



GAMMA RAY

5" = 100' FEET MD

COMPANY : ANADARKO E&P ONSHORE LLC

WELL : BANDED 16N-27HZ

FIELD : WATTENBERG

COUNTY : WELD

STATE : COLORADO

COUNTRY : U.S.A.

UWI : 05-123-39304

COMPANY : ANADARKO E&P ONSHORE LLC

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WELL LOCATION

LAT:40°7'2.096"N LONG:104°52'14.358"W
N:1286182.29 ft E:3176008.58 ft

SEC:22

TWP:2N

RANGE:67W

OTHER SERVICES

DIRECTIONAL

ROP

DEPTH REF. : RKB

REF. HEIGHT : 25.000 ft

RKB to Ground Level

GROUND LEVEL : 4977.000 ft

G.L. to MEAN SEA LEVEL

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
12.25	0	1771	0-10	0	6810
8.75	1771	8018	10-90	6810	7887
6.125	8018	13255	90-92	7887	13255

CASING RECORD

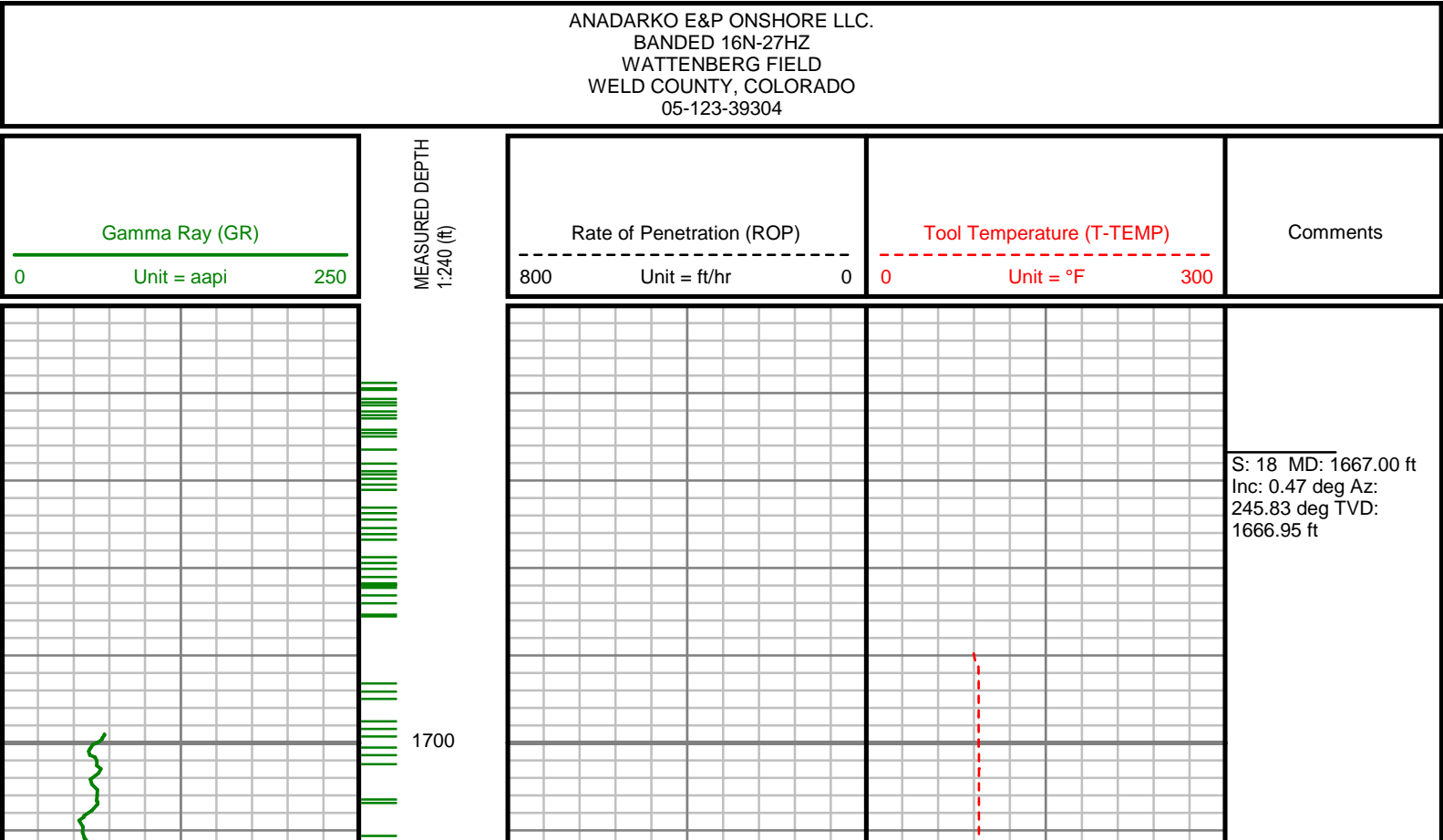
CASING SIZE in	FROM ft	TO ft
9.625	0	1771
7	0	7887
DRILLING CO. : H&P		
RIG : 311		
LWD UNIT NO. : DISTRICT : CASPER		
SPUD DATE : 06/23/2014		
LWD START DATE : 8/17/2014 DEPTH : 1771 ft		
LWD END DATE : 08/28/2014 DEPTH : 13255 ft		
TOTAL DEPTH : 13255 ft		

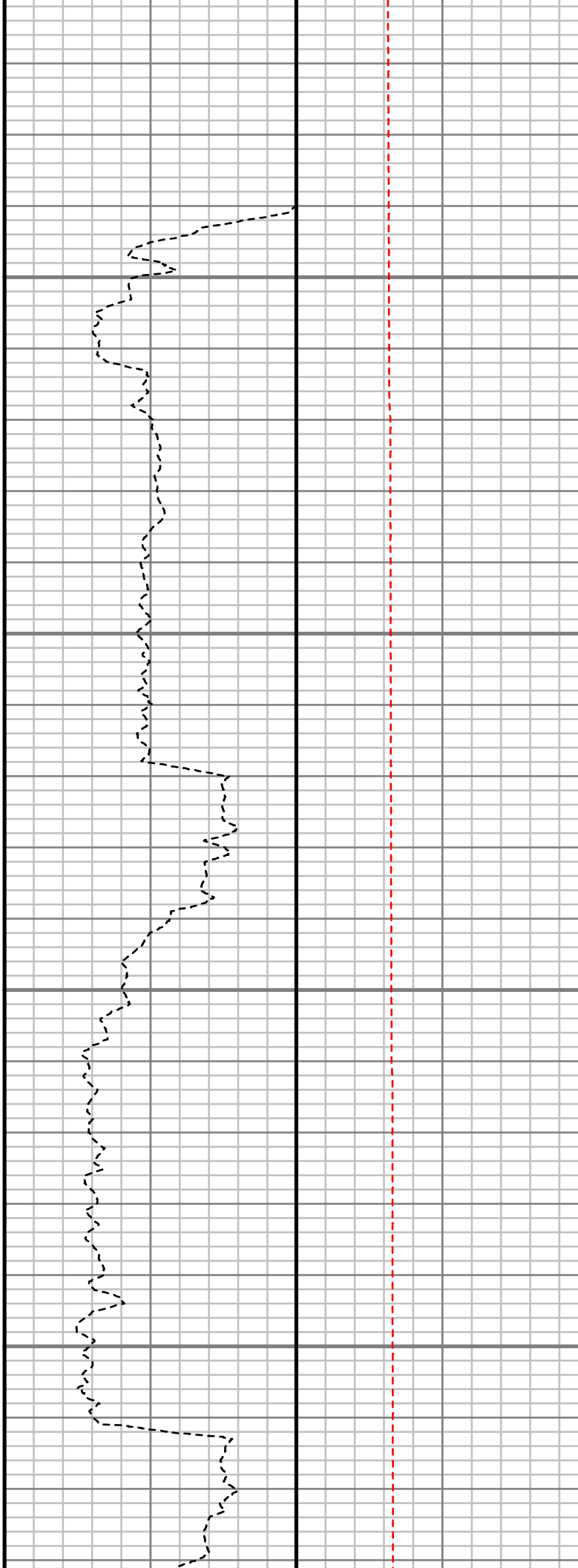
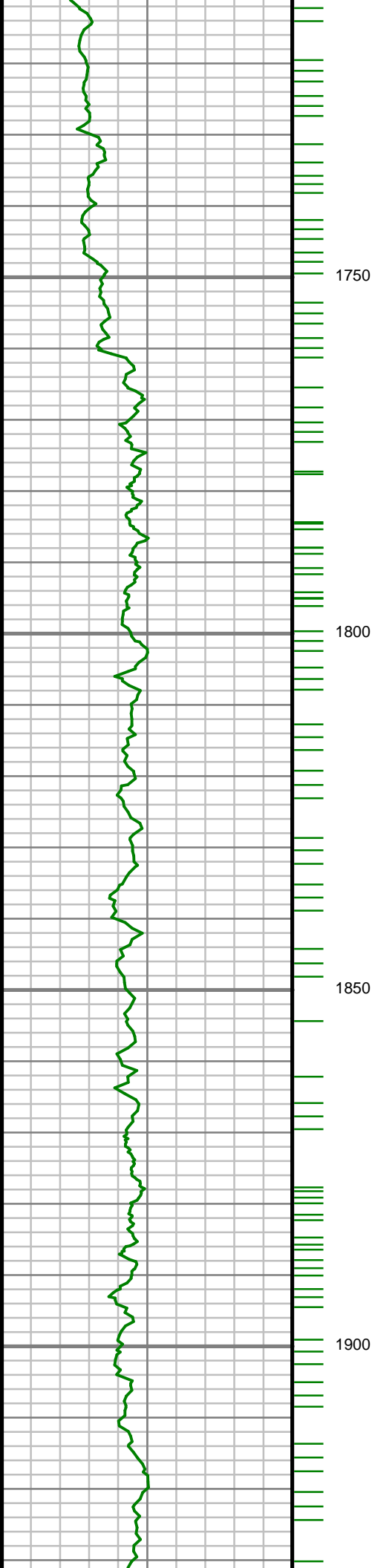
Run Data

RUN NUMBER	1	2
START DATE	08/17/2014	8/22/2014
START TIME	1000	0500
END DATE	08/22/2014	8/26/2014
END TIME	0500	1800
DEPTH IN (ft)	1910	7937
DEPTH OUT (ft)	7937	13255
LOG TOP (ft)	1858	7887
LOG BOTTOM (ft)	7887	13137
HOLE SIZE (in)	8.75	6.125
MUD DATA @ (ft)	WATER-BASED	WATER-BASED
MUD TYPE	1771	13255
DENSITY (lb / gal)	8.4	9.3
VISCOSITY (s / qt)	26	41
pH	8.0	9.4
FLUID LOSS (cm3 / 30)	-	-
SALINITY (ppm)	2300	2100
Rm (ohmm @ deg F)	-	-
Rmf (ohmm @ deg F)	-	-
MAX TEMP (deg F)	160	240
Rm @ MAX TEMP (ohmm)	-	-
LWD ENGINEER #1	M. SHARKER	M. SHARKER
LWD ENGINEER #2	T. RELLERGERT	T. RELLERGERT
LWD ENGINEER #3	-	-
LOG WITNESS #1	S. SADLE	S. SADLE
LOG WITNESS #2	-	-

Remarks
ANADARKO E&P ONSHORE LLC PRODUCTION AFE# 2088710
SCIENTIFIC DRILLING INTERNATIONAL JOB# 187997
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 = 128-169 / CONT = 477 / MWD EYE =163 / GAMMA RAY =1101
BIT TO SENSOR OFFSETS: SURVEY = 52.30 FT. / GAMMA RAY = 43.05 FT.
RUN # 2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-139 / CONT = 590 / MWD EYE =826 / GAMMA RAY =1031
BIT TO SENSOR OFFSETS: SURVEY = 59.08 FT. / GAMMA RAY = 49.83 FT.
MNEMONICS LIST:
GR = GAMMA RAY
ROP = RATE OF PENETRATION
T-TEMP = TOOL TEMPERATURE

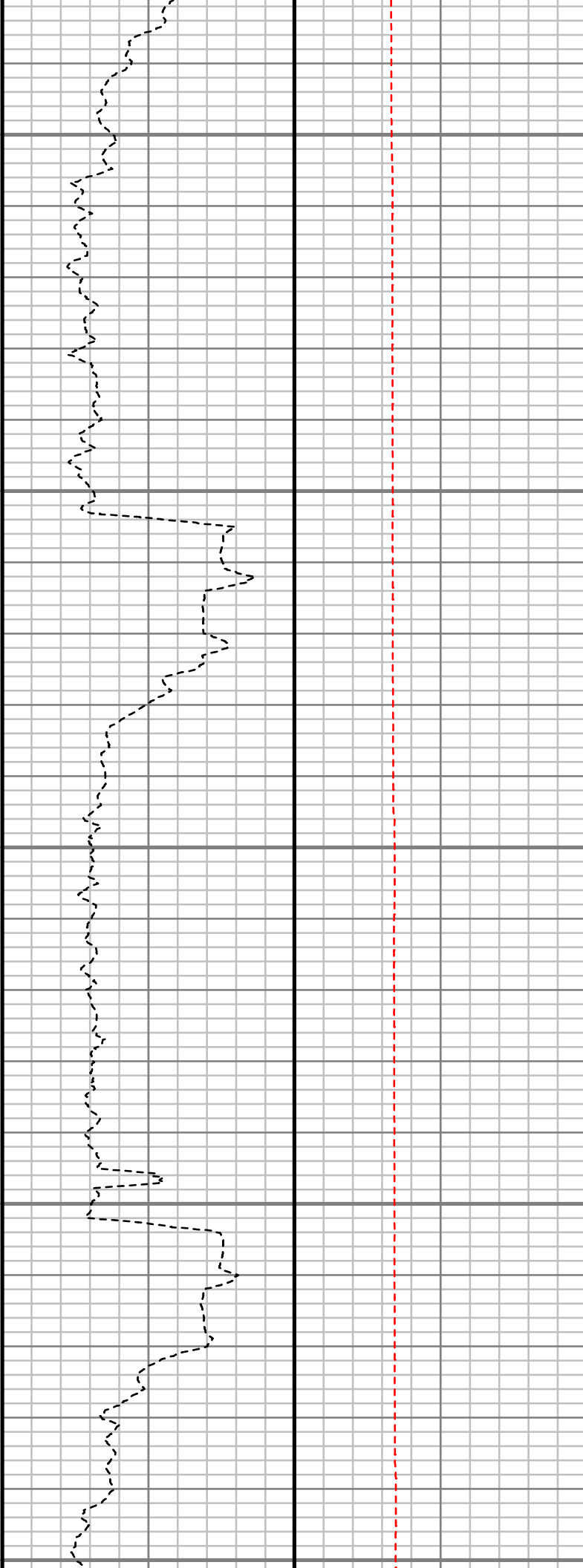
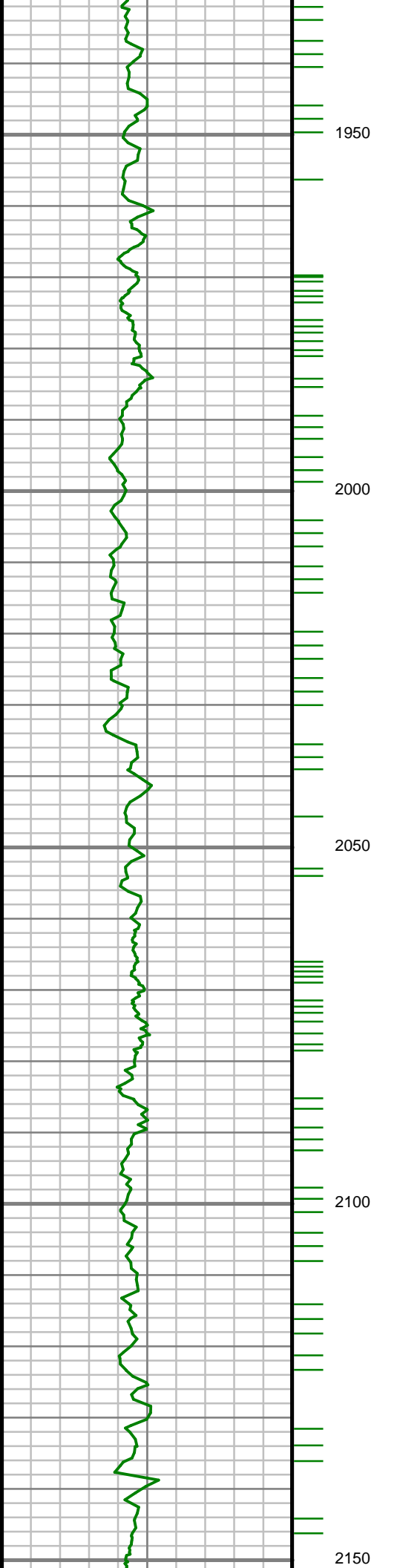
All interpretations are opinions based on inferences from electrical or other measurements and we cannot, and do not guarantee the accuracy or correctness of any interpretations, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs,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





S: 19 MD: 1767.00 ft
Inc: 0.85 deg Az:
294.54 deg TVD:
1766.94 ft

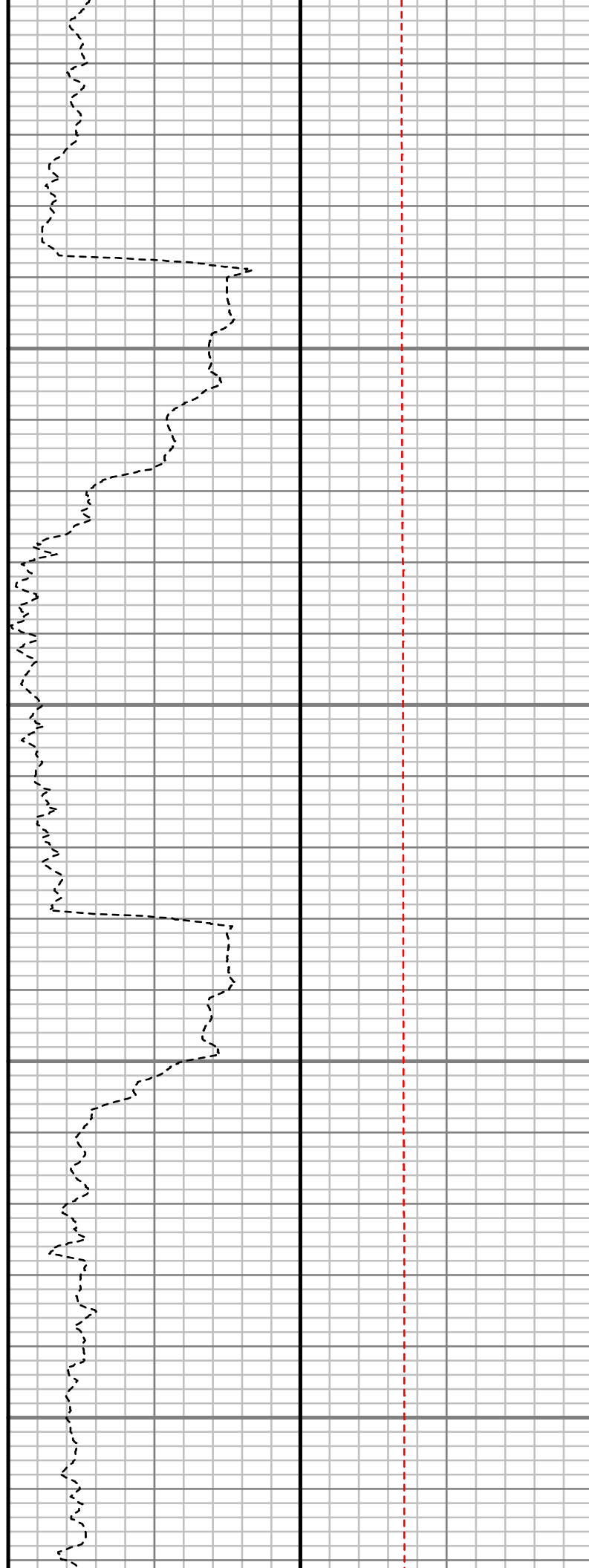
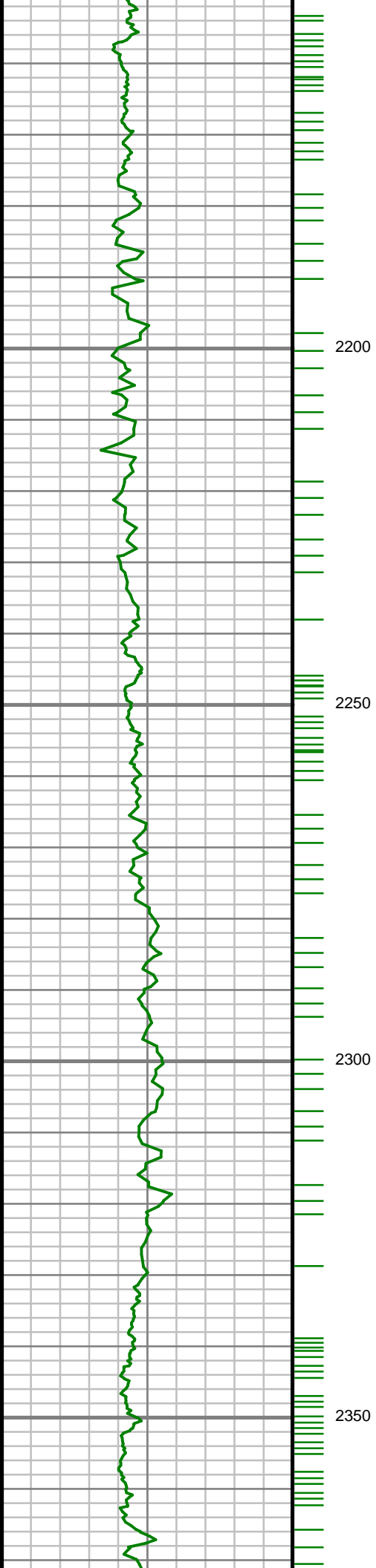
S: 20 MD: 1858.00 ft
Inc: 3.24 deg Az:
333.90 deg TVD:
1857.88 ft



S: 21 MD: 1949.00 ft
Inc: 4.58 deg Az:
348.25 deg TVD:
1948.67 ft

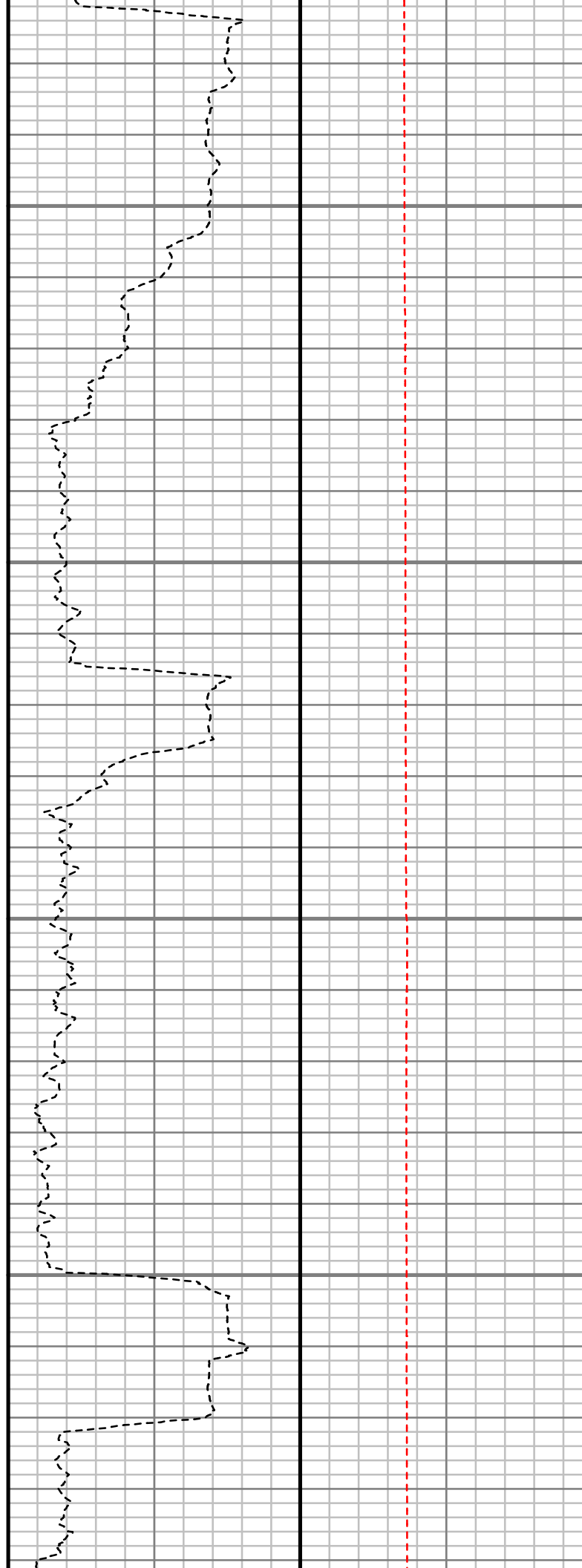
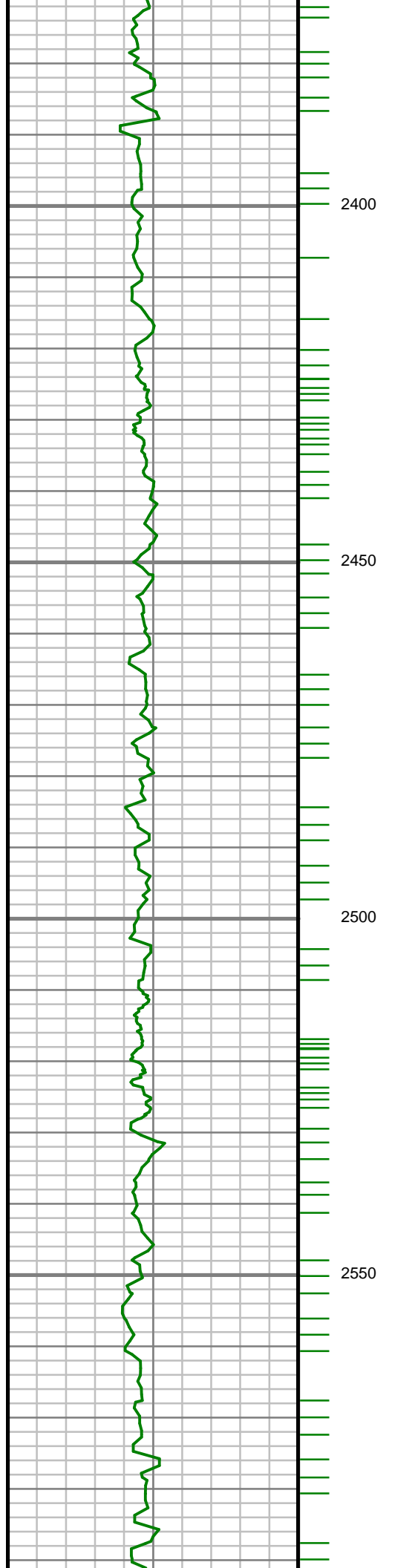
S: 22 MD: 2041.00 ft
Inc: 6.88 deg Az: 1.52
deg TVD: 2040.21 ft

S: 23 MD: 2132.00 ft
Inc: 8.91 deg Az:
359.28 deg TVD:
2130.34 ft



S: 24 MD: 2224.00 ft
Inc: 10.71 deg Az:
357.95 deg TVD:
2220.99 ft

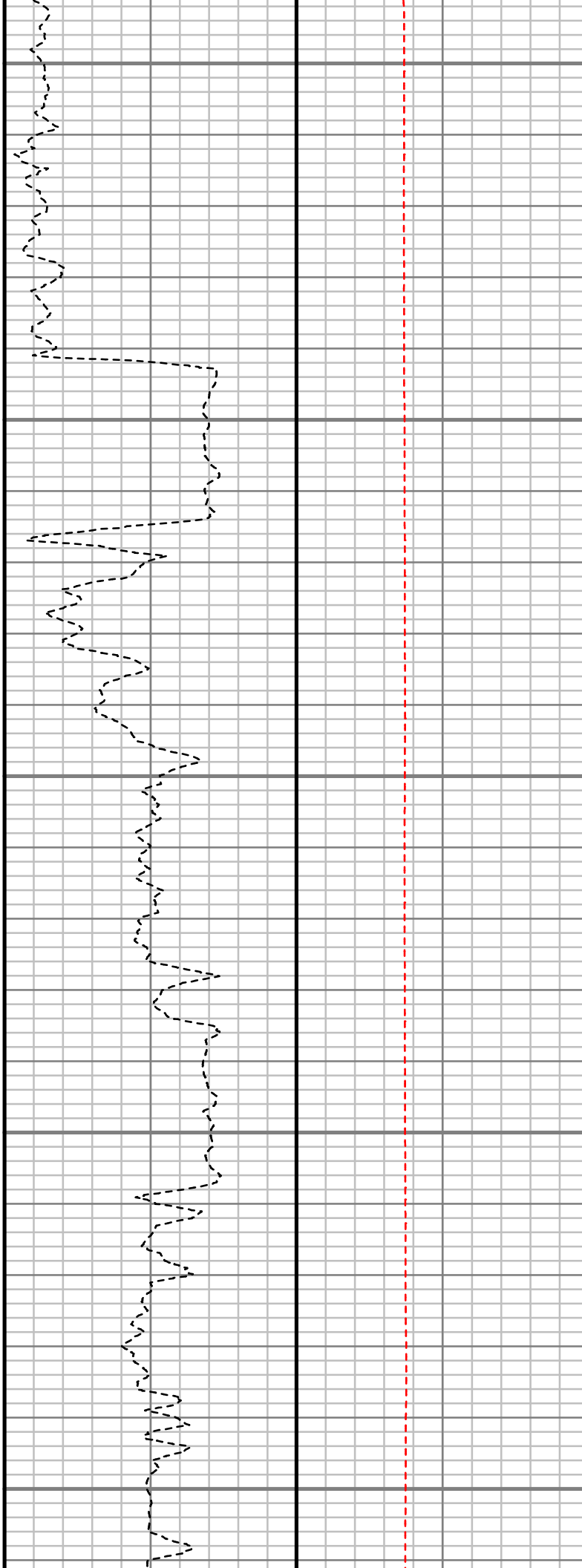
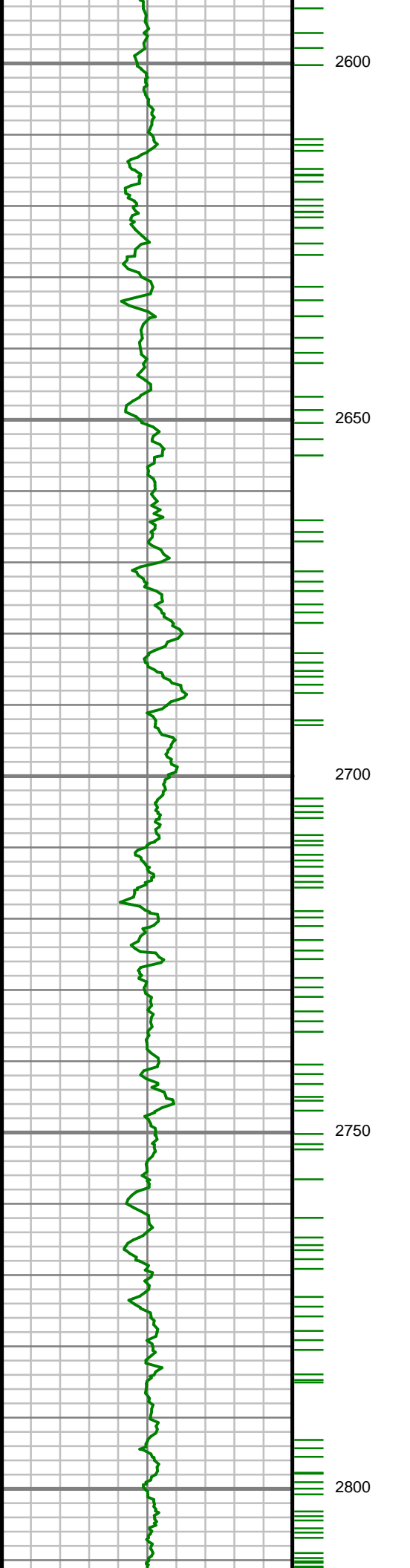
S: 25 MD: 2315.00 ft
Inc: 11.90 deg Az:
356.43 deg TVD:
2310.22 ft



S: 26 MD: 2407.00 ft
Inc: 14.12 deg Az:
352.28 deg TVD:
2399.86 ft

S: 27 MD: 2498.00 ft
Inc: 14.59 deg Az:
350.98 deg TVD:
2488.02 ft

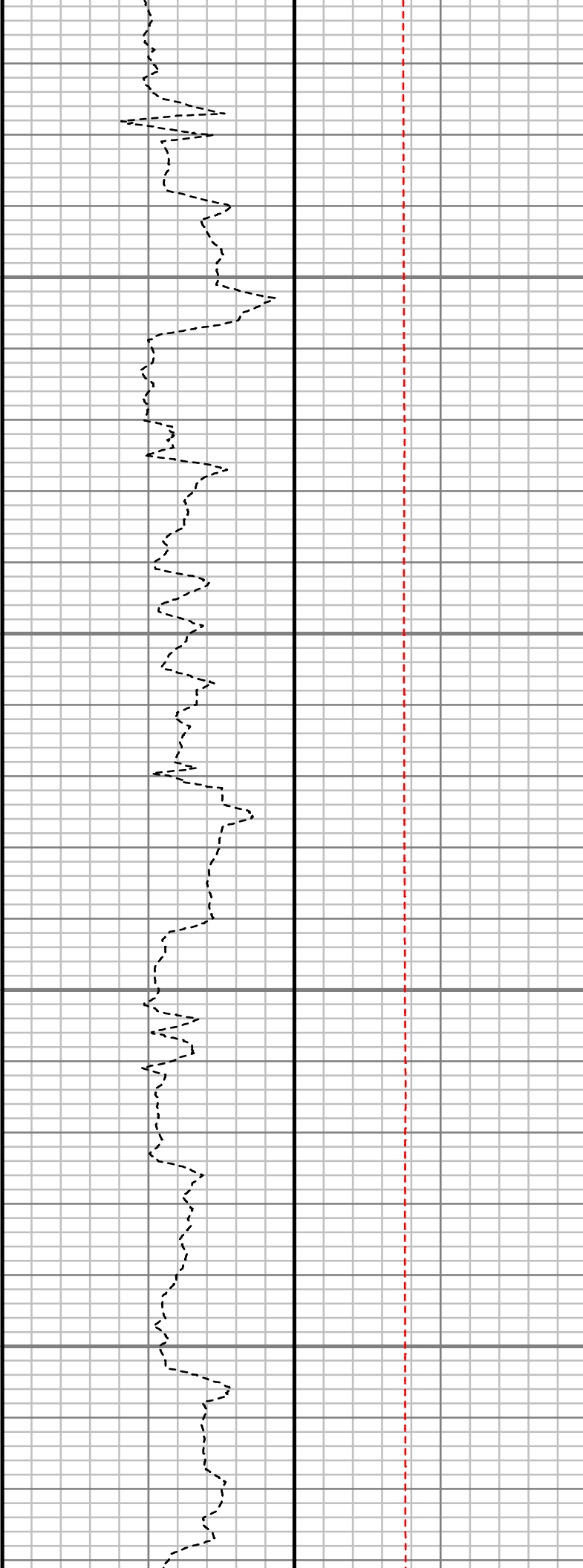
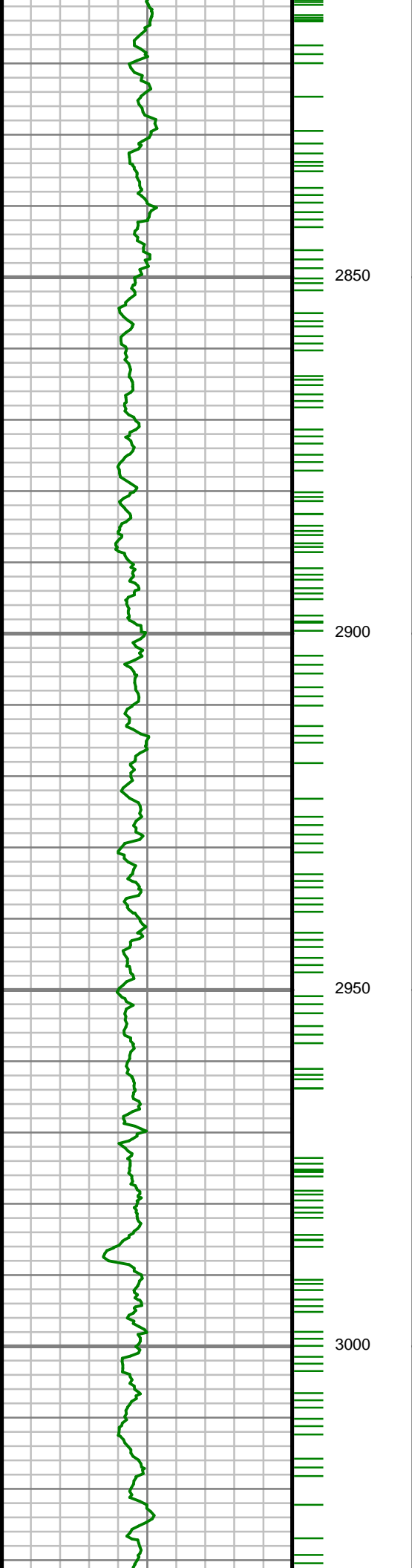
S: 28 MD: 2500.00 ft



