

5" = 100' FEET MD

COMPANY : ENCANA OIL AND GAS (U.S.A.) INC.
WELL : RODMAN BRUNTZ 2C-26H
FIELD : WATTENBURG
COUNTY : WELD
STATE : COLORADO
COUNTRY : U.S.A.
UWI : 05-123-37760

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WELL LOCATION
LAT:40°6'53.640"N LONG:104°44'47.976"W
N:1285597.12 ft E:3210692.79 ft

SEC:26 TWP:2N RANGE:66W DIRECTIONAL ROP

DEPTH REF. : RKB
REF. HEIGHT : 13.000 ft
GROUND LEVEL : 5097.000 ft
RKB to Ground Level
G.L. to MEAN SEA LEVEL

BOREHOLE RECORD

DEVIATION RECORD

HOLE SIZE in	FROM ft	TO ft	INCLINATION deg	FROM ft	TO ft
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12.25	0	1268	0 - 7	0	6810
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8.75	1268	7831	7 - 83	6810	7831
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6.125	7831	14322	83 - 93	7831	14322
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CASING SIZE in	FROM ft	TO ft			
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9.625	0	1258			
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7	0	7821			
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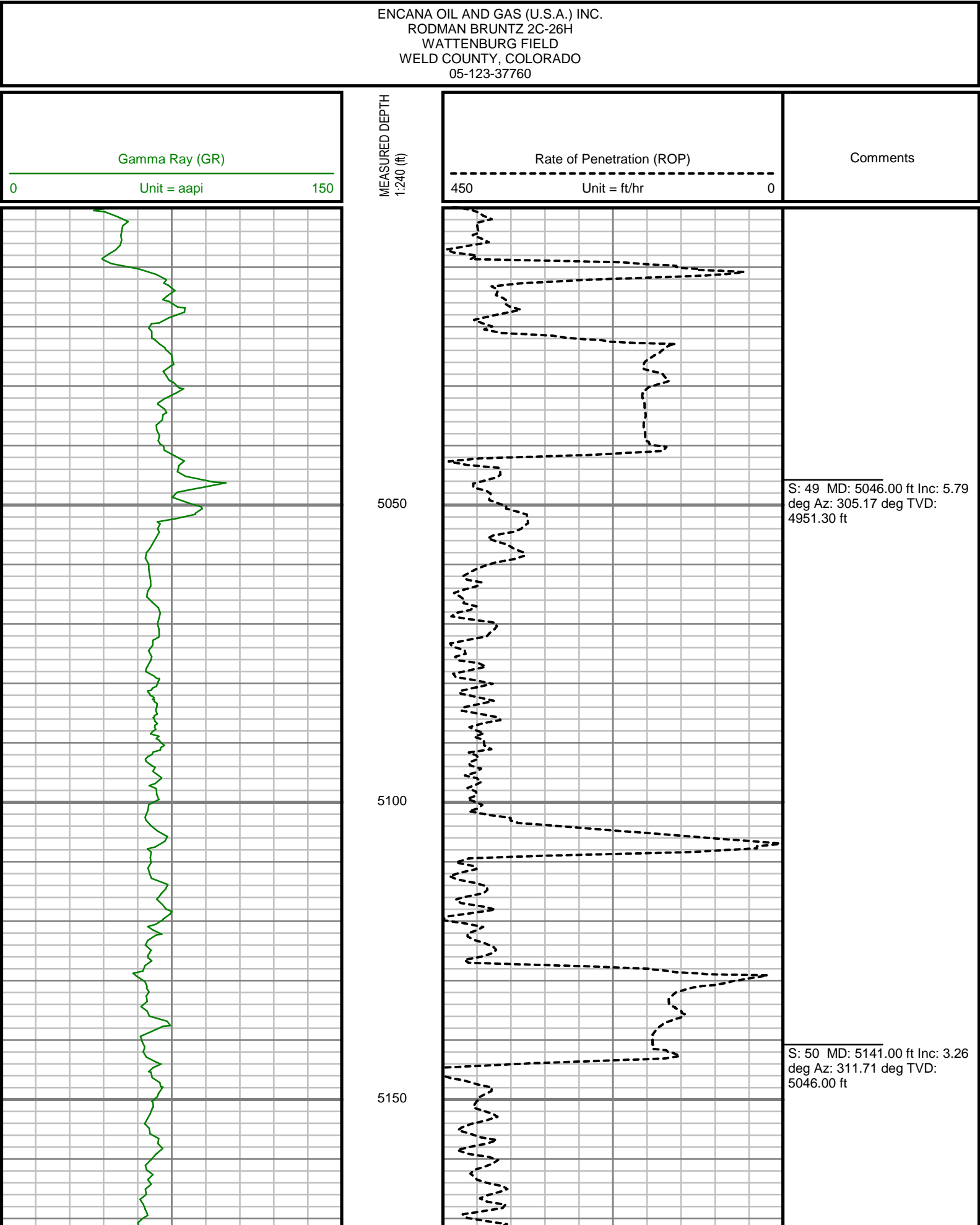
DRILLING CO. : ENSIGN
RIG : 124
LWD UNIT NO. : C-70
SPUD DATE : 11/17/2013
LWD START DATE : 11/19/2013
LWD END DATE : 12/02/2013
DISTRICT : CASPER
DEPTH : 5000 ft
DEPTH : 14322 ft
TOTAL DEPTH : 14322 ft

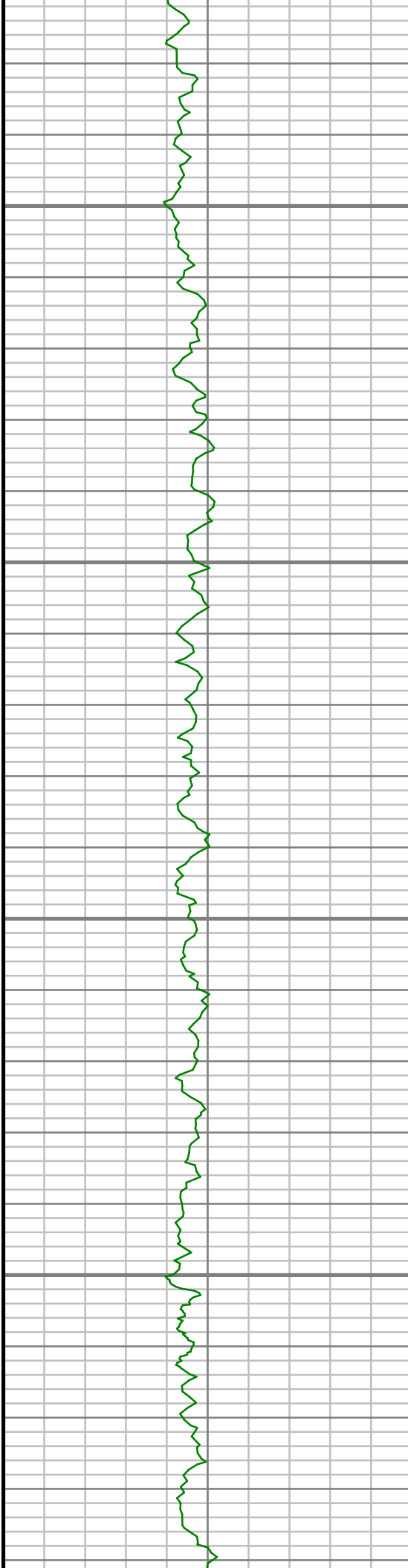
Run Data						
RUN NUMBER	1	2	3	4		
START DATE	11/17/2013	11/19/2013	11/24/2013	11/30/2013		
START TIME	2200	1745	2300	0230		
END DATE	11/18/2013	11/23/2013	11/30/2013	12/01/2013		
END TIME	0515	0500	0200	1300		
DEPTH IN (ft)	96	1268	7831	13563		
DEPTH OUT (ft)	1268	7831	13563	14322		
LOG TOP (ft)	-	5000	7782	13511		
LOG BOTTOM (ft)	-	7782	13511	14322		
HOLE SIZE (in)	12.25	8.75	6.125	6.125		
MUD DATA @ (ft)	1268	7831	13563	14322		
MUD TYPE	WATER-BASED	WATER-BASED	WATER-BASED	WATER-BASED		
DENSITY (lb / gal)	8.5	10.5	10.6	10.55		
VISCOSITY (s / qt)	35	41	38	45		
pH	7.2	8.2	8.2	7.5		
FLUID LOSS (cm3 / 30)	-	-	-	-		
SALINITY (ppm)	-	-	-	-		
Rm (ohmm @ deg F)	-	-	-	-		
Rmf (ohmm @ deg F)	-	-	-	-		
MAX TEMP (deg F)	80	168	233	230		
Rm @ MAX TEMP (ohmm)	-	-	-	-		
LWD ENGINEER #1	M. SMITH	M. SMITH	M. SMITH	M. SMITH		
LWD ENGINEER #2	J. SMITH	J. SMITH	J. SMITH	J. SMITH		
LWD ENGINEER #3	-	-	-	-		
LOG WITNESS #1	M. ROANE	M. ROANE	M. ROANE	M. ROANE		
LOG WITNESS #2	-	-	-	-		

Remarks
ENCANA OIL AND GAS (U.S.A.) INC. PRODUCTION AFE# 13175438
SCIENTIFIC DRILLING INTERNATIONAL JOB# 83857
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 = 814 / MWD EYE = 0764
BIT TO SENSOR OFFSET: SURVEY = 61.14 FT.
RUN #2: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 128-085 / CONT = 761 / MWD EYE = 0120 / GAMMA RAY = 1057
BIT TO SENSOR OFFSETS: SURVEY = 58.39 FT. / GAMMA RAY = 48.89 FT.
RUN #3: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-094 / CONT = 786 / MWD EYE = 0764 / GAMMA RAY = 1021
BIT TO SENSOR OFFSETS: SURVEY = 60.87 FT. / GAMMA RAY = 51.70 FT.
RUN #4: MWD / GAMMA RAY LOGGING RUN
SENSORS S/N: PULSER = 78-212 / CONT = 761 / MWD EYE = 0120 / GAMMA RAY = 1057
BIT TO SENSOR OFFSETS: SURVEY = 60.67 FT. / GAMMA RAY = 51.50 FT.

[illegible]

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.



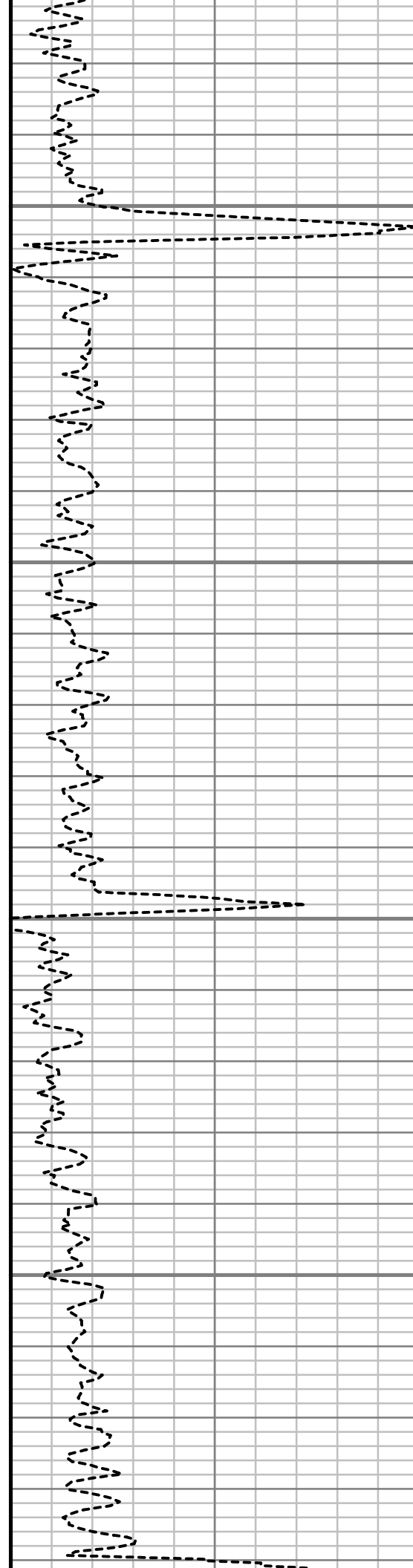


5200

5250

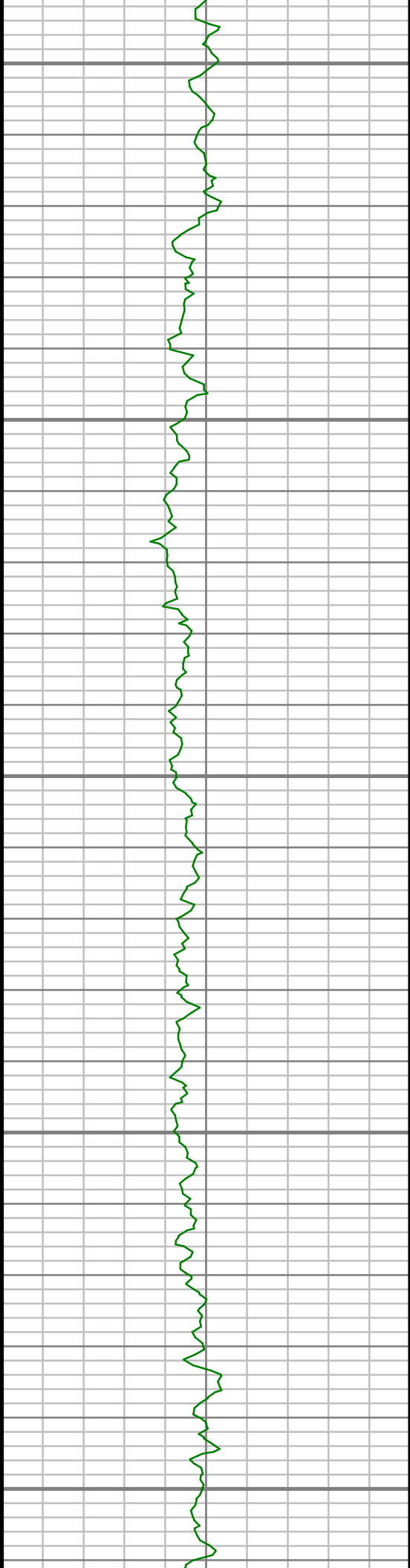
5300

5350



S: 51 MD: 5236.00 ft Inc: 2.29
deg Az: 322.94 deg TVD:
5140.89 ft

S: 52 MD: 5331.00 ft Inc: 1.89
deg Az: 323.02 deg TVD:
5235.82 ft



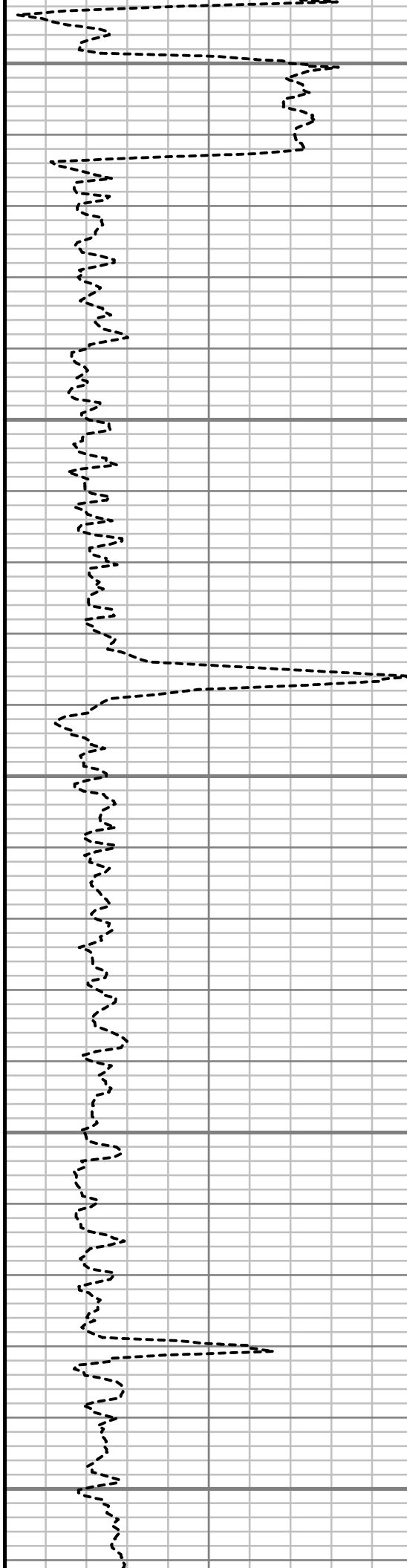
5400

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S: 53 MD: 5425.00 ft Inc: 2.73
deg Az: 279.47 deg TVD:
5329.75 ft

S: 54 MD: 5520.00 ft Inc: 2.89
deg Az: 275.70 deg TVD:
5424.64 ft

S: 55 MD: 5615.00 ft Inc: 2.38
deg Az: 274.29 deg TVD:
5519.54 ft

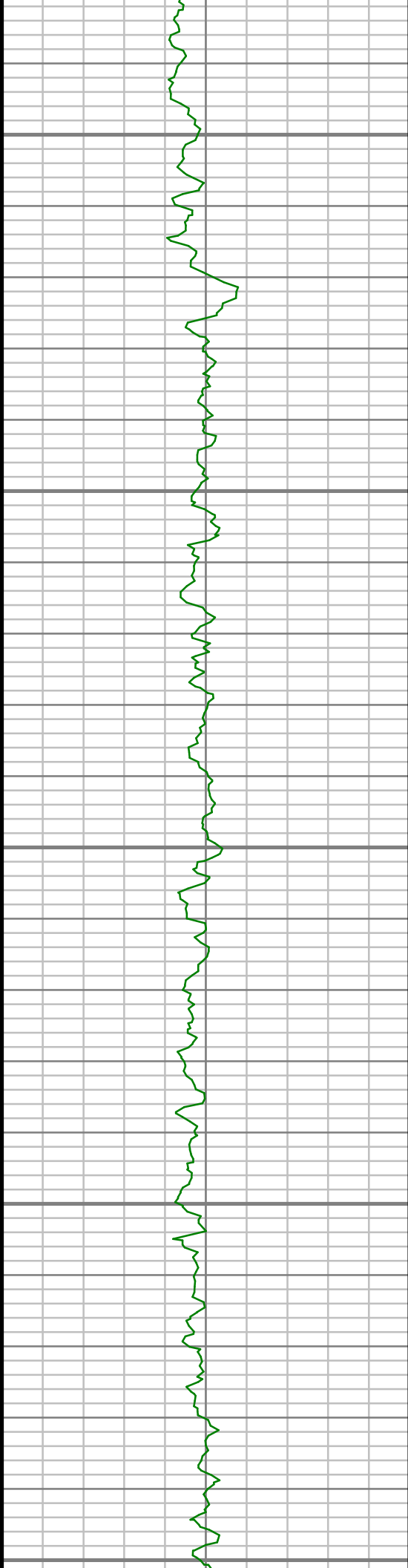
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5700

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5800

S: 56 MD: 5710.00 ft Inc: 1.93
deg Az: 272.75 deg TVD:
5614.47 ft



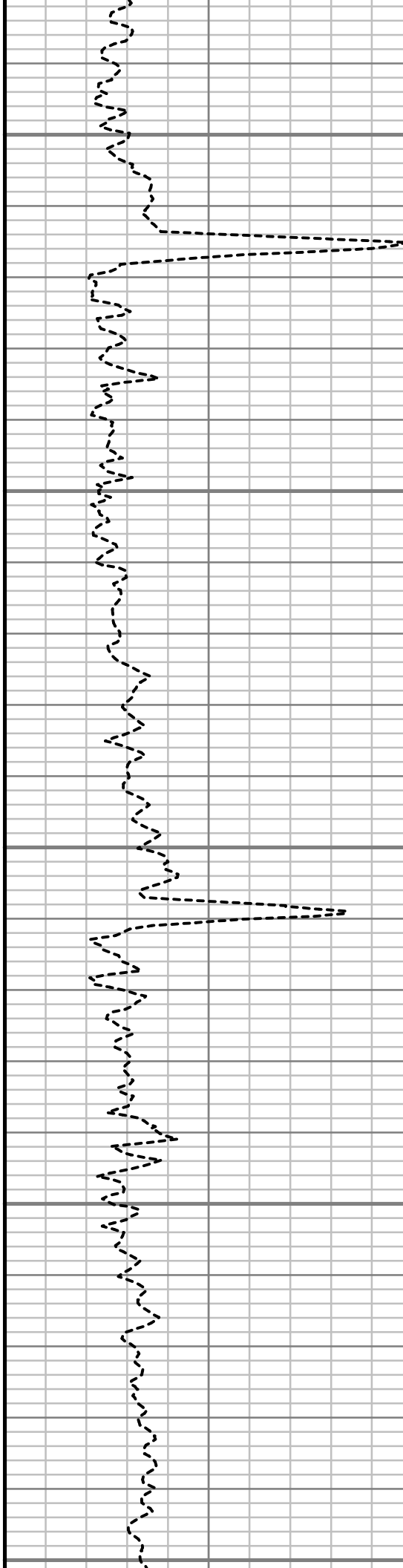
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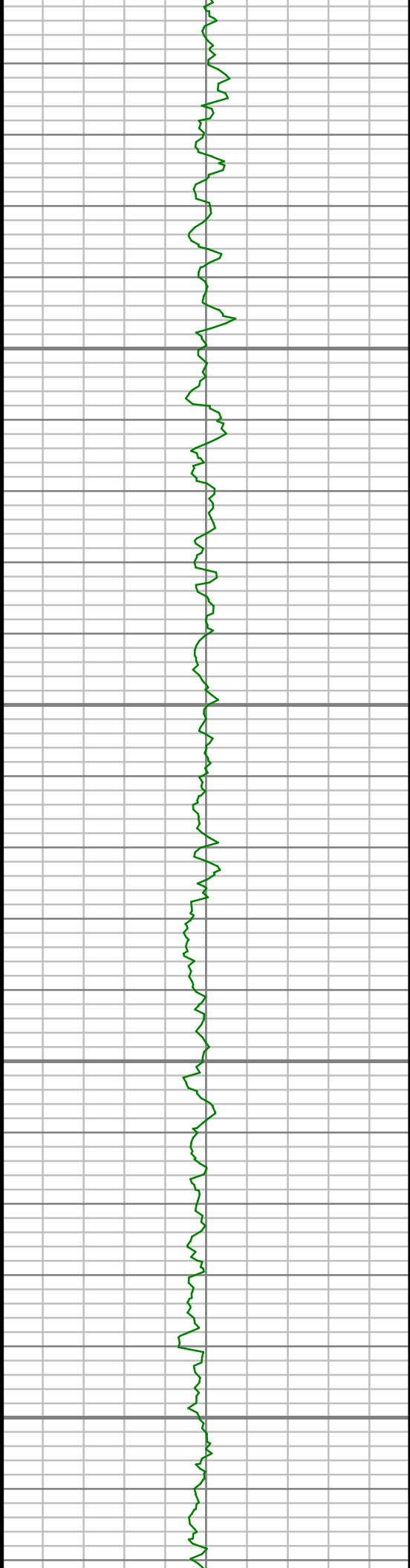
6000

