

**Cathedral Energy Services**

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405-261-6011 (Office)
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HWY52 4V-32H-0268**Scale 5":100' - MD****8/30/2017 1:26 PM****Oper. Company:** Crestone Peak Resources**Well:** HWY52 4V-32H-0268**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-43113**Job Number:** 175141

Notes: Gamma Ray Log
Section Plan: 359.93°
Datum: NAD 1927 (NADCON CONUS)
Magnetic North: 8.51°
Grid Convergence: °
Gamma Averaging: 7% Smoothing

State: Colorado**County:** Weld**Country:** U.S.A**Location:** S32-T2N-R68W**Start Date:** 08/27/2017 09:00:00**End Date:** 08/30/2017 03:00:00**Latitude:** 40.089353**Longitude:** -105.024535**Elev GL:** 4992**Elev DF:** 5015**Elev KB:** 5015**Notes:** Log & Survey Depths Relative to Kelly Bushing (KB) Depth**Operator 1:** M. Andrew**Operator 2:** T. Burks**Notes:** Maximum Temperature: 224°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	FF015				
Bit Size	8.5				
Cal Factor	5.12				
Survey Offset	60.00				
Gamma Offset	55.15				
Resistivity Offset	0.00				
Start Depth	1720.00				
StartDate	8/27/2017				
StartTime	05:00				
EndDepth	12092.00				
EndDate	8/30/2017				
EndTime	03:00				
Mud Type	OBM				
Mud Weight	10.8				
Funnel Viscosity	55				
Plastic Viscosity	23				
Yield Point	14				
Gel Strength	18				
Solids Content	13				
Sand Content	N/A				
Chlorides	188081				
Temperature	224				

Hole Data			Casing Data		
Size	From	To	Size	From	To
12.5	0.00	1720.00	9.625	0.00	1720.00
8.5	1720.00	12092.00			

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.

