

**Cathedral Energy Services**

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

**FILE 3T-32H-K268****Scale 5":100' - MD****12/4/2017 12:51 PM****Oper. Company:** Crestone Peak Resources**Well:** FILE 3T-32H-K268**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-45831-0000**Job Number:** 175173

**Notes:** Gamma Ray Log  
Section Plan: 7.33°  
Datum: NAD 1983  
Magnetic North: 8.49°  
Grid Convergence: 0.31°  
Gamma Averaging: 7% Smoothing

**State:** Colorado**County:** Weld**Country:** United States**Location:** S32-T2N-R68W**Start Date:** 12/01/2017 10:00:00**End Date:** 12/04/2017 12:00:00**Latitude:** 40.092573**Longitude:** -105.030539**Elev GL:** 4970.00**Elev DF:** 4993.00**Elev KB:** 4993.00**Notes:** Log & Survey Depths Relative to Kelly Bushing (KB) Depth**Operator 1:** Jerry Shannahan**Operator 2:** Daniel Stevens**Notes:** Maximum Temperature: 230°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	1323				
Bit Size	8.75				
Cal Factor	5.69				
Survey Offset	54.00				
Gamma Offset	41.83				
Resistivity Offset	0.00				
Start Depth	1975.00				
StartDate	12/1/2017				
StartTime	10:00				
EndDepth	13562.00				
EndDate	12/4/2017				
EndTime	12:00				
Mud Type	Oil Base				
Mud Weight	10.10 ppg				
Funnel Viscosity	48.00 sec/qt				
Plastic Viscosity	17.00 cp@120°F				
Yield Point	12.00 lbf/100ft²				
Gel Strength	7.00 10s/10m				
Solids Content	5.40 % by vol HGS				
Sand Content	0.00 % by vol				
Filtrate Alkalinity	16.40 @ 250°F				
Chlorides	185,446 ppm				
Temperature	230°F				
Hole Data			Casing Data		
Size	From	To	Size	From	To
12.25	0.00	1975.00	9.625	0.00	1956.00
8.75	1975.00	13562.00			

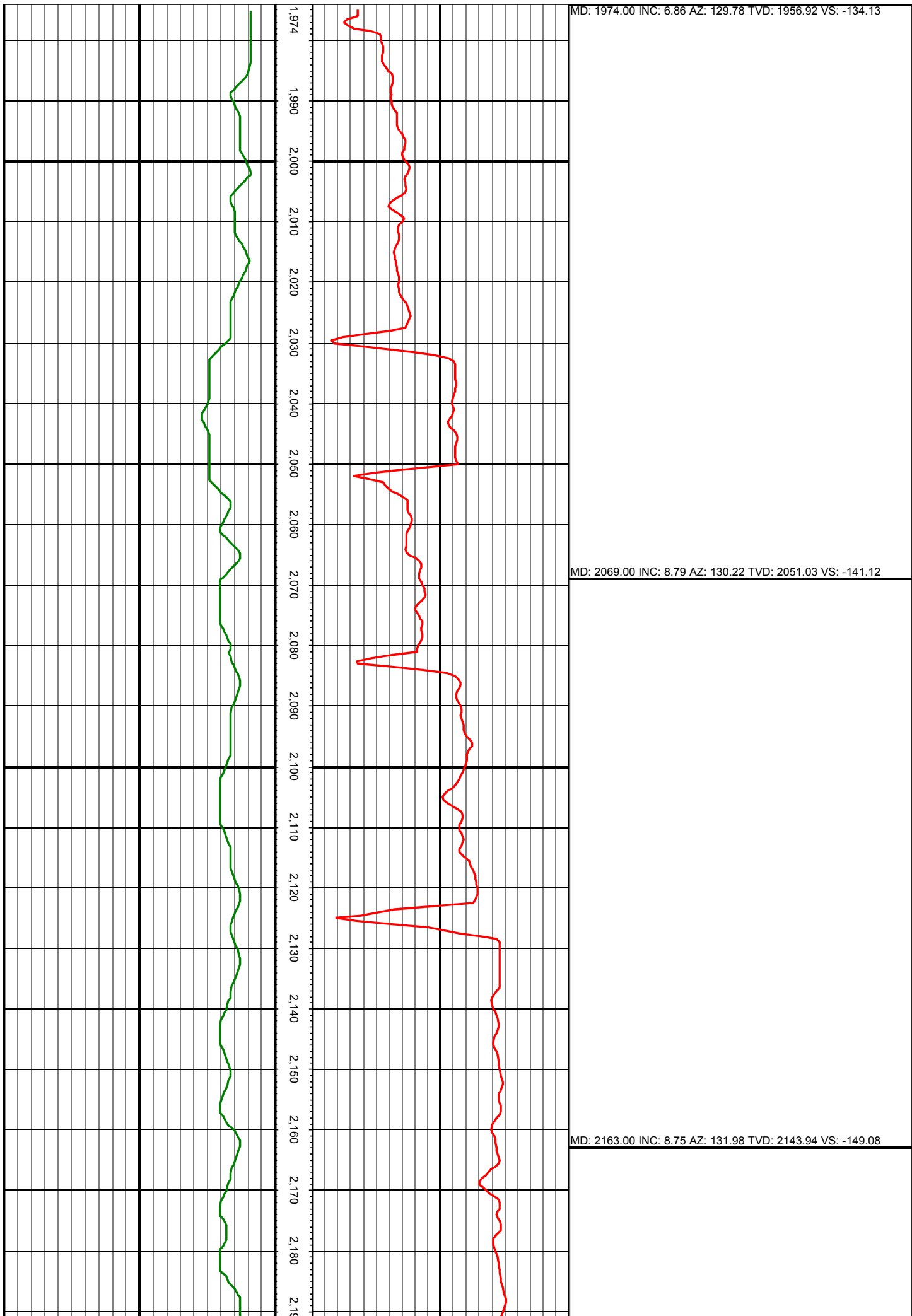
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost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

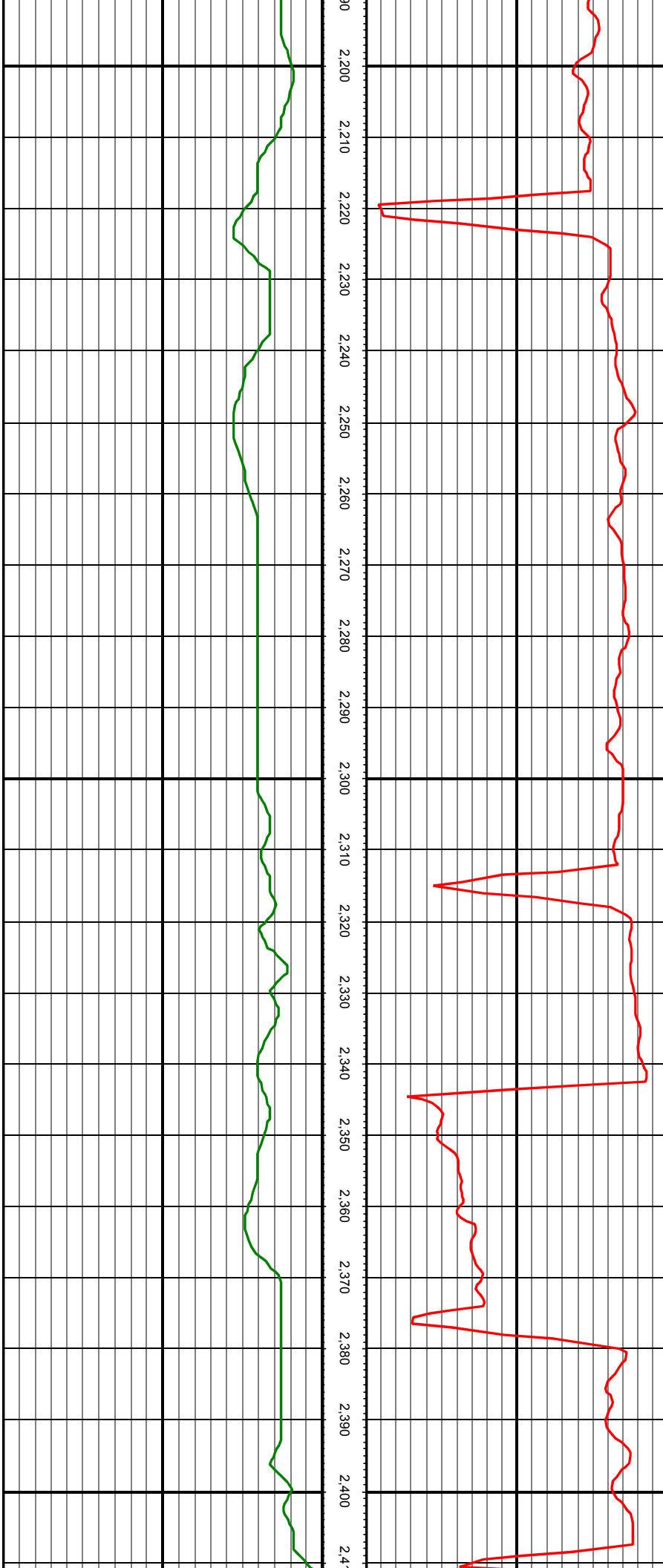
150.00

2

300.00

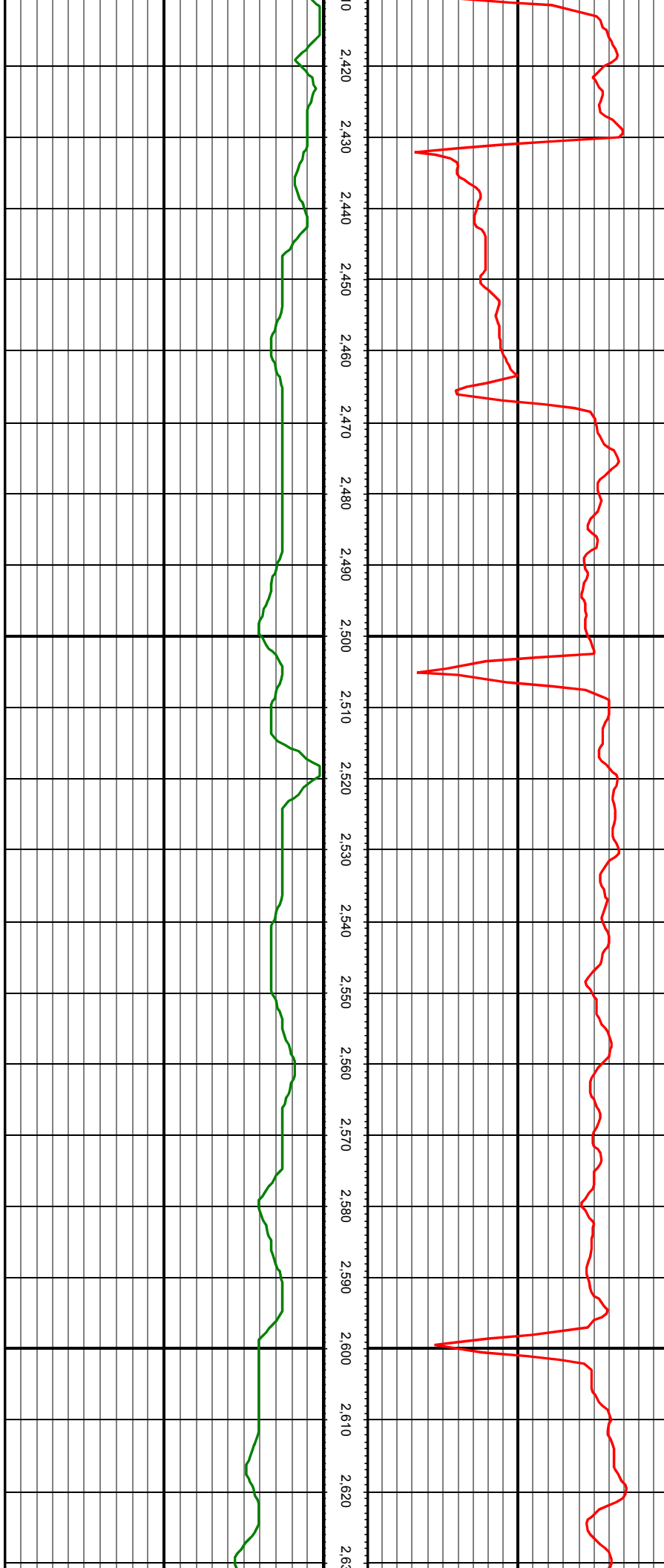
FT





MD: 2258.00 INC: 7.30 AZ: 128.90 TVD: 2238.00 VS: -156.35

MD: 2353.00 INC: 7.65 AZ: 130.39 TVD: 2332.20 VS: -162.96



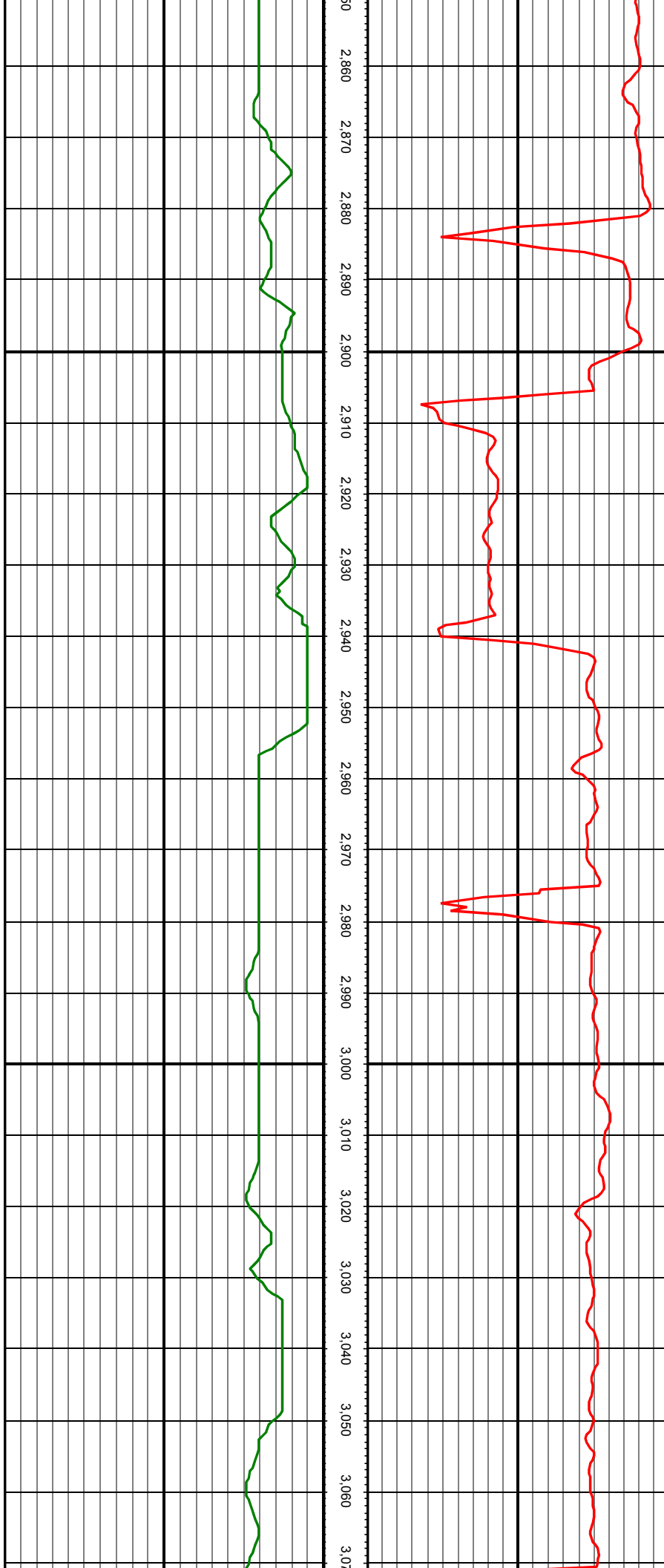
MD: 2448.00 INC: 10.55 AZ: 140.77 TVD: 2426.00 VS: -172.39

MD: 2543.00 INC: 10.37 AZ: 144.28 TVD: 2519.42 VS: -184.62

MD: 2637.00 INC: 9.01 AZ: 146.83 TVD: 2612.08 VS: -196.40

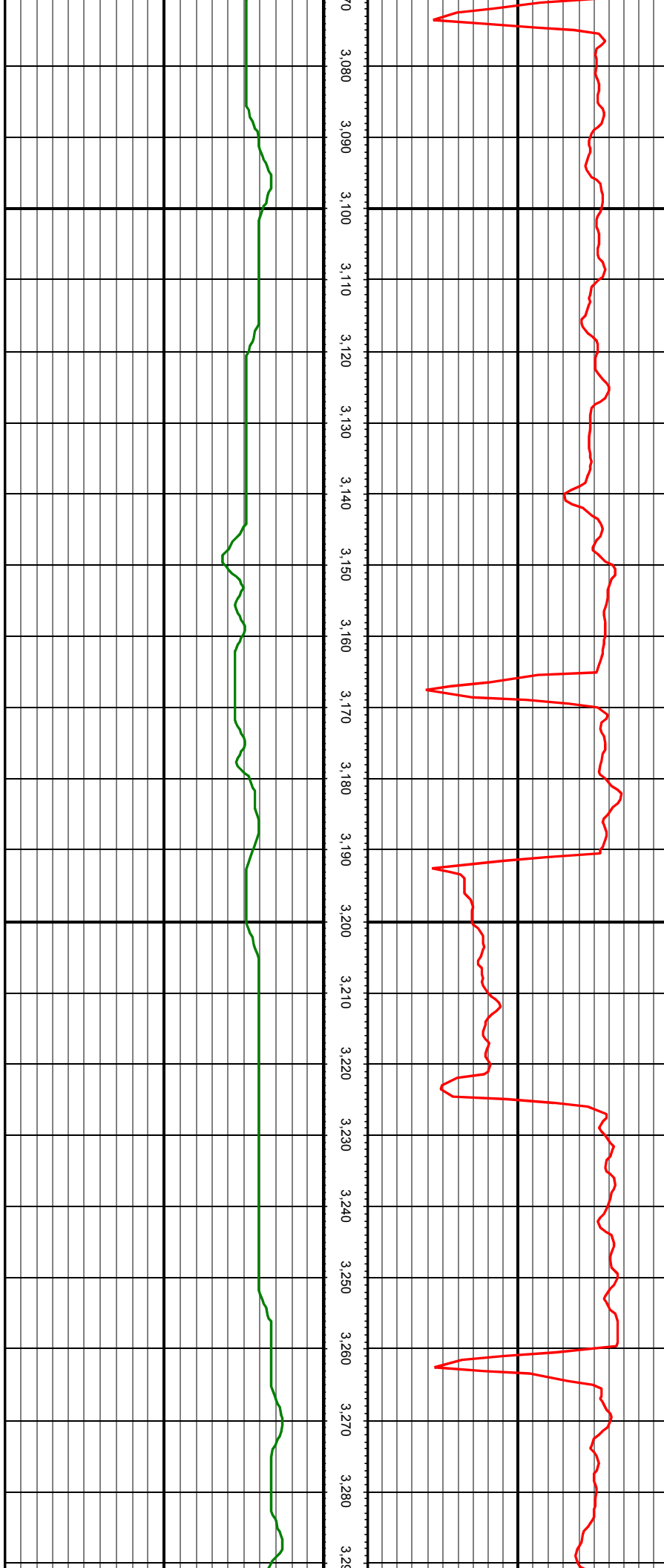
MD: 2732.00 INC: 10.11 AZ: 148.94 TVD: 2705.76 VS: -208.59

