

**Cathedral Energy Services**

6622 Willowbrook Park Drive
Houston, Tx 77066
281-440-1010 (Office)
281-440-1025 (Fax)

COSSLETT 1D-22H-B168**Scale 5":100' - MD****1/22/2019 7:07 PM****Oper. Company:** Crestone Peak Resources**Well:** COSSLETT 1D-22H-B168**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-47677-00**Job Number:** 195002

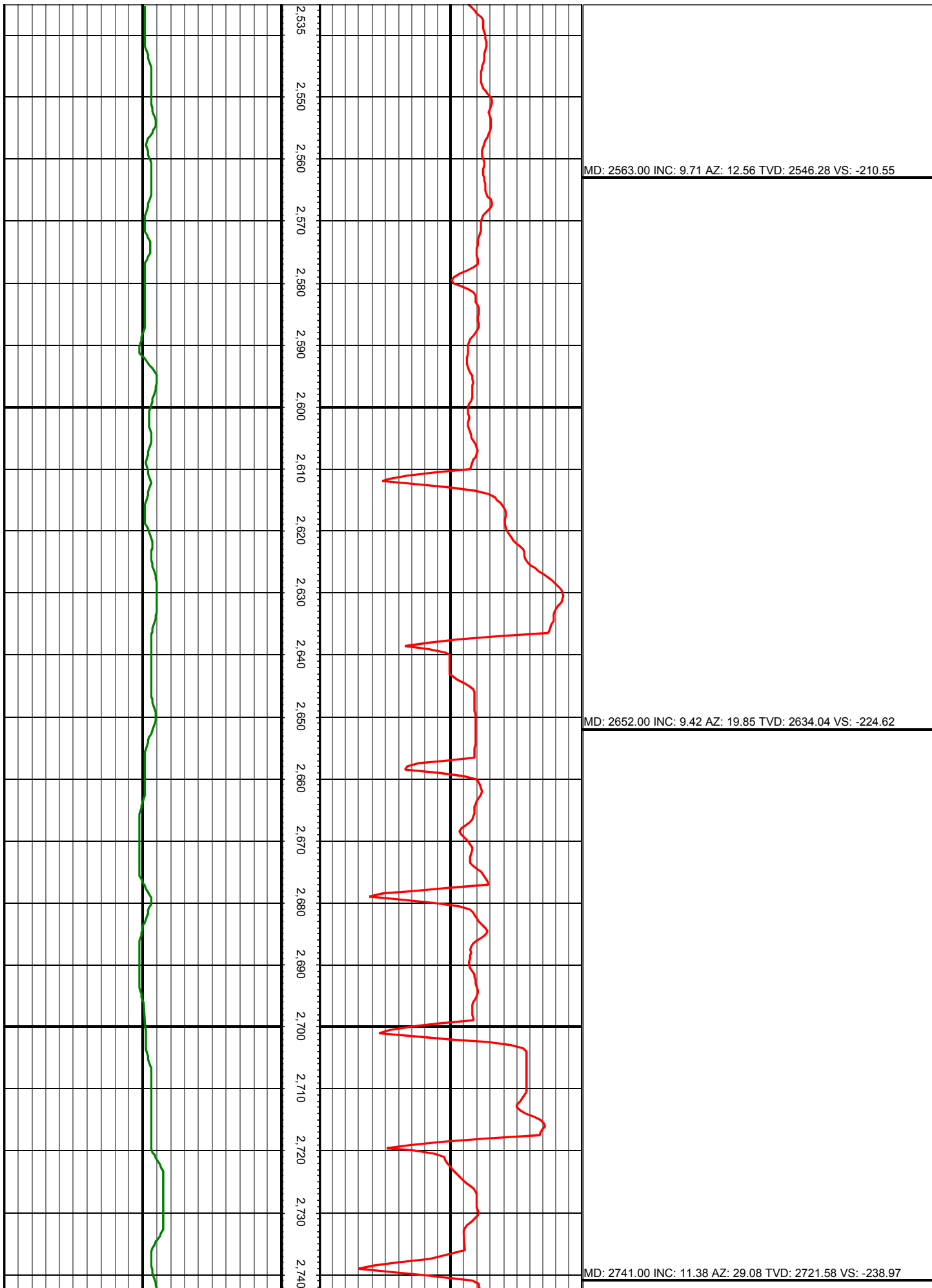
Notes: Gamma Ray Log
Section Plan: 178.51°
Datum: North American Datum 1983
Magnetic North: 8.34°
Grid Convergence: 0.33°
Gamma Averaging: 7% Smoothing

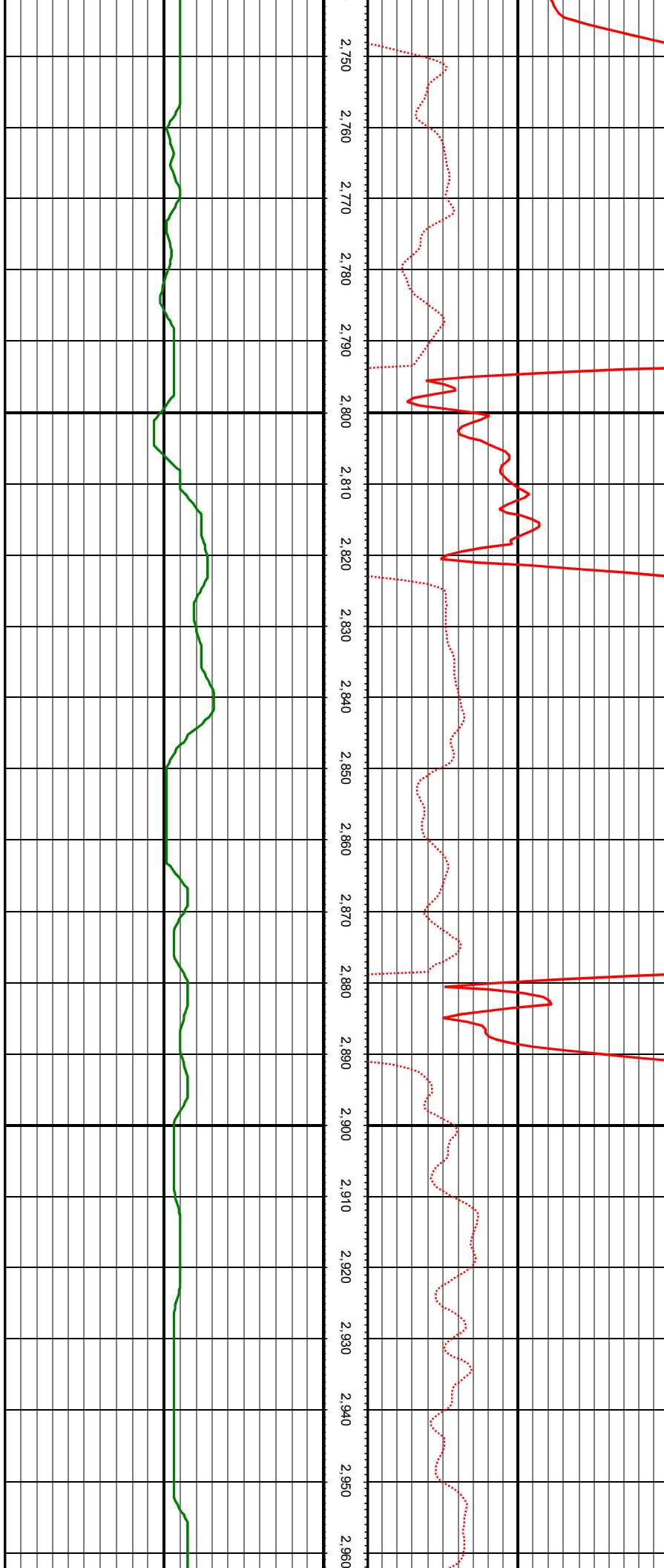
State: CO**County:** Weld**Country:** United States**Location:** S22-T1N-R68W**Start Date:** 01/17/2019 12:00:00**End Date:** 01/22/2019 18:00:00**Latitude:** 40.041391**Longitude:** -104.987976**Elev GL:** 5,174.00**Elev DF:** 5,197.00**Elev KB:** 5,197.00**Notes:** Log & Survey Depths Relative to Kelly Bushing (KB) Depth**Operator 1:** Bob Stahlecker**Operator 2:** Jerry Shannahan**Notes:** Maximun Temperature: 250.00°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	BTDM-1638	BTDM-1638			
Bit Size	8.75	8.50			
Cal Factor	5.30	5.21			
Survey Offset	52.00	60.00			
Gamma Offset	36.81	43.68			
Resistivity Offset	0.00	0.00			
Start Depth	2510.00	16160.00			
StartDate	1/17/2019	1/21/2019			
StartTime	12:00	17:00			
EndDepth	16160.00	17524.00			
EndDate	1/21/2019	1/22/2019			
EndTime	15:00	18:00			
Mud Type	OIL BASED	OIL BASED			
Mud Weight	10.10 PPG	10.40 PPG			
Funnel Viscosity	52.00 SEC/QT	51.00 SEC/QT			
Plastic Viscosity	23.00 CP	25.00 CP			
Yield Point	7.00 LBS/100FT2	6.00 LBS/100FT2			
Gel Strength	5.00/17.00/20.00 LBS/100FT2	3.00/18.00/25.00 LBS/100FT2			
Solids Content	7.20 % BY VOL	8.90 % BY VOL			
Sand Content	0.00 % BY VOL	0.00 % BY VOL			
Mud Alkalinity	0.00 PPG	0.00 PPG			
Filtrate Alkalinity	0.00% BY VOL	0.00% BY VOL			
Chlorides	33,000.00 MG/L	35,000.00 MG/L			
Temperature	243.00 °F	250.00 °F			

Hole Data			Casing Data		
Size	From	To	Size	From	To
12.25	516.00	2510.00	13.375	0.00	516.00
8.75	2510.00	16160.00	9.625	0.00	2490.00
8.50	16160.00	17524.00	5.50	0.00	17524.00

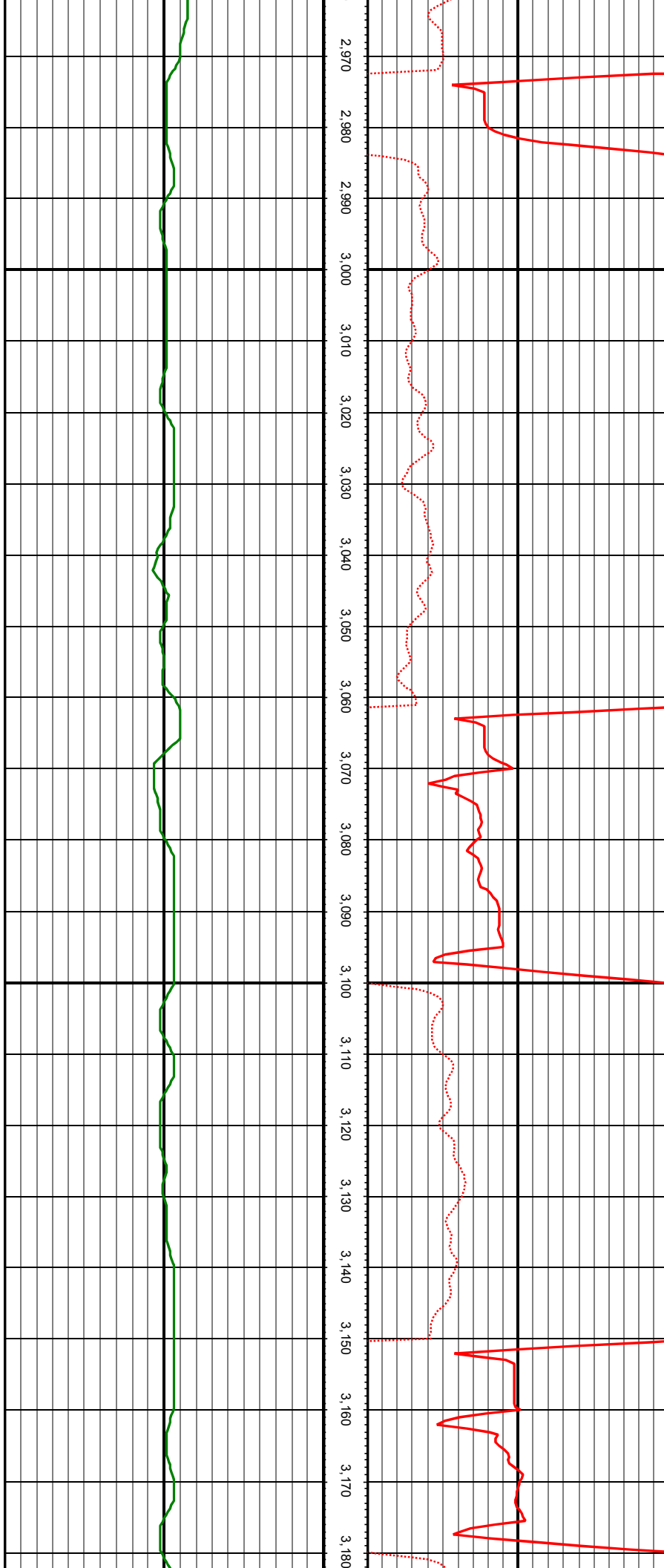
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost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





MD: 2830.00 INC: 10.64 AZ: 19.77 TVD: 2808.95 VS: -254.19

MD: 2919.00 INC: 9.41 AZ: 16.16 TVD: 2896.59 VS: -268.78



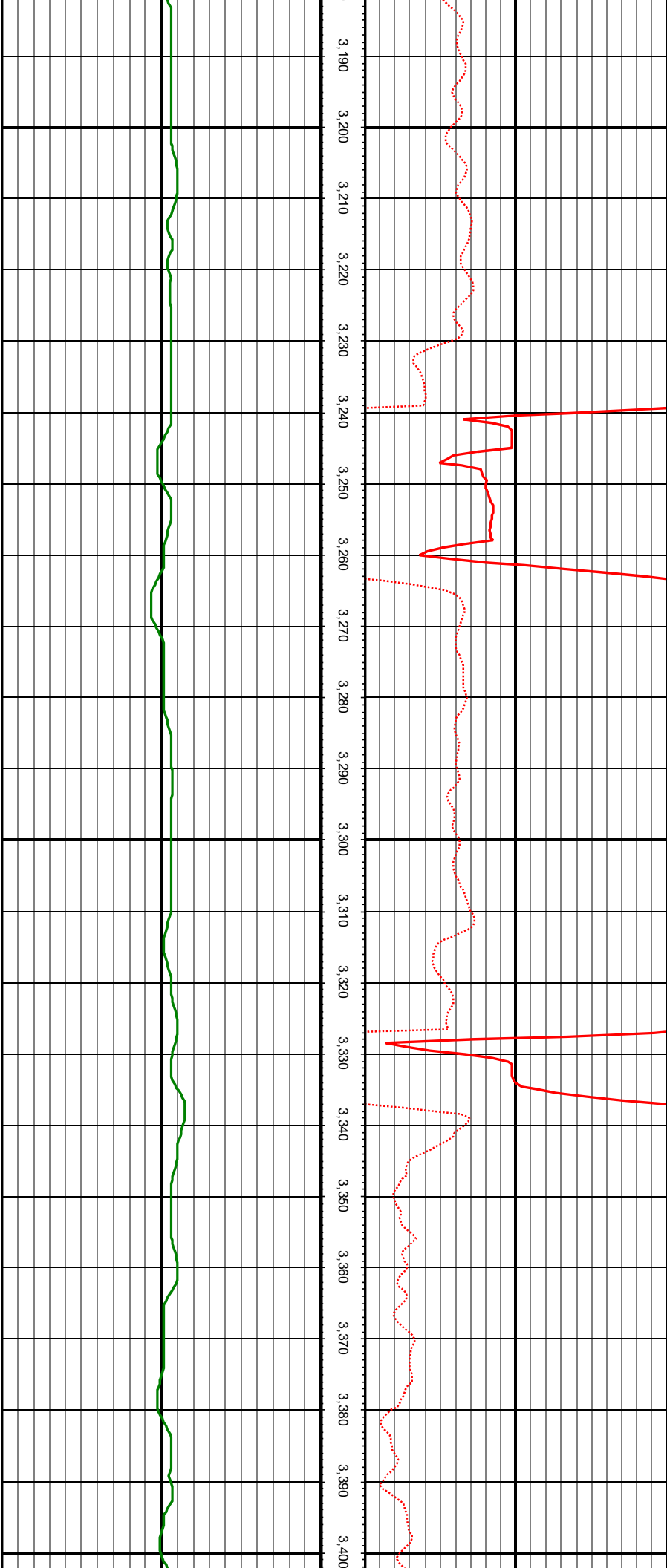
MD: 3008.00 INC: 8.40 AZ: 14.14 TVD: 2984.52 VS: -281.97

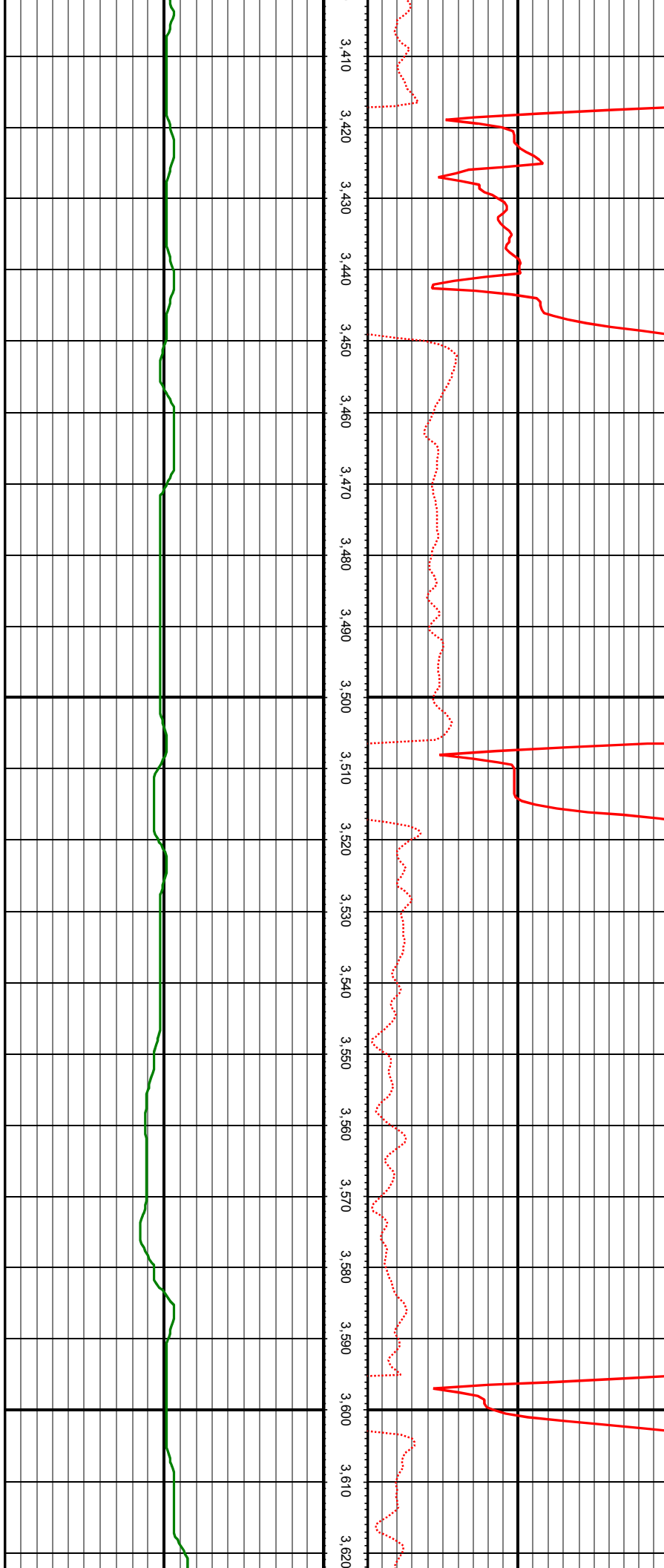
MD: 3097.00 INC: 7.52 AZ: 24.25 TVD: 3072.66 VS: -293.48

MD: 3187.00 INC: 9.14 AZ: 32.51 TVD: 3161.72 VS: -304.71

MD: 3276.00 INC: 9.85 AZ: 26.09 TVD: 3249.50 VS: -317.32

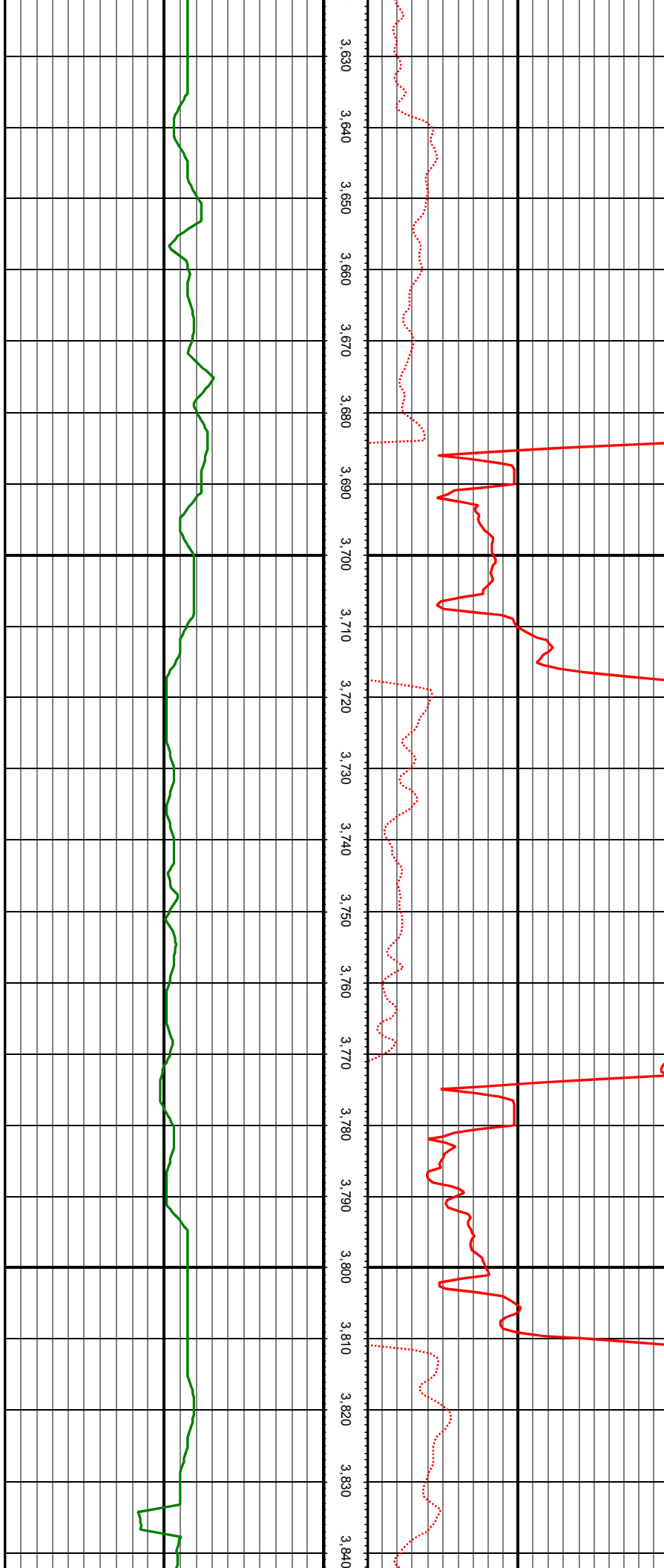
MD: 3365.00 INC: 8.48 AZ: 24.42 TVD: 3337.36 VS: -329.97





MD: 3454.00 INC: 10.02 AZ: 24.07 TVD: 3425.20 VS: -342.86

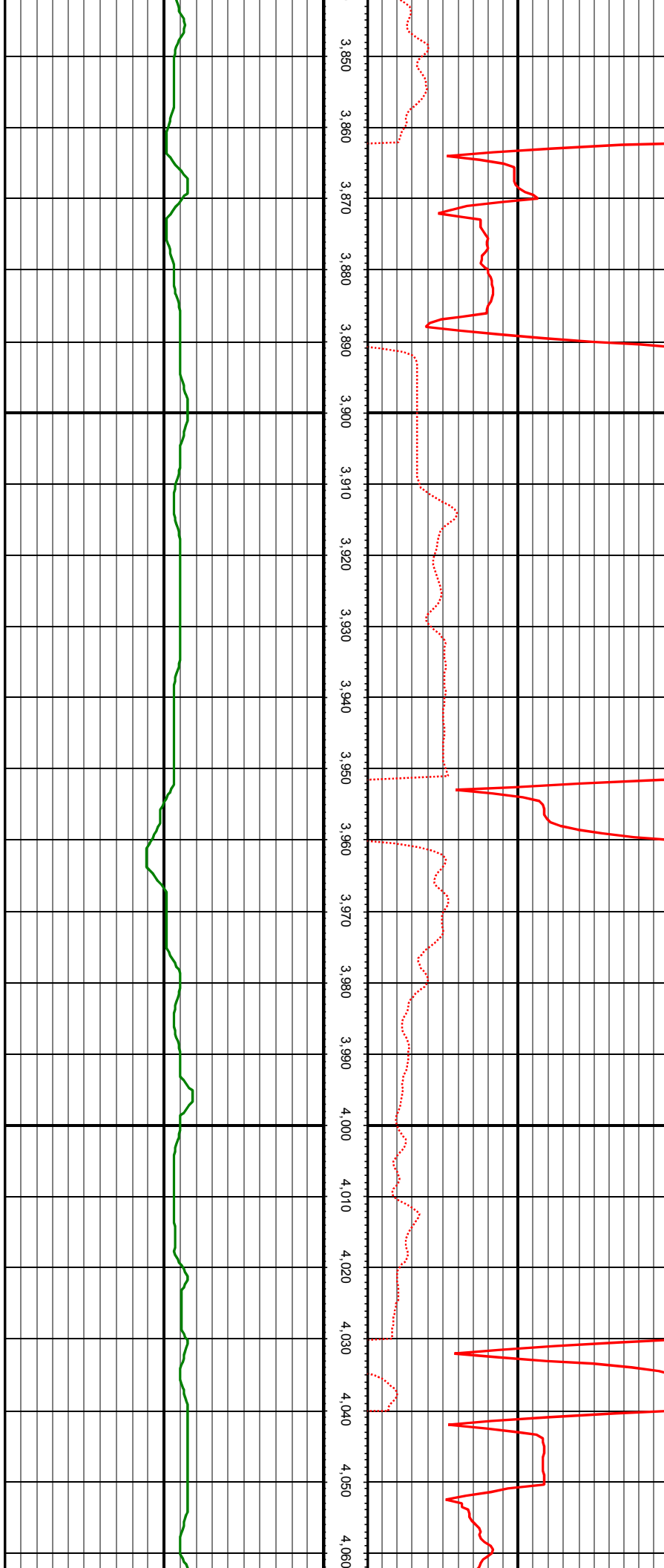
MD: 3543.00 INC: 8.97 AZ: 21.96 TVD: 3512.98 VS: -356.21