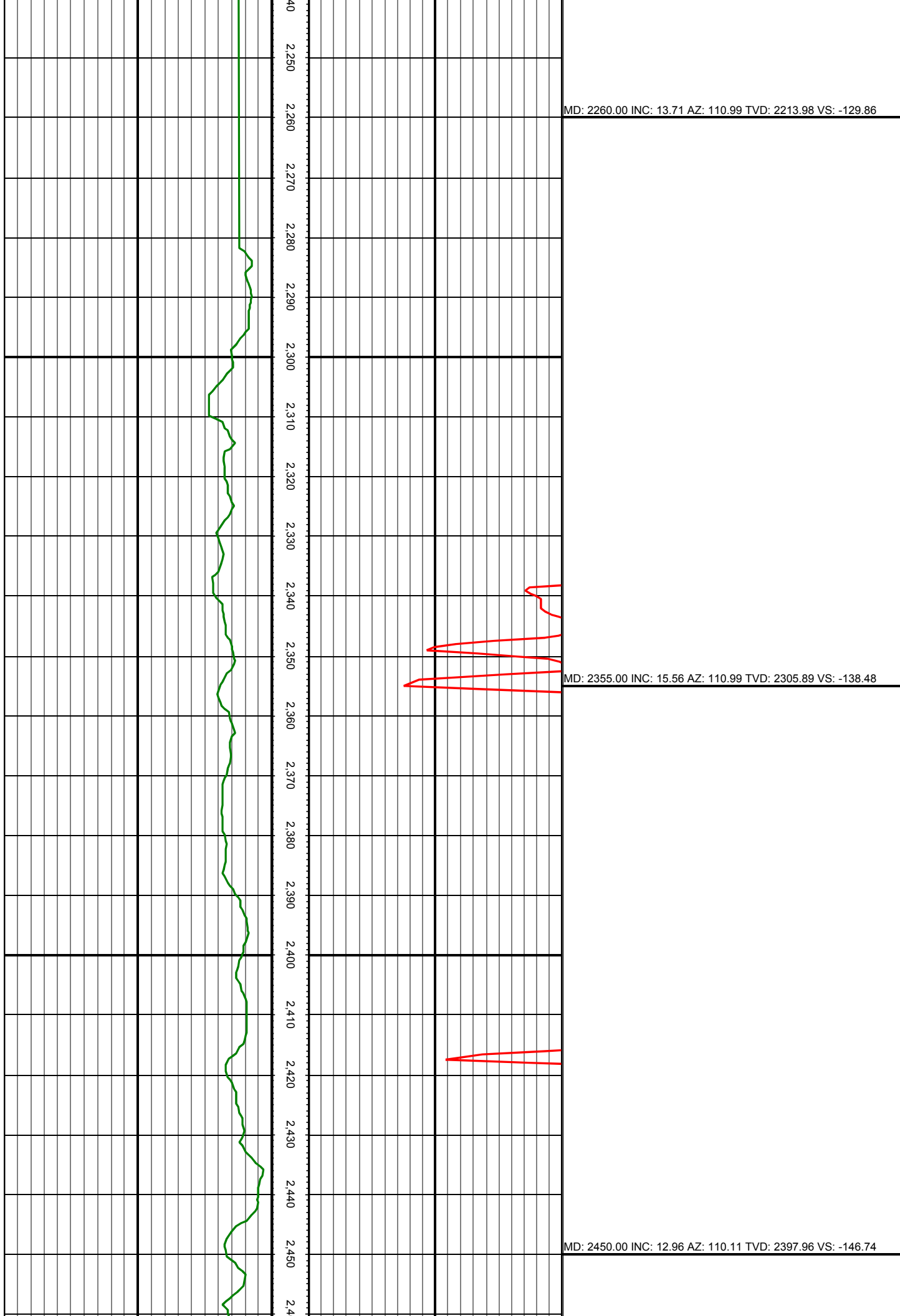


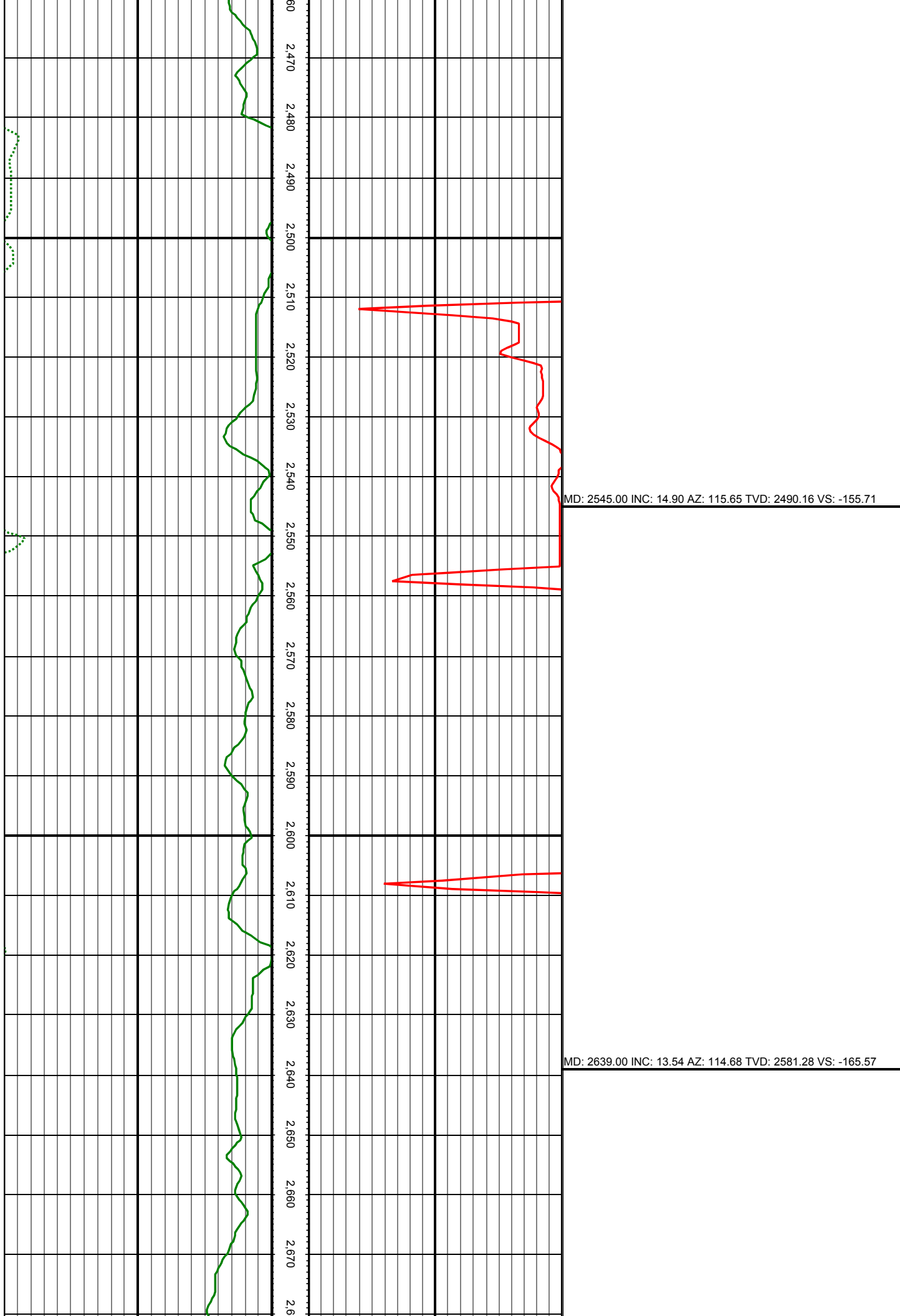
MD: 1882.00 INC: 13.58 AZ: 105.72 TVD: 1847.19 VS: -98.20

