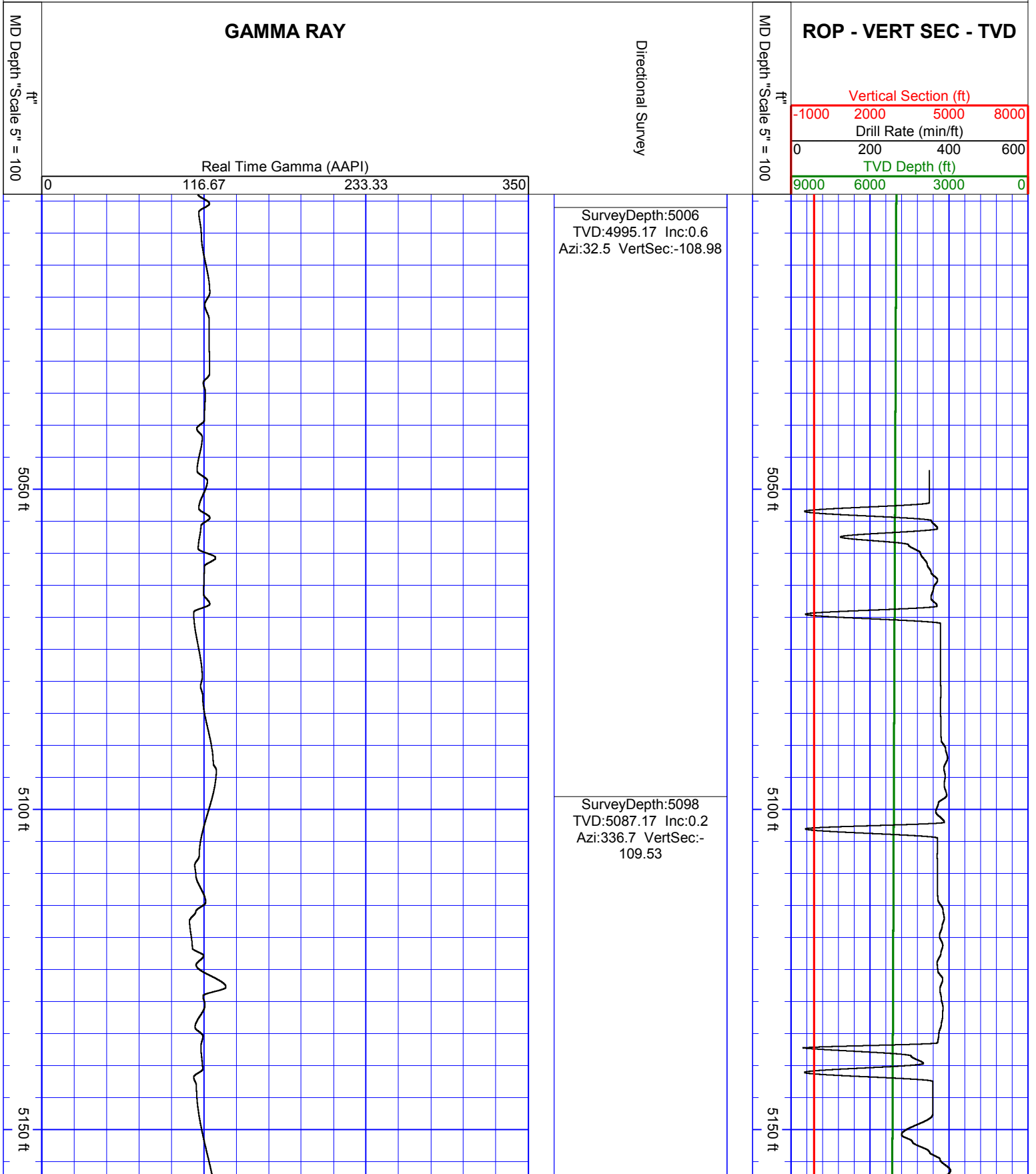
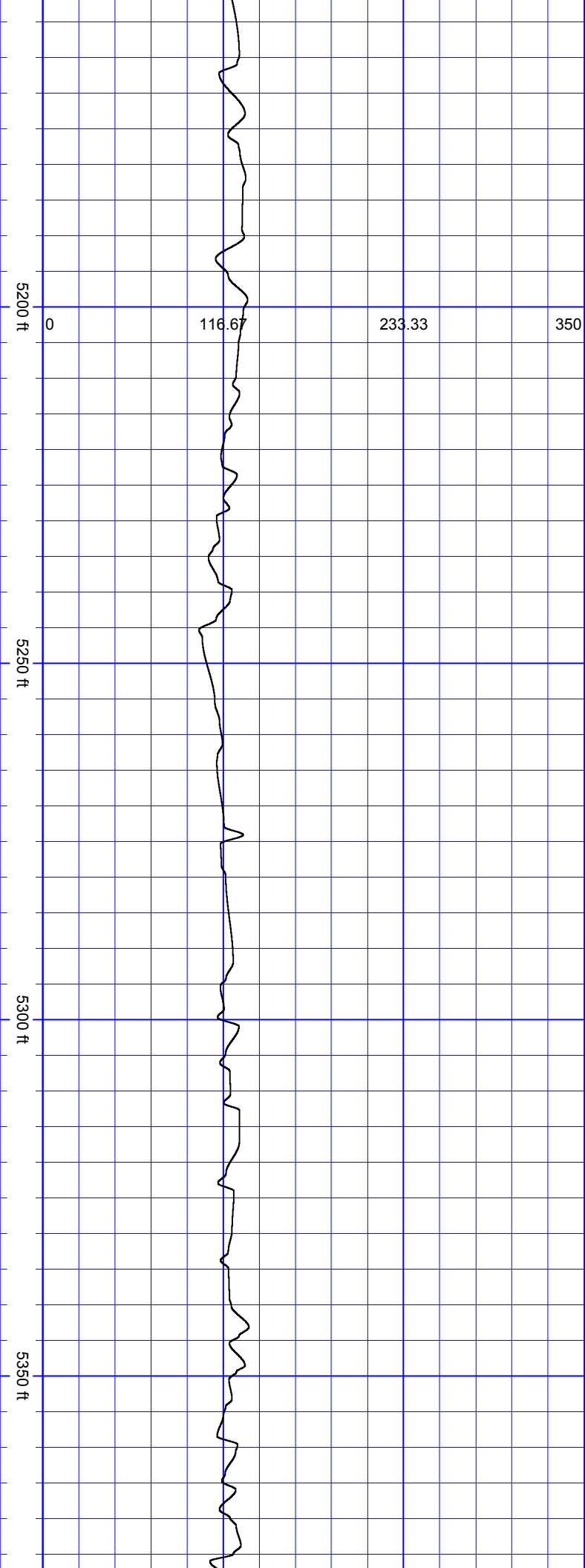




Oil Company: Whiting Petroleum
Well Name: Razor Federal 12F-1304B
Surface Location: S12-T10N-R58W
Bit Run: 6
Log Depth Start: 5003.90 ft Log Depth End: 14175.41 ft
Data Depth Start: 5003.90 ft Data Depth End: 14175.41 ft

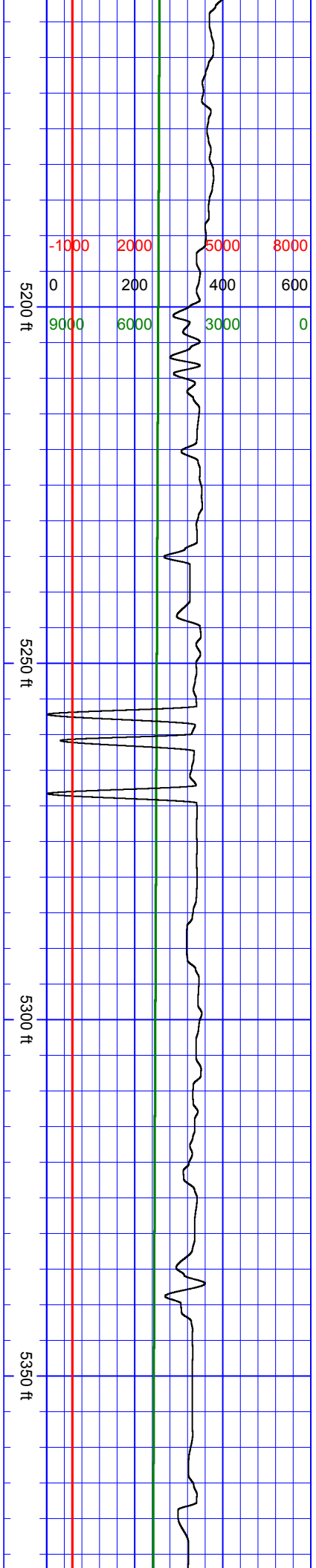
Interpretations of this data by Cathedral Energy Services will be of best judgment as to correctness. Cathedral Energy Services cannot and does not guarantee the accuracy or correctness of interpretations or any surveys derived therefrom. Cathedral Energy Services makes no warranties of performance, results, fitness or suitability for any particular purposes with respect to the goods being furnished under the terms and conditions. Cathedral Energy Services warrants that the equipment furnished will conform to Cathedral Energy Services published specifications in effect at the time and be in good working order.

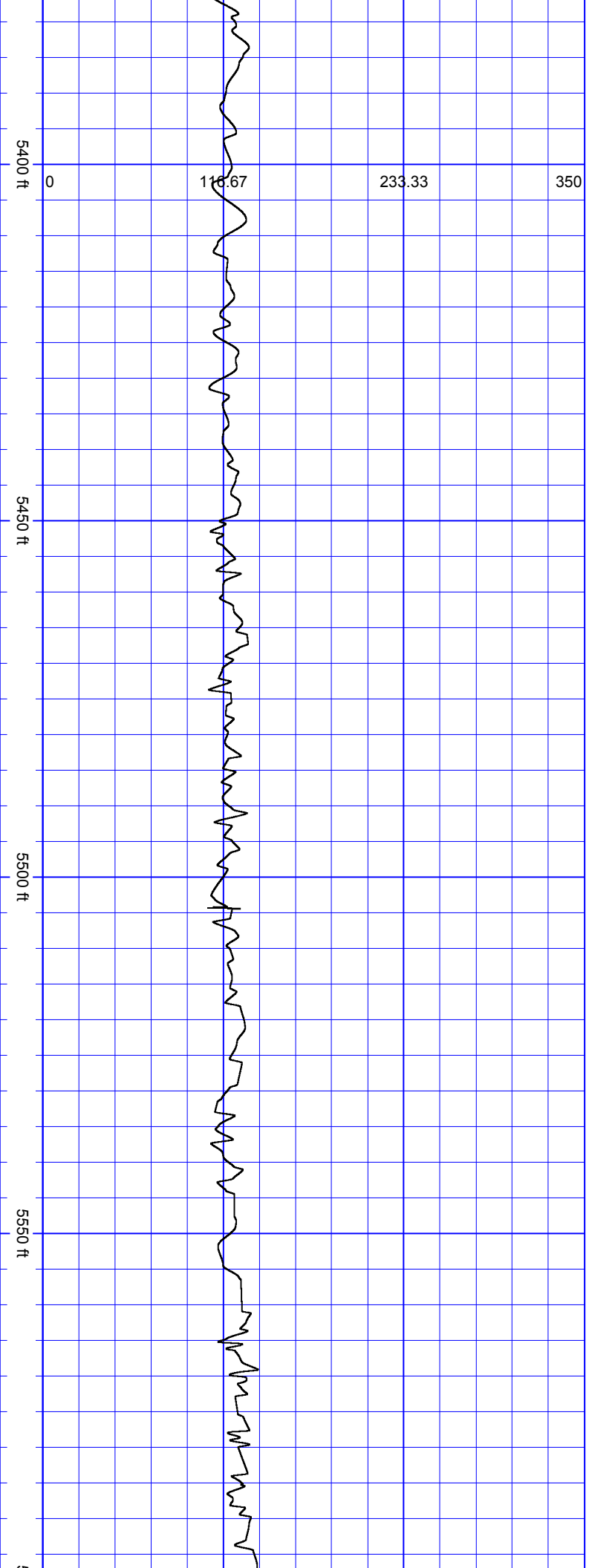




SurveyDepth:5282
TVD:5271.17 Inc:0.4
Azi:271.9 VertSec:-
109.85

SurveyDepth:5373
TVD:5362.16 Inc:0.6

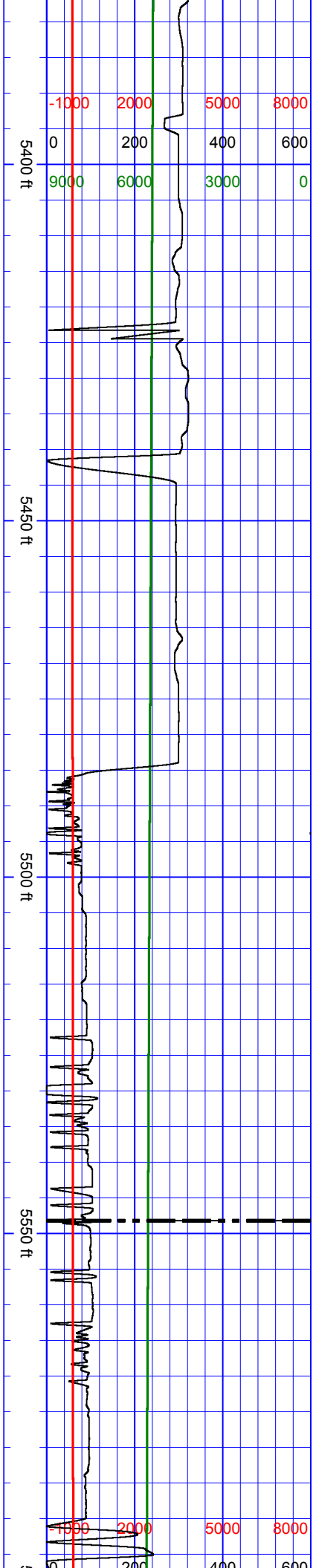


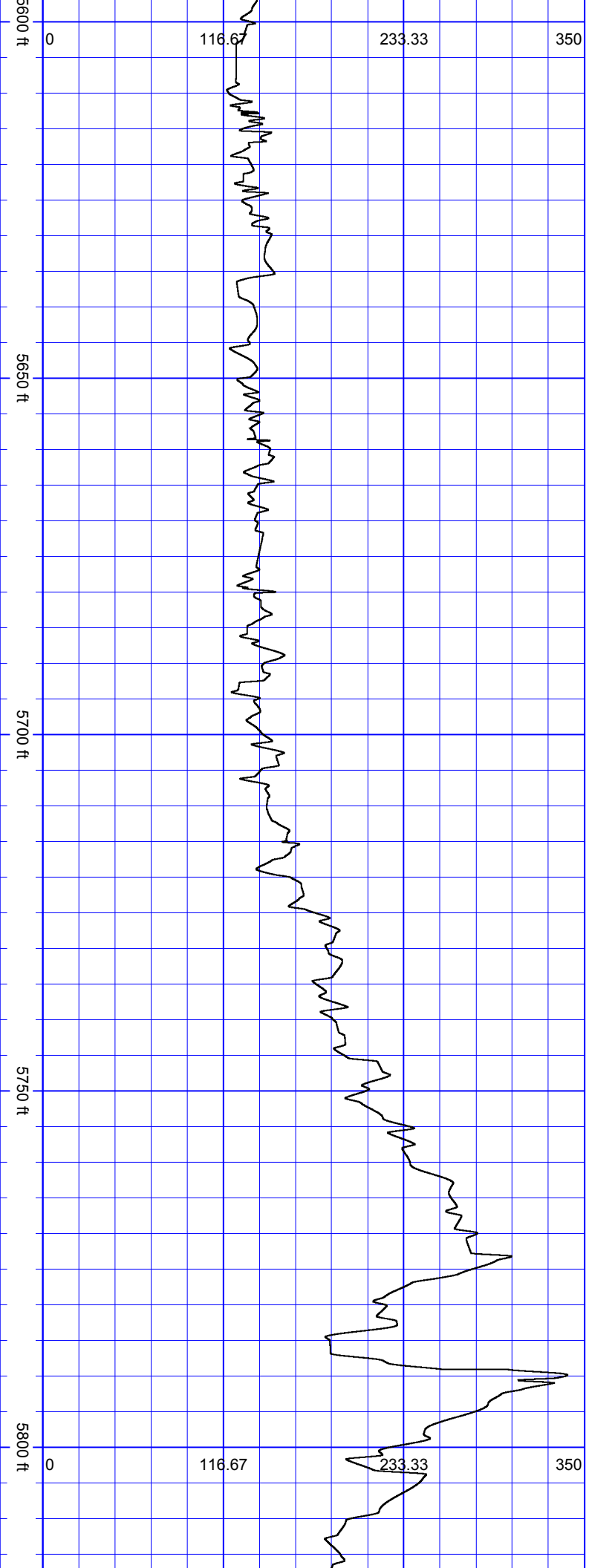


TVD:5552.16 Inc:0.6
Azi:277.5 VertSec:-109.92

SurveyDepth:5465
TVD:5454.16 Inc:0.7
Azi:292.2 VertSec:-110.2

SurveyDepth:5557
TVD:5545.32 Inc:13.5
Azi:188 VertSec:-99.72





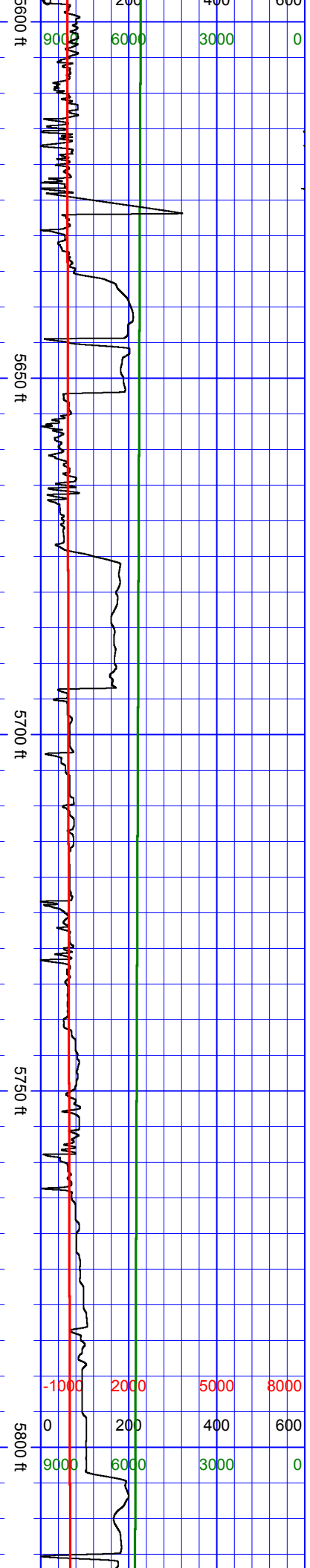
SurveyDepth:5602
TVD:5588.38 Inc:20
Azi:186.8 VertSec:-86.87

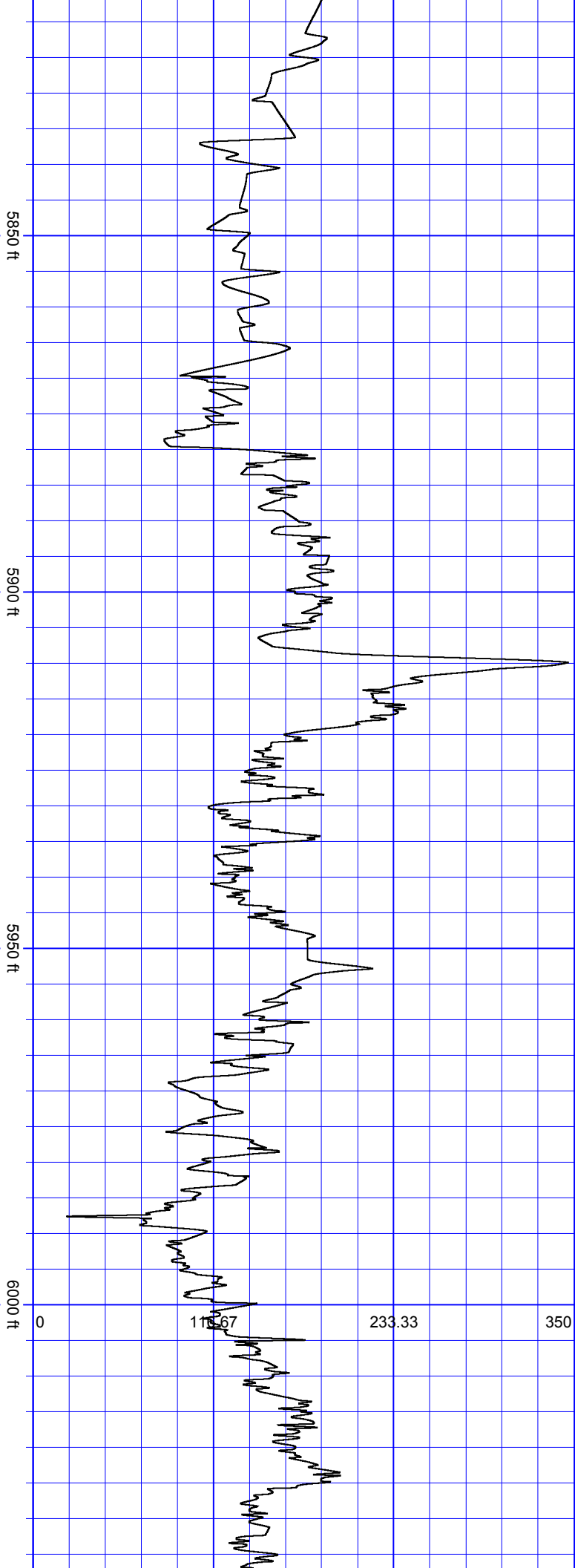
SurveyDepth:5645
TVD:5628.57 Inc:21.7
Azi:186.8 VertSec:-71.67