MD: 3632.00 INC: 7.74 AZ: 19.94 TVD: 3601.03 VS: -368.15

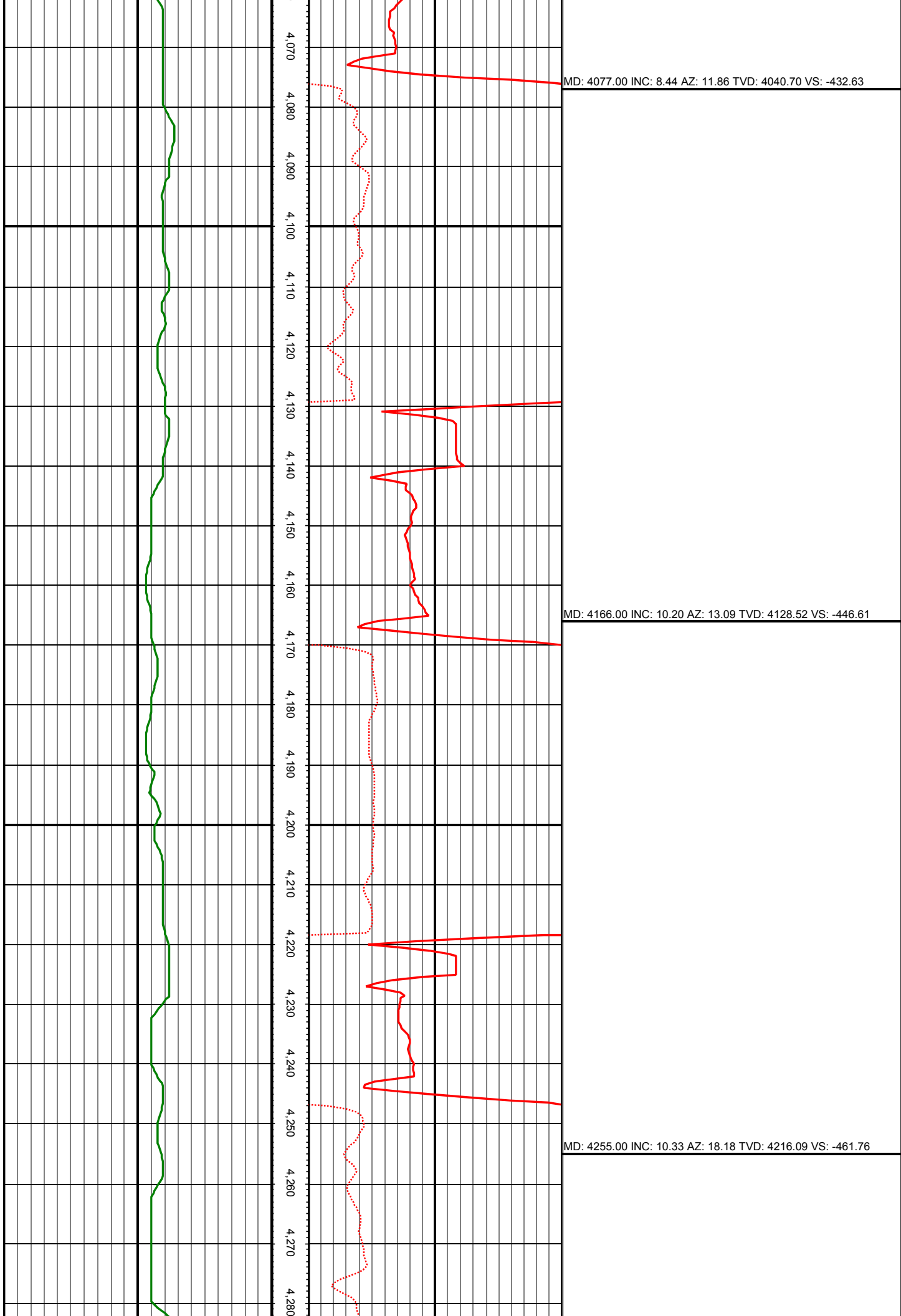
MD: 3721.00 INC: 7.87 AZ: 28.29 TVD: 3689.21 VS: -379.02

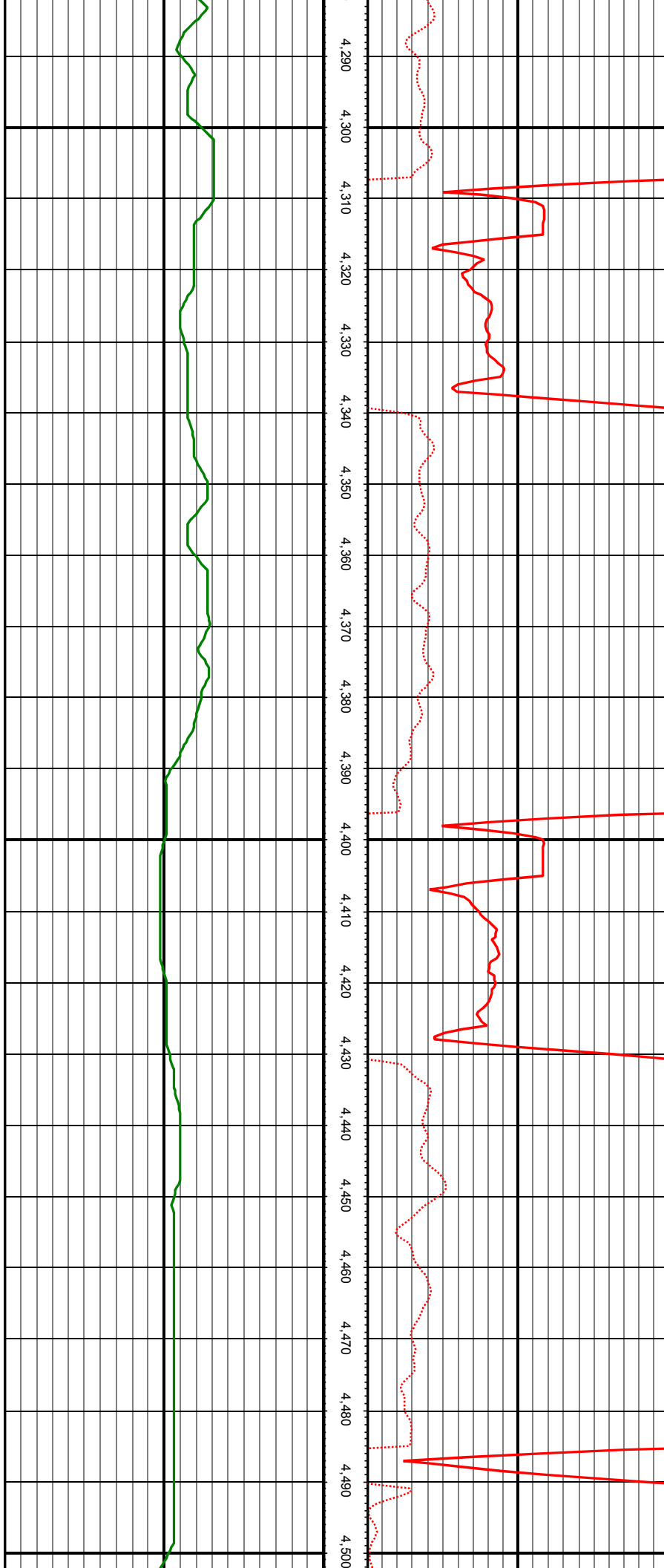
MD: 3810.00 INC: 9.45 AZ: 19.50 TVD: 3777.20 VS: -391.13



MD: 3899.00 INC: 10.46 AZ: 14.93 TVD: 3864.86 VS: -405.70

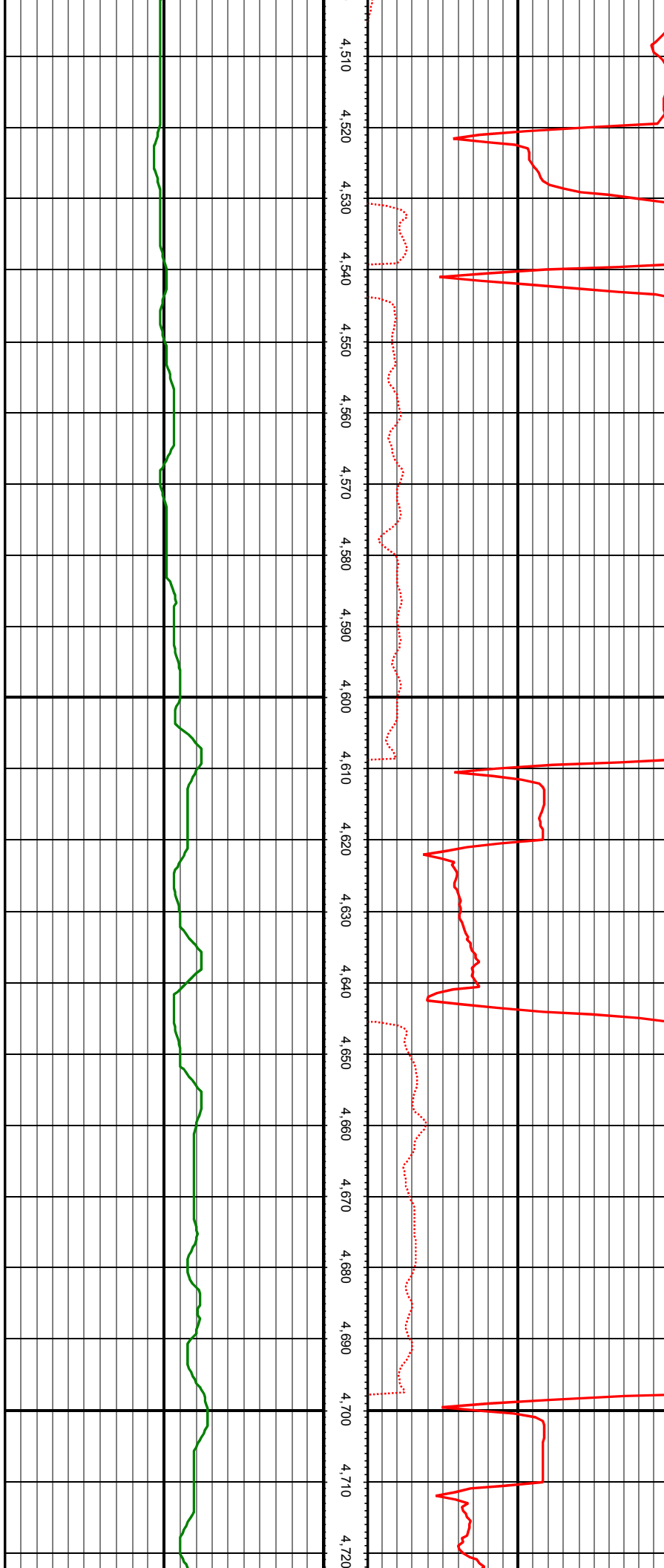
MD: 3988.00 INC: 8.40 AZ: 7.99 TVD: 3952.65 VS: -419.87





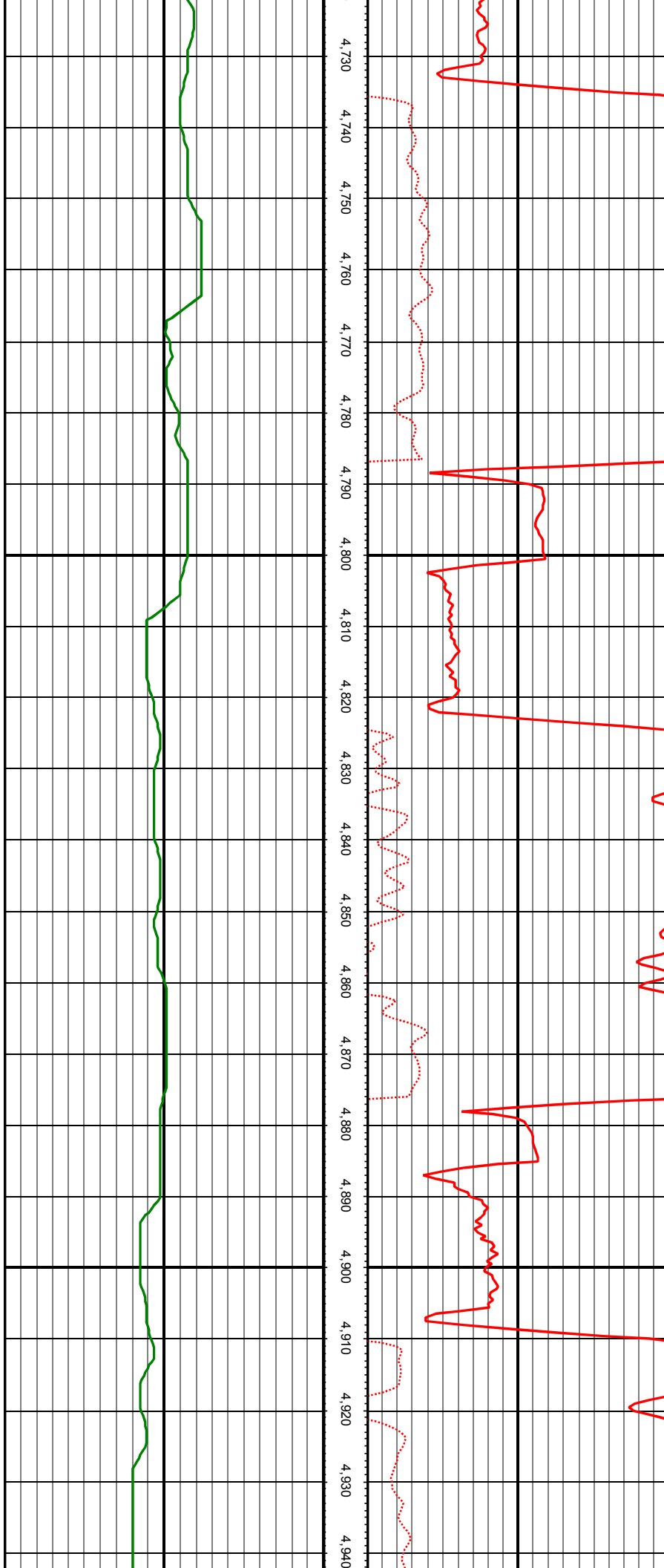
MD: 4344.00 INC: 10.37 AZ: 13.17 TVD: 4303.65 VS: -477.02

MD: 4467.00 INC: 10.55 AZ: 15.20 TVD: 4424.60 VS: -498.52



MD: 4556.00 INC: 9.27 AZ: 10.45 TVD: 4512.28 VS: -513.33

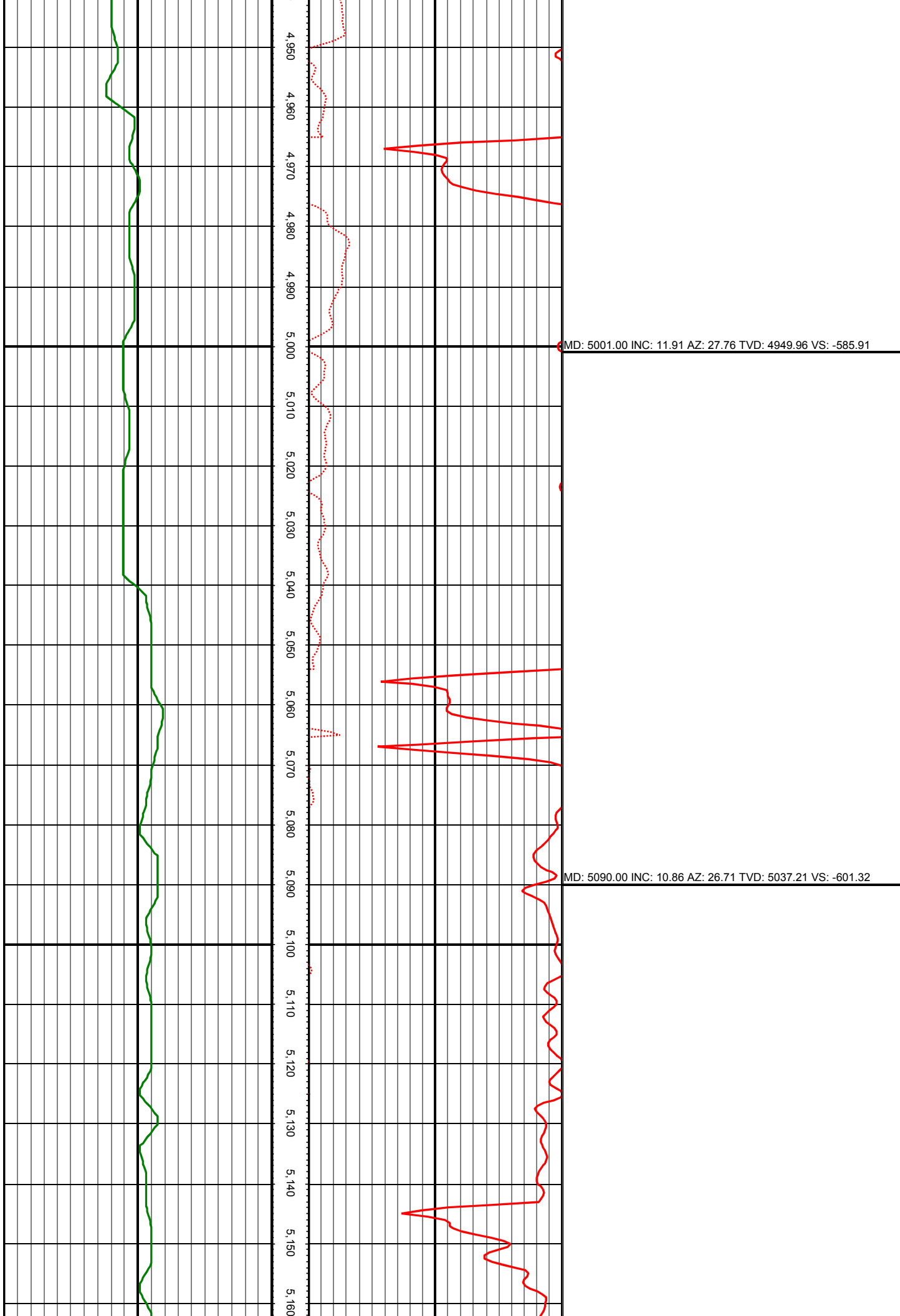
MD: 4645.00 INC: 9.41 AZ: 16.25 TVD: 4600.10 VS: -527.28

