



GAMMA RAY

5" = 100' FEET MD

COMPANY : ANADARKO E&P ONSHORE LLC

WELL : DOLPH 4C-1HZ

FIELD : WATTENBERG

COUNTY : WELD

STATE : COLORADO

COUNTRY : U.S.A.

UWI : 05-123-39198

COMPANY : ANADARKO E&P ONSHORE LLC

WELL : DOLPH 4C-1HZ

FIELD : WATTENBERG

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UWI : 05-123-39198

WELL LOCATION

LAT:40°9'40.140"N LONG:104°43'44.933"W
N:1302486.53 ft E:3215443.94 ft

SEC:1

TWP:2N

RANGE:66W

OTHER SERVICES

DIRECTIONAL

ROP

DEPTH REF. : RKB

REF. HEIGHT : 25.000 ft

RKB to Ground Level

GROUND LEVEL : 4999.000 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	1250	0-10	1250	6992
8.75	1250	6992	10-90	6992	8080
6.125	6992	13286	90-92	8080	13286

CASING RECORD

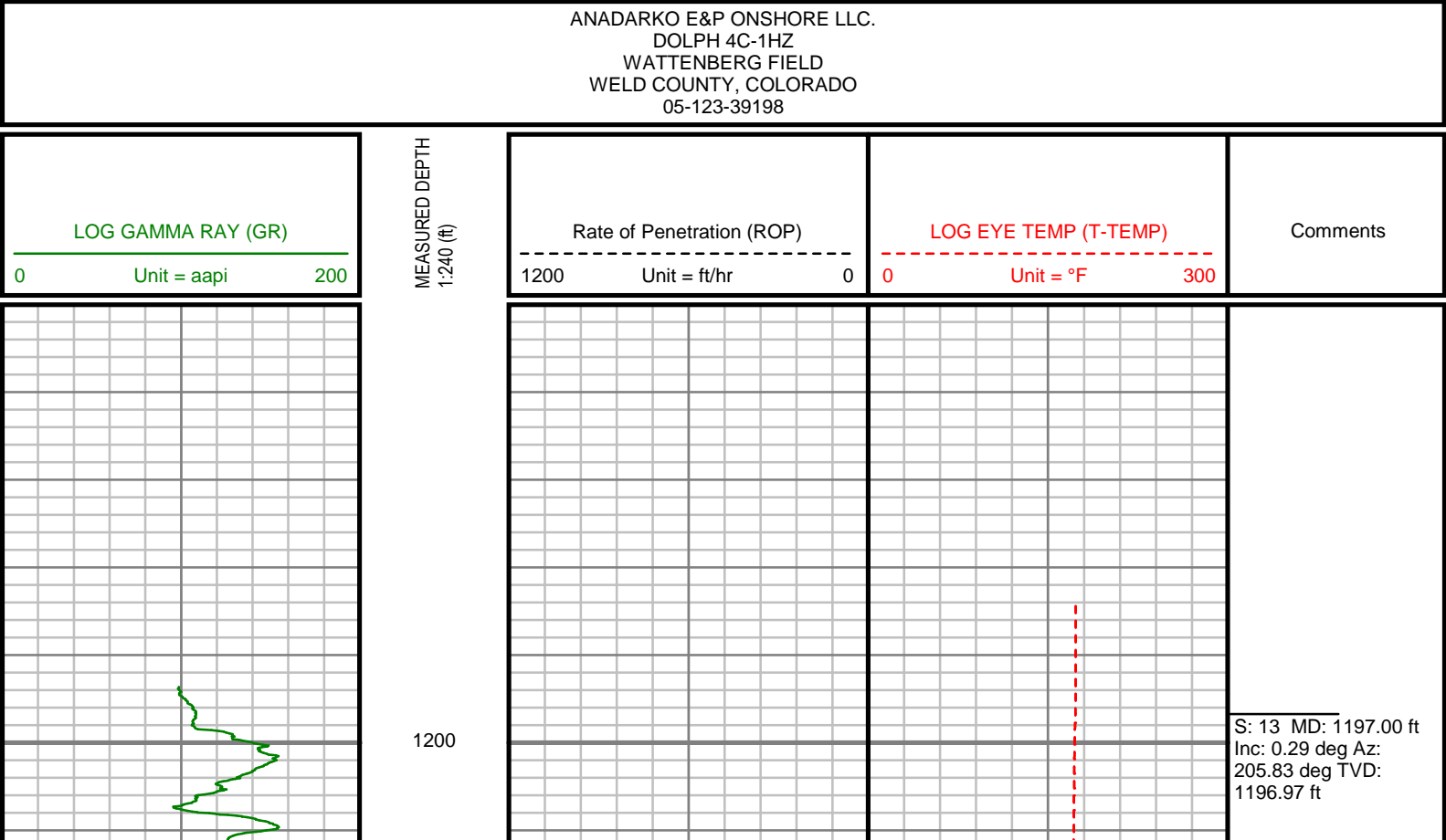
CASING SIZE in	FROM ft	TO ft
9.625	0	1250
7	0	8060
DRILLING CO. : H&P		
RIG : 311		
LWD UNIT NO. : DISTRICT : CASPER		
SPUD DATE :		
LWD START DATE : 09/18/2014 DEPTH : 1250 ft		
LWD END DATE : 09/25/2014 DEPTH : 13286 ft		
TOTAL DEPTH : 13286 ft		

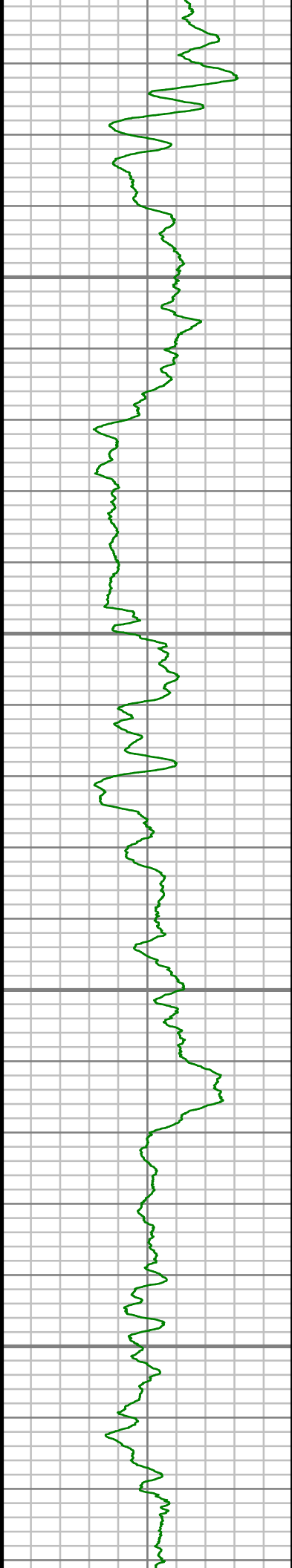
Run Data

RUN NUMBER	1	2
START DATE	9/18/2014	9/22/2014
START TIME	0330	1430
END DATE	9/22/2014	9/26/2014
END TIME	1430	0800
DEPTH IN (ft)	1391	8080
DEPTH OUT (ft)	8080	13286
LOG TOP (ft)	1348	7981
LOG BOTTOM (ft)	7981	13224
HOLE SIZE (in)	8.75	6.125
MUD DATA @ (ft)	8080	13286
MUD TYPE	WATER-BASED	WATER-BASED
DENSITY (lb / gal)	9.3	9.95
VISCOSITY (s / qt)	40	43
pH	9.3	9
FLUID LOSS (cm3 / 30)	-	-
SALINITY (ppm)	2200	1800
Rm (ohmm @ deg F)	-	-
Rmf (ohmm @ deg F)	-	-
MAX TEMP (deg F)	122	236
Rm @ MAX TEMP (ohmm)	-	-
LWD ENGINEER #1	M. SHARKER	M. SHARKER
LWD ENGINEER #2	B. GREER	B. GREER
LWD ENGINEER #3	-	-
LOG WITNESS #1	S. SADLE	S. SADLE
LOG WITNESS #2	-	-

Remarks
ANADARKO E&P ONSHORE LLC PRODUCTION AFE# 2093724
SCIENTIFIC DRILLING INTERNATIONAL JOB# 200386
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 LOG 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 LOG EYE TEMP CURVE
ROP NOT COLLECTED FROM 1250 FT. TO 3938 FT.
GAMMA RAY FROM 3800 FT TO 8080 FT. IS REAL TIME DATA
RUN # 1: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-153 / CONT = 277 / MWD EYE =1100 / GAMMA RAY =1031
BIT TO SENSOR OFFSETS: SURVEY = 52.30 FT. / GAMMA RAY = 43.05 FT.
RUN # 2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-279 / CONT = 880 / MWD EYE =840 / GAMMA RAY =1140
BIT TO SENSOR OFFSETS: SURVEY = 59.08 FT. / GAMMA RAY = 49.83 FT.
MNEMONICS LIST:
GR = LOG GAMMA RAY
ROP = RATE OF PENETRATION
T-TEMP = LOG EYE TEMP

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.





1250

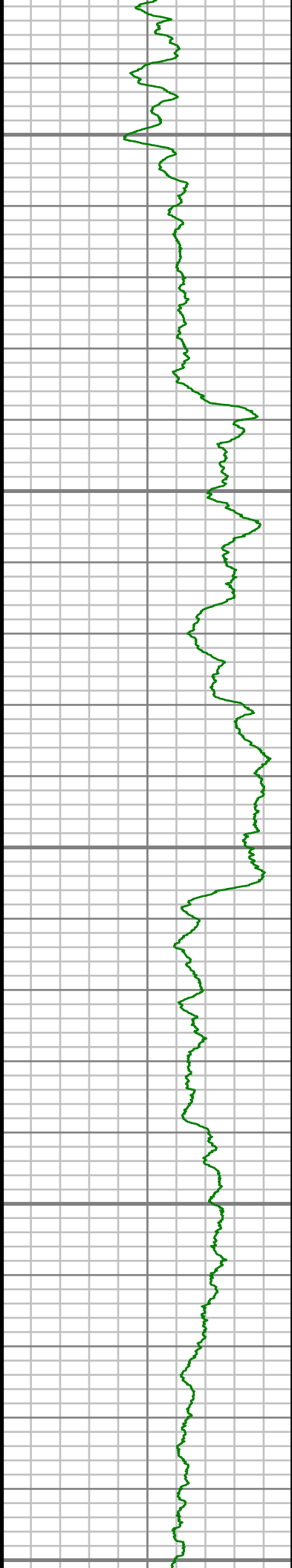
SEE REMARK # 1

1300

1350

1400

S: 14 MD: 1349.00 ft
Inc: 0.44 deg Az:
161.07 deg TVD:
1348.97 ft



1450

1500

1550

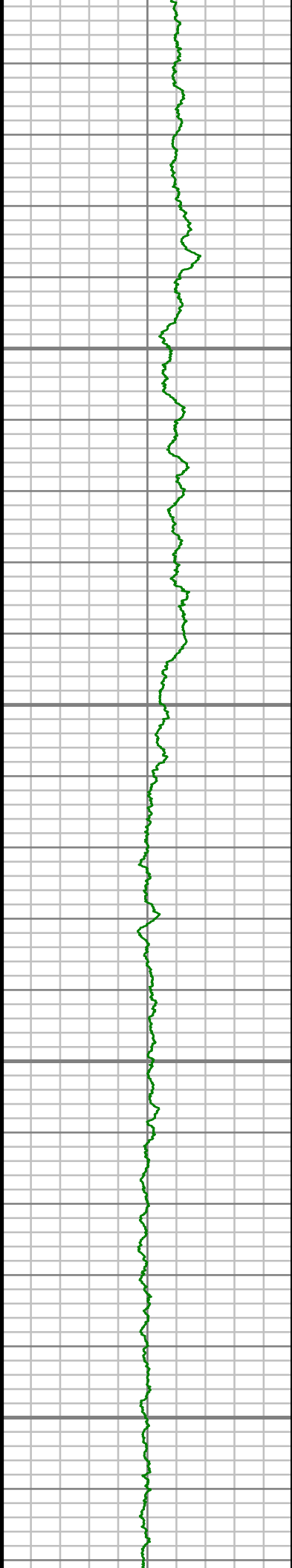
1600

1650

S: 15 MD: 1441.00 ft
Inc: 0.50 deg Az:
169.43 deg TVD:
1440.97 ft

S: 16 MD: 1532.00 ft
Inc: 2.15 deg Az:
201.19 deg TVD:
1531.94 ft

S: 17 MD: 1623.00 ft
Inc: 4.01 deg Az:
213.22 deg TVD:
1622.80 ft

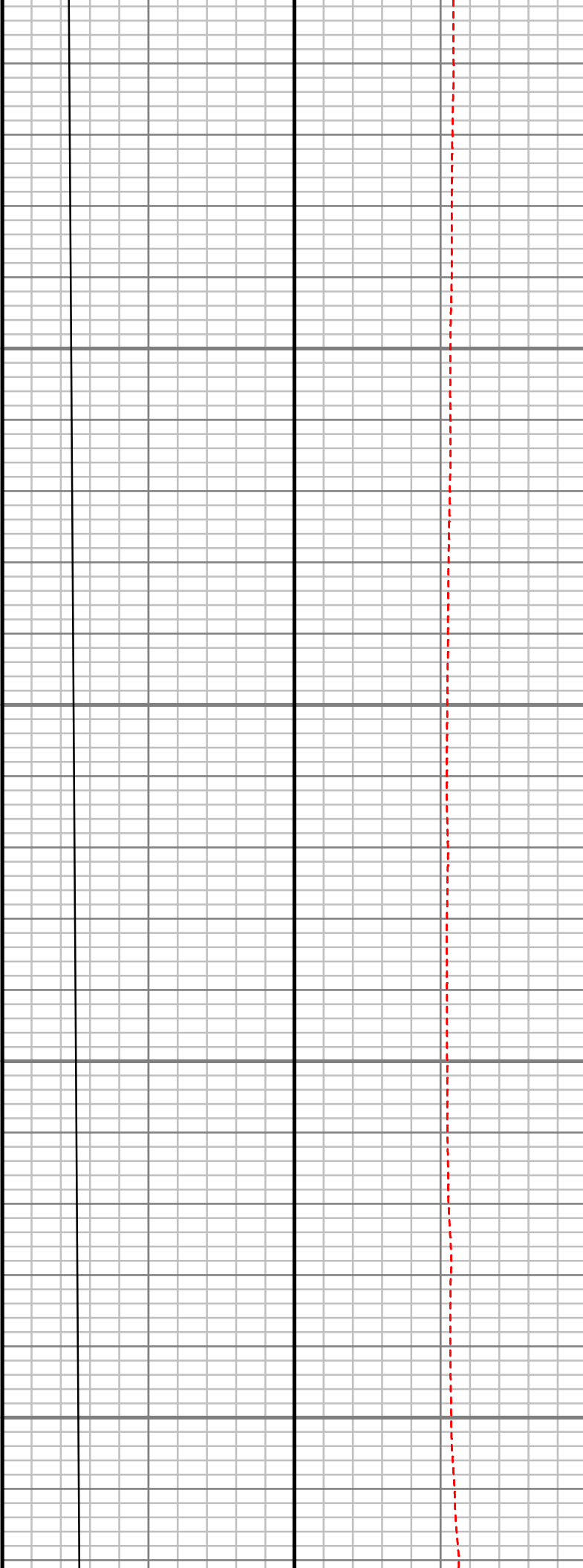


1700

1750

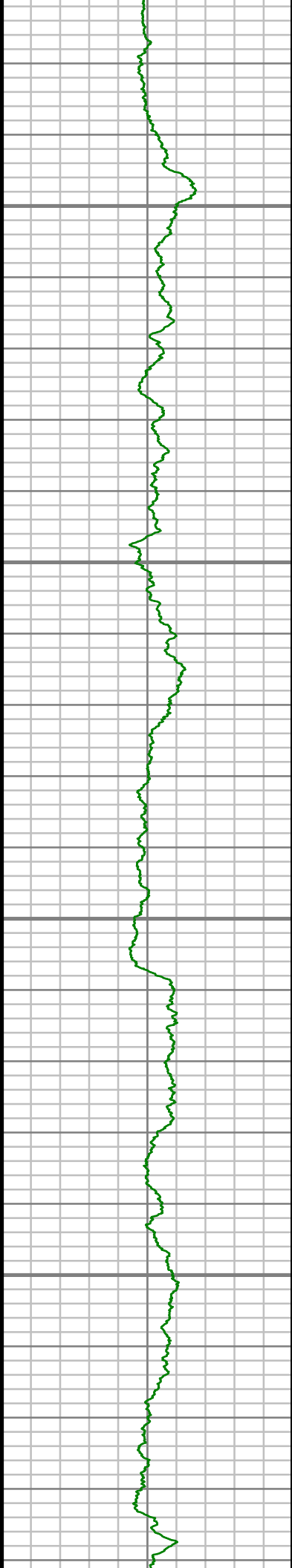
1800

1850



S: 18 MD: 1715.00 ft
Inc: 5.43 deg Az:
210.76 deg TVD:
1714.49 ft

S: 19 MD: 1807.00 ft
Inc: 7.61 deg Az:
211.04 deg TVD:
1805.89 ft

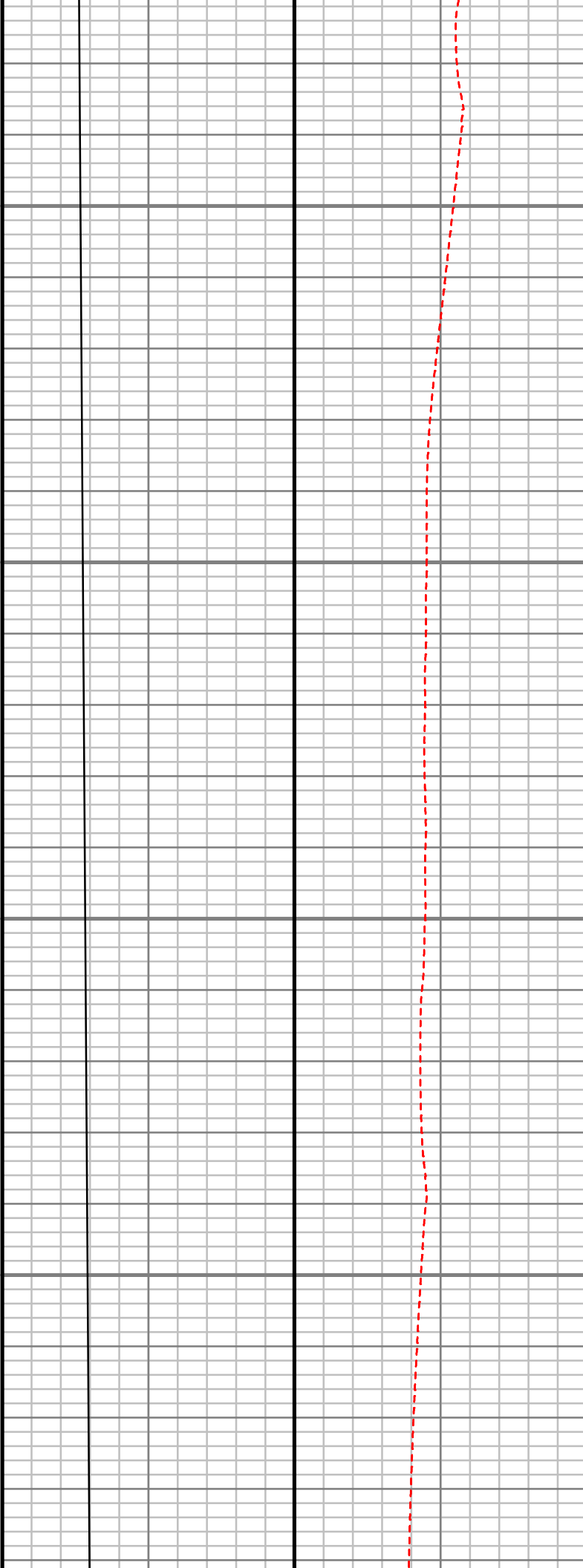


1900

1950

2000

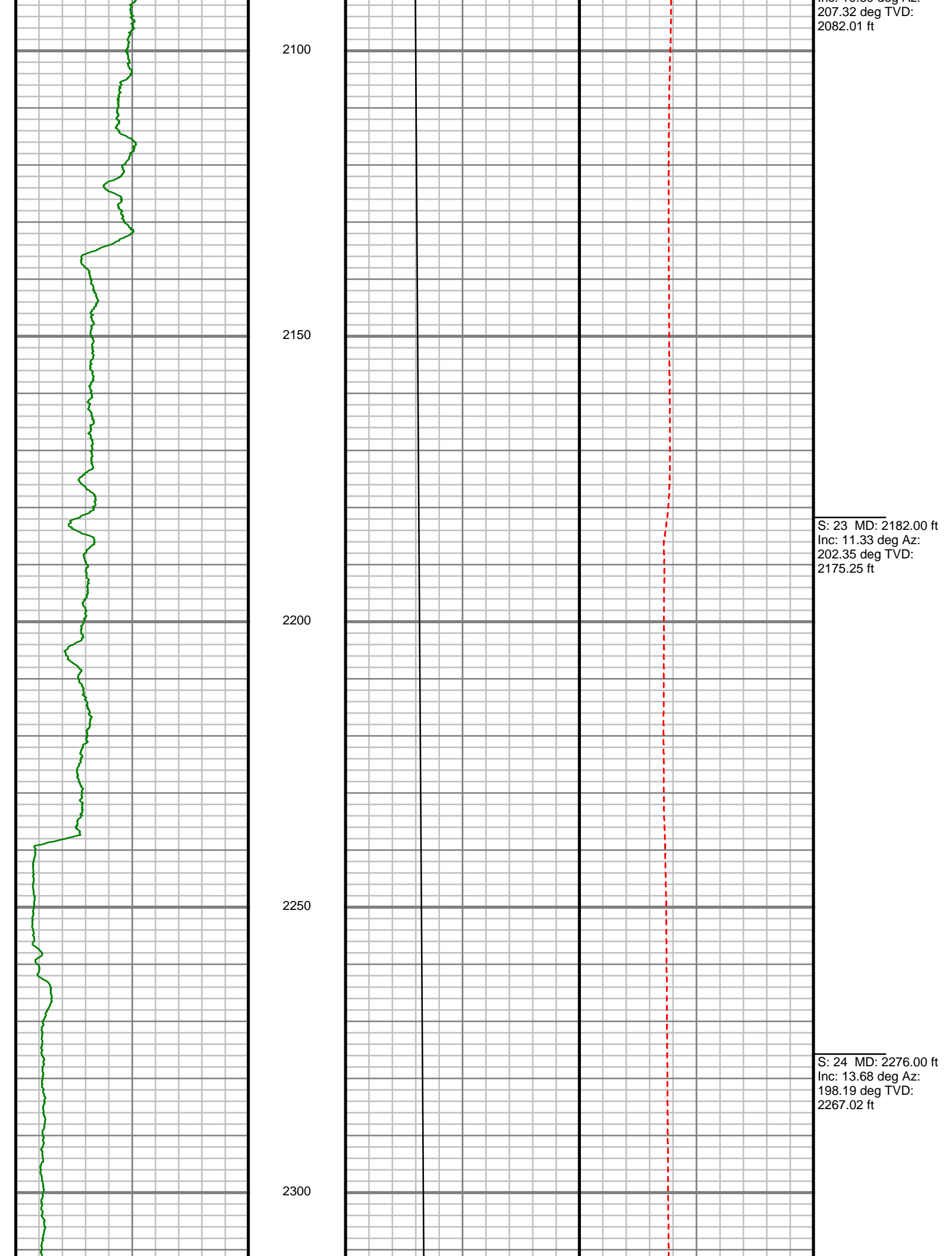
2050

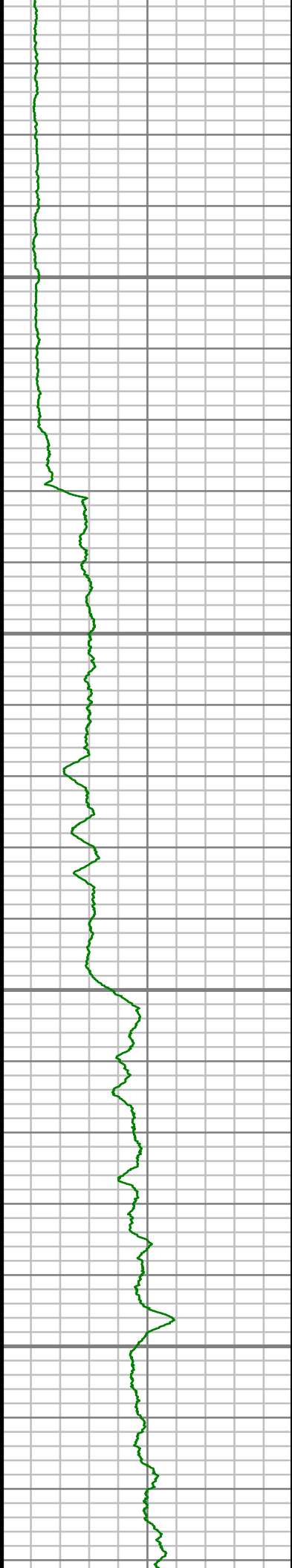


S: 20 MD: 1899.00 ft
Inc: 8.96 deg Az:
208.81 deg TVD:
1896.93 ft

S: 21 MD: 1993.00 ft
Inc: 10.30 deg Az:
205.92 deg TVD:
1989.60 ft

S: 22 MD: 2087.00 ft
Inc: 10.80 deg Az:





2350

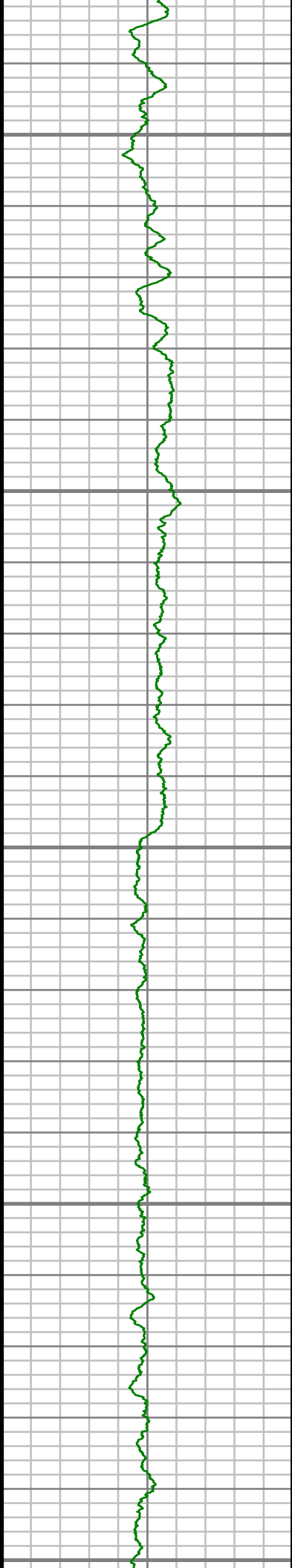
2400

2450

2500

S: 25 MD: 2370.00 ft
Inc: 14.35 deg Az:
201.96 deg TVD:
2358.22 ft

S: 26 MD: 2465.00 ft
Inc: 16.59 deg Az:
206.92 deg TVD:
2449.77 ft



2550

2600

2650

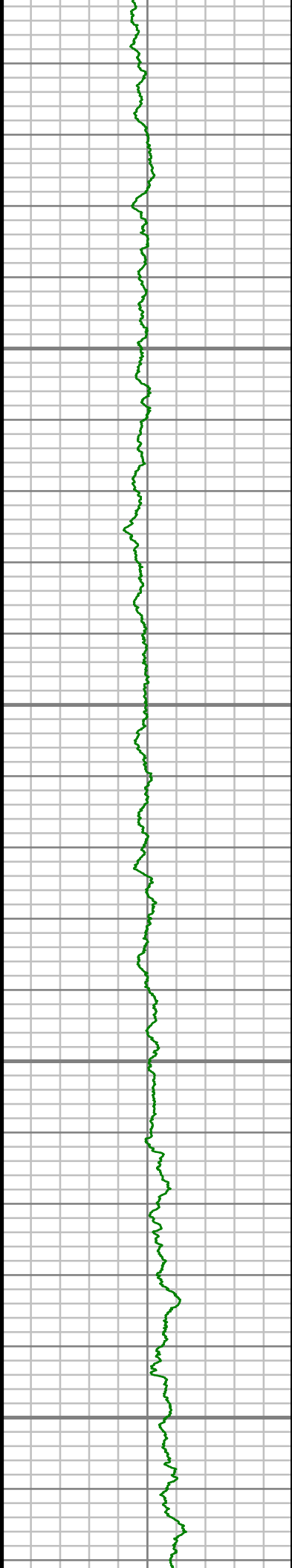
2700

2750

S: 27 MD: 2559.00 ft
Inc: 17.98 deg Az:
202.62 deg TVD:
2539.53 ft

S: 28 MD: 2654.00 ft
Inc: 18.75 deg Az:
199.02 deg TVD:
2629.69 ft

S: 29 MD: 2748.00 ft
Inc: 19.54 deg Az:
195.02 deg TVD:
2728.54 ft



2800

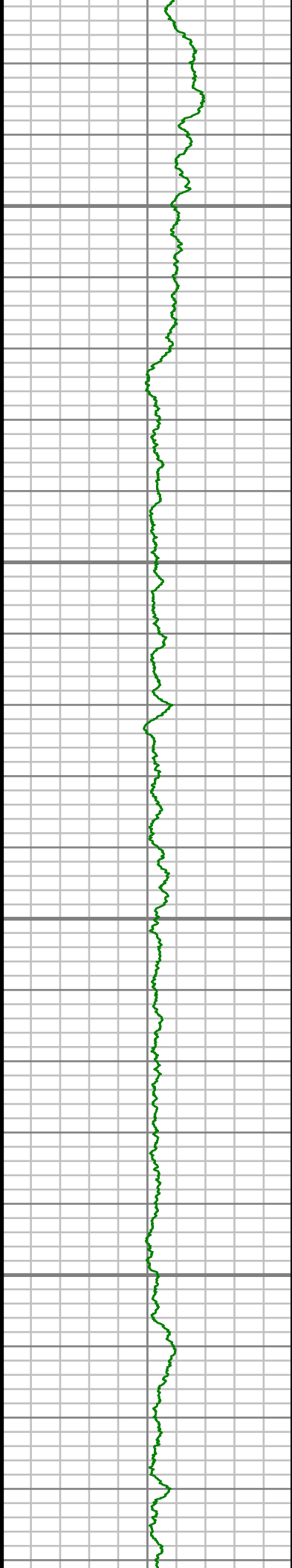
2850

2900

2950

Inc: 19.54 deg Az:
197.98 deg TVD:
2718.49 ft

S: 30 MD: 2842.00 ft
Inc: 20.13 deg Az:
199.08 deg TVD:
2806.91 ft



3000

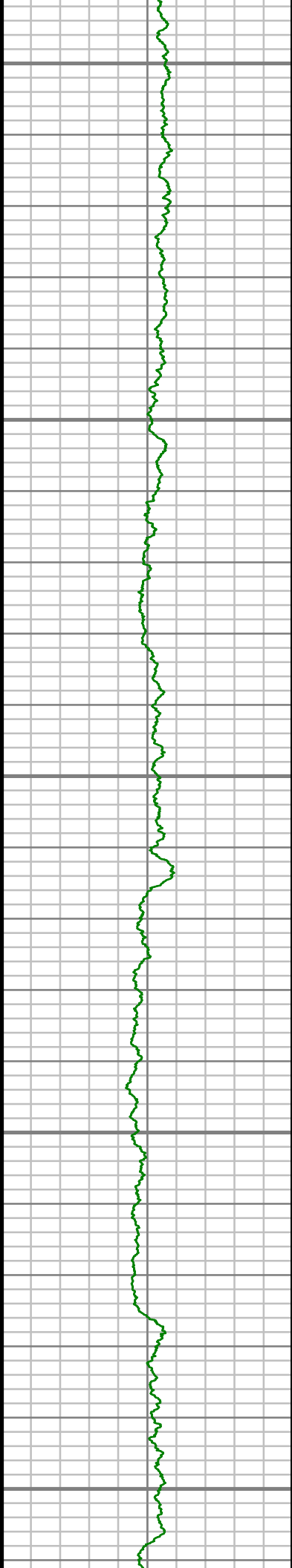
3050

3100

3150

S: 31 MD: 3031.00 ft
Inc: 25.88 deg Az:
201.82 deg TVD:
2980.82 ft

S: 32 MD: 3125.00 ft
Inc: 23.54 deg Az:
199.57 deg TVD:
3066.21 ft



3200

3250

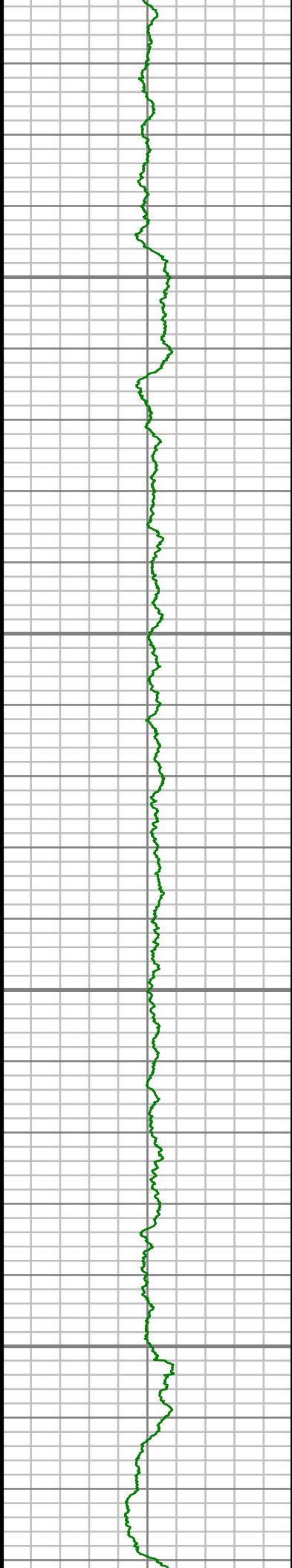
3300

3350

3400

S: 33 MD: 3219.00 ft
Inc: 22.89 deg Az:
202.56 deg TVD:
3152.60 ft

S: 34 MD: 3314.00 ft
Inc: 21.17 deg Az:
205.91 deg TVD:
3240.66 ft



3450

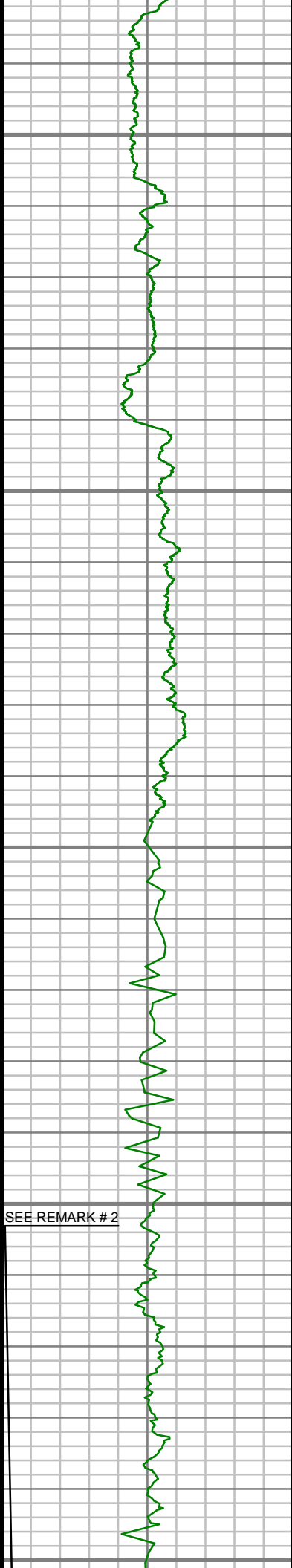
3500

3550

3600

S: 35 MD: 3502.00 ft
Inc: 18.46 deg Az:
208.82 deg TVD:
3417.52 ft

S: 36 MD: 3597.00 ft
Inc: 18.76 deg Az:
210.06 deg TVD:
3507.55 ft



3650

3700

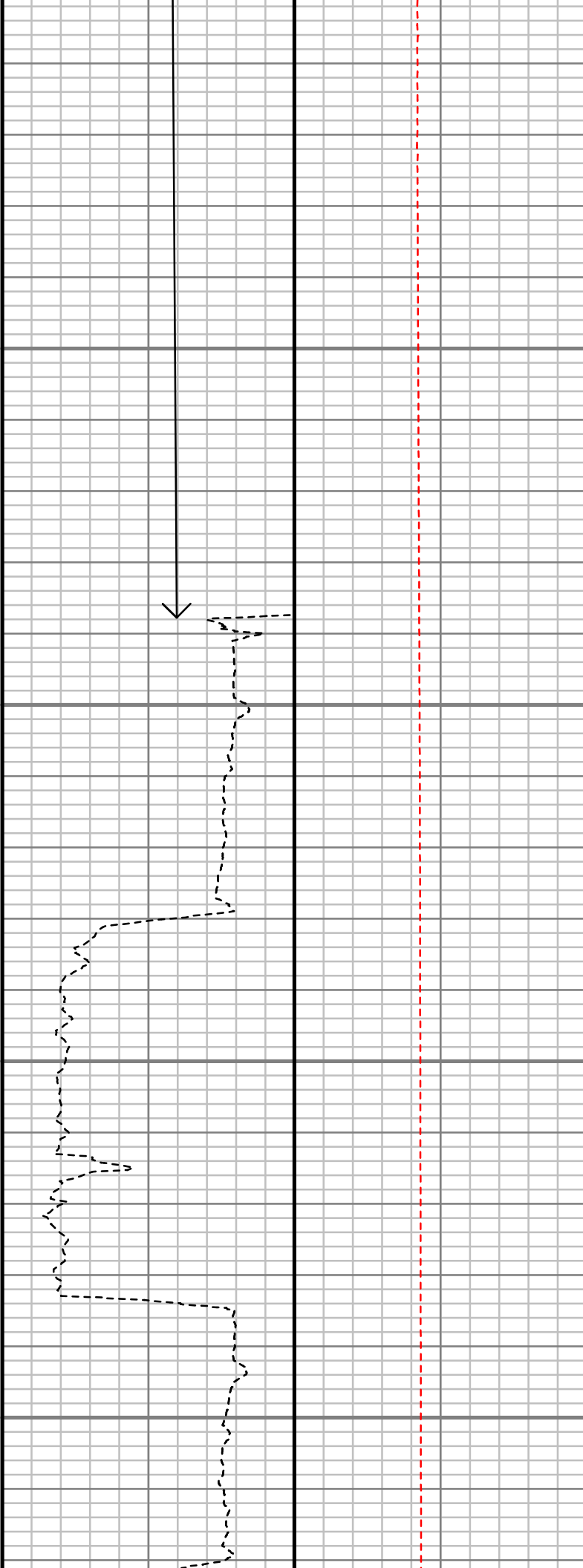
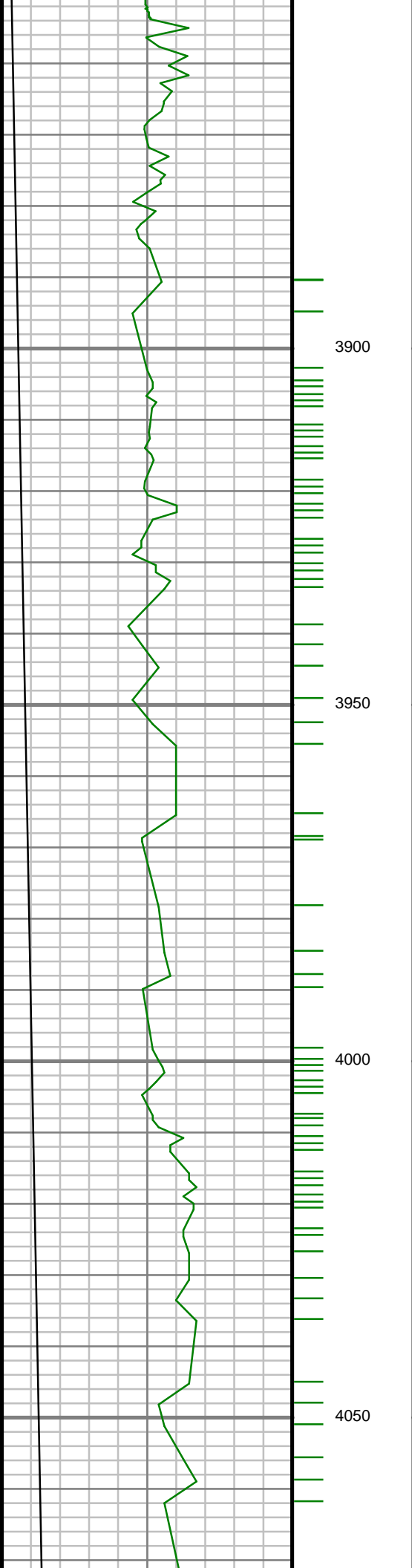
3750

3800

3850

S: 37 MD: 3691.00 ft
Inc: 18.44 deg Az:
213.67 deg TVD:
3596.64 ft

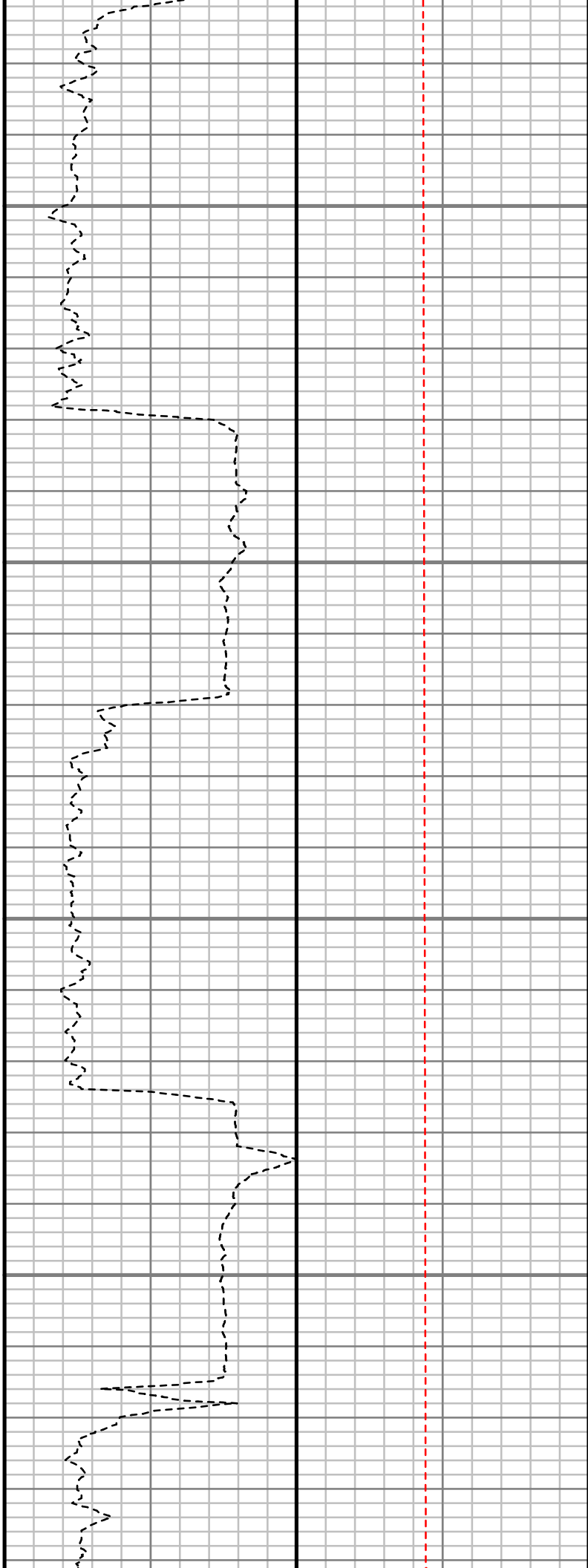
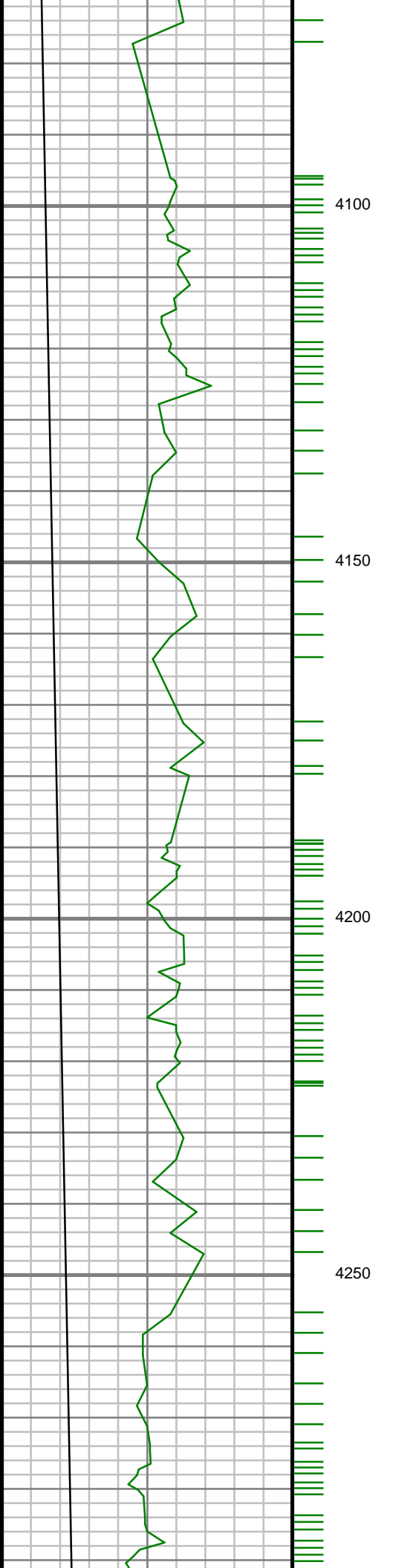
S: 38 MD: 3785.00 ft
Inc: 19.58 deg Az:
208.93 deg TVD:
3685.52 ft



S: 39 MD: 3879.00 ft
Inc: 20.52 deg Az:
211.42 deg TVD:
3773.82 ft

S: 40 MD: 3973.00 ft
Inc: 20.94 deg Az:
211.54 deg TVD:
3861.74 ft

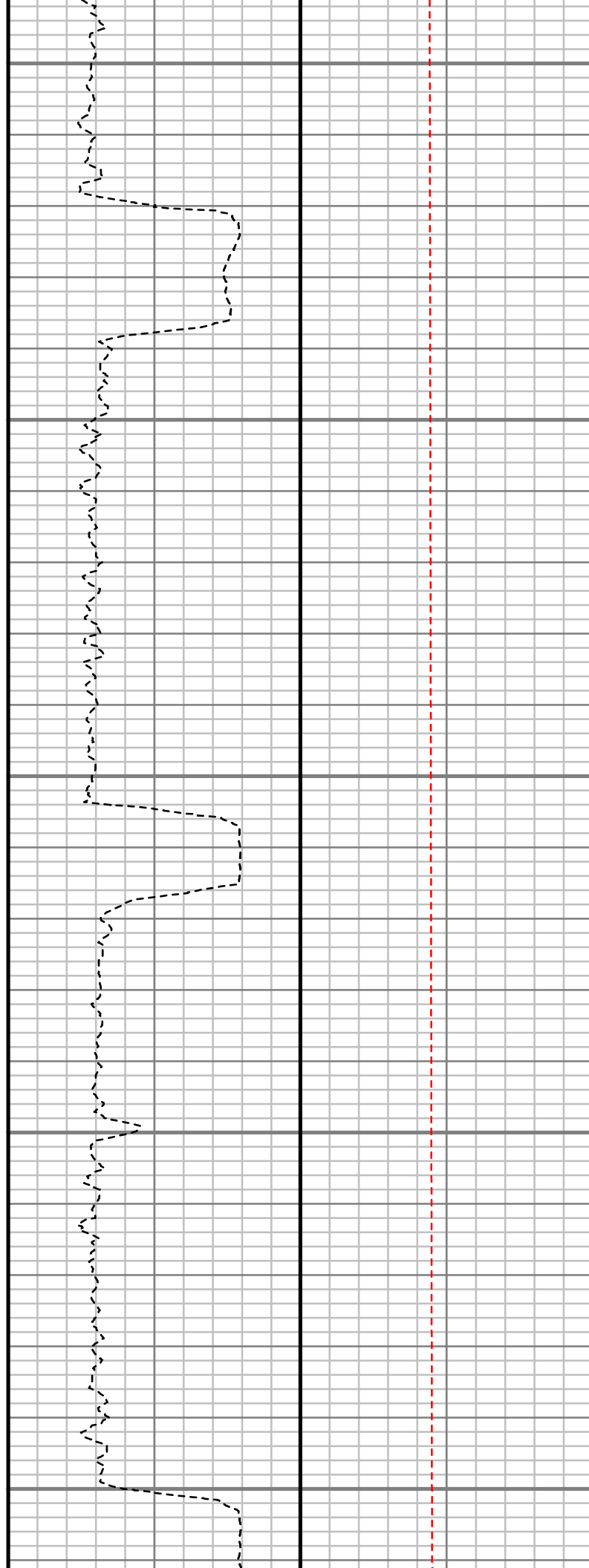
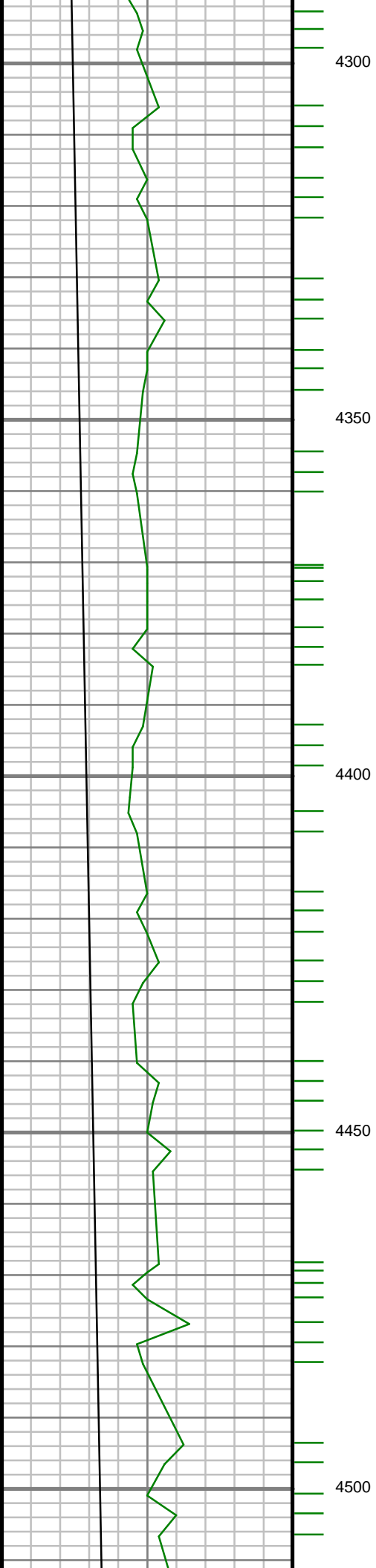
S: 41 MD: 4068.00 ft



Inc: 21.26 deg Az:
209.29 deg TVD:
3950.37 ft

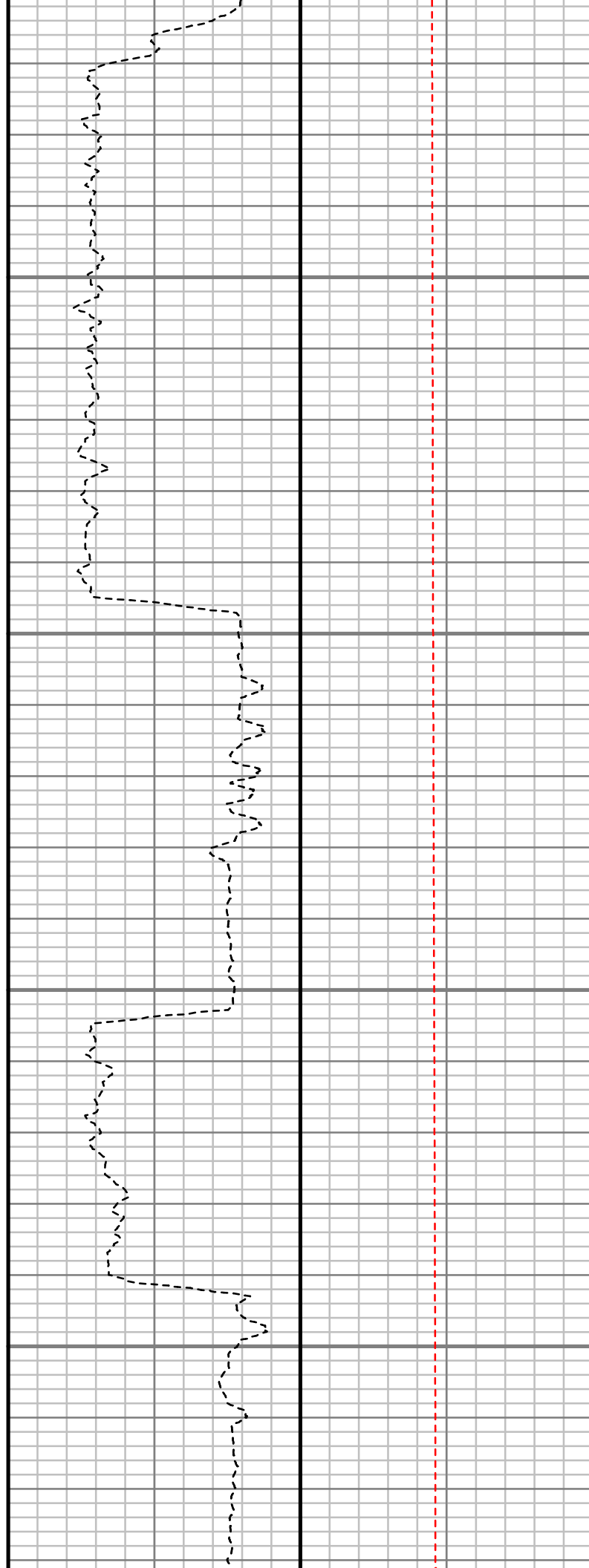
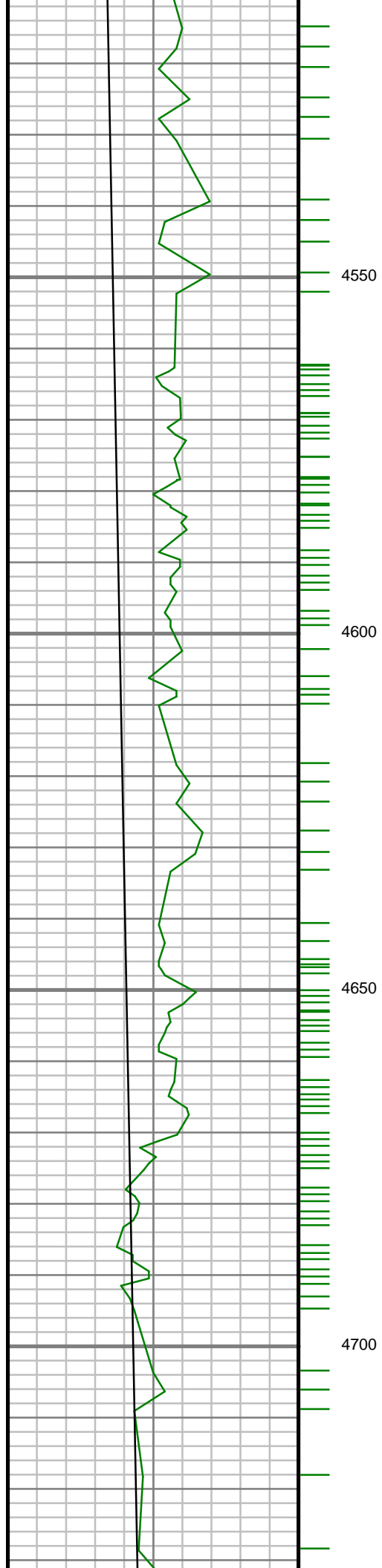
S: 42 MD: 4162.00 ft
Inc: 21.40 deg Az:
206.64 deg TVD:
4037.94 ft

S: 43 MD: 4257.00 ft
Inc: 22.91 deg Az:
206.22 deg TVD:
4125.92 ft

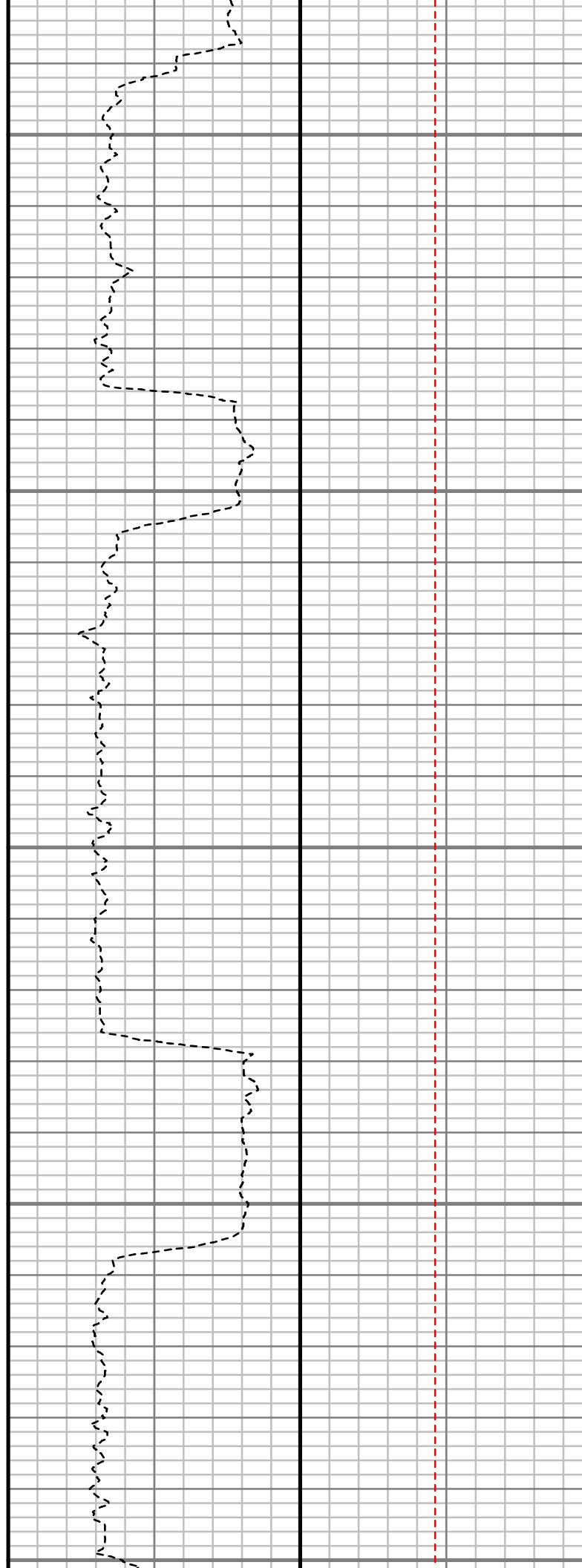
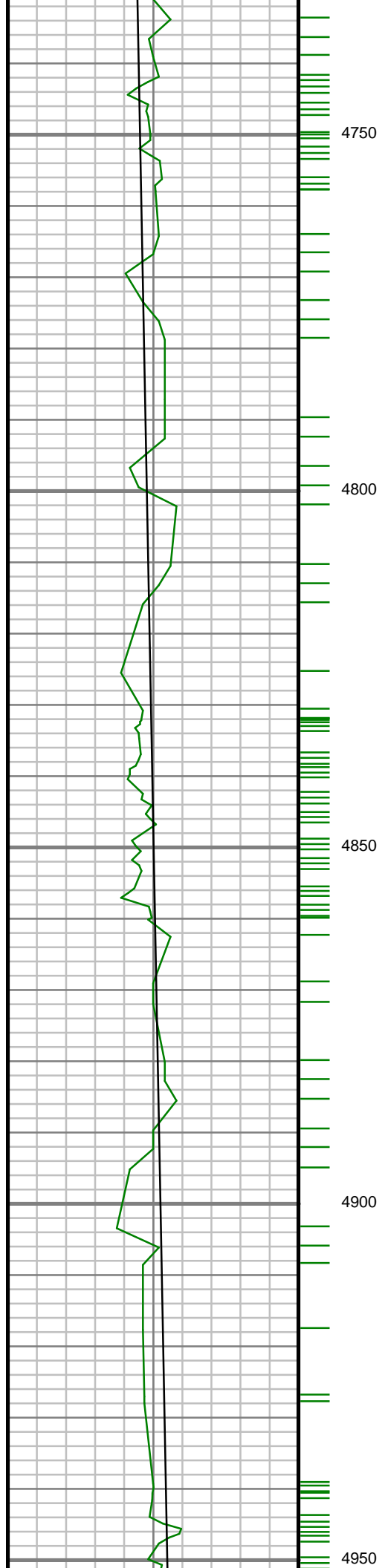


S: 44 MD: 4351.00 ft
Inc: 24.81 deg Az:
204.96 deg TVD:
4211.88 ft

S: 45 MD: 4445.00 ft
Inc: 23.09 deg Az:
204.07 deg TVD:
4297.79 ft

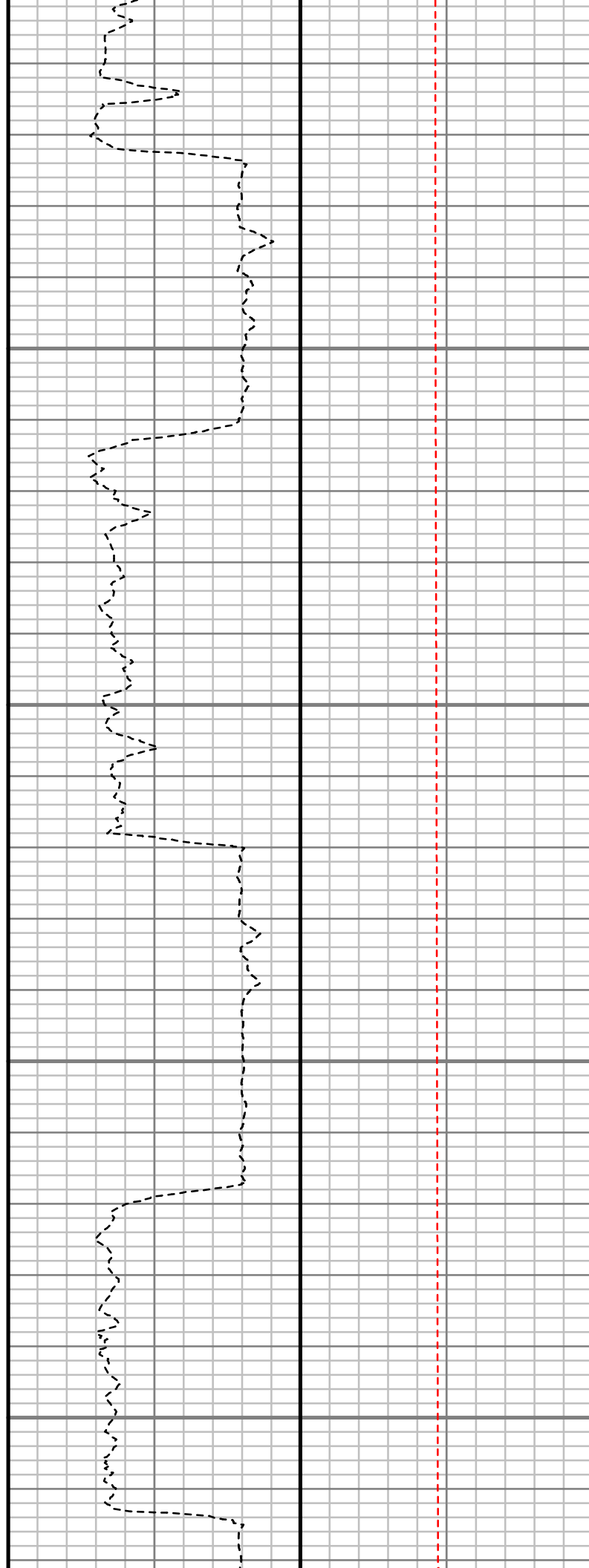
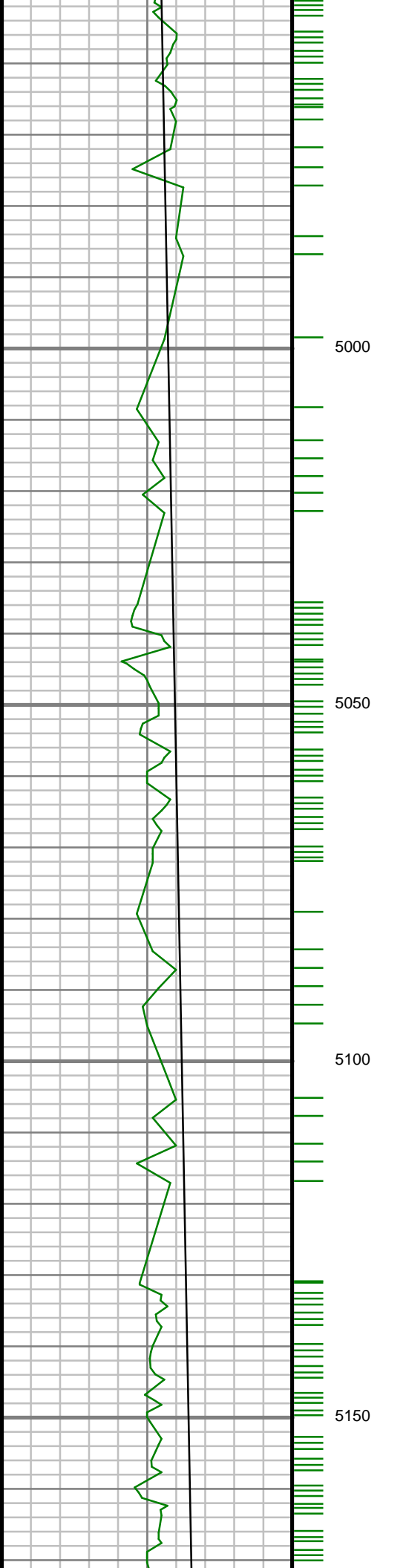


