
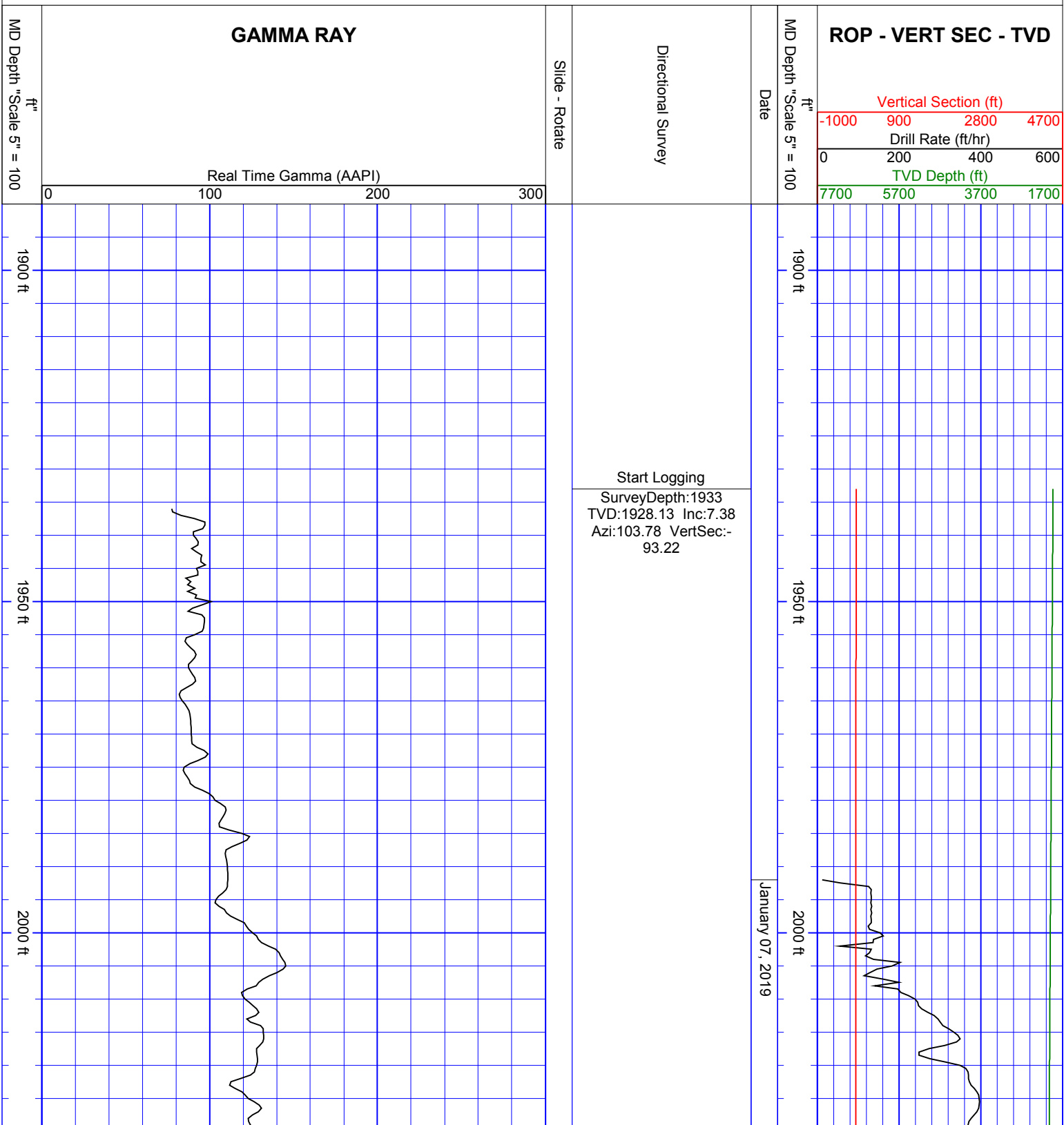


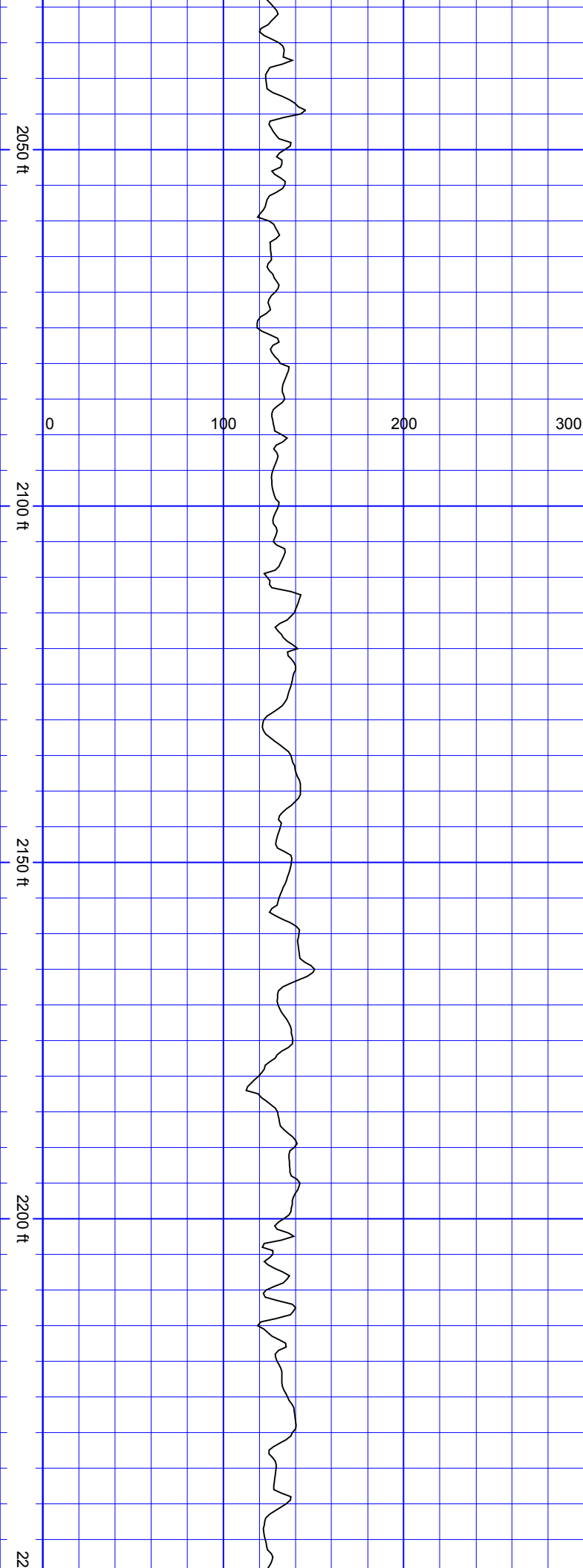
<div><b>CATHEDRAL</b></div>				<div><b>Build &amp; Lateral</b></div> <div>Job #: 195012Well ID: 16191569</div> <div>Scale: 5" = 100 ftType: MD</div>			
<b>Well Site Information</b>							
Oil Company		Crestone Peak Resources					
Surface Location		S33-T3N-R67W					
Well Name		Herren 1J-33H-H367					
API		05-123-47734					
Field		DJ BASIN					
State		CO					
Country		USA					
<b>Surface Coordinates</b>							
Well Type		Horizontal					
Latitude		40° 10' 59.2608 N					
Longitude		104° 53' 14.1684 W					
N / S Coordinates		1,310,150.35 us/ft					
E / W Coordinates		3,171,202.83 us/ft					
Azimuth Reference		True North					
Grid Convergence		0.40°					
<b>MWD Engineers</b>							
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		11,875.00 ft		Spud Date		Jan/07/2019	
(MD) Log Interval		Start Depth		1,933.00 ft		End Date	
						Jan/10/2019	
				End Depth		11,875.17 ft	
<b>Bore Hole Record</b>							
Hole Size		From		To			
13.50 in		0.00 ft		1,992.00 ft			
8.50 in		1,992.00 ft		11,875.00 ft			
<b>Casing Record</b>							
Type		Size		WGT		From	
LTC		9.63 in		40.00 lbs/ft		0.00 ft	
						1,977.00 ft	

Run Data					
Bit Run Number	1	2	3		
Start Date & Time	Jan/07/2019 08:00:00	Jan/08/2019 04:00:00	Jan/09/2019 06:30:00		
End Date & Time	Jan/08/2019 02:30:00	Jan/09/2019 04:30:00	Jan/10/2019 16:30:00		
Run Hours	18.50	24.50	34.00		
Depth In	1,992.00 ft	5,114.00 ft	8,078.00 ft		
Depth Out	5,114.00 ft	8,078.00 ft	11,875.00 ft		
Total Gamma Correction	5.17	5.28	5.06		
Gamma to Bit	56.87 ft	56.90 ft	62.42 ft		
Resistivity to Bit	-	-	-		
Mud Type	OBM	OBM	OBM		
Density	9.95 ppg	10.10 ppg	10.30 ppg		
Viscosity	57.00 sec/qt	47.00 sec/qt	45.00 sec/qt		
PH	-	-	-		
Fluid Loss	-	-	-		
K+ ppm	-	-	-		
CL- ppm	200,276.00 ppm	213,055.00 ppm	238,409 ppm		
Max Mud Temp	149.00 °F	201.00 °F	258.00 °F		
Mud Report Depth	3,563.00 ft	6,721.00 ft	9,393.00 ft		

Remarks
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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.

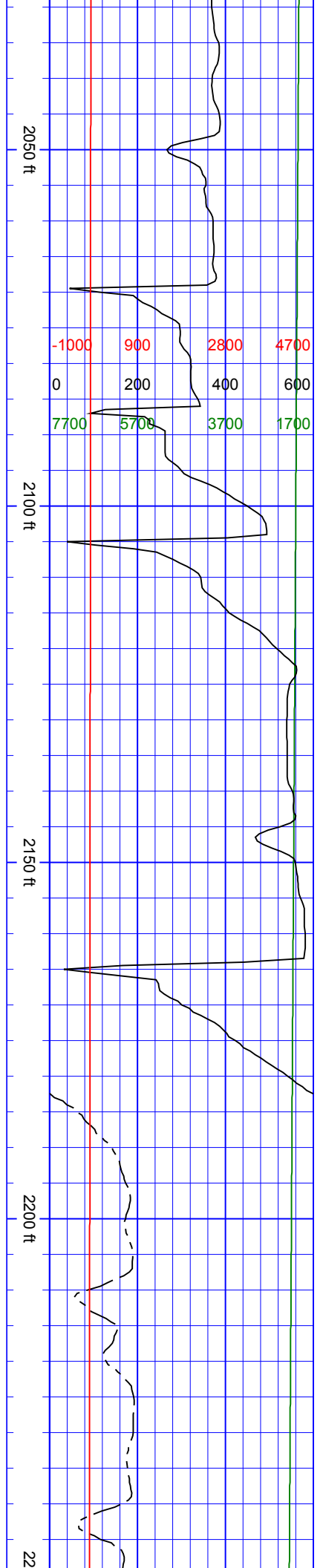


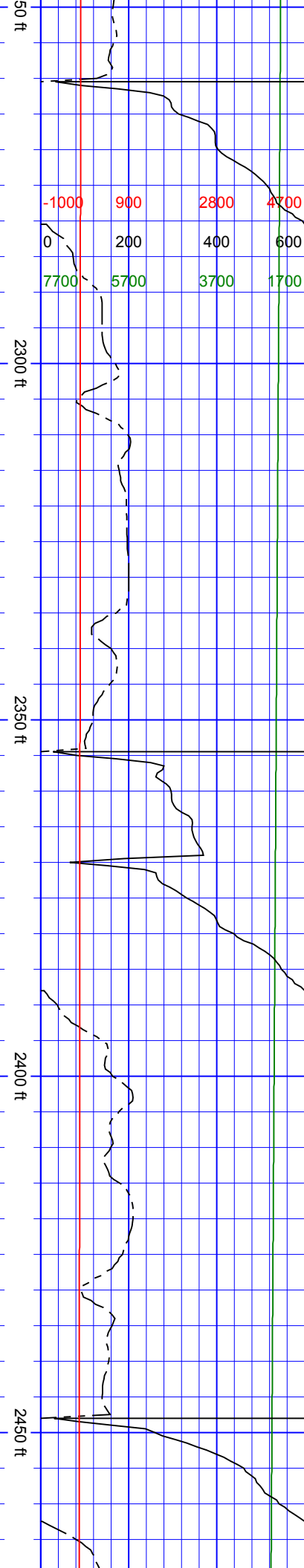


SurveyDepth:2038  
TVD:2032.36 Inc:6.46  
Azi:103.85 VertSec:-105.4

SurveyDepth:2101  
TVD:2094.82 Inc:8.53  
Azi:106.49 VertSec:-113.24

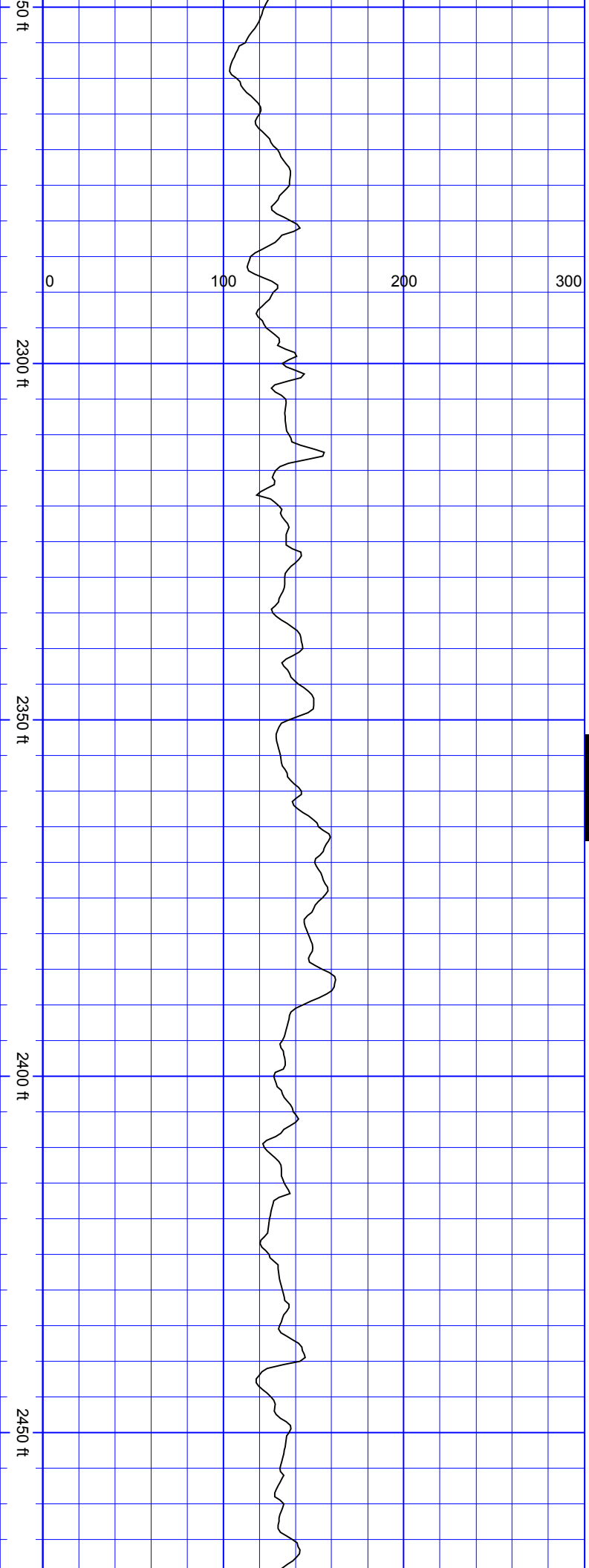
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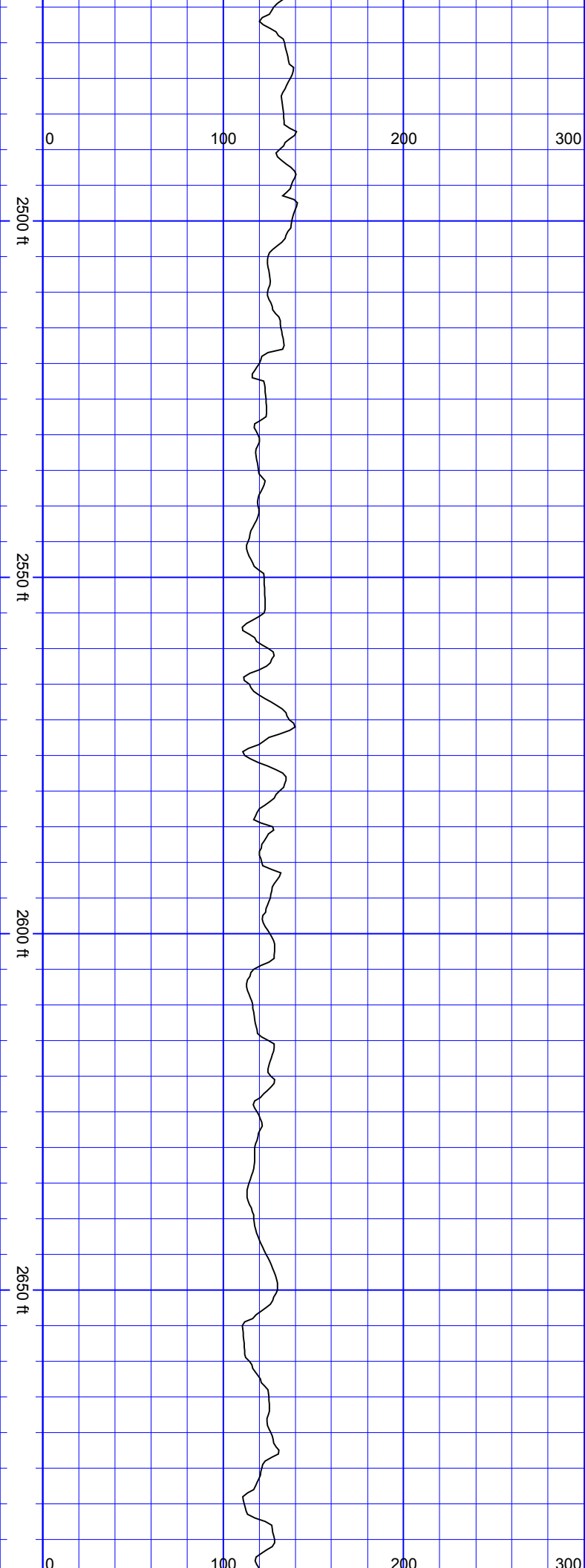




SurveyDepth:2289  
TVD:2280.92 Inc:7.56  
Azi:104.29 VertSec:-  
138.59

SurveyDepth:2383  
TVD:2373.93 Inc:9.1  
Azi:101.65 VertSec:-  
151.74

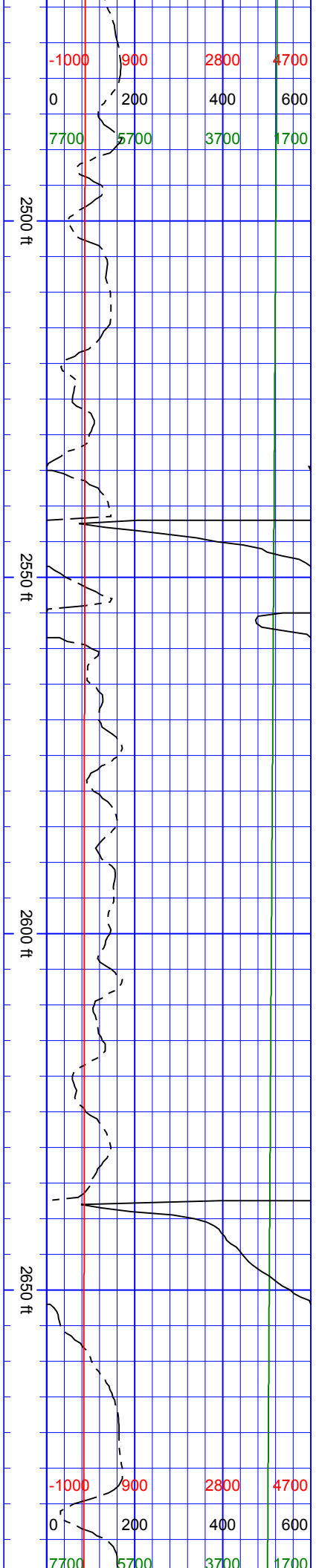


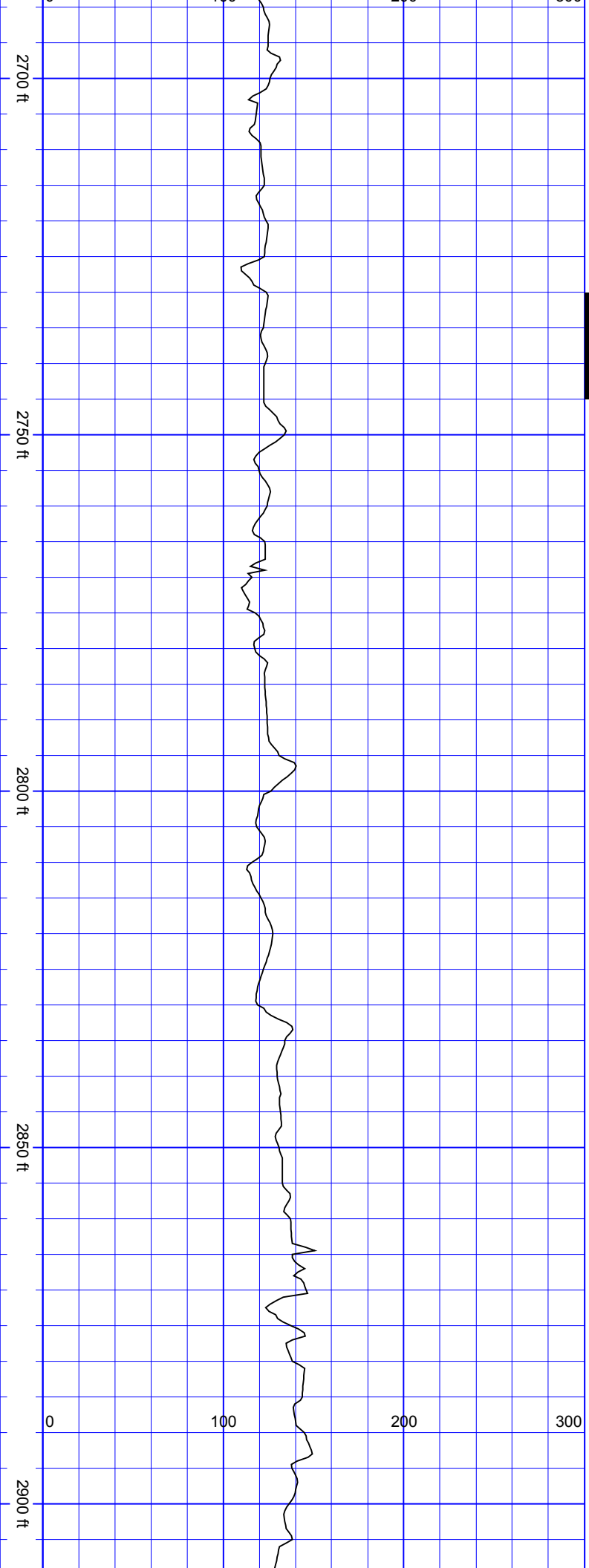


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TVD:2466.84 Inc:8.31  
Azi:100.16 VertSec:-  
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Azi:99.19 VertSec:-  
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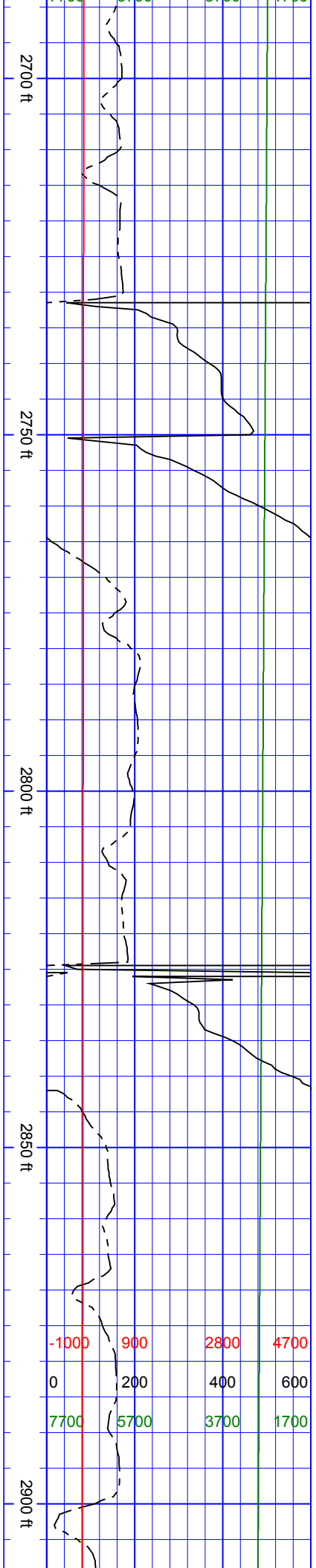
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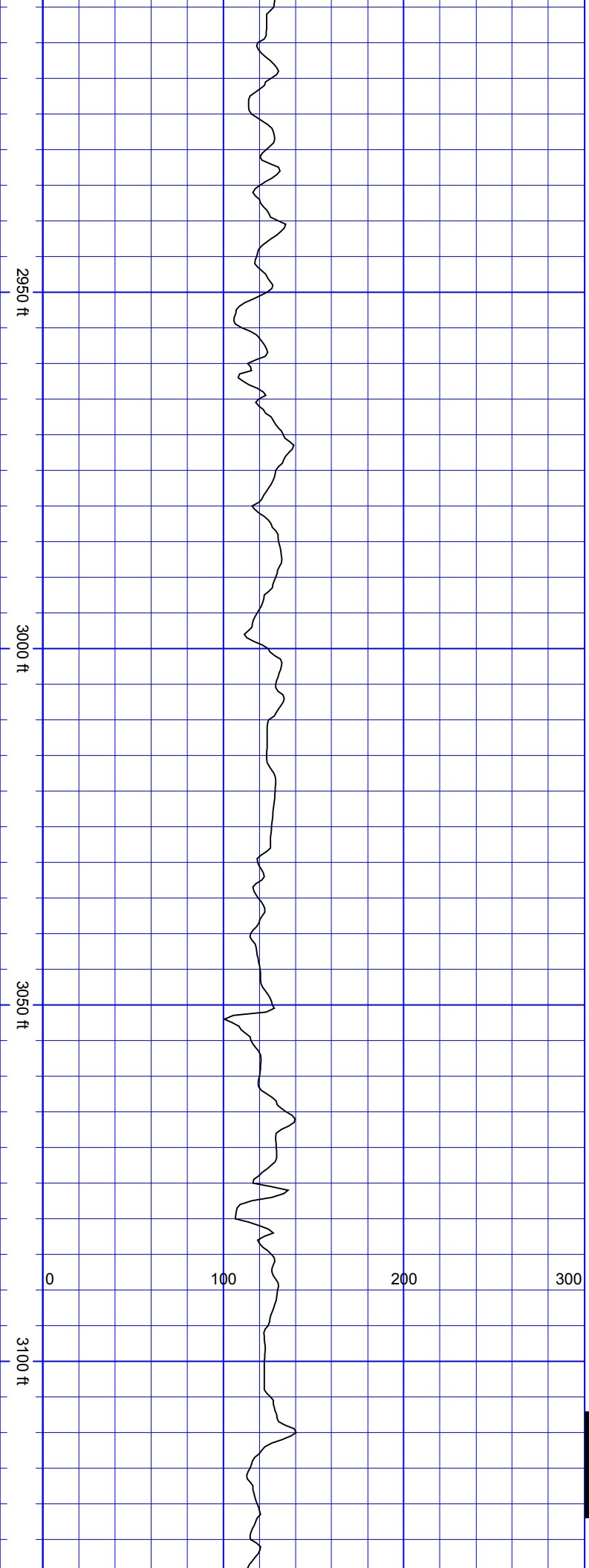