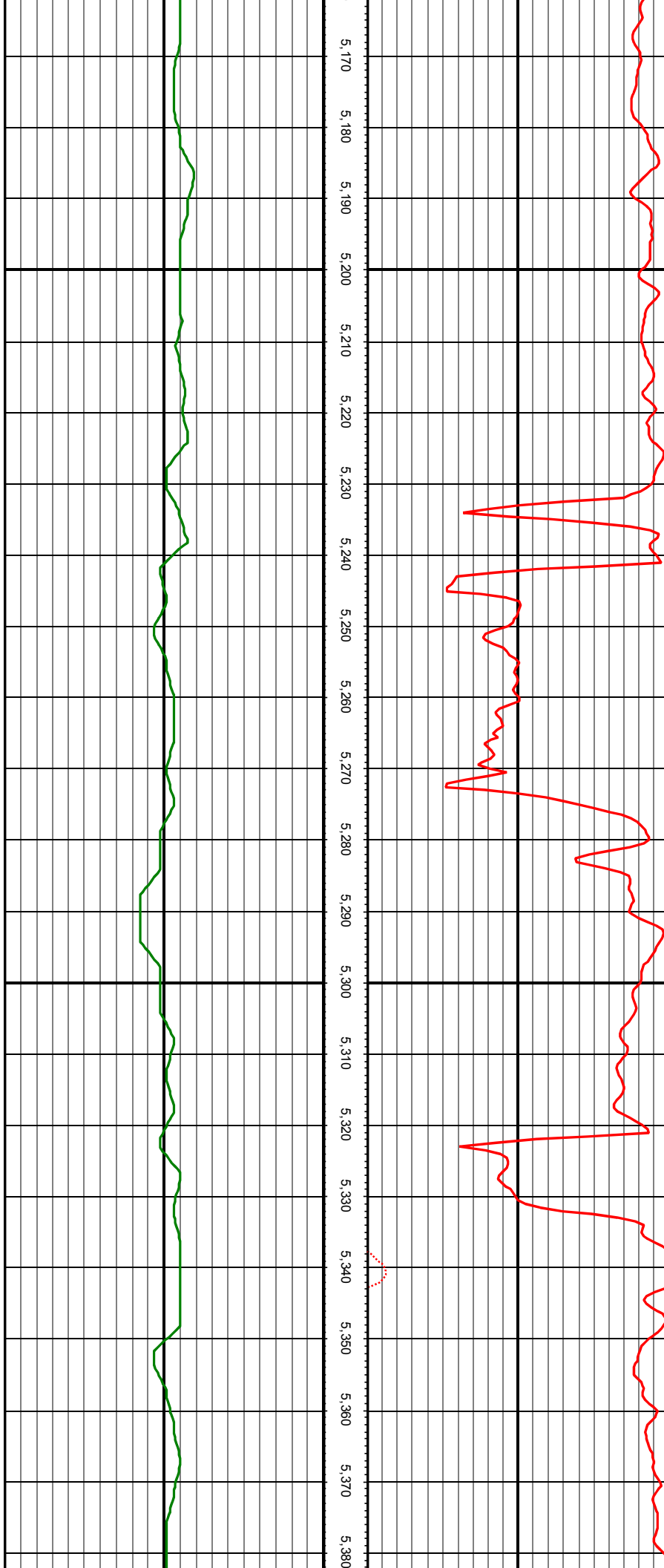


MD: 4734.00 INC: 8.84 AZ: 23.46 TVD: 4687.97 VS: -540.41

MD: 4823.00 INC: 10.77 AZ: 22.84 TVD: 4775.67 VS: -554.19

MD: 4912.00 INC: 12.09 AZ: 28.55 TVD: 4862.91 VS: -569.83

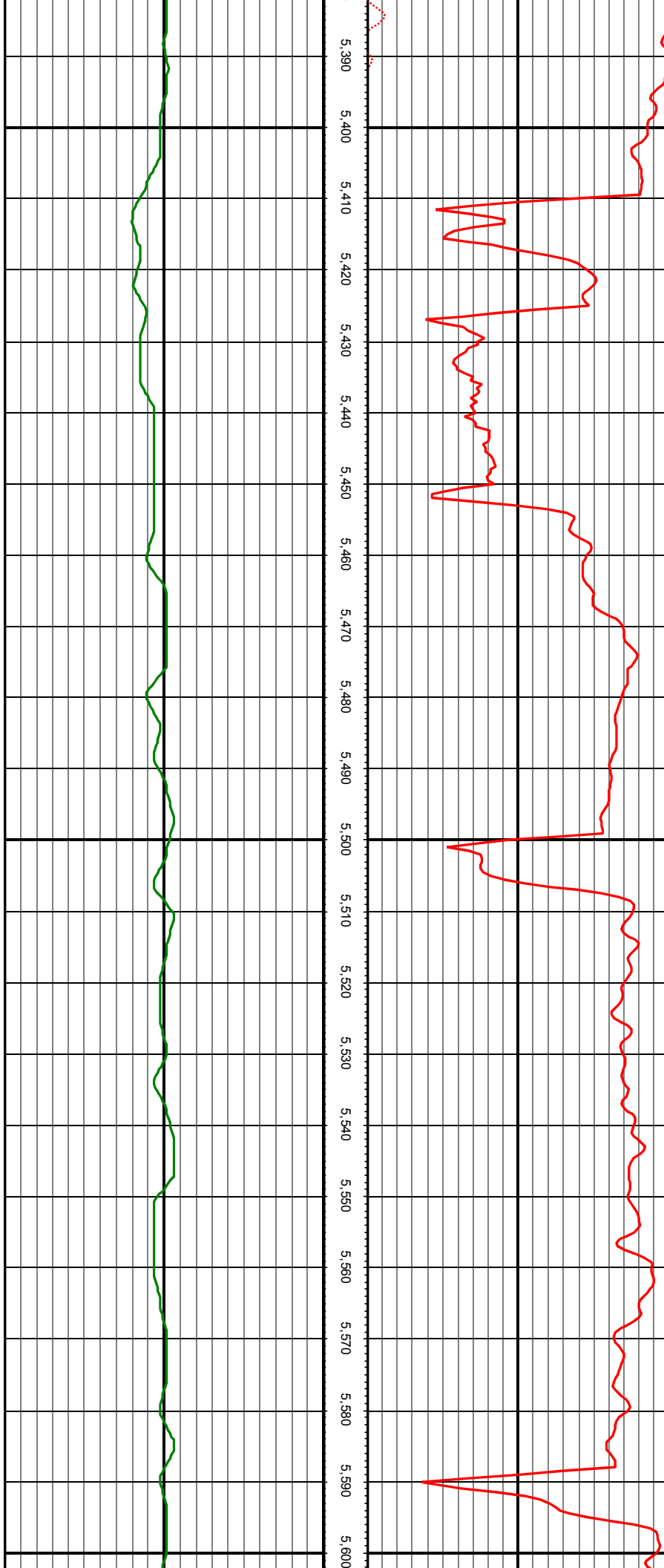




MD: 5179.00 INC: 9.14 AZ: 24.86 TVD: 5124.85 VS: -615.04

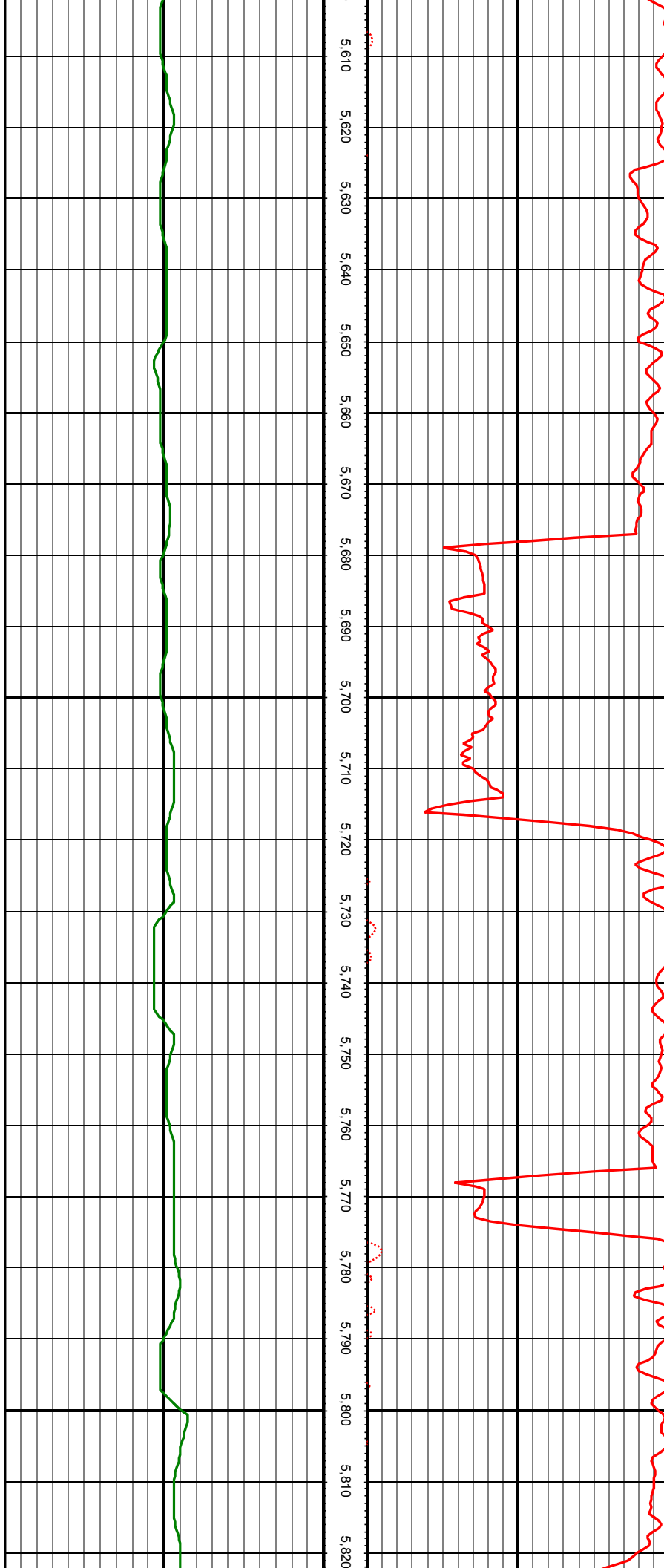
MD: 5268.00 INC: 10.07 AZ: 32.95 TVD: 5212.61 VS: -627.79

MD: 5357.00 INC: 9.23 AZ: 30.58 TVD: 5300.35 VS: -640.26



MD: 5447.00 INC: 10.55 AZ: 25.92 TVD: 5389.01 VS: -653.69

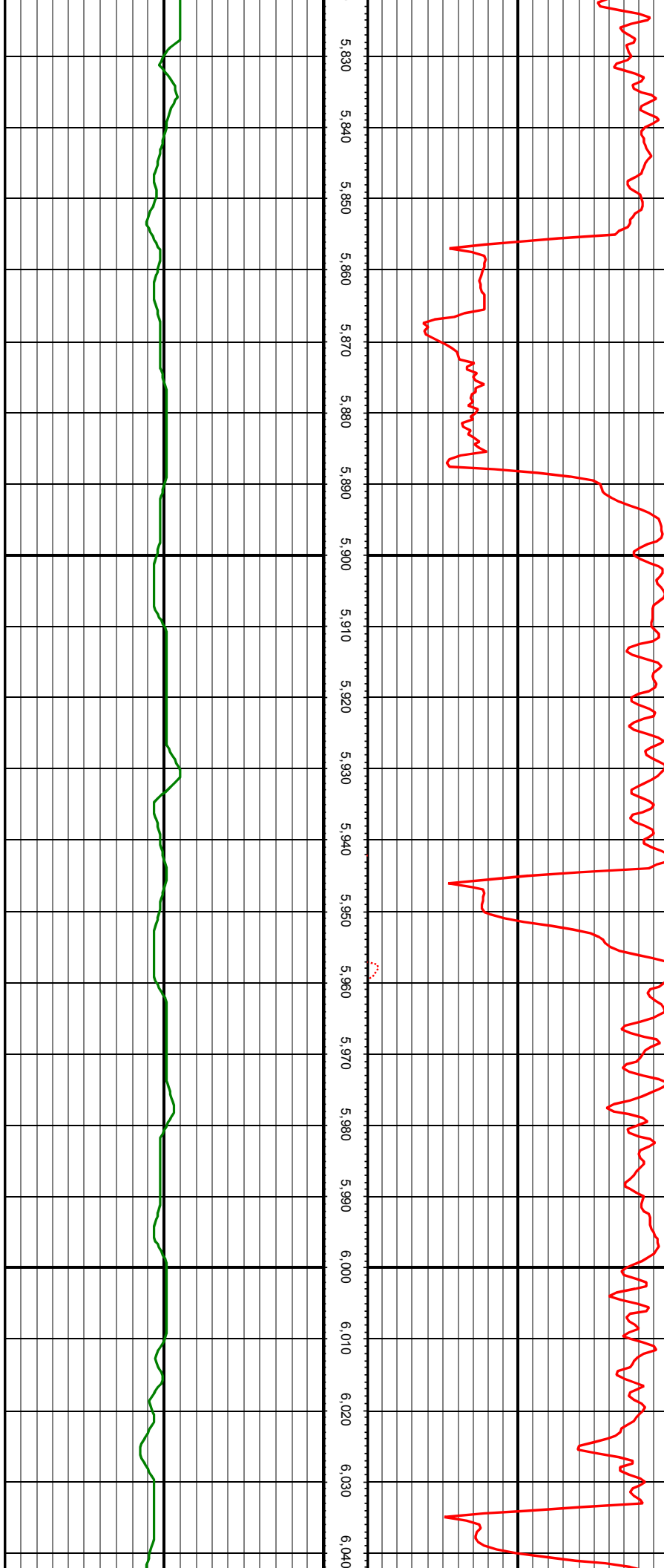
MD: 5536.00 INC: 9.98 AZ: 23.19 TVD: 5476.59 VS: -667.93



MD: 5625.00 INC: 8.48 AZ: 22.93 TVD: 5564.43 VS: -680.91

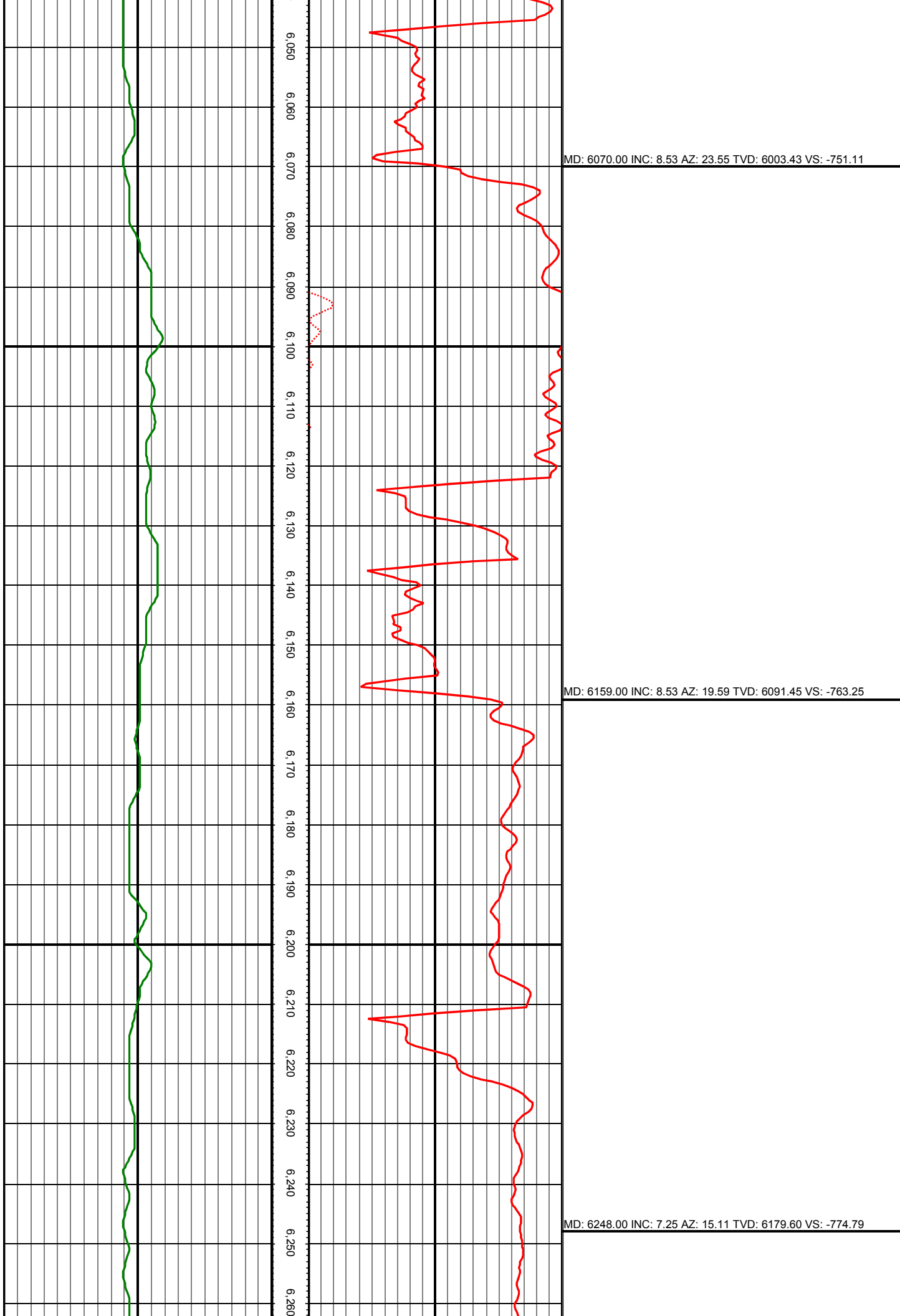
MD: 5714.00 INC: 10.07 AZ: 15.99 TVD: 5652.27 VS: -694.31

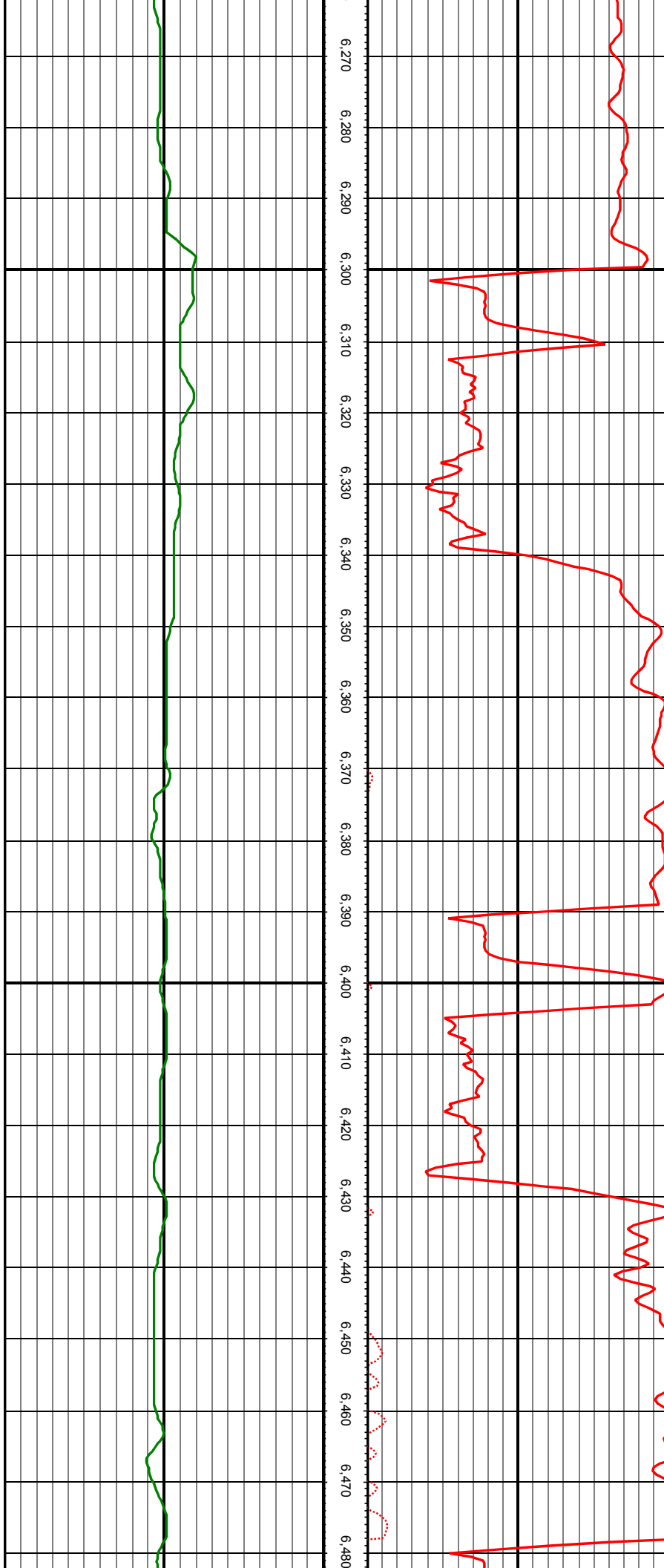
MD: 5803.00 INC: 8.84 AZ: 10.36 TVD: 5740.06 VS: -708.43



MD: 5892.00 INC: 10.51 AZ: 9.57 TVD: 5827.79 VS: -723.09

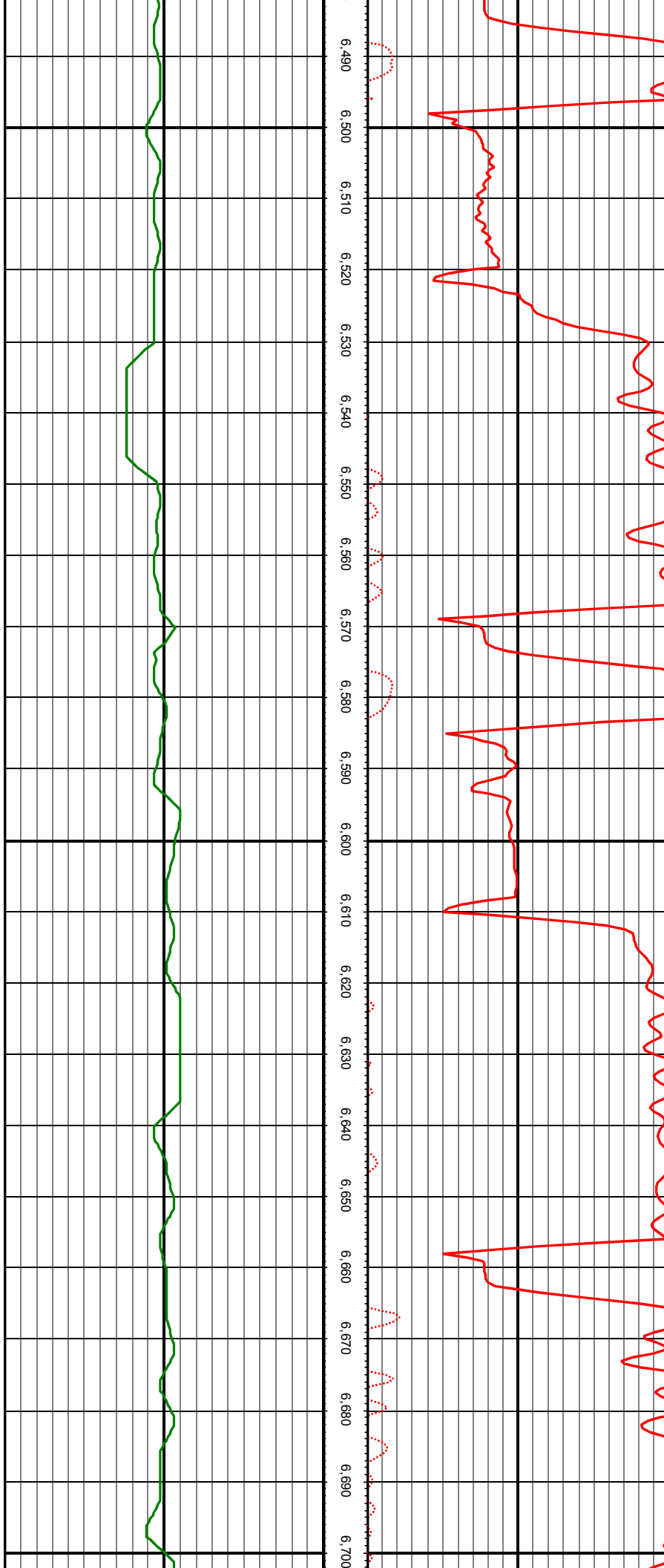
MD: 5981.00 INC: 9.19 AZ: 6.49 TVD: 5915.48 VS: -738.09





MD: 6337.00 INC: 7.56 AZ: 15.55 TVD: 6267.86 VS: -785.77

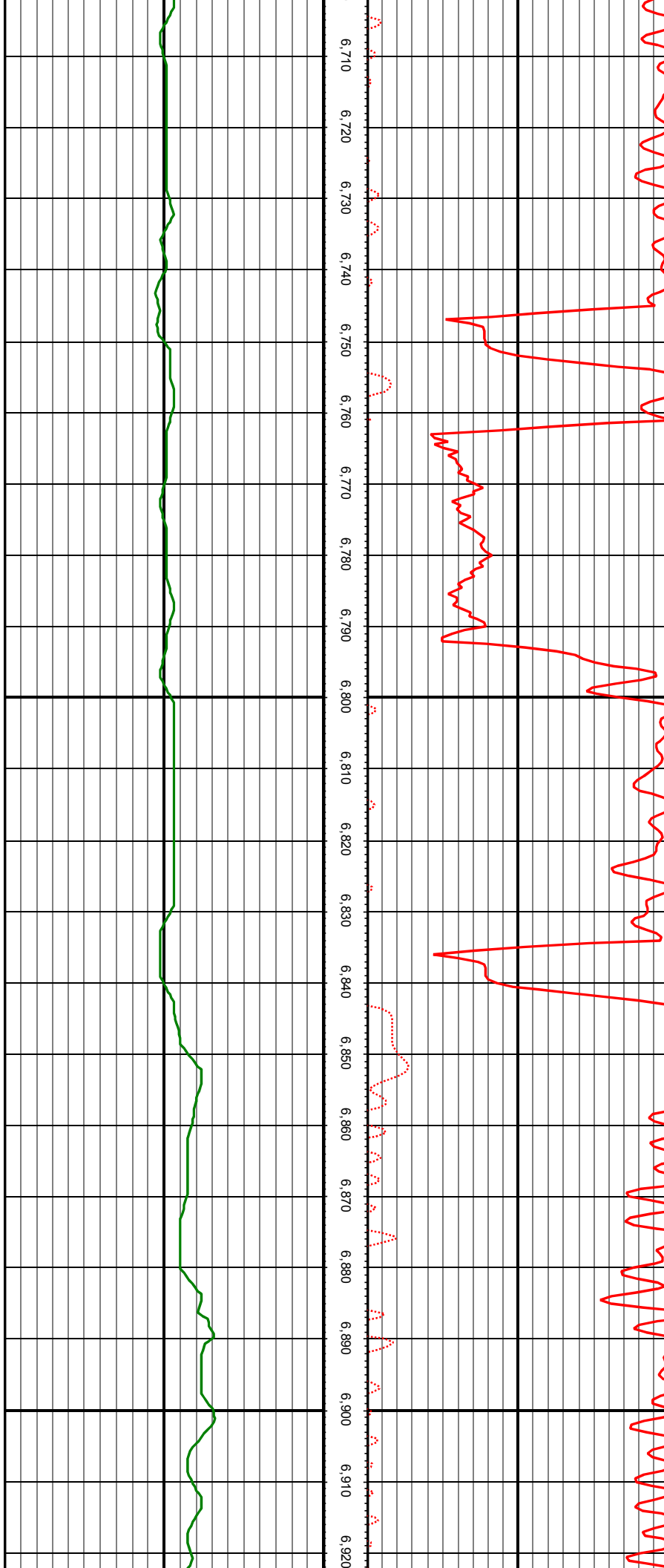
MD: 6426.00 INC: 8.84 AZ: 11.42 TVD: 6355.95 VS: -798.04



MD: 6516.00 INC: 9.85 AZ: 14.76 TVD: 6444.76 VS: -812.17

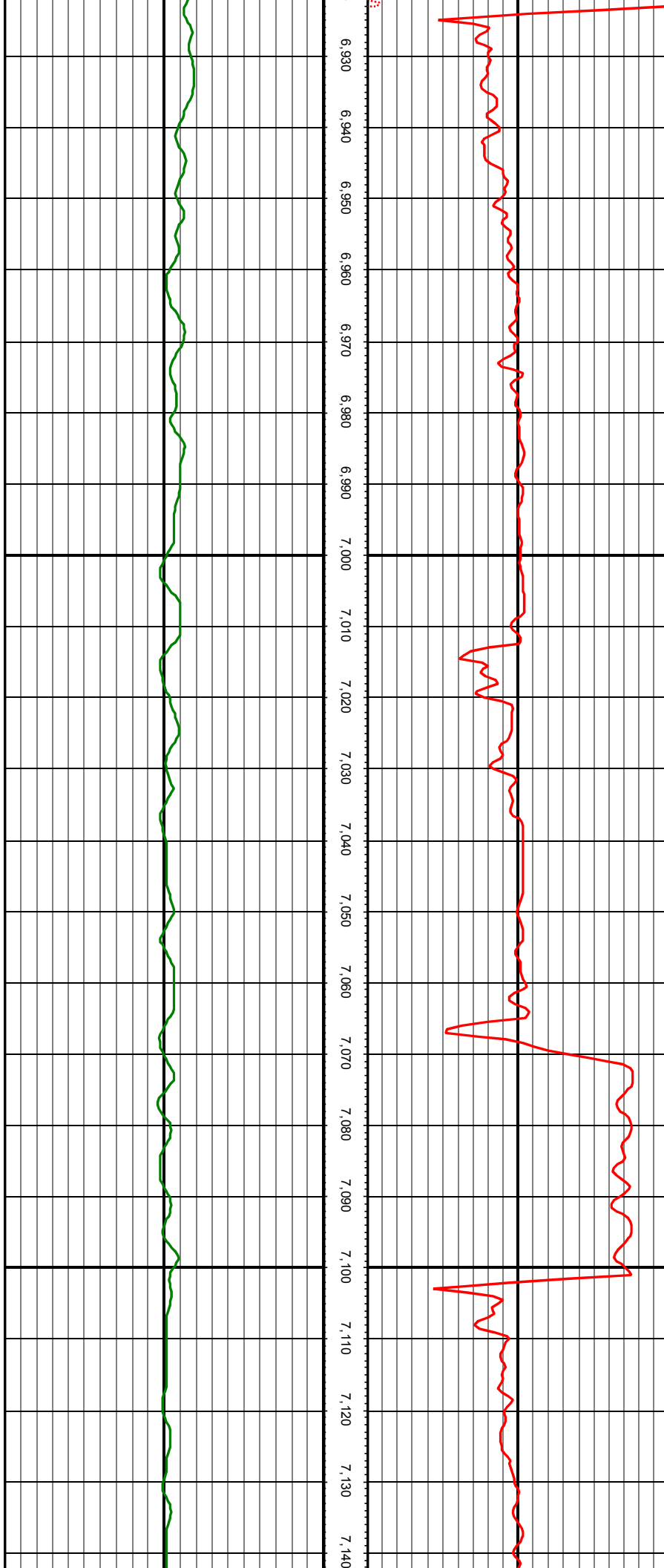
MD: 6605.00 INC: 10.59 AZ: 17.57 TVD: 6532.34 VS: -827.21

