



GAMMA RAY

5" = 100' FEET MD

COMPANY : ANADARKO E&P ONSHORE LLC
WELL : MULGA 29C-23HZ
FIELD : MULGA 13-23HZ PAD
COUNTY : WELD
STATE : COLORADO
COUNTRY : U.S.A.
UWI : 05-123-39253

COMPANY : ANADARKO E&P ONSHORE LLC
WELL : MULGA 29C-23HZ
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COUNTY : WELD
STATE : COLORADO
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WELL LOCATION
LAT:40°7'1.690"N LONG:104°51'34.934"W
N:1286163.18 ft E:3179071.56 ft

OTHER SERVICES

SEC:23 TWP:2N RANGE:67W DIRECTIONAL ROP

DEPTH REF. : RKB
REF. HEIGHT : 25.000 ft
GROUND LEVEL : 4947.000 ft
RKB to Ground Level
G.L. to MEAN SEA LEVEL

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
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12.25	0	1249	0-10	0	6995
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8.75	1249	7907	10-90	6995	7907
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6.125	7907	12593	90-92	7907	12593
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CASING RECORD					
CASING SIZE in	FROM ft	TO ft			

9.625	0	1249			
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7	0	7907			
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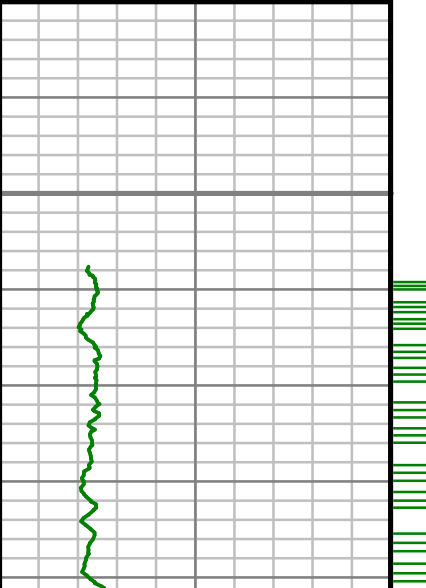


DRILLING CO. : H&P
RIG : 311
LWD UNIT NO. :
SPUD DATE :
LWD START DATE : 7/5/2013
LWD END DATE : 7/13/2014
DISTRICT : CASPER
DEPTH : 1346 ft
DEPTH : 12593 ft
TOTAL DEPTH : 12593 ft

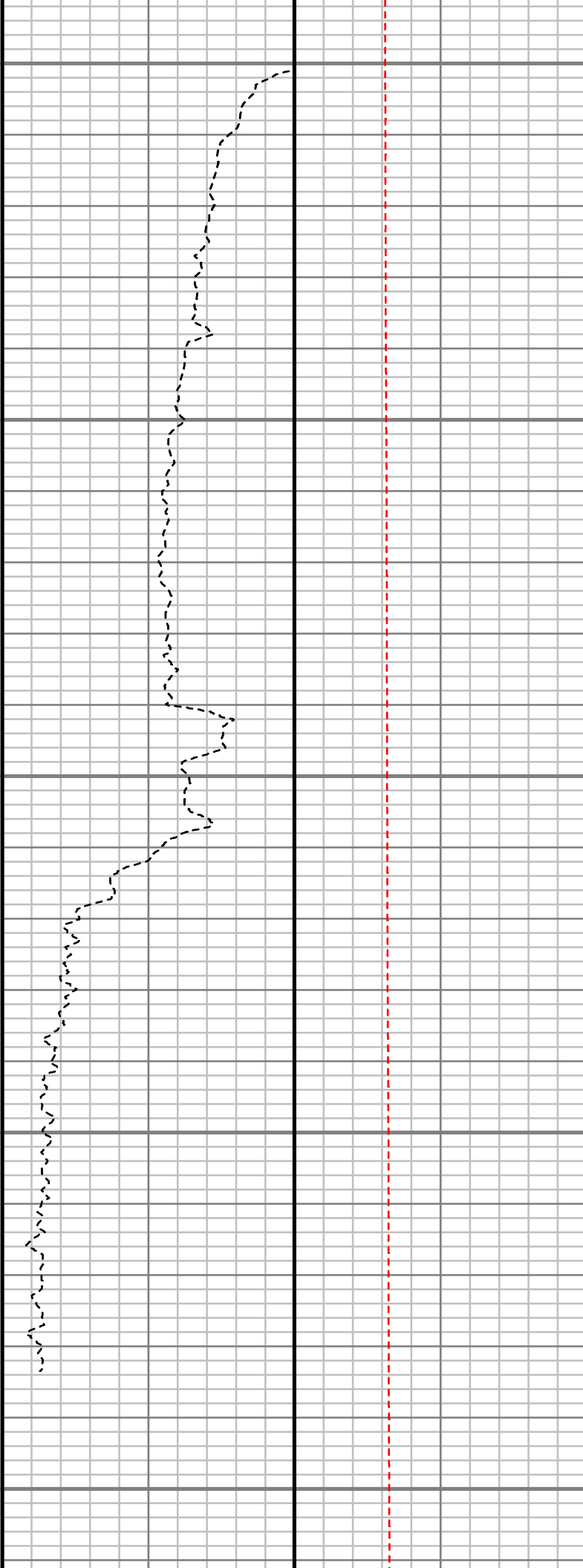
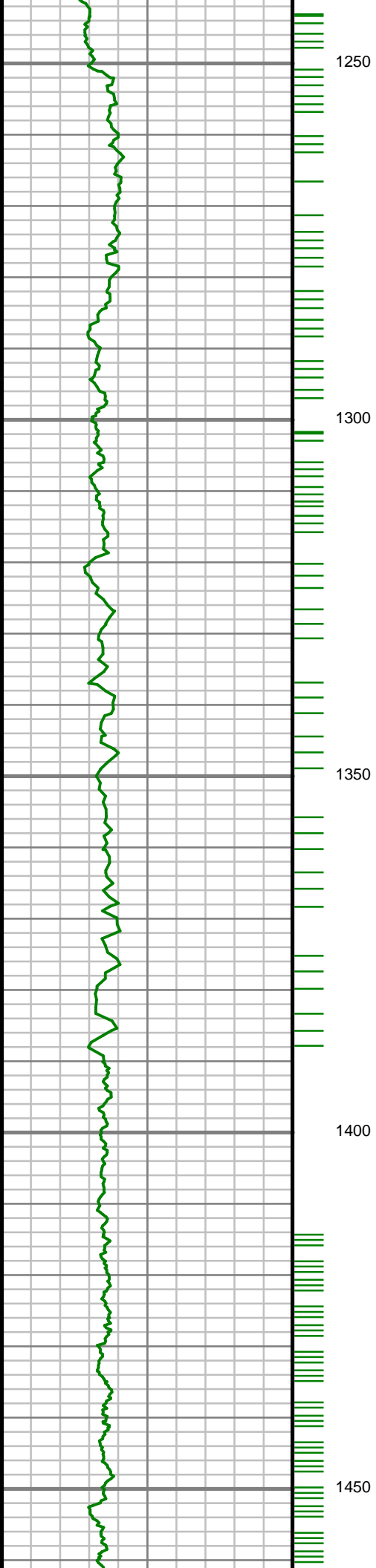
Run Data

RUN NUMBER	1	2	3			
START DATE	07/05/2014	07/09/2014	7/10/2014			
START TIME	1430	1330	1630			
END DATE	07/09/2014	7/10/2014	7/13/2014			
END TIME	1330	1630	1500			
DEPTH IN (ft)	1346	7545	7962			
DEPTH OUT (ft)	7545	7962	12593			
LOG TOP (ft)	1286	7485	7907			
LOG BOTTOM (ft)	7485	7907	12382			
HOLE SIZE (in)	8.75	8.75	6.125			
MUD DATA @ (ft)	7325	7962	12356			
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED			
DENSITY (lb / gal)	10	10.15	9.8			
VISCOSITY (s / qt)	40	42	44			
pH	9.3	13	15			
FLUID LOSS (cm3 / 30)	-	-	-			
SALINITY (ppm)	1700	1700	1700			
Rm (ohmm @ deg F)	-	-	-			
Rmf (ohmm @ deg F)	-	-	-			
MAX TEMP (deg F)	169	169	230			
Rm @ MAX TEMP (ohmm)	-	-	-			
LWD ENGINEER #1	M. SHARKER	M. SHARKER	M. SHARKER			
LWD ENGINEER #2	B. GREER	B. GREER	B. GREER			
LWD ENGINEER #3	-	-	-			
LOG WTINNESS #1	S. SADLE	S. SADLE	S. SADLE			
LOG WTINNESS #2	-	-	-			

Remarks
ANADARKO E&P ONSHORE LLC PRODUCTION AFE# 2094826
SCIENTIFIC DRILLING INTERNATIONAL JOB# 171439
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 = 128-036 / CONT = 277 / MWD EYE =1001 / GAMMA RAY =1133
BIT TO SENSOR OFFSETS: SURVEY = 52.30 FT. / GAMMA RAY = 43.05 FT.
RUN # 3: 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.

ANADARKO PETROLEUM CORP. MULGA 29C-23HZ WATTENBERG FIELD WELD COUNTY, COLORADO 05-123-39253										
Gamma Ray (GR)		MEASURED DEPTH 1:240 (ft)	Rate of Penetration (ROP)		Tool Temperature (T-TEMP)		Comments			
0	Unit = aapi		150	800	Unit = ft/hr	0		0	Unit = °F	300
										

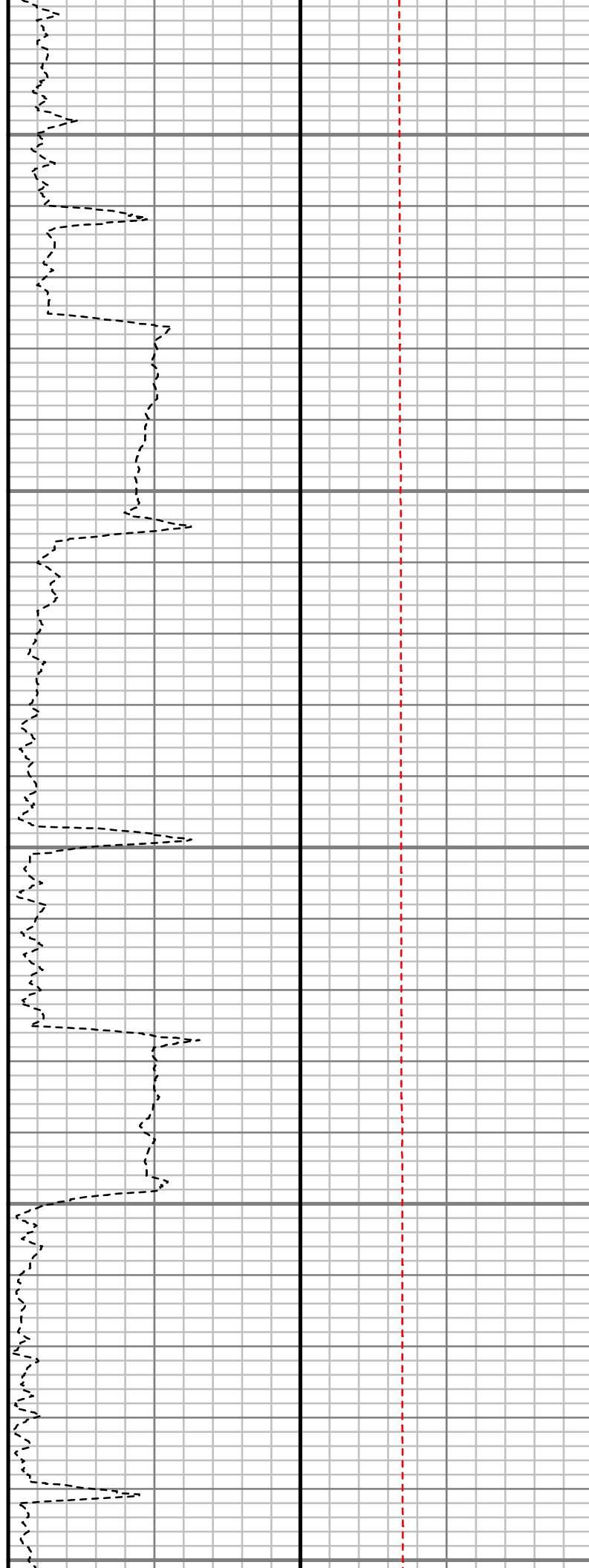
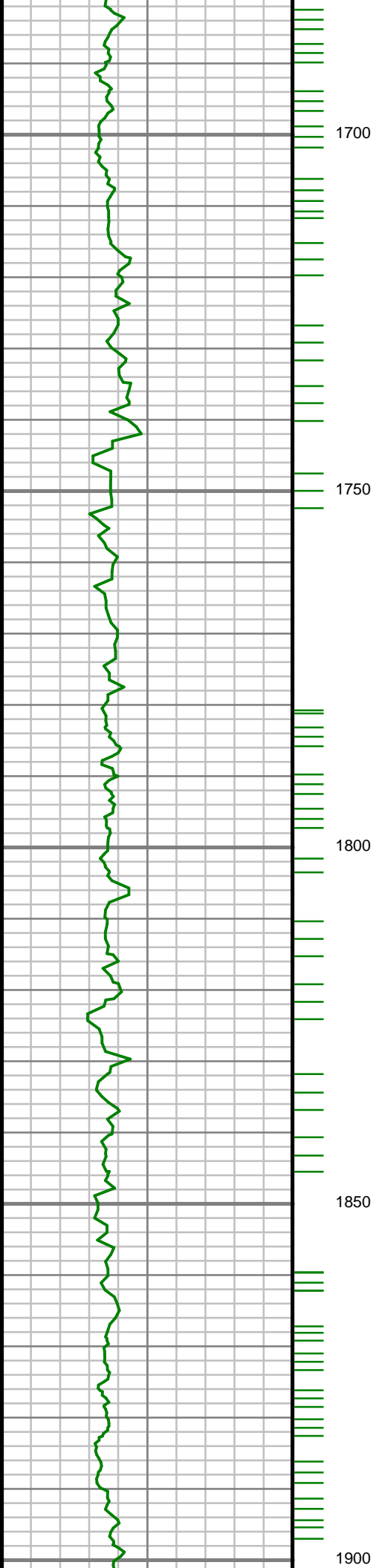


S: 14 MD: 1286.00 ft
Inc: 0.47 deg Az:
297.24 deg TVD:
1285.96 ft

S: 15 MD: 1378.00 ft
Inc: 2.22 deg Az:
265.96 deg TVD:
1377.93 ft

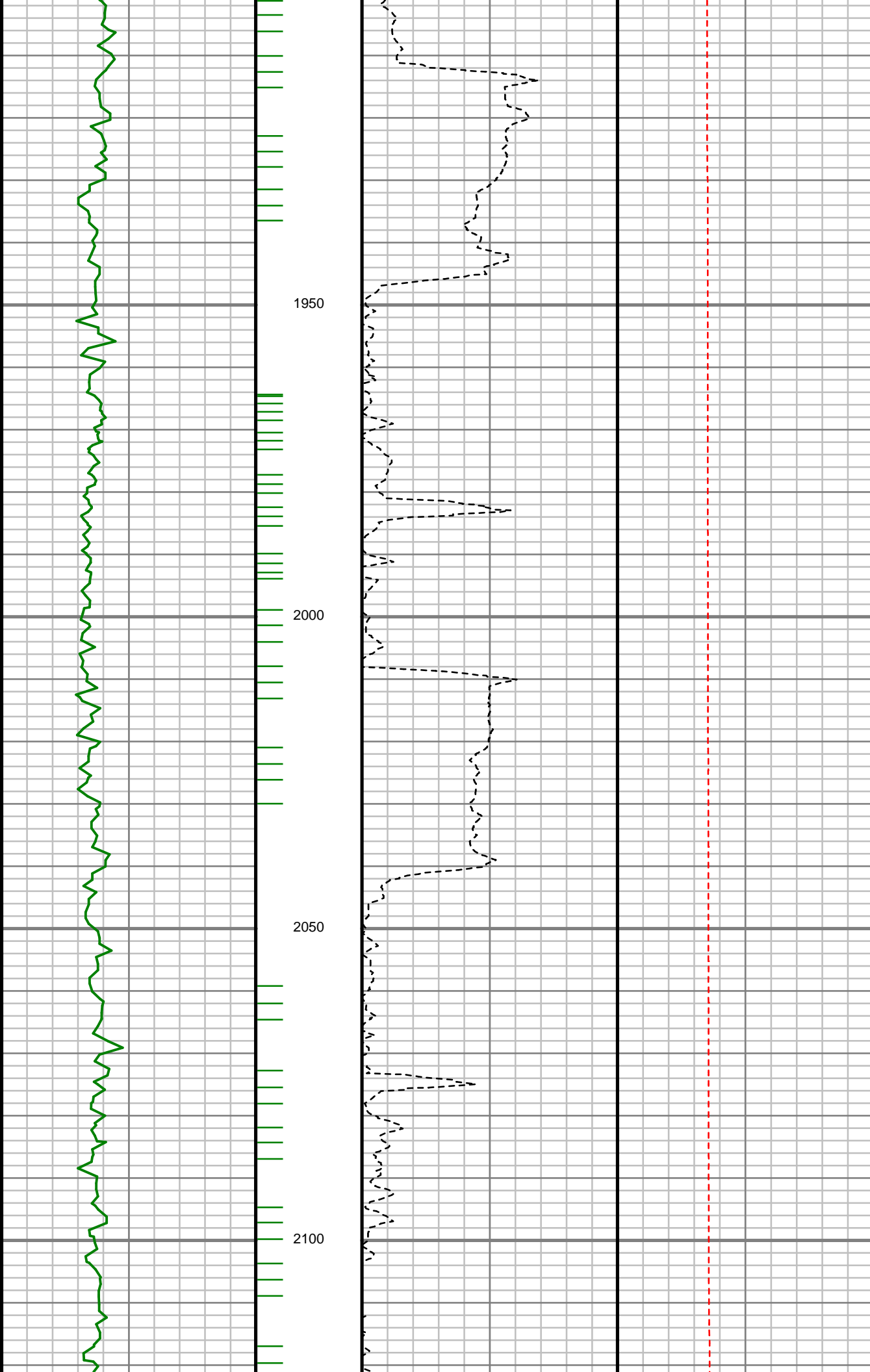
S: 16 MD: 1469.00 ft
Inc: 4.25 deg Az:
262.29 deg TVD:
1468.78 ft

S: 17 MD: 1561.00 ft
Inc: 6.52 deg Az:
248.72 deg TVD:
1560.37 ft



S: 18 MD: 1743.00 ft
Inc: 7.89 deg Az:
224.86 deg TVD:
1740.97 ft

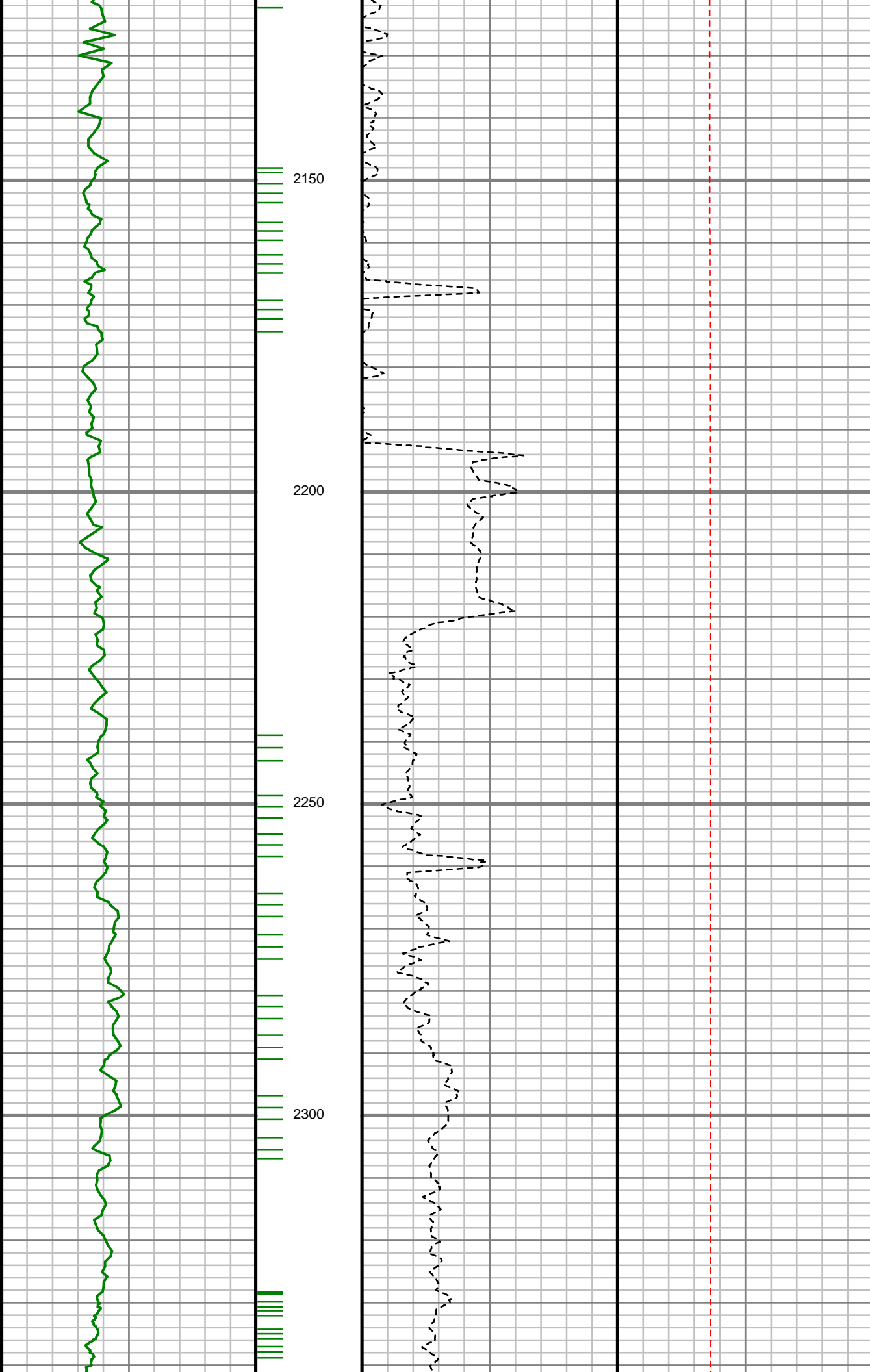
S: 19 MD: 1835.00 ft
Inc: 10.48 deg Az:
230.44 deg TVD:
1831.78 ft



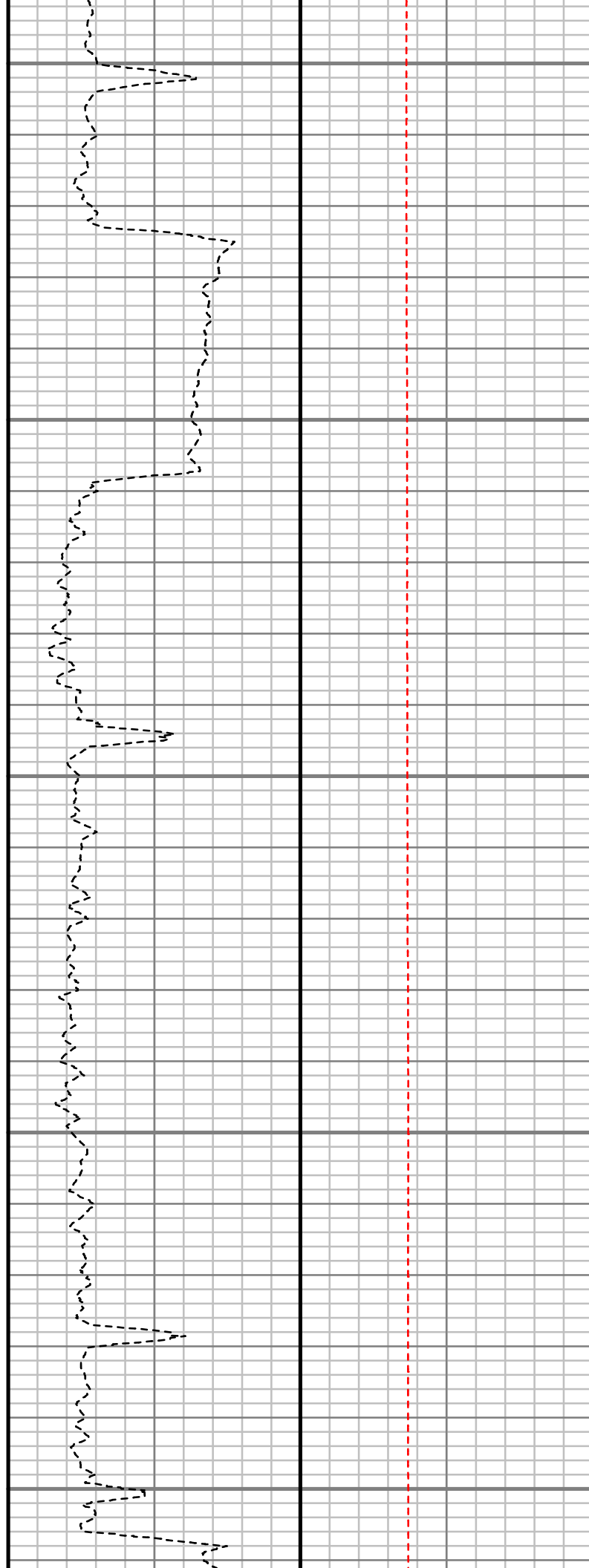
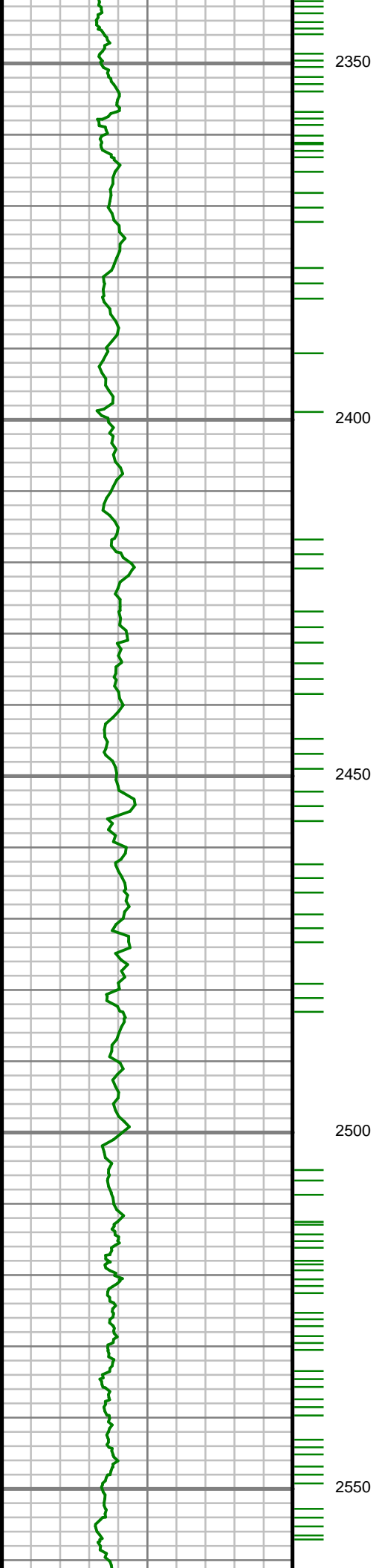
S: 20 MD: 1926.00 ft
Inc: 12.28 deg Az:
240.08 deg TVD:
1921.00 ft

S: 21 MD: 2018.00 ft
Inc: 13.59 deg Az:
251.01 deg TVD:
2010.68 ft

S: 22 MD: 2109.00 ft
Inc: 15.06 deg Az:
252.72 deg TVD:
2098.85 ft

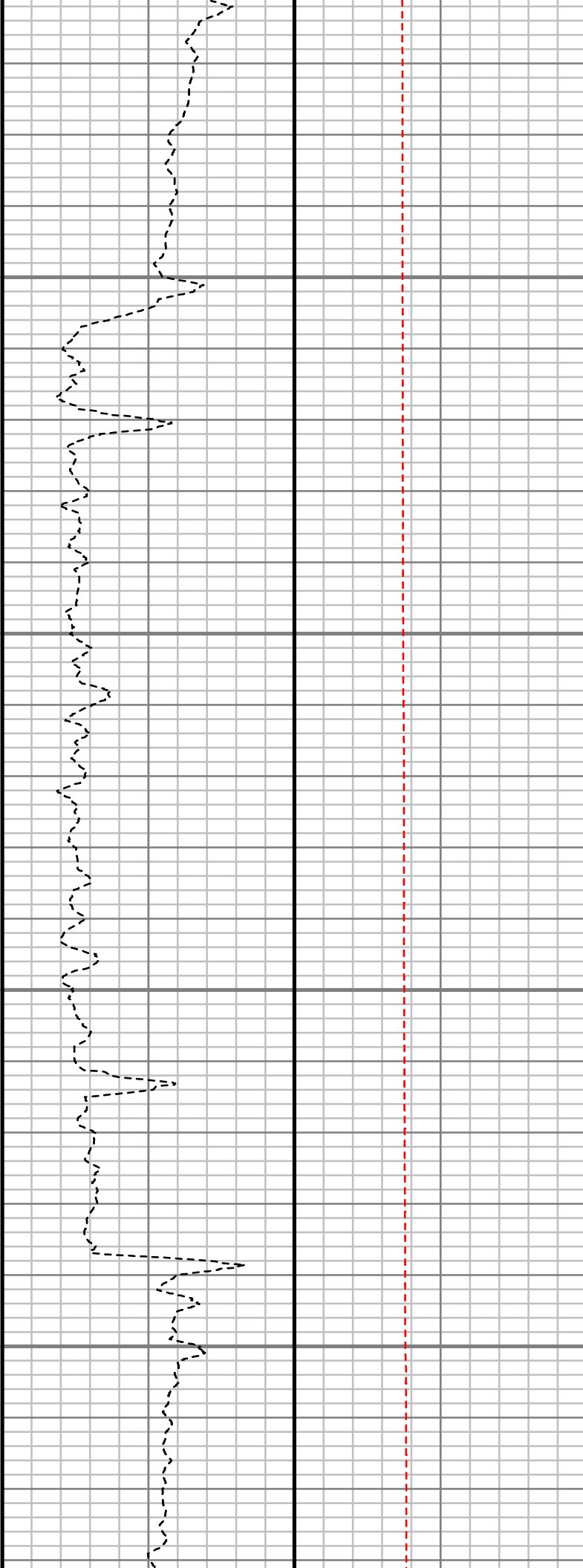
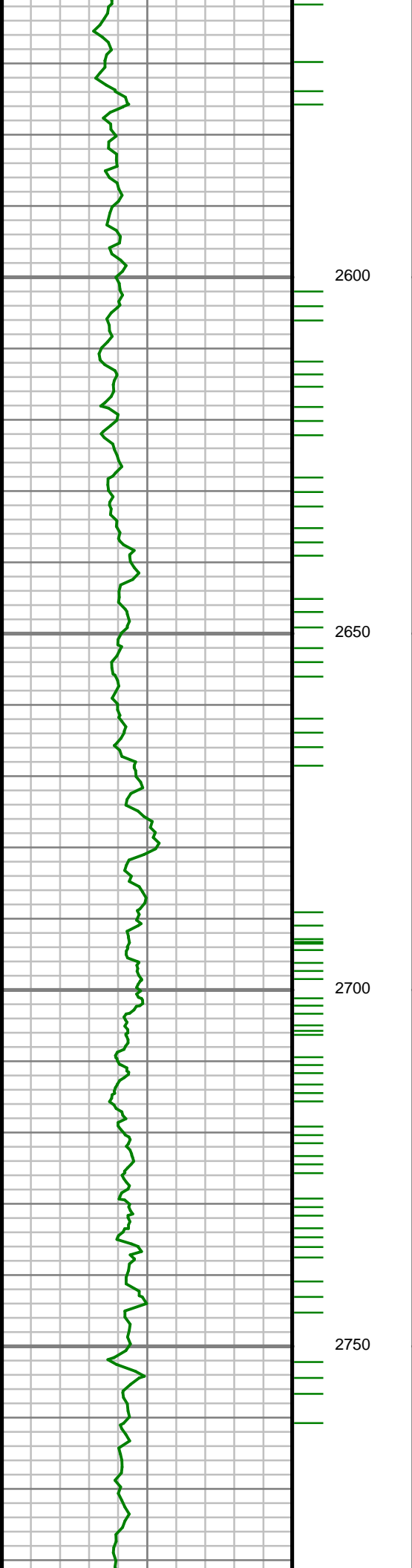