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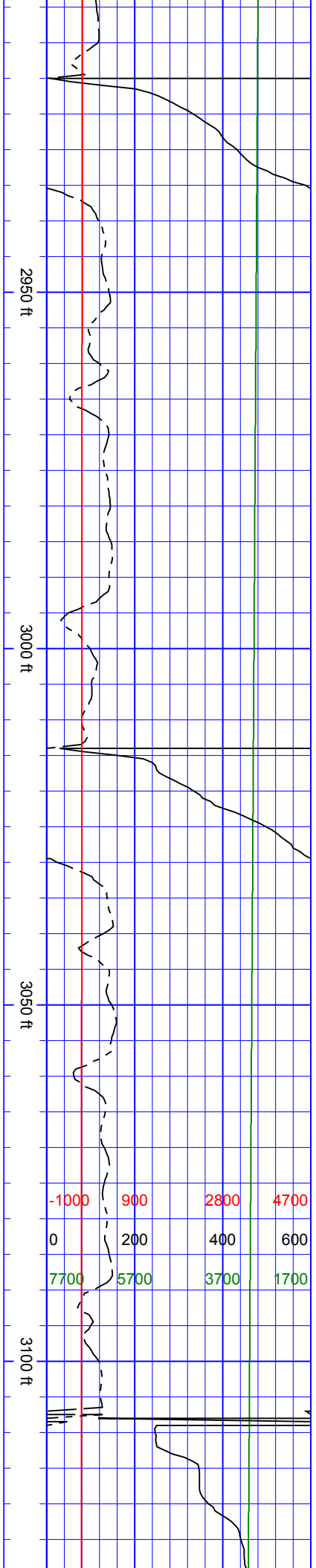
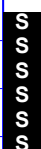
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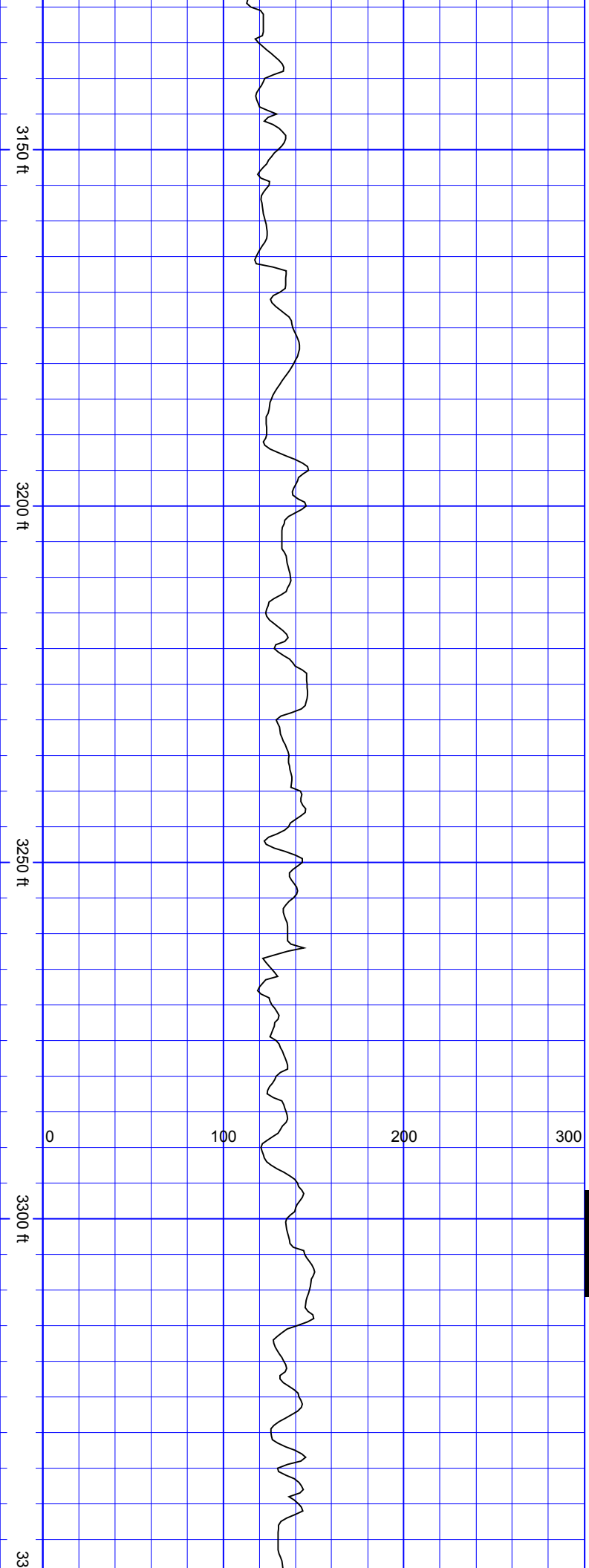




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239.38

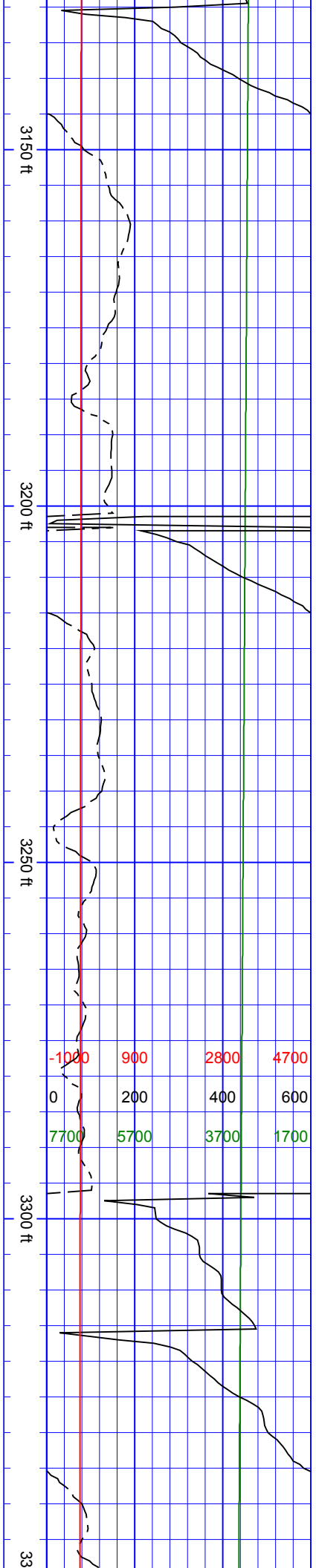




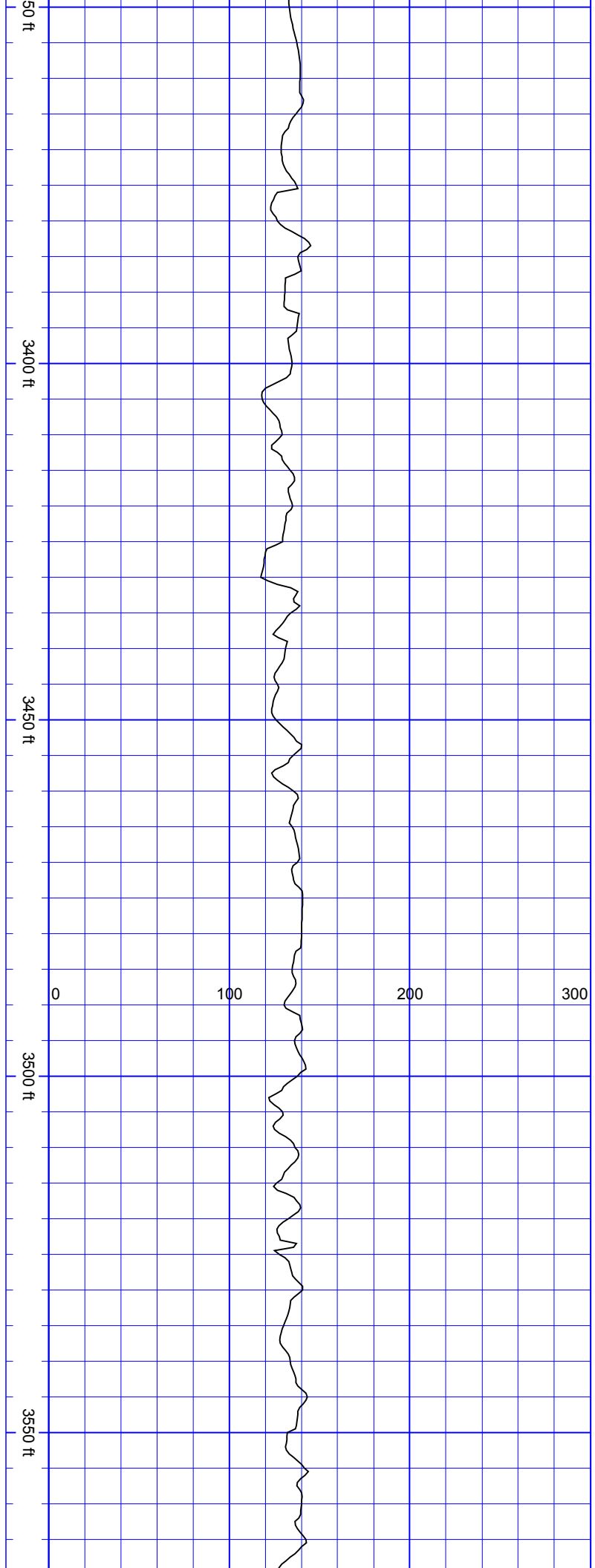
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Azi:111.67 VertSec:-250.51

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TVD:3215.91 Inc:7.12  
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Azi:108.77 VertSec:-274.38

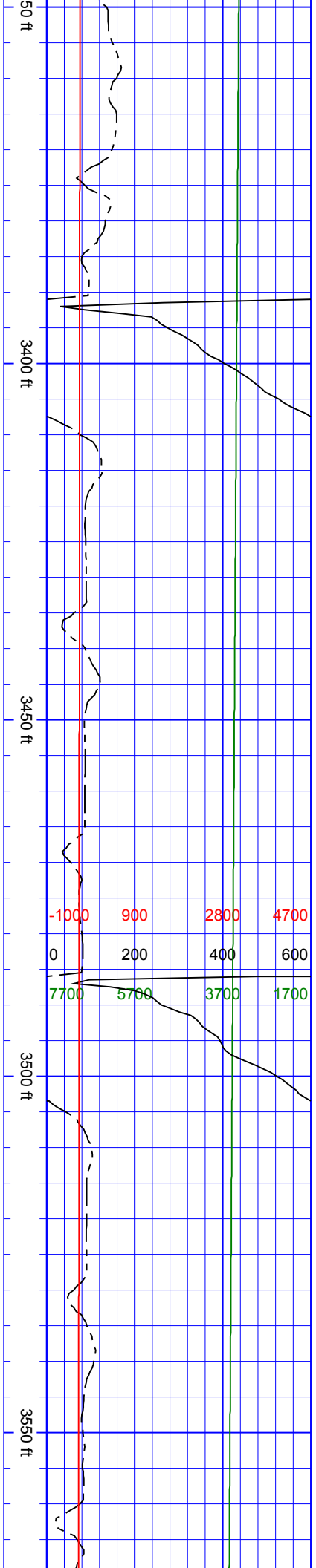


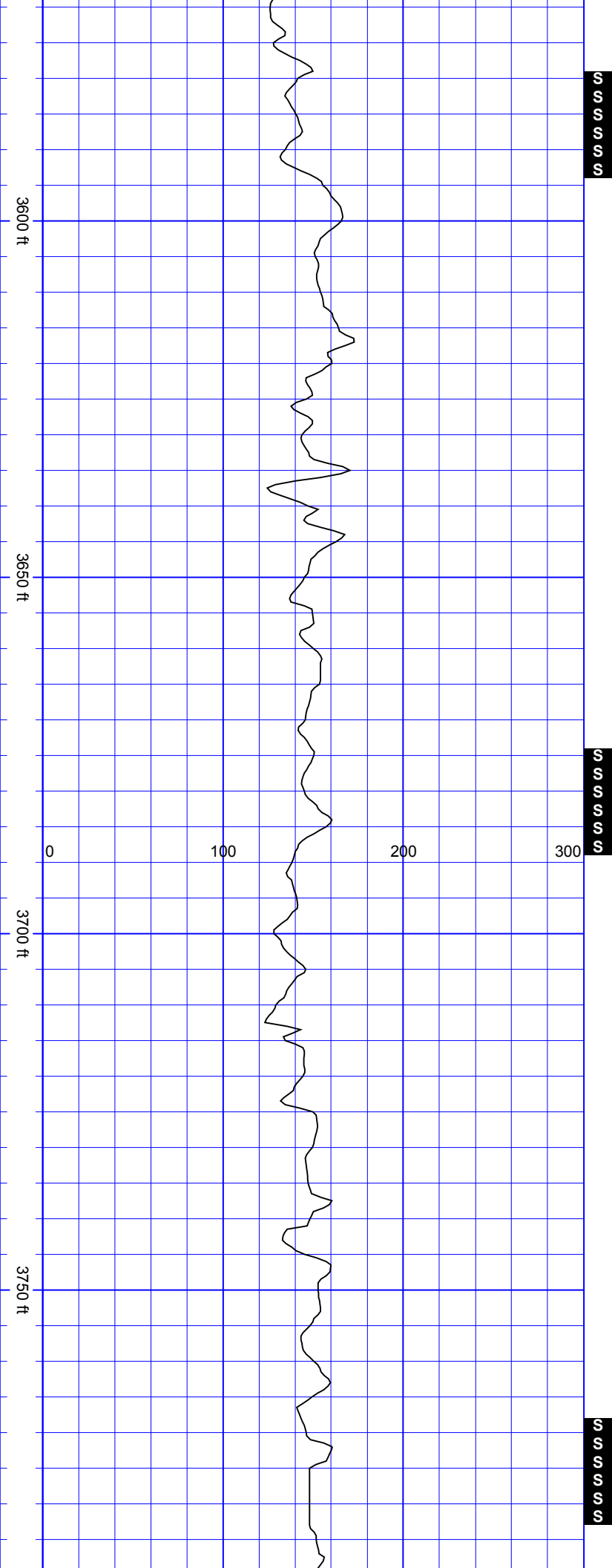




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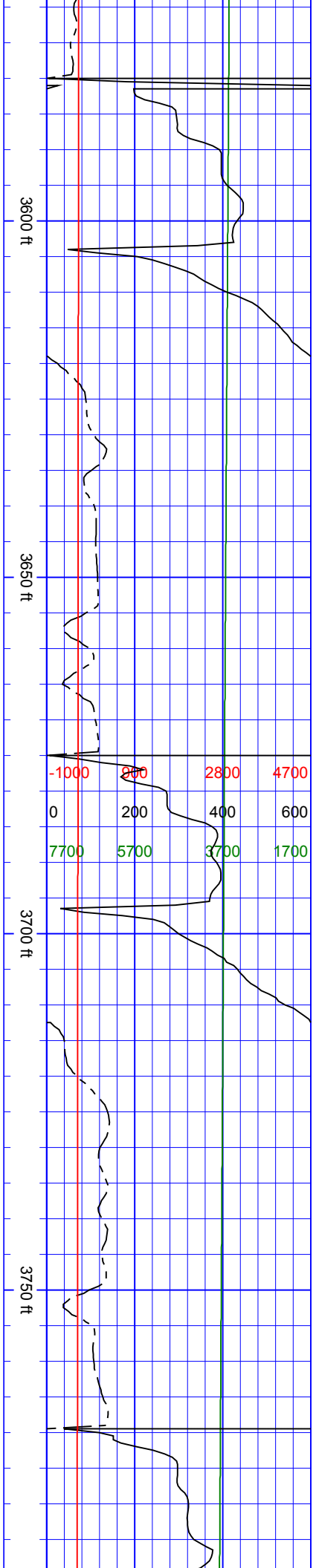
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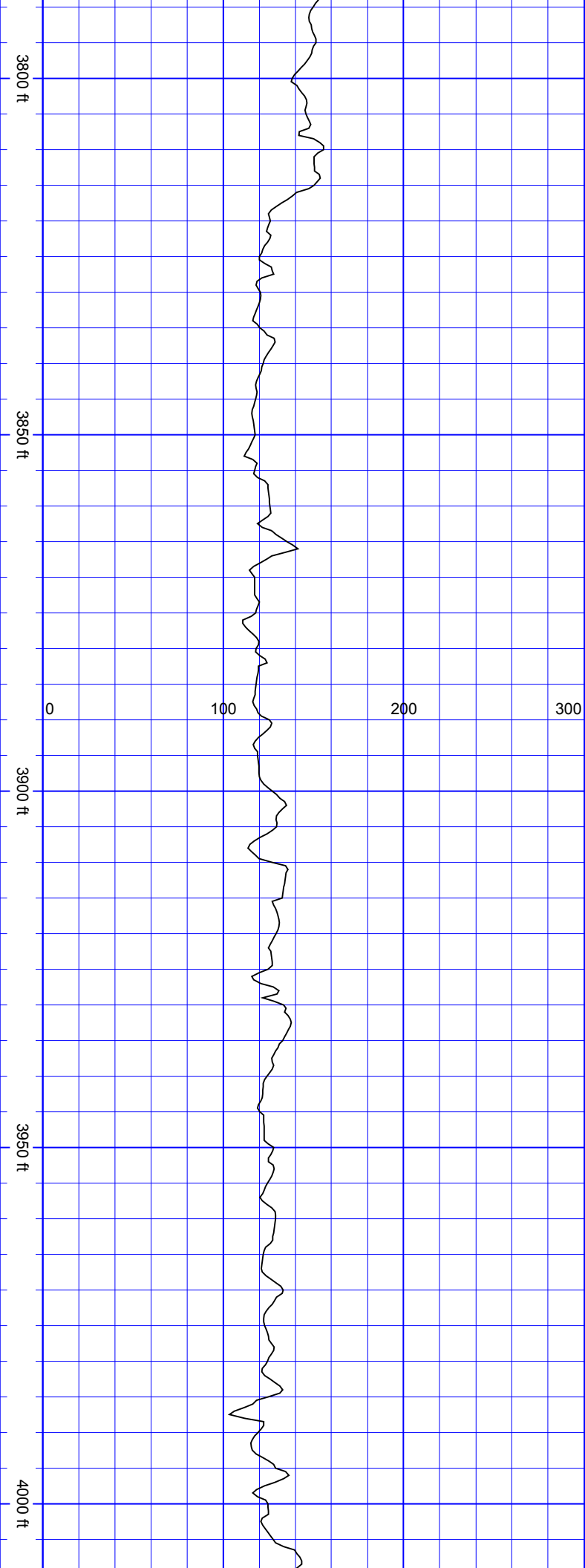




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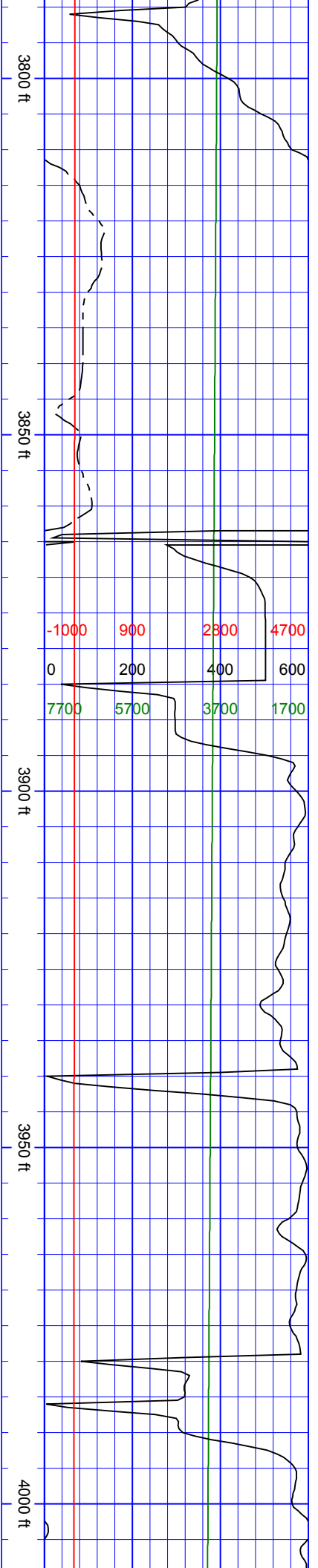
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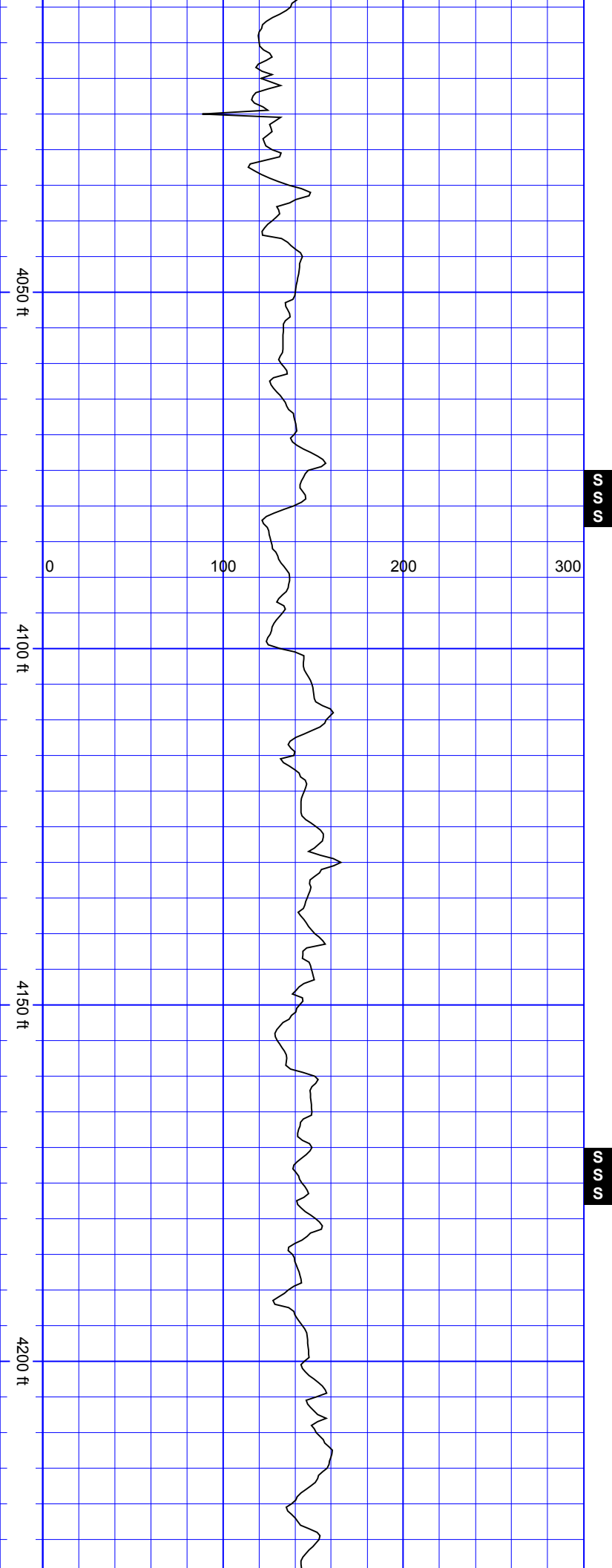




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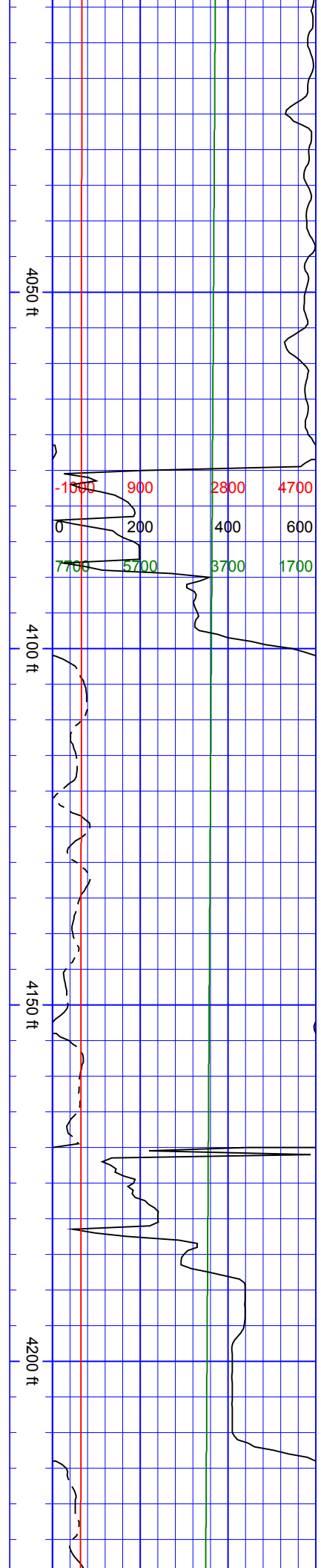


