



CATHEDRAL

Build & Lateral

Job #:

185351

Well ID:

16191567

Scale:

5" = 100 ft

Type:

MD

Well Site Information

Oil Company Crestone Peak Resources

Surface Location S33-T3N-R67W

Well Name Herren 1H-33H-H367

API 05-123-47732

Field DJ BASIN

State CO

Country USA

Surface Coordinates

Well Type Horizontal

Latitude 40° 10' 59.3976 N

Longitude 104° 53' 13.9848 W

N / S Coordinates 1,310,164.49 us/ft

E / W Coordinates 3,171,216.97 us/ft

Azimuth Reference True North

Grid Convergence 0.40°

MWD Engineers

Lead Hand Deric Group

Second Hand David Lindberg

Perm Datum Ground Elevation 4,848.00 ft

Log depth measured from KB is 23.00 ft above perm datum. KB = 4,871.00 ft

Total Depth 12,001.00 ft Spud Date Dec/29/2018 End Date Dec/31/2018

(MD) Log Interval Start Depth 1,921.56 ft End Depth 12,001.01 ft

Bore Hole Record

| Hole Size | From | To |
|-----------|------|----|
|-----------|------|----|

| | | |
|----------|---------|-------------|
| 13.50 in | 0.00 ft | 1,974.00 ft |
|----------|---------|-------------|

| | | |
|---------|-------------|--------------|
| 8.50 in | 1,974.00 ft | 12,001.00 ft |
|---------|-------------|--------------|

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Casing Record

| Type | Size | WGT | From | To |
|------|------|-----|------|----|
|------|------|-----|------|----|

| | | | | |
|-----|---------|--------------|---------|-------------|
| LTC | 9.63 in | 40.00 lbs/ft | 0.00 ft | 1,959.00 ft |
|-----|---------|--------------|---------|-------------|

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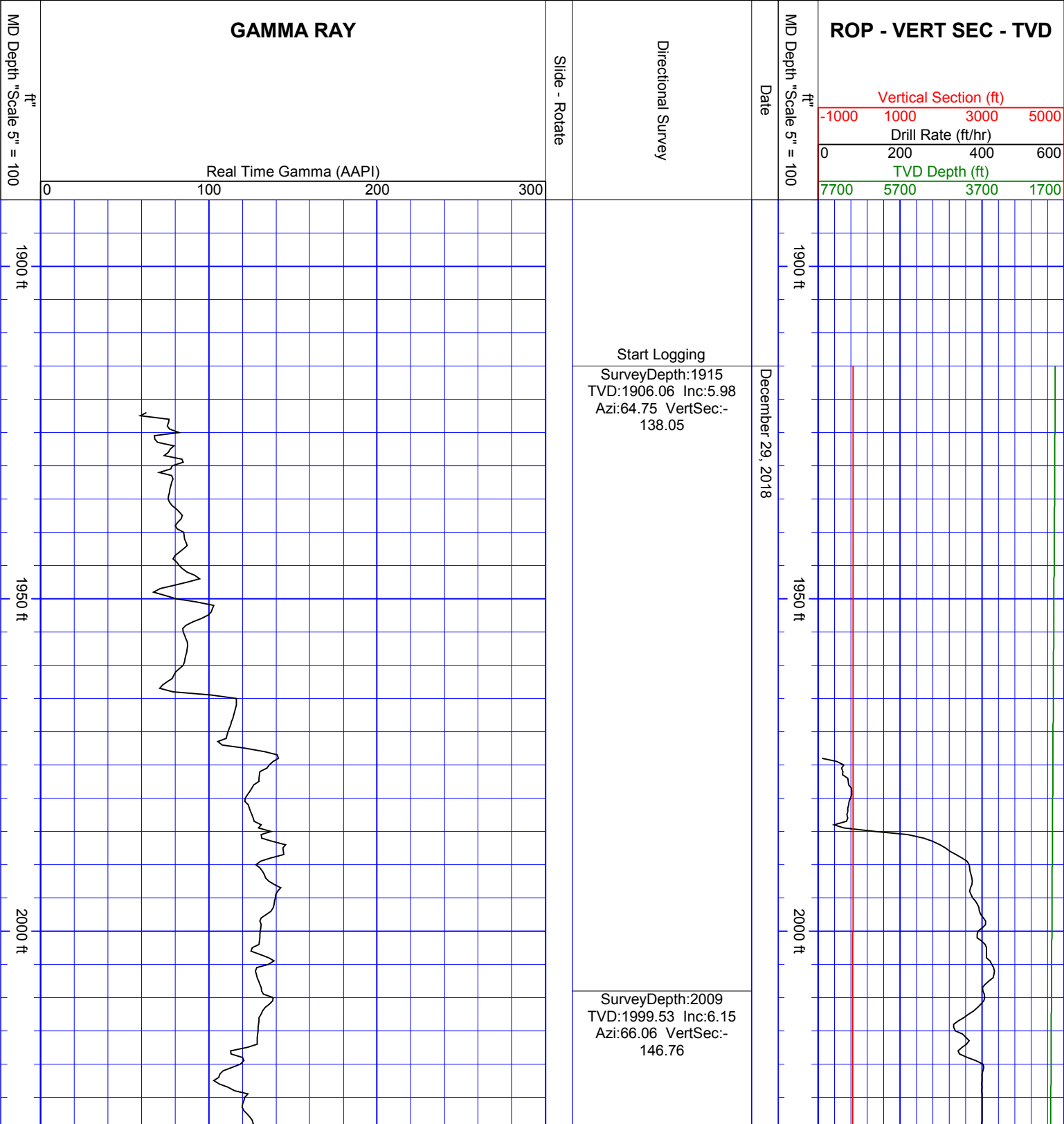
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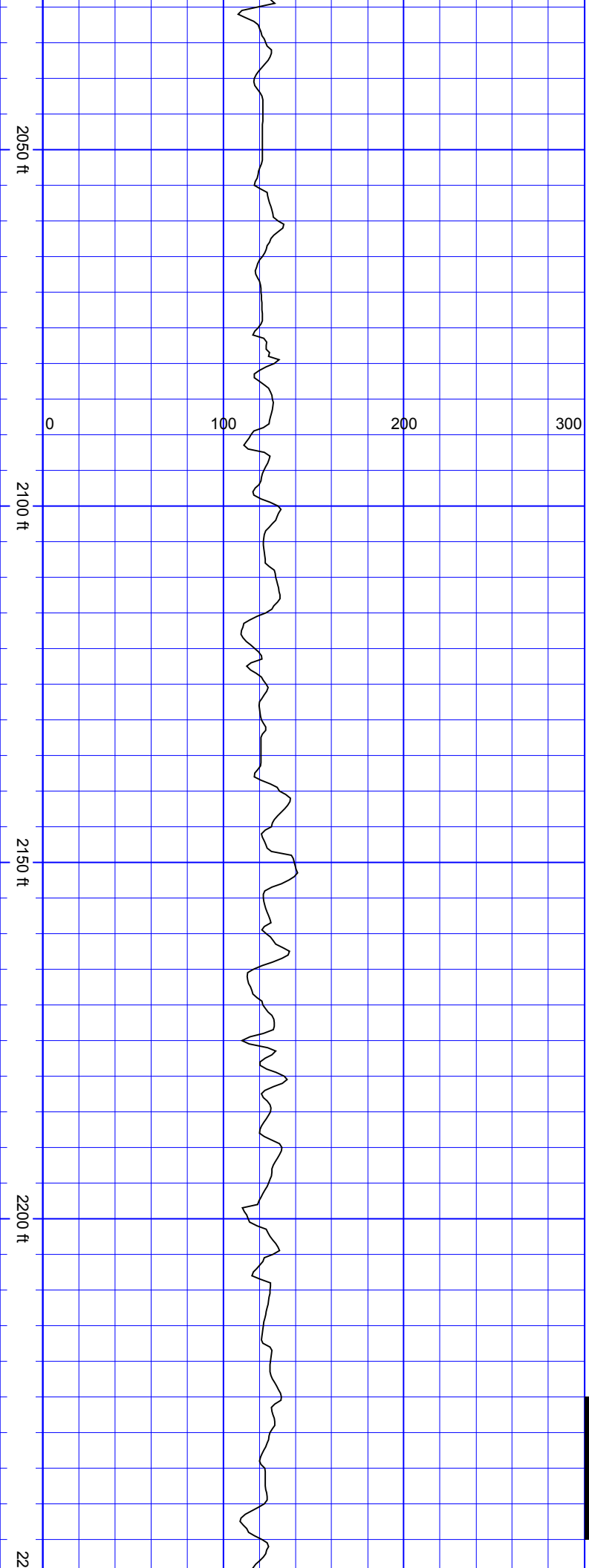
Run Data

| | | | | | |
|------------------------|----------------------|--|--|--|--|
| Bit Run Number | 1 | | | | |
| Start Date & Time | Dec/29/2018 03:00:00 | | | | |
| End Date & Time | Dec/31/2018 18:00:00 | | | | |
| Run Hours | 63.00 | | | | |
| Depth In | 1,974.00 ft | | | | |
| Depth Out | 12,001.00 ft | | | | |
| Total Gamma Correction | 5.70 | | | | |
| Gamma to Bit | 52.50 ft | | | | |
| Resistivity to Bit | - | | | | |
| Mud Type | OBM | | | | |
| Density | 10.20 ppg | | | | |
| Viscosity | 48.00 sec/qt | | | | |
| PH | - | | | | |
| Fluid Loss | - | | | | |
| K+ ppm | - | | | | |
| CL- ppm | 221,537 ppm | | | | |
| Max Mud Temp | 250.00 °F | | | | |
| Mud Report Depth | 9,240.00 ft | | | | |

Remarks

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.

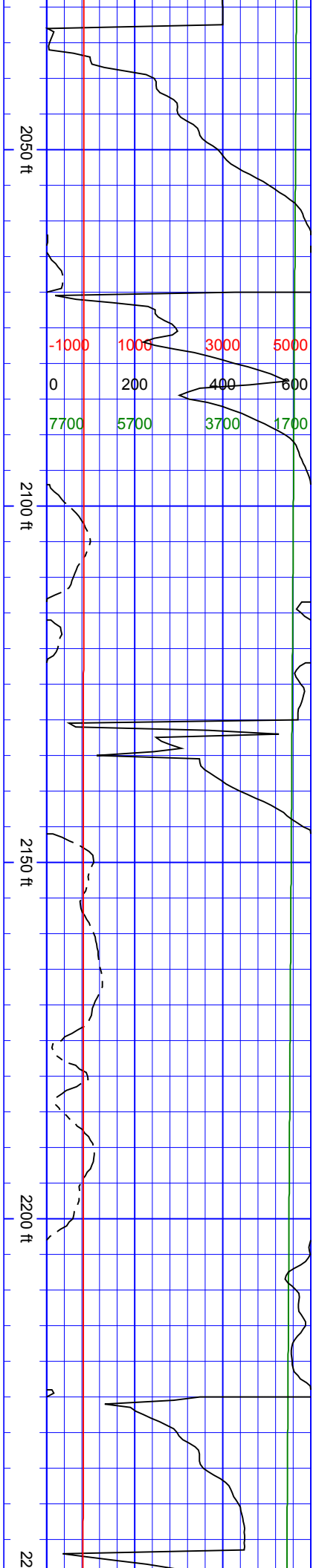


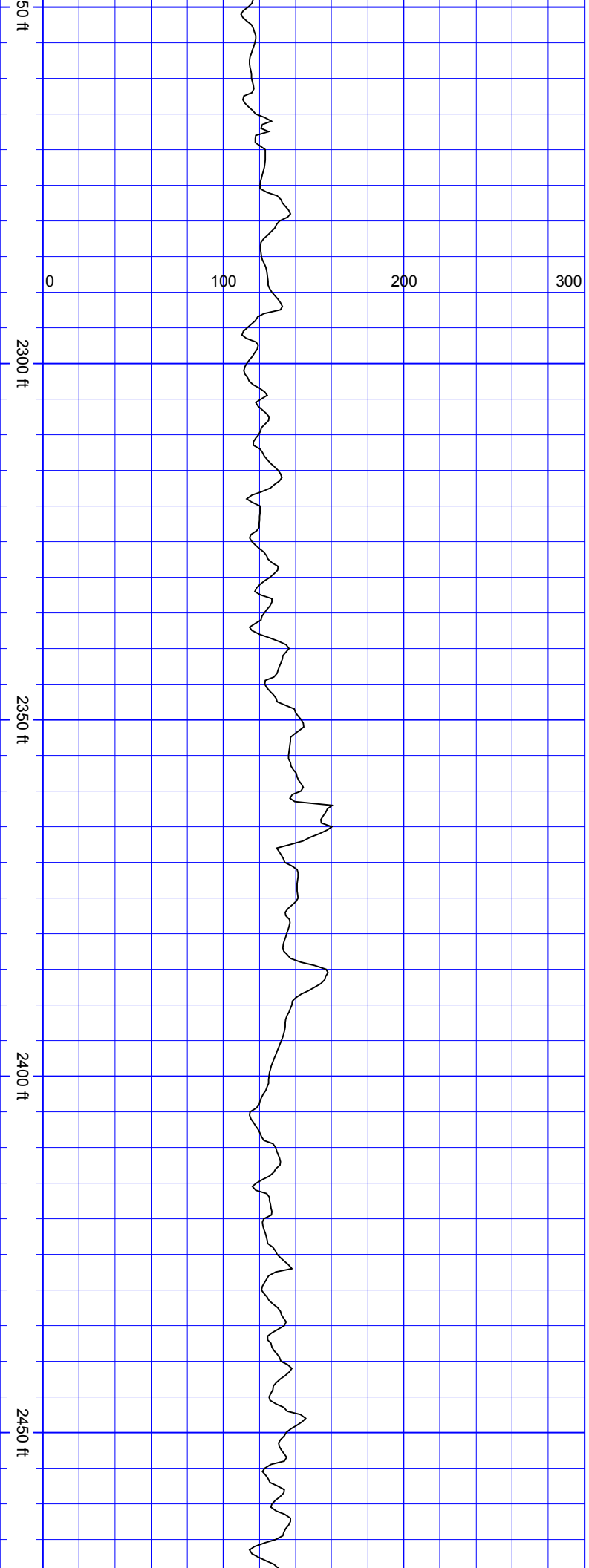


SurveyDepth:2072
TVD:2062.19 Inc:5.85
Azi:64.21 VertSec:-
152.53

SurveyDepth:2167
TVD:2156.73 Inc:5.36
Azi:59.64 VertSec:-
160.39

SSSSSSSSSS

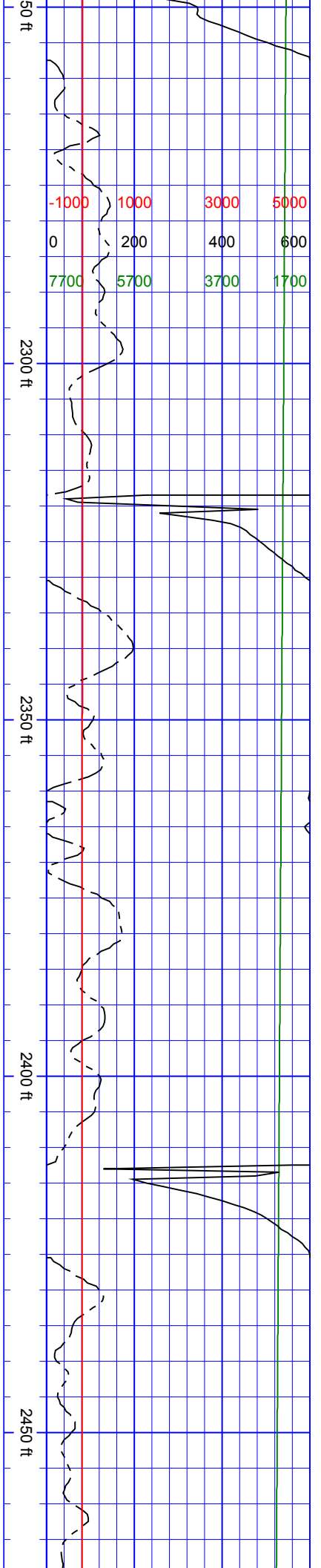


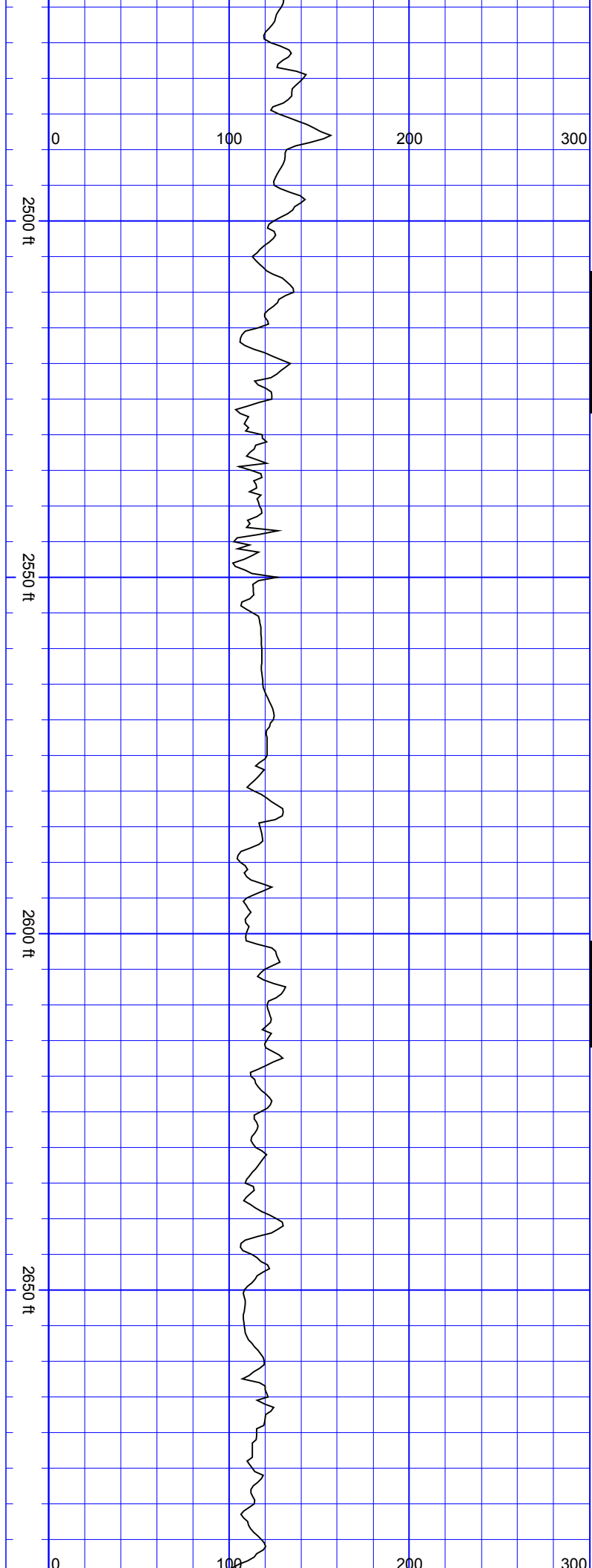


SurveyDepth:2260
TVD:2249.18 Inc:7.16
Azi:70.19 VertSec:-
169.28

SurveyDepth:2354
TVD:2342.57 Inc:5.85
Azi:66.41 VertSec:-
178.88

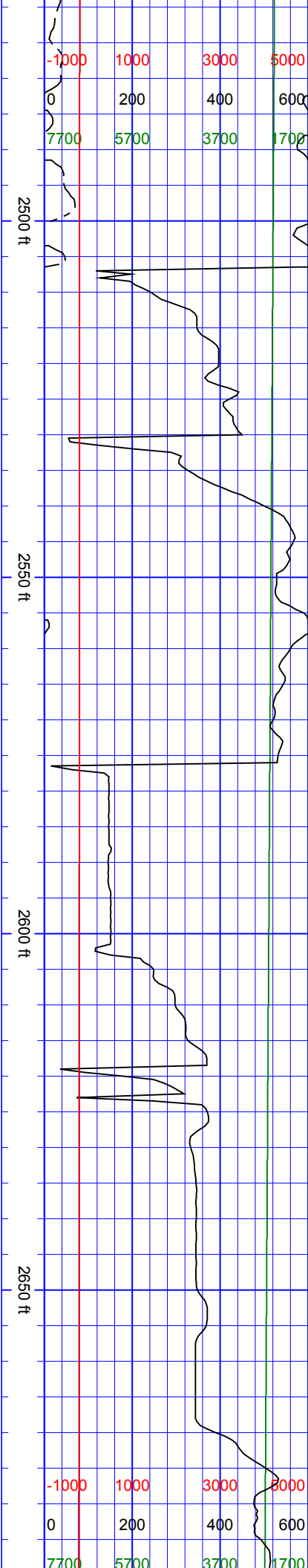
SurveyDepth:2449
TVD:2437.16 Inc:4.83
Azi:61.49 VertSec:-
186.55

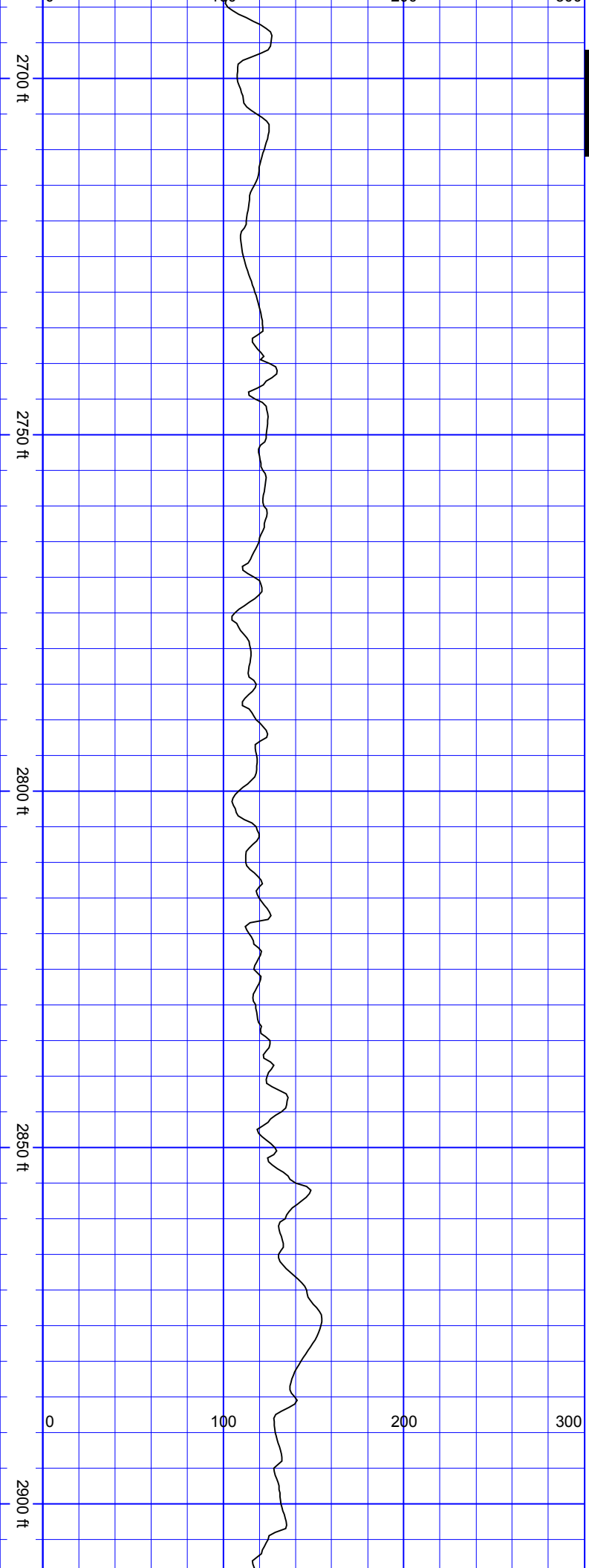




SurveyDepth:2543
TVD:2530.71 Inc:6.37
Azi:71.33 VertSec:-194.7

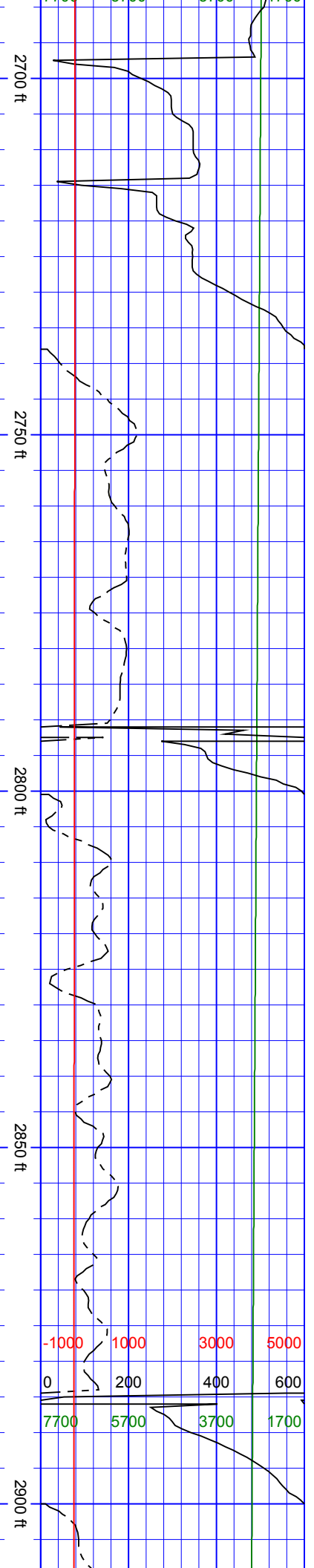
SurveyDepth:2638
TVD:2625 Inc:7.65
Azi:69.92 VertSec:-
205.33

