


<div>CATHEDRAL</div>				<div>Build & Lateral</div> <div>Job #: 185330Well ID: 16191561</div> <div>Scale: 5" = 100 ftType: MD</div>				
Well Site Information								
Oil Company		Crestone Peak Resources						
Surface Location		S33-T3N-R67W						
Well Name		Herren 1B-33H-H367						
API		05-123-47728						
Field		DJ BASIN						
State		CO						
Country		USA						
Surface Coordinates								
Well Type		Horizontal						
Latitude		40° 10' 59.8152 N						
Longitude		104° 53' 13.434 W						
N / S Coordinates		1,310,206.92 us/ft						
E / W Coordinates		3,171,259.40 us/ft						
Azimuth Reference		True North						
Grid Convergence		0.40°						
MWD Engineers								
Lead Hand		Deric Group						
Second Hand		Jerry Shannahan						
Perm Datum		Ground		Elevation		4,847.00 ft		
Log depth measured from KB is		23.00 ft		above perm datum.		KB = 4,870.00 ft		
Total Depth		12,135.00 ft		Spud Date		Dec/03/2018		
(MD) Log Interval		Start Depth		End Date		Dec/06/2018		
		1,940.00 ft		End Depth		12,135.08 ft		
Bore Hole Record				Casing Record				
Hole Size	From	To		Type	Size	WGT	From	To
13.50 in	0.00 ft	2,037.00 ft		LTC	9.63 in	40.00 lbs/ft	0.00 ft	2,022.00 ft
8.50 in	2,037.00 ft	12,135.00 ft						

Run Data					
Bit Run Number	1				
Start Date & Time	Dec/03/2018 04:30:00				
End Date & Time	Dec/06/2018 13:30:00				
Run Hours	81.00				
Depth In	2,037.00 ft				
Depth Out	12,135.00 ft				
Total Gamma Correction	5.88				
Gamma to Bit	62.06 ft				
Resistivity to Bit	-				
Mud Type	OBM				
Density	9.95 ppg				
Viscosity	45.00 sec/qt				
PH	-				
Fluid Loss	-				
K+ ppm	-				
CL- ppm	198,163.00 ppm				
Max Mud Temp	250.00 °F				
Mud Report Depth	10,502.00 ft				

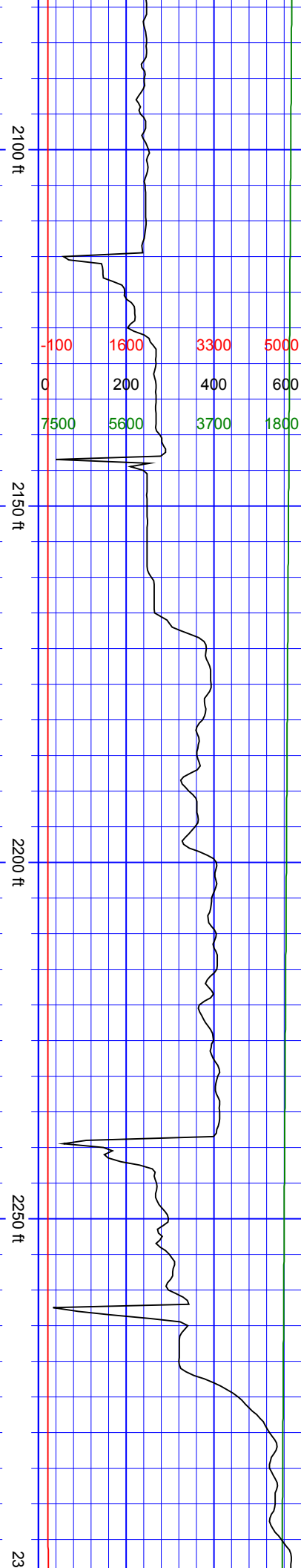
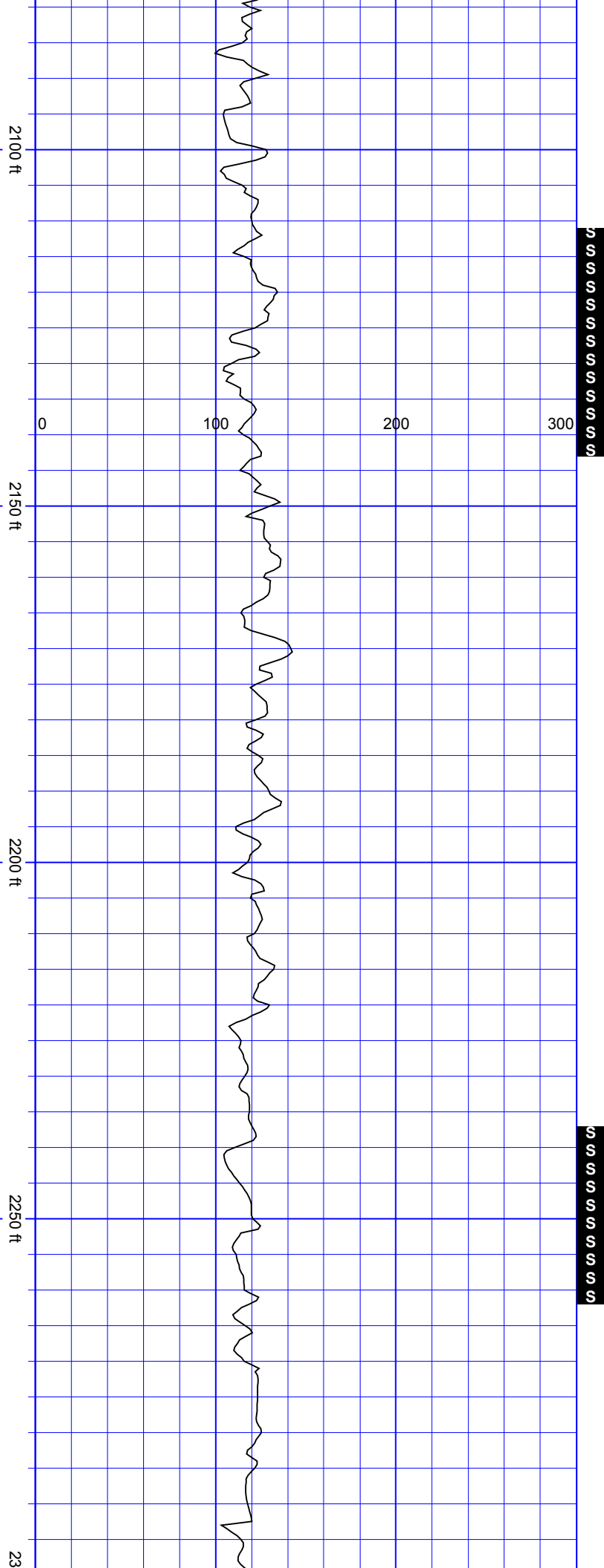
Remarks

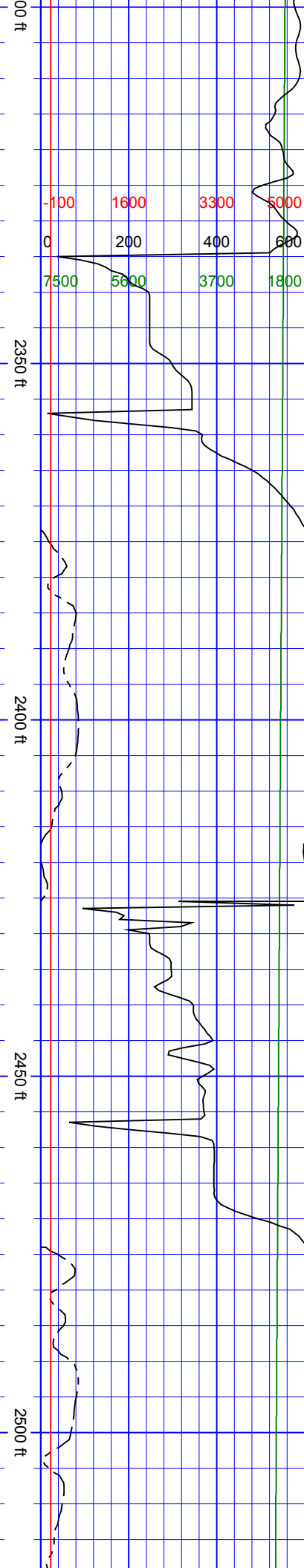
Interpretations of this data by Cathedral Energy Services will be of best judgment as to correctness. Cathedral Energy Services cannot and does not guarantee the accuracy or correctness of interpretations or any surveys derived therefrom. Cathedral Energy Services makes no warranties of performance, 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:2167
TVD:2095.75 Inc:18.9
Azi:21.51 VertSec:88.92

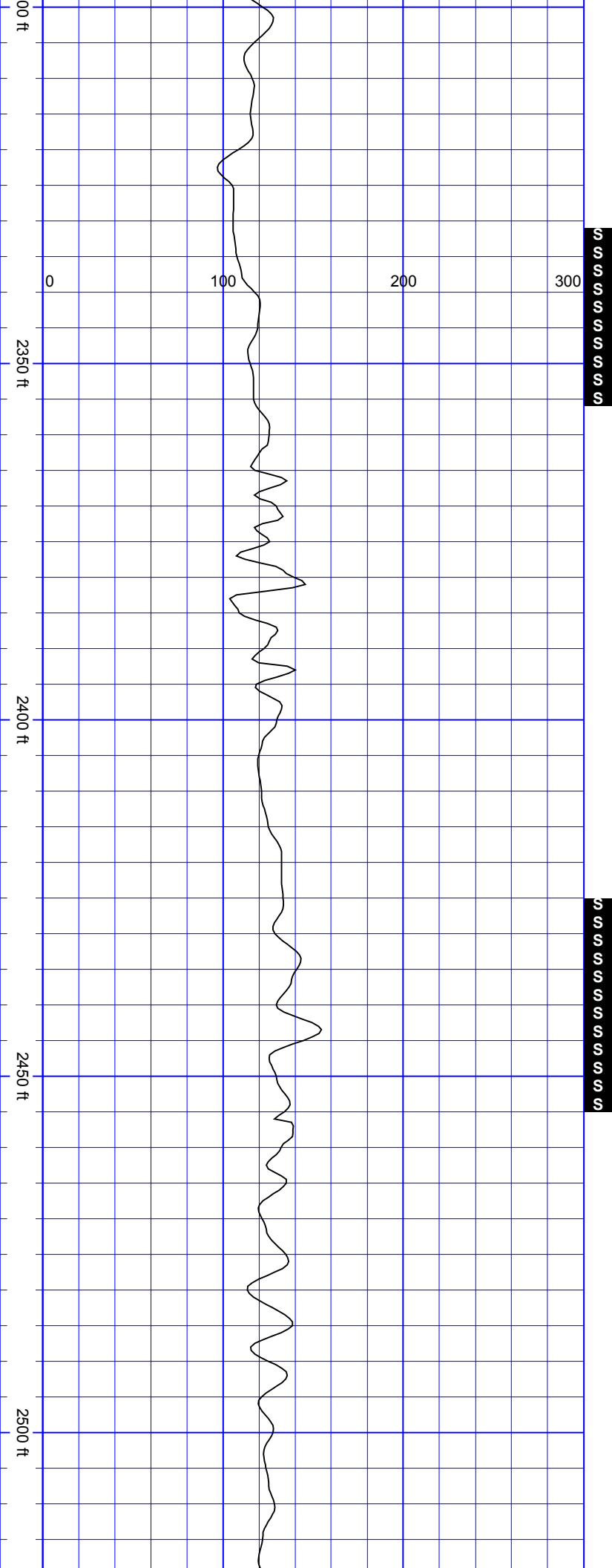
SurveyDepth:2261
TVD:2184.46 Inc:19.73
Azi:21.42 VertSec:91.78