S: 46 MD: 4634.00 ft
Inc: 16.55 deg Az:
197.02 deg TVD:
4475.52 ft



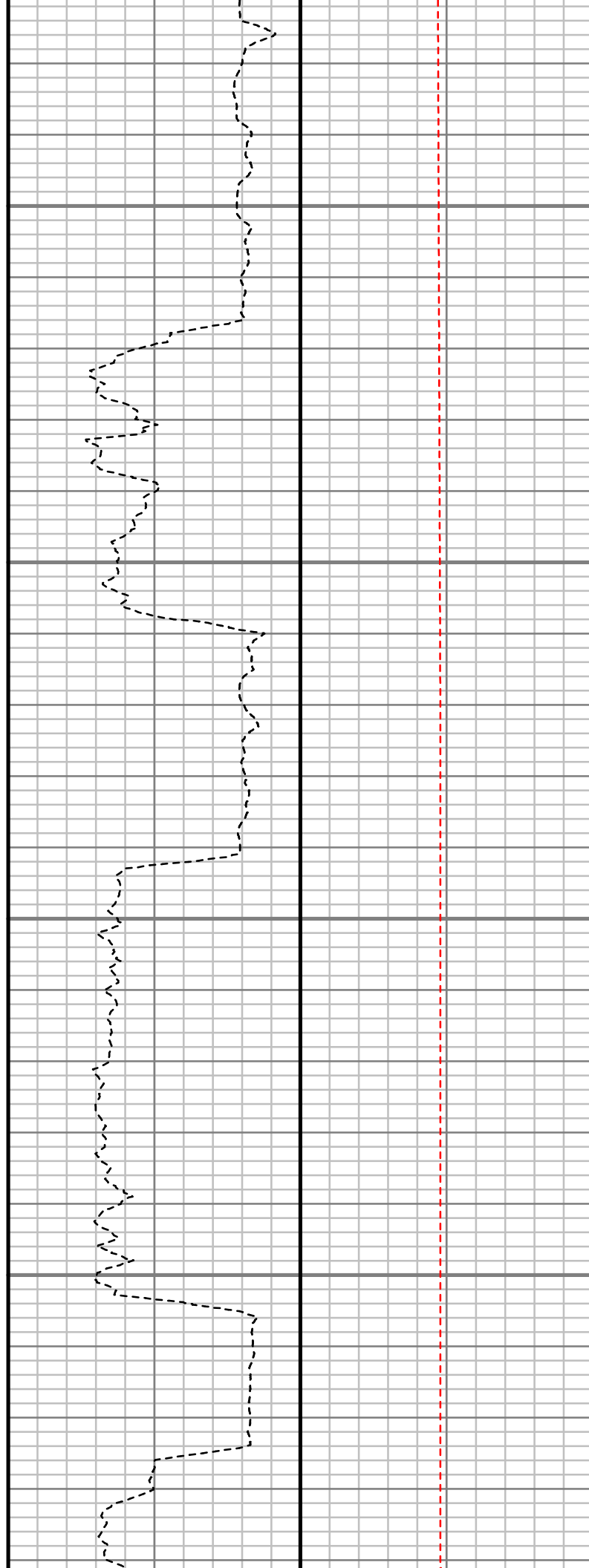
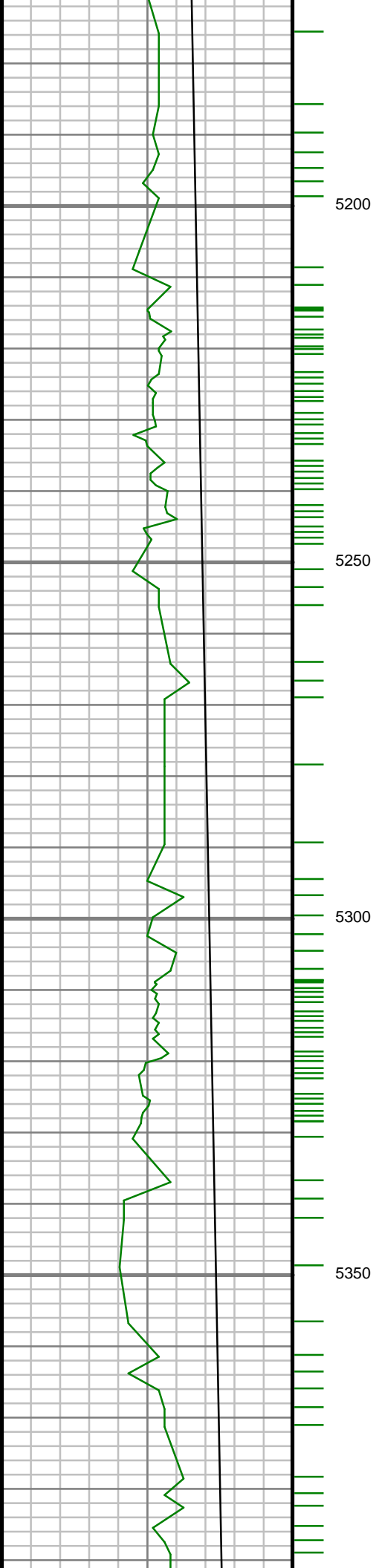
S: 47 MD: 4823.00 ft
Inc: 23.28 deg Az:
195.36 deg TVD:
4653.12 ft

S: 48 MD: 4917.00 ft
Inc: 22.82 deg Az:
197.57 deg TVD:
4739.62 ft



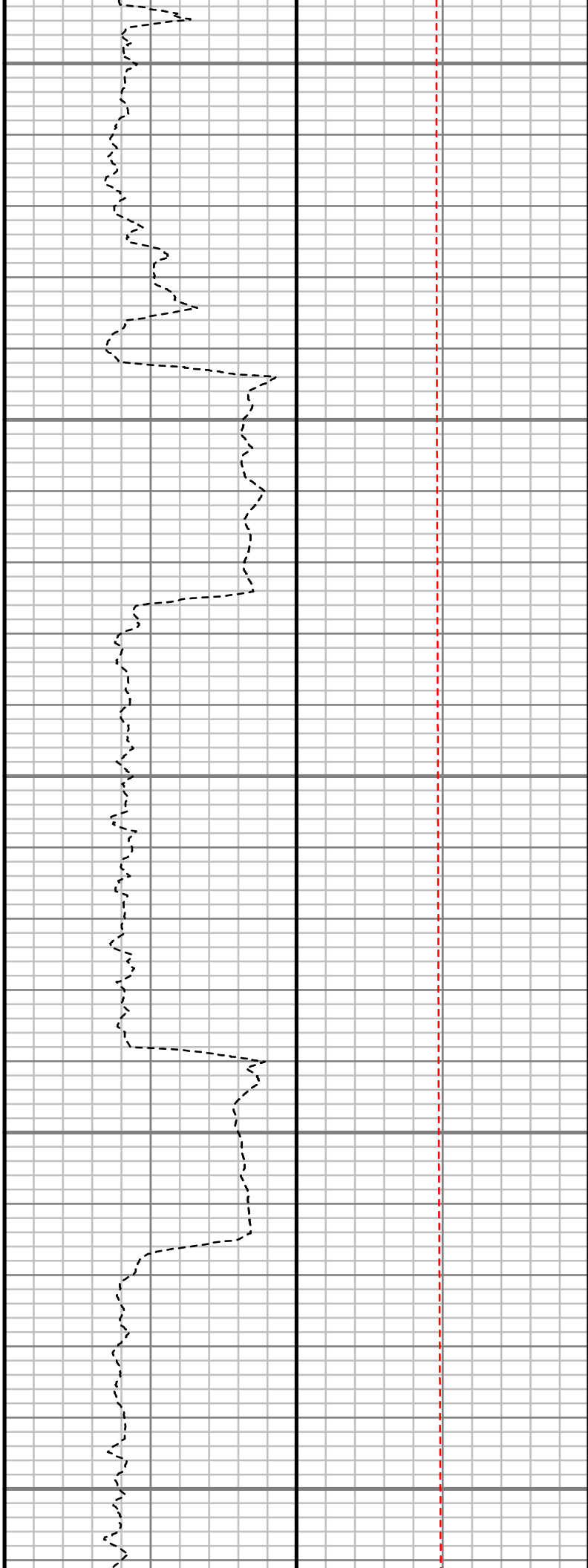
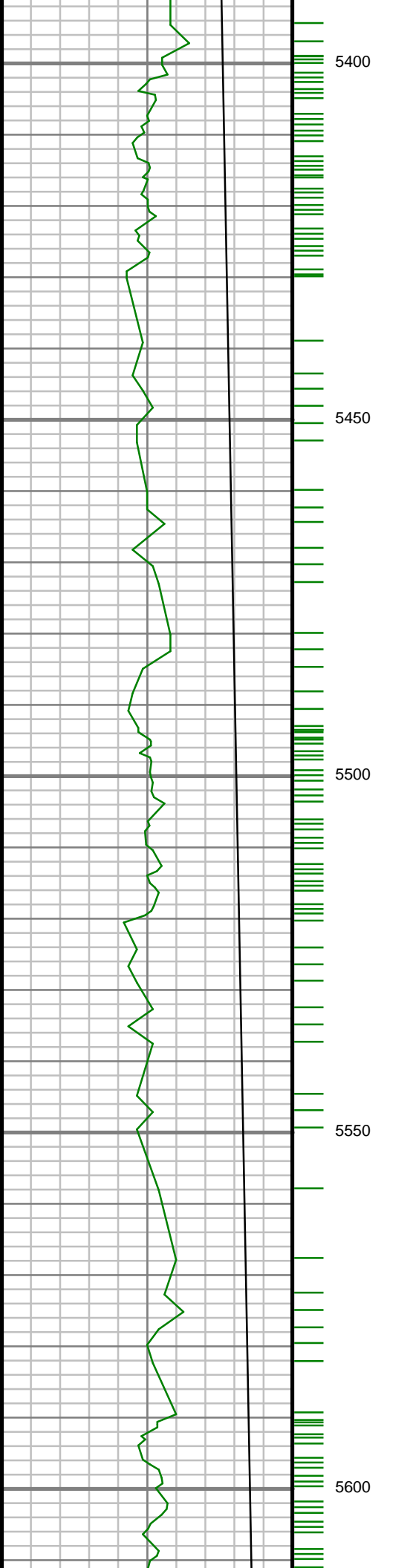
S: 49 MD: 5011.00 ft
Inc: 23.73 deg Az:
198.84 deg TVD:
4825.97 ft

S: 50 MD: 5106.00 ft
Inc: 22.31 deg Az:
202.96 deg TVD:
4913.41 ft



S: 51 MD: 5295.00 ft
Inc: 18.86 deg Az:
220.58 deg TVD:
5090.49 ft

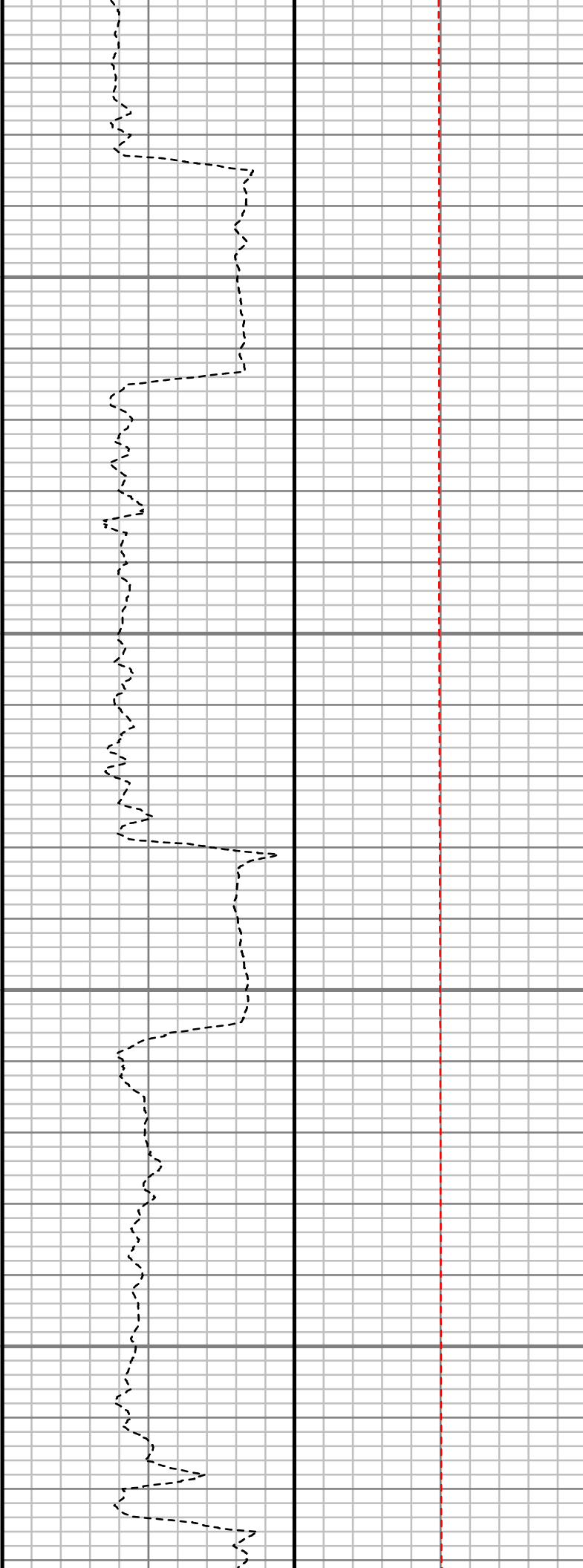
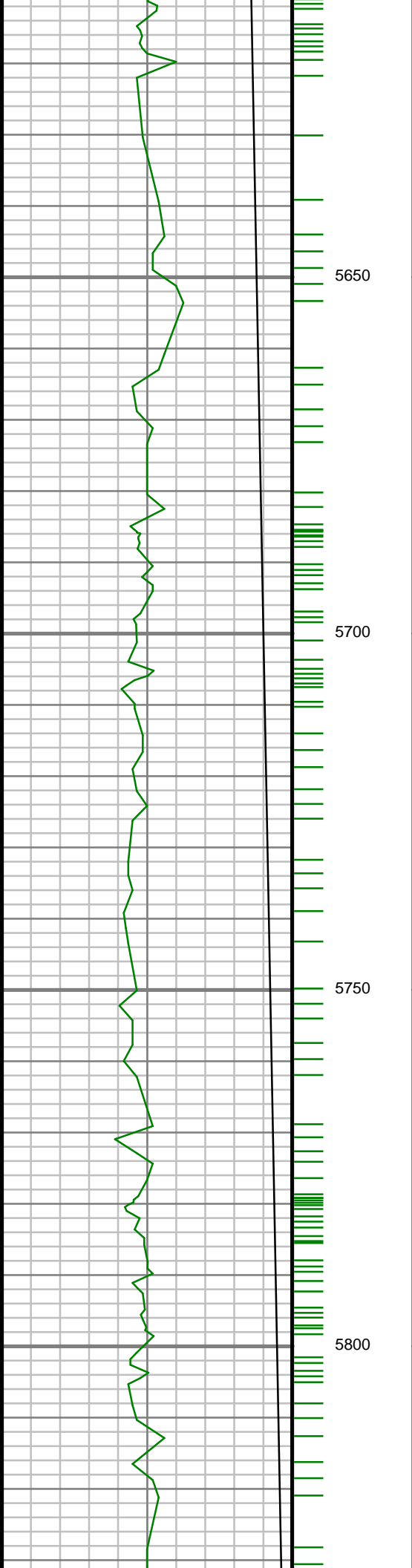
S: 52 MD: 5389.00 ft



Inc: 19.84 deg Az:
215.72 deg TVD:
5179.18 ft

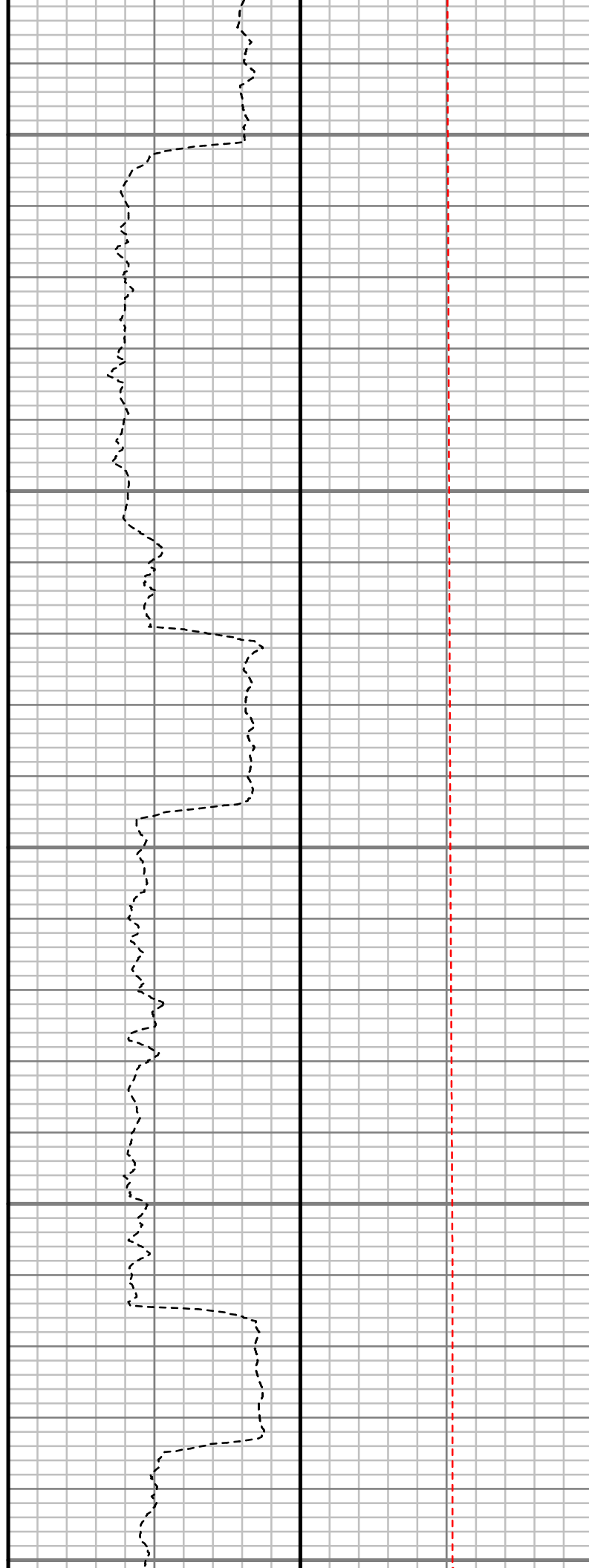
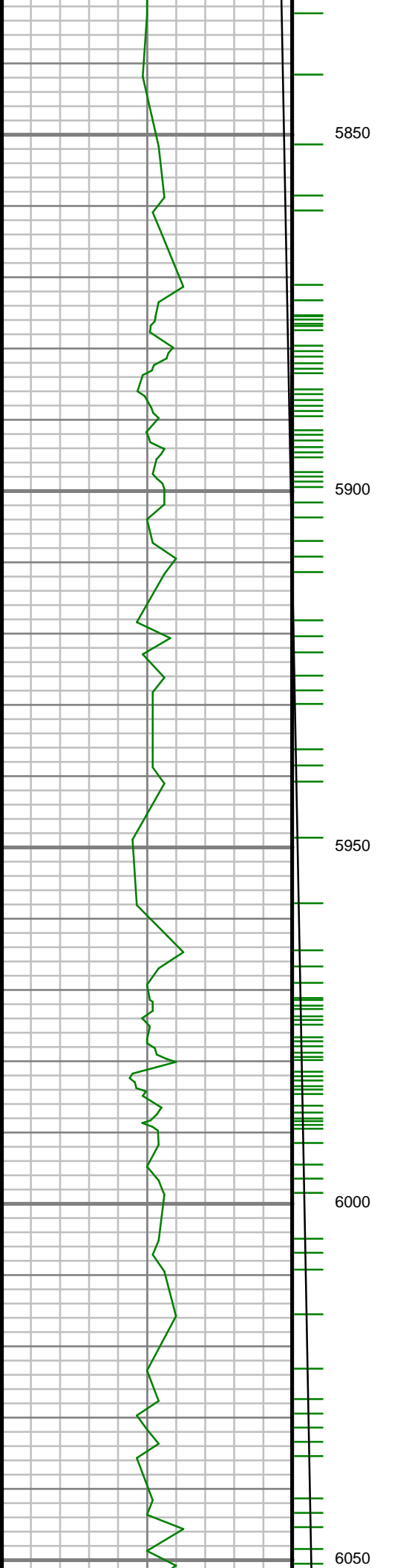
S: 53 MD: 5483.00 ft
Inc: 21.12 deg Az:
217.90 deg TVD:
5267.24 ft

S: 54 MD: 5578.00 ft
Inc: 21.19 deg Az:
214.01 deg TVD:
5355.84 ft



S: 55 MD: 5672.00 ft
Inc: 21.24 deg Az:
206.06 deg TVD:
5443.49 ft

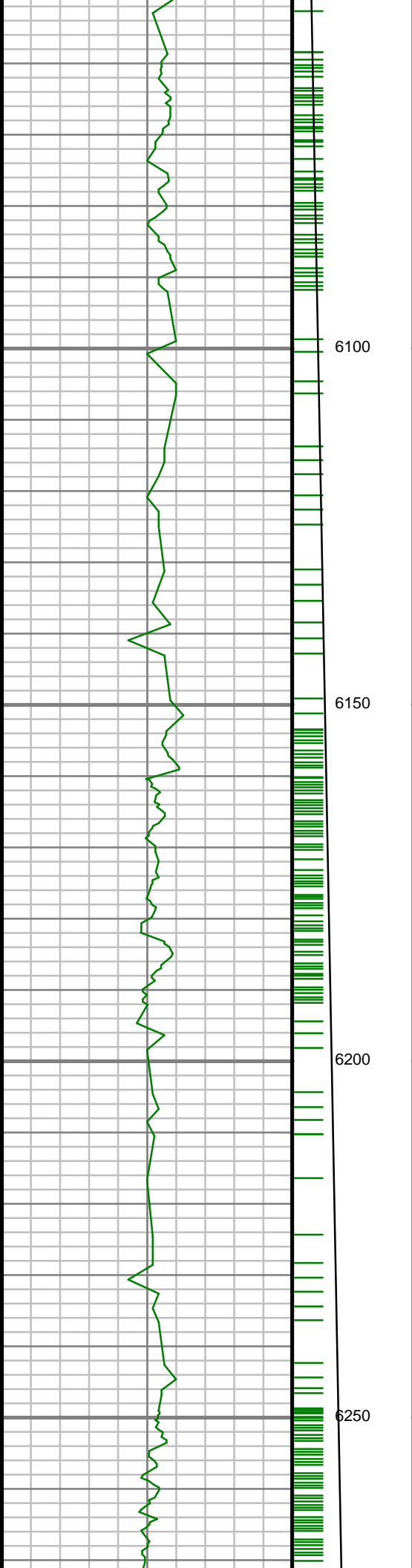
S: 56 MD: 5766.00 ft
Inc: 22.97 deg Az:
202.90 deg TVD:
5530.58 ft



S: 57 MD: 5860.00 ft
Inc: 21.45 deg Az:
205.13 deg TVD:
5617.61 ft

S: 58 MD: 5954.00 ft
Inc: 19.51 deg Az:
200.29 deg TVD:
5705.67 ft

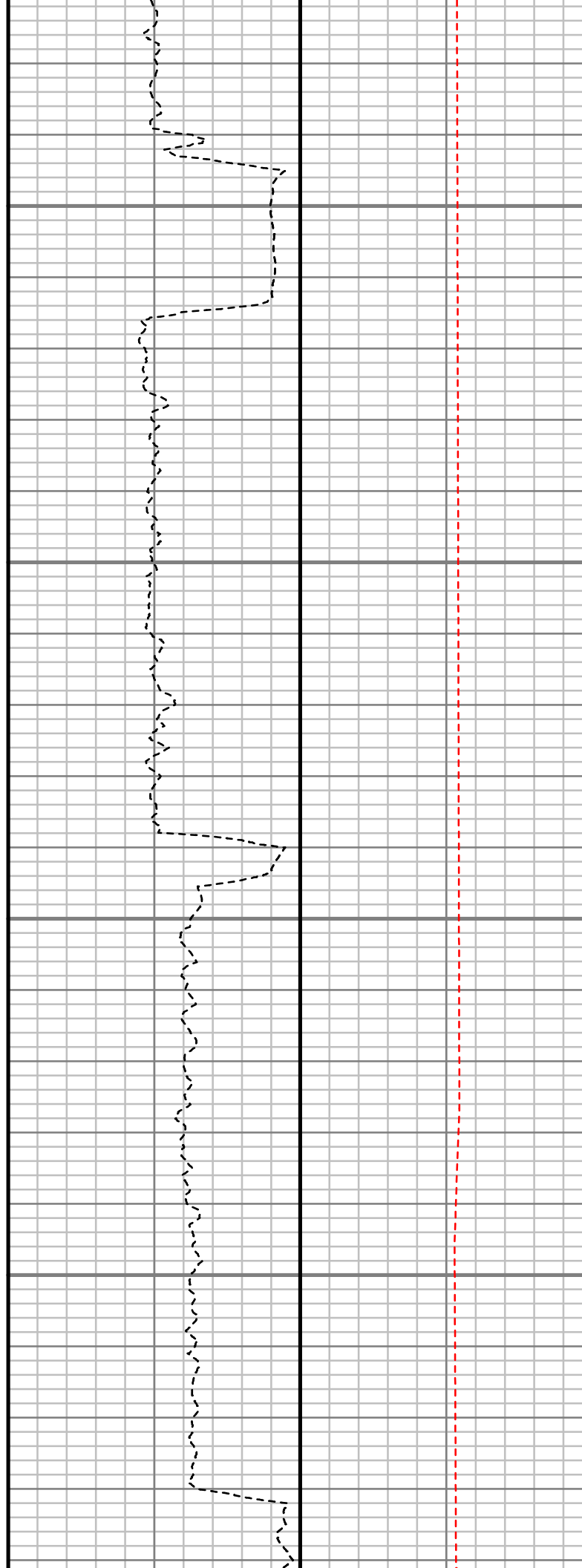
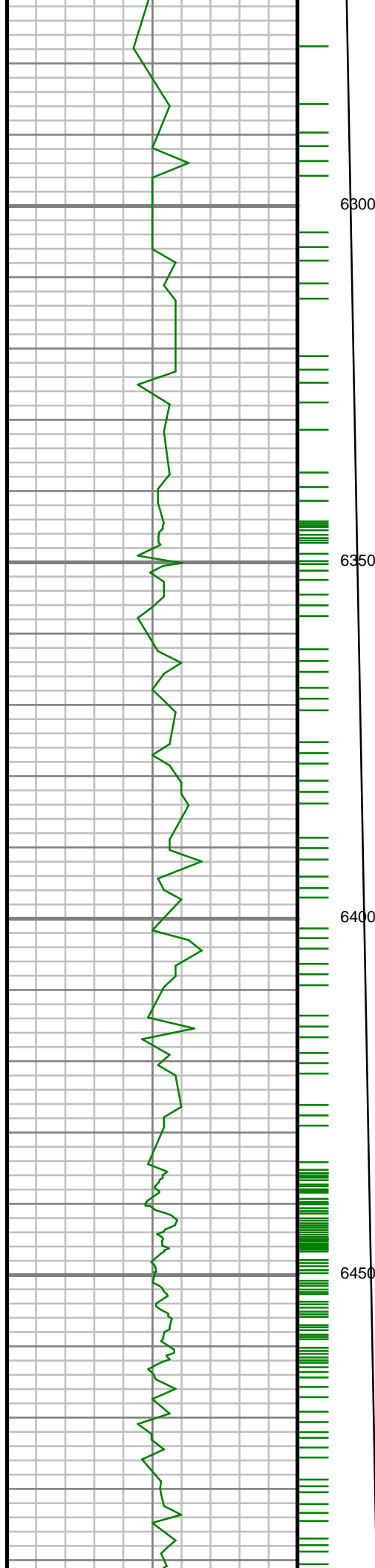
S: 59 MD: 6049.00 ft



Inc: 17.06 deg Az:
207.26 deg TVD:
5795.88 ft

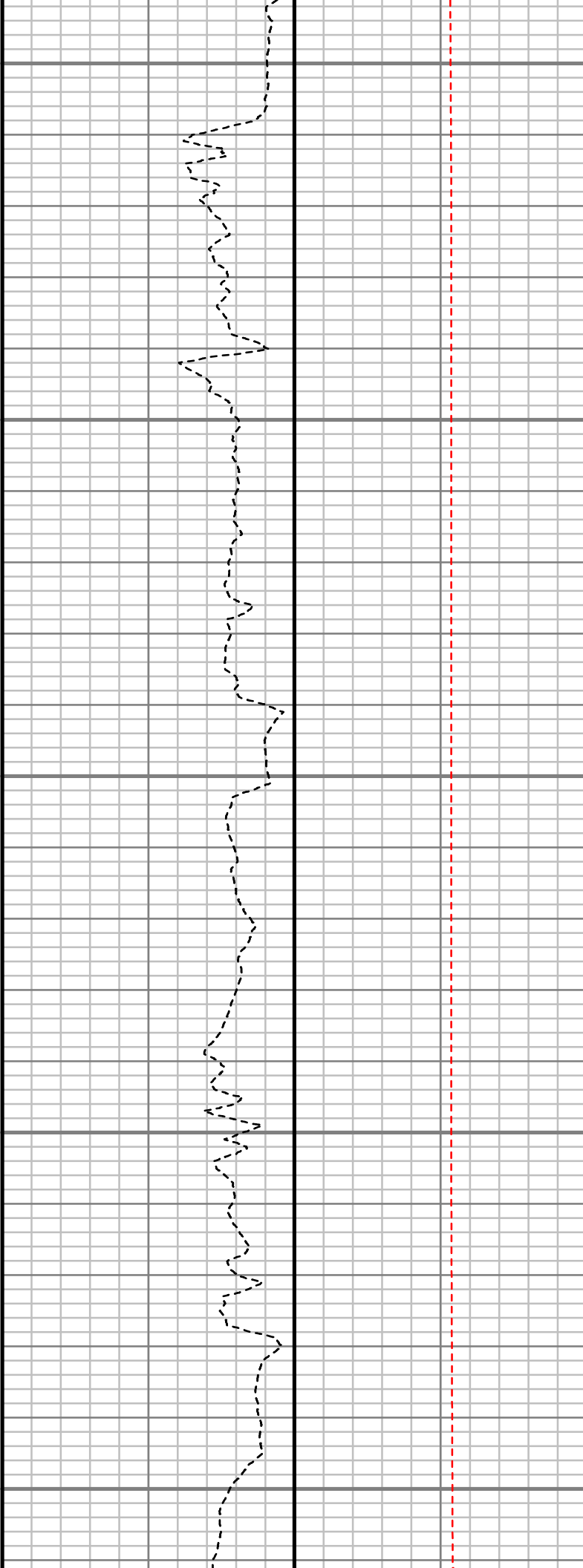
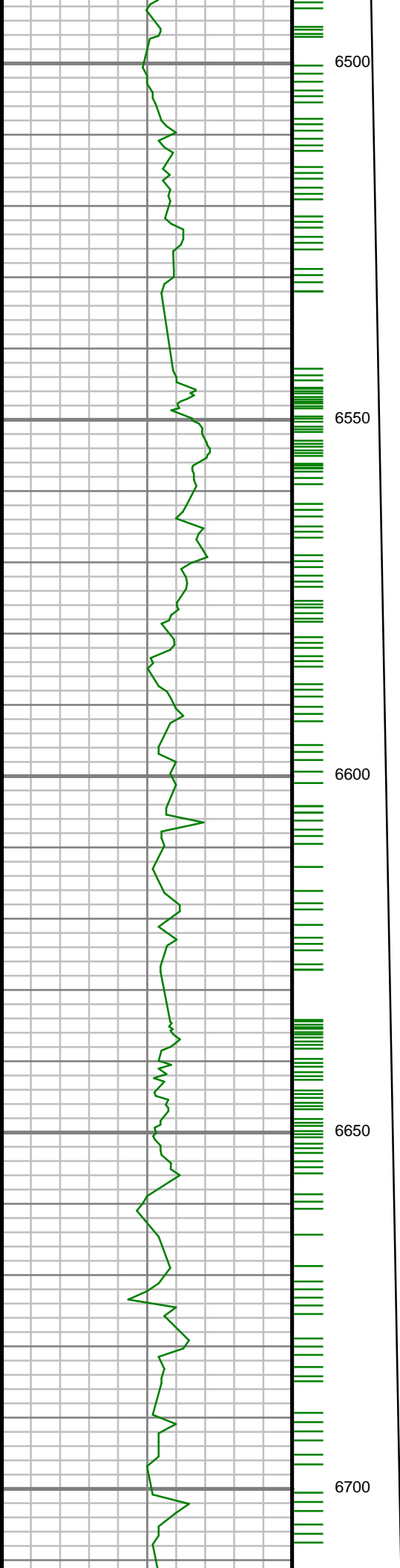
S: 60 MD: 6143.00 ft
Inc: 17.67 deg Az:
206.70 deg TVD:
5885.59 ft

