

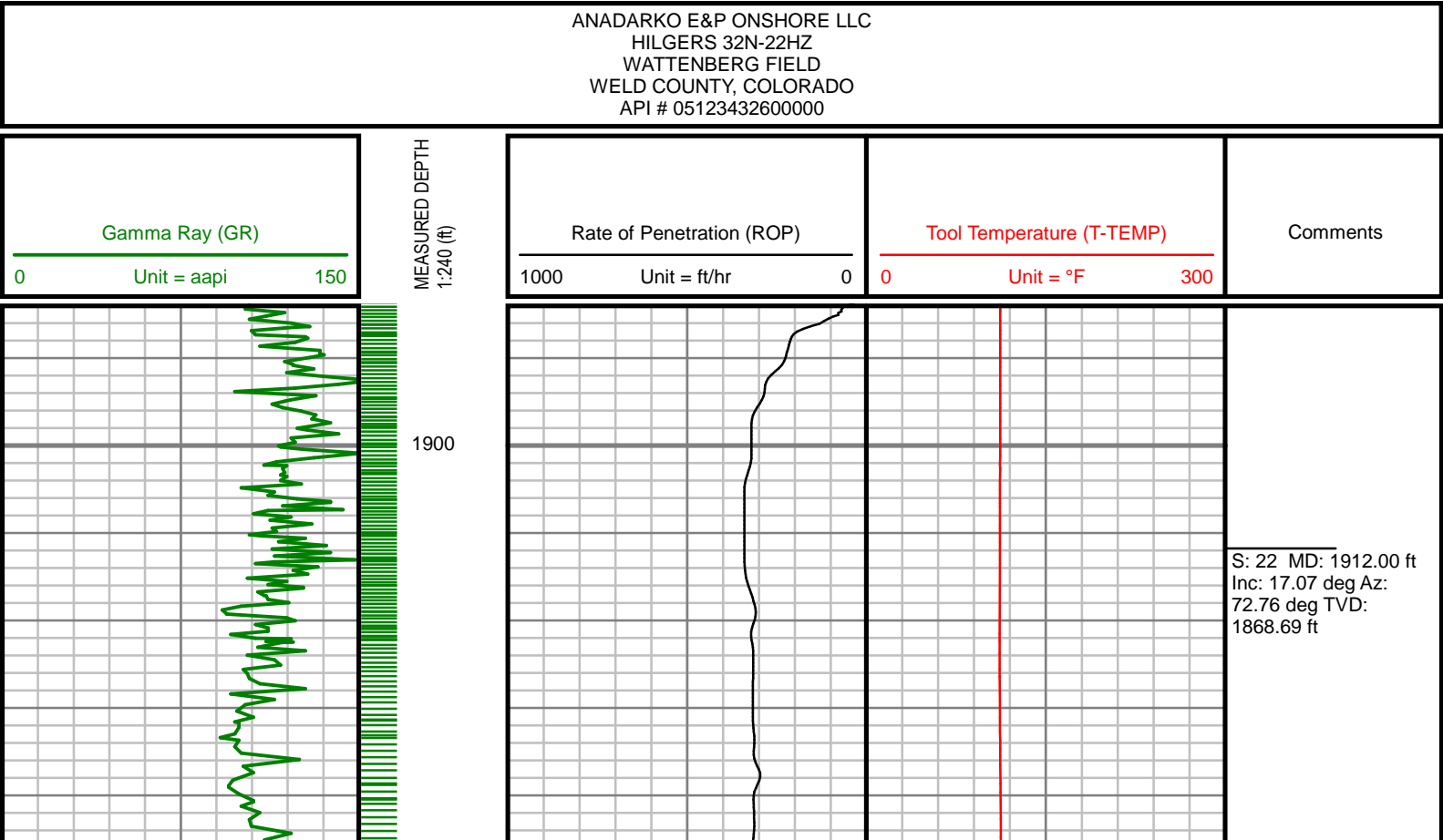
5" = 100' MD

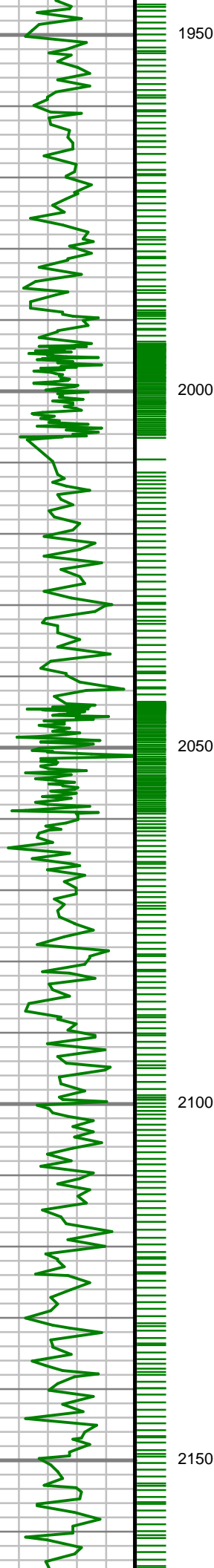
COMPANY : ANADARKO E&P ONSHORE LLC WELL : HILGERS 32N-22HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05123432600000										COMPANY : ANADARKO E&P ONSHORE LLC WELL : HILGERS 32N-22HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A. UWI : 05123432600000																																																	
DEPTH REF. : KB REF. HEIGHT : 17.000 ft GROUND LEVEL : 4998.000 ft										KB to Ground Level G.I. to MEAN SEA LEVEL										DIRECTIONAL ROP																																							
BOREHOLE RECORD										DEVIATION RECORD										OTHER SERVICES																																							
HOLE SIZE in										FROM ft										TO ft										INCLINATION deg										FROM ft										TO ft									
13										0										1884										0 - 11										0										977									
8.5										1884										12410										11 - 18										977										4599									
																														18 - 0										4599										5044									
																														0 - 1										5044										6661									
																														1 - 88										6661										7727									
																														88 - 94										7727										12410									
CASING RECORD																																																											
CASING SIZE in										FROM ft										TO ft																																							
9.625										0										1874																																							

Run Data						
RUN NUMBER	1	2	3			
START DATE	05/31/2017	06/02/2017	06/03/2017			
START TIME	22:30	19:30	11:30			
END DATE	06/02/2017	06/03/2017	06-05-2017			
END TIME	19:30	11:30	17:15			
DEPTH IN (ft)	1884	7393	7608			
DEPTH OUT (ft)	7393	7608	12410			
LOG TOP (ft)	1884	7342	7560			
LOG BOTTOM (ft)	7342	7560	12360			
HOLE SIZE (in)	8.5	8.5	8.5			
MUD DATA @ (ft)	6915	7606	11001			
MUD TYPE	OIL-BASED	OIL-BASED	OIL-BASED			
DENSITY (lb / gal)	9.05	9.1	9.2			
VISCOSITY (s / qt)	69	68	61			
pH	-	-	-			
FLUID LOSS (cm3 / 30)	-	-	-			
SALINITY (mg/L)	33500	33500	33000			
Rm (ohmm @ deg F)	-	-	-			
Rmf (ohmm @ deg F)	-	-	-			
MAX TEMP (deg F)	168	170	220			
Rm @ MAX TEMP (ohmm)	-	-	-			
LWD ENGINEER #1	J. WALSH	J. WALSH	J. WALSH			
LWD ENGINEER #2	J. MEYERS	J. MEYERS	J. MEYERS			
LWD ENGINEER #3	-	-	M. BAILY			
LOG WITNESS #1	-	-	-			
LOG WITNESS #2	-	-	-			

Remarks
ANADARKO E&P ONSHORE LLC AFE# 2115835
SCIENTIFIC DRILLING INTERNATIONAL JOB# OP.001773
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 RATE OF PENETRATION CURVE
RUN #1: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-377 / CONTROLLER=697 / MWD EYE=589 / GAMMA RAY=1420
BIT TO SENSOR OFFSETS: MWD EYE=59.94 FT. / GAMMA RAY=51.24 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-377 / CONTROLLER=697 / MWD EYE=589 / GAMMA RAY=1420
BIT TO SENSOR OFFSETS: MWD EYE=56.88 FT. / GAMMA RAY=48.18 FT.
RUN #3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER=128-377 / CONTROLLER=697 / MWD EYE=589 / GAMMA RAY=1420
BIT TO SENSOR OFFSETS: MWD EYE=58.58 FT. / GAMMA RAY=49.88 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.





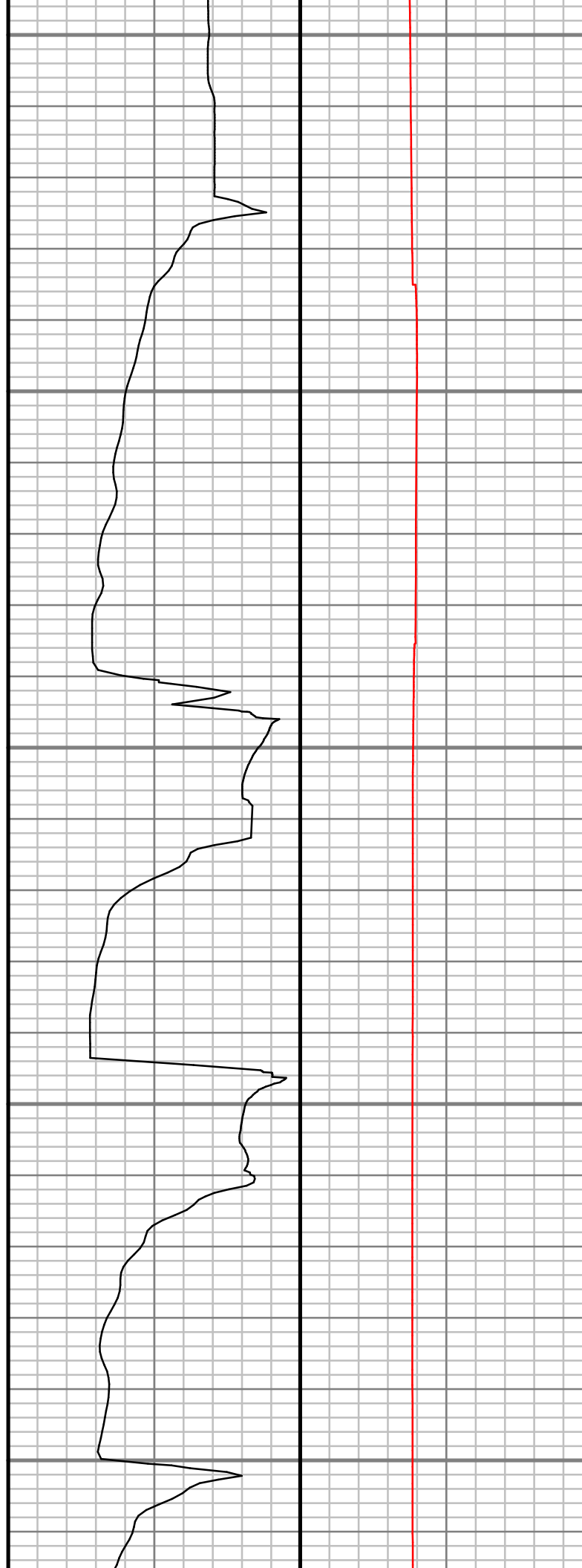
1950

2000

2050

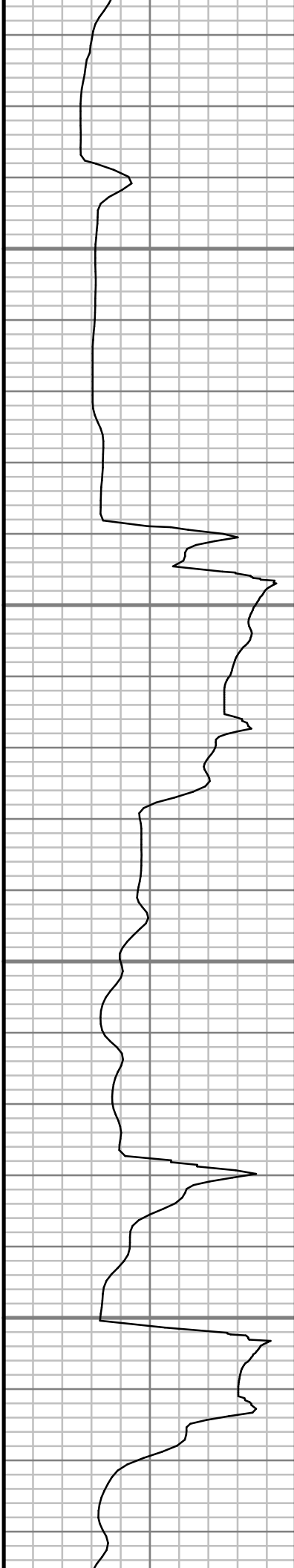
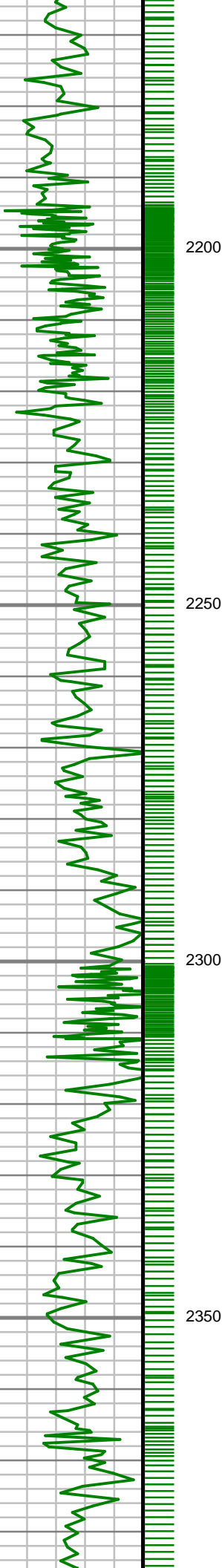
2100

2150



S: 23 MD: 2000.00 ft
Inc: 15.82 deg Az:
70.61 deg TVD:
1953.09 ft

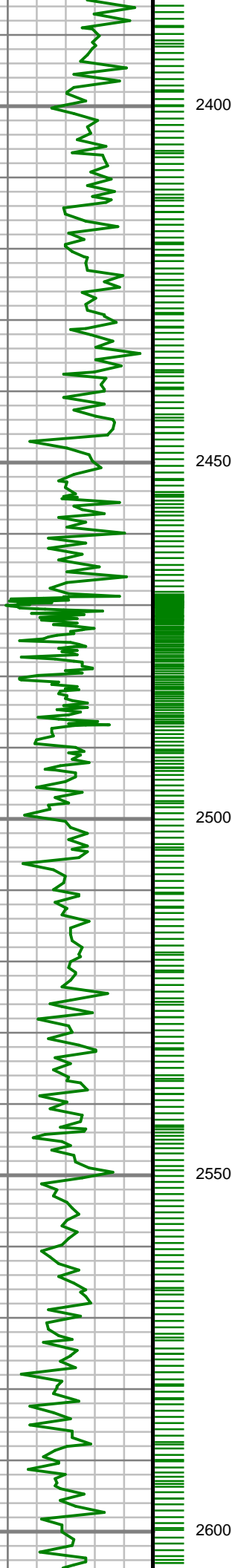
S: 24 MD: 2089.00 ft
Inc: 17.46 deg Az:
71.17 deg TVD:
2038.36 ft



S: 25 MD: 2177.00 ft
Inc: 18.09 deg Az:
68.97 deg TVD:
2122.16 ft

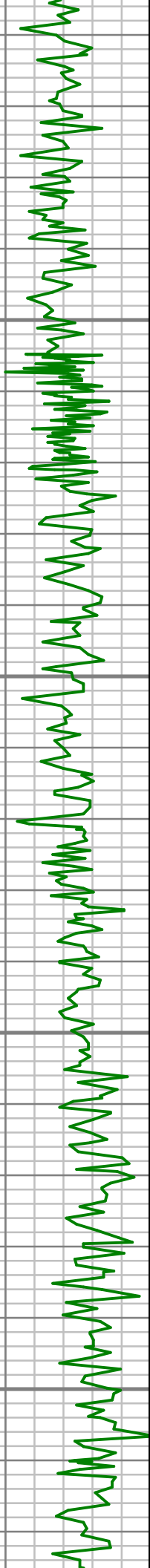
S: 26 MD: 2266.00 ft
Inc: 17.20 deg Az:
76.27 deg TVD:
2206.98 ft

S: 27 MD: 2355.00 ft
Inc: 16.66 deg Az:
77.70 deg TVD:
2292.12 ft



S: 28 MD: 2444.00 ft
Inc: 15.67 deg Az:
75.83 deg TVD:
2377.61 ft

S: 29 MD: 2532.00 ft
Inc: 17.15 deg Az:
78.37 deg TVD:
2462.02 ft



2650

2700

2750

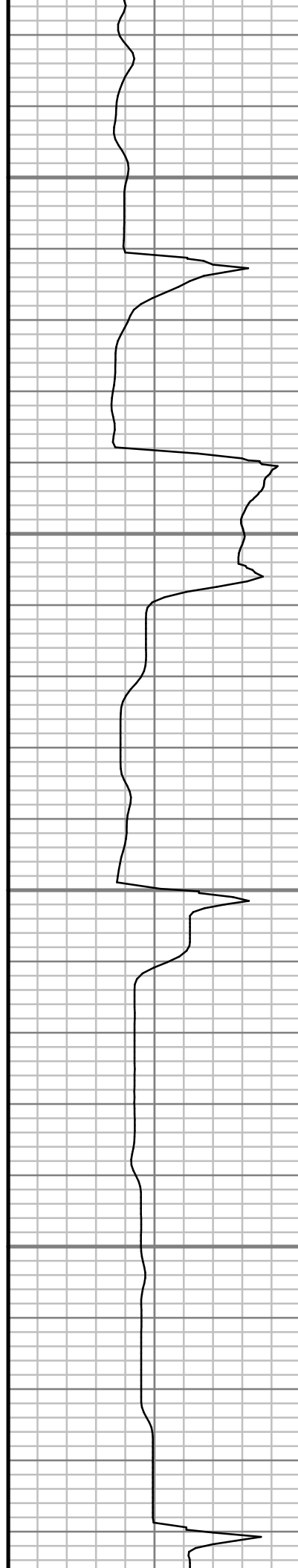
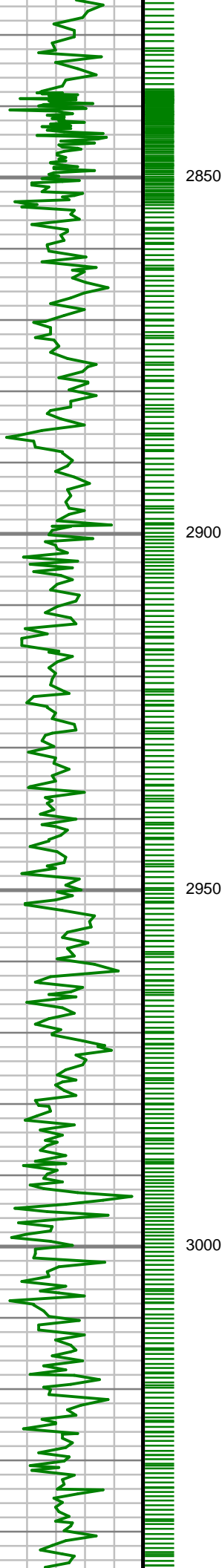
2800



S: 30 MD: 2621.00 ft
Inc: 16.90 deg Az:
75.68 deg TVD:
2547.12 ft

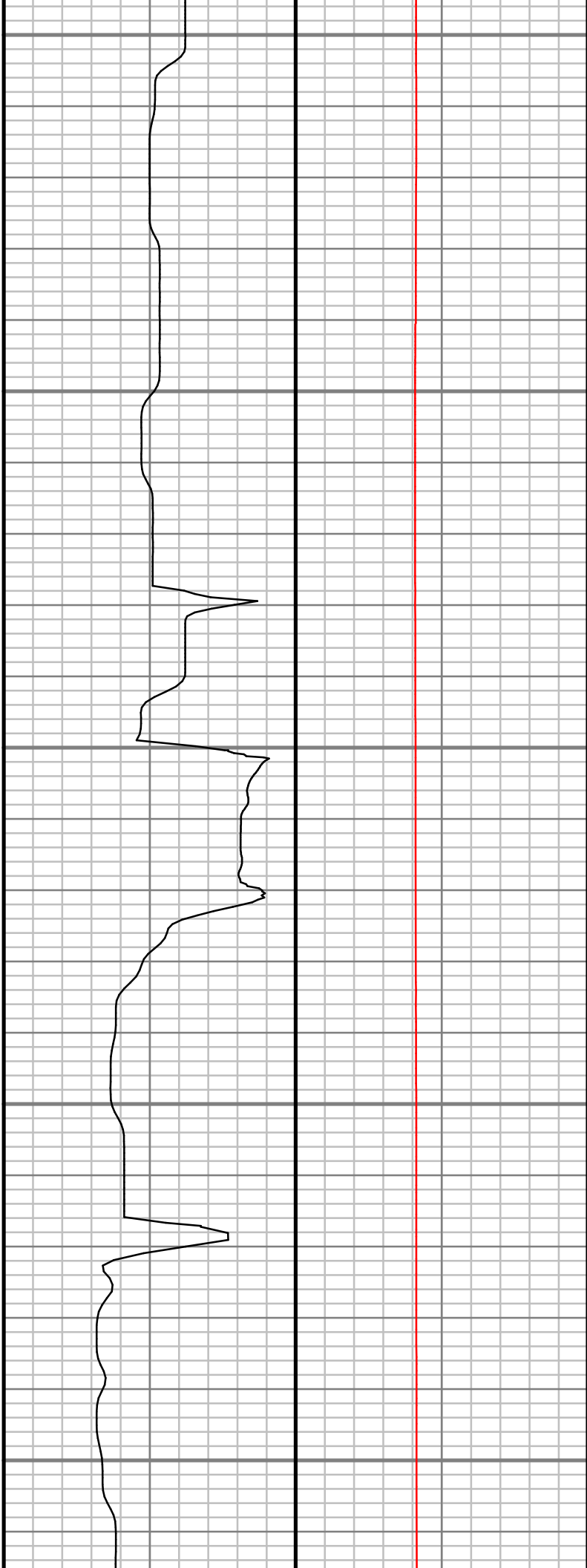
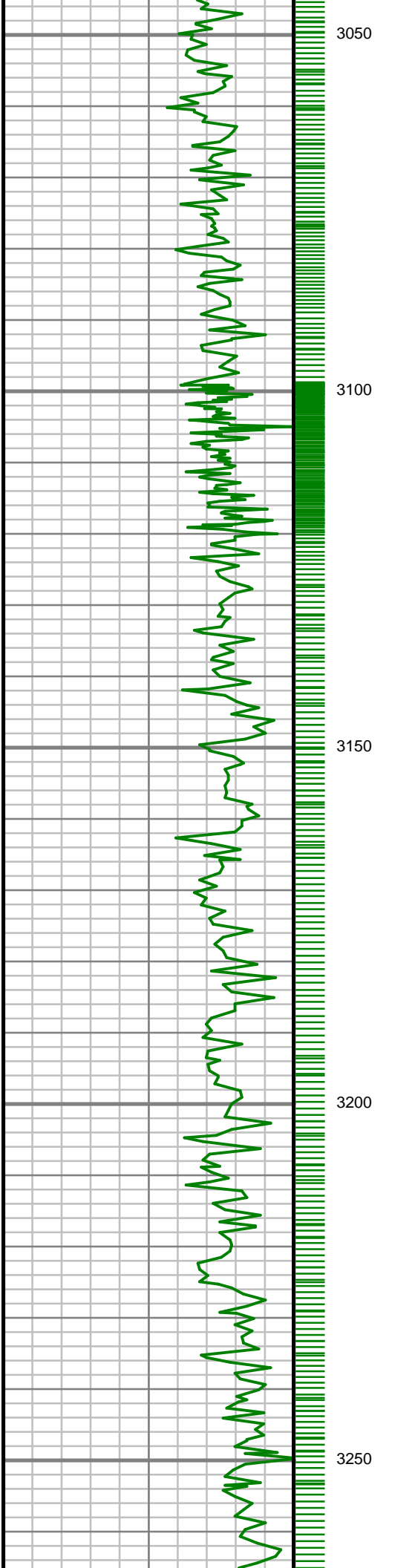
S: 31 MD: 2710.00 ft
Inc: 17.23 deg Az:
77.09 deg TVD:
2632.20 ft

