



CATHEDRAL

Build & Lateral

Job #:

185190

Well ID:

05-123-

Scale:

5" = 100 ft

Type:

MD

Well Site Information

Oil Company Crestone Peak Resources

Surface Location S4-T1N-R65W (Ruegge)

Well Name Ruegge 3K-4H-N165

API 05-123-46563 00

Field DJ Basin

State CO

Country Weld

Surface Coordinates

Well Type Horizontal

Latitude 40° 4' 31 N

Longitude 104° 40' 15 W

N / S Coordinates 1,271,346.18

E / W Coordinates 3,232,050.98

Azimuth Reference True North

Grid Convergence 0.54°

MWD Engineers

Lead Hand Aaron Clark

Second Hand Bill O'Dell

Perm Datum Ground Elevation 4,915.00 ft

Log depth measured from KB is 23.00 ft above perm datum. KB = 4,938.00 ft

Total Depth 11,932.00 ft Spud Date Jun/29/2018 End Date Jul/02/2018

(MD) Log Interval Start Depth 2,440.00 ft End Depth 11,932.03 ft

Bore Hole Record

Hole Size	From	To
13.50 in	0.00 ft	2,535.00 ft
8.50 in	2,535.00 ft	11,935.00 ft

Casing Record

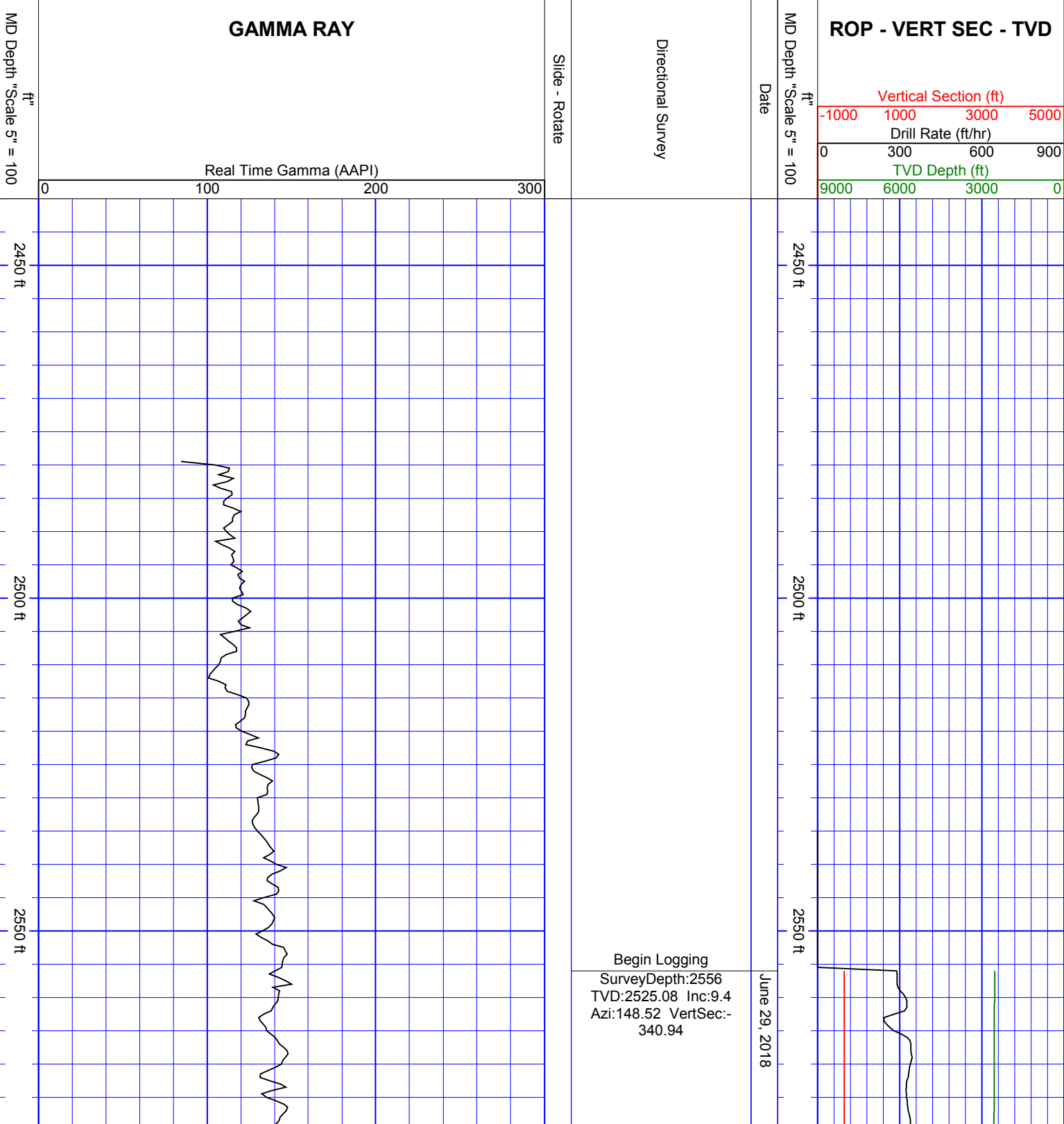
Type	Size	WGT	From	To
LT&C	9.63 in	40 lb.	0.00 ft	2,465.00 ft
DWC/C-IS	5.50 in	20 lb.	0.00 ft	11,918.00 ft

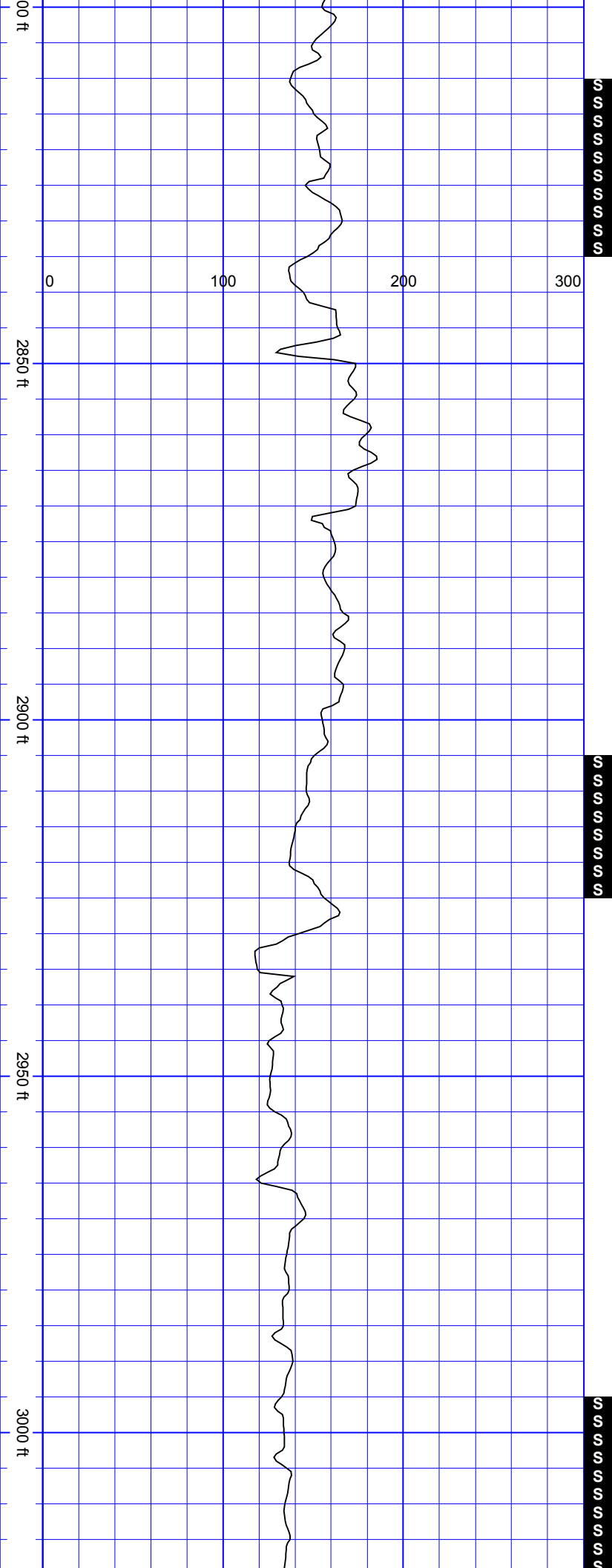
Run Data

Bit Run Number	1				
Start Date & Time	Jun/29/2018 22:30:00				
End Date & Time	Jul/02/2018 11:00:00				
Run Hours	60.50				
Depth In	2,535.00 ft				
Depth Out	11,932.00 ft				
Total Gamma Correction	5.69				
Gamma to Bit	55.89 ft				
Resistivity to Bit	N/A				
Mud Type	Oil Base				
Density	9.80				
Viscosity	44.00				
PH	N/A				
Fluid Loss	N/A				
K+ ppm	N/A				
CL- ppm	39,500.00				
Max Mud Temp	243.00 °F				
Mud Report Depth	10,050.00 ft				

Remarks

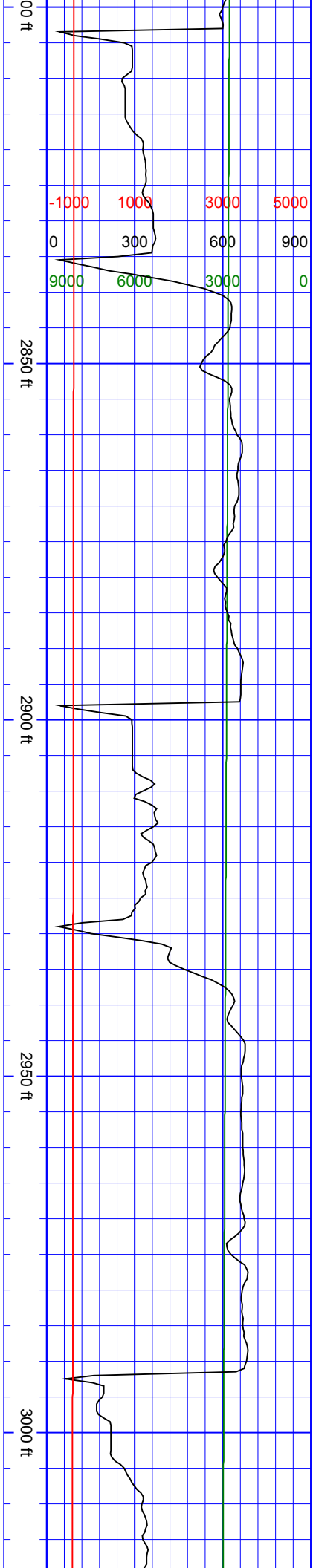
Interpretations of this data by Cathedral Energy Services will be of best judgment as to correctness. Cathedral Energy Services cannot and does not guarantee the accuracy or correctness of interpretations or any surveys derived therefrom. Cathedral Energy Services makes no warranties of performance, 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.

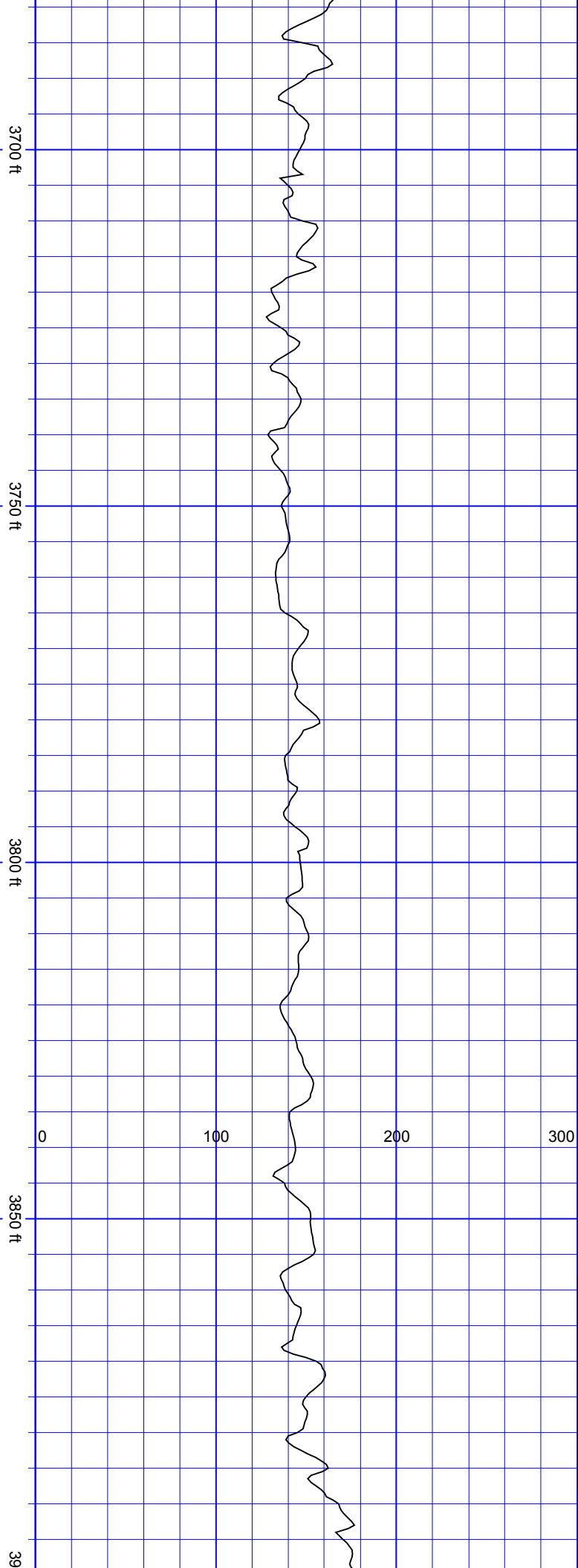




SurveyDepth:2840
TVD:2805.36 Inc:9.58
Azi:152.83 VertSec:-
381.75

SurveyDepth:2934
TVD:2898.12 Inc:9.05
Azi:160.39 VertSec:-
395.63

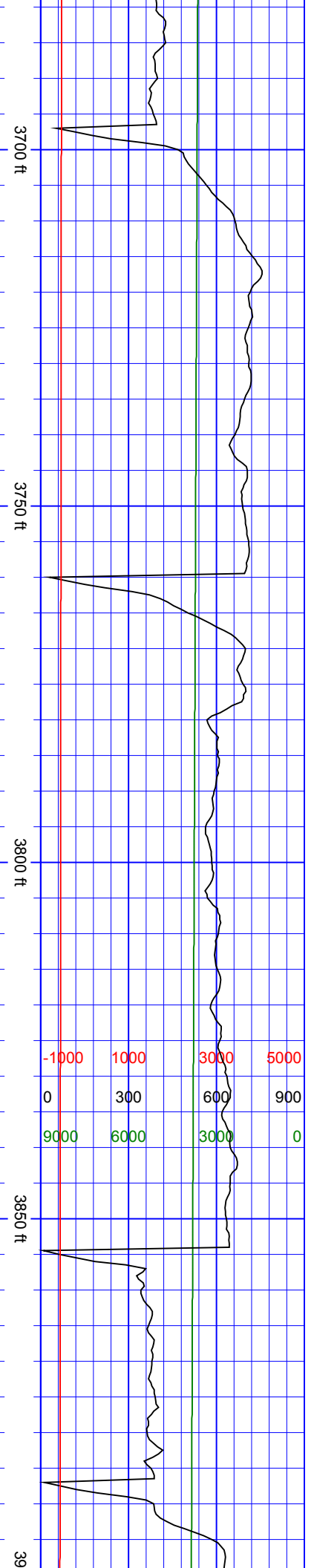


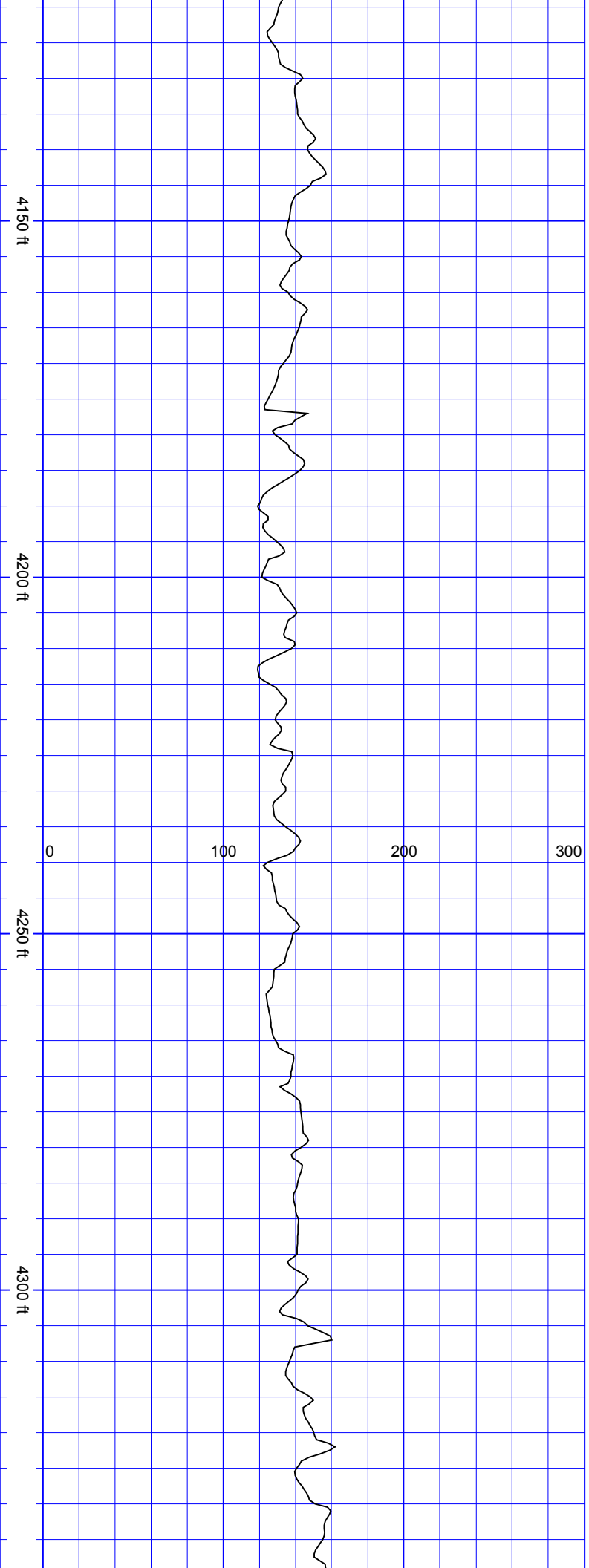


SurveyDepth:3702
TVD:3654.11 Inc:11.51
Azi:166.72 VertSec:-
524.52

SurveyDepth:3797
TVD:3747.57 Inc:9.14
Azi:165.57 VertSec:-
541.02

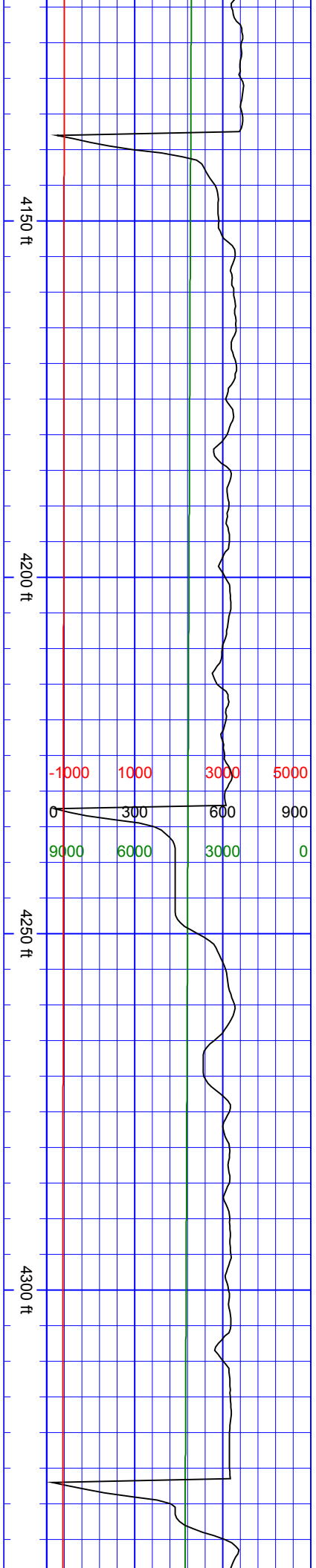
SurveyDepth:3892
TVD:3841.29 Inc:9.71
Azi:159.68 VertSec:-