S: 61 MD: 6237.00 ft
Inc: 19.45 deg Az:
203.70 deg TVD:
5974.70 ft



S: 62 MD: 6332.00 ft
Inc: 18.93 deg Az:
200.97 deg TVD:
6064.42 ft

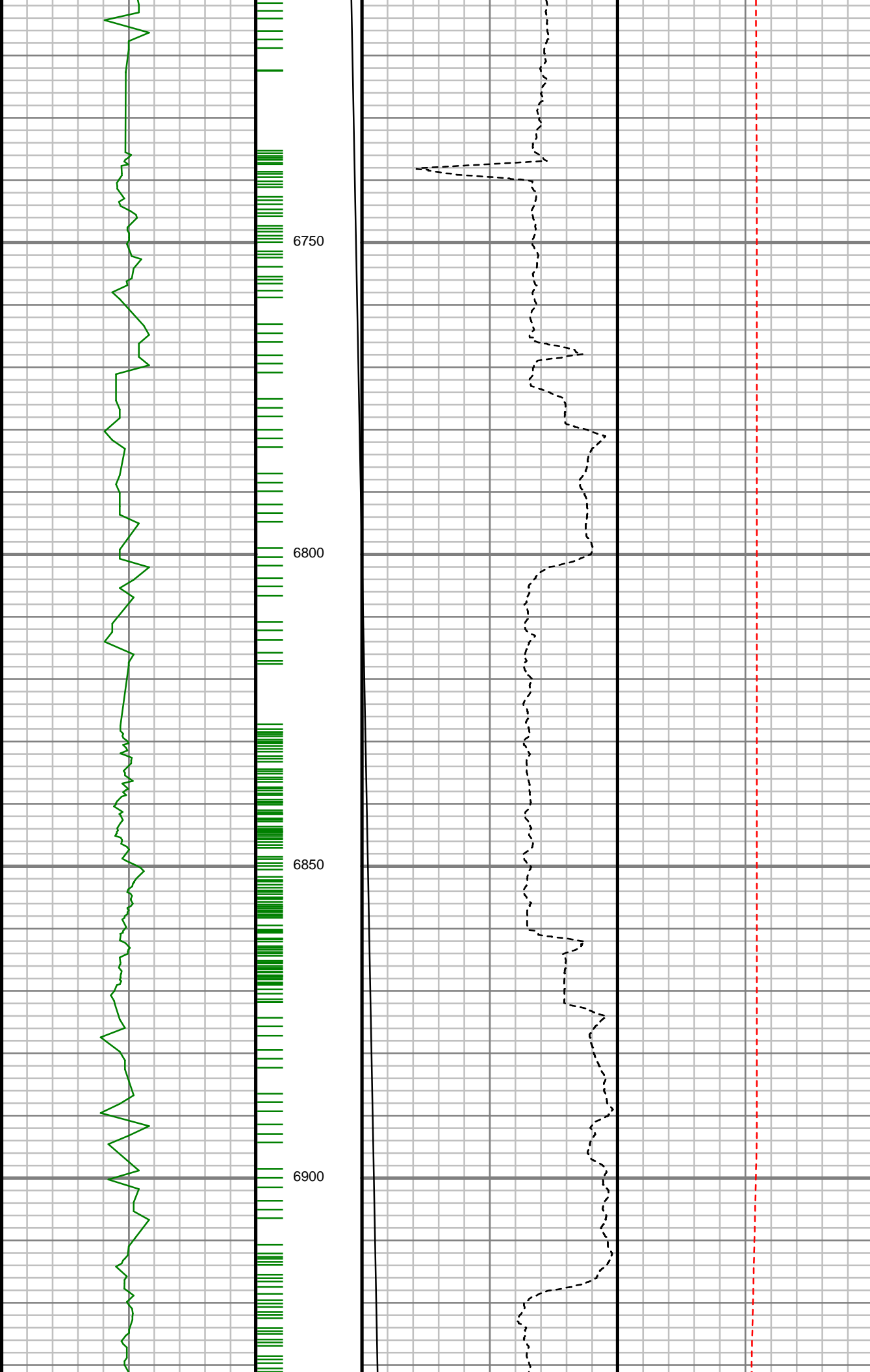
S: 63 MD: 6426.00 ft
Inc: 13.52 deg Az:
197.72 deg TVD:
6154.65 ft



S: 64 MD: 6521.00 ft
Inc: 12.60 deg Az:
199.14 deg TVD:
6247.19 ft

S: 65 MD: 6615.00 ft
Inc: 11.73 deg Az:
202.53 deg TVD:
6339.08 ft

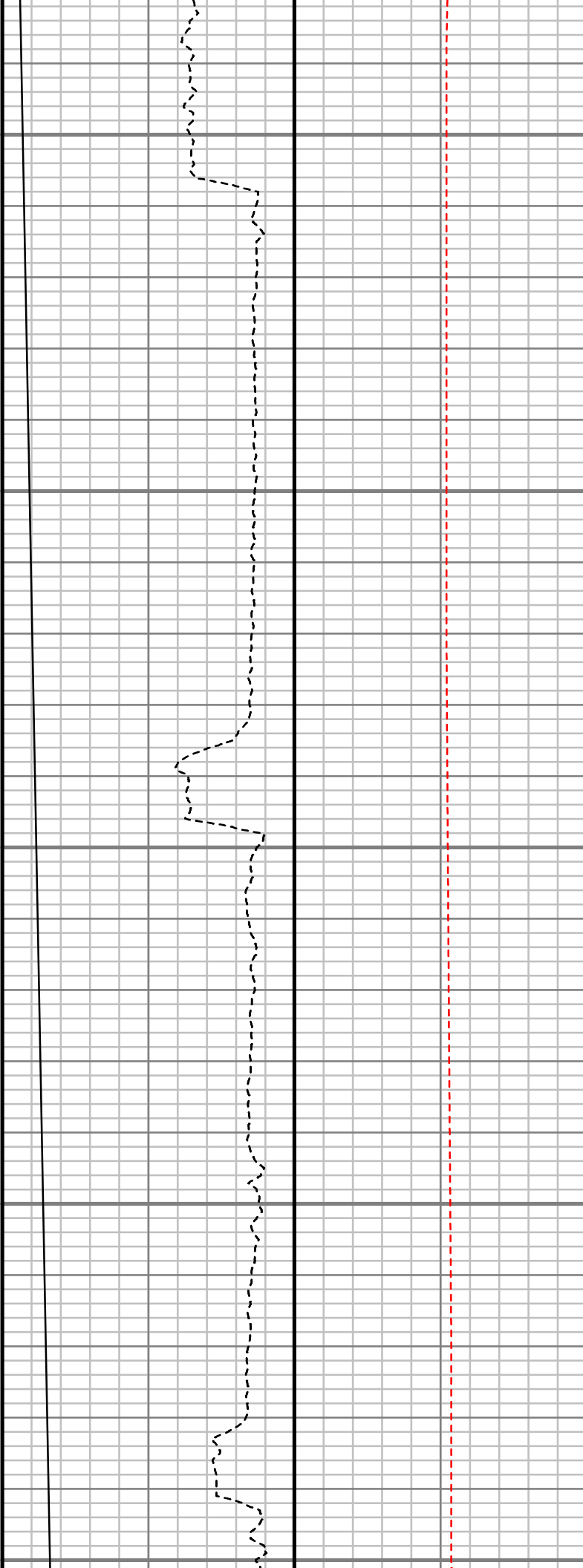
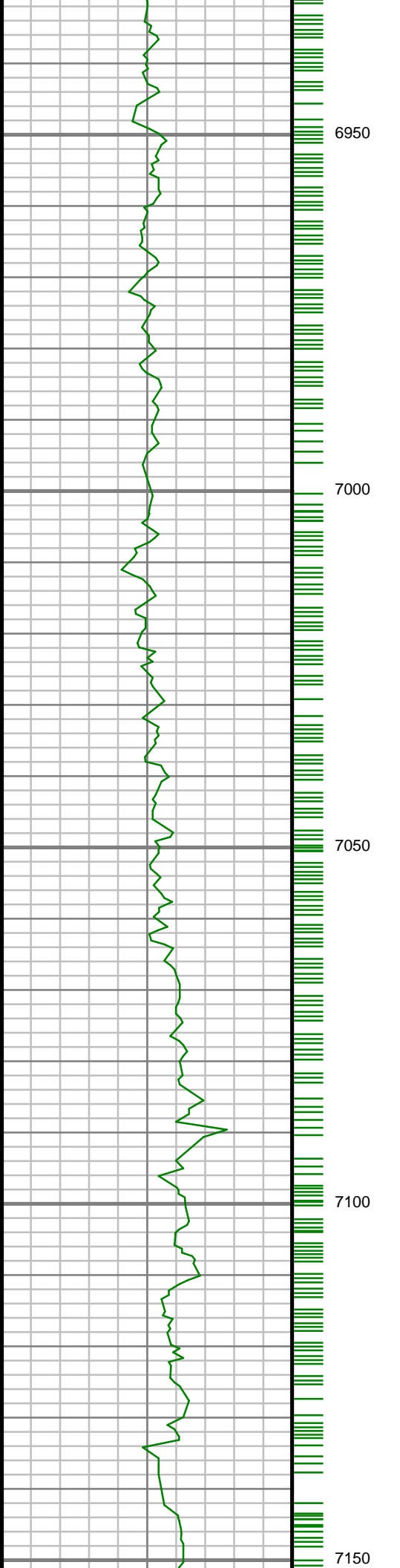
S: 66 MD: 6709.00 ft



Inc: 7.94 deg Az:
202.93 deg TVD:
6431.68 ft

S: 67 MD: 6803.00 ft
Inc: 4.21 deg Az:
210.55 deg TVD:
6525.14 ft

S: 68 MD: 6898.00 ft
Inc: 2.69 deg Az:
233.57 deg TVD:
6619.97 ft

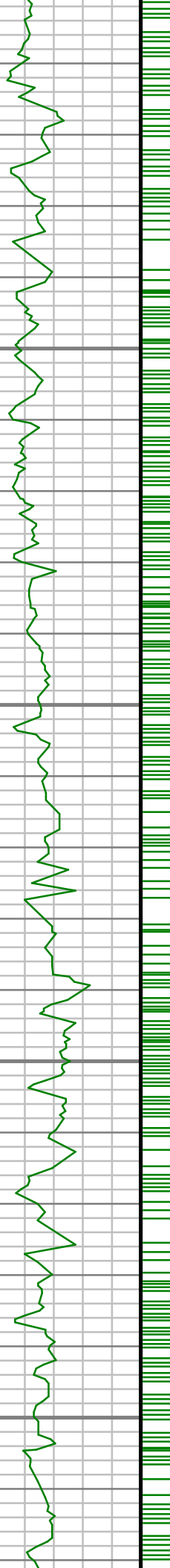


S: 69 MD: 6992.00 ft
Inc: 4.36 deg Az:
337.51 deg TVD:
6713.85 ft

S: 70 MD: 7039.00 ft
Inc: 9.05 deg Az:
350.17 deg TVD:
6760.52 ft

S: 71 MD: 7086.00 ft
Inc: 13.15 deg Az:
358.21 deg TVD:
6806.64 ft

S: 72 MD: 7133.00 ft
Inc: 16.73 deg Az:
352.24 deg TVD:
6852.04 ft

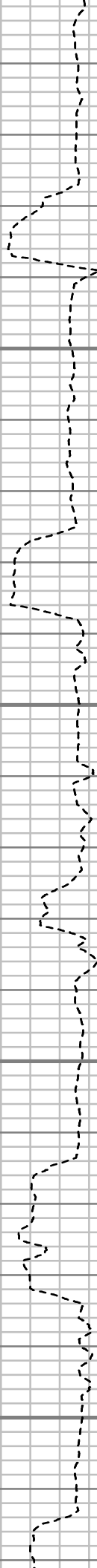


7200

7250

7300

7350



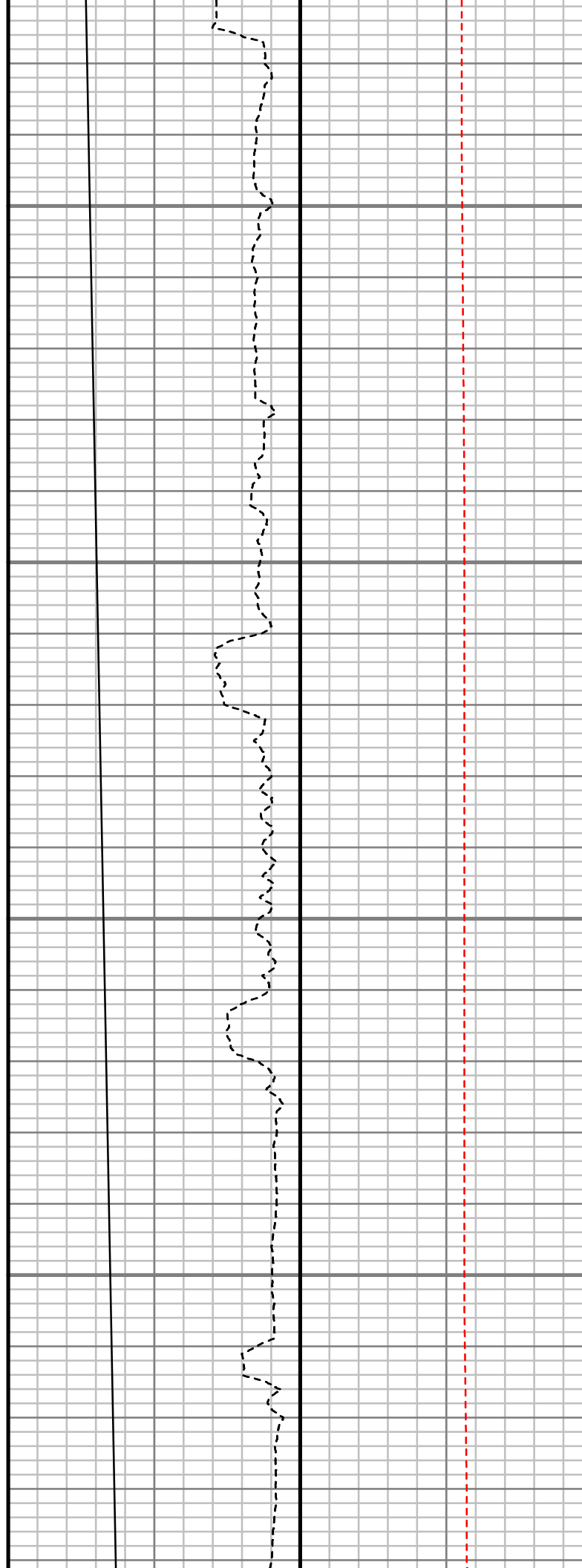
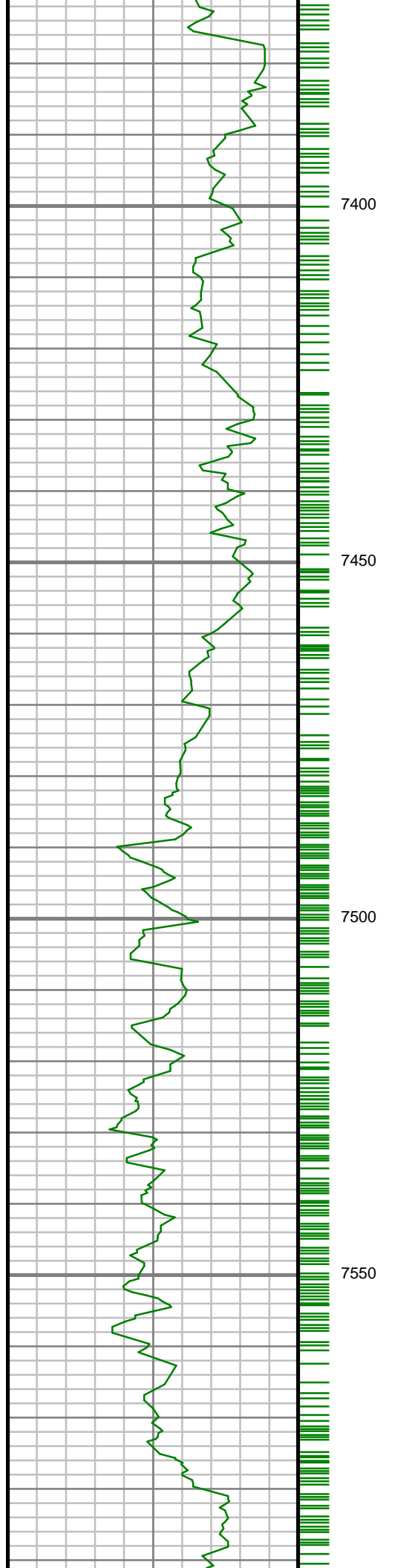
S: 73 MD: 7180.00 ft
Inc: 19.55 deg Az:
351.27 deg TVD:
6896.70 ft

S: 74 MD: 7227.00 ft
Inc: 22.67 deg Az:
351.92 deg TVD:
6940.54 ft

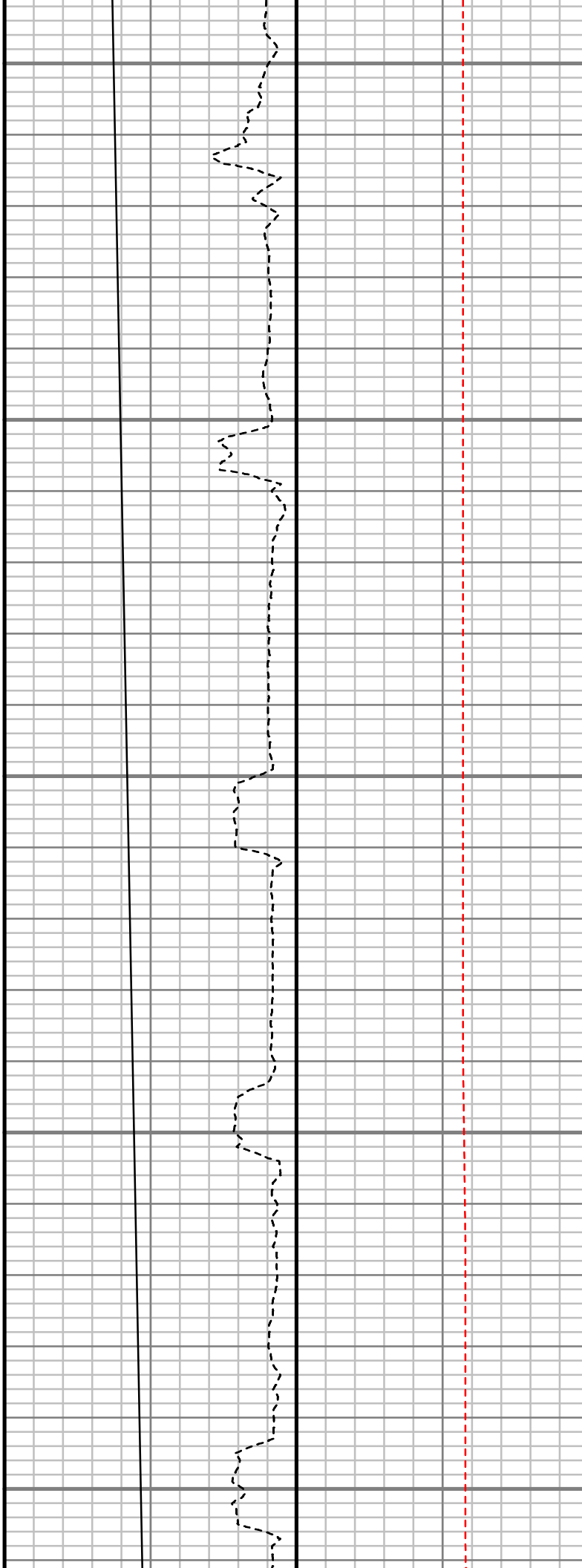
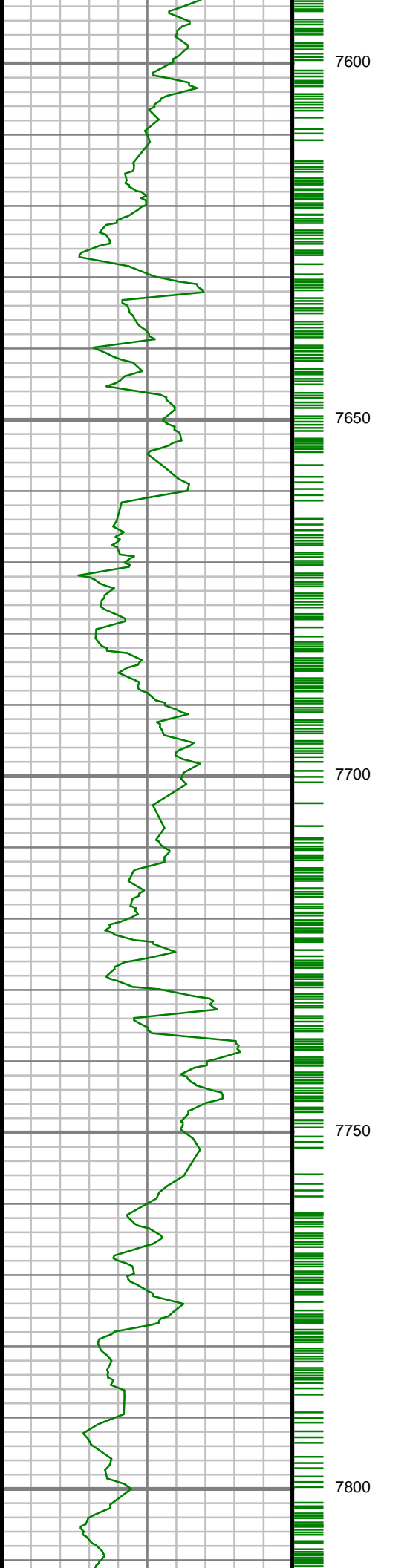
S: 75 MD: 7274.00 ft
Inc: 26.52 deg Az:
349.57 deg TVD:
6983.27 ft

S: 76 MD: 7321.00 ft
Inc: 29.75 deg Az:
347.52 deg TVD:
7024.71 ft

S: 77 MD: 7369.00 ft



Inc: 32.32 deg Az: 350.89 deg TVD: 7065.84 ft
S: 78 MD: 7416.00 ft Inc: 33.82 deg Az: 358.56 deg TVD: 7105.24 ft
S: 79 MD: 7463.00 ft Inc: 36.18 deg Az: 4.40 deg TVD: 7143.75 ft
S: 80 MD: 7510.00 ft Inc: 39.08 deg Az: 3.61 deg TVD: 7180.96 ft
S: 81 MD: 7556.00 ft Inc: 43.67 deg Az: 1.93 deg TVD: 7215.47 ft



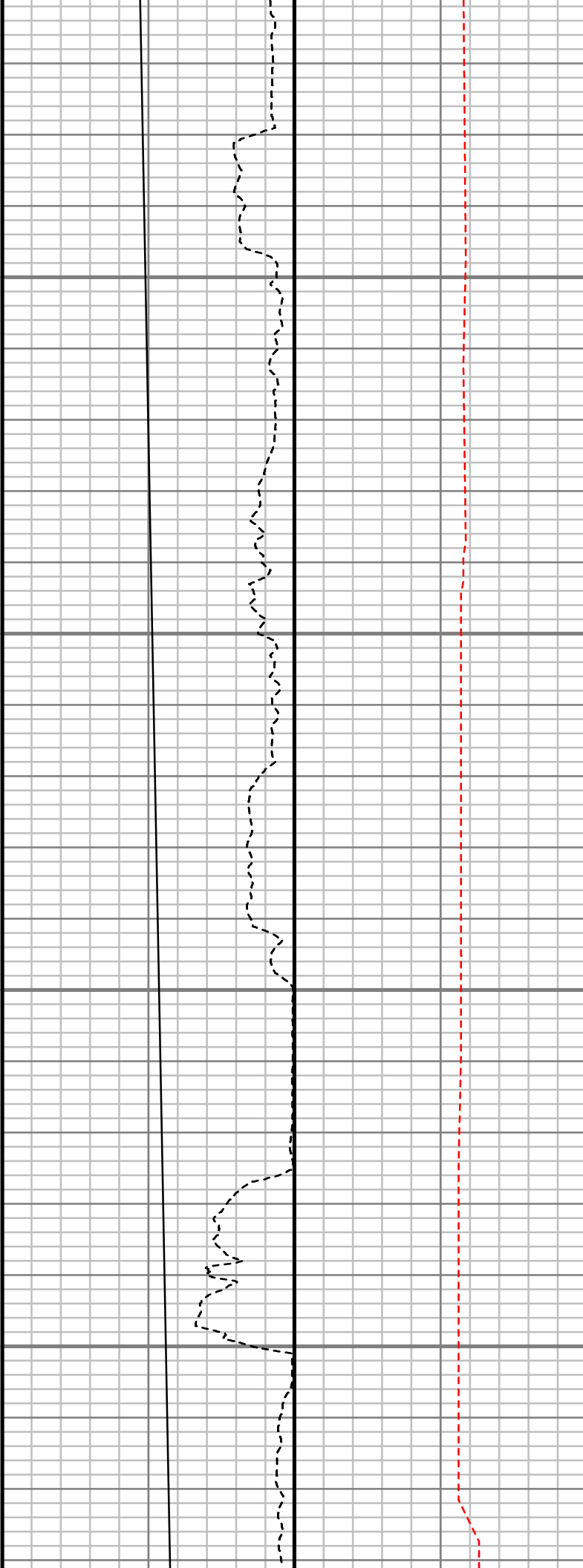
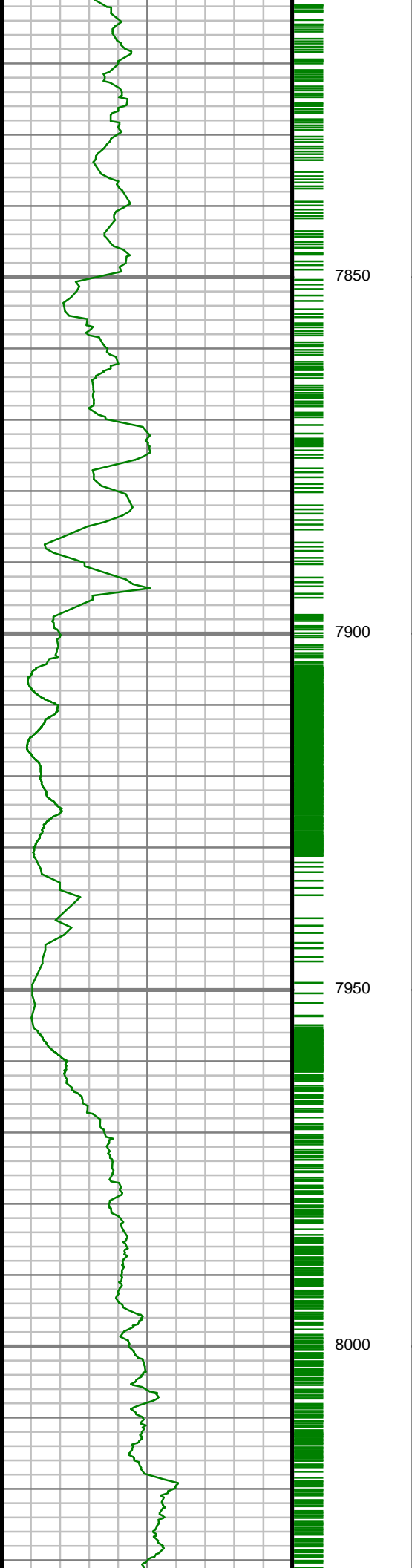
S: 82 MD: 7603.00 ft
Inc: 46.33 deg Az: 2.88
deg TVD: 7248.70 ft

S: 83 MD: 7651.00 ft
Inc: 50.69 deg Az: 2.72
deg TVD: 7280.50 ft

S: 84 MD: 7698.00 ft
Inc: 55.07 deg Az: 1.26
deg TVD: 7308.85 ft

S: 85 MD: 7745.00 ft
Inc: 59.85 deg Az:
359.93 deg TVD:
7334.13 ft

S: 86 MD: 7792.00 ft
Inc: 64.25 deg Az:
359.35 deg TVD:
7356.15 ft

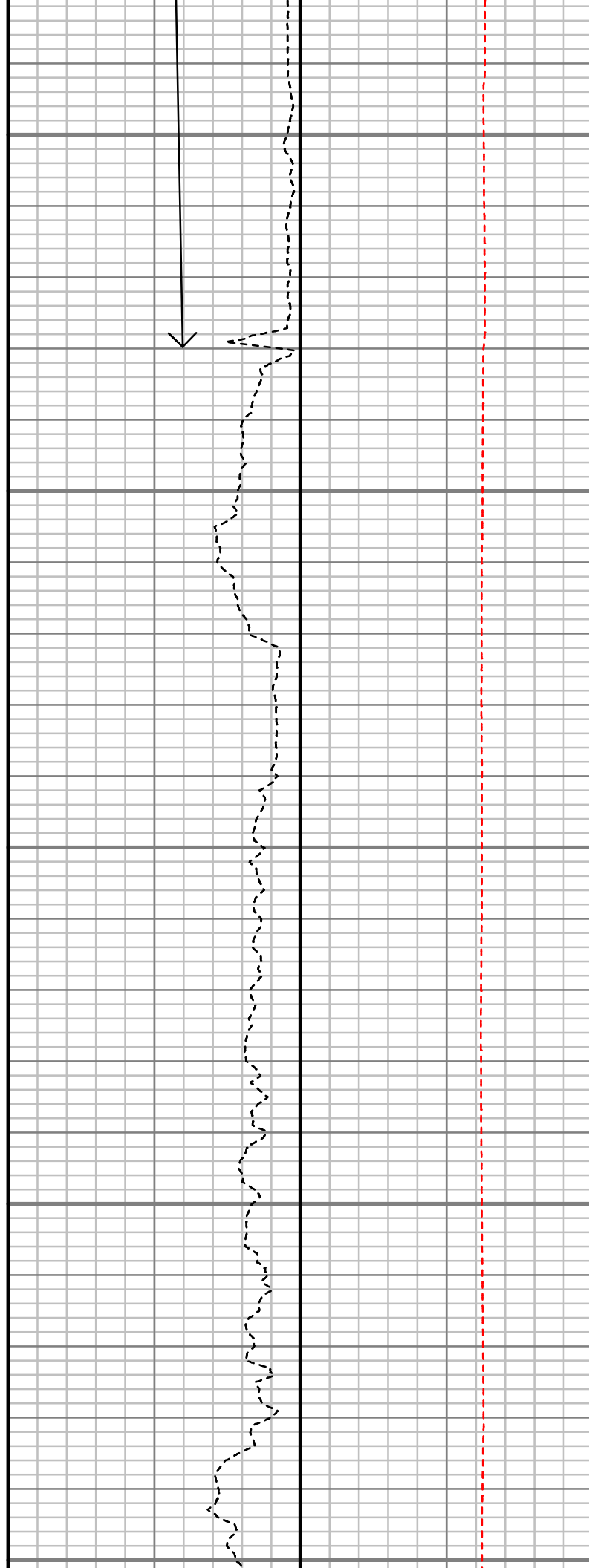
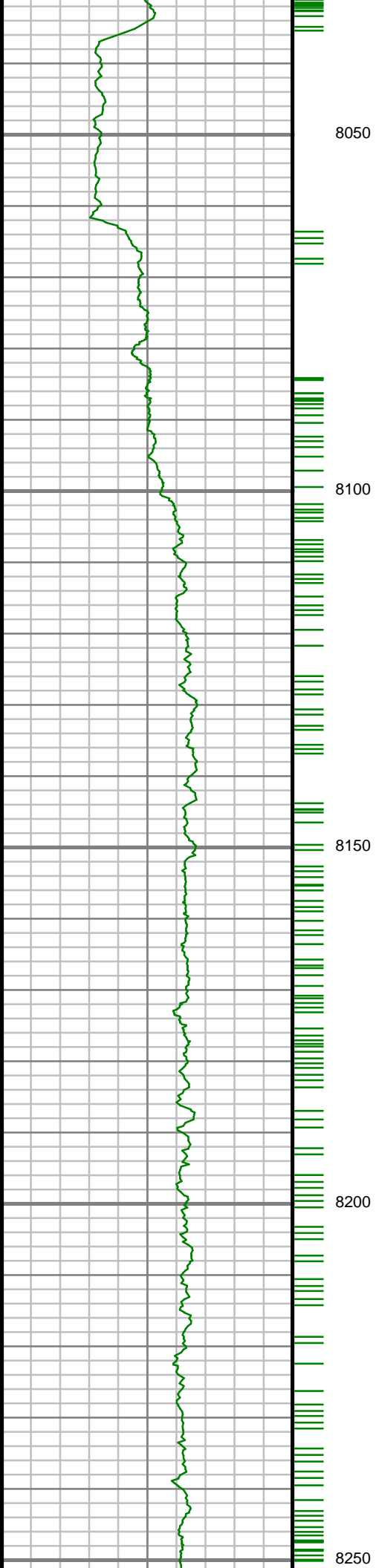