S: 28 MD: 2590.00 ft
Inc: 15.05 deg Az:
349.07 deg TVD:
2576.96 ft

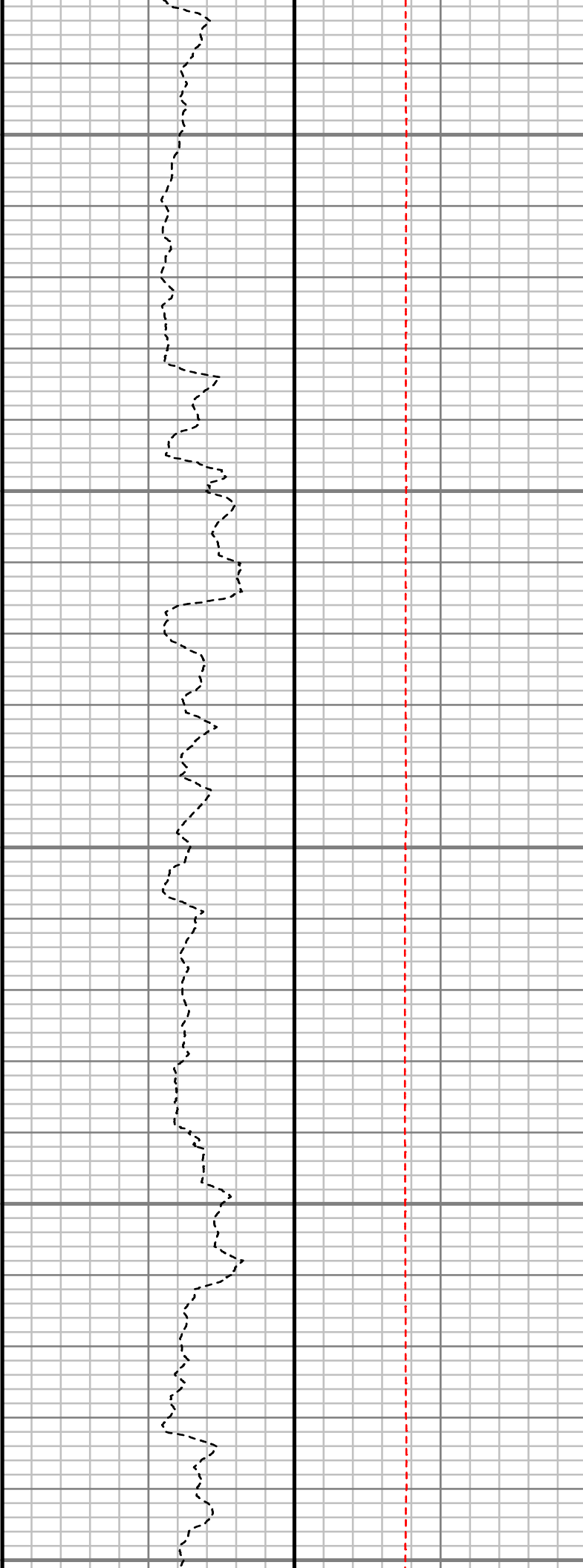
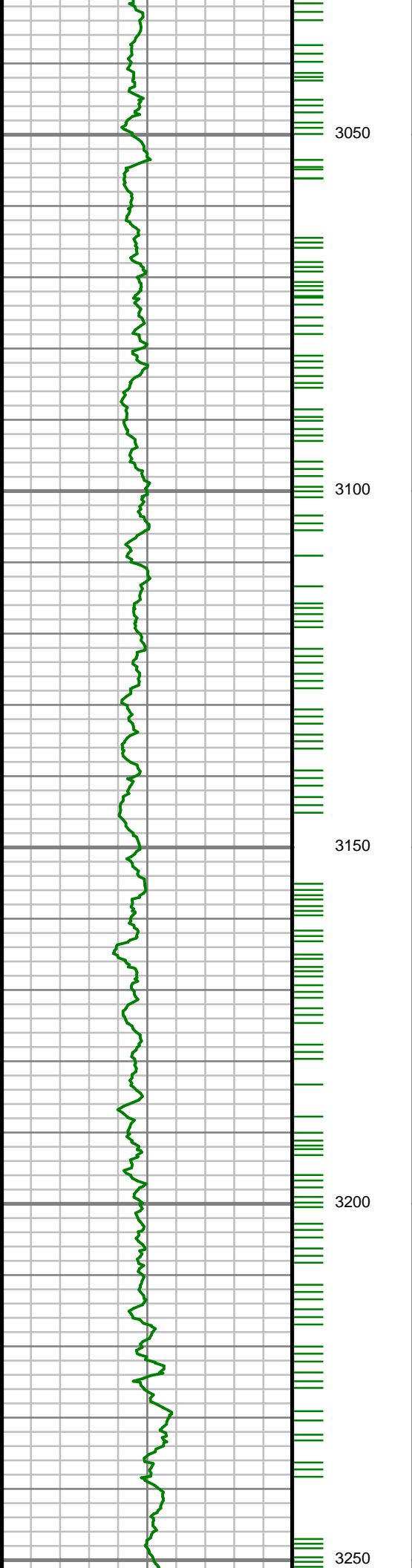
S: 29 MD: 2681.00 ft
Inc: 14.60 deg Az:
350.73 deg TVD:
2664.93 ft

S: 30 MD: 2772.00 ft
Inc: 12.26 deg Az:
350.72 deg TVD:
2753.43 ft



S: 31 MD: 2863.00 ft
Inc: 12.76 deg Az:
357.29 deg TVD:
2842.28 ft

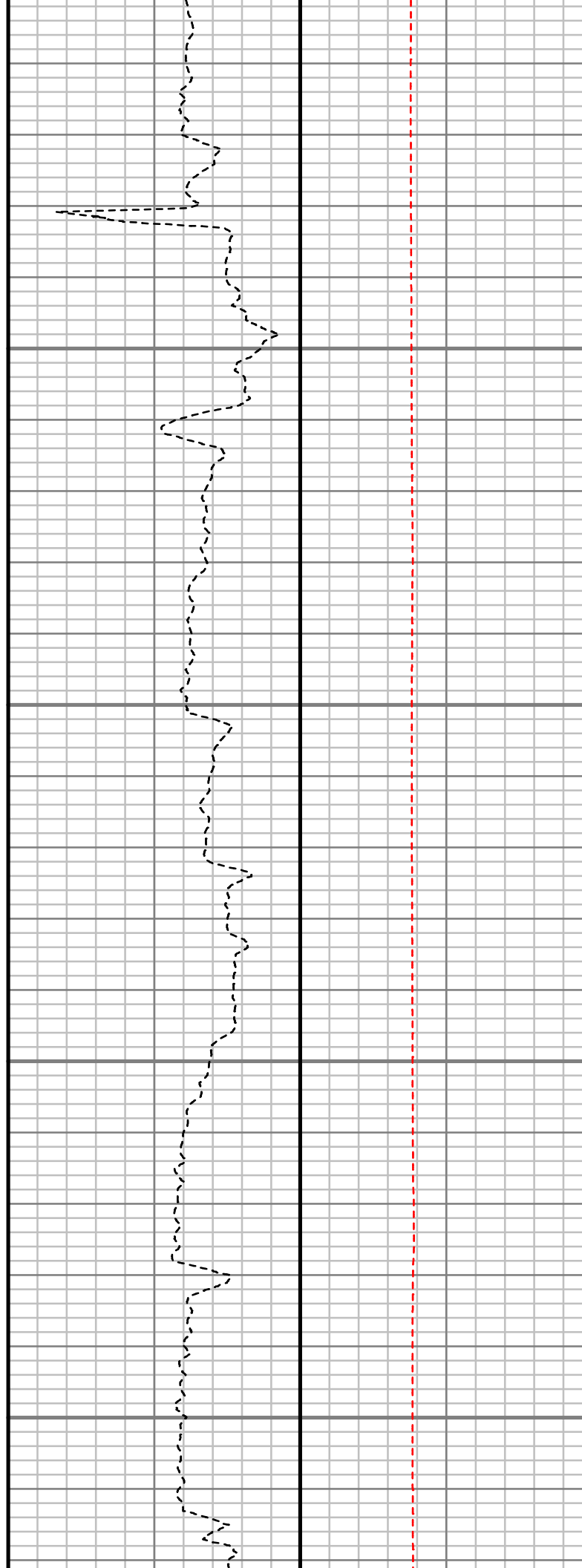
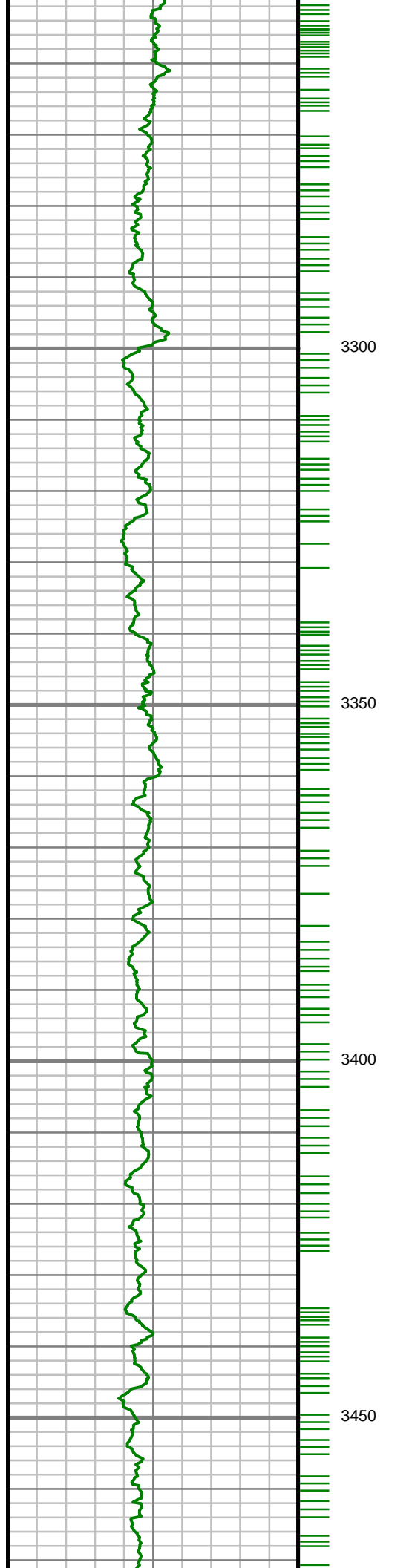
S: 32 MD: 2955.00 ft
Inc: 14.86 deg Az:
359.95 deg TVD:
2931.61 ft



S: 33 MD: 3046.00 ft
Inc: 15.07 deg Az: 1.82
deg TVD: 3019.53 ft

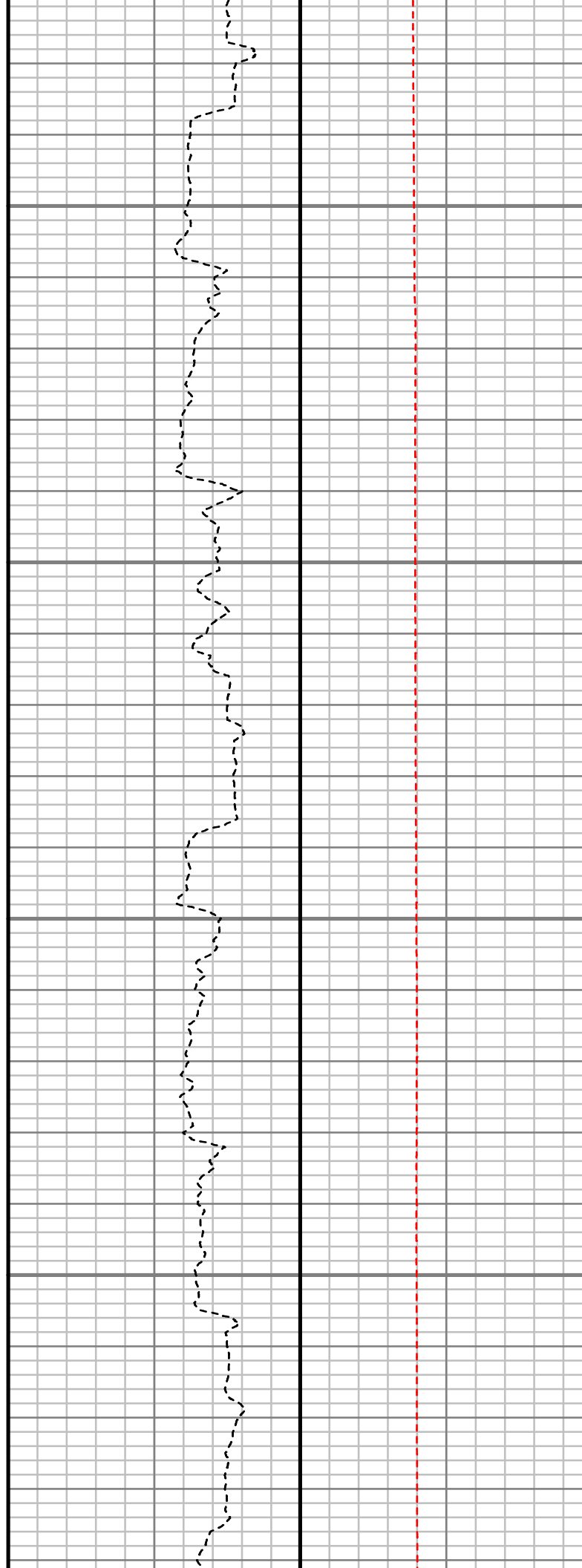
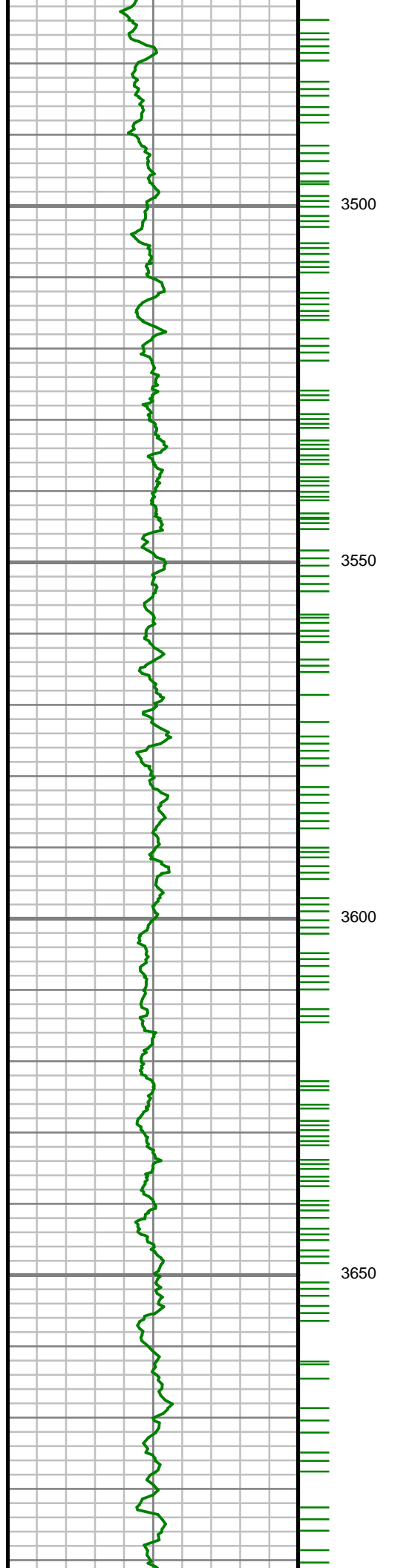
S: 34 MD: 3137.00 ft
Inc: 13.82 deg Az: 1.85
deg TVD: 3107.65 ft

S: 35 MD: 3229.00 ft
Inc: 14.18 deg Az:
358.86 deg TVD:
3196.92 ft



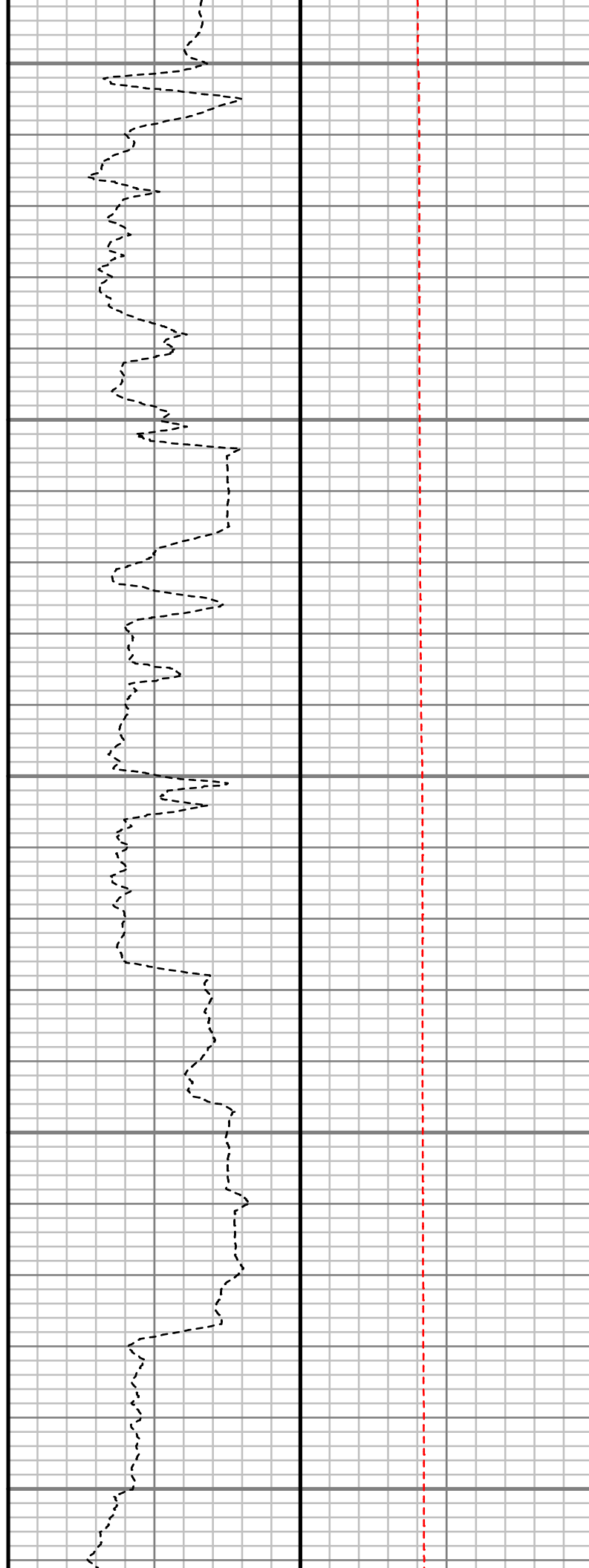
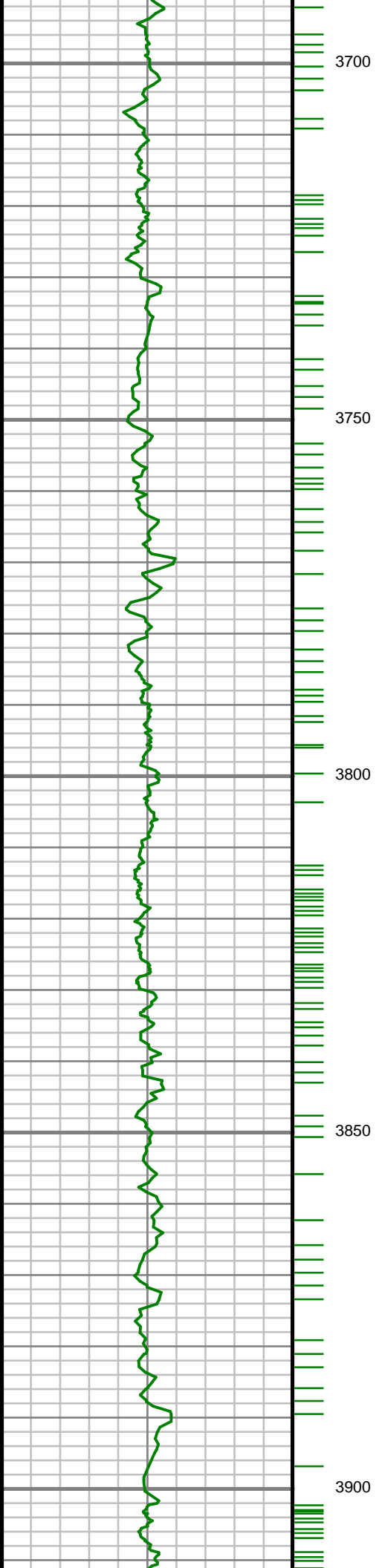
S: 36 MD: 3321.00 ft
Inc: 14.33 deg Az:
352.81 deg TVD:
3286.09 ft

S: 37 MD: 3415.00 ft
Inc: 15.08 deg Az:
355.17 deg TVD:
3377.01 ft



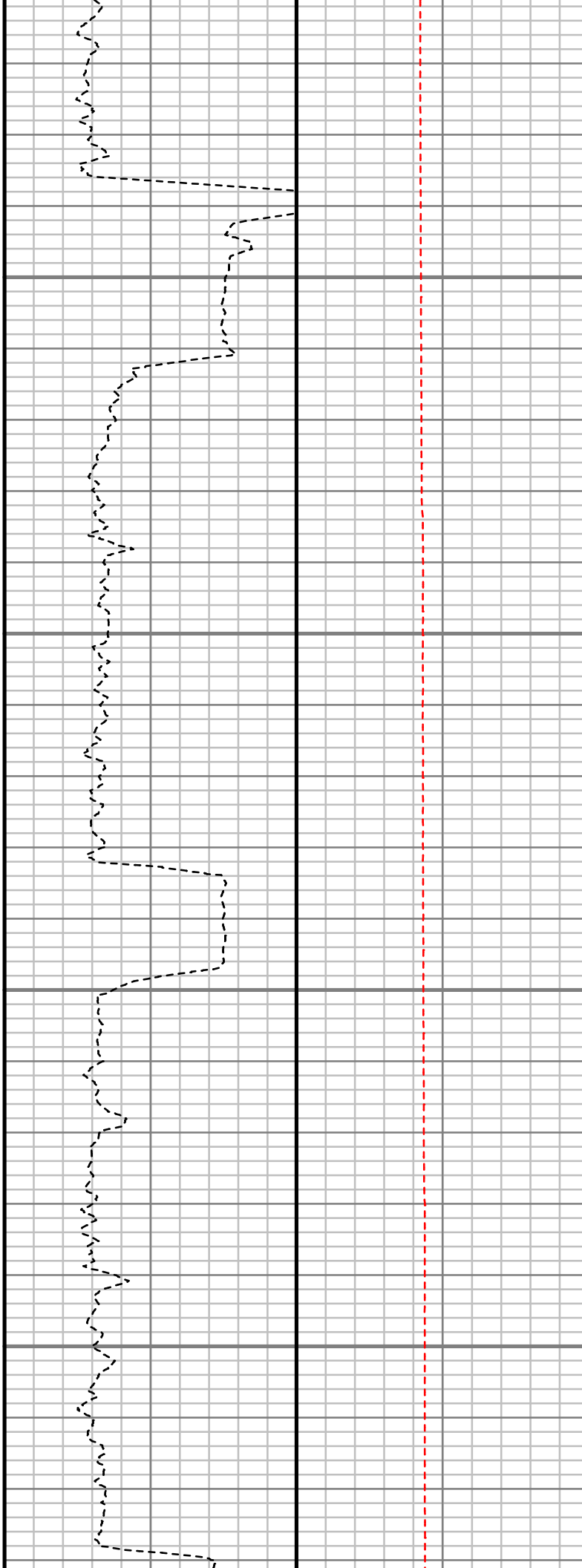
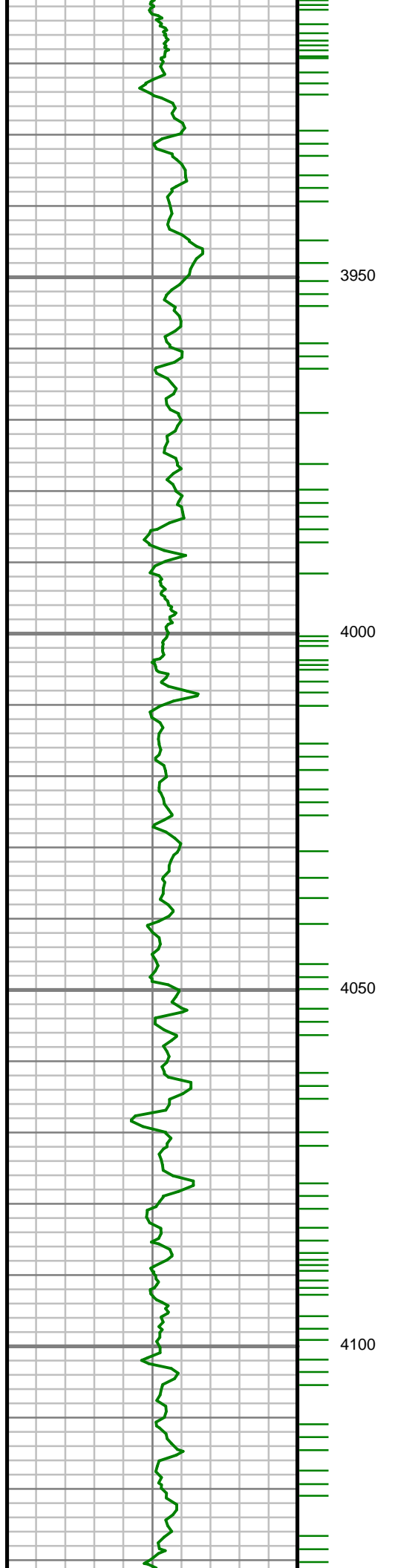
S: 38 MD: 3510.00 ft
Inc: 13.15 deg Az:
358.23 deg TVD:
3469.14 ft

S: 39 MD: 3604.00 ft
Inc: 13.48 deg Az:
357.29 deg TVD:
3560.61 ft

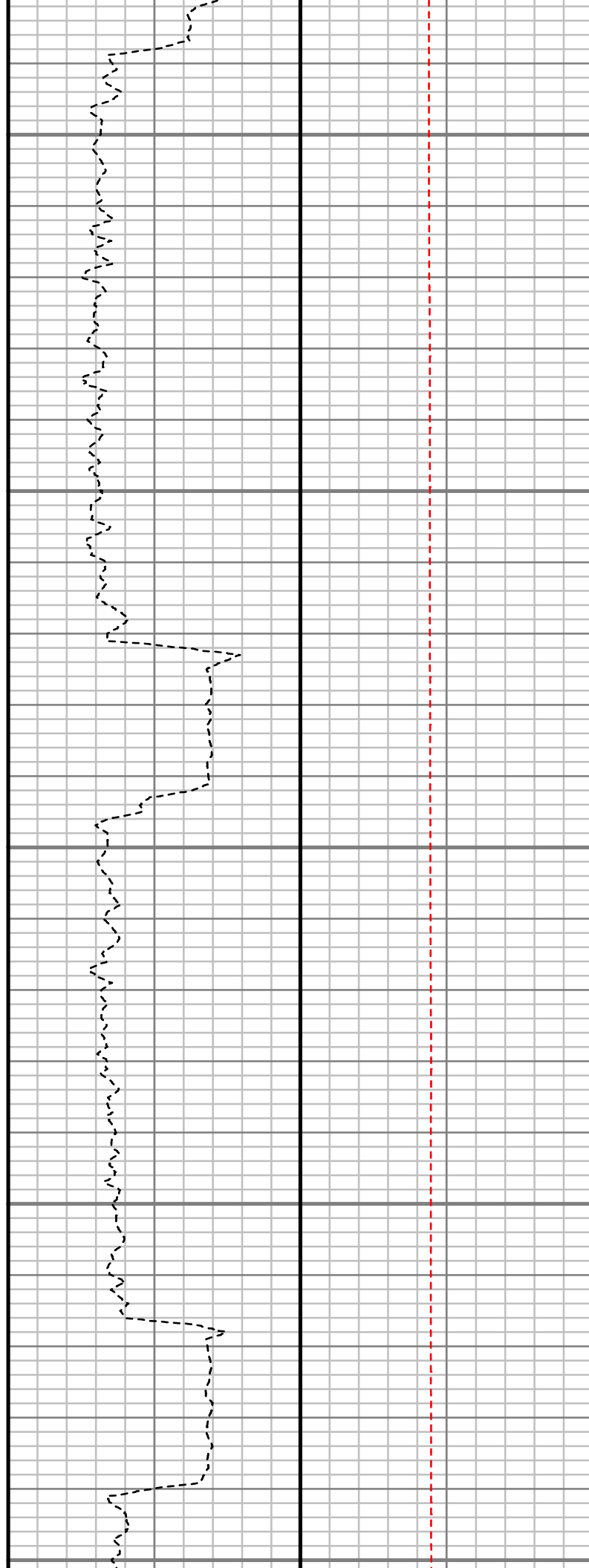
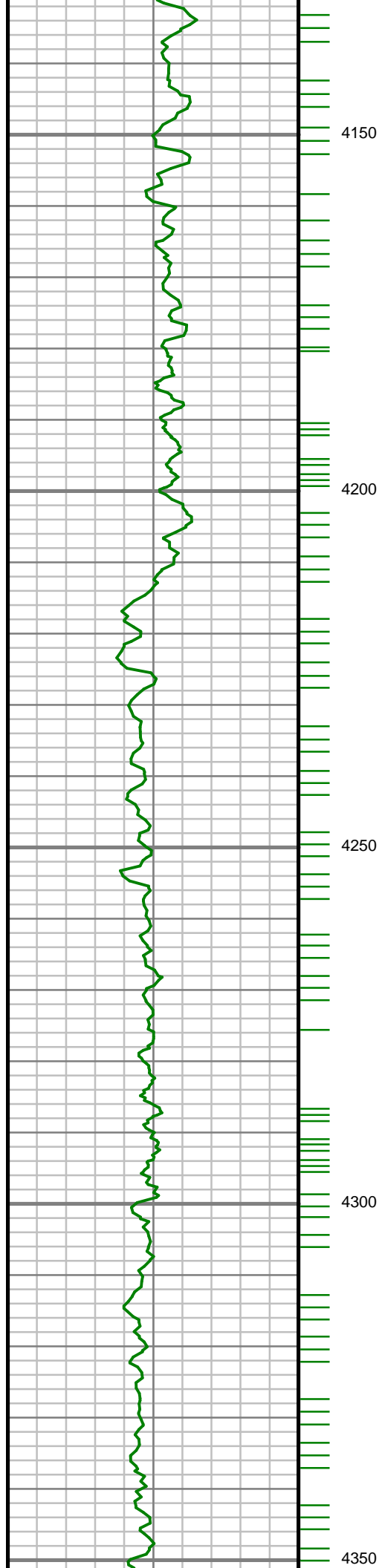


S: 40 MD: 3793.00 ft
Inc: 12.46 deg Az:
351.92 deg TVD:
3744.80 ft

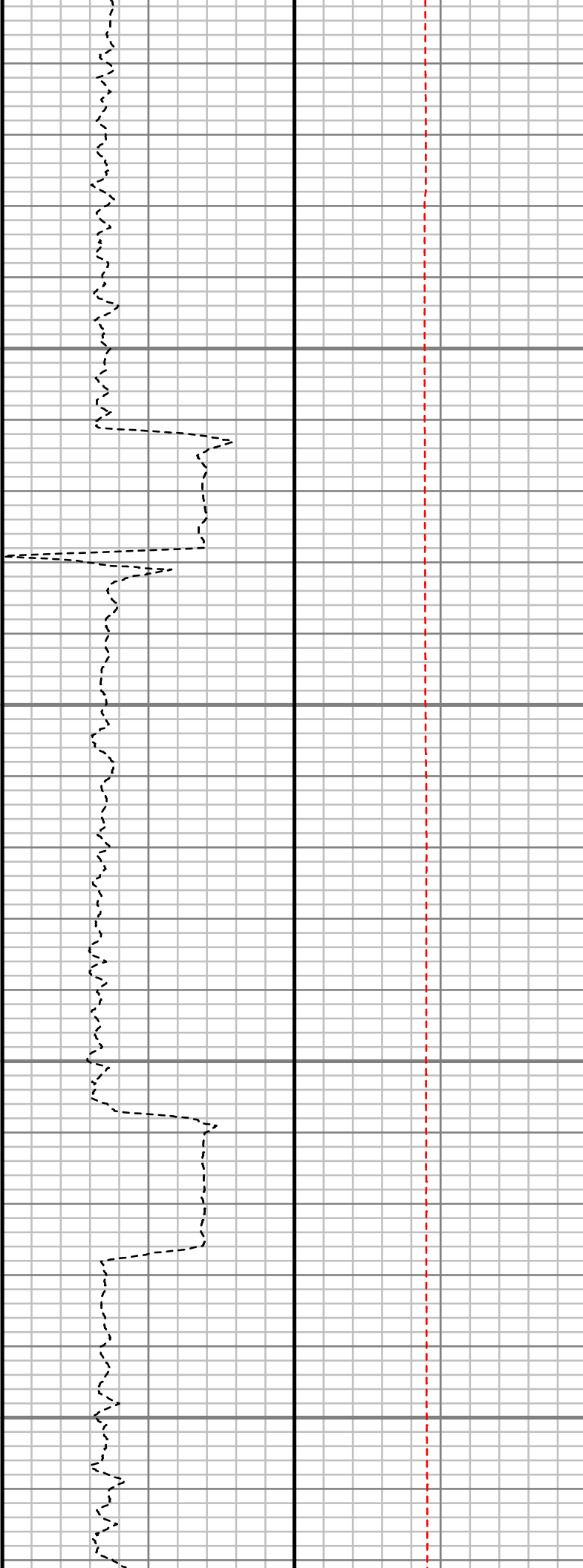
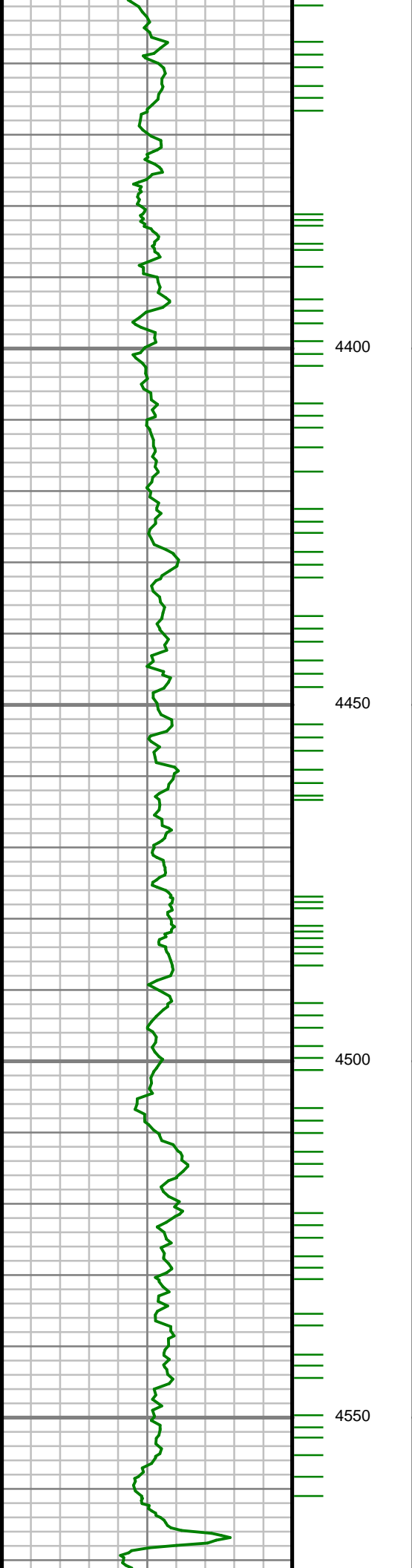
S: 41 MD: 3887.00 ft
Inc: 11.61 deg Az:
357.83 deg TVD:
3836.74 ft