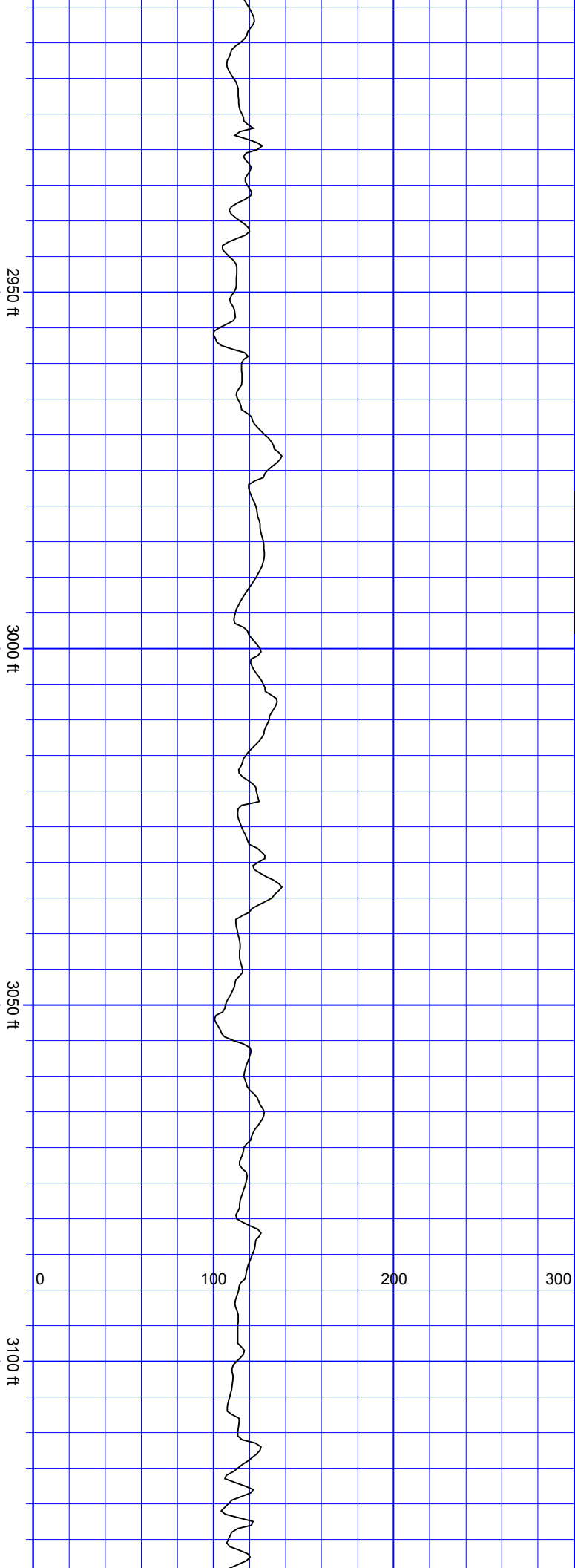




SurveyDepth:2732
TVD:2717.99 Inc:9.1
Azi:75.2 VertSec:-218.08

SurveyDepth:2826
TVD:2810.98 Inc:7.73
Azi:74.14 VertSec:-231.06



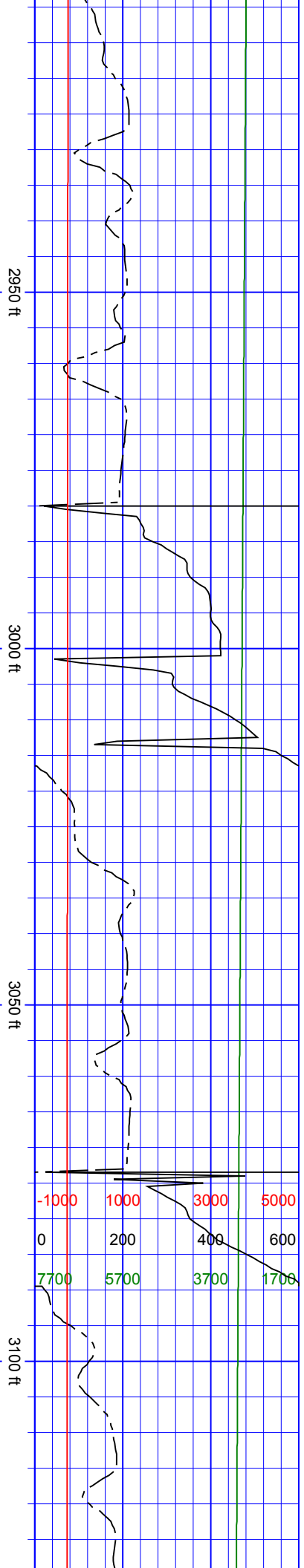


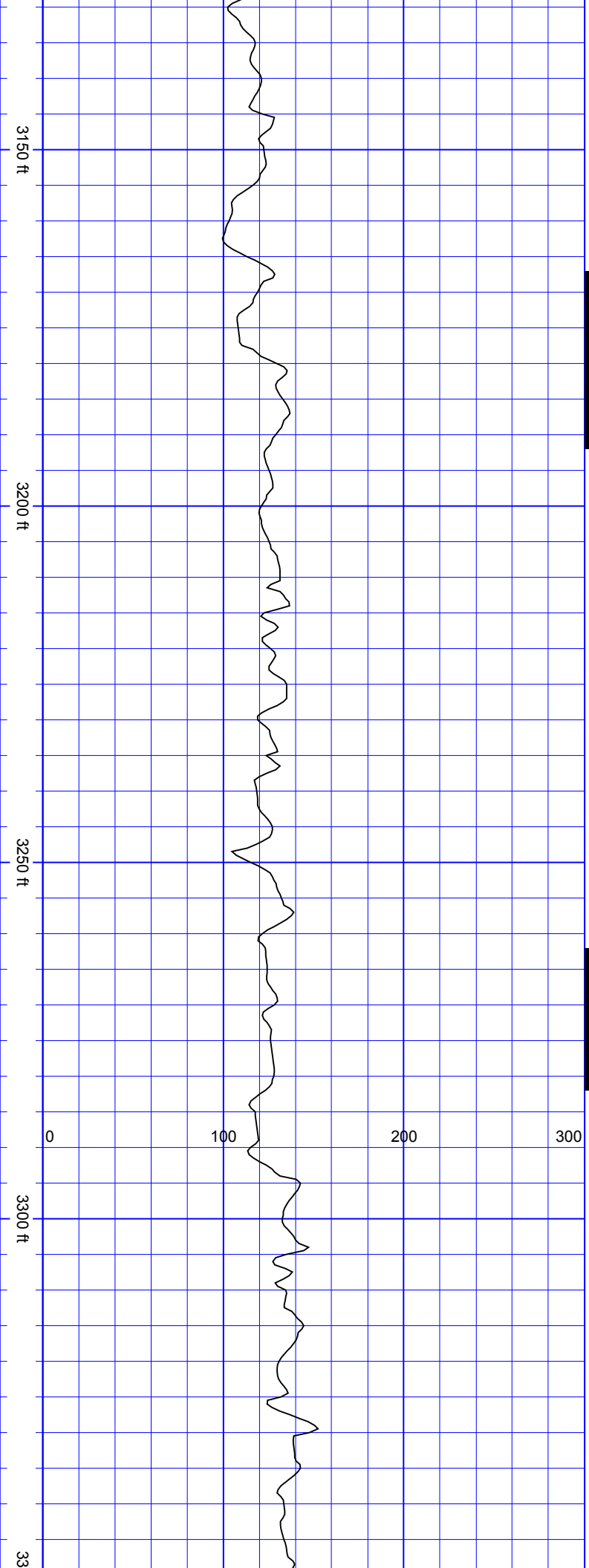
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SurveyDepth:2920
TVD:2904.29 Inc:6.11
Azi:73 VertSec:-241.68

SurveyDepth:3015
TVD:2998.62 Inc:7.52
Azi:65.71 VertSec:-251.87

SurveyDepth:3109
TVD:3091.98 Inc:5.89
Azi:58.06 VertSec:-261.19



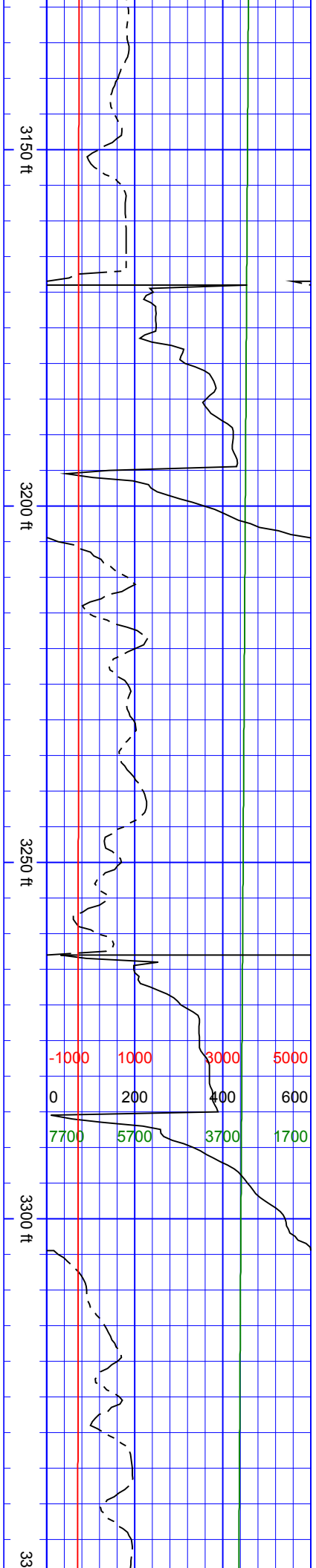


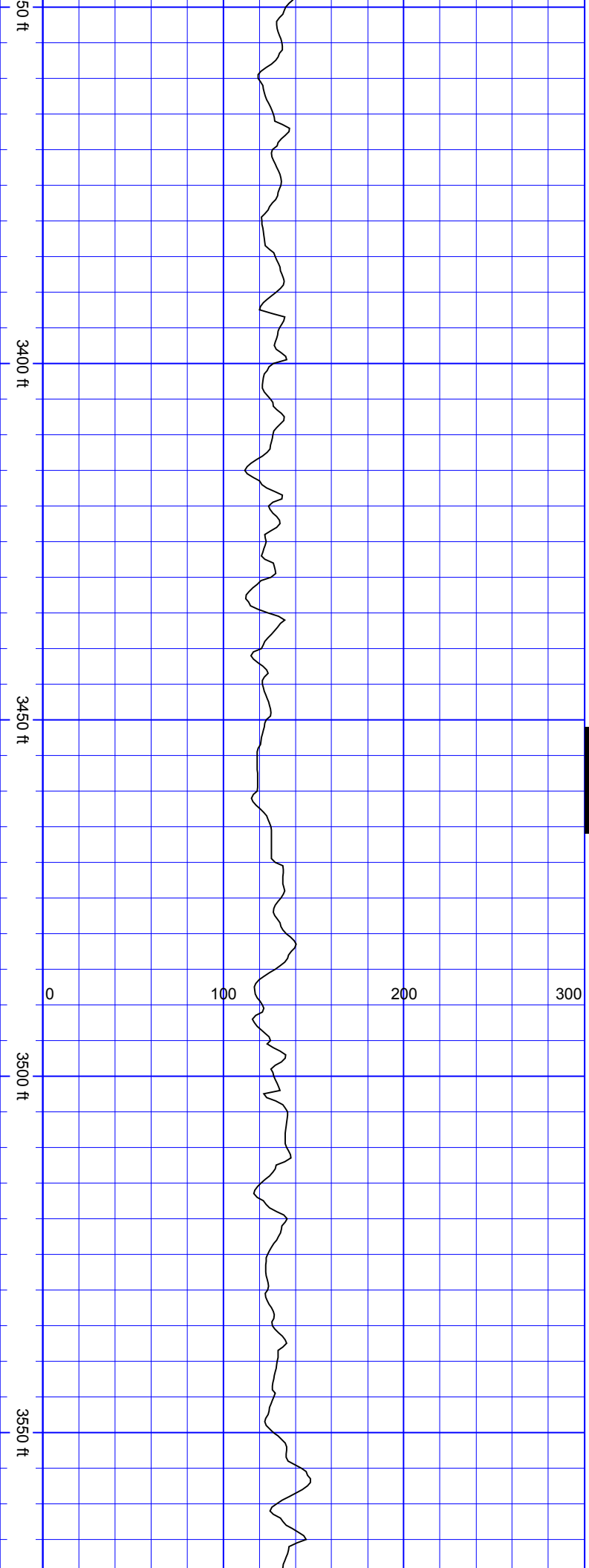
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SurveyDepth:3204
TVD:3186.34 Inc:7.34
Azi:64.47 VertSec:-
270.41

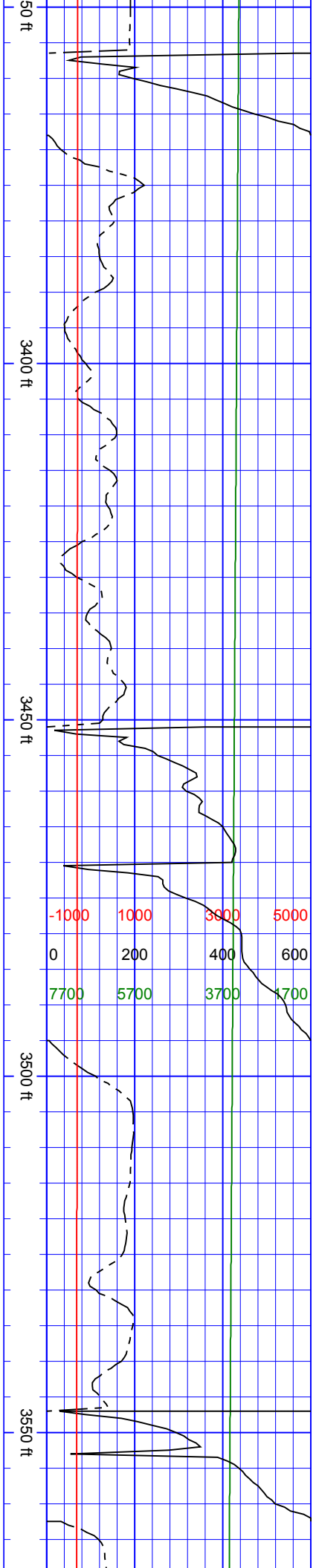
SurveyDepth:3299
TVD:3280.4 Inc:8.83
Azi:66.23 VertSec:-
282.14

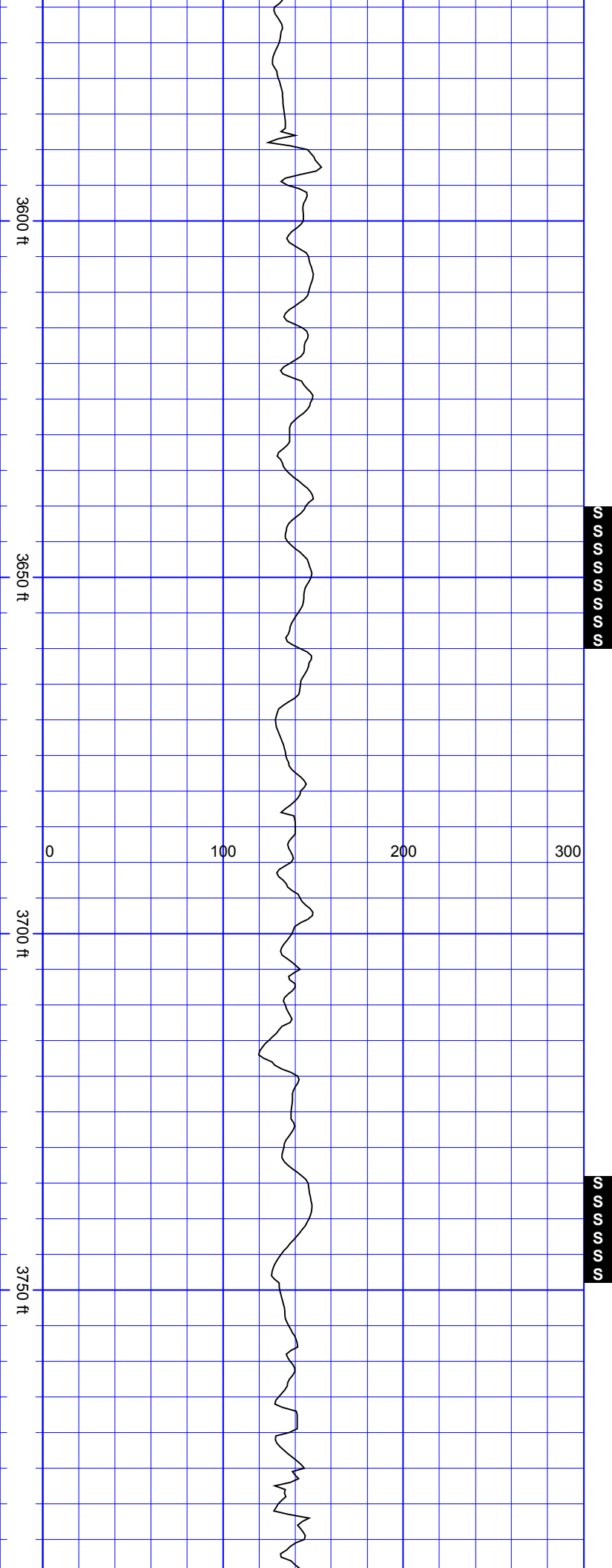




SurveyDepth:3393
TVD:3373.44 Inc:7.52
Azi:61.31 VertSec:-293.7

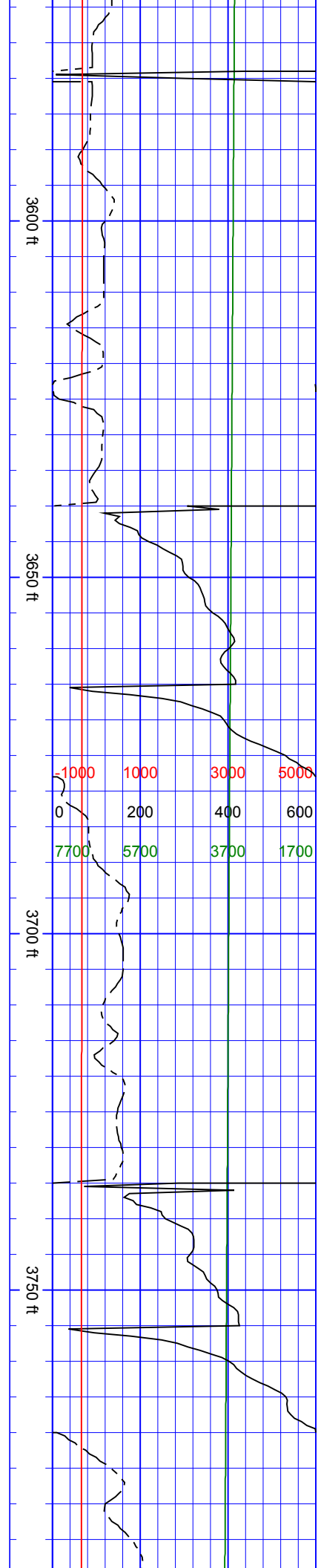
SurveyDepth:3487
TVD:3466.63 Inc:7.56
Azi:72.91 VertSec:-304.65