S: 23 MD: 2201.00 ft
Inc: 15.44 deg Az:
247.88 deg TVD:
2187.61 ft



S: 24 MD: 2383.00 ft
Inc: 15.14 deg Az:
243.68 deg TVD:
2363.17 ft

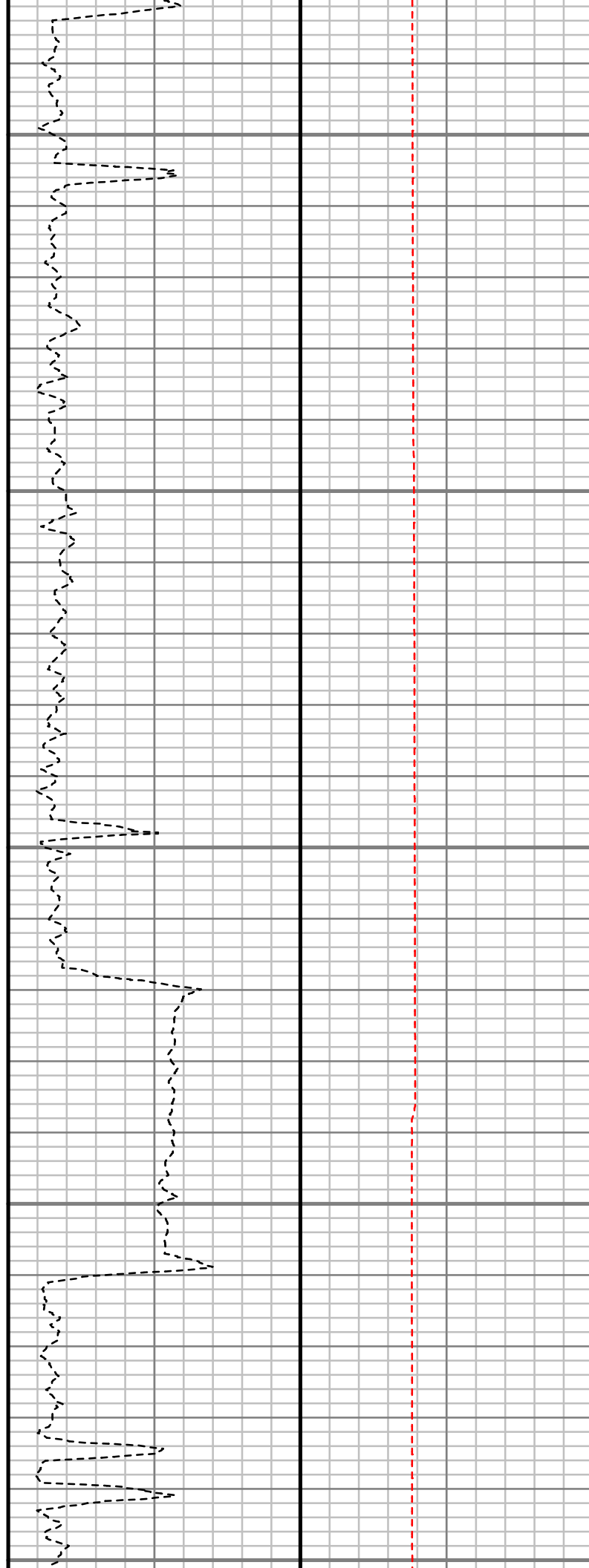
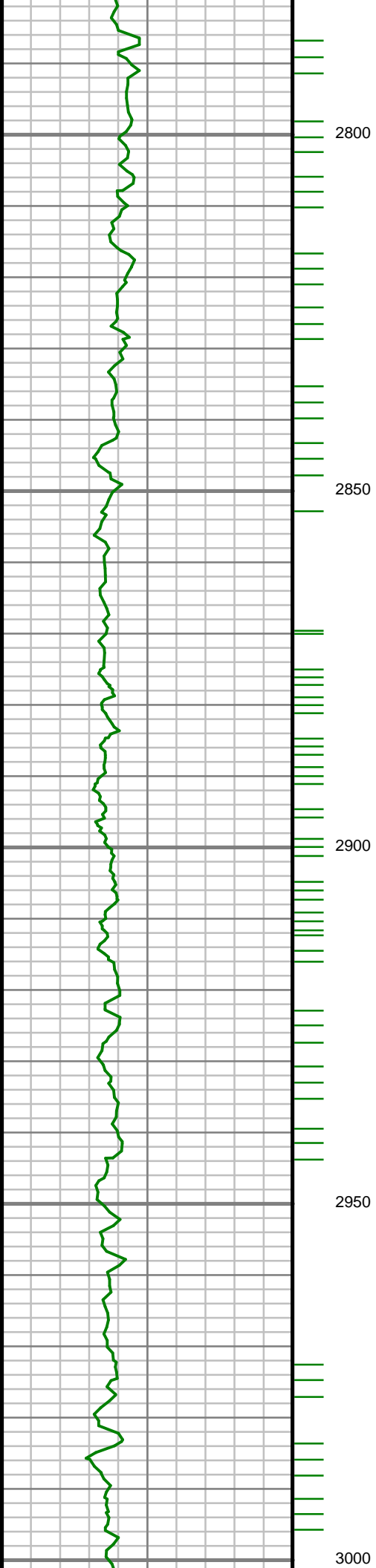
S: 25 MD: 2475.00 ft
Inc: 14.16 deg Az:
240.43 deg TVD:
2452.18 ft



S: 26 MD: 2566.00 ft
Inc: 12.59 deg Az:
240.60 deg TVD:
2540.71 ft

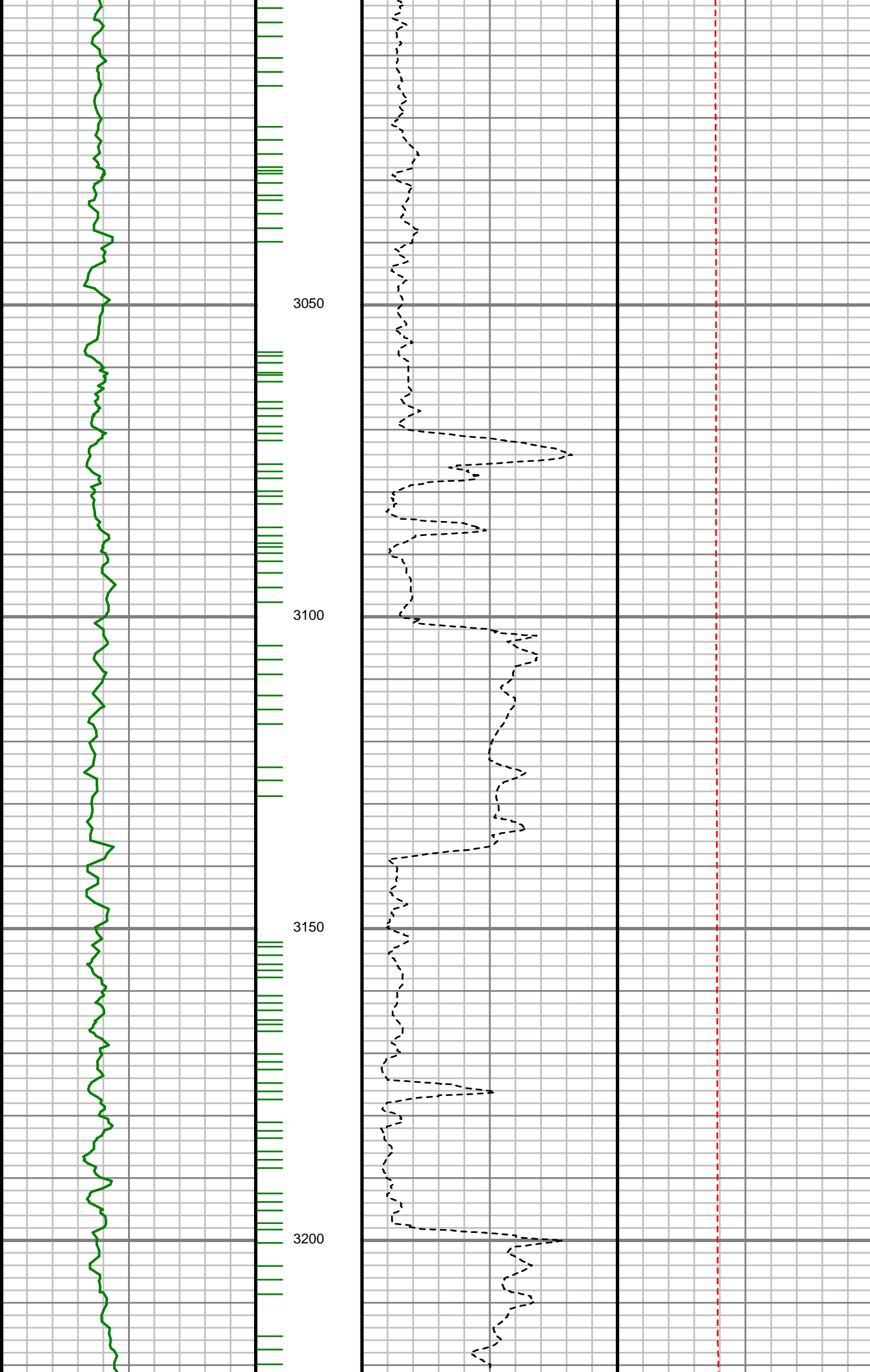
S: 27 MD: 2658.00 ft
Inc: 13.51 deg Az:
244.58 deg TVD:
2630.34 ft

S: 28 MD: 2749.00 ft
Inc: 12.98 deg Az:
243.16 deg TVD:
2718.91 ft



S: 29 MD: 2840.00 ft
Inc: 12.75 deg Az:
250.87 deg TVD:
2807.64 ft

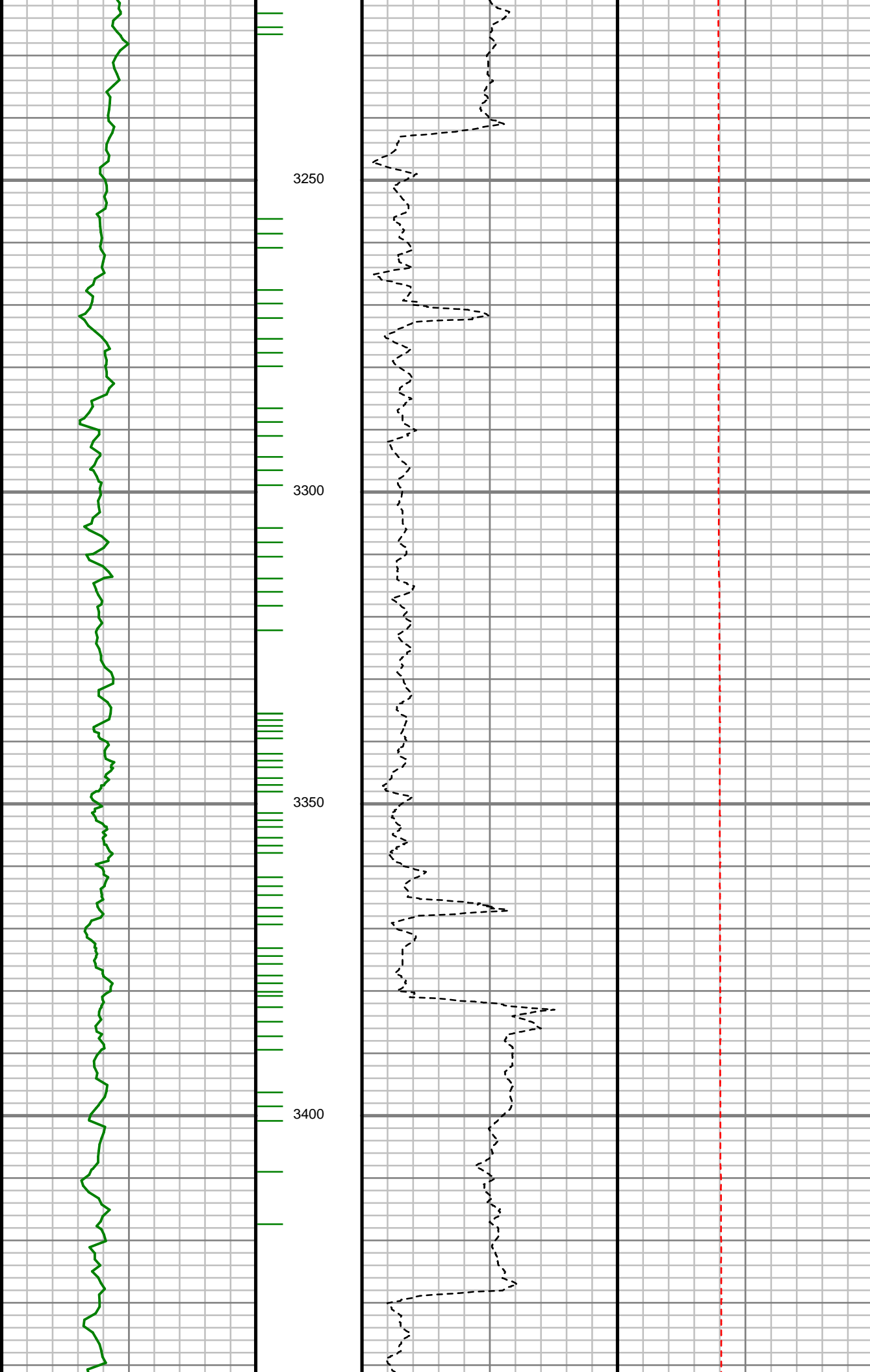
S: 30 MD: 2932.00 ft
Inc: 13.25 deg Az:
255.39 deg TVD:
2897.28 ft



S: 31 MD: 3026.00 ft
Inc: 13.33 deg Az:
255.55 deg TVD:
2988.76 ft

S: 32 MD: 3121.00 ft
Inc: 13.96 deg Az:
255.81 deg TVD:
3081.08 ft

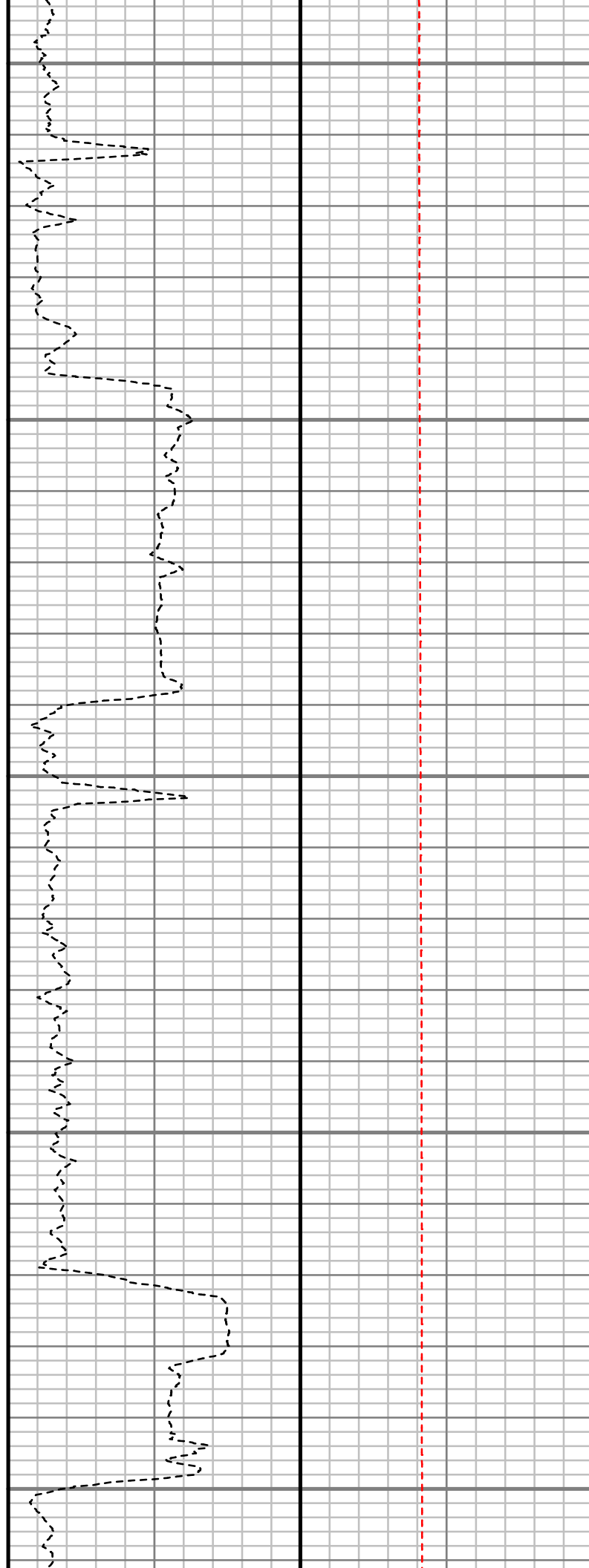
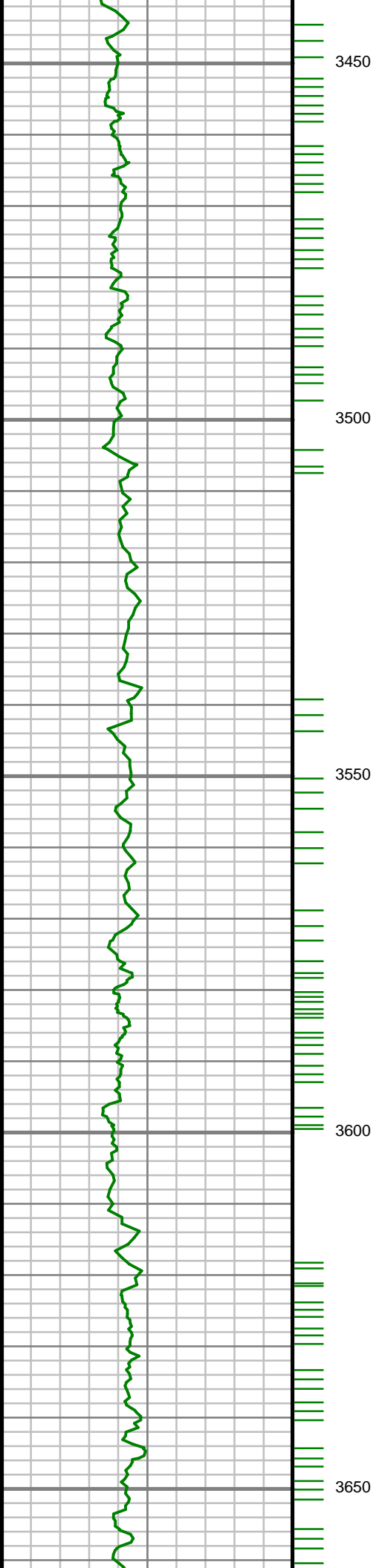
S: 33 MD: 3215.00 ft
Inc: 14.98 deg Az:
253.48 deg TVD:



253.48 deg TVD:
3172.09 ft

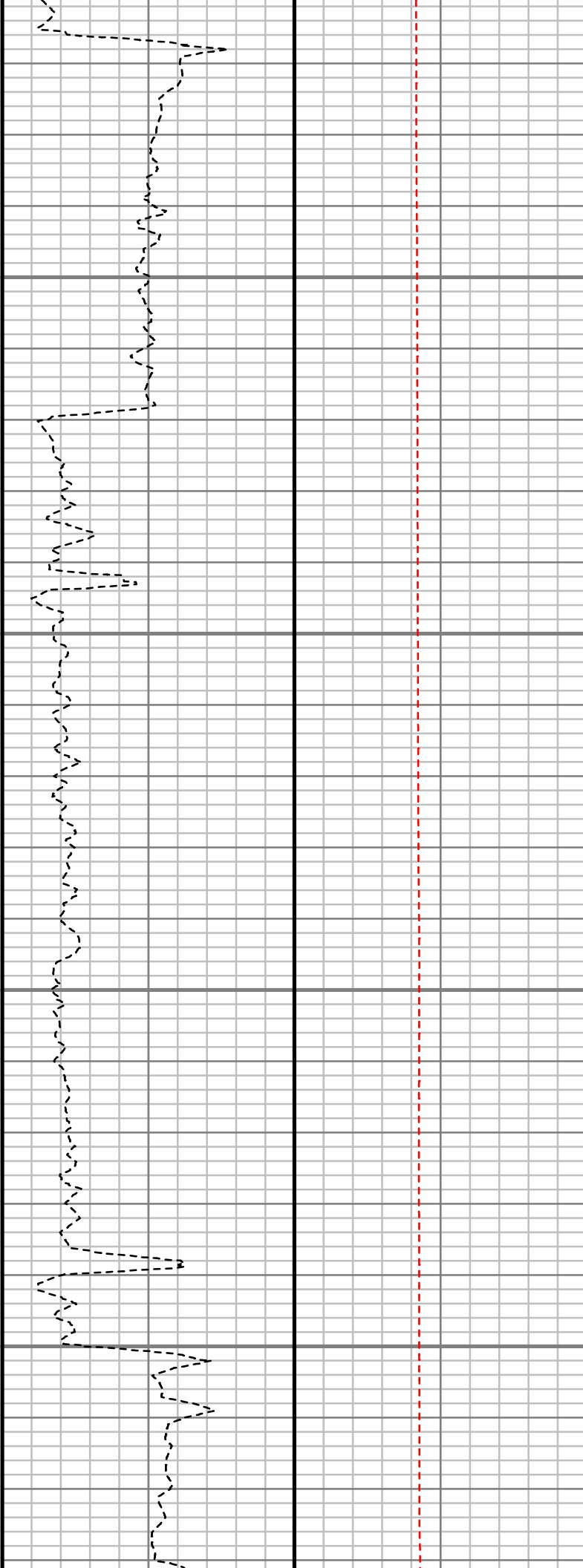
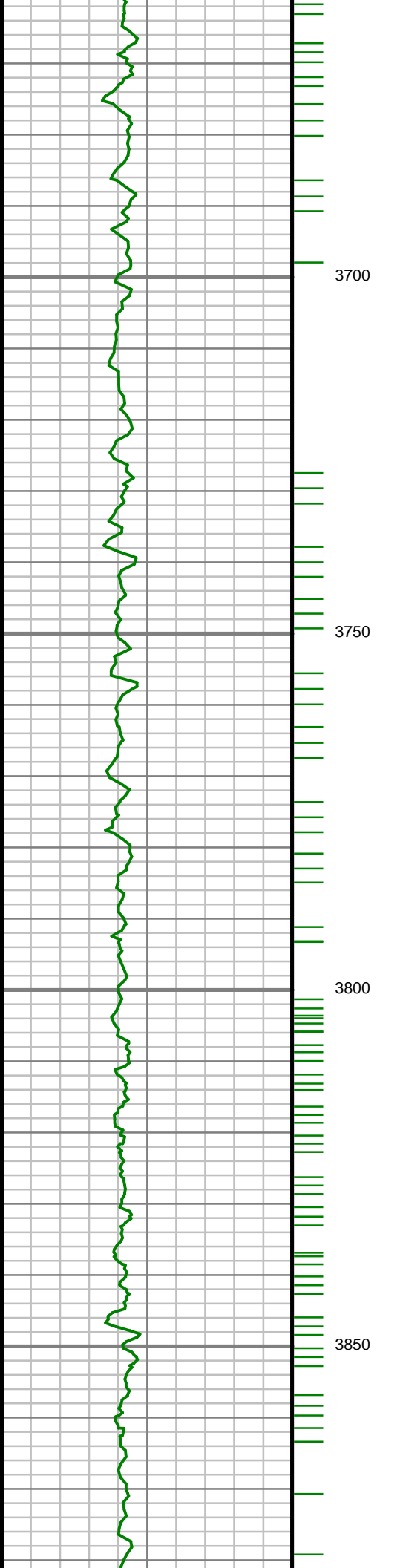
S: 34 MD: 3309.00 ft
Inc: 14.60 deg Az:
254.90 deg TVD:
3262.98 ft

S: 35 MD: 3403.00 ft
Inc: 14.47 deg Az:
253.87 deg TVD:
3353.97 ft



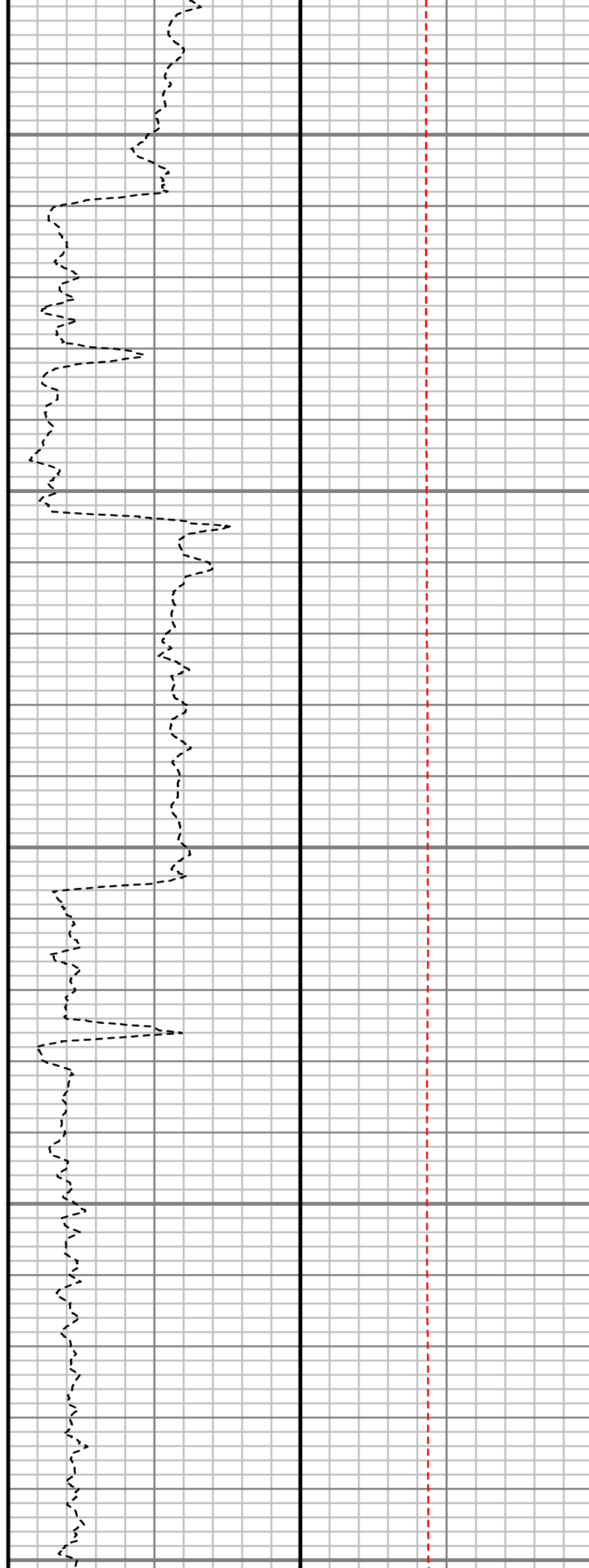
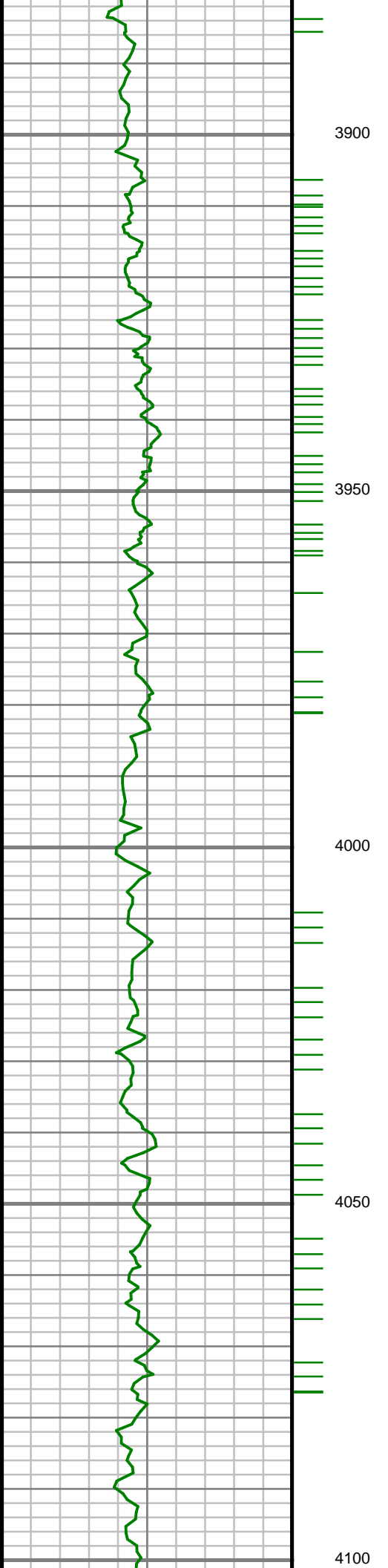
S: 36 MD: 3498.00 ft
Inc: 14.74 deg Az:
249.19 deg TVD:
3445.91 ft

S: 37 MD: 3592.00 ft
Inc: 15.20 deg Az:
245.40 deg TVD:
3536.72 ft



S: 38 MD: 3781.00 ft
Inc: 12.66 deg Az:
264.81 deg TVD:
3720.24 ft

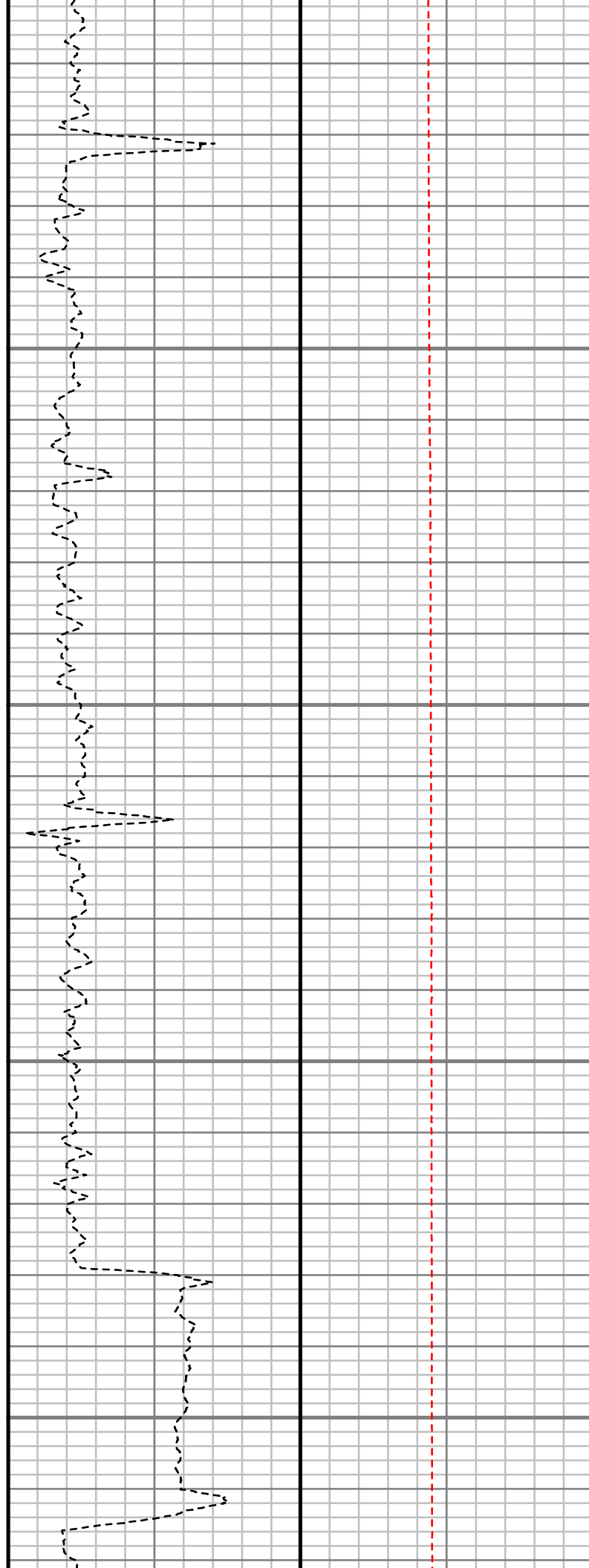
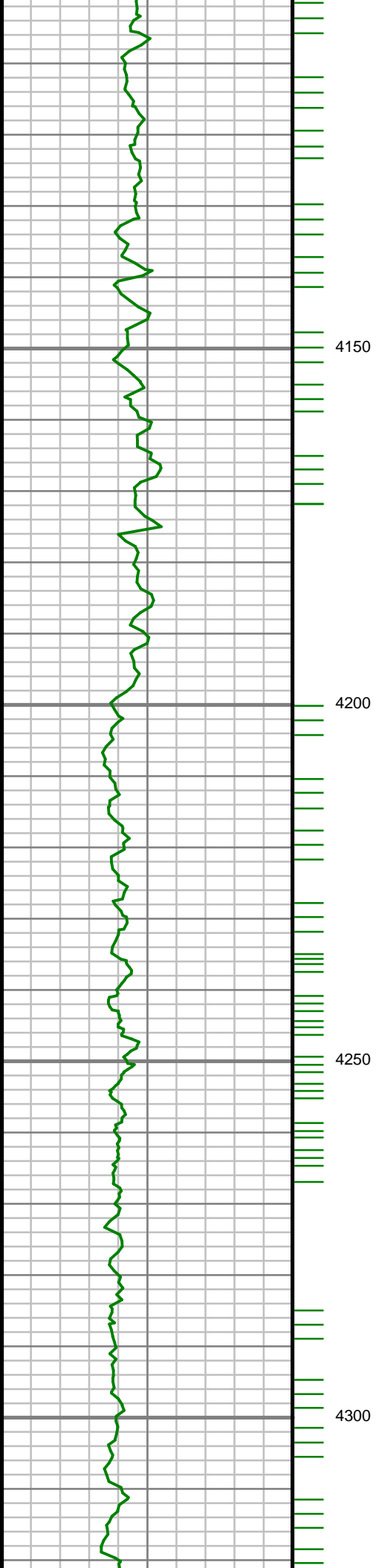
S: 39 MD: 3875.00 ft
Inc: 12.25 deg Az:
258.52 deg TVD:



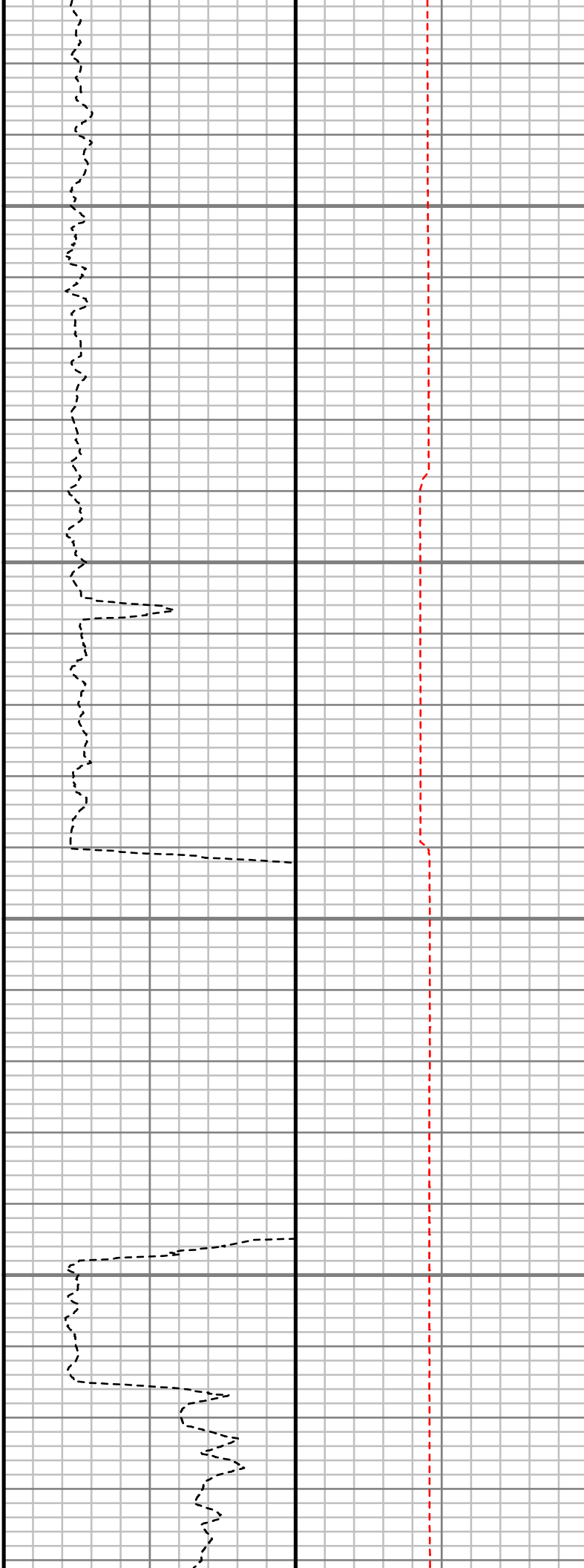
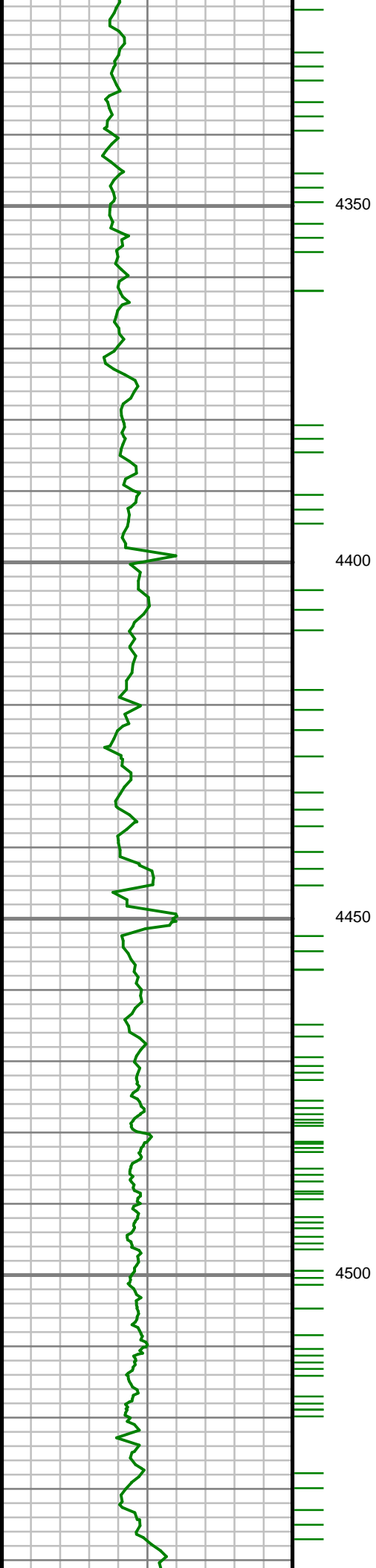
258.92 deg TVD:
3812.04 ft

S: 40 MD: 3970.00 ft
Inc: 14.50 deg Az:
257.34 deg TVD:
3904.45 ft

S: 41 MD: 4064.00 ft
Inc: 13.82 deg Az:
259.17 deg TVD:
3995.60 ft

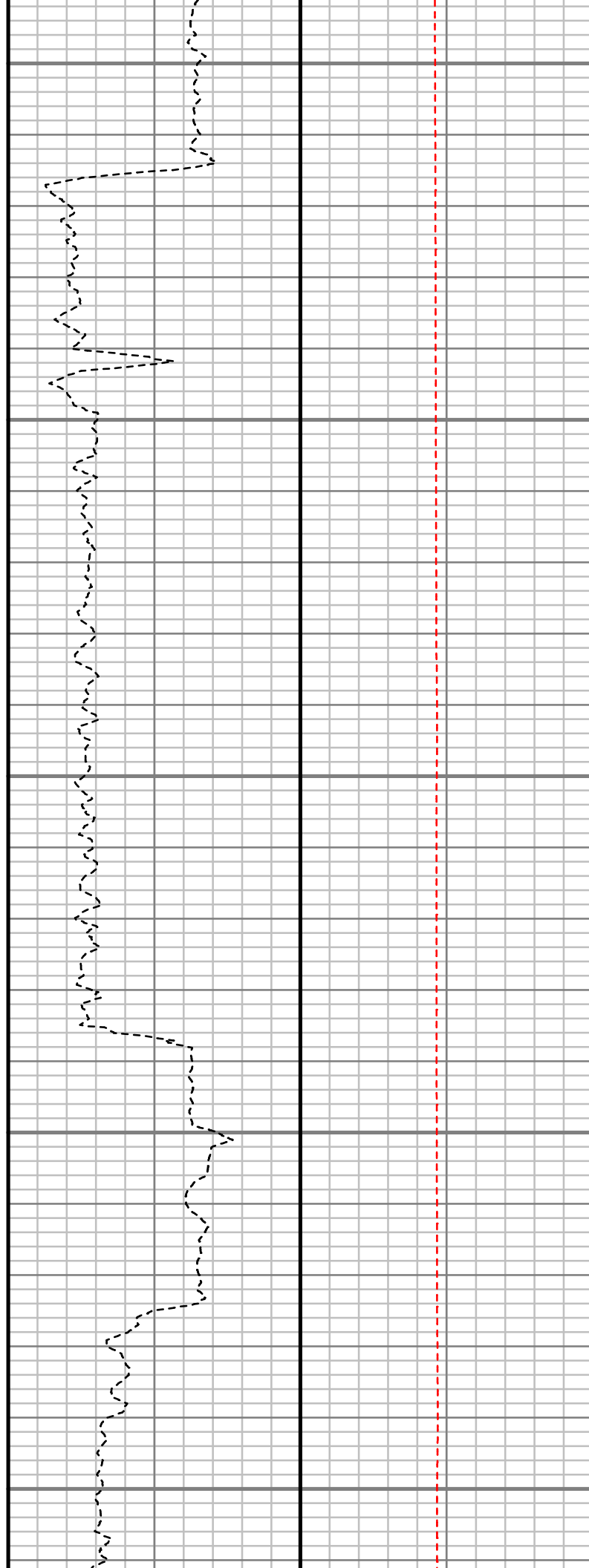
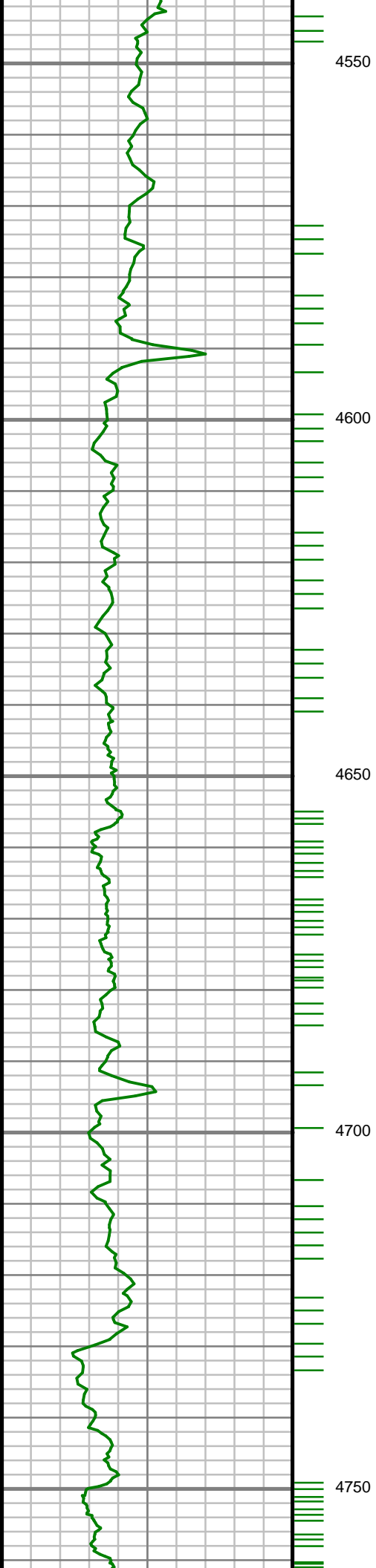


S: 42 MD: 4158.00 ft
Inc: 10.81 deg Az:
251.87 deg TVD:
4087.43 ft



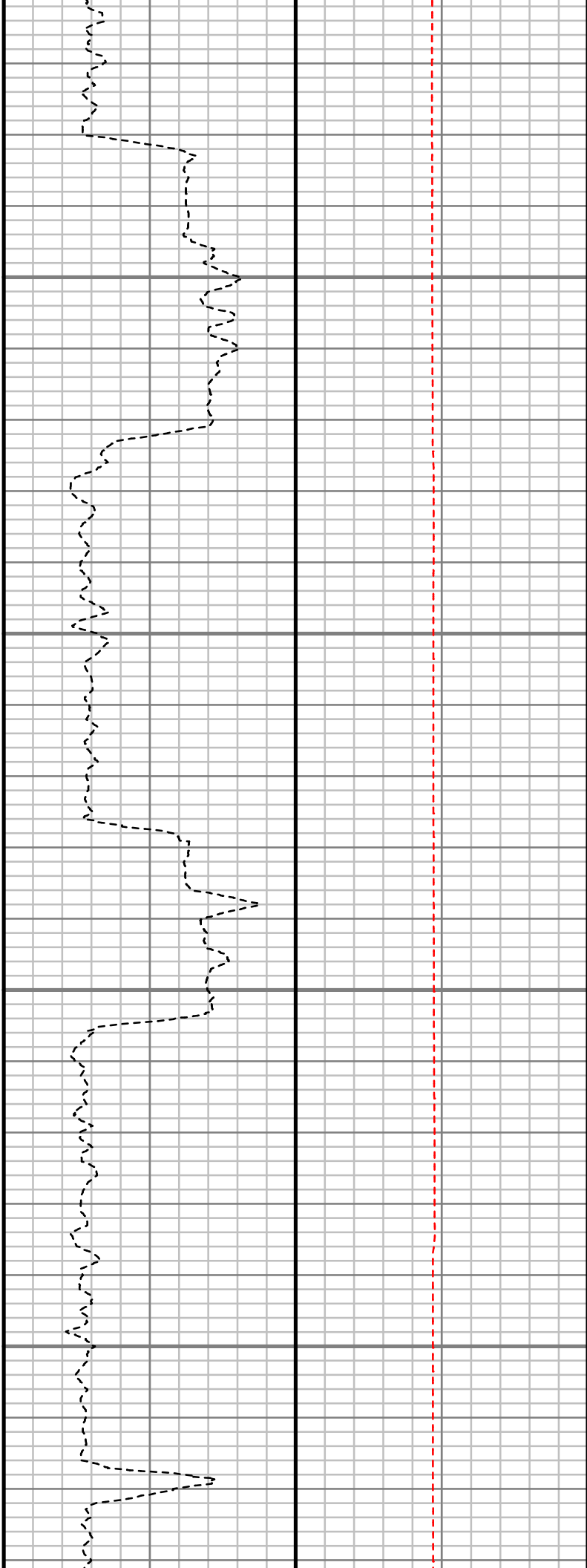
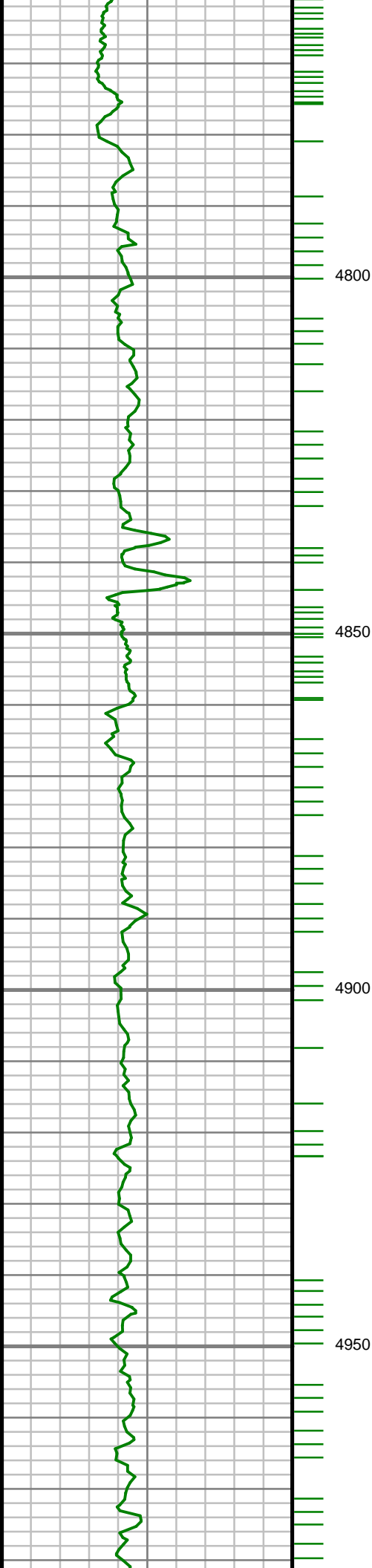
S: 43 MD: 4347.00 ft
Inc: 9.71 deg Az:
257.31 deg TVD:
4273.41 ft

S: 44 MD: 4441.00 ft
Inc: 6.14 deg Az:
251.07 deg TVD:
4366.50 ft



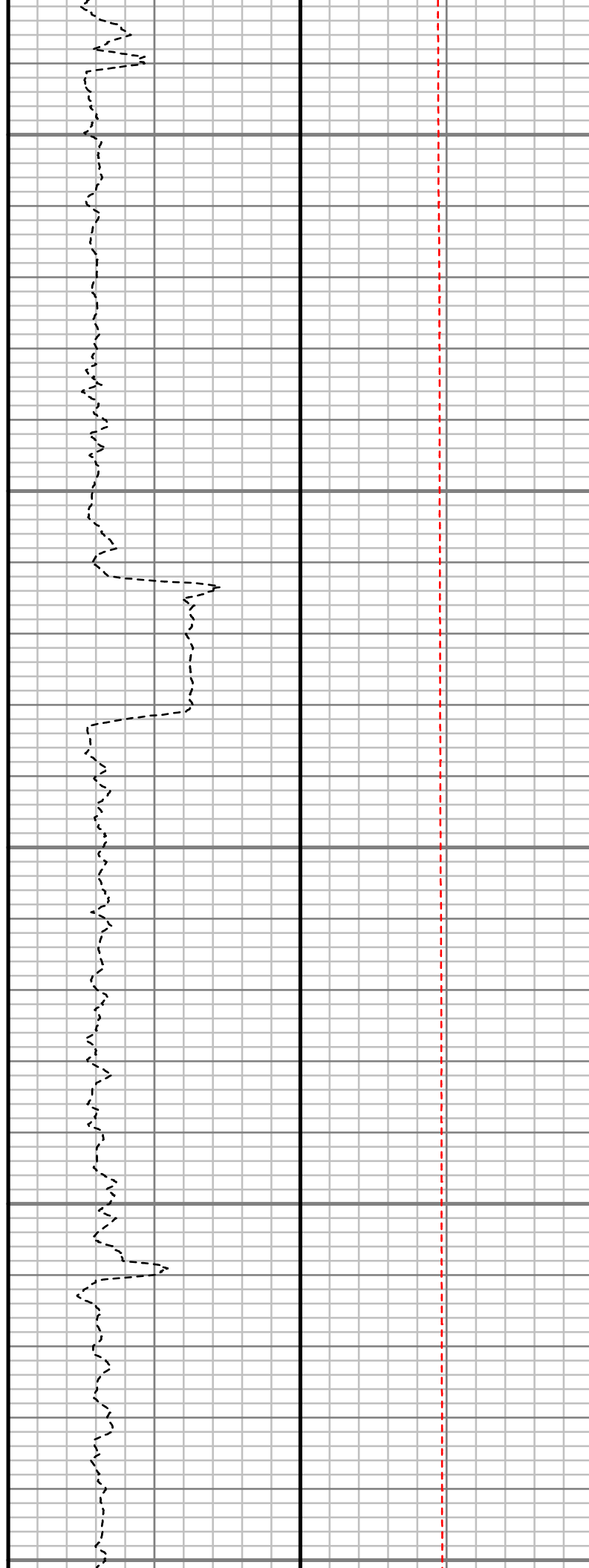
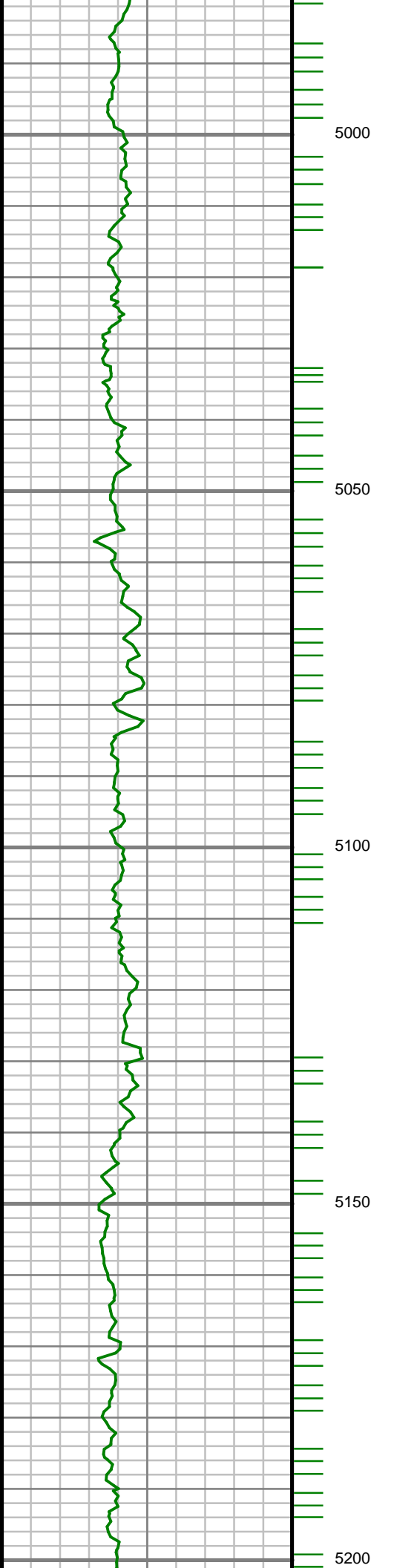
S: 45 MD: 4630.00 ft
Inc: 4.07 deg Az:
247.00 deg TVD:
4554.74 ft

S: 46 MD: 4724.00 ft
Inc: 4.69 deg Az:
267.53 deg TVD:
4648.47 ft

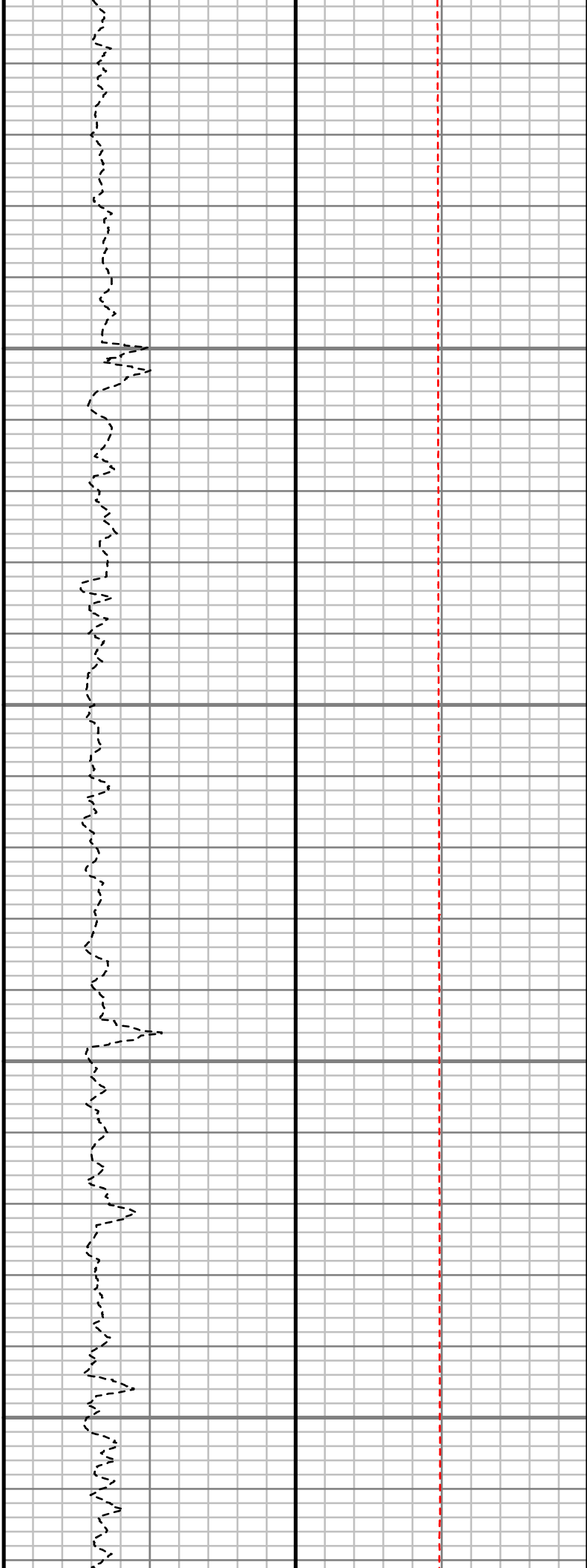
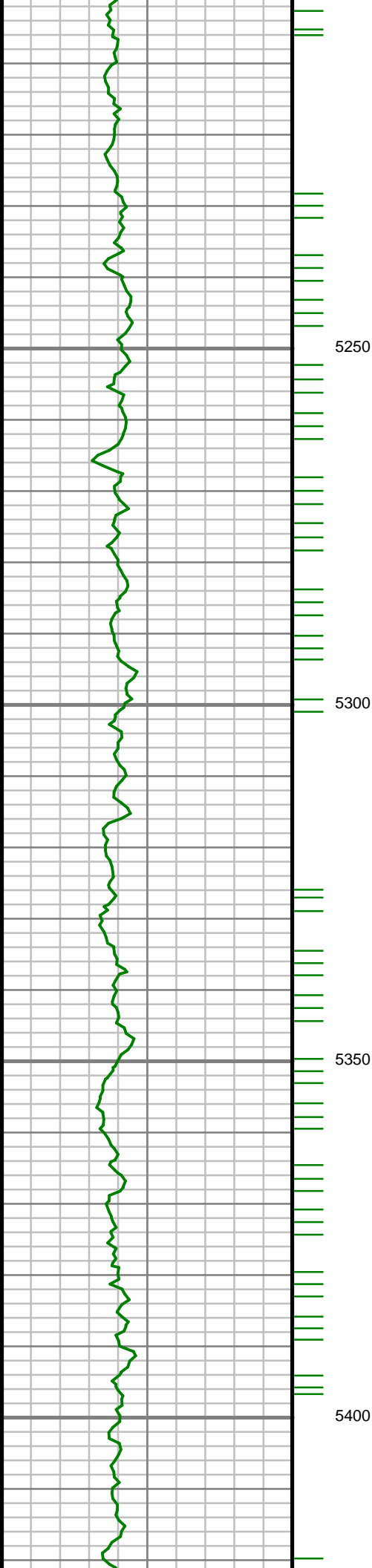


S: 47 MD: 4819.00 ft
Inc: 6.04 deg Az:
265.79 deg TVD:
4743.05 ft

S: 48 MD: 4913.00 ft
Inc: 7.60 deg Az:
261.82 deg TVD:
4836.39 ft

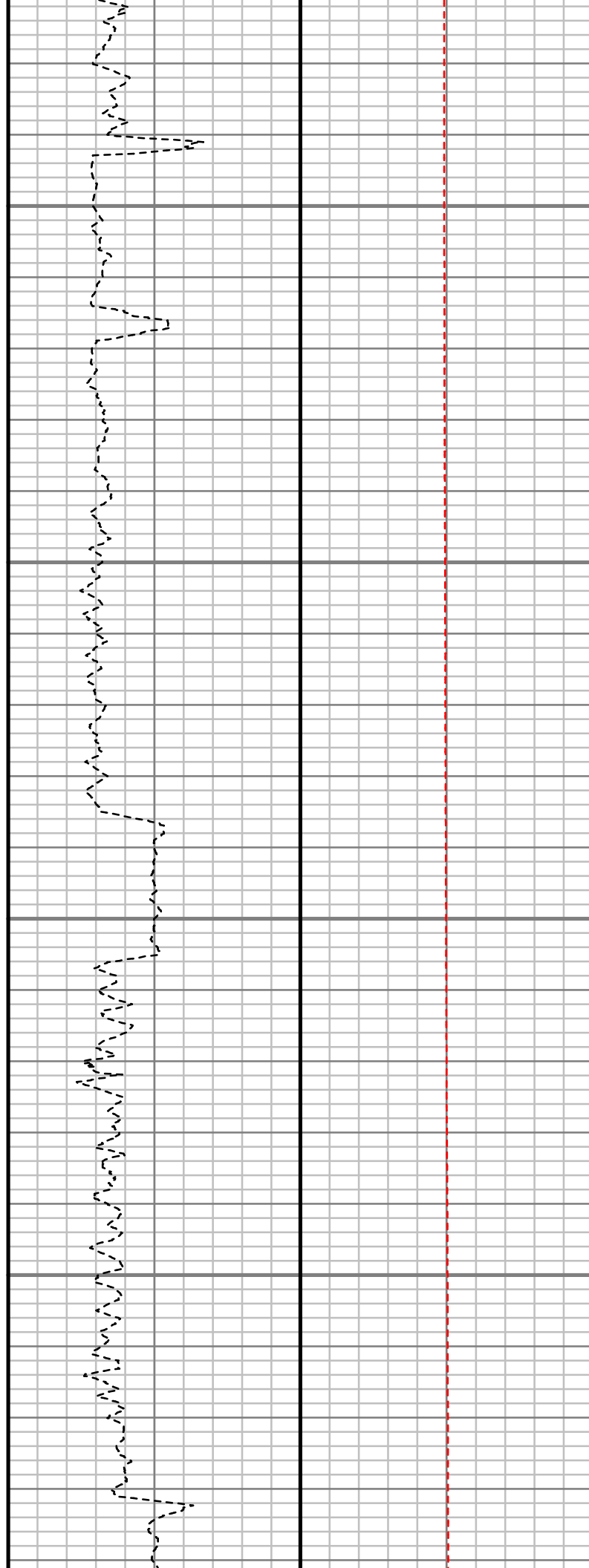
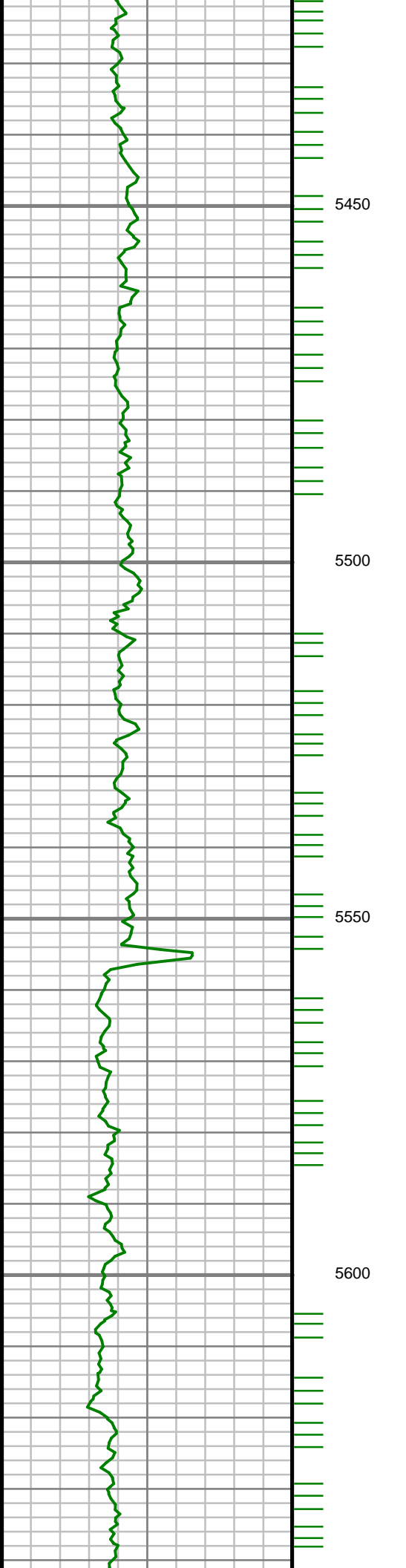