MD: 6694.00 INC: 9.32 AZ: 12.56 TVD: 6620.00 VS: -841.93



MD: 6783.00 INC: 7.34 AZ: 17.48 TVD: 6708.06 VS: -854.30

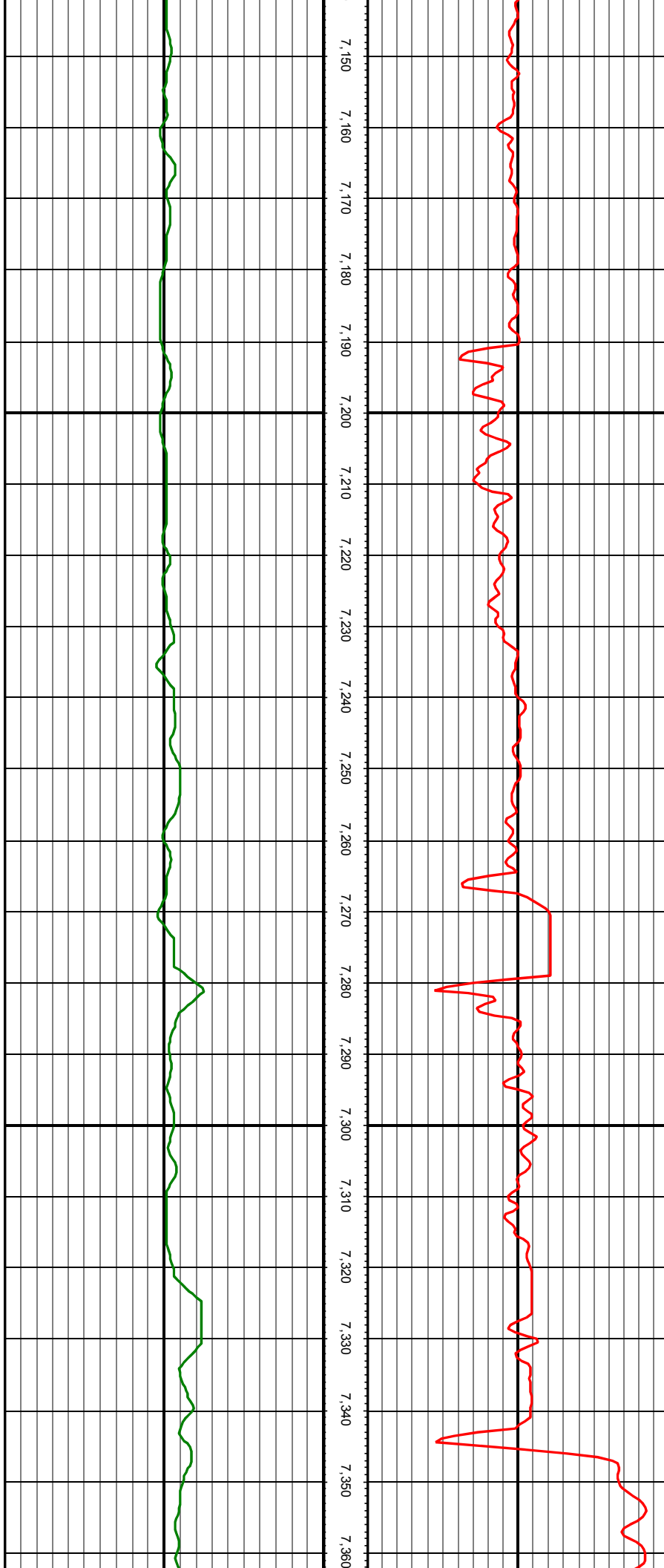
MD: 6872.00 INC: 6.42 AZ: 11.59 TVD: 6796.42 VS: -864.52



MD: 6961.00 INC: 6.90 AZ: 48.77 TVD: 6884.86 VS: -872.79

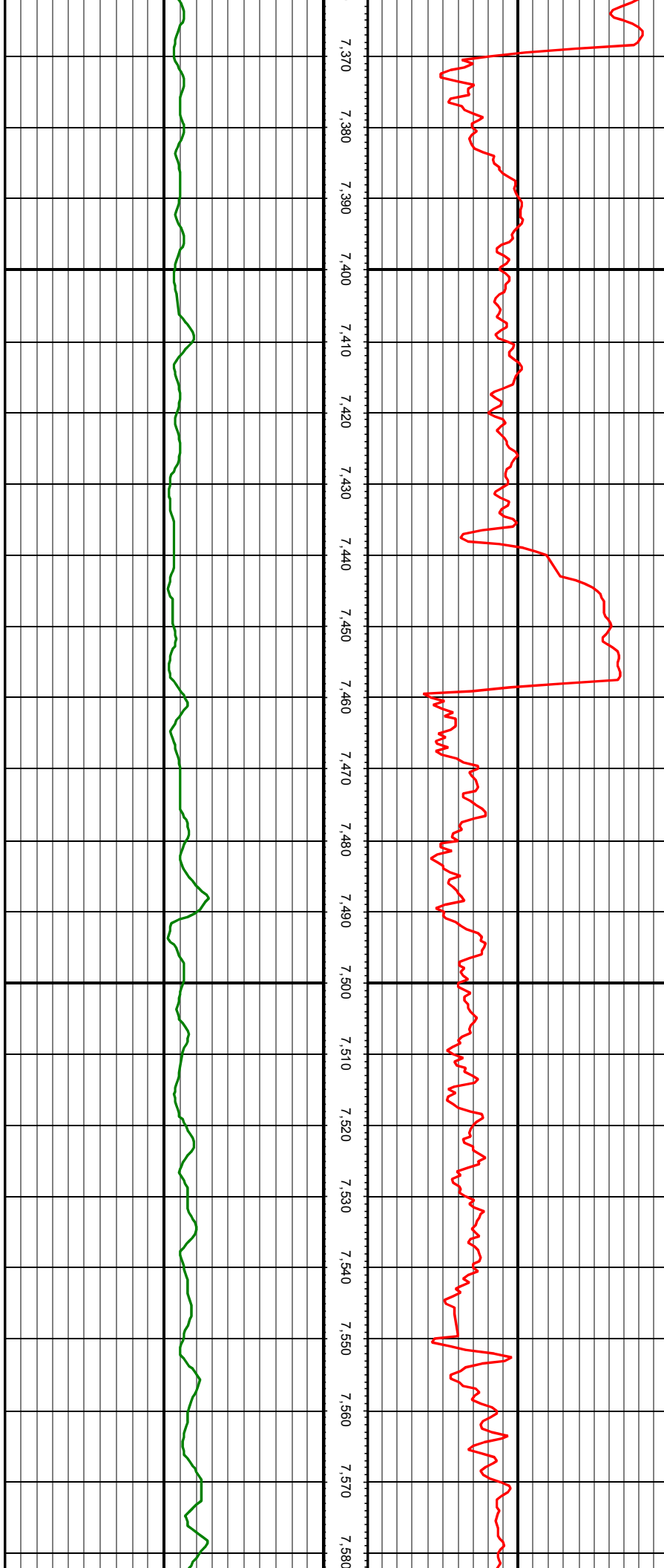
MD: 7051.00 INC: 13.80 AZ: 97.72 TVD: 6973.49 VS: -874.53

MD: 7140.00 INC: 11.25 AZ: 129.19 TVD: 7060.46 VS: -867.17



MD: 7229.00 INC: 15.87 AZ: 174.01 TVD: 7147.18 VS: -849.32

MD: 7318.00 INC: 22.55 AZ: 185.09 TVD: 7231.21 VS: -820.19



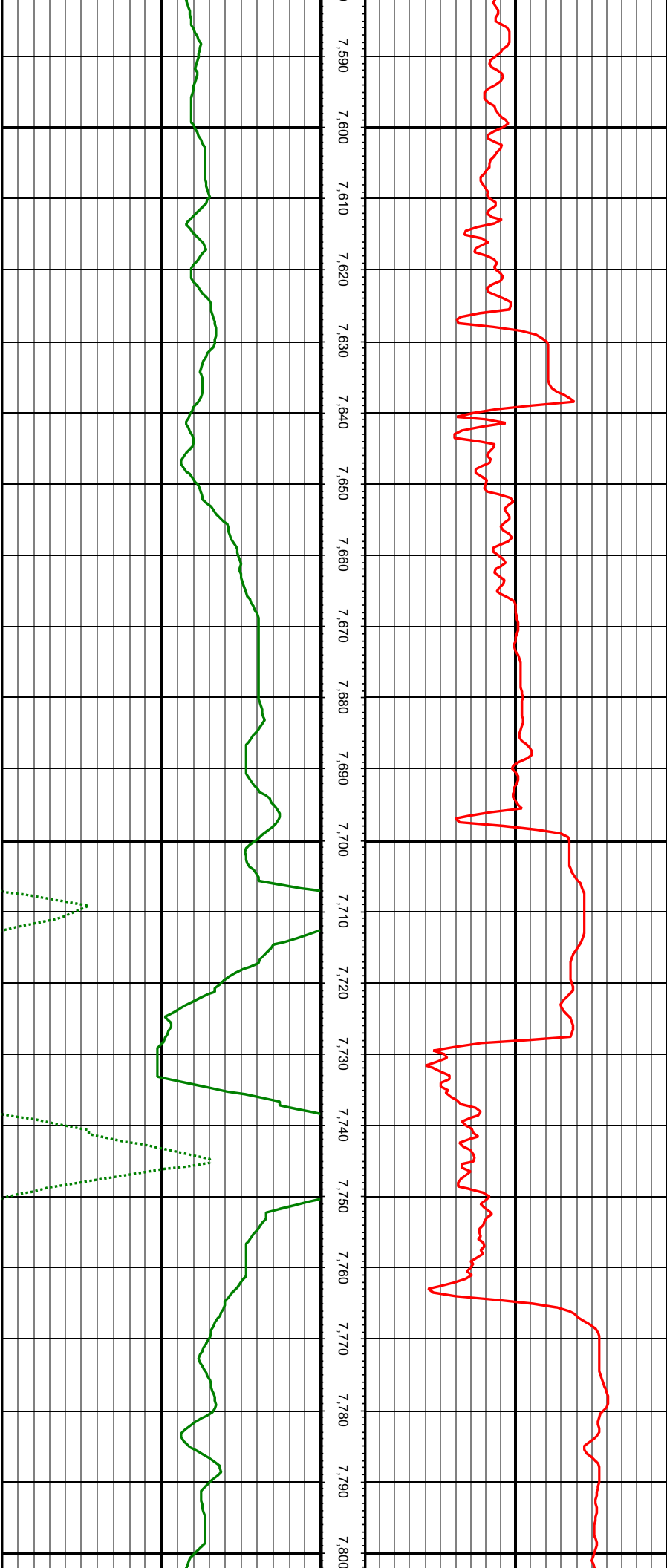
MD: 7408.00 INC: 28.04 AZ: 186.67 TVD: 7312.55 VS: -782.08

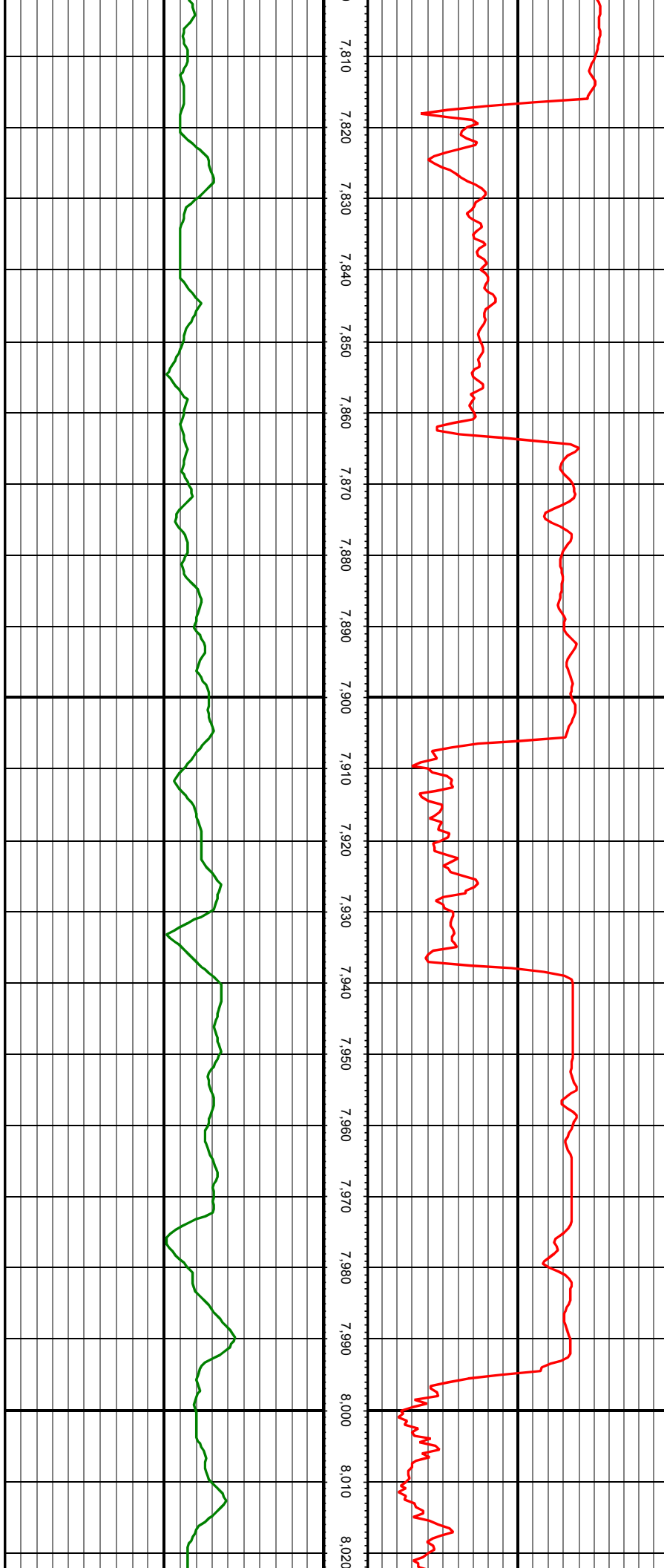
MD: 7497.00 INC: 35.16 AZ: 183.77 TVD: 7388.31 VS: -735.79

MD: 7586.00 INC: 45.36 AZ: 179.90 TVD: 7456.15 VS: -678.46

MD: 7675.00 INC: 54.68 AZ: 184.47 TVD: 7513.28 VS: -610.52

MD: 7764.00 INC: 60.75 AZ: 182.63 TVD: 7560.80 VS: -535.61





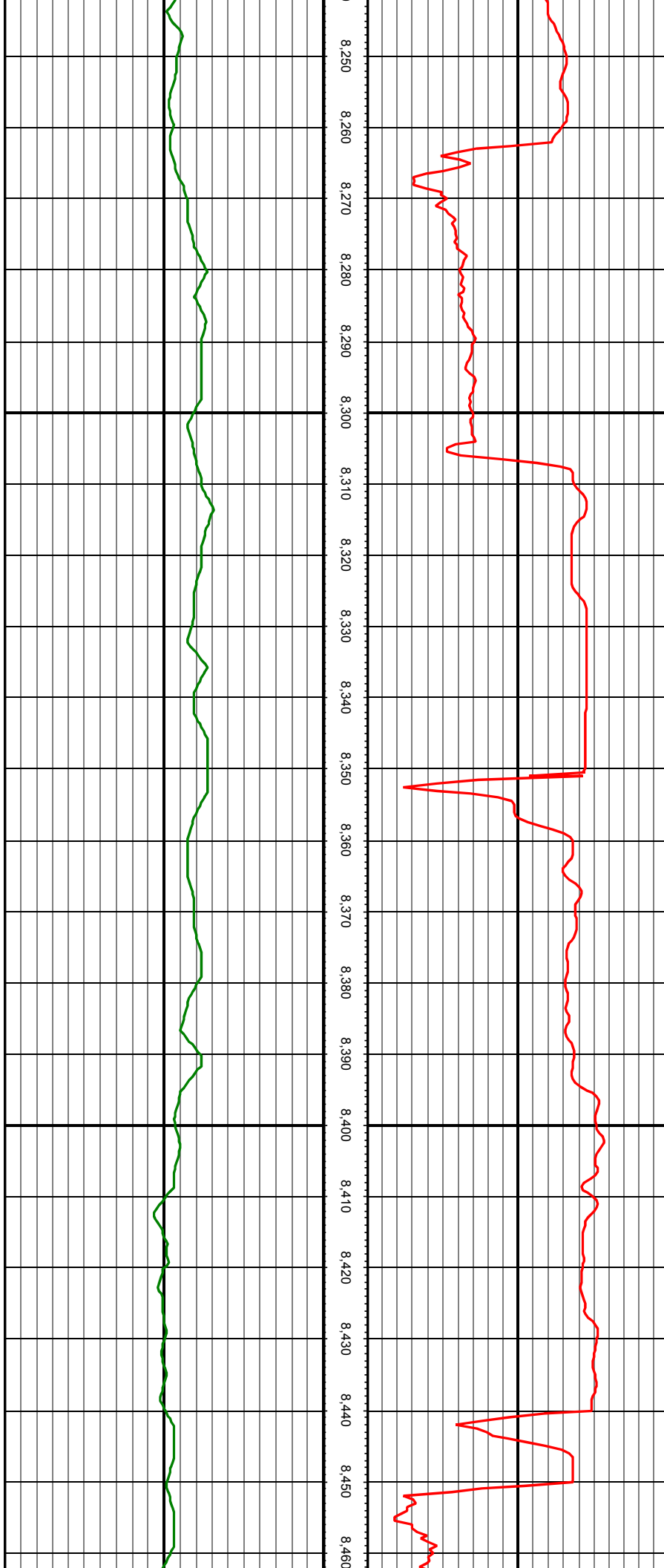
MD: 7853.00 INC: 65.05 AZ: 181.22 TVD: 7601.34 VS: -456.54

MD: 7942.00 INC: 68.57 AZ: 178.85 TVD: 7636.38 VS: -374.78

MD: 8031.00 INC: 74.51 AZ: 178.41 TVD: 7664.55 VS: -290.40

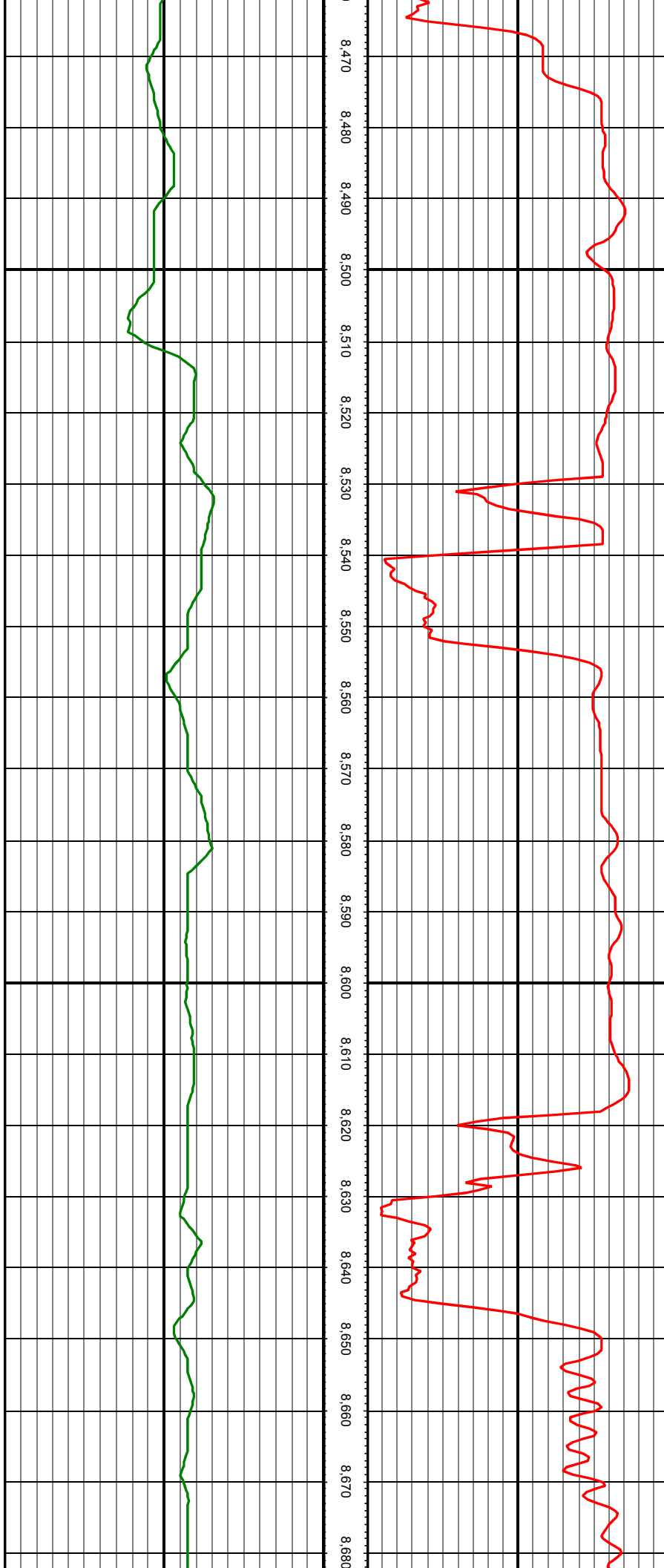
MD: 8120.00 INC: 79.65 AZ: 177.71 TVD: 7684.45 VS: -203.69

MD: 8209.00 INC: 83.12 AZ: 178.14 TVD: 7697.78 VS: -115.71



MD: 8298.00 INC: 90.86 AZ: 178.23 TVD: 7702.45 VS: -26.90

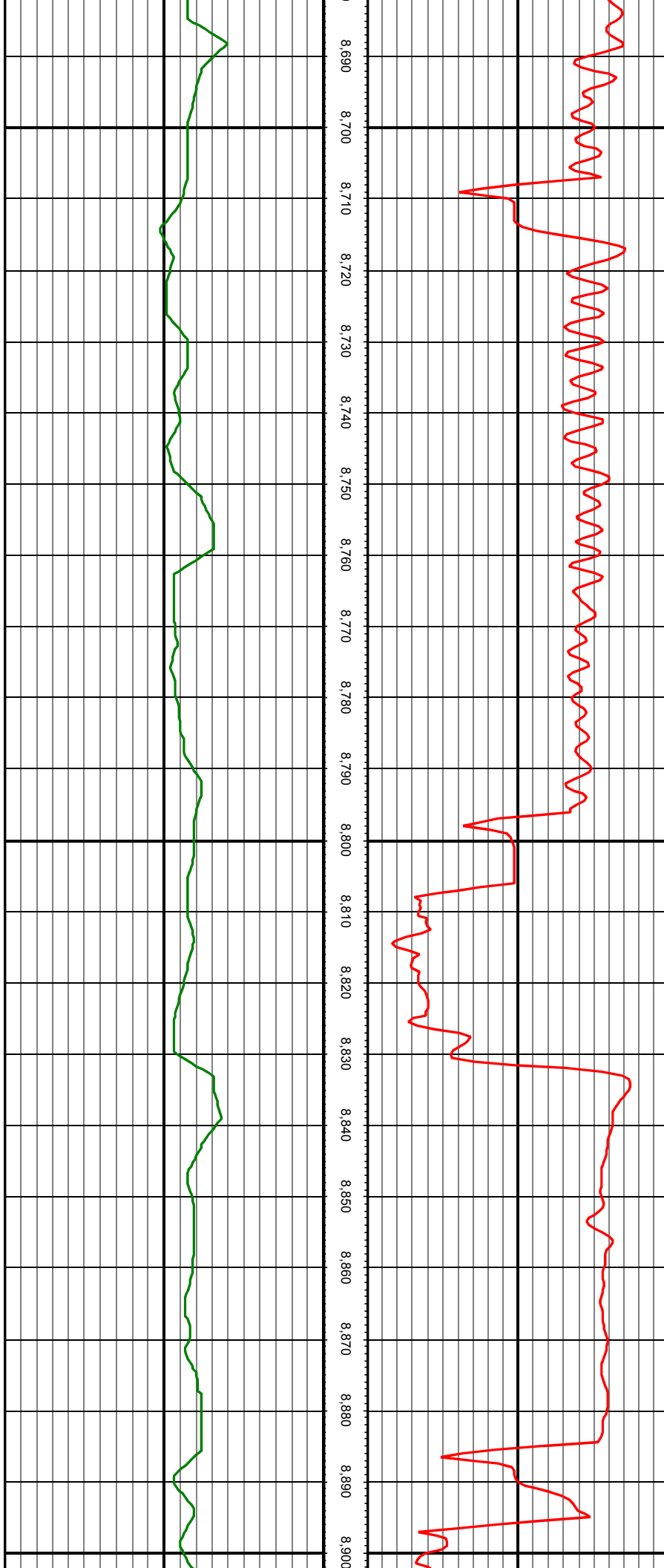
MD: 8387.00 INC: 91.91 AZ: 177.18 TVD: 7700.29 VS: 62.06