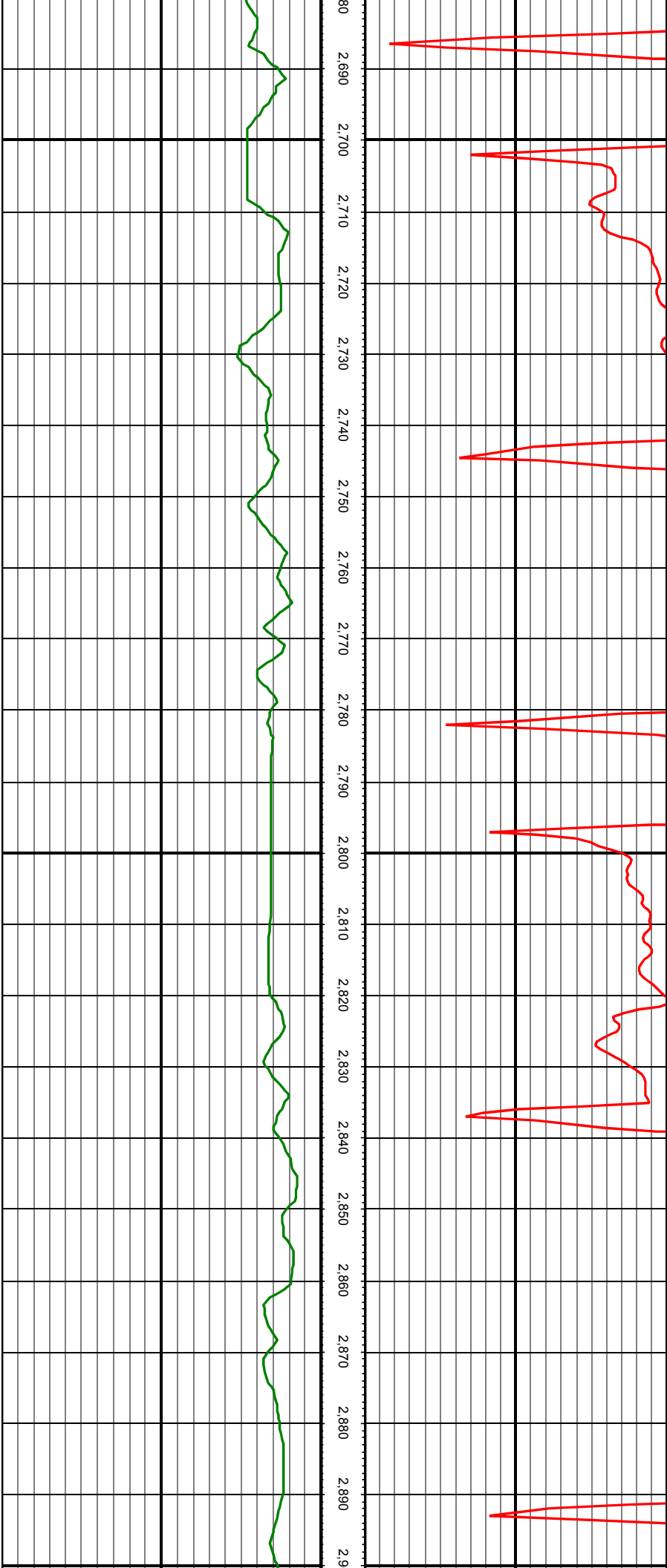
MD: 1977.00 INC: 13.49 AZ: 111.08 TVD: 1939.55 VS: -105.23

