

## GAMMA RAY LOG



5" = 100' FEET MD

COMPANY : ANADARKO PETROLEUM CORP. WELL : GITTLEIN 29N-28HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A UWI : 05-123-36218					COMPANY : ANADARKO PETROLEUM CORP. WELL : GITTLEIN 29N-28HZ FIELD : WATTENBERG COUNTY : WELD STATE : COLORADO COUNTRY : U.S.A UWI : 05-123-36218				
DEPTH REF. : RKB REF. HEIGHT : 25.000 ft GROUND LEVEL : 4911.000 ft					WELL LOCATION LAT:40°5'18.056"N LONG:104°40'15.262"W N:1276114.66 ft E:3231969.38 ft SEC:33 TWP:2N RANGE:65W				
BOREHOLE RECORD HOLE SIZE in FROM ft TO ft 12.25 0 1335 8.75 1335 7513 6.125 7513					OTHER SERVICES LAT:40°5'18.056"N LONG:104°40'15.262"W N:1276114.66 ft E:3231969.38 ft SEC:33 TWP:2N RANGE:65W				
DEVIATION RECORD INCLINATION deg FROM ft TO ft 0-10 0 6477 10-90 6477 7513 90- 7513					CASING RECORD CASING SIZE in FROM ft TO ft 9.625 0 1335 7 0 7513				

Run Data						
RUN NUMBER	1	2	3			
START DATE	09/20/2013	09/24/2013	09/26/2013			
START TIME	1230	1430	0930			
END DATE	09/24/2013	09/26/2013				
END TIME	1430	0930				
DEPTH IN (ft)	1335	7513	10417			
DEPTH OUT (ft)	7513	10417				
LOG TOP (ft)	1269	7447	10347			
LOG BOTTOM (ft)	7447	10347				
HOLE SIZE (in)	8.75	6.125	6.125			
MUD DATA @ (ft)	1326	7200	10417			
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED			
DENSITY (lb / gal)	9.2	10.1	9.5			
VISCOSITY (s / qt)	33	39	39			
pH	8.2	9	9			
FLUID LOSS (cm3 / 30)	-	-	-			
SALINITY (ppm)	1300	1300	1300			
Rm (ohmm @ deg F)	-	-	-			
Rmf (ohmm @ deg F)	-	-	-			
MAX TEMP (deg F)	178	215				
Rm @ MAX TEMP (ohmm)	-	-	-			
LWD ENGINEER #1	M. SHARKER	M. SHARKER	M. SHARKER			
LWD ENGINEER #2	J. DENNING	J. DENNING	J. DENNING			
LWD ENGINEER #3	B. GREER	-	-			
LOG WITNESS #1	J. STUART	J. STUART	R. CANNON			
LOG WITNESS #2	-	-	-			

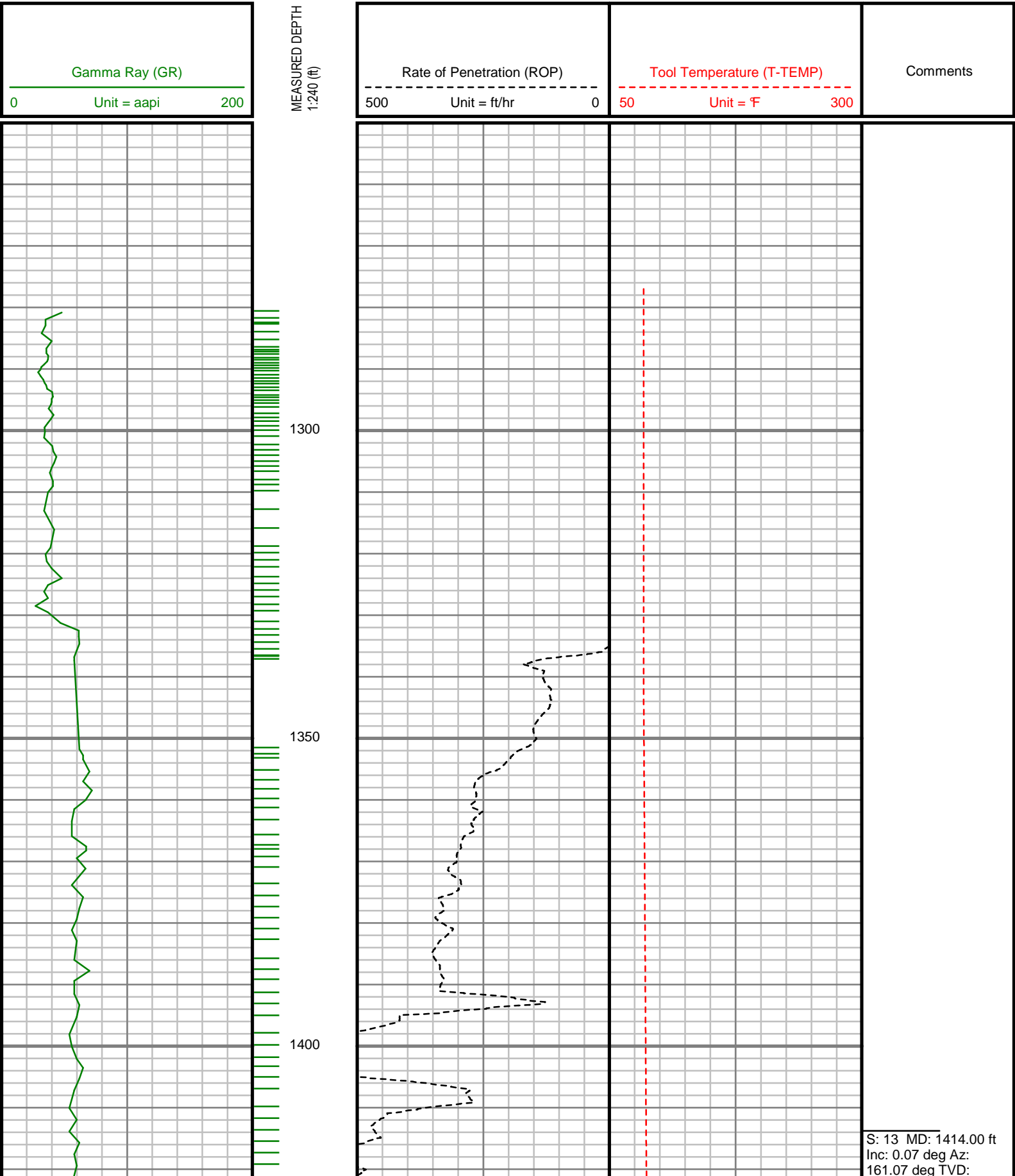
TOTAL DEPTH :

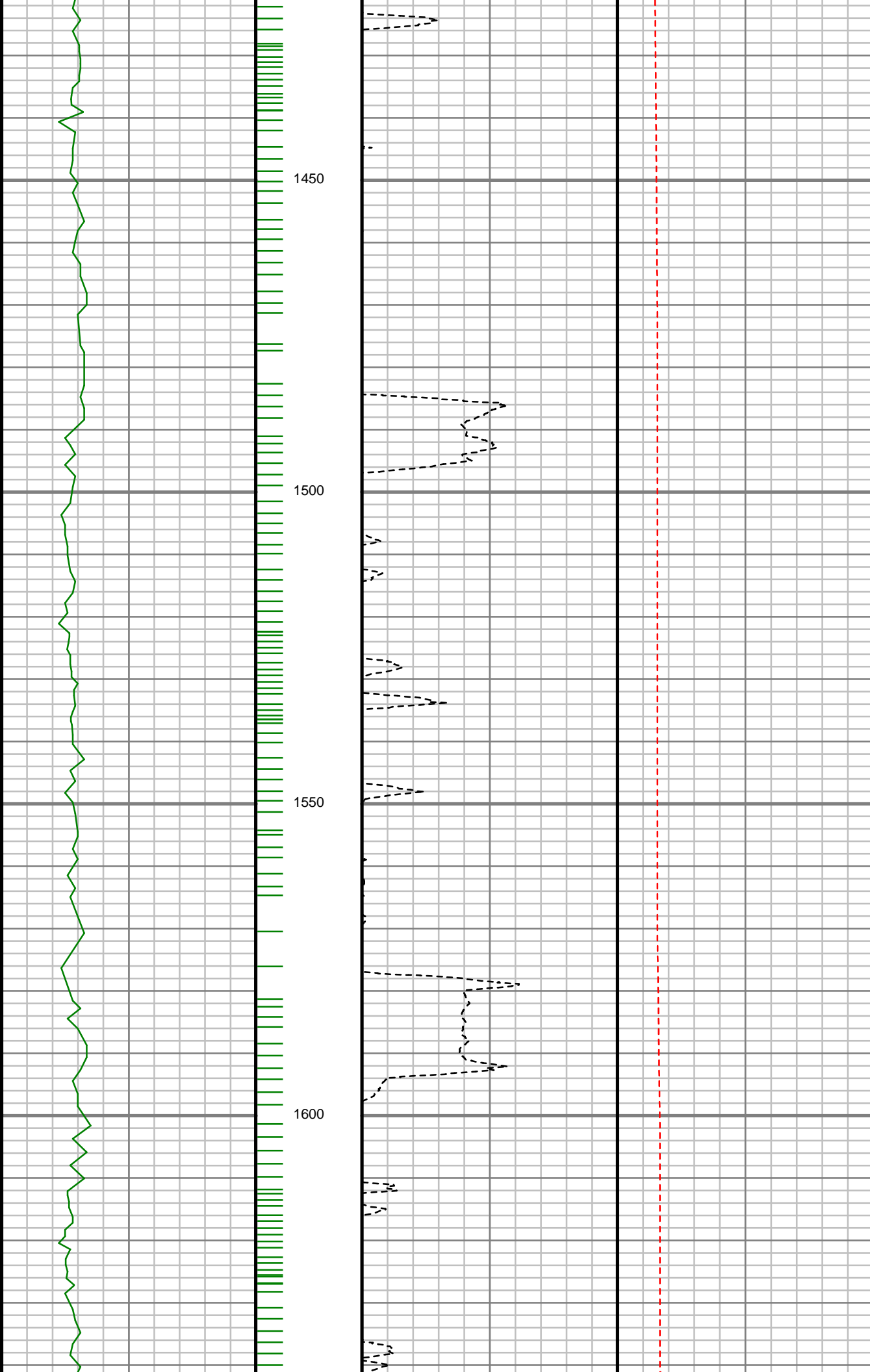
Remarks
ANADARKO PETROLEUM CORP. PRODUCTION AFE# 2075260
SCIENTIFIC DRILLING INTERNATIONAL JOB# 57638
ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.
ALL DATA IS MEMORY DATA UNLESS STATED OTHERWISE.
FLAT AVERAGE FILTER OF 1.00 FT. APPLIED TO GAMMA RAY CURVE
FLAT AVERAGE FILTER OF 1.00 FT. APPLIED TO RATE OF PENETRATION CURVE
FLAT AVERAGE FILTER OF 1.00 FT. APPLIED TO TEMPERATURE CURVE
RUN #1: MWD/GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-185 / CONT=542/ MWD EYE = 0778 / GAMMA RAY = 456
BIT TO SENSOR OFFSETS: SURVEY= 64.05 FT. / GAMMA RAY = 54.80 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-178 / CONT = 295 / MWD EYE = 0206 / GAMMA RAY = 232
BIT TO SENSOR OFFSETS: SURVEY = 67.93 FT. / GAMMA RAY = 58.68 FT.
RUN #3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-010 / CONT = 397 / MWD EYE = 0259 / GAMMA RAY = 180
BIT TO SENSOR OFFSETS: SURVEY = 67.79 FT. / GAMMA RAY = 58.54 FT.
SURVEY WELL NOTES:
SURVEYS FROM 0.0 FT. TO 1335 FT. WERE ACQUIRED BY MS GYRO MWD.
SURVEYS FROM 1335 FT. TO XXXX FT. WERE ACQUIRED BY SCIENTIFIC DRILLING INTERNATIONAL MWD.

[illegible]

All interpretations are opinions based on 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.  
GITTLEIN 29N-28HZ  
WATTENBERG FIELD  
WELD COUNTY, COLORADO  
05-123-36218





1413.98 ft

1450

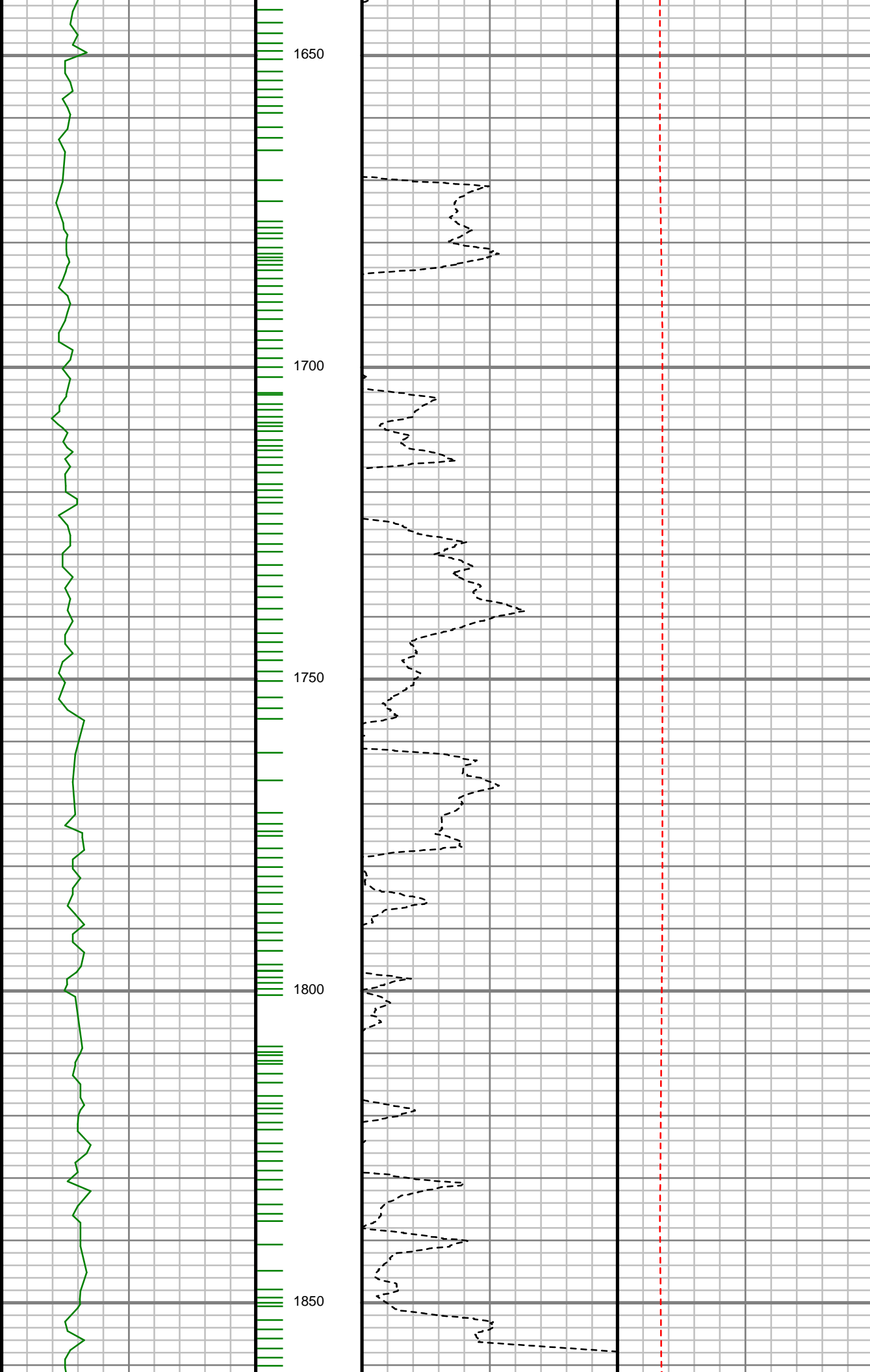
1500

1550

1600

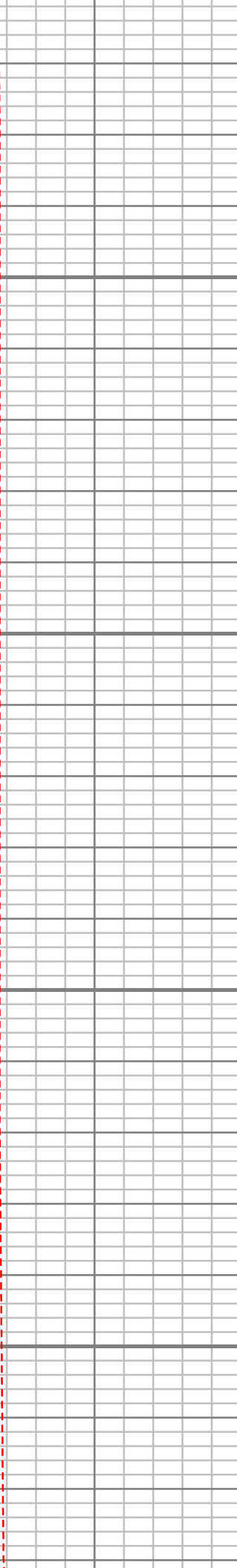
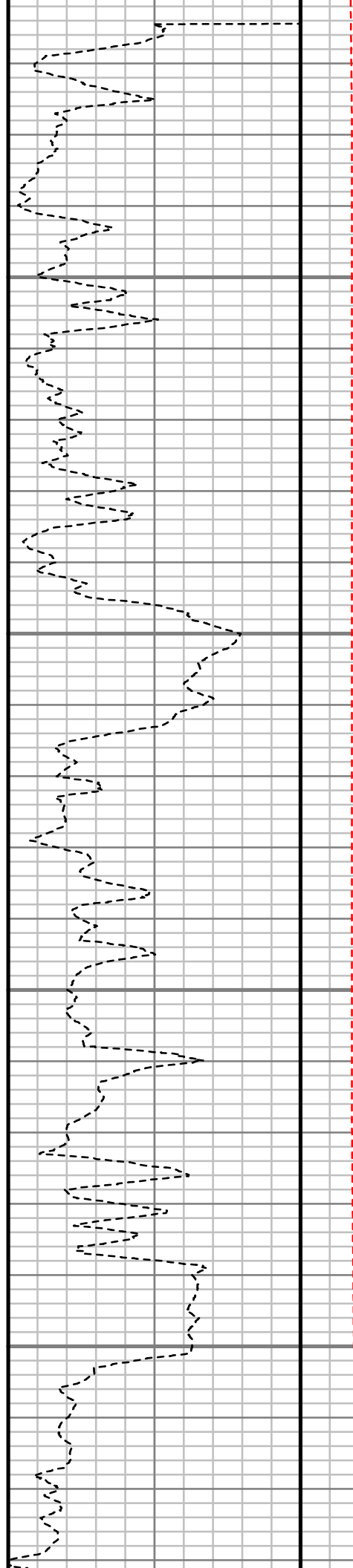
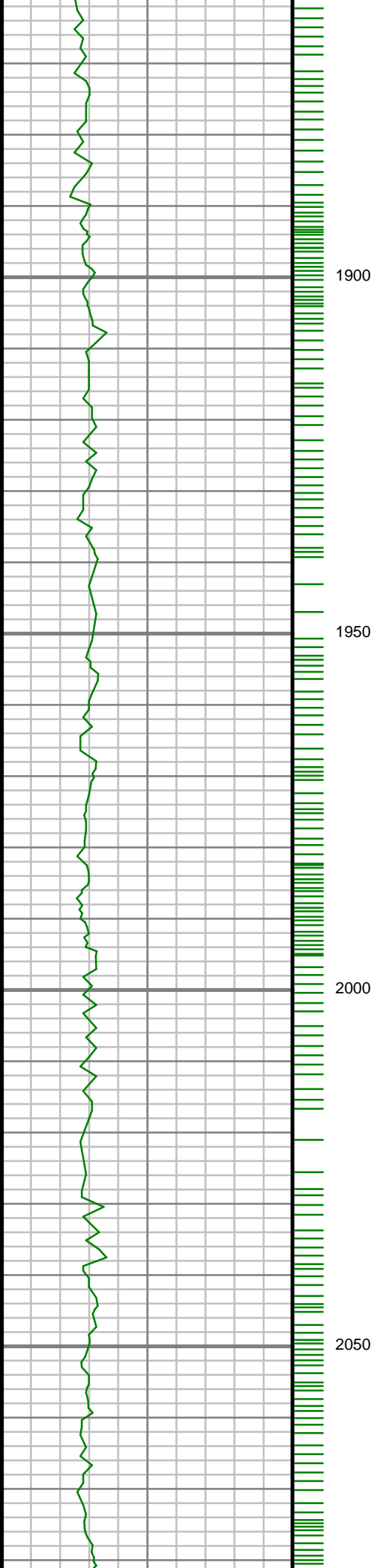
S: 14 MD: 1506.00 ft  
Inc: 1.51 deg Az:  
222.69 deg TVD:  
1505.97 ft

S: 15 MD: 1597.00 ft  
Inc: 4.31 deg Az:  
228.98 deg TVD:  
1596.85 ft



S: 16 MD: 1689.00 ft  
Inc: 4.50 deg Az:  
229.32 deg TVD:  
1688.58 ft

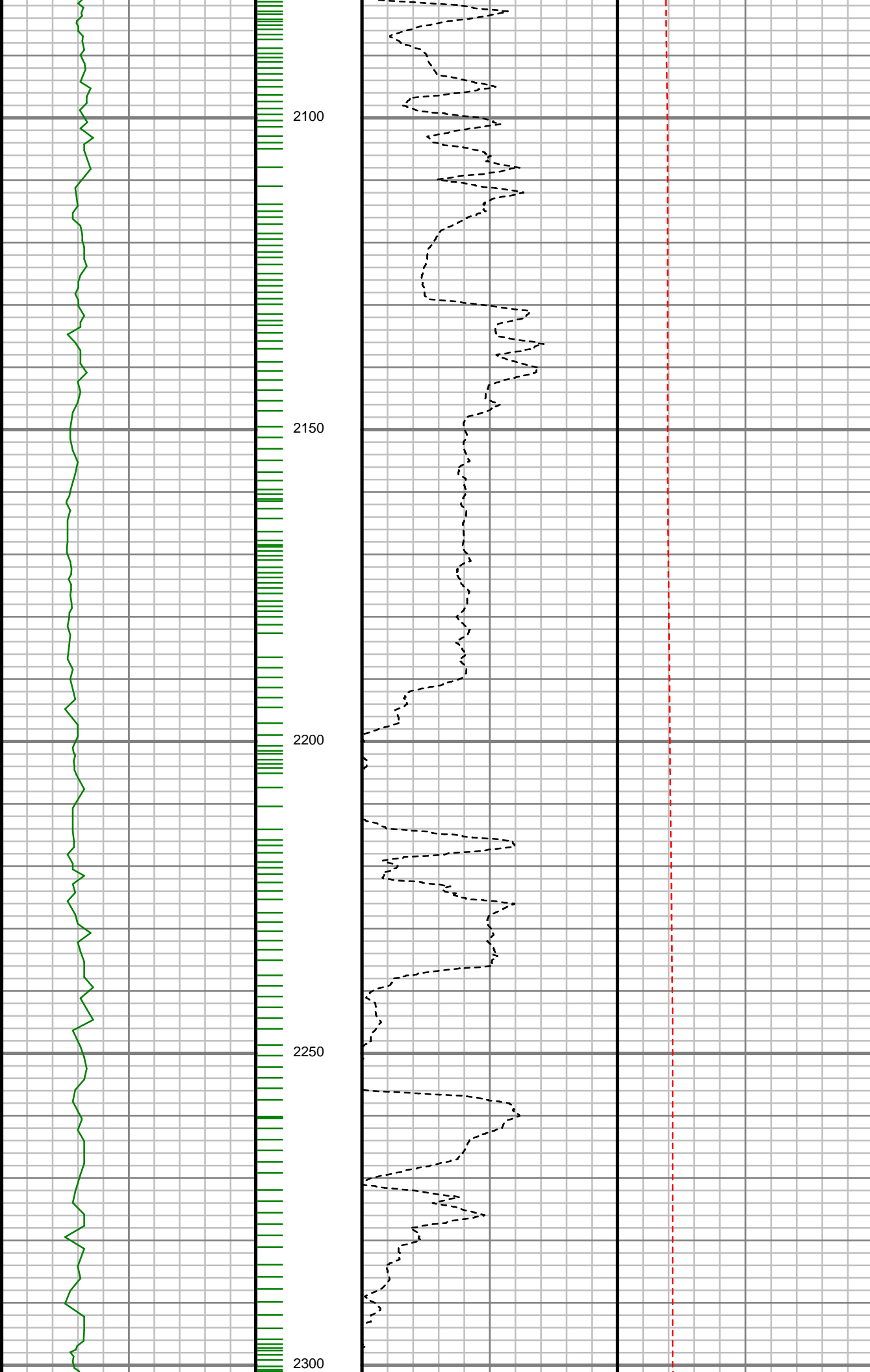
S: 17 MD: 1780.00 ft  
Inc: 6.70 deg Az:  
225.50 deg TVD:  
1779.14 ft



S: 18 MD: 1872.00 ft  
Inc: 7.42 deg Az:  
215.04 deg TVD:  
1870.44 ft

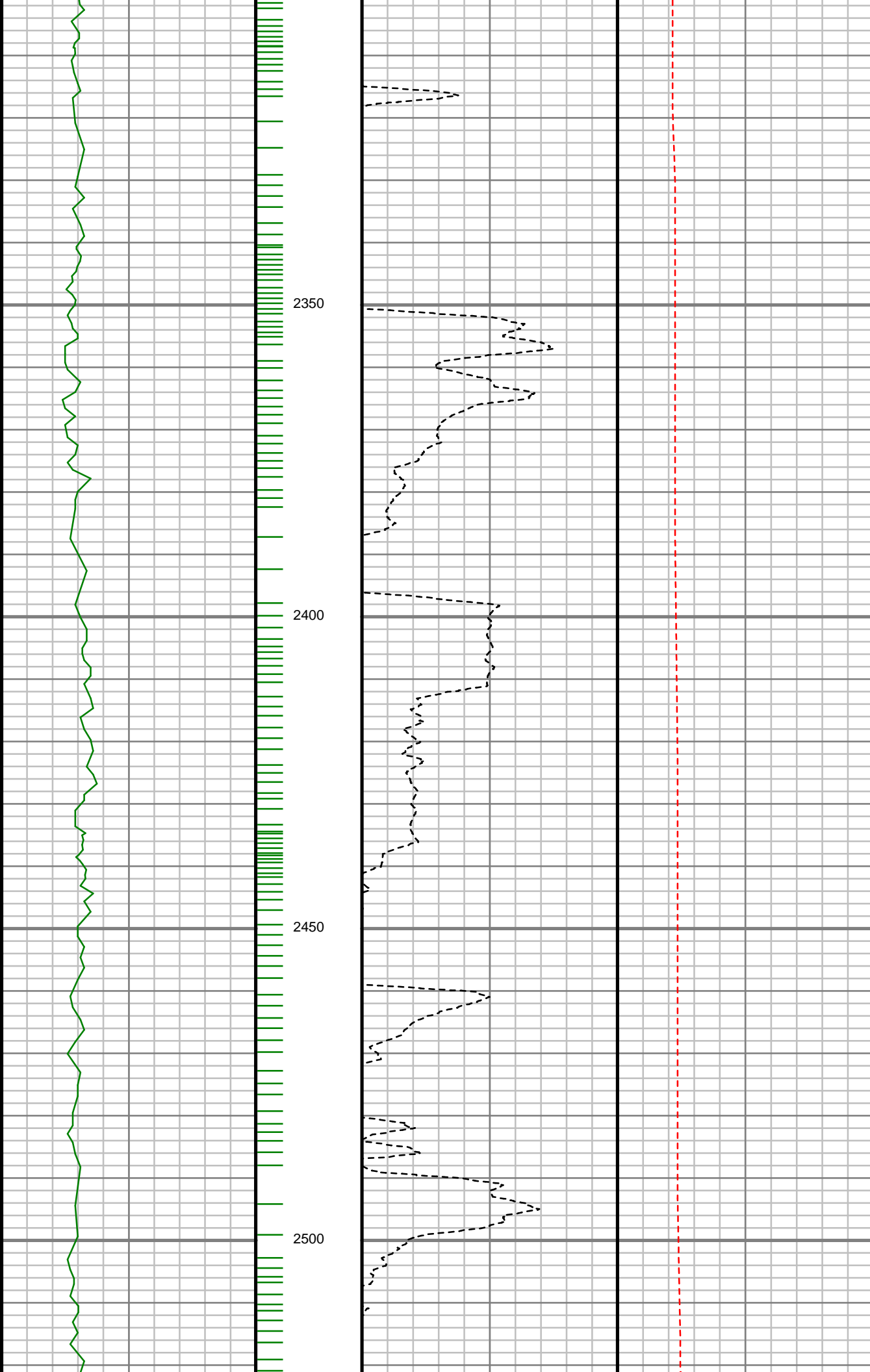
S: 19 MD: 1964.00 ft  
Inc: 9.35 deg Az:  
210.58 deg TVD:  
1961.45 ft

S: 20 MD: 2056.00 ft  
Inc: 10.57 deg Az:  
207.35 deg TVD:  
2052.07 ft



S: 21 MD: 2147.00 ft  
Inc: 11.76 deg Az:  
208.93 deg TVD:  
2141.34 ft

S: 22 MD: 2239.00 ft  
Inc: 10.88 deg Az:  
213.53 deg TVD:  
2231.55 ft



S: 23 MD: 2331.00 ft  
Inc: 11.03 deg Az:  
209.91 deg TVD:  
2321.88 ft

S: 24 MD: 2423.00 ft  
Inc: 9.39 deg Az:  
224.14 deg TVD:  
2412.43 ft

S: 25 MD: 2514.00 ft  
Inc: 9.07 deg Az:  
224.40 deg TVD:



2502.25 ft

2550

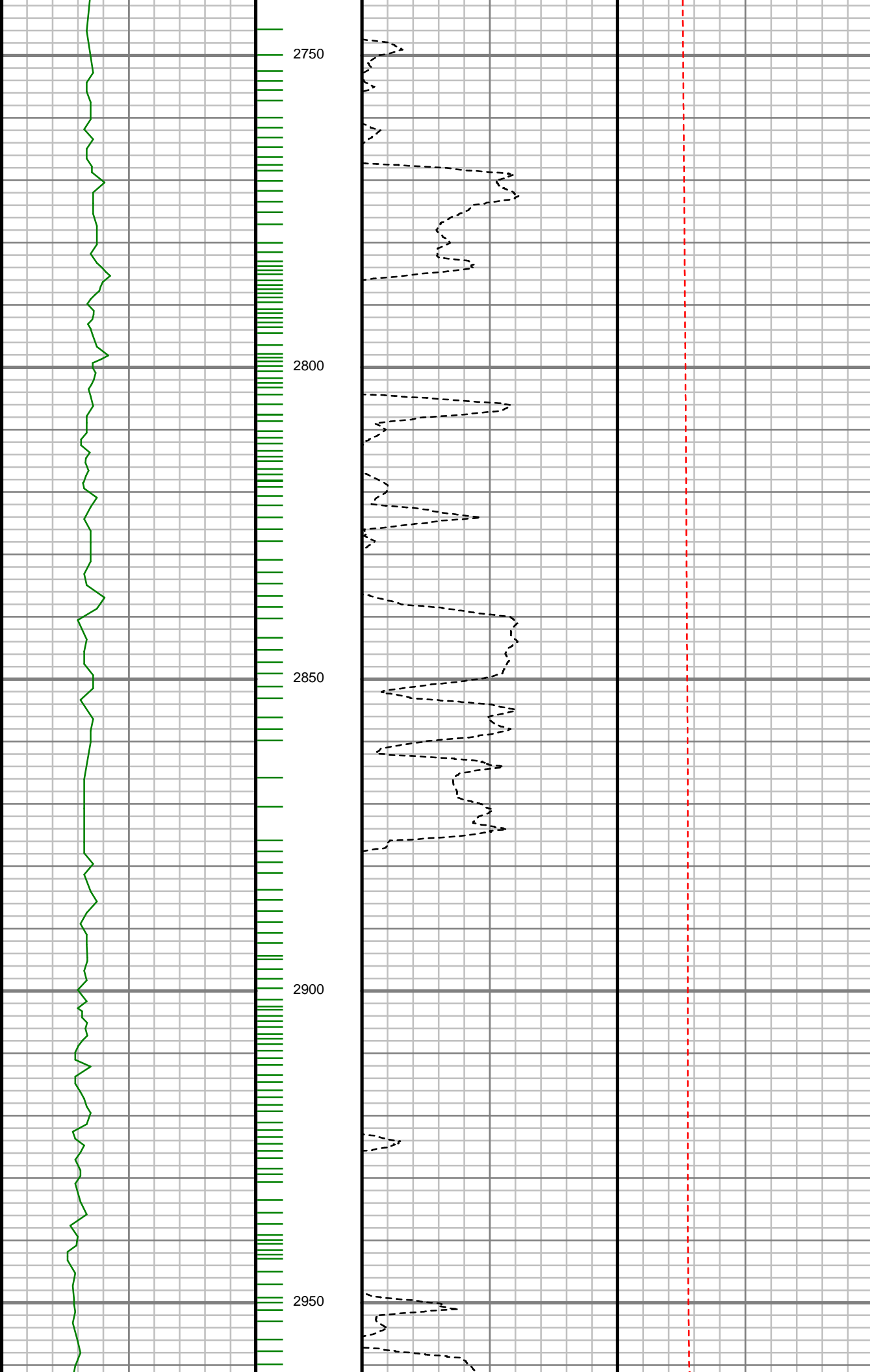
2600

2650

2700

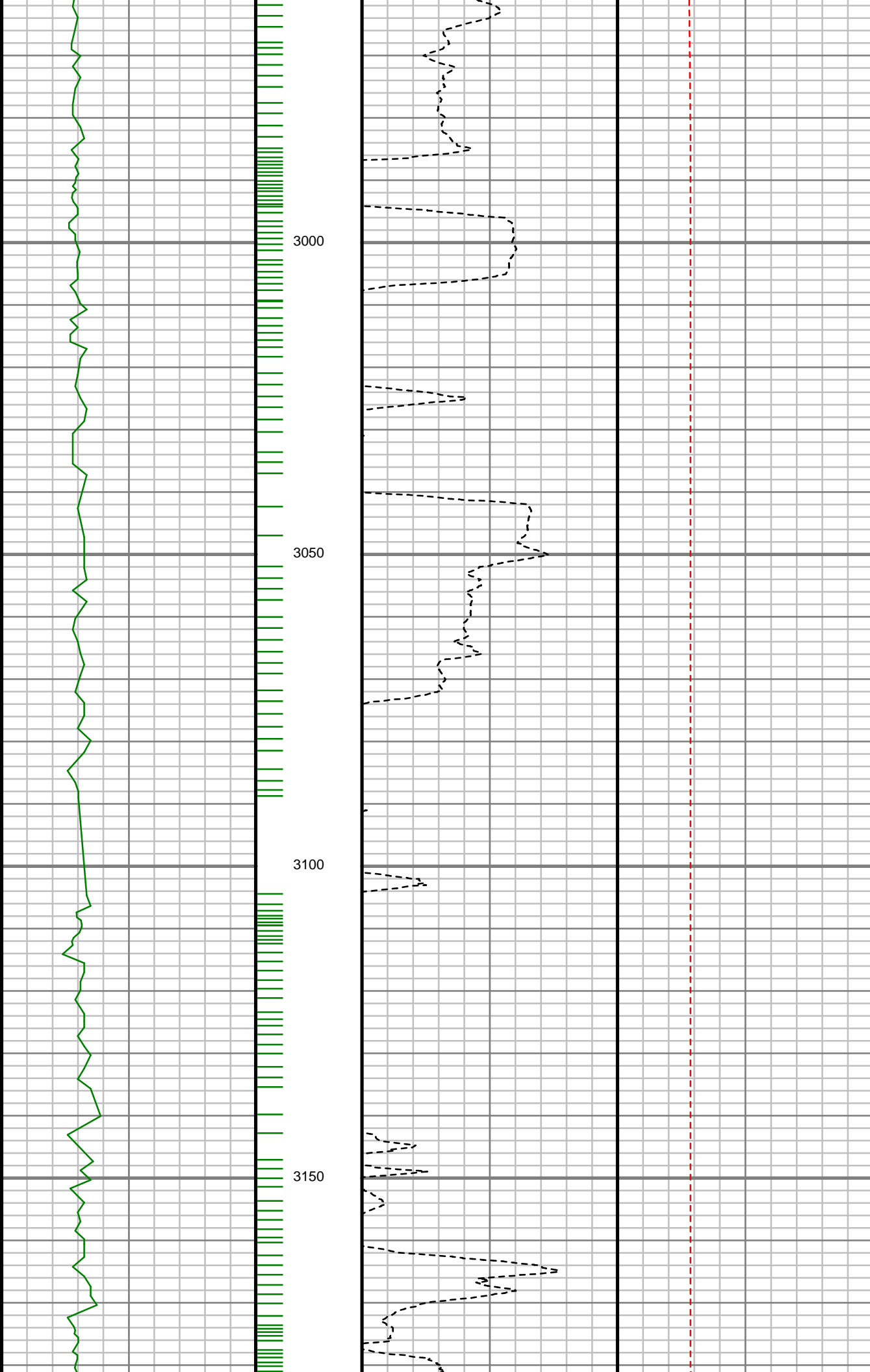
S: 26 MD: 2606.00 ft  
Inc: 6.53 deg Az:  
204.73 deg TVD:  
2593.41 ft

