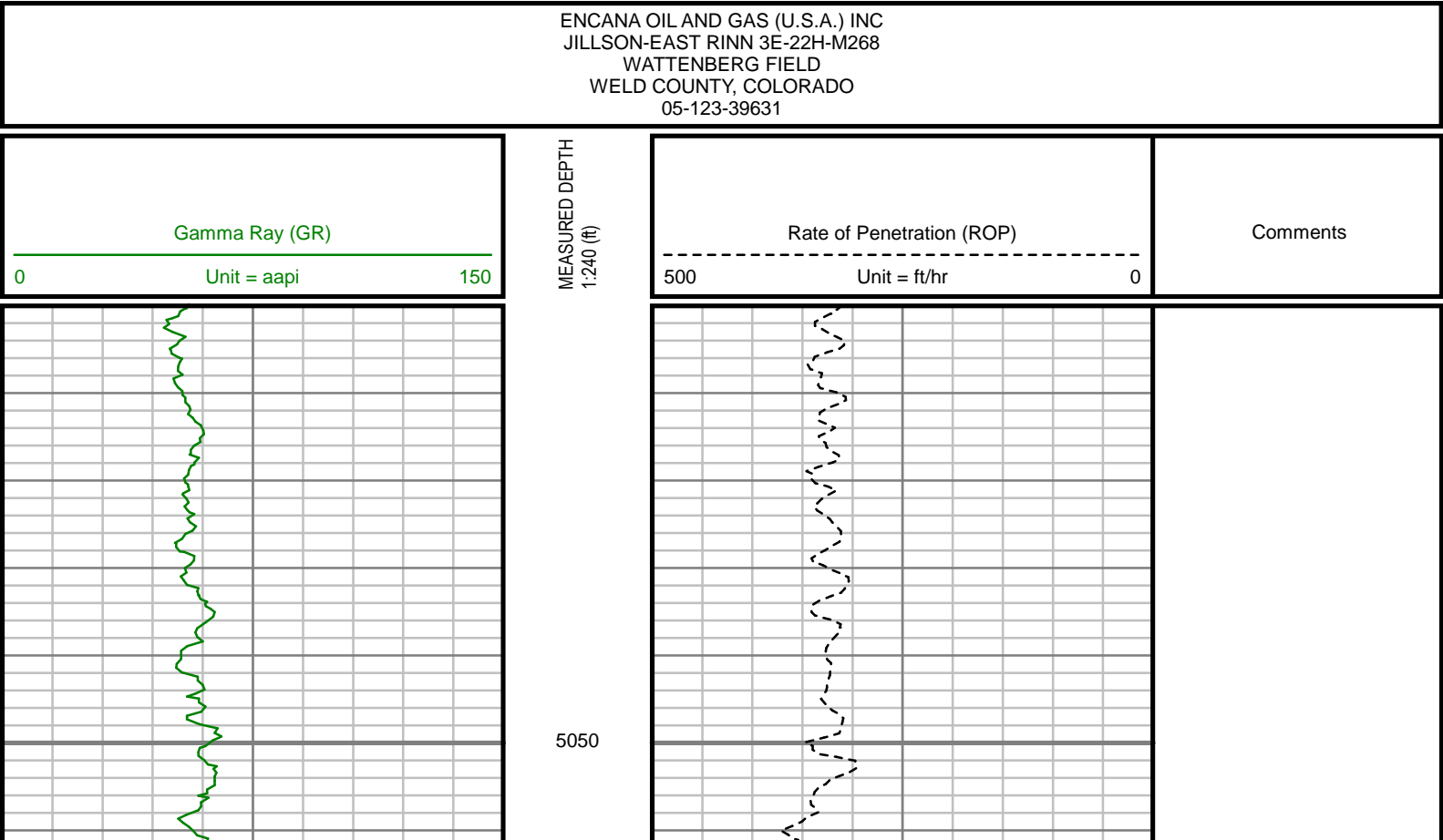




|  |
|--|
| Remarks  |
| ENCANA OIL AND GAS (U.S.A.) INC PRODUCTION AFE# 14181166                       |
| SCIENTIFIC DRILLING INTERNATIONAL JOB# 179887                                  |
|  |
| ALL REFERENCES IN THE DEPTH TRACK ARE AT BIT DEPTH.                            |
| ALL DATA IS MEMORY DATA 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            |
|  |
| RUN # 1: MWD / DIRECTIONAL RUN   |
| SENSORS S/N: CONT = 1011 / MWD EYE = 429                                       |
| BIT TO SENSOR OFFSET: SURVEY = 54.33 FT.                                       |
|  |
| RUN # 2: MWD / GAMMA RAY LOGGING RUN   |
| SENSORS S/N: PULSER = 128-115 / CONT = 882 / MWD EYE = 0349 / GAMMA RAY = 1074 |
| BIT TO SENSOR OFFSETS: SURVEY = 67.61 FT. / GAMMMA RAY = 53.60 FT.             |
|  |
| RUN # 3: MWD / GAMMA RAY LOGGING RUN   |
| SENSORS S/N: PULSER = 78-207 / CONT = 831 / MWD EYE = 0429 / GAMMA RAY = 1194  |
| BIT TO SENSOR OFFSETS: SURVEY = 65.35 FT. / GAMMMA RAY = 52.10 FT.             |
|  |
| MNEMONICS LIST:  |
| GR = GAMMA RAY   |
| ROP = RATE OF PENETRATION  |
|  |
|  |

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.