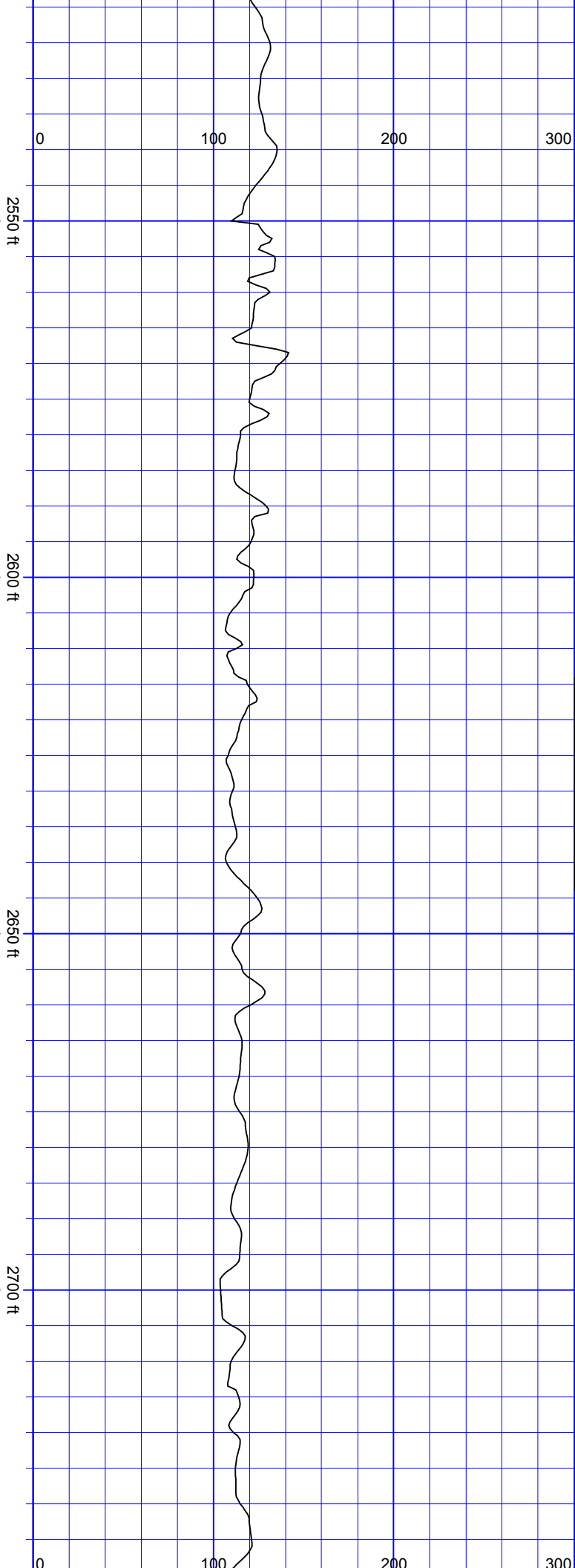




SurveyDepth:2355
TVD:2272.62 Inc:20.87
Azi:20.89 VertSec:94.97

SurveyDepth:2449
TVD:2360.15 Inc:21.89
Azi:22.3 VertSec:98.04

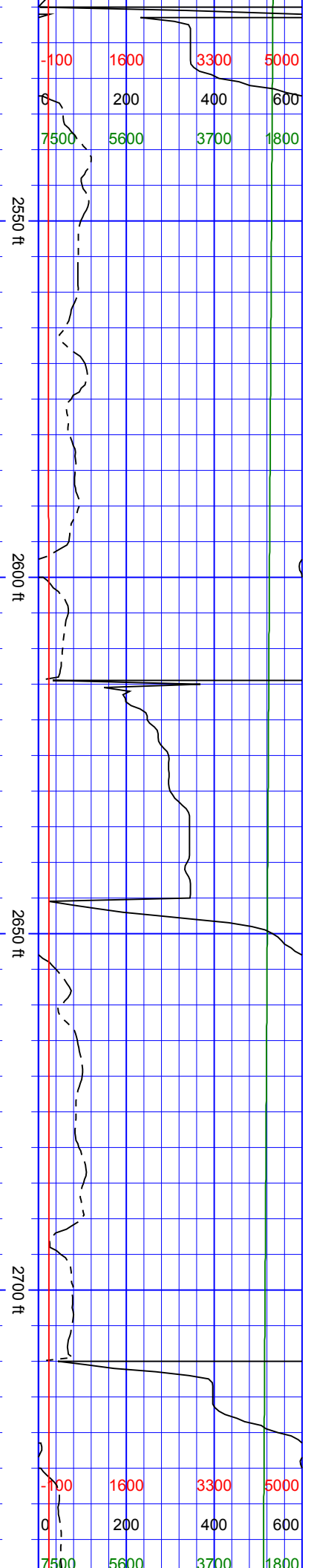


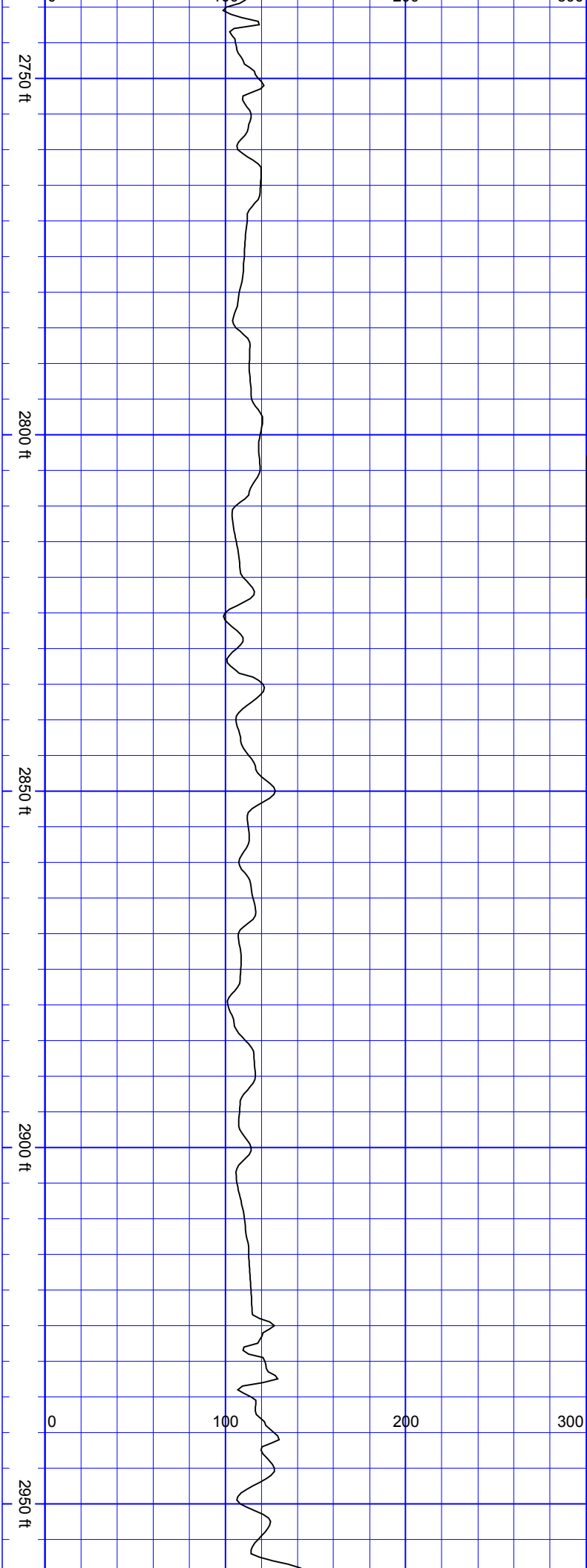


SurveyDepth:2544
TVD:2449.04 Inc:19.42
Azi:22.12
VertSec:100.69

SurveyDepth:2638
TVD:2536.99 Inc:21.89
Azi:21.42
VertSec:103.58

SurveyDepth:2733
TVD:2625.49 Inc:20.74
Azi:19.75
VertSec:106.47

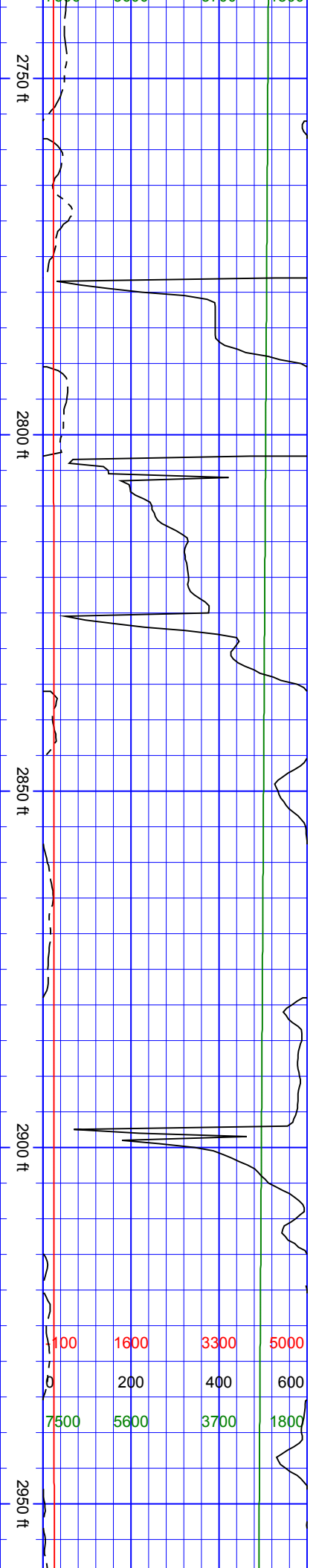


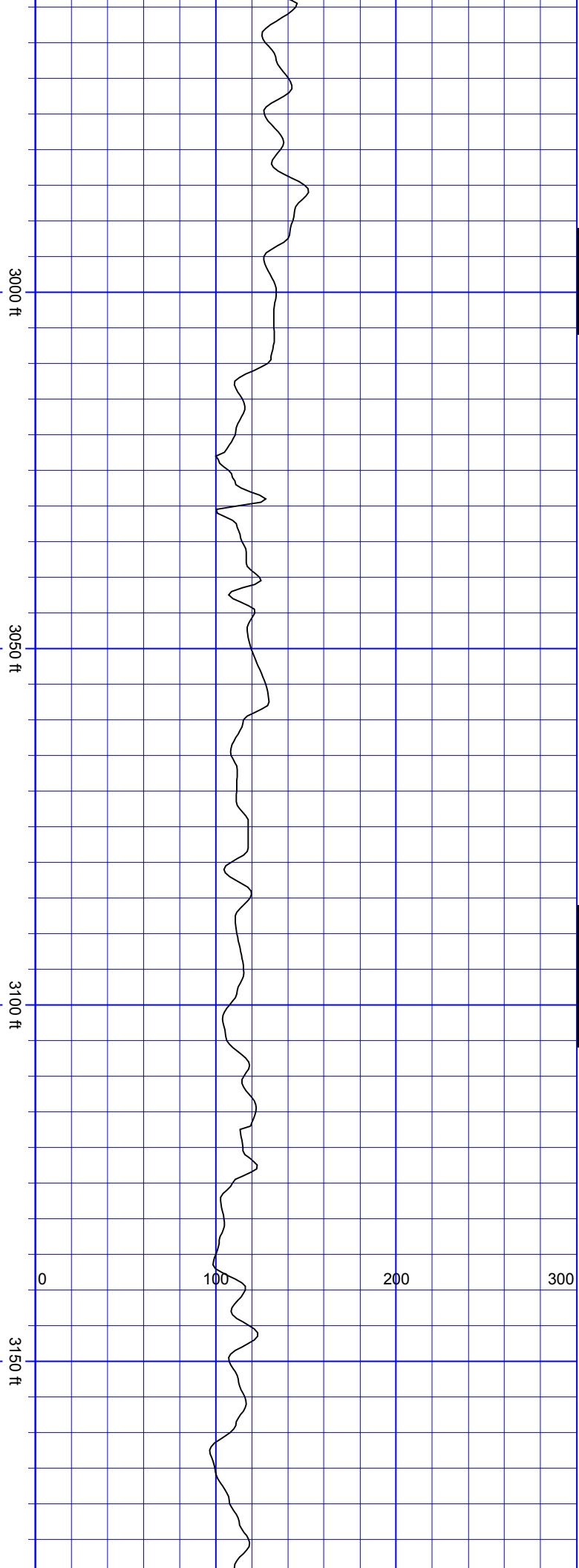


SSSSSS

SurveyDepth:2827
TVD:2712.81 Inc:22.72
Azi:17.29
VertSec:112.28

SurveyDepth:2921
TVD:2799.96 Inc:21.27
Azi:14.91
VertSec:118.77



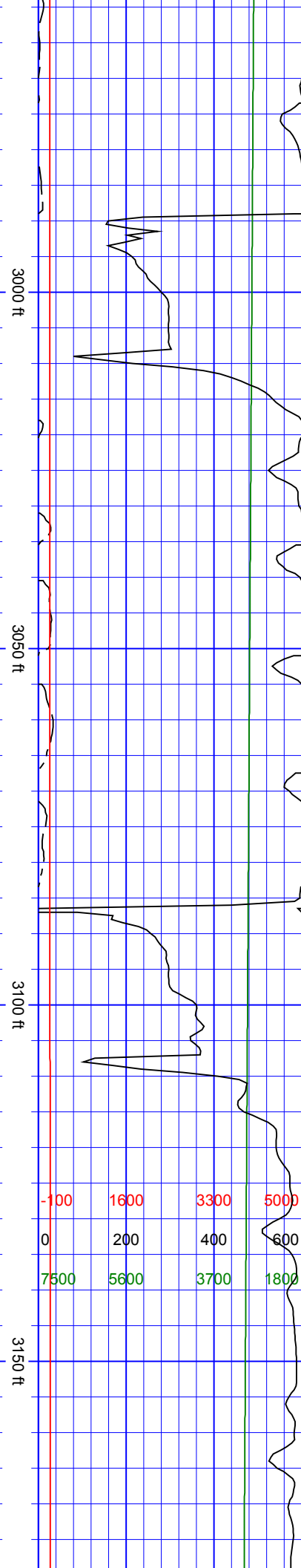


SSSSS

SurveyDepth:3016
TVD:2888.93 Inc:19.78
Azi:16.32
VertSec:125.21

SSSSSS

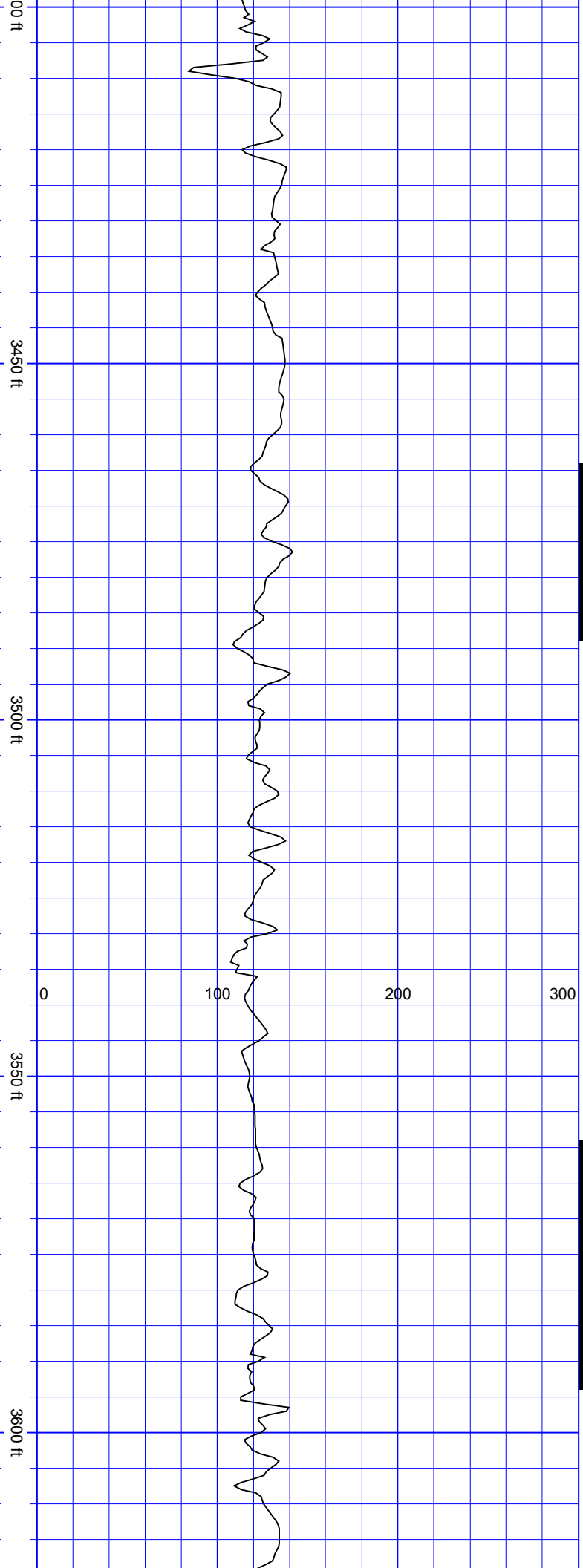
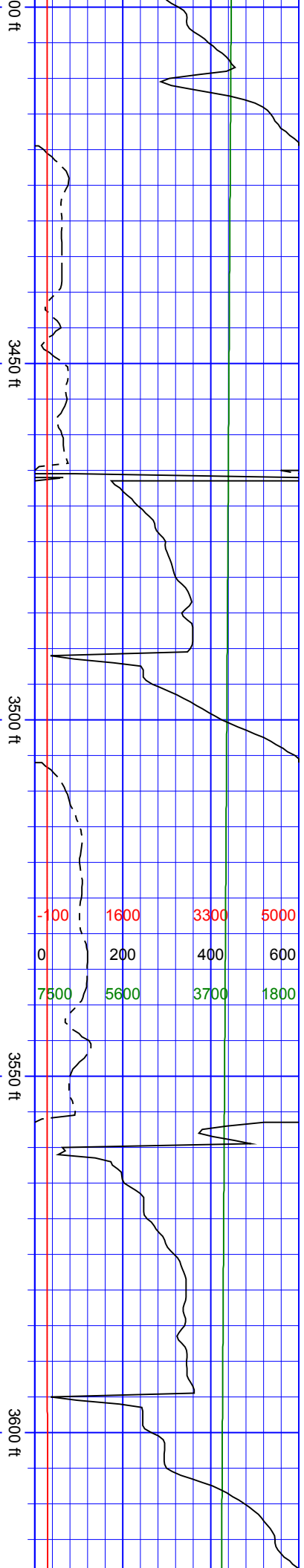
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TVD:2977.18 Inc:20.52
Azi:20.63
VertSec:129.85

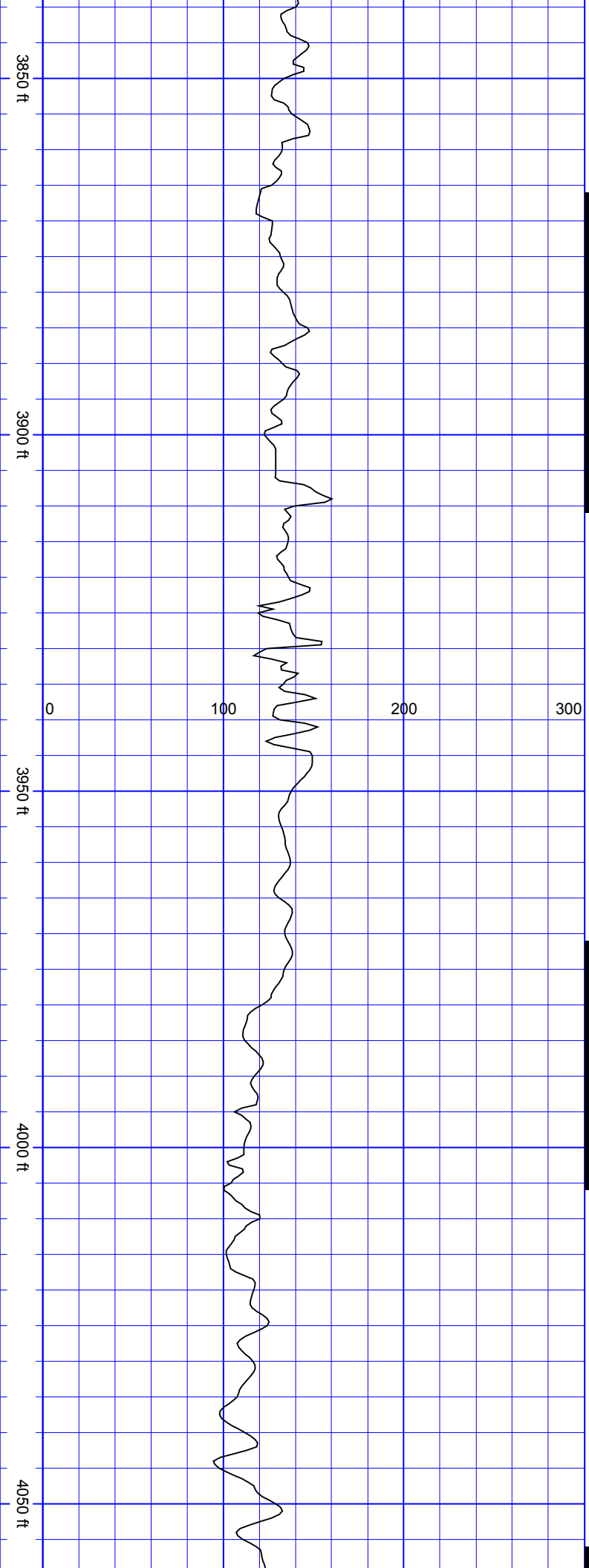


Azi:21.24
VertSec:140.82

SurveyDepth:3489
TVD:3338.71 Inc:16.35
Azi:19.66
VertSec:143.73

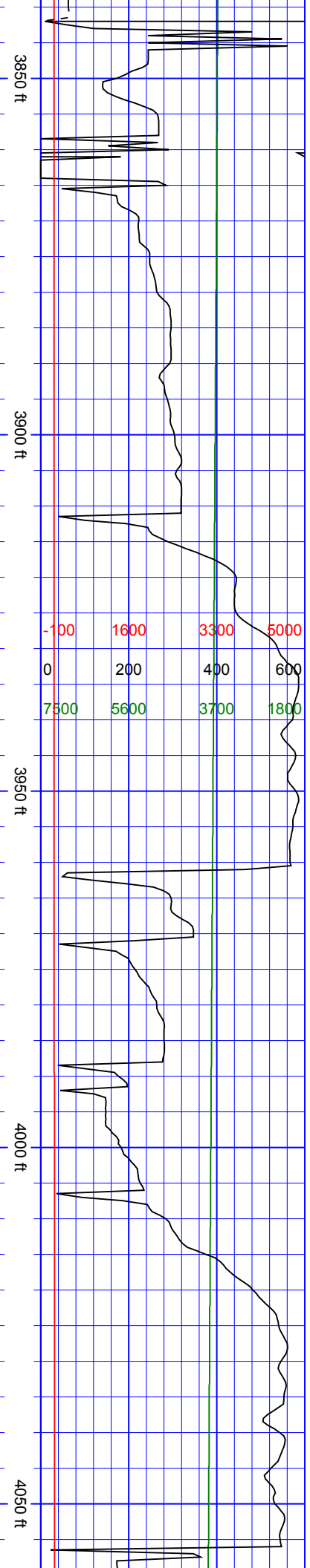
SurveyDepth:3583
TVD:3428.68 Inc:17.31
Azi:18.25
VertSec:147.43

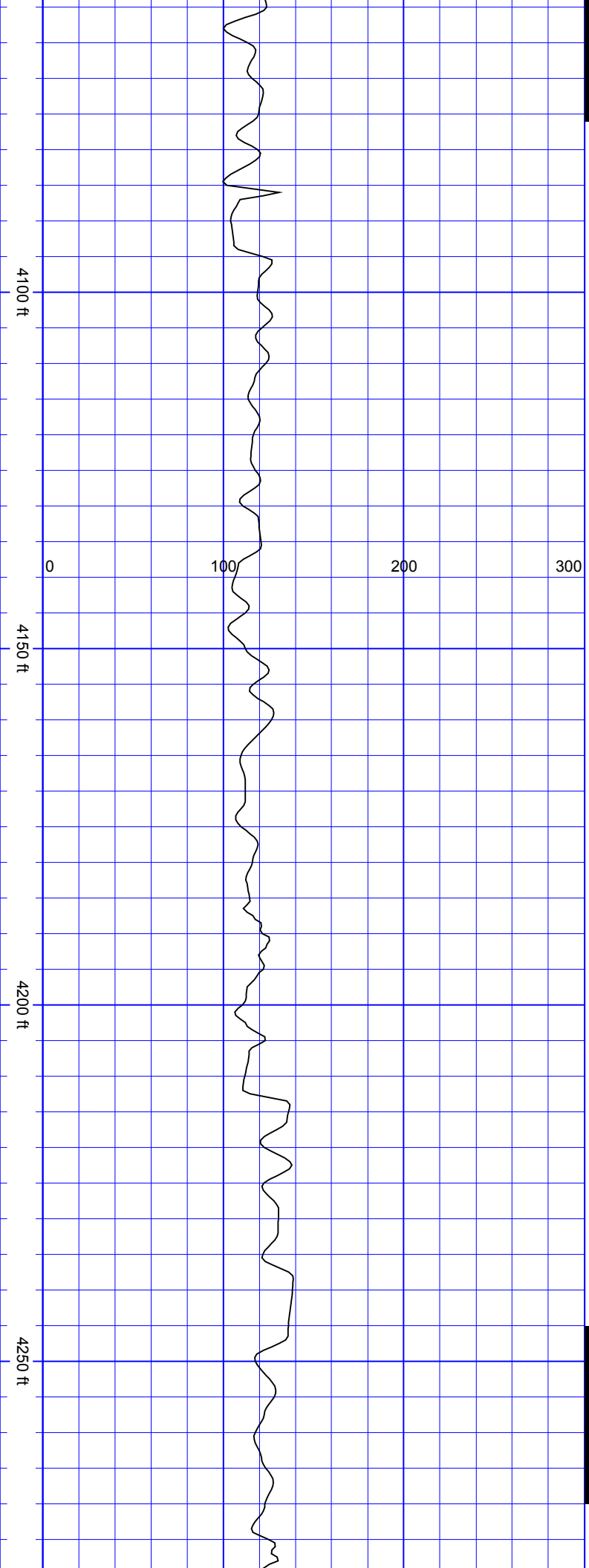




SurveyDepth:3891
TVD:3721.07 Inc:19.56
Azi:18.34
VertSec:161.13

SurveyDepth:3986
TVD:3810.22 Inc:20.87
Azi:17.29
VertSec:166.24

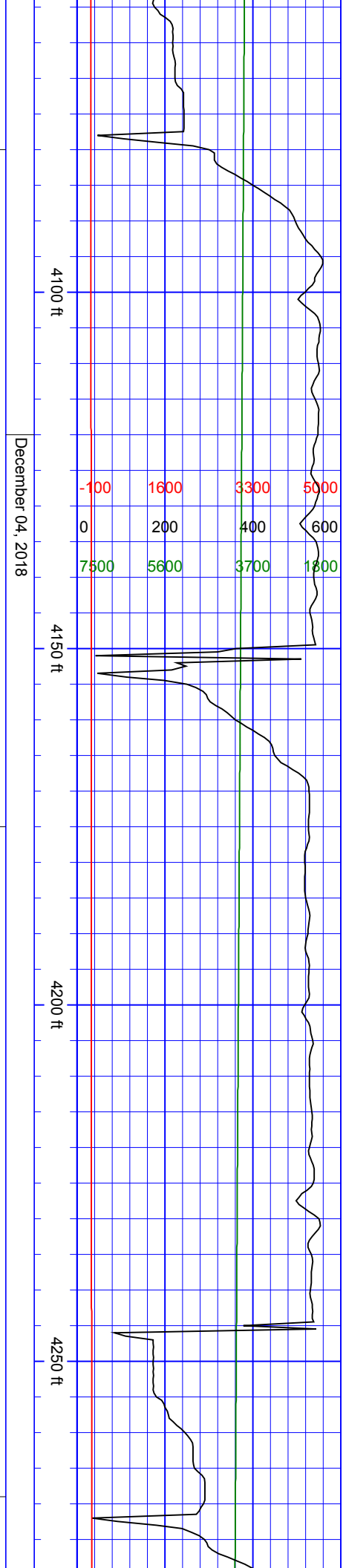




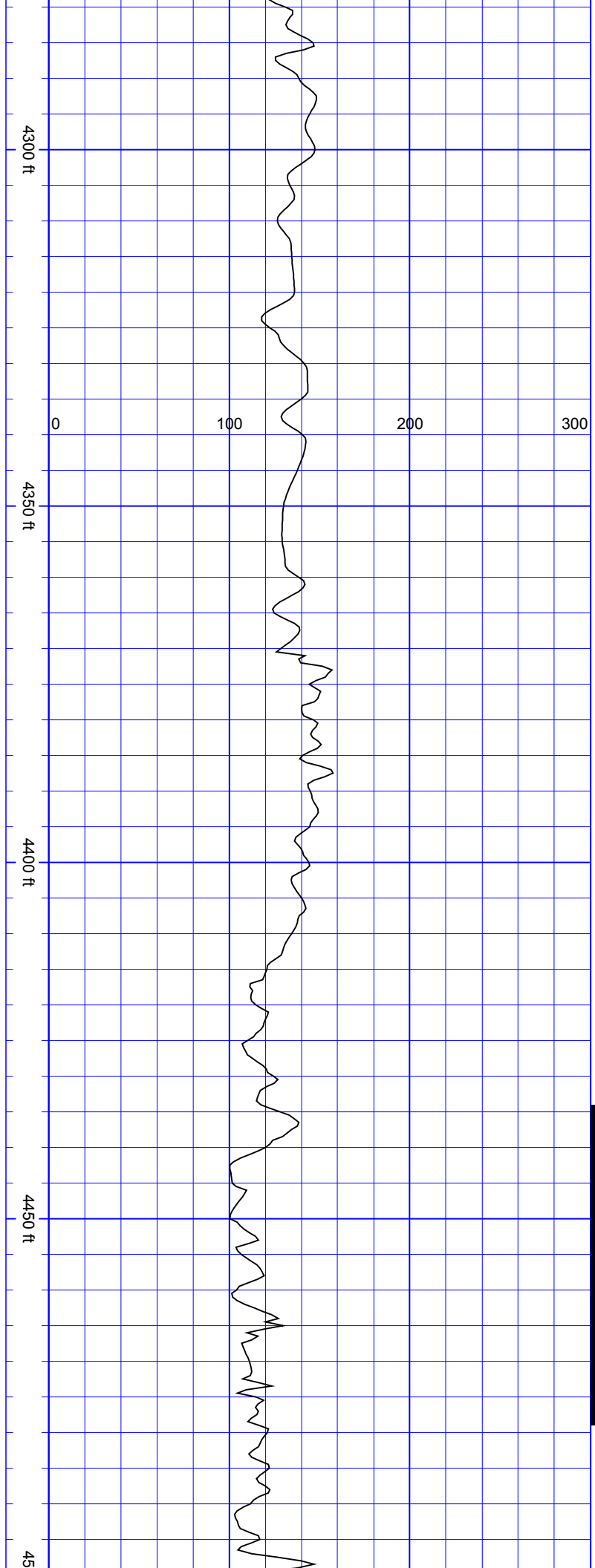
SurveyDepth:4080
TVD:3897.15 Inc:23.82
Azi:15.97
VertSec:172.54

SurveyDepth:4175
TVD:3984.51 Inc:22.46
Azi:14.12 VertSec:180.1

SurveyDepth:4269
TVD:4071.6 Inc:21.75
Azi:17.81
VertSec:186.73

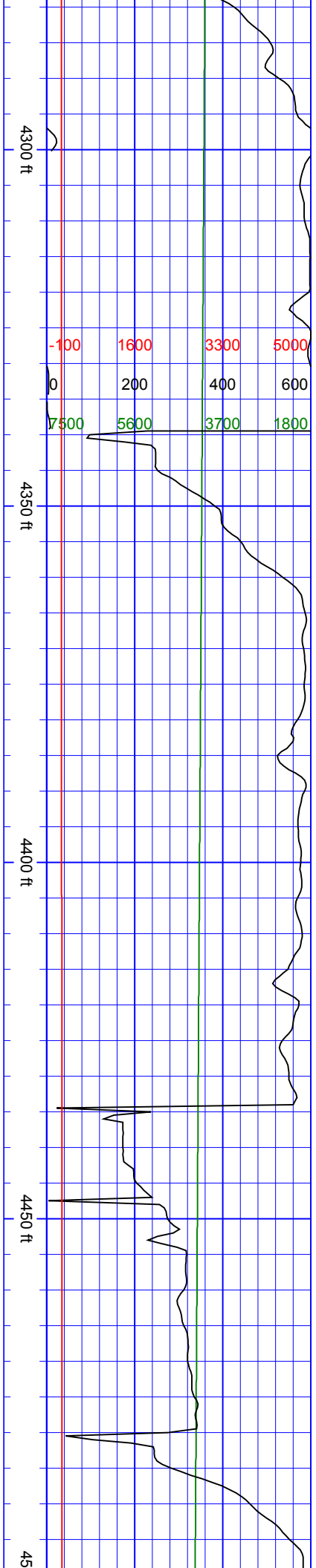


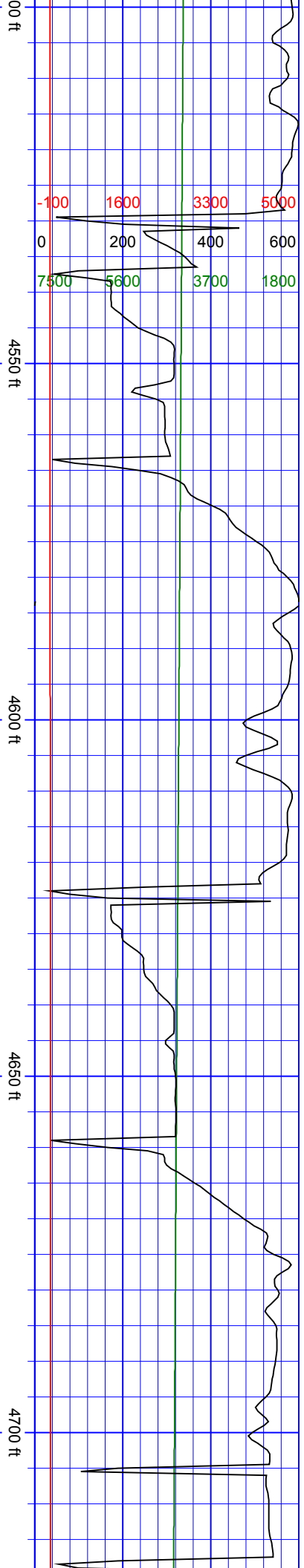
December 04, 2018



SurveyDepth:4364
TVD:4161.09 Inc:17.4
Azi:15.97
VertSec:192.12

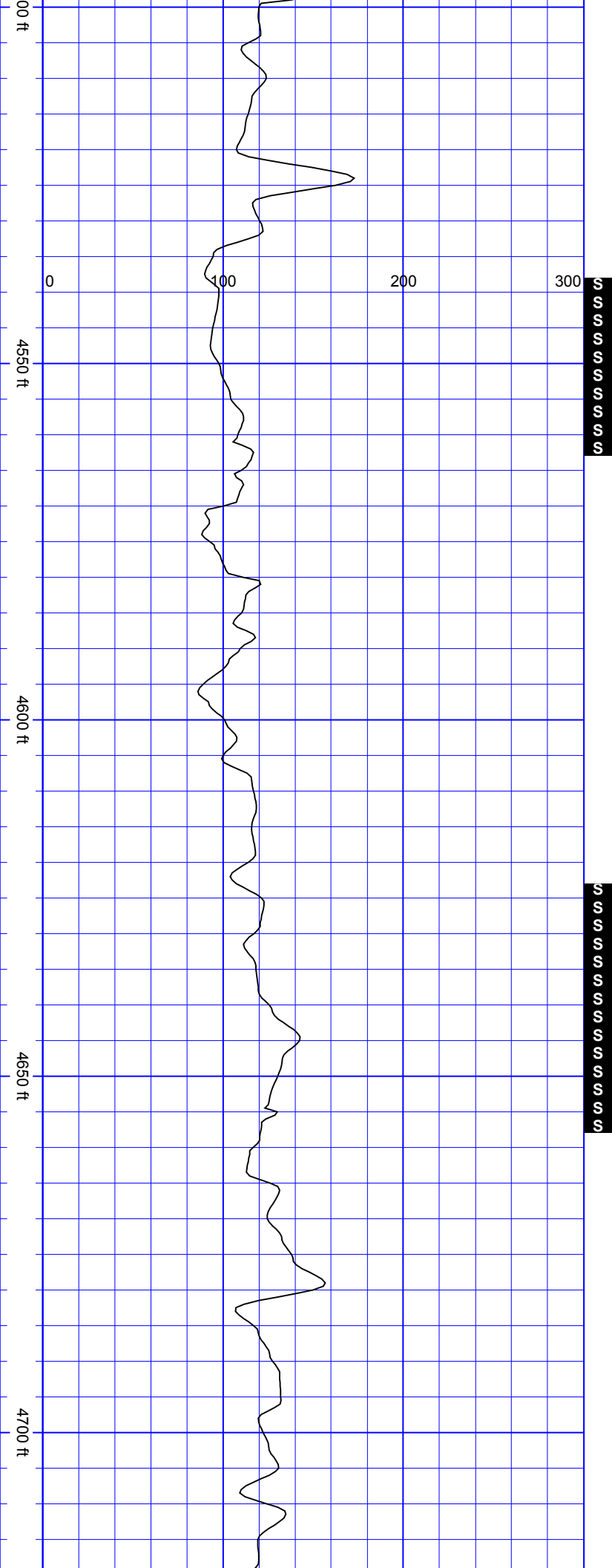
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TVD:4251.67 Inc:17.71
Azi:19.31
VertSec:196.65