S: 27 MD: 2698.00 ft  
Inc: 5.34 deg Az:  
202.78 deg TVD:  
2684.92 ft



S: 28 MD: 2793.00 ft  
Inc: 3.79 deg Az:  
224.27 deg TVD:  
2779.62 ft

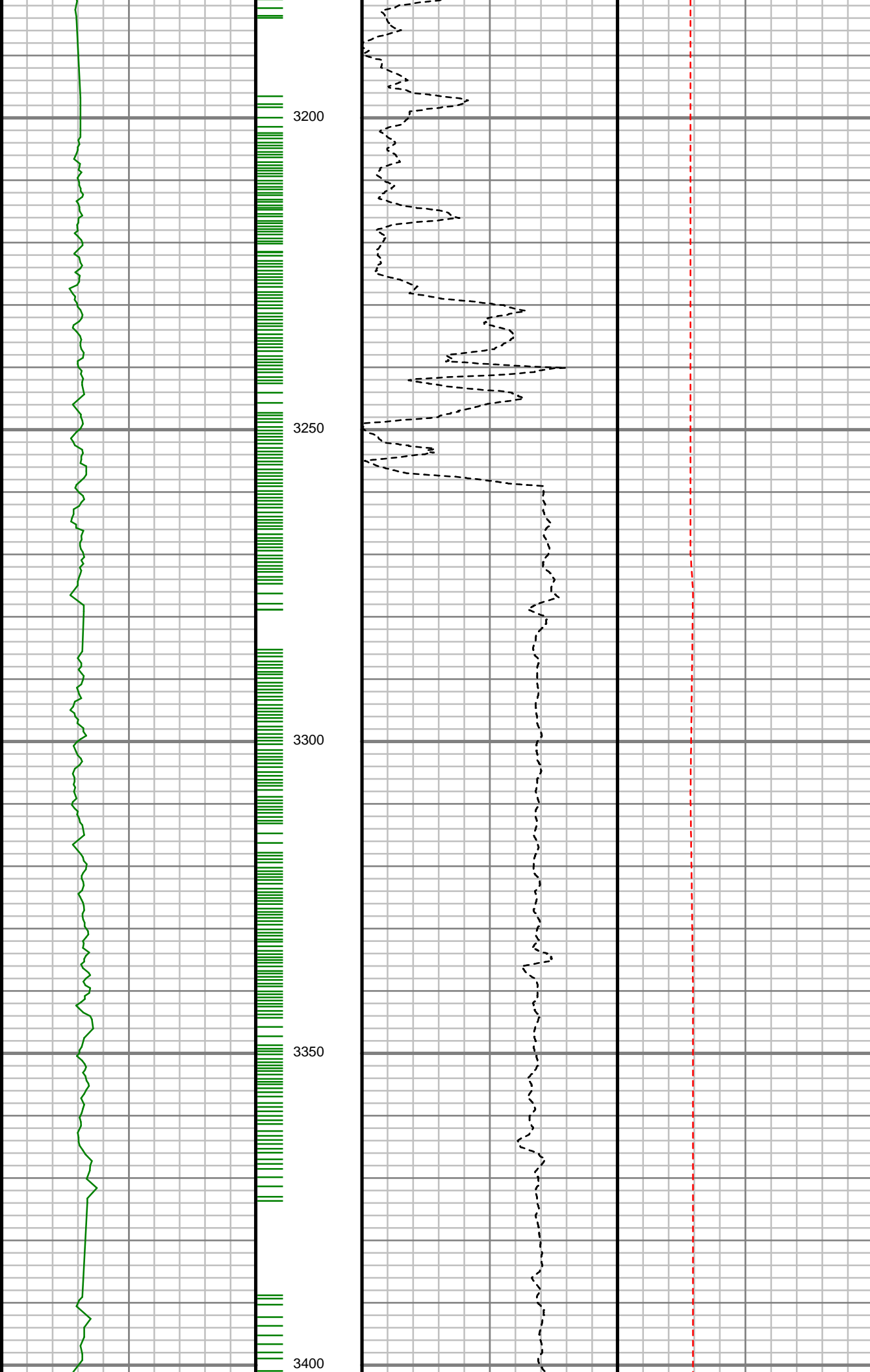
S: 29 MD: 2887.00 ft  
Inc: 2.78 deg Az:  
247.40 deg TVD:  
2873.47 ft



S: 30 MD: 2982.00 ft  
Inc: 3.79 deg Az:  
328.30 deg TVD:  
2968.35 ft

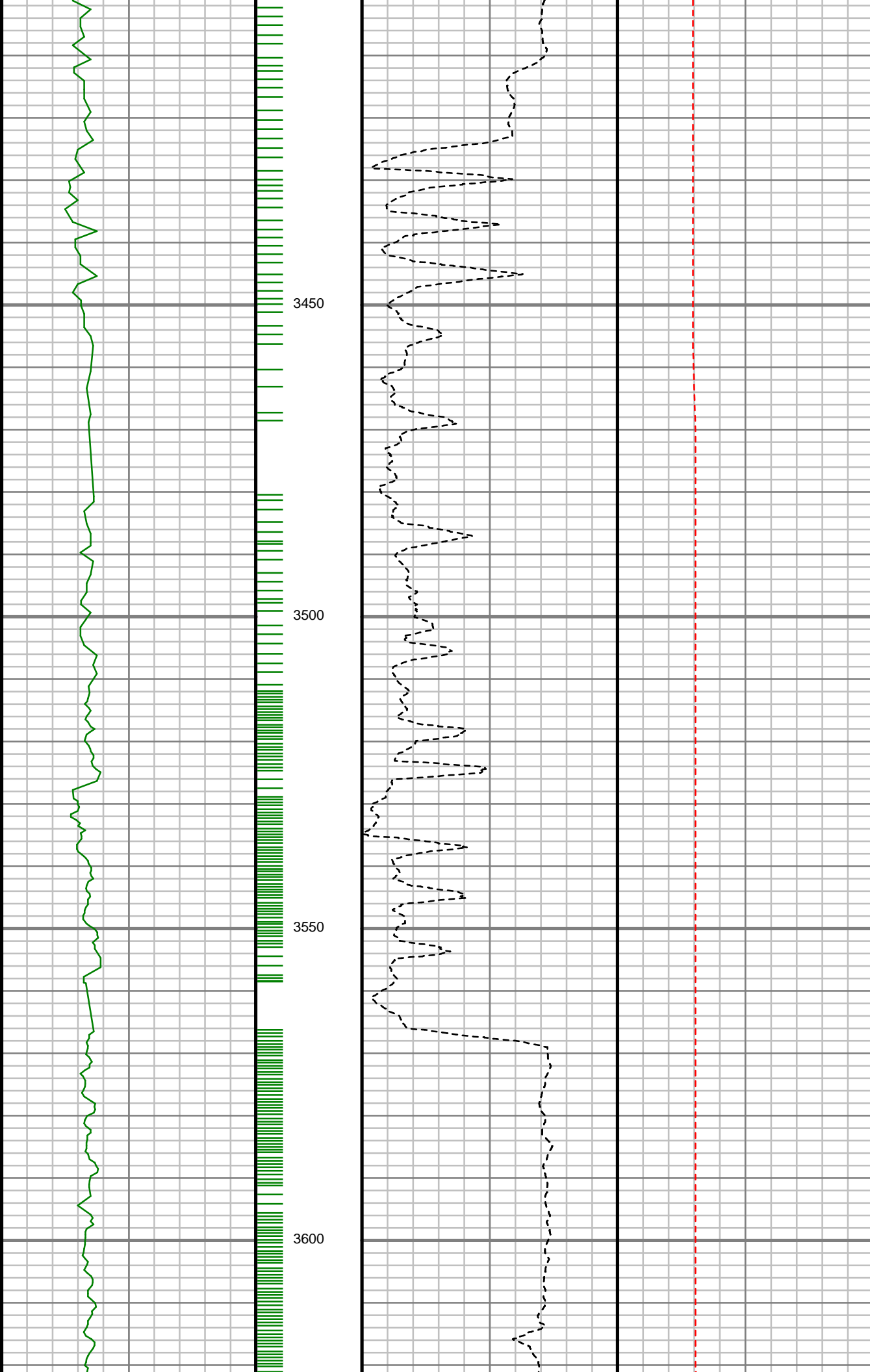
S: 31 MD: 3076.00 ft  
Inc: 1.01 deg Az:  
325.32 deg TVD:  
3062.26 ft

S: 32 MD: 3171.00 ft  
Inc: 0.76 deg Az: 1.29  
deg TVD: 3157.25 ft

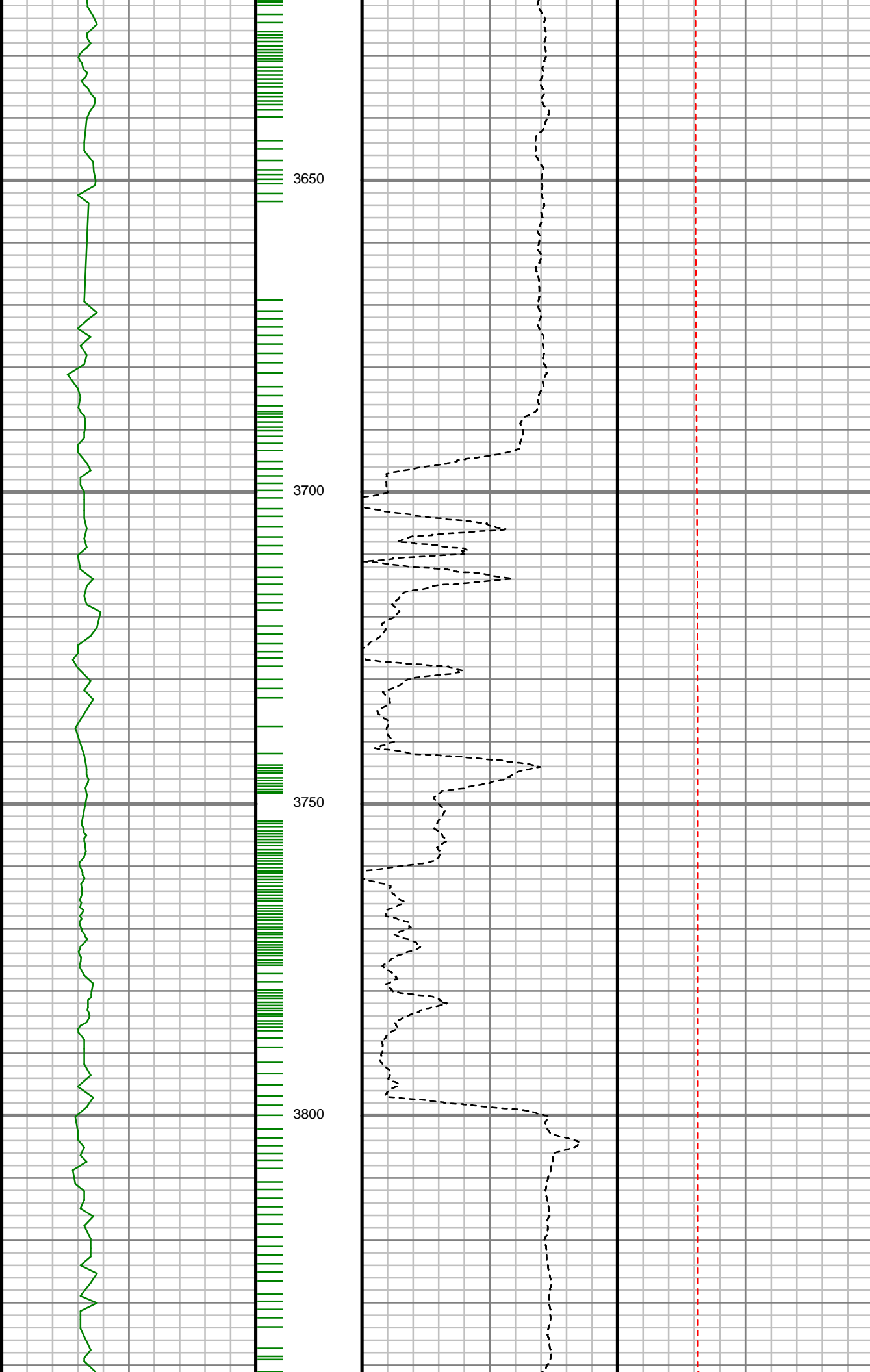


S: 33 MD: 3265.00 ft  
Inc: 0.39 deg Az:  
255.27 deg TVD:  
3251.25 ft

S: 34 MD: 3359.00 ft  
Inc: 0.60 deg Az:  
299.67 deg TVD:  
3345.24 ft

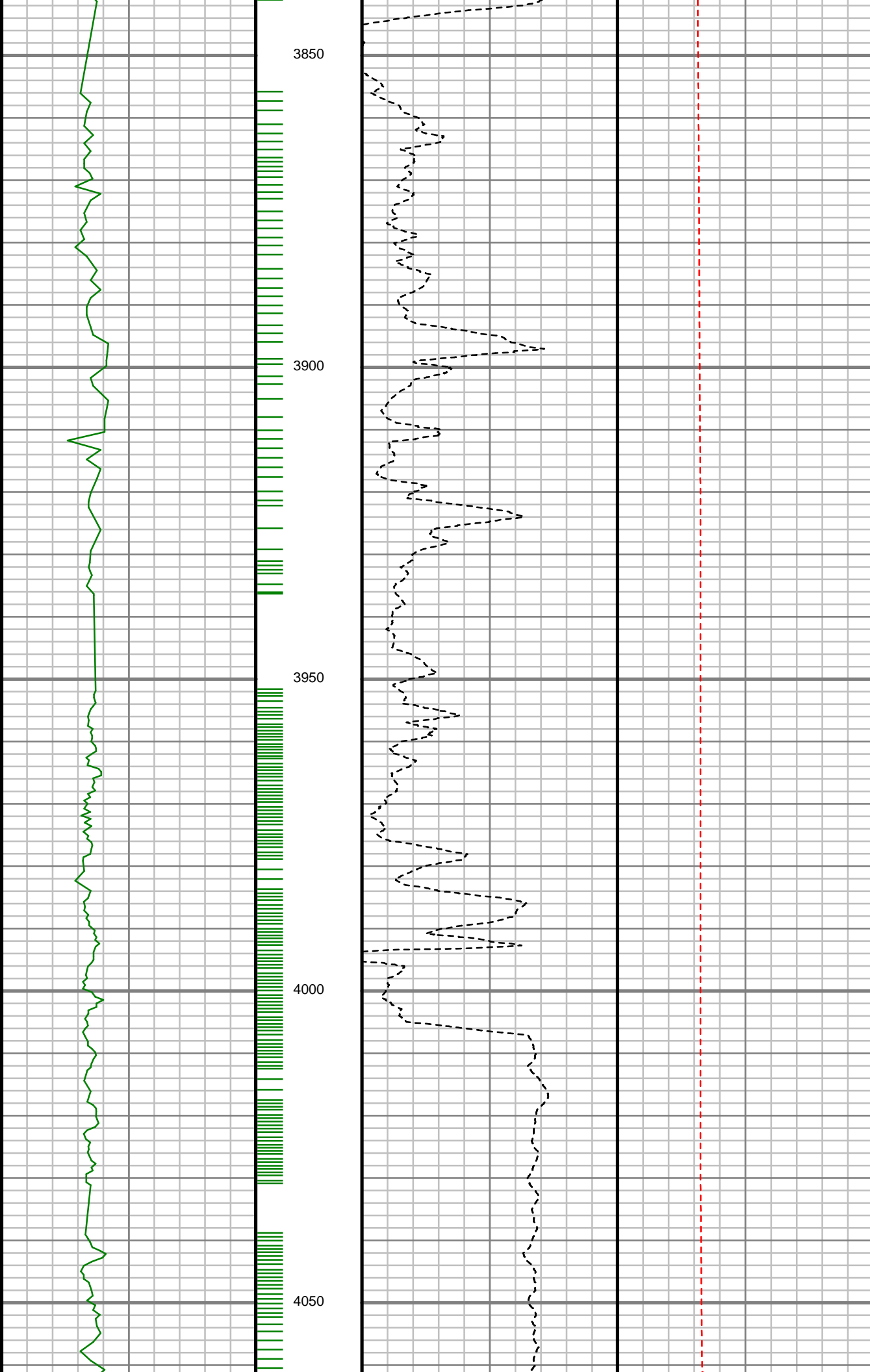


S: 35 MD: 3548.00 ft  
Inc: 0.21 deg Az:  
341.65 deg TVD:  
3534.24 ft



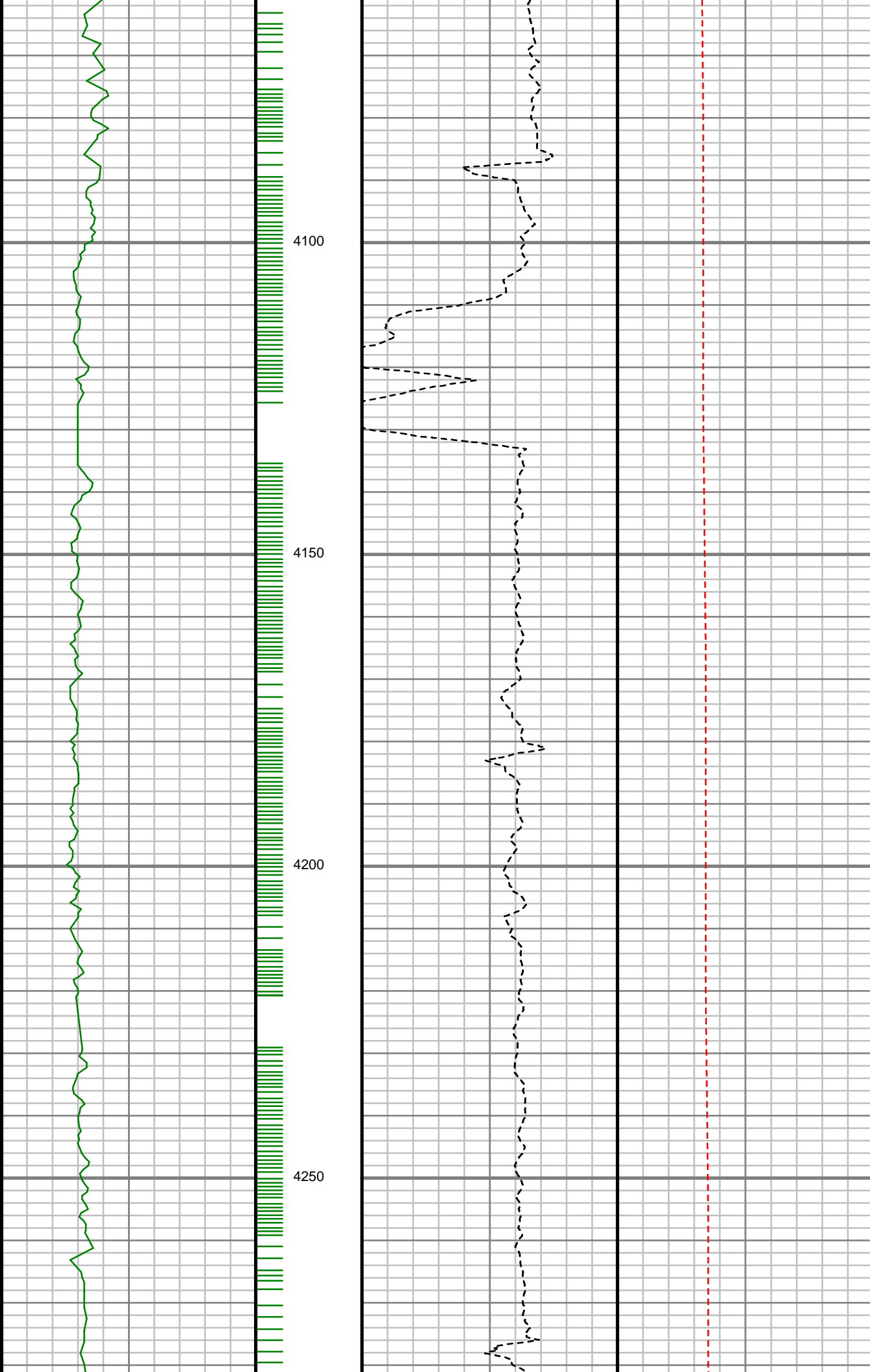
S: 36 MD: 3642.00 ft  
Inc: 0.67 deg Az: 85.00  
deg TVD: 3628.24 ft

S: 37 MD: 3831.00 ft  
Inc: 0.42 deg Az:  
134.22 deg TVD:  
3817.23 ft



S: 38 MD: 3926.00 ft  
Inc: 0.53 deg Az:  
131.02 deg TVD:  
3912.23 ft

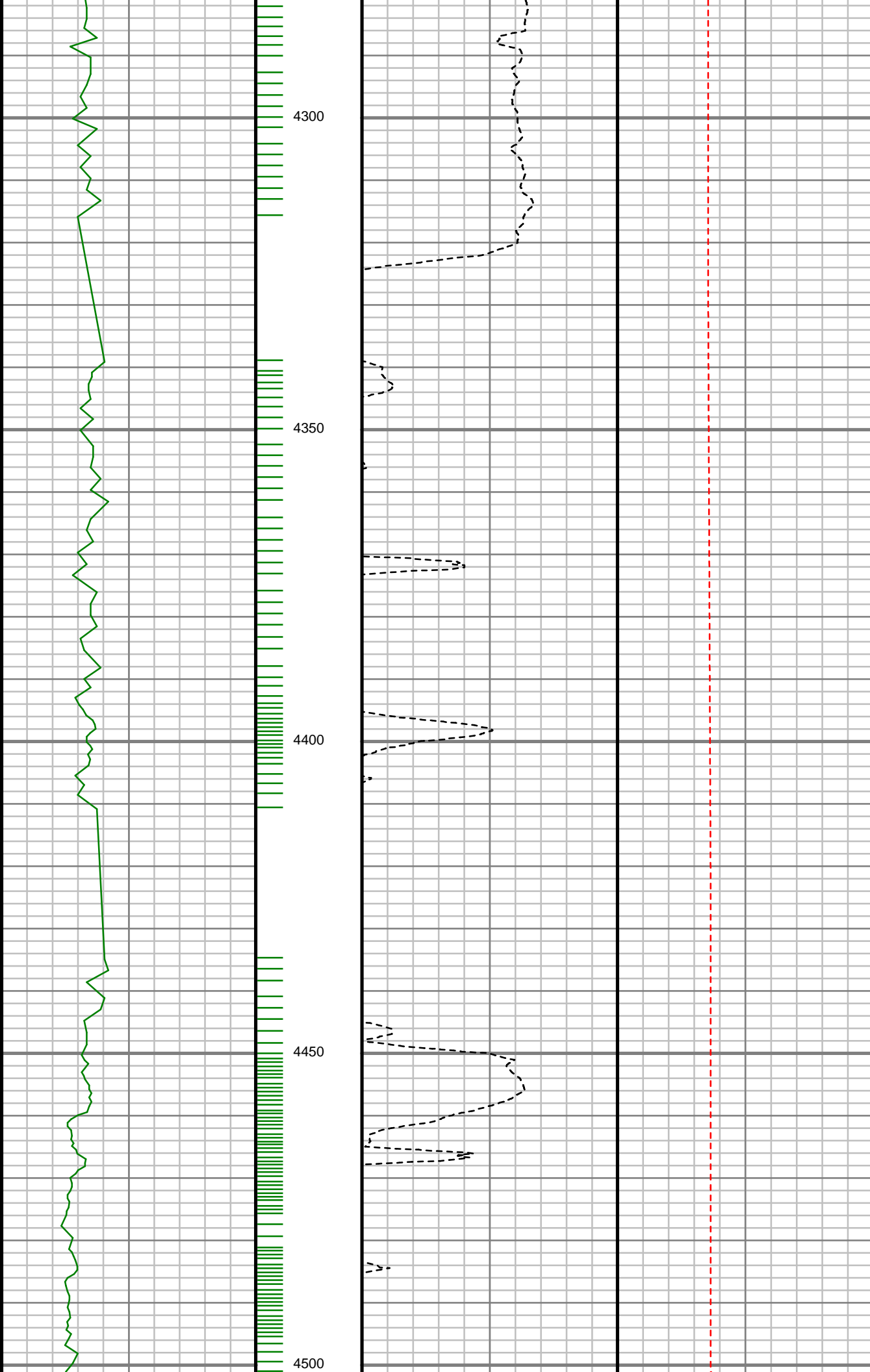
S: 39 MD: 4020.00 ft  
Inc: 0.45 deg Az:  
166.71 deg TVD:  
4006.22 ft



S: 40 MD: 4114.00 ft  
Inc: 0.47 deg Az:  
151.22 deg TVD:  
4100.22 ft

S: 41 MD: 4208.00 ft  
Inc: 0.24 deg Az:  
126.36 deg TVD:  
4194.22 ft

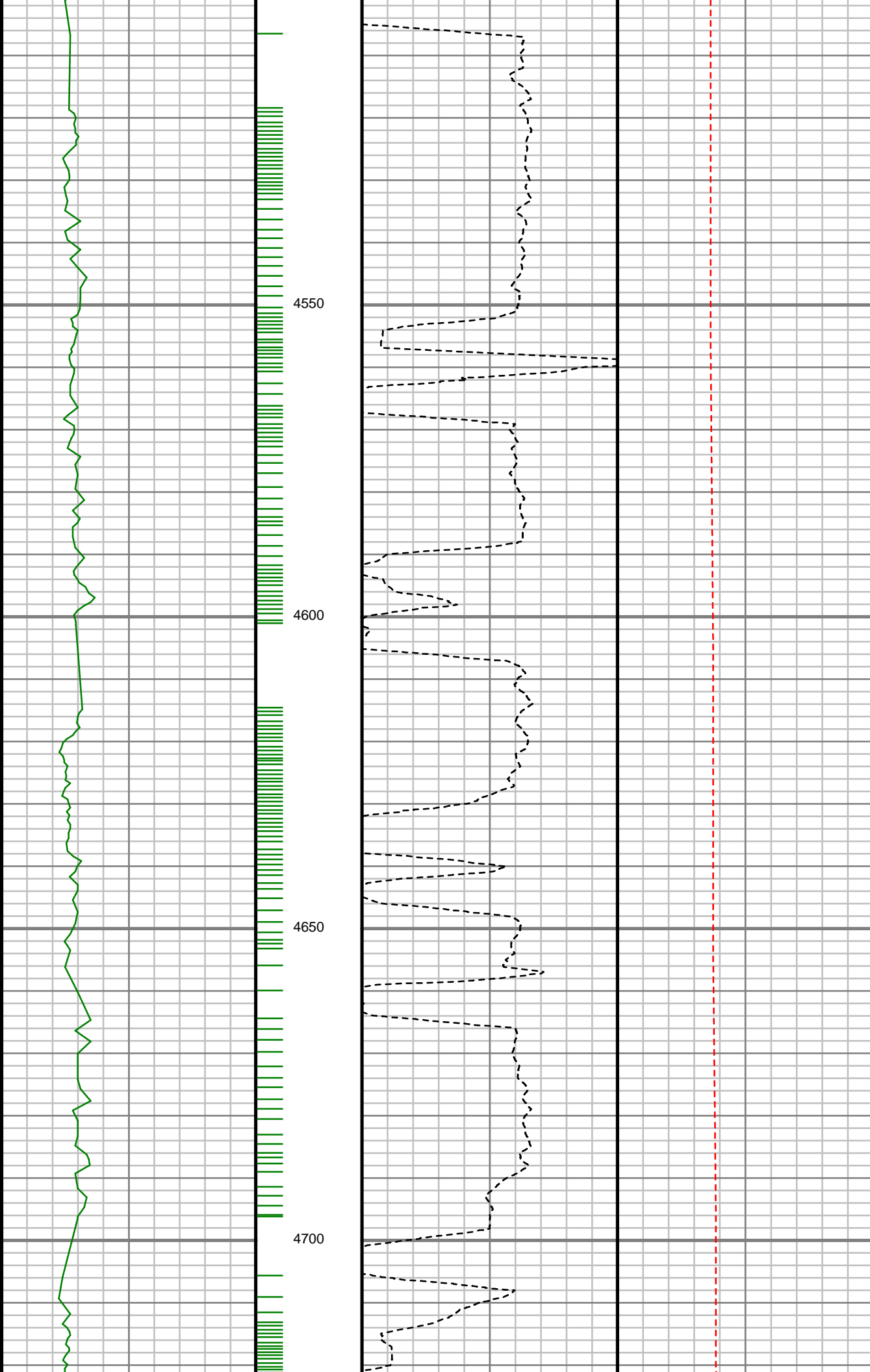




S: 42 MD: 4303.00 ft  
Inc: 0.84 deg Az:  
107.66 deg TVD:  
4289.21 ft

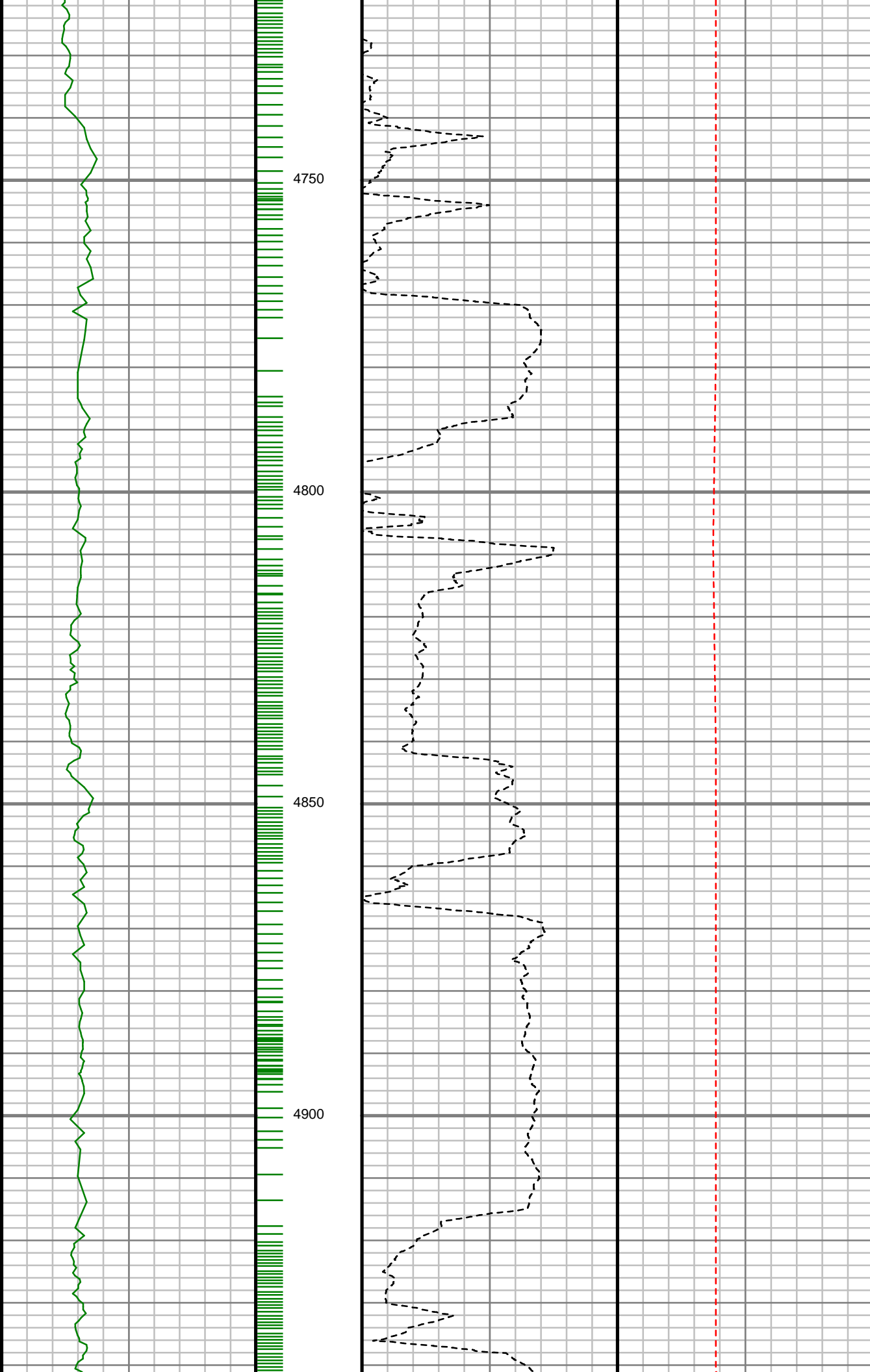
S: 43 MD: 4397.00 ft  
Inc: 1.14 deg Az:  
106.27 deg TVD:  
4383.20 ft