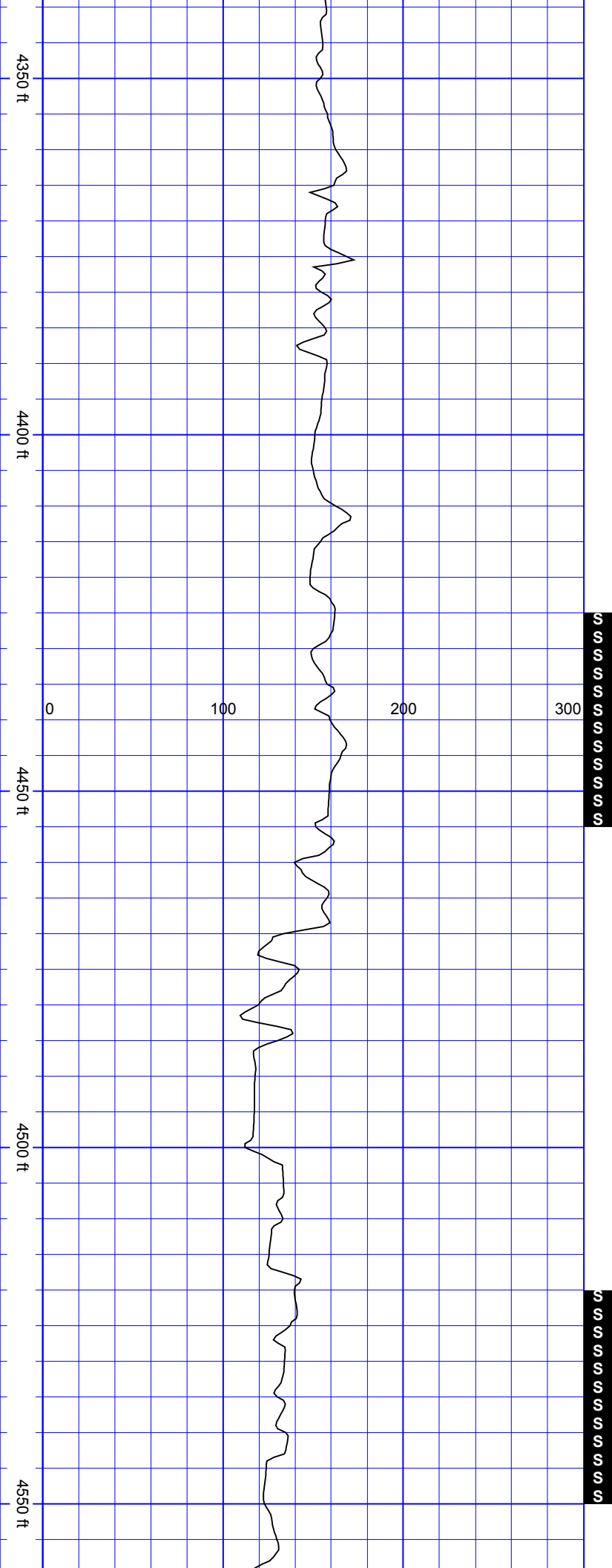




SurveyDepth:4175
TVD:4119.15 Inc:10.64
Azi:157.4 VertSec:-605.55

SurveyDepth:4270
TVD:4212.58 Inc:10.2
Azi:158.1 VertSec:-621.4

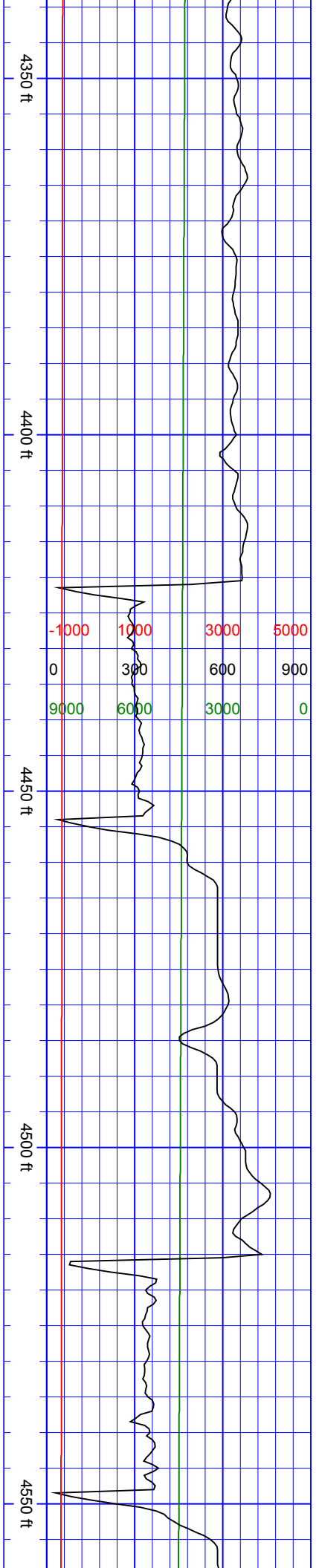


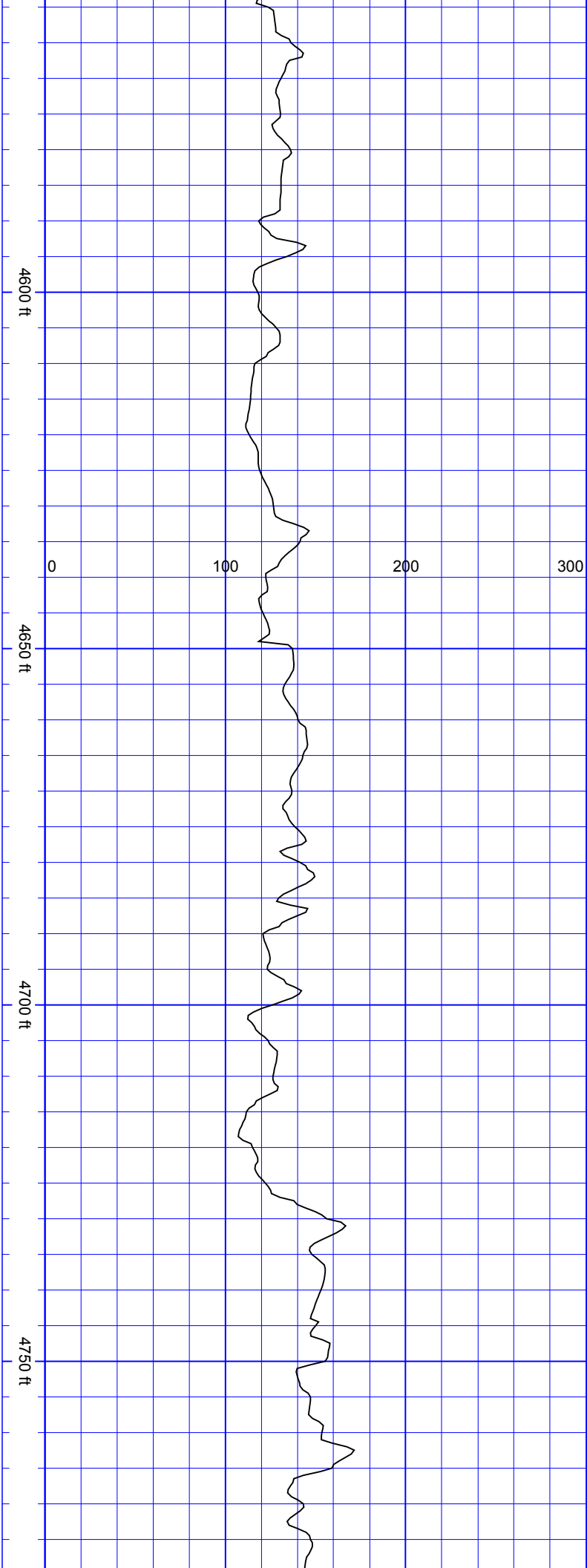


SurveyDepth:4364
TVD:4305.27 Inc:8.92
Azi:161.79 VertSec:-636

SurveyDepth:4459
TVD:4399.09 Inc:9.23
Azi:159.42 VertSec:-650.09

SurveyDepth:4554
TVD:4492.34 Inc:12.66

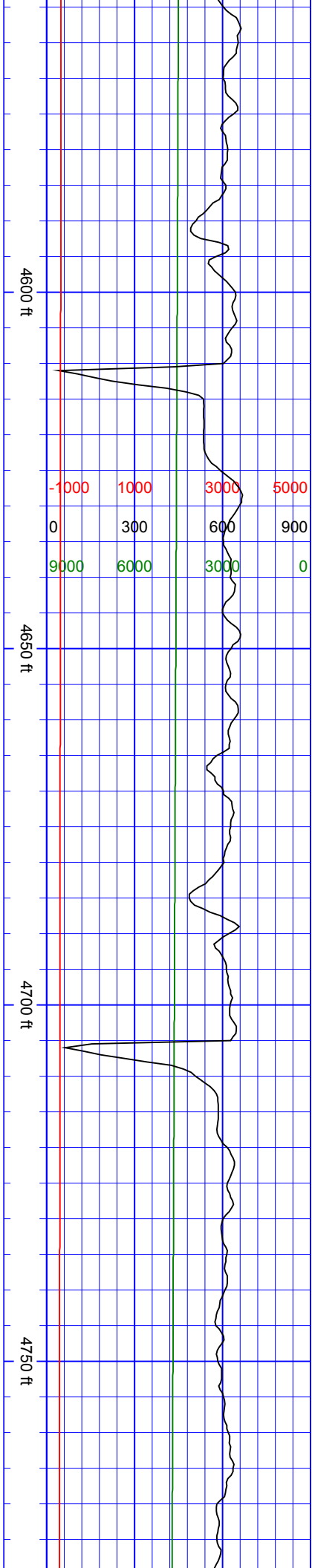


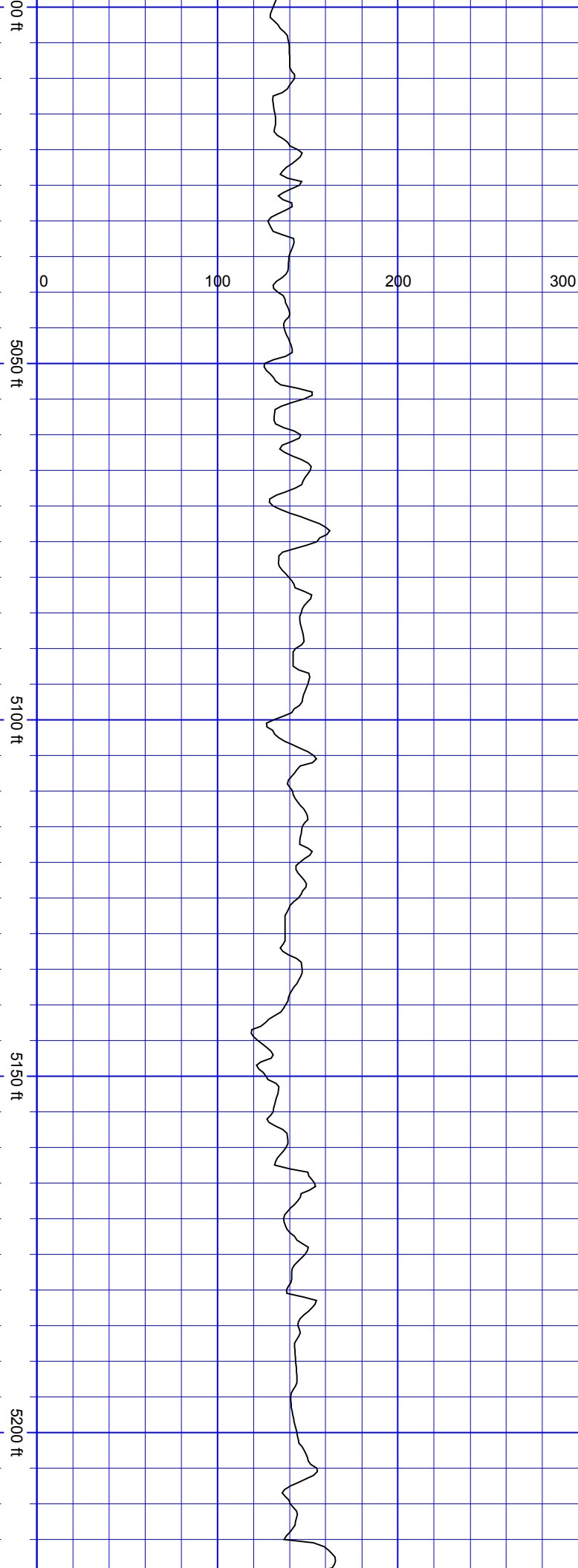


Azi:156.52 VertSec:-666.72

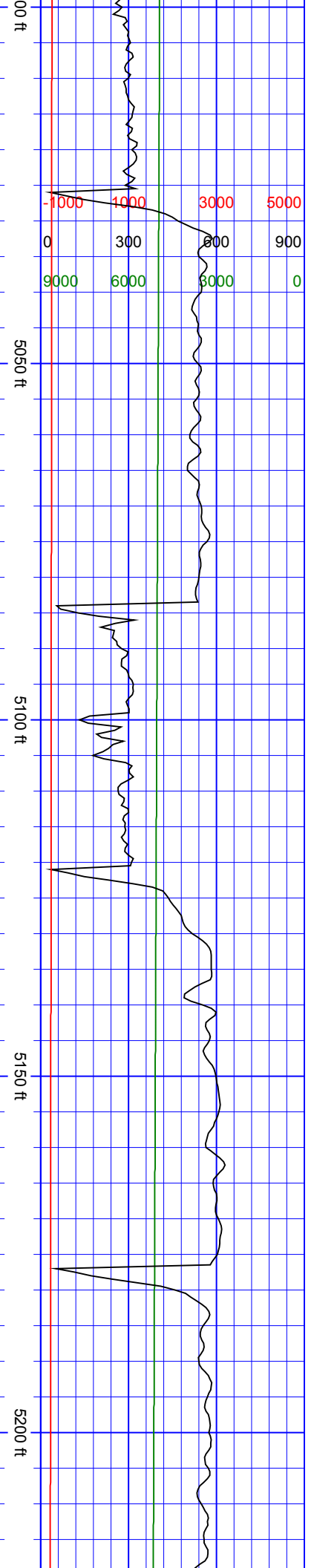
SurveyDepth:4649
TVD:4585.36 Inc:10.81
Azi:154.5 VertSec:-684.25

SurveyDepth:4743
TVD:4677.95 Inc:8.97
Azi:152.92 VertSec:-698.67



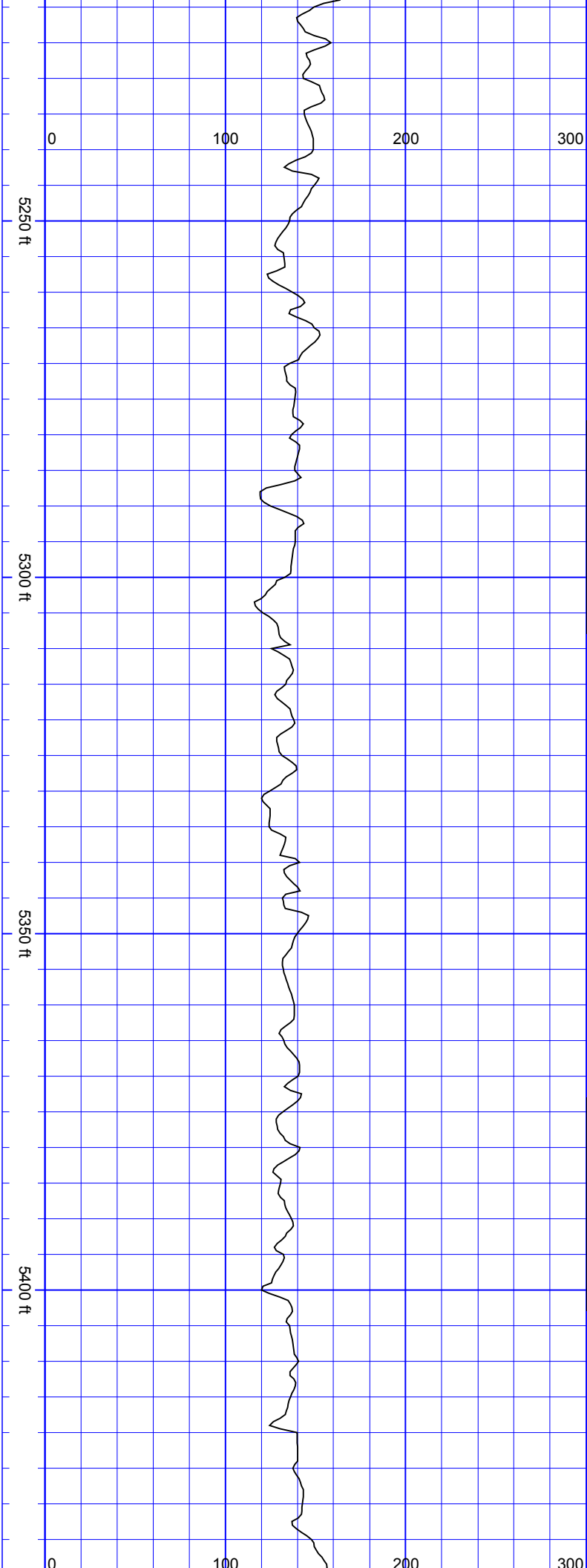


SurveyDepth:5028
TVD:4958.82 Inc:9.19
Azi:164.78 VertSec:-
743.2



SurveyDepth:5122
TVD:5051.32 Inc:11.25
Azi:159.42 VertSec:-
758.98

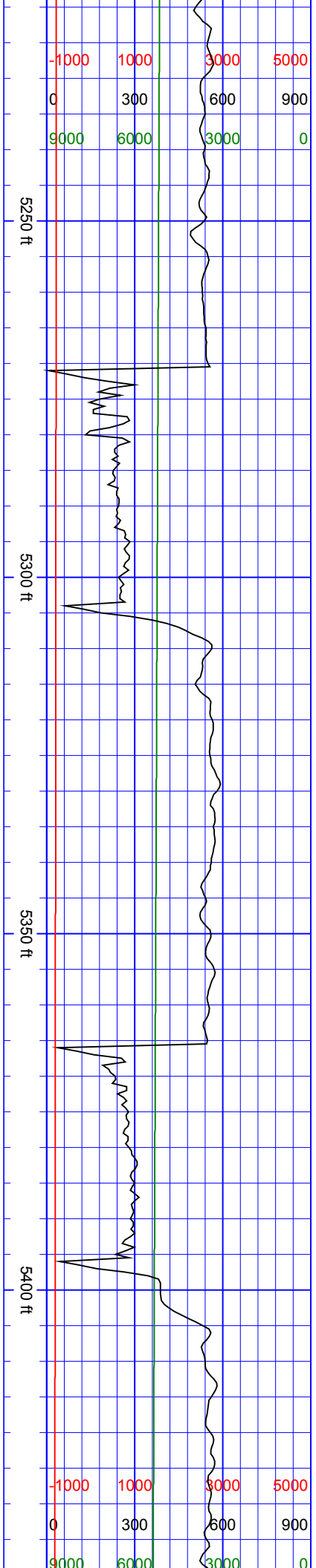
SurveyDepth:5217



TVD:5144.74 Inc:9.71
Azi:150.1 VertSec:-774.55

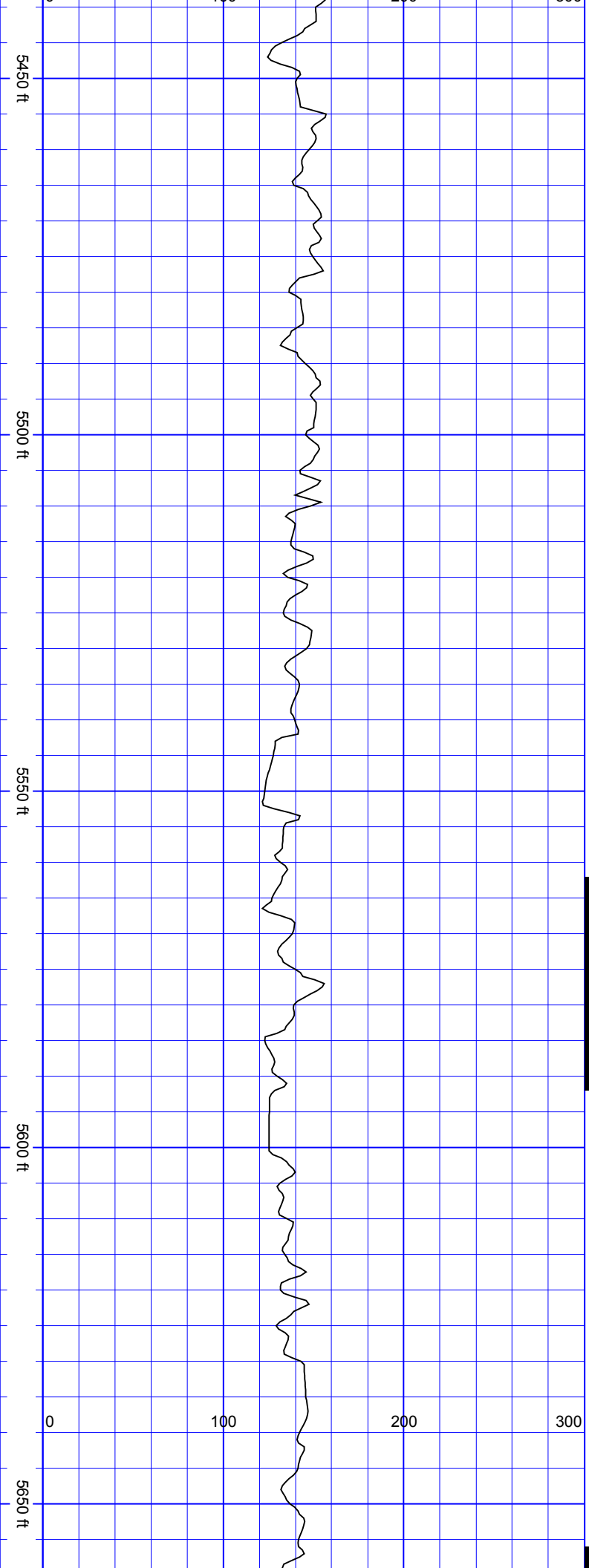
SurveyDepth:5312
TVD:5238.26 Inc:10.59
Azi:146.5 VertSec:-788.7

