

**Cathedral Energy Services**

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Oklahoma City, OK 73179  
405-261-6011 (Office)  
405-261-6188 (Fax)

**FILE 3B-32H-K268****Scale 5":100' - MD****11/21/2017 8:02 AM****Oper. Company:** Crestone Peak Resources**Well:** FILE 3B-32H-K268**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-38050-0000**Job Number:** 175219

**Notes:** Gamma Ray Log  
Section Plan: 191.14°  
Datum: NAD 1983 (NADCON CONUS)  
Magnetic North: 8.49°  
Grid Convergence: 0.31°  
Gamma Averaging: 7% Smoothing

**State:** Colorado**County:** Weld Co**Country:** United States**Location:** S32-T2N-R68W**Start Date:** 11/17/2017 14:00:00**End Date:** 11/20/2017 20:20:00**Latitude:** 40.092576**Longitude:** -105.031182**Elev GL:** 4970.00**Elev DF:** 4993.00**Elev KB:** 4993.00**Notes:** Log & Survey Depths Relative to Kelly Bushing (KB) Depth**Operator 1:** Daniel Stevens**Operator 2:** Randy Uhlich**Notes:** Maximum Temperature: 246.00°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	1503				
Bit Size	8.75				
Cal Factor	6.010				
Survey Offset	54.00				
Gamma Offset	43.02				
Resistivity Offset	0.00				
Start Depth	1935.00				
StartDate	11/17/2017				
StartTime	14:00				
EndDepth	14134.00				
EndDate	11/21/2017				
EndTime	07:00				
Mud Type	Oil Based				
Mud Weight	9.50				
Funnel Viscosity	44.00				
Plastic Viscosity	15.00				
Yield Point	8.00				
Gel Strength	5.00				
Solids Content	8.20				
Sand Content	0.00				
Filtrate Alkalinity	17.20				
Chlorides	172,660.00				
Temperature	246.00				
Hole Data			Casing Data		
Size	From	To	Size	From	To
12.25	0.00	1935.00	9.625	0.00	1930.00
8.75	1935.00	14134.00			

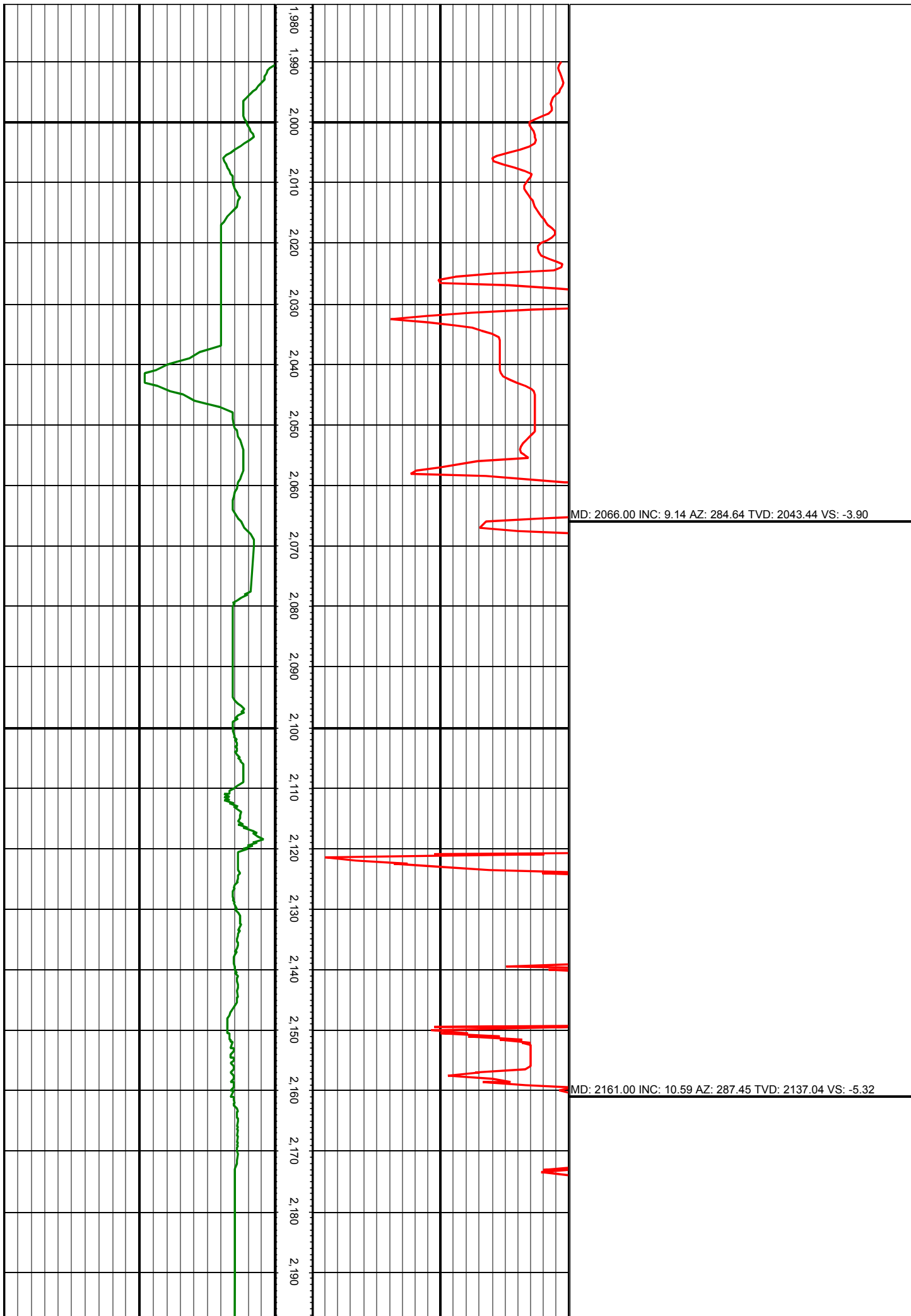
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost damages or expenses incurred or sustained by anyone resulting from an interpretation made by any of our officers, agents, or employees.

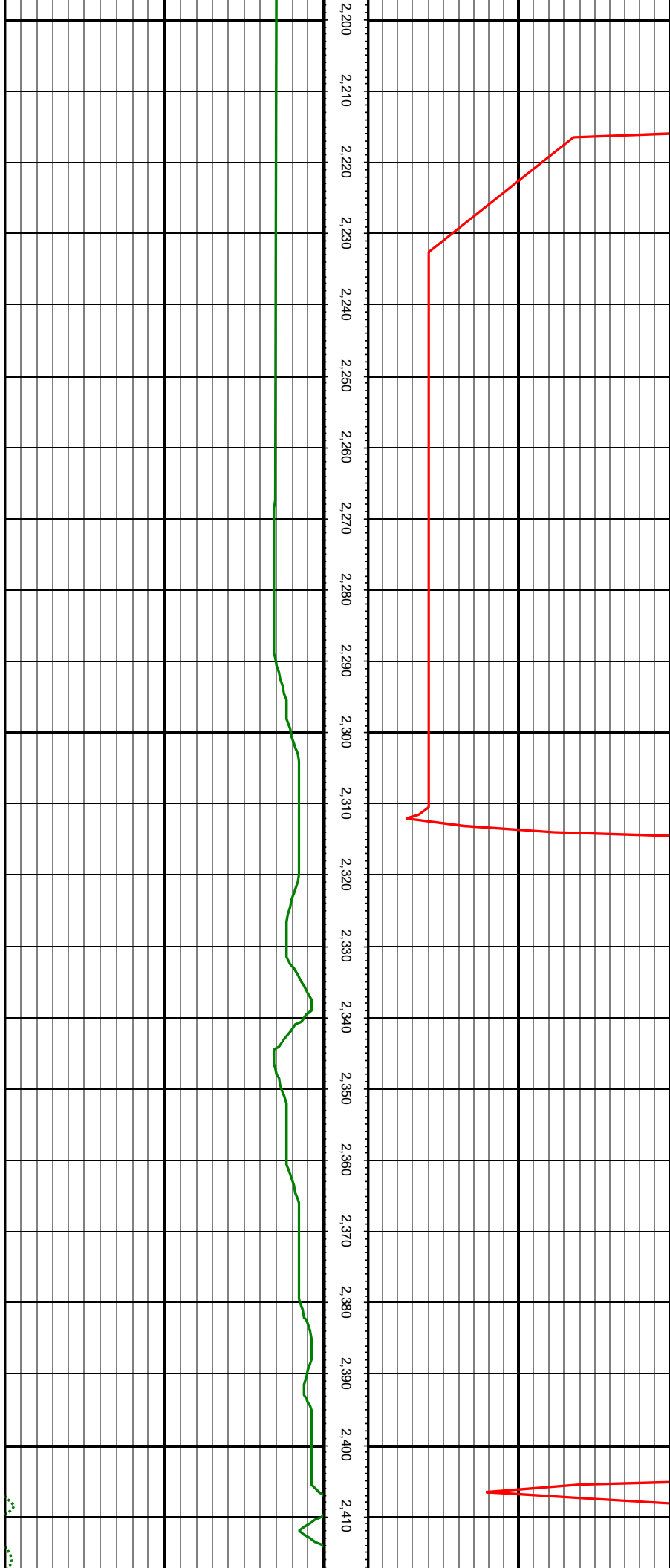
150.00

2

300.00

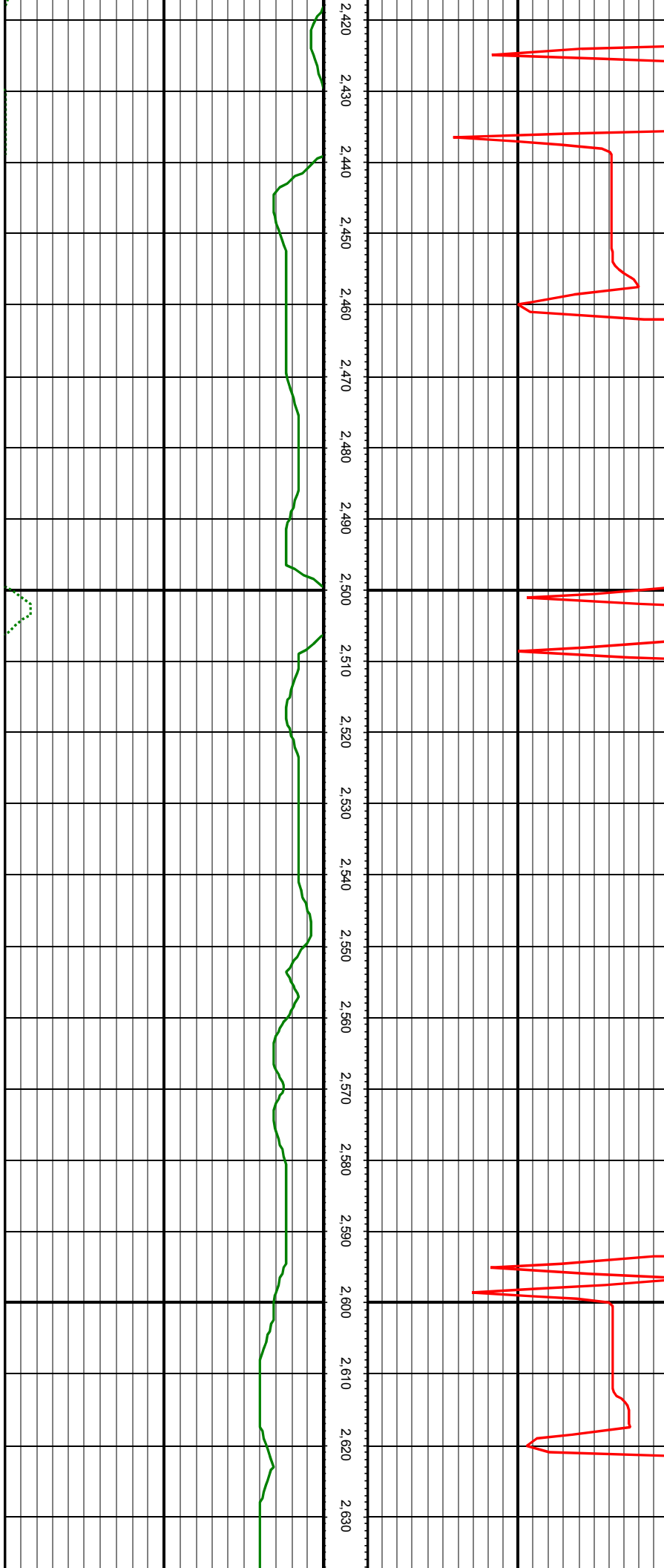
FT





MD: 2256.00 INC: 10.95 AZ: 283.59 TVD: 2230.36 VS: -6.66

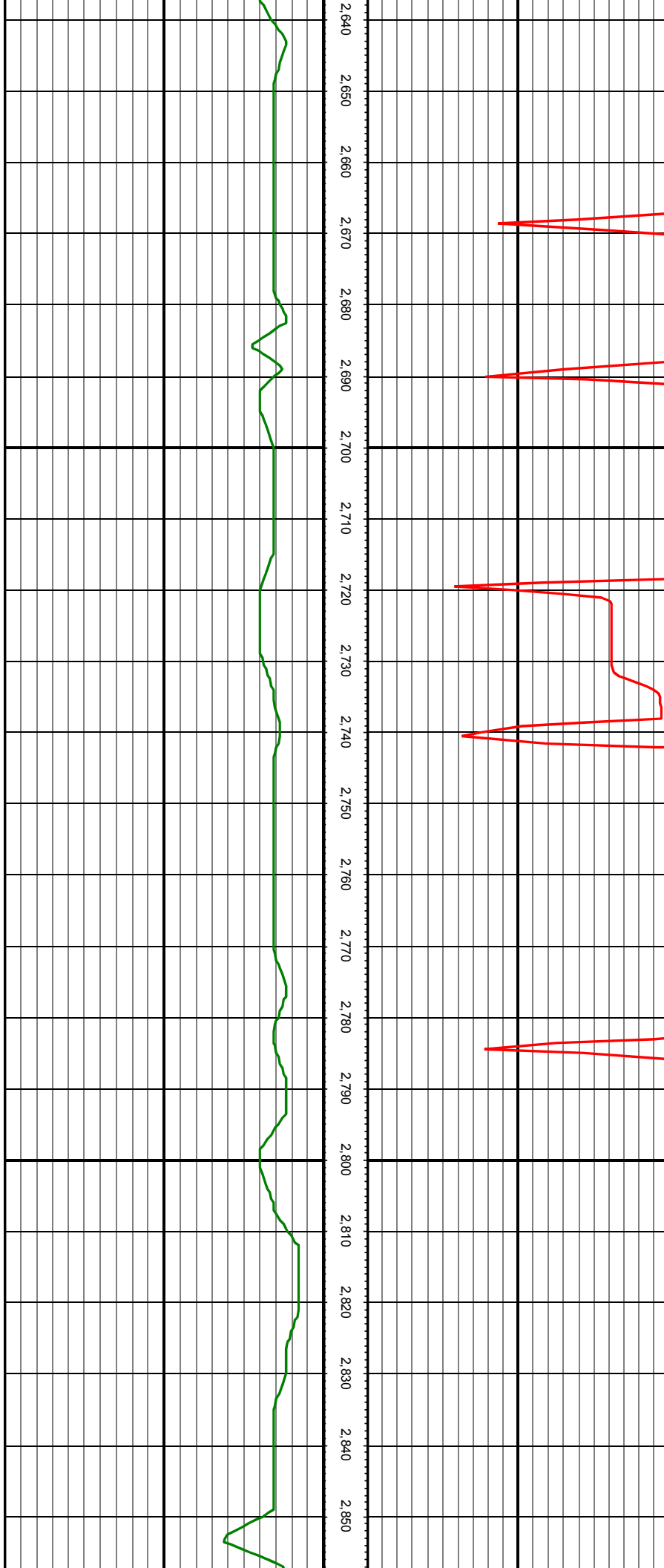
MD: 2350.00 INC: 10.37 AZ: 285.26 TVD: 2322.74 VS: -7.65



MD: 2444.00 INC: 10.29 AZ: 283.59 TVD: 2415.22 VS: -8.62

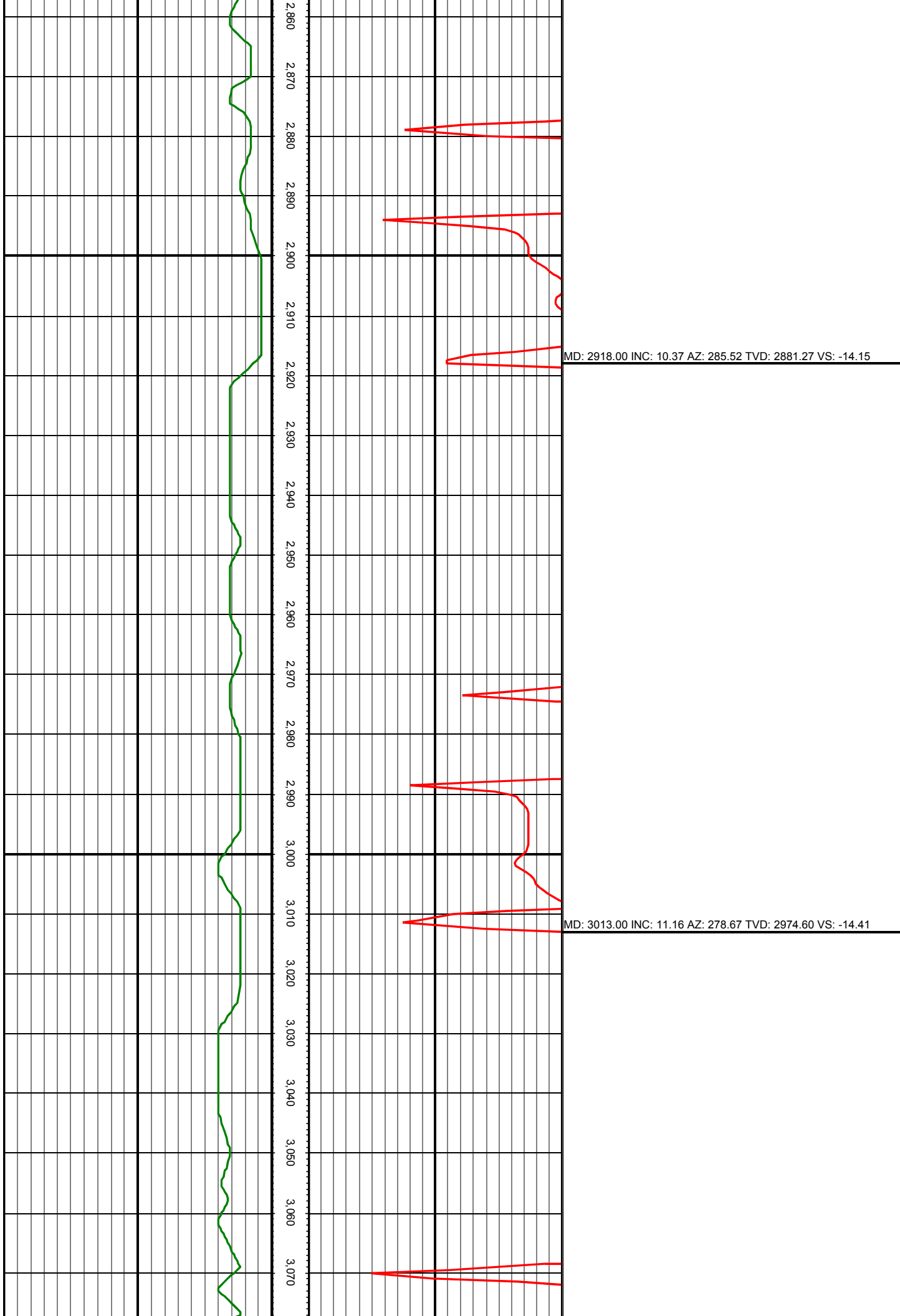
MD: 2539.00 INC: 10.11 AZ: 284.11 TVD: 2508.72 VS: -9.41

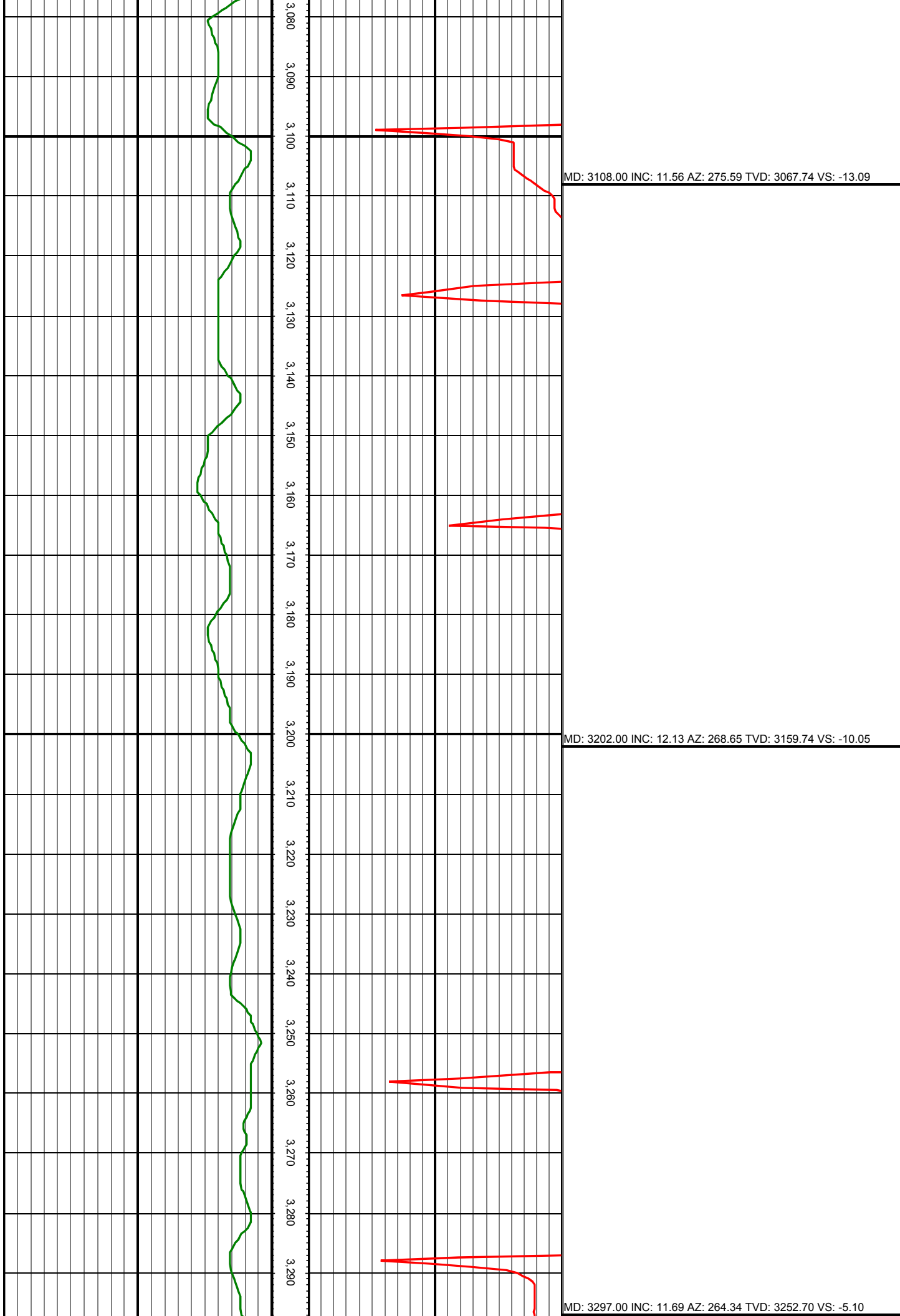
MD: 2633.00 INC: 11.52 AZ: 284.99 TVD: 2601.05 VS: -10.47