S: 44 MD: 4491.00 ft  
Inc: 1.18 deg Az:  
128.71 deg TVD:  
4477.18 ft



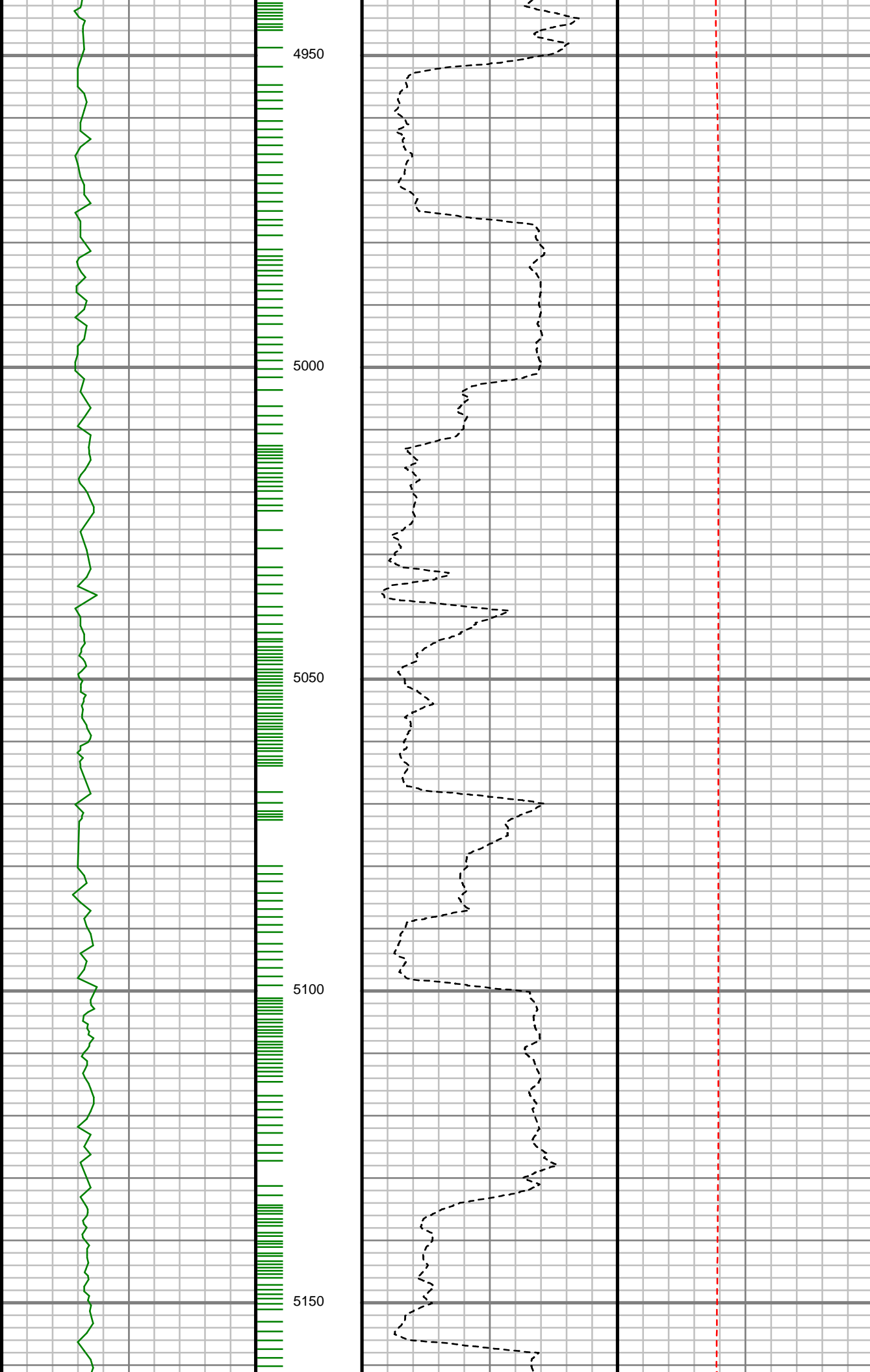
S: 45 MD: 4586.00 ft  
Inc: 1.68 deg Az:  
121.43 deg TVD:  
4572.15 ft

S: 46 MD: 4680.00 ft  
Inc: 1.91 deg Az:  
114.07 deg TVD:  
4666.11 ft



S: 47 MD: 4775.00 ft  
Inc: 1.91 deg Az:  
104.25 deg TVD:  
4761.05 ft

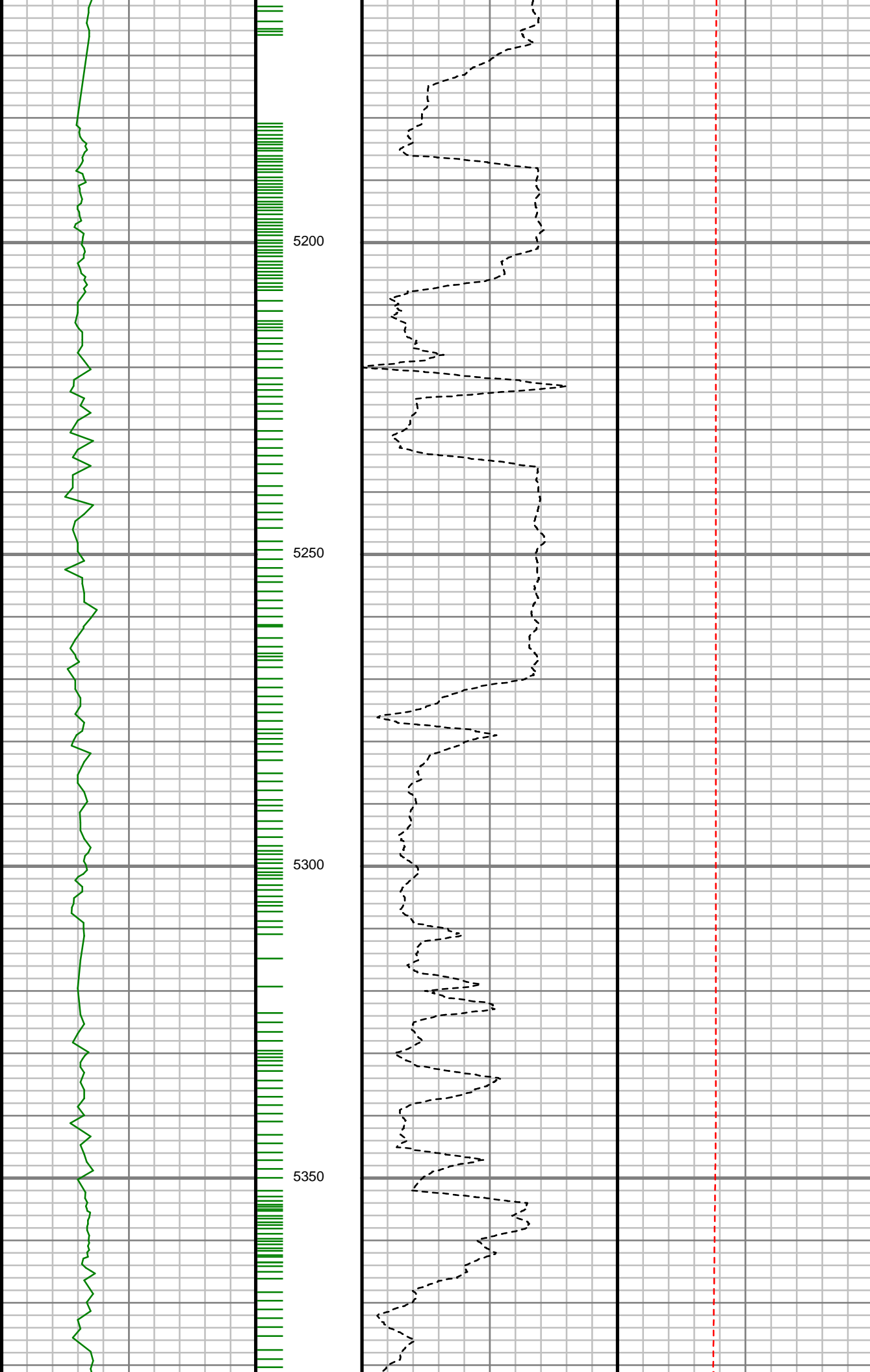
S: 48 MD: 4869.00 ft  
Inc: 1.06 deg Az:  
201.06 deg TVD:  
4855.03 ft



S: 49 MD: 4964.00 ft  
Inc: 1.13 deg Az:  
257.75 deg TVD:  
4950.02 ft

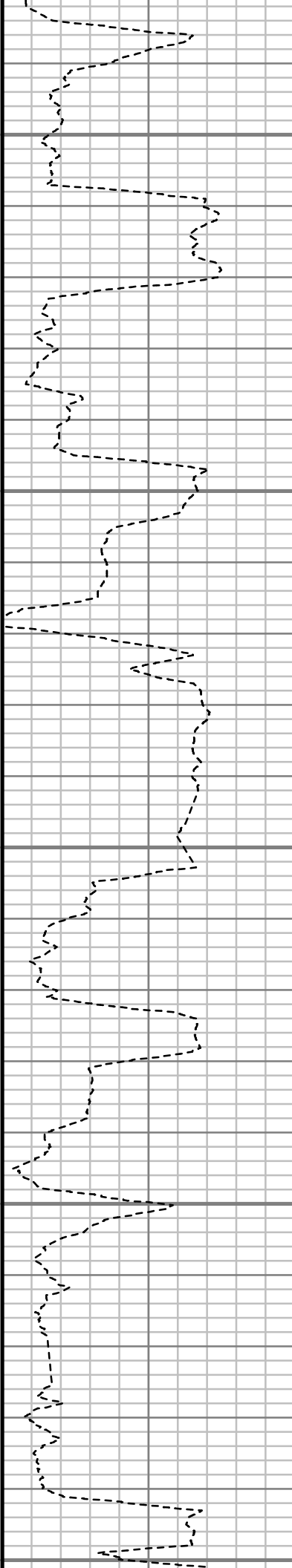
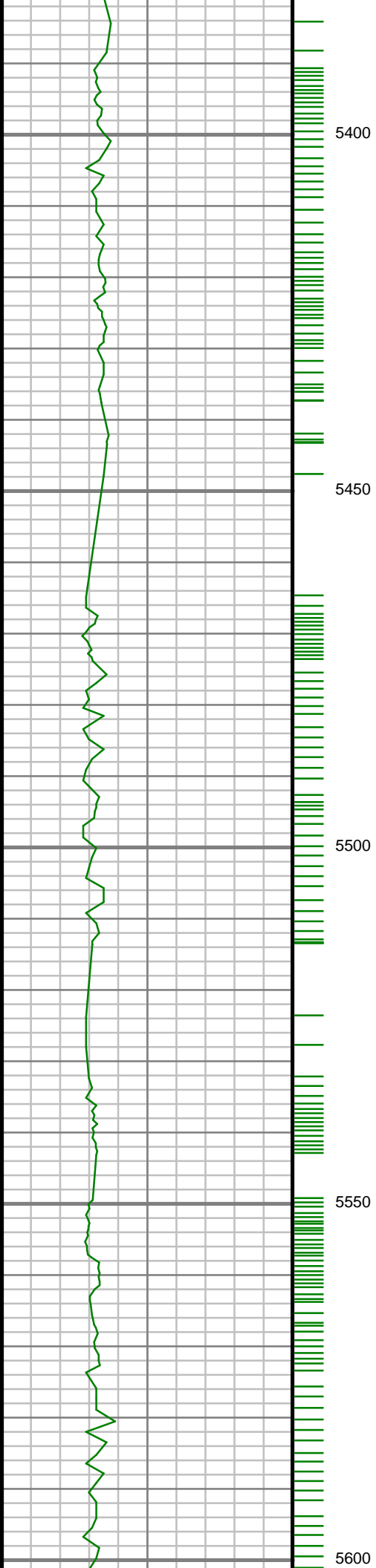
S: 50 MD: 5058.00 ft  
Inc: 1.38 deg Az:  
268.01 deg TVD:  
5043.99 ft

S: 51 MD: 5153.00 ft  
Inc: 1.83 deg Az:  
256.53 deg TVD:



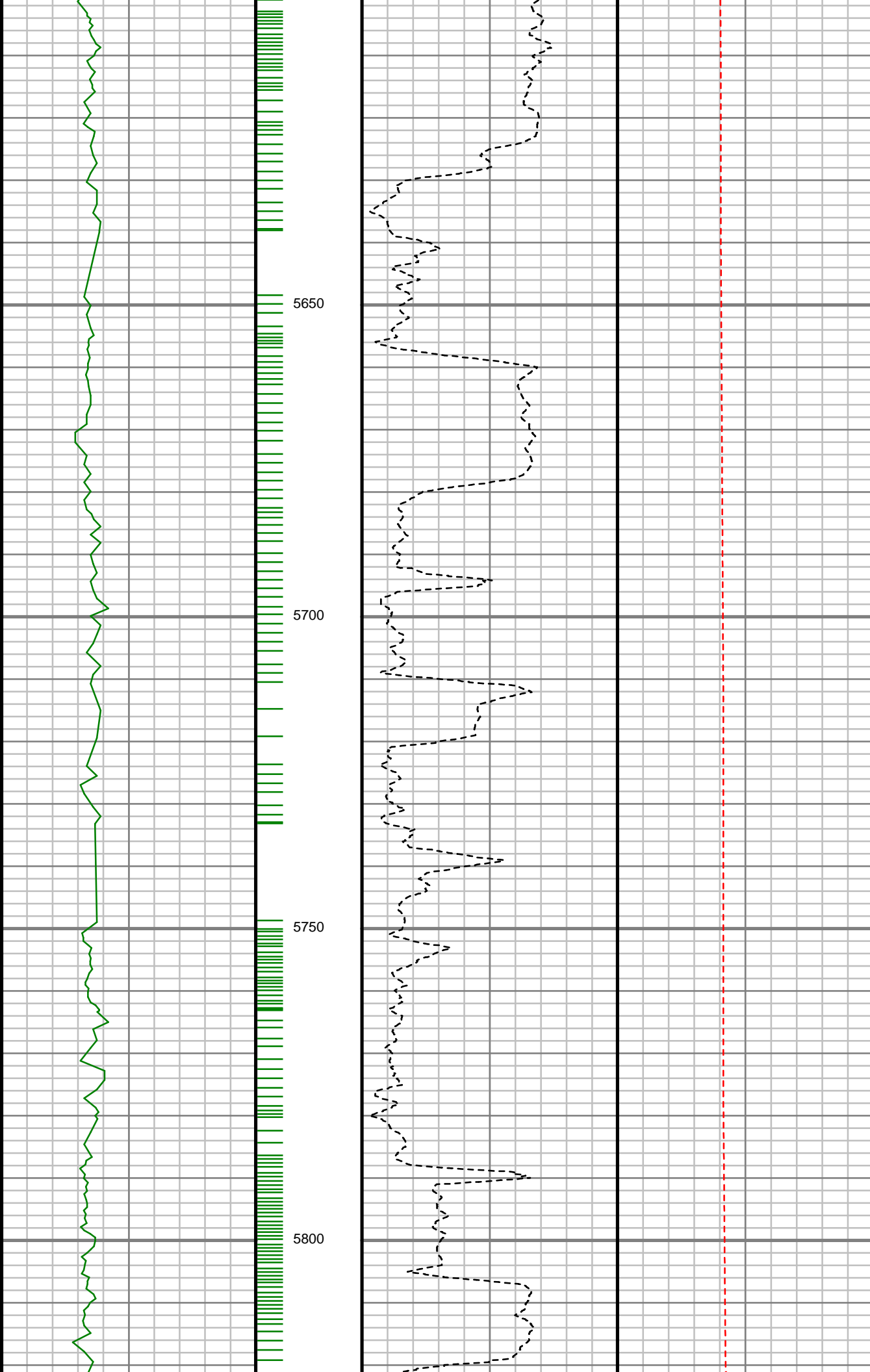
S: 52 MD: 5247.00 ft  
Inc: 1.99 deg Az:  
270.12 deg TVD:  
5232.90 ft

S: 53 MD: 5342.00 ft  
Inc: 1.59 deg Az:  
278.85 deg TVD:  
5327.86 ft



S: 54 MD: 5436.00 ft  
Inc: 2.12 deg Az:  
308.37 deg TVD:  
5421.81 ft

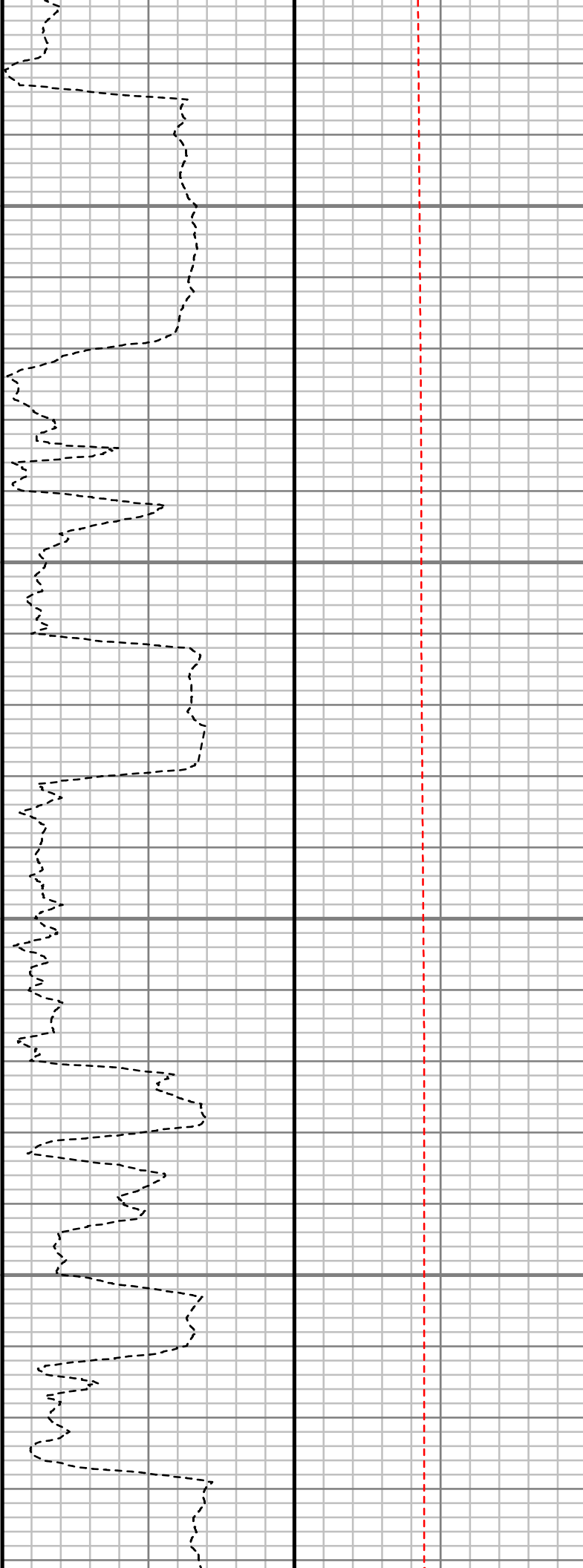
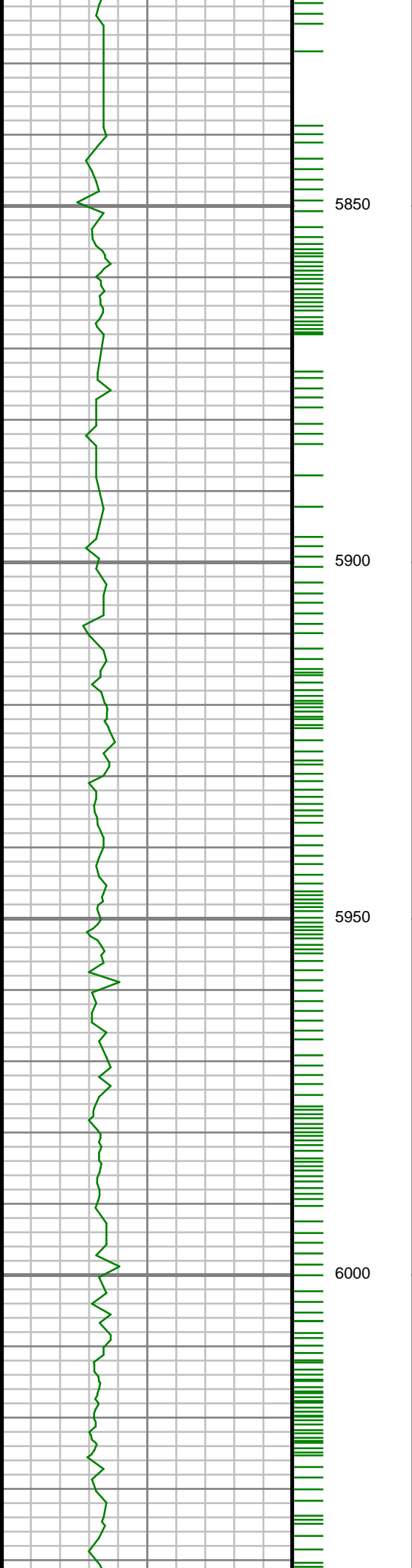
S: 55 MD: 5530.00 ft  
Inc: 2.28 deg Az:  
311.46 deg TVD:  
5515.74 ft



S: 56 MD: 5625.00 ft  
Inc: 1.25 deg Az:  
330.97 deg TVD:  
5610.70 ft

S: 57 MD: 5719.00 ft  
Inc: 1.63 deg Az:  
337.88 deg TVD:  
5704.67 ft

S: 58 MD: 5814.00 ft  
Inc: 0.54 deg Az:  
141.91 deg TVD:

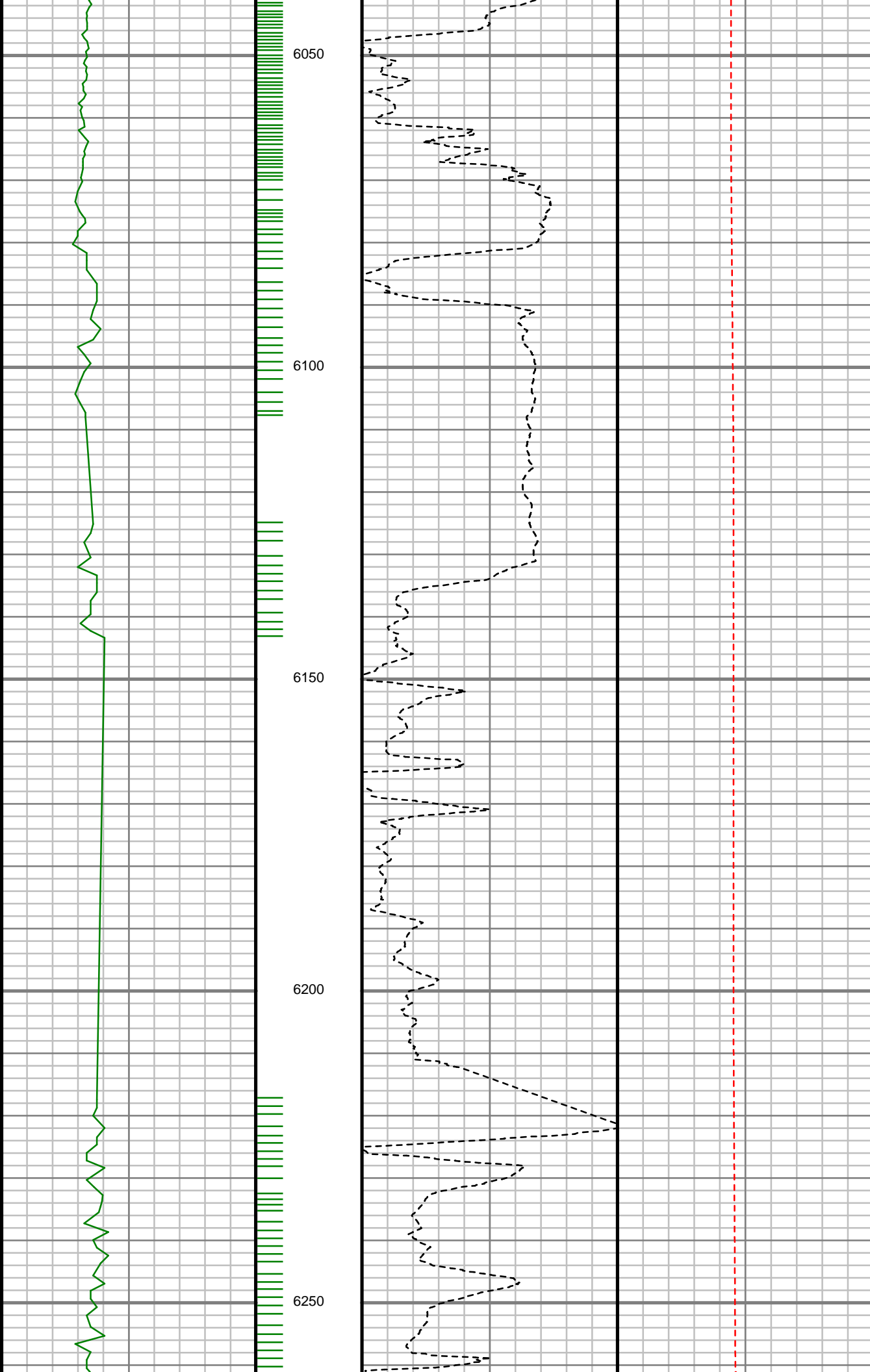


5799.66 ft

S: 59 MD: 5908.00 ft  
Inc: 0.81 deg Az:  
157.68 deg TVD:  
5893.65 ft

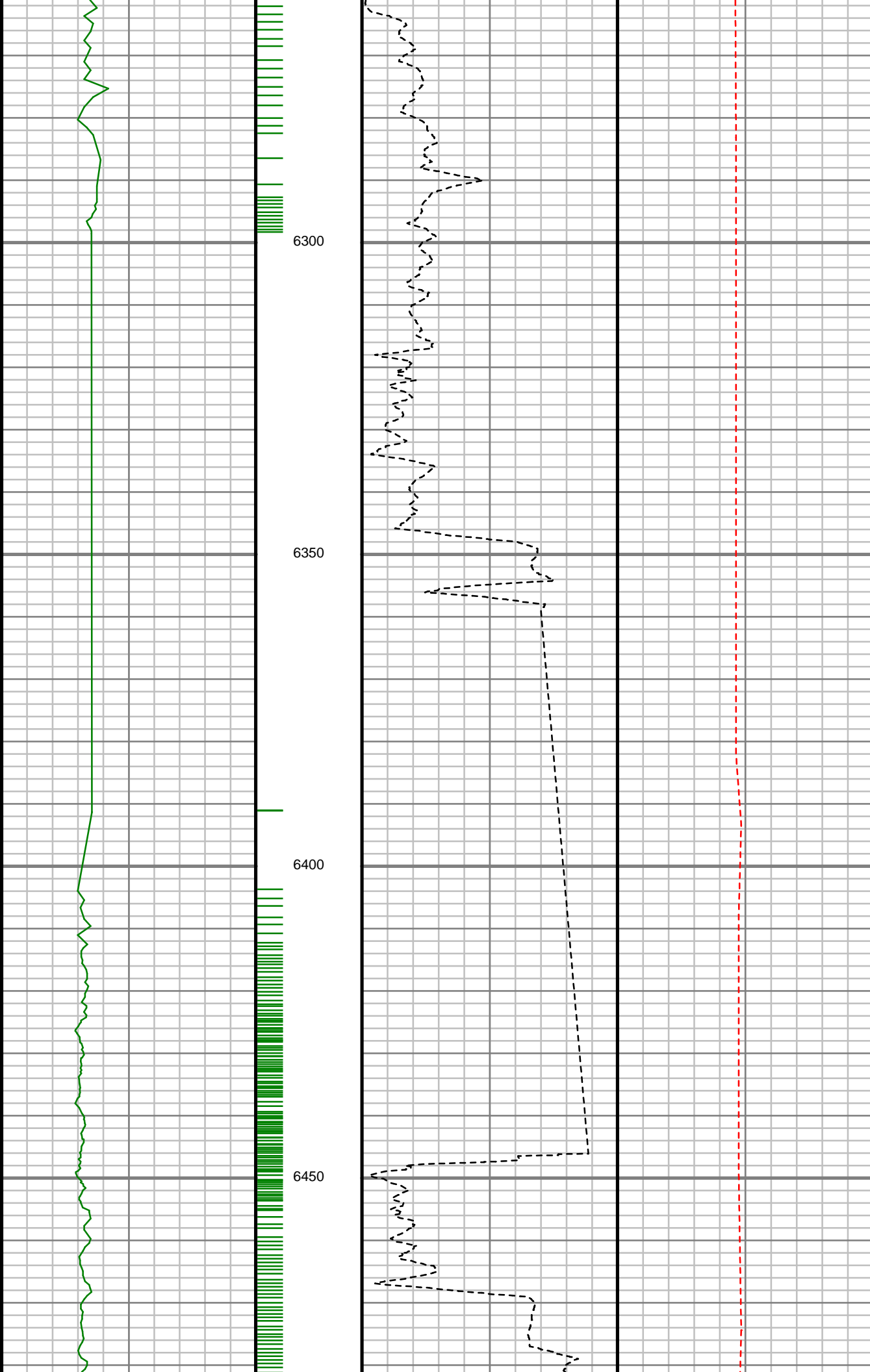
S: 60 MD: 6002.00 ft  
Inc: 0.88 deg Az:  
162.53 deg TVD:  
5987.64 ft





S: 61 MD: 6097.00 ft  
Inc: 1.38 deg Az: 67.46  
deg TVD: 6082.63 ft

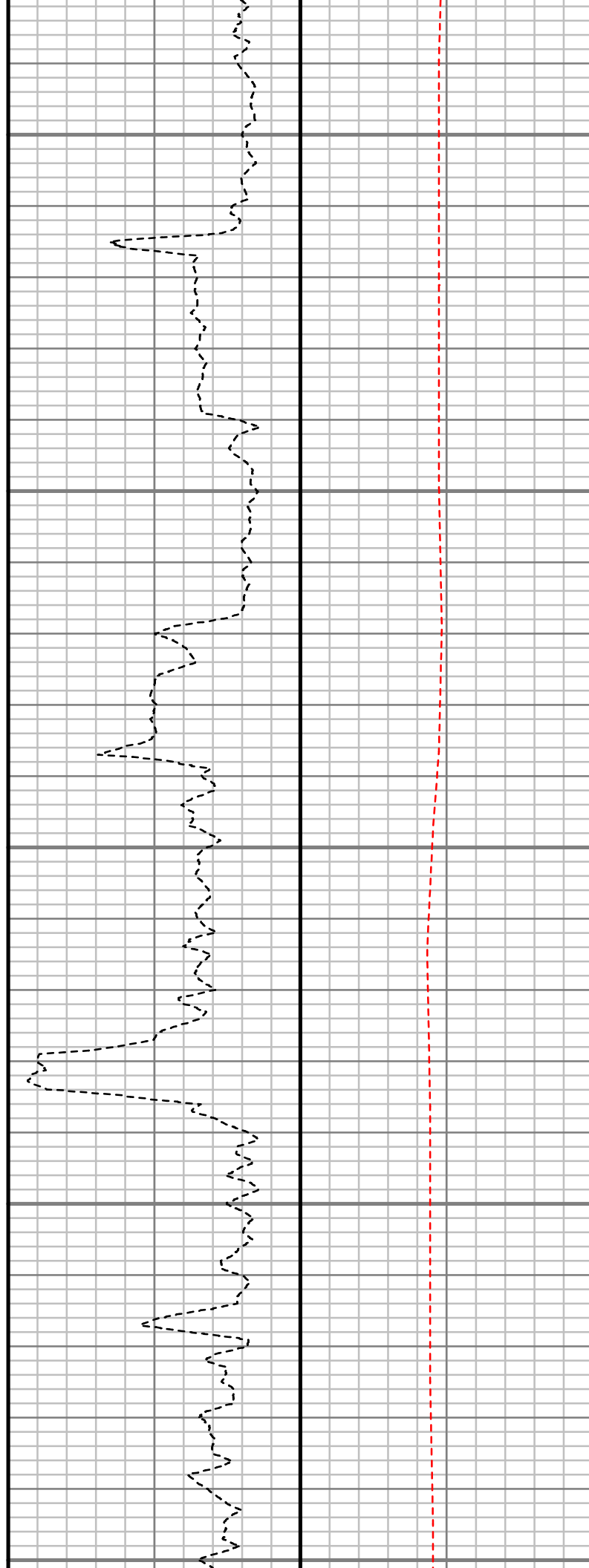
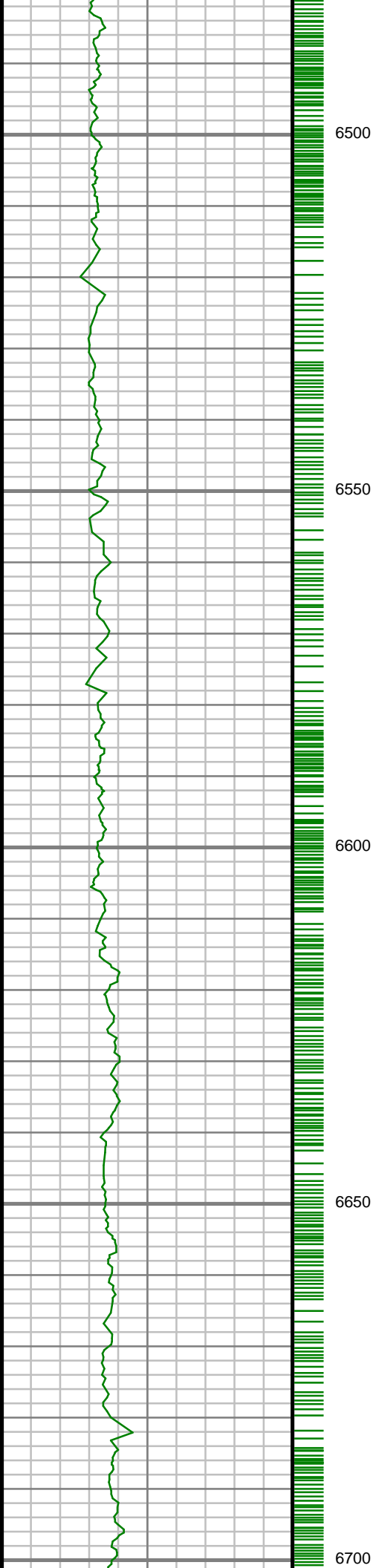
S: 62 MD: 6191.00 ft  
Inc: 1.11 deg Az: 66.67  
deg TVD: 6176.60 ft