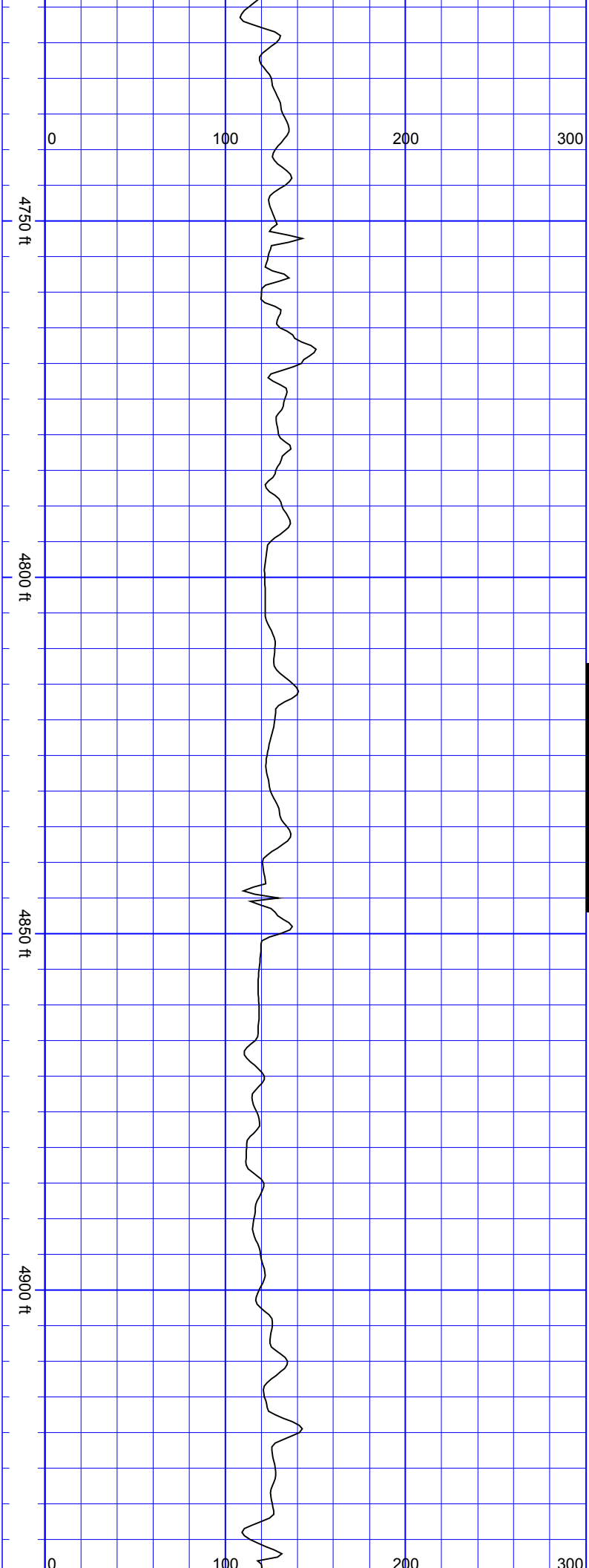




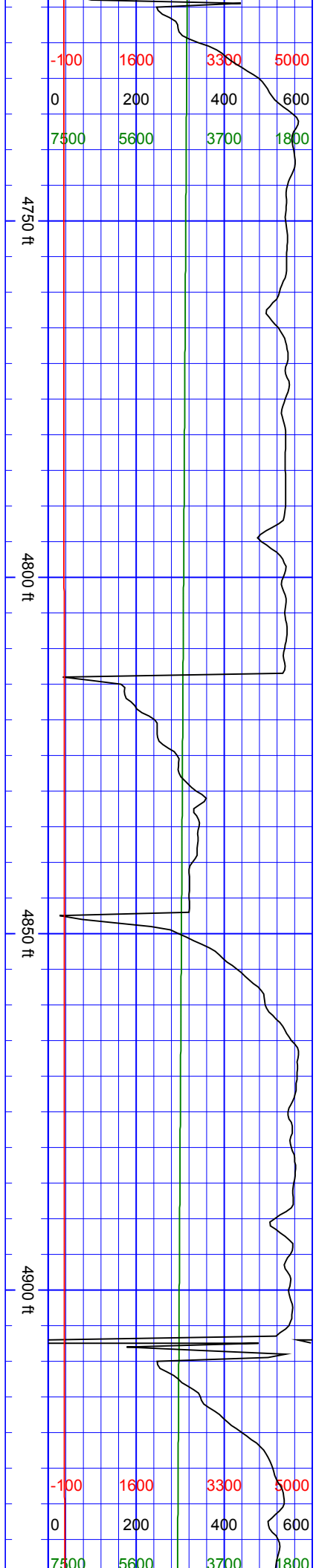
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Azi:16.85
VertSec:201.21

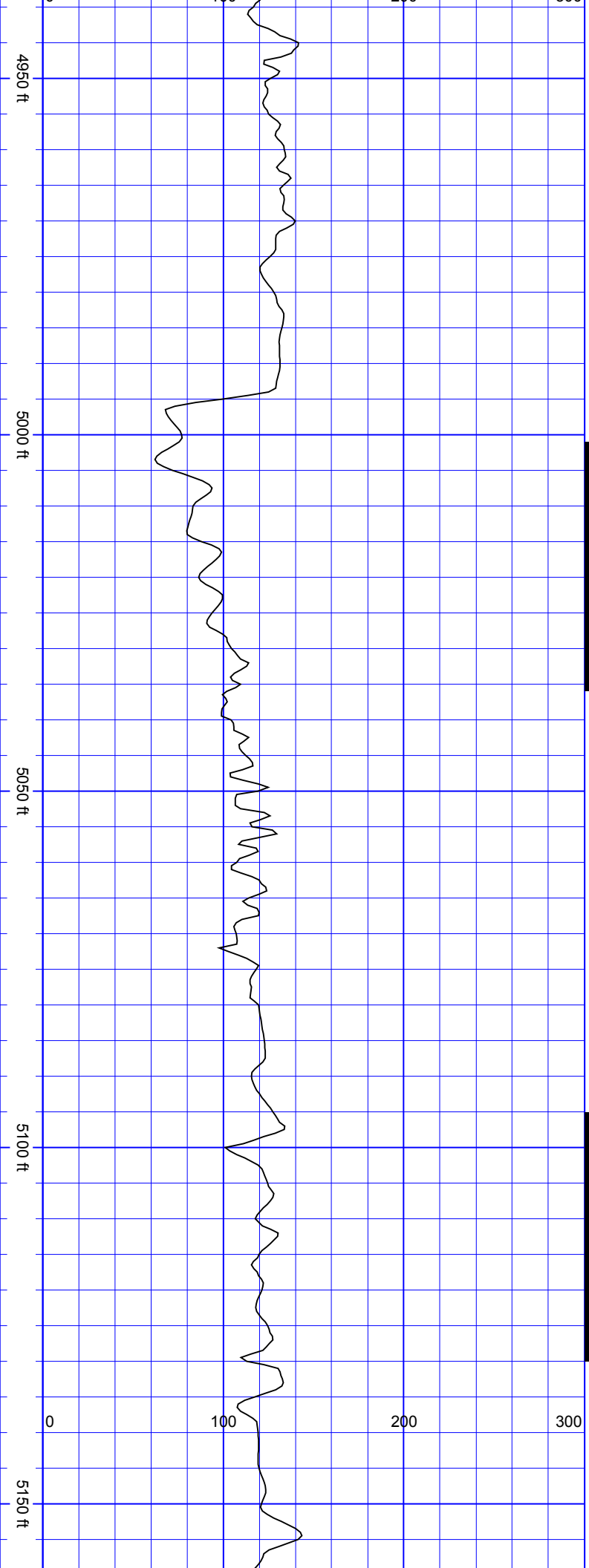
SurveyDepth:4648
TVD:4429.71 Inc:21.49
Azi:21.24
VertSec:205.61





SurveyDepth:4742 TVD:4517.56 Inc:20.17 Azi:20.19 VertSec:209.12	SurveyDepth:4836 TVD:4605.81 Inc:20.13 Azi:14.74 VertSec:214.34	SurveyDepth:4931 TVD:4695.36 Inc:18.9 Azi:11.66
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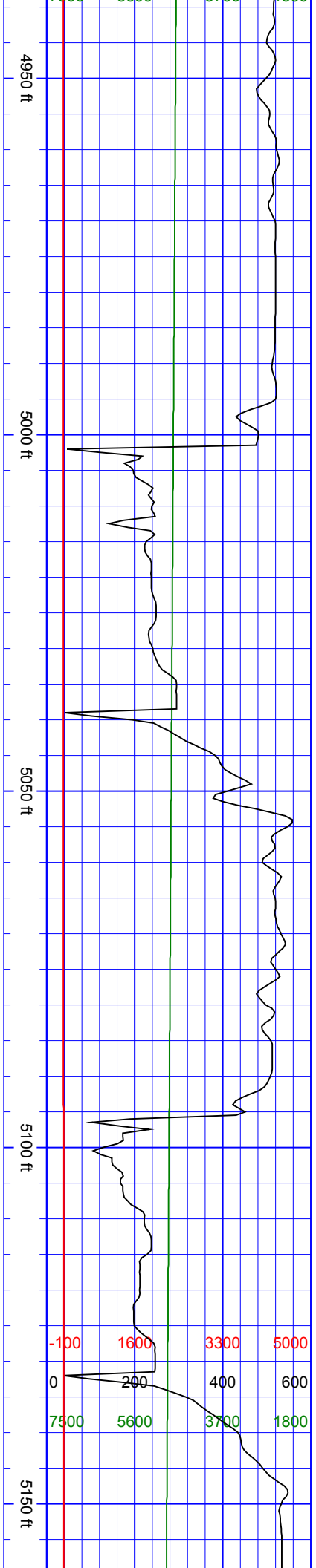


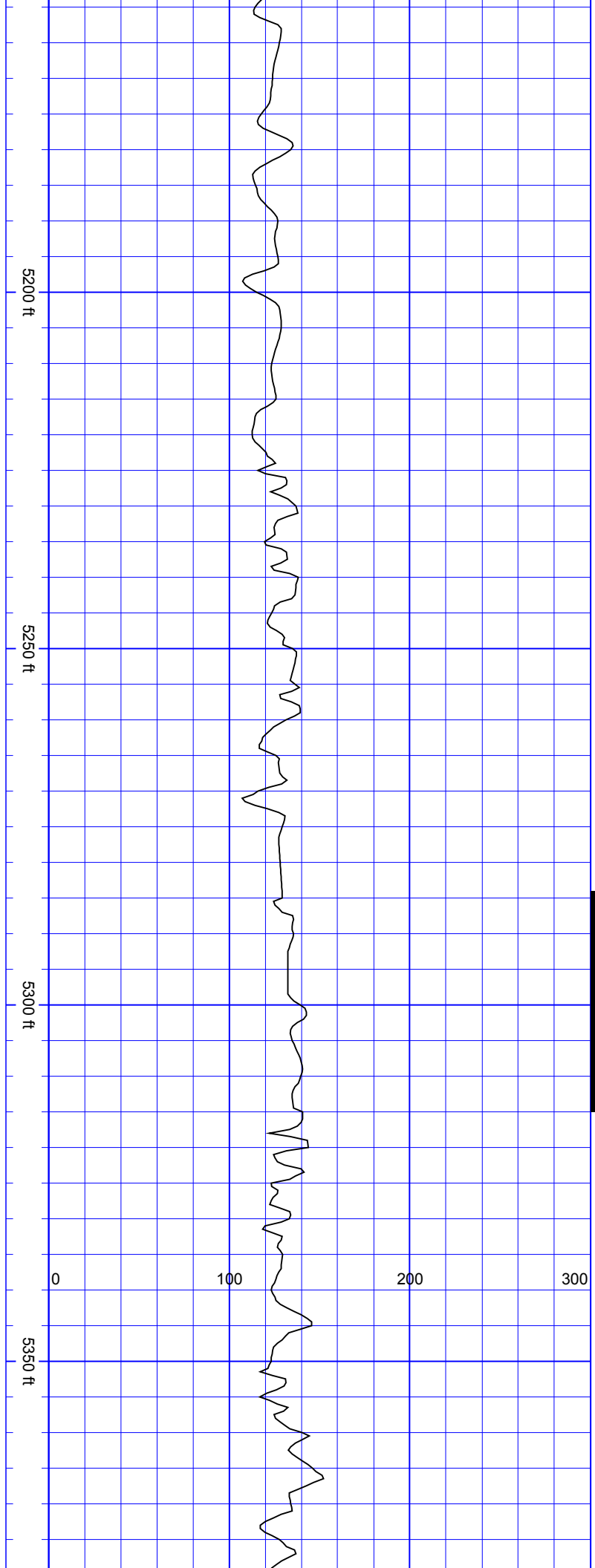


SurveyDepth:5025
TVD:4784.39 Inc:18.55
Azi:18.52
VertSec:227.85



SurveyDepth:5120
TVD:4874.02 Inc:20.17
Azi:20.1 VertSec:231.91

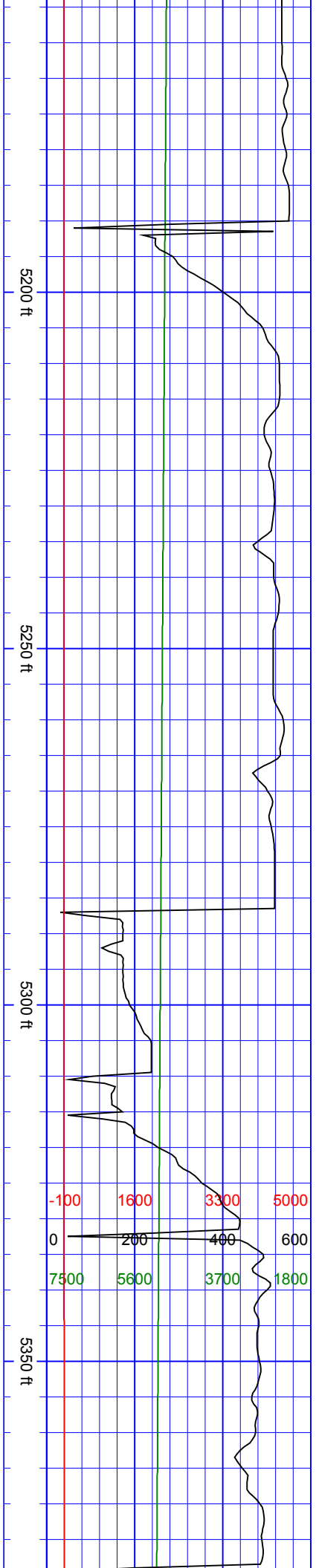


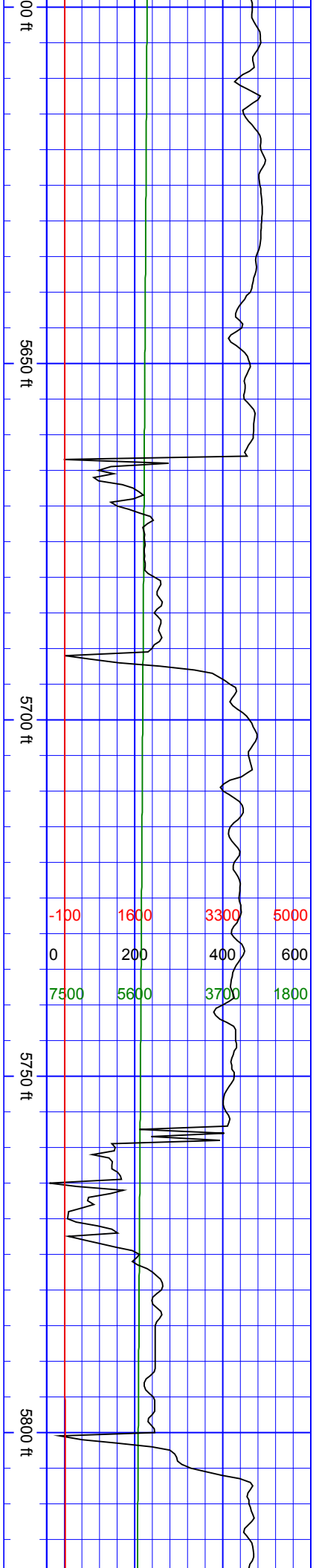
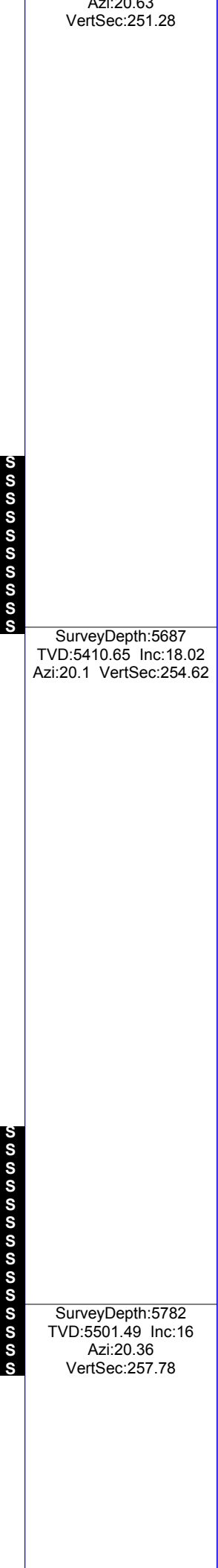
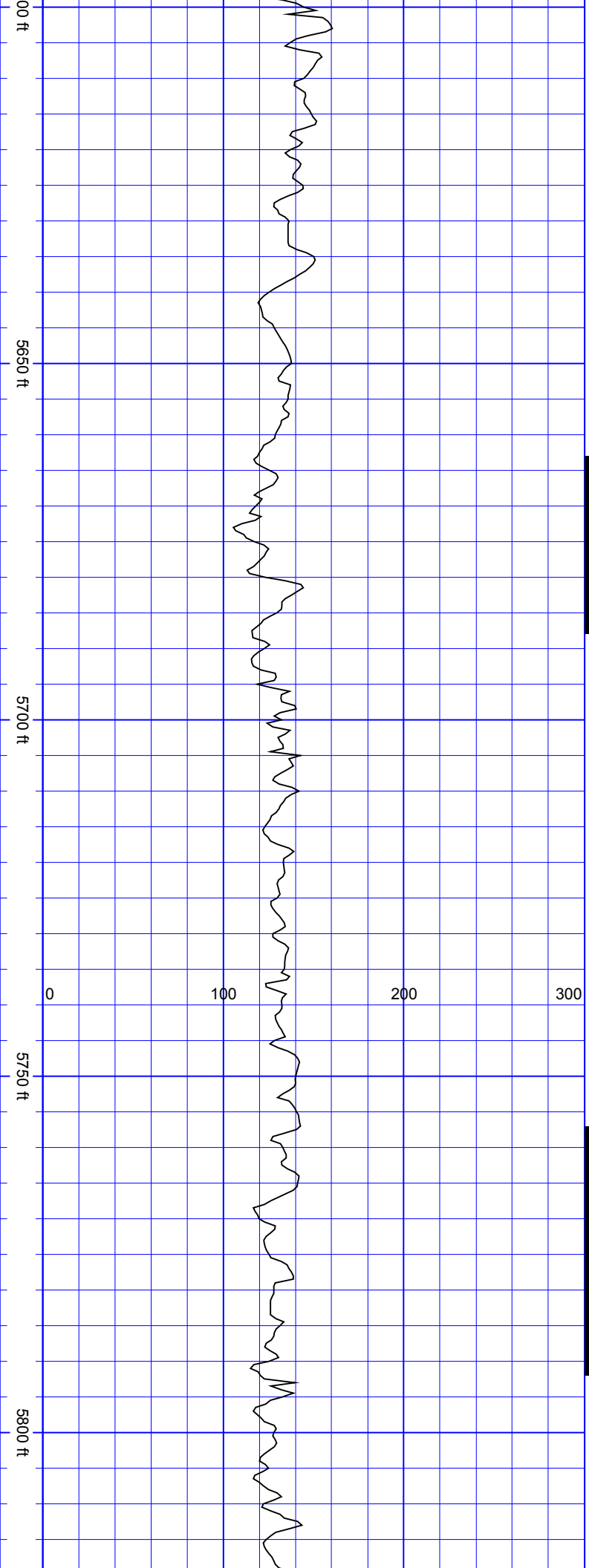