S: 87 MD: 7840.00 ft
Inc: 68.73 deg Az:
359.27 deg TVD:
7375.29 ft

S: 88 MD: 7887.00 ft
Inc: 71.21 deg Az:
359.34 deg TVD:
7391.39 ft

S: 89 MD: 7934.00 ft
Inc: 74.10 deg Az:
359.18 deg TVD:
7405.40 ft

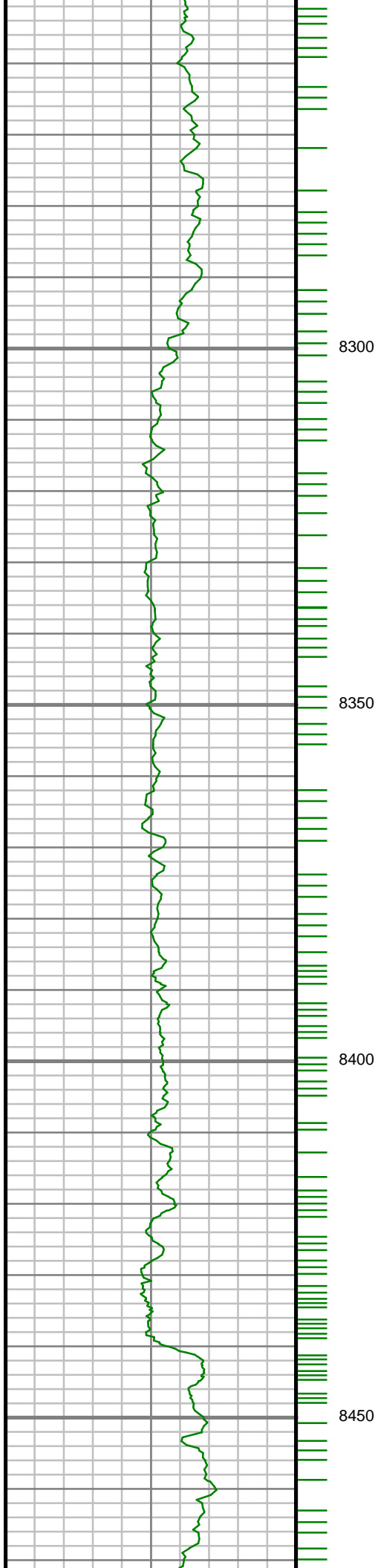
S: 90 MD: 7981.00 ft
Inc: 79.47 deg Az:
358.45 deg TVD:
7416.15 ft



S: 91 MD: 8103.00 ft
Inc: 88.82 deg Az:
357.06 deg TVD:
7428.58 ft

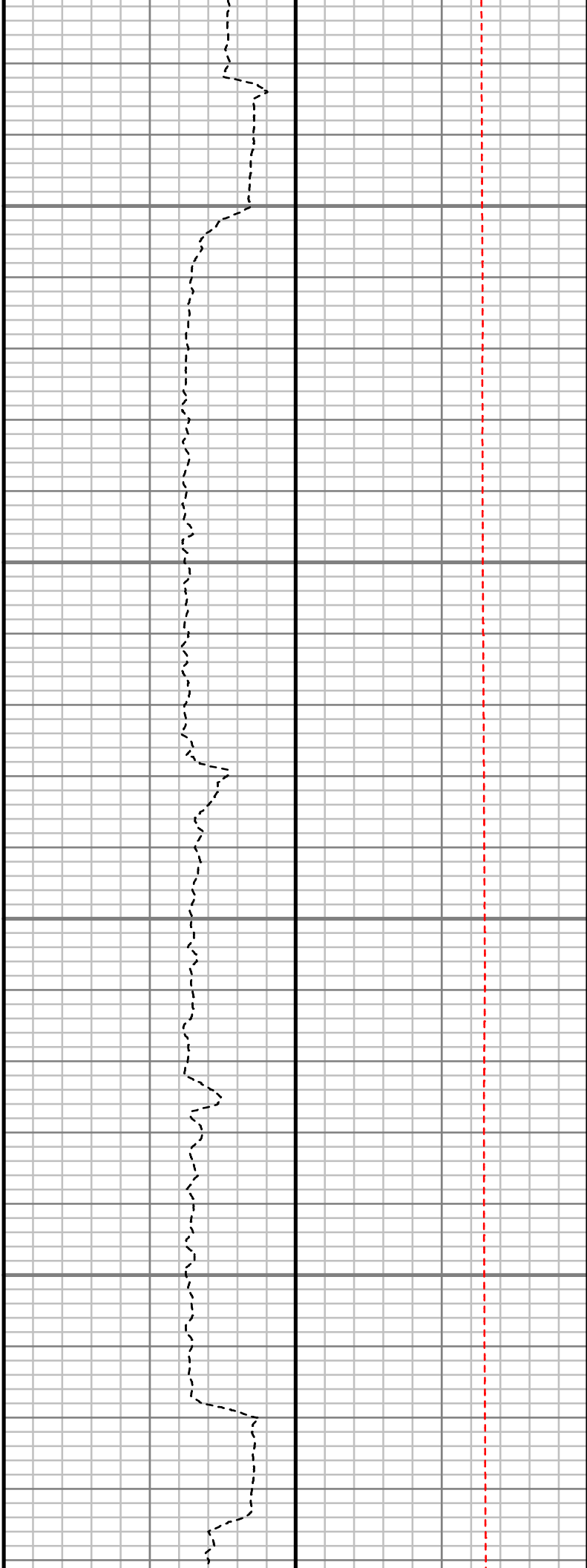
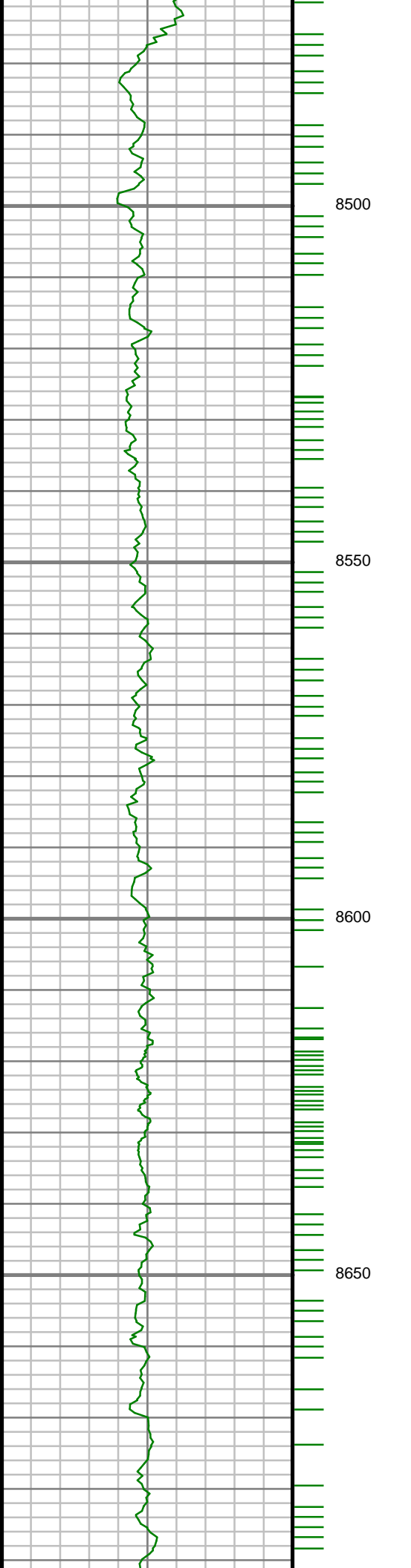
S: 92 MD: 8135.00 ft
Inc: 89.10 deg Az:
357.06 deg TVD:
7429.16 ft

S: 93 MD: 8229.00 ft
Inc: 90.91 deg Az:
358.93 deg TVD:
7429.16 ft



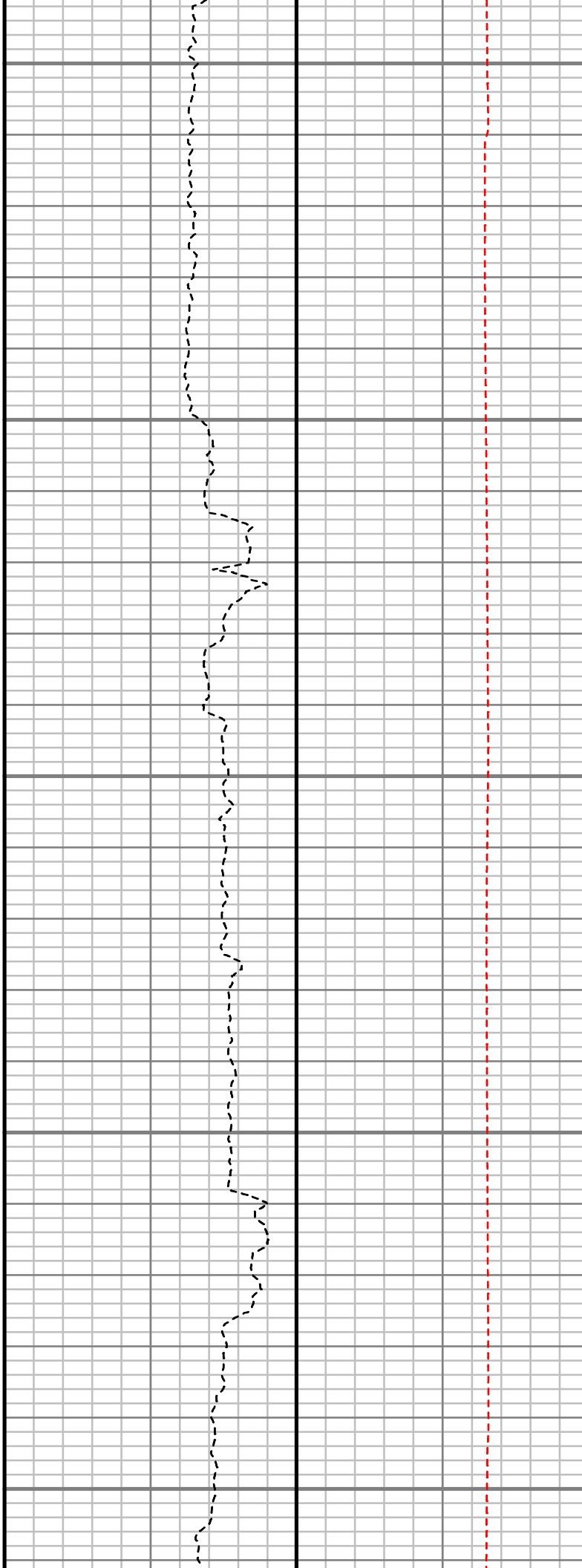
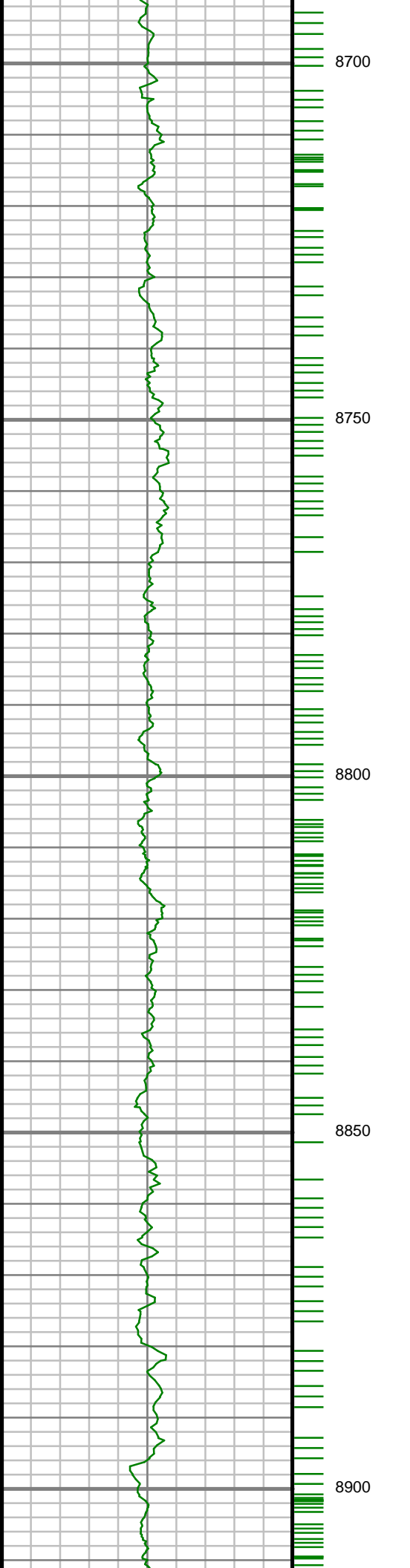
S: 94 MD: 8323.00 ft
Inc: 91.92 deg Az:
359.21 deg TVD:
7426.84 ft

S: 95 MD: 8418.00 ft
Inc: 92.32 deg Az:
359.20 deg TVD:
7423.33 ft



S: 96 MD: 8512.00 ft
Inc: 90.81 deg Az: 0.61
deg TVD: 7420.77 ft

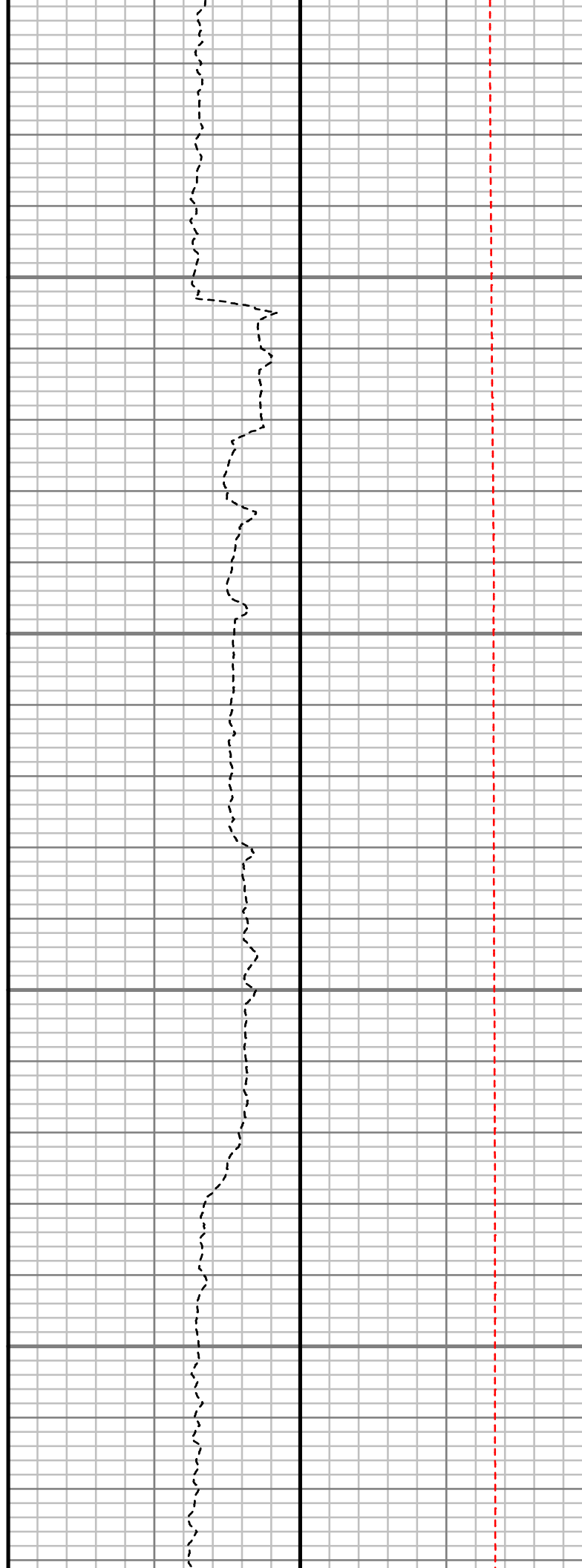
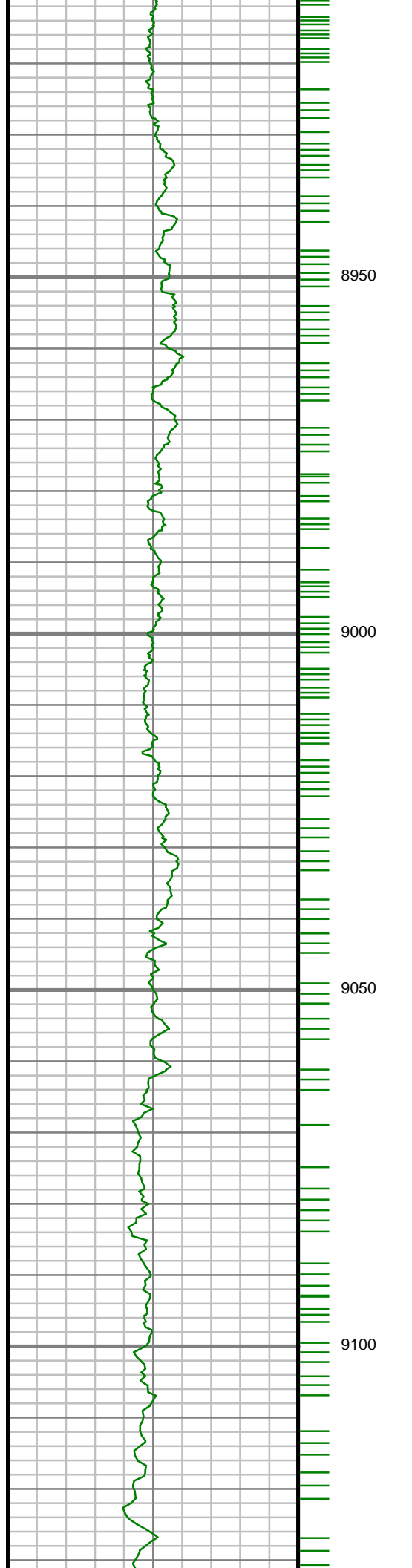
S: 97 MD: 8606.00 ft
Inc: 91.01 deg Az:
359.71 deg TVD:
7419.28 ft



S: 98 MD: 8701.00 ft
Inc: 89.97 deg Az: 0.31
deg TVD: 7418.47 ft

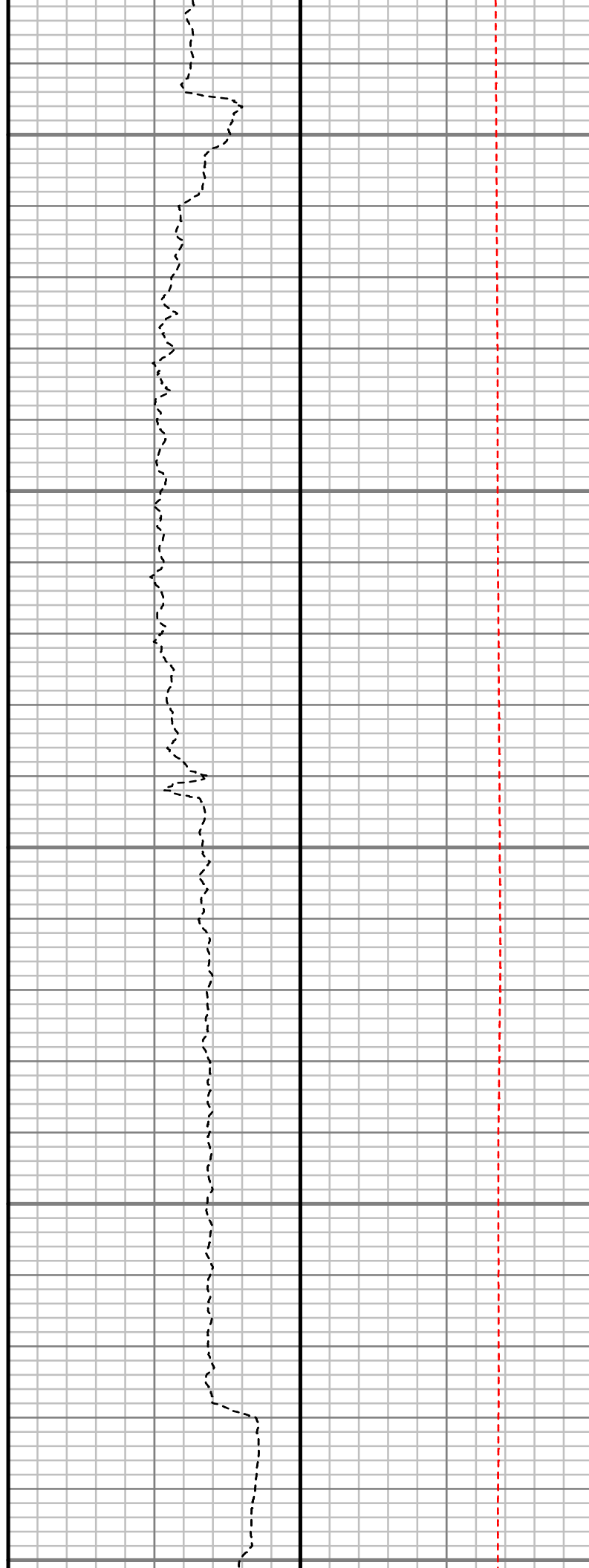
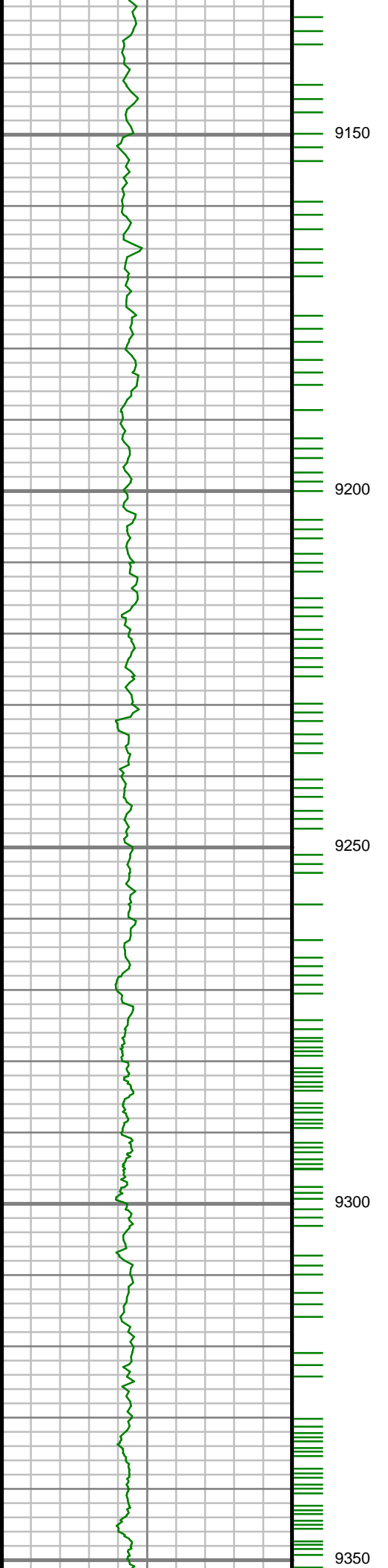
S: 99 MD: 8795.00 ft
Inc: 89.70 deg Az:
359.73 deg TVD:
7418.75 ft

S: 100 MD: 8889.00 ft
Inc: 89.70 deg Az: 0.57
deg TVD: 7419.25 ft



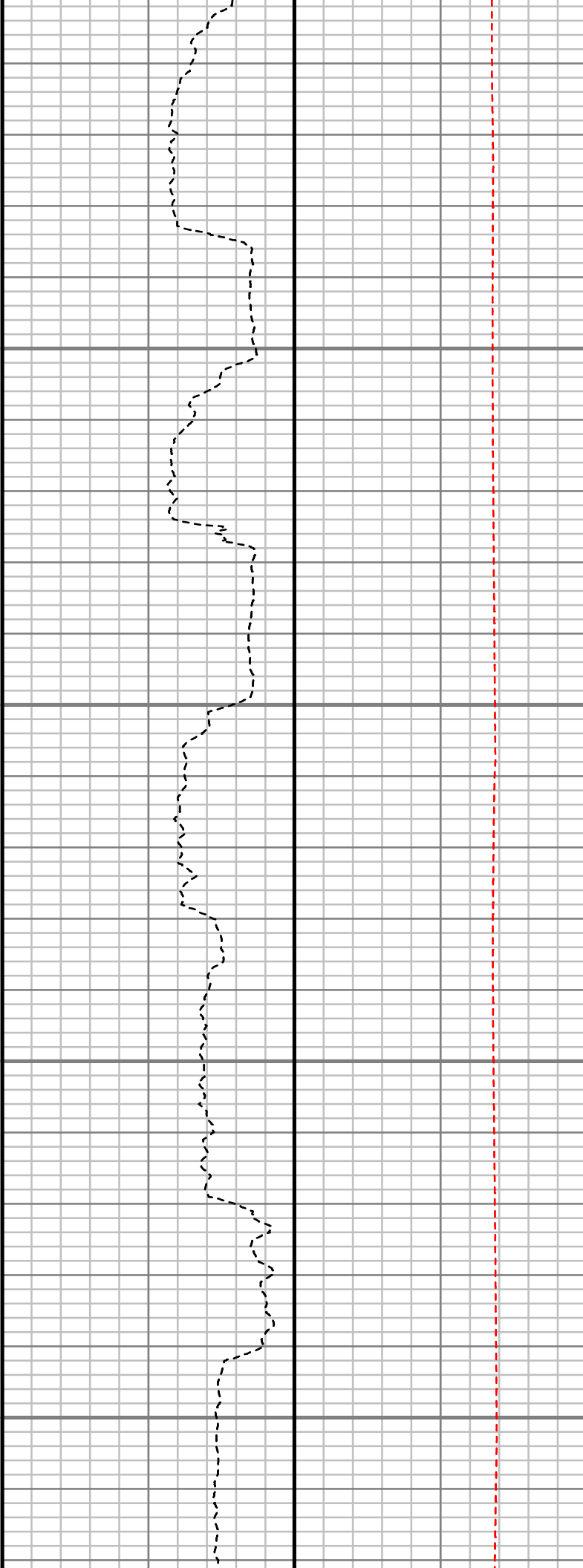
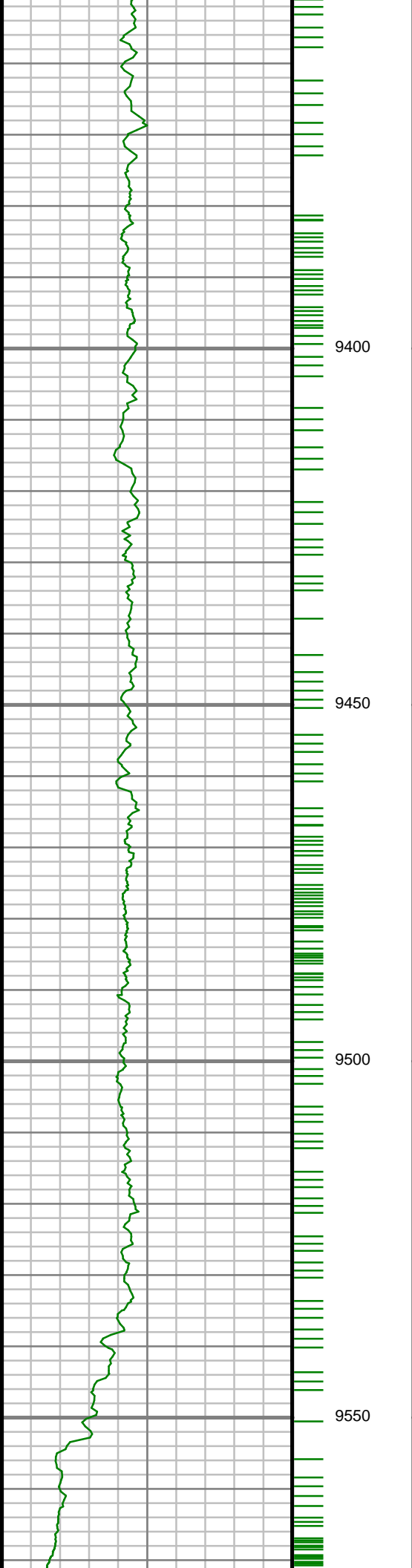
S: 101 MD: 8984.00 ft
Inc: 90.50 deg Az: 1.14
deg TVD: 7419.08 ft

S: 102 MD: 9078.00 ft
Inc: 90.47 deg Az: 1.16
deg TVD: 7418.28 ft



S: 103 MD: 9173.00 ft
Inc: 90.77 deg Az: 1.57
deg TVD: 7417.25 ft

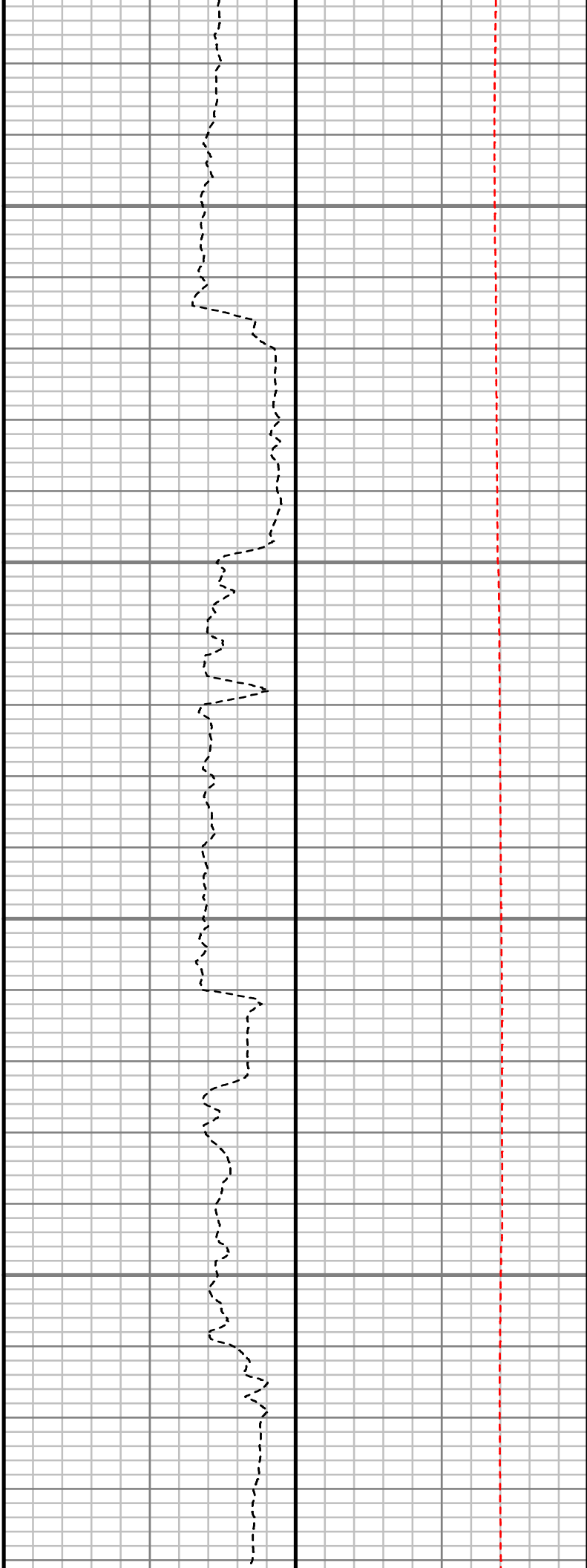
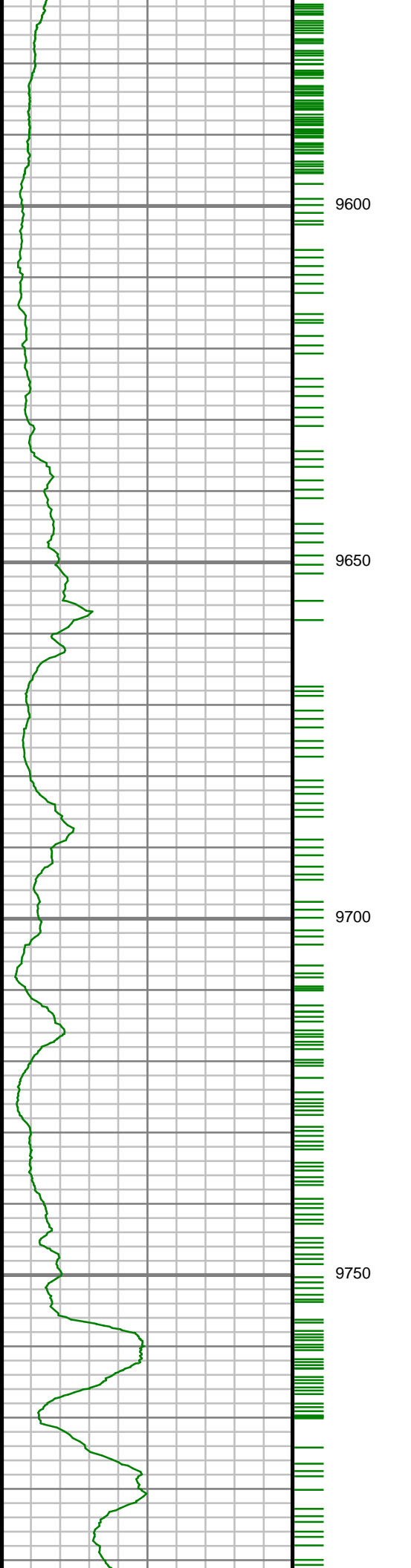
S: 104 MD: 9267.00 ft
Inc: 89.29 deg Az:
359.56 deg TVD:
7417.19 ft