S: 63 MD: 6285.00 ft  
Inc: 1.26 deg Az: 48.25  
deg TVD: 6270.58 ft

S: 64 MD: 6380.00 ft  
Inc: 1.11 deg Az: 60.13  
deg TVD: 6365.56 ft

S: 65 MD: 6474.00 ft  
Inc: 1.50 deg Az: 20.32  
deg TVD: 6459.54 ft

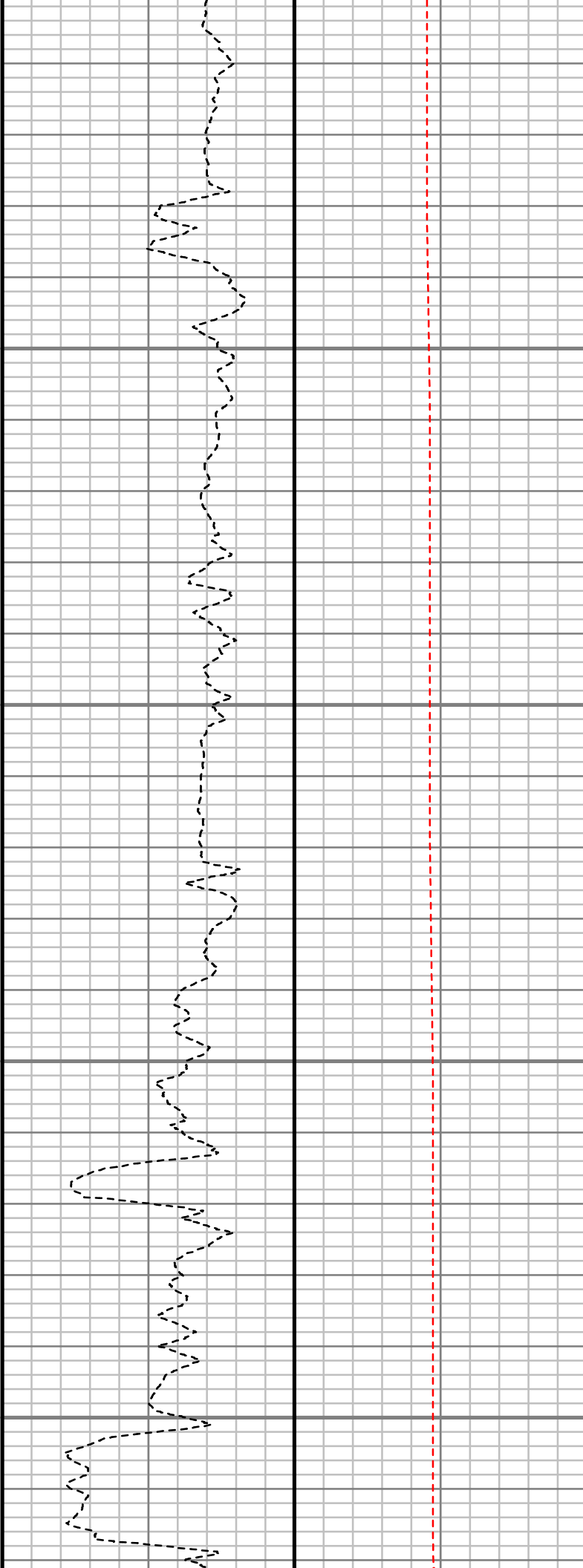
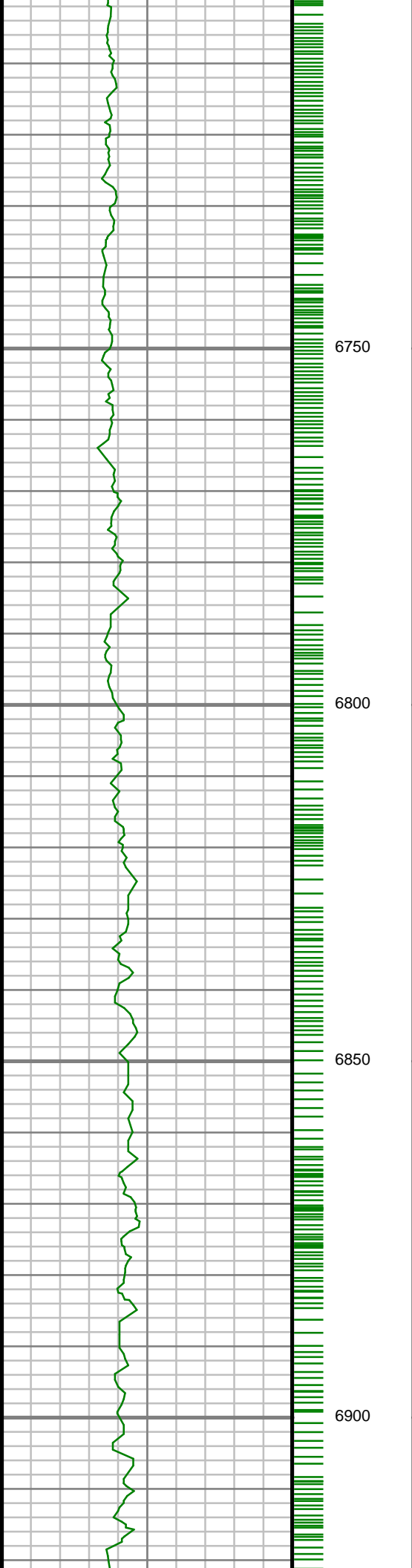


S: 66 MD: 6521.00 ft  
Inc: 4.33 deg Az: 0.24  
deg TVD: 6506.48 ft

S: 67 MD: 6568.00 ft  
Inc: 8.53 deg Az:  
357.85 deg TVD:  
6553.17 ft

S: 68 MD: 6615.00 ft  
Inc: 14.70 deg Az: 3.22  
deg TVD: 6599.19 ft

S: 69 MD: 6662.00 ft  
Inc: 20.08 deg Az:  
359.76 deg TVD:  
6644.02 ft



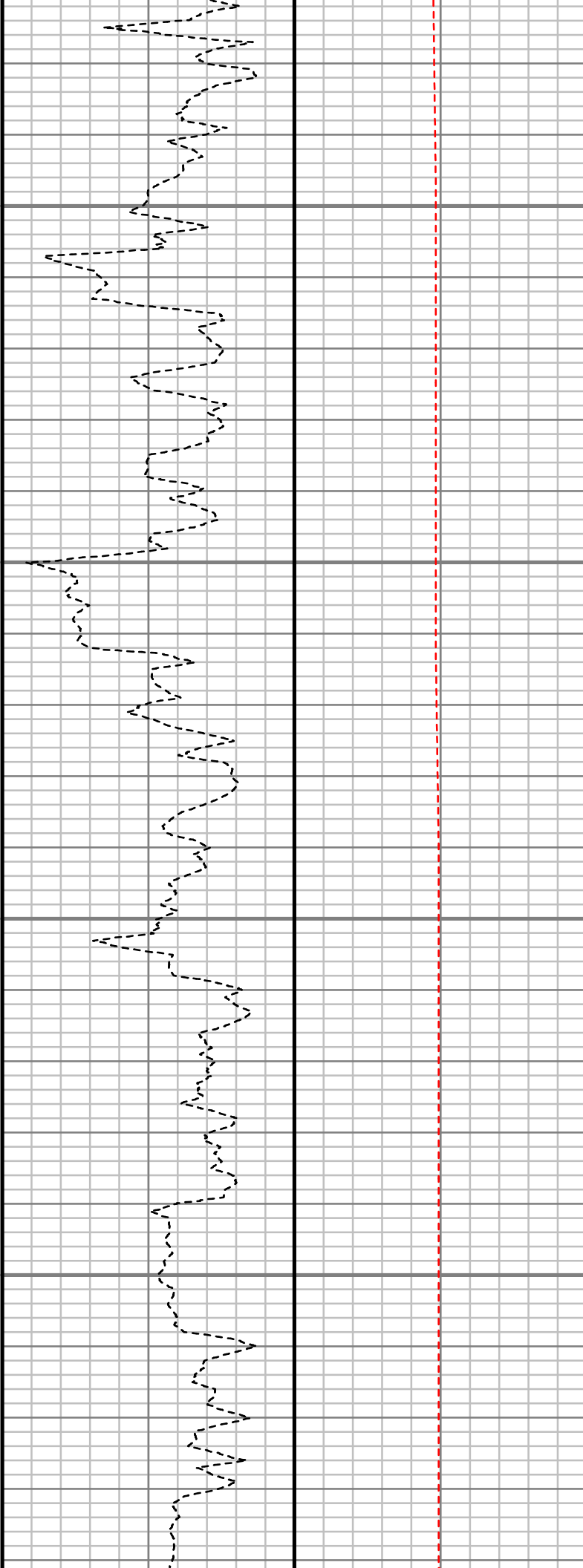
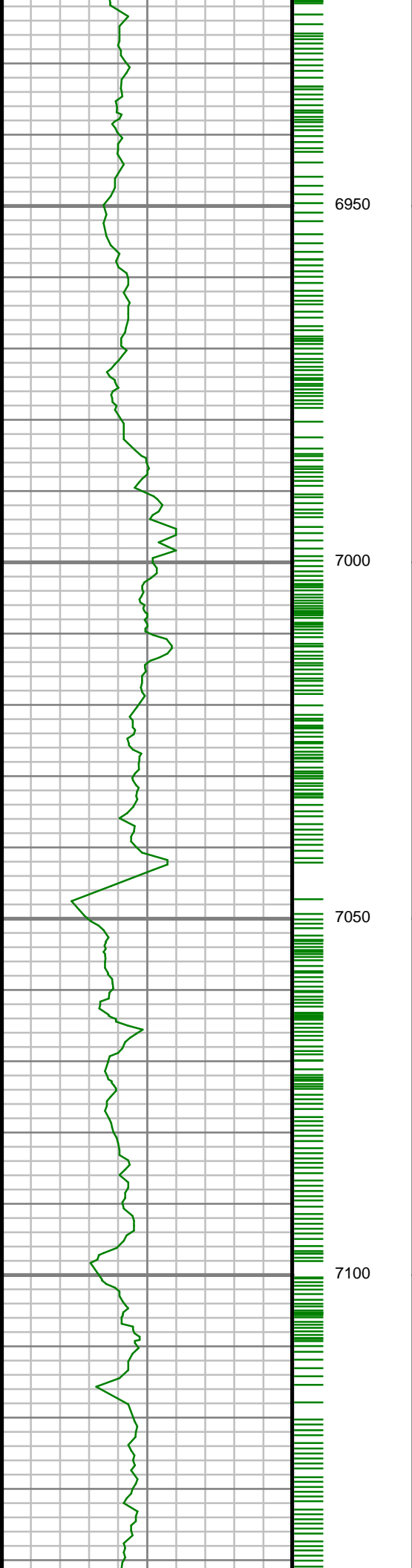
S: 70 MD: 6709.00 ft  
Inc: 25.13 deg Az:  
352.96 deg TVD:  
6687.41 ft

S: 71 MD: 6756.00 ft  
Inc: 29.09 deg Az:  
349.05 deg TVD:  
6729.24 ft

S: 72 MD: 6803.00 ft  
Inc: 33.18 deg Az:  
352.57 deg TVD:  
6769.46 ft

S: 73 MD: 6851.00 ft  
Inc: 39.49 deg Az:  
354.44 deg TVD:  
6808.11 ft

S: 74 MD: 6898.00 ft  
Inc: 45.16 deg Az:  
355.03 deg TVD:  
6842.85 ft



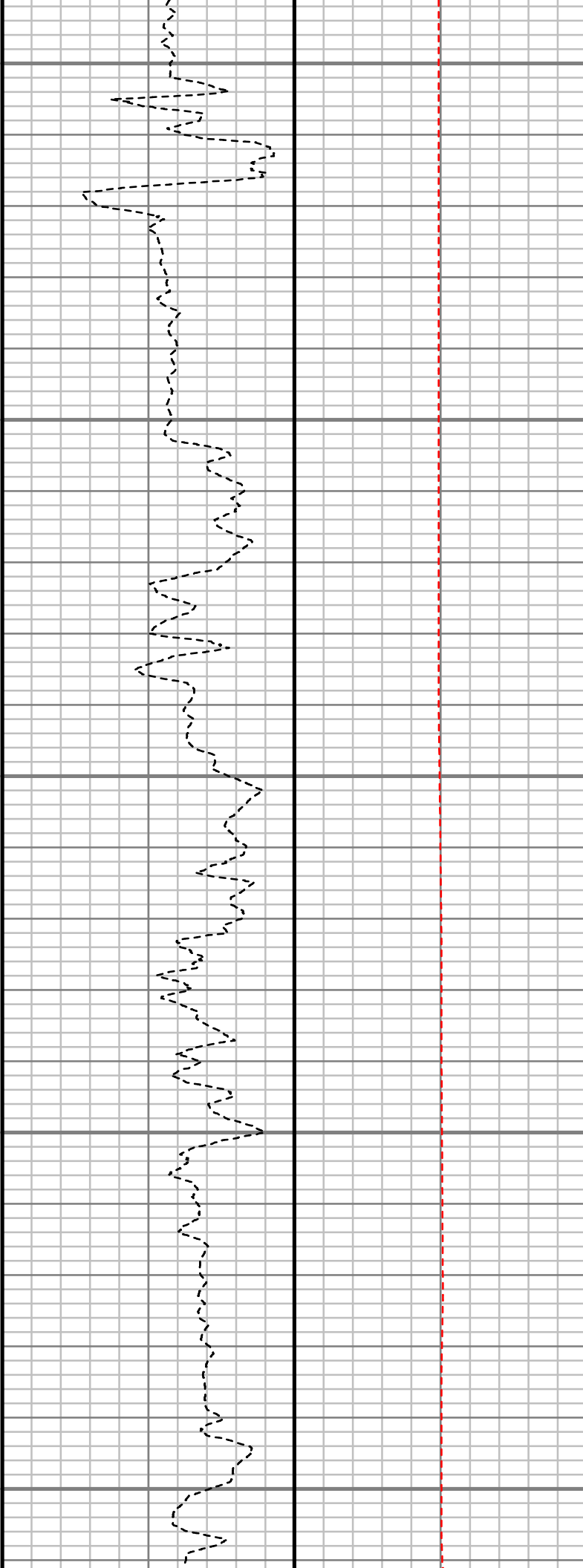
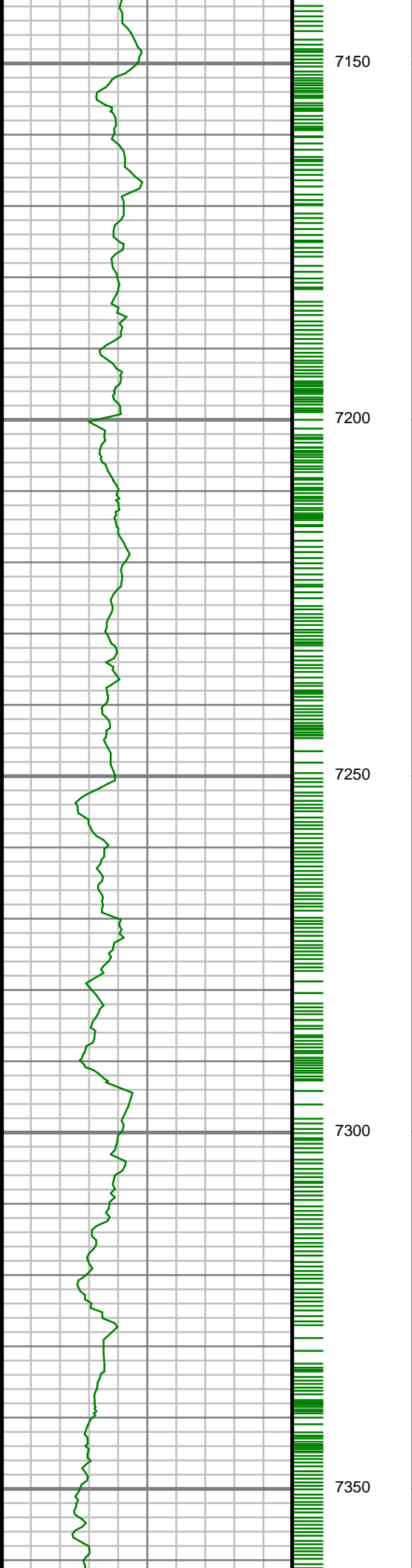
S: 75 MD: 6945.00 ft  
Inc: 48.86 deg Az:  
356.77 deg TVD:  
6874.89 ft

S: 76 MD: 6992.00 ft  
Inc: 54.01 deg Az:  
357.85 deg TVD:  
6904.18 ft

S: 77 MD: 7039.00 ft  
Inc: 60.03 deg Az:  
357.83 deg TVD:  
6929.76 ft

S: 78 MD: 7086.00 ft  
Inc: 64.79 deg Az: 2.07  
deg TVD: 6951.52 ft

S: 79 MD: 7133.00 ft  
Inc: 66.96 deg Az: 4.93  
deg TVD: 6970.74 ft

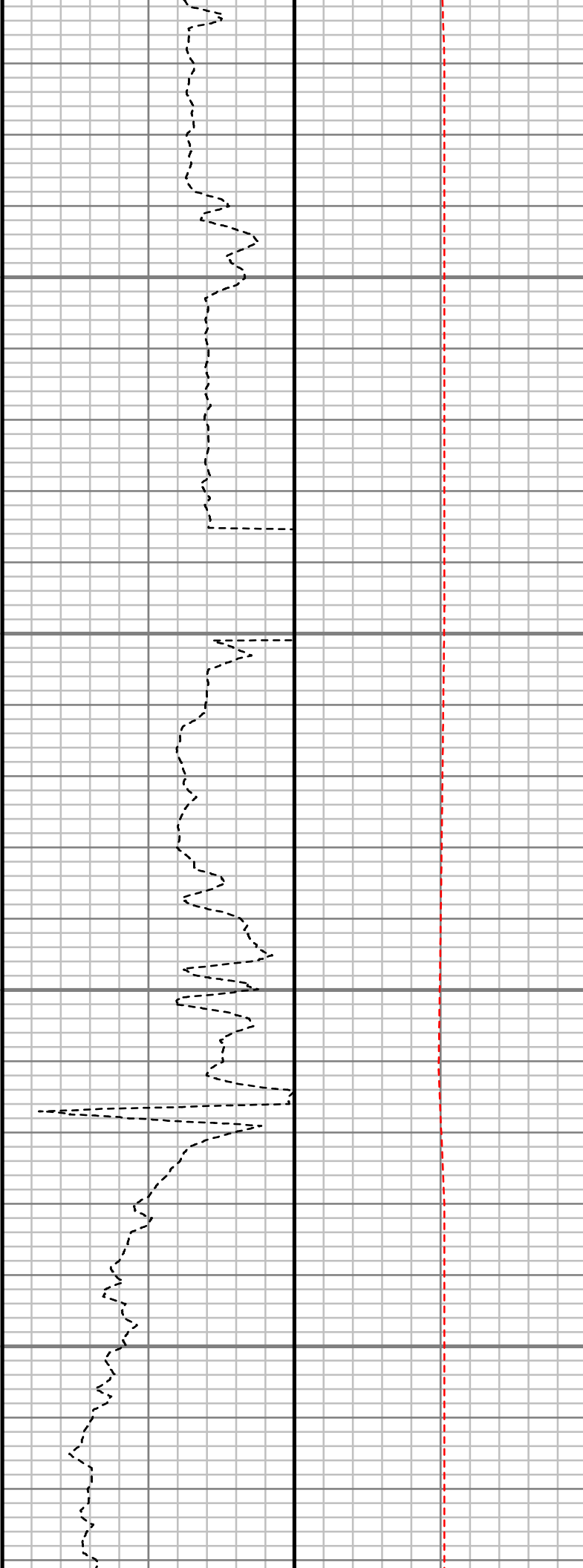
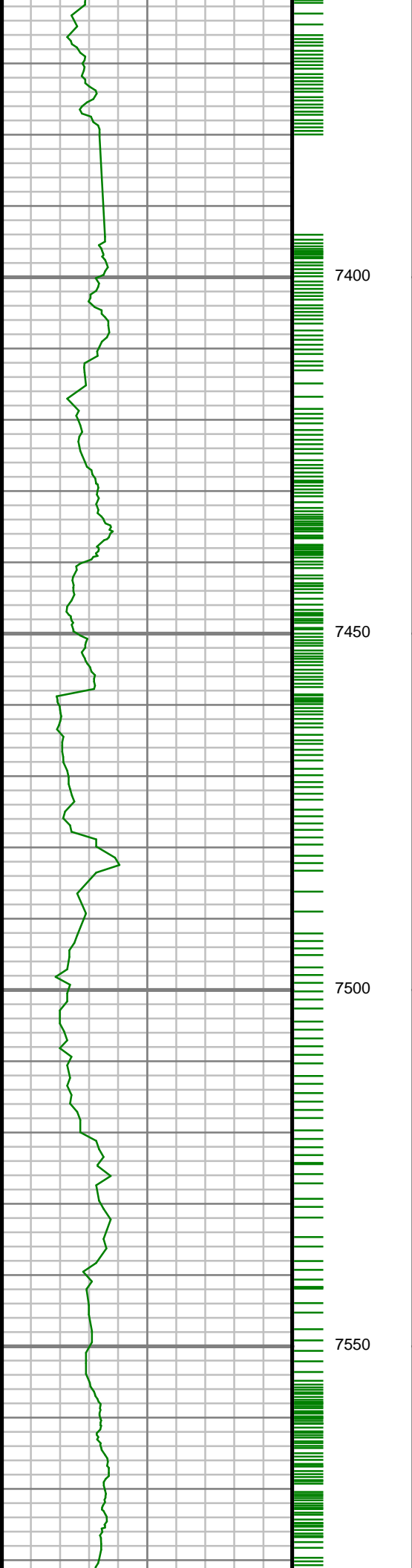


S: 80 MD: 7180.00 ft  
Inc: 68.38 deg Az: 3.58  
deg TVD: 6988.59 ft

S: 81 MD: 7228.00 ft  
Inc: 72.32 deg Az: 2.72  
deg TVD: 7004.73 ft

S: 82 MD: 7275.00 ft  
Inc: 77.60 deg Az: 2.32  
deg TVD: 7016.93 ft

S: 83 MD: 7322.00 ft  
Inc: 79.36 deg Az: 1.18  
deg TVD: 7026.31 ft



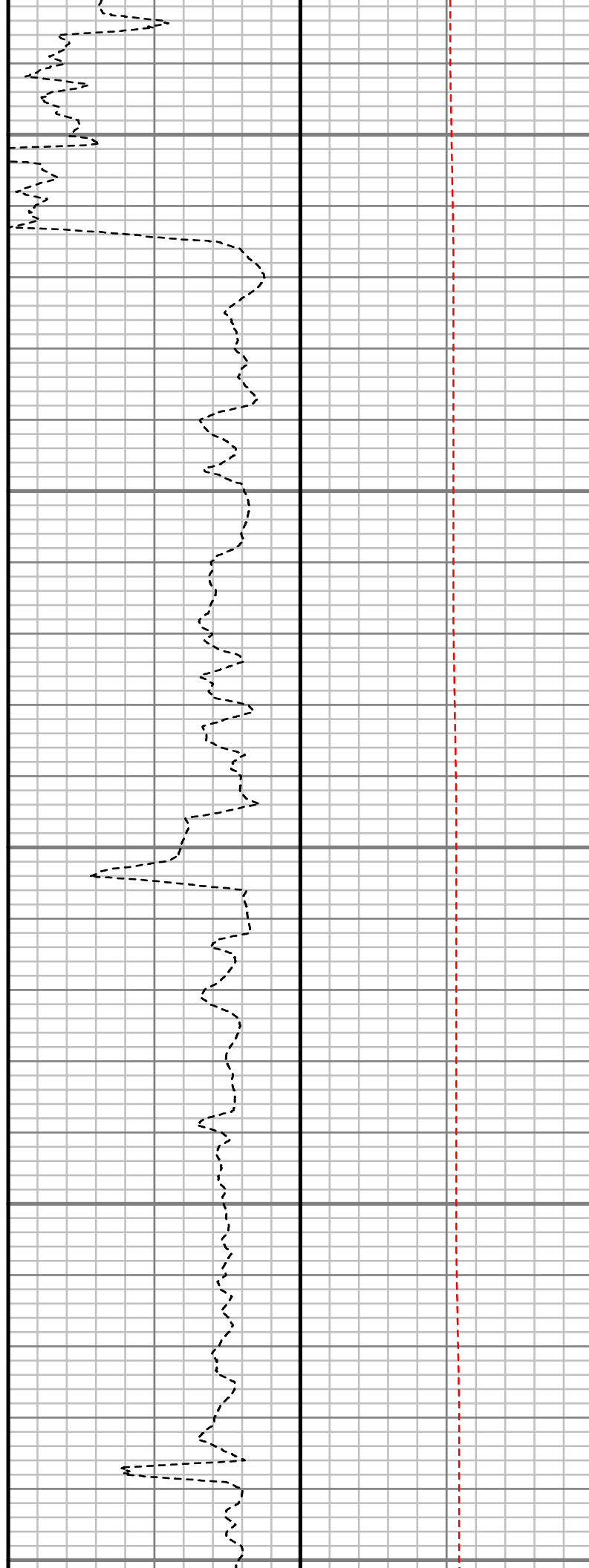
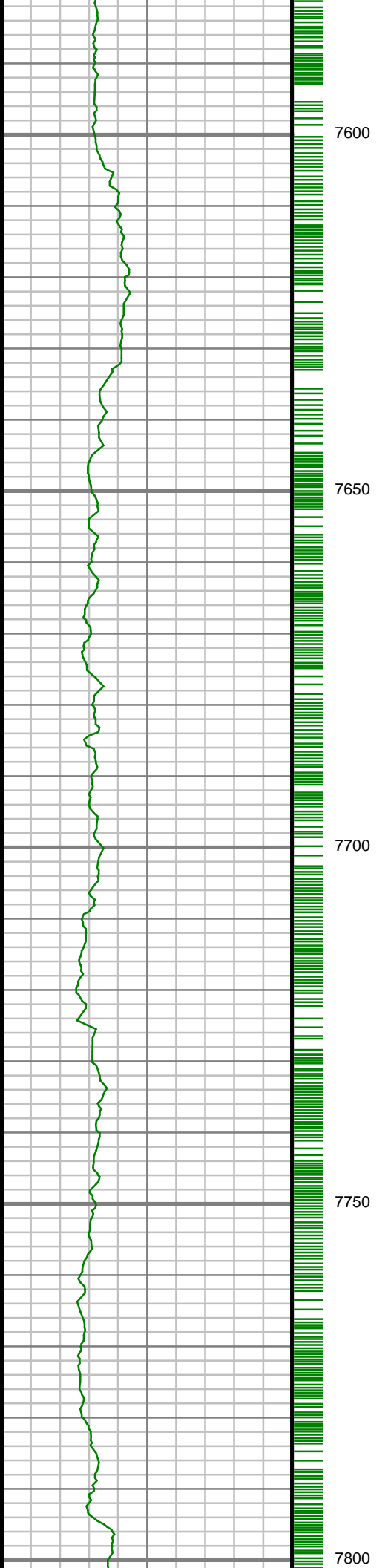
S: 84 MD: 7369.00 ft  
Inc: 80.95 deg Az: 1.01  
deg TVD: 7034.35 ft

S: 85 MD: 7416.00 ft  
Inc: 84.16 deg Az: 1.22  
deg TVD: 7040.44 ft

S: 86 MD: 7447.00 ft  
Inc: 86.88 deg Az: 1.07  
deg TVD: 7042.85 ft

S: 87 MD: 7513.00 ft  
Inc: 89.53 deg Az: 1.69  
deg TVD: 7044.92 ft

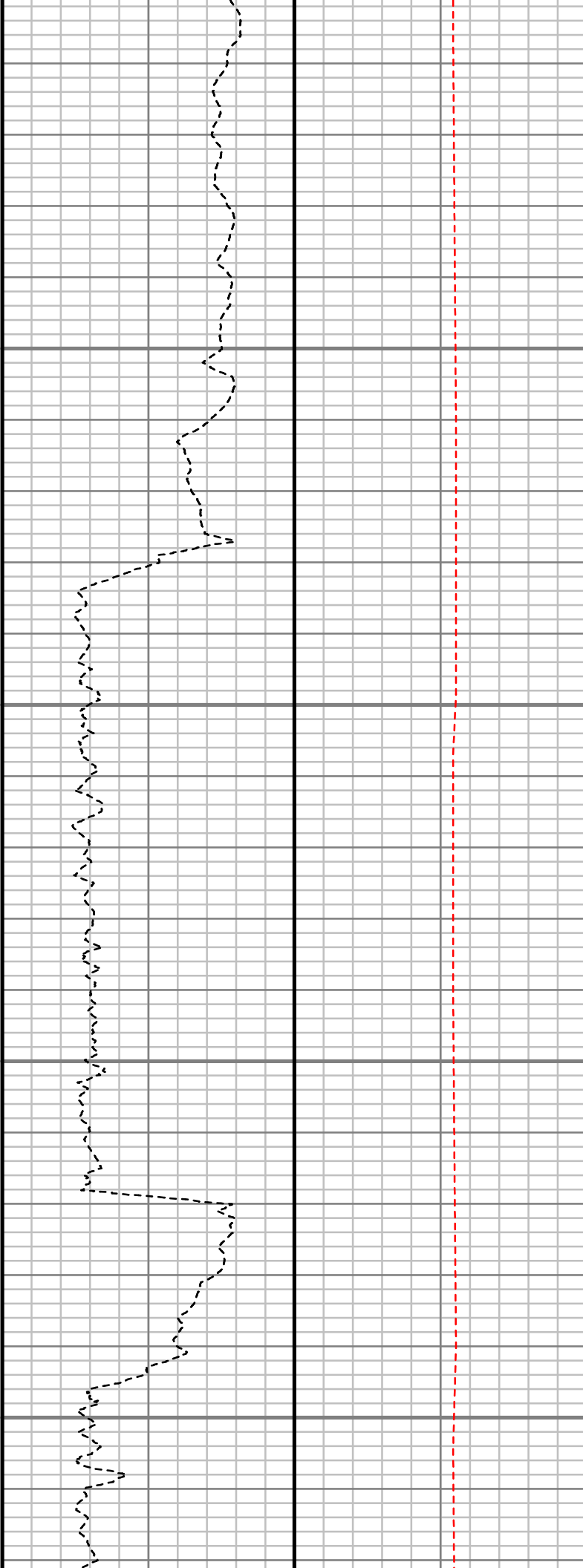
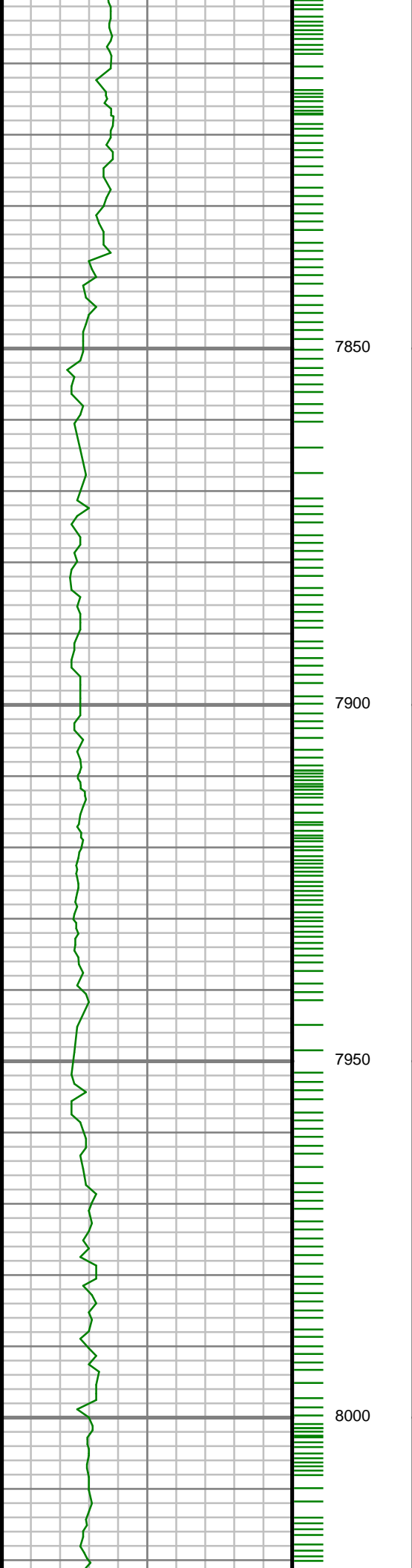
S: 88 MD: 7530.00 ft  
Inc: 89.56 deg Az: 1.73  
deg TVD: 7045.05 ft



S: 89 MD: 7621.00 ft  
Inc: 90.00 deg Az: 0.86  
deg TVD: 7045.40 ft

S: 90 MD: 7713.00 ft  
Inc: 90.00 deg Az: 0.47  
deg TVD: 7045.40 ft

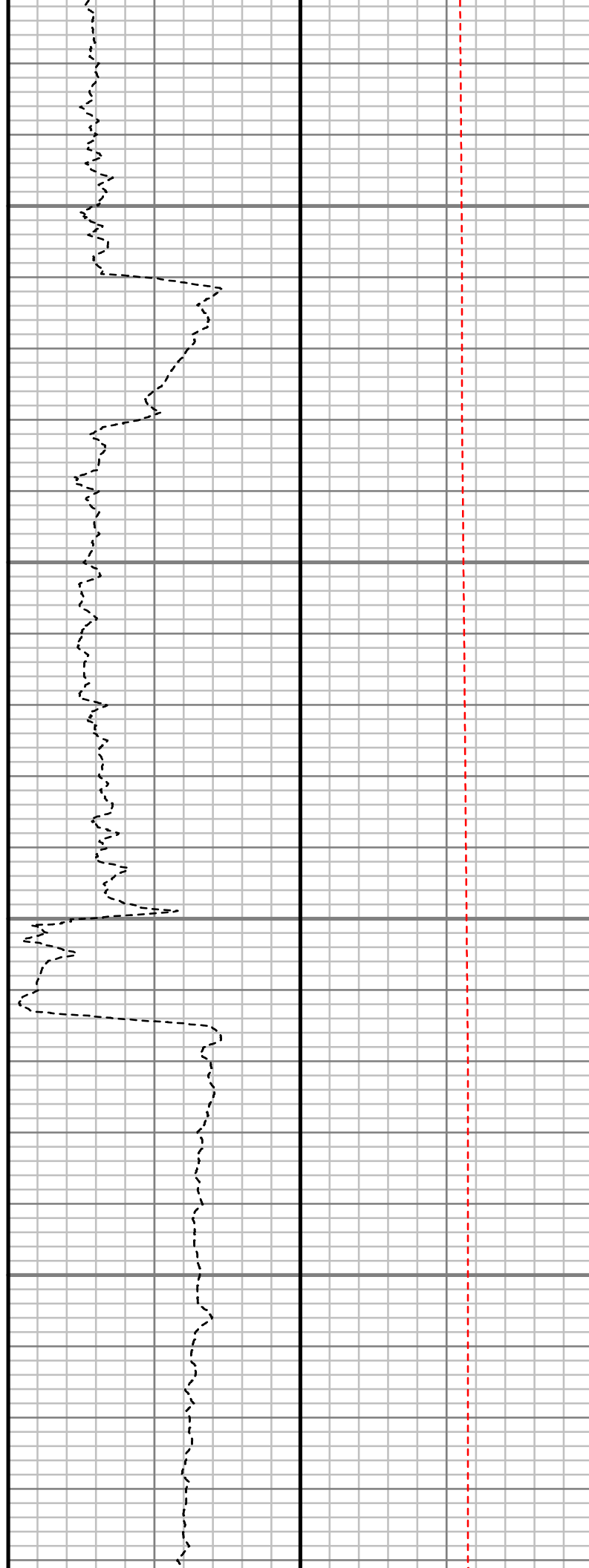
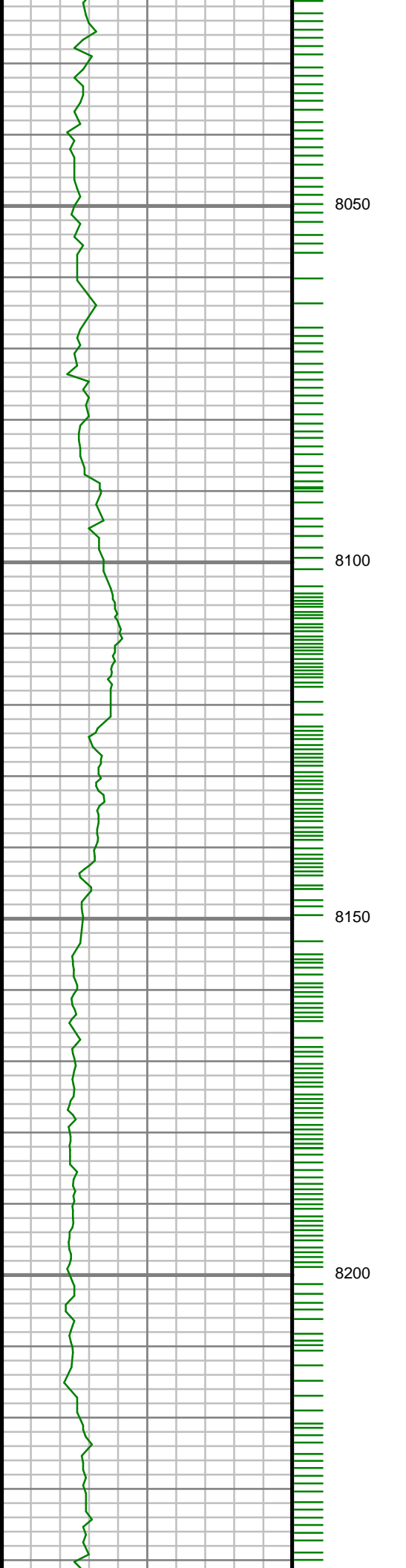