S: 49 MD: 5102.00 ft
Inc: 4.31 deg Az:
277.99 deg TVD:
5024.35 ft

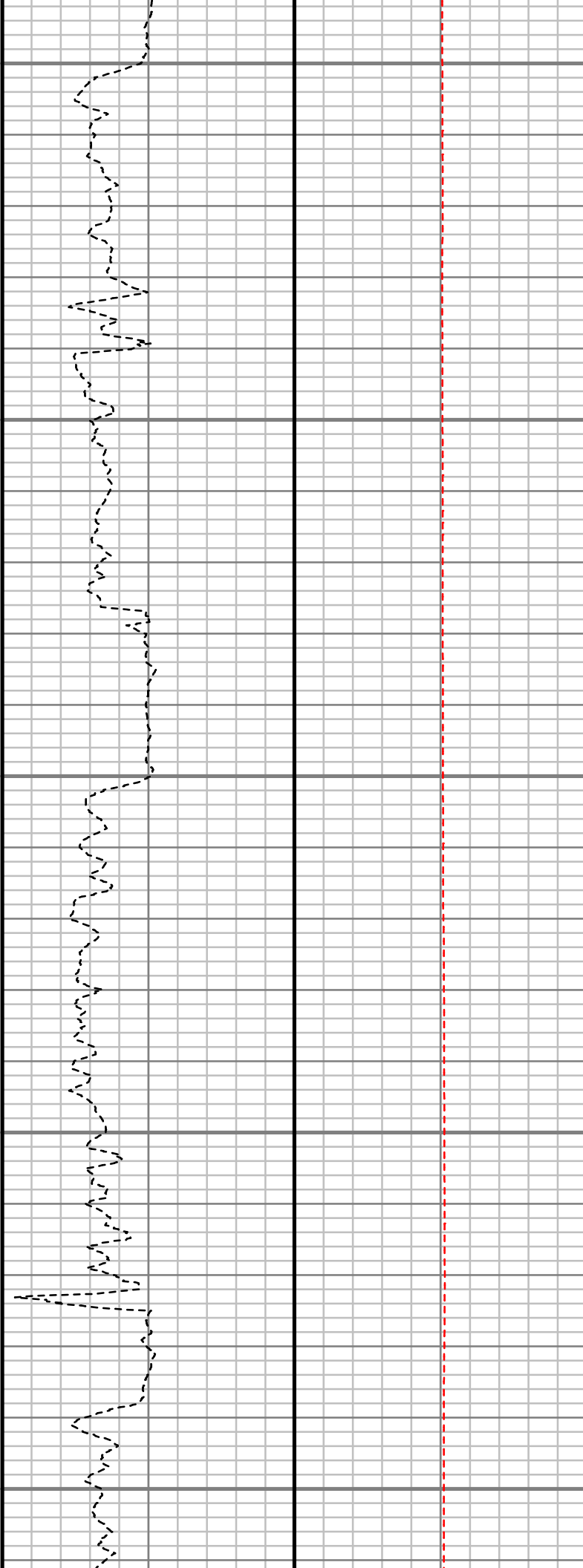
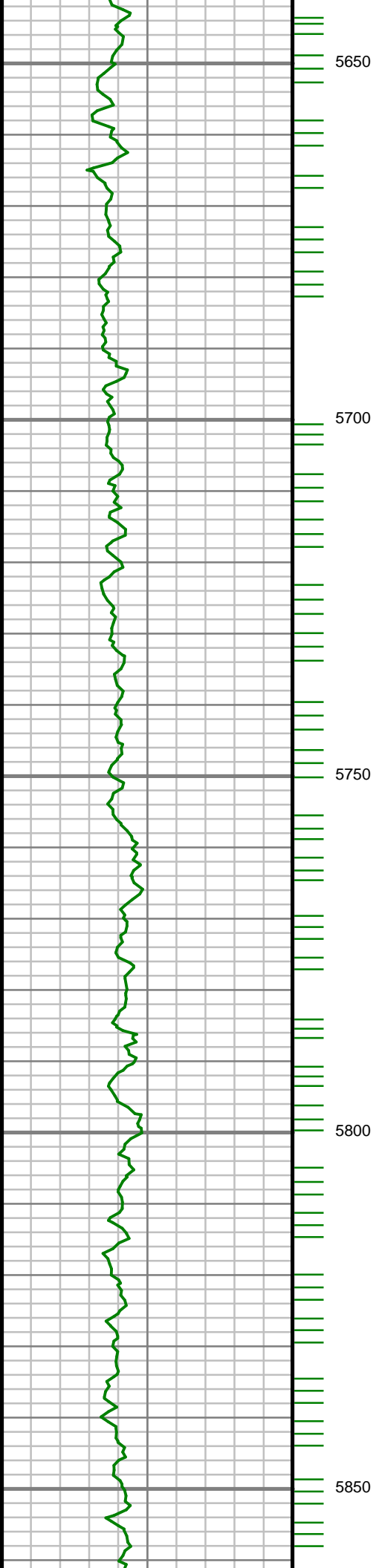


S: 50 MD: 5290.00 ft
Inc: 2.76 deg Az:
273.12 deg TVD:
5211.99 ft

S: 51 MD: 5384.00 ft
Inc: 1.82 deg Az:
274.60 deg TVD:
5305.91 ft

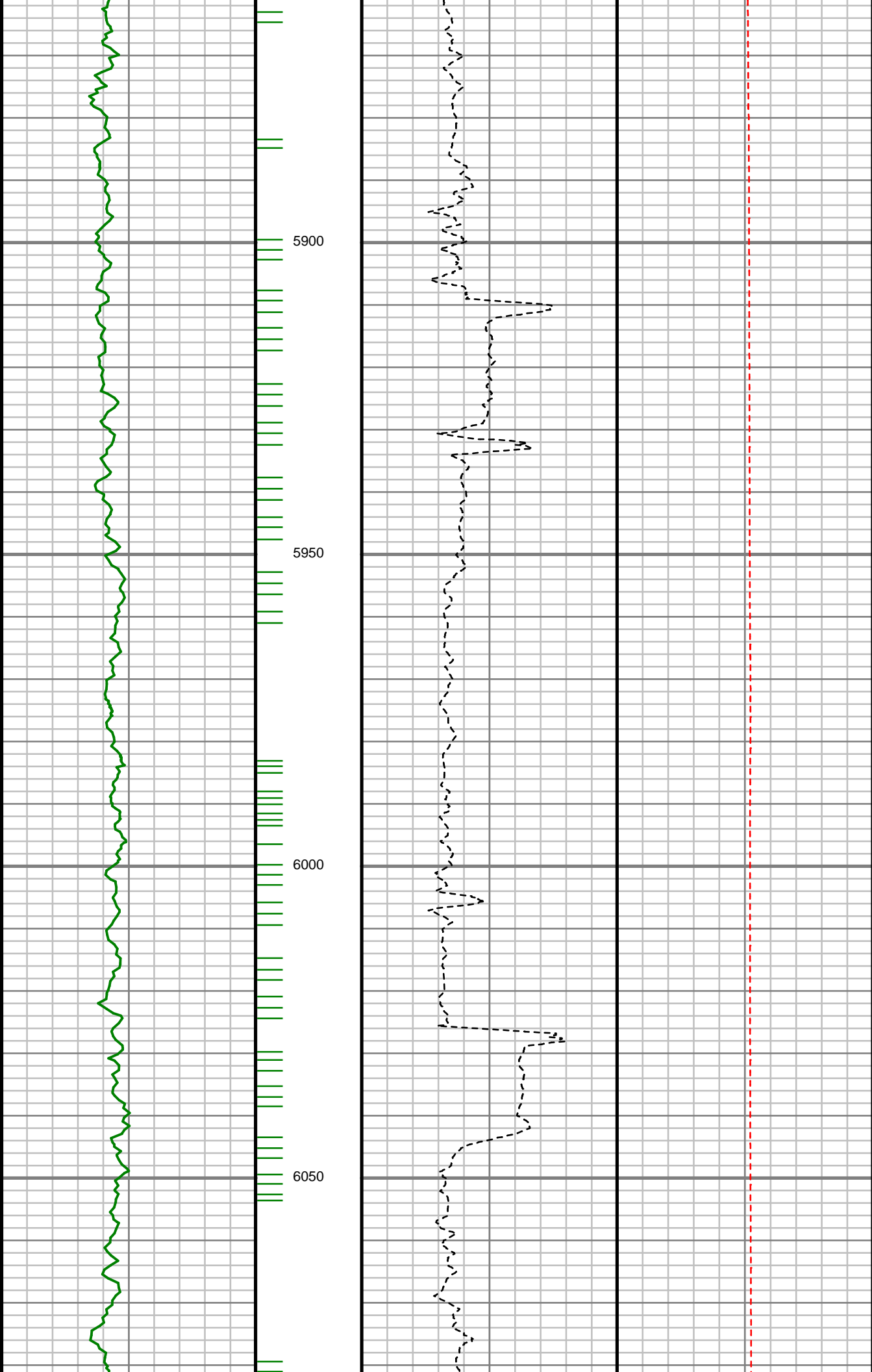


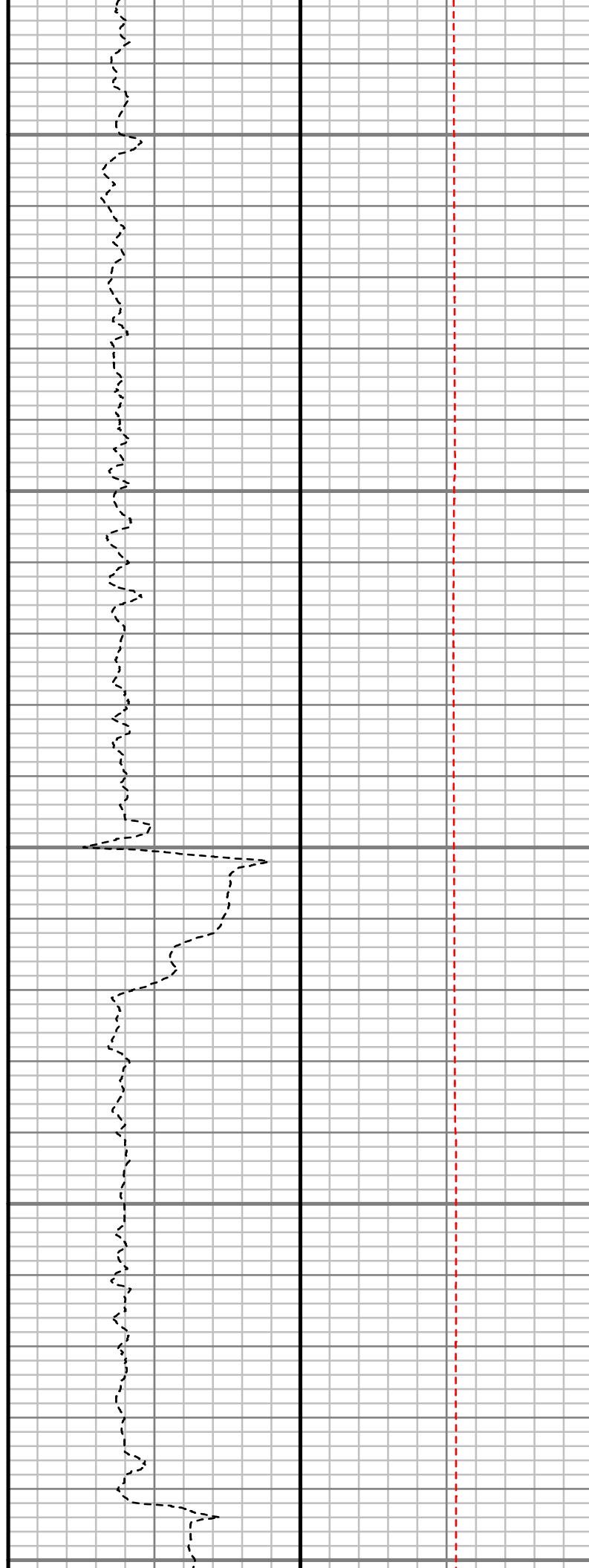
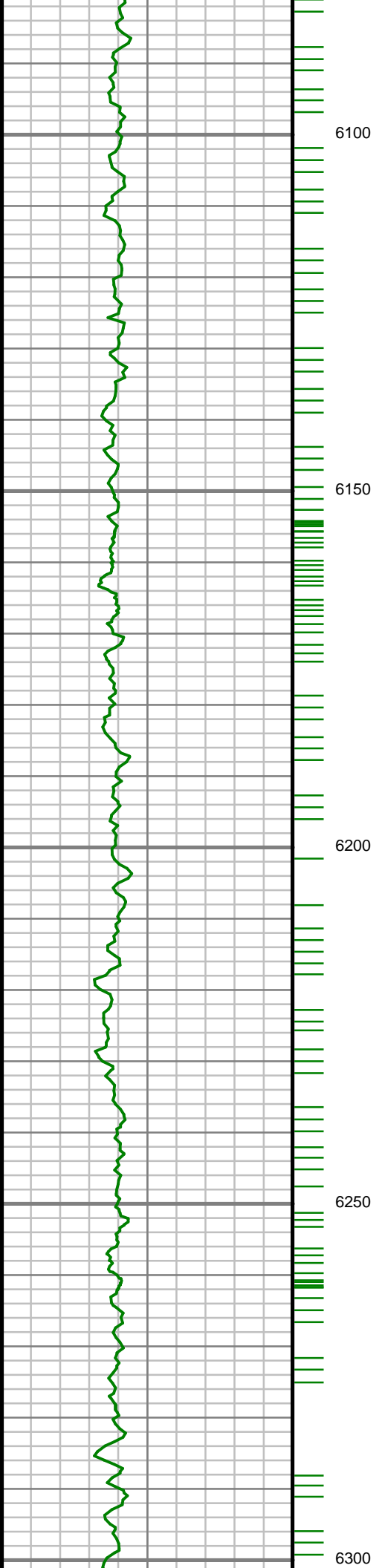
S: 52 MD: 5478.00 ft
Inc: 0.93 deg Az:
282.40 deg TVD:
5399.89 ft



S: 53 MD: 5667.00 ft
Inc: 0.50 deg Az:
277.80 deg TVD:
5588.87 ft

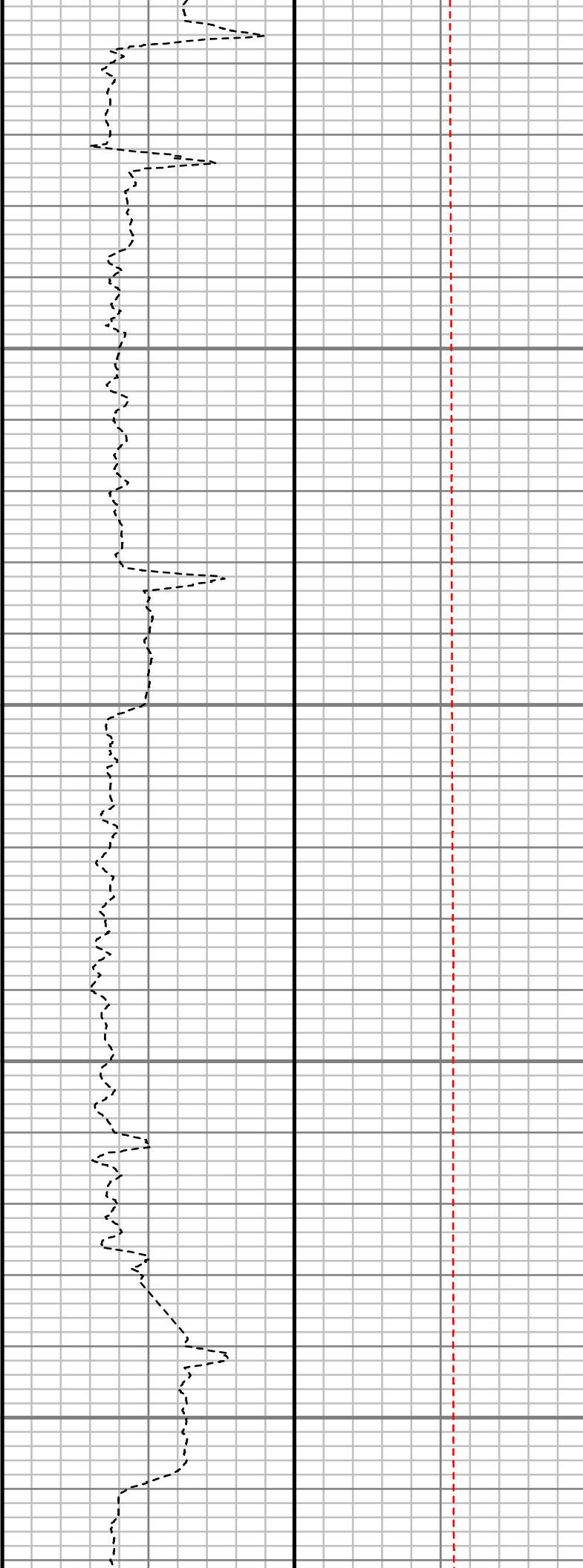
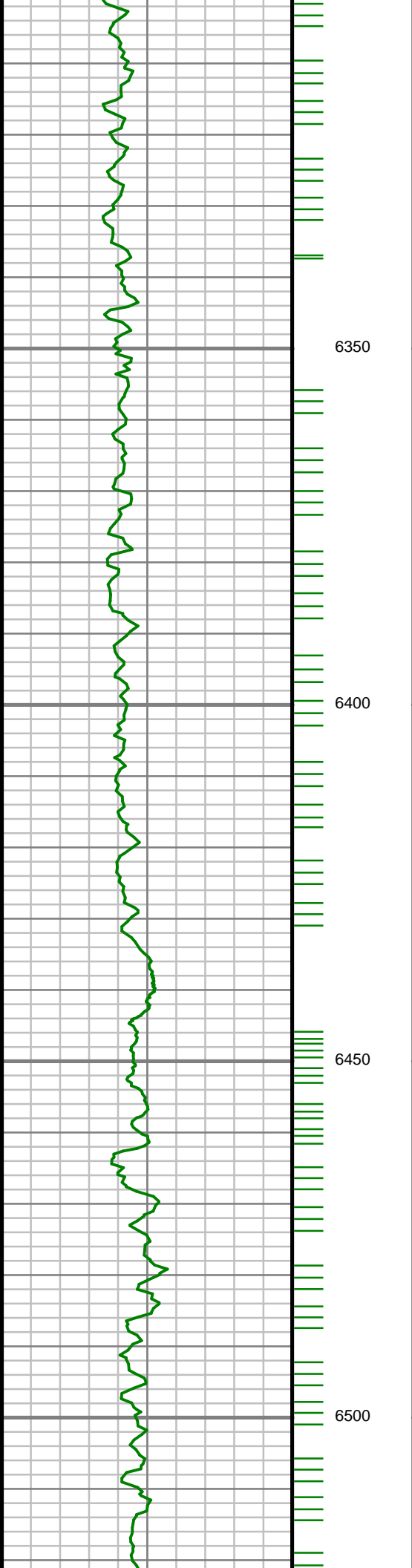
S: 54 MD: 5856.00 ft
Inc: 0.42 deg Az: 59.60





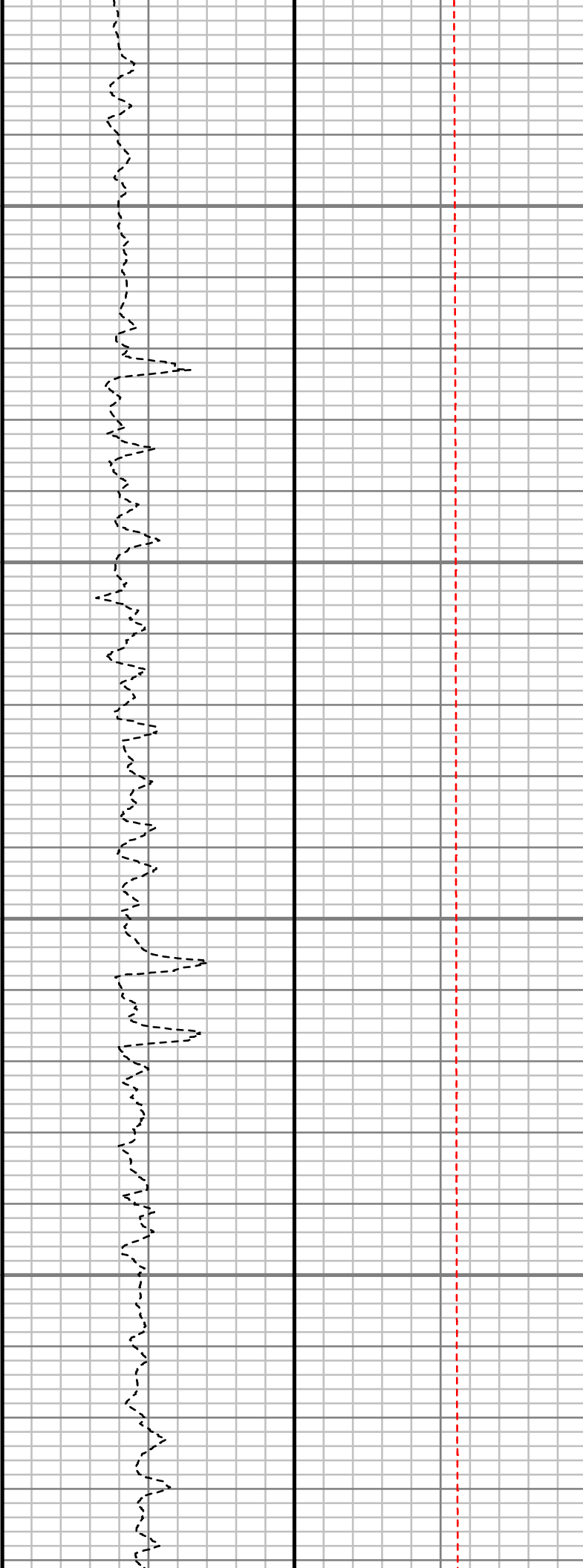
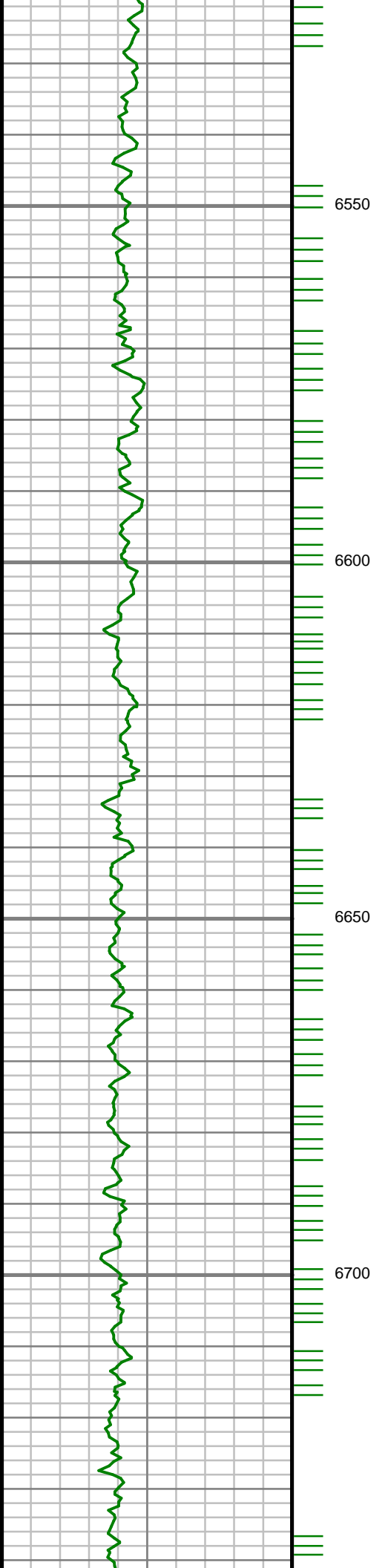
S: 55 MD: 6139.00 ft
Inc: 2.01 deg Az:
351.18 deg TVD:
6060.80 ft

S: 56 MD: 6233.00 ft
Inc: 1.15 deg Az:
229.76 deg TVD:
6154.78 ft



S: 57 MD: 6422.00 ft
Inc: 0.81 deg Az:
217.67 deg TVD:
6343.76 ft

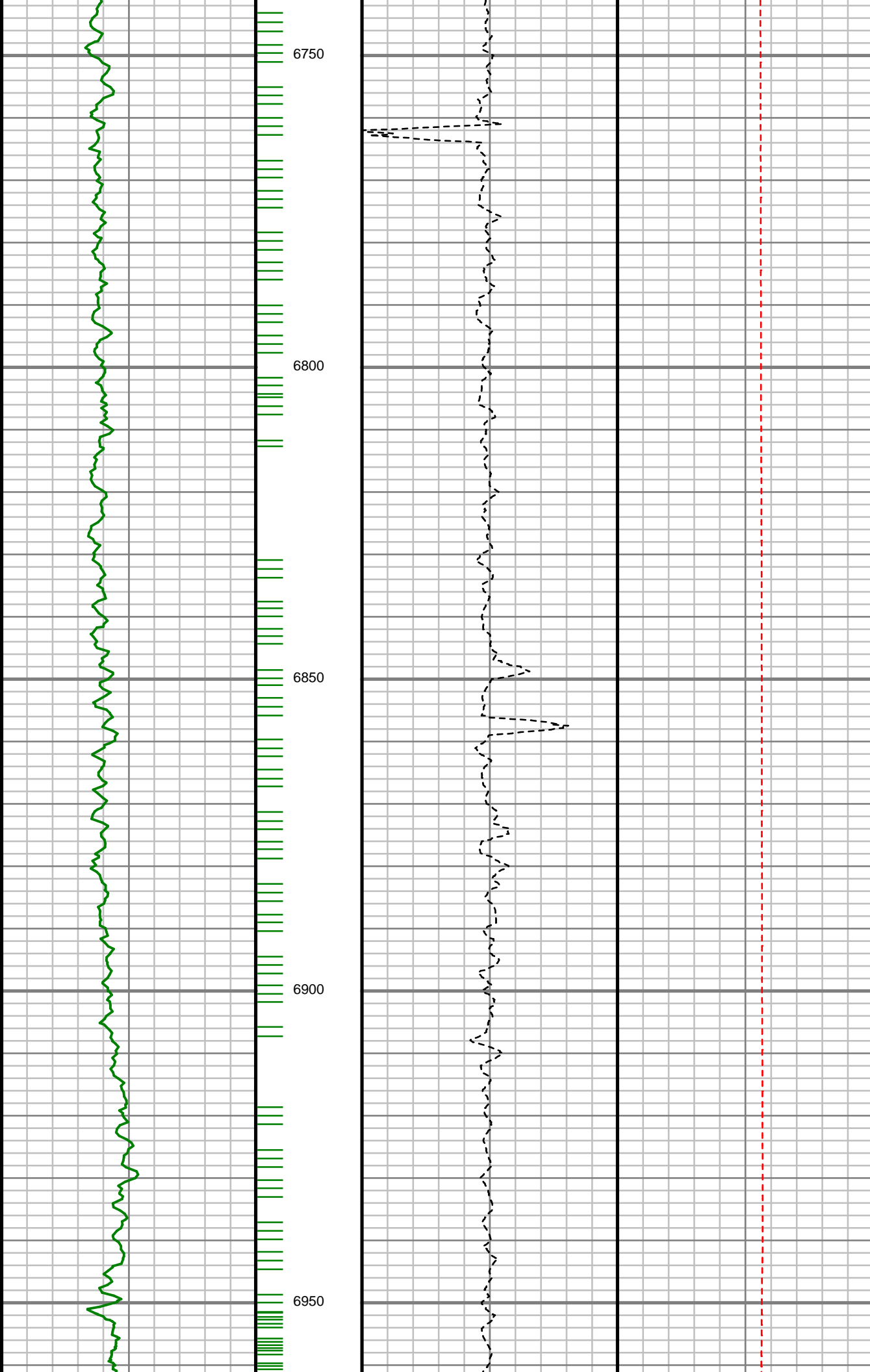
S: 58 MD: 6516.00 ft
Inc: 0.81 deg Az:

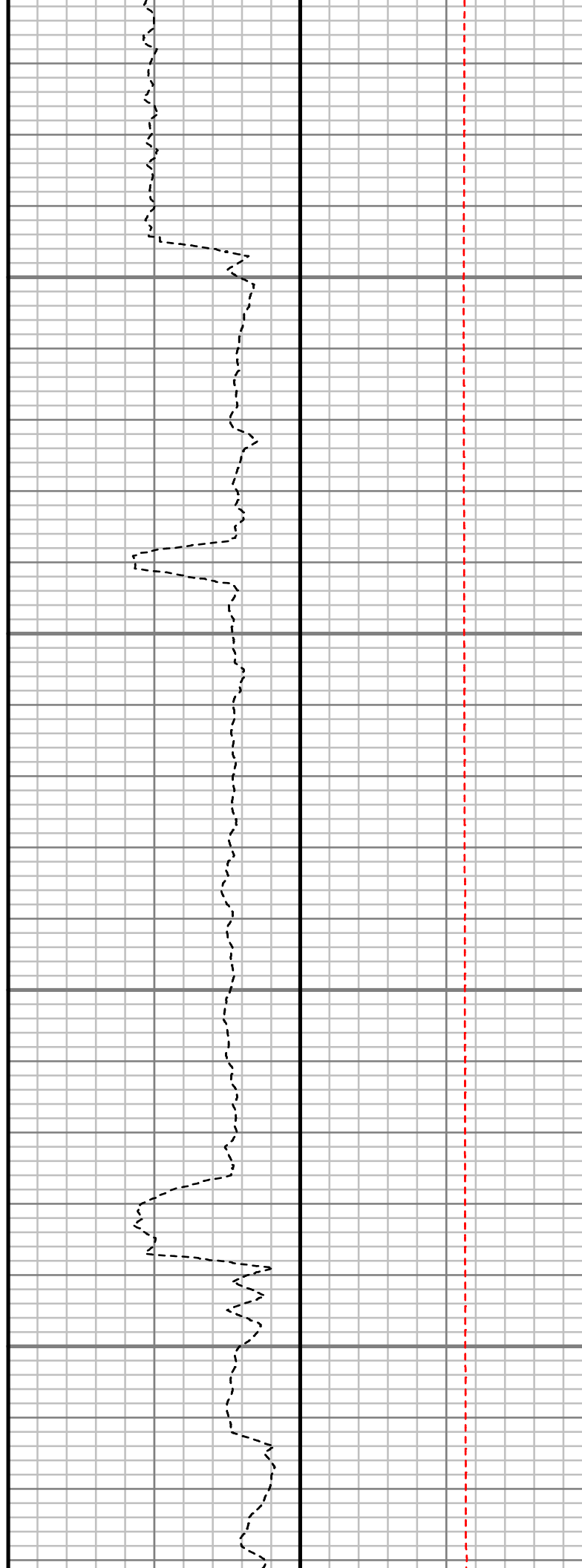
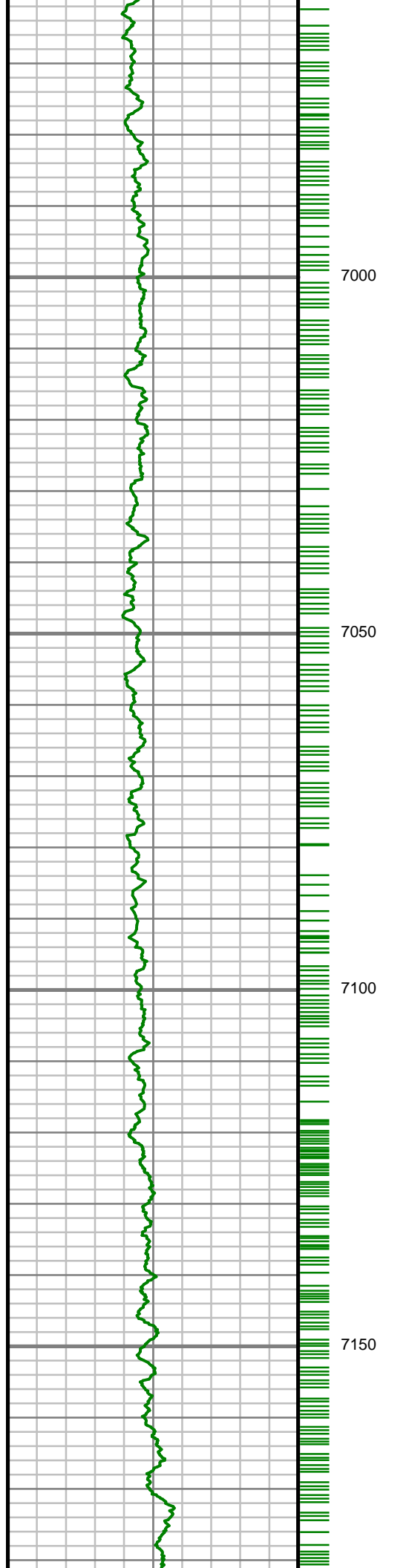