SurveyDepth:5406
TVD:5330.48 Inc:11.73
Azi:154.06 VertSec:-804.42



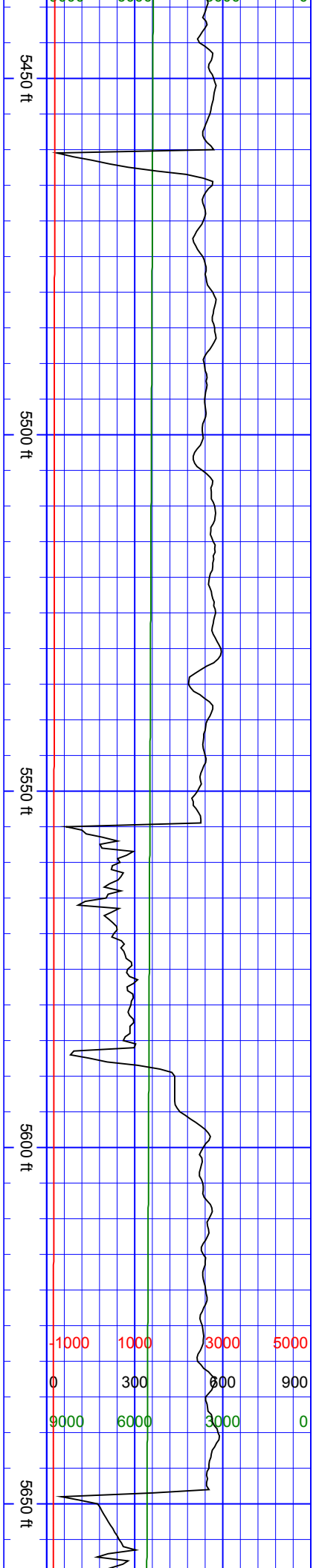
Red	Green	Black
-1000	1000	3000
0	300	600
9000	6000	3000
0	0	0

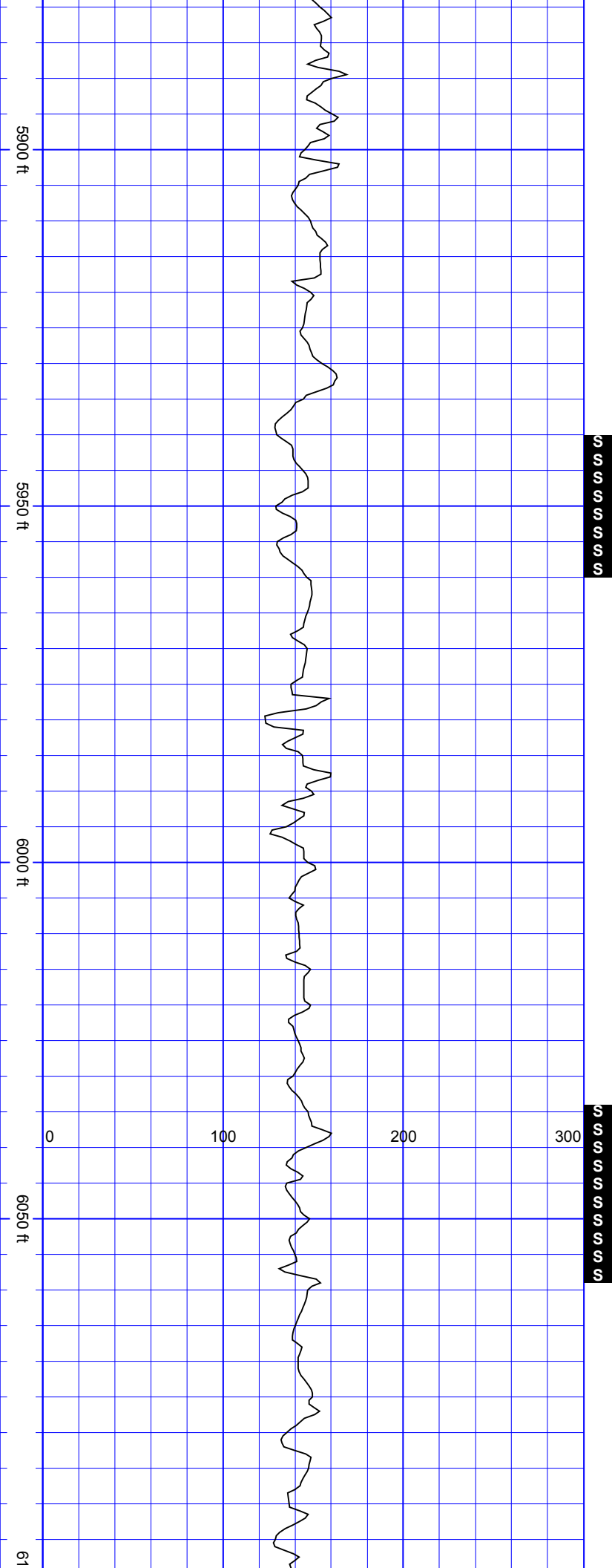
Red	Green	Black
-1000	1000	3000
0	300	600
9000	6000	3000
0	0	0



SurveyDepth:5501
TVD:5423.81 Inc:9.76
Azi:149.75 VertSec:-
819.99

SurveyDepth:5595
TVD:5516.47 Inc:9.76
Azi:163.73 VertSec:-
834.48

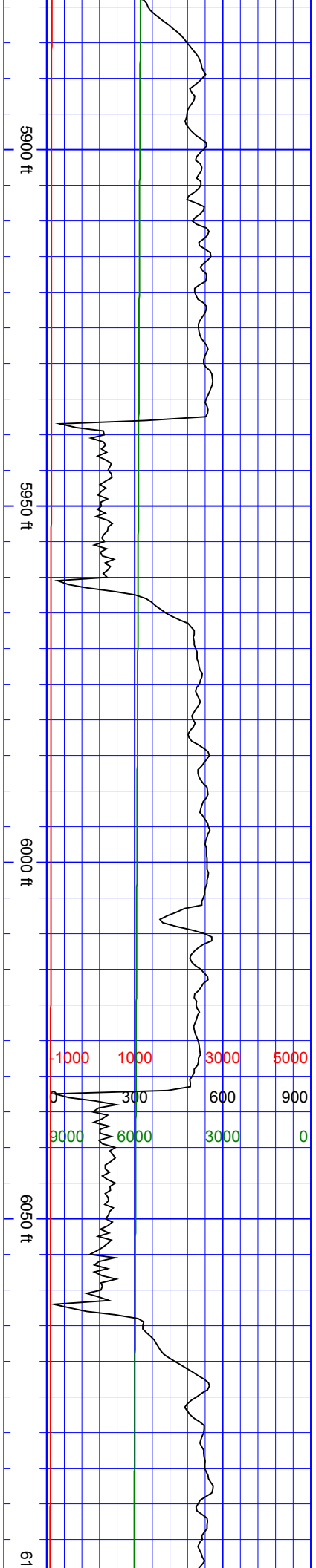


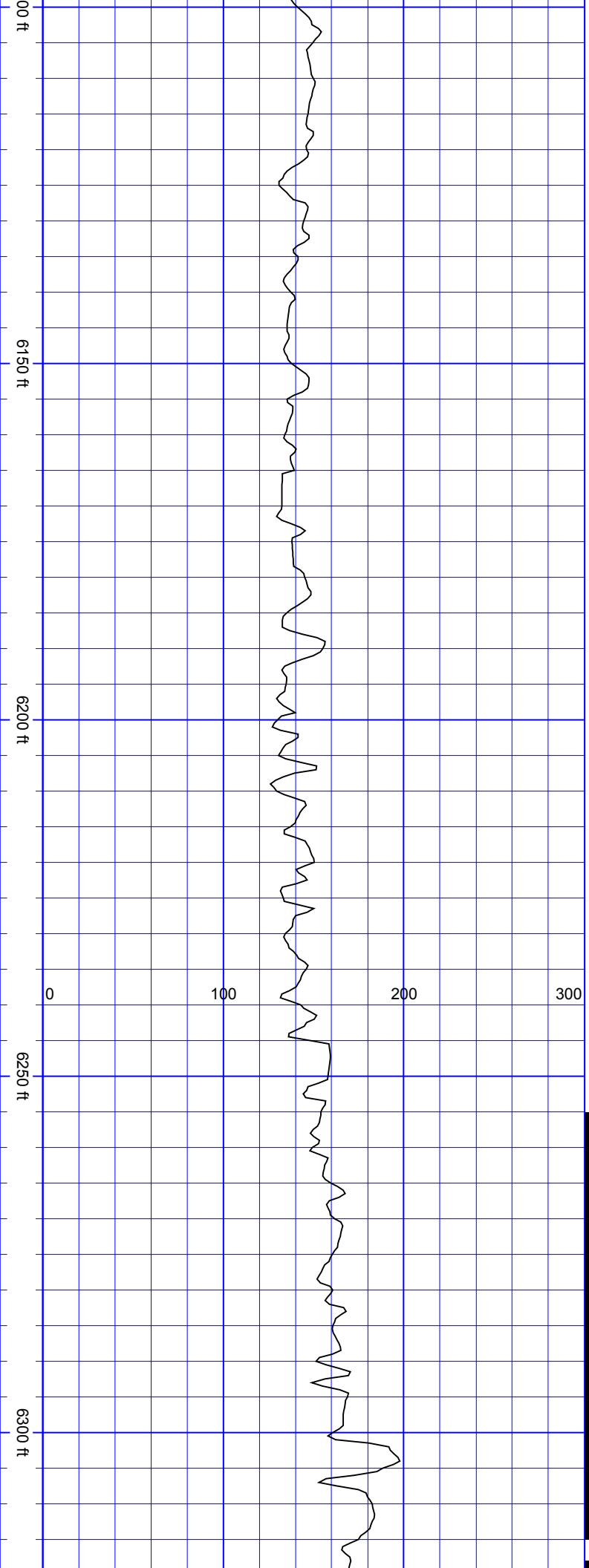


SurveyDepth:5879
TVD:5796.61 Inc:9.19
Azi:168.03 VertSec:-
879.98

SurveyDepth:5973
TVD:5889.32 Inc:9.8
Azi:168.39 VertSec:-
895.13

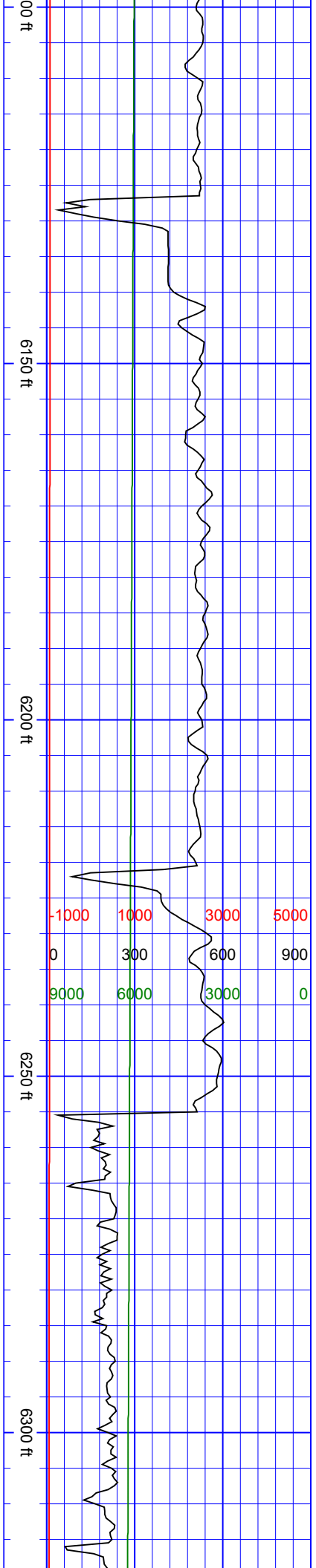
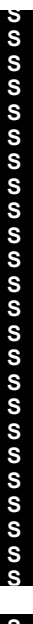
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TVD:5983.03 Inc:9.14
Azi:166.1 VertSec:-
910.35

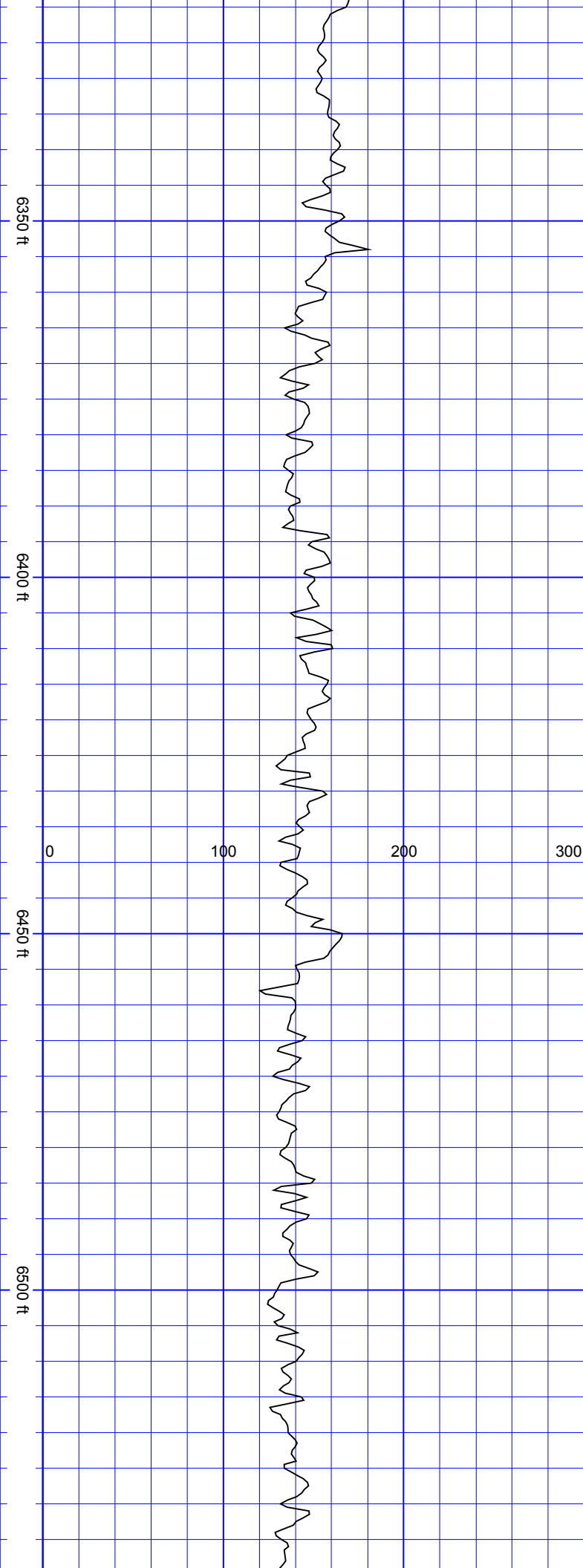




SurveyDepth:6163
TVD:6076.99 Inc:7.82
Azi:163.2 VertSec:-
923.83

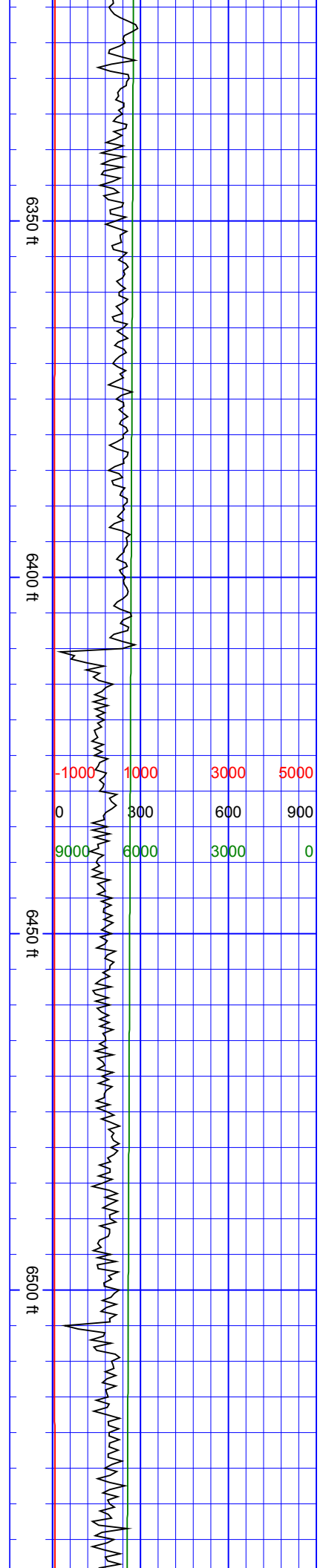
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TVD:6170.29 Inc:6.15
Azi:158.01 VertSec:-
934.59