MD: 2071.00 INC: 14.11 AZ: 107.12 TVD: 2030.84 VS: -112.58

MD: 2166.00 INC: 14.72 AZ: 114.16 TVD: 2122.86 VS: -120.95

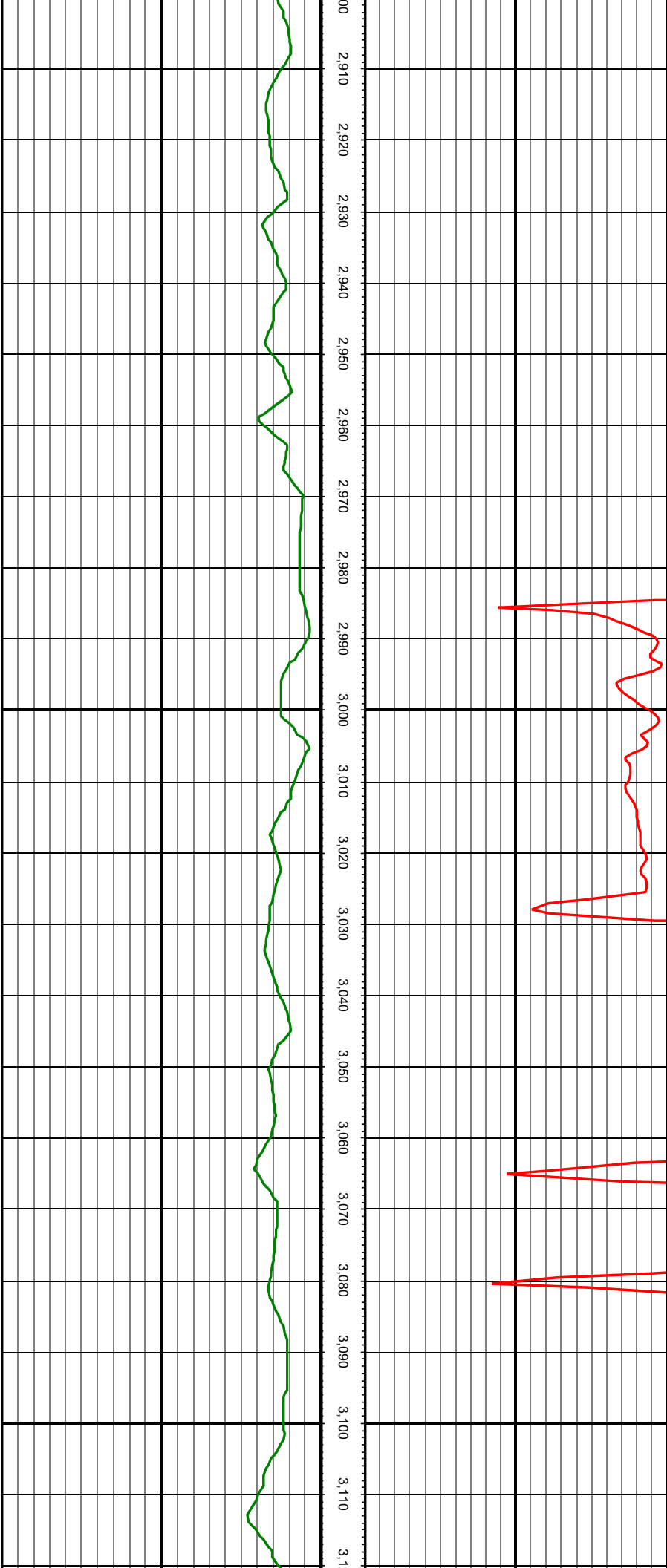






MD: 2734.00 INC: 14.55 AZ: 114.33 TVD: 2673.44 VS: -175.15

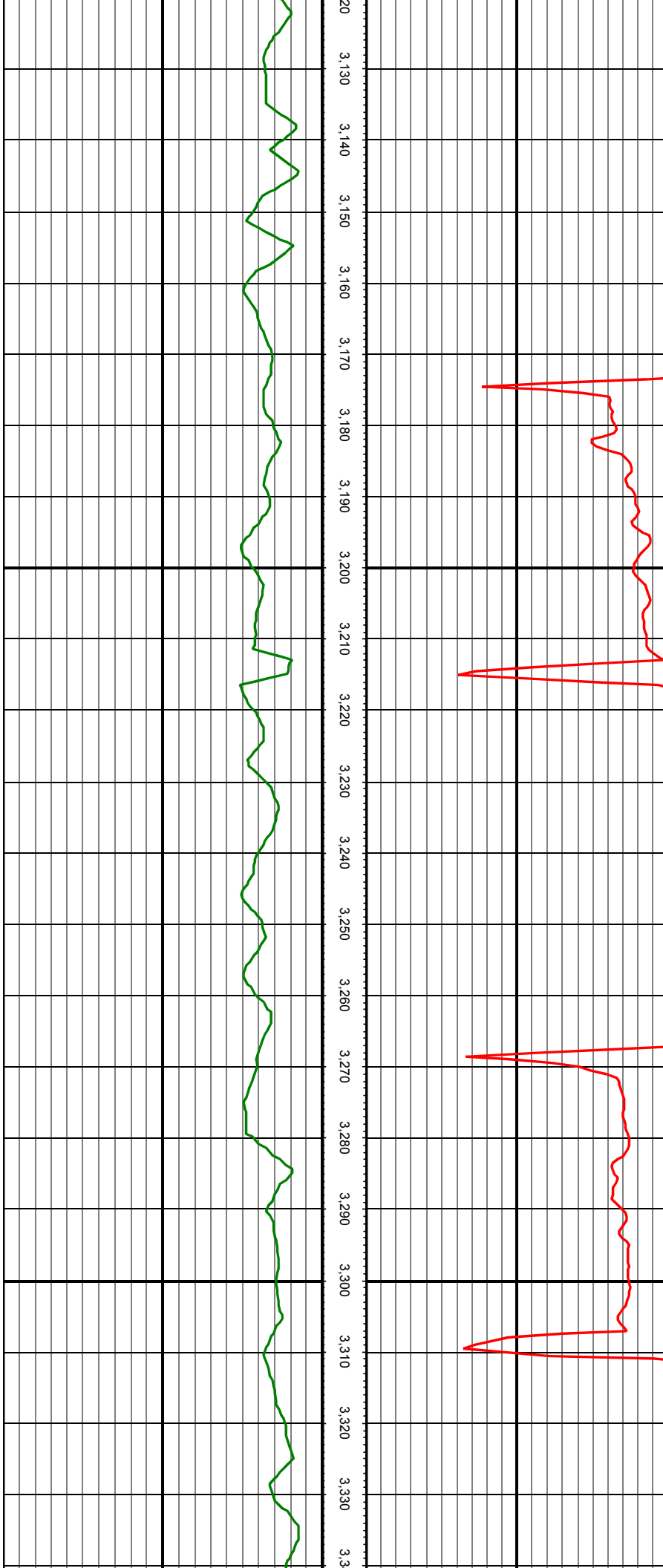
MD: 2828.00 INC: 16.26 AZ: 118.46 TVD: 2764.06 VS: -186.32