205.76 deg TVD:
6437.75 ft

S: 59 MD: 6611.00 ft
Inc: 0.71 deg Az:
216.18 deg TVD:
6532.74 ft

S: 60 MD: 6705.00 ft
Inc: 0.82 deg Az:
226.33 deg TVD:
6626.73 ft

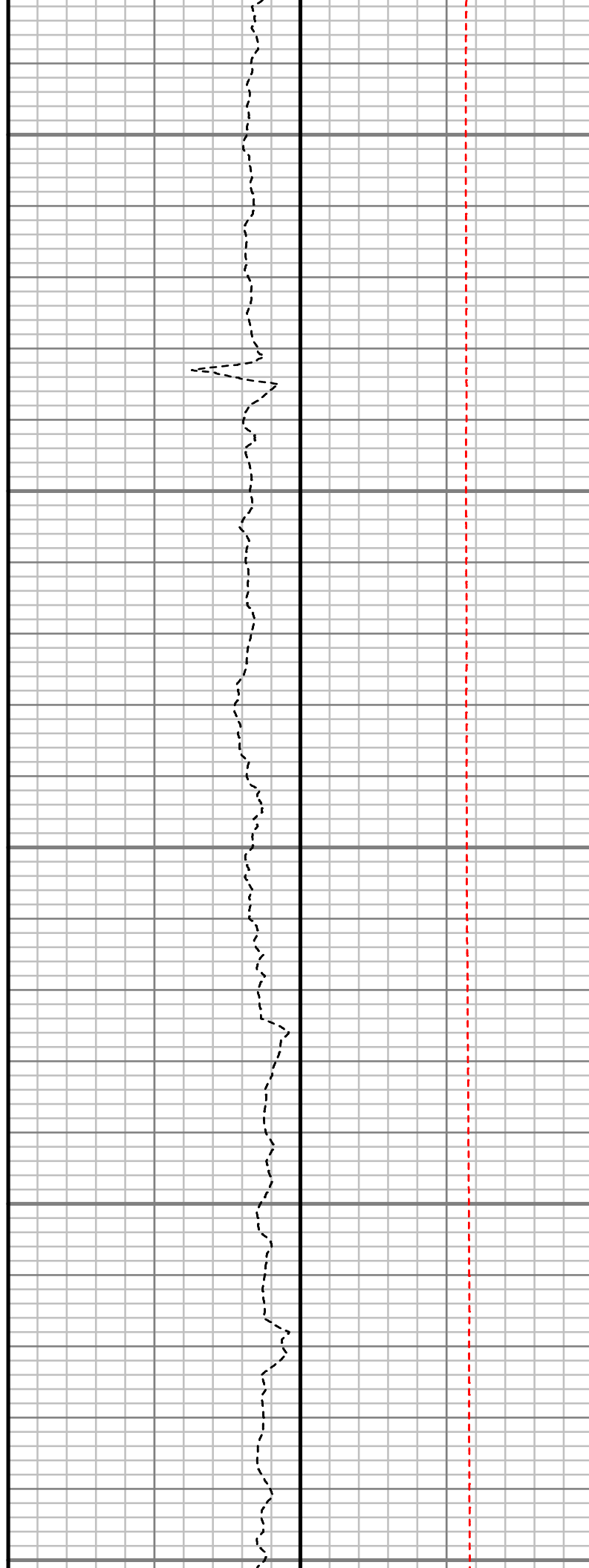
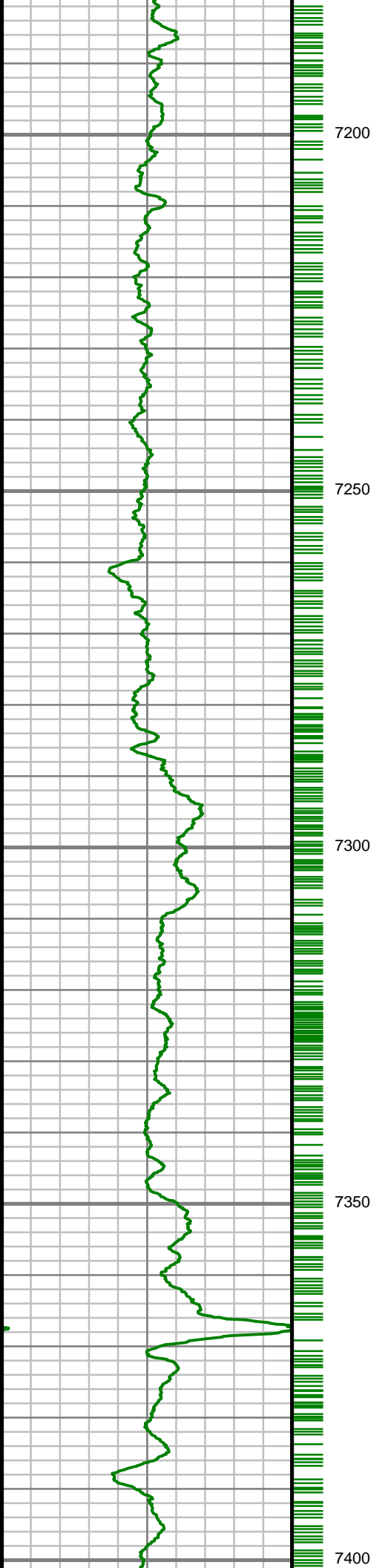




S: 63 MD: 6988.00 ft
Inc: 0.77 deg Az: 293.96 deg TVD: 6909.71 ft

S: 64 MD: 7082.00 ft
Inc: 7.88 deg Az: 8.93 deg TVD: 7003.40 ft

S: 65 MD: 7177.00 ft
Inc: 11.82 deg Az: 5.45

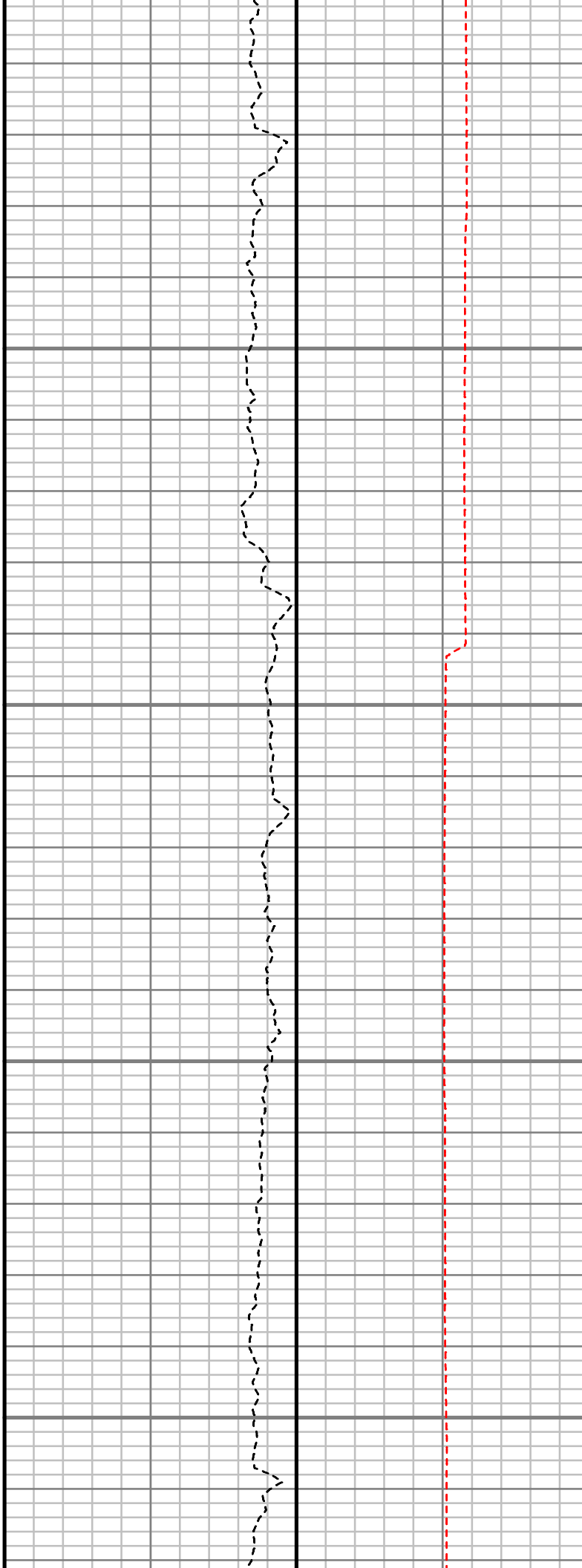
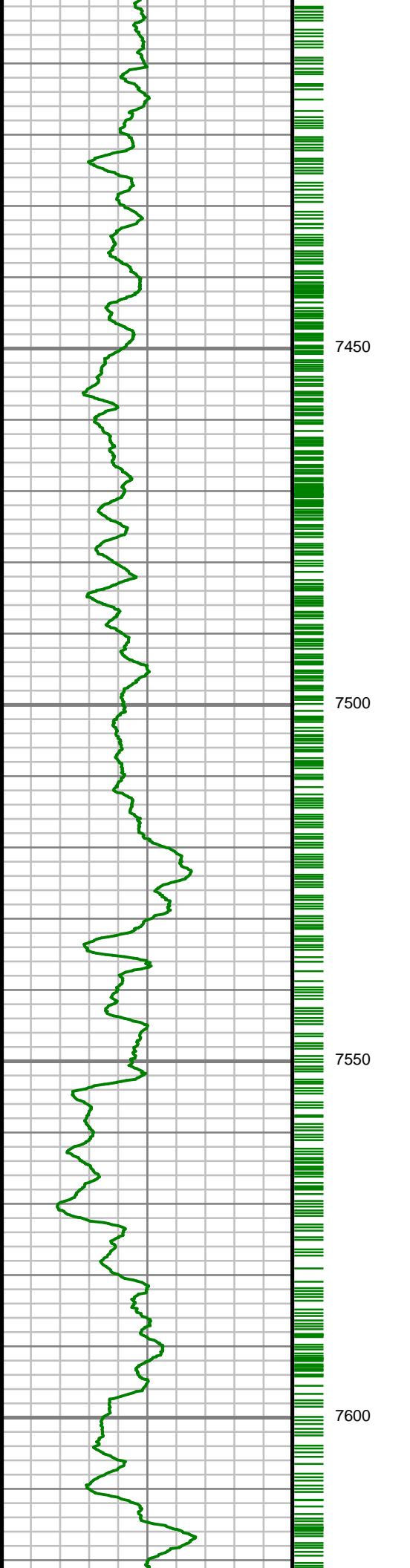


Inc: 15.57 deg Az: 6.04
deg TVD: 7096.98 ft

S: 66 MD: 7224.00 ft
Inc: 15.57 deg Az: 6.04
deg TVD: 7142.64 ft

S: 67 MD: 7271.00 ft
Inc: 18.19 deg Az: 7.45
deg TVD: 7187.61 ft

S: 68 MD: 7365.00 ft
Inc: 26.22 deg Az: 1.66
deg TVD: 7274.58 ft

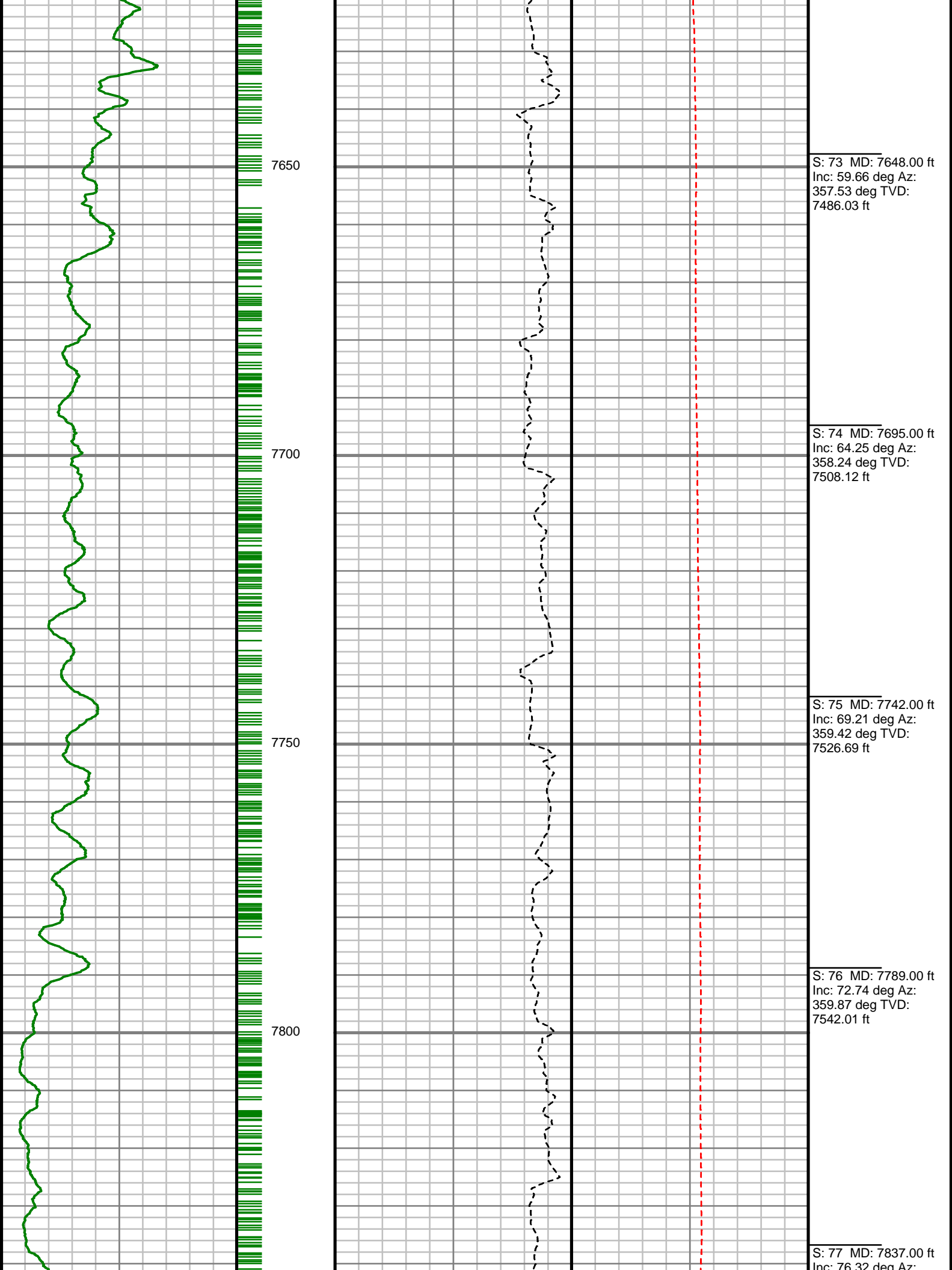


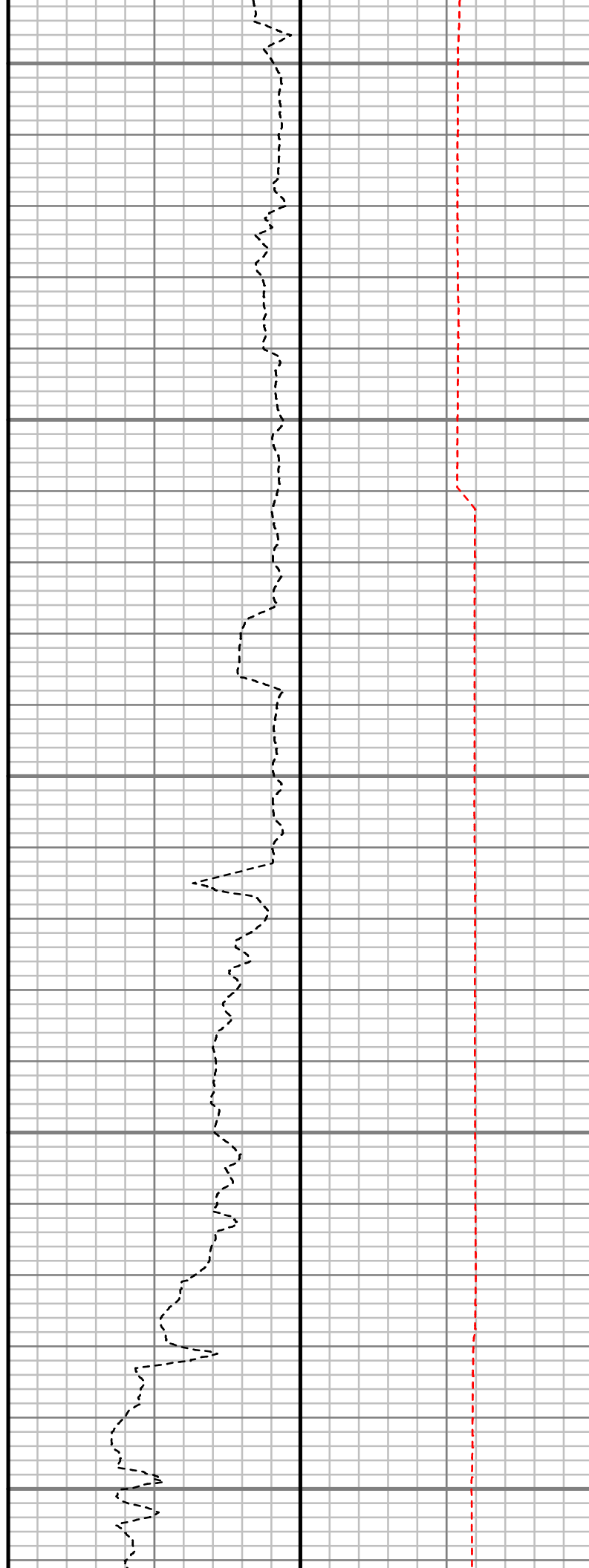
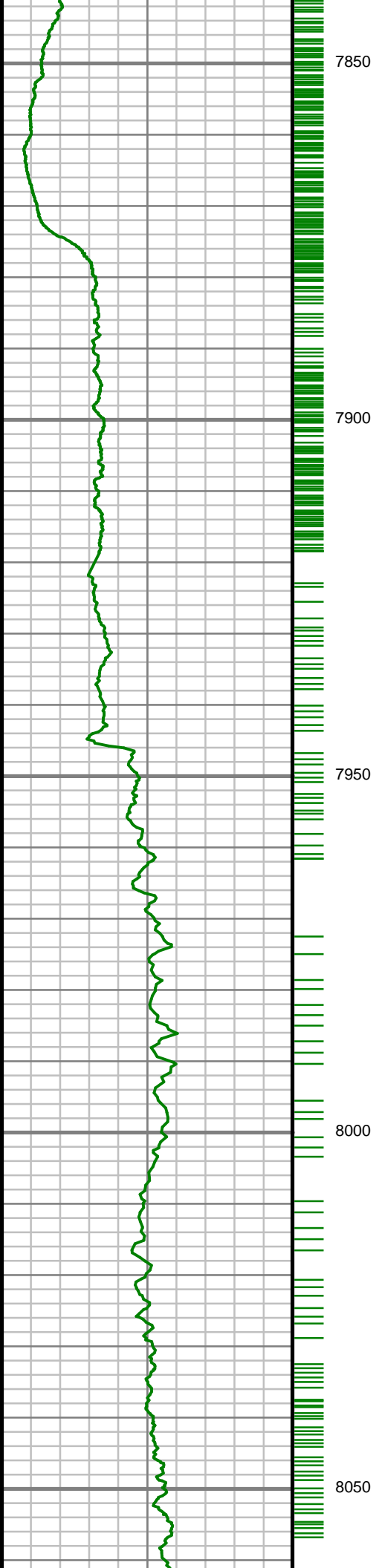
S: 69 MD: 7412.00 ft
Inc: 31.35 deg Az:
356.77 deg TVD:
7315.77 ft

S: 70 MD: 7460.00 ft
Inc: 34.90 deg Az:
356.78 deg TVD:
7355.96 ft

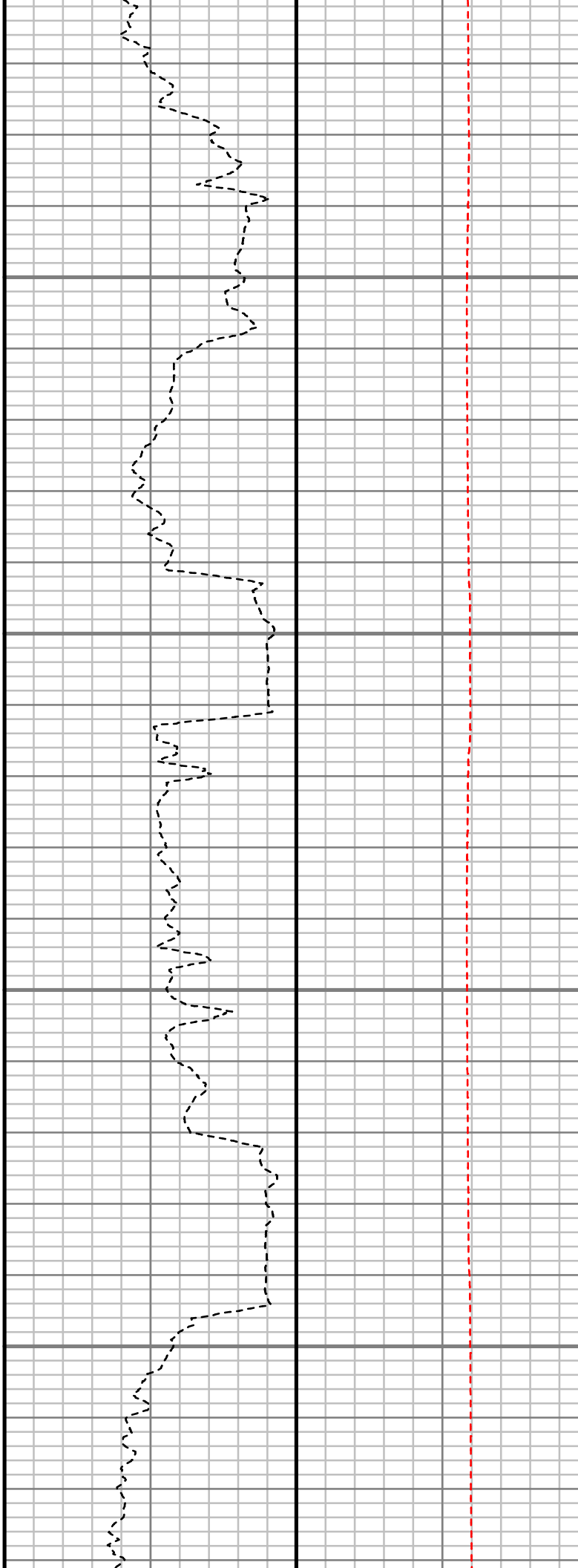
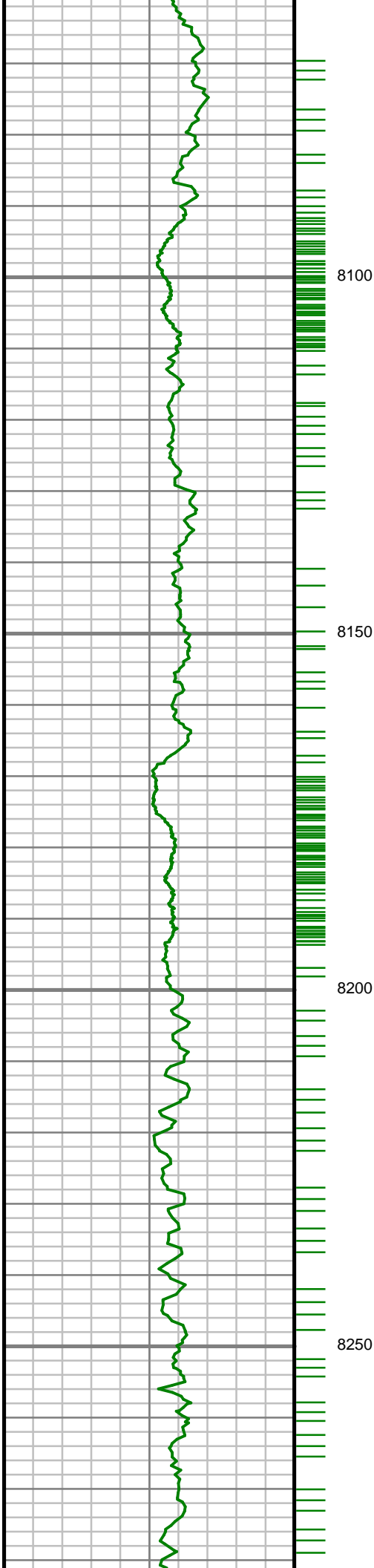
S: 71 MD: 7491.00 ft
Inc: 37.19 deg Az:
357.99 deg TVD:
7381.02 ft

S: 72 MD: 7554.00 ft
Inc: 44.72 deg Az:
358.66 deg TVD:
7428.57 ft

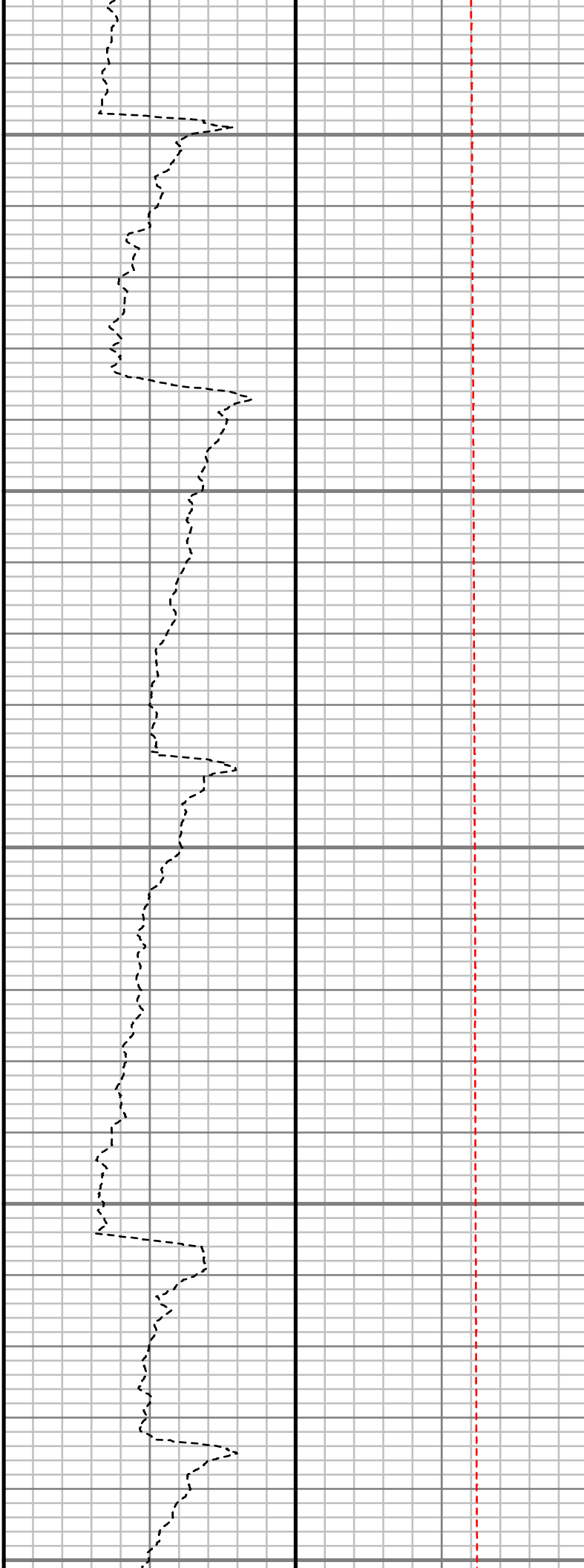
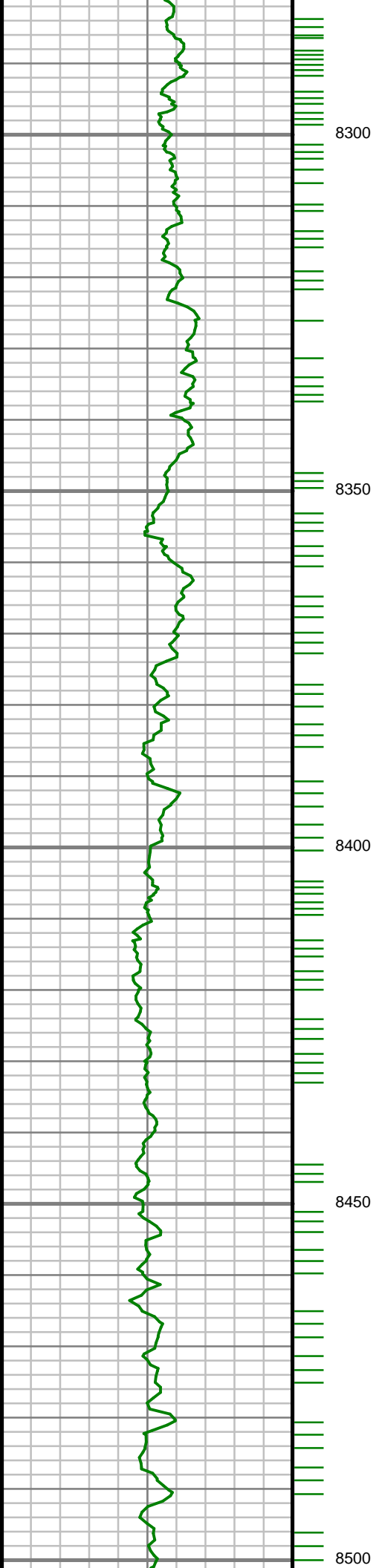




	359.85 deg Az: 7554.81 ft
S: 78 MD: 7884.00 ft Inc: 79.61 deg Az: 359.90 deg TVD: 7564.61 ft	
S: 79 MD: 7907.00 ft Inc: 82.23 deg Az: 359.37 deg TVD: 7568.24 ft	
S: 80 MD: 7969.00 ft Inc: 88.16 deg Az: 359.41 deg TVD: 7573.43 ft	

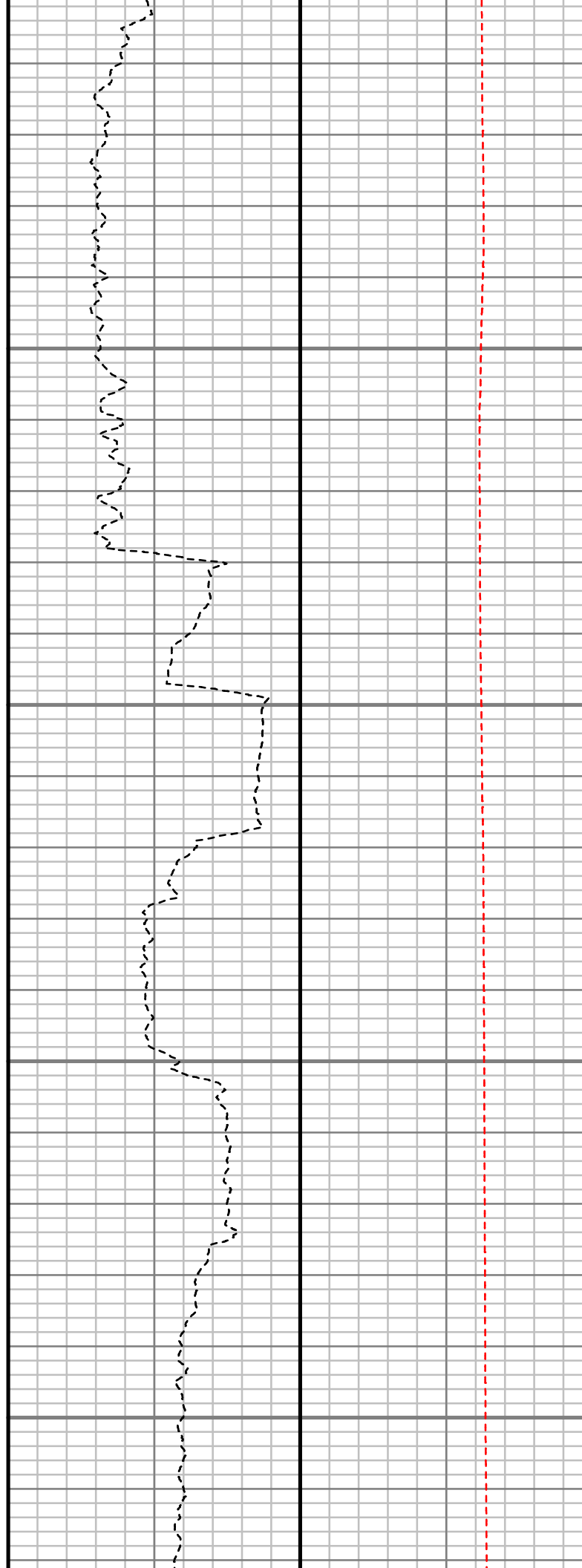
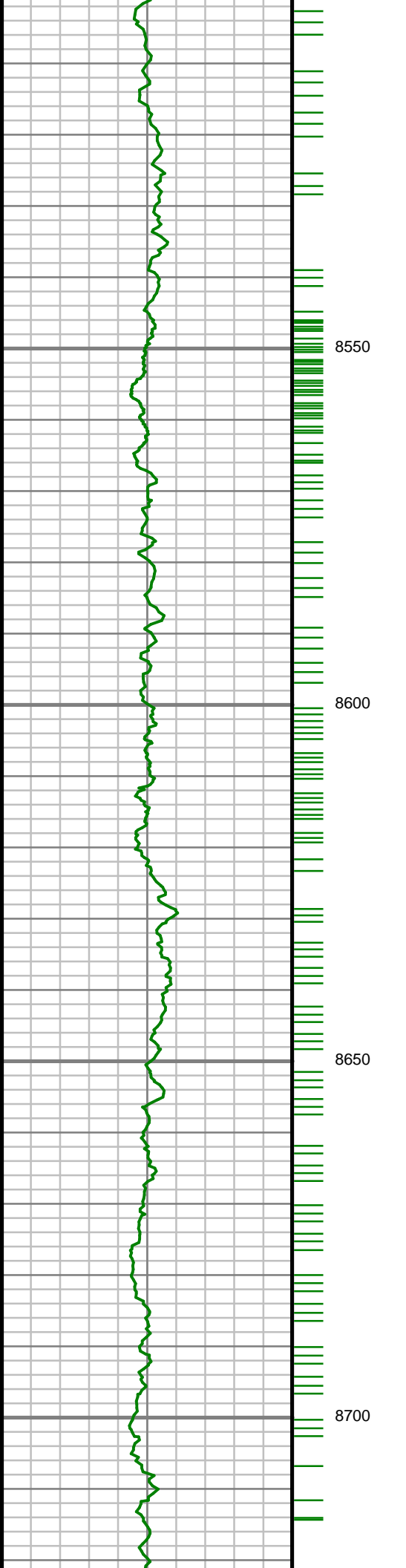