SurveyDepth:5689
TVD:5669.2 Inc:23.4
Azi:182.5 VertSec:-54.86

SurveyDepth:5734
TVD:5709.57 Inc:29
Azi:181.4 VertSec:-35.01

SurveyDepth:5776
TVD:5745.01 Inc:35.8
Azi:182.3 VertSec:-12.54



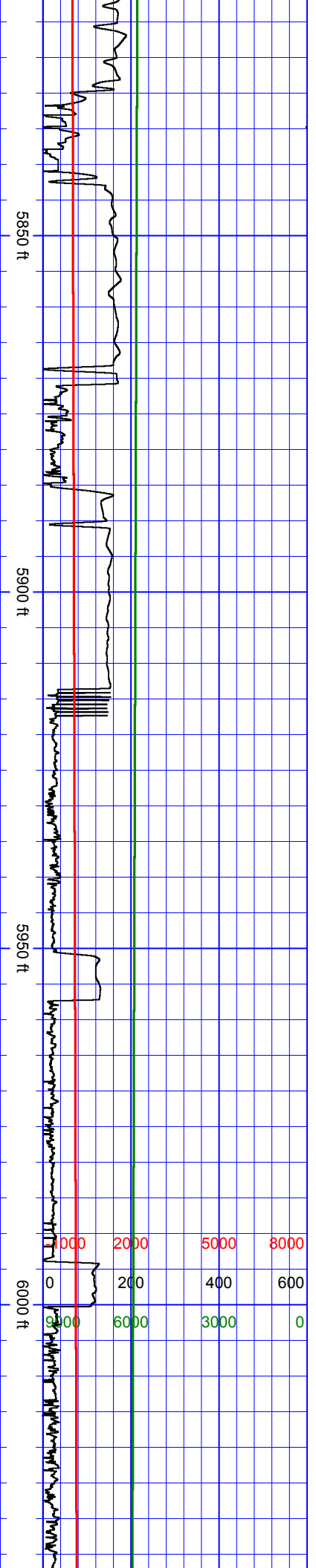


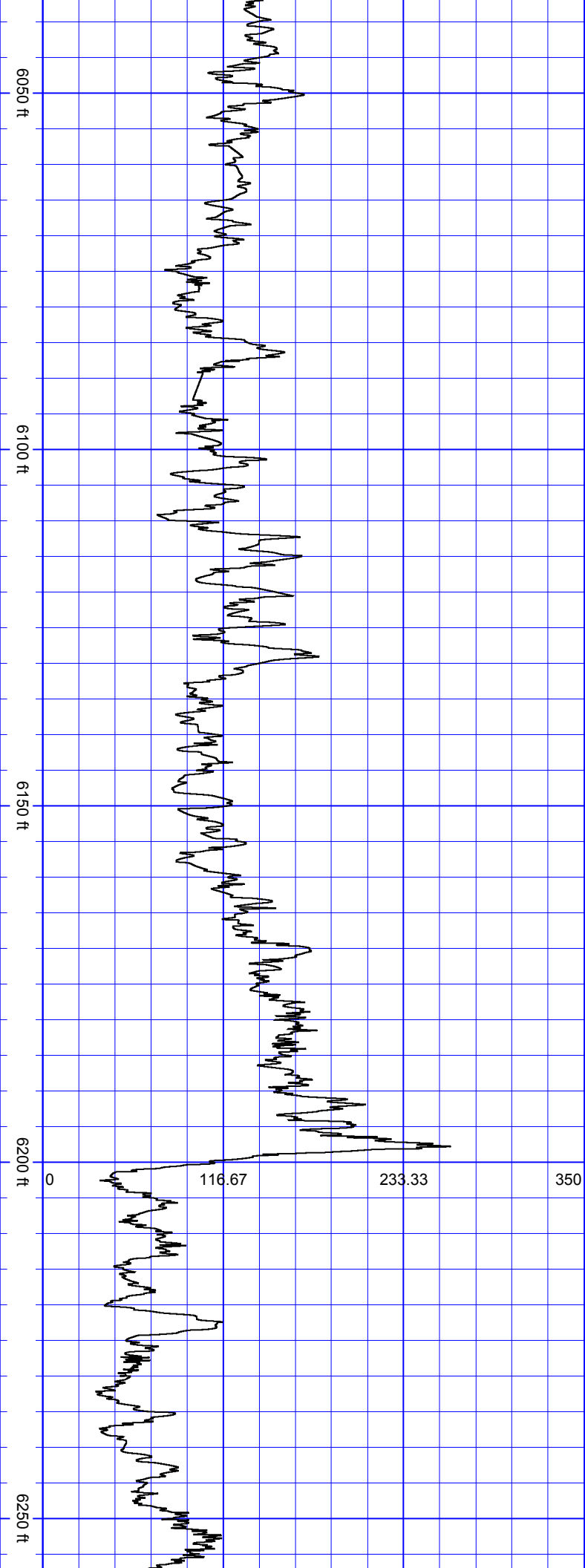
SurveyDepth:5863
TVD:5813.65 Inc:40
Azi:178.5 VertSec:40.87

SurveyDepth:5908
TVD:5848.07 Inc:40.2
Azi:178.1 VertSec:69.85

SurveyDepth:5953
TVD:5882.27 Inc:40.9
Azi:177 VertSec:99.07

SurveyDepth:5997
TVD:5914.78 Inc:43.8
Azi:177.1
VertSec:128.67





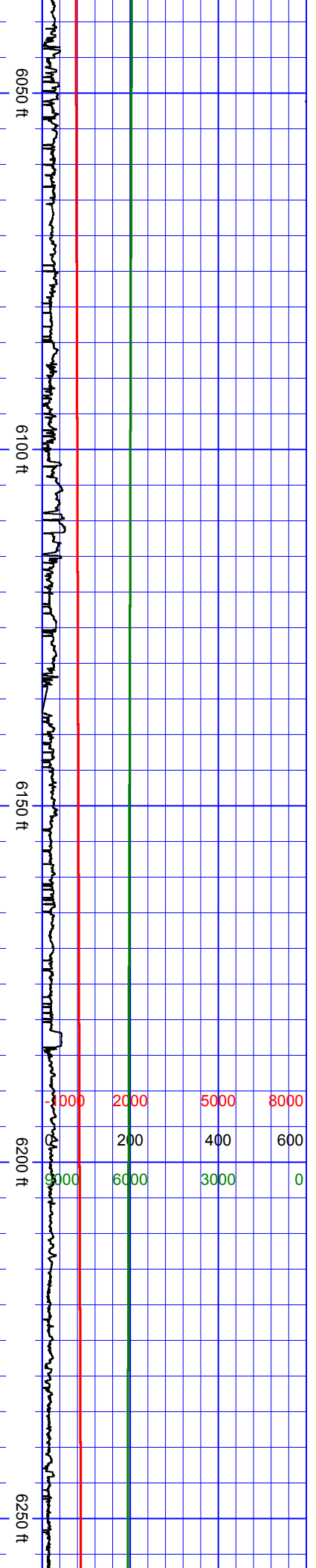
SurveyDepth:6042
TVD:5946.51 Inc:46.5
Azi:176.7
VertSec:160.52

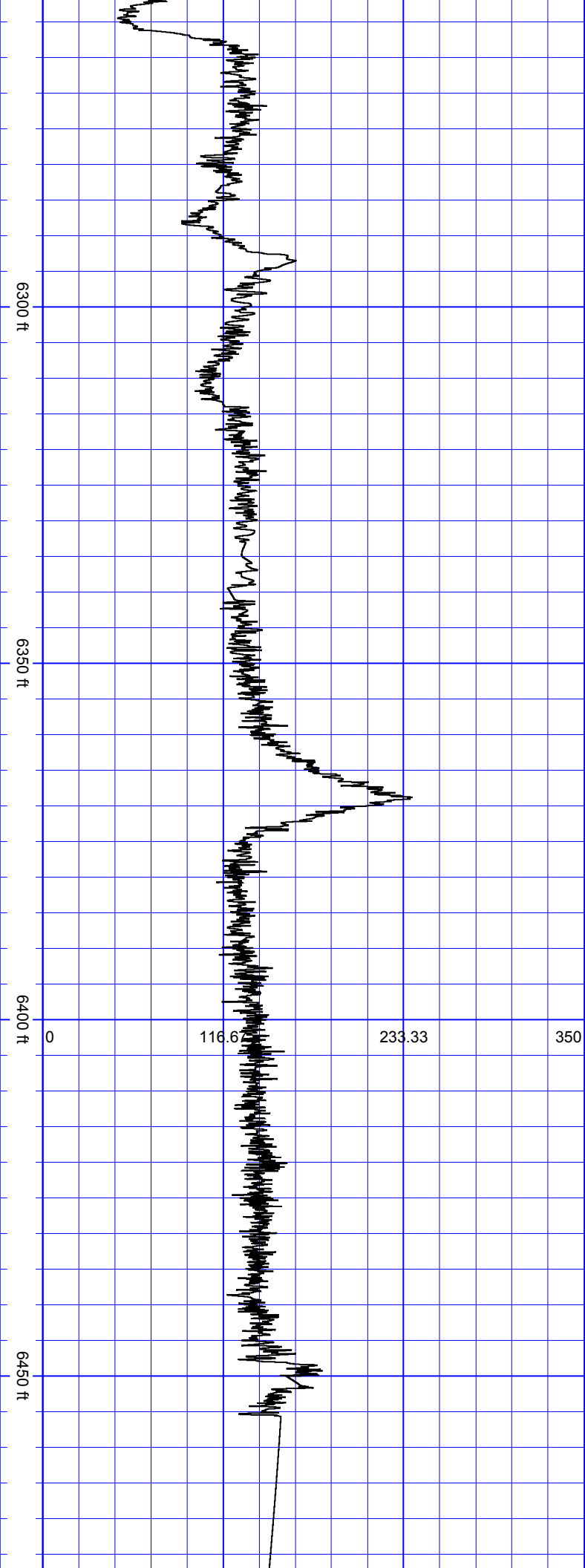
SurveyDepth:6087
TVD:5977 Inc:48.2
Azi:175.8
VertSec:193.55

SurveyDepth:6132
TVD:6006.61 Inc:49.5
Azi:175.6
VertSec:227.34

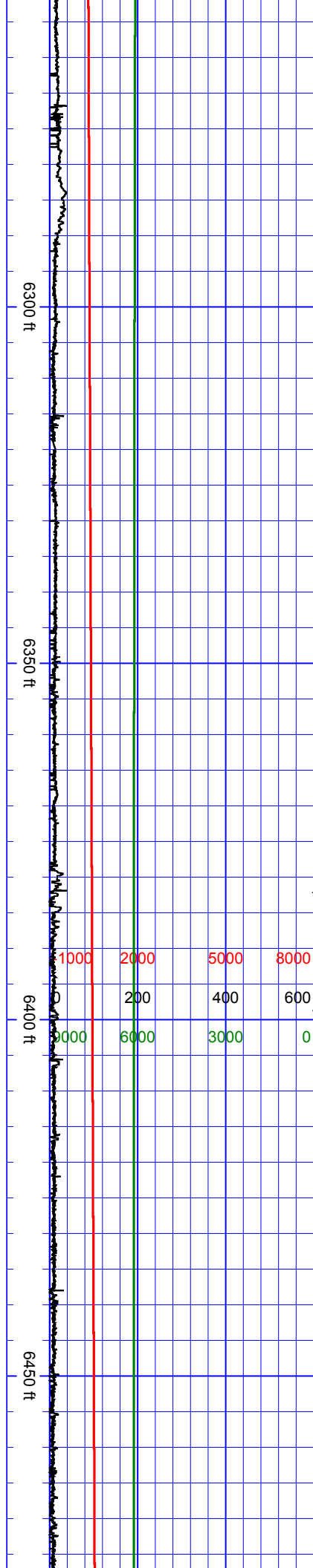
SurveyDepth:6179
TVD:6036.47 Inc:51.6
Azi:175.2
VertSec:263.51

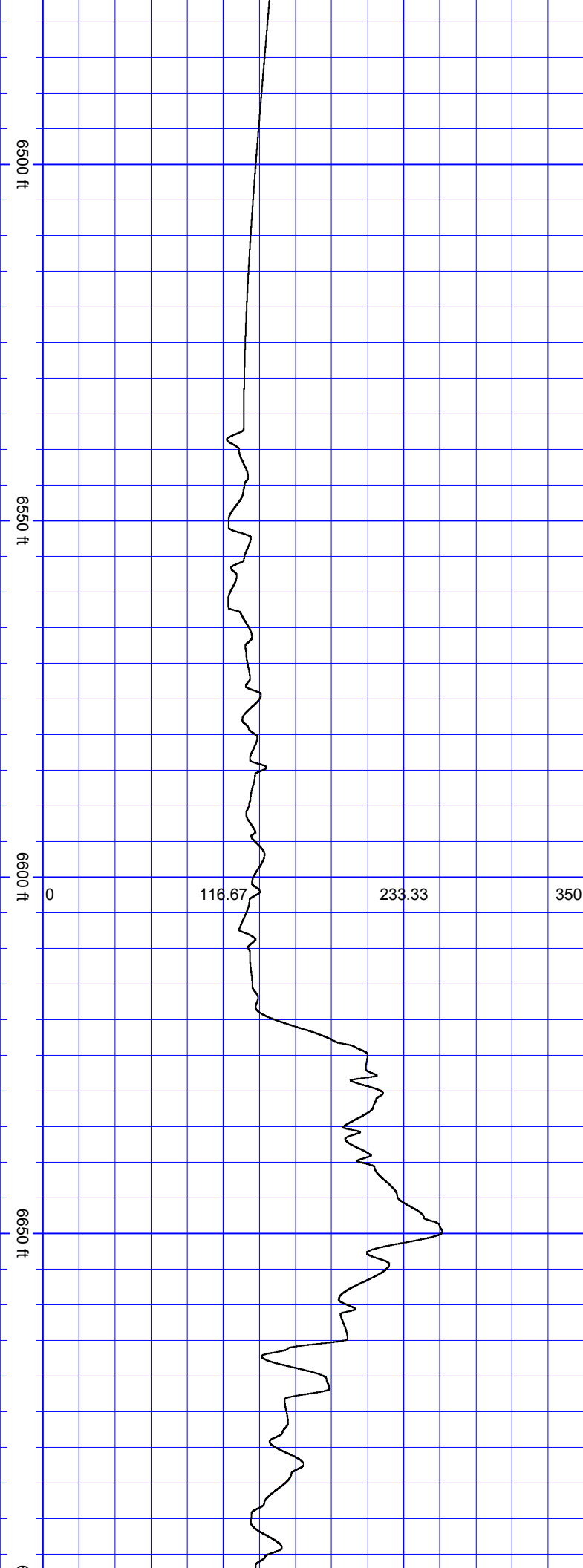
SurveyDepth:6221
TVD:6060.85 Inc:57.4
Azi:176.4 VertSec:297.6



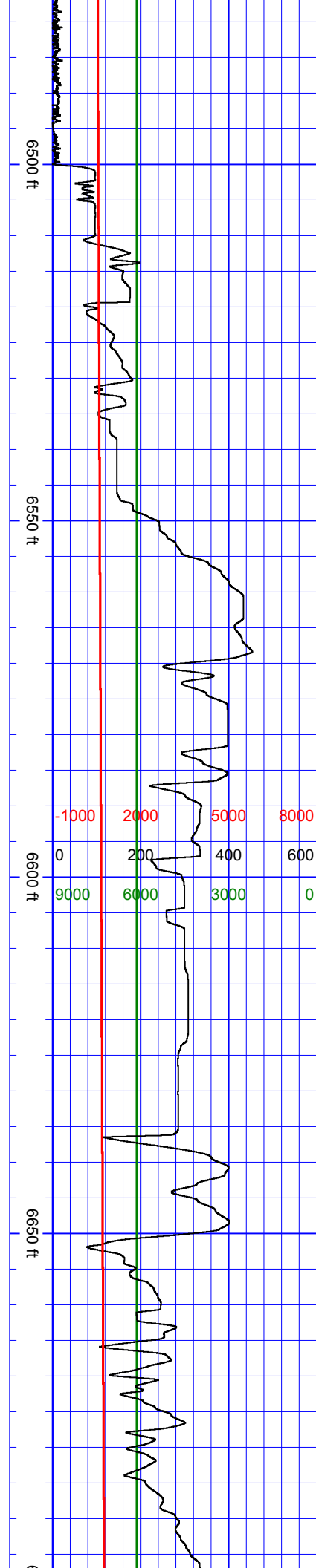


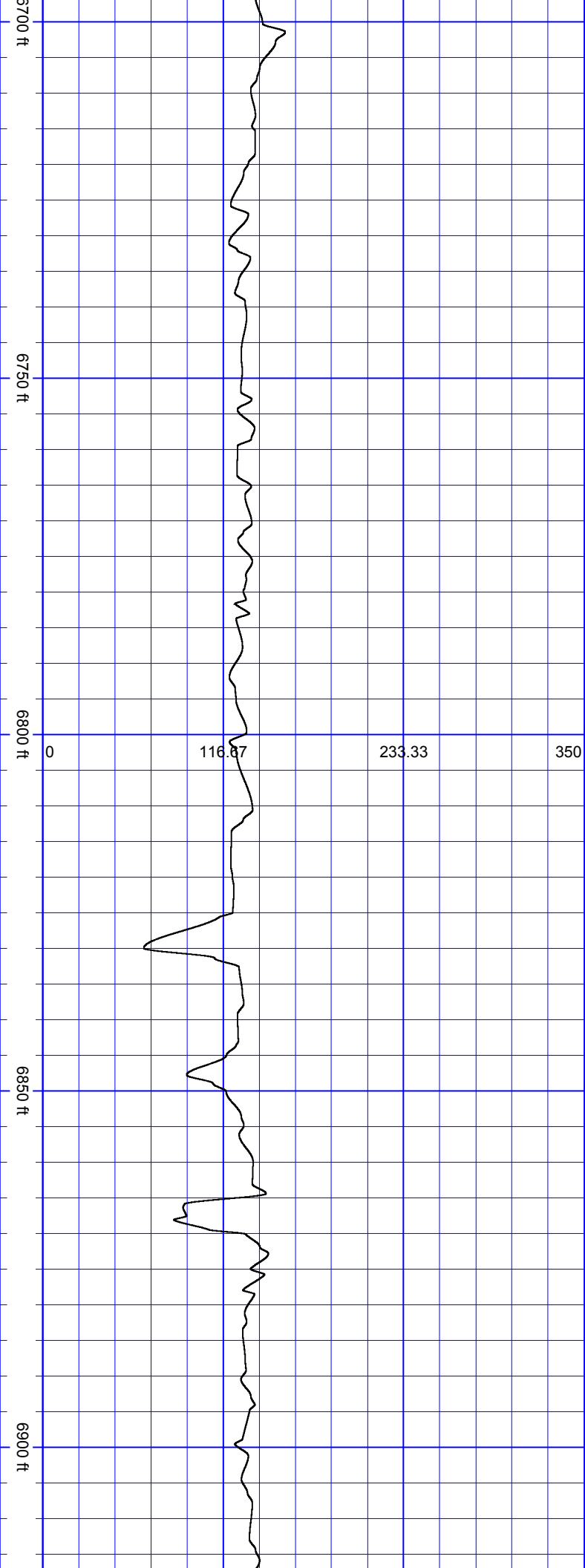
| |
|---|
| SurveyDepth:6266 TVD:6083.04 Inc:63.5 Azi:178.2 VertSec:336.68 |
| SurveyDepth:6296 TVD:6095.31 Inc:68.2 Azi:178.6 VertSec:364.04 |
| SurveyDepth:6326 TVD:6105.34 Inc:72.7 Azi:178.7 VertSec:392.29 |
| SurveyDepth:6356 TVD:6113.33 Inc:76.4 Azi:178.9 VertSec:421.2 |
| SurveyDepth:6386 TVD:6119.44 Inc:80.1 Azi:179.4 VertSec:450.56 |
| SurveyDepth:6410 TVD:6122.95 Inc:83.1 Azi:179.6 VertSec:474.3 |
| SurveyDepth:6425 TVD:6124.45 Inc:85.4 Azi:180.1 VertSec:489.22 |
| SurveyDepth:6445 TVD:6125.64 Inc:87.8 Azi:180.5 VertSec:509.18 |





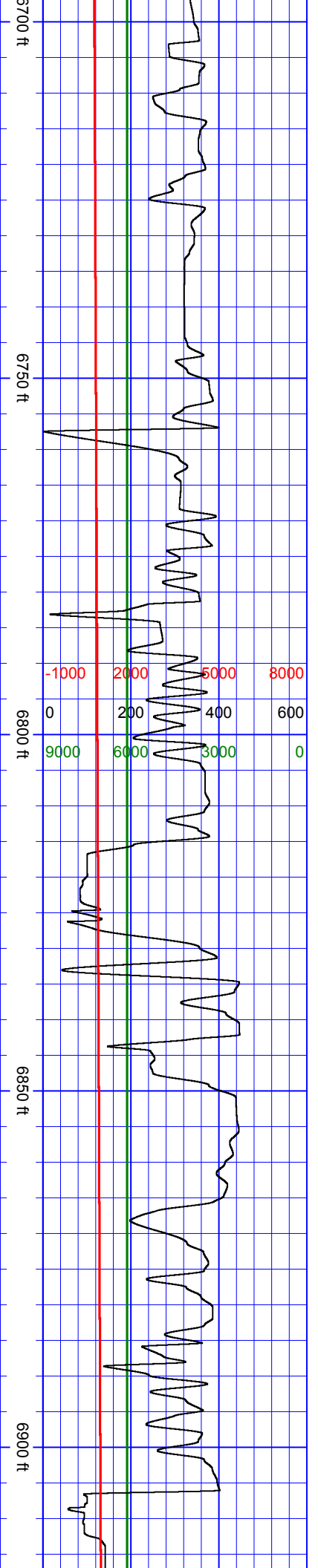
| | |
|---|---|
| SurveyDepth:6588 TVD:6126.01 Inc:91.9 Azi:180.1 VertSec:652.15 | SurveyDepth:6678 TVD:6123.58 Inc:91.2 Azi:179.8 VertSec:742.12 |
|---|---|