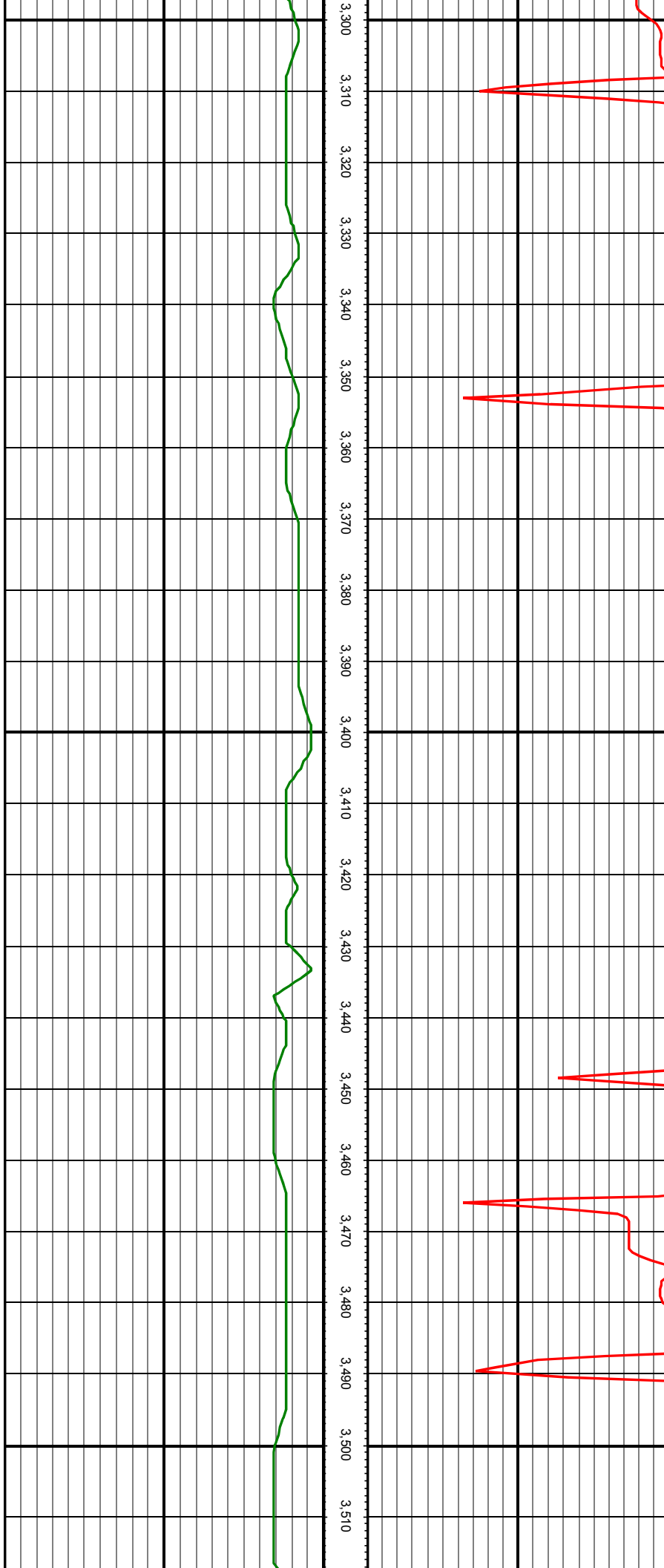


MD: 2728.00 INC: 10.86 AZ: 285.52 TVD: 2694.24 VS: -11.79

MD: 2824.00 INC: 9.67 AZ: 284.82 TVD: 2788.70 VS: -13.00



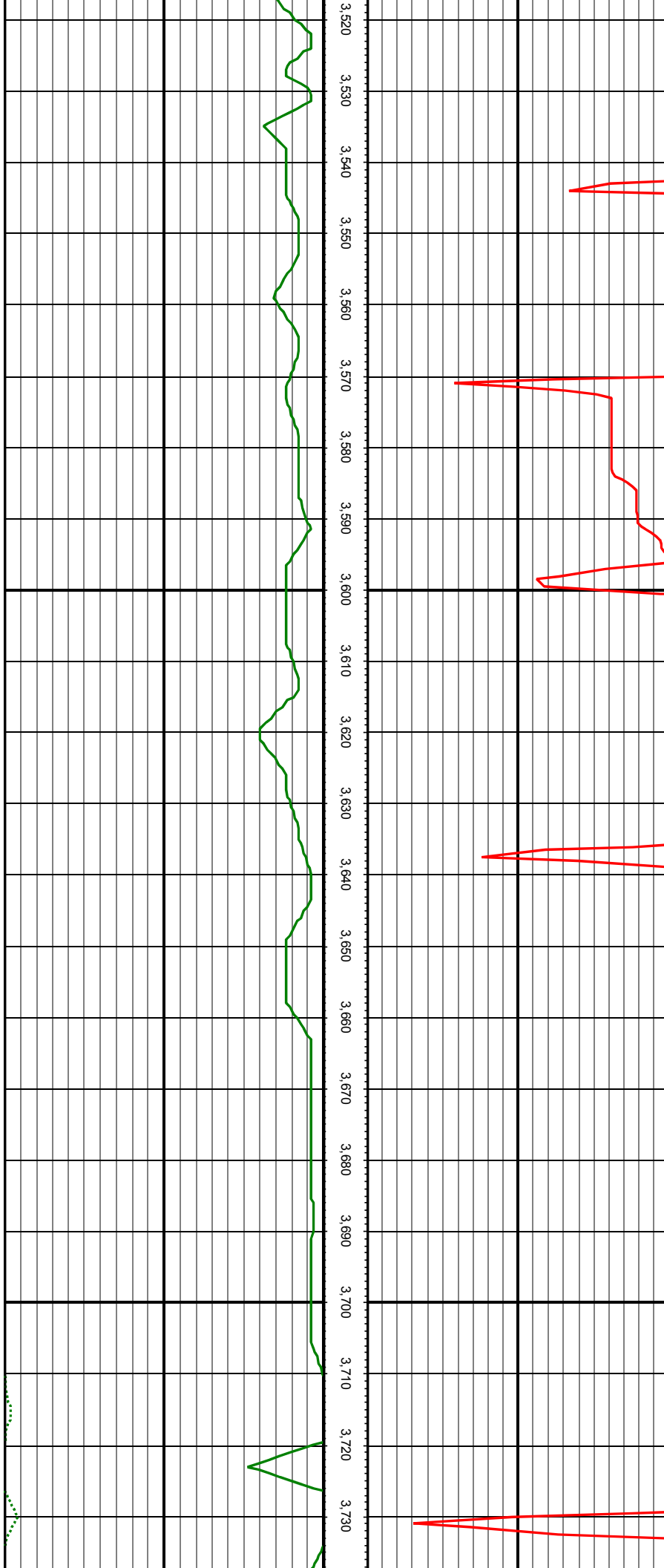




MD: 3392.00 INC: 10.20 AZ: 266.19 TVD: 3345.97 VS: -0.15

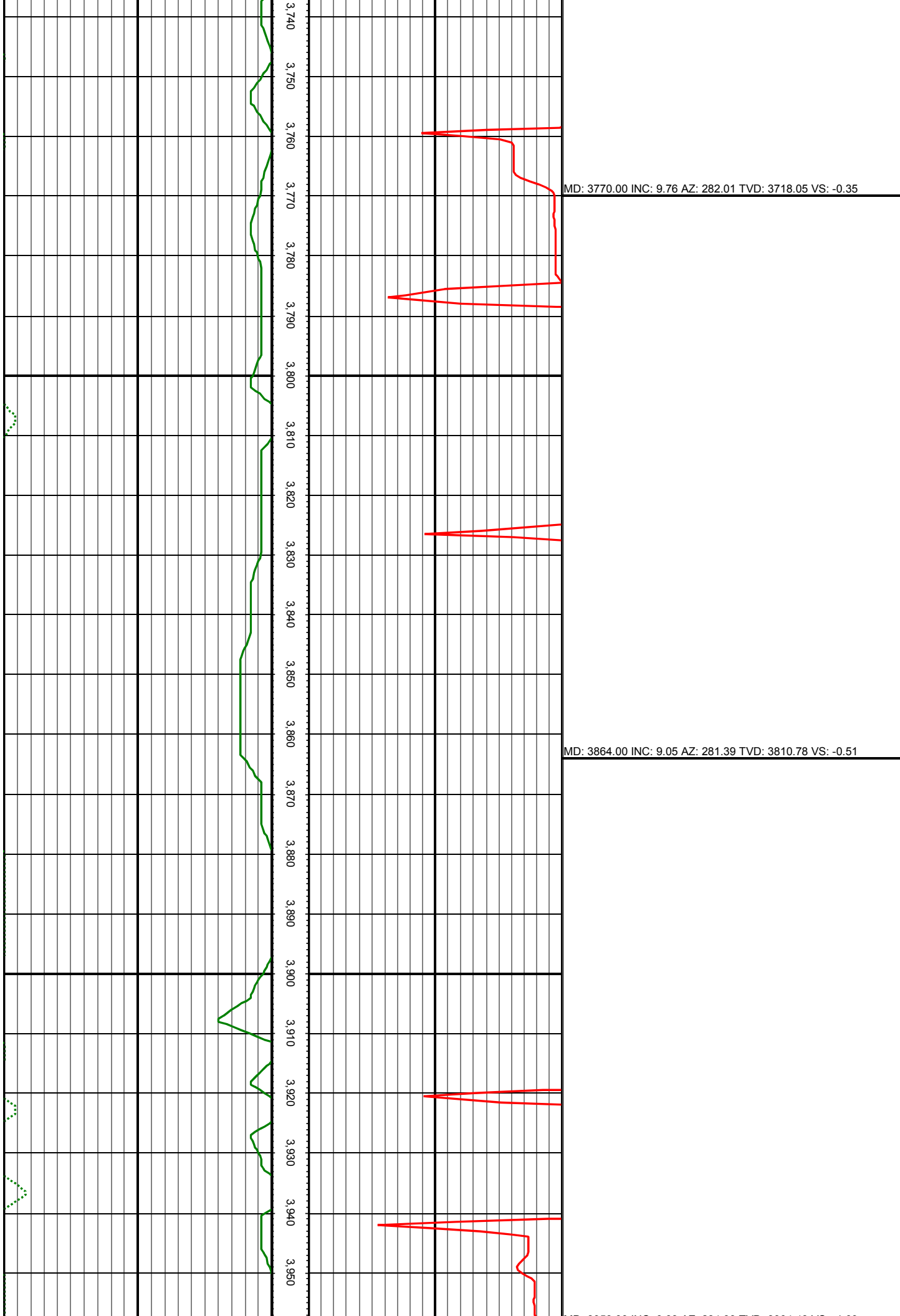
MD: 3486.00 INC: 10.15 AZ: 278.49 TVD: 3438.50 VS: 2.38



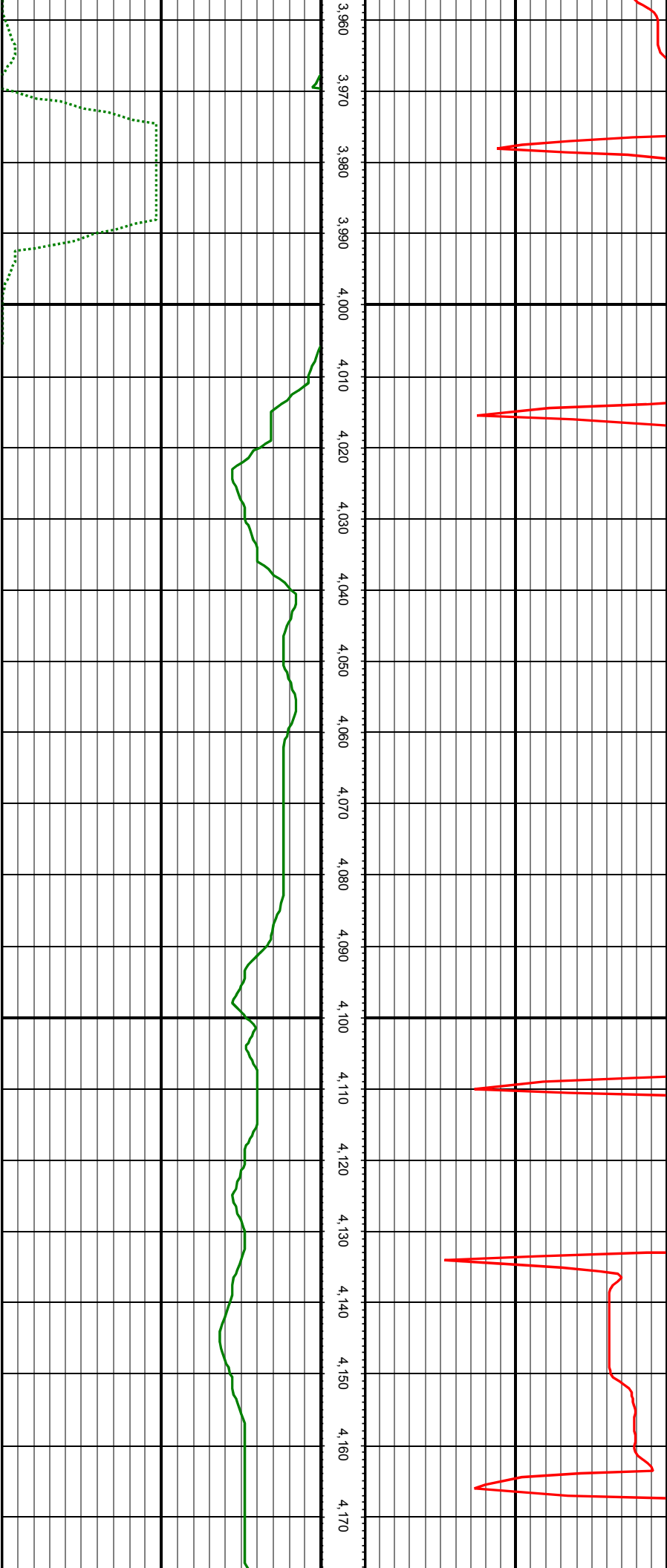


MD: 3581.00 INC: 10.51 AZ: 285.08 TVD: 3531.96 VS: 2.17

MD: 3676.00 INC: 10.02 AZ: 287.45 TVD: 3625.44 VS: 0.67

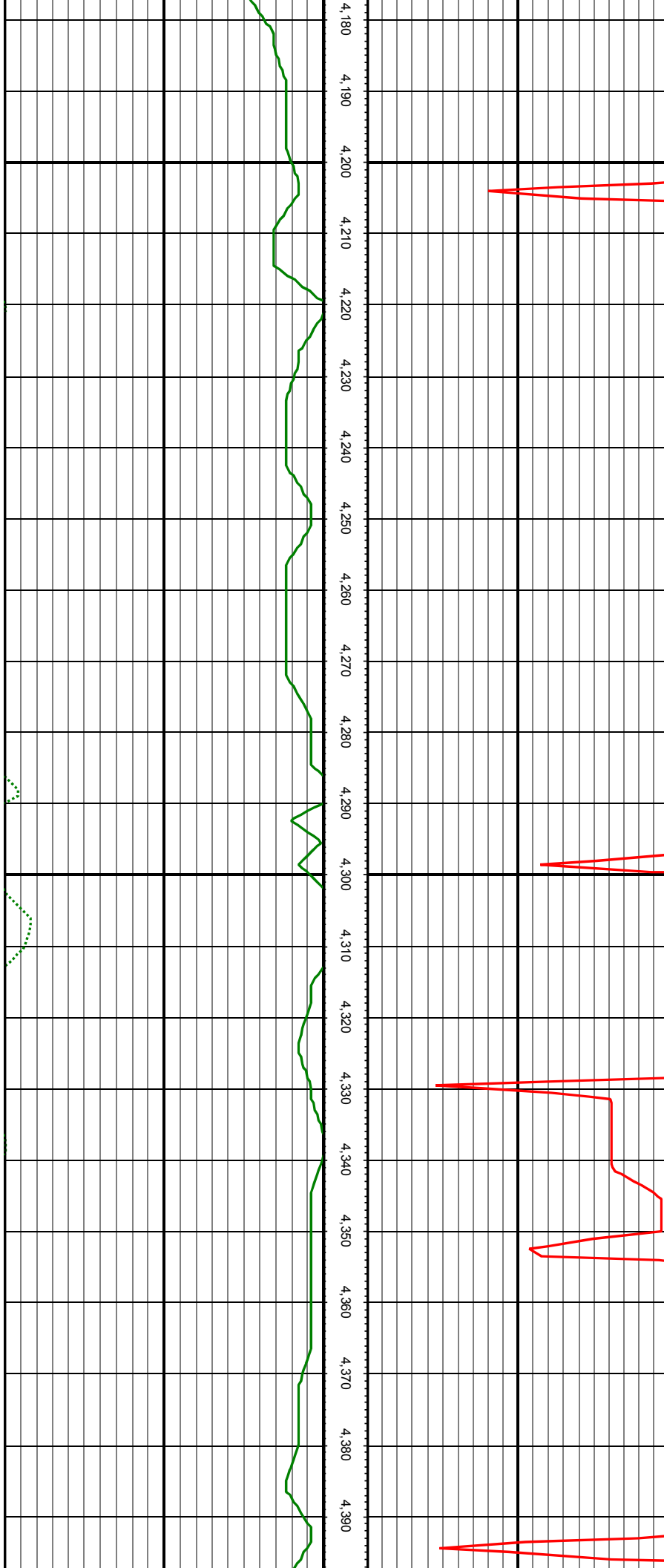


MD: 3959.00 INC: 9.93 AZ: 284.99 TVD: 3904.48 VS: -1.09



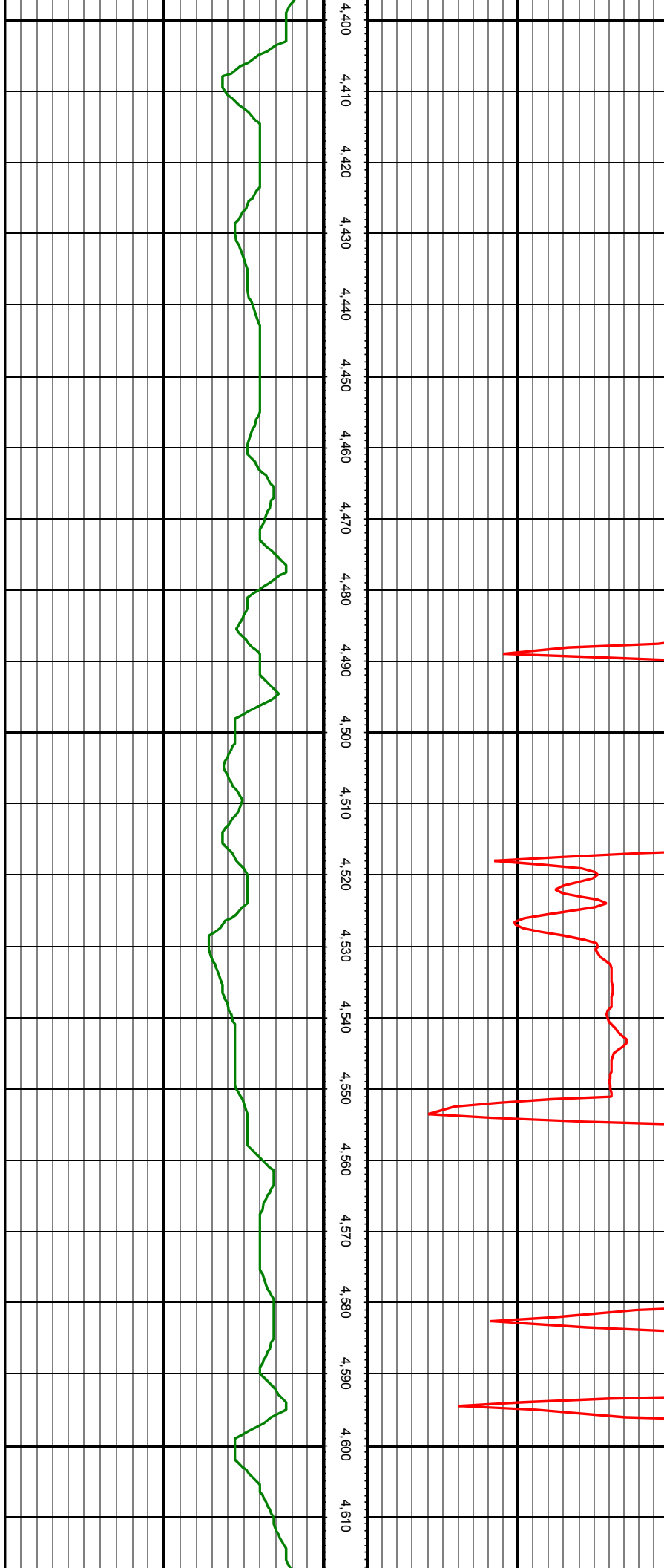
MD: 4053.00 INC: 10.90 AZ: 285.70 TVD: 3996.93 VS: -2.34

MD: 4148.00 INC: 12.26 AZ: 282.88 TVD: 4090.00 VS: -3.36



MD: 4243.00 INC: 11.78 AZ: 285.26 TVD: 4182.92 VS: -4.36

MD: 4338.00 INC: 10.55 AZ: 286.84 TVD: 4276.12 VS: -5.92



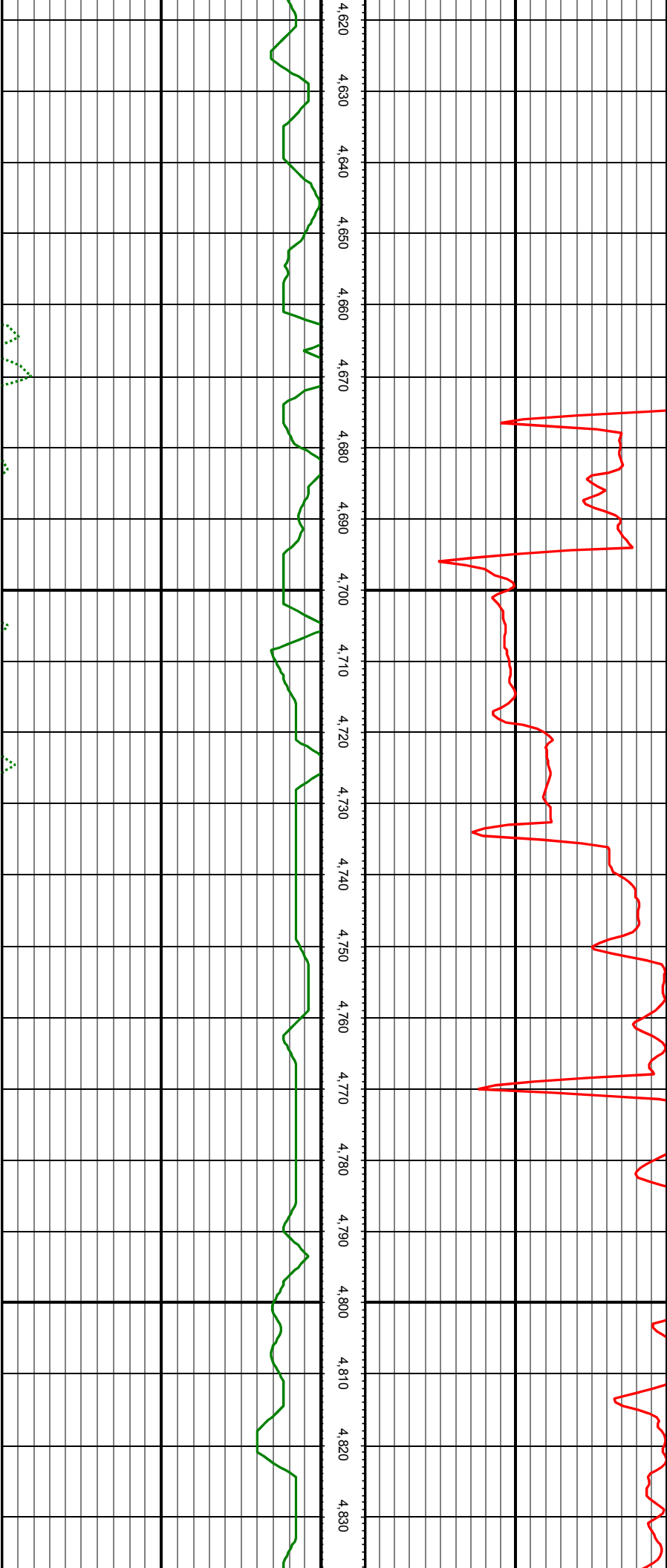
MD: 4432.00 INC: 10.42 AZ: 288.77 TVD: 4368.55 VS: -7.91