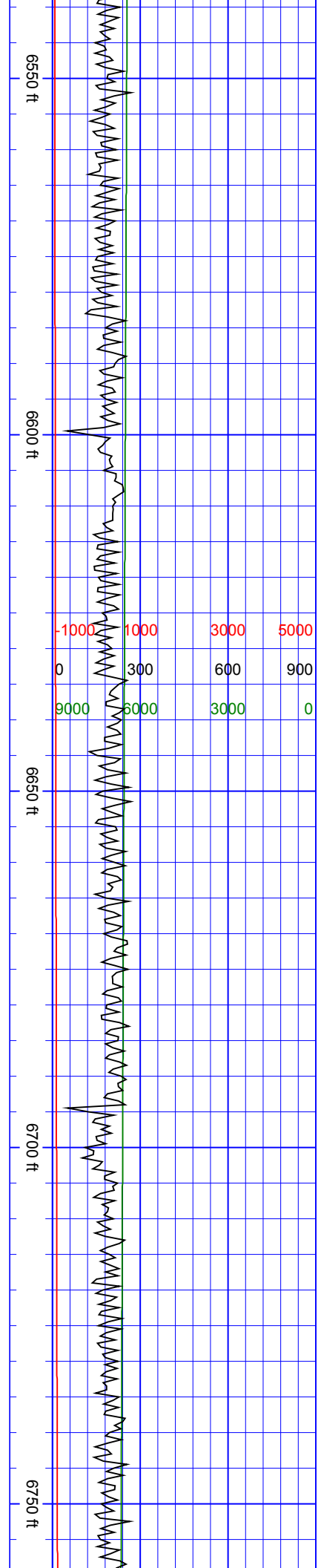
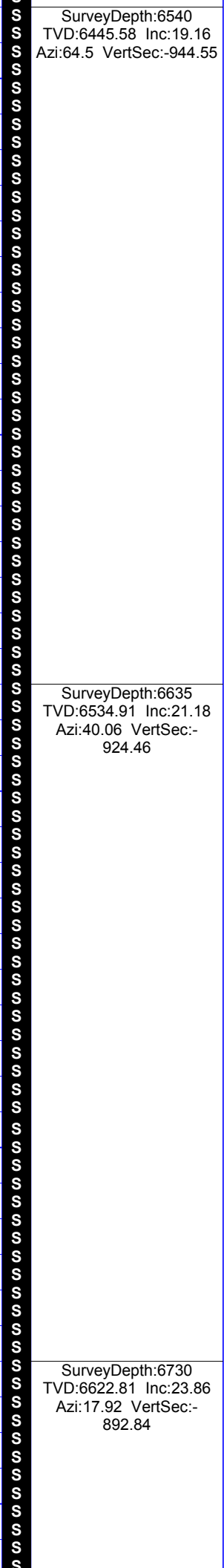
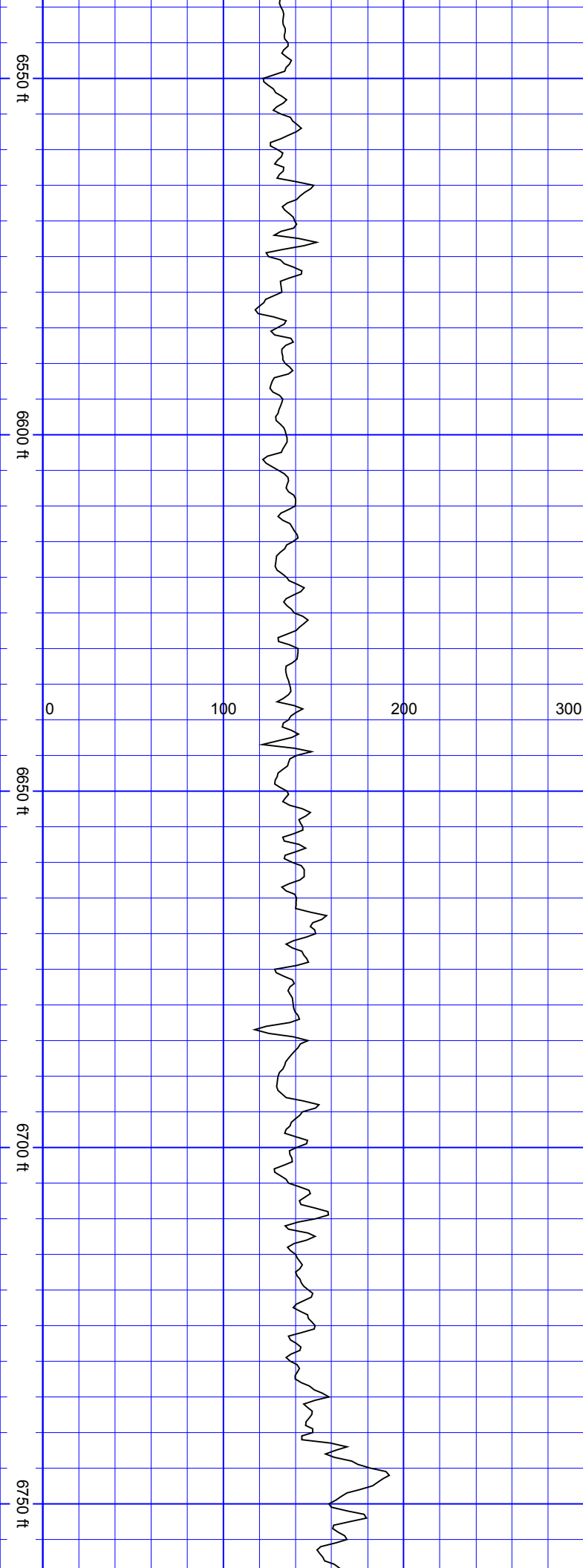




SurveyDepth:6352
TVD:6264.24 Inc:10.99
Azi:126.99 VertSec:-
944.69

SurveyDepth:6446
TVD:6355.78 Inc:15.86
Azi:93.33 VertSec:-
950.68





6800 ft

6850 ft

6900 ft

6950 ft

0 100 200 300

SurveyDepth:6825
TVD:6707.76 Inc:29.36
Azi:7.46 VertSec:-851.34

SurveyDepth:6920
TVD:6787.5 Inc:36.39
Azi:5.96 VertSec:-800.11

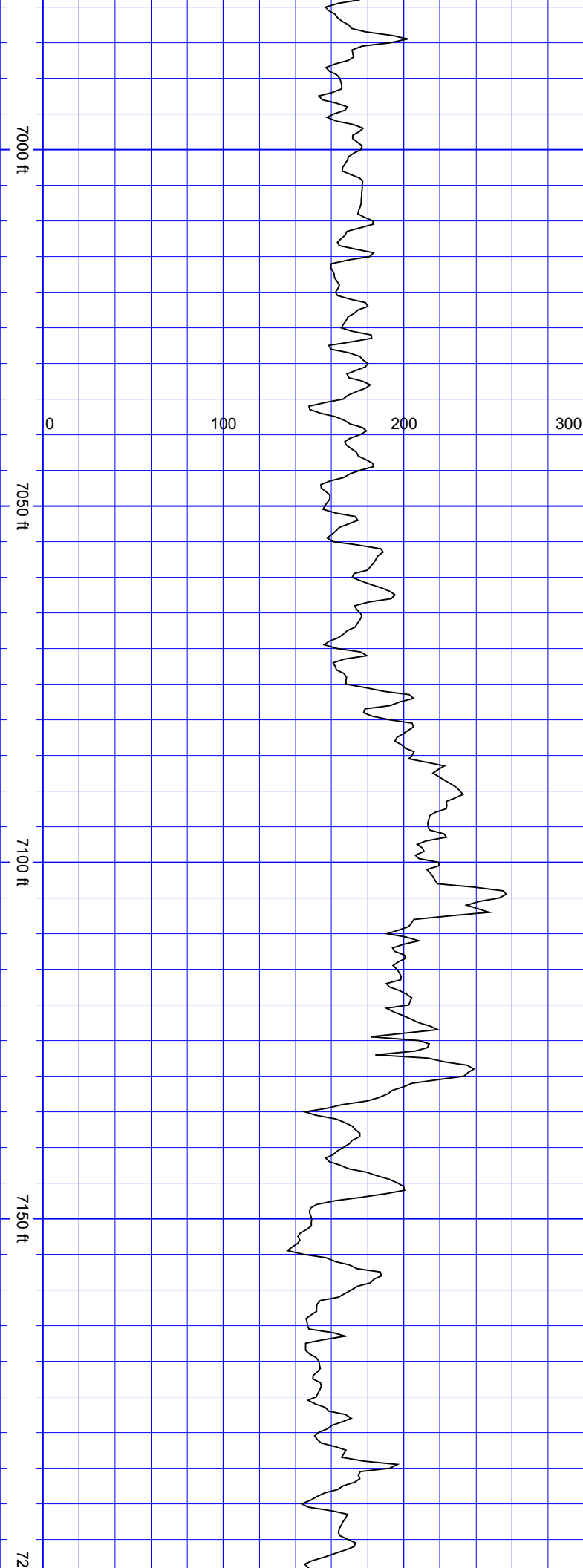
6800 ft

6850 ft

6900 ft

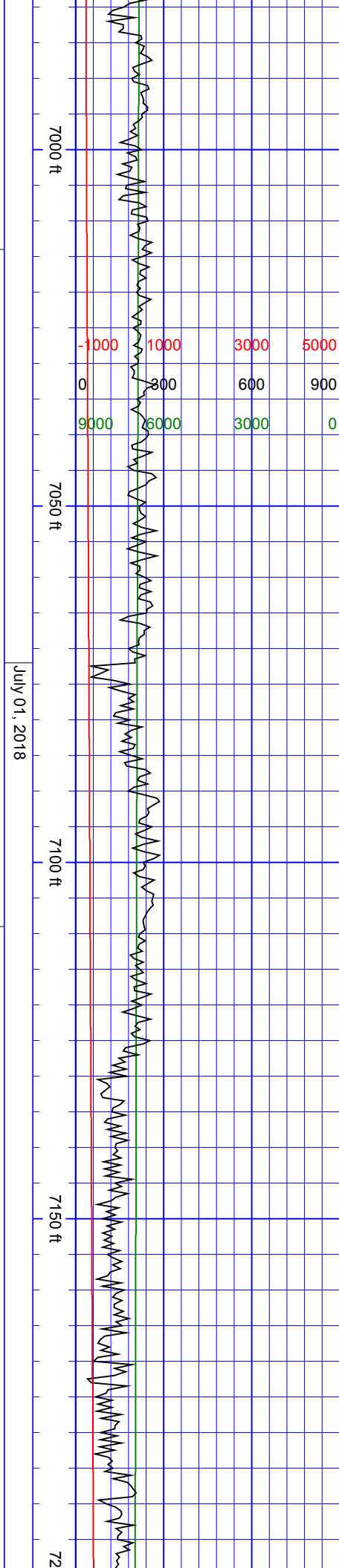
6950 ft

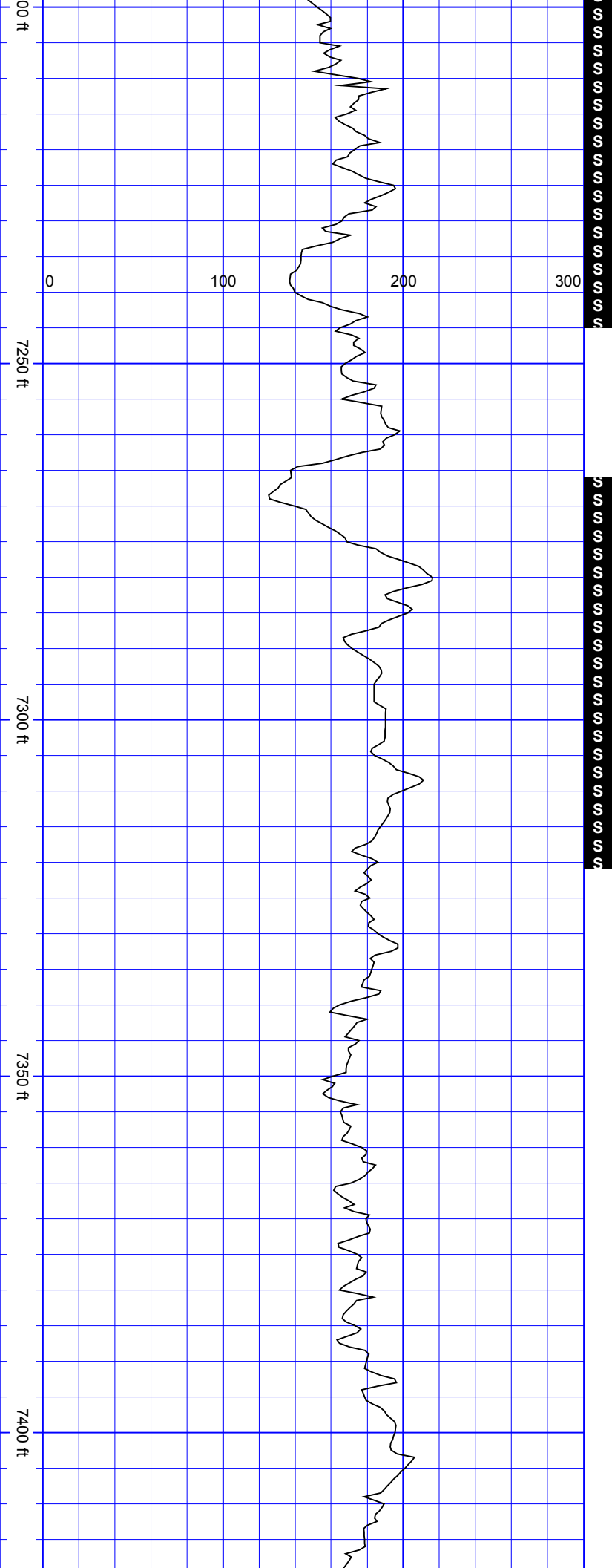
-1000	000	3000	5000
0	300	600	900
9000	6000	3000	0



SurveyDepth:7014
TVD:6858.66 Inc:45.09
Azi:5.79 VertSec:-739.09

SurveyDepth:7109
TVD:6919.41 Inc:55.28
Azi:4.82 VertSec:-666.48

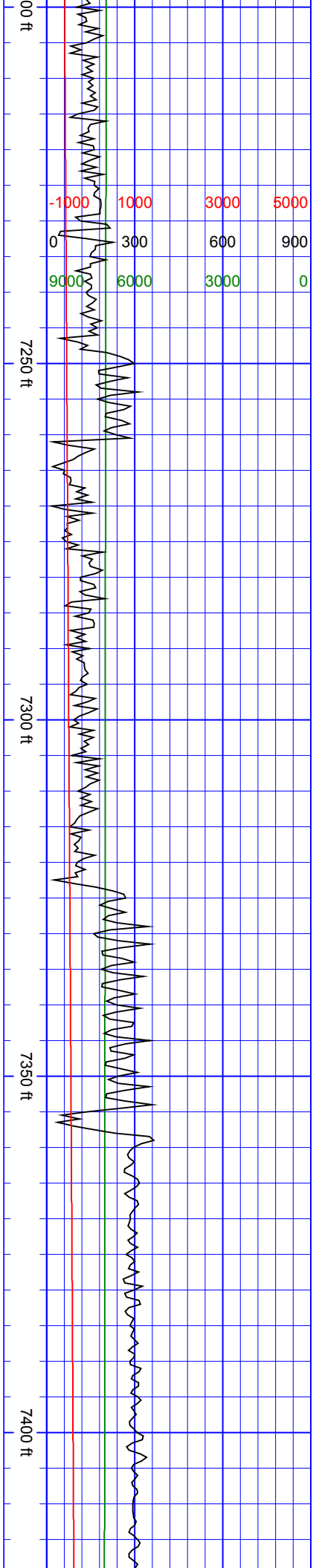


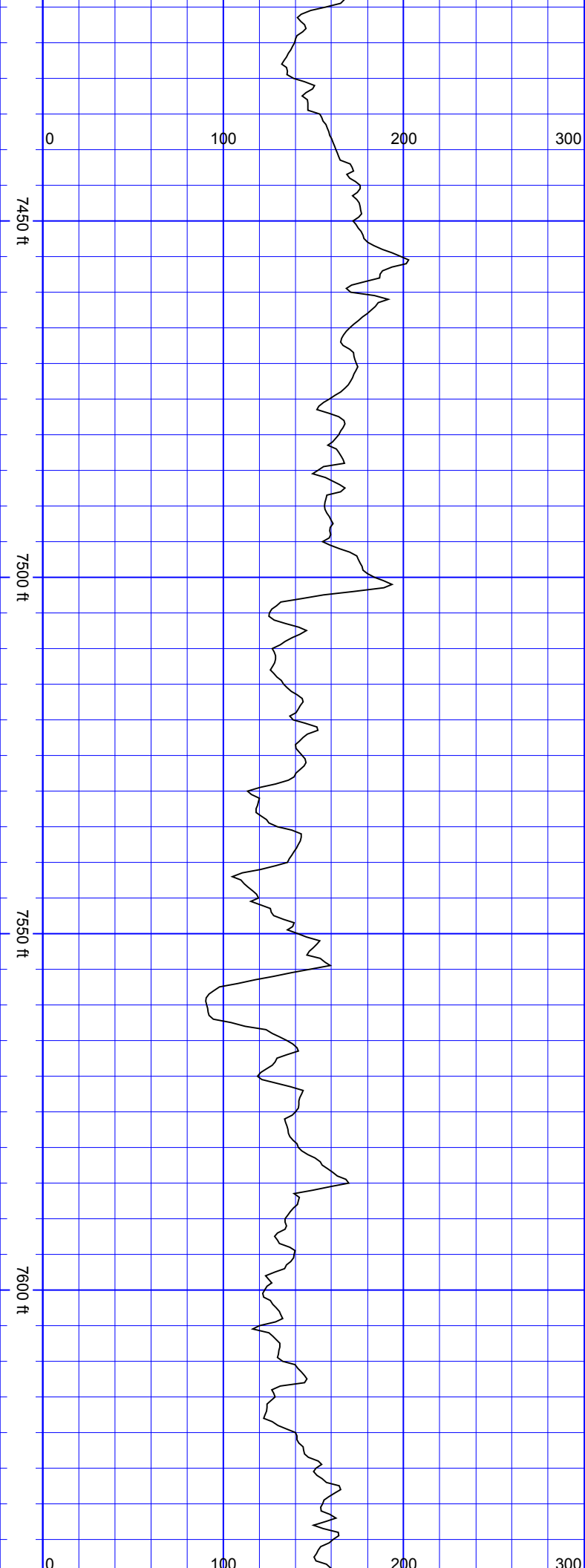


SurveyDepth:7203
TVD:6965.24 Inc:66.27
Azi:2.18 VertSec:-584.69

SurveyDepth:7298
TVD:6996.29 Inc:75.54
Azi:358.4 VertSec:-495.03

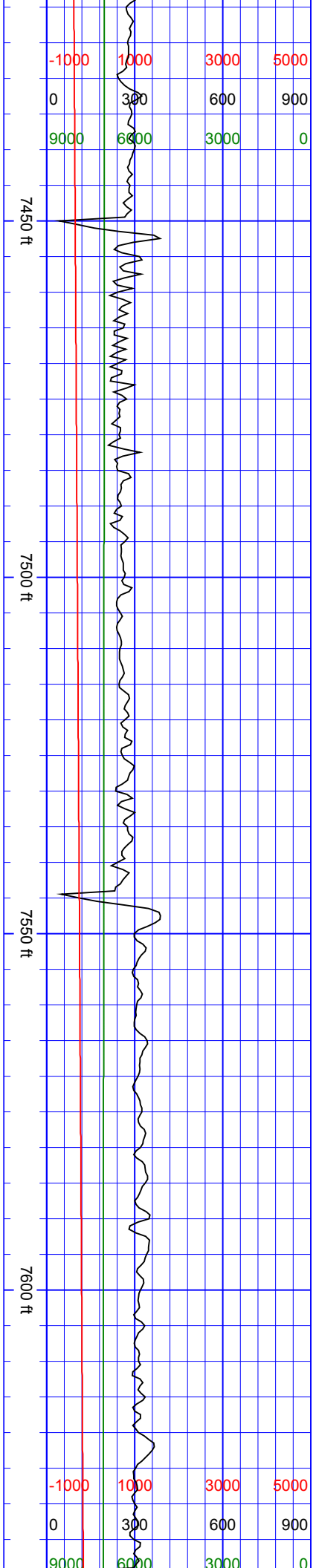
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TVD:7017.46 Inc:78.71
Azi:356.82 VertSec:-402.55