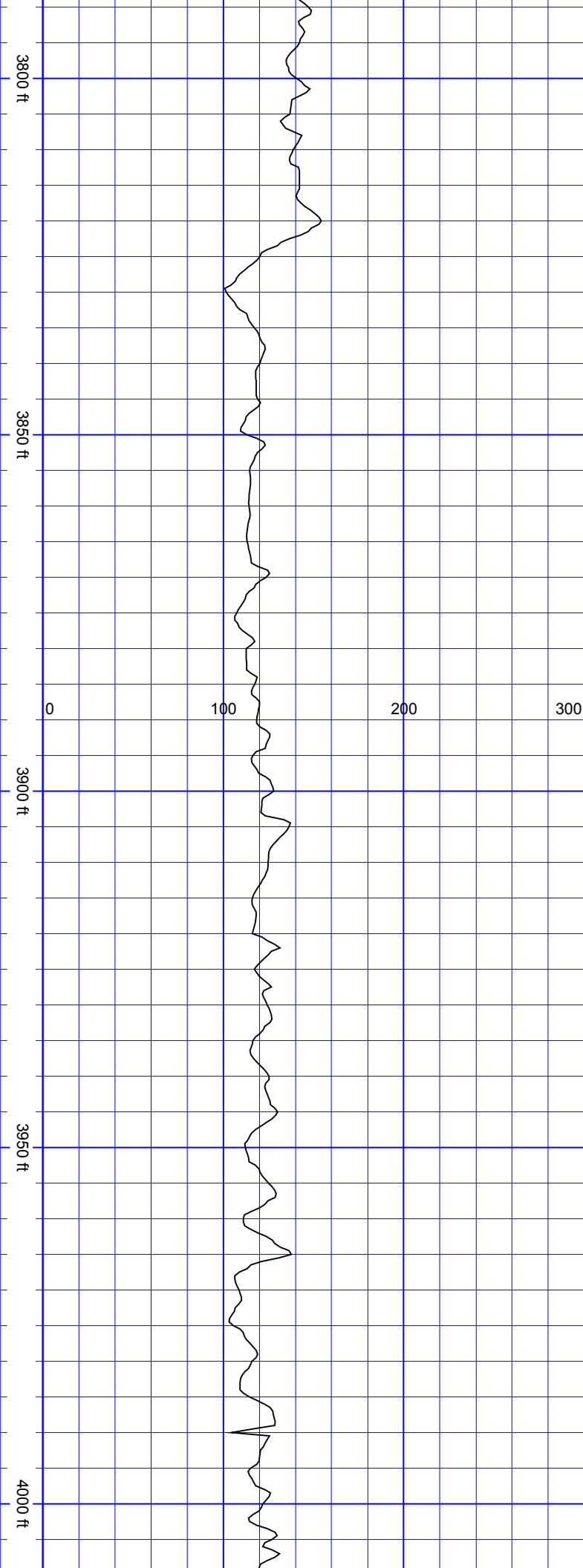




SurveyDepth:3582
TVD:3560.94 Inc:6.24
Azi:65.71 VertSec:-
315.02

SurveyDepth:3676
TVD:3654.33 Inc:6.99
Azi:84.34 VertSec:-
325.16

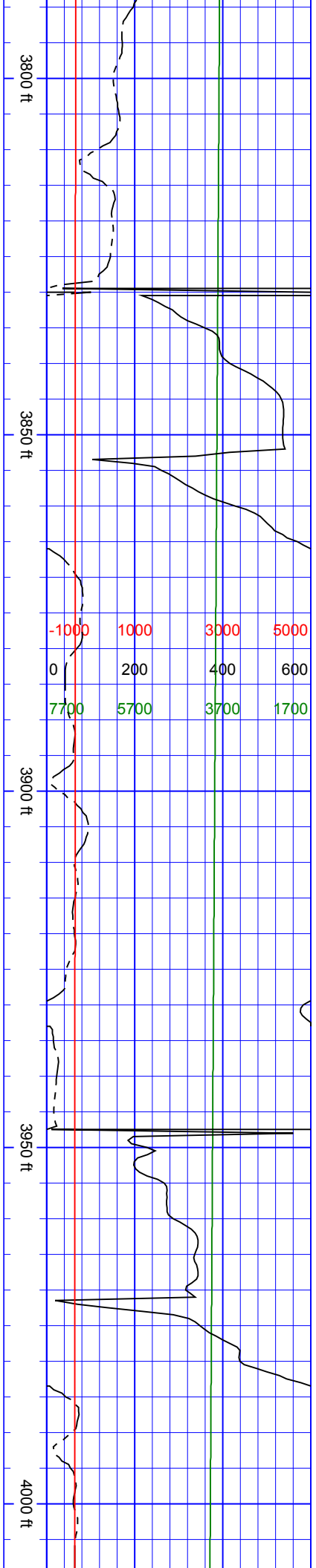


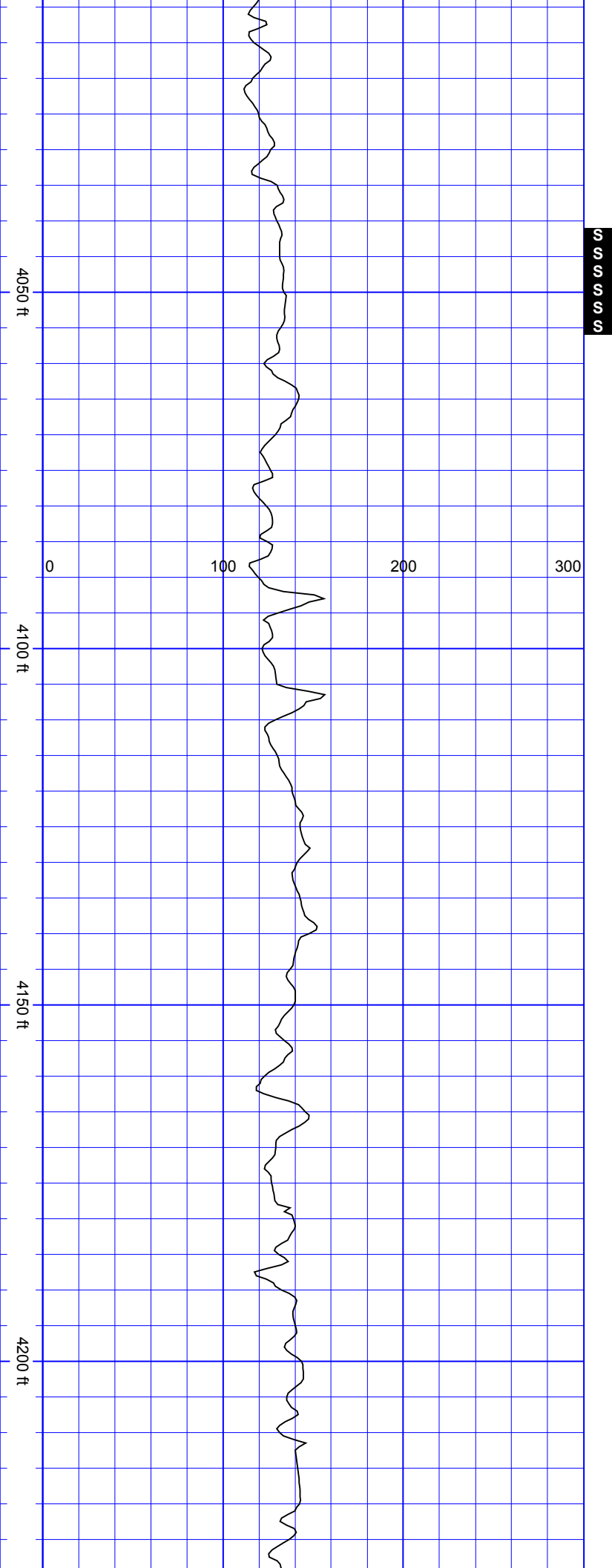


SurveyDepth:3794
TVD:3771.55 Inc:6.2
Azi:78.45 VertSec:-338.38

SurveyDepth:3889
TVD:3866.05 Inc:5.49
Azi:76.6 VertSec:-347.65

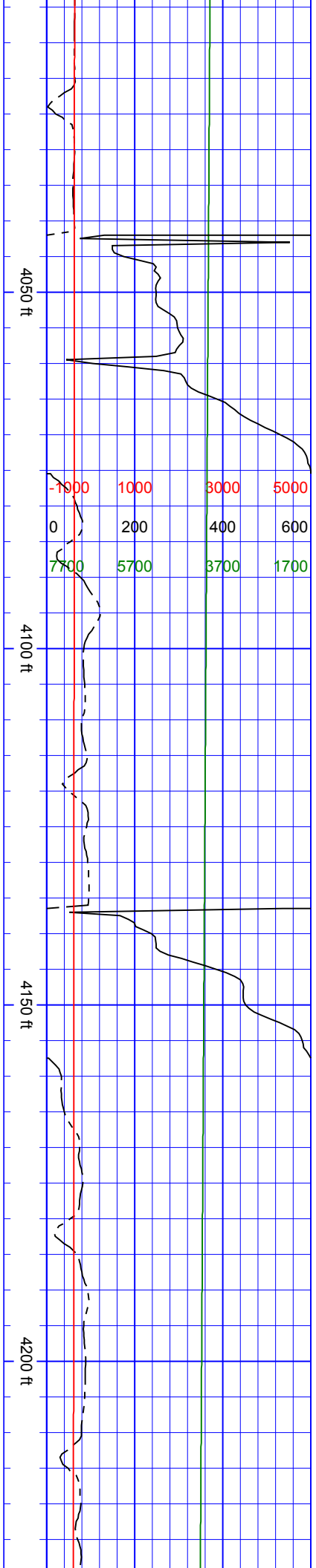
SurveyDepth:3983
TVD:3959.46 Inc:7.38
Azi:82.49 VertSec:-357.86

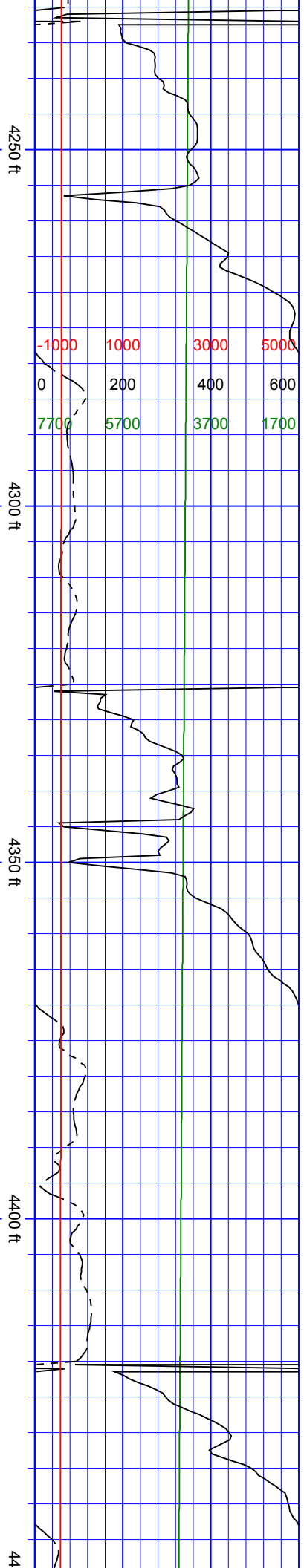
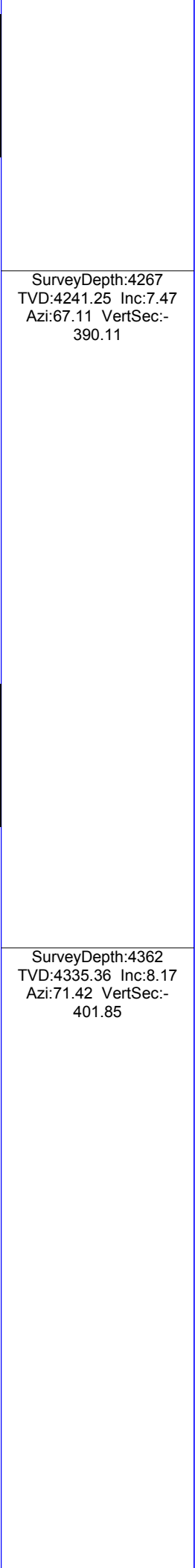
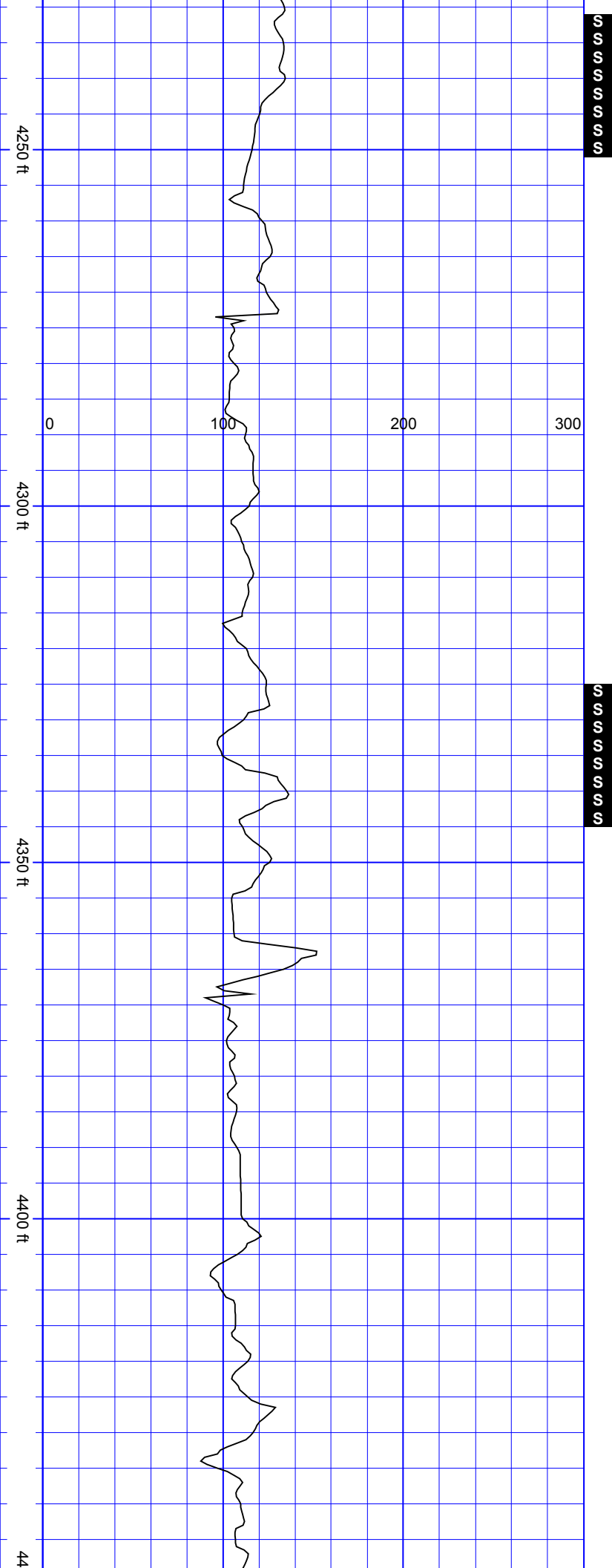


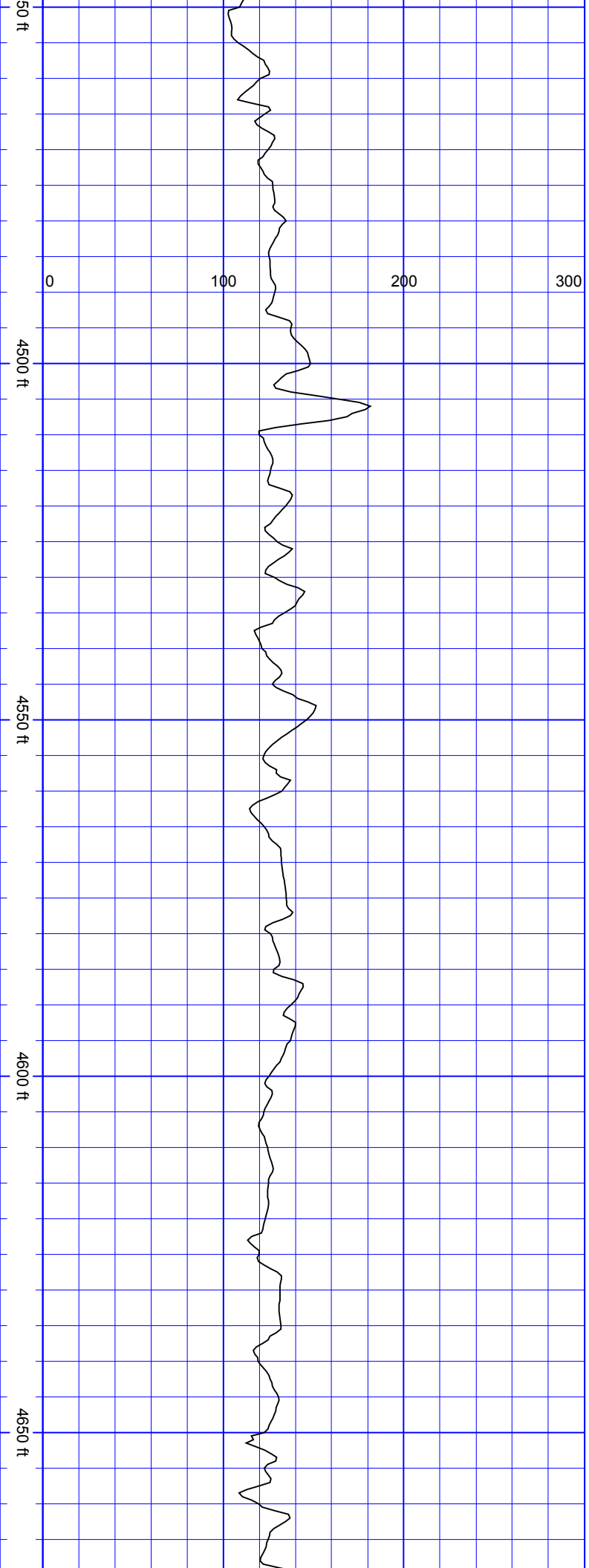


SurveyDepth:4078
TVD:4053.63 Inc:7.87
Azi:69.4 VertSec:-369.75

SurveyDepth:4173
TVD:4147.91 Inc:6.15
Azi:66.67 VertSec:-380.19



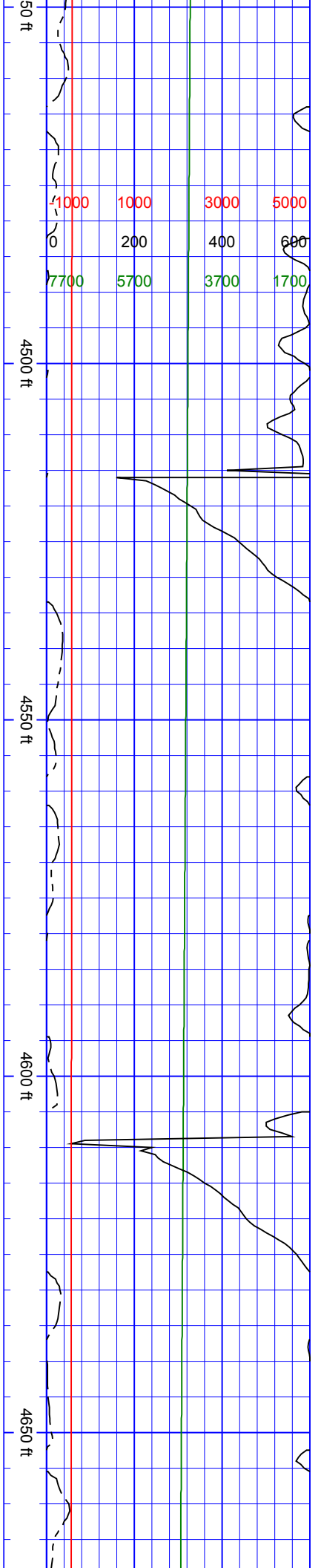


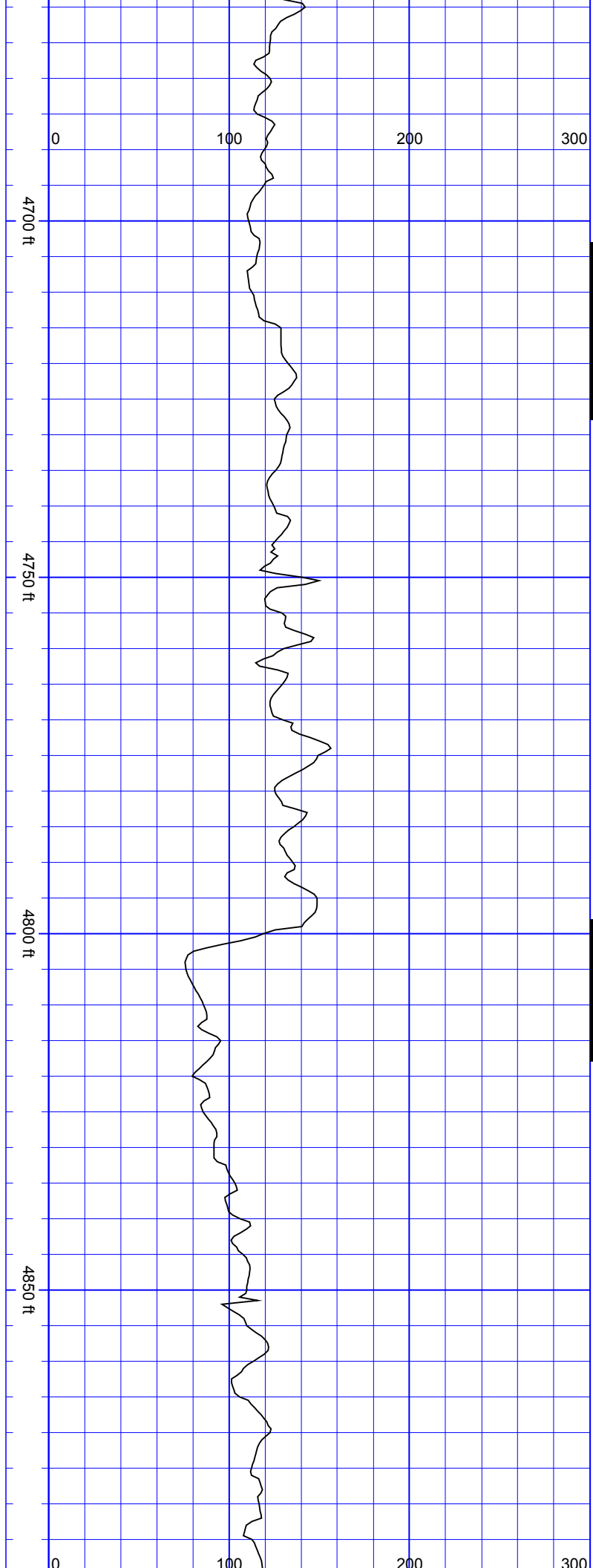


SurveyDepth:4456
TVD:4428.54 Inc:7.03
Azi:67.81 VertSec:-
413.17

SurveyDepth:4551
TVD:4522.88 Inc:6.42
Azi:64.39 VertSec:-
423.01

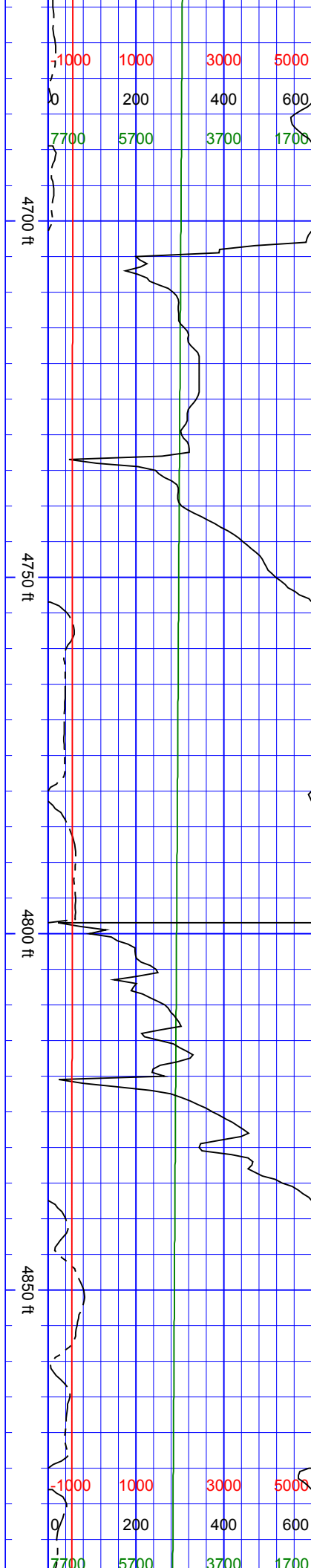
SurveyDepth:4645
TVD:4616.4 Inc:5.19
Azi:60.26 VertSec:-
431.11