S: 42 MD: 3981.00 ft
Inc: 11.69 deg Az:
359.92 deg TVD:
3928.80 ft

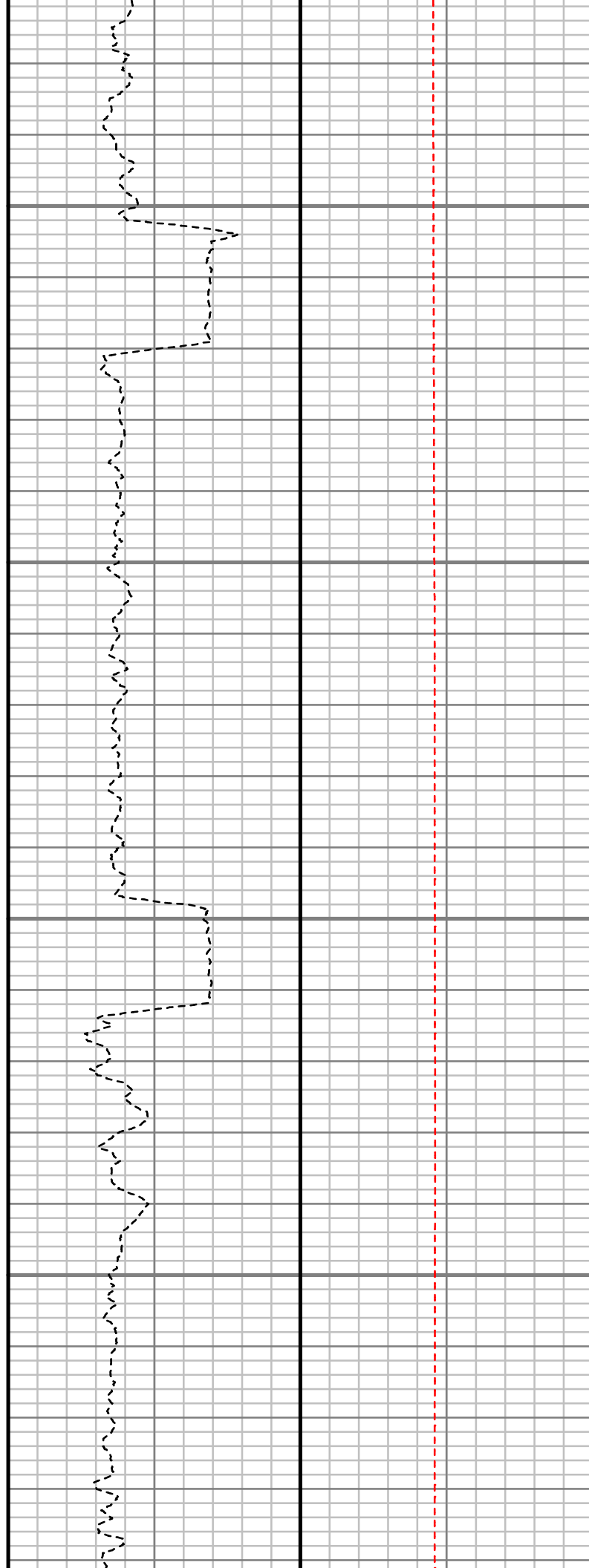
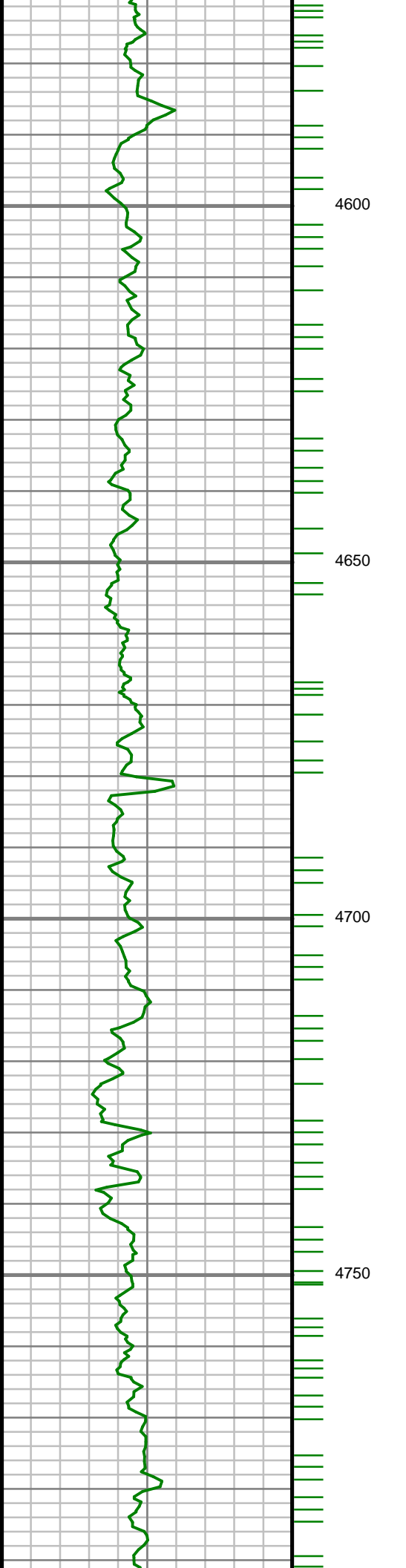


S: 43 MD: 4170.00 ft
Inc: 6.55 deg Az:
349.96 deg TVD:
4115.36 ft

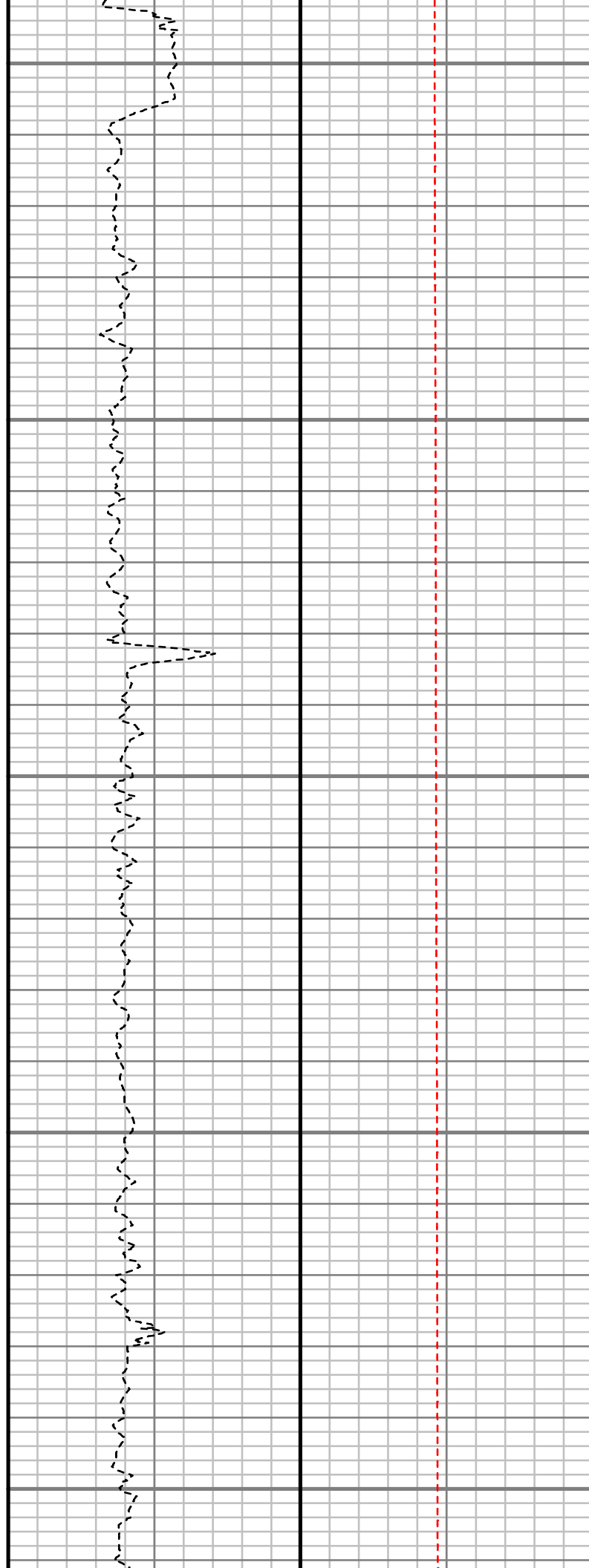
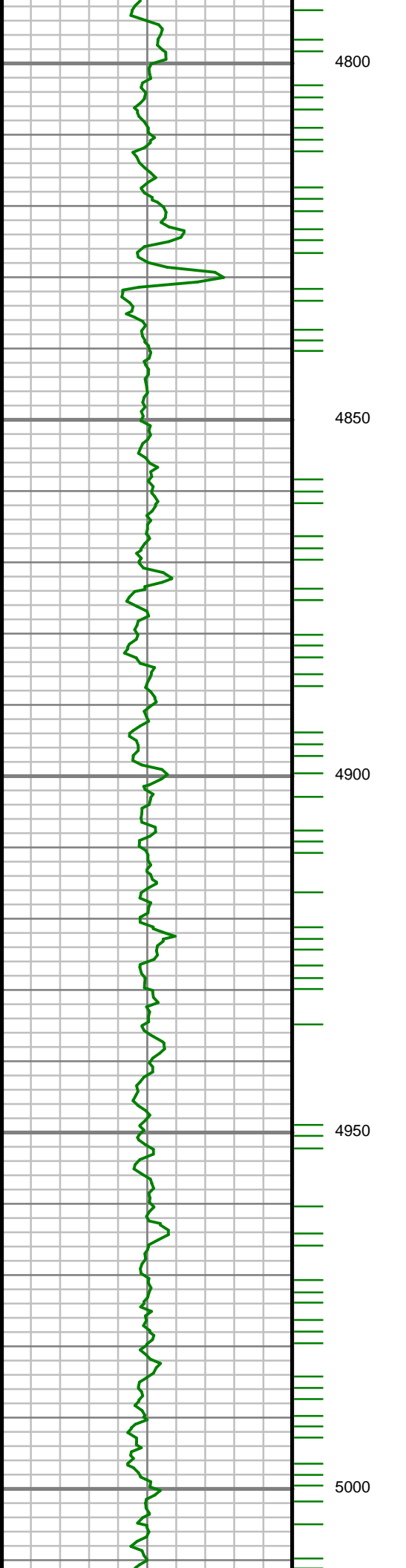


S: 44 MD: 4359.00 ft
Inc: 4.53 deg Az:
343.24 deg TVD:
4303.47 ft

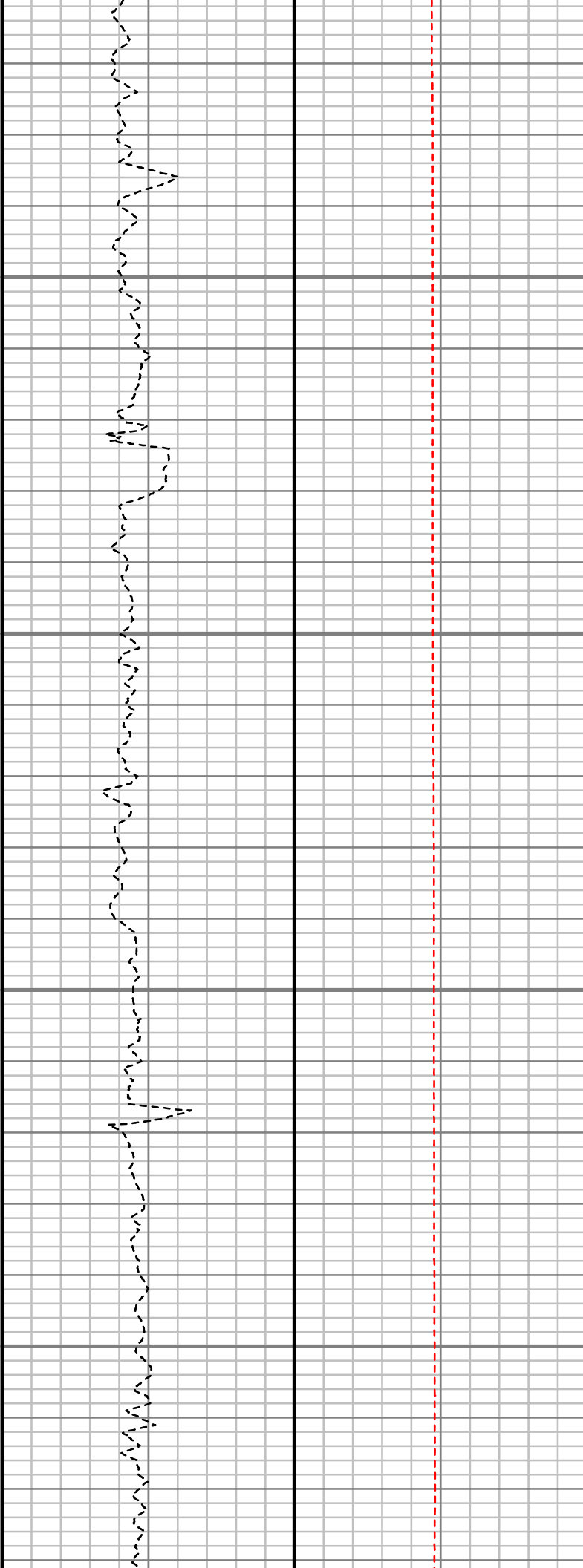
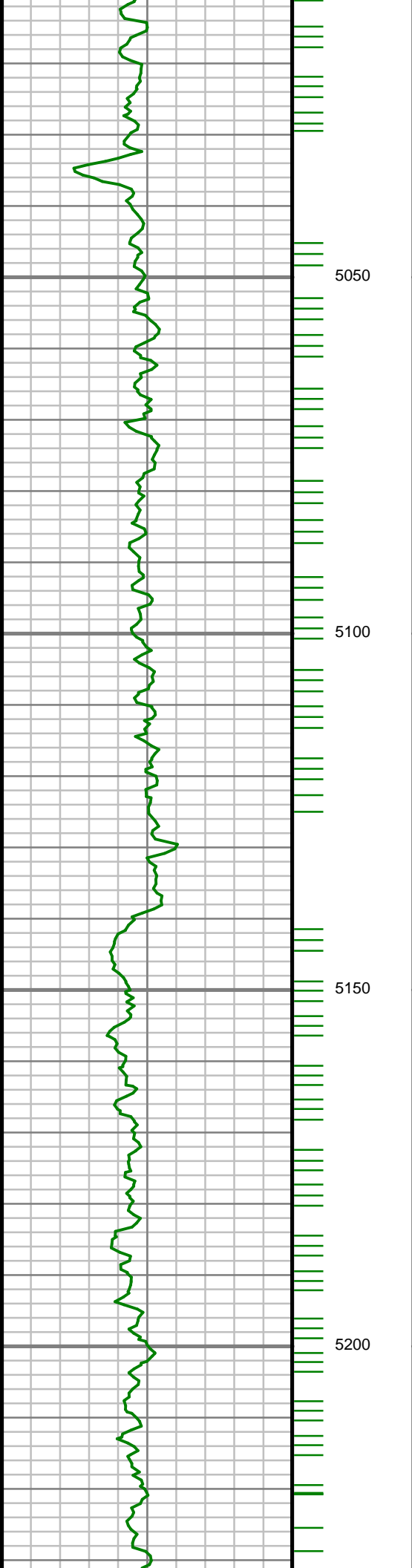
S: 45 MD: 4453.00 ft
Inc: 4.08 deg Az:
342.18 deg TVD:
4397.20 ft



S: 46 MD: 4736.00 ft
Inc: 2.54 deg Az:
326.48 deg TVD:
4679.73 ft



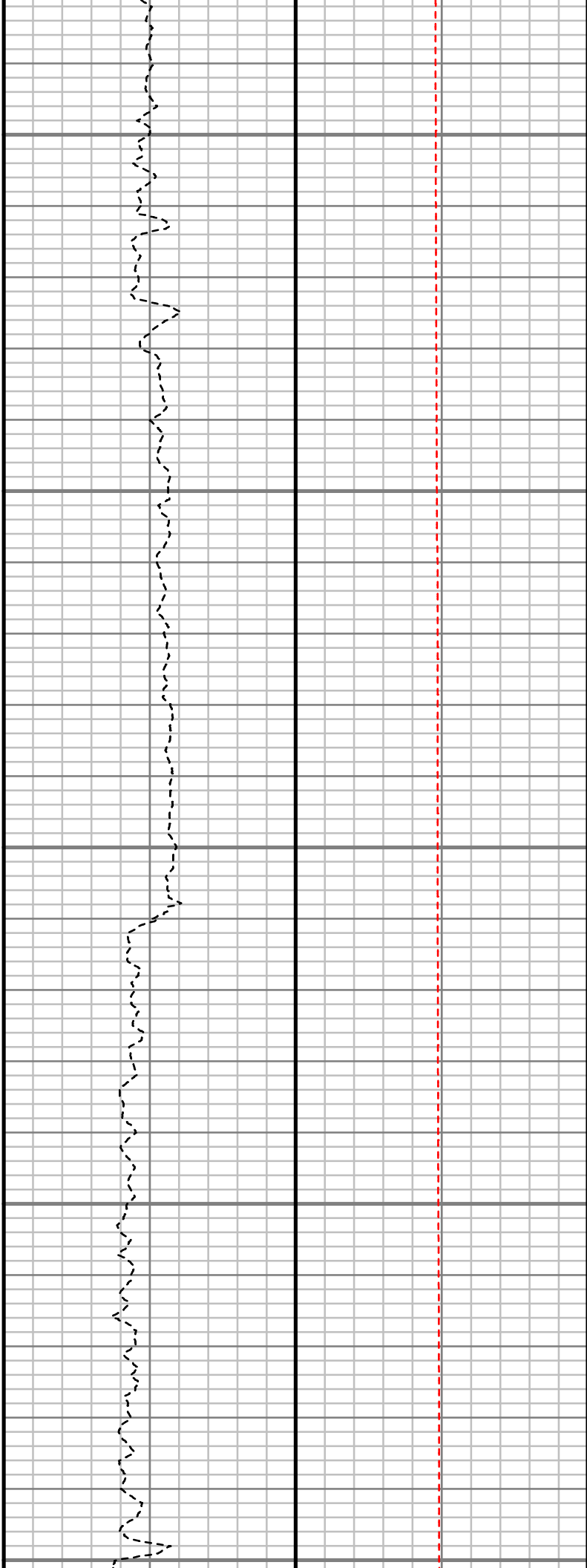
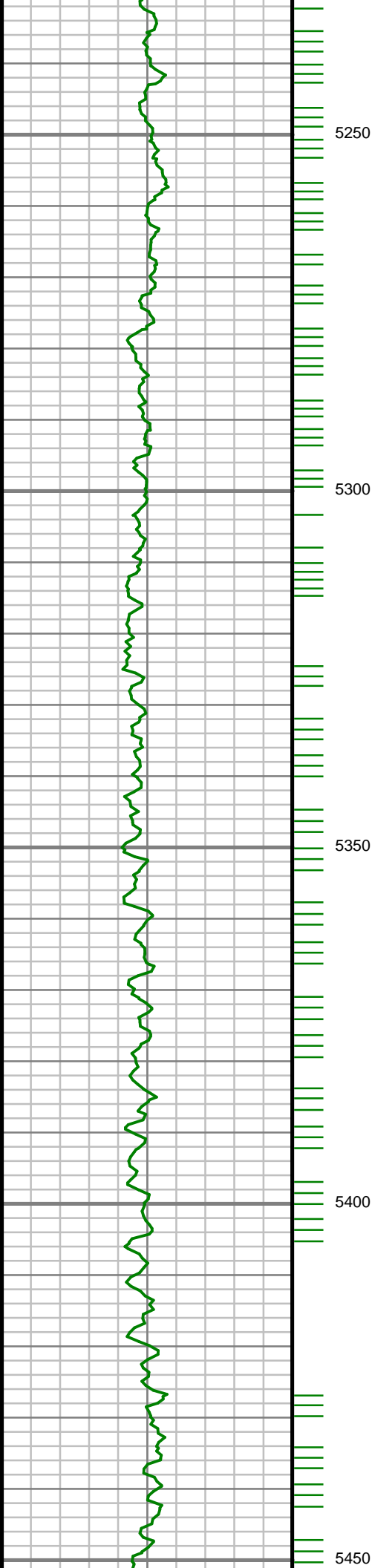
S: 47 MD: 4830.00 ft
Inc: 2.33 deg Az:
320.84 deg TVD:
4773.64 ft

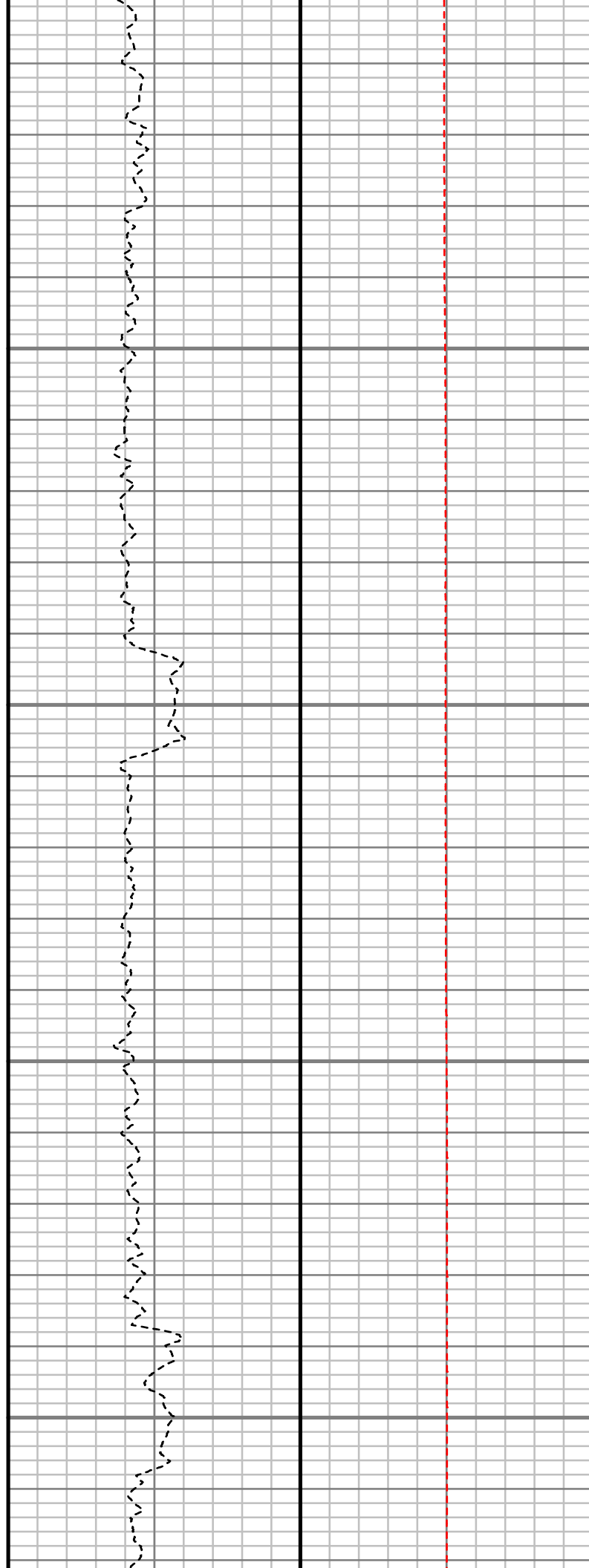
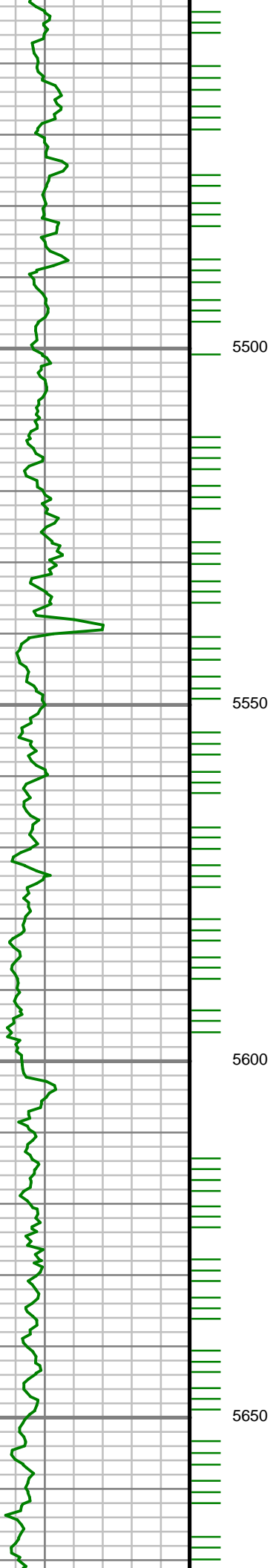


S: 48 MD: 5019.00 ft
Inc: 1.25 deg Az:
298.09 deg TVD:
4962.55 ft

S: 49 MD: 5113.00 ft
Inc: 0.92 deg Az:
274.97 deg TVD:
5056.53 ft

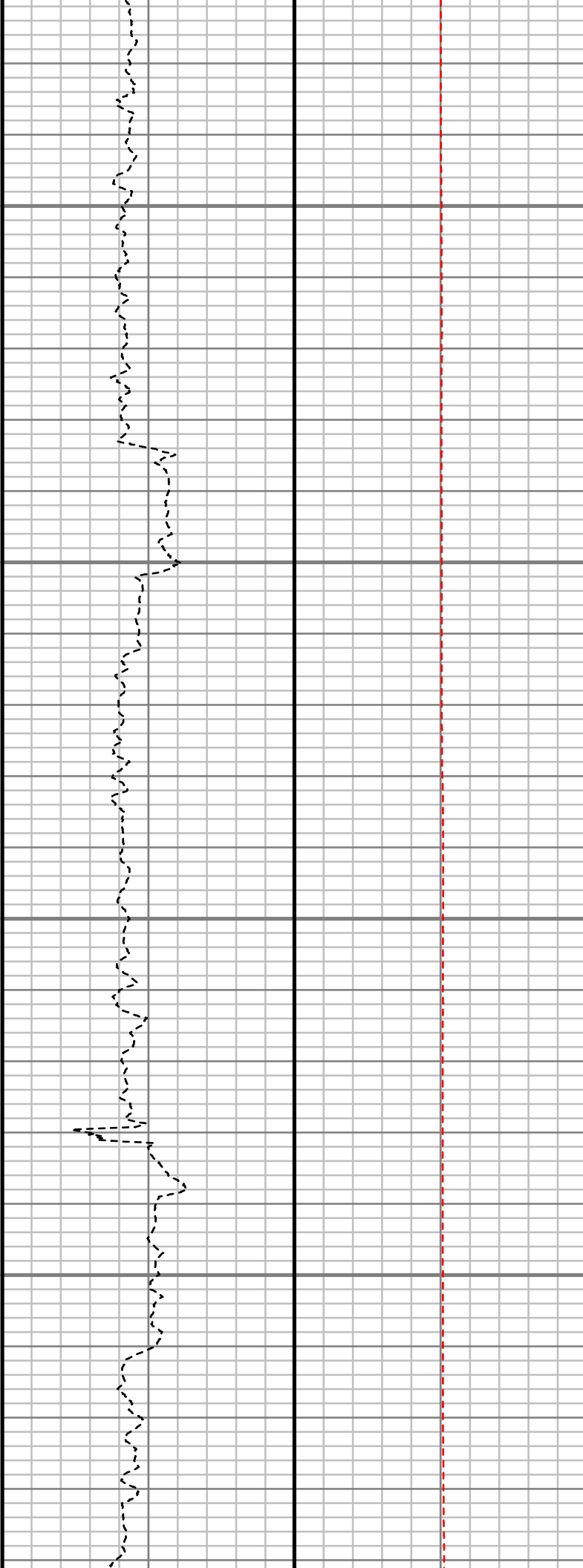
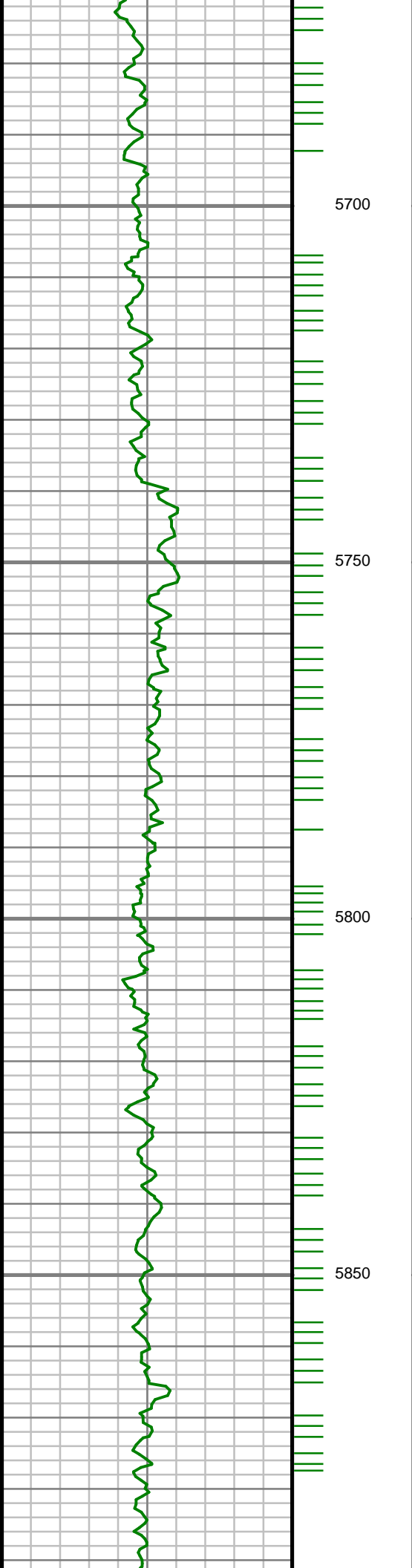
S: 50 MD: 5207.00 ft
Inc: 0.89 deg Az:
292.36 deg TVD:
5150.52 ft





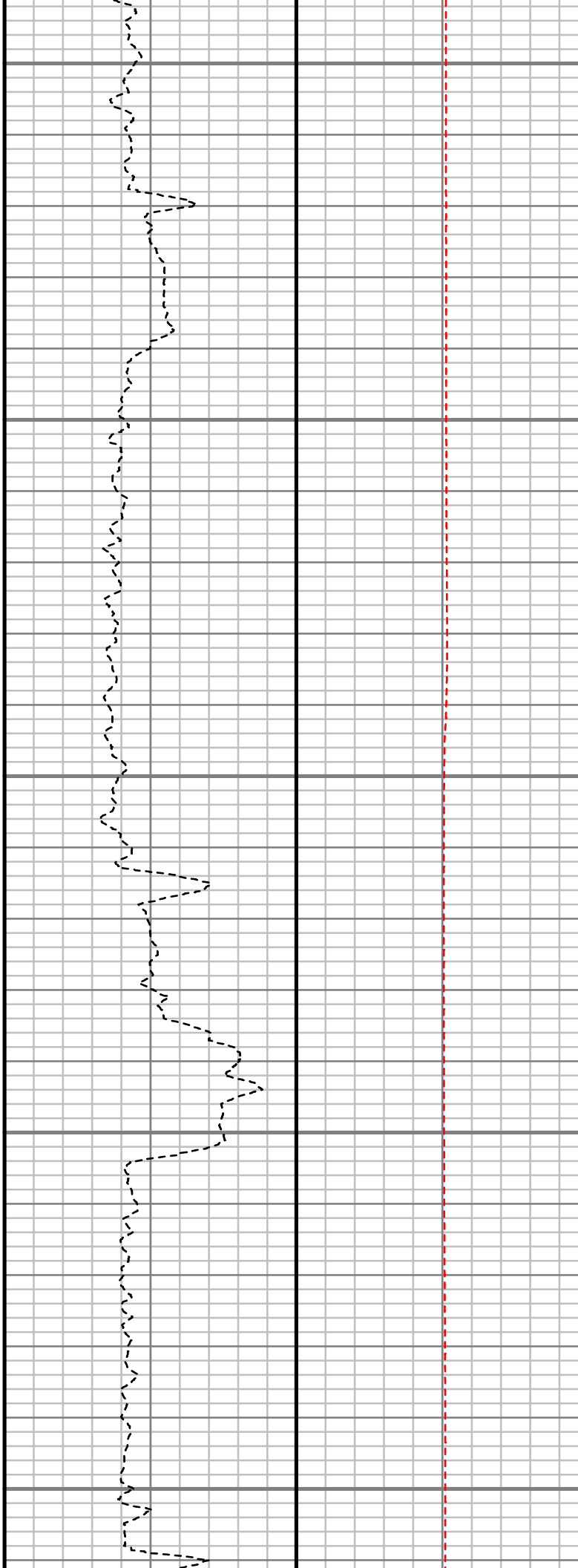
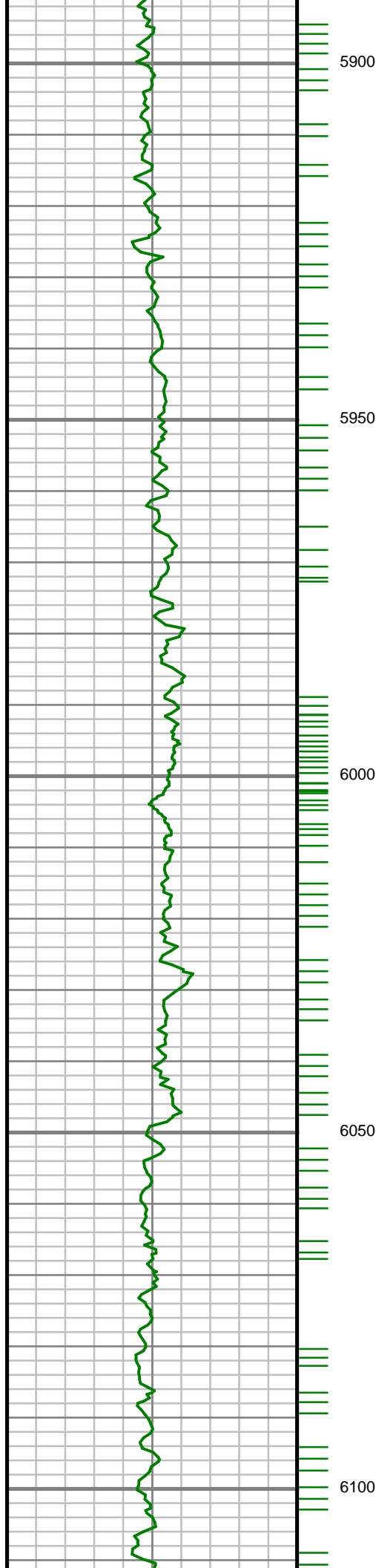
S: 51 MD: 5489.00 ft
Inc: 0.50 deg Az:
330.72 deg TVD:
5432.50 ft