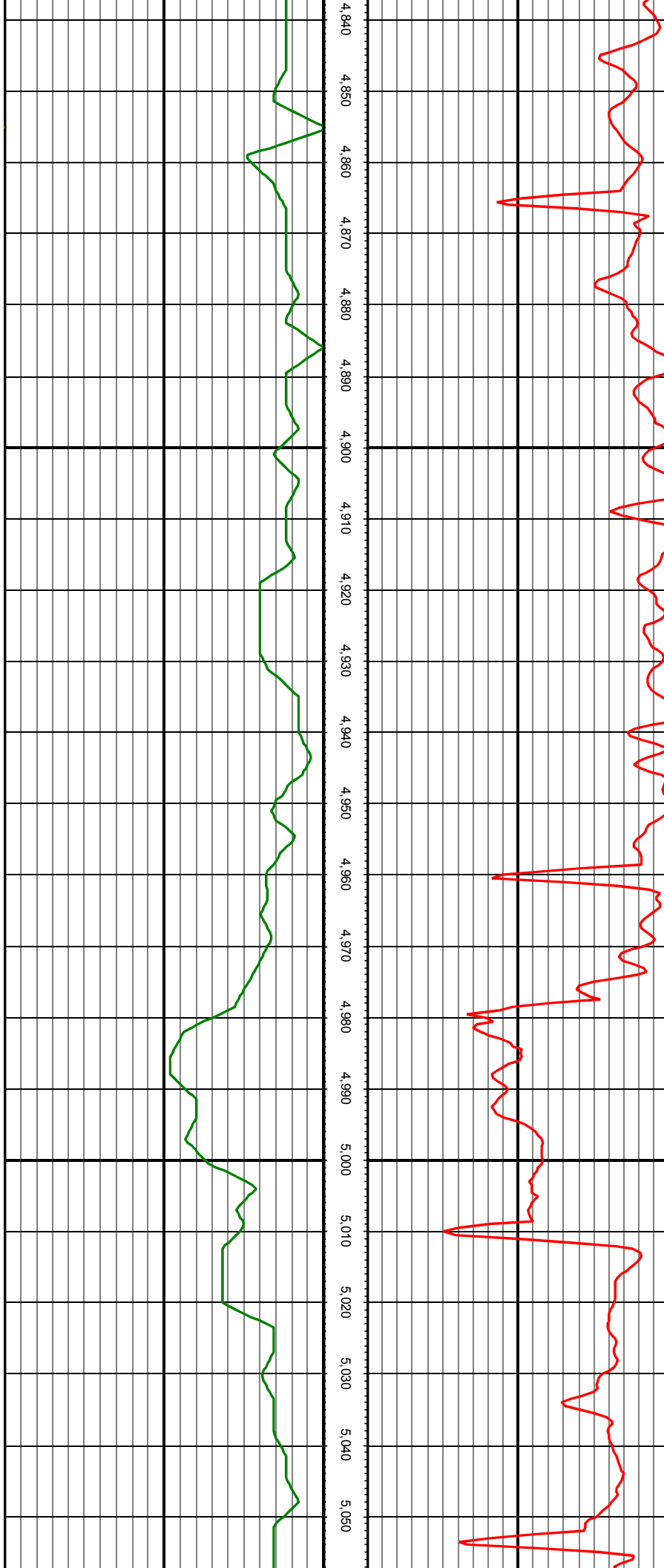
MD: 4526.00 INC: 8.79 AZ: 290.18 TVD: 4461.23 VS: -10.17

MD: 4621.00 INC: 9.89 AZ: 286.49 TVD: 4554.97 VS: -12.07

MD: 4716.00 INC: 11.34 AZ: 284.47 TVD: 4648.34 VS: -13.37

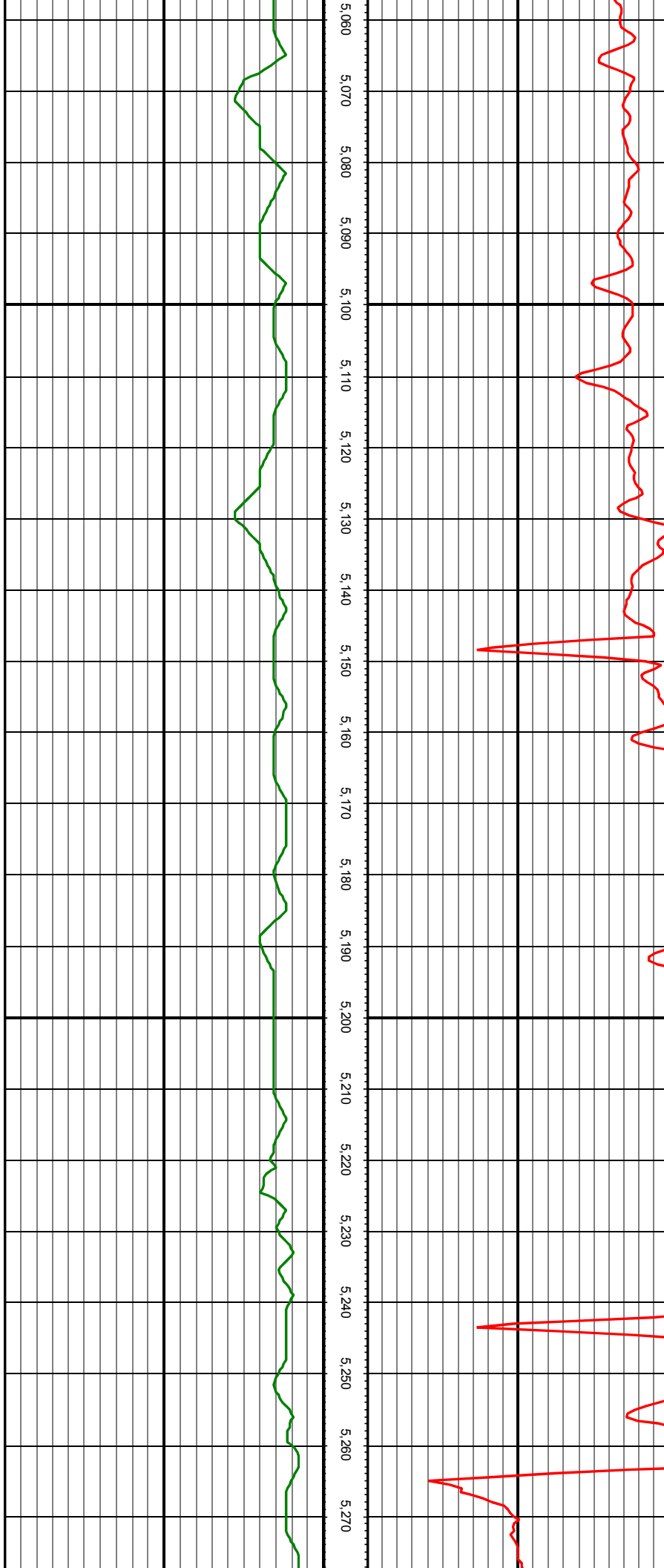
MD: 4811.00 INC: 11.60 AZ: 284.47 TVD: 4741.44 VS: -14.47





MD: 4906.00 INC: 10.11 AZ: 286.66 TVD: 4834.74 VS: -15.82

MD: 5001.00 INC: 11.12 AZ: 285.52 TVD: 4928.11 VS: -17.33



MD: 5095.00 INC: 10.99 AZ: 285.87 TVD: 5020.37 VS: -18.76

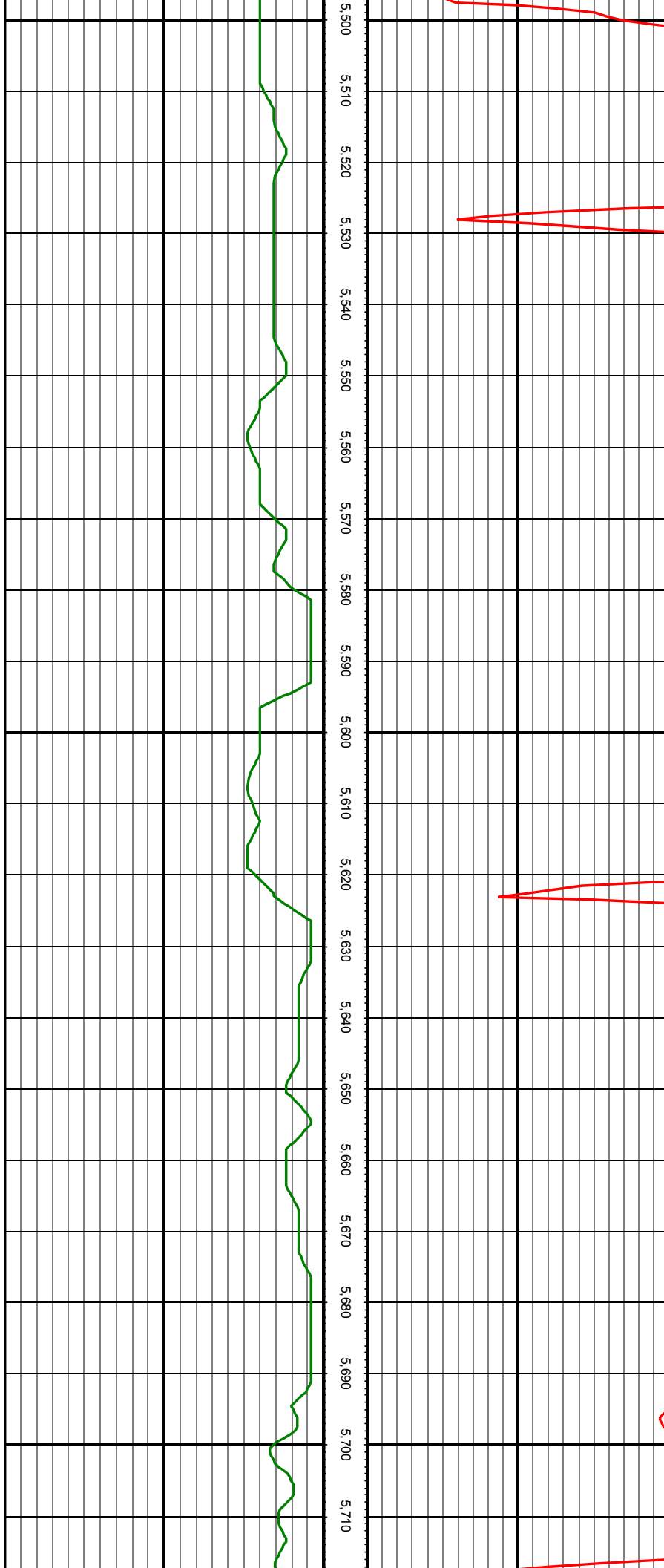
MD: 5190.00 INC: 9.27 AZ: 285.08 TVD: 5113.88 VS: -20.03



MD: 5284.00 INC: 10.11 AZ: 278.84 TVD: 5206.54 VS: -20.22

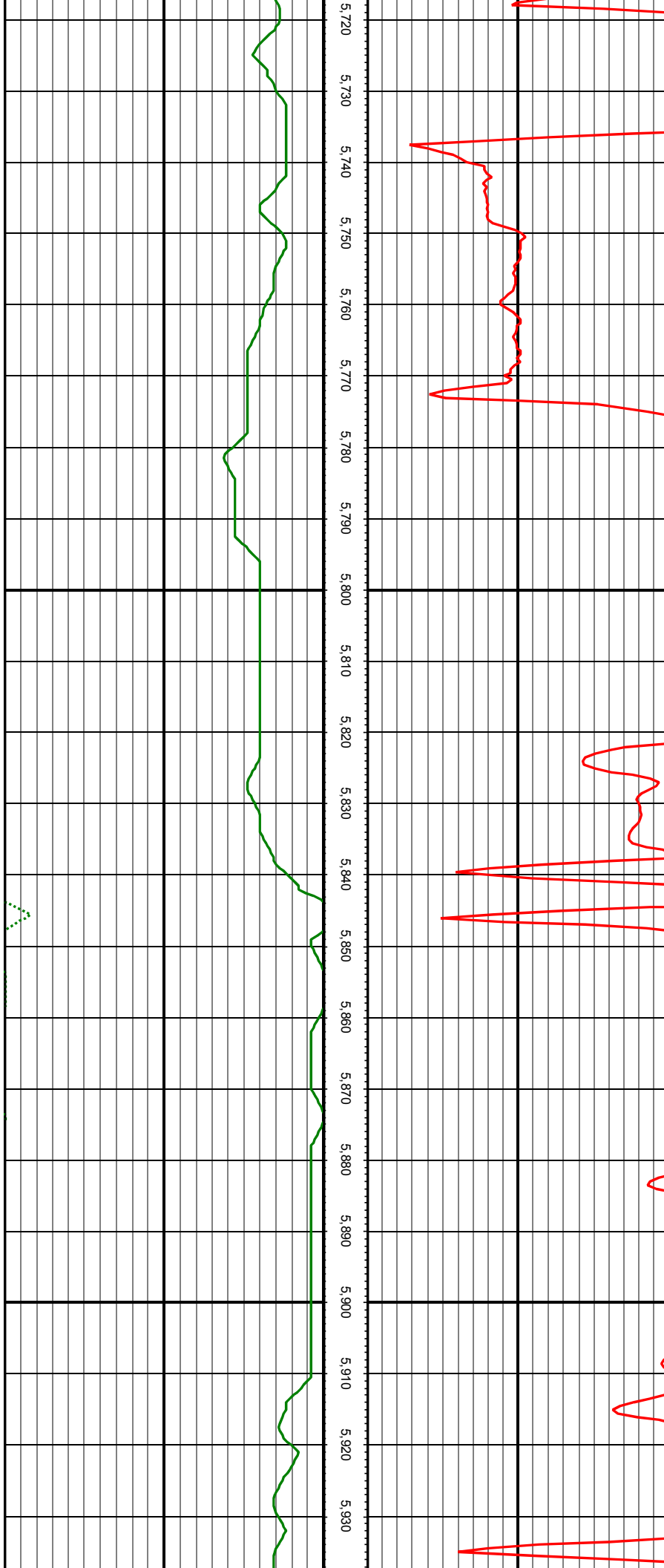
MD: 5379.00 INC: 9.85 AZ: 273.04 TVD: 5300.11 VS: -18.74

MD: 5474.00 INC: 10.51 AZ: 272.25 TVD: 5393.61 VS: -16.26



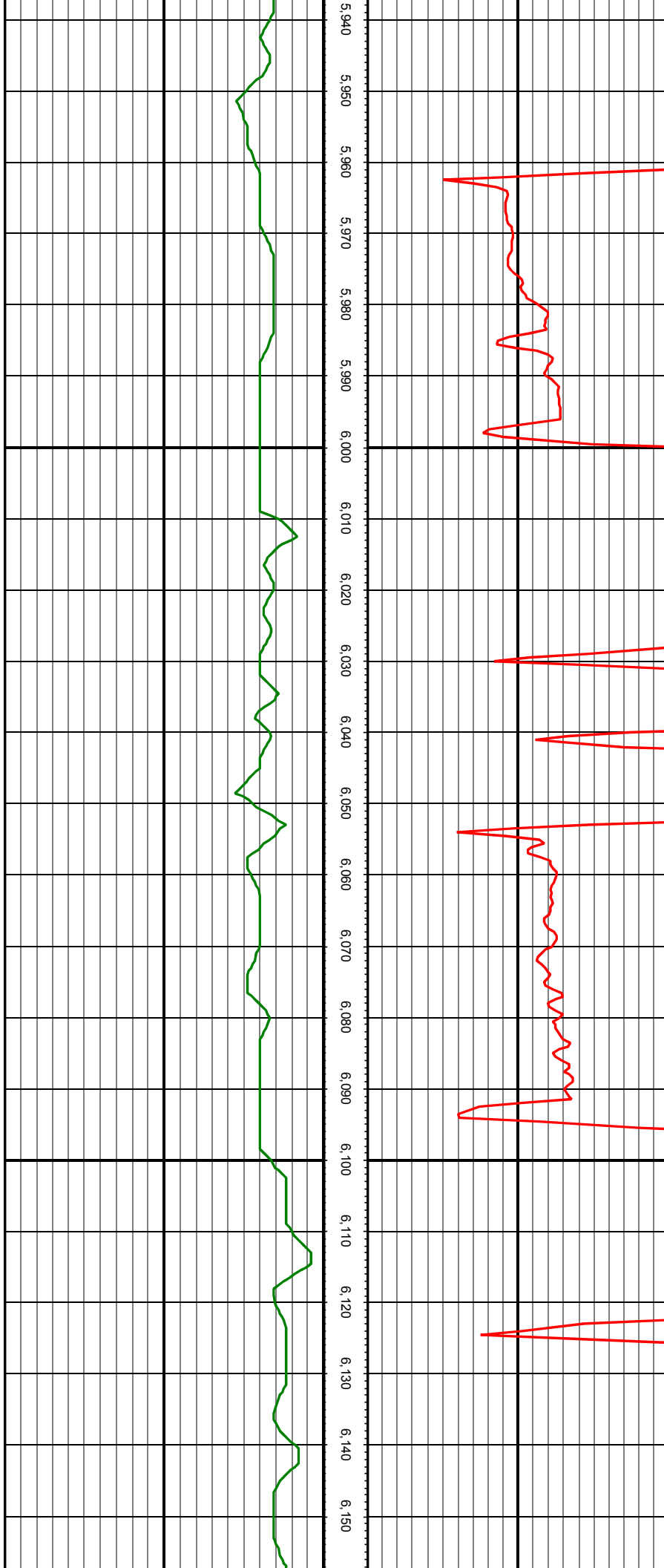
MD: 5569.00 INC: 10.86 AZ: 275.41 TVD: 5486.97 VS: -14.02

MD: 5664.00 INC: 9.01 AZ: 276.64 TVD: 5580.54 VS: -12.55



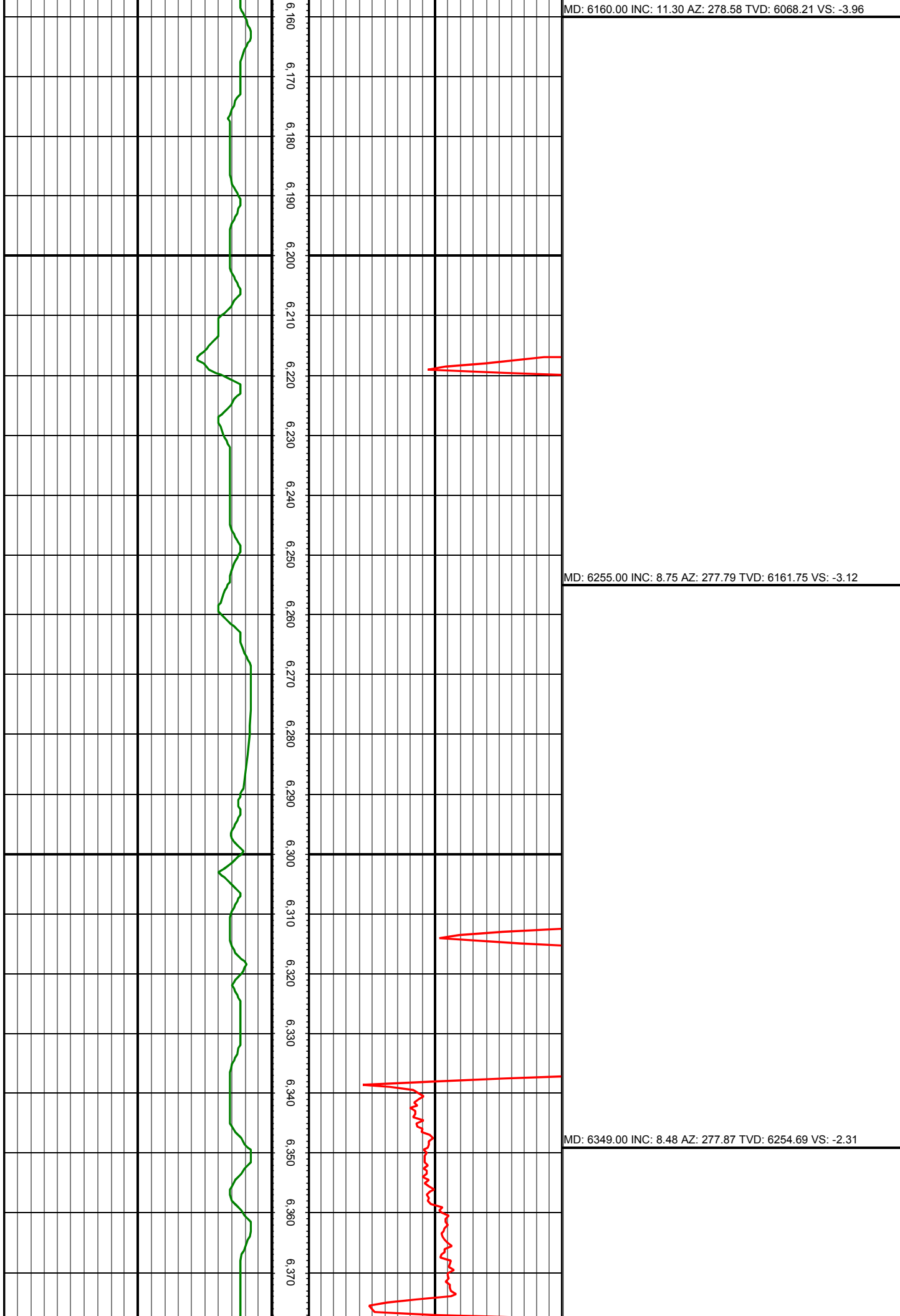
MD: 5781.00 INC: 11.87 AZ: 279.11 TVD: 5695.59 VS: -11.40

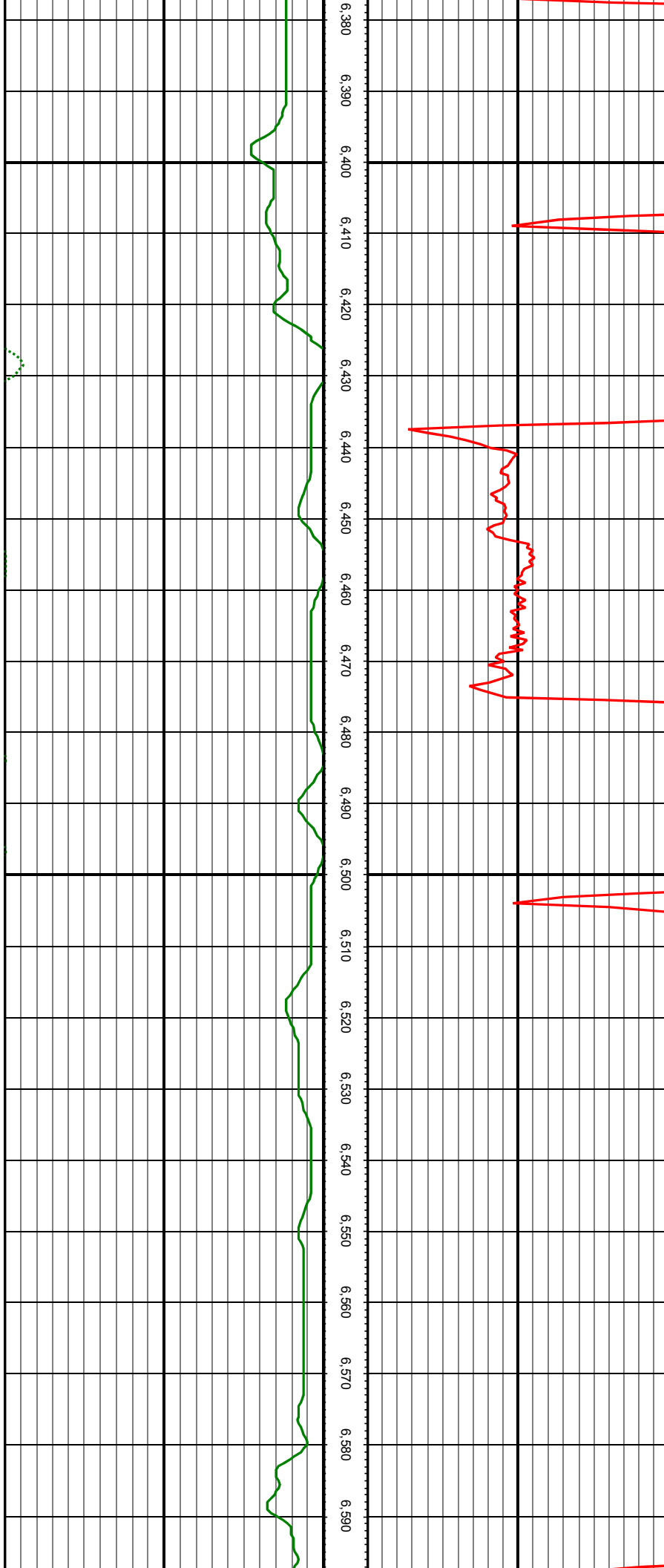
MD: 5876.00 INC: 9.89 AZ: 278.75 TVD: 5788.88 VS: -10.71



