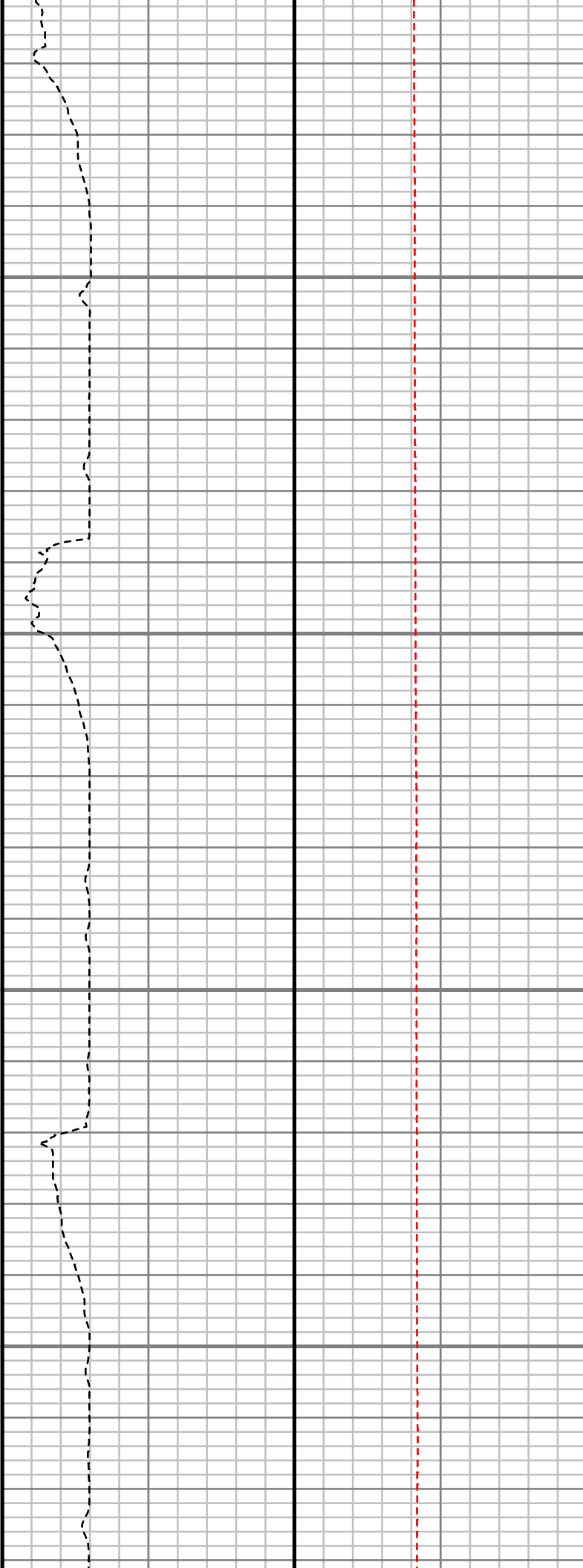
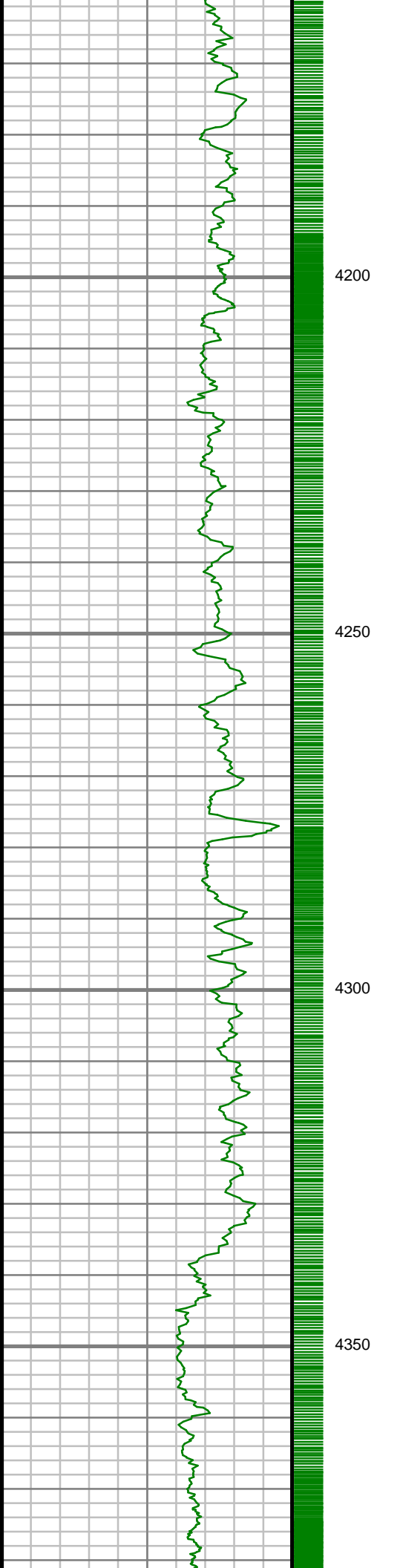
S: 46 MD: 3820.00 ft
Inc: 10.09 deg Az:
169.51 deg TVD:
3786.34 ft

S: 47 MD: 3910.00 ft
Inc: 9.53 deg Az:
179.74 deg TVD:
3875.03 ft



S: 48 MD: 4000.00 ft
Inc: 10.45 deg Az:
176.77 deg TVD:
3963.67 ft

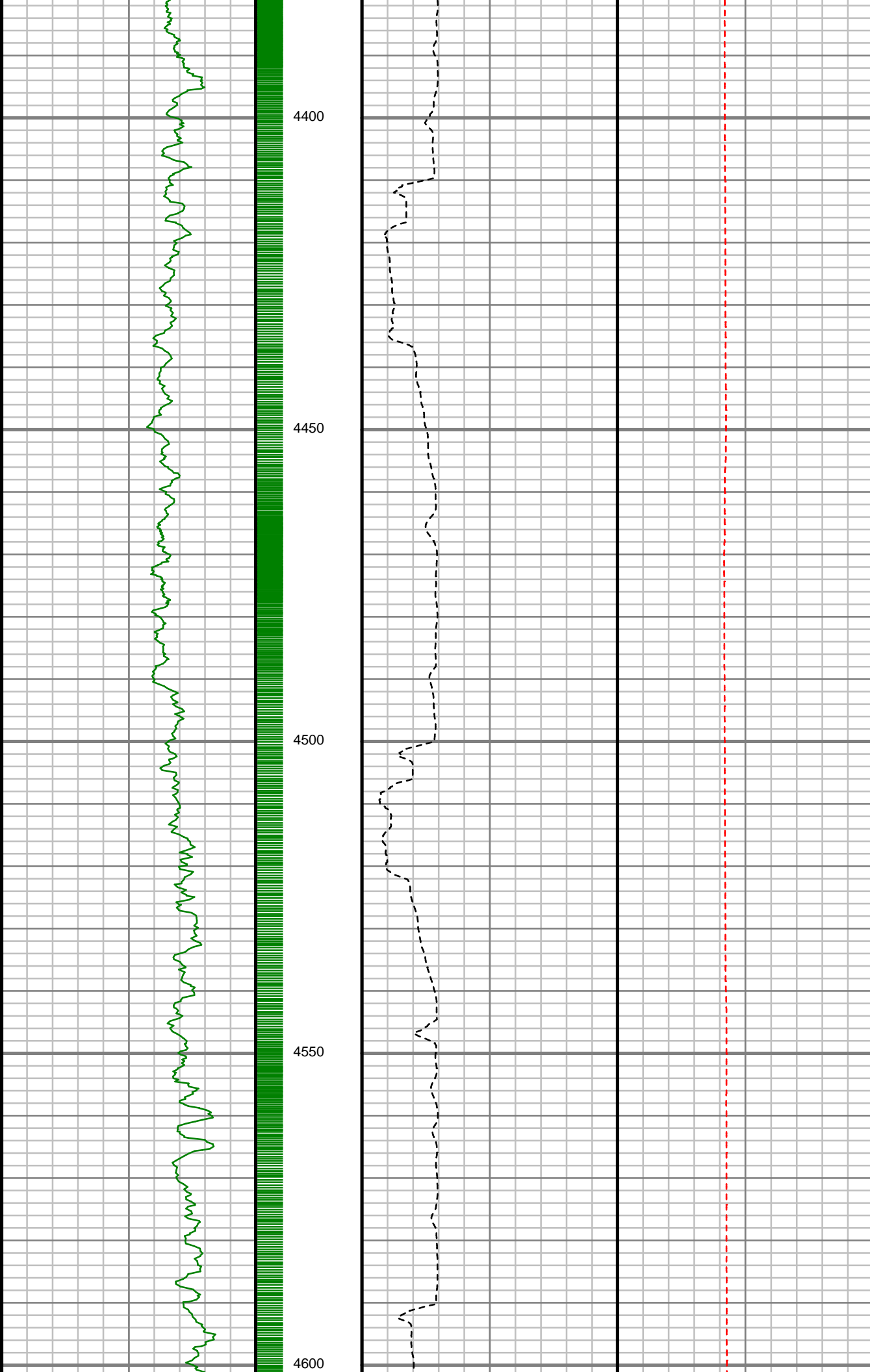
S: 49 MD: 4090.00 ft
Inc: 10.22 deg Az:
180.82 deg TVD:
4052.21 ft



S: 50 MD: 4179.00 ft
Inc: 10.73 deg Az:
178.94 deg TVD:
4139.72 ft

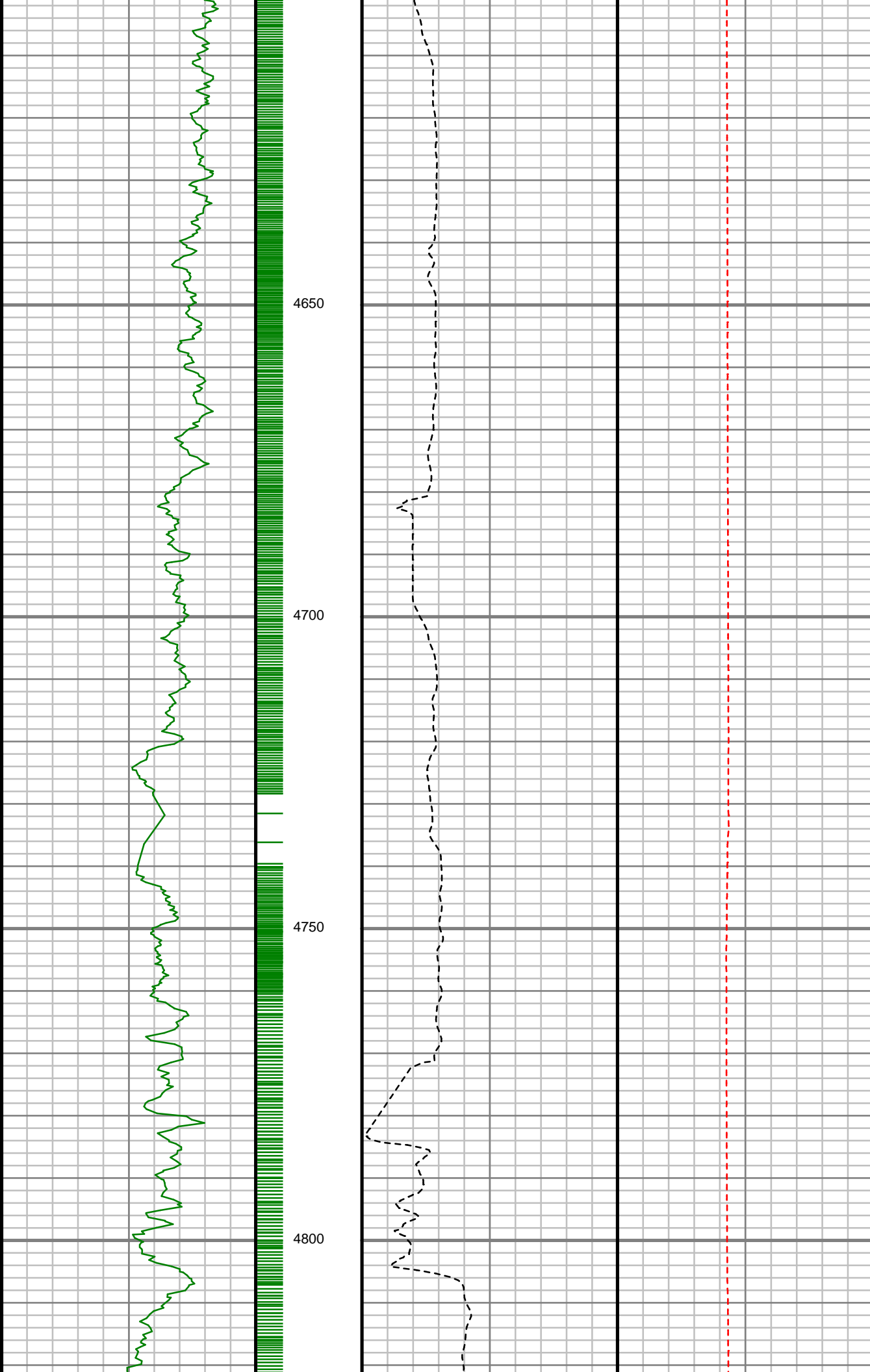
S: 51 MD: 4269.00 ft
Inc: 11.21 deg Az:
174.18 deg TVD:
4228.08 ft

S: 52 MD: 4359.00 ft
Inc: 9.77 deg Az:
172.86 deg TVD:
4316.57 ft



S: 53 MD: 4449.00 ft
Inc: 11.81 deg Az:
178.04 deg TVD:
4404.98 ft

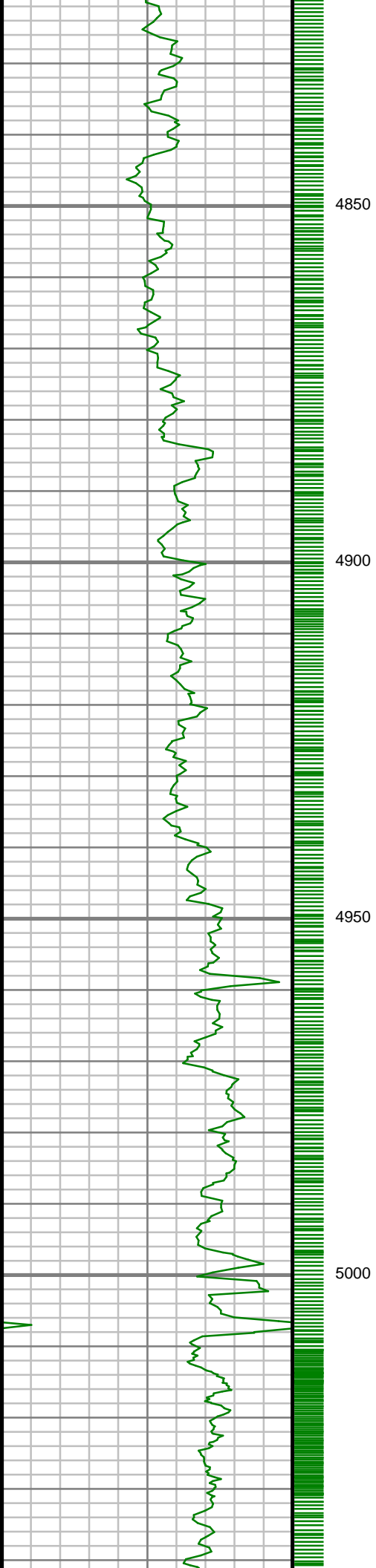
S: 54 MD: 4538.00 ft
Inc: 12.84 deg Az:
170.86 deg TVD:
4491.93 ft



S: 55 MD: 4628.00 ft
Inc: 11.55 deg Az:
166.26 deg TVD:
4579.90 ft

S: 56 MD: 4718.00 ft
Inc: 10.14 deg Az:
165.47 deg TVD:
4668.29 ft

S: 57 MD: 4808.00 ft
Inc: 11.06 deg Az:
167.58 deg TVD:
4756.76 ft

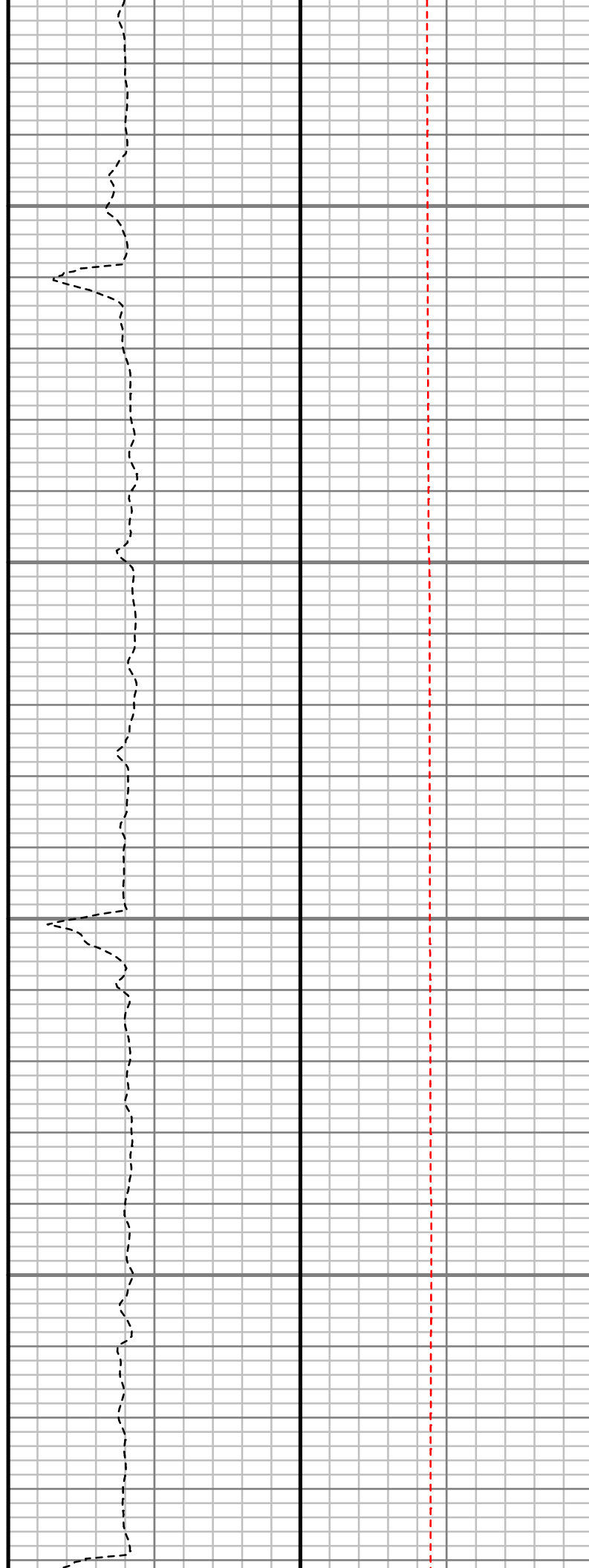


4850

4900

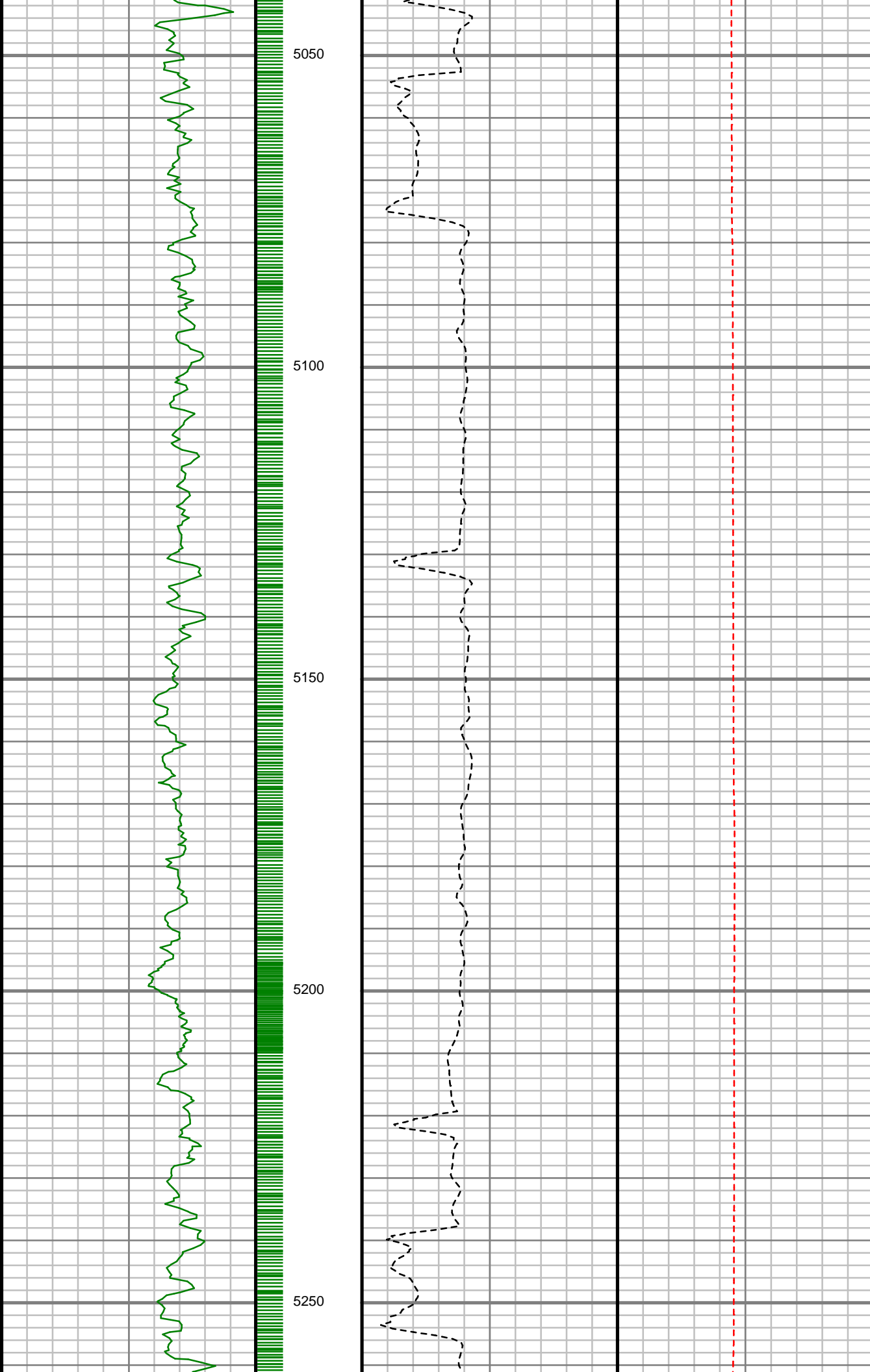
4950

5000



S: 58 MD: 4898.00 ft
Inc: 10.93 deg Az:
166.84 deg TVD:
4845.10 ft

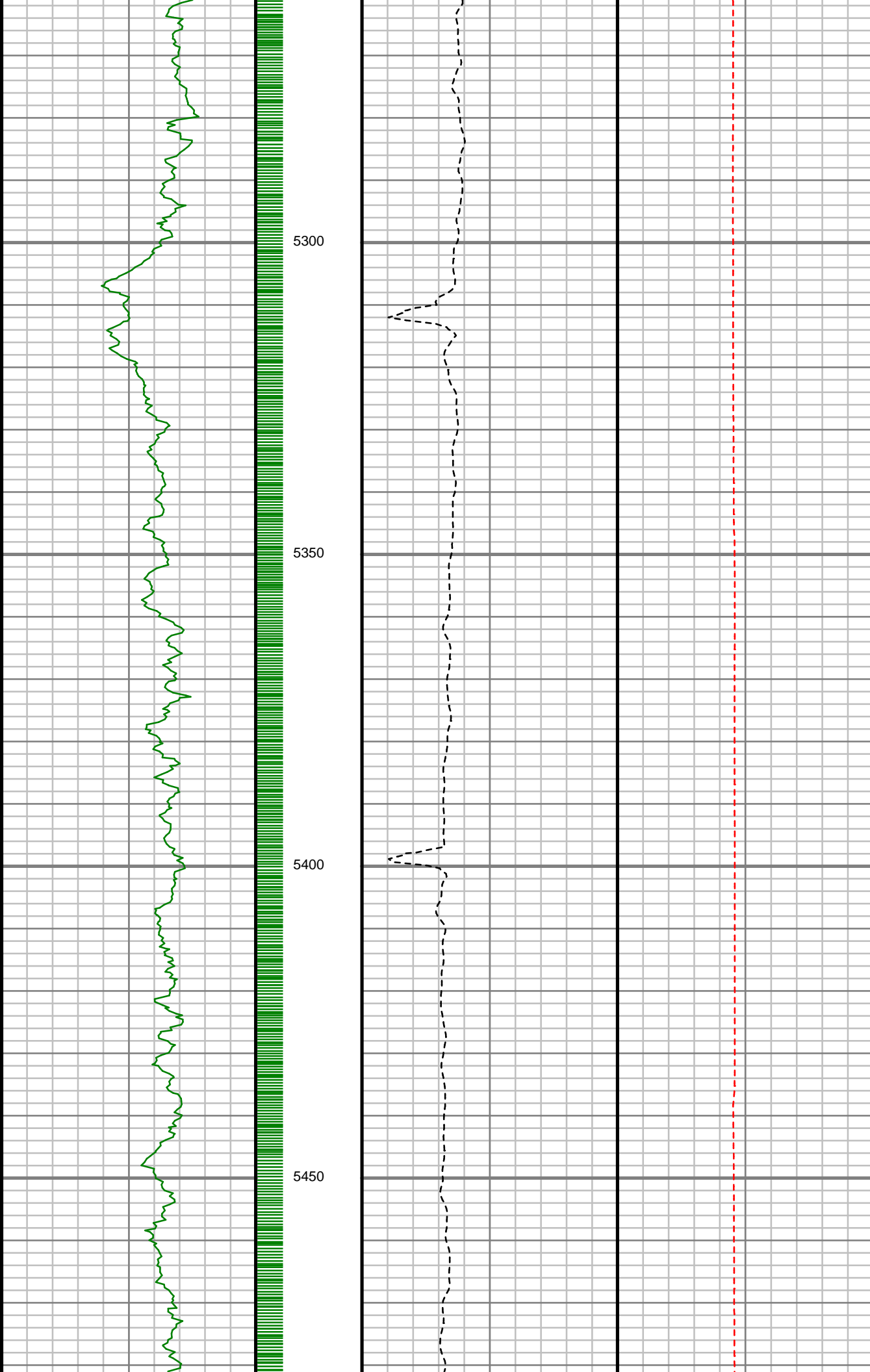
S: 59 MD: 4987.00 ft
Inc: 10.32 deg Az:
164.76 deg TVD:
4932.58 ft