S: 52 MD: 5584.00 ft
Inc: 0.72 deg Az:
308.50 deg TVD:
5527.50 ft



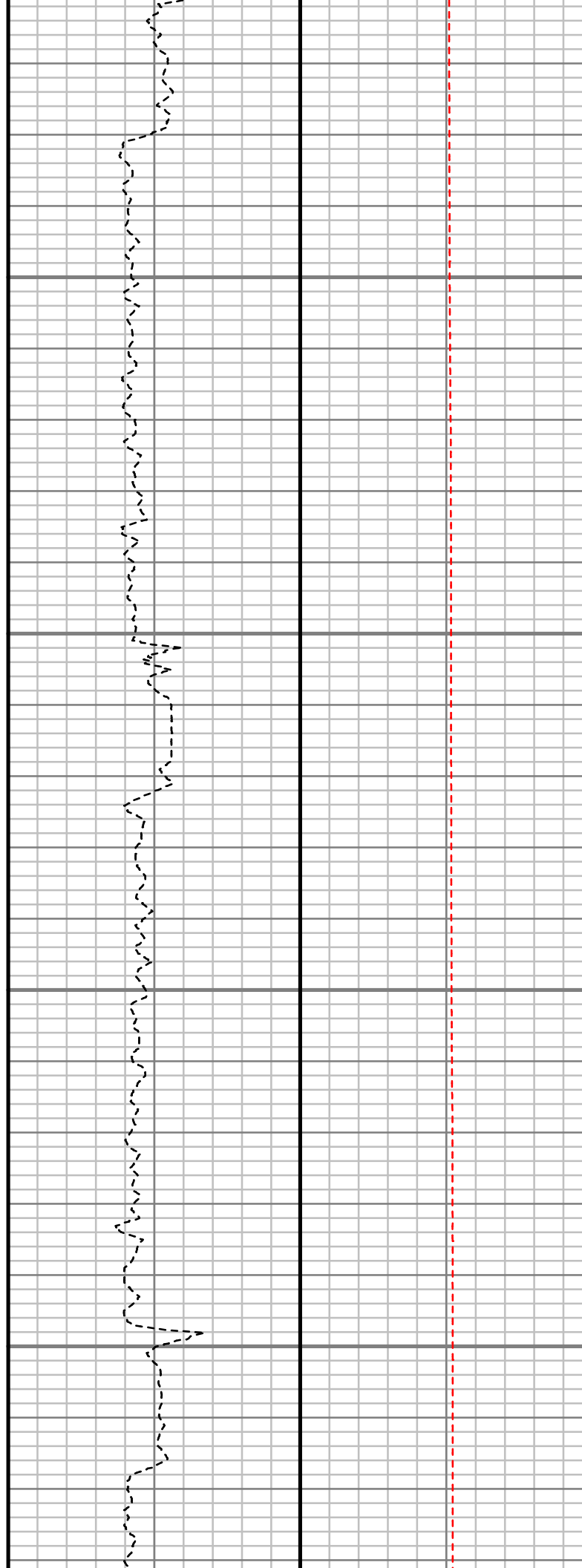
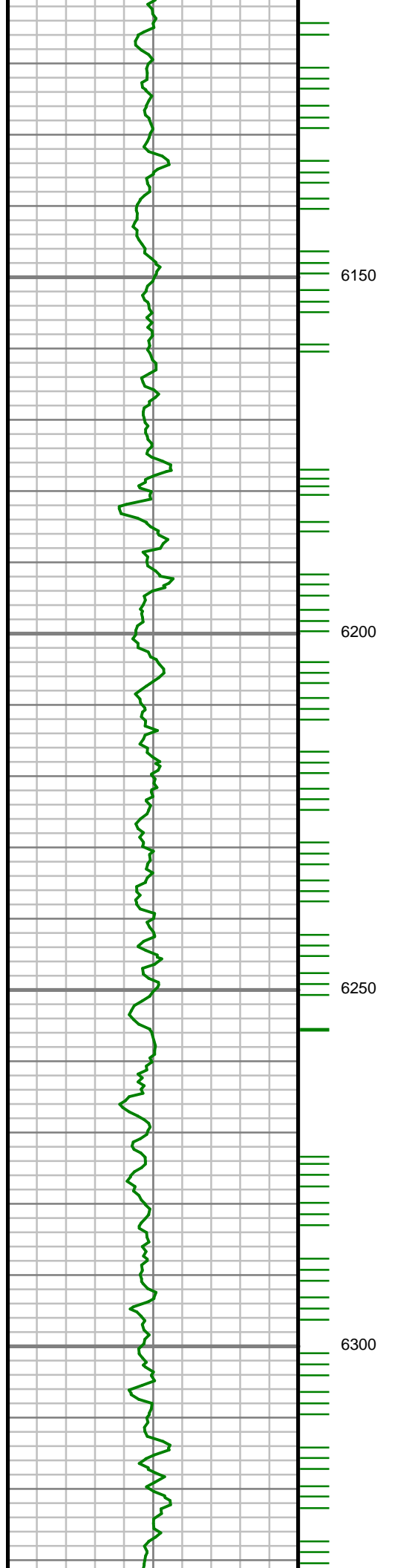
S: 53 MD: 5678.00 ft
Inc: 0.78 deg Az:
311.94 deg TVD:
5621.49 ft

S: 54 MD: 5773.00 ft
Inc: 0.52 deg Az:
326.49 deg TVD:
5716.48 ft



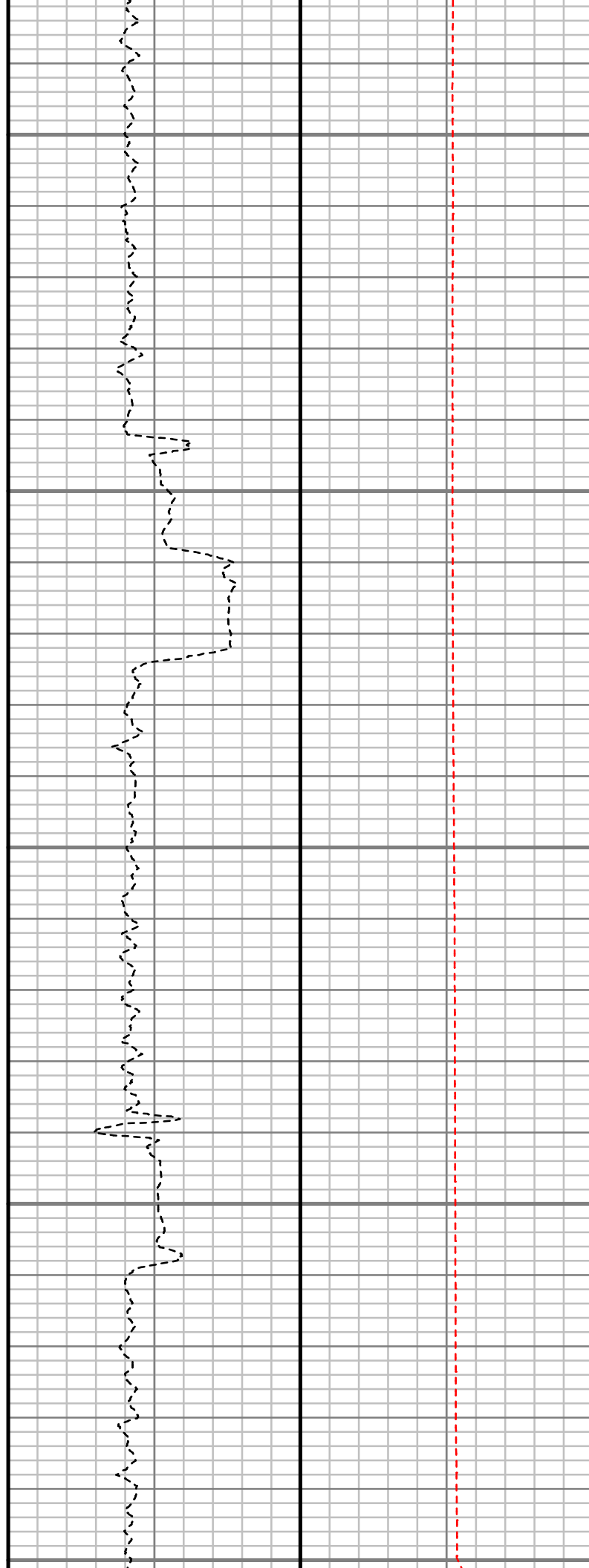
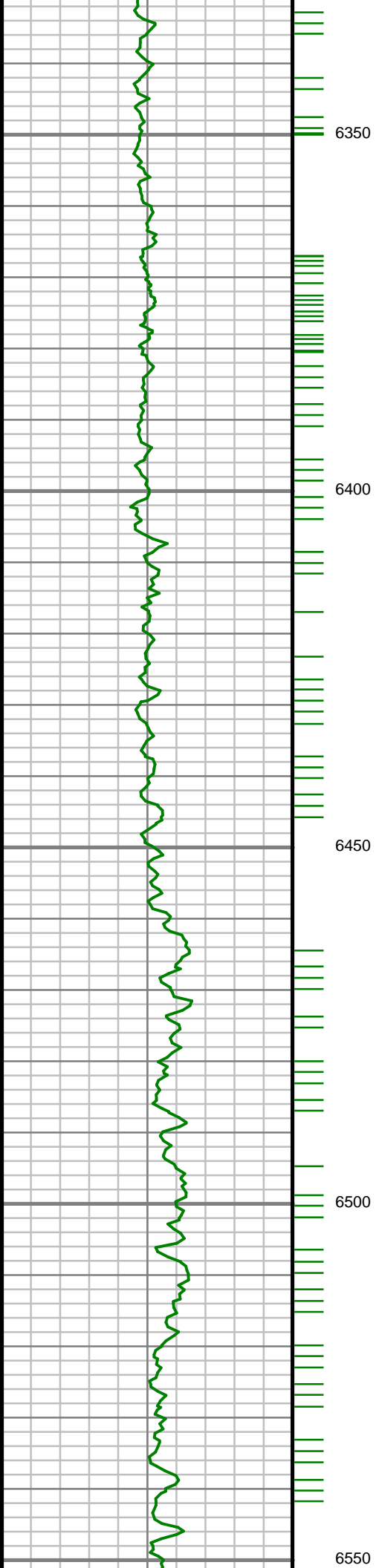
S: 55 MD: 5961.00 ft
Inc: 0.54 deg Az:
352.65 deg TVD:
5904.47 ft

S: 56 MD: 6056.00 ft
Inc: 0.81 deg Az:
103.34 deg TVD:
5999.47 ft

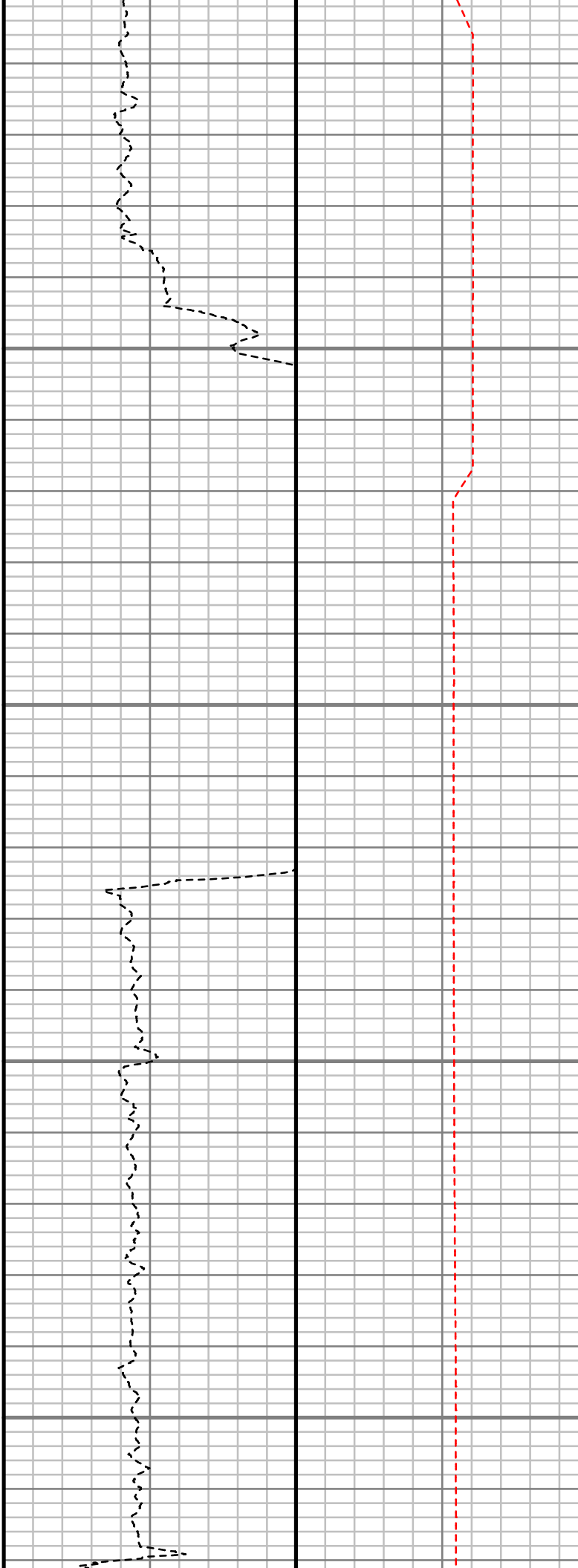
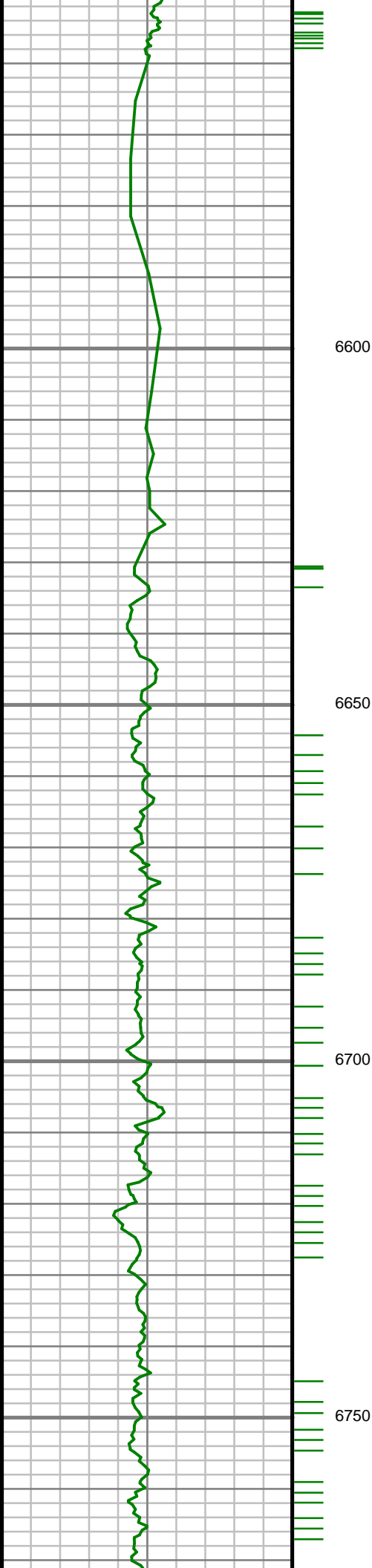


S: 57 MD: 6150.00 ft
Inc: 0.64 deg Az: 73.47
deg TVD: 6093.46 ft

S: 58 MD: 6244.00 ft
Inc: 0.71 deg Az:
330.97 deg TVD:
6187.46 ft

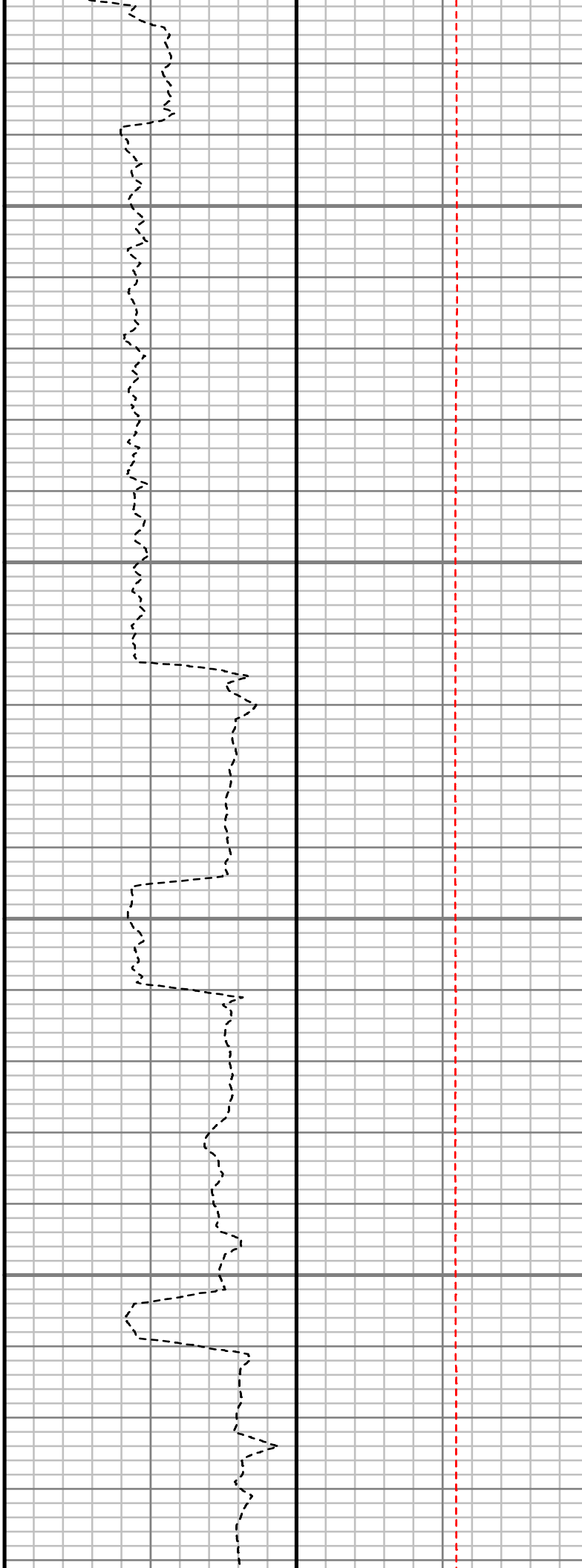
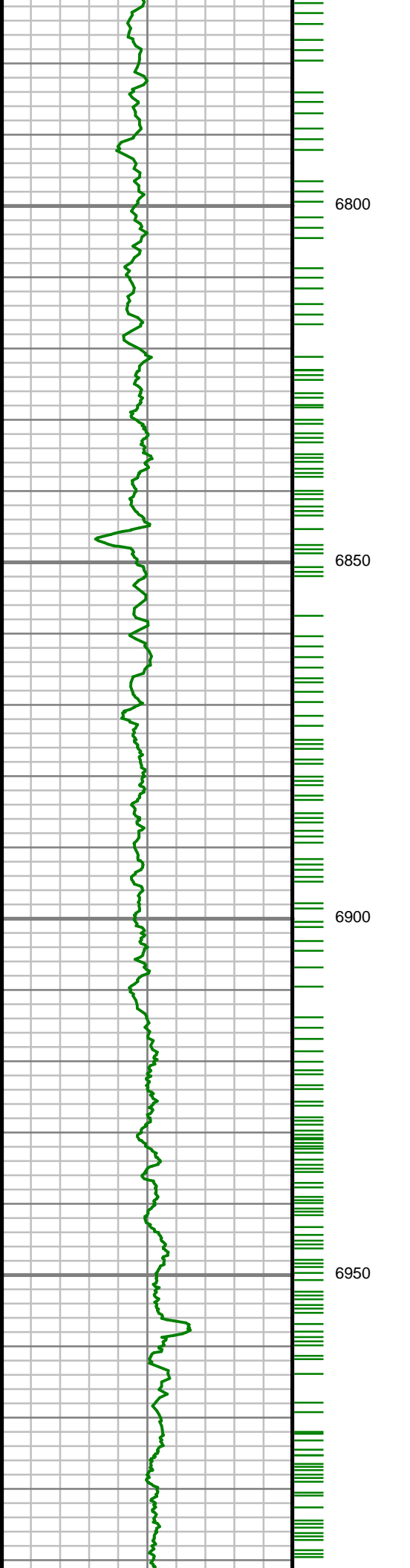


S: 59 MD: 6433.00 ft
Inc: 1.45 deg Az:
126.06 deg TVD:
6376.44 ft



S: 60 MD: 6621.00 ft
Inc: 0.67 deg Az:
110.55 deg TVD:
6564.41 ft

S: 61 MD: 6716.00 ft
Inc: 0.48 deg Az: 51.12
deg TVD: 6659.41 ft

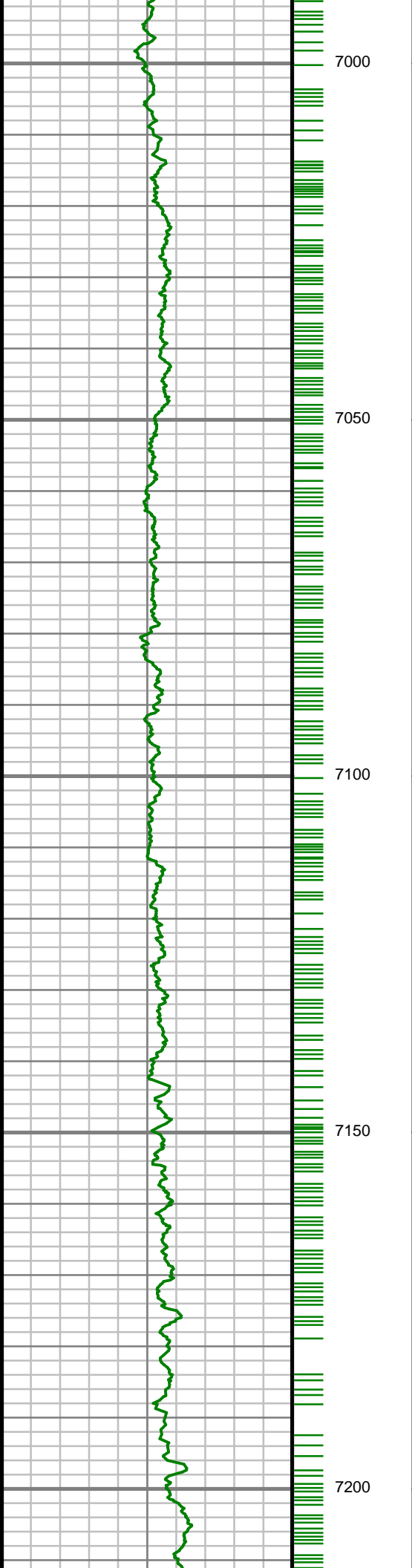


S: 62 MD: 6810.00 ft
Inc: 1.30 deg Az: 48.85
deg TVD: 6753.39 ft

S: 63 MD: 6857.00 ft
Inc: 1.69 deg Az: 53.59
deg TVD: 6800.38 ft

S: 64 MD: 6905.00 ft
Inc: 3.18 deg Az:
151.40 deg TVD:
6848.35 ft

S: 65 MD: 6952.00 ft
Inc: 6.89 deg Az:
166.31 deg TVD:
6895.16 ft



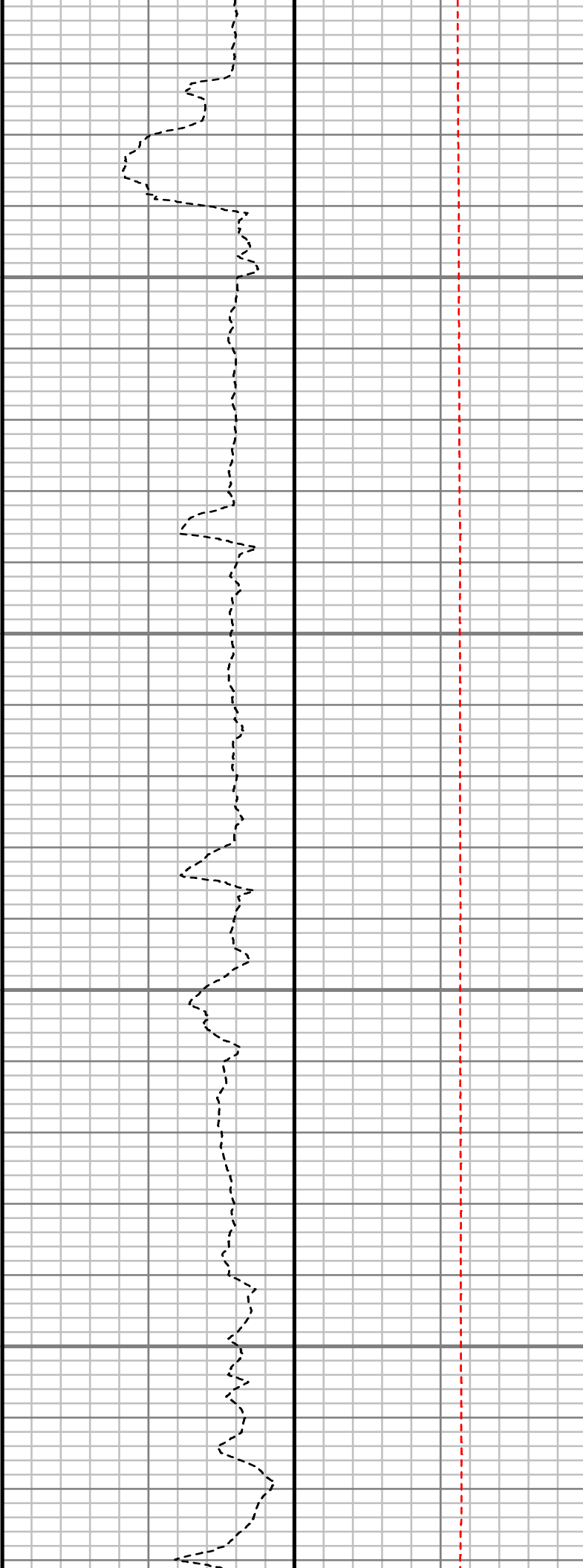
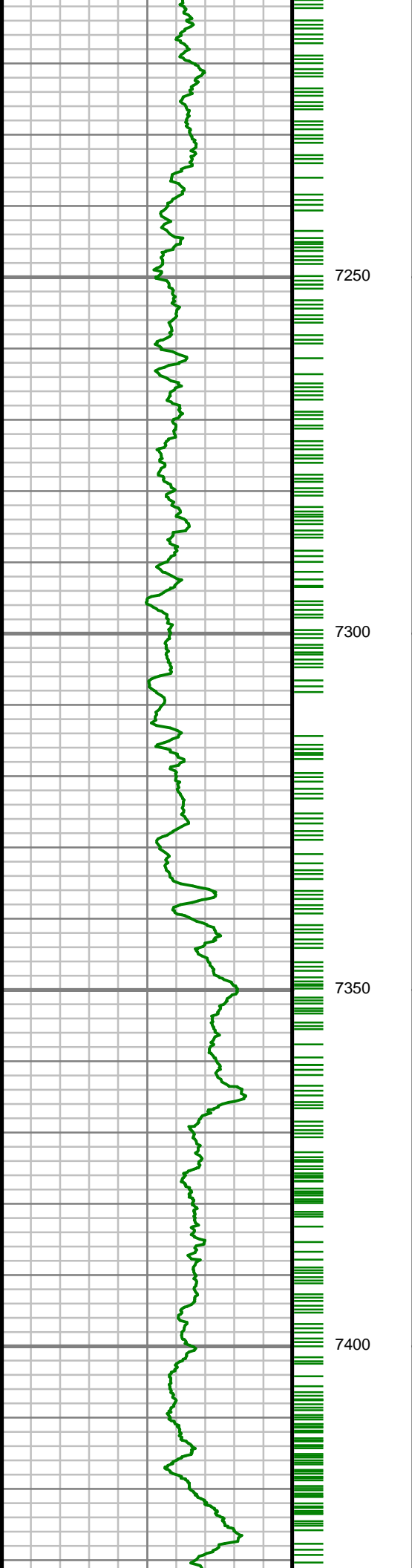
S: 66 MD: 6999.00 ft
Inc: 10.37 deg Az:
164.34 deg TVD:
6941.62 ft

S: 67 MD: 7046.00 ft
Inc: 14.09 deg Az:
167.74 deg TVD:
6987.55 ft

S: 68 MD: 7093.00 ft
Inc: 18.87 deg Az:
173.68 deg TVD:
7032.61 ft

S: 69 MD: 7140.00 ft
Inc: 24.08 deg Az:
178.93 deg TVD:
7076.33 ft

S: 70 MD: 7187.00 ft
Inc: 29.89 deg Az:
184.09 deg TVD:
7118.21 ft



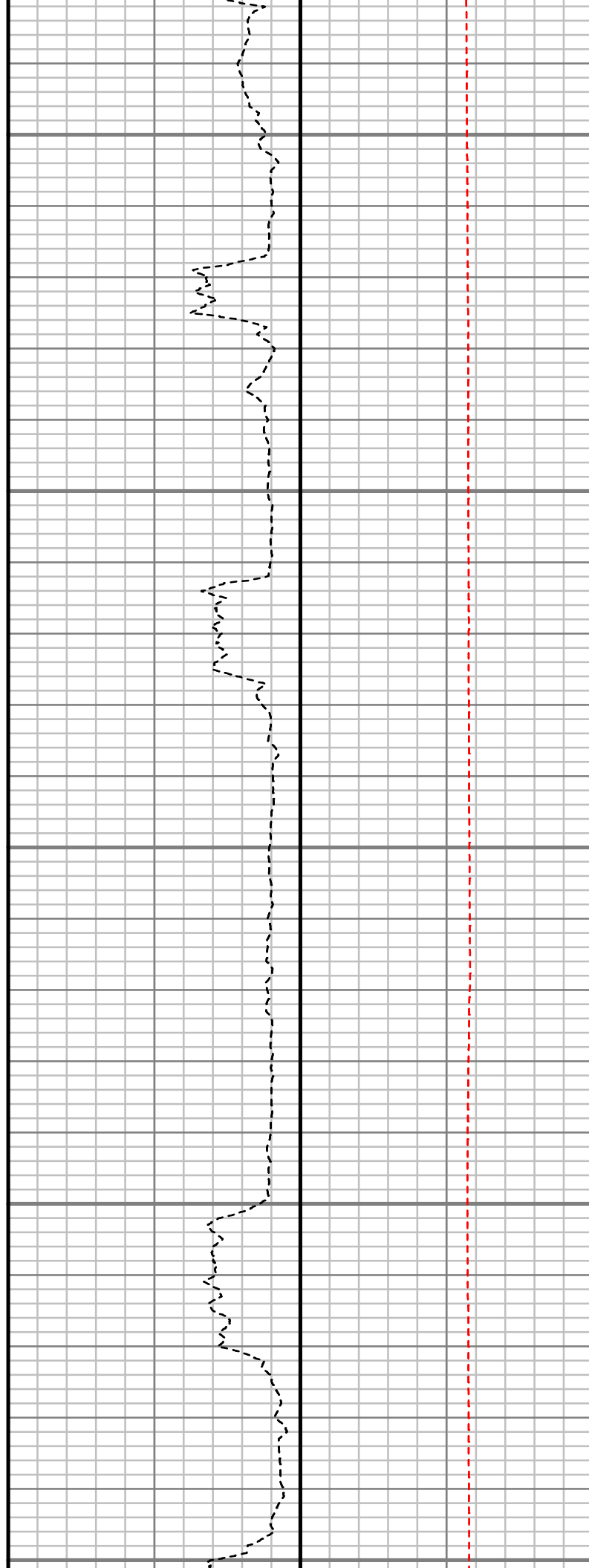
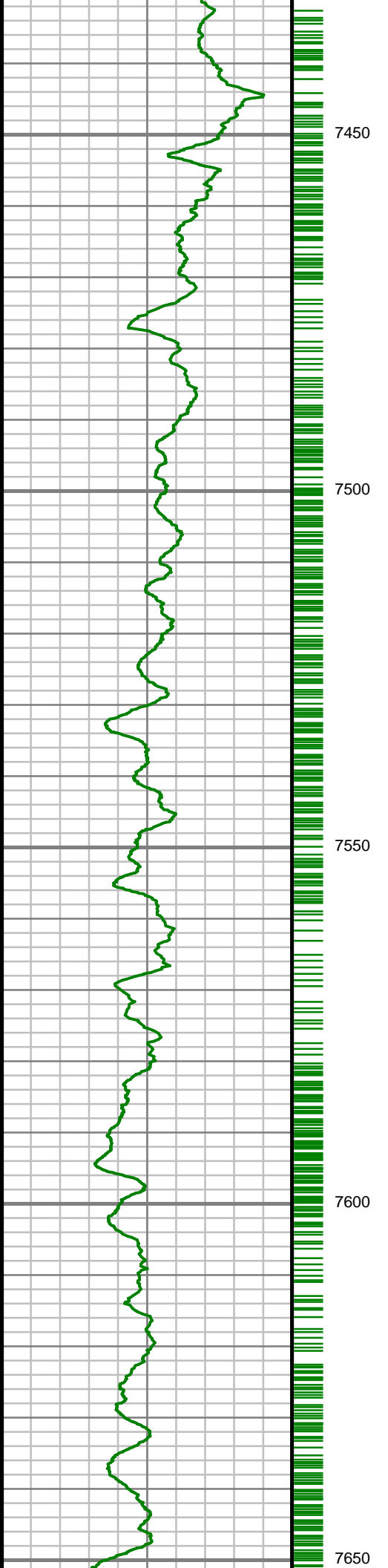
S: 71 MD: 7234.00 ft
Inc: 33.53 deg Az:
184.39 deg TVD:
7158.18 ft

S: 72 MD: 7282.00 ft
Inc: 37.07 deg Az:
184.66 deg TVD:
7197.35 ft

S: 73 MD: 7329.00 ft
Inc: 40.96 deg Az:
185.39 deg TVD:
7233.86 ft

S: 74 MD: 7376.00 ft
Inc: 44.32 deg Az:
183.99 deg TVD:
7268.43 ft

S: 75 MD: 7423.00 ft
Inc: 48.08 deg Az:
185.02 deg TVD:

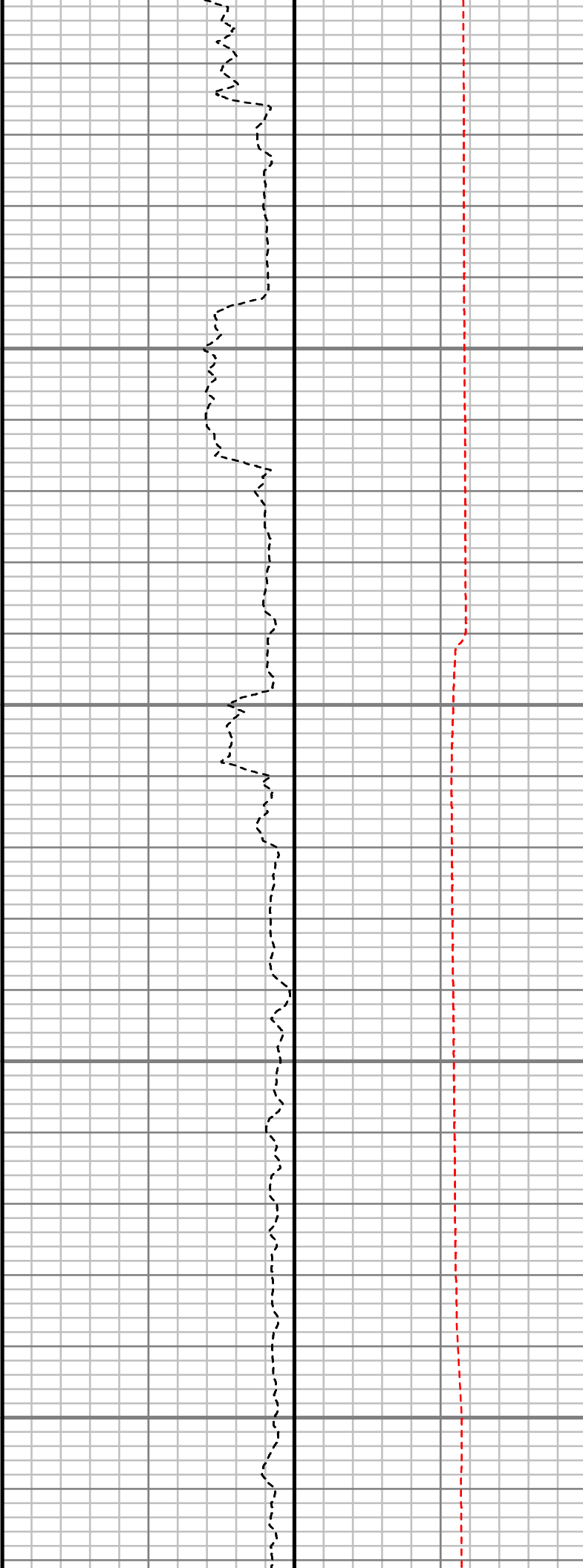
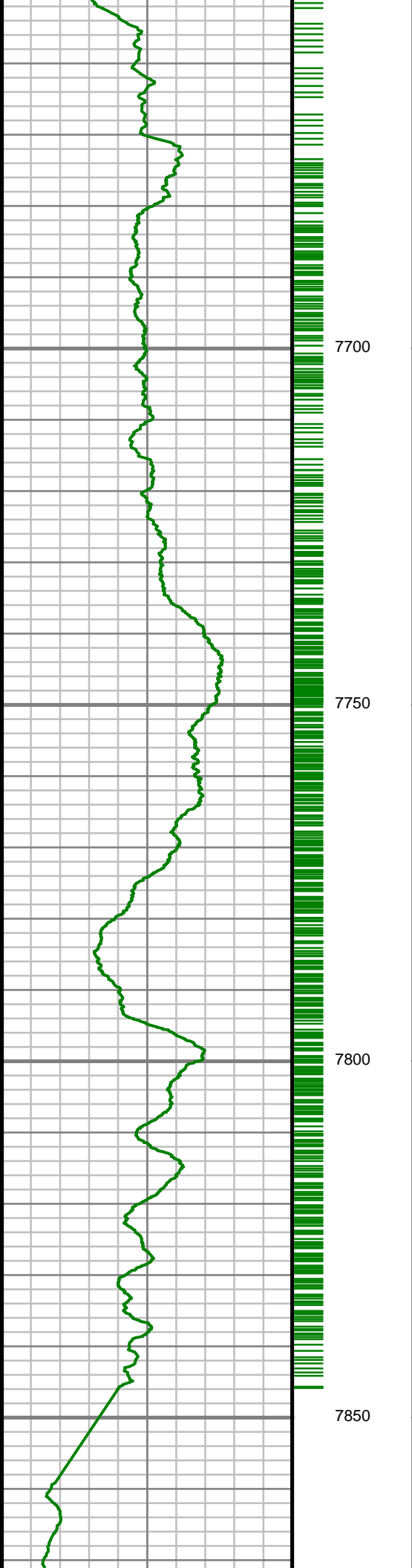


S: 76 MD: 7470.00 ft
Inc: 52.38 deg Az:
184.64 deg TVD:
7331.02 ft

S: 77 MD: 7517.00 ft
Inc: 56.80 deg Az:
183.94 deg TVD:
7358.24 ft

S: 78 MD: 7565.00 ft
Inc: 62.03 deg Az:
183.08 deg TVD:
7382.66 ft

S: 79 MD: 7612.00 ft
Inc: 65.13 deg Az:
182.61 deg TVD:
7403.57 ft

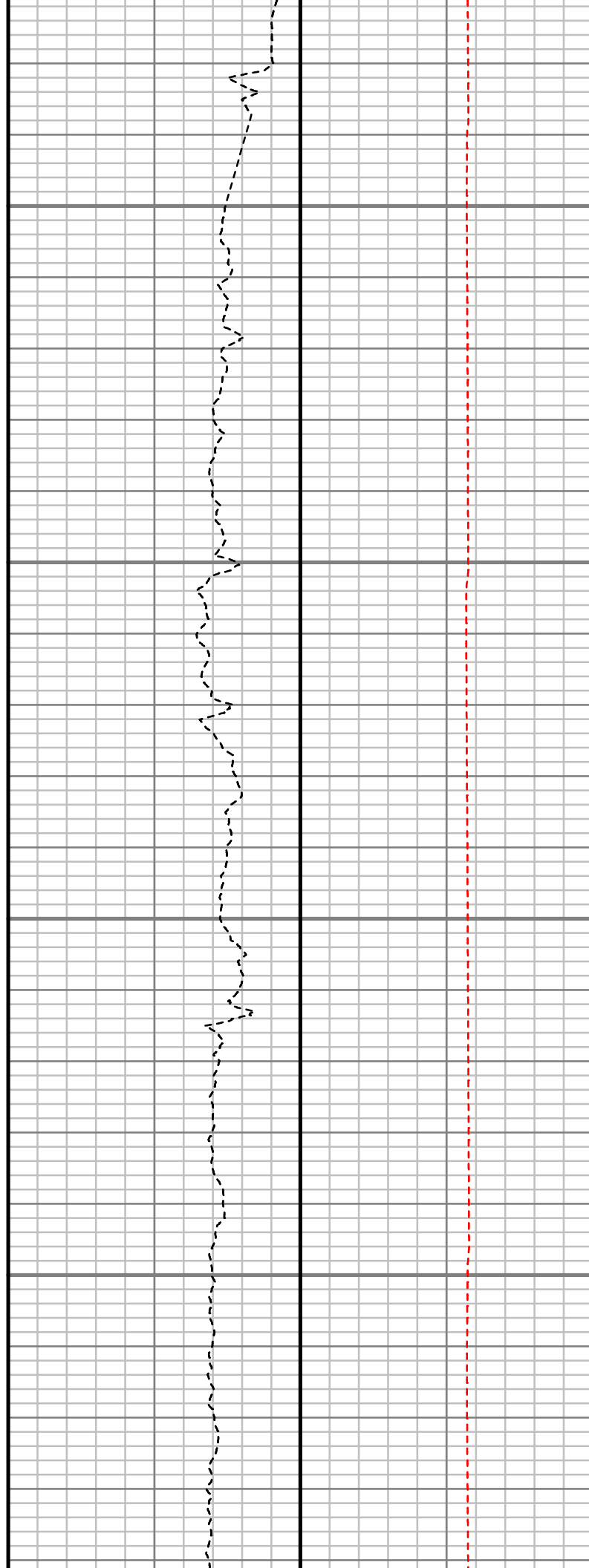
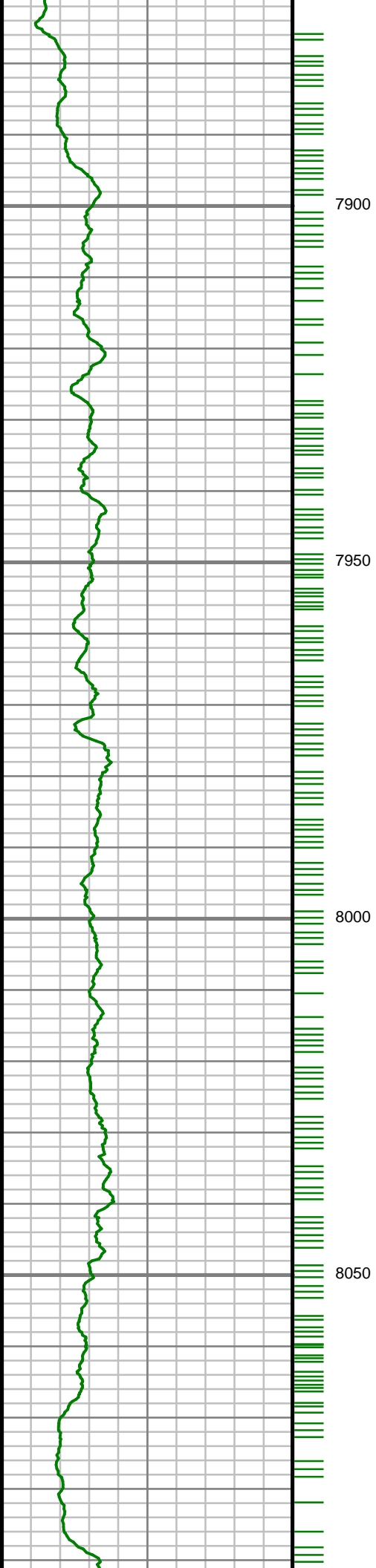


S: 80 MD: 7659.00 ft
Inc: 67.90 deg Az:
181.41 deg TVD:
7422.30 ft

S: 81 MD: 7706.00 ft
Inc: 71.34 deg Az:
181.42 deg TVD:
7438.67 ft

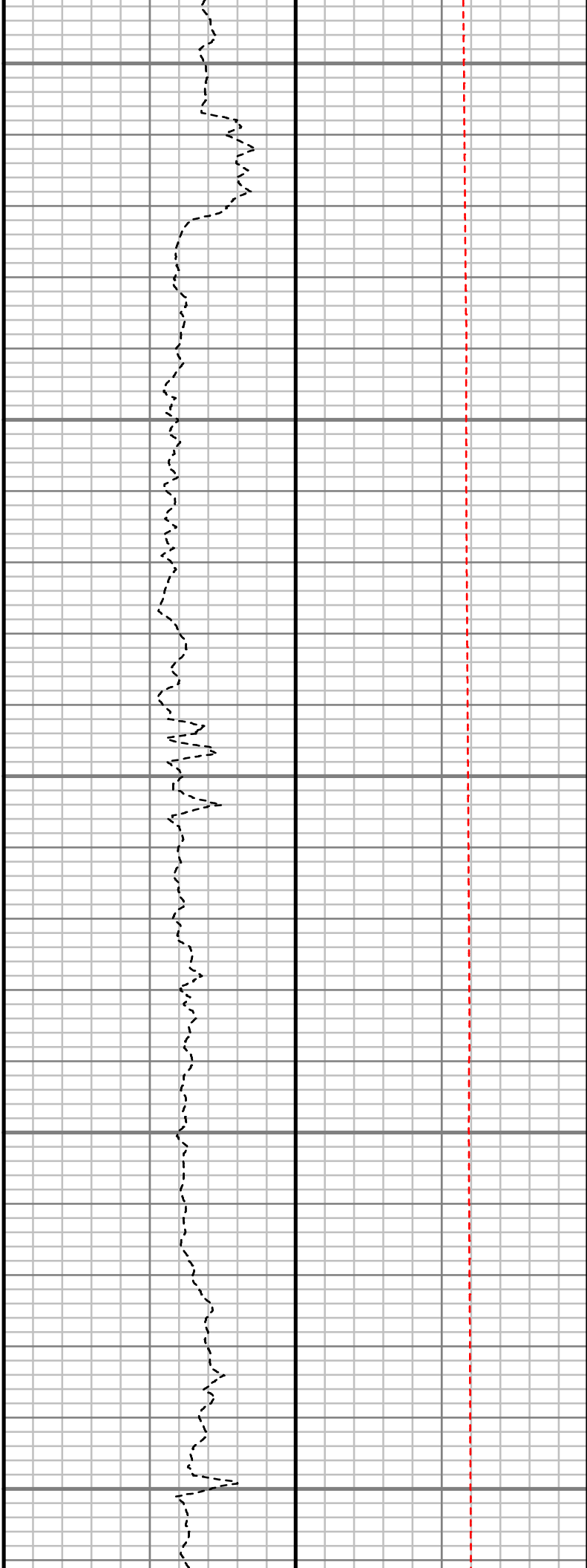
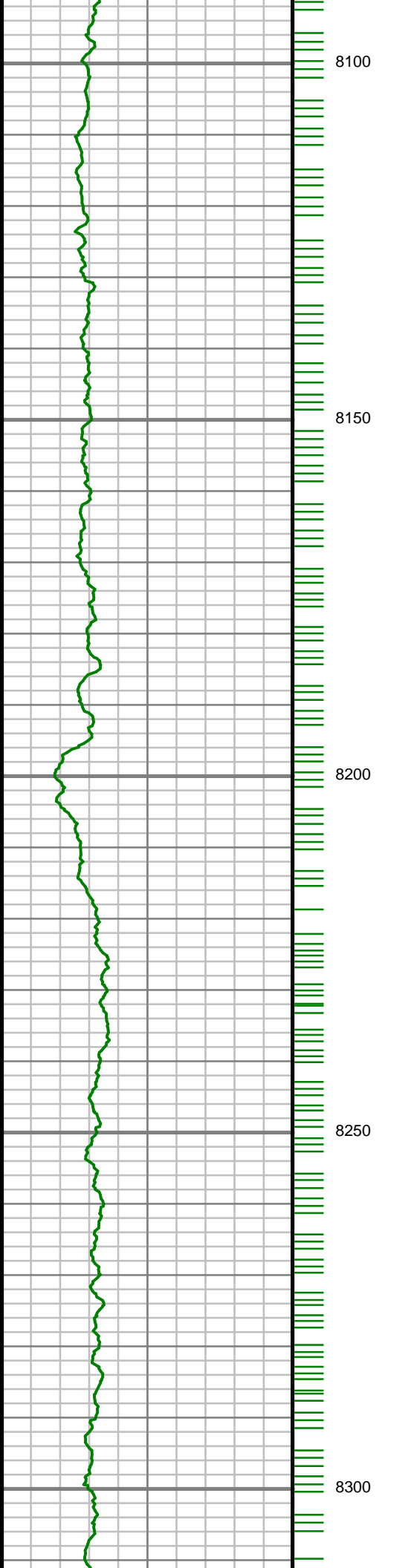
S: 82 MD: 7753.00 ft
Inc: 75.27 deg Az:
181.18 deg TVD:
7452.16 ft

S: 83 MD: 7835.00 ft
Inc: 84.35 deg Az:
180.22 deg TVD:
7466.66 ft



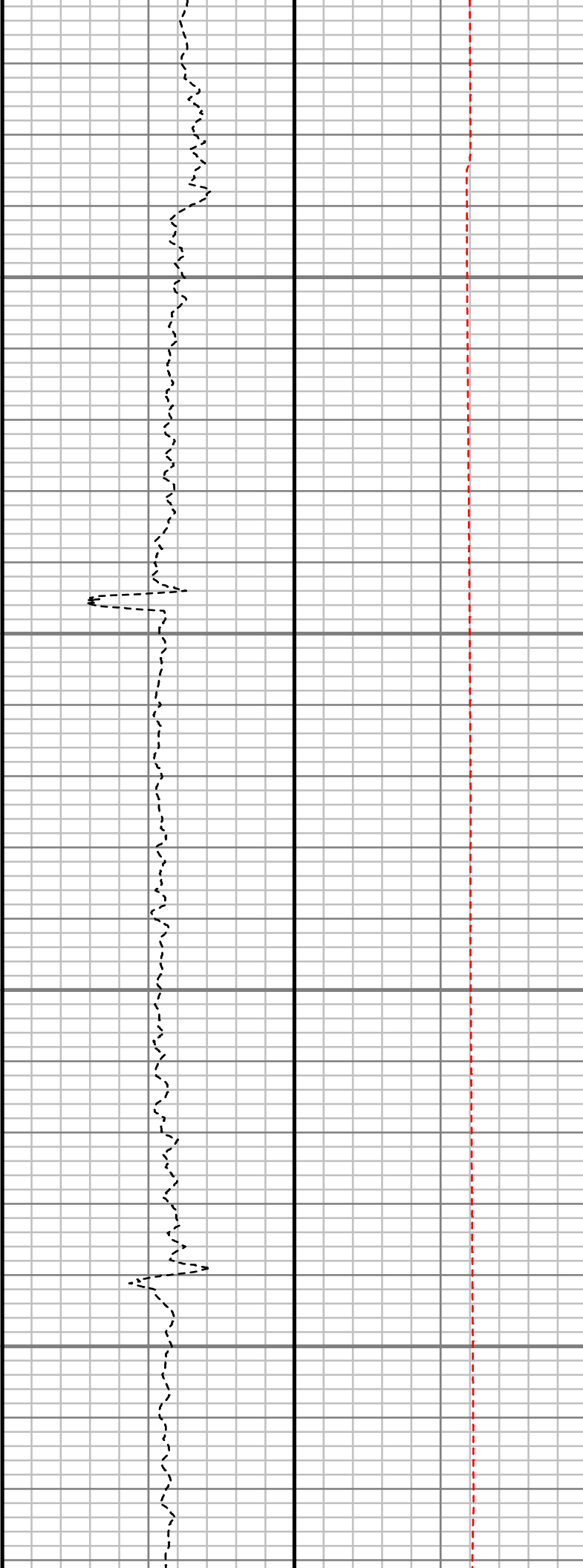
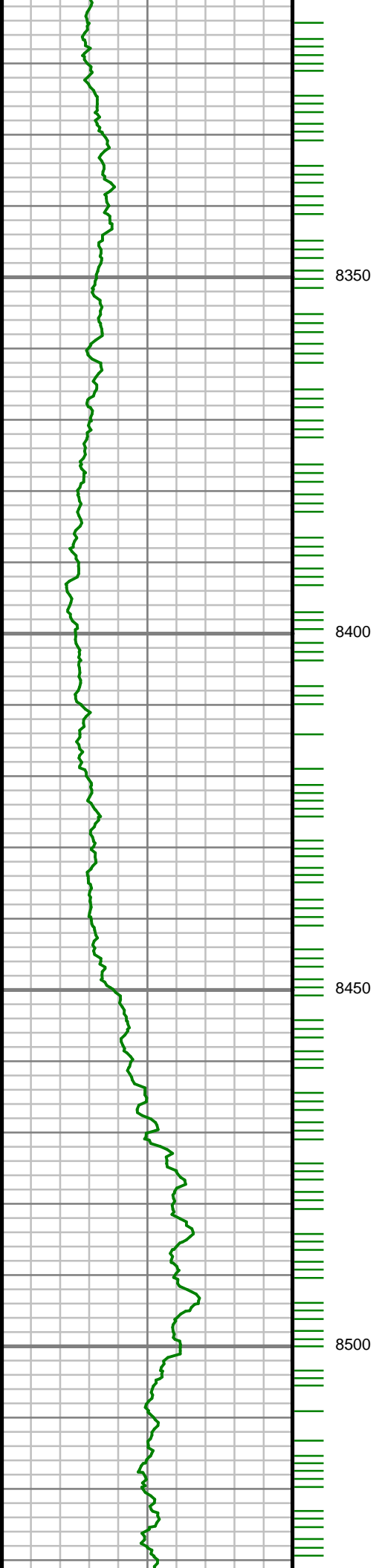
S: 84 MD: 7950.00 ft
Inc: 89.80 deg Az:
179.17 deg TVD:
7472.52 ft

S: 85 MD: 8045.00 ft
Inc: 89.66 deg Az:
178.80 deg TVD:
7472.97 ft



S: 86 MD: 8139.00 ft
Inc: 90.60 deg Az:
179.44 deg TVD:
7472.75 ft

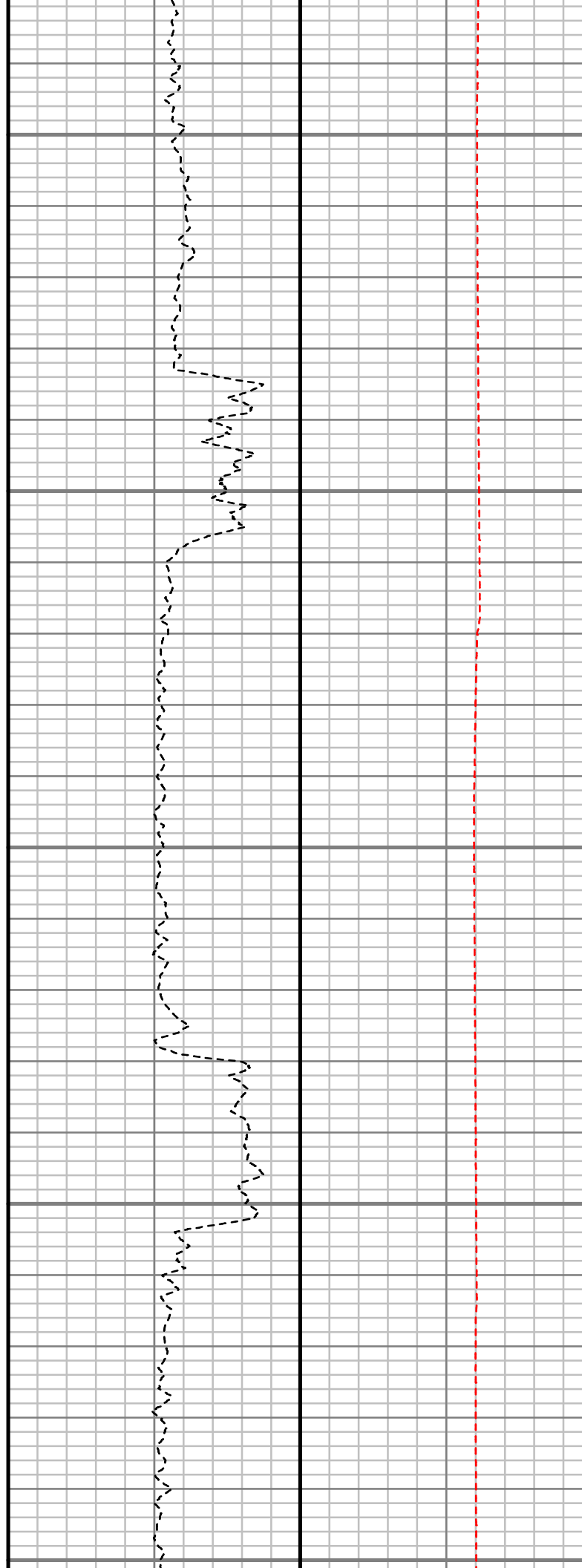
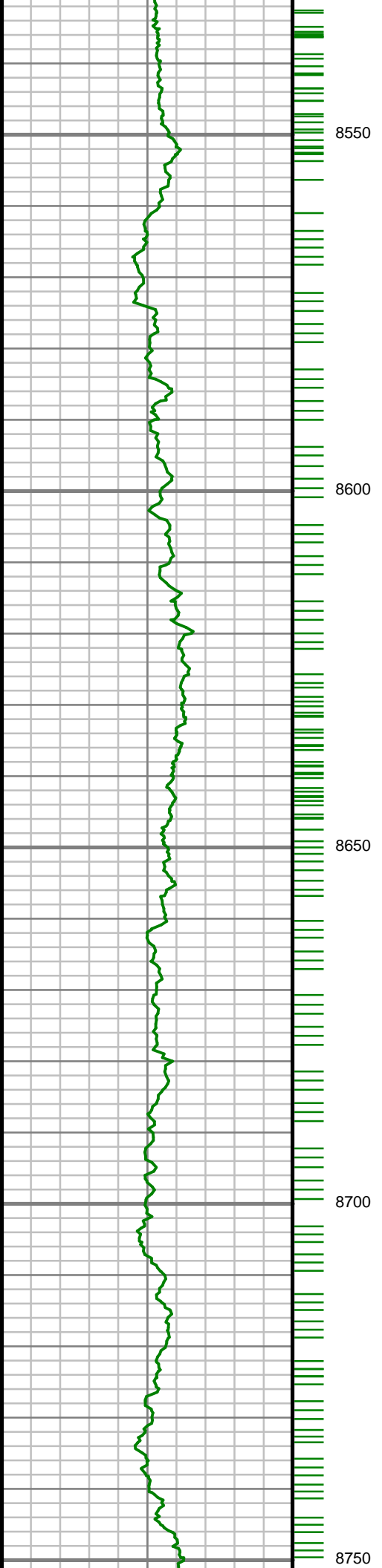
S: 87 MD: 8233.00 ft
Inc: 90.87 deg Az:
179.22 deg TVD:
7471.54 ft



S: 88 MD: 8327.00 ft
Inc: 90.91 deg Az:
179.12 deg TVD:
7470.08 ft

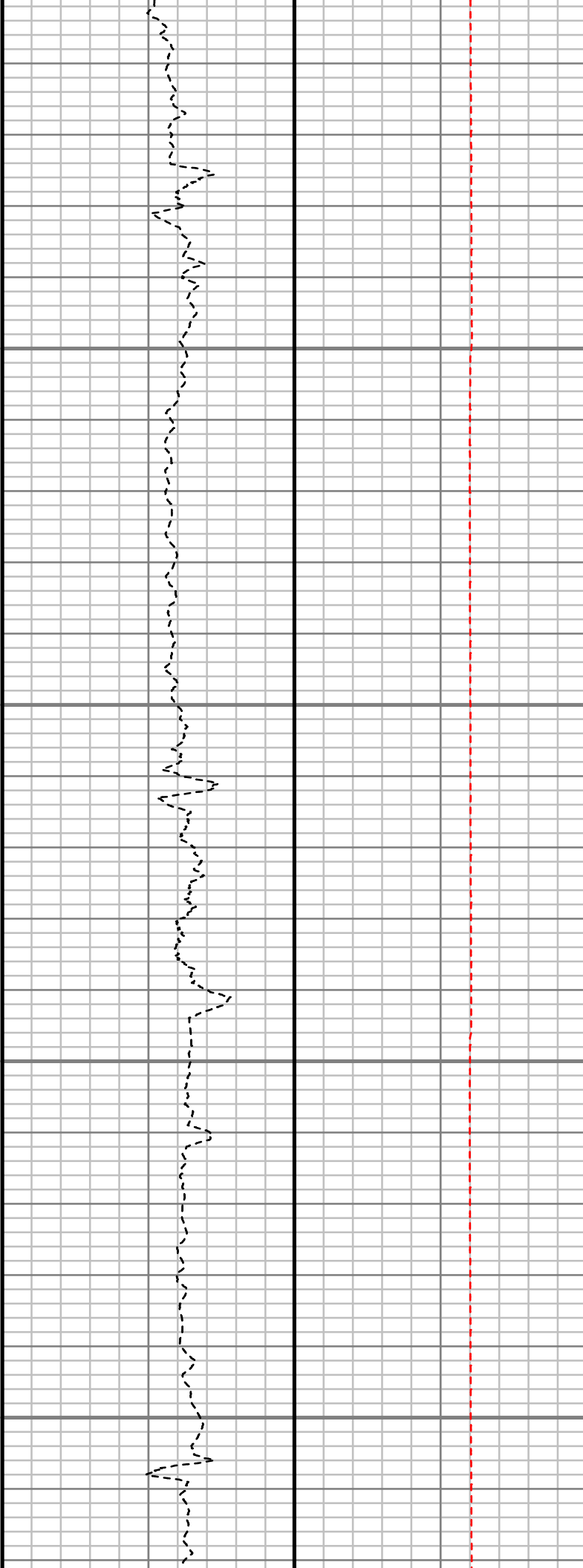
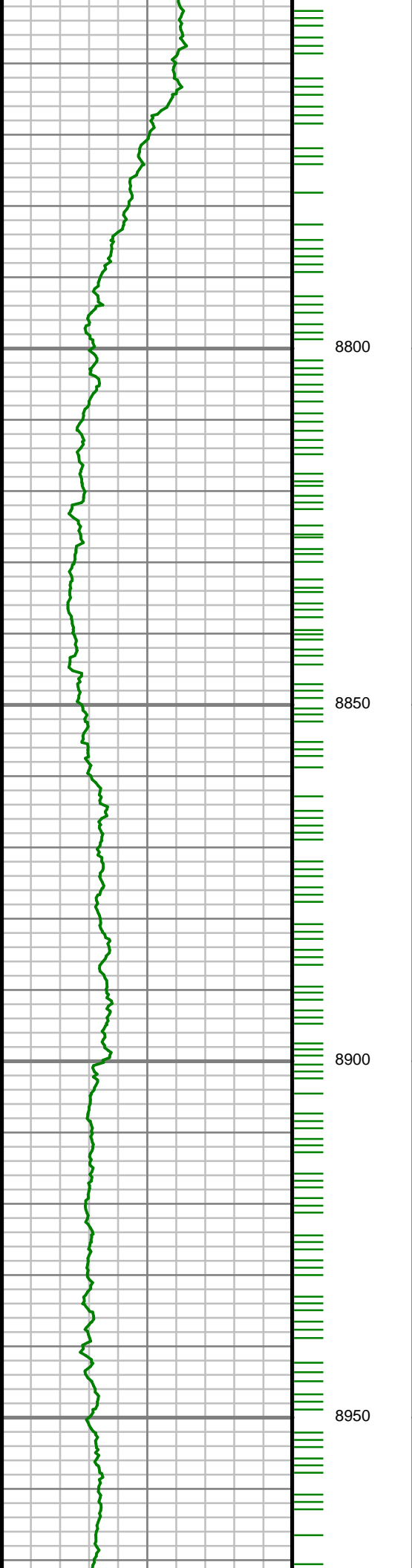
S: 89 MD: 8422.00 ft
Inc: 90.64 deg Az:
179.08 deg TVD:
7468.79 ft

S: 90 MD: 8516.00 ft
Inc: 91.48 deg Az:
178.78 deg TVD:
7467.06 ft



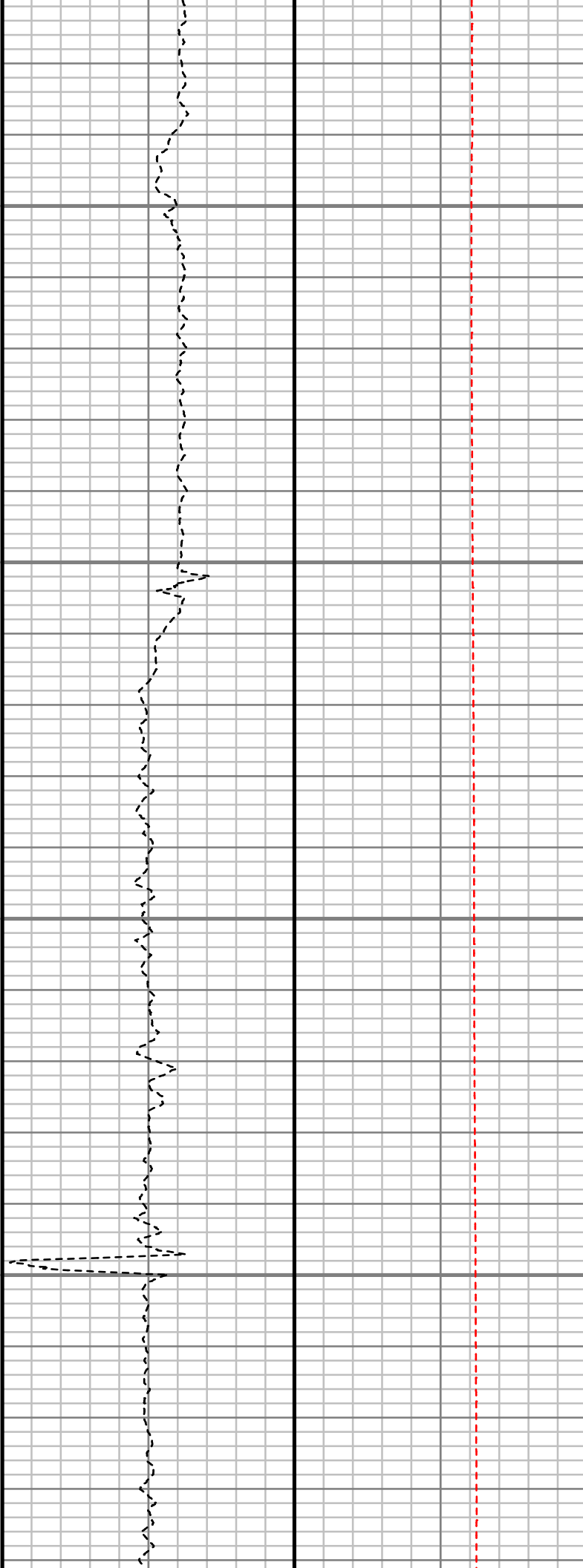
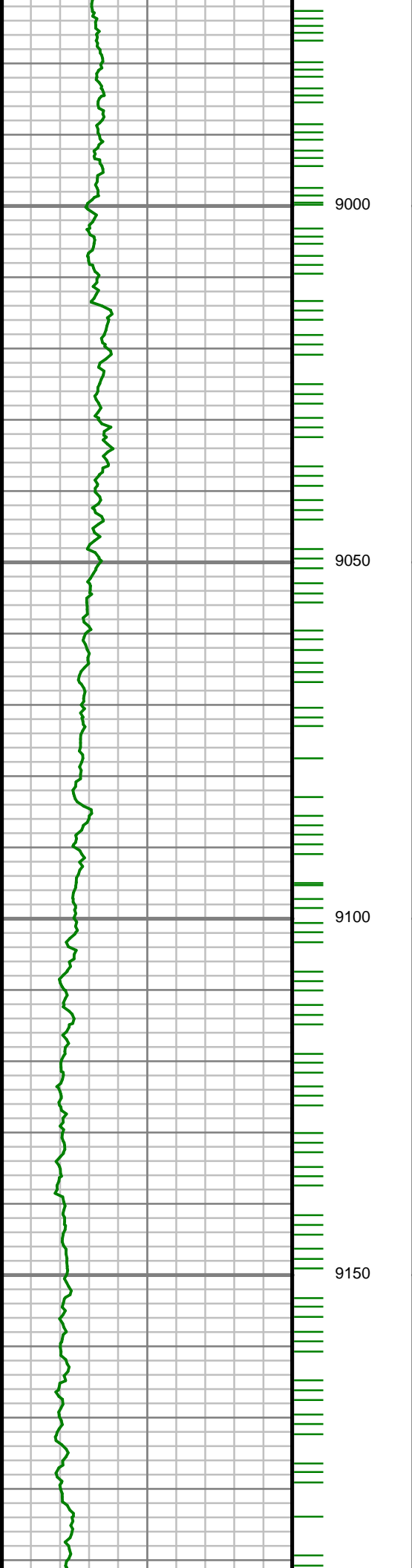
S: 91 MD: 8611.00 ft
Inc: 90.81 deg Az:
179.01 deg TVD:
7465.16 ft