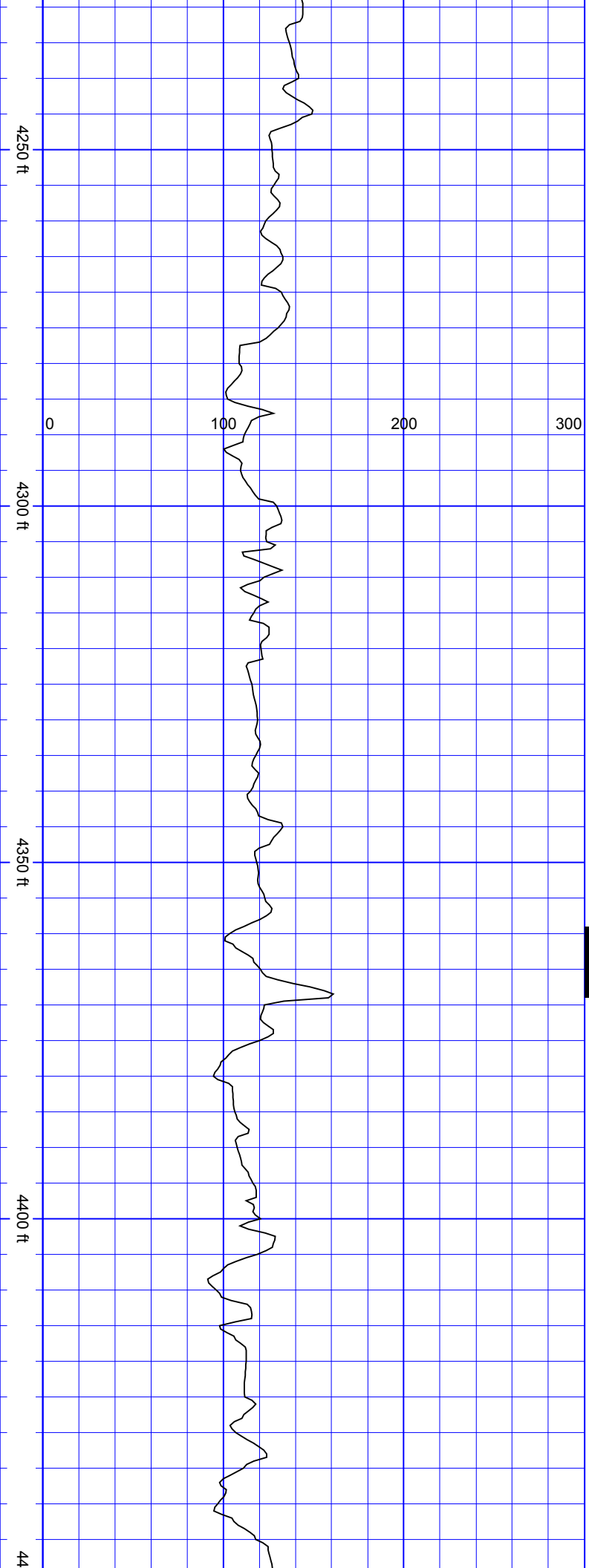


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TVD:4081.68 Inc:7.56  
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TVD:4174.96 Inc:6.64  
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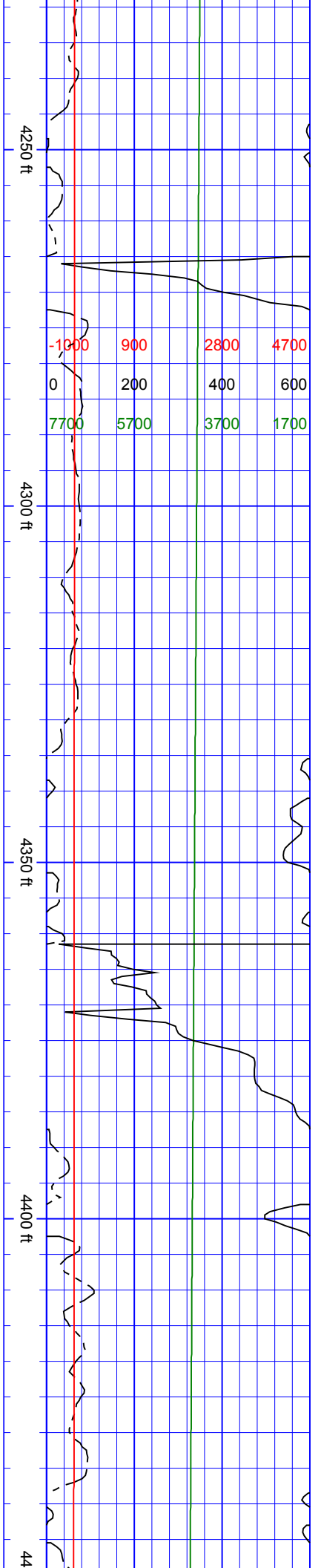


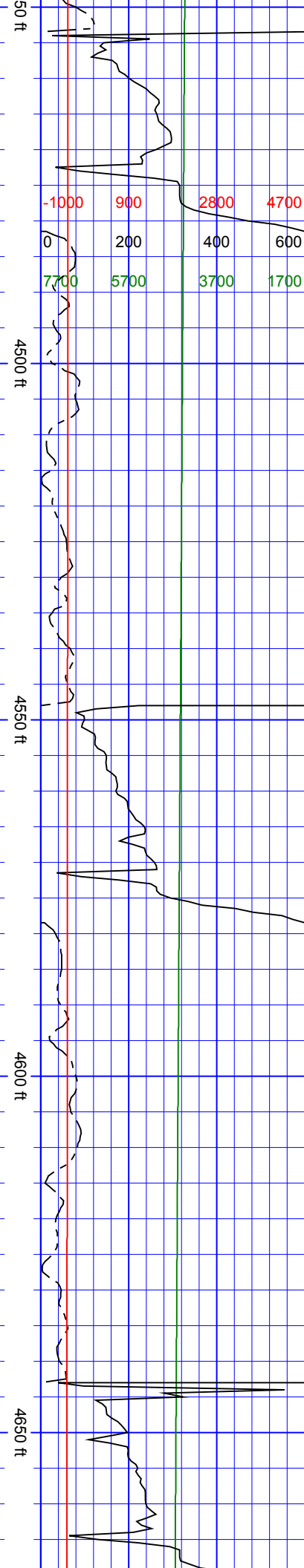


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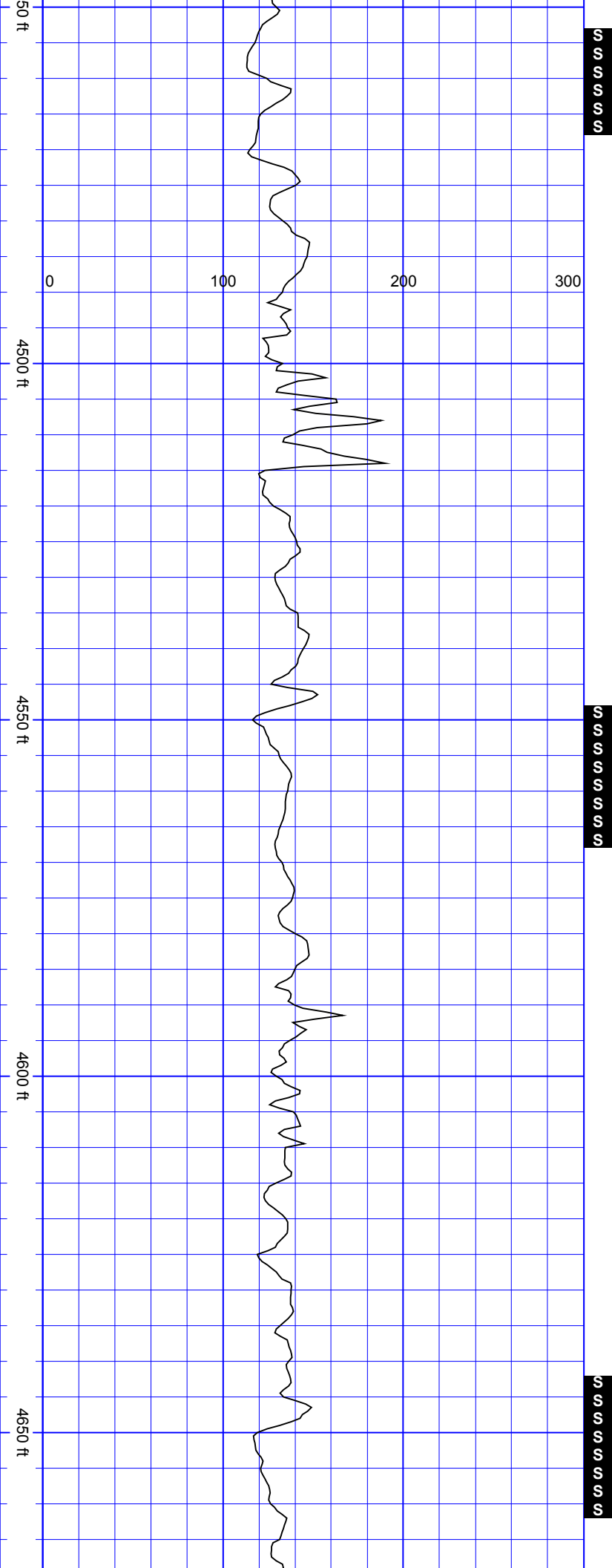
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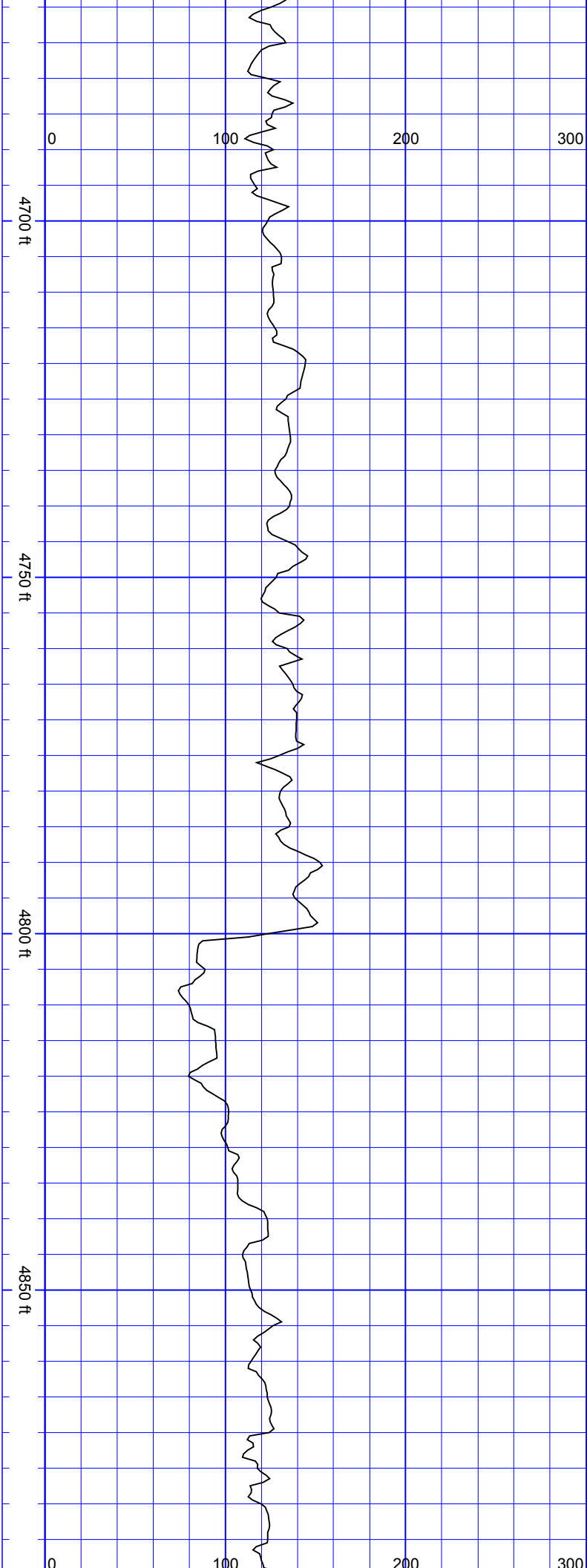




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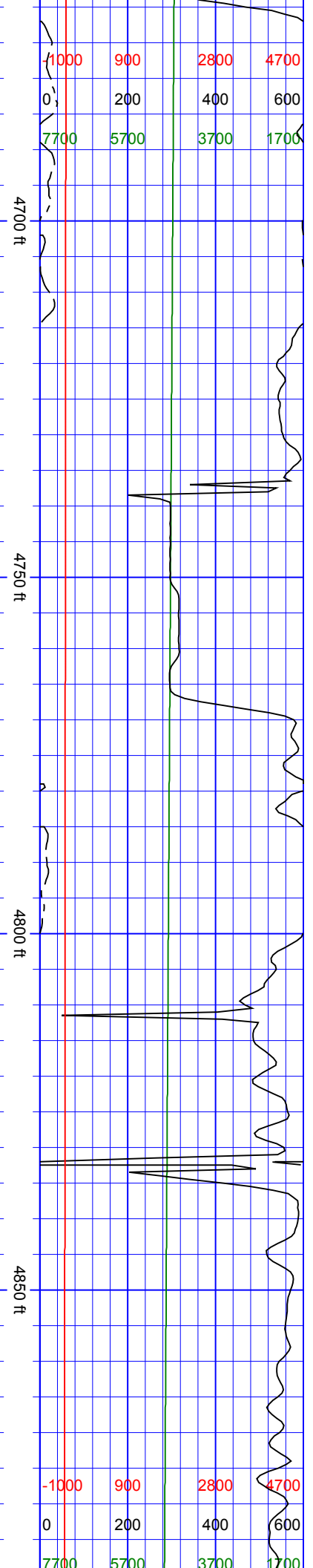


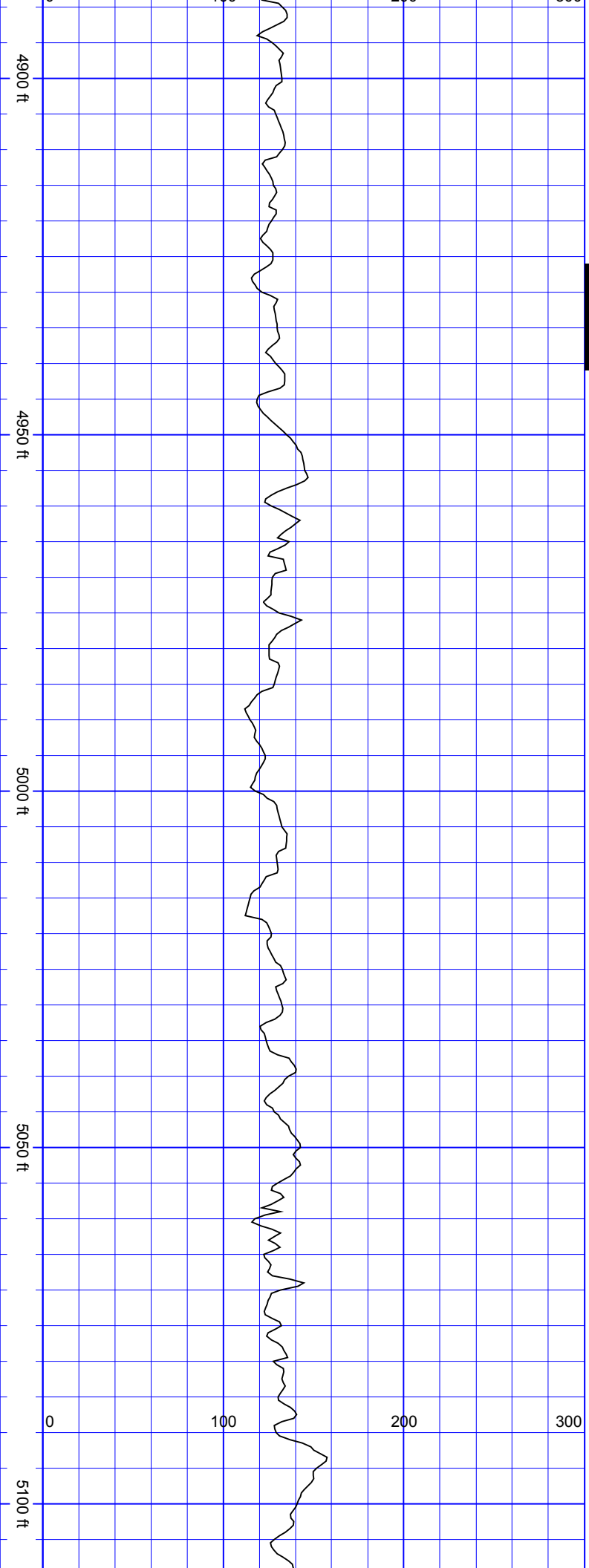


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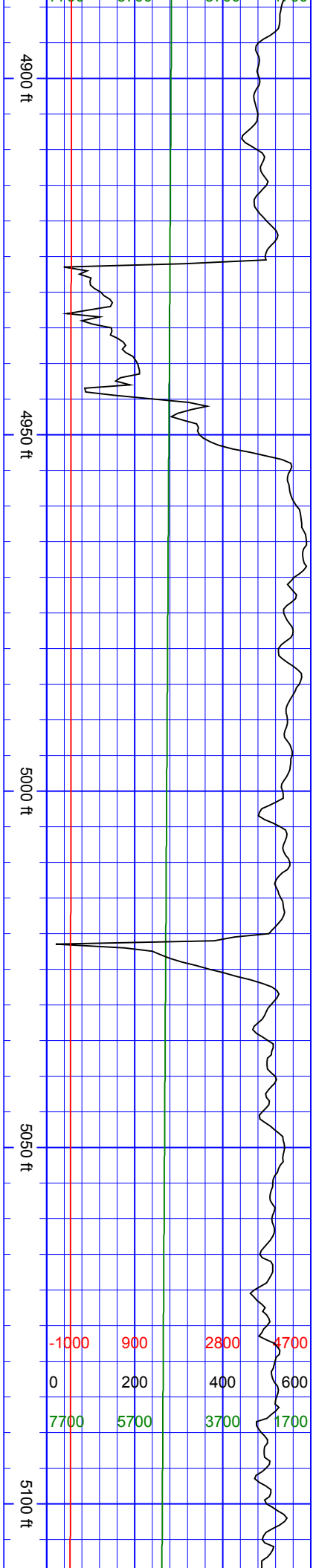
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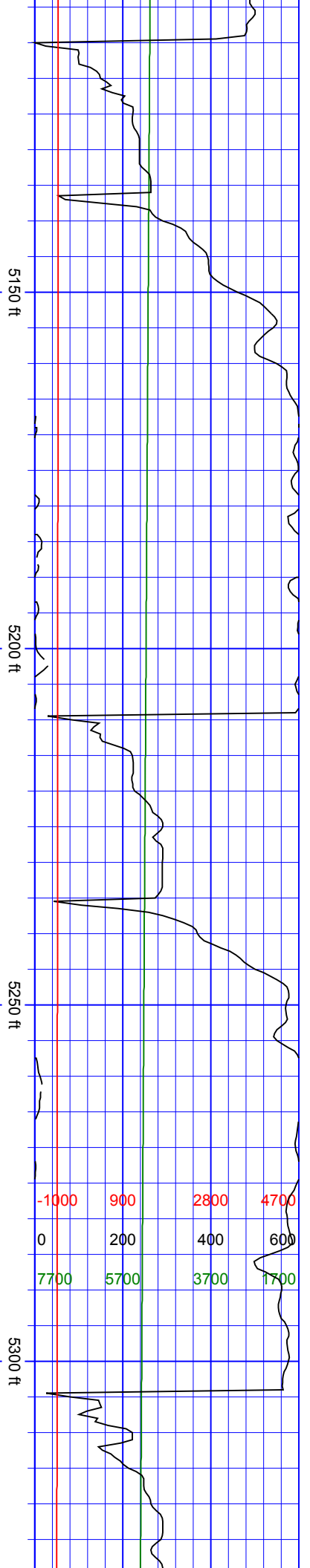
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SurveyDepth:5052  
TVD:5019.48 Inc:6.33  
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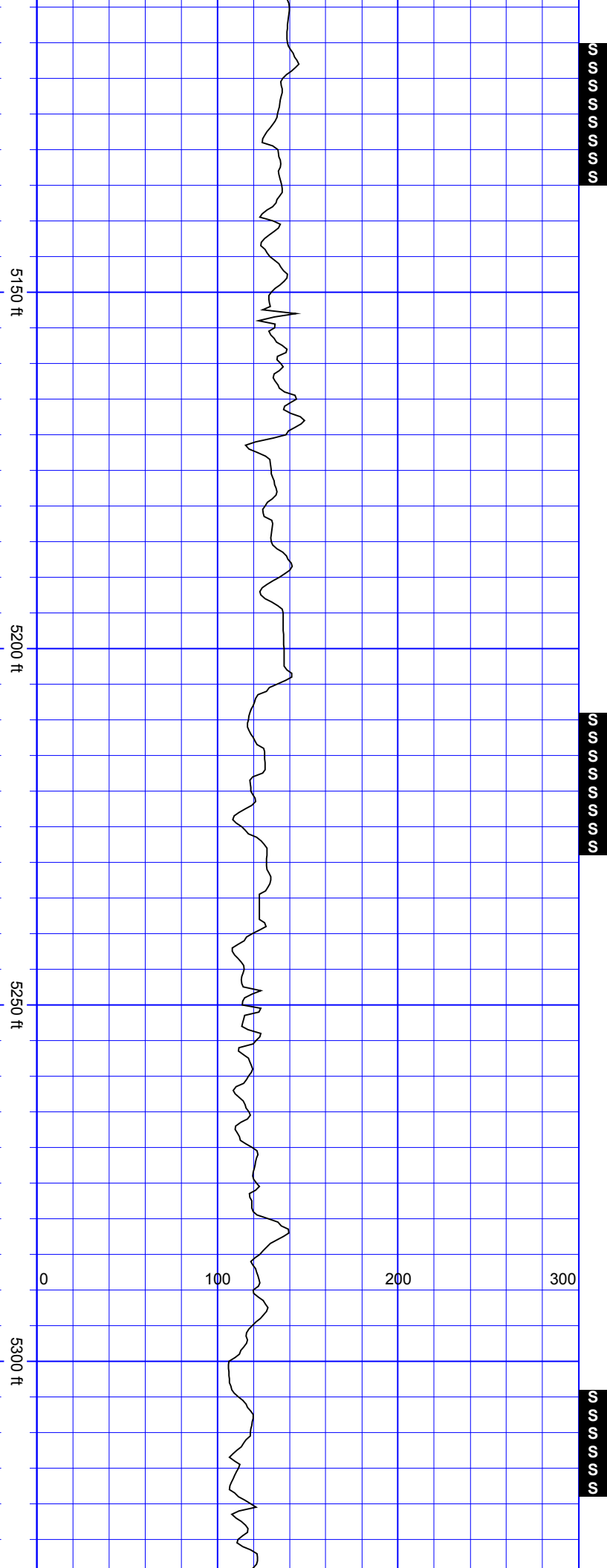
January 08, 2019



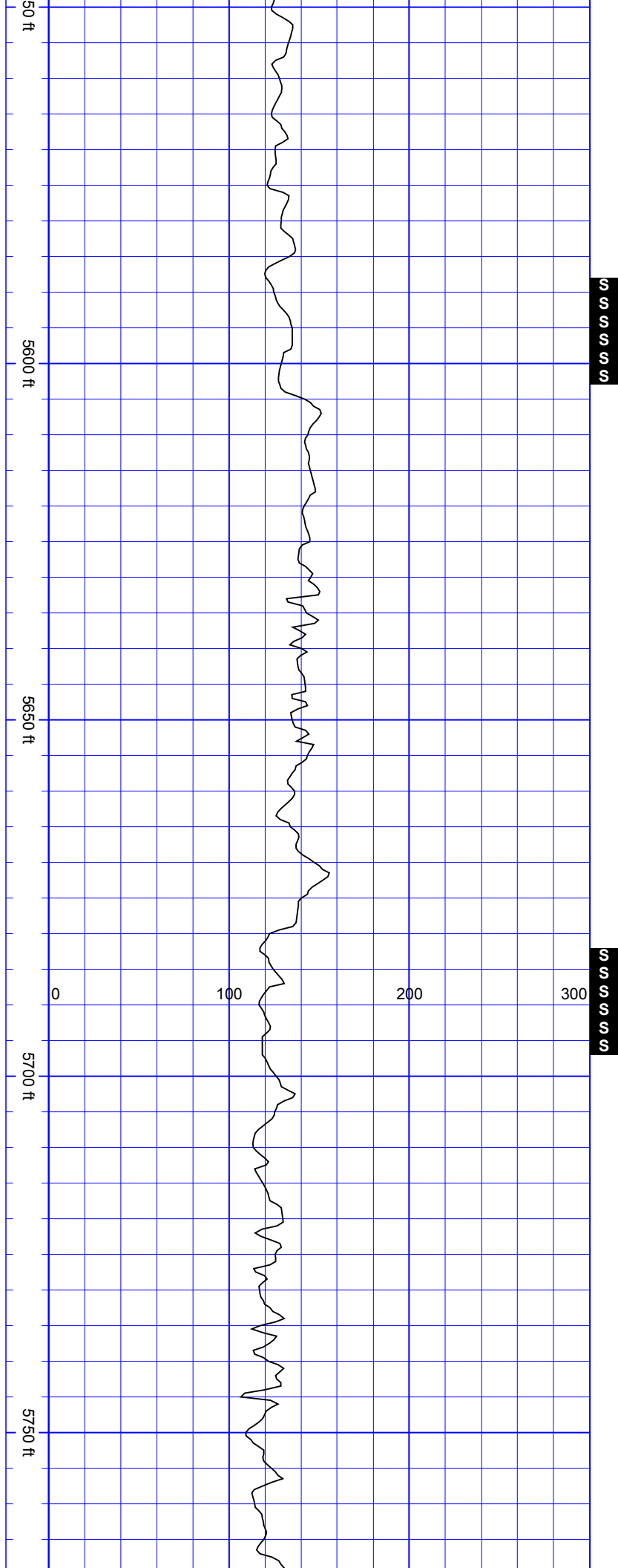
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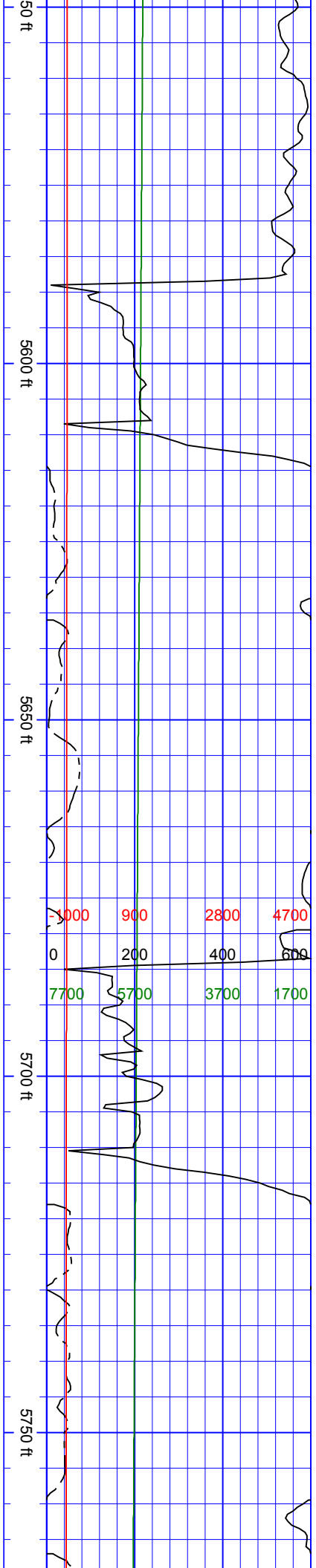