S: 60 MD: 5077.00 ft
Inc: 10.93 deg Az:
165.41 deg TVD:
5021.03 ft

S: 61 MD: 5167.00 ft
Inc: 9.07 deg Az:
168.01 deg TVD:
5109.66 ft

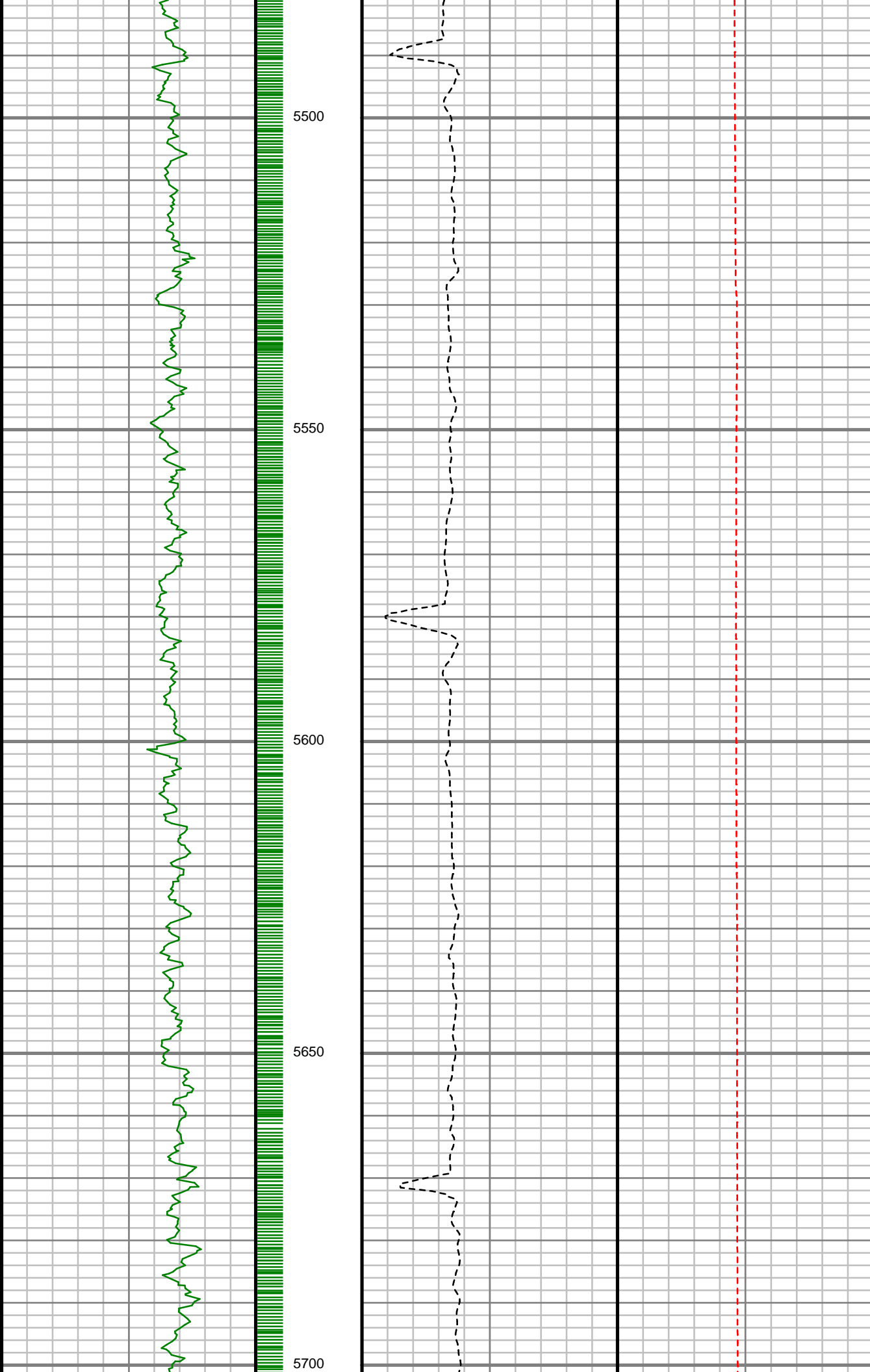
S: 62 MD: 5257.00 ft
Inc: 8.10 deg Az:



166.43 deg TVD:
5198.65 ft

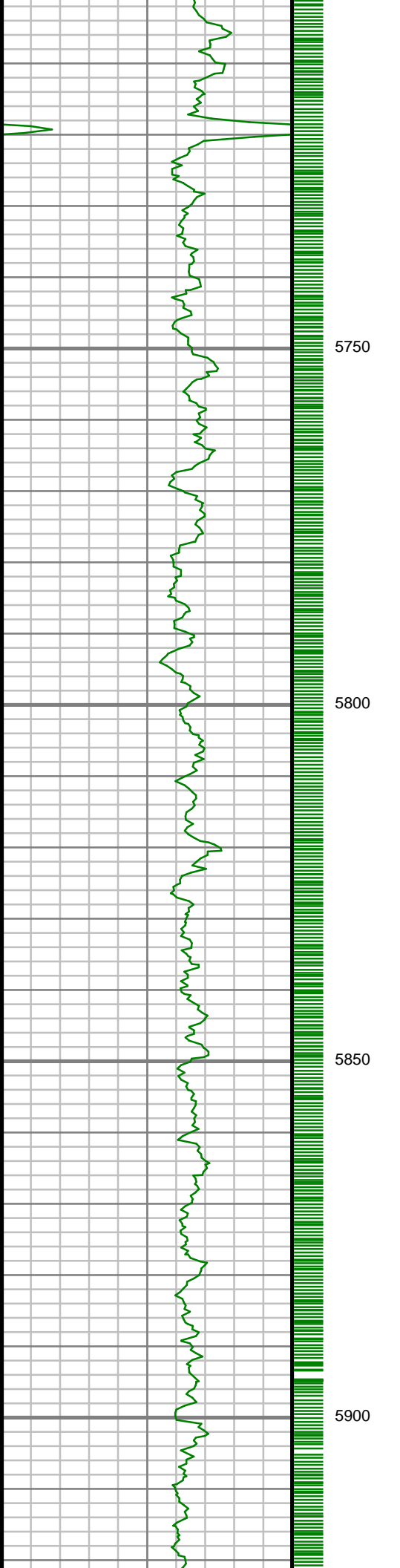
S: 63 MD: 5347.00 ft
Inc: 7.52 deg Az:
164.82 deg TVD:
5287.82 ft

S: 64 MD: 5437.00 ft
Inc: 6.63 deg Az:
164.14 deg TVD:
5377.13 ft



S: 65 MD: 5526.00 ft
Inc: 5.32 deg Az:
163.59 deg TVD:
5465.64 ft

S: 66 MD: 5616.00 ft
Inc: 3.95 deg Az:
167.71 deg TVD:
5555.35 ft

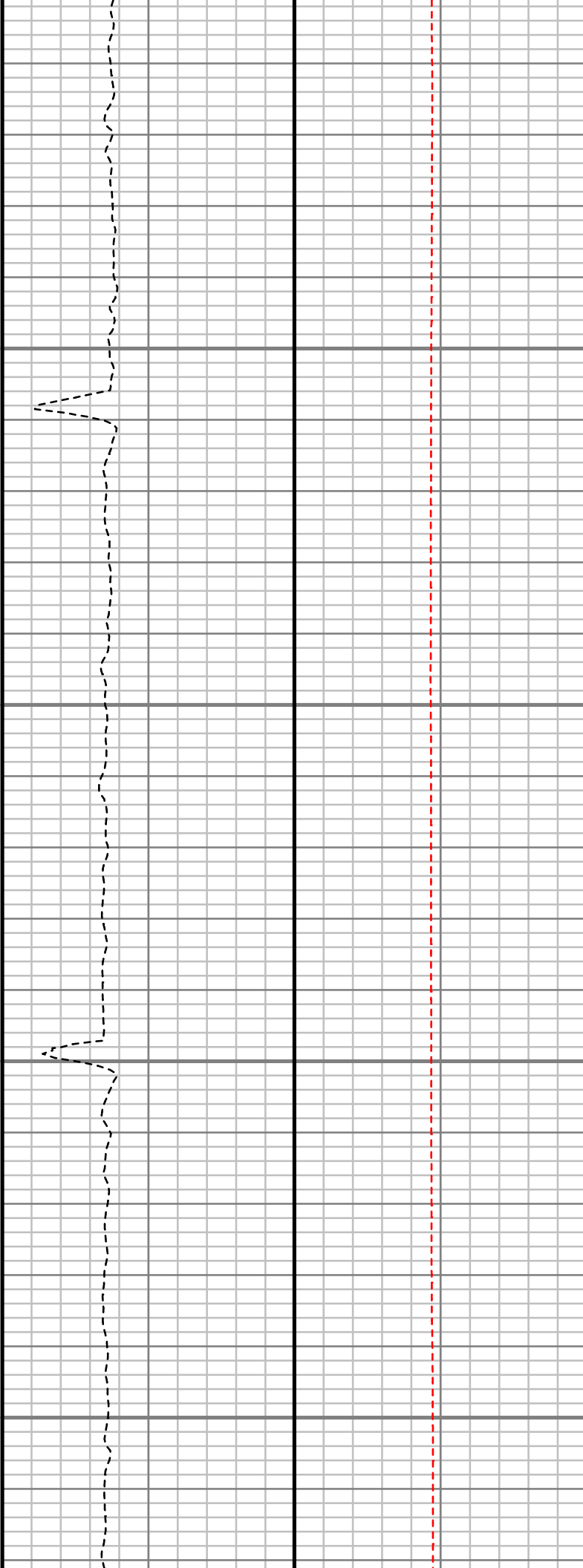


5750

5800

5850

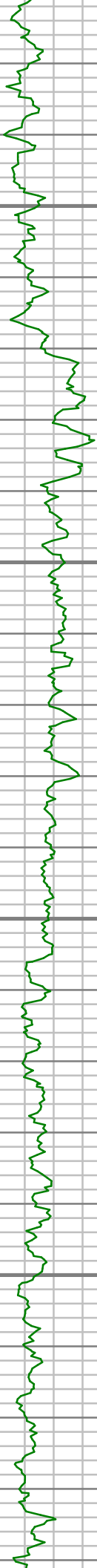
5900



S: 67 MD: 5706.00 ft
Inc: 2.68 deg Az:
169.42 deg TVD:
5645.20 ft

S: 68 MD: 5796.00 ft
Inc: 2.04 deg Az:
176.82 deg TVD:
5735.12 ft

S: 69 MD: 5886.00 ft
Inc: 1.45 deg Az:
184.07 deg TVD:
5825.08 ft

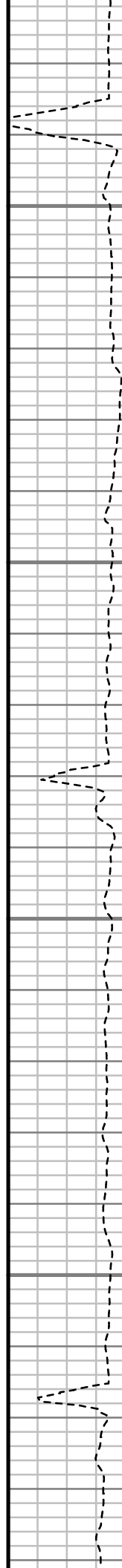


5950

6000

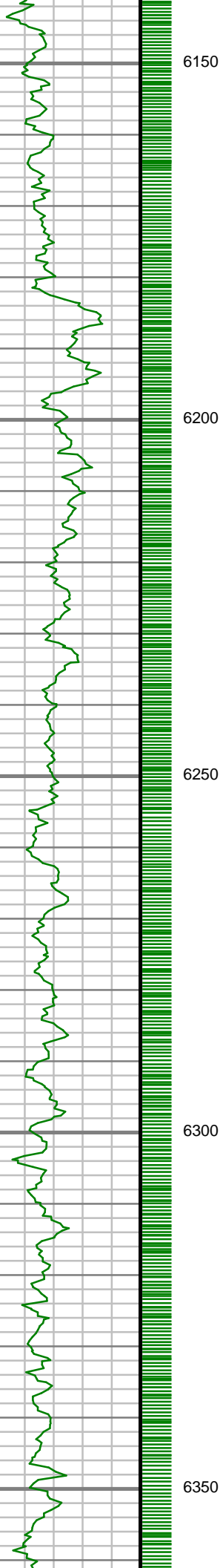
6050

6100



S: 70 MD: 5975.00 ft
Inc: 1.07 deg Az:
194.65 deg TVD:
5914.06 ft

S: 71 MD: 6065.00 ft
Inc: 0.94 deg Az:
185.64 deg TVD:
6004.04 ft



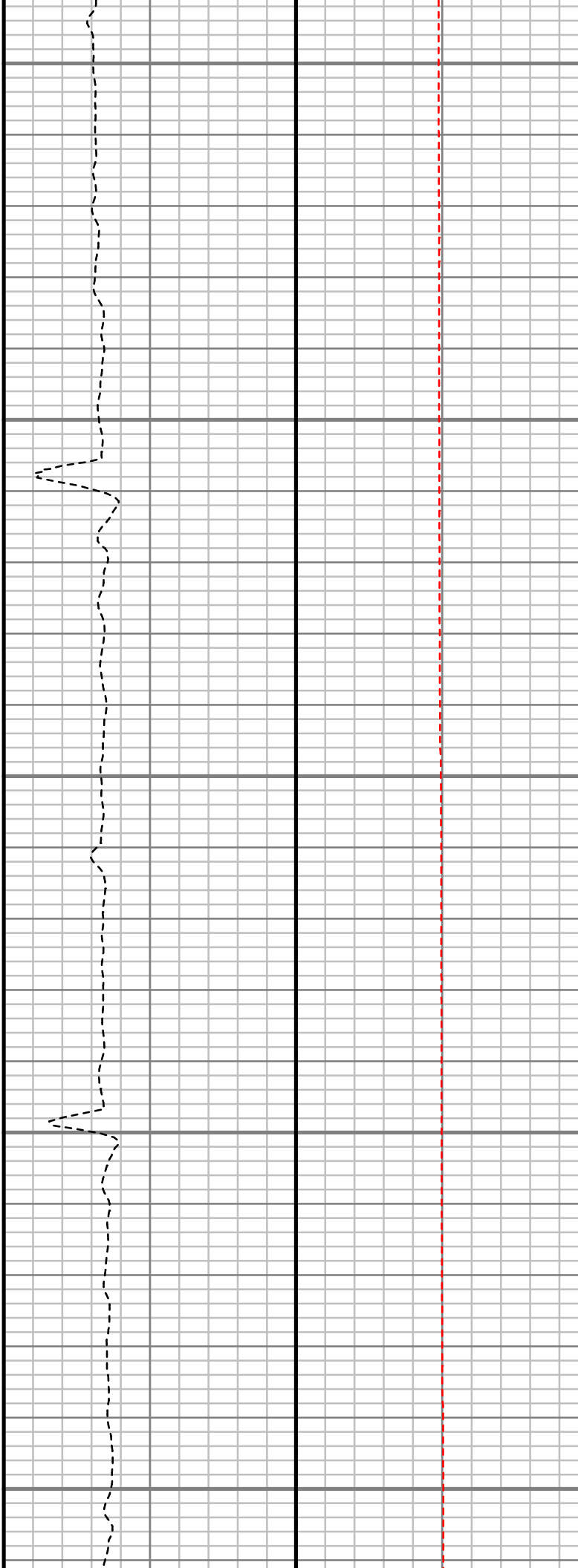
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6200

6250

6300

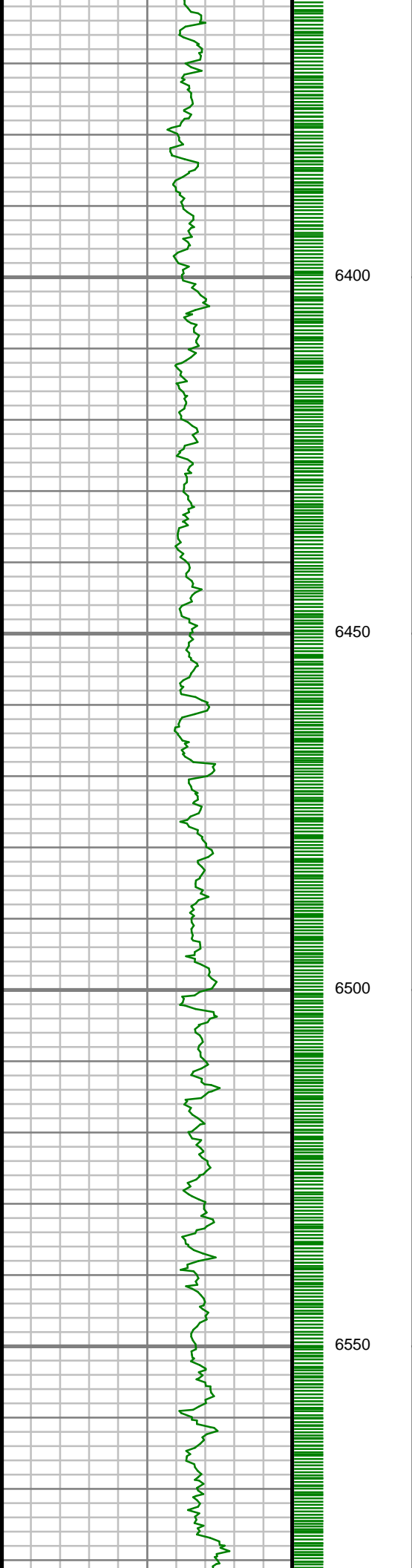
6350



S: 72 MD: 6155.00 ft
Inc: 0.62 deg Az:
197.31 deg TVD:
6094.03 ft

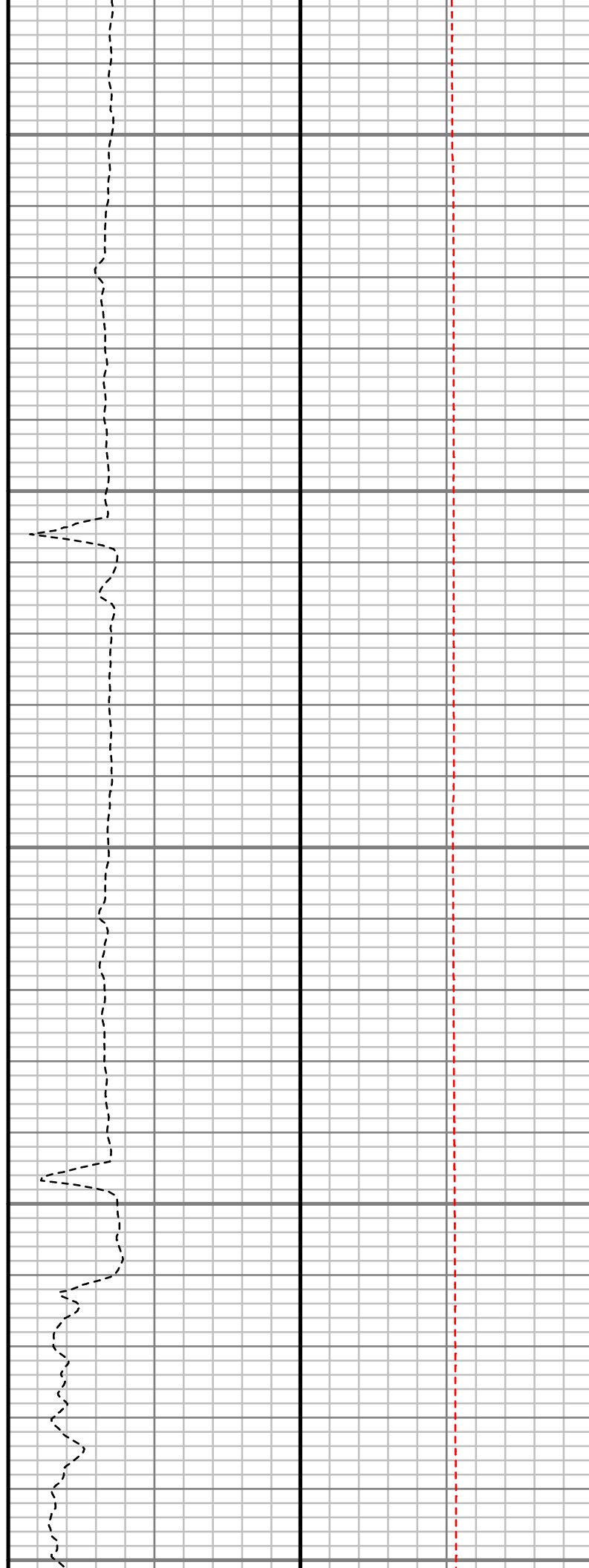
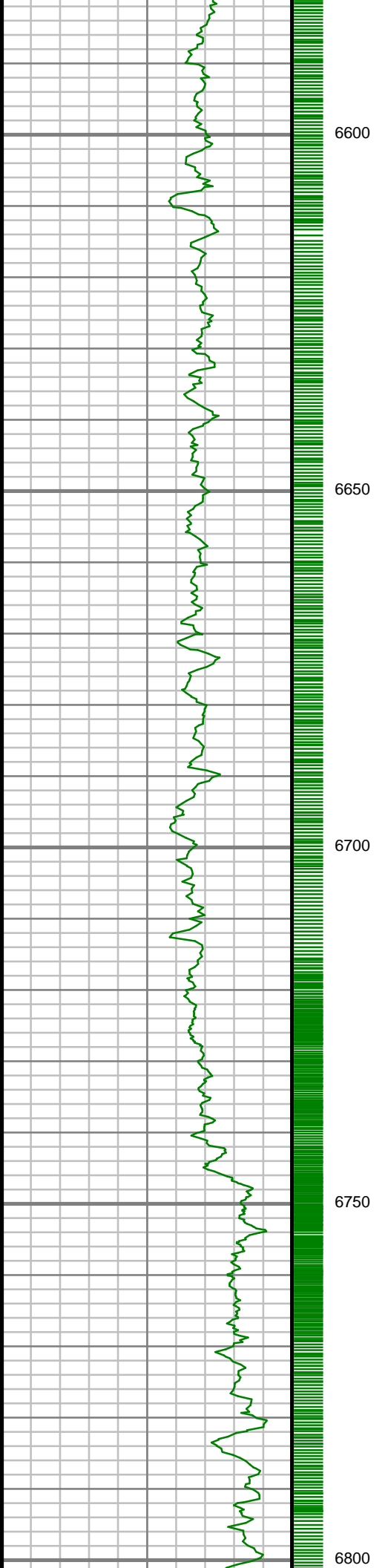
S: 73 MD: 6245.00 ft
Inc: 0.59 deg Az:
187.74 deg TVD:
6184.03 ft

S: 74 MD: 6335.00 ft
Inc: 0.51 deg Az:
210.47 deg TVD:
6274.02 ft



S: 75 MD: 6424.00 ft
Inc: 0.94 deg Az:
229.22 deg TVD:
6363.02 ft

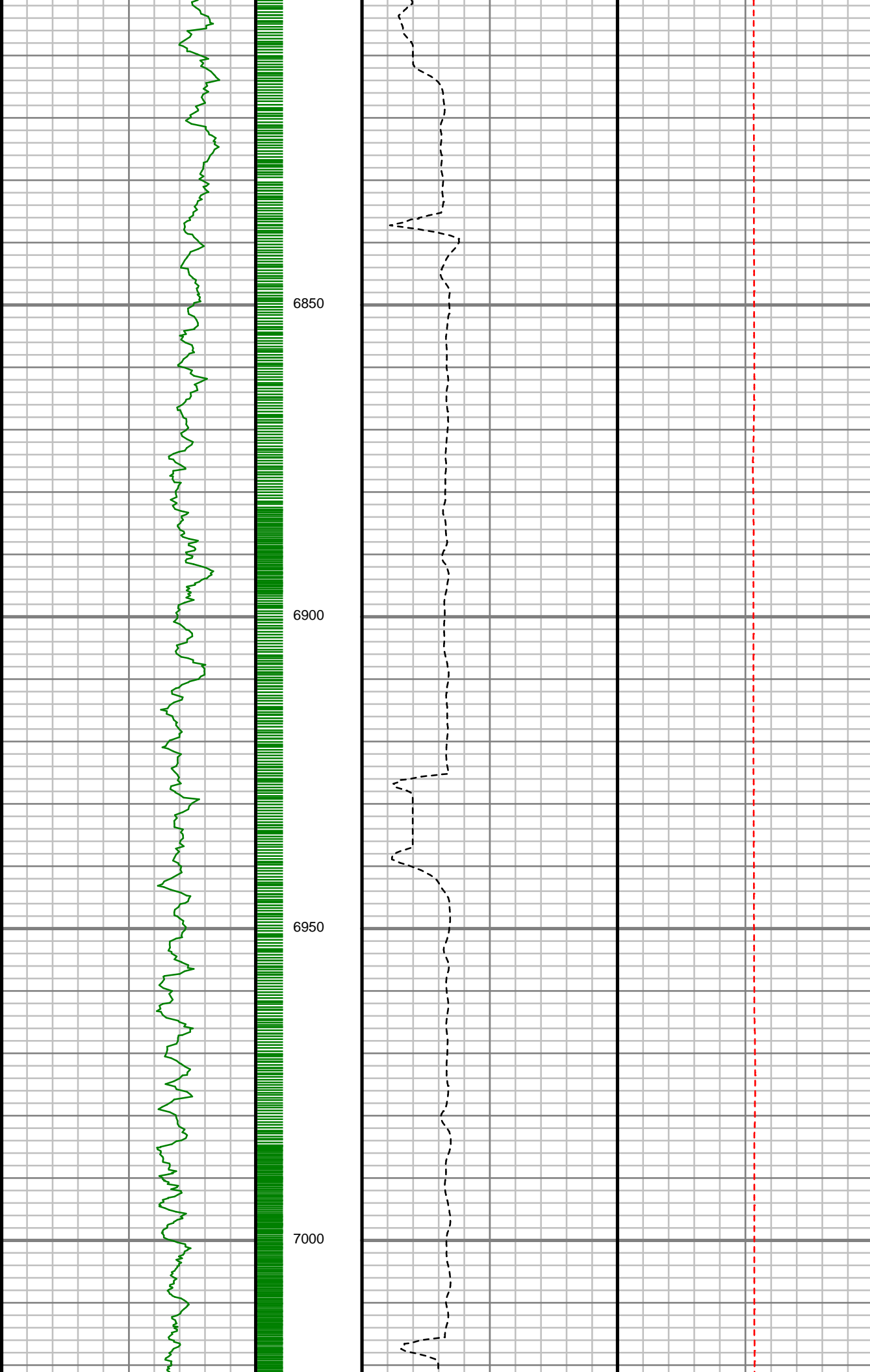
S: 76 MD: 6514.00 ft
Inc: 0.61 deg Az:
243.17 deg TVD:
6453.01 ft



S: 77 MD: 6604.00 ft
Inc: 0.03 deg Az:
305.44 deg TVD:
6543.01 ft

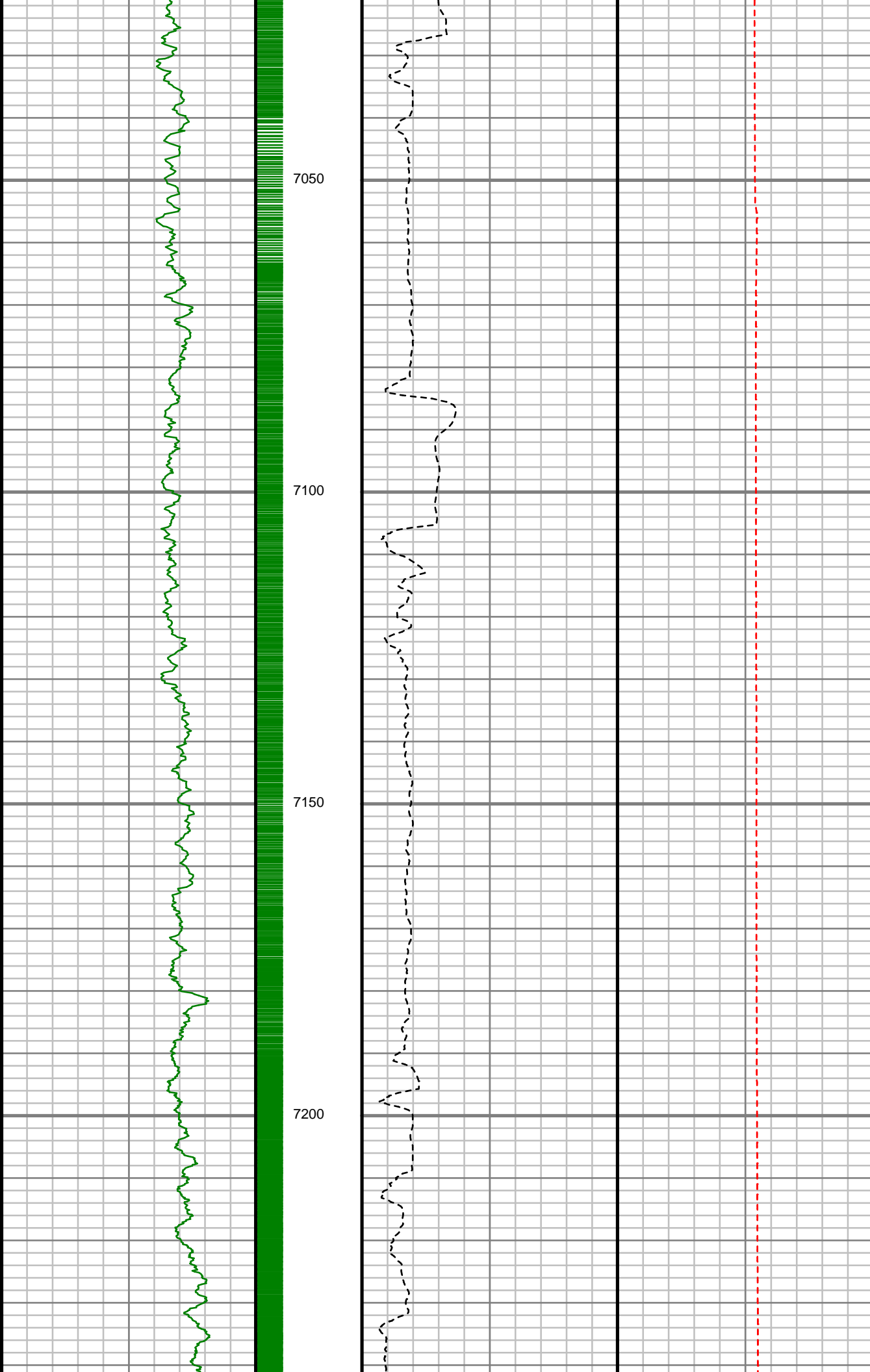
S: 78 MD: 6694.00 ft
Inc: 0.38 deg Az:
345.45 deg TVD:
6633.01 ft