SurveyDepth:5214
TVD:4962.74 Inc:18.41
Azi:19.84
VertSec:235.57



SurveyDepth:5309
TVD:5053.08 Inc:17.62
Azi:21.07 VertSec:238.8





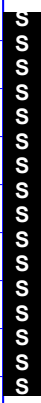
5850 ft

5900 ft

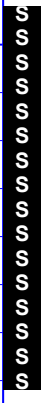
5950 ft

6000 ft

0 100 200 300



SurveyDepth:5876
TVD:5591.69 Inc:16.7
Azi:15 VertSec:261.97



SurveyDepth:5970
TVD:5681.53 Inc:17.53
Azi:12.54 VertSec:268.2

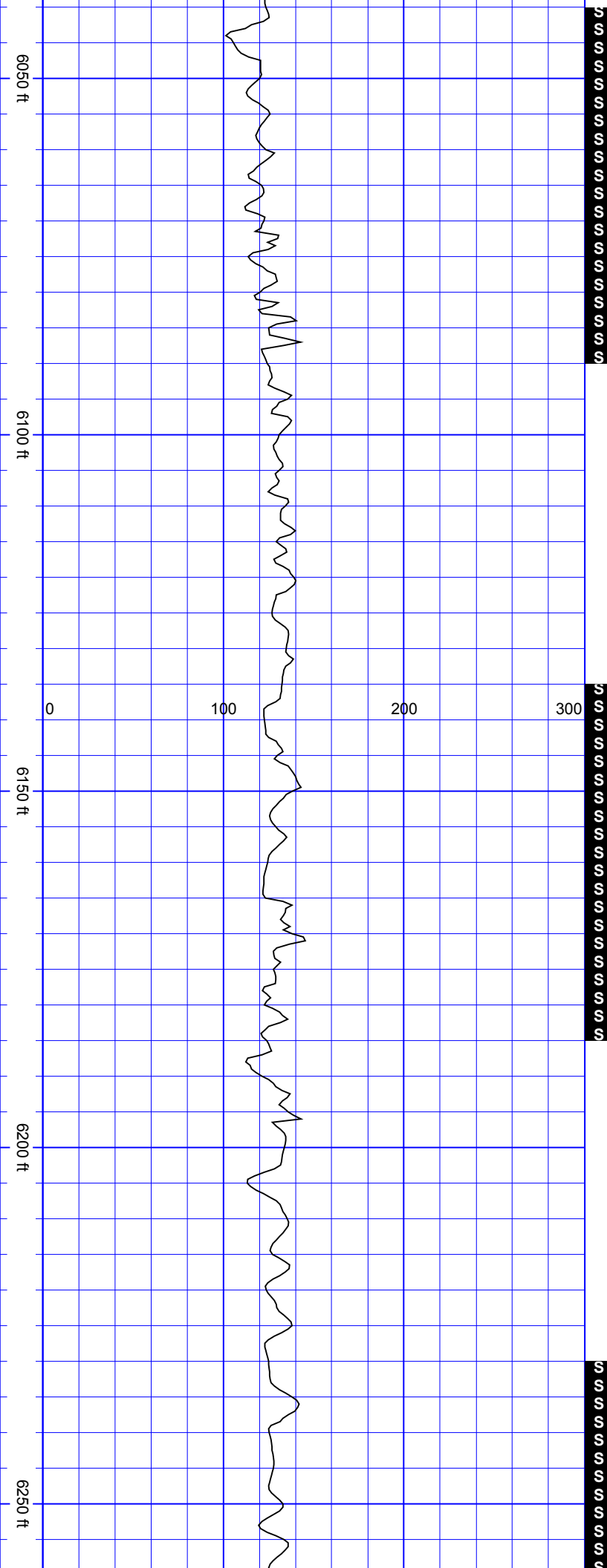
5850 ft

5900 ft

5950 ft

6000 ft

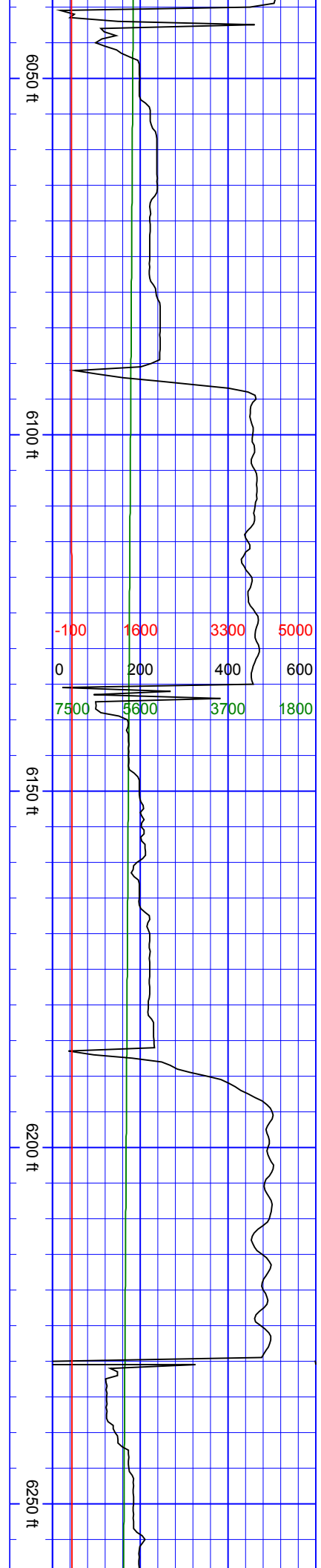
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0	200	400	600
7500	5600	3700	1800



SurveyDepth:6065
TVD:5772.11 Inc:17.58
Azi:16.58
VertSec:274.24

SurveyDepth:6160
TVD:5862.05 Inc:19.95
Azi:19.4 VertSec:278.85

SurveyDepth:6254
TVD:5950.41 Inc:19.95



Azi:21.51
VertSec:282.37

SurveyDepth:6348
TVD:6039.31 Inc:17.97
Azi:21.42
VertSec:285.18

SurveyDepth:6443
TVD:6129.63 Inc:18.15
Azi:21.68
VertSec:287.85

6300 ft

0 100 200 300

6350 ft

6400 ft

6450 ft

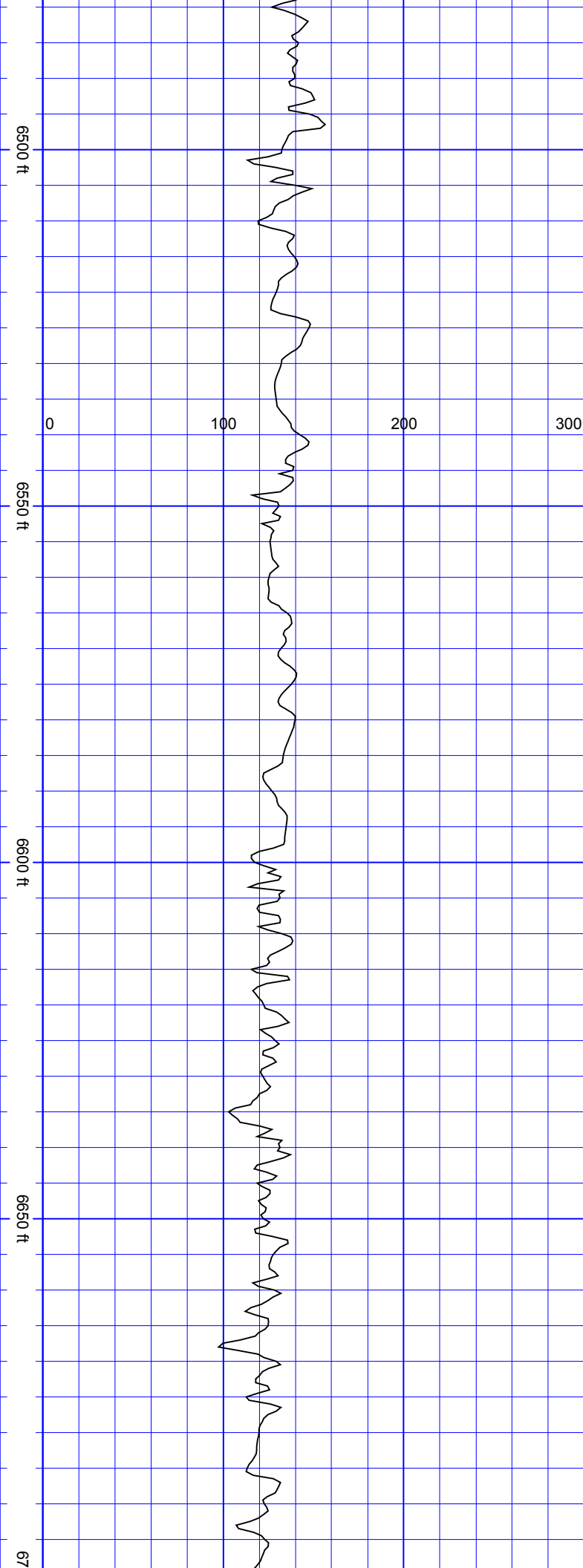
6300 ft

6350 ft

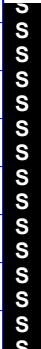
6400 ft

6450 ft

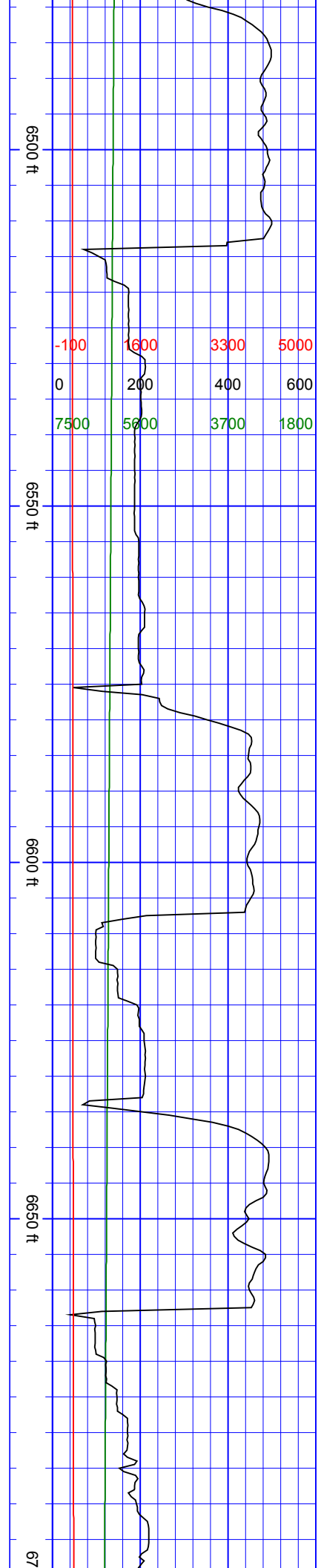
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0 200 400 600
7500 5600 3700 1800

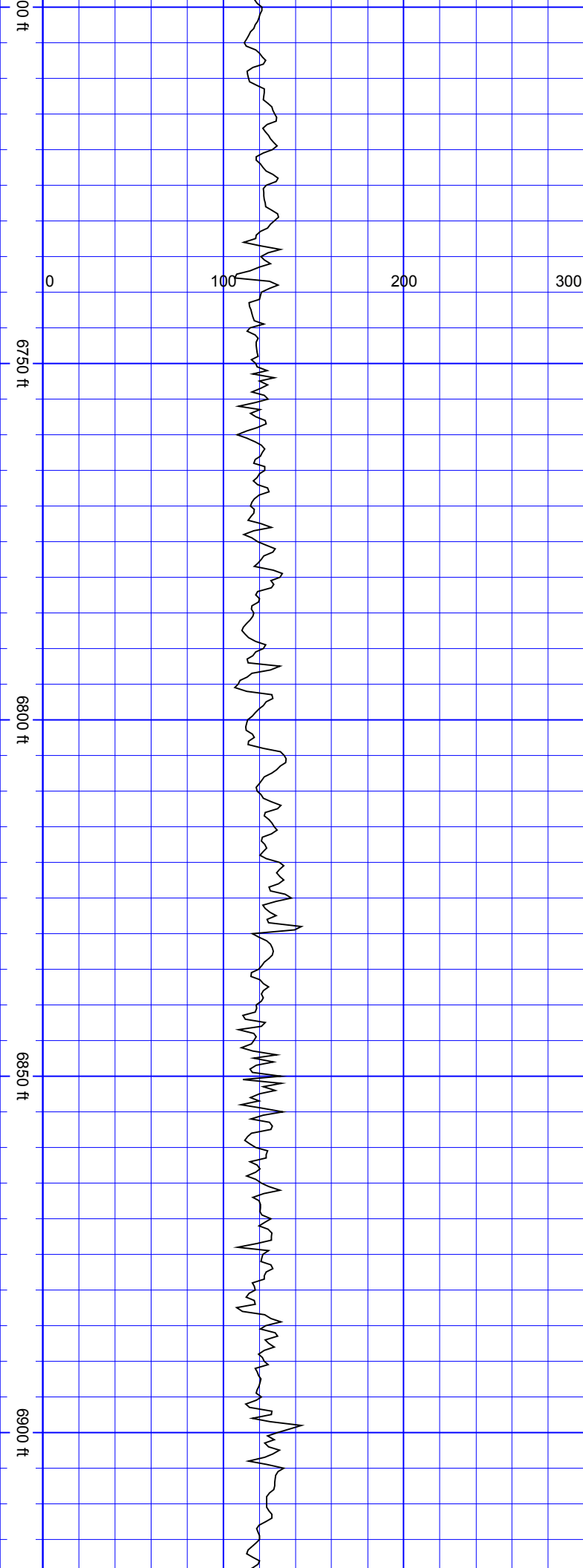


SurveyDepth:6537
TVD:6218.33 Inc:20.52
Azi:13.77
VertSec:292.84



SurveyDepth:6632
TVD:6306.7 Inc:22.59
Azi:7.71 VertSec:302.54





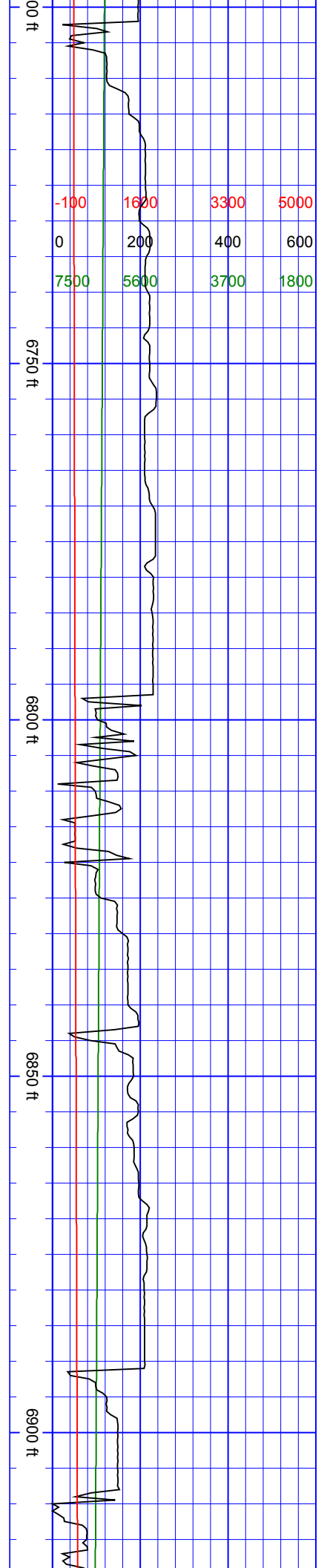
SurveyDepth:6726
TVD:6393.78 Inc:22.1
Azi:346.53
VertSec:319.87

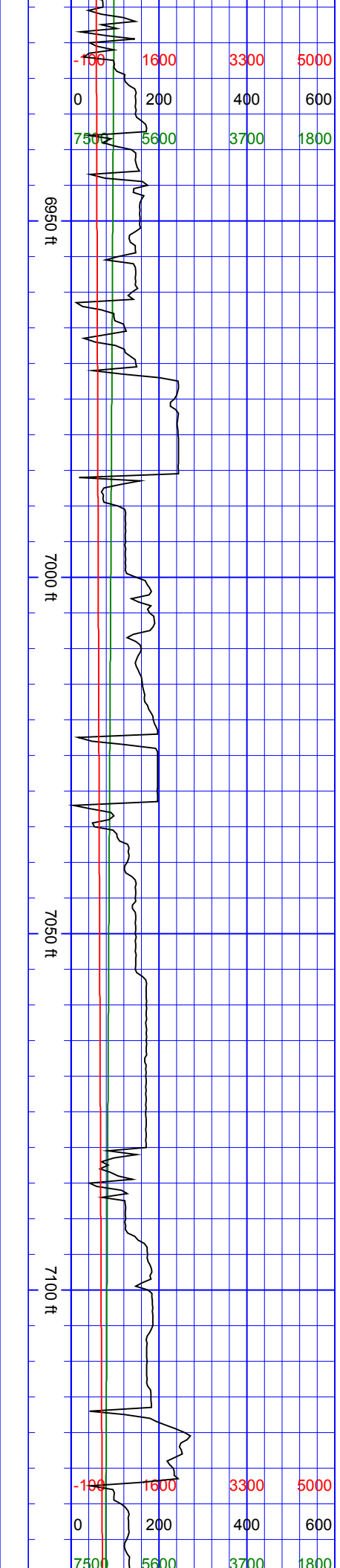
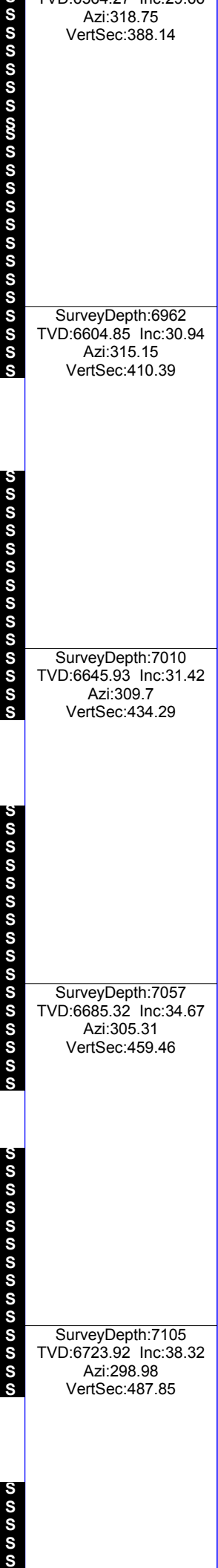
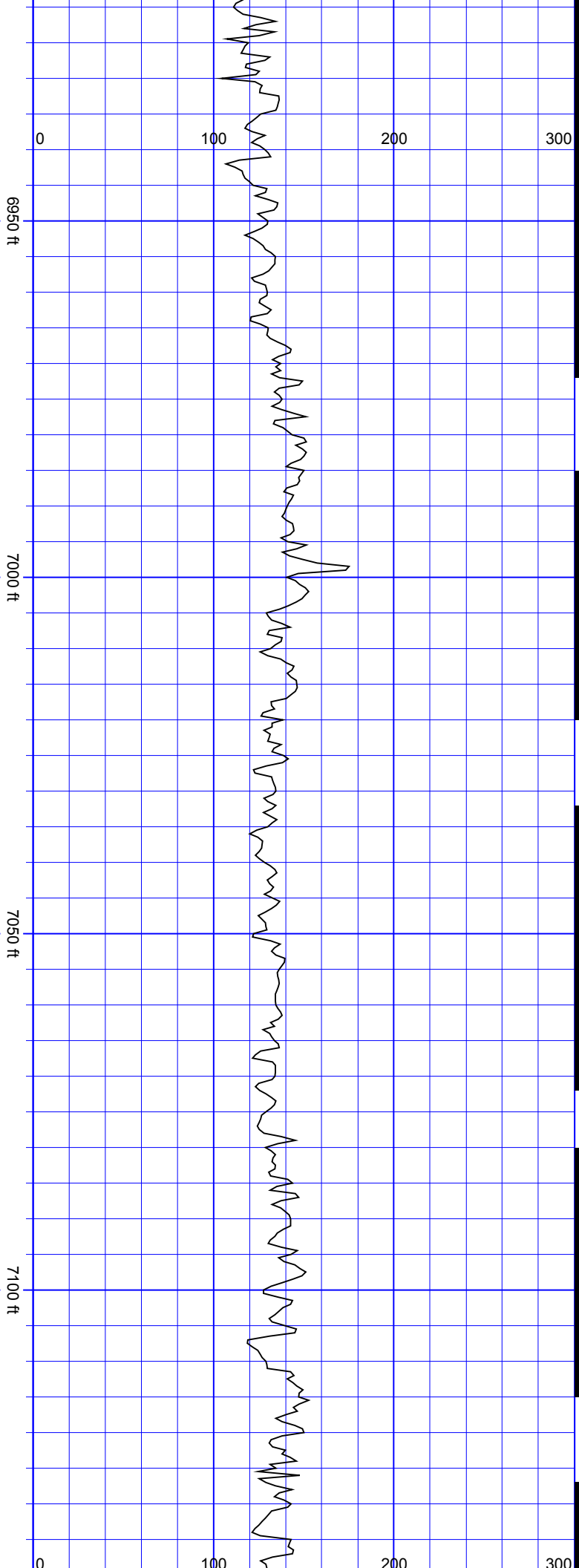
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TVD:6437.09 Inc:23.73
Azi:334.4
VertSec:333.08

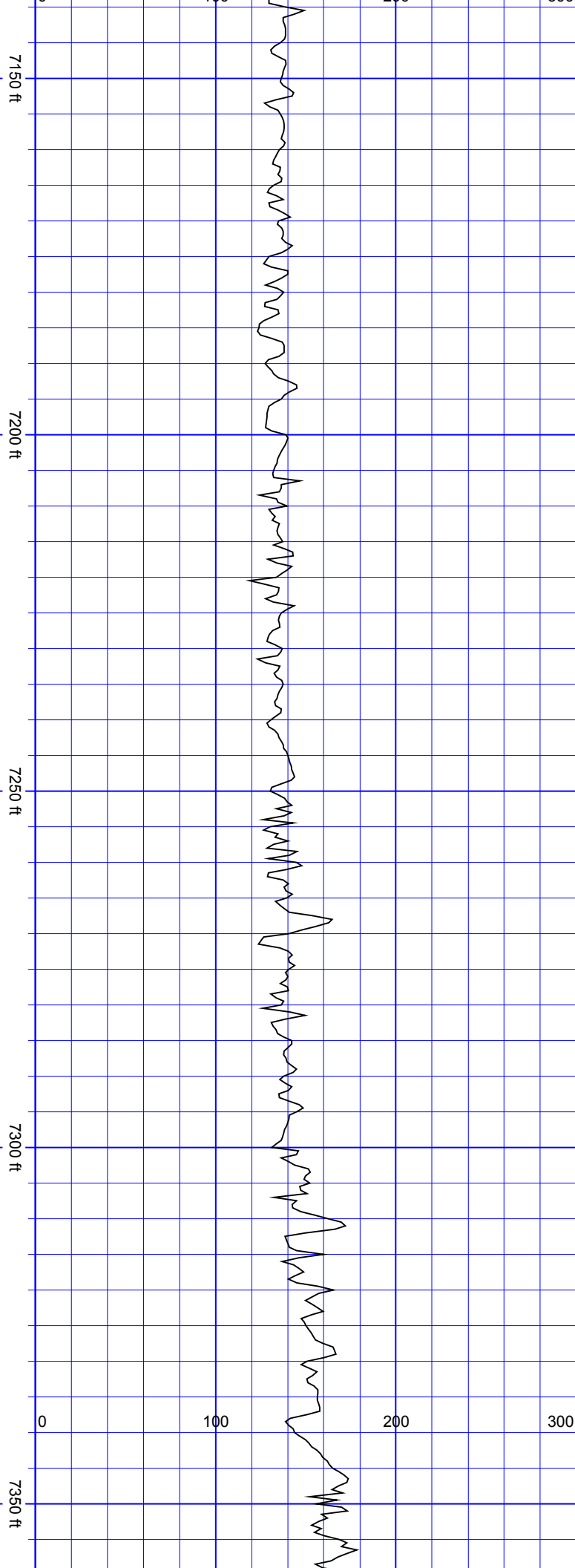
SurveyDepth:6820
TVD:6479.98 Inc:24.61
Azi:328.33
VertSec:348.91