S: 91 MD: 7805.00 ft  
Inc: 90.94 deg Az: 0.18  
deg TVD: 7044.65 ft

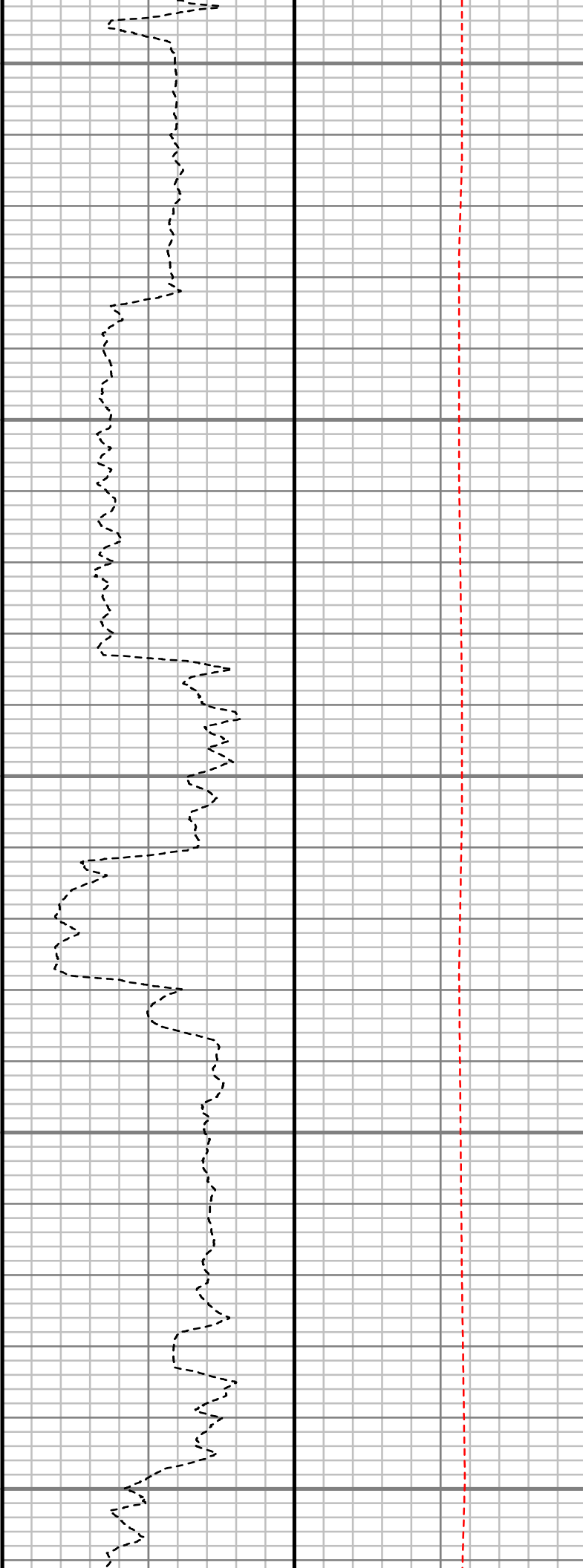
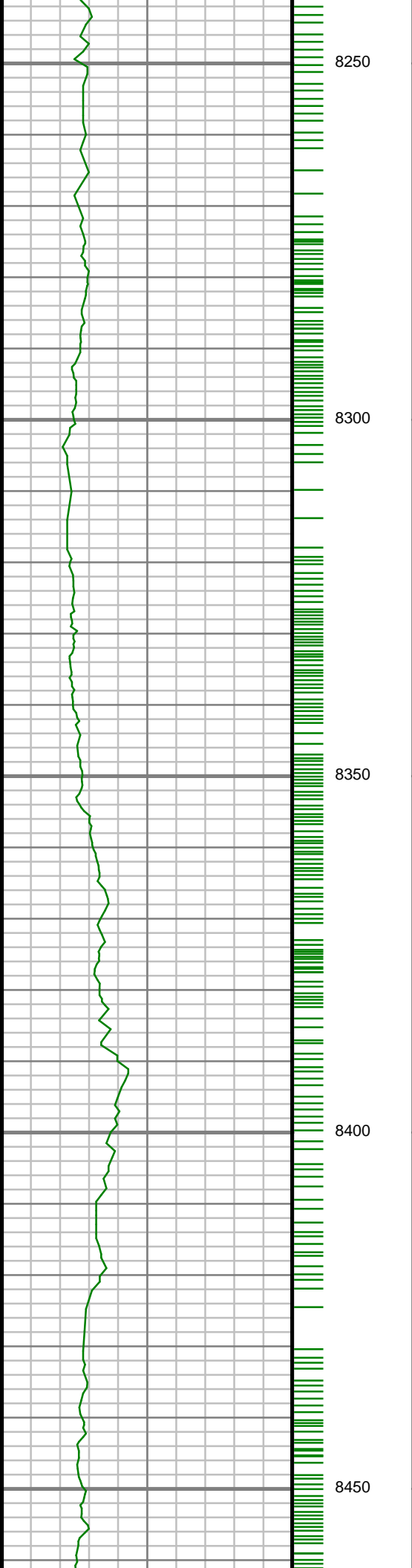
S: 92 MD: 7896.00 ft  
Inc: 91.88 deg Az:  
359.05 deg TVD:  
7042.40 ft

S: 93 MD: 7986.00 ft  
Inc: 91.04 deg Az:  
359.10 deg TVD:  
7040.10 ft



S: 94 MD: 8077.00 ft  
Inc: 89.33 deg Az:  
359.75 deg TVD:  
7039.81 ft

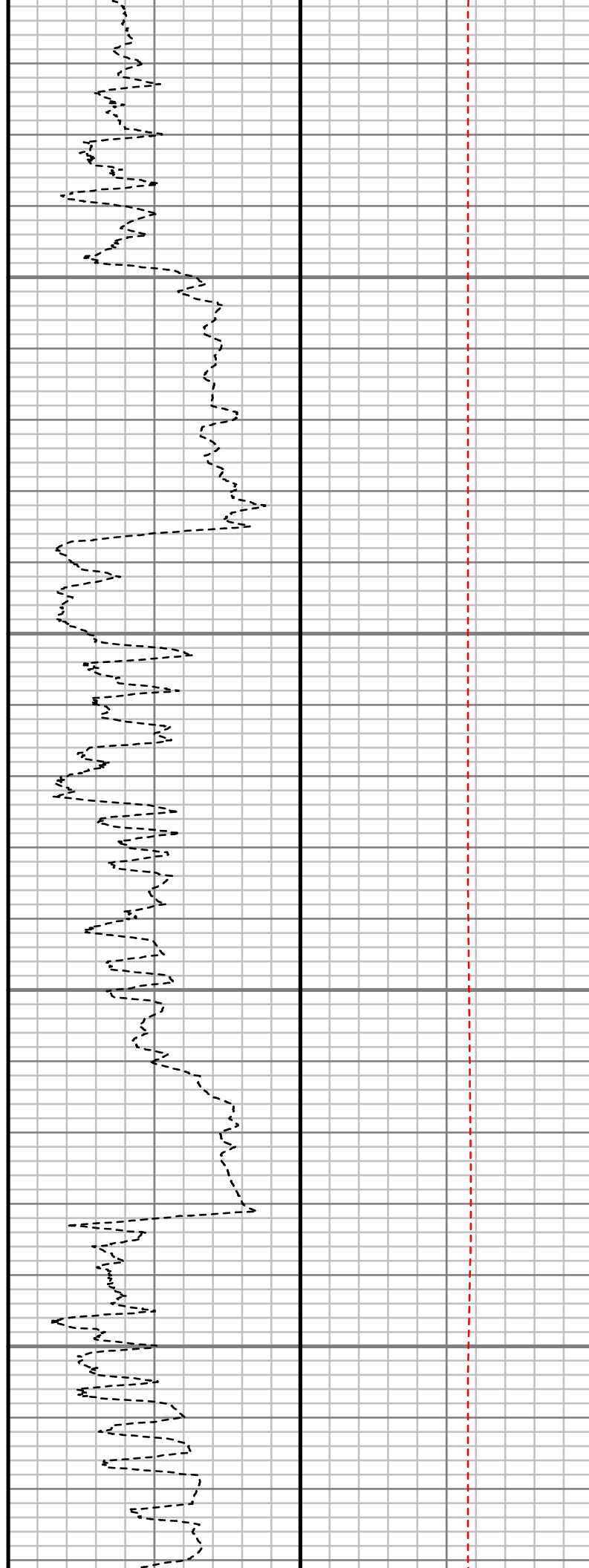
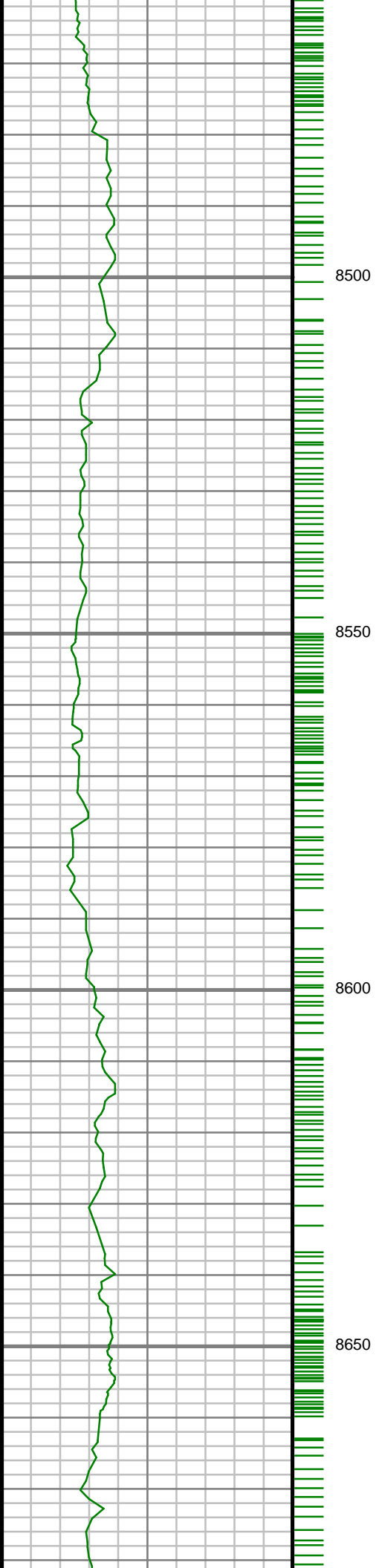
S: 95 MD: 8168.00 ft  
Inc: 89.87 deg Az:  
359.56 deg TVD:  
7040.45 ft



S: 96 MD: 8260.00 ft  
Inc: 90.37 deg Az:  
358.01 deg TVD:  
7040.26 ft

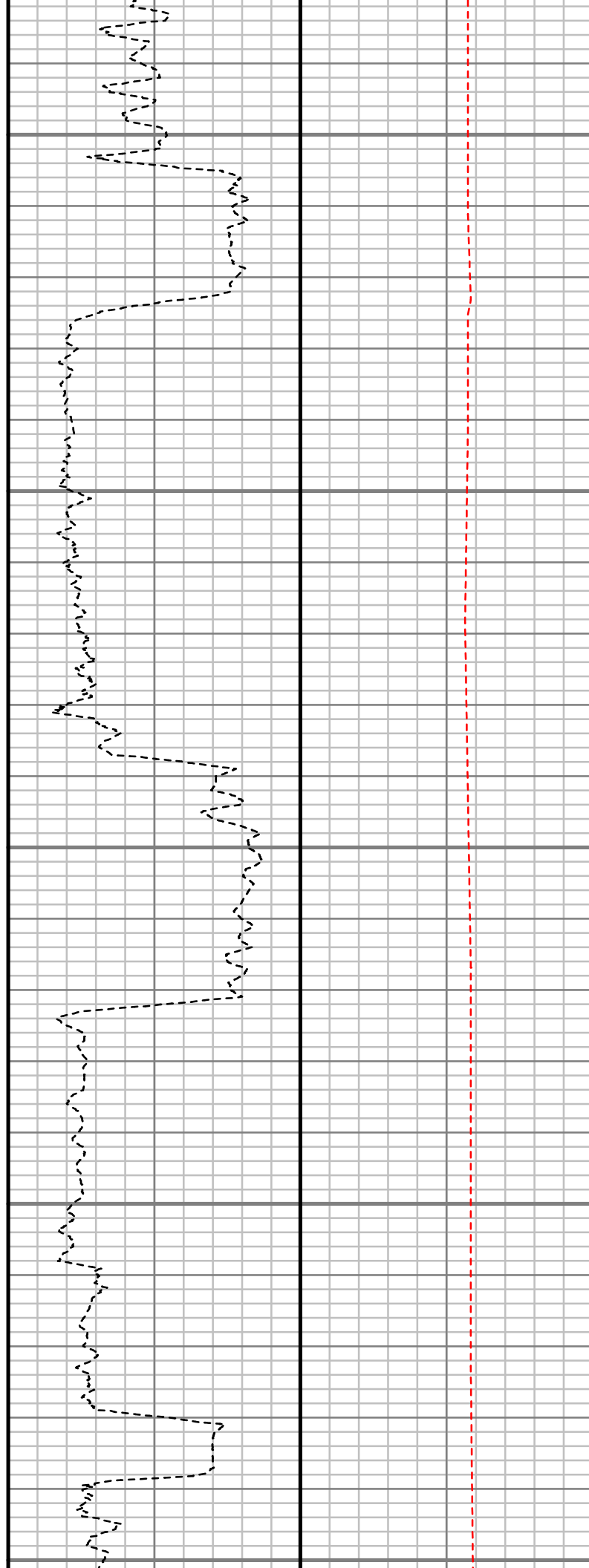
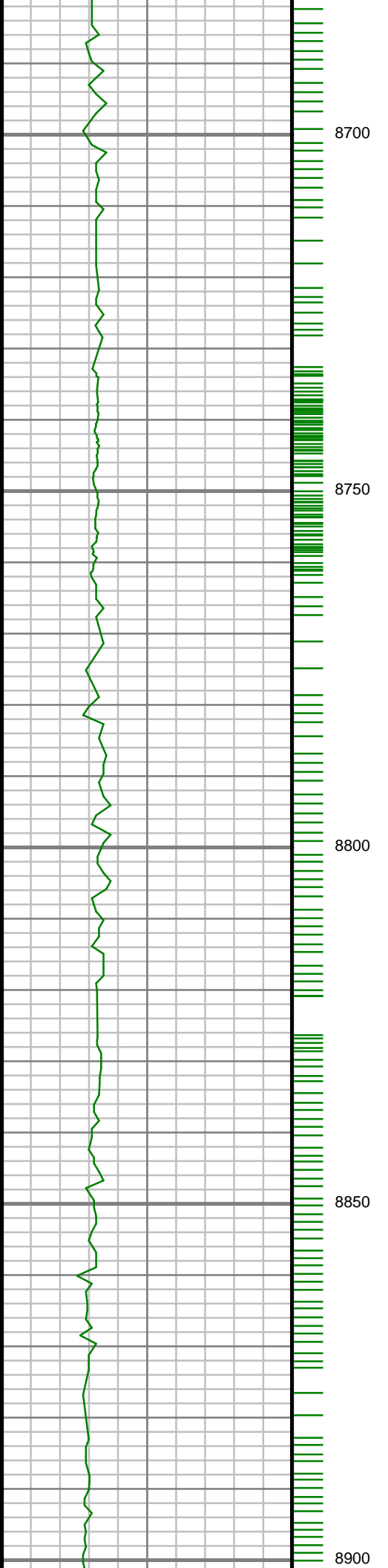
S: 97 MD: 8352.00 ft  
Inc: 90.91 deg Az:  
359.41 deg TVD:  
7039.23 ft

S: 98 MD: 8443.00 ft  
Inc: 91.04 deg Az: 0.17  
deg TVD: 7037.68 ft



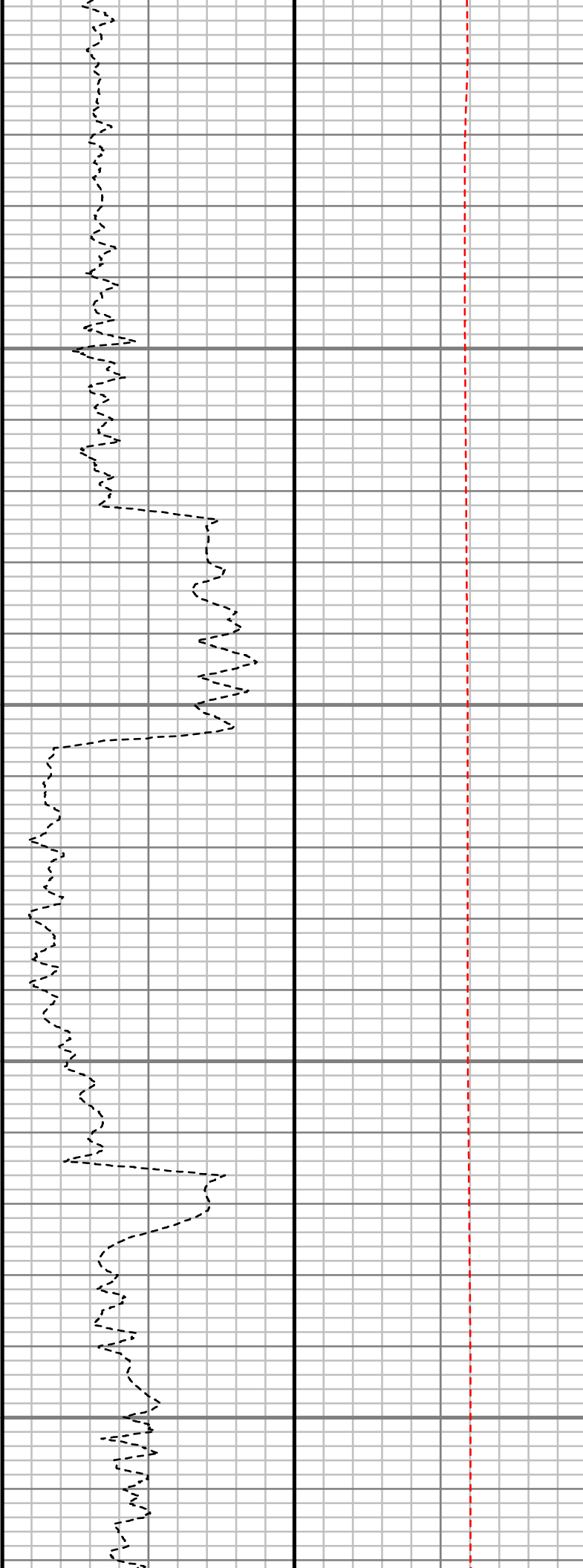
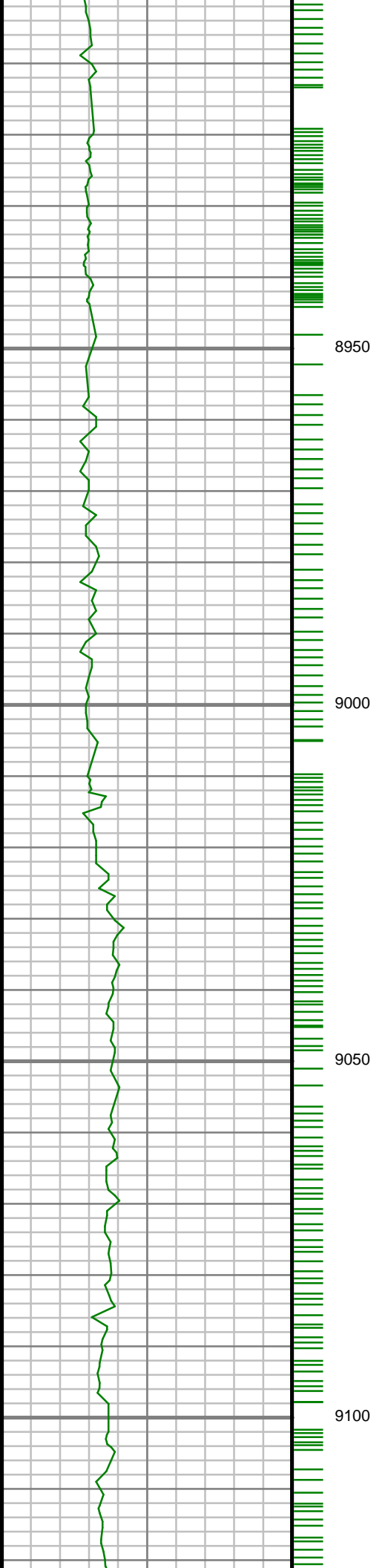
S: 99 MD: 8534.00 ft  
Inc: 91.62 deg Az: 1.10  
deg TVD: 7035.57 ft

S: 100 MD: 8626.00 ft  
Inc: 91.38 deg Az: 0.38  
deg TVD: 7033.17 ft



S: 101 MD: 8718.00 ft  
Inc: 90.84 deg Az: 1.68  
deg TVD: 7031.39 ft

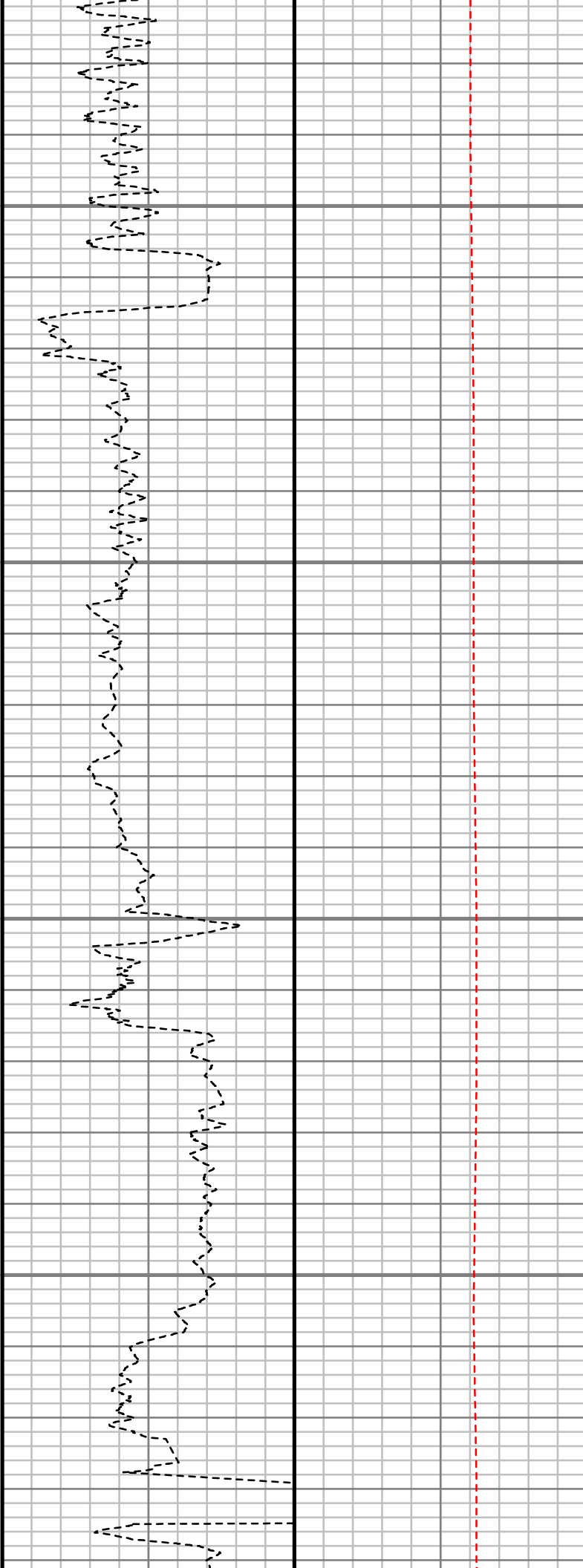
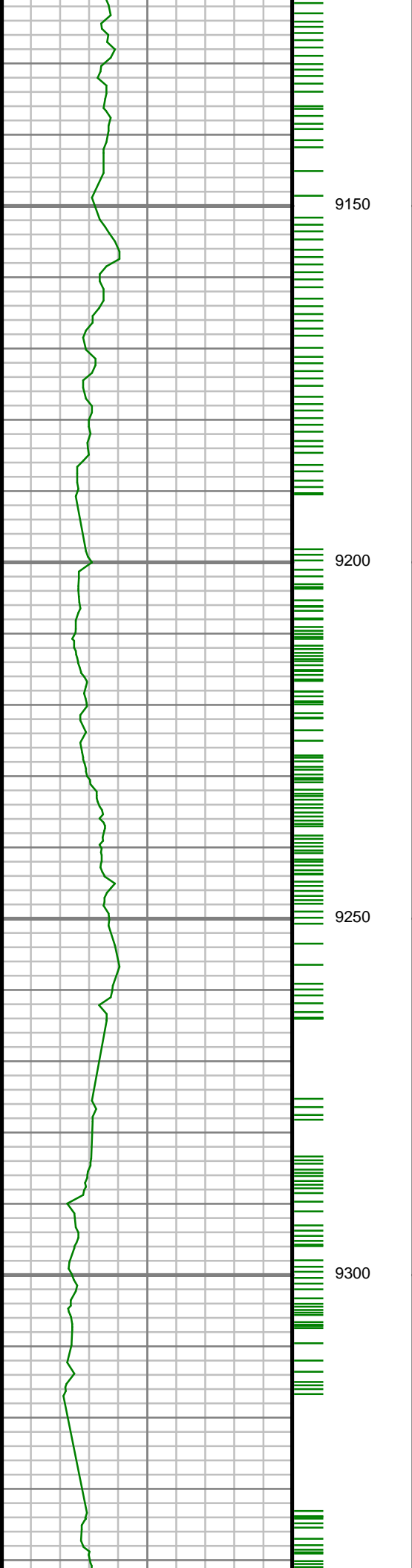
S: 102 MD: 8809.00 ft  
Inc: 89.73 deg Az: 1.52  
deg TVD: 7030.93 ft



S: 103 MD: 8901.00 ft  
Inc: 90.20 deg Az: 1.40  
deg TVD: 7030.99 ft

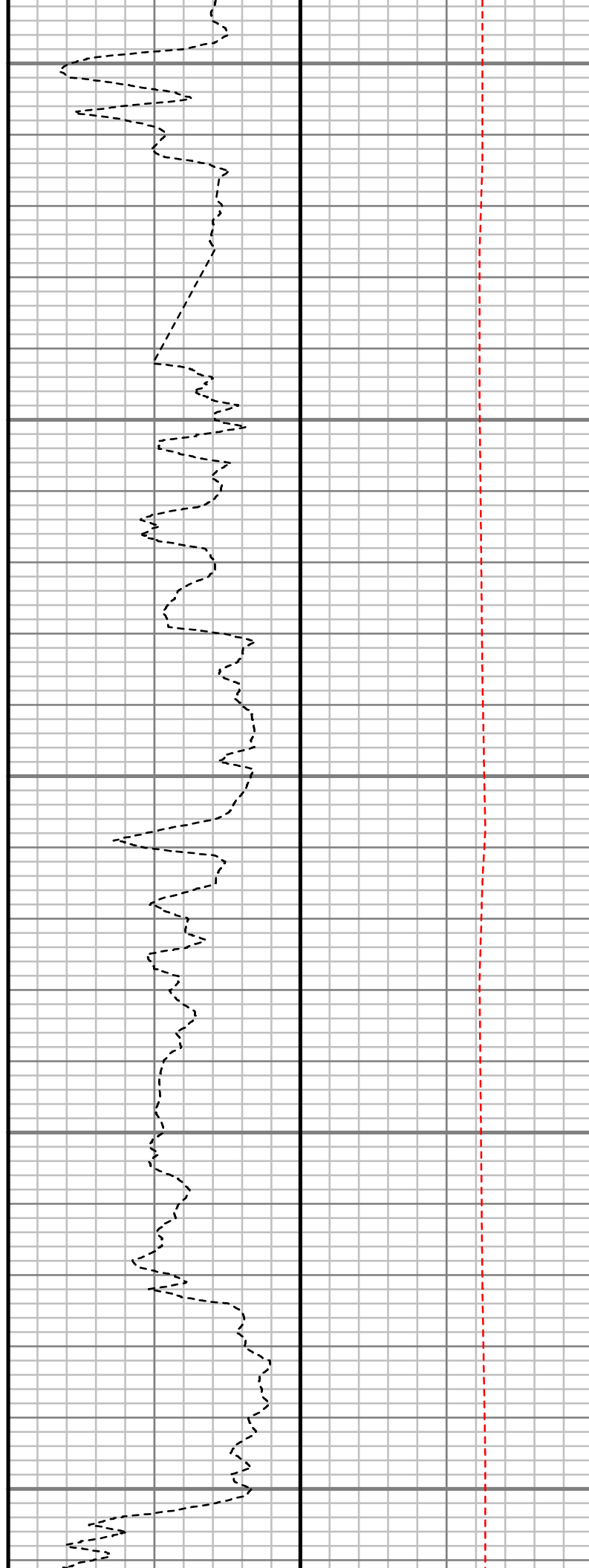
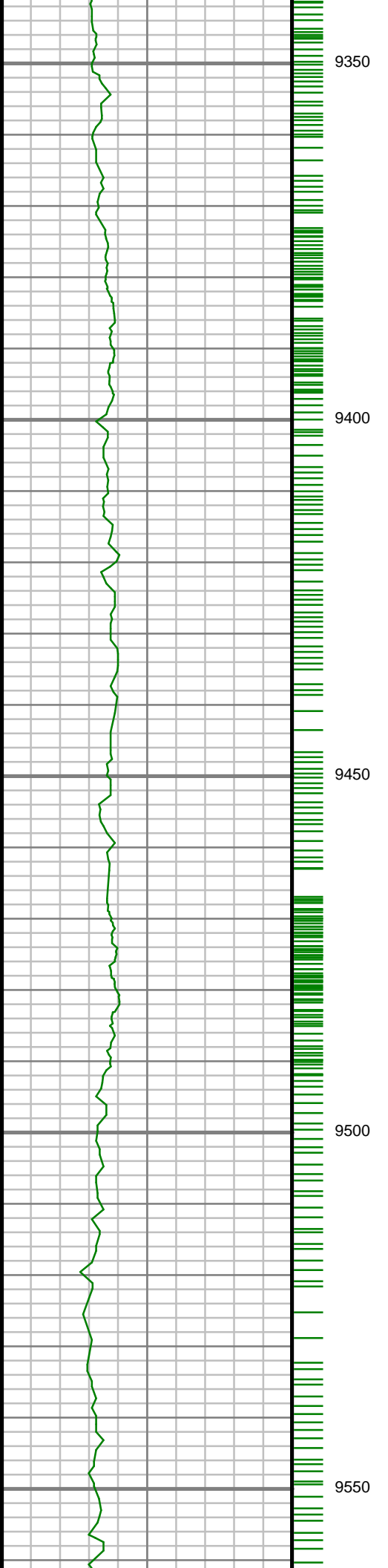
S: 104 MD: 8992.00 ft  
Inc: 89.53 deg Az: 1.15  
deg TVD: 7031.20 ft

S: 105 MD: 9084.00 ft  
Inc: 88.99 deg Az: 0.46  
deg TVD: 7032.39 ft



S: 106 MD: 9176.00 ft  
Inc: 88.75 deg Az: 0.04  
deg TVD: 7034.20 ft

S: 107 MD: 9267.00 ft  
Inc: 88.59 deg Az:  
359.27 deg TVD:  
7036.31 ft

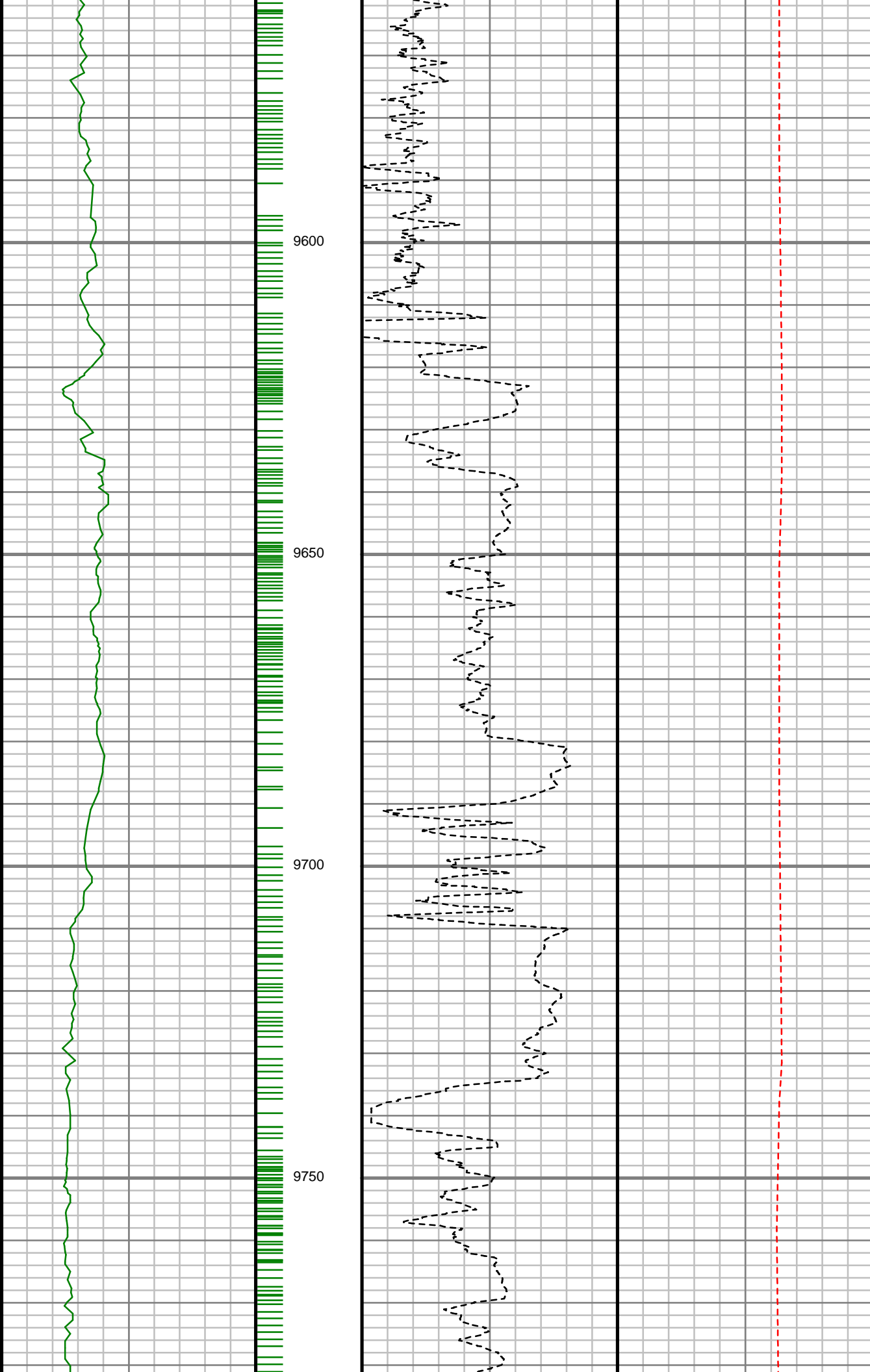


S: 108 MD: 9359.00 ft  
Inc: 89.06 deg Az:  
359.26 deg TVD:  
7038.19 ft

S: 109 MD: 9451.00 ft  
Inc: 91.61 deg Az: 0.42  
deg TVD: 7037.65 ft

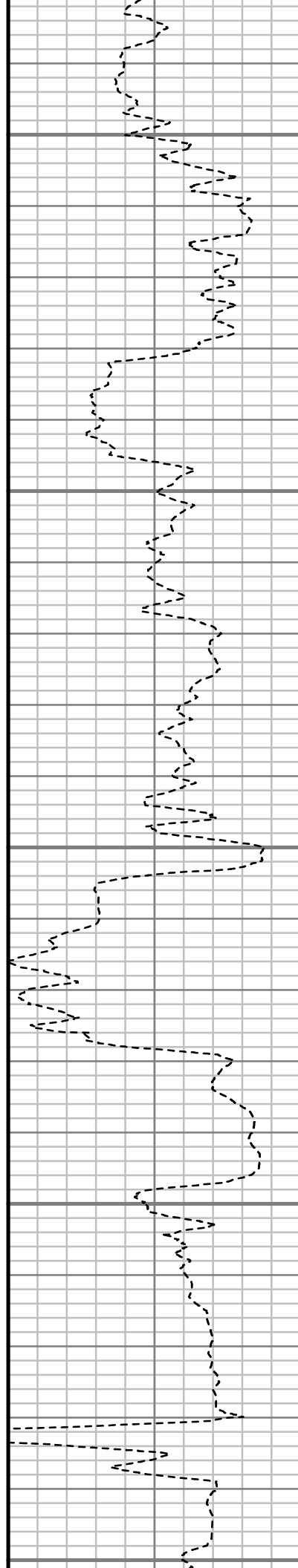
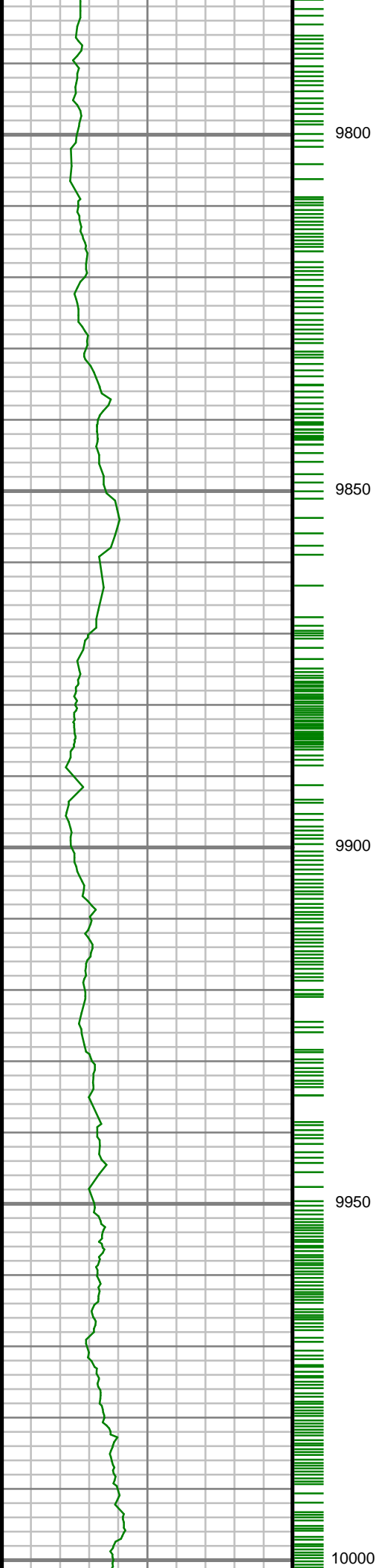
S: 110 MD: 9543.00 ft  
Inc: 90.17 deg Az: 0.25  
deg TVD: 7036.23 ft