S: 32 MD: 2798.00 ft
Inc: 16.58 deg Az:
77.60 deg TVD:
2716.40 ft



S: 33 MD: 2887.00 ft
Inc: 16.56 deg Az:
77.41 deg TVD:
2801.71 ft

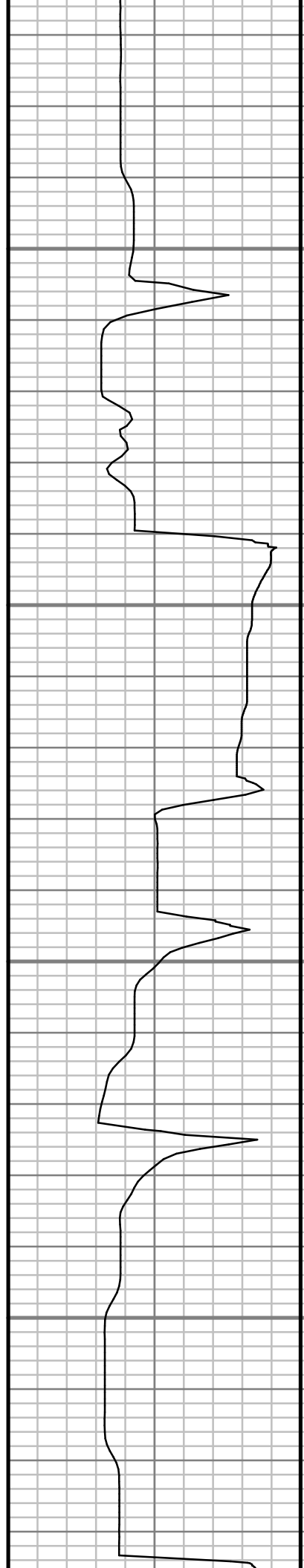
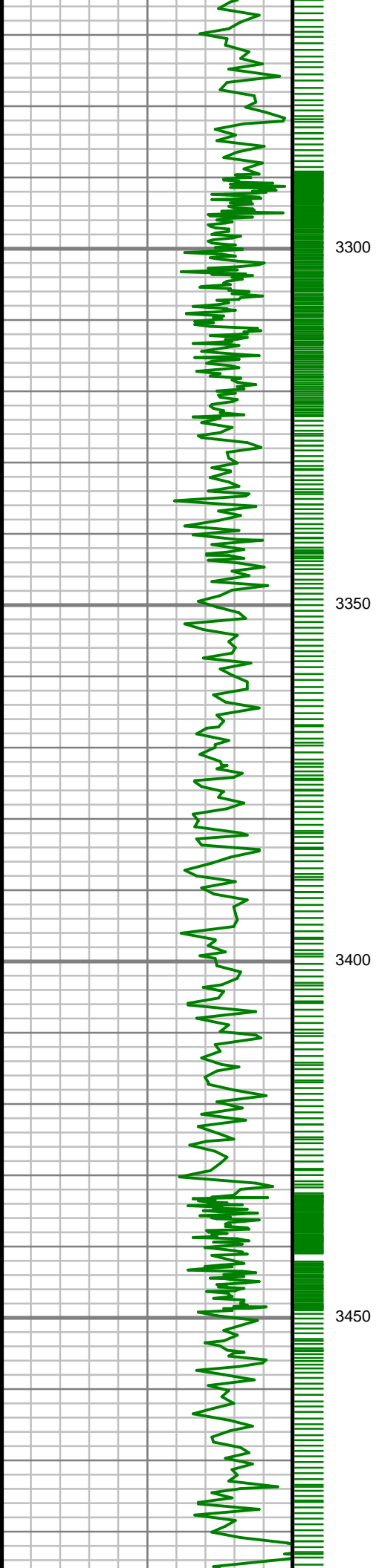
S: 34 MD: 2975.00 ft
Inc: 16.22 deg Az:
79.84 deg TVD:
2886.13 ft



S: 35 MD: 3064.00 ft
Inc: 14.23 deg Az:
77.42 deg TVD:
2972.00 ft

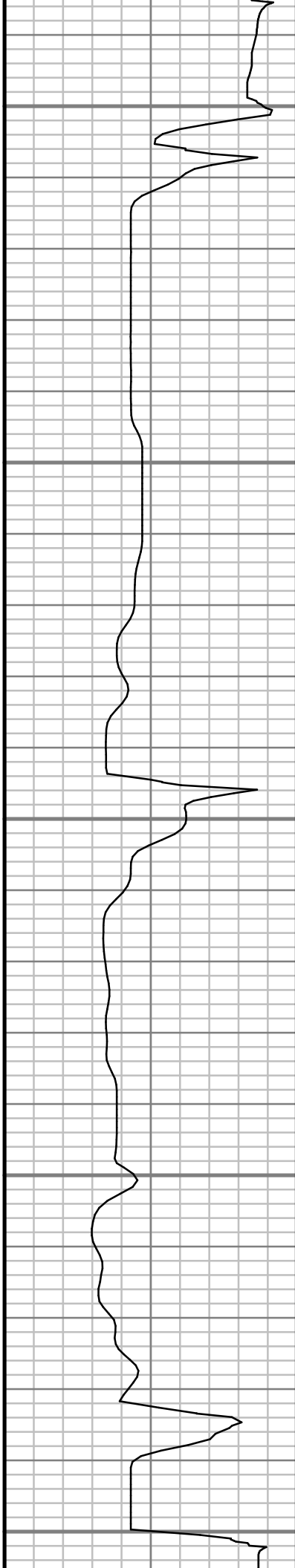
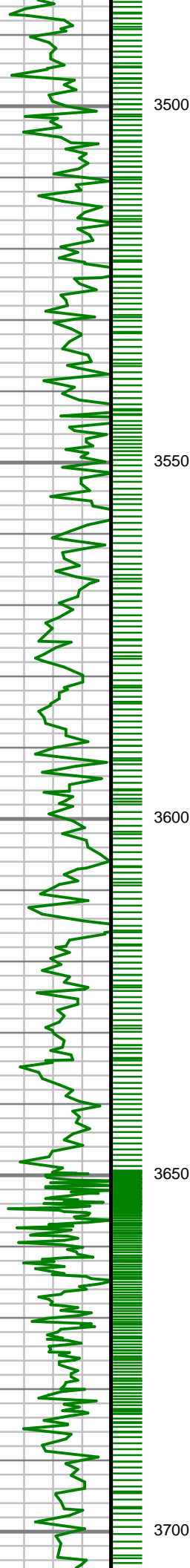
S: 36 MD: 3153.00 ft
Inc: 14.00 deg Az:
80.86 deg TVD:
3058.32 ft

S: 37 MD: 3241.00 ft
Inc: 13.08 deg Az:
79.87 deg TVD:
3143.87 ft



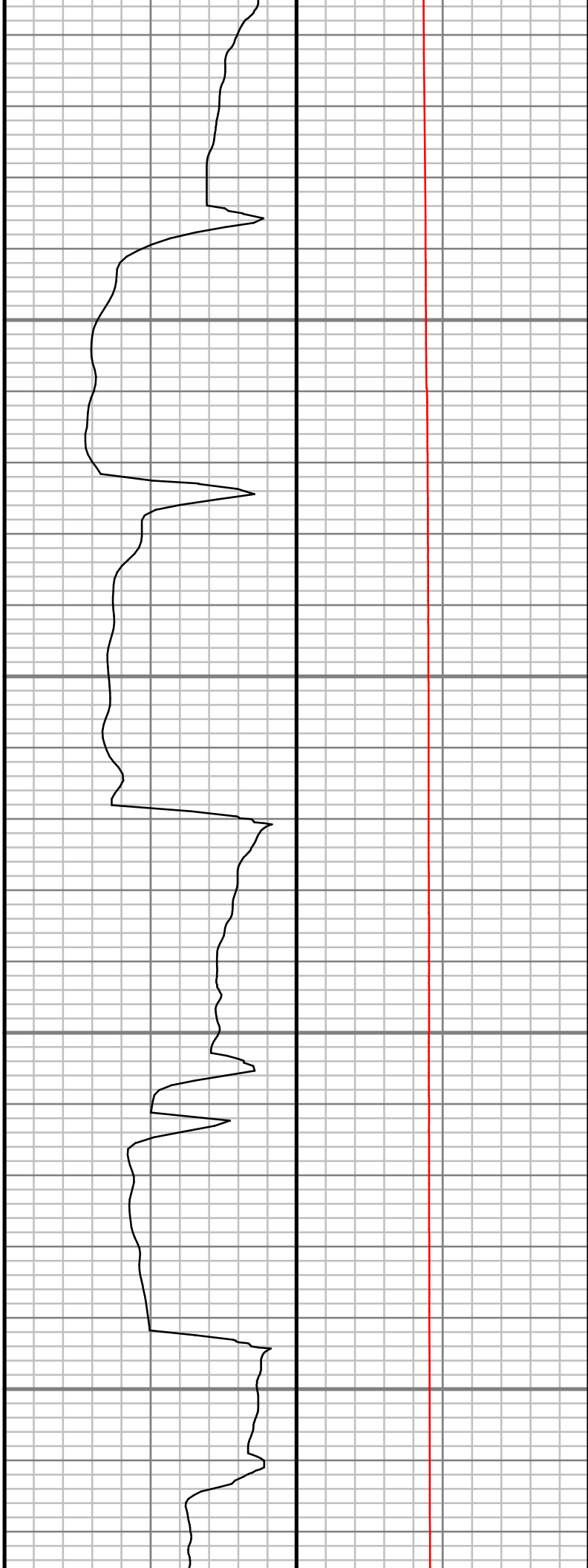
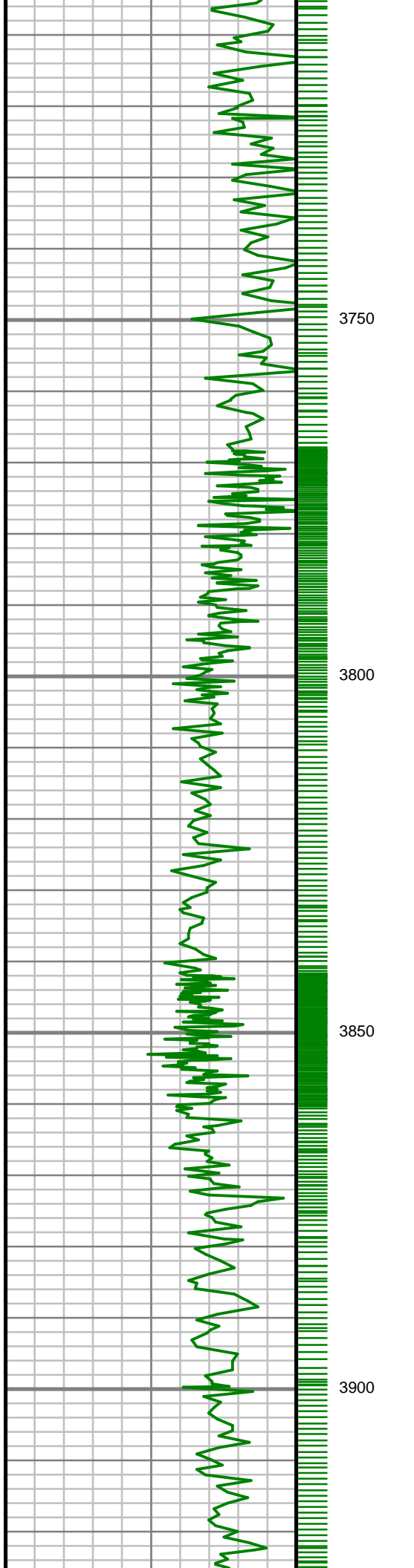
S: 38 MD: 3330.00 ft
Inc: 11.38 deg Az:
79.51 deg TVD:
3230.85 ft

S: 39 MD: 3418.00 ft
Inc: 14.78 deg Az:
83.91 deg TVD:
3316.56 ft



S: 40 MD: 3533.00 ft
Inc: 14.34 deg Az:
83.96 deg TVD:
3427.86 ft

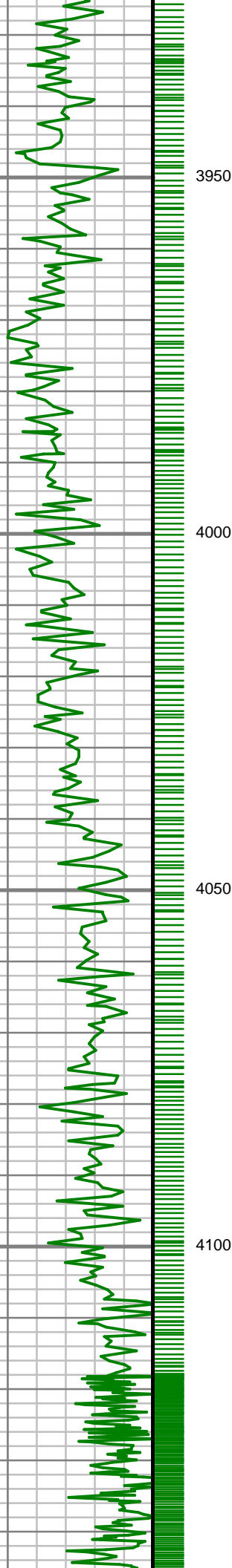
S: 41 MD: 3622.00 ft
Inc: 11.76 deg Az:
81.18 deg TVD:
3514.56 ft



S: 42 MD: 3710.00 ft
Inc: 11.41 deg Az:
78.81 deg TVD:
3600.77 ft

S: 43 MD: 3799.00 ft
Inc: 12.27 deg Az:
80.30 deg TVD:
3687.87 ft

S: 44 MD: 3888.00 ft
Inc: 17.66 deg Az:
85.41 deg TVD:
3773.83 ft

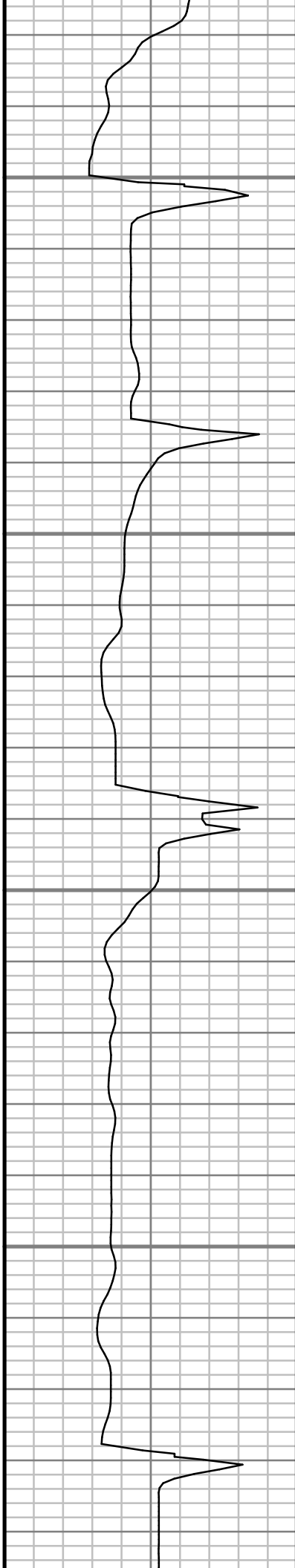


3950

4000

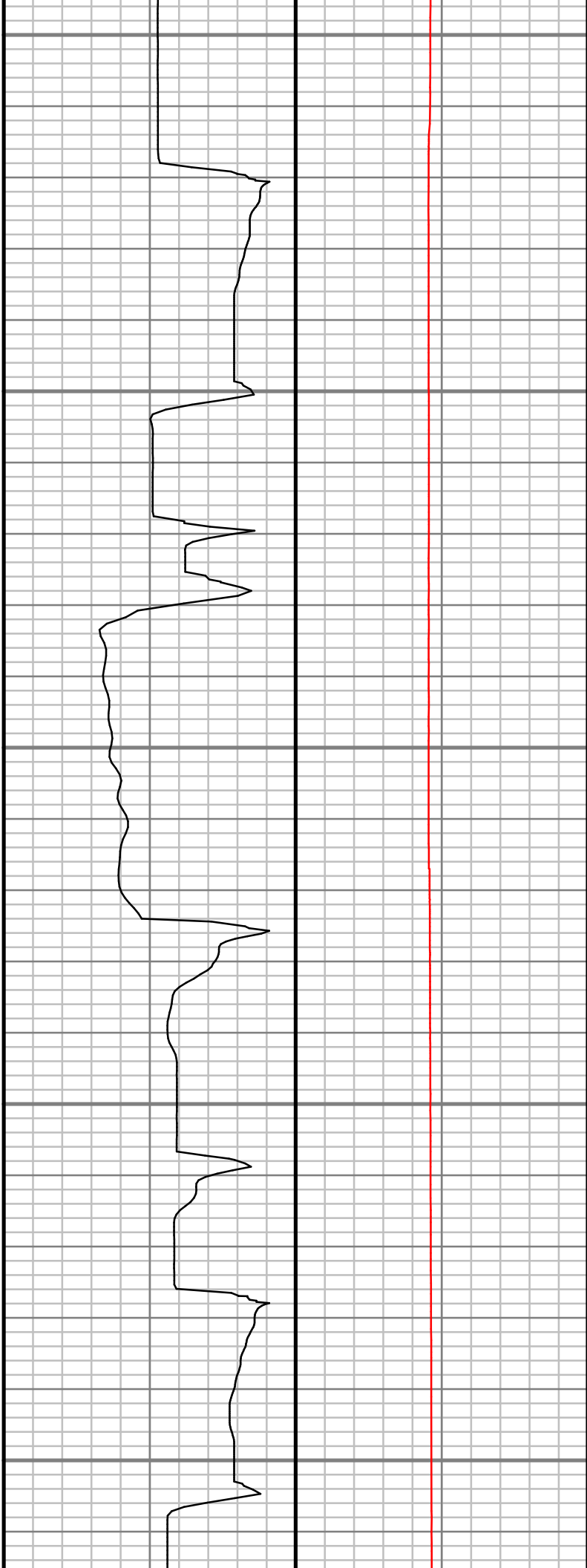
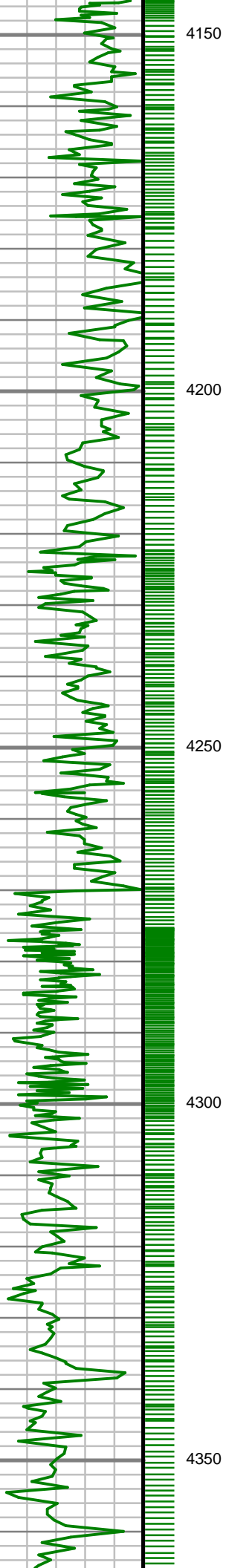
4050

4100



S: 45 MD: 3976.00 ft
Inc: 17.62 deg Az:
85.35 deg TVD:
3857.69 ft

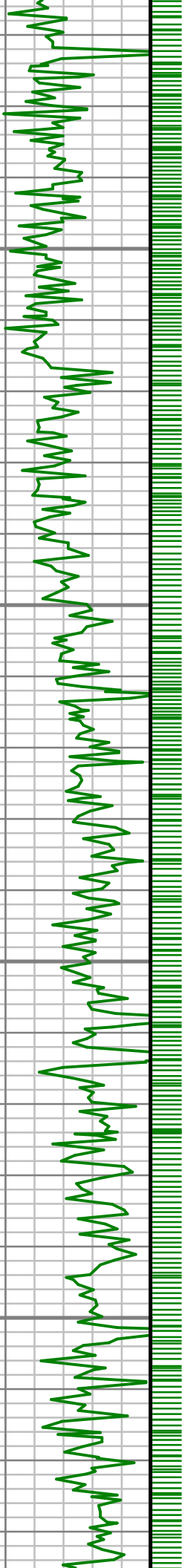
S: 46 MD: 4065.00 ft
Inc: 15.77 deg Az:
83.48 deg TVD:
3942.93 ft