S: 105 MD: 9361.00 ft
Inc: 87.88 deg Az:
359.95 deg TVD:
7419.51 ft

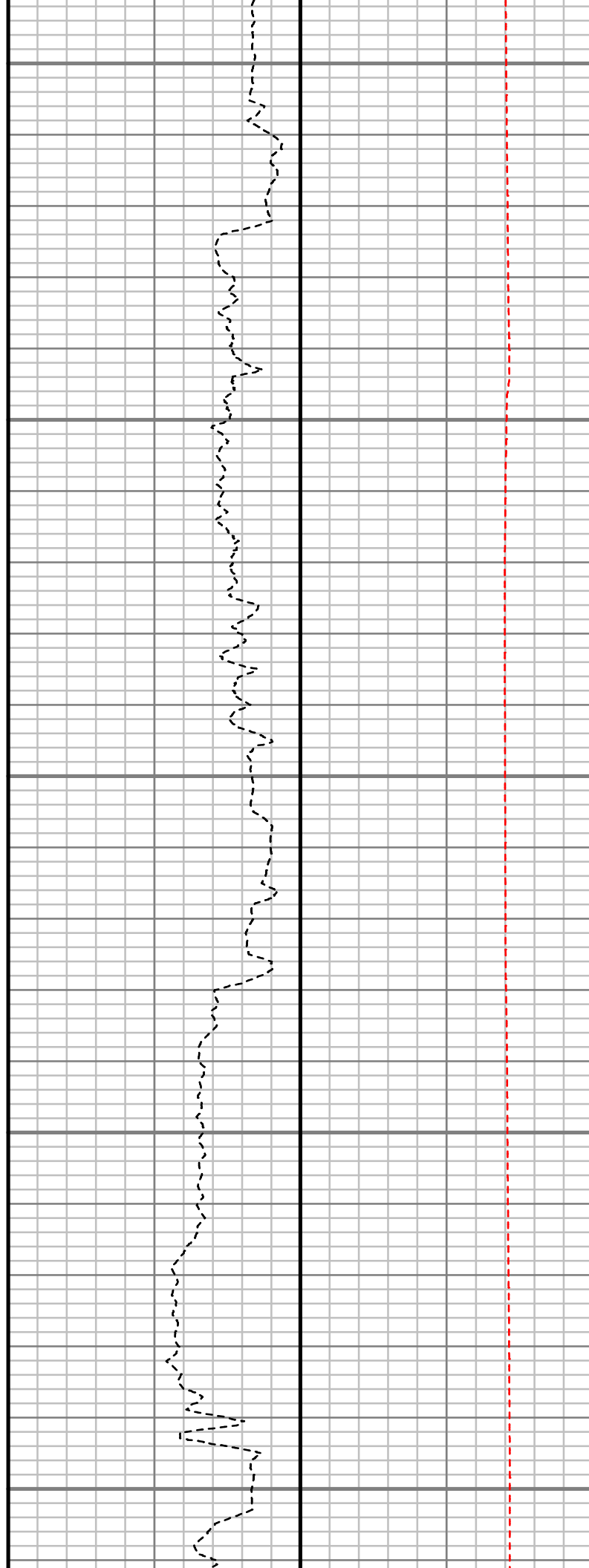
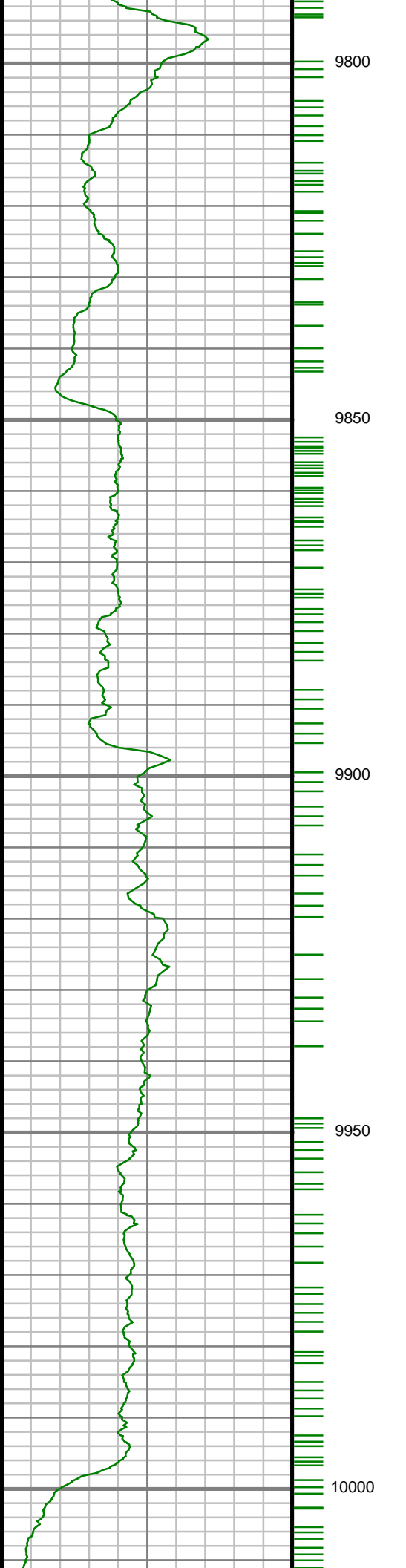
S: 106 MD: 9456.00 ft
Inc: 89.90 deg Az: 0.20
deg TVD: 7421.34 ft

S: 107 MD: 9550.00 ft
Inc: 88.05 deg Az:
358.99 deg TVD:
7423.03 ft



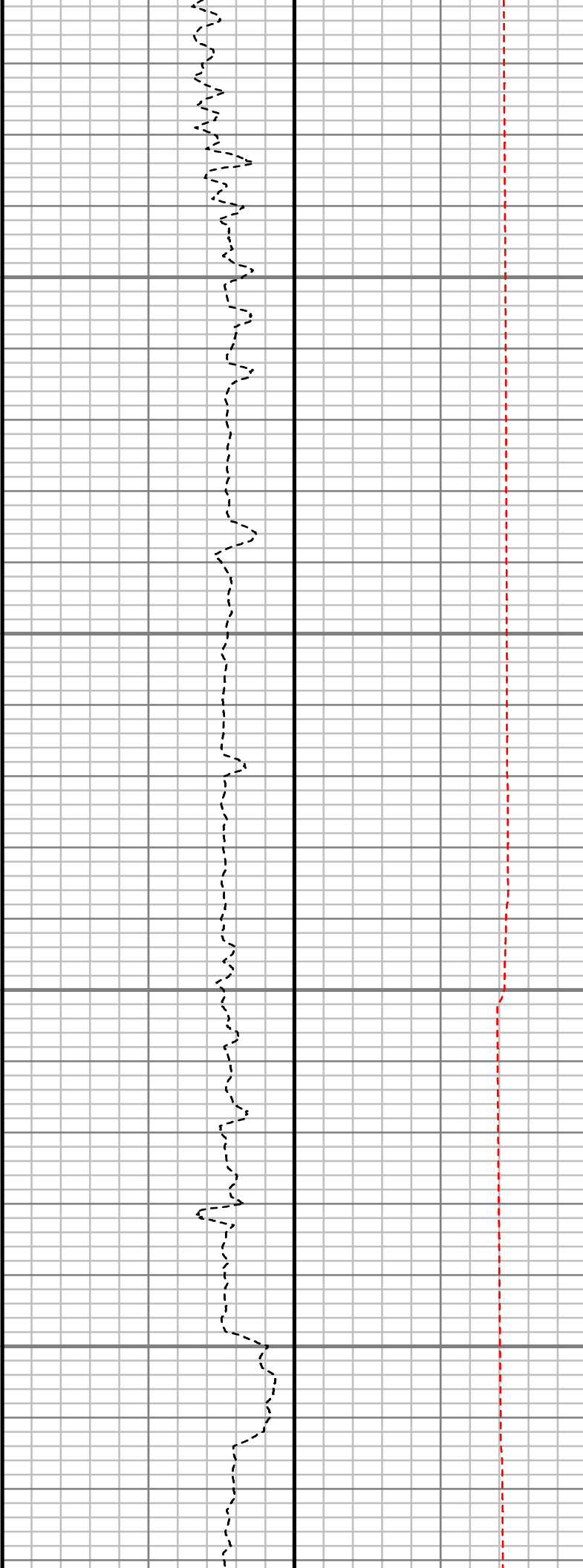
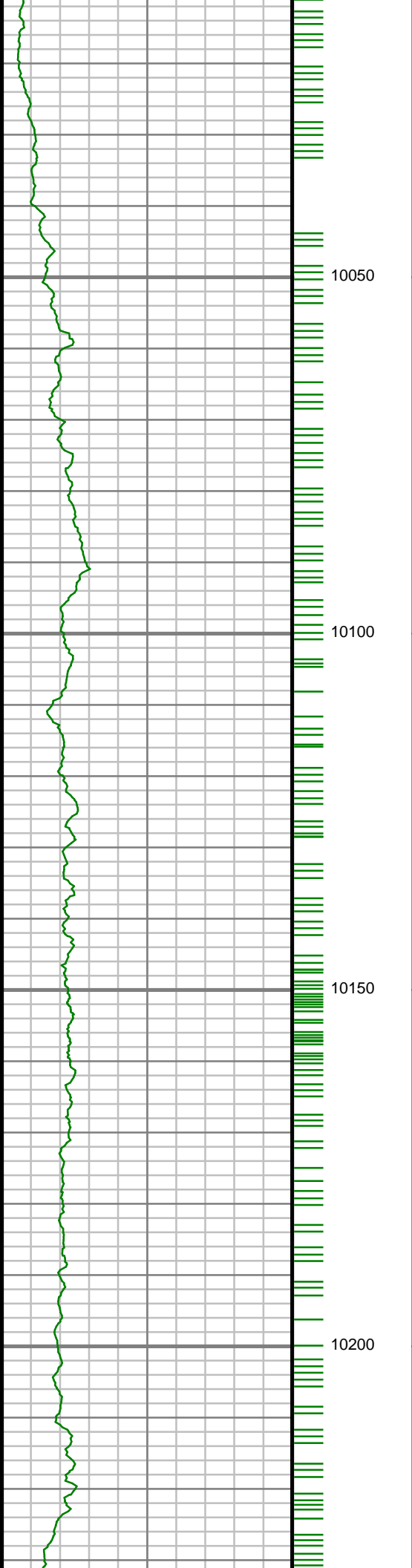
S: 108 MD: 9644.00 ft
Inc: 90.07 deg Az: 0.63
deg TVD: 7424.57 ft

S: 109 MD: 9739.00 ft
Inc: 91.27 deg Az: 0.31
deg TVD: 7423.46 ft



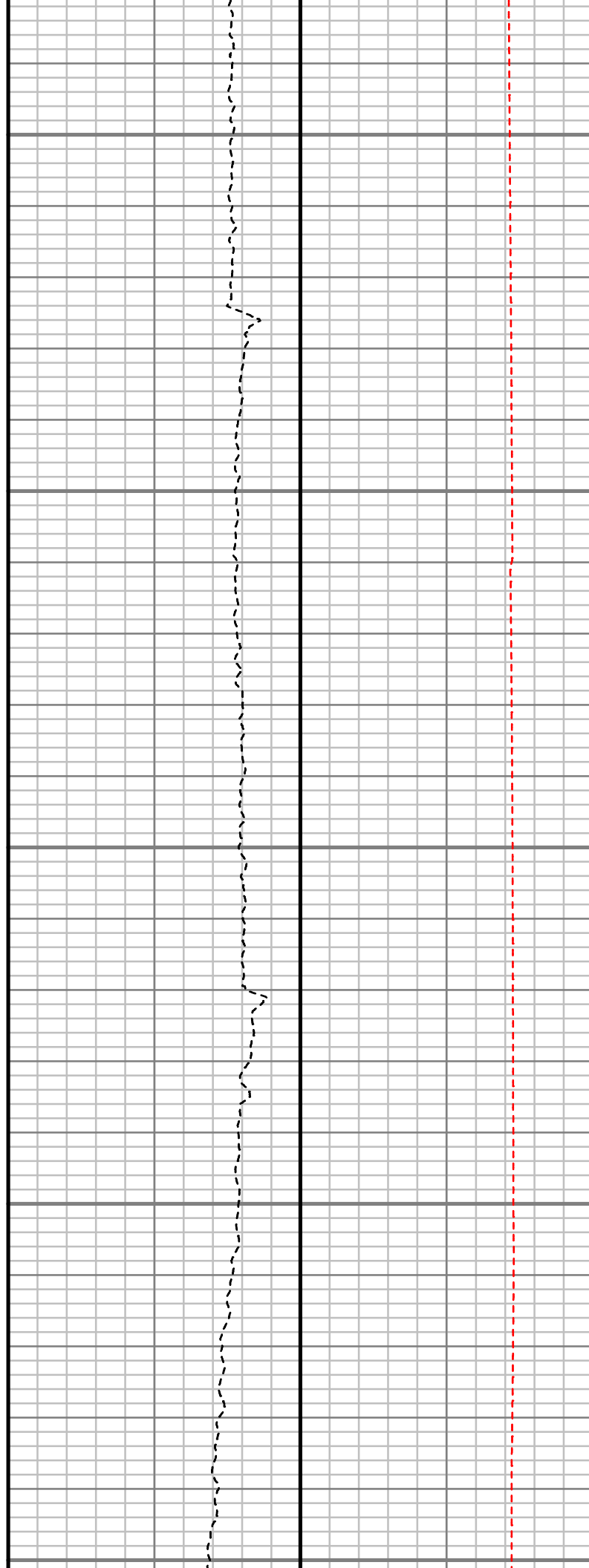
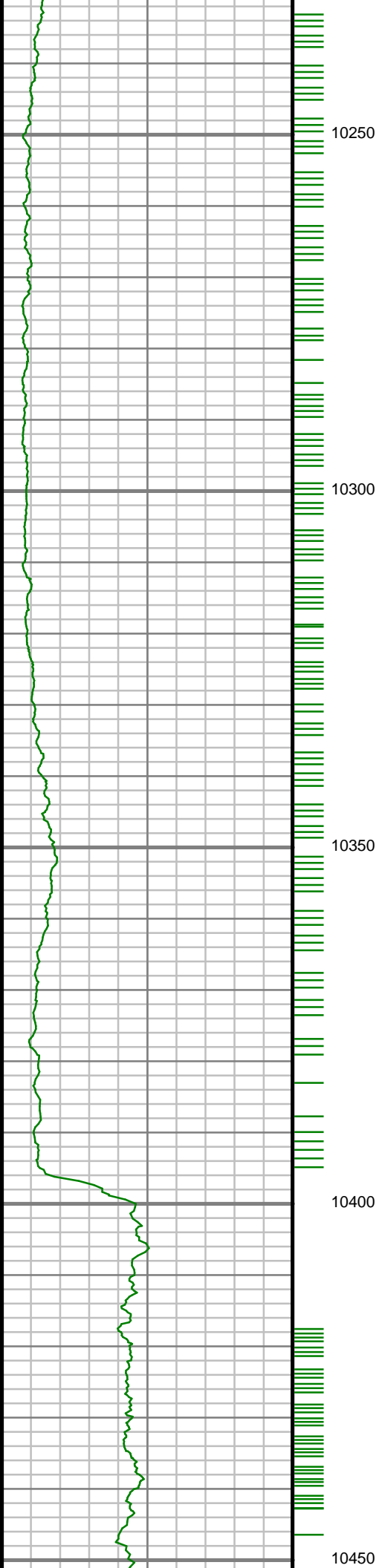
S: 110 MD: 9833.00 ft
Inc: 91.68 deg Az: 0.50
deg TVD: 7421.03 ft

S: 111 MD: 9927.00 ft
Inc: 90.37 deg Az: 1.51
deg TVD: 7419.35 ft



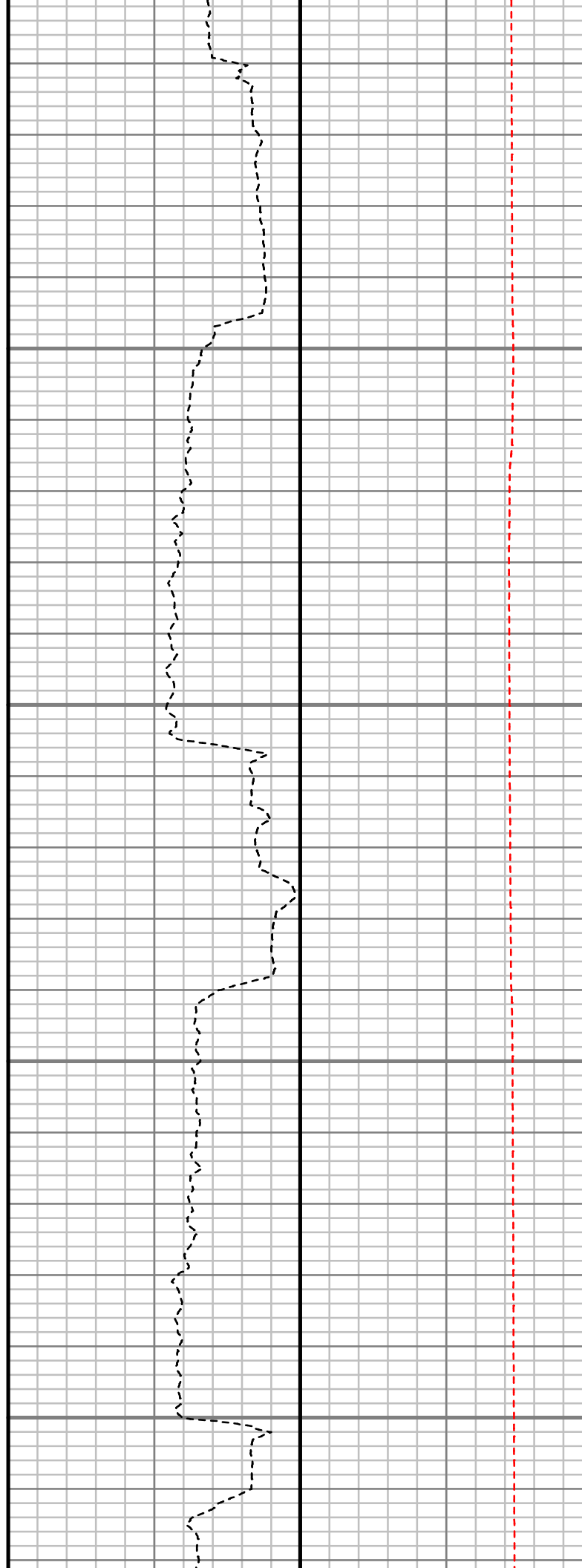
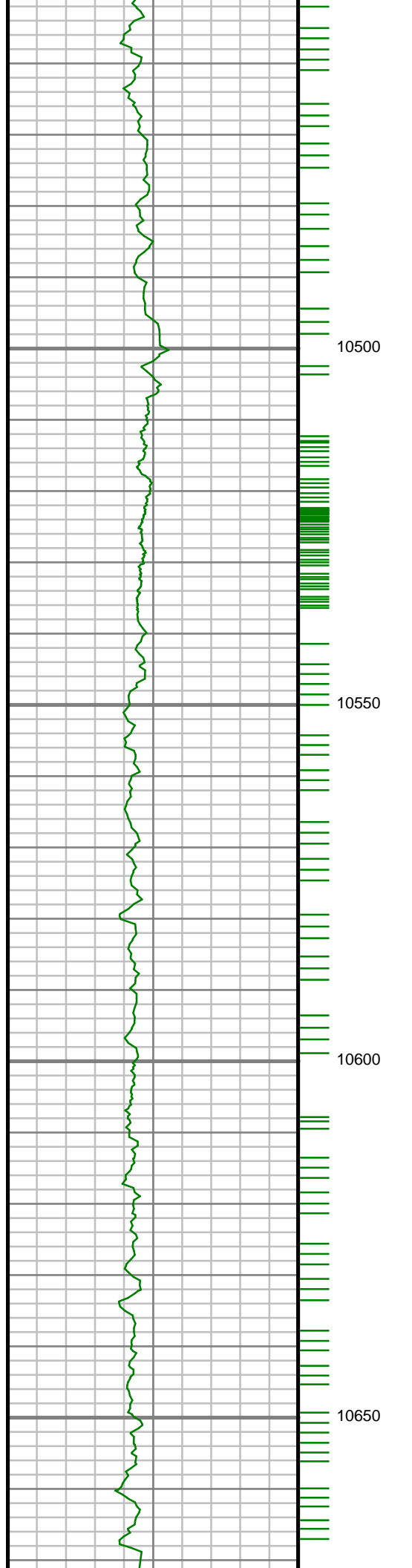
S: 112 MD: 10021.00 ft
Inc: 90.50 deg Az: 1.30
deg TVD: 7418.64 ft

S: 113 MD: 10116.00 ft
Inc: 89.60 deg Az: 1.59
deg TVD: 7418.55 ft



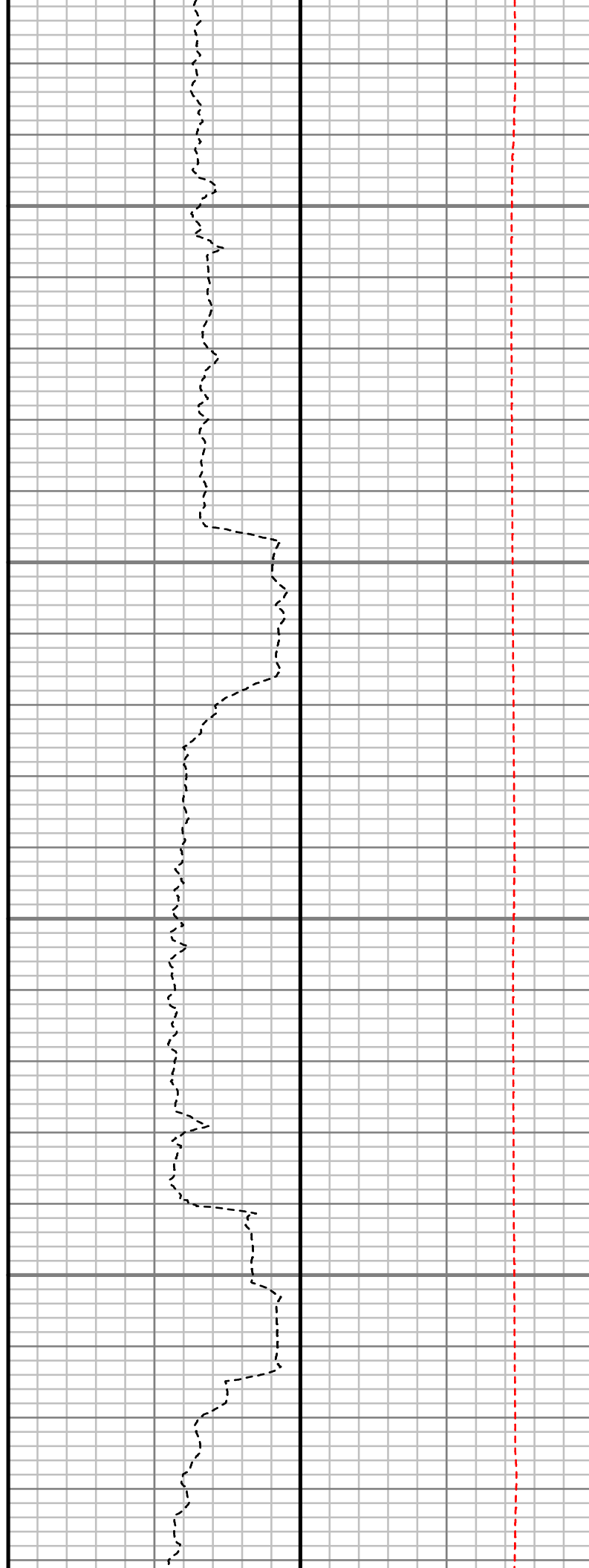
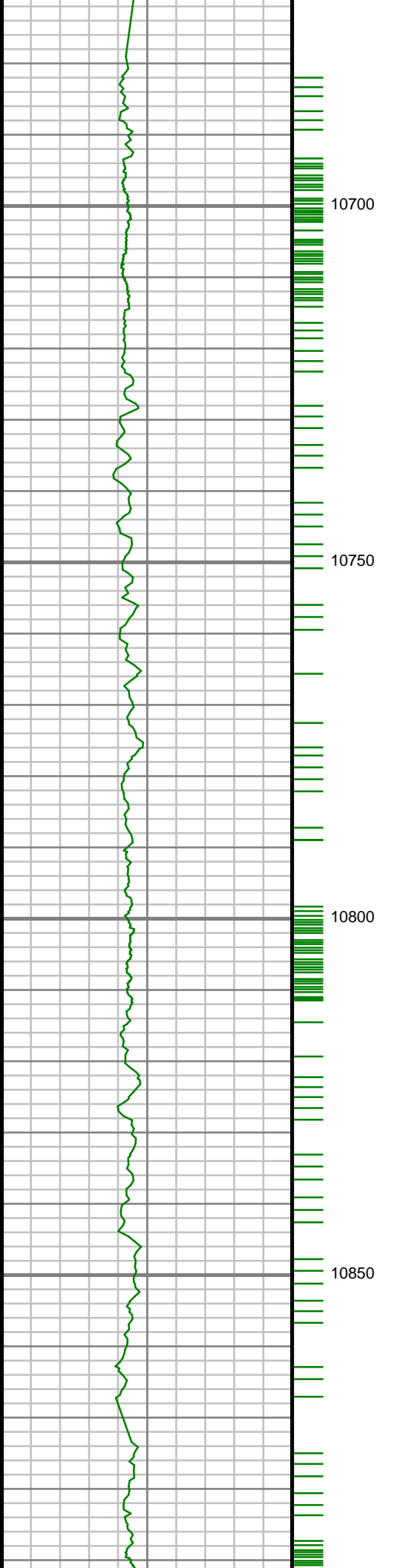
S: 114 MD: 10304.00 ft
Inc: 90.37 deg Az: 2.38
deg TVD: 7418.61 ft

S: 115 MD: 10398.00 ft
Inc: 91.24 deg Az: 2.76
deg TVD: 7417.29 ft



S: 116 MD: 10492.00 ft
Inc: 89.53 deg Az: 2.06
deg TVD: 7416.66 ft

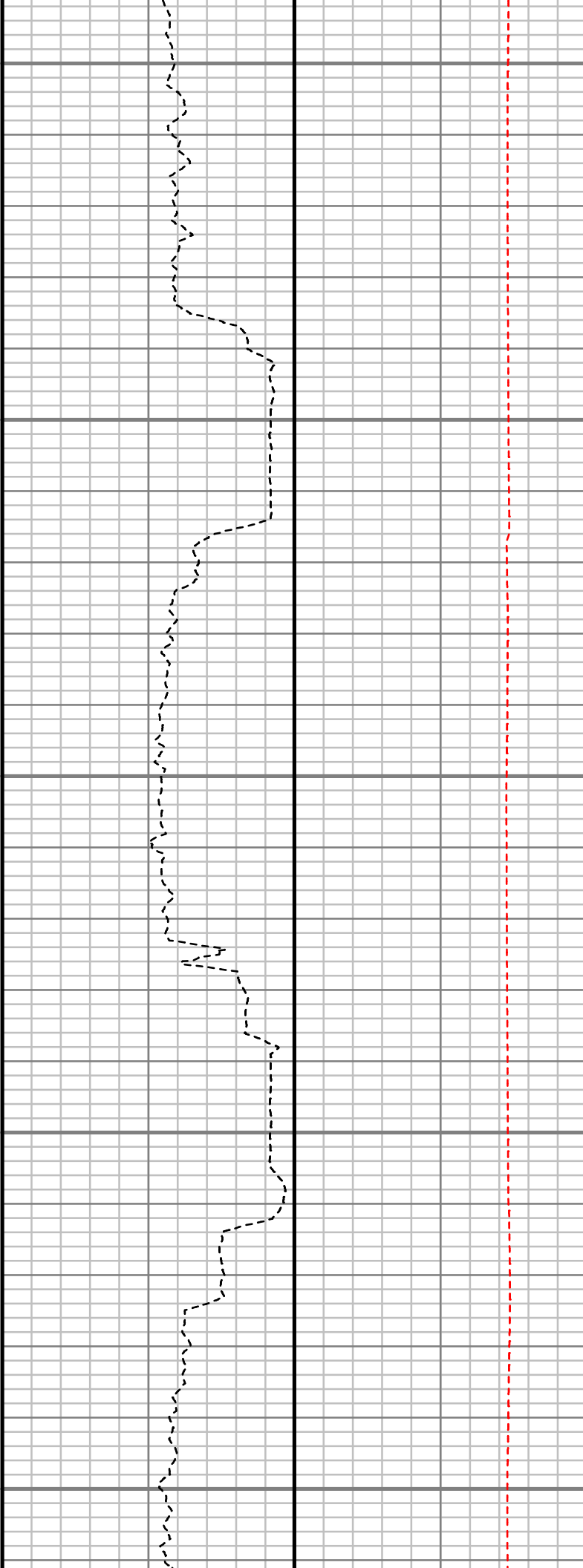
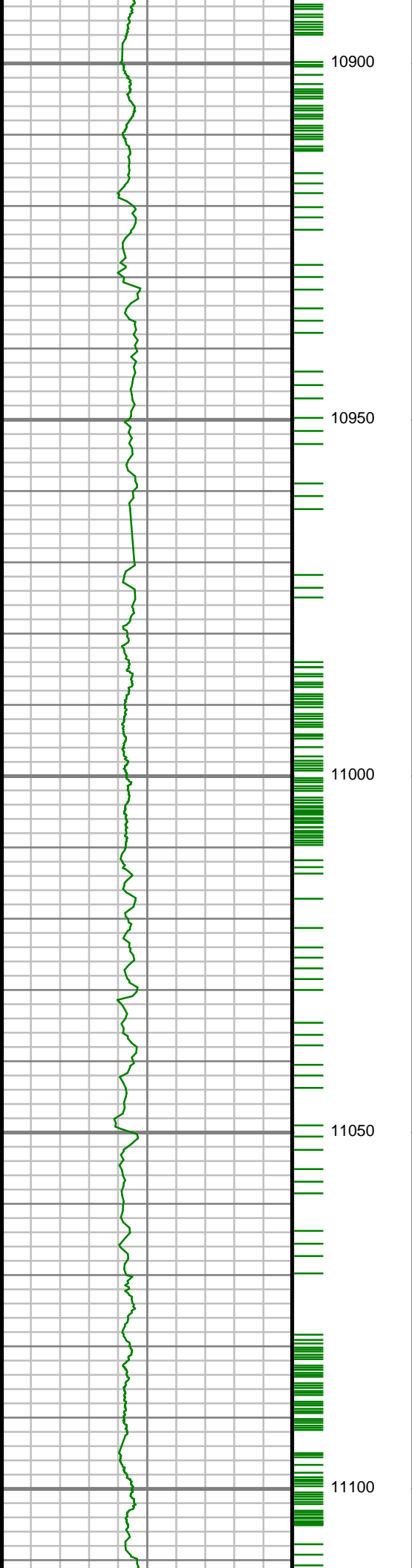
S: 117 MD: 10587.00 ft
Inc: 89.90 deg Az: 1.05
deg TVD: 7417.13 ft