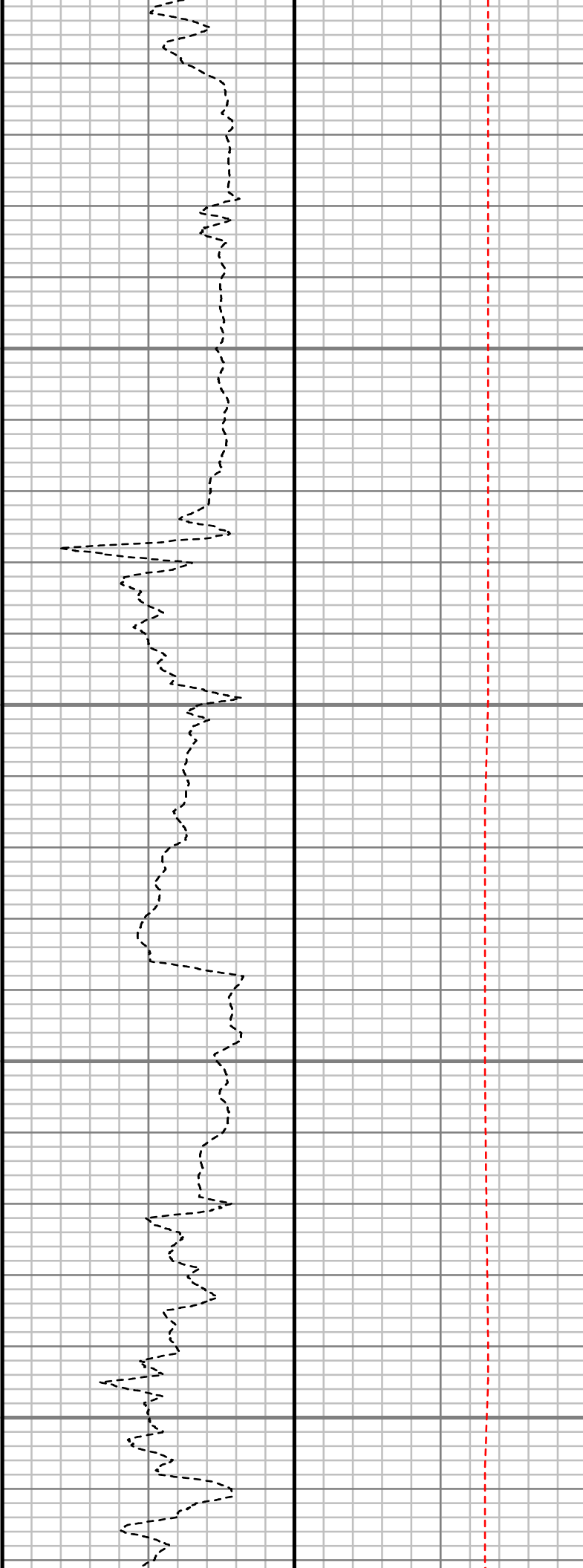
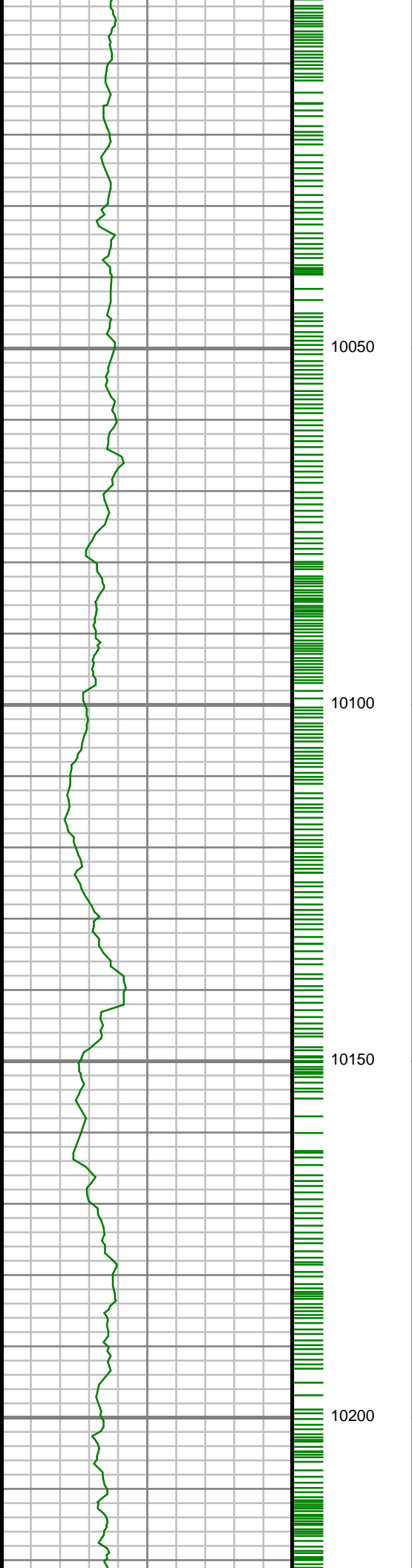
S: 111 MD: 9635.00 ft  
Inc: 91.11 deg Az:  
359.97 deg TVD:  
7035.20 ft

S: 112 MD: 9726.00 ft  
Inc: 91.21 deg Az: 1.12  
deg TVD: 7033.36 ft



S: 113 MD: 9818.00 ft  
Inc: 88.42 deg Az: 0.97  
deg TVD: 7033.65 ft

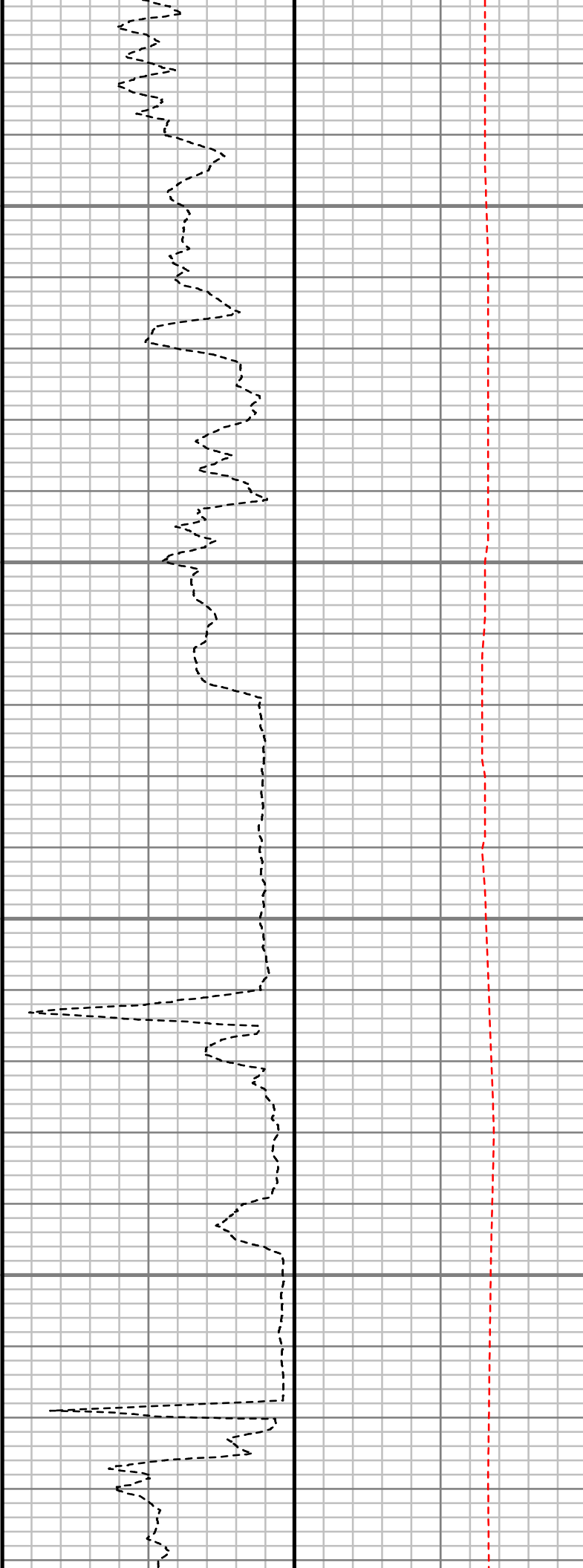
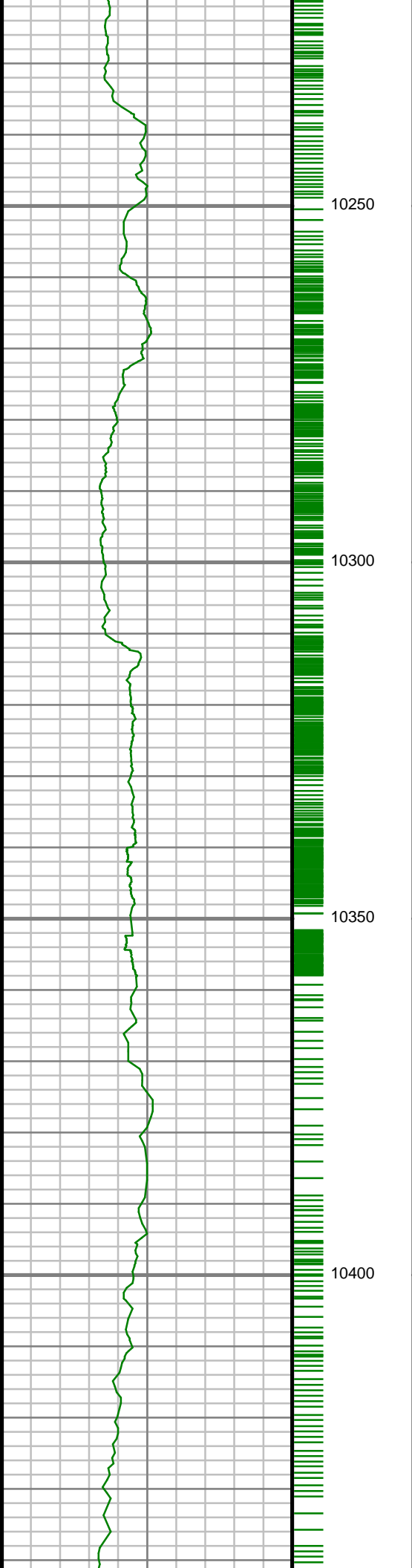
S: 114 MD: 9910.00 ft  
Inc: 88.86 deg Az: 0.83  
deg TVD: 7035.84 ft



S: 115 MD: 10005.00 ft  
Inc: 88.92 deg Az: 0.57  
deg TVD: 7037.68 ft

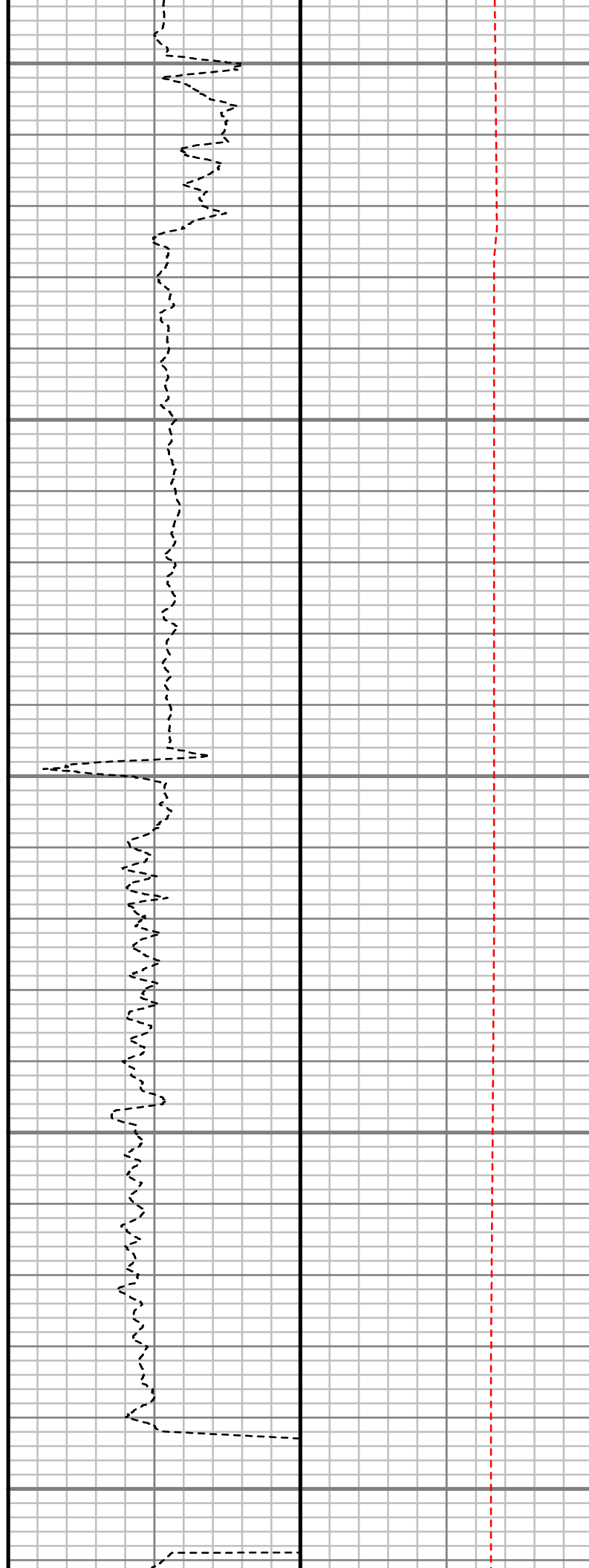
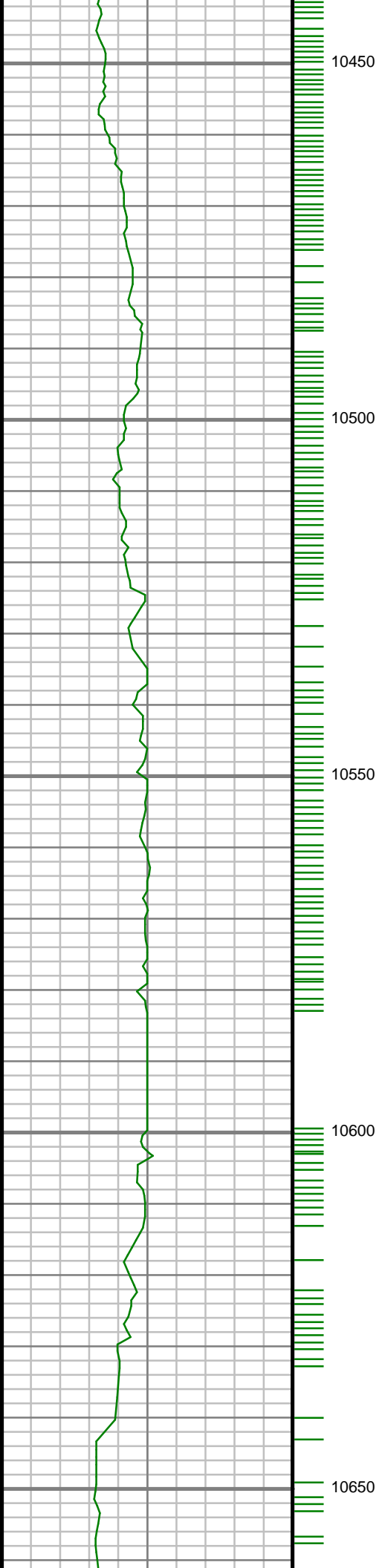
S: 116 MD: 10099.00 ft  
Inc: 91.04 deg Az: 0.21  
deg TVD: 7037.71 ft

S: 117 MD: 10194.00 ft  
Inc: 91.38 deg Az:  
358.43 deg TVD:  
7035.70 ft



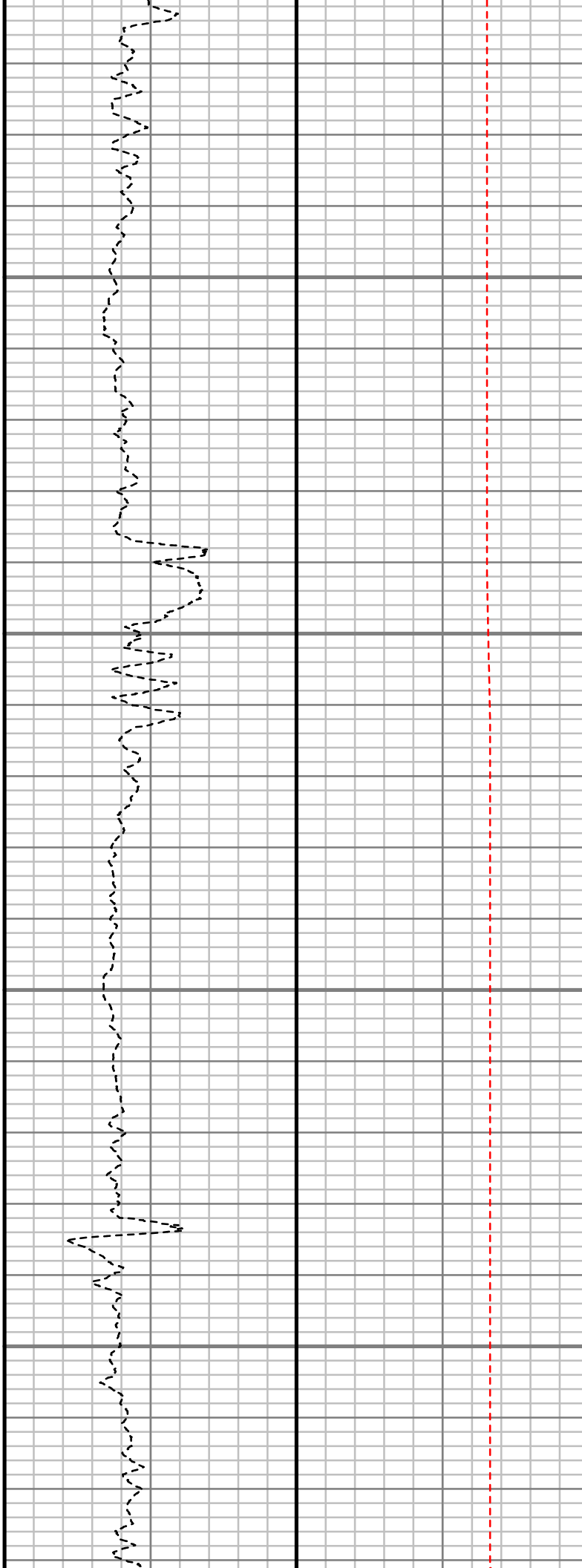
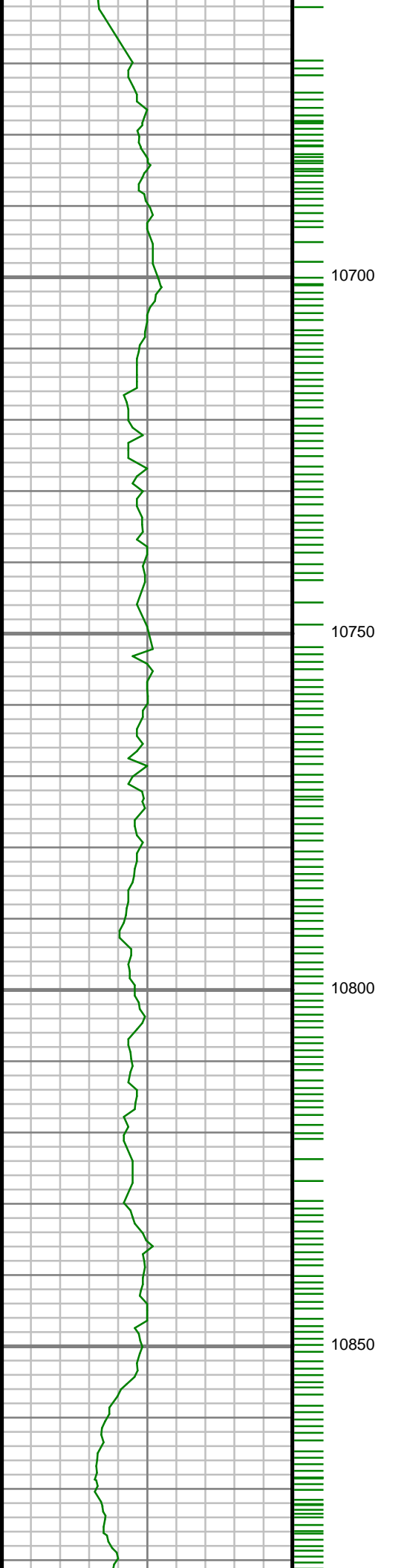
S: 118 MD: 10288.00 ft  
Inc: 92.08 deg Az: 0.78  
deg TVD: 7032.86 ft

S: 119 MD: 10383.00 ft  
Inc: 91.71 deg Az: 2.18  
deg TVD: 7029.72 ft



S: 120 MD: 10477.00 ft  
Inc: 90.54 deg Az: 1.49  
deg TVD: 7027.87 ft

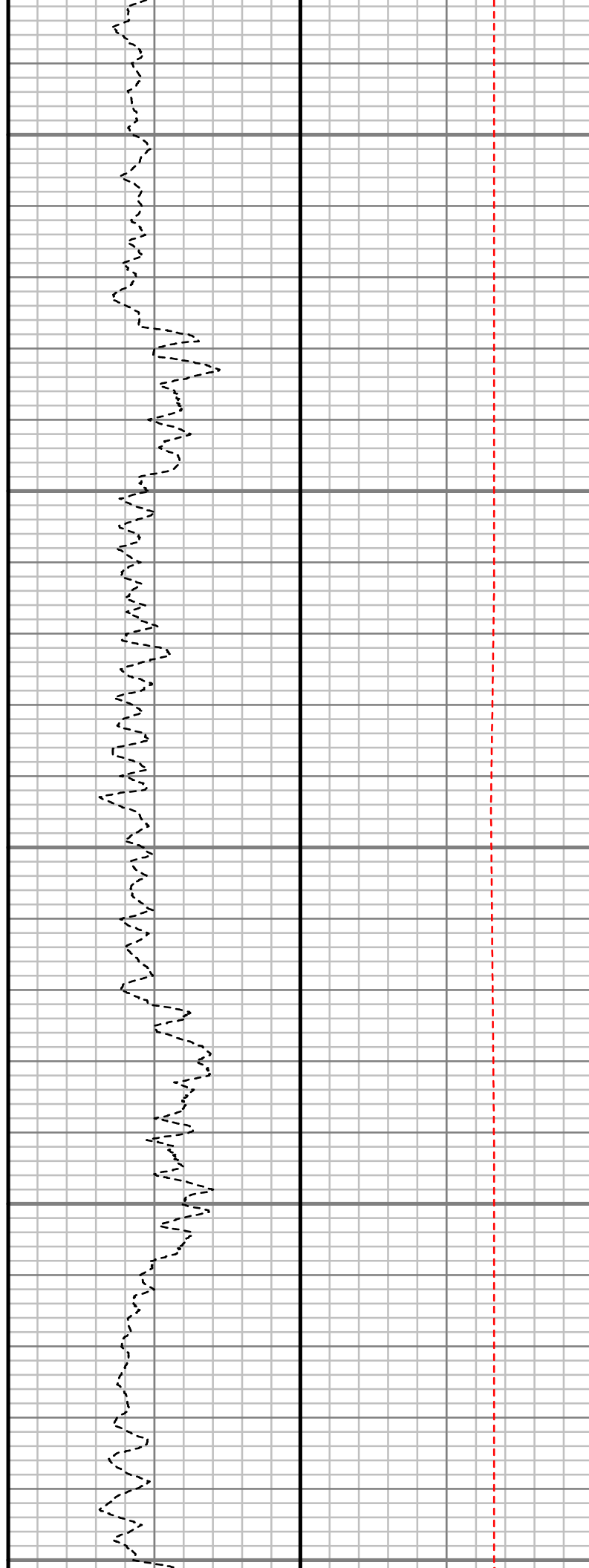
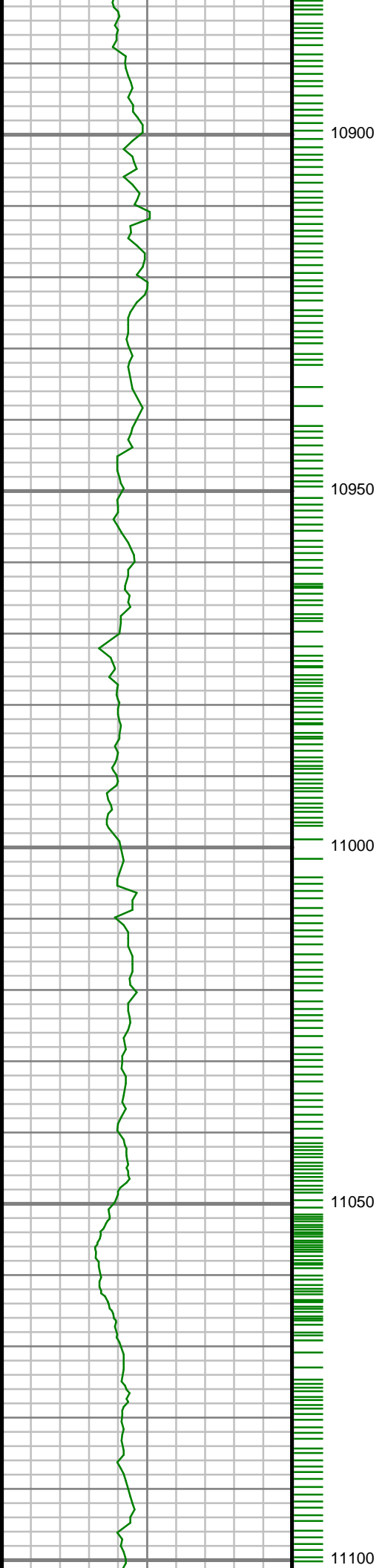
S: 121 MD: 10571.00 ft  
Inc: 90.94 deg Az: 0.99  
deg TVD: 7026.66 ft



S: 122 MD: 10666.00 ft  
Inc: 90.20 deg Az: 0.39  
deg TVD: 7025.71 ft

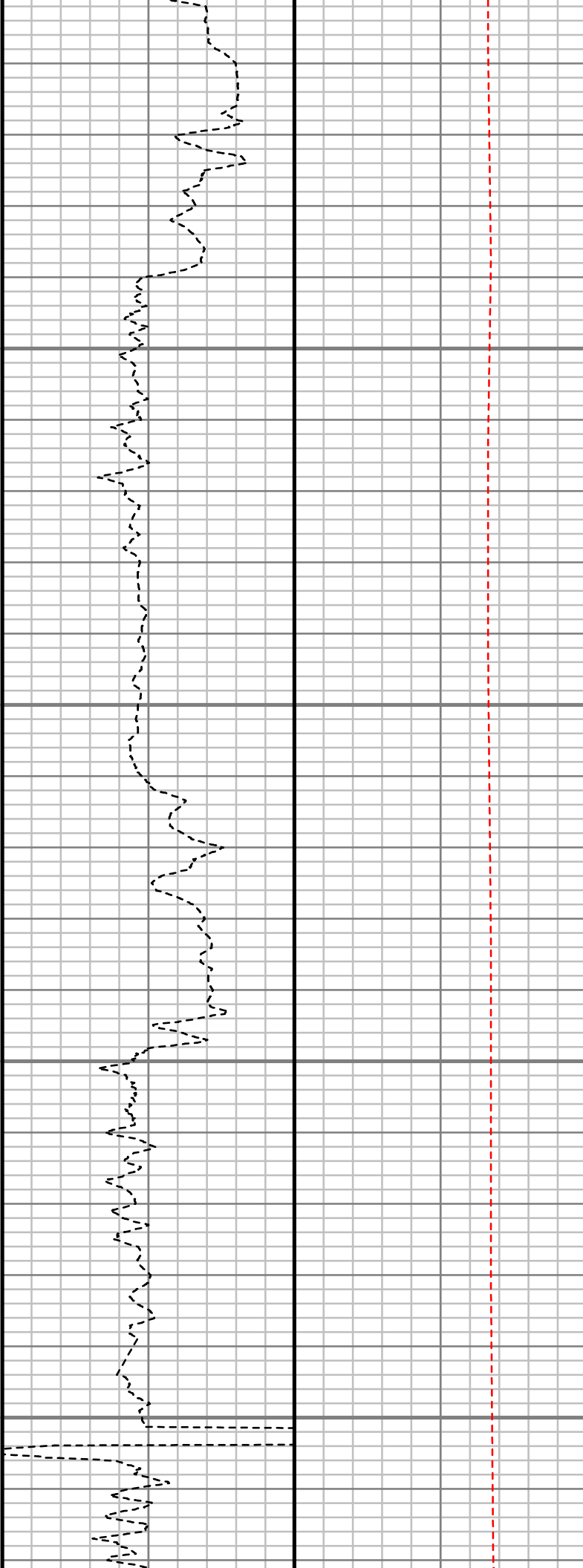
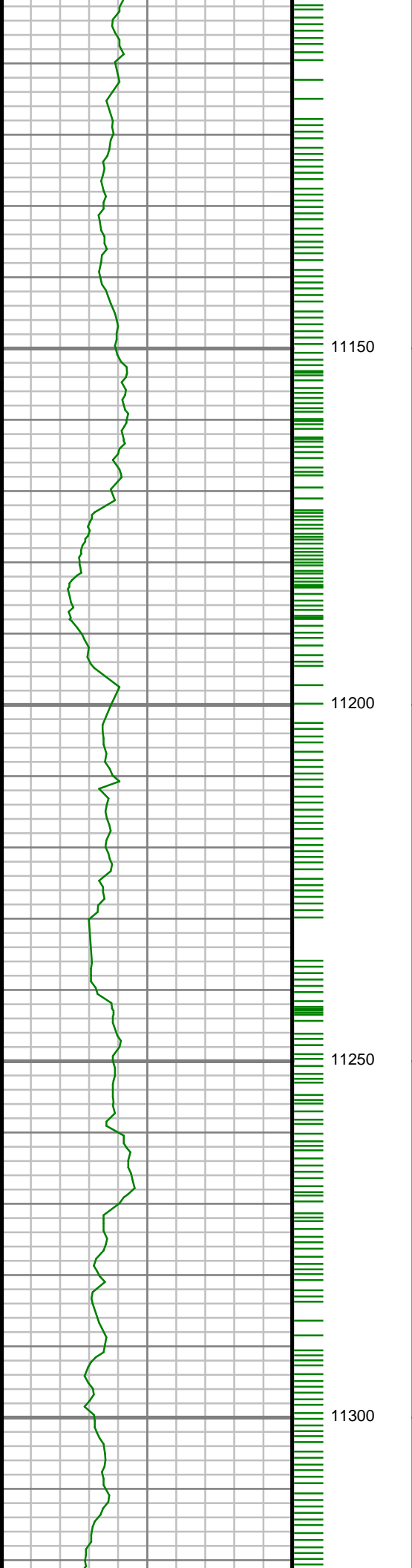
S: 123 MD: 10760.00 ft  
Inc: 89.26 deg Az:  
358.95 deg TVD:  
7026.15 ft