MD: 2827.00 INC: 9.41 AZ: 155.27 TVD: 2799.38 VS: -221.71



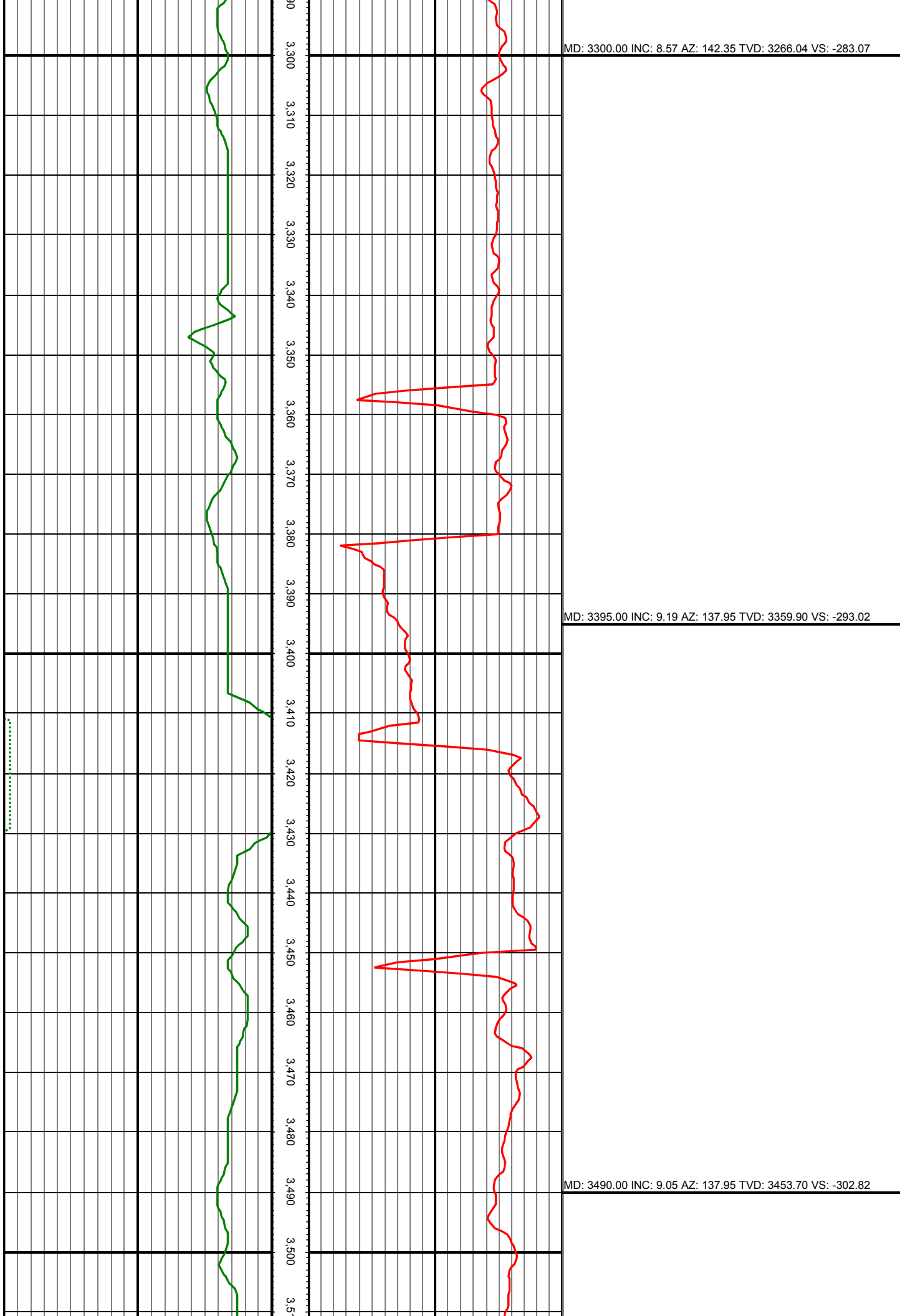
MD: 2921.00 INC: 10.07 AZ: 151.93 TVD: 2892.03 VS: -234.92

MD: 3016.00 INC: 10.29 AZ: 151.58 TVD: 2985.53 VS: -248.58



MD: 3110.00 INC: 8.57 AZ: 152.28 TVD: 3078.26 VS: -261.13

MD: 3205.00 INC: 8.97 AZ: 146.13 TVD: 3172.15 VS: -272.49

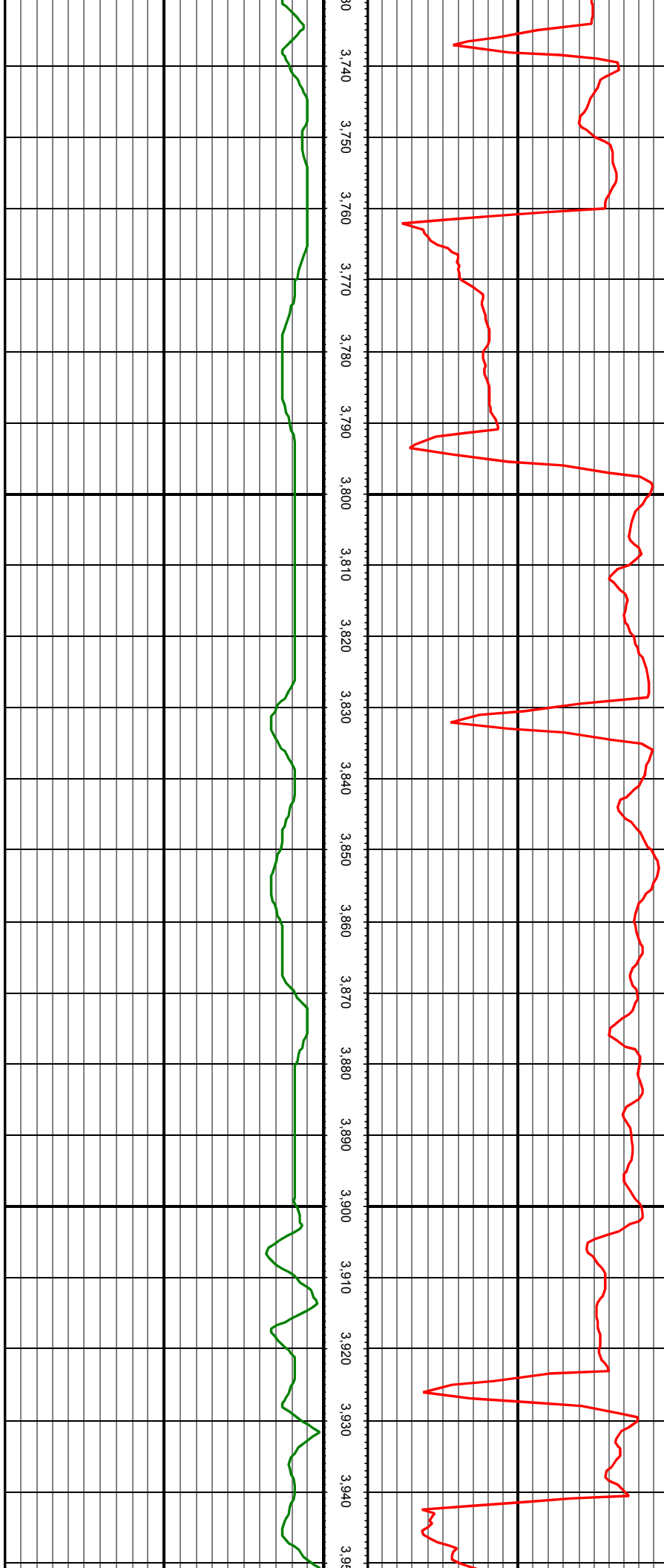






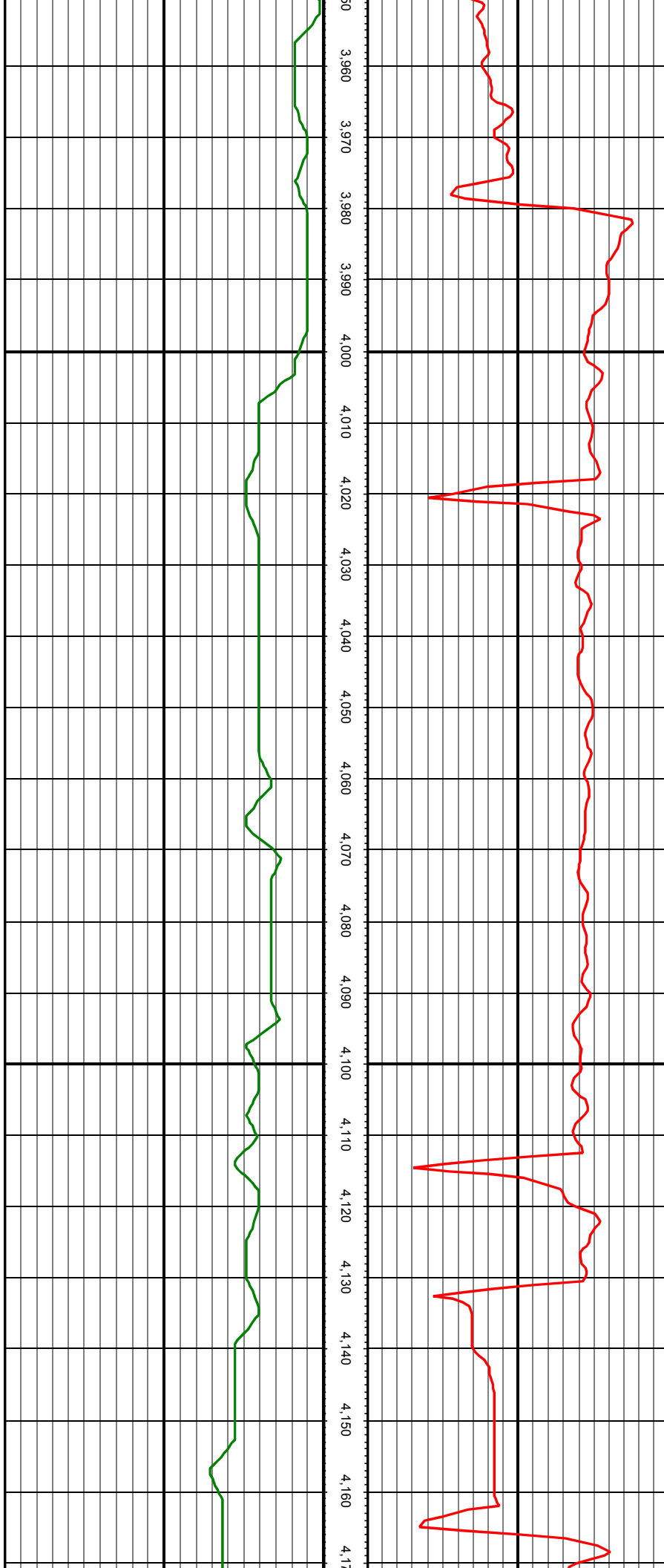
MD: 3585.00 INC: 9.19 AZ: 135.14 TVD: 3547.50 VS: -312.34

MD: 3680.00 INC: 8.62 AZ: 133.65 TVD: 3641.35 VS: -321.21



MD: 3774.00 INC: 8.88 AZ: 130.48 TVD: 3734.26 VS: -329.35

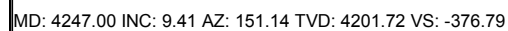
MD: 3869.00 INC: 8.13 AZ: 133.29 TVD: 3828.22 VS: -337.30



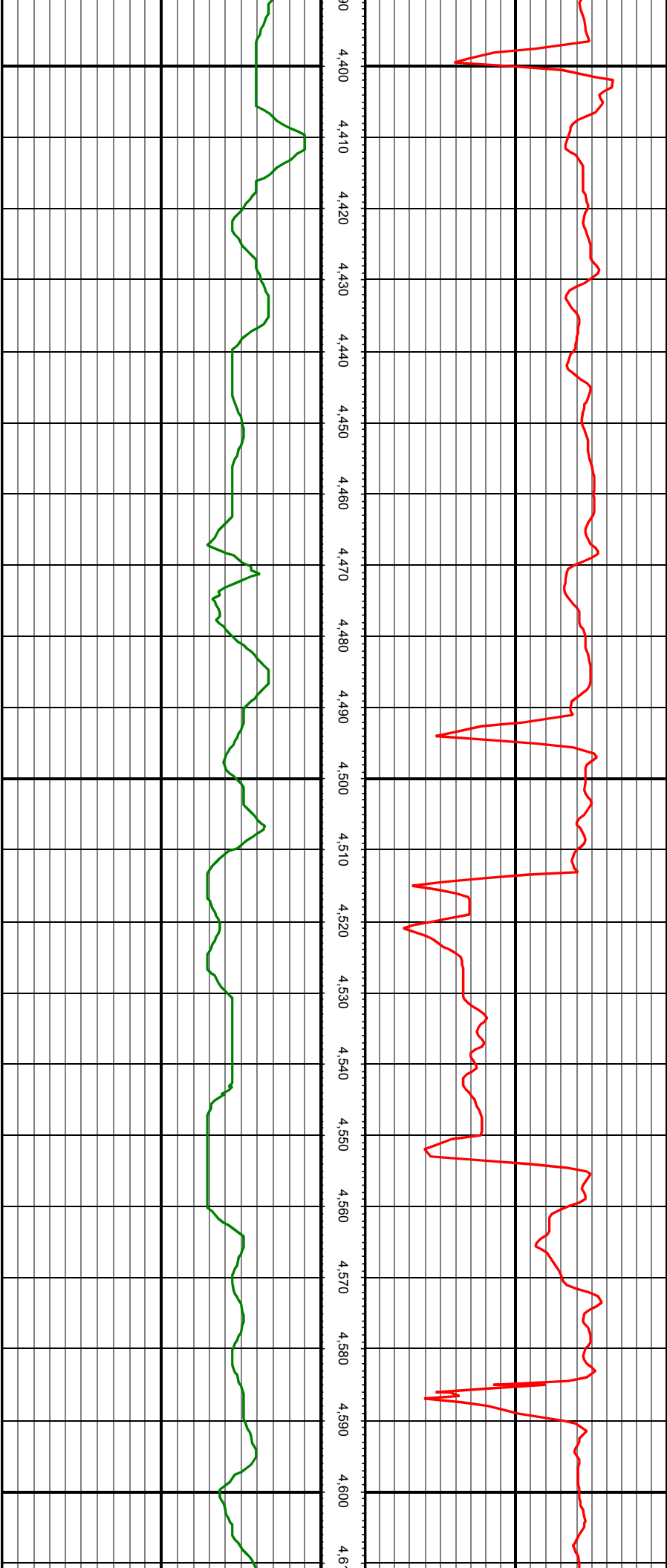
MD: 3963.00 INC: 8.31 AZ: 135.40 TVD: 3921.25 VS: -345.39