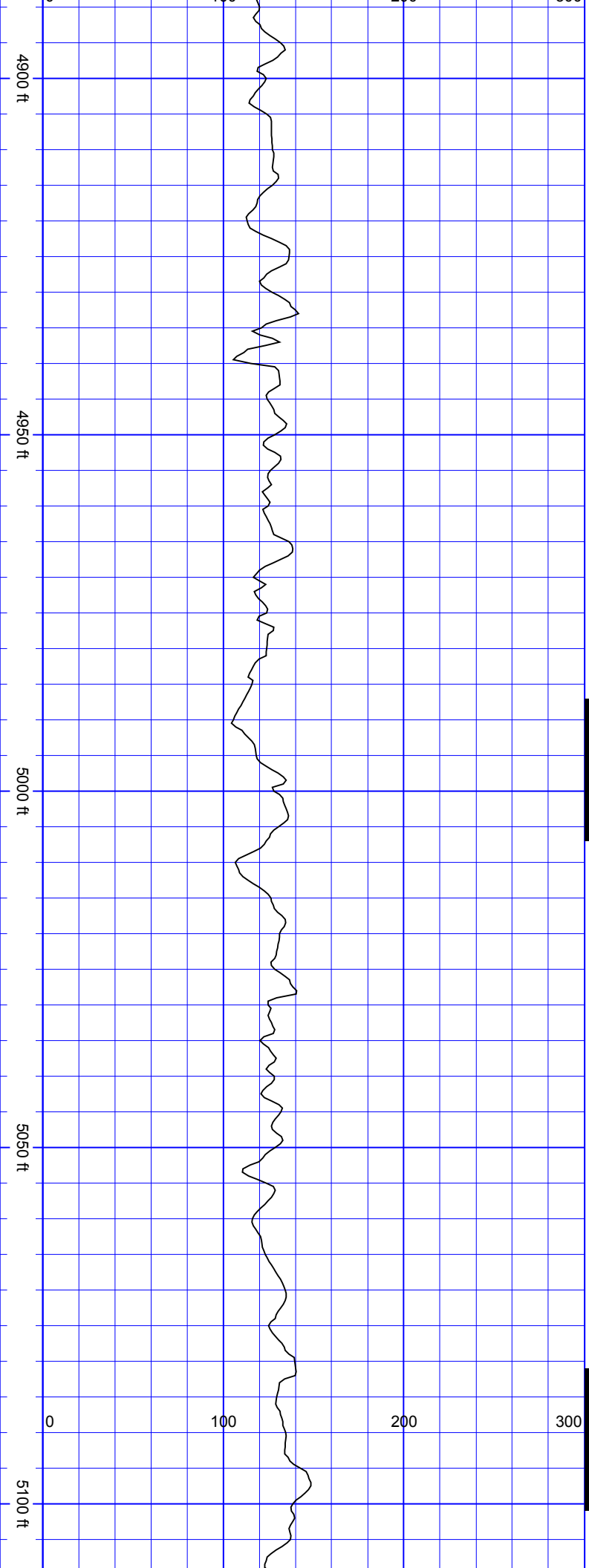


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| SurveyDepth:4740 TVD:4710.86 Inc:6.99 Azi:69.4 VertSec:-439.94 |
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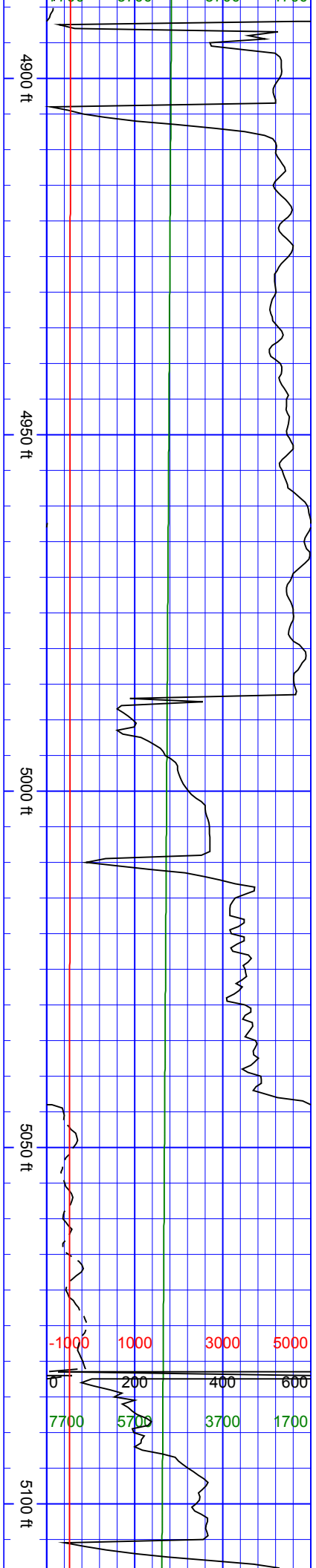


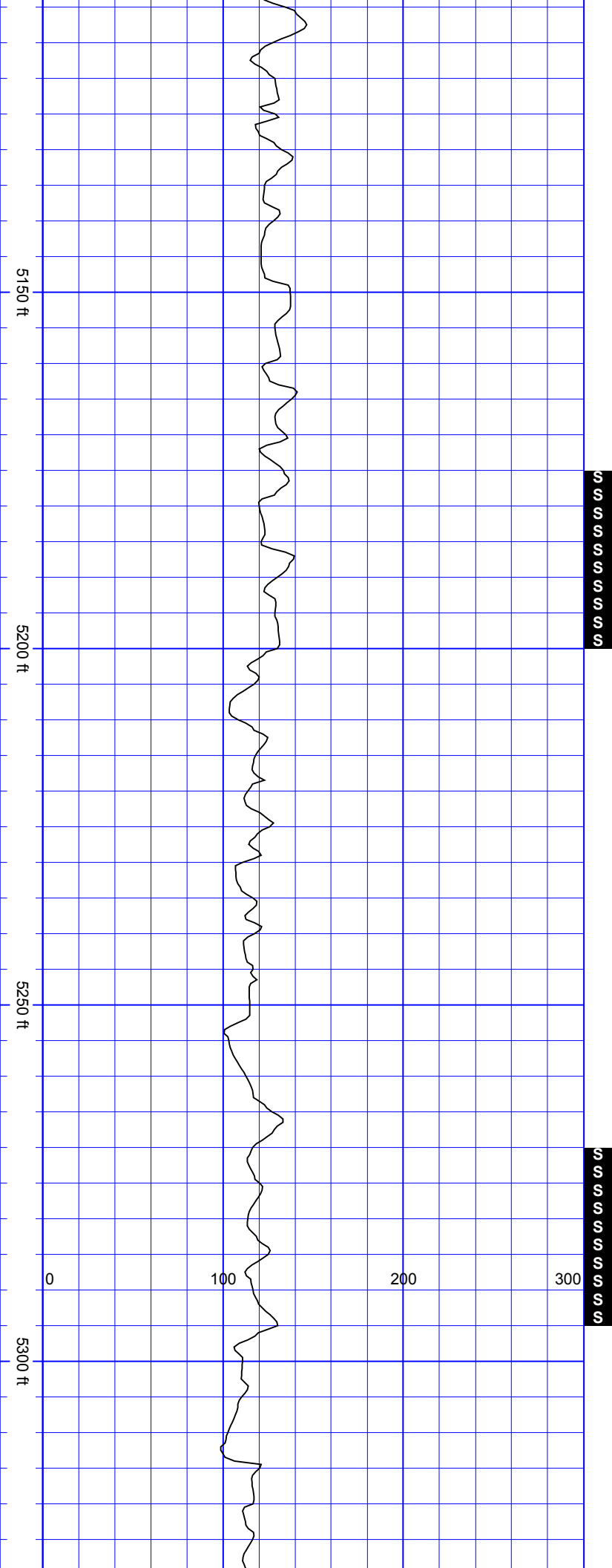
SurveyDepth:4834
TVD:4804.2 Inc:6.64
Azi:81.96 VertSec:-
450.45



SurveyDepth:4929
TVD:4898.65 Inc:5.71
Azi:82.84 VertSec:-
460.46

SurveyDepth:5023
TVD:4992.1 Inc:6.68
Azi:72.3 VertSec:-470.13



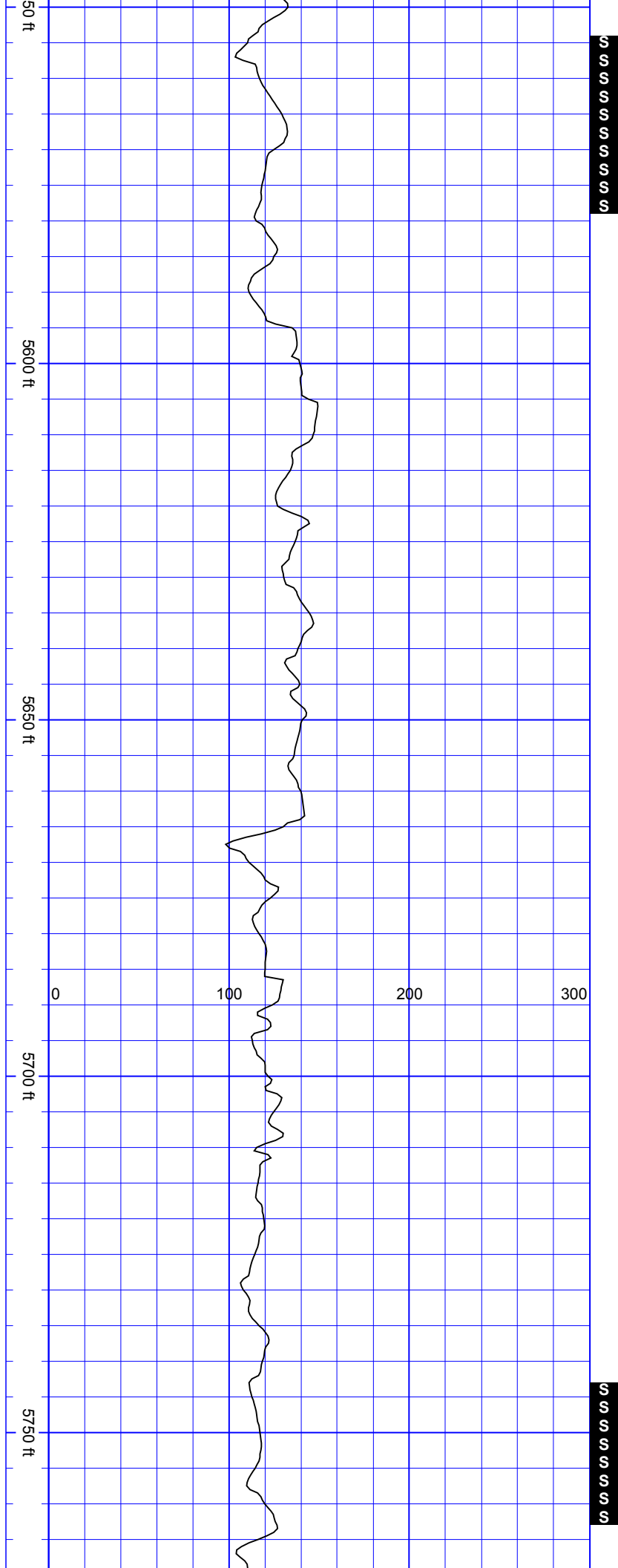


SurveyDepth:5117
TVD:5085.5 Inc:6.37
Azi:66.85 VertSec:-
479.85

SurveyDepth:5212
TVD:5179.87 Inc:6.81
Azi:71.95 VertSec:-
489.75

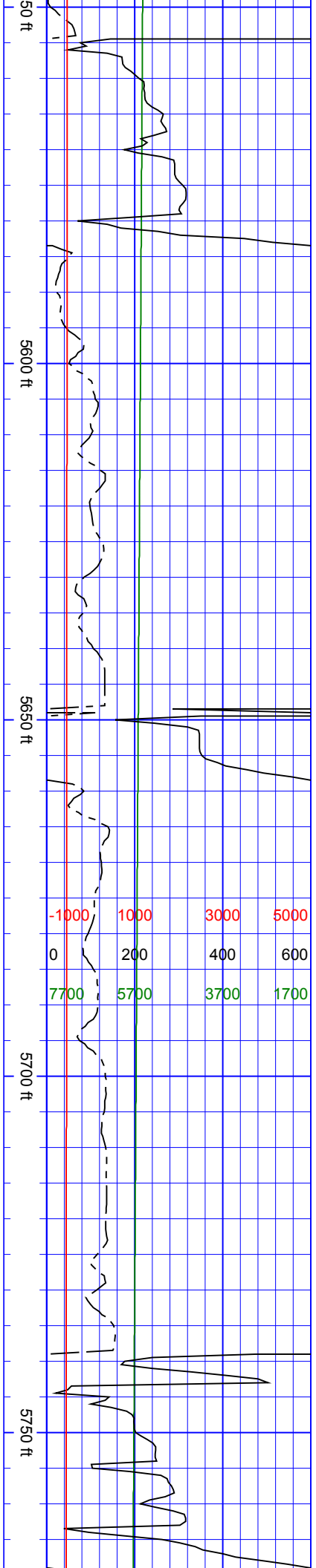
SurveyDepth:5307
TVD:5274.07 Inc:8
Azi:75.37 VertSec:-
501.24

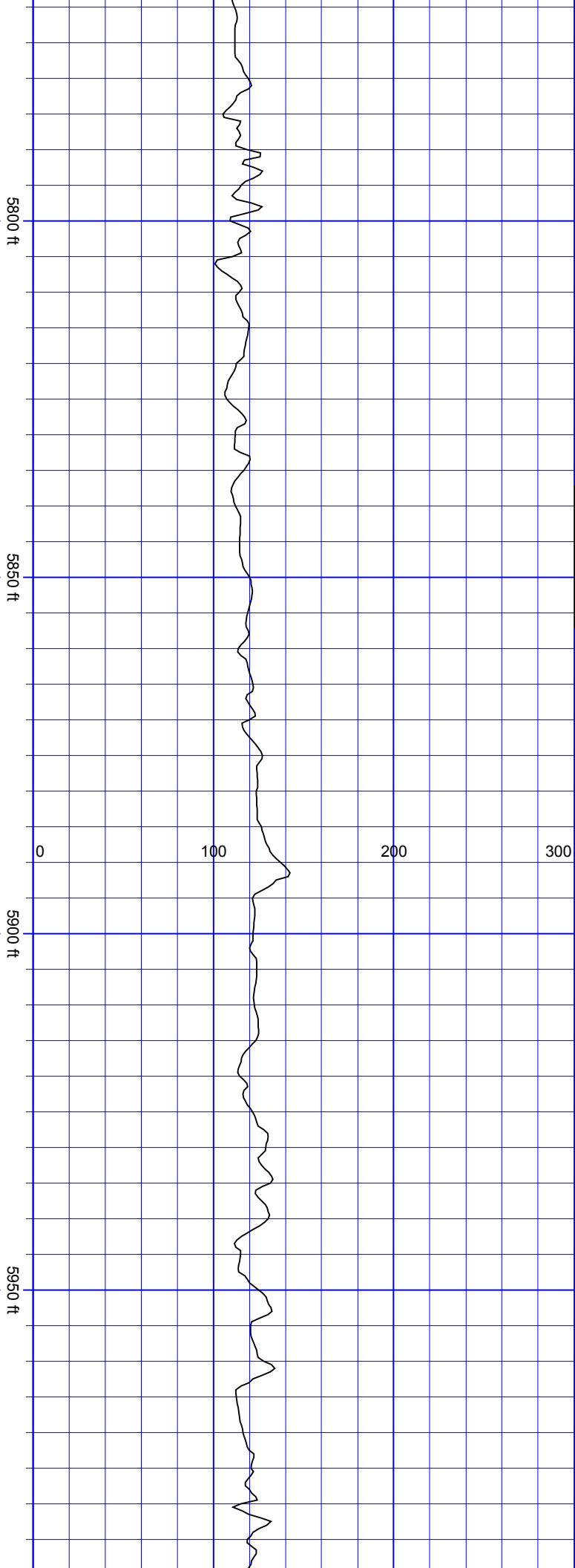




SurveyDepth:5590
TVD:5554.93 Inc:8.26
Azi:68.34 VertSec:-532.3

SurveyDepth:5685
TVD:5649.07 Inc:7.21
Azi:62.01 VertSec:-543.51

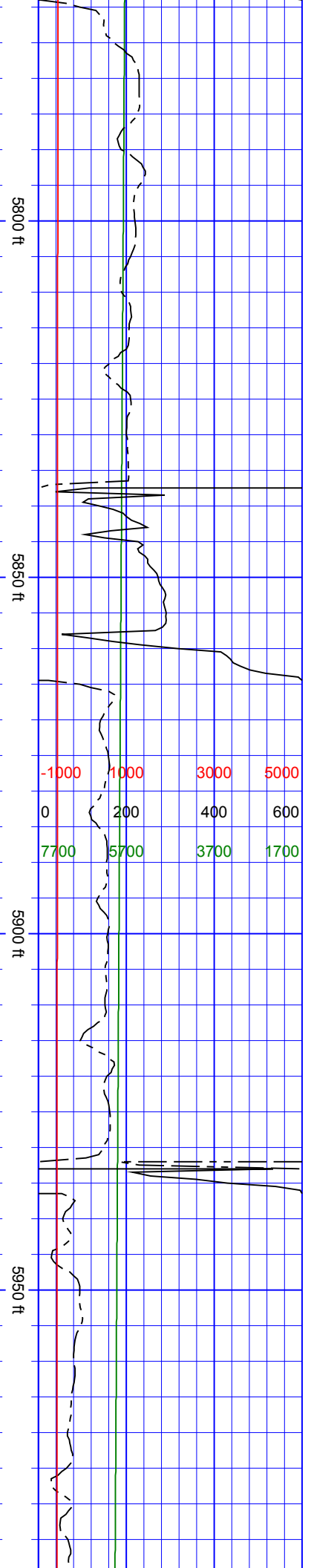


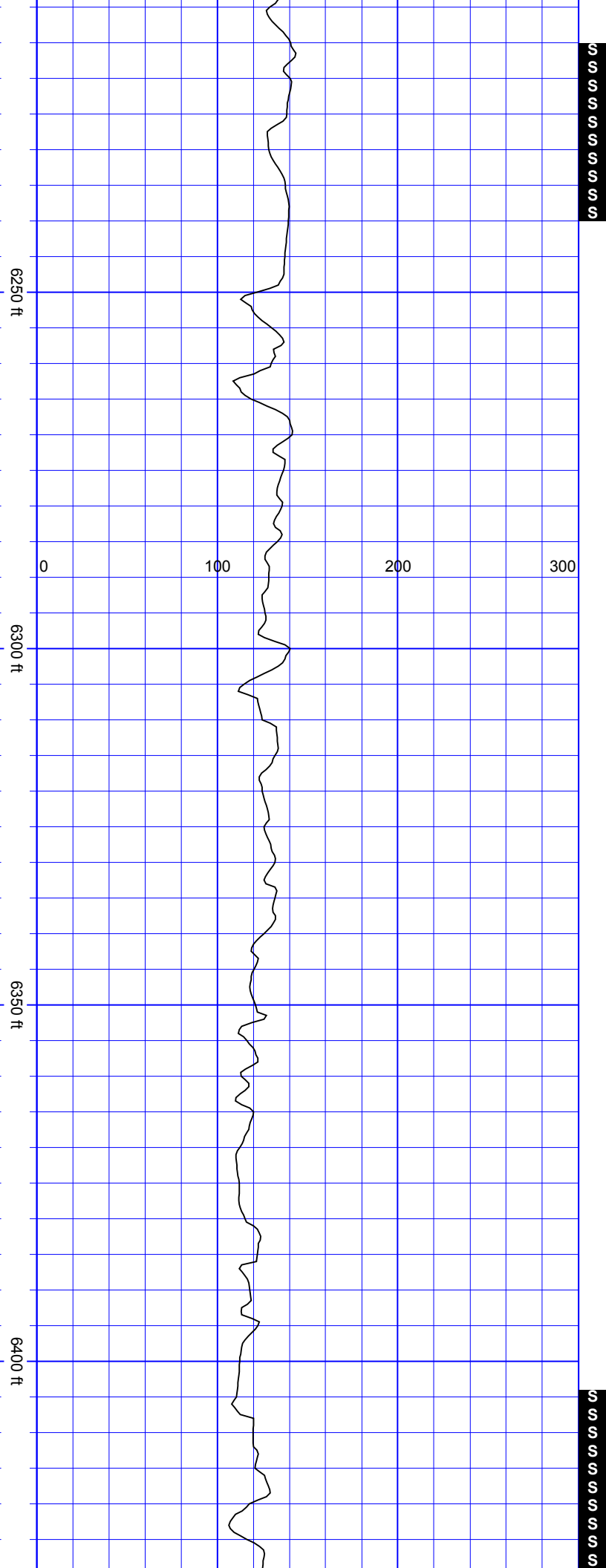


SurveyDepth:5779
TVD:5742.3 Inc:7.43
Azi:65.09 VertSec:-
553.83

SurveyDepth:5873
TVD:5835.55 Inc:7.08
Azi:72.56 VertSec:-
564.54

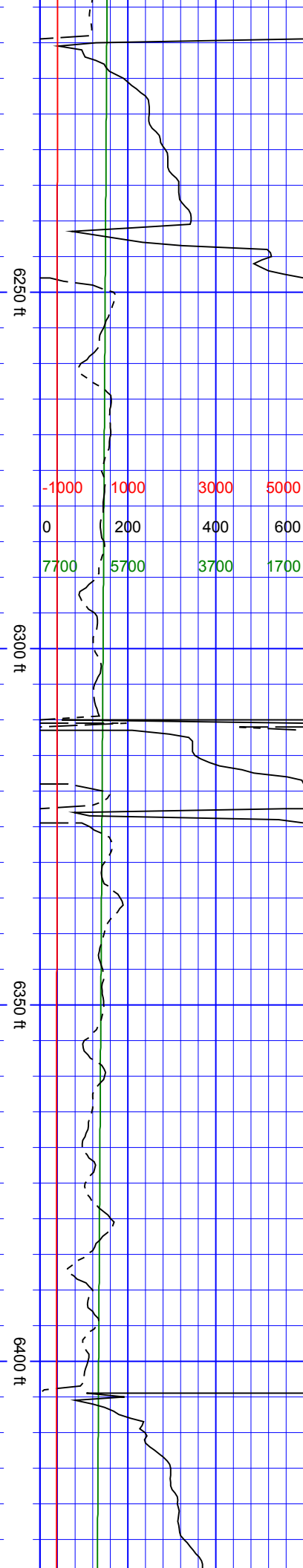
SurveyDepth:5968
TVD:5930 Inc:5.27
Azi:68.96 VertSec:-
573.94