MD: 2923.00 INC: 13.93 AZ: 117.06 TVD: 2855.78 VS: -197.88

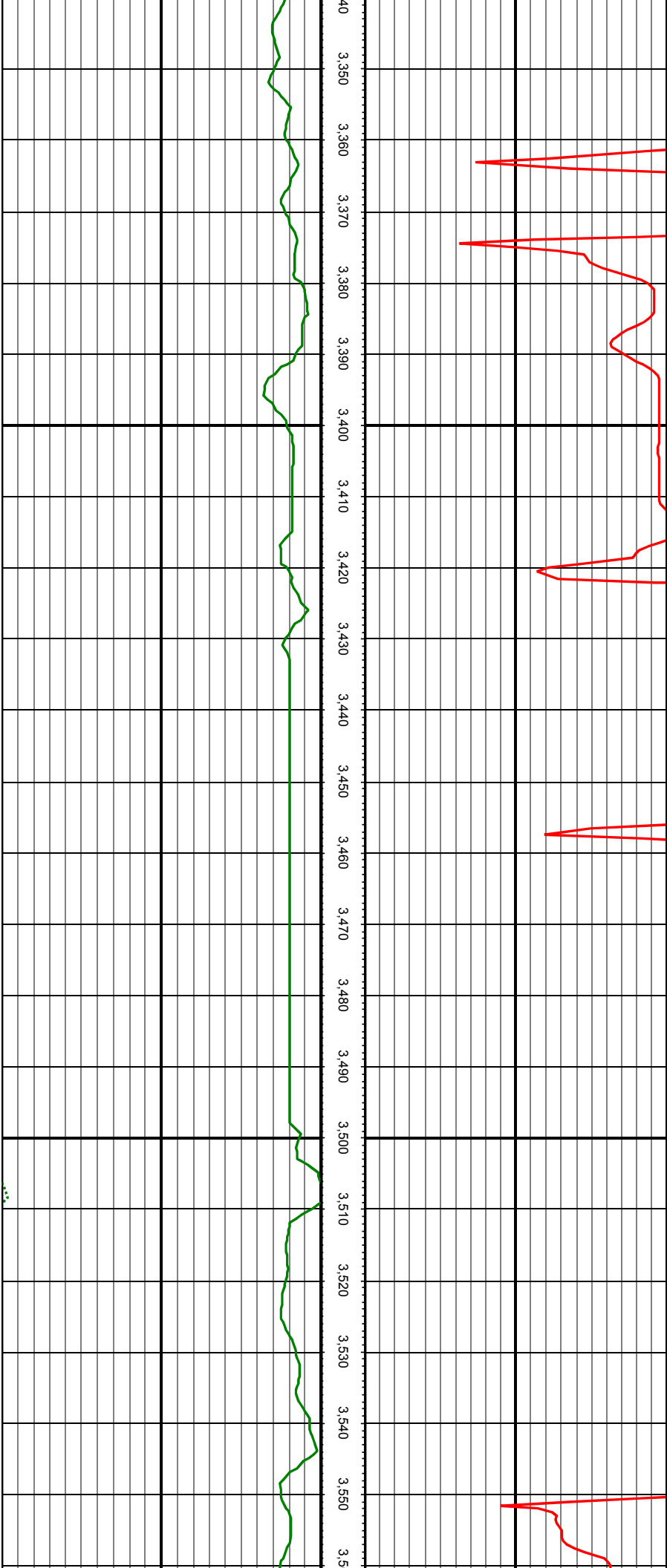
MD: 3018.00 INC: 15.03 AZ: 115.82 TVD: 2947.76 VS: -208.48

MD: 3113.00 INC: 12.52 AZ: 115.21 TVD: 3040.02 VS: -218.25



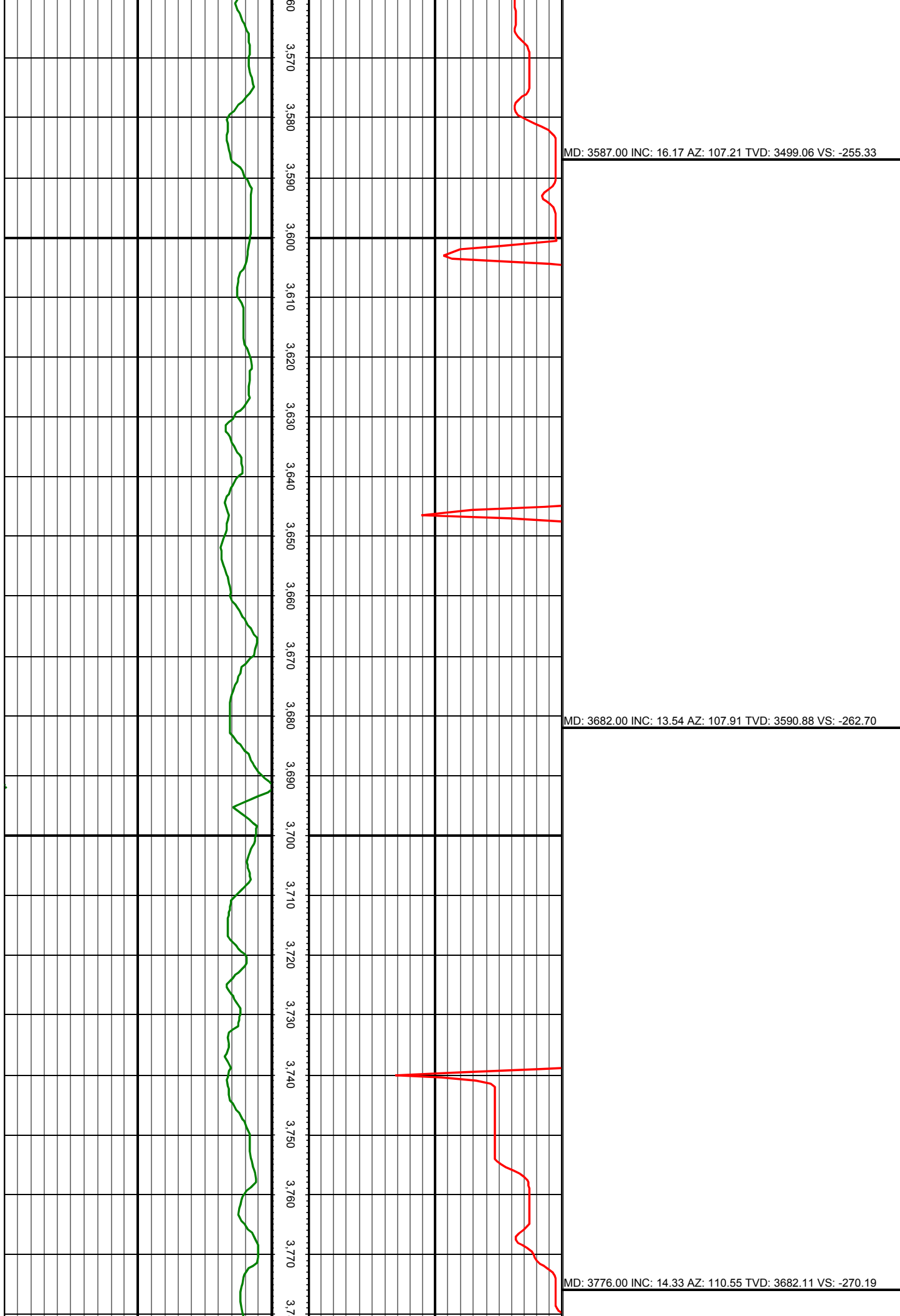
MD: 3208.00 INC: 13.80 AZ: 106.51 TVD: 3132.53 VS: -225.89