MD: 5971.00 INC: 9.23 AZ: 269.61 TVD: 5882.56 VS: -8.85

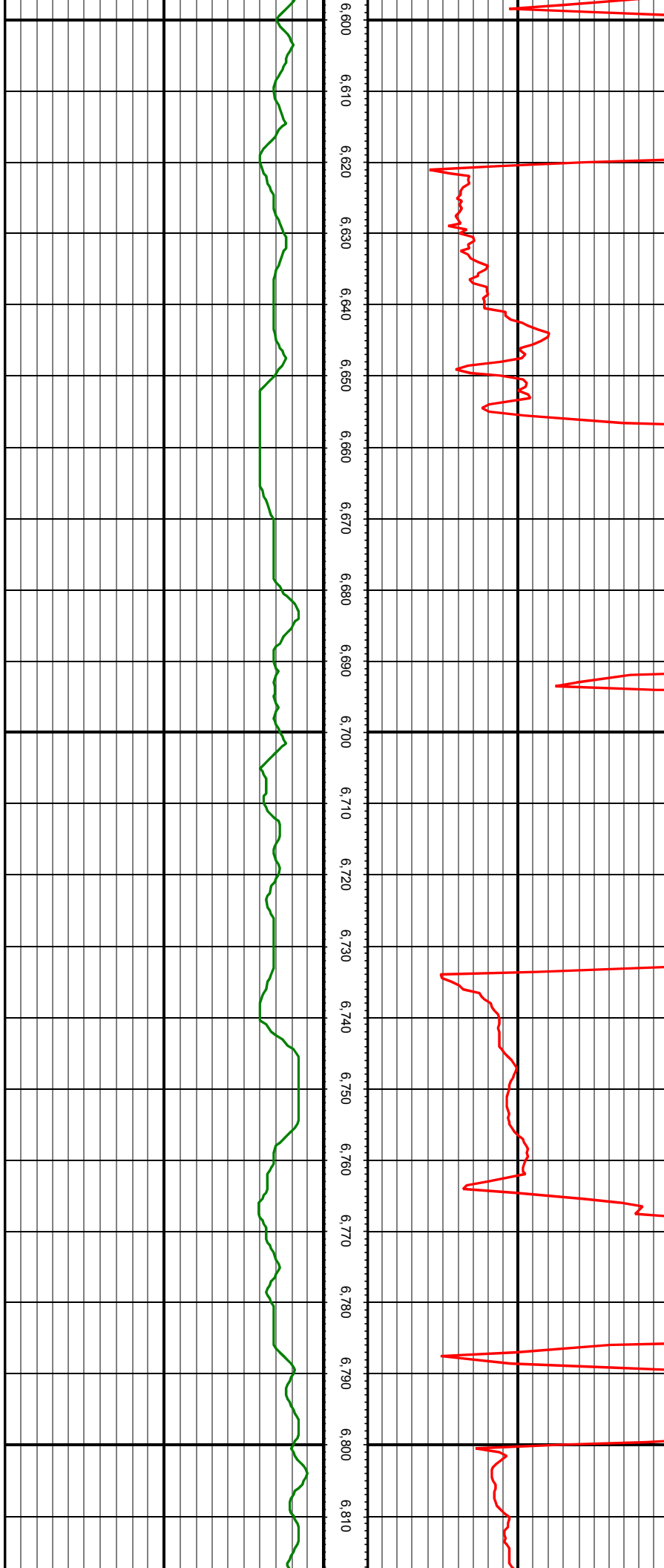
MD: 6066.00 INC: 11.34 AZ: 271.99 TVD: 5976.03 VS: -5.84





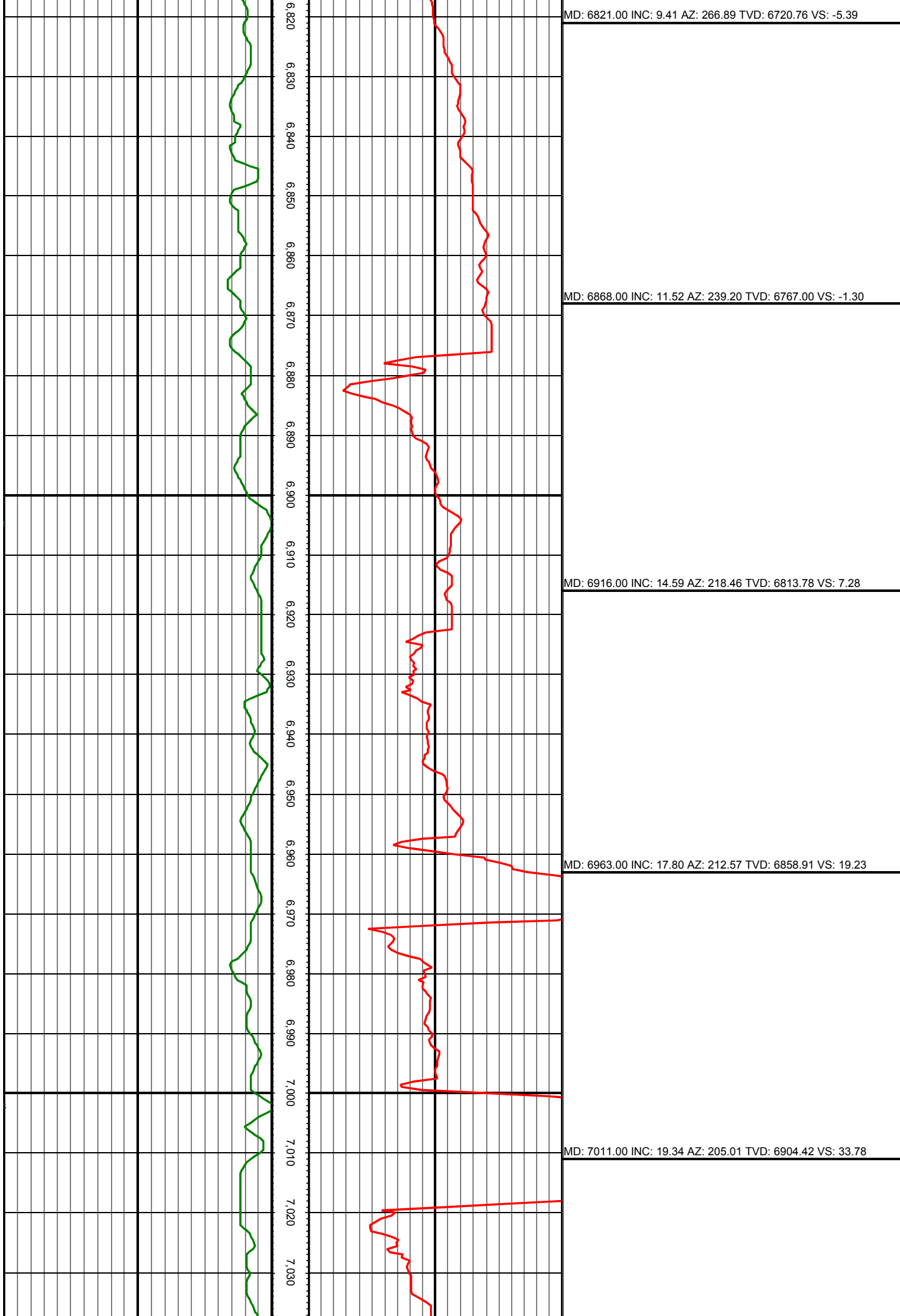
MD: 6444.00 INC: 9.45 AZ: 288.69 TVD: 6348.53 VS: -2.94

MD: 6539.00 INC: 9.32 AZ: 287.10 TVD: 6442.26 VS: -4.76

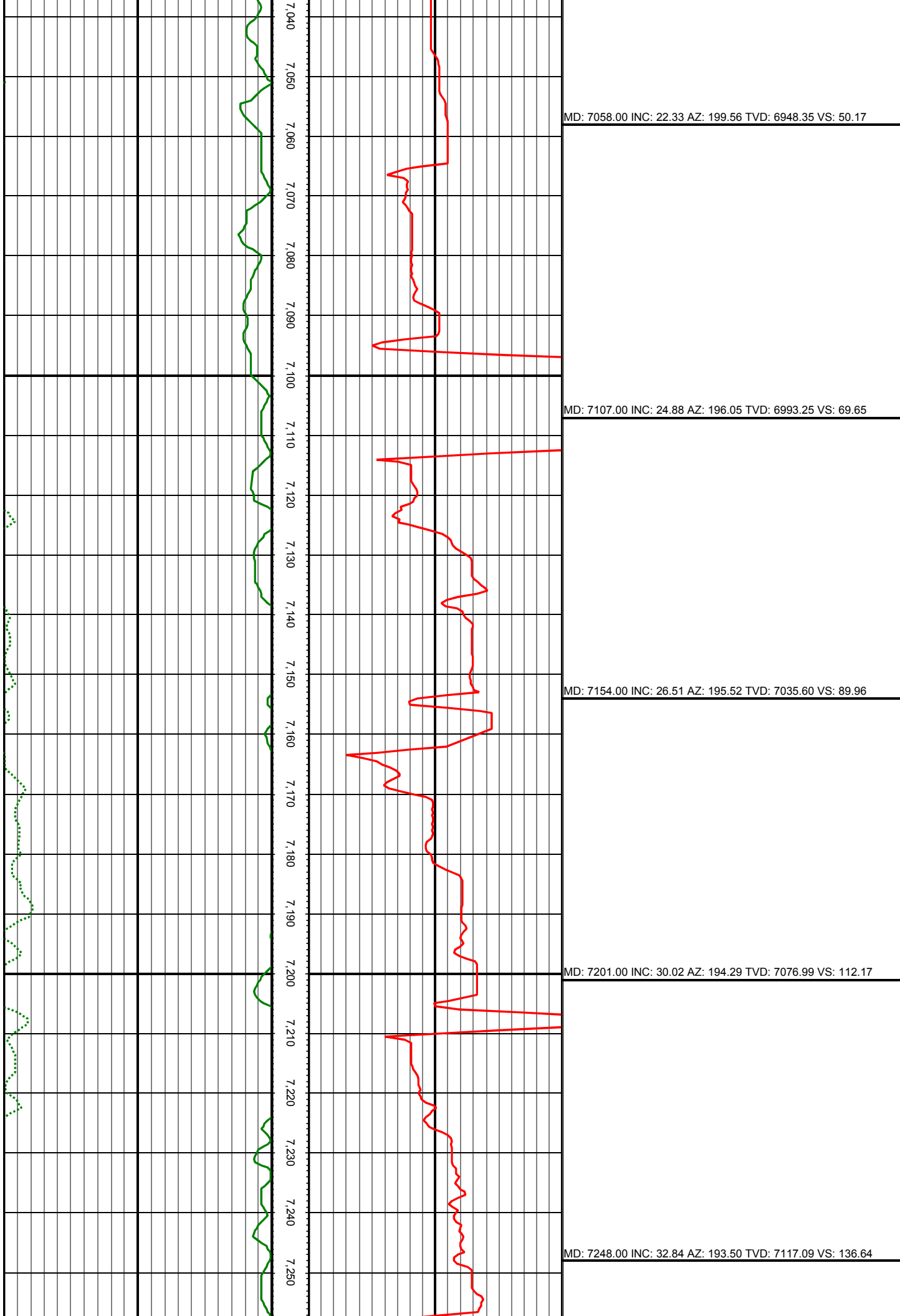


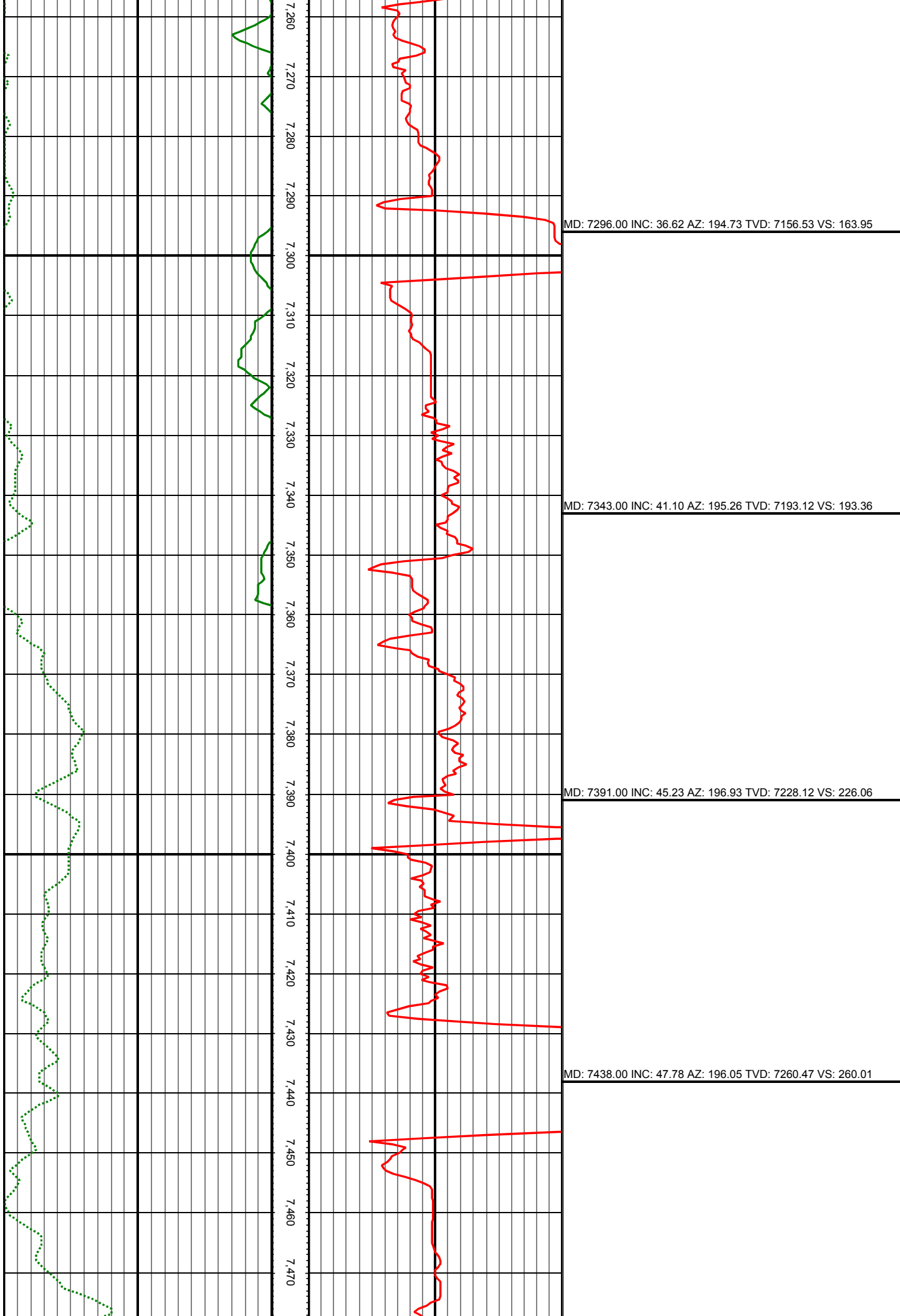
MD: 6633.00 INC: 9.32 AZ: 285.52 TVD: 6535.02 VS: -6.13

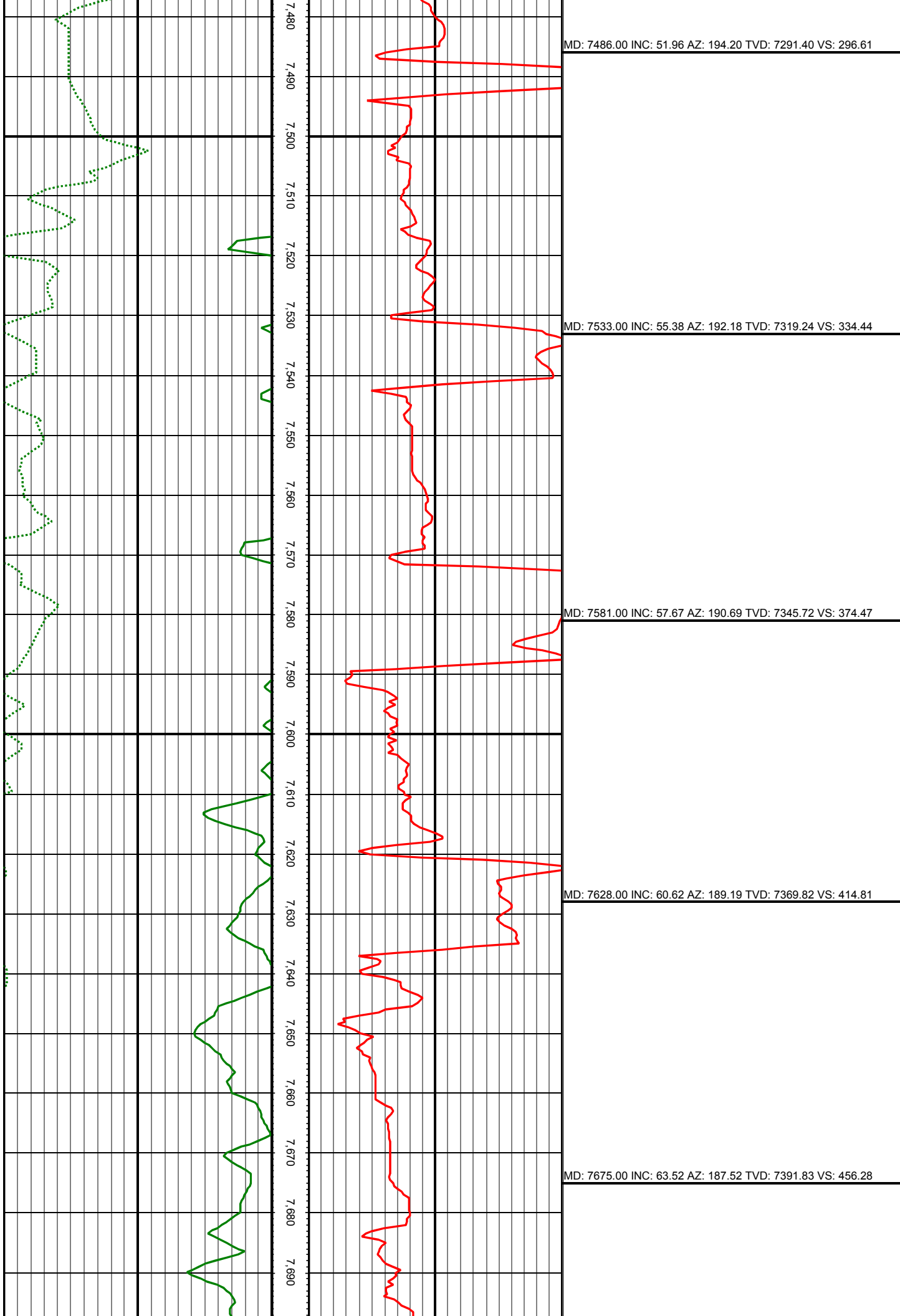
MD: 6727.00 INC: 8.48 AZ: 283.50 TVD: 6627.89 VS: -7.00