S: 92 MD: 8705.00 ft
Inc: 89.36 deg Az:
179.31 deg TVD:
7465.02 ft



S: 93 MD: 8799.00 ft
Inc: 89.43 deg Az:
179.57 deg TVD:
7466.01 ft

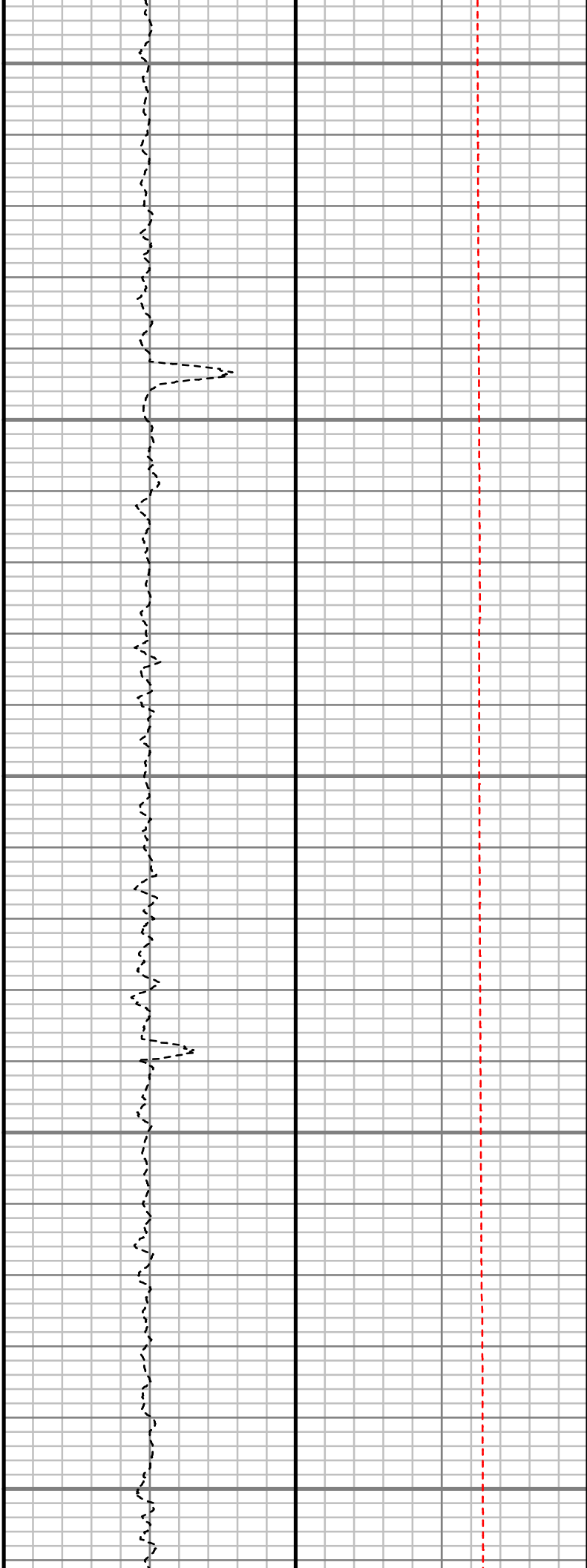
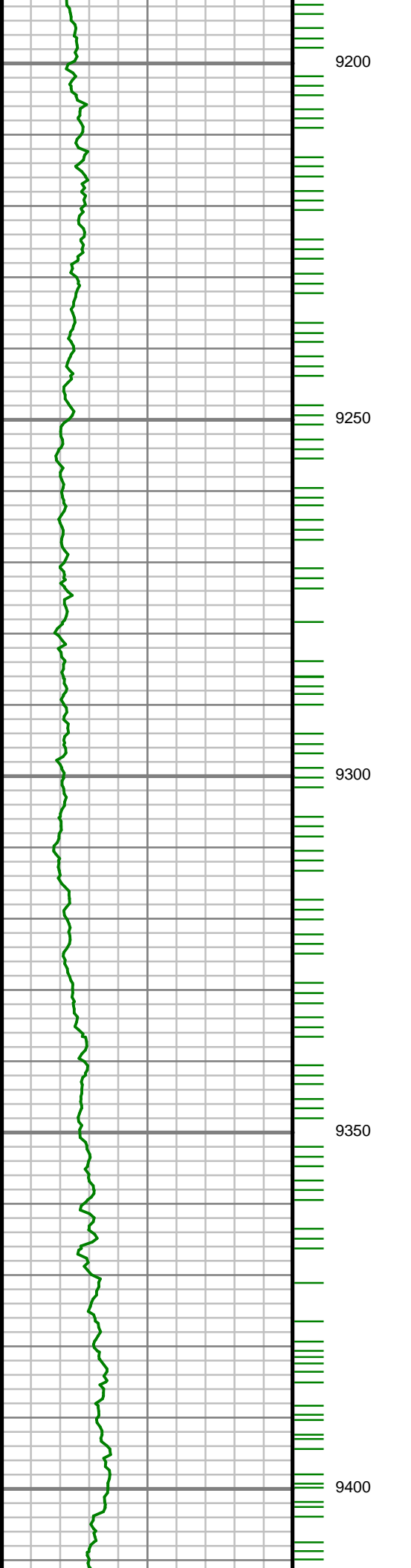
S: 94 MD: 8893.00 ft
Inc: 89.06 deg Az:
179.81 deg TVD:
7467.25 ft



S: 95 MD: 8988.00 ft
Inc: 89.06 deg Az:
179.86 deg TVD:
7468.82 ft

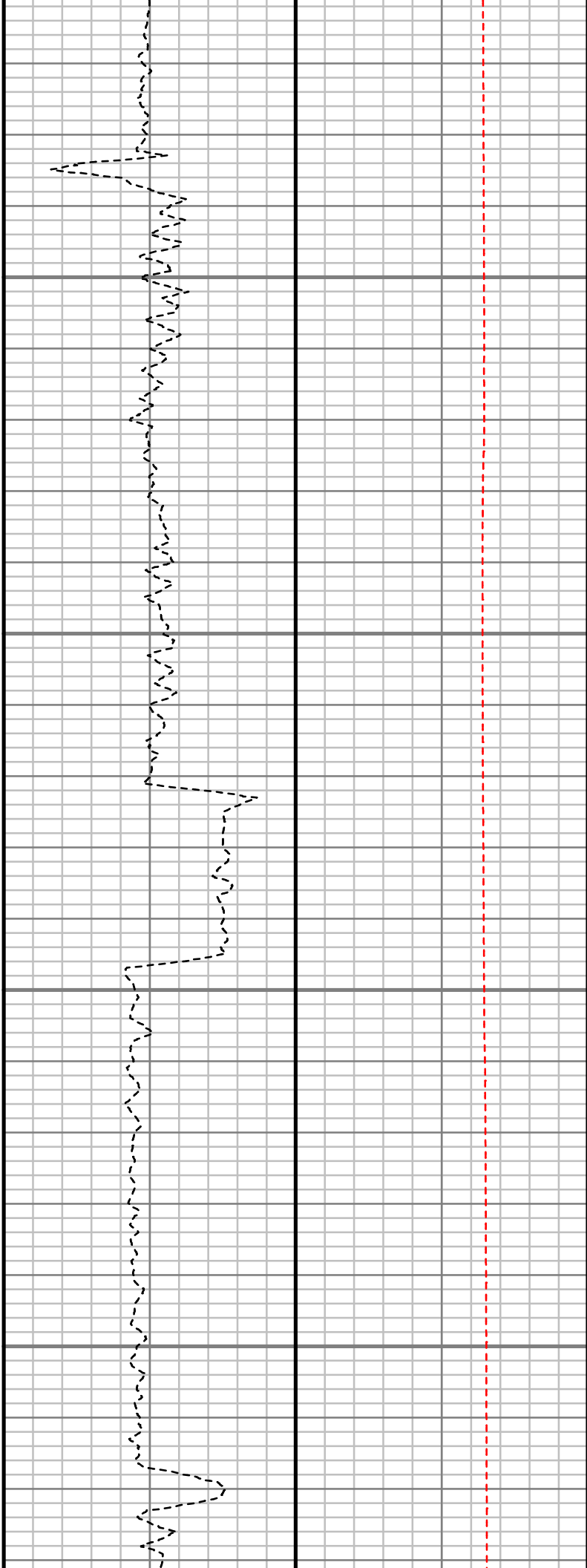
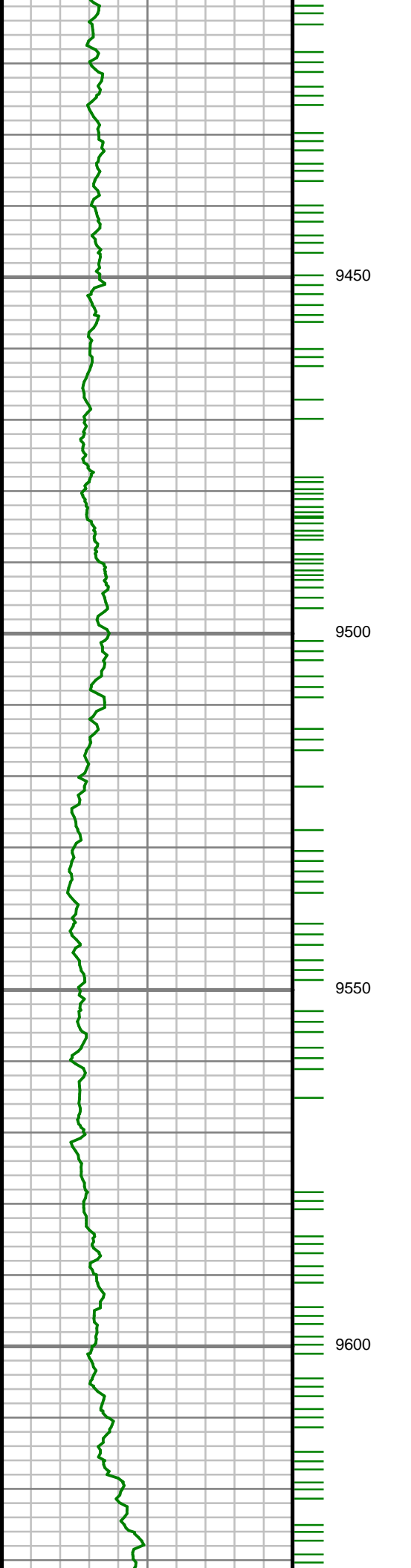
S: 96 MD: 9082.00 ft
Inc: 89.60 deg Az:
179.98 deg TVD:
7469.92 ft

S: 97 MD: 9177.00 ft
Inc: 90.77 deg Az:
180.86 deg TVD:
7469.61 ft



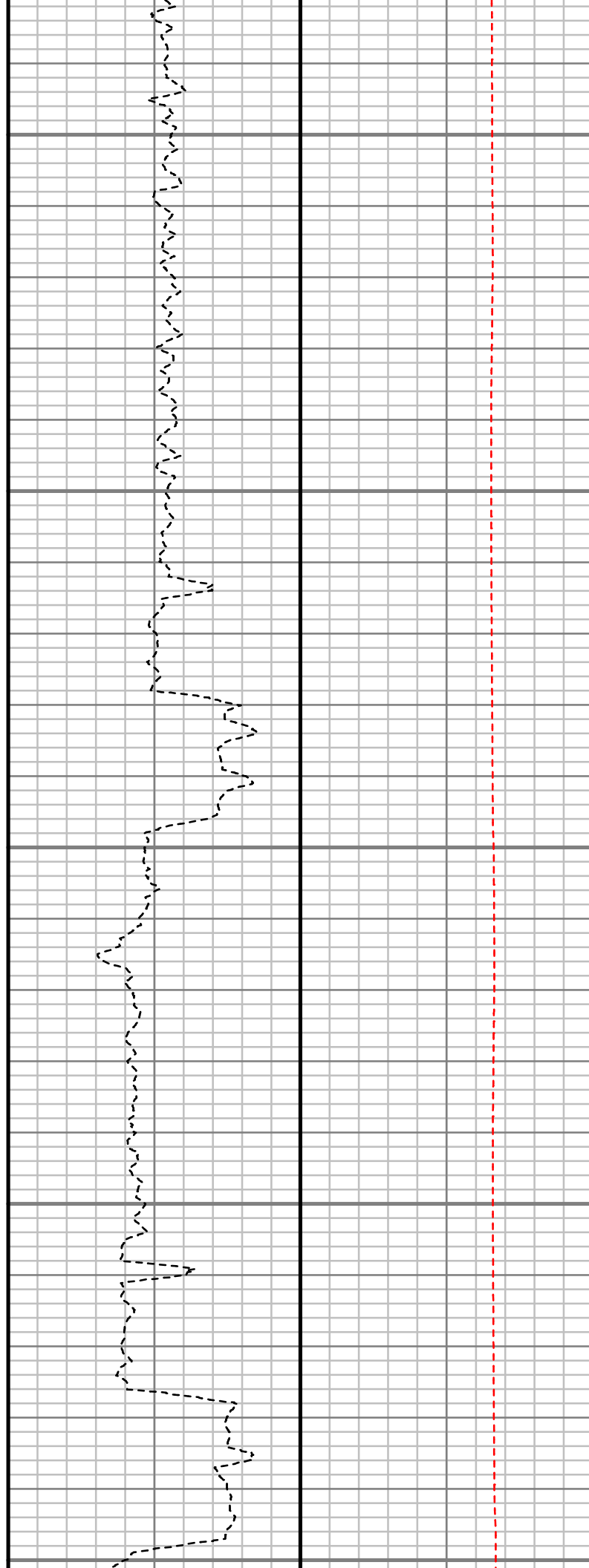
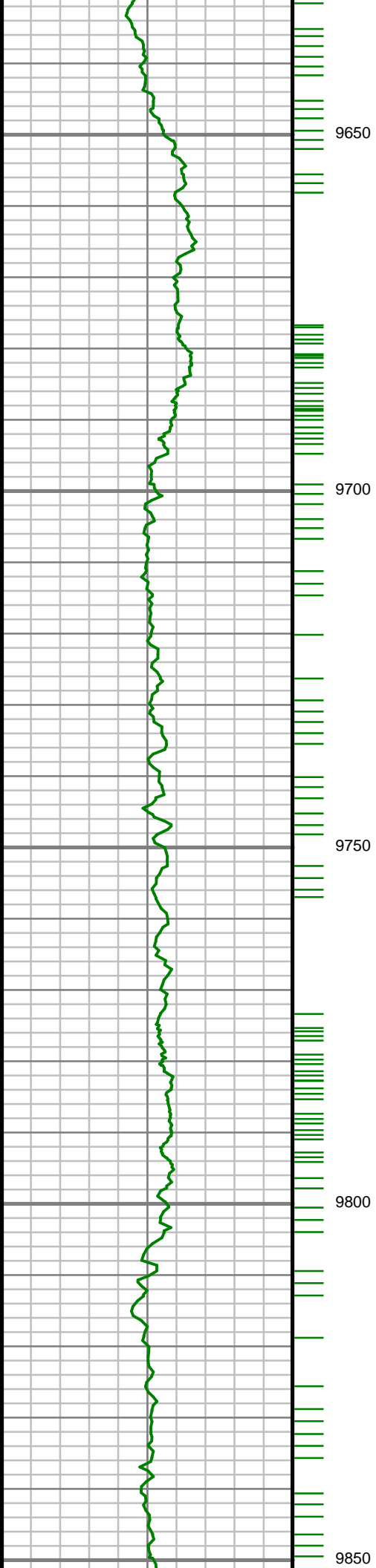
S: 98 MD: 9271.00 ft
Inc: 89.83 deg Az:
180.02 deg TVD:
7469.12 ft

S: 99 MD: 9365.00 ft
Inc: 91.21 deg Az:
180.46 deg TVD:
7468.26 ft



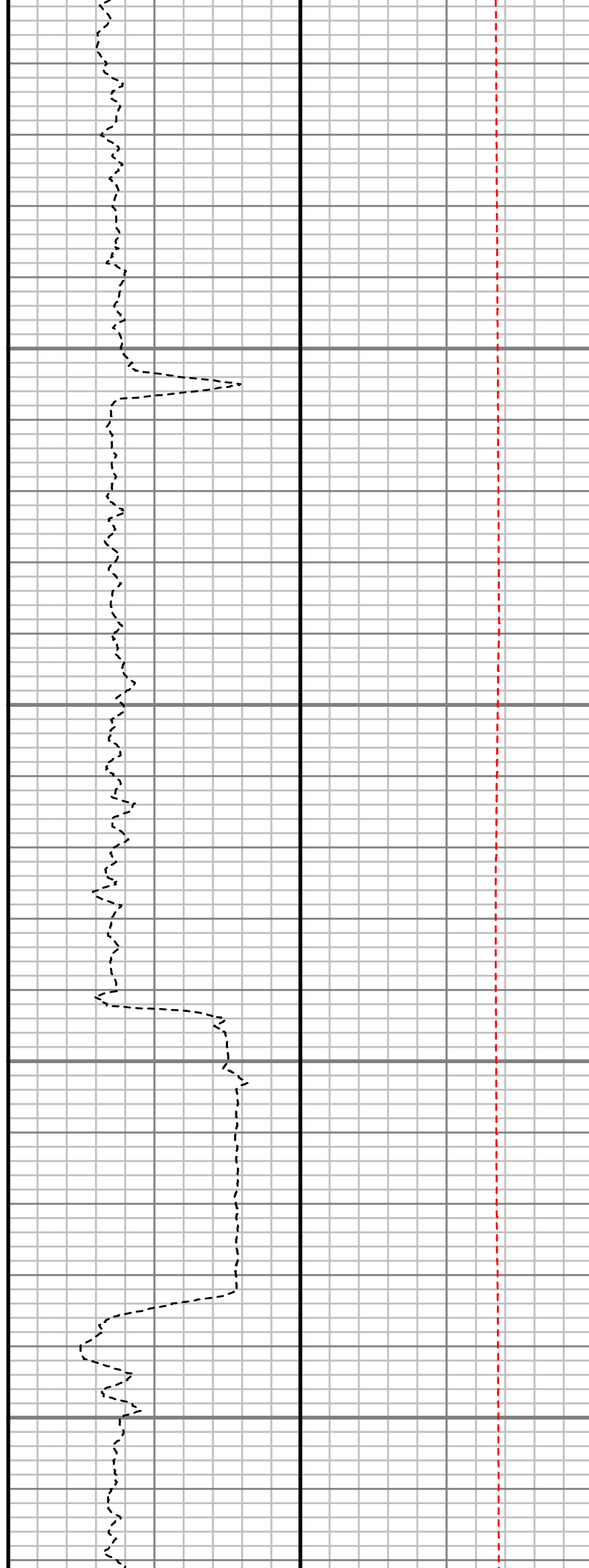
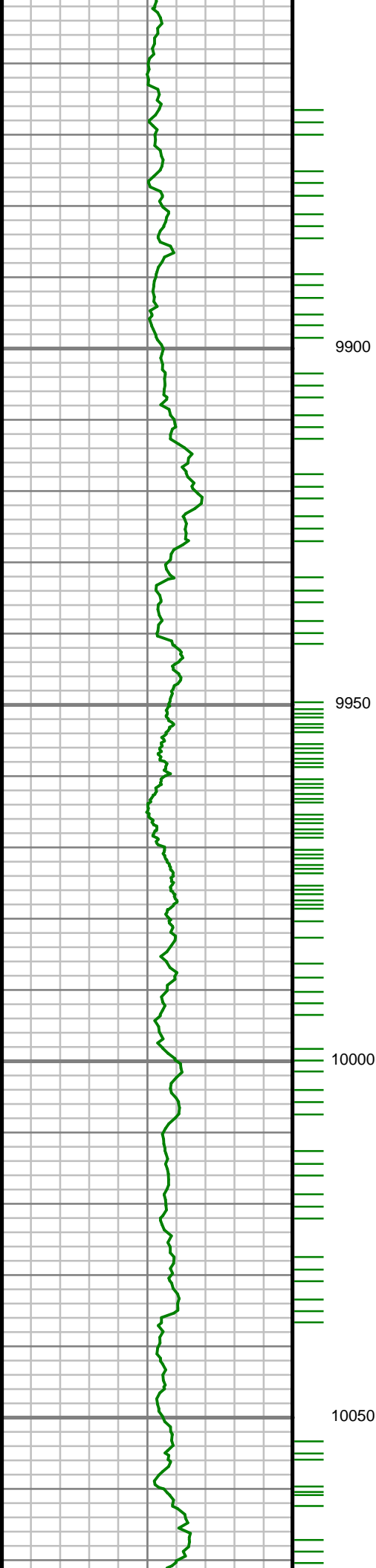
S: 100 MD: 9460.00 ft
Inc: 91.31 deg Az:
179.95 deg TVD:
7466.17 ft

S: 101 MD: 9554.00 ft
Inc: 90.61 deg Az:
180.07 deg TVD:
7464.60 ft



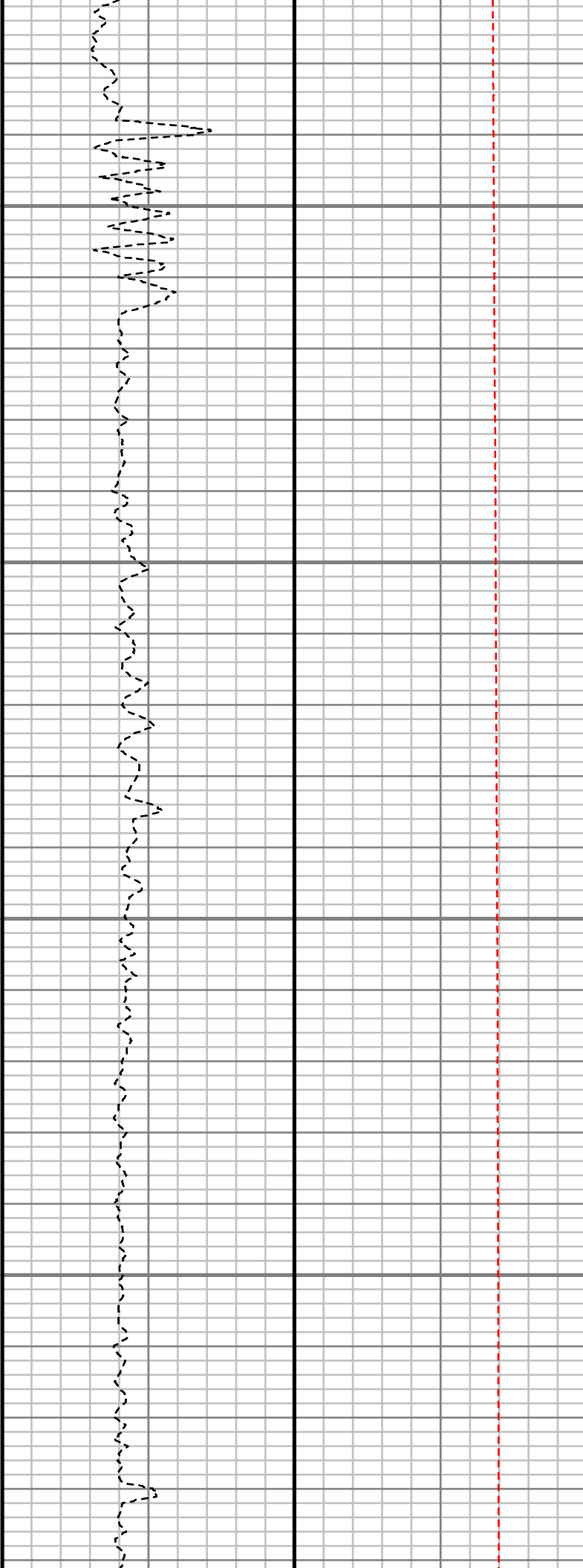
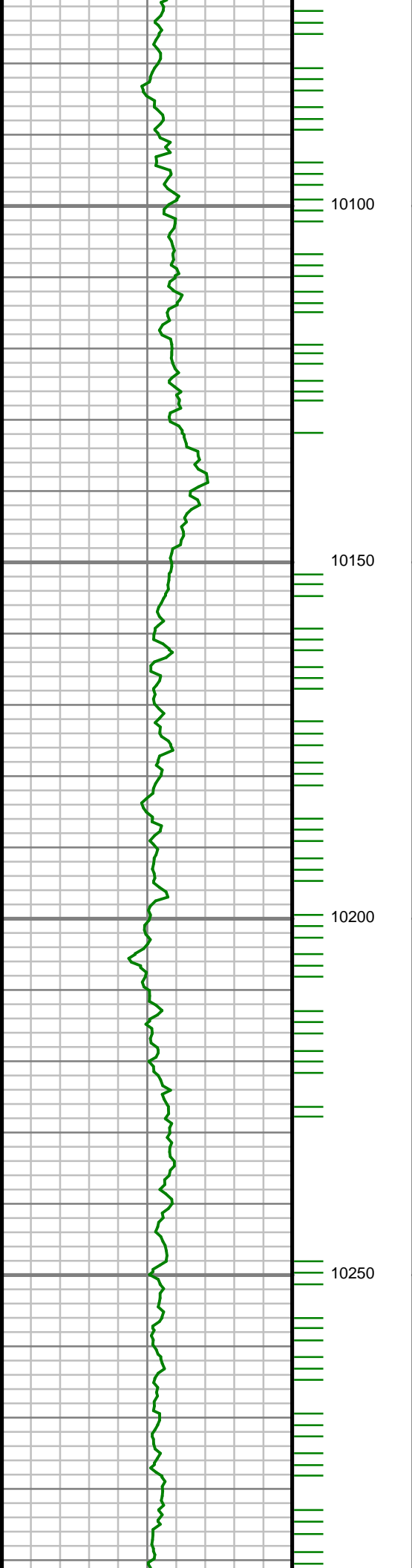
S: 102 MD: 9743.00 ft
Inc: 90.54 deg Az:
180.46 deg TVD:
7462.71 ft

S: 103 MD: 9837.00 ft
Inc: 90.07 deg Az:
180.50 deg TVD:
7462.22 ft



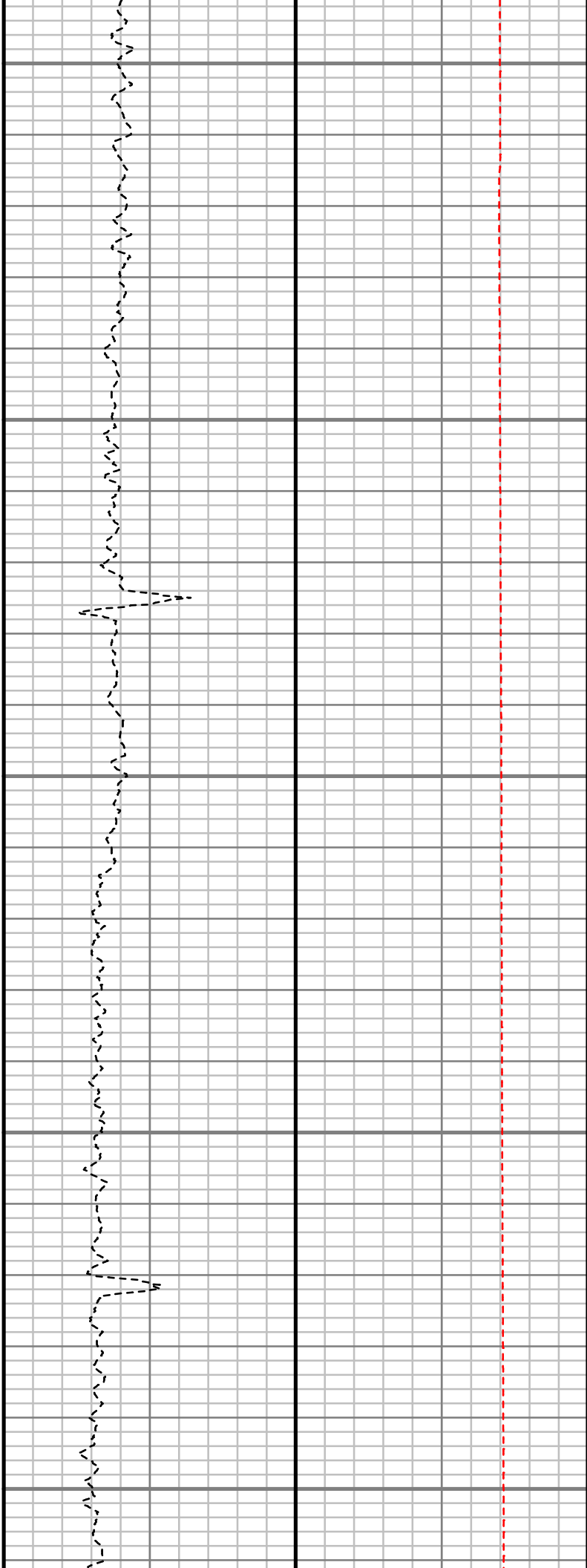
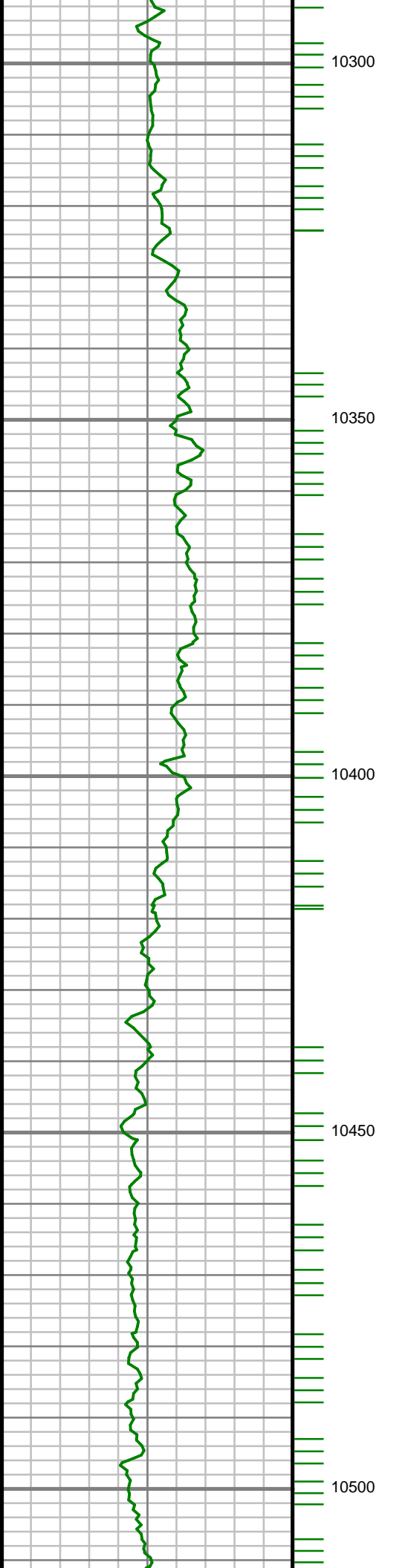
S: 104 MD: 9931.00 ft
Inc: 90.91 deg Az:
180.69 deg TVD:
7461.42 ft

S: 105 MD: 10025.00 ft
Inc: 89.09 deg Az:
180.11 deg TVD:
7461.42 ft



S: 106 MD: 10120.00 ft
Inc: 89.06 deg Az:
179.96 deg TVD:
7462.95 ft

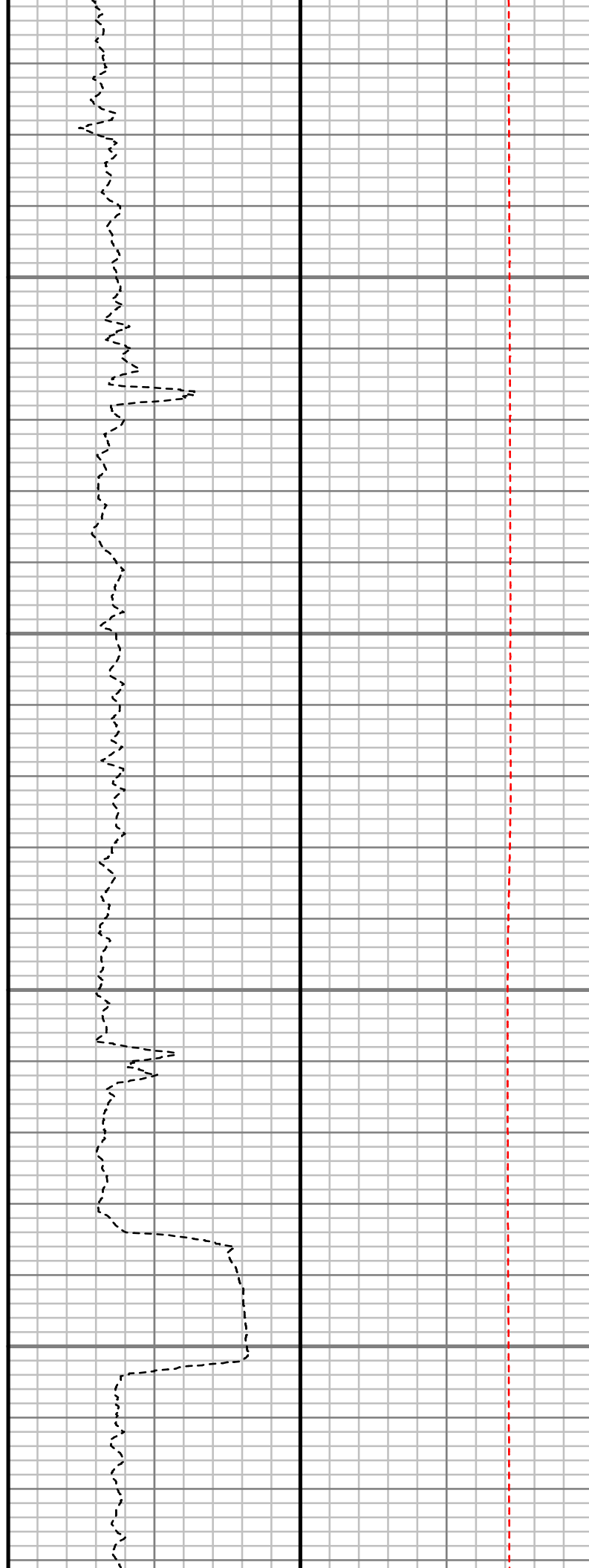
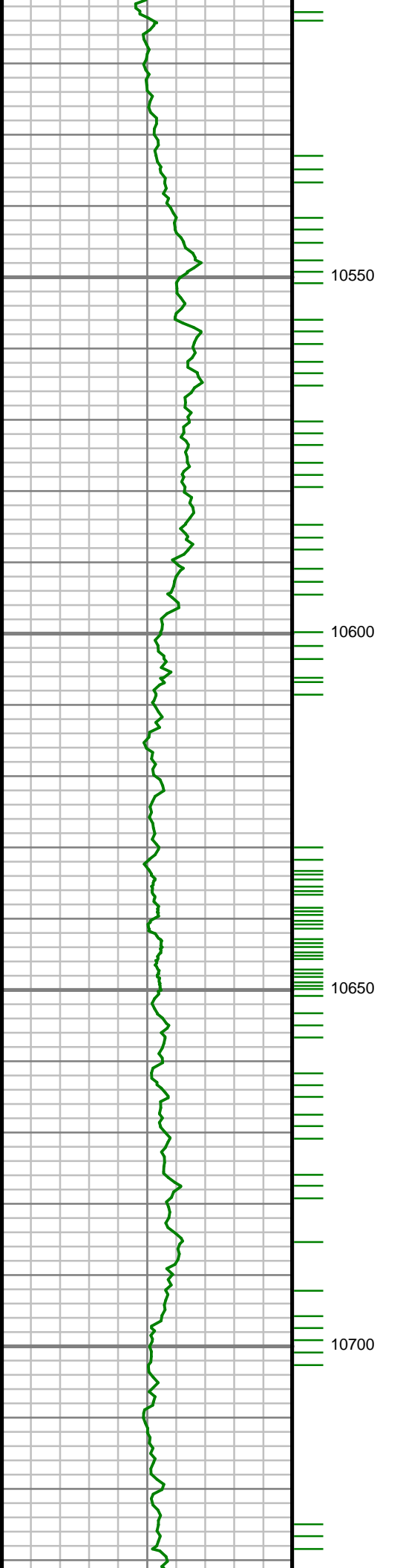
S: 107 MD: 10214.00 ft
Inc: 88.99 deg Az:
180.30 deg TVD:
7464.55 ft