S: 81 MD: 8138.00 ft
Inc: 88.76 deg Az:
359.97 deg TVD:
7577.98 ft



S: 82 MD: 8327.00 ft
Inc: 91.11 deg Az: 1.68
deg TVD: 7578.20 ft

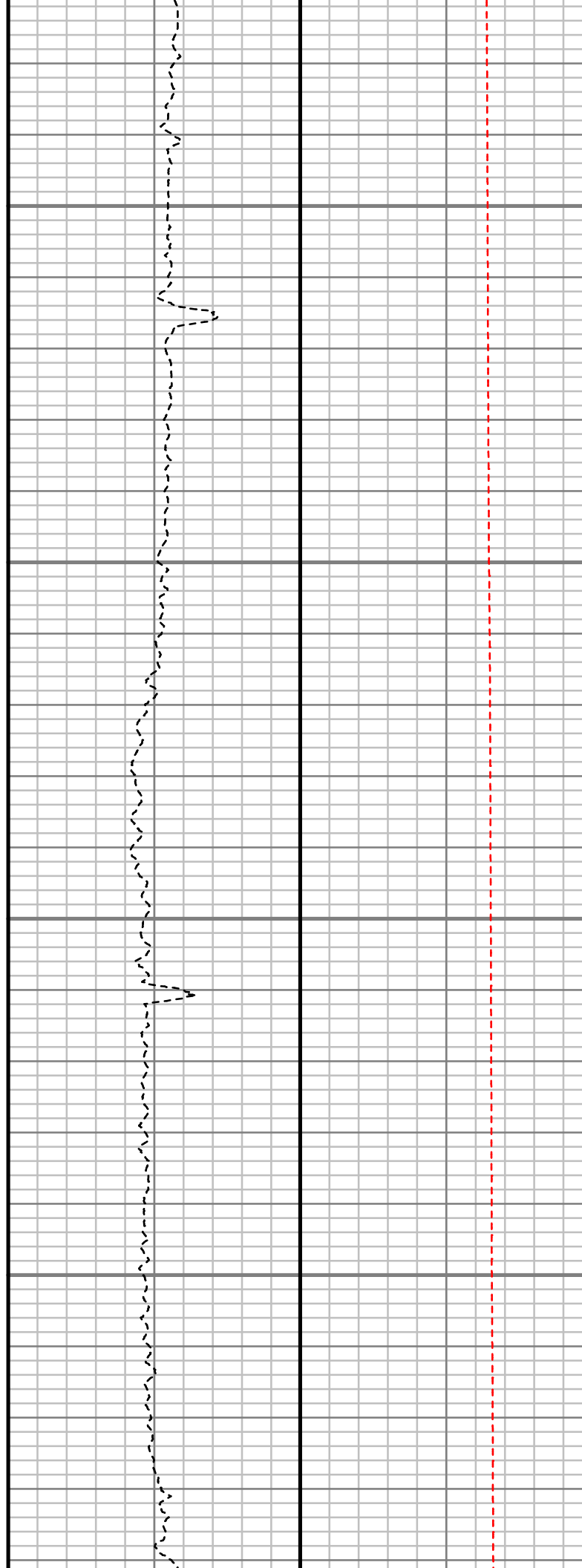
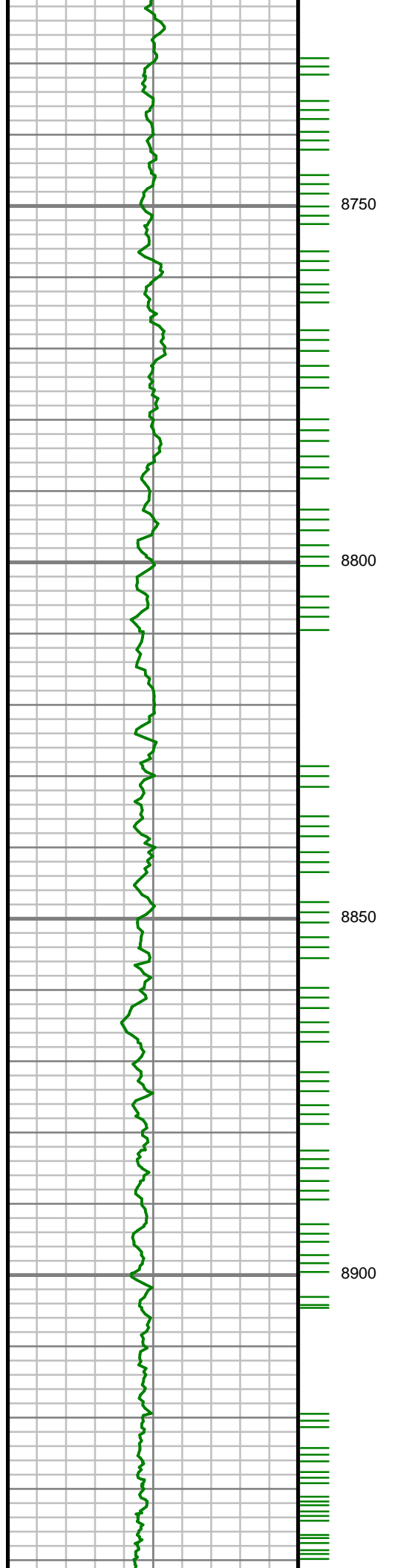
S: 83 MD: 8421.00 ft
Inc: 90.81 deg Az: 1.18
deg TVD: 7576.63 ft



S: 84 MD: 8516.00 ft
Inc: 90.34 deg Az: 0.25
deg TVD: 7575.68 ft

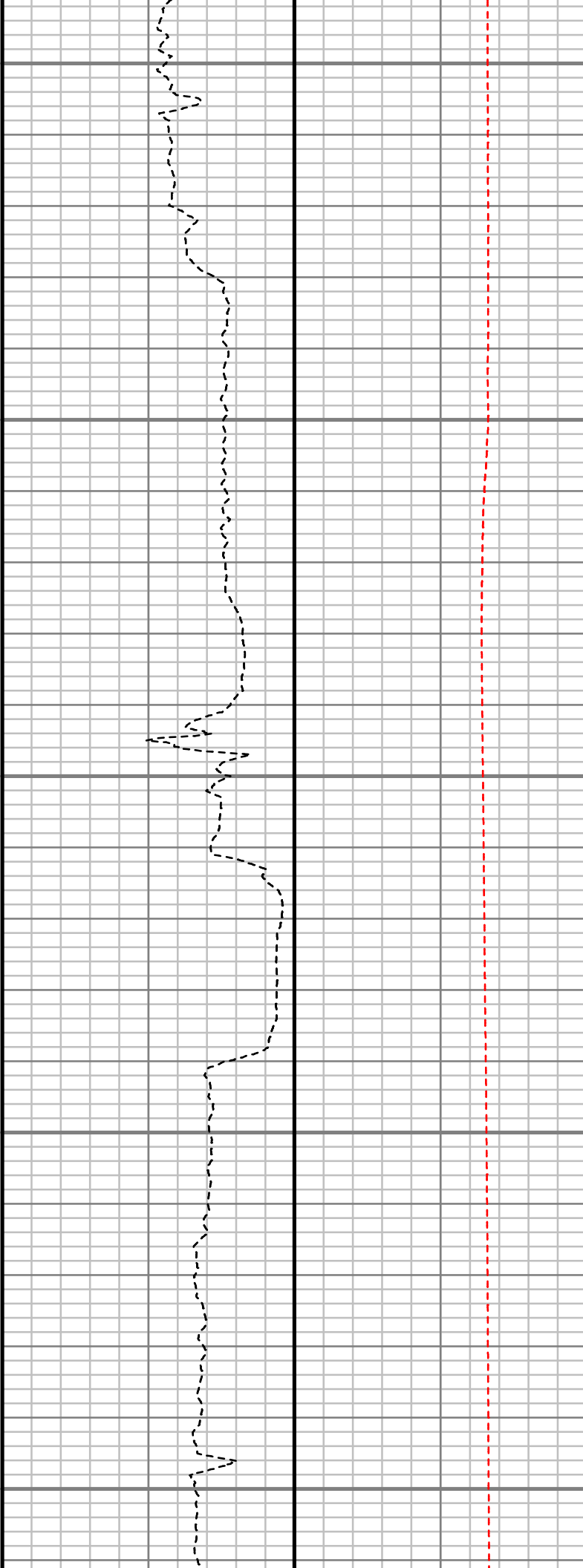
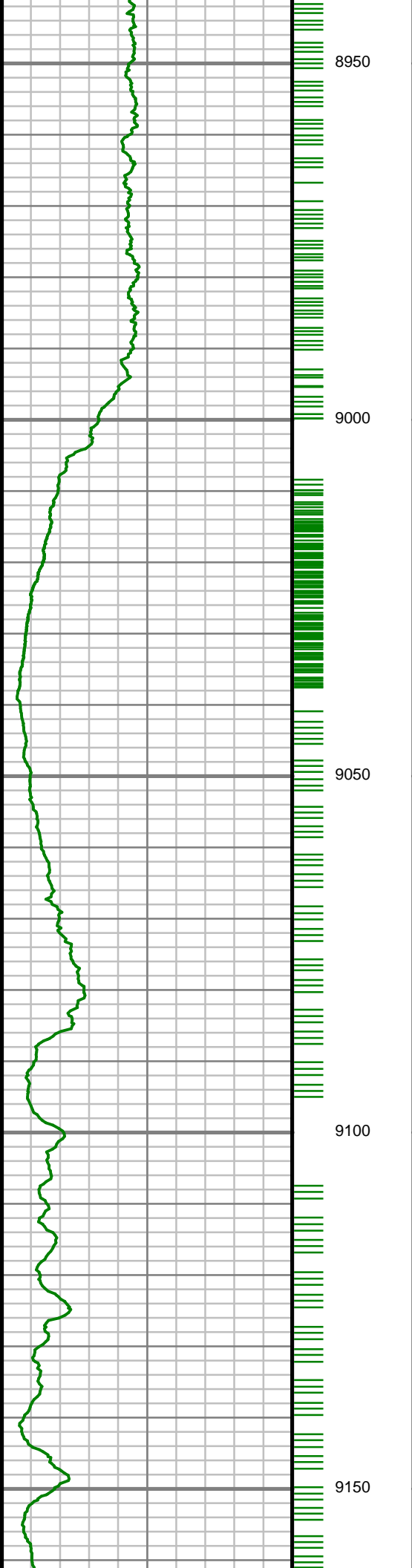
S: 85 MD: 8610.00 ft
Inc: 91.88 deg Az: 1.13
deg TVD: 7573.86 ft

S: 86 MD: 8704.00 ft
Inc: 91.45 deg Az: 0.97
deg TVD: 7571.14 ft

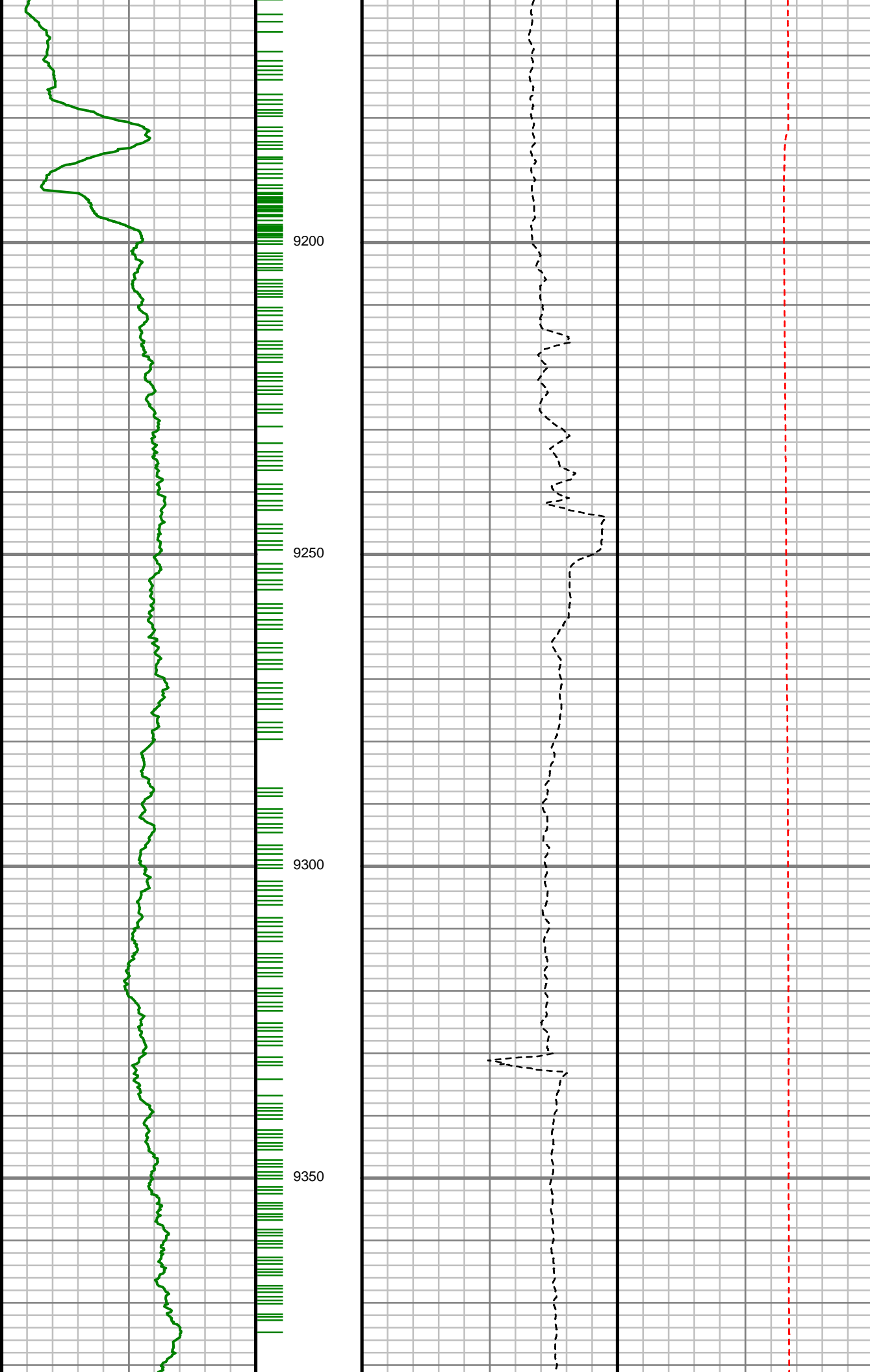


S: 87 MD: 8798.00 ft
Inc: 90.84 deg Az: 0.31
deg TVD: 7569.26 ft

S: 88 MD: 8893.00 ft
Inc: 90.37 deg Az:
359.33 deg TVD:
7568.26 ft



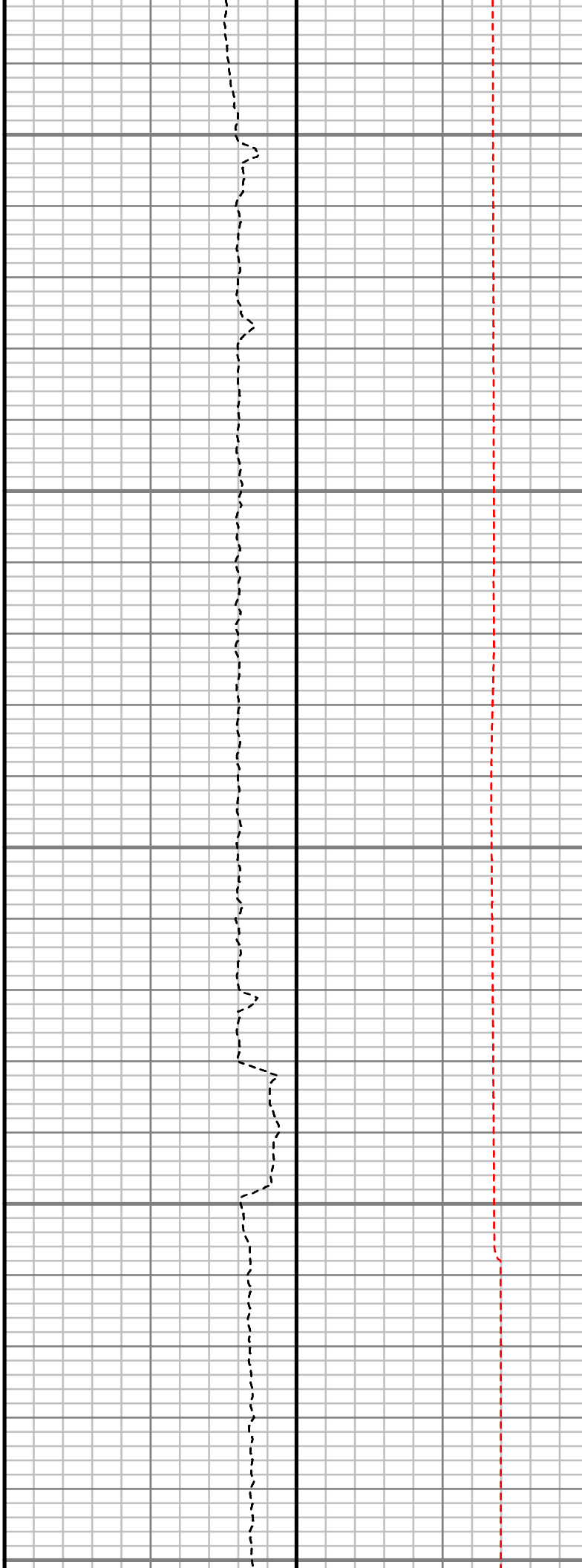
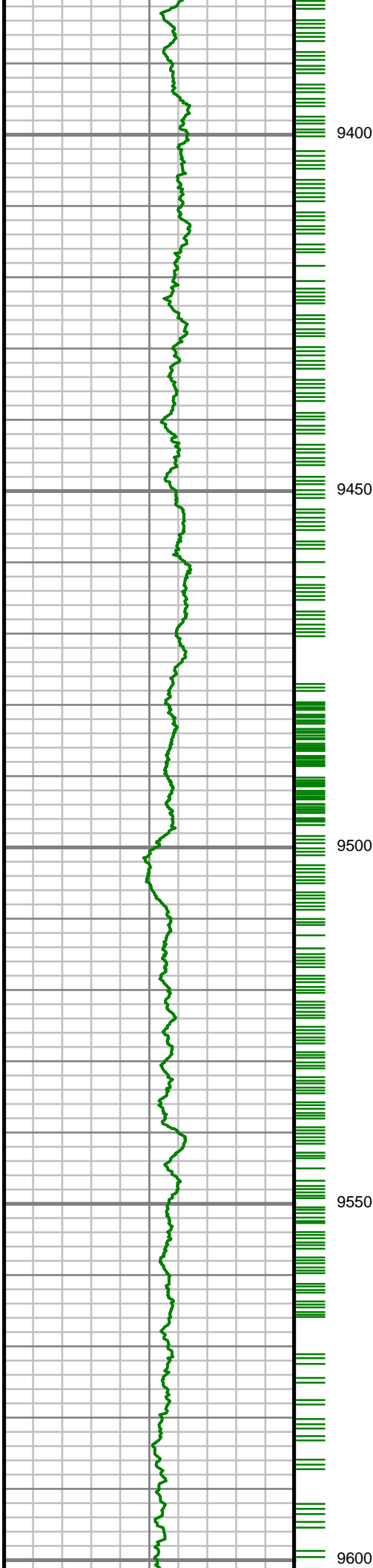
S: 89 MD: 8987.00 ft
Inc: 89.33 deg Az:
356.97 deg TVD:
7568.51 ft

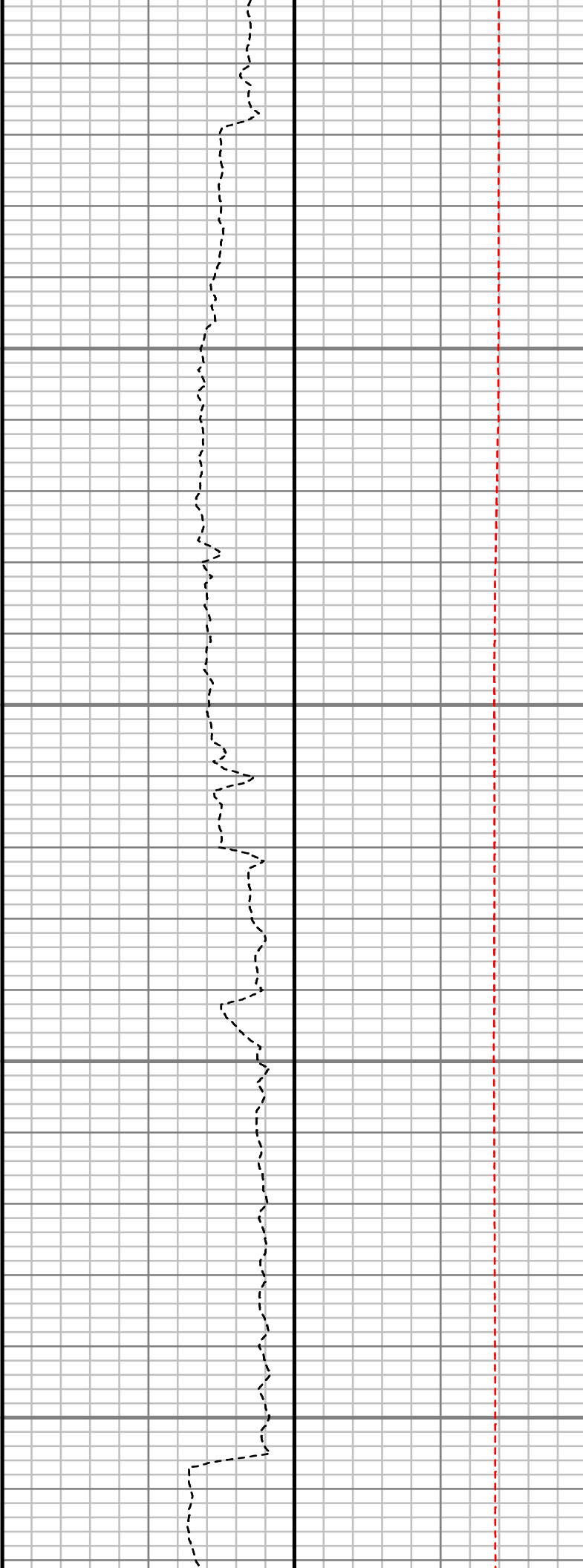
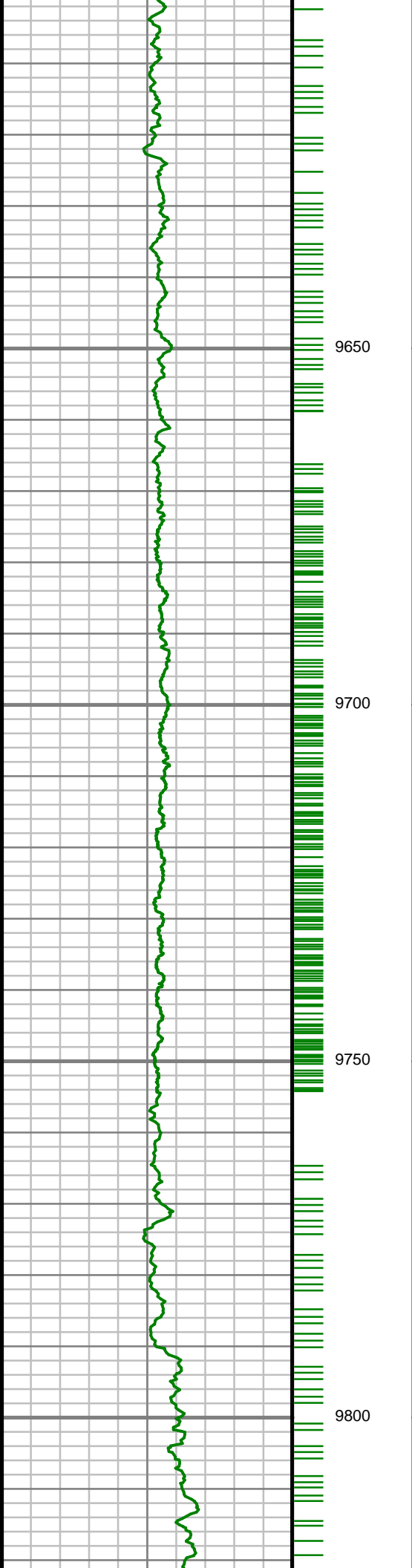


S: 90 MD: 9175.00 ft
Inc: 91.71 deg Az: 0.28
deg TVD: 7566.81 ft

S: 91 MD: 9270.00 ft
Inc: 90.74 deg Az:
359.18 deg TVD:
7564.78 ft

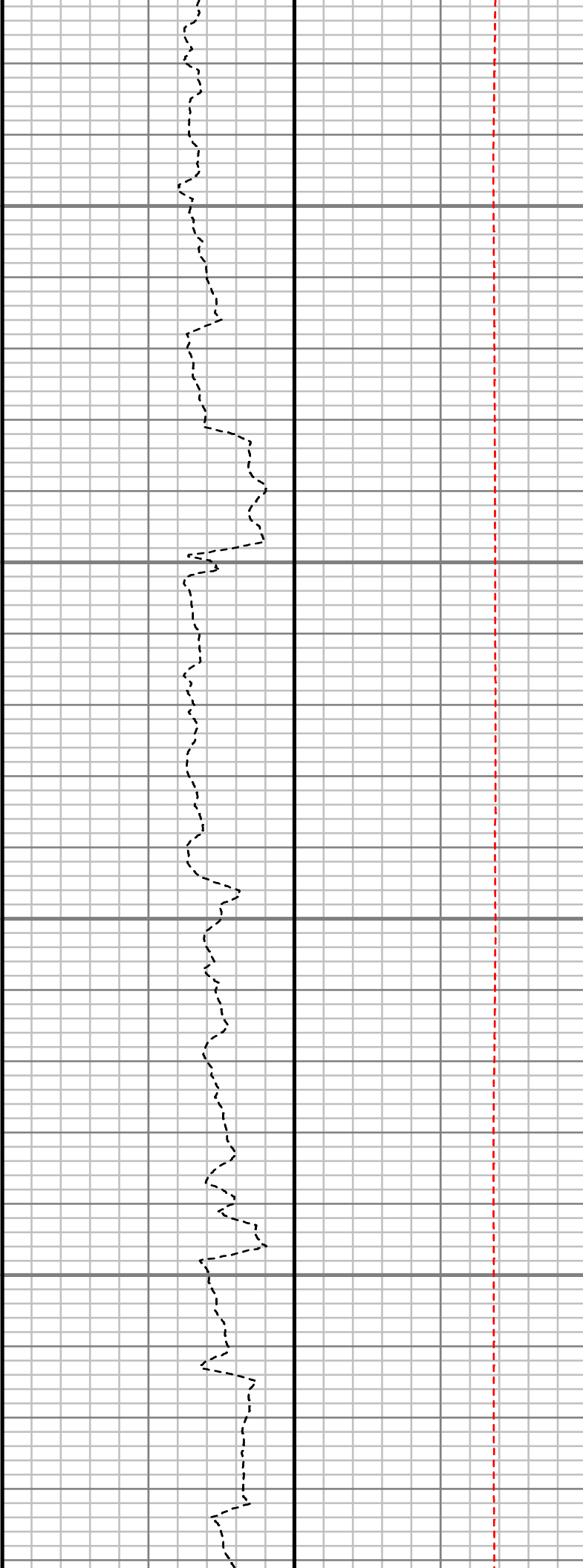
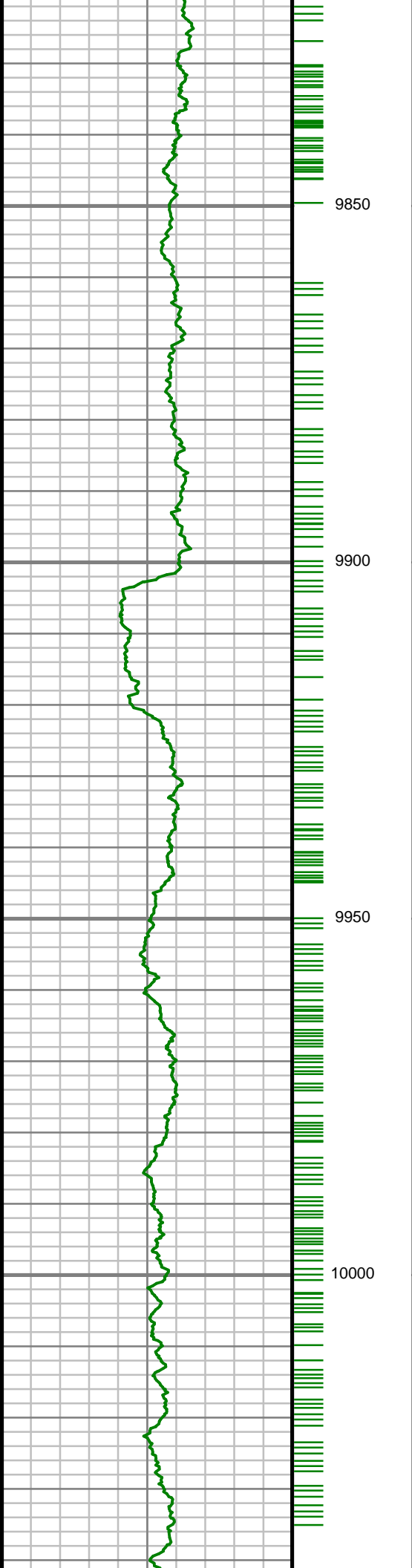
S: 92 MD: 9364.00 ft
Inc: 90.24 deg Az:
358.42 deg TVD:
7563.98 ft





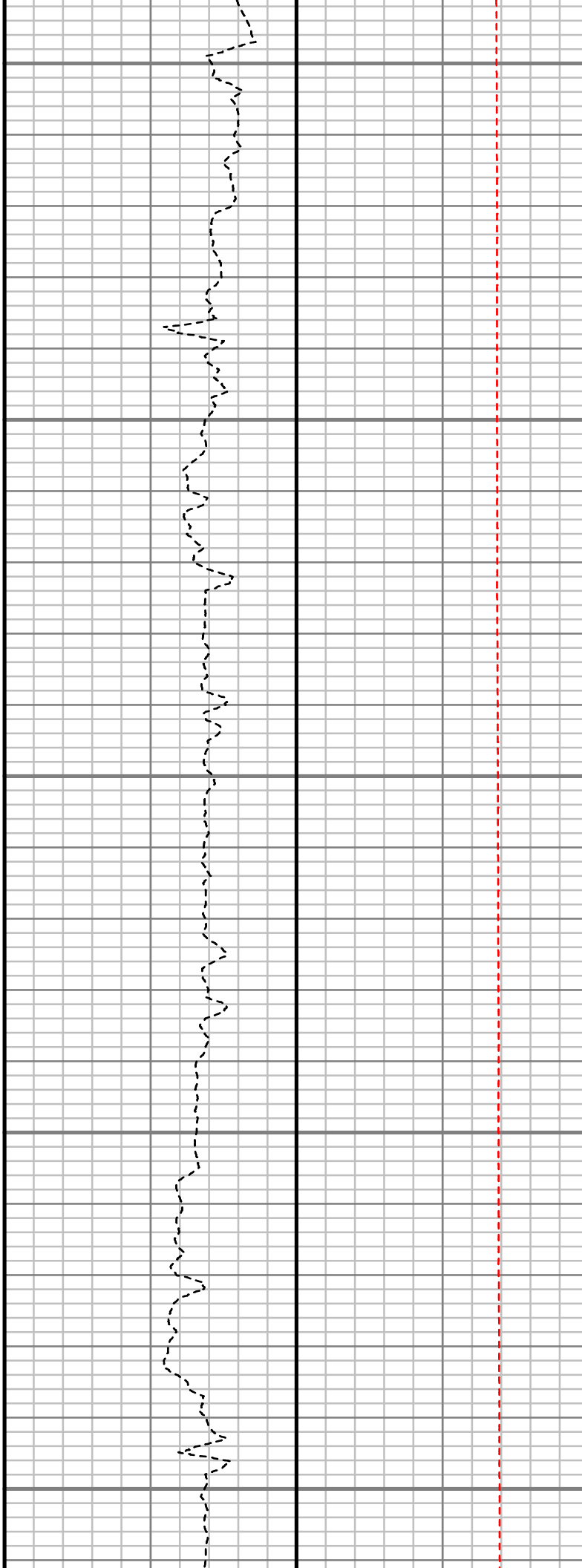
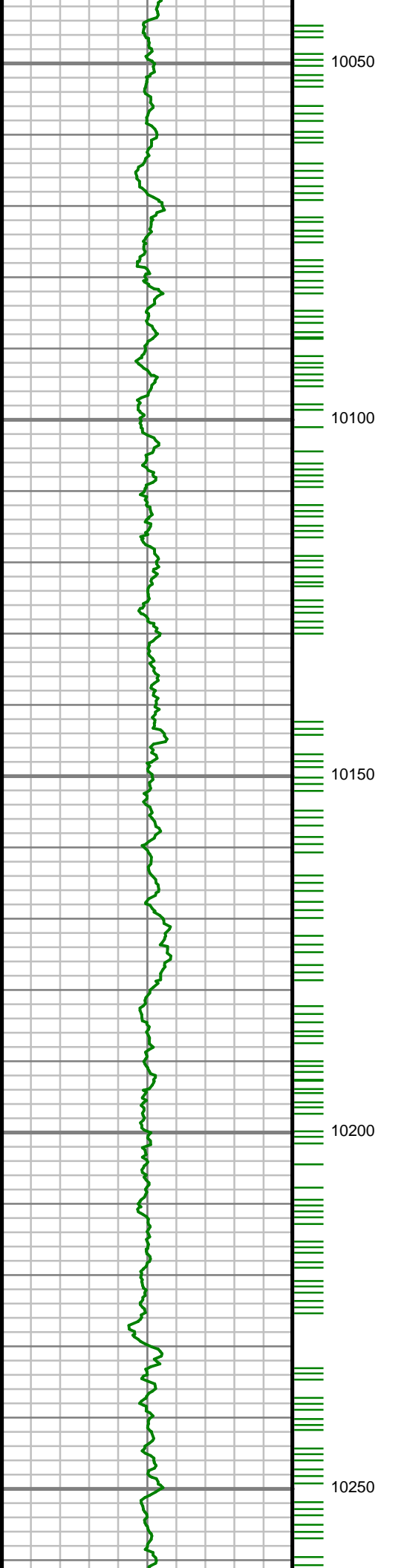
S: 93 MD: 9647.00 ft
Inc: 89.63 deg Az:
358.53 deg TVD:
7564.31 ft