MD: 4058.00 INC: 8.35 AZ: 136.63 TVD: 4015.25 VS: -353.99

MD: 4153.00 INC: 9.89 AZ: 146.21 TVD: 4109.05 VS: -364.51

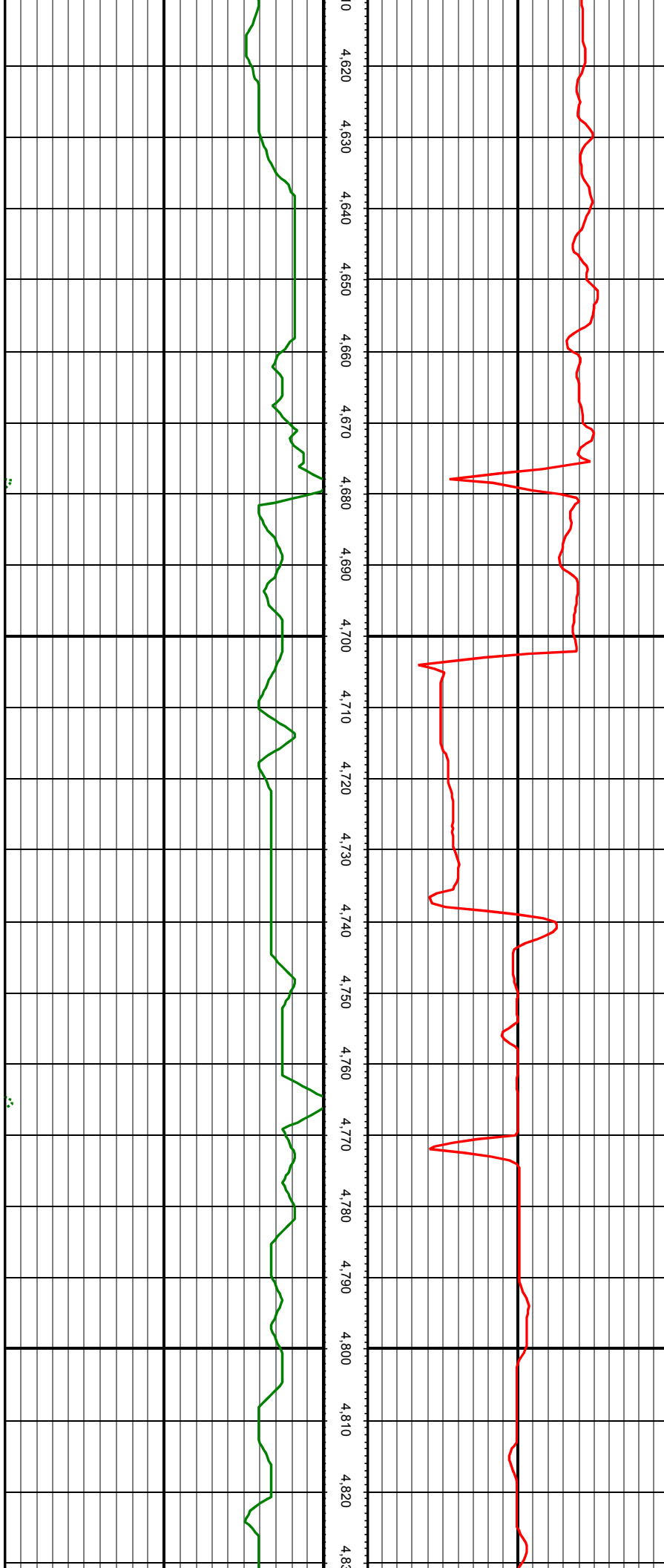


MD: 4341.00 INC: 9.58 AZ: 154.48 TVD: 4294.43 VS: -389.57



MD: 4435.00 INC: 9.41 AZ: 151.75 TVD: 4387.15 VS: -402.39

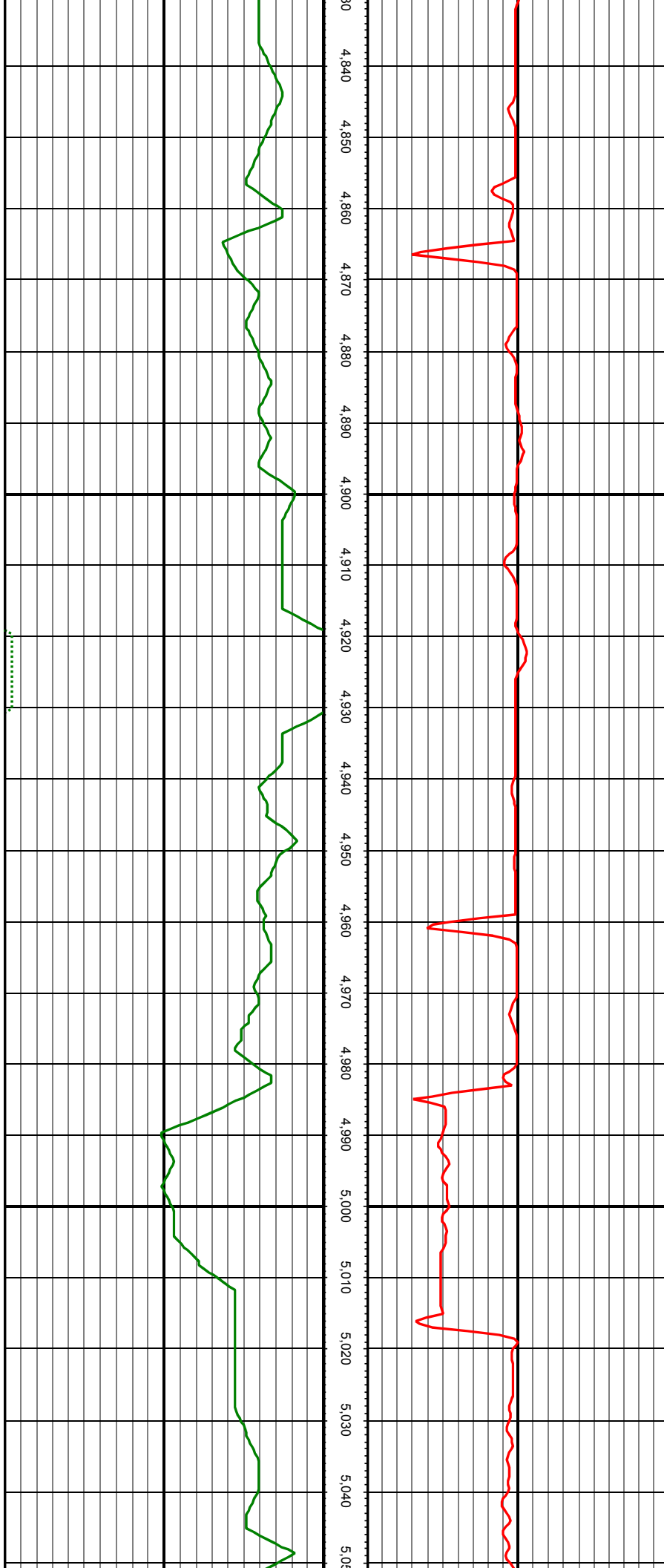
MD: 4530.00 INC: 9.14 AZ: 144.37 TVD: 4480.91 VS: -414.23



MD: 4625.00 INC: 10.07 AZ: 145.51 TVD: 4574.58 VS: -425.94

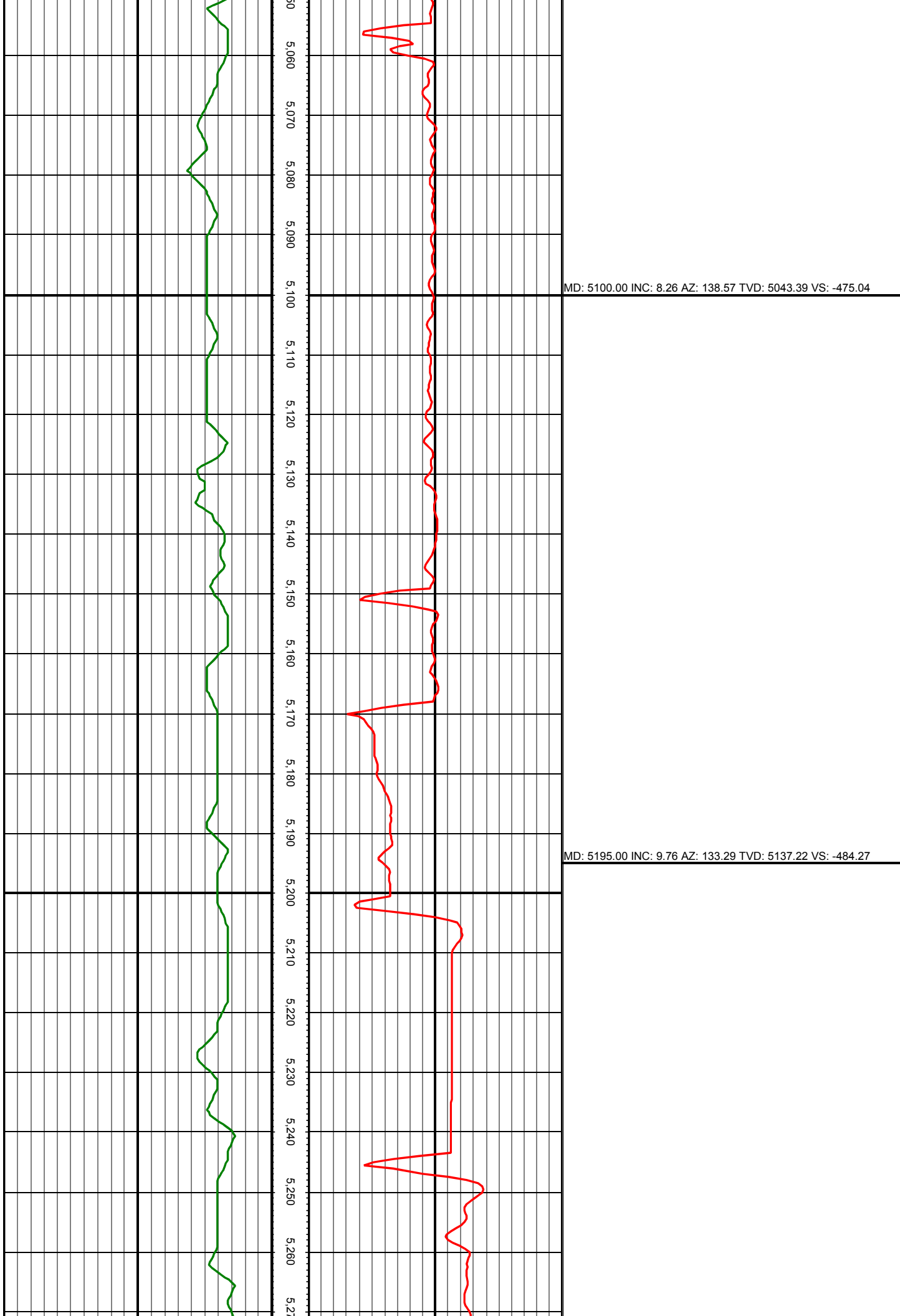
MD: 4720.00 INC: 9.98 AZ: 139.97 TVD: 4668.13 VS: -437.70

MD: 4815.00 INC: 10.07 AZ: 136.90 TVD: 4761.68 VS: -448.57

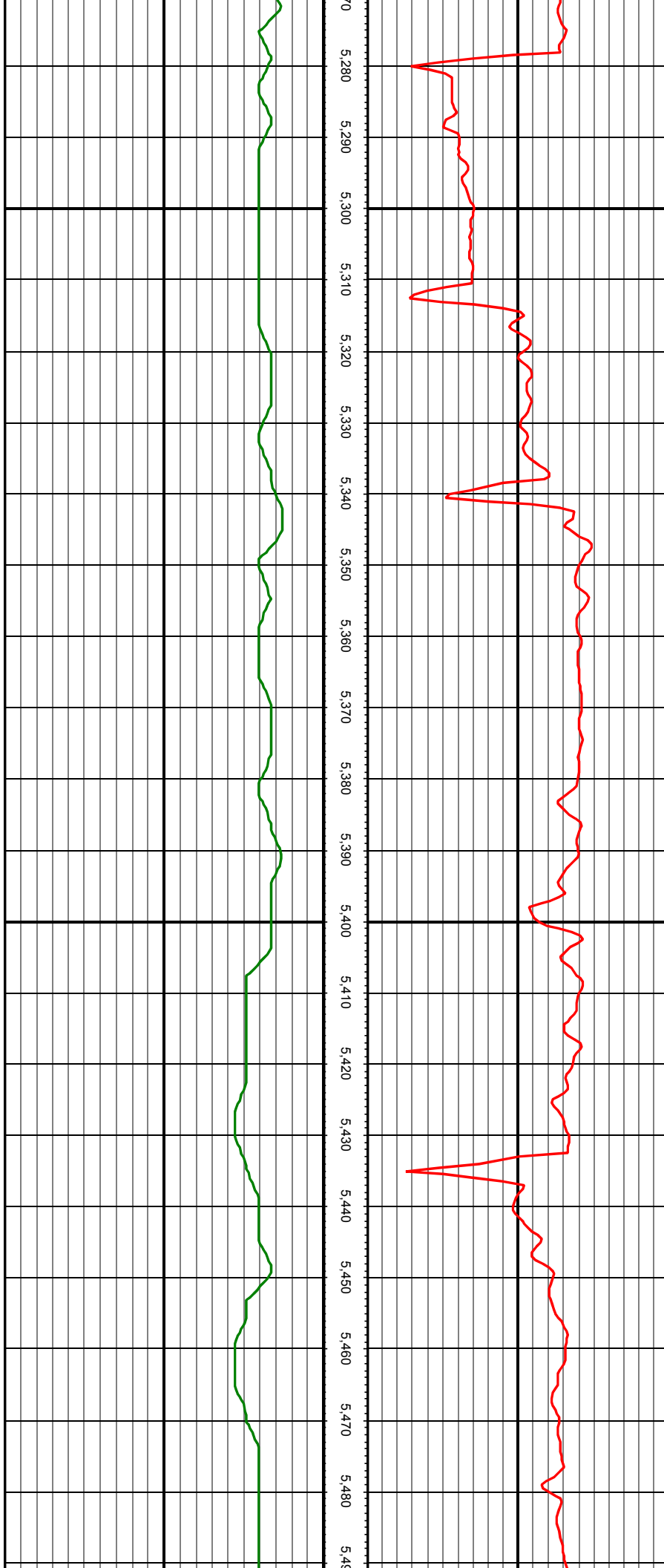


MD: 4910.00 INC: 8.66 AZ: 134.96 TVD: 4855.41 VS: -458.23

MD: 5005.00 INC: 8.26 AZ: 132.94 TVD: 4949.38 VS: -466.57



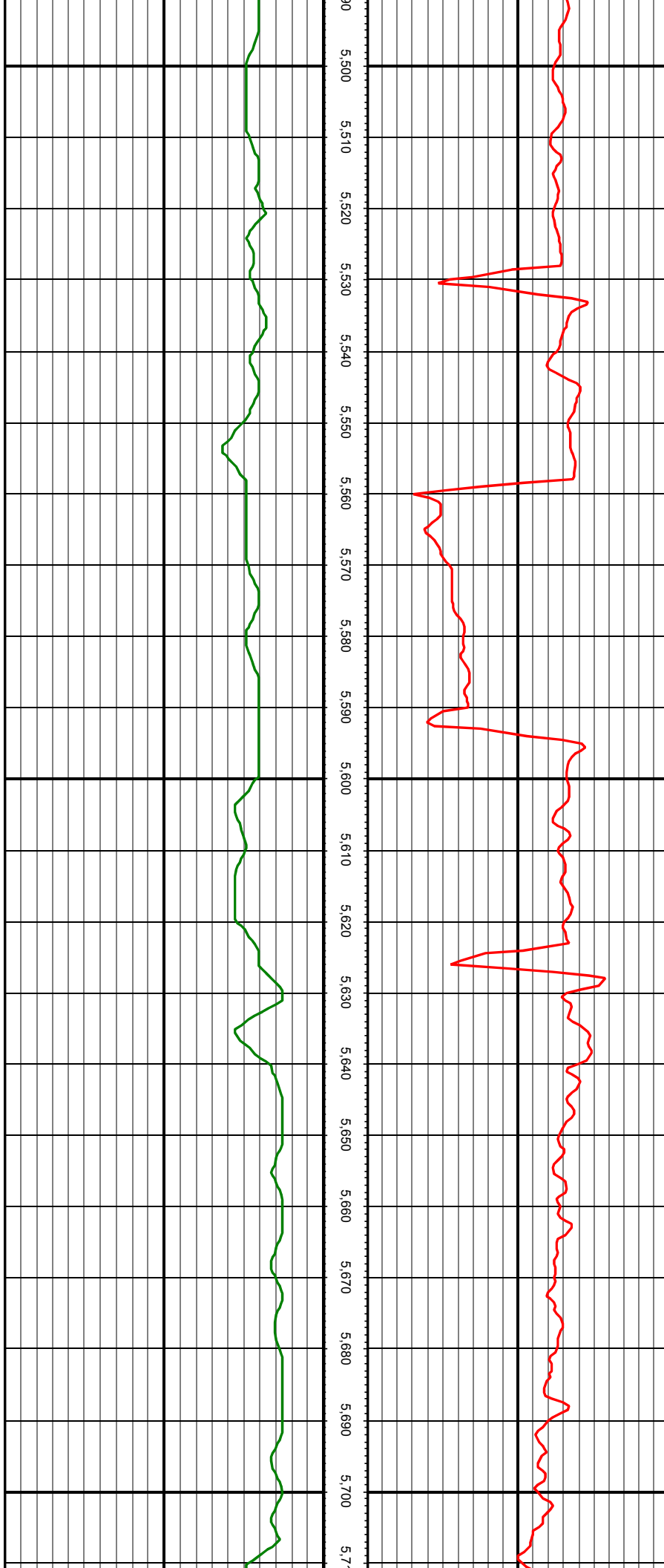




MD: 5289.00 INC: 10.37 AZ: 134.17 TVD: 5229.77 VS: -494.02

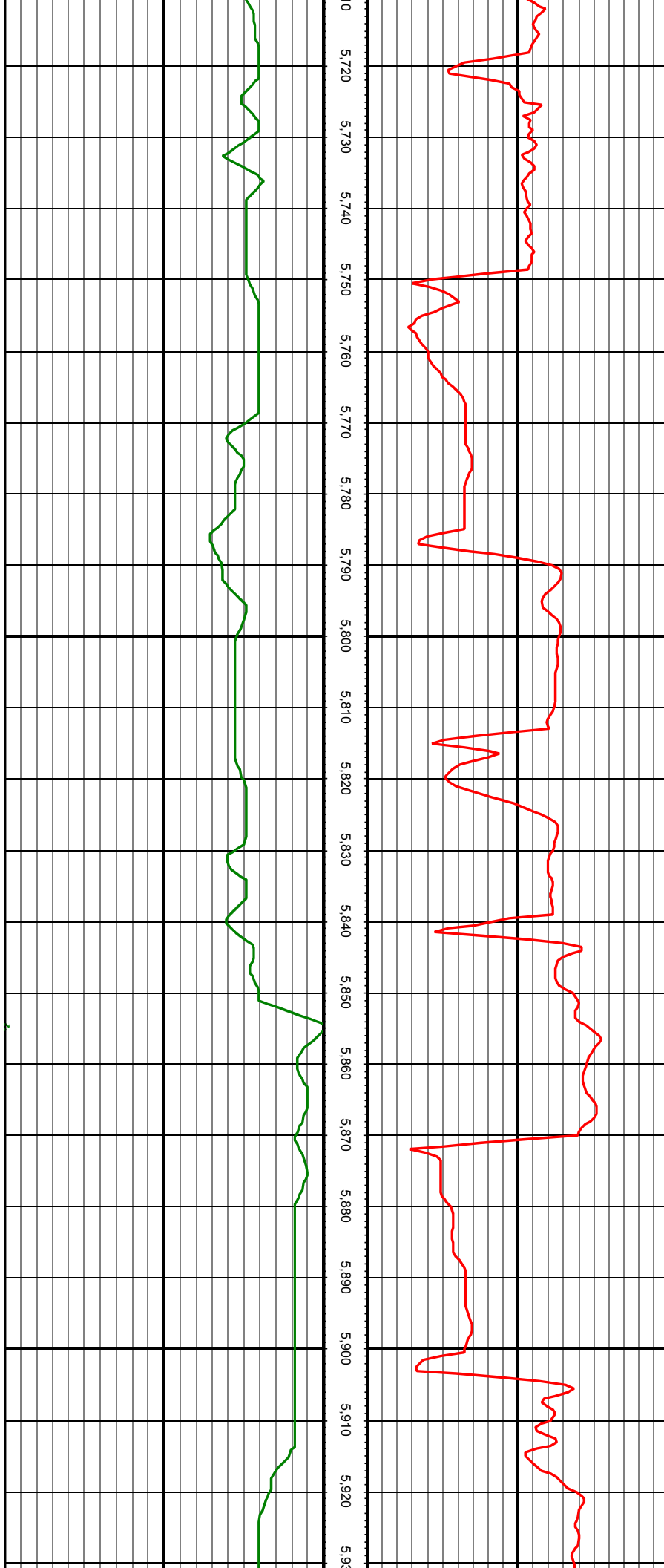
MD: 5384.00 INC: 10.64 AZ: 132.77 TVD: 5323.18 VS: -504.23

MD: 5479.00 INC: 9.49 AZ: 130.75 TVD: 5416.72 VS: -513.63



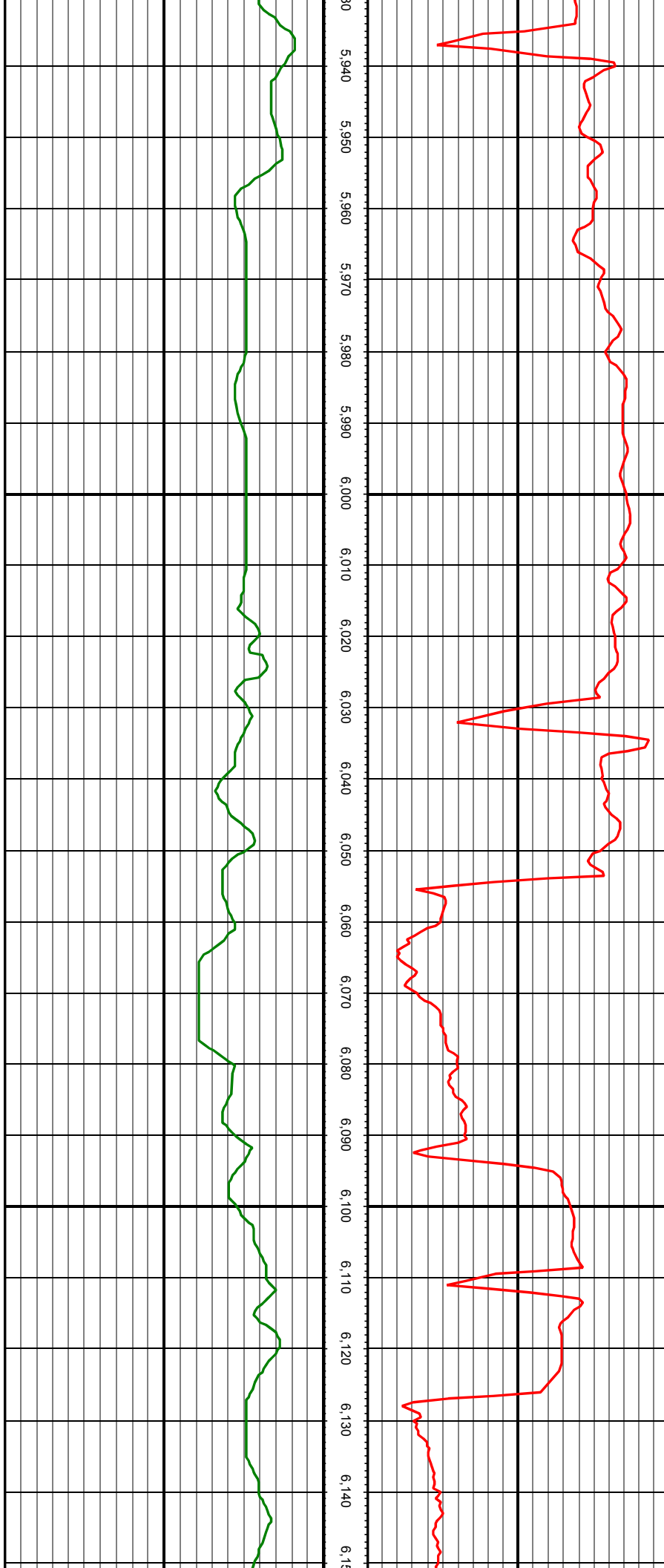
MD: 5574.00 INC: 8.92 AZ: 130.75 TVD: 5510.49 VS: -522.00