MD: 8476.00 INC: 90.29 AZ: 176.47 TVD: 7698.59 VS: 151.00

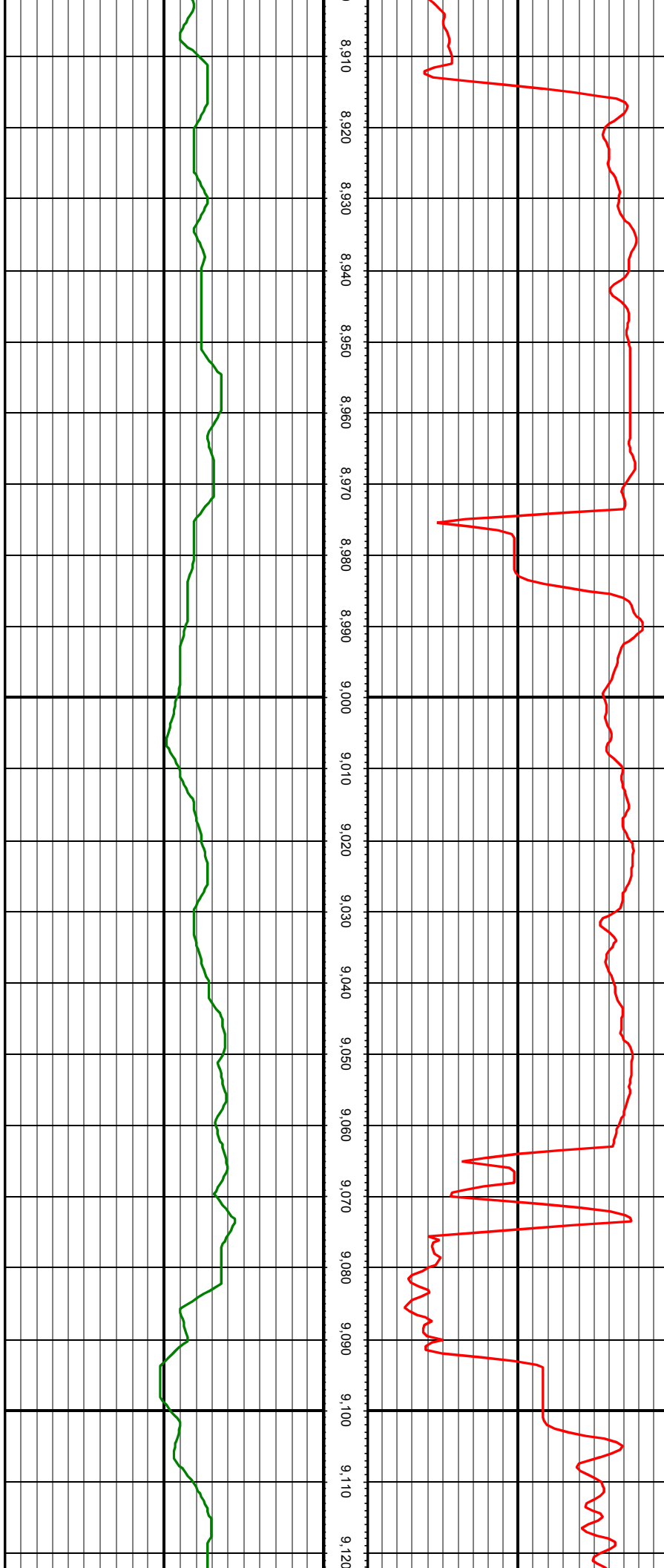
MD: 8566.00 INC: 90.07 AZ: 177.44 TVD: 7698.30 VS: 240.97

MD: 8655.00 INC: 88.88 AZ: 179.11 TVD: 7699.12 VS: 329.96



MD: 8744.00 INC: 88.22 AZ: 178.76 TVD: 7701.37 VS: 418.93

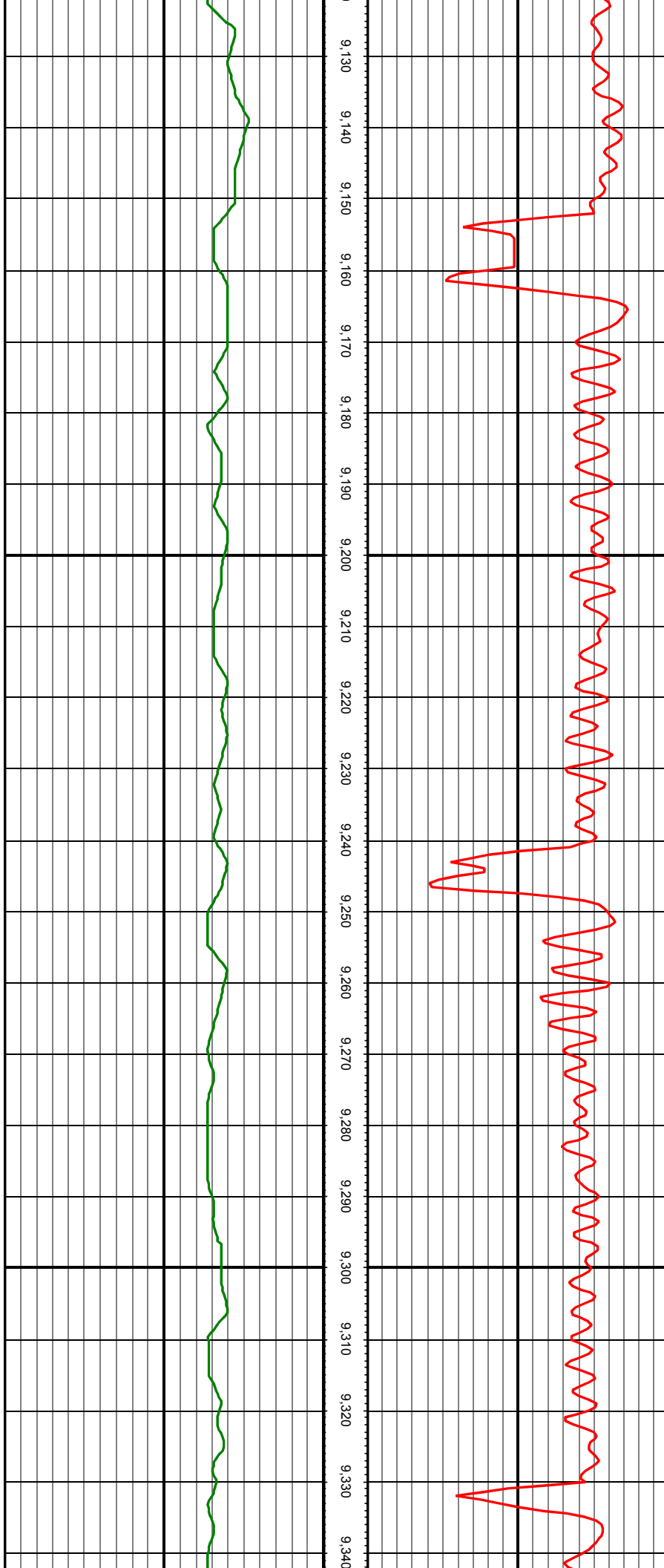
MD: 8833.00 INC: 87.65 AZ: 180.61 TVD: 7704.58 VS: 507.85



MD: 8922.00 INC: 88.70 AZ: 182.10 TVD: 7707.41 VS: 596.69

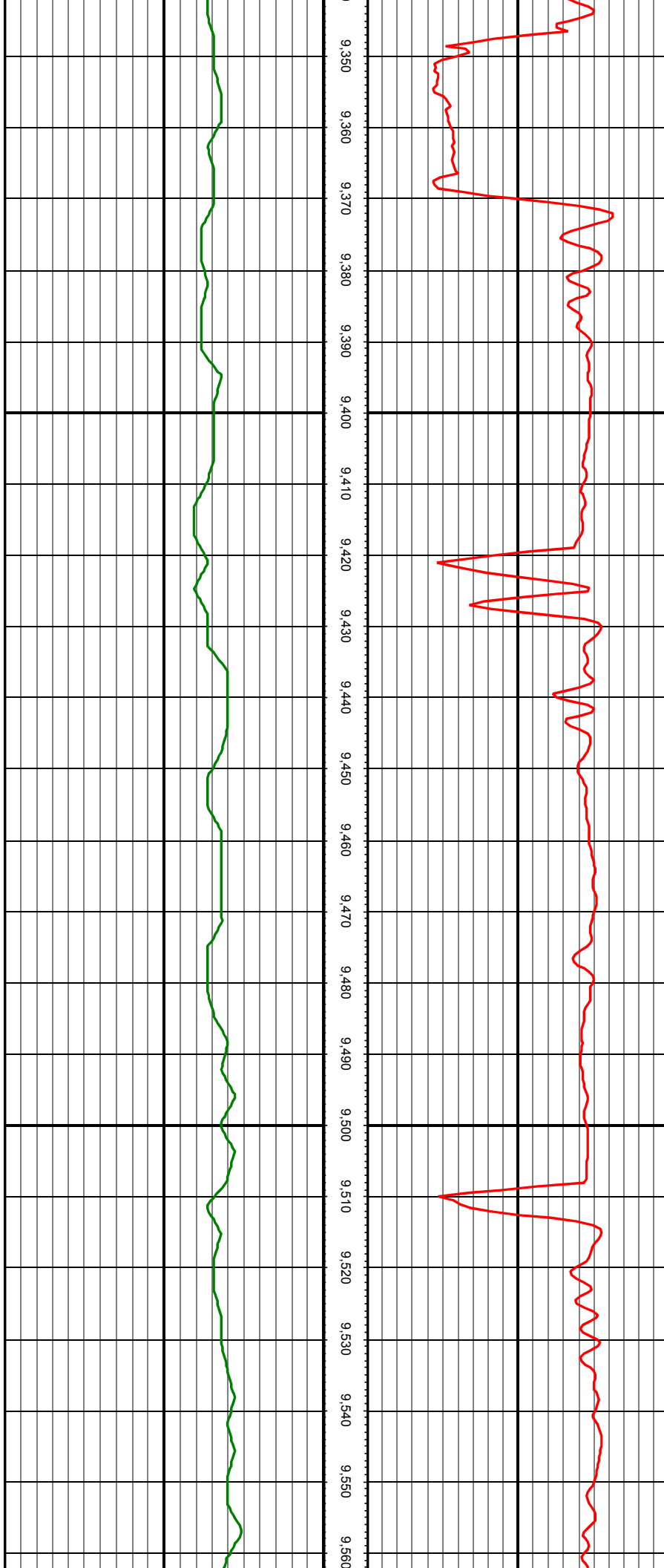
MD: 9011.00 INC: 88.26 AZ: 182.10 TVD: 7709.77 VS: 685.48

MD: 9100.00 INC: 89.63 AZ: 181.22 TVD: 7711.41 VS: 774.33



MD: 9189.00 INC: 89.36 AZ: 180.69 TVD: 7712.20 VS: 863.25

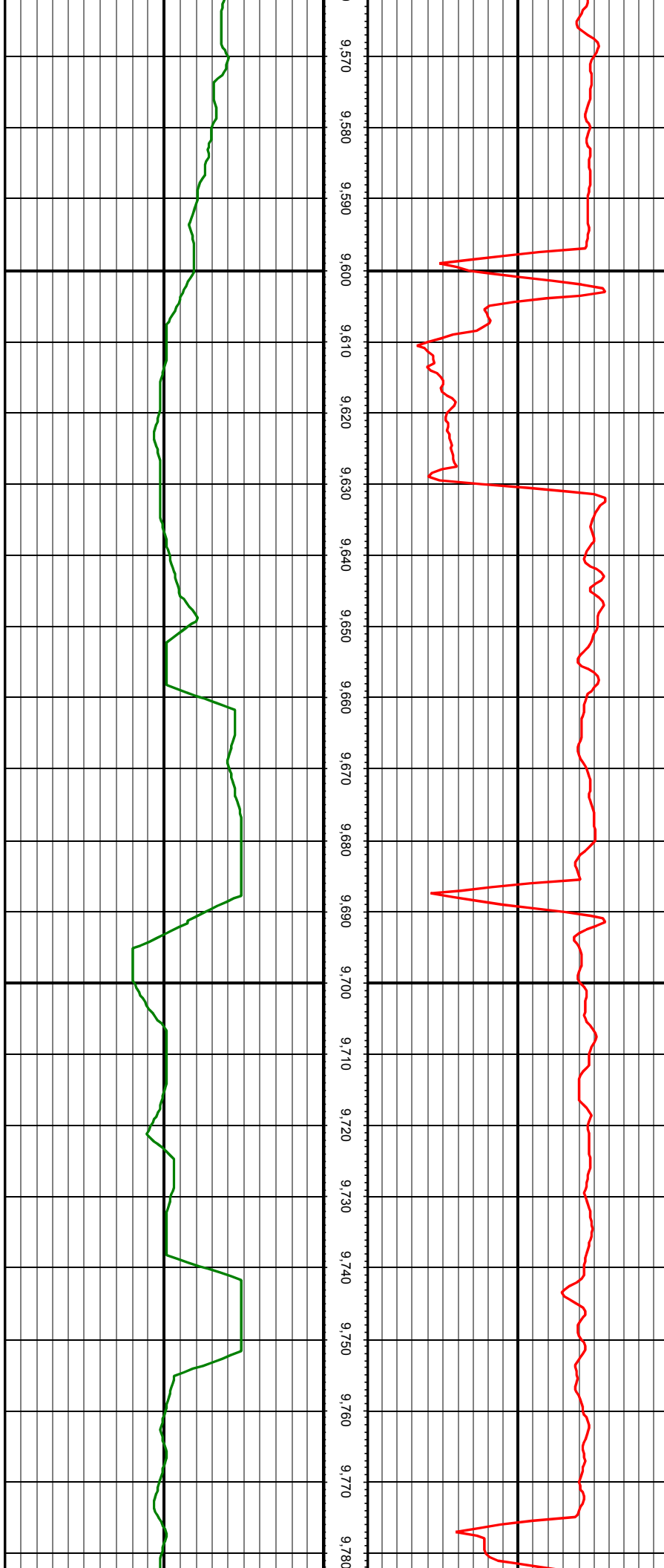
MD: 9278.00 INC: 89.19 AZ: 180.25 TVD: 7713.32 VS: 952.19



MD: 9367.00 INC: 90.81 AZ: 180.25 TVD: 7713.32 VS: 1041.14

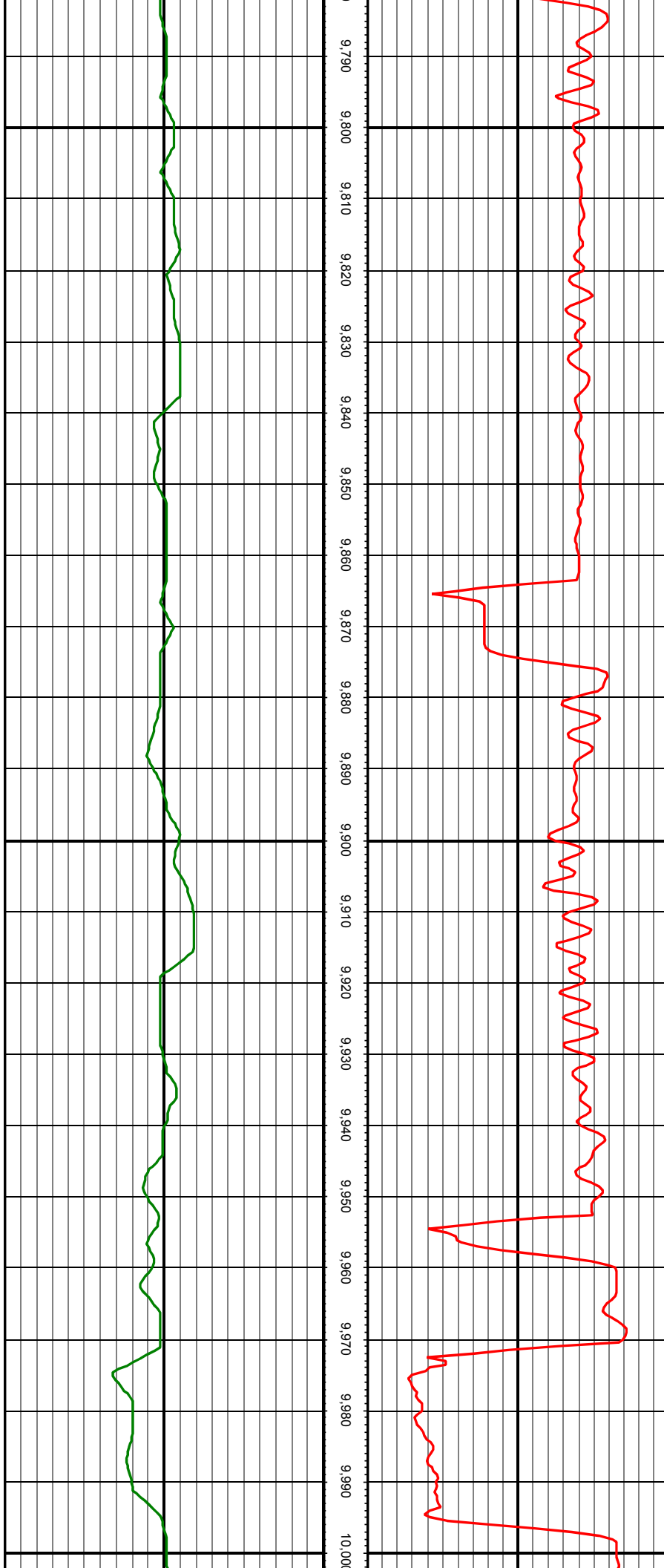
MD: 9456.00 INC: 91.30 AZ: 179.81 TVD: 7711.68 VS: 1130.10

MD: 9545.00 INC: 91.43 AZ: 179.02 TVD: 7709.56 VS: 1219.06



MD: 9634.00 INC: 91.08 AZ: 180.78 TVD: 7707.61 VS: 1308.01

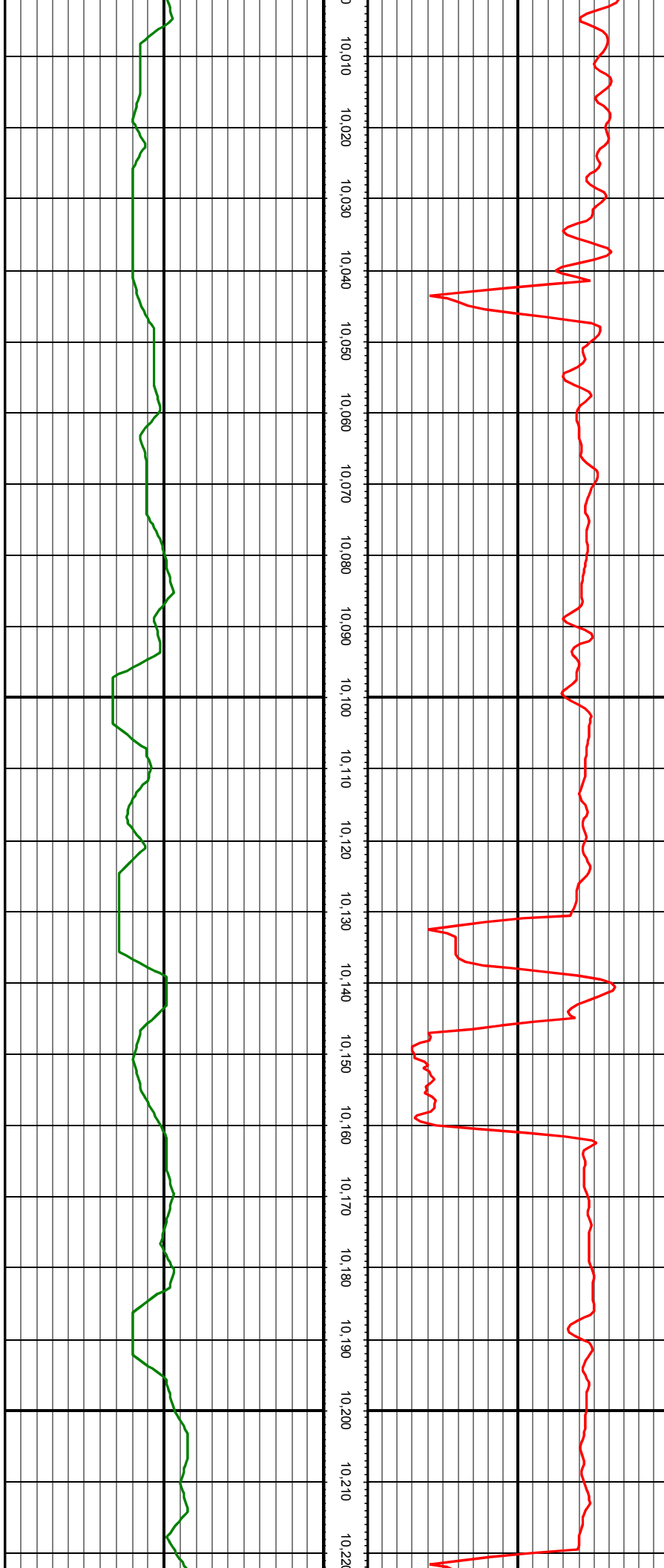
MD: 9723.00 INC: 90.95 AZ: 180.17 TVD: 7706.04 VS: 1396.94



MD: 9812.00 INC: 90.68 AZ: 179.81 TVD: 7704.77 VS: 1485.90

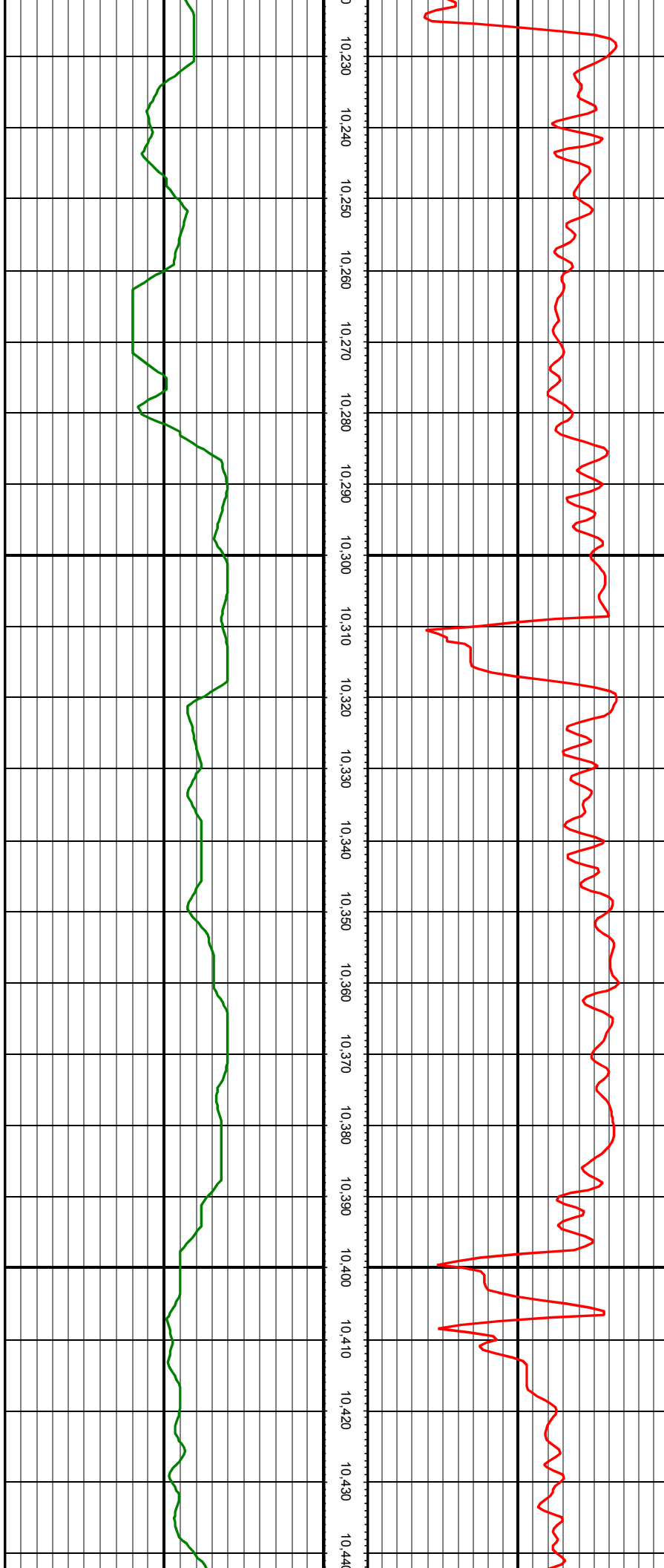
MD: 9901.00 INC: 90.42 AZ: 179.29 TVD: 7703.92 VS: 1574.88