S: 94 MD: 9742.00 ft
Inc: 91.11 deg Az:
359.12 deg TVD:
7563.70 ft



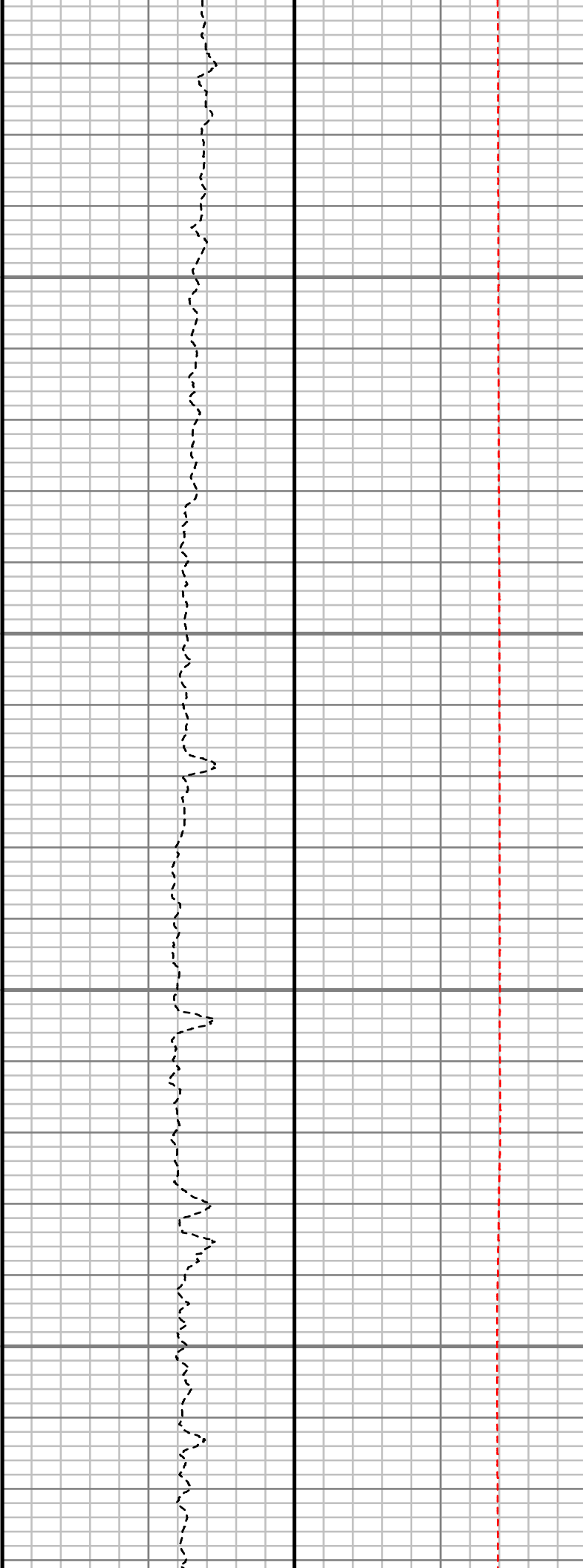
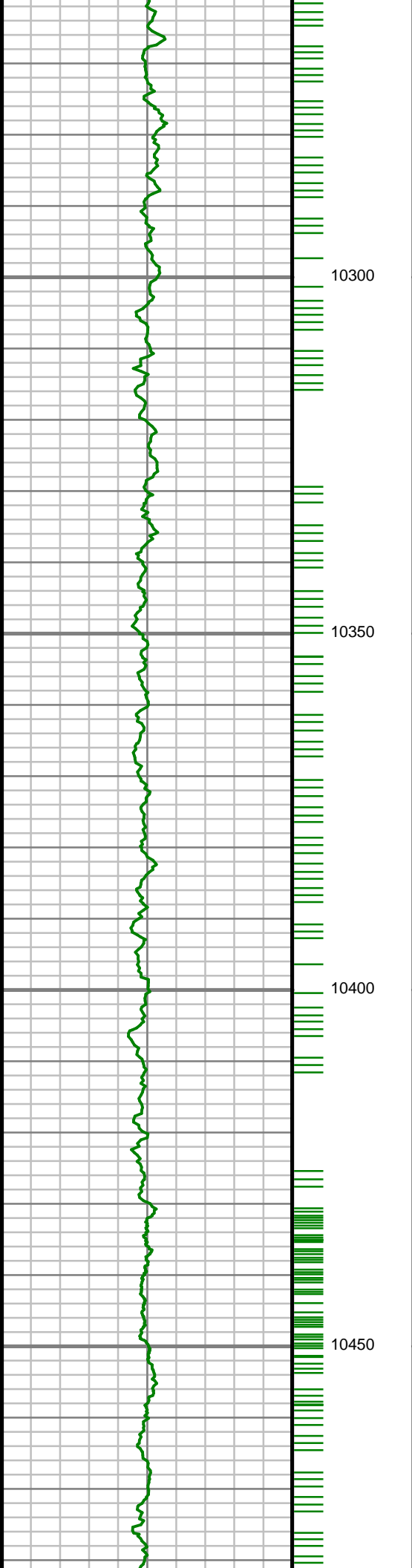
S: 95 MD: 9930.00 ft
Inc: 91.31 deg Az:
359.34 deg TVD:
7559.73 ft

S: 96 MD: 10025.00 ft
Inc: 89.90 deg Az:
359.15 deg TVD:
7558.73 ft



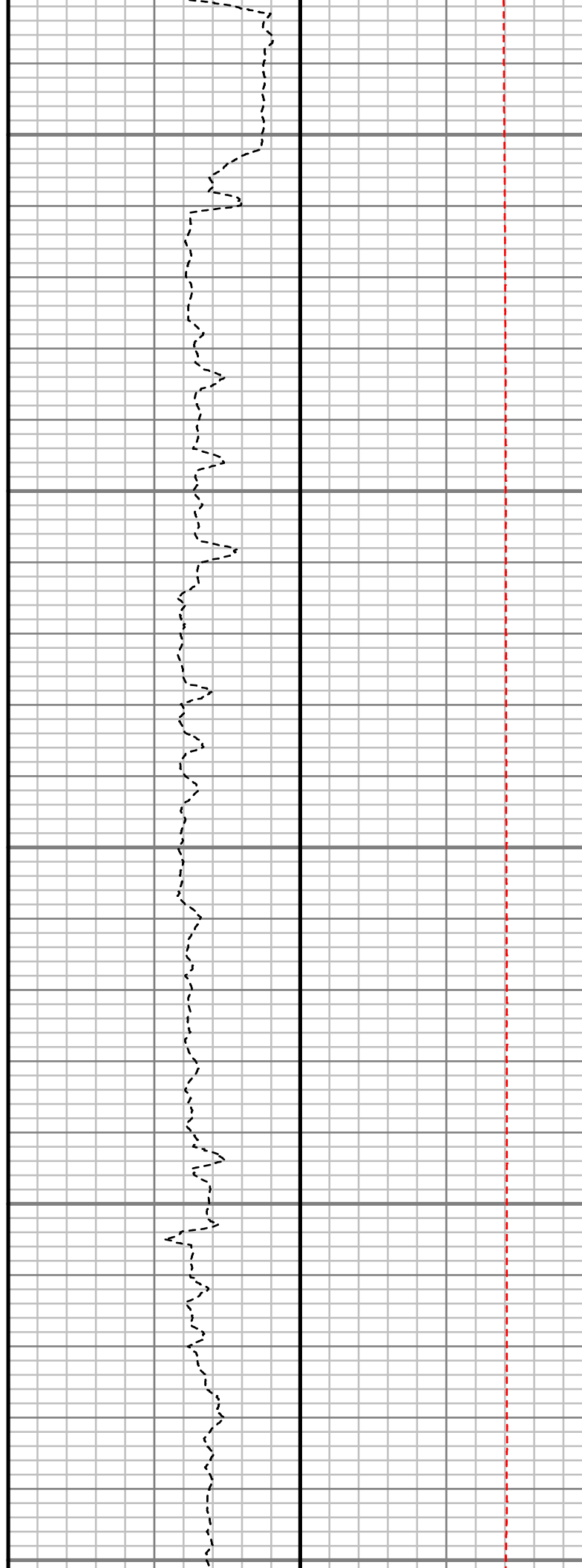
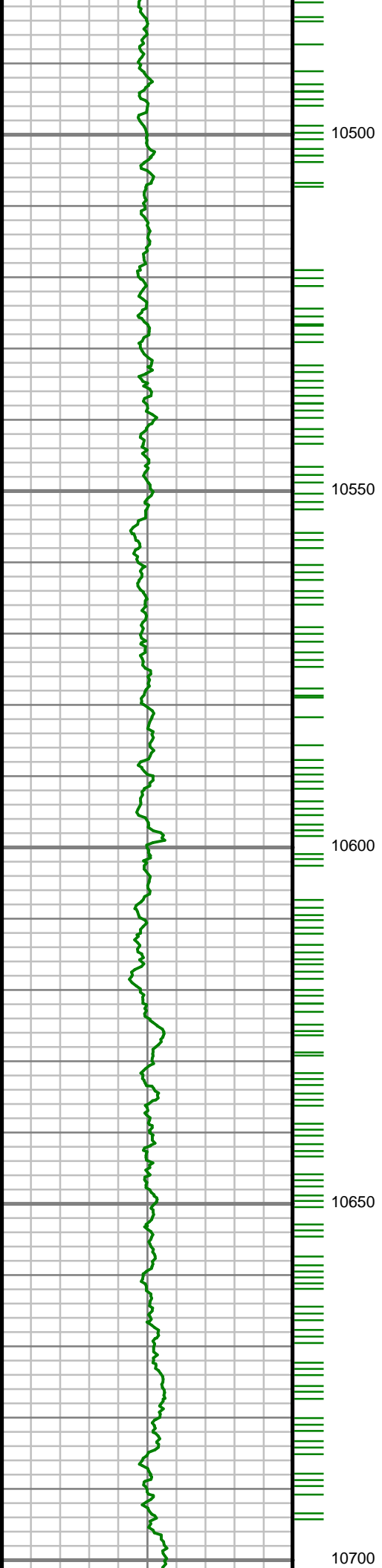
S: 97 MD: 10119.00 ft
Inc: 89.80 deg Az:
358.63 deg TVD:
7558.97 ft

S: 98 MD: 10213.00 ft
Inc: 90.50 deg Az:
359.65 deg TVD:
7558.73 ft



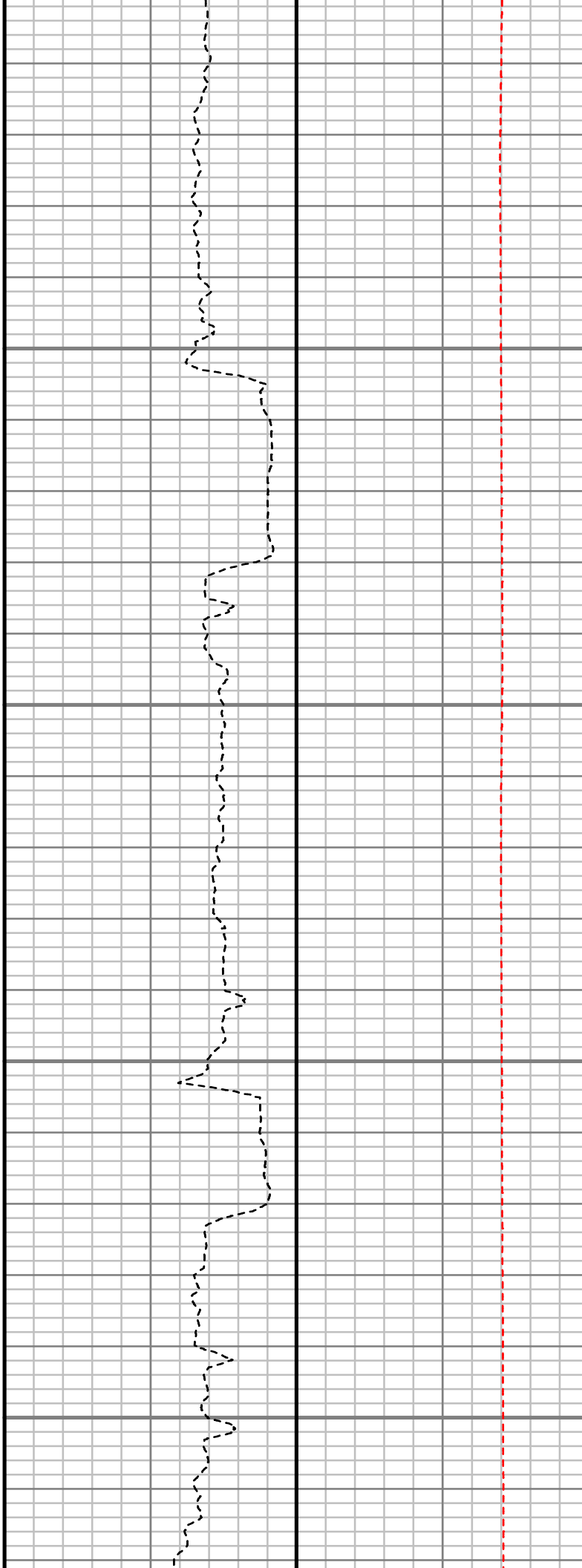
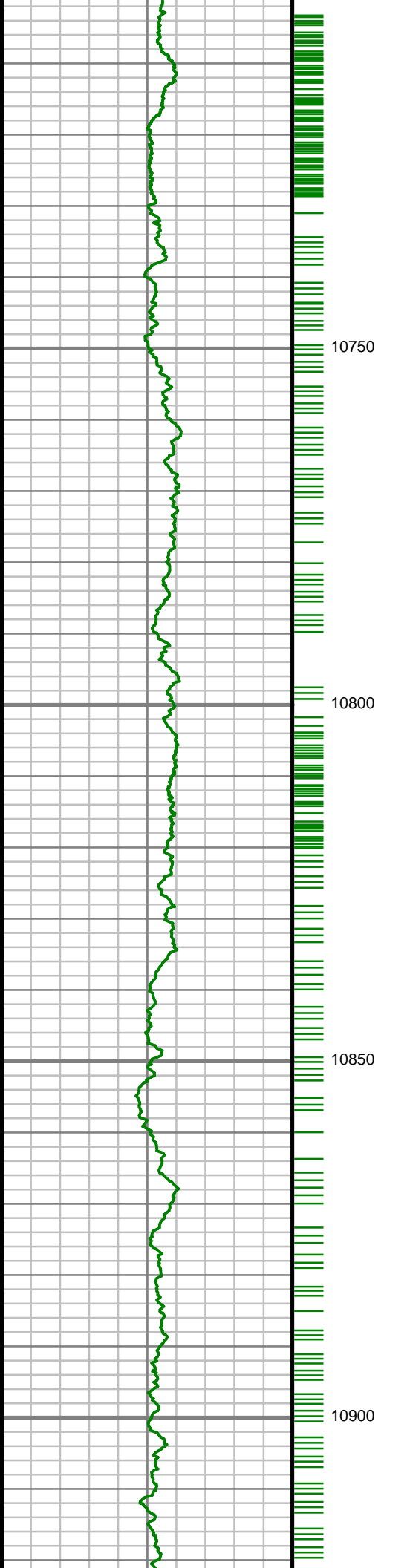
S: 99 MD: 10307.00 ft
Inc: 90.07 deg Az:
358.62 deg TVD:
7558.26 ft

S: 100 MD: 10402.00 ft
Inc: 90.17 deg Az:
357.75 deg TVD:
7558.06 ft



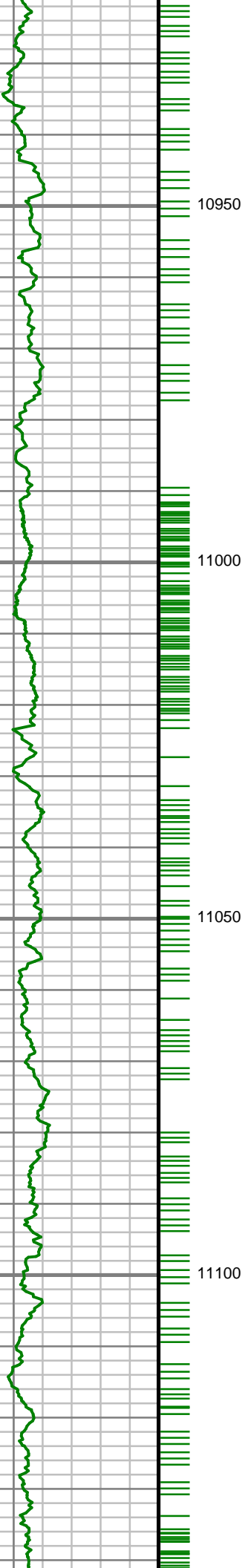
S: 101 MD: 10590.00 ft
Inc: 89.56 deg Az:
358.99 deg TVD:
7558.50 ft

S: 102 MD: 10685.00 ft
Inc: 88.83 deg Az:
357.57 deg TVD:
7559.84 ft



S: 103 MD: 10779.00 ft
Inc: 89.23 deg Az: 0.04
deg TVD: 7561.43 ft

S: 104 MD: 10873.00 ft
Inc: 89.80 deg Az: 0.05
deg TVD: 7562.23 ft

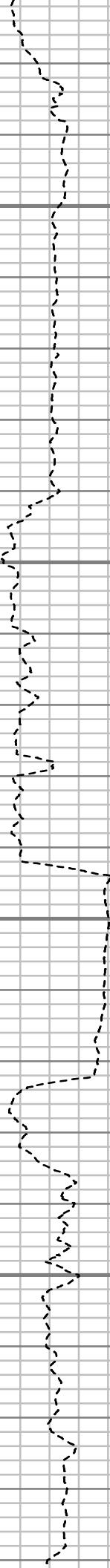


10950

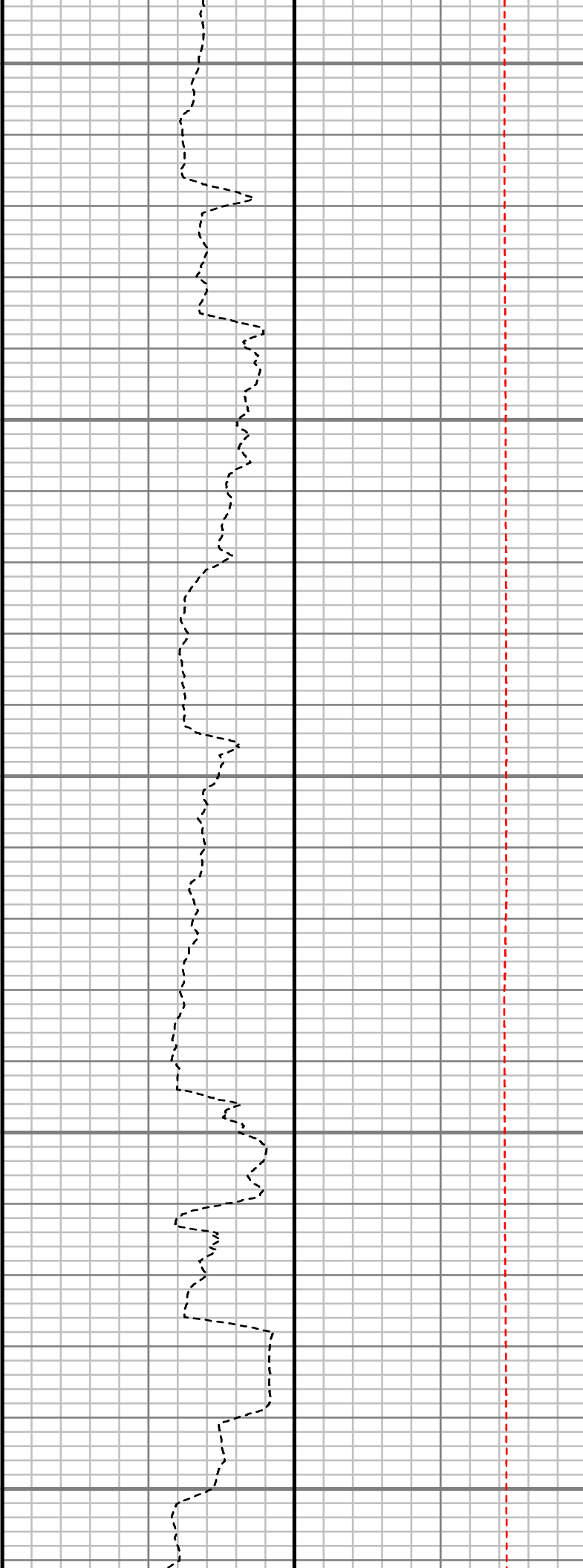
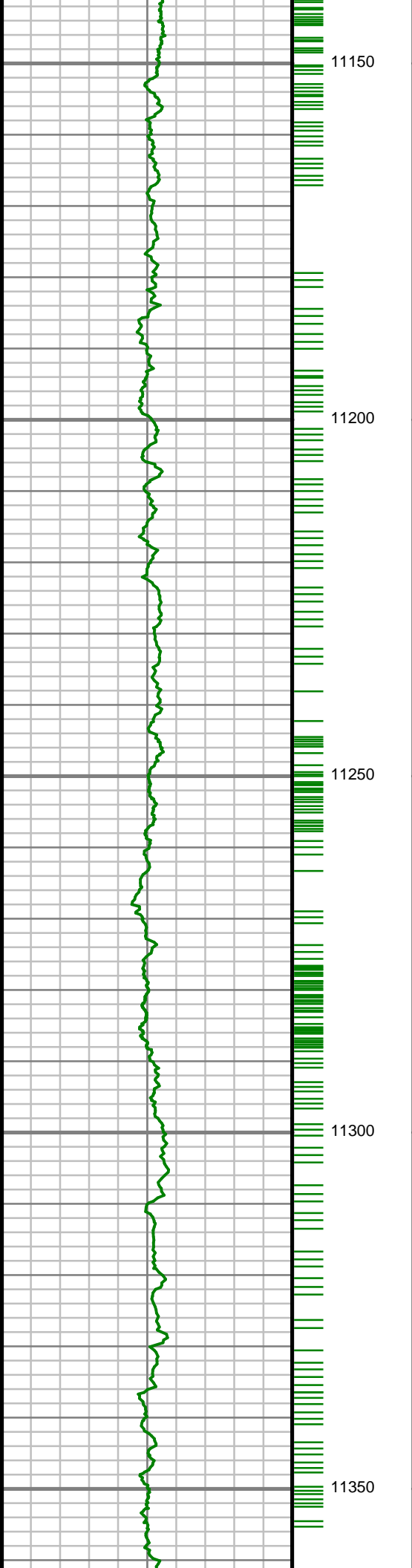
11000

11050

11100



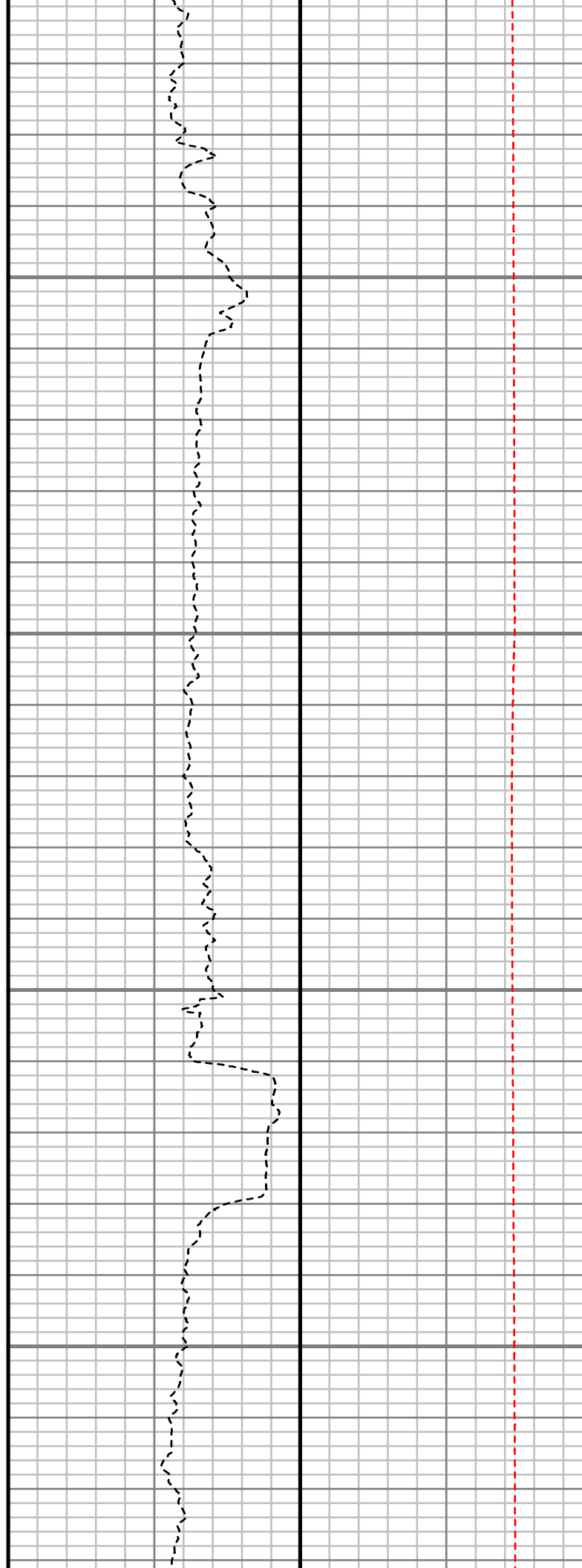
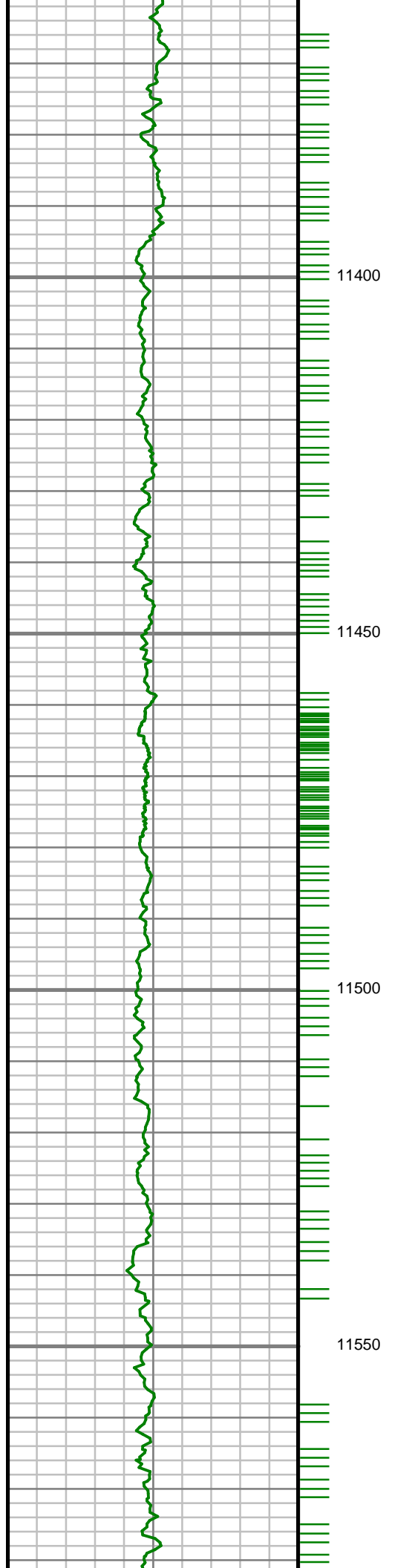
S: 105 MD: 11062.00 ft
Inc: 90.97 deg Az: 1.26
deg TVD: 7560.96 ft



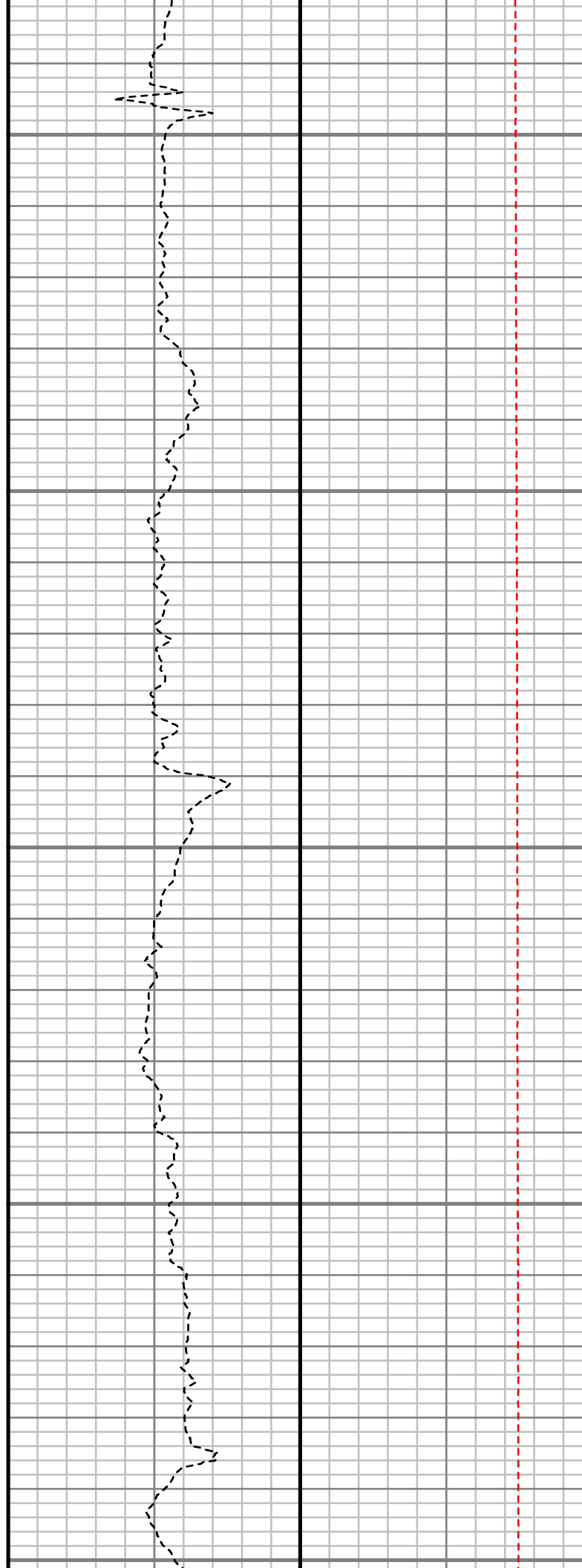
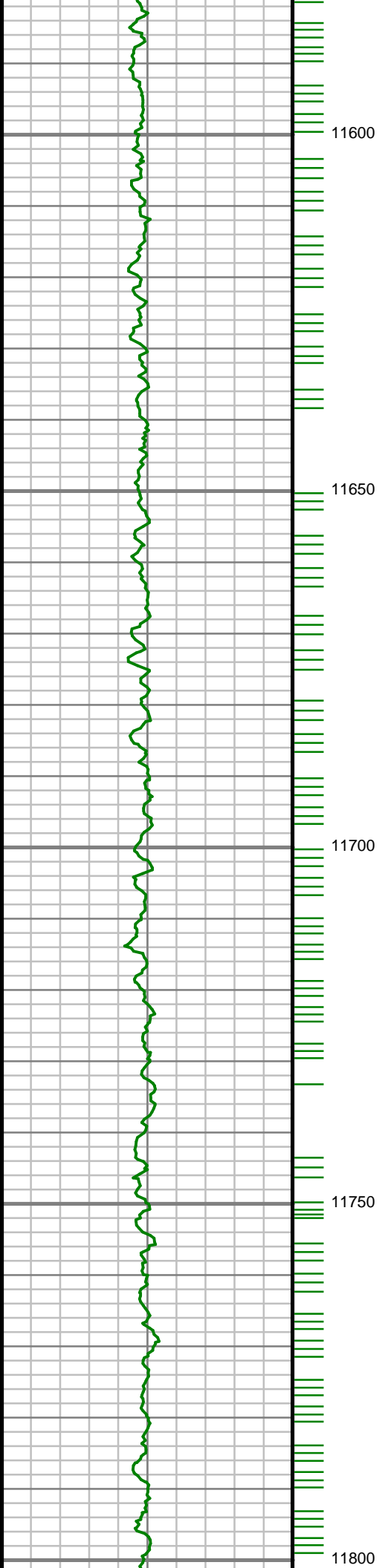
S: 106 MD: 11156.00 ft
Inc: 91.17 deg Az: 1.84
deg TVD: 7559.20 ft