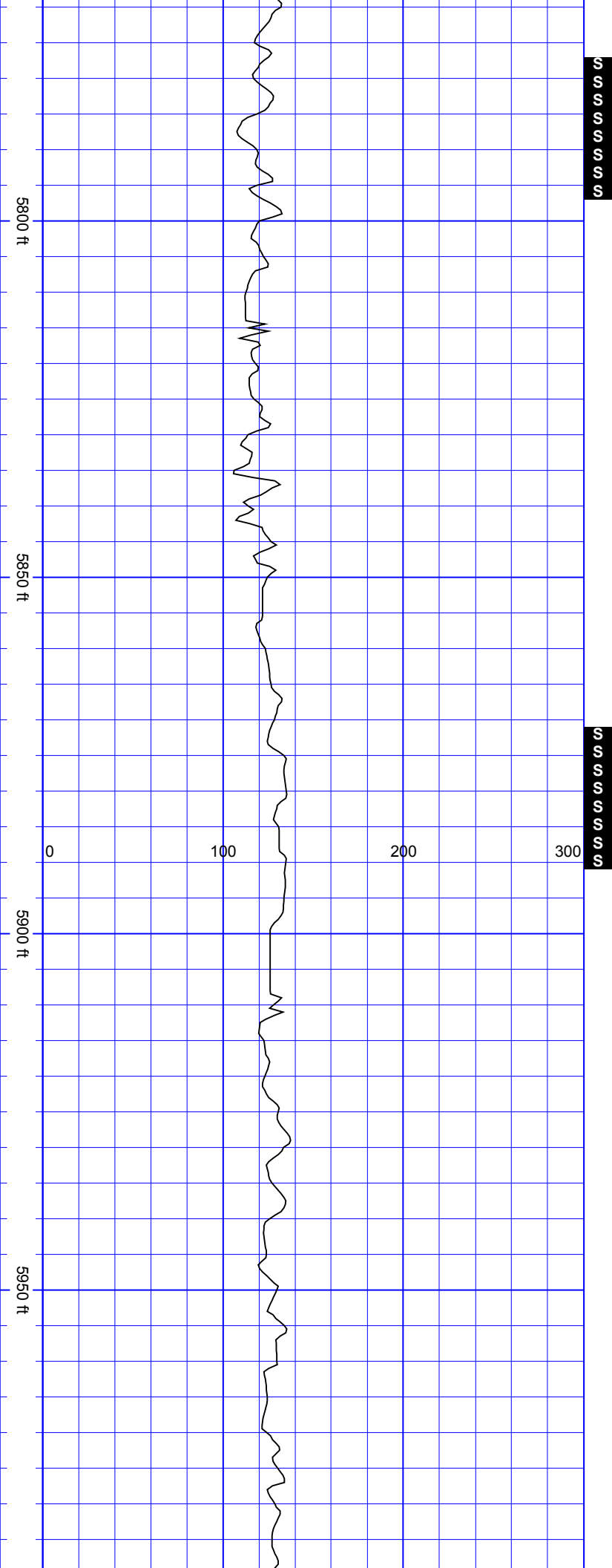




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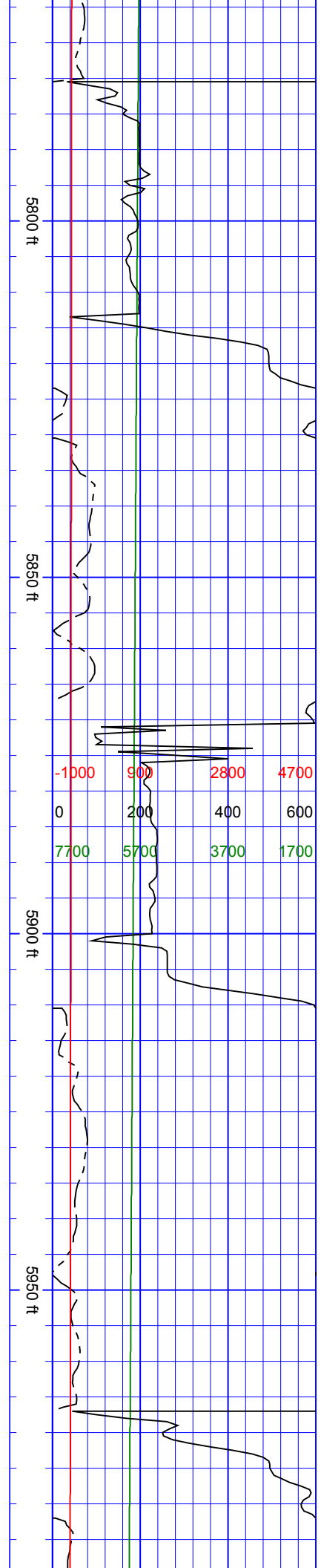
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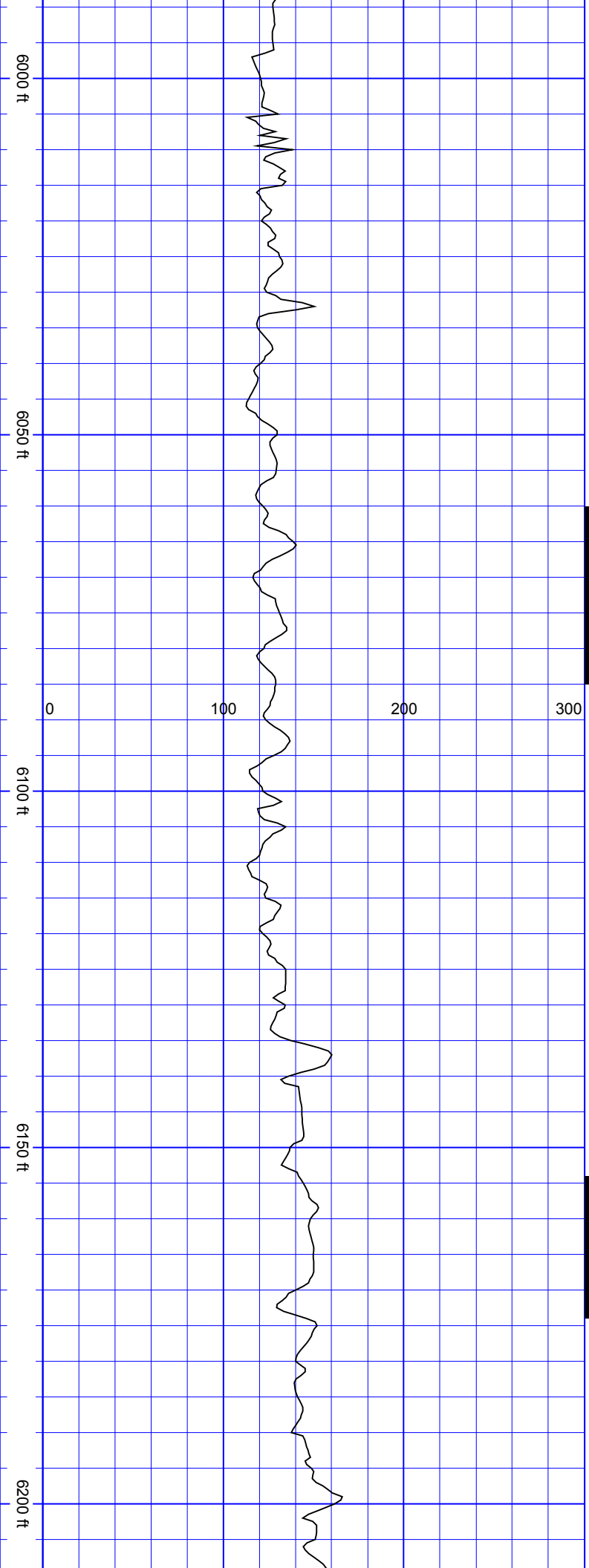


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TVD:5767.56 Inc:8.61  
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SurveyDepth:5902  
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Azi:102.8 VertSec:-  
598.34



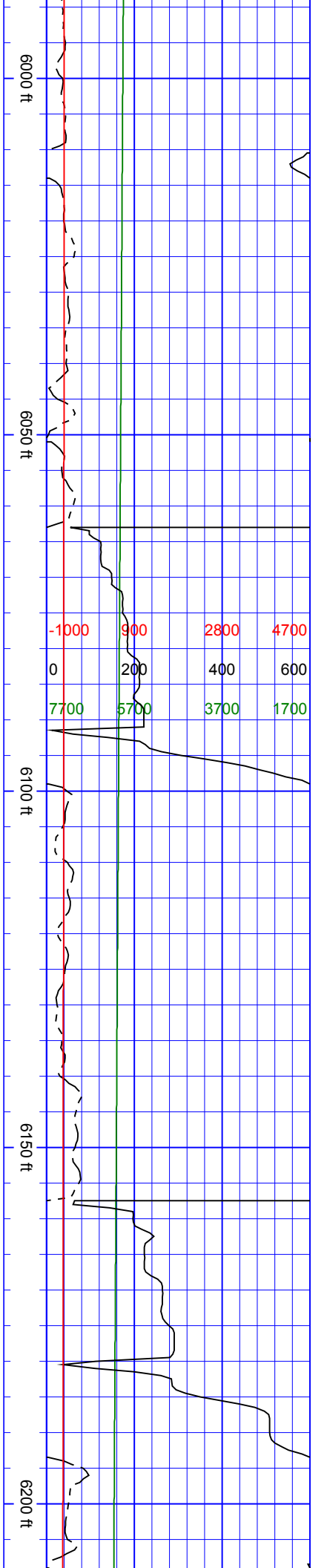
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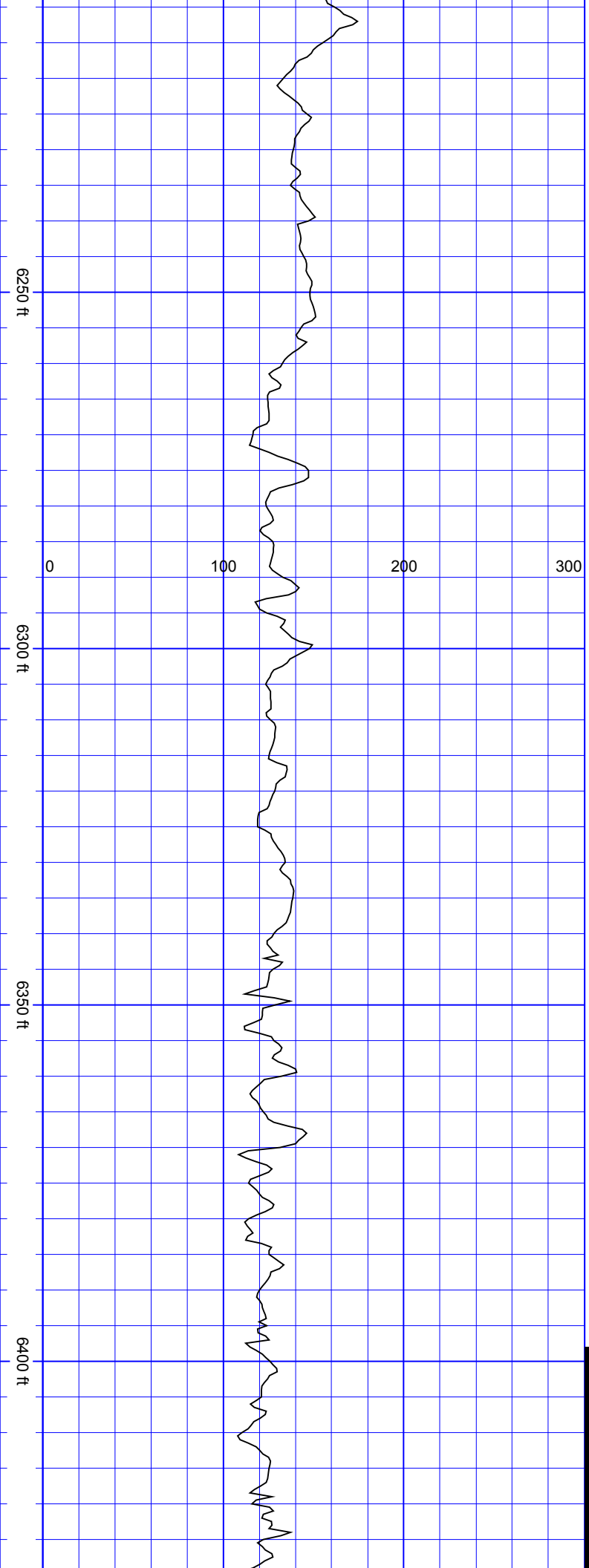


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Azi:113.96 VertSec:-  
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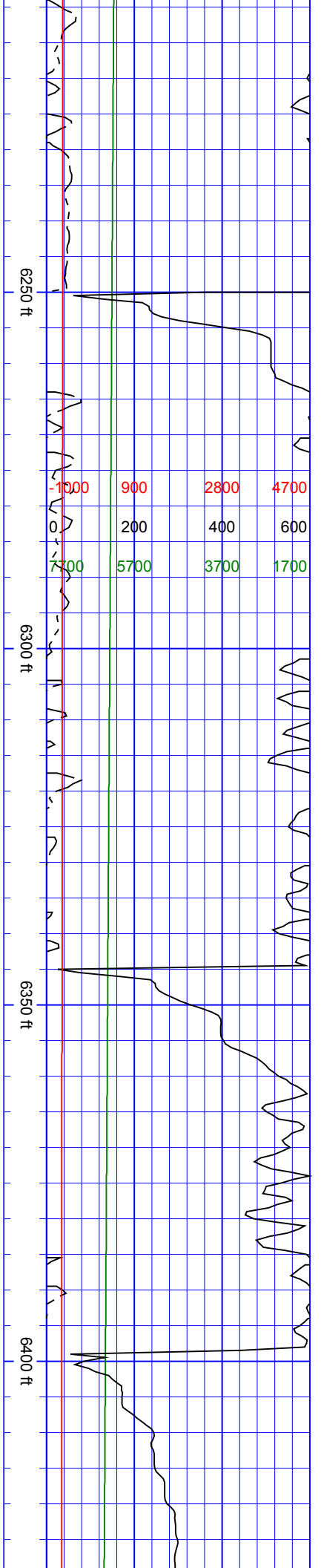
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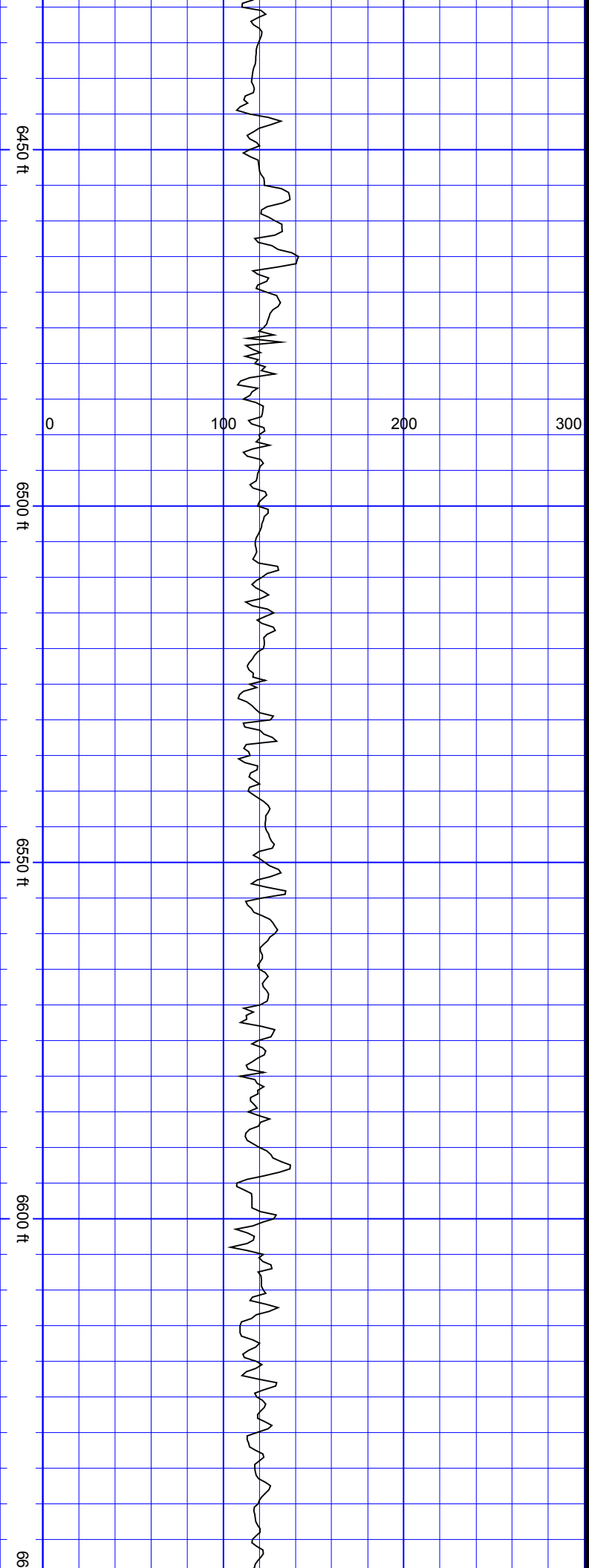




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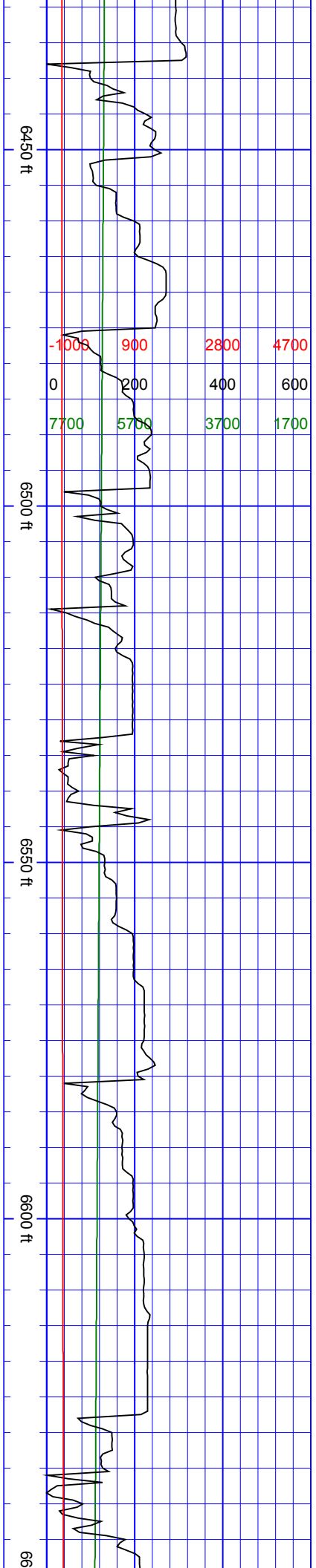


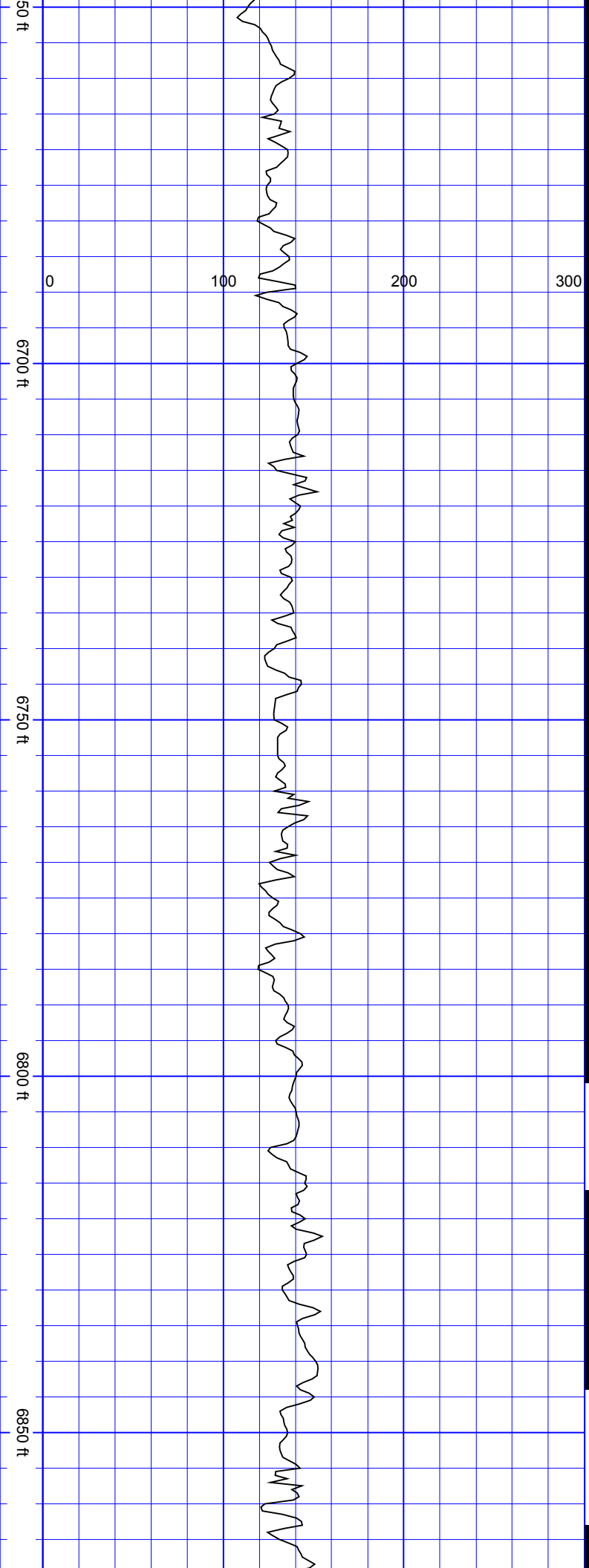
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SurveyDepth:6516  
TVD:6468.92 Inc:7.16  
Azi:256.34 VertSec:-  
661.3

SurveyDepth:6564  
TVD:6516.31 Inc:10.94  
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SurveyDepth:6611  
TVD:6561.92 Inc:16.79  
Azi:258.54 VertSec:-  
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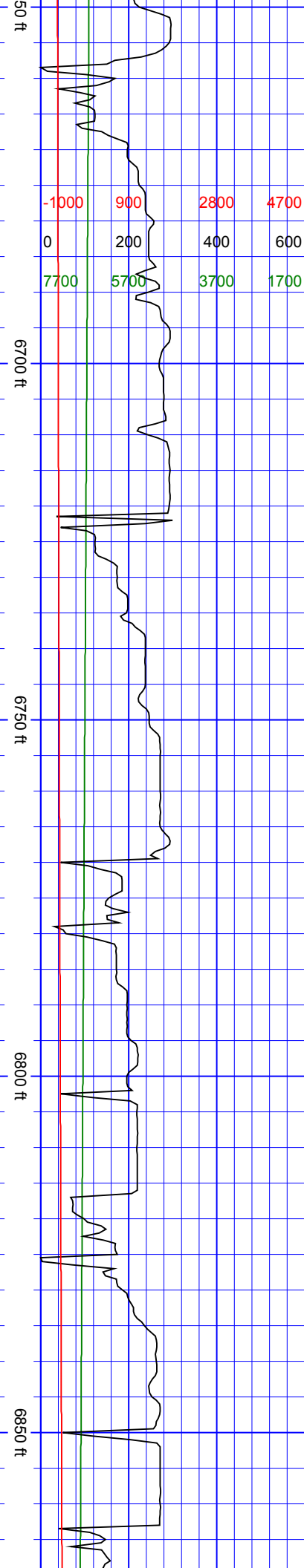
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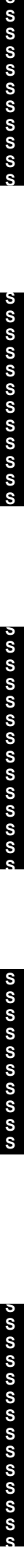
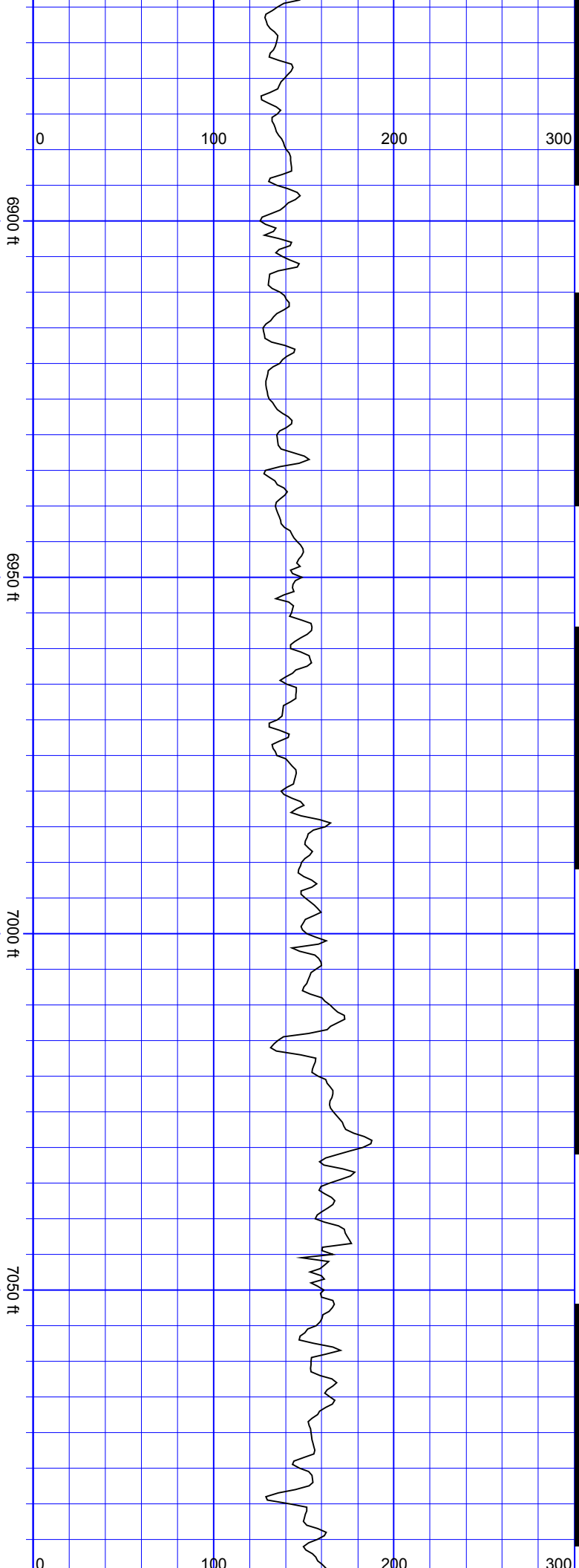
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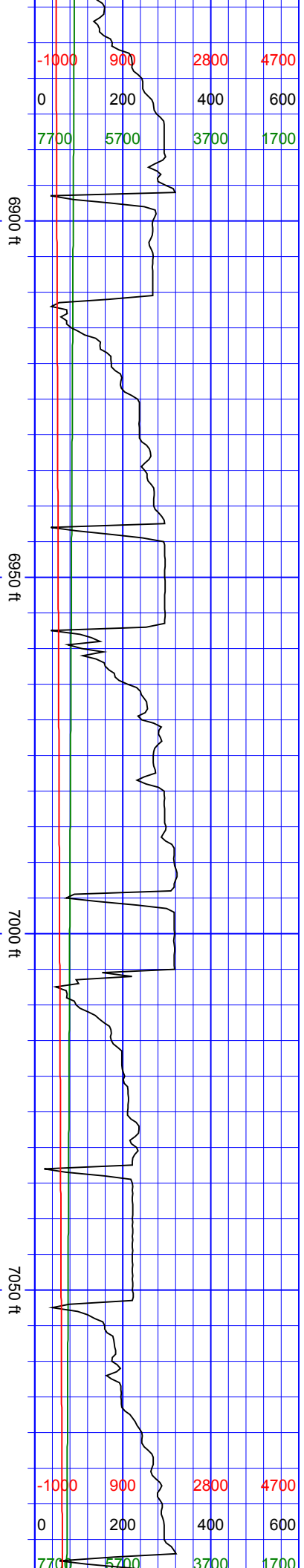
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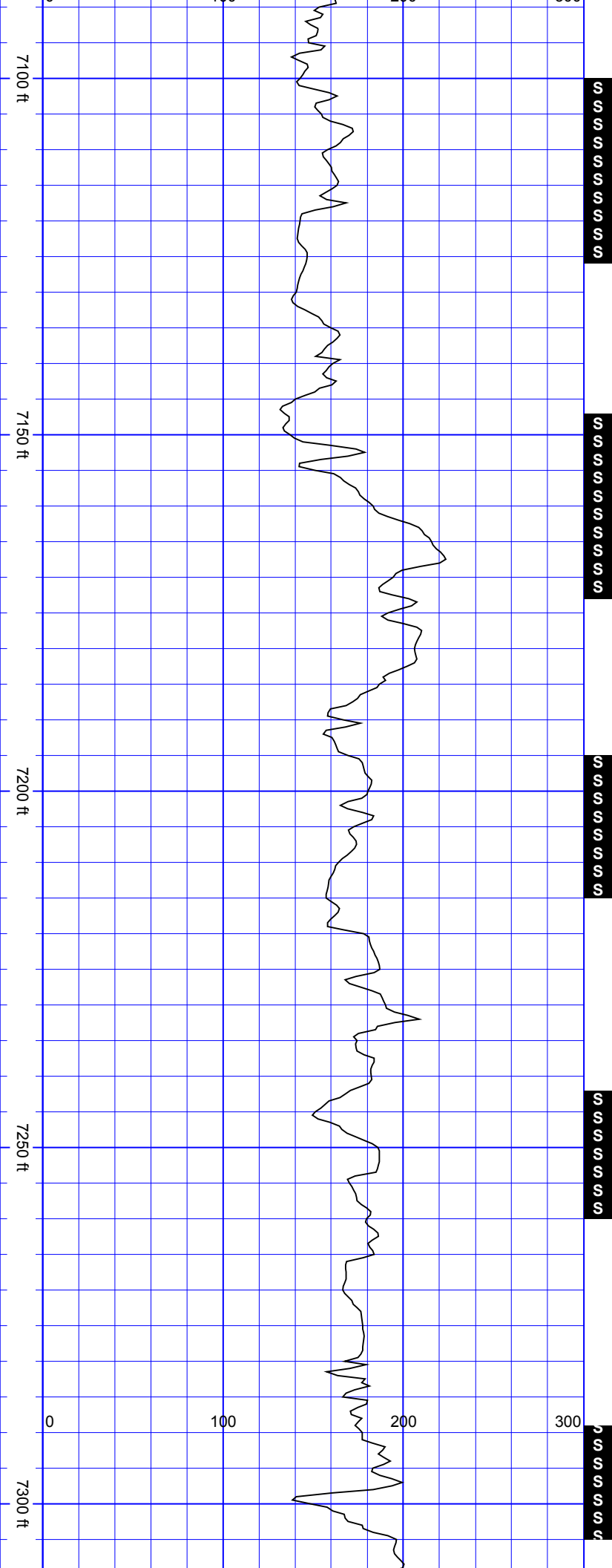
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TVD:6891.98 Inc:38.41  
Azi:272.69 VertSec:-  
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SurveyDepth:7037  
TVD:6928.71 Inc:41.7  
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SurveyDepth:7084  
TVD:6962.81 Inc:45.26