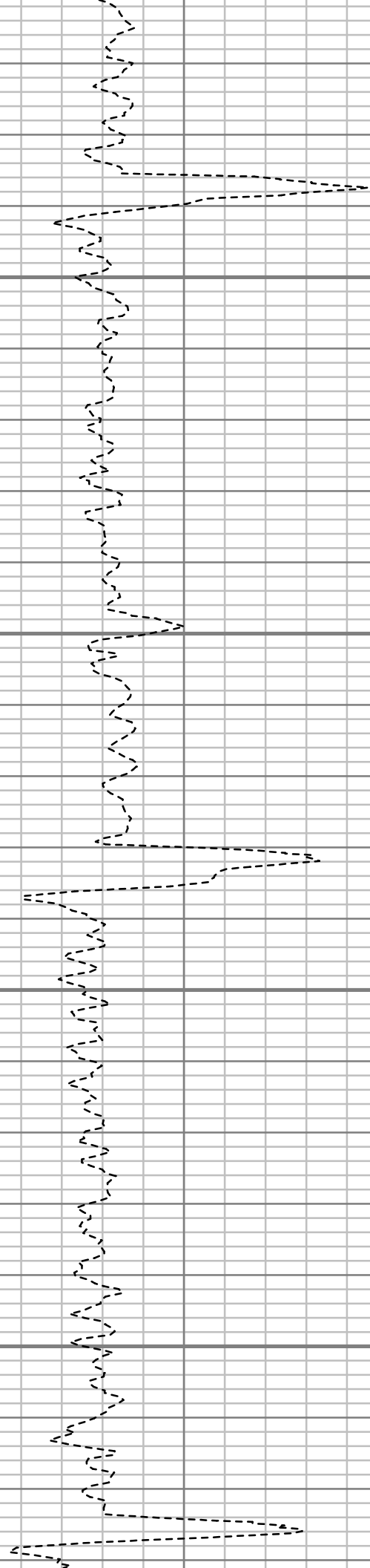
5100

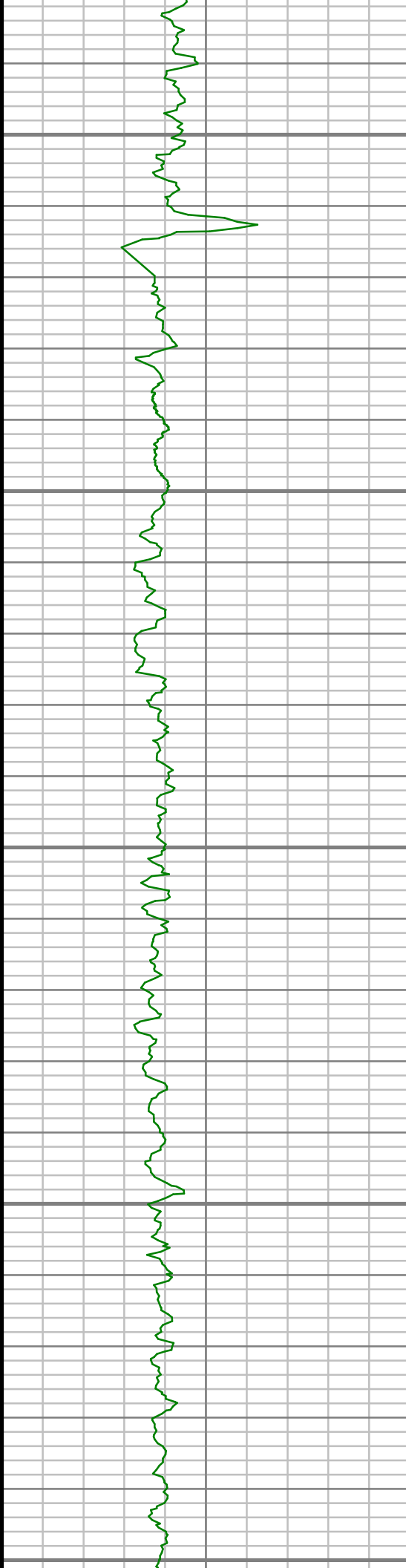
5150

5200

5250

S: 32 MD: 5113.00 ft Inc: 4.83  
deg Az: 131.89 deg TVD:  
5100.47 ft





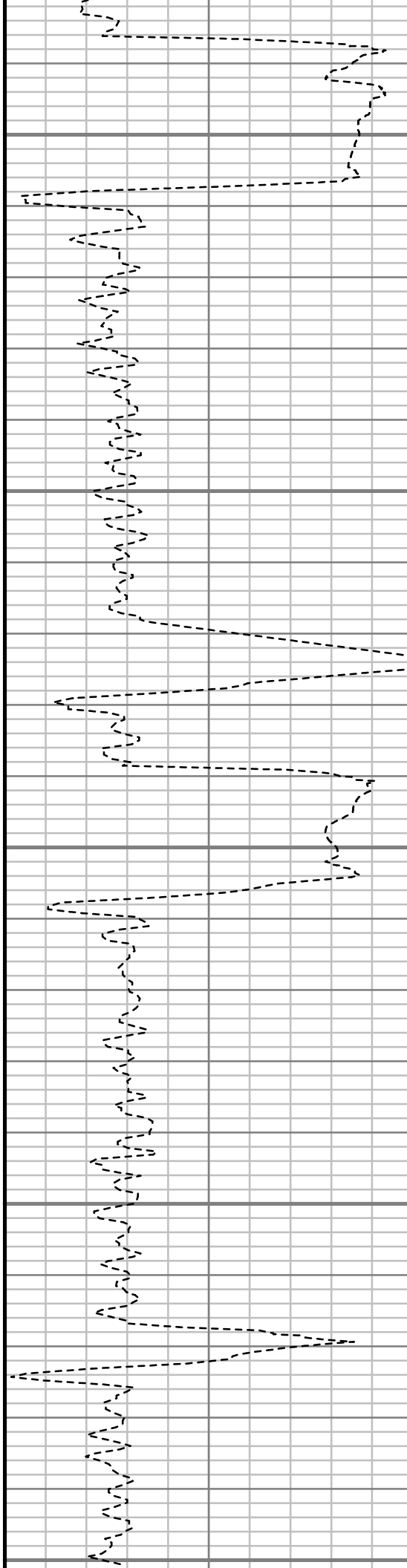
5300

5350

5400

5450

5500



S: 33 MD: 5304.00 ft Inc: 3.50  
deg Az: 135.73 deg TVD:  
5290.96 ft

S: 34 MD: 5494.00 ft Inc: 5.03  
deg Az: 127.90 deg TVD:  
5480.43 ft

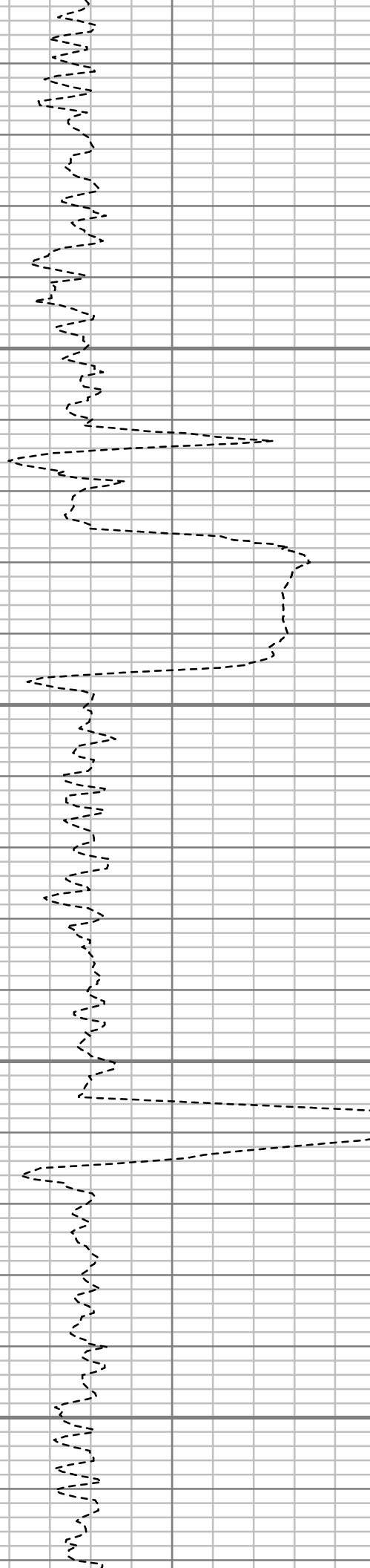


5550

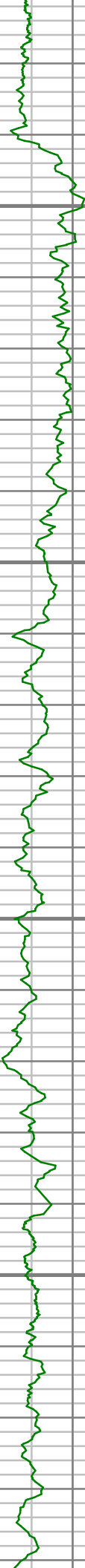
5600

5650

5700



S: 35 MD: 5685.00 ft Inc: 5.04  
deg Az: 141.73 deg TVD:  
5670.70 ft

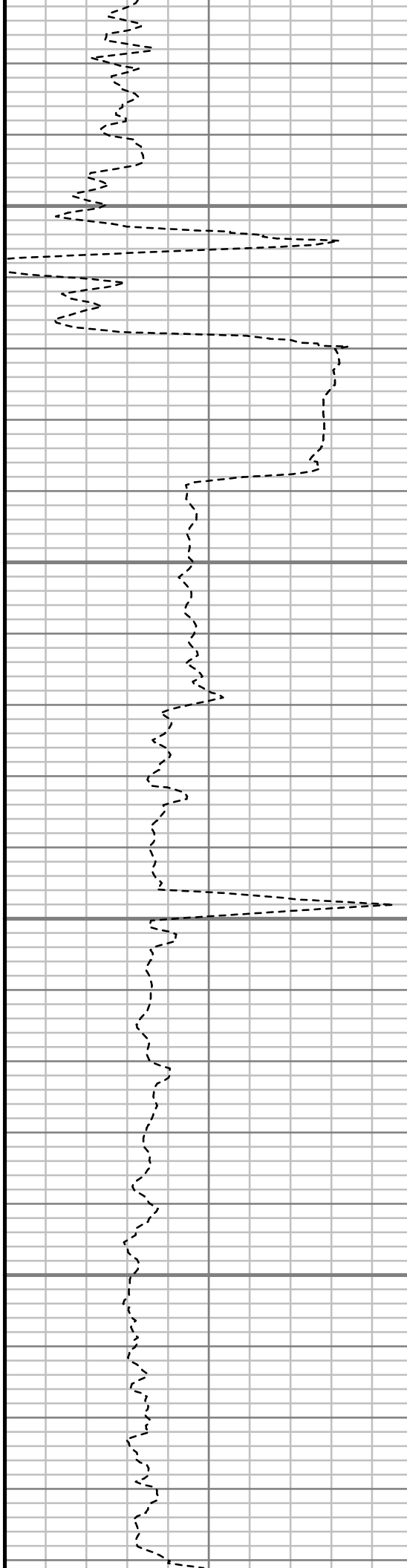


5750

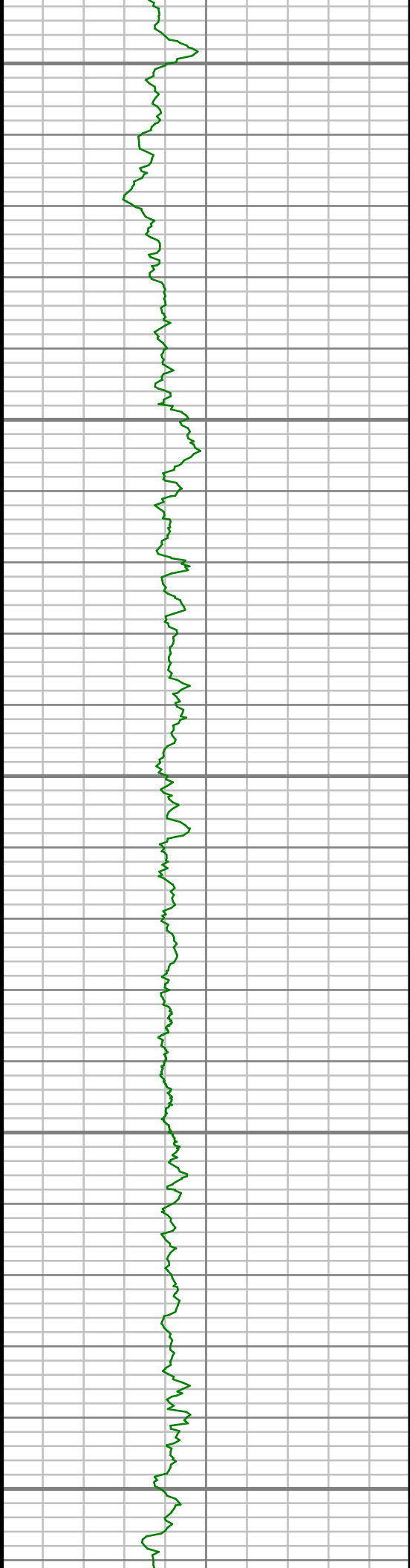
5800

5850

5900



S: 36 MD: 5875.00 ft Inc: 4.79  
deg Az: 136.93 deg TVD:  
5860.00 ft



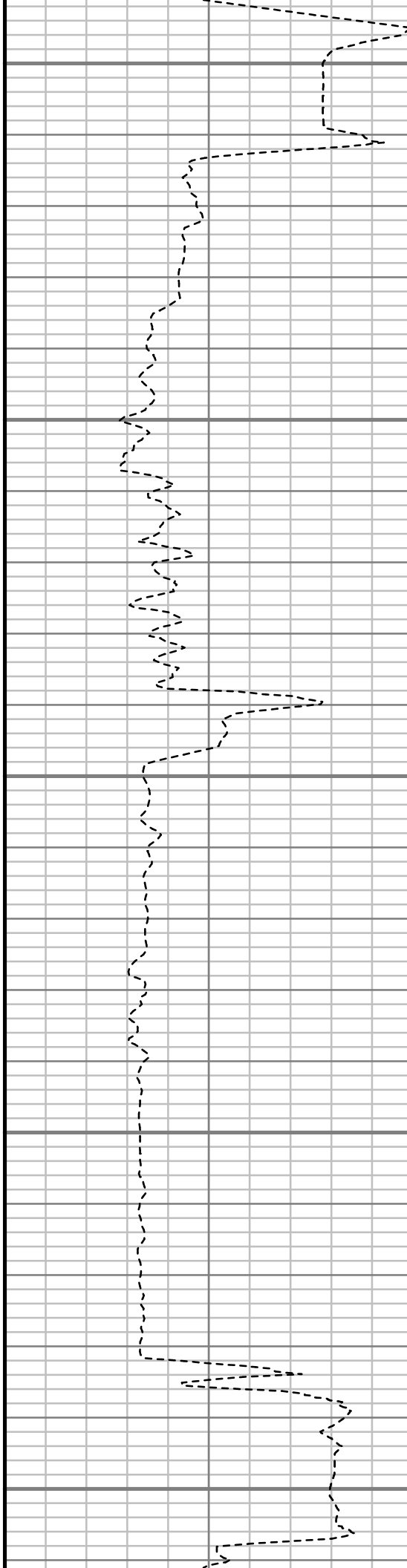
5950

6000

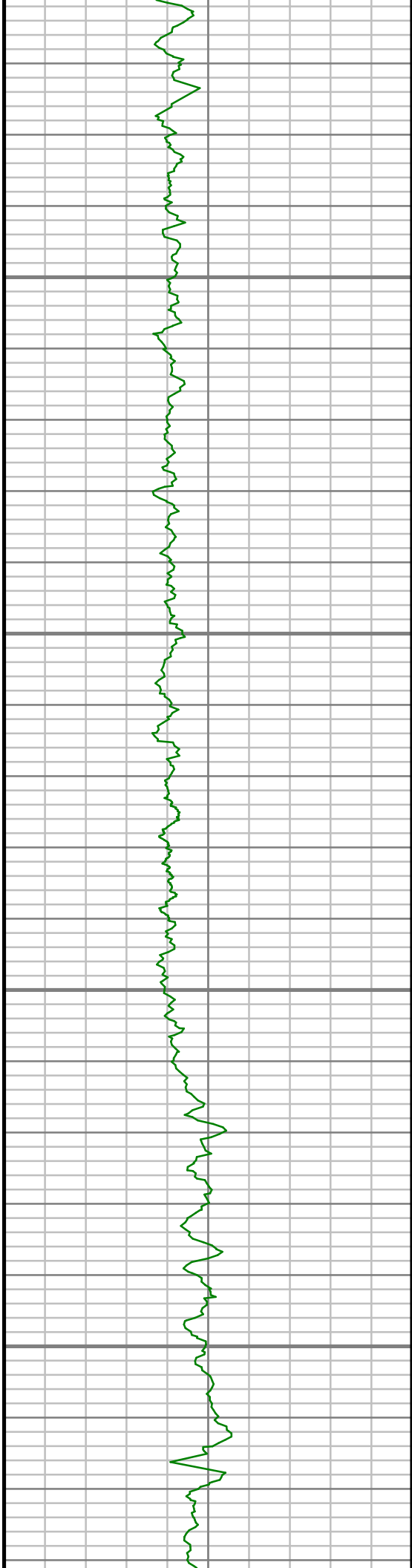
6050

6100

6150



S: 37 MD: 6066.00 ft Inc: 5.35  
deg Az: 138.78 deg TVD:  
6050.25 ft

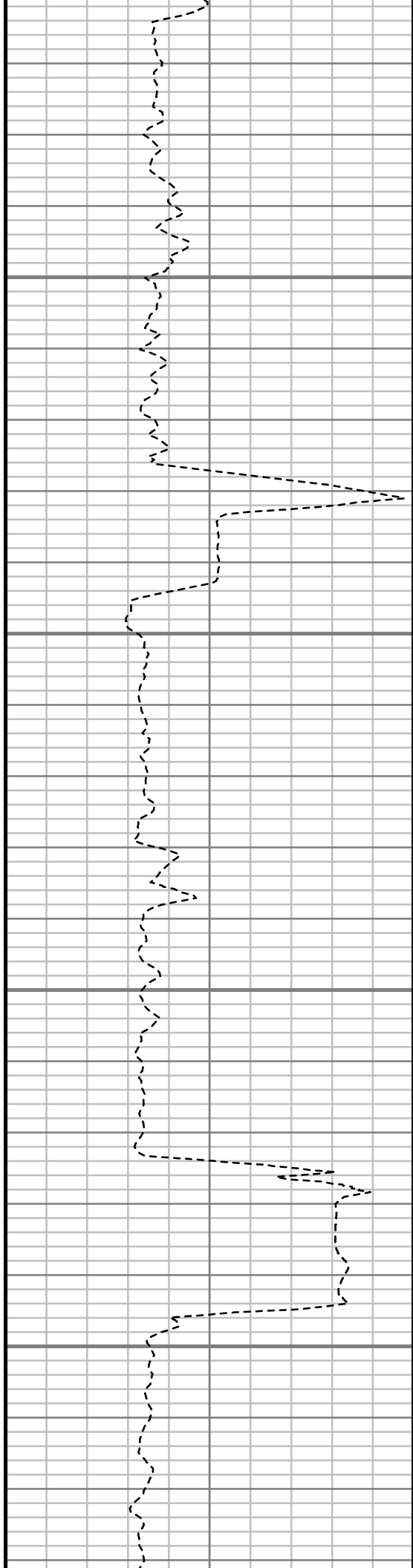


6200

6250

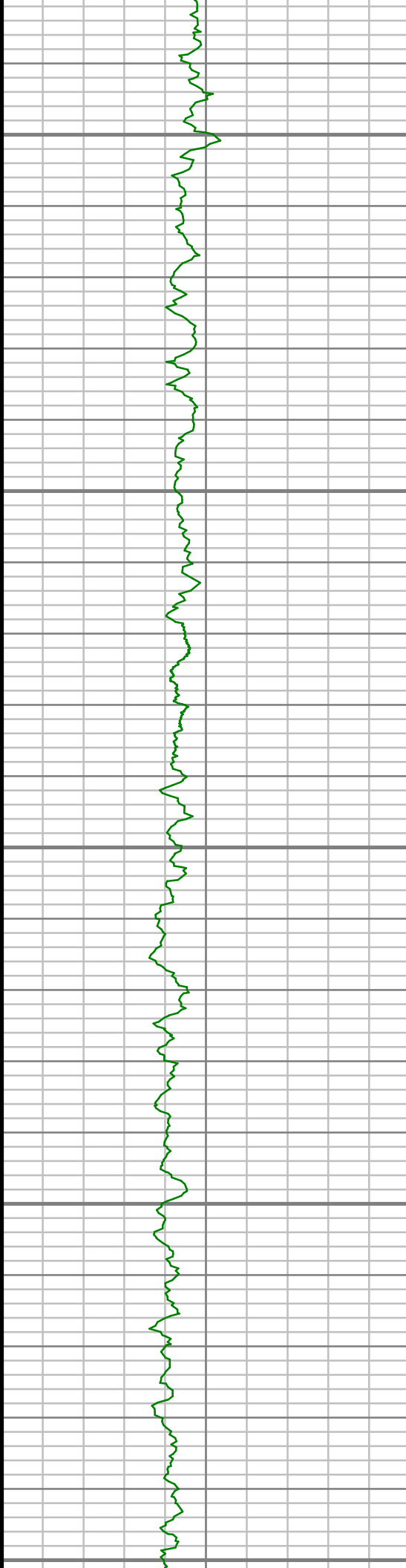
6300

6350



S: 38 MD: 6256.00 ft Inc: 4.09  
deg Az: 126.41 deg TVD:  
6239.61 ft





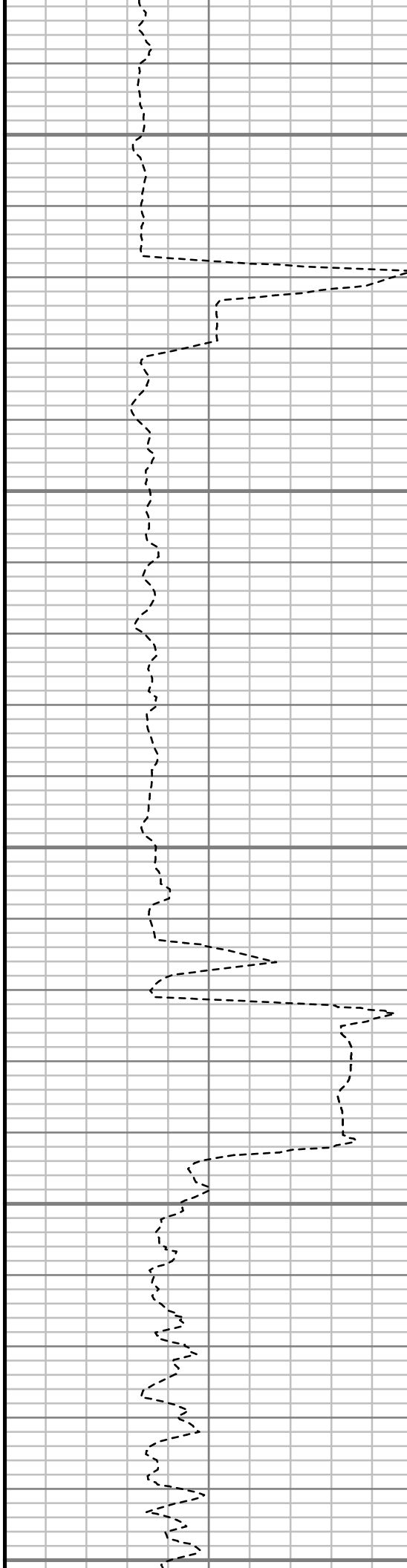
6400

6450

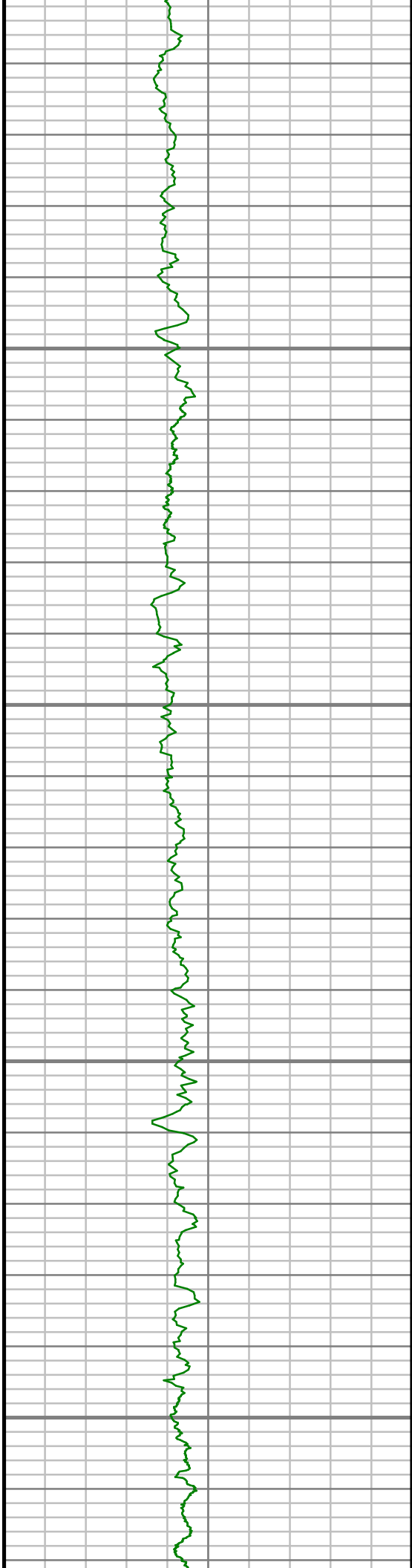
6500

6550

6600



S: 39 MD: 6447.00 ft Inc: 4.23  
deg Az: 120.69 deg TVD:  
6430.11 ft

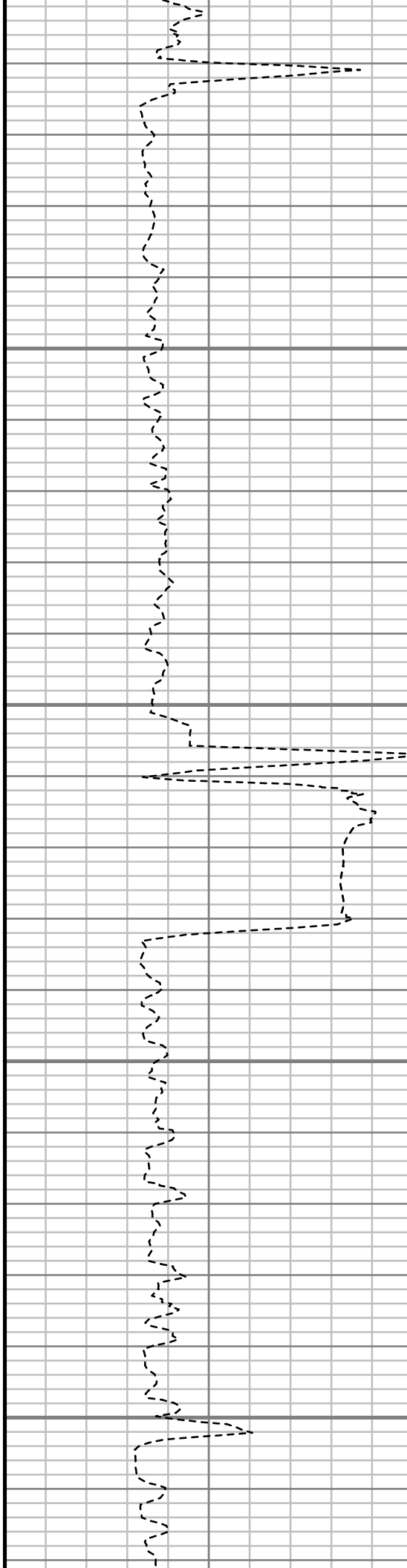


6650

6700

6750

6800



S: 40 MD: 6637.00 ft Inc: 4.45  
deg Az: 112.36 deg TVD:  
6619.56 ft

S: 41 MD: 6780.00 ft Inc: 1.18  
deg Az: 69.93 deg TVD:  
6762.38 ft

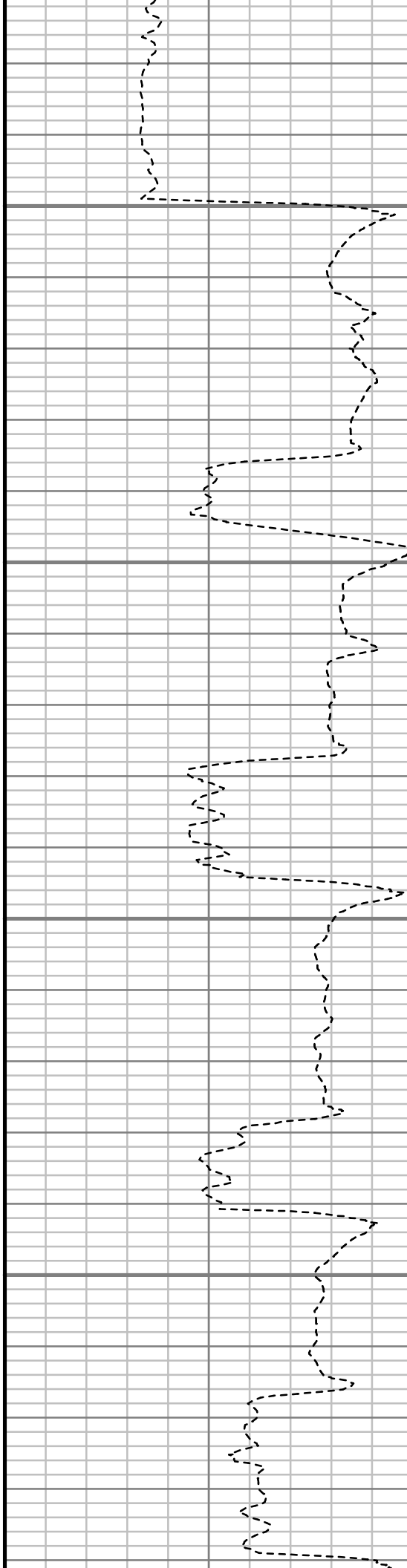


6850

6900

6950

7000



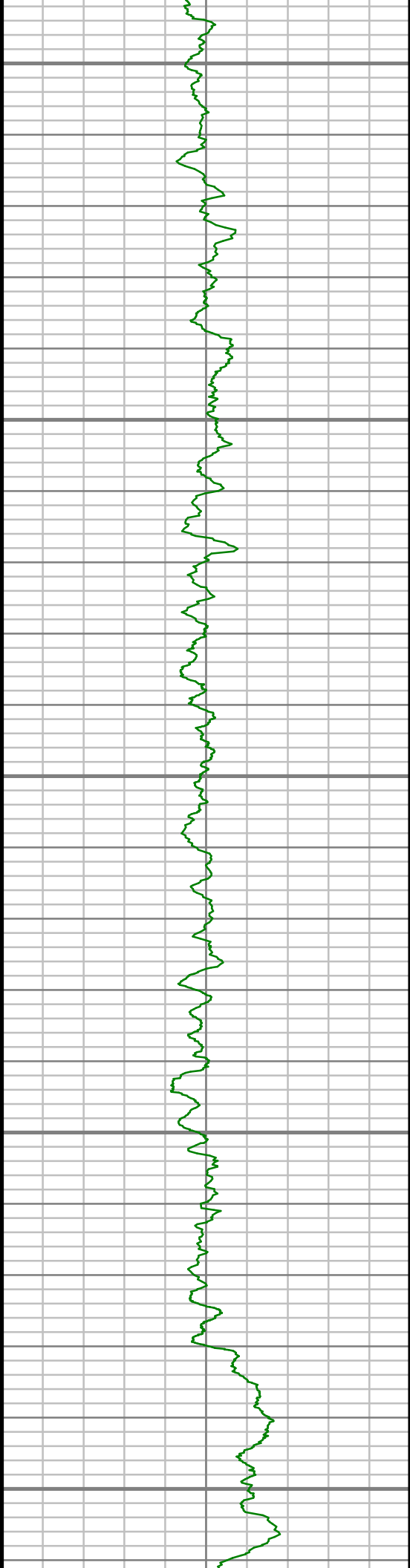
S: 42 MD: 6828.00 ft Inc: 1.00  
deg Az: 64.39 deg TVD:  
6810.37 ft

S: 43 MD: 6875.00 ft Inc: 2.96  