S: 79 MD: 6784.00 ft
Inc: 0.36 deg Az:
341.03 deg TVD:
6723.00 ft



S: 80 MD: 6873.00 ft
Inc: 0.81 deg Az: 78.85
deg TVD: 6812.00 ft

S: 81 MD: 6963.00 ft
Inc: 0.84 deg Az: 38.74
deg TVD: 6901.99 ft



7050

7100

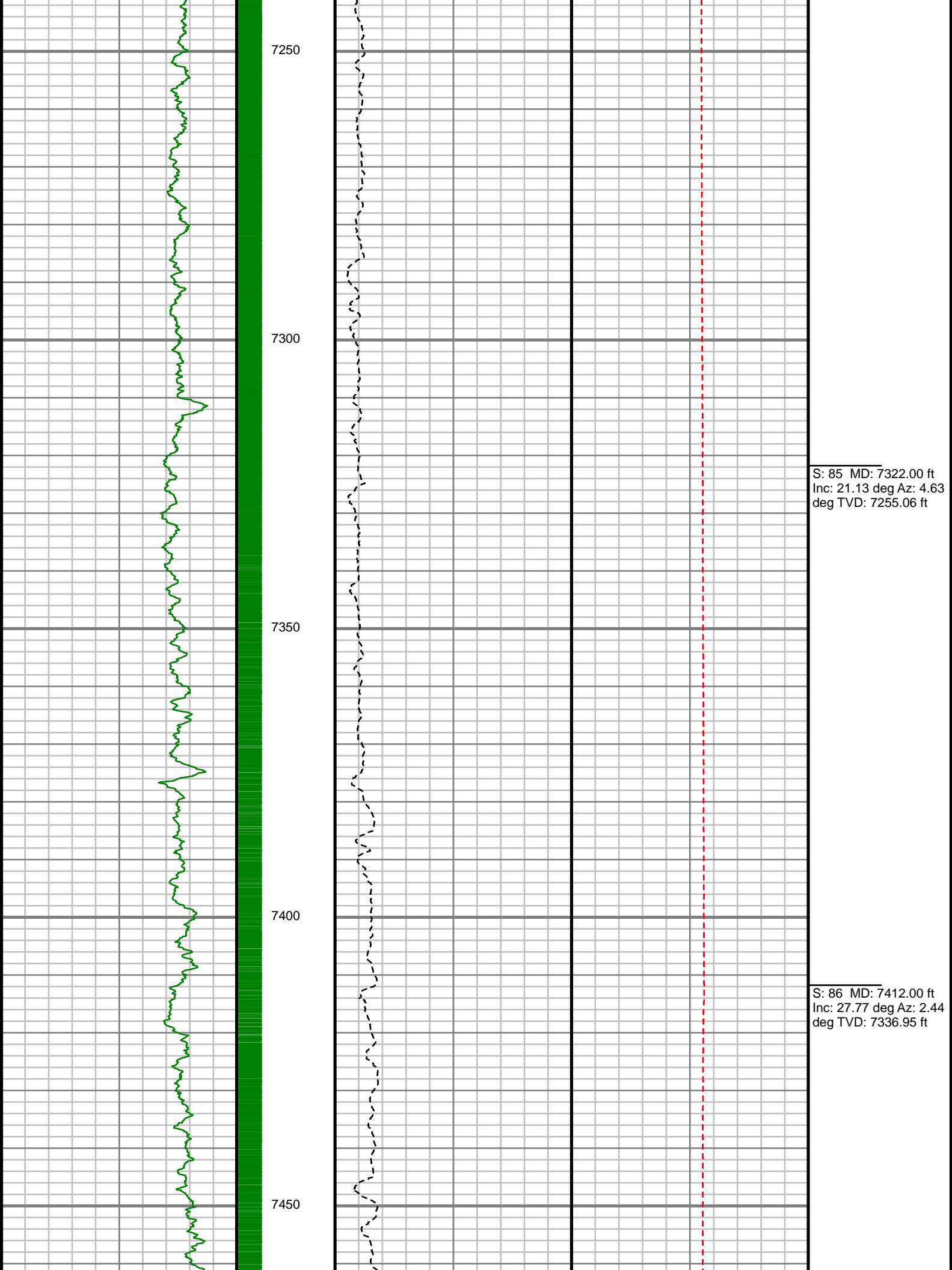
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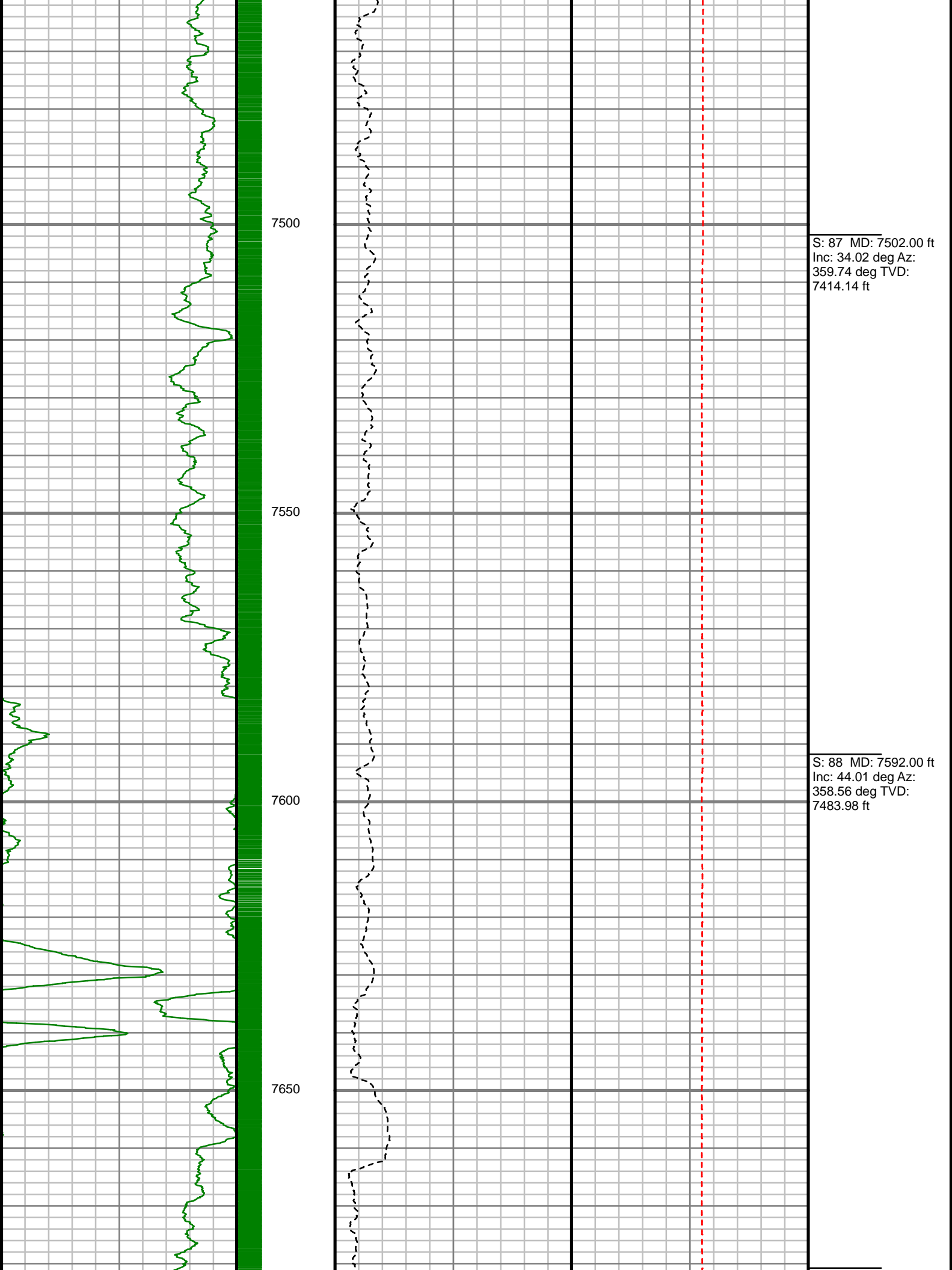
7200

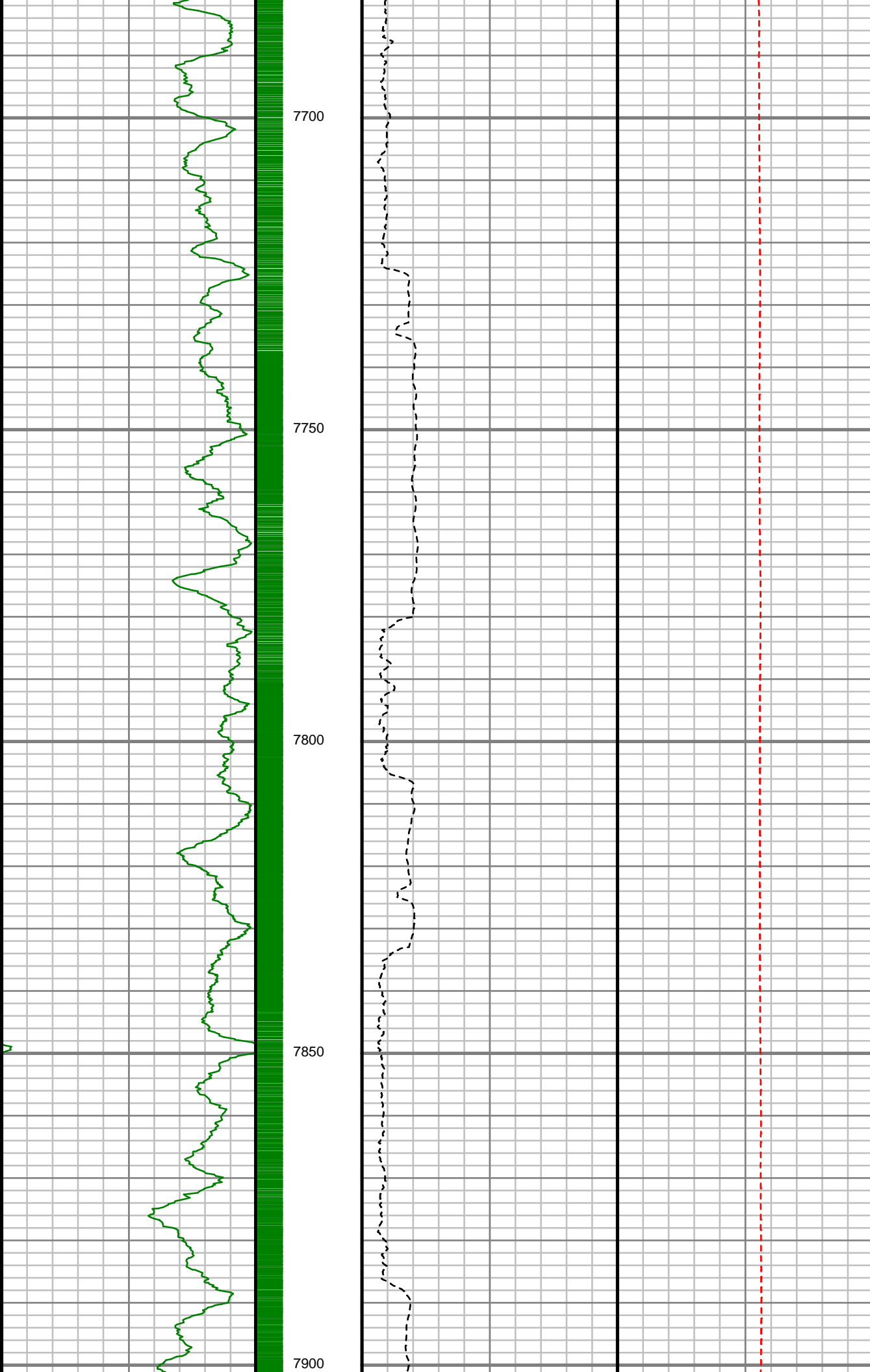
S: 82 MD: 7053.00 ft
Inc: 3.33 deg Az: 5.66
deg TVD: 6991.93 ft

S: 83 MD: 7143.00 ft
Inc: 7.92 deg Az: 0.70
deg TVD: 7081.47 ft

S: 84 MD: 7233.00 ft
Inc: 12.79 deg Az:
14.34 deg TVD:



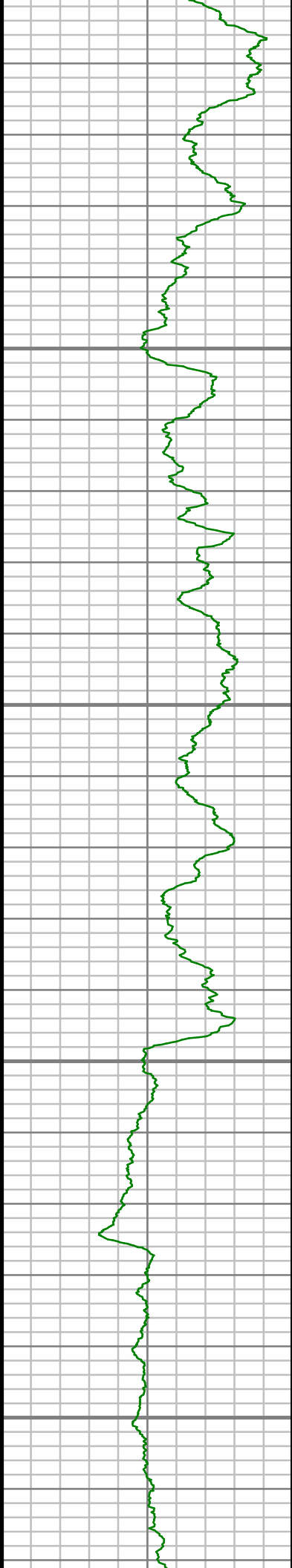




S: 89 MD: 7681.00 ft
Inc: 53.74 deg Az:
357.65 deg TVD:
7542.45 ft

S: 90 MD: 7771.00 ft
Inc: 60.98 deg Az:
357.64 deg TVD:
7590.96 ft

S: 91 MD: 7861.00 ft
Inc: 70.16 deg Az:
358.93 deg TVD:
7628.15 ft

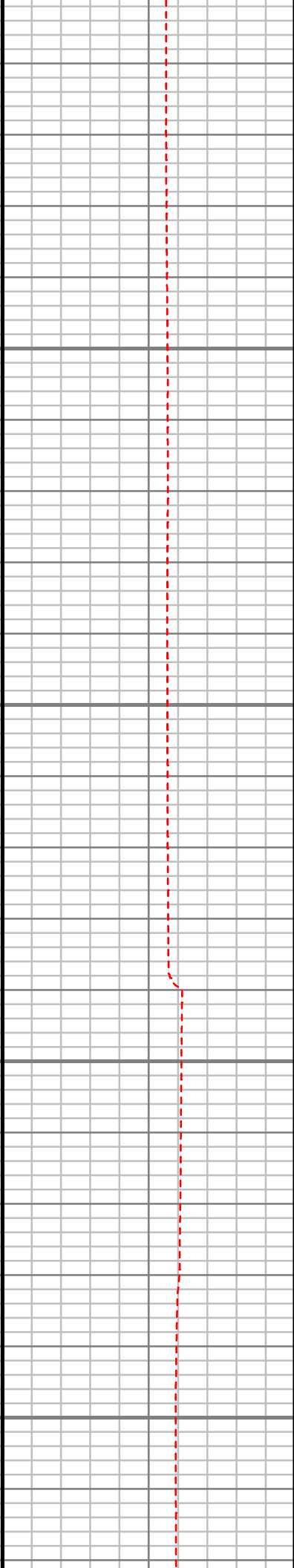
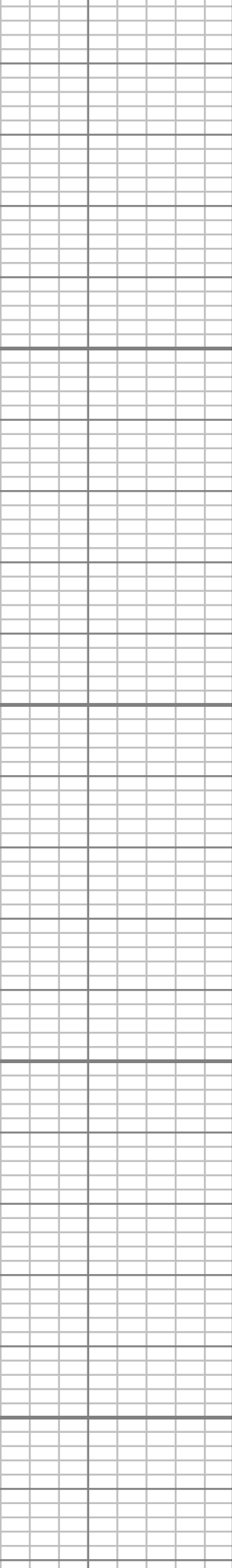
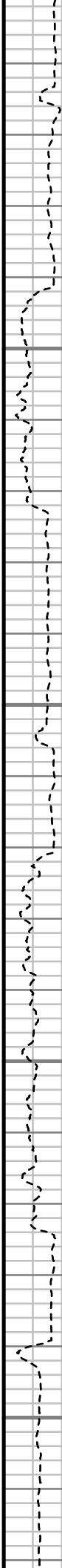


7950

8000

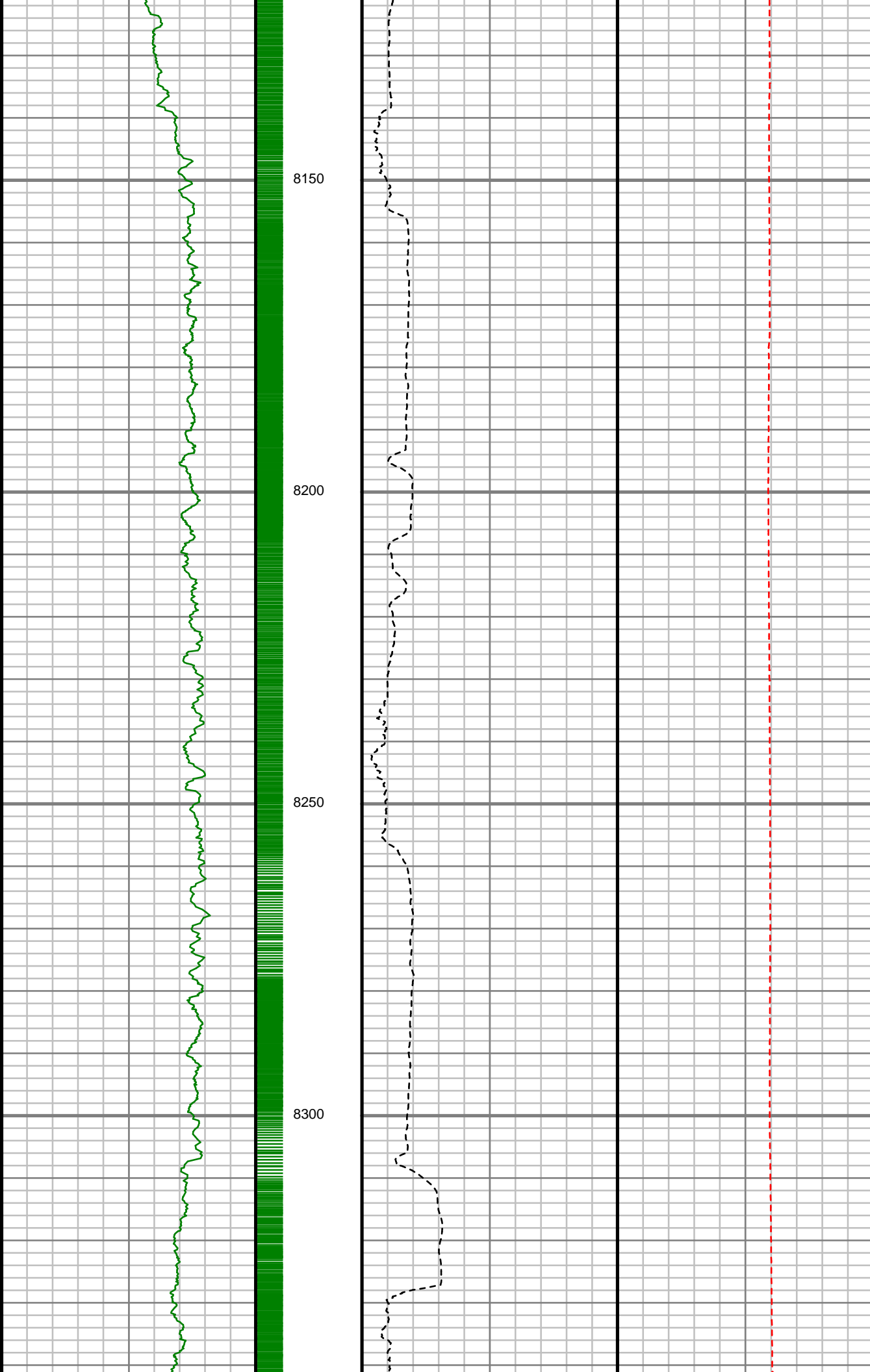
8050

8100



S: 92 MD: 7951.00 ft
Inc: 77.00 deg Az:
359.12 deg TVD:
7653.58 ft

S: 93 MD: 8037.00 ft
Inc: 83.47 deg Az:
359.19 deg TVD:
7668.16 ft



8150

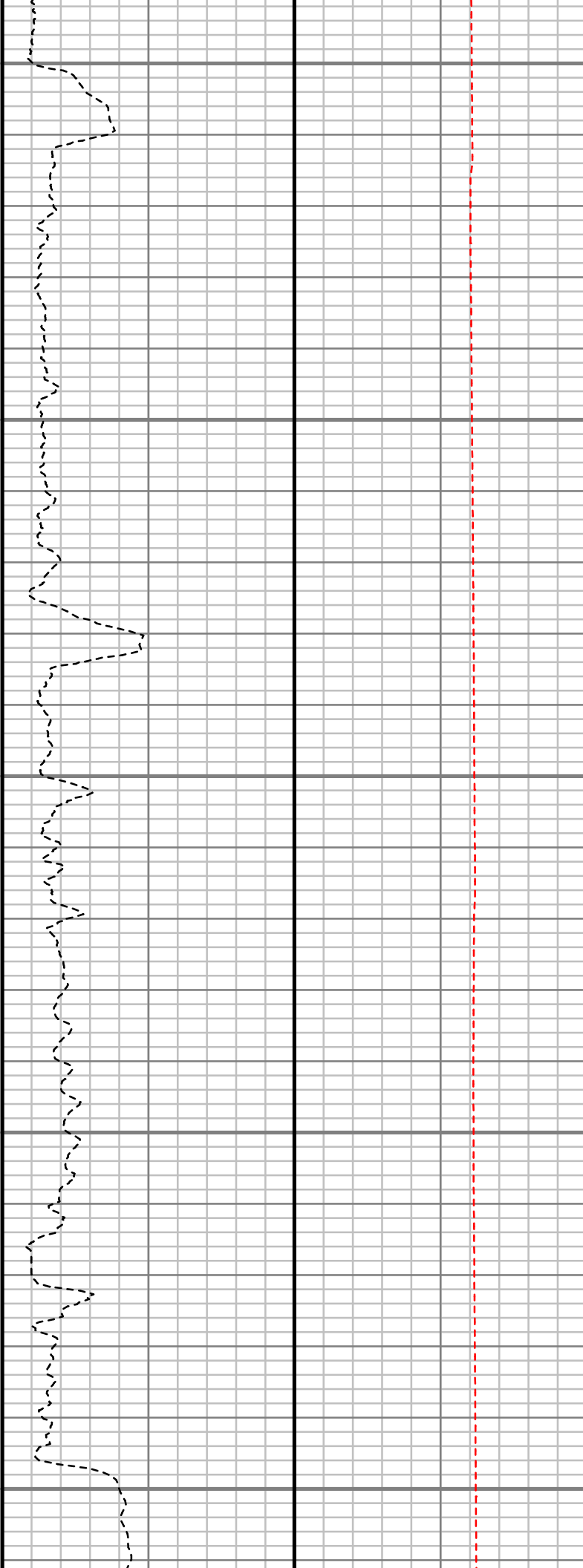
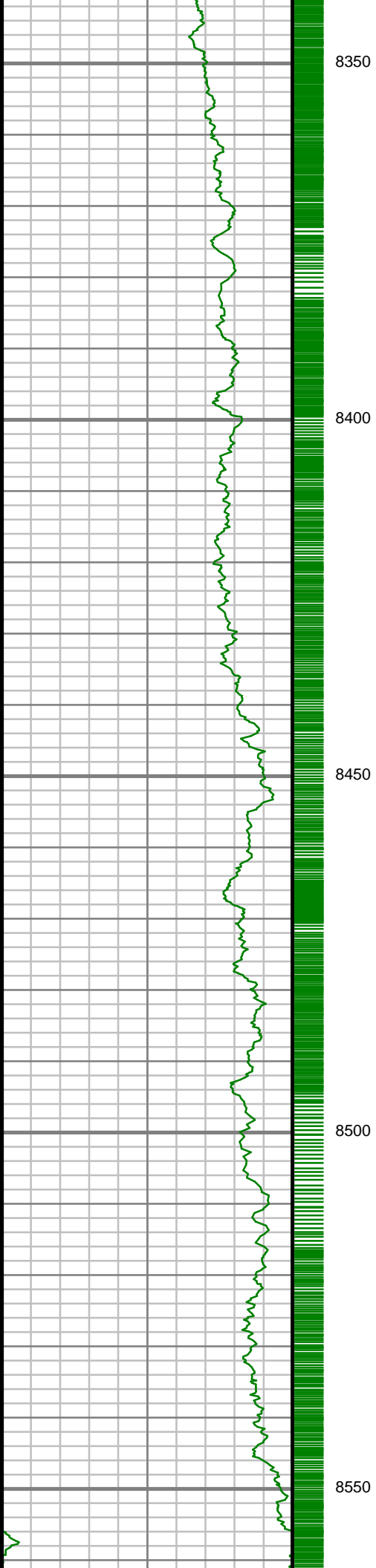
8200

8250

8300

S: 94 MD: 8174.00 ft
Inc: 88.69 deg Az: 0.20
deg TVD: 7677.53 ft

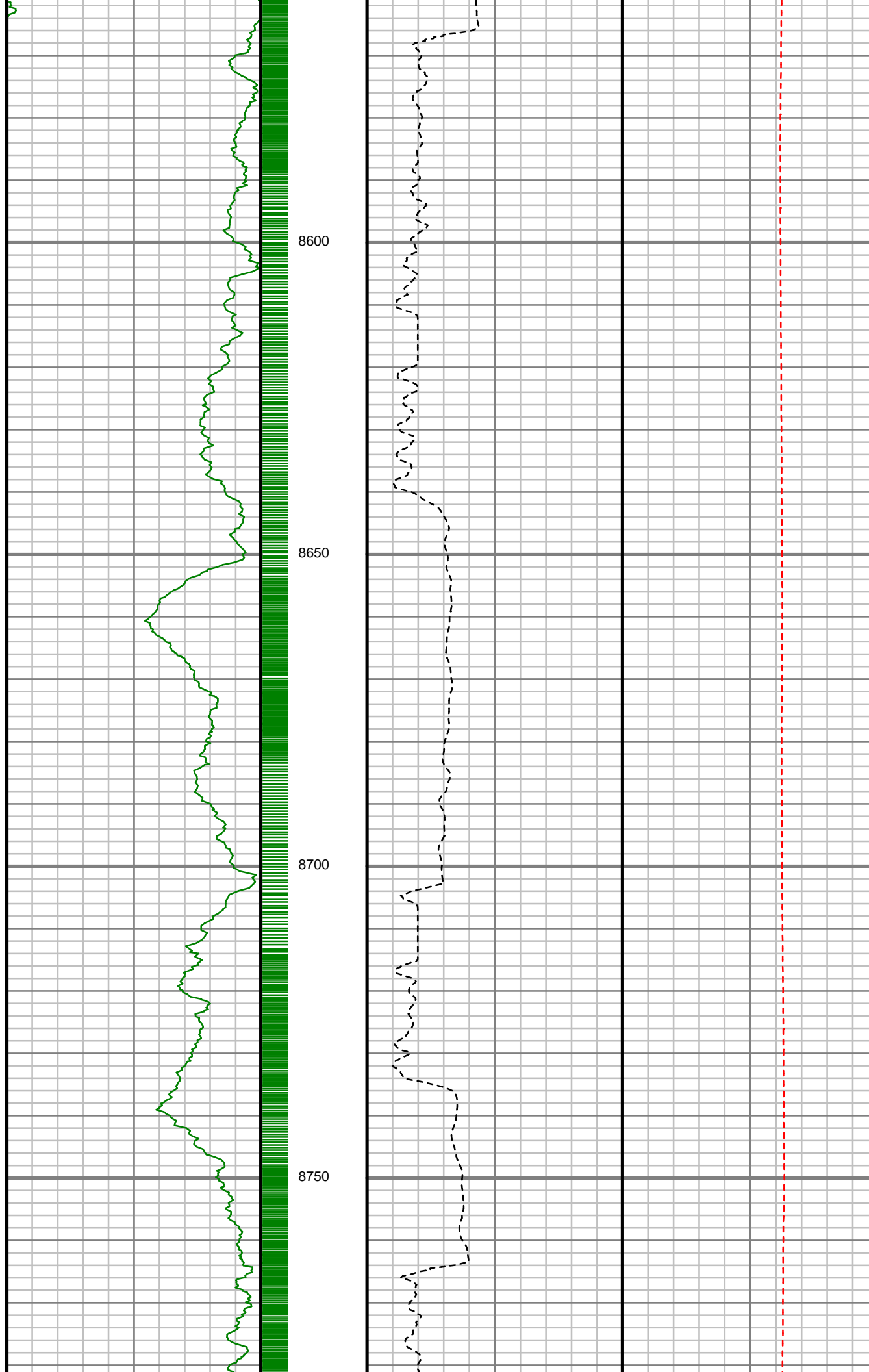
S: 95 MD: 8268.00 ft
Inc: 89.09 deg Az:
359.35 deg TVD:
7679.35 ft