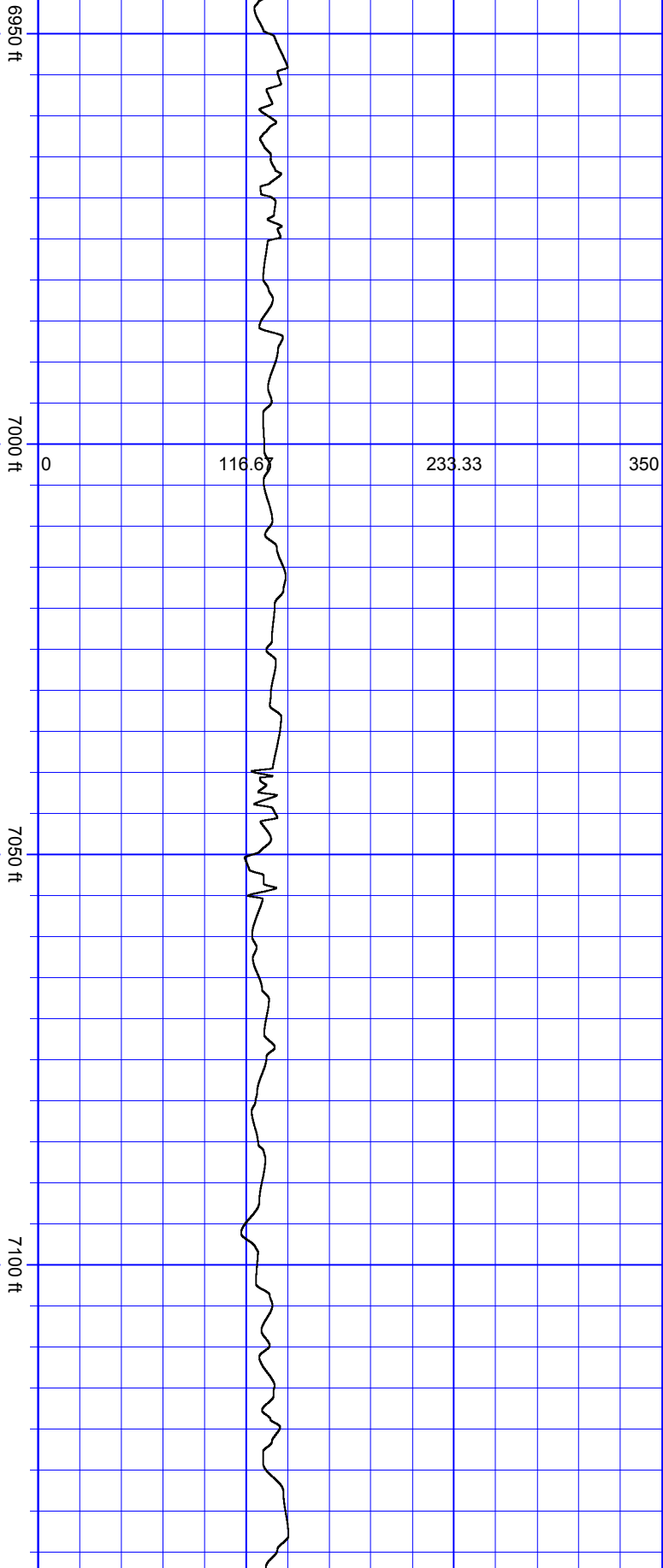




SurveyDepth:6768
TVD:6122.24 Inc:90.5
Azi:179.6
VertSec:832.11

SurveyDepth:6857
TVD:6121.39 Inc:90.6
Azi:177.2
VertSec:921.06



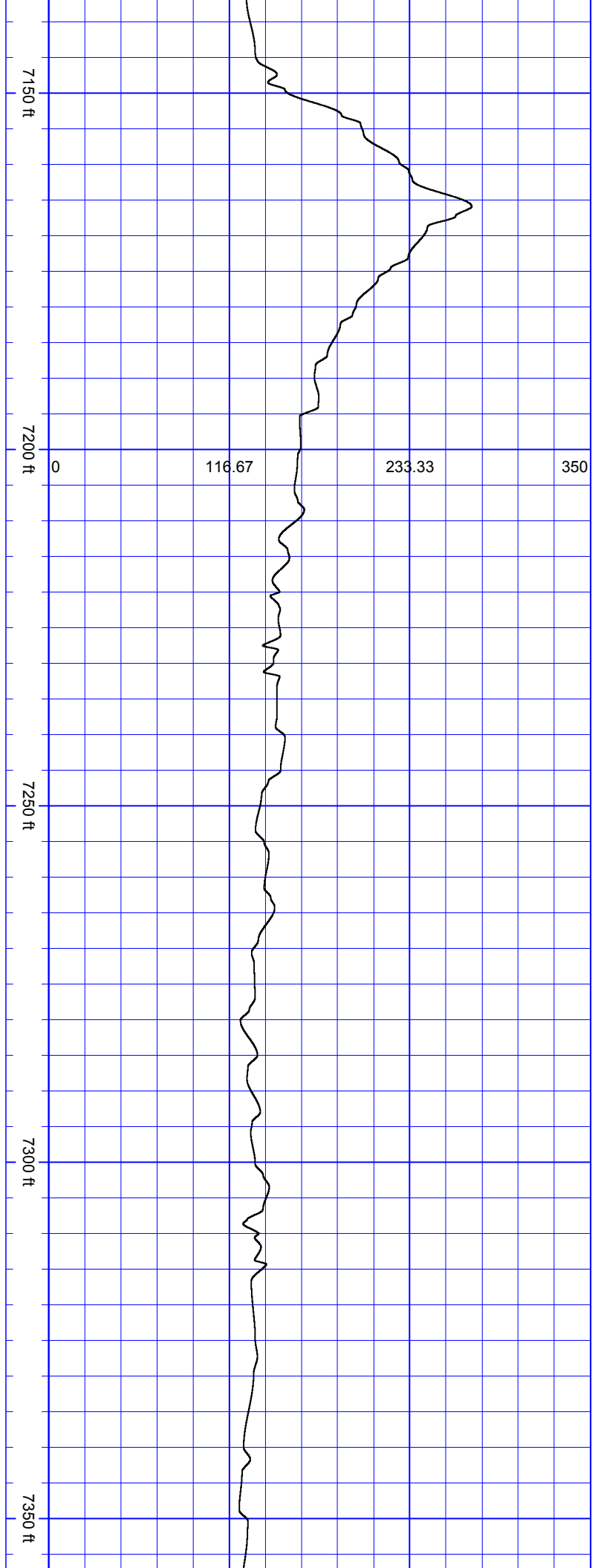


SurveyDepth:6943
TVD:6119.36 Inc:92.1
Azi:176.8
VertSec:1006.92

SurveyDepth:7031
TVD:6116.21 Inc:92
Azi:178.8
VertSec:1094.79

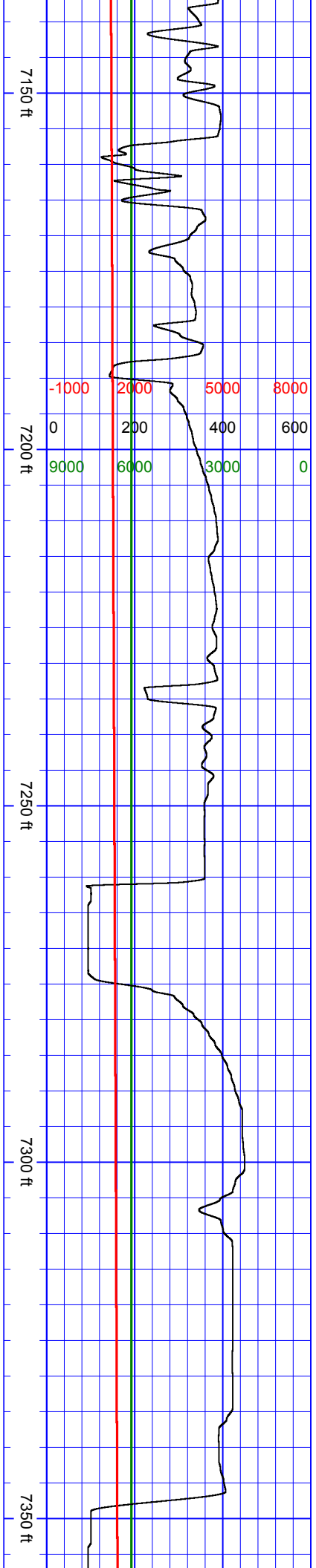
SurveyDepth:7120
TVD:6112.64 Inc:92.6
Azi:180.2
VertSec:1183.71





SurveyDepth:7210
TVD:6108.79 Inc:92.3
Azi:179.7
VertSec:1273.63

SurveyDepth:7297
TVD:6105.45 Inc:92.1
Azi:181.4
VertSec:1360.56



7400 ft 0 116.67 233.33 350

7450 ft

7500 ft

7550 ft

SurveyDepth:7387
TVD:6103.02 Inc:91
Azi:181.7
VertSec:1450.49

SurveyDepth:7477
TVD:6101.84 Inc:90.5
Azi:182 VertSec:1540.44

SurveyDepth:7566
TVD:6101.53 Inc:89.9
Azi:182.5
VertSec:1629.37

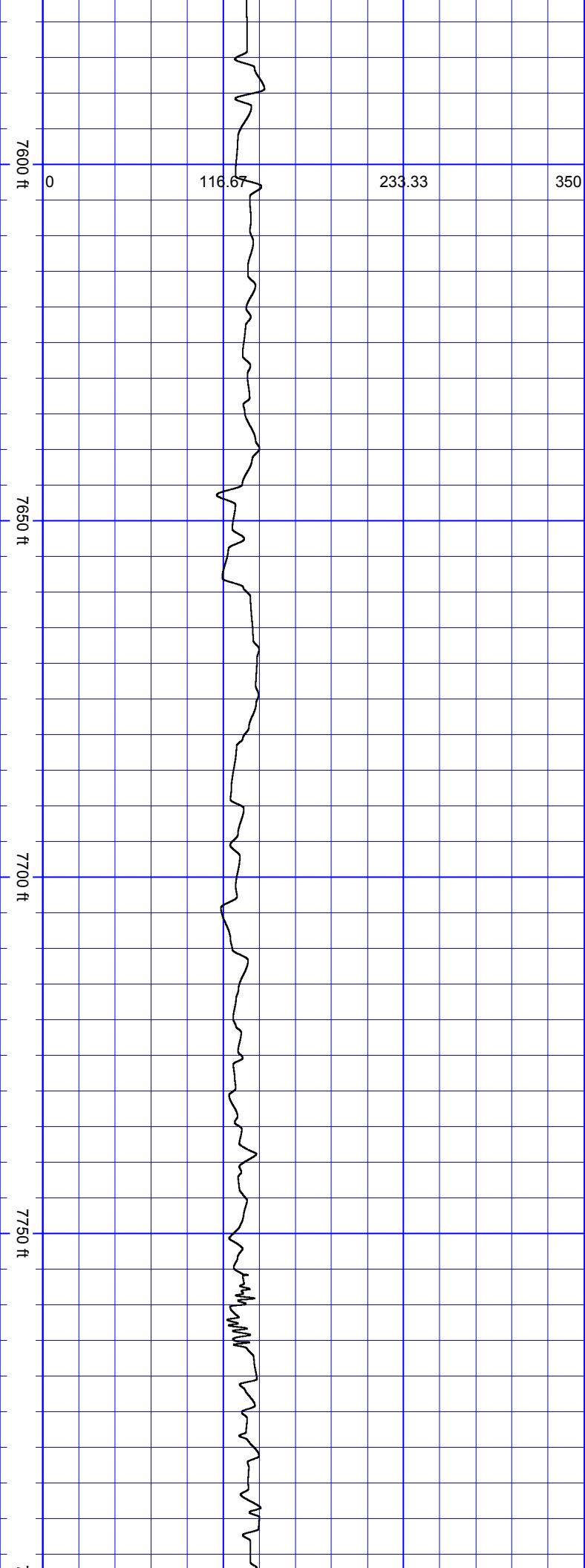
-1000 2000 5000 8000
0 200 400 600
9000 6000 3000 0

7400 ft

7450 ft

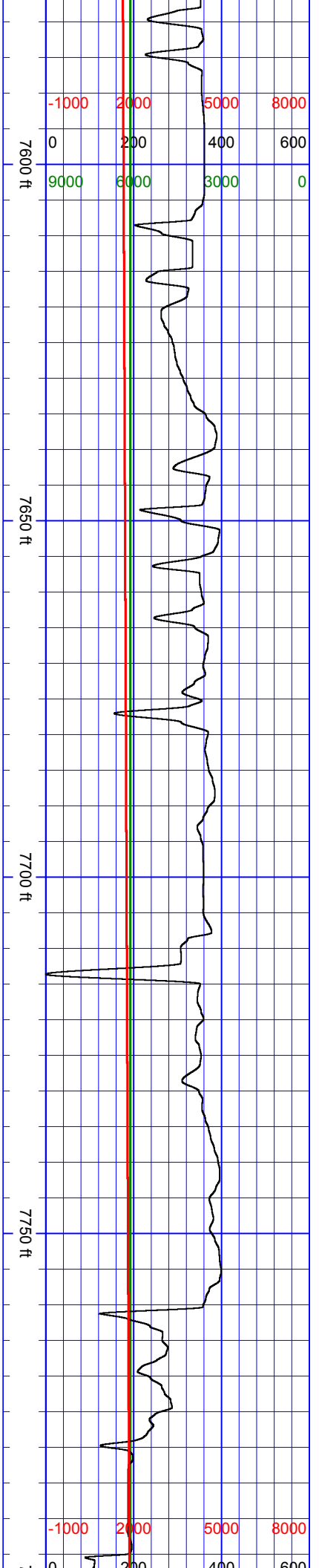
7500 ft

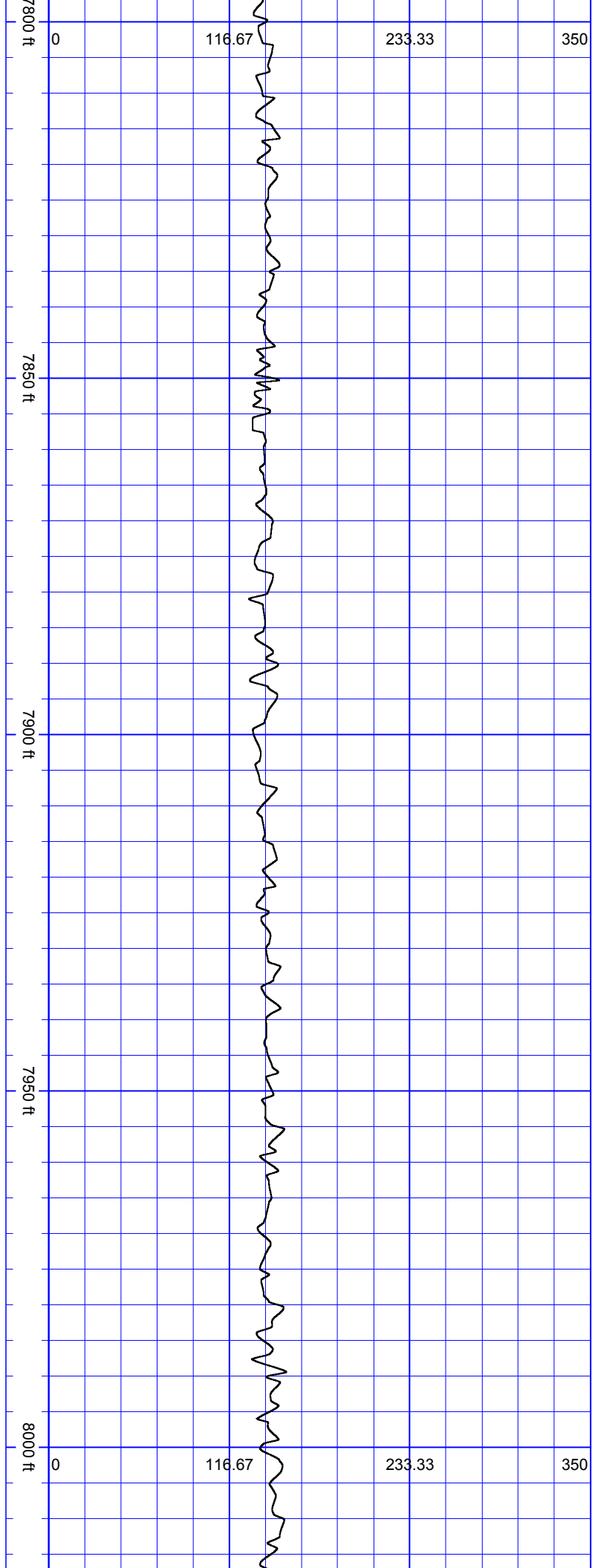
7550 ft



SurveyDepth:7656
TVD:6101.53 Inc:90.1
Azi:183 VertSec:1719.26

SurveyDepth:7745
TVD:6102.54 Inc:88.6
Azi:180.9
VertSec:1808.2

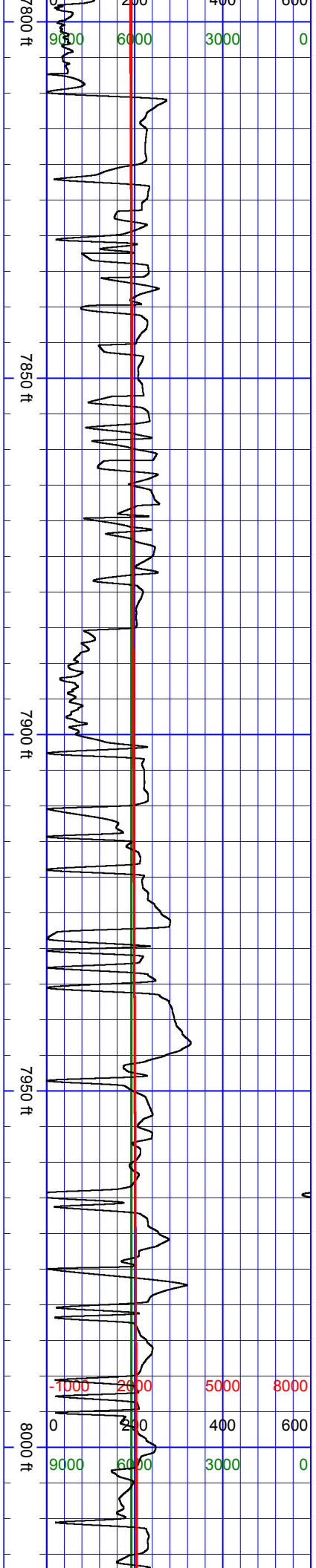


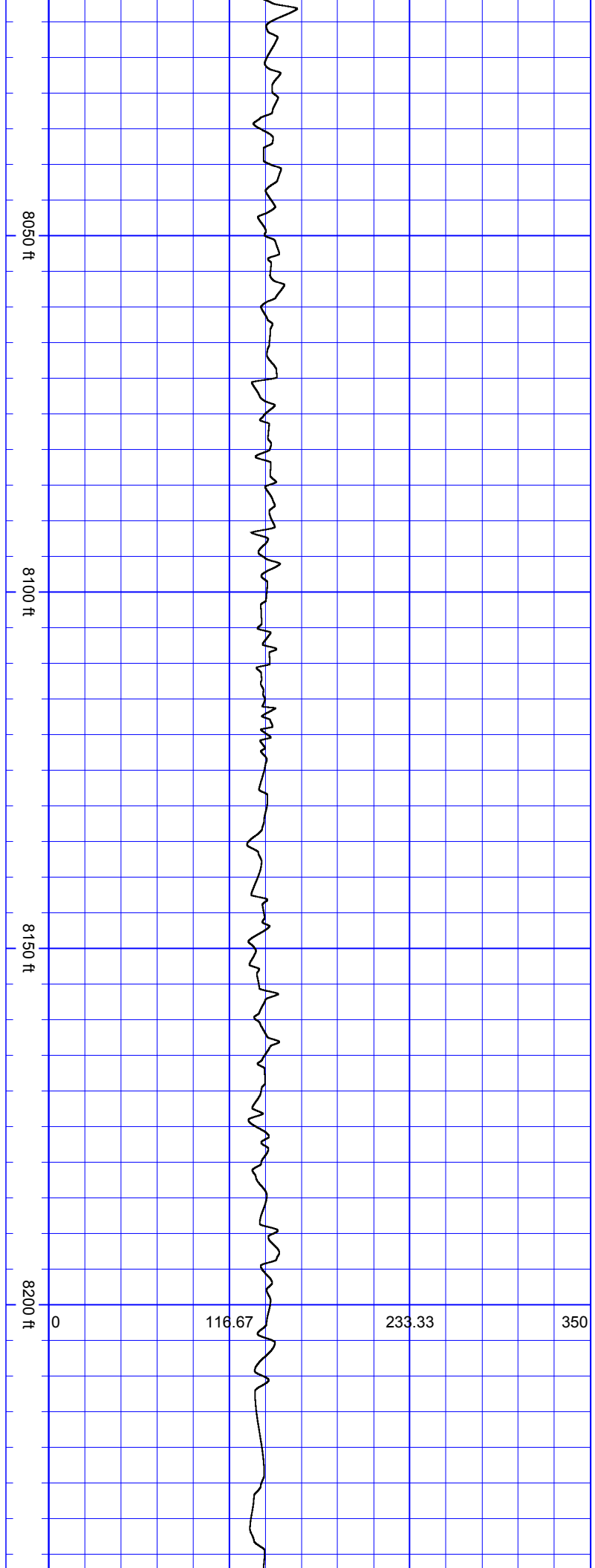


SurveyDepth:7835
TVD:6104.35 Inc:89.1
Azi:180.3
VertSec:1898.17

SurveyDepth:7924
TVD:6104.5 Inc:90.7
Azi:180.7
VertSec:1987.17

SurveyDepth:8014

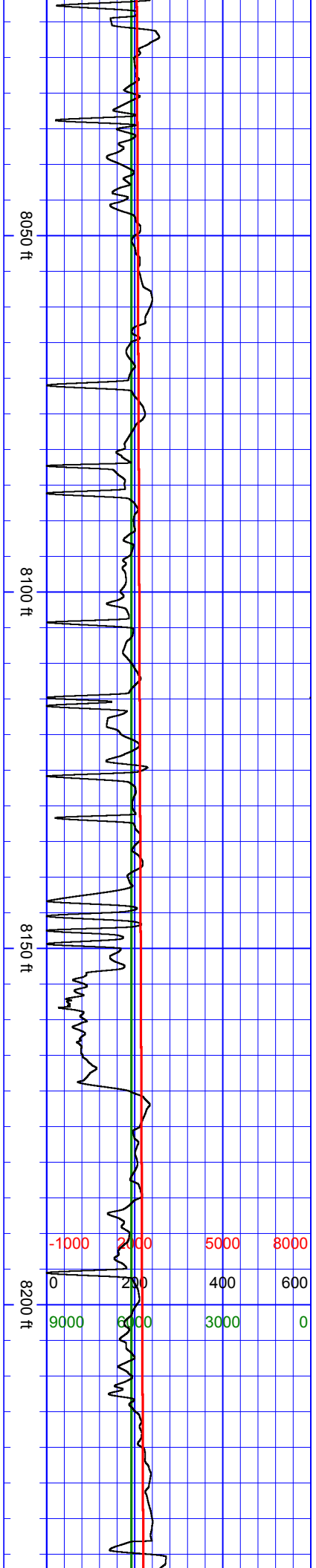


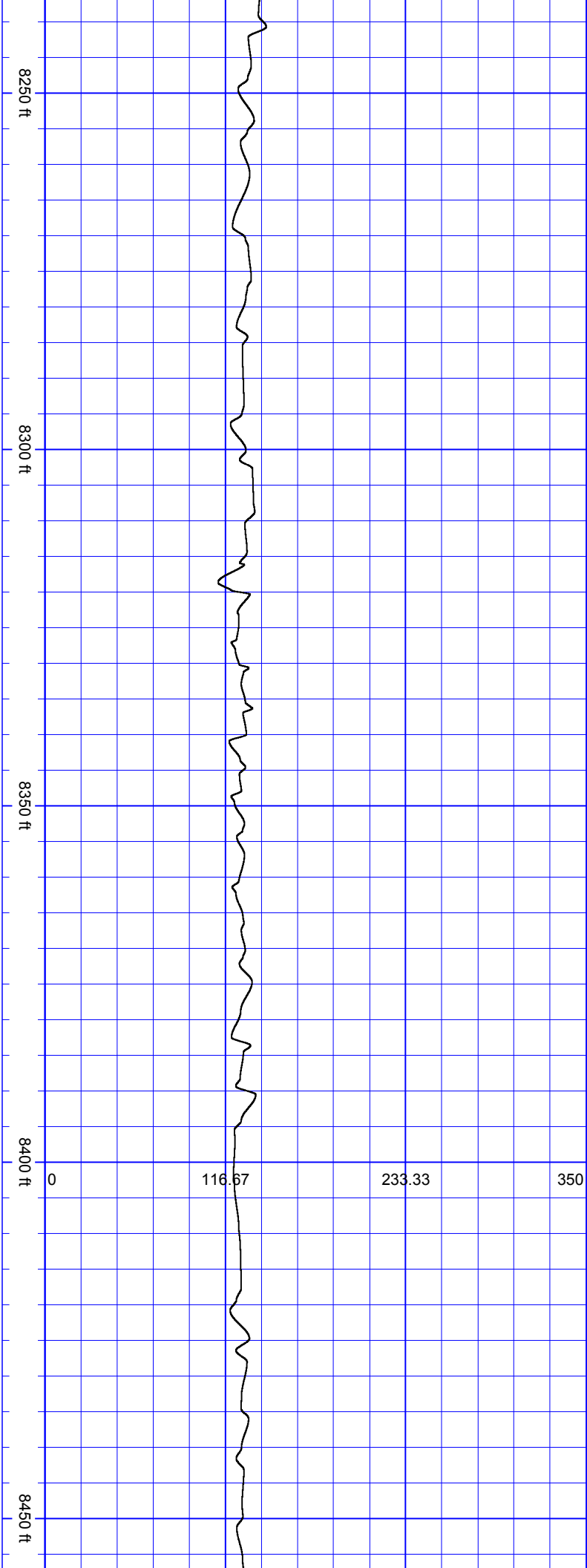


TVD:6103.32 Inc:90.8
Azi:180.1
VertSec:2077.16

SurveyDepth:8104
TVD:6102.22 Inc:90.6
Azi:180 VertSec:2167.15

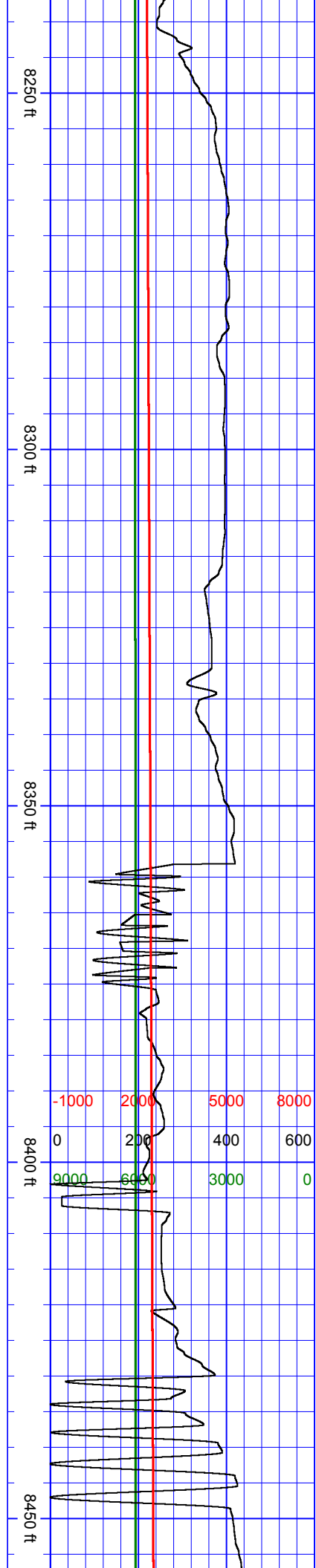
SurveyDepth:8190
TVD:6100.42 Inc:91.8
Azi:181.4
VertSec:2253.12