SurveyDepth:6867
TVD:6522.16 Inc:27.73
Azi:322.71
VertSec:367.08

SurveyDepth:6915
TVD:6564.27 Inc:29.66
Azi:317.81
VertSec:386.15







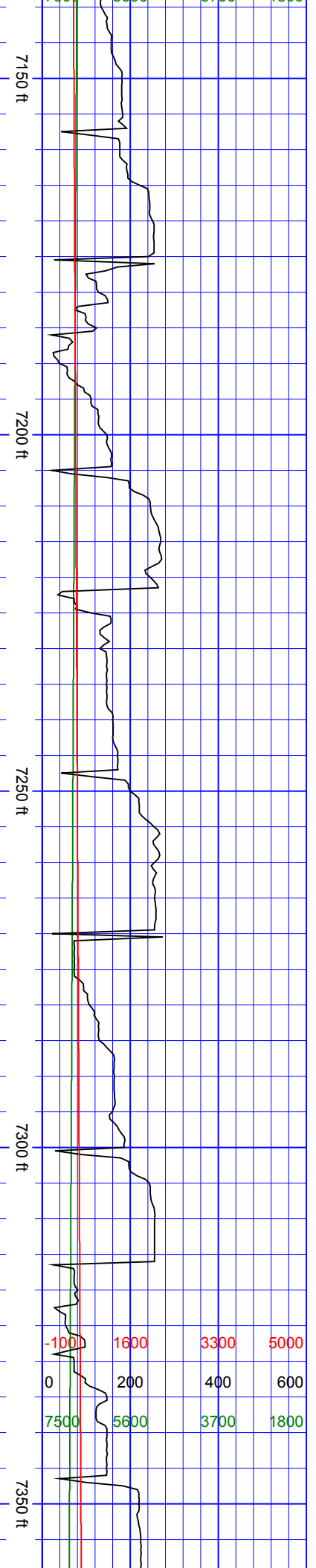
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TVD:6760.22 Inc:40.56
Azi:296.25
VertSec:517.7

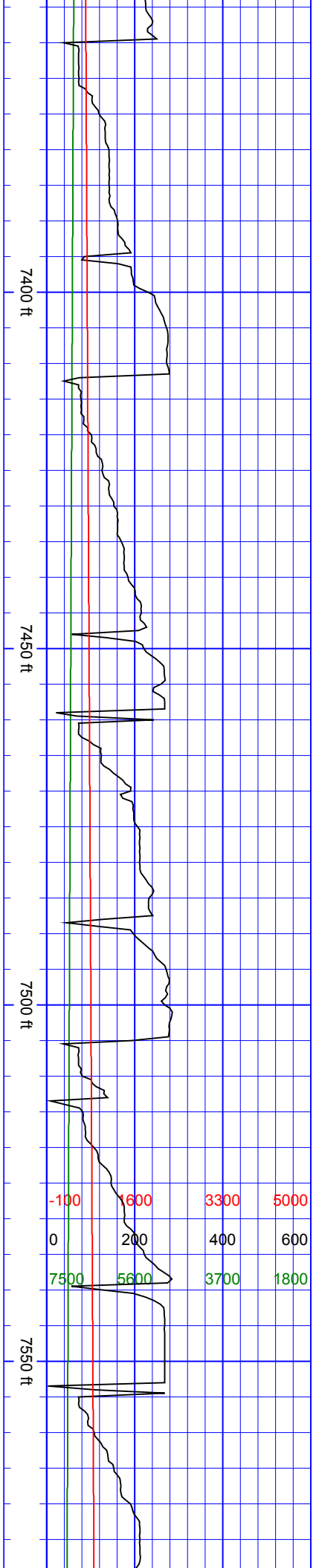
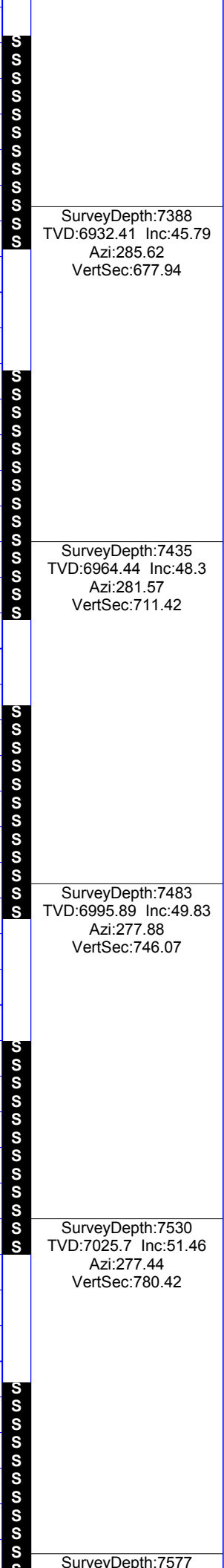
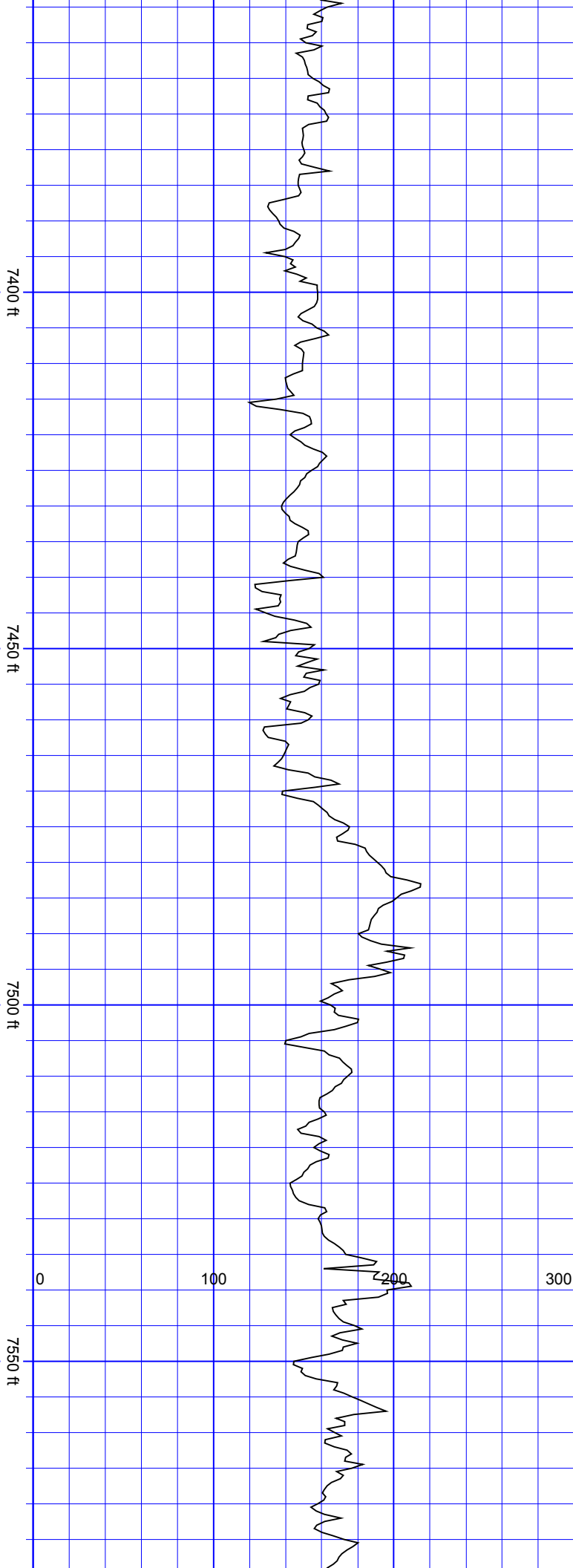
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TVD:6795.82 Inc:40.96
Azi:294.06
VertSec:548.37

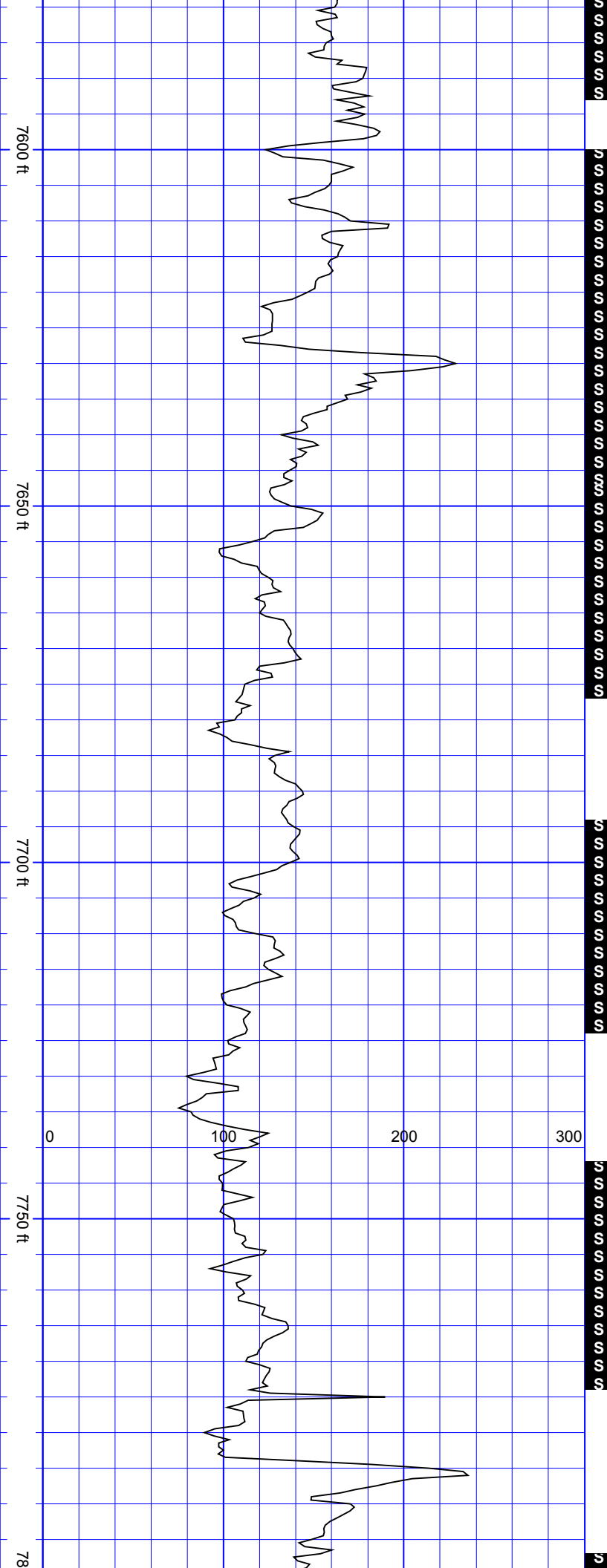
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TVD:6830.73 Inc:43.11
Azi:292.82
VertSec:579.78

SurveyDepth:7294
TVD:6865.43 Inc:44.3
Azi:288.96
VertSec:612.76

SurveyDepth:7341
TVD:6899.13 Inc:44.08
Azi:288.87
VertSec:645.22







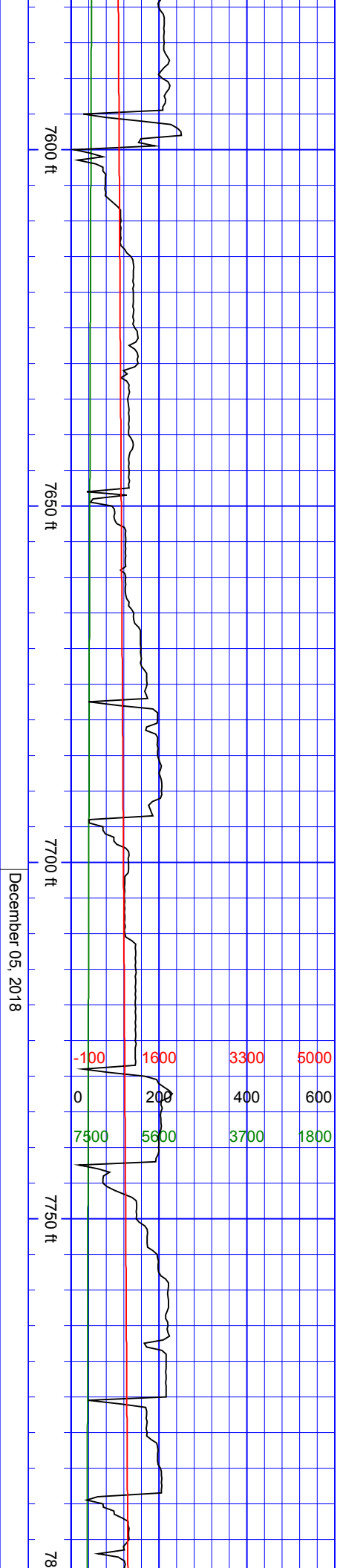
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Azi:276.83
VertSec:815.98

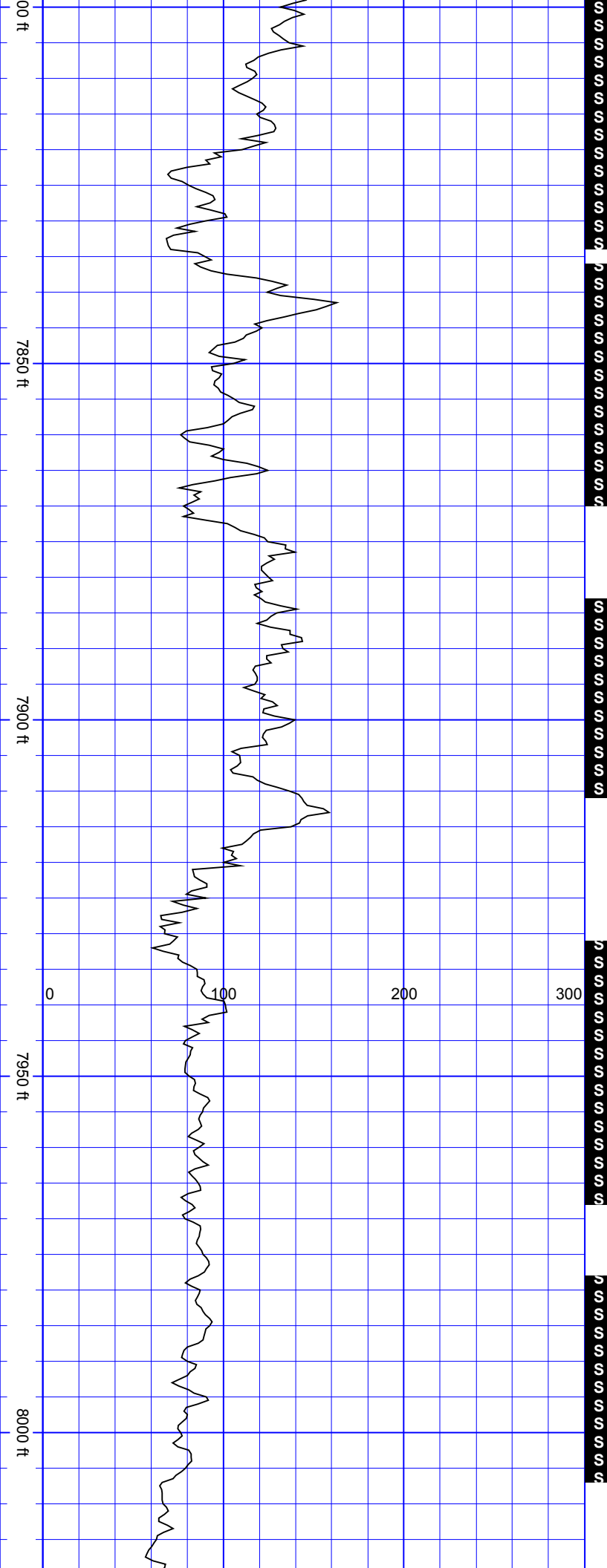
SurveyDepth:7624
TVD:7078.78 Inc:59.94
Azi:276.56
VertSec:853.28

SurveyDepth:7672
TVD:7101.04 Inc:64.78
Azi:275.42
VertSec:893.03

SurveyDepth:7719
TVD:7119.96 Inc:67.76
Azi:275.95
VertSec:933.18

SurveyDepth:7766
TVD:7136.62 Inc:70.71
Azi:274.28
VertSec:974.02



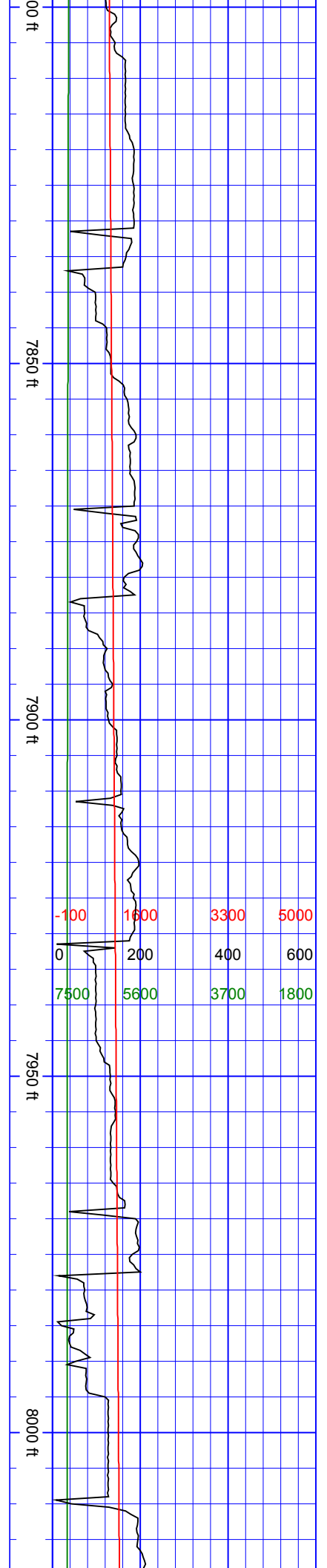


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TVD:7151.04 Inc:73.56
Azi:273.93
VertSec:1015.3

SurveyDepth:7861
TVD:7163.11 Inc:77.3
Azi:272.26
VertSec:1057.84

SurveyDepth:7908
TVD:7171.8 Inc:81.39
Azi:271.99
VertSec:1099.82

SurveyDepth:7955
TVD:7177.42 Inc:84.86
Azi:271.64
VertSec:1142.13



8050 ft

8100 ft

8150 ft

8200 ft

0 100 200 300

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SurveyDepth:8050
TVD:7183.25 Inc:88.11
Azi:270.32
VertSec:1227.5

SurveyDepth:8144
TVD:7185.66 Inc:88.95
Azi:269.97
VertSec:1311.52

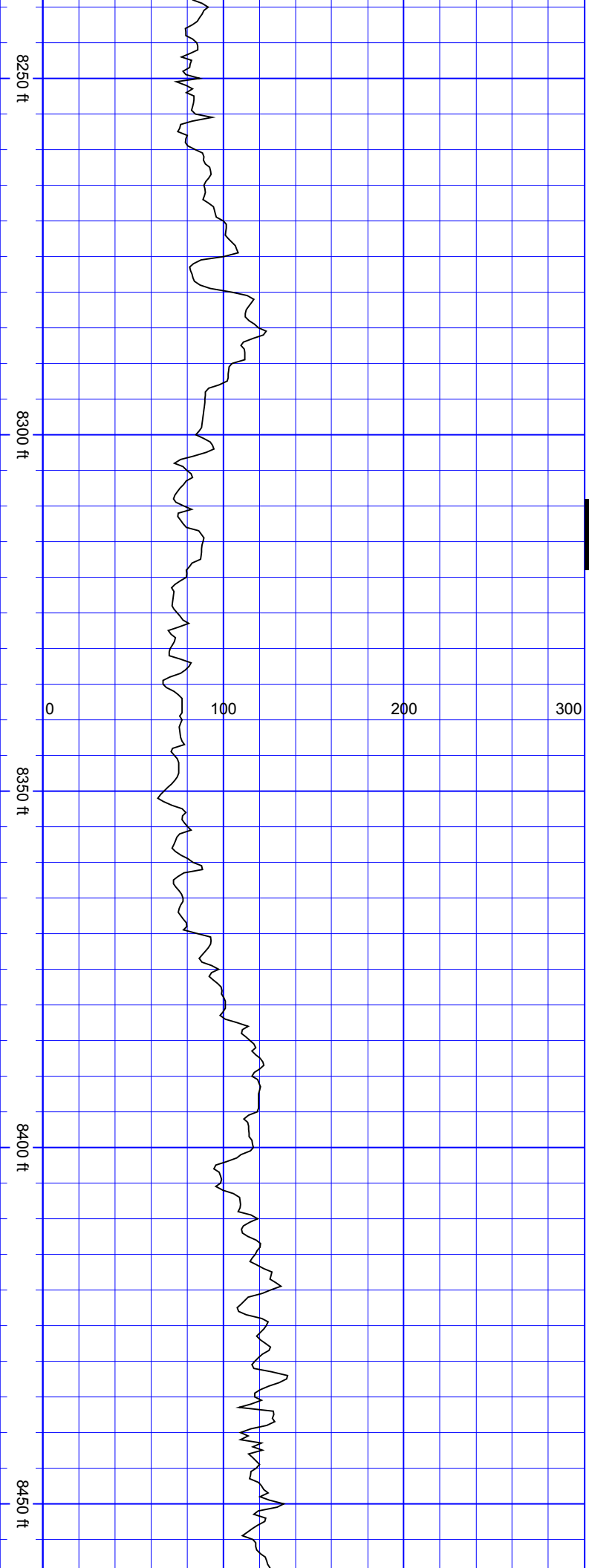
8050 ft

8100 ft

8150 ft

8200 ft

-100	1600	3300	5000
0	200	400	600
7500	5600	3700	1800

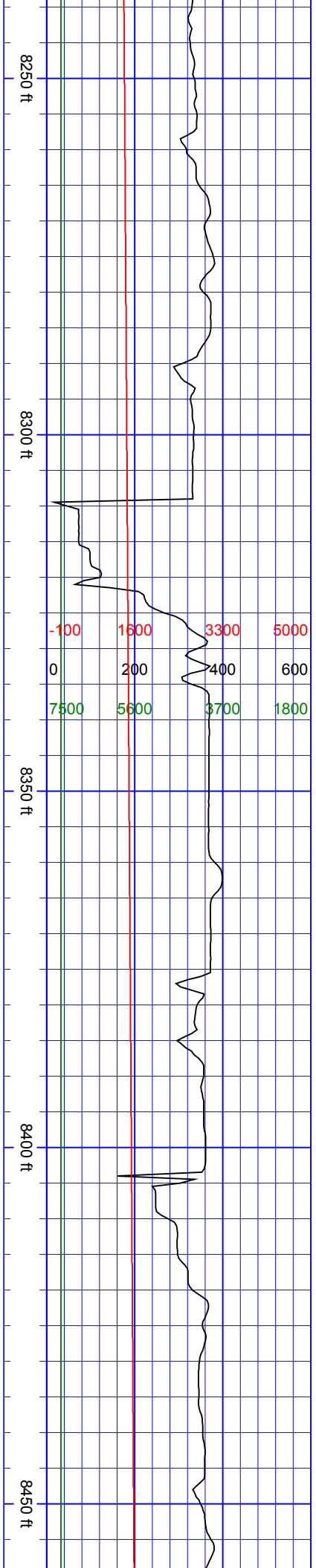


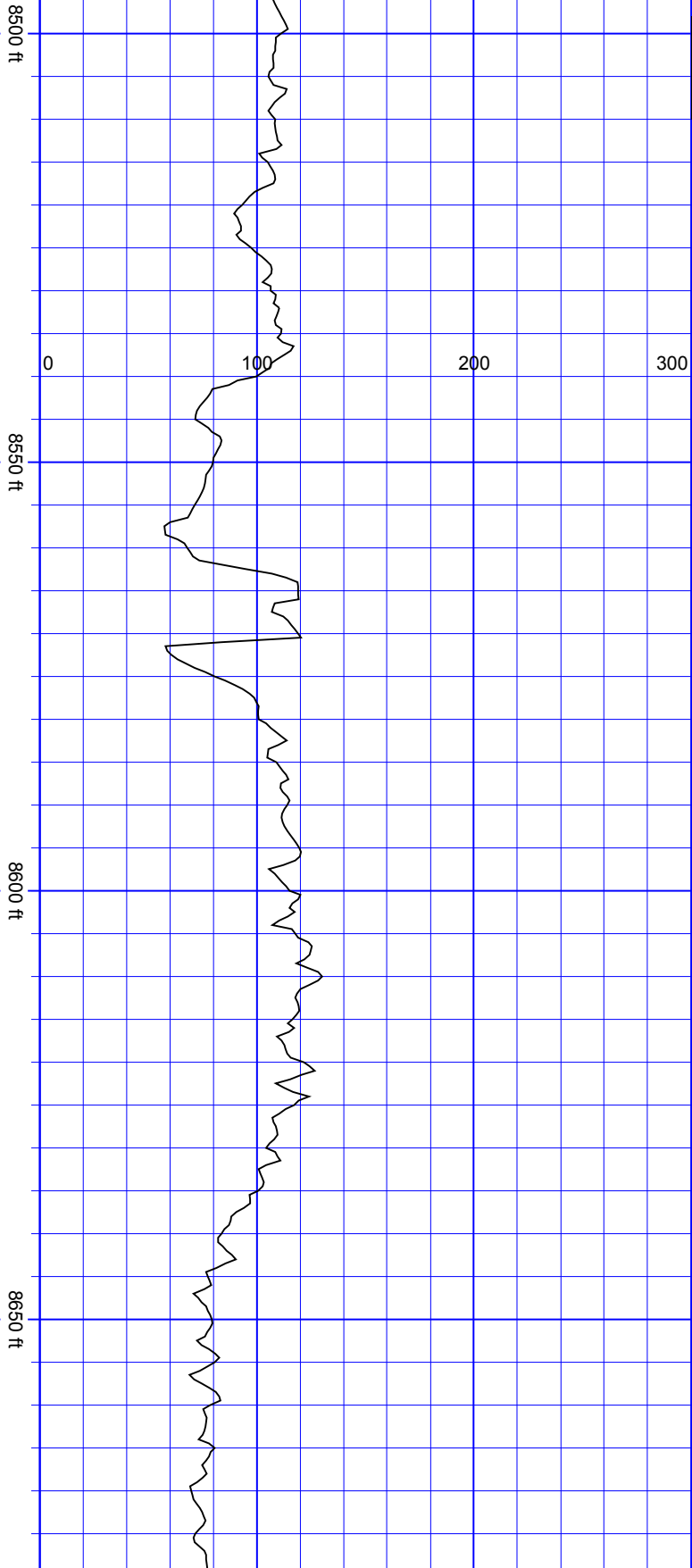
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SurveyDepth:8239
TVD:7187.37 Inc:88.99
Azi:270.24
VertSec:1396.42