S: 118 MD: 10681.00 ft
Inc: 89.03 deg Az:
359.81 deg TVD:
7418.01 ft

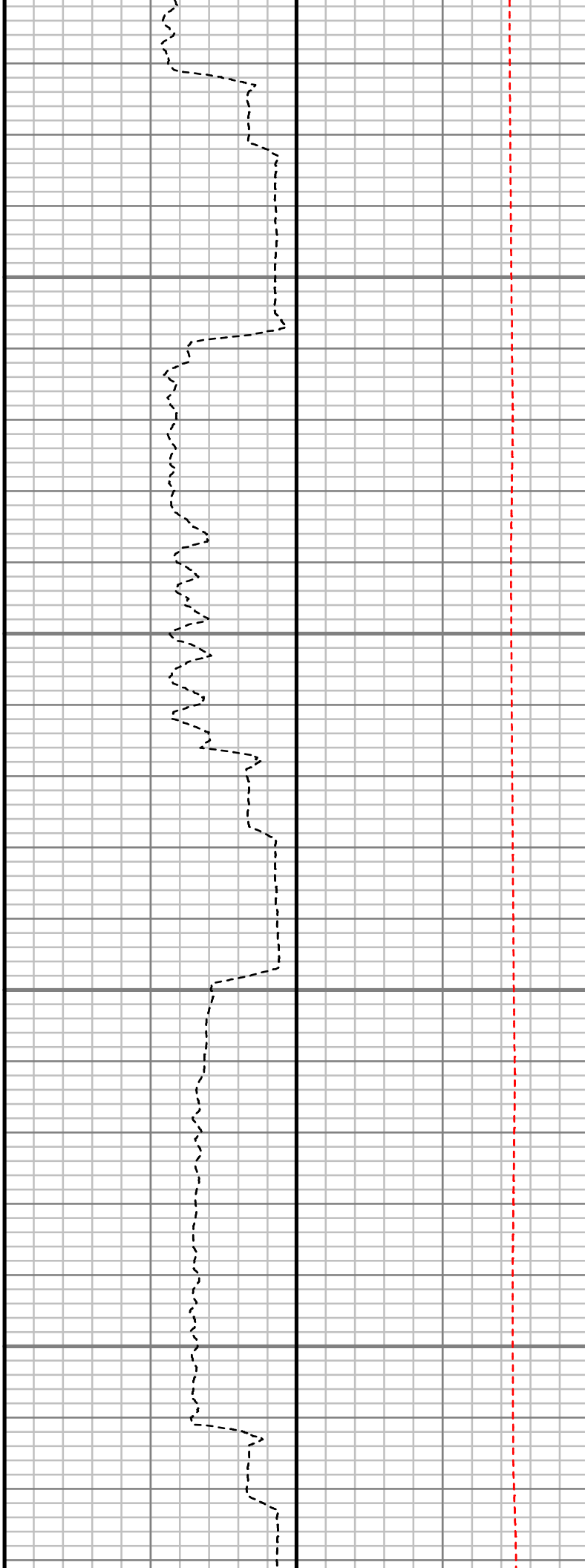
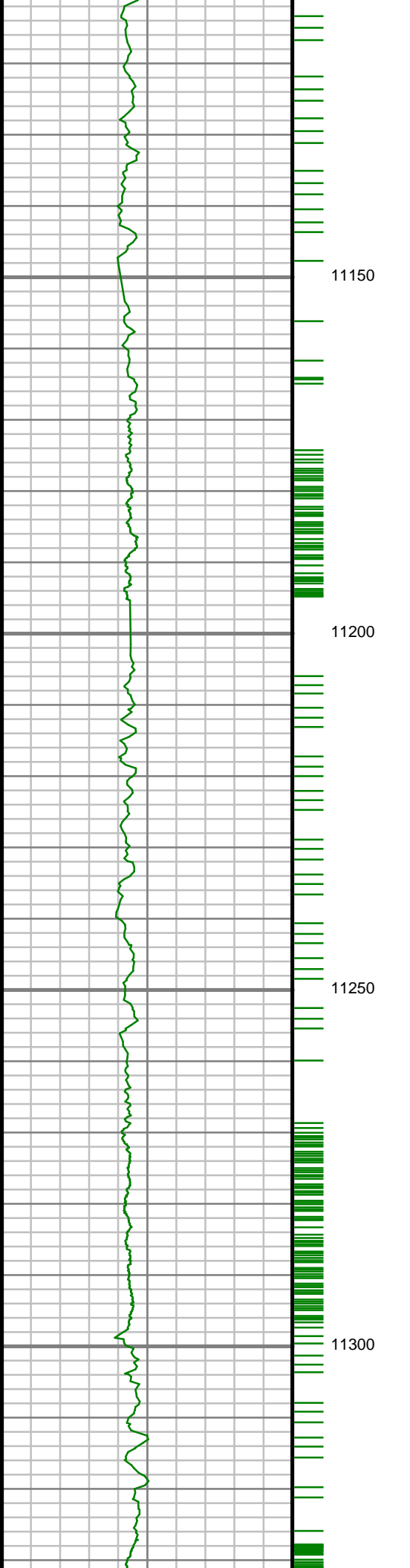
S: 119 MD: 10776.00 ft
Inc: 89.19 deg Az:
359.36 deg TVD:
7419.49 ft

S: 120 MD: 10870.00 ft
Inc: 89.09 deg Az:
359.68 deg TVD:
7420.89 ft



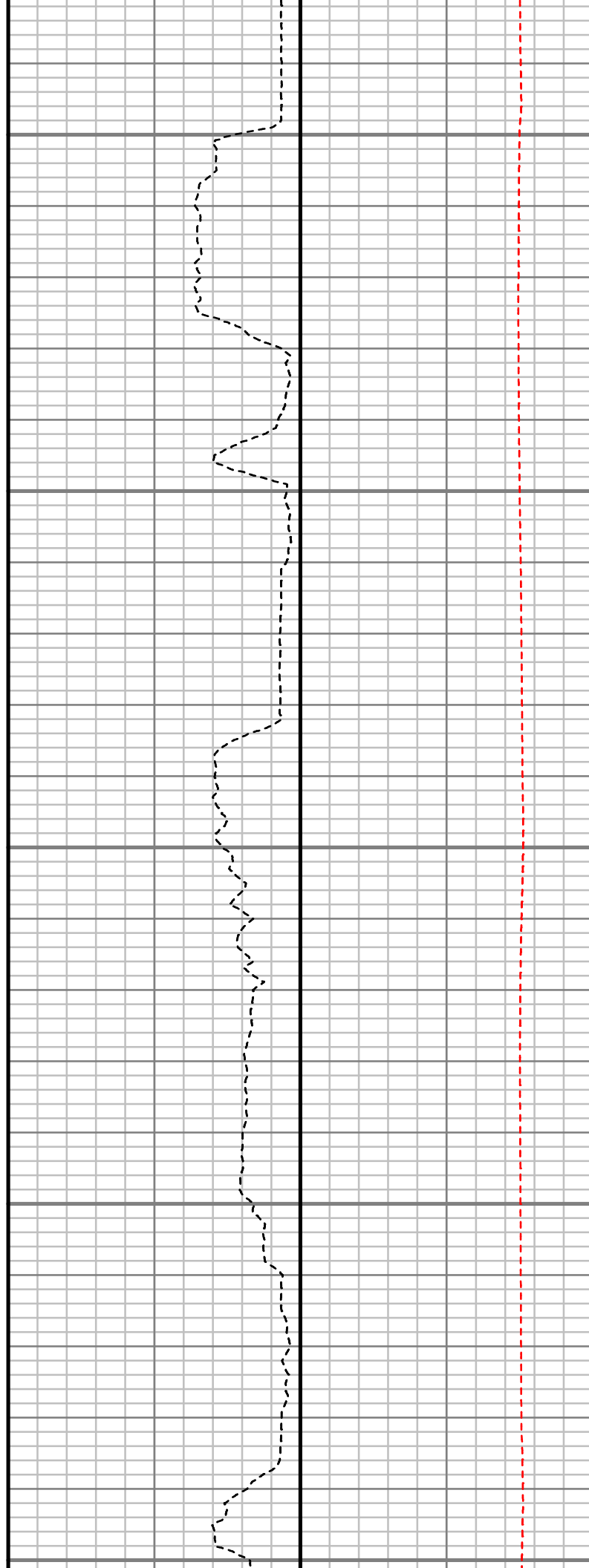
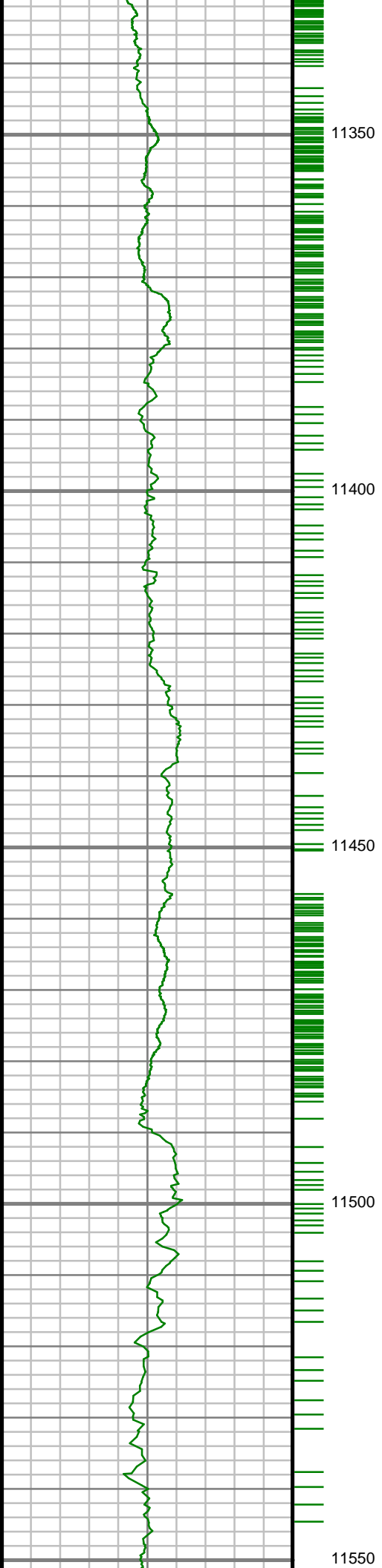
S: 121 MD: 10964.00 ft
Inc: 89.80 deg Az:
358.66 deg TVD:
7421.80 ft

S: 122 MD: 11059.00 ft
Inc: 90.13 deg Az:
358.28 deg TVD:
7421.86 ft



S: 123 MD: 11153.00 ft
Inc: 91.28 deg Az:
358.89 deg TVD:
7420.70 ft

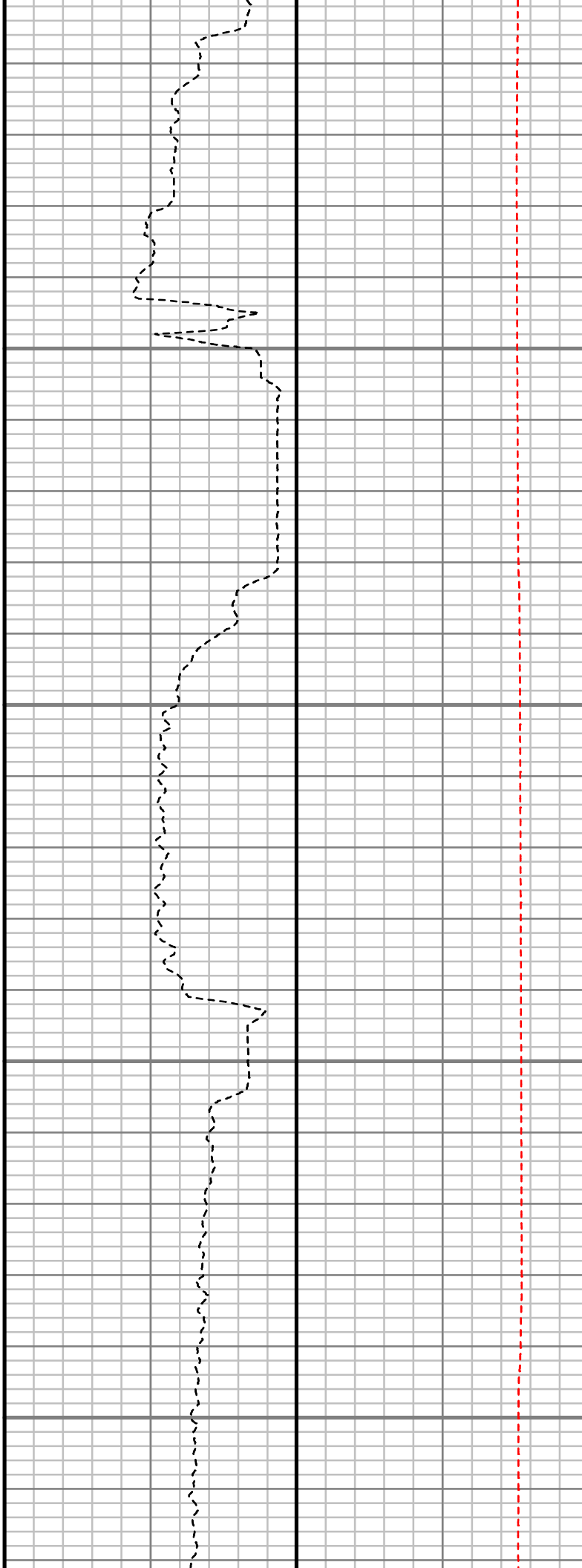
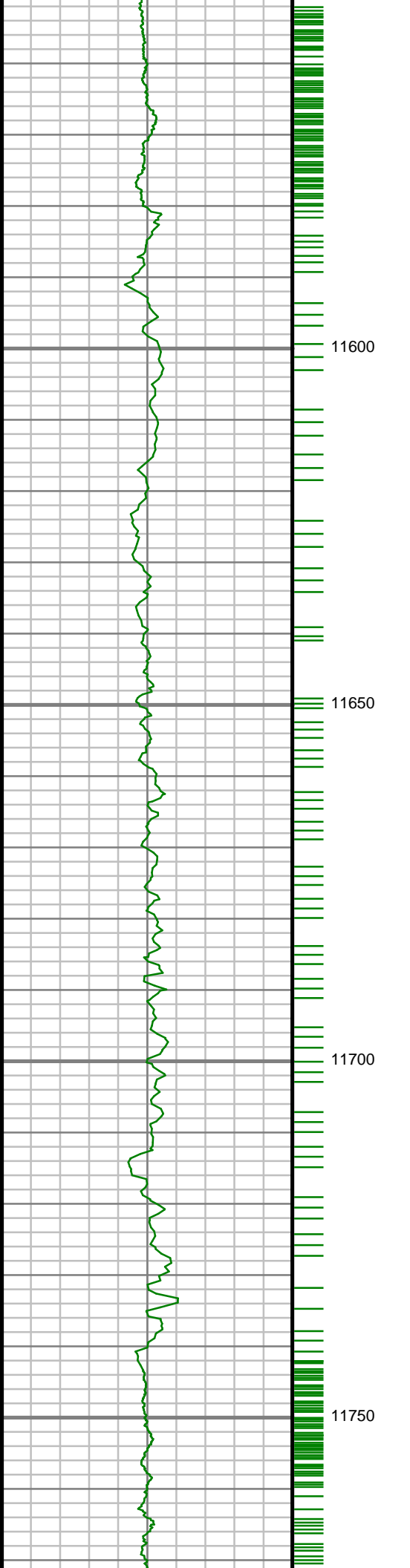
S: 124 MD: 11247.00 ft
Inc: 88.62 deg Az:
358.63 deg TVD:
7420.78 ft



S: 125 MD: 11342.00 ft
Inc: 88.39 deg Az:
359.20 deg TVD:
7423.26 ft

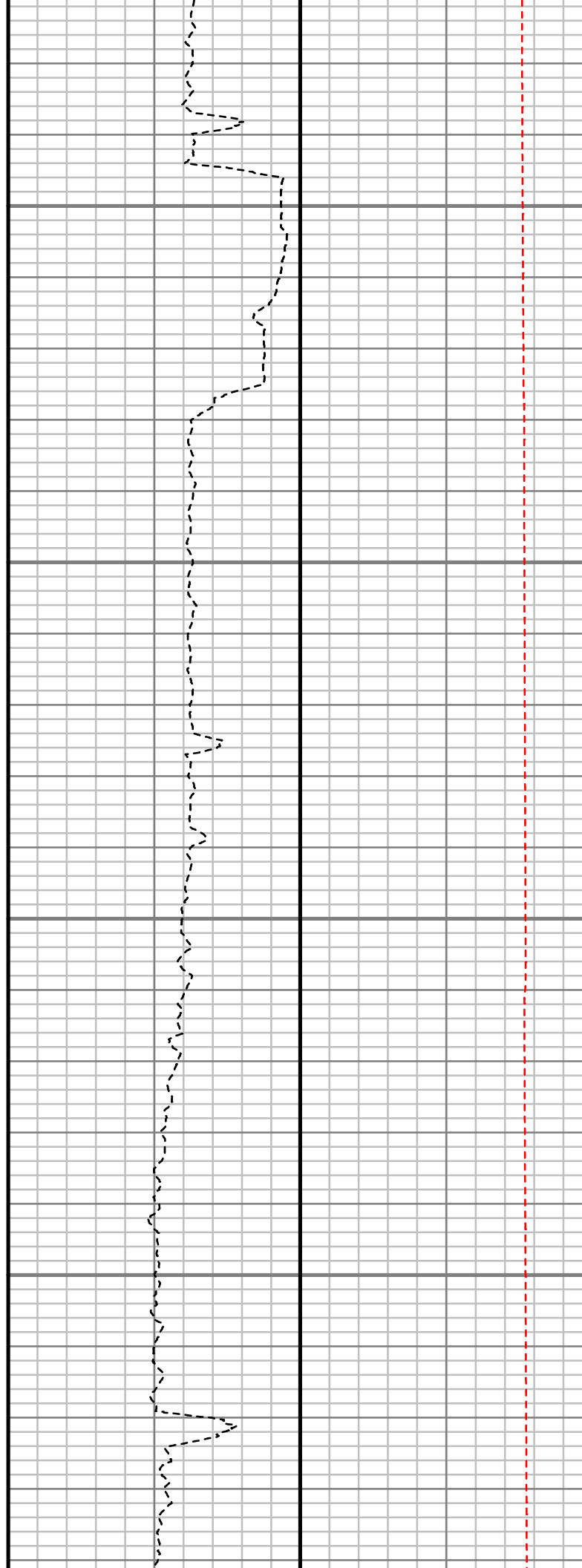
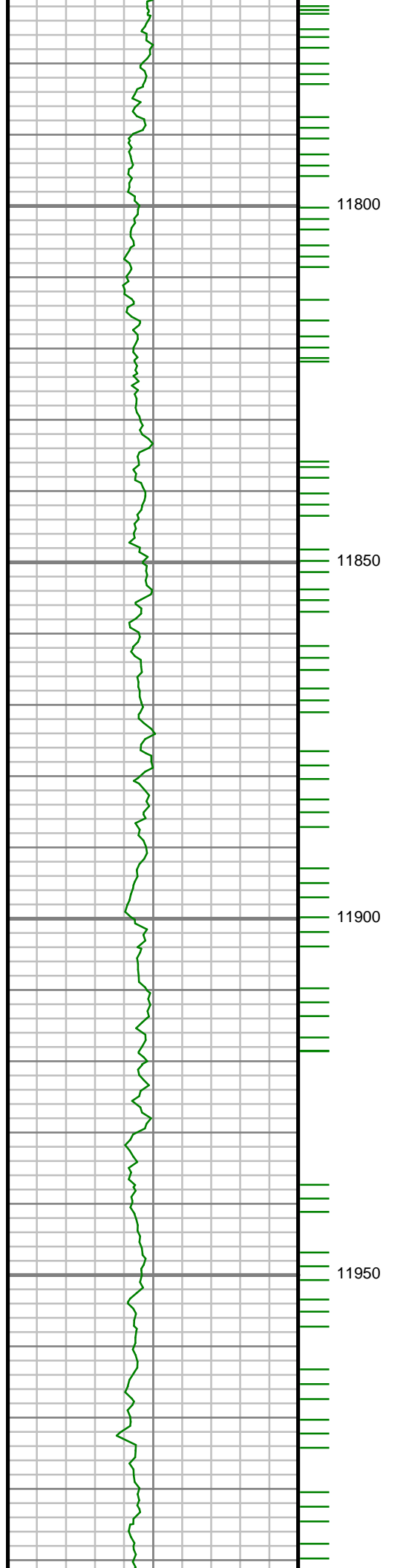
S: 126 MD: 11436.00 ft
Inc: 89.70 deg Az:
359.35 deg TVD:
7424.83 ft

S: 127 MD: 11530.00 ft
Inc: 89.80 deg Az:
359.13 deg TVD:
7425.24 ft



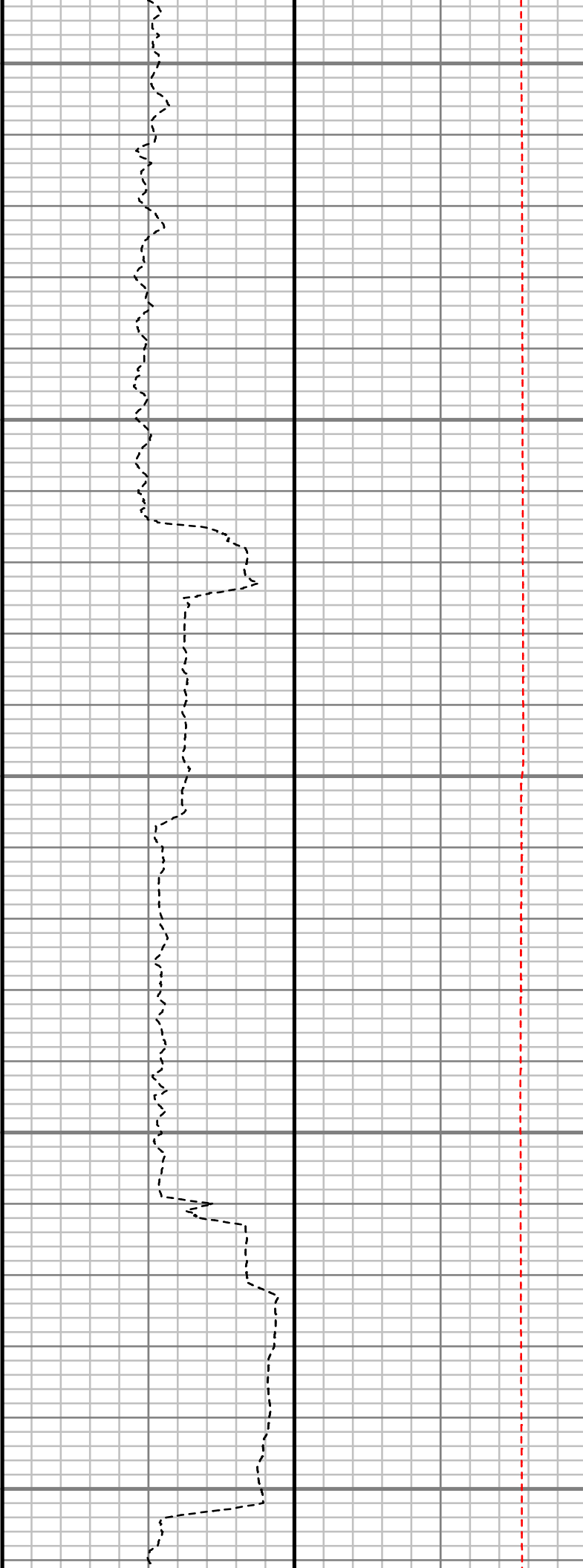
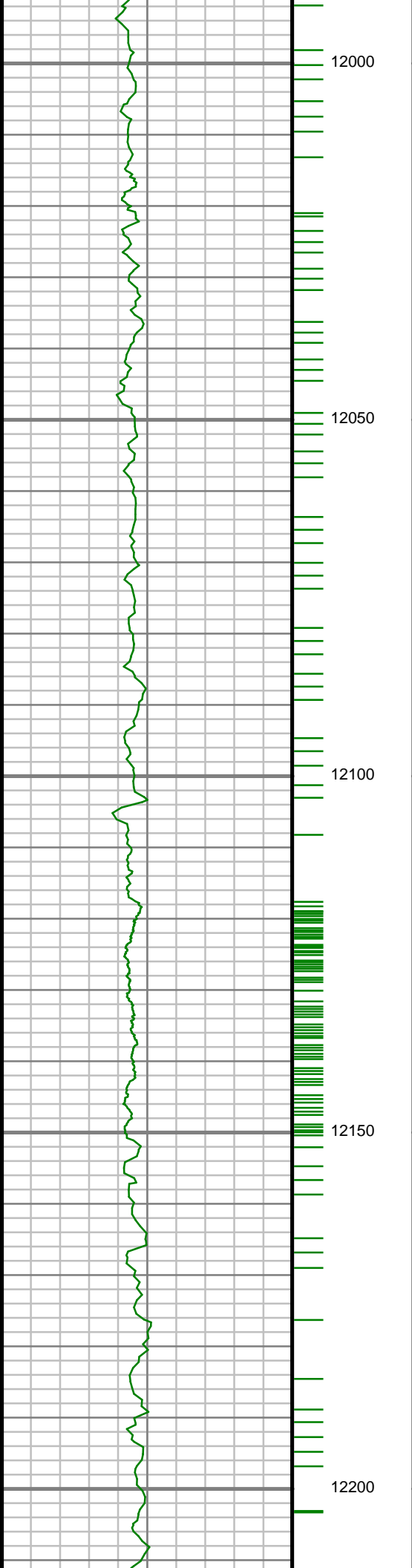
S: 128 MD: 11625.00 ft
Inc: 91.21 deg Az:
359.89 deg TVD:
7424.41 ft

S: 129 MD: 11719.00 ft
Inc: 91.08 deg Az:
359.23 deg TVD:
7422.53 ft



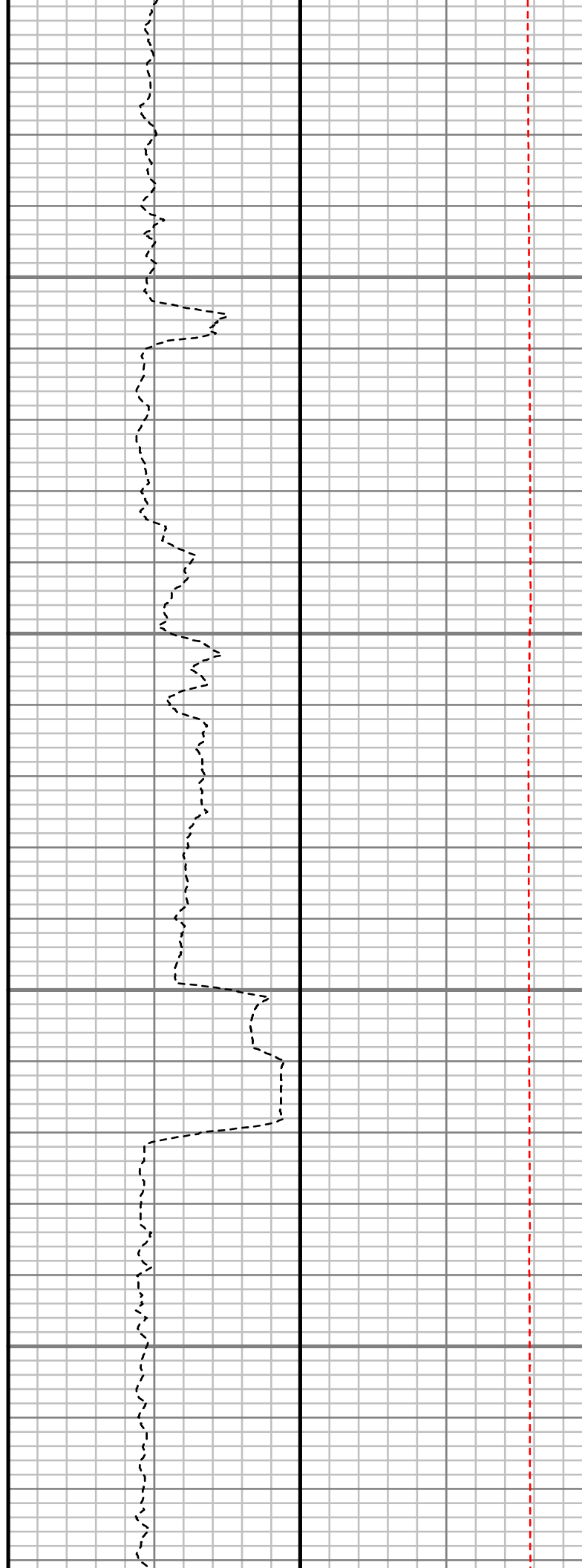
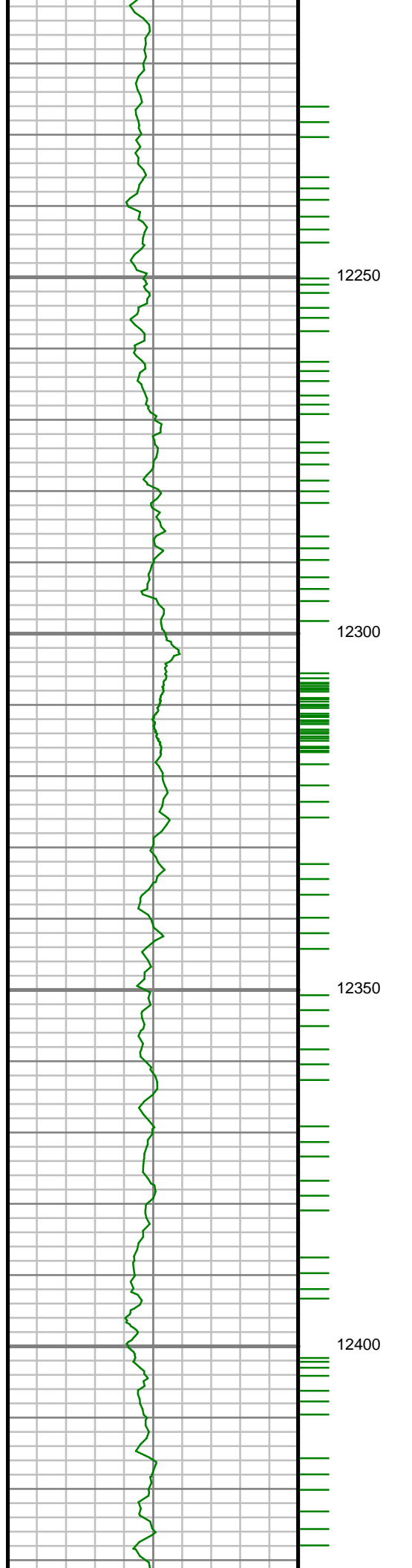
S: 130 MD: 11813.00 ft
Inc: 90.47 deg Az: 0.23
deg TVD: 7421.27 ft

S: 131 MD: 11908.00 ft
Inc: 90.44 deg Az:
359.74 deg TVD:
7420.52 ft



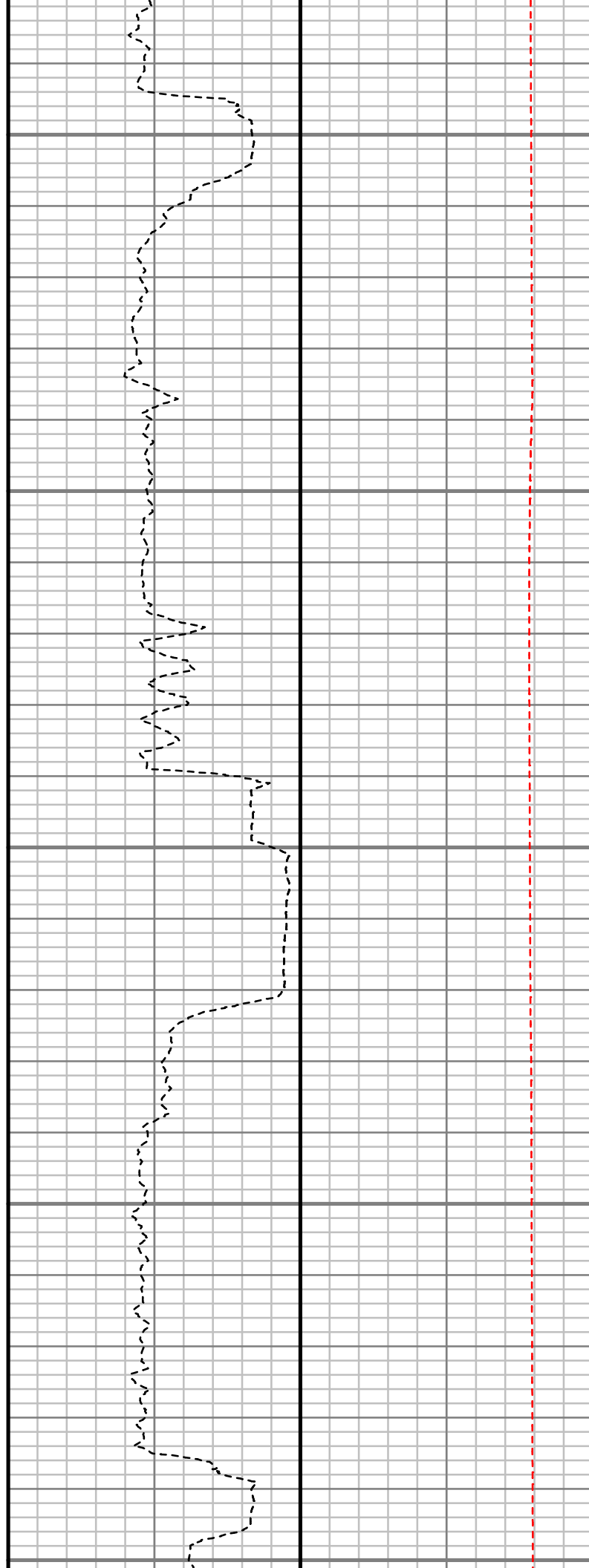
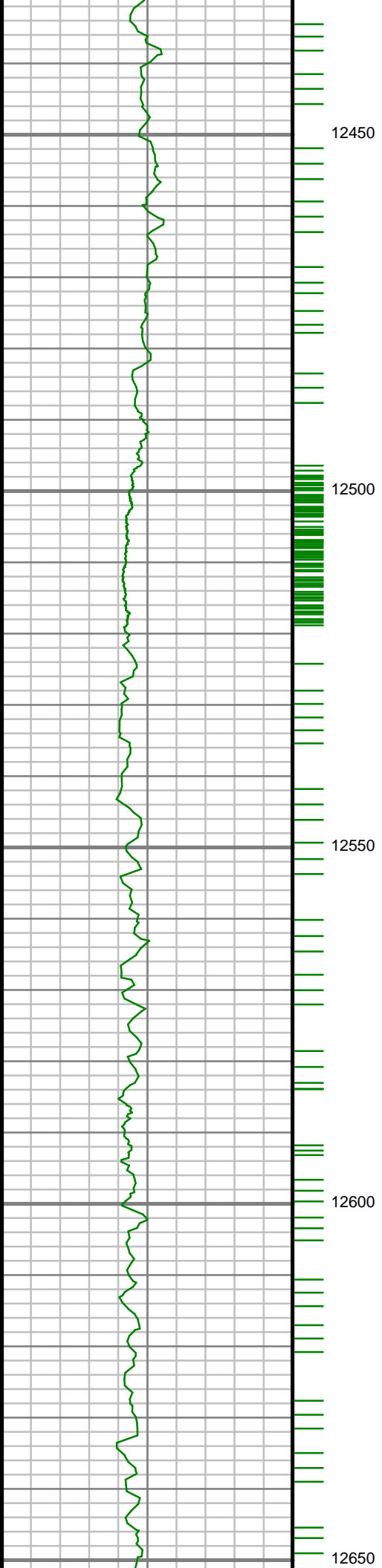
S: 132 MD: 12002.00 ft
Inc: 90.34 deg Az:
359.52 deg TVD:
7419.88 ft