deg Az: 20.43 deg TVD:  
6857.35 ft

S: 44 MD: 6923.00 ft Inc: 7.19  
deg Az: 16.51 deg TVD:  
6905.15 ft

S: 45 MD: 6970.00 ft Inc: 12.09  
deg Az: 9.15 deg TVD: 6951.47  
ft

S: 46 MD: 7019.00 ft Inc: 15.31  
deg Az: 11.68 deg TVD:  
6999.07 ft



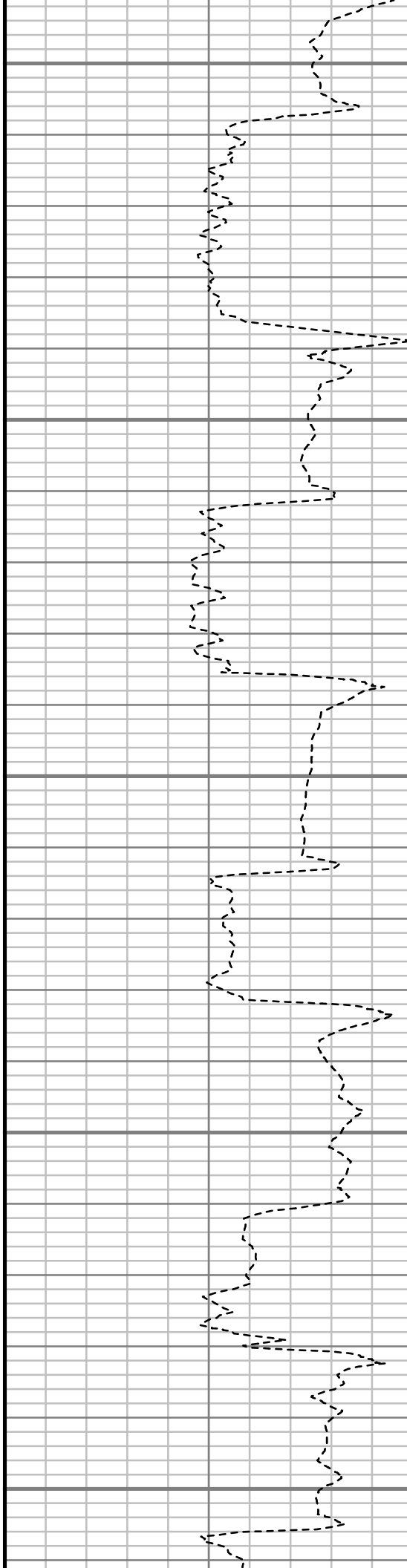
7050

7100

7150

7200

7250



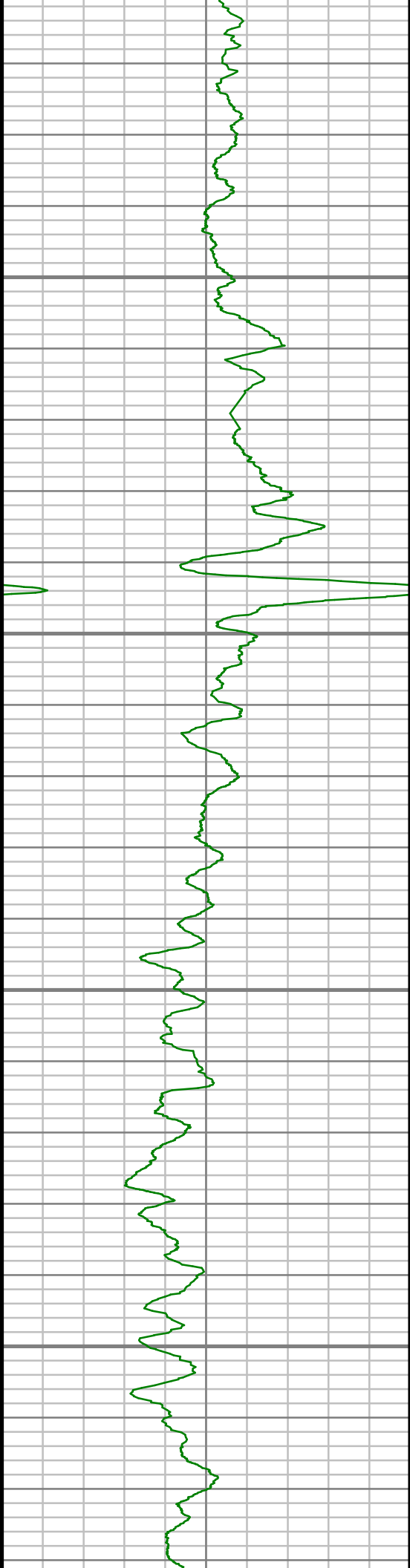
S: 47 MD: 7066.00 ft Inc: 16.60  
deg Az: 11.19 deg TVD:  
7044.26 ft

S: 48 MD: 7114.00 ft Inc: 18.69  
deg Az: 10.19 deg TVD:  
7090.00 ft

S: 49 MD: 7161.00 ft Inc: 21.98  
deg Az: 10.20 deg TVD:  
7134.06 ft

S: 50 MD: 7209.00 ft Inc: 25.00  
deg Az: 9.43 deg TVD: 7178.08  
ft

S: 51 MD: 7256.00 ft Inc: 27.78  
deg Az: 8.35 deg TVD: 7220.18

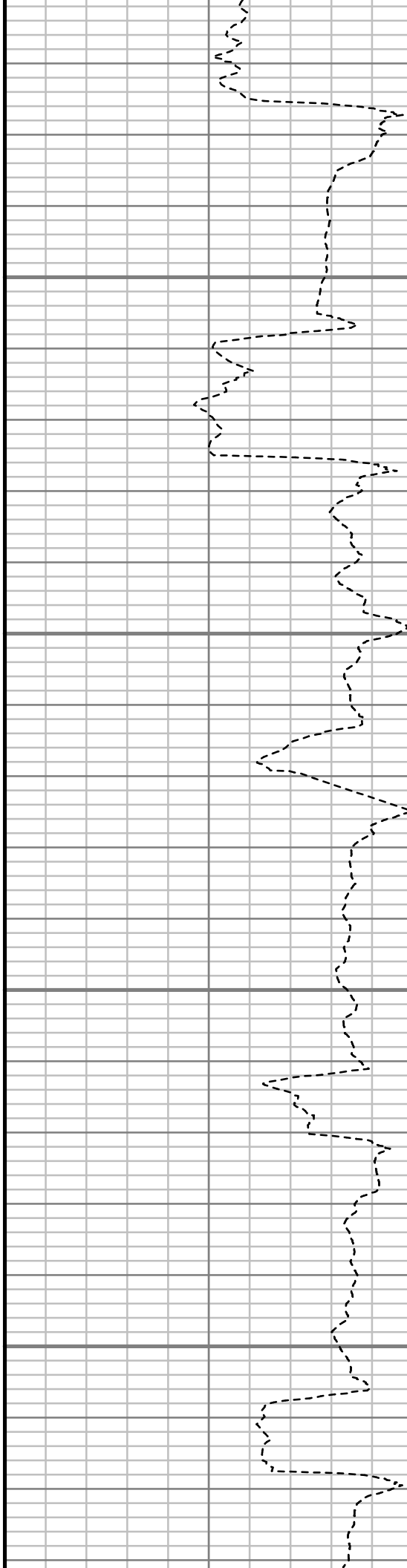


7300

7350

7400

7450

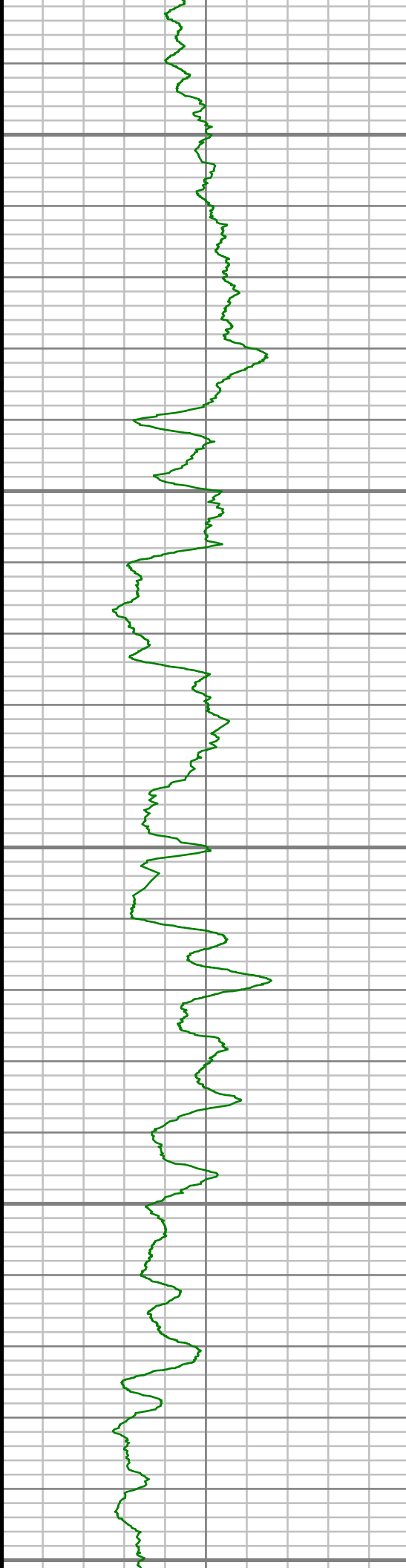


S: 52 MD: 7304.00 ft Inc: 30.63  
deg Az: 6.18 deg TVD: 7262.07  
ft

S: 53 MD: 7351.00 ft Inc: 34.02  
deg Az: 3.54 deg TVD: 7301.79  
ft

S: 54 MD: 7400.00 ft Inc: 39.84  
deg Az: 1.07 deg TVD: 7340.94  
ft

S: 55 MD: 7447.00 ft Inc: 44.68  
deg Az: 1.05 deg TVD: 7375.71  
ft



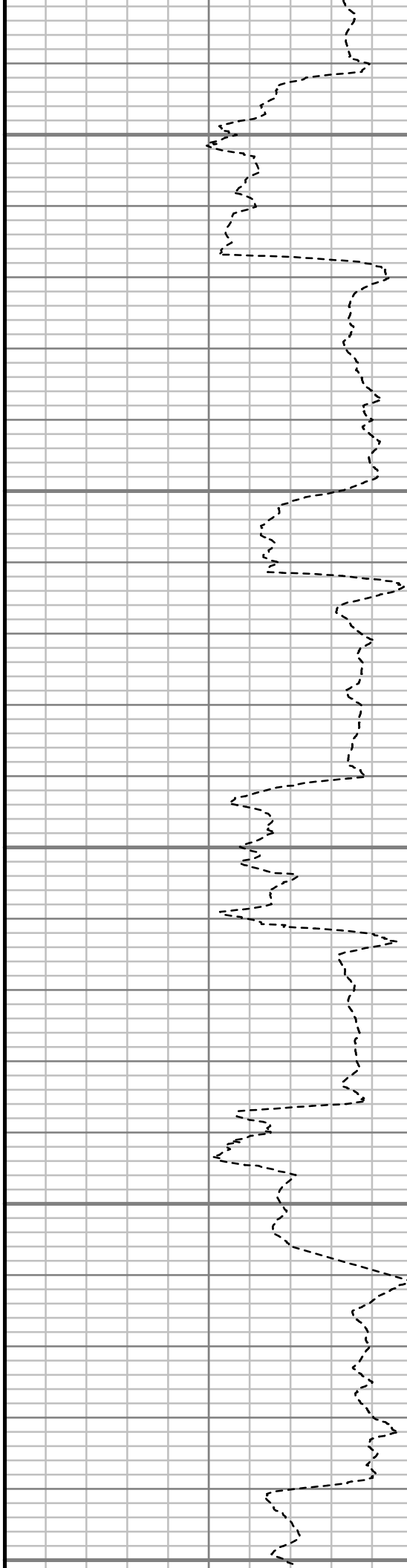
7500

7550

7600

7650

7700



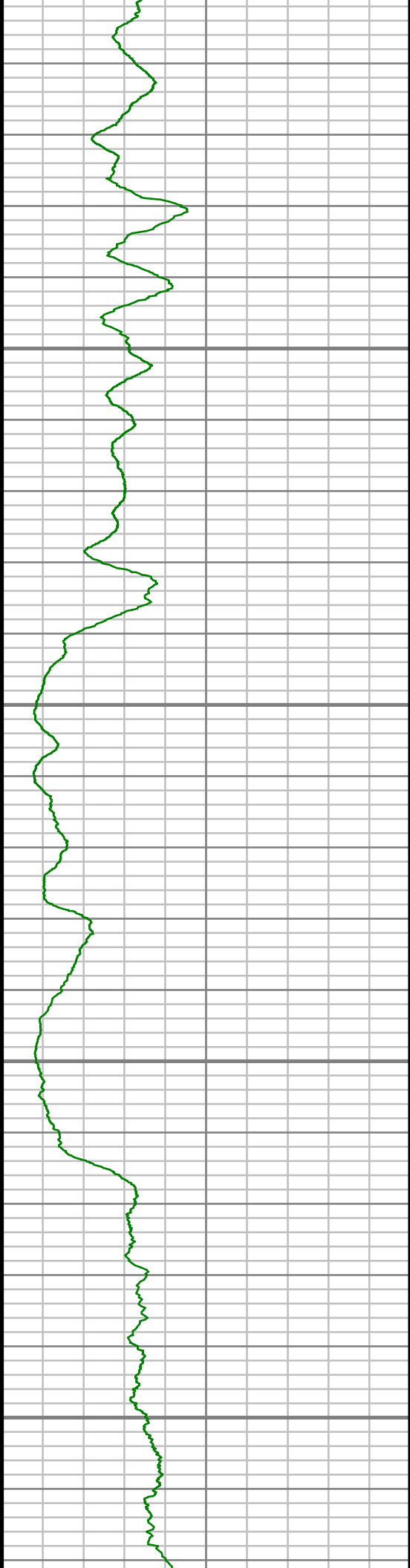
S: 56 MD: 7495.00 ft Inc: 48.49  
deg Az: 1.82 deg TVD: 7408.70  
ft

S: 57 MD: 7542.00 ft Inc: 52.65  
deg Az: 0.78 deg TVD: 7438.54  
ft

S: 58 MD: 7590.00 ft Inc: 56.74  
deg Az: 359.18 deg TVD:  
7466.28 ft

S: 59 MD: 7637.00 ft Inc: 61.10  
deg Az: 358.48 deg TVD:  
7490.54 ft

S: 60 MD: 7686.00 ft Inc: 65.59  
deg Az: 359.31 deg TVD:  
7512.51 ft



7750

7800

7850

7900



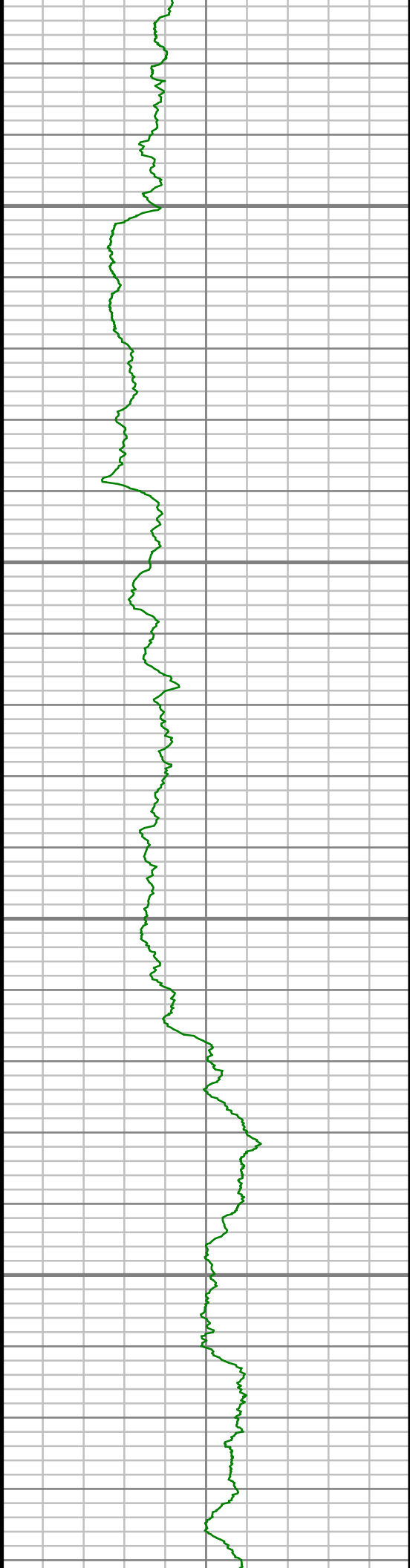
S: 61 MD: 7733.00 ft Inc: 69.29  
deg Az: 0.22 deg TVD: 7530.54  
ft