SurveyDepth:8333
TVD:7188.37 Inc:89.78
Azi:269.36
VertSec:1480.2

SurveyDepth:8428
TVD:7189.14 Inc:89.3
Azi:268.65
VertSec:1564.28

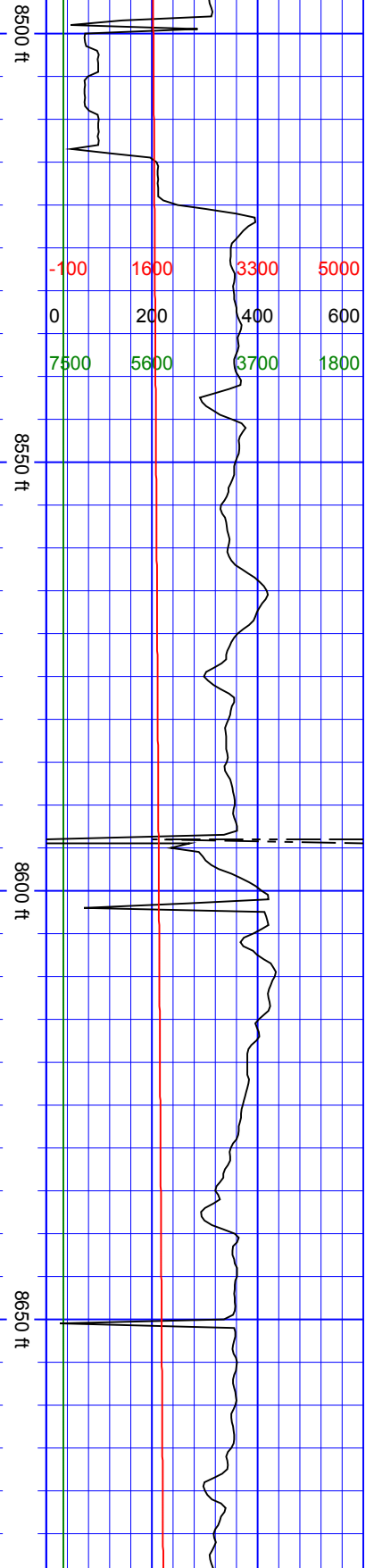


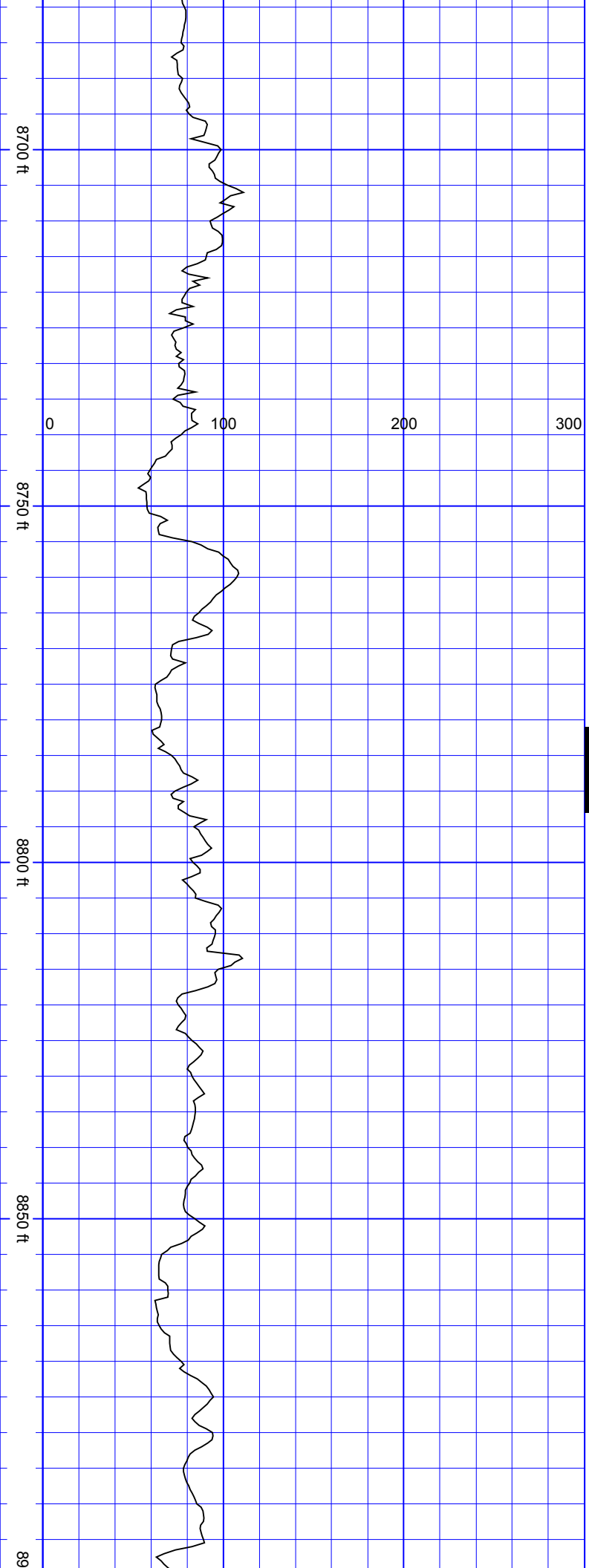


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SurveyDepth:8523
TVD:7189.24 Inc:90.57
Azi:269.09
VertSec:1648.25

SurveyDepth:8617
TVD:7188.56 Inc:90.26
Azi:268.65
VertSec:1731.34

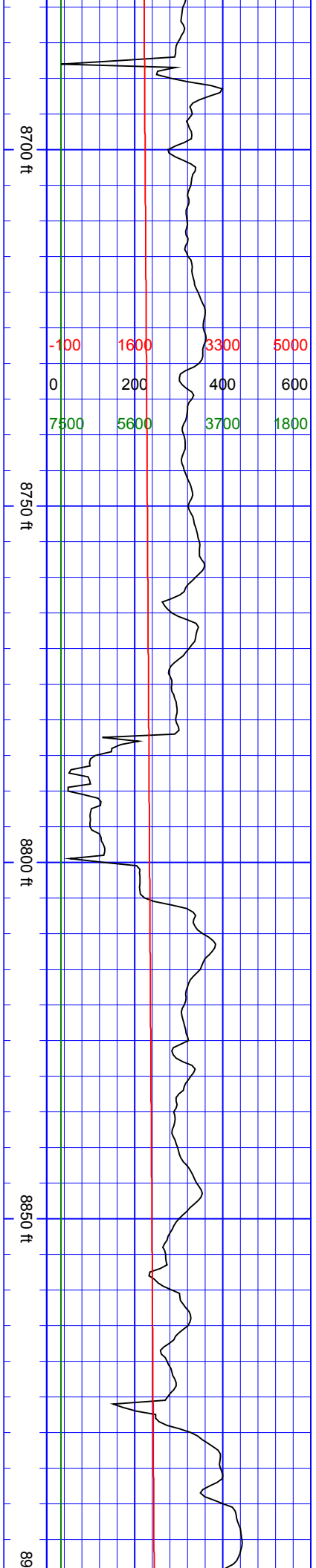


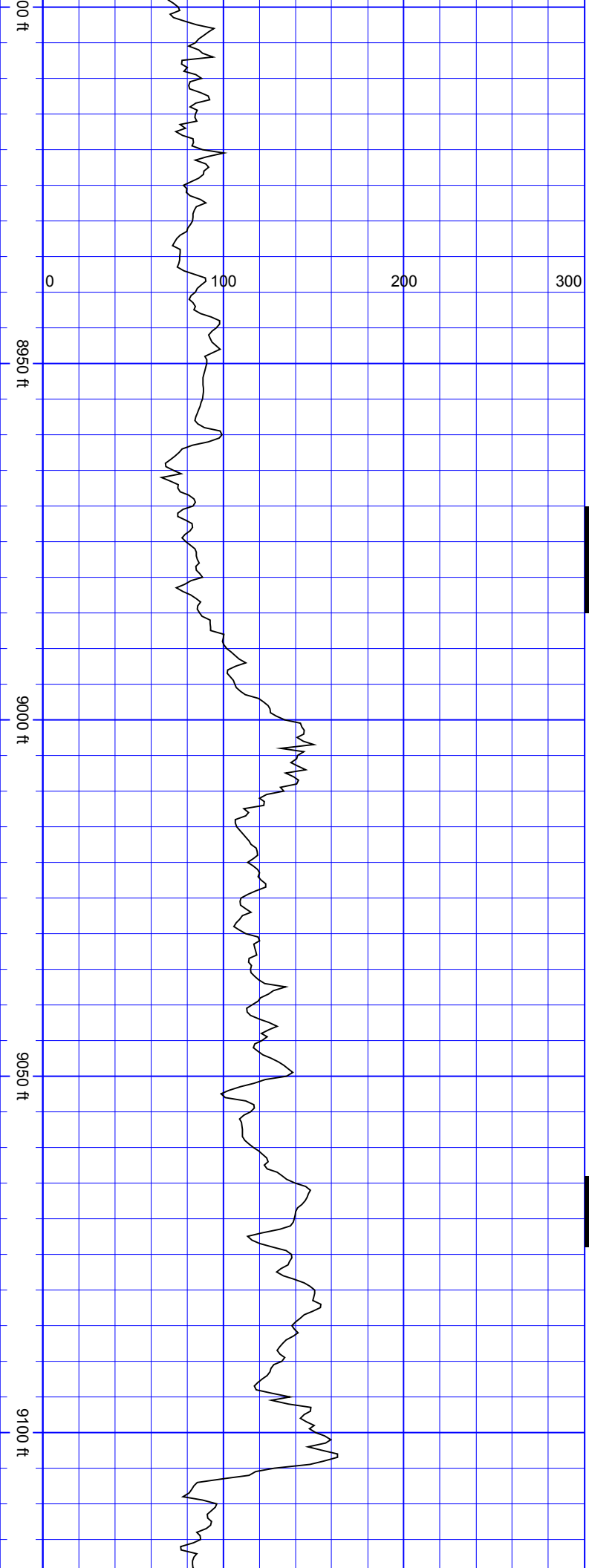


SurveyDepth:8711
TVD:7188.46 Inc:89.87
Azi:268.04
VertSec:1814.02

SSSS

SurveyDepth:8805
TVD:7187.48 Inc:91.32
Azi:268.22
VertSec:1896.53

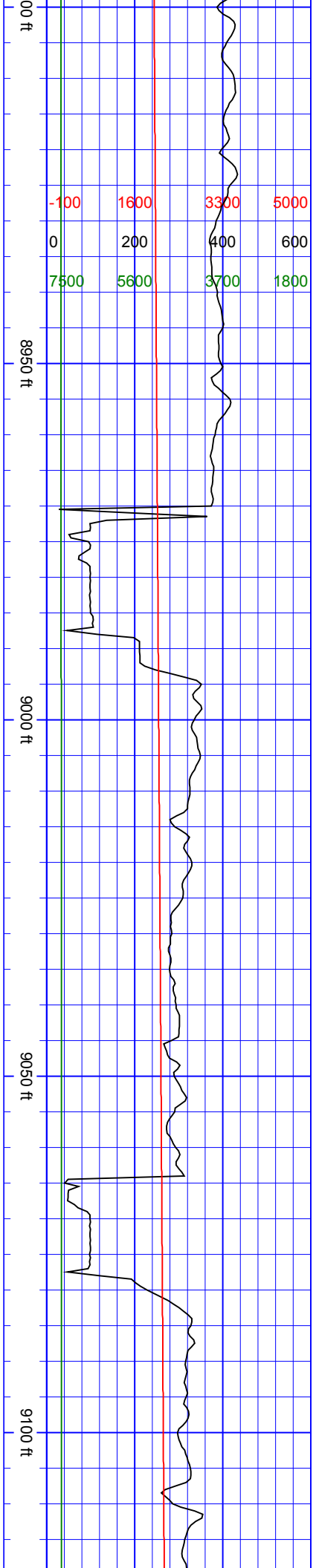


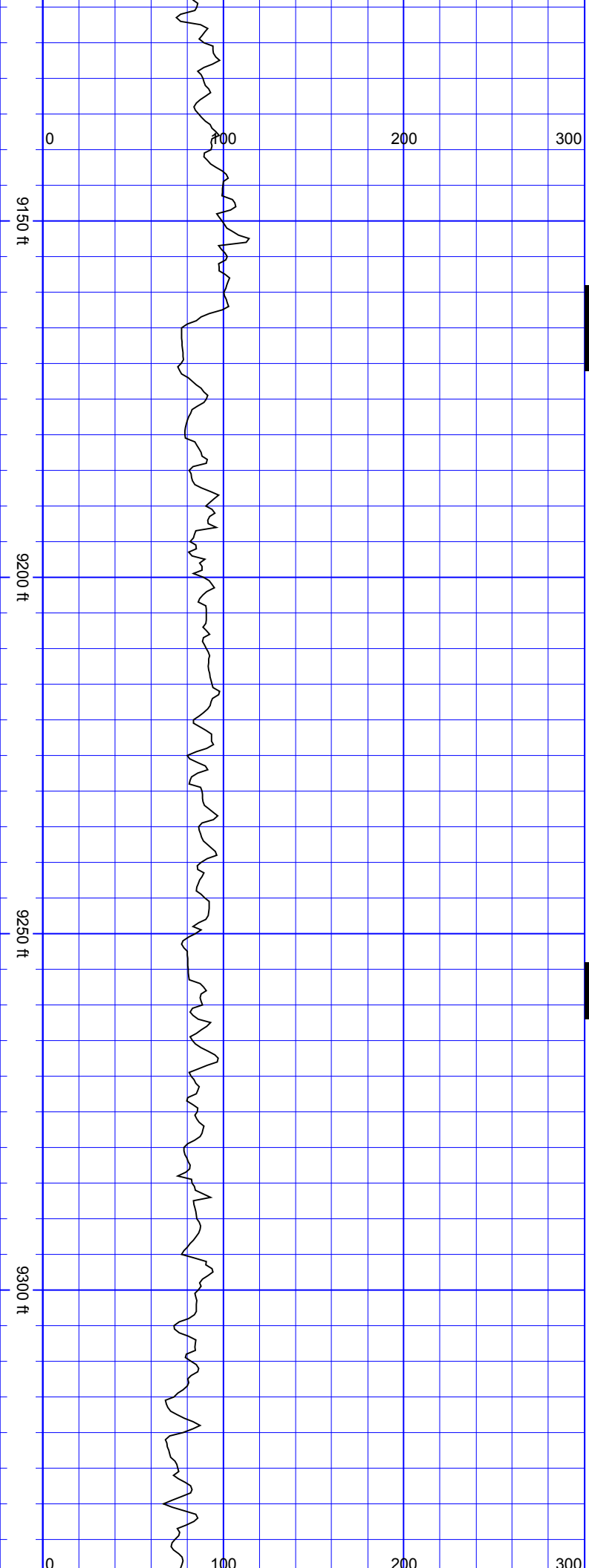


SurveyDepth:8900
TVD:7184.97 Inc:91.71
Azi:267.34
VertSec:1979.61

SurveyDepth:8994
TVD:7181.62 Inc:92.37
Azi:269.36
VertSec:2062.24

SurveyDepth:9089
TVD:7178.31 Inc:91.63
Azi:269.71
VertSec:2146.67



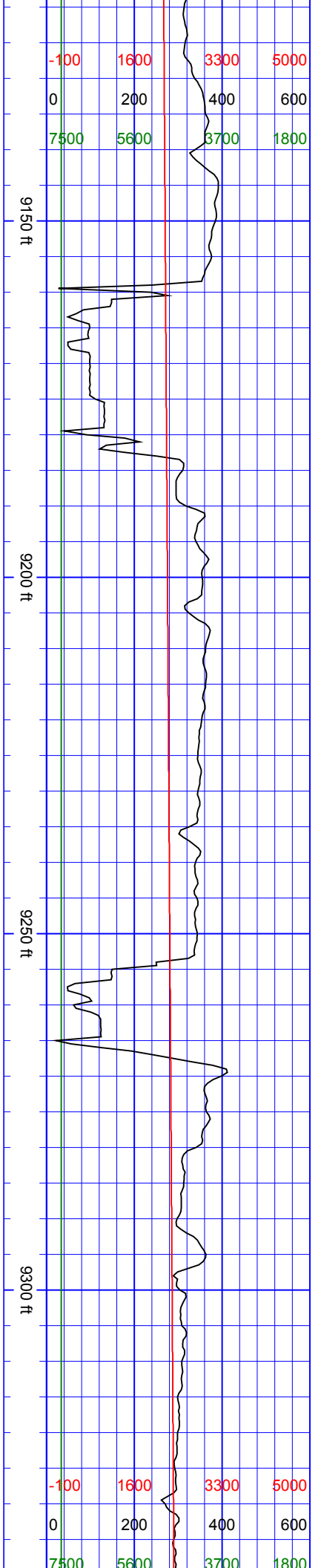


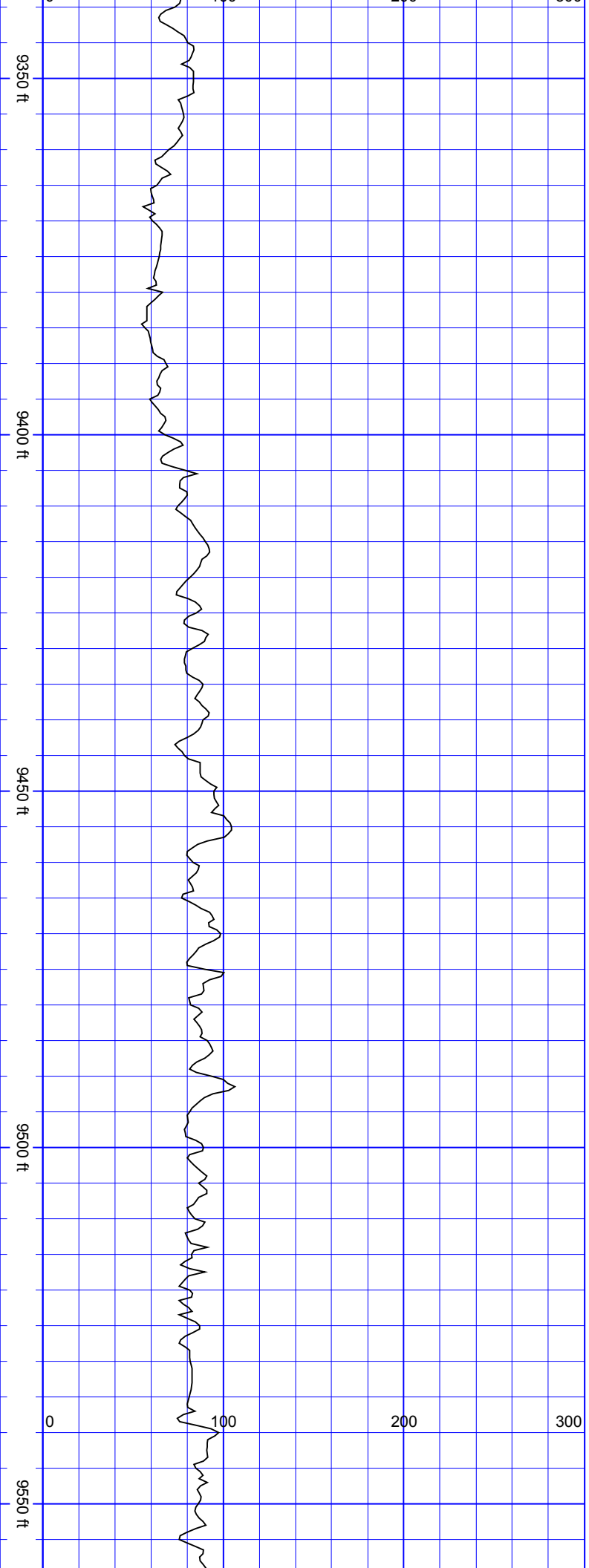
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SurveyDepth:9184
TVD:7176.67 Inc:90.35
Azi:271.64
VertSec:2231.98