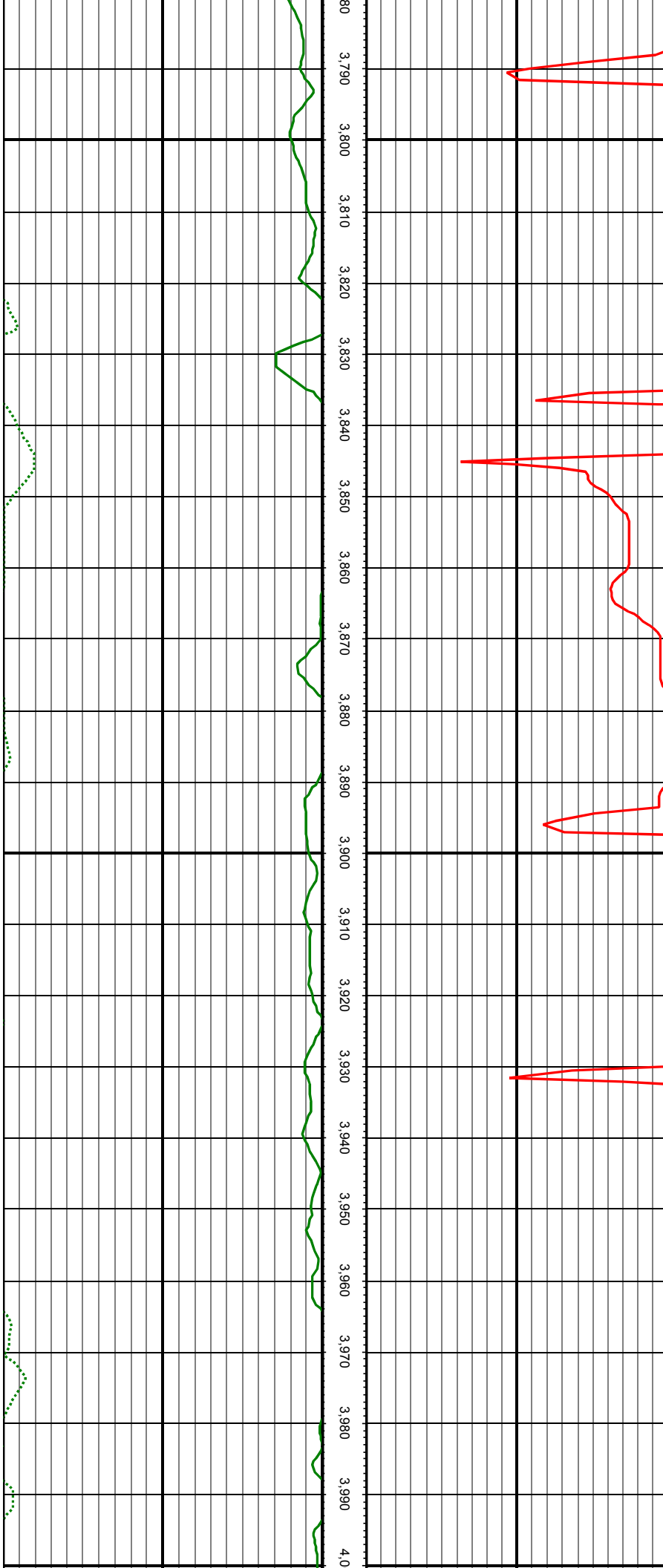
MD: 3303.00 INC: 15.16 AZ: 108.62 TVD: 3224.51 VS: -233.10