MD: 9990.00 INC: 90.42 AZ: 181.92 TVD: 7703.26 VS: 1663.81



MD: 10080.00 INC: 90.77 AZ: 181.66 TVD: 7702.33 VS: 1753.66

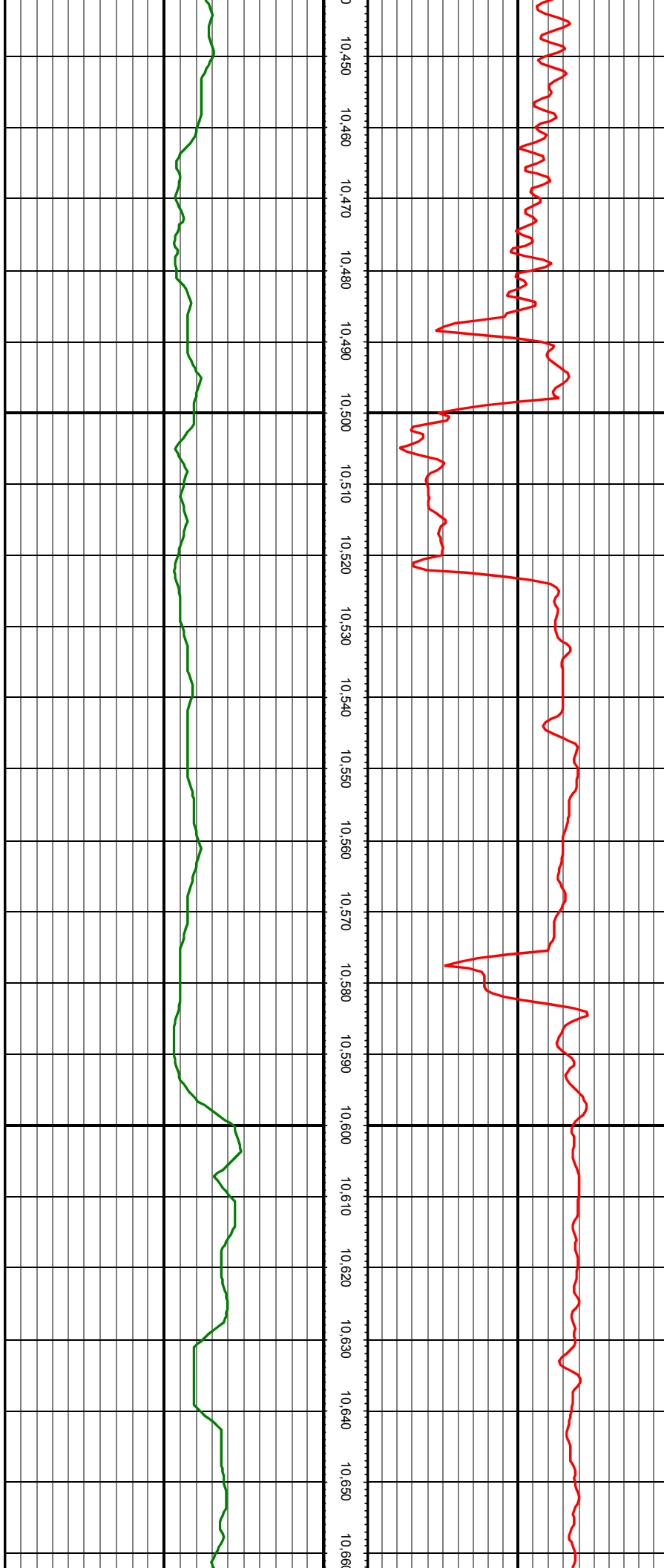
MD: 10169.00 INC: 88.48 AZ: 180.96 TVD: 7702.91 VS: 1842.55



MD: 10258.00 INC: 88.09 AZ: 180.25 TVD: 7705.58 VS: 1931.45

MD: 10347.00 INC: 88.18 AZ: 179.38 TVD: 7708.47 VS: 2020.38

MD: 10436.00 INC: 88.00 AZ: 178.67 TVD: 7711.44 VS: 2109.32



MD: 10525.00 INC: 89.71 AZ: 179.38 TVD: 7713.22 VS: 2198.30

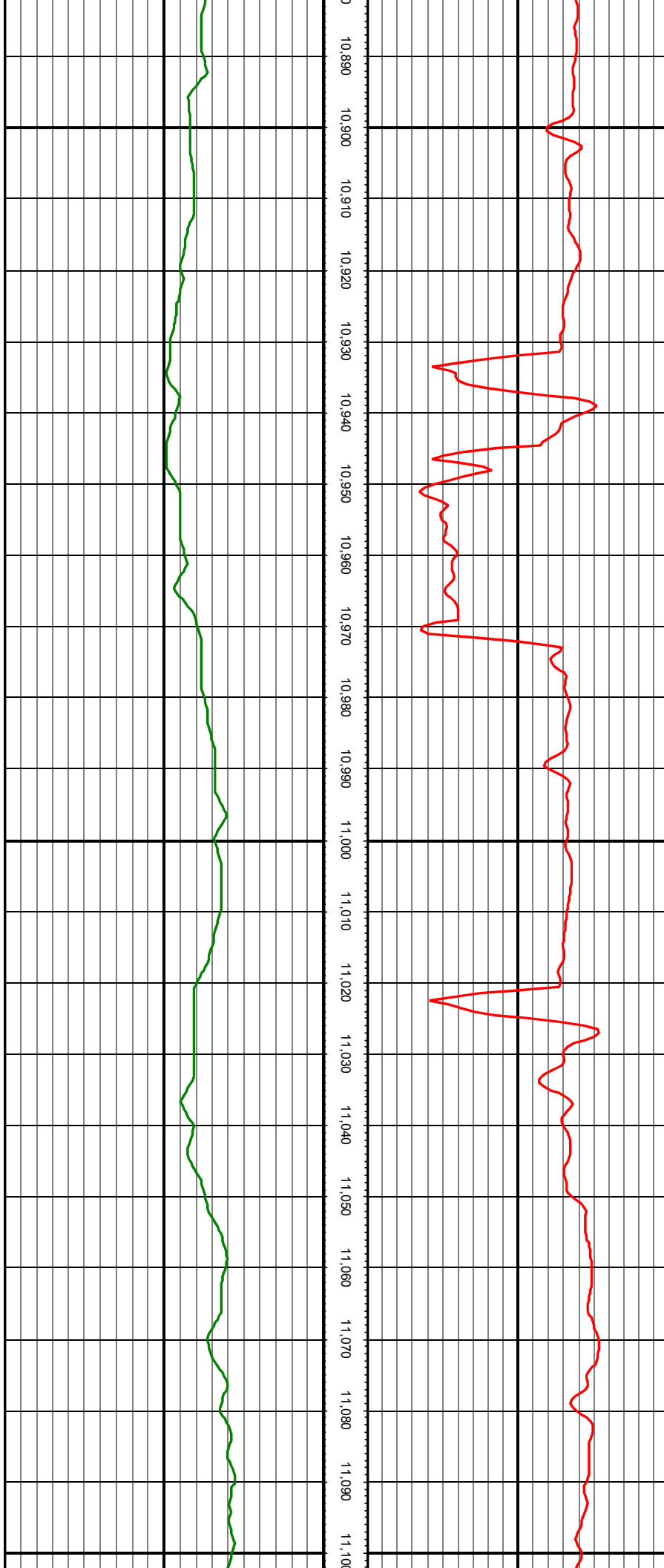
MD: 10614.00 INC: 90.07 AZ: 178.85 TVD: 7713.39 VS: 2287.29



MD: 10704.00 INC: 89.80 AZ: 180.17 TVD: 7713.49 VS: 2377.27

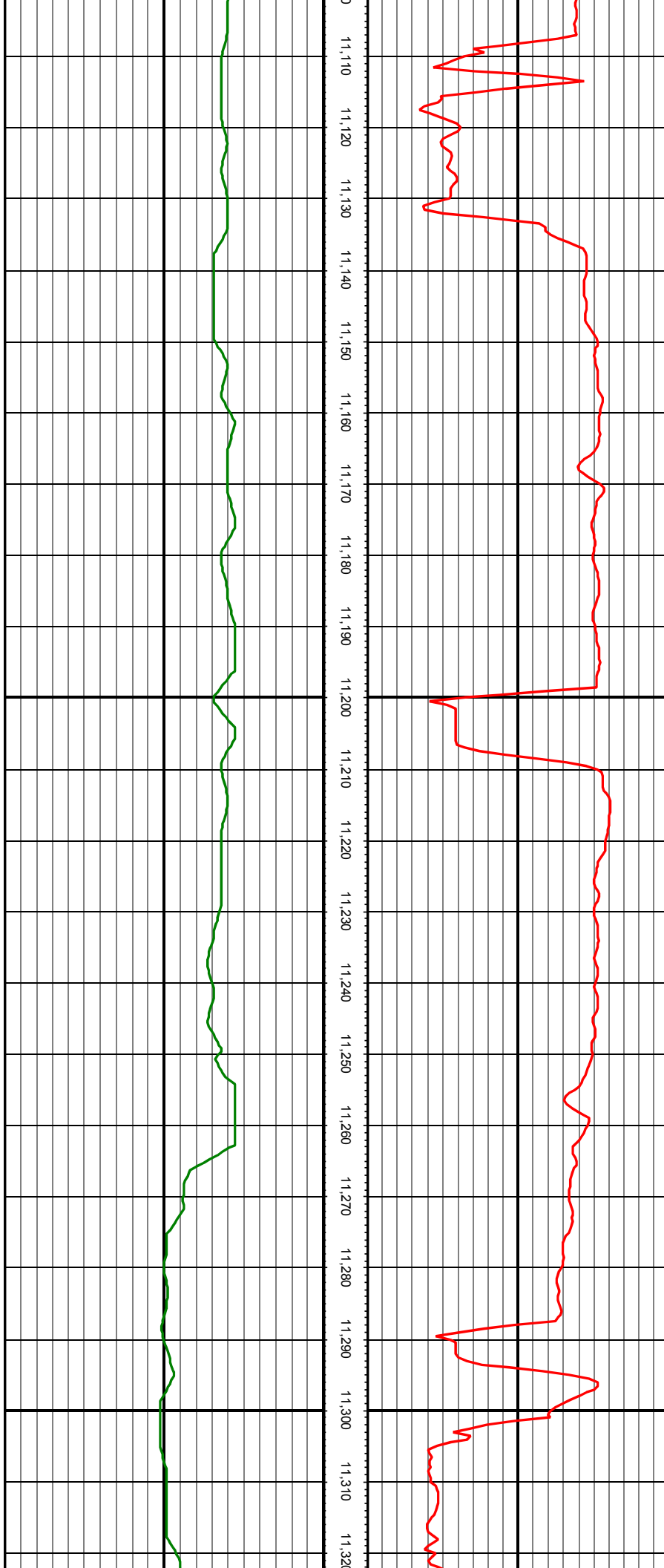
MD: 10793.00 INC: 89.58 AZ: 179.99 TVD: 7713.97 VS: 2466.24

MD: 10882.00 INC: 88.97 AZ: 179.20 TVD: 7715.10 VS: 2555.22



MD: 10971.00 INC: 89.58 AZ: 180.52 TVD: 7716.22 VS: 2644.18

MD: 11060.00 INC: 89.41 AZ: 180.08 TVD: 7717.01 VS: 2733.13



MD: 11149.00 INC: 90.95 AZ: 181.22 TVD: 7716.73 VS: 2822.07

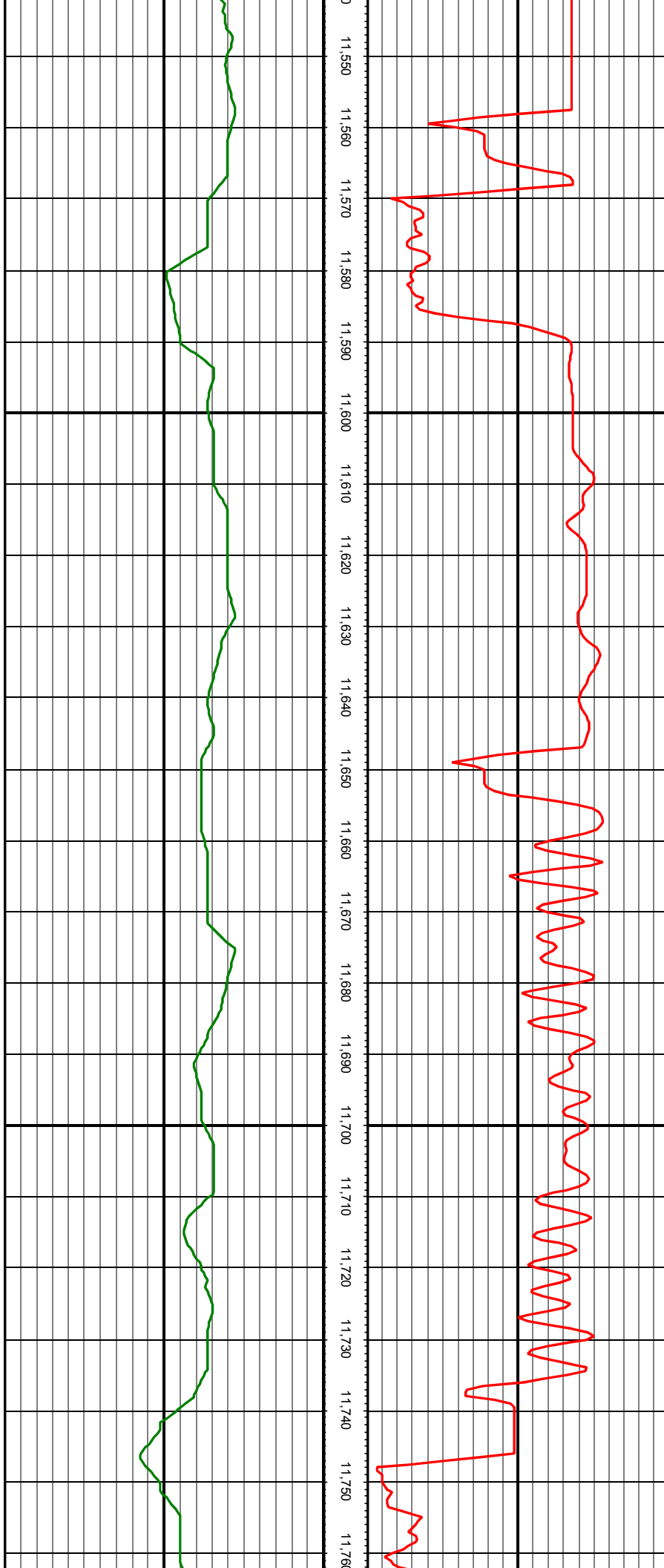
MD: 11238.00 INC: 90.73 AZ: 180.43 TVD: 7715.42 VS: 2910.99

MD: 11327.00 INC: 90.29 AZ: 181.66 TVD: 7714.63 VS: 2999.89



MD: 11416.00 INC: 90.02 AZ: 181.05 TVD: 7714.39 VS: 3088.78

MD: 11506.00 INC: 89.54 AZ: 180.43 TVD: 7714.74 VS: 3178.71



MD: 11595.00 INC: 89.45 AZ: 182.01 TVD: 7715.52 VS: 3267.61

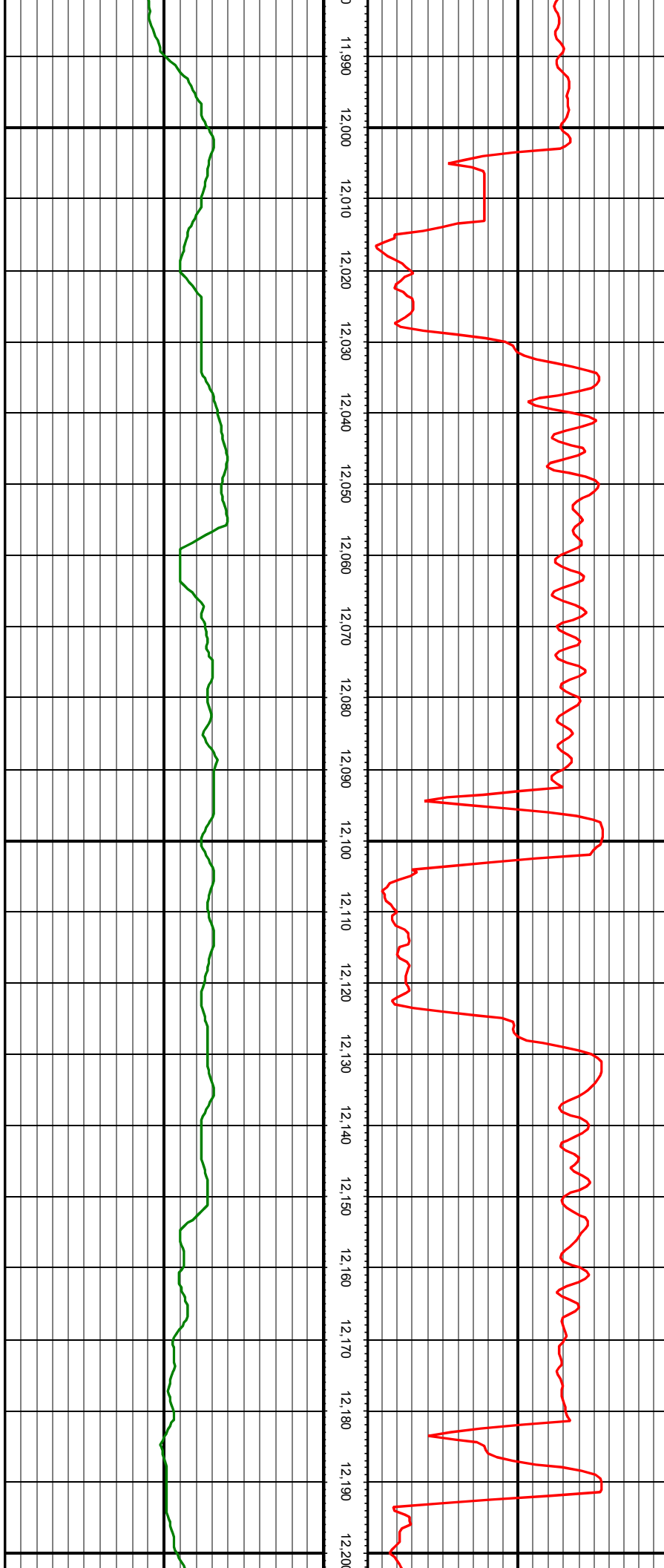
MD: 11684.00 INC: 88.62 AZ: 181.75 TVD: 7717.02 VS: 3356.44



MD: 11773.00 INC: 90.11 AZ: 181.31 TVD: 7718.01 VS: 3445.31

MD: 11862.00 INC: 90.15 AZ: 180.52 TVD: 7717.80 VS: 3534.23

MD: 11951.00 INC: 90.33 AZ: 179.55 TVD: 7717.43 VS: 3623.19



MD: 12040.00 INC: 91.52 AZ: 180.08 TVD: 7715.99 VS: 3712.16

MD: 12129.00 INC: 90.95 AZ: 180.43 TVD: 7714.08 VS: 3801.10



MD: 12218.00 INC: 88.57 AZ: 180.08 TVD: 7714.45 VS: 3890.05

MD: 12307.00 INC: 88.62 AZ: 179.29 TVD: 7716.63 VS: 3979.00

MD: 12396.00 INC: 88.57 AZ: 178.14 TVD: 7718.81 VS: 4067.97



MD: 12486.00 INC: 88.40 AZ: 179.29 TVD: 7721.19 VS: 4157.94

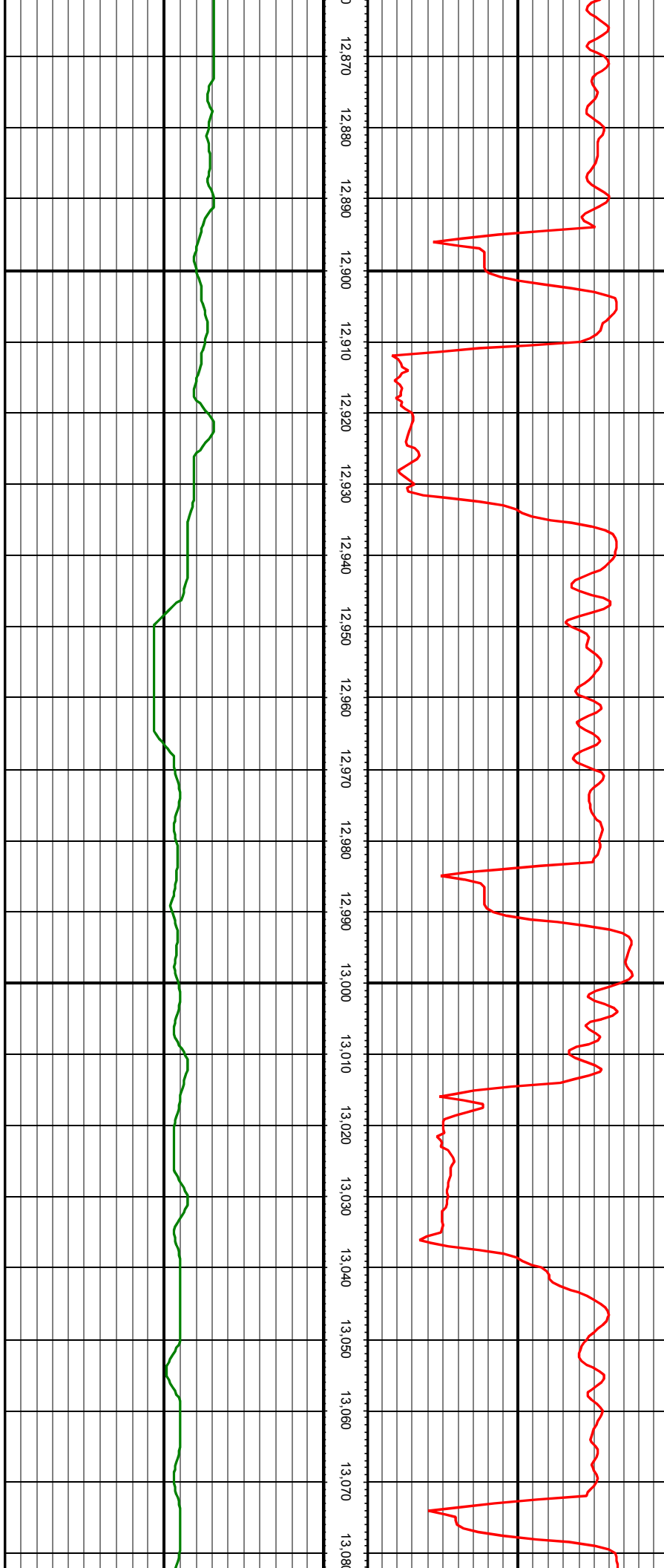
MD: 12575.00 INC: 88.66 AZ: 179.73 TVD: 7723.48 VS: 4246.90



MD: 12664.00 INC: 89.76 AZ: 180.87 TVD: 7724.70 VS: 4335.84

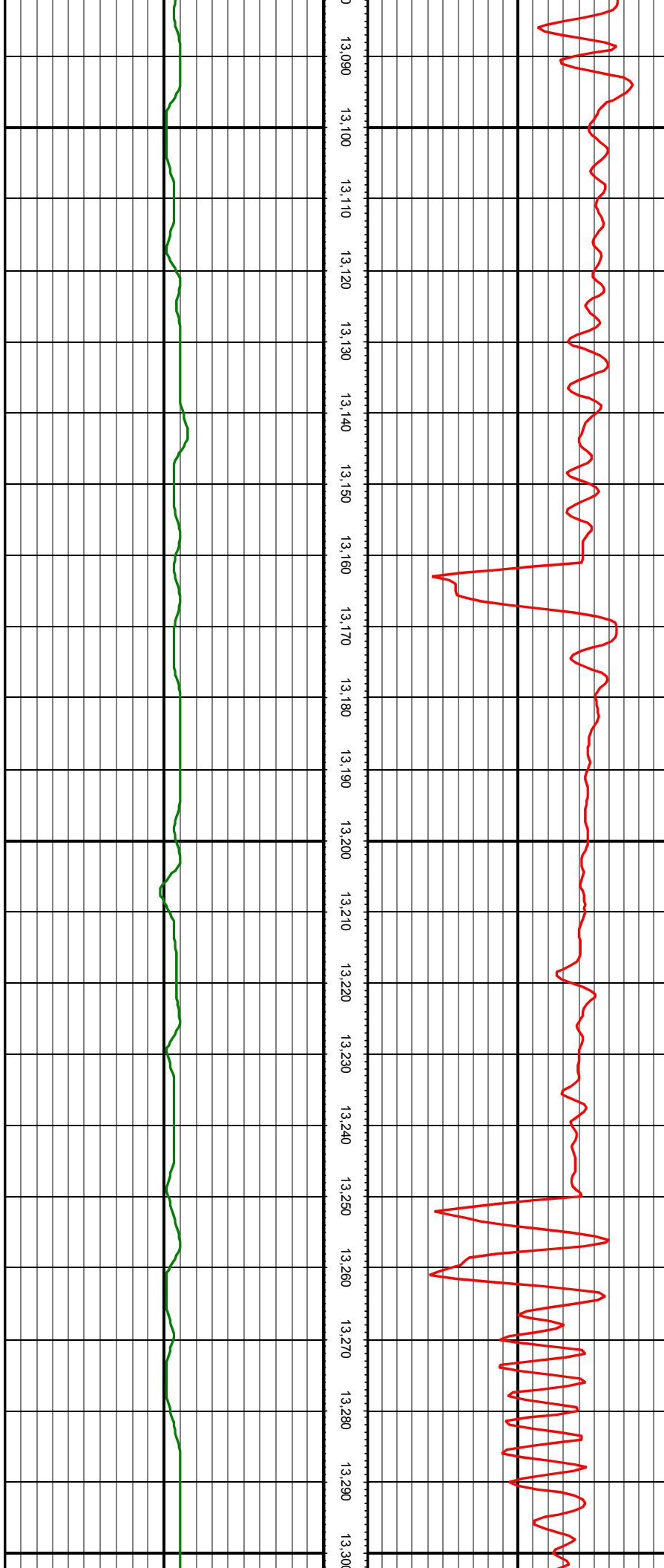
MD: 12753.00 INC: 89.85 AZ: 180.25 TVD: 7725.01 VS: 4424.78