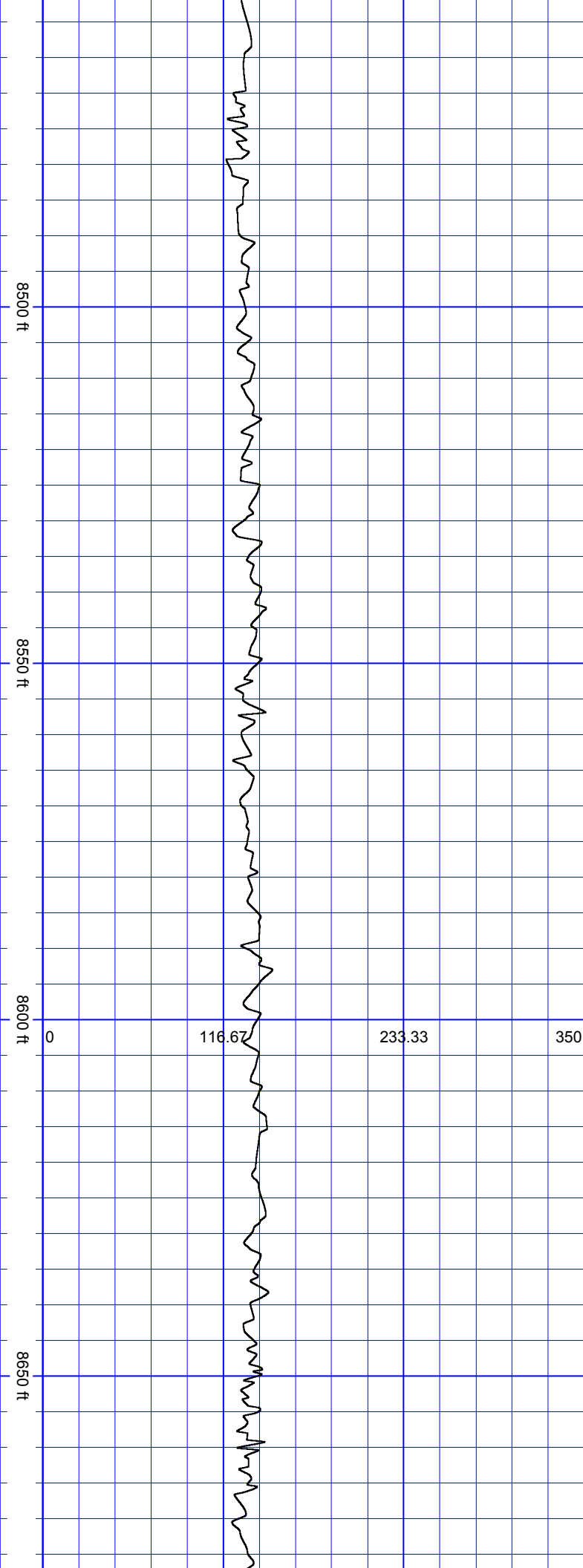




SurveyDepth:8280
TVD:6097.99 Inc:91.3
Azi:182.2
VertSec:2343.04

SurveyDepth:8370
TVD:6096.65 Inc:90.4
Azi:181.5
VertSec:2432.98

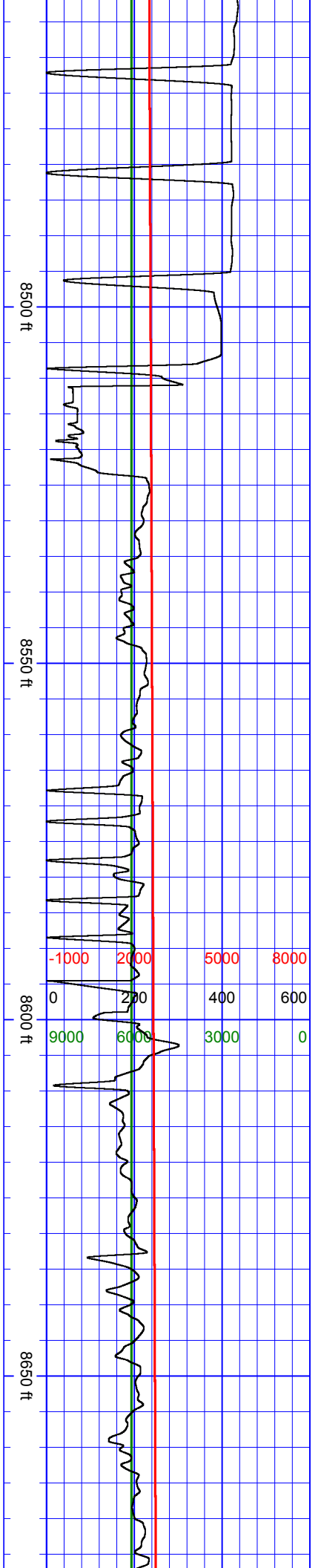


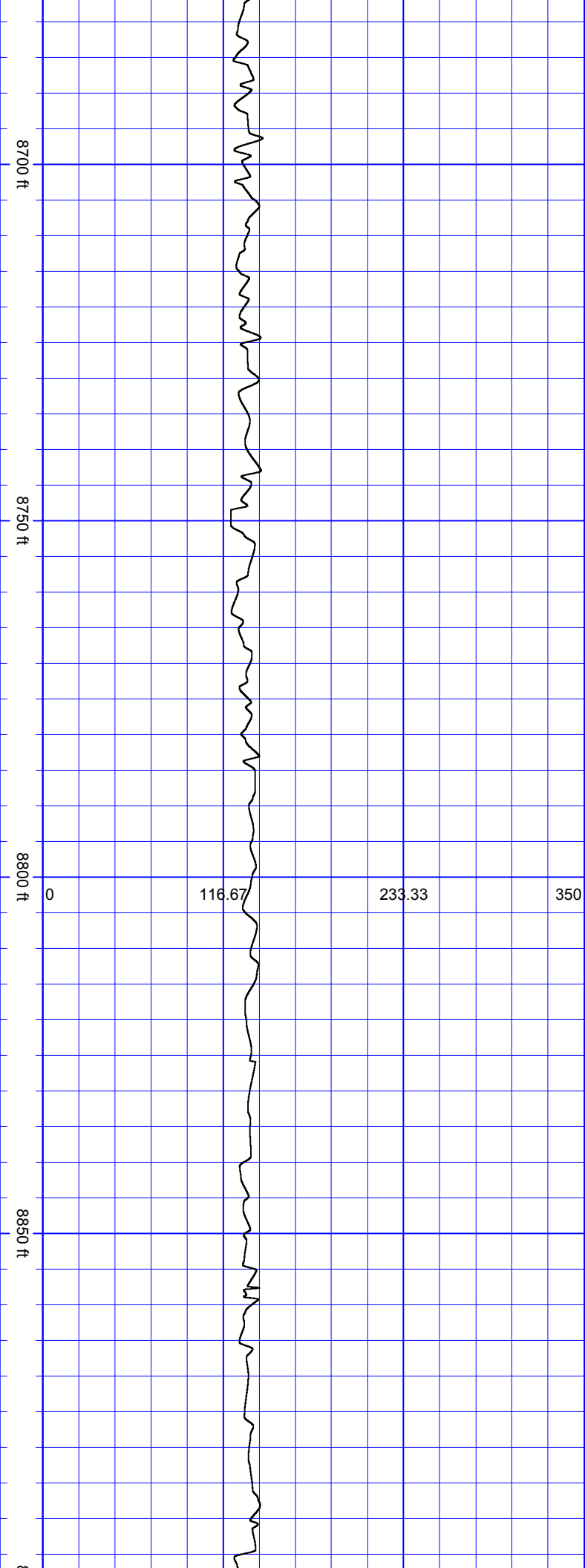


SurveyDepth:8460
TVD:6096.5 Inc:89.8
Azi:181.5
VertSec:2522.95

SurveyDepth:8549
TVD:6096.42 Inc:90.3
Azi:181.9
VertSec:2611.91

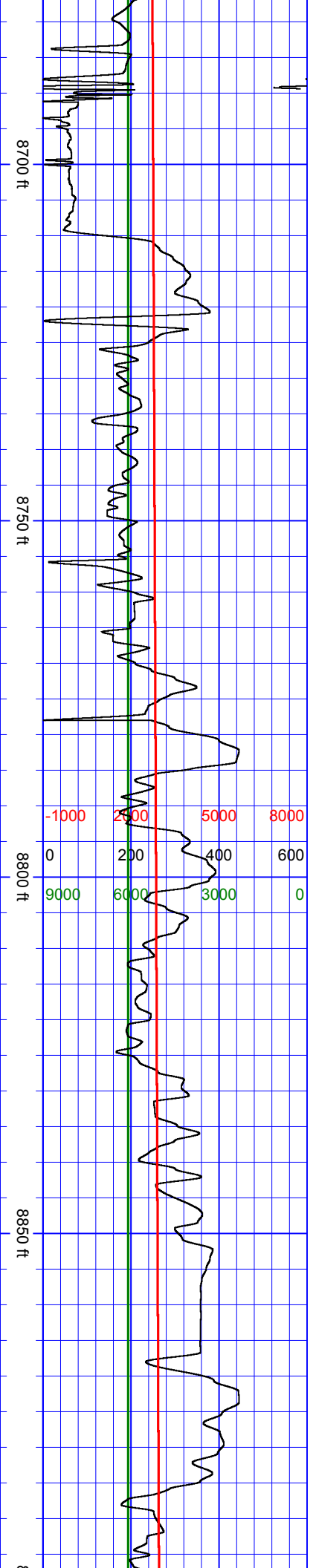
SurveyDepth:8639
TVD:6096.5 Inc:89.6
Azi:181.4
VertSec:2701.88

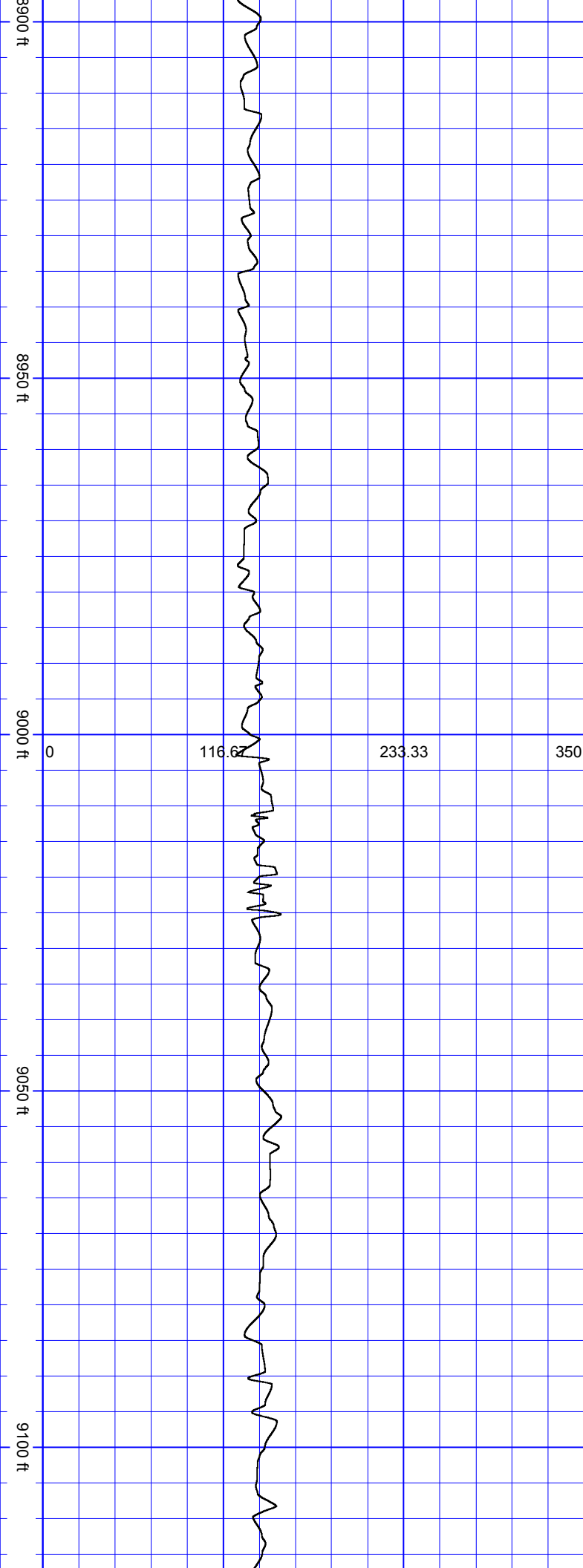




SurveyDepth:8728
TVD:6096.27 Inc:90.7
Azi:180.9
VertSec:2790.86

SurveyDepth:8818
TVD:6095.56 Inc:90.2
Azi:181.3
VertSec:2880.84

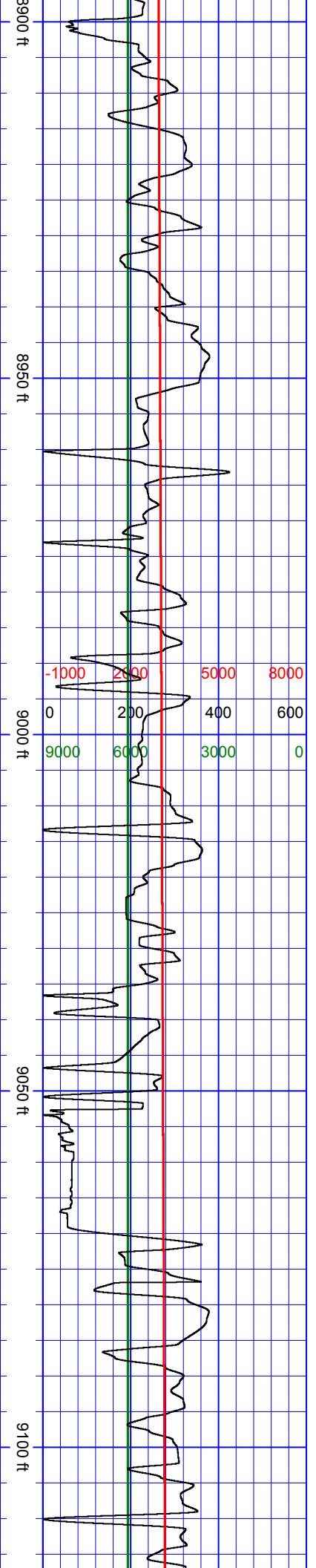


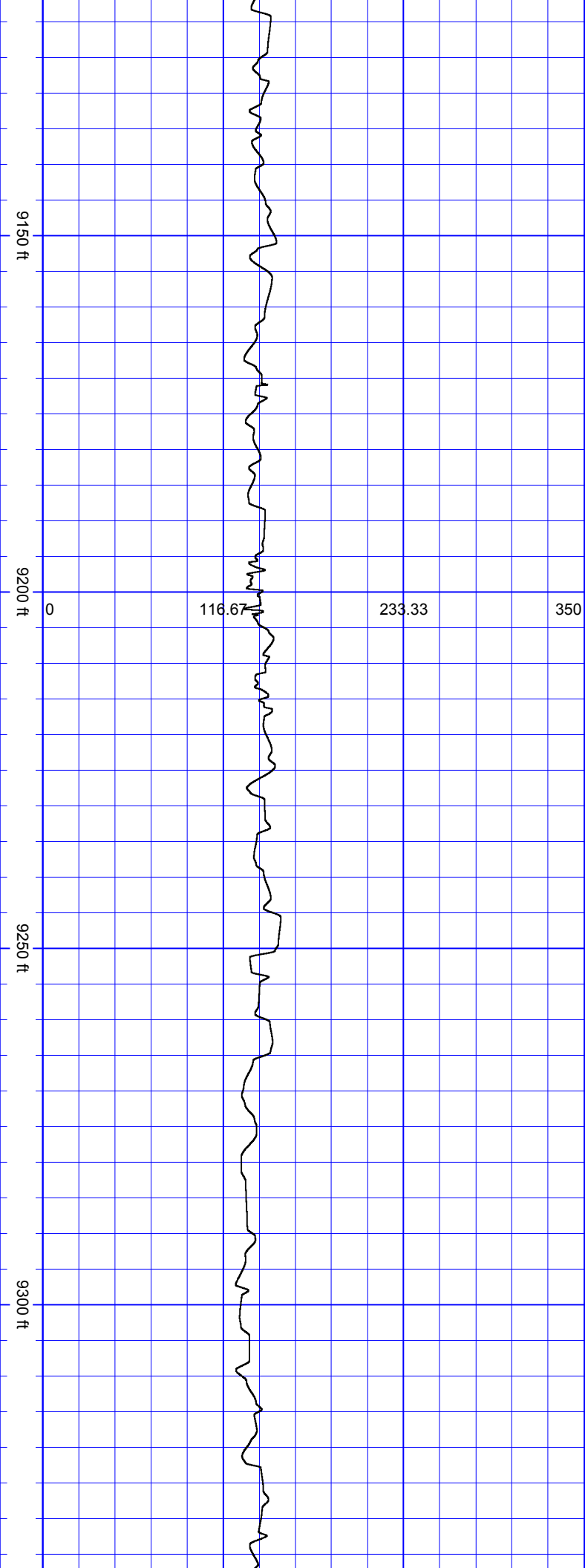


SurveyDepth:8910
TVD:6095 Inc:90.5
Azi:180.8
VertSec:2972.82

SurveyDepth:9002
TVD:6094.76 Inc:89.8
Azi:180.1
VertSec:3064.81

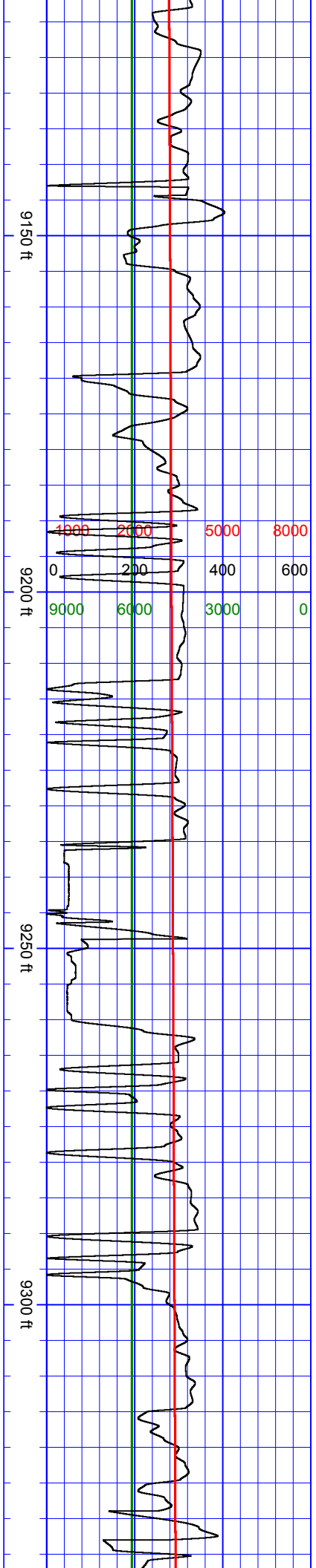
SurveyDepth:9093
TVD:6094.44 Inc:90.6
Azi:179.8
VertSec:3155.81

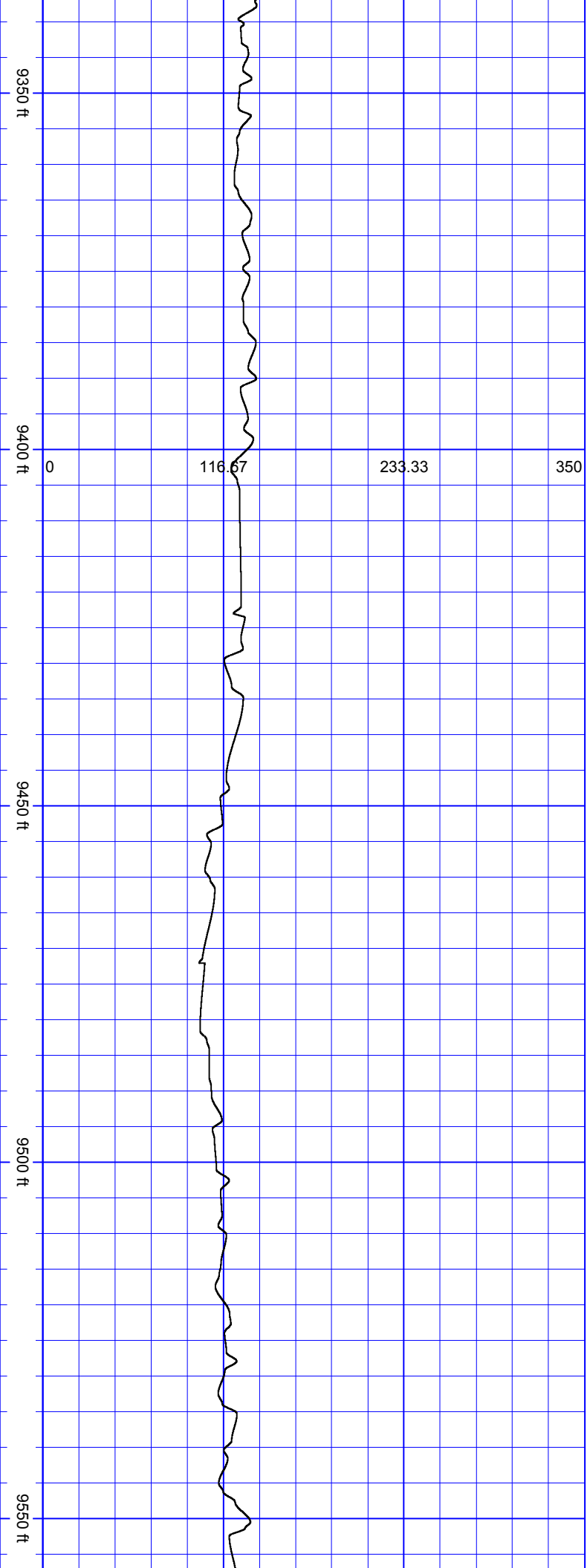




SurveyDepth:9186
TVD:6094.03 Inc:89.9
Azi:180.3
VertSec:3248.81

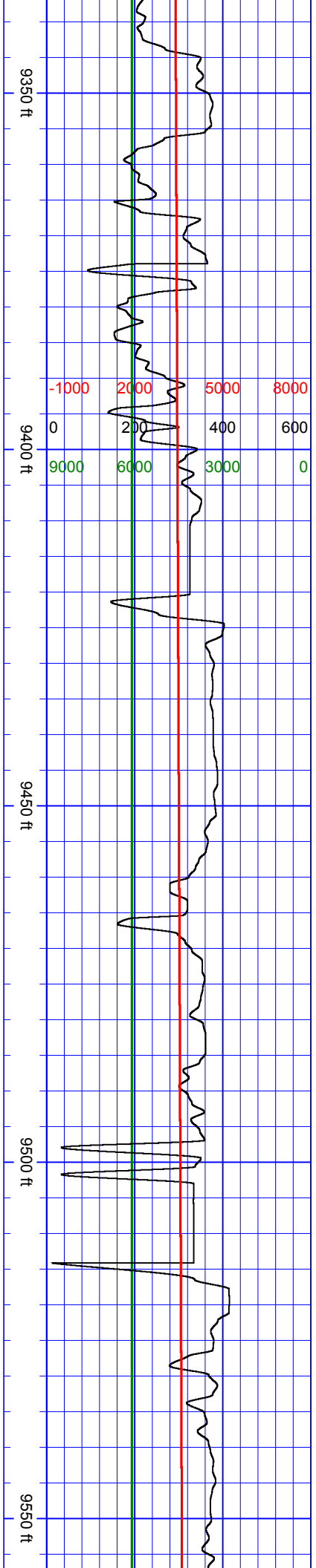
SurveyDepth:9279
TVD:6092.17 Inc:92.4
Azi:180.2
VertSec:3341.78