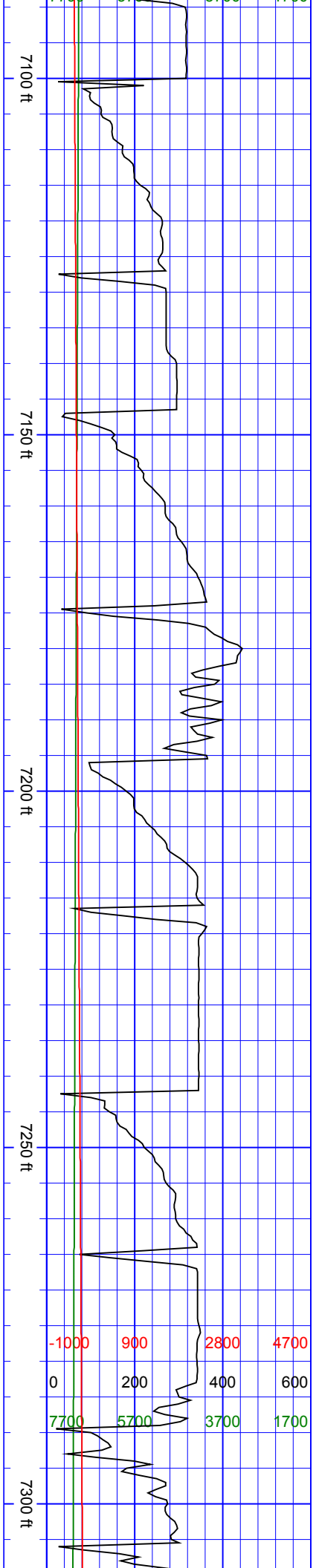
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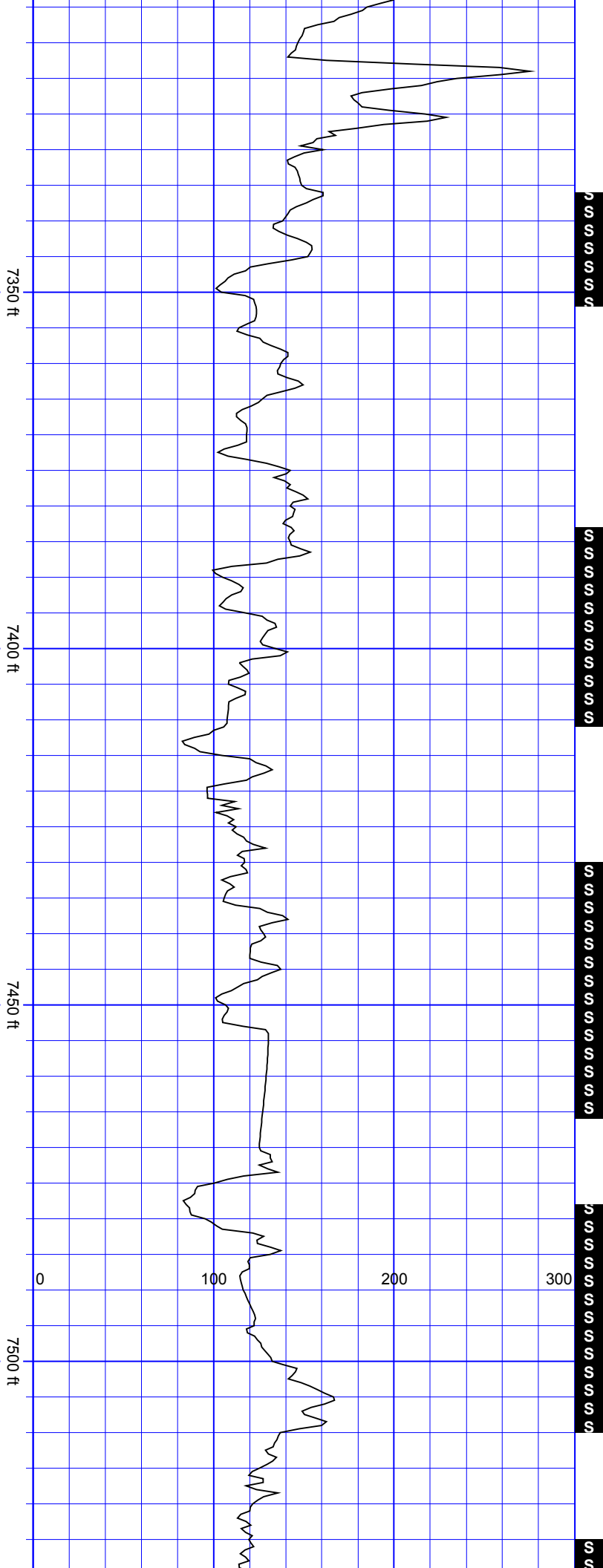
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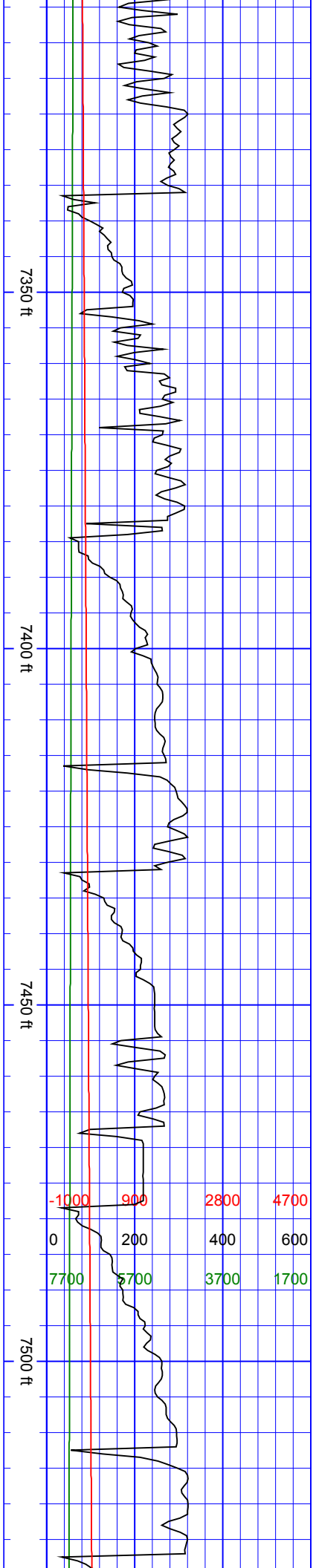
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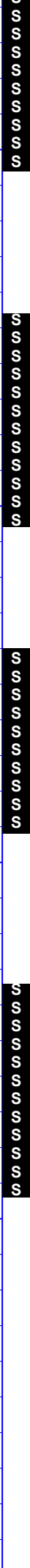
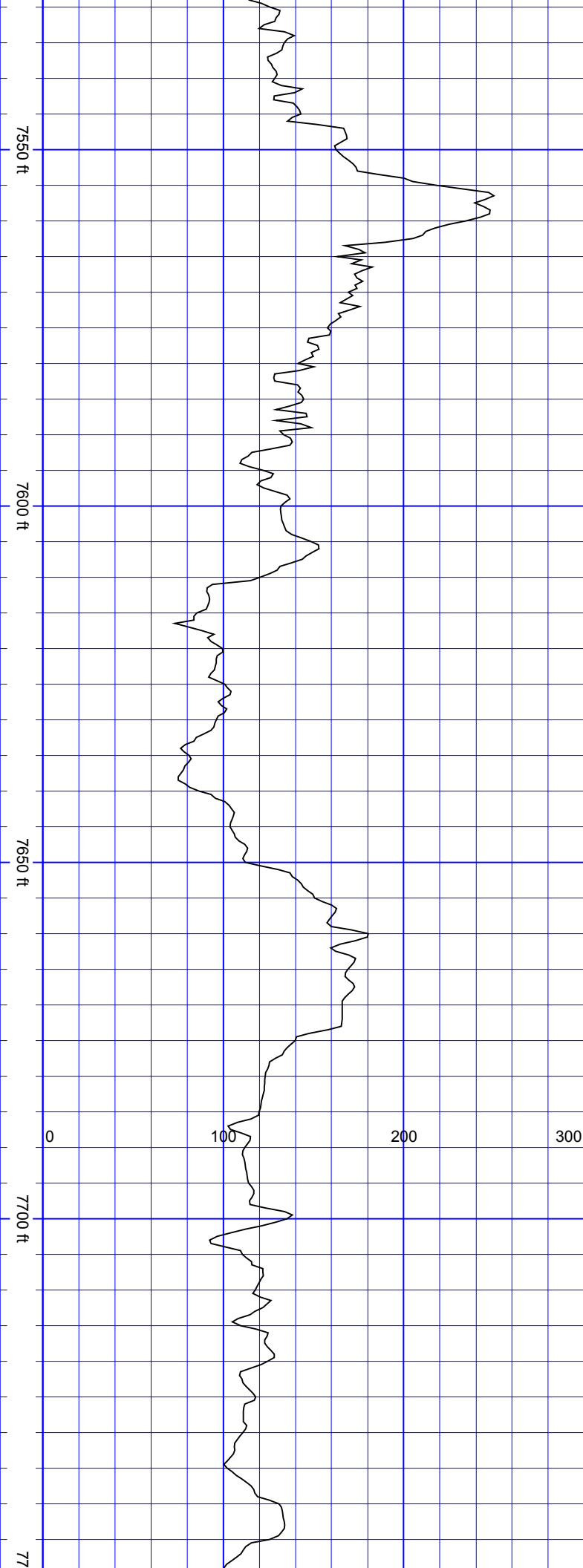
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TVD:7077.62 Inc:58.98  
Azi:271.02 VertSec:-253





SurveyDepth:7320 TVD:7101.55 Inc:59.81 Azi:271.55 VertSec:-212.61
SurveyDepth:7367 TVD:7124.74 Inc:61.04 Azi:271.11 VertSec:-171.81
SurveyDepth:7415 TVD:7146.65 Inc:64.64 Azi:270.23 VertSec:-129.15
SurveyDepth:7462 TVD:7165.27 Inc:68.69 Azi:267.33 VertSec:-86.02
SurveyDepth:7510 TVD:7180.76 Inc:73.65 Azi:267.85 VertSec:-40.6

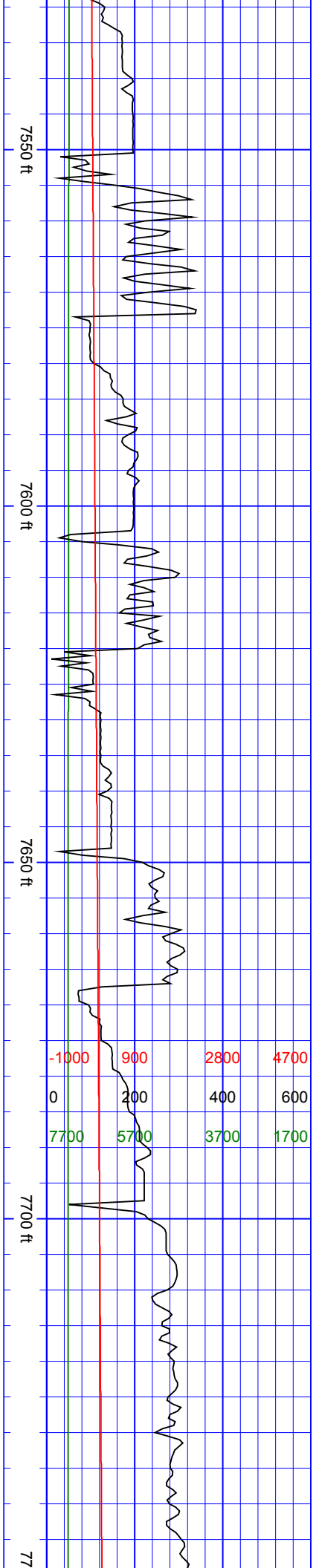


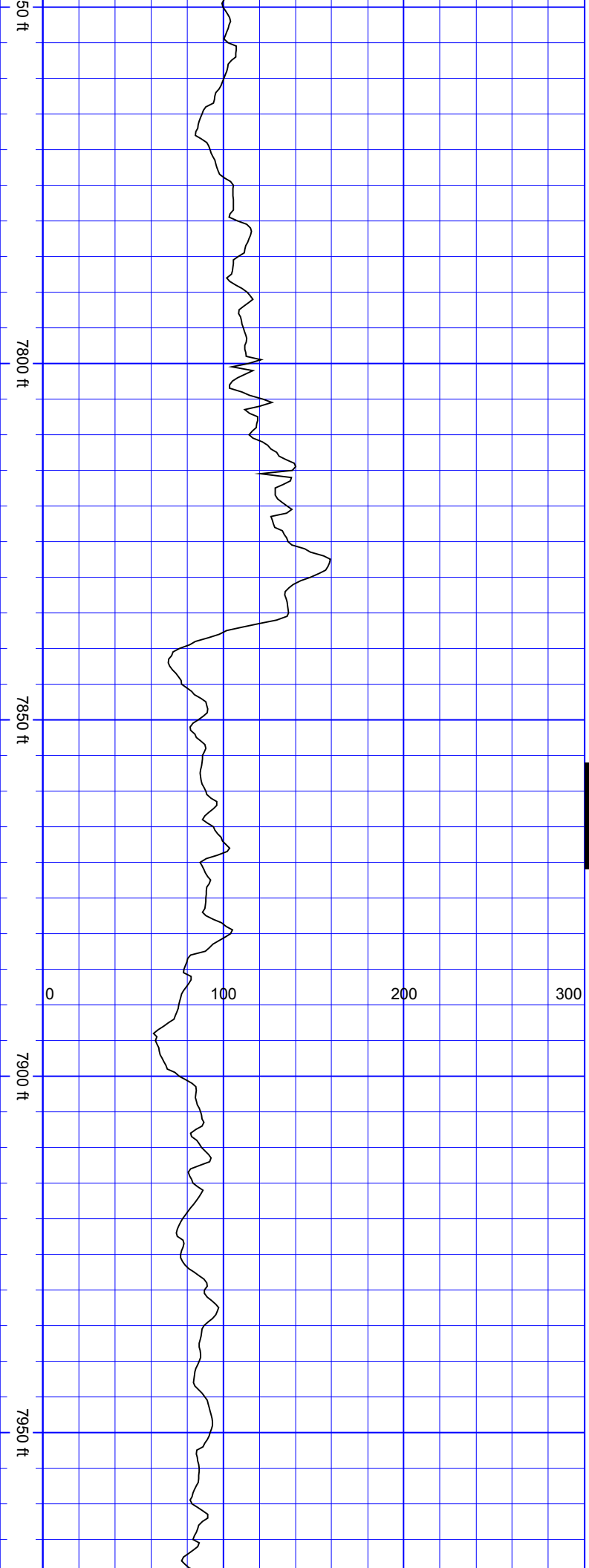


SurveyDepth:7557  
TVD:7192.47 Inc:77.48  
Azi:269.52 VertSec:4.9

SurveyDepth:7604  
TVD:7200.95 Inc:81.74  
Azi:269.88 VertSec:51.1

SurveyDepth:7698  
TVD:7207.56 Inc:90.18  
Azi:271.28  
VertSec:144.68

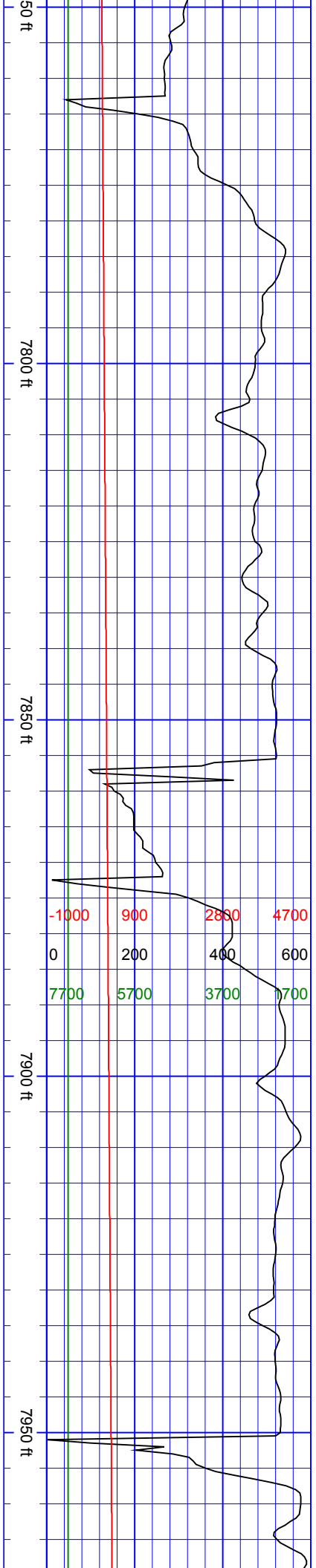


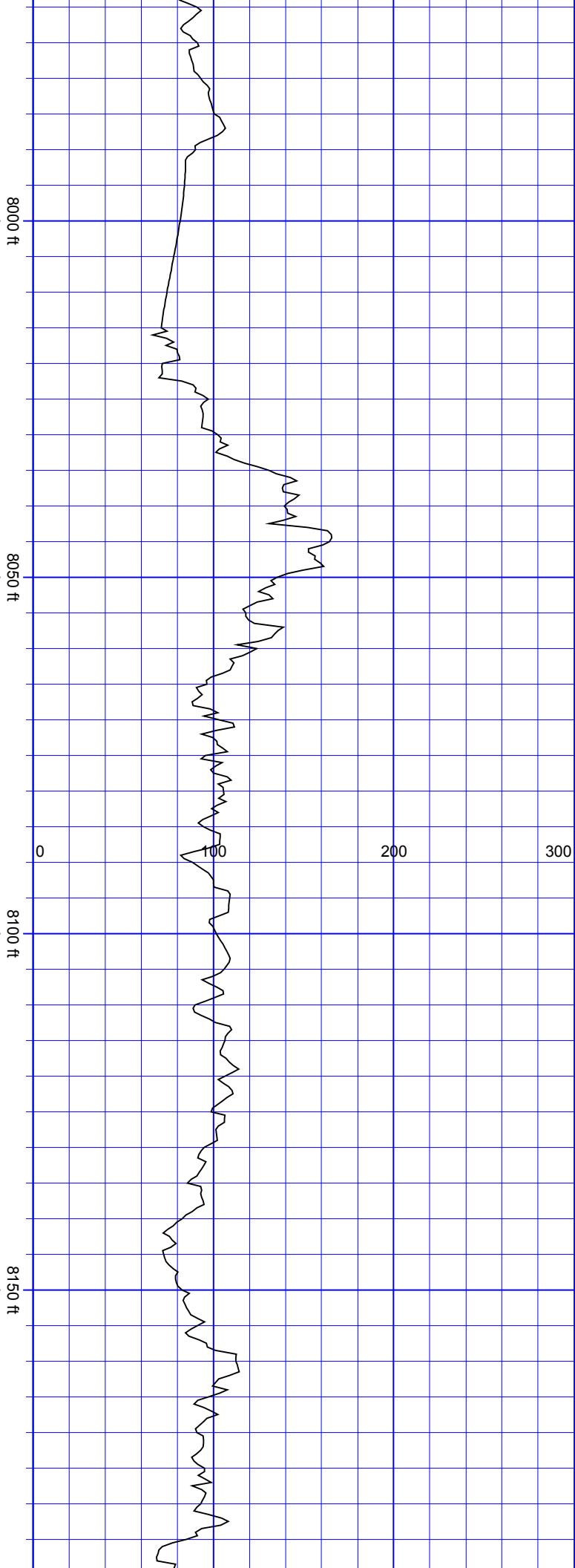


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SurveyDepth:7793  
TVD:7206.76 Inc:90.79  
Azi:271.46  
VertSec:239.51