S: 47 MD: 4154.00 ft
Inc: 12.81 deg Az:
80.29 deg TVD:
4029.17 ft

S: 48 MD: 4243.00 ft
Inc: 14.69 deg Az:
78.85 deg TVD:
4115.62 ft

S: 49 MD: 4332.00 ft
Inc: 14.96 deg Az:
77.59 deg TVD:
4201.66 ft

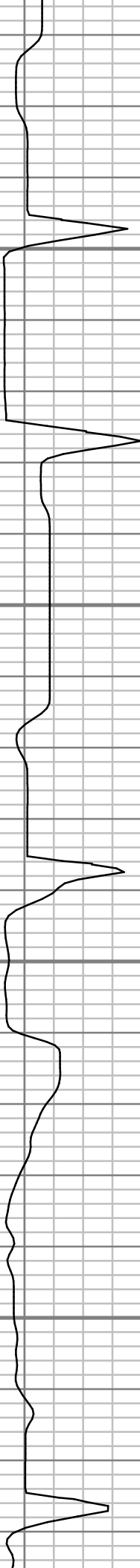


4400

4450

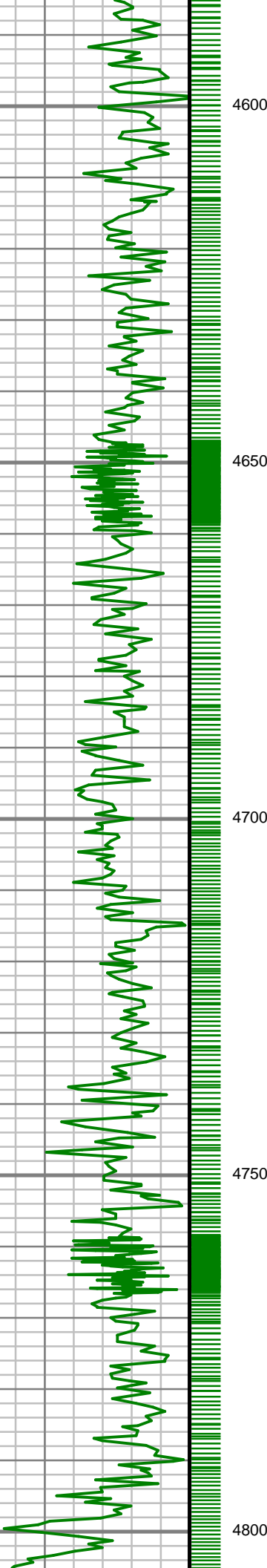
4500

4550



S: 50 MD: 4421.00 ft
Inc: 15.06 deg Az:
76.10 deg TVD:
4287.62 ft

S: 51 MD: 4510.00 ft
Inc: 13.75 deg Az:
75.17 deg TVD:
4373.82 ft



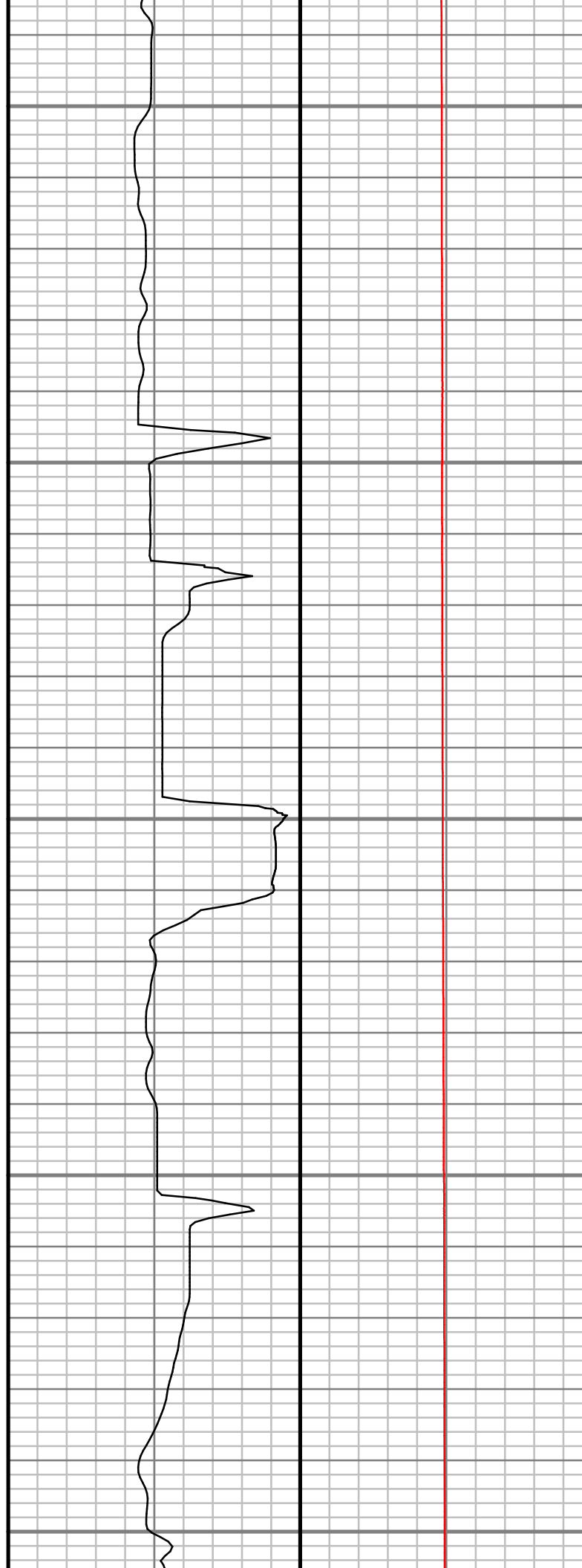
4600

4650

4700

4750

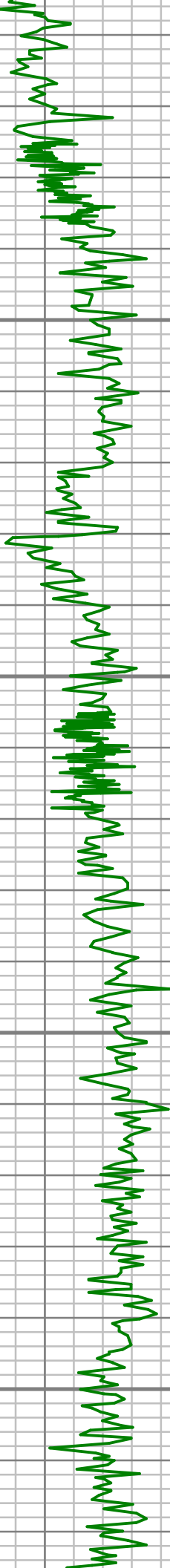
4800



S: 52 MD: 4599.00 ft
Inc: 11.91 deg Az:
75.80 deg TVD:
4460.60 ft

S: 53 MD: 4689.00 ft
Inc: 9.12 deg Az: 74.72
deg TVD: 4549.07 ft

S: 54 MD: 4777.00 ft
Inc: 6.70 deg Az: 76.12
deg TVD: 4636.23 ft

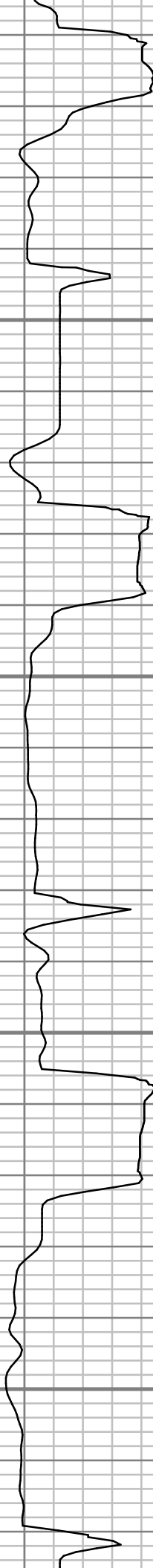


4850

4900

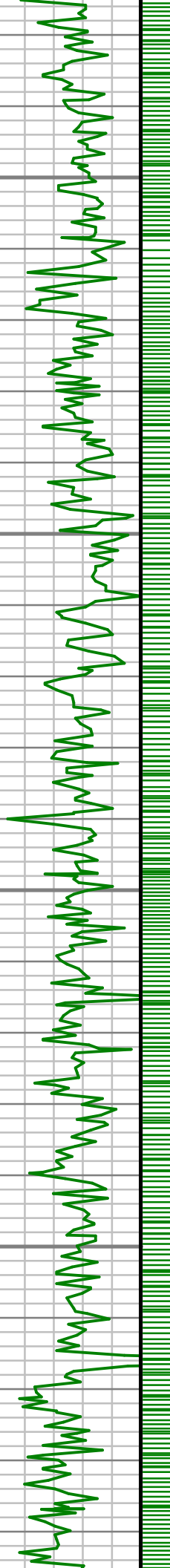
4950

5000



S: 55 MD: 4866.00 ft
Inc: 5.50 deg Az: 86.94
deg TVD: 4724.73 ft

S: 56 MD: 4955.00 ft
Inc: 2.23 deg Az: 75.63
deg TVD: 4813.51 ft

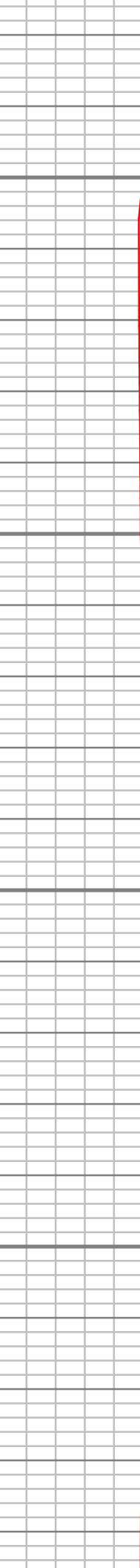
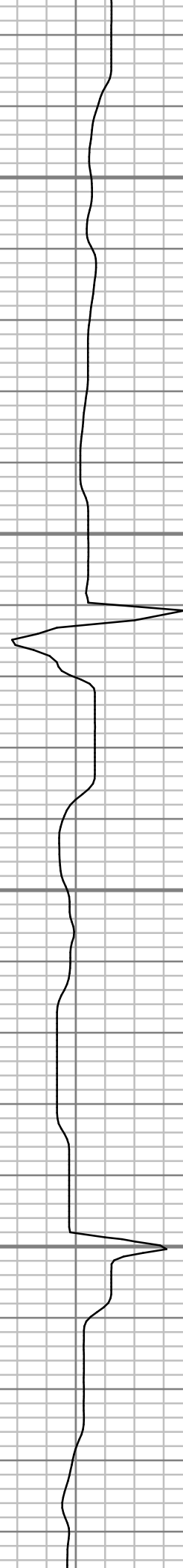


5050

5100

5150

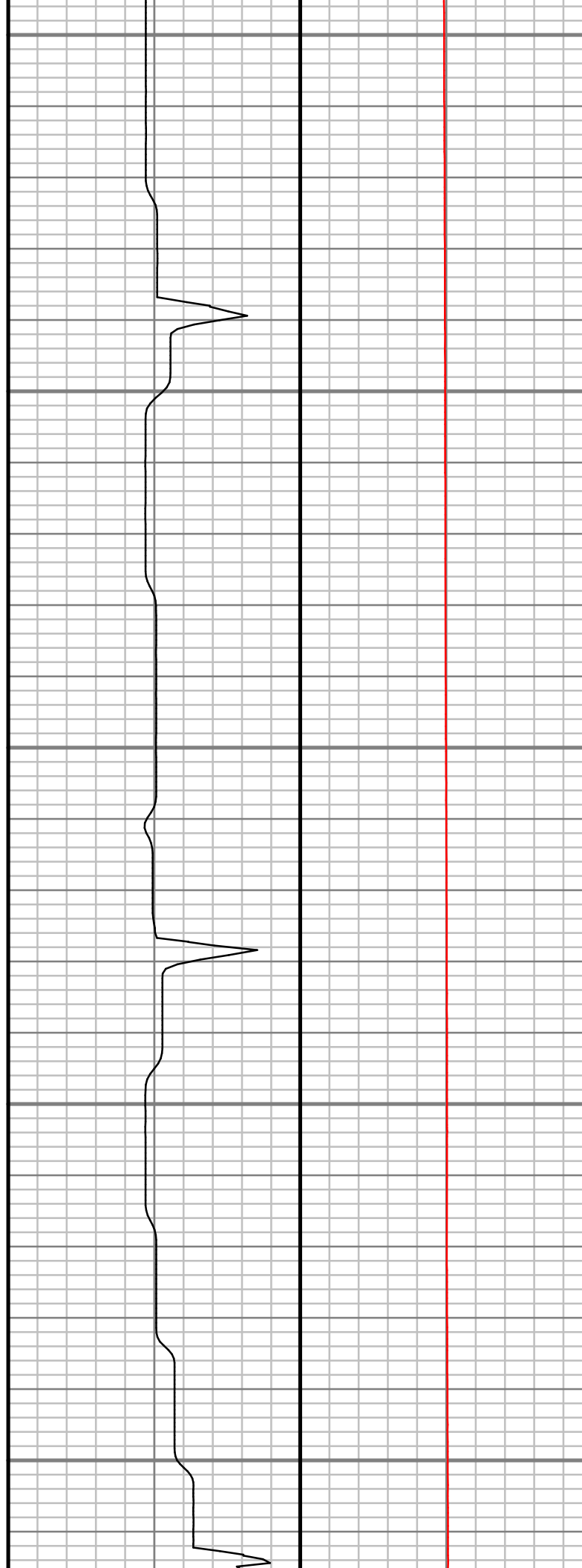
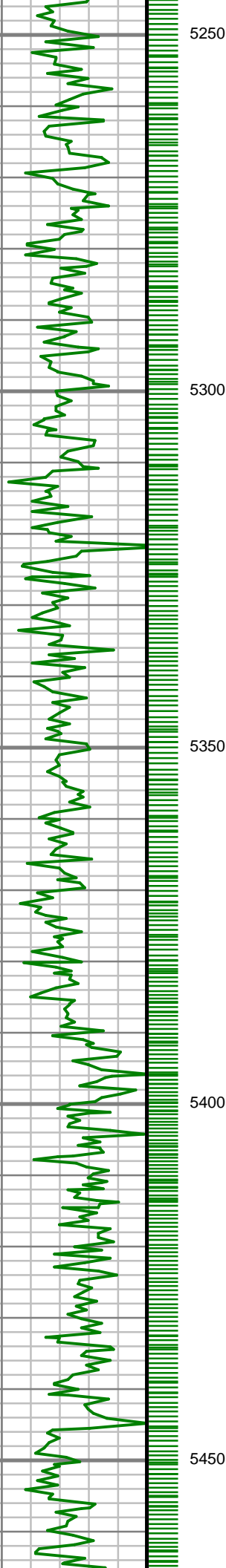
5200



S: 57 MD: 5044.00 ft
Inc: 0.95 deg Az: 51.58
deg TVD: 4902.48 ft

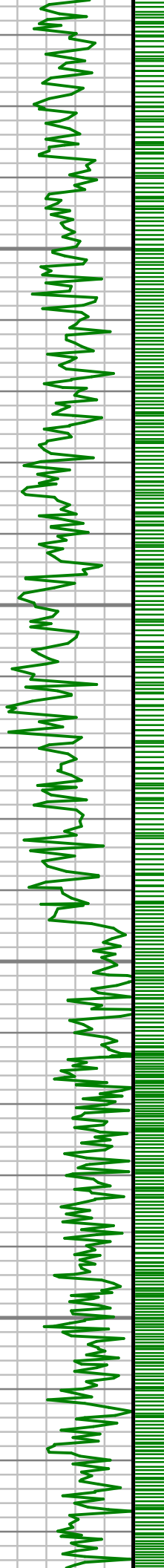
S: 58 MD: 5133.00 ft
Inc: 0.54 deg Az: 30.92
deg TVD: 4991.47 ft

S: 59 MD: 5222.00 ft
Inc: 0.42 deg Az:
346.00 deg TVD:
5080.47 ft



S: 60 MD: 5311.00 ft
Inc: 0.48 deg Az:
303.54 deg TVD:
5169.47 ft

S: 61 MD: 5399.00 ft
Inc: 0.41 deg Az:
296.84 deg TVD:
5257.46 ft

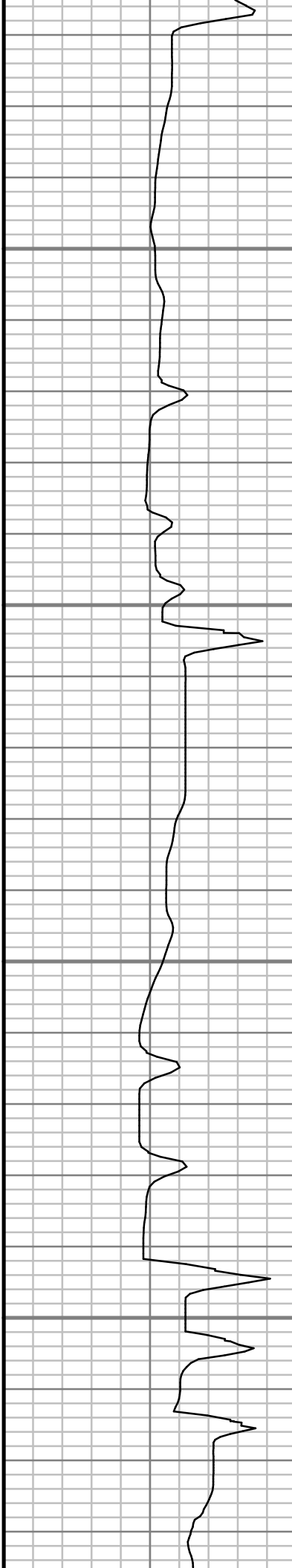


5500

5550

5600

5650



S: 62 MD: 5489.00 ft
Inc: 0.35 deg Az:
258.34 deg TVD:
5347.46 ft

S: 63 MD: 5577.00 ft
Inc: 0.74 deg Az:
254.10 deg TVD:
5435.46 ft

S: 64 MD: 5666.00 ft
Inc: 0.77 deg Az:
230.94 deg TVD:
5524.45 ft



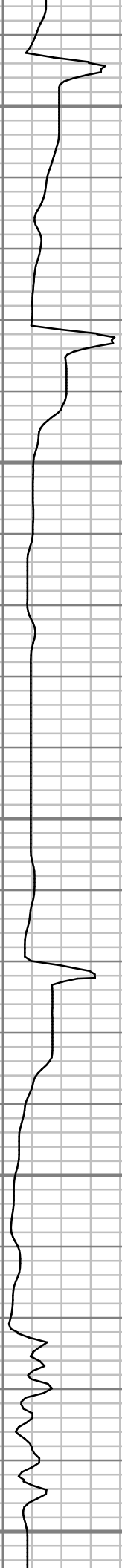
5700

5750

5800

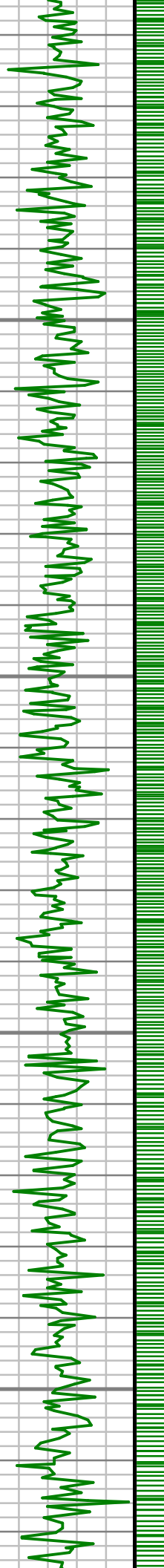
5850

5900



S: 65 MD: 5755.00 ft
Inc: 0.92 deg Az:
268.84 deg TVD:
5613.44 ft

S: 66 MD: 5847.00 ft
Inc: 0.84 deg Az:
264.06 deg TVD:
5705.43 ft

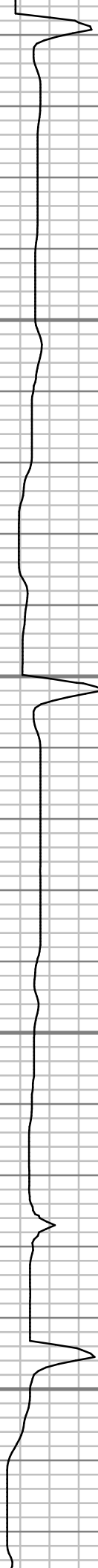


5950

6000

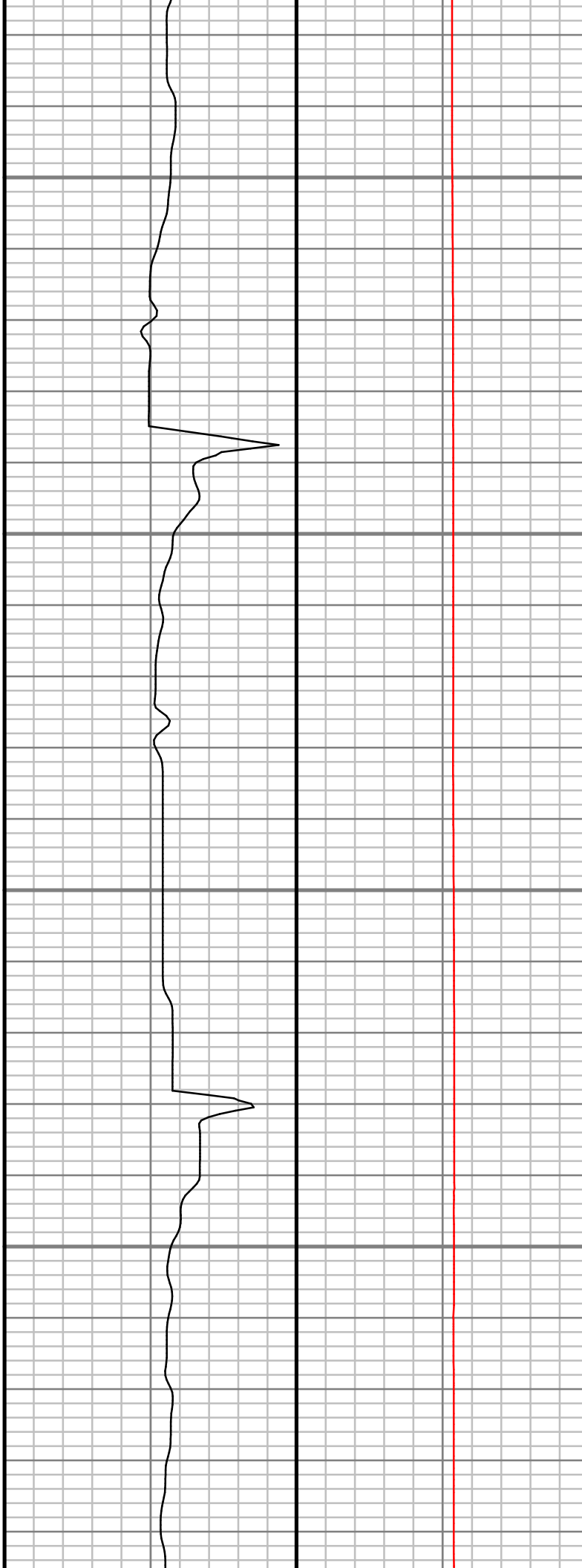
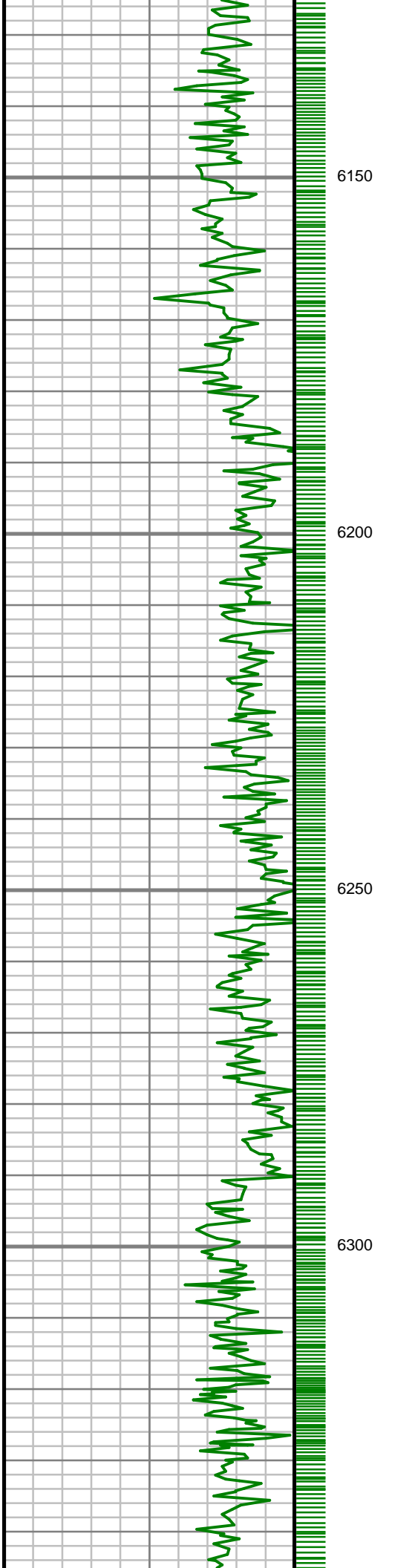
6050