S: 62 MD: 7781.00 ft Inc: 71.74  
deg Az: 0.39 deg TVD: 7546.55  
ft

S: 63 MD: 7828.00 ft Inc: 74.67  
deg Az: 0.02 deg TVD: 7560.12  
ft

S: 64 MD: 7876.00 ft Inc: 77.86  
deg Az: 359.21 deg TVD:  
7571.52 ft

S: 65 MD: 7908.00 ft Inc: 81.94  
deg Az: 359.17 deg TVD:  
7577.13 ft

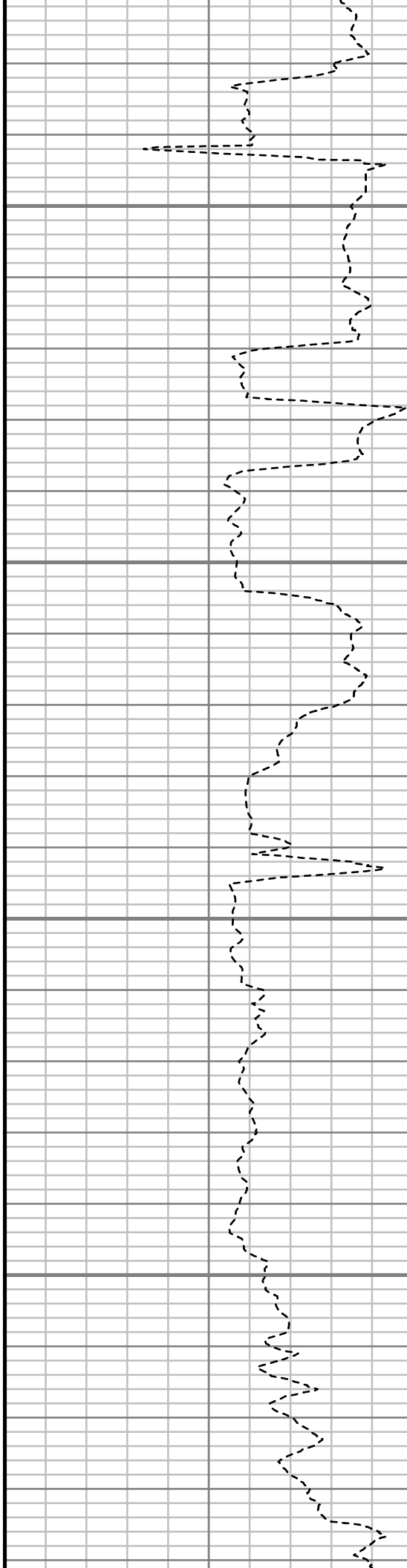


7950

8000

8050

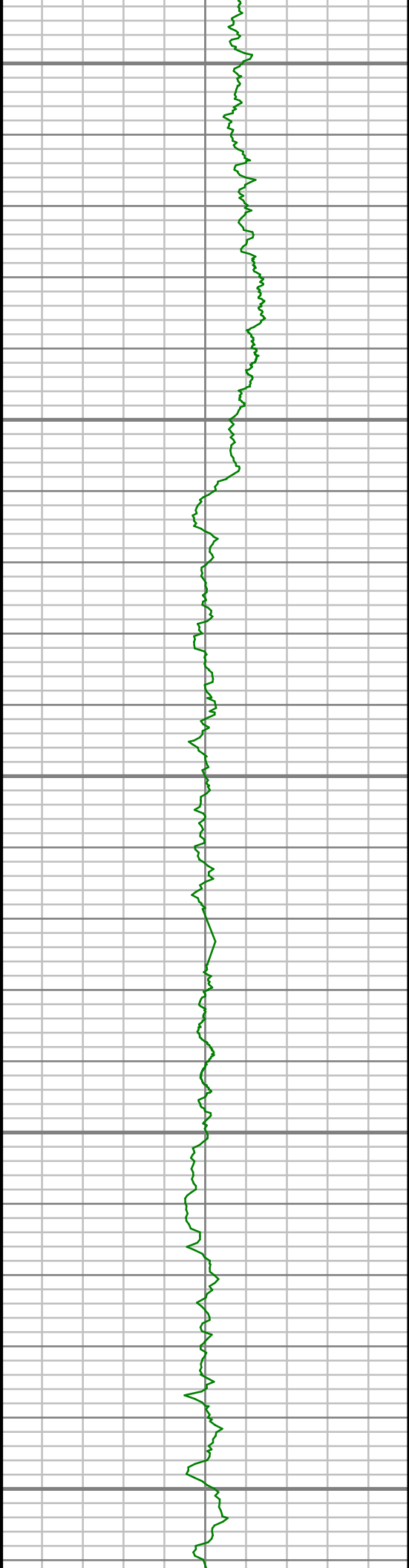
8100



S: 66 MD: 7935.00 ft Inc: 85.30  
deg Az: 359.62 deg TVD:  
7580.13 ft

S: 67 MD: 8073.00 ft Inc: 90.37  
deg Az: 0.87 deg TVD: 7585.35  
ft





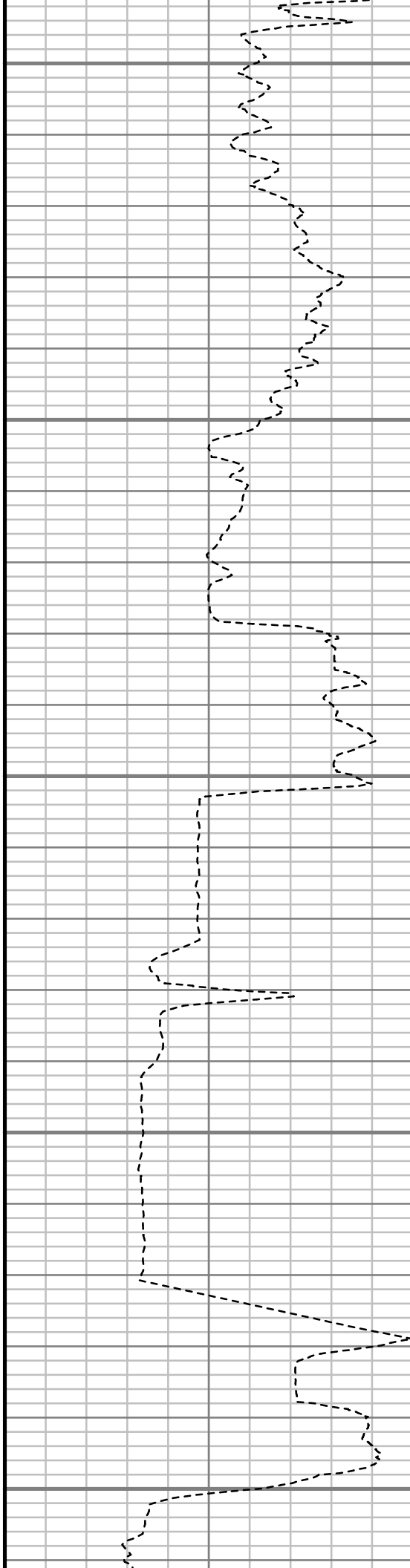
8150

8200

8250

8300

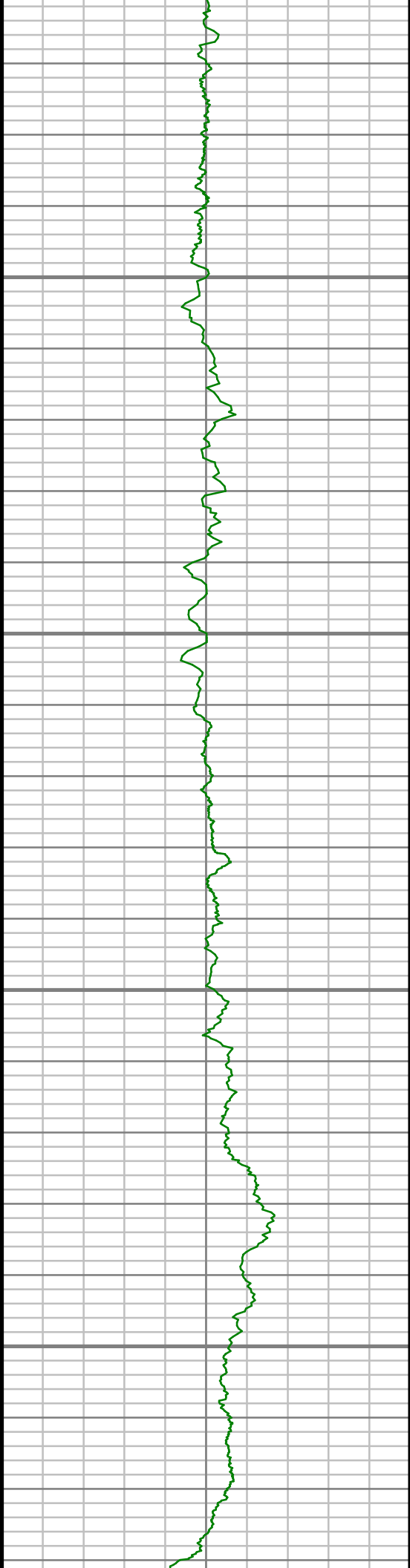
8350



S: 68 MD: 8169.00 ft Inc: 89.29  
deg Az: 0.51 deg TVD: 7585.63  
ft

S: 69 MD: 8262.00 ft Inc: 90.34  
deg Az: 0.62 deg TVD: 7585.93  
ft

S: 70 MD: 8355.00 ft Inc: 90.47  
deg Az: 358.68 deg TVD:  
7595.27 ft

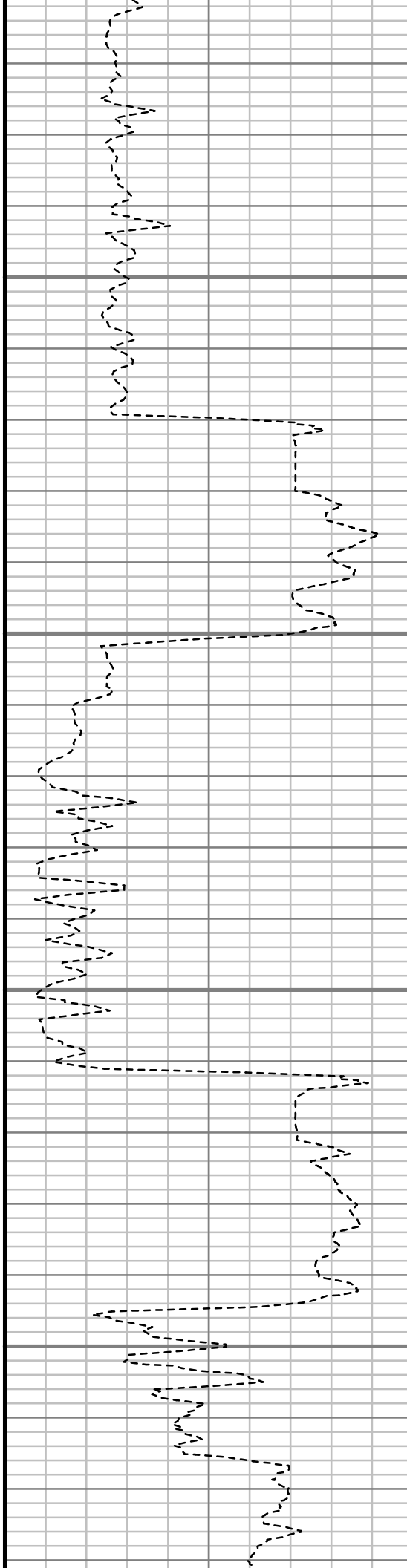


8400

8450

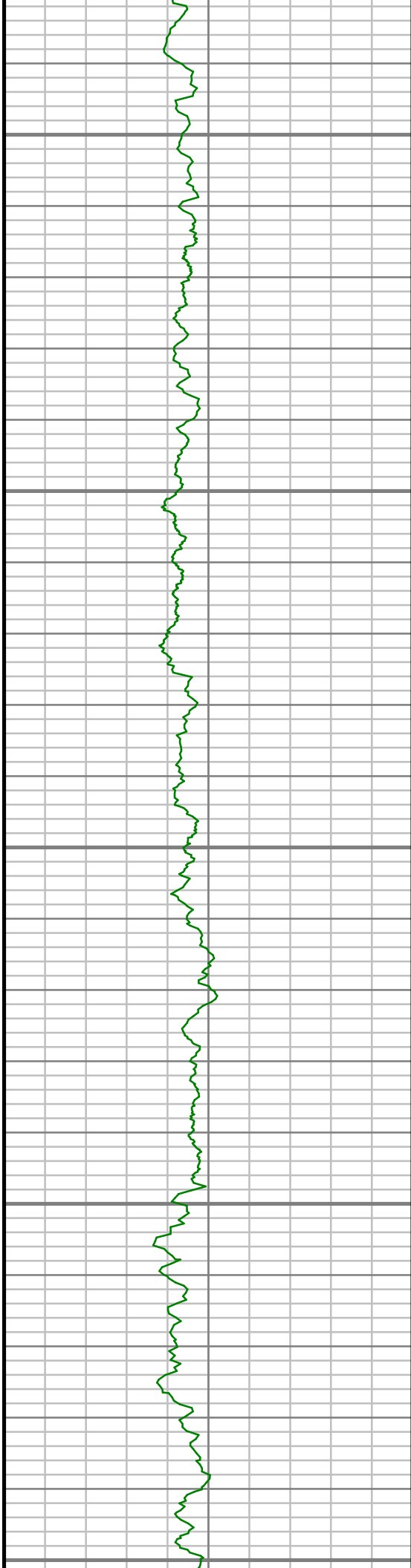
8500

8550



S: 71 MD: 8448.00 ft Inc: 90.50  
deg Az: 358.28 deg TVD:  
7584.48 ft

S: 72 MD: 8541.00 ft Inc: 91.51  
deg Az: 358.57 deg TVD:  
7582.85 ft



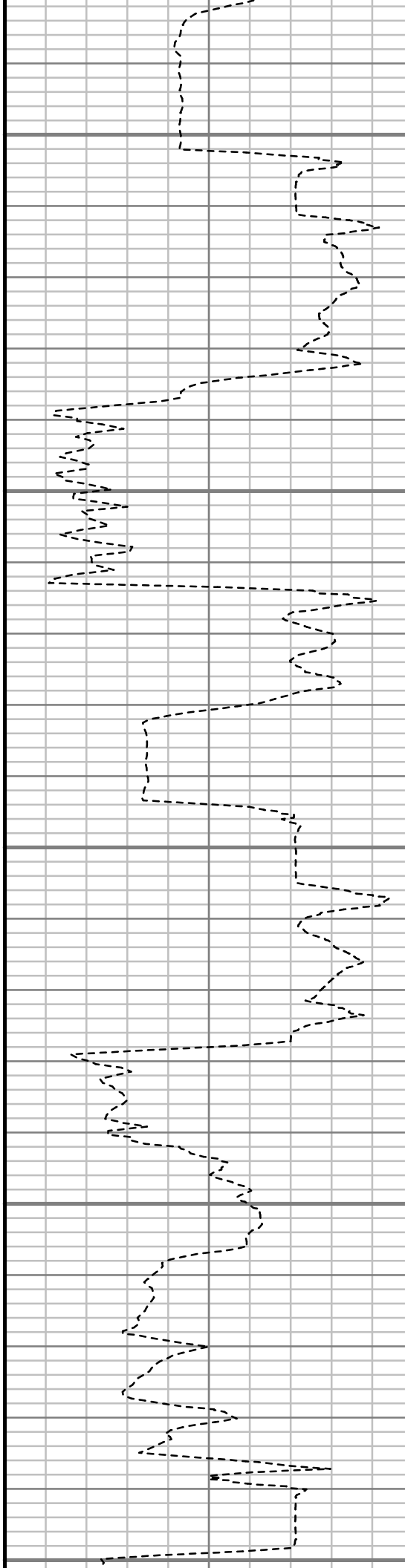
8600

8650

8700

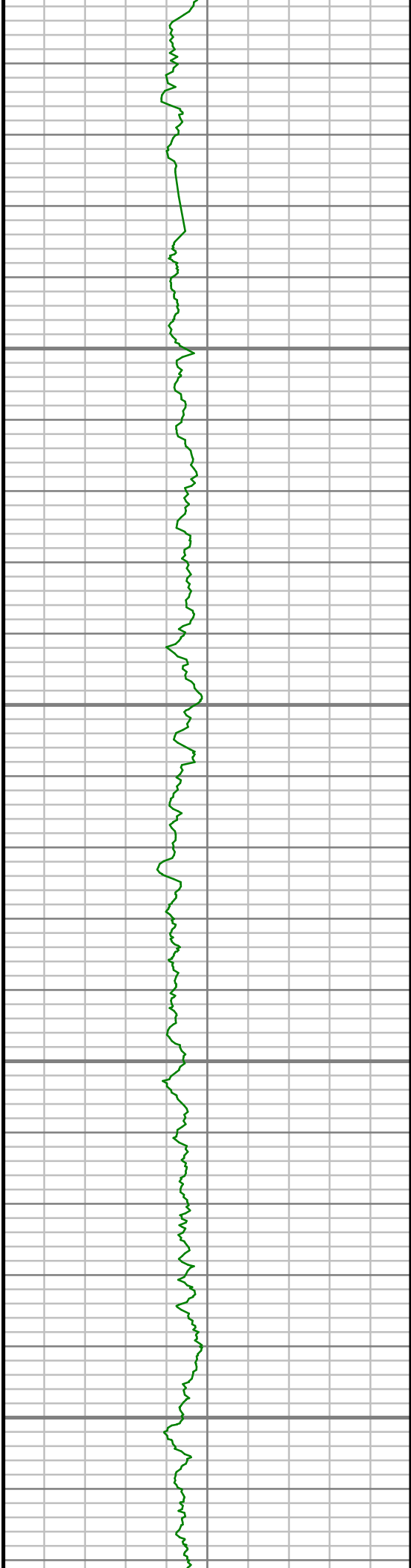
8750

8800



S: 73 MD: 8633.00 ft Inc: 92.05  
deg Az: 0.06 deg TVD: 7579.99  
ft

S: 74 MD: 8726.00 ft Inc: 90.97  
deg Az: 1.97 deg TVD: 7577.53  
ft

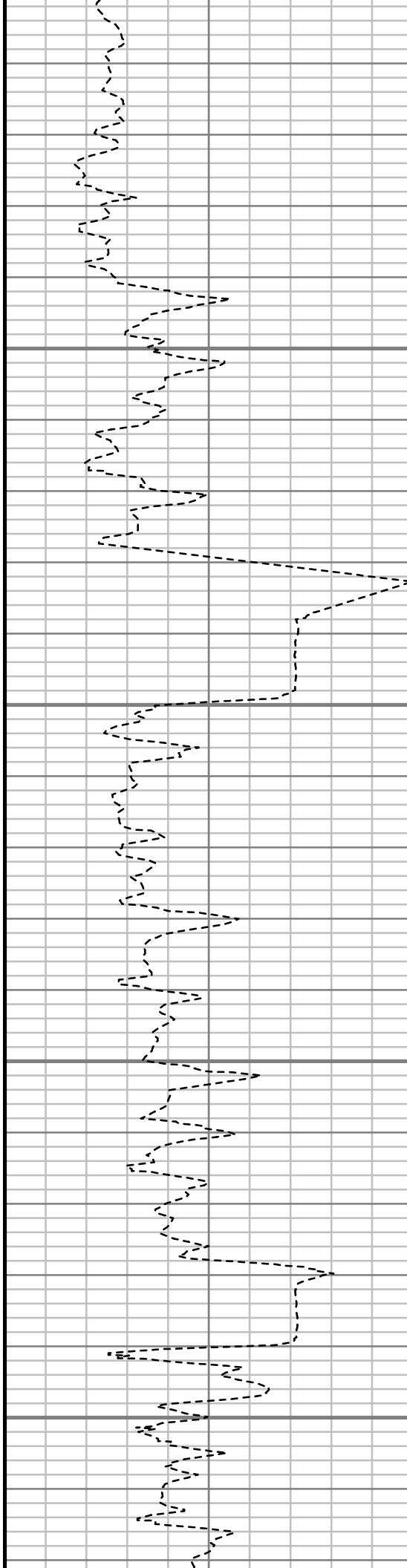


8850

8900

8950

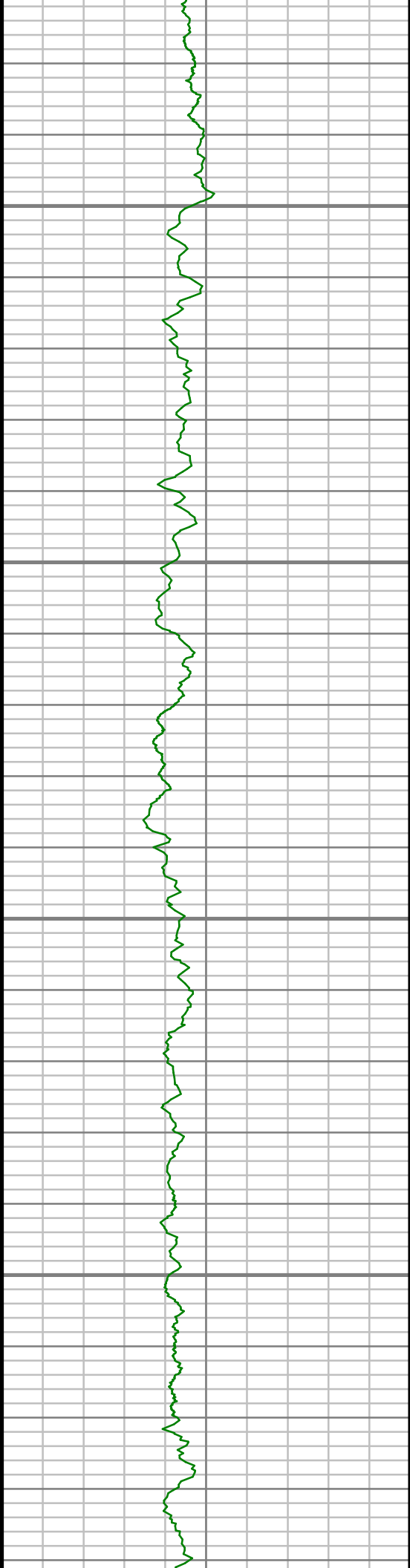
9000



S: 75 MD: 8819.00 ft Inc: 90.74  
deg Az: 2.33 deg TVD: 7576.14  
ft

S: 76 MD: 8912.00 ft Inc: 90.47  
deg Az: 2.36 deg TVD: 7575.16  
ft

S: 77 MD: 9005.00 ft Inc: 89.87  
deg Az: 1.38 deg TVD: 7574.88  
ft

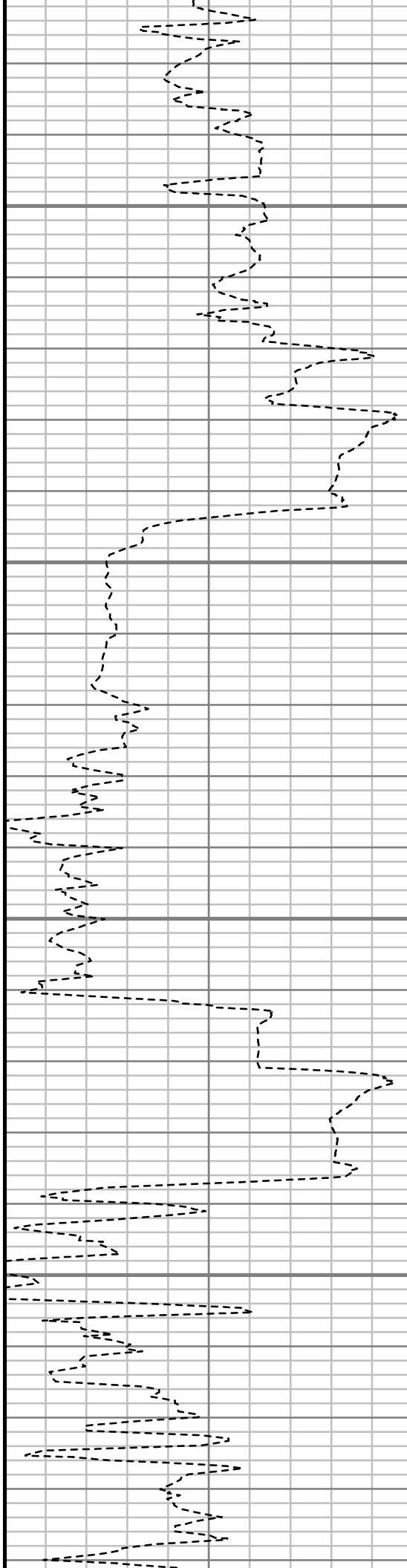


9050

9100

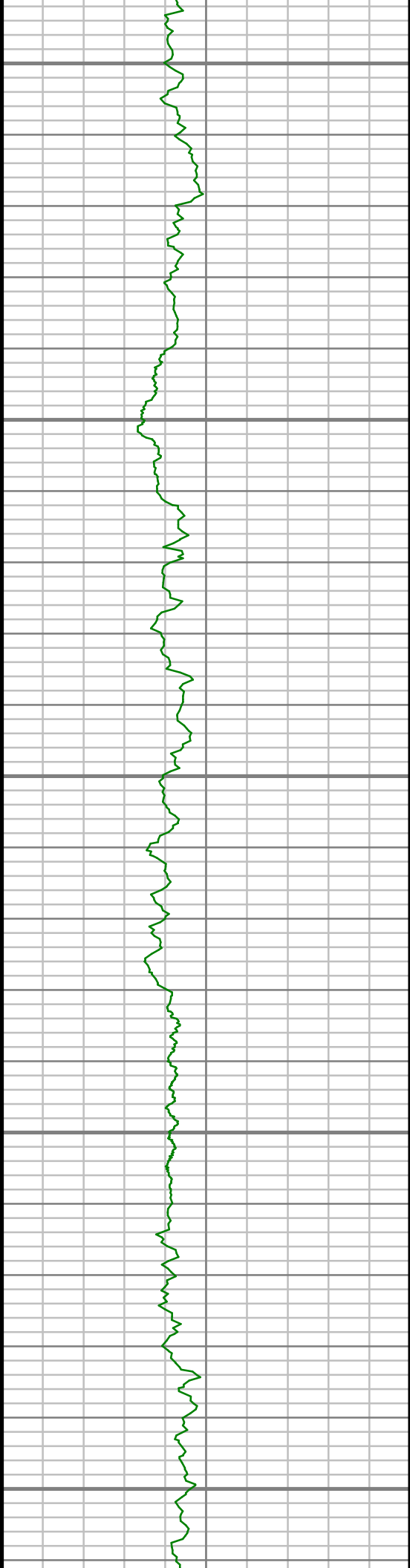
9150

9200



S: 78 MD: 9098.00 ft Inc: 90.44  
deg Az: 1.41 deg TVD: 7574.64  
ft

S: 79 MD: 9191.00 ft Inc: 91.28  
deg Az: 1.05 deg TVD: 7573.25  
ft



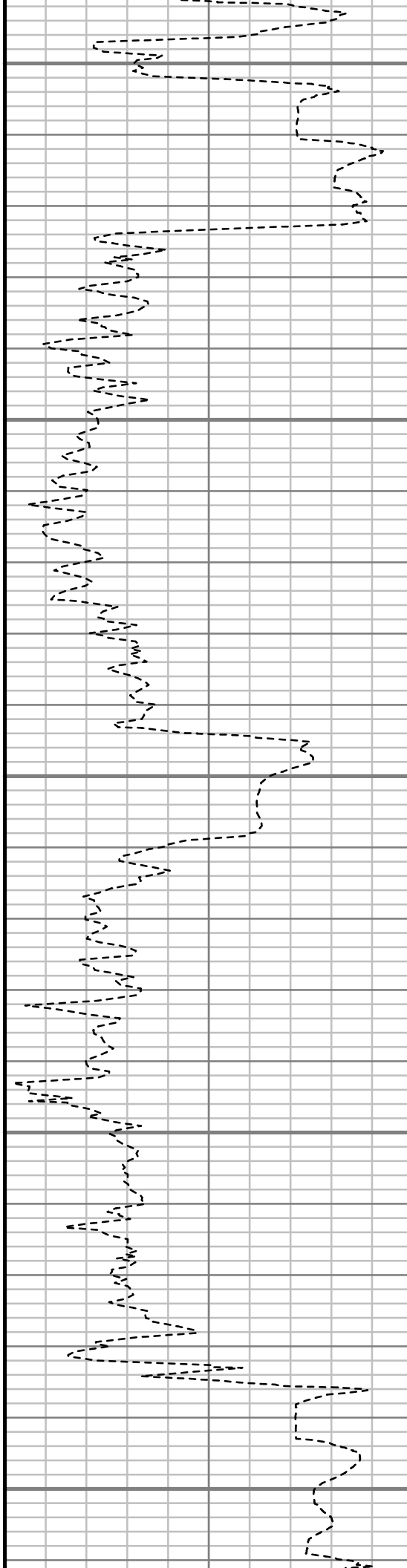
9250

9300

9350

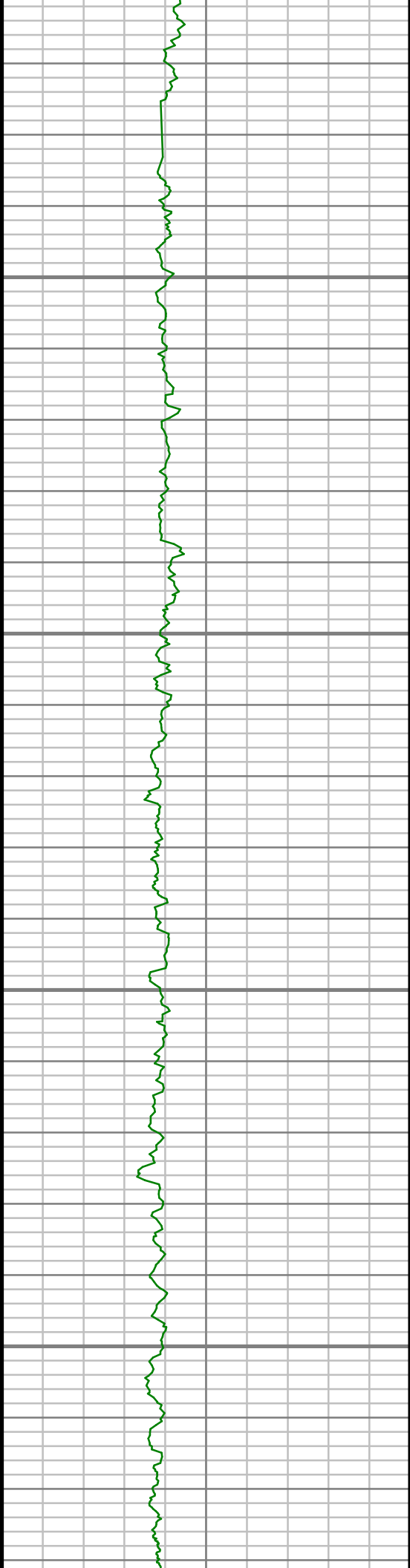
9400

9450



S: 80 MD: 9284.00 ft Inc: 92.05  
deg Az: 0.27 deg TVD: 7570.55  
ft

S: 81 MD: 9377.00 ft Inc: 90.74  
deg Az: 359.46 deg TVD:  
7568.29 ft

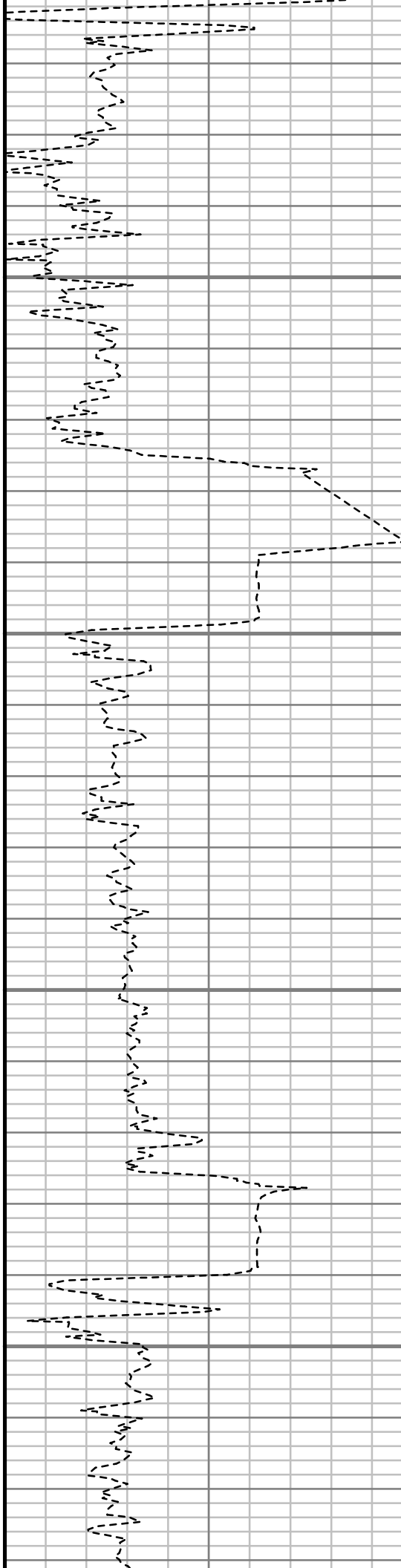


9500

9550

9600

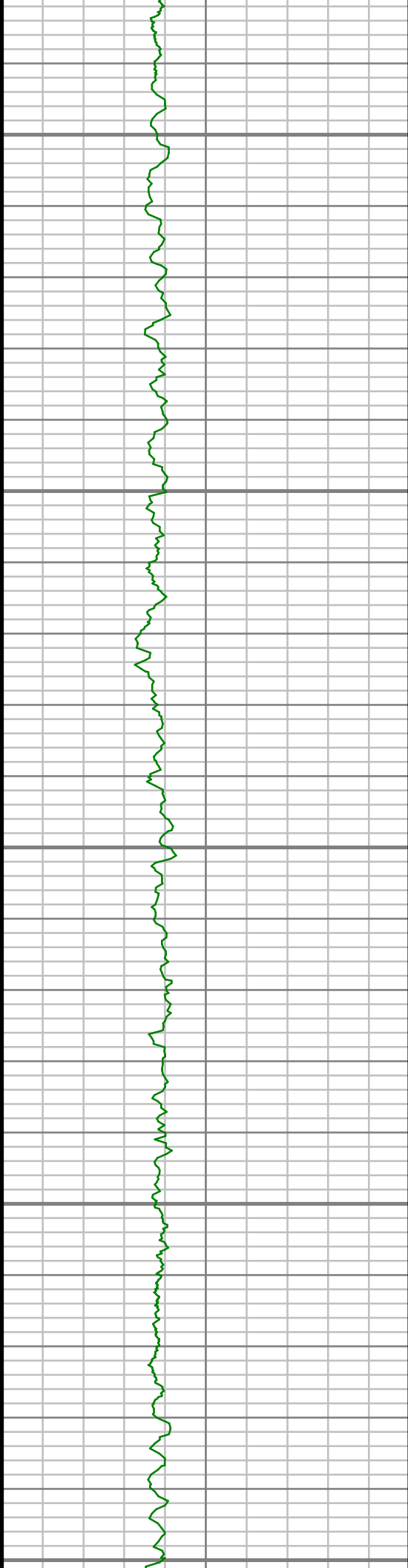
9650



S: 82 MD: 9470.00 ft Inc: 91.88  
deg Az: 0.50 deg TVD: 7566.16  
ft

S: 83 MD: 9562.00 ft Inc: 91.68  
deg Az: 0.62 deg TVD: 7563.30  
ft

S: 84 MD: 9655.00 ft Inc: 90.70  
deg Az: 0.20 deg TVD: 7561.36  
ft



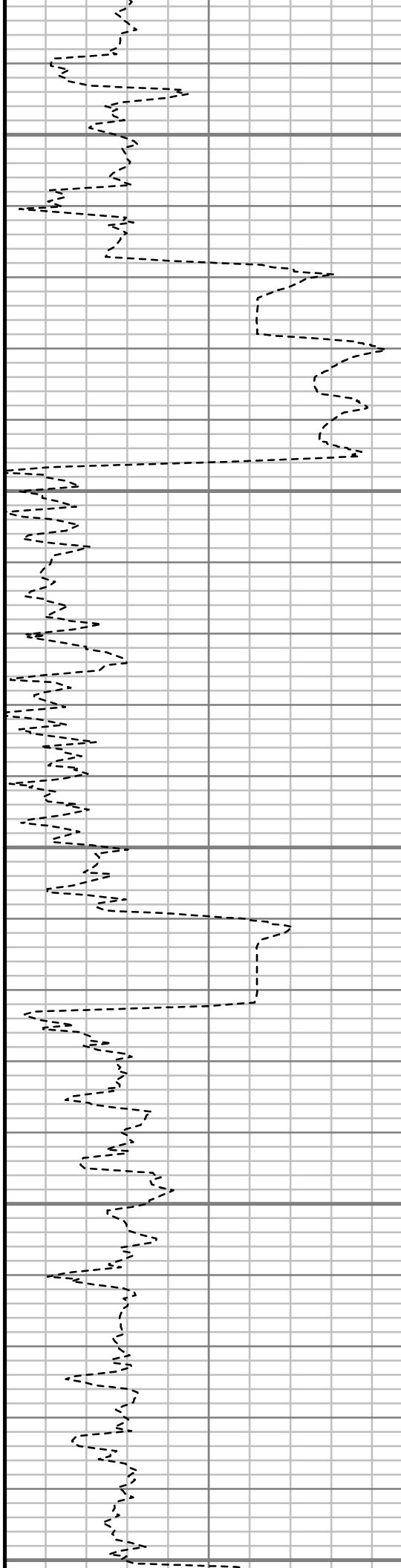
9700

9750

9800

9850

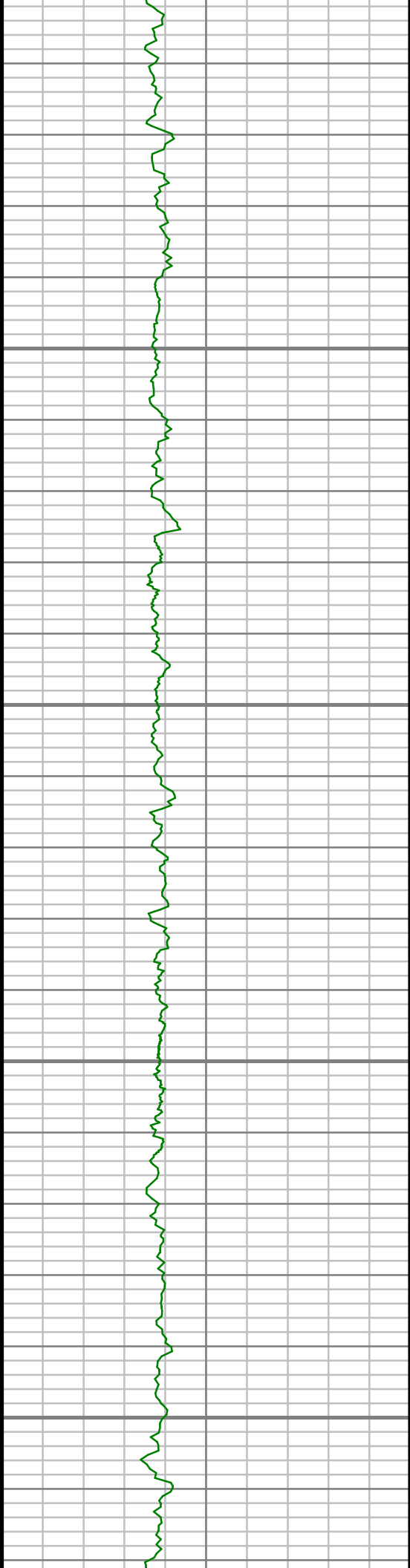
9900



S: 85 MD: 9748.00 ft Inc: 91.51  
deg Az: 0.97 deg TVD: 7559.57  
ft

S: 86 MD: 9841.00 ft Inc: 90.13  
deg Az: 359.96 deg TVD:  
7558.23 ft



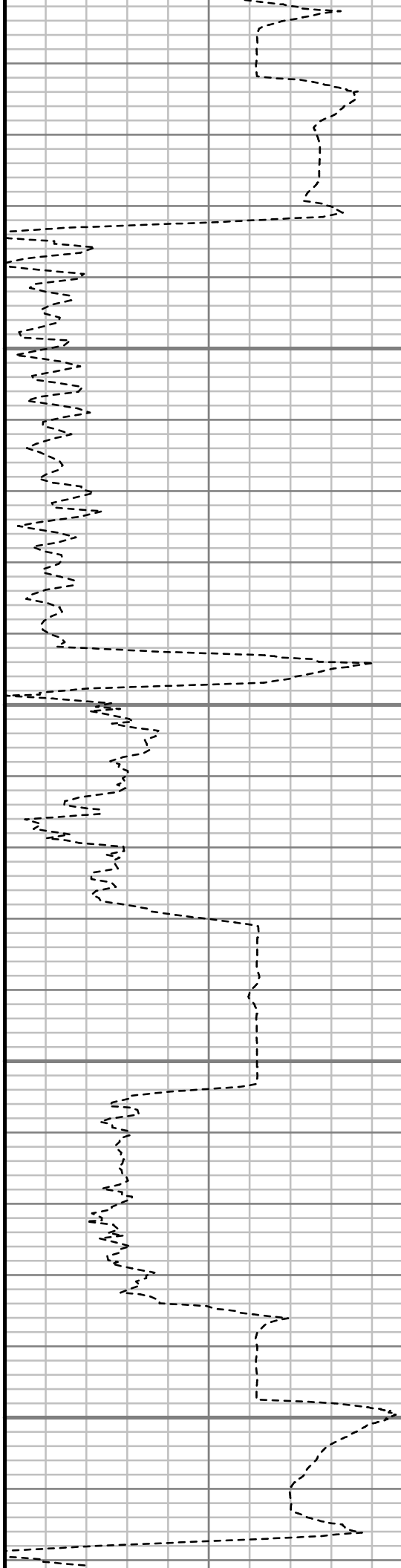


9950

10000

10050

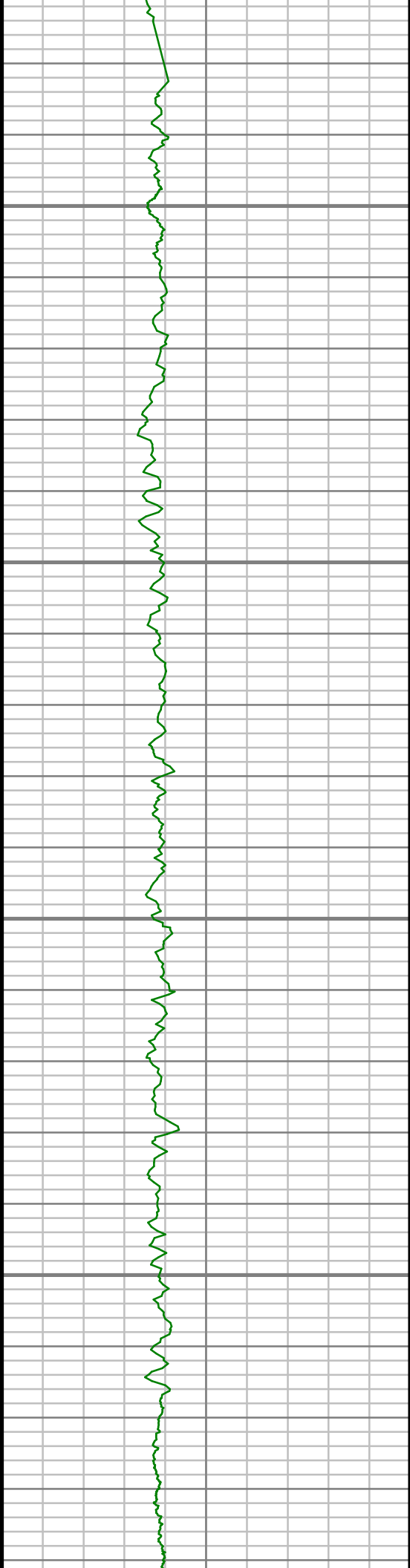
10100



S: 87 MD: 9934.00 ft Inc: 91.55  
deg Az: 0.11 deg TVD: 7556.87  
ft

S: 88 MD: 10027.00 ft Inc:  
90.37 deg Az: 358.44 deg TVD:  
7555.31 ft

S: 89 MD: 10119.00 ft Inc:

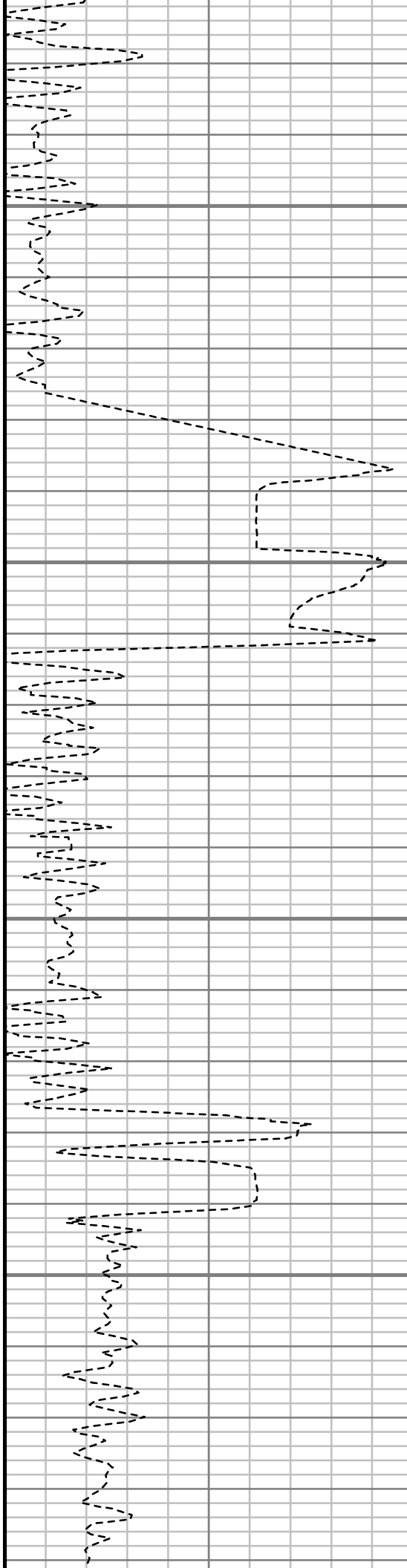


10150

10200

10250

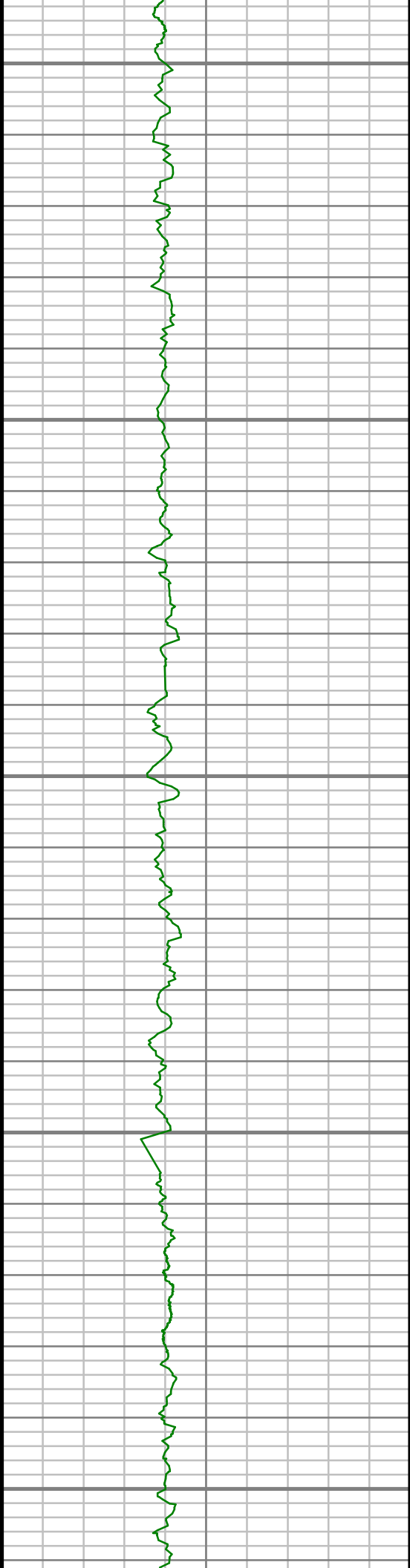
10300



90.60 deg Az: 359.95 deg TVD:  
7554.53 ft

S: 90 MD: 10212.00 ft Inc:  
90.94 deg Az: 0.12 deg TVD:  
7553.28 ft

S: 91 MD: 10305.00 ft Inc:  
89.97 deg Az: 358.86 deg TVD:  
7552.54 ft



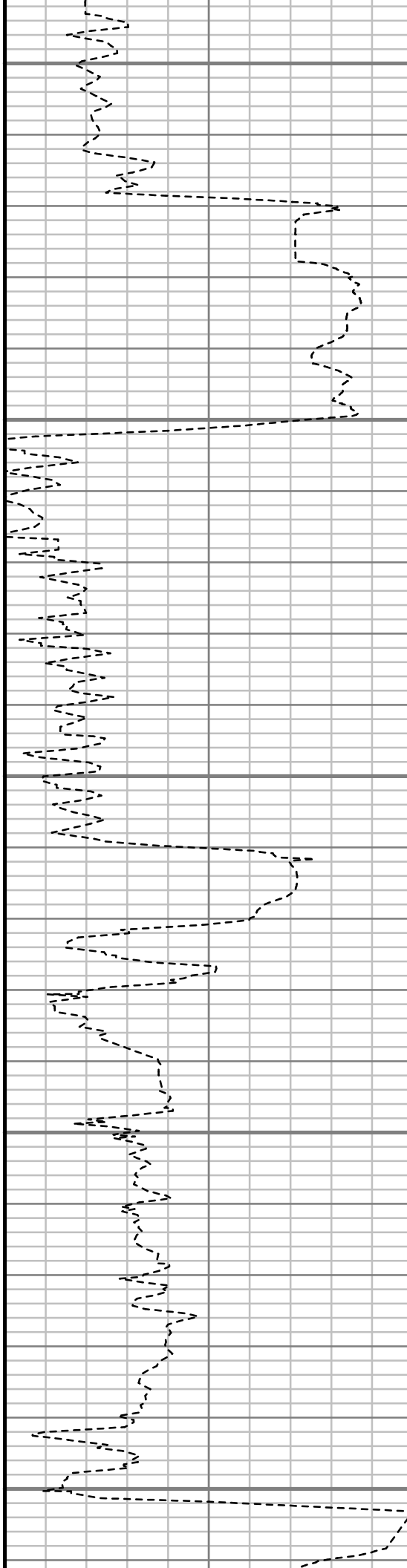
10350

10400

10450

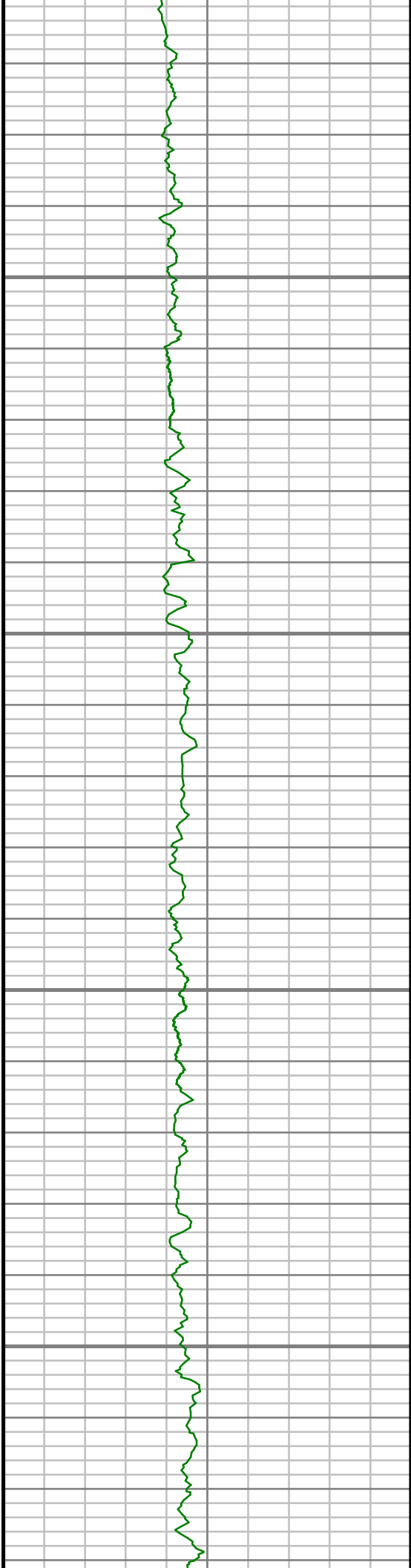
10500

10550



S: 92 MD: 10398.00 ft Inc:  
90.40 deg Az: 0.00 deg TVD:  
7552.24 ft

S: 93 MD: 10491.00 ft Inc:  
89.50 deg Az: 359.88 deg TVD:  
7552.32 ft

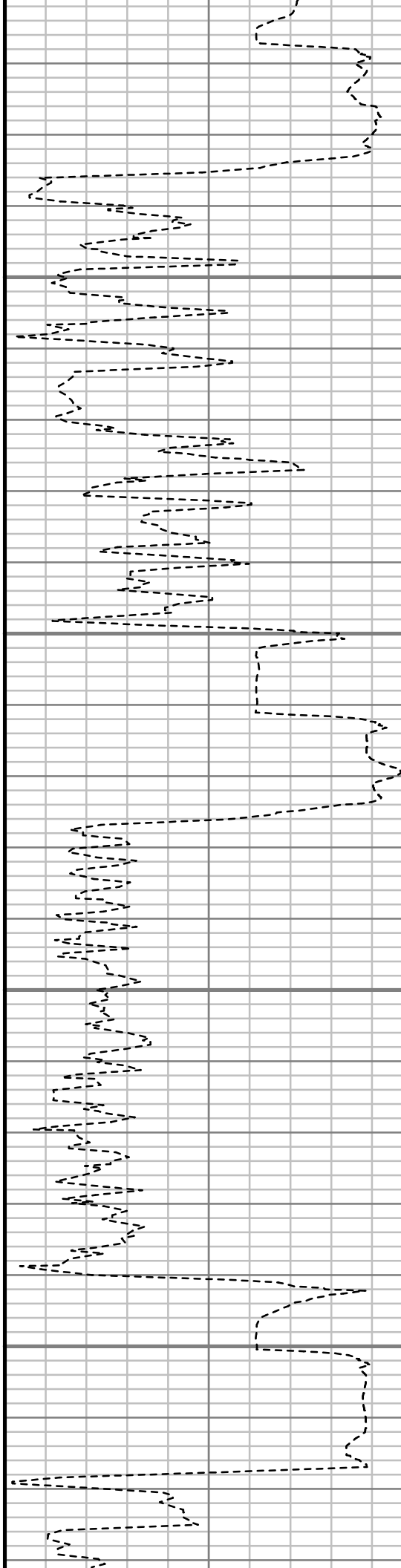


10600

10650

10700

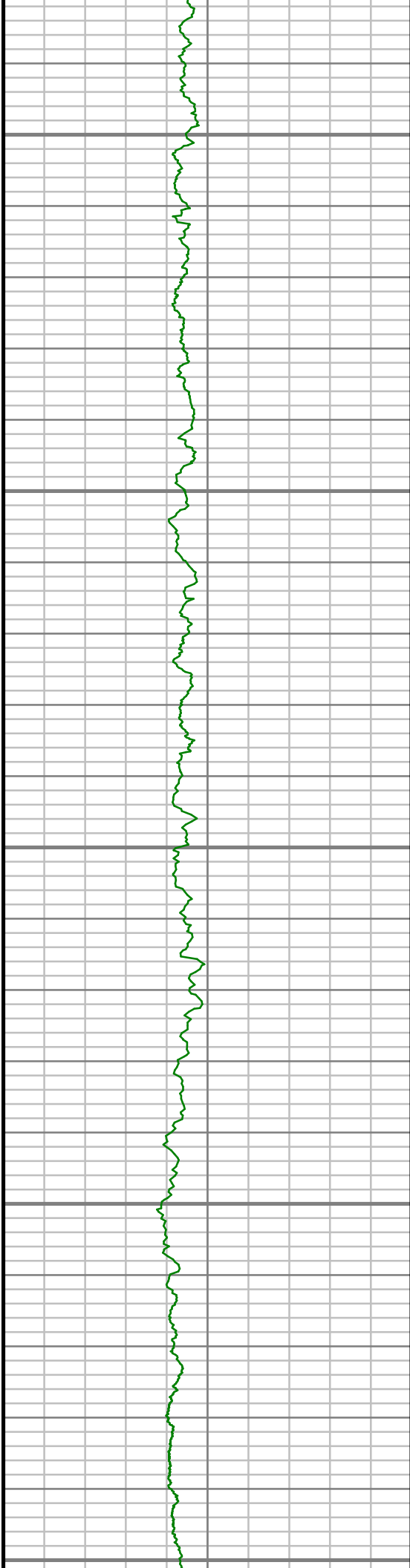
10750



S: 94 MD: 10584.00 ft Inc:  
90.34 deg Az: 359.58 deg TVD:  
7552.46 ft

S: 95 MD: 10677.00 ft Inc:  
89.80 deg Az: 359.80 deg TVD:  
7552.35 ft

S: 96 MD: 10770.00 ft Inc:  
90.17 deg Az: 1.58 deg TVD:  
7552.38 ft



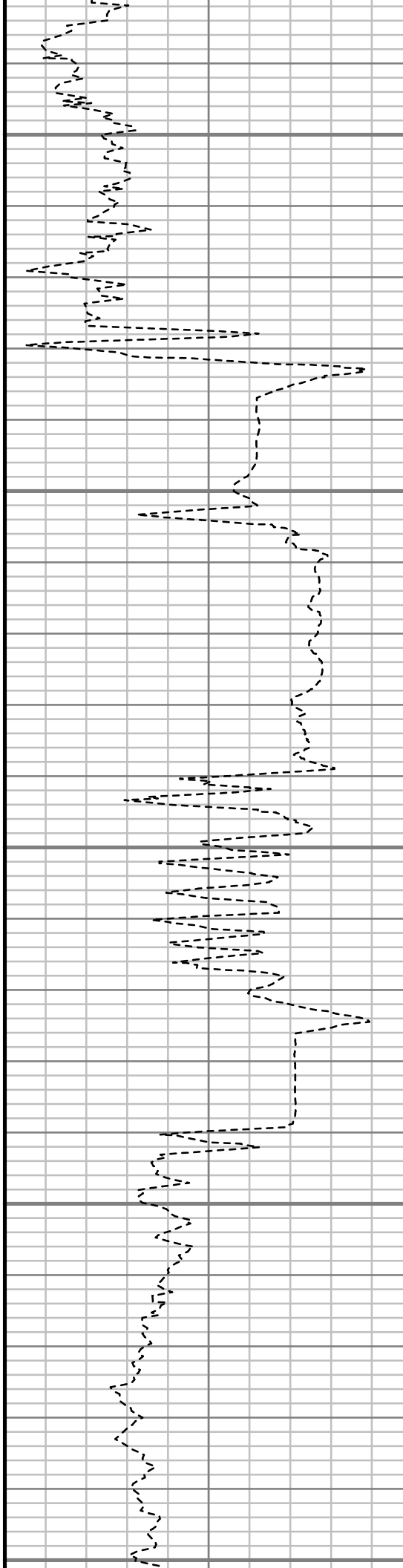
10800

10850

10900

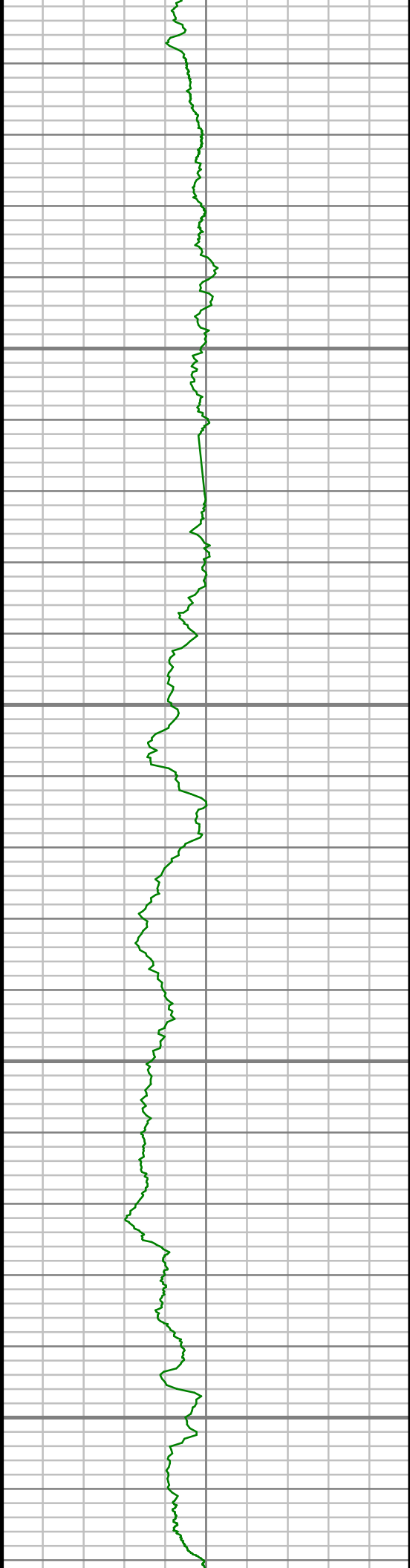
10950

11000



S: 97 MD: 10862.00 ft Inc:  
89.73 deg Az: 1.27 deg TVD:  
7552.46 ft

S: 98 MD: 10955.00 ft Inc:  
88.99 deg Az: 1.27 deg TVD:  
7553.49 ft

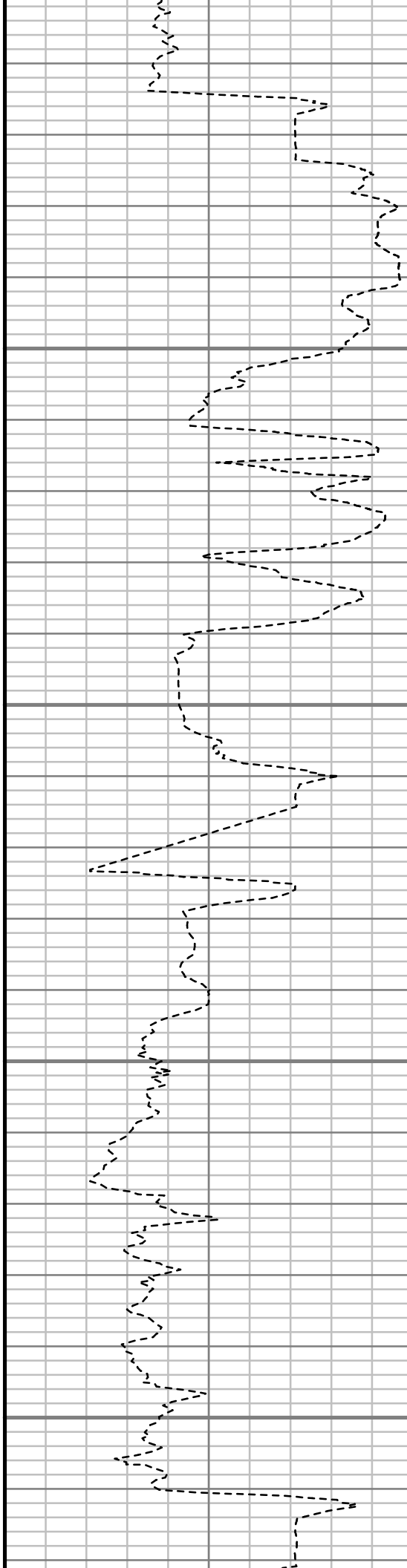


11050

11100

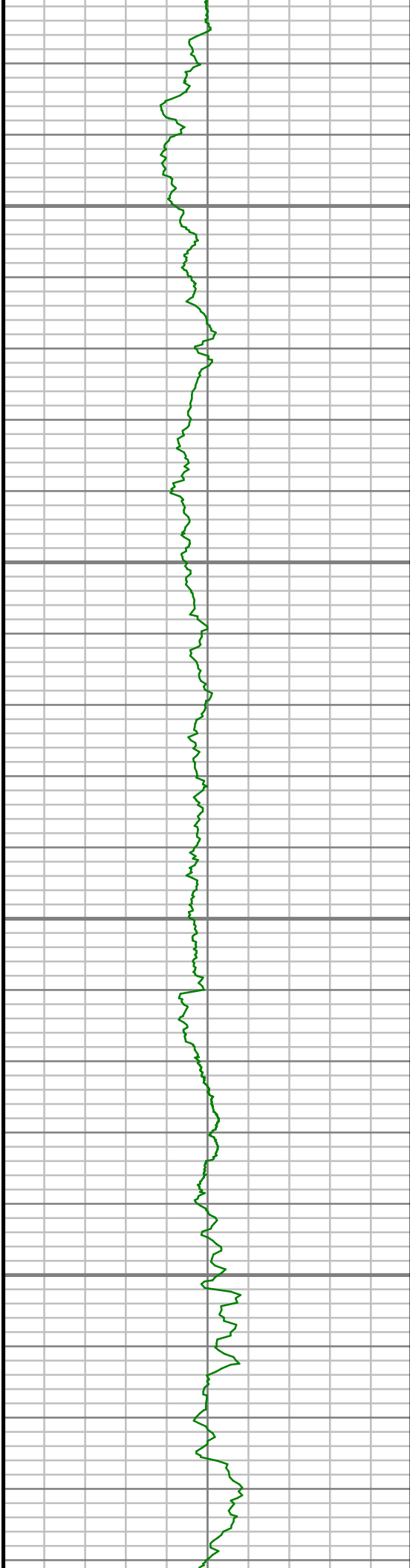
11150

11200



S: 99 MD: 11051.00 ft Inc:  
90.03 deg Az: 0.60 deg TVD:  
7554.31 ft

S: 100 MD: 11146.00 ft Inc:  
91.21 deg Az: 0.65 deg TVD:  
7553.28 ft

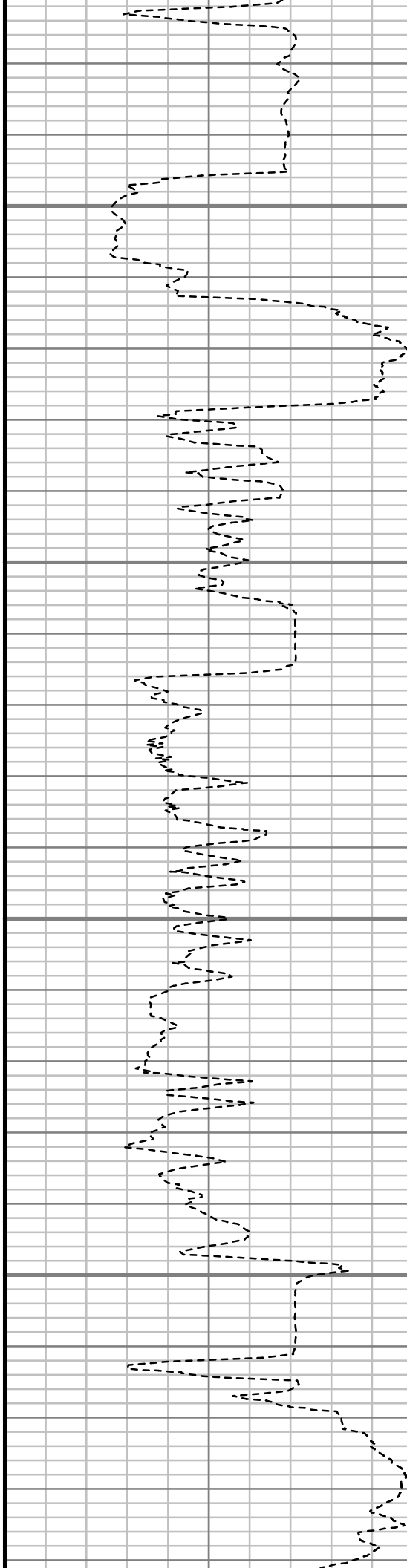


11250

11300

11350

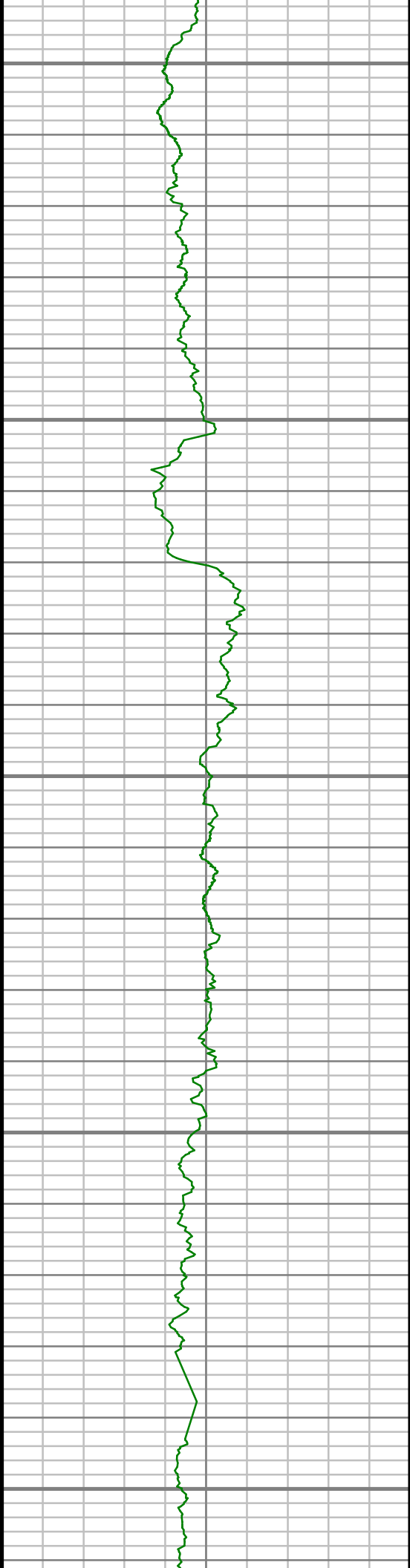
11400



S: 101 MD: 11241.00 ft Inc:  
91.28 deg Az: 359.98 deg TVD:  
7551.22 ft

S: 102 MD: 11336.00 ft Inc:  
90.00 deg Az: 359.51 deg TVD:  
7550.16 ft

S: 103 MD: 11432.00 ft Inc:  
89.16 deg Az: 359.67 deg TVD:  
7550.87 ft



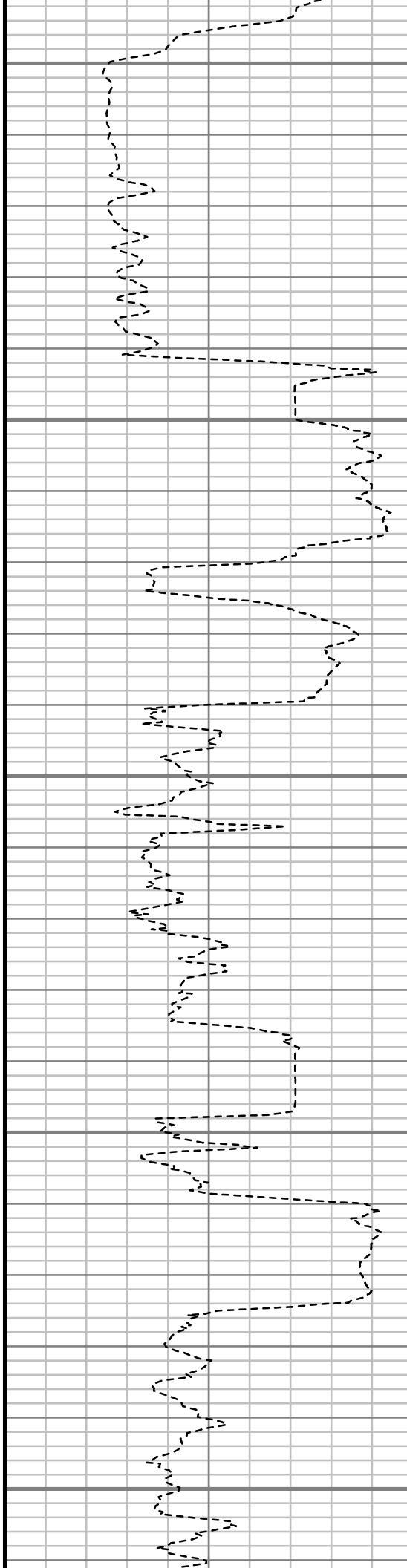
11450

11500

11550

11600

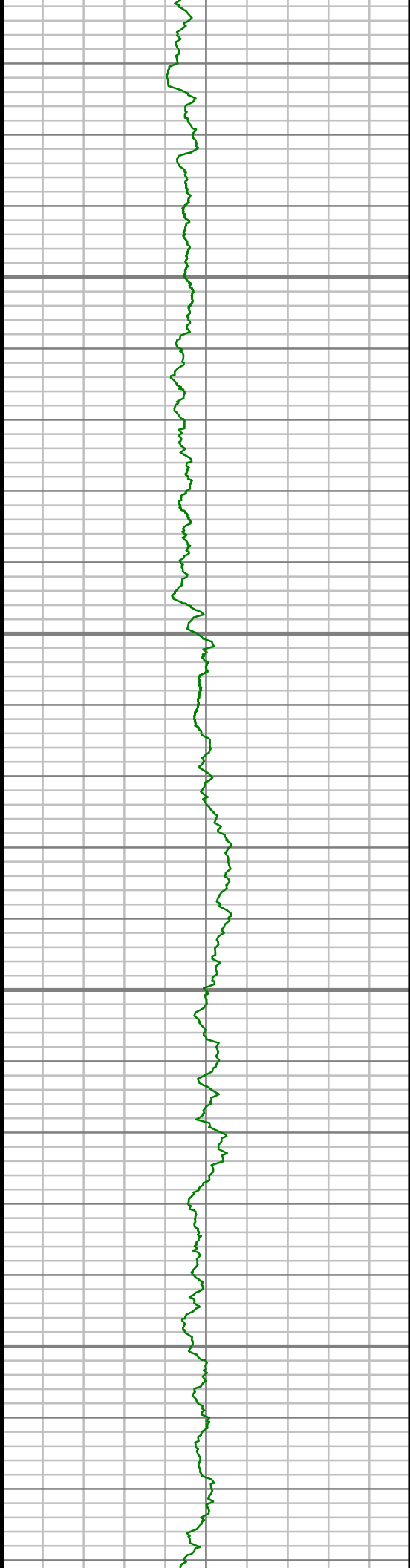
11650



S: 104 MD: 11527.00 ft Inc:  
89.30 deg Az: 359.55 deg TVD:  
7552.14 ft

S: 105 MD: 11623.00 ft Inc:  
89.66 deg Az: 359.56 deg TVD:  
7553.02 ft



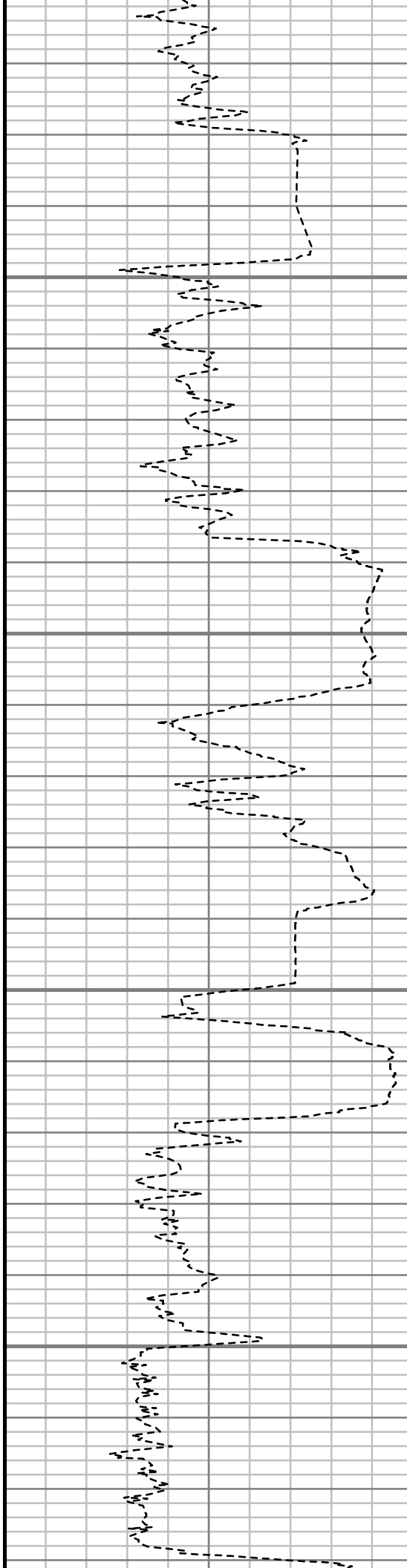


11700

11750

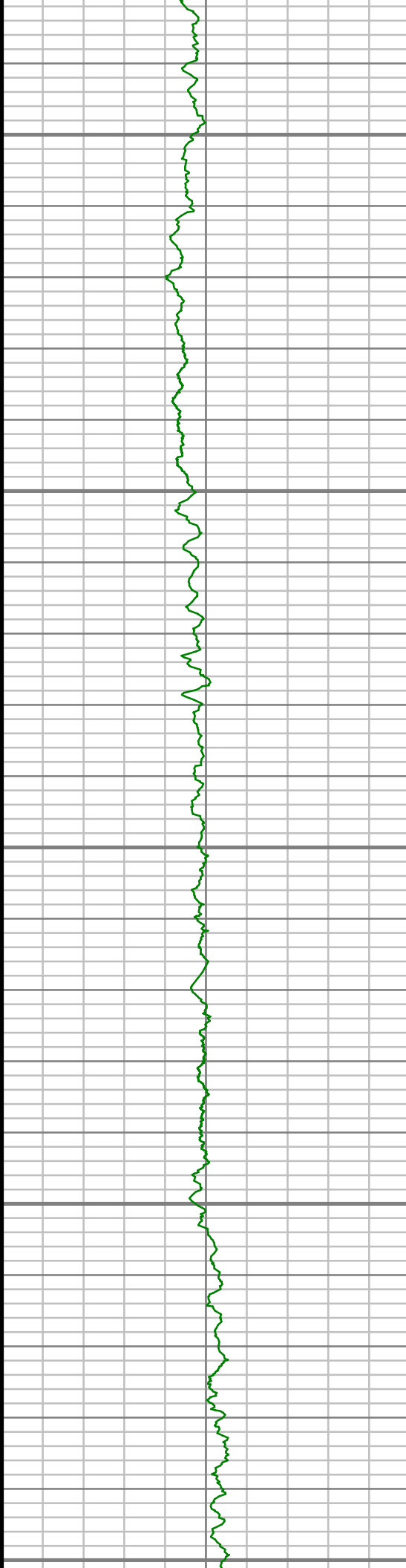
11800

11850



S: 106 MD: 11718.00 ft Inc:  
88.69 deg Az: 359.00 deg TVD:  
7554.38 ft

S: 107 MD: 11813.00 ft Inc:  
91.01 deg Az: 358.95 deg TVD:  
7554.63 ft



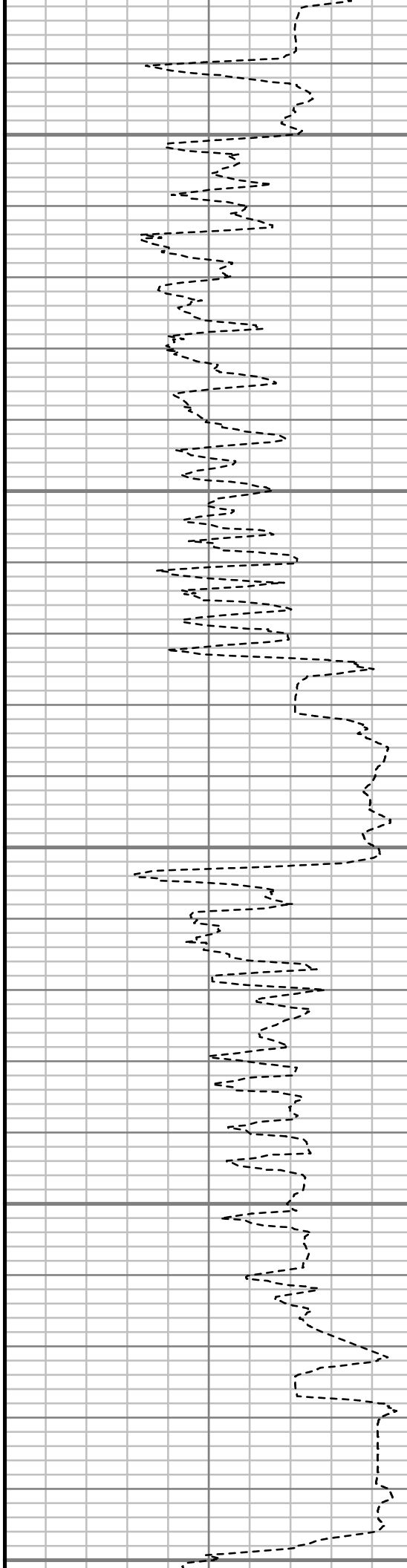
11900

11950

12000

12050

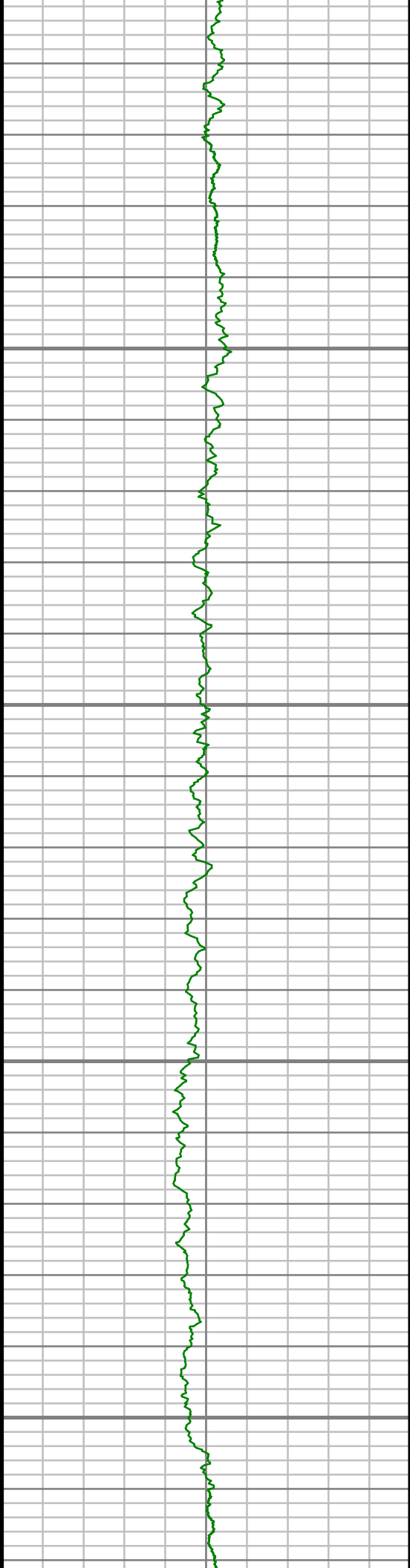
12100



S: 108 MD: 11909.00 ft Inc:  
89.03 deg Az: 357.62 deg TVD:  
7554.61 ft

S: 109 MD: 12004.00 ft Inc:  
90.10 deg Az: 358.33 deg TVD:  
7555.33 ft

S: 110 MD: 12099.00 ft Inc:

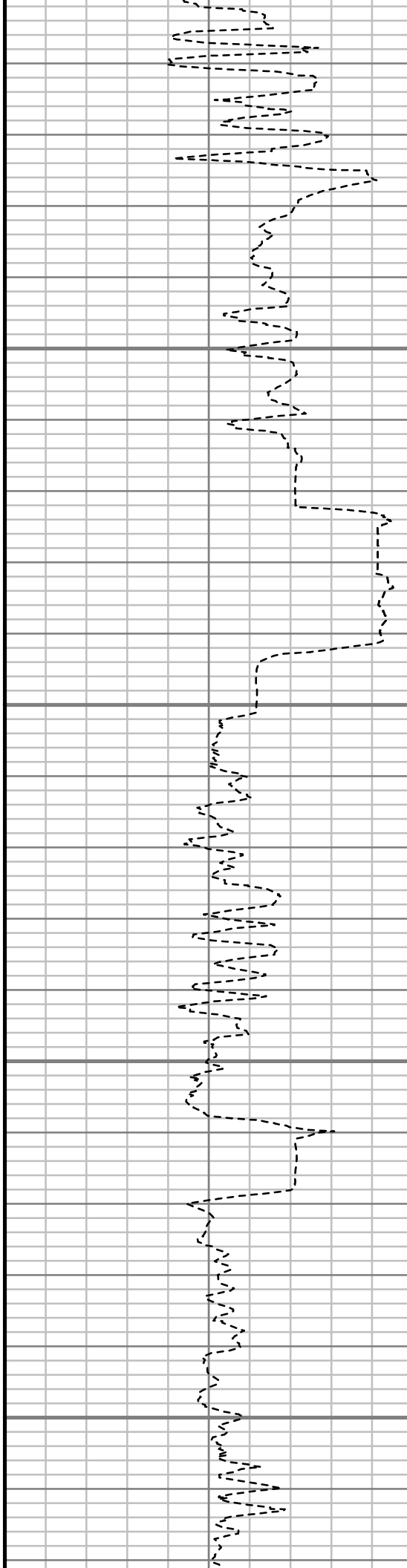


12150

12200

12250

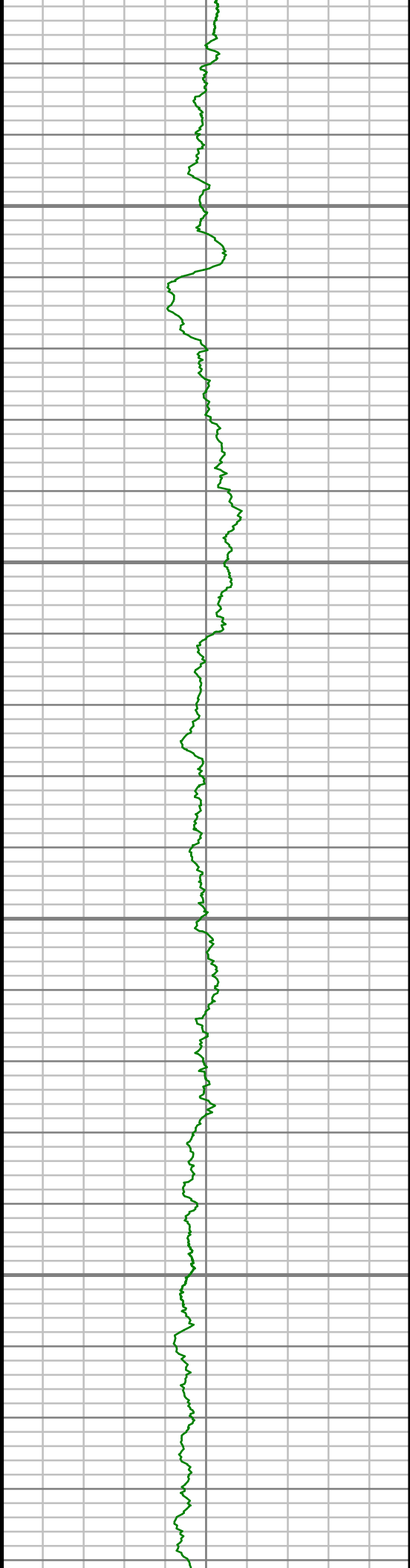
12300



90.94 deg Az: 359.99 deg TVD:  
7554.47 ft

S: 111 MD: 12195.00 ft Inc:  
92.05 deg Az: 0.22 deg TVD:  
7551.97 ft

S: 112 MD: 12290.00 ft Inc:  
92.05 deg Az: 359.51 deg TVD:  
7548.57 ft

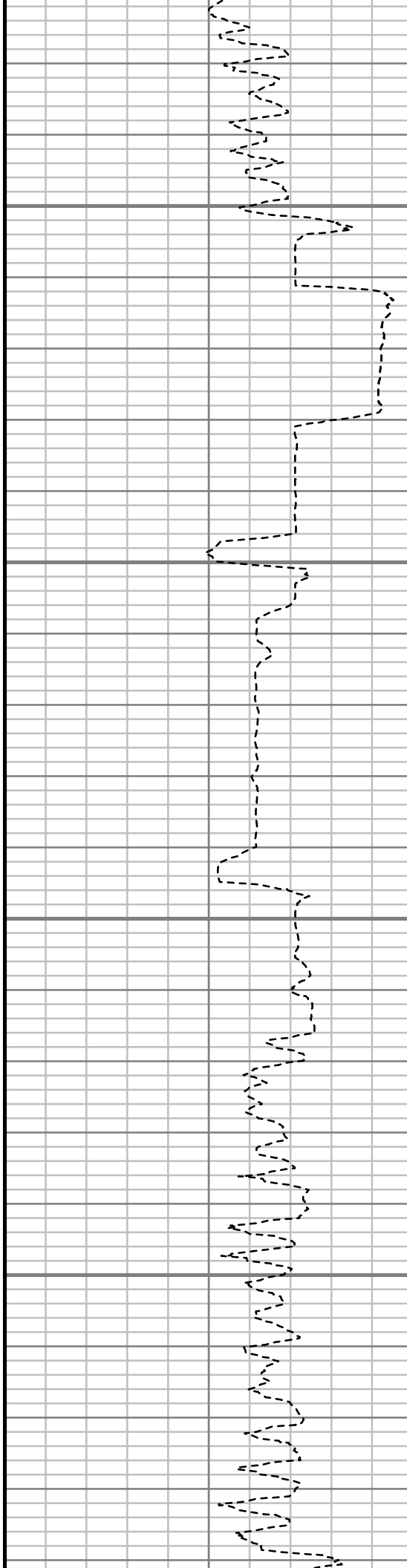


12350

12400

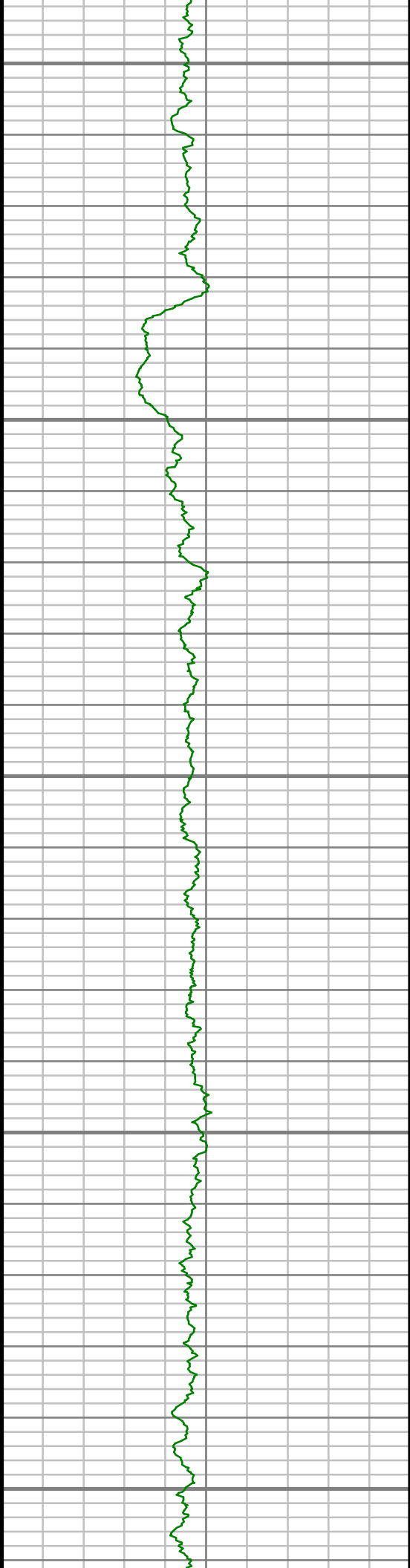
12450

12500



S: 113 MD: 12385.00 ft Inc:  
92.35 deg Az: 2.12 deg TVD:  
7544.92 ft

S: 114 MD: 12480.00 ft Inc:  
91.95 deg Az: 2.03 deg TVD:  
7541.35 ft



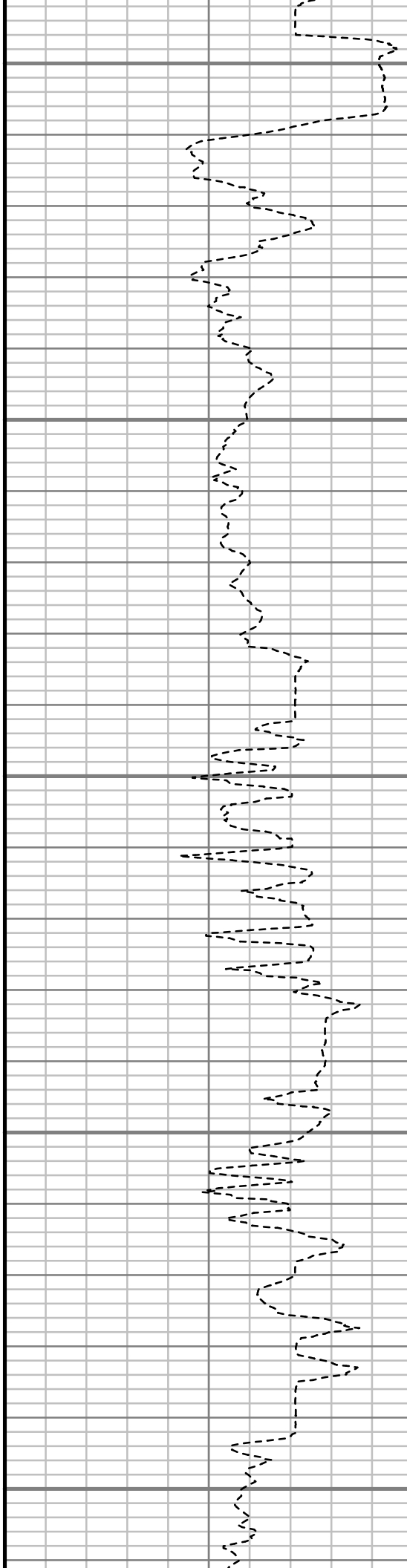
12550

12600

12650

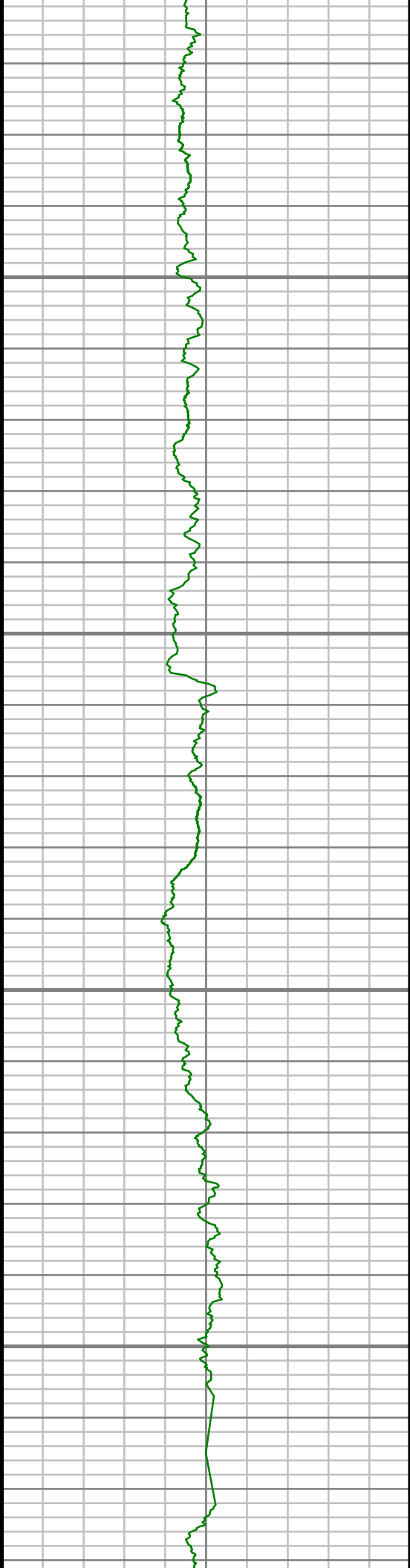
12700

12750



S: 115 MD: 12576.00 ft Inc:  
91.24 deg Az: 3.28 deg TVD:  
7538.68 ft

S: 116 MD: 12671.00 ft Inc:  
90.57 deg Az: 2.20 deg TVD:  
7537.18 ft

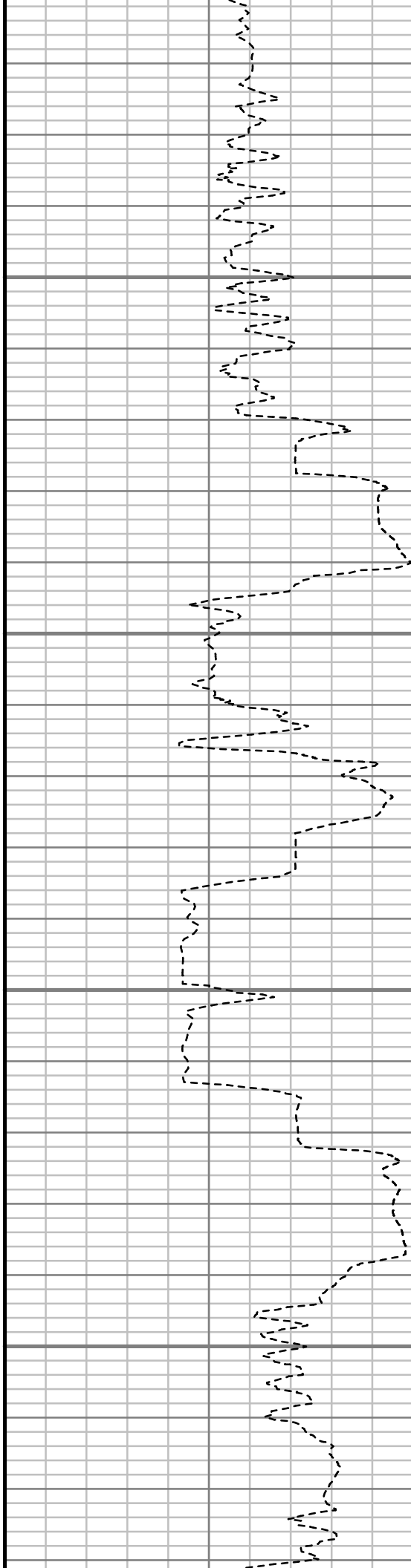


12800

12850

12900

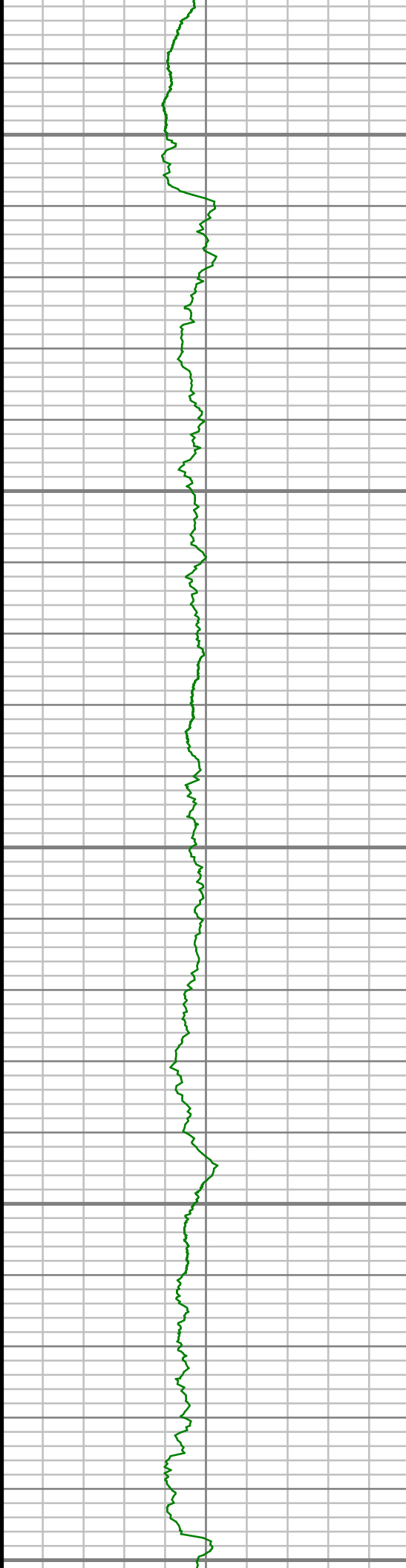
12950



S: 117 MD: 12766.00 ft Inc:  
90.67 deg Az: 2.66 deg TVD:  
7536.15 ft

S: 118 MD: 12862.00 ft Inc:  
89.23 deg Az: 1.62 deg TVD:  
7536.24 ft

S: 119 MD: 12957.00 ft Inc:  
88.52 deg Az: 0.06 deg TVD:  
7538.10 ft



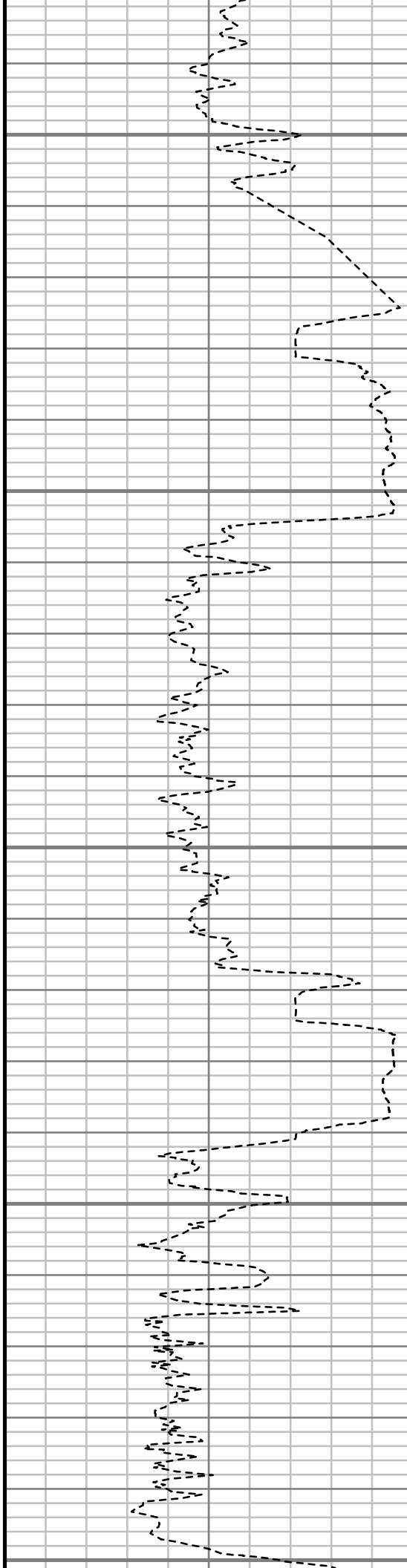
13000

13050

13100

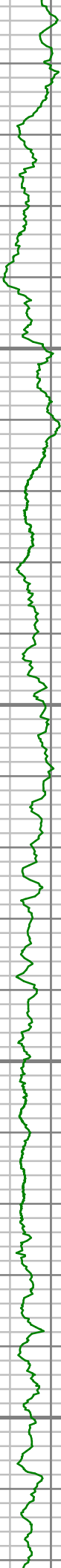
13150

13200



S: 120 MD: 13052.00 ft Inc:  
90.40 deg Az: 358.97 deg TVD:  
7538.99 ft

S: 121 MD: 13147.00 ft Inc:  
91.68 deg Az: 359.19 deg TVD:  
7537.27 ft

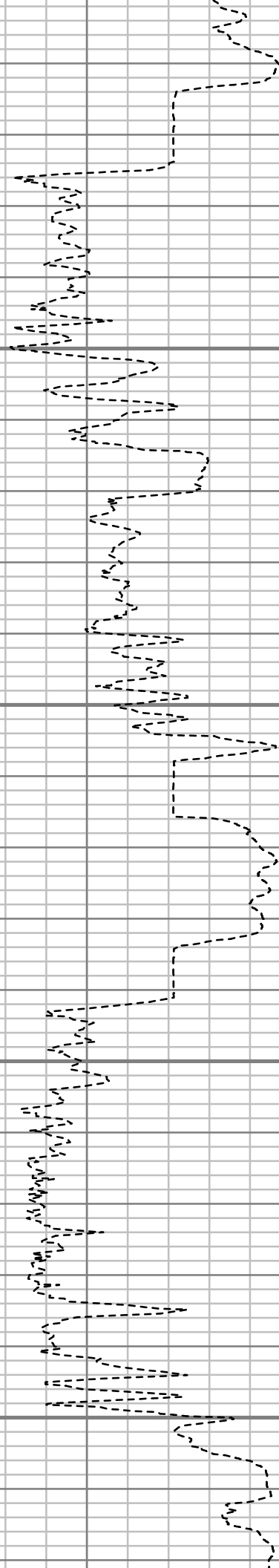


13250

13300

13350

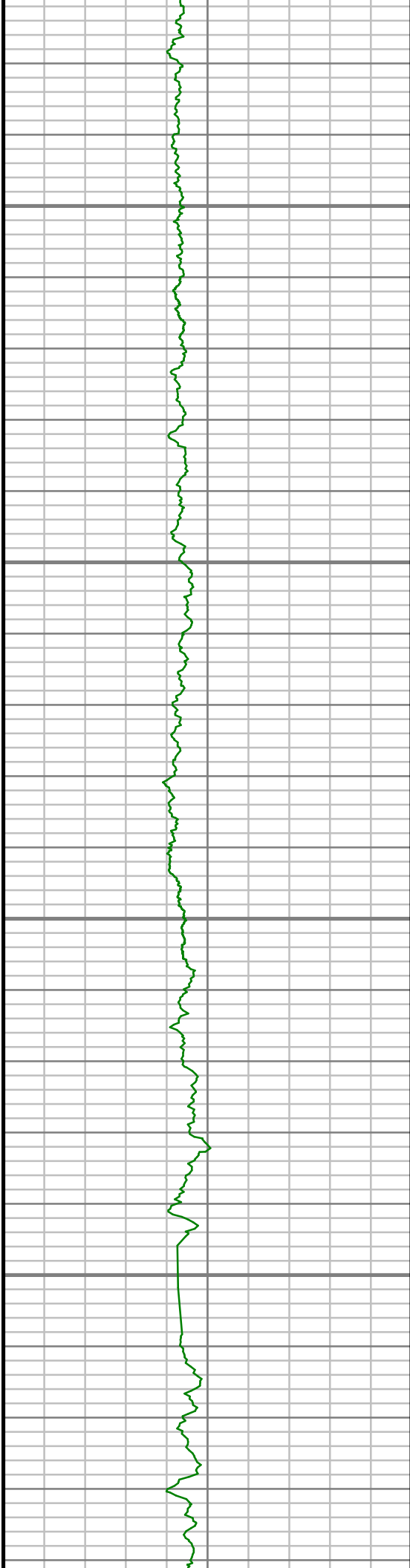
13400



S: 122 MD: 13243.00 ft Inc:  
92.48 deg Az: 359.25 deg TVD:  
7533.78 ft

S: 123 MD: 13338.00 ft Inc:  
91.54 deg Az: 359.03 deg TVD:  
7530.44 ft



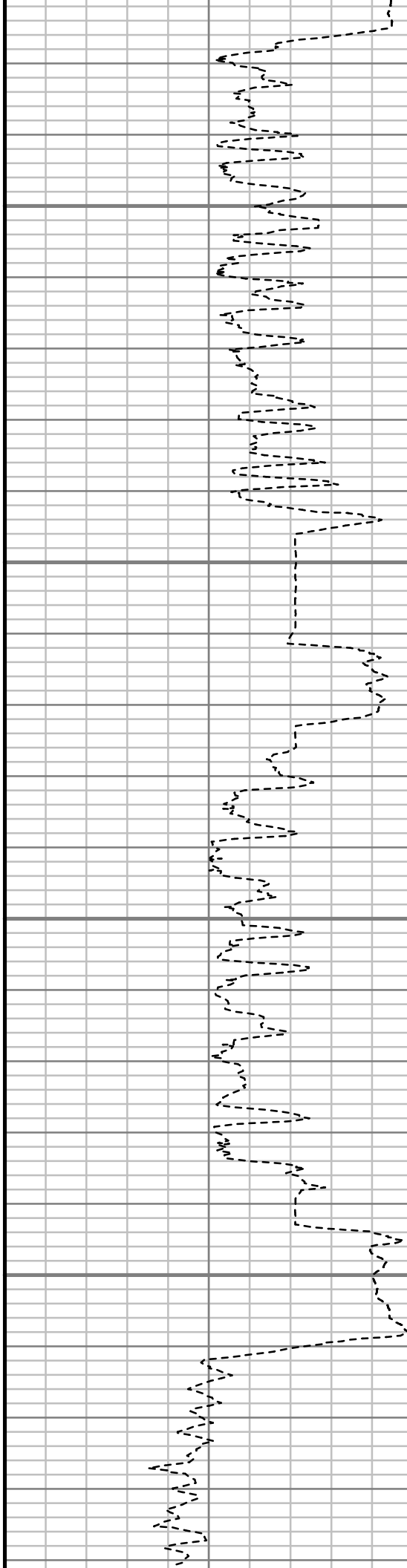


13450

13500

13550

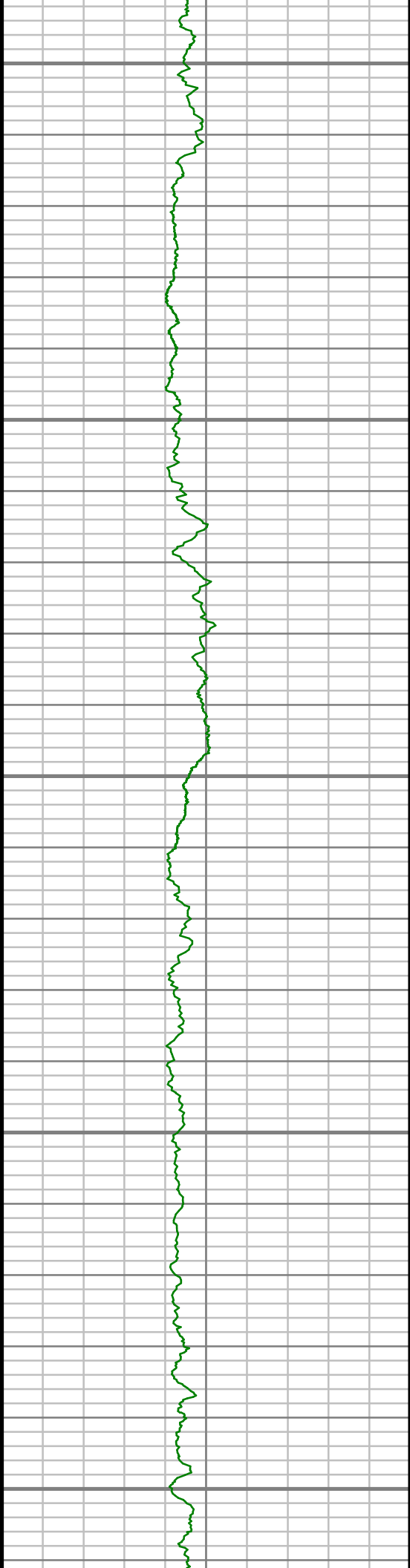
13600



S: 124 MD: 13433.00 ft Inc:  
89.70 deg Az: 0.15 deg TVD:  
7529.41 ft

S: 125 MD: 13529.00 ft Inc:  
89.36 deg Az: 359.54 deg TVD:  
7530.20 ft

S: 126 MD: 13624.00 ft Inc:  
90.30 deg Az: 358.28 deg TVD:  
7530.48 ft



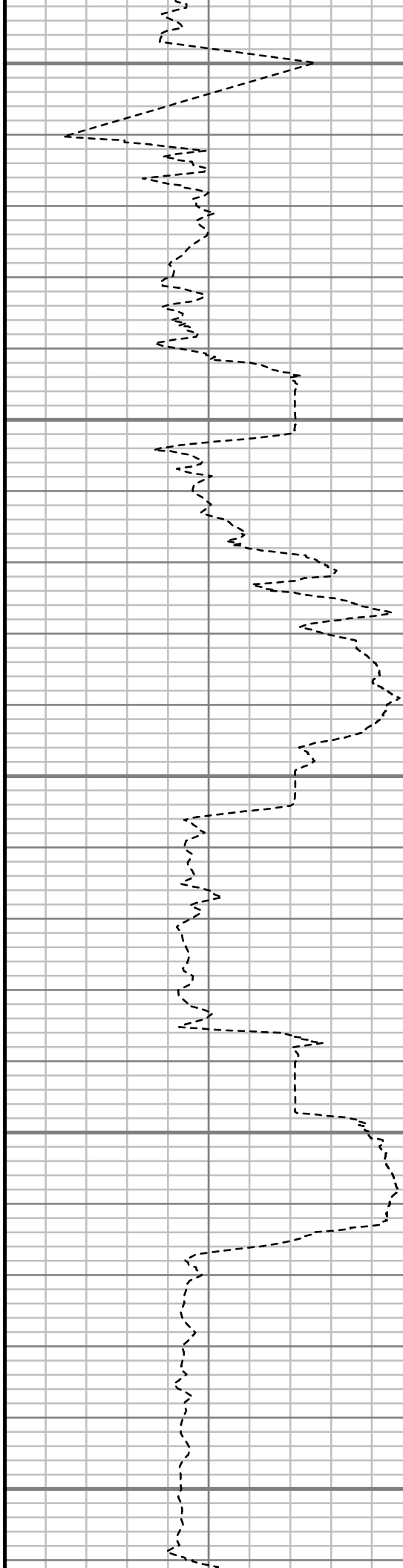
13650

13700

13750

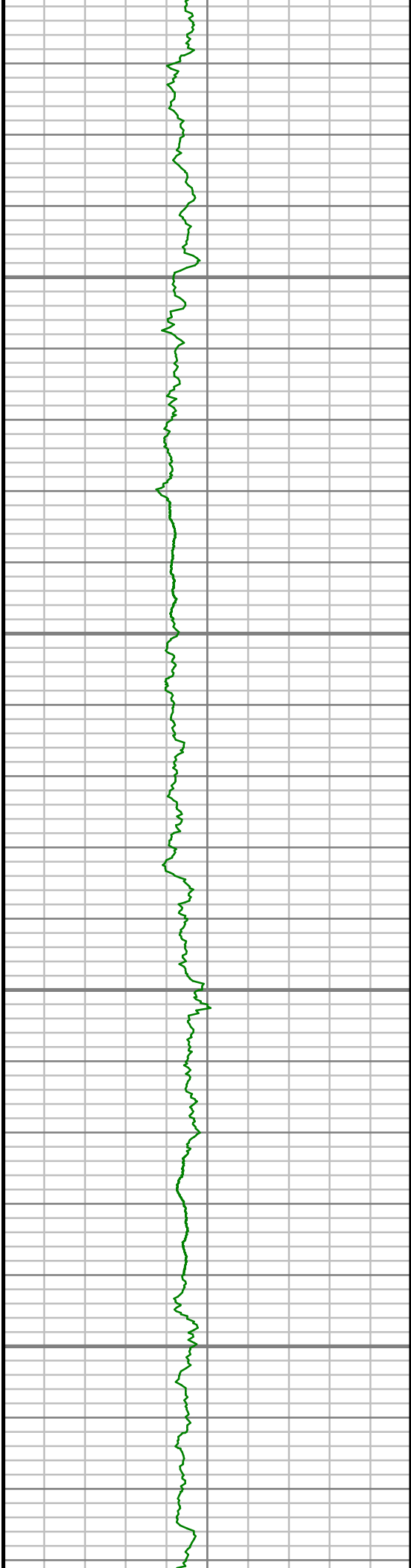
13800

13850



S: 127 MD: 13720.00 ft Inc:  
89.87 deg Az: 356.87 deg TVD:  
7530.34 ft

S: 128 MD: 13815.00 ft Inc:  
90.91 deg Az: 356.71 deg TVD:  
7529.70 ft

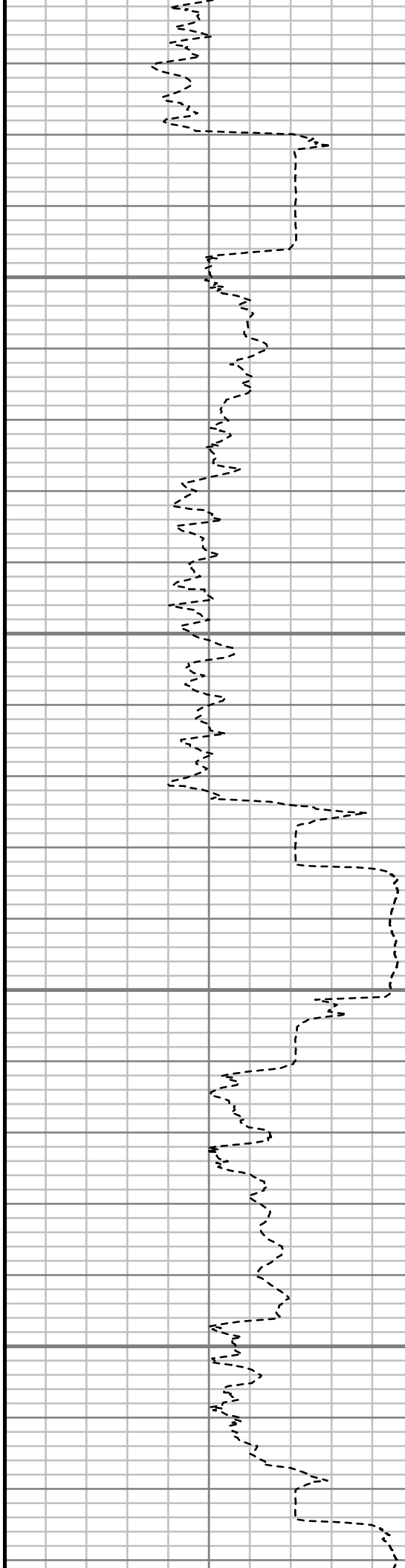


13900

13950

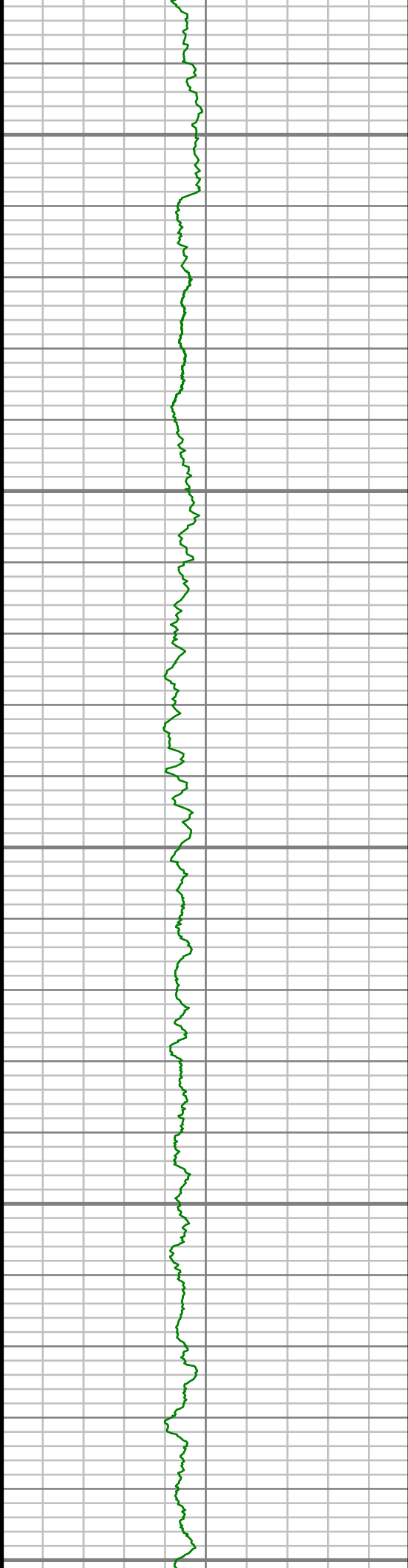
14000

14050



S: 129 MD: 13910.00 ft Inc:  
90.17 deg Az: 355.01 deg TVD:  
7528.81 ft

S: 130 MD: 14006.00 ft Inc:  
91.24 deg Az: 355.32 deg TVD:  
7527.62 ft



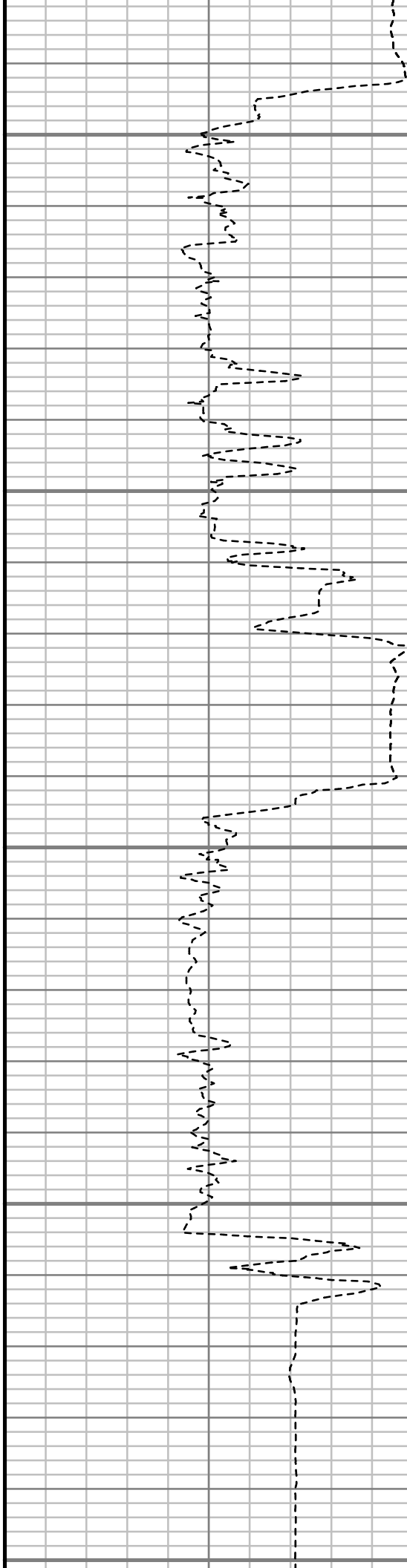
14100

14150

14200

14250

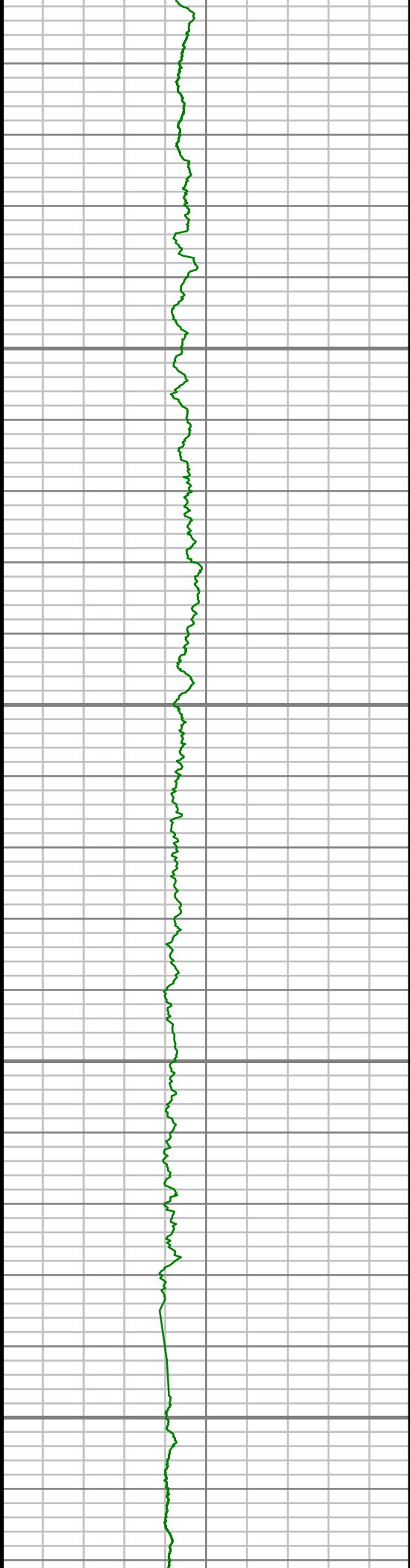
14300