MD: 3397.00 INC: 14.77 AZ: 109.15 TVD: 3315.33 VS: -240.98

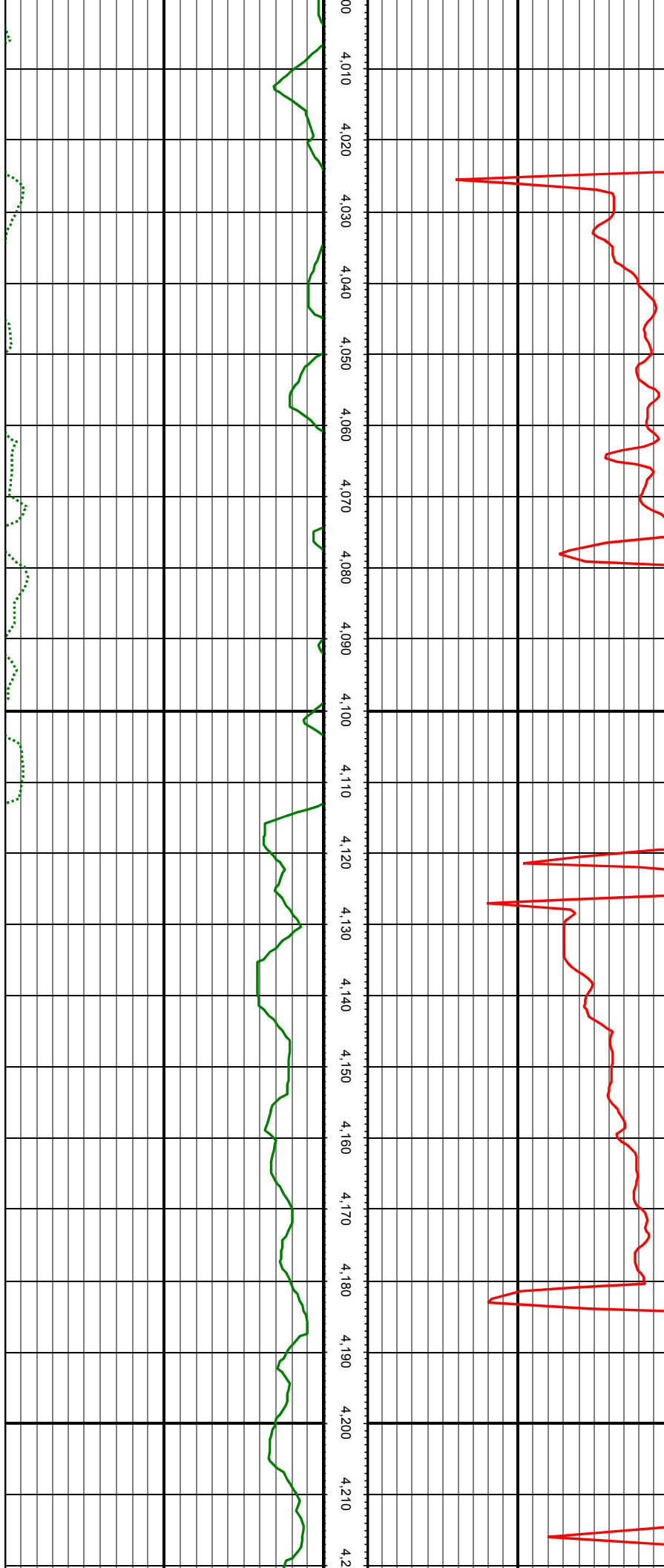
MD: 3492.00 INC: 14.02 AZ: 106.16 TVD: 3407.34 VS: -248.19





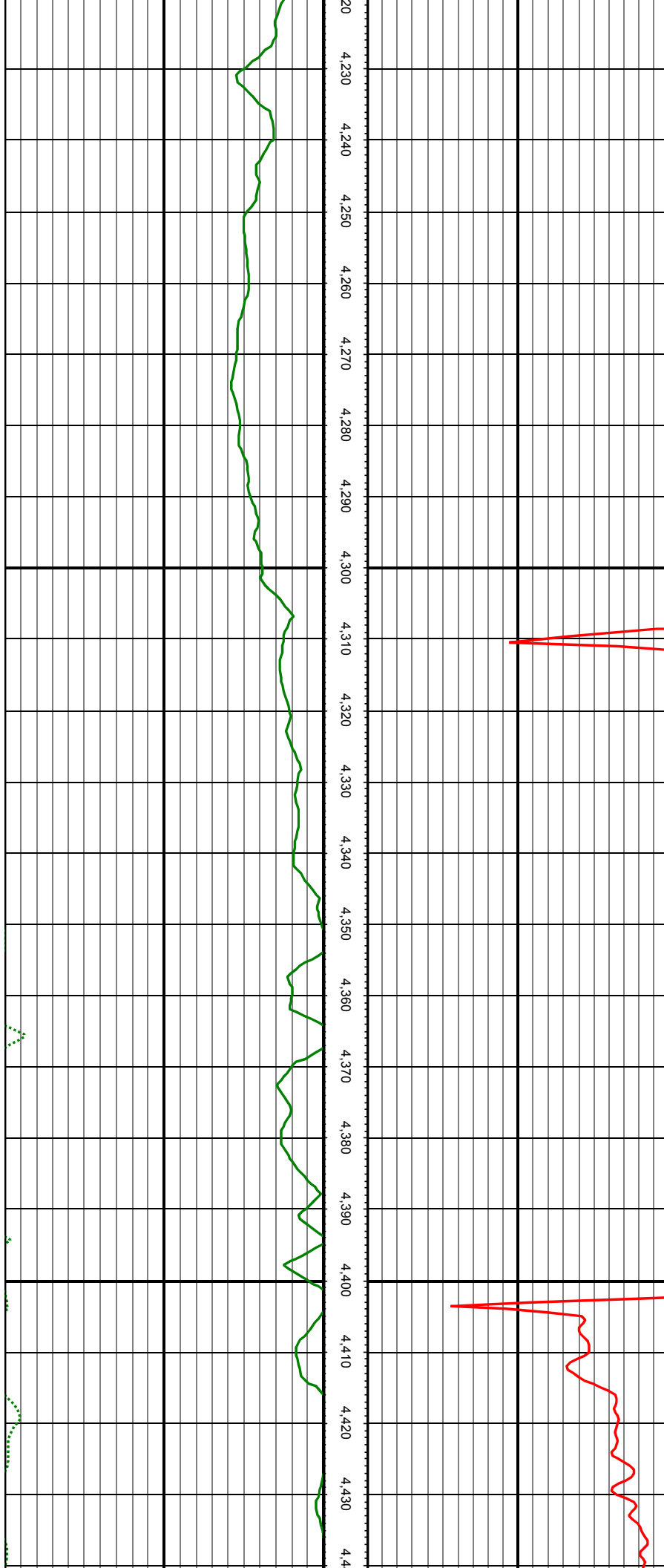
MD: 3872.00 INC: 15.60 AZ: 112.13 TVD: 3774.85 VS: -279.25