6100



S: 67 MD: 5940.00 ft
Inc: 0.81 deg Az:
248.59 deg TVD:
5798.42 ft

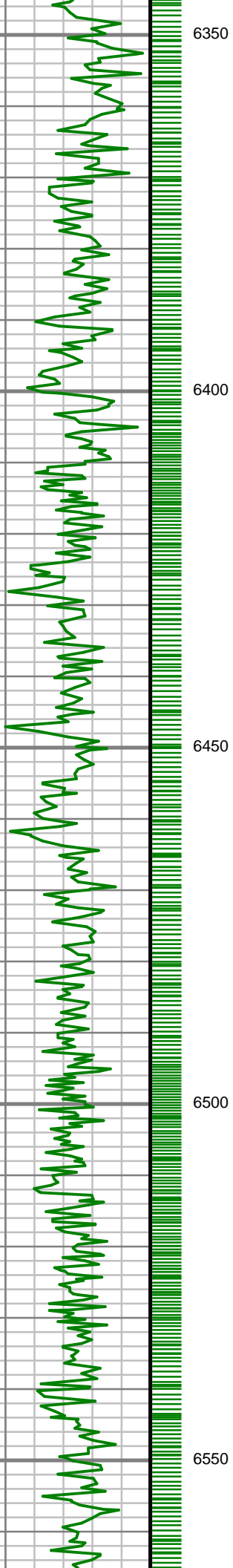
S: 68 MD: 6032.00 ft
Inc: 0.93 deg Az:
246.85 deg TVD:
5890.41 ft



S: 69 MD: 6125.00 ft
Inc: 0.81 deg Az:
248.10 deg TVD:
5983.40 ft

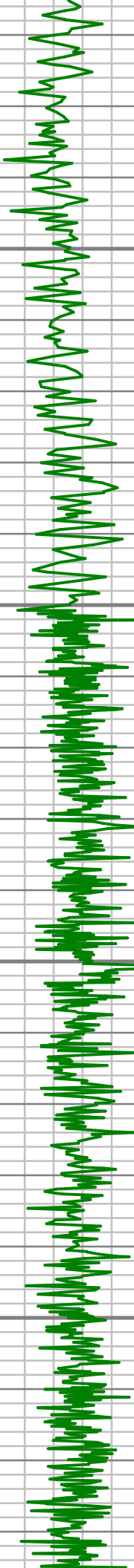
S: 70 MD: 6217.00 ft
Inc: 0.90 deg Az:
251.59 deg TVD:
6075.39 ft

S: 71 MD: 6306.00 ft
Inc: 1.01 deg Az:
237.24 deg TVD:
6164.38 ft



S: 72 MD: 6395.00 ft
Inc: 1.12 deg Az:
241.07 deg TVD:
6253.36 ft

S: 73 MD: 6483.00 ft
Inc: 0.92 deg Az:
238.09 deg TVD:
6341.35 ft



6600

6650

6700

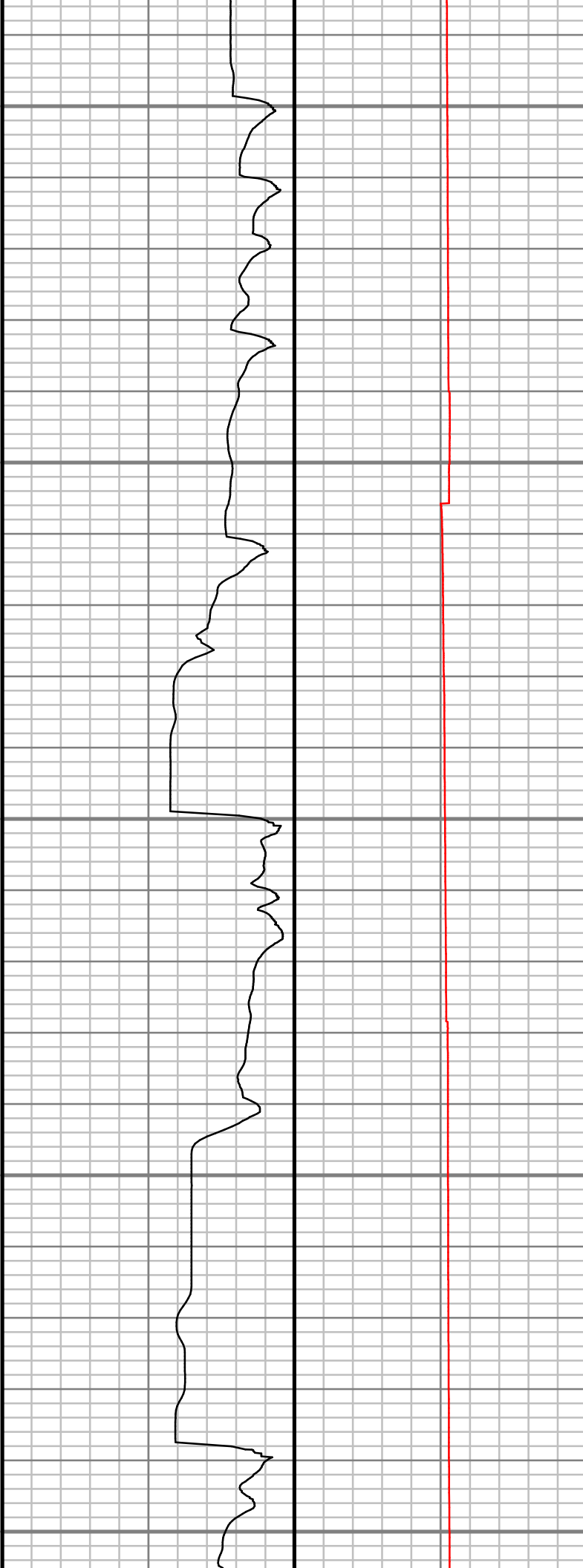
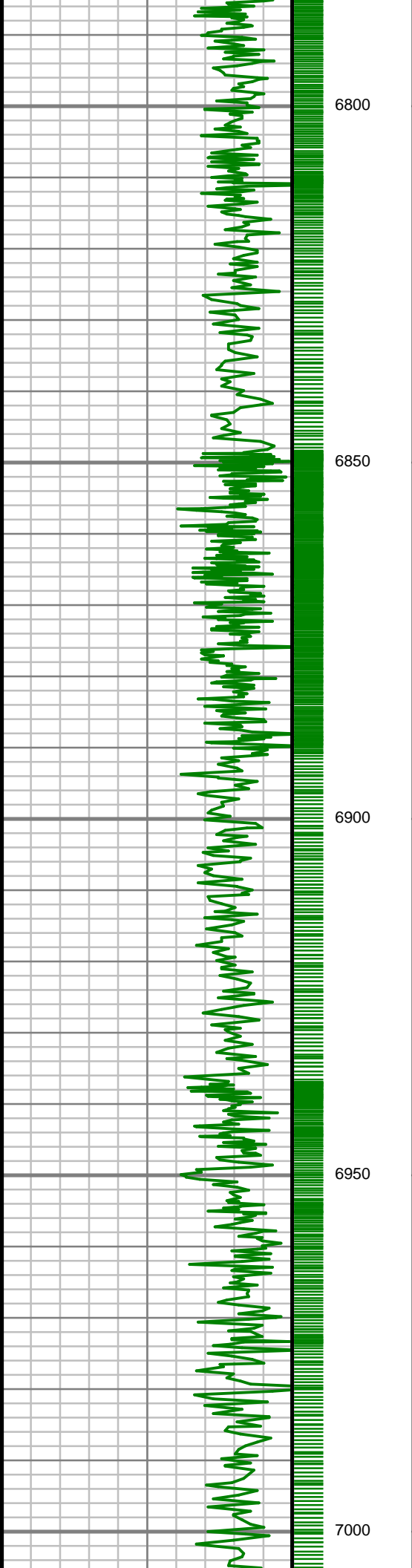
6750



S: 74 MD: 6572.00 ft
Inc: 0.88 deg Az:
244.99 deg TVD:
6430.34 ft

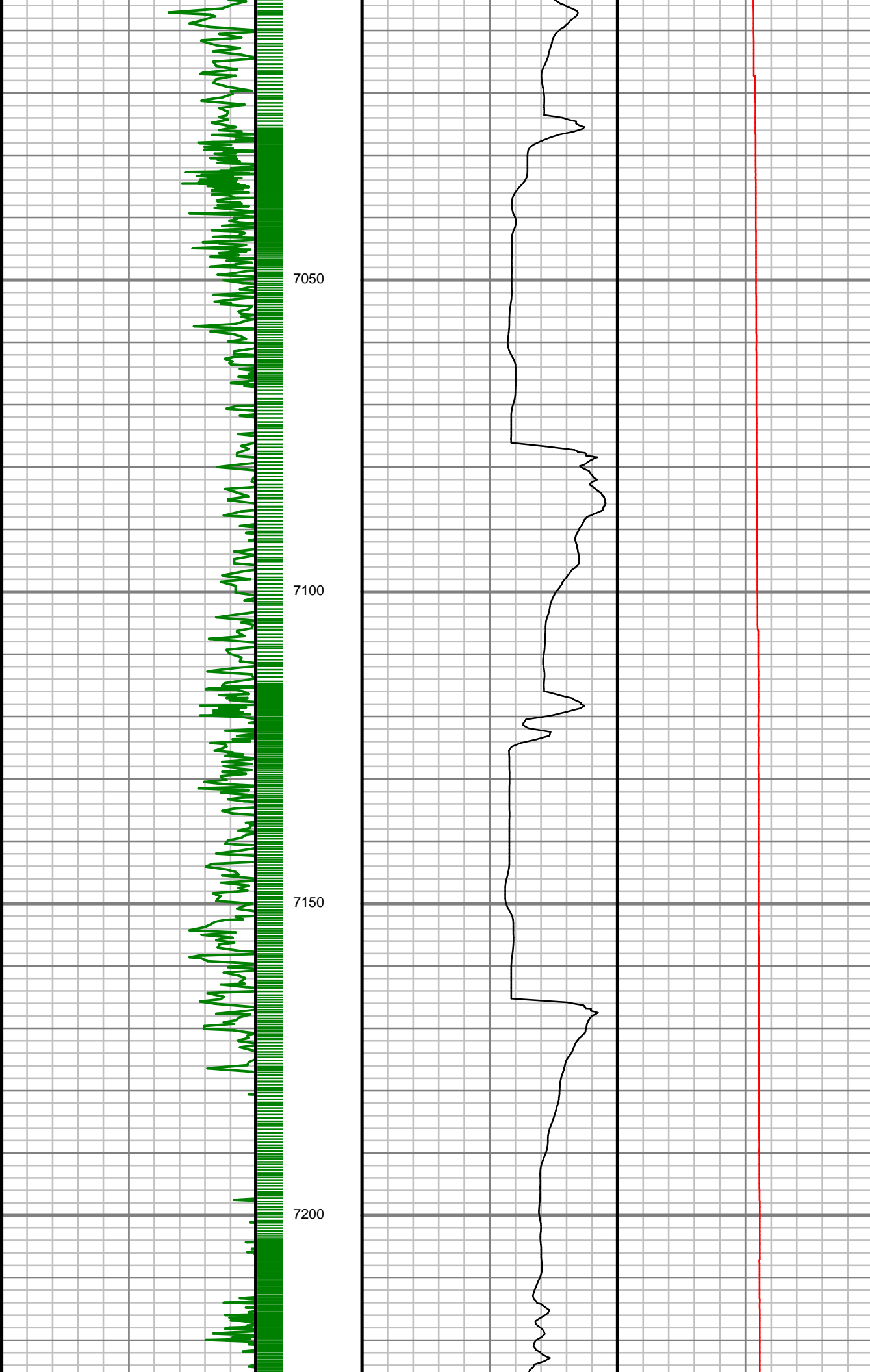
S: 75 MD: 6661.00 ft
Inc: 0.85 deg Az:
243.21 deg TVD:
6519.33 ft

S: 76 MD: 6750.00 ft
Inc: 8.50 deg Az:
270.01 deg TVD:
6607.97 ft



S: 77 MD: 6838.00 ft
Inc: 18.70 deg Az:
296.30 deg TVD:
6693.46 ft

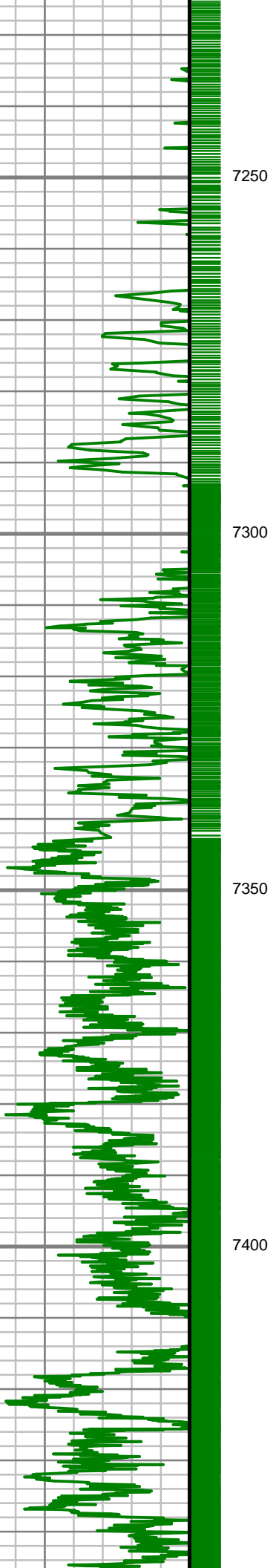
S: 78 MD: 6927.00 ft
Inc: 22.03 deg Az:
288.44 deg TVD:
6776.90 ft



S: 79 MD: 7015.00 ft
Inc: 25.01 deg Az:
281.18 deg TVD:
6857.60 ft

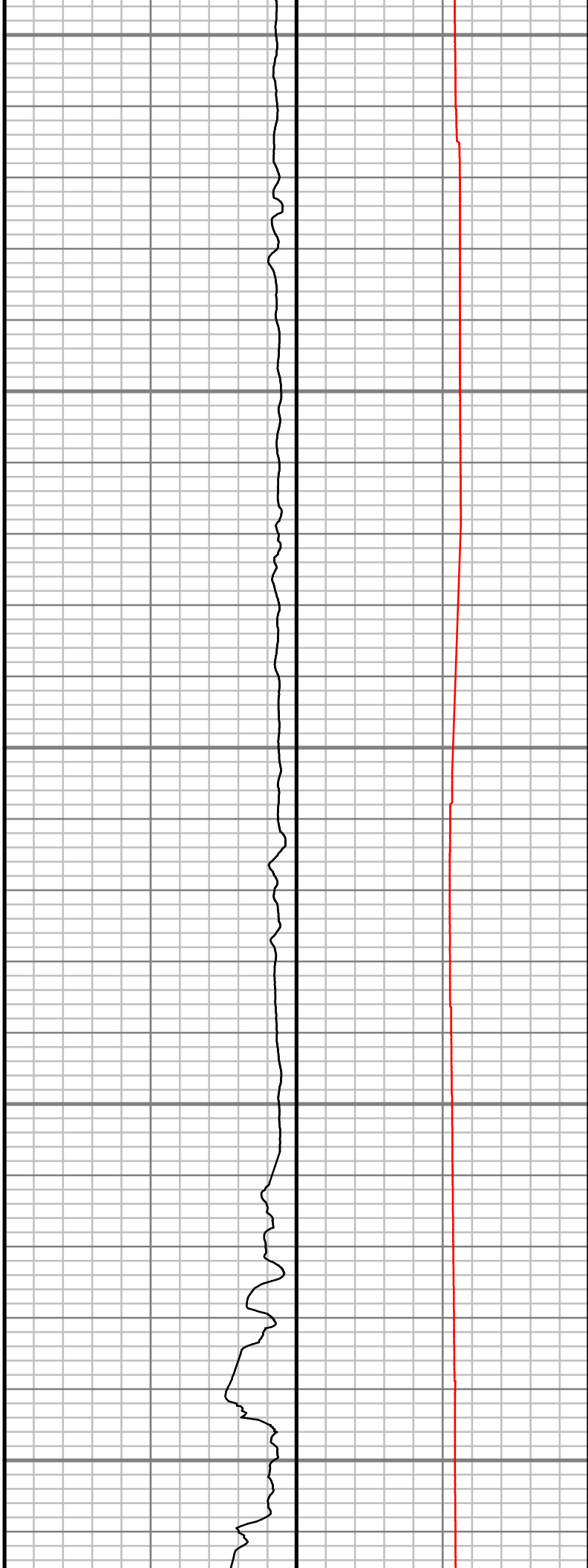
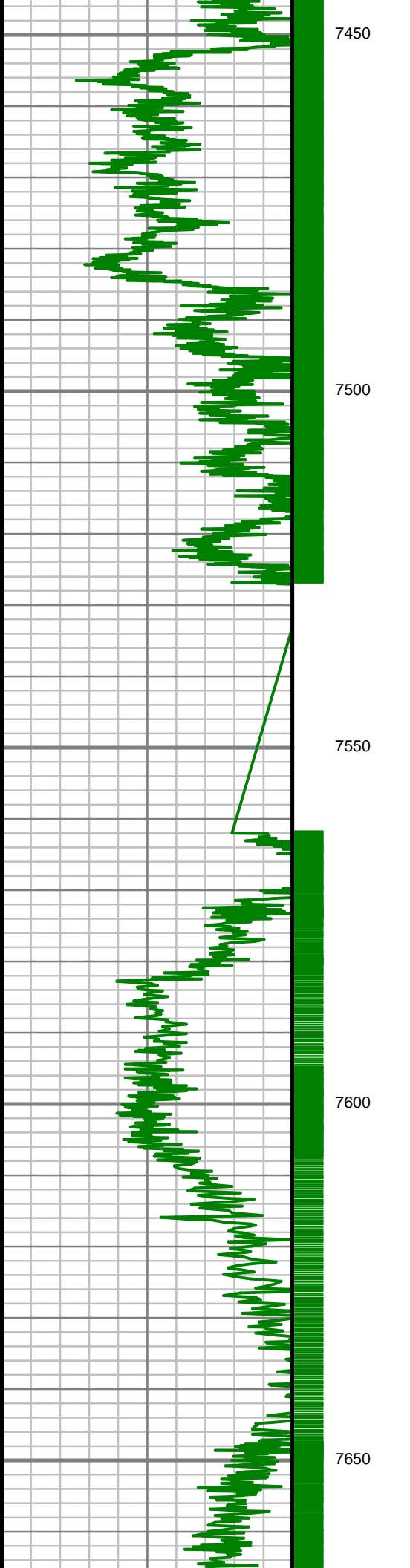
S: 80 MD: 7104.00 ft
Inc: 25.44 deg Az:
274.17 deg TVD:
6938.13 ft