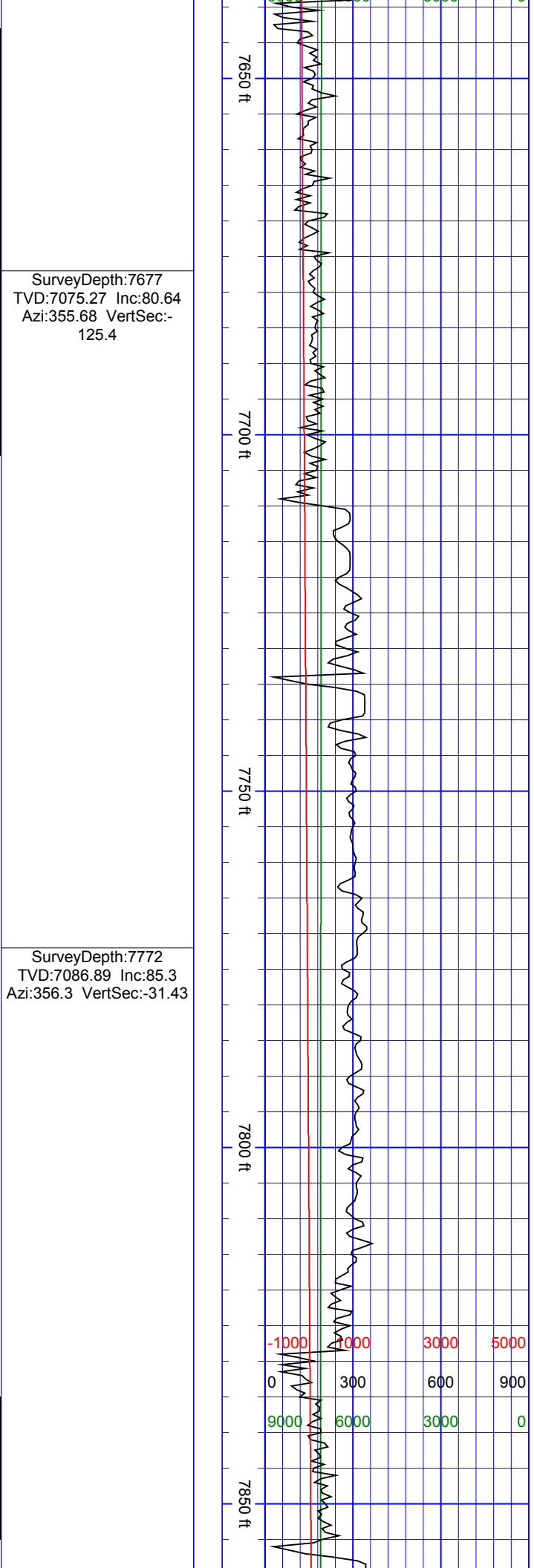
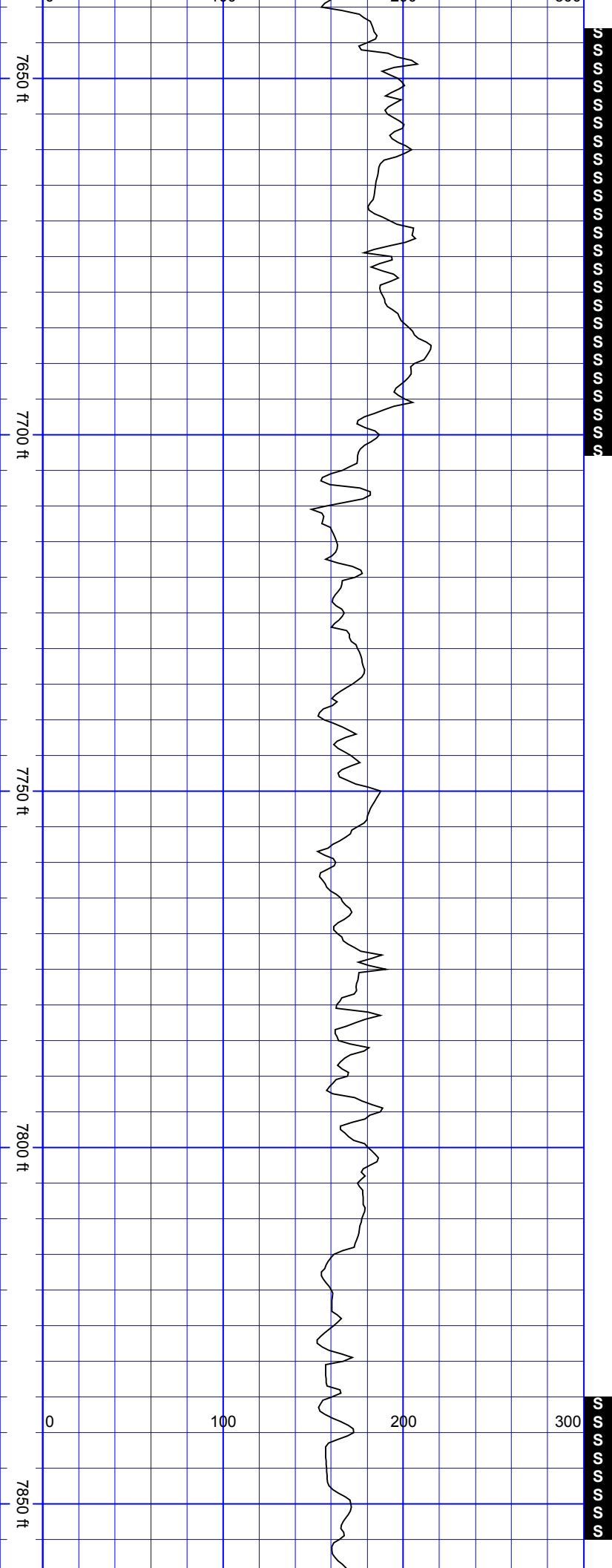


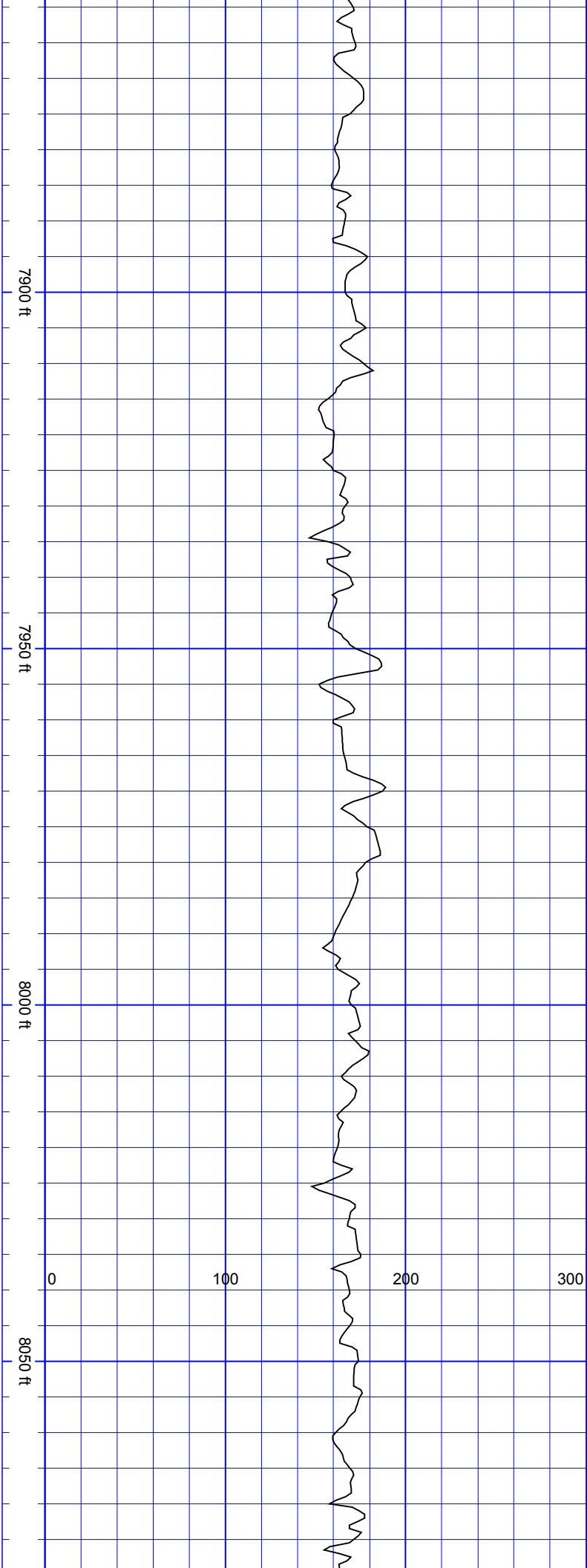


SurveyDepth:7487
TVD:7036.11 Inc:78.4
Azi:356.21 VertSec:-
310.64

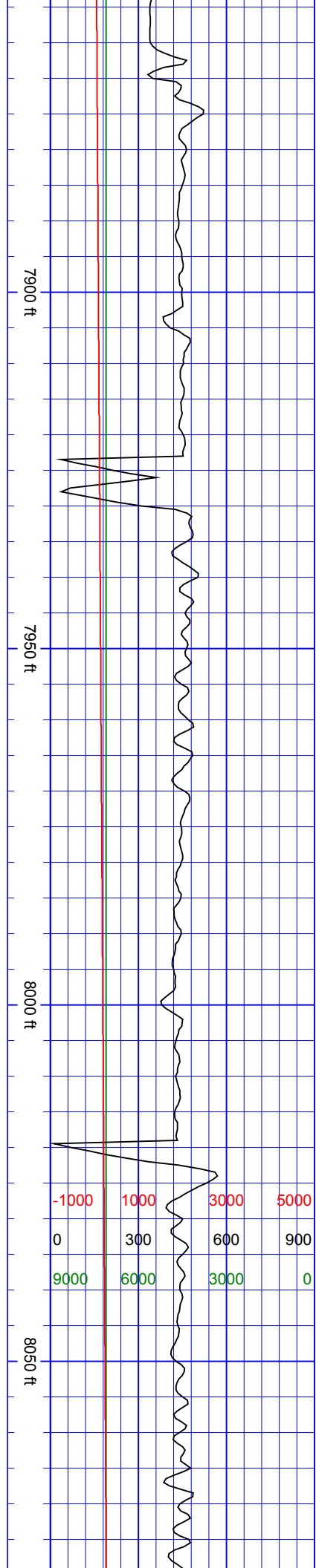
SurveyDepth:7582
TVD:7056.6 Inc:76.69
Azi:355.42 VertSec:-
218.19

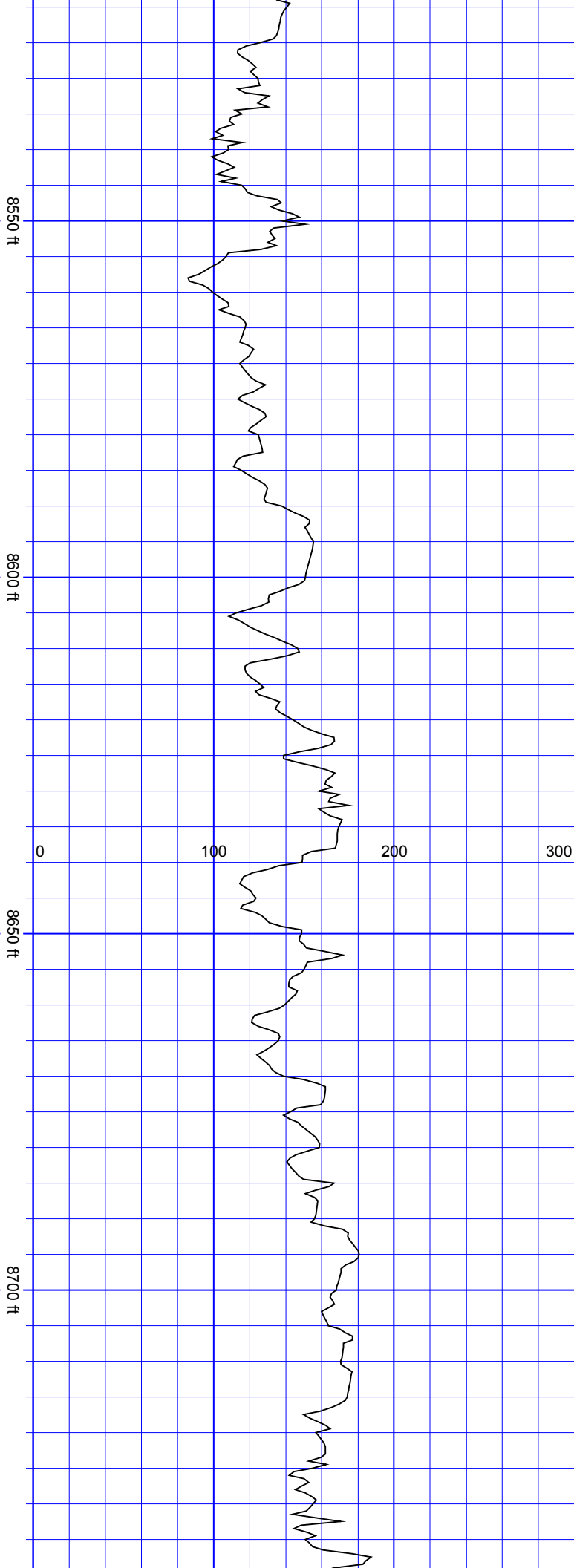






SurveyDepth:7866 TVD:7092.73 Inc:87.58 Azi:357 VertSec:62.17
SurveyDepth:7961 TVD:7096.19 Inc:88.24 Azi:359.72 VertSec:157.04
SurveyDepth:8055 TVD:7099.69 Inc:87.5 Azi:352.34 VertSec:250.62

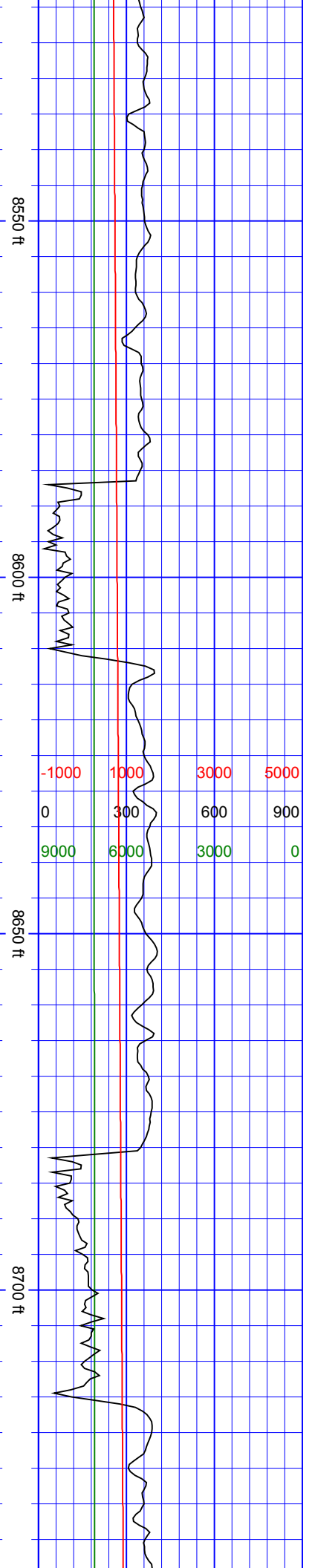


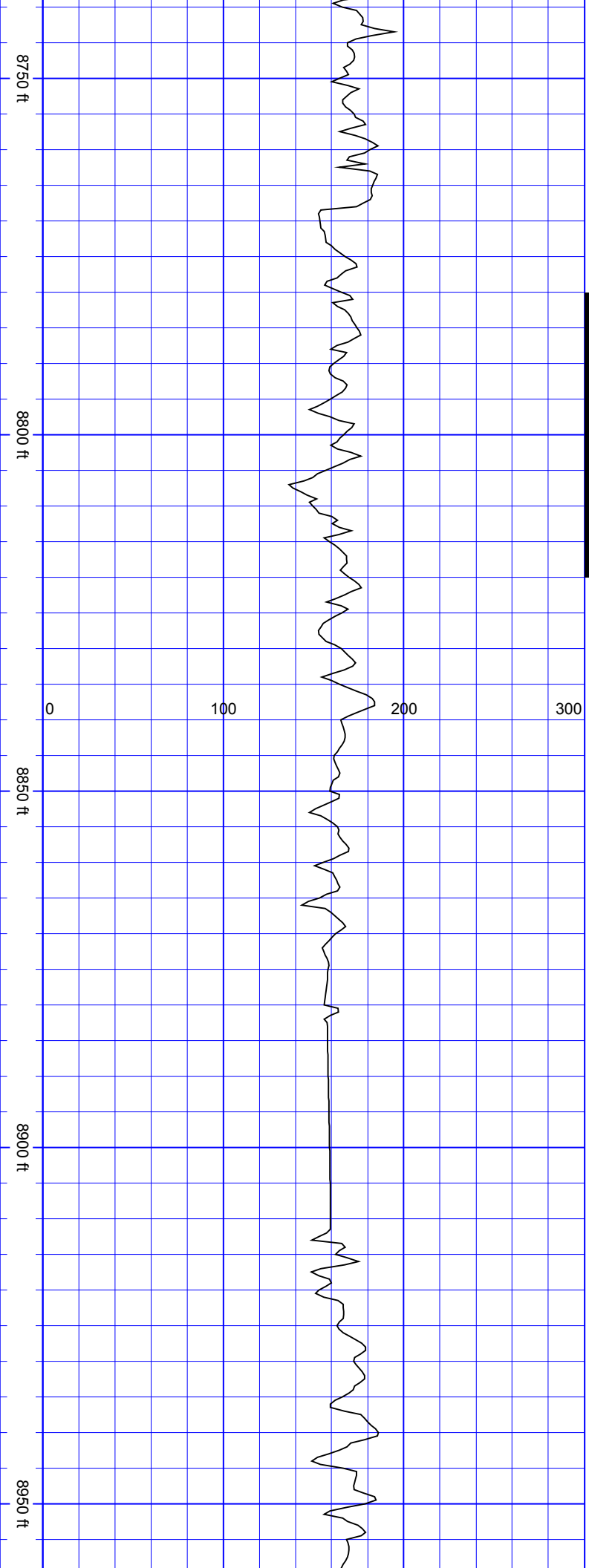


SurveyDepth:8529
TVD:7094.22 Inc:93.96
Azi:359.9
VertSec:723.25

SurveyDepth:8624
TVD:7088.02 Inc:93.52
Azi:0.78 VertSec:818.04

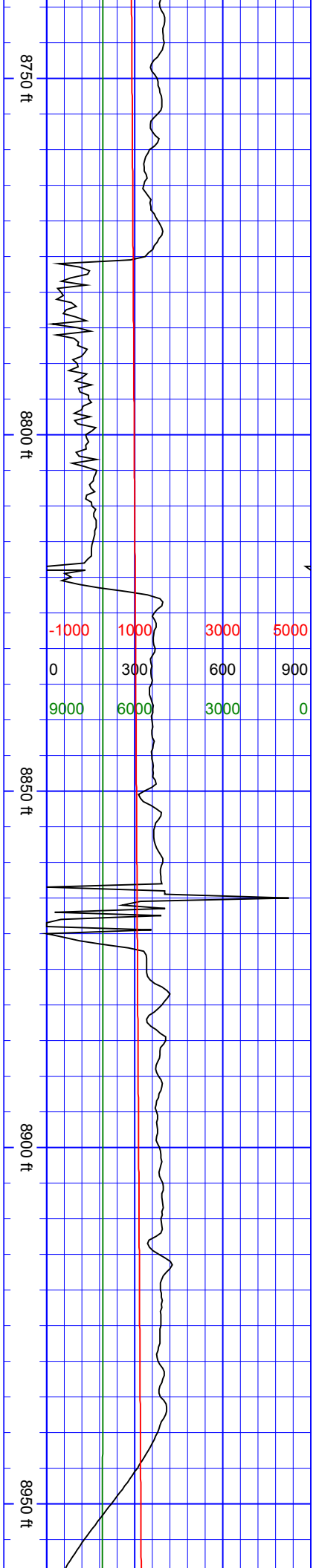
SurveyDepth:8719
TVD:7083.75 Inc:91.63
Azi:358.84
VertSec:912.93