S: 108 MD: 10308.00 ft
Inc: 89.13 deg Az:
180.40 deg TVD:
7466.09 ft

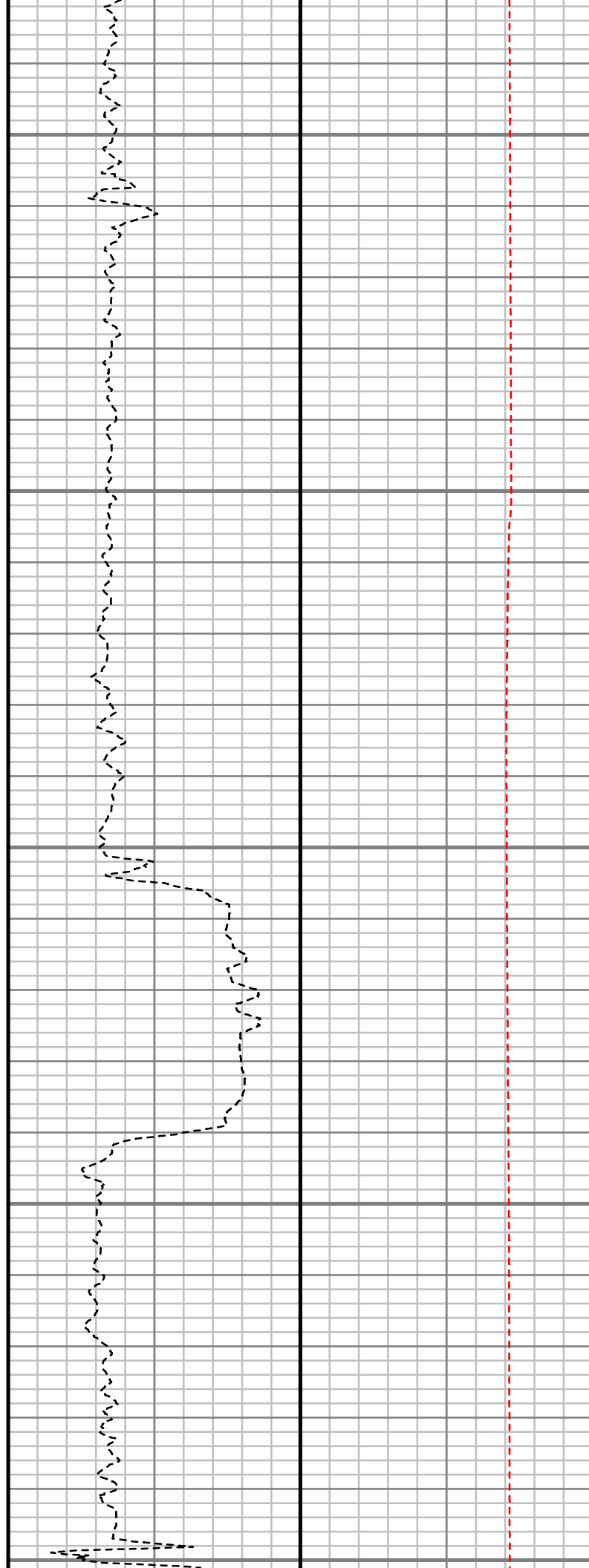
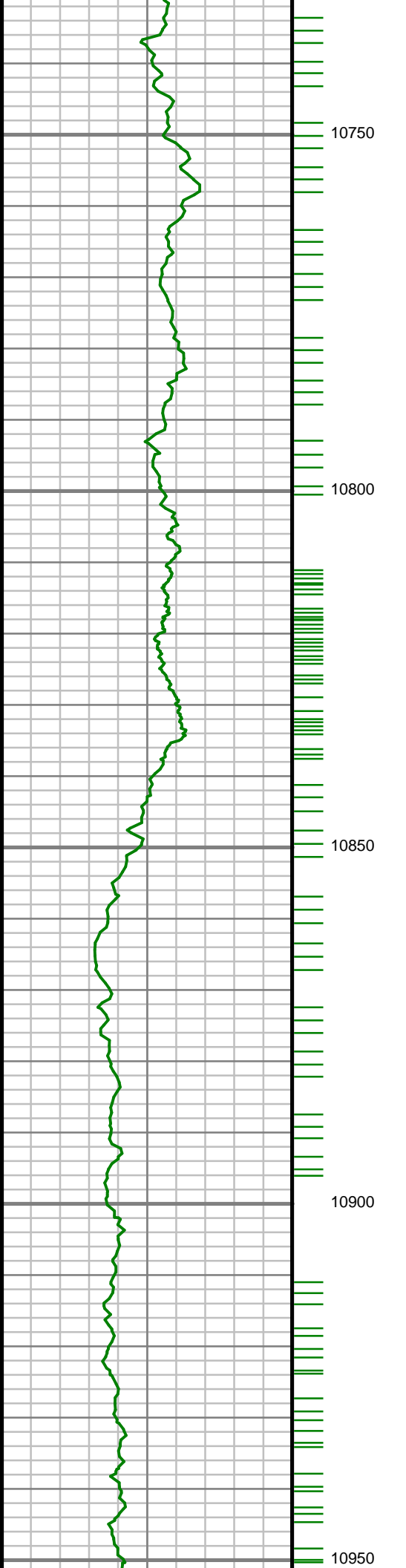
S: 109 MD: 10403.00 ft
Inc: 89.33 deg Az:
180.61 deg TVD:
7467.37 ft

S: 110 MD: 10497.00 ft
Inc: 90.20 deg Az:
180.87 deg TVD:
7467.76 ft



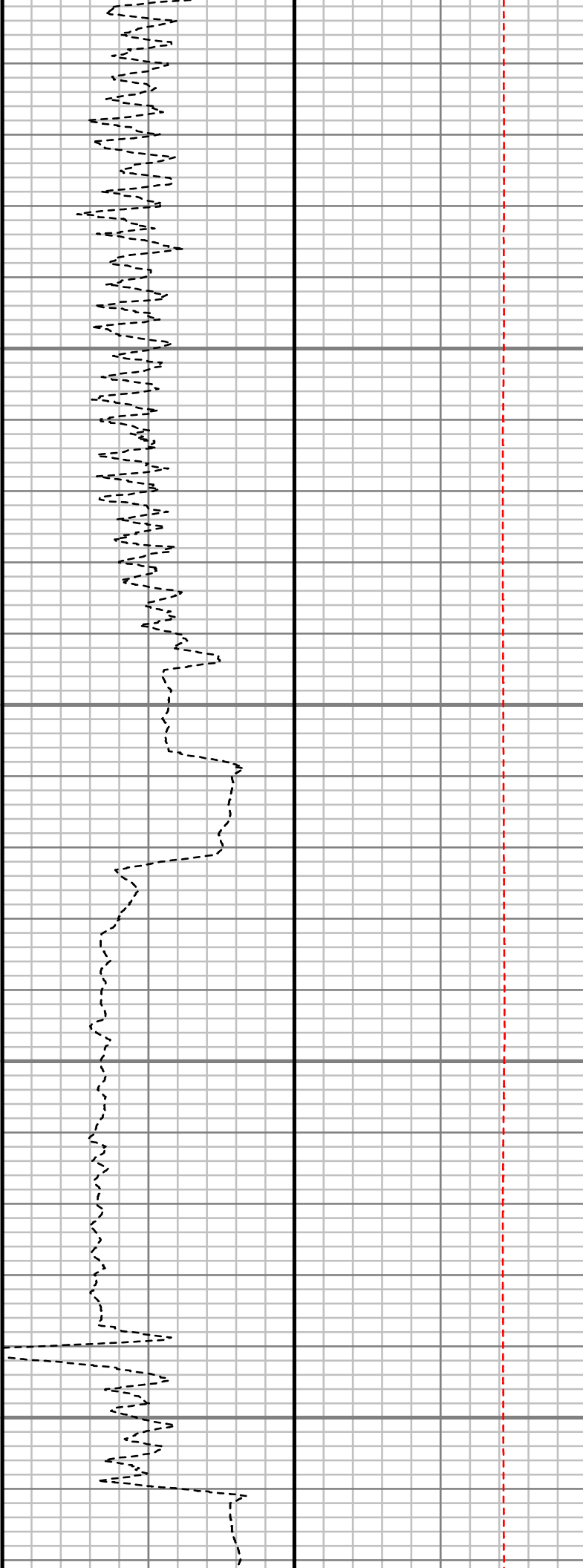
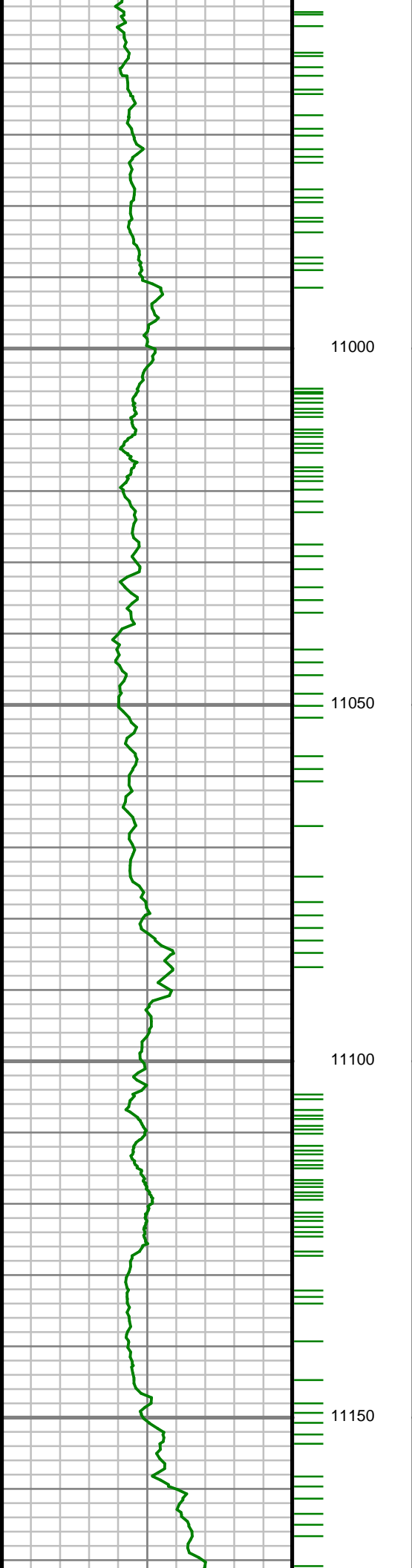
S: 111 MD: 10591.00 ft
Inc: 90.37 deg Az:
180.95 deg TVD:
7467.29 ft

S: 112 MD: 10686.00 ft
Inc: 90.50 deg Az:
179.98 deg TVD:
7466.57 ft



S: 113 MD: 10780.00 ft
Inc: 91.04 deg Az:
179.64 deg TVD:
7465.30 ft

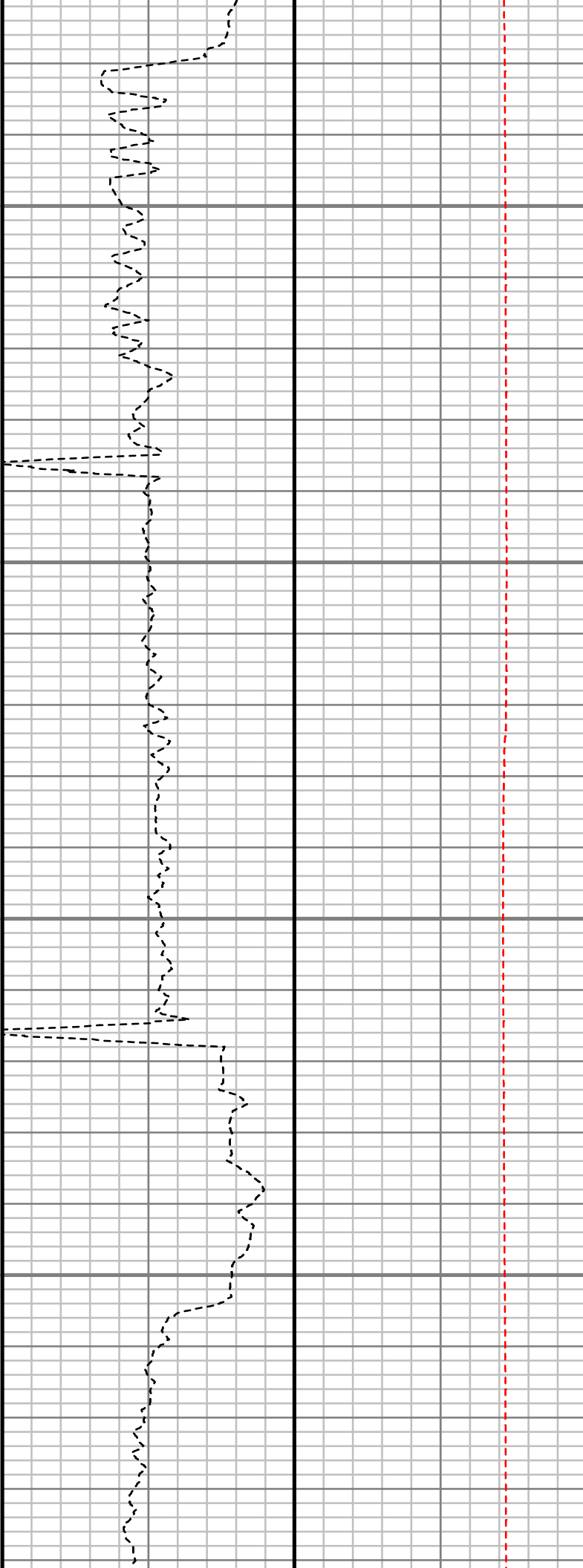
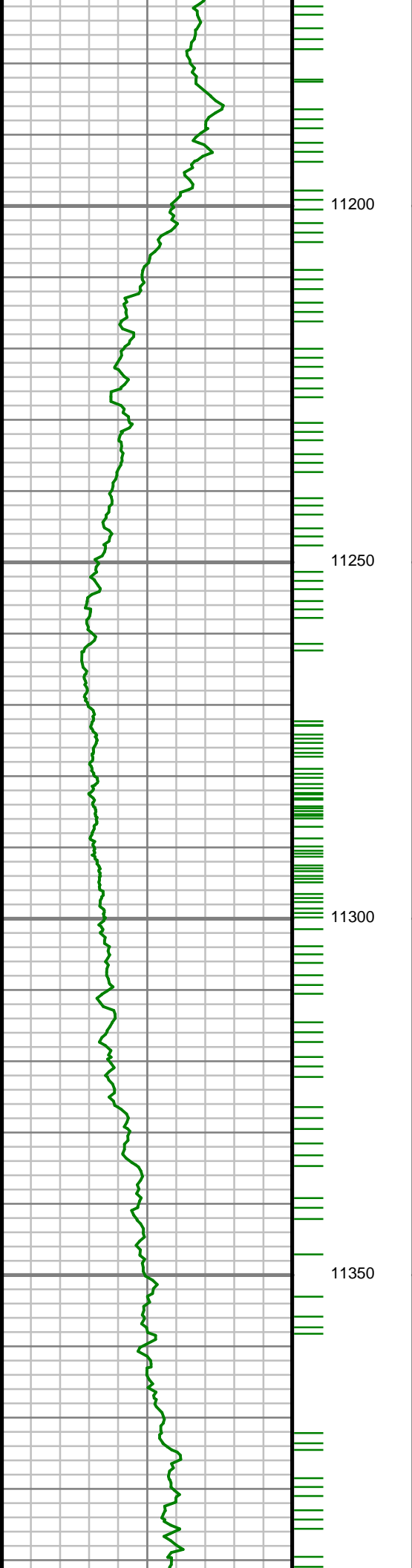
S: 114 MD: 10875.00 ft
Inc: 89.63 deg Az:
179.83 deg TVD:
7464.74 ft



S: 115 MD: 10969.00 ft
Inc: 90.27 deg Az:
180.32 deg TVD:
7464.82 ft

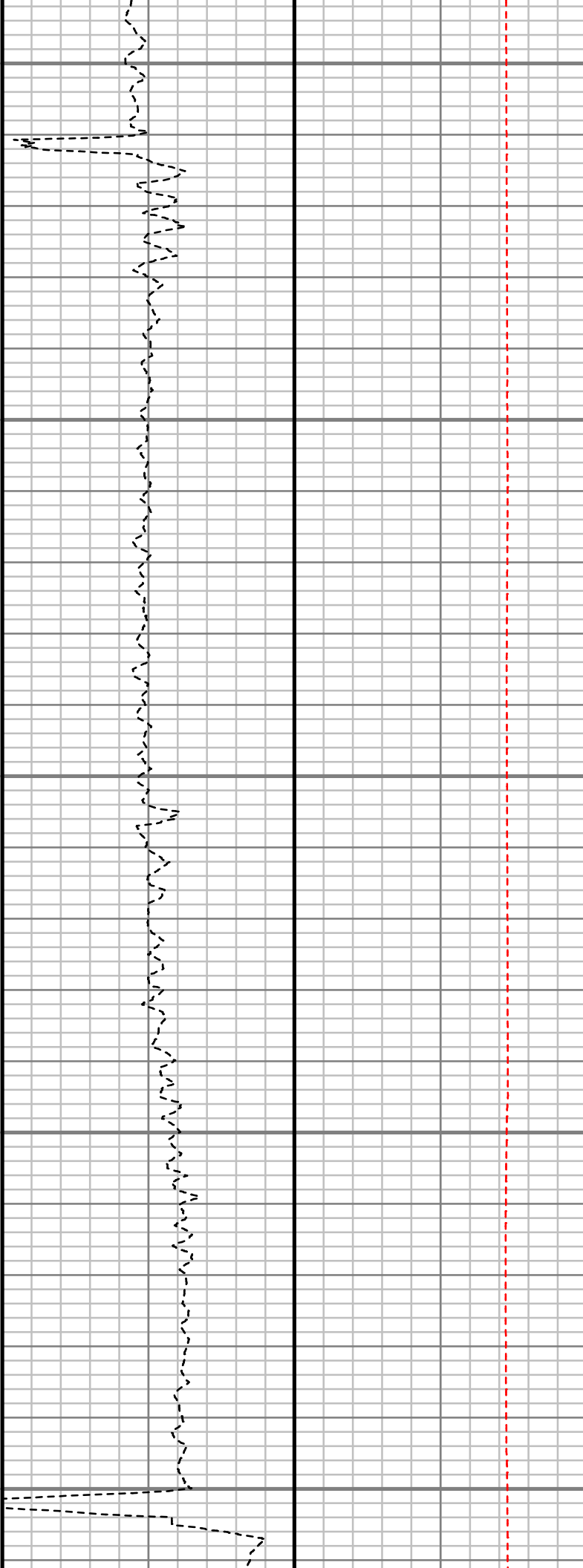
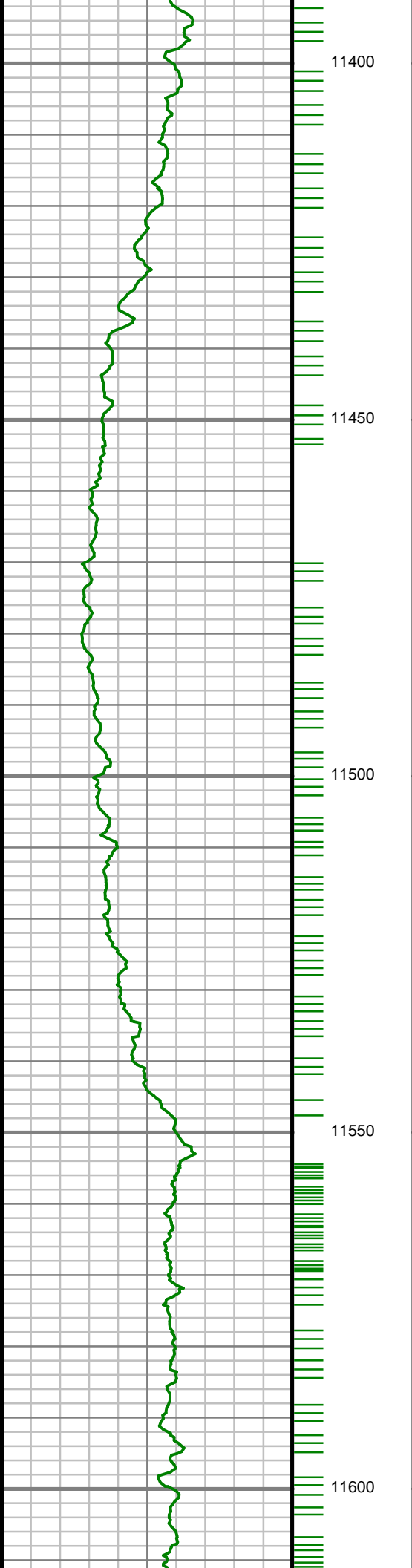
S: 116 MD: 11063.00 ft
Inc: 90.54 deg Az:
179.81 deg TVD:
7464.16 ft

S: 117 MD: 11157.00 ft
Inc: 90.57 deg Az:
179.11 deg TVD:
7463.25 ft



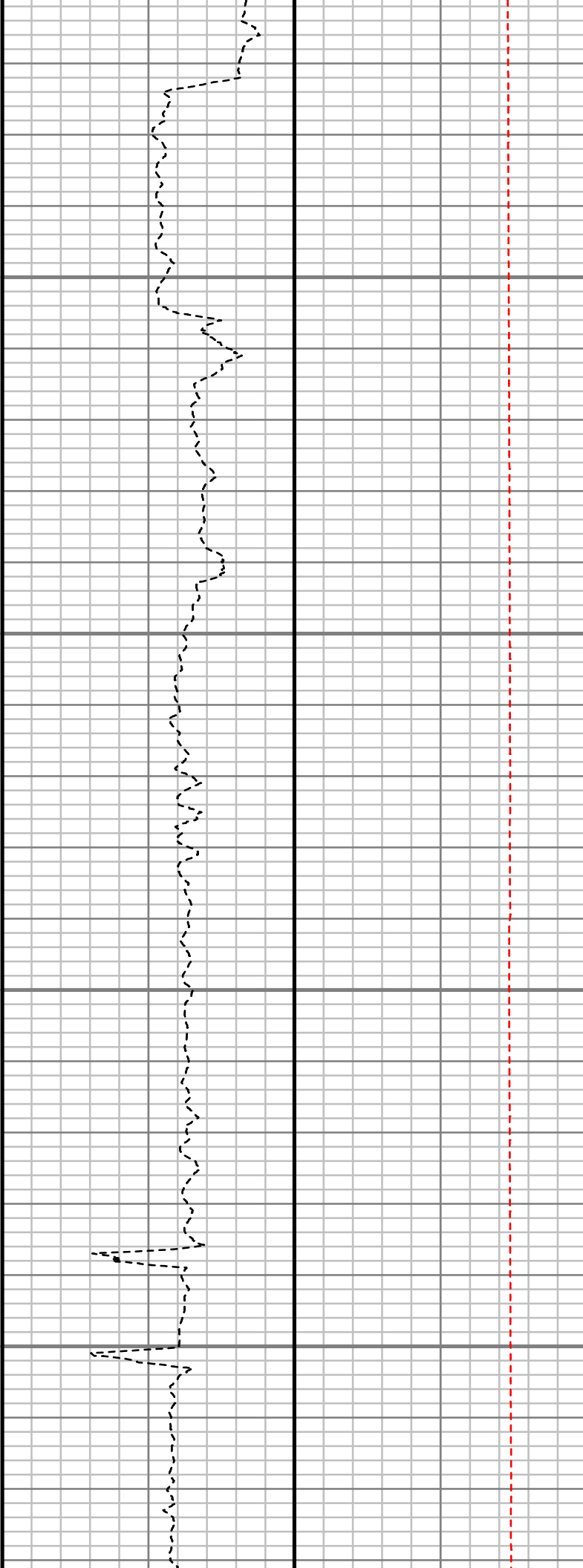
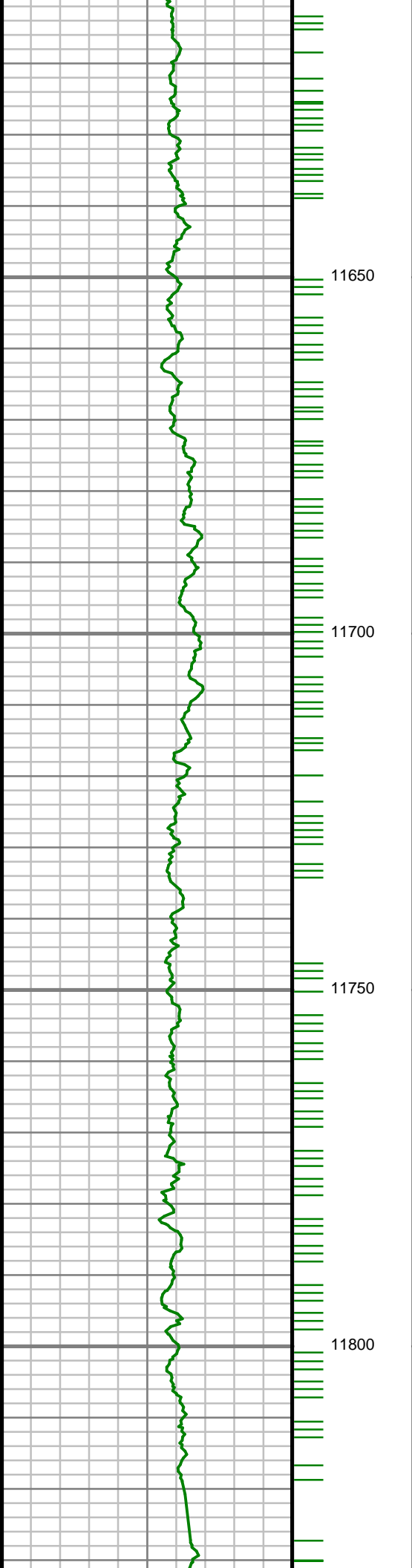
S: 118 MD: 11252.00 ft
Inc: 90.37 deg Az:
178.57 deg TVD:
7462.47 ft

S: 119 MD: 11346.00 ft
Inc: 90.24 deg Az:
178.45 deg TVD:
7461.97 ft



S: 120 MD: 11440.00 ft
Inc: 89.73 deg Az:
177.78 deg TVD:
7462.00 ft

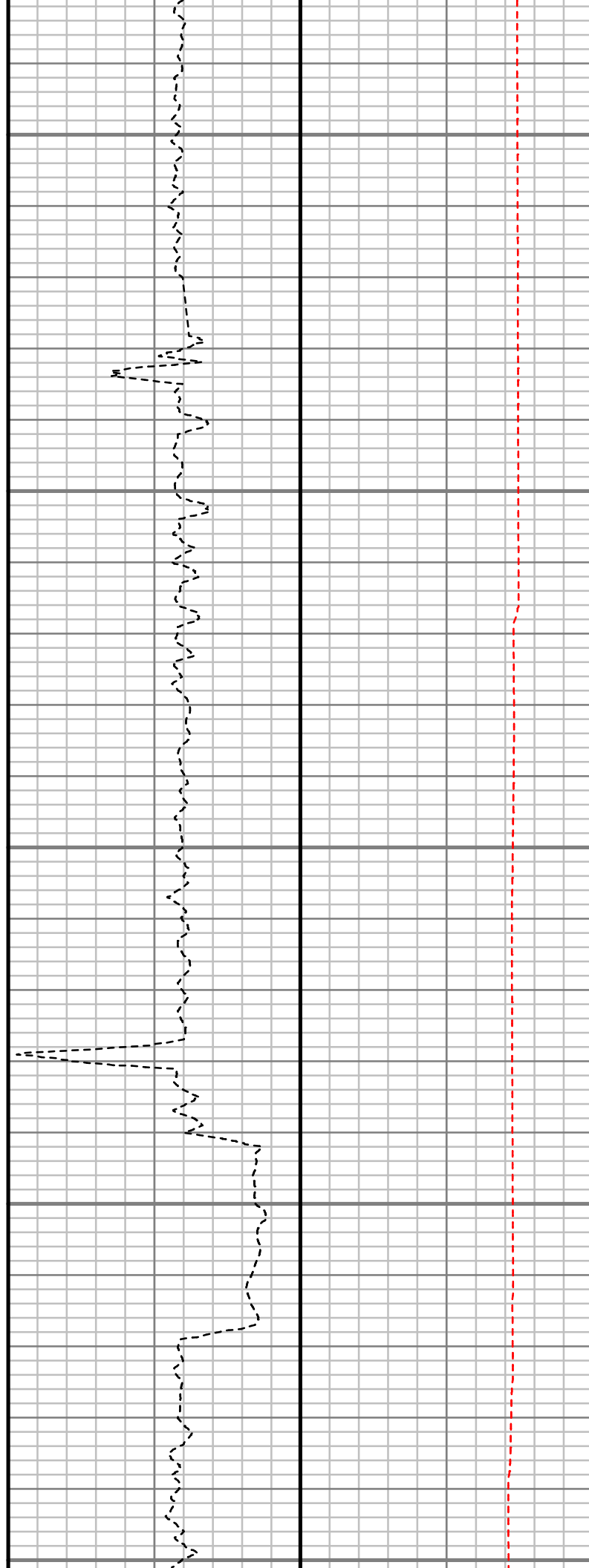
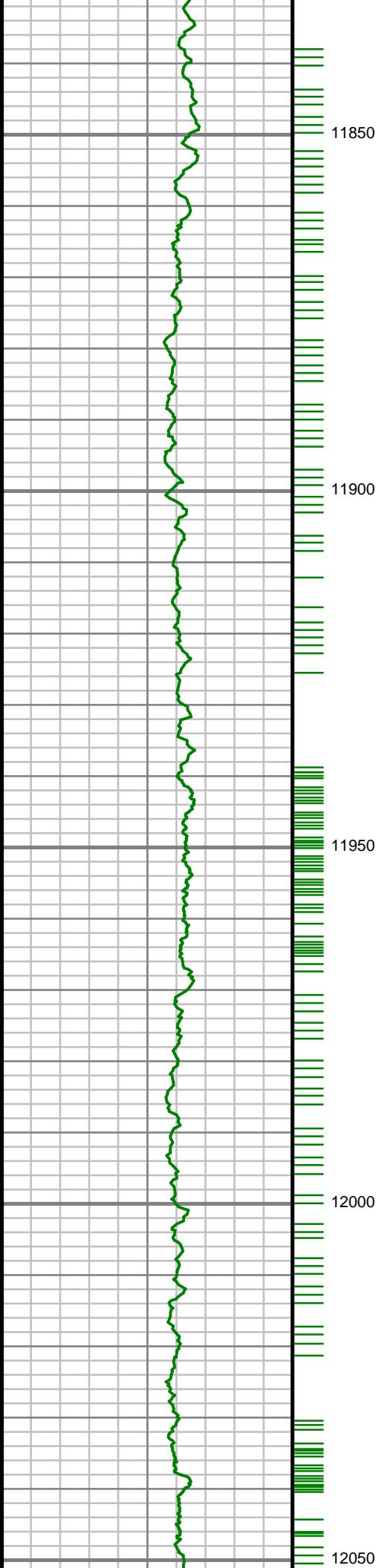
S: 121 MD: 11534.00 ft
Inc: 90.30 deg Az:
178.45 deg TVD:
7461.97 ft



S: 122 MD: 11628.00 ft
Inc: 89.56 deg Az:
178.79 deg TVD:
7462.08 ft

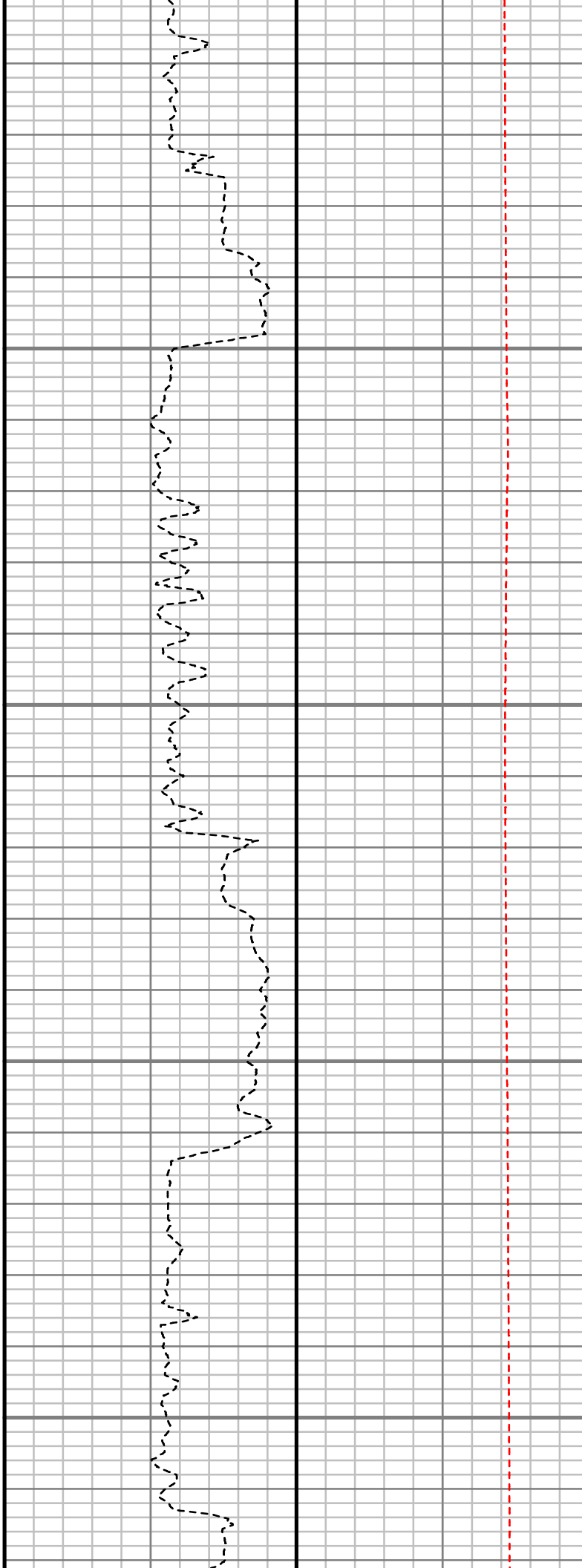
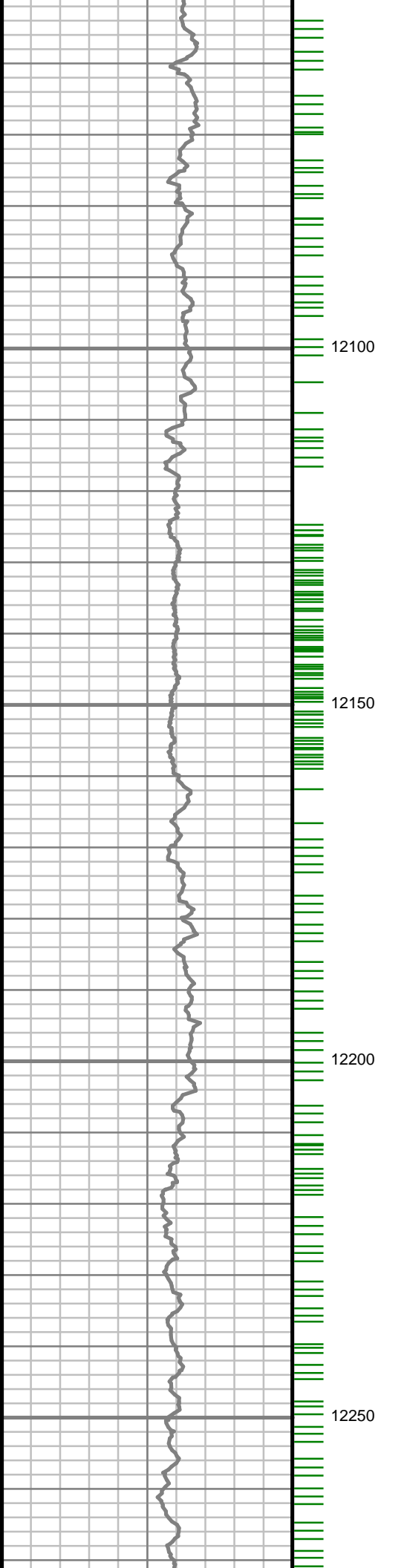
S: 123 MD: 11723.00 ft
Inc: 89.13 deg Az:
177.93 deg TVD:
7463.17 ft