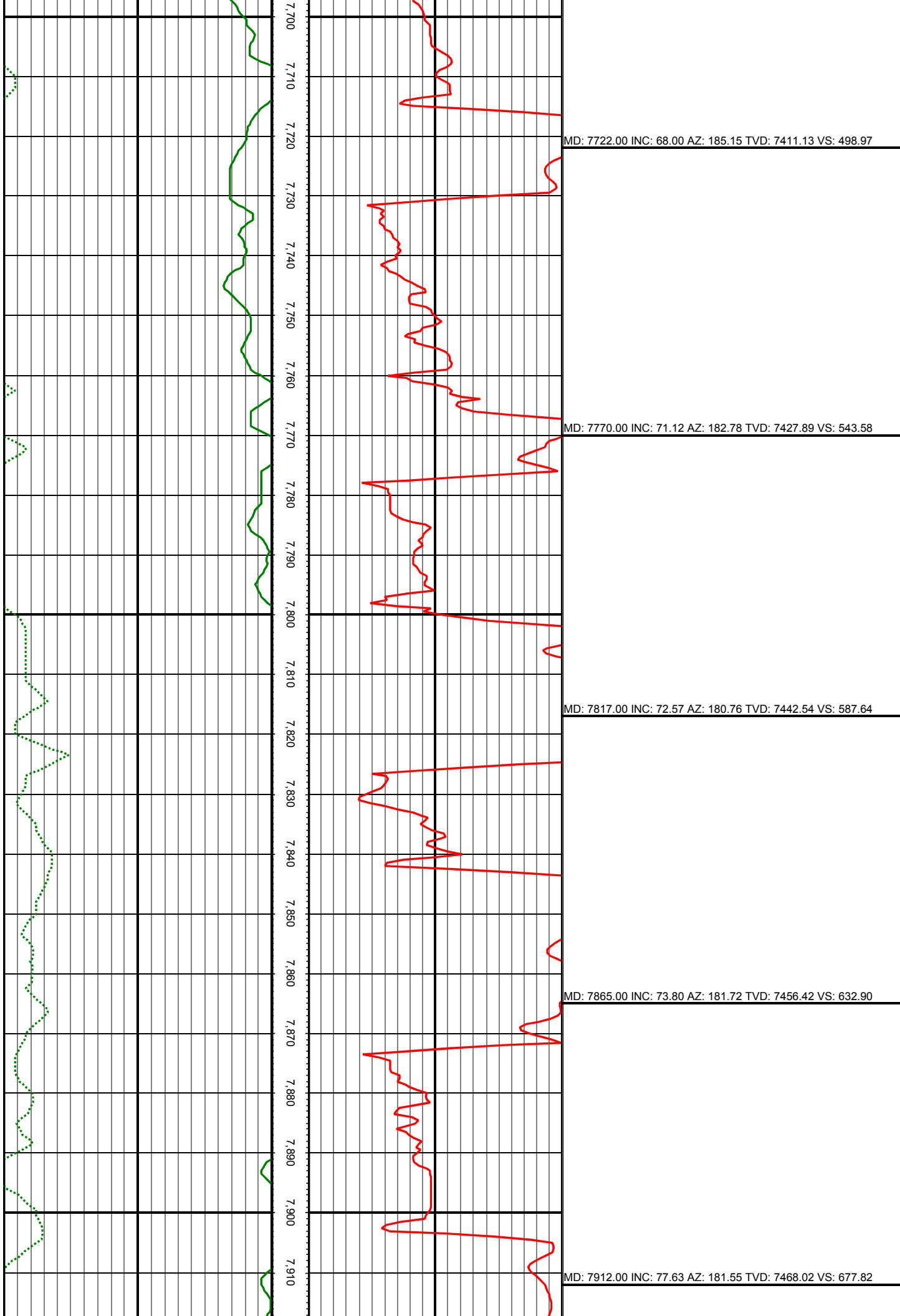


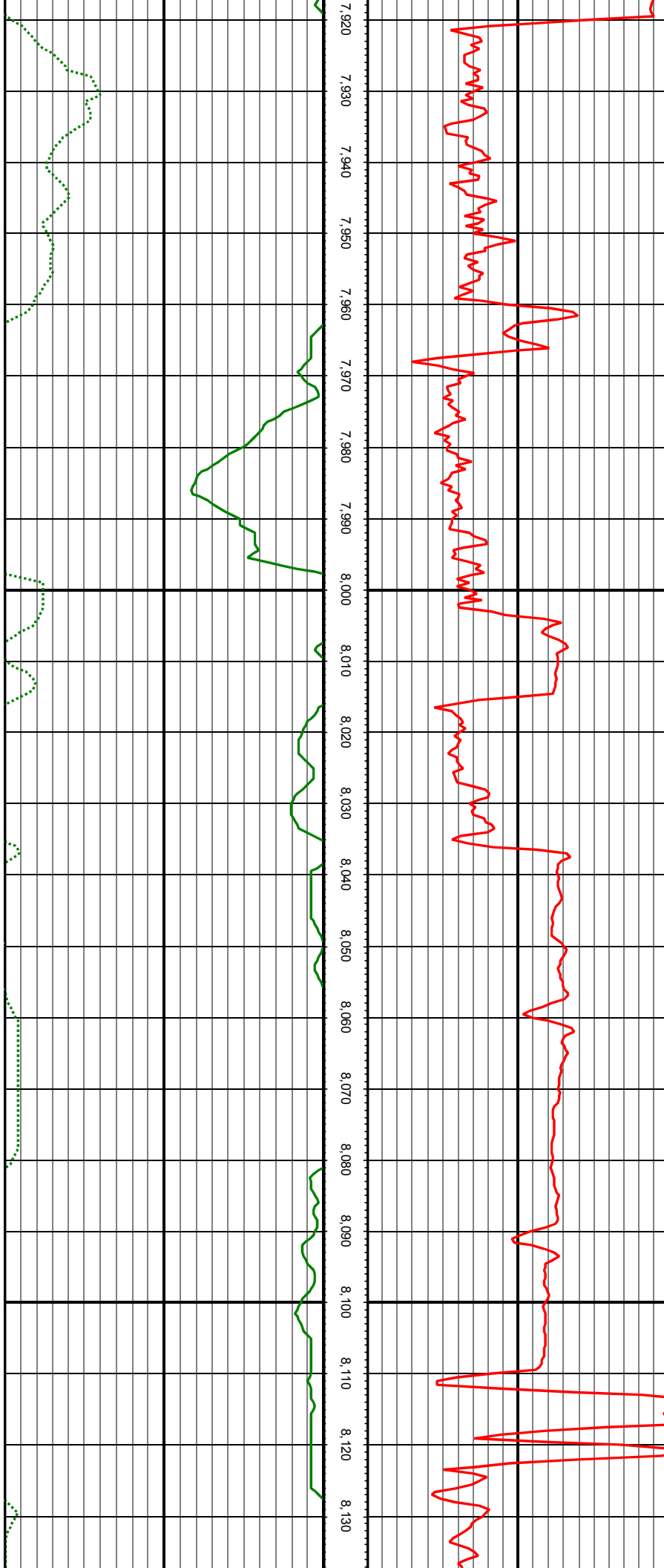






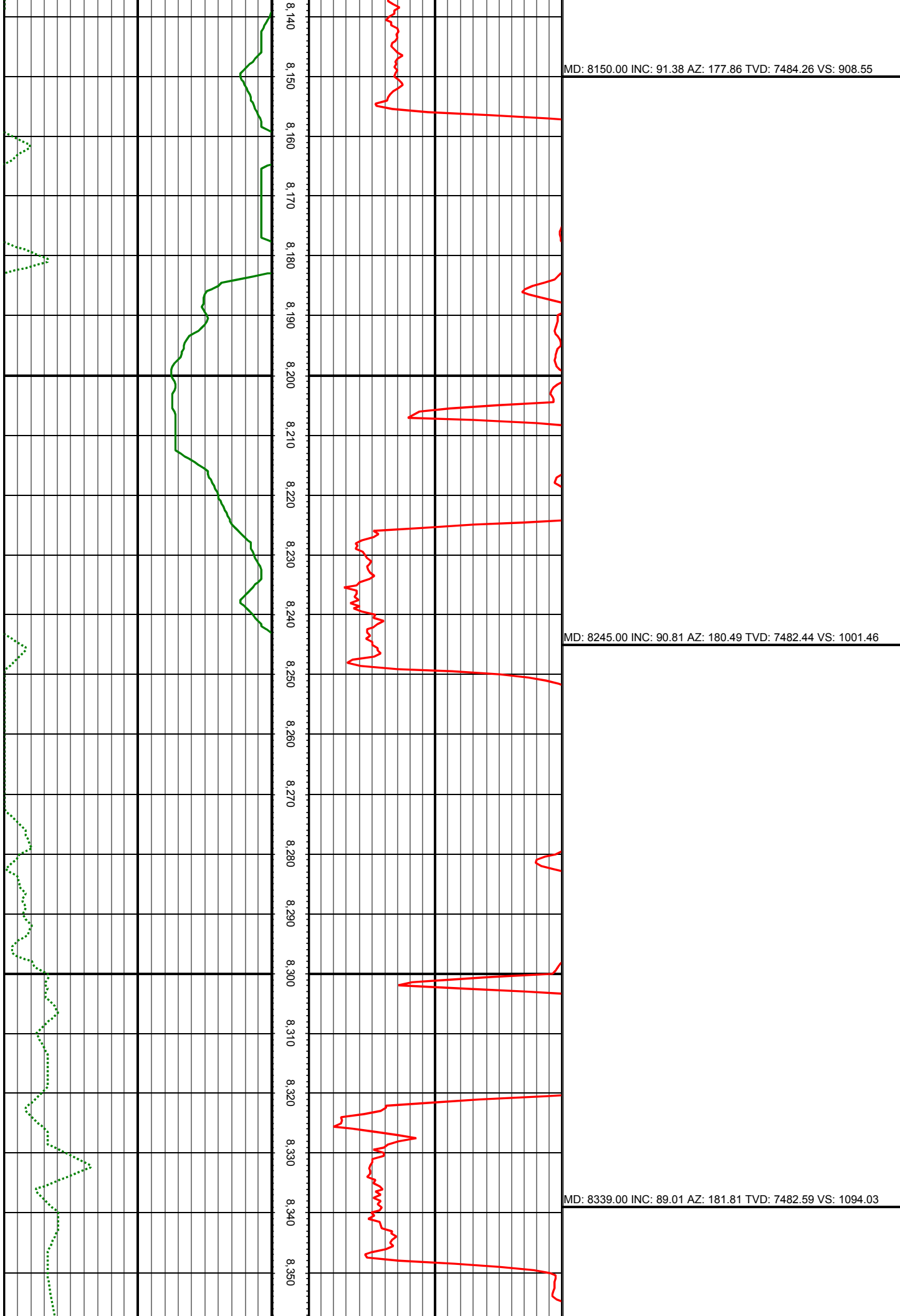


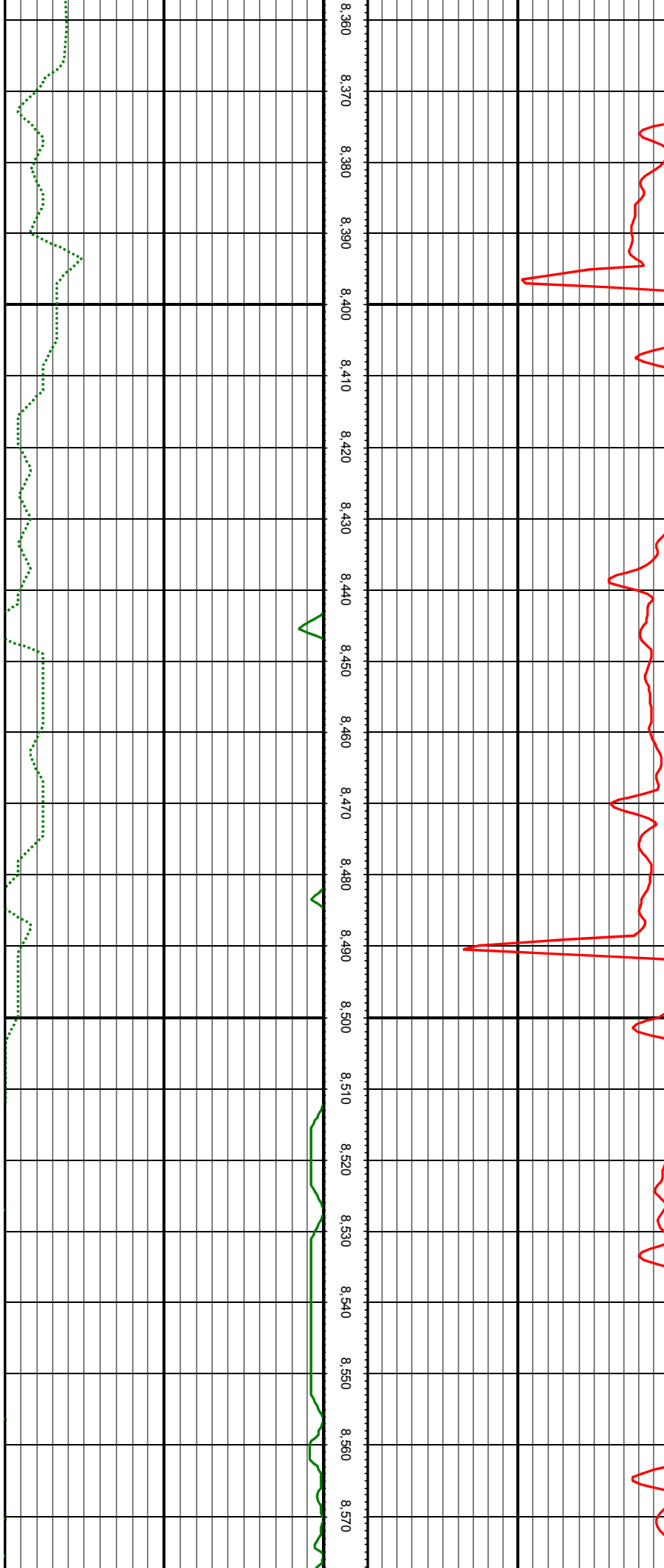




MD: 7960.00 INC: 81.54 AZ: 179.35 TVD: 7476.69 VS: 724.19

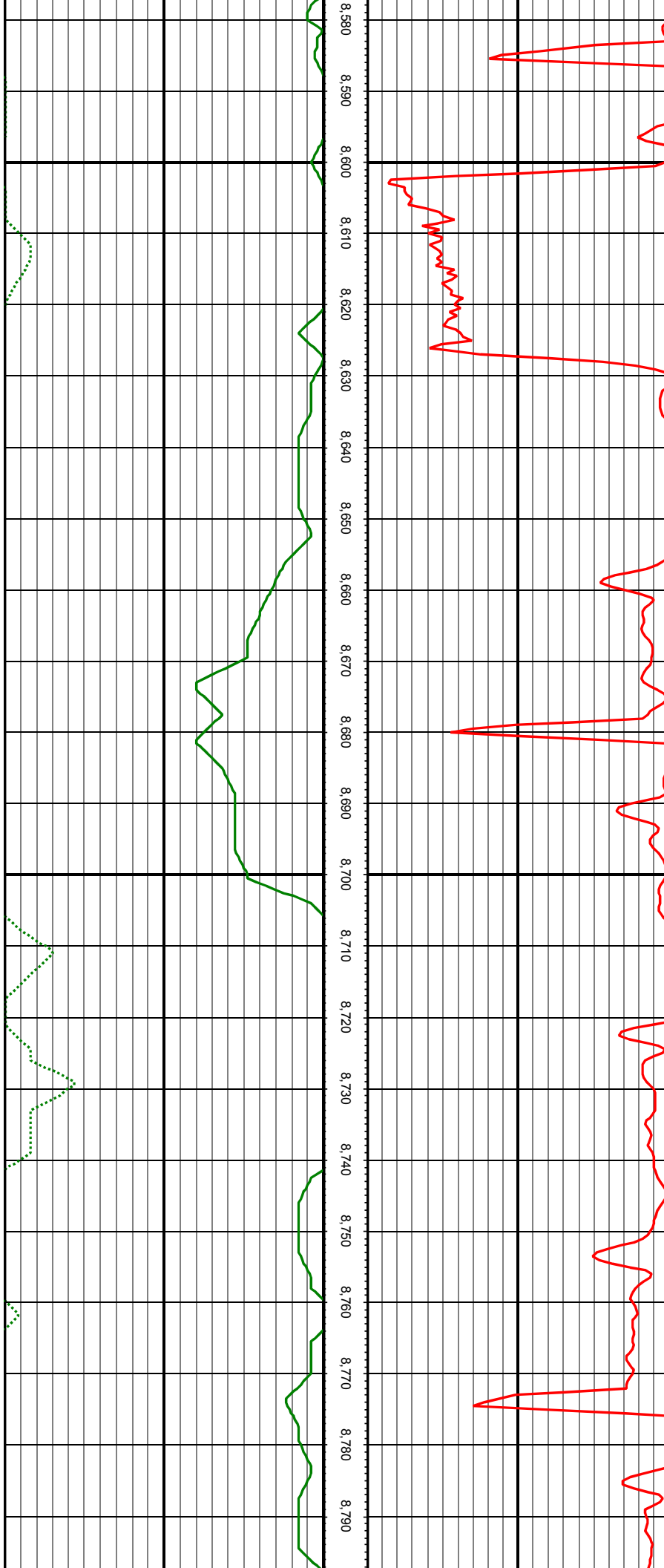
MD: 8055.00 INC: 88.97 AZ: 176.71 TVD: 7484.55 VS: 816.32





MD: 8434.00 INC: 88.53 AZ: 182.34 TVD: 7484.63 VS: 1187.82

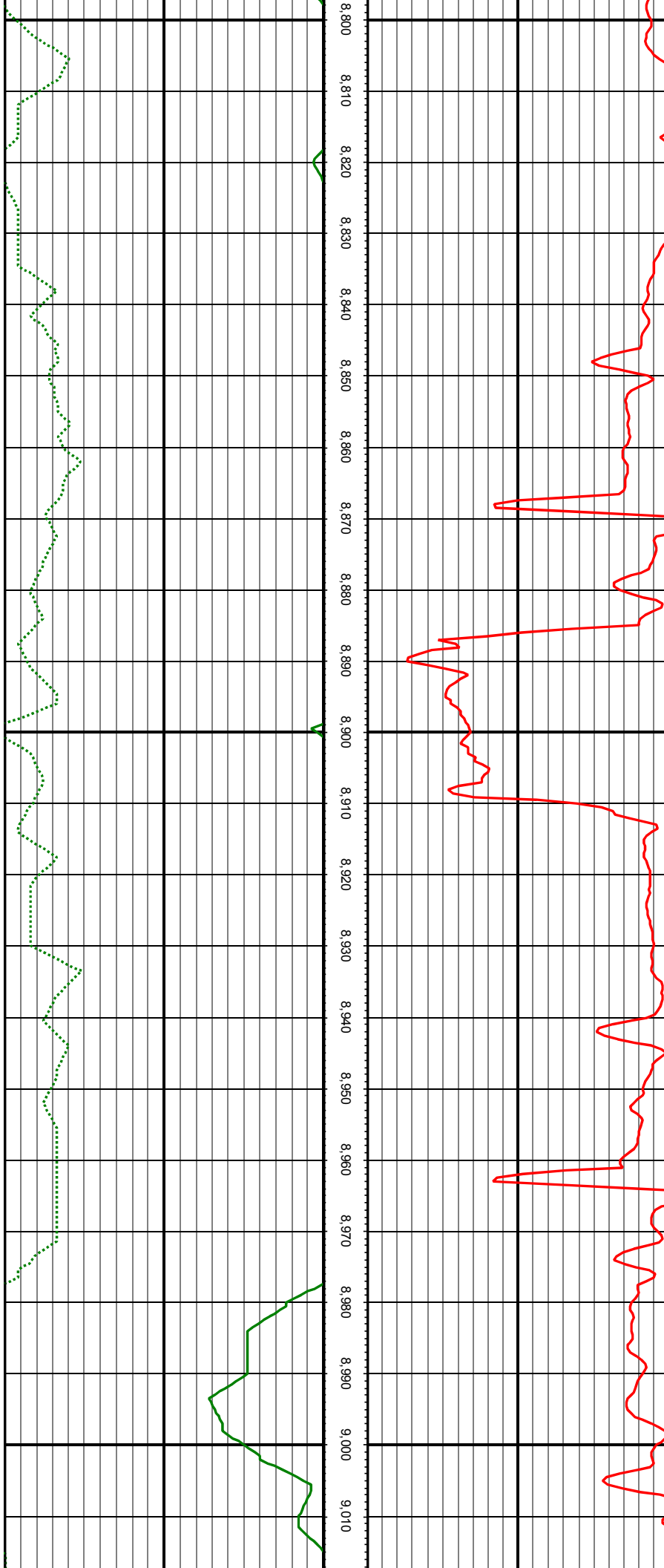
MD: 8529.00 INC: 89.32 AZ: 181.72 TVD: 7486.41 VS: 1281.61



MD: 8624.00 INC: 87.65 AZ: 182.87 TVD: 7488.92 VS: 1375.44

MD: 8718.00 INC: 87.56 AZ: 182.78 TVD: 7492.85 VS: 1468.37

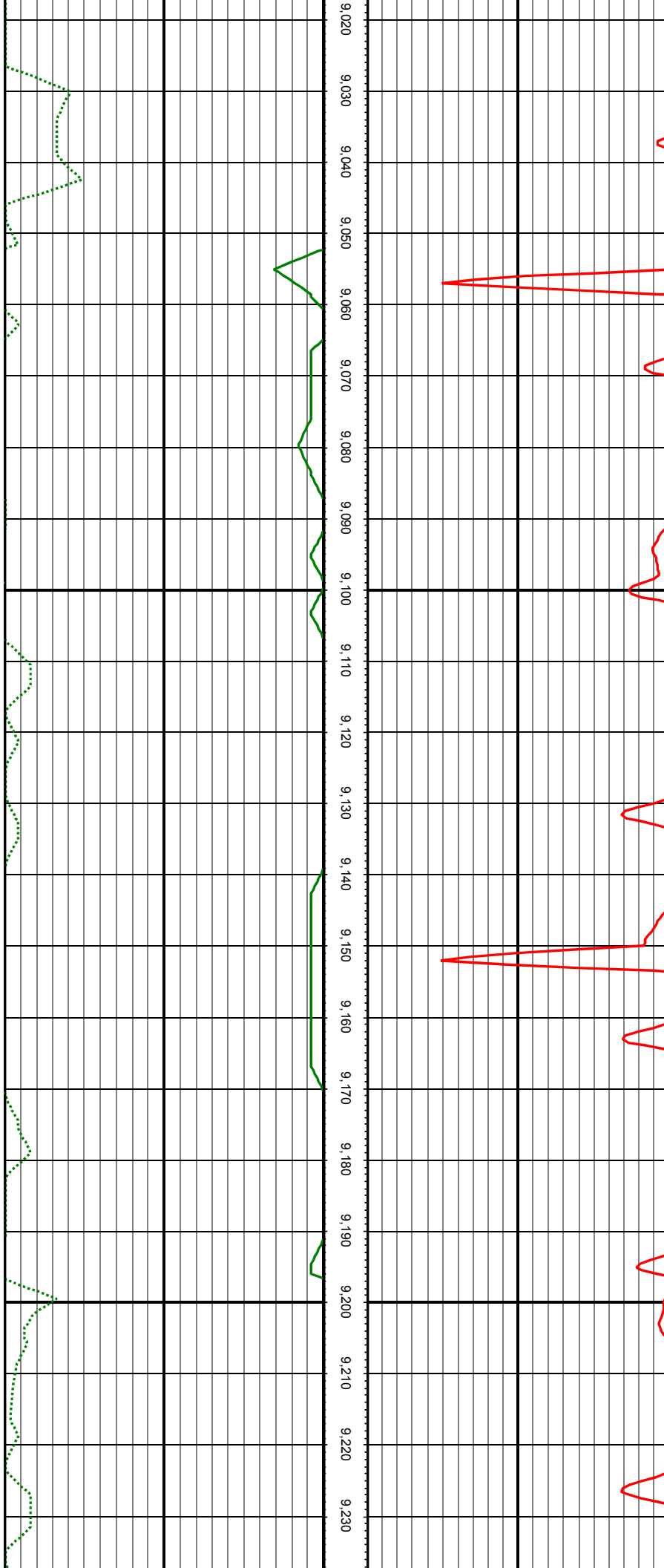




MD: 8813.00 INC: 88.13 AZ: 182.78 TVD: 7496.42 VS: 1562.29

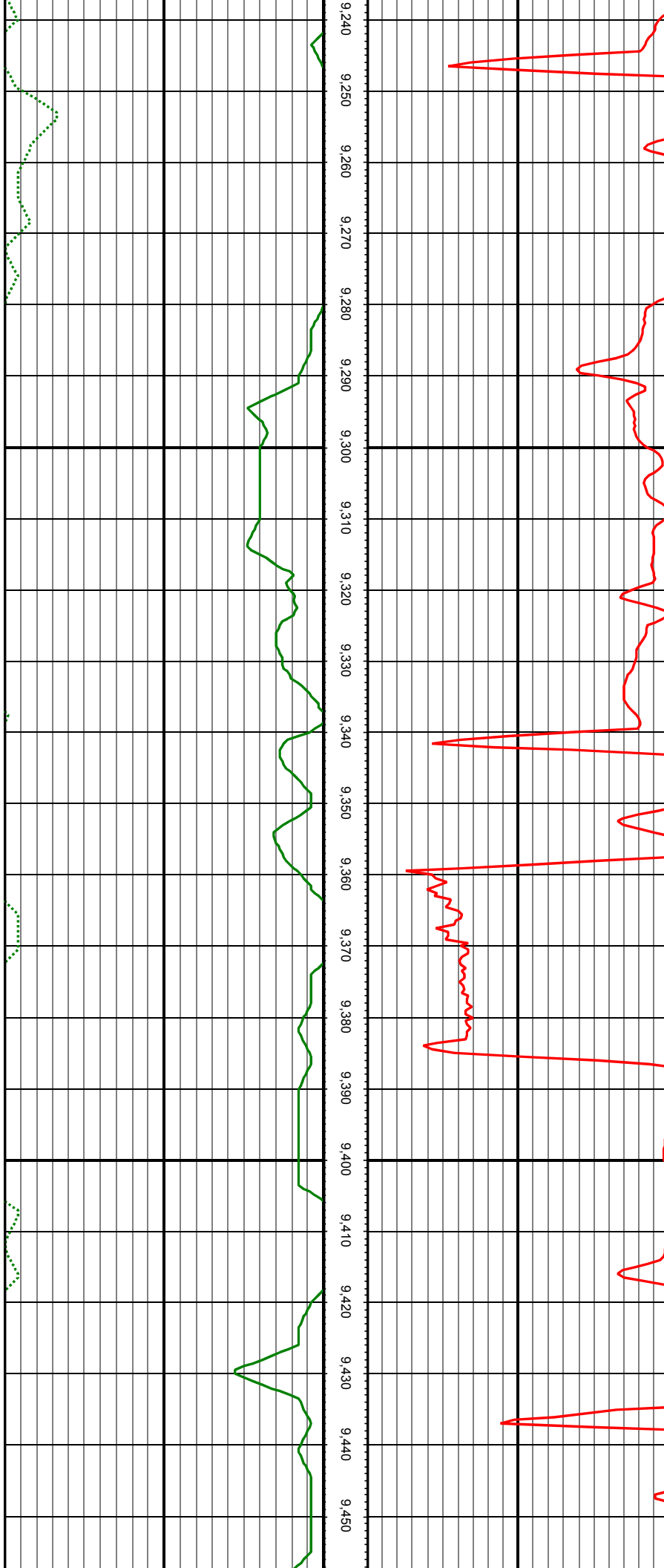
MD: 8907.00 INC: 87.52 AZ: 180.67 TVD: 7499.99 VS: 1654.95

MD: 9003.00 INC: 87.82 AZ: 179.26 TVD: 7503.89 VS: 1749.05



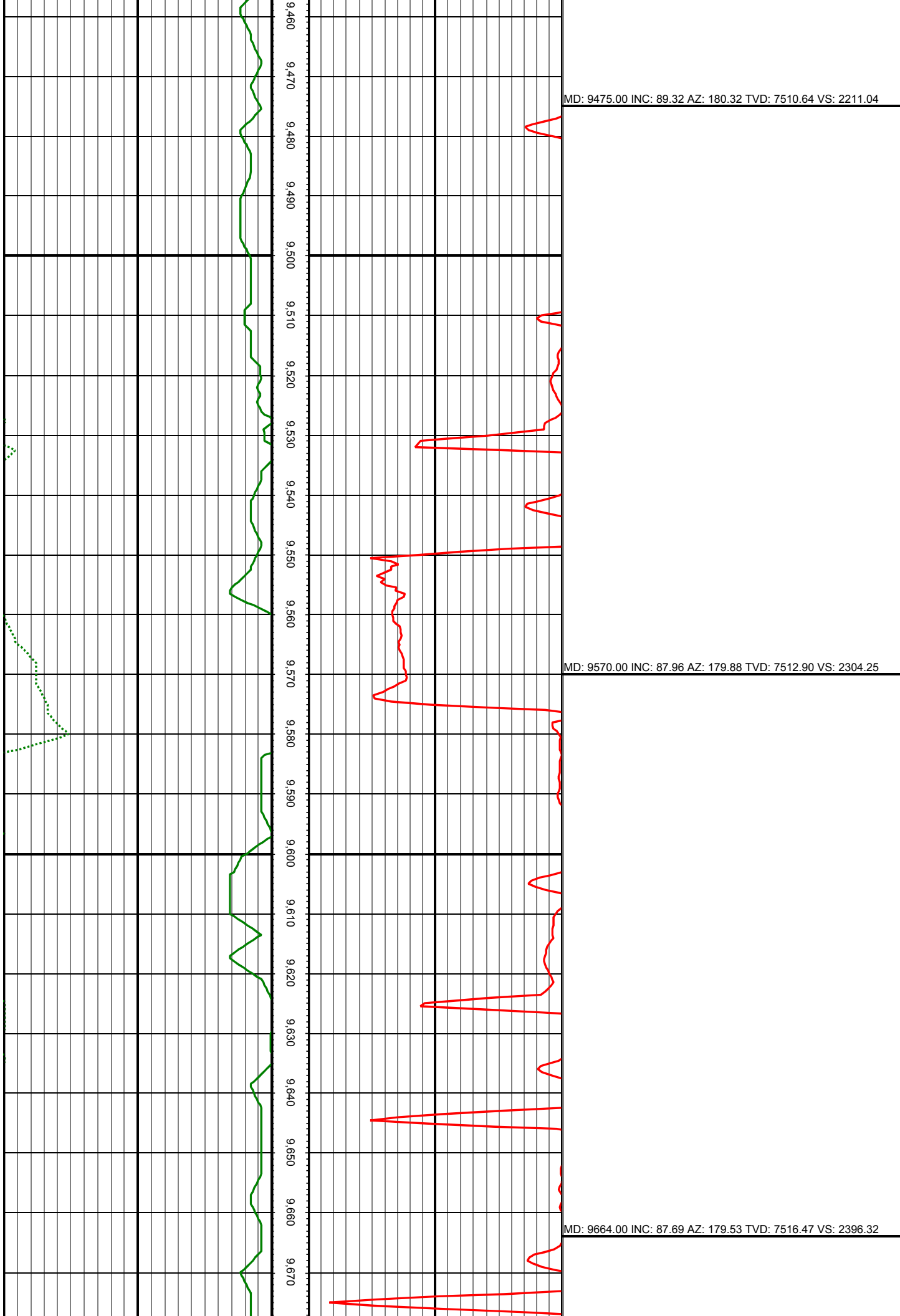
MD: 9097.00 INC: 88.44 AZ: 179.09 TVD: 7506.96 VS: 1840.96