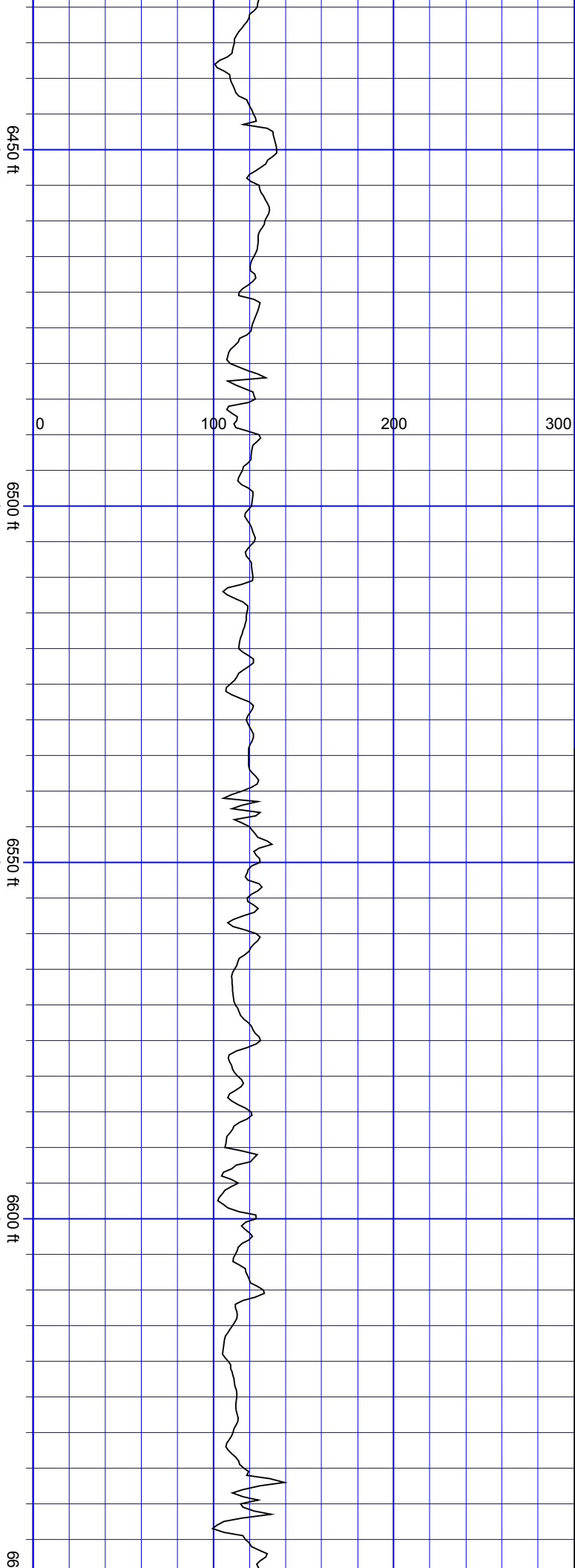




SurveyDepth:6252
TVD:6212.4 Inc:7.38
Azi:66.23 VertSec:-
601.72

SurveyDepth:6346
TVD:6305.81 Inc:5.36
Azi:63.86 VertSec:-
610.86



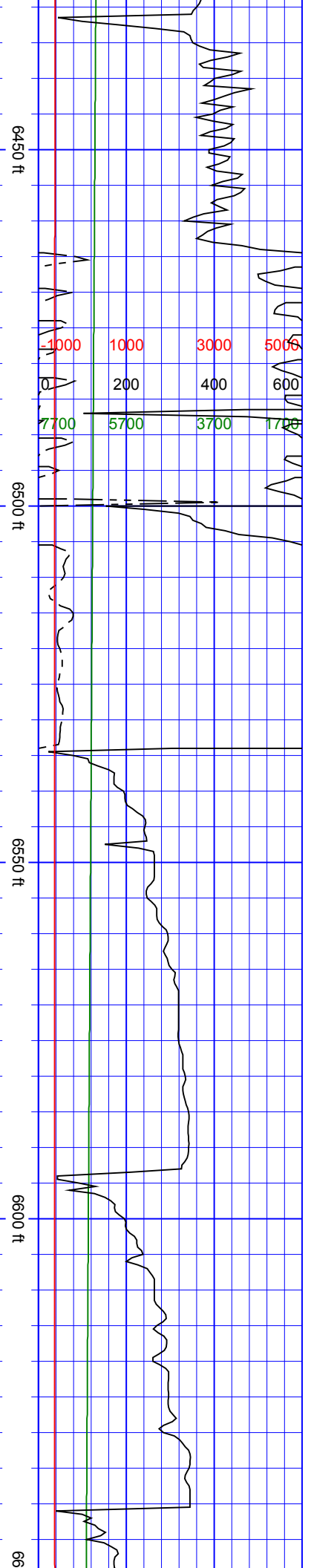


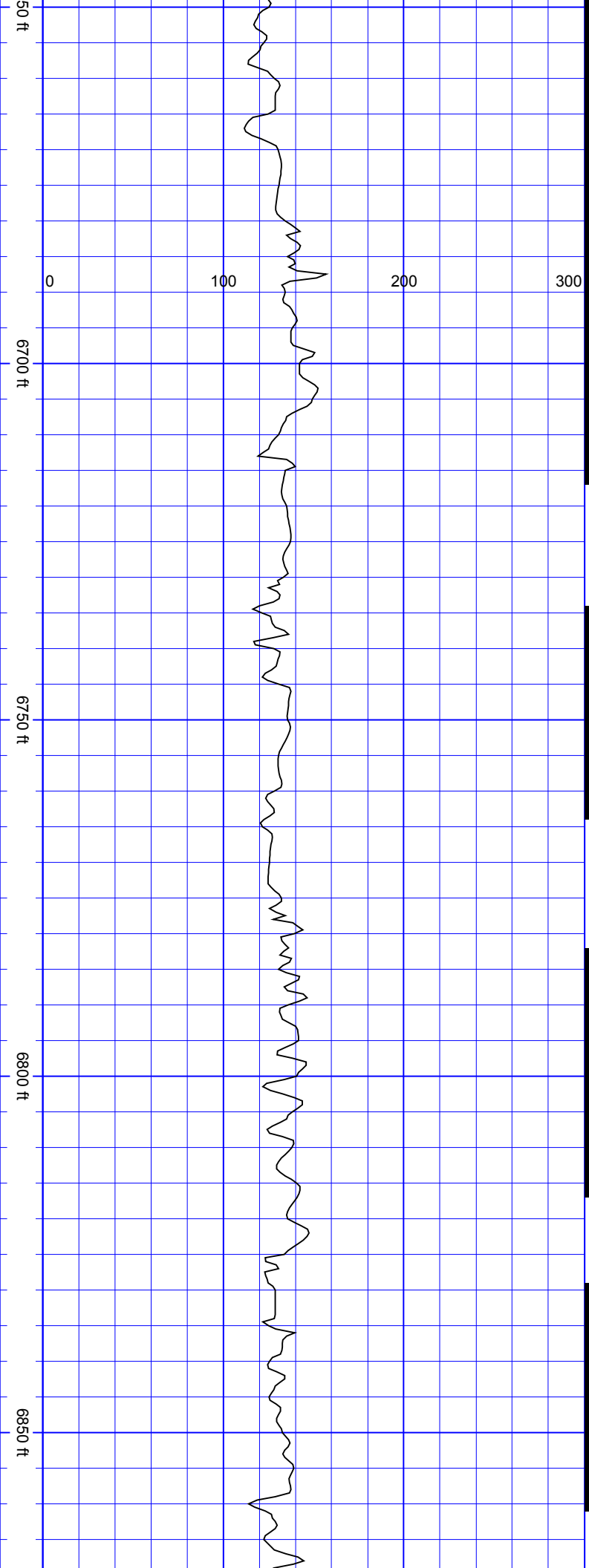
SurveyDepth:6440
TVD:6399.32 Inc:6.46
Azi:77.04 VertSec:-
619.72

SurveyDepth:6535
TVD:6493.91 Inc:4.09
Azi:66.58 VertSec:-
627.83

SurveyDepth:6582
TVD:6540.86 Inc:2.46
Azi:314 VertSec:-
628.55

SurveyDepth:6629
TVD:6587.7 Inc:7.08
Azi:277.17 VertSec:-
624.88





SurveyDepth:6676
TVD:6634.05 Inc:11.78
Azi:272.78 VertSec:-
617.19

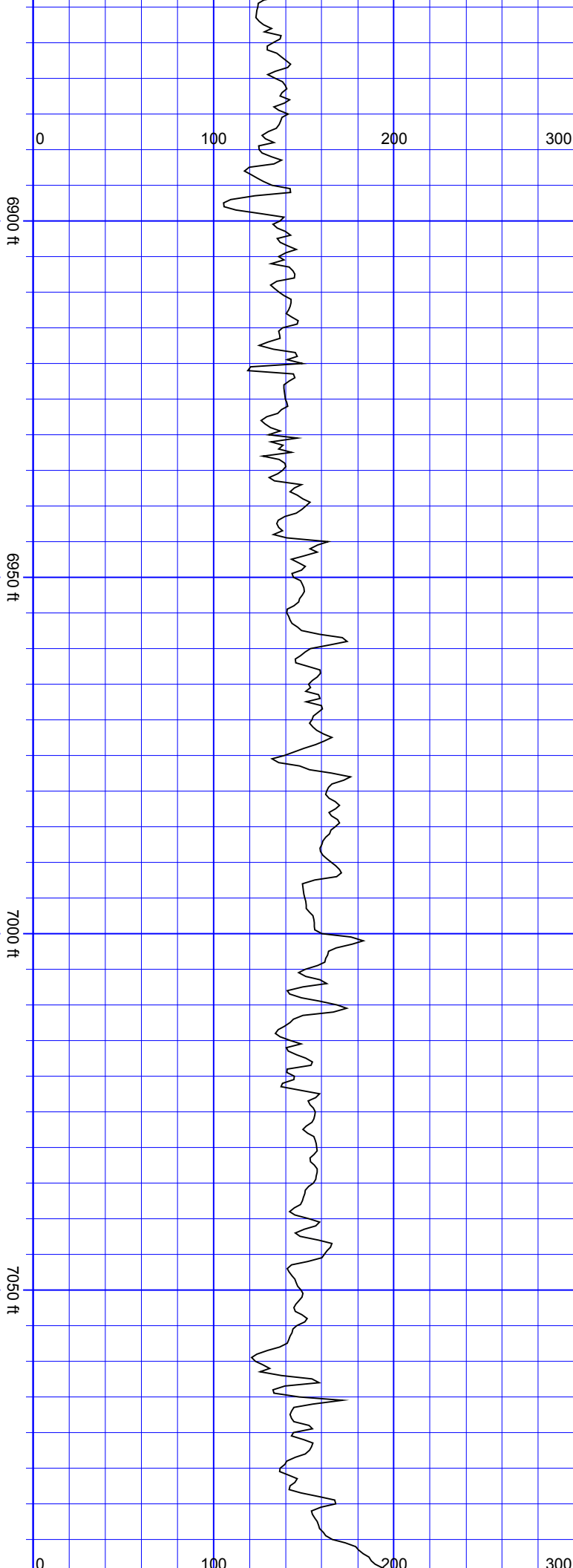
SurveyDepth:6724
TVD:6680.7 Inc:15.38
Azi:269.08 VertSec:-
605.95

SurveyDepth:6771
TVD:6725.7 Inc:18.11
Azi:267.24 VertSec:-
592.48

SurveyDepth:6819
TVD:6771.02 Inc:20.35
Azi:267.94 VertSec:-
576.77

SurveyDepth:6866





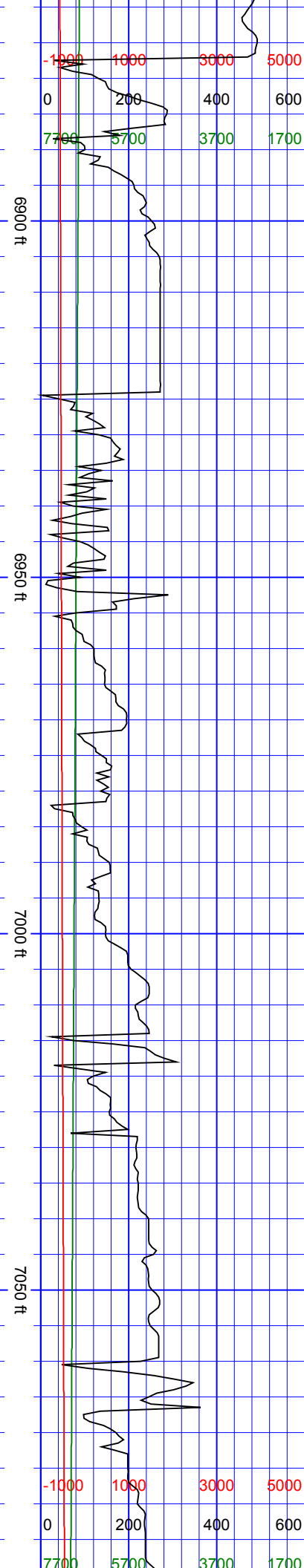
TVD:6814.71 Inc:22.9
Azi:269.7 VertSec:-559.52

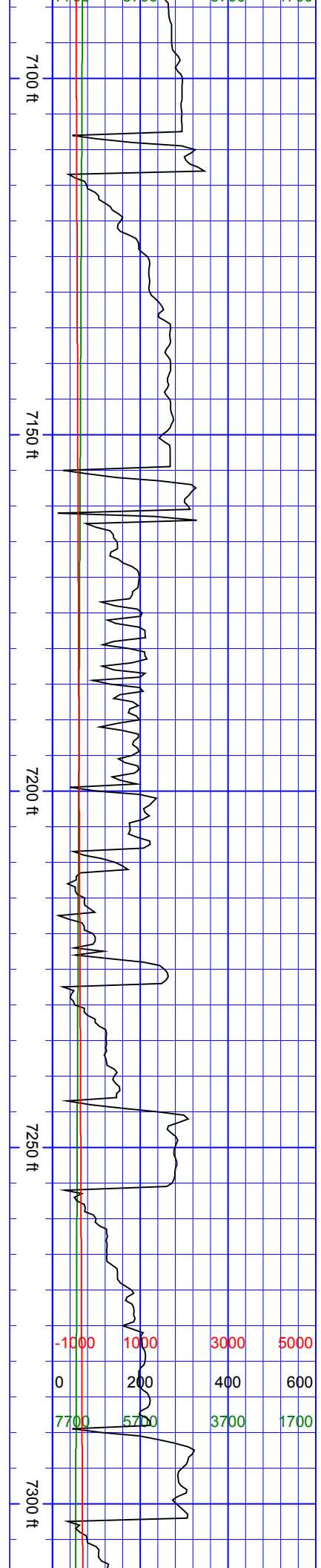
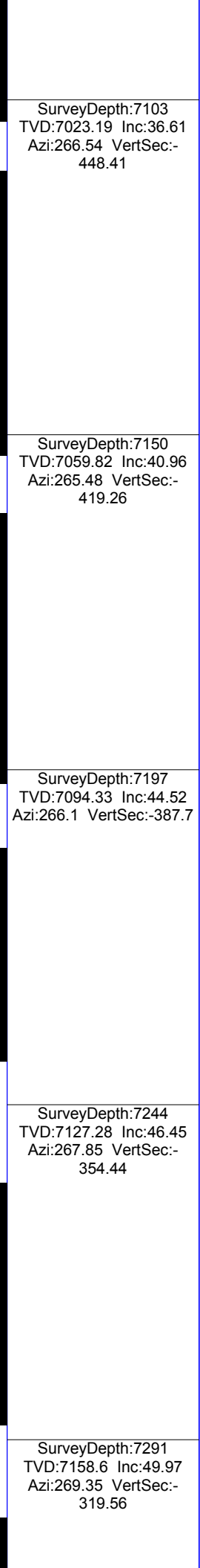
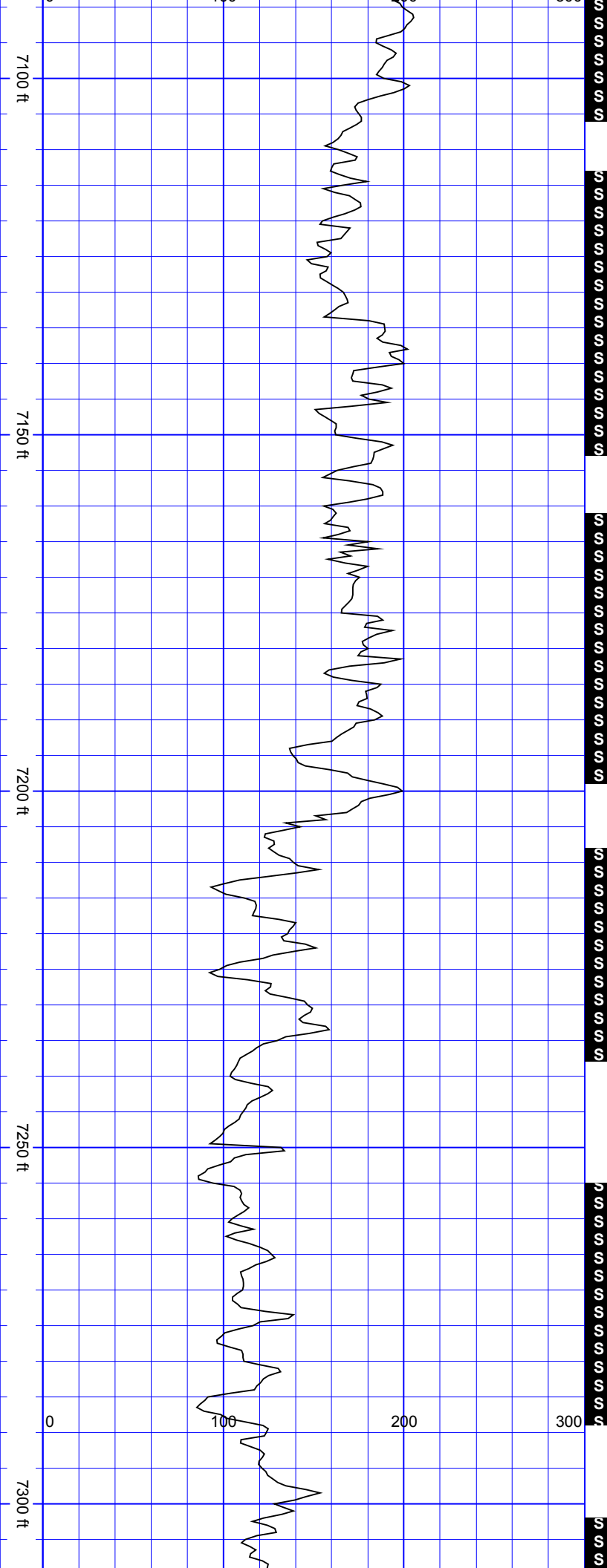
SurveyDepth:6913
TVD:6857.9 Inc:23.6
Azi:274.18 VertSec:-540.99

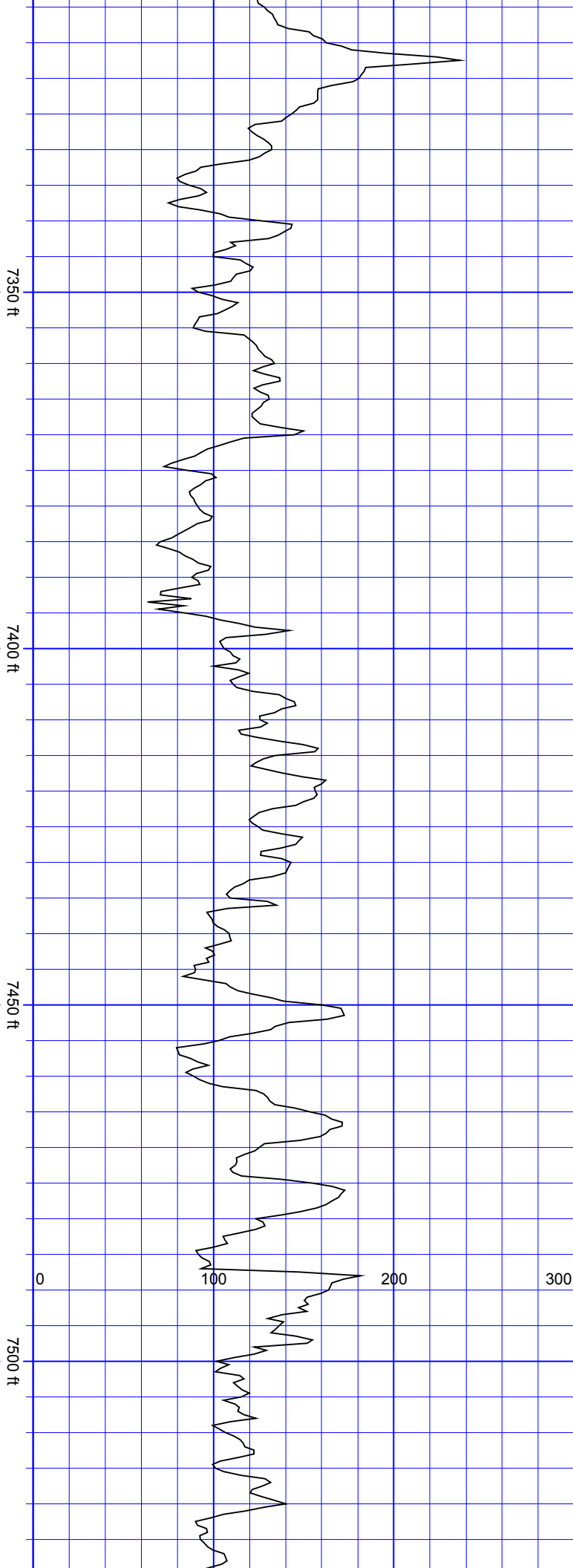
SurveyDepth:6960
TVD:6900.64 Inc:25.53
Azi:273.74 VertSec:-521.46

SurveyDepth:7008
TVD:6943.29 Inc:29.05
Azi:272.34 VertSec:-499.46

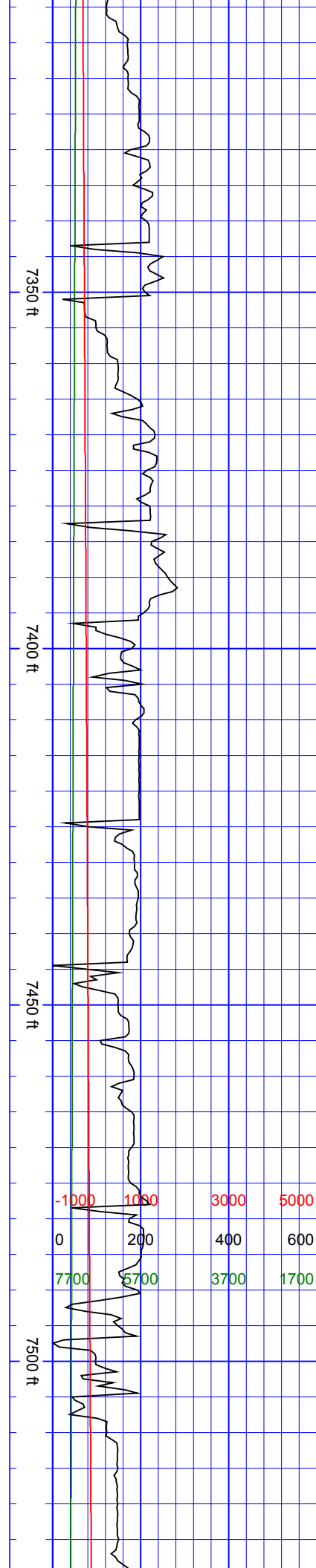
SurveyDepth:7055
TVD:6983.67 Inc:32.52
Azi:268.82 VertSec:-475.46

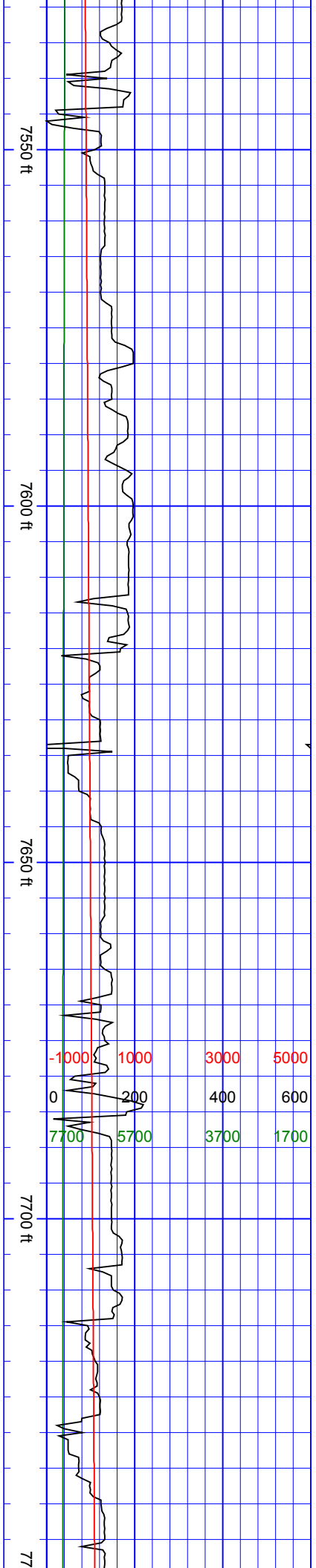
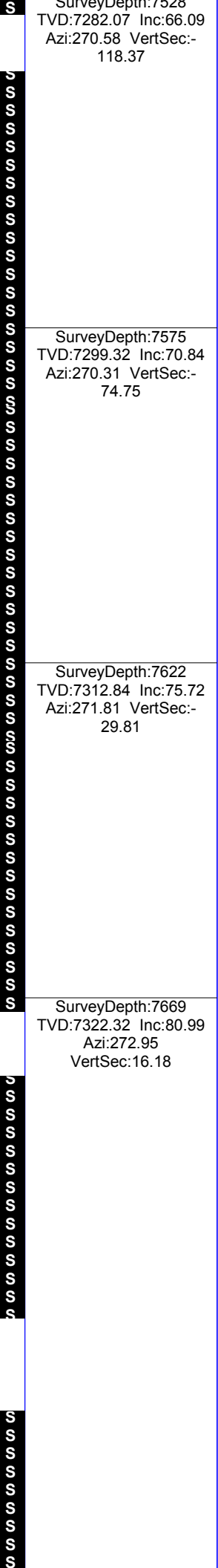
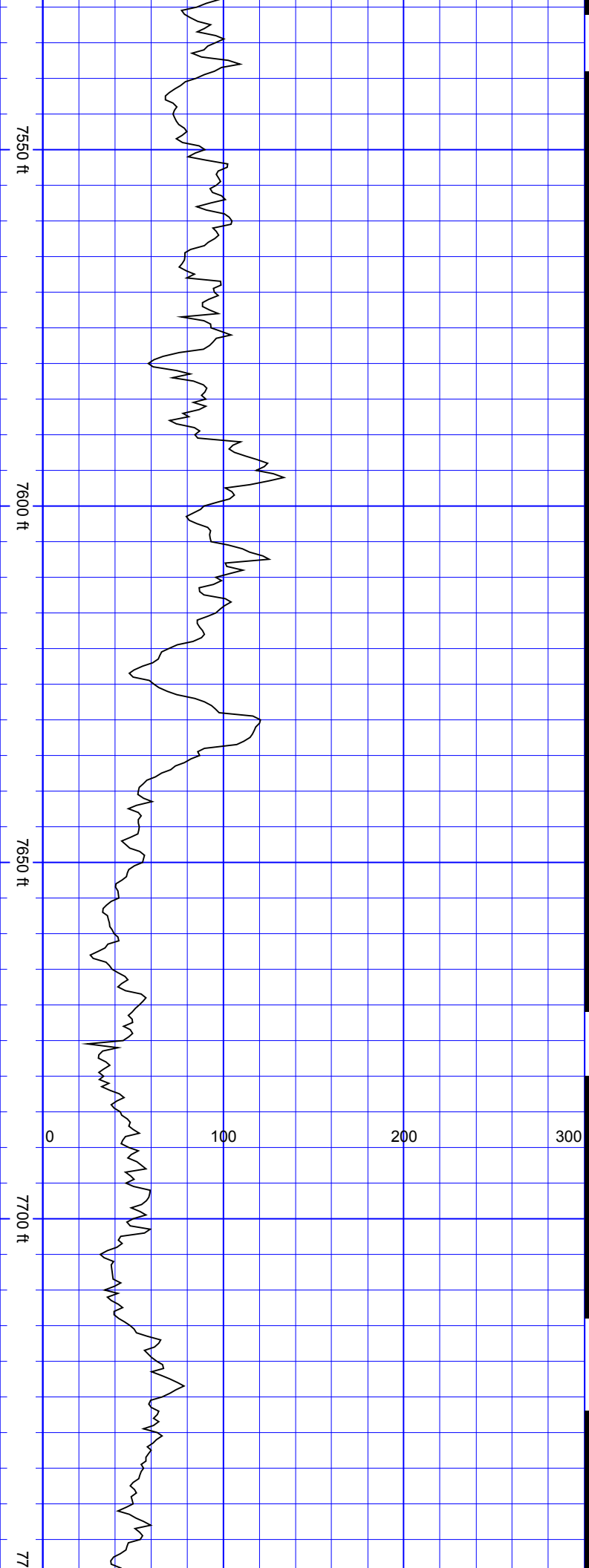