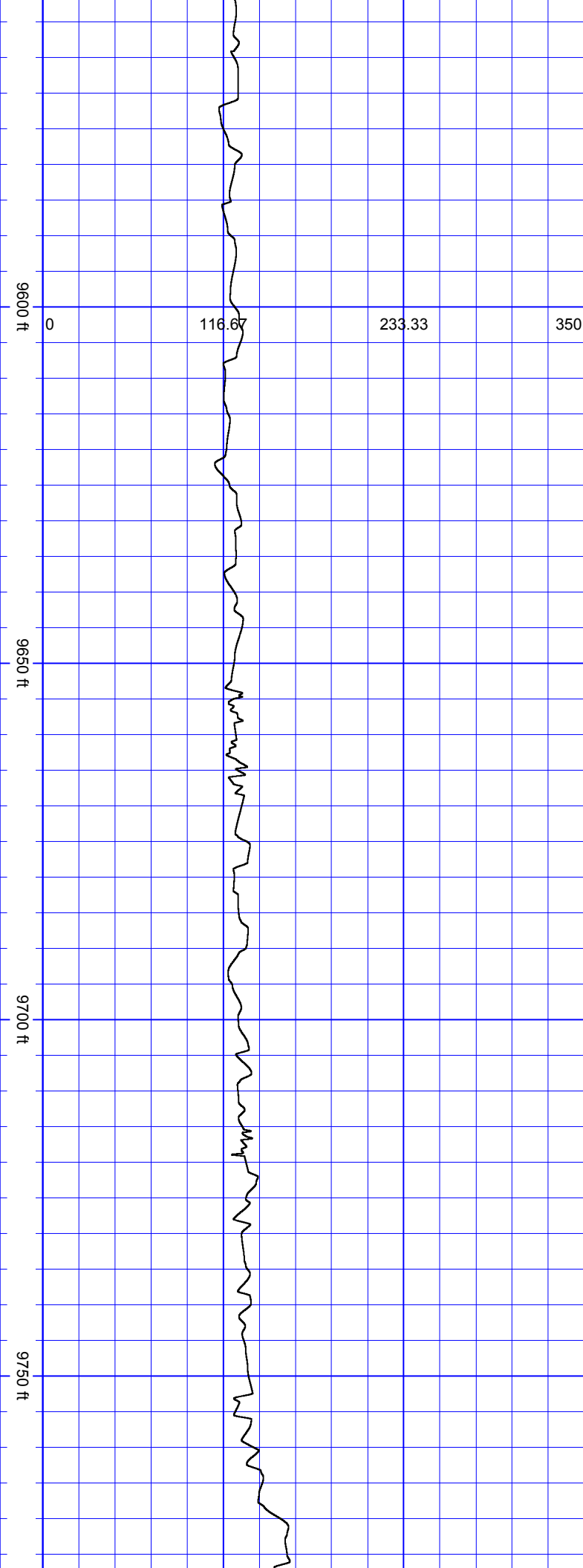




SurveyDepth:9371
TVD:6088.31 Inc:92.4
Azi:180.8
VertSec:3433.7

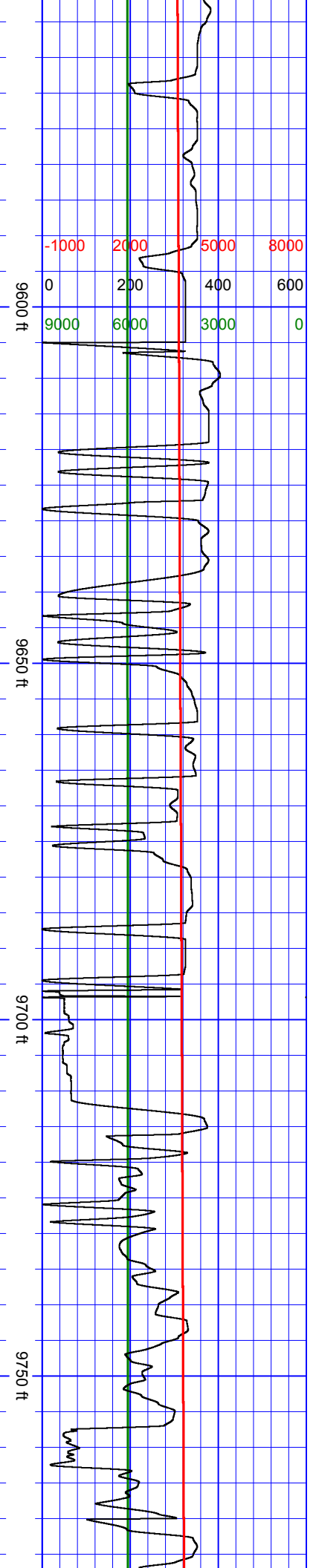
SurveyDepth:9555

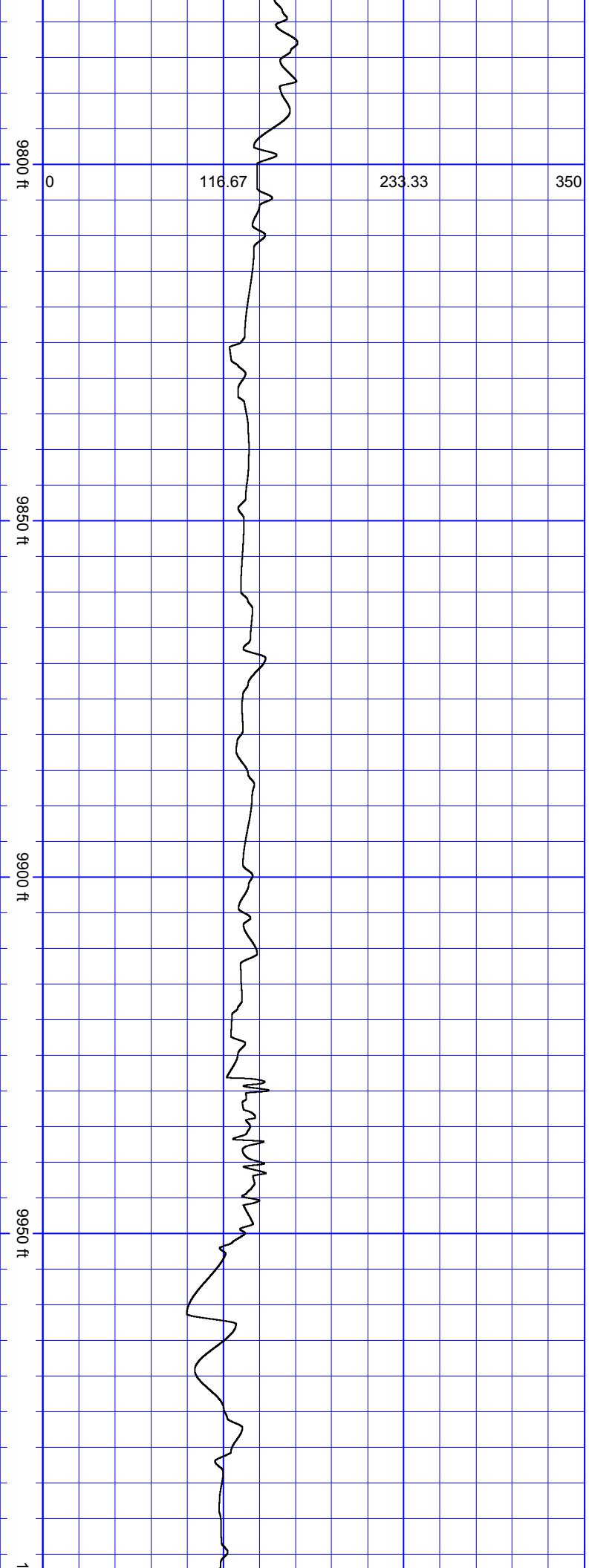




TVD:6083.18 Inc:90.8
Azi:181.1
VertSec:3617.6

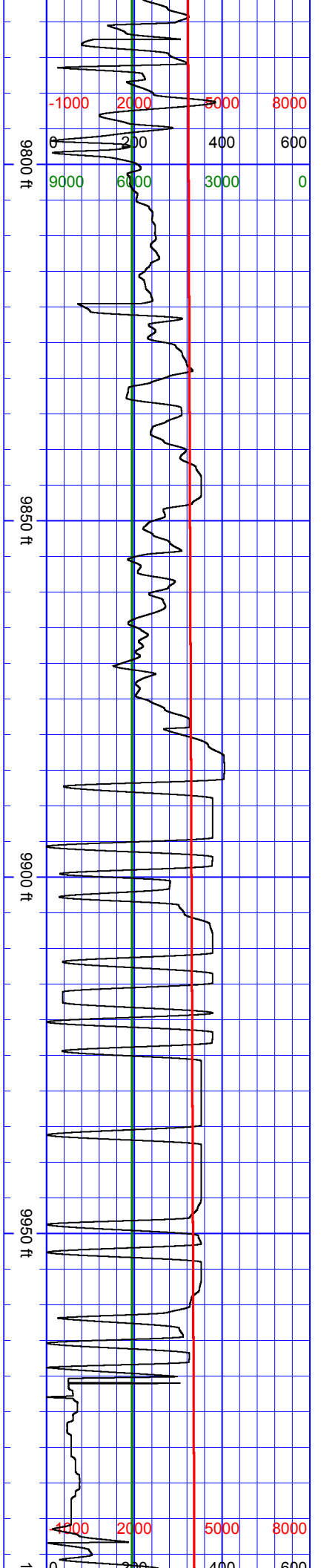
SurveyDepth:9737
TVD:6079.36 Inc:91.6
Azi:180.4
VertSec:3799.54

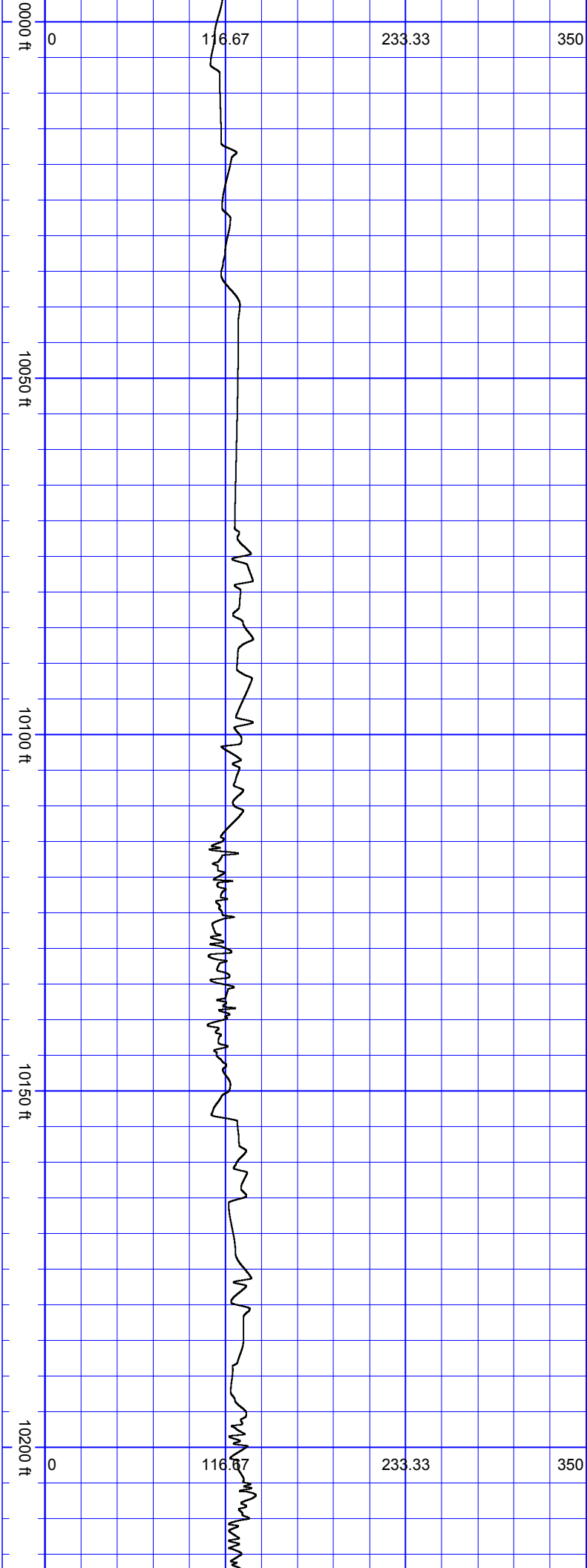




SurveyDepth:9829
TVD:6076.63 Inc:91.8
Azi:180.5
VertSec:3891.49

SurveyDepth:9920
TVD:6073.7 Inc:91.9
Azi:181.2
VertSec:3982.44

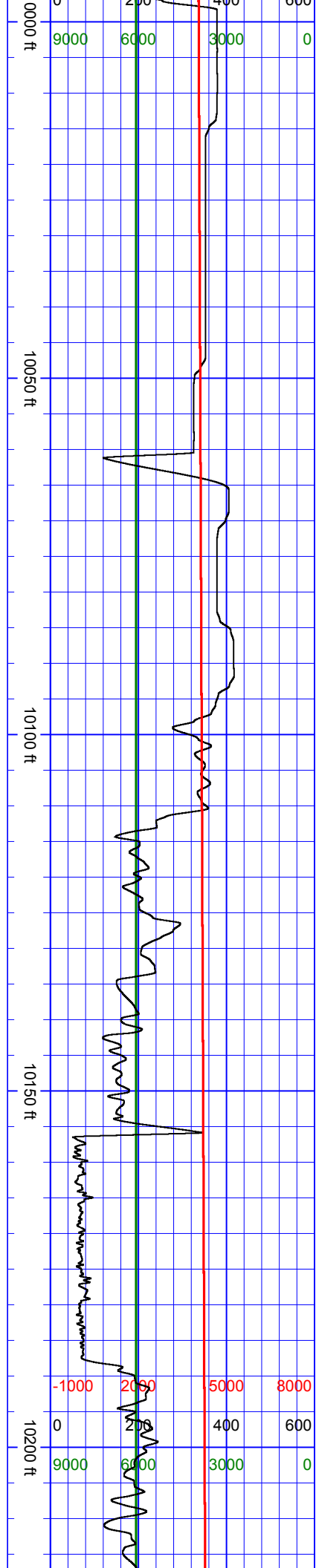


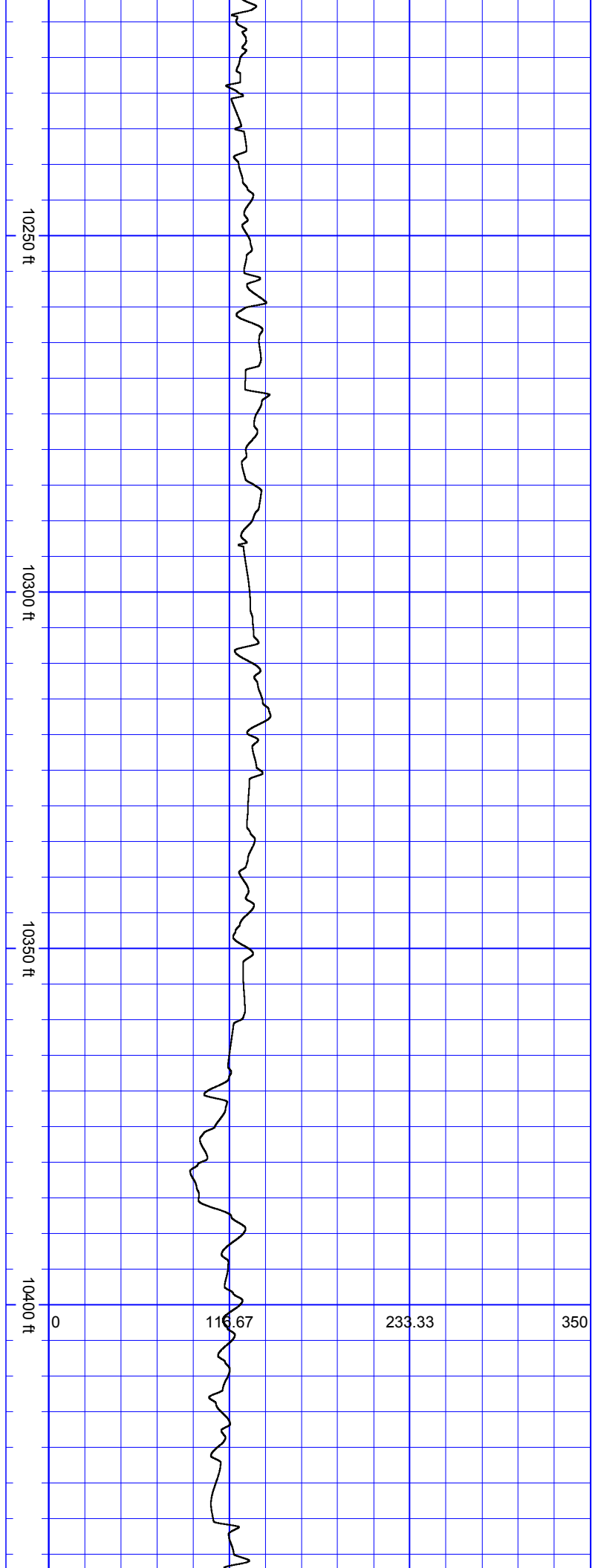


SurveyDepth:10011
TVD:6072.35 Inc:89.8
Azi:179 VertSec:4073.42

SurveyDepth:10103
TVD:6072.51 Inc:90
Azi:180.8
VertSec:4165.41

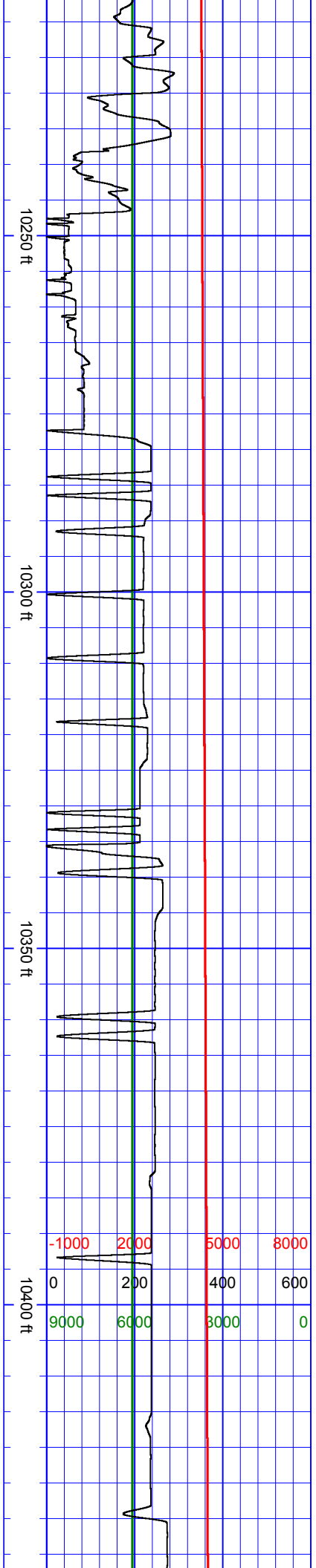
SurveyDepth:10196
TVD:6072.43 Inc:90.1
Azi:181.8
VertSec:4258.39