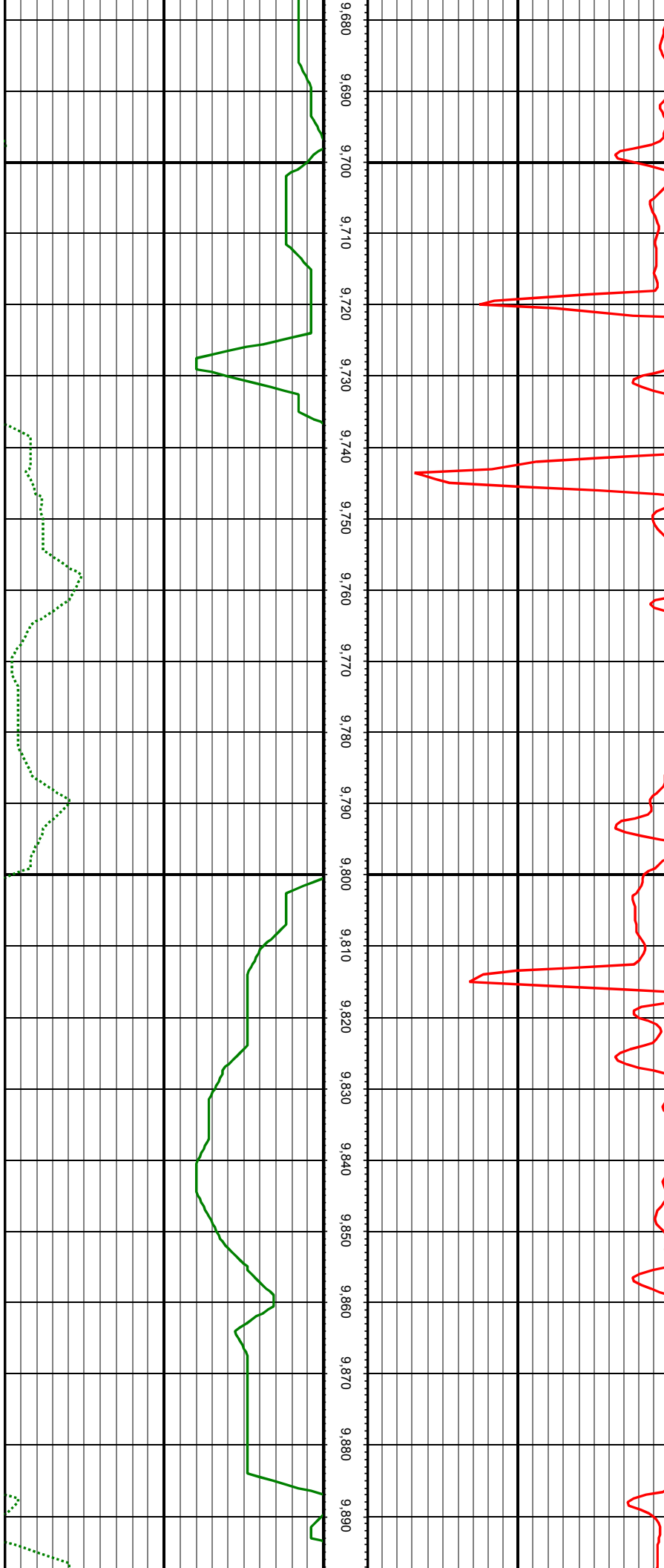
MD: 9191.00 INC: 89.49 AZ: 179.35 TVD: 7508.66 VS: 1932.92

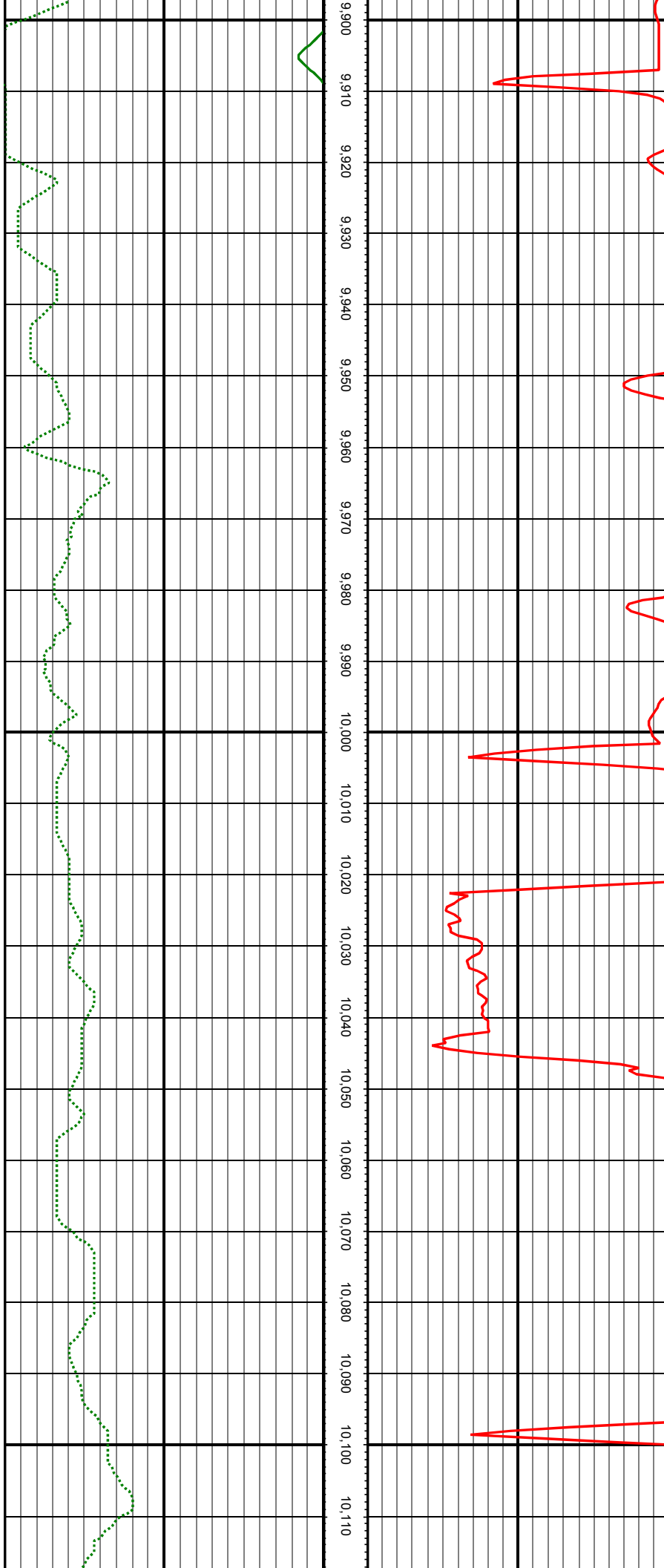


MD: 9286.00 INC: 90.29 AZ: 178.82 TVD: 7508.84 VS: 2025.82

MD: 9381.00 INC: 89.10 AZ: 179.79 TVD: 7509.35 VS: 2118.80

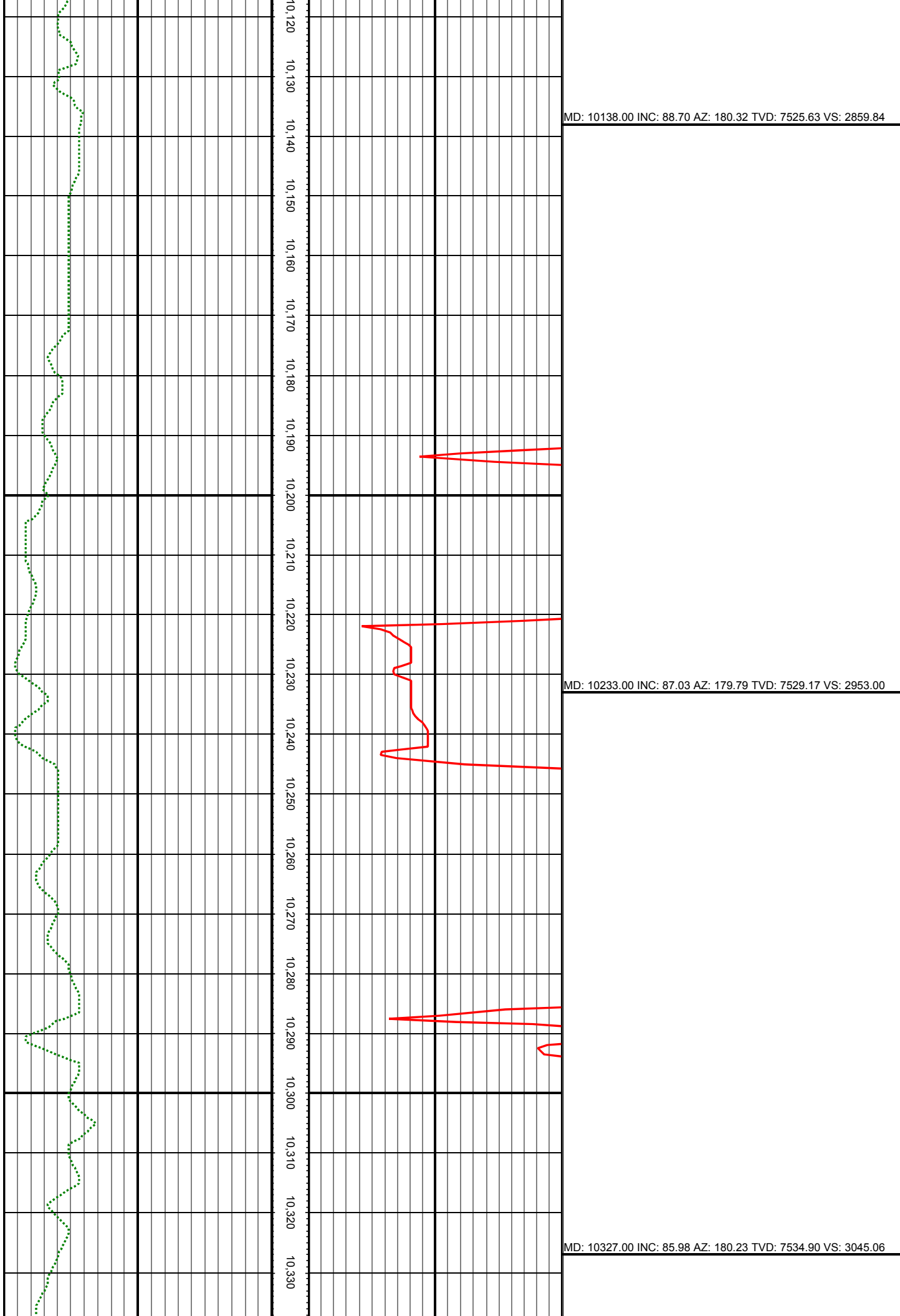


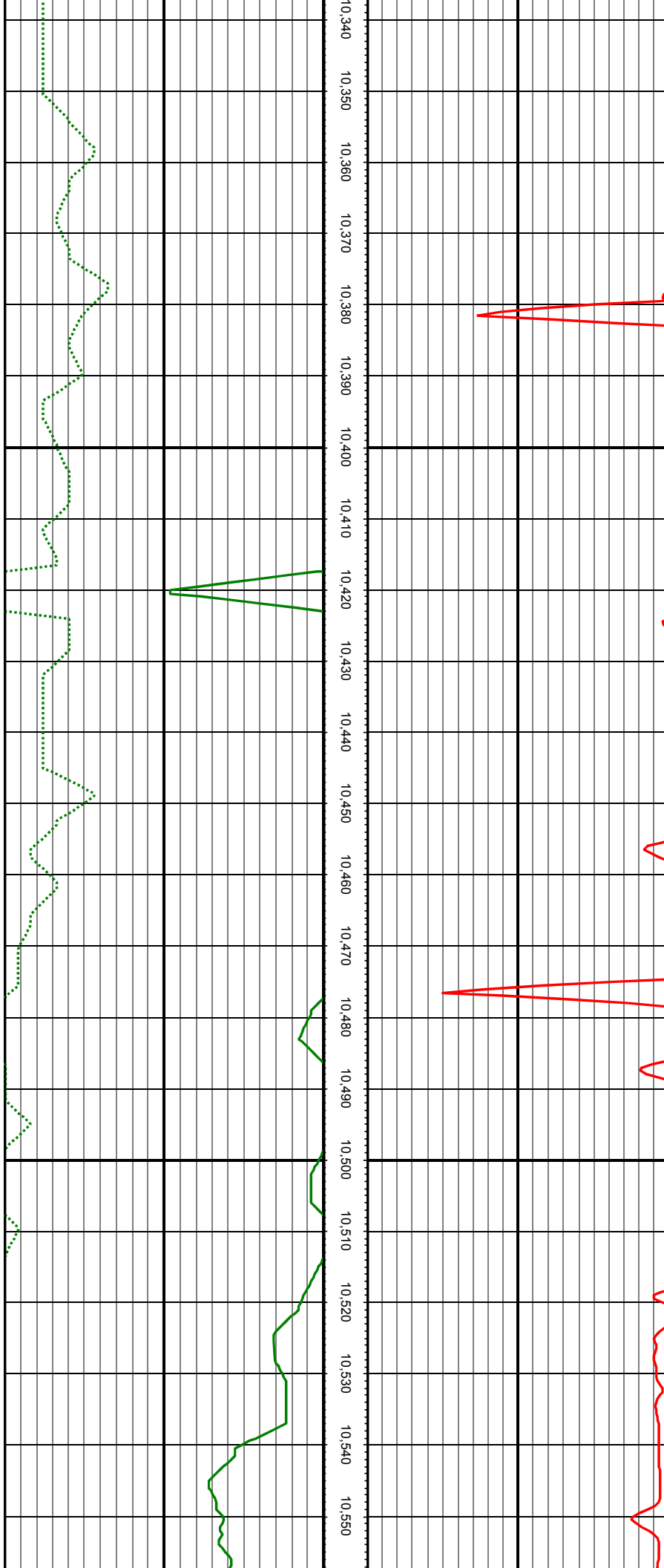




MD: 9949.00 INC: 89.89 AZ: 178.21 TVD: 7521.89 VS: 2674.76

MD: 10043.00 INC: 88.44 AZ: 179.79 TVD: 7523.26 VS: 2766.64

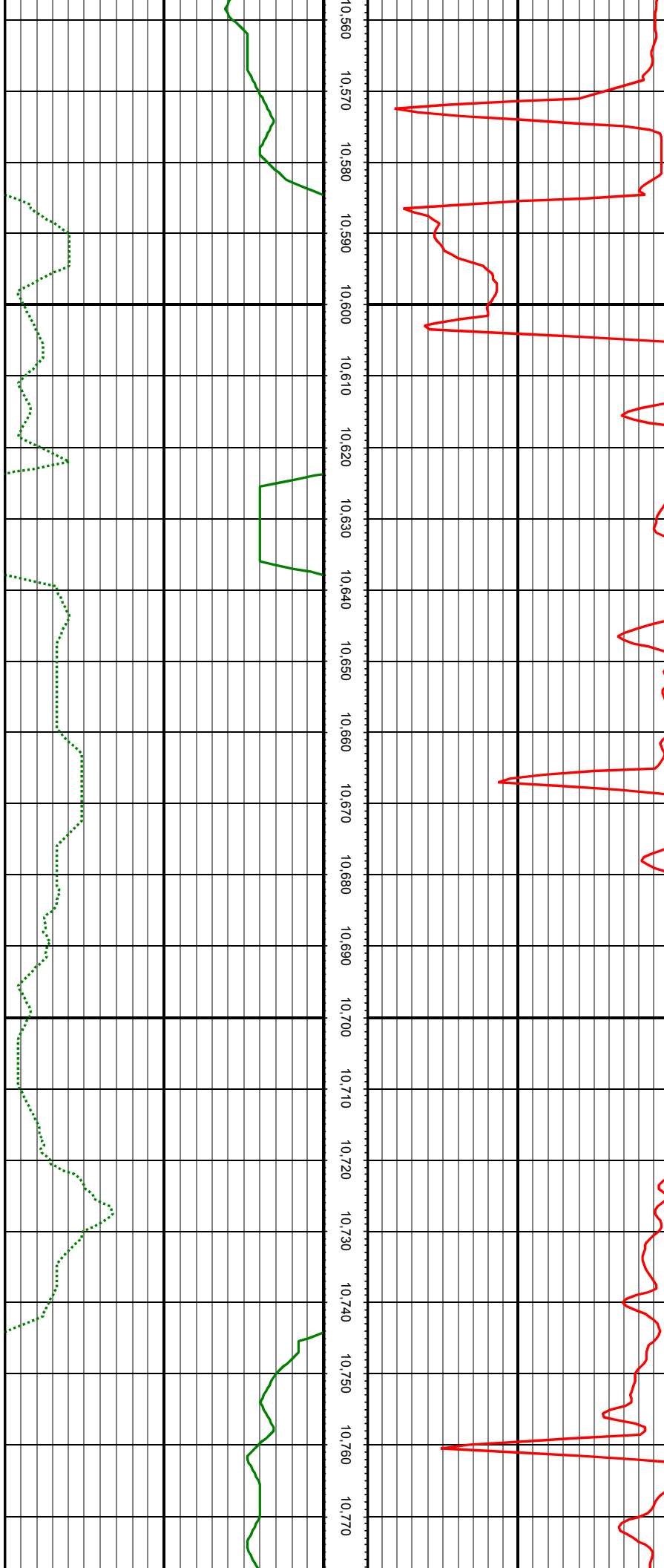




MD: 10422.00 INC: 86.15 AZ: 180.49 TVD: 7541.42 VS: 3138.16

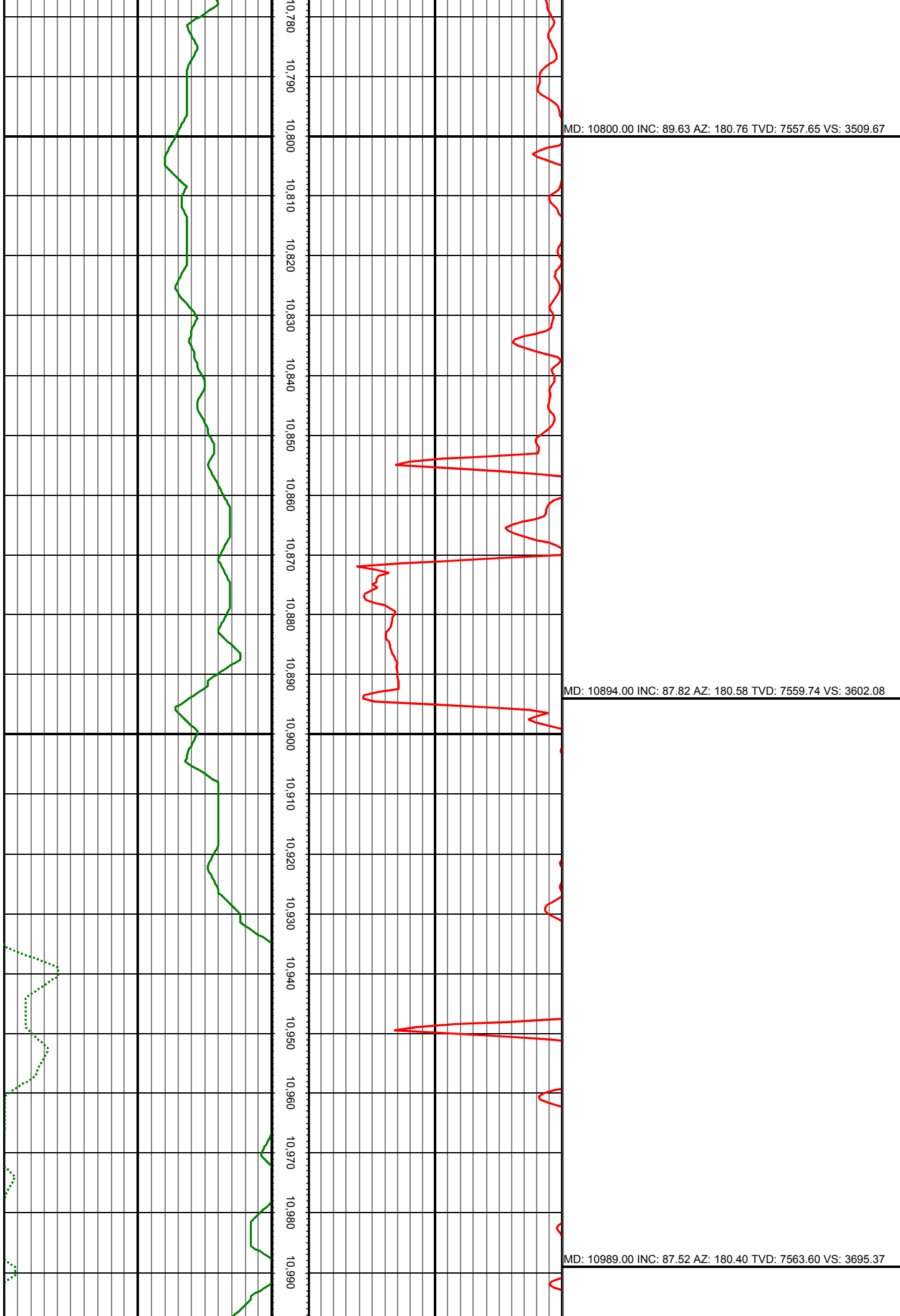
MD: 10516.00 INC: 86.15 AZ: 180.40 TVD: 7547.73 VS: 3230.32