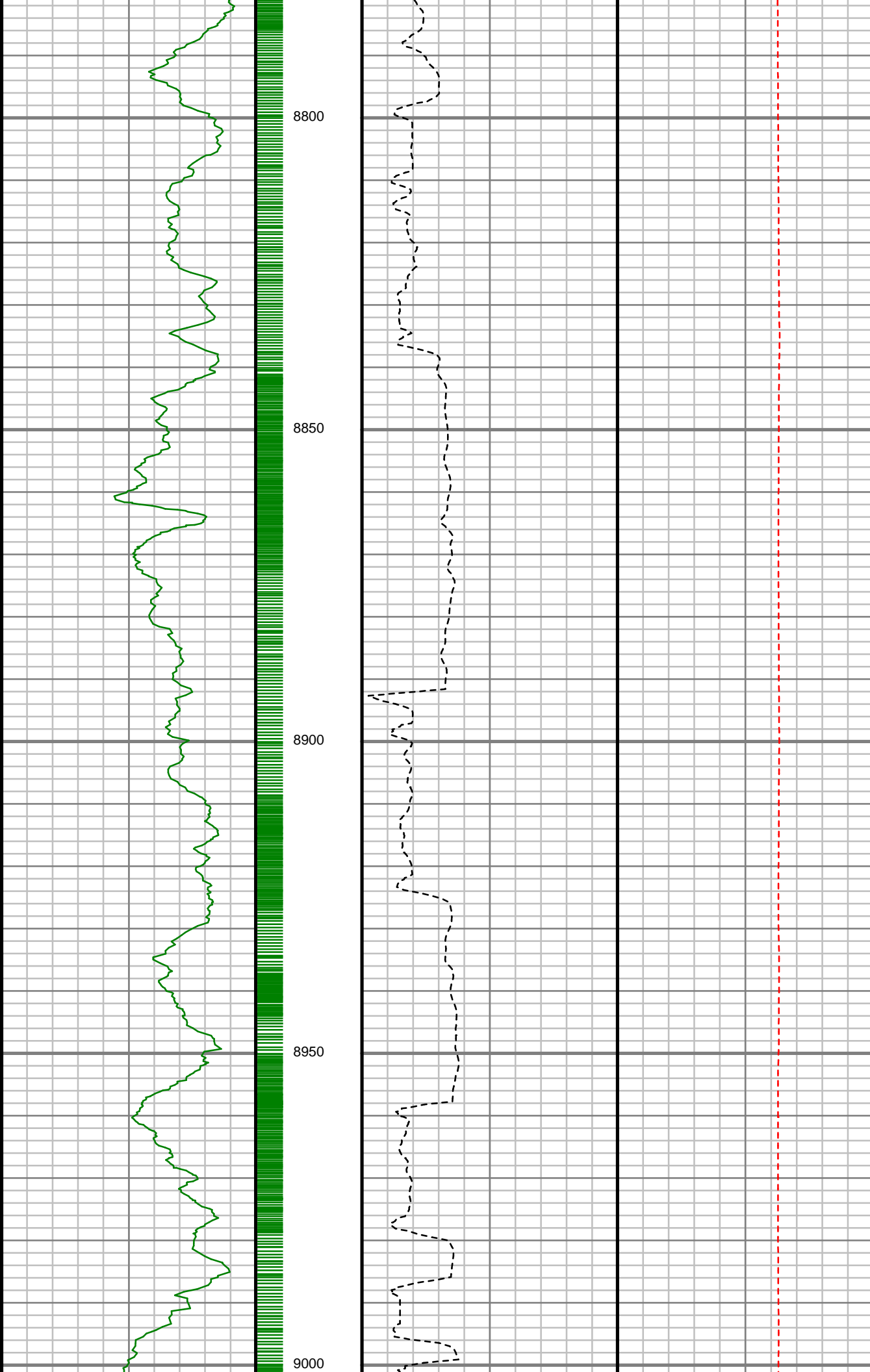
S: 96 MD: 8363.00 ft
Inc: 90.34 deg Az:
358.48 deg TVD:
7679.82 ft

S: 97 MD: 8457.00 ft
Inc: 90.03 deg Az:
356.64 deg TVD:
7679.52 ft

S: 98 MD: 8551.00 ft
Inc: 91.14 deg Az:
356.42 deg TVD:
7678.56 ft

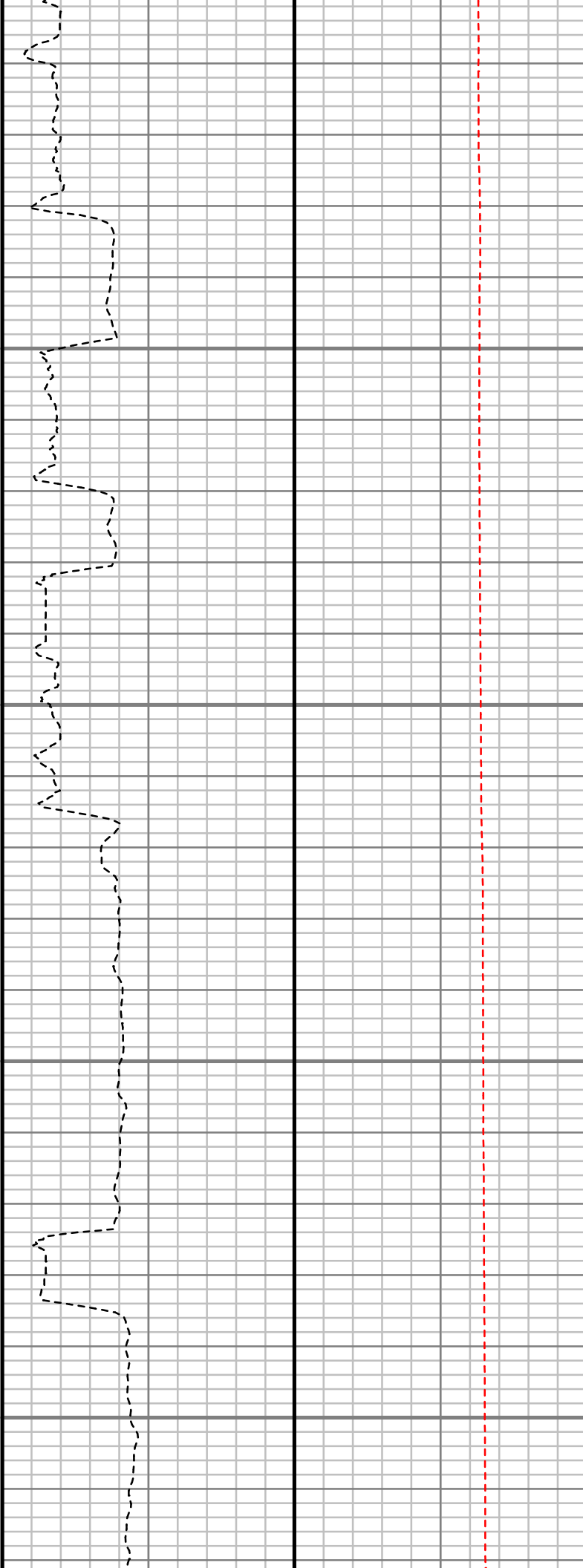
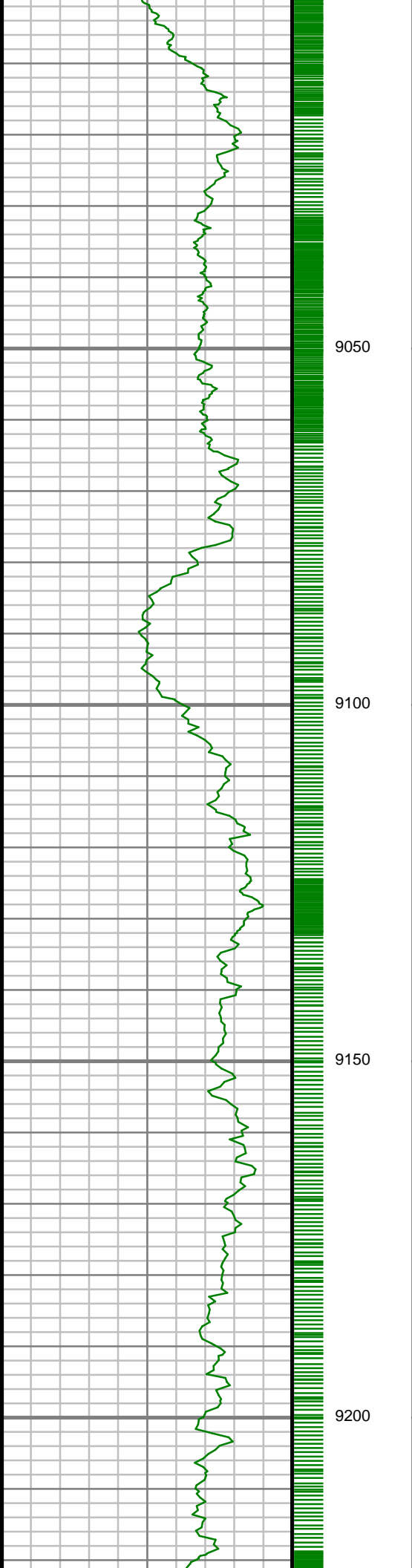


S: 99 MD: 8645.00 ft
Inc: 90.61 deg Az:
358.07 deg TVD:
7677.13 ft



S: 100 MD: 8834.00 ft
Inc: 88.86 deg Az:
357.92 deg TVD:
7678.01 ft

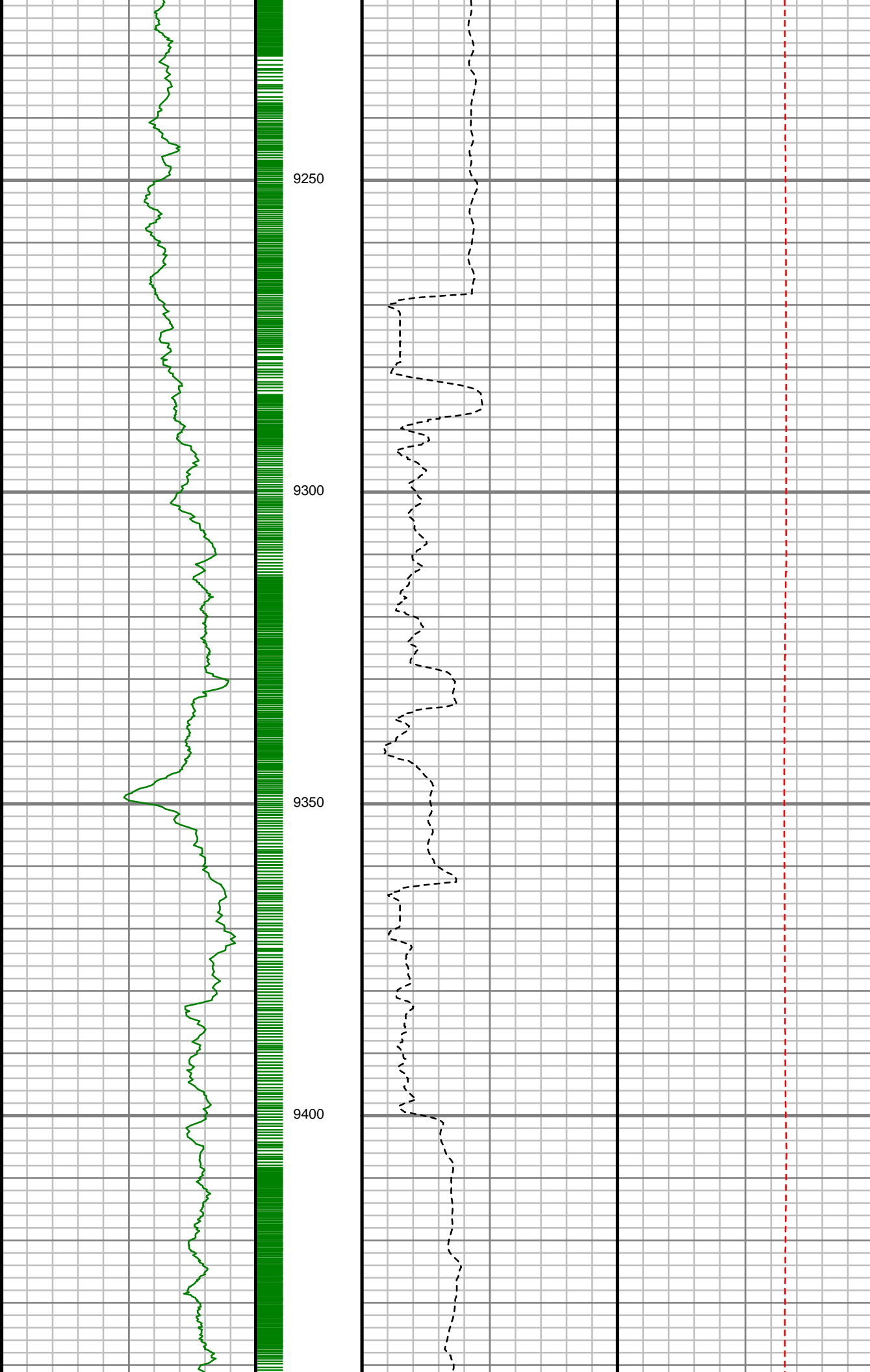
S: 101 MD: 8928.00 ft
Inc: 88.39 deg Az:
359.14 deg TVD:
7680.27 ft



S: 102 MD: 9022.00 ft
Inc: 90.30 deg Az:
359.39 deg TVD:
7681.34 ft

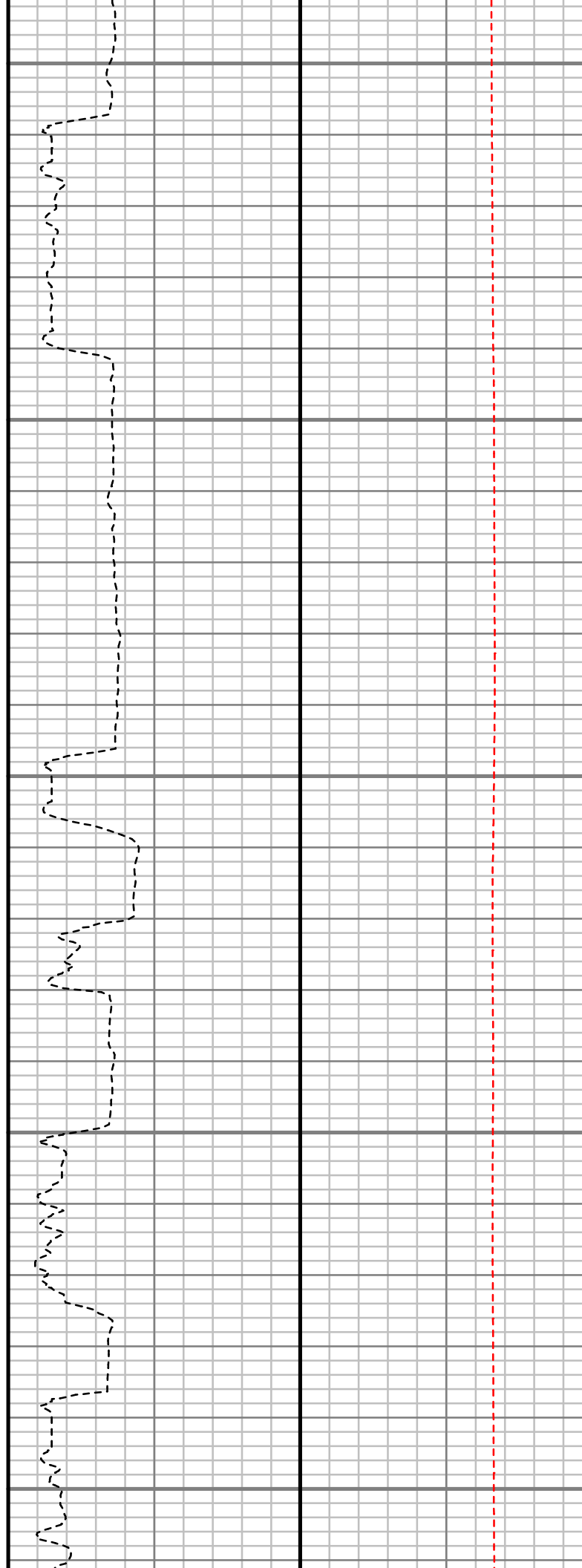
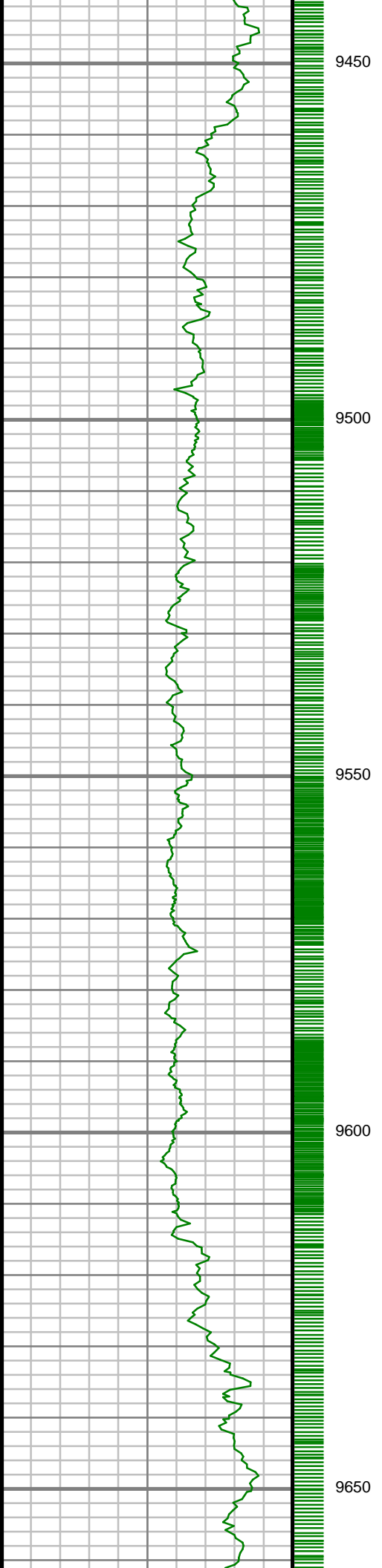
S: 103 MD: 9116.00 ft
Inc: 91.73 deg Az: 0.19
deg TVD: 7679.67 ft

S: 104 MD: 9211.00 ft
Inc: 91.17 deg Az: 0.46
deg TVD: 7677.26 ft



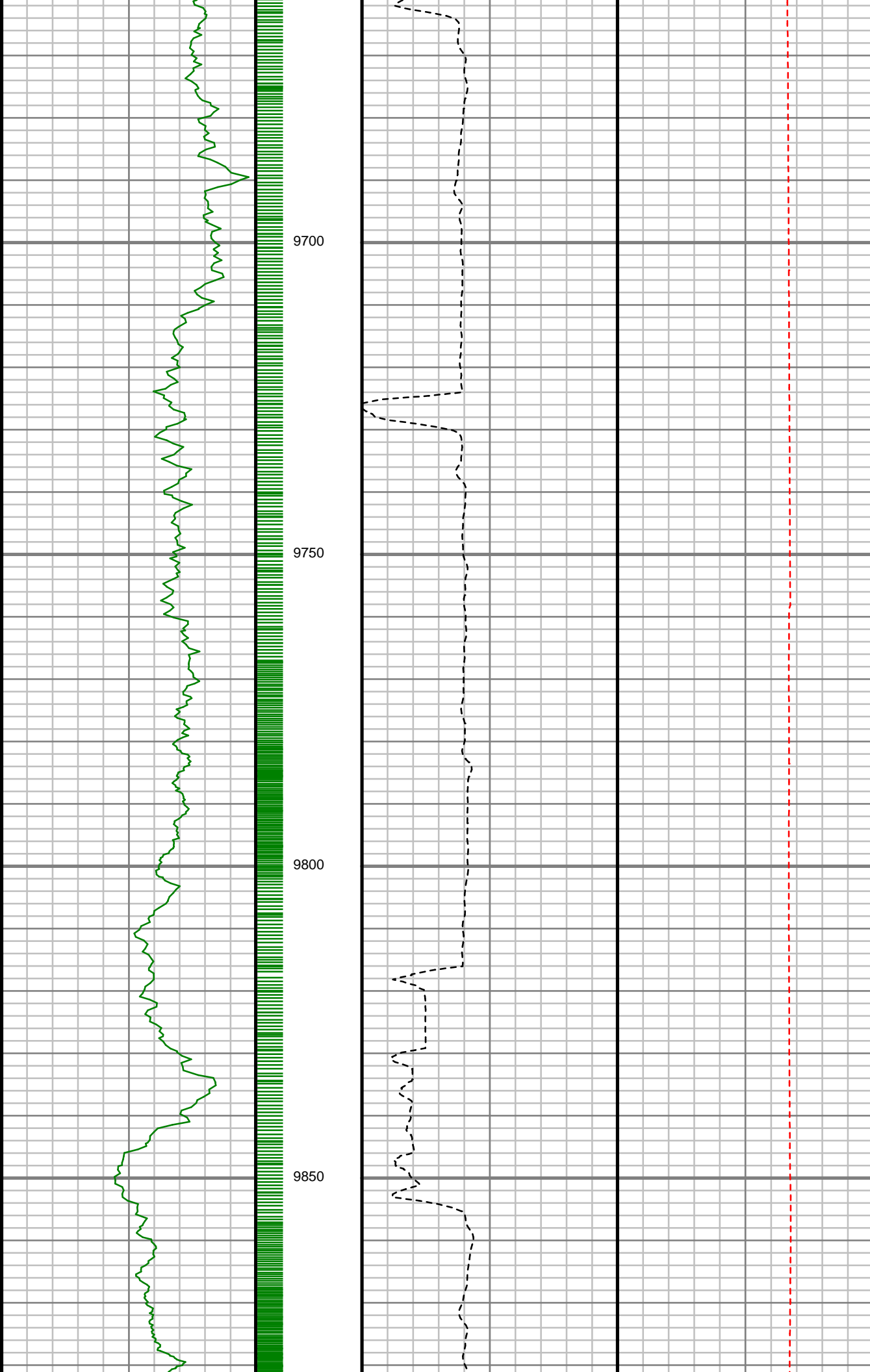
S: 105 MD: 9305.00 ft
Inc: 89.50 deg Az: 0.69
deg TVD: 7676.71 ft

S: 106 MD: 9399.00 ft
Inc: 89.80 deg Az: 0.15
deg TVD: 7677.29 ft



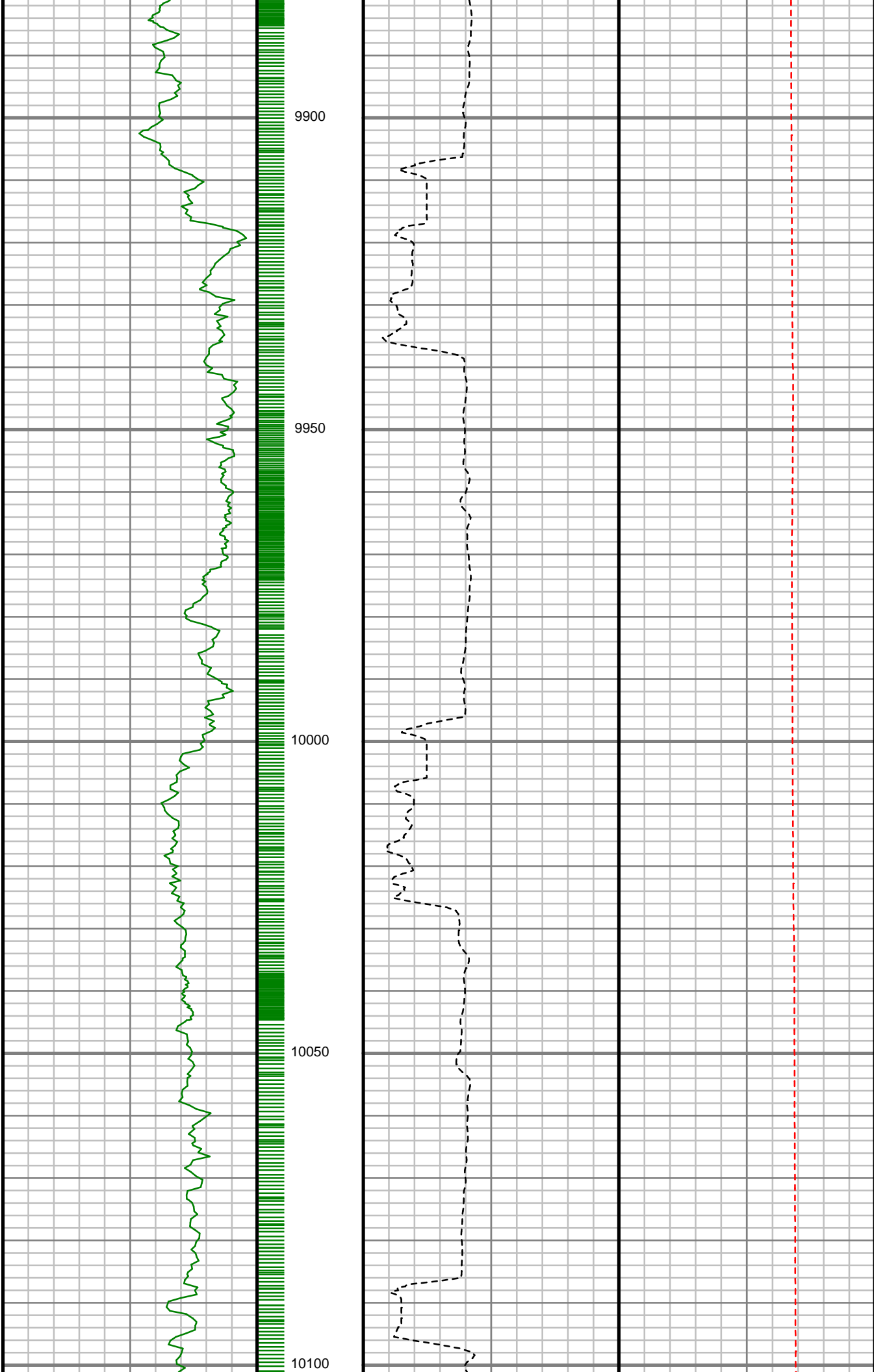
S: 107 MD: 9489.00 ft
Inc: 91.01 deg Az:
359.94 deg TVD:
7676.65 ft