6050



S: 57 MD: 5900.00 ft Inc: 1.28
deg Az: 269.78 deg TVD:
5804.40 ft

S: 58 MD: 5995.00 ft Inc: 0.95
deg Az: 248.97 deg TVD:
5899.38 ft

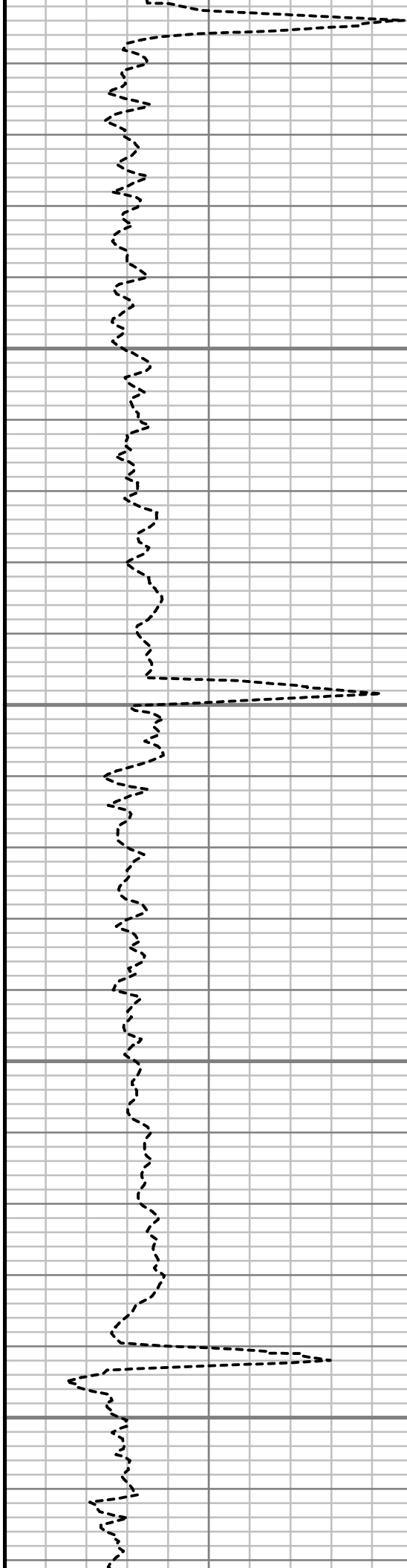


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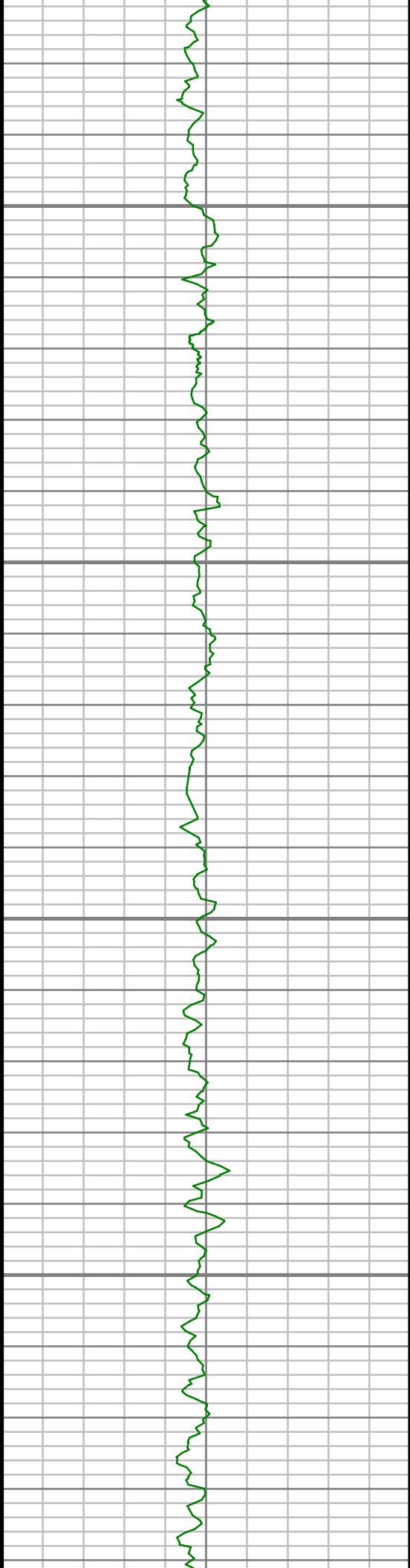
6150

6200

6250



S: 59 MD: 6090.00 ft Inc: 1.01
deg Az: 277.02 deg TVD:
5994.37 ft

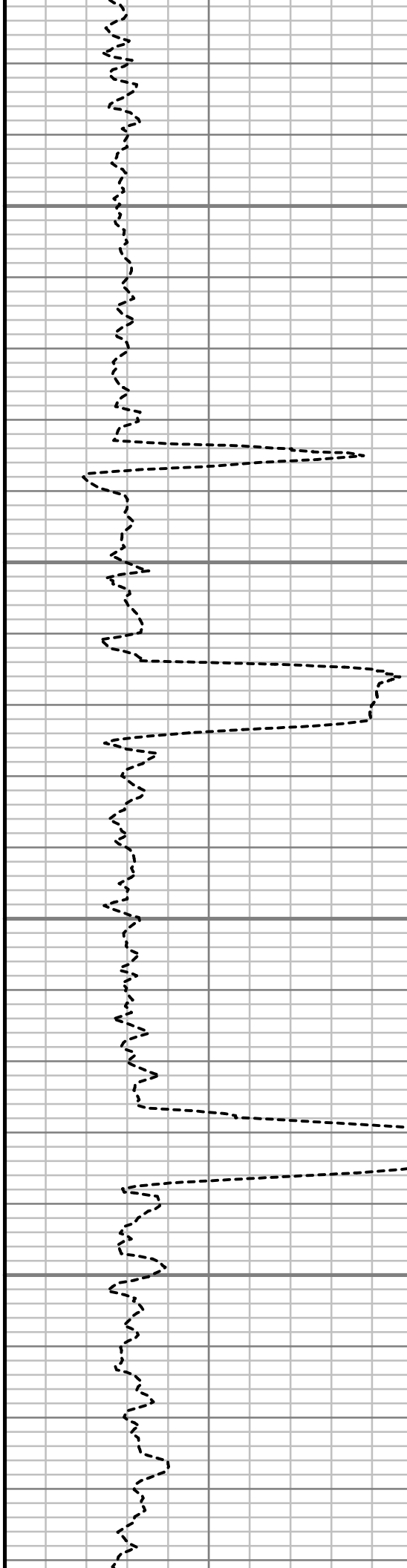


6300

6350

6400

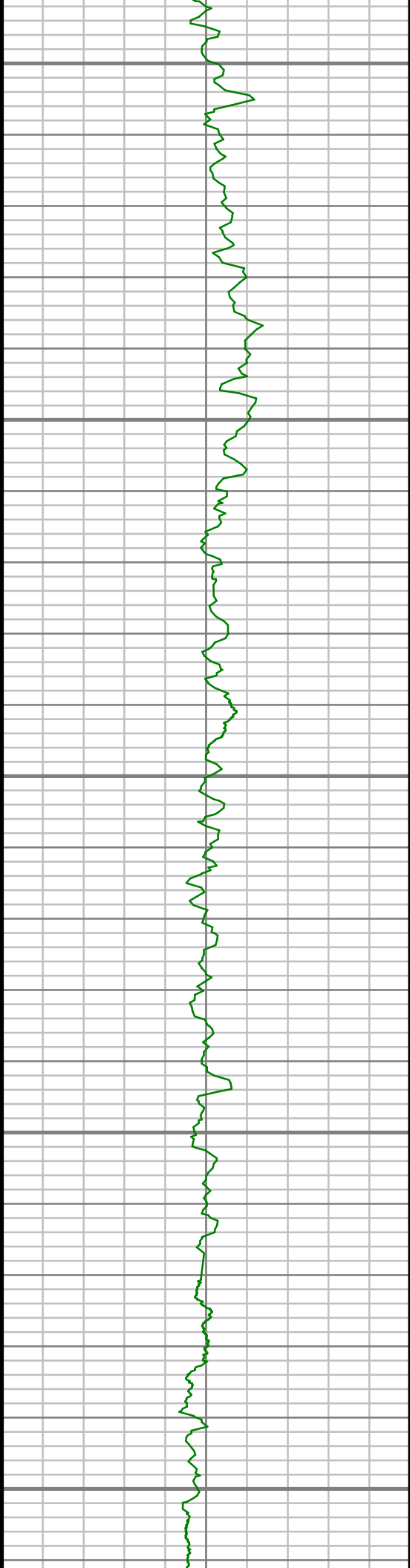
6450



S: 60 MD: 6279.00 ft Inc: 0.98
deg Az: 310.00 deg TVD:
6183.34 ft

S: 61 MD: 6374.00 ft Inc: 0.32
deg Az: 1.32 deg TVD: 6278.33
ft

S: 62 MD: 6469.00 ft Inc: 0.52
deg Az: 17.68 deg TVD:
6373.33 ft



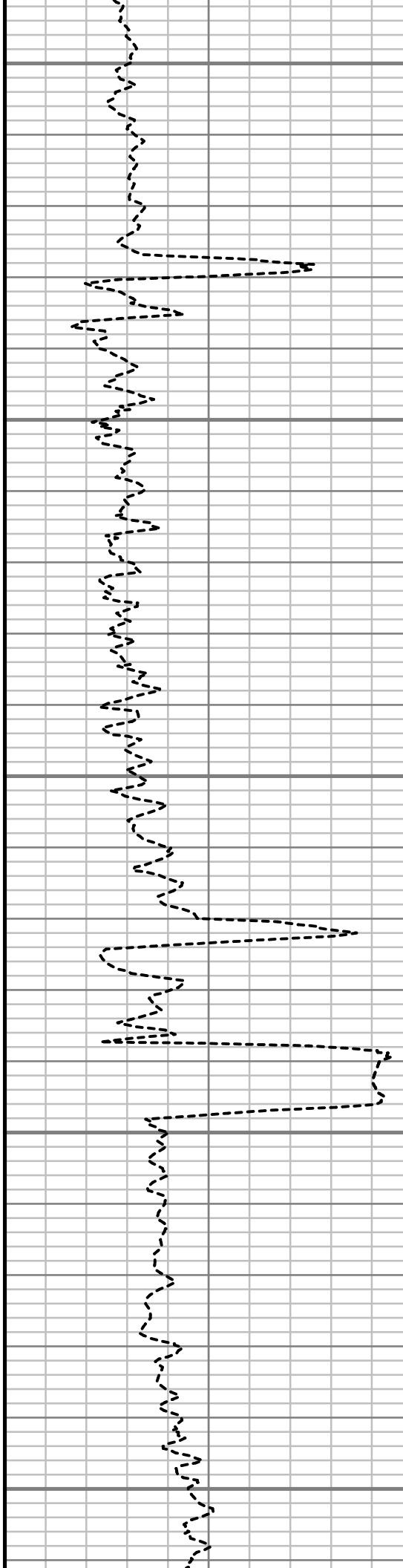
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6550

6600

6650

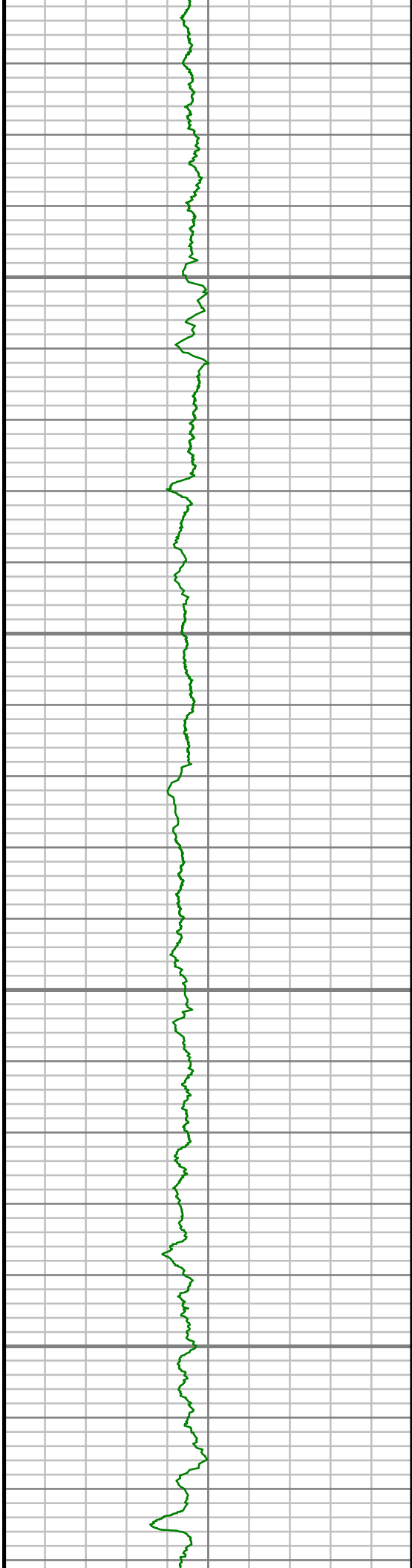
6700



S: 63 MD: 6564.00 ft Inc: 0.77
deg Az: 337.94 deg TVD:
6468.32 ft

S: 64 MD: 6659.00 ft Inc: 0.18
deg Az: 251.61 deg TVD:
6563.32 ft

S: 65 MD: 6690.00 ft Inc: 0.35
deg Az: 258.65 deg TVD:
6594.32 ft

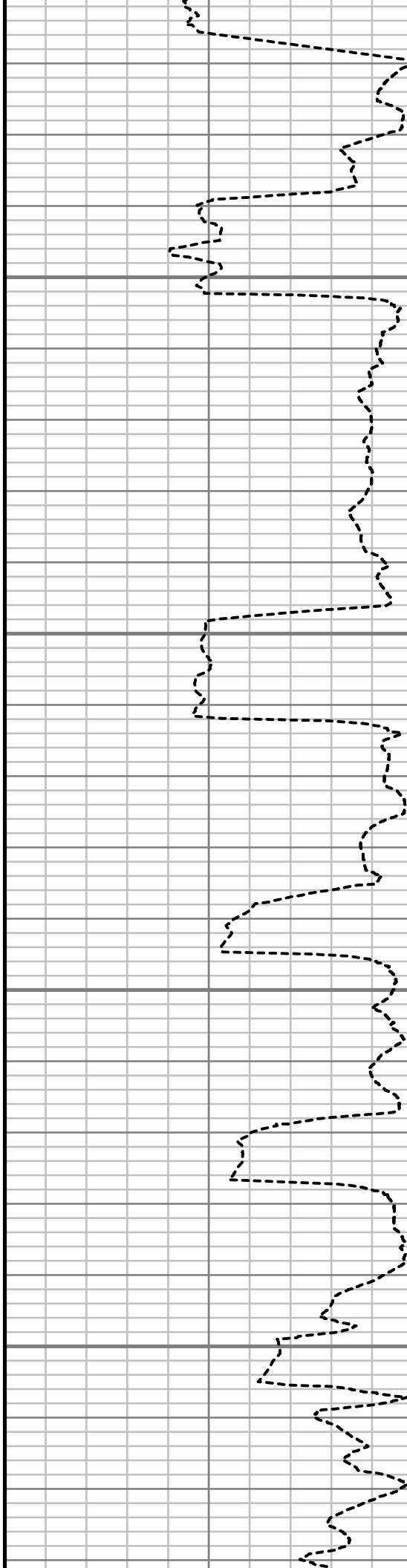


6750

6800

6850

6900



S: 66 MD: 6722.00 ft Inc: 1.05
deg Az: 202.40 deg TVD:
6626.32 ft

S: 67 MD: 6753.00 ft Inc: 2.59
deg Az: 172.72 deg TVD:
6657.30 ft

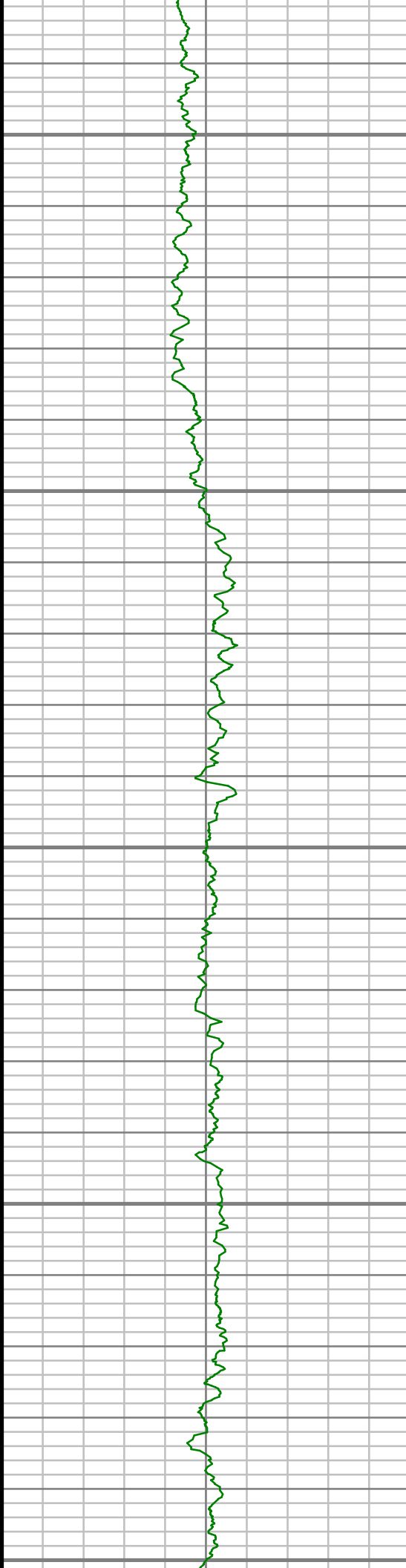
S: 68 MD: 6785.00 ft Inc: 5.64
deg Az: 163.66 deg TVD:
6689.22 ft

S: 69 MD: 6817.00 ft Inc: 7.87
deg Az: 165.31 deg TVD:
6720.99 ft

S: 70 MD: 6848.00 ft Inc: 10.07
deg Az: 170.44 deg TVD:
6751.61 ft

S: 71 MD: 6880.00 ft Inc: 12.00
deg Az: 170.85 deg TVD:
6783.02 ft

S: 72 MD: 6912.00 ft Inc: 13.74
deg Az: 169.76 deg TVD:
6814.21 ft



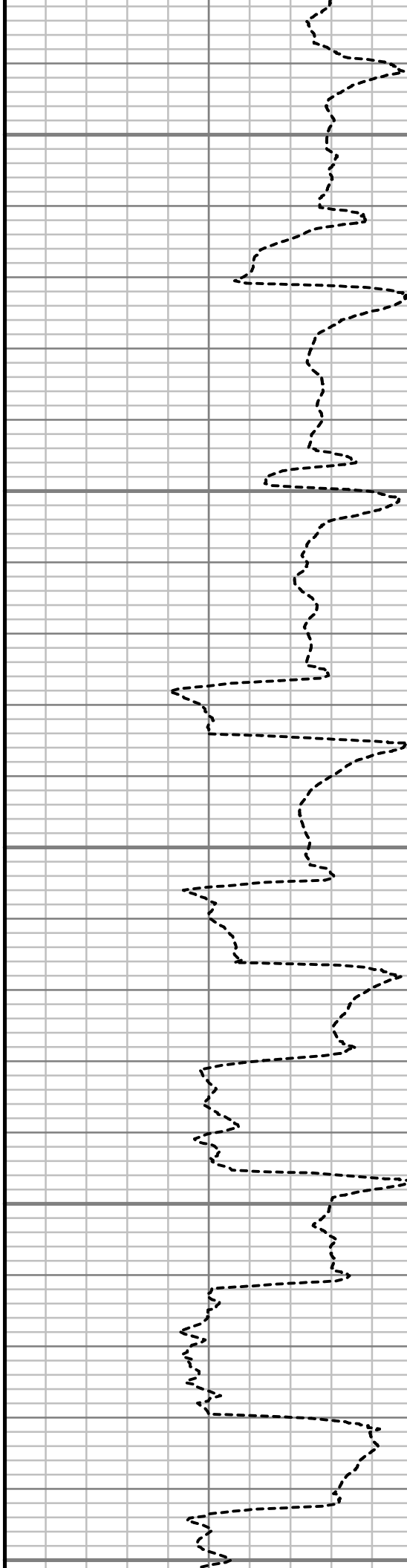
6950

7000

7050

7100

7150



S: 73 MD: 6943.00 ft Inc: 15.60
deg Az: 171.90 deg TVD:
6844.20 ft

S: 74 MD: 6975.00 ft Inc: 18.79
deg Az: 178.01 deg TVD:
6874.77 ft

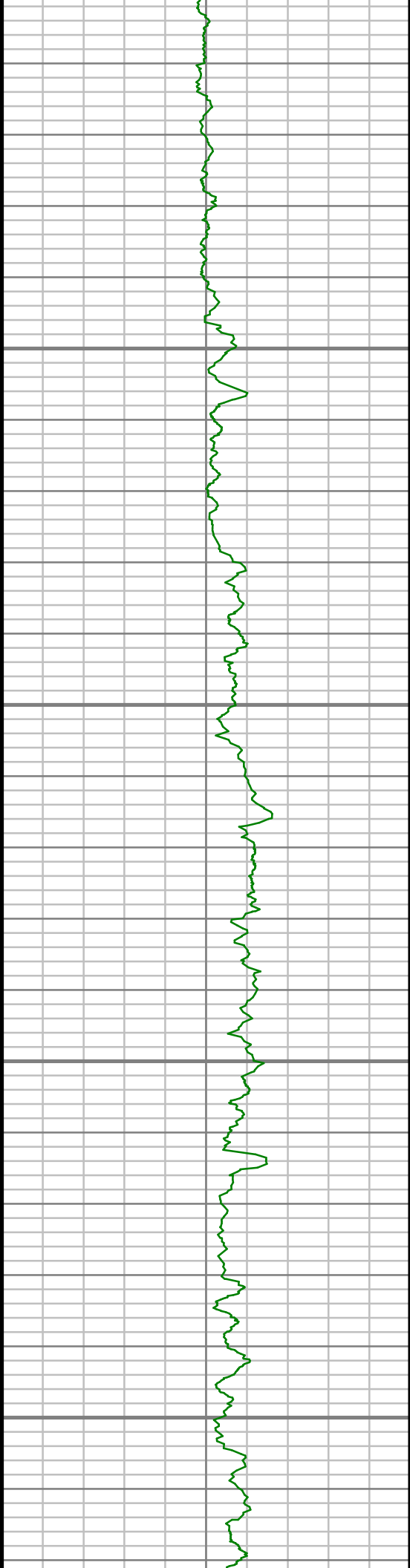
S: 75 MD: 7007.00 ft Inc: 22.81
deg Az: 179.20 deg TVD:
6904.68 ft

S: 76 MD: 7038.00 ft Inc: 26.49
deg Az: 178.90 deg TVD:
6932.85 ft

S: 77 MD: 7070.00 ft Inc: 29.43
deg Az: 178.69 deg TVD:
6961.11 ft

S: 78 MD: 7101.00 ft Inc: 30.96
deg Az: 179.32 deg TVD:
6987.91 ft

S: 79 MD: 7133.00 ft Inc: 32.02
deg Az: 179.58 deg TVD:
7015.19 ft

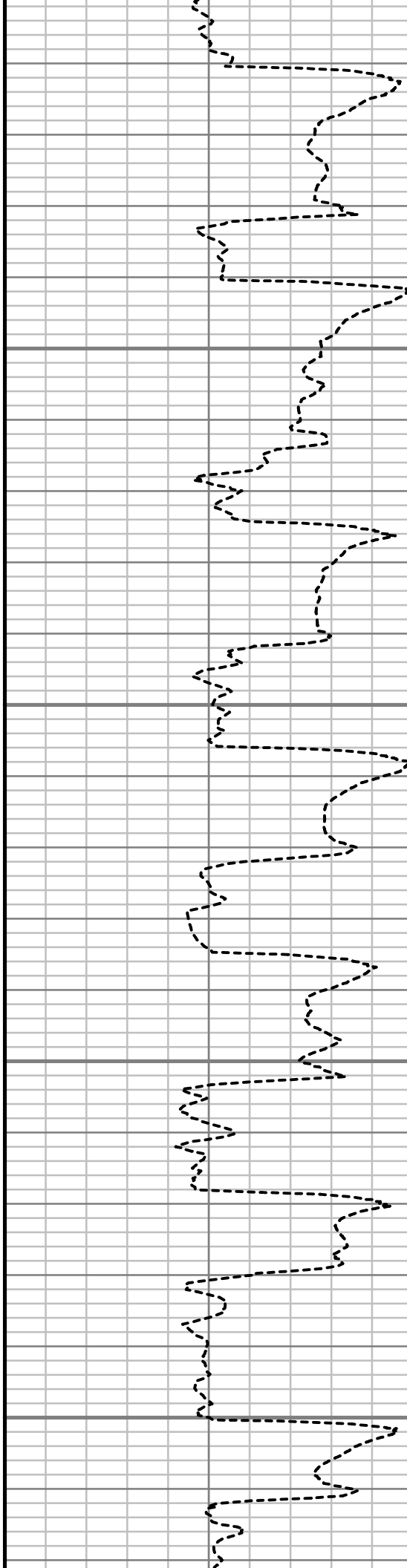


7200

7250

7300

7350



S: 80 MD: 7165.00 ft Inc: 33.92
deg Az: 178.84 deg TVD:
7042.04 ft

S: 81 MD: 7196.00 ft Inc: 37.62
deg Az: 179.95 deg TVD:
7067.18 ft

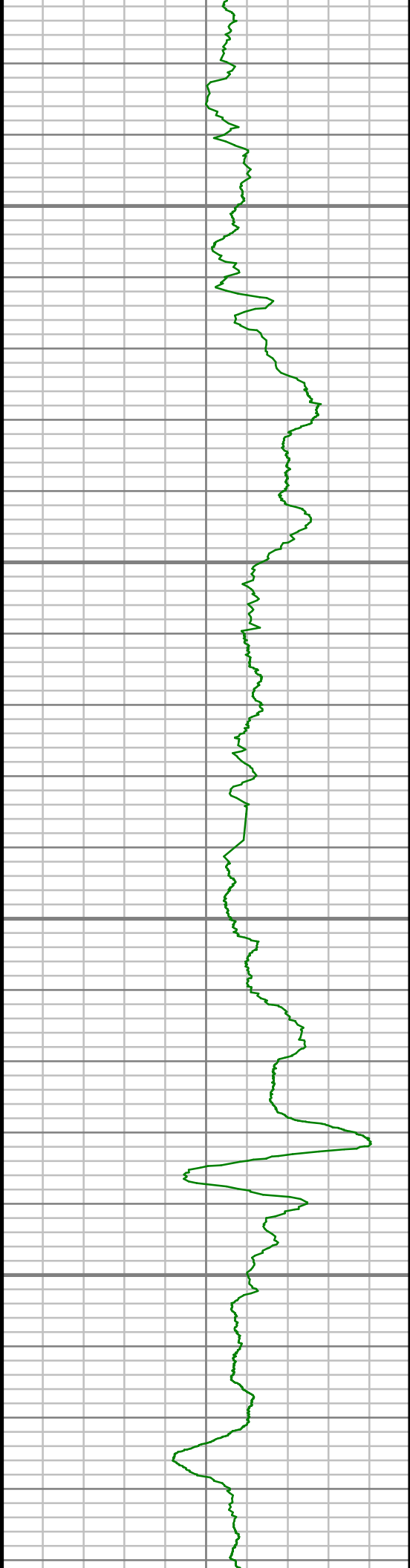
S: 82 MD: 7228.00 ft Inc: 40.82
deg Az: 179.97 deg TVD:
7091.97 ft