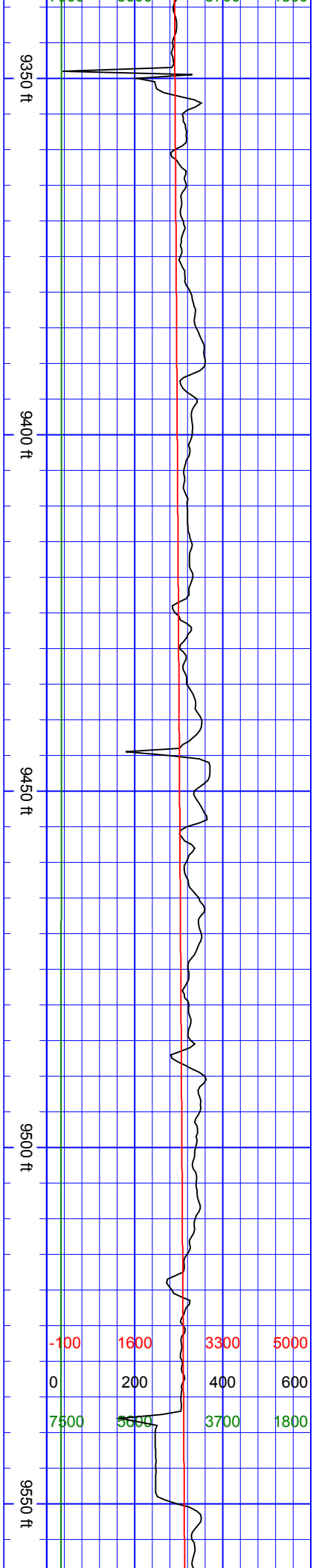
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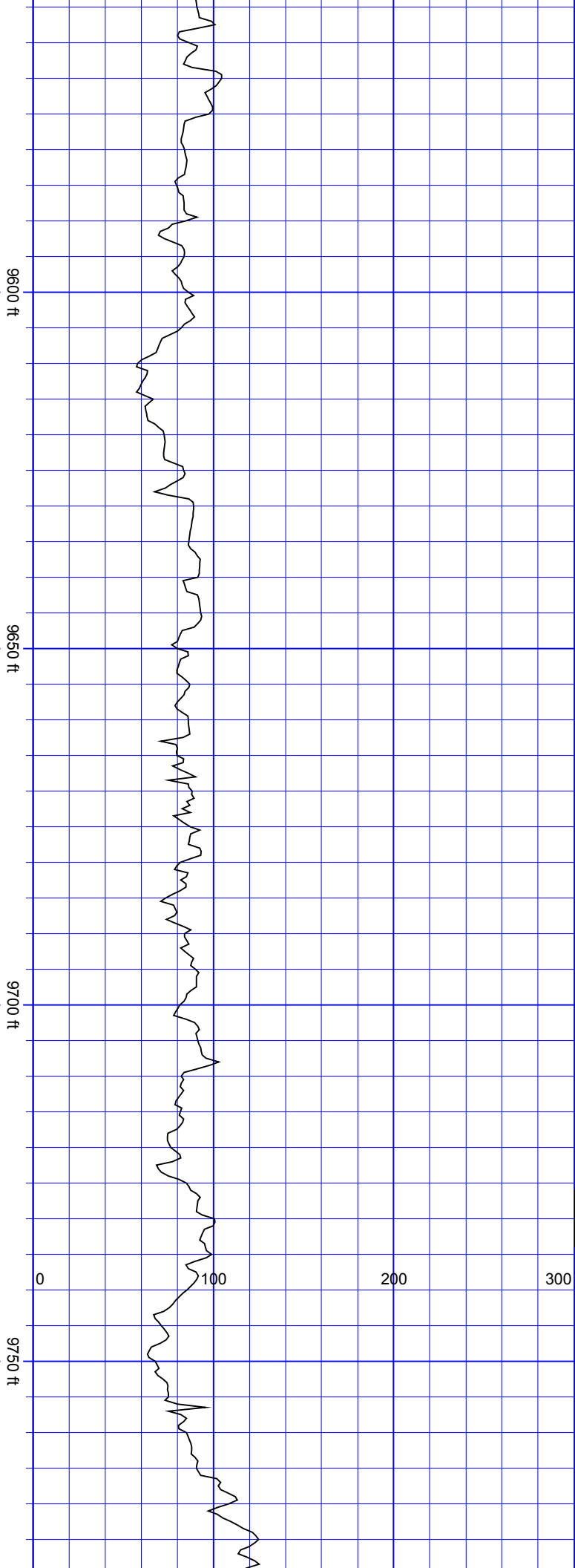
SurveyDepth:9278
TVD:7177.21 Inc:88.99
Azi:270.76
VertSec:2316.79





SurveyDepth:9373 TVD:7179.32 Inc:88.46 Azi:270.59 VertSec:2402.1
SurveyDepth:9467 TVD:7181.59 Inc:88.77 Azi:270.32 VertSec:2486.35

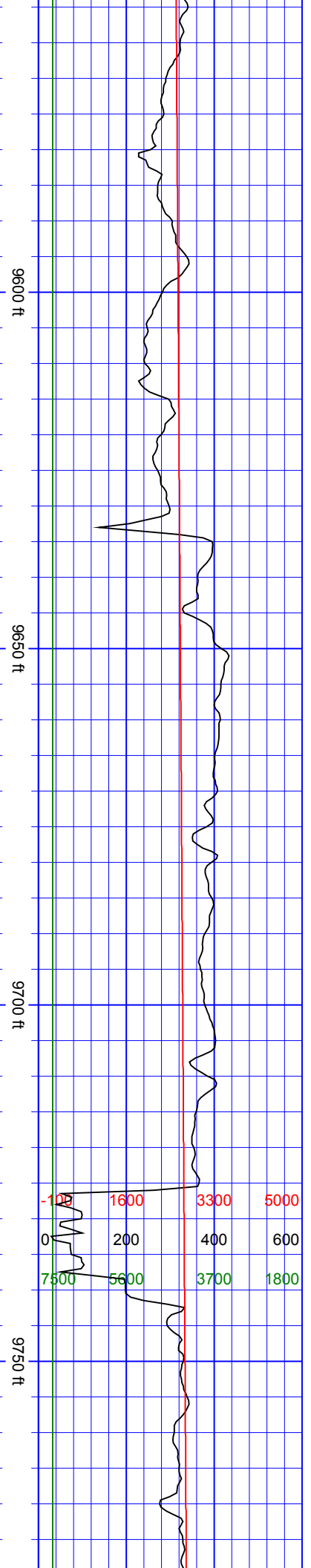


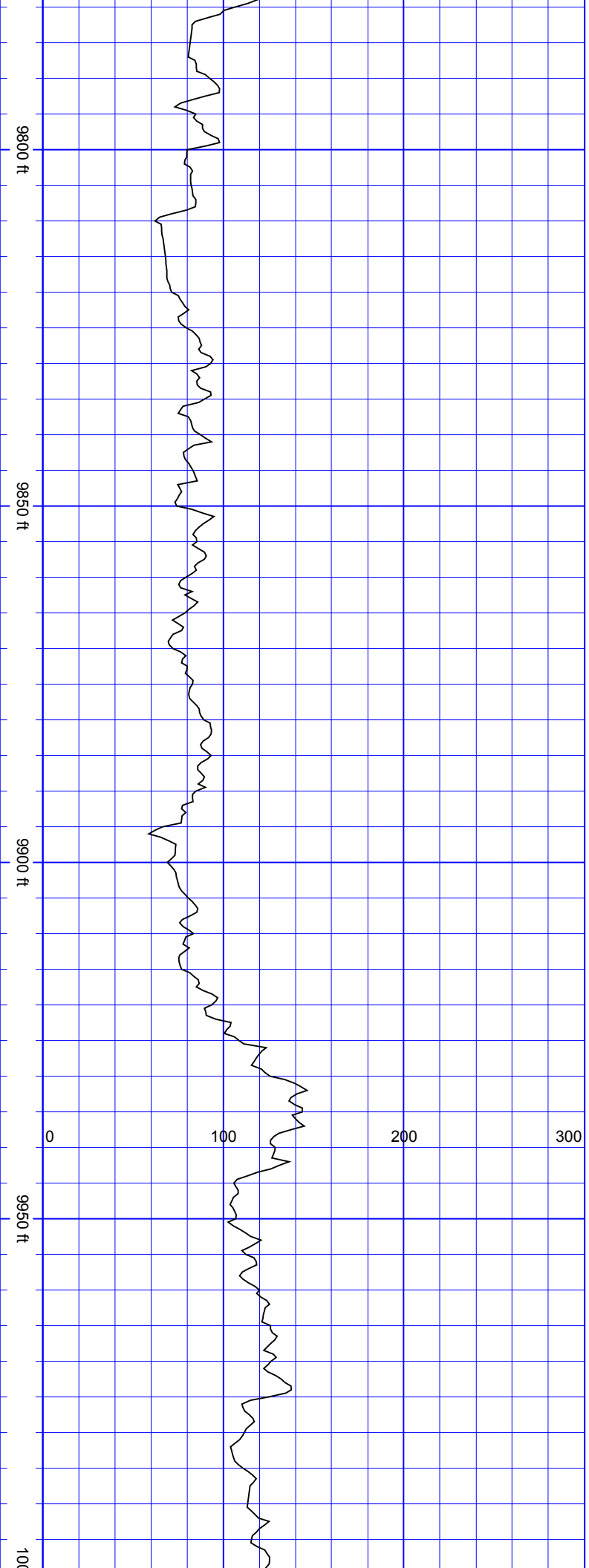


SurveyDepth:9561
TVD:7183.43 Inc:88.99
Azi:270.68
VertSec:2570.63

SurveyDepth:9656
TVD:7185.21 Inc:88.86
Azi:270.24
VertSec:2655.79

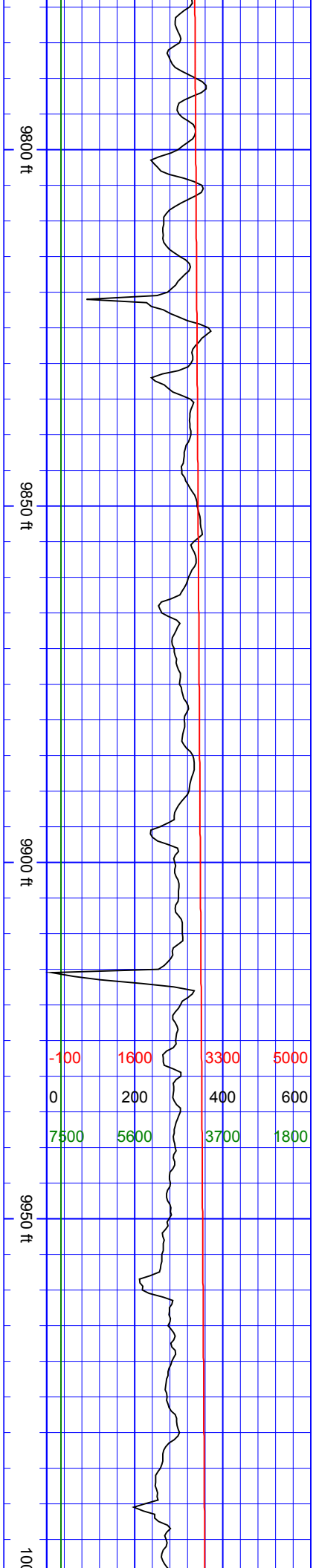
SurveyDepth:9750
TVD:7186.12 Inc:90.04
Azi:268.83
VertSec:2739.38





SurveyDepth:9844
TVD:7185.51 Inc:90.7
Azi:268.65
VertSec:2822.37

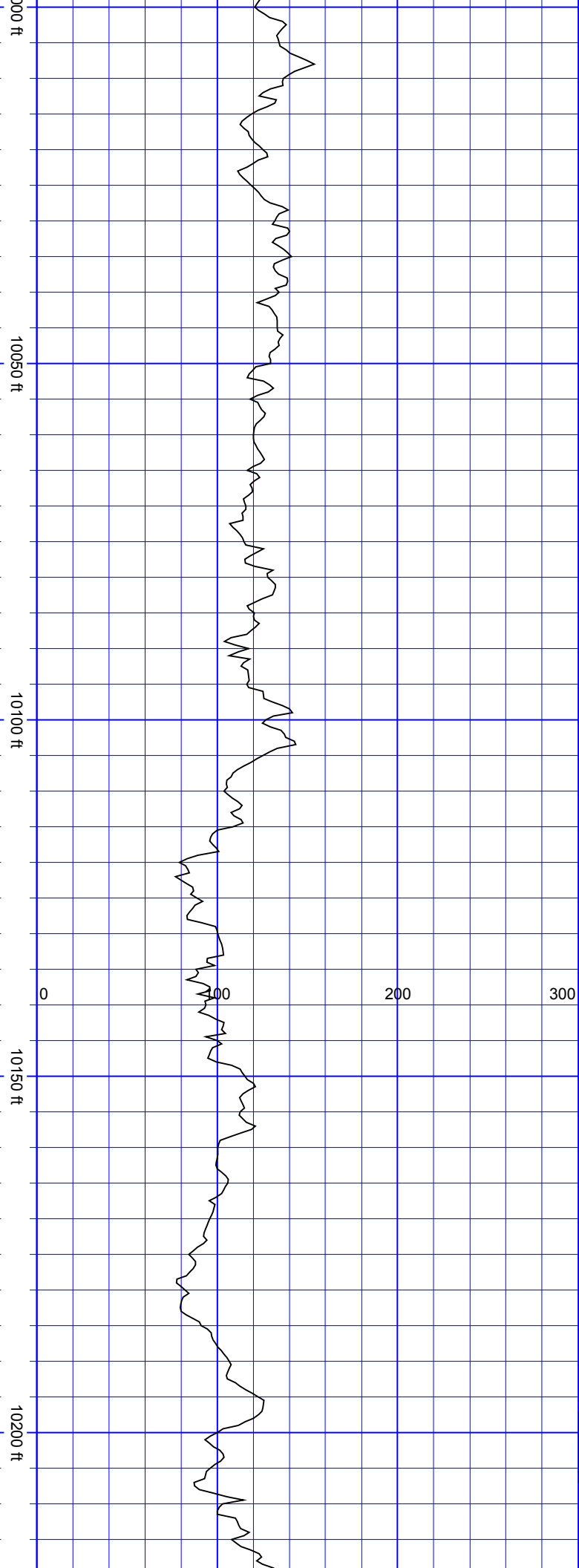
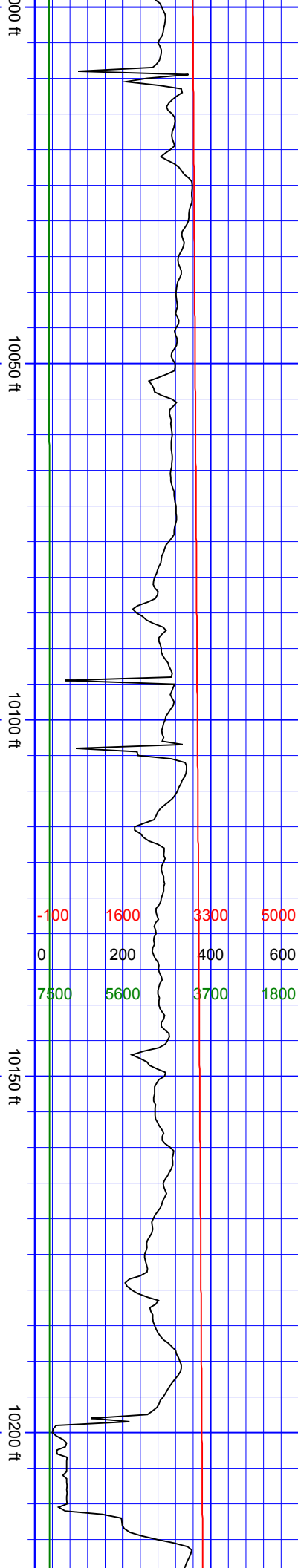
SurveyDepth:9939
TVD:7184.12 Inc:90.97
Azi:267.6
VertSec:2905.75

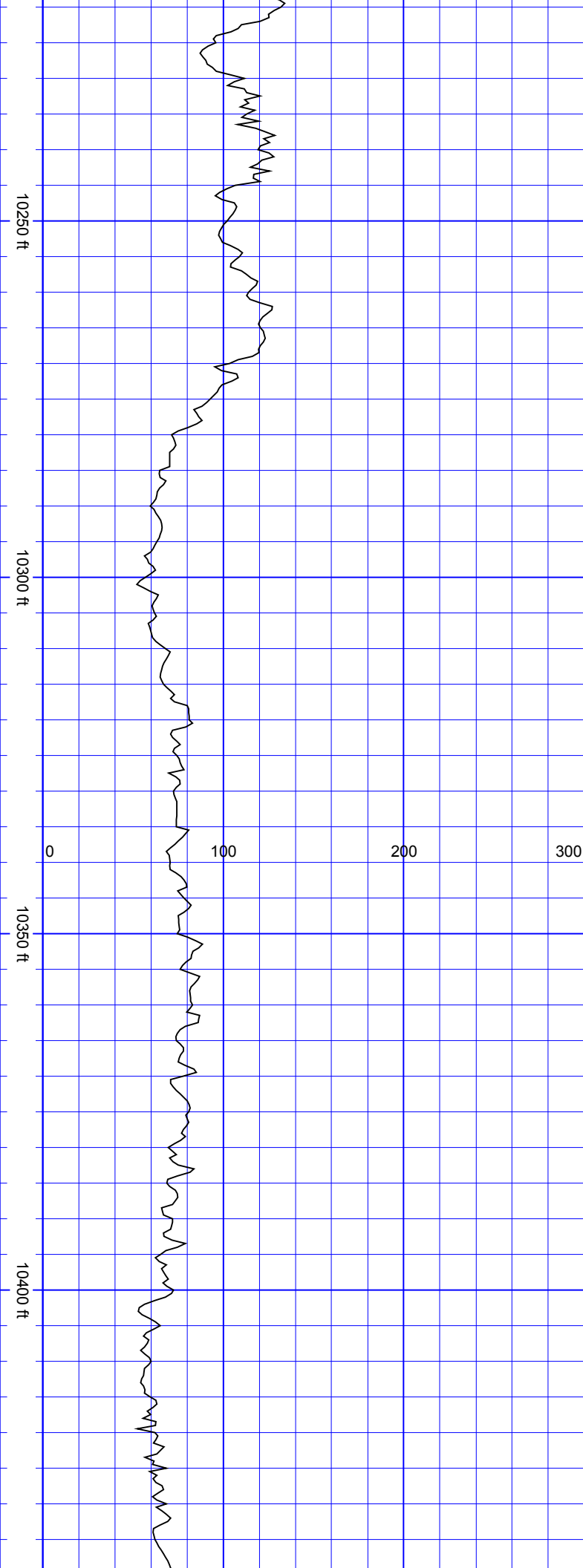


SurveyDepth:10033
TVD:7182.25 Inc:91.32
Azi:267.6
VertSec:2987.82

SurveyDepth:10127
TVD:7180.19 Inc:91.19
Azi:266.98
VertSec:3069.65

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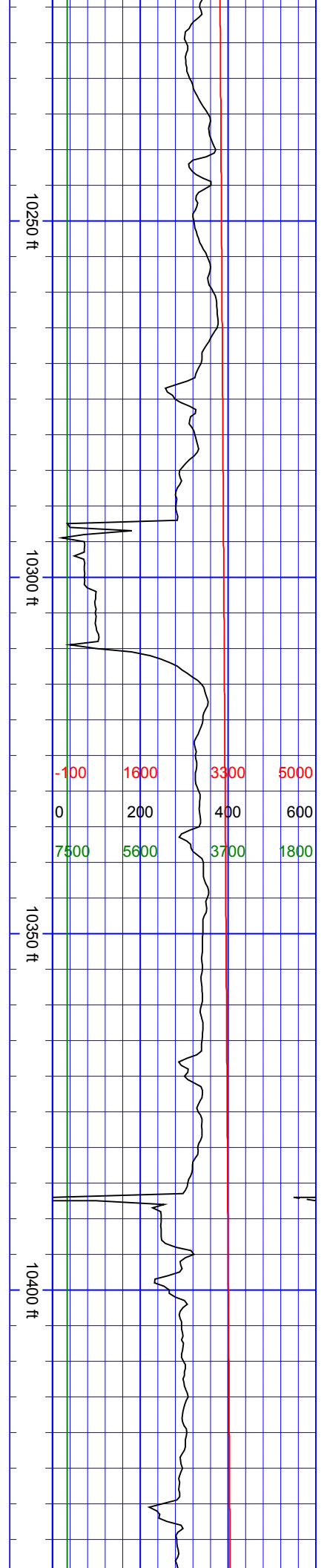


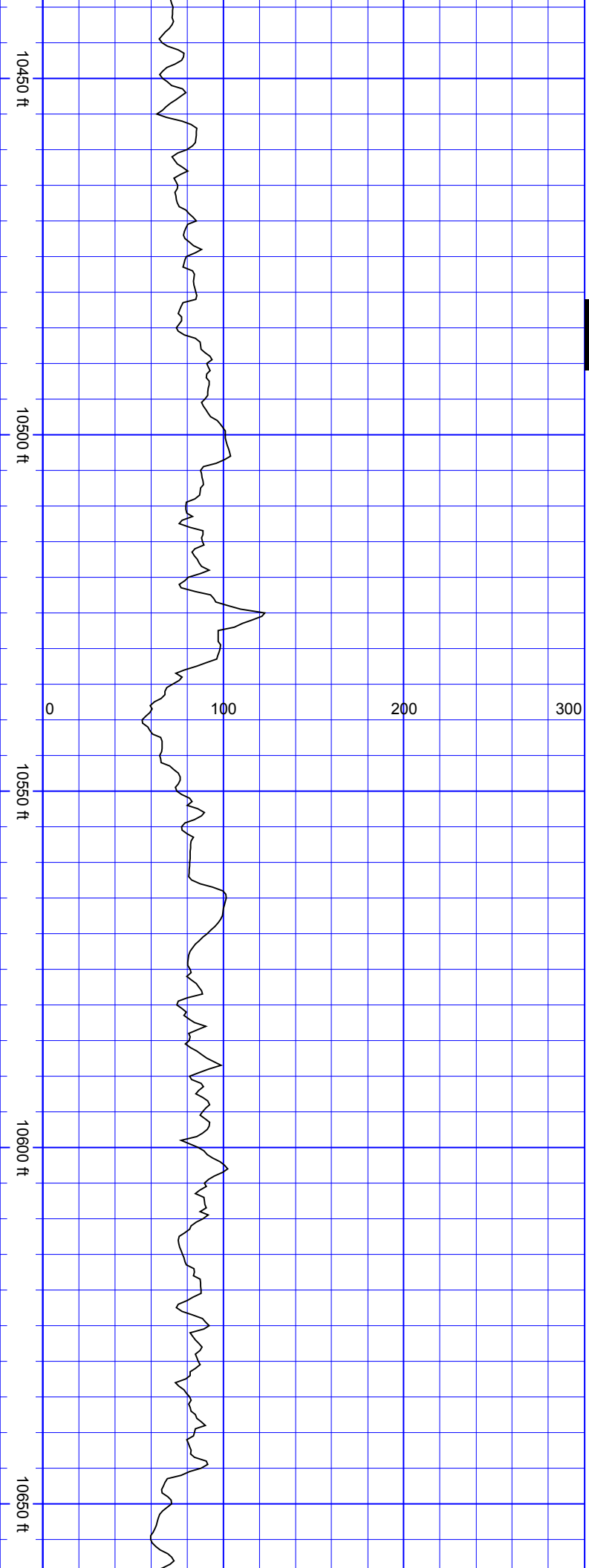
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SurveyDepth:10222
TVD:7178.07 Inc:91.36
Azi:268.04
VertSec:3152.52

SurveyDepth:10316
TVD:7177.35 Inc:89.52
Azi:269.01
VertSec:3235.34

SurveyDepth:10411
TVD:7178.95 Inc:88.55
Azi:268.65
VertSec:3319.27

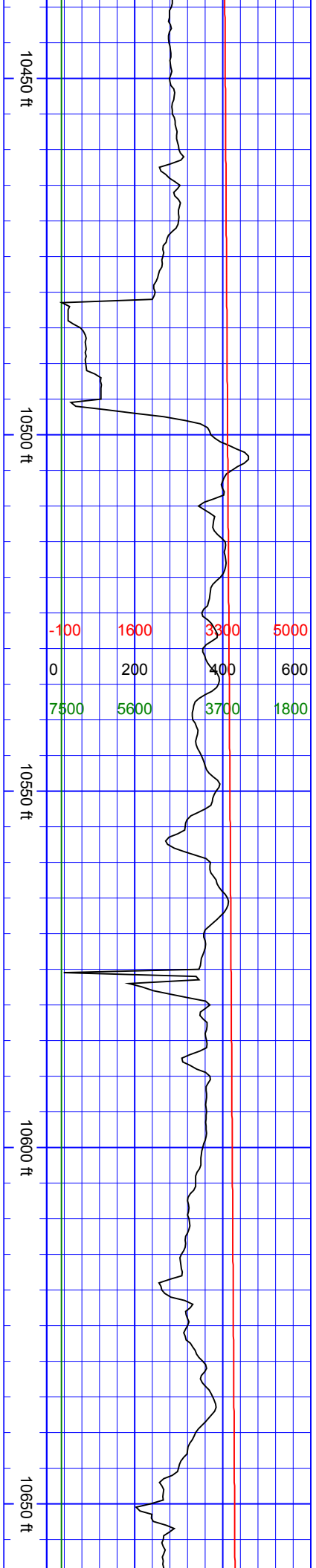




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SurveyDepth:10505
TVD:7179.71 Inc:90.53
Azi:270.32
VertSec:3402.81