S: 108 MD: 9579.00 ft
Inc: 89.93 deg Az:
359.10 deg TVD:
7675.91 ft

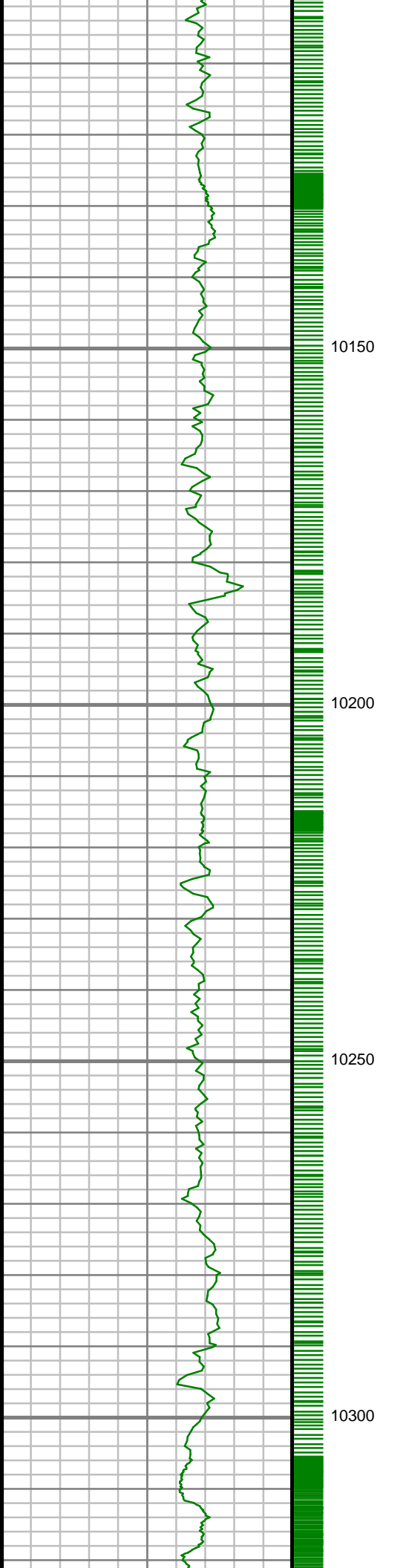


S: 109 MD: 9668.00 ft
Inc: 92.04 deg Az:
359.54 deg TVD:
7674.38 ft

S: 110 MD: 9848.00 ft
Inc: 91.92 deg Az:
359.15 deg TVD:
7668.15 ft

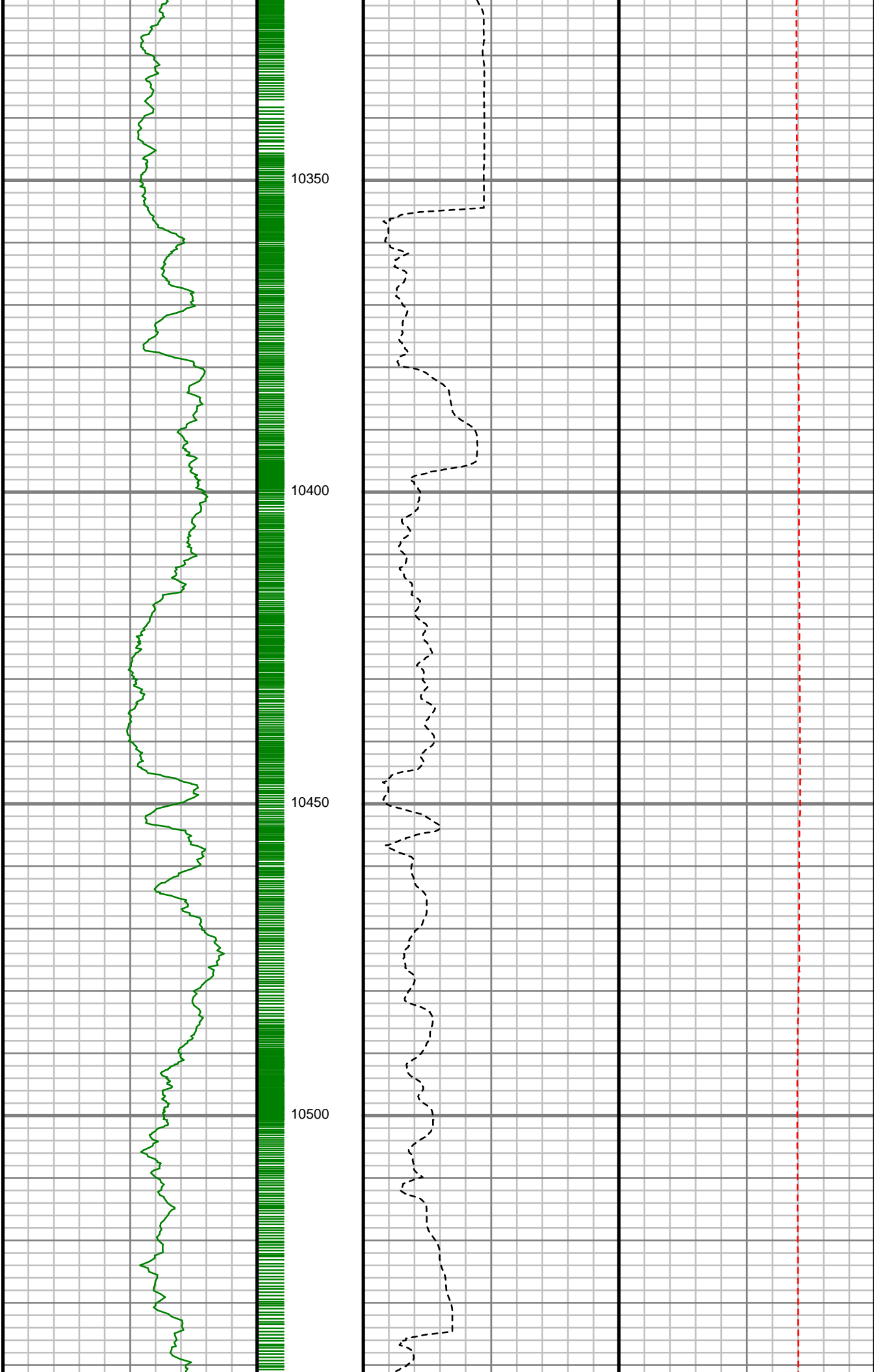


S: 111 MD: 10027.00 ft
Inc: 89.16 deg Az: 0.58
deg TVD: 7666.46 ft

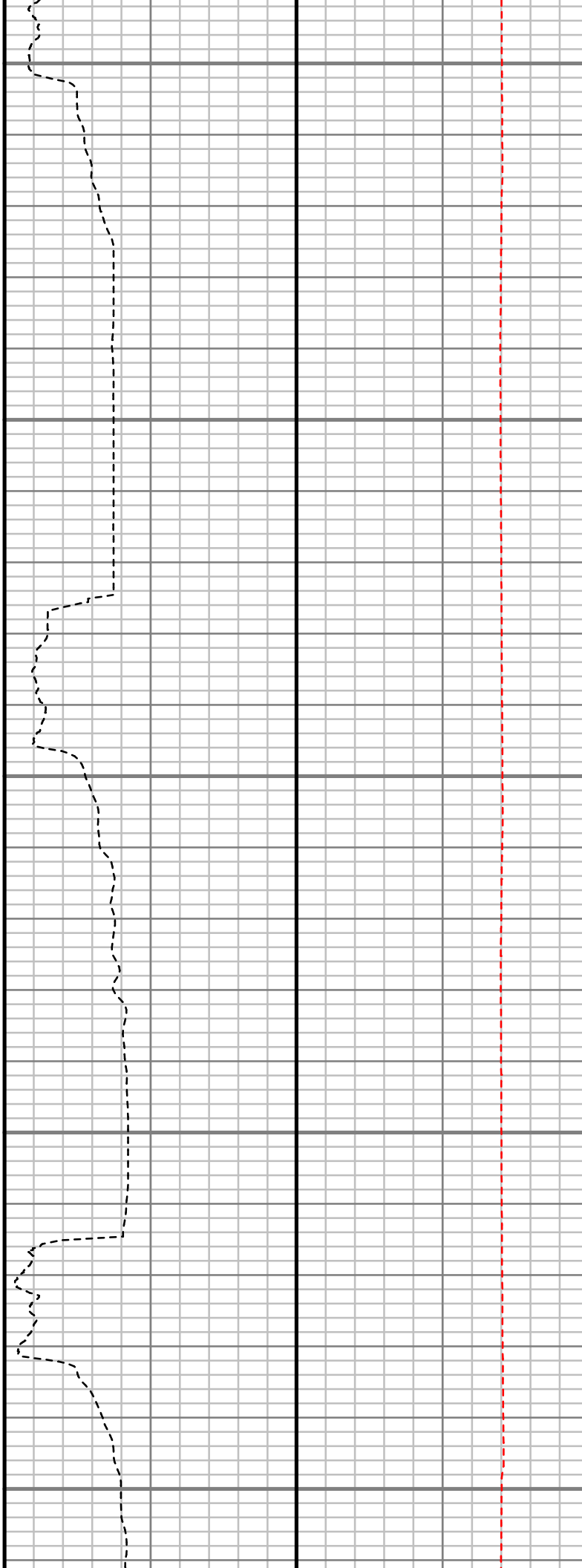
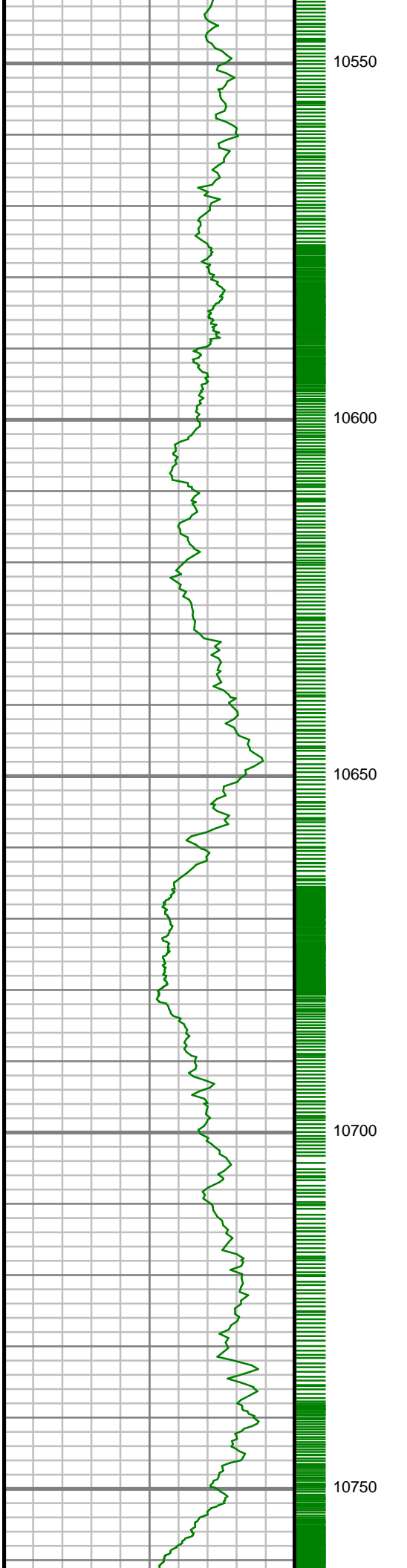


S: 112 MD: 10207.00 ft
Inc: 89.23 deg Az: 0.24
deg TVD: 7668.98 ft

S: 113 MD: 10297.00 ft
Inc: 88.69 deg Az:
359.73 deg TVD:
7670.62 ft



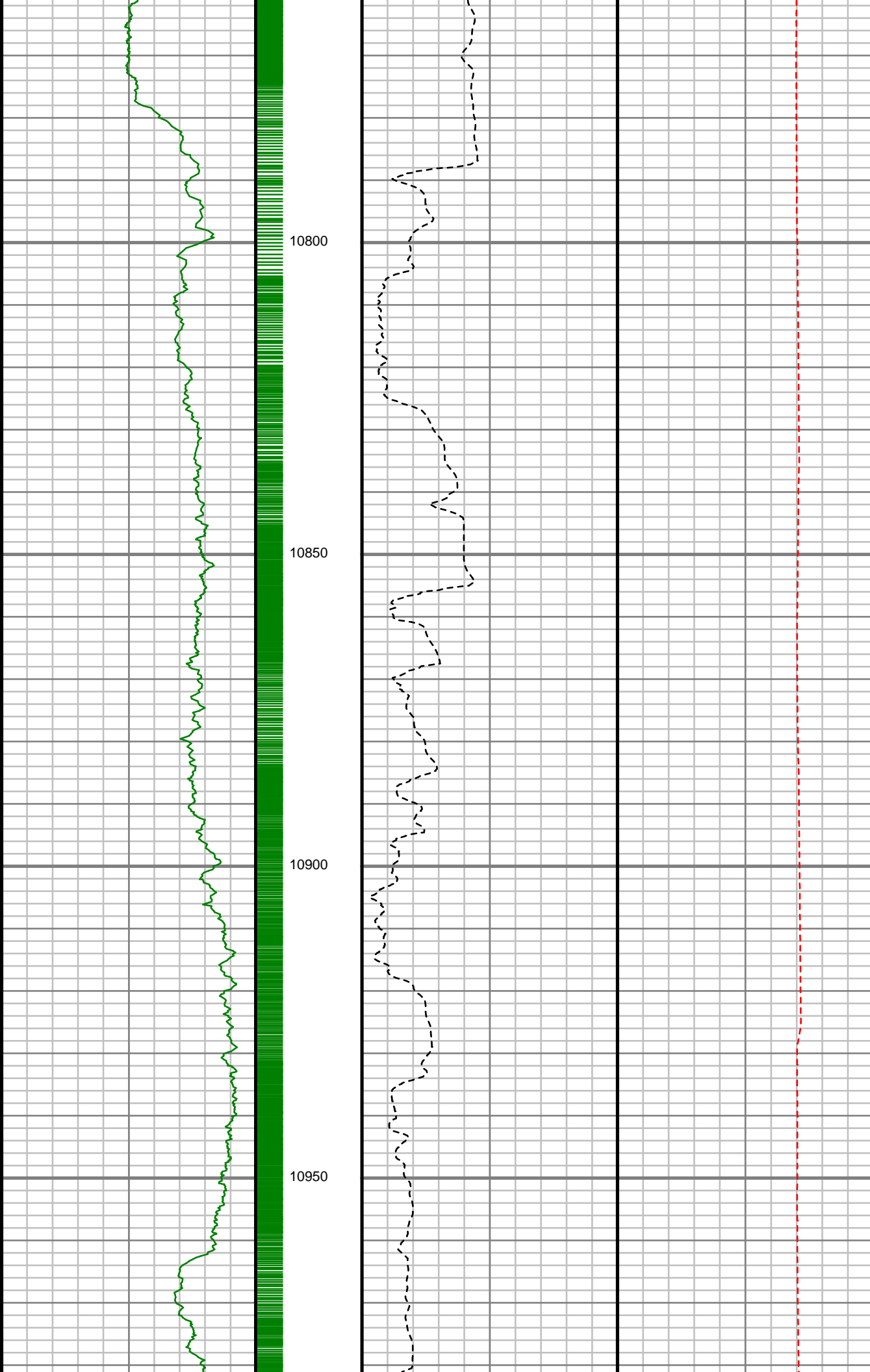
S: 114 MD: 10476.00 ft
Inc: 90.13 deg Az: 0.22
deg TVD: 7672.46 ft



S: 115 MD: 10566.00 ft
Inc: 88.85 deg Az:
358.92 deg TVD:
7673.25 ft

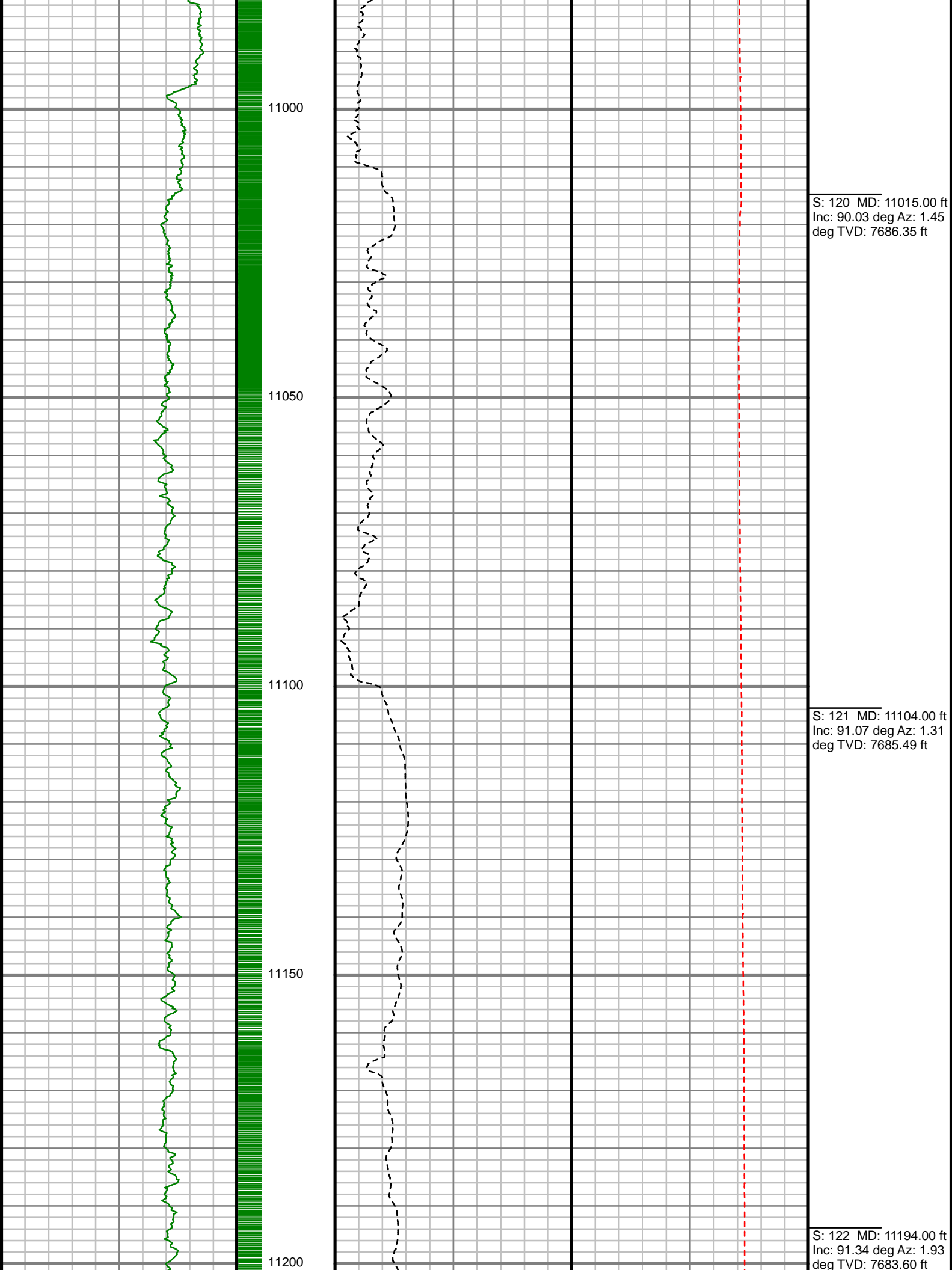
S: 116 MD: 10656.00 ft
Inc: 87.43 deg Az: 0.58
deg TVD: 7676.17 ft

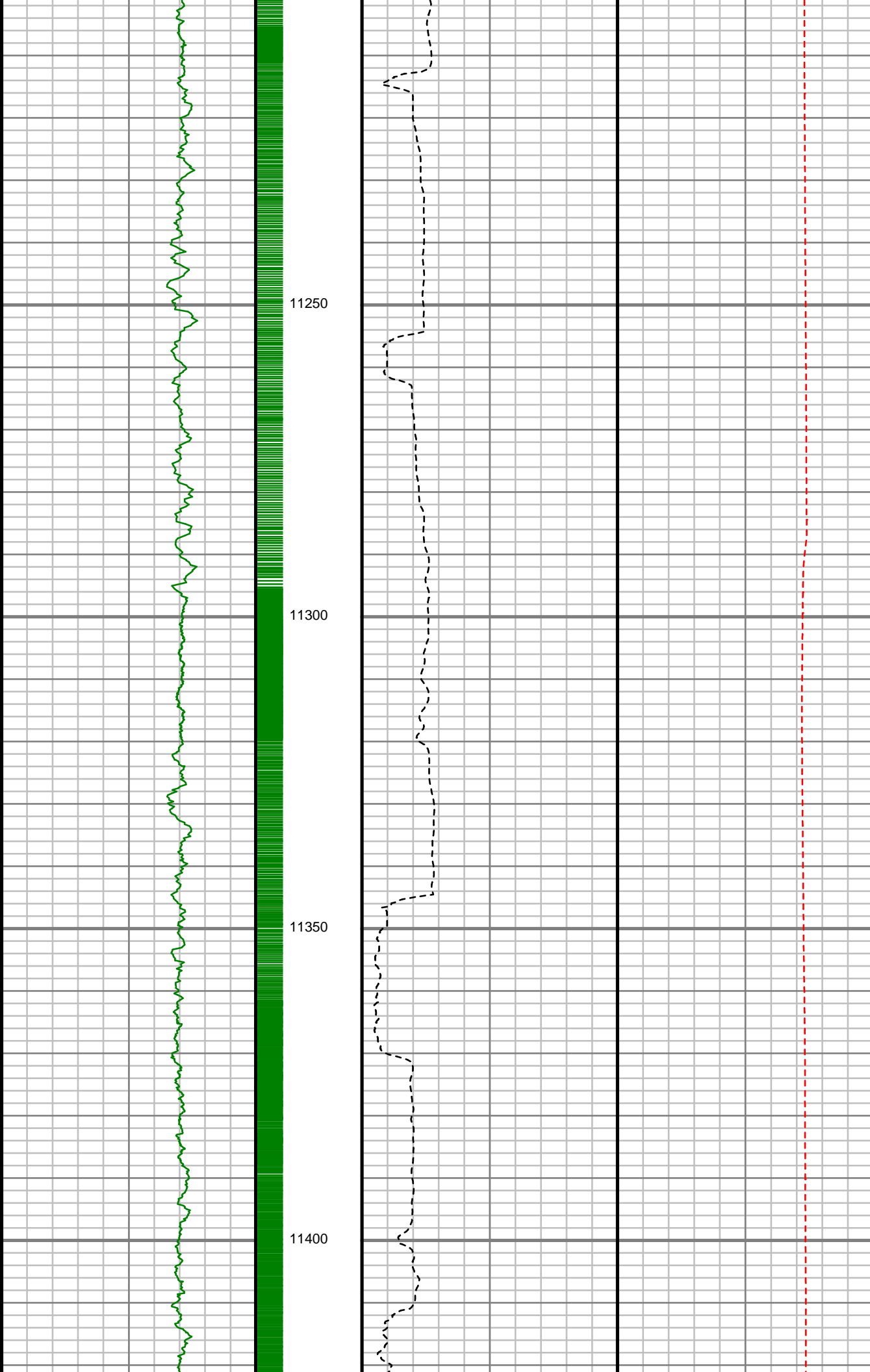
S: 117 MD: 10745.00 ft
Inc: 87.62 deg Az: 1.16
deg TVD: 7680.02 ft



S: 118 MD: 10835.00 ft
Inc: 88.25 deg Az:
359.65 deg TVD:
7683.26 ft

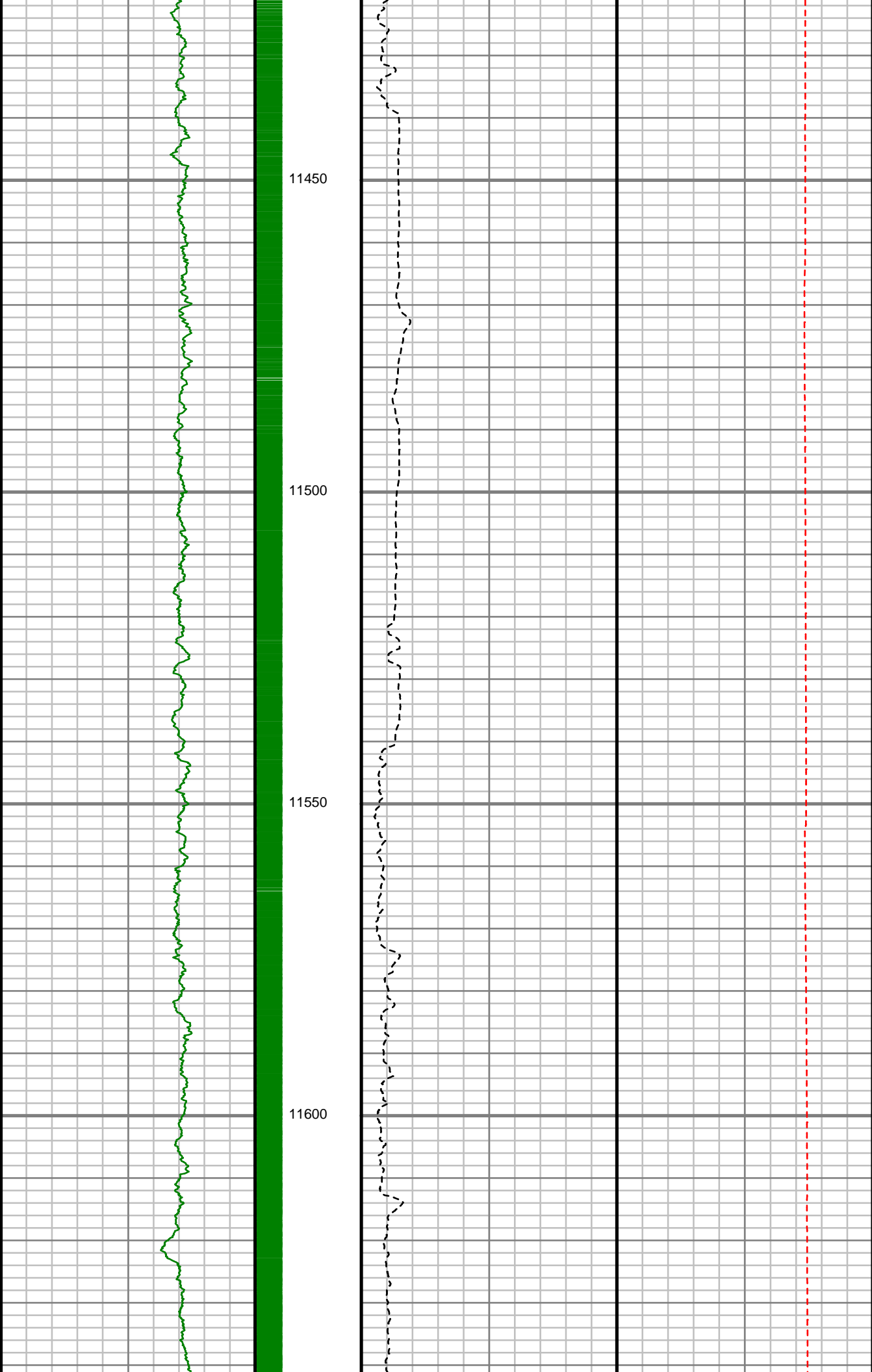
S: 119 MD: 10925.00 ft
Inc: 88.89 deg Az:
359.41 deg TVD:
7685.51 ft