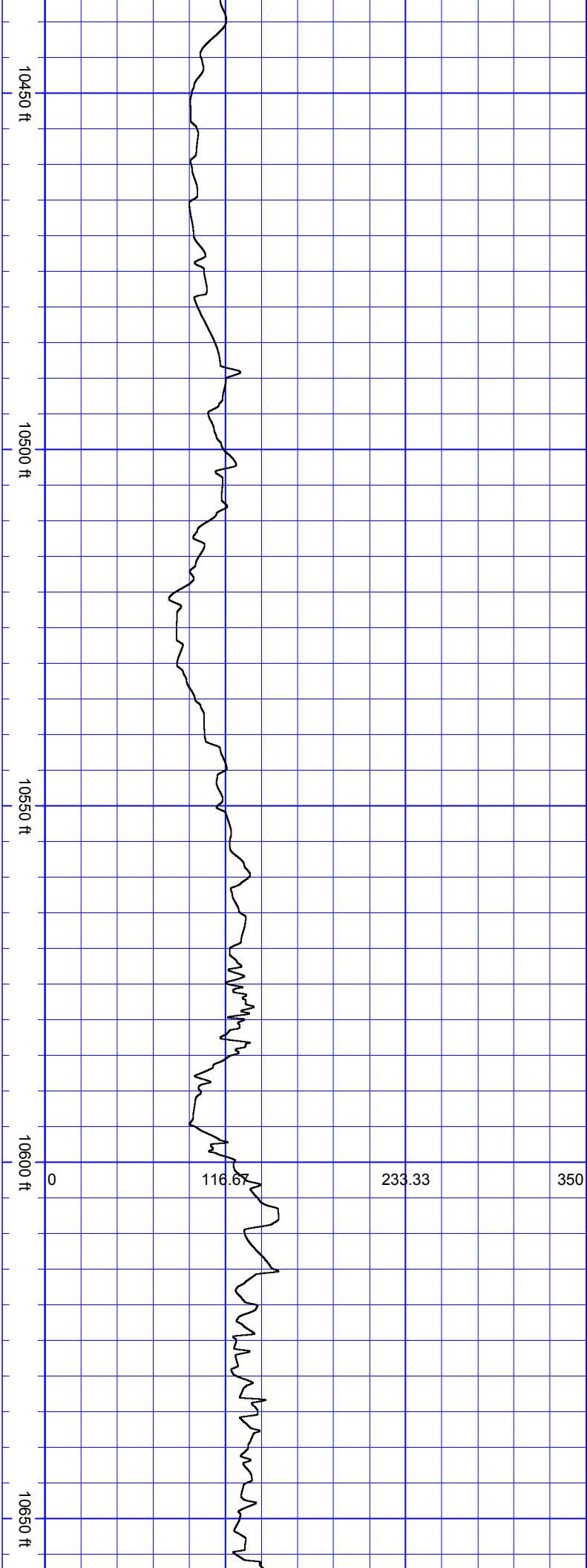




SurveyDepth:10288
TVD:6072.83 Inc:89.4
Azi:177.9
VertSec:4350.37

SurveyDepth:10380
TVD:6072.91 Inc:90.5
Azi:177.4
VertSec:4442.29

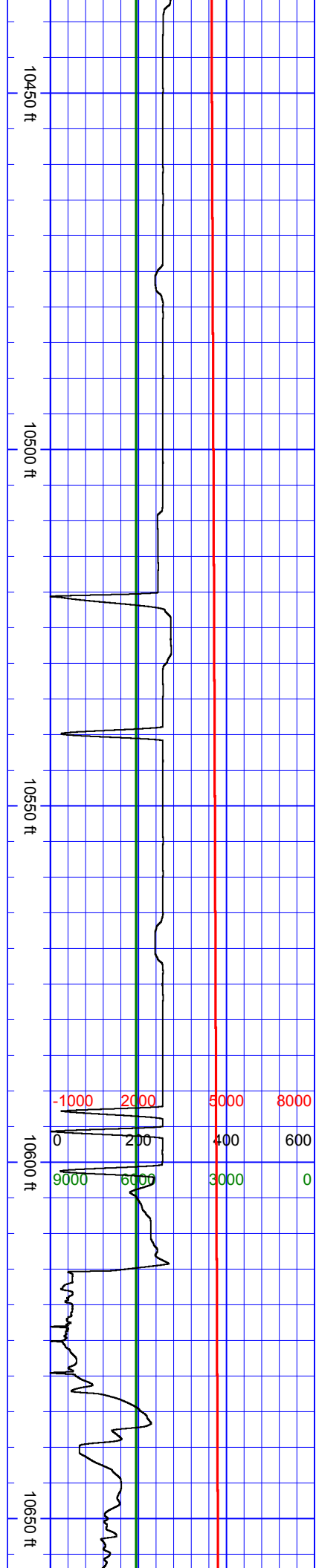




SurveyDepth:10472
TVD:6072.43 Inc:90.1
Azi:177.8
VertSec:4534.21

SurveyDepth:10563
TVD:6072.59 Inc:89.7
Azi:178.2
VertSec:4625.15

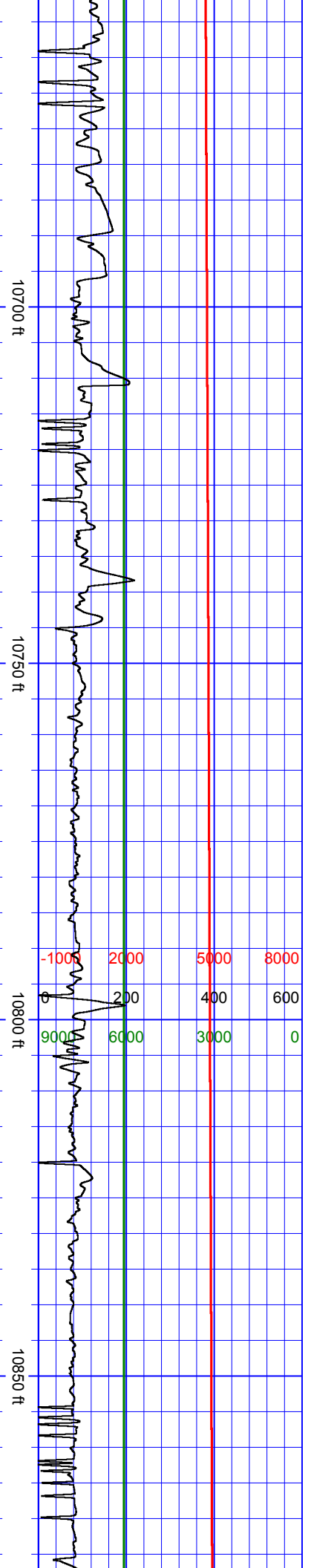
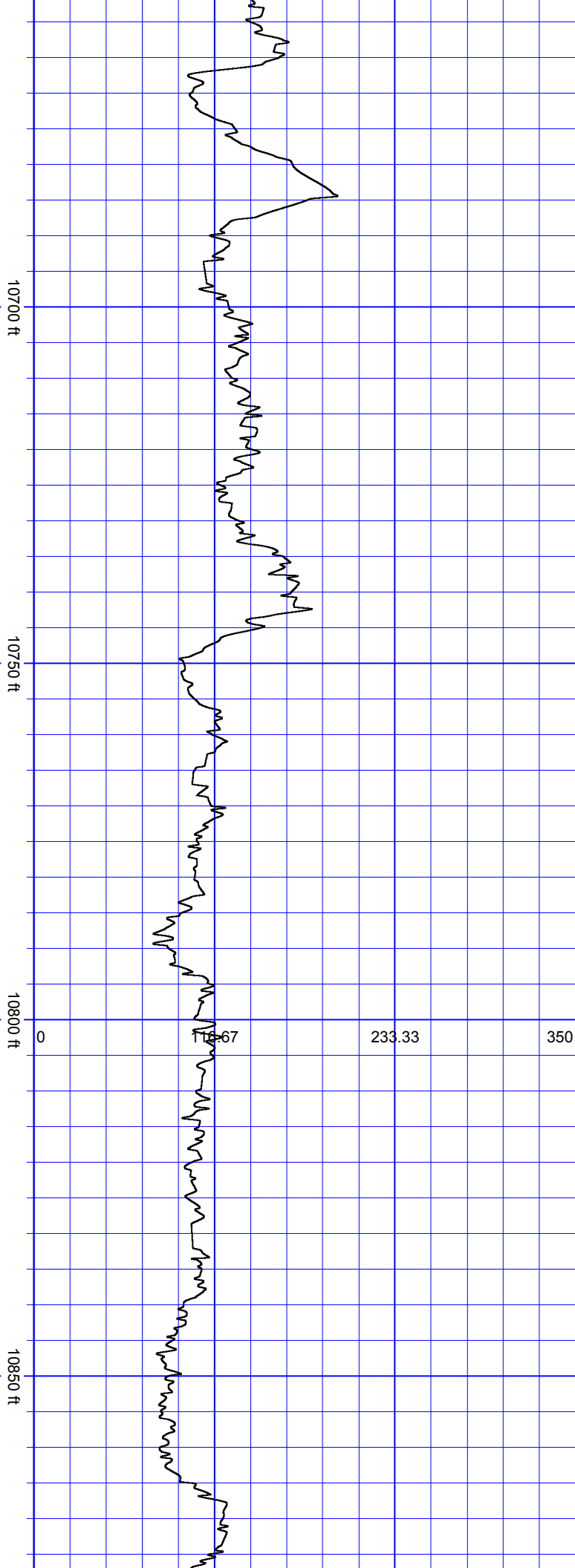
SurveyDepth:10650

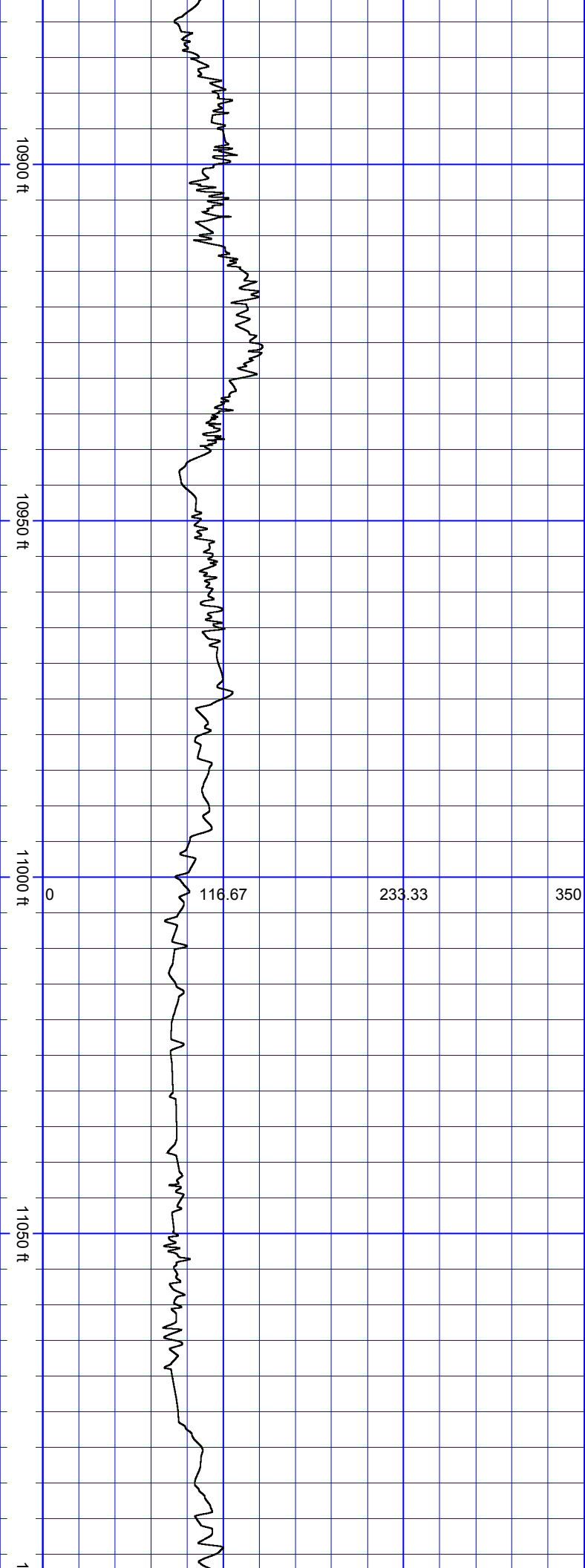


SurveyDepth:10656
TVD:6072.18 Inc:90.8
Azi:176.6
VertSec:4718.05

SurveyDepth:10748
TVD:6071.22 Inc:90.4
Azi:175.9
VertSec:4809.85

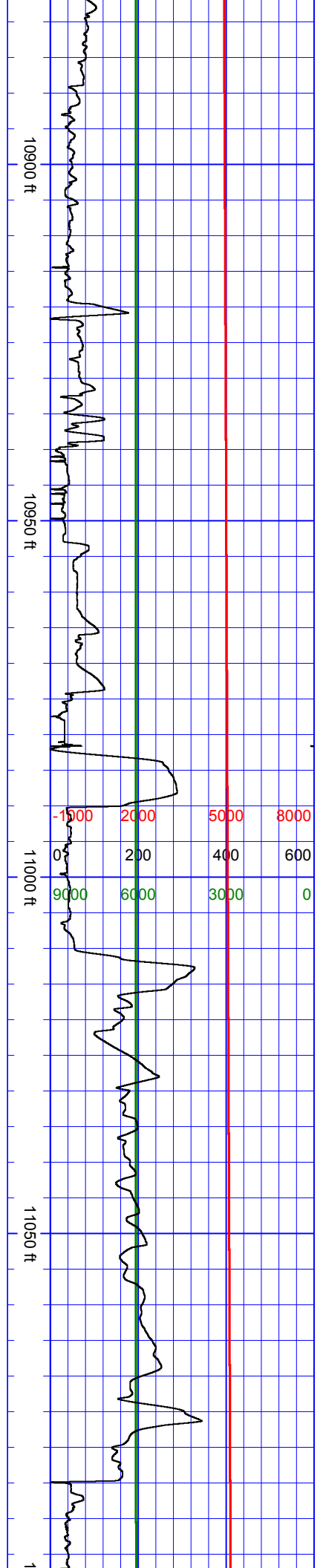
SurveyDepth:10840
TVD:6070.98 Inc:89.9
Azi:175.1
VertSec:4901.56

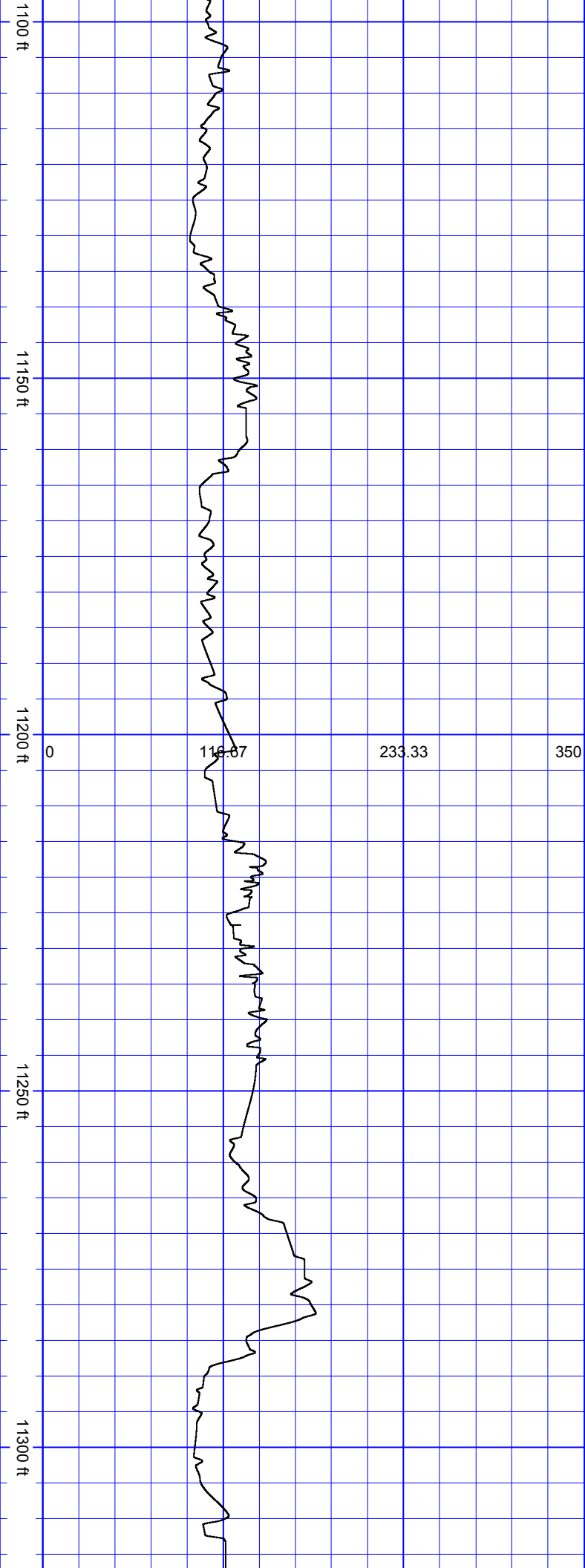




SurveyDepth:10931
TVD:6069.63 Inc:91.8
Azi:178 VertSec:4992.37

SurveyDepth:11023
TVD:6066.57 Inc:92
Azi:180.4
VertSec:5084.31

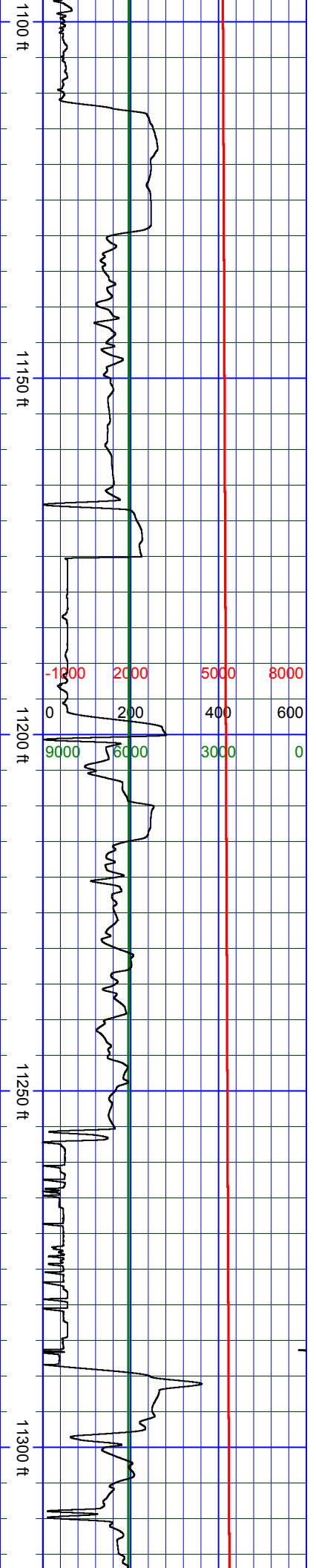


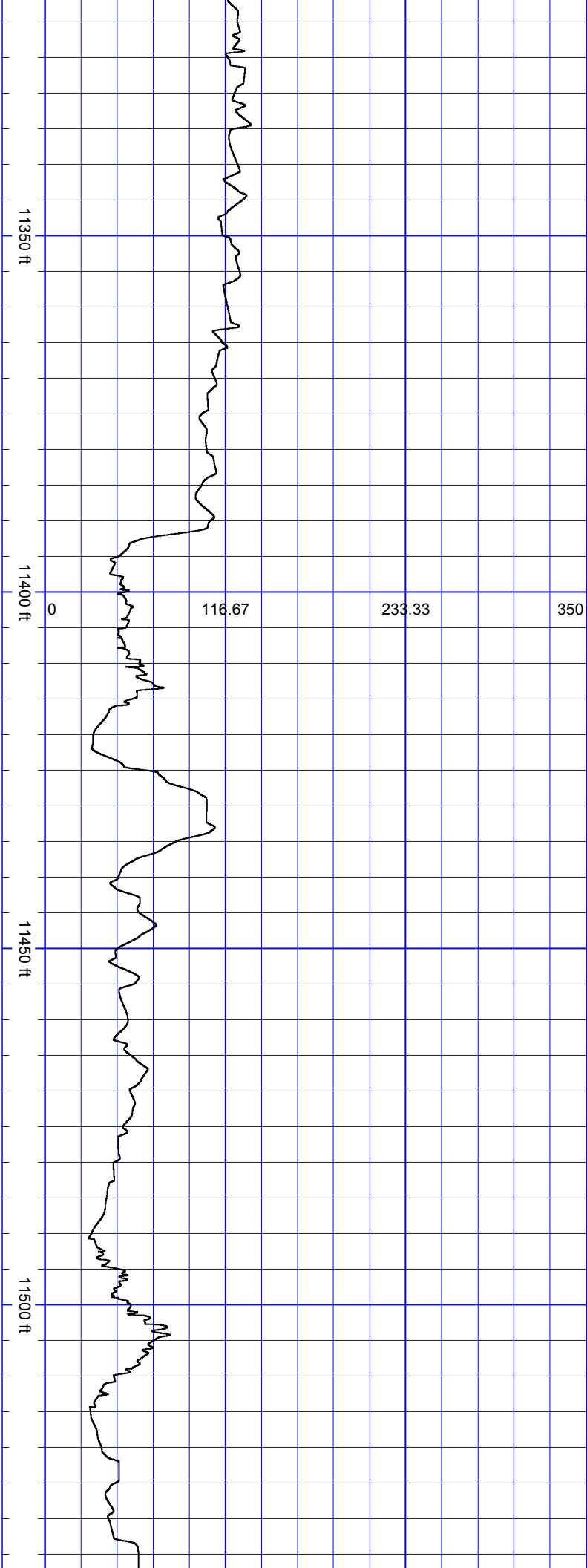


SurveyDepth:11115
TVD:6064.25 Inc:90.9
Azi:183.6
VertSec:5176.21

SurveyDepth:11207
TVD:6064.17 Inc:89.2
Azi:184.1 VertSec:5268

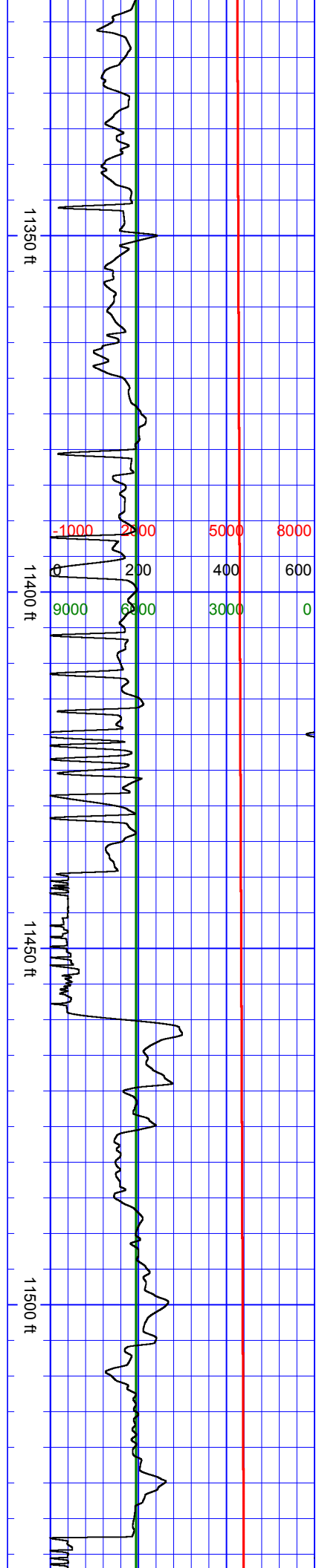
SurveyDepth:11298
TVD:6066.15 Inc:88.3
Azi:180.7
VertSec:5358.88