MD: 5669.00 INC: 8.44 AZ: 133.21 TVD: 5604.40 VS: -530.14



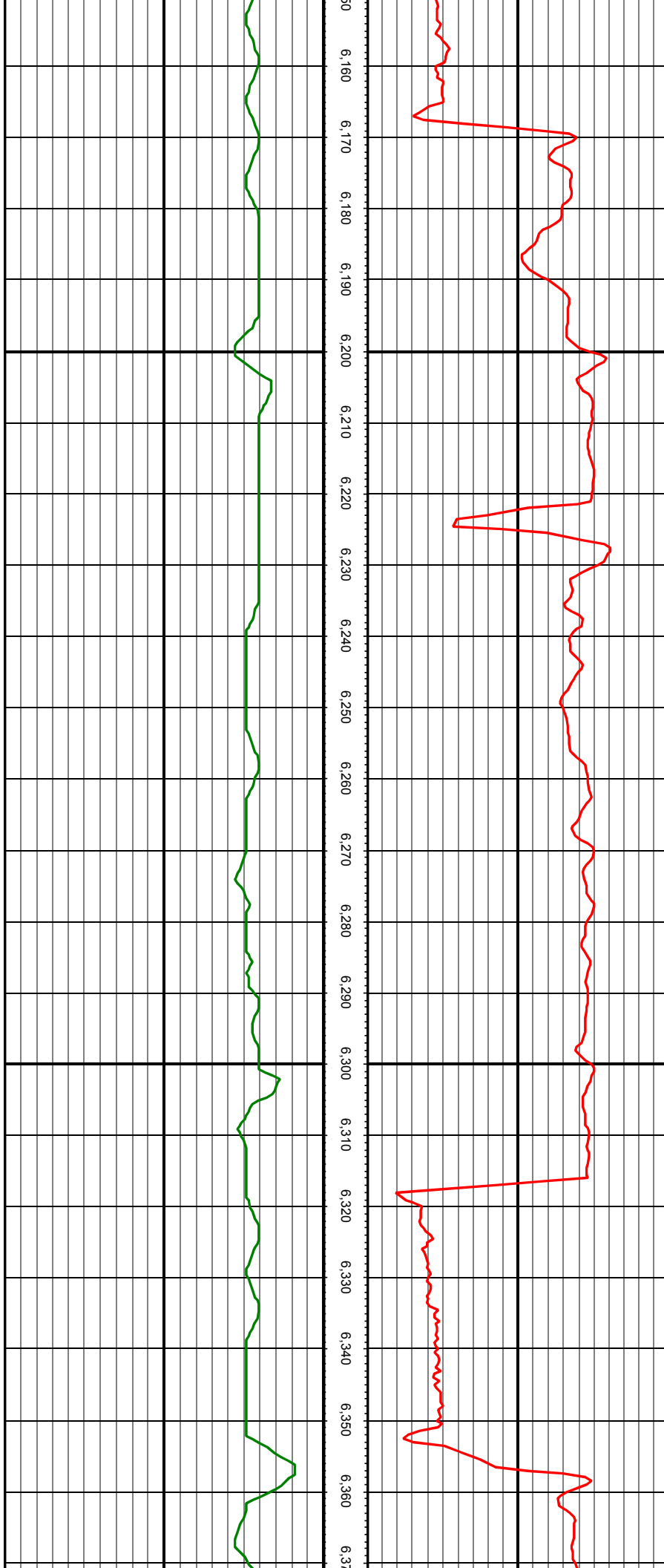
MD: 5764.00 INC: 7.08 AZ: 132.06 TVD: 5698.53 VS: -537.57

MD: 5882.00 INC: 8.88 AZ: 135.67 TVD: 5815.38 VS: -547.36



MD: 5977.00 INC: 7.87 AZ: 136.20 TVD: 5909.37 VS: -555.99

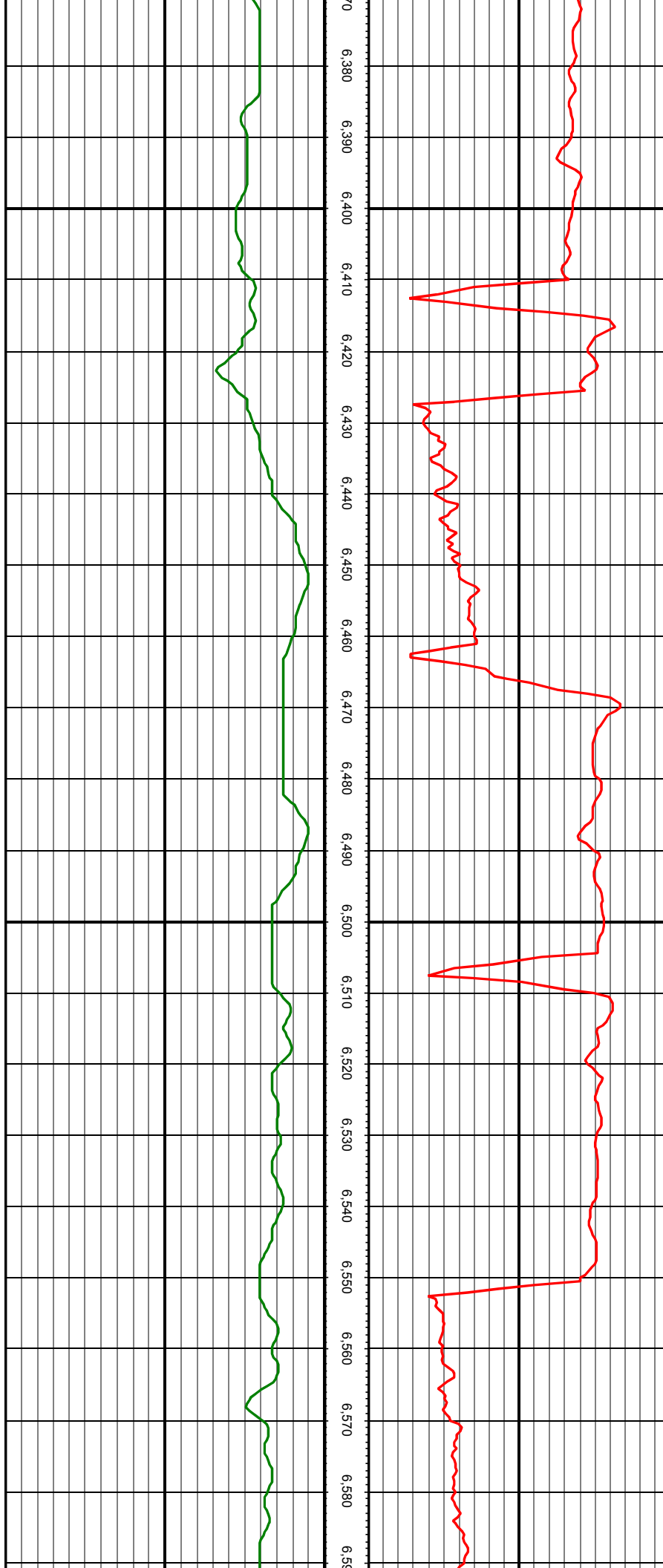
MD: 6072.00 INC: 5.98 AZ: 130.13 TVD: 6003.67 VS: -562.75



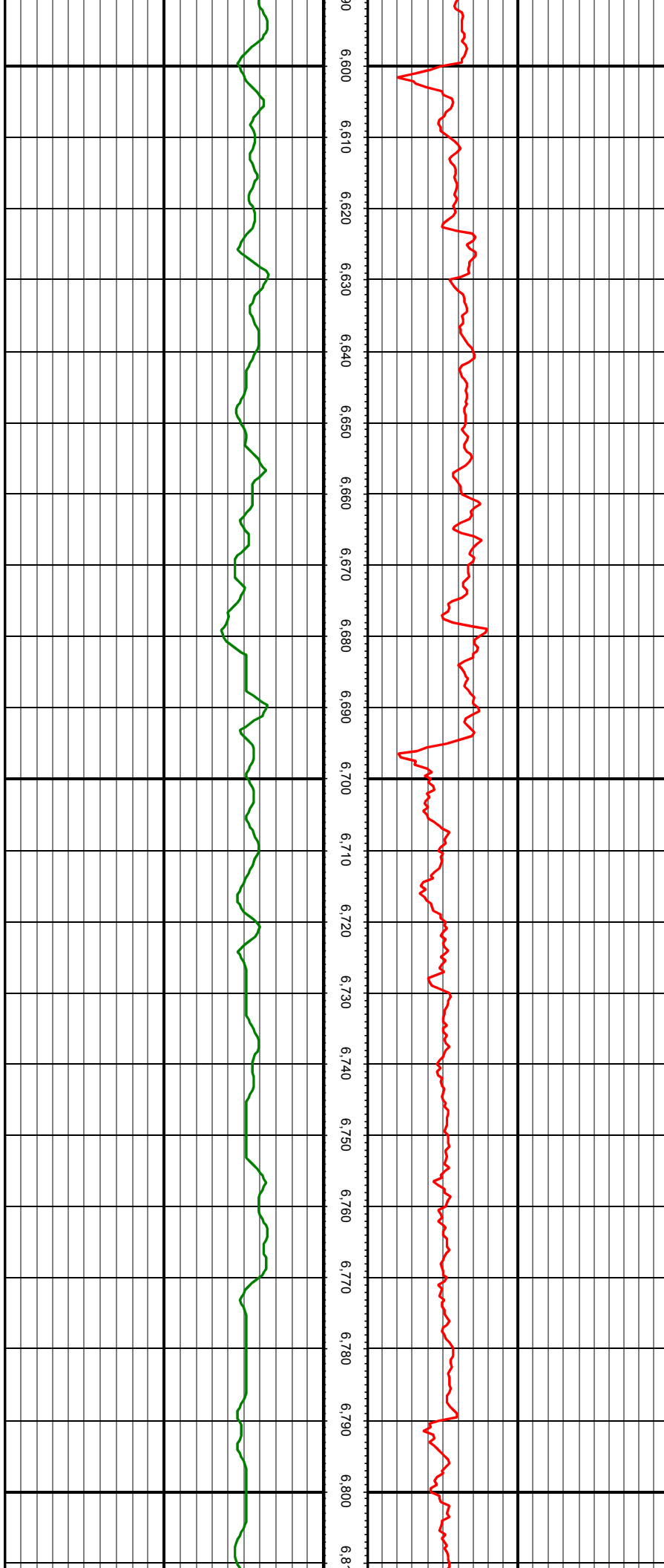
MD: 6167.00 INC: 9.41 AZ: 139.01 TVD: 6097.81 VS: -570.60