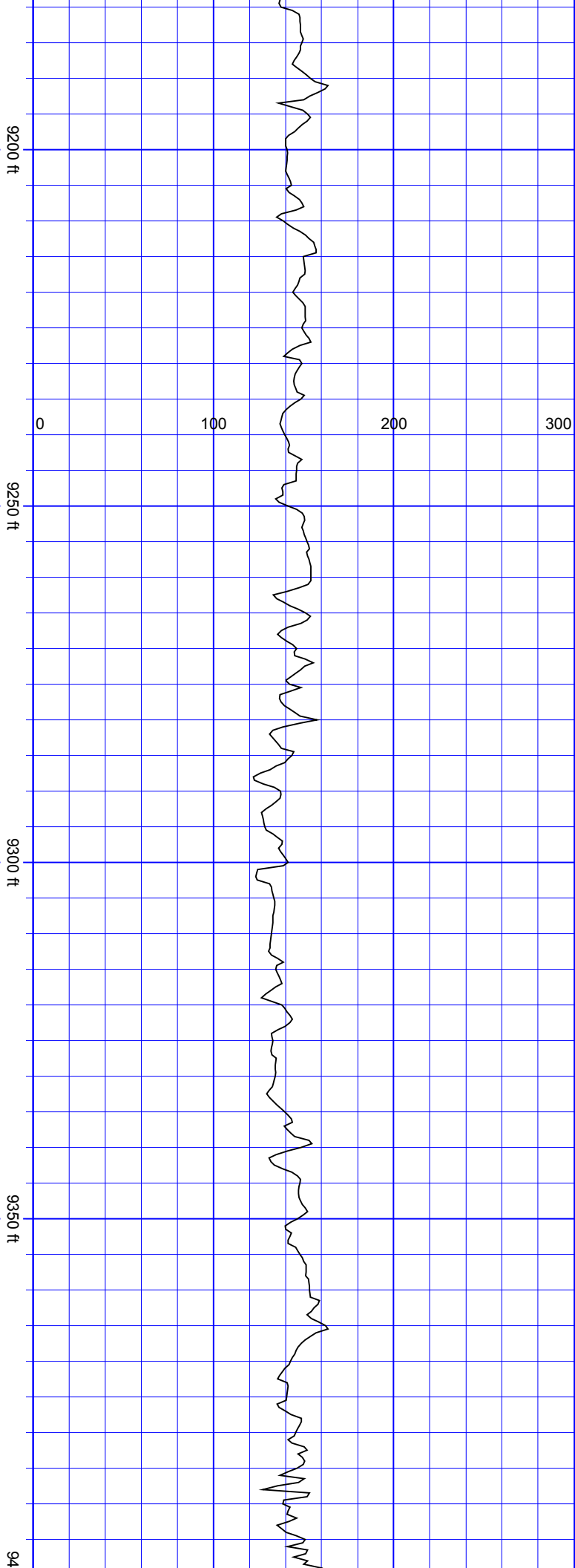




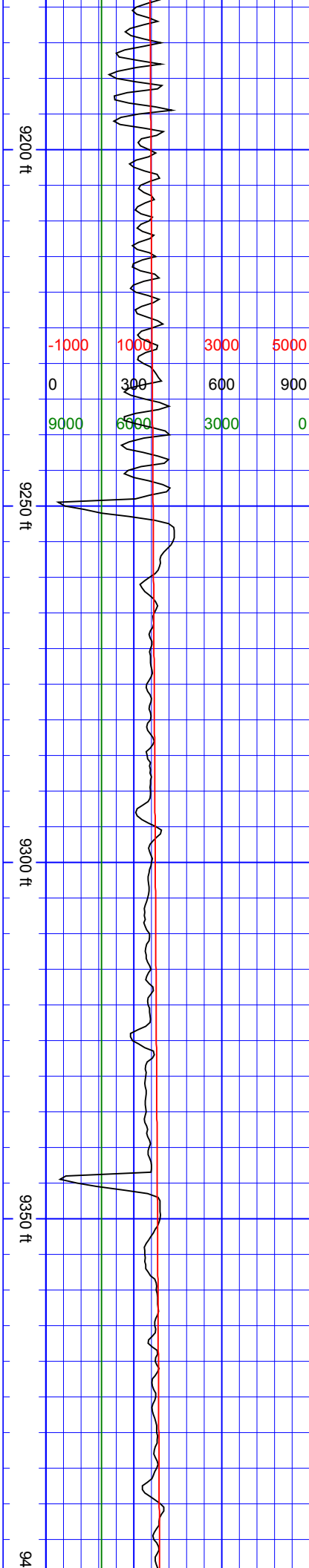
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TVD:7083.14 Inc:89.12
Azi:359.81
VertSec:1006.9

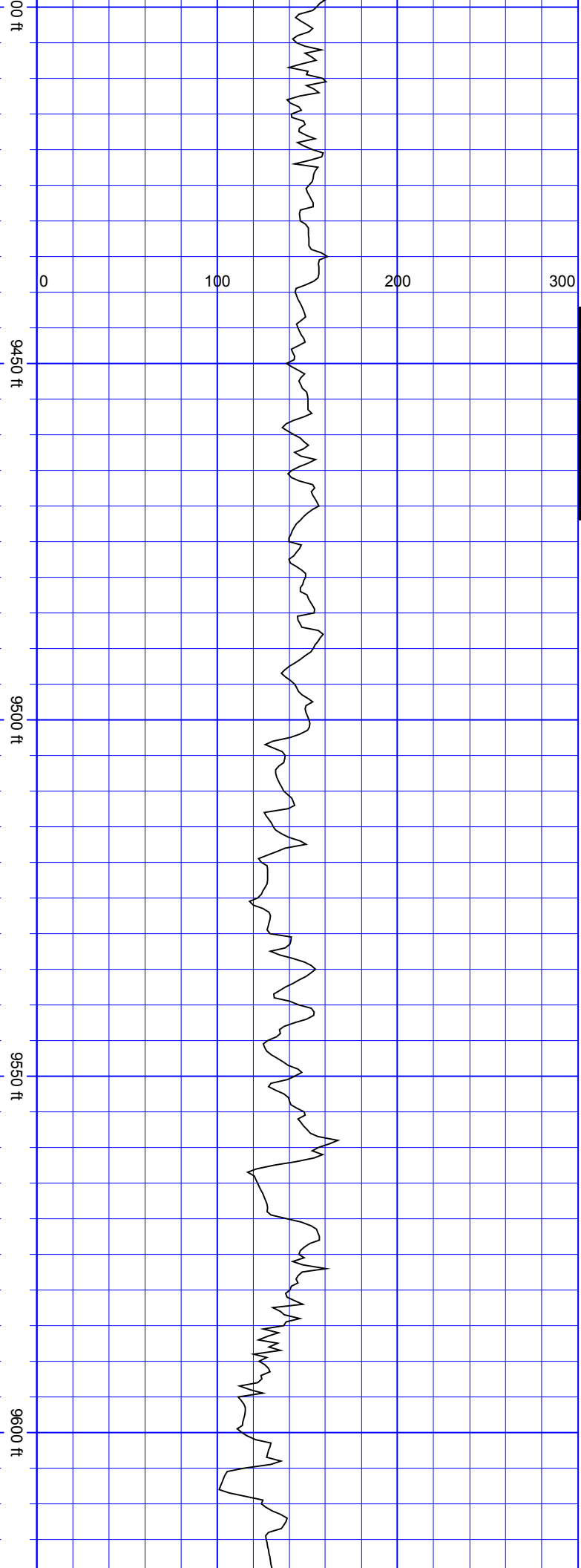
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TVD:7085.46 Inc:88.07
Azi:358.67
VertSec:1101.85





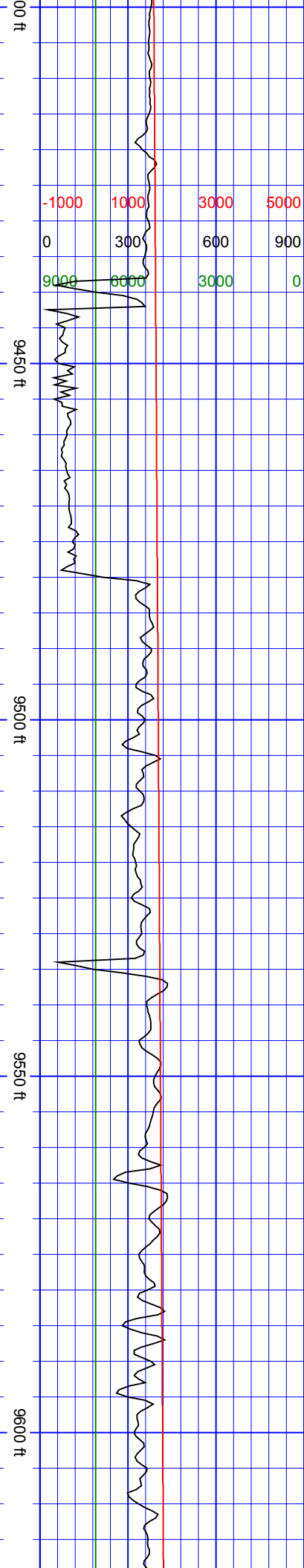
SurveyDepth:9191 TVD:7090.9 Inc:89.47 Azi:4.64 VertSec:1384.68	SurveyDepth:9286 TVD:7091.73 Inc:89.52 Azi:4.03 VertSec:1479.46	SurveyDepth:9381 TVD:7091.92 Inc:90.26 Azi:4.03 VertSec:1574.27
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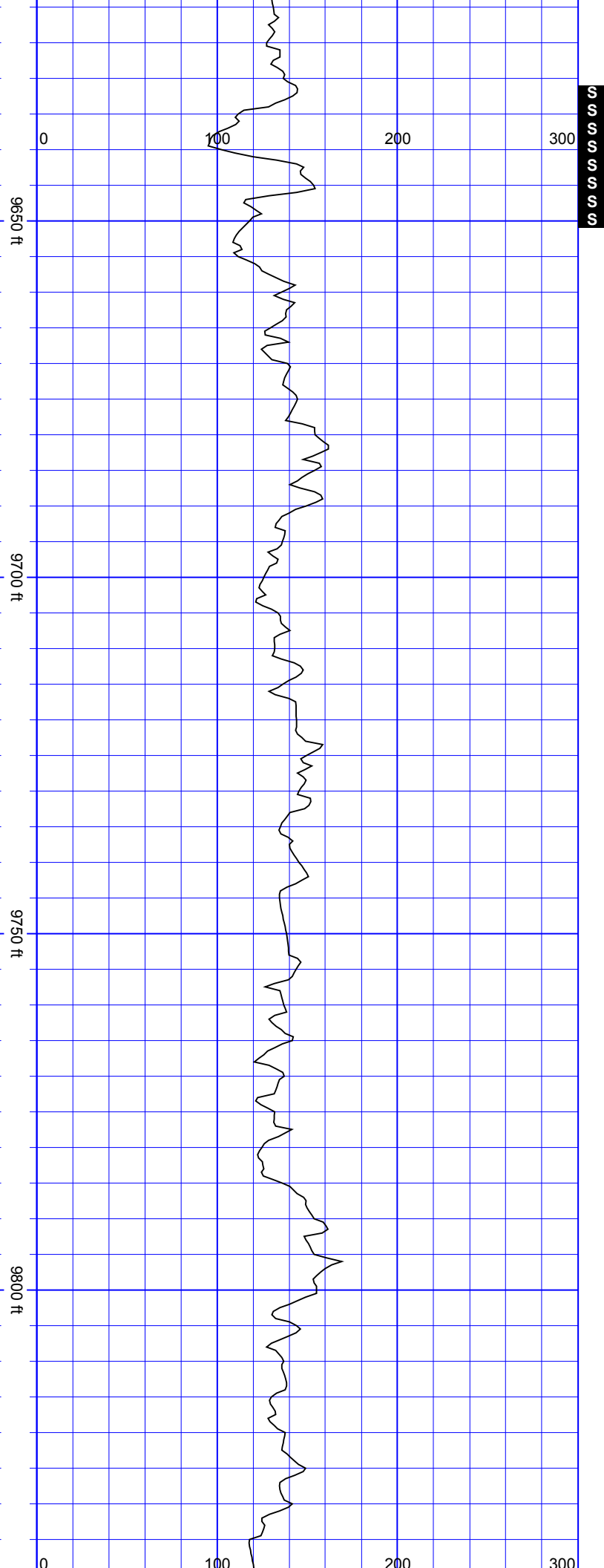




SurveyDepth:9475
TVD:7094.19 Inc:86.97
Azi:1.04
VertSec:1668.16

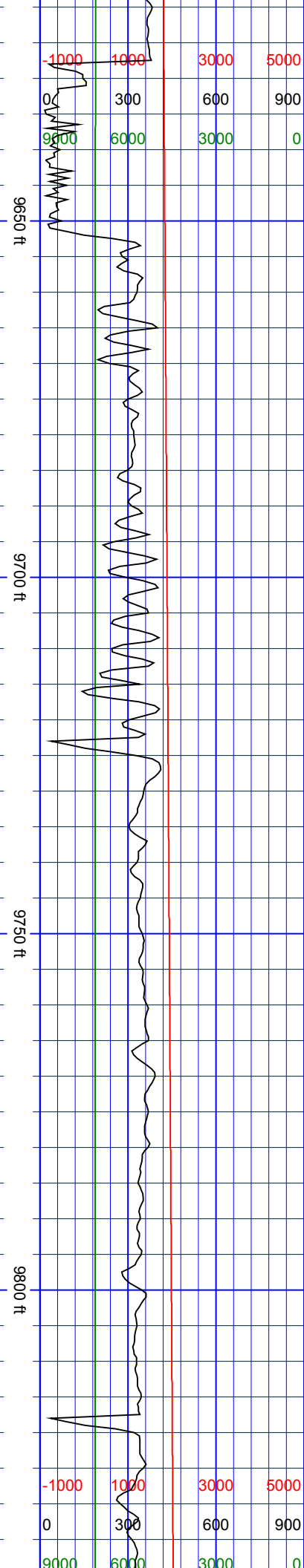
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TVD:7099.65 Inc:86.44
Azi:0.51 VertSec:1763

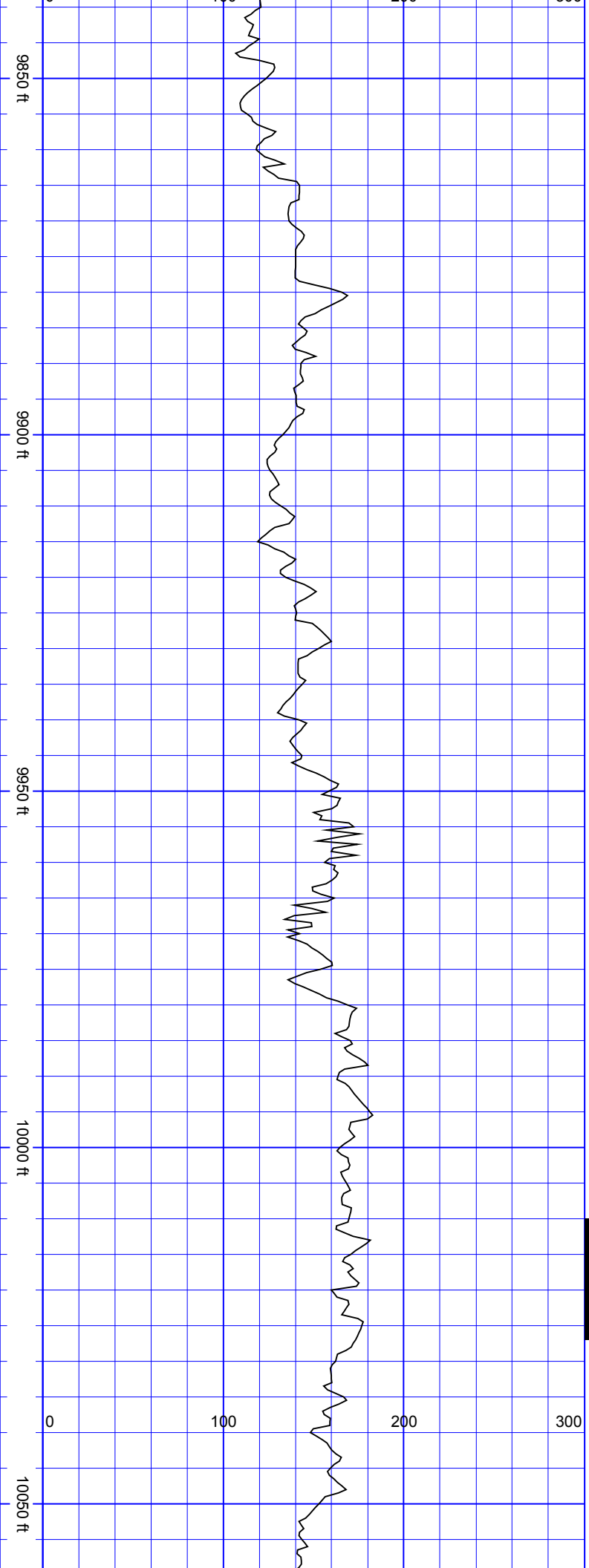




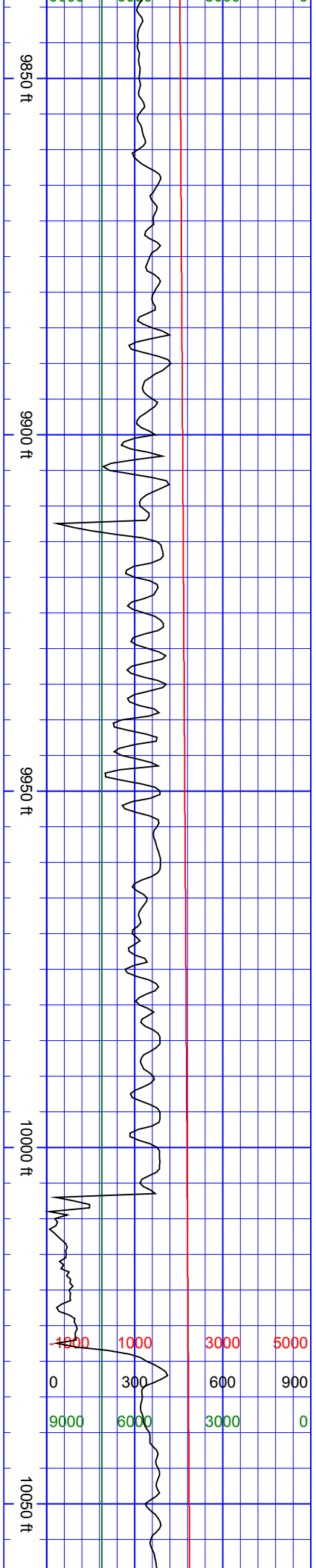
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TVD:7103.98 Inc:88.33
Azi:2.1 VertSec:1857.88

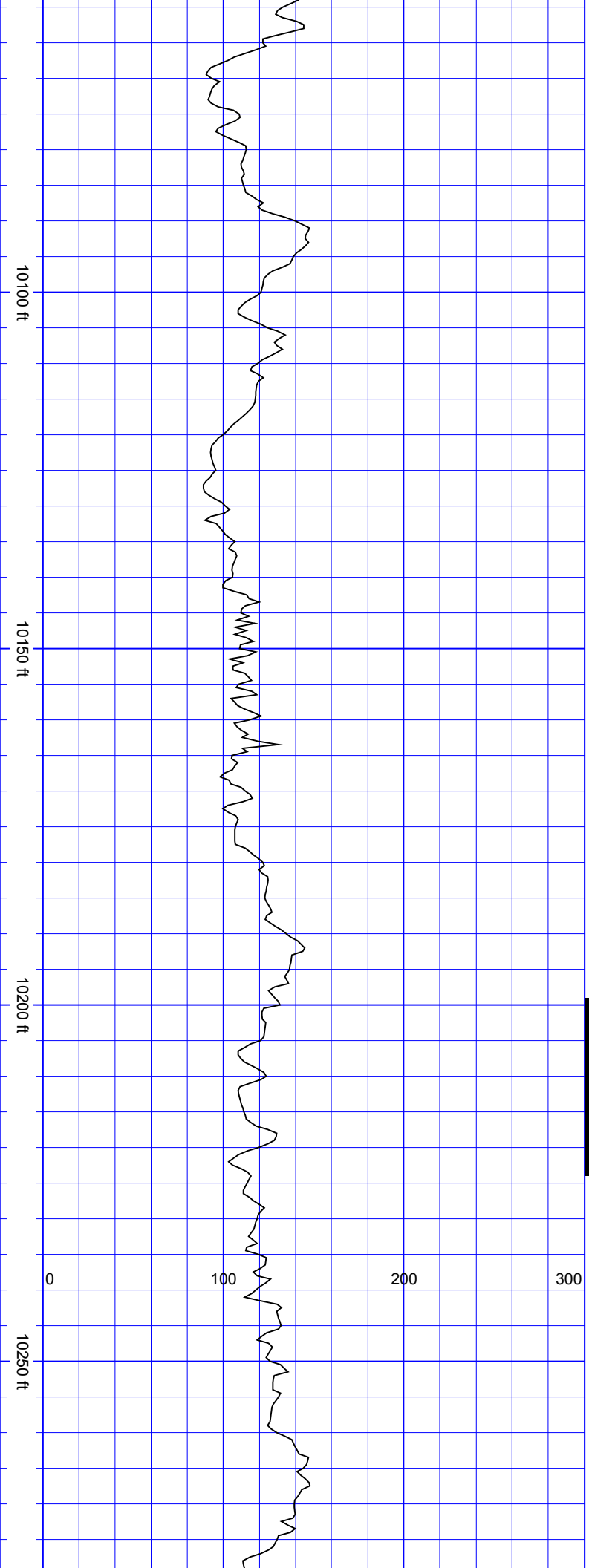
SurveyDepth:9760
TVD:7106.17 Inc:89.03
Azi:2.27
VertSec:1952.82