S: 124 MD: 10854.00 ft  
Inc: 89.46 deg Az:  
357.60 deg TVD:  
7027.19 ft



S: 125 MD: 10949.00 ft  
Inc: 89.02 deg Az:  
357.29 deg TVD:  
7028.44 ft

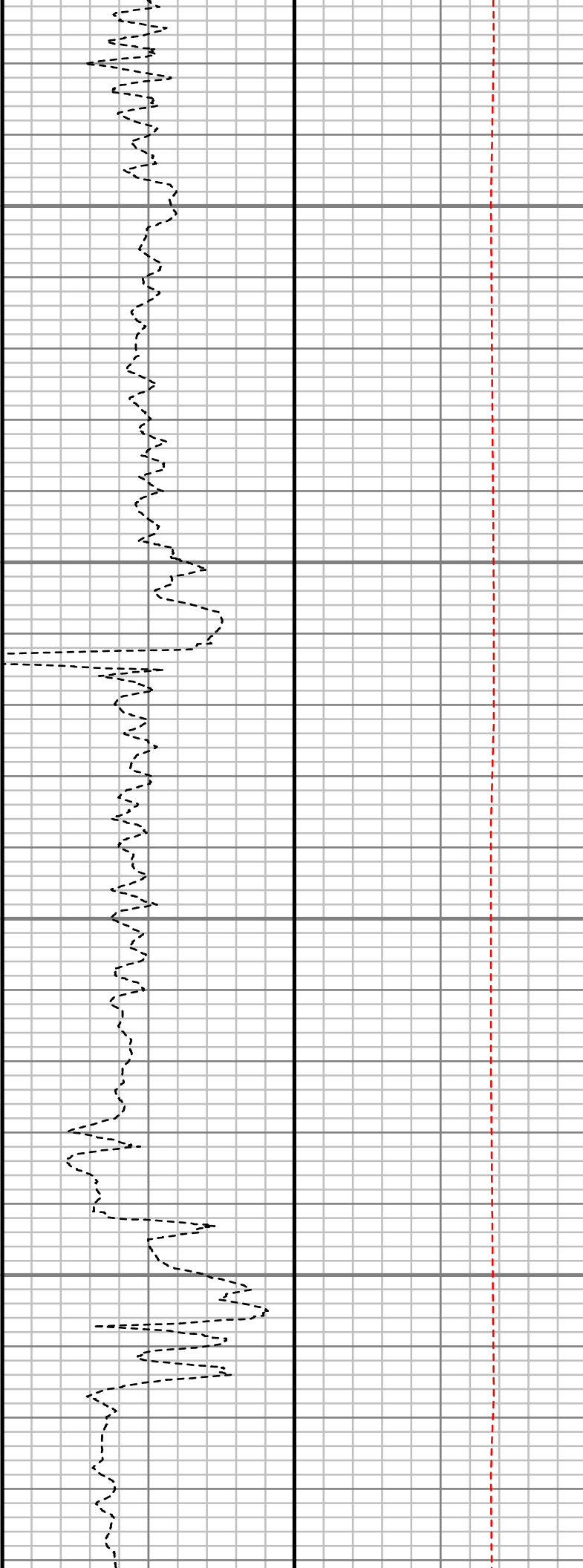
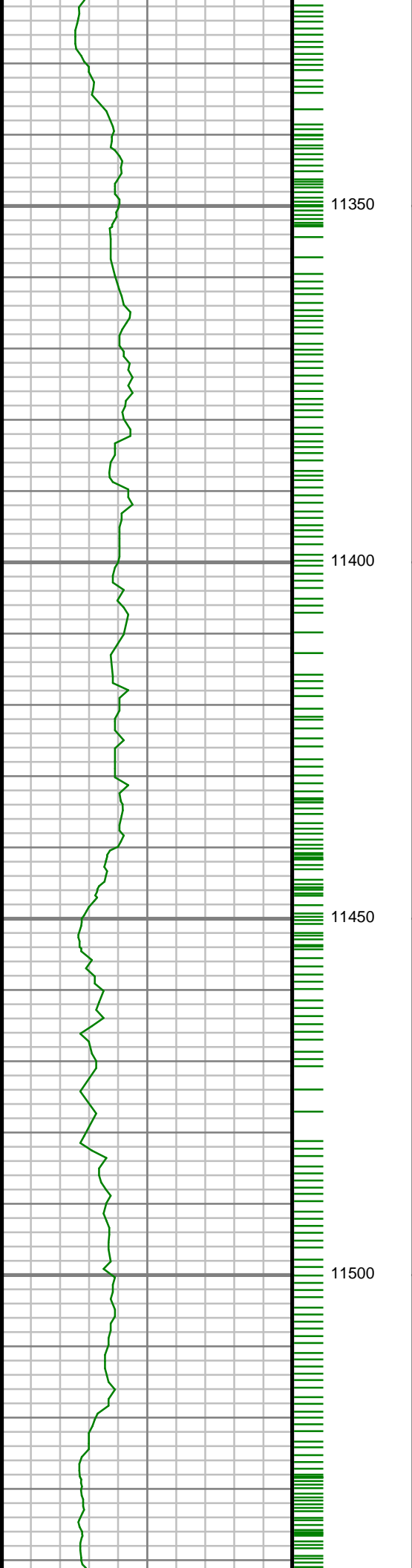
S: 126 MD: 11043.00 ft  
Inc: 89.43 deg Az:  
358.31 deg TVD:  
7029.71 ft



S: 127 MD: 11138.00 ft  
Inc: 89.19 deg Az:  
358.88 deg TVD:  
7030.86 ft

S: 128 MD: 11232.00 ft  
Inc: 88.63 deg Az:  
359.89 deg TVD:  
7032.65 ft

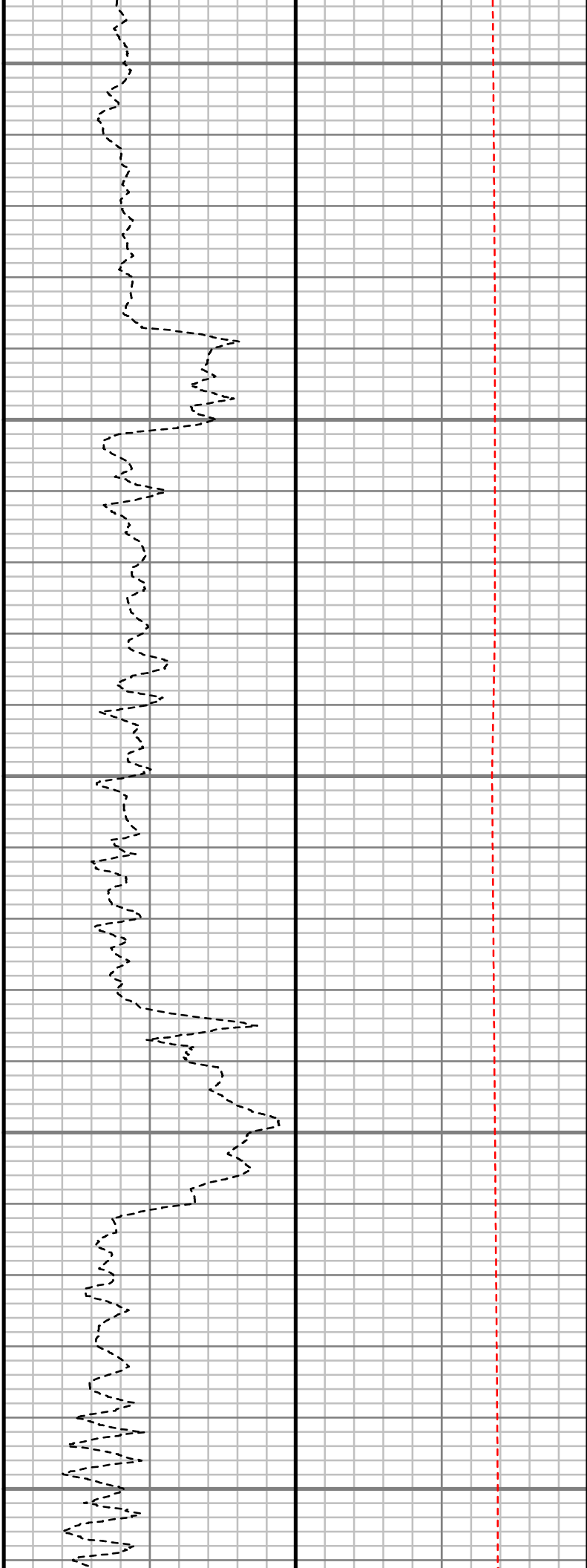
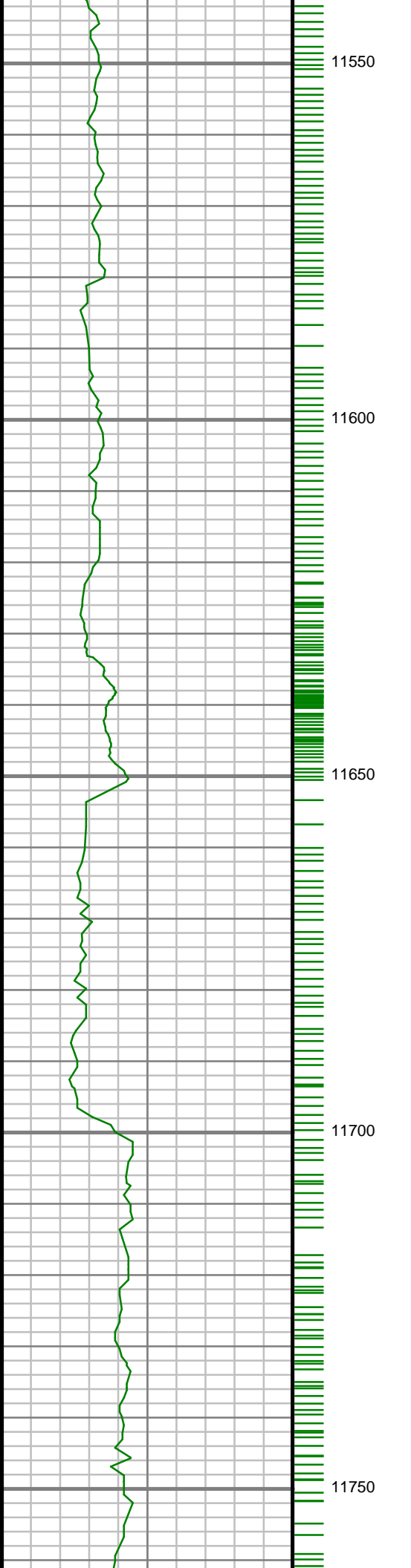




S: 129 MD: 11326.00 ft  
Inc: 88.56 deg Az:  
359.62 deg TVD:  
7034.96 ft

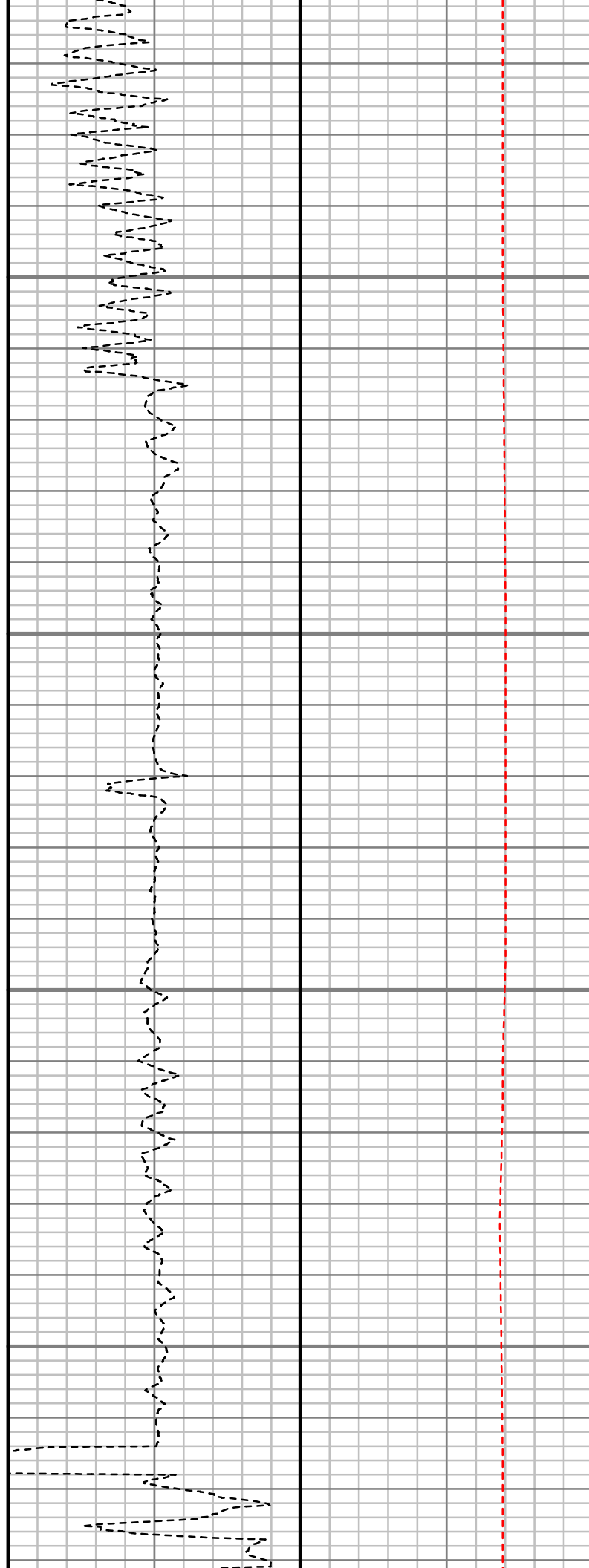
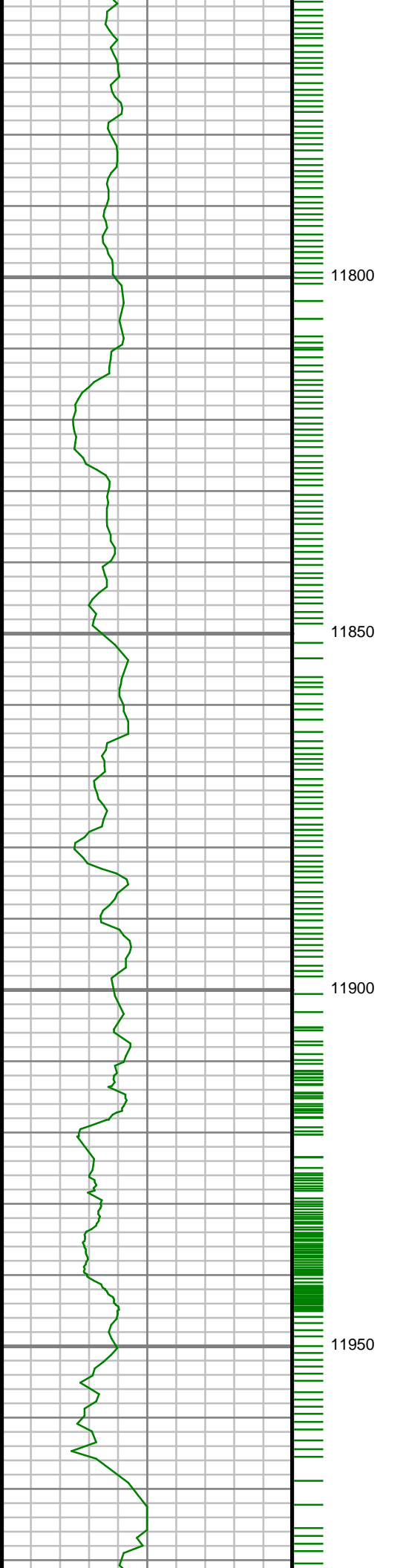
S: 130 MD: 11420.00 ft  
Inc: 88.59 deg Az:  
359.65 deg TVD:  
7037.30 ft

S: 131 MD: 11515.00 ft  
Inc: 89.20 deg Az: 0.81  
deg TVD: 7039.14 ft



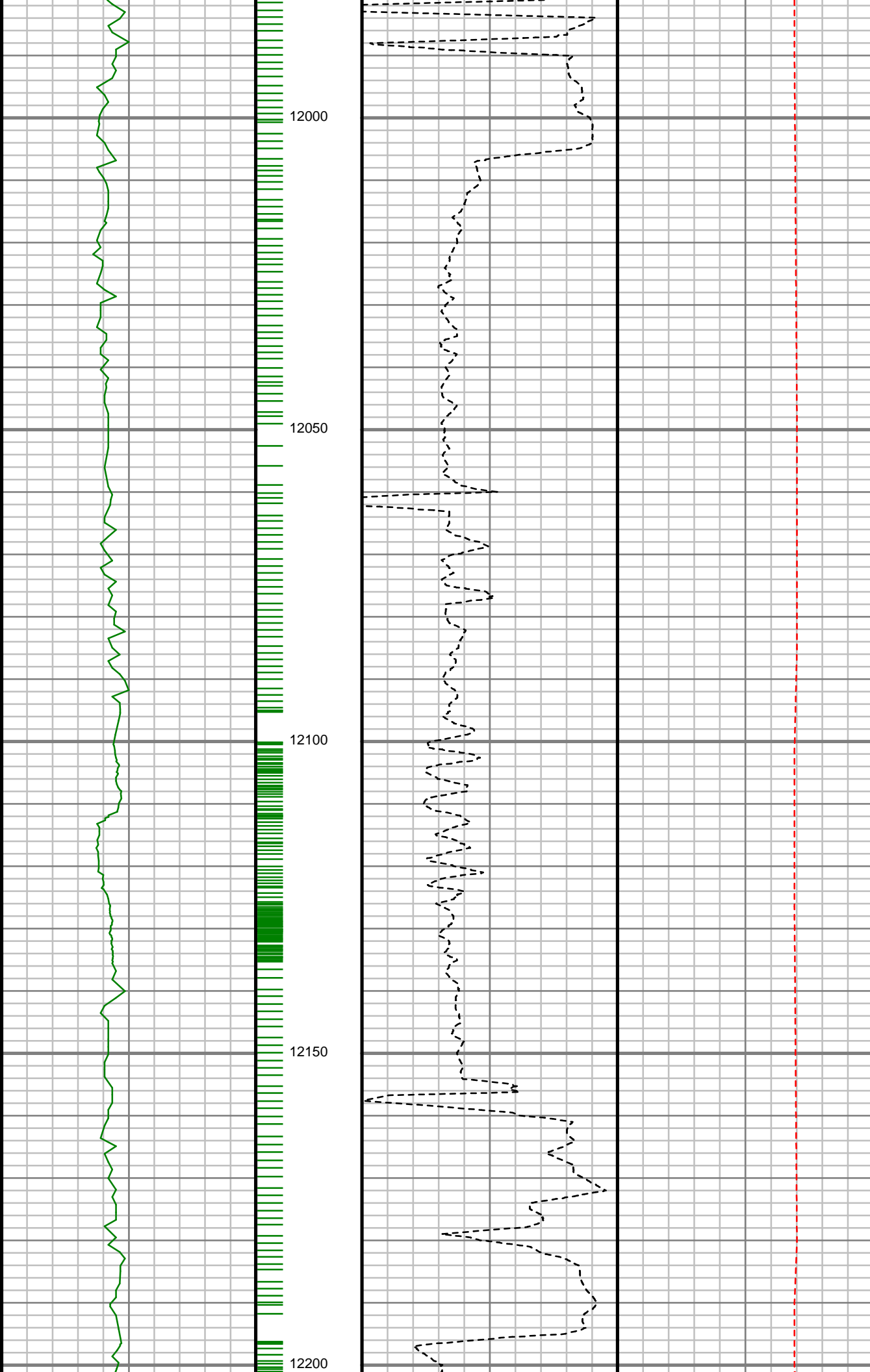
S: 132 MD: 11609.00 ft  
Inc: 89.30 deg Az: 0.29  
deg TVD: 7040.37 ft

S: 133 MD: 11703.00 ft  
Inc: 90.30 deg Az: 0.32  
deg TVD: 7040.70 ft



S: 134 MD: 11798.00 ft  
Inc: 90.57 deg Az: 0.52  
deg TVD: 7039.98 ft

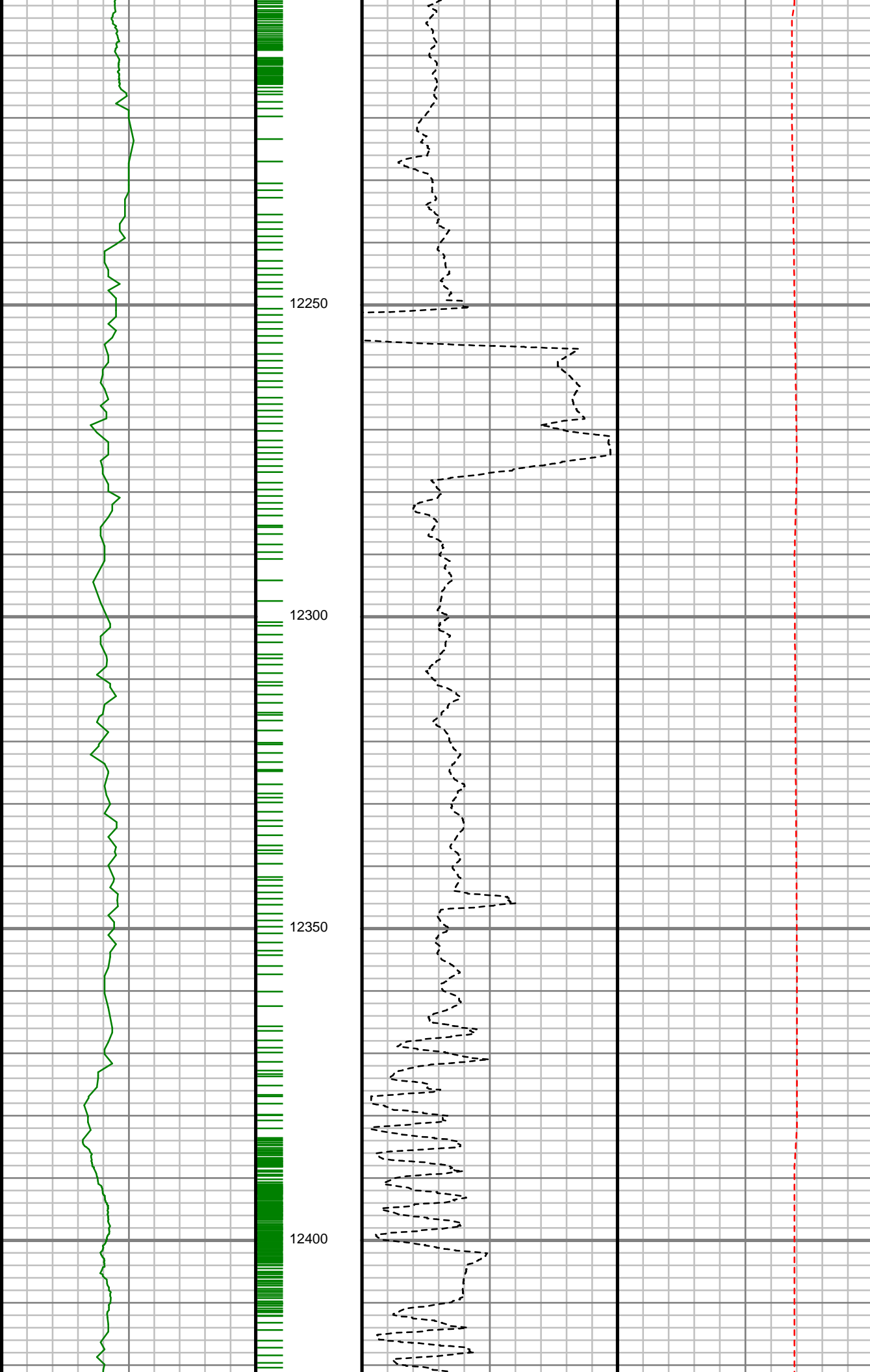
S: 135 MD: 11892.00 ft  
Inc: 90.20 deg Az:  
359.66 deg TVD:  
7039.34 ft



S: 136 MD: 11987.00 ft  
Inc: 90.10 deg Az: 1.14  
deg TVD: 7039.09 ft

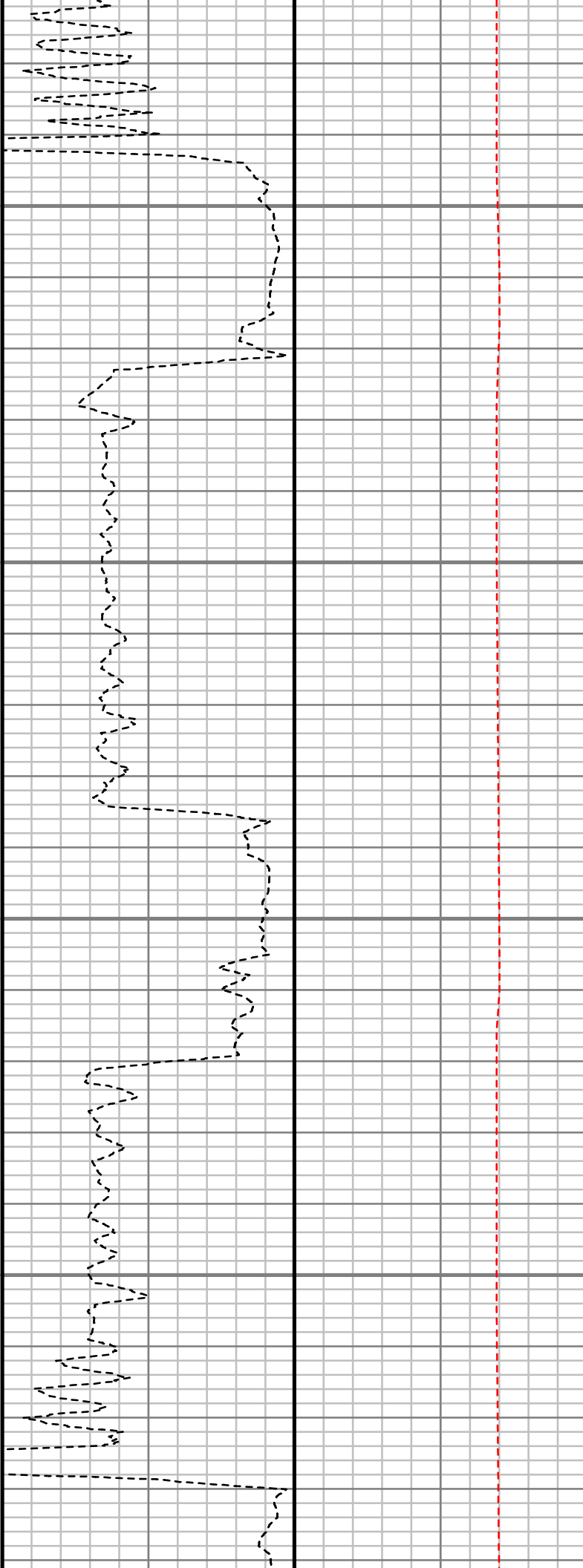
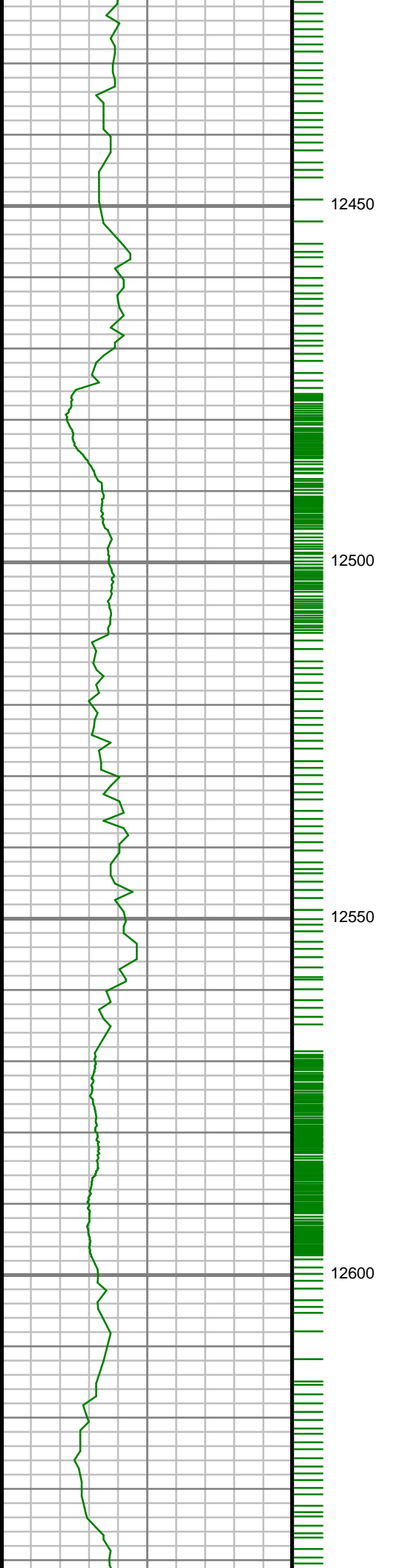
S: 137 MD: 12081.00 ft  
Inc: 90.77 deg Az: 0.64  
deg TVD: 7038.38 ft

S: 138 MD: 12176.00 ft  
Inc: 89.87 deg Az:  
358.76 deg TVD:  
7037.85 ft



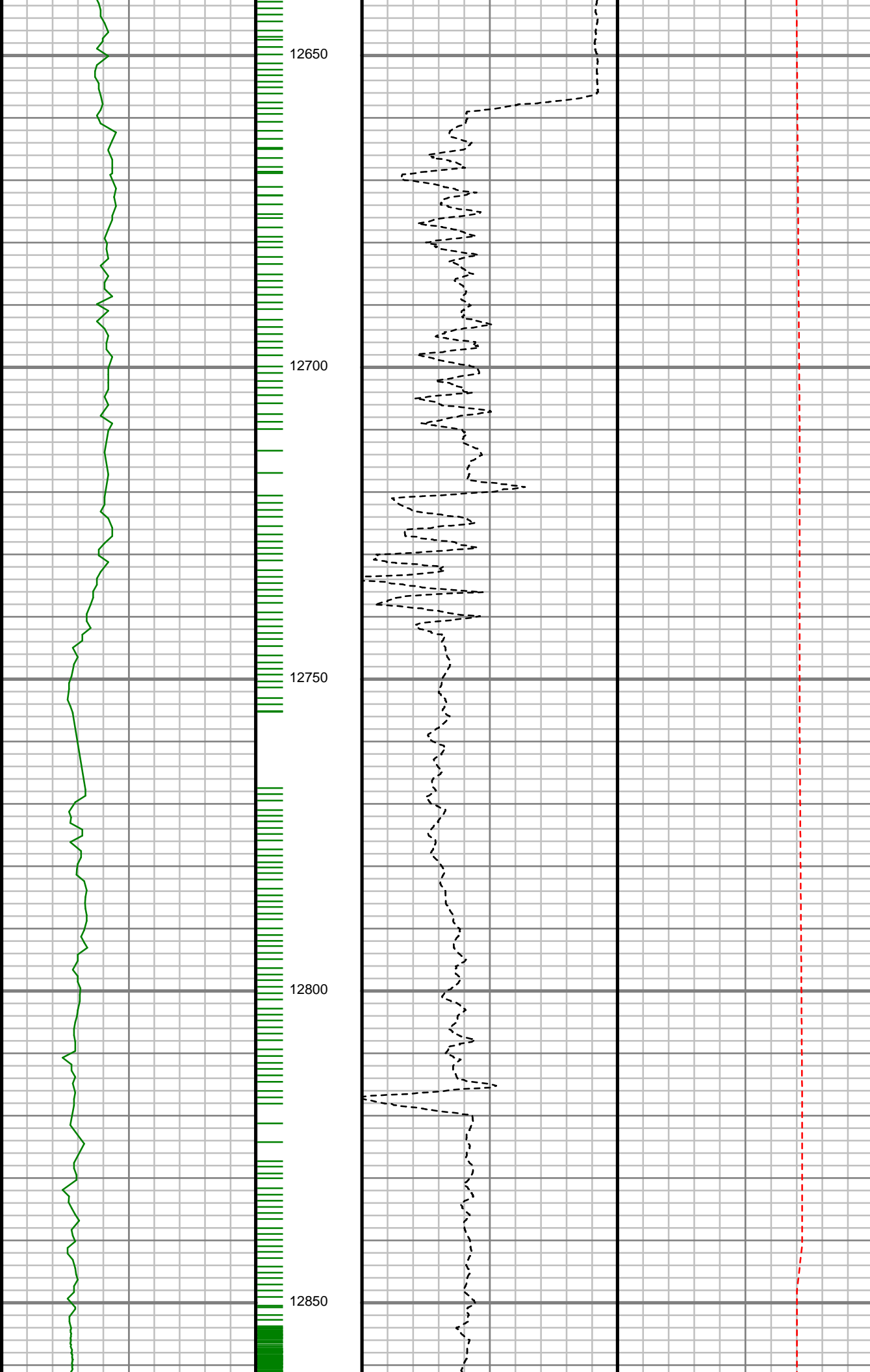
S: 139 MD: 12270.00 ft  
Inc: 88.82 deg Az:  
359.42 deg TVD:  
7038.93 ft

S: 140 MD: 12365.00 ft  
Inc: 89.23 deg Az:  
357.47 deg TVD:  
7040.54 ft



S: 141 MD: 12459.00 ft  
Inc: 89.30 deg Az:  
358.90 deg TVD:  
7041.75 ft

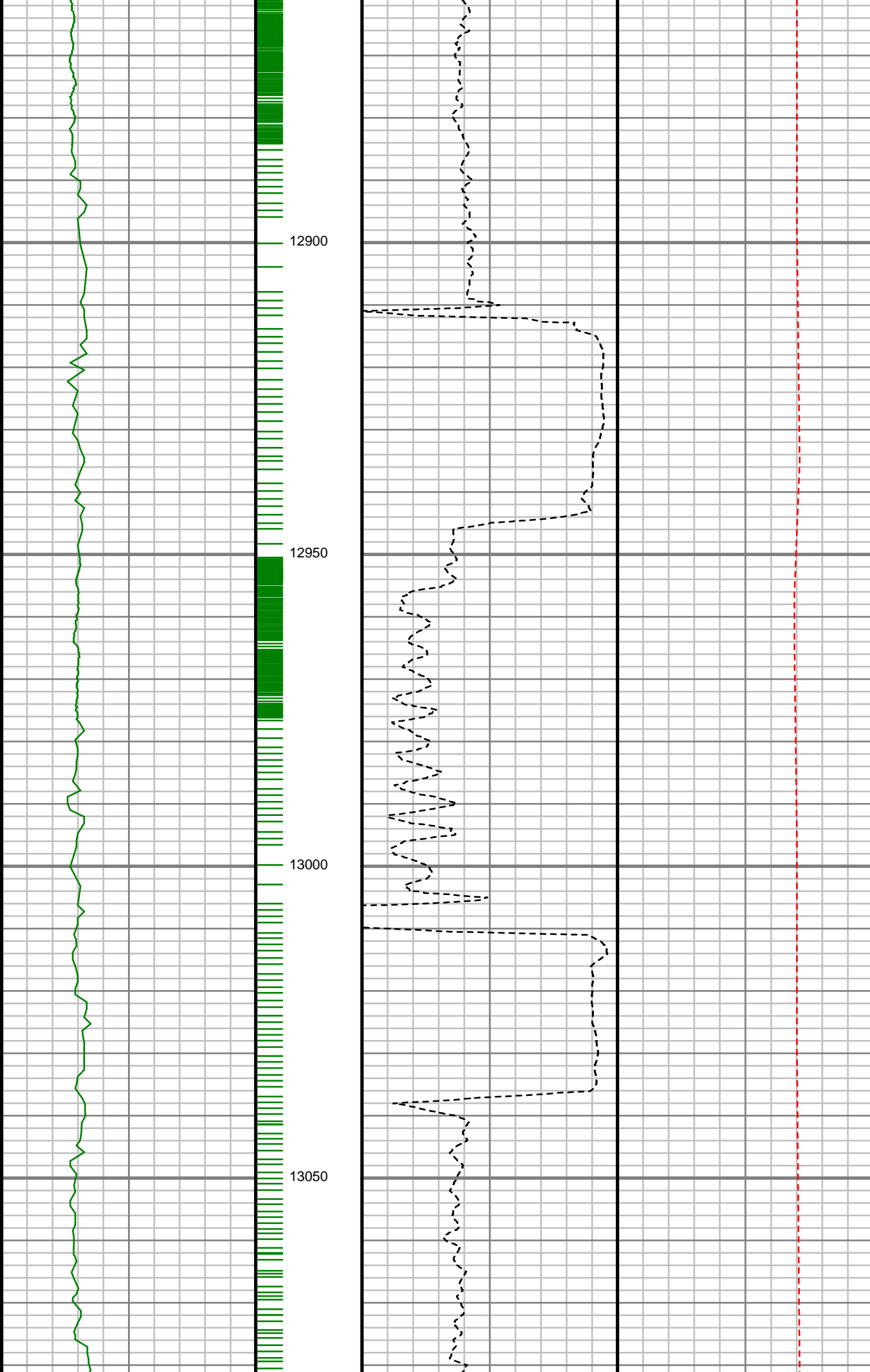
S: 142 MD: 12554.00 ft  
Inc: 89.87 deg Az:  
359.65 deg TVD:  
7042.45 ft