MD: 6261.00 INC: 6.95 AZ: 138.30 TVD: 6190.84 VS: -579.44

MD: 6356.00 INC: 7.87 AZ: 146.65 TVD: 6285.05 VS: -588.14

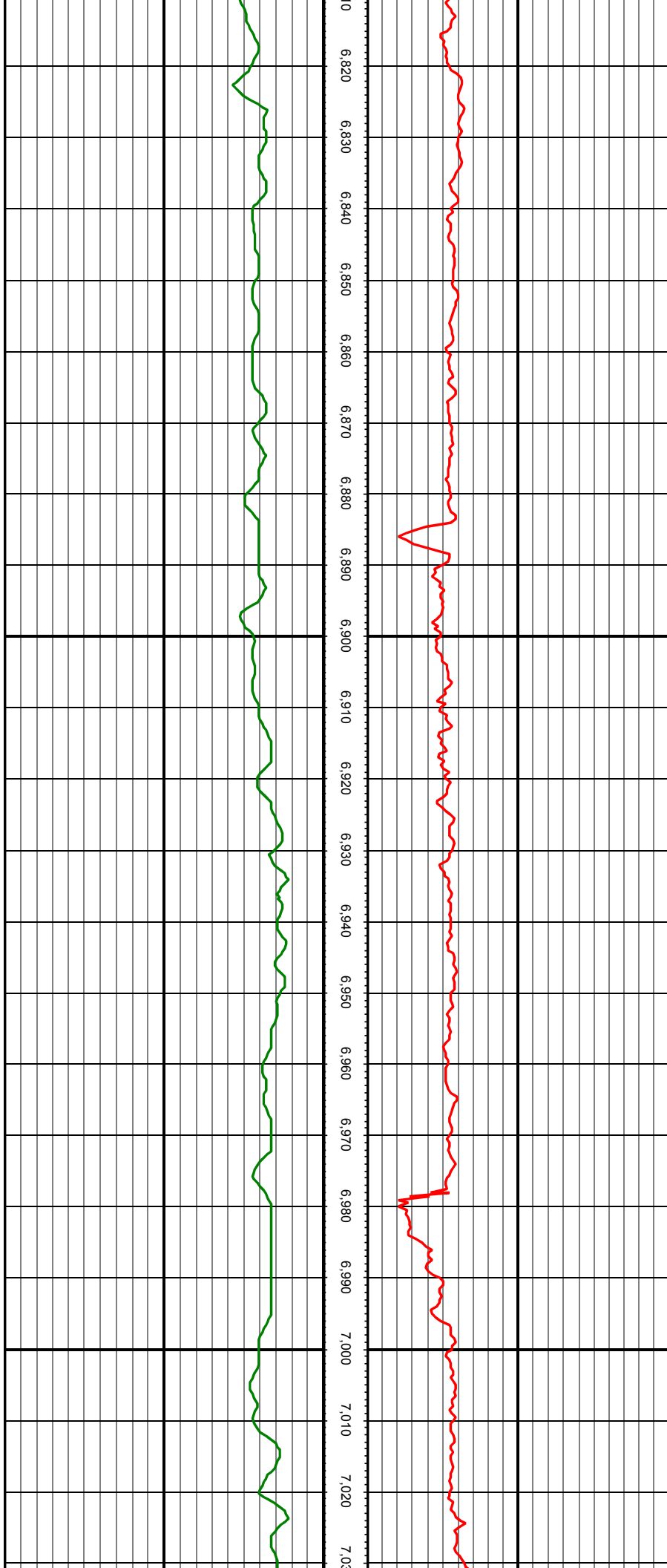


MD: 6545.00 INC: 6.77 AZ: 133.29 TVD: 6472.27 VS: -606.32



MD: 6640.00 INC: 11.74 AZ: 87.50 TVD: 6566.12 VS: -607.96

MD: 6735.00 INC: 14.86 AZ: 59.82 TVD: 6658.65 VS: -598.88

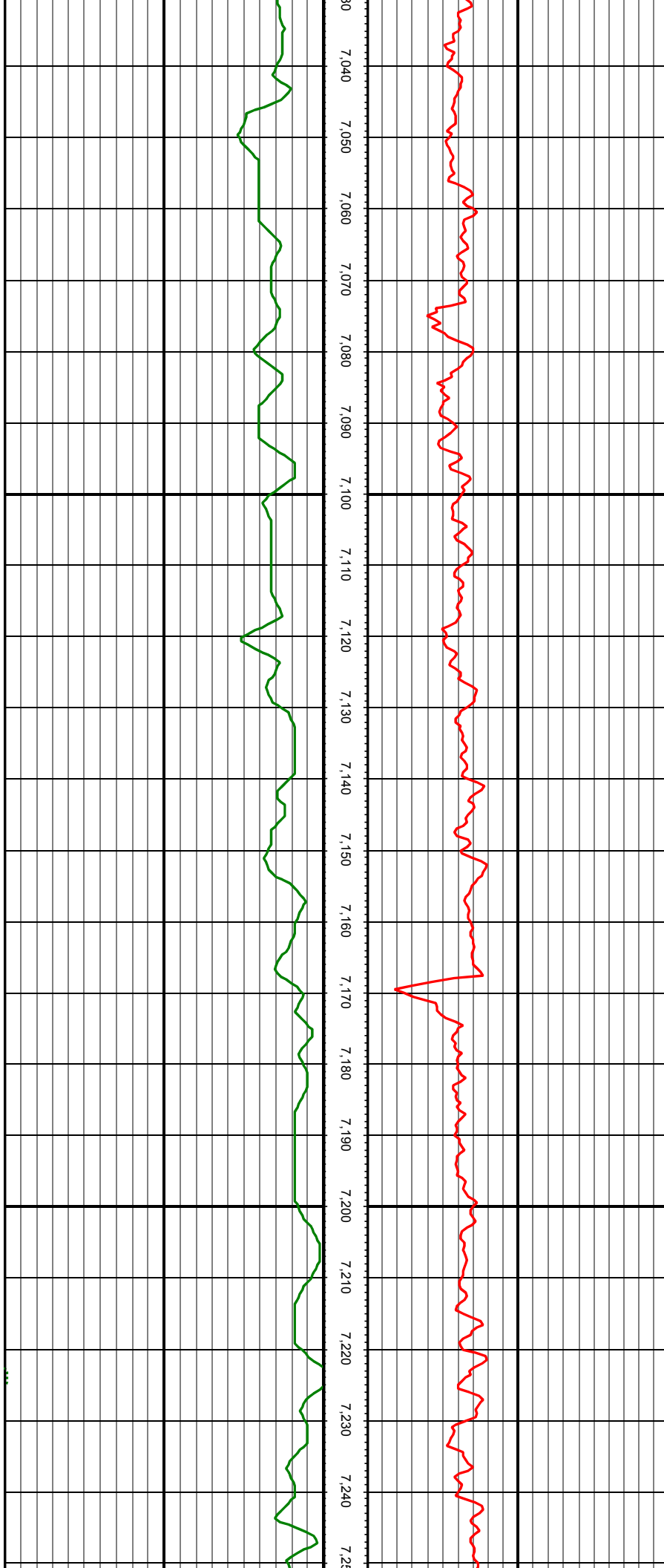


MD: 6829.00 INC: 18.77 AZ: 31.69 TVD: 6748.76 VS: -577.72

MD: 6924.00 INC: 20.53 AZ: 11.92 TVD: 6838.32 VS: -547.15

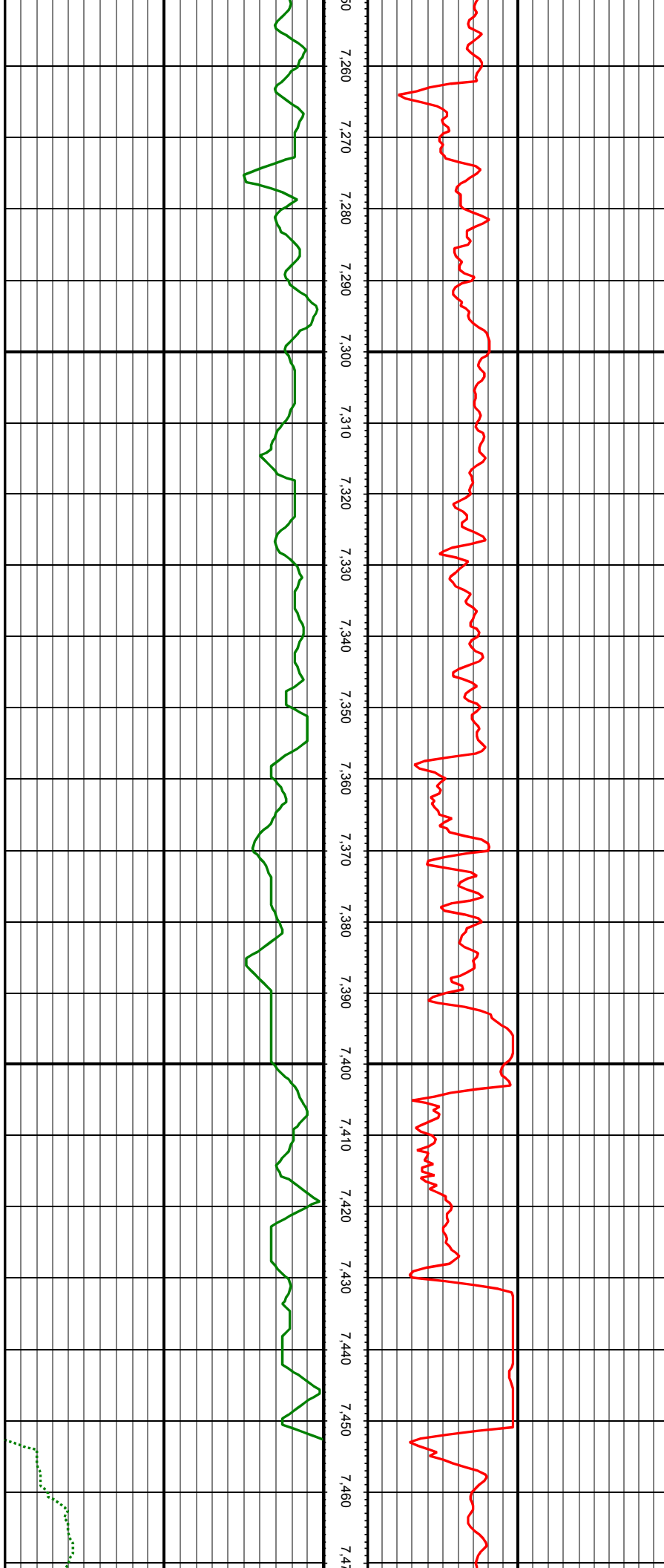
MD: 7018.00 INC: 25.58 AZ: 357.59 TVD: 6924.85 VS: -510.67





MD: 7113.00 INC: 32.00 AZ: 1.81 TVD: 7008.08 VS: -465.35

MD: 7208.00 INC: 39.87 AZ: 5.15 TVD: 7084.94 VS: -409.78

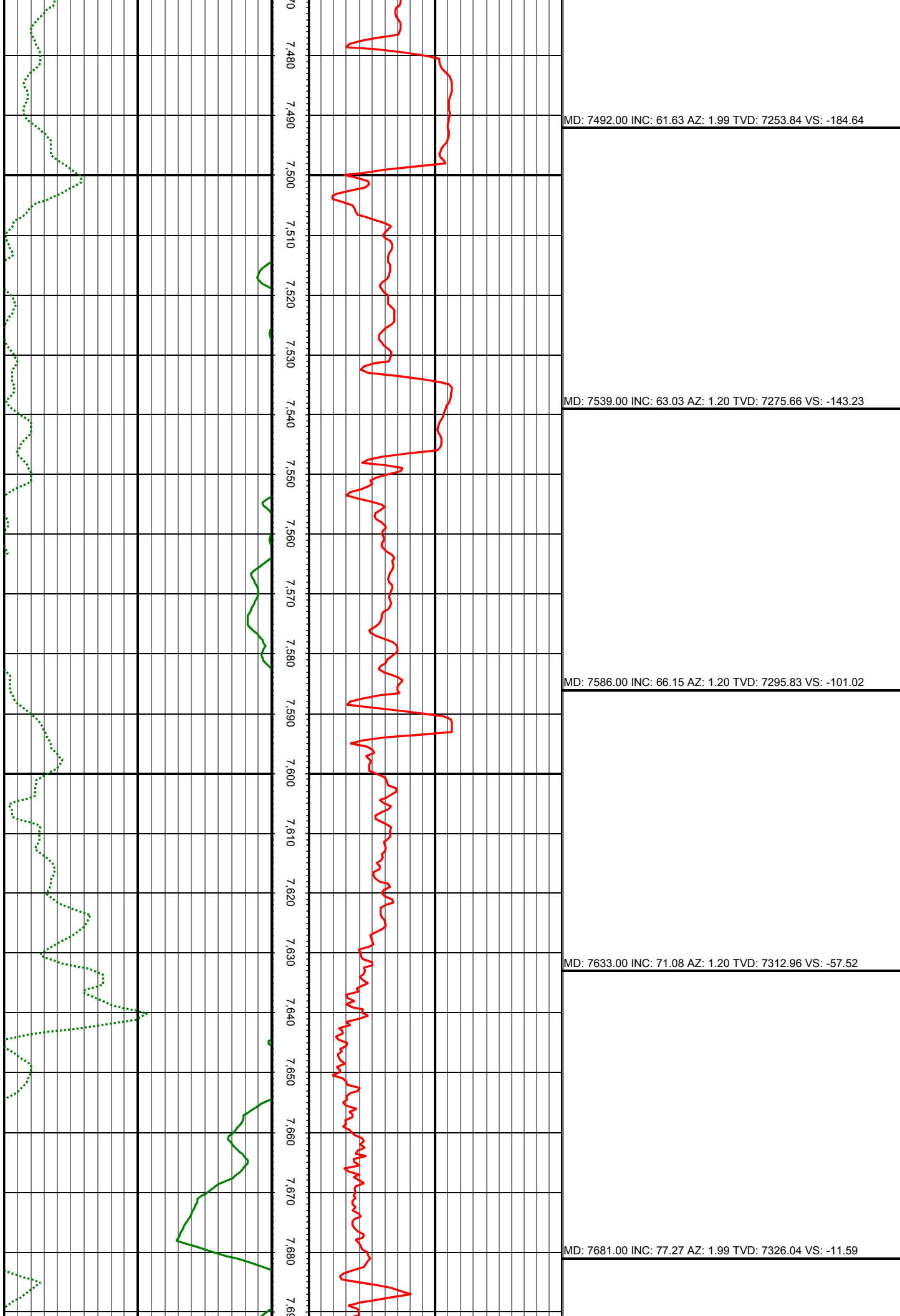


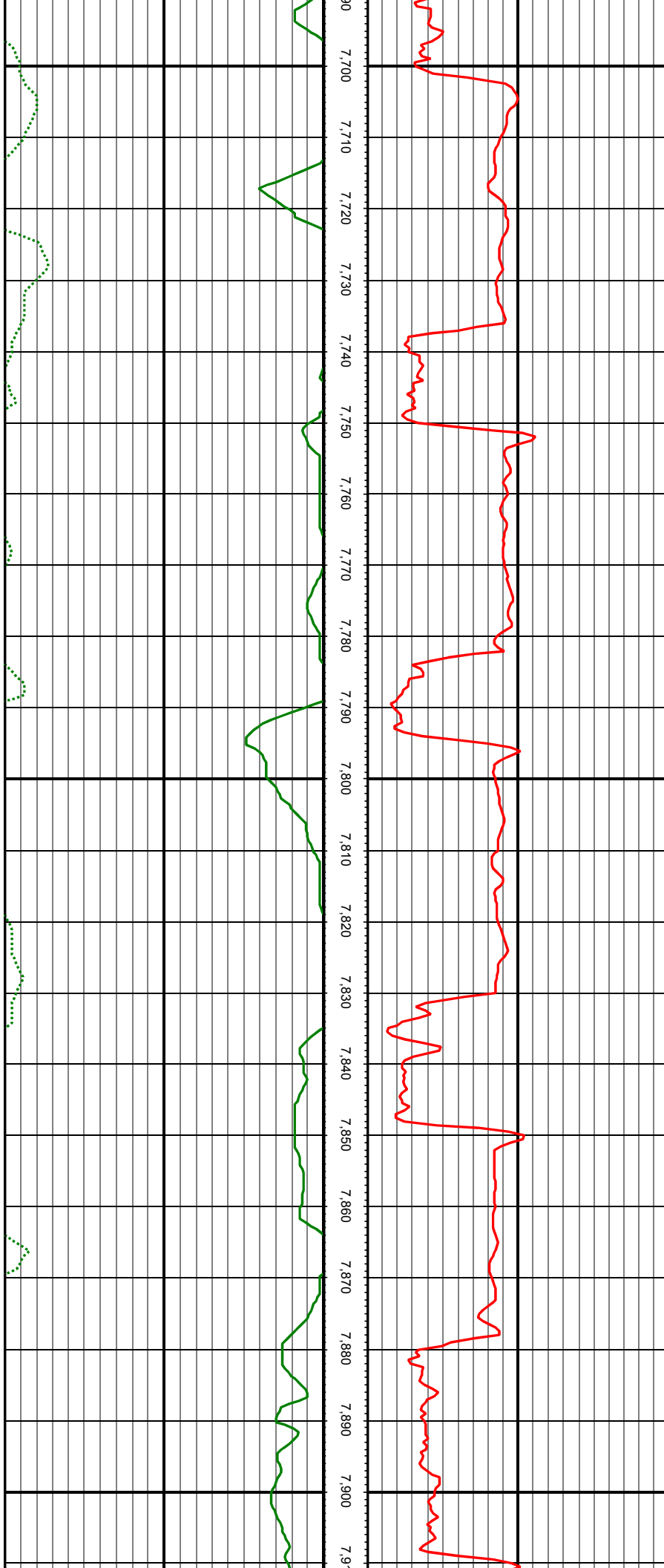
MD: 7302.00 INC: 49.54 AZ: 4.36 TVD: 7151.67 VS: -343.80

MD: 7349.00 INC: 55.08 AZ: 3.57 TVD: 7180.40 VS: -306.69

MD: 7397.00 INC: 58.64 AZ: 1.46 TVD: 7206.64 VS: -266.65

MD: 7444.00 INC: 60.26 AZ: 1.28 TVD: 7230.53 VS: -226.39



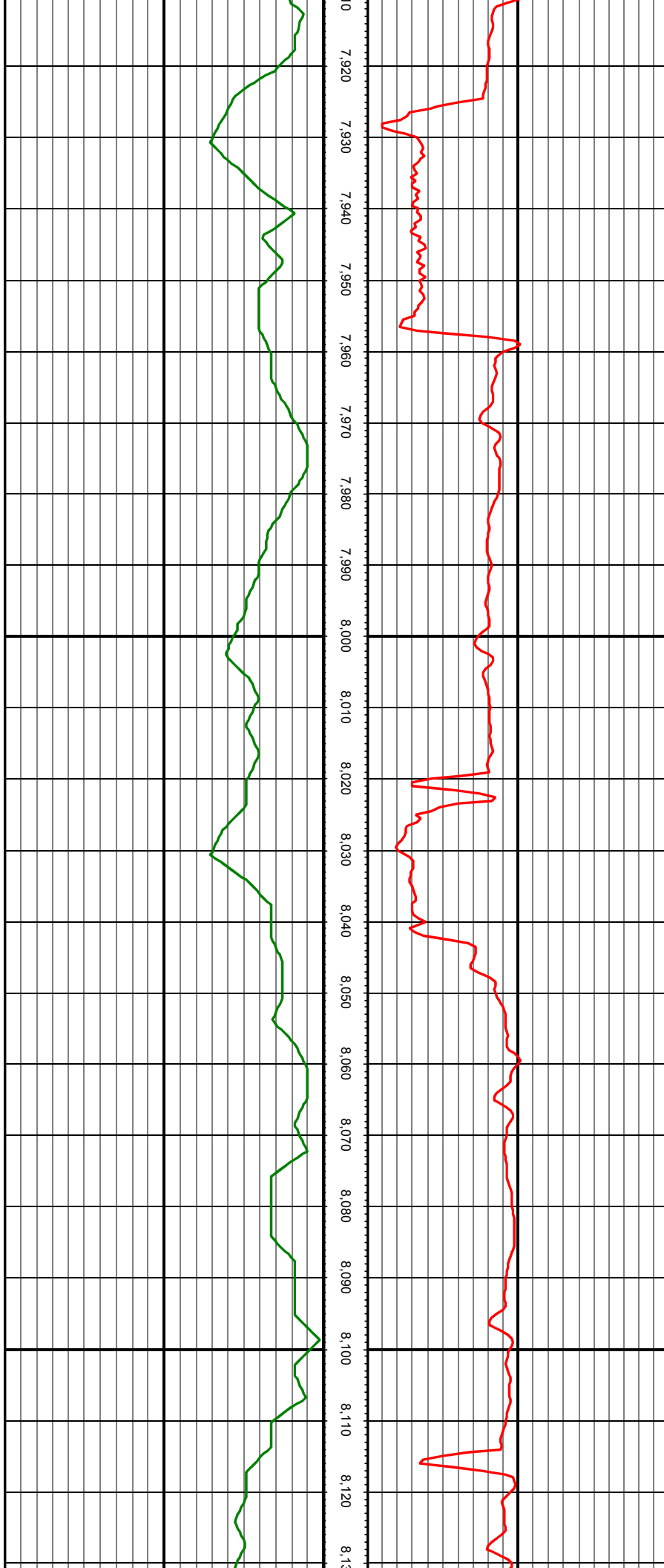


MD: 7728.00 INC: 79.21 AZ: 2.16 TVD: 7335.62 VS: 34.22

MD: 7775.00 INC: 80.75 AZ: 2.07 TVD: 7343.80 VS: 80.31

MD: 7822.00 INC: 80.40 AZ: 1.63 TVD: 7351.50 VS: 126.47

MD: 7871.00 INC: 80.40 AZ: 1.72 TVD: 7359.67 VS: 174.55



MD: 7965.00 INC: 86.59 AZ: 0.14 TVD: 7370.31 VS: 267.31

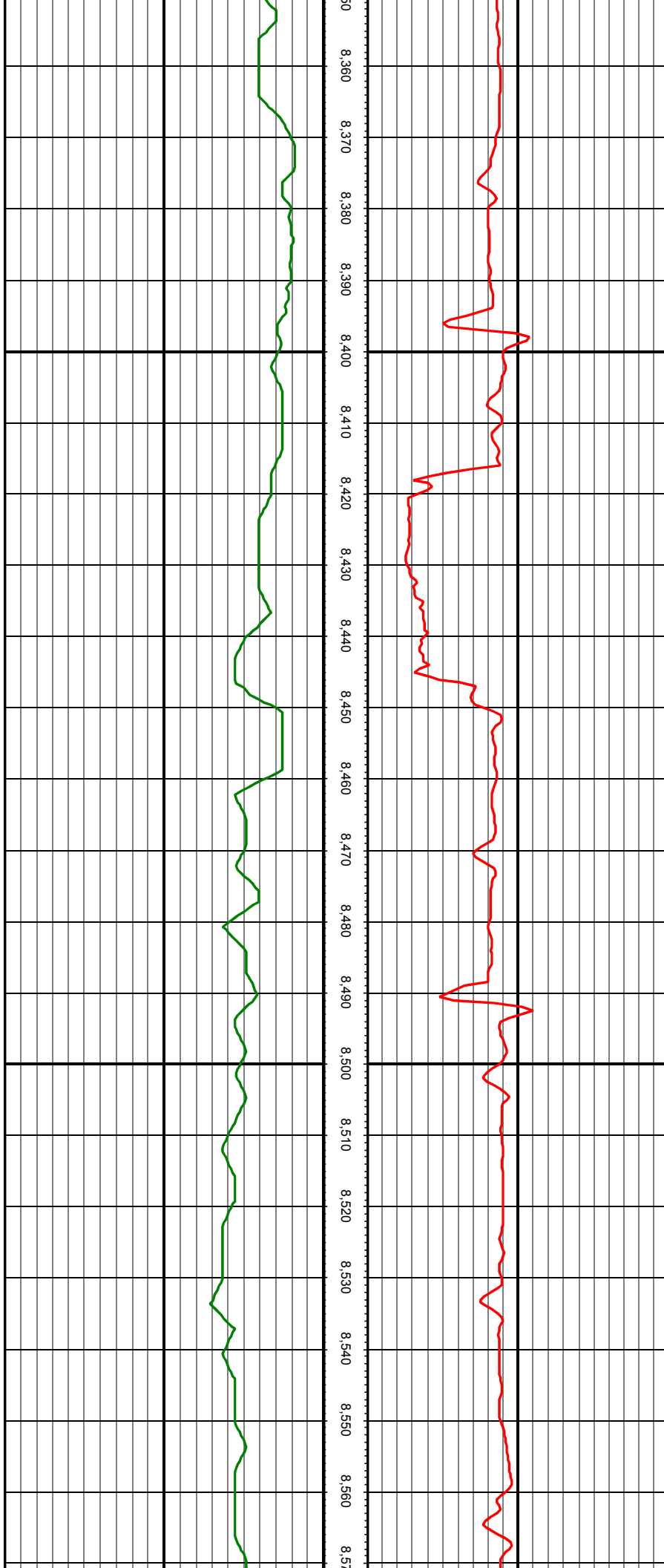
MD: 8059.00 INC: 87.30 AZ: 359.35 TVD: 7375.32 VS: 360.35