S: 123 MD: 11284.00 ft
Inc: 91.11 deg Az: 2.42
deg TVD: 7681.68 ft

S: 124 MD: 11374.00 ft
Inc: 89.73 deg Az: 1.03
deg TVD: 7681.02 ft



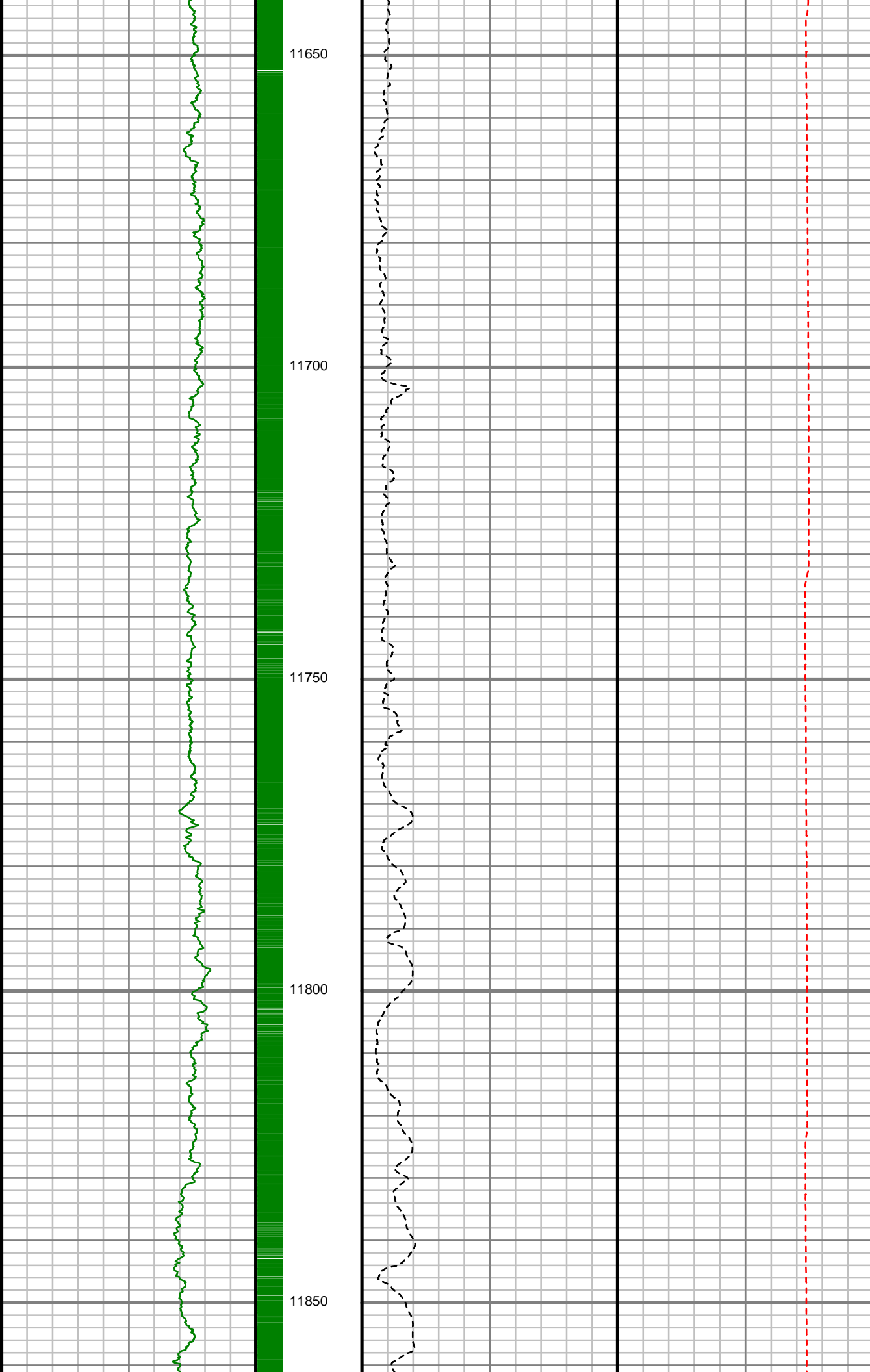
11450

11500

11550

11600

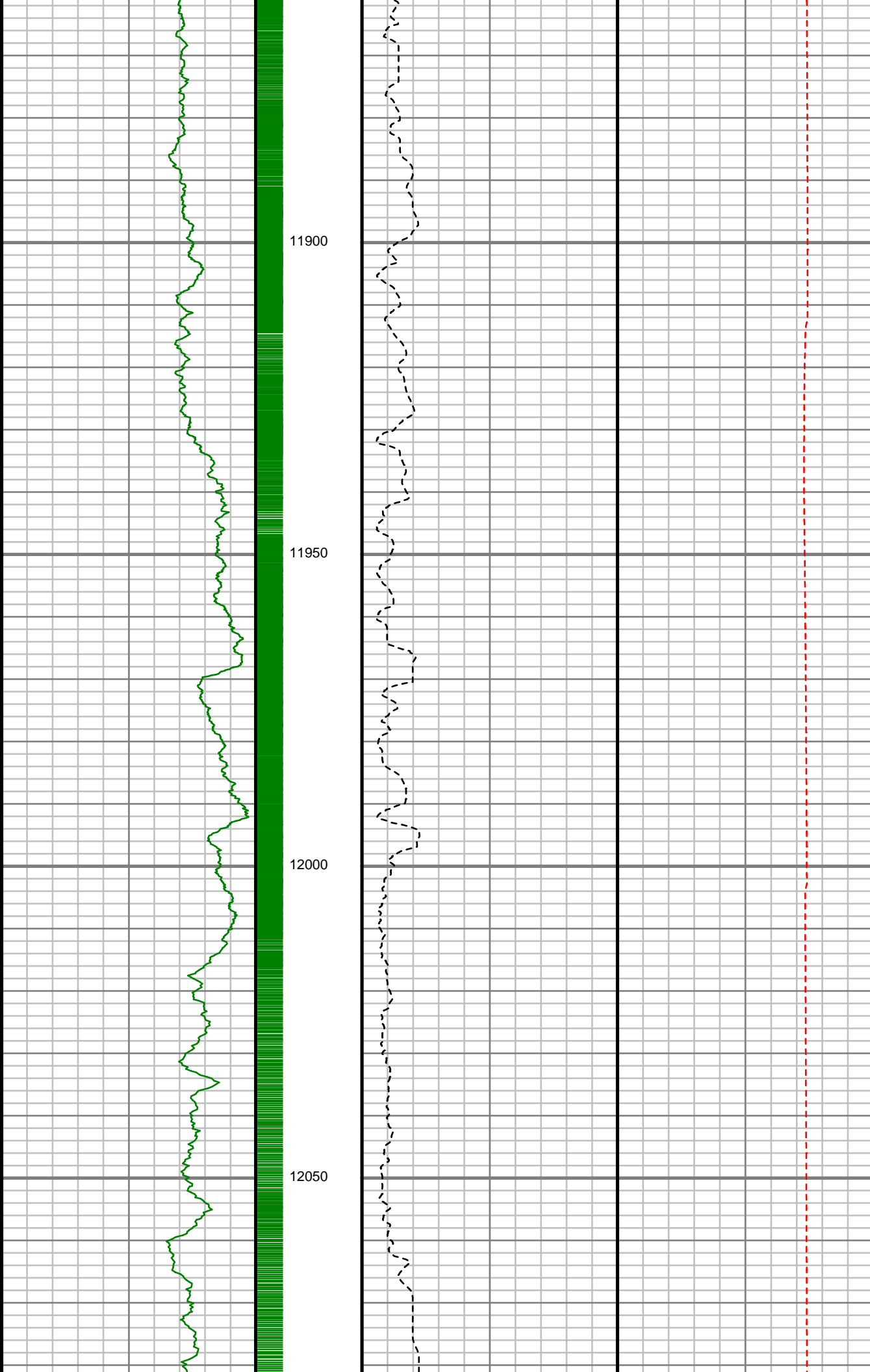
S: 125 MD: 11553.00 ft
Inc: 89.53 deg Az: 0.84
deg TVD: 7682.17 ft



S: 126 MD: 11643.00 ft
Inc: 89.60 deg Az: 0.47
deg TVD: 7682.86 ft

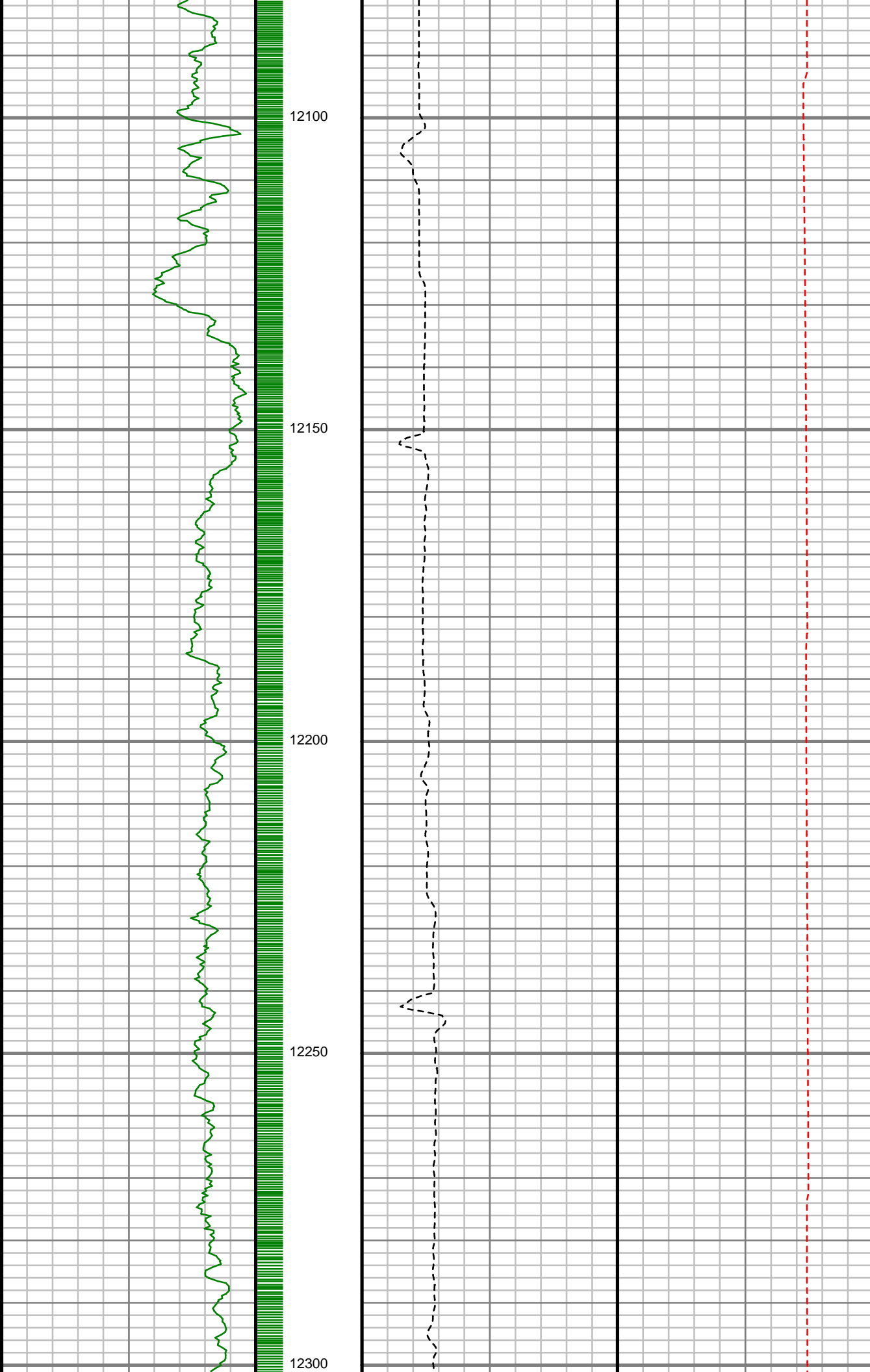
S: 127 MD: 11733.00 ft
Inc: 89.33 deg Az:
359.82 deg TVD:
7683.70 ft

S: 128 MD: 11822.00 ft
Inc: 89.03 deg Az: 0.54
deg TVD: 7684.98 ft



S: 129 MD: 11912.00 ft
Inc: 88.69 deg Az: 0.99
deg TVD: 7686.77 ft

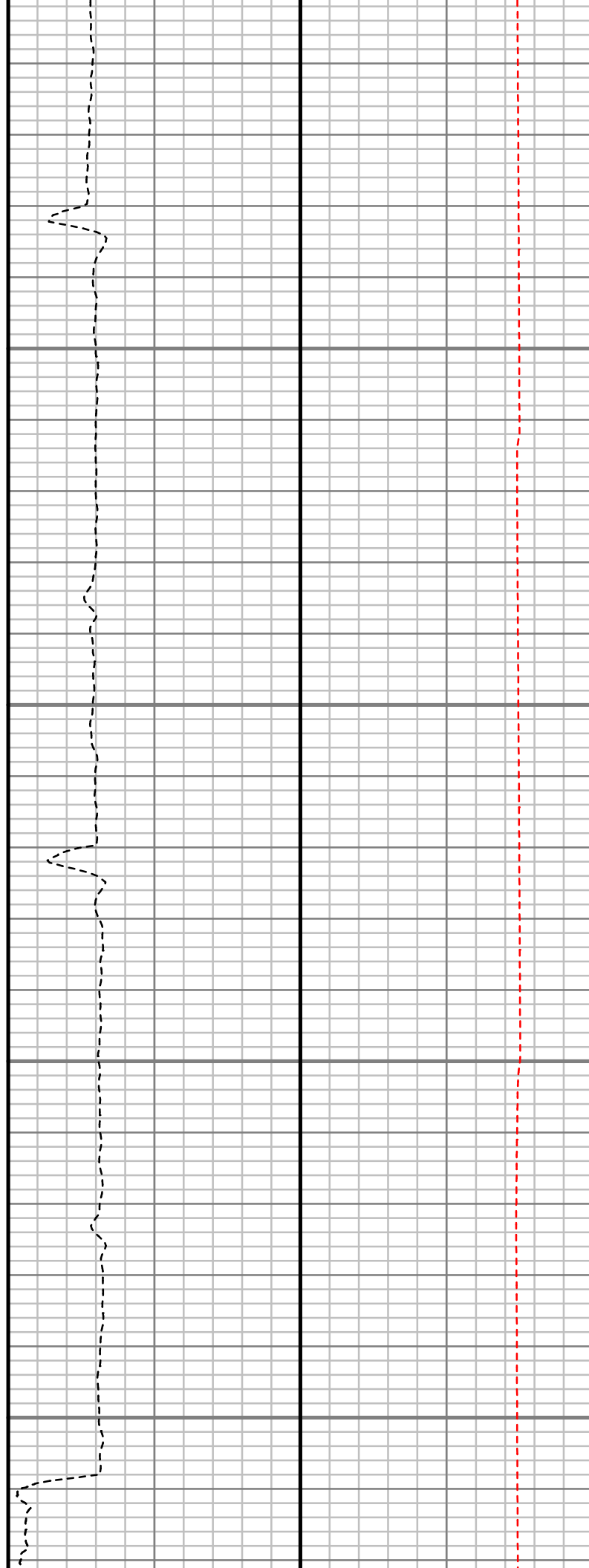
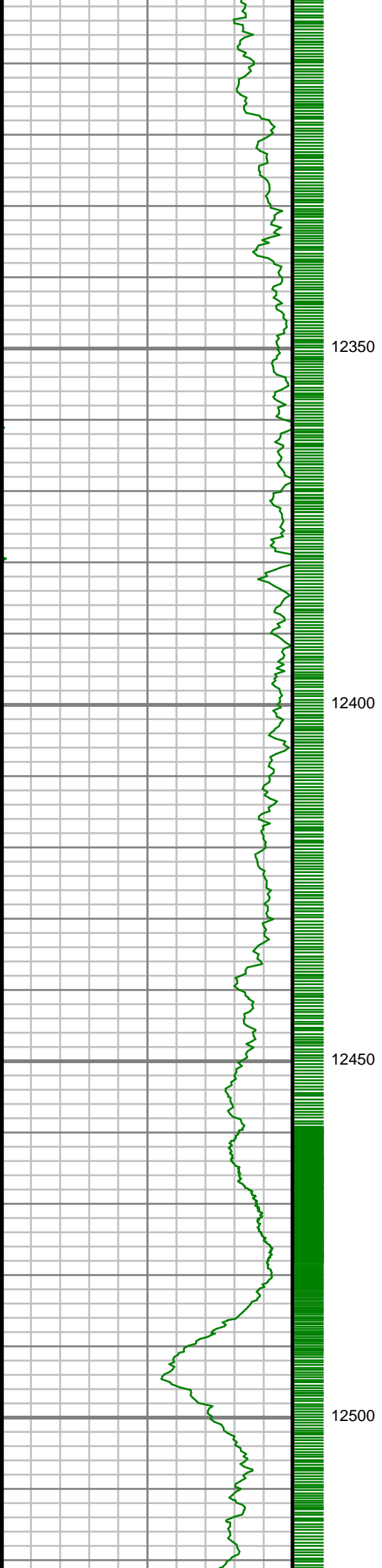
S: 130 MD: 12002.00 ft
Inc: 89.50 deg Az: 0.41
deg TVD: 7688.19 ft



S: 131 MD: 12092.00 ft
Inc: 89.47 deg Az: 0.26
deg TVD: 7689.01 ft

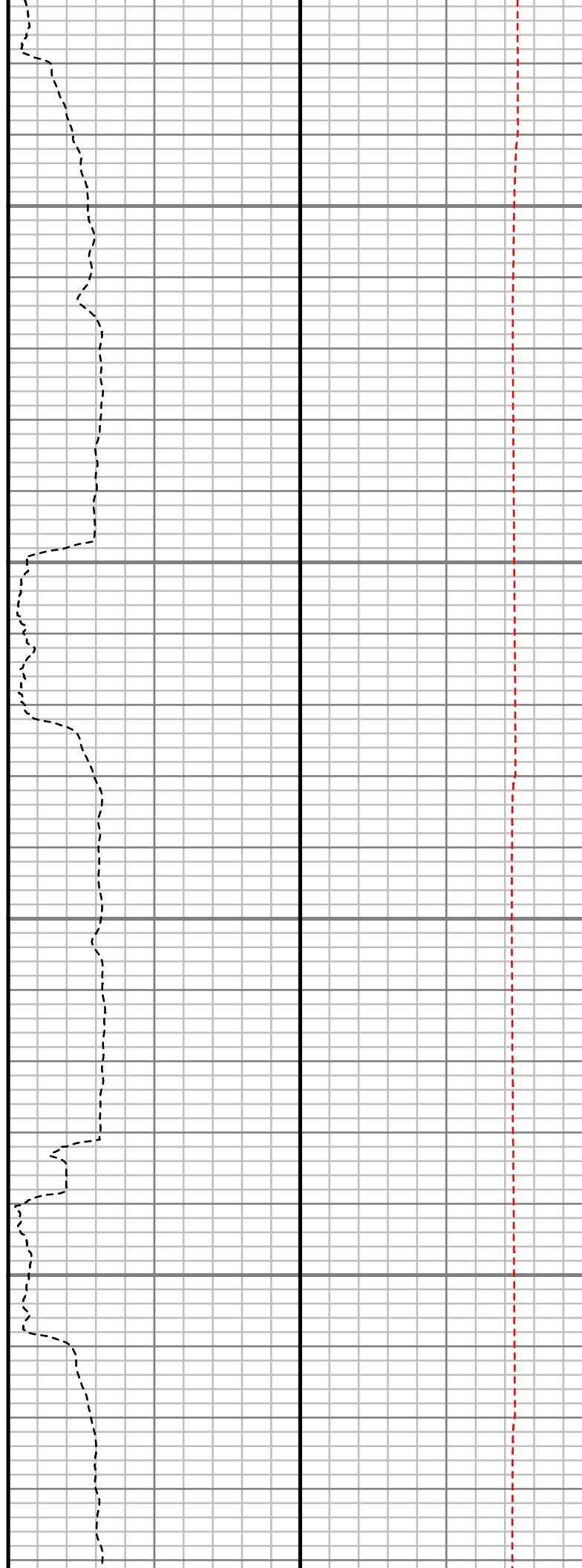
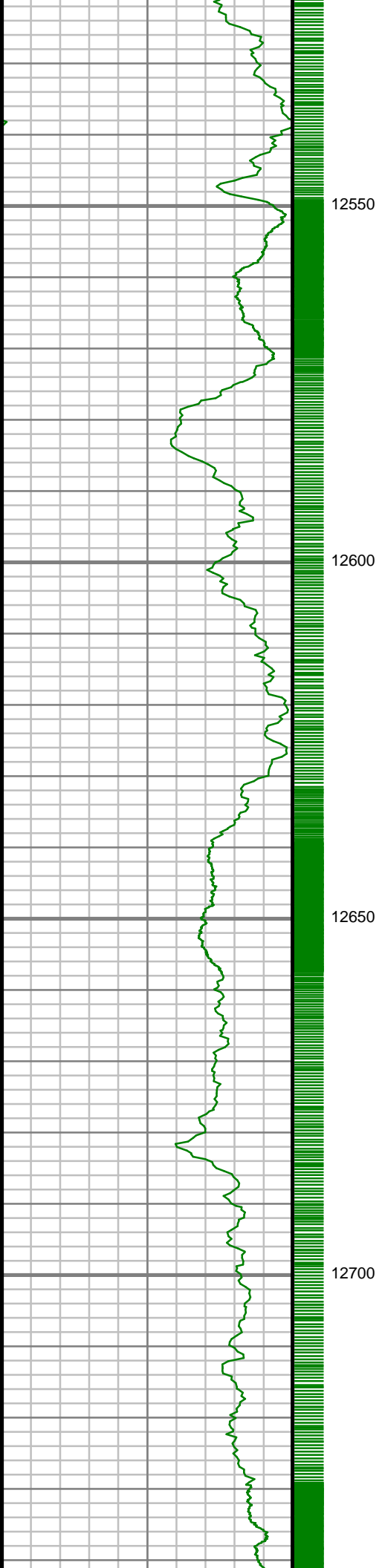
S: 132 MD: 12181.00 ft
Inc: 89.70 deg Az: 0.43
deg TVD: 7689.66 ft

S: 133 MD: 12271.00 ft
Inc: 89.10 deg Az:
359.70 deg TVD:
7690.60 ft



S: 134 MD: 12361.00 ft
Inc: 89.09 deg Az:
359.86 deg TVD:
7692.02 ft

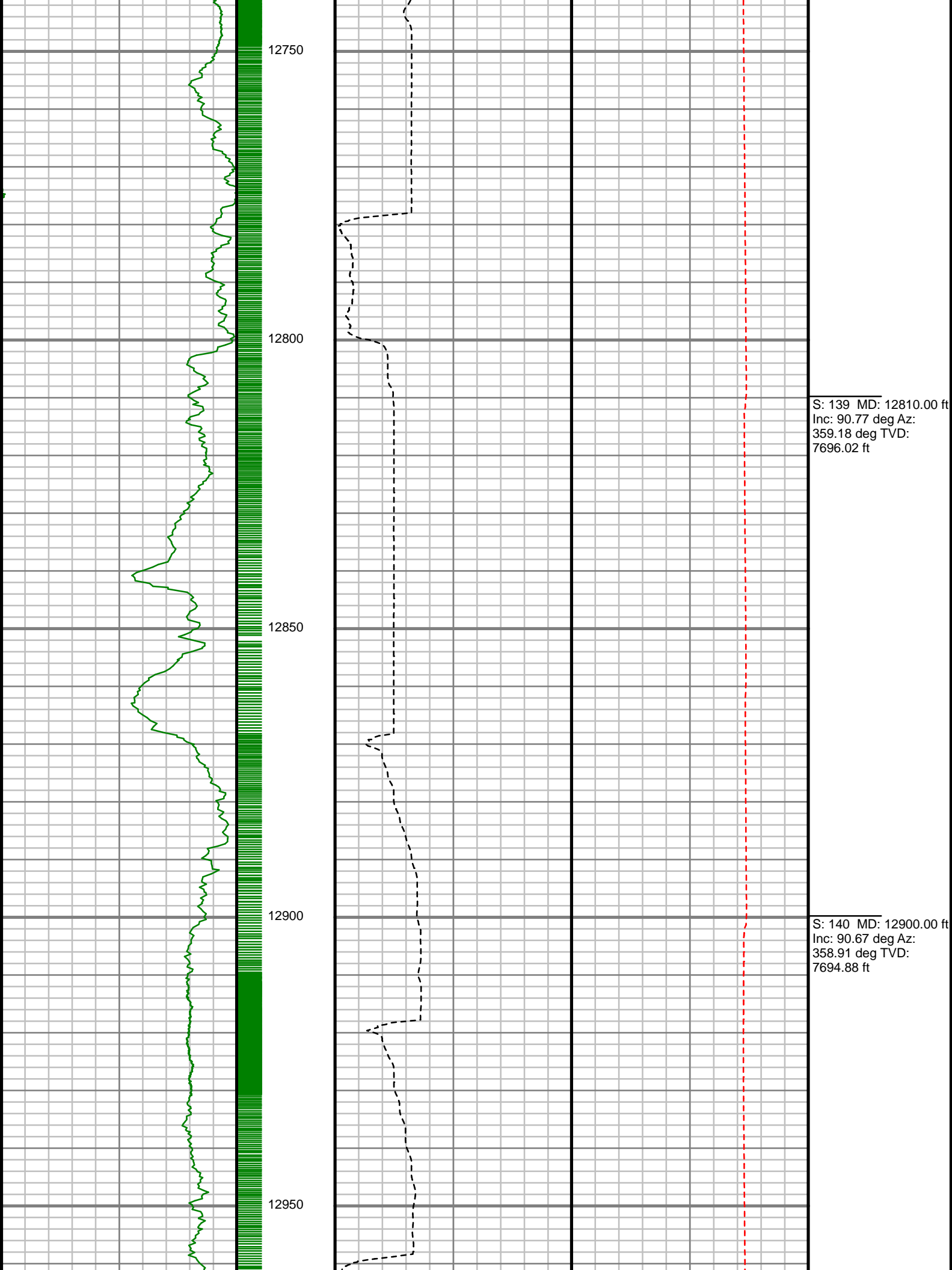
S: 135 MD: 12451.00 ft
Inc: 88.32 deg Az:
359.47 deg TVD:
7694.05 ft

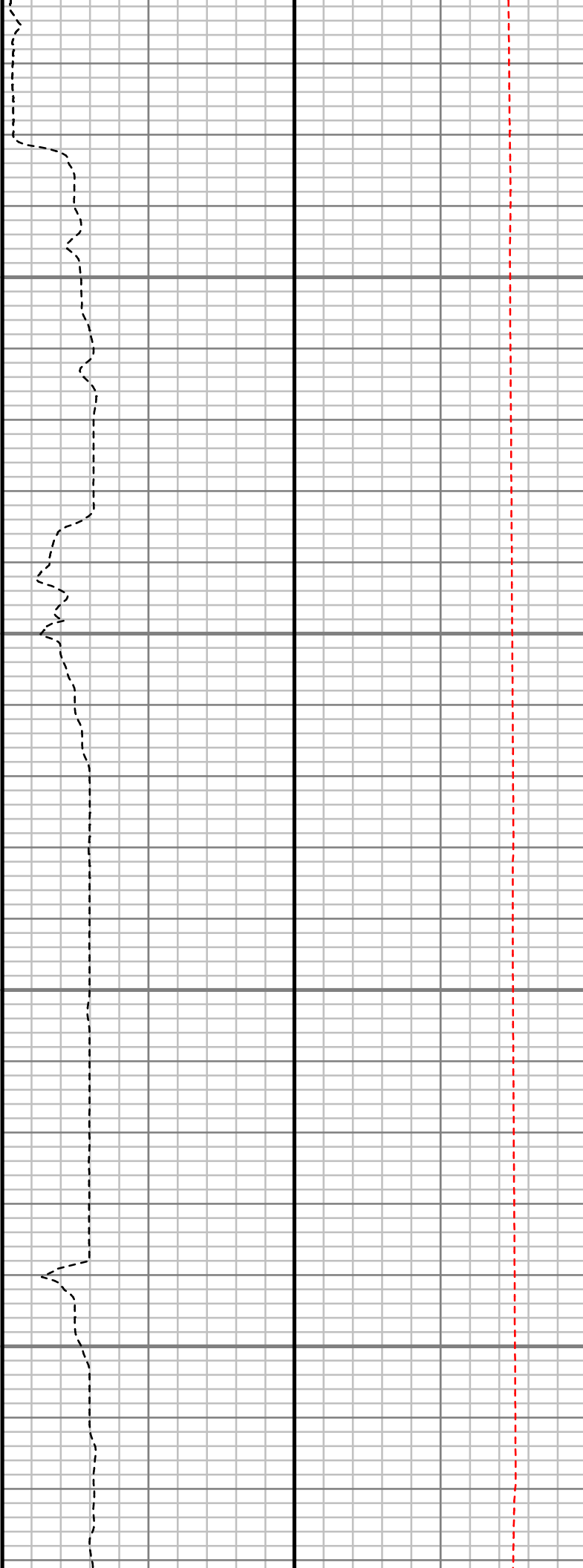
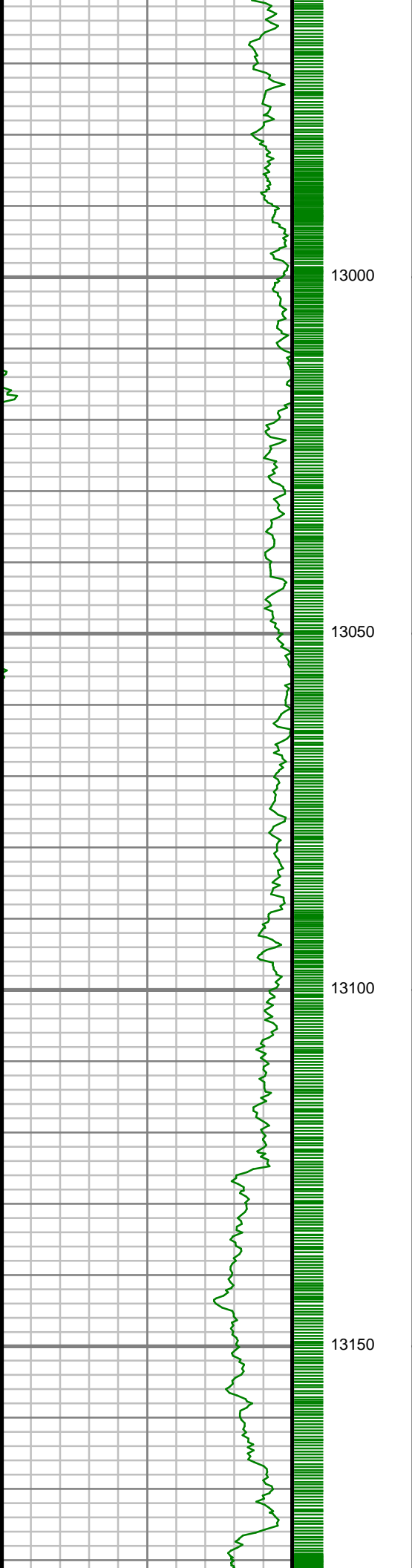