S: 143 MD: 12648.00 ft  
Inc: 88.93 deg Az: 1.33  
deg TVD: 7043.44 ft

S: 144 MD: 12742.00 ft  
Inc: 89.73 deg Az: 0.78  
deg TVD: 7044.54 ft

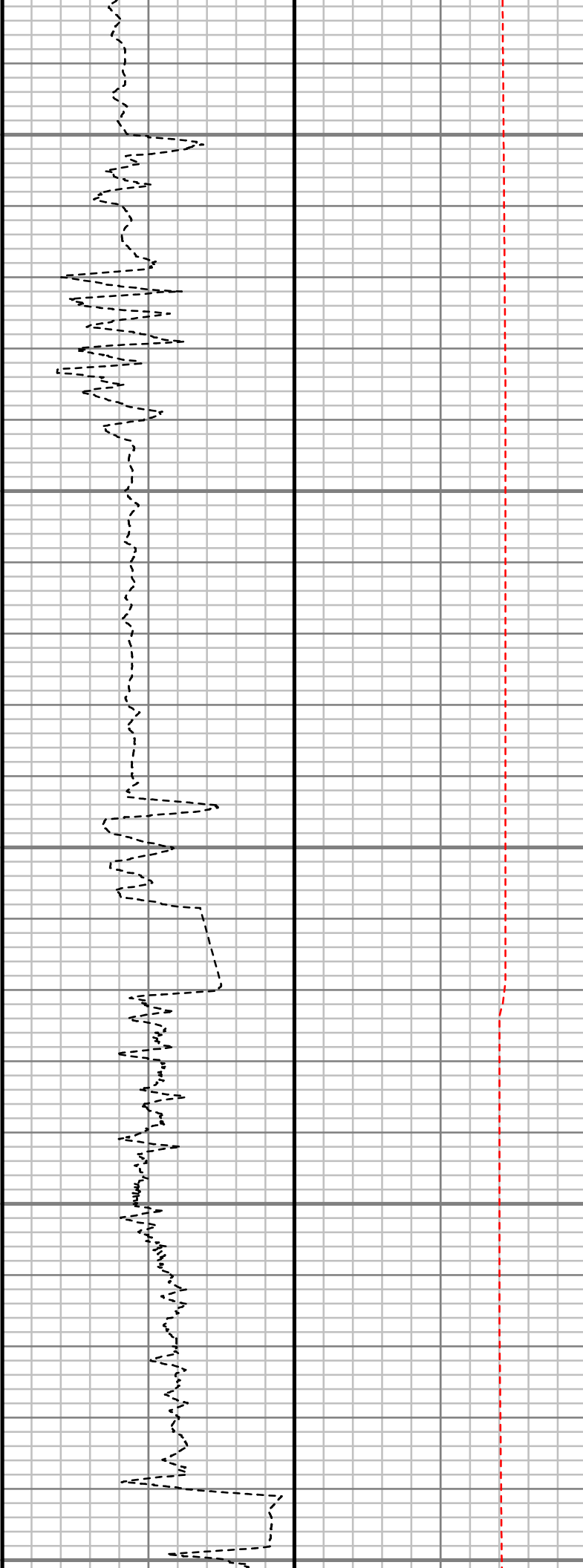
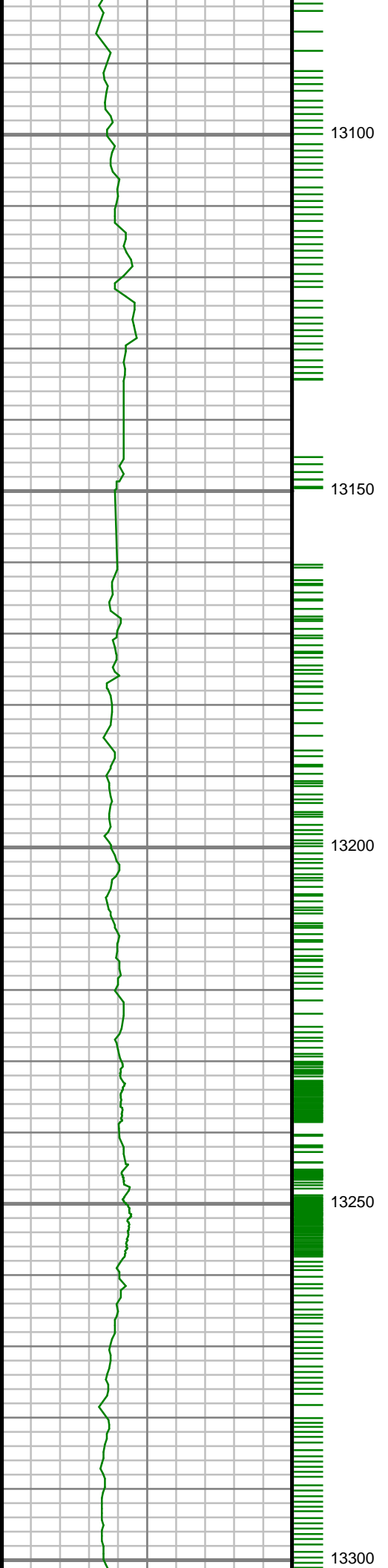
S: 145 MD: 12837.00 ft  
Inc: 91.00 deg Az:  
359.78 deg TVD:  
7043.93 ft



S: 146 MD: 12931.00 ft  
Inc: 90.94 deg Az: 1.49  
deg TVD: 7042.33 ft

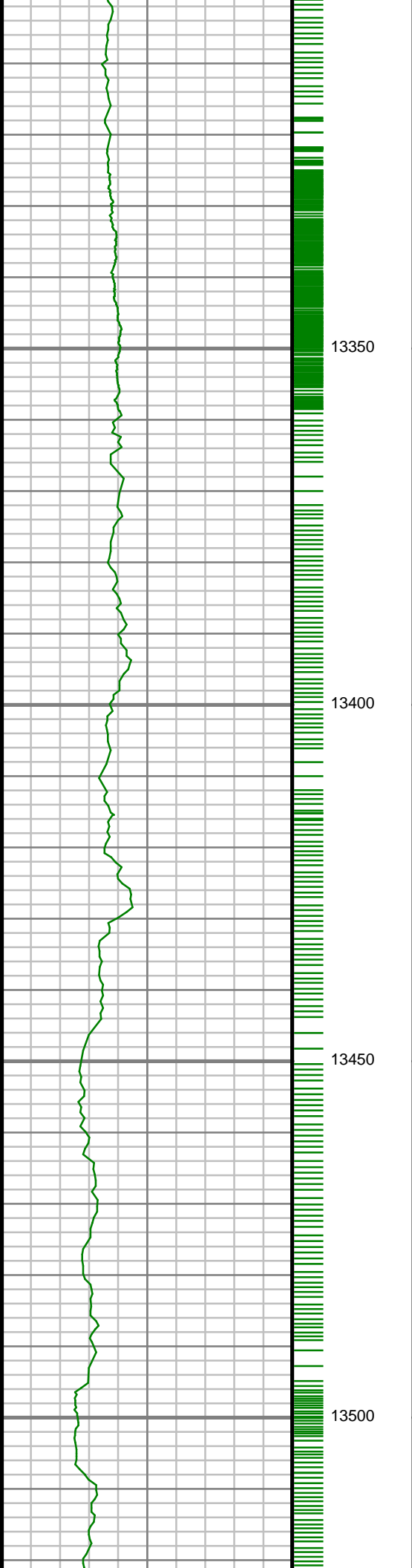
S: 147 MD: 13026.00 ft  
Inc: 89.13 deg Az: 2.40  
deg TVD: 7042.27 ft





S: 148 MD: 13120.00 ft  
Inc: 90.20 deg Az: 2.55  
deg TVD: 7042.82 ft

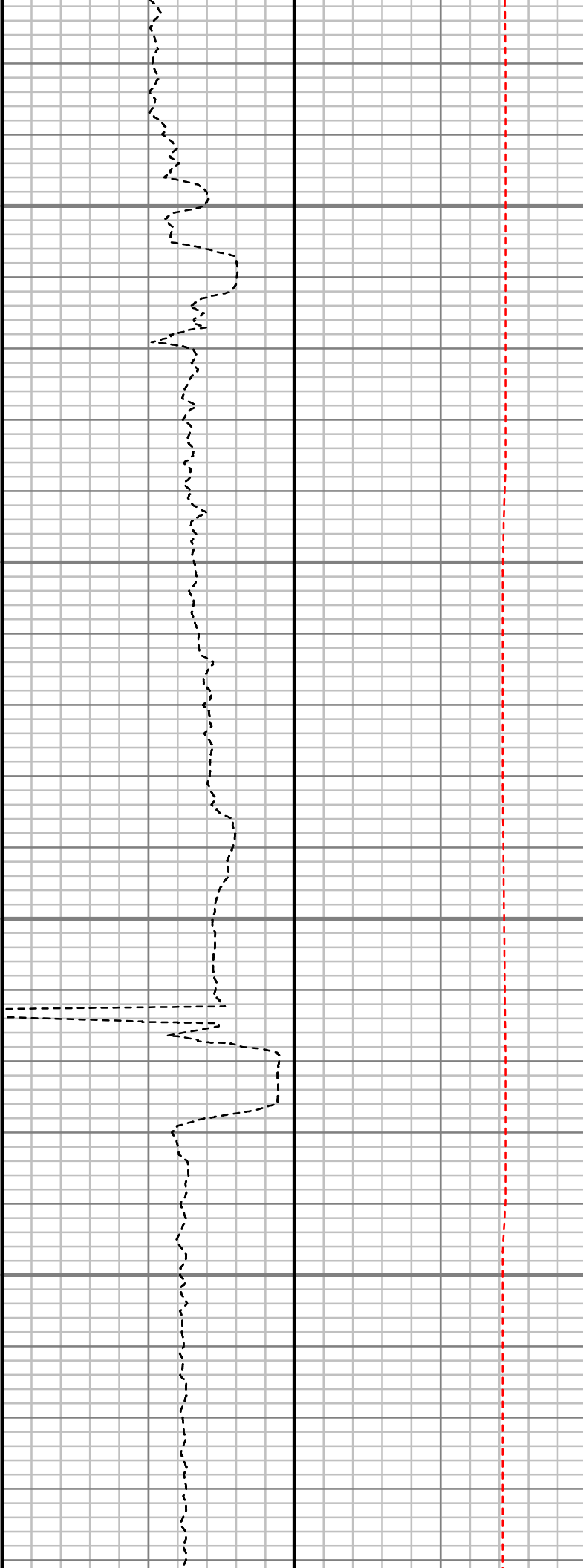
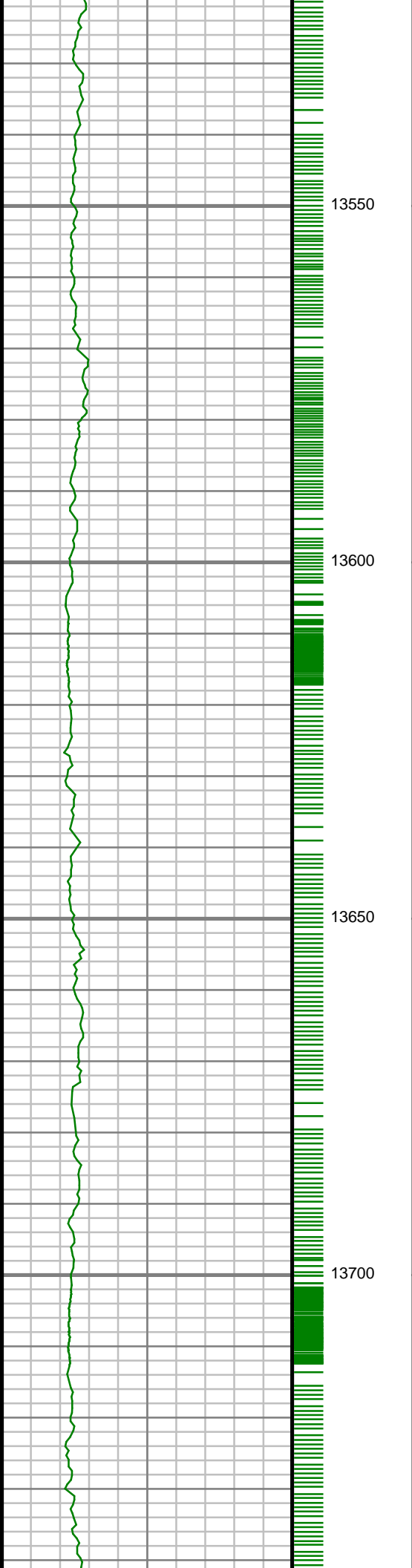
S: 149 MD: 13214.00 ft  
Inc: 90.61 deg Az: 0.59  
deg TVD: 7042.16 ft



S: 150 MD: 13309.00 ft  
Inc: 90.13 deg Az: 1.63  
deg TVD: 7041.55 ft

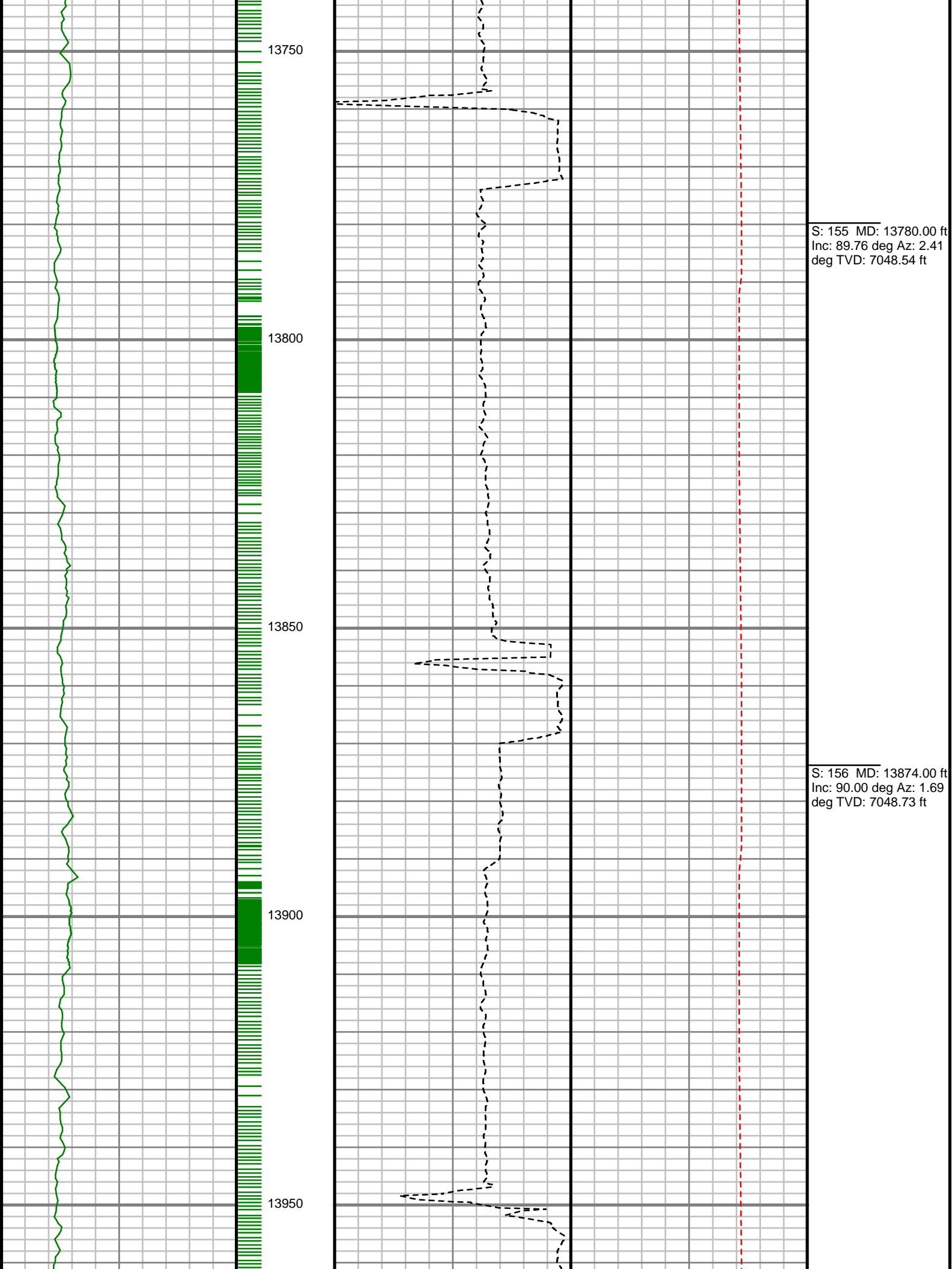
S: 151 MD: 13403.00 ft  
Inc: 88.08 deg Az: 4.21  
deg TVD: 7043.01 ft

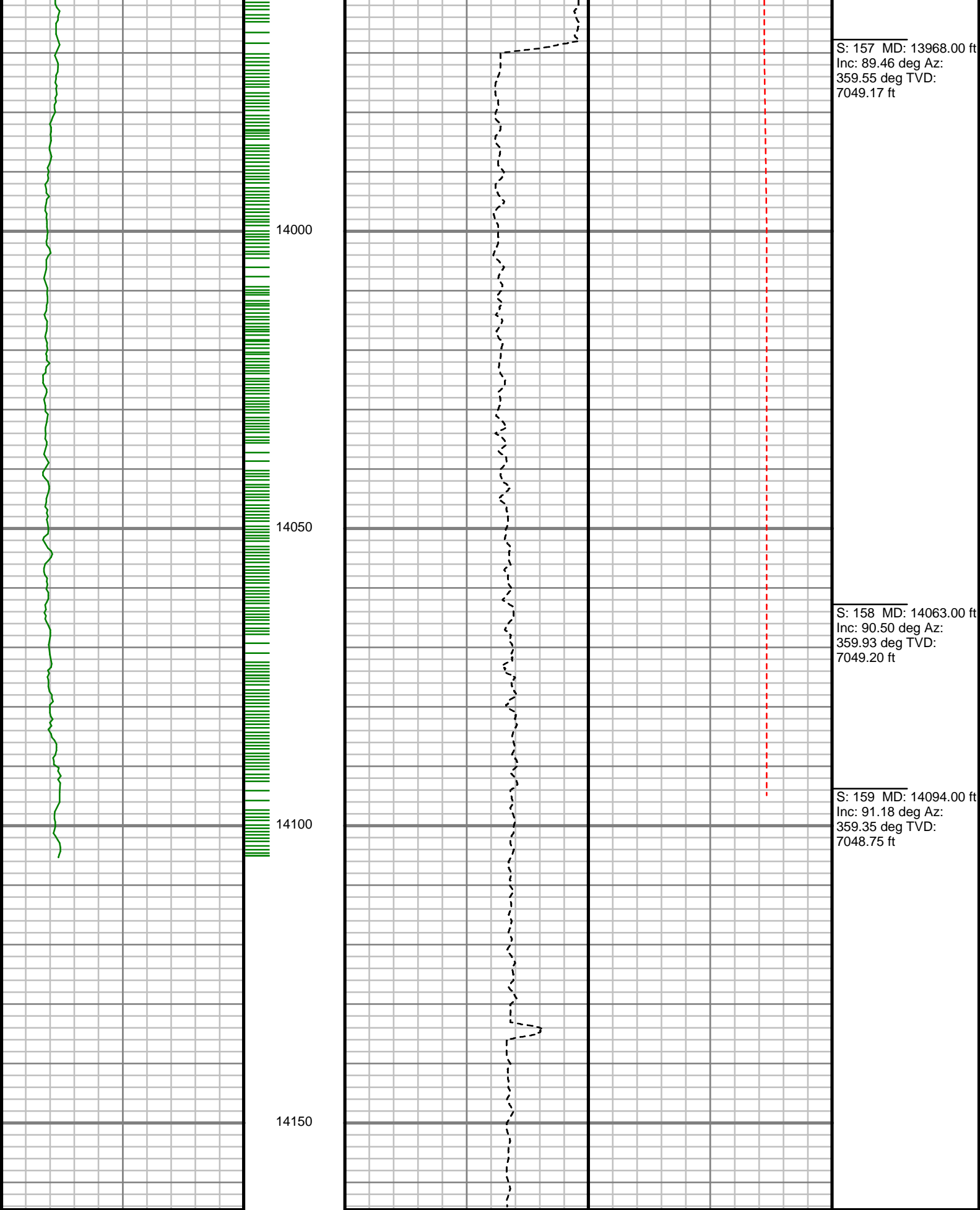
S: 152 MD: 13497.00 ft  
Inc: 88.46 deg Az: 4.07  
deg TVD: 7045.85 ft



S: 153 MD: 13592.00 ft  
Inc: 89.46 deg Az: 4.42  
deg TVD: 7047.57 ft

S: 154 MD: 13686.00 ft  
Inc: 89.80 deg Az: 3.15  
deg TVD: 7048.18 ft





Gamma Ray (GR)			MEASURED DEPTH 1:240 (ft)	Rate of Penetration (ROP)			Tool Temperature (T-TEMP)			Comments
Unit = aapi				Unit = ft/hr			Unit = °F			
0		200		500		0	50		300	

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TH

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# Survey Report

<b>Customer Name:</b>	ANADARKO PETROLEUM CORP.
<b>Site Name:</b>	GITTLEIN 36-33HZ
<b>Well Name:</b>	GITTLEIN 29N-28HZ
<b>Survey:</b>	Gittlein 29N-28HZ
<b>Survey Date:</b>	9/20/2013
<b>Magnetic Declination:</b>	8.30 deg
<b>North Reference:</b>	True North
<b>Calculation Method:</b>	Minimum Curvature
<b>Section (VS) Ref:</b>	0.00N (ft), 0.00E (ft), 0.00Azim (deg)

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
0.00	0.00	0.00	0.00	0.00	0.00	0.00	Invalid
100.00	0.29	150.78	100.00	-0.22	-0.22	0.12	0.29
200.00	0.35	169.15	200.00	-0.74	-0.74	0.30	0.12
300.00	0.16	157.72	300.00	-1.17	-1.17	0.42	0.20
400.00	0.29	148.53	400.00	-1.52	-1.52	0.60	0.13
500.00	0.30	193.16	500.00	-1.99	-1.99	0.67	0.22
600.00	0.38	179.76	599.99	-2.57	-2.57	0.61	0.11
700.00	0.19	251.14	699.99	-2.96	-2.96	0.46	0.37
800.00	0.18	142.07	799.99	-3.14	-3.14	0.40	0.30

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
900.00	0.09	145.71	899.99	-3.32	-3.32	0.54	0.09
1000.00	0.21	290.85	999.99	-3.32	-3.32	0.41	0.29
1100.00	0.15	268.47	1099.99	-3.26	-3.26	0.11	0.09
1140.00	0.66	359.16	1139.99	-3.03	-3.03	0.05	1.70
1414.00	0.07	161.07	1413.98	-1.62	-1.62	0.09	0.27
1506.00	1.51	222.69	1505.97	-2.57	-2.57	-0.71	1.60
1597.00	4.31	228.98	1596.85	-5.70	-5.70	-4.10	3.10
1689.00	4.50	229.32	1688.58	-10.32	-10.32	-9.45	0.20
1780.00	6.70	225.50	1779.14	-16.37	-16.37	-15.94	2.45
1872.00	7.42	215.04	1870.44	-24.99	-24.99	-23.18	1.60
1964.00	9.35	210.58	1961.45	-36.29	-36.29	-30.40	2.22
2056.00	10.57	207.35	2052.07	-50.23	-50.23	-38.08	1.45
2147.00	11.76	208.93	2141.34	-65.76	-65.76	-46.40	1.35
2239.00	10.88	213.53	2231.55	-81.21	-81.21	-55.73	1.37
2331.00	11.03	209.91	2321.88	-96.07	-96.07	-64.91	0.77
2423.00	9.39	224.14	2412.43	-109.09	-109.09	-74.53	3.26
2514.00	9.07	224.40	2502.25	-119.54	-119.54	-84.72	0.35
2606.00	6.53	204.73	2593.41	-129.47	-129.47	-91.98	3.97
2698.00	5.34	202.78	2684.92	-138.17	-138.17	-95.83	1.31
2793.00	3.79	224.27	2779.62	-144.50	-144.50	-99.73	2.40

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
2887.00	2.78	247.40	2873.47	-147.60	-147.60	-104.00	1.76
2982.00	3.79	328.30	2968.35	-145.81	-145.81	-107.78	4.56
3076.00	1.01	325.32	3062.26	-142.49	-142.49	-109.89	2.97
3171.00	0.76	1.29	3157.25	-141.17	-141.17	-110.35	0.62
3265.00	0.39	255.27	3251.25	-140.63	-140.63	-110.64	1.01
3359.00	0.60	299.67	3345.24	-140.47	-140.47	-111.38	0.45
3548.00	0.21	341.65	3534.24	-139.64	-139.64	-112.35	0.24
3642.00	0.67	85.00	3628.24	-139.43	-139.43	-111.86	0.80
3831.00	0.42	134.22	3817.23	-139.81	-139.81	-110.26	0.27
3926.00	0.53	131.02	3912.23	-140.34	-140.34	-109.68	0.12
4020.00	0.45	166.71	4006.22	-140.98	-140.98	-109.27	0.33
4114.00	0.47	151.22	4100.22	-141.68	-141.68	-109.00	0.13
4208.00	0.24	126.36	4194.22	-142.14	-142.14	-108.65	0.29
4303.00	0.84	107.66	4289.21	-142.47	-142.47	-107.83	0.64
4397.00	1.14	106.27	4383.20	-142.94	-142.94	-106.28	0.32
4491.00	1.18	128.71	4477.18	-143.80	-143.80	-104.63	0.48
4586.00	1.68	121.43	4572.15	-145.14	-145.14	-102.68	0.56
4680.00	1.91	114.07	4666.11	-146.50	-146.50	-100.07	0.35
4775.00	1.91	104.25	4761.05	-147.53	-147.53	-97.09	0.34

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
4869.00	1.06	201.06	4855.03	-148.73	-148.73	-95.88	2.44
4964.00	1.13	257.75	4950.02	-149.76	-149.76	-97.12	1.10
5058.00	1.38	268.01	5043.99	-149.99	-149.99	-99.15	0.35
5153.00	1.83	256.53	5138.96	-150.38	-150.38	-101.77	0.58
5247.00	1.99	270.12	5232.90	-150.73	-150.73	-104.86	0.51
5342.00	1.59	278.85	5327.86	-150.52	-150.52	-107.81	0.51
5436.00	2.12	308.37	5421.81	-149.24	-149.24	-110.46	1.14
5530.00	2.28	311.46	5515.74	-146.93	-146.93	-113.22	0.21
5625.00	1.25	330.97	5610.70	-144.77	-144.77	-115.14	1.23
5719.00	1.63	337.88	5704.67	-142.63	-142.63	-116.14	0.44
5814.00	0.54	141.91	5799.66	-141.73	-141.73	-116.38	2.27
5908.00	0.81	157.68	5893.65	-142.69	-142.69	-115.85	0.34
6002.00	0.88	162.53	5987.64	-143.99	-143.99	-115.39	0.11
6097.00	1.38	67.46	6082.63	-144.25	-144.25	-114.11	1.79
6191.00	1.11	66.67	6176.60	-143.46	-143.46	-112.22	0.28
6285.00	1.26	48.25	6270.58	-142.41	-142.41	-110.61	0.43
6380.00	1.11	60.13	6365.56	-141.25	-141.25	-109.04	0.30
6474.00	1.50	20.32	6459.54	-139.65	-139.65	-107.82	1.02
6521.00	4.33	0.24	6506.48	-137.29	-137.29	-107.60	6.31
6568.00	8.53	357.85	6553.17	-132.03	-132.03	-107.72	8.96



MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
6615.00	14.70	3.22	6599.19	-122.59	-122.59	-107.52	13.30
6662.00	20.08	359.76	6644.02	-108.55	-108.55	-107.22	11.65
6709.00	25.13	352.96	6687.41	-90.57	-90.57	-108.48	12.09
6756.00	29.09	349.05	6729.24	-69.43	-69.43	-111.87	9.22
6803.00	33.18	352.57	6769.46	-45.45	-45.45	-115.71	9.51
6851.00	39.49	354.44	6808.11	-17.21	-17.21	-118.89	13.36
6898.00	45.16	355.03	6842.85	14.29	14.29	-121.79	12.08
6945.00	48.86	356.77	6874.89	48.58	48.58	-124.23	8.34
6992.00	54.01	357.85	6904.18	85.27	85.27	-125.94	11.09
7039.00	60.03	357.83	6929.76	124.65	124.65	-127.43	12.82
7086.00	64.79	2.07	6951.52	166.28	166.28	-127.43	12.91
7133.00	66.96	4.93	6970.74	209.09	209.09	-124.81	7.21
7180.00	68.38	3.58	6988.59	252.44	252.44	-121.58	4.03
7228.00	72.32	2.72	7004.73	297.57	297.57	-119.10	8.37
7275.00	77.60	2.32	7016.93	342.90	342.90	-117.11	11.28
7322.00	79.36	1.18	7026.31	388.93	388.93	-115.71	4.42
7369.00	80.95	1.01	7034.35	435.22	435.22	-114.82	3.40
7416.00	84.16	1.22	7040.44	481.81	481.81	-113.92	6.85
7447.00	86.88	1.07	7042.85	512.71	512.71	-113.30	8.79

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
7513.00	89.53	1.69	7044.92	578.65	578.65	-111.71	4.12
7530.00	89.56	1.73	7045.05	595.64	595.64	-111.21	0.29
7621.00	90.00	0.86	7045.40	686.62	686.62	-109.16	1.07
7713.00	90.00	0.47	7045.40	778.61	778.61	-108.10	0.42
7805.00	90.94	0.18	7044.65	870.61	870.61	-107.58	1.07
7896.00	91.88	359.05	7042.40	961.57	961.57	-108.19	1.61
7986.00	91.04	359.10	7040.10	1051.53	1051.53	-109.64	0.94
8077.00	89.33	359.75	7039.81	1142.52	1142.52	-110.55	2.02
8168.00	89.87	359.56	7040.45	1233.52	1233.52	-111.10	0.63
8260.00	90.37	358.01	7040.26	1325.50	1325.50	-113.05	1.77
8352.00	90.91	359.41	7039.23	1417.46	1417.46	-115.12	1.63
8443.00	91.04	0.17	7037.68	1508.45	1508.45	-115.46	0.85
8534.00	91.62	1.10	7035.57	1599.42	1599.42	-114.45	1.21
8626.00	91.38	0.38	7033.17	1691.38	1691.38	-113.26	0.82
8718.00	90.84	1.68	7031.39	1783.34	1783.34	-111.60	1.53
8809.00	89.73	1.52	7030.93	1874.31	1874.31	-109.06	1.23
8901.00	90.20	1.40	7030.99	1966.28	1966.28	-106.72	0.53
8992.00	89.53	1.15	7031.20	2057.25	2057.25	-104.70	0.79
9084.00	88.99	0.46	7032.39	2149.23	2149.23	-103.40	0.95
9176.00	88.75	0.04	7034.20	2241.22	2241.22	-103.00	0.52

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
9267.00	88.59	359.27	7036.31	2332.19	2332.19	-103.54	0.87
9359.00	89.06	359.26	7038.19	2424.16	2424.16	-104.73	0.51
9451.00	91.61	0.42	7037.65	2516.15	2516.15	-104.99	3.05
9543.00	90.17	0.25	7036.23	2608.14	2608.14	-104.45	1.58
9635.00	91.11	359.97	7035.20	2700.13	2700.13	-104.28	1.07
9726.00	91.21	1.12	7033.36	2791.10	2791.10	-103.41	1.27
9818.00	88.42	0.97	7033.65	2883.08	2883.08	-101.72	3.04
9910.00	88.86	0.83	7035.84	2975.04	2975.04	-100.28	0.50
10005.00	88.92	0.57	7037.68	3070.02	3070.02	-99.12	0.28
10099.00	91.04	0.21	7037.71	3164.01	3164.01	-98.48	2.28
10194.00	91.38	358.43	7035.70	3258.98	3258.98	-99.60	1.91
10288.00	92.08	0.78	7032.86	3352.92	3352.92	-100.24	2.61
10383.00	91.71	2.18	7029.72	3447.84	3447.84	-97.79	1.53
10477.00	90.54	1.49	7027.87	3541.77	3541.77	-94.77	1.45
10571.00	90.94	0.99	7026.66	3635.74	3635.74	-92.74	0.69
10666.00	90.20	0.39	7025.71	3730.73	3730.73	-91.59	1.01
10760.00	89.26	358.95	7026.15	3824.72	3824.72	-92.14	1.83
10854.00	89.46	357.60	7027.19	3918.67	3918.67	-94.97	1.44
10949.00	89.02	357.29	7028.44	4013.57	4013.57	-99.20	0.56

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
11043.00	89.43	358.31	7029.71	4107.49	4107.49	-102.80	1.16
11138.00	89.19	358.88	7030.86	4202.45	4202.45	-105.13	0.65
11232.00	88.63	359.89	7032.65	4296.43	4296.43	-106.14	1.23
11326.00	88.56	359.62	7034.96	4390.40	4390.40	-106.55	0.30
11420.00	88.59	359.65	7037.30	4484.37	4484.37	-107.15	0.04
11515.00	89.20	0.81	7039.14	4579.35	4579.35	-106.76	1.39
11609.00	89.30	0.29	7040.37	4673.33	4673.33	-105.86	0.56
11703.00	90.30	0.32	7040.70	4767.33	4767.33	-105.36	1.07
11798.00	90.57	0.52	7039.98	4862.33	4862.33	-104.67	0.35
11892.00	90.20	359.66	7039.34	4956.32	4956.32	-104.52	0.99
11987.00	90.10	1.14	7039.09	5051.32	5051.32	-103.85	1.56
12081.00	90.77	0.64	7038.38	5145.30	5145.30	-102.39	0.89
12176.00	89.87	358.76	7037.85	5240.29	5240.29	-102.89	2.20
12270.00	88.82	359.42	7038.93	5334.27	5334.27	-104.38	1.31
12365.00	89.23	357.47	7040.54	5429.22	5429.22	-106.96	2.10
12459.00	89.30	358.90	7041.75	5523.16	5523.16	-109.94	1.53
12554.00	89.87	359.65	7042.45	5618.15	5618.15	-111.14	0.99
12648.00	88.93	1.33	7043.44	5712.14	5712.14	-110.34	2.05
12742.00	89.73	0.78	7044.54	5806.11	5806.11	-108.61	1.04
12837.00	91.00	359.78	7043.93	5901.11	5901.11	-108.15	1.70

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	7100ft
12931.00	90.94	1.49	7042.33	5995.09	5995.09	-107.11	1.83
13026.00	89.13	2.40	7042.27	6090.03	6090.03	-103.88	2.14
13120.00	90.20	2.55	7042.82	6183.94	6183.94	-99.82	1.15
13214.00	90.61	0.59	7042.16	6277.89	6277.89	-97.25	2.13
13309.00	90.13	1.63	7041.55	6372.87	6372.87	-95.40	1.20
13403.00	88.08	4.21	7043.01	6466.73	6466.73	-90.61	3.50
13497.00	88.46	4.07	7045.85	6560.44	6560.44	-83.83	0.42
13592.00	89.46	4.42	7047.57	6655.16	6655.16	-76.81	1.12
13686.00	89.80	3.15	7048.18	6748.95	6748.95	-70.60	1.39
13780.00	89.76	2.41	7048.54	6842.84	6842.84	-66.04	0.80
13874.00	90.00	1.69	7048.73	6936.78	6936.78	-62.68	0.80
13968.00	89.46	359.55	7049.17	7030.77	7030.77	-61.66	2.35
14063.00	90.50	359.93	7049.20	7125.76	7125.76	-62.09	1.17
14094.00	91.18	359.35	7048.75	7156.76	7156.76	-62.29	2.87

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft

5" = 100' FEET MD