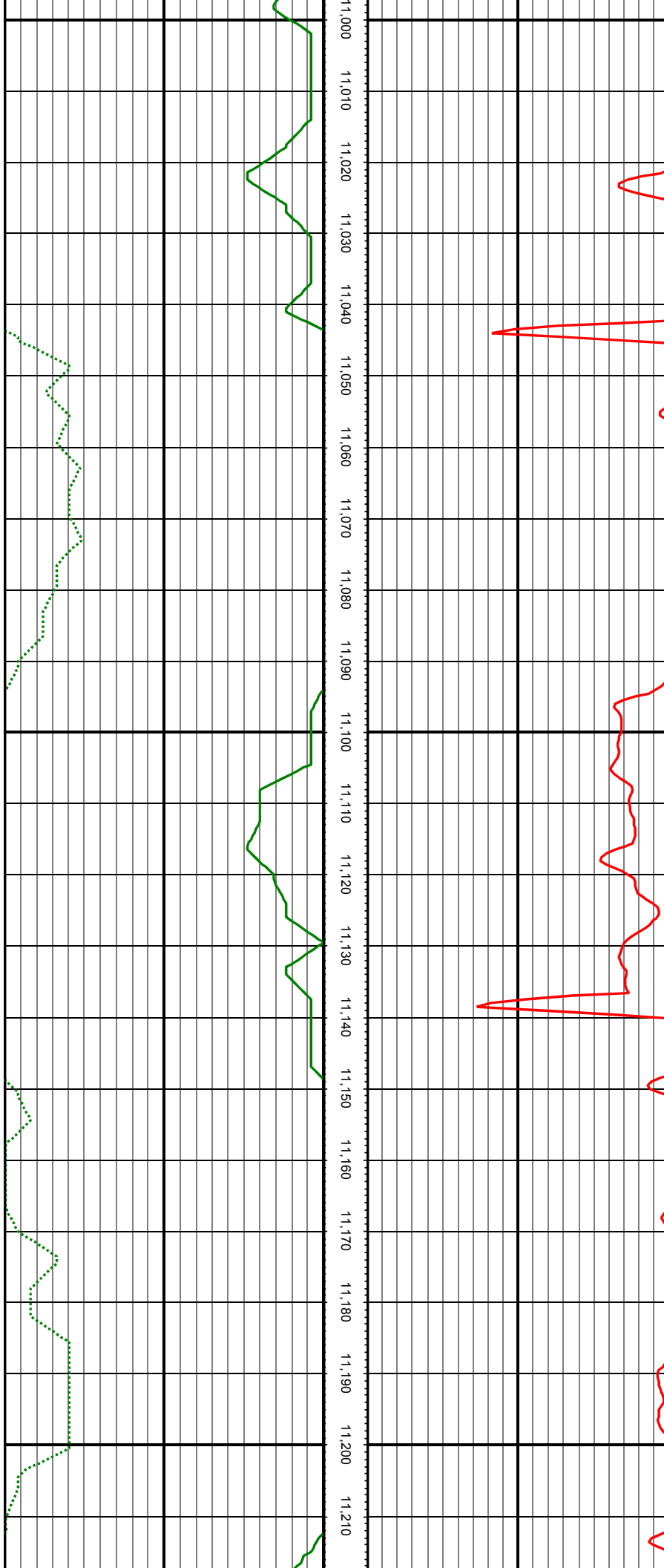




MD: 10612.00 INC: 87.21 AZ: 180.93 TVD: 7553.29 VS: 3324.56

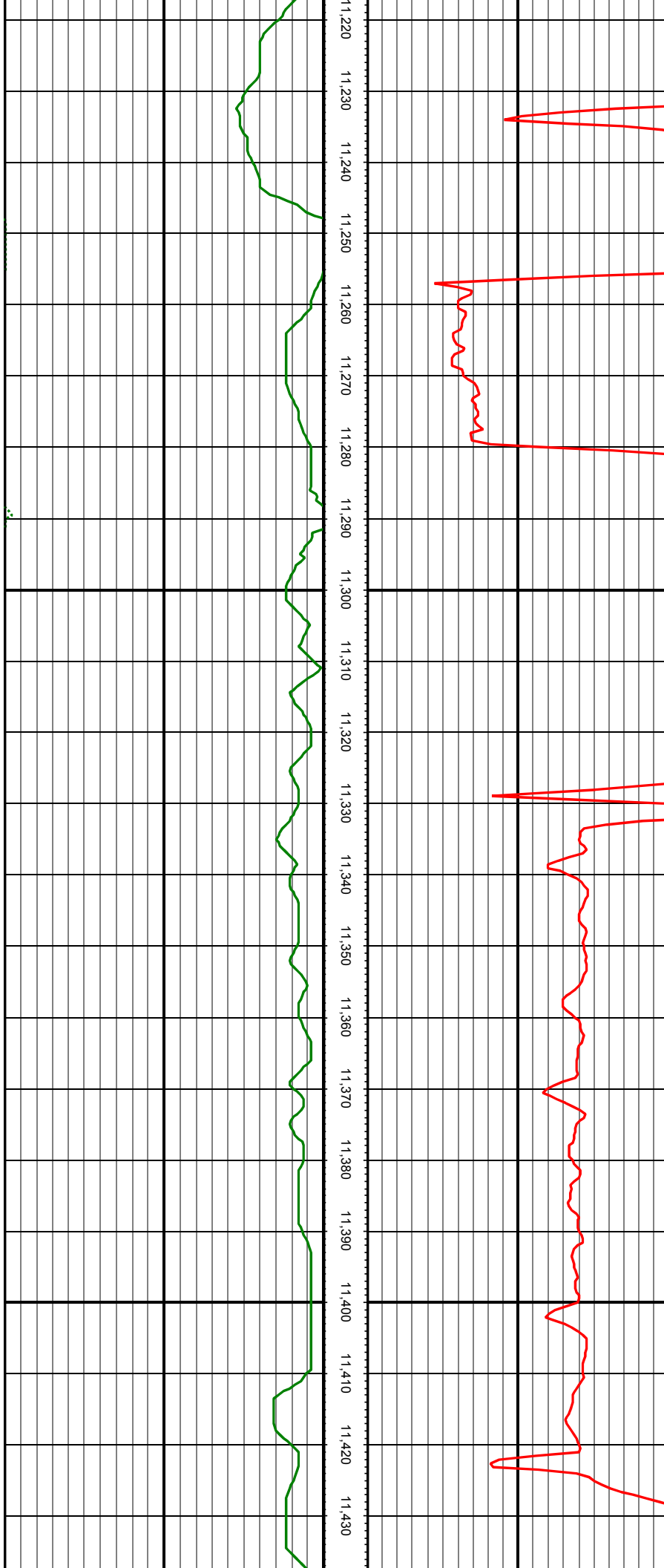
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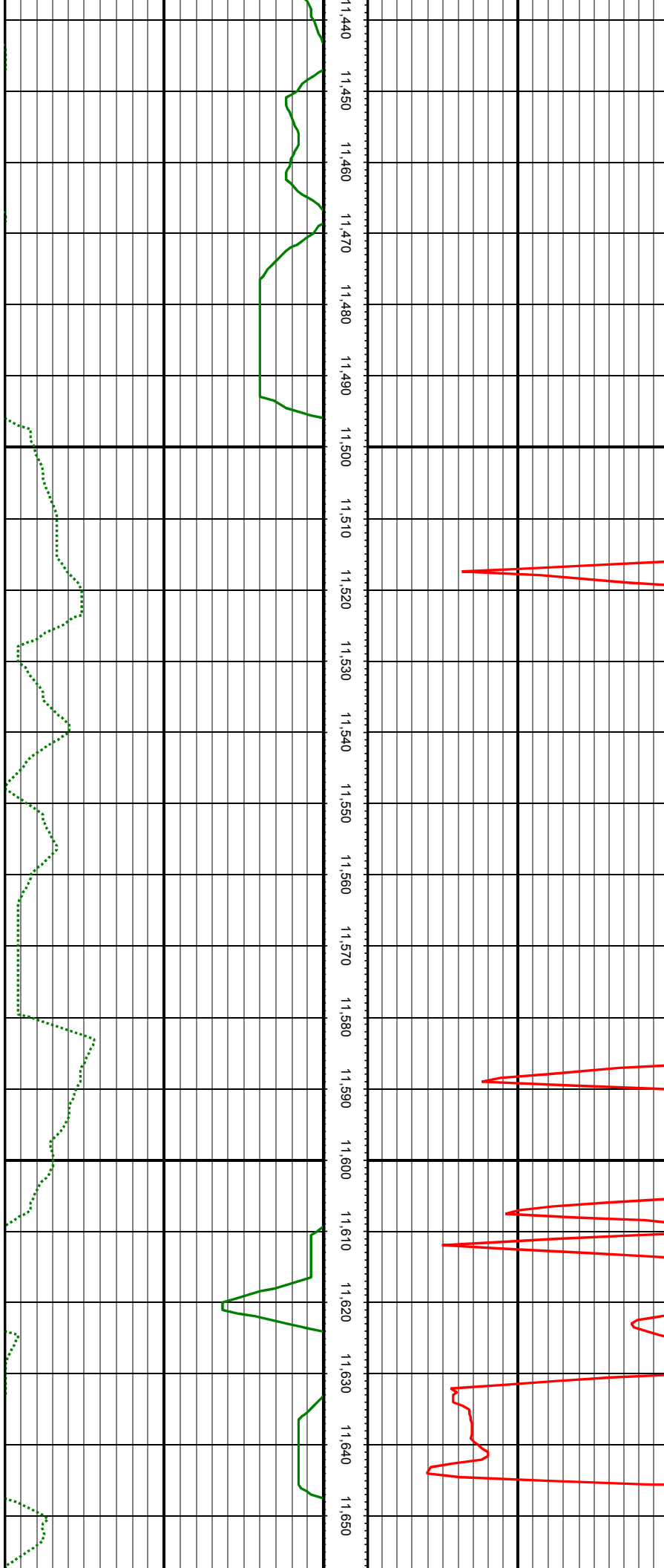
MD: 11083.00 INC: 88.09 AZ: 181.02 TVD: 7567.20 VS: 3787.75

MD: 11178.00 INC: 89.23 AZ: 180.93 TVD: 7569.43 VS: 3881.23



MD: 11273.00 INC: 87.30 AZ: 181.55 TVD: 7572.30 VS: 3974.77

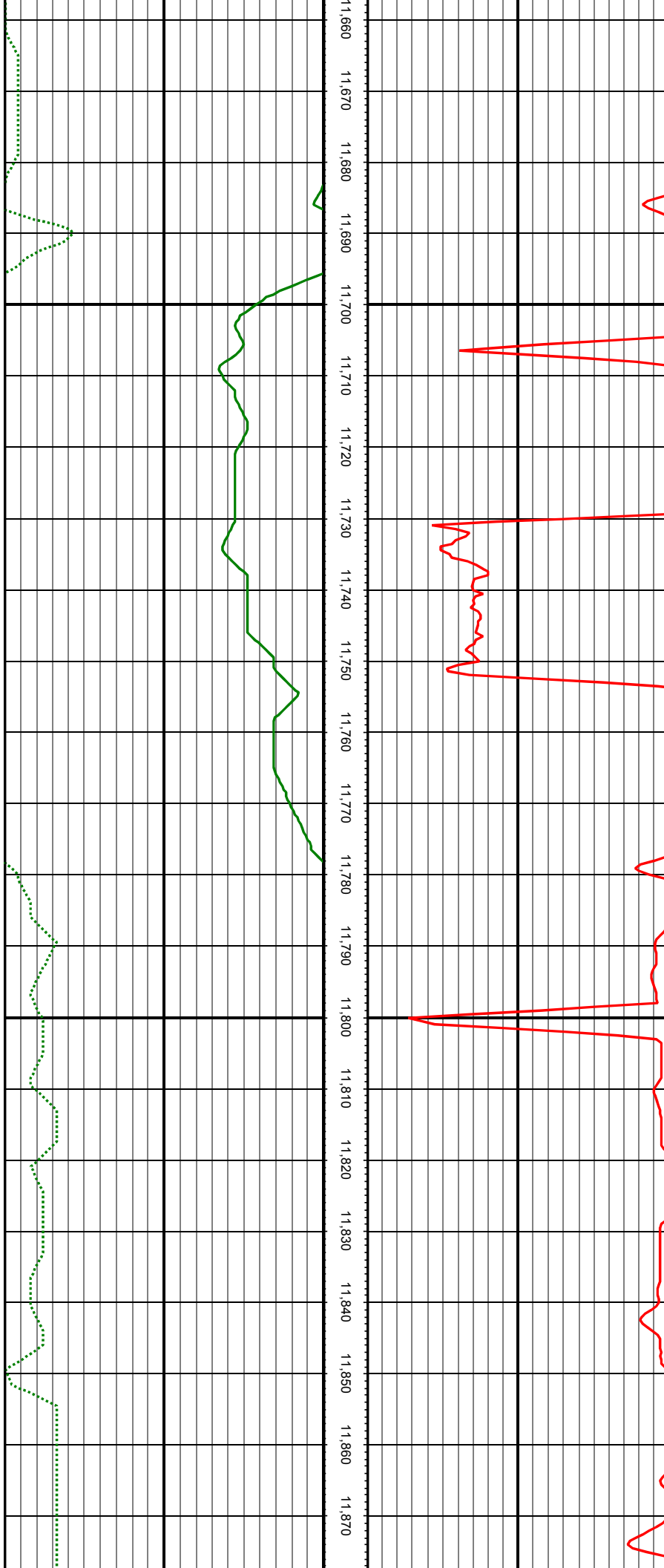
MD: 11368.00 INC: 87.16 AZ: 181.02 TVD: 7576.89 VS: 4068.25



MD: 11463.00 INC: 87.21 AZ: 181.20 TVD: 7581.56 VS: 4161.69

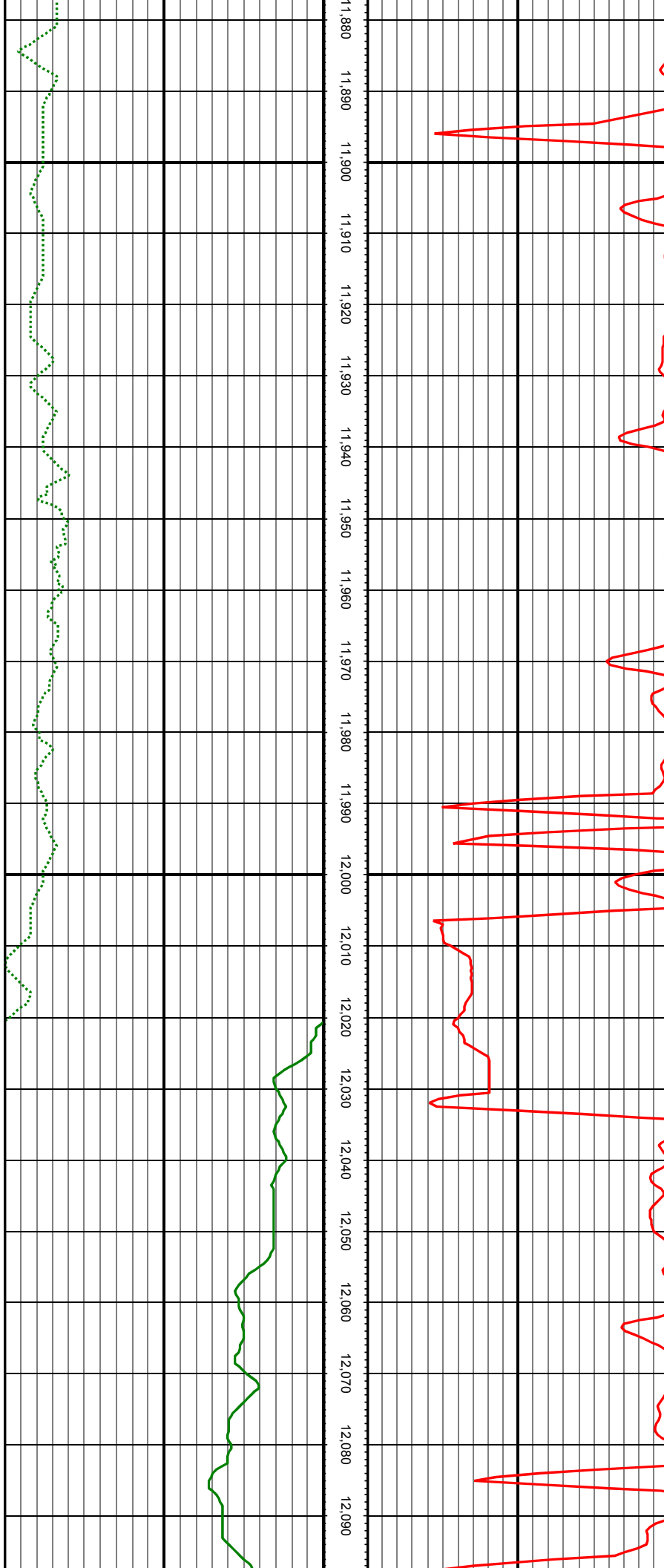
MD: 11558.00 INC: 86.90 AZ: 181.46 TVD: 7586.44 VS: 4255.18

MD: 11652.00 INC: 86.81 AZ: 180.93 TVD: 7591.60 VS: 4347.62



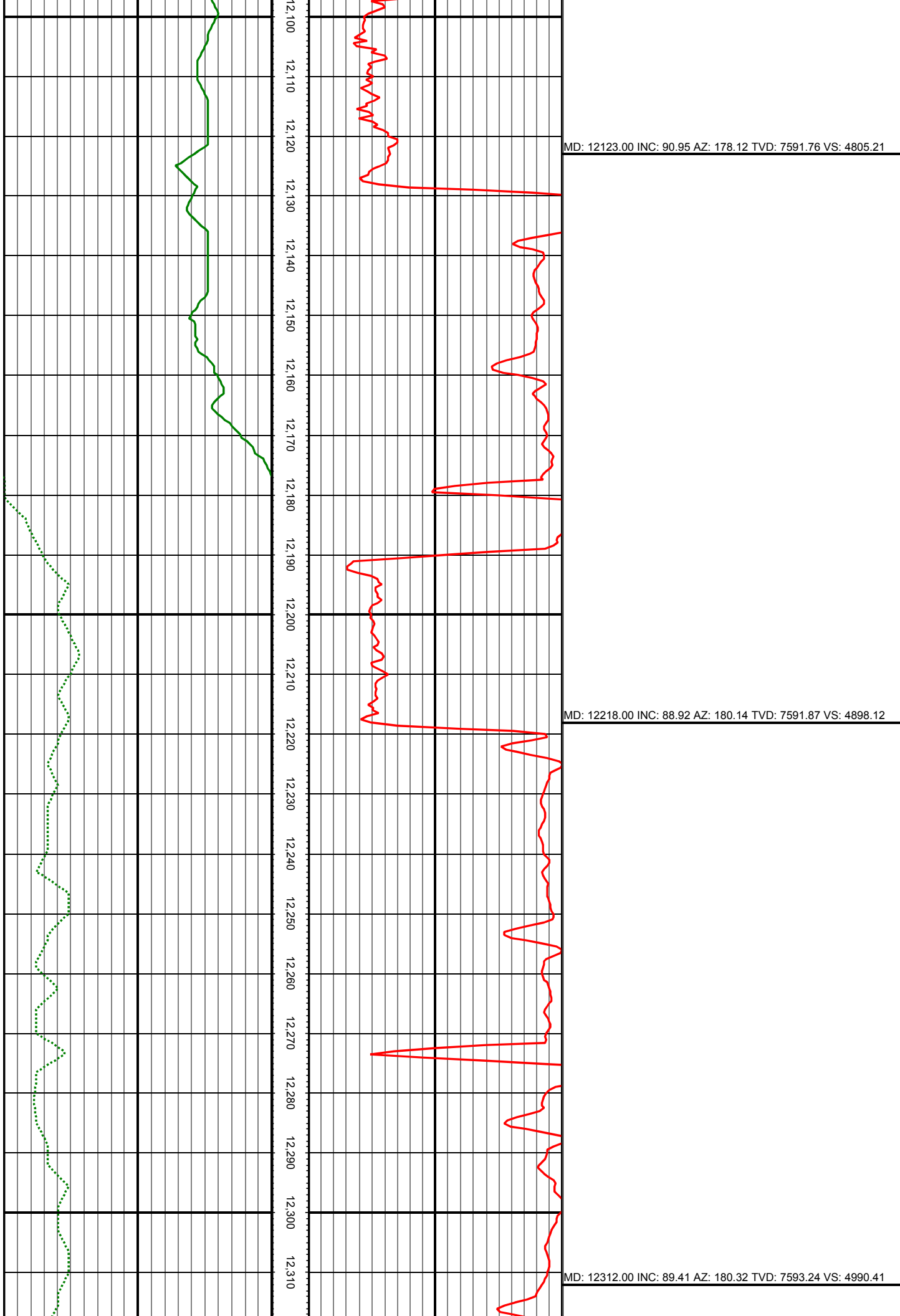
MD: 11746.00 INC: 89.23 AZ: 180.05 TVD: 7594.84 VS: 4439.94