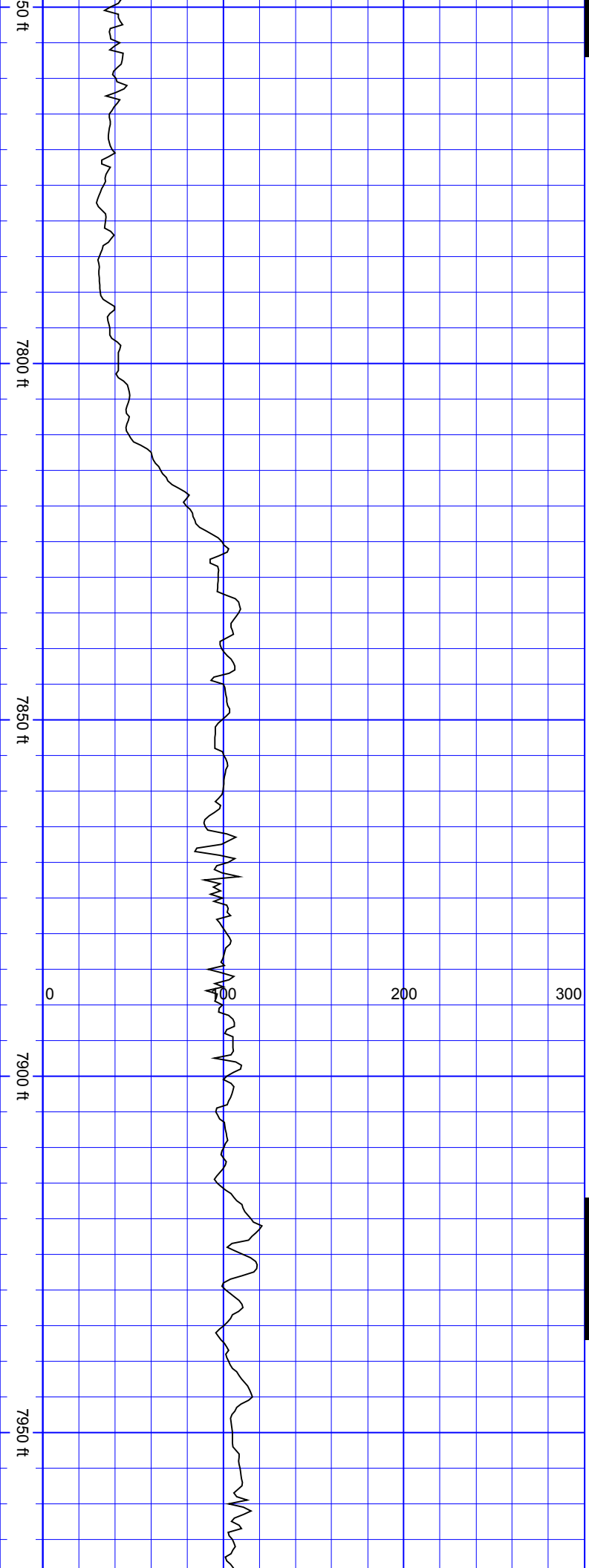




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| SurveyDepth:7338 TVD:7187.5 Inc:54.1 Azi:270.23 VertSec:-282.62 |
| SurveyDepth:7386 TVD:7214.47 Inc:57.52 Azi:271.63 VertSec:-242.98 |
| SurveyDepth:7433 TVD:7238.84 Inc:60.03 Azi:272.07 VertSec:-202.82 |
| SurveyDepth:7481 TVD:7261.8 Inc:62.8 Azi:271.28 VertSec:-160.71 |
| SurveyDepth:7529 |



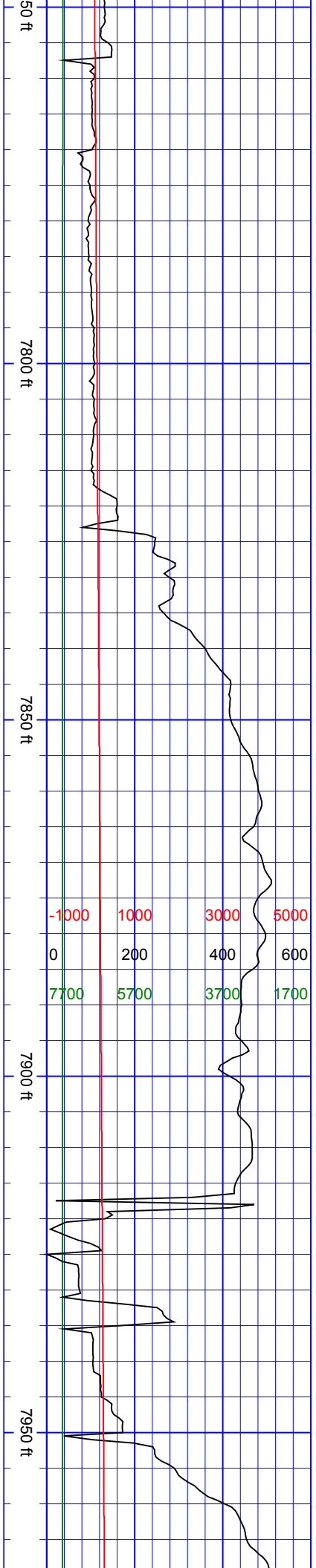


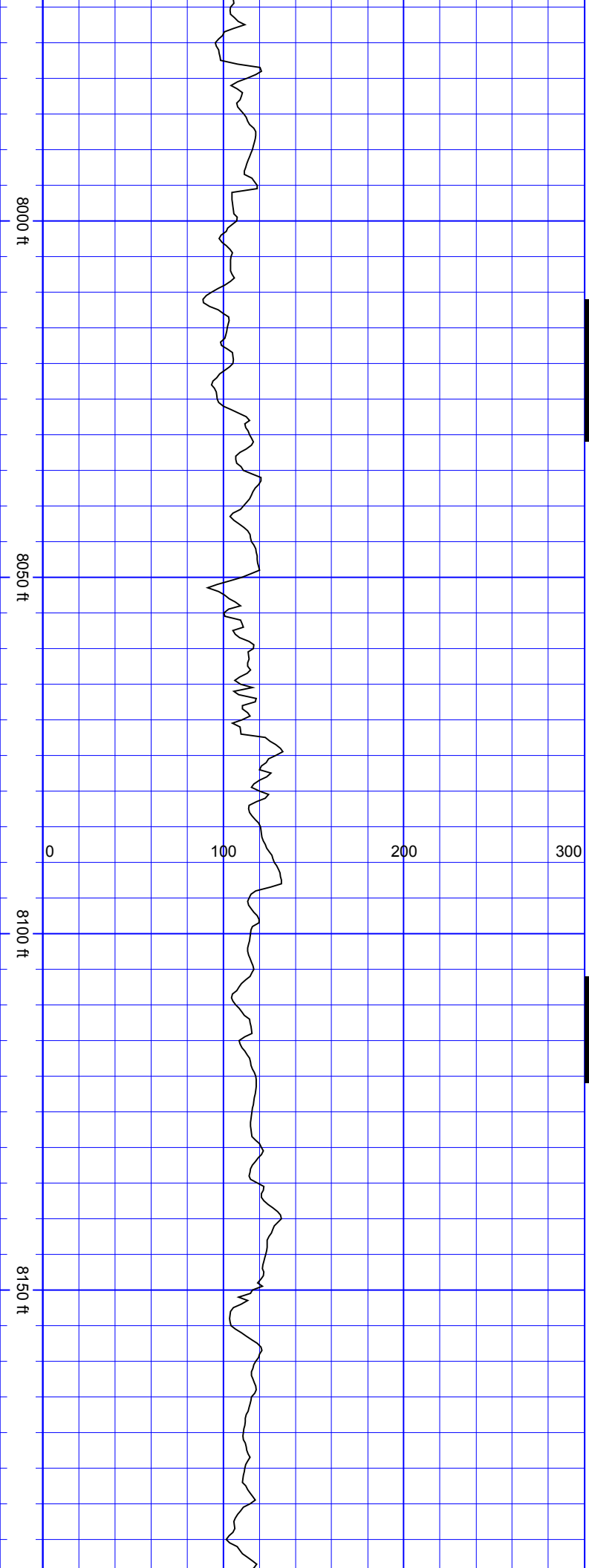


SurveyDepth:7764
TVD:7331.99 Inc:87.32
Azi:273.65
VertSec:110.63

SurveyDepth:7859
TVD:7337.06 Inc:86.57
Azi:272.86
VertSec:205.49

SurveyDepth:7953
TVD:7341.56 Inc:87.94
Azi:272.34
VertSec:299.35



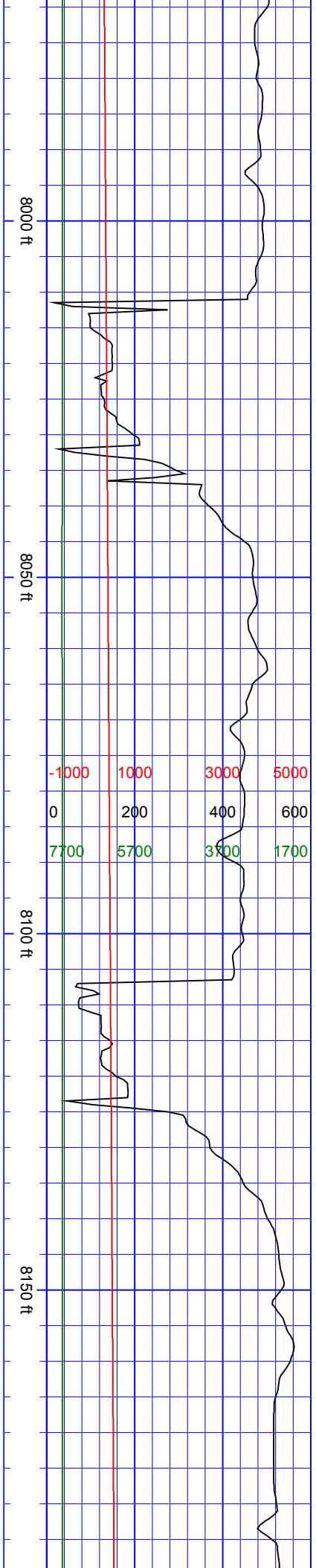


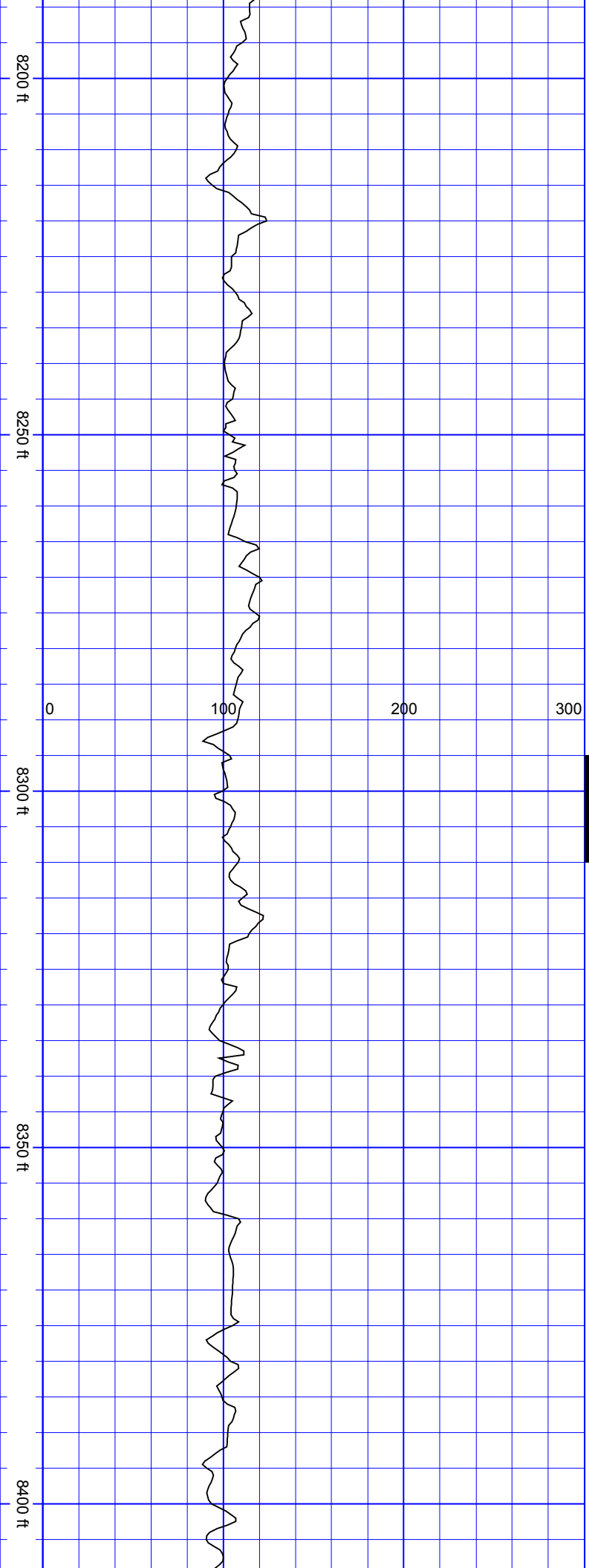
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SurveyDepth:8048
TVD:7343.34 Inc:89.91
Azi:271.28
VertSec:394.26

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SurveyDepth:8142
TVD:7342.66 Inc:90.92
Azi:269.88
VertSec:488.08

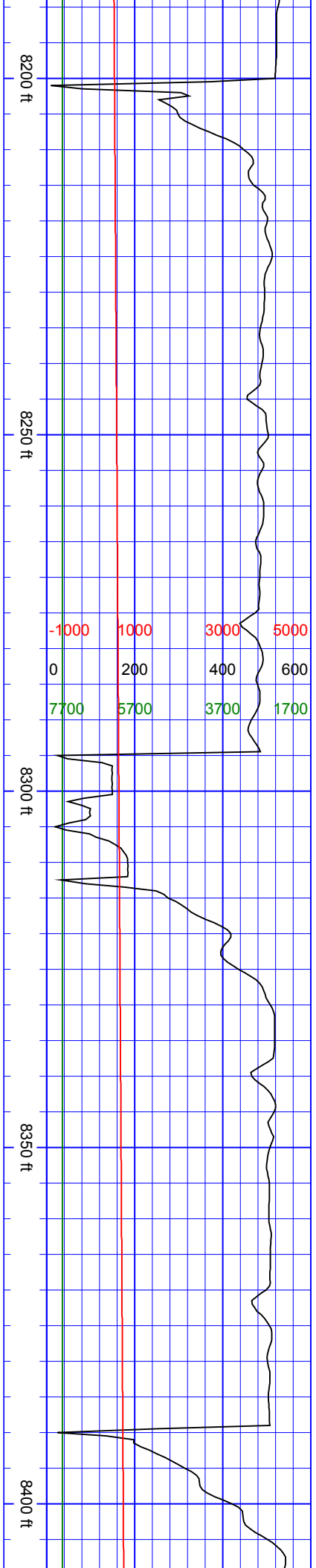


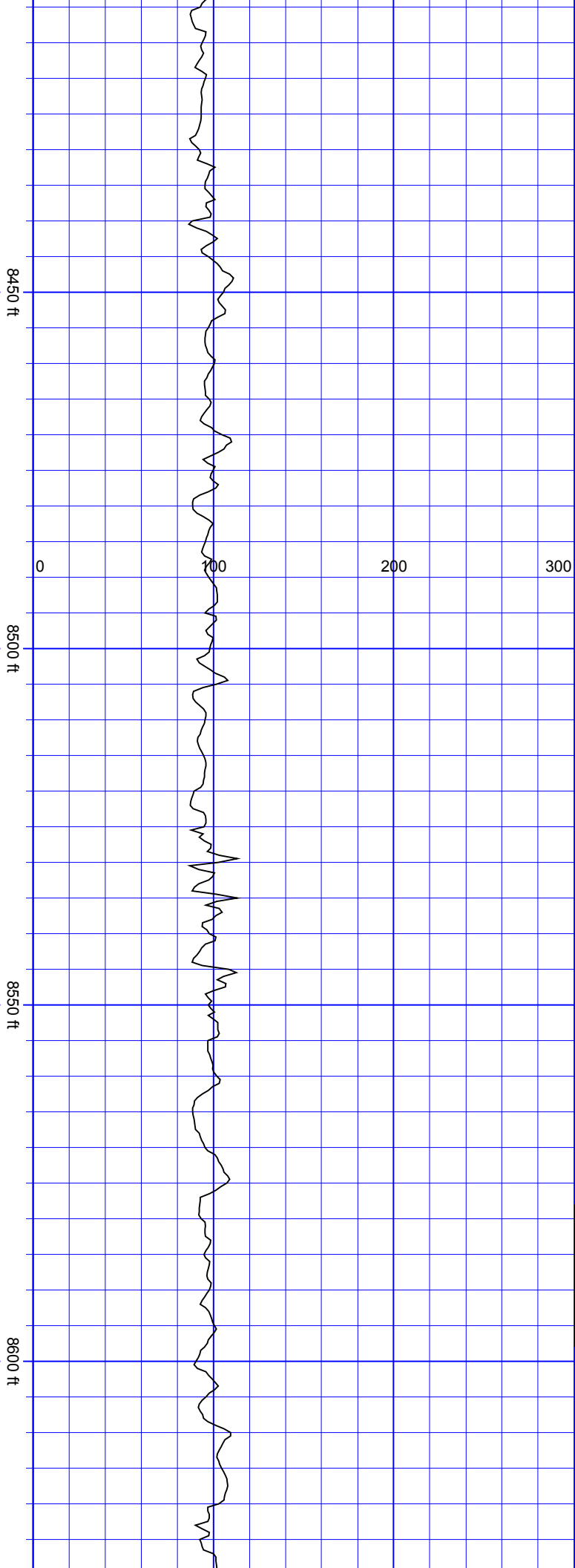


SurveyDepth:8237
TVD:7340.84 Inc:91.27
Azi:270.14
VertSec:582.83

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SurveyDepth:8331
TVD:7339.23 Inc:90.7
Azi:269 VertSec:676.53



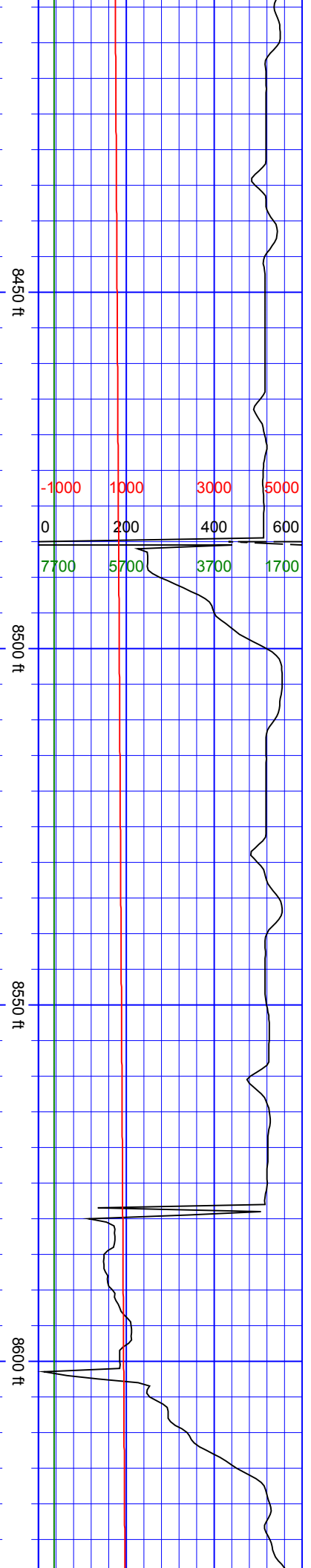


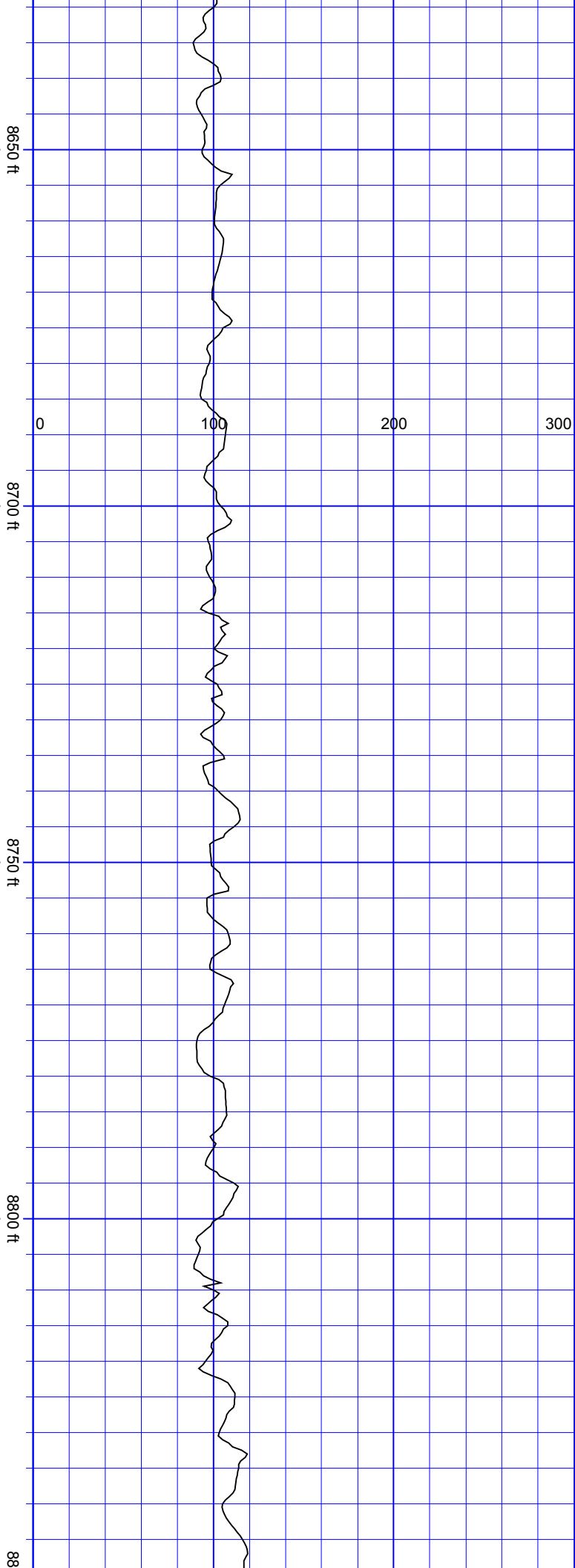
SurveyDepth:8426
TVD:7337.84 Inc:90.97
Azi:269.08
VertSec:771.16