SurveyDepth:9854 TVD:7107.18 Inc:89.74 Azi:1.74 VertSec:2046.78	SurveyDepth:9949 TVD:7107.14 Inc:90.31 Azi:1.31 VertSec:2141.76	SurveyDepth:10043 TVD:7107.61 Inc:89.12 Azi:1.39 VertSec:2235.75
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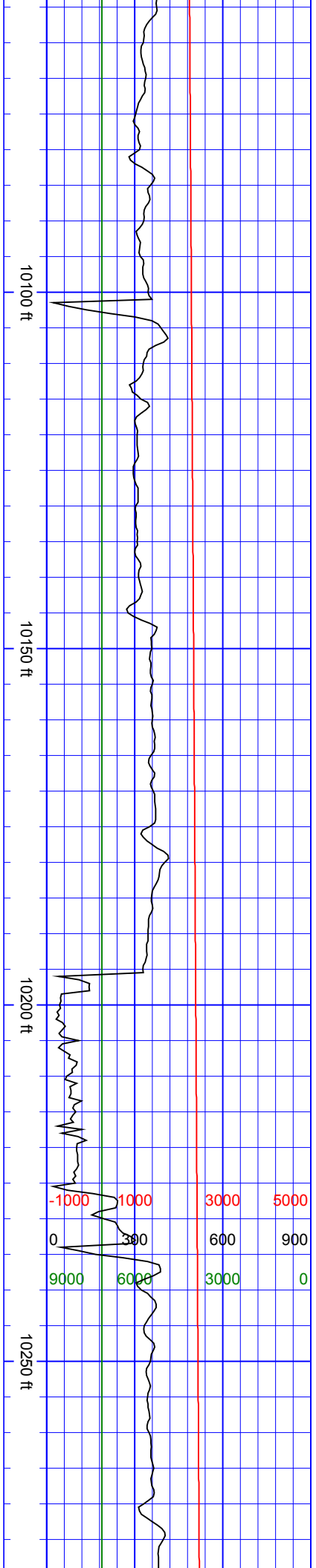


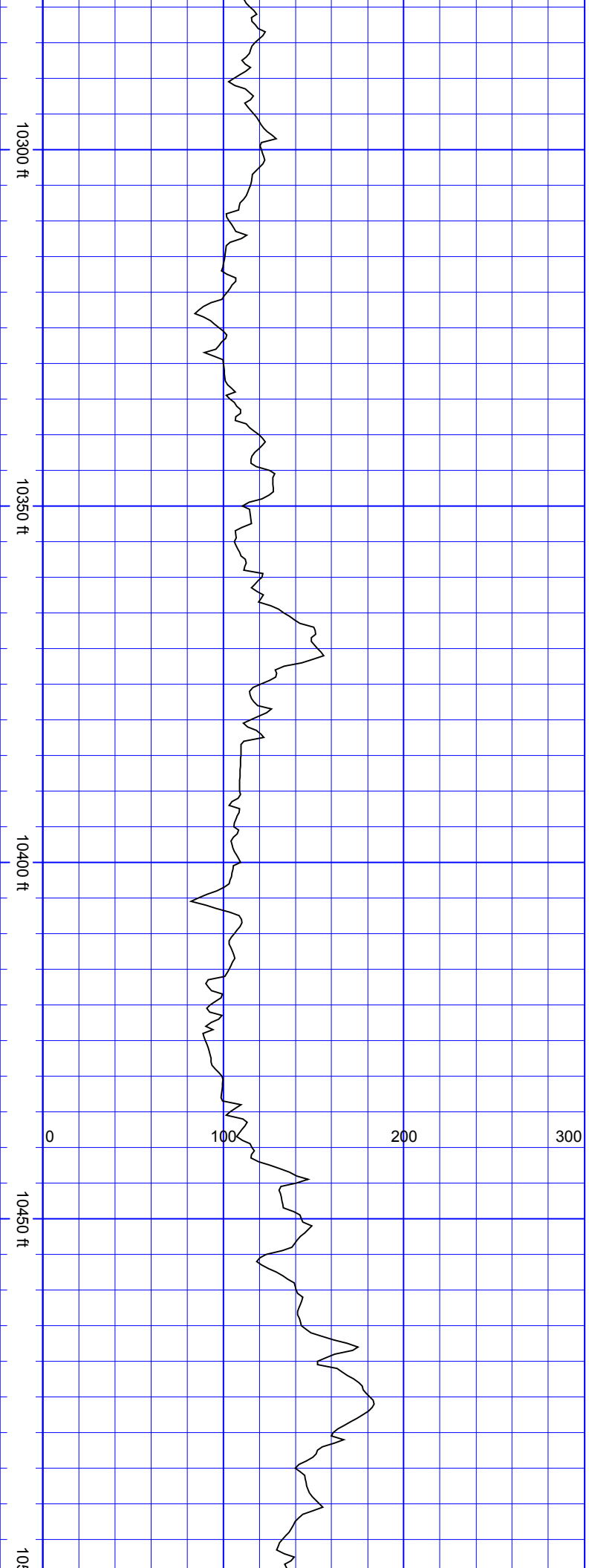


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SurveyDepth:10138
TVD:7108.01 Inc:90.4
Azi:1.31
VertSec:2330.73

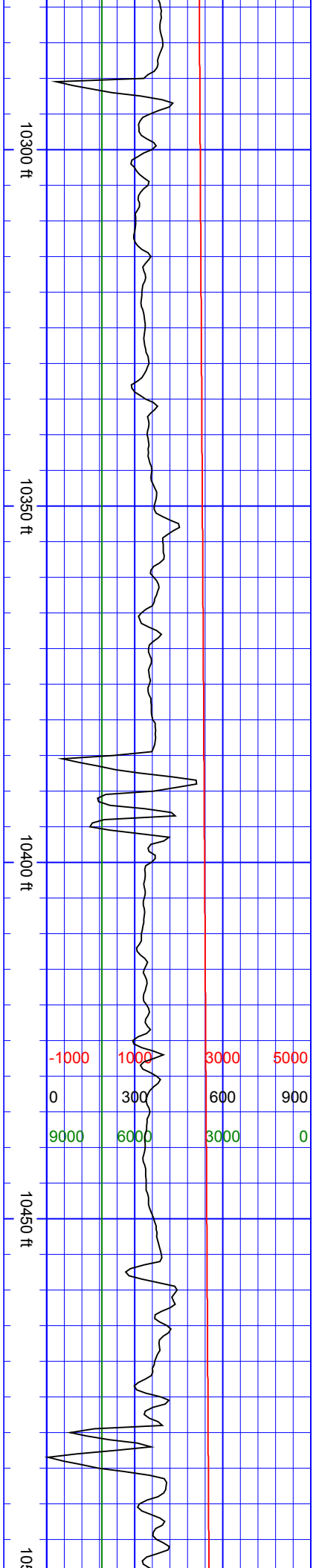
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TVD:7109.56 Inc:87.72
Azi:1.31 VertSec:2425.7