MD: 11840.00 INC: 90.24 AZ: 179.00 TVD: 7595.28 VS: 4532.01

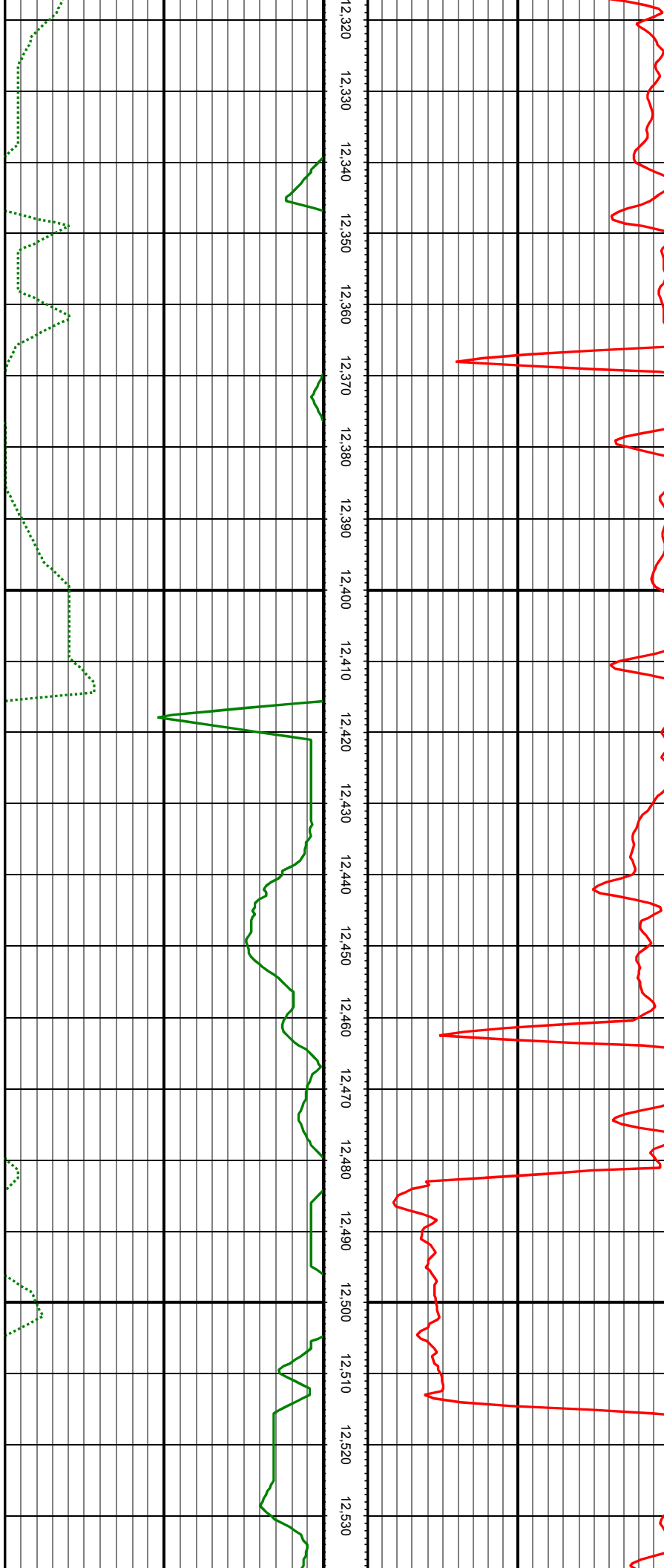


MD: 11934.00 INC: 89.89 AZ: 174.78 TVD: 7595.17 VS: 4623.10

MD: 12029.00 INC: 91.65 AZ: 174.95 TVD: 7593.90 VS: 4714.28

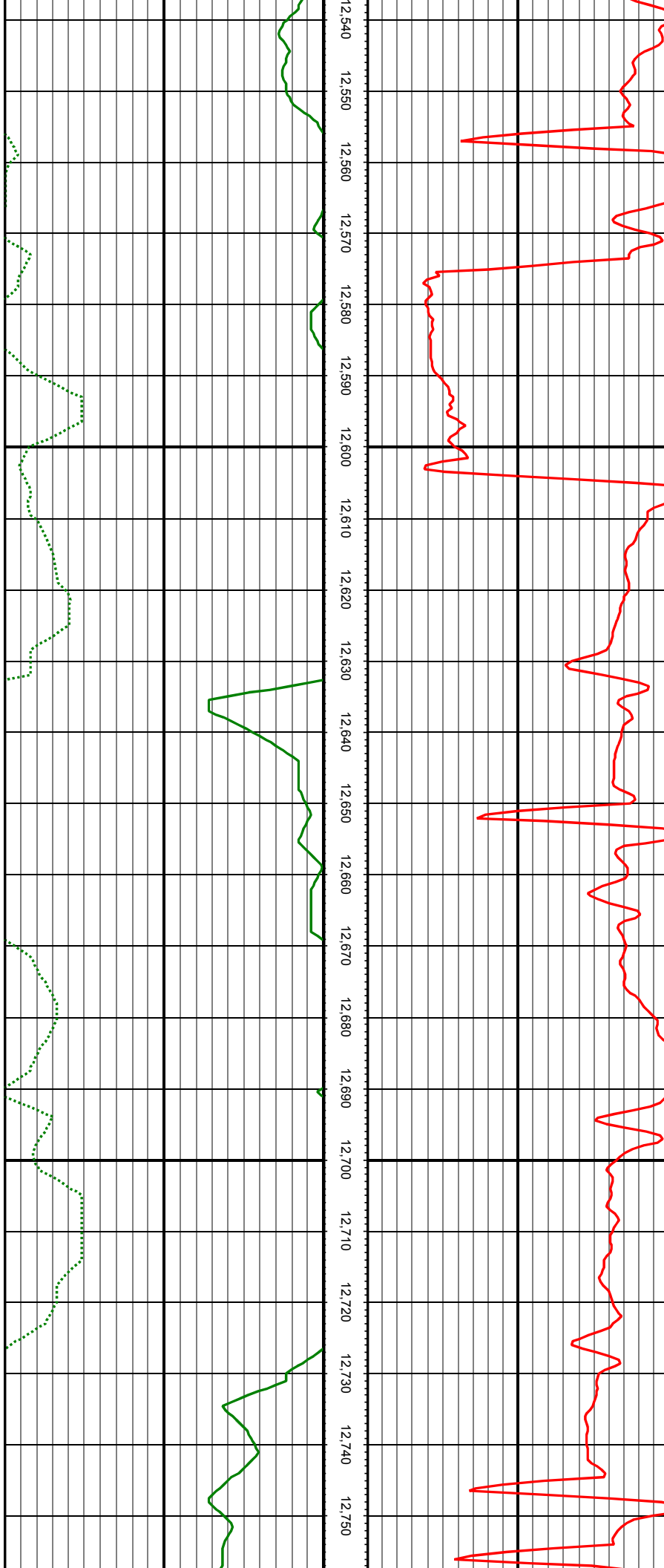






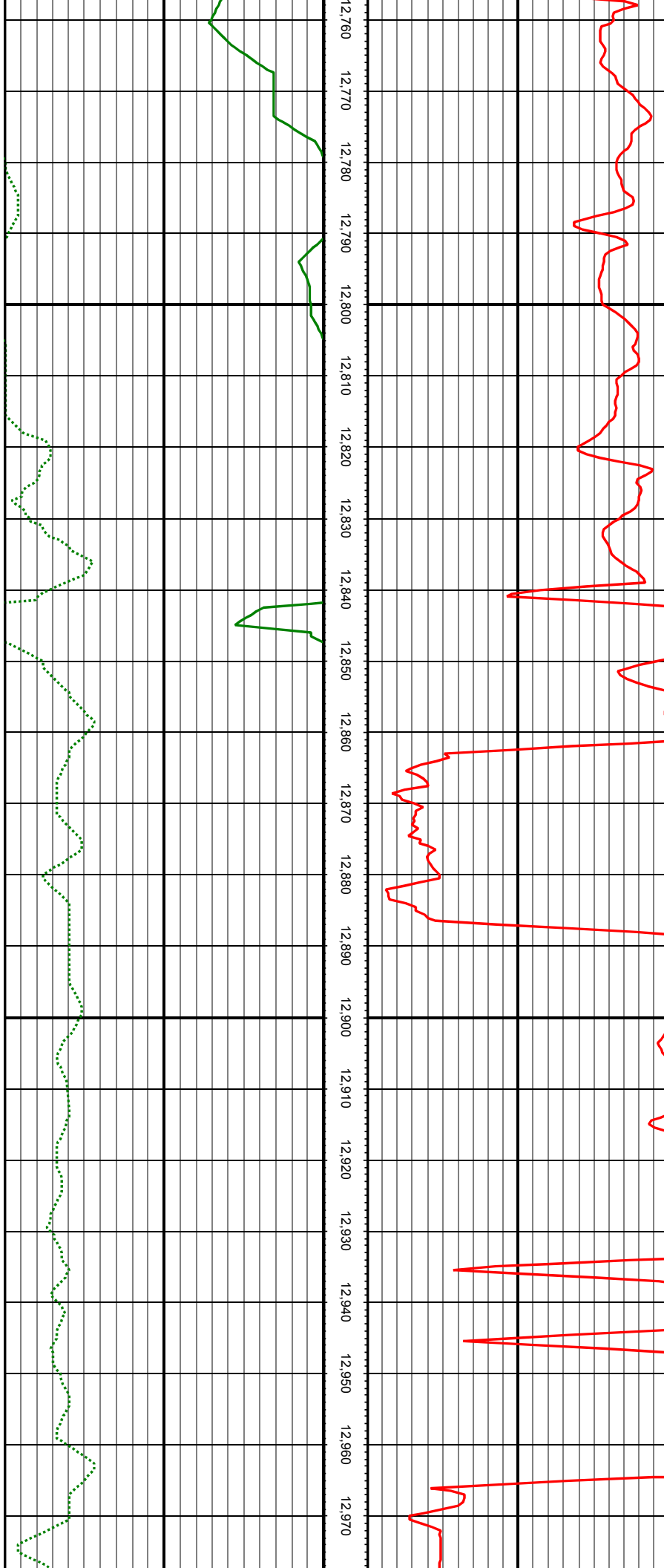
MD: 12406.00 INC: 90.24 AZ: 179.79 TVD: 7593.53 VS: 5082.66

MD: 12501.00 INC: 90.59 AZ: 181.63 TVD: 7592.84 VS: 5176.08



MD: 12596.00 INC: 90.07 AZ: 184.62 TVD: 7592.29 VS: 5270.14

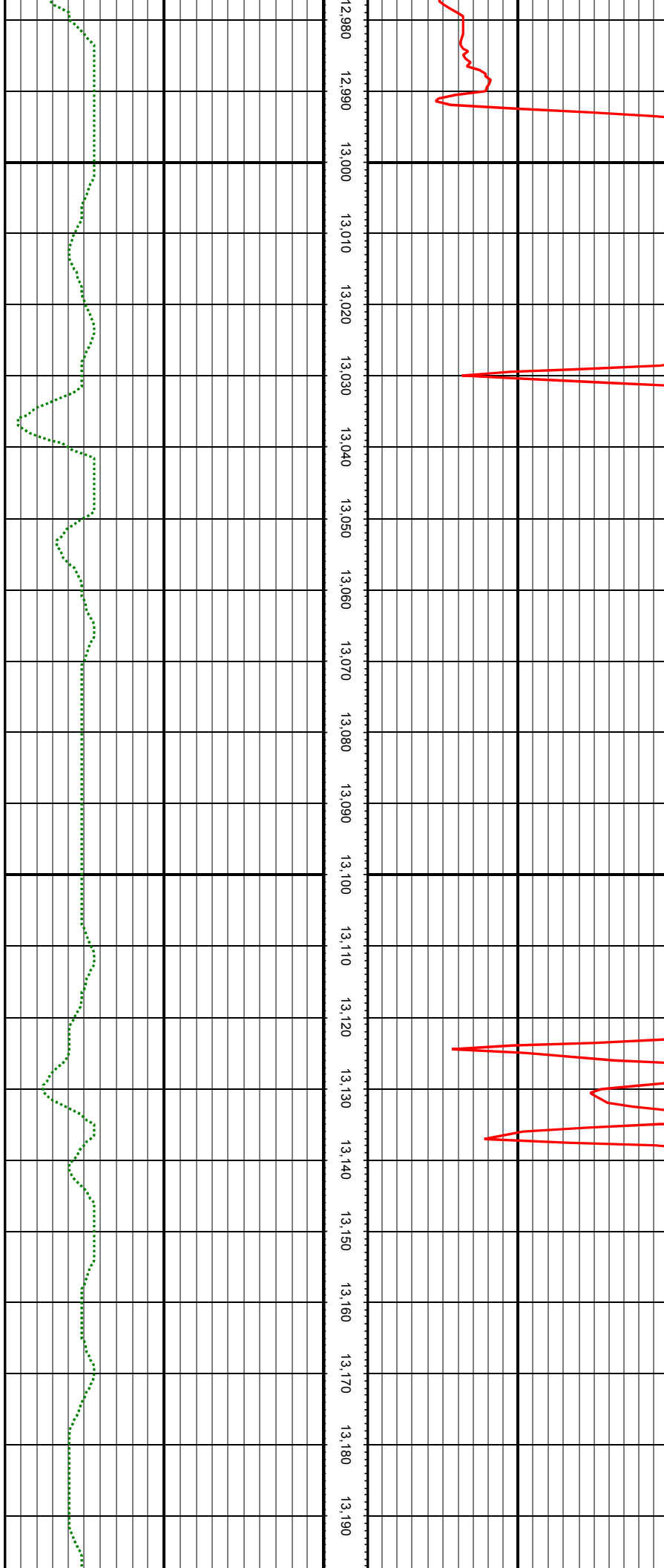
MD: 12690.00 INC: 90.73 AZ: 184.89 TVD: 7591.64 VS: 5363.55



MD: 12785.00 INC: 91.25 AZ: 184.01 TVD: 7589.99 VS: 5457.89

MD: 12879.00 INC: 91.25 AZ: 183.30 TVD: 7587.94 VS: 5551.07

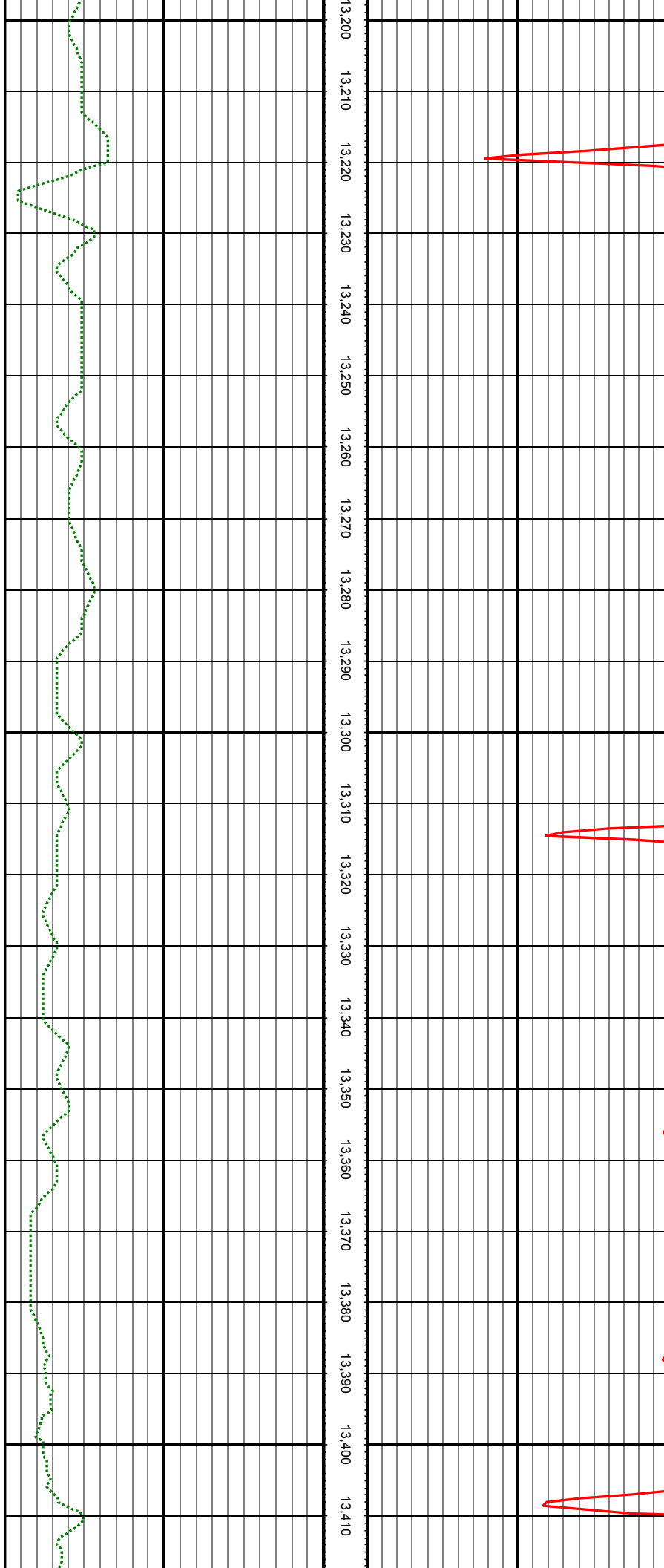
MD: 12974.00 INC: 90.68 AZ: 183.92 TVD: 7586.34 VS: 5645.23



12,980 12,990 13,000 13,010 13,020 13,030 13,040 13,050 13,060 13,070 13,080 13,090 13,100 13,110 13,120 13,130 13,140 13,150 13,160 13,170 13,180 13,190

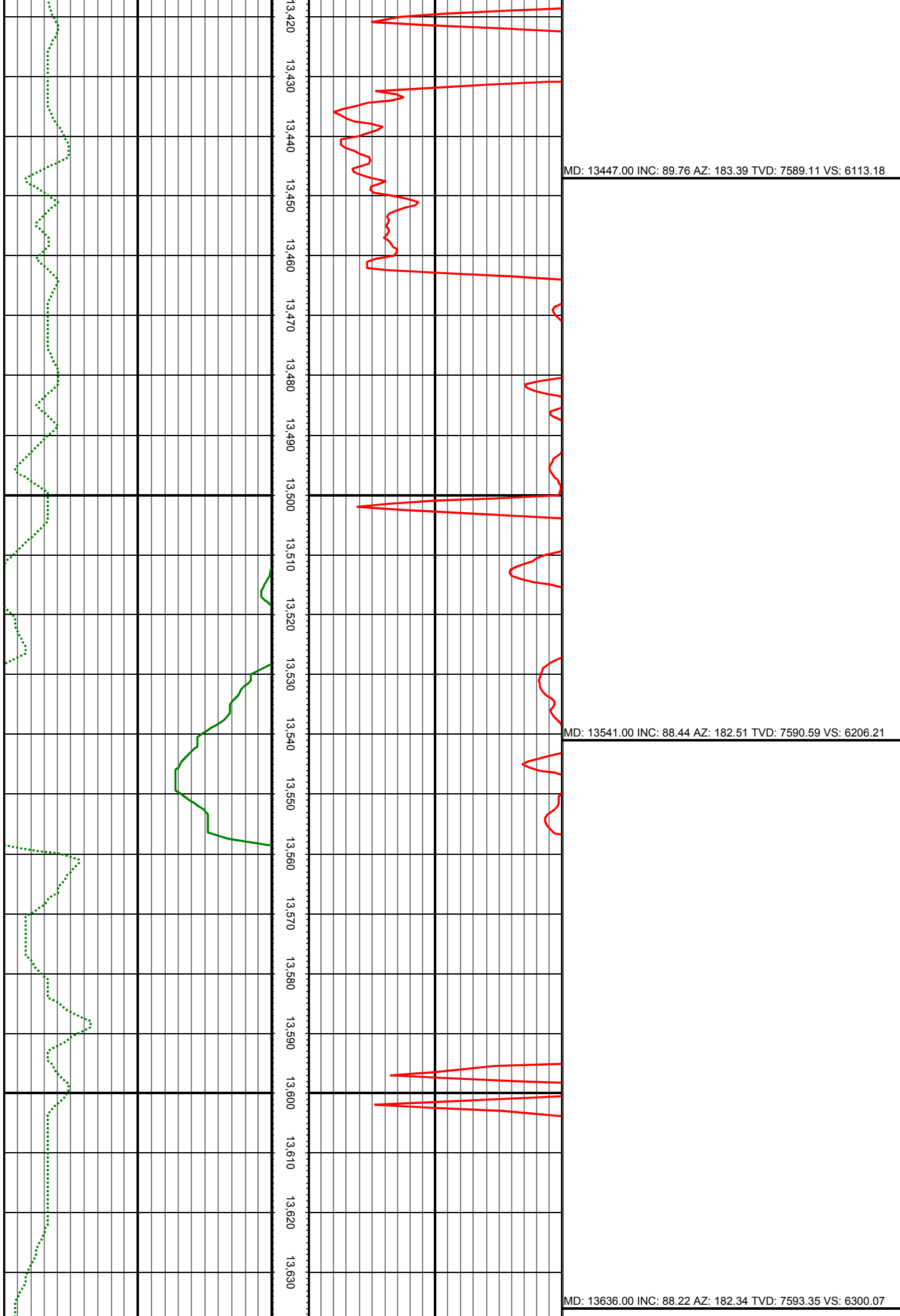
MD: 13068.00 INC: 89.14 AZ: 182.69 TVD: 7586.49 VS: 5738.35

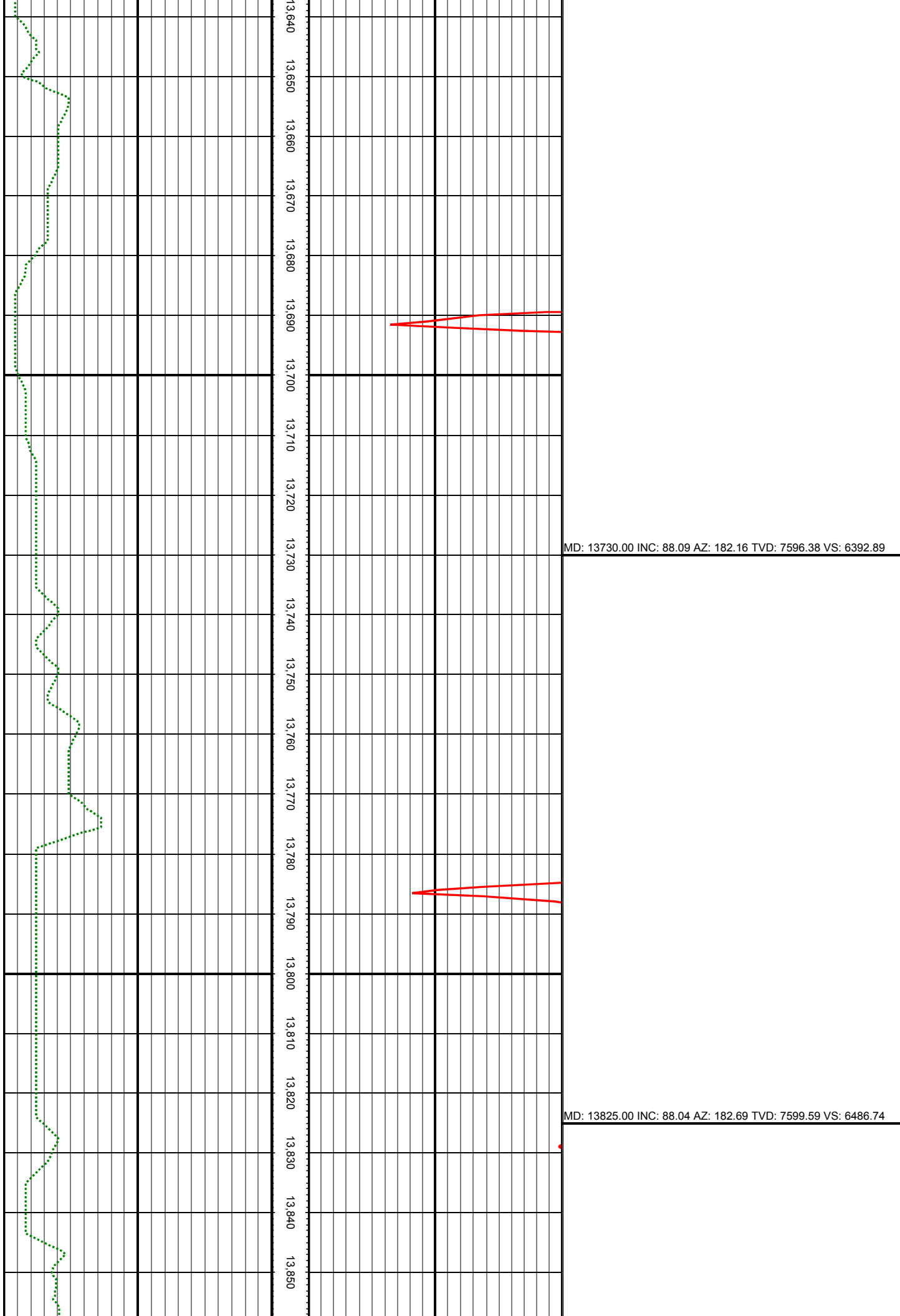
MD: 13163.00 INC: 89.32 AZ: 181.90 TVD: 7587.77 VS: 5832.21

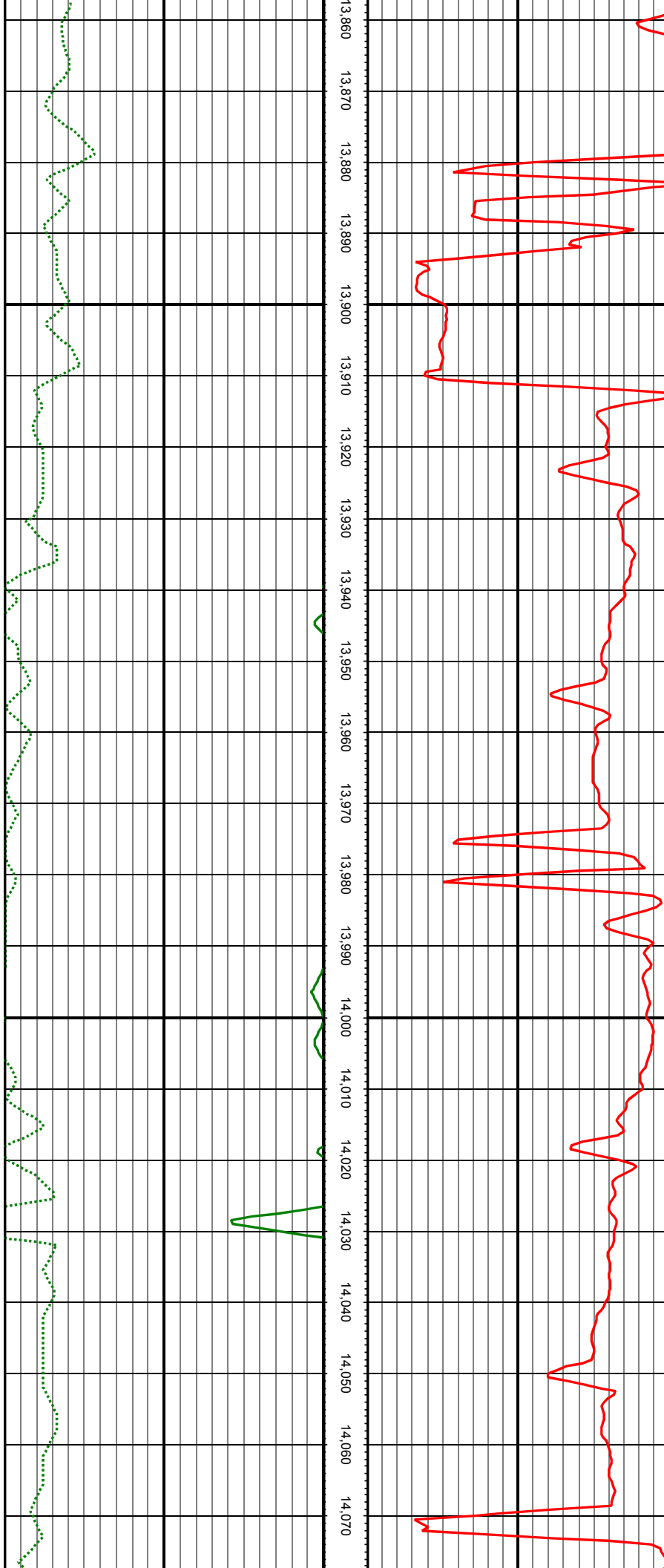


MD: 13258.00 INC: 89.41 AZ: 182.34 TVD: 7588.82 VS: 5926.03

MD: 13352.00 INC: 90.24 AZ: 183.39 TVD: 7589.11 VS: 6019.05







MD: 13920.00 INC: 89.10 AZ: 180.40 TVD: 7601.96 VS: 6580.38

MD: 14015.00 INC: 90.33 AZ: 181.02 TVD: 7602.43 VS: 6673.80