SurveyDepth:10600
TVD:7178.28 Inc:91.19
Azi:269.97
VertSec:3487.75



10700 ft

10750 ft

10800 ft

10850 ft

SurveyDepth:10694
TVD:7176.11 Inc:91.45
Azi:269.18
VertSec:3571.35

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SurveyDepth:10789
TVD:7174.51 Inc:90.48
Azi:269.53
VertSec:3655.68

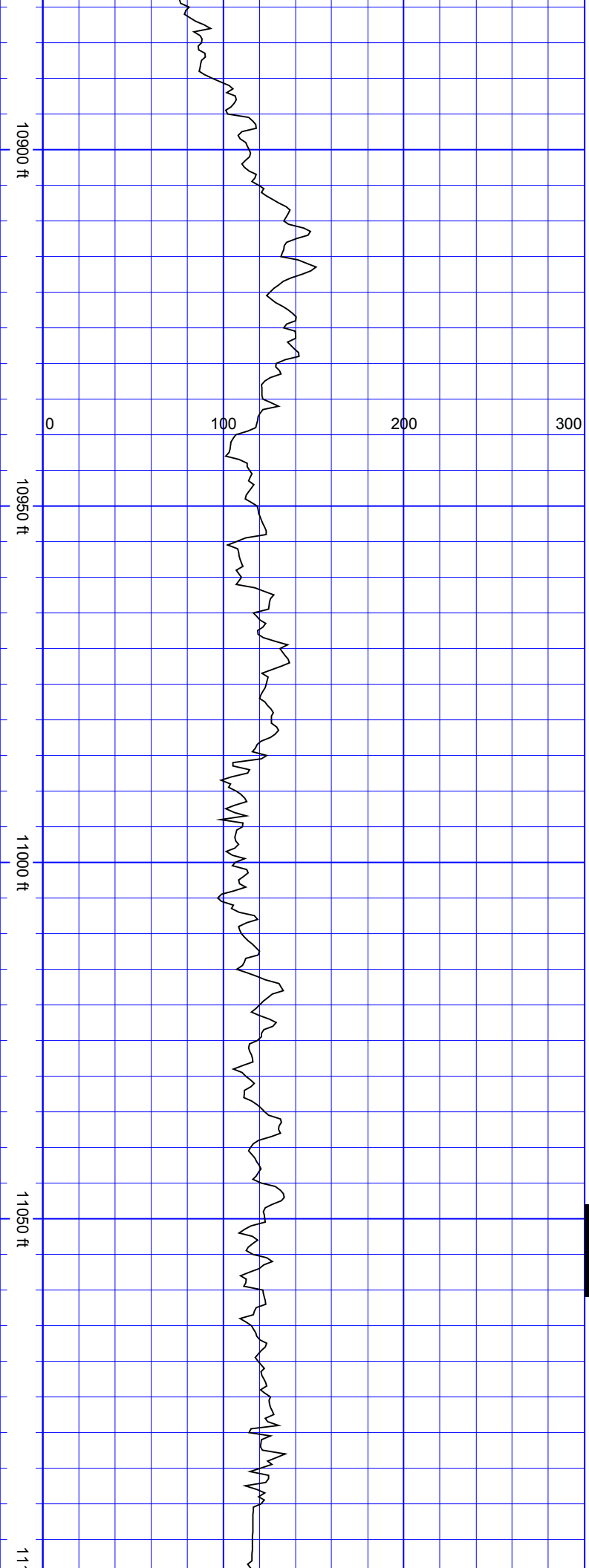
10700 ft

10750 ft

10800 ft

10850 ft

-100	1600	3300	5000
0	200	400	600
7500	5600	3700	1800

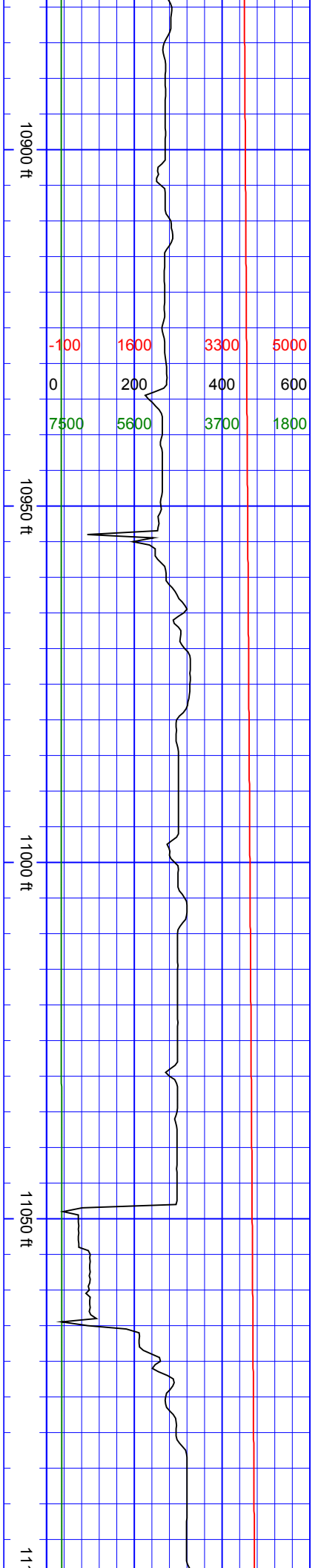


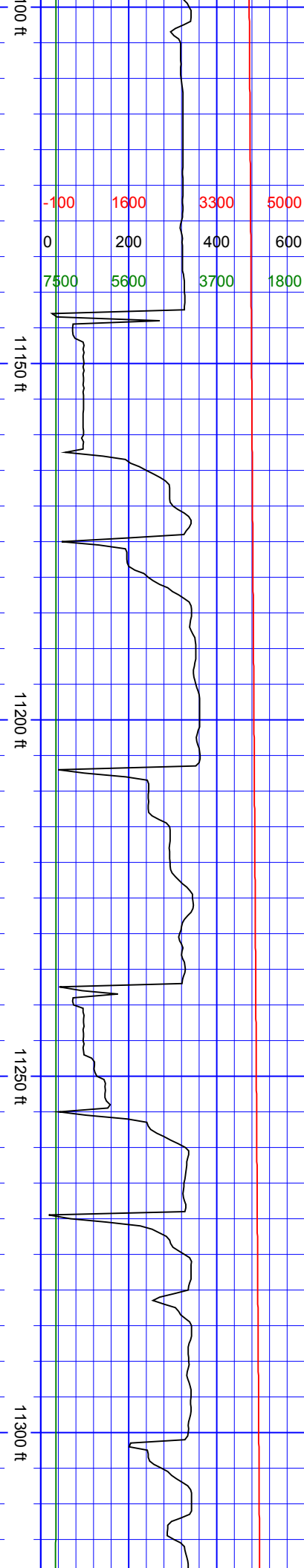
SurveyDepth:10883
TVD:7173.69 Inc:90.53
Azi:269.09
VertSec:3739.1

SurveyDepth:10978
TVD:7172.33 Inc:91.1
Azi:269.09
VertSec:3823.23

SurveyDepth:11073
TVD:7170.59 Inc:91.01
Azi:271.03
VertSec:3908.09

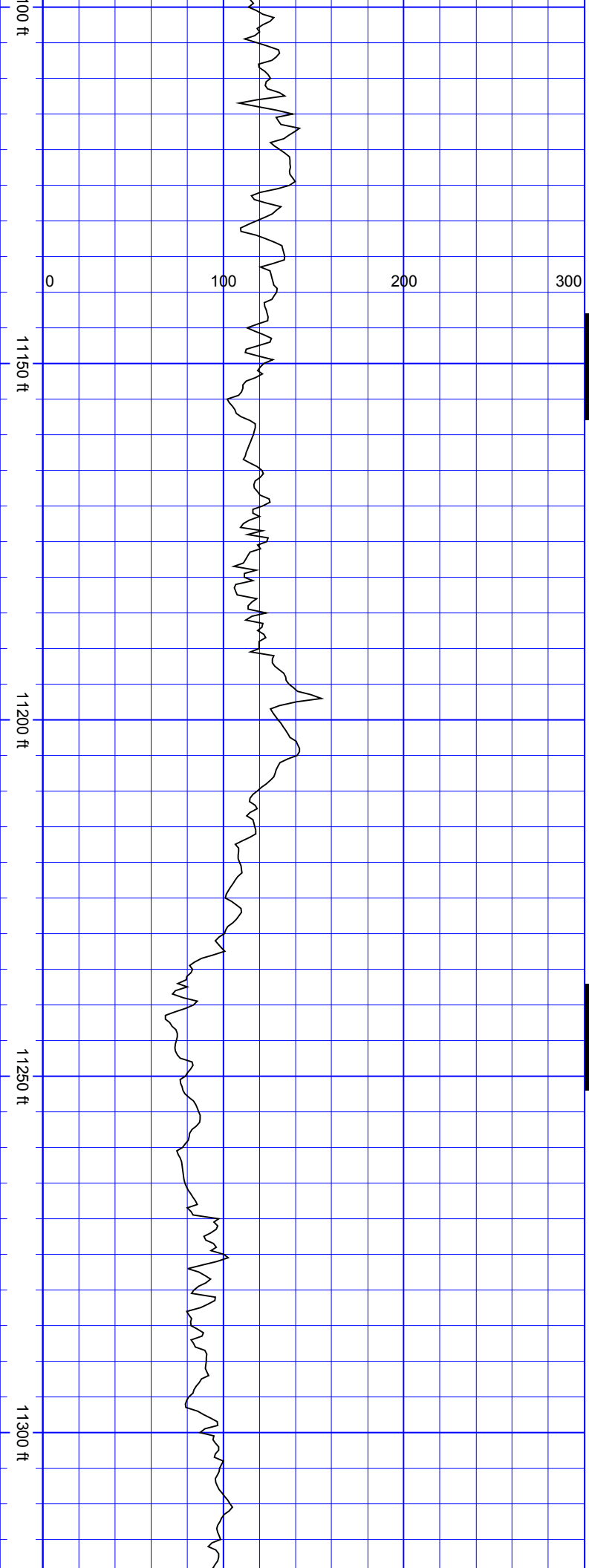
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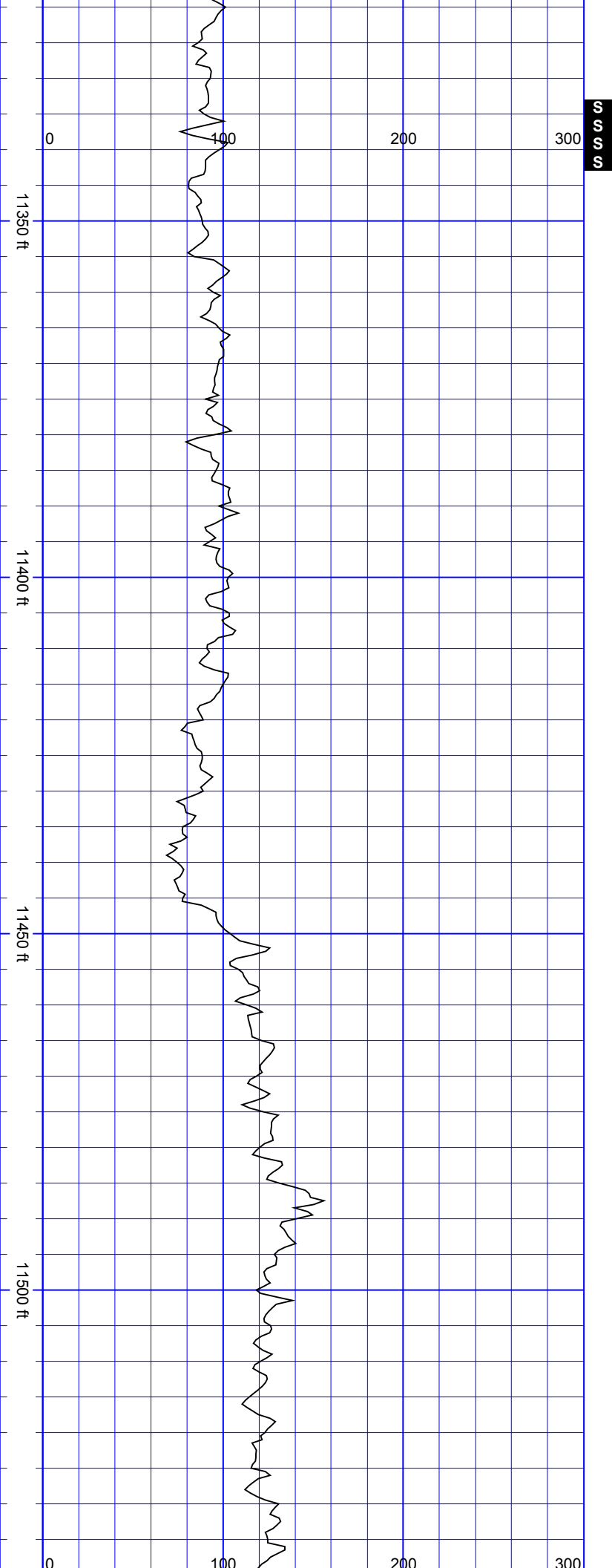




SurveyDepth:11167
TVD:7169.61 Inc:90.18
Azi:272.79
VertSec:3993.39

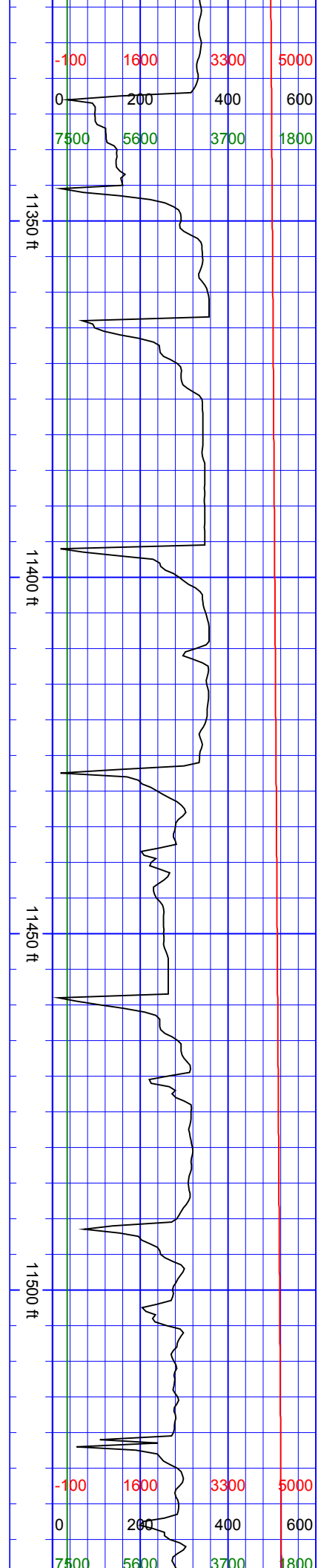
SurveyDepth:11262
TVD:7170.26 Inc:89.03
Azi:274.37
VertSec:4080.72

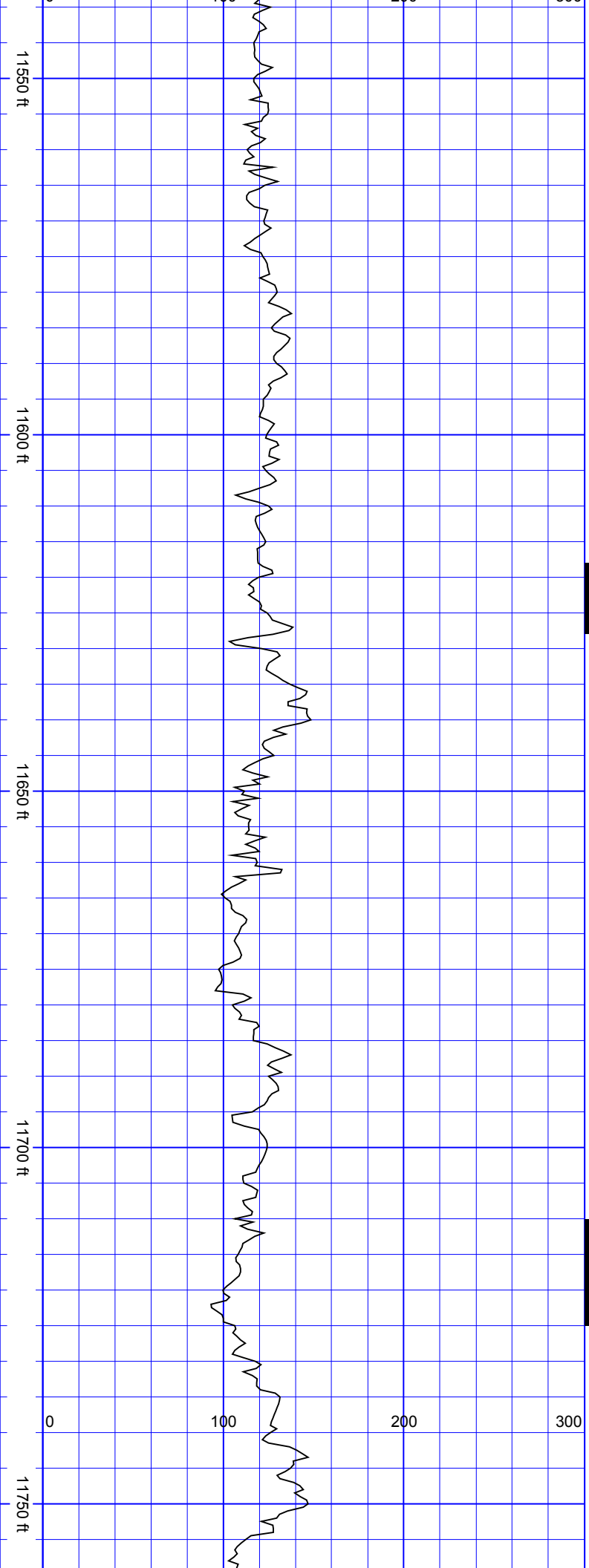




SurveyDepth:11356
TVD:7172.18 Inc:88.64
Azi:276.74
VertSec:4168.34

SurveyDepth:11451
TVD:7174.11 Inc:89.03
Azi:276.56
VertSec:4257.53





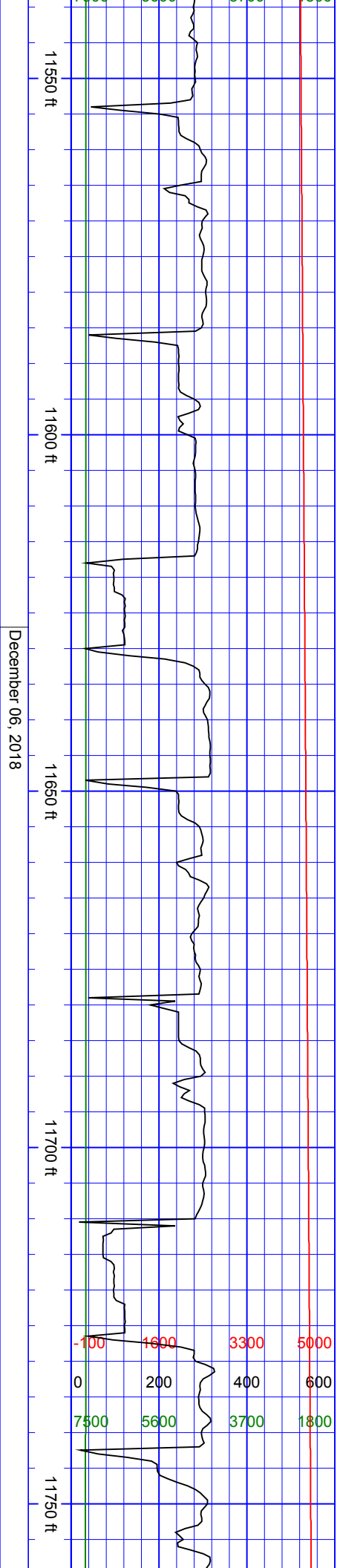
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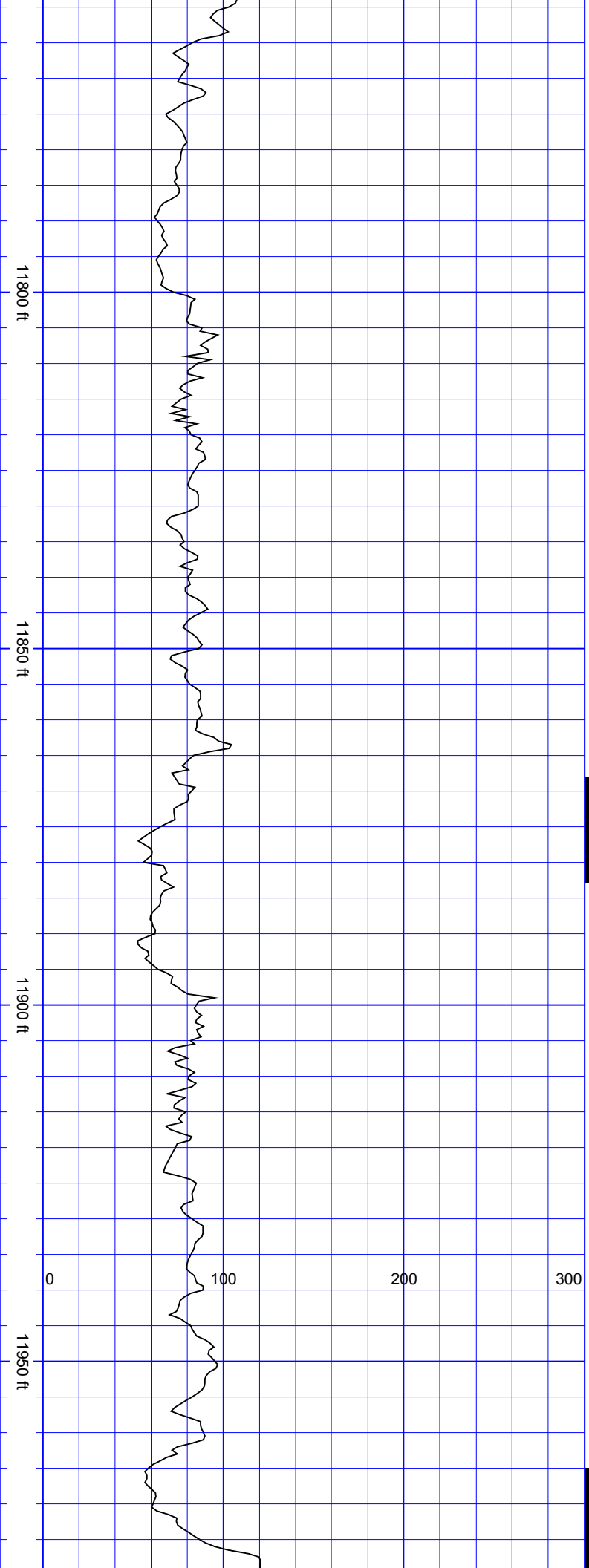
SurveyDepth:11546
TVD:7175.31 Inc:89.52
Azi:276.83
VertSec:4346.76

SurveyDepth:11640
TVD:7177.33 Inc:88.02
Azi:277.27
VertSec:4435.24

SurveyDepth:11735
TVD:7181.34 Inc:87.14
Azi:276.13
VertSec:4524.4



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SurveyDepth:11829
TVD:7186.6 Inc:86.44
Azi:275.95
VertSec:4612.19

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SurveyDepth:11924
TVD:7192.58 Inc:86.35
Azi:274.19
VertSec:4700.29

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