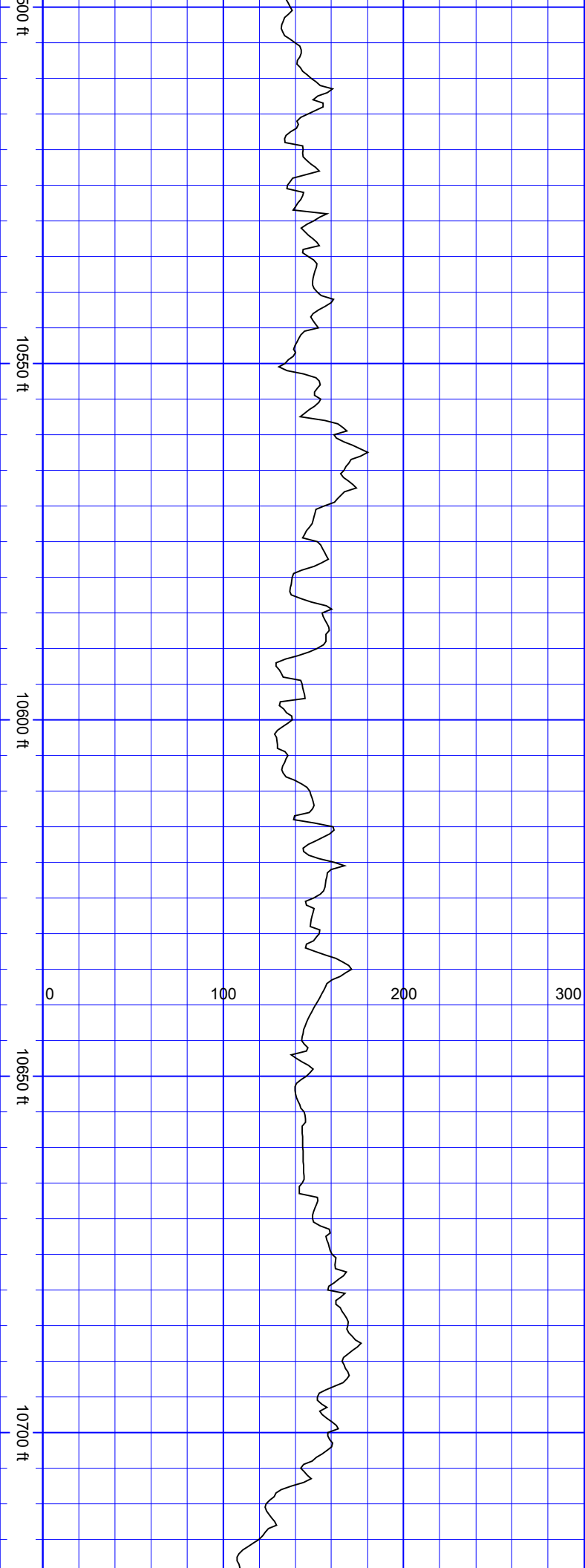




SurveyDepth:10327
TVD:7112.88 Inc:88.24
Azi:1.22
VertSec:2519.63

SurveyDepth:10422
TVD:7115.72 Inc:88.33
Azi:1.04
VertSec:2614.58

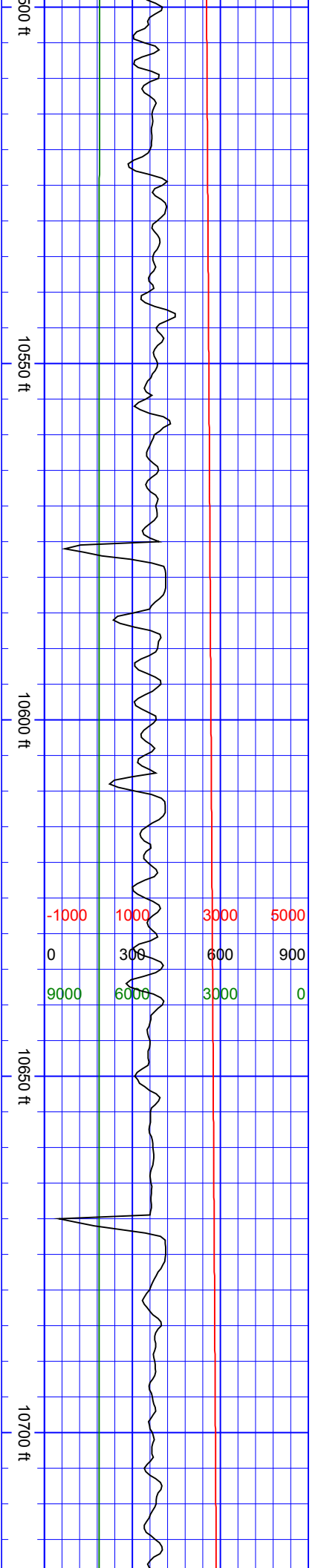


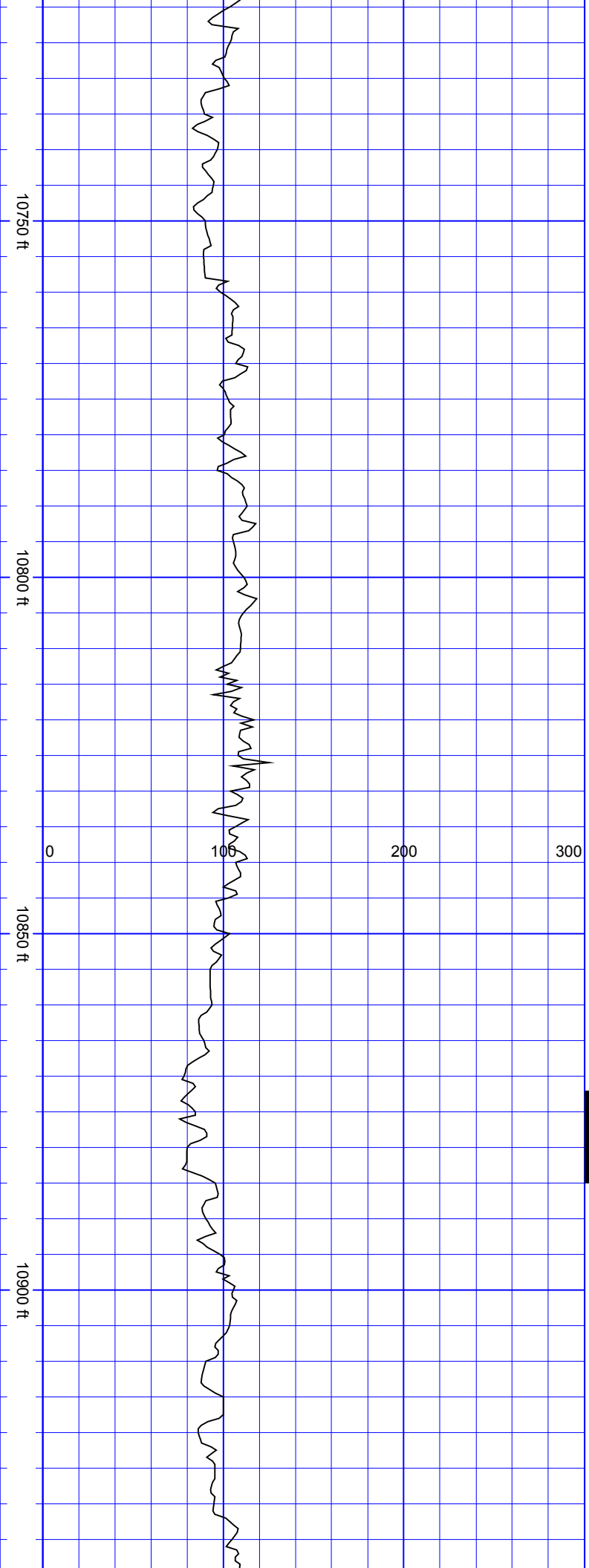


SurveyDepth:10517
TVD:7118.7 Inc:88.07
Azi:0.69
VertSec:2709.53

SurveyDepth:10612
TVD:7121.8 Inc:88.2
Azi:0.34
VertSec:2804.48

SurveyDepth:10706
TVD:7124.67 Inc:88.29
Azi:0.07
VertSec:2898.44

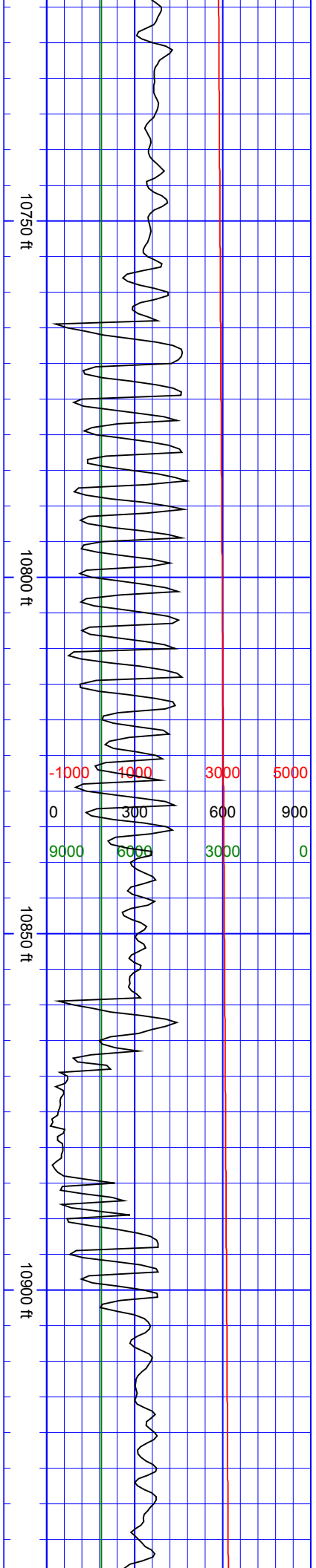


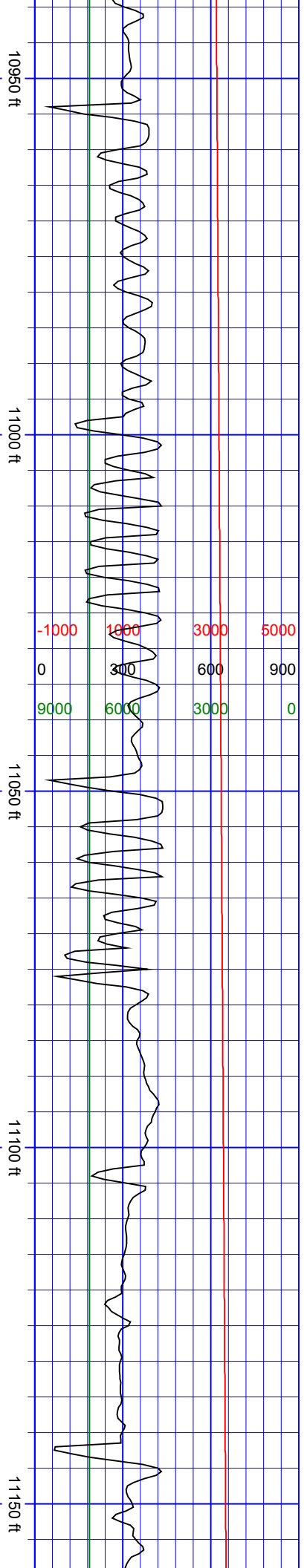


SurveyDepth:10801
TVD:7127.44 Inc:88.37
Azi:359.81
VertSec:2993.39

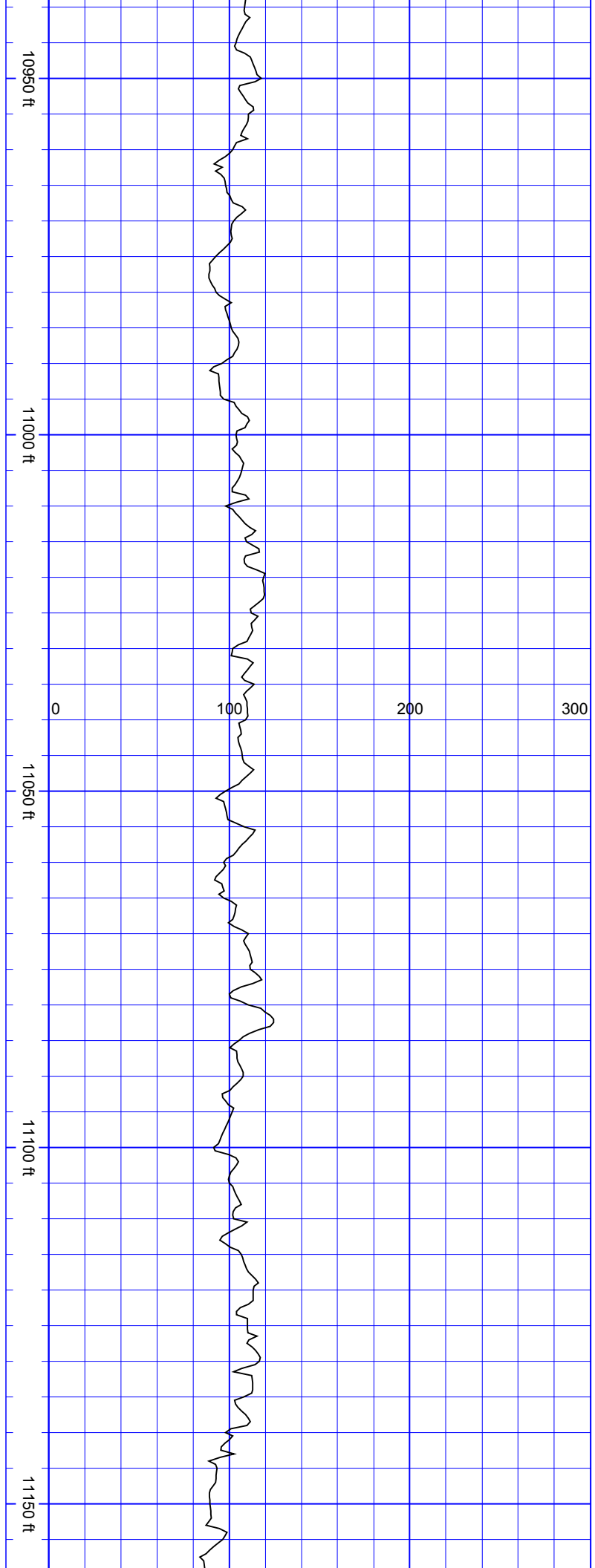
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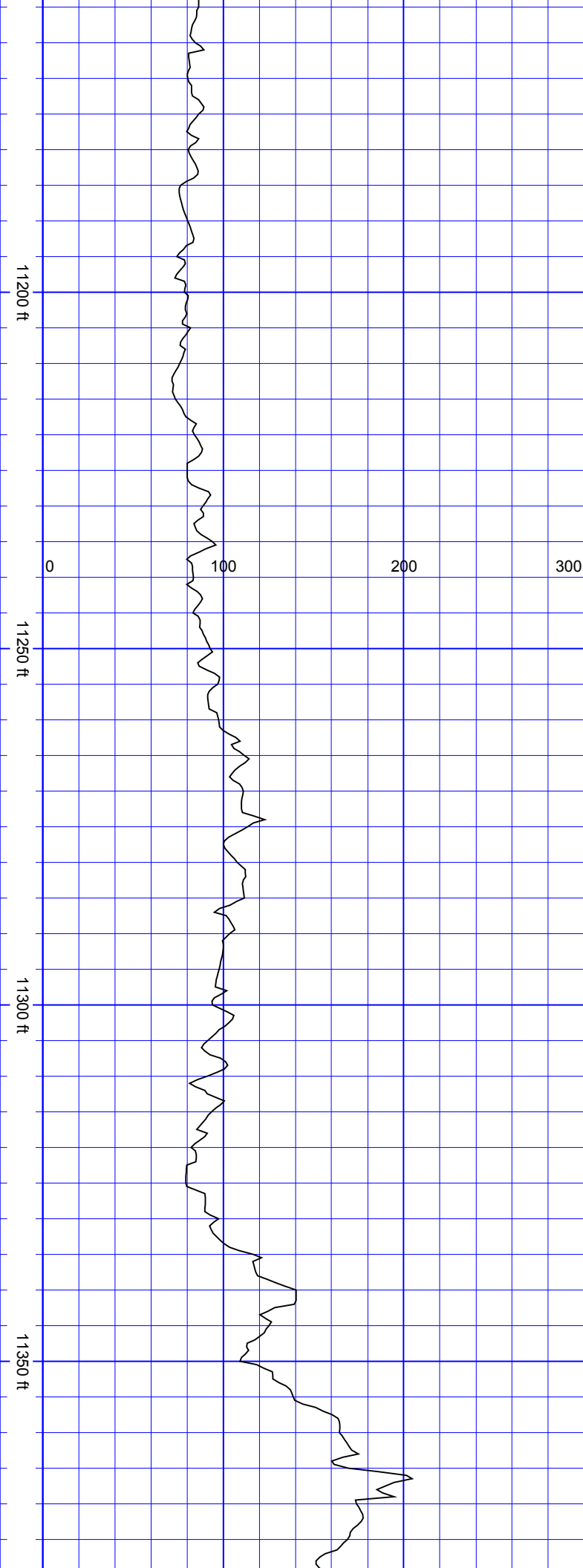
SurveyDepth:10896
TVD:7129.05 Inc:89.69
Azi:1.04
VertSec:3088.38





SurveyDepth:11084
TVD:7129.05 Inc:90.31
Azi:359.64
VertSec:3276.37

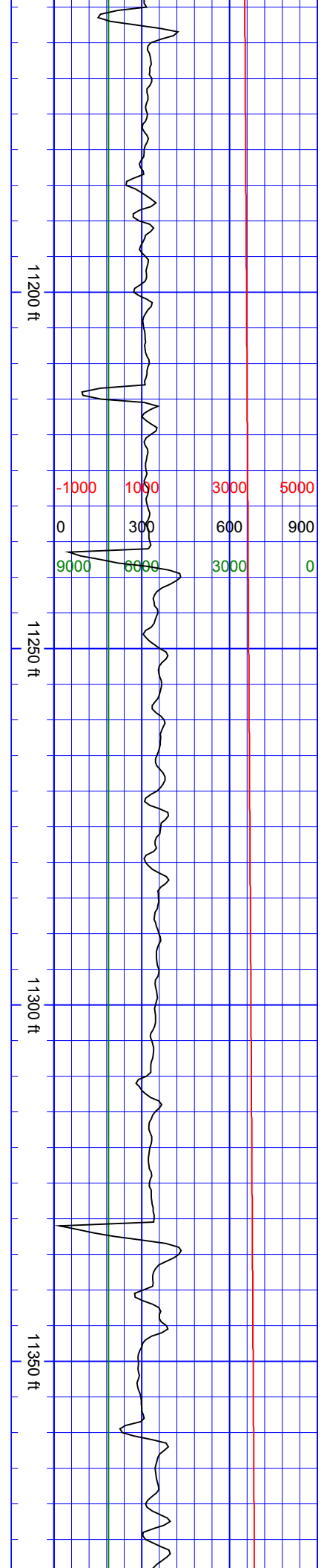


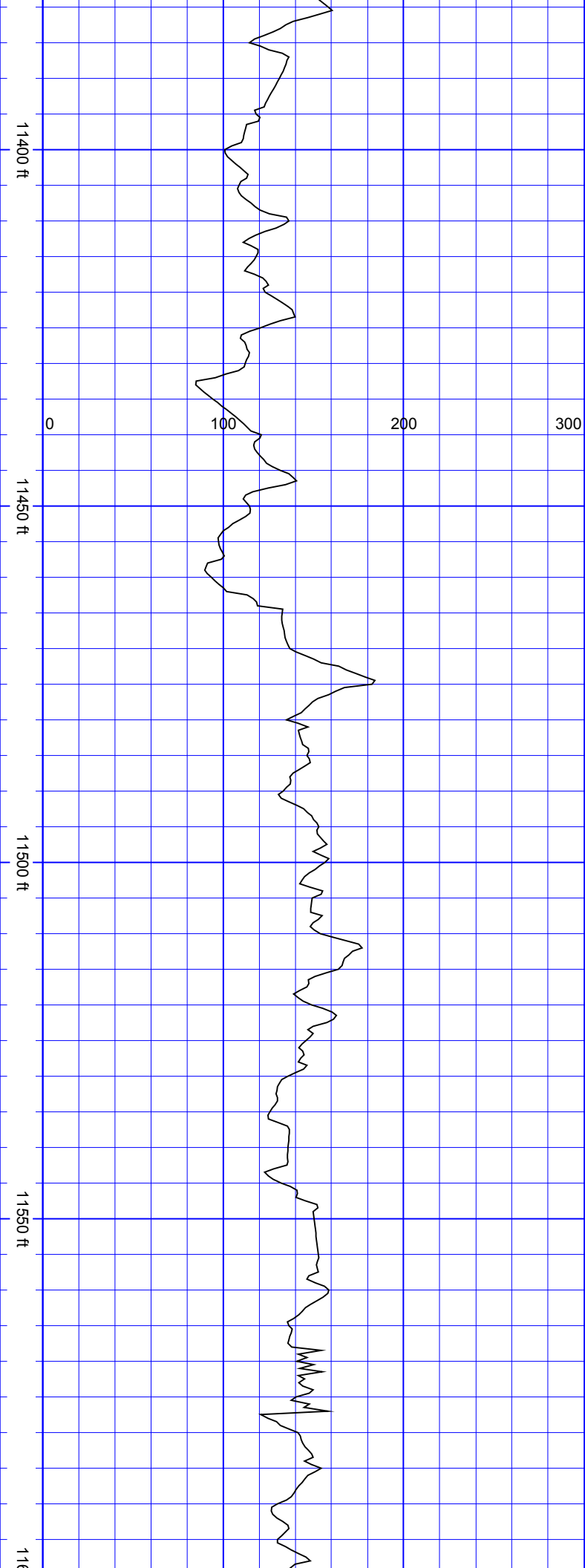


SurveyDepth:11179
TVD:7127.88 Inc:91.1
Azi:0.25
VertSec:3371.36

SurveyDepth:11273
TVD:7126.15 Inc:91.01
Azi:359.9
VertSec:3465.34

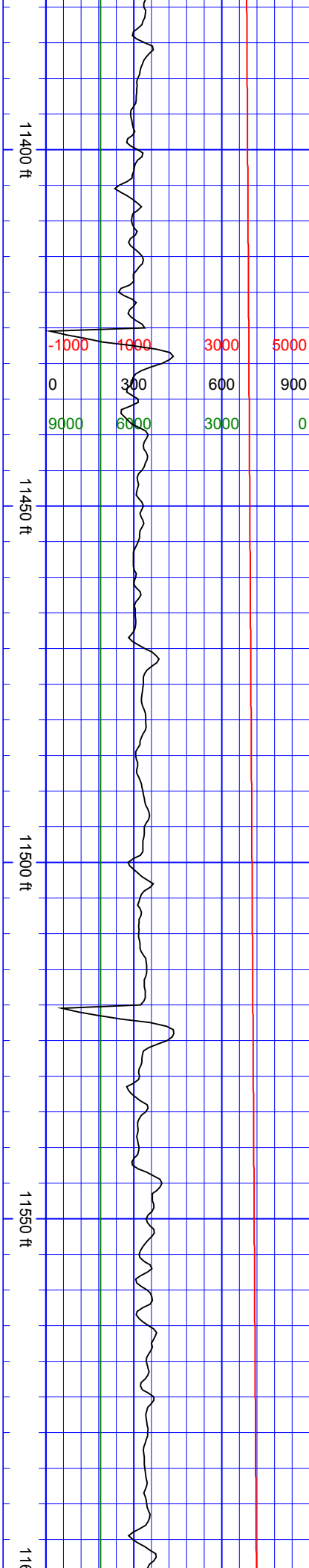
SurveyDepth:11368
TVD:7125.46 Inc:89.82
Azi:358.67
VertSec:3560.31

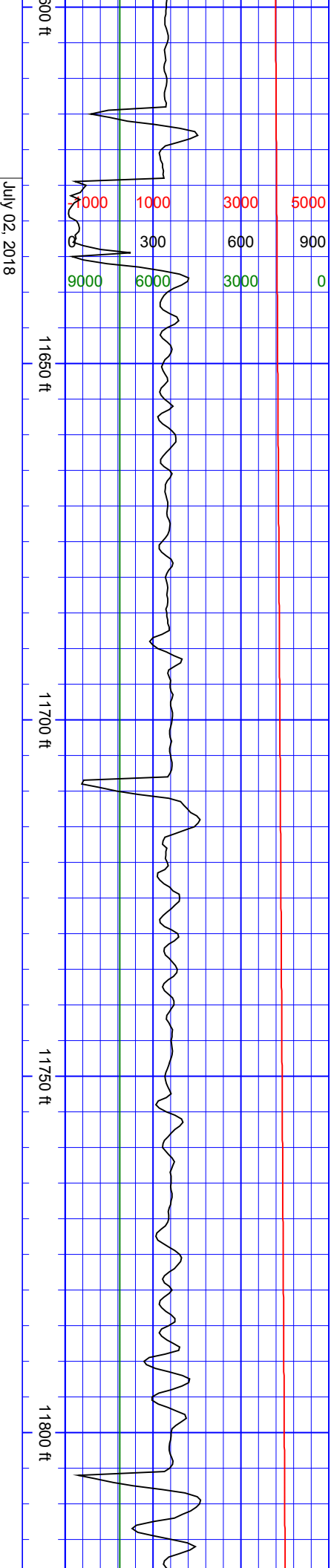




SurveyDepth:11463
TVD:7126.01 Inc:89.52
Azi:358.84
VertSec:3655.27

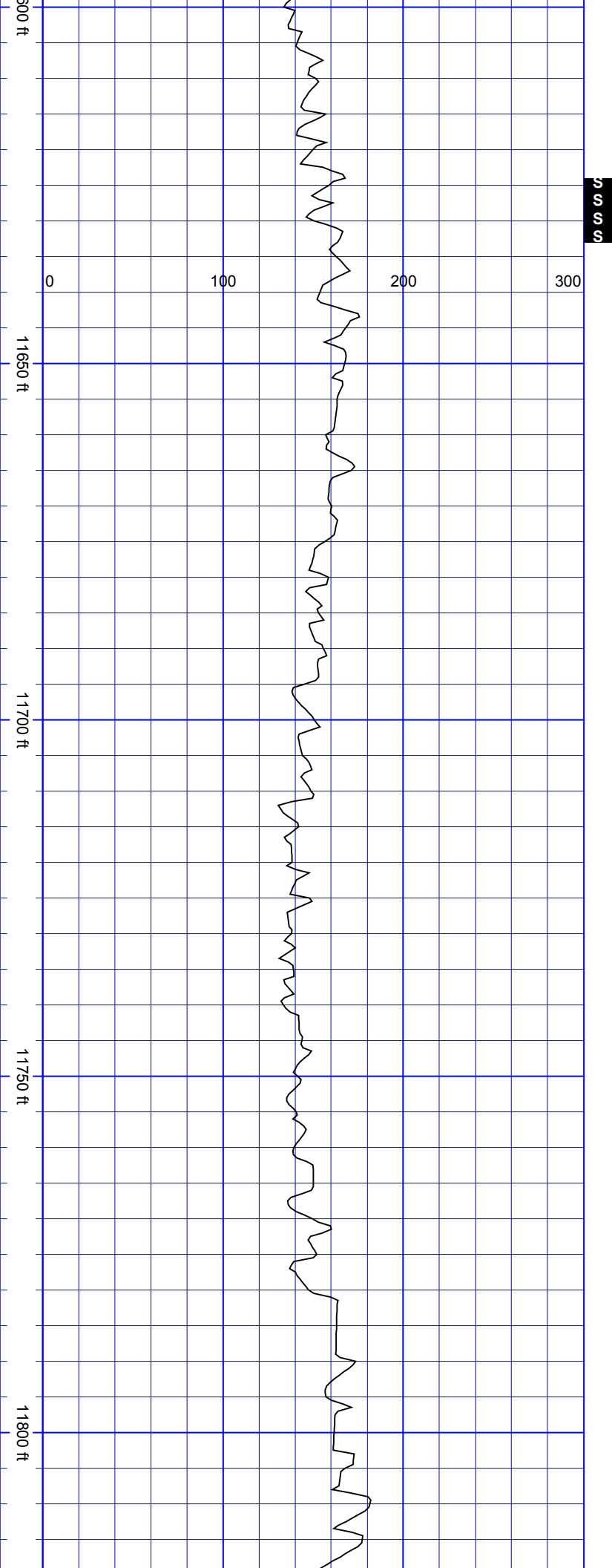
SurveyDepth:11557
TVD:7127.05 Inc:89.21
Azi:358.58
VertSec:3749.22

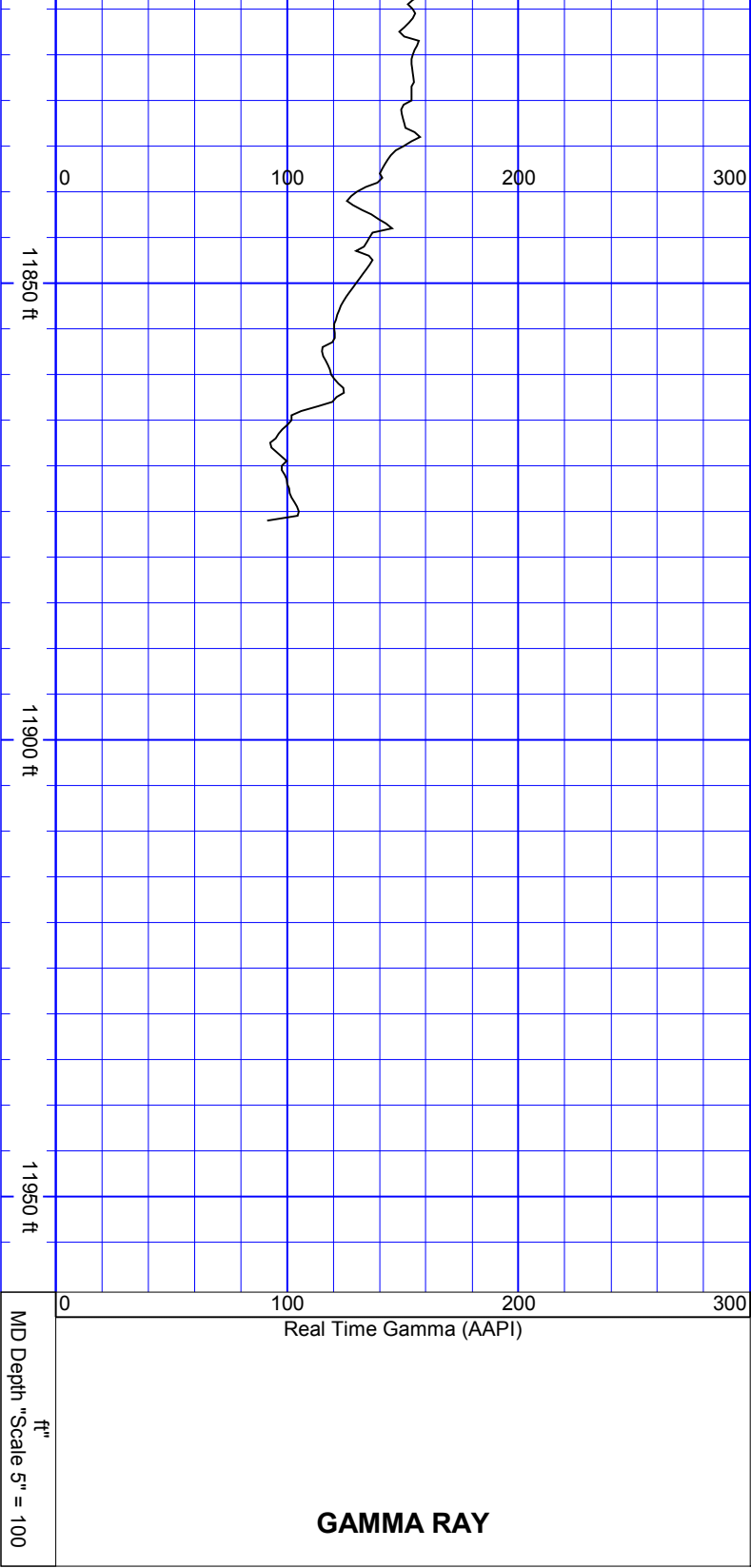




SurveyDepth:11651
TVD:7127.41 Inc:90.35
Azi:359.02
VertSec:3843.18

SurveyDepth:11746
TVD:7126.79 Inc:90.4
Azi:359.11
VertSec:3938.14





Directional Survey	SurveyDepth:11841 TVD:7126.2 Inc:90.31 Azi:359.02 VertSec:4033.11
	SurveyDepth:11871 TVD:7125.95 Inc:90.66 Azi:359.02 VertSec:4063.1
	Extrapolation to Bit SurveyDepth:11932 TVD:7125.25 Inc:90.66 Azi:359.02 VertSec:4124.08