S: 83 MD: 7259.00 ft Inc: 44.00
deg Az: 179.66 deg TVD:
7114.86 ft

S: 84 MD: 7291.00 ft Inc: 46.67
deg Az: 179.05 deg TVD:
7137.35 ft

S: 85 MD: 7323.00 ft Inc: 48.45
deg Az: 179.69 deg TVD:
7158.95 ft

S: 86 MD: 7354.00 ft Inc: 50.15
deg Az: 180.26 deg TVD:
7179.16 ft

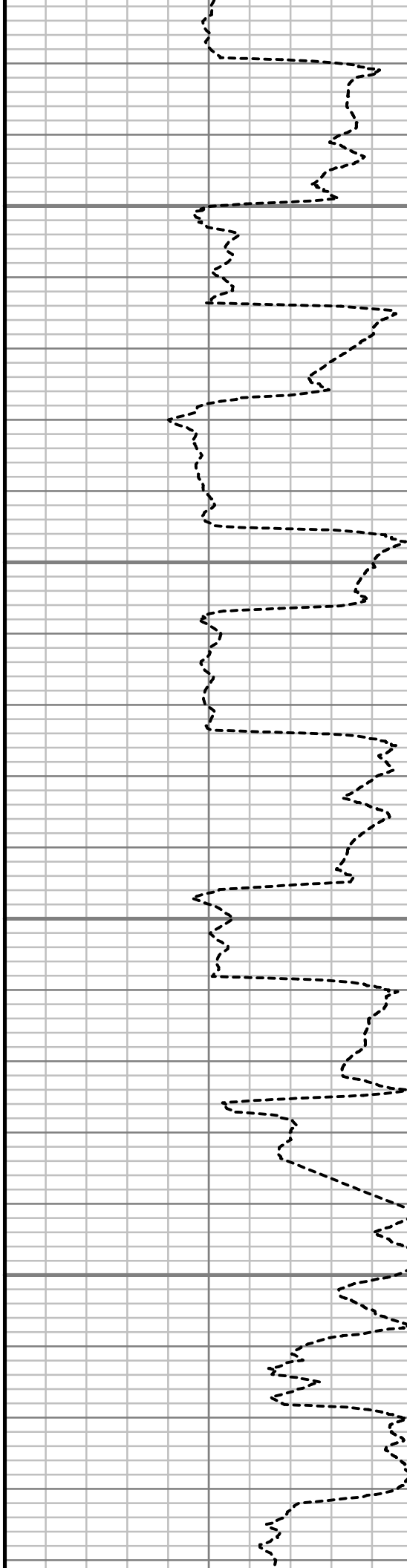


7400

7450

7500

7550



S: 87 MD: 7386.00 ft Inc: 52.61
deg Az: 180.02 deg TVD:
7199.13 ft

S: 88 MD: 7417.00 ft Inc: 54.94
deg Az: 181.26 deg TVD:
7217.45 ft

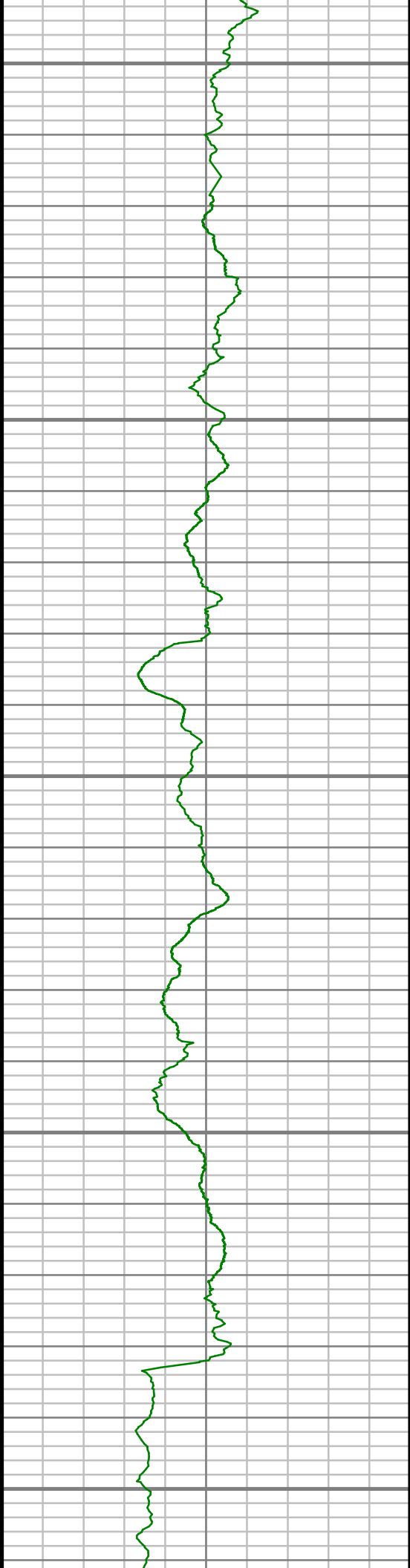
S: 89 MD: 7449.00 ft Inc: 56.59
deg Az: 181.80 deg TVD:
7235.45 ft

S: 90 MD: 7480.00 ft Inc: 59.08
deg Az: 181.50 deg TVD:
7251.95 ft

S: 91 MD: 7512.00 ft Inc: 62.18
deg Az: 180.95 deg TVD:
7267.64 ft

S: 92 MD: 7544.00 ft Inc: 65.57
deg Az: 181.74 deg TVD:
7281.73 ft

S: 93 MD: 7575.00 ft Inc: 67.89
deg Az: 181.78 deg TVD:
7293.98 ft



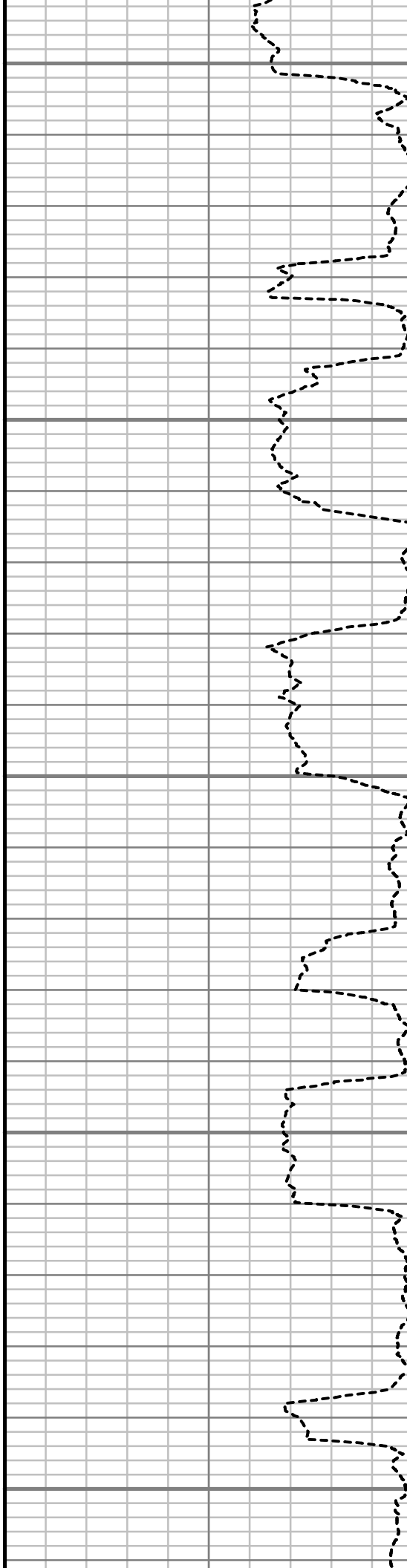
7600

7650

7700

7750

7800



S: 94 MD: 7607.00 ft Inc: 69.84
deg Az: 181.18 deg TVD:
7305.51 ft

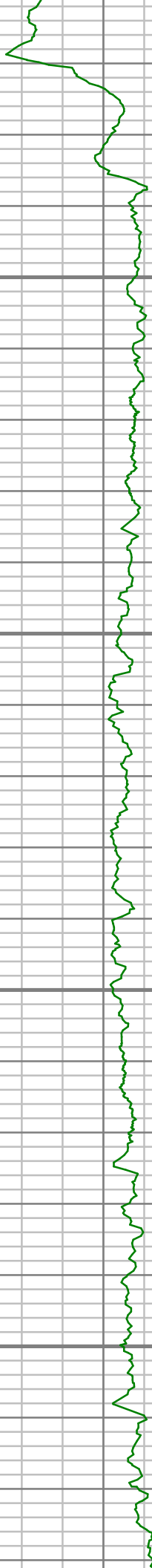
S: 95 MD: 7638.00 ft Inc: 73.03
deg Az: 180.46 deg TVD:
7315.38 ft

S: 96 MD: 7670.00 ft Inc: 74.95
deg Az: 179.96 deg TVD:
7324.21 ft

S: 97 MD: 7702.00 ft Inc: 76.98
deg Az: 179.33 deg TVD:
7331.97 ft

S: 98 MD: 7734.00 ft Inc: 80.27
deg Az: 179.55 deg TVD:
7338.28 ft

S: 99 MD: 7771.00 ft Inc: 83.43
deg Az: 179.28 deg TVD:
7343.52 ft

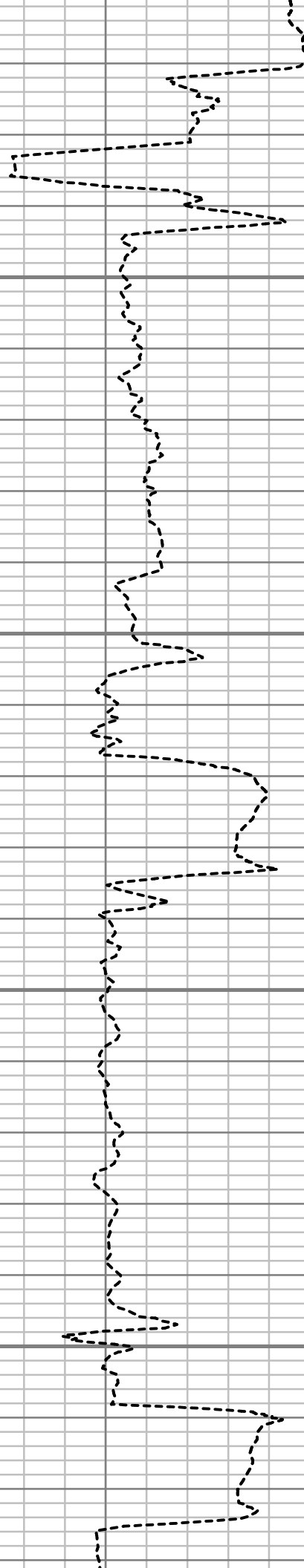


7850

7900

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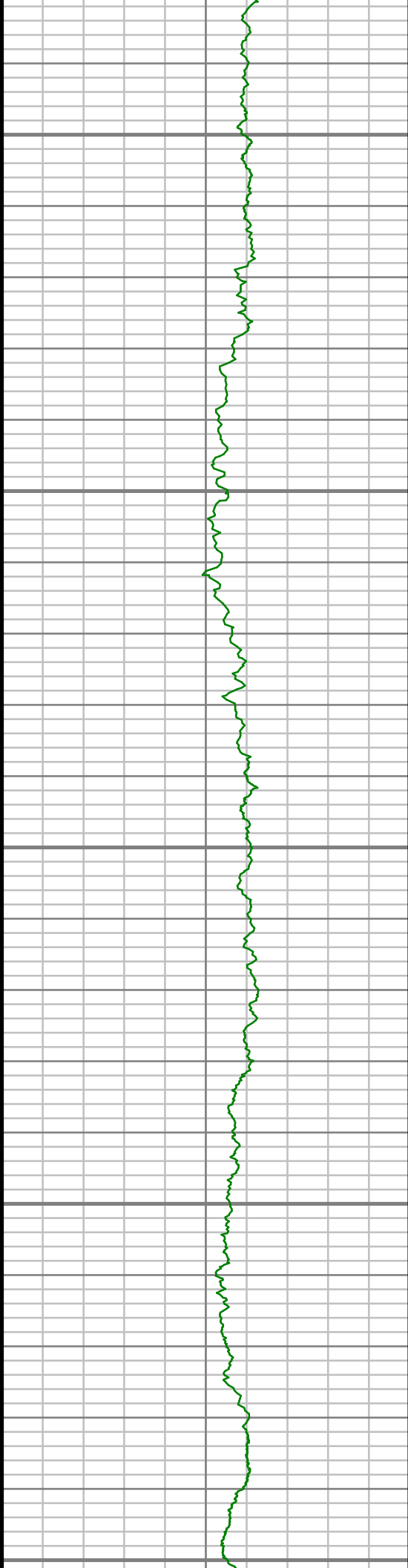
8000



S: 100 MD: 7843.00 ft Inc:
89.06 deg Az: 177.84 deg TVD:
7348.24 ft

S: 101 MD: 7936.00 ft Inc:
88.08 deg Az: 179.69 deg TVD:
7350.56 ft

S: 102 MD: 8029.00 ft Inc:



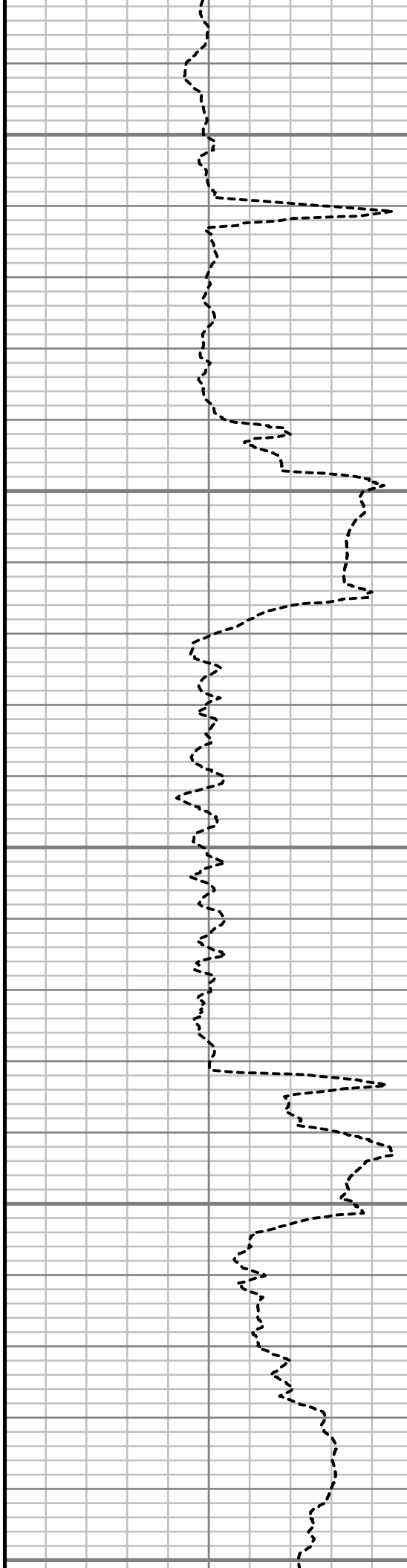
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8100

8150

8200

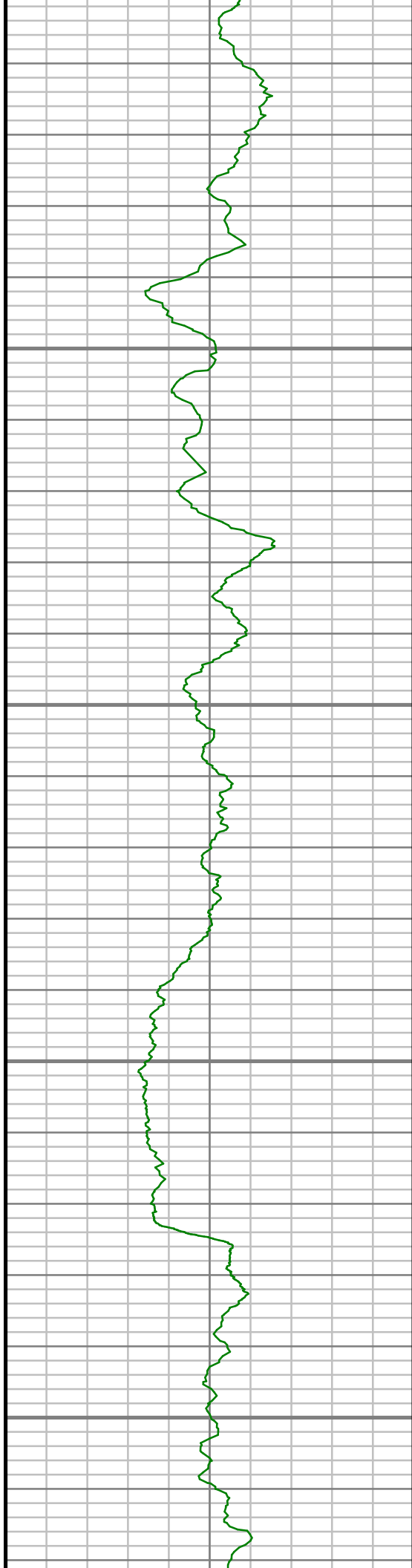
8250



88.22 deg Az: 179.79 deg TVD:
7353.56 ft

S: 103 MD: 8122.00 ft Inc:
89.09 deg Az: 180.16 deg TVD:
7355.74 ft

S: 104 MD: 8214.00 ft Inc:
88.89 deg Az: 179.78 deg TVD:
7357.36 ft

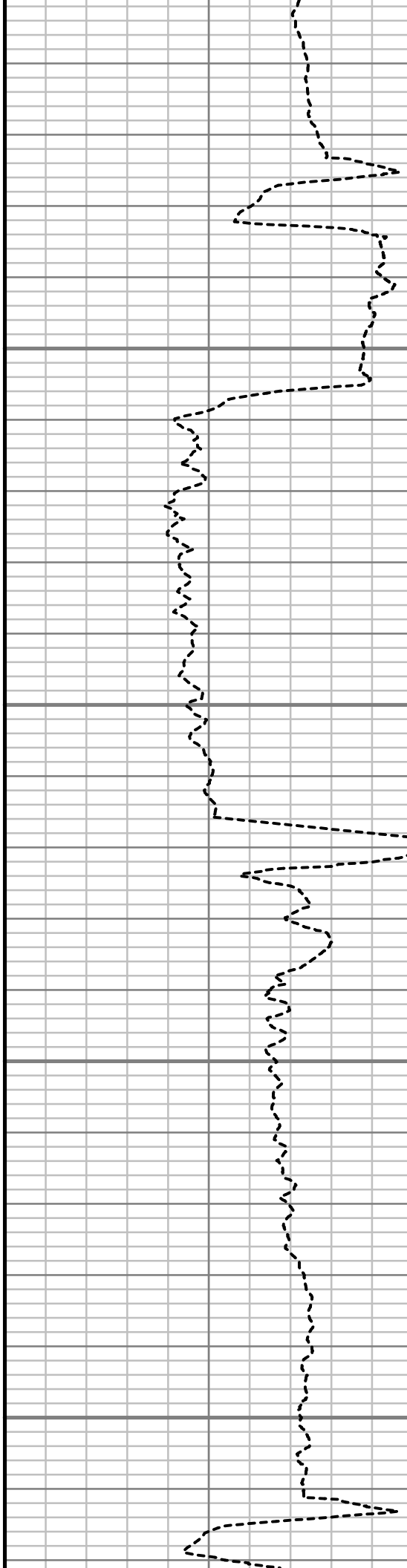


8300

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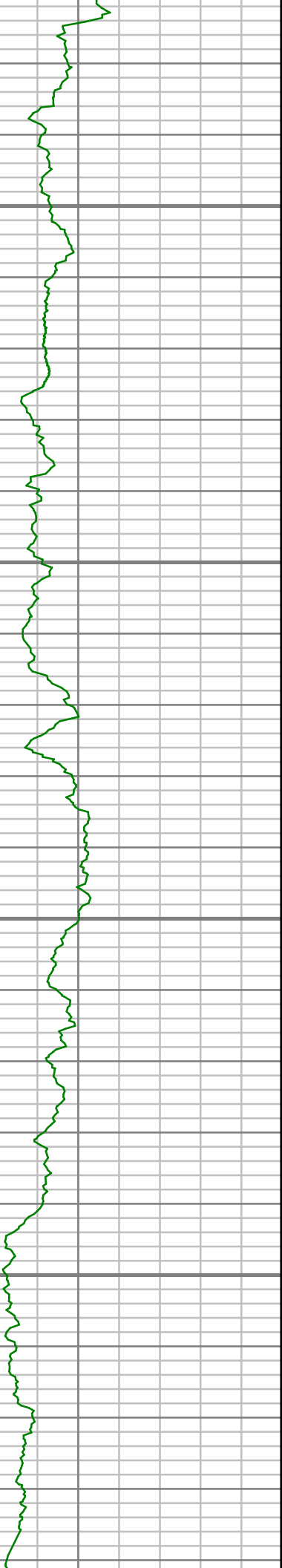
8400