S: 136 MD: 12541.00 ft
Inc: 88.80 deg Az:
358.80 deg TVD:
7696.32 ft

S: 137 MD: 12630.00 ft
Inc: 89.53 deg Az:
359.04 deg TVD:
7697.62 ft

S: 138 MD: 12720.00 ft
Inc: 90.87 deg Az:
358.30 deg TVD:
7697.31 ft

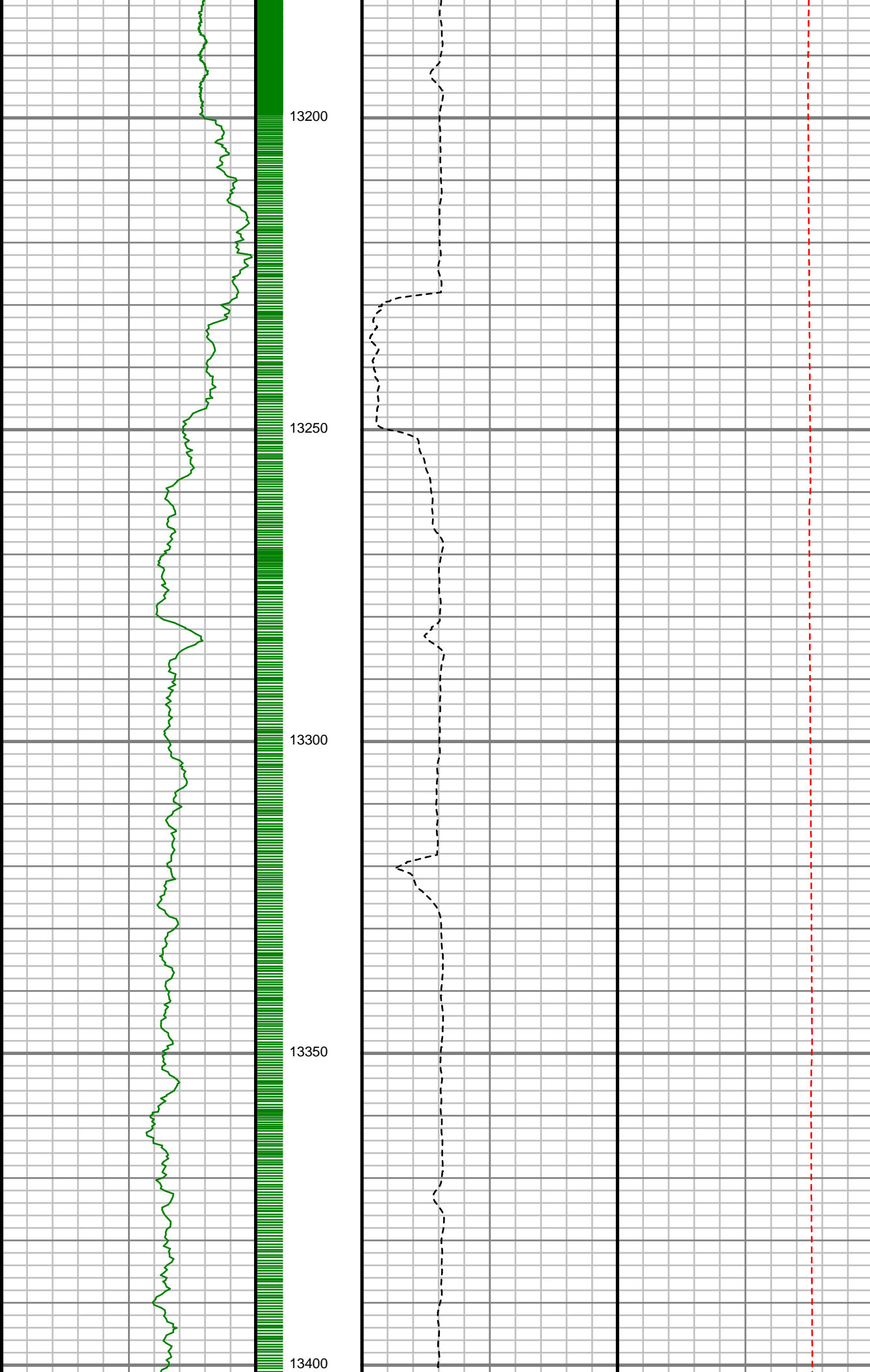




S: 141 MD: 12990.00 ft
Inc: 90.34 deg Az: 1.52
deg TVD: 7694.09 ft

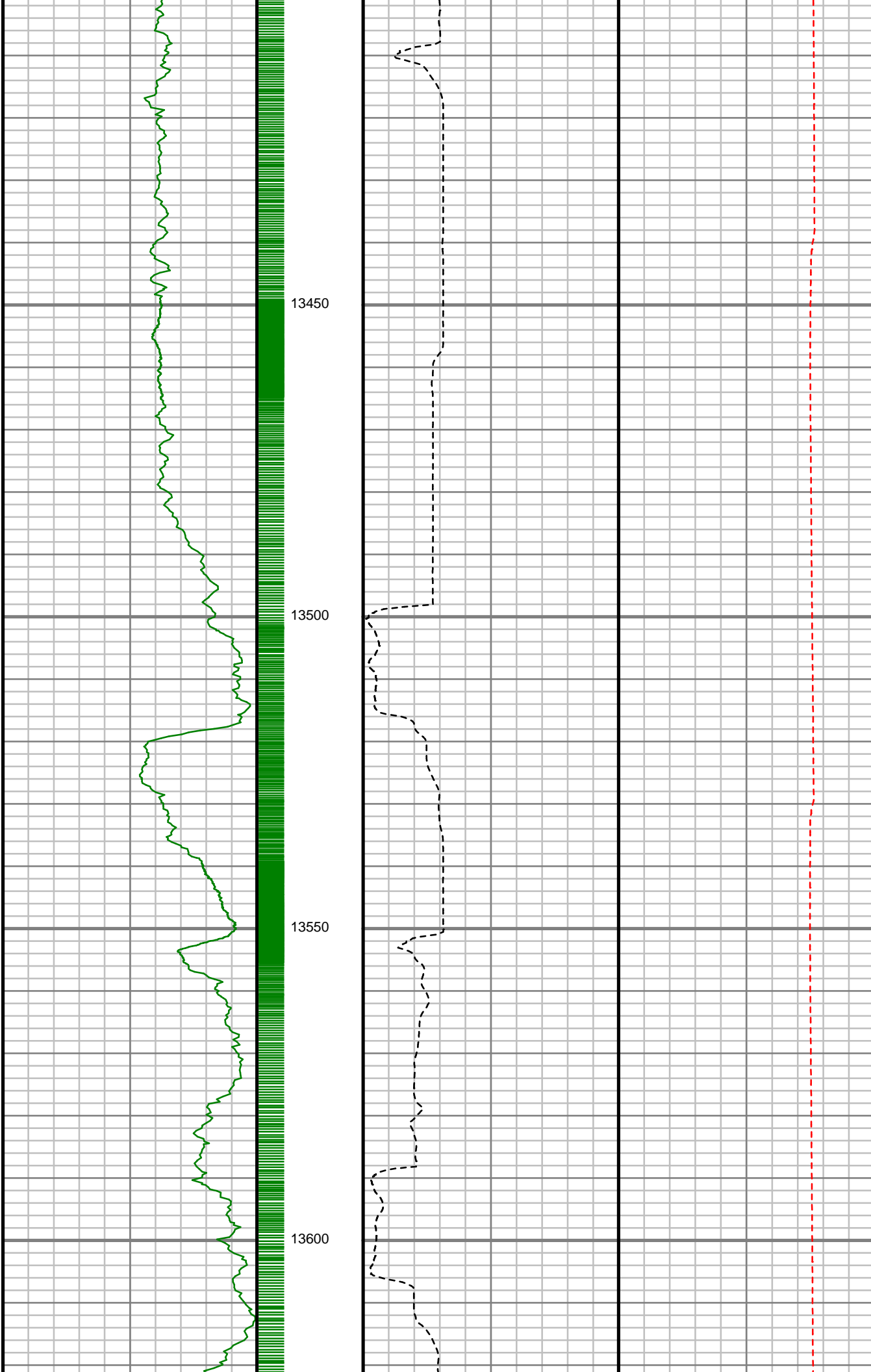
S: 142 MD: 13080.00 ft
Inc: 89.13 deg Az: 0.01
deg TVD: 7694.51 ft

S: 143 MD: 13169.00 ft
Inc: 87.76 deg Az:
359.85 deg TVD:
7696.93 ft



S: 144 MD: 13259.00 ft
Inc: 88.96 deg Az:
359.82 deg TVD:
7699.51 ft

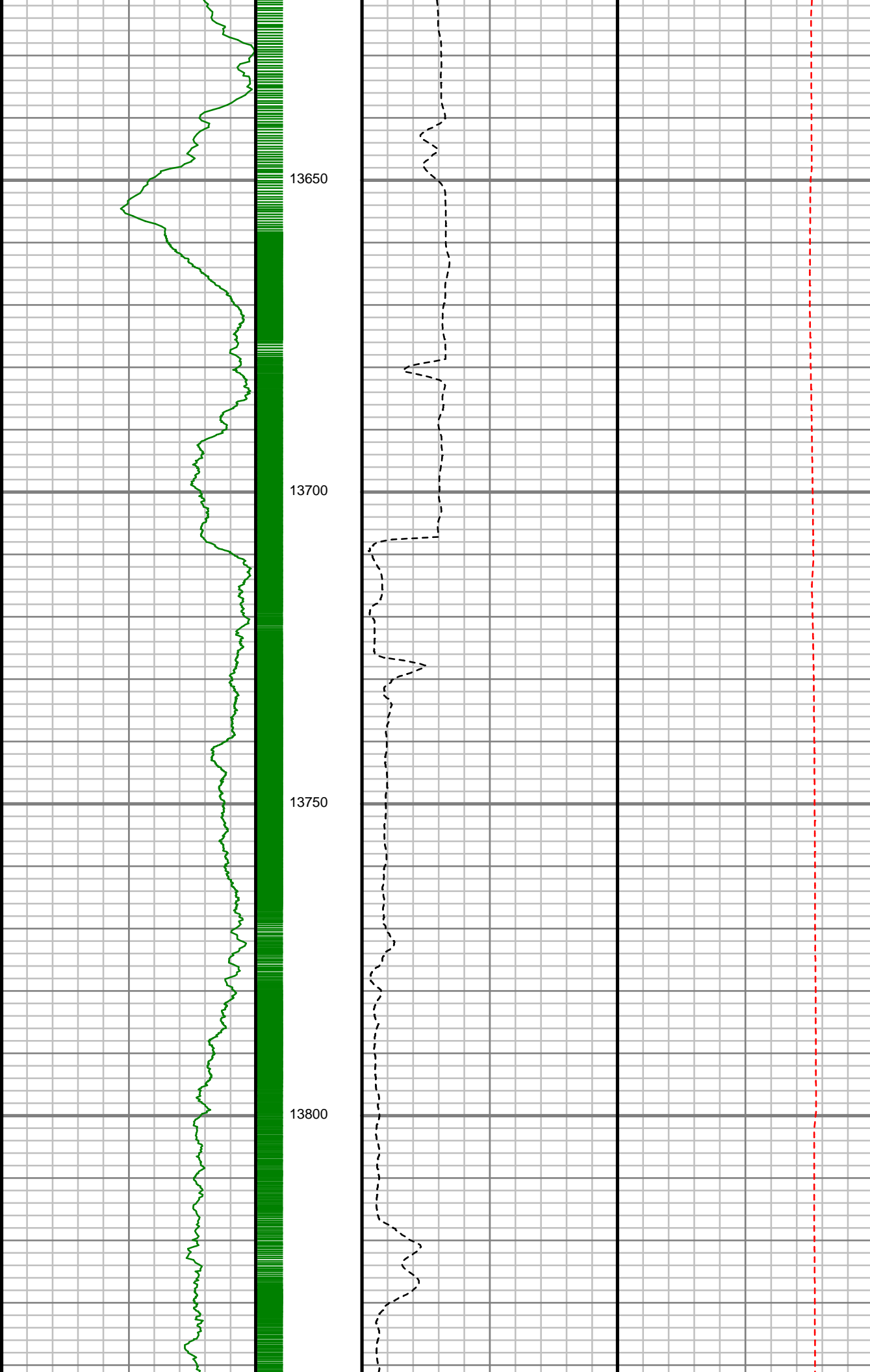
S: 145 MD: 13349.00 ft
Inc: 89.90 deg Az:
359.96 deg TVD:
7700.40 ft



S: 146 MD: 13439.00 ft
Inc: 91.85 deg Az: 0.95
deg TVD: 7699.03 ft

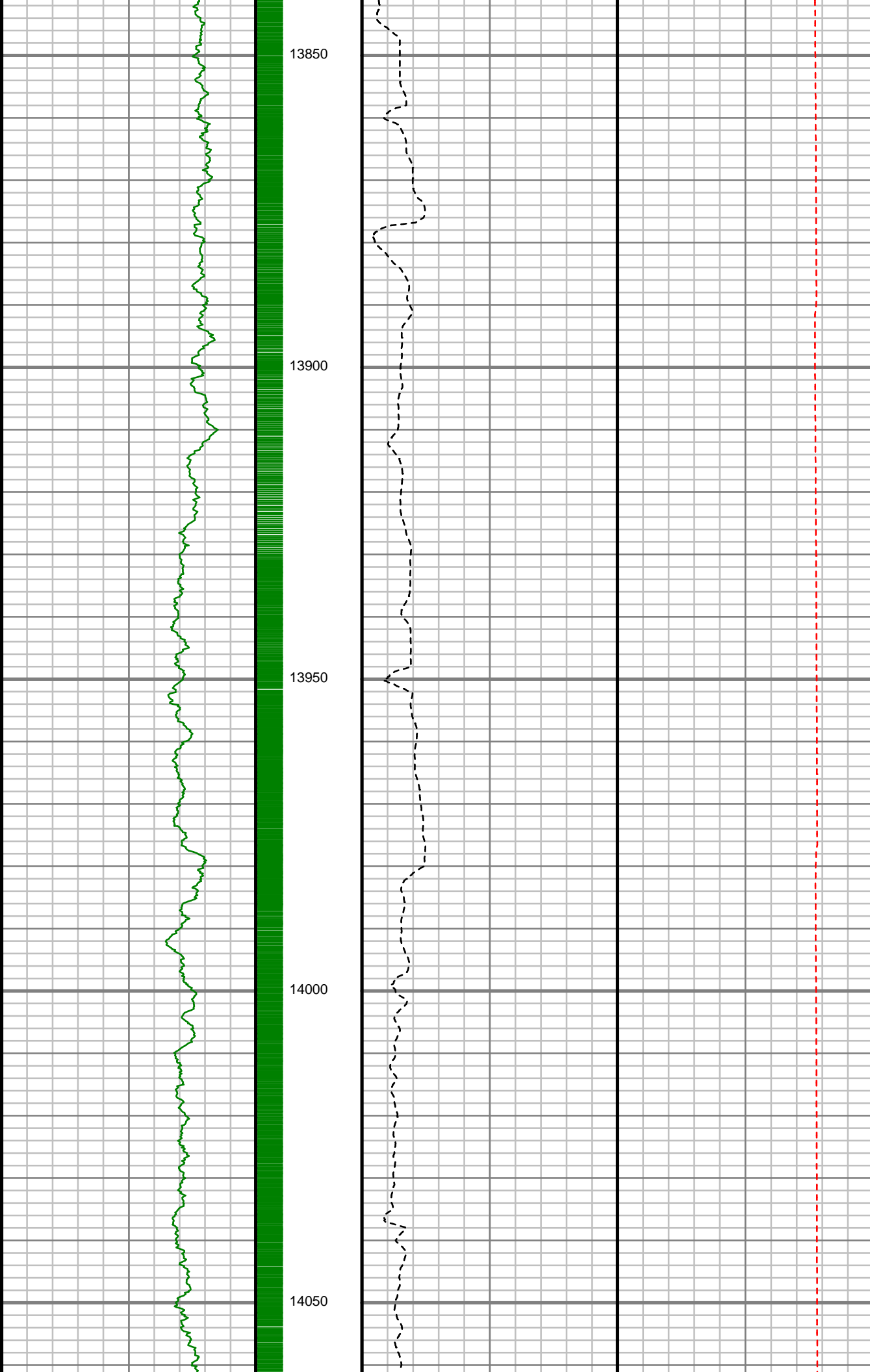
S: 147 MD: 13529.00 ft
Inc: 91.47 deg Az: 1.07
deg TVD: 7696.43 ft

S: 148 MD: 13618.00 ft



Inc: 90.13 deg Az: 2.05
deg TVD: 7695.18 ft

S: 149 MD: 13798.00 ft
Inc: 89.33 deg Az: 2.89
deg TVD: 7696.02 ft



13850

13900

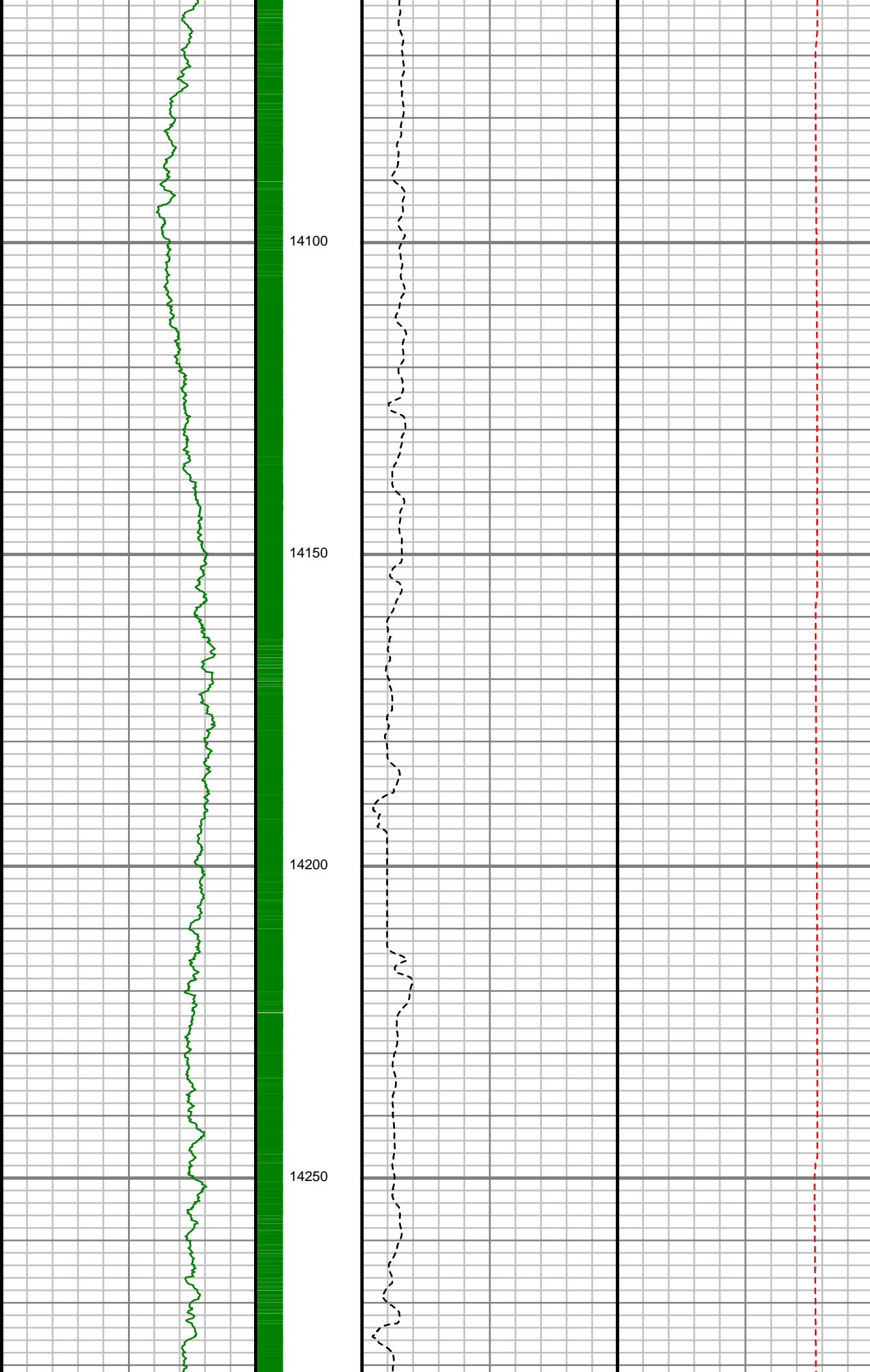
13950

14000

14050

S: 150 MD: 13888.00 ft
Inc: 88.59 deg Az: 1.69
deg TVD: 7697.64 ft

S: 151 MD: 13978.00 ft
Inc: 87.90 deg Az: 0.96
deg TVD: 7700.40 ft



14100

14150

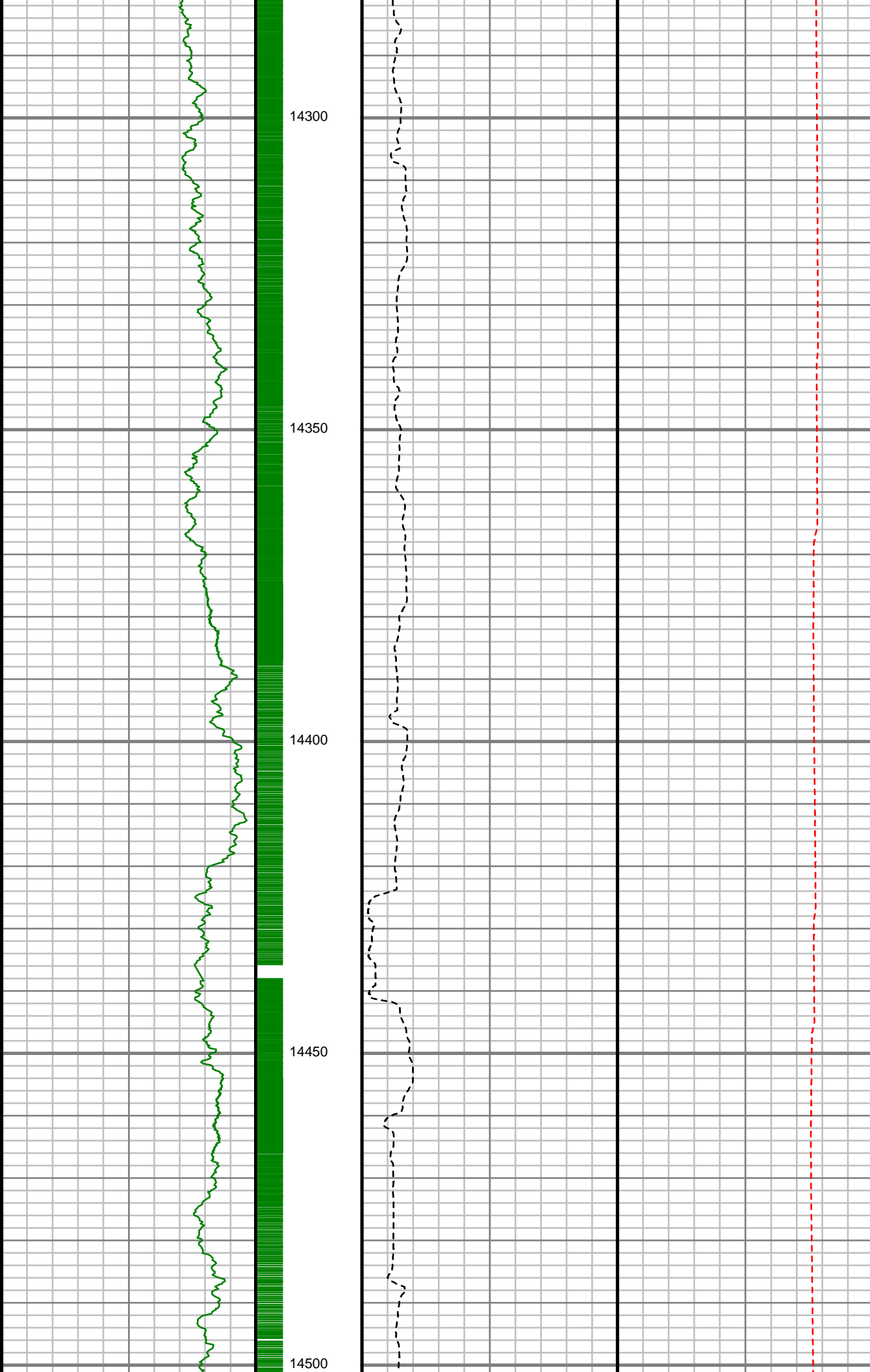
14200

14250

S: 152 MD: 14067.00 ft
Inc: 88.19 deg Az: 2.63
deg TVD: 7703.44 ft

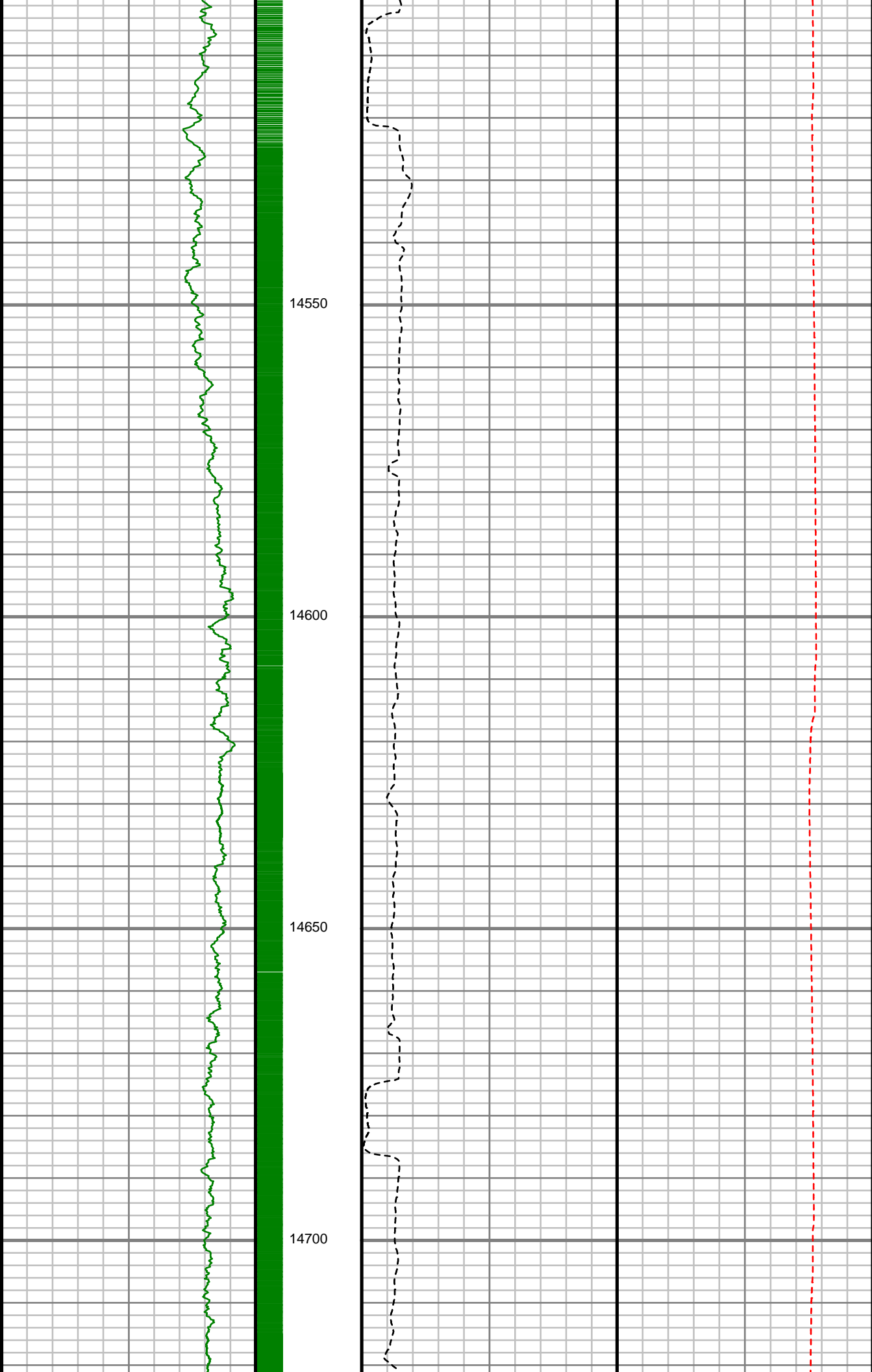
S: 153 MD: 14157.00 ft
Inc: 88.18 deg Az: 1.14
deg TVD: 7706.29 ft