MD: 8154.00 INC: 88.44 AZ: 359.17 TVD: 7378.85 VS: 454.35

MD: 8249.00 INC: 89.71 AZ: 358.56 TVD: 7380.39 VS: 548.30

MD: 8344.00 INC: 91.25 AZ: 357.94 TVD: 7379.59 VS: 642.10



MD: 8438.00 INC: 90.95 AZ: 359.17 TVD: 7377.79 VS: 734.98

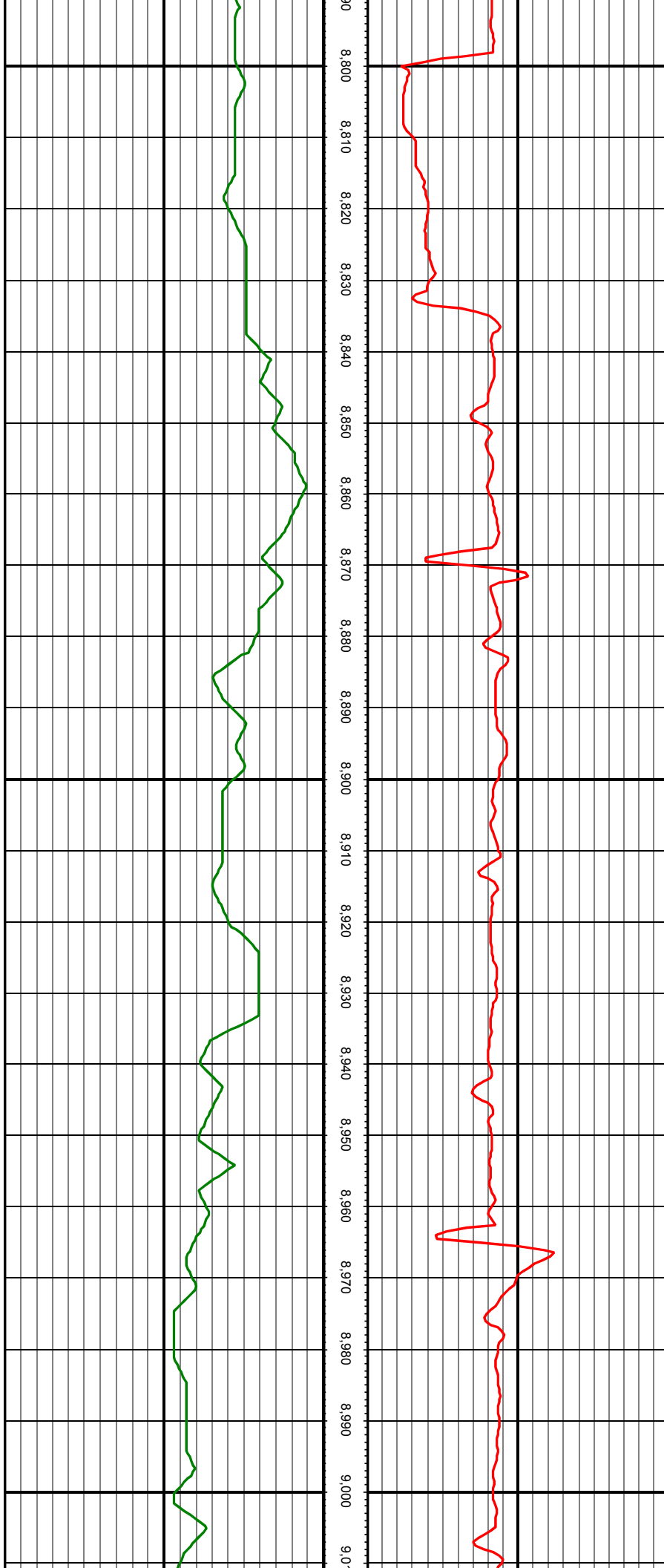
MD: 8532.00 INC: 91.43 AZ: 359.26 TVD: 7375.83 VS: 828.02



MD: 8626.00 INC: 91.87 AZ: 359.79 TVD: 7373.13 VS: 921.11

MD: 8721.00 INC: 90.37 AZ: 359.09 TVD: 7371.27 VS: 1015.19

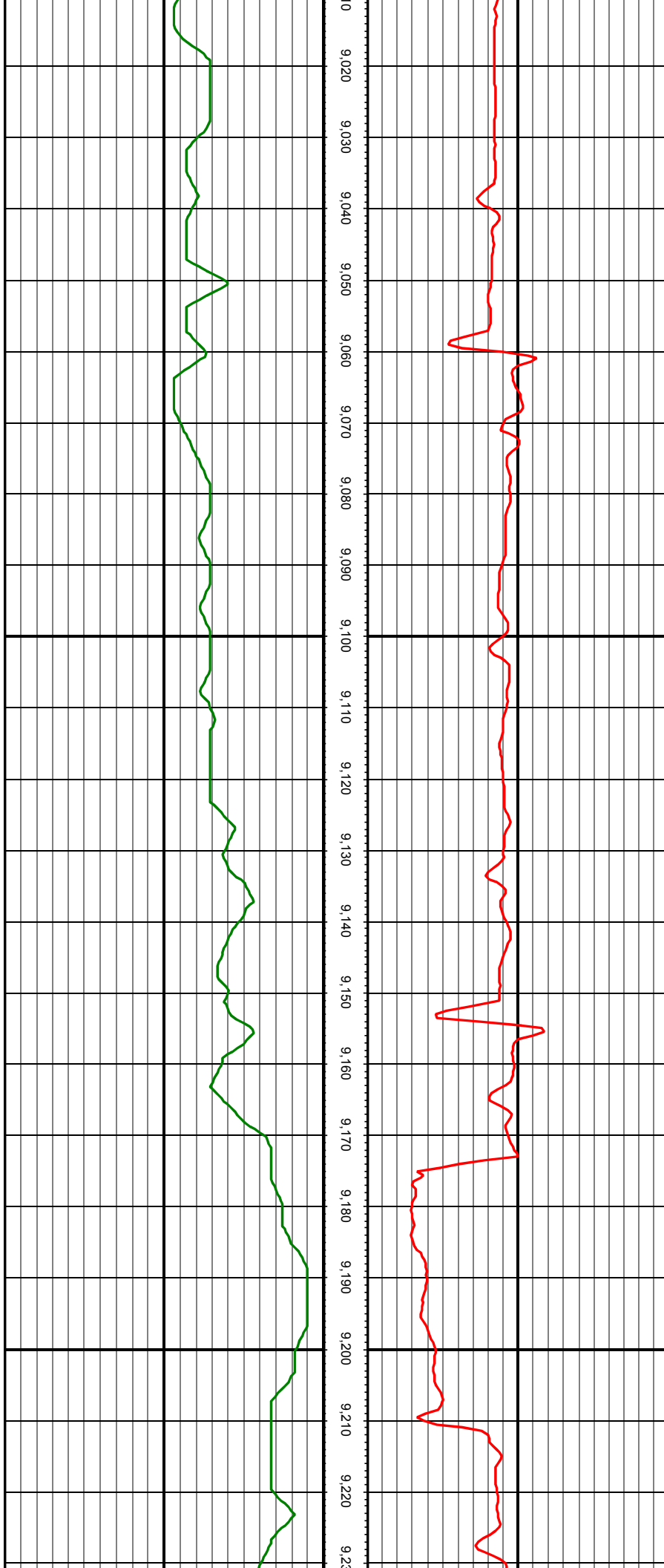




MD: 8816.00 INC: 89.36 AZ: 359.17 TVD: 7371.49 VS: 1109.22

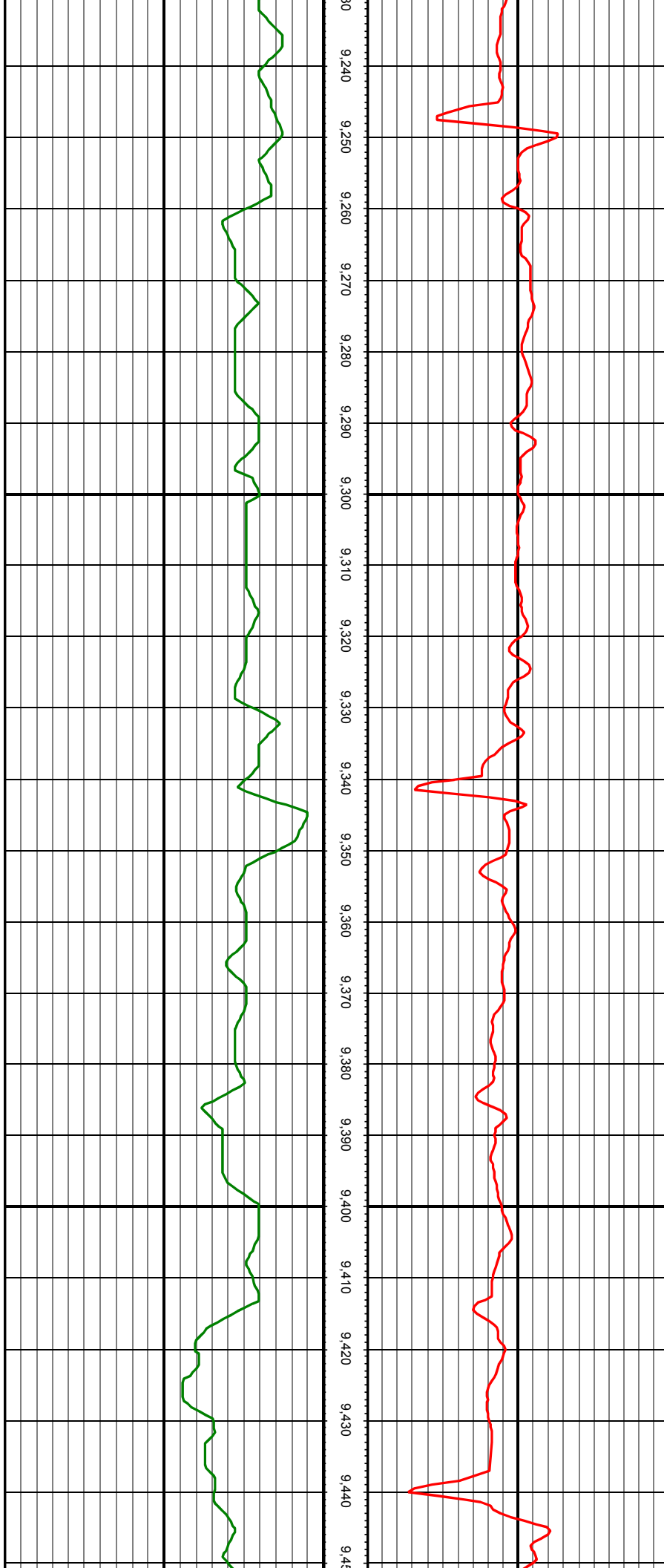
MD: 8911.00 INC: 87.91 AZ: 358.82 TVD: 7373.76 VS: 1203.18

MD: 9006.00 INC: 89.49 AZ: 358.12 TVD: 7375.91 VS: 1297.02



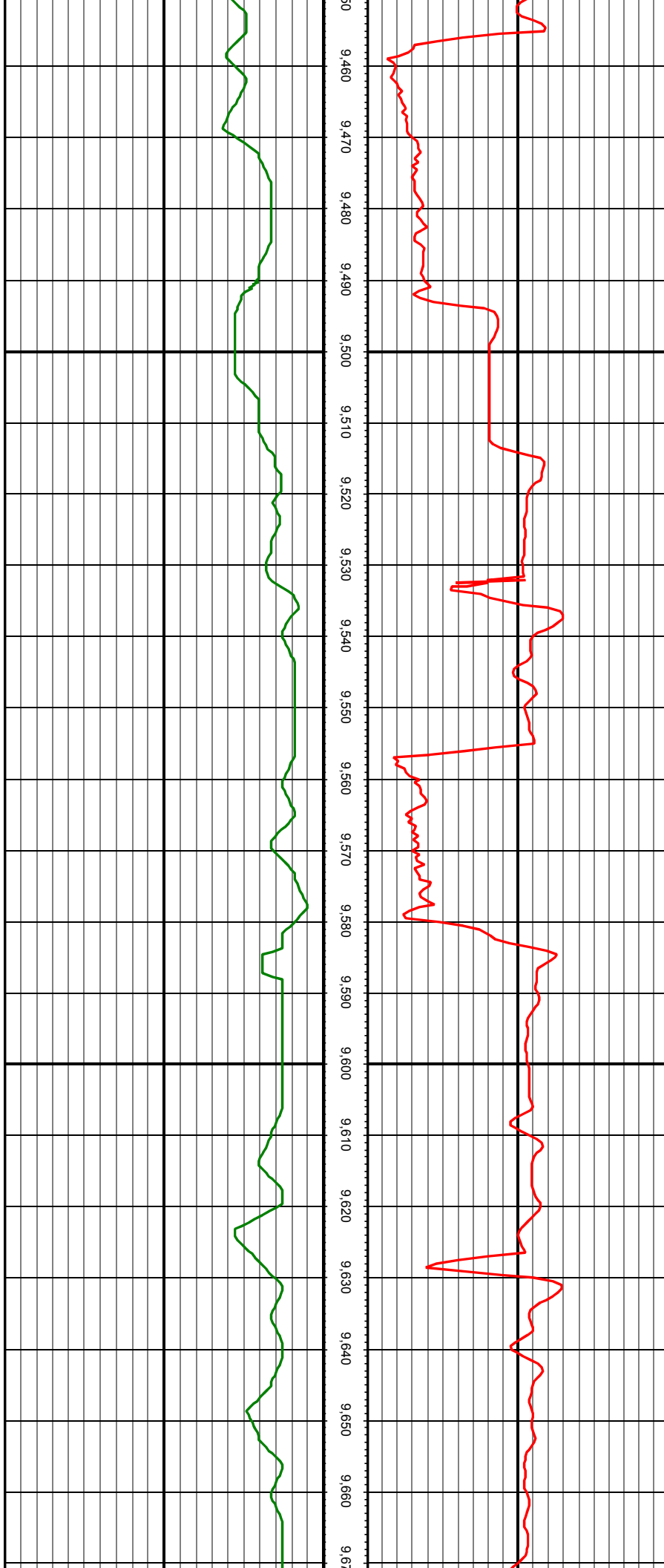
MD: 9101.00 INC: 91.16 AZ: 357.77 TVD: 7375.37 VS: 1390.75

MD: 9195.00 INC: 90.15 AZ: 357.77 TVD: 7374.30 VS: 1483.43



MD: 9290.00 INC: 89.54 AZ: 357.15 TVD: 7374.56 VS: 1577.03

MD: 9384.00 INC: 91.34 AZ: 356.71 TVD: 7373.83 VS: 1669.47



MD: 9477.00 INC: 90.11 AZ: 357.24 TVD: 7372.66 VS: 1760.95

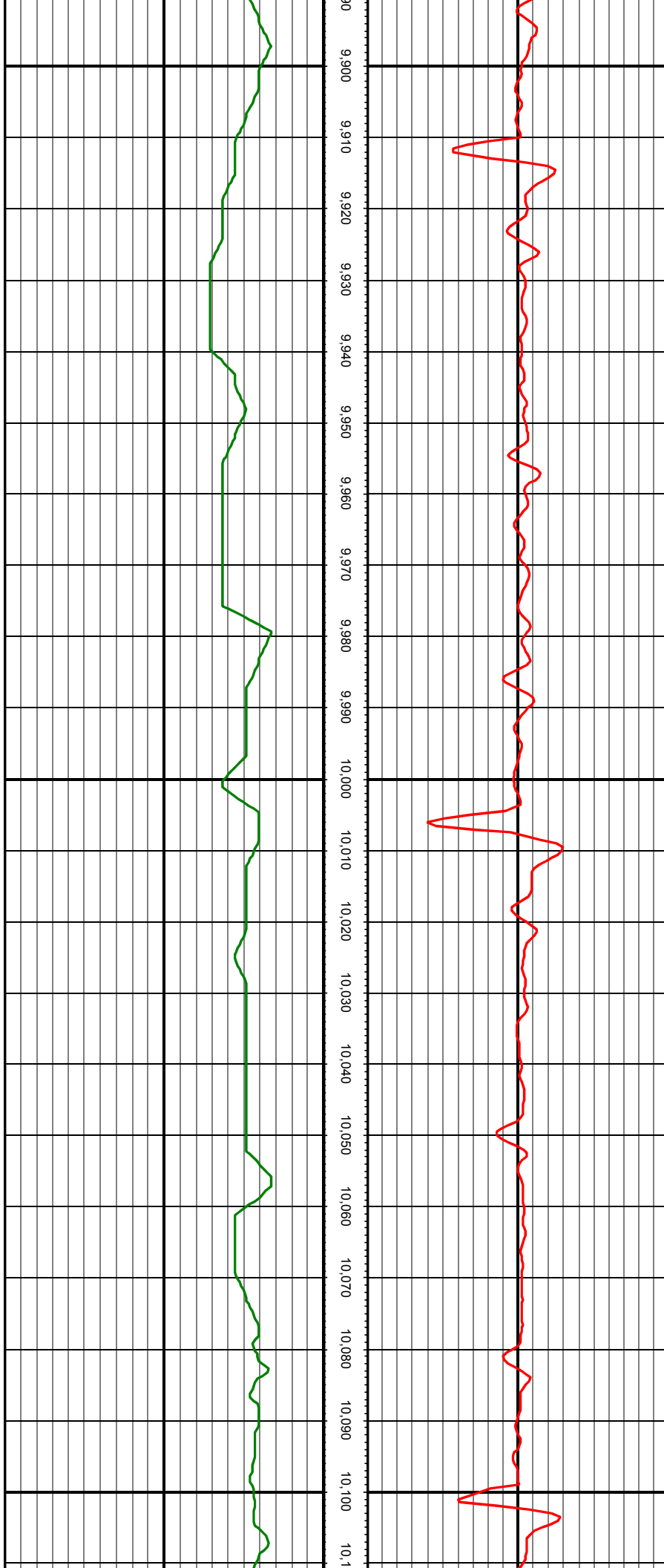
MD: 9572.00 INC: 89.36 AZ: 358.65 TVD: 7373.10 VS: 1854.67

MD: 9666.00 INC: 90.20 AZ: 358.73 TVD: 7373.46 VS: 1947.61



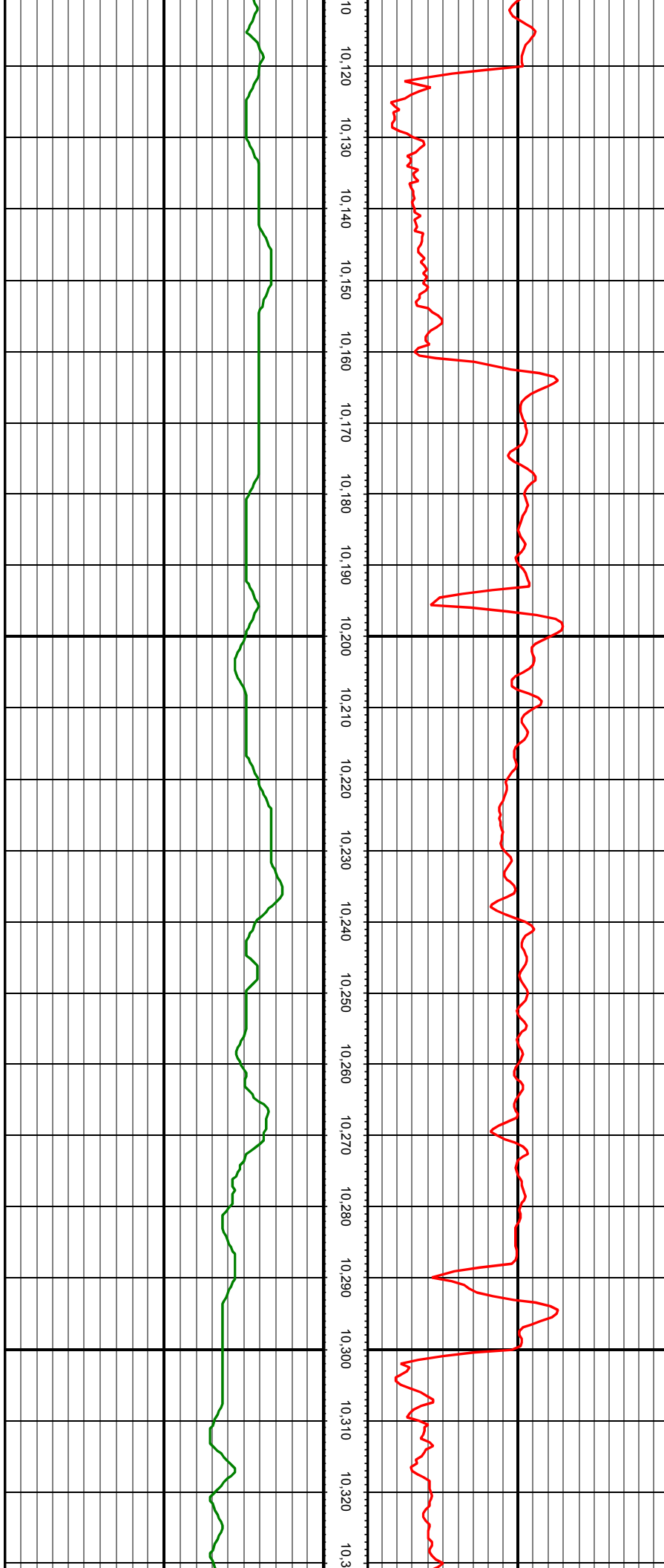
MD: 9761.00 INC: 89.05 AZ: 359.79 TVD: 7374.08 VS: 2041.66