S: 81 MD: 7193.00 ft
Inc: 29.00 deg Az:
269.65 deg TVD:
7017.27 ft



S: 82 MD: 7282.00 ft
Inc: 37.37 deg Az:
274.71 deg TVD:
7091.70 ft

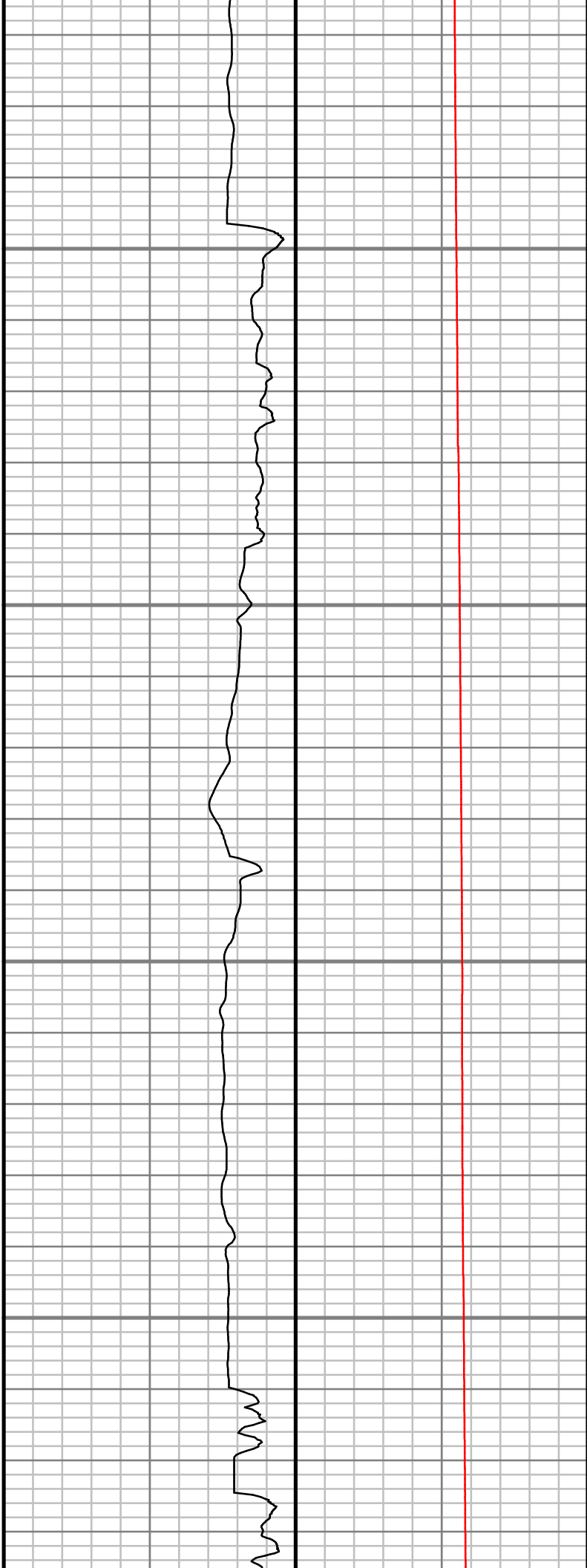
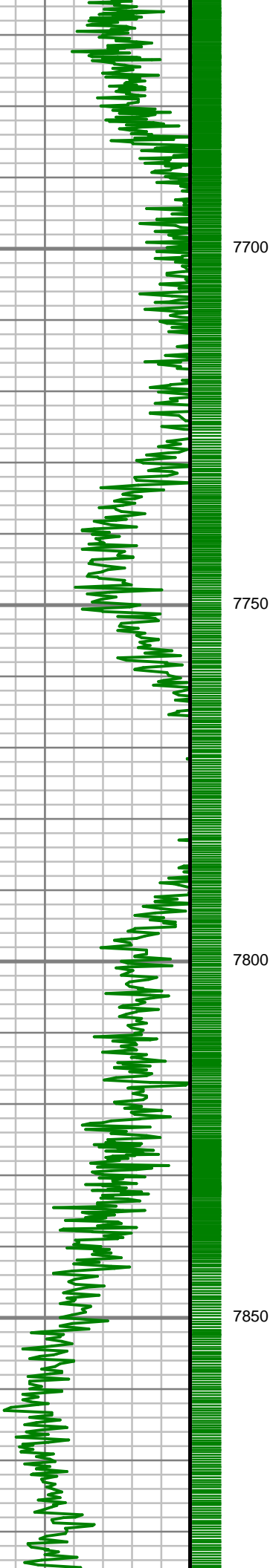
S: 83 MD: 7371.00 ft
Inc: 45.81 deg Az:
273.02 deg TVD:
7158.20 ft



S: 84 MD: 7460.00 ft
Inc: 59.09 deg Az:
270.44 deg TVD:
7212.32 ft

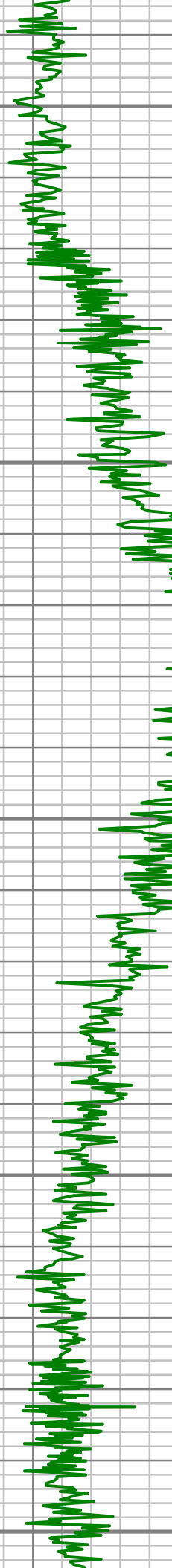
S: 85 MD: 7549.00 ft
Inc: 74.70 deg Az:
270.01 deg TVD:
7247.14 ft

S: 86 MD: 7638.00 ft
Inc: 87.34 deg Az:
273.30 deg TVD:
7261.01 ft



S: 87 MD: 7727.00 ft
Inc: 91.34 deg Az:
268.83 deg TVD:
7262.03 ft

S: 88 MD: 7815.00 ft
Inc: 92.49 deg Az:
266.68 deg TVD:
7259.09 ft



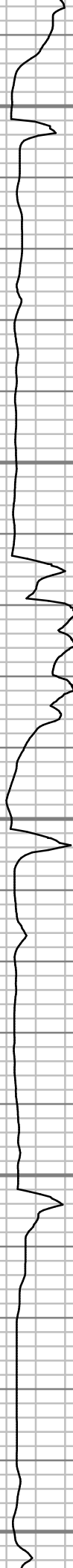
7900

7950

8000

8050

8100



S: 89 MD: 7904.00 ft
Inc: 94.01 deg Az:
266.89 deg TVD:
7254.05 ft

S: 90 MD: 7993.00 ft
Inc: 91.38 deg Az:
266.16 deg TVD:
7249.87 ft

S: 91 MD: 8081.00 ft
Inc: 91.75 deg Az:
265.96 deg TVD:
7247.46 ft



8150

8200

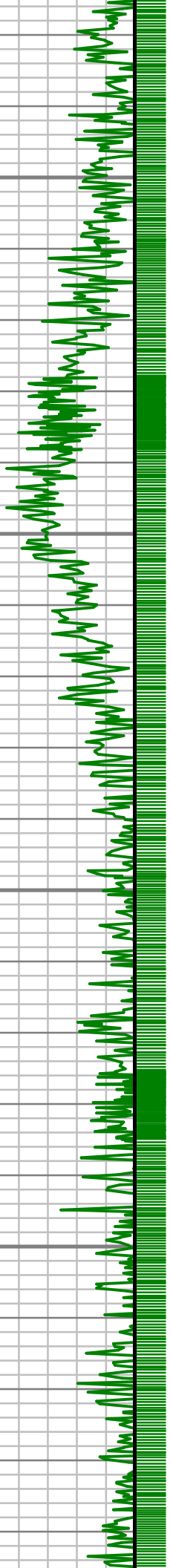
8250

8300



S: 92 MD: 8170.00 ft
Inc: 92.46 deg Az:
269.60 deg TVD:
7244.19 ft

S: 93 MD: 8259.00 ft
Inc: 91.78 deg Az:
272.47 deg TVD:
7240.90 ft

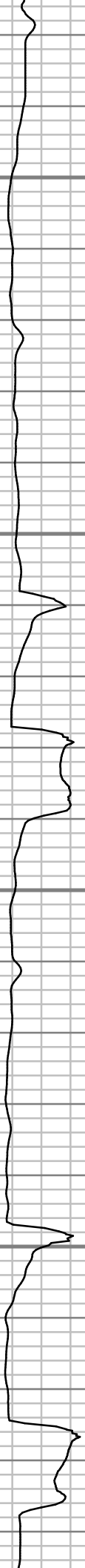


8350

8400

8450

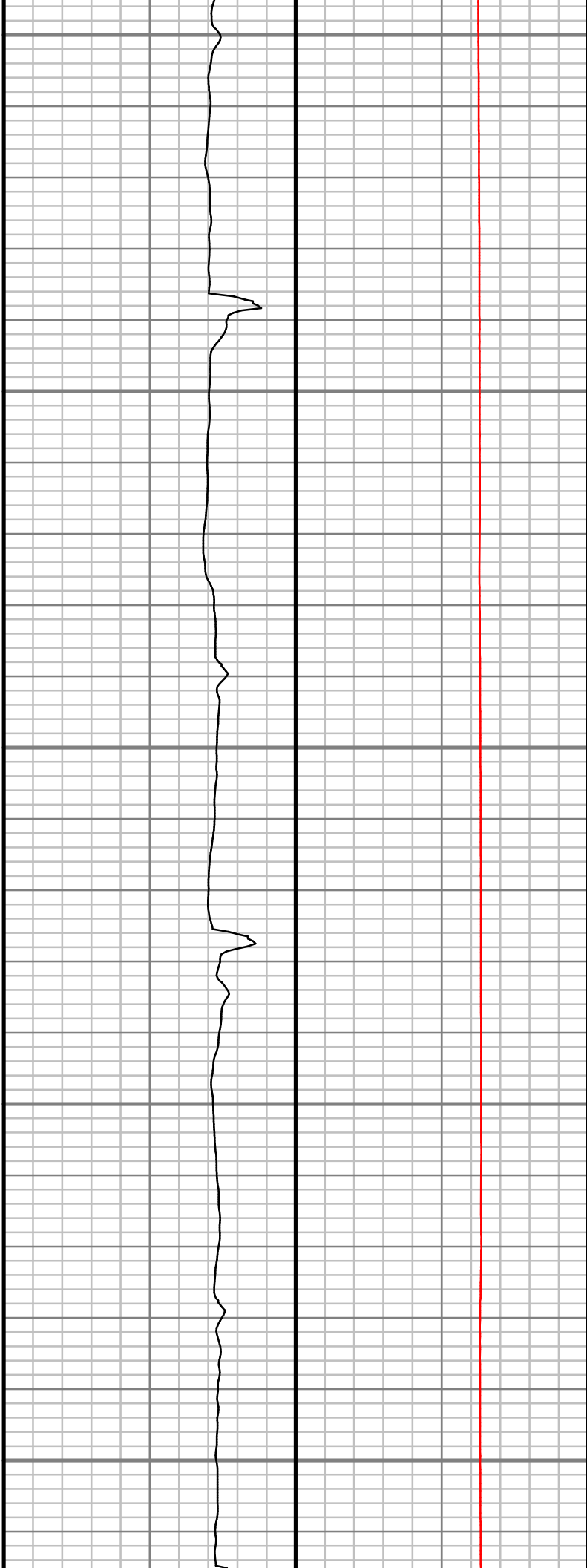
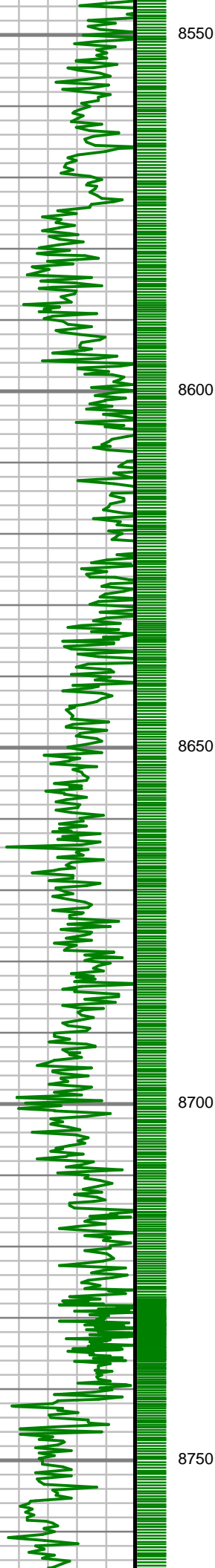
8500



S: 94 MD: 8348.00 ft
Inc: 91.92 deg Az:
273.04 deg TVD:
7238.03 ft

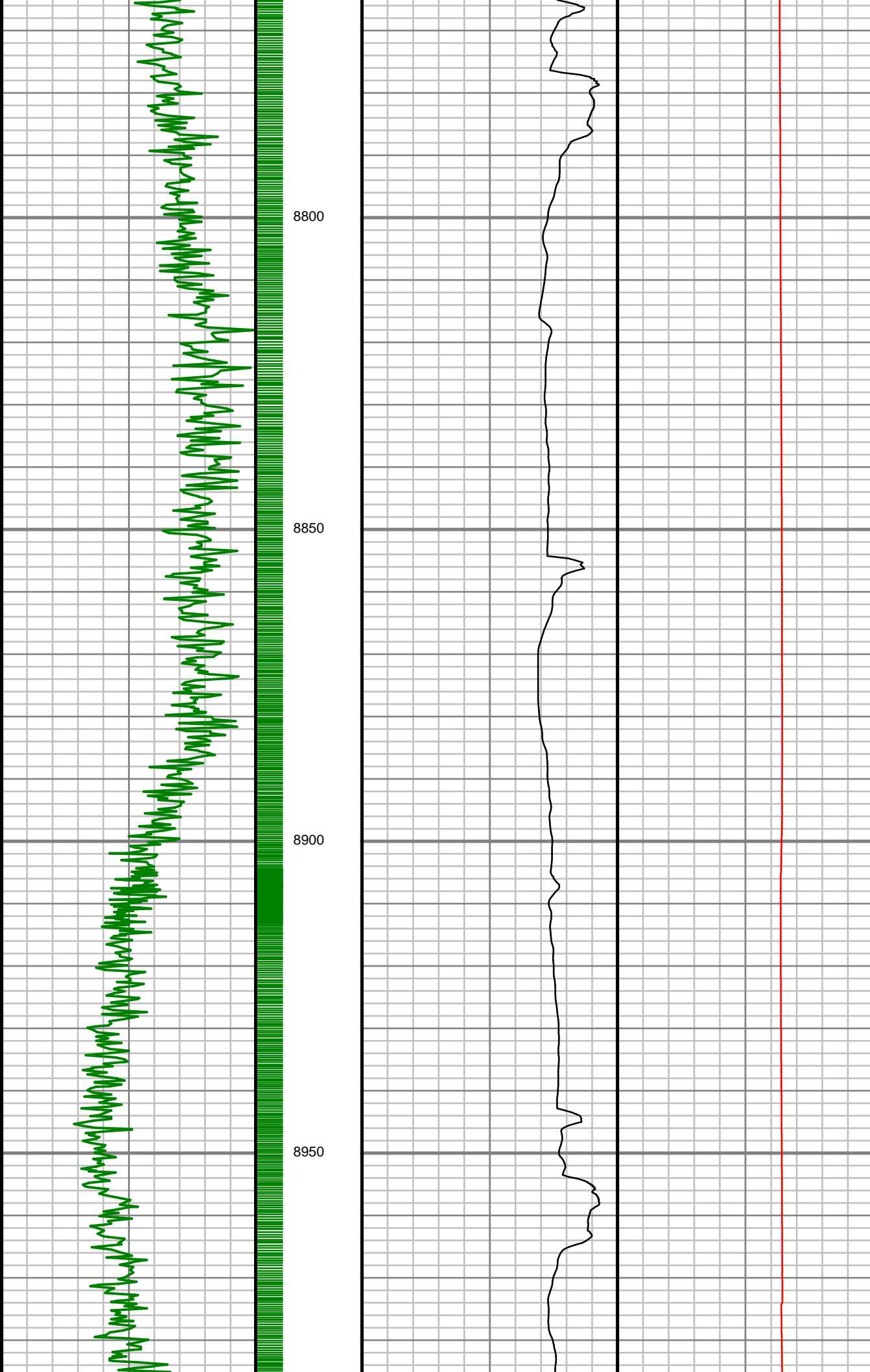
S: 95 MD: 8437.00 ft
Inc: 91.01 deg Az:
272.12 deg TVD:
7235.76 ft

S: 96 MD: 8526.00 ft
Inc: 91.88 deg Az:
270.79 deg TVD:
7233.52 ft



S: 97 MD: 8615.00 ft
Inc: 92.12 deg Az:
270.00 deg TVD:
7230.41 ft

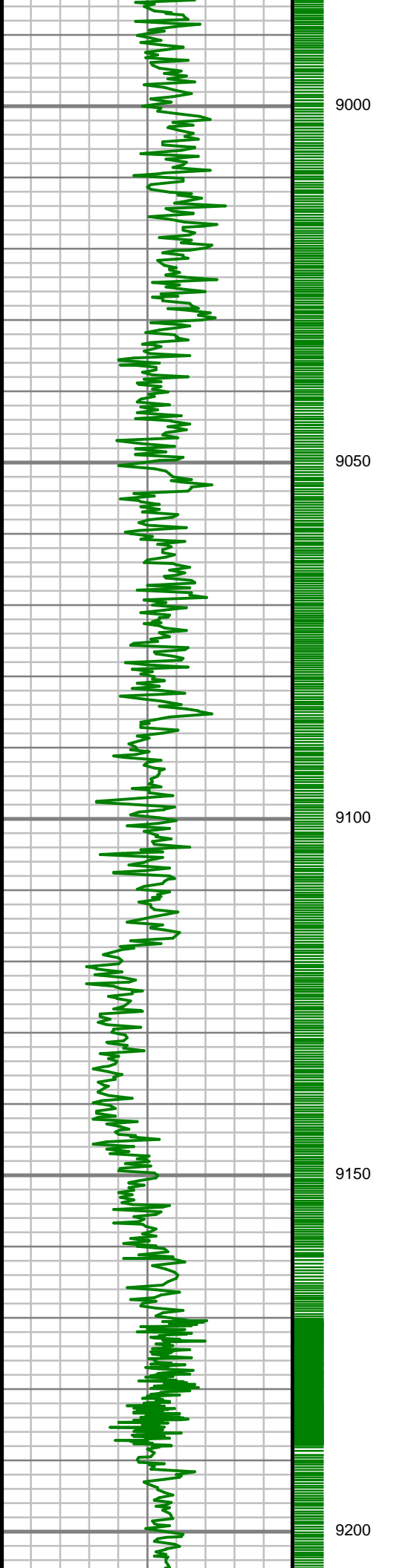
S: 98 MD: 8704.00 ft
Inc: 92.59 deg Az:
270.62 deg TVD:
7226.76 ft



S: 99 MD: 8792.00 ft
Inc: 91.65 deg Az:
269.01 deg TVD:
7223.50 ft

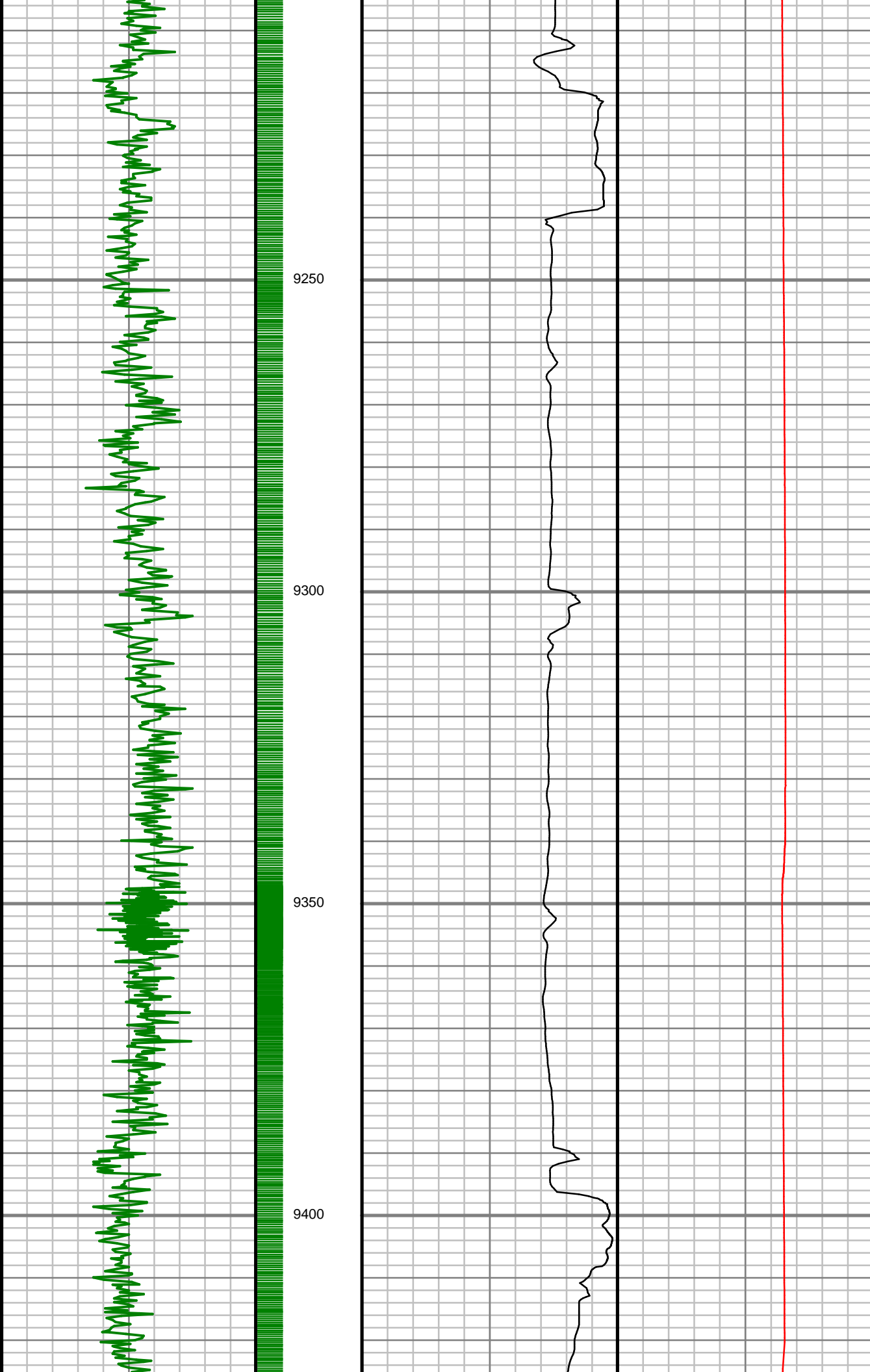
S: 100 MD: 8882.00 ft
Inc: 91.55 deg Az:
269.04 deg TVD:
7220.99 ft