S: 154 MD: 14247.00 ft
Inc: 88.15 deg Az: 1.30
deg TVD: 7709.17 ft



S: 155 MD: 14337.00 ft
Inc: 87.83 deg Az: 1.52
deg TVD: 7712.32 ft

S: 156 MD: 14444.00 ft
Inc: 87.60 deg Az: 1.86
deg TVD: 7716.58 ft



14550

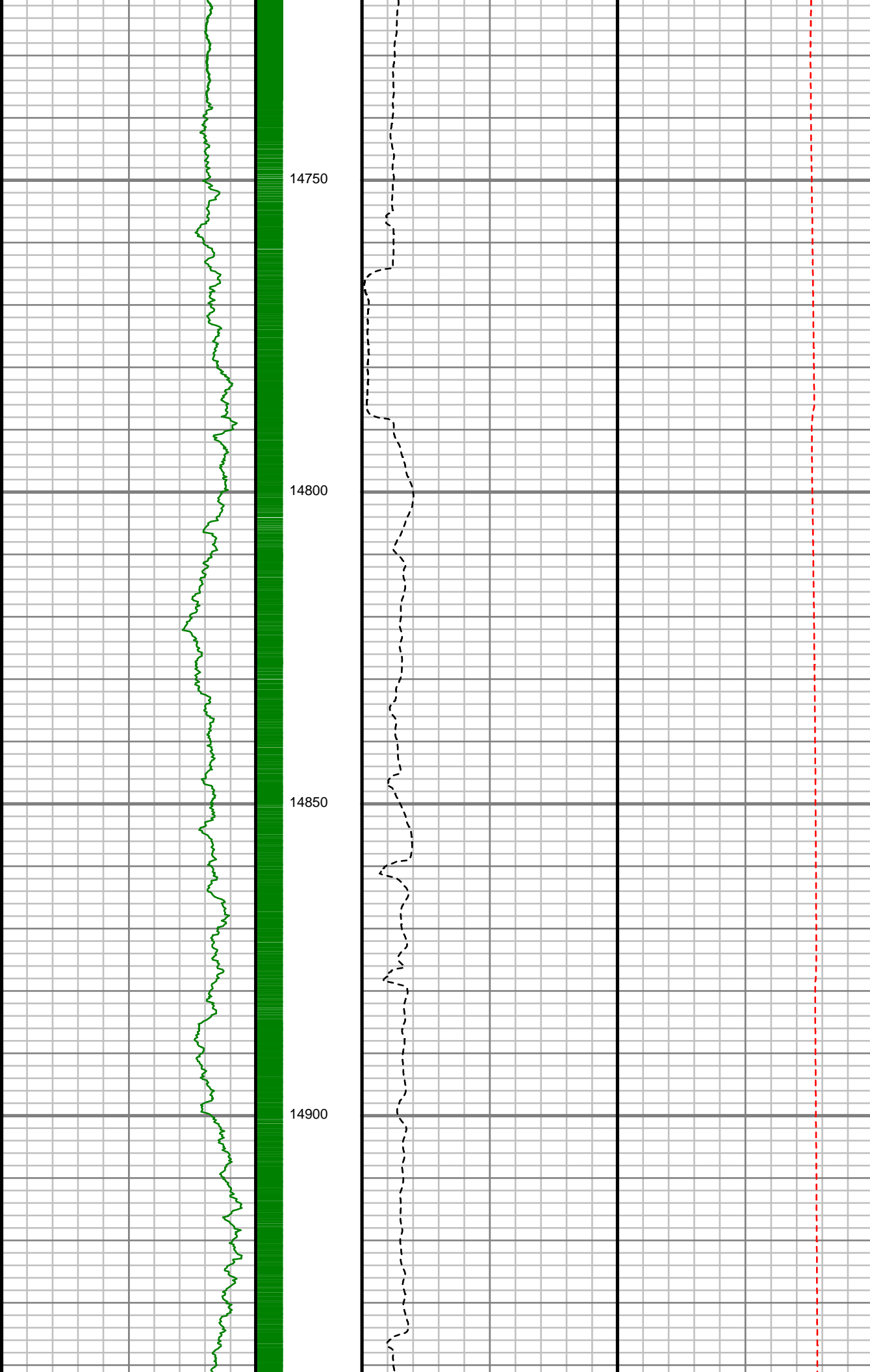
14600

14650

14700

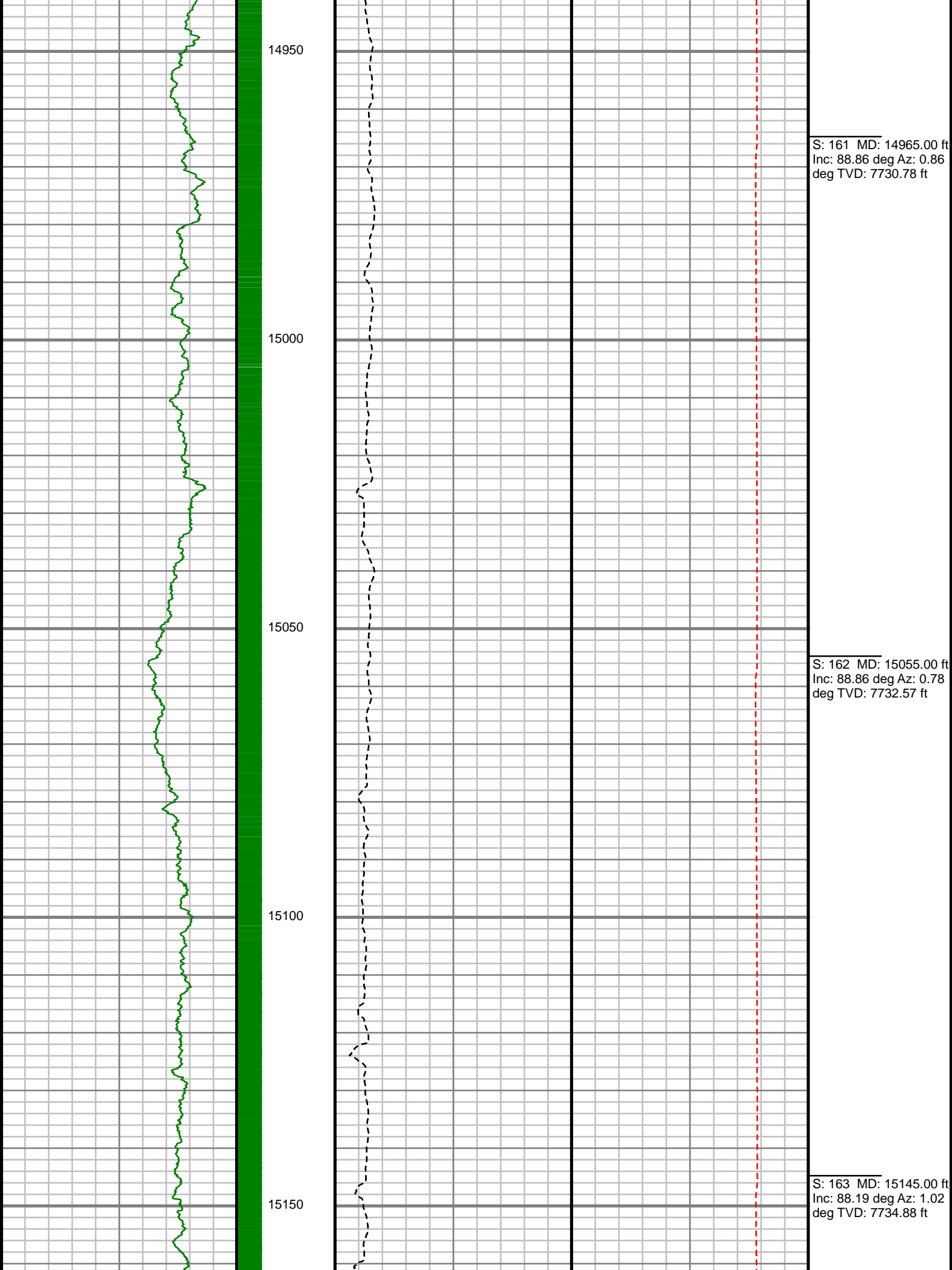
S: 157 MD: 14606.00 ft
Inc: 87.85 deg Az: 0.08
deg TVD: 7723.01 ft

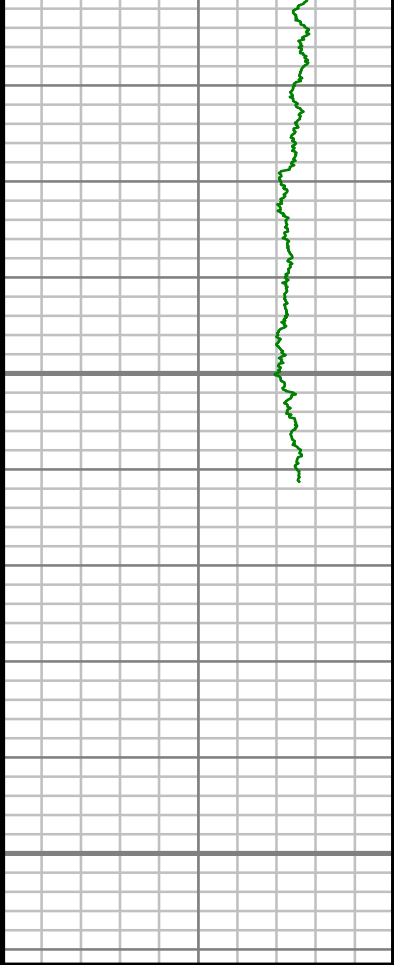
S: 158 MD: 14696.00 ft
Inc: 87.75 deg Az:
359.80 deg TVD:
7726.46 ft



S: 159 MD: 14786.00 ft
Inc: 89.63 deg Az: 1.04
deg TVD: 7728.51 ft

S: 160 MD: 14876.00 ft
Inc: 89.30 deg Az: 0.99
deg TVD: 7729.35 ft



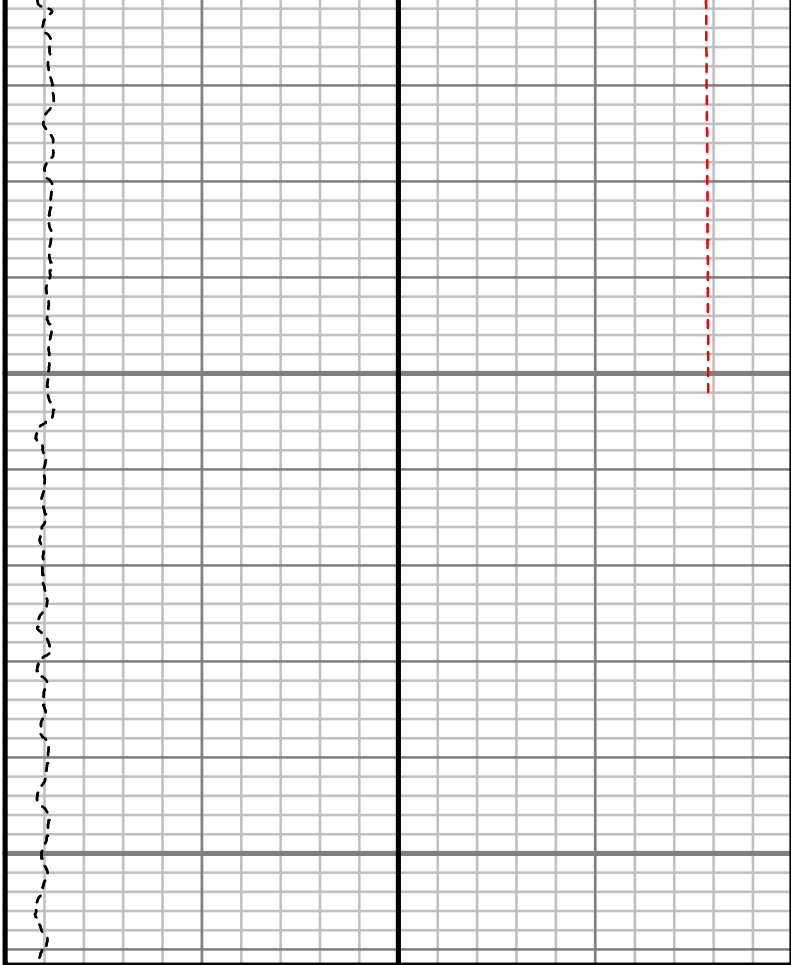


15200

15250

MEASURED DEPTH
1:240 (ft)

Gamma Ray (GR)		
0	Unit = aapi	150



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

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

Comments

MWD Survey Report

Well Location	BUFFALO & BADGER 4C-15HZ PAD
Well Name	BADGER 22N-3HZ
Survey Date	4/4/2015
Latitude	40°3'26.434"N
Longitude	104°59'43.764"W
Btotal	52596, 52638, 52684, 52701 nT
Dip	66.52, 66.53, 66.58 deg
Magnetic Declination	8.60, 8.62, 8.64, 8.67 deg
North Reference	True North
Grid Correction	None
Depth Reference	RKB (20.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 0.18Azim (deg)
Operator(s)	C. COLLINS, H. ORAHOOD

Well Notes

SURVEYS FROM 0 FT. TO 1271 FT. WERE ACQUIRED BY CATHEDRAL MWD.

SURVEYS FROM 1393 FT. TO 15145 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
14.00	0.00	0.00	14.00	0.00	0.00	0.00	0.00	14.00
66.00	0.10	1.60	66.00	0.05	0.05	0.00	0.19	52.00
177.00	0.30	134.80	177.00	-0.06	-0.06	0.21	0.34	111.00
255.00	0.20	82.80	255.00	-0.19	-0.19	0.49	0.30	78.00
336.00	0.20	77.80	336.00	-0.14	-0.14	0.77	0.02	81.00
416.00	0.40	119.00	416.00	-0.24	-0.25	1.15	0.35	80.00
496.00	0.20	70.60	496.00	-0.33	-0.34	1.53	0.38	80.00
576.00	0.10	35.60	576.00	-0.23	-0.23	1.70	0.16	80.00
656.00	0.40	98.50	656.00	-0.21	-0.22	2.01	0.46	80.00
736.00	0.20	218.50	735.99	-0.36	-0.37	2.20	0.66	80.00
816.00	0.30	180.10	815.99	-0.68	-0.69	2.12	0.24	80.00
896.00	0.40	143.00	895.99	-1.11	-1.12	2.28	0.30	80.00
976.00	0.10	98.50	975.99	-1.35	-1.35	2.52	0.42	80.00
1056.00	0.40	143.90	1055.99	-1.58	-1.59	2.75	0.42	80.00
1136.00	0.40	210.70	1135.99	-2.05	-2.05	2.78	0.55	80.00
1216.00	0.30	157.90	1215.99	-2.48	-2.49	2.71	0.40	80.00
1271.00	0.40	228.20	1270.99	-2.74	-2.75	2.62	0.75	55.00
1393.00	1.04	352.17	1392.98	-1.93	-1.93	2.16	1.07	122.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
1487.00	1.46	248.09	1486.97	-1.53	-1.53	0.93	2.12	94.00
1577.00	2.08	190.02	1576.93	-3.57	-3.57	-0.42	2.00	90.00
1666.00	2.45	167.47	1665.86	-7.02	-7.02	-0.29	1.08	89.00
1756.00	3.19	160.85	1755.75	-11.26	-11.26	0.95	0.89	90.00
1846.00	4.80	157.19	1845.53	-17.09	-17.10	3.23	1.81	90.00
1936.00	6.60	166.86	1935.08	-25.59	-25.61	5.87	2.26	90.00
2025.00	8.94	177.41	2023.27	-37.48	-37.50	7.34	3.07	89.00
2115.00	11.54	179.04	2111.82	-53.47	-53.50	7.81	2.91	90.00
2160.00	11.01	179.79	2155.96	-62.27	-62.30	7.90	1.23	45.00
2250.00	12.05	177.13	2244.14	-80.25	-80.28	8.41	1.30	90.00
2295.00	10.58	175.05	2288.26	-89.05	-89.08	9.00	3.40	45.00
2384.00	12.42	176.51	2375.47	-106.74	-106.77	10.28	2.09	89.00
2474.00	11.18	175.94	2463.57	-125.10	-125.13	11.49	1.38	90.00
2564.00	11.24	175.21	2551.85	-142.54	-142.58	12.84	0.17	90.00
2654.00	10.67	177.32	2640.21	-159.60	-159.64	13.96	0.78	90.00
2743.00	10.94	179.49	2727.63	-176.28	-176.32	14.42	0.55	89.00
2833.00	10.88	173.82	2816.01	-193.26	-193.31	15.41	1.19	90.00
2923.00	11.01	171.67	2904.37	-210.21	-210.26	17.57	0.47	90.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
3013.00	11.14	177.77	2992.70	-227.39	-227.45	19.16	1.31	90.00
3102.00	11.28	172.79	3080.00	-244.61	-244.67	20.58	1.10	89.00
3192.00	9.91	172.73	3168.47	-261.01	-261.08	22.67	1.52	90.00
3282.00	11.16	176.53	3256.95	-277.38	-277.46	24.17	1.59	90.00
3372.00	10.70	175.81	3345.32	-294.39	-294.47	25.31	0.53	90.00
3461.00	9.72	172.91	3432.91	-310.08	-310.17	26.84	1.24	89.00
3551.00	9.48	176.51	3521.65	-325.02	-325.11	28.23	0.72	90.00
3641.00	9.62	164.69	3610.41	-339.67	-339.76	30.67	2.18	90.00
3730.00	11.39	168.96	3697.92	-355.45	-355.56	34.31	2.17	89.00
3820.00	10.09	169.51	3786.34	-371.92	-372.03	37.45	1.45	90.00
3910.00	9.53	179.74	3875.03	-387.11	-387.24	38.92	2.03	90.00
4000.00	10.45	176.77	3963.67	-402.71	-402.84	39.41	1.17	90.00
4090.00	10.22	180.82	4052.21	-418.85	-418.97	39.76	0.85	90.00
4179.00	10.73	178.94	4139.72	-435.03	-435.15	39.80	0.69	89.00
4269.00	11.21	174.18	4228.08	-452.10	-452.23	40.84	1.14	90.00
4359.00	9.77	172.86	4316.57	-468.38	-468.51	42.68	1.63	90.00
4449.00	11.81	178.04	4404.98	-485.15	-485.29	43.94	2.51	90.00
4538.00	12.84	170.86	4491.93	-504.02	-504.16	45.83	2.07	89.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
4628.00	11.55	166.26	4579.90	-522.64	-522.80	49.55	1.79	90.00
4718.00	10.14	165.47	4668.29	-539.05	-539.22	53.68	1.58	90.00
4808.00	11.06	167.58	4756.76	-555.14	-555.32	57.53	1.12	90.00
4898.00	10.93	166.84	4845.10	-571.87	-572.06	61.33	0.21	90.00
4987.00	10.32	164.76	4932.58	-587.77	-587.98	65.34	0.81	89.00
5077.00	10.93	165.41	5021.03	-603.79	-604.01	69.61	0.68	90.00
5167.00	9.07	168.01	5109.66	-618.98	-619.21	73.23	2.12	90.00
5257.00	8.10	166.43	5198.65	-632.07	-632.31	76.20	1.12	90.00
5347.00	7.52	164.82	5287.82	-643.91	-644.16	79.23	0.68	90.00
5437.00	6.63	164.14	5377.13	-654.58	-654.85	82.19	0.99	90.00
5526.00	5.32	163.59	5465.64	-663.48	-663.75	84.76	1.48	89.00
5616.00	3.95	167.71	5555.35	-670.51	-670.79	86.60	1.57	90.00
5706.00	2.68	169.42	5645.20	-675.60	-675.88	87.65	1.42	90.00
5796.00	2.04	176.82	5735.12	-679.27	-679.55	88.12	0.78	90.00
5886.00	1.45	184.07	5825.08	-682.00	-682.28	88.13	0.70	90.00
5975.00	1.07	194.65	5914.06	-683.93	-684.21	87.84	0.50	89.00
6065.00	0.94	185.64	6004.04	-685.48	-685.76	87.55	0.23	90.00
6155.00	0.62	197.31	6094.03	-686.69	-686.96	87.33	0.40	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
6245.00	0.59	187.74	6184.03	-687.61	-687.89	87.13	0.12	90.00
6335.00	0.51	210.47	6274.02	-688.42	-688.70	86.86	0.26	90.00
6424.00	0.94	229.22	6363.02	-689.25	-689.52	86.10	0.55	89.00
6514.00	0.61	243.17	6453.01	-689.95	-690.22	85.12	0.42	90.00
6604.00	0.03	305.44	6543.01	-690.15	-690.42	84.67	0.66	90.00
6694.00	0.38	345.45	6633.01	-689.85	-690.12	84.57	0.39	90.00
6784.00	0.36	341.03	6723.00	-689.29	-689.56	84.41	0.03	90.00
6873.00	0.81	78.85	6812.00	-688.90	-689.17	84.93	1.05	89.00
6963.00	0.84	38.74	6901.99	-688.26	-688.53	85.97	0.63	90.00
7053.00	3.33	5.66	6991.93	-685.14	-685.42	86.64	2.96	90.00
7143.00	7.92	0.70	7081.47	-676.34	-676.62	86.98	5.13	90.00
7233.00	12.79	14.34	7169.99	-660.47	-660.76	89.52	6.02	90.00
7322.00	21.13	4.63	7255.06	-634.88	-635.17	93.26	9.88	89.00
7412.00	27.77	2.44	7336.95	-597.71	-598.01	95.47	7.44	90.00
7502.00	34.02	359.74	7414.14	-551.53	-551.84	96.24	7.12	90.00
7592.00	44.01	358.56	7483.98	-494.96	-495.26	95.34	11.13	90.00
7681.00	53.74	357.65	7542.45	-428.05	-428.34	93.09	10.96	89.00
7771.00	60.98	357.64	7590.96	-352.39	-352.67	89.97	8.05	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
7861.00	70.16	358.93	7628.15	-270.58	-270.86	87.56	10.29	90.00
7951.00	77.00	359.12	7653.58	-184.32	-184.59	86.09	7.60	90.00
8037.00	83.47	359.19	7668.16	-99.62	-99.89	84.84	7.52	86.00
8174.00	88.69	0.20	7677.53	37.00	36.74	84.11	3.88	137.00
8268.00	89.09	359.35	7679.35	130.98	130.72	83.74	1.00	94.00
8363.00	90.34	358.48	7679.82	225.95	225.70	81.94	1.60	95.00
8457.00	90.03	356.64	7679.52	319.85	319.61	77.95	1.98	94.00
8551.00	91.14	356.42	7678.56	413.65	413.43	72.26	1.20	94.00
8645.00	90.61	358.07	7677.13	507.52	507.31	67.74	1.85	94.00
8834.00	88.86	357.92	7678.01	696.37	696.18	61.14	0.93	189.00
8928.00	88.39	359.14	7680.27	790.30	790.12	58.73	1.38	94.00
9022.00	90.30	359.39	7681.34	884.28	884.10	57.52	2.06	94.00
9116.00	91.73	0.19	7679.67	978.26	978.08	57.18	1.75	94.00
9211.00	91.17	0.46	7677.26	1073.23	1073.05	57.72	0.65	95.00
9305.00	89.50	0.69	7676.71	1167.22	1167.04	58.65	1.80	94.00
9399.00	89.80	0.15	7677.29	1261.22	1261.04	59.35	0.66	94.00
9489.00	91.01	359.94	7676.65	1351.21	1351.03	59.42	1.37	90.00
9579.00	89.93	359.10	7675.91	1441.20	1441.02	58.67	1.52	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
9668.00	92.04	359.54	7674.38	1530.17	1530.00	57.62	2.42	89.00
9848.00	91.92	359.15	7668.15	1710.05	1709.88	55.56	0.23	180.00
10027.00	89.16	0.58	7666.46	1889.01	1888.85	55.13	1.74	179.00
10207.00	89.23	0.24	7668.98	2068.99	2068.83	56.42	0.19	180.00
10297.00	88.69	359.73	7670.62	2158.98	2158.81	56.40	0.83	90.00
10476.00	90.13	0.22	7672.46	2337.96	2337.80	56.32	0.85	179.00
10566.00	88.85	358.92	7673.25	2427.95	2427.79	55.65	2.03	90.00
10656.00	87.43	0.58	7676.17	2517.89	2517.73	55.25	2.42	90.00
10745.00	87.62	1.16	7680.02	2606.80	2606.64	56.60	0.69	89.00
10835.00	88.25	359.65	7683.26	2696.74	2696.58	57.23	1.81	90.00
10925.00	88.89	359.41	7685.51	2786.71	2786.54	56.50	0.77	90.00
11015.00	90.03	1.45	7686.35	2876.70	2876.53	57.17	2.59	90.00
11104.00	91.07	1.31	7685.49	2965.67	2965.50	59.31	1.17	89.00
11194.00	91.34	1.93	7683.60	3055.62	3055.44	61.86	0.75	90.00
11284.00	91.11	2.42	7681.68	3145.55	3145.36	65.27	0.60	90.00
11374.00	89.73	1.03	7681.02	3235.51	3235.31	67.98	2.17	90.00
11553.00	89.53	0.84	7682.17	3414.49	3414.28	70.91	0.16	179.00
11643.00	89.60	0.47	7682.86	3504.48	3504.27	71.94	0.41	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
11733.00	89.33	359.82	7683.70	3594.48	3594.27	72.17	0.78	90.00
11822.00	89.03	0.54	7684.98	3683.47	3683.26	72.45	0.88	89.00
11912.00	88.69	0.99	7686.77	3773.45	3773.23	73.65	0.62	90.00
12002.00	89.50	0.41	7688.19	3863.43	3863.21	74.75	1.10	90.00
12092.00	89.47	0.26	7689.01	3953.43	3953.21	75.27	0.17	90.00
12181.00	89.70	0.43	7689.66	4042.42	4042.20	75.80	0.33	89.00
12271.00	89.10	359.70	7690.60	4132.42	4132.20	75.91	1.05	90.00
12361.00	89.09	359.86	7692.02	4222.40	4222.19	75.57	0.17	90.00
12451.00	88.32	359.47	7694.05	4312.38	4312.16	75.04	0.96	90.00
12541.00	88.80	358.80	7696.32	4402.33	4402.12	73.68	0.91	90.00
12630.00	89.53	359.04	7697.62	4491.30	4491.10	72.00	0.87	89.00
12720.00	90.87	358.30	7697.31	4581.26	4581.07	69.91	1.71	90.00
12810.00	90.77	359.18	7696.02	4671.23	4671.04	67.94	0.99	90.00
12900.00	90.67	358.91	7694.88	4761.20	4761.02	66.44	0.33	90.00
12990.00	90.34	1.52	7694.09	4851.19	4851.00	66.77	2.93	90.00
13080.00	89.13	0.01	7694.51	4941.18	4940.99	67.97	2.15	90.00
13169.00	87.76	359.85	7696.93	5030.14	5029.96	67.87	1.55	89.00
13259.00	88.96	359.82	7699.51	5120.10	5119.92	67.61	1.34	90.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
13349.00	89.90	359.96	7700.40	5210.10	5209.91	67.44	1.05	90.00
13439.00	91.85	0.95	7699.03	5300.08	5299.89	68.15	2.43	90.00
13529.00	91.47	1.07	7696.43	5390.03	5389.84	69.73	0.44	90.00
13618.00	90.13	2.05	7695.18	5479.00	5478.80	72.15	1.86	89.00
13798.00	89.33	2.89	7696.02	5658.85	5658.62	79.91	0.65	180.00
13888.00	88.59	1.69	7697.64	5748.77	5748.53	83.51	1.57	90.00
13978.00	87.90	0.96	7700.40	5838.71	5838.47	85.59	1.12	90.00
14067.00	88.19	2.63	7703.44	5927.62	5927.37	88.38	1.90	89.00
14157.00	88.18	1.14	7706.29	6017.53	6017.27	91.34	1.66	90.00
14247.00	88.15	1.30	7709.17	6107.47	6107.21	93.25	0.19	90.00
14337.00	87.83	1.52	7712.32	6197.39	6197.12	95.47	0.43	90.00
14444.00	87.60	1.86	7716.58	6304.27	6303.99	98.63	0.38	107.00
14606.00	87.85	0.08	7723.01	6466.12	6465.83	101.37	1.11	162.00
14696.00	87.75	359.80	7726.46	6556.05	6555.77	101.28	0.32	90.00
14786.00	89.63	1.04	7728.51	6646.02	6645.74	101.94	2.50	90.00
14876.00	89.30	0.99	7729.35	6736.01	6735.72	103.54	0.37	90.00
14965.00	88.86	0.86	7730.78	6824.99	6824.69	104.98	0.51	89.00
15055.00	88.86	0.78	7732.57	6914.97	6914.67	106.27	0.09	90.00
15145.00	88.19	1.02	7734.88	7004.93	7004.63	107.68	0.79	90.00

5" = 100' FEET MD