MD: 9855.00 INC: 87.30 AZ: 359.53 TVD: 7377.07 VS: 2134.77



MD: 9950.00 INC: 88.40 AZ: 358.82 TVD: 7380.64 VS: 2228.74

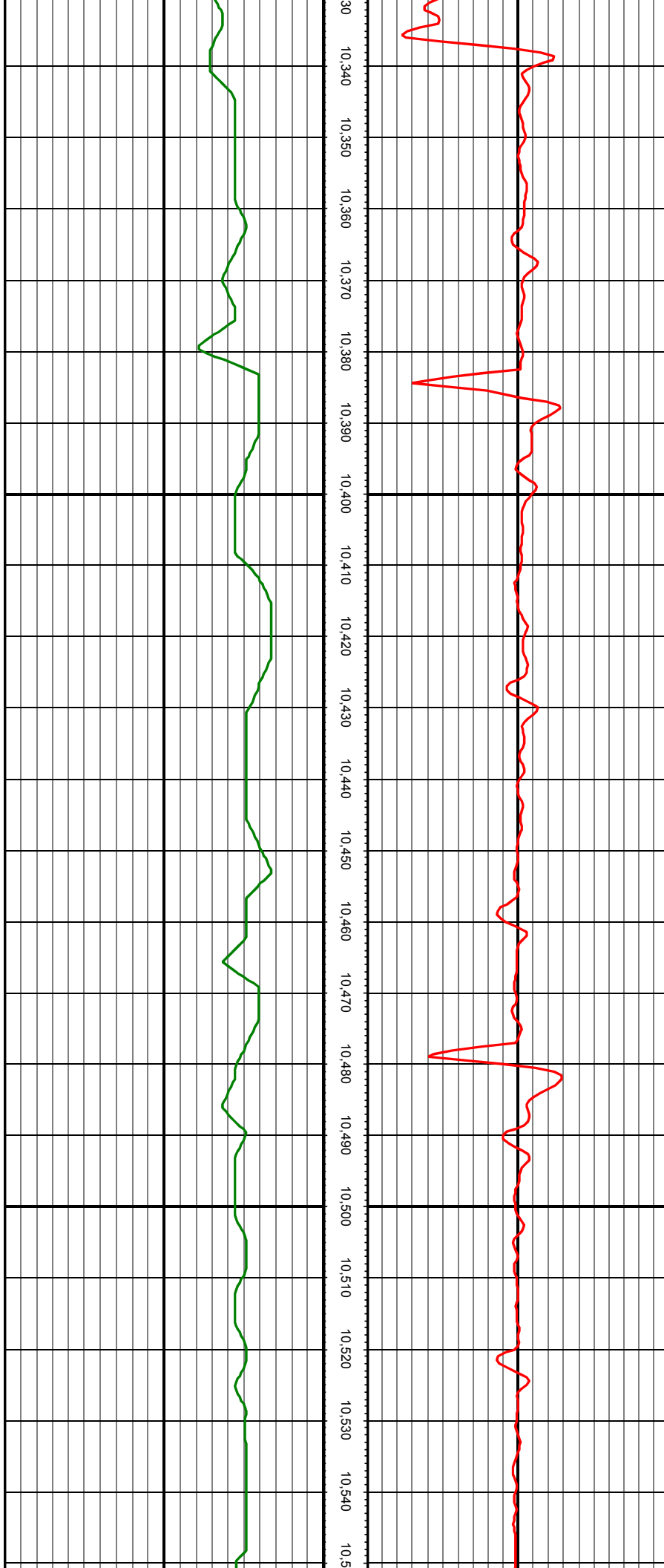
MD: 10044.00 INC: 89.67 AZ: 358.38 TVD: 7382.22 VS: 2321.64



MD: 10138.00 INC: 90.59 AZ: 0.32 TVD: 7382.01 VS: 2414.72

MD: 10233.00 INC: 91.47 AZ: 1.90 TVD: 7380.30 VS: 2509.14

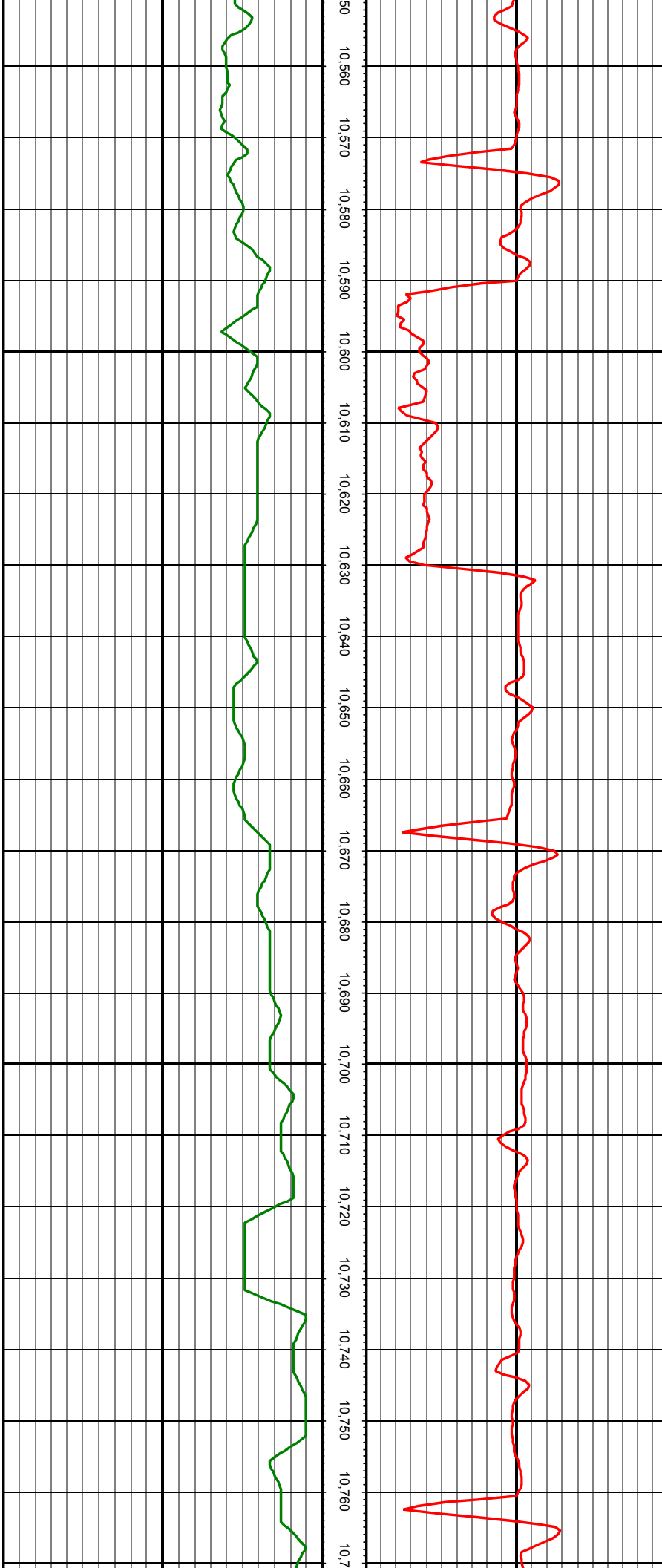
MD: 10328.00 INC: 88.97 AZ: 0.93 TVD: 7379.93 VS: 2603.63



MD: 10422.00 INC: 89.05 AZ: 0.23 TVD: 7381.56 VS: 2696.96

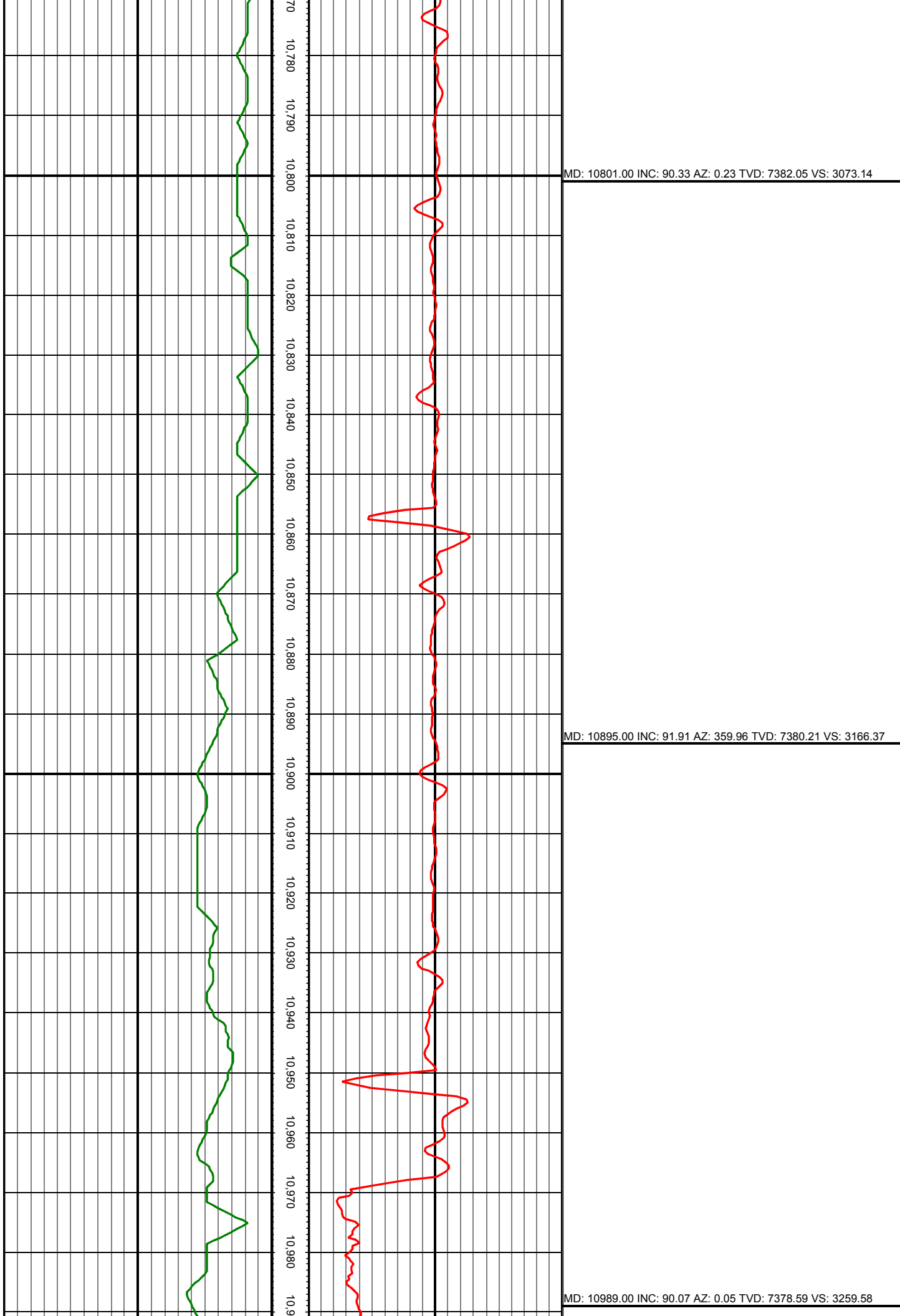
MD: 10517.00 INC: 90.90 AZ: 359.53 TVD: 7381.60 VS: 2791.15

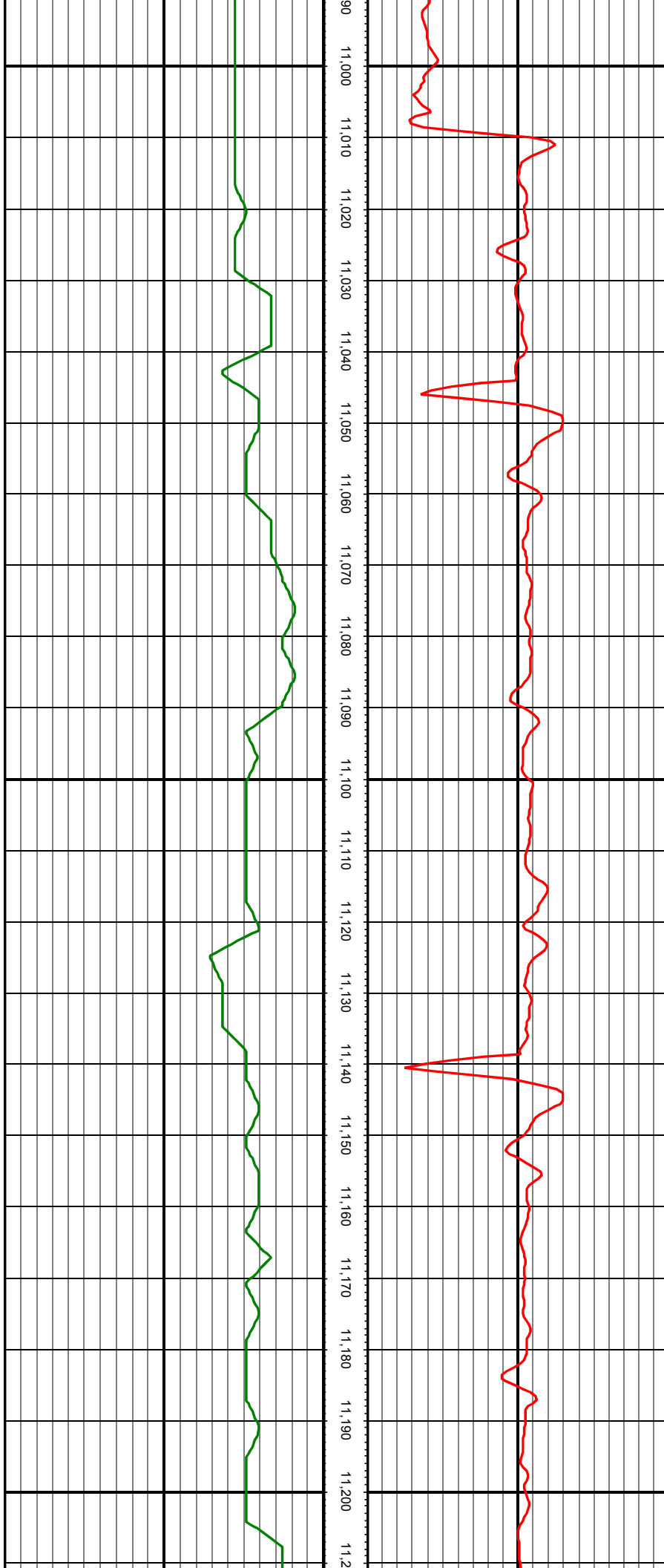




MD: 10611.00 INC: 89.93 AZ: 0.93 TVD: 7380.92 VS: 2884.43

MD: 10706.00 INC: 89.19 AZ: 0.76 TVD: 7381.65 VS: 2978.82





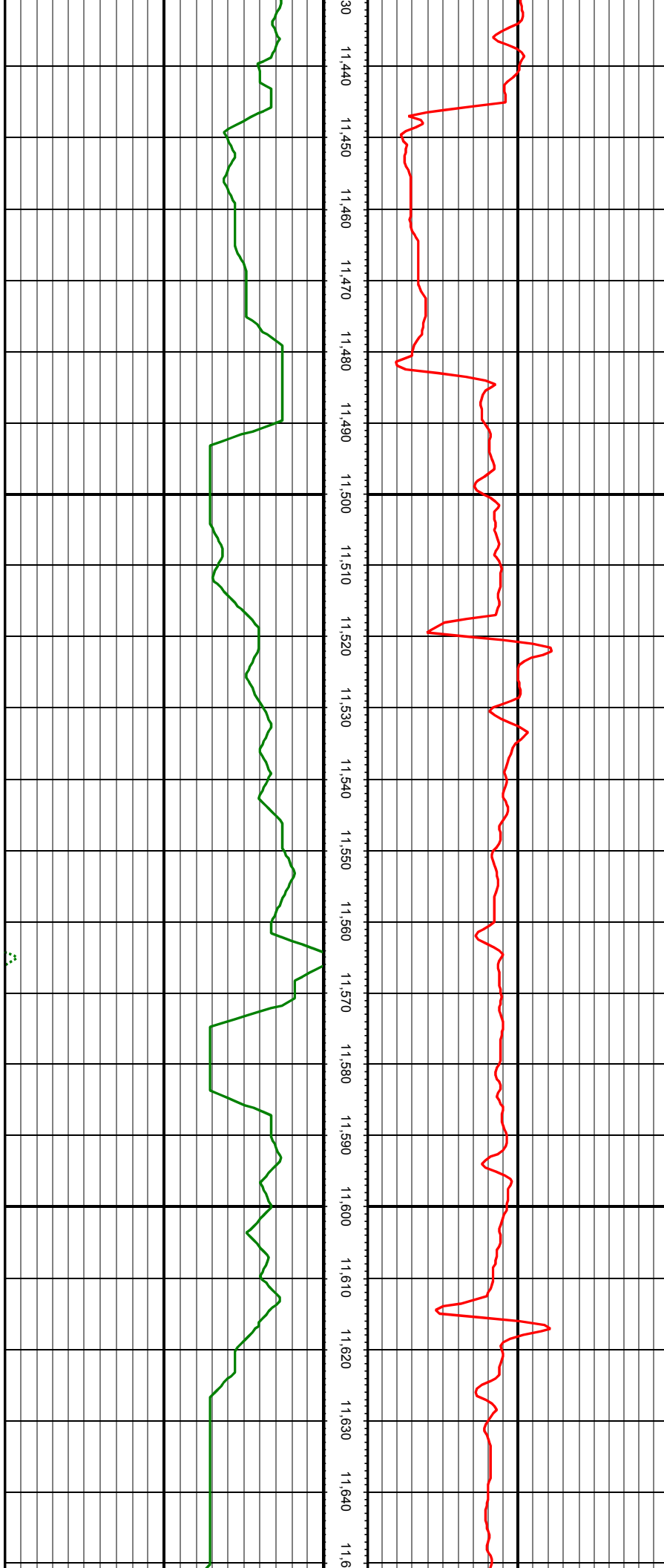
MD: 11084.00 INC: 88.57 AZ: 359.79 TVD: 7379.71 VS: 3353.78