MD: 12842.00 INC: 89.41 AZ: 178.06 TVD: 7725.58 VS: 4513.77



MD: 12931.00 INC: 88.62 AZ: 180.34 TVD: 7727.11 VS: 4602.74

MD: 13020.00 INC: 88.88 AZ: 181.57 TVD: 7729.05 VS: 4691.64



MD: 13109.00 INC: 89.45 AZ: 181.84 TVD: 7730.35 VS: 4780.49

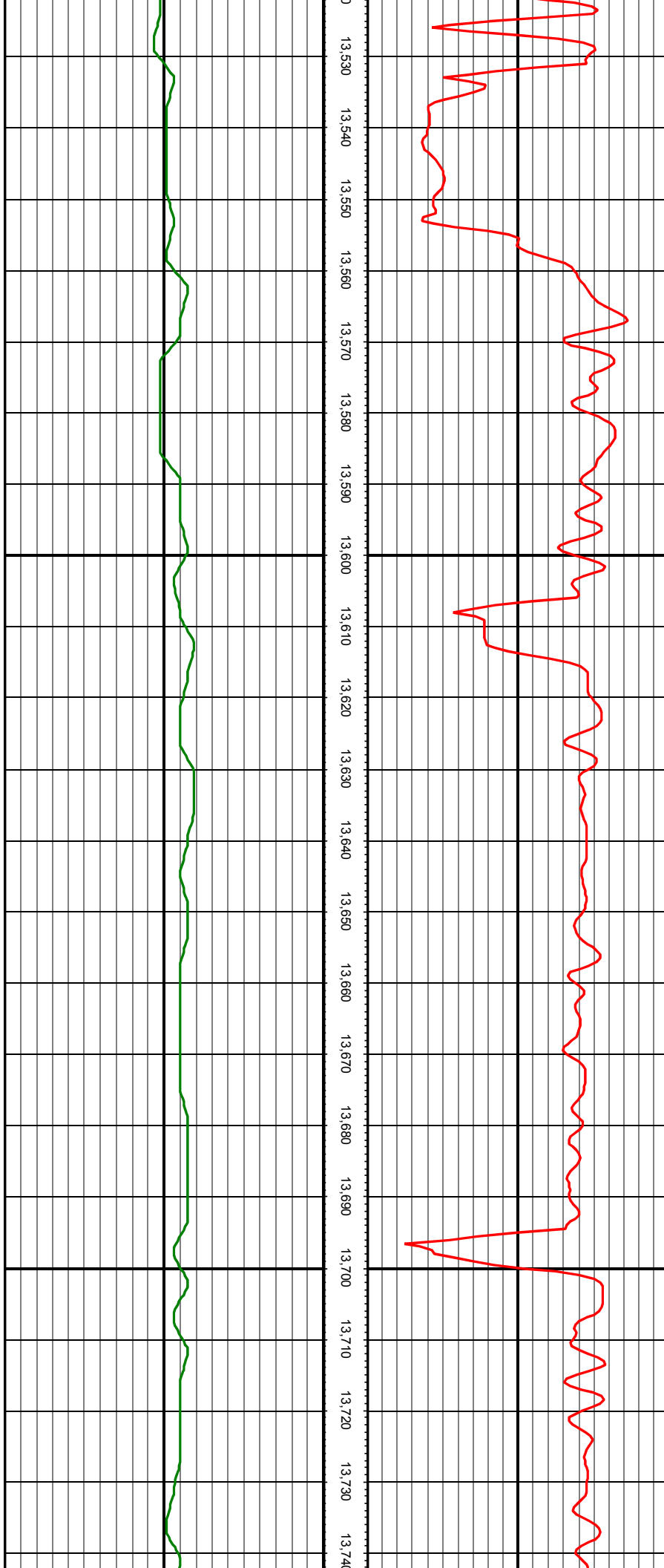
MD: 13199.00 INC: 89.67 AZ: 181.75 TVD: 7731.04 VS: 4870.34

MD: 13288.00 INC: 89.76 AZ: 180.87 TVD: 7731.48 VS: 4959.23



MD: 13377.00 INC: 89.85 AZ: 179.99 TVD: 7731.79 VS: 5048.18

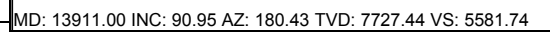
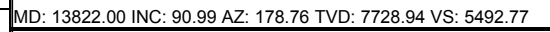
MD: 13466.00 INC: 88.18 AZ: 181.48 TVD: 7733.32 VS: 5137.10

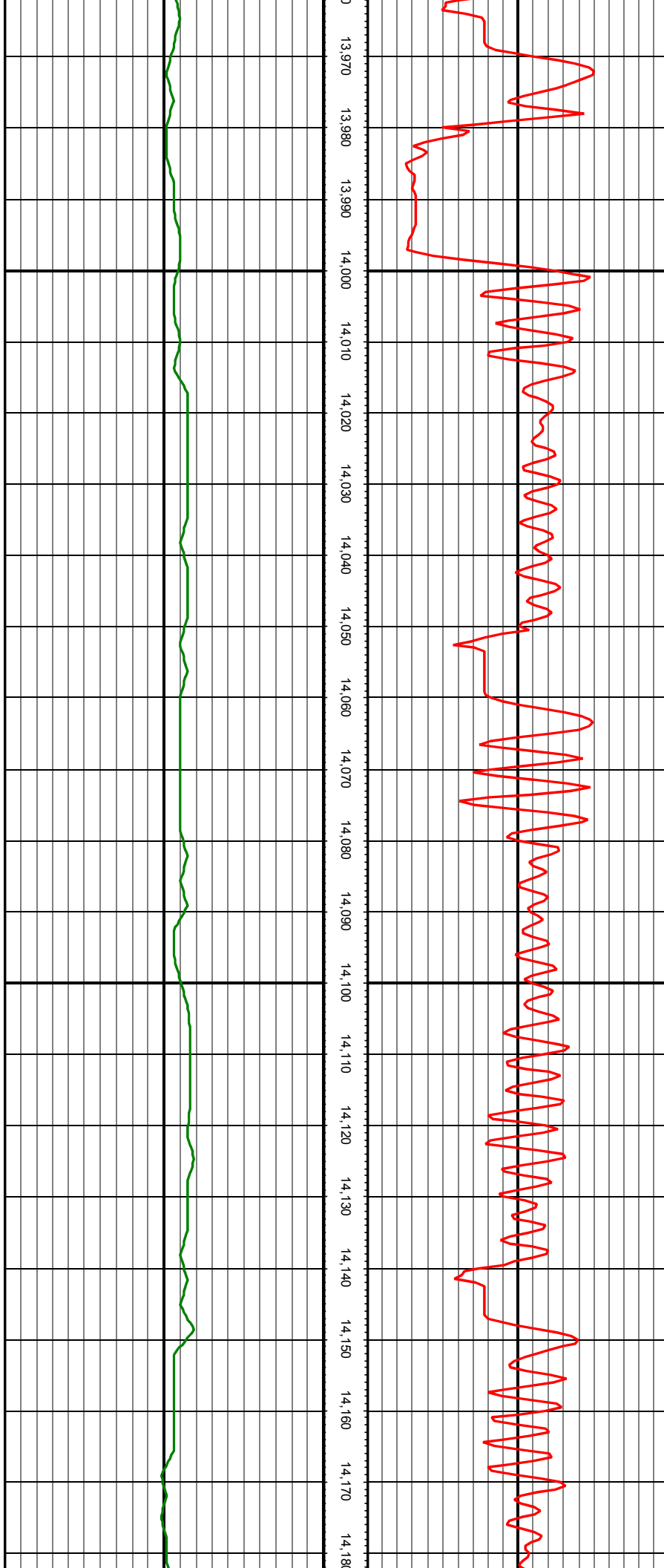


MD: 13555.00 INC: 90.81 AZ: 181.31 TVD: 7734.10 VS: 5225.97

MD: 13644.00 INC: 91.21 AZ: 180.78 TVD: 7732.53 VS: 5314.87

MD: 13733.00 INC: 91.21 AZ: 180.08 TVD: 7730.65 VS: 5403.80

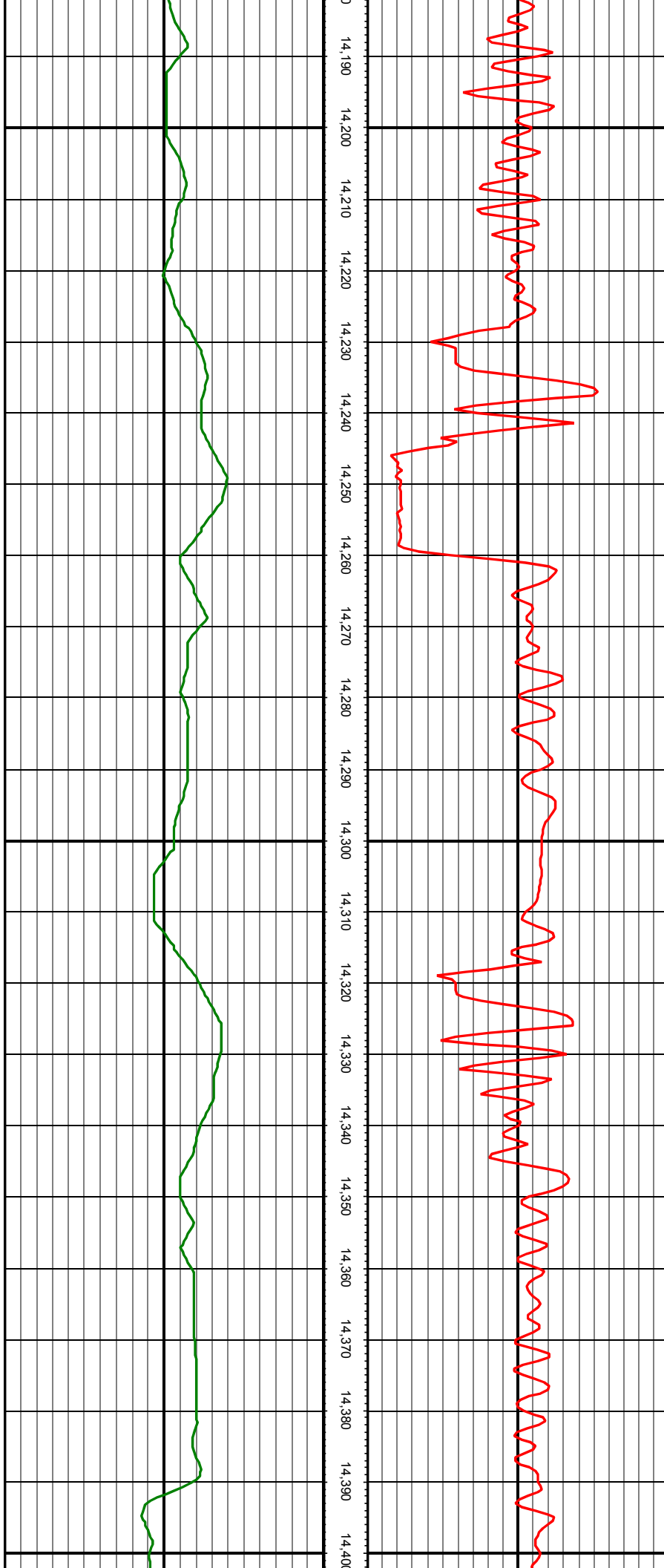




MD: 14000.00 INC: 91.12 AZ: 181.92 TVD: 7725.83 VS: 5670.62

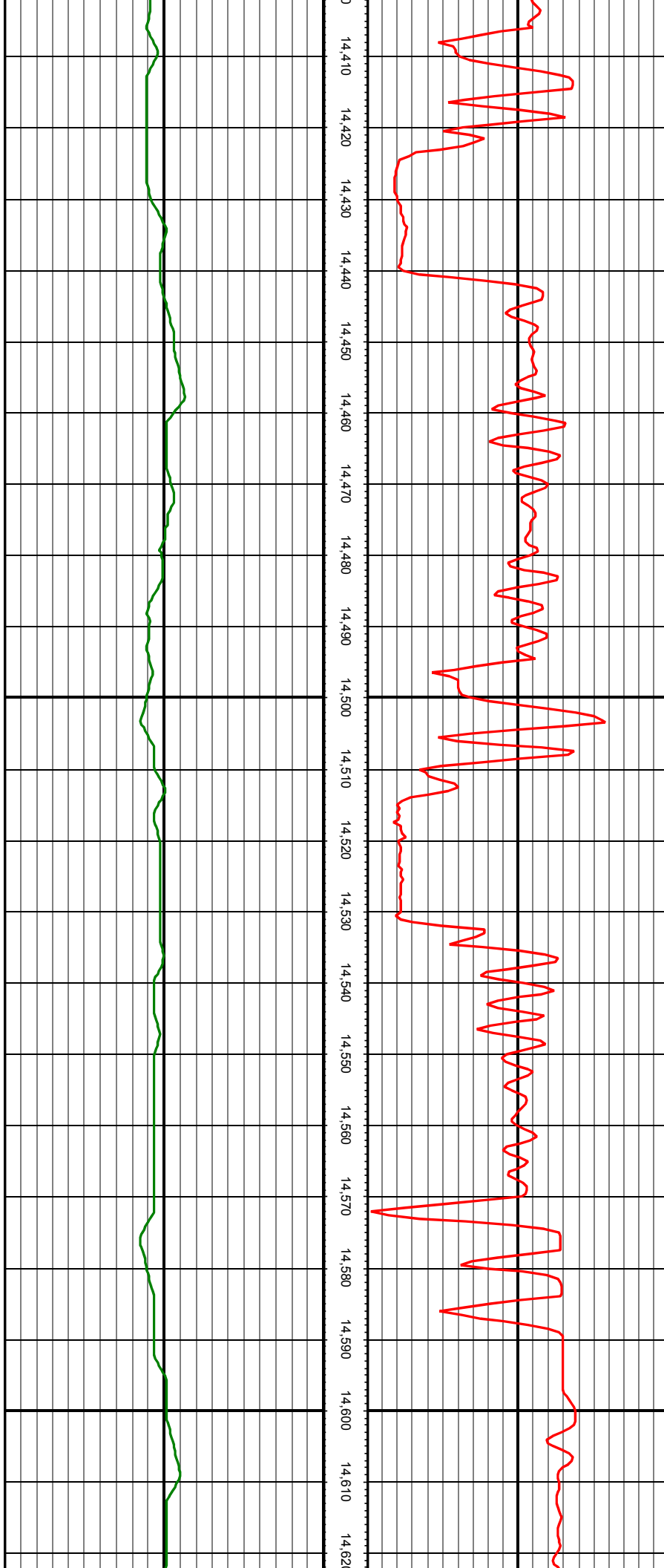
MD: 14089.00 INC: 90.90 AZ: 181.40 TVD: 7724.26 VS: 5759.48

MD: 14178.00 INC: 91.12 AZ: 180.78 TVD: 7722.69 VS: 5848.37



MD: 14268.00 INC: 90.02 AZ: 180.43 TVD: 7721.80 VS: 5938.31

MD: 14357.00 INC: 90.77 AZ: 179.73 TVD: 7721.18 VS: 6027.27



MD: 14446.00 INC: 90.15 AZ: 179.38 TVD: 7720.47 VS: 6116.25

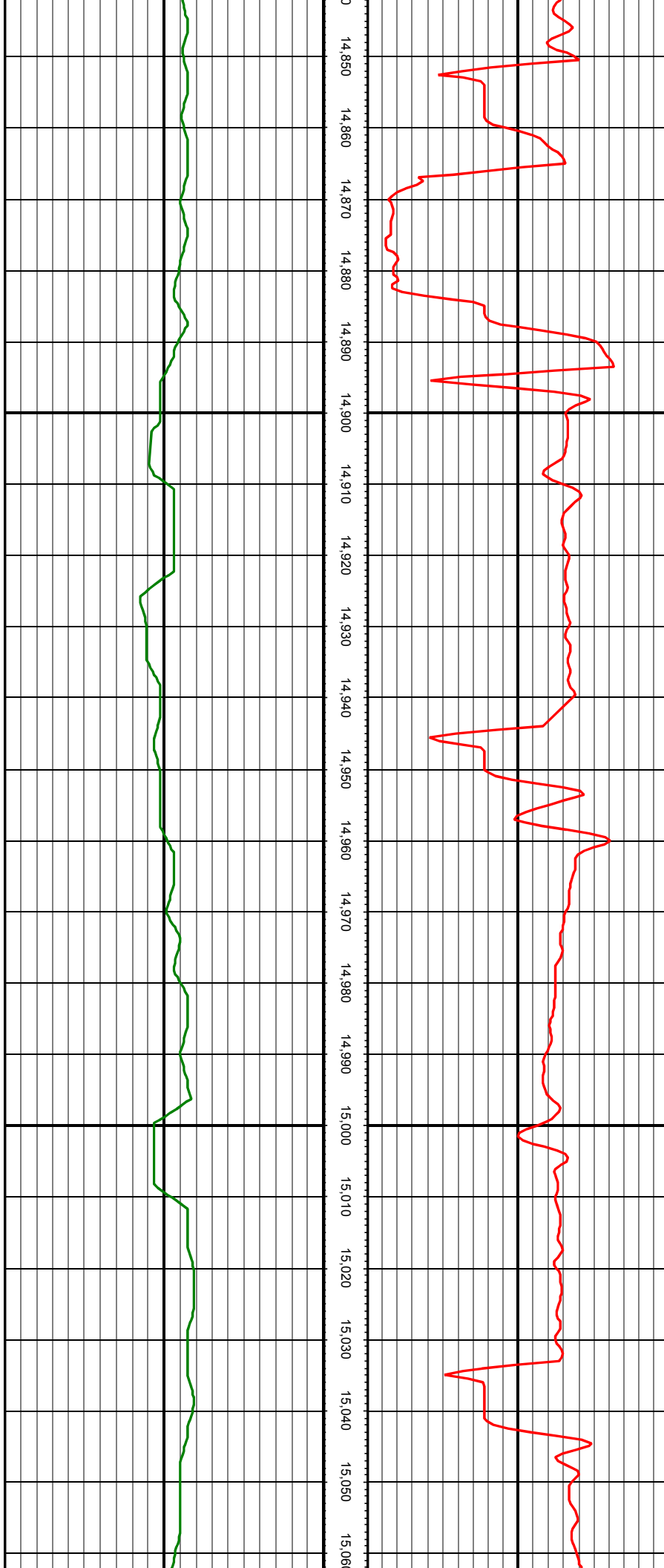
MD: 14535.00 INC: 89.05 AZ: 180.96 TVD: 7721.09 VS: 6205.21

MD: 14624.00 INC: 89.23 AZ: 180.69 TVD: 7722.43 VS: 6294.12



MD: 14713.00 INC: 87.91 AZ: 181.05 TVD: 7724.65 VS: 6383.02

MD: 14802.00 INC: 87.78 AZ: 180.69 TVD: 7727.99 VS: 6471.88



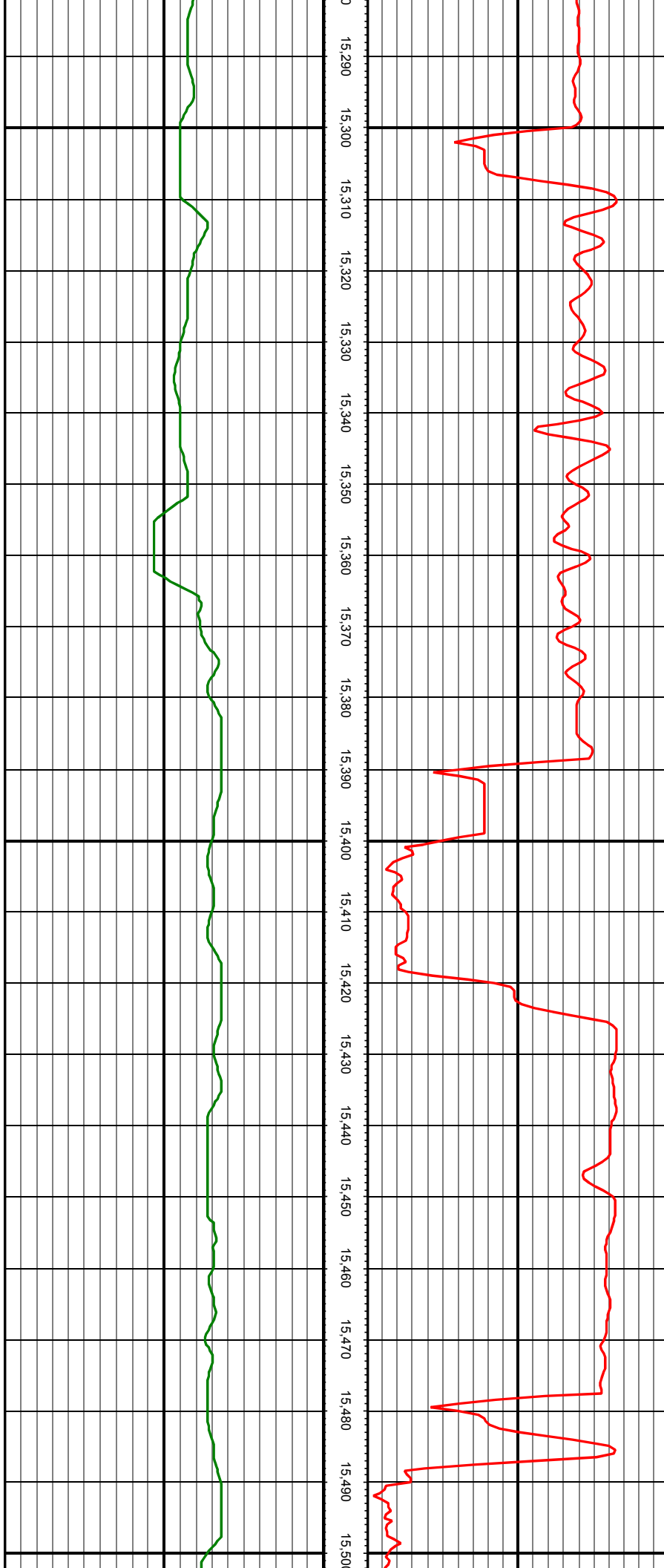
MD: 14892.00 INC: 87.30 AZ: 182.19 TVD: 7731.86 VS: 6561.68

MD: 14981.00 INC: 87.16 AZ: 181.66 TVD: 7736.16 VS: 6650.41

MD: 15070.00 INC: 87.21 AZ: 181.05 TVD: 7740.53 VS: 6739.20

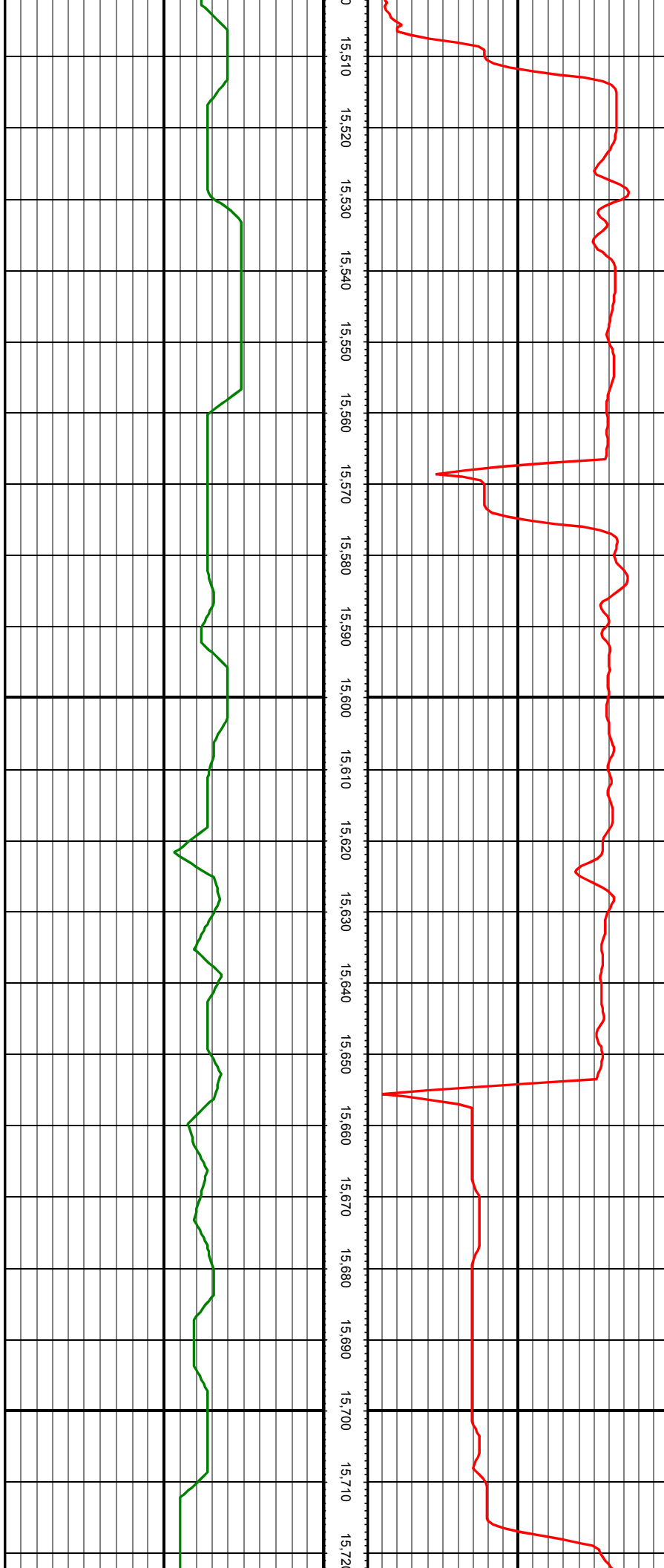
MD: 15159.00 INC: 87.34 AZ: 180.96 TVD: 7744.76 VS: 6828.01