S: 107 MD: 11251.00 ft
Inc: 91.82 deg Az: 1.60
deg TVD: 7556.72 ft

S: 108 MD: 11345.00 ft
Inc: 90.98 deg Az: 1.02
deg TVD: 7554.43 ft

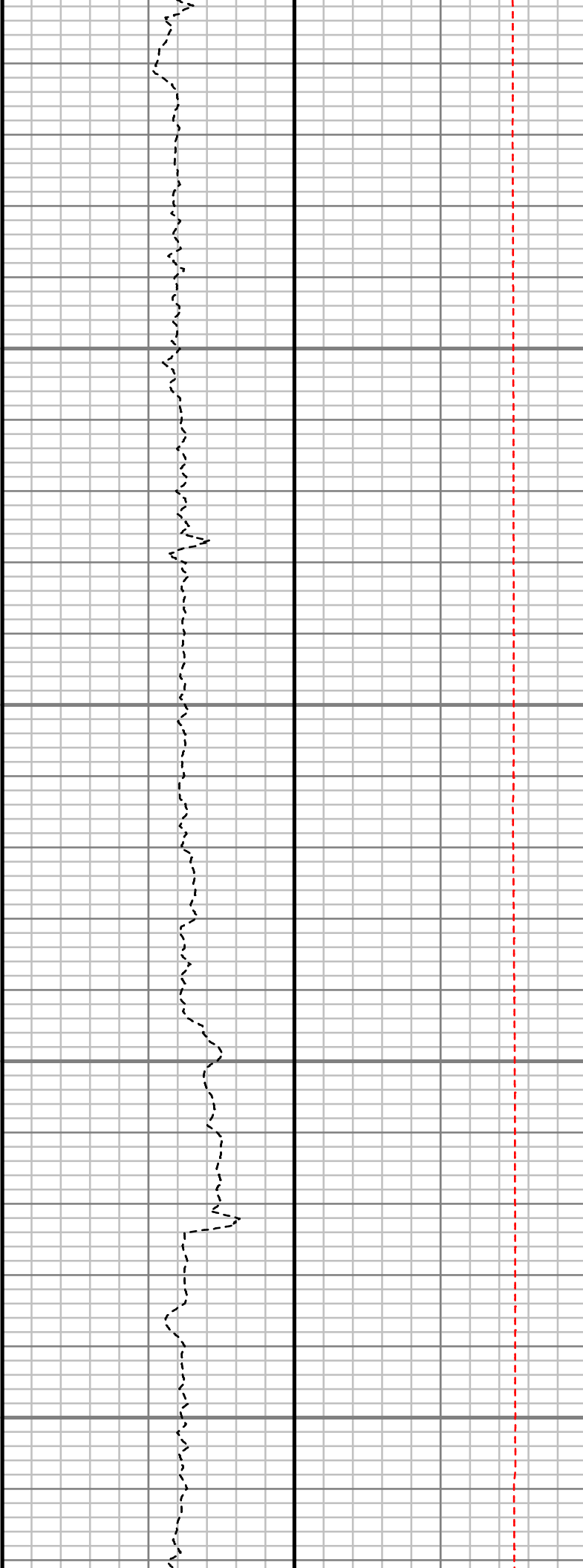
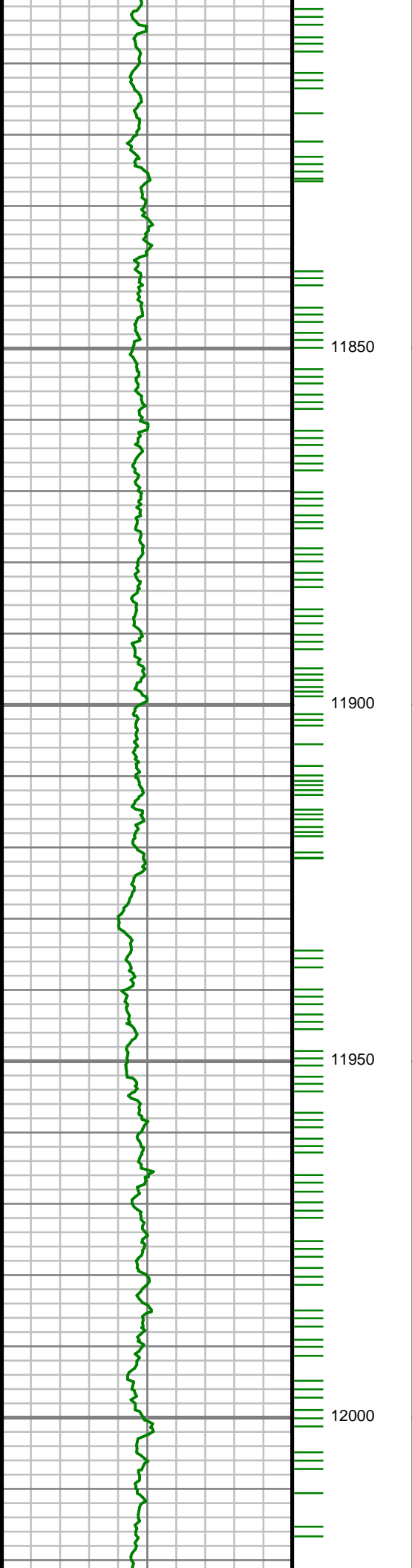


S: 109 MD: 11533.00 ft
Inc: 90.07 deg Az: 1.06
deg TVD: 7552.72 ft



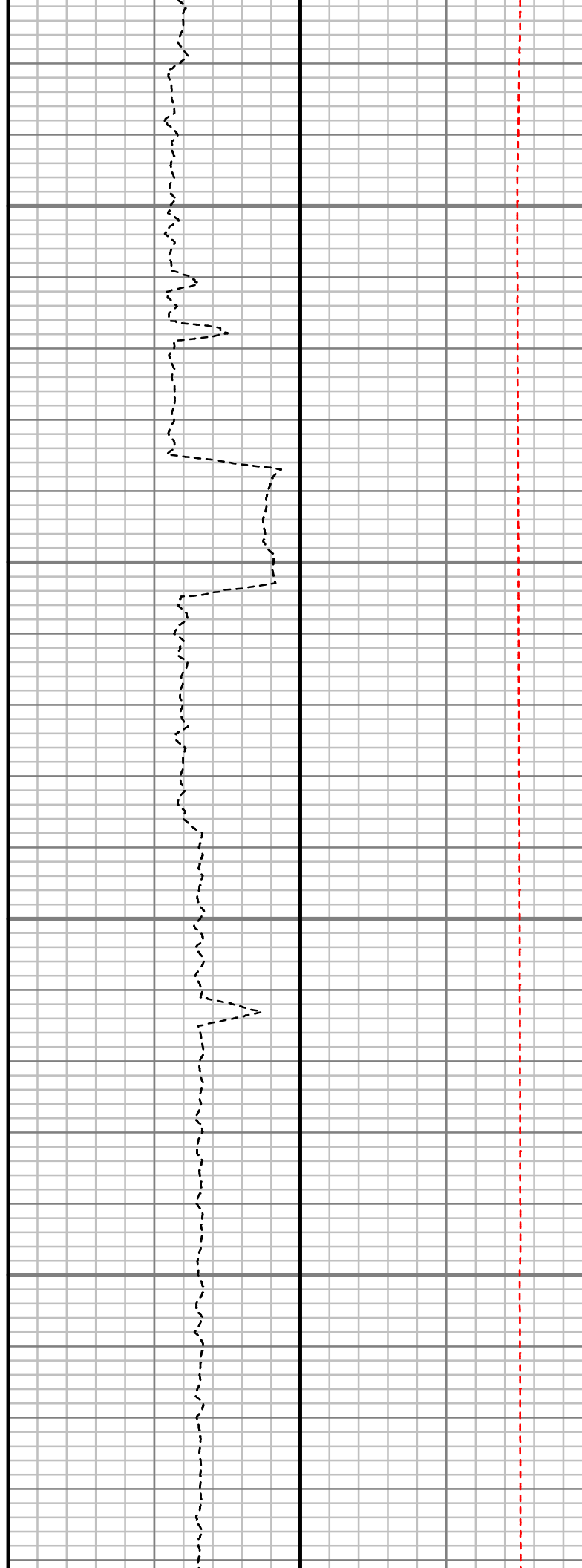
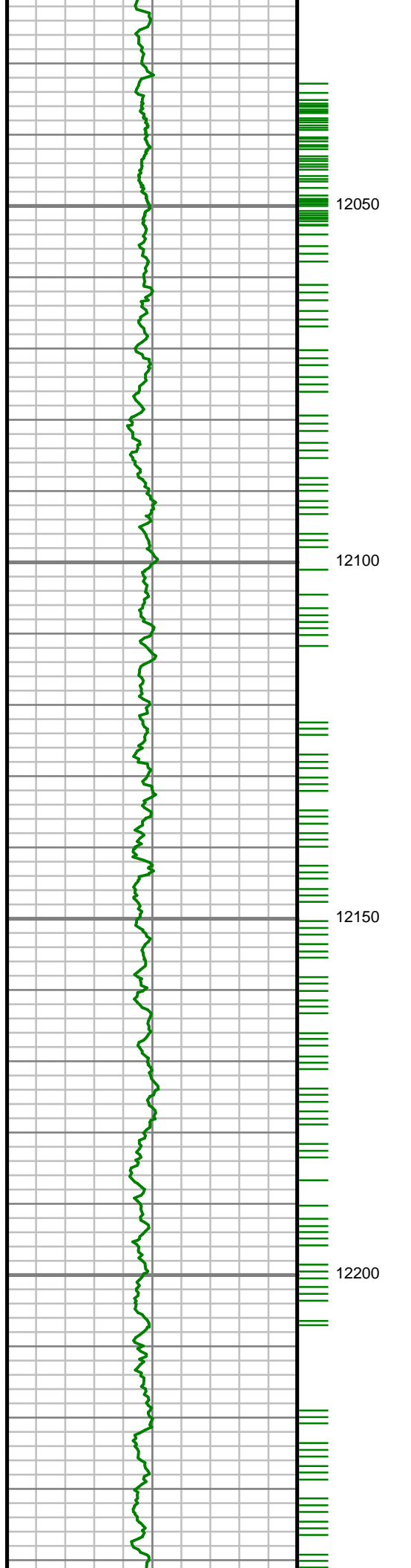
S: 110 MD: 11628.00 ft
Inc: 89.73 deg Az: 0.82
deg TVD: 7552.89 ft

S: 111 MD: 11722.00 ft
Inc: 89.87 deg Az: 0.40
deg TVD: 7553.22 ft



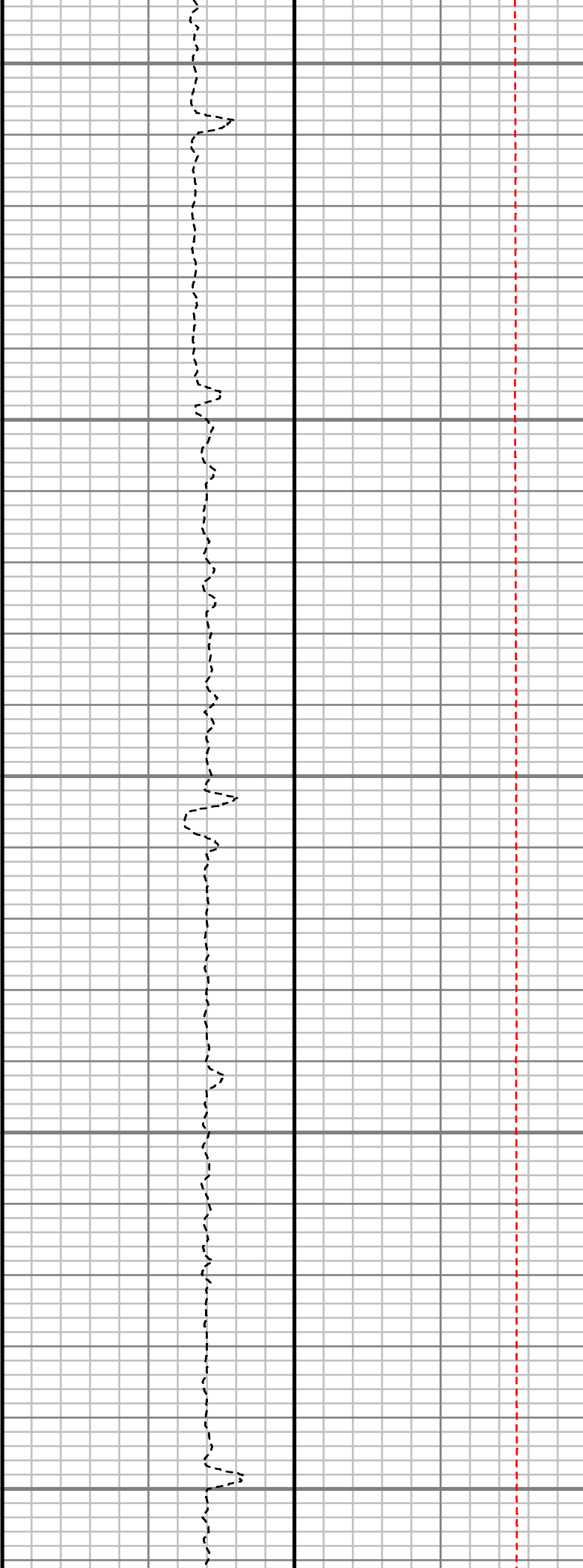
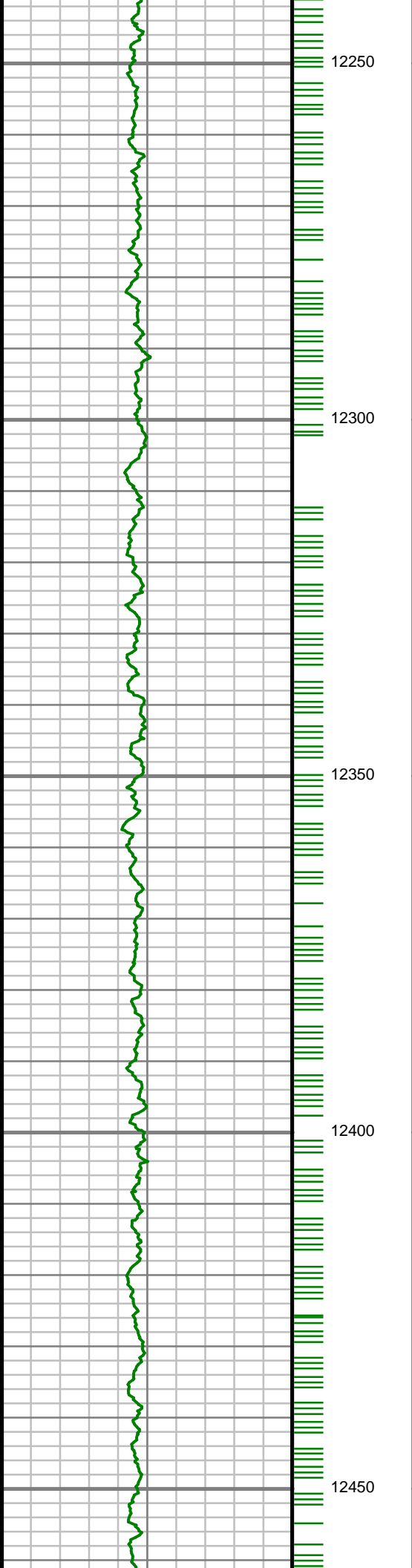
S: 112 MD: 11816.00 ft
Inc: 89.60 deg Az: 0.24
deg TVD: 7553.66 ft

S: 113 MD: 11910.00 ft
Inc: 89.53 deg Az:
359.25 deg TVD:
7554.37 ft



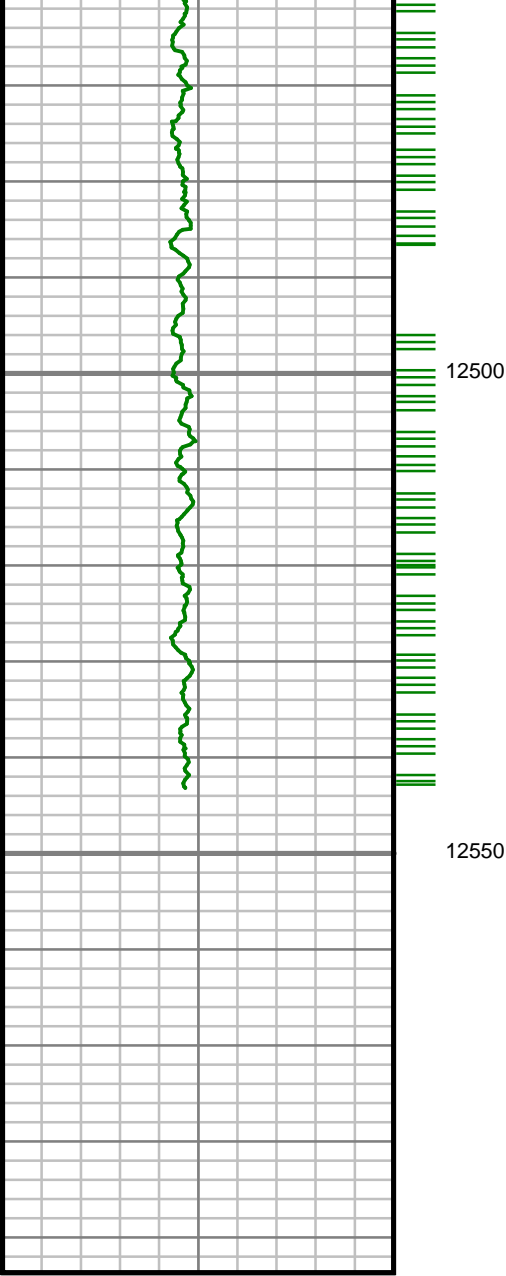
S: 114 MD: 12099.00 ft
Inc: 90.10 deg Az:
358.62 deg TVD:
7554.98 ft

S: 115 MD: 12193.00 ft
Inc: 90.13 deg Az:
357.49 deg TVD:
7554.79 ft



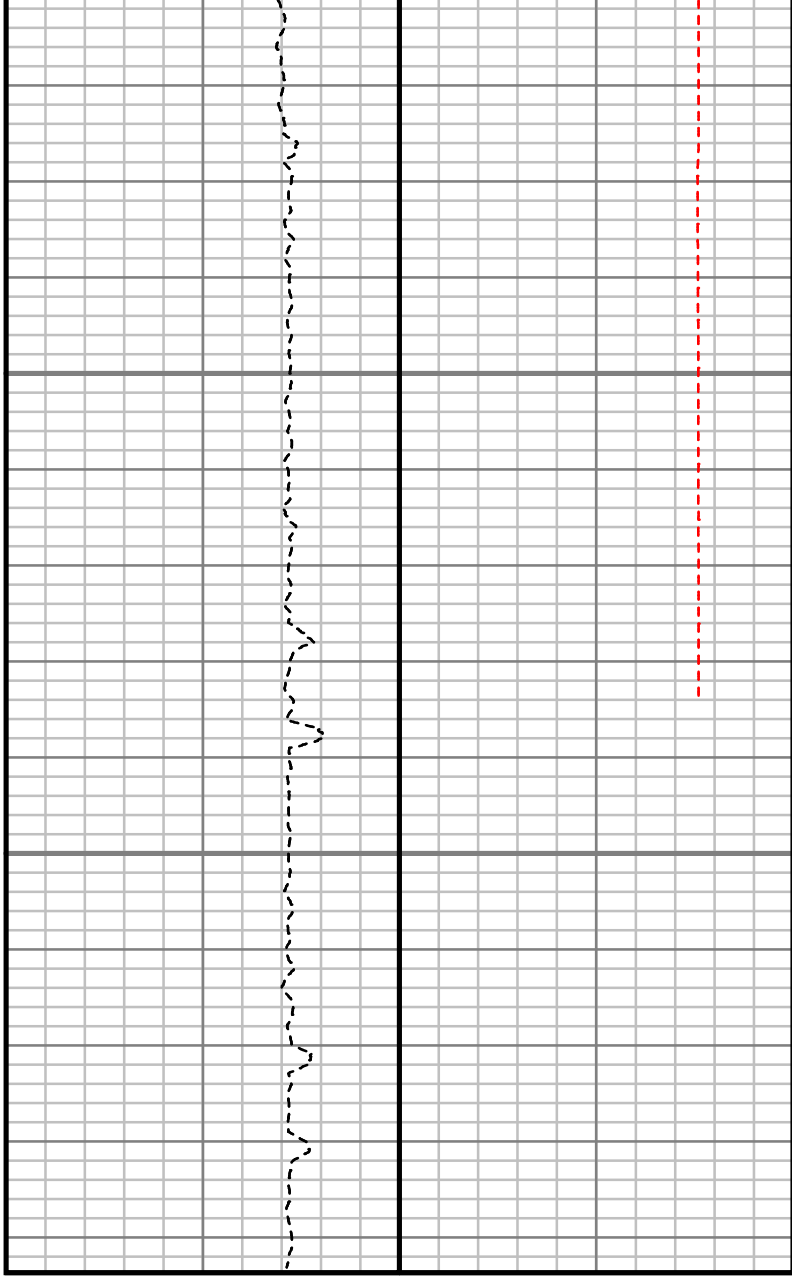
S: 116 MD: 12287.00 ft
Inc: 89.73 deg Az:
357.21 deg TVD:
7554.90 ft

S: 117 MD: 12382.00 ft
Inc: 89.73 deg Az:
356.02 deg TVD:
7555.34 ft



Gamma Ray (GR)		
0	Unit = aapi	150

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	MULGA 29C-23HZ
Well Name	MULGA 29C-23HZ
Survey Date	7/5/2014
Latitude	40°7'1.690"N
Longitude	104°51'34.934"W
Btotal	52743, 52806 nT
Dip	66.77, 66.80 deg
Magnetic Declination	8.60, 8.64 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), 0.00Azim (deg)
Operator(s)	B. GREER, M. SHARKER

Well Notes

SURVEYS FROM 0 FT. TO 1249 FT. WERE ACQUIRED BY MS GYRO MWD.

SURVEYS FROM 1249 FT. TO 12382 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	0.57	348.80	125.00	0.49	0.49	-0.10	0.57	100.00
225.00	0.50	22.47	224.99	1.38	1.38	-0.03	0.32	100.00
325.00	0.15	59.44	324.99	1.85	1.85	0.25	0.39	100.00
425.00	0.45	302.74	424.99	2.13	2.13	0.04	0.53	100.00
525.00	0.76	344.40	524.99	2.98	2.98	-0.47	0.52	100.00
625.00	0.64	10.74	624.98	4.17	4.17	-0.55	0.34	100.00
725.00	0.21	25.71	724.98	4.88	4.88	-0.36	0.44	100.00
825.00	0.26	295.06	824.98	5.14	5.14	-0.49	0.34	100.00
925.00	0.71	298.34	924.97	5.53	5.53	-1.24	0.45	100.00
1025.00	0.60	333.72	1024.97	6.30	6.30	-2.02	0.41	100.00
1125.00	0.41	8.66	1124.96	7.12	7.12	-2.20	0.35	100.00
1153.00	0.45	341.72	1152.96	7.32	7.32	-2.22	0.73	28.00
1286.00	0.47	297.24	1285.96	8.07	8.07	-2.86	0.26	133.00
1378.00	2.22	265.96	1377.93	8.11	8.11	-4.97	1.99	92.00
1469.00	4.25	262.29	1468.78	7.54	7.54	-10.07	2.24	91.00
1561.00	6.52	248.72	1560.37	5.18	5.18	-18.31	2.81	92.00
1743.00	7.89	224.86	1740.97	-7.42	-7.42	-36.76	1.79	182.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
1835.00	10.48	230.44	1831.78	-17.23	-17.23	-47.67	2.97	92.00
1926.00	12.28	240.08	1921.00	-27.33	-27.33	-62.44	2.87	91.00
2018.00	13.59	251.01	2010.68	-35.73	-35.73	-81.14	3.01	92.00
2109.00	15.06	252.72	2098.85	-42.72	-42.72	-102.54	1.68	91.00
2201.00	15.44	247.88	2187.61	-50.88	-50.88	-125.30	1.44	92.00
2383.00	15.14	243.68	2363.17	-70.54	-70.54	-169.04	0.63	182.00
2475.00	14.16	240.43	2452.18	-81.42	-81.42	-189.60	1.38	92.00
2566.00	12.59	240.60	2540.71	-91.79	-91.79	-207.92	1.73	91.00
2658.00	13.51	244.58	2630.34	-101.33	-101.33	-226.37	1.40	92.00
2749.00	12.98	243.16	2718.91	-110.51	-110.51	-245.09	0.68	91.00
2840.00	12.75	250.87	2807.64	-118.42	-118.42	-263.70	1.90	91.00
2932.00	13.25	255.39	2897.28	-124.40	-124.40	-283.50	1.23	92.00
3026.00	13.33	255.55	2988.76	-129.83	-129.83	-304.43	0.09	94.00
3121.00	13.96	255.81	3081.08	-135.37	-135.37	-326.15	0.67	95.00
3215.00	14.98	253.48	3172.09	-141.61	-141.61	-348.79	1.25	94.00
3309.00	14.60	254.90	3262.98	-148.15	-148.15	-371.87	0.56	94.00
3403.00	14.47	253.87	3353.97	-154.49	-154.49	-394.59	0.31	94.00
3498.00	14.74	249.19	3445.91	-162.09	-162.09	-417.29	1.27	95.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
3592.00	15.20	245.40	3536.72	-171.47	-171.47	-439.67	1.15	94.00
3781.00	12.66	264.81	3720.24	-183.66	-183.66	-482.86	2.80	189.00
3875.00	12.25	258.52	3812.04	-186.58	-186.58	-502.89	1.51	94.00
3970.00	14.50	257.34	3904.45	-191.19	-191.19	-524.37	2.39	95.00
4064.00	13.82	259.17	3995.60	-195.88	-195.88	-546.88	0.87	94.00
4158.00	10.81	251.87	4087.43	-200.74	-200.74	-566.28	3.60	94.00
4347.00	9.71	257.31	4273.41	-209.75	-209.75	-598.67	0.77	189.00
4441.00	6.14	251.07	4366.50	-213.12	-213.12	-611.16	3.90	94.00
4630.00	4.07	247.00	4554.74	-219.02	-219.02	-626.90	1.11	189.00
4724.00	4.69	267.53	4648.47	-220.49	-220.49	-633.81	1.78	94.00
4819.00	6.04	265.79	4743.05	-221.03	-221.03	-642.68	1.43	95.00
4913.00	7.60	261.82	4836.39	-222.27	-222.27	-653.77	1.73	94.00
5102.00	4.31	277.99	5024.35	-223.07	-223.07	-673.18	1.94	189.00
5290.00	2.76	273.12	5211.99	-221.84	-221.84	-684.70	0.84	188.00
5384.00	1.82	274.60	5305.91	-221.59	-221.59	-688.44	1.00	94.00
5478.00	0.93	282.40	5399.89	-221.31	-221.31	-690.67	0.96	94.00
5667.00	0.50	277.80	5588.87	-220.87	-220.87	-692.99	0.23	189.00
5856.00	0.42	59.60	5777.87	-220.41	-220.41	-693.21	0.46	189.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
6139.00	2.01	351.18	6060.80	-215.00	-215.00	-693.09	0.67	283.00
6233.00	1.15	229.76	6154.78	-213.98	-213.98	-694.06	2.96	94.00
6422.00	0.81	217.67	6343.76	-216.26	-216.26	-696.32	0.21	189.00
6516.00	0.81	205.76	6437.75	-217.38	-217.38	-697.01	0.18	94.00
6611.00	0.71	216.18	6532.74	-218.45	-218.45	-697.65	0.18	95.00
6705.00	0.82	226.33	6626.73	-219.38	-219.38	-698.47	0.19	94.00
6800.00	0.76	239.28	6721.72	-220.18	-220.18	-699.51	0.20	95.00
6894.00	0.67	238.70	6815.71	-220.78	-220.78	-700.51	0.10	94.00
6988.00	0.77	293.96	6909.71	-220.81	-220.81	-701.56	0.72	94.00
7082.00	7.88	8.93	7003.40	-214.18	-214.18	-701.14	8.20	94.00
7177.00	11.82	5.45	7096.98	-198.06	-198.06	-699.21	4.19	95.00
7224.00	15.57	6.04	7142.64	-186.99	-186.99	-698.09	7.99	47.00
7271.00	18.19	7.45	7187.61	-173.45	-173.45	-696.47	5.64	47.00
7365.00	26.22	1.66	7274.58	-138.08	-138.08	-693.96	8.85	94.00
7412.00	31.35	356.77	7315.77	-115.48	-115.48	-694.35	12.01	47.00
7460.00	34.90	356.78	7355.96	-89.30	-89.30	-695.83	7.39	48.00
7491.00	37.19	357.99	7381.02	-71.08	-71.08	-696.65	7.74	31.00
7554.00	44.72	358.66	7428.57	-29.83	-29.83	-697.84	11.97	63.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
7648.00	59.66	357.53	7486.03	44.18	44.18	-700.37	15.93	94.00
7695.00	64.25	358.24	7508.12	85.62	85.62	-701.90	9.84	47.00
7742.00	69.21	359.42	7526.69	128.77	128.77	-702.77	10.81	47.00
7789.00	72.74	359.87	7542.01	173.20	173.20	-703.04	7.57	47.00
7837.00	76.32	359.85	7554.81	219.45	219.45	-703.16	7.44	48.00
7884.00	79.61	359.90	7564.61	265.41	265.41	-703.26	7.01	47.00
7907.00	82.23	359.37	7568.24	288.12	288.12	-703.40	11.60	23.00
7969.00	88.16	359.41	7573.43	349.87	349.87	-704.06	9.56	62.00
8138.00	88.76	359.97	7577.98	518.81	518.81	-704.97	0.49	169.00
8327.00	91.11	1.68	7578.20	707.77	707.77	-702.24	1.54	189.00
8421.00	90.81	1.18	7576.63	801.72	801.72	-699.89	0.62	94.00
8516.00	90.34	0.25	7575.68	896.71	896.71	-698.70	1.10	95.00
8610.00	91.88	1.13	7573.86	990.68	990.68	-697.57	1.89	94.00
8704.00	91.45	0.97	7571.14	1084.63	1084.63	-695.85	0.49	94.00
8798.00	90.84	0.31	7569.26	1178.60	1178.60	-694.80	0.95	94.00
8893.00	90.37	359.33	7568.26	1273.59	1273.59	-695.10	1.14	95.00
8987.00	89.33	356.97	7568.51	1367.54	1367.54	-698.13	2.75	94.00
9175.00	91.71	0.28	7566.81	1555.44	1555.44	-702.65	2.17	188.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
9270.00	90.74	359.18	7564.78	1650.41	1650.41	-703.09	1.54	95.00
9364.00	90.24	358.42	7563.98	1744.39	1744.39	-705.06	0.97	94.00
9647.00	89.63	358.53	7564.31	2027.28	2027.28	-712.59	0.22	283.00
9742.00	91.11	359.12	7563.70	2122.26	2122.26	-714.53	1.68	95.00
9930.00	91.31	359.34	7559.73	2310.20	2310.20	-717.06	0.16	188.00
10025.00	89.90	359.15	7558.73	2405.18	2405.18	-718.31	1.50	95.00
10119.00	89.80	358.63	7558.97	2499.17	2499.17	-720.13	0.56	94.00
10213.00	90.50	359.65	7558.73	2593.15	2593.15	-721.54	1.32	94.00
10307.00	90.07	358.62	7558.26	2687.14	2687.14	-722.96	1.19	94.00
10402.00	90.17	357.75	7558.06	2782.09	2782.09	-725.98	0.92	95.00
10590.00	89.56	358.99	7558.50	2970.01	2970.01	-731.32	0.74	188.00
10685.00	88.83	357.57	7559.84	3064.95	3064.95	-734.17	1.69	95.00
10779.00	89.23	0.04	7561.43	3158.91	3158.91	-736.13	2.66	94.00
10873.00	89.80	0.05	7562.23	3252.91	3252.91	-736.06	0.61	94.00
11062.00	90.97	1.26	7560.96	3441.89	3441.89	-733.89	0.89	189.00
11156.00	91.17	1.84	7559.20	3535.83	3535.83	-731.35	0.65	94.00
11251.00	91.82	1.60	7556.72	3630.76	3630.76	-728.50	0.72	95.00
11345.00	90.98	1.02	7554.43	3724.71	3724.71	-726.36	1.09	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
11533.00	90.07	1.06	7552.72	3912.66	3912.66	-722.95	0.48	188.00
11628.00	89.73	0.82	7552.89	4007.65	4007.65	-721.39	0.44	95.00
11722.00	89.87	0.40	7553.22	4101.65	4101.65	-720.39	0.46	94.00
11816.00	89.60	0.24	7553.66	4195.64	4195.64	-719.86	0.33	94.00
11910.00	89.53	359.25	7554.37	4289.64	4289.64	-720.28	1.06	94.00
12099.00	90.10	358.62	7554.98	4478.60	4478.60	-723.81	0.45	189.00
12193.00	90.13	357.49	7554.79	4572.55	4572.55	-727.00	1.20	94.00
12287.00	89.73	357.21	7554.90	4666.45	4666.45	-731.35	0.52	94.00
12382.00	89.73	356.02	7555.34	4761.28	4761.28	-736.96	1.26	95.00

5" = 100' FEET MD