SurveyDepth:8520
TVD:7335.93 Inc:91.36
Azi:269.44
VertSec:864.82

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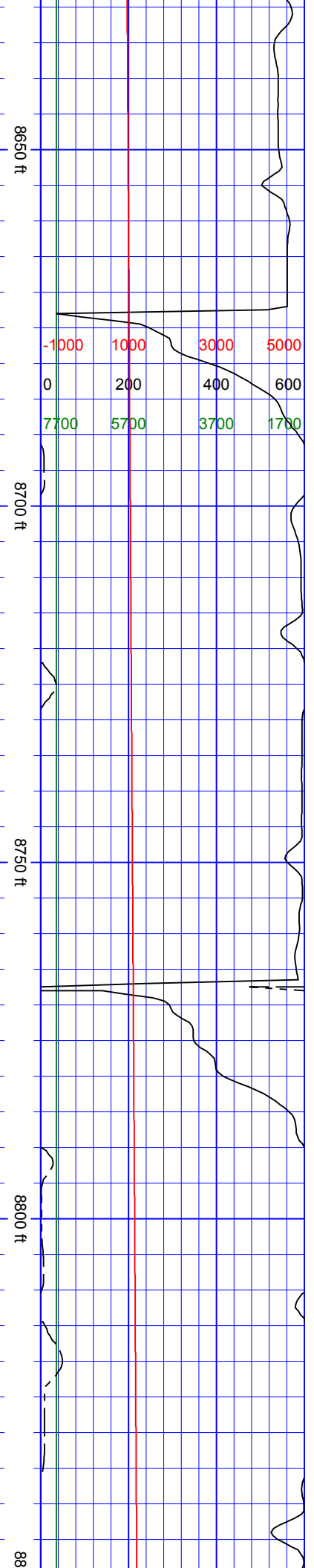
SurveyDepth:8614
TVD:7335.18 Inc:89.56
Azi:268.82
VertSec:958.47

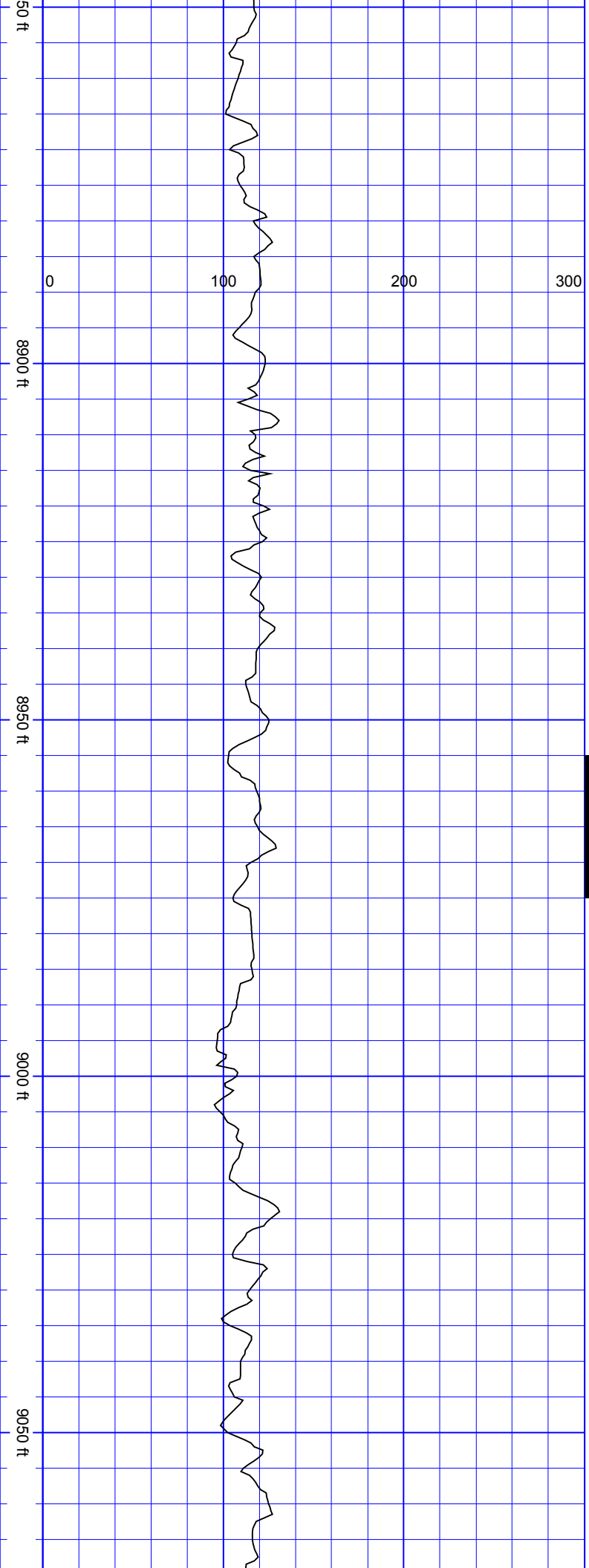




SurveyDepth:8709
TVD:7336.02 Inc:89.43
Azi:268.56
VertSec:1053.05

SurveyDepth:8803
TVD:7336.81 Inc:89.6
Azi:268.38
VertSec:1146.61

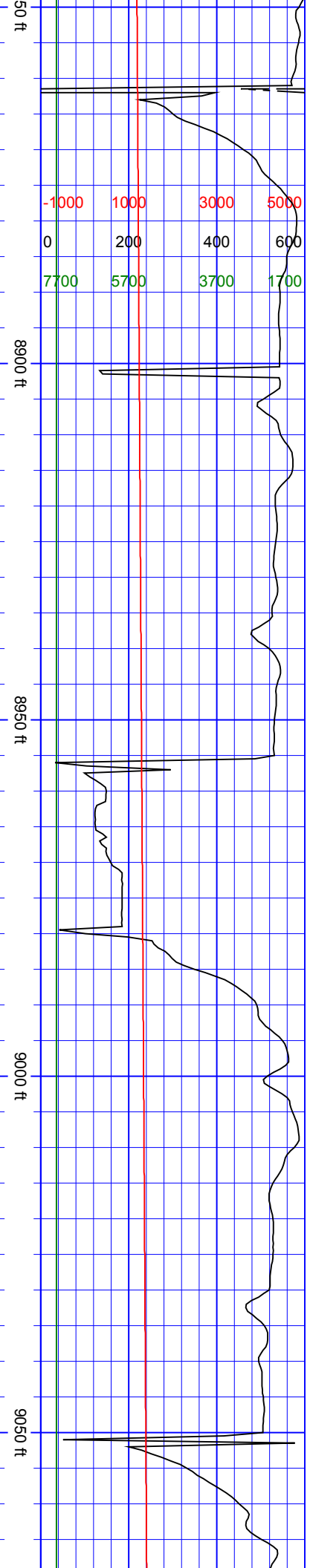


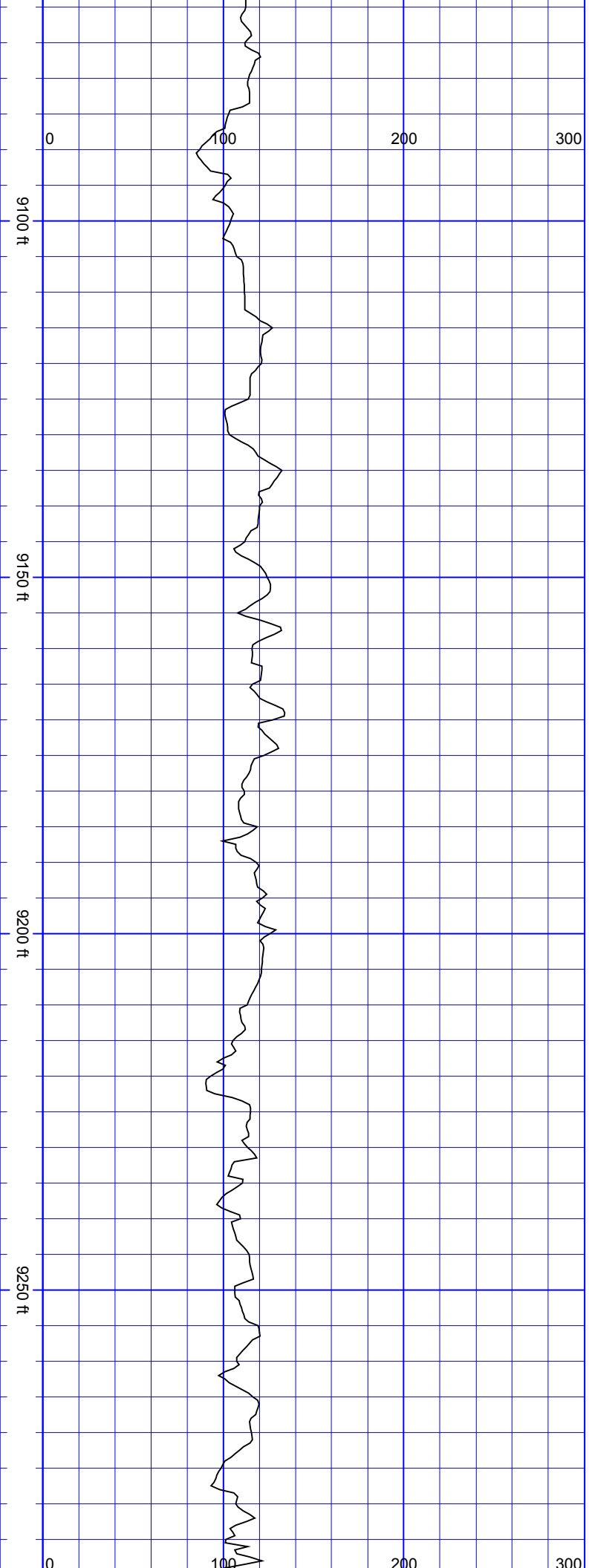


SurveyDepth:8897
TVD:7336.99 Inc:90.18
Azi:270.31
VertSec:1240.29

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SurveyDepth:8992
TVD:7338.3 Inc:88.24
Azi:268.56
VertSec:1334.97

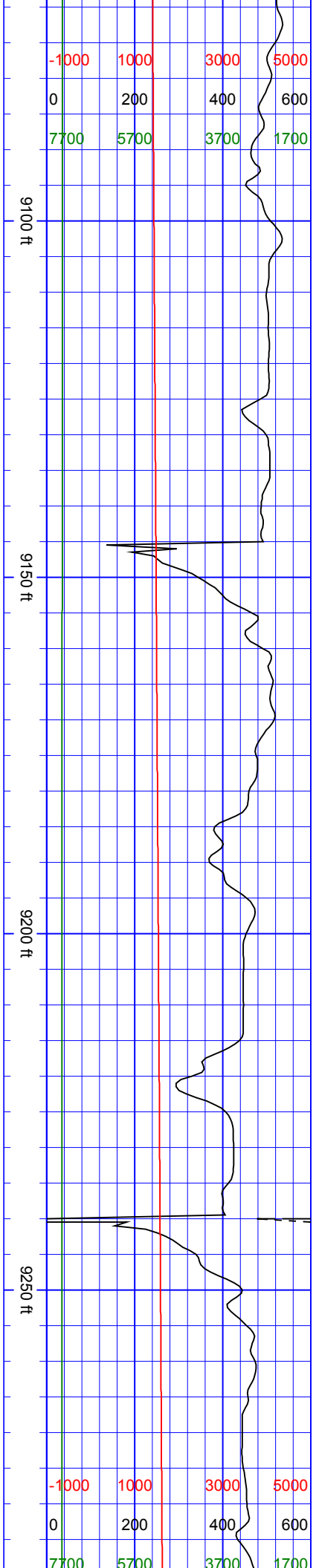


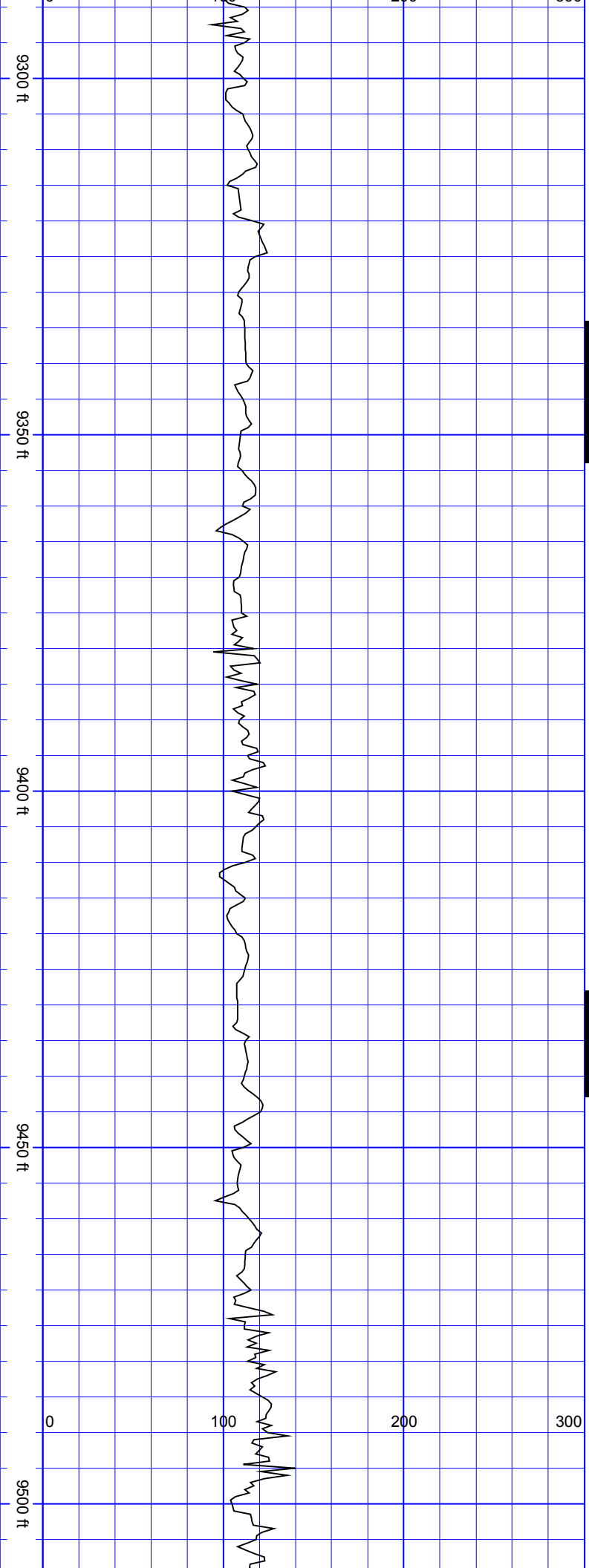


SurveyDepth:9087
TVD:7341.22 Inc:88.24
Azi:267.68
VertSec:1429.42

SurveyDepth:9181
TVD:7344.03 Inc:88.33
Azi:267.59
VertSec:1522.8

SurveyDepth:9276
TVD:7346.95 Inc:88.15
Azi:267.33
VertSec:1617.13



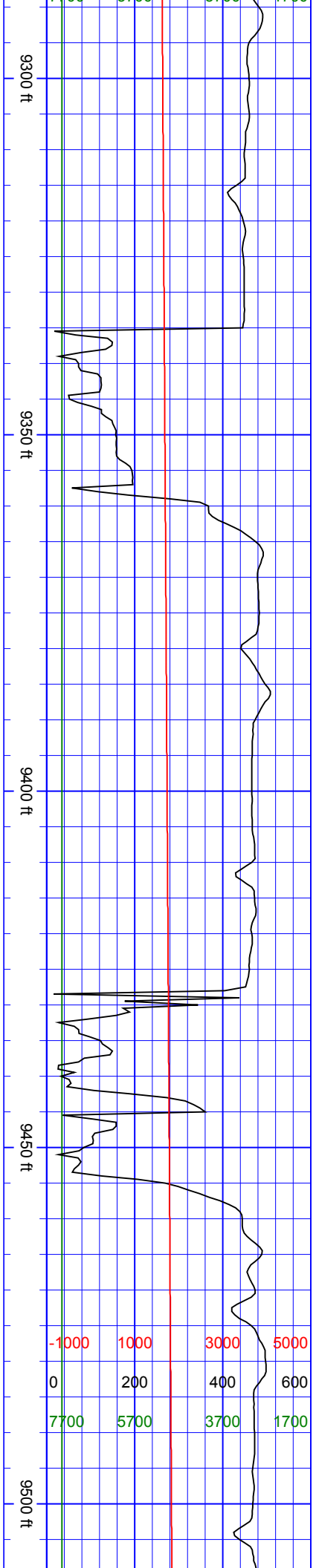


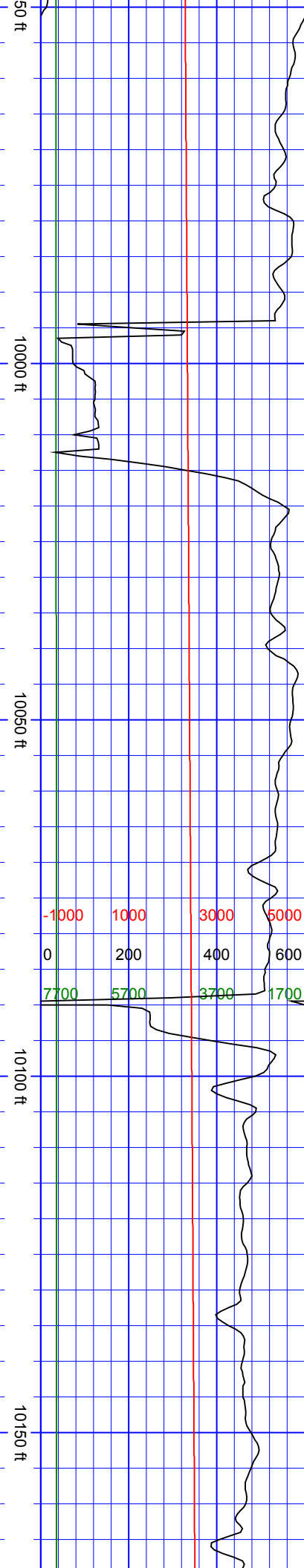
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SurveyDepth:9370
TVD:7348.21 Inc:90.31
Azi:268.56
VertSec:1710.59

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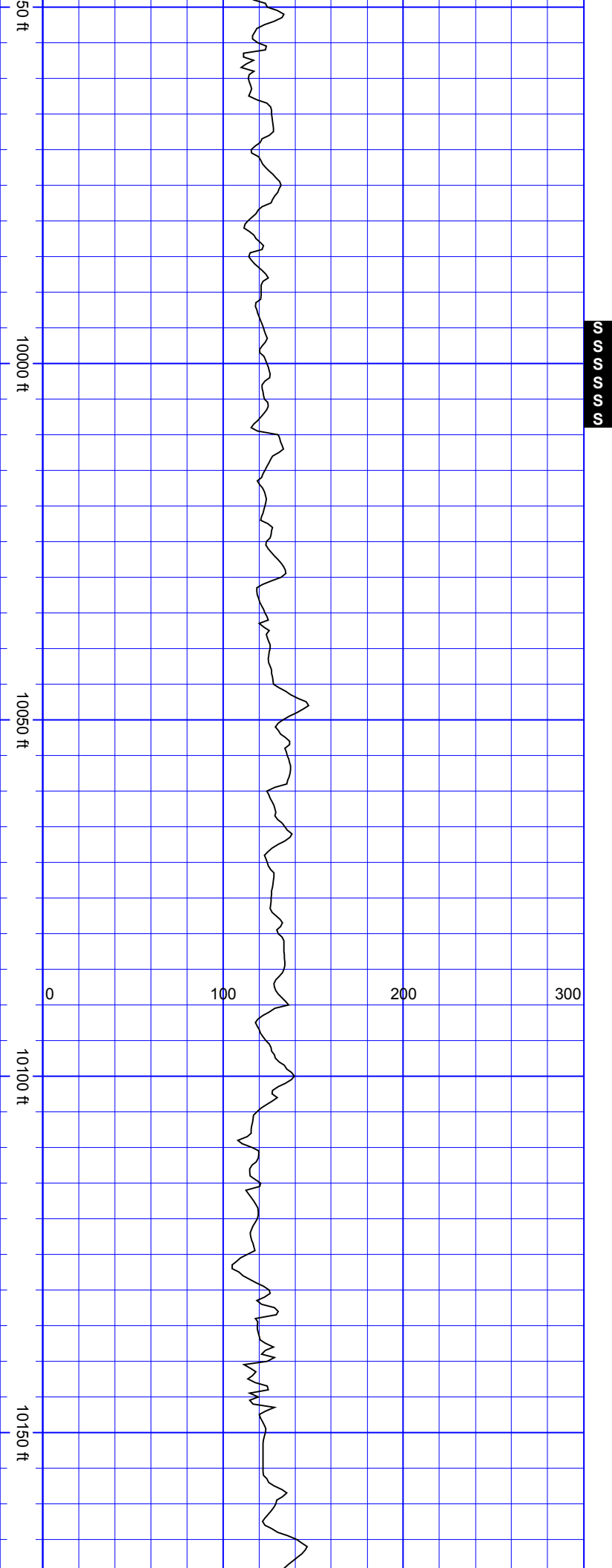
SurveyDepth:9464
TVD:7347.57 Inc:90.48
Azi:269.08
VertSec:1804.2