8450



S: 105 MD: 8307.00 ft Inc:
92.08 deg Az: 179.59 deg TVD:
7356.57 ft

S: 106 MD: 8400.00 ft Inc:
92.09 deg Az: 179.33 deg TVD:
7353.19 ft



8500

8550

8600

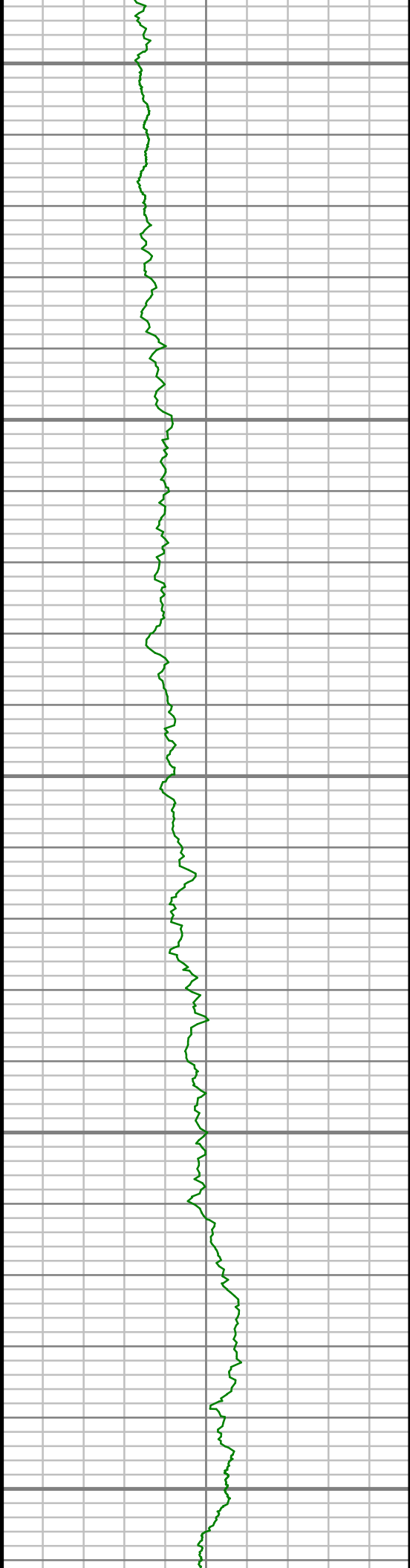
8650



S: 107 MD: 8493.00 ft Inc:
93.05 deg Az: 179.89 deg TVD:
7349.02 ft

S: 108 MD: 8586.00 ft Inc:
90.74 deg Az: 180.19 deg TVD:
7345.94 ft

S: 109 MD: 8679.00 ft Inc:
90.64 deg Az: 179.28 deg TVD:
7344.82 ft



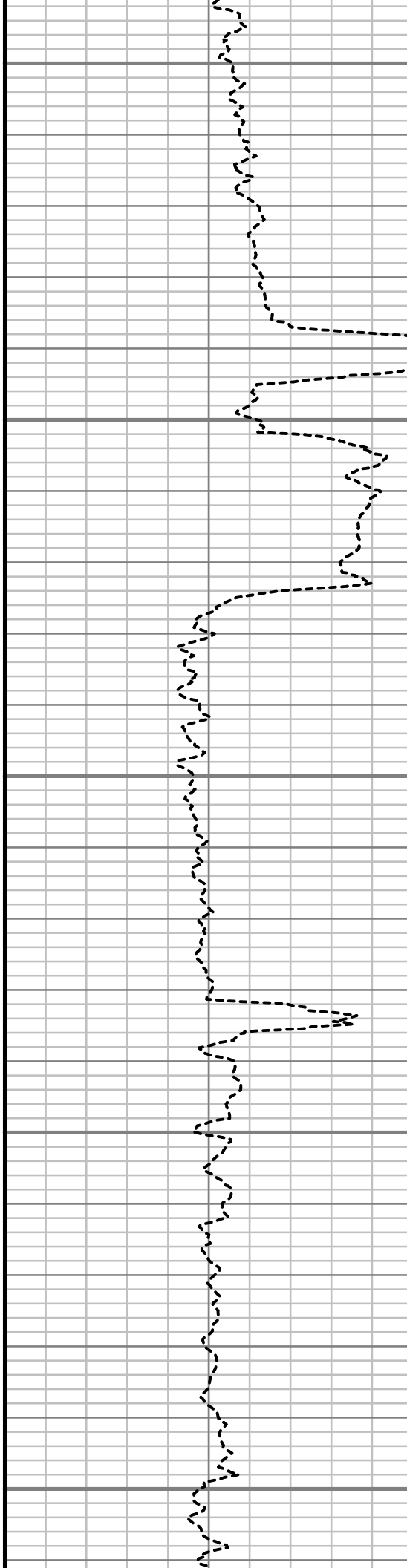
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8800

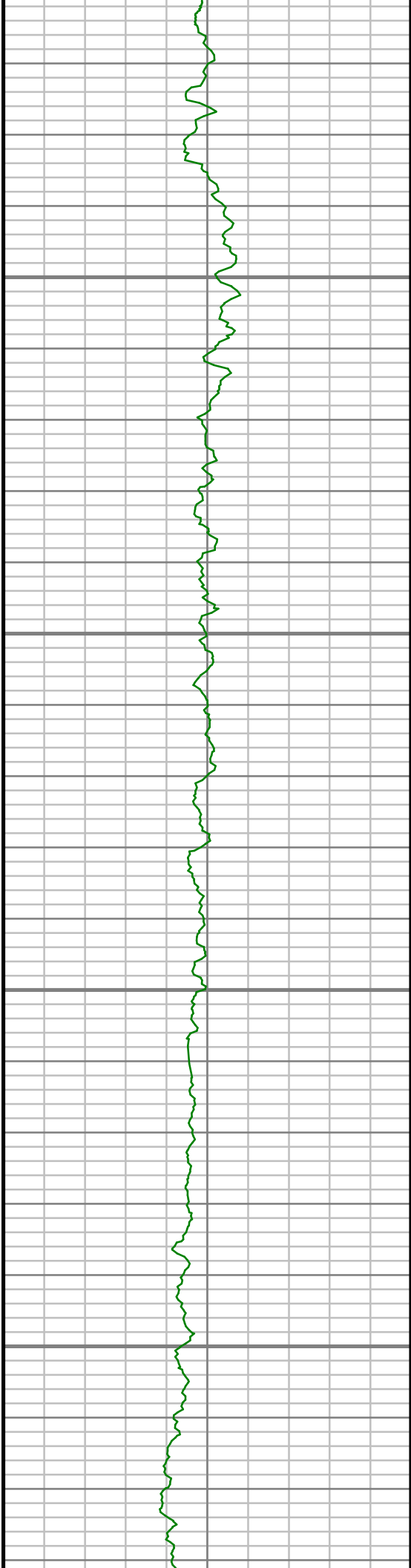
8850

8900



S: 110 MD: 8772.00 ft Inc:
89.97 deg Az: 180.75 deg TVD:
7344.33 ft

S: 111 MD: 8865.00 ft Inc:
90.54 deg Az: 179.99 deg TVD:
7343.92 ft

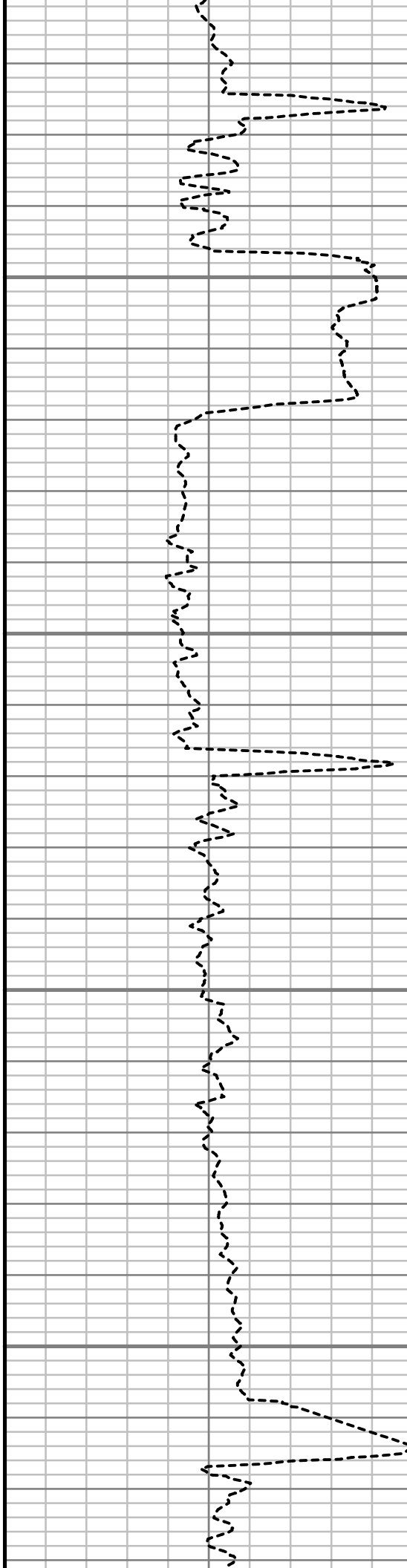


8950

9000

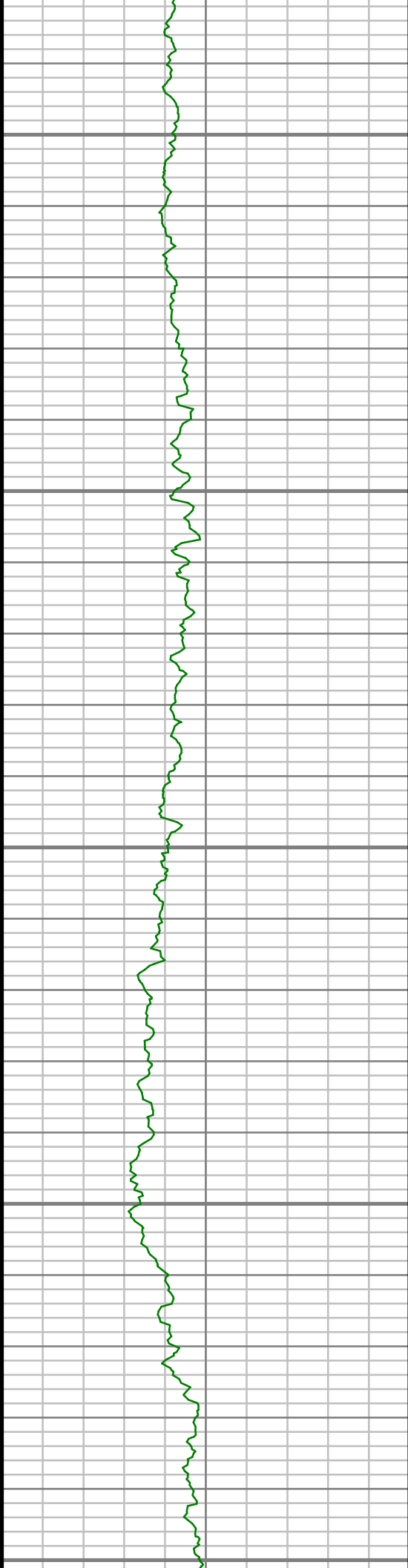
9050

9100



S: 112 MD: 8957.00 ft Inc:
88.42 deg Az: 180.22 deg TVD:
7344.76 ft

S: 113 MD: 9050.00 ft Inc:
89.56 deg Az: 182.14 deg TVD:
7346.39 ft



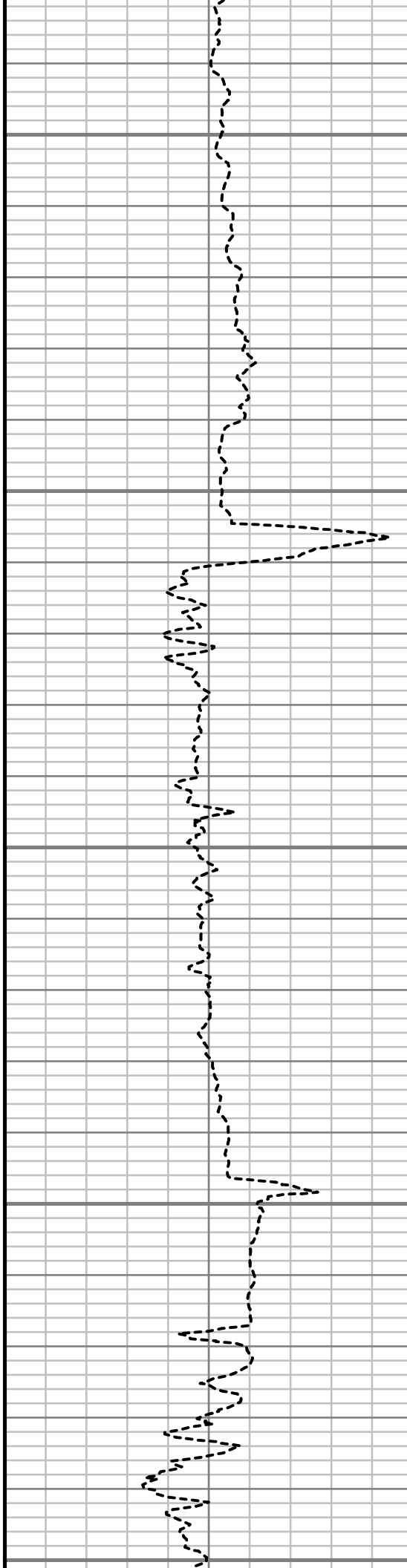
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9200