MD: 15248.00 INC: 88.13 AZ: 182.36 TVD: 7748.28 VS: 6916.81



MD: 15337.00 INC: 87.96 AZ: 181.66 TVD: 7751.31 VS: 7005.59

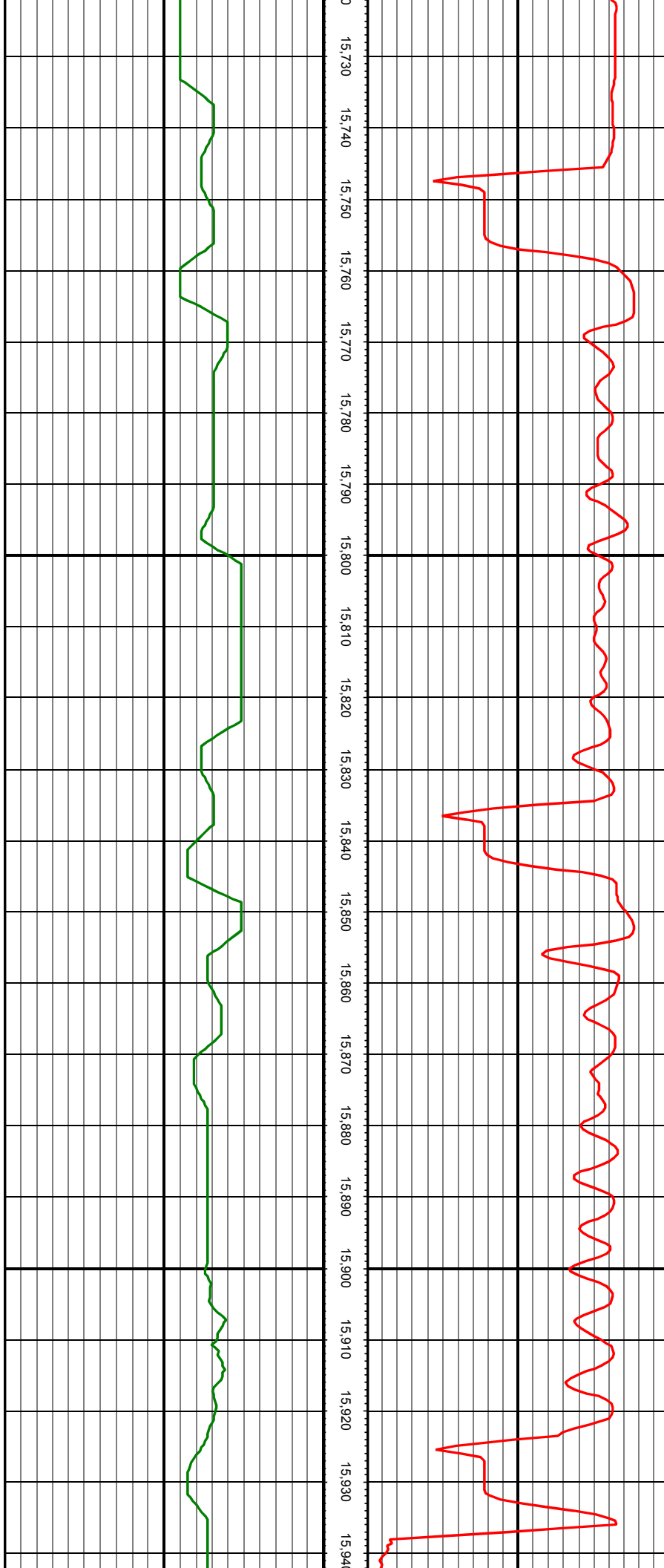
MD: 15426.00 INC: 88.84 AZ: 182.45 TVD: 7753.80 VS: 7094.38



MD: 15515.00 INC: 89.19 AZ: 182.71 TVD: 7755.33 VS: 7183.14

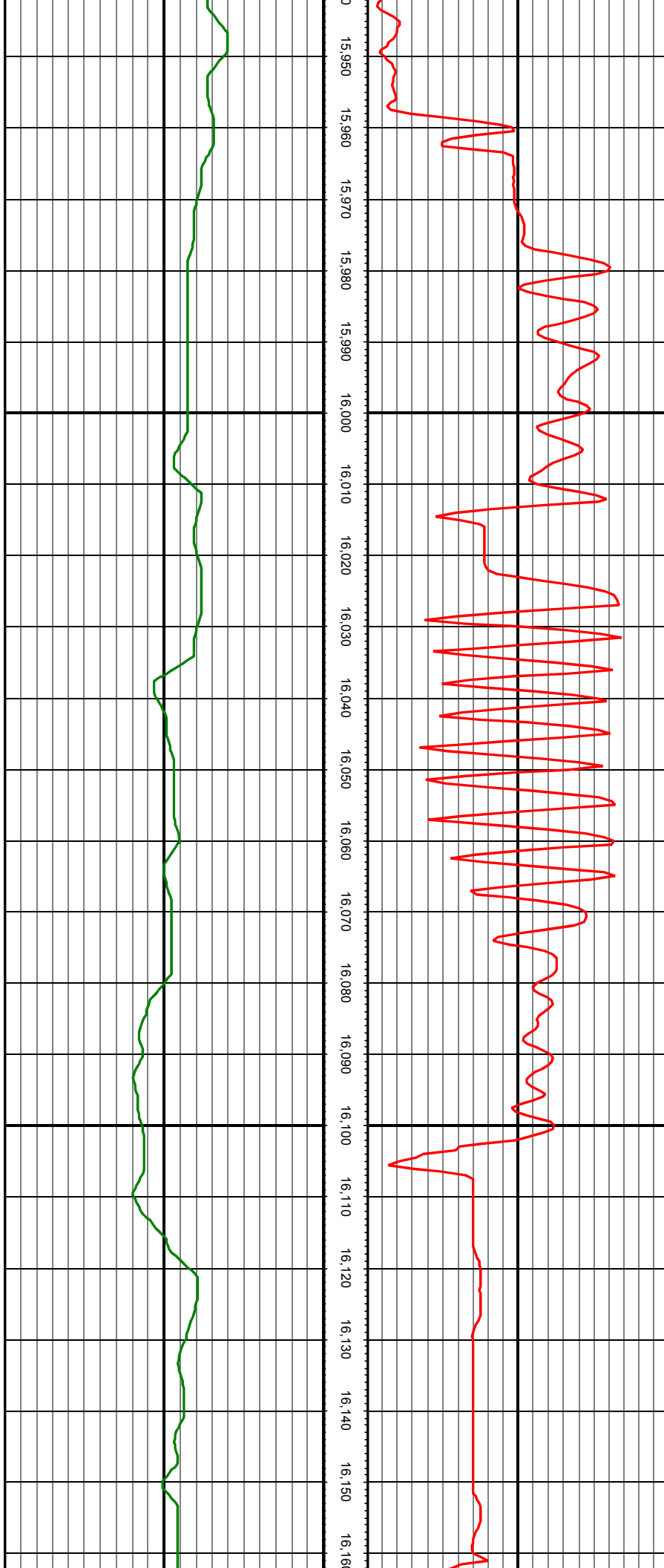
MD: 15604.00 INC: 89.32 AZ: 182.10 TVD: 7756.49 VS: 7271.93

MD: 15693.00 INC: 89.58 AZ: 181.40 TVD: 7757.34 VS: 7360.78



MD: 15782.00 INC: 89.63 AZ: 180.69 TVD: 7757.95 VS: 7449.69

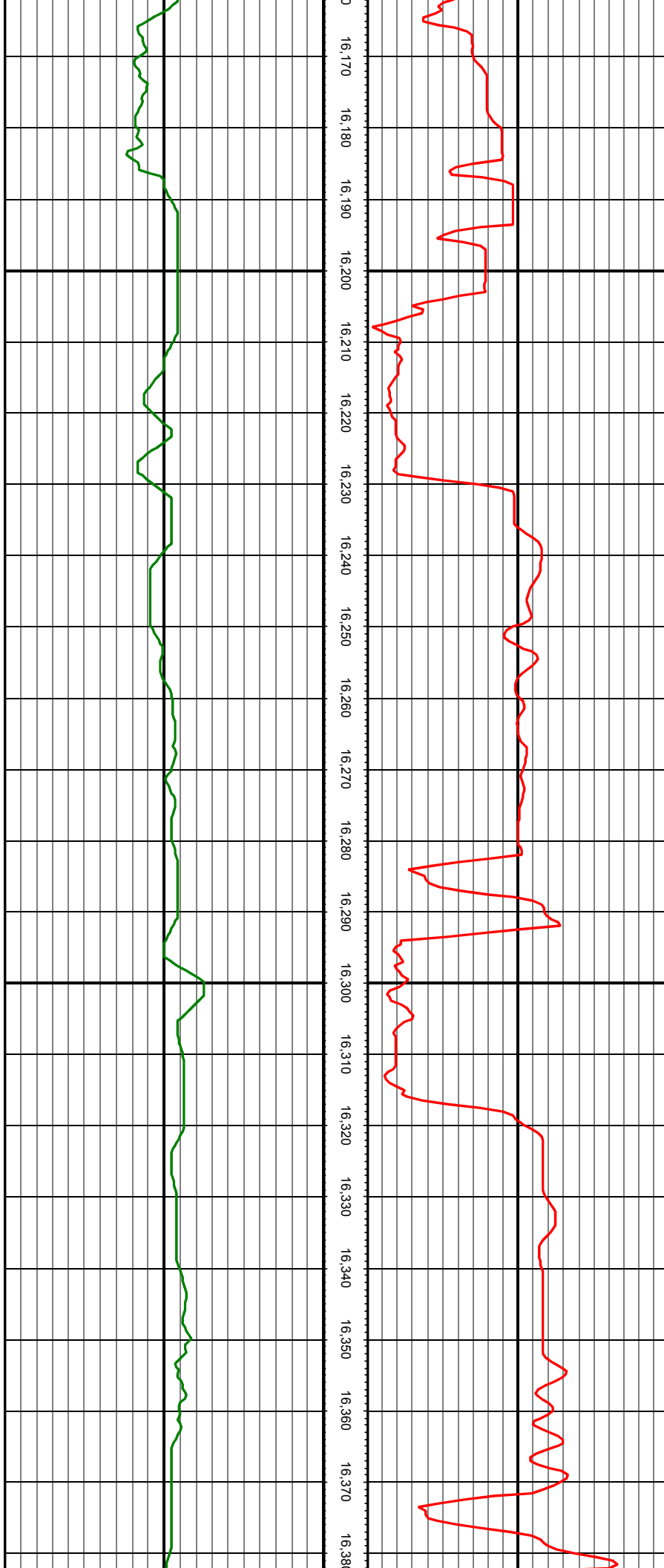
MD: 15871.00 INC: 89.19 AZ: 180.17 TVD: 7758.87 VS: 7538.64



MD: 15960.00 INC: 91.30 AZ: 180.08 TVD: 7758.49 VS: 7627.60

MD: 16050.00 INC: 91.74 AZ: 179.29 TVD: 7756.10 VS: 7717.54

MD: 16133.00 INC: 92.44 AZ: 178.32 TVD: 7753.08 VS: 7800.49



MD: 16222.00 INC: 91.03 AZ: 177.18 TVD: 7750.38 VS: 7889.43

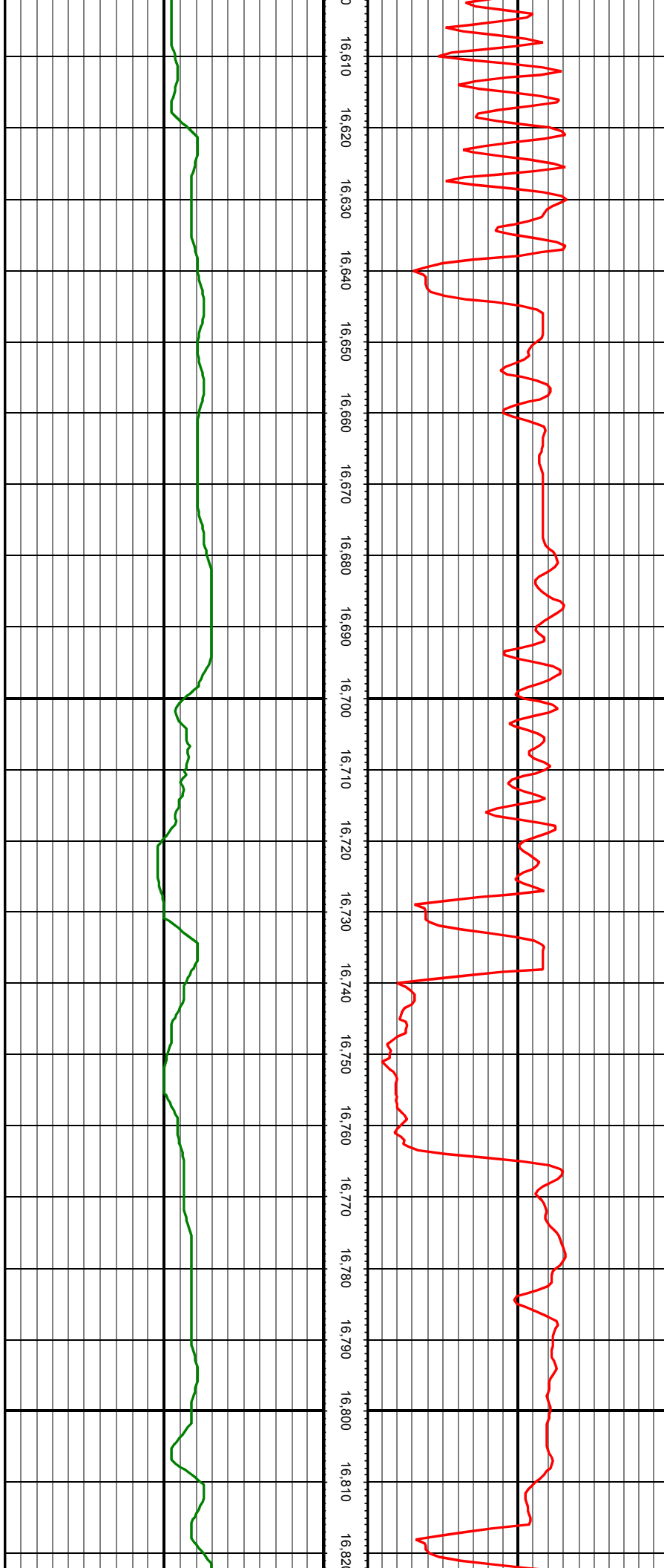
MD: 16312.00 INC: 89.63 AZ: 179.46 TVD: 7749.86 VS: 7979.42



MD: 16401.00 INC: 88.88 AZ: 182.01 TVD: 7751.02 VS: 8068.34

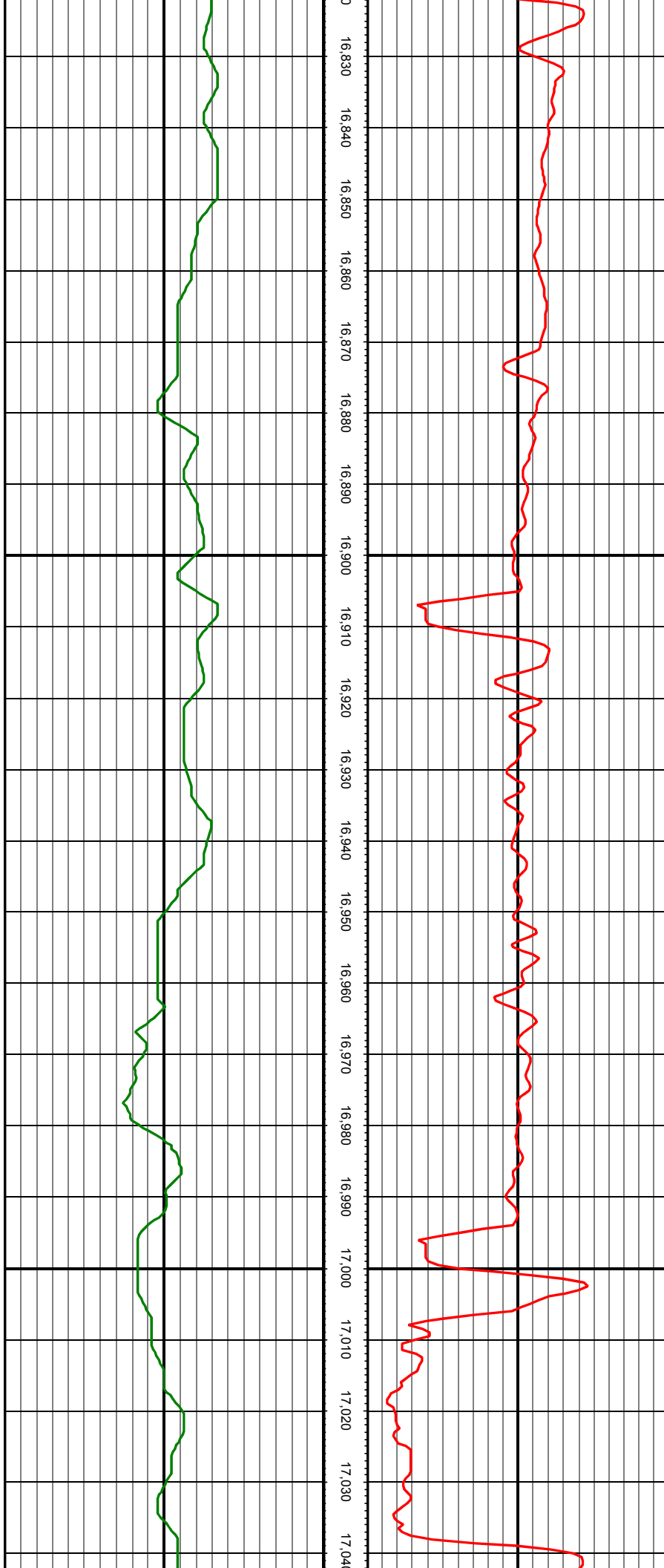
MD: 16490.00 INC: 88.66 AZ: 181.75 TVD: 7752.93 VS: 8157.17

MD: 16579.00 INC: 88.04 AZ: 181.31 TVD: 7755.49 VS: 8246.01



MD: 16668.00 INC: 87.69 AZ: 180.87 TVD: 7758.81 VS: 8334.85

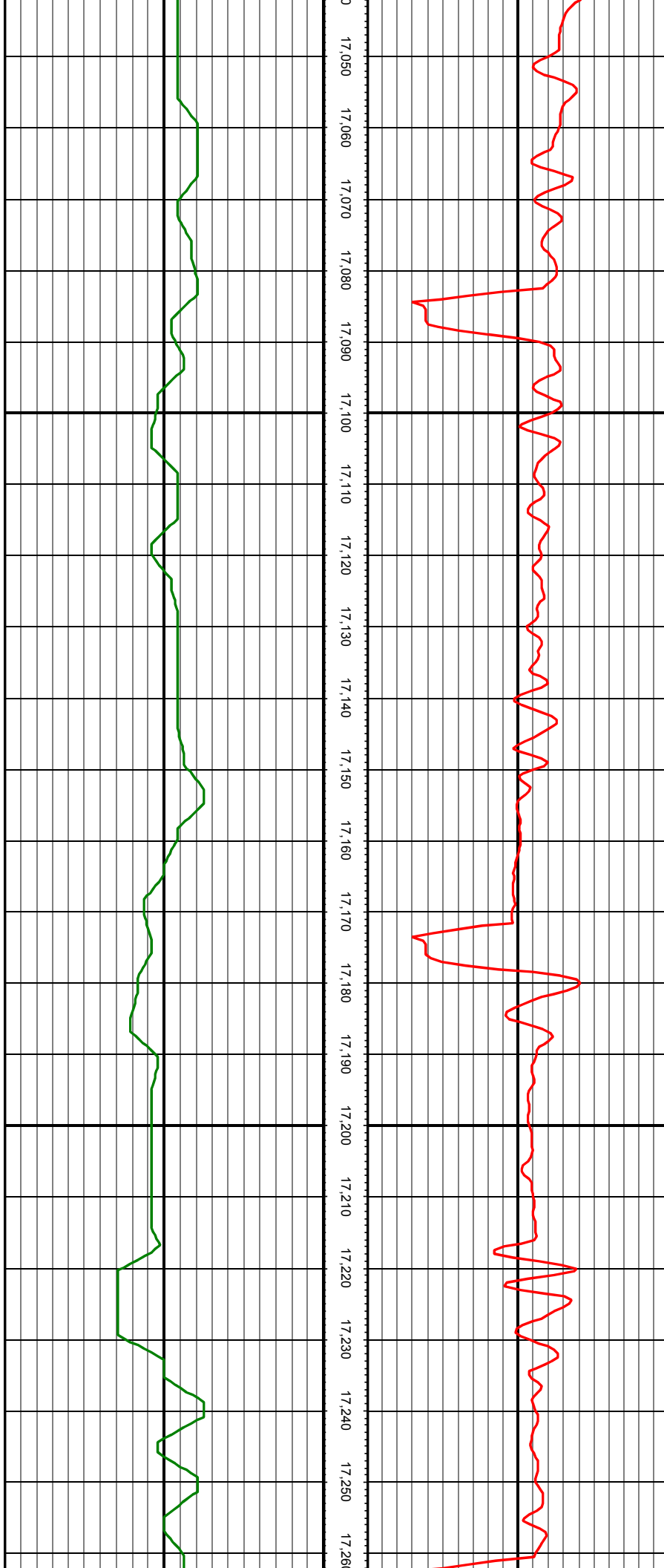
MD: 16757.00 INC: 87.82 AZ: 182.28 TVD: 7762.30 VS: 8423.66



MD: 16846.00 INC: 87.96 AZ: 182.28 TVD: 7765.57 VS: 8512.40

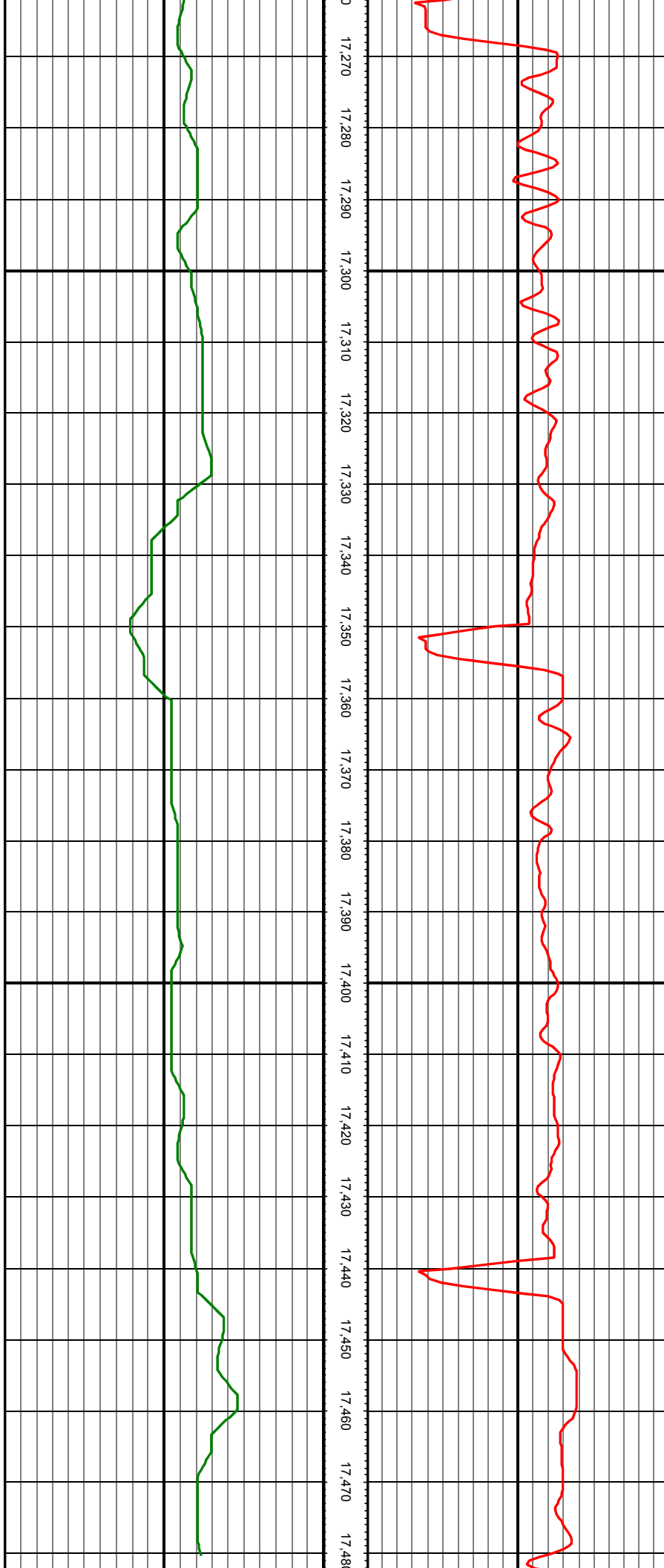
MD: 16935.00 INC: 86.86 AZ: 182.01 TVD: 7769.59 VS: 8601.13

MD: 17025.00 INC: 88.66 AZ: 182.19 TVD: 7773.11 VS: 8690.88



MD: 17114.00 INC: 89.23 AZ: 182.36 TVD: 7774.75 VS: 8779.68

MD: 17203.00 INC: 89.41 AZ: 182.10 TVD: 7775.81 VS: 8868.48



MD: 17292.00 INC: 88.97 AZ: 181.66 TVD: 7777.06 VS: 8957.32

MD: 17381.00 INC: 88.66 AZ: 181.40 TVD: 7778.91 VS: 9046.18

MD: 17464.00 INC: 88.44 AZ: 181.13 TVD: 7781.01 VS: 9129.05