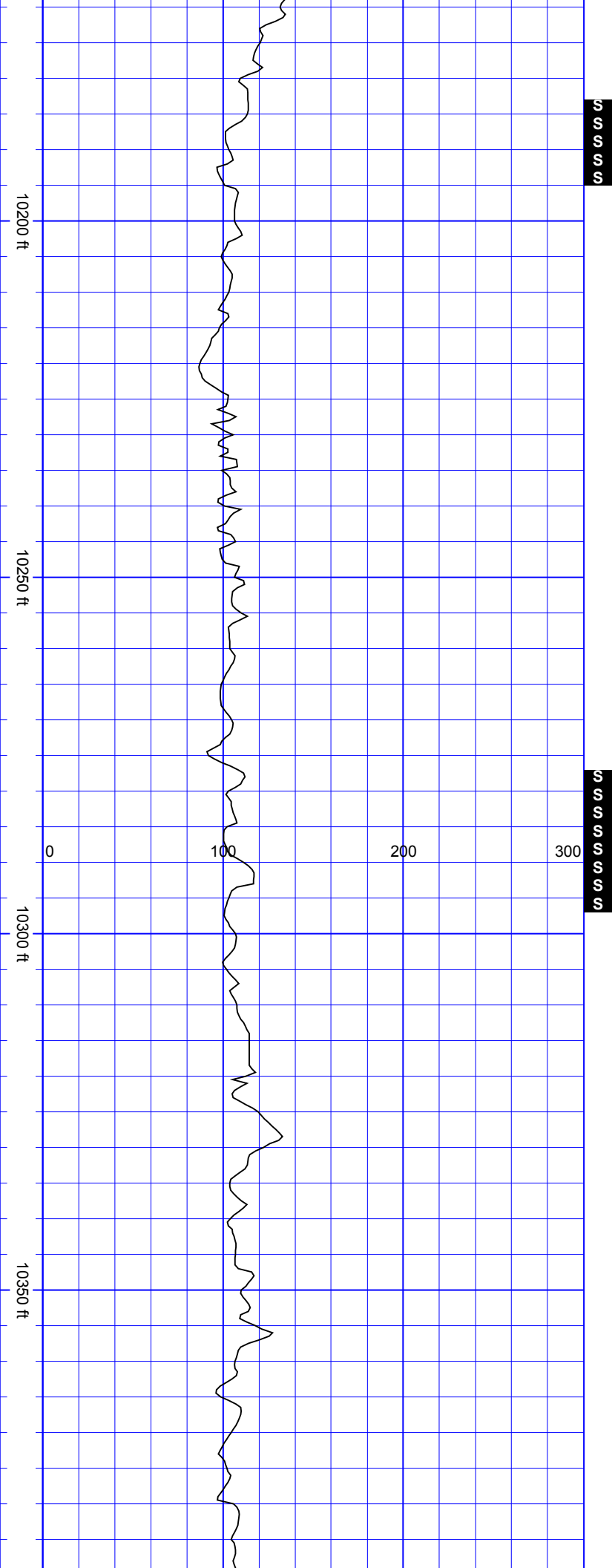




SurveyDepth:10030
TVD:7343.38 Inc:91.06
Azi:267.59
VertSec:2369.19

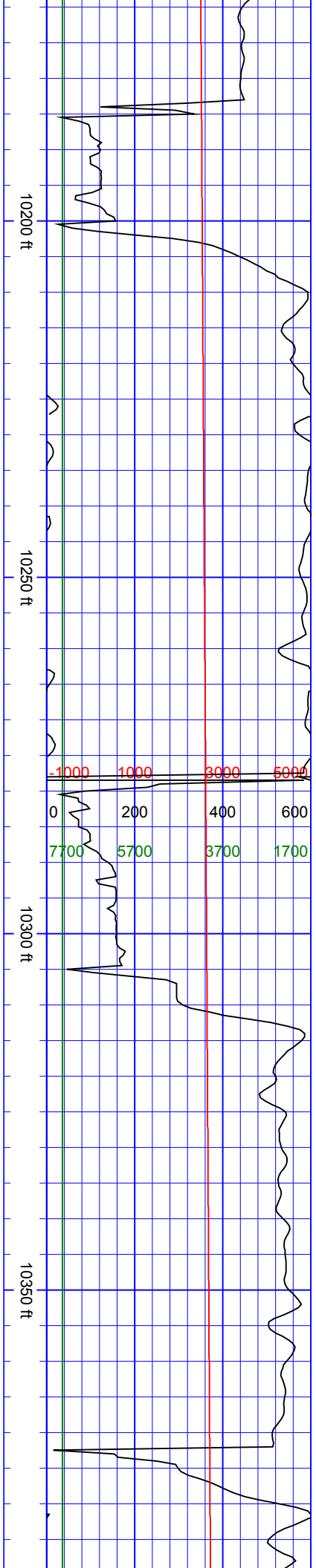
SurveyDepth:10125
TVD:7340.93 Inc:91.89
Azi:268.38
VertSec:2463.63



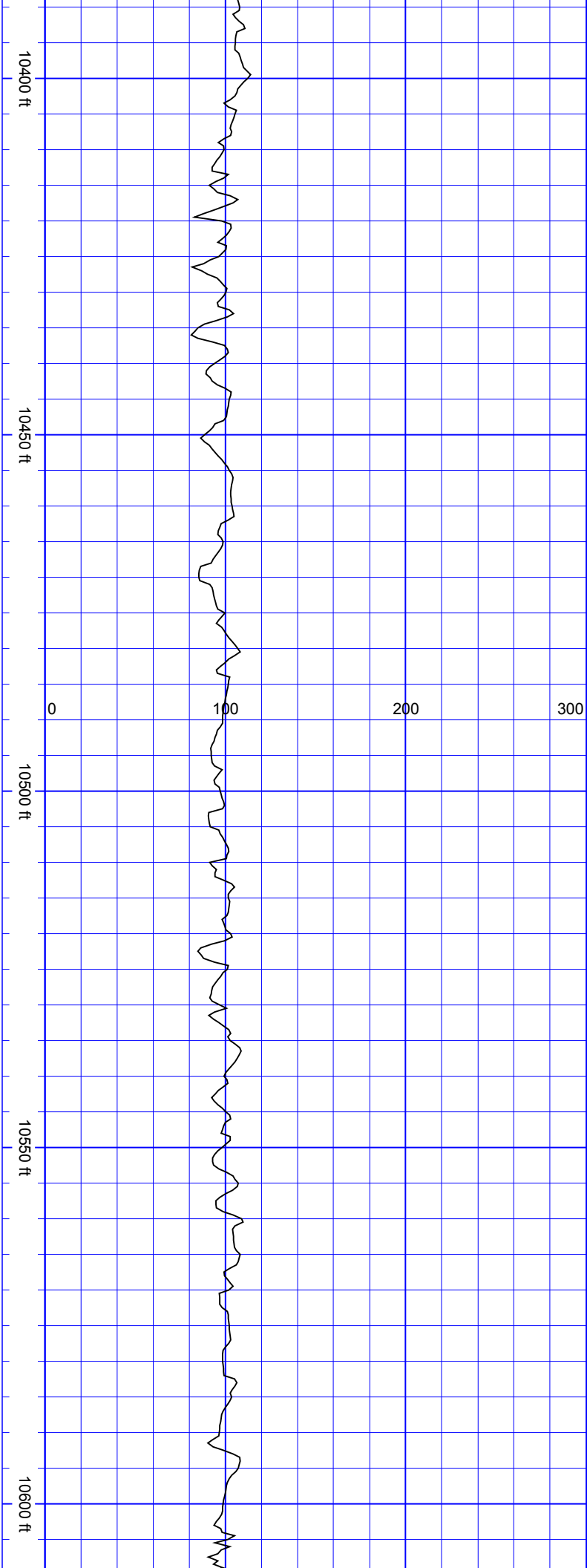


SurveyDepth:10219
TVD:7337.58 Inc:92.2
Azi:269.7
VertSec:2557.21

SurveyDepth:10314
TVD:7335.5 Inc:90.31
Azi:267.5
VertSec:2651.75



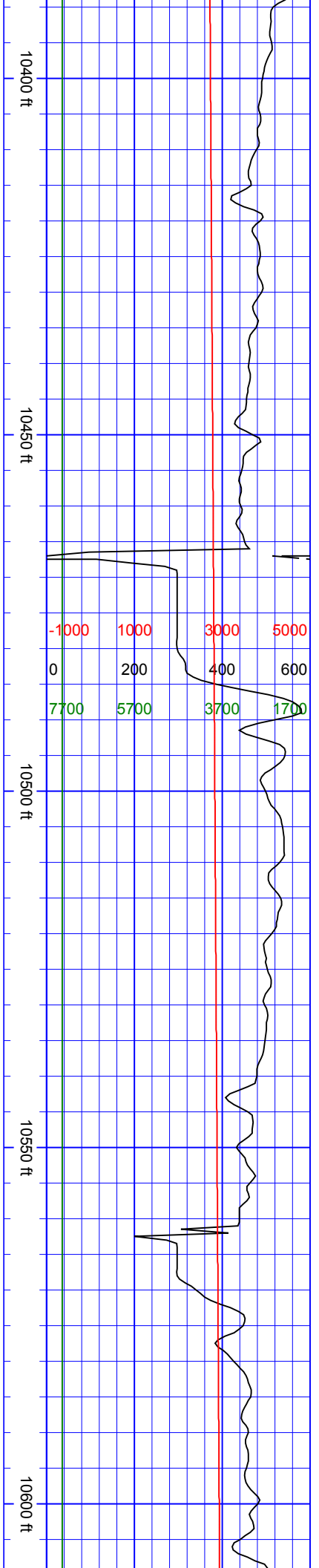
| Depth (ft) | Scale 1 | Scale 2 | Scale 3 | Scale 4 |
|------------|---------|---------|---------|---------|
| 10200 | 1000 | 1000 | 3000 | 5000 |
| 10250 | 0 | 200 | 400 | 600 |
| 10300 | 7700 | 5700 | 3700 | 1700 |
| 10350 | | | | |

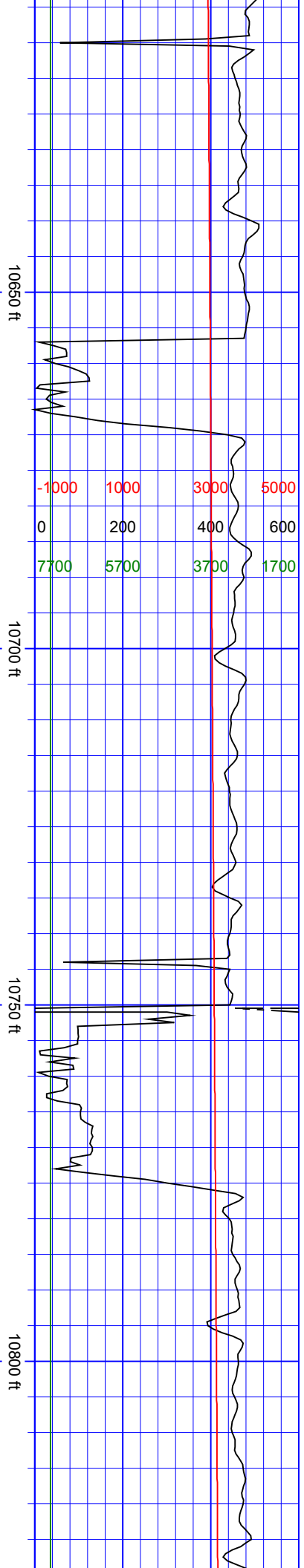


SurveyDepth:10408
TVD:7334.81 Inc:90.53
Azi:267.94
VertSec:2745.18

SurveyDepth:10503
TVD:7334.04 Inc:90.4
Azi:268.12
VertSec:2839.66

SurveyDepth:10597
TVD:7334.65 Inc:88.86
Azi:266.89
VertSec:2933.05





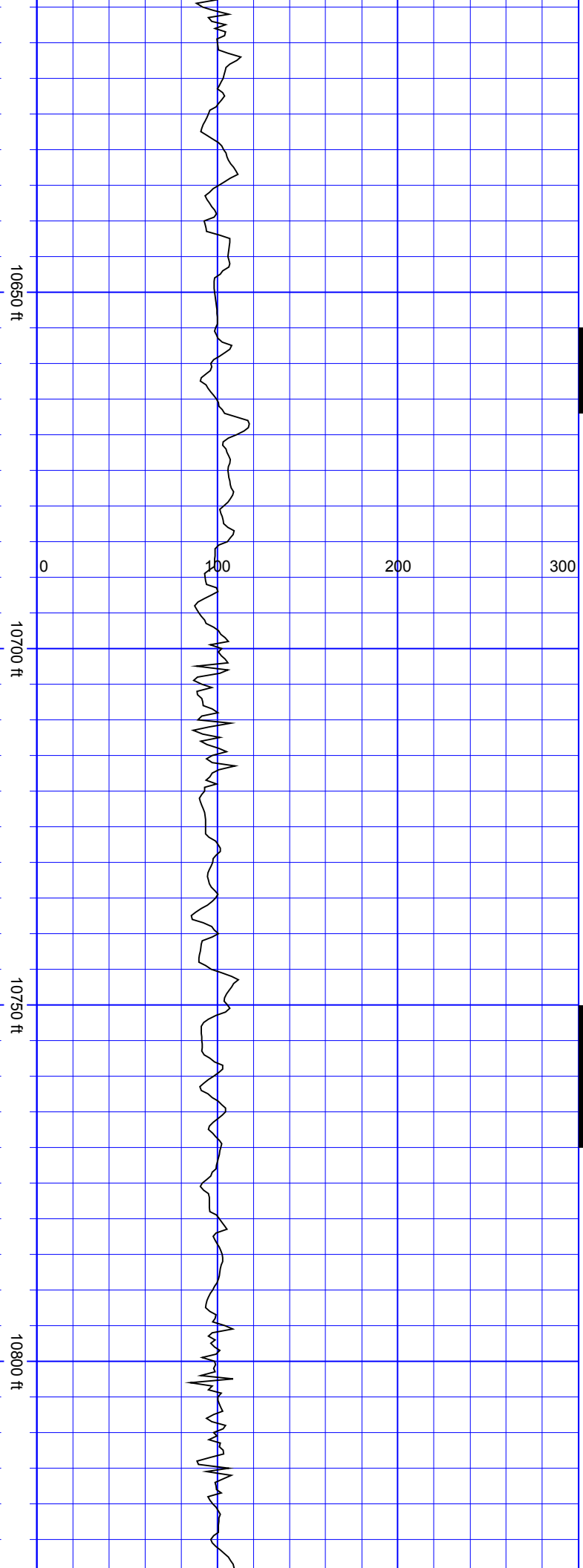
December 31, 2018

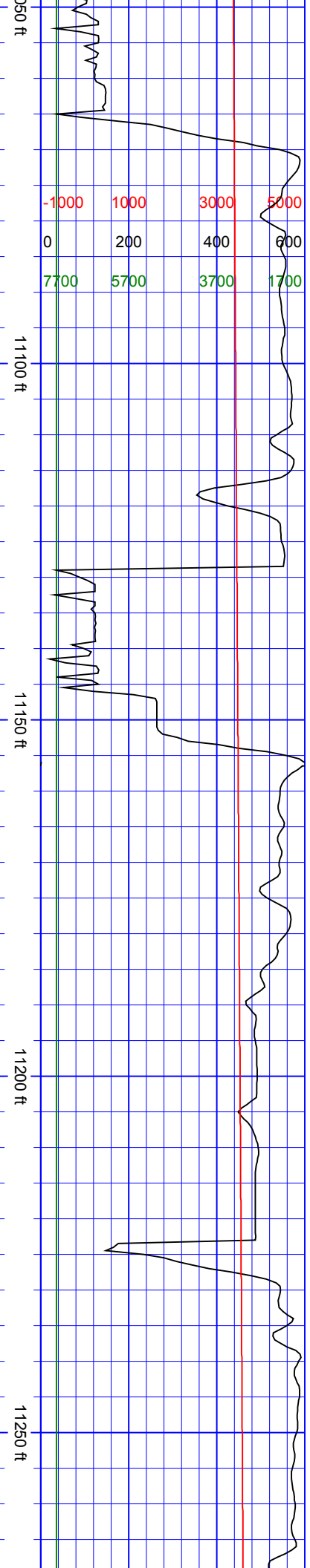
SurveyDepth:10692
TVD:7336.98 Inc:88.33
Azi:266.8
VertSec:3027.27

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SurveyDepth:10786
TVD:7340.22 Inc:87.72
Azi:268.73
VertSec:3120.65

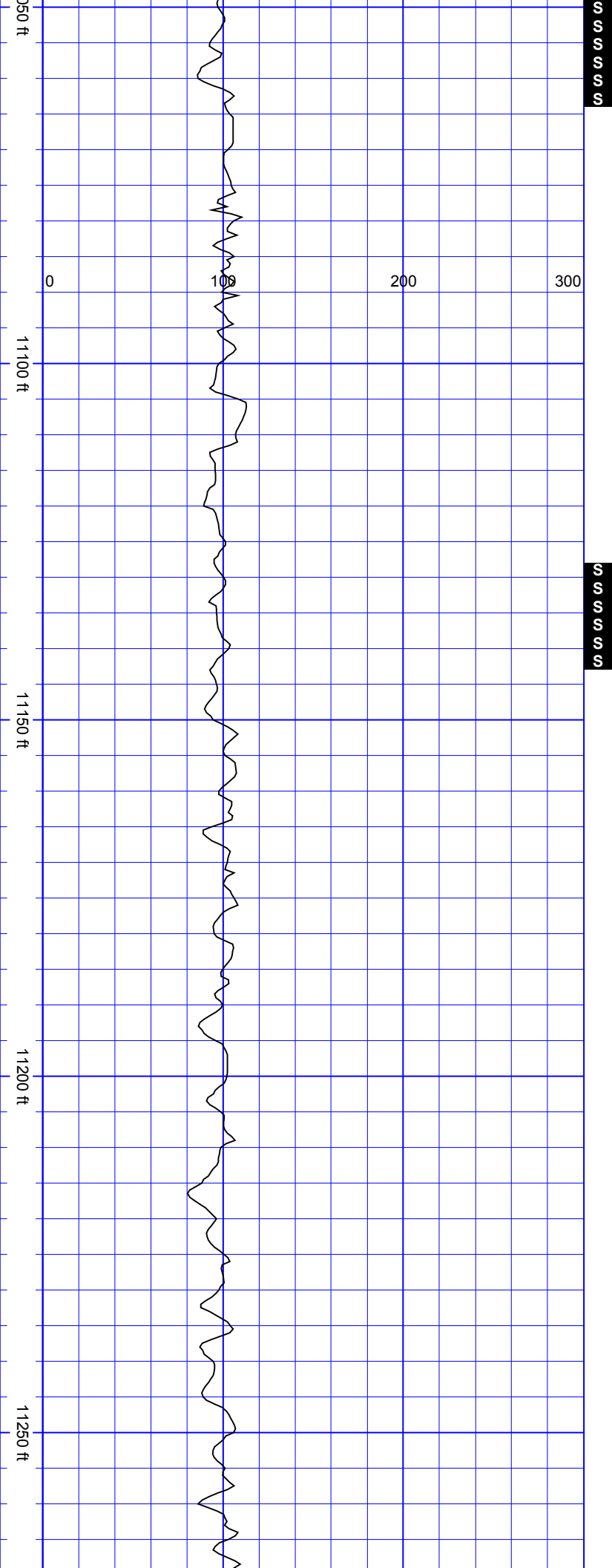




SurveyDepth:11070
TVD:7341.07 Inc:91.45
Azi:274.27
VertSec:3404.06

SurveyDepth:11165
TVD:7338.88 Inc:91.19
Azi:276.73
VertSec:3498.99

SurveyDepth:11260
TVD:7336.91 Inc:91.19
Azi:276.55
VertSec:3593.87



VertSec:3395.67

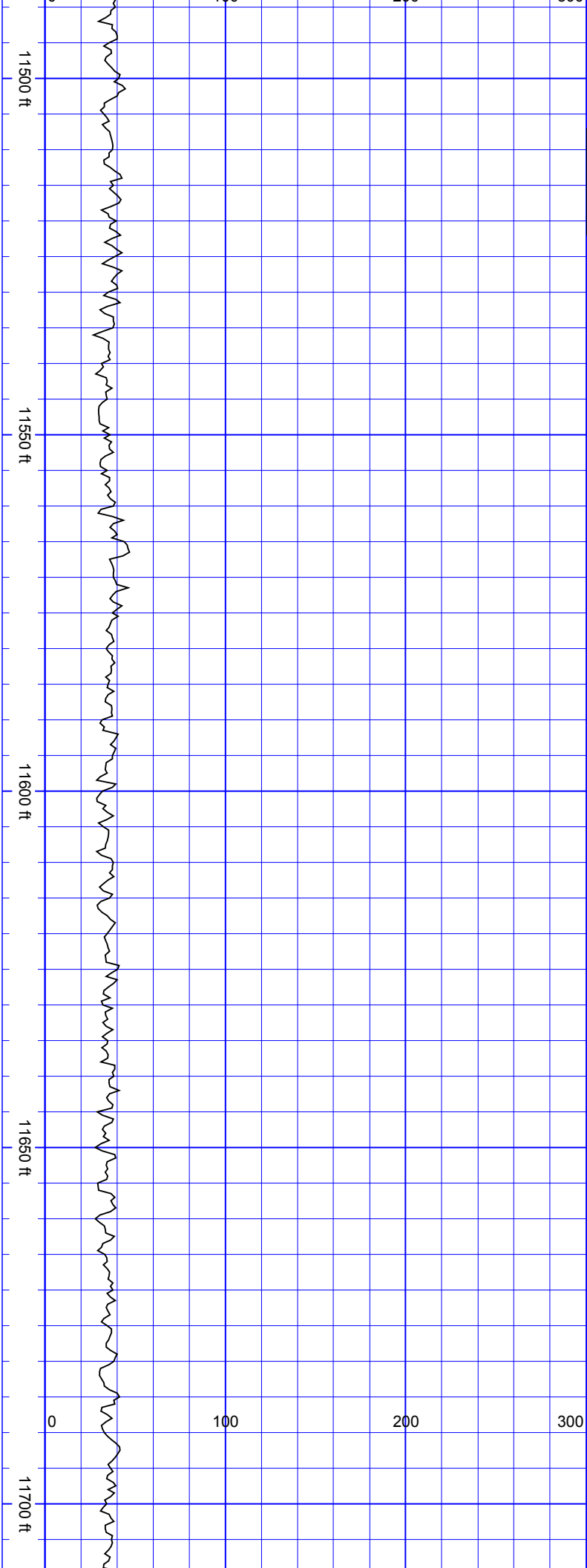
SurveyDepth:11354
TVD:7334.77 Inc:91.41
Azi:276.73
VertSec:3687.75

SurveyDepth:11449
TVD:7332.55 Inc:91.27
Azi:276.55
VertSec:3782.62

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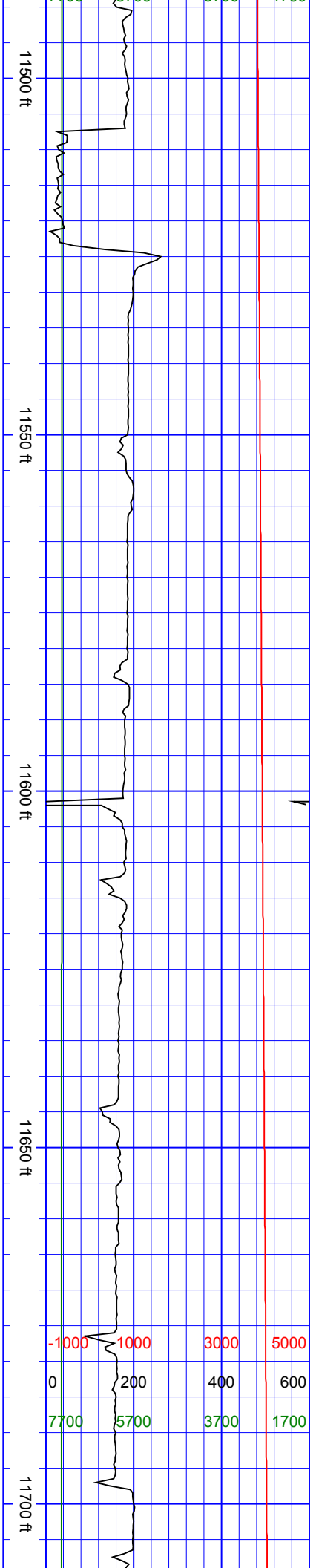
| | | | |
|-------|------|------|------|
| -1000 | 1000 | 3000 | 5000 |
| 0 | 200 | 400 | 600 |
| 7700 | 5700 | 3700 | 1700 |

| | | | |
|-------|------|------|------|
| -1000 | 1000 | 3000 | 5000 |
| 0 | 200 | 400 | 600 |
| 7700 | 5700 | 3700 | 1700 |



SurveyDepth:11543
TVD:7331.84 Inc:89.6
Azi:275.68
VertSec:3876.56

SurveyDepth:11638
TVD:7332.53 Inc:89.56
Azi:275.41
VertSec:3971.52



11750 ft

11800 ft

11850 ft

11900 ft

0 100 200 300

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SurveyDepth:11732
TVD:7332.93 Inc:89.96
Azi:275.94
VertSec:4065.48

SurveyDepth:11827
TVD:7332.45 Inc:90.62
Azi:275.59
VertSec:4160.43

SurveyDepth:11921
TVD:7333.05 Inc:88.64
Azi:274.8

11750 ft

11800 ft

11850 ft

11900 ft

-1000 1000 3000 5000
0 200 400 600
7700 5700 3700 1700