S: 133 MD: 12191.00 ft
Inc: 90.54 deg Az:
359.90 deg TVD:
7418.44 ft



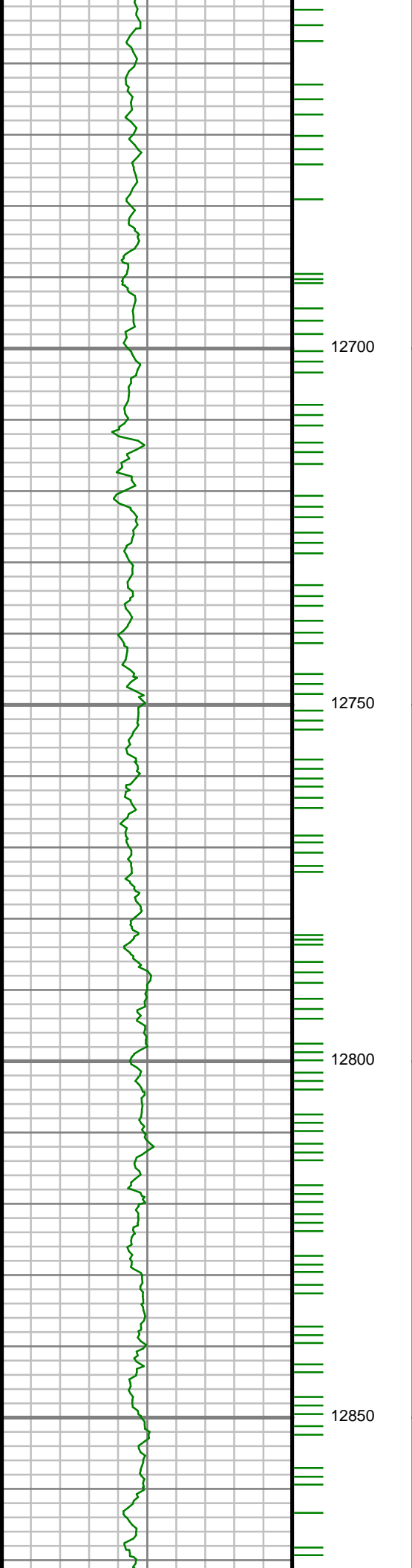
S: 134 MD: 12285.00 ft
Inc: 89.97 deg Az:
359.31 deg TVD:
7418.03 ft

S: 135 MD: 12379.00 ft
Inc: 89.73 deg Az: 0.91
deg TVD: 7418.28 ft

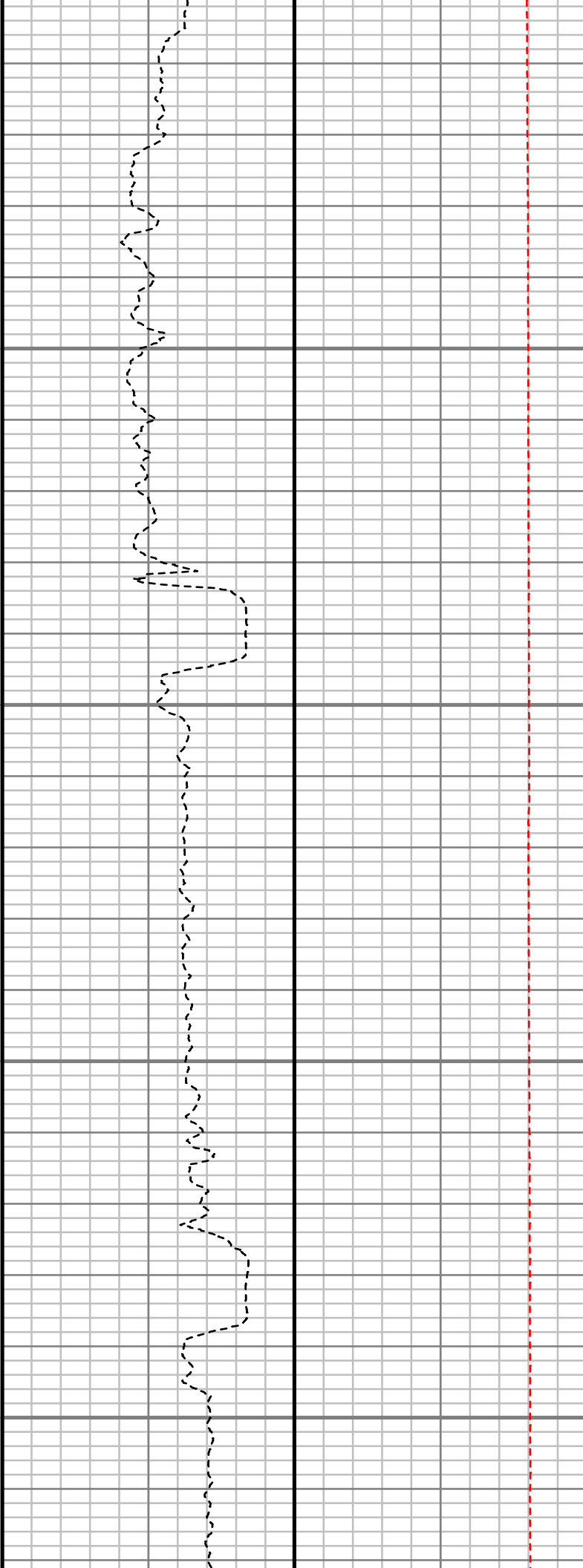


S: 136 MD: 12474.00 ft
Inc: 89.46 deg Az: 359.86 deg TVD: 7418.95 ft

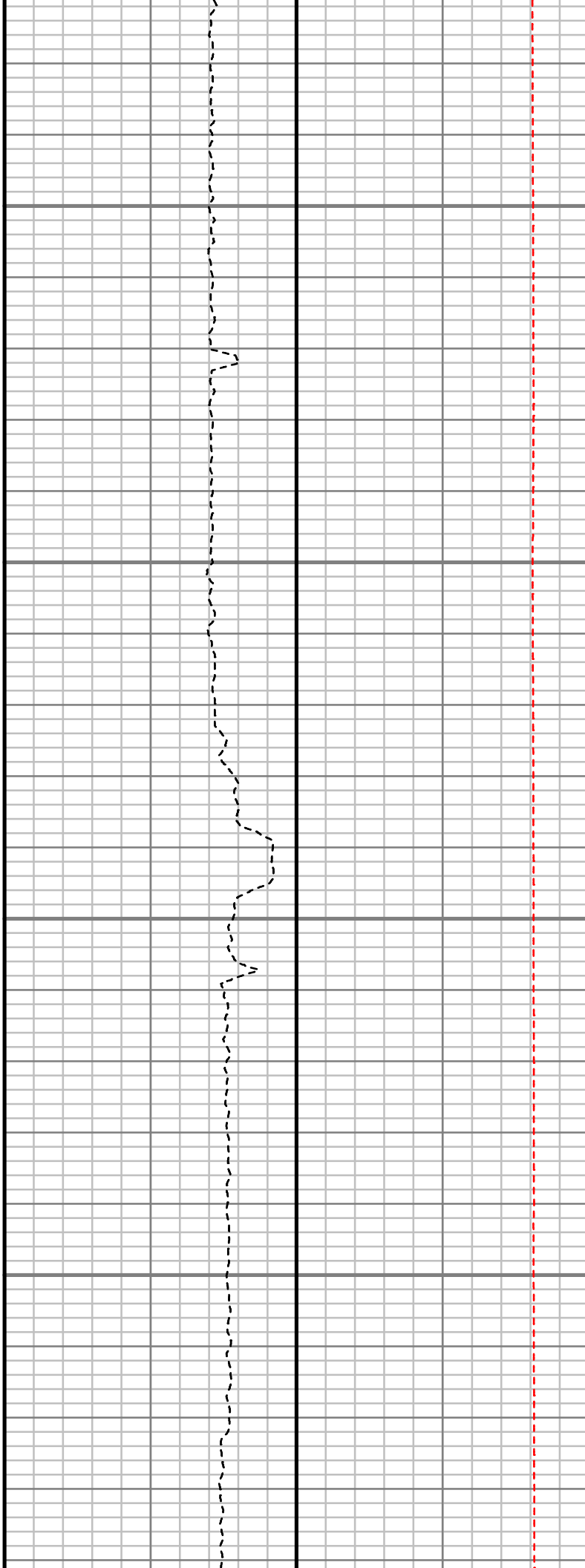
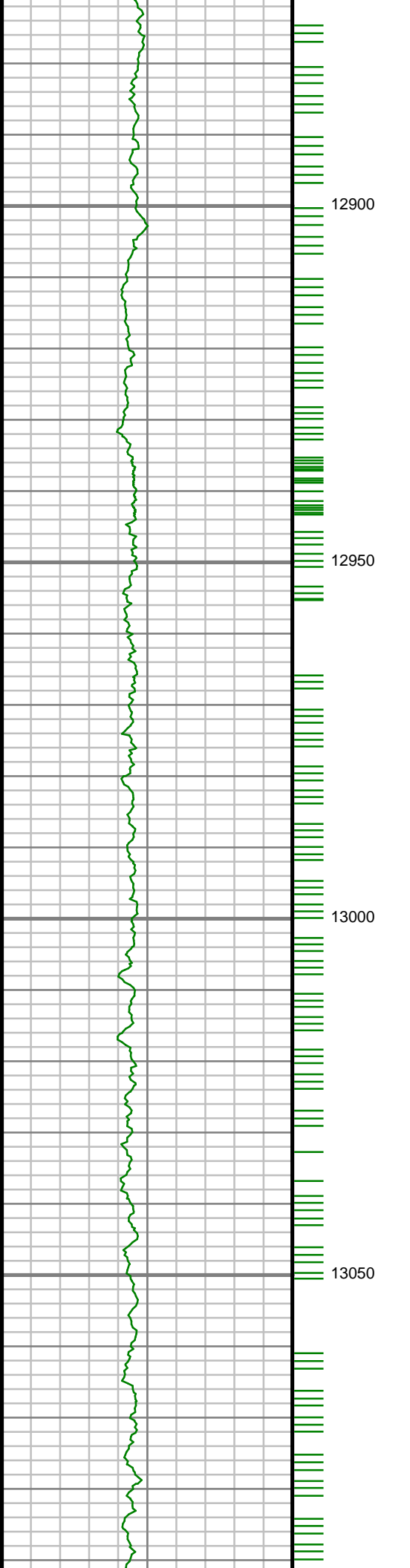
S: 137 MD: 12568.00 ft
Inc: 90.34 deg Az: 0.68 deg TVD: 7419.11 ft



S: 138 MD: 12662.00 ft
Inc: 90.44 deg Az: 0.38
deg TVD: 7418.48 ft

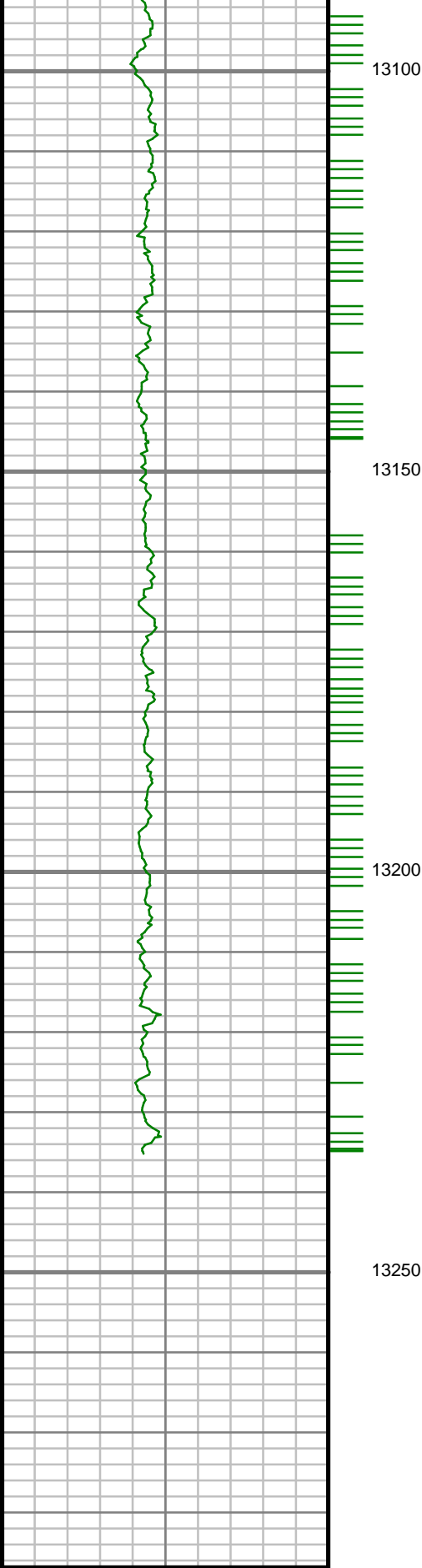


S: 139 MD: 12757.00 ft
Inc: 90.23 deg Az: 0.16
deg TVD: 7417.92 ft



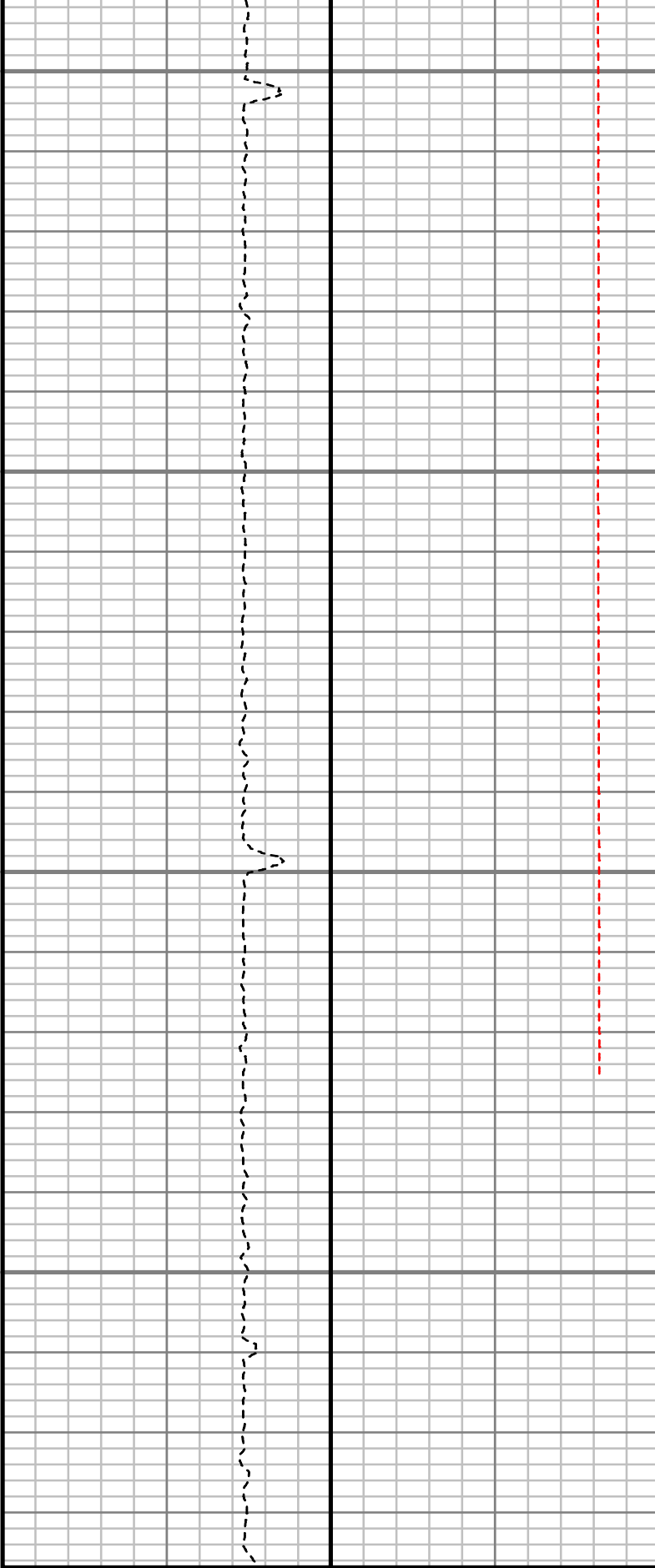
S: 140 MD: 12945.00 ft
Inc: 90.00 deg Az: 0.18
deg TVD: 7417.53 ft

S: 141 MD: 13039.00 ft
Inc: 89.63 deg Az: 0.85
deg TVD: 7417.84 ft



LOG GAMMA RAY (GR)		
0	Unit = aapi	200

MEASURED DEPTH
1:240 (ft)



Rate of Penetration (ROP)		
1200	Unit = ft/hr	0

LOG EYE TEMP (T-TEMP)		
0	Unit = °F	300

S: 142 MD: 13133.00 ft
Inc: 89.46 deg Az: 0.60
deg TVD: 7418.58 ft

S: 143 MD: 13224.00 ft
Inc: 89.29 deg Az: 0.31
deg TVD: 7419.57 ft

Comments

MWD Survey Report

Well Location	DOLPH 14-1HZ PAD
Well Name	DOLPH 4C-1HZ
Survey Date	9/18/2014
Latitude	40°9'40.140"N
Longitude	104°43'44.933"W
Btotal	52591, 52621 nT
Dip	66.90, 66.94 deg
Magnetic Declination	8.46, 8.48 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 1349 FT. WERE ACQUIRED BY MS GYRO MWD.

SURVEYS FROM 1349 FT. TO 13224 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	0.51	185.88	125.00	-0.44	-0.44	-0.05	0.51	100.00
225.00	0.28	183.46	225.00	-1.13	-1.13	-0.11	0.23	100.00
325.00	0.36	191.93	324.99	-1.68	-1.68	-0.19	0.09	100.00
425.00	0.32	198.05	424.99	-2.25	-2.25	-0.34	0.05	100.00
525.00	0.41	166.84	524.99	-2.87	-2.87	-0.34	0.21	100.00
625.00	0.77	134.59	624.99	-3.69	-3.69	0.22	0.48	100.00
725.00	0.55	121.89	724.98	-4.41	-4.41	1.10	0.26	100.00
825.00	0.44	100.19	824.98	-4.73	-4.73	1.89	0.22	100.00
925.00	0.30	101.56	924.97	-4.85	-4.85	2.52	0.14	100.00
1025.00	0.08	273.46	1024.97	-4.90	-4.90	2.71	0.38	100.00
1125.00	0.26	223.73	1124.97	-5.06	-5.06	2.48	0.22	100.00
1197.00	0.29	205.83	1196.97	-5.34	-5.34	2.29	0.13	72.00
1349.00	0.44	161.07	1348.97	-6.24	-6.24	2.31	0.20	152.00
1441.00	0.50	169.43	1440.97	-6.96	-6.96	2.50	0.10	92.00
1532.00	2.15	201.19	1531.94	-8.95	-8.95	1.95	1.92	91.00
1623.00	4.01	213.22	1622.80	-13.21	-13.21	-0.41	2.15	91.00
1715.00	5.43	210.76	1714.49	-19.64	-19.64	-4.40	1.56	92.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
1807.00	7.61	211.04	1805.89	-28.60	-28.60	-9.77	2.36	92.00
1899.00	8.96	208.81	1896.93	-40.10	-40.10	-16.36	1.51	92.00
1993.00	10.30	205.92	1989.60	-54.07	-54.07	-23.56	1.51	94.00
2087.00	10.80	207.32	2082.01	-69.45	-69.45	-31.27	0.60	94.00
2182.00	11.33	202.35	2175.25	-85.98	-85.98	-38.91	1.15	95.00
2276.00	13.68	198.19	2267.02	-105.08	-105.08	-45.89	2.68	94.00
2370.00	14.35	201.96	2358.22	-126.45	-126.45	-53.72	1.21	94.00
2465.00	16.59	206.92	2449.77	-149.47	-149.47	-64.26	2.74	95.00
2559.00	17.98	202.62	2539.53	-174.83	-174.83	-75.92	2.00	94.00
2654.00	18.75	199.02	2629.69	-202.80	-202.80	-86.53	1.44	95.00
2748.00	19.54	197.98	2718.49	-232.04	-232.04	-96.31	0.92	94.00
2842.00	20.13	199.08	2806.91	-262.29	-262.29	-106.45	0.74	94.00
3031.00	25.88	201.82	2980.82	-331.37	-331.37	-132.44	3.09	189.00
3125.00	23.54	199.57	3066.21	-368.11	-368.11	-146.35	2.68	94.00
3219.00	22.89	202.56	3152.60	-402.68	-402.68	-159.65	1.43	94.00
3314.00	21.17	205.91	3240.66	-435.18	-435.18	-174.24	2.24	95.00
3502.00	18.46	208.82	3417.52	-491.80	-491.80	-203.43	1.54	188.00
3597.00	18.76	210.06	3507.55	-518.20	-518.20	-218.33	0.53	95.00

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS °/100ft	Course Length ft
3691.00	18.44	213.67	3596.64	-543.66	-543.66	-234.14	1.27	94.00
3785.00	19.58	208.93	3685.52	-569.82	-569.82	-250.01	2.04	94.00
3879.00	20.52	211.42	3773.82	-597.66	-597.66	-266.22	1.35	94.00
3973.00	20.94	211.54	3861.74	-626.04	-626.04	-283.59	0.45	94.00
4068.00	21.26	209.29	3950.37	-655.52	-655.52	-300.90	0.92	95.00
4162.00	21.40	206.64	4037.94	-685.71	-685.71	-316.92	1.03	94.00
4257.00	22.91	206.22	4125.92	-717.79	-717.79	-332.86	1.60	95.00
4351.00	24.81	204.96	4211.88	-752.09	-752.09	-349.27	2.09	94.00
4445.00	23.09	204.07	4297.79	-786.80	-786.80	-365.11	1.87	94.00
4634.00	16.55	197.02	4475.52	-846.46	-846.46	-388.13	3.68	189.00
4823.00	23.28	195.36	4653.12	-908.28	-908.28	-405.93	3.57	189.00
4917.00	22.82	197.57	4739.62	-943.57	-943.57	-416.35	1.04	94.00
5011.00	23.73	198.84	4825.97	-978.84	-978.84	-427.96	1.11	94.00
5106.00	22.31	202.96	4913.41	-1013.54	-1013.54	-441.16	2.26	95.00
5295.00	18.86	220.58	5090.49	-1069.84	-1069.84	-475.07	3.73	189.00
5389.00	19.84	215.72	5179.18	-1094.33	-1094.33	-494.26	2.00	94.00
5483.00	21.12	217.90	5267.24	-1120.64	-1120.64	-513.98	1.59	94.00
5578.00	21.19	214.01	5355.84	-1148.38	-1148.38	-534.10	1.48	95.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
5672.00	21.24	206.06	5443.49	-1177.77	-1177.77	-551.08	3.06	94.00
5766.00	22.97	202.90	5530.58	-1209.96	-1209.96	-565.70	2.24	94.00
5860.00	21.45	205.13	5617.61	-1242.42	-1242.42	-580.14	1.85	94.00
5954.00	19.51	200.29	5705.67	-1272.71	-1272.71	-592.88	2.74	94.00
6049.00	17.06	207.26	5795.88	-1299.98	-1299.98	-604.76	3.45	95.00
6143.00	17.67	206.70	5885.59	-1324.99	-1324.99	-617.49	0.67	94.00
6237.00	19.45	203.70	5974.70	-1352.07	-1352.07	-630.19	2.15	94.00
6332.00	18.93	200.97	6064.42	-1380.94	-1380.94	-642.07	1.09	95.00
6426.00	13.52	197.72	6154.65	-1405.67	-1405.67	-650.88	5.83	94.00
6521.00	12.60	199.14	6247.19	-1426.04	-1426.04	-657.65	1.03	95.00
6615.00	11.73	202.53	6339.08	-1444.55	-1444.55	-664.67	1.20	94.00
6709.00	7.94	202.93	6431.68	-1459.35	-1459.35	-670.87	4.03	94.00
6803.00	4.21	210.55	6525.14	-1468.30	-1468.30	-675.15	4.05	94.00
6898.00	2.69	233.57	6619.97	-1472.63	-1472.63	-678.72	2.13	95.00
6992.00	4.36	337.51	6713.85	-1470.64	-1470.64	-681.86	6.00	94.00
7039.00	9.05	350.17	6760.52	-1465.34	-1465.34	-683.17	10.42	47.00
7086.00	13.15	358.21	6806.64	-1456.35	-1456.35	-683.97	9.30	47.00
7133.00	16.73	352.24	6852.04	-1444.30	-1444.30	-685.05	8.28	47.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
7180.00	19.55	351.27	6896.70	-1429.82	-1429.82	-687.16	6.04	47.00
7227.00	22.67	351.92	6940.54	-1413.07	-1413.07	-689.63	6.65	47.00
7274.00	26.52	349.57	6983.27	-1393.78	-1393.78	-692.80	8.45	47.00
7321.00	29.75	347.52	7024.71	-1372.07	-1372.07	-697.23	7.18	47.00
7369.00	32.32	350.89	7065.84	-1347.76	-1347.76	-701.83	6.46	48.00
7416.00	33.82	358.56	7105.24	-1322.26	-1322.26	-704.15	9.45	47.00
7463.00	36.18	4.40	7143.75	-1295.34	-1295.34	-703.42	8.71	47.00
7510.00	39.08	3.61	7180.96	-1266.72	-1266.72	-701.42	6.25	47.00
7556.00	43.67	1.93	7215.47	-1236.36	-1236.36	-699.97	10.27	46.00
7603.00	46.33	2.88	7248.70	-1203.16	-1203.16	-698.57	5.83	47.00
7651.00	50.69	2.72	7280.50	-1167.25	-1167.25	-696.81	9.10	48.00
7698.00	55.07	1.26	7308.85	-1129.81	-1129.81	-695.52	9.63	47.00
7745.00	59.85	359.93	7334.13	-1090.20	-1090.20	-695.13	10.45	47.00
7792.00	64.25	359.35	7356.15	-1048.69	-1048.69	-695.39	9.42	47.00
7840.00	68.73	359.27	7375.29	-1004.69	-1004.69	-695.92	9.34	48.00
7887.00	71.21	359.34	7391.39	-960.54	-960.54	-696.45	5.27	47.00
7934.00	74.10	359.18	7405.40	-915.69	-915.69	-697.03	6.16	47.00
7981.00	79.47	358.45	7416.15	-869.96	-869.96	-697.98	11.53	47.00

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
8103.00	88.82	357.06	7428.58	-748.83	-748.83	-702.74	7.75	122.00
8135.00	89.10	357.06	7429.16	-716.88	-716.88	-704.38	0.85	32.00
8229.00	90.91	358.93	7429.16	-622.94	-622.94	-707.68	2.77	94.00
8323.00	91.92	359.21	7426.84	-528.99	-528.99	-709.20	1.11	94.00
8418.00	92.32	359.20	7423.33	-434.06	-434.06	-710.52	0.42	95.00
8512.00	90.81	0.61	7420.77	-340.10	-340.10	-710.68	2.20	94.00
8606.00	91.01	359.71	7419.28	-246.11	-246.11	-710.41	0.98	94.00
8701.00	89.97	0.31	7418.47	-151.12	-151.12	-710.39	1.27	95.00
8795.00	89.70	359.73	7418.75	-57.12	-57.12	-710.36	0.69	94.00
8889.00	89.70	0.57	7419.25	36.88	36.88	-710.12	0.90	94.00
8984.00	90.50	1.14	7419.08	131.87	131.87	-708.70	1.04	95.00
9078.00	90.47	1.16	7418.28	225.84	225.84	-706.82	0.04	94.00
9173.00	90.77	1.57	7417.25	320.81	320.81	-704.57	0.54	95.00
9267.00	89.29	359.56	7417.19	414.80	414.80	-703.64	2.65	94.00
9361.00	87.88	359.95	7419.51	508.77	508.77	-704.04	1.56	94.00
9456.00	89.90	0.20	7421.34	603.74	603.74	-703.91	2.14	95.00
9550.00	88.05	358.99	7423.03	697.72	697.72	-704.57	2.35	94.00
9644.00	90.07	0.63	7424.57	791.70	791.70	-704.89	2.77	94.00

MD	Inc	Azim	TVD	VS	+N-S	+E-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
9739.00	91.27	0.31	7423.46	886.69	886.69	-704.11	1.32	95.00
9833.00	91.68	0.50	7421.03	980.66	980.66	-703.45	0.48	94.00
9927.00	90.37	1.51	7419.35	1074.62	1074.62	-701.80	1.76	94.00
10021.00	90.50	1.30	7418.64	1168.59	1168.59	-699.50	0.26	94.00
10116.00	89.60	1.59	7418.55	1263.56	1263.56	-697.10	1.00	95.00
10304.00	90.37	2.38	7418.61	1451.44	1451.44	-690.60	0.59	188.00
10398.00	91.24	2.76	7417.29	1545.34	1545.34	-686.39	1.01	94.00
10492.00	89.53	2.06	7416.66	1639.25	1639.25	-682.44	1.97	94.00
10587.00	89.90	1.05	7417.13	1734.21	1734.21	-679.87	1.13	95.00
10681.00	89.03	359.81	7418.01	1828.20	1828.20	-679.16	1.61	94.00
10776.00	89.19	359.36	7419.49	1923.19	1923.19	-679.85	0.50	95.00
10870.00	89.09	359.68	7420.89	2017.18	2017.18	-680.64	0.35	94.00
10964.00	89.80	358.66	7421.80	2111.16	2111.16	-682.01	1.32	94.00
11059.00	90.13	358.28	7421.86	2206.13	2206.13	-684.54	0.53	95.00
11153.00	91.28	358.89	7420.70	2300.09	2300.09	-686.86	1.38	94.00
11247.00	88.62	358.63	7420.78	2394.06	2394.06	-688.89	2.83	94.00
11342.00	88.39	359.20	7423.26	2489.01	2489.01	-690.69	0.65	95.00
11436.00	89.70	359.35	7424.83	2582.98	2582.98	-691.88	1.40	94.00

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS	Course Length
ft	deg	deg	ft	ft	ft	ft	°/100ft	ft
11530.00	89.80	359.13	7425.24	2676.98	2676.98	-693.14	0.26	94.00
11625.00	91.21	359.89	7424.41	2771.97	2771.97	-693.96	1.68	95.00
11719.00	91.08	359.23	7422.53	2865.94	2865.94	-694.68	0.71	94.00
11813.00	90.47	0.23	7421.27	2959.93	2959.93	-695.12	1.24	94.00
11908.00	90.44	359.74	7420.52	3054.93	3054.93	-695.15	0.51	95.00
12002.00	90.34	359.52	7419.88	3148.92	3148.92	-695.77	0.26	94.00
12191.00	90.54	359.90	7418.44	3337.92	3337.92	-696.73	0.23	189.00
12285.00	89.97	359.31	7418.03	3431.91	3431.91	-697.37	0.87	94.00
12379.00	89.73	0.91	7418.28	3525.91	3525.91	-697.19	1.72	94.00
12474.00	89.46	359.86	7418.95	3620.90	3620.90	-696.55	1.15	95.00
12568.00	90.34	0.68	7419.11	3714.90	3714.90	-696.11	1.27	94.00
12662.00	90.44	0.38	7418.48	3808.89	3808.89	-695.25	0.34	94.00
12757.00	90.23	0.16	7417.92	3903.89	3903.89	-694.80	0.31	95.00
12945.00	90.00	0.18	7417.53	4091.89	4091.89	-694.25	0.13	188.00
13039.00	89.63	0.85	7417.84	4185.88	4185.88	-693.41	0.82	94.00
13133.00	89.46	0.60	7418.58	4279.87	4279.87	-692.22	0.32	94.00
13224.00	89.29	0.31	7419.57	4370.87	4370.87	-691.49	0.37	91.00

[illegible]

5" = 100' FEET MD