S: 101 MD: 8970.00 ft
Inc: 92.16 deg Az:
268.03 deg TVD:
7218.15 ft



S: 102 MD: 9059.00 ft
Inc: 92.39 deg Az:
268.54 deg TVD:
7214.62 ft

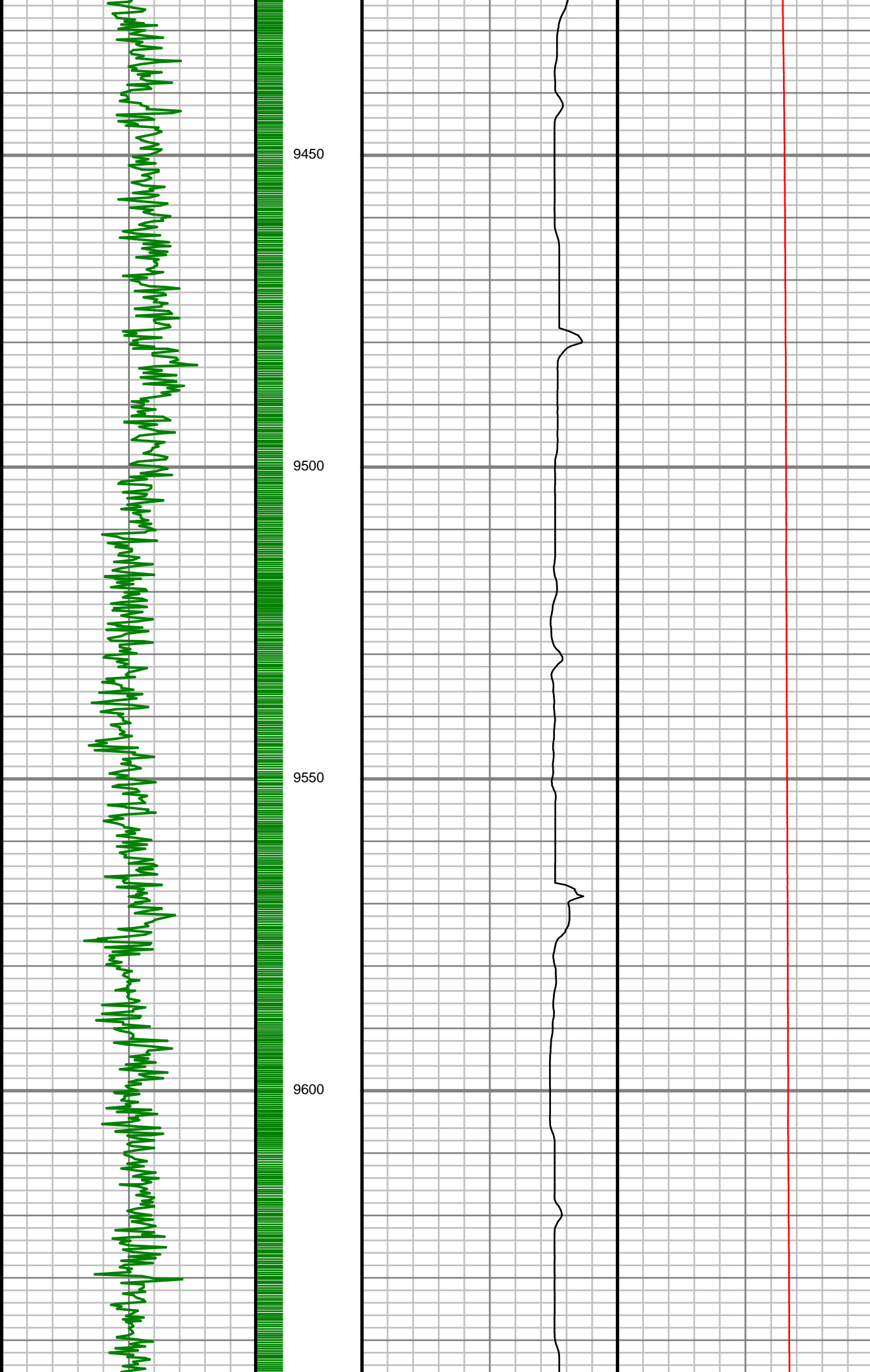
S: 103 MD: 9148.00 ft
Inc: 93.45 deg Az:
270.25 deg TVD:
7210.09 ft



S: 104 MD: 9237.00 ft
Inc: 91.21 deg Az:
269.09 deg TVD:
7206.47 ft

S: 105 MD: 9325.00 ft
Inc: 91.21 deg Az:
269.63 deg TVD:
7204.62 ft

S: 106 MD: 9414.00 ft
Inc: 90.30 deg Az:
269.74 deg TVD:
7203.44 ft



9450

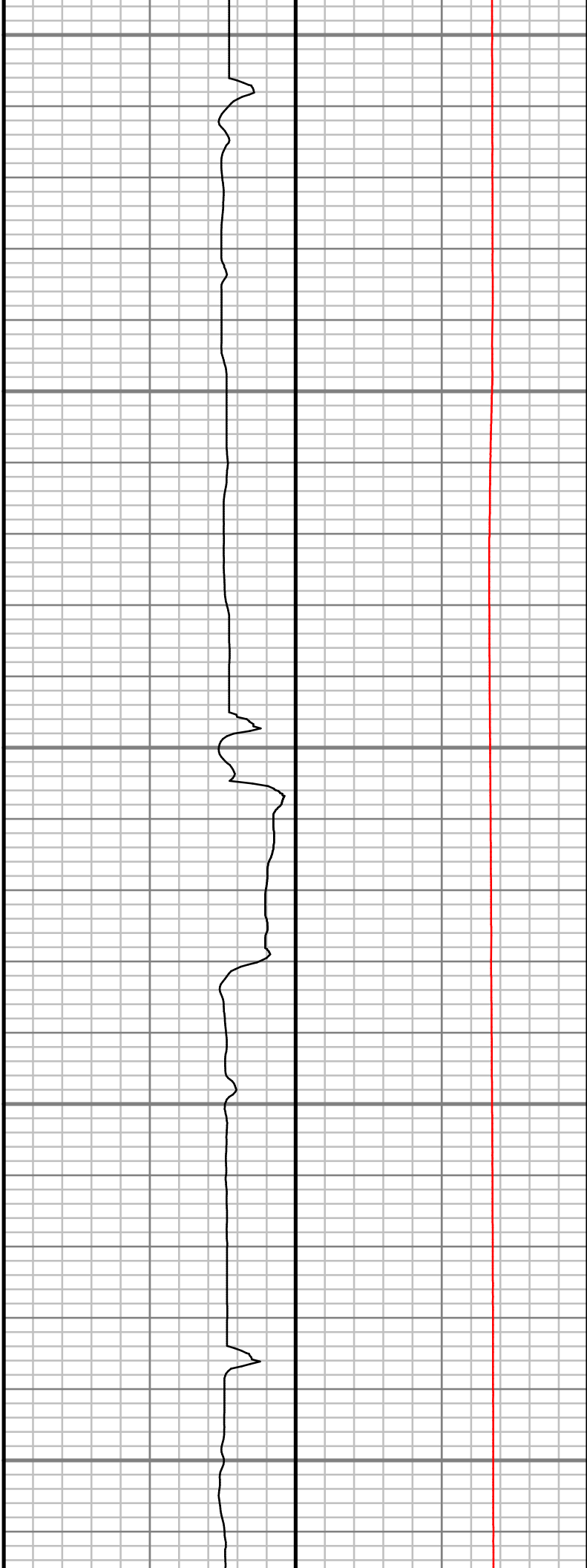
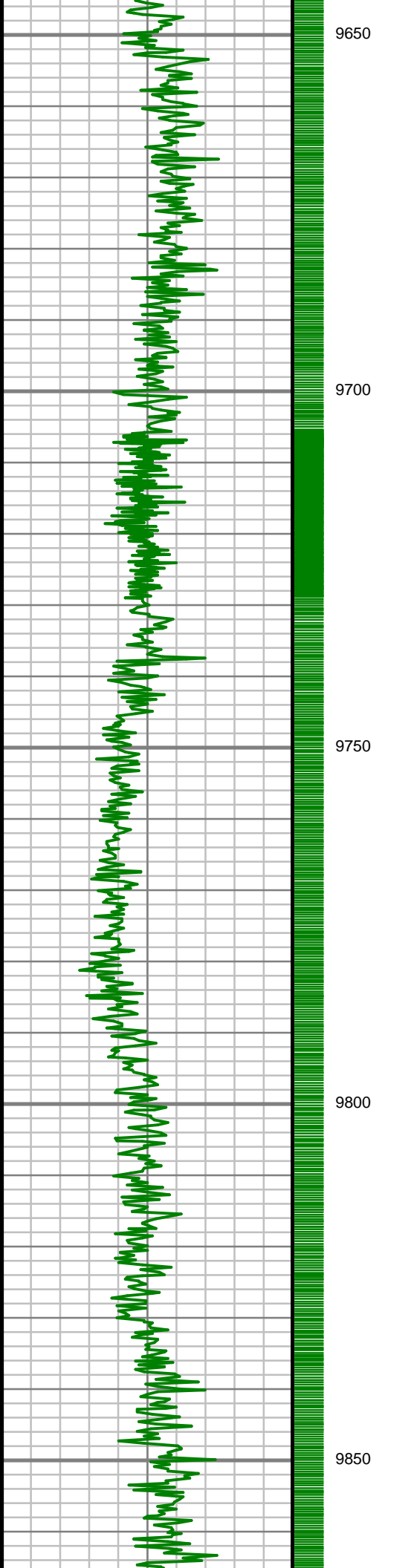
9500

9550

9600

S: 107 MD: 9503.00 ft
Inc: 89.56 deg Az:
269.10 deg TVD:
7203.54 ft

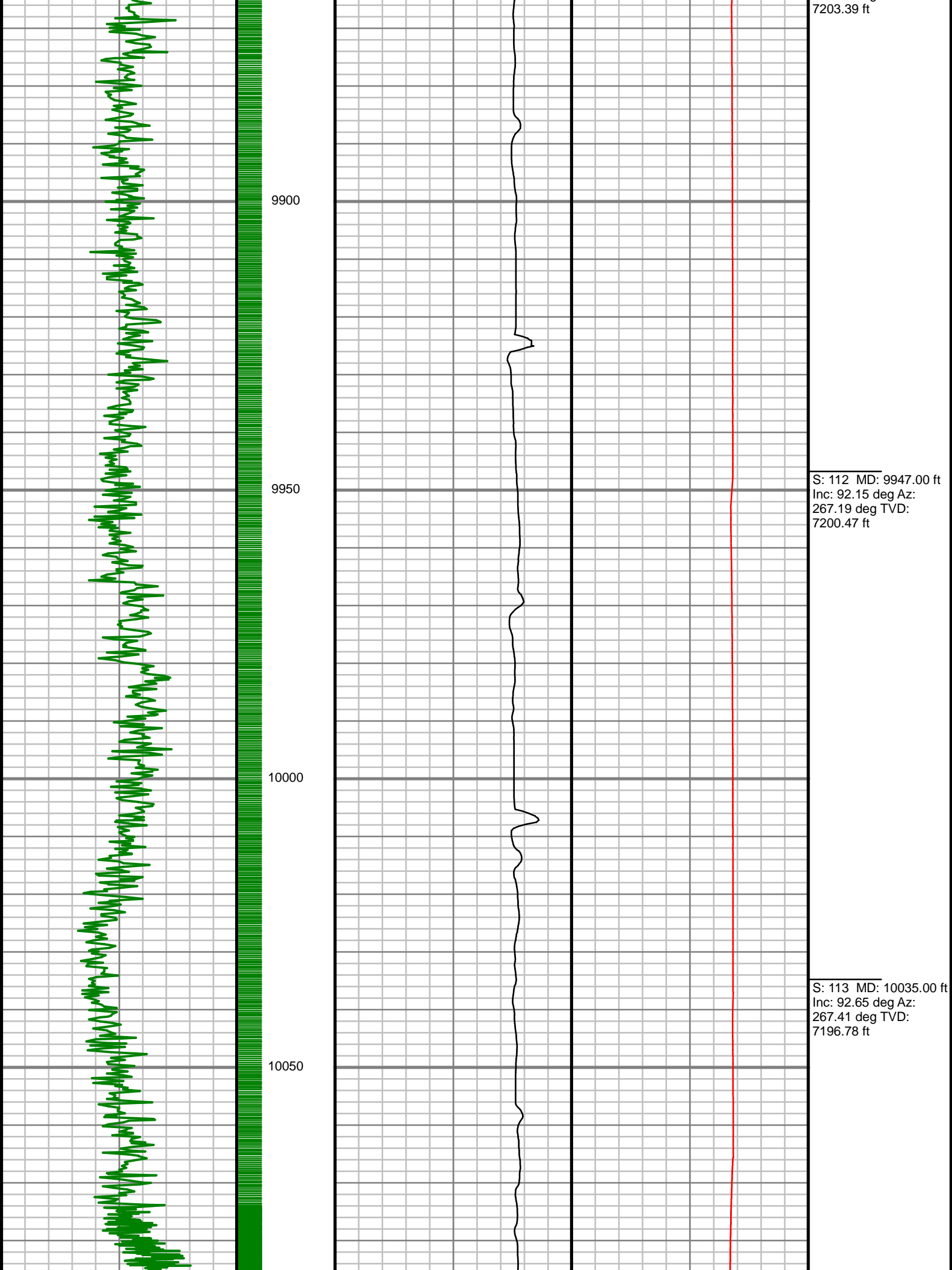
S: 108 MD: 9592.00 ft
Inc: 89.53 deg Az:
269.76 deg TVD:
7204.25 ft



S: 109 MD: 9681.00 ft
Inc: 89.19 deg Az:
269.04 deg TVD:
7205.24 ft

S: 110 MD: 9770.00 ft
Inc: 90.80 deg Az:
268.07 deg TVD:
7205.24 ft

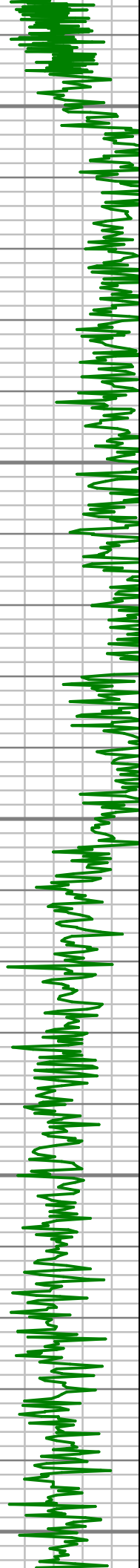
S: 111 MD: 9858.00 ft
Inc: 91.61 deg Az:
266.94 deg TVD:



7203.39 ft

S: 112 MD: 9947.00 ft
Inc: 92.15 deg Az:
267.19 deg TVD:
7200.47 ft

S: 113 MD: 10035.00 ft
Inc: 92.65 deg Az:
267.41 deg TVD:
7196.78 ft



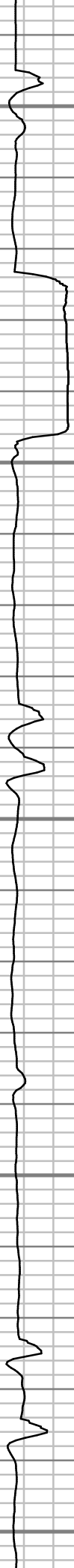
10100

10150

10200

10250

10300

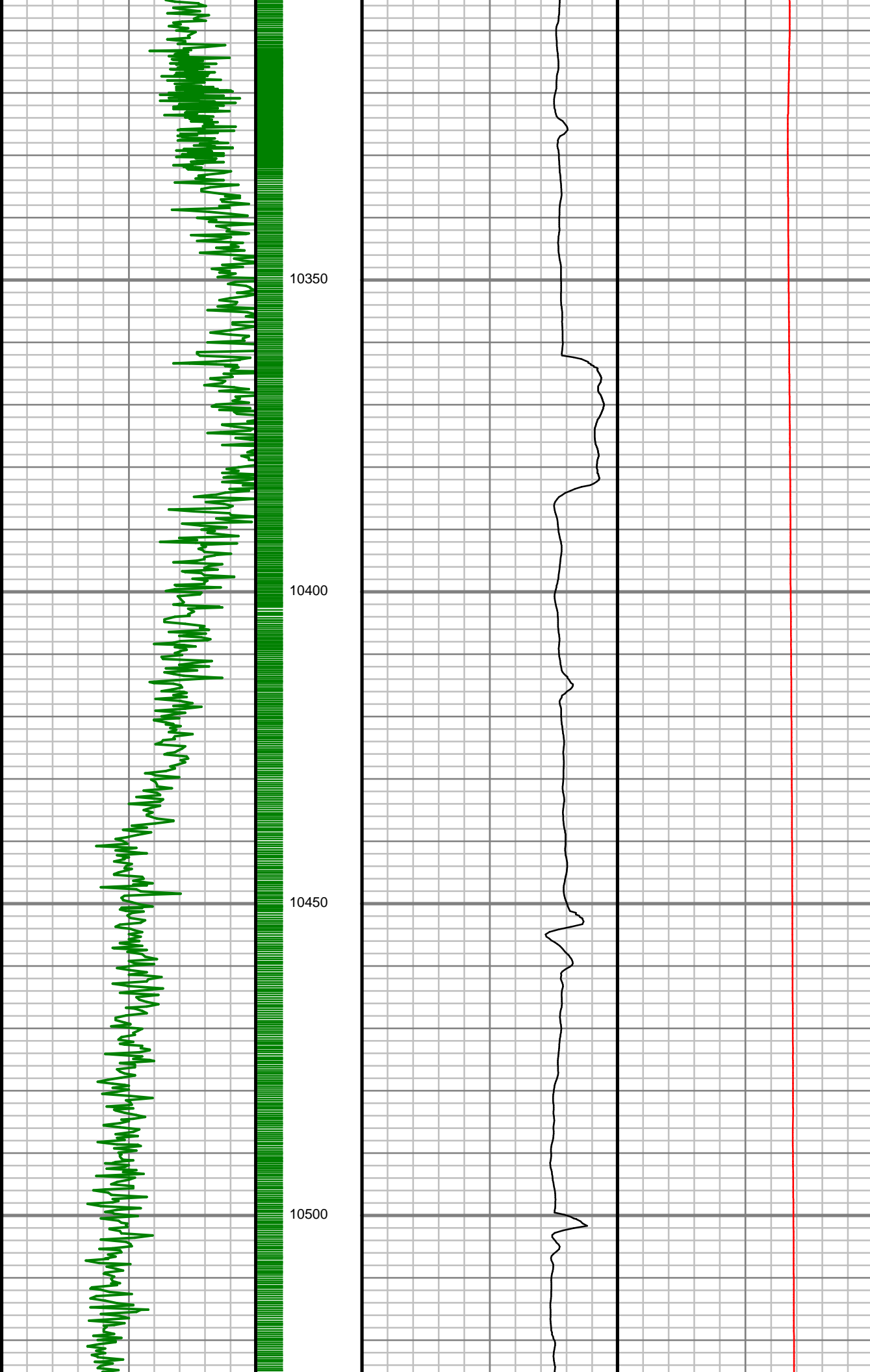


S: 114 MD: 10124.00 ft
Inc: 91.57 deg Az:
267.54 deg TVD:
7193.50 ft

S: 115 MD: 10213.00 ft
Inc: 90.40 deg Az:
268.34 deg TVD:
7191.97 ft

S: 116 MD: 10302.00 ft

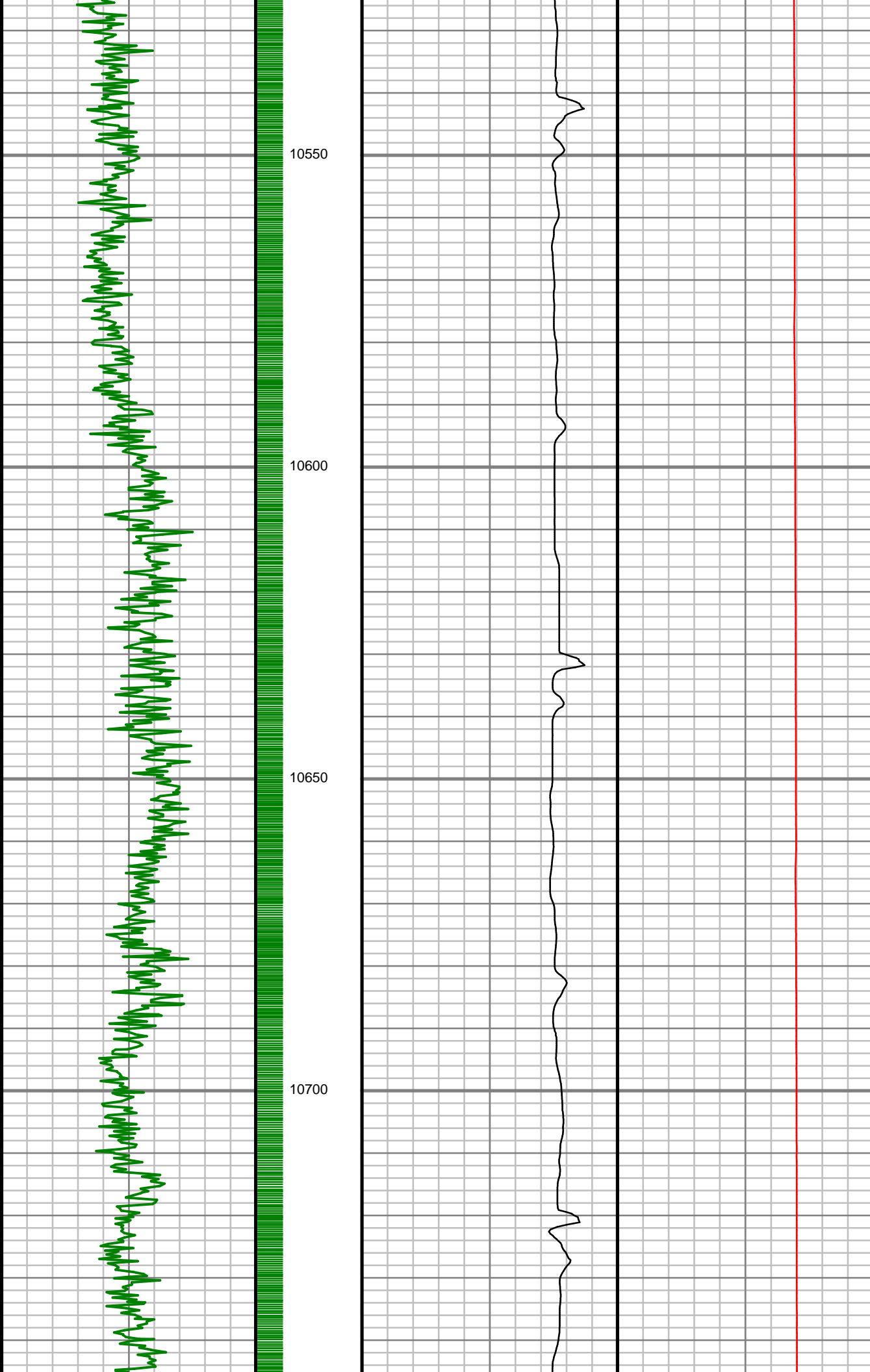




Inc: 91.11 deg Az:
269.53 deg TVD:
7190.79 ft

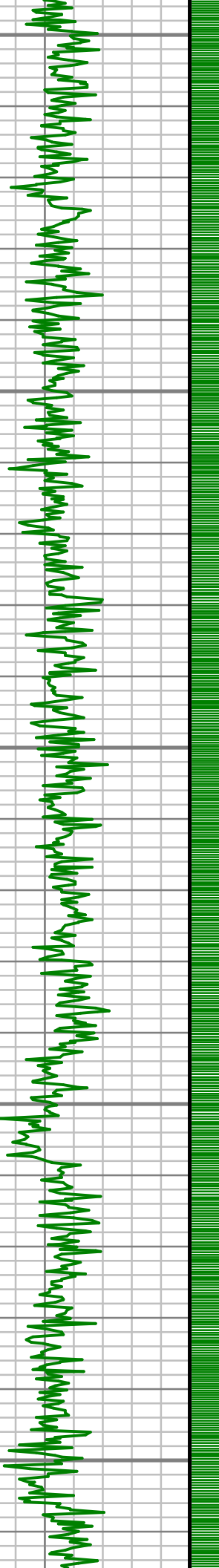
S: 117 MD: 10391.00 ft
Inc: 89.13 deg Az:
270.17 deg TVD:
7190.61 ft