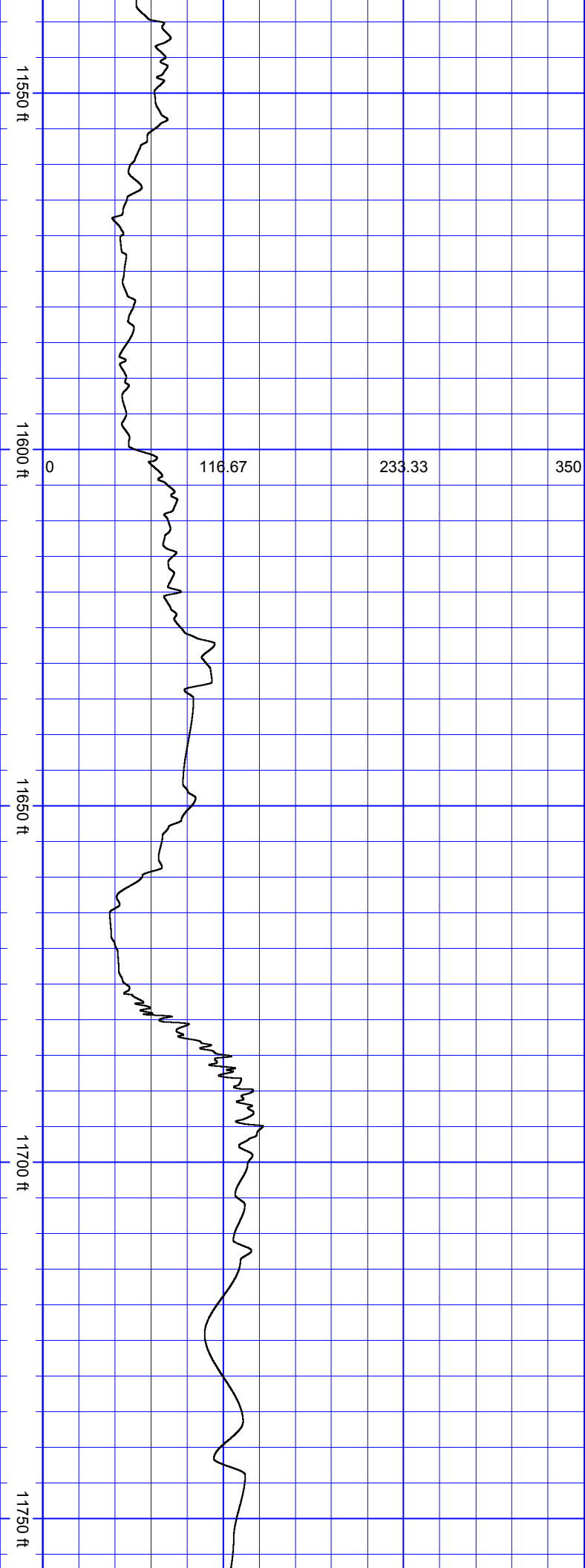




SurveyDepth:11390
TVD:6069.36 Inc:87.7
Azi:180.3
VertSec:5450.82

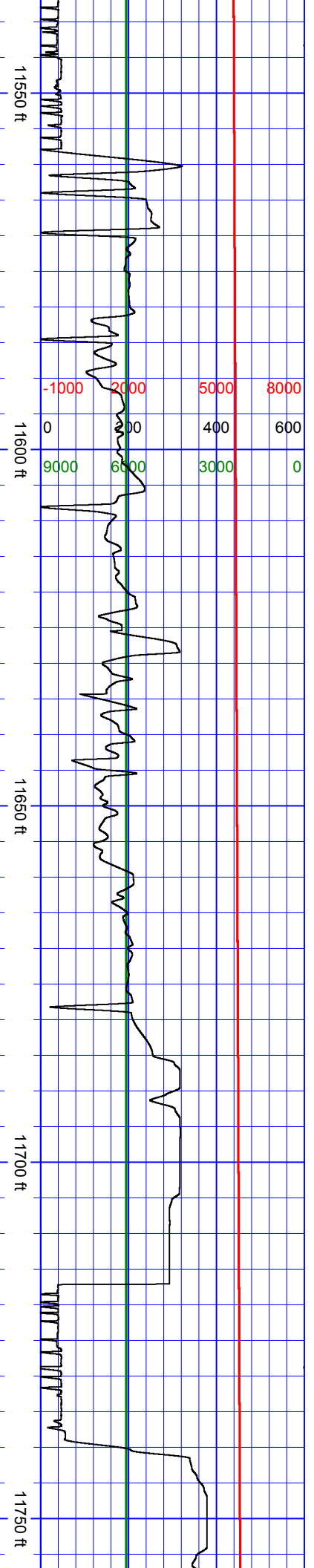
SurveyDepth:11483
TVD:6072.85 Inc:88
Azi:179.8
VertSec:5543.75





SurveyDepth:11574
TVD:6074.36 Inc:90.1
Azi:181.2
VertSec:5634.73

SurveyDepth:11667
TVD:6075.17 Inc:88.9
Azi:180.6
VertSec:5727.71



SurveyDepth:11759
TVD:6075.81 Inc:90.3
Azi:181 VertSec:5819.7

SurveyDepth:11851
TVD:6074.29 Inc:91.6
Azi:181 VertSec:5911.67

11800 ft 0 116.67 233.33 350

11850 ft

11900 ft

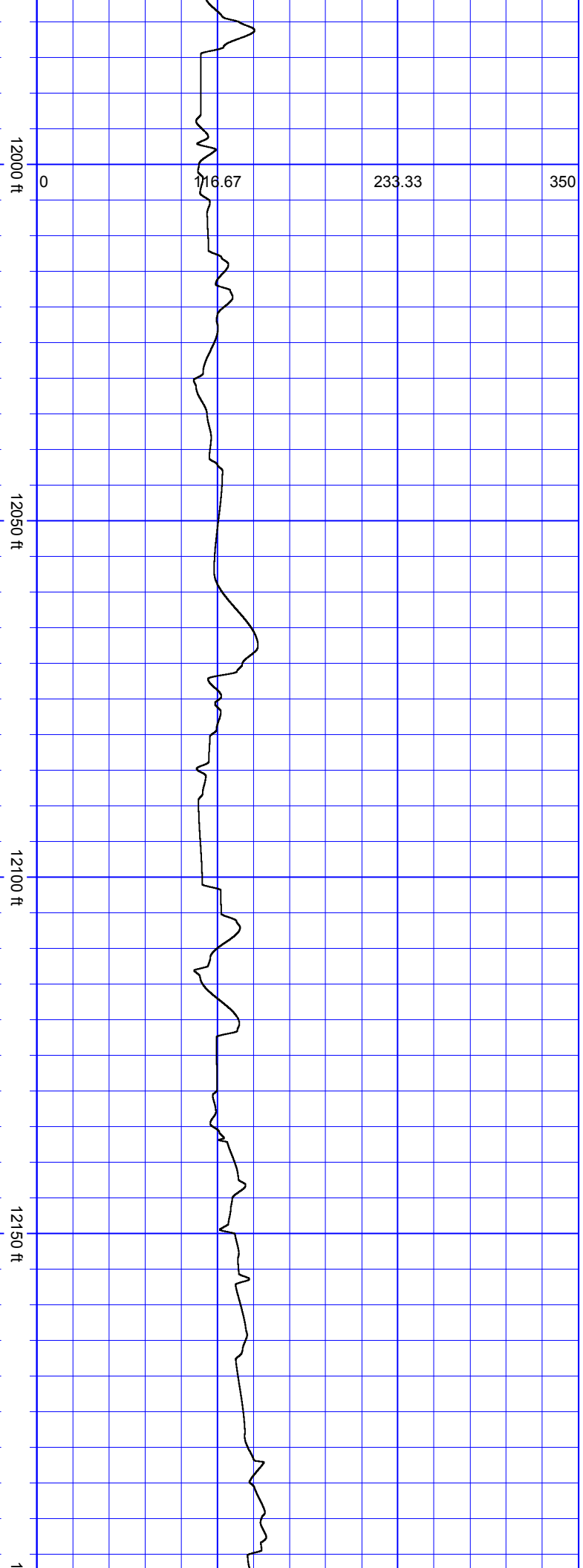
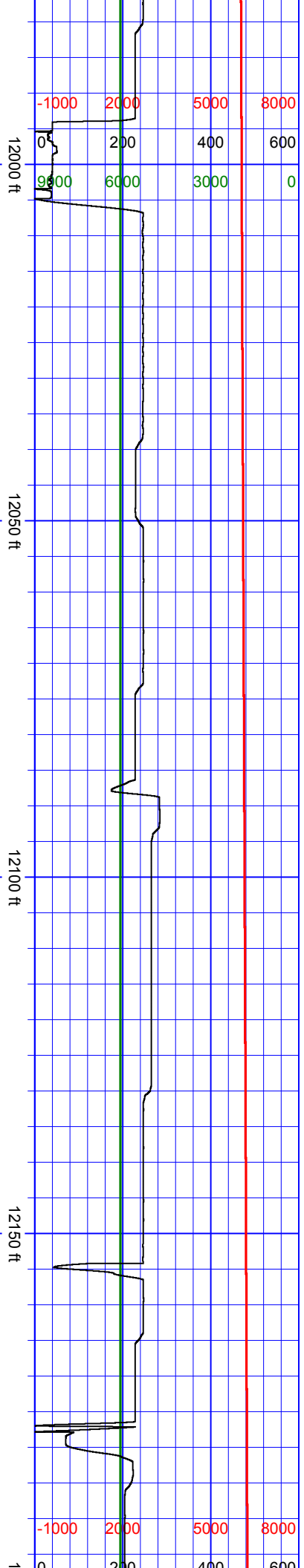
11950 ft

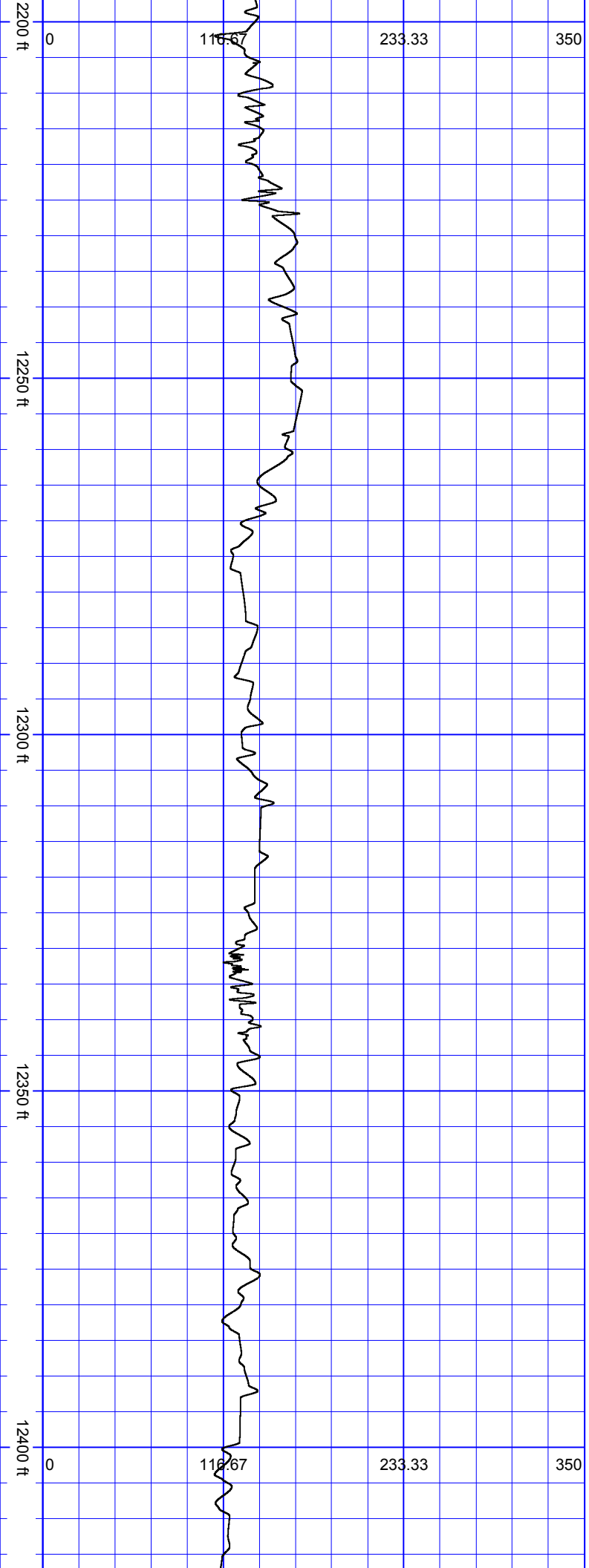
11800 ft -1000 2000 5500 8000
0 200 400 600
9000 6000 3000 0

11850 ft

11900 ft

11950 ft

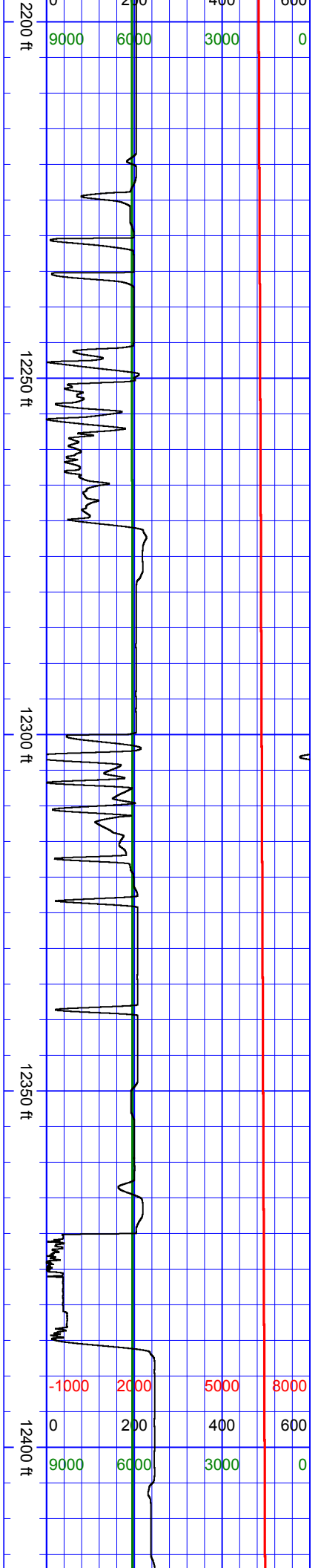


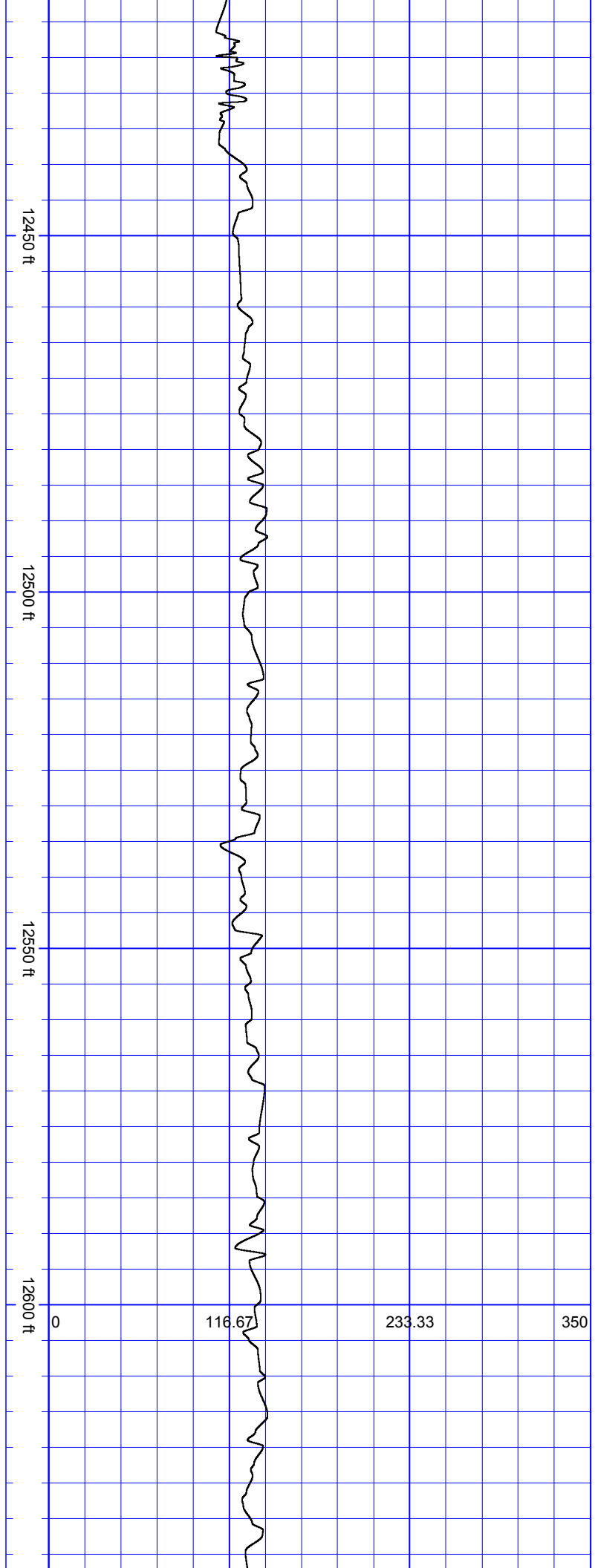


SurveyDepth:12219
TVD:6065.62 Inc:91.1
Azi:178.6
VertSec:6279.54

SurveyDepth:12310
TVD:6064.11 Inc:90.8
Azi:178.1
VertSec:6370.49

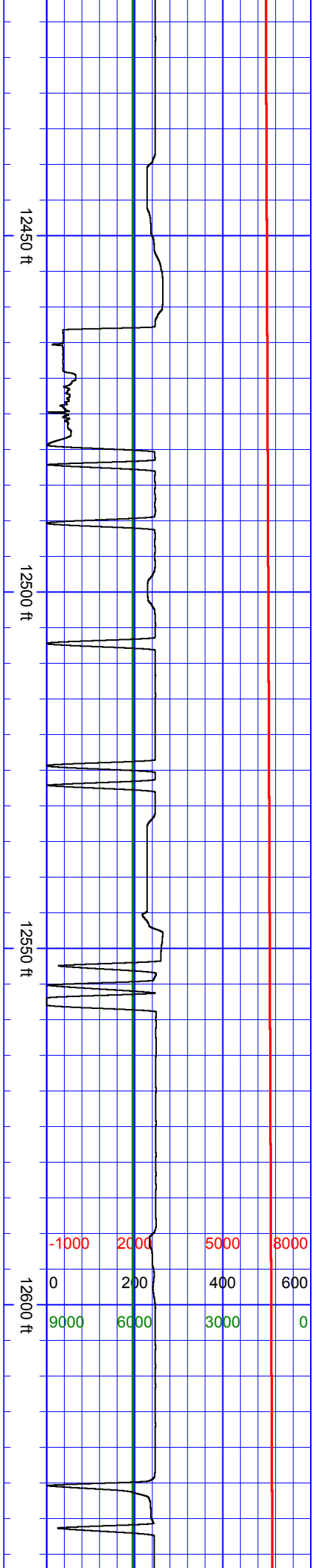
SurveyDepth:12403
TVD:6062.65 Inc:91
Azi:178 VertSec:6463.42

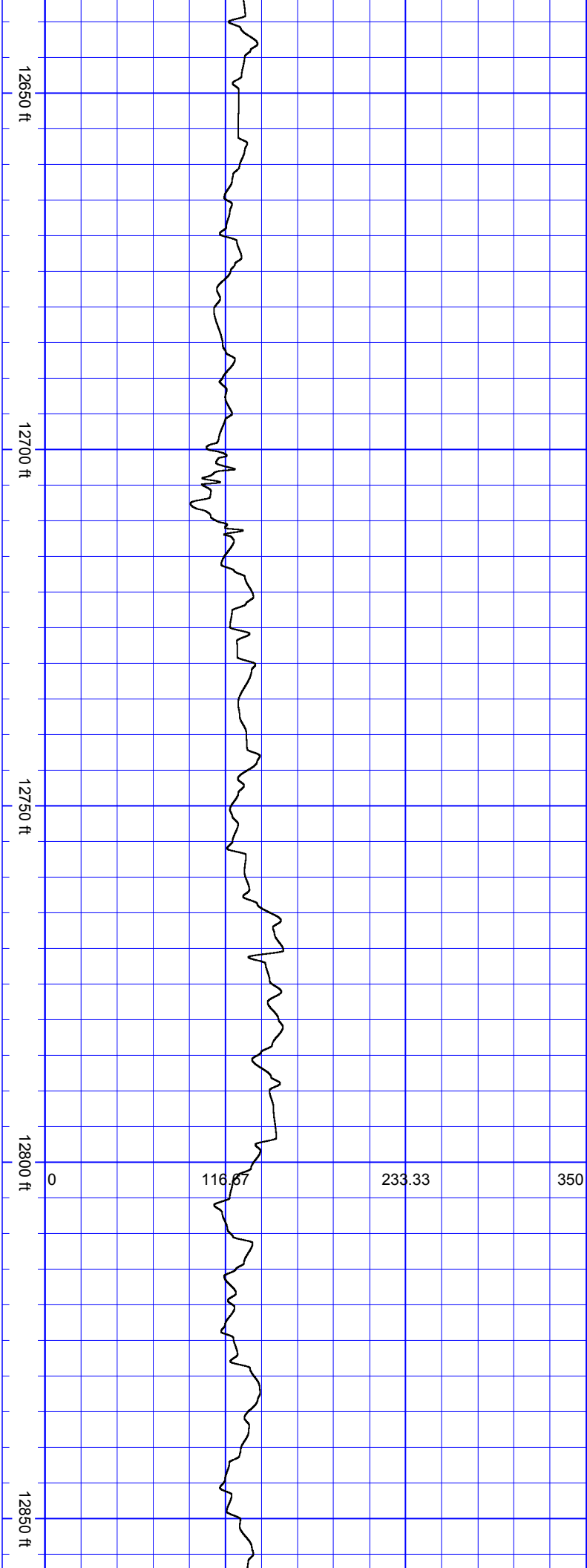




SurveyDepth:12495
TVD:6060.8 Inc:91.3
Azi:180.5
VertSec:6555.39

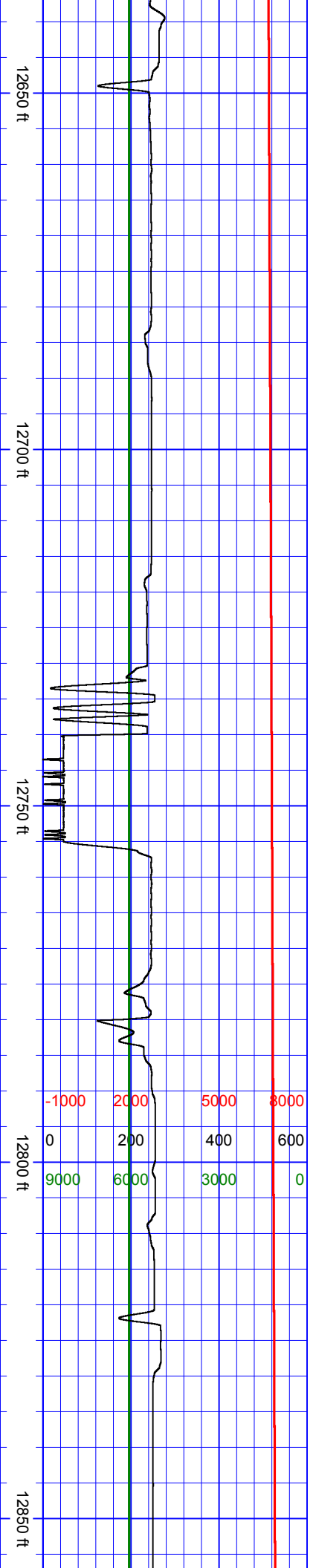
SurveyDepth:12588
TVD:6058.77 Inc:91.2
Azi:180.6
VertSec:6648.36