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9300

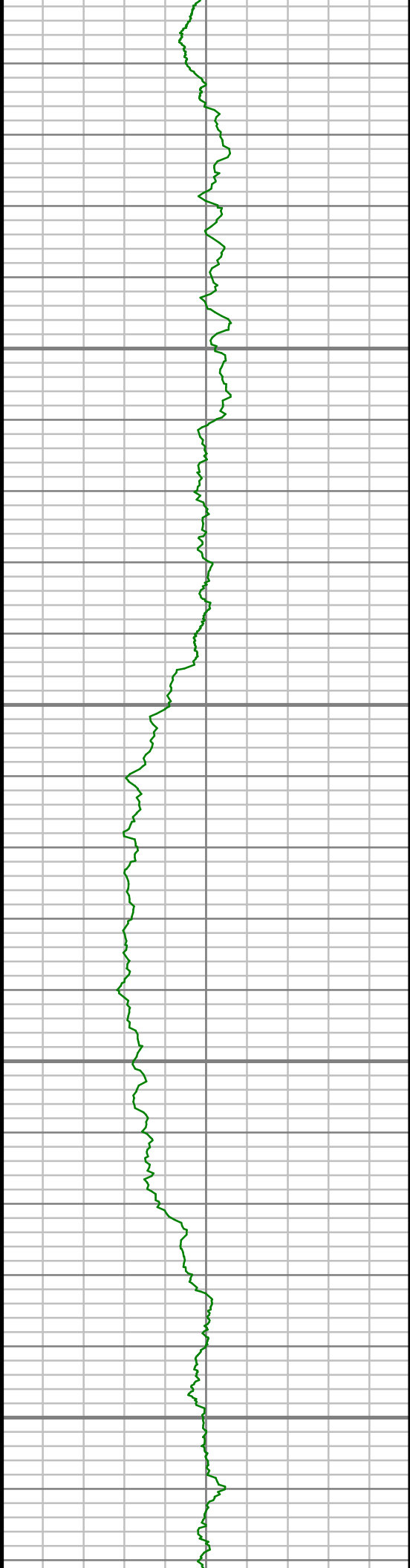
9350



S: 114 MD: 9143.00 ft Inc:
89.09 deg Az: 181.24 deg TVD:
7347.48 ft

S: 115 MD: 9236.00 ft Inc:
88.79 deg Az: 180.70 deg TVD:
7349.20 ft

S: 116 MD: 9329.00 ft Inc:
88.18 deg Az: 180.85 deg TVD:
7351.65 ft

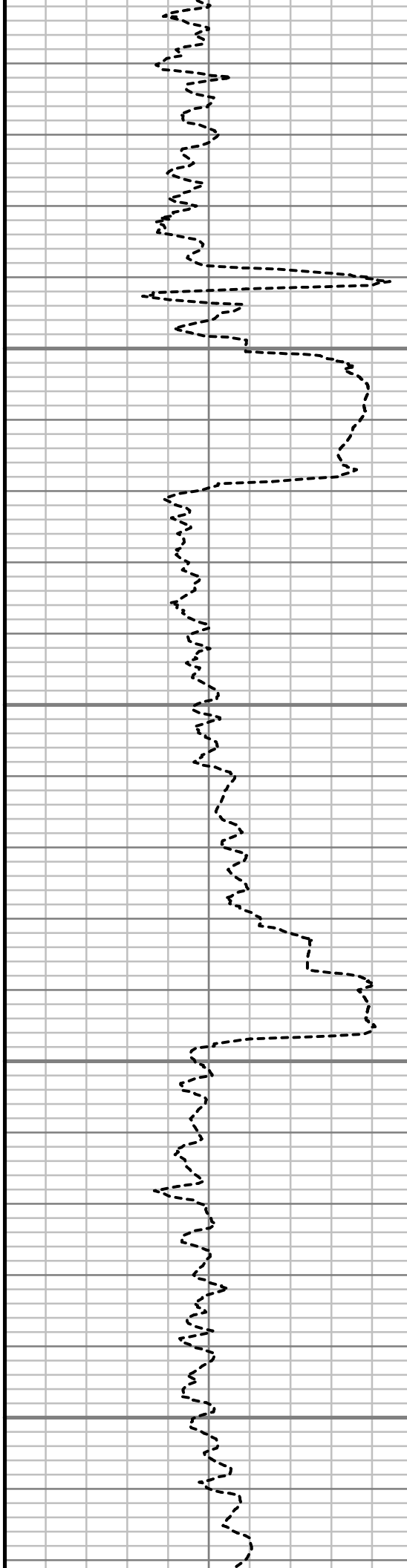


9400

9450

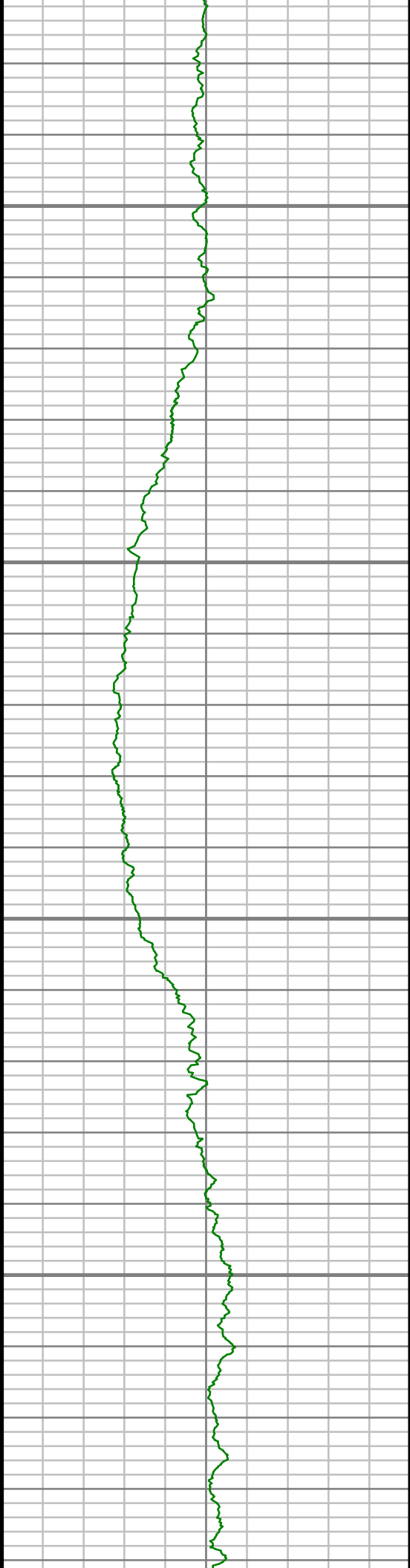
9500

9550



S: 117 MD: 9422.00 ft Inc:
89.39 deg Az: 180.93 deg TVD:
7353.62 ft

S: 118 MD: 9517.00 ft Inc:
91.14 deg Az: 180.93 deg TVD:
7353.17 ft

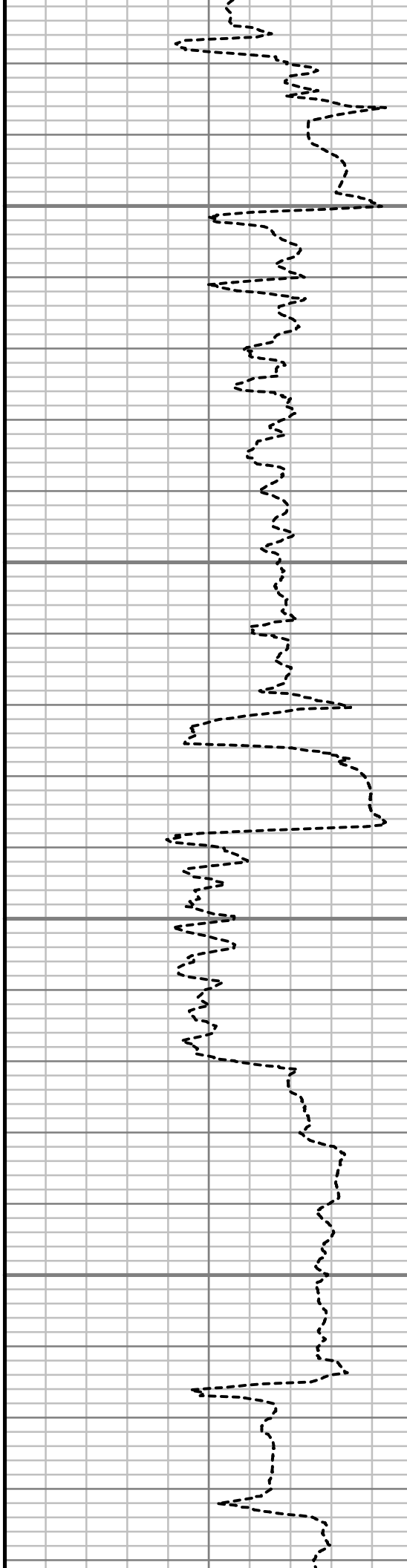


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9650

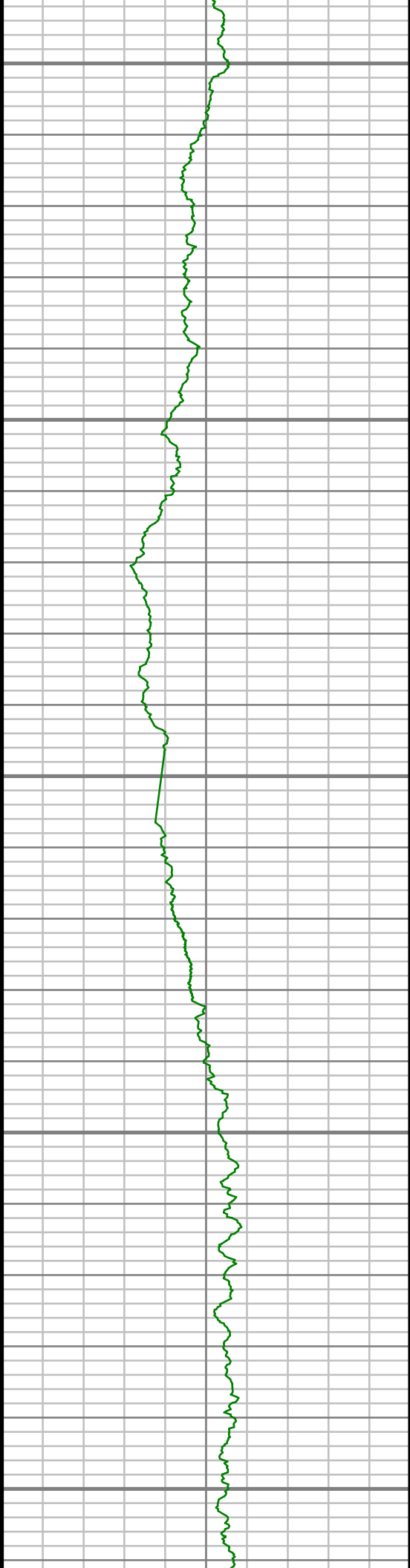
9700

9750



S: 119 MD: 9612.00 ft Inc:
89.97 deg Az: 179.86 deg TVD:
7352.26 ft

S: 120 MD: 9707.00 ft Inc:
91.41 deg Az: 180.85 deg TVD:
7351.11 ft



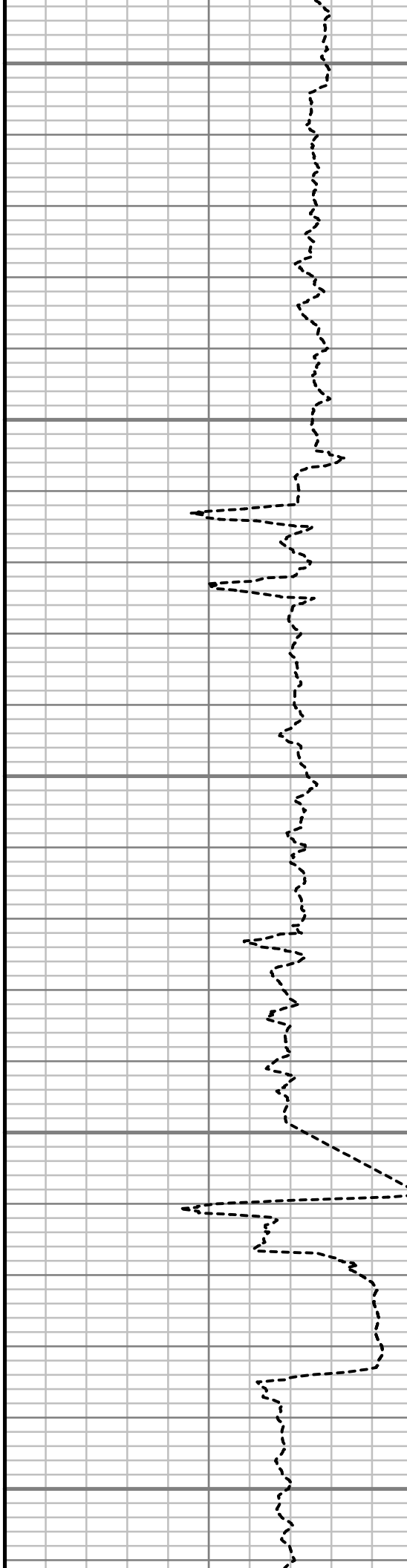
9800

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9900

9950

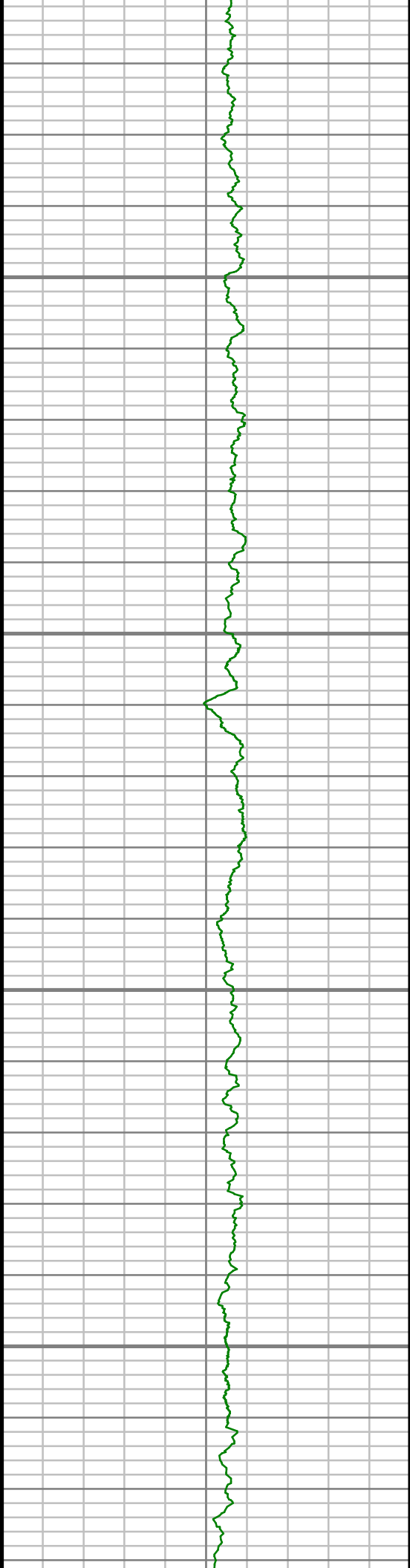
10000



S: 121 MD: 9802.00 ft Inc:
91.18 deg Az: 180.74 deg TVD:
7348.97 ft

S: 122 MD: 9896.00 ft Inc:
91.41 deg Az: 179.06 deg TVD:
7346.85 ft

S: 123 MD: 9991.00 ft Inc:
89.93 deg Az: 178.56 deg TVD:
7345.73 ft

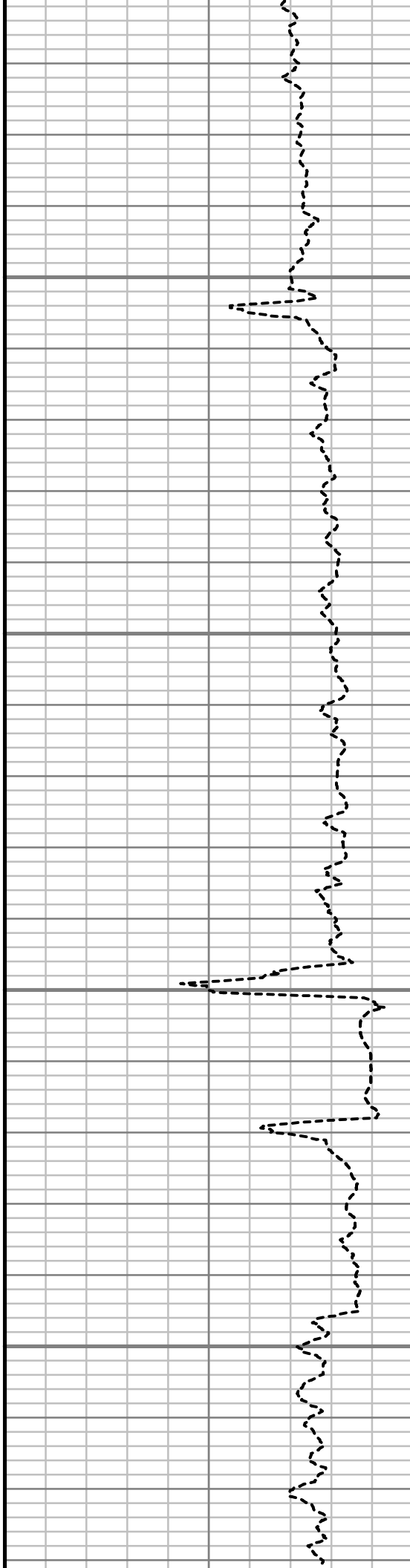


10050

10100

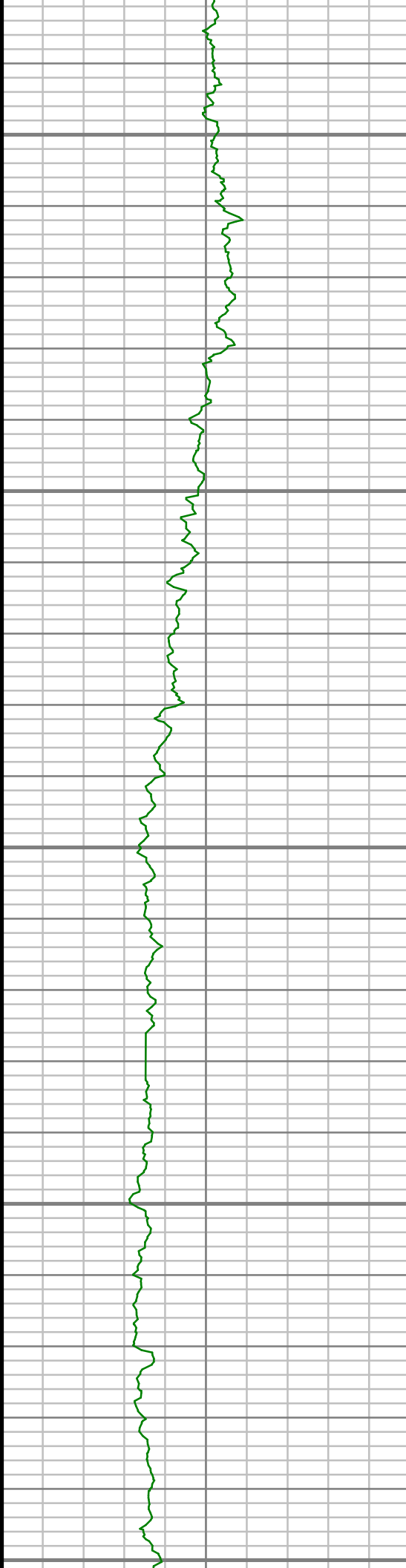
10150

10200



S: 124 MD: 10086.00 ft Inc:
90.30 deg Az: 178.66 deg TVD:
7345.54 ft

S: 125 MD: 10181.00 ft Inc:
90.27 deg Az: 180.06 deg TVD:
7345.06 ft



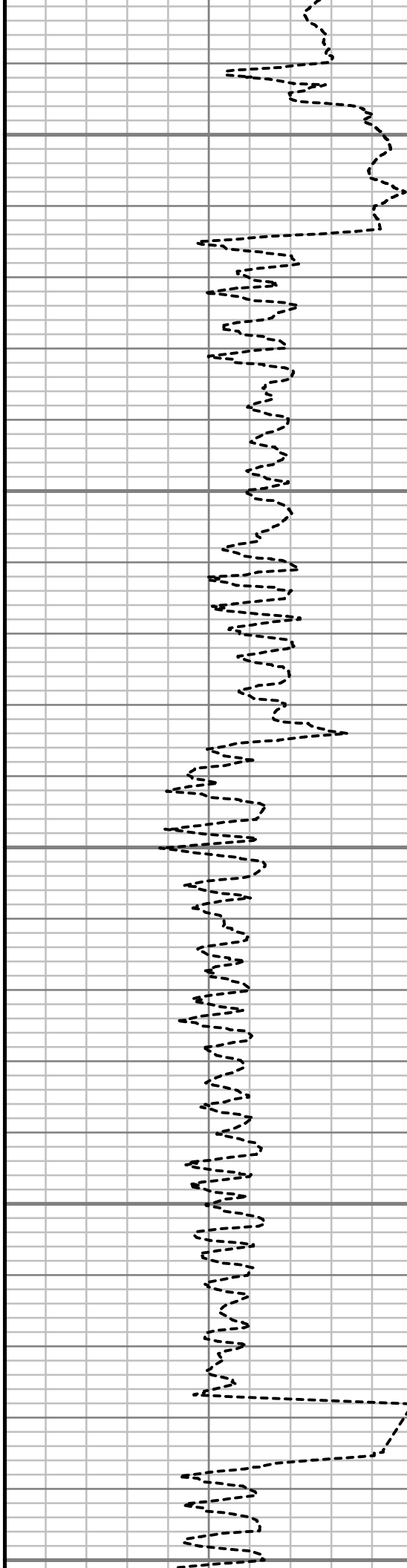
10250

10300

10350

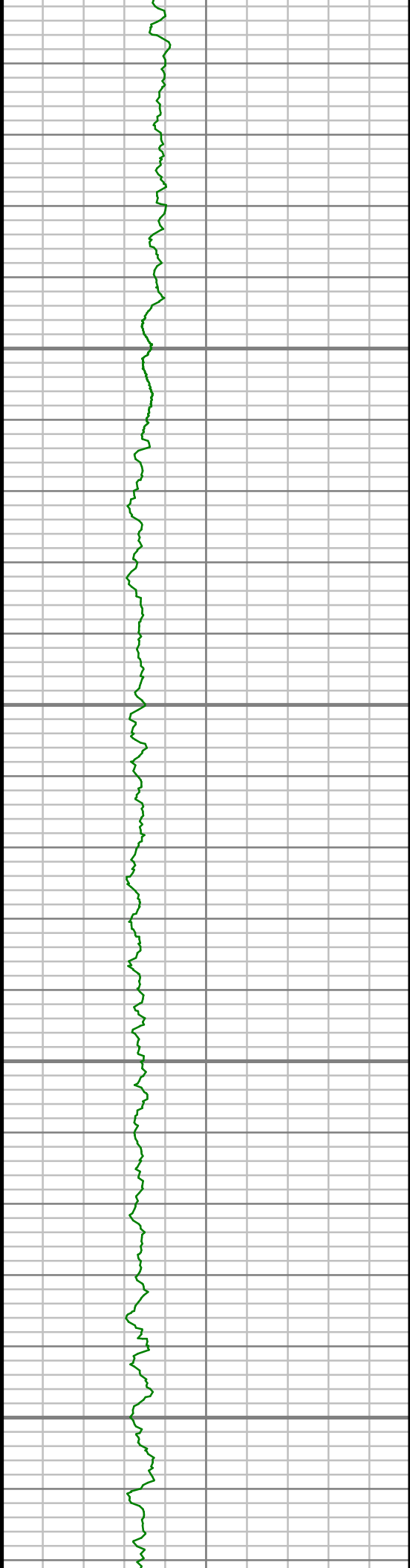
10400

10450



S: 126 MD: 10276.00 ft Inc:
88.99 deg Az: 180.76 deg TVD:
7345.68 ft

S: 127 MD: 10371.00 ft Inc:
89.46 deg Az: 179.90 deg TVD:
7346.96 ft

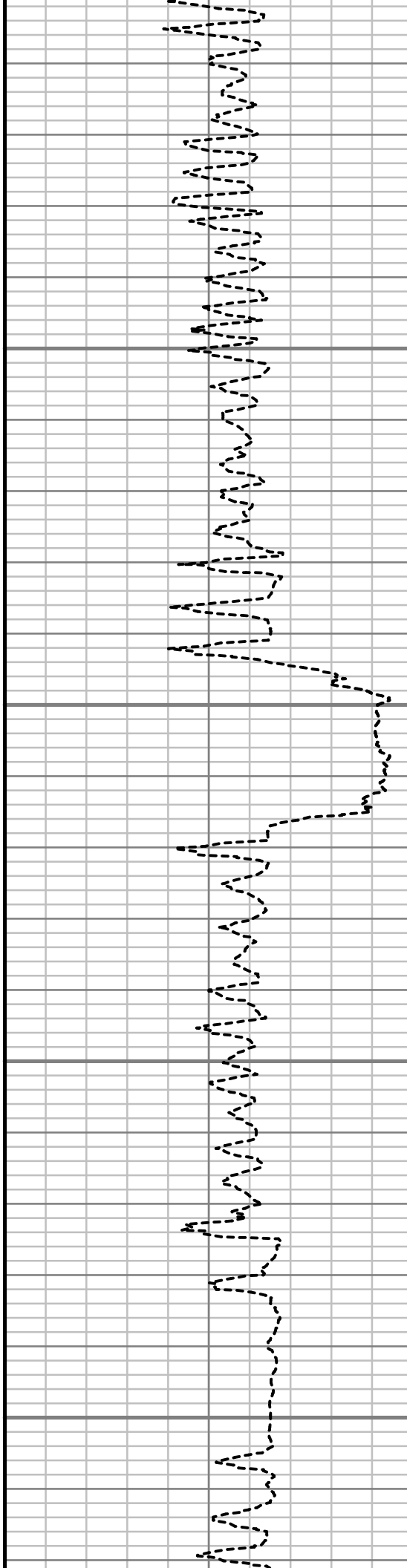


10500

10550

10600

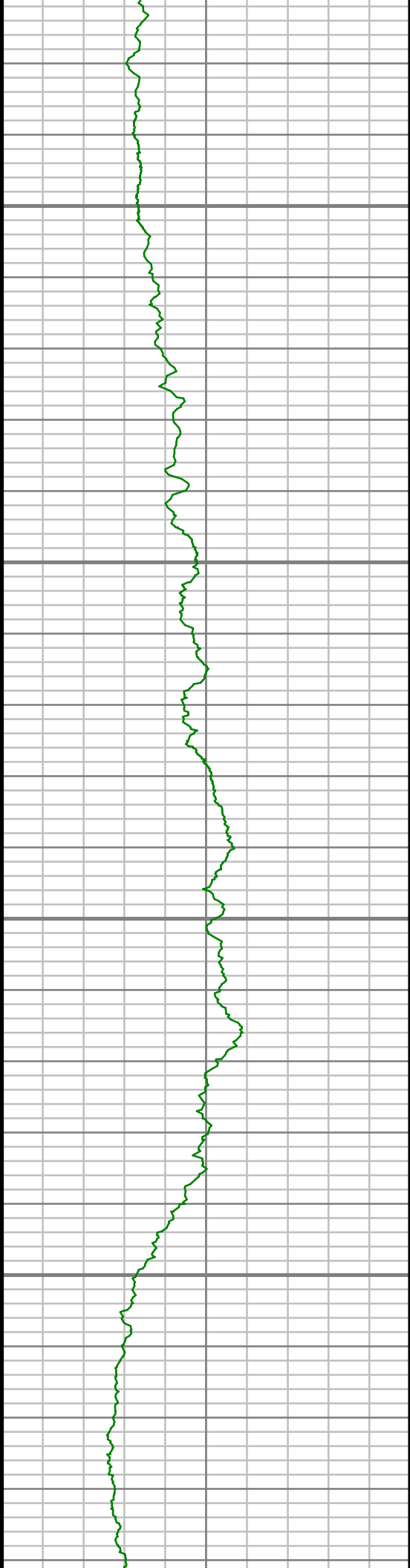
10650



S: 128 MD: 10466.00 ft Inc:
90.10 deg Az: 178.45 deg TVD:
7347.33 ft

S: 129 MD: 10560.00 ft Inc:
90.13 deg Az: 179.51 deg TVD:
7347.13 ft

S: 130 MD: 10655.00 ft Inc:
90.64 deg Az: 179.17 deg TVD:
7346.49 ft

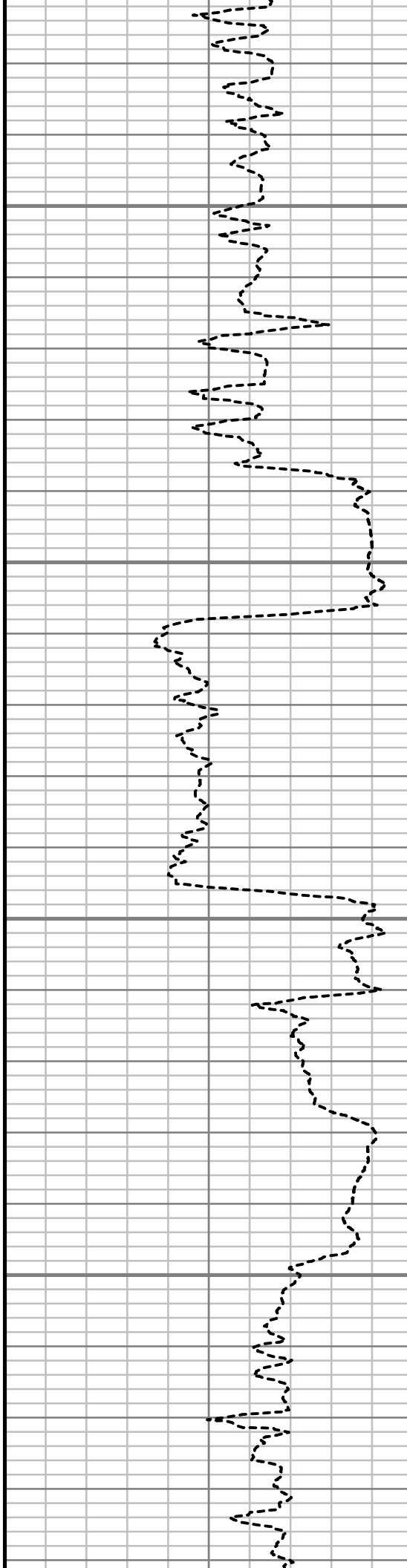


10700

10750

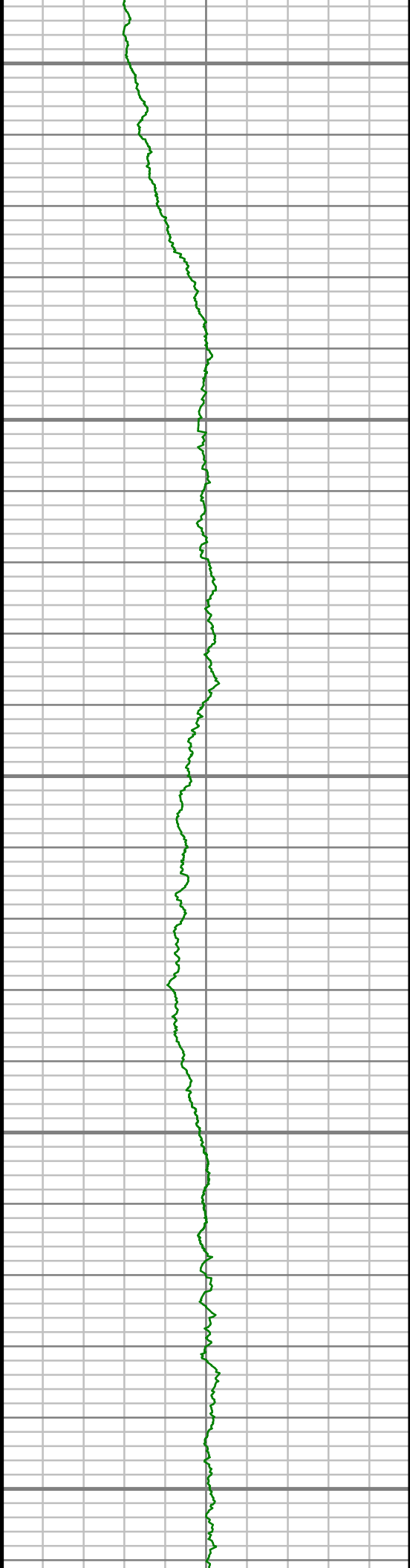
10800

10850



S: 131 MD: 10750.00 ft Inc:
89.03 deg Az: 180.04 deg TVD:
7346.77 ft

S: 132 MD: 10845.00 ft Inc:
88.99 deg Az: 179.97 deg TVD:
7348.42 ft



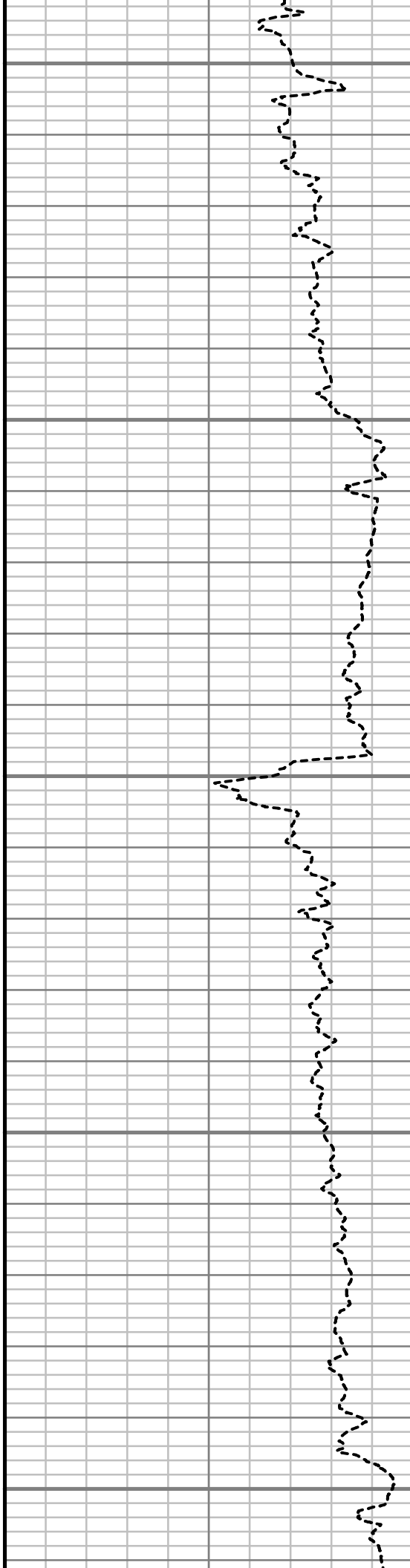
10900

10950

11000

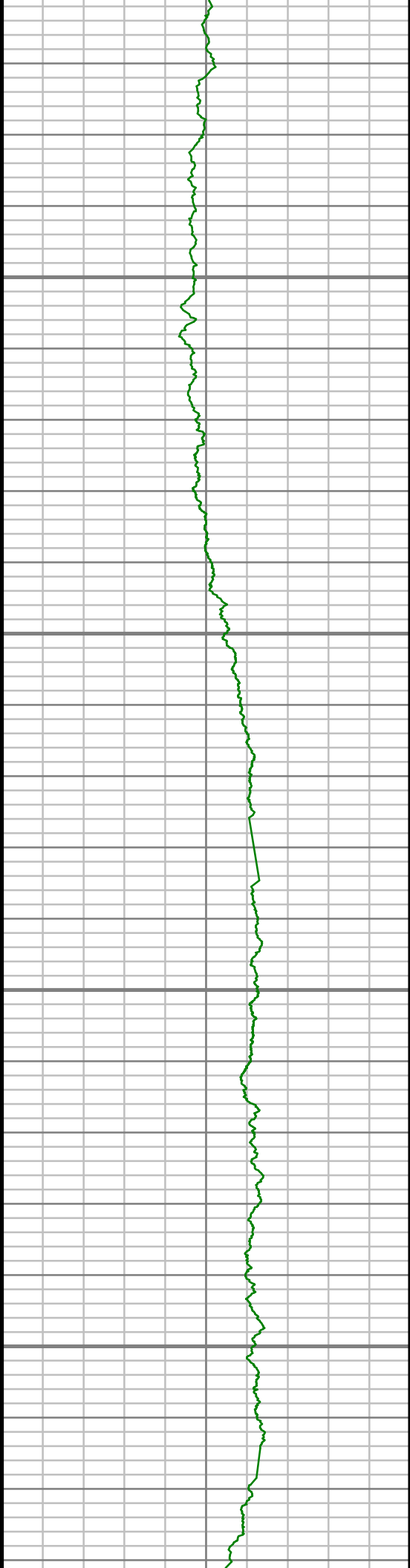
11050

11100



S: 133 MD: 10940.00 ft Inc:
89.13 deg Az: 179.47 deg TVD:
7349.98 ft

S: 134 MD: 11034.00 ft Inc:
89.73 deg Az: 178.24 deg TVD:
7350.92 ft

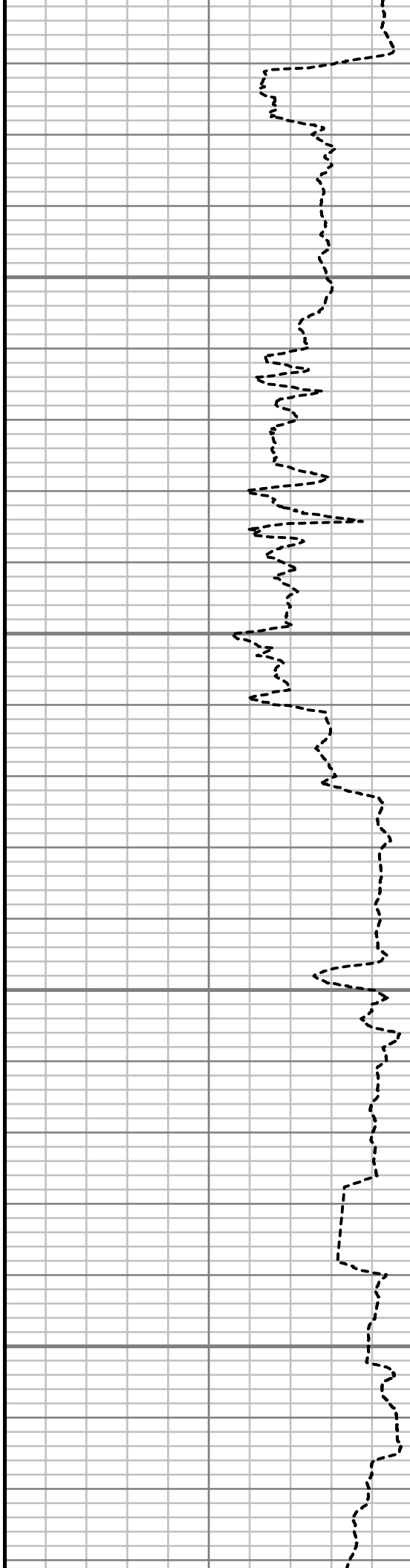


11150

11200

11250

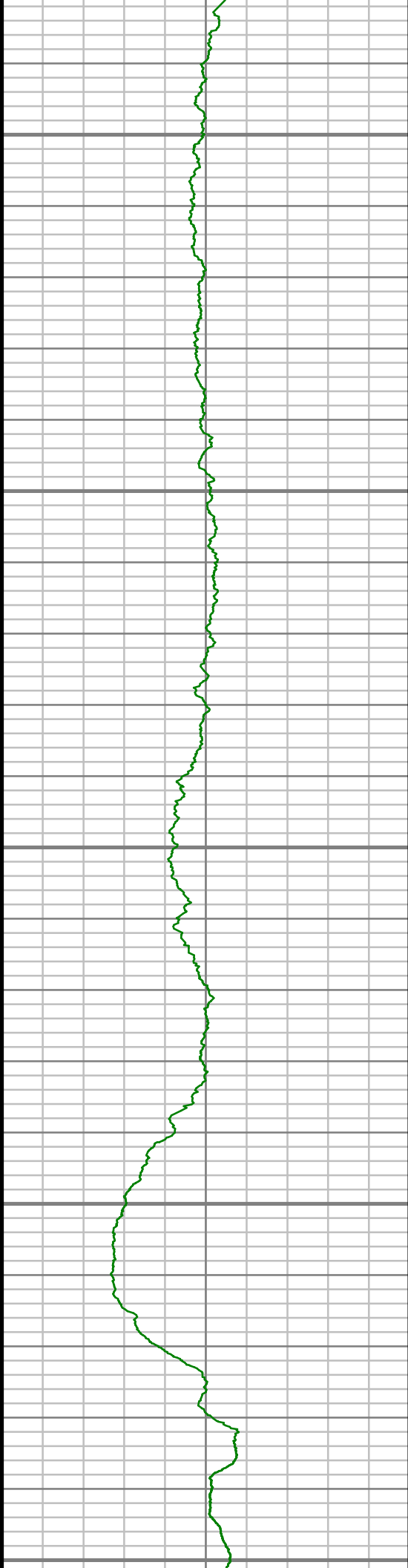
11300



S: 135 MD: 11129.00 ft Inc:
89.80 deg Az: 181.31 deg TVD:
7351.30 ft

S: 136 MD: 11224.00 ft Inc:
89.50 deg Az: 180.16 deg TVD:
7351.89 ft

S: 137 MD: 11319.00 ft Inc:
91.21 deg Az: 180.33 deg TVD:
7351.30 ft



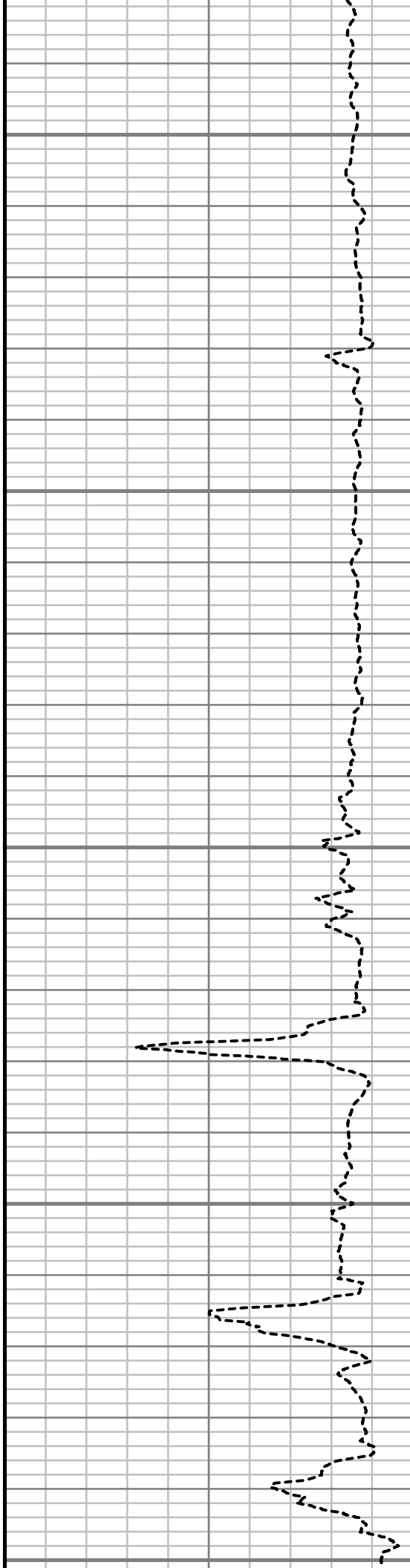
11350

11400

11450

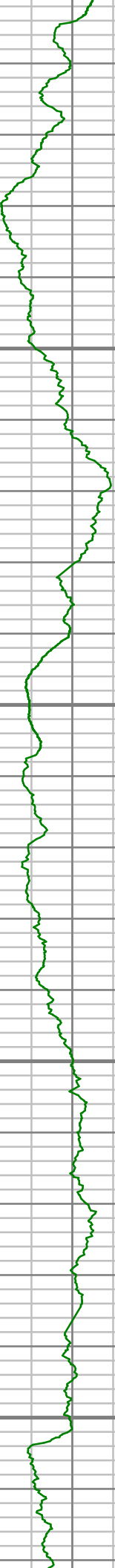
11500

11550



S: 138 MD: 11414.00 ft Inc:
91.58 deg Az: 180.10 deg TVD:
7348.99 ft

S: 139 MD: 11509.00 ft Inc:
92.18 deg Az: 178.79 deg TVD:
7345.87 ft



11600

11650

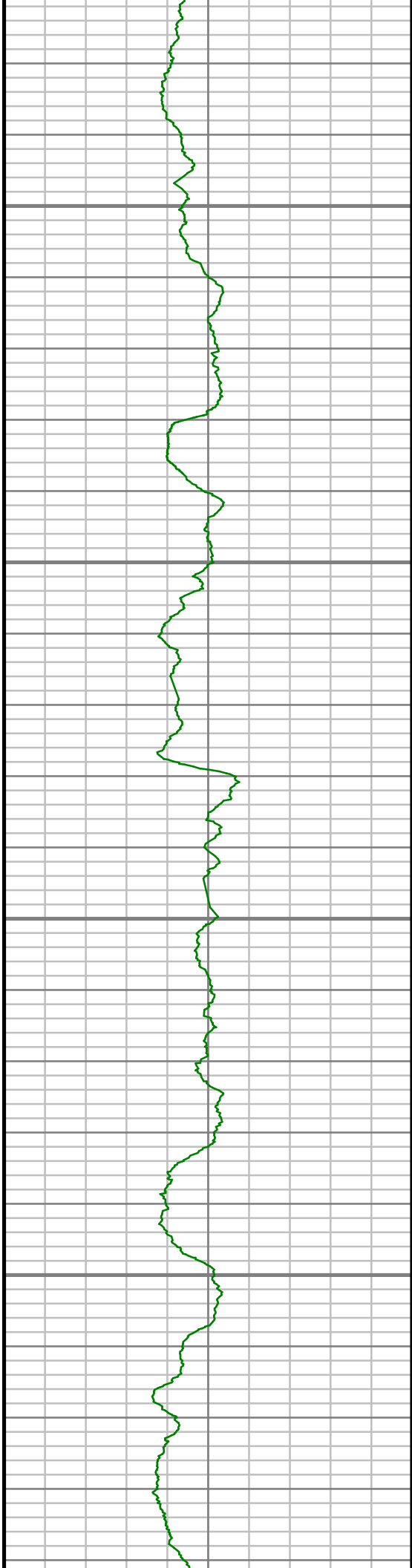
11700

11750



S: 140 MD: 11603.00 ft Inc:
91.08 deg Az: 179.94 deg TVD:
7343.20 ft

S: 141 MD: 11698.00 ft Inc:
90.27 deg Az: 180.13 deg TVD:
7342.08 ft

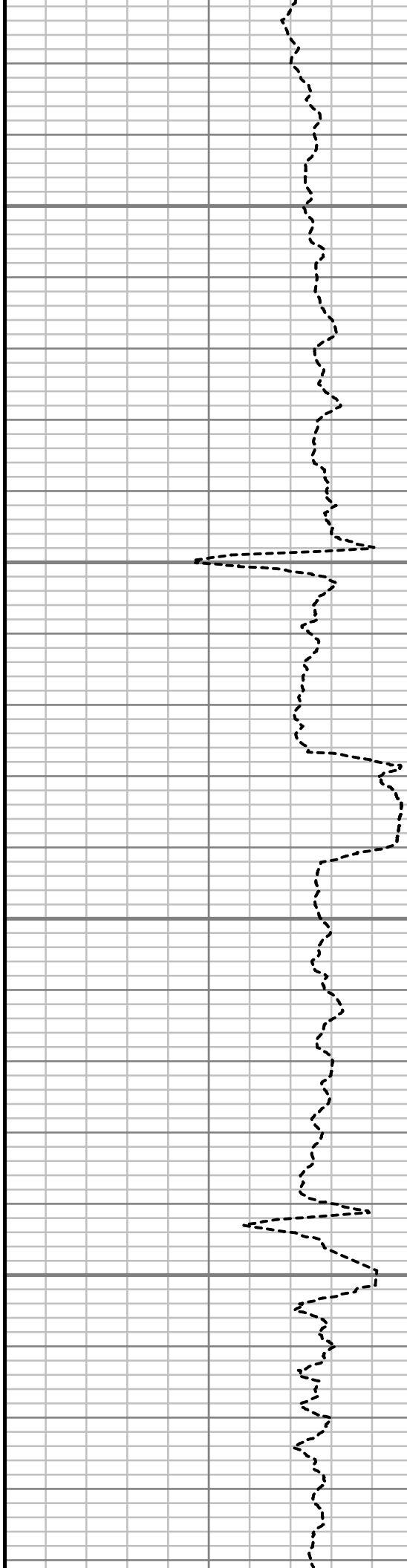


11800

11850

11900

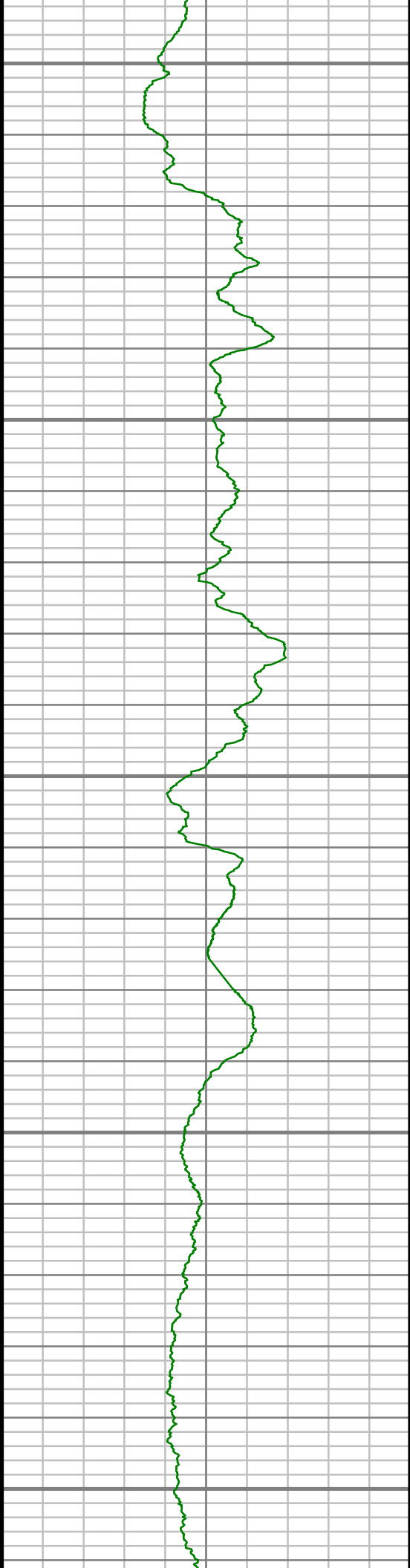
11950



S: 142 MD: 11793.00 ft Inc:
89.87 deg Az: 180.62 deg TVD:
7341.97 ft

S: 143 MD: 11888.00 ft Inc:
89.87 deg Az: 180.91 deg TVD:
7342.20 ft

S: 144 MD: 11982.00 ft Inc:
89.60 deg Az: 180.79 deg TVD:
7342.64 ft



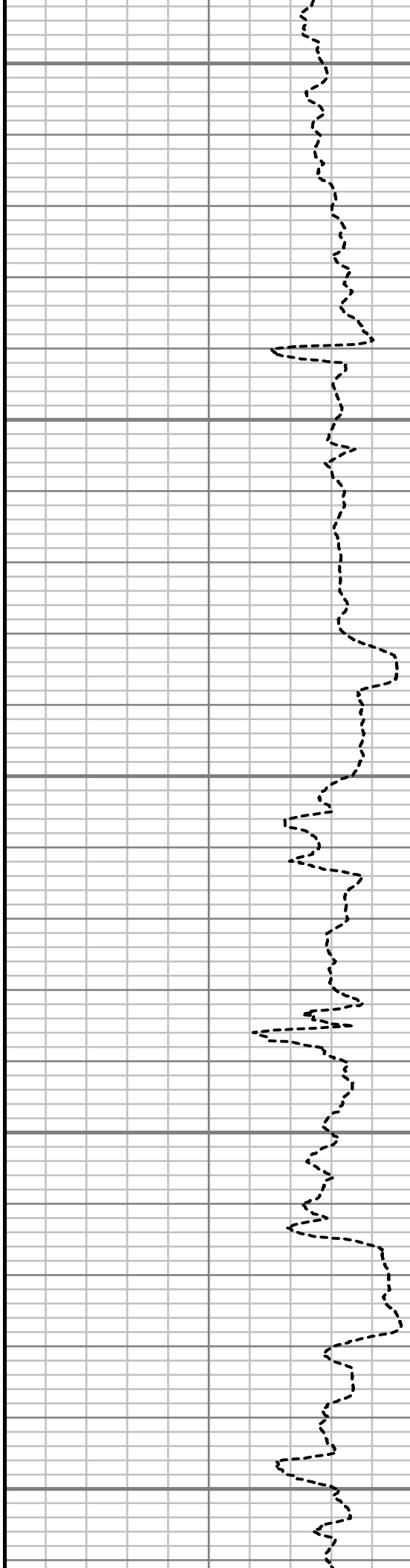
12000

12050

12100

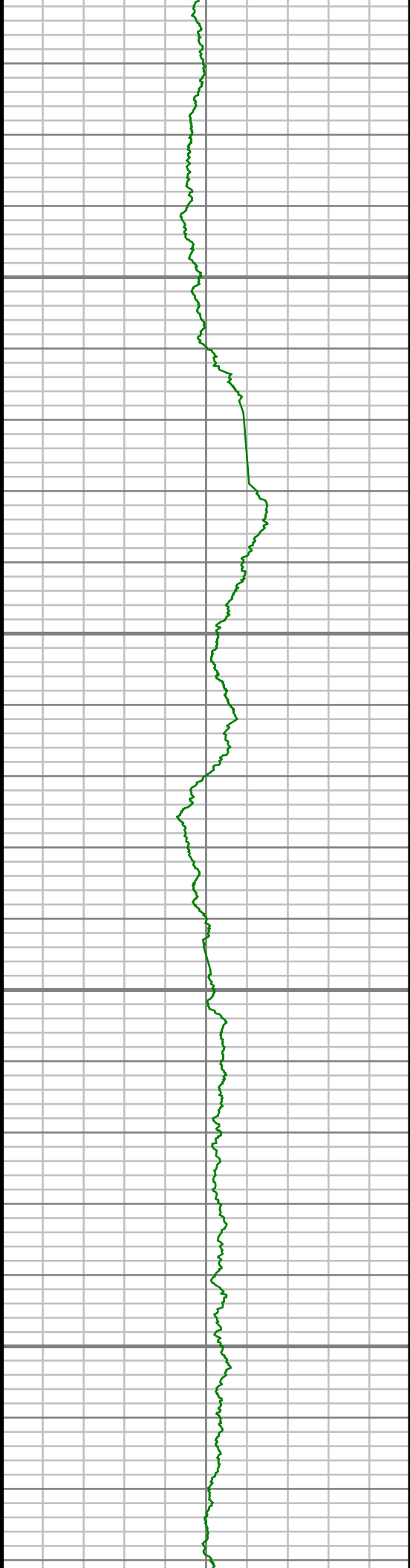
12150

12200



S: 145 MD: 12078.00 ft Inc:
89.93 deg Az: 179.21 deg TVD:
7343.03 ft

S: 146 MD: 12173.00 ft Inc:
89.83 deg Az: 179.20 deg TVD:
7343.23 ft

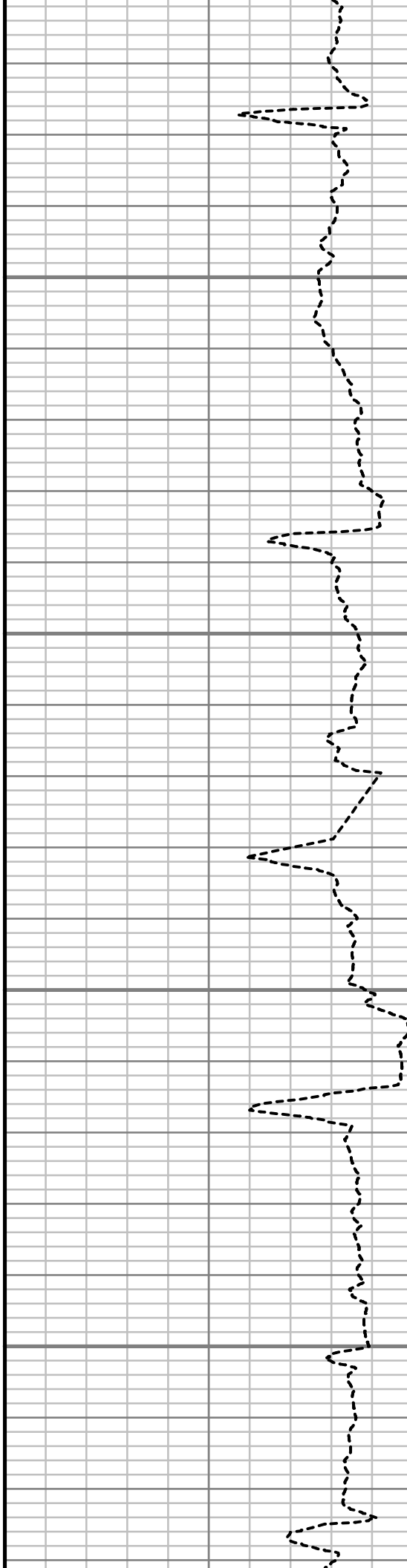


12250

12300

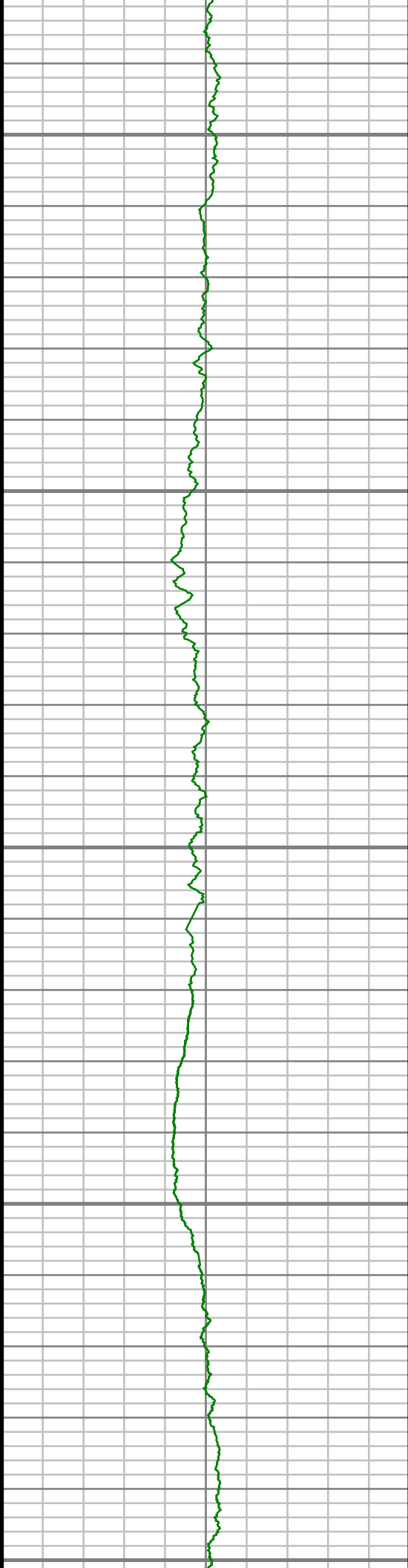
12350

12400



S: 147 MD: 12267.00 ft Inc:
90.13 deg Az: 179.31 deg TVD:
7343.25 ft

S: 148 MD: 12362.00 ft Inc:
88.99 deg Az: 180.29 deg TVD:
7343.98 ft



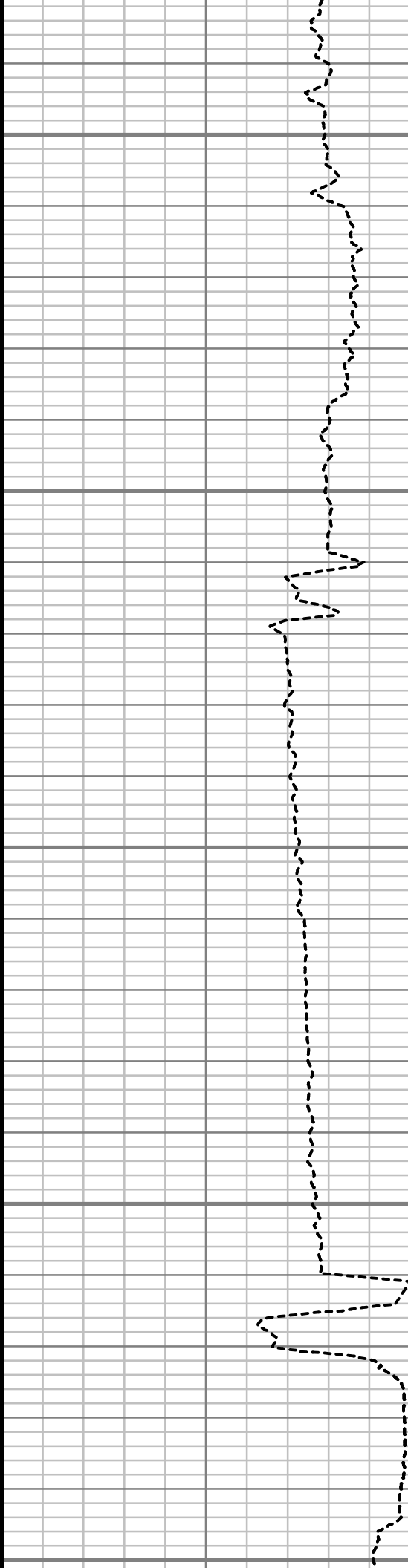
12450

12500

12550

12600

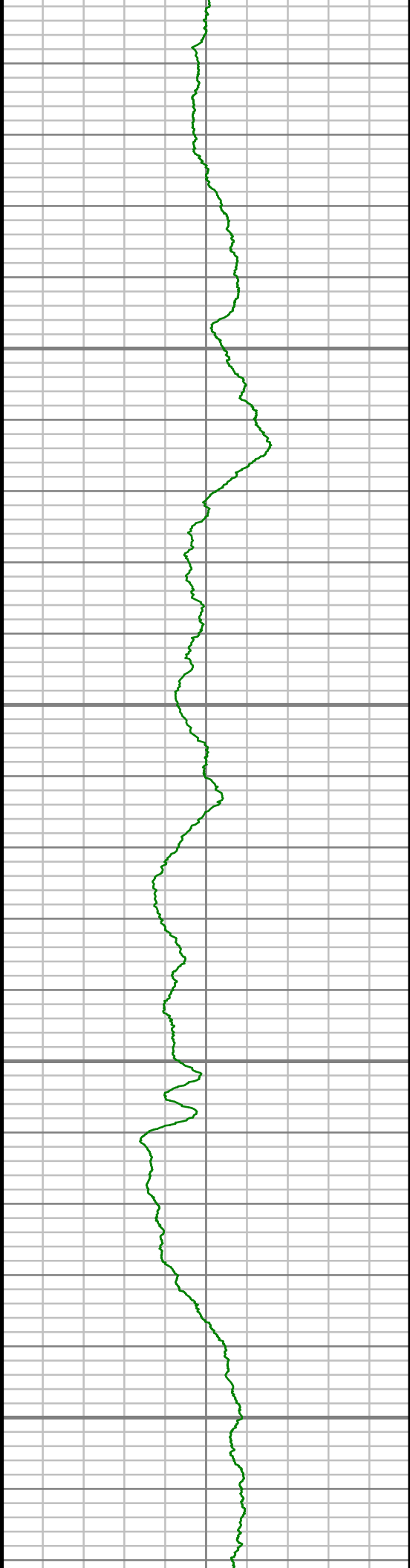
12650



S: 149 MD: 12457.00 ft Inc:
89.70 deg Az: 180.60 deg TVD:
7345.06 ft

S: 150 MD: 12552.00 ft Inc:
89.56 deg Az: 178.74 deg TVD:
7345.68 ft

S: 151 MD: 12647.00 ft Inc:
89.66 deg Az: 182.06 deg TVD:

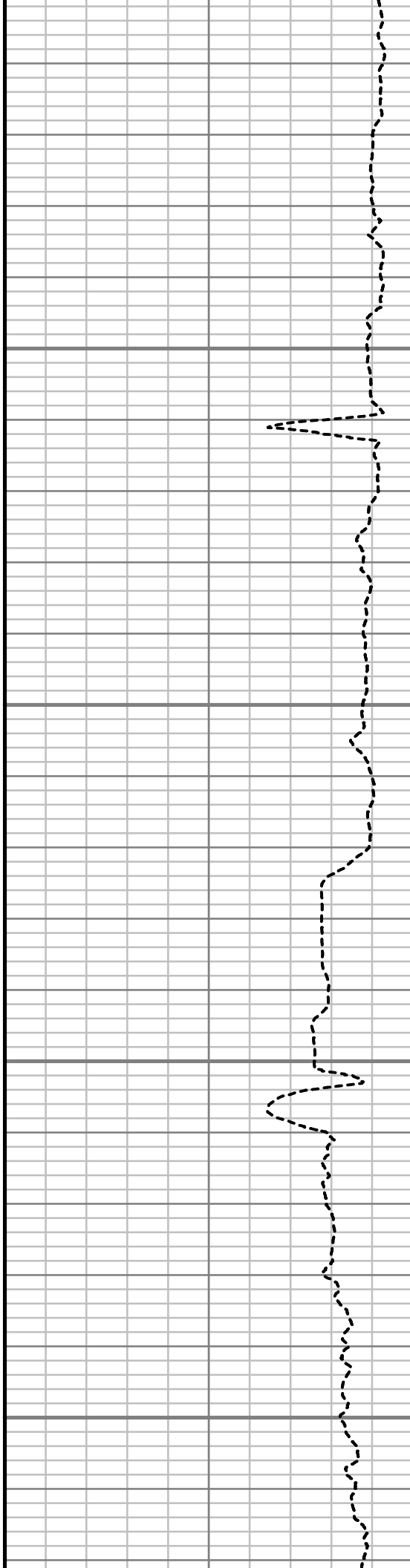


12700

12750

12800

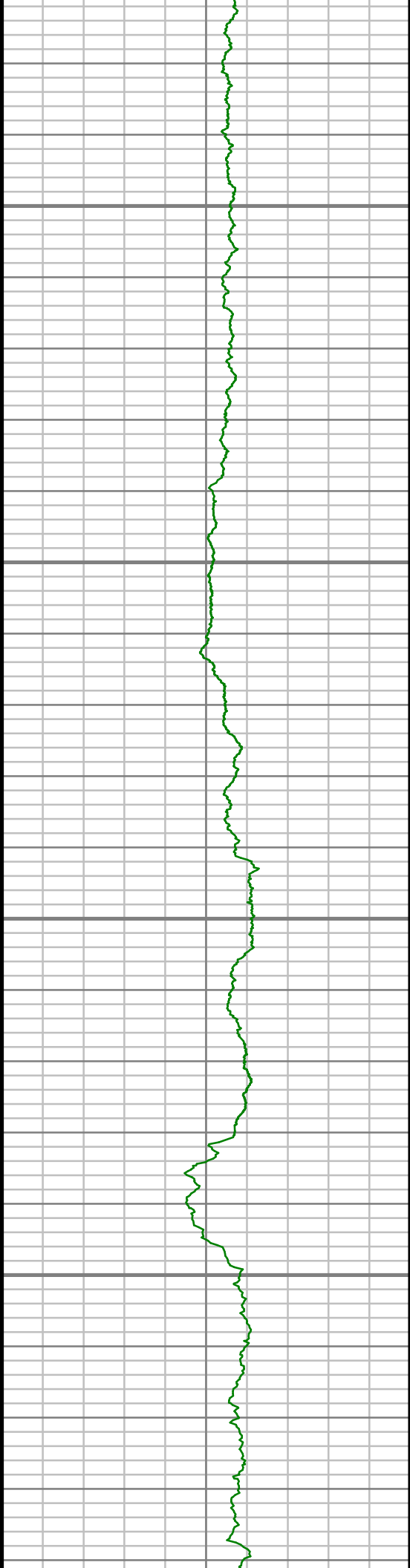
12850



90.34 deg Az: 182.00 deg TVD:
7346.32 ft

S: 152 MD: 12742.00 ft Inc:
90.34 deg Az: 181.12 deg TVD:
7346.32 ft

S: 153 MD: 12836.00 ft Inc:
90.50 deg Az: 180.11 deg TVD:
7345.63 ft

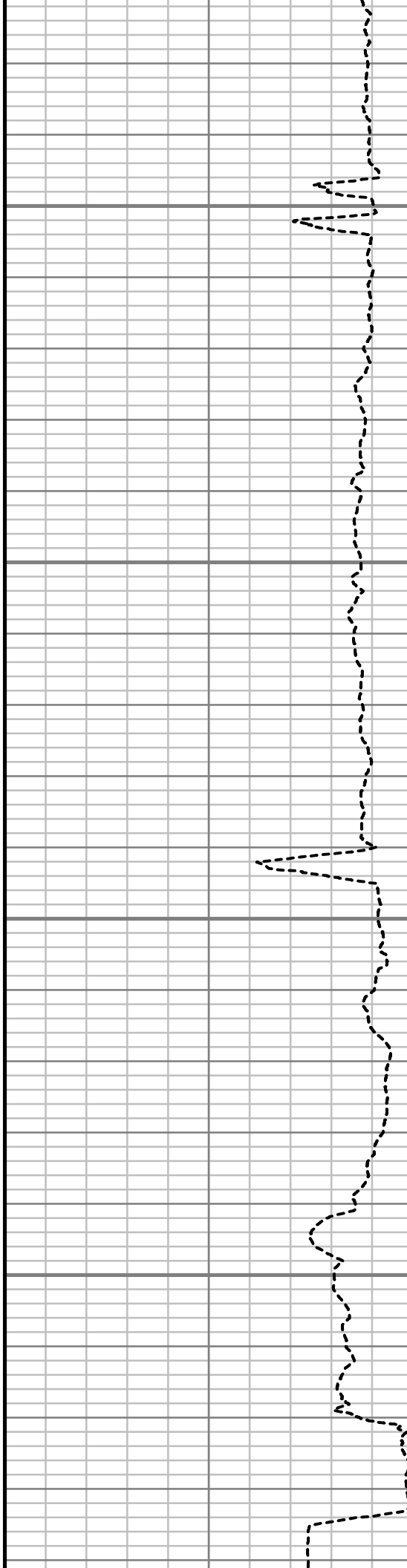


12900

12950

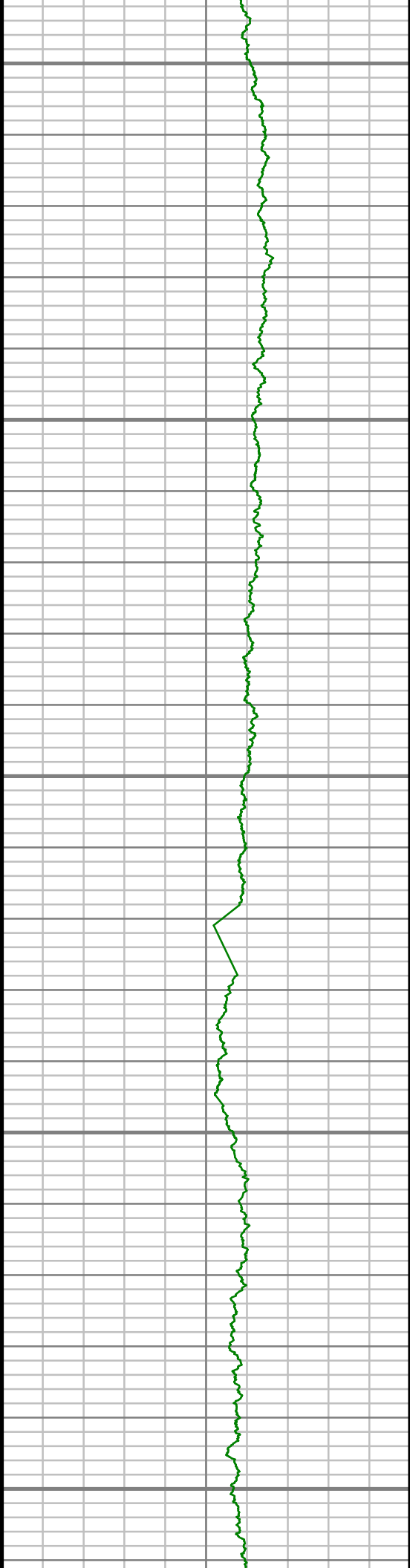
13000

13050



S: 154 MD: 12931.00 ft Inc:
91.55 deg Az: 180.20 deg TVD:
7343.93 ft

S: 155 MD: 13026.00 ft Inc:
92.45 deg Az: 179.48 deg TVD:
7340.62 ft



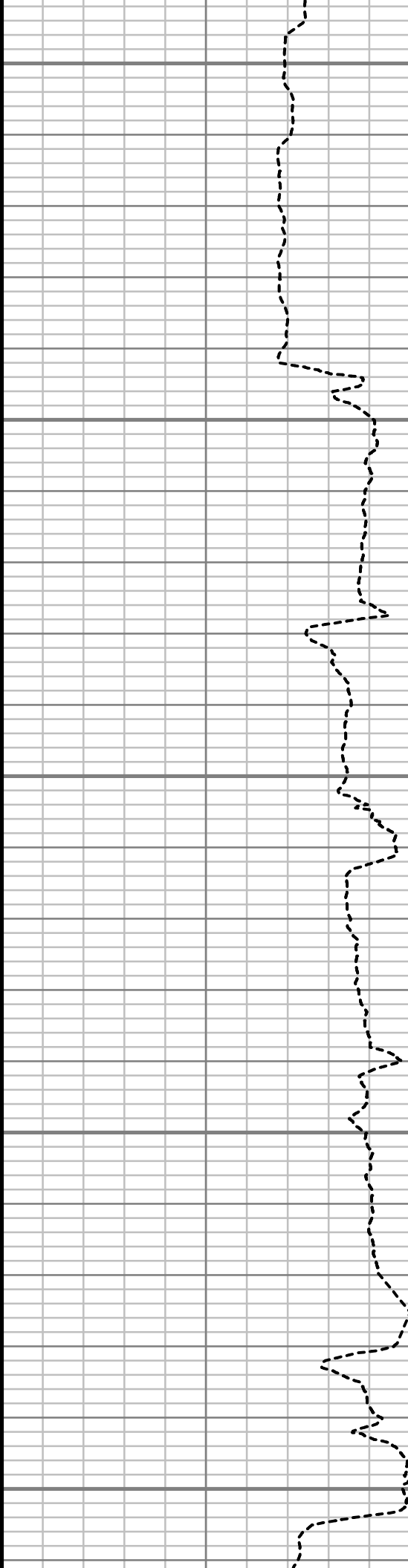
13100

13150

13200

13250

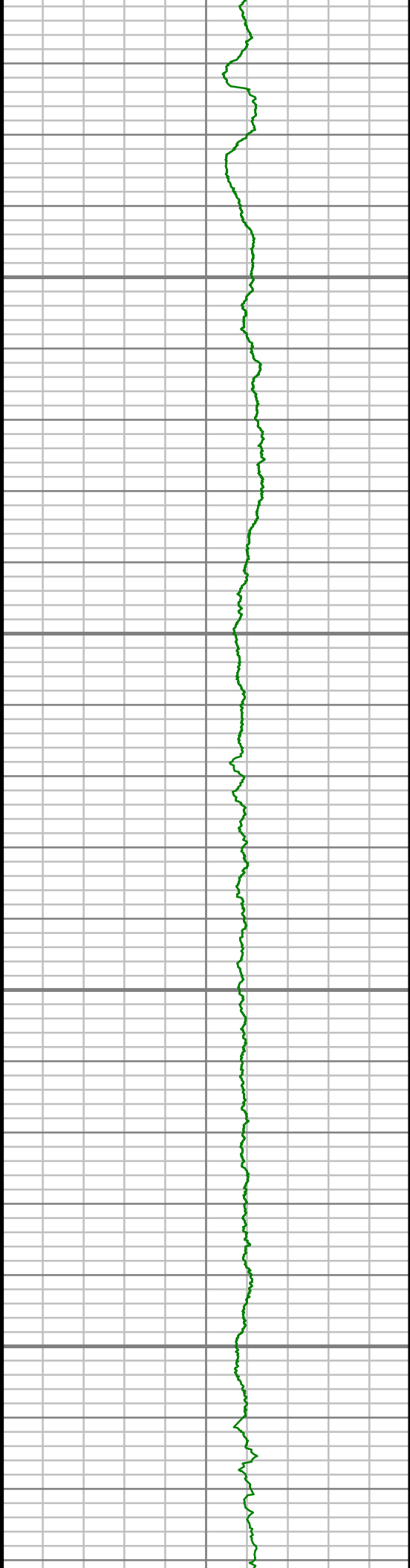
13300



S: 156 MD: 13121.00 ft Inc:
90.94 deg Az: 180.42 deg TVD:
7337.80 ft

S: 157 MD: 13216.00 ft Inc:
90.40 deg Az: 179.93 deg TVD:
7336.69 ft

S: 158 MD: 13310.00 ft Inc:

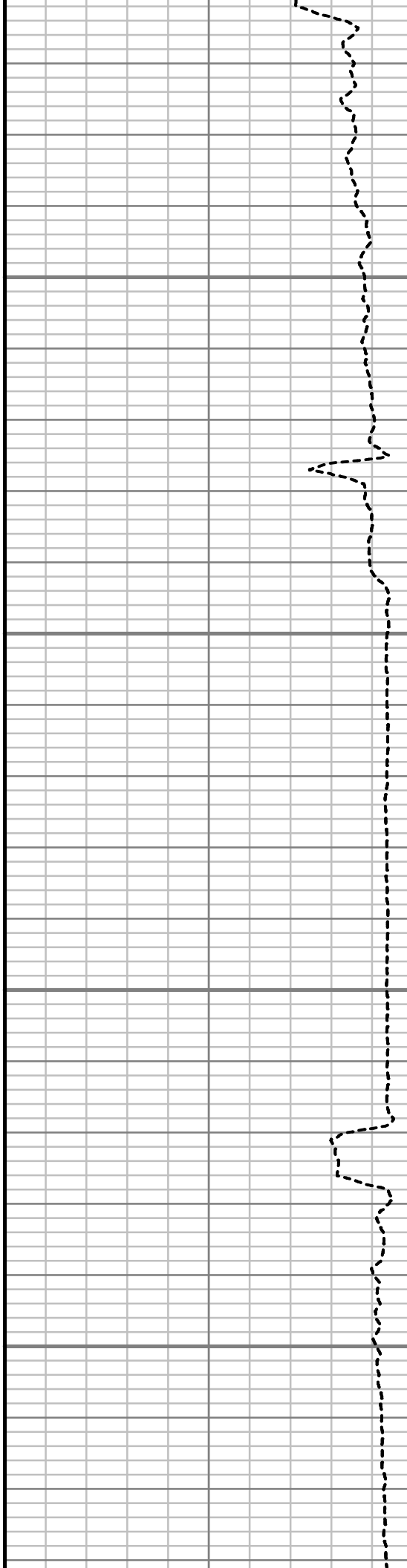


13350

13400

13450

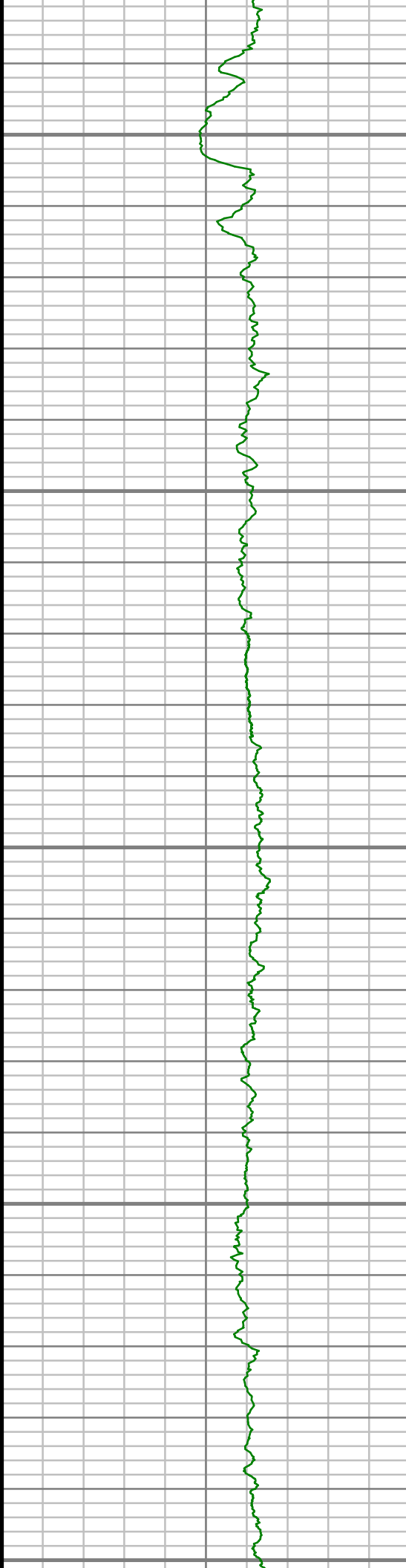
13500



S: 158 MD: 13310.00 ft Inc:
88.93 deg Az: 179.59 deg TVD:
7337.24 ft

S: 159 MD: 13405.00 ft Inc:
89.30 deg Az: 180.12 deg TVD:
7338.71 ft

S: 160 MD: 13500.00 ft Inc:
89.80 deg Az: 180.08 deg TVD:
7339.46 ft



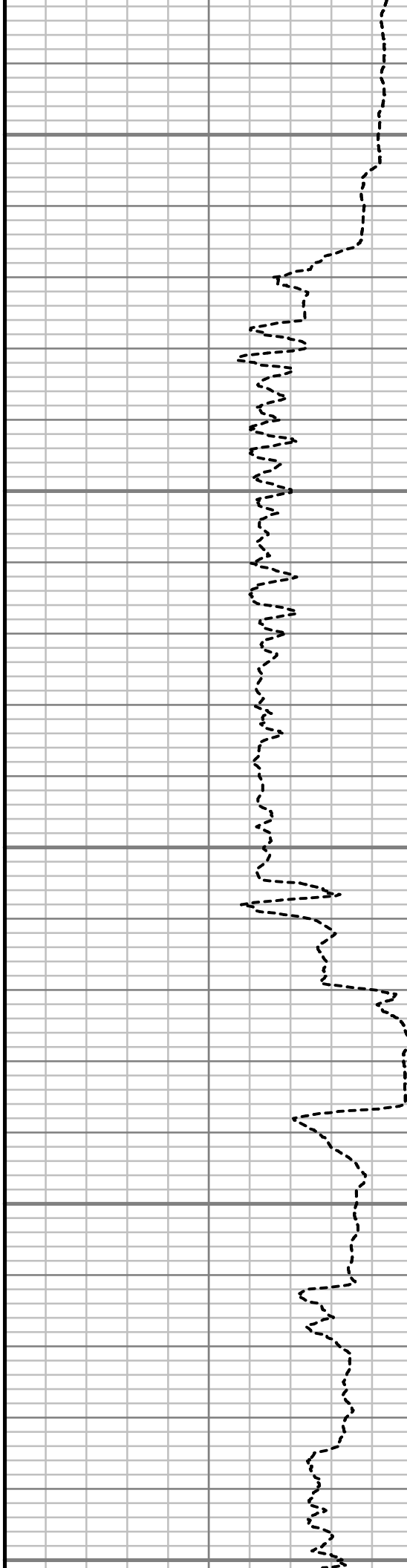
13550

13600

13650

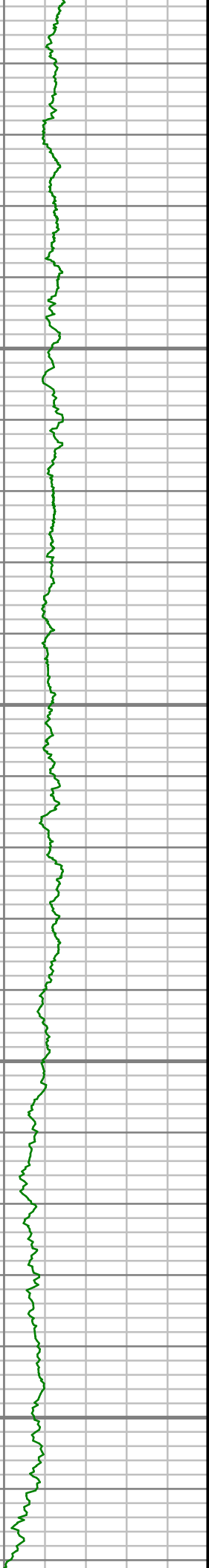
13700

13750



S: 161 MD: 13595.00 ft Inc:
90.54 deg Az: 179.32 deg TVD:
7339.18 ft

S: 162 MD: 13690.00 ft Inc:
89.20 deg Az: 179.75 deg TVD:
7339.40 ft

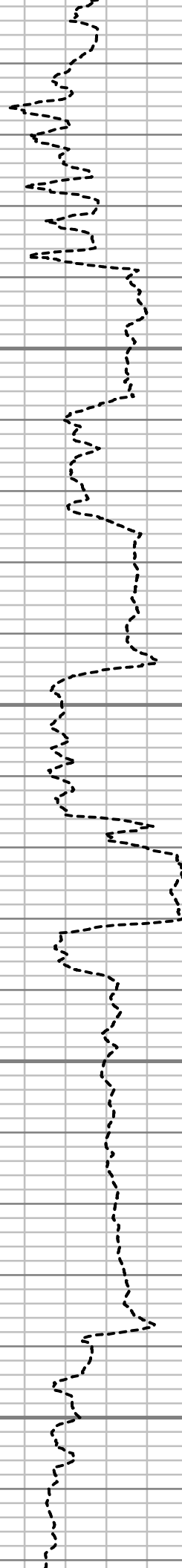


13800

13850

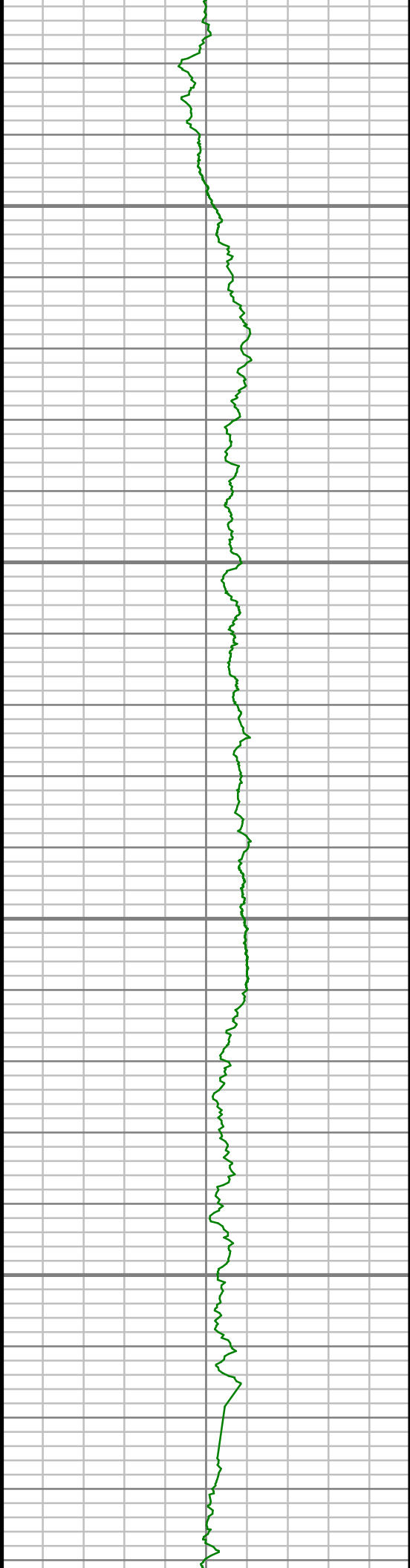
13900

13950



S: 163 MD: 13785.00 ft Inc:
88.79 deg Az: 178.89 deg TVD:
7341.07 ft

S: 164 MD: 13879.00 ft Inc:
88.69 deg Az: 180.86 deg TVD:
7343.14 ft

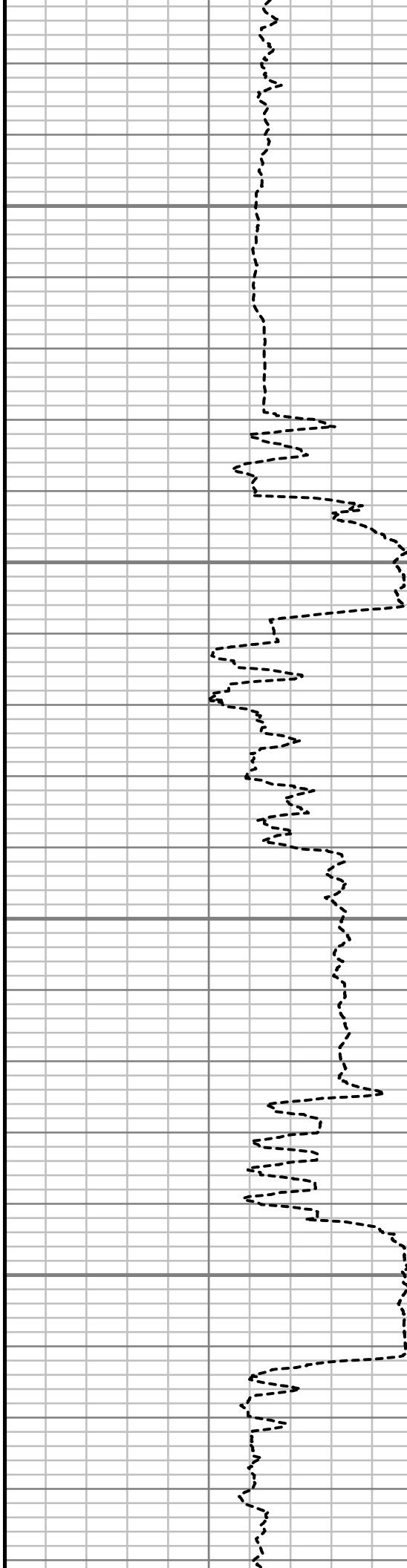


14000

14050

14100

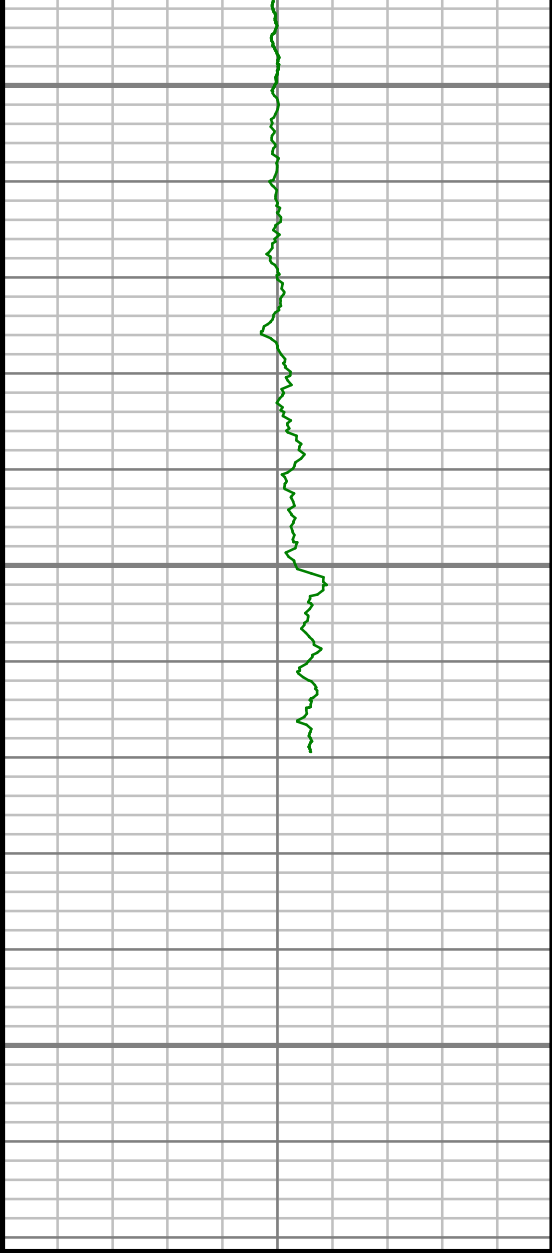
14150



S: 165 MD: 13974.00 ft Inc:
88.12 deg Az: 180.00 deg TVD:
7345.78 ft

S: 166 MD: 14069.00 ft Inc:
88.39 deg Az: 180.11 deg TVD:
7348.68 ft

S: 167 MD: 14164.00 ft Inc:
88.76 deg Az: 180.56 deg TVD:
7351.04 ft



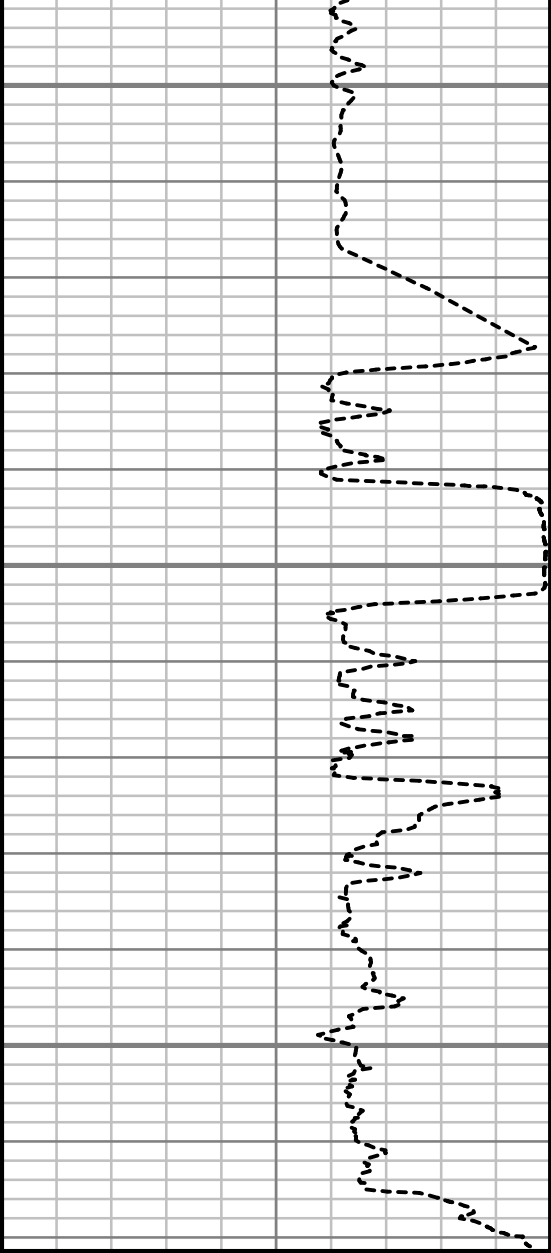
Gamma Ray (GR)		
0	Unit = aapi	150

14200

14250

14300

MEASURED DEPTH
1-240 (ft)



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

S: 168 MD: 14259.00 ft Inc:
88.26 deg Az: 181.49 deg TVD:
7353.52 ft

Comments

Survey Report

Customer Name:	ENCANA OIL AND GAS (U.S.A.) INC.						
Site Name:	RODMAN BRUNTZ						
Well Name:	RODMAN BRUNTZ 2C-26H						
Survey:	RODMAN BRUNTZ 2C-26H						
Survey Date:	11/17/2013						
Magnetic Declination:	8.54 deg						
North Reference:	True North						
Calculation Method:	Minimum Curvature						
Section (VS) Ref:	0.00N (ft), 0.00E (ft), 180.00Azim (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
466.00	0.41	174.91	466.00	1.64	-1.64	0.15	0.09
590.00	0.31	190.93	589.99	2.41	-2.41	0.12	0.11
713.00	0.12	170.54	712.99	2.86	-2.86	0.08	0.16
806.00	0.47	184.86	805.99	3.34	-3.34	0.06	0.38
899.00	0.38	202.46	898.99	4.00	-4.00	-0.09	0.17
992.00	0.81	191.23	991.98	4.94	-4.94	-0.33	0.48
1085.00	2.00	258.02	1084.96	5.92	-5.92	-2.05	1.97
1178.00	2.74	299.44	1177.88	5.17	-5.17	-5.57	1.95

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
1205.00	2.45	291.24	1204.86	4.64	-4.64	-6.67	1.74
1296.00	2.62	296.64	1295.77	3.00	-3.00	-10.35	0.32
1358.00	2.68	295.50	1357.70	1.75	-1.75	-12.92	0.12
1451.00	3.87	315.78	1450.55	-1.44	1.44	-17.07	1.77
1544.00	4.30	317.67	1543.32	-6.27	6.27	-21.60	0.48
1637.00	4.10	318.06	1636.07	-11.32	11.32	-26.17	0.22
1730.00	6.77	319.33	1728.64	-17.95	17.95	-31.97	2.88
1823.00	8.60	322.11	1820.80	-27.60	27.60	-39.81	2.00
2011.00	8.35	315.87	2006.75	-48.48	48.48	-57.94	0.51
2105.00	10.03	312.77	2099.54	-58.93	58.93	-68.70	1.87
2200.00	11.26	312.10	2192.91	-70.77	70.77	-81.66	1.30
2295.00	11.50	310.53	2286.04	-83.14	83.14	-95.74	0.41
2390.00	11.97	308.97	2379.05	-95.49	95.49	-110.60	0.60
2485.00	13.17	309.46	2471.78	-108.57	108.57	-126.61	1.27
2580.00	13.16	307.62	2564.28	-122.05	122.05	-143.53	0.44
2675.00	14.99	307.71	2656.42	-136.17	136.17	-161.82	1.92
2770.00	14.36	308.23	2748.32	-150.97	150.97	-180.79	0.68
2865.00	15.15	310.52	2840.19	-166.33	166.33	-199.48	1.03
2960.00	14.88	312.33	2931.95	-182.61	182.61	-217.93	0.57
3055.00	15.10	309.75	3023.72	-198.73	198.73	-236.46	0.74

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
3150.00	16.20	309.11	3115.19	-215.00	215.00	-256.26	1.17
3245.00	15.46	307.23	3206.59	-231.02	231.02	-276.62	0.95
3339.00	15.68	312.25	3297.15	-247.15	247.15	-296.01	1.45
3434.00	15.09	317.63	3388.74	-264.92	264.92	-313.85	1.63
3529.00	16.31	316.69	3480.20	-283.76	283.76	-331.33	1.31
3624.00	15.98	313.28	3571.45	-302.43	302.43	-350.00	1.06
3719.00	14.74	314.46	3663.06	-319.86	319.86	-368.14	1.35
3814.00	15.51	313.32	3754.77	-337.04	337.04	-386.00	0.87
3909.00	14.70	311.17	3846.49	-353.69	353.69	-404.32	1.03
4003.00	16.35	308.59	3937.06	-369.80	369.80	-423.64	1.91
4098.00	16.88	305.69	4028.09	-386.18	386.18	-445.30	1.03
4193.00	15.51	303.93	4119.32	-401.32	401.32	-467.04	1.53
4288.00	13.33	303.46	4211.32	-414.45	414.45	-486.72	2.30
4382.00	14.76	311.89	4302.52	-428.42	428.42	-504.67	2.65
4477.00	15.64	315.08	4394.20	-445.57	445.57	-522.72	1.28
4572.00	15.29	316.50	4485.75	-463.72	463.72	-540.39	0.54
4667.00	13.31	322.07	4577.81	-481.44	481.44	-555.74	2.54
4762.00	11.26	320.24	4670.63	-497.20	497.20	-568.40	2.20
4857.00	9.60	322.58	4764.06	-510.62	510.62	-579.14	1.81

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
4952.00	7.79	319.96	4857.96	-521.84	521.84	-588.10	1.94
5046.00	5.79	305.17	4951.30	-529.46	529.46	-596.08	2.81
5141.00	3.26	311.71	5046.00	-534.02	534.02	-602.02	2.71
5236.00	2.29	322.94	5140.89	-537.34	537.34	-605.19	1.17
5331.00	1.89	323.02	5235.82	-540.11	540.11	-607.27	0.42
5425.00	2.73	279.47	5329.75	-541.71	541.71	-610.42	2.01
5520.00	2.89	275.70	5424.64	-542.32	542.32	-615.04	0.26
5615.00	2.38	274.29	5519.54	-542.71	542.71	-619.39	0.55
5710.00	1.93	272.75	5614.47	-542.93	542.93	-622.95	0.47
5900.00	1.28	269.78	5804.40	-543.08	543.08	-628.26	0.35
5995.00	0.95	248.97	5899.38	-542.79	542.79	-630.06	0.54
6090.00	1.01	277.02	5994.37	-542.61	542.61	-631.62	0.50
6279.00	0.98	310.00	6183.34	-543.85	543.85	-634.51	0.30
6374.00	0.32	1.32	6278.33	-544.64	544.64	-635.13	0.86
6469.00	0.52	17.68	6373.33	-545.32	545.32	-634.99	0.25
6564.00	0.77	337.94	6468.32	-546.32	546.32	-635.10	0.52
6659.00	0.18	251.61	6563.32	-546.86	546.86	-635.48	0.82
6690.00	0.35	258.65	6594.32	-546.83	546.83	-635.62	0.54
6722.00	1.05	202.40	6626.32	-546.54	546.54	-635.83	2.83
6753.00	2.59	172.72	6657.30	-545.58	545.58	-635.85	5.67

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
6785.00	5.64	163.66	6689.22	-543.35	543.35	-635.31	9.72
6817.00	7.87	165.31	6720.99	-539.72	539.72	-634.31	6.99
6848.00	10.07	170.44	6751.61	-534.99	534.99	-633.32	7.54
6880.00	12.00	170.85	6783.02	-528.95	528.95	-632.33	6.03
6912.00	13.74	169.76	6814.21	-521.92	521.92	-631.12	5.49
6943.00	15.60	171.90	6844.20	-514.18	514.18	-629.88	6.23
6975.00	18.79	178.01	6874.77	-504.76	504.76	-629.10	11.47
7007.00	22.81	179.20	6904.68	-493.40	493.40	-628.83	12.60
7038.00	26.49	178.90	6932.85	-480.48	480.48	-628.62	11.88
7070.00	29.43	178.69	6961.11	-465.48	465.48	-628.30	9.21
7101.00	30.96	179.32	6987.91	-449.90	449.90	-628.03	5.02
7133.00	32.02	179.58	7015.19	-433.18	433.18	-627.87	3.37
7165.00	33.92	178.84	7042.04	-415.77	415.77	-627.63	6.07
7196.00	37.62	179.95	7067.18	-397.65	397.65	-627.44	12.11
7228.00	40.82	179.97	7091.97	-377.42	377.42	-627.43	9.98
7259.00	44.00	179.66	7114.86	-356.52	356.52	-627.36	10.30
7291.00	46.67	179.05	7137.35	-333.76	333.76	-627.10	8.44
7323.00	48.45	179.69	7158.95	-310.15	310.15	-626.84	5.75
7354.00	50.15	180.26	7179.16	-286.65	286.65	-626.83	5.66

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
7386.00	52.61	180.02	7199.13	-261.65	261.65	-626.90	7.73
7417.00	54.94	181.26	7217.45	-236.64	236.64	-627.18	8.18
7449.00	56.59	181.80	7235.45	-210.20	210.20	-627.89	5.34
7480.00	59.08	181.50	7251.95	-183.97	183.97	-628.64	8.07
7512.00	62.18	180.95	7267.64	-156.09	156.09	-629.24	9.80
7544.00	65.57	181.74	7281.73	-127.37	127.37	-629.91	10.81
7575.00	67.89	181.78	7293.98	-98.91	98.91	-630.79	7.51
7607.00	69.84	181.18	7305.51	-69.07	69.07	-631.56	6.33
7638.00	73.03	180.46	7315.38	-39.69	39.69	-631.98	10.50
7670.00	74.95	179.96	7324.21	-8.94	8.94	-632.09	6.19
7702.00	76.98	179.33	7331.97	22.11	-22.11	-631.90	6.63
7734.00	80.27	179.55	7338.28	53.47	-53.47	-631.59	10.33
7771.00	83.43	179.28	7343.52	90.09	-90.09	-631.22	8.56
7843.00	89.06	177.84	7348.24	161.88	-161.88	-629.41	8.07
7936.00	88.08	179.69	7350.56	254.83	-254.83	-627.40	2.26
8029.00	88.22	179.79	7353.56	347.78	-347.78	-626.98	0.18
8122.00	89.09	180.16	7355.74	440.75	-440.75	-626.94	1.02
8214.00	88.89	179.78	7357.36	532.74	-532.74	-626.89	0.46
8307.00	92.08	179.59	7356.57	625.72	-625.72	-626.38	3.44
8400.00	92.09	179.33	7353.19	718.65	-718.65	-625.50	0.27

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
8493.00	93.05	179.89	7349.02	811.56	-811.56	-624.86	1.20
8586.00	90.74	180.19	7345.94	904.50	-904.50	-624.93	2.51
8679.00	90.64	179.28	7344.82	997.49	-997.49	-624.50	0.98
8772.00	89.97	180.75	7344.33	1090.49	-1090.49	-624.53	1.73
8865.00	90.54	179.99	7343.92	1183.48	-1183.48	-625.13	1.02
8957.00	88.42	180.22	7344.76	1275.47	-1275.47	-625.30	2.31
9050.00	89.56	182.14	7346.39	1368.43	-1368.43	-627.21	2.40
9143.00	89.09	181.24	7347.48	1461.39	-1461.39	-629.95	1.10
9236.00	88.79	180.70	7349.20	1554.36	-1554.36	-631.52	0.66
9329.00	88.18	180.85	7351.65	1647.31	-1647.31	-632.78	0.68
9422.00	89.39	180.93	7353.62	1740.28	-1740.28	-634.23	1.31
9517.00	91.14	180.93	7353.17	1835.26	-1835.26	-635.77	1.84
9612.00	89.97	179.86	7352.26	1930.25	-1930.25	-636.43	1.67
9707.00	91.41	180.85	7351.11	2025.24	-2025.24	-637.02	1.84
9802.00	91.18	180.74	7348.97	2120.21	-2120.21	-638.34	0.27
9896.00	91.41	179.06	7346.85	2214.18	-2214.18	-638.18	1.81
9991.00	89.93	178.56	7345.73	2309.15	-2309.15	-636.21	1.64
10086.00	90.30	178.66	7345.54	2404.12	-2404.12	-633.91	0.40
10181.00	90.27	180.06	7345.06	2499.11	-2499.11	-632.85	1.48

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
10276.00	88.99	180.76	7345.68	2594.11	-2594.11	-633.53	1.53
10371.00	89.46	179.90	7346.96	2689.09	-2689.09	-634.08	1.04
10466.00	90.10	178.45	7347.33	2784.08	-2784.08	-632.71	1.66
10560.00	90.13	179.51	7347.13	2878.06	-2878.06	-631.04	1.13
10655.00	90.64	179.17	7346.49	2973.06	-2973.06	-629.94	0.64
10750.00	89.03	180.04	7346.77	3068.05	-3068.05	-629.29	1.93
10845.00	88.99	179.97	7348.42	3163.03	-3163.03	-629.29	0.09
10940.00	89.13	179.47	7349.98	3258.02	-3258.02	-628.83	0.54
11034.00	89.73	178.24	7350.92	3351.99	-3351.99	-626.95	1.46
11129.00	89.80	181.31	7351.30	3446.98	-3446.98	-626.58	3.23
11224.00	89.50	180.16	7351.89	3541.97	-3541.97	-627.80	1.25
11319.00	91.21	180.33	7351.30	3636.96	-3636.96	-628.21	1.81
11414.00	91.58	180.10	7348.99	3731.93	-3731.93	-628.56	0.46
11509.00	92.18	178.79	7345.87	3826.88	-3826.88	-627.64	1.51
11603.00	91.08	179.94	7343.20	3920.83	-3920.83	-626.59	1.69
11698.00	90.27	180.13	7342.08	4015.82	-4015.82	-626.65	0.88
11793.00	89.87	180.62	7341.97	4110.82	-4110.82	-627.27	0.67
11888.00	89.87	180.91	7342.20	4205.81	-4205.81	-628.54	0.30
11982.00	89.60	180.79	7342.64	4299.80	-4299.80	-629.93	0.31
12078.00	89.93	179.21	7343.03	4395.80	-4395.80	-629.93	1.68

MD	Inc	Azim	TVD	VS	+N/-S	+E/-W	DLS
ft	deg	deg	ft	ft	ft	ft	7100ft
12173.00	89.83	179.20	7343.23	4490.79	-4490.79	-628.61	0.11
12267.00	90.13	179.31	7343.25	4584.78	-4584.78	-627.38	0.34
12362.00	88.99	180.29	7343.98	4679.77	-4679.77	-627.05	1.58
12457.00	89.70	180.60	7345.06	4774.76	-4774.76	-627.78	0.81
12552.00	89.56	178.74	7345.68	4869.75	-4869.75	-627.23	1.96
12647.00	89.66	182.06	7346.32	4964.74	-4964.74	-627.90	3.49
12742.00	90.34	181.12	7346.32	5059.70	-5059.70	-630.53	1.22
12836.00	90.50	180.11	7345.63	5153.69	-5153.69	-631.53	1.08
12931.00	91.55	180.20	7343.93	5248.67	-5248.67	-631.79	1.10
13026.00	92.45	179.48	7340.62	5343.61	-5343.61	-631.53	1.22
13121.00	90.94	180.42	7337.80	5438.57	-5438.57	-631.44	1.87
13216.00	90.40	179.93	7336.69	5533.56	-5533.56	-631.73	0.76
13310.00	88.93	179.59	7337.24	5627.55	-5627.55	-631.34	1.61
13405.00	89.30	180.12	7338.71	5722.54	-5722.54	-631.10	0.68
13500.00	89.80	180.08	7339.46	5817.54	-5817.54	-631.27	0.53
13595.00	90.54	179.32	7339.18	5912.54	-5912.54	-630.77	1.12
13690.00	89.20	179.75	7339.40	6007.53	-6007.53	-629.99	1.48
13785.00	88.79	178.89	7341.07	6102.51	-6102.51	-628.87	0.99
13879.00	88.69	180.86	7343.14	6196.48	-6196.48	-628.66	2.09

MD ft	Inc deg	Azim deg	TVD ft	VS ft	+N/-S ft	+E/-W ft	DLS 7100ft
13974.00	88.12	180.00	7345.78	6291.44	-6291.44	-629.37	1.08
14069.00	88.39	180.11	7348.68	6386.40	-6386.40	-629.47	0.31
14164.00	88.76	180.56	7351.04	6481.36	-6481.36	-630.03	0.61
14259.00	88.26	181.49	7353.52	6576.31	-6576.31	-631.73	1.11

5" = 100' FEET MD