MD: 11179.00 INC: 89.63 AZ: 359.53 TVD: 7381.21 VS: 3447.92



MD: 11273.00 INC: 90.64 AZ: 359.17 TVD: 7380.98 VS: 3541.01

MD: 11368.00 INC: 91.60 AZ: 359.09 TVD: 7379.13 VS: 3635.02



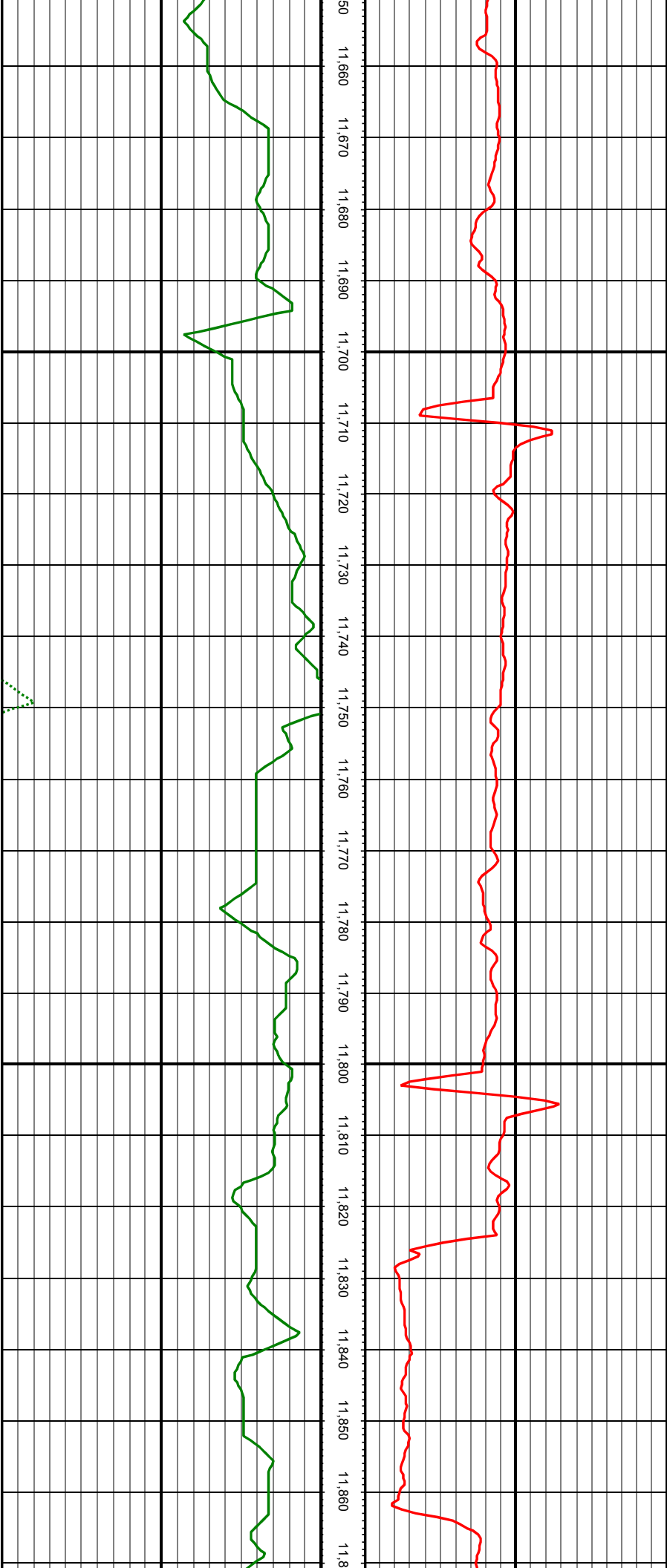
MD: 11463.00 INC: 89.80 AZ: 359.88 TVD: 7377.97 VS: 3729.11

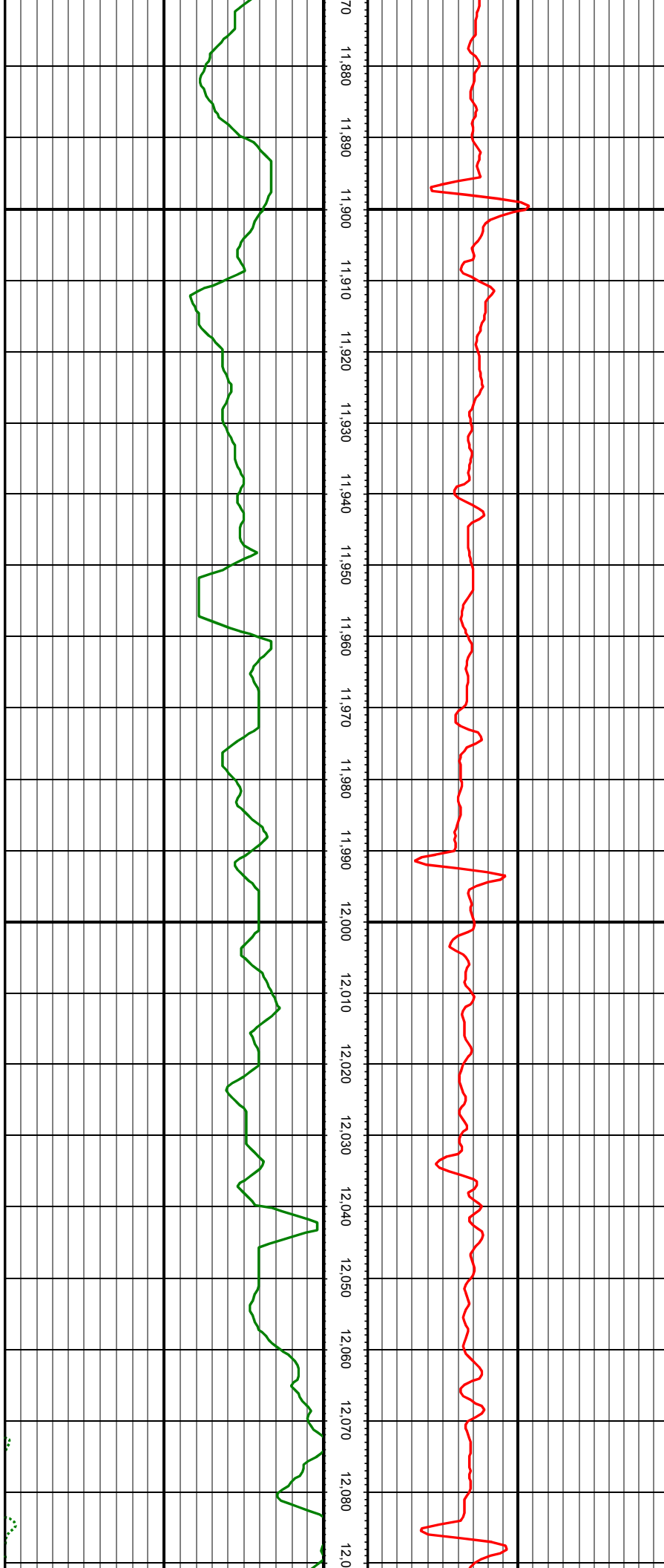
MD: 11558.00 INC: 89.10 AZ: 359.79 TVD: 7378.88 VS: 3823.30

MD: 11653.00 INC: 89.89 AZ: 359.44 TVD: 7379.72 VS: 3917.43

MD: 11747.00 INC: 91.16 AZ: 358.82 TVD: 7378.85 VS: 4010.47

MD: 11842.00 INC: 90.55 AZ: 0.58 TVD: 7377.44 VS: 4104.61





MD: 11937.00 INC: 90.37 AZ: 0.58 TVD: 7376.67 VS: 4198.95

MD: 12031.00 INC: 92.22 AZ: 0.32 TVD: 7374.55 VS: 4292.24

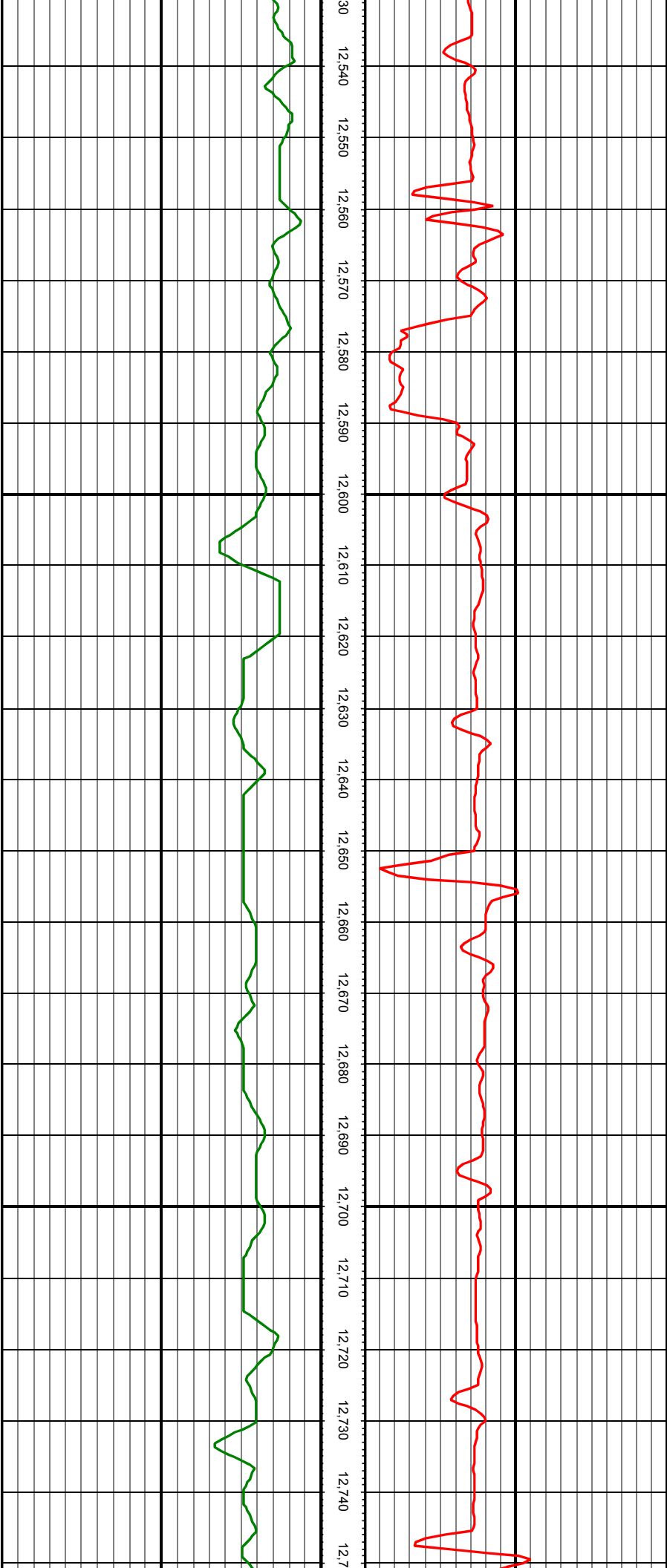




MD: 12316.00 INC: 86.64 AZ: 3.39 TVD: 7375.71 VS: 4575.58

MD: 12410.00 INC: 87.16 AZ: 3.04 TVD: 7380.79 VS: 4669.20

MD: 12505.00 INC: 87.78 AZ: 3.22 TVD: 7384.99 VS: 4763.85



MD: 12599.00 INC: 89.63 AZ: 1.90 TVD: 7387.11 VS: 4857.50

MD: 12694.00 INC: 90.64 AZ: 1.90 TVD: 7386.89 VS: 4952.07

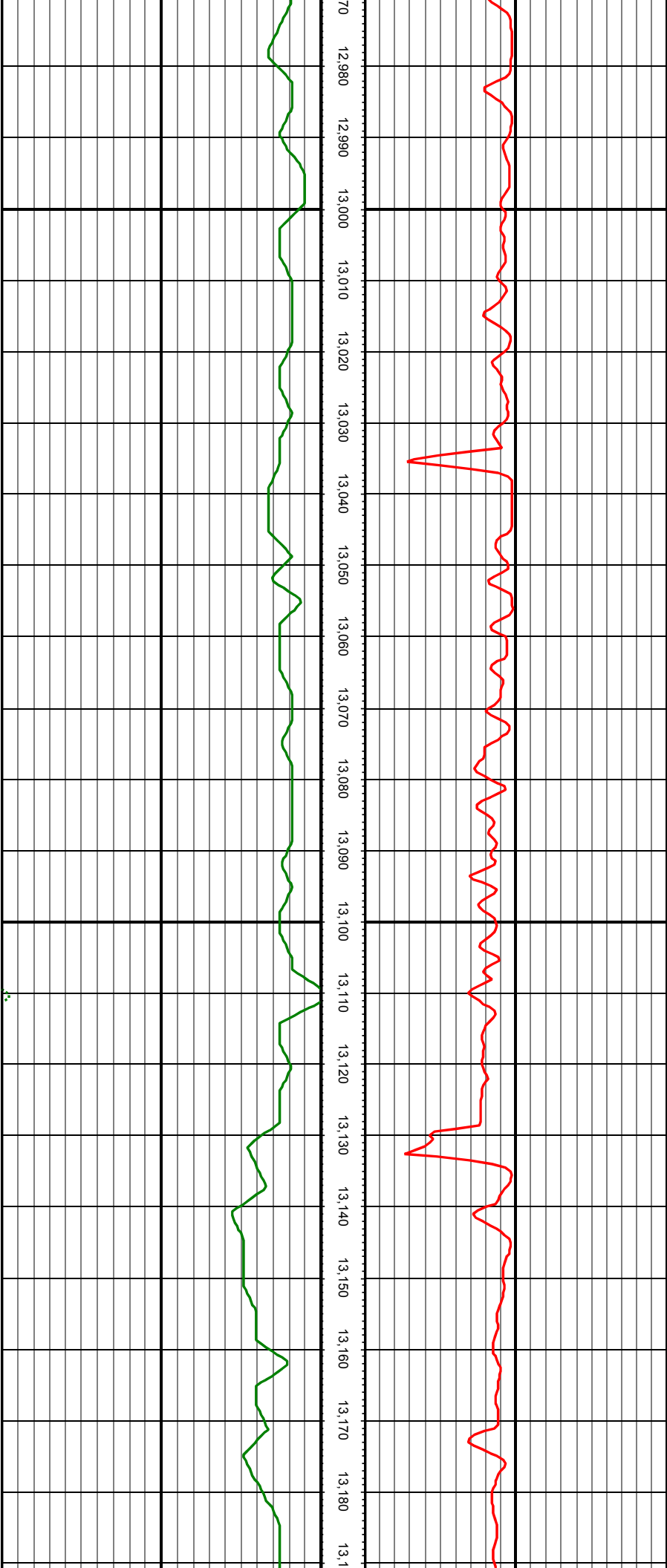
MD: 12789.00 INC: 92.22 AZ: 1.72 TVD: 7384.52 VS: 5046.60

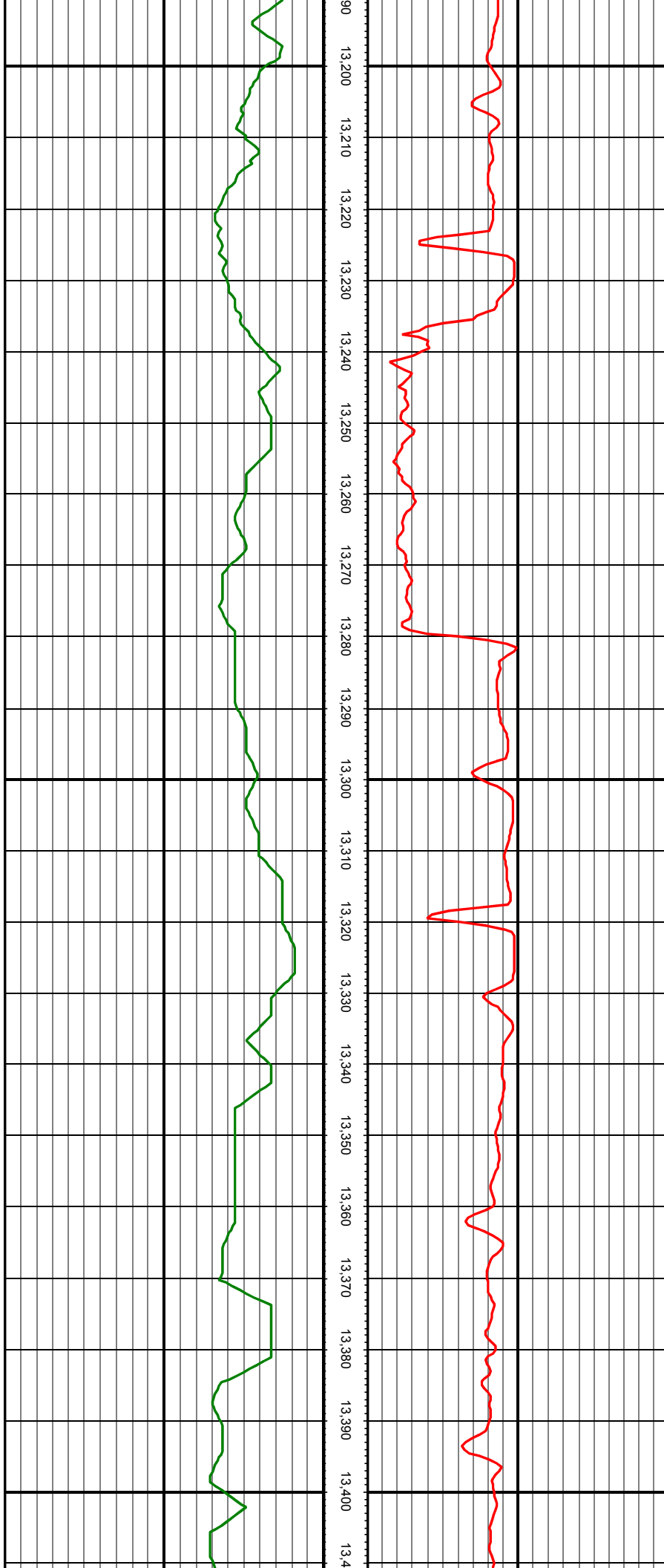
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MD: 12979.00 INC: 89.76 AZ: 1.55 TVD: 7383.27 VS: 5235.67

MD: 13074.00 INC: 90.99 AZ: 1.63 TVD: 7382.65 VS: 5330.19

MD: 13168.00 INC: 92.53 AZ: 1.11 TVD: 7379.76 VS: 5423.63





MD: 13263.00 INC: 89.54 AZ: 1.63 TVD: 7378.05 VS: 5518.09

MD: 13358.00 INC: 89.41 AZ: 1.81 TVD: 7378.92 VS: 5612.63