SurveyDepth:7888  
TVD:7206.61 Inc:89.39  
Azi:274.01  
VertSec:334.17

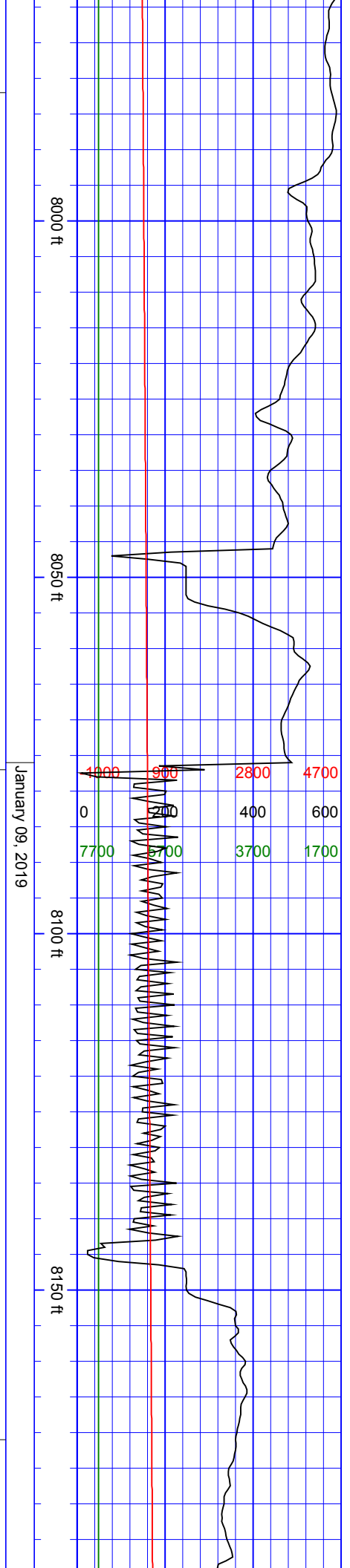


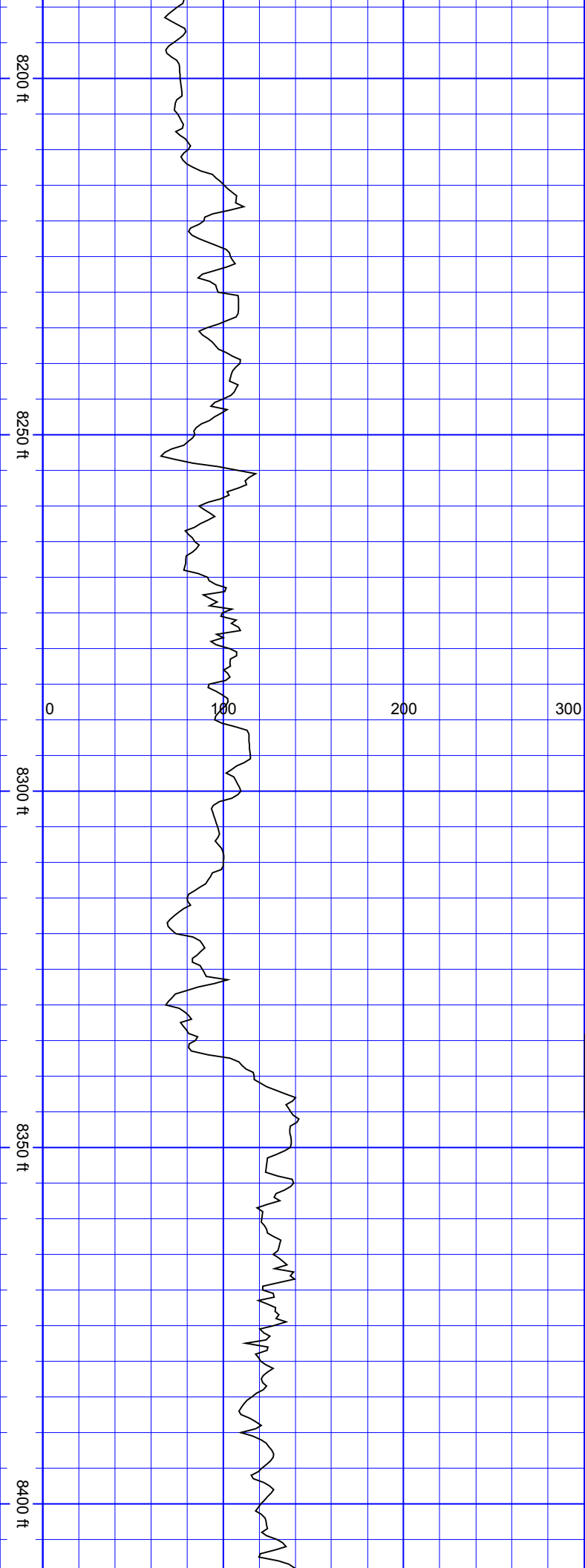


SurveyDepth:7982  
TVD:7207.91 Inc:89.03  
Azi:273.92  
VertSec:427.65

SurveyDepth:8077  
TVD:7209.51 Inc:89.03  
Azi:273.13  
VertSec:522.19

SurveyDepth:8171  
TVD:7210.78 Inc:89.43  
Azi:272.69  
VertSec:615.83

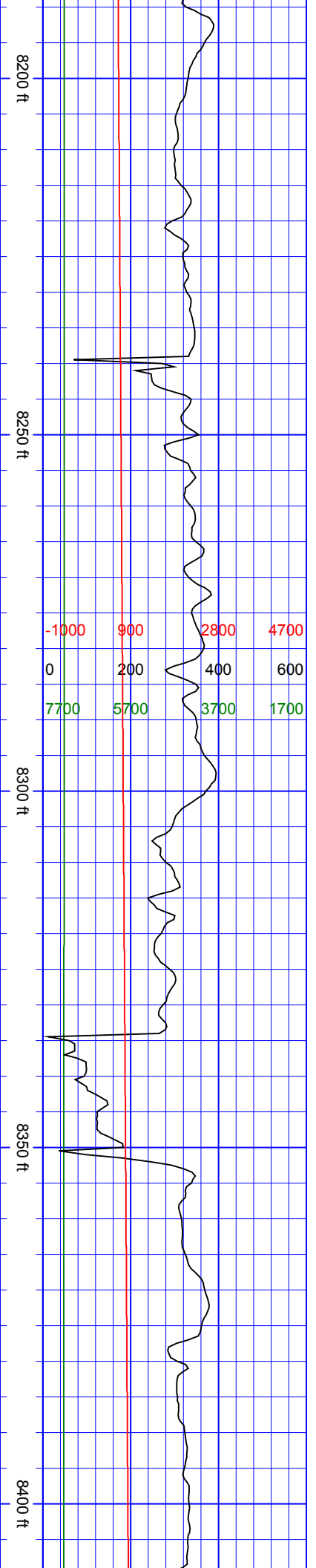


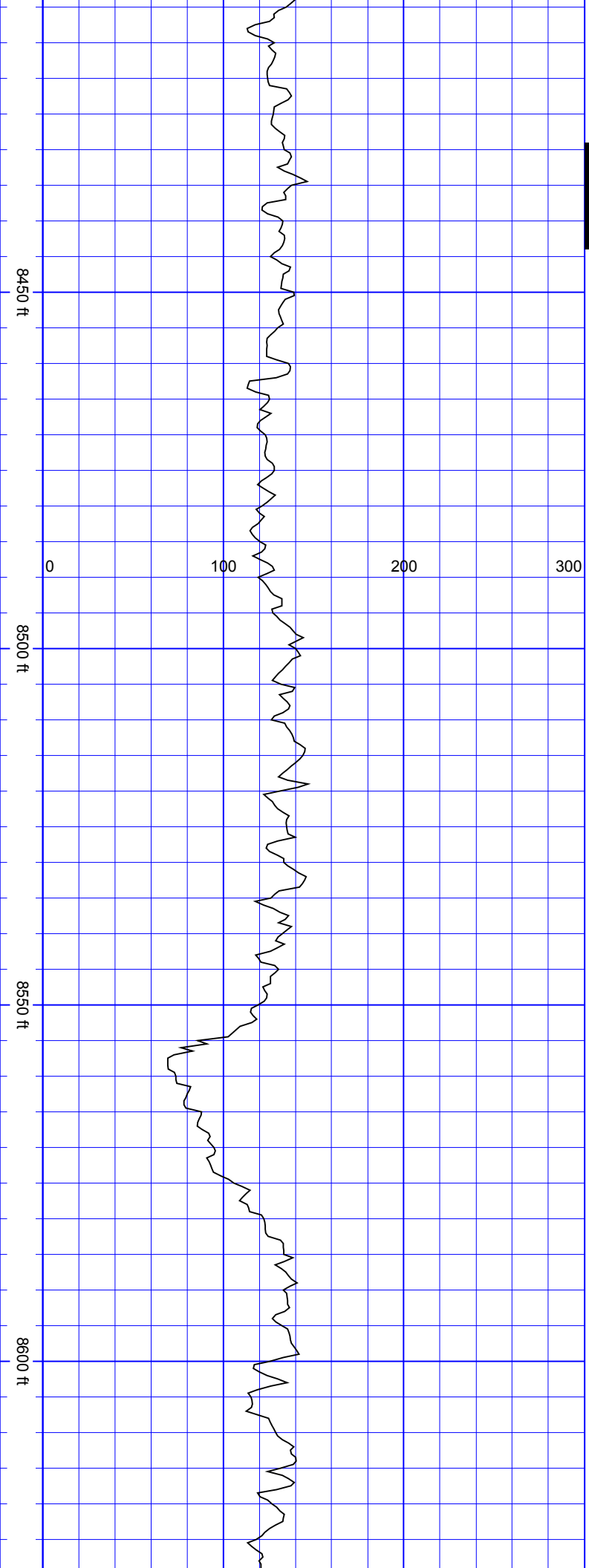


SurveyDepth:8266  
TVD:7212.16 Inc:88.9  
Azi:272.6 VertSec:710.5

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SurveyDepth:8361  
TVD:7214.46 Inc:88.33  
Azi:274.09  
VertSec:805.05

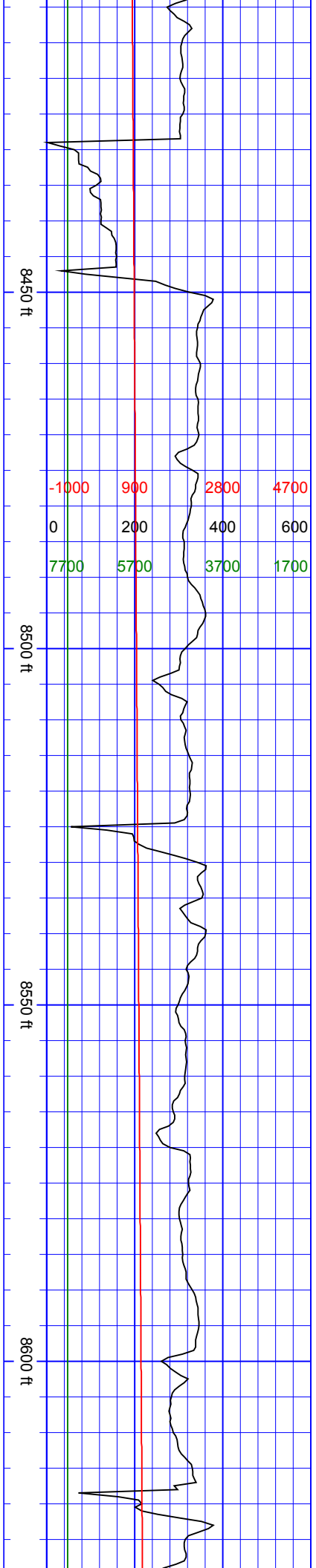




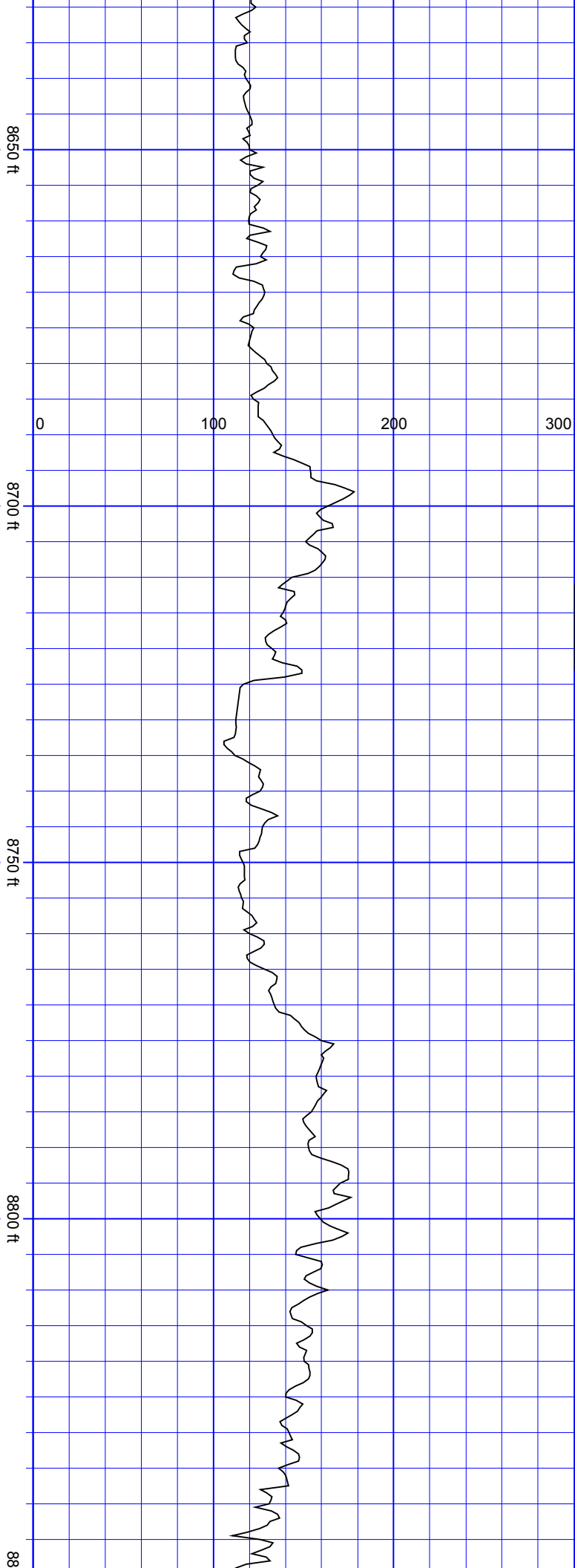
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SurveyDepth:8455  
TVD:7215.29 Inc:90.66  
Azi:274.18  
VertSec:898.5

SurveyDepth:8549  
TVD:7214.38 Inc:90.44  
Azi:274.53  
VertSec:991.91





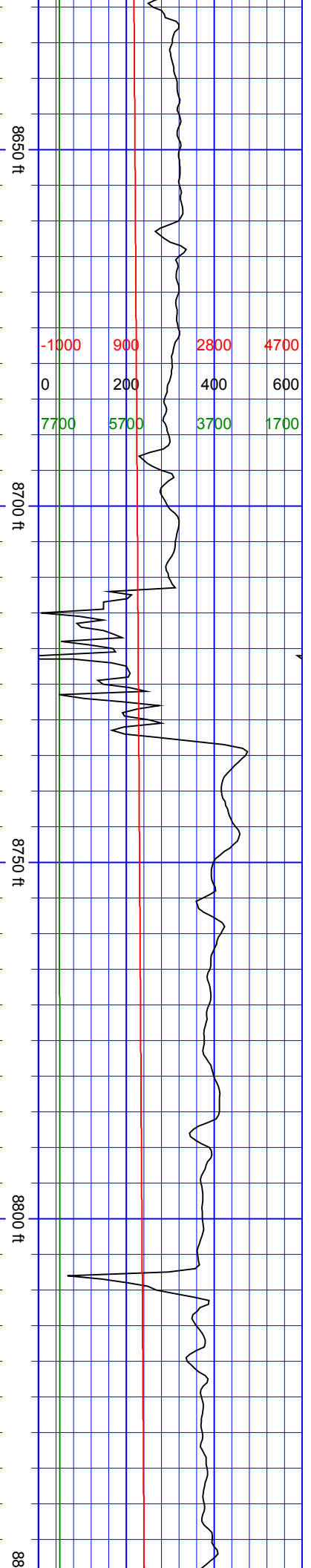


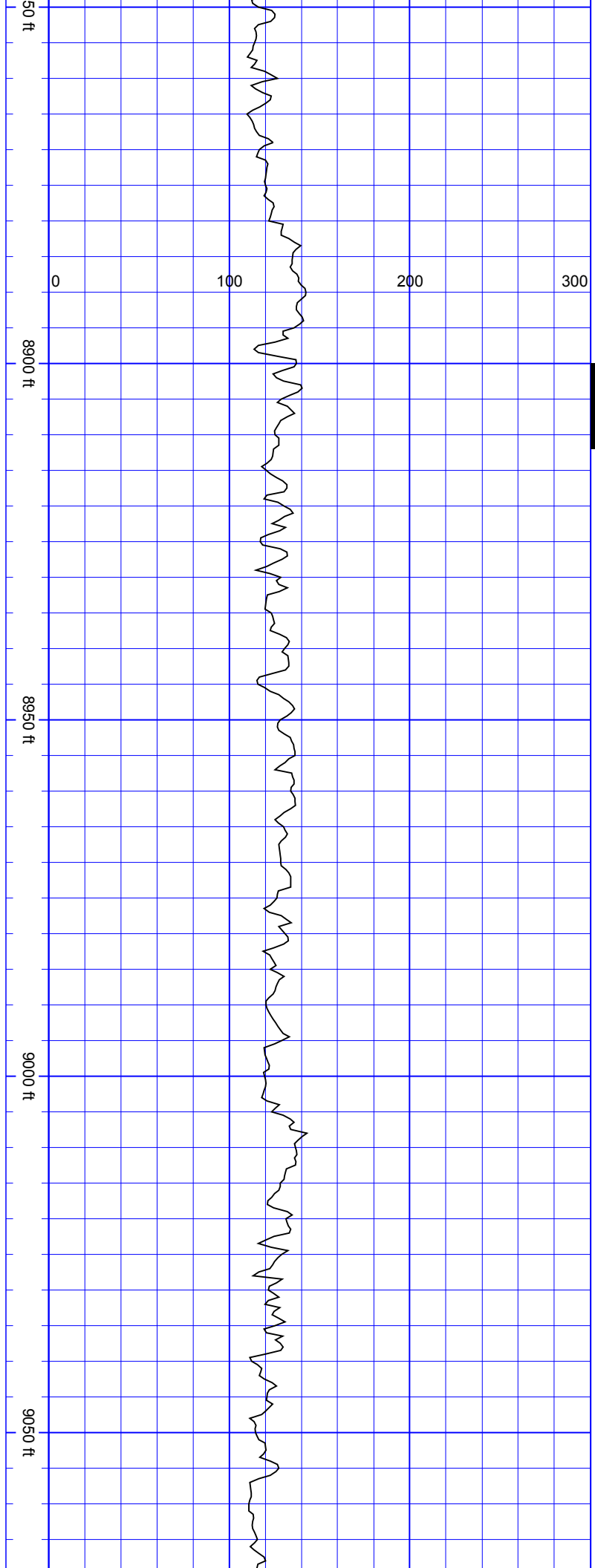
SurveyDepth:8643  
TVD:7214.17 Inc:89.82  
Azi:274.36  
VertSec:1085.31

SurveyDepth:8738  
TVD:7213.77 Inc:90.66  
Azi:273.3  
VertSec:1179.81

SurveyDepth:8832  
TVD:7212.98 Inc:90.31  
Azi:273.39  
VertSec:1273.4

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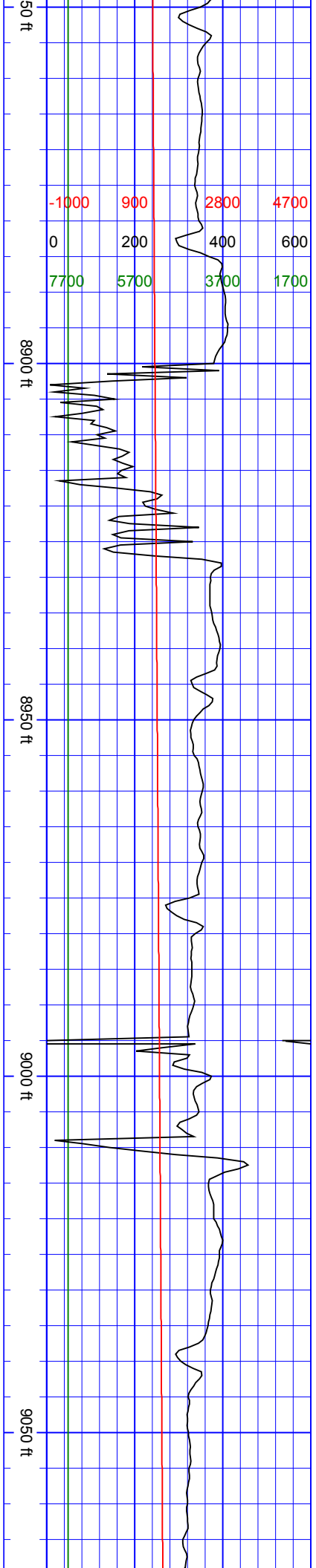


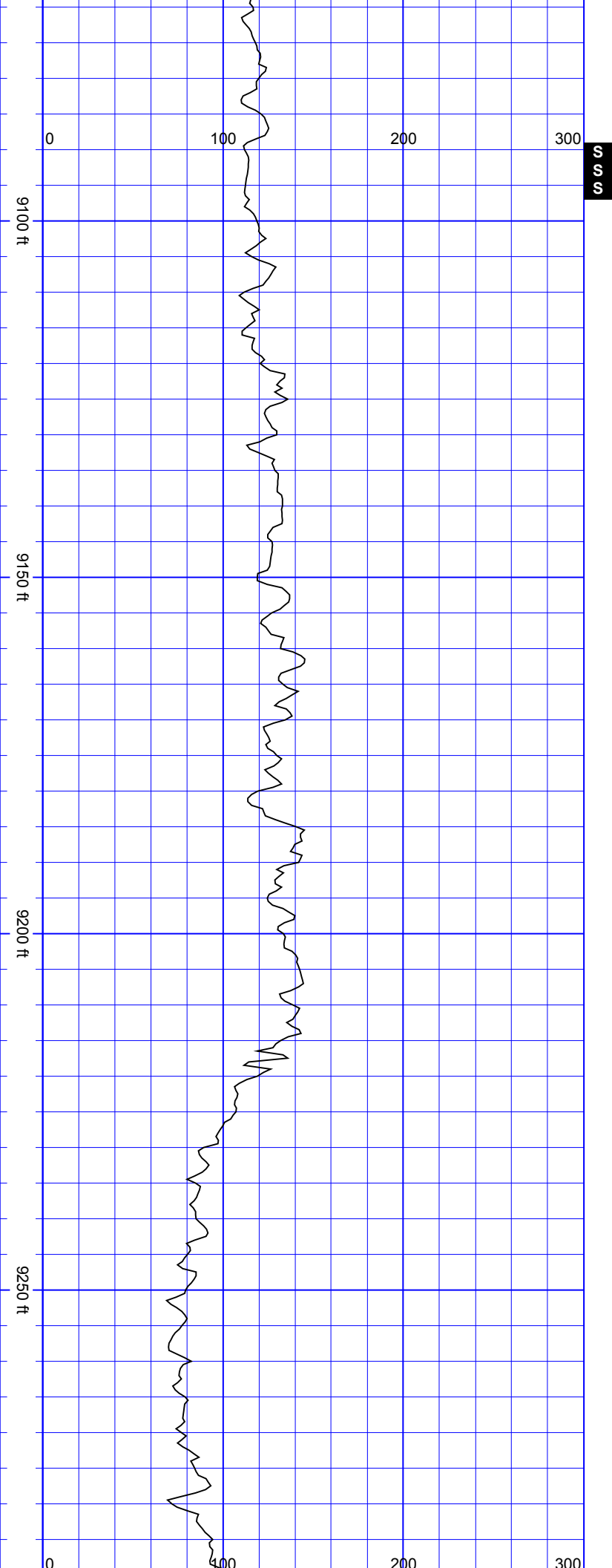


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SurveyDepth:8926  
TVD:7211.71 Inc:91.23  
Azi:272.16  
VertSec:1367.05

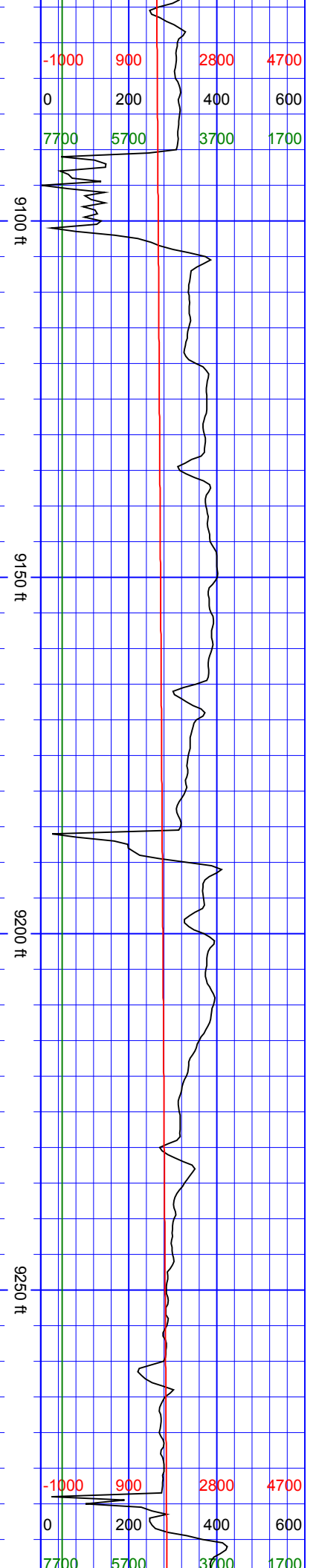
SurveyDepth:9021  
TVD:7210.48 Inc:90.26  
Azi:272.42  
VertSec:1461.77

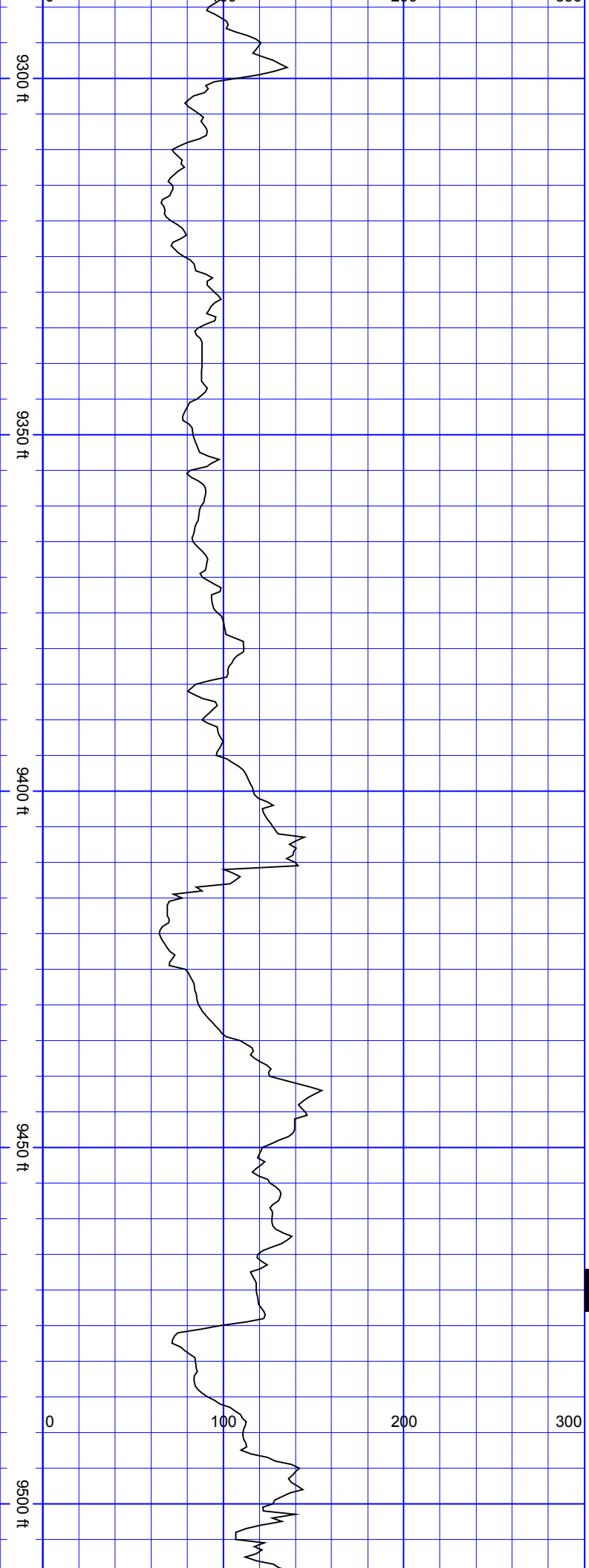




SurveyDepth:9116  
TVD:7209.82 Inc:90.53  
Azi:271.98  
VertSec:1556.51

SurveyDepth:9210  
TVD:7209.1 Inc:90.35  
Azi:271.9  
VertSec:1650.28



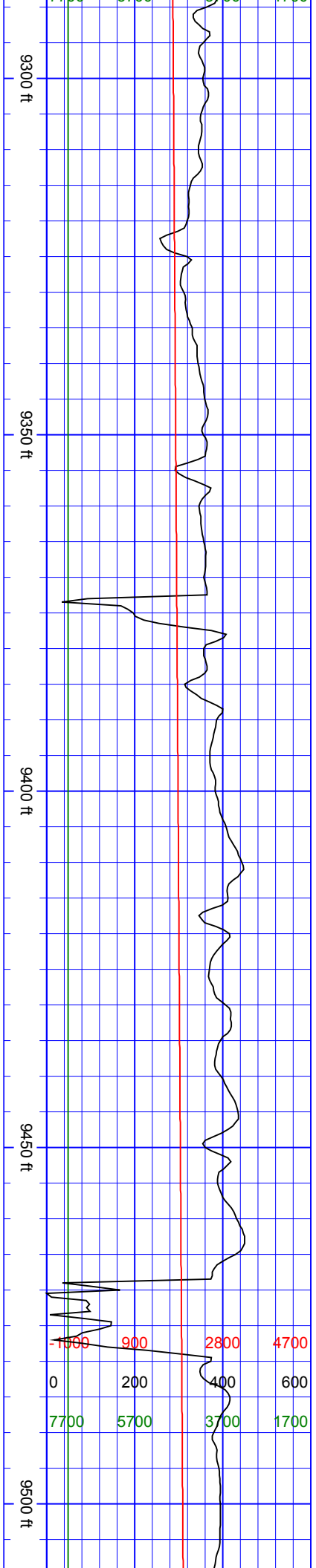


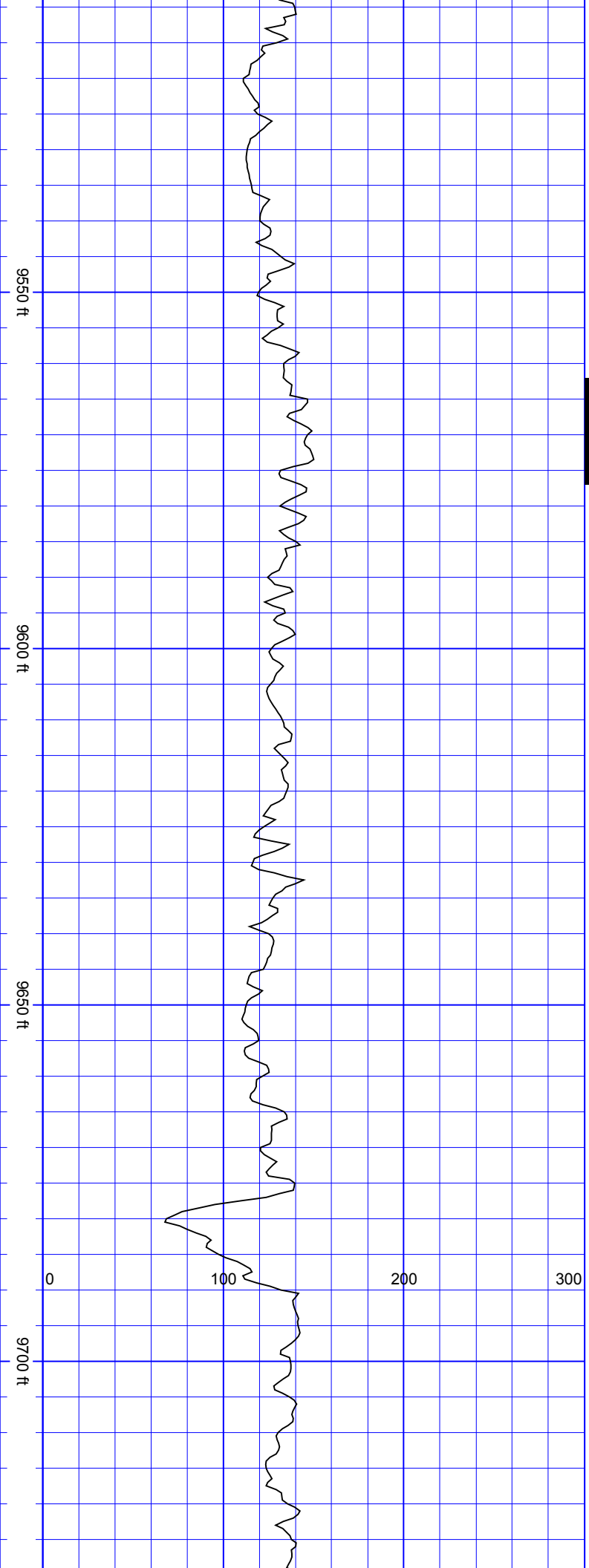
SurveyDepth:9305  
TVD:7208.84 Inc:89.96  
Azi:271.81  
VertSec:1745.07