S: 118 MD: 10480.00 ft
Inc: 89.16 deg Az:
270.57 deg TVD:
7191.94 ft



S: 119 MD: 10569.00 ft
Inc: 89.83 deg Az:
271.75 deg TVD:
7192.72 ft

S: 120 MD: 10658.00 ft
Inc: 89.53 deg Az:
271.46 deg TVD:
7193.22 ft



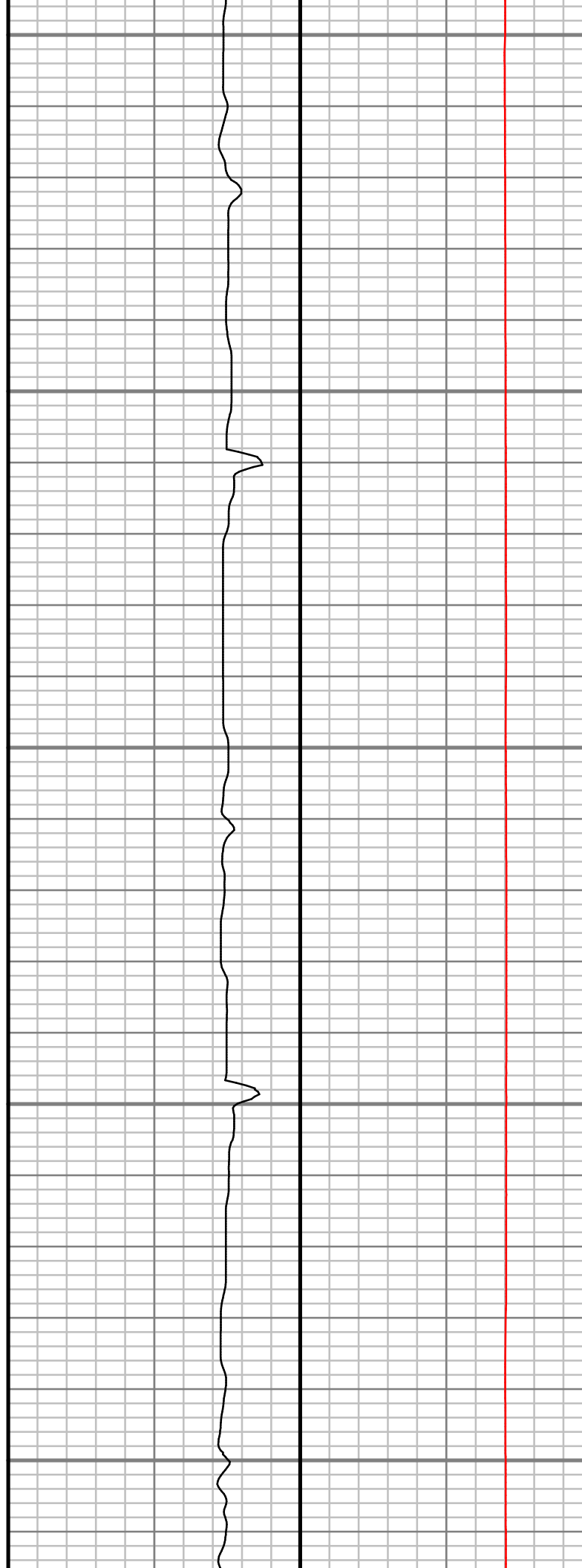
10750

10800

10850

10900

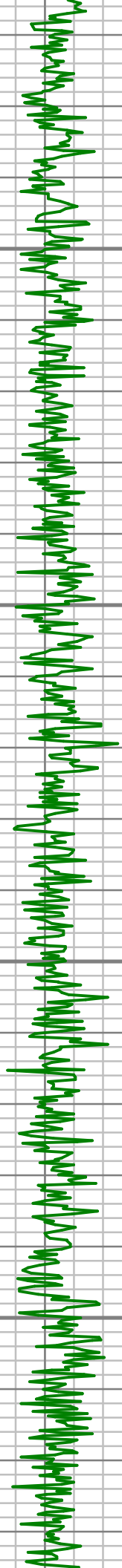
10950



S: 121 MD: 10747.00 ft
Inc: 89.60 deg Az:
271.51 deg TVD:
7193.90 ft

S: 122 MD: 10836.00 ft
Inc: 90.03 deg Az:
271.66 deg TVD:
7194.18 ft

S: 123 MD: 10925.00 ft
Inc: 90.30 deg Az:
271.55 deg TVD:
7193.92 ft

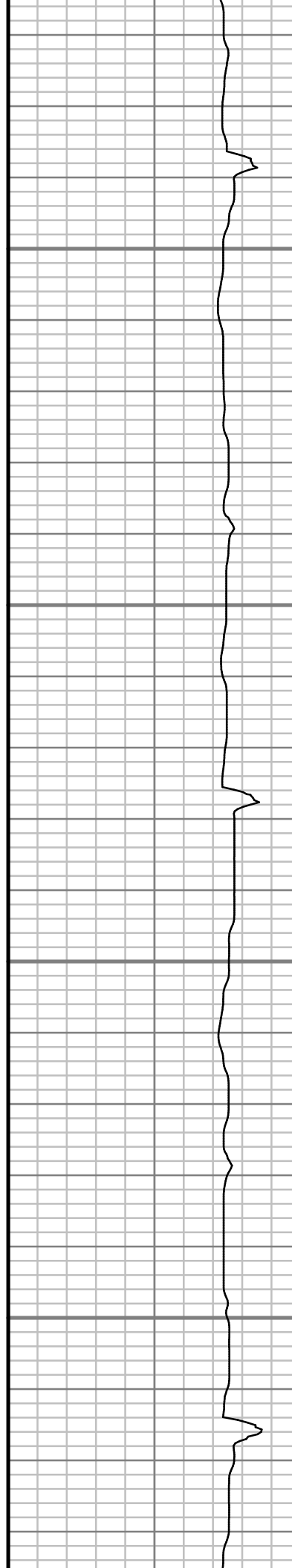


11000

11050

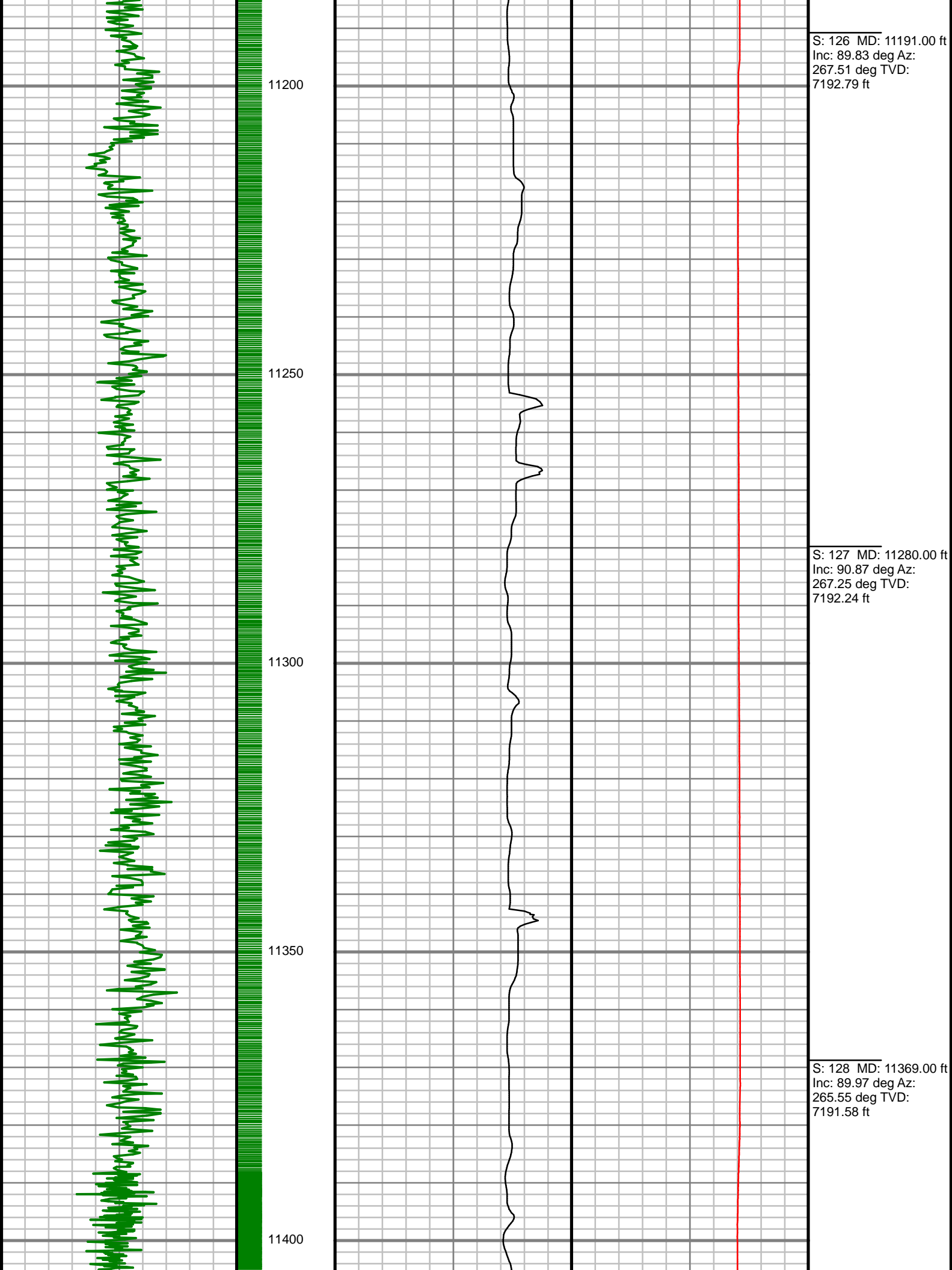
11100

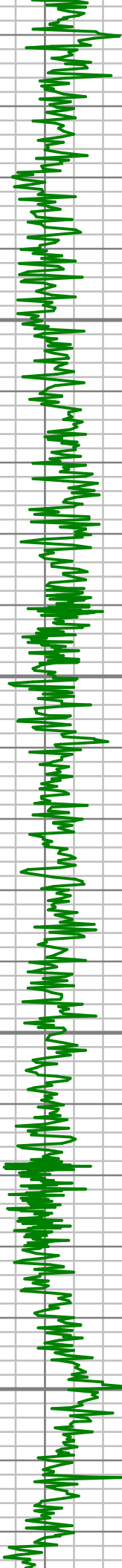
11150



S: 124 MD: 11013.00 ft
Inc: 90.77 deg Az:
270.63 deg TVD:
7193.10 ft

S: 125 MD: 11102.00 ft
Inc: 89.90 deg Az:
268.99 deg TVD:
7192.58 ft





11450

11500

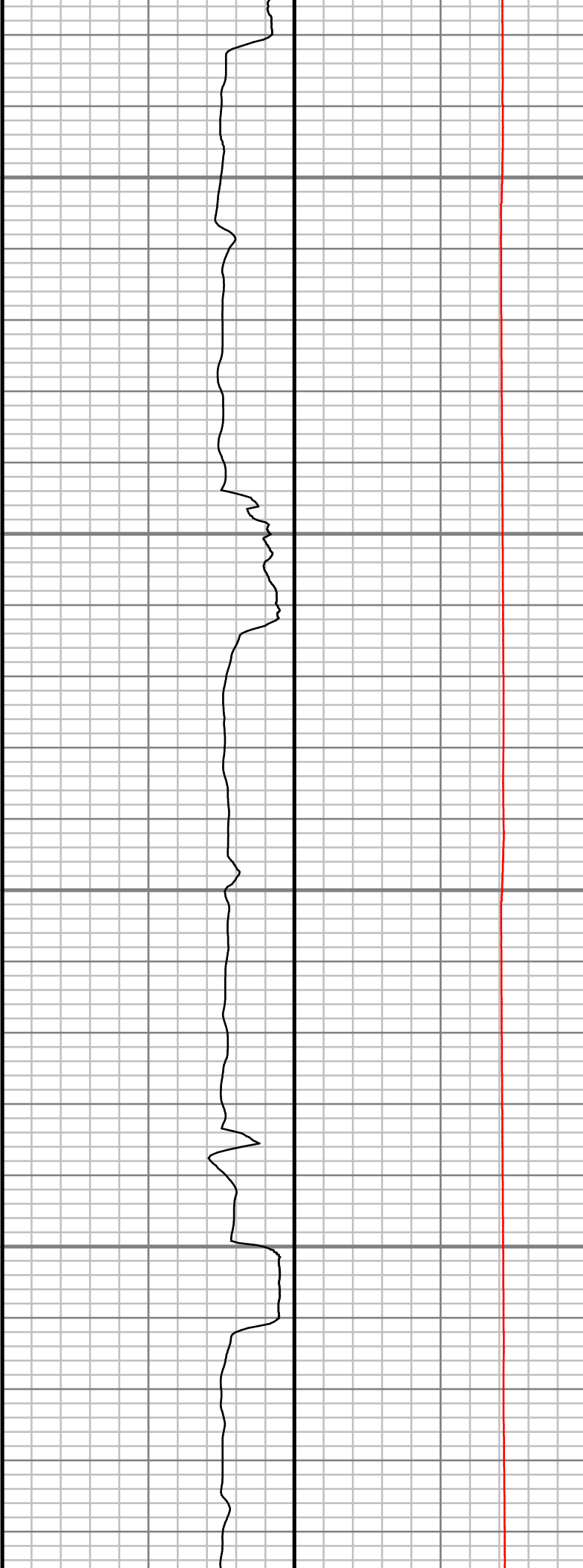
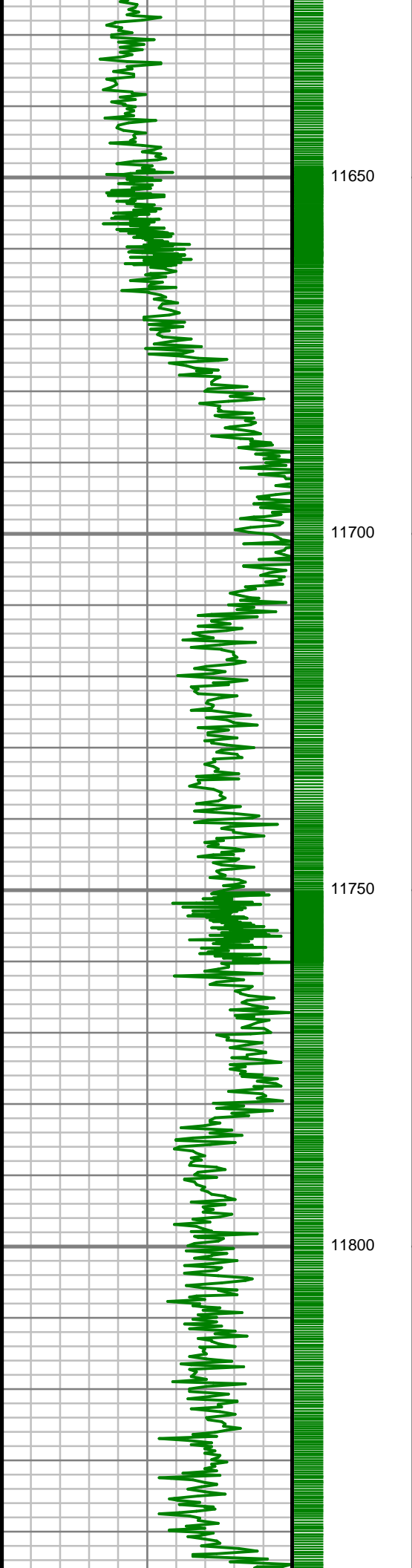
11550

11600



S: 129 MD: 11458.00 ft
Inc: 91.68 deg Az:
267.49 deg TVD:
7190.30 ft

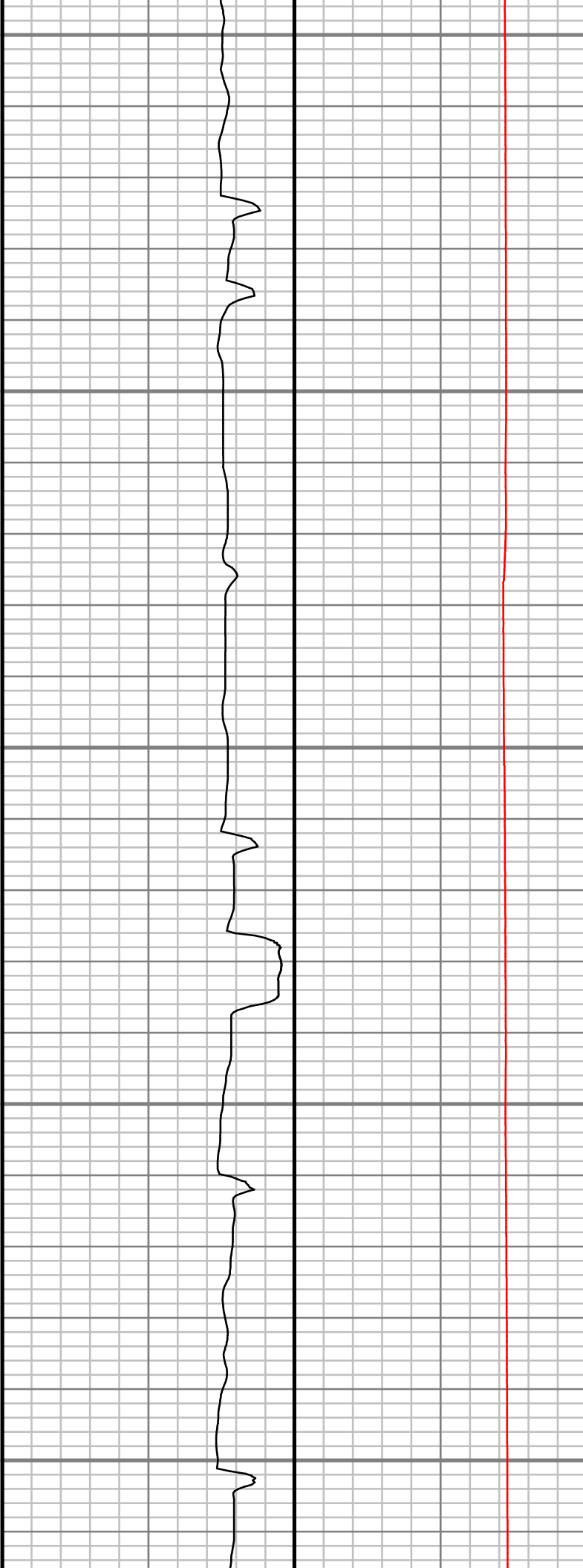
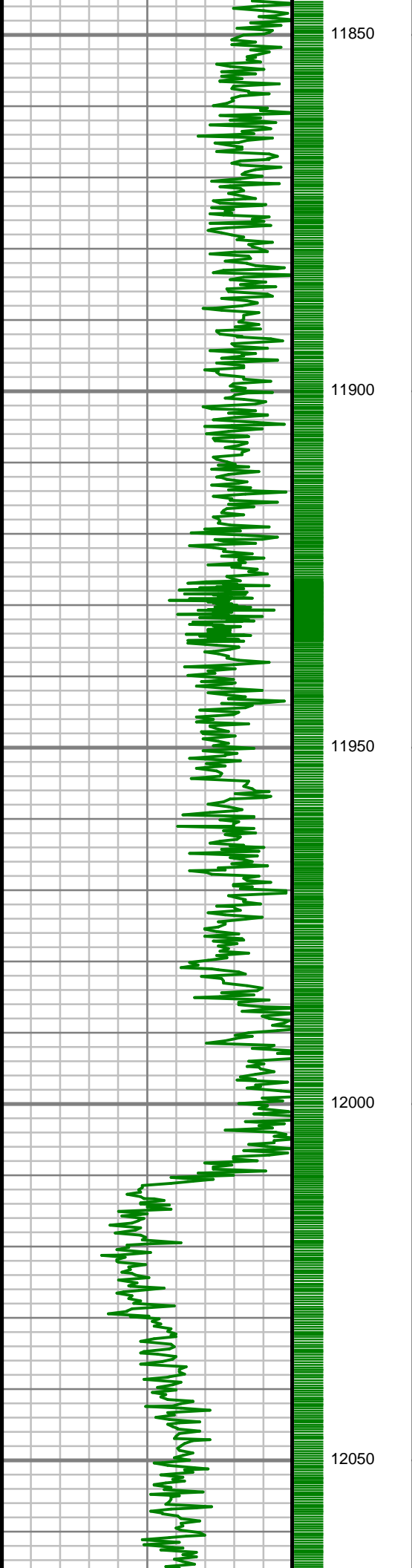
S: 130 MD: 11547.00 ft
Inc: 92.15 deg Az:
268.48 deg TVD:
7187.33 ft