S: 124 MD: 11818.00 ft
Inc: 89.83 deg Az:
178.65 deg TVD:
7464.03 ft



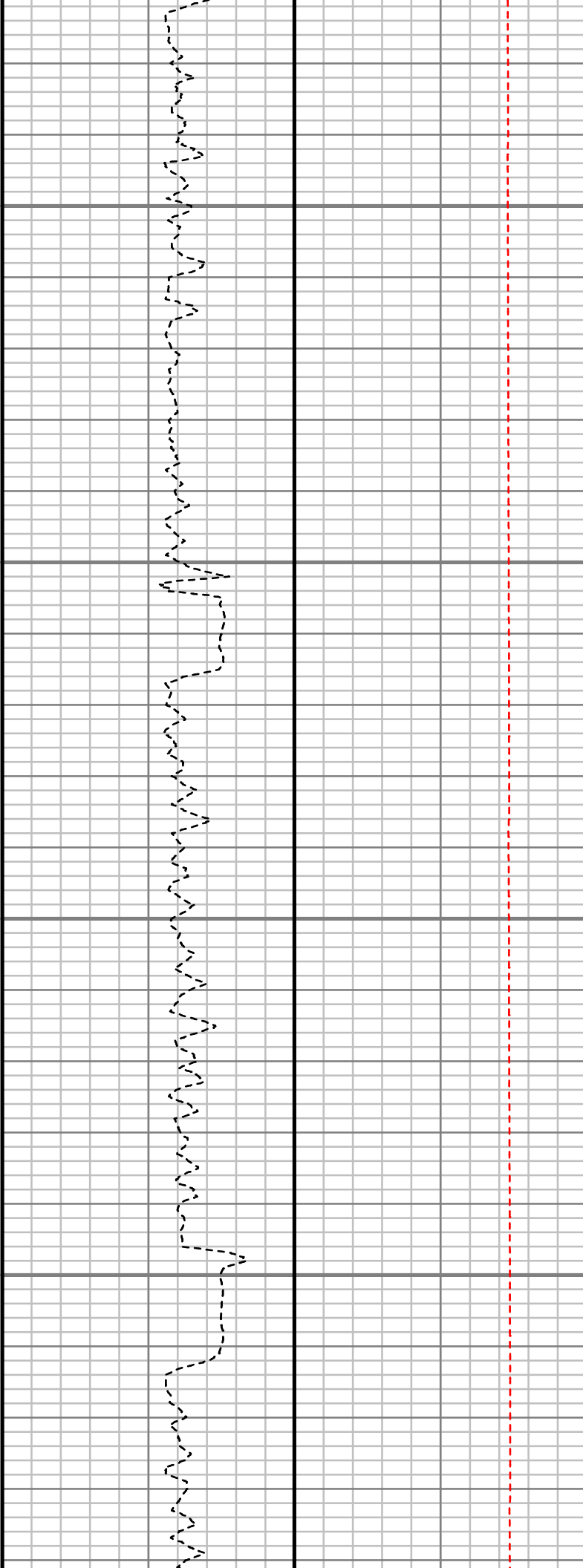
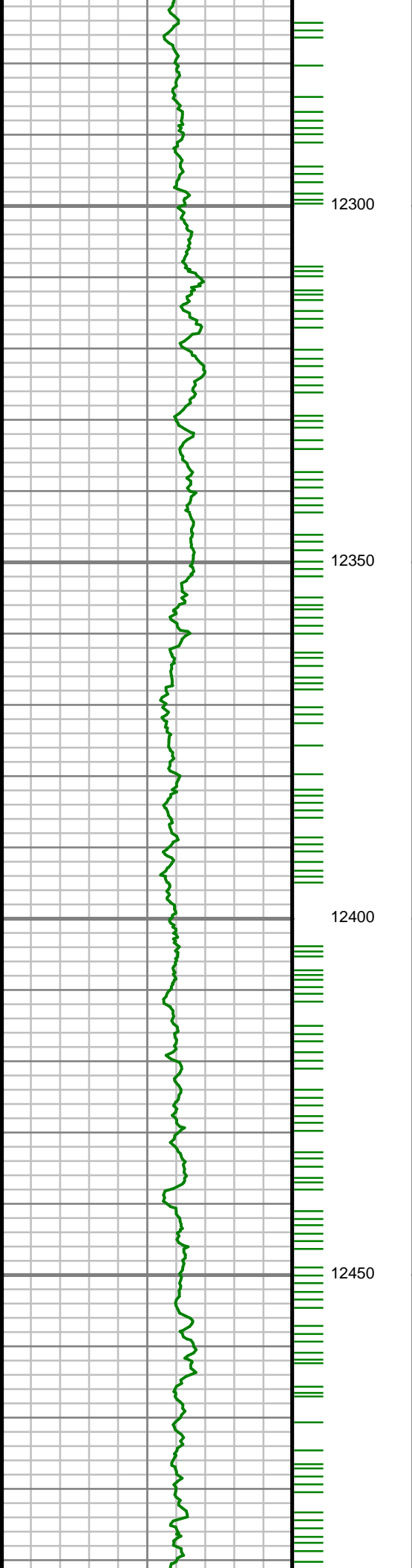
S: 125 MD: 11912.00 ft
Inc: 89.66 deg Az:
177.83 deg TVD:
7464.45 ft

S: 126 MD: 12006.00 ft
Inc: 89.56 deg Az:
178.67 deg TVD:
7465.08 ft



S: 127 MD: 12101.00 ft
Inc: 89.29 deg Az:
178.82 deg TVD:
7466.03 ft

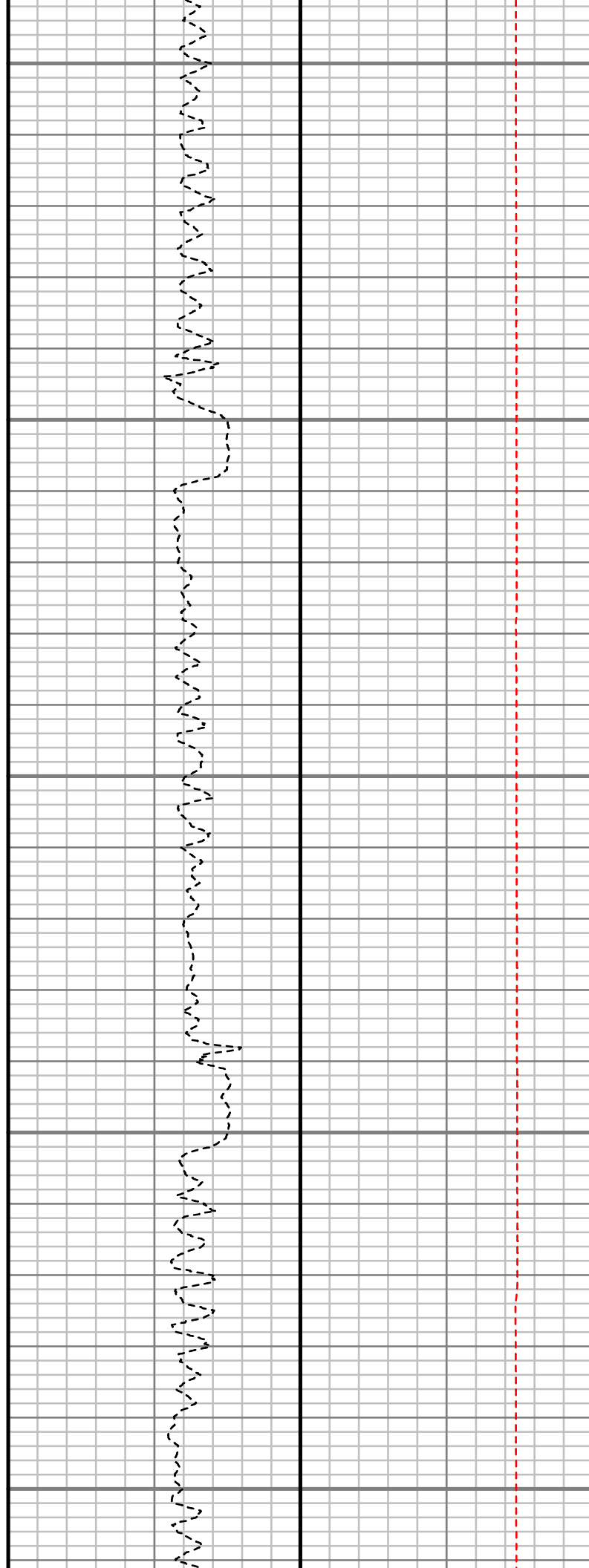
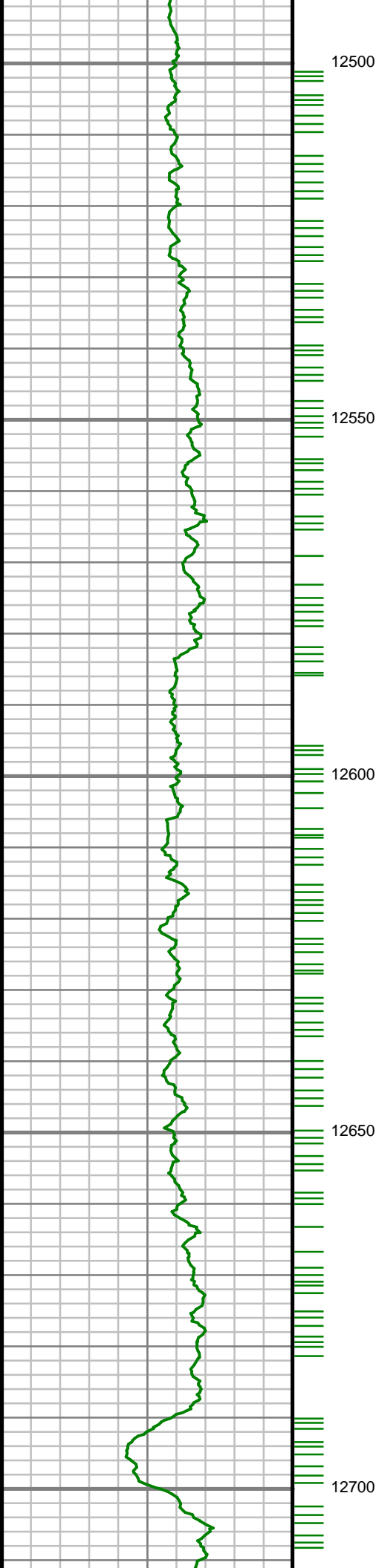
S: 128 MD: 12195.00 ft
Inc: 89.23 deg Az:
180.76 deg TVD:
7467.24 ft



S: 129 MD: 12289.00 ft
Inc: 89.93 deg Az:
181.92 deg TVD:
7467.93 ft

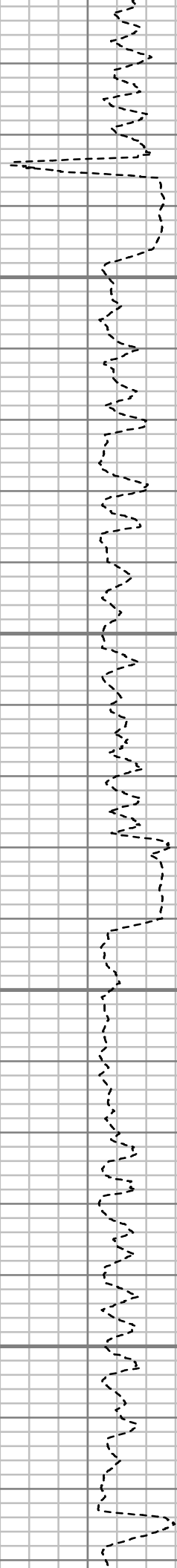
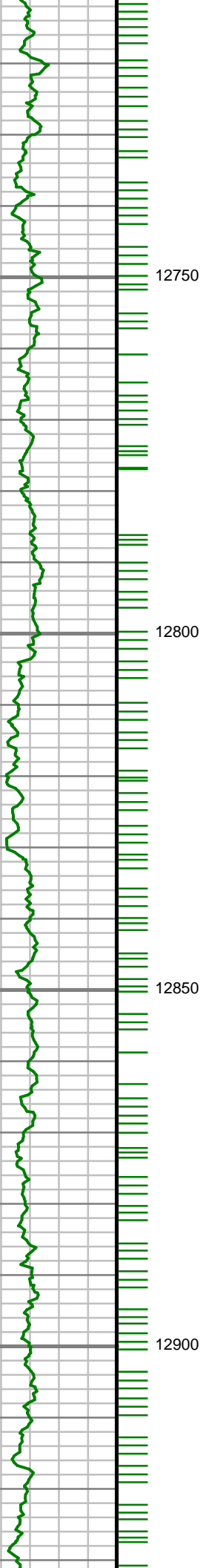
S: 130 MD: 12383.00 ft
Inc: 89.53 deg Az:
181.27 deg TVD:
7468.37 ft

S: 131 MD: 12478.00 ft
Inc: 89.50 deg Az:
181.35 deg TVD:
7469.18 ft



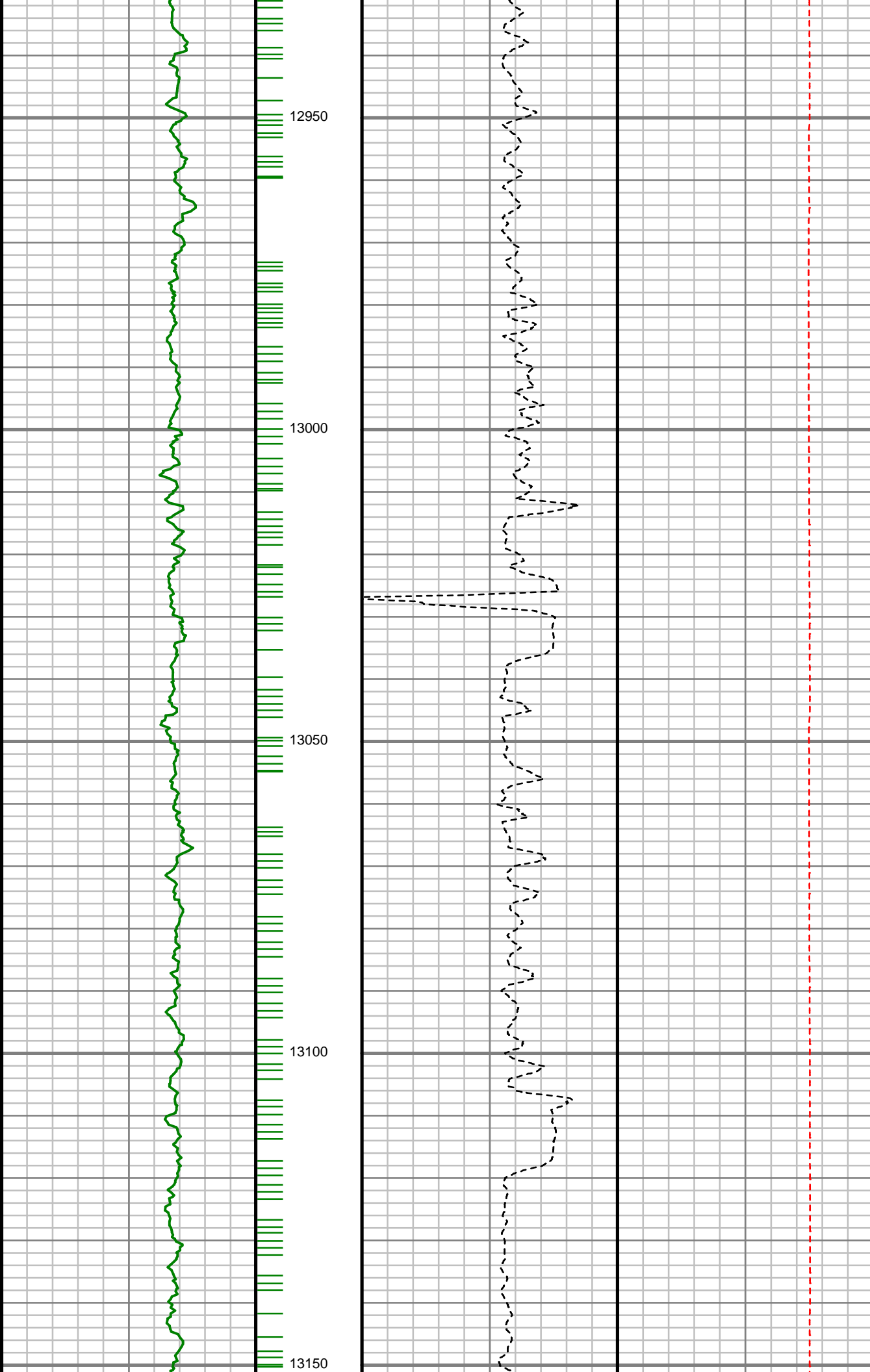
S: 132 MD: 12572.00 ft
Inc: 89.29 deg Az:
180.95 deg TVD:
7470.17 ft

S: 133 MD: 12666.00 ft
Inc: 90.07 deg Az:
181.24 deg TVD:
7470.70 ft



S: 134 MD: 12761.00 ft
Inc: 90.30 deg Az:
181.10 deg TVD:
7470.39 ft

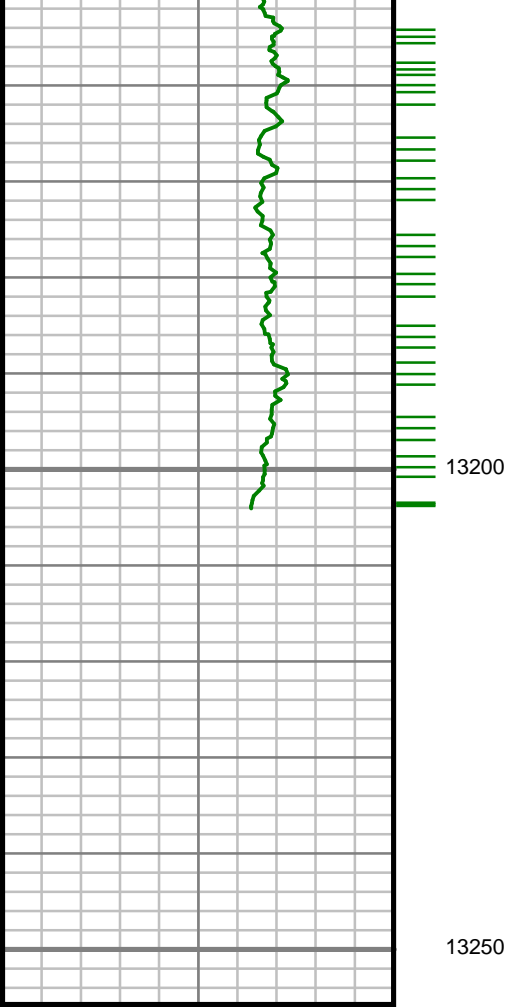
S: 135 MD: 12855.00 ft
Inc: 89.80 deg Az:
180.88 deg TVD:
7470.31 ft



S: 136 MD: 12949.00 ft
Inc: 89.36 deg Az:
179.92 deg TVD:
7470.99 ft

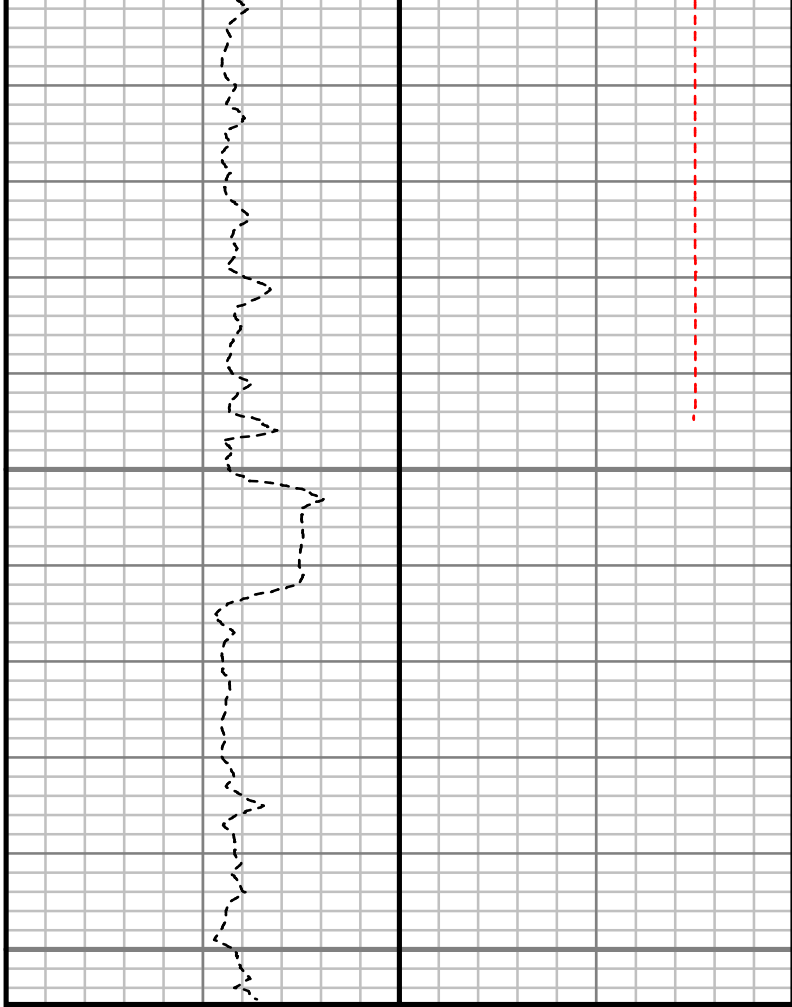
S: 137 MD: 13043.00 ft
Inc: 89.33 deg Az:
179.30 deg TVD:
7472.07 ft

S: 138 MD: 13137.00 ft
Inc: 89.80 deg Az:
180.54 deg TVD:
7472.79 ft



Gamma Ray (GR)		
0	Unit = aapi	250

MEASURED DEPTH
1,240 (ft)



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

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

Comments

MWD Survey Report

Well Location	BANDED 16N-27HZ
Well Name	BANDED 16N-27HZ
Survey Date	8/19/2014
Latitude	40°7'2.096"N
Longitude	104°52'14.358"W
Btotal	52722, 52757, 52799 nT
Dip	66.76, 66.77 deg
Magnetic Declination	8.61, 8.63 deg
North Reference	True North
Grid Correction	None
Depth Reference	RKB (25.00 ft)
Calculation Method	Minimum Curvature
Section (VS) Ref	0.00N (ft), 0.00E (ft), 180.00Azim (deg)
Operator(s)	M. SHARKER, T. RELLERGERT

Well Notes

SURVEYS FROM 0 FT. TO 1771 FT. WERE ACQUIRED BY MS GYRO MWD.

SURVEYS FROM 1771 FT. TO 13137 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
25.00	0.00	0.00	25.00	0.00	0.00	0.00	0.00	25.00
125.00	0.26	11.27	125.00	-0.22	0.22	0.04	0.26	100.00
225.00	0.37	332.45	225.00	-0.73	0.73	-0.06	0.23	100.00
325.00	0.37	329.61	325.00	-1.30	1.30	-0.37	0.02	100.00
425.00	0.38	320.40	424.99	-1.83	1.83	-0.75	0.06	100.00
525.00	0.39	304.99	524.99	-2.28	2.28	-1.24	0.10	100.00
625.00	0.43	314.02	624.99	-2.74	2.74	-1.79	0.08	100.00
725.00	0.46	308.80	724.99	-3.25	3.25	-2.37	0.05	100.00
825.00	0.53	302.46	824.98	-3.75	3.75	-3.07	0.09	100.00
925.00	0.52	287.51	924.98	-4.13	4.13	-3.90	0.14	100.00
1025.00	0.61	286.64	1024.97	-4.42	4.42	-4.84	0.09	100.00
1125.00	0.67	278.07	1124.97	-4.66	4.66	-5.93	0.11	100.00
1225.00	0.64	275.19	1224.96	-4.79	4.79	-7.06	0.04	100.00
1325.00	0.53	290.90	1324.96	-5.01	5.01	-8.05	0.19	100.00
1425.00	0.43	280.19	1424.95	-5.24	5.24	-8.85	0.13	100.00
1525.00	0.36	280.13	1524.95	-5.36	5.36	-9.53	0.07	100.00
1625.00	0.41	235.42	1624.95	-5.21	5.21	-10.13	0.30	100.00
1667.00	0.47	245.83	1666.95	-5.05	5.05	-10.42	0.24	42.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
1767.00	0.85	294.54	1766.94	-5.20	5.20	-11.47	0.65	100.00
1858.00	3.24	333.90	1857.88	-7.79	7.79	-13.21	2.89	91.00
1949.00	4.58	348.25	1948.67	-13.65	13.65	-15.08	1.81	91.00
2041.00	6.88	1.52	2040.21	-22.75	22.75	-15.68	2.87	92.00
2132.00	8.91	359.28	2130.34	-35.24	35.24	-15.63	2.25	91.00
2224.00	10.71	357.95	2220.99	-50.91	50.91	-16.02	1.98	92.00
2315.00	11.90	356.43	2310.22	-68.73	68.73	-16.91	1.34	91.00
2407.00	14.12	352.28	2399.86	-89.31	89.31	-19.01	2.62	92.00
2498.00	14.59	350.98	2488.02	-111.63	111.63	-22.29	0.63	91.00
2590.00	15.05	349.07	2576.96	-134.81	134.81	-26.38	0.73	92.00
2681.00	14.60	350.73	2664.93	-157.73	157.73	-30.46	0.68	91.00
2772.00	12.26	350.72	2753.43	-178.58	178.58	-33.87	2.57	91.00
2863.00	12.76	357.29	2842.28	-198.16	198.16	-35.90	1.66	91.00
2955.00	14.86	359.95	2931.61	-220.11	220.11	-36.39	2.39	92.00
3046.00	15.07	1.82	3019.53	-243.60	243.60	-36.03	0.58	91.00
3137.00	13.82	1.85	3107.65	-266.29	266.29	-35.30	1.38	91.00
3229.00	14.18	358.86	3196.92	-288.53	288.53	-35.17	0.88	92.00
3321.00	14.33	352.81	3286.09	-311.09	311.09	-36.82	1.63	92.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
3415.00	15.08	355.17	3377.01	-334.82	334.82	-39.31	1.02	94.00
3510.00	13.15	358.23	3469.14	-357.94	357.94	-40.68	2.18	95.00
3604.00	13.48	357.29	3560.61	-379.57	379.57	-41.53	0.42	94.00
3793.00	12.46	351.92	3744.80	-421.76	421.76	-45.44	0.84	189.00
3887.00	11.61	357.83	3836.74	-441.24	441.24	-47.22	1.59	94.00
3981.00	11.69	359.92	3928.80	-460.22	460.22	-47.59	0.46	94.00
4170.00	6.55	349.96	4115.36	-490.01	490.01	-49.50	2.84	189.00
4359.00	4.53	343.24	4303.47	-507.78	507.78	-53.54	1.12	189.00
4453.00	4.08	342.18	4397.20	-514.51	514.51	-55.63	0.48	94.00
4736.00	2.54	326.48	4679.73	-529.33	529.33	-62.18	0.63	283.00
4830.00	2.33	320.84	4773.64	-532.55	532.55	-64.53	0.34	94.00
5019.00	1.25	298.09	4962.55	-536.49	536.49	-68.77	0.67	189.00
5113.00	0.92	274.97	5056.53	-537.04	537.04	-70.43	0.58	94.00
5207.00	0.89	292.36	5150.52	-537.39	537.39	-71.85	0.29	94.00
5489.00	0.50	330.72	5432.50	-539.30	539.30	-74.49	0.21	282.00
5584.00	0.72	308.50	5527.50	-540.04	540.04	-75.15	0.33	95.00
5678.00	0.78	311.94	5621.49	-540.83	540.83	-76.09	0.08	94.00
5773.00	0.52	326.49	5716.48	-541.62	541.62	-76.81	0.33	95.00

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
5961.00	0.54	352.65	5904.47	-543.20	543.20	-77.39	0.13	188.00
6056.00	0.81	103.34	5999.47	-543.49	543.49	-76.80	1.17	95.00
6150.00	0.64	73.47	6093.46	-543.49	543.49	-75.65	0.43	94.00
6244.00	0.71	330.97	6187.46	-544.15	544.15	-75.43	1.12	94.00
6433.00	1.45	126.06	6376.44	-543.77	543.77	-74.07	1.12	189.00
6621.00	0.67	110.55	6564.41	-541.99	541.99	-71.13	0.44	188.00
6716.00	0.48	51.12	6659.41	-542.05	542.05	-70.30	0.62	95.00
6810.00	1.30	48.85	6753.39	-543.00	543.00	-69.19	0.88	94.00
6857.00	1.69	53.59	6800.38	-543.76	543.76	-68.23	0.87	47.00
6905.00	3.18	151.40	6848.35	-543.01	543.01	-67.02	7.92	48.00
6952.00	6.89	166.31	6895.16	-539.13	539.13	-65.73	8.30	47.00
6999.00	10.37	164.34	6941.62	-532.31	532.31	-63.92	7.44	47.00
7046.00	14.09	167.74	6987.55	-522.65	522.65	-61.56	8.04	47.00
7093.00	18.87	173.68	7032.61	-509.49	509.49	-59.51	10.78	47.00
7140.00	24.08	178.93	7076.33	-492.34	492.34	-58.49	11.80	47.00
7187.00	29.89	184.09	7118.21	-471.06	471.06	-59.15	13.31	47.00
7234.00	33.53	184.39	7158.18	-446.43	446.43	-60.97	7.76	47.00
7282.00	37.07	184.66	7197.35	-418.78	418.78	-63.17	7.37	48.00

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
7329.00	40.96	185.39	7233.86	-389.32	389.32	-65.76	8.35	47.00
7376.00	44.32	183.99	7268.43	-357.59	357.59	-68.36	7.43	47.00
7423.00	48.08	185.02	7300.96	-323.78	323.78	-71.03	8.14	47.00
7470.00	52.38	184.64	7331.02	-287.79	287.79	-74.07	9.18	47.00
7517.00	56.80	183.94	7358.24	-249.60	249.60	-76.92	9.47	47.00
7565.00	62.03	183.08	7382.66	-208.37	208.37	-79.44	11.01	48.00
7612.00	65.13	182.61	7403.57	-166.34	166.34	-81.53	6.65	47.00
7659.00	67.90	181.41	7422.30	-123.26	123.26	-83.04	6.35	47.00
7706.00	71.34	181.42	7438.67	-79.23	79.23	-84.13	7.33	47.00
7753.00	75.27	181.18	7452.16	-34.23	34.23	-85.14	8.37	47.00
7835.00	84.35	180.22	7466.66	46.39	-46.39	-86.12	11.13	82.00
7950.00	89.80	179.17	7472.52	161.19	-161.19	-85.50	4.82	115.00
8045.00	89.66	178.80	7472.97	256.18	-256.18	-83.83	0.41	95.00
8139.00	90.60	179.44	7472.75	350.16	-350.16	-82.38	1.21	94.00
8233.00	90.87	179.22	7471.54	444.15	-444.15	-81.28	0.37	94.00
8327.00	90.91	179.12	7470.08	538.13	-538.13	-79.92	0.10	94.00
8422.00	90.64	179.08	7468.79	633.11	-633.11	-78.43	0.29	95.00
8516.00	91.48	178.78	7467.06	727.07	-727.07	-76.67	0.95	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
8611.00	90.81	179.01	7465.16	822.04	-822.04	-74.83	0.75	95.00
8705.00	89.36	179.31	7465.02	916.02	-916.02	-73.45	1.57	94.00
8799.00	89.43	179.57	7466.01	1010.01	-1010.01	-72.53	0.28	94.00
8893.00	89.06	179.81	7467.25	1104.00	-1104.00	-72.02	0.47	94.00
8988.00	89.06	179.86	7468.82	1198.99	-1198.99	-71.74	0.06	95.00
9082.00	89.60	179.98	7469.92	1292.98	-1292.98	-71.61	0.59	94.00
9177.00	90.77	180.86	7469.61	1387.98	-1387.98	-72.30	1.54	95.00
9271.00	89.83	180.02	7469.12	1481.97	-1481.97	-73.02	1.34	94.00
9365.00	91.21	180.46	7468.26	1575.97	-1575.97	-73.42	1.54	94.00
9460.00	91.31	179.95	7466.17	1670.94	-1670.94	-73.77	0.54	95.00
9554.00	90.61	180.07	7464.60	1764.93	-1764.93	-73.78	0.76	94.00
9743.00	90.54	180.46	7462.71	1953.92	-1953.92	-74.64	0.21	189.00
9837.00	90.07	180.50	7462.22	2047.91	-2047.91	-75.43	0.50	94.00
9931.00	90.91	180.69	7461.42	2141.90	-2141.90	-76.40	0.92	94.00
10025.00	89.09	180.11	7461.42	2235.90	-2235.90	-77.06	2.03	94.00
10120.00	89.06	179.96	7462.95	2330.88	-2330.88	-77.12	0.17	95.00
10214.00	88.99	180.30	7464.55	2424.87	-2424.87	-77.32	0.37	94.00
10308.00	89.13	180.40	7466.09	2518.85	-2518.85	-77.89	0.18	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
10403.00	89.33	180.61	7467.37	2613.84	-2613.84	-78.72	0.31	95.00
10497.00	90.20	180.87	7467.76	2707.83	-2707.83	-79.94	0.97	94.00
10591.00	90.37	180.95	7467.29	2801.82	-2801.82	-81.44	0.20	94.00
10686.00	90.50	179.98	7466.57	2896.81	-2896.81	-82.21	1.03	95.00
10780.00	91.04	179.64	7465.30	2990.80	-2990.80	-81.91	0.68	94.00
10875.00	89.63	179.83	7464.74	3085.80	-3085.80	-81.47	1.50	95.00
10969.00	90.27	180.32	7464.82	3179.80	-3179.80	-81.60	0.86	94.00
11063.00	90.54	179.81	7464.16	3273.79	-3273.79	-81.70	0.62	94.00
11157.00	90.57	179.11	7463.25	3367.78	-3367.78	-80.82	0.74	94.00
11252.00	90.37	178.57	7462.47	3462.76	-3462.76	-78.89	0.61	95.00
11346.00	90.24	178.45	7461.97	3556.73	-3556.73	-76.44	0.19	94.00
11440.00	89.73	177.78	7462.00	3650.68	-3650.68	-73.35	0.89	94.00
11534.00	90.30	178.45	7461.97	3744.63	-3744.63	-70.26	0.94	94.00
11628.00	89.56	178.79	7462.08	3838.60	-3838.60	-68.01	0.87	94.00
11723.00	89.13	177.93	7463.17	3933.55	-3933.55	-65.29	1.02	95.00
11818.00	89.83	178.65	7464.03	4028.50	-4028.50	-62.46	1.06	95.00
11912.00	89.66	177.83	7464.45	4122.46	-4122.46	-59.57	0.89	94.00
12006.00	89.56	178.67	7465.08	4216.41	-4216.41	-56.70	0.89	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
12101.00	89.29	178.82	7466.03	4311.38	-4311.38	-54.63	0.33	95.00
12195.00	89.23	180.76	7467.24	4405.37	-4405.37	-54.29	2.07	94.00
12289.00	89.93	181.92	7467.93	4499.34	-4499.34	-56.49	1.44	94.00
12383.00	89.53	181.27	7468.37	4593.30	-4593.30	-59.10	0.81	94.00
12478.00	89.50	181.35	7469.18	4688.27	-4688.27	-61.27	0.09	95.00
12572.00	89.29	180.95	7470.17	4782.25	-4782.25	-63.16	0.48	94.00
12666.00	90.07	181.24	7470.70	4876.23	-4876.23	-64.95	0.88	94.00
12761.00	90.30	181.10	7470.39	4971.21	-4971.21	-66.89	0.29	95.00
12855.00	89.80	180.88	7470.31	5065.20	-5065.20	-68.51	0.58	94.00
12949.00	89.36	179.92	7470.99	5159.19	-5159.19	-69.17	1.13	94.00
13043.00	89.33	179.30	7472.07	5253.18	-5253.18	-68.52	0.66	94.00
13137.00	89.80	180.54	7472.79	5347.18	-5347.18	-68.39	1.41	94.00

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

5" = 100' FEET MD