SurveyDepth:9399  
TVD:7209.74 Inc:88.95  
Azi:271.02  
VertSec:1838.89

SurveyDepth:9494  
TVD:7212.21 Inc:88.07  
Azi:270.67  
VertSec:1933.74

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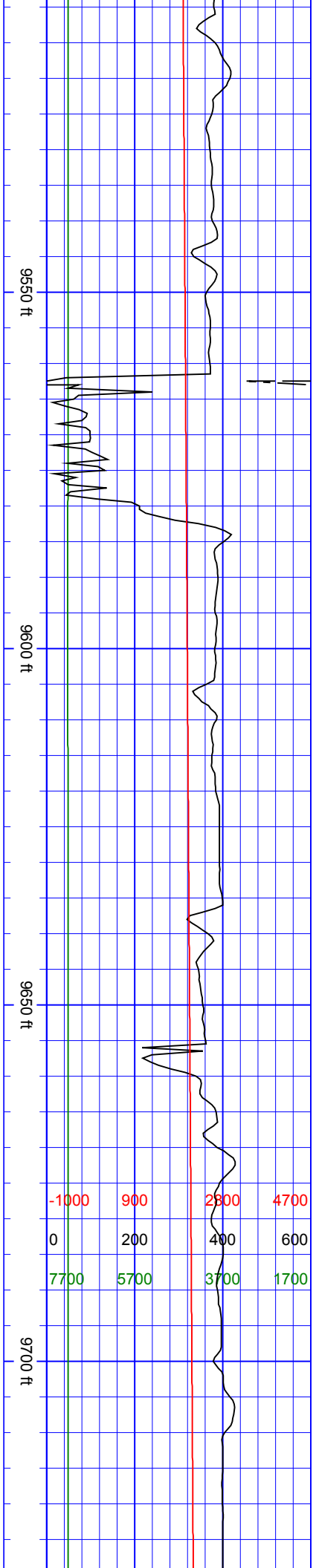


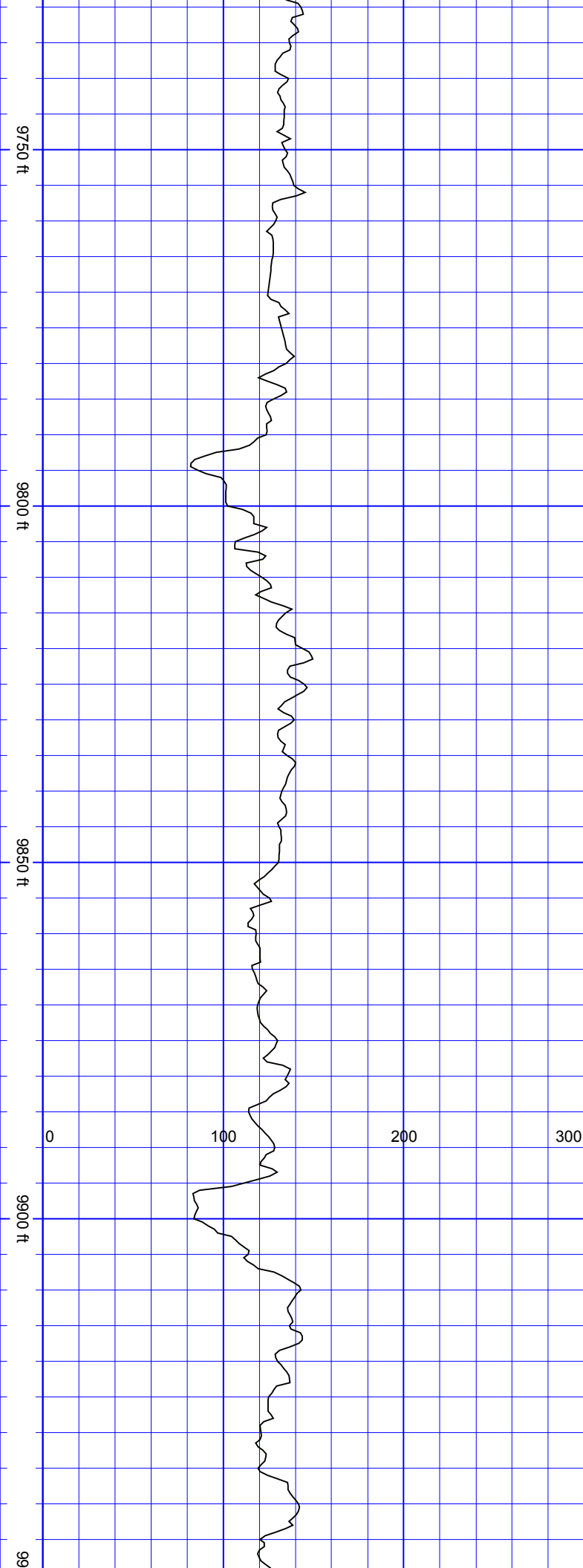


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SurveyDepth:9588  
TVD:7213.64 Inc:90.18  
Azi:272.07  
VertSec:2027.55

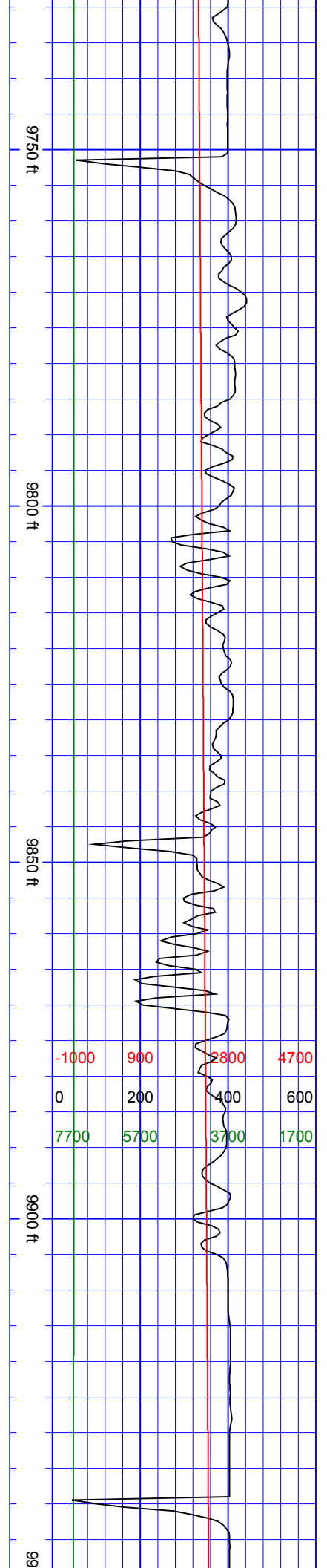
SurveyDepth:9682  
TVD:7213.17 Inc:90.4  
Azi:272.34  
VertSec:2121.3

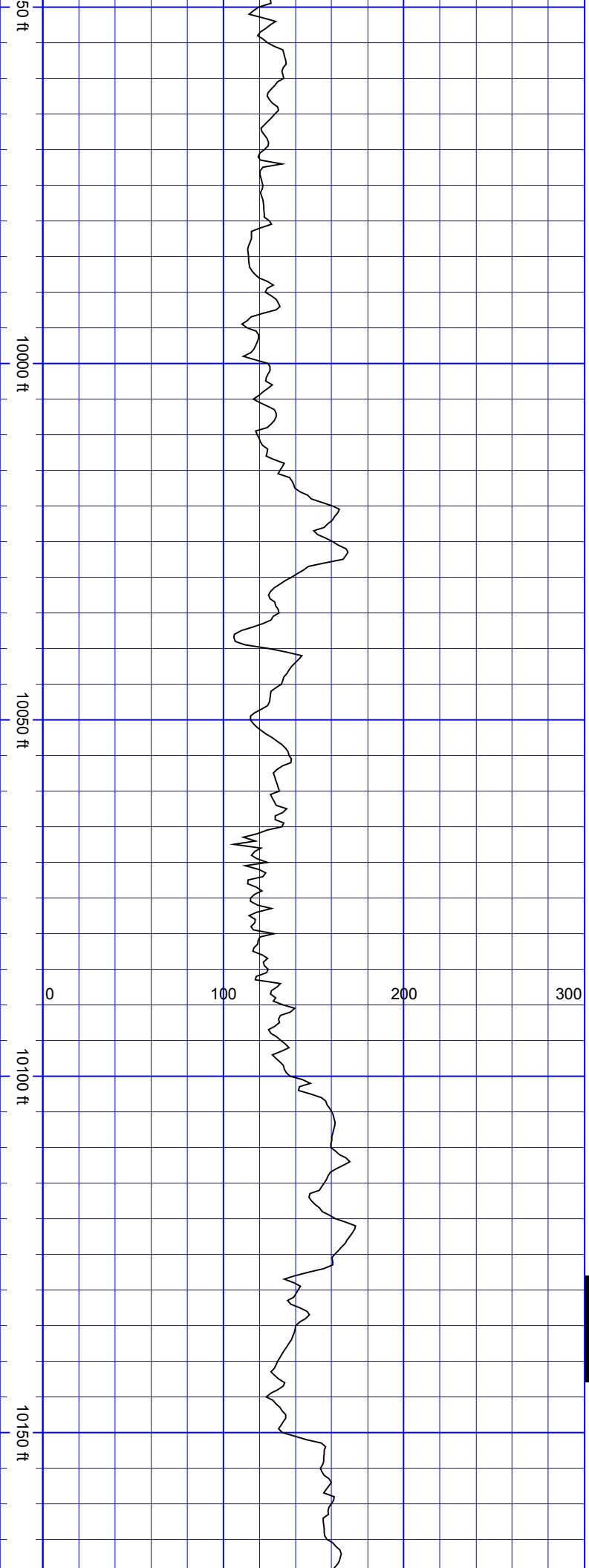




SurveyDepth:9777  
TVD:7212.65 Inc:90.22  
Azi:271.19  
VertSec:2216.08

SurveyDepth:9871  
TVD:7212.94 Inc:89.43  
Azi:271.19  
VertSec:2309.93

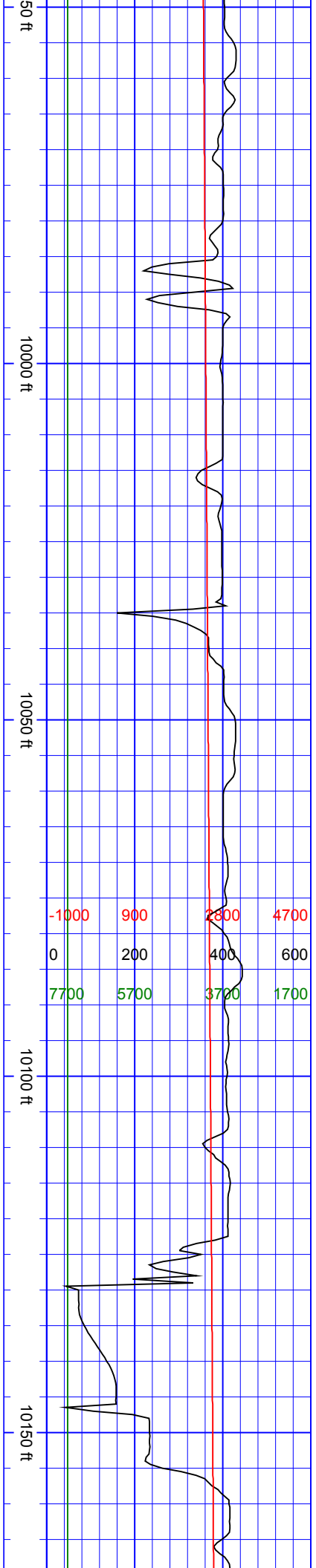


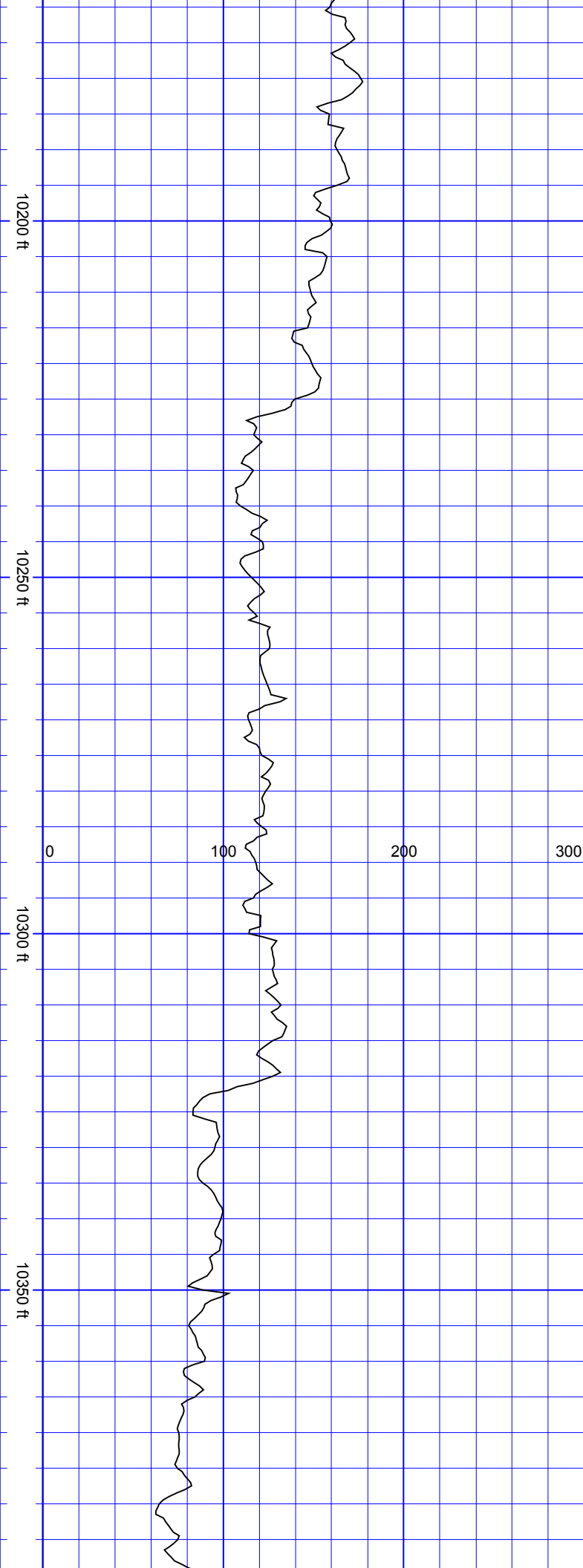


SurveyDepth:9965  
TVD:7214.06 Inc:89.21  
Azi:271.55  
VertSec:2403.76

SurveyDepth:10060  
TVD:7215.77 Inc:88.73  
Azi:271.81  
VertSec:2498.55

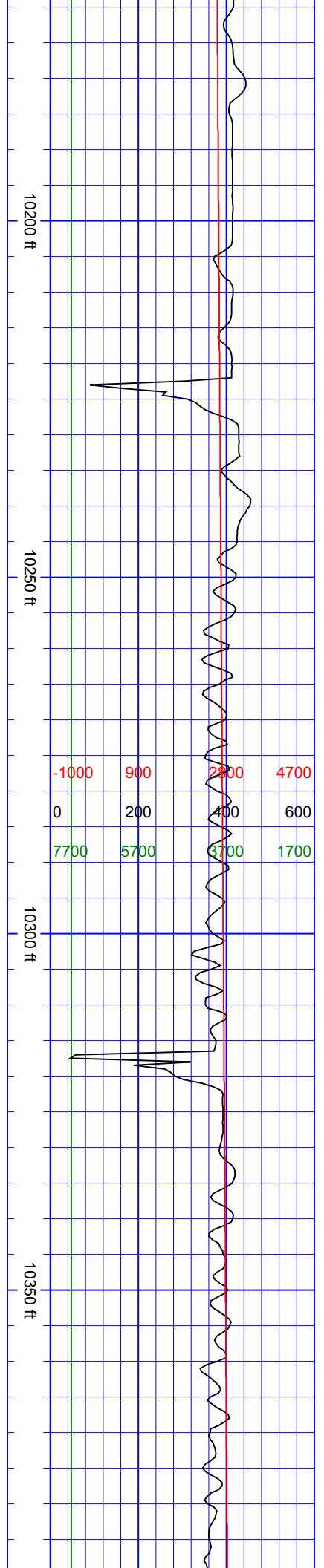
SurveyDepth:10154  
TVD:7216.01 Inc:90.97  
Azi:272.07  
VertSec:2592.32



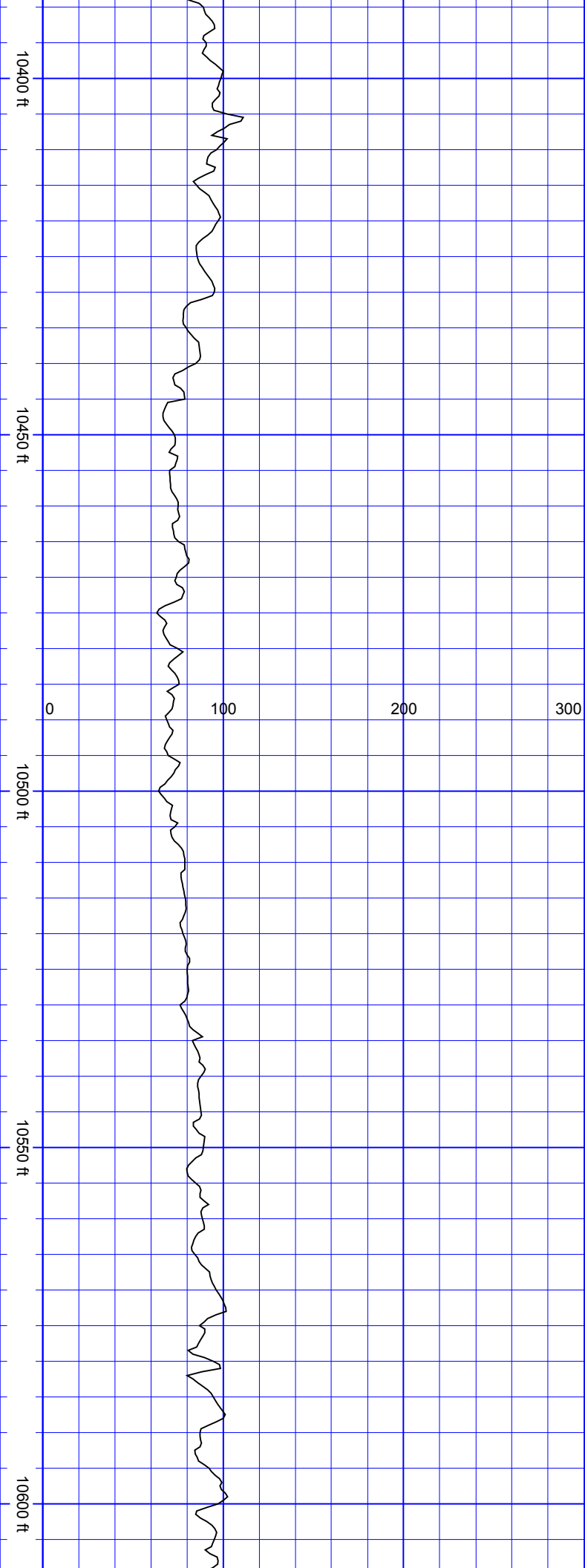


SurveyDepth:10249  
TVD:7214.51 Inc:90.84  
Azi:271.19  
VertSec:2687.11

SurveyDepth:10343  
TVD:7213.53 Inc:90.35  
Azi:271.46  
VertSec:2780.94

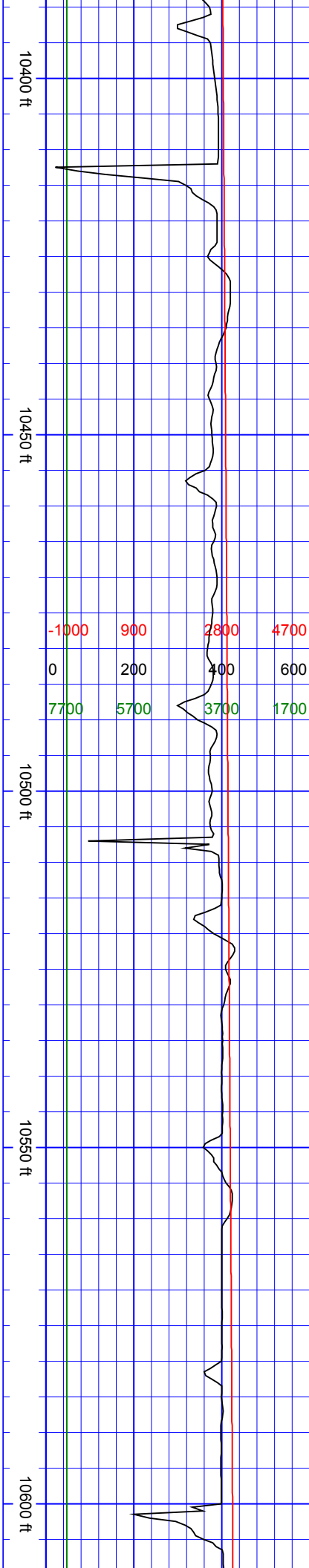


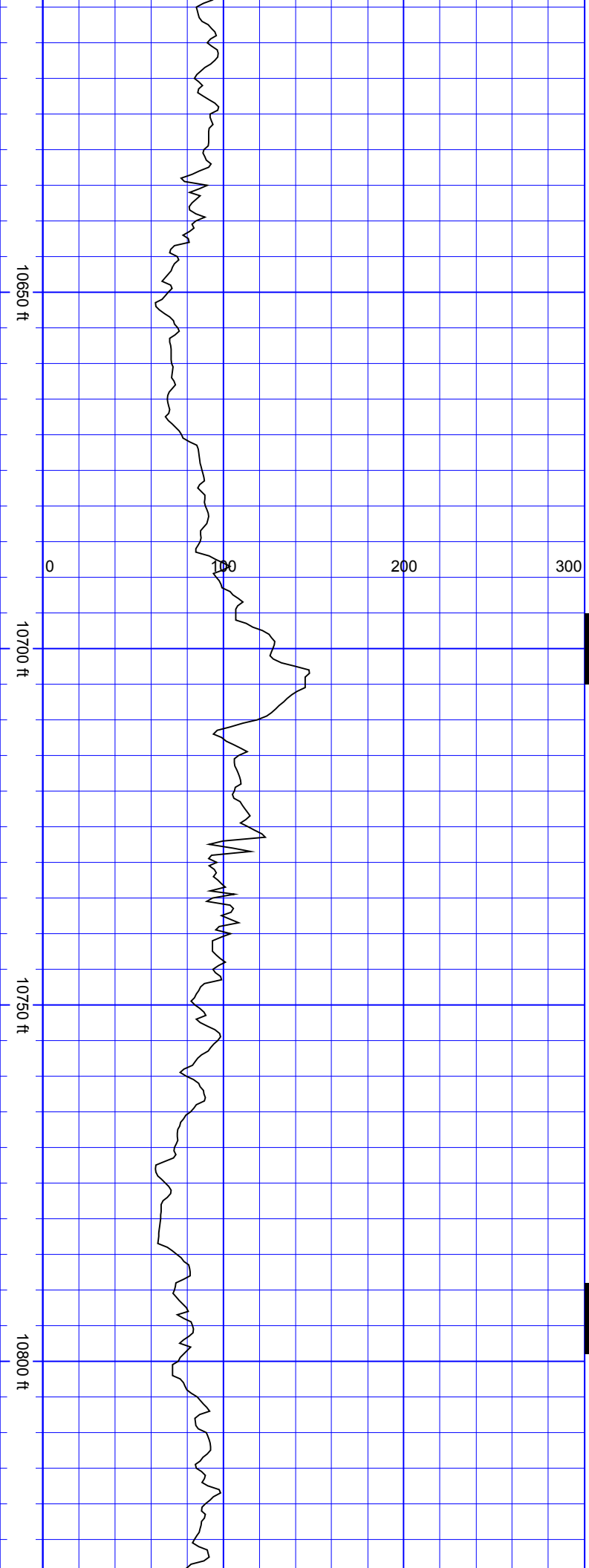




SurveyDepth:10437  
TVD:7213.58 Inc:89.6  
Azi:271.46  
VertSec:2874.77

SurveyDepth:10532  
TVD:7213.65 Inc:90.31  
Azi:271.72  
VertSec:2969.58





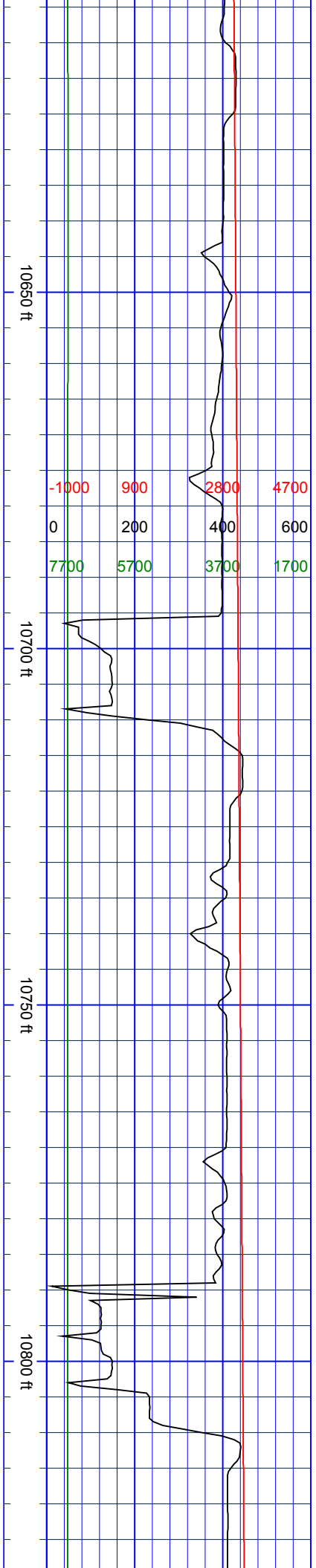
SurveyDepth:10627  
TVD:7213.5 Inc:89.87  
Azi:272.25  
VertSec:3064.34