S: 131 MD: 14101.00 ft Inc:  
92.05 deg Az: 356.13 deg TVD:  
7524.89 ft

S: 132 MD: 14196.00 ft Inc:  
90.54 deg Az: 357.78 deg TVD:  
7522.75 ft

S: 133 MD: 14291.00 ft Inc:  
90.34 deg Az: 356.92 deg TVD:  
7522.02 ft

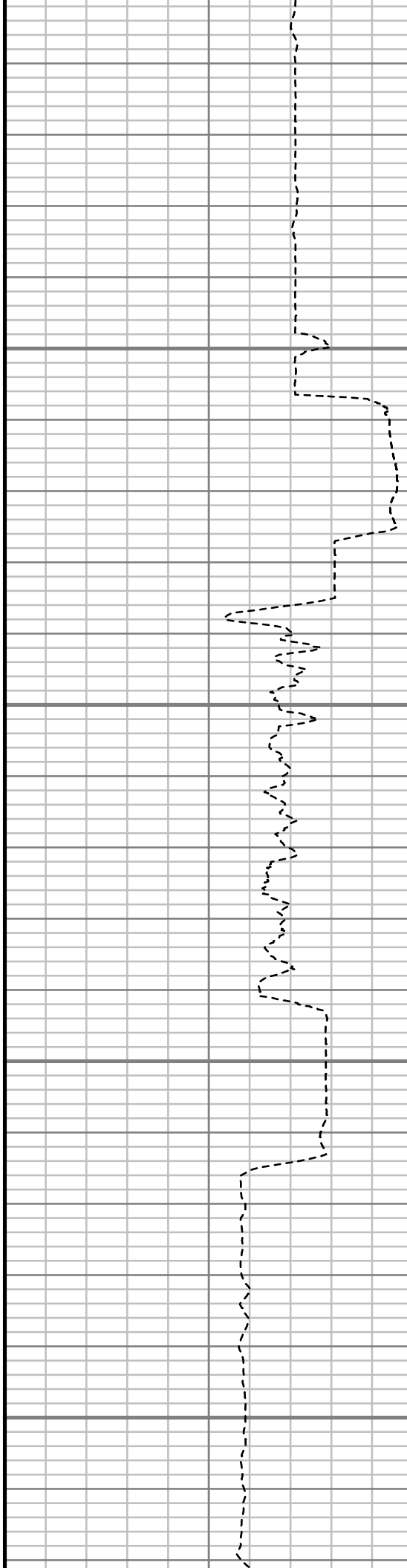


14350

14400

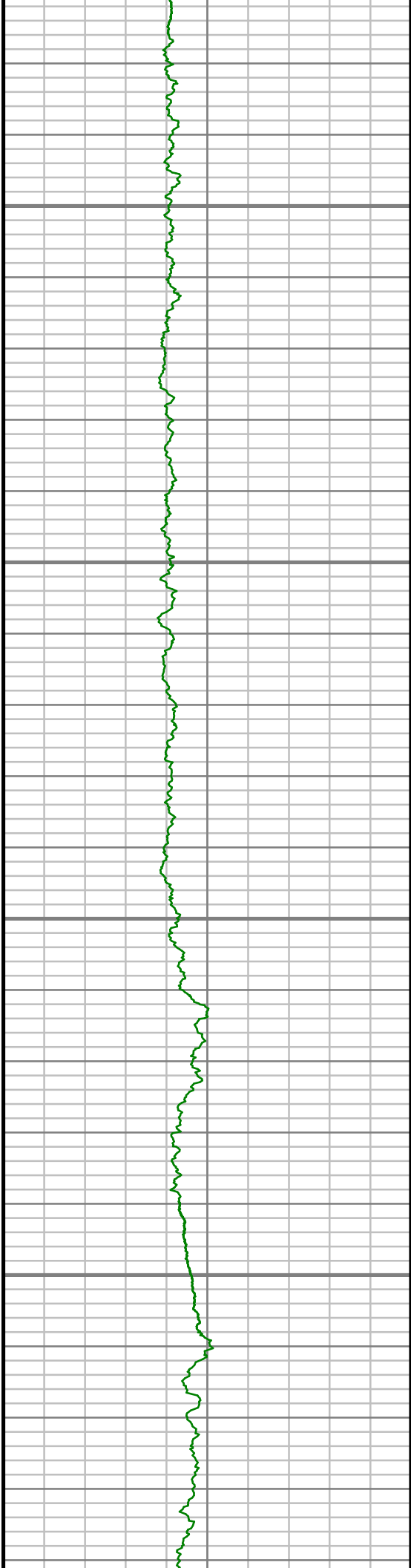
14450

14500



S: 134 MD: 14386.00 ft Inc:  
90.40 deg Az: 357.11 deg TVD:  
7521.41 ft

S: 135 MD: 14481.00 ft Inc:  
90.50 deg Az: 356.13 deg TVD:  
7520.66 ft

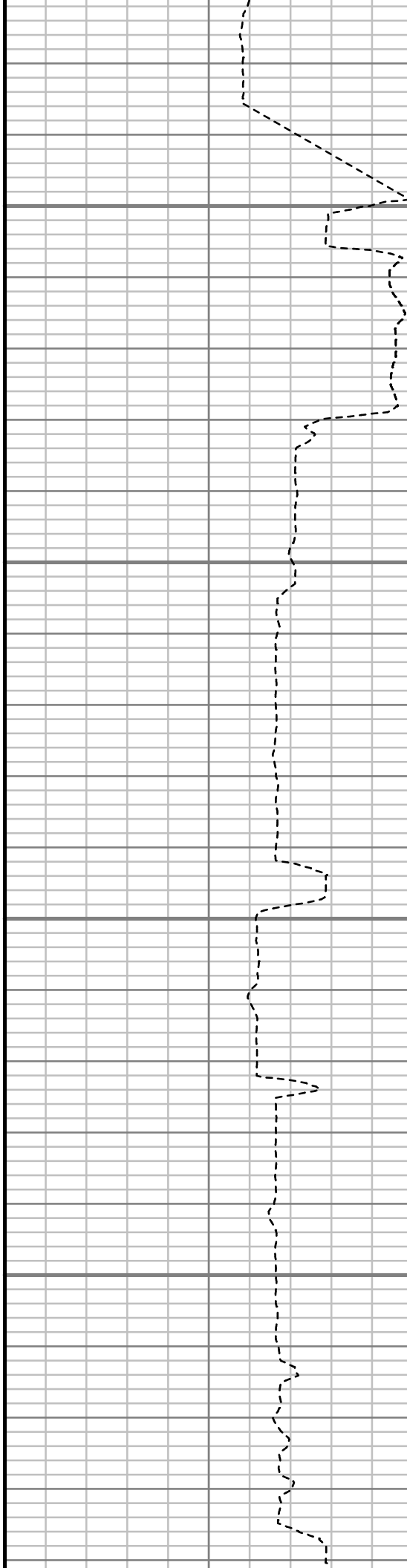


14550

14600

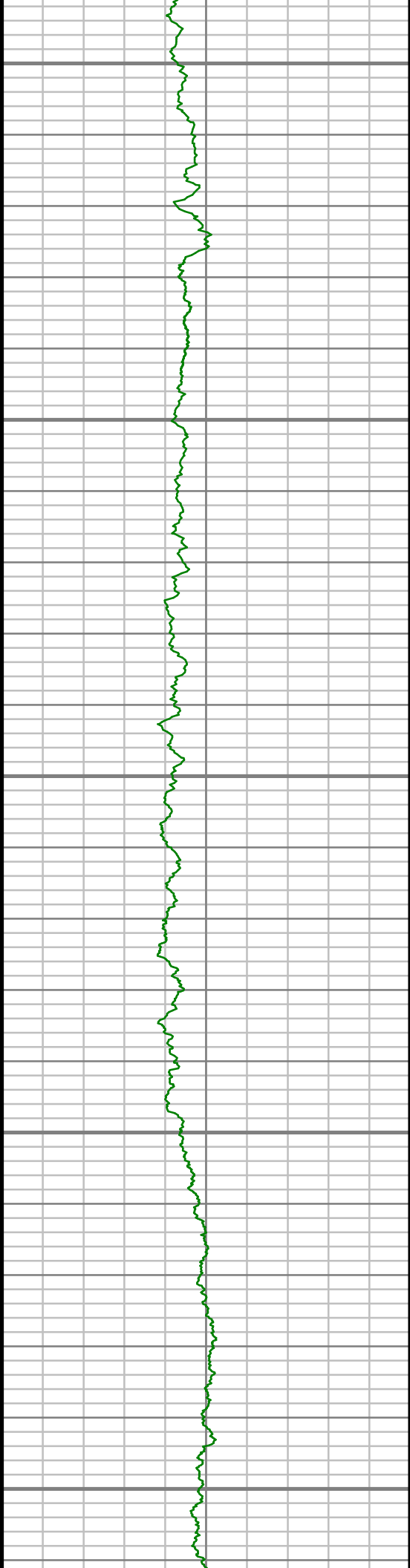
14650

14700



S: 136 MD: 14577.00 ft Inc:  
90.81 deg Az: 357.60 deg TVD:  
7519.56 ft

S: 137 MD: 14672.00 ft Inc:  
90.70 deg Az: 356.67 deg TVD:  
7518.31 ft



14750

14800

14850

14900

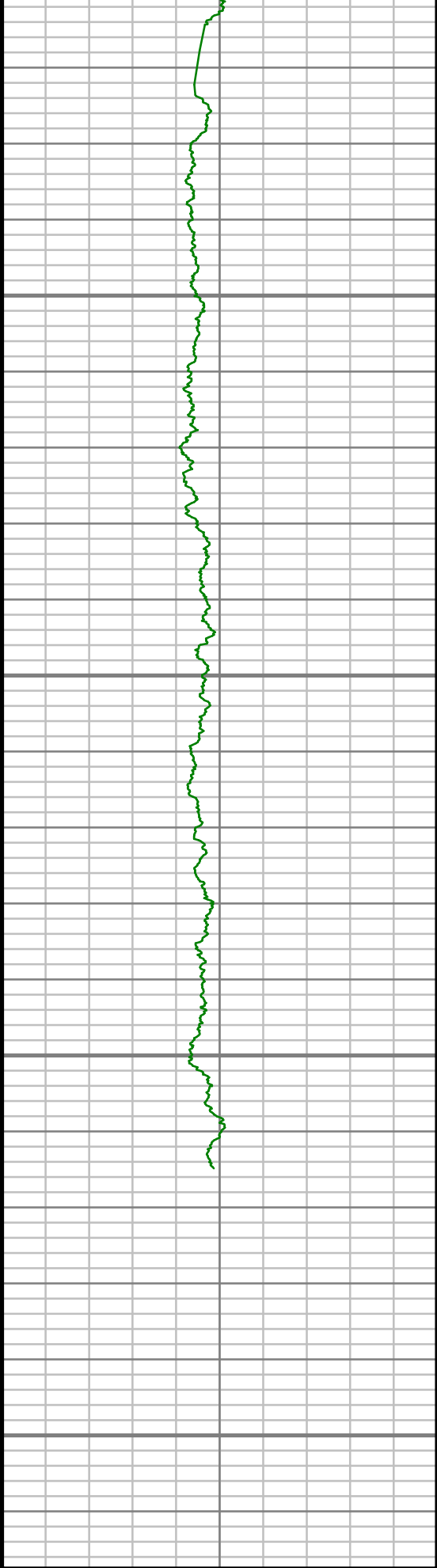
14950



S: 138 MD: 14767.00 ft Inc:  
91.28 deg Az: 357.73 deg TVD:  
7516.67 ft

S: 139 MD: 14863.00 ft Inc:  
89.70 deg Az: 357.61 deg TVD:  
7515.85 ft

S: 140 MD: 14958.00 ft Inc:



Gamma Ray (GR)  
Unit = aapi  
0 150

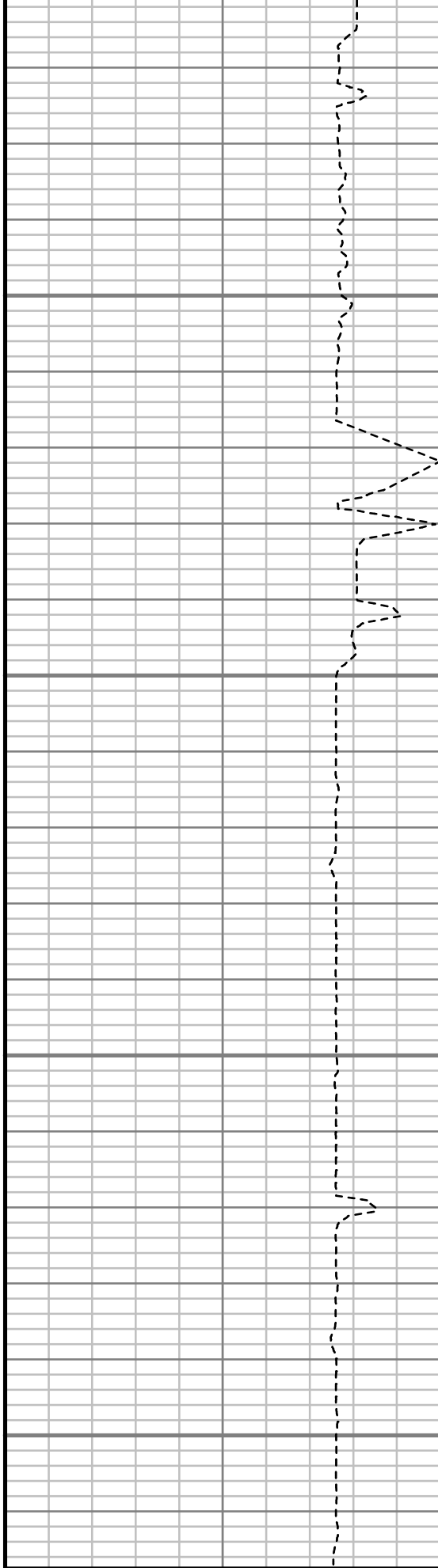
15000

15050

15100

15150

MEASURED D  
1:240 (ft)



Rate of Penetration (ROP)  
Unit = ft/hr  
500 0

89.87 deg Az: 357.71 deg IVD:  
7516.21 ft

S: 141 MD: 15053.00 ft Inc:  
90.07 deg Az: 357.07 deg TVD:  
7516.27 ft

S: 142 MD: 15100.00 ft Inc:  
89.60 deg Az: 356.67 deg TVD:  
7516.41 ft

Comments



|  |
|--|
|  |
|--|

DEPTH

|  |
|--|
|  |
|--|

|  |
|--|
|  |
|--|

## MWD Survey Report

|                             |  |
|-----------------------------|--|
| <b>Well Location</b>        | JILLSON-EAST RINN                      |
| <b>Well Name</b>            | JILLSON-EAST RINN 3E-22H-M268          |
| <b>Survey Date</b>          | 7/30/2014                              |
| <b>Latitude</b>             | 40°7'4.465"N                           |
| <b>Longitude</b>            | 104°59'46.471"W                        |
| <b>Btotal</b>               | 52528 nT                               |
| <b>Dip</b>                  | 66.67 deg                              |
| <b>Magnetic Declination</b> | 8.63 deg                               |
| <b>North Reference</b>      | True North                             |
| <b>Grid Correction</b>      | None                                   |
| <b>Depth Reference</b>      | R.K.B. (13.00 ft)                      |
| <b>Calculation Method</b>   | Minimum Curvature                      |
| <b>Section (VS) Ref</b>     | 0.00N (ft), 0.00E (ft), 0.00Azim (deg) |
| <b>Operator(s)</b>          | J. SMITH, M. SMITH, T. WHEELER         |

### Well Notes

SURVEYS FROM 100 FT. - 839 FT. WERE ACQUIRED BY VES SURVEYS INTERNATIONAL GYRO.