S: 131 MD: 11636.00 ft
Inc: 92.42 deg Az:
270.41 deg TVD:
7183.78 ft

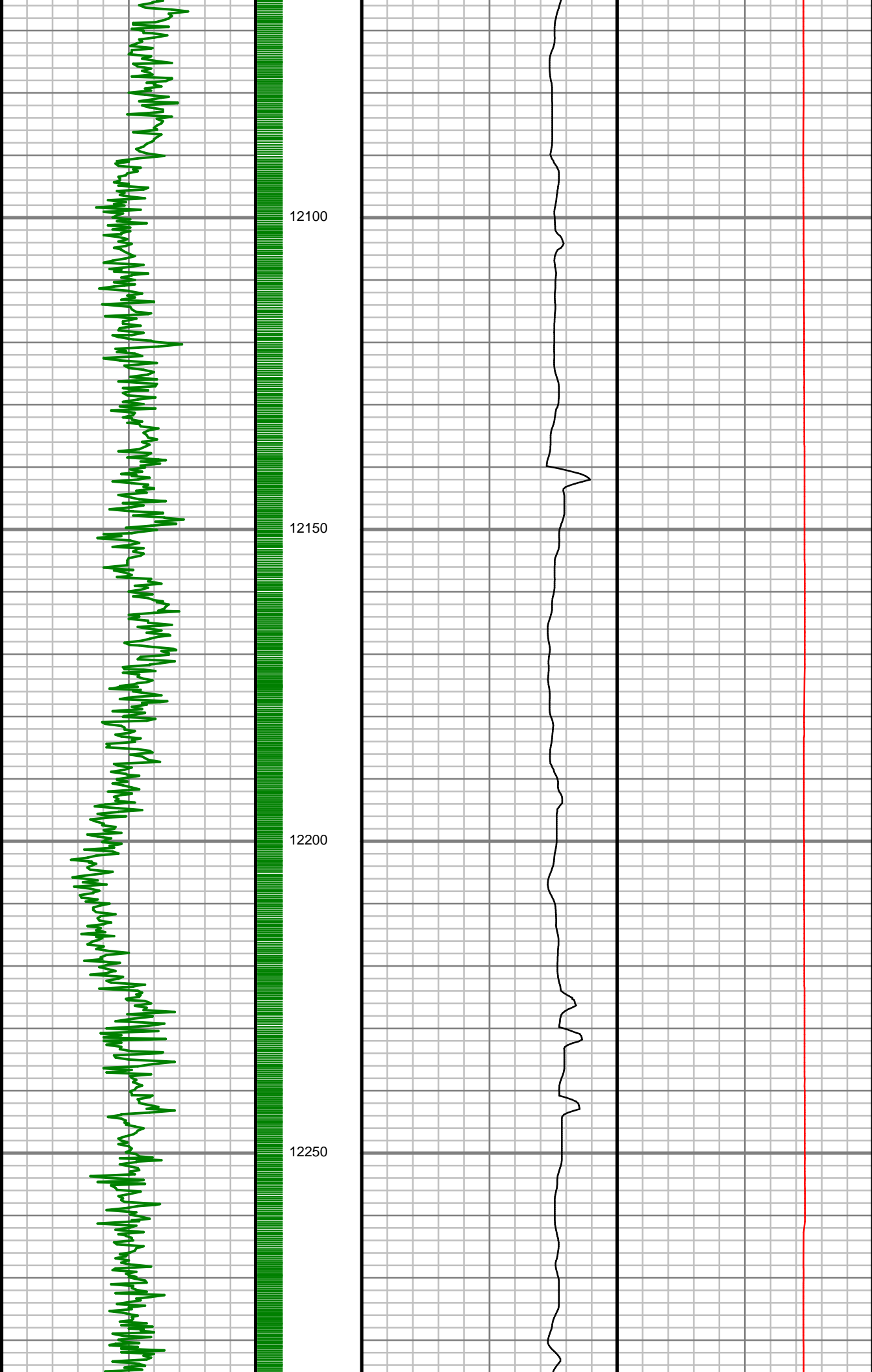
S: 132 MD: 11724.00 ft
Inc: 90.67 deg Az:
271.30 deg TVD:
7181.40 ft

S: 133 MD: 11813.00 ft
Inc: 89.09 deg Az:
269.55 deg TVD:
7181.59 ft



S: 134 MD: 11902.00 ft
Inc: 89.16 deg Az:
268.98 deg TVD:
7182.95 ft

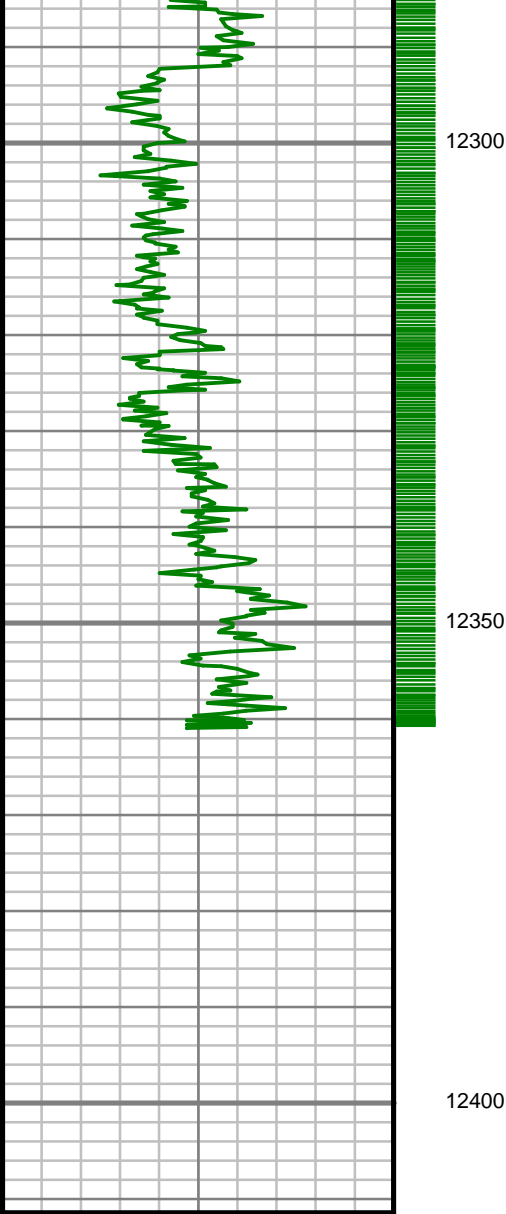
S: 135 MD: 11991.00 ft
Inc: 89.50 deg Az:
270.49 deg TVD:
7183.99 ft



S: 136 MD: 12080.00 ft
Inc: 88.96 deg Az:
270.33 deg TVD:
7185.19 ft

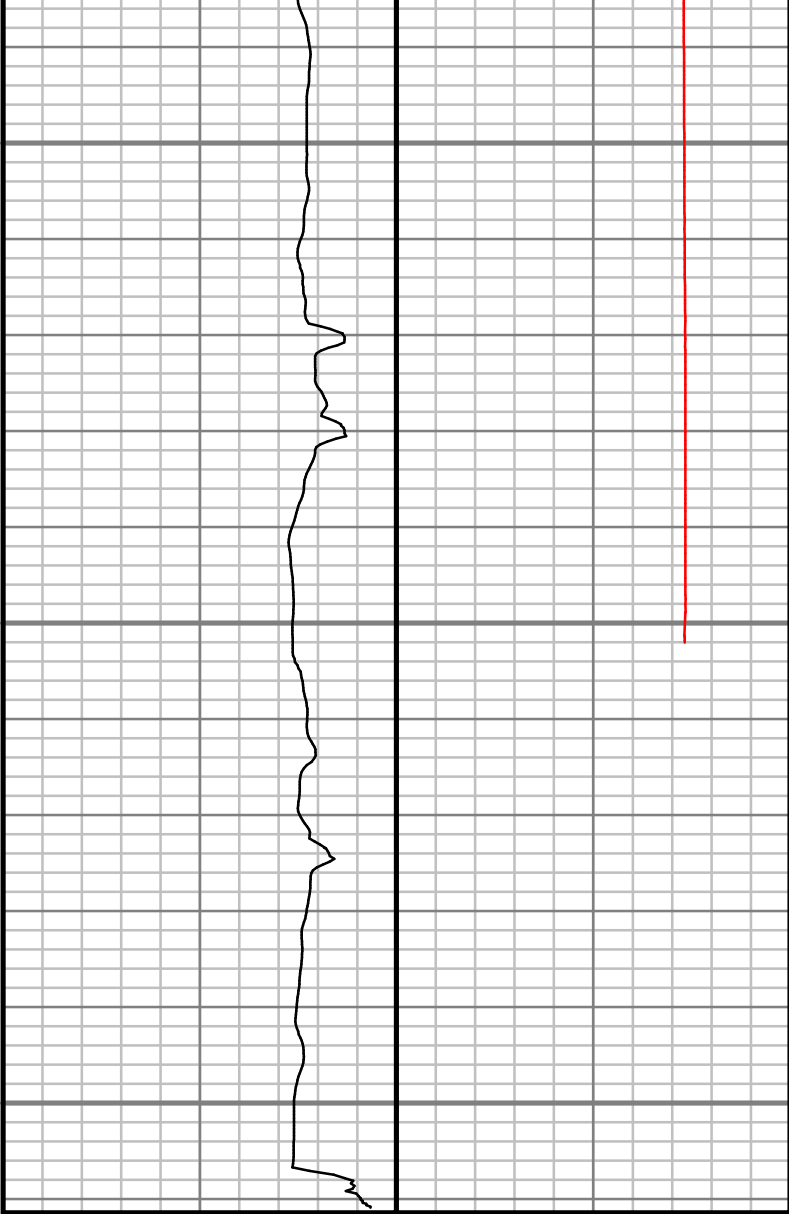
S: 137 MD: 12169.00 ft
Inc: 88.76 deg Az:
270.02 deg TVD:
7186.97 ft

S: 138 MD: 12258.00 ft
Inc: 88.99 deg Az:
270.19 deg TVD:
7188.71 ft



Gamma Ray (GR)		
0	Unit = aapi	150

MEASURED DEPTH
1:240 (ft)



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

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

Comments

S: 139 MD: 12346.00 ft
Inc: 88.29 deg Az:
269.19 deg TVD:
7190.80 ft

SURVEY REPORT

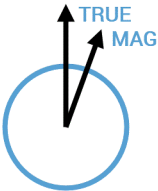
HILGERS 32N-22HZ COMPUTED SURVEYS

CUSTOMER ANADARKO E&P ONSHORE LLC
PROJECT HILGERS 32N-22HZ
FIELD WATTENBERG

WELL INFORMATION
Lat/Long 40.210297° N, 104.981563° W
Northing 14,603,313.04 ft
Easting 1,645,564.09 ft
UWI 05123432600000

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 269.91°
Calculation Method Minimum Curvature



GEOMAGNETIC REFERENCE INFORMATION Local Gravity: 999.047 mG [computed]

MD	MODEL	DATE	DECLINATION	MAG TO TRUE
0-12346 ft	ANADARKO MAG VAR	29 May 2017	8.43°	add 8.43°

WELL NOTES OPERATORS
J. MEYERS, J. WALSH, 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
140.00	0.11	196.55	140.00	0.04	-0.13	-0.04	0.08
195.00	0.49	86.96	195.00	-0.18	-0.17	0.18	0.98
271.00	1.56	88.14	270.99	-1.54	-0.12	1.54	1.41
358.00	2.57	78.84	357.93	-4.64	0.30	4.64	1.22
445.00	3.96	76.20	444.79	-9.47	1.39	9.47	1.61
533.00	5.01	75.36	532.51	-16.14	3.09	16.14	1.20
622.00	5.84	81.38	621.12	-24.38	4.75	24.37	1.13
711.00	7.18	78.51	709.54	-34.31	6.54	34.30	1.55
800.00	8.53	79.56	797.70	-46.26	8.84	46.24	1.53
888.00	10.17	77.45	884.53	-60.27	11.71	60.25	1.90
977.00	11.84	77.08	971.89	-76.84	15.46	76.82	1.88
1064.00	13.05	77.93	1056.85	-95.15	19.51	95.12	1.41
1148.00	14.06	77.90	1138.51	-114.41	23.63	114.37	1.20
1237.00	15.10	77.71	1224.64	-136.32	28.37	136.27	1.17
1326.00	16.20	78.61	1310.34	-159.82	33.29	159.77	1.27
1414.00	16.88	78.76	1394.70	-184.39	38.20	184.34	0.77
1503.00	17.67	77.55	1479.68	-210.27	43.63	210.20	0.98
1592.00	18.12	75.04	1564.38	-236.84	50.12	236.76	1.00
1676.00	18.60	75.64	1644.10	-262.45	56.81	262.36	0.61

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
1763.00	18.09	74.83	1726.68	-288.94	63.79	288.84	0.66
1826.00	17.74	73.44	1786.62	-307.58	69.08	307.48	0.88
1912.00	17.07	72.76	1868.69	-332.21	76.56	332.09	0.82
2000.00	15.82	70.61	1953.09	-355.87	84.37	355.73	1.58
2089.00	17.46	71.17	2038.36	-379.96	92.70	379.82	1.86
2177.00	18.09	68.97	2122.16	-405.22	101.87	405.07	1.05
2266.00	17.20	76.27	2206.98	-430.92	109.95	430.75	2.68
2355.00	16.66	77.70	2292.12	-456.17	115.79	455.99	0.77
2444.00	15.67	75.83	2377.61	-480.29	121.45	480.10	1.26
2532.00	17.15	78.37	2462.02	-504.53	126.97	504.33	1.87
2621.00	16.90	75.68	2547.12	-529.93	132.82	529.72	0.93
2710.00	17.23	77.09	2632.20	-555.32	138.96	555.10	0.60
2798.00	16.58	77.60	2716.40	-580.30	144.57	580.07	0.76
2887.00	16.56	77.41	2801.71	-605.09	150.06	604.85	0.06
2975.00	16.22	79.84	2886.13	-629.43	154.96	629.19	0.87
3064.00	14.23	77.42	2972.00	-652.35	159.54	652.10	2.34
3153.00	14.00	80.86	3058.32	-673.66	163.63	673.40	0.98
3241.00	13.08	79.87	3143.87	-693.97	167.07	693.71	1.07
3330.00	11.38	79.51	3230.85	-712.53	170.44	712.26	1.91
3418.00	14.78	83.91	3316.56	-732.24	173.21	731.97	4.03

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
3533.00	14.34	83.96	3427.86	-760.99	176.27	760.71	0.39
3622.00	11.76	81.18	3514.56	-780.92	178.82	780.64	2.97
3710.00	11.41	78.81	3600.77	-798.33	181.88	798.04	0.68
3799.00	12.27	80.30	3687.87	-816.28	185.18	815.99	1.03
3888.00	17.66	85.41	3773.83	-839.08	187.86	838.79	6.23
3976.00	17.62	85.35	3857.69	-865.67	190.01	865.37	0.05
4065.00	15.77	83.48	3942.93	-891.12	192.47	890.82	2.17
4154.00	12.81	80.29	4029.17	-912.87	195.51	912.56	3.44
4243.00	14.69	78.85	4115.62	-933.67	199.36	933.36	2.14
4332.00	14.96	77.59	4201.66	-955.96	204.01	955.65	0.47
4421.00	15.06	76.10	4287.62	-978.41	209.25	978.08	0.45
4510.00	13.75	75.17	4373.82	-999.87	214.74	999.53	1.49
4599.00	11.91	75.80	4460.60	-1019.01	219.70	1018.66	2.08
4689.00	9.12	74.72	4549.07	-1034.90	223.86	1034.55	3.10
4777.00	6.70	76.12	4636.23	-1046.62	226.93	1046.27	2.76
4866.00	5.50	86.94	4724.73	-1055.93	228.40	1055.57	1.86
4955.00	2.23	75.63	4813.51	-1061.87	229.06	1061.51	3.76
5044.00	0.95	51.58	4902.48	-1064.13	229.95	1063.77	1.59
5133.00	0.54	30.92	4991.47	-1064.92	230.77	1064.56	0.54
5222.00	0.42	346.00	5080.47	-1065.06	231.45	1064.70	0.43

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
5311.00	0.48	303.54	5169.47	-1064.67	231.97	1064.31	0.37
5399.00	0.41	296.84	5257.46	-1064.09	232.32	1063.72	0.10
5489.00	0.35	258.34	5347.46	-1063.53	232.41	1063.17	0.28
5577.00	0.74	254.10	5435.46	-1062.72	232.20	1062.36	0.45
5666.00	0.77	230.94	5524.45	-1061.71	231.66	1061.34	0.34
5755.00	0.92	268.84	5613.44	-1060.53	231.27	1060.17	0.64
5847.00	0.84	264.06	5705.43	-1059.12	231.19	1058.76	0.12
5940.00	0.81	248.59	5798.42	-1057.83	230.88	1057.46	0.24
6032.00	0.93	246.85	5890.41	-1056.53	230.35	1056.17	0.13
6125.00	0.81	248.10	5983.40	-1055.23	229.81	1054.87	0.13
6217.00	0.90	251.59	6075.39	-1053.93	229.33	1053.58	0.11
6306.00	1.01	237.24	6164.38	-1052.61	228.69	1052.25	0.29
6395.00	1.12	241.07	6253.36	-1051.19	227.85	1050.83	0.15
6483.00	0.92	238.09	6341.35	-1049.84	227.06	1049.48	0.23
6572.00	0.88	244.99	6430.34	-1048.61	226.39	1048.26	0.13
6661.00	0.85	243.21	6519.33	-1047.40	225.80	1047.05	0.05
6750.00	8.50	270.01	6607.97	-1040.23	225.51	1039.87	8.71
6838.00	18.70	296.30	6693.46	-1021.02	231.78	1020.66	13.27
6927.00	22.03	288.44	6776.90	-992.40	243.38	992.02	4.83
7015.00	25.01	281.18	6857.60	-958.50	252.21	958.10	4.72

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
7104.00	25.44	274.17	6938.13	-920.97	257.25	920.57	3.39
7193.00	29.00	269.65	7017.27	-880.31	258.51	879.91	4.61
7282.00	37.37	274.71	7091.70	-831.73	260.60	831.32	9.91
7371.00	45.81	273.02	7158.20	-772.84	264.50	772.43	9.57
7460.00	59.09	270.44	7212.32	-702.48	266.49	702.06	15.10
7549.00	74.70	270.01	7247.14	-620.87	266.79	620.45	17.54
7638.00	87.34	273.30	7261.01	-533.19	269.37	532.77	14.66
7727.00	91.34	268.83	7262.03	-444.26	271.02	443.83	6.75
7815.00	92.49	266.68	7259.09	-356.38	267.57	355.96	2.76
7904.00	94.01	266.89	7254.05	-267.65	262.59	267.24	1.72
7993.00	91.38	266.16	7249.87	-178.92	257.20	178.51	3.06
8081.00	91.75	265.96	7247.46	-91.15	251.16	90.75	0.48
8170.00	92.46	269.60	7244.19	-2.28	247.72	1.90	4.16
8259.00	91.78	272.47	7240.90	86.63	249.33	-87.02	3.31
8348.00	91.92	273.04	7238.03	175.47	253.60	-175.87	0.66
8437.00	91.01	272.12	7235.76	264.34	257.61	-264.75	1.46
8526.00	91.88	270.79	7233.52	353.28	259.86	-353.69	1.78
8615.00	92.12	270.00	7230.41	442.22	260.47	-442.63	0.92
8704.00	92.59	270.62	7226.76	531.14	260.96	-531.55	0.87
8792.00	91.65	269.01	7223.50	619.08	260.68	-619.49	2.12

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
8882.00	91.55	269.04	7220.99	709.03	259.15	-709.44	0.12
8970.00	92.16	268.03	7218.15	796.96	256.90	-797.37	1.34
9059.00	92.39	268.54	7214.62	885.86	254.24	-886.26	0.63
9148.00	93.45	270.25	7210.09	974.73	253.30	-975.13	2.26
9237.00	91.21	269.09	7206.47	1063.65	252.79	-1064.05	2.83
9325.00	91.21	269.63	7204.62	1151.63	251.80	-1152.02	0.61
9414.00	90.30	269.74	7203.44	1240.62	251.31	-1241.01	1.03
9503.00	89.56	269.10	7203.54	1329.61	250.41	-1330.01	1.10
9592.00	89.53	269.76	7204.25	1418.61	249.53	-1419.00	0.74
9681.00	89.19	269.04	7205.24	1507.60	248.60	-1507.99	0.89
9770.00	90.80	268.07	7205.24	1596.57	246.35	-1596.96	2.12
9858.00	91.61	266.94	7203.39	1684.47	242.52	-1684.85	1.57
9947.00	92.15	267.19	7200.47	1773.31	237.96	-1773.69	0.68
10035.00	92.65	267.41	7196.78	1861.14	233.82	-1861.51	0.62
10124.00	91.57	267.54	7193.50	1950.00	229.90	-1950.36	1.23
10213.00	90.40	268.34	7191.97	2038.93	226.70	-2039.29	1.59
10302.00	91.11	269.53	7190.79	2127.91	225.05	-2128.26	1.56
10391.00	89.13	270.17	7190.61	2216.90	224.82	-2217.26	2.34
10480.00	89.16	270.57	7191.94	2305.89	225.40	-2306.25	0.45
10569.00	89.83	271.75	7192.72	2394.86	227.20	-2395.22	1.53

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft
10658.00	89.53	271.46	7193.22	2483.82	229.70	-2484.19	0.47
10747.00	89.60	271.51	7193.90	2572.79	232.01	-2573.15	0.09
10836.00	90.03	271.66	7194.18	2661.75	234.47	-2662.12	0.52
10925.00	90.30	271.55	7193.92	2750.71	236.96	-2751.08	0.33
11013.00	90.77	270.63	7193.10	2838.68	238.64	-2839.06	1.17
11102.00	89.90	268.99	7192.58	2927.68	238.34	-2928.06	2.10
11191.00	89.83	267.51	7192.79	3016.64	235.62	-3017.01	1.66
11280.00	90.87	267.25	7192.24	3105.55	231.54	-3105.92	1.21
11369.00	89.97	265.55	7191.58	3194.37	225.96	-3194.73	2.16
11458.00	91.68	267.49	7190.30	3283.20	220.56	-3283.55	2.90
11547.00	92.15	268.48	7187.33	3372.10	217.42	-3372.45	1.23
11636.00	92.42	270.41	7183.78	3461.02	216.55	-3461.37	2.19
11724.00	90.67	271.30	7181.40	3548.97	217.86	-3549.32	2.23
11813.00	89.09	269.55	7181.59	3637.96	218.52	-3638.31	2.65
11902.00	89.16	268.98	7182.95	3726.95	217.38	-3727.29	0.64
11991.00	89.50	270.49	7183.99	3815.94	216.97	-3816.28	1.74
12080.00	88.96	270.33	7185.19	3904.93	217.60	-3905.27	0.63
12169.00	88.76	270.02	7186.97	3993.91	217.87	-3994.26	0.41
12258.00	88.99	270.19	7188.71	4082.89	218.03	-4083.24	0.33
12346.00	88.29	269.19	7190.80	4170.86	217.56	-4171.21	1.39

5" = 100' MD