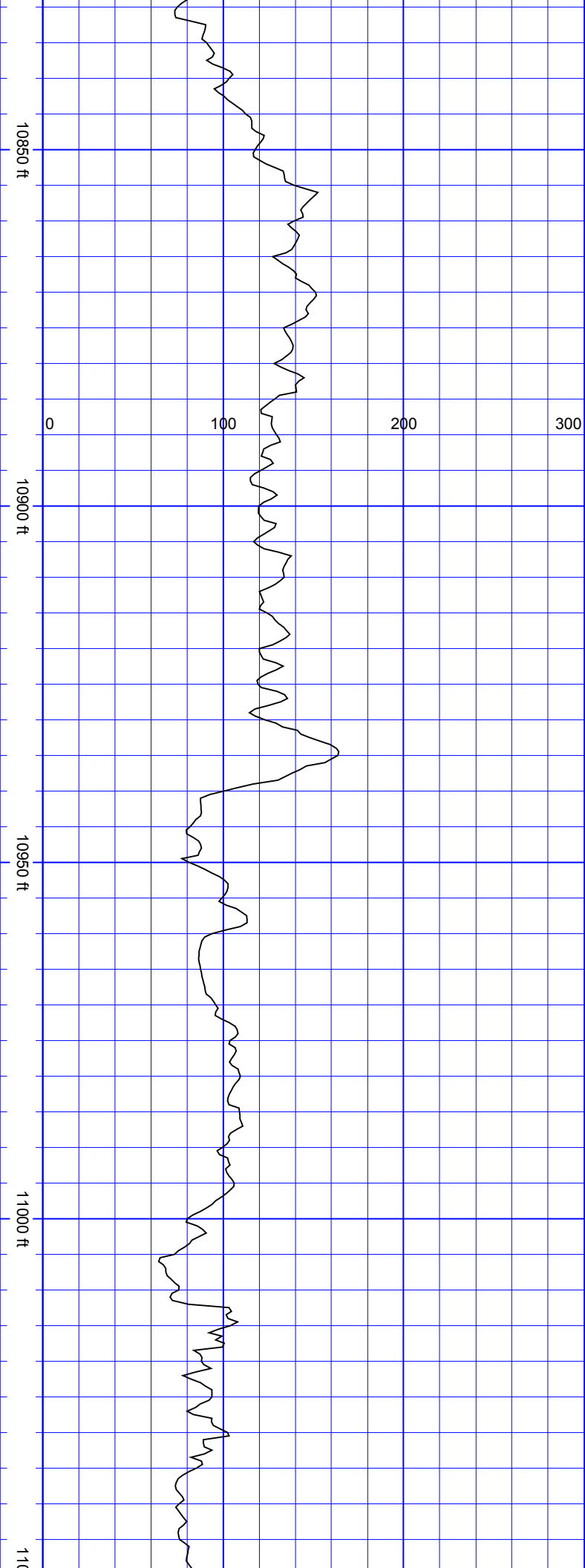
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SurveyDepth:10721  
TVD:7213.53 Inc:90.09  
Azi:271.02  
VertSec:3158.15

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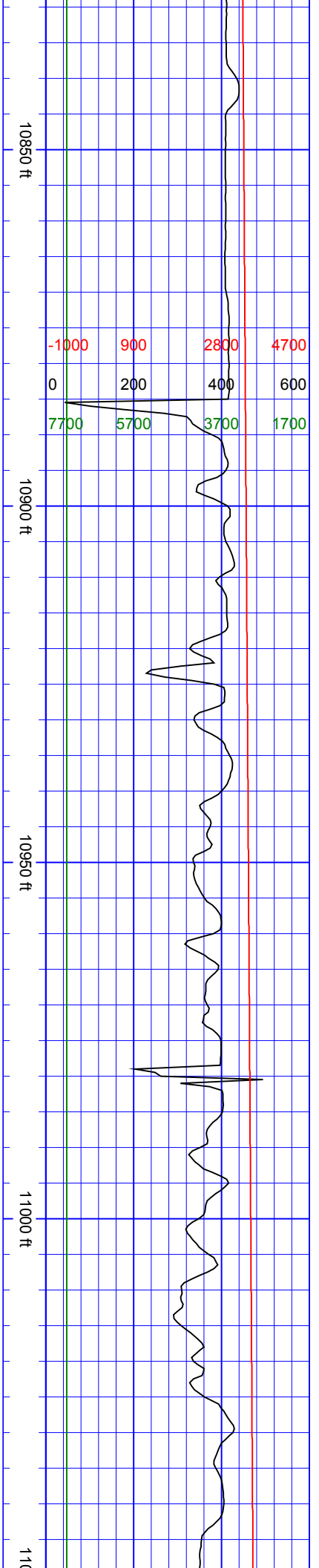
SurveyDepth:10816  
TVD:7213.72 Inc:89.69  
Azi:270.05  
VertSec:3253.05

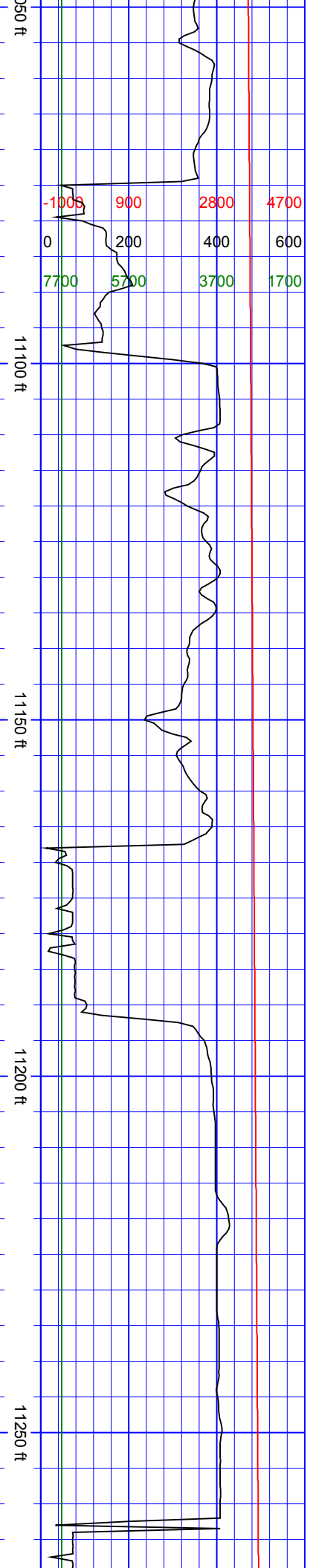




SurveyDepth:10910  
TVD:7214.73 Inc:89.08  
Azi:269.7  
VertSec:3346.99

SurveyDepth:11005  
TVD:7217.09 Inc:88.07  
Azi:269.79  
VertSec:3441.92

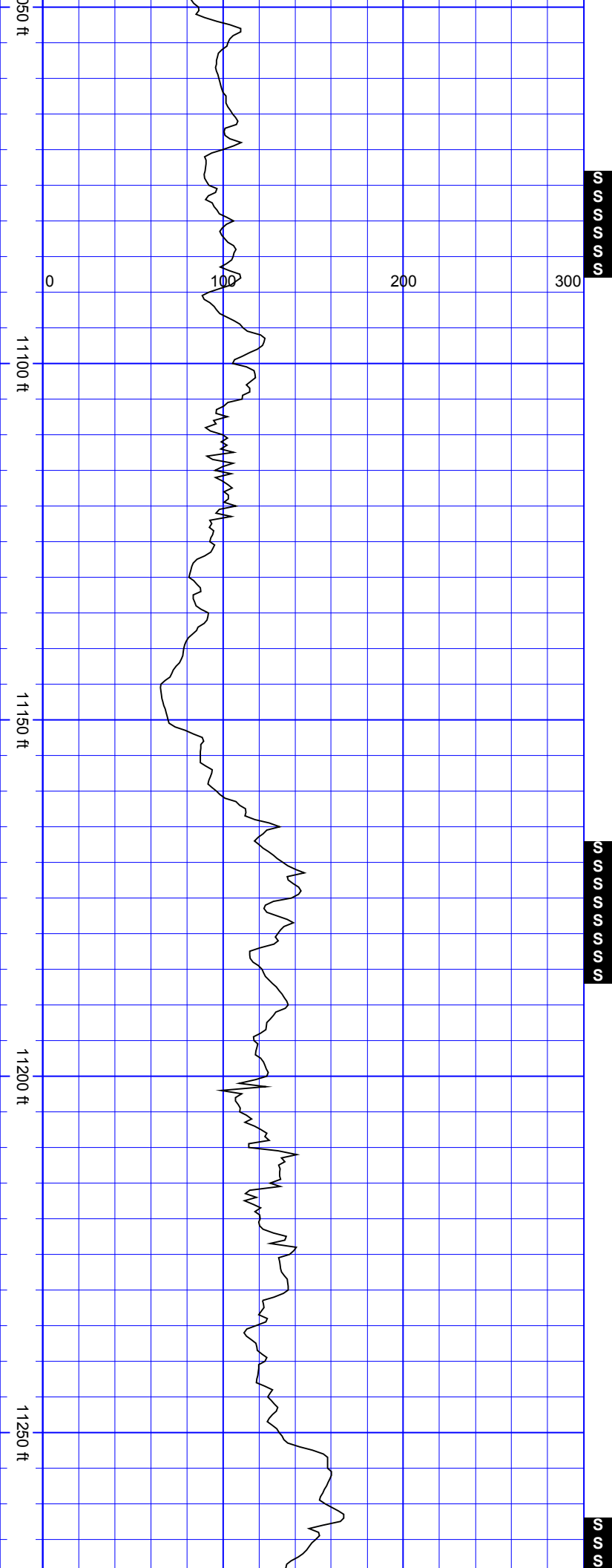


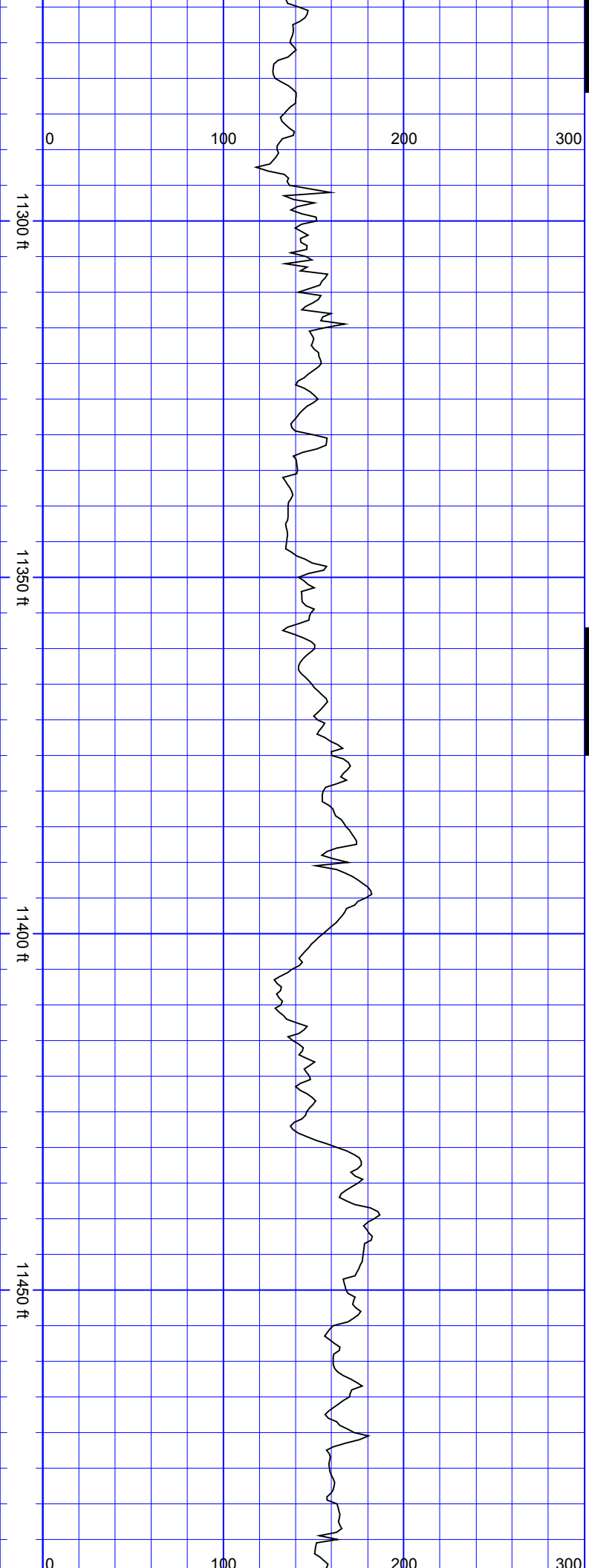


January 10, 2019

SurveyDepth:11099  
TVD:7219.43 Inc:89.08  
Azi:271.28  
VertSec:3535.79

SurveyDepth:11194  
TVD:7220.69 Inc:89.39  
Azi:269.35  
VertSec:3630.7





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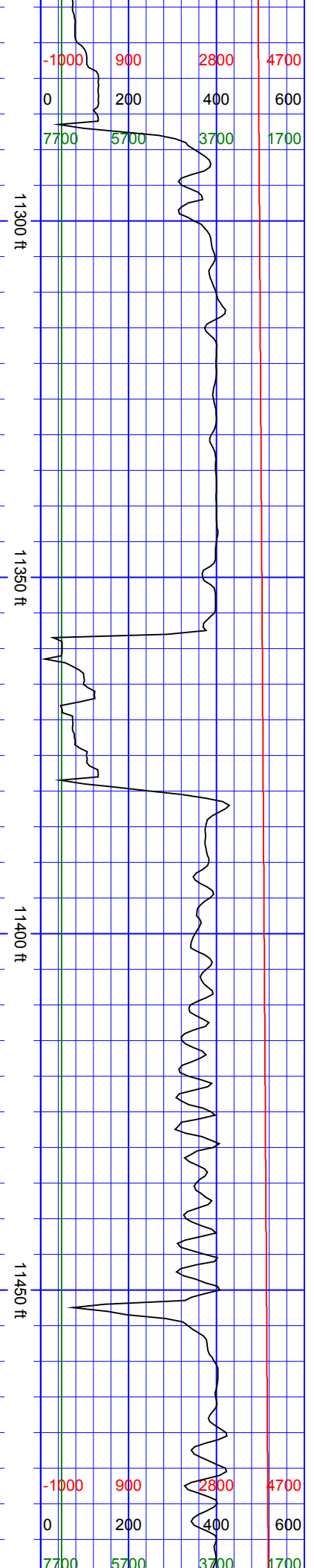
SurveyDepth:11289  
TVD:7220.44 Inc:90.92  
Azi:266.8  
VertSec:3725.69

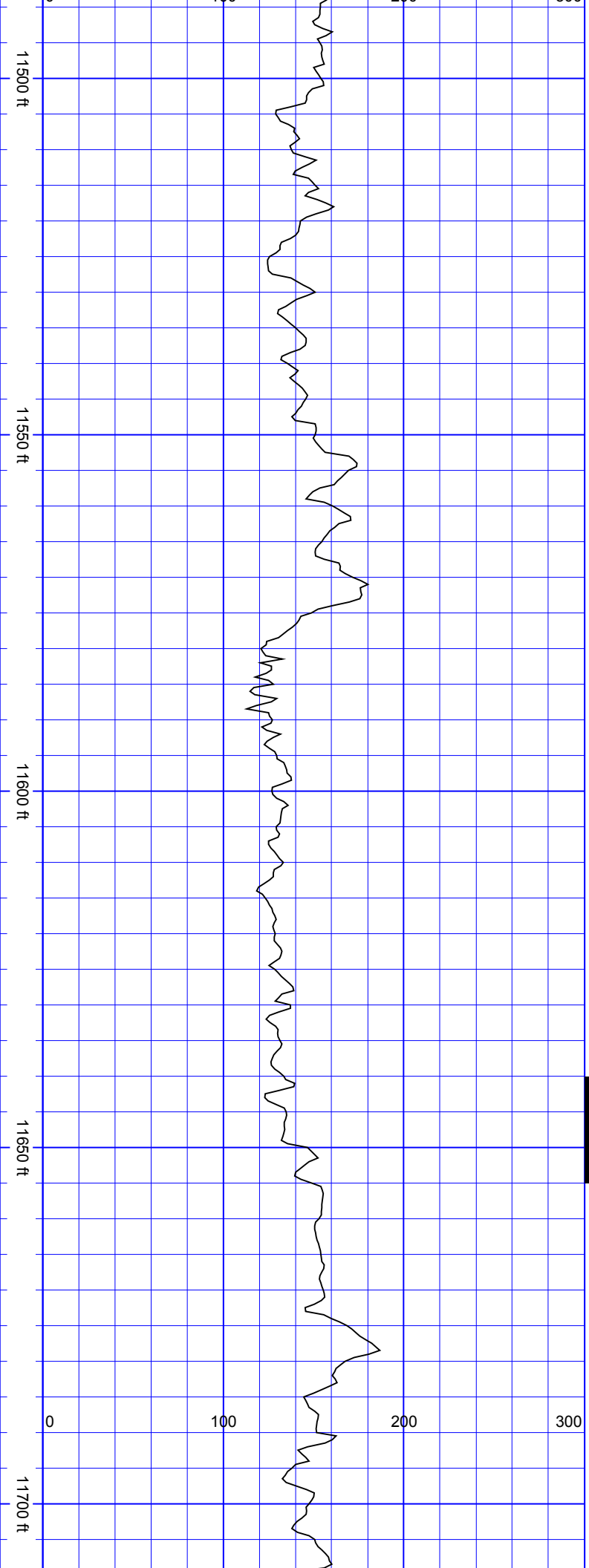
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SurveyDepth:11384  
TVD:7219.57 Inc:90.13  
Azi:264.6  
VertSec:3820.6

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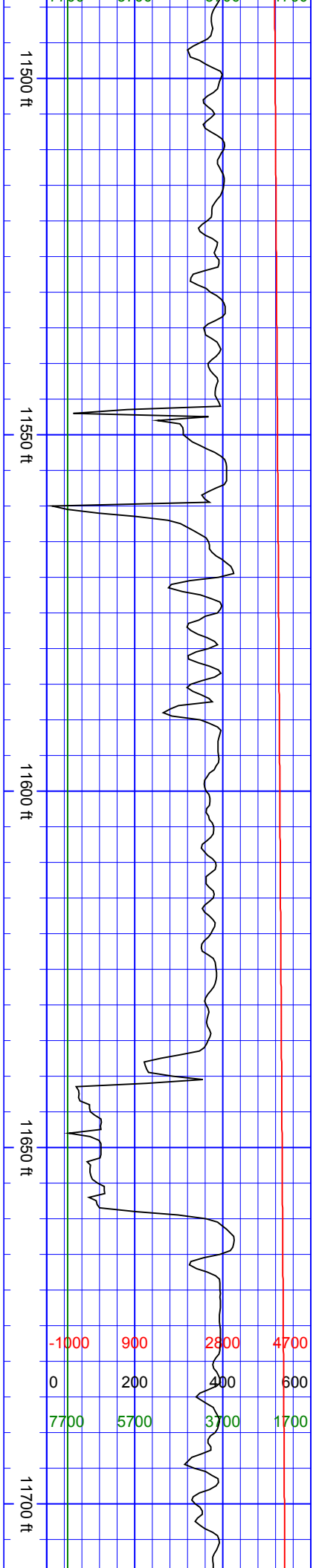
SurveyDepth:11478  
TVD:7219.43 Inc:90.04  
Azi:264.07  
VertSec:3914.41

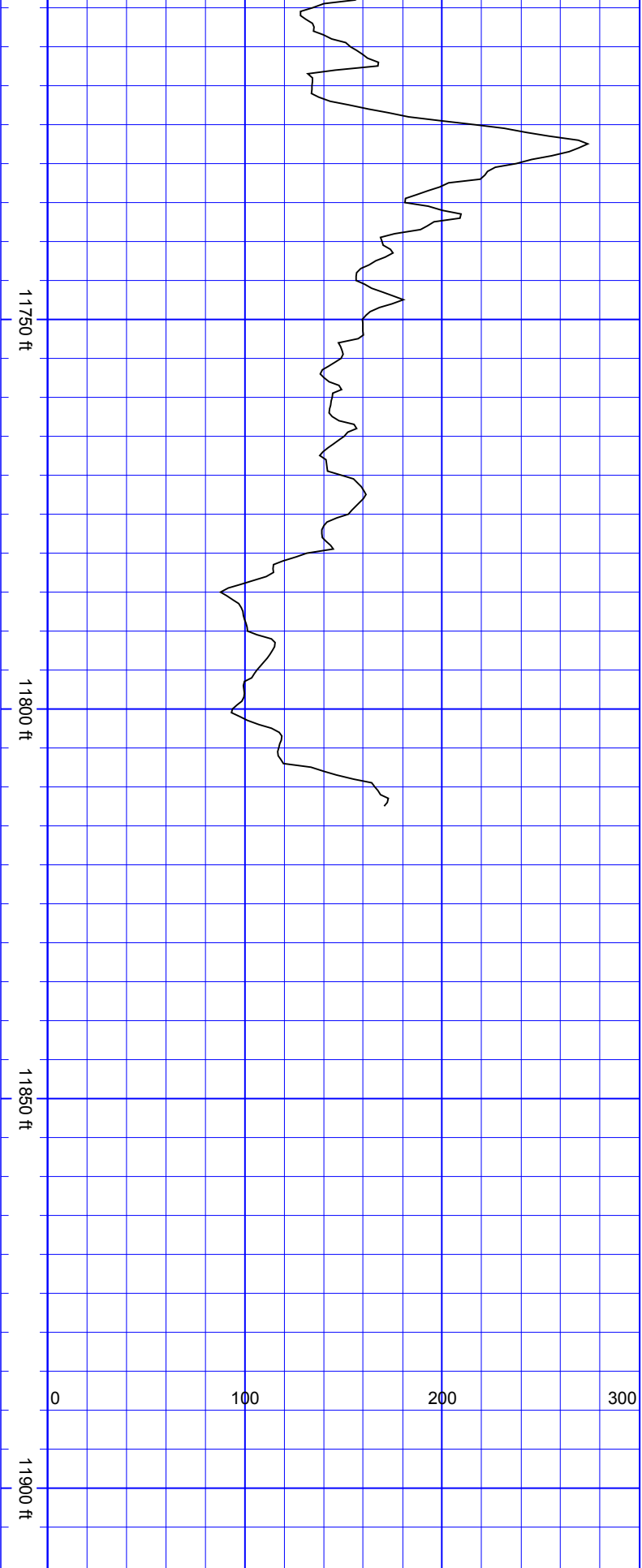




SurveyDepth:11572  
TVD:7218.96 Inc:90.53  
Azi:263.9  
VertSec:4008.18

SurveyDepth:11667  
TVD:7219.1 Inc:89.3  
Azi:263.46  
VertSec:4102.92



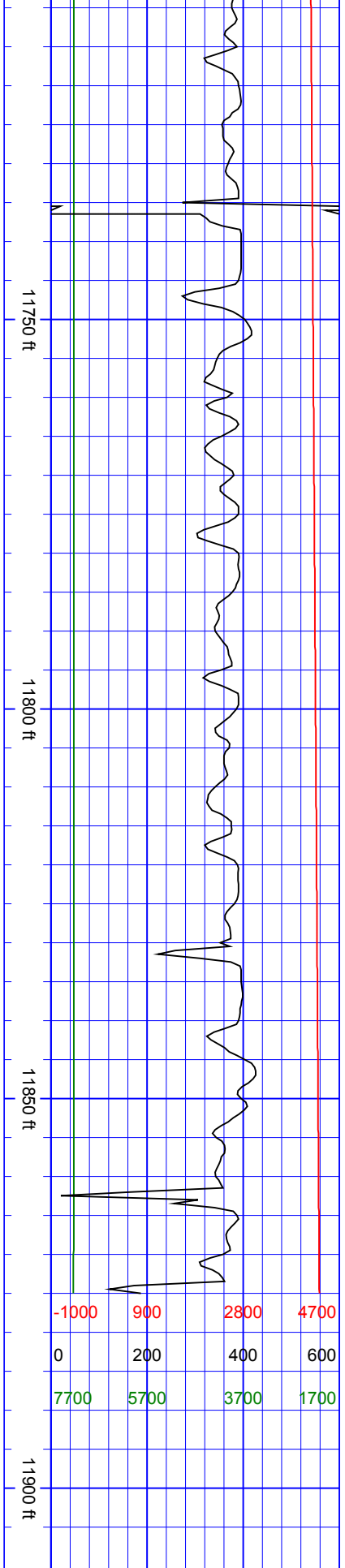


SurveyDepth:11761  
TVD:7220.94 Inc:88.46  
Azi:263.11  
VertSec:4196.58

SurveyDepth:11807  
TVD:7222.3 Inc:88.15  
Azi:262.93  
VertSec:4242.39

Extrapolation to Bit  
SurveyDepth:11875  
TVD:7224.49 Inc:88.15  
Azi:262.93  
VertSec:4310.09

Slide - Rot  
Directional S



7700	5700	3700	1700
TVD Depth (ft)			
0	200	400	600
Drill Rate (ft/hr)			
-1000	900	2800	4700
Vertical Section (ft)			

Date  
MD Depth "Scale" ft

5" = 100	GAMMA RAY	ate	urvey	5" = 100	ROP - VERT SEC - TVD
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