SURVEYS FROM 970 FT. - 15100 FT. WERE ACQUIRED BY SCIENTIFIC DRILLING INTERNATIONAL MWD.

| MD      | Inc  | Azim   | TVD     | VS     | +N/-S  | +E/-W | Closure<br>Direction | Closure<br>Distance | DLS     |
|---------|------|--------|---------|--------|--------|-------|----------------------|---------------------|---------|
| ft      | deg  | deg    | ft      | ft     | ft     | ft    | deg                  | ft                  | °/100ft |
| 0.00    | 0.00 | 0.00   | 0.00    | 0.00   | 0.00   | 0.00  | 0.00                 | 0.00                | Invalid |
| 100.00  | 0.39 | 50.13  | 100.00  | 0.22   | 0.22   | 0.26  | 50.13                | 0.34                | 0.39    |
| 200.00  | 0.23 | 56.31  | 200.00  | 0.55   | 0.55   | 0.69  | 51.54                | 0.88                | 0.16    |
| 300.00  | 0.05 | 329.10 | 300.00  | 0.70   | 0.70   | 0.83  | 50.14                | 1.09                | 0.23    |
| 400.00  | 0.23 | 297.28 | 400.00  | 0.83   | 0.83   | 0.63  | 37.48                | 1.04                | 0.19    |
| 500.00  | 0.42 | 292.63 | 500.00  | 1.06   | 1.06   | 0.12  | 6.28                 | 1.07                | 0.19    |
| 600.00  | 0.57 | 266.93 | 599.99  | 1.17   | 1.17   | -0.72 | 328.52               | 1.38                | 0.26    |
| 700.00  | 0.42 | 206.59 | 699.99  | 0.82   | 0.82   | -1.38 | 300.70               | 1.60                | 0.51    |
| 800.00  | 0.42 | 248.02 | 799.99  | 0.35   | 0.35   | -1.88 | 280.65               | 1.92                | 0.30    |
| 839.00  | 0.32 | 308.59 | 838.99  | 0.37   | 0.37   | -2.10 | 279.95               | 2.13                | 0.98    |
| 970.00  | 0.30 | 115.12 | 969.98  | 0.45   | 0.45   | -2.07 | 282.23               | 2.12                | 0.47    |
| 1155.00 | 3.06 | 141.92 | 1154.89 | -3.65  | -3.65  | 1.42  | 158.72               | 3.92                | 1.51    |
| 1341.00 | 2.66 | 143.86 | 1340.66 | -11.05 | -11.05 | 7.04  | 147.52               | 13.10               | 0.22    |
| 1527.00 | 6.83 | 144.26 | 1525.98 | -23.53 | -23.53 | 16.05 | 145.70               | 28.49               | 2.24    |
| 1713.00 | 6.14 | 138.55 | 1710.79 | -39.97 | -39.97 | 29.10 | 143.94               | 49.44               | 0.51    |
| 1898.00 | 5.03 | 134.50 | 1894.91 | -53.07 | -53.07 | 41.43 | 142.02               | 67.33               | 0.64    |
| 2084.00 | 4.75 | 126.10 | 2080.23 | -63.32 | -63.32 | 53.47 | 139.82               | 82.87               | 0.41    |
| 2270.00 | 4.82 | 147.30 | 2265.60 | -74.43 | -74.43 | 63.92 | 139.35               | 98.11               | 0.95    |
| 2456.00 | 3.60 | 155.00 | 2451.09 | -86.32 | -86.32 | 70.61 | 140.71               | 111.52              | 0.72    |

| MD      | Inc  | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|---------|------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft      | deg  | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 2641.00 | 2.49 | 172.57 | 2635.83 | -95.56  | -95.56  | 73.59  | 142.40               | 120.61              | 0.78    |
| 2827.00 | 4.41 | 145.13 | 2821.50 | -105.43 | -105.43 | 78.20  | 143.44               | 131.26              | 1.33    |
| 3018.00 | 2.79 | 133.55 | 3012.12 | -114.65 | -114.65 | 85.76  | 143.20               | 143.17              | 0.93    |
| 3208.00 | 3.88 | 123.47 | 3201.80 | -121.37 | -121.37 | 94.47  | 142.11               | 153.80              | 0.65    |
| 3399.00 | 5.49 | 127.93 | 3392.15 | -130.56 | -130.56 | 107.07 | 140.65               | 168.85              | 0.86    |
| 3589.00 | 5.04 | 138.18 | 3581.35 | -142.37 | -142.37 | 119.80 | 139.92               | 186.07              | 0.55    |
| 3780.00 | 5.50 | 147.84 | 3771.55 | -156.37 | -156.37 | 130.27 | 140.20               | 203.53              | 0.52    |
| 3970.00 | 4.03 | 158.89 | 3960.89 | -170.30 | -170.30 | 137.52 | 141.08               | 218.90              | 0.91    |
| 4160.00 | 4.64 | 157.58 | 4150.35 | -183.63 | -183.63 | 142.86 | 142.12               | 232.65              | 0.33    |
| 4351.00 | 2.99 | 158.91 | 4340.92 | -195.43 | -195.43 | 147.60 | 142.94               | 244.90              | 0.86    |
| 4542.00 | 4.83 | 132.52 | 4531.48 | -205.51 | -205.51 | 155.32 | 142.92               | 257.60              | 1.32    |
| 4733.00 | 4.31 | 130.77 | 4721.87 | -215.63 | -215.63 | 166.68 | 142.30               | 272.54              | 0.28    |
| 4923.00 | 5.27 | 130.39 | 4911.21 | -225.95 | -225.95 | 178.73 | 141.66               | 288.09              | 0.50    |
| 5113.00 | 4.83 | 131.89 | 5100.47 | -236.93 | -236.93 | 191.32 | 141.08               | 304.54              | 0.24    |
| 5304.00 | 3.50 | 135.73 | 5290.96 | -246.48 | -246.48 | 201.38 | 140.75               | 318.29              | 0.71    |
| 5494.00 | 5.03 | 127.90 | 5480.43 | -255.75 | -255.75 | 212.00 | 140.34               | 332.20              | 0.86    |
| 5685.00 | 5.04 | 141.73 | 5670.70 | -267.48 | -267.48 | 223.80 | 140.08               | 348.76              | 0.63    |
| 5875.00 | 4.79 | 136.93 | 5860.00 | -279.83 | -279.83 | 234.39 | 140.05               | 365.03              | 0.25    |

| MD      | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|---------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft      | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 6066.00 | 5.35  | 138.78 | 6050.25 | -292.36 | -292.36 | 245.71 | 139.96               | 381.90              | 0.31    |
| 6256.00 | 4.09  | 126.41 | 6239.61 | -303.05 | -303.05 | 257.00 | 139.70               | 397.35              | 0.85    |
| 6447.00 | 4.23  | 120.69 | 6430.11 | -310.69 | -310.69 | 268.55 | 139.16               | 410.66              | 0.23    |
| 6637.00 | 4.45  | 112.36 | 6619.56 | -317.07 | -317.07 | 281.39 | 138.41               | 423.93              | 0.35    |
| 6780.00 | 1.18  | 69.93  | 6762.38 | -318.68 | -318.68 | 287.90 | 137.90               | 429.46              | 2.56    |
| 6828.00 | 1.00  | 64.39  | 6810.37 | -318.33 | -318.33 | 288.74 | 137.79               | 429.77              | 0.43    |
| 6875.00 | 2.96  | 20.43  | 6857.35 | -317.01 | -317.01 | 289.53 | 137.59               | 429.33              | 4.99    |
| 6923.00 | 7.19  | 16.51  | 6905.15 | -312.97 | -312.97 | 290.82 | 137.10               | 427.23              | 8.83    |
| 6970.00 | 12.09 | 9.15   | 6951.47 | -305.29 | -305.29 | 292.44 | 136.23               | 422.75              | 10.73   |
| 7019.00 | 15.31 | 11.68  | 6999.07 | -293.89 | -293.89 | 294.56 | 134.93               | 416.10              | 6.69    |
| 7066.00 | 16.60 | 11.19  | 7044.26 | -281.22 | -281.22 | 297.12 | 133.43               | 409.11              | 2.75    |
| 7114.00 | 18.69 | 10.19  | 7090.00 | -266.92 | -266.92 | 299.81 | 131.68               | 401.42              | 4.41    |
| 7161.00 | 21.98 | 10.20  | 7134.06 | -250.85 | -250.85 | 302.70 | 129.65               | 393.14              | 6.99    |
| 7209.00 | 25.00 | 9.43   | 7178.08 | -232.00 | -232.00 | 305.96 | 127.17               | 383.97              | 6.33    |
| 7256.00 | 27.78 | 8.35   | 7220.18 | -211.36 | -211.36 | 309.18 | 124.36               | 374.52              | 6.01    |
| 7304.00 | 30.63 | 6.18   | 7262.07 | -188.13 | -188.13 | 312.12 | 121.08               | 364.43              | 6.32    |
| 7351.00 | 34.02 | 3.54   | 7301.79 | -163.10 | -163.10 | 314.22 | 117.43               | 354.03              | 7.82    |
| 7400.00 | 39.84 | 1.07   | 7340.94 | -133.70 | -133.70 | 315.36 | 112.97               | 342.53              | 12.26   |

| MD      | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|---------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft      | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 7447.00 | 44.68 | 1.05   | 7375.71 | -102.10 | -102.10 | 315.95 | 107.91               | 332.03              | 10.30   |
| 7495.00 | 48.49 | 1.82   | 7408.70 | -67.25  | -67.25  | 316.83 | 101.98               | 323.89              | 8.02    |
| 7542.00 | 52.65 | 0.78   | 7438.54 | -30.97  | -30.97  | 317.64 | 95.57                | 319.15              | 9.00    |
| 7590.00 | 56.74 | 359.18 | 7466.28 | 8.19    | 8.19    | 317.61 | 88.52                | 317.72              | 8.95    |
| 7637.00 | 61.10 | 358.48 | 7490.54 | 48.43   | 48.43   | 316.79 | 81.31                | 320.47              | 9.38    |
| 7686.00 | 65.59 | 359.31 | 7512.51 | 92.20   | 92.20   | 315.95 | 73.73                | 329.13              | 9.29    |
| 7733.00 | 69.29 | 0.22   | 7530.54 | 135.60  | 135.60  | 315.77 | 66.76                | 343.66              | 8.07    |
| 7781.00 | 71.74 | 0.39   | 7546.55 | 180.85  | 180.85  | 316.01 | 60.22                | 364.10              | 5.12    |
| 7828.00 | 74.67 | 0.02   | 7560.12 | 225.84  | 225.84  | 316.17 | 54.46                | 388.54              | 6.28    |
| 7876.00 | 77.86 | 359.21 | 7571.52 | 272.46  | 272.46  | 315.86 | 49.22                | 417.13              | 6.84    |
| 7908.00 | 81.94 | 359.17 | 7577.13 | 303.95  | 303.95  | 315.41 | 46.06                | 438.03              | 12.74   |
| 7935.00 | 85.30 | 359.62 | 7580.13 | 330.78  | 330.78  | 315.13 | 43.61                | 456.86              | 12.55   |
| 8073.00 | 90.37 | 0.87   | 7585.35 | 468.63  | 468.63  | 315.72 | 33.97                | 565.06              | 3.79    |
| 8169.00 | 89.29 | 0.51   | 7585.63 | 564.62  | 564.62  | 316.88 | 29.30                | 647.47              | 1.18    |
| 8262.00 | 90.34 | 0.62   | 7585.93 | 657.61  | 657.61  | 317.80 | 25.79                | 730.38              | 1.13    |
| 8355.00 | 90.47 | 358.68 | 7585.27 | 750.61  | 750.61  | 317.24 | 22.91                | 814.89              | 2.10    |
| 8448.00 | 90.50 | 358.28 | 7584.48 | 843.57  | 843.57  | 314.77 | 20.46                | 900.38              | 0.42    |
| 8541.00 | 91.51 | 358.57 | 7582.85 | 936.52  | 936.52  | 312.22 | 18.44                | 987.19              | 1.13    |

| MD       | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|----------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft       | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 8633.00  | 92.05 | 0.06   | 7579.99 | 1028.47 | 1028.47 | 311.13 | 16.83                | 1074.50             | 1.72    |
| 8726.00  | 90.97 | 1.97   | 7577.53 | 1121.41 | 1121.41 | 312.77 | 15.58                | 1164.21             | 2.35    |
| 8819.00  | 90.74 | 2.33   | 7576.14 | 1214.34 | 1214.34 | 316.26 | 14.60                | 1254.84             | 0.46    |
| 8912.00  | 90.47 | 2.36   | 7575.16 | 1307.25 | 1307.25 | 320.06 | 13.76                | 1345.86             | 0.29    |
| 9005.00  | 89.87 | 1.38   | 7574.88 | 1400.20 | 1400.20 | 323.09 | 12.99                | 1437.00             | 1.24    |
| 9098.00  | 90.44 | 1.41   | 7574.64 | 1493.17 | 1493.17 | 325.36 | 12.29                | 1528.21             | 0.61    |
| 9191.00  | 91.28 | 1.05   | 7573.25 | 1586.14 | 1586.14 | 327.36 | 11.66                | 1619.57             | 0.99    |
| 9284.00  | 92.05 | 0.27   | 7570.55 | 1679.09 | 1679.09 | 328.42 | 11.07                | 1710.91             | 1.18    |
| 9377.00  | 90.74 | 359.46 | 7568.29 | 1772.06 | 1772.06 | 328.20 | 10.49                | 1802.20             | 1.65    |
| 9470.00  | 91.88 | 0.50   | 7566.16 | 1865.04 | 1865.04 | 328.17 | 9.98                 | 1893.69             | 1.66    |
| 9562.00  | 91.68 | 0.62   | 7563.30 | 1956.99 | 1956.99 | 329.06 | 9.54                 | 1984.46             | 0.26    |
| 9655.00  | 90.70 | 0.20   | 7561.36 | 2049.96 | 2049.96 | 329.73 | 9.14                 | 2076.31             | 1.14    |
| 9748.00  | 91.51 | 0.97   | 7559.57 | 2142.94 | 2142.94 | 330.69 | 8.77                 | 2168.30             | 1.20    |
| 9841.00  | 90.13 | 359.96 | 7558.23 | 2235.92 | 2235.92 | 331.44 | 8.43                 | 2260.36             | 1.84    |
| 9934.00  | 91.55 | 0.11   | 7556.87 | 2328.91 | 2328.91 | 331.50 | 8.10                 | 2352.39             | 1.53    |
| 10027.00 | 90.37 | 358.44 | 7555.31 | 2421.89 | 2421.89 | 330.32 | 7.77                 | 2444.31             | 2.20    |
| 10119.00 | 90.60 | 359.95 | 7554.53 | 2513.87 | 2513.87 | 329.03 | 7.46                 | 2535.31             | 1.66    |
| 10212.00 | 90.94 | 0.12   | 7553.28 | 2606.86 | 2606.86 | 329.08 | 7.19                 | 2627.55             | 0.40    |

| MD       | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|----------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft       | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 10305.00 | 89.97 | 358.86 | 7552.54 | 2699.85 | 2699.85 | 328.24 | 6.93                 | 2719.73             | 1.71    |
| 10398.00 | 90.40 | 0.00   | 7552.24 | 2792.85 | 2792.85 | 327.32 | 6.68                 | 2811.96             | 1.32    |
| 10491.00 | 89.50 | 359.88 | 7552.32 | 2885.84 | 2885.84 | 327.22 | 6.47                 | 2904.34             | 0.98    |
| 10584.00 | 90.34 | 359.58 | 7552.46 | 2978.84 | 2978.84 | 326.78 | 6.26                 | 2996.71             | 0.96    |
| 10677.00 | 89.80 | 359.80 | 7552.35 | 3071.84 | 3071.84 | 326.28 | 6.06                 | 3089.12             | 0.62    |
| 10770.00 | 90.17 | 1.58   | 7552.38 | 3164.83 | 3164.83 | 327.39 | 5.91                 | 3181.72             | 1.95    |
| 10862.00 | 89.73 | 1.27   | 7552.46 | 3256.80 | 3256.80 | 329.68 | 5.78                 | 3273.45             | 0.58    |
| 10955.00 | 88.99 | 1.27   | 7553.49 | 3349.77 | 3349.77 | 331.74 | 5.66                 | 3366.16             | 0.79    |
| 11051.00 | 90.03 | 0.60   | 7554.31 | 3445.75 | 3445.75 | 333.30 | 5.52                 | 3461.84             | 1.29    |
| 11146.00 | 91.21 | 0.65   | 7553.28 | 3540.74 | 3540.74 | 334.33 | 5.39                 | 3556.49             | 1.24    |
| 11241.00 | 91.28 | 359.98 | 7551.22 | 3635.72 | 3635.72 | 334.85 | 5.26                 | 3651.10             | 0.70    |
| 11336.00 | 90.00 | 359.51 | 7550.16 | 3730.71 | 3730.71 | 334.43 | 5.12                 | 3745.67             | 1.43    |
| 11432.00 | 89.16 | 359.67 | 7550.87 | 3826.70 | 3826.70 | 333.74 | 4.98                 | 3841.23             | 0.89    |
| 11527.00 | 89.30 | 359.55 | 7552.14 | 3921.69 | 3921.69 | 333.09 | 4.85                 | 3935.81             | 0.19    |
| 11623.00 | 89.66 | 359.56 | 7553.02 | 4017.68 | 4017.68 | 332.35 | 4.73                 | 4031.41             | 0.38    |
| 11718.00 | 88.69 | 359.00 | 7554.38 | 4112.67 | 4112.67 | 331.16 | 4.60                 | 4125.98             | 1.18    |
| 11813.00 | 91.01 | 358.95 | 7554.63 | 4207.64 | 4207.64 | 329.46 | 4.48                 | 4220.52             | 2.44    |
| 11909.00 | 89.03 | 357.62 | 7554.61 | 4303.59 | 4303.59 | 326.59 | 4.34                 | 4315.97             | 2.48    |

| MD       | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|----------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft       | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | °/100ft |
| 12004.00 | 90.10 | 358.33 | 7555.33 | 4398.53 | 4398.53 | 323.23 | 4.20                 | 4410.39             | 1.36    |
| 12099.00 | 90.94 | 359.99 | 7554.47 | 4493.51 | 4493.51 | 321.84 | 4.10                 | 4505.02             | 1.96    |
| 12195.00 | 92.05 | 0.22   | 7551.97 | 4589.48 | 4589.48 | 322.02 | 4.01                 | 4600.76             | 1.18    |
| 12290.00 | 92.05 | 359.51 | 7548.57 | 4684.42 | 4684.42 | 321.79 | 3.93                 | 4695.45             | 0.75    |
| 12385.00 | 92.35 | 2.12   | 7544.92 | 4779.33 | 4779.33 | 323.14 | 3.87                 | 4790.24             | 2.76    |
| 12480.00 | 91.95 | 2.03   | 7541.35 | 4874.20 | 4874.20 | 326.58 | 3.83                 | 4885.13             | 0.44    |
| 12576.00 | 91.24 | 3.28   | 7538.68 | 4970.06 | 4970.06 | 331.02 | 3.81                 | 4981.07             | 1.49    |
| 12671.00 | 90.57 | 2.20   | 7537.18 | 5064.93 | 5064.93 | 335.56 | 3.79                 | 5076.04             | 1.33    |
| 12766.00 | 90.67 | 2.66   | 7536.15 | 5159.84 | 5159.84 | 339.59 | 3.77                 | 5171.00             | 0.49    |
| 12862.00 | 89.23 | 1.62   | 7536.24 | 5255.77 | 5255.77 | 343.18 | 3.74                 | 5266.96             | 1.85    |
| 12957.00 | 88.52 | 0.06   | 7538.10 | 5350.74 | 5350.74 | 344.57 | 3.68                 | 5361.82             | 1.80    |
| 13052.00 | 90.40 | 358.97 | 7538.99 | 5445.73 | 5445.73 | 343.77 | 3.61                 | 5456.56             | 2.29    |
| 13147.00 | 91.68 | 359.19 | 7537.27 | 5540.70 | 5540.70 | 342.24 | 3.53                 | 5551.26             | 1.37    |
| 13243.00 | 92.48 | 359.25 | 7533.78 | 5636.62 | 5636.62 | 340.94 | 3.46                 | 5646.92             | 0.84    |
| 13338.00 | 91.54 | 359.03 | 7530.44 | 5731.55 | 5731.55 | 339.52 | 3.39                 | 5741.60             | 1.02    |
| 13433.00 | 89.70 | 0.15   | 7529.41 | 5826.54 | 5826.54 | 338.83 | 3.33                 | 5836.38             | 2.27    |
| 13529.00 | 89.36 | 359.54 | 7530.20 | 5922.53 | 5922.53 | 338.57 | 3.27                 | 5932.20             | 0.72    |
| 13624.00 | 90.30 | 358.28 | 7530.48 | 6017.51 | 6017.51 | 336.76 | 3.20                 | 6026.93             | 1.65    |

| MD       | Inc   | Azim   | TVD     | VS      | +N/-S   | +E/-W  | Closure<br>Direction | Closure<br>Distance | DLS     |
|----------|-------|--------|---------|---------|---------|--------|----------------------|---------------------|---------|
| ft       | deg   | deg    | ft      | ft      | ft      | ft     | deg                  | ft                  | "/100ft |
| 13720.00 | 89.87 | 356.87 | 7530.34 | 6113.42 | 6113.42 | 332.71 | 3.12                 | 6122.47             | 1.54    |
| 13815.00 | 90.91 | 356.71 | 7529.70 | 6208.27 | 6208.27 | 327.39 | 3.02                 | 6216.90             | 1.11    |
| 13910.00 | 90.17 | 355.01 | 7528.81 | 6303.02 | 6303.02 | 320.53 | 2.91                 | 6311.16             | 1.95    |
| 14006.00 | 91.24 | 355.32 | 7527.62 | 6398.67 | 6398.67 | 312.43 | 2.80                 | 6406.29             | 1.16    |
| 14101.00 | 92.05 | 356.13 | 7524.89 | 6493.36 | 6493.36 | 305.35 | 2.69                 | 6500.54             | 1.20    |
| 14196.00 | 90.54 | 357.78 | 7522.75 | 6588.20 | 6588.20 | 300.30 | 2.61                 | 6595.04             | 2.36    |
| 14291.00 | 90.34 | 356.92 | 7522.02 | 6683.09 | 6683.09 | 295.91 | 2.54                 | 6689.64             | 0.92    |
| 14386.00 | 90.40 | 357.11 | 7521.41 | 6777.96 | 6777.96 | 290.96 | 2.46                 | 6784.20             | 0.20    |
| 14481.00 | 90.50 | 356.13 | 7520.66 | 6872.79 | 6872.79 | 285.36 | 2.38                 | 6878.71             | 1.03    |
| 14577.00 | 90.81 | 357.60 | 7519.56 | 6968.64 | 6968.64 | 280.12 | 2.30                 | 6974.26             | 1.56    |
| 14672.00 | 90.70 | 356.67 | 7518.31 | 7063.51 | 7063.51 | 275.36 | 2.23                 | 7068.87             | 0.99    |
| 14767.00 | 91.28 | 357.73 | 7516.67 | 7158.38 | 7158.38 | 270.72 | 2.17                 | 7163.50             | 1.27    |
| 14863.00 | 89.70 | 357.61 | 7515.85 | 7254.29 | 7254.29 | 266.82 | 2.11                 | 7259.20             | 1.65    |
| 14958.00 | 89.87 | 357.71 | 7516.21 | 7349.21 | 7349.21 | 262.95 | 2.05                 | 7353.92             | 0.21    |
| 15053.00 | 90.07 | 357.07 | 7516.27 | 7444.11 | 7444.11 | 258.62 | 1.99                 | 7448.61             | 0.71    |
| 15100.00 | 89.60 | 356.67 | 7516.41 | 7491.04 | 7491.04 | 256.05 | 1.96                 | 7495.42             | 1.31    |

| MD | Inc | Azim | TVD | VS | +N/-S | +E/-W | Closure<br>Direction | Closure<br>Distance | DLS     |
|----|-----|------|-----|----|-------|-------|----------------------|---------------------|---------|
| ft | deg | deg  | ft  | ft | ft    | ft    | deg                  | ft                  | °/100ft |

5" = 100' FEET MD