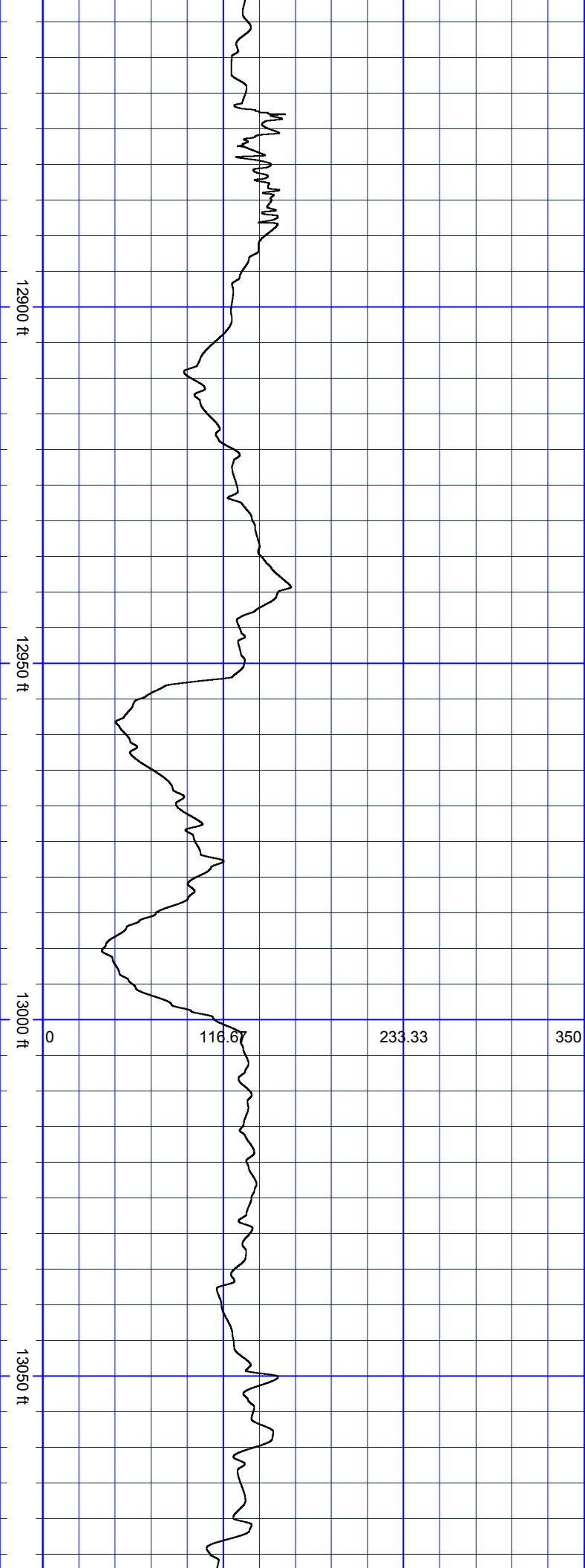




SurveyDepth:12680
TVD:6056.36 Inc:91.8
Azi:181.6
VertSec:6740.31

SurveyDepth:12772
TVD:6054.36 Inc:90.7
Azi:181.5
VertSec:6832.25

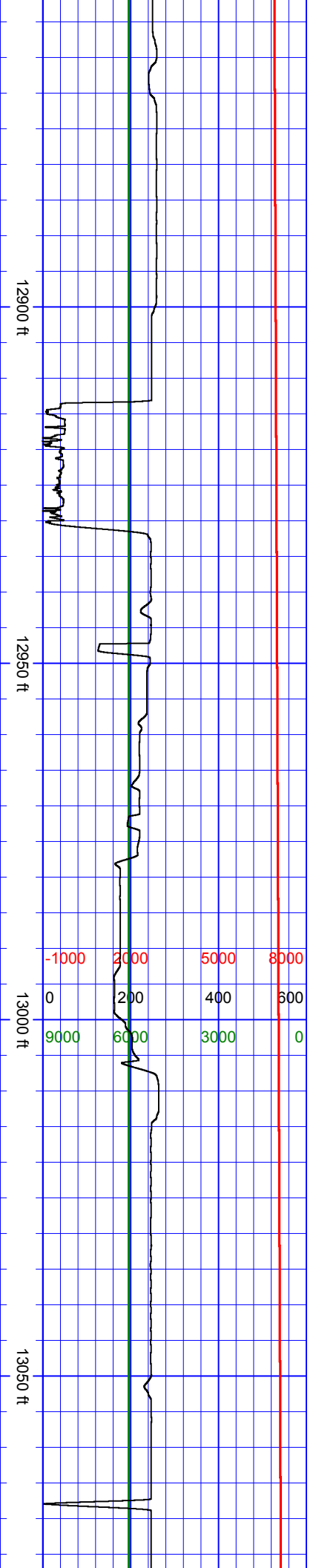


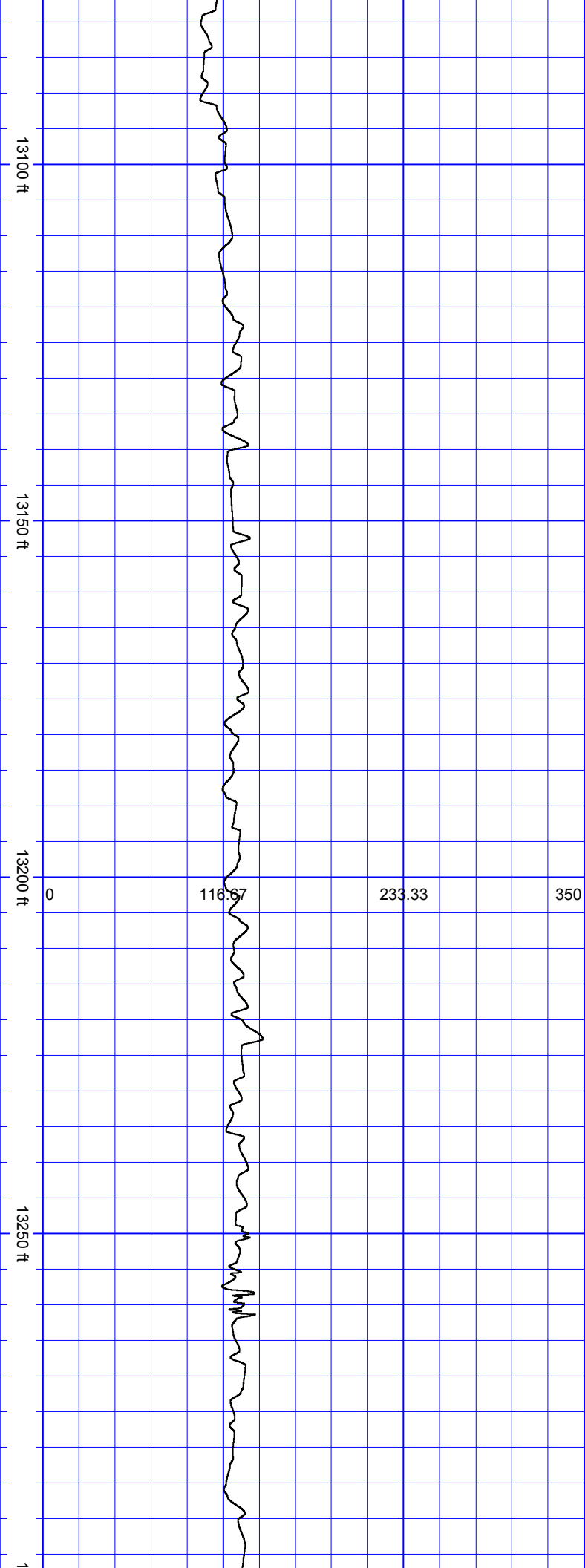


SurveyDepth:12864
TVD:6052.91 Inc:91.1
Azi:181.7
VertSec:6924.21

SurveyDepth:12956
TVD:6052.67 Inc:89.2
Azi:181.1
VertSec:7016.17

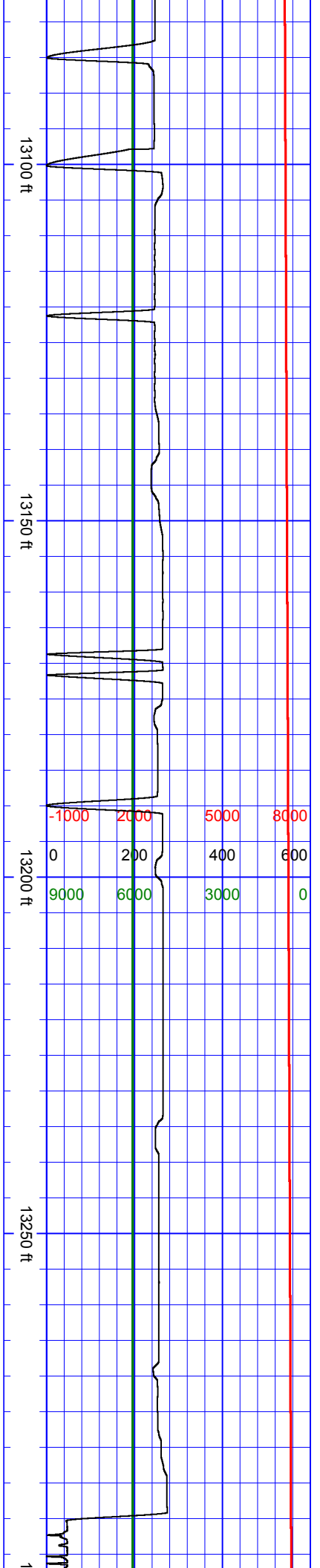
SurveyDepth:13048
TVD:6054.28 Inc:88.8
Azi:181 VertSec:7108.15

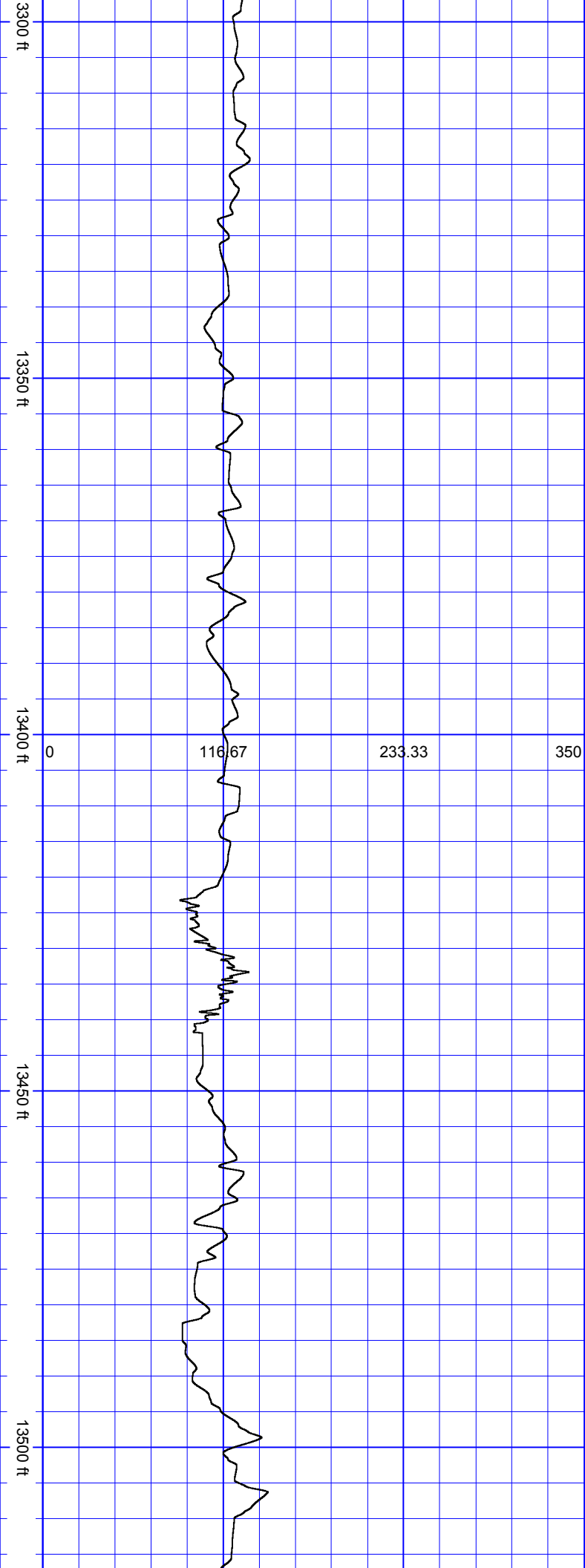




SurveyDepth:13139
TVD:6055.94 Inc:89.1
Azi:181 VertSec:7199.12

SurveyDepth:13231
TVD:6057.47 Inc:89
Azi:181 VertSec:7291.09

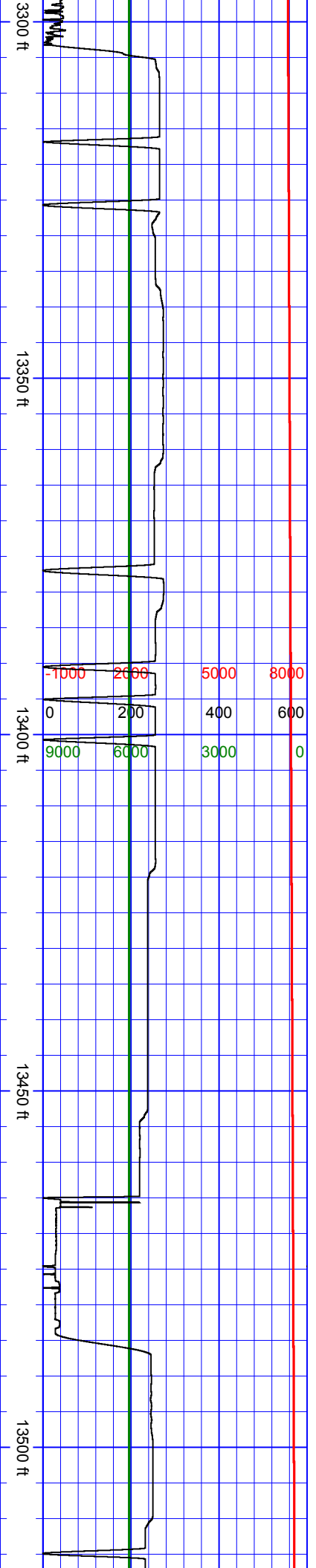


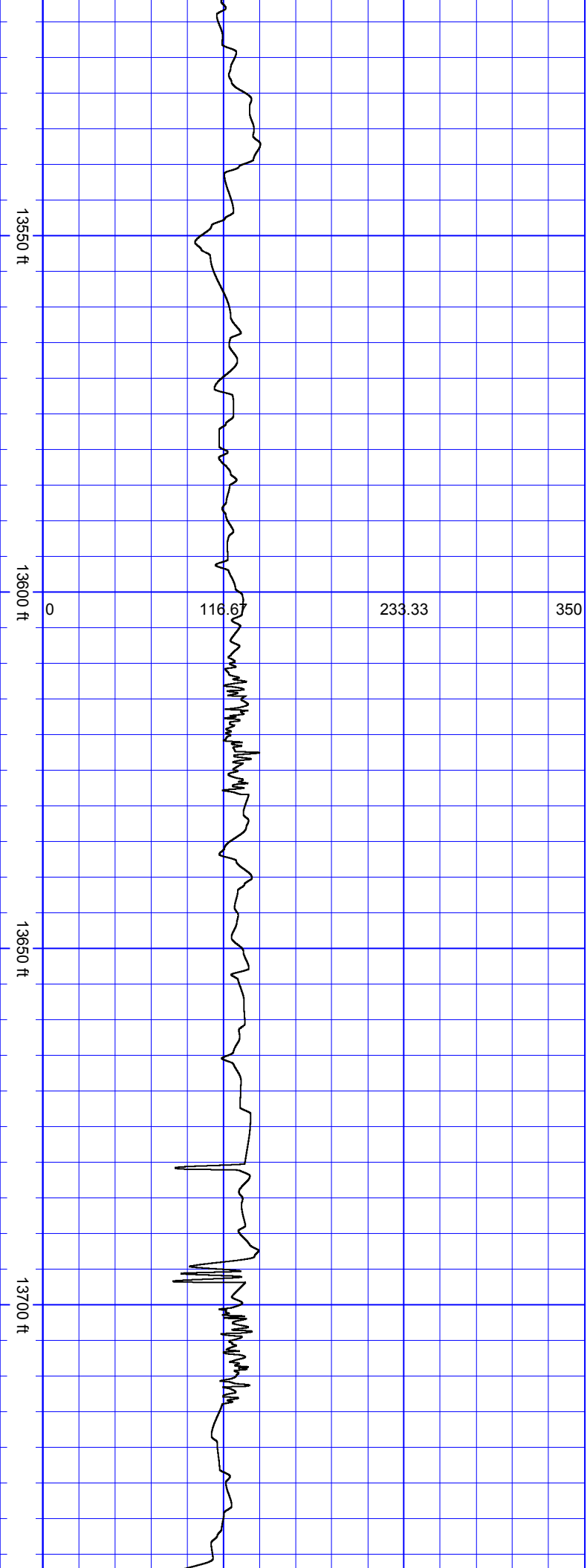


SurveyDepth:13323
TVD:6058.35 Inc:89.9
Azi:180.2
VertSec:7383.08

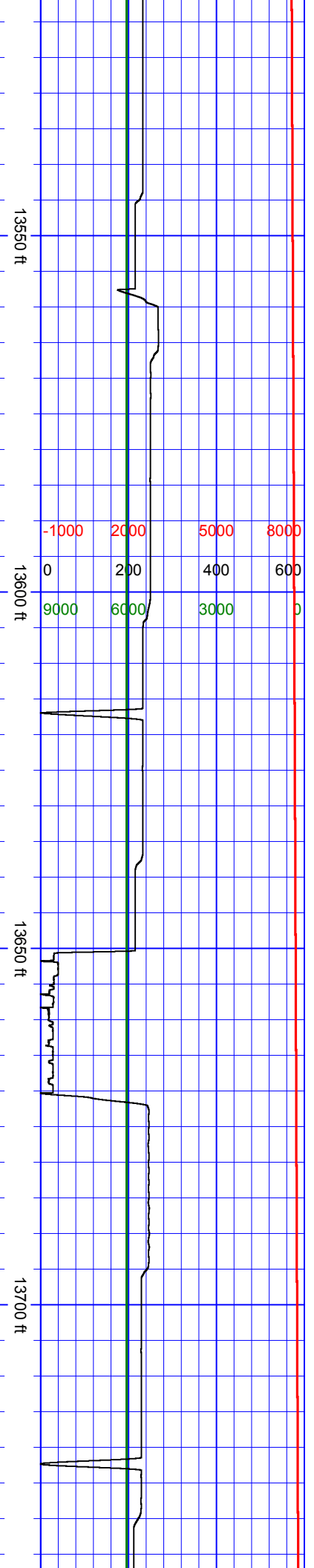
SurveyDepth:13414
TVD:6058.67 Inc:89.7
Azi:179.8
VertSec:7474.08

SurveyDepth:13507
TVD:6059.16 Inc:89.7
Azi:179.8
VertSec:7567.08





SurveyDepth:13691
TVD:6059.8 Inc:89.9
Azi:178.7
VertSec:7751.06



SurveyDepth:13739
TVD:6059.76 Inc:90.2
Azi:178.1
VertSec:7799.04

SurveyDepth:13830
TVD:6058.8 Inc:91
Azi:177.3
VertSec:7889.96

SurveyDepth:13921
TVD:6058.01 Inc:90
Azi:175.9
VertSec:7980.79

13750 ft
13800 ft
0 116.67 233.33 350

13850 ft

13900 ft

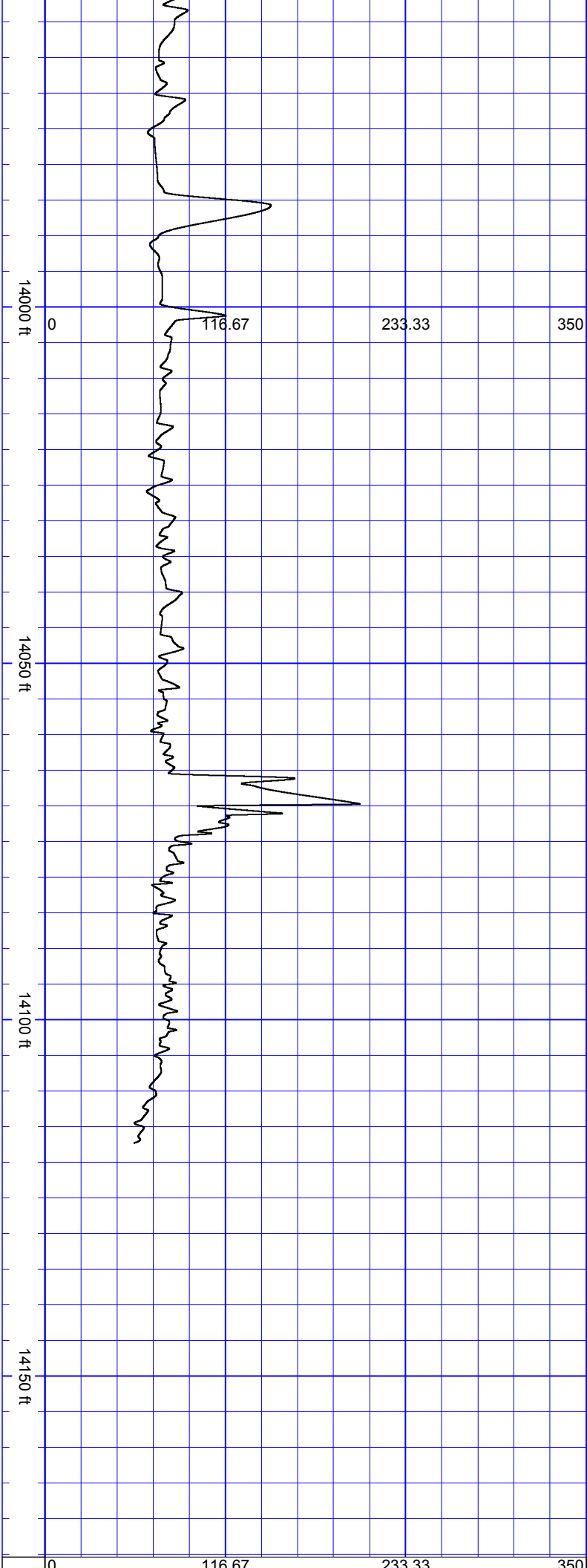
13950 ft

13750 ft
13800 ft
-1000 2000 5000 8000
0 200 400 600
9000 6000 3000 0

13850 ft

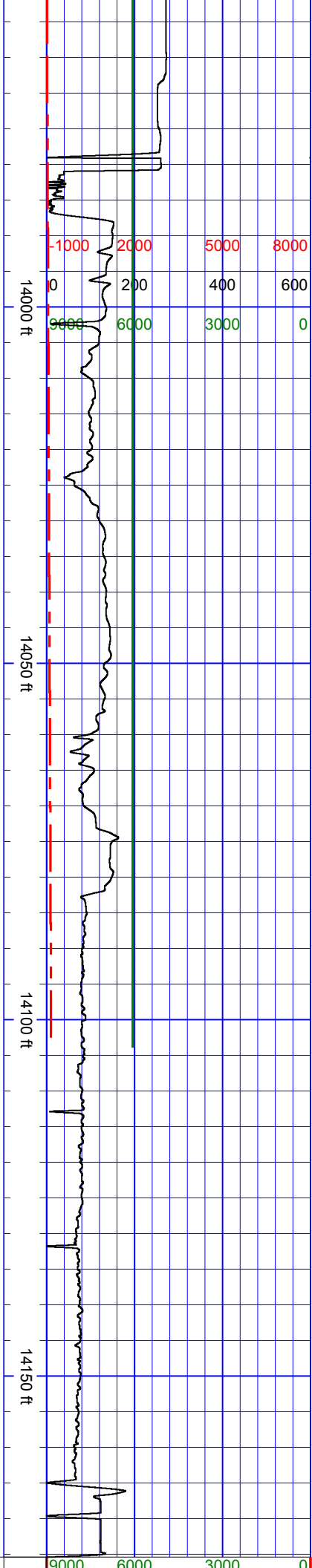
13900 ft

13950 ft



SurveyDepth:14013
TVD:6058.09 Inc:89.9
Azi:176.8
VertSec:8072.6

SurveyDepth:14104
TVD:6058.33 Inc:89.8
Azi:176.6
VertSec:8163.45



Real Time Gamma (AAPL)

Directional Survey

GAMMA RAY

MD Depth "Scale 5" = 100
ft"

| | | | |
|-----------------------|------|------|------|
| 0 | 200 | 400 | 600 |
| Drill Rate (min/ft) | | | |
| -1000 | 2000 | 5000 | 8000 |
| Vertical Section (ft) | | | |
| ROP - VERT SEC - TVD | | | |



CATHEDRAL

Oil Company: Whiting Petroleum
Well Name: Razor Federal 12F-1304B
Surface Location: S12-T10N-R58W
Bit Run: 6
Log Depth Start: 5003.90 ft Log Depth End: 14175.41 ft
Data Depth Start: 5003.90 ft Data Depth End: 14175.41 ft