MD: 3967.00 INC: 13.01 AZ: 109.06 TVD: 3866.90 VS: -287.58



MD: 4062.00 INC: 13.54 AZ: 111.25 TVD: 3959.36 VS: -295.13

MD: 4158.00 INC: 15.56 AZ: 113.72 TVD: 4052.28 VS: -304.41



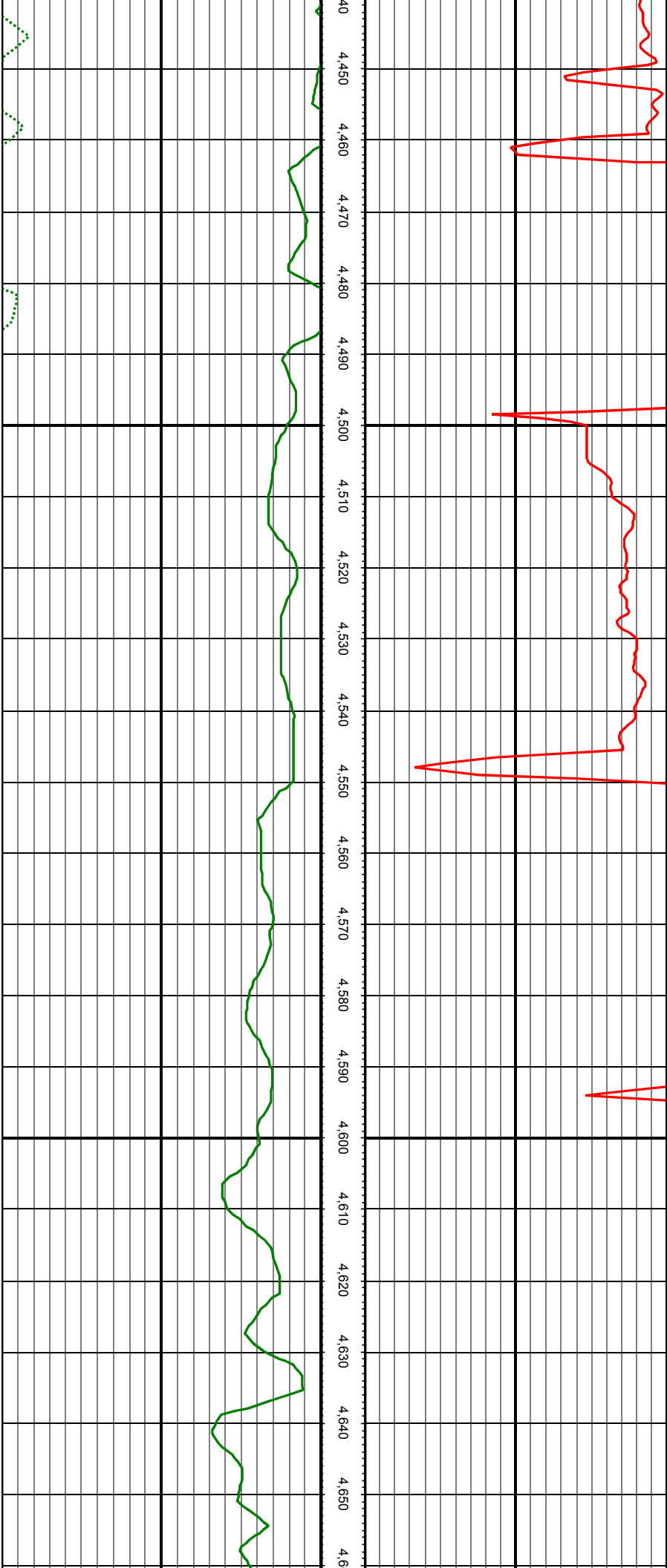
MD: 4253.00 INC: 15.56 AZ: 108.53 TVD: 4143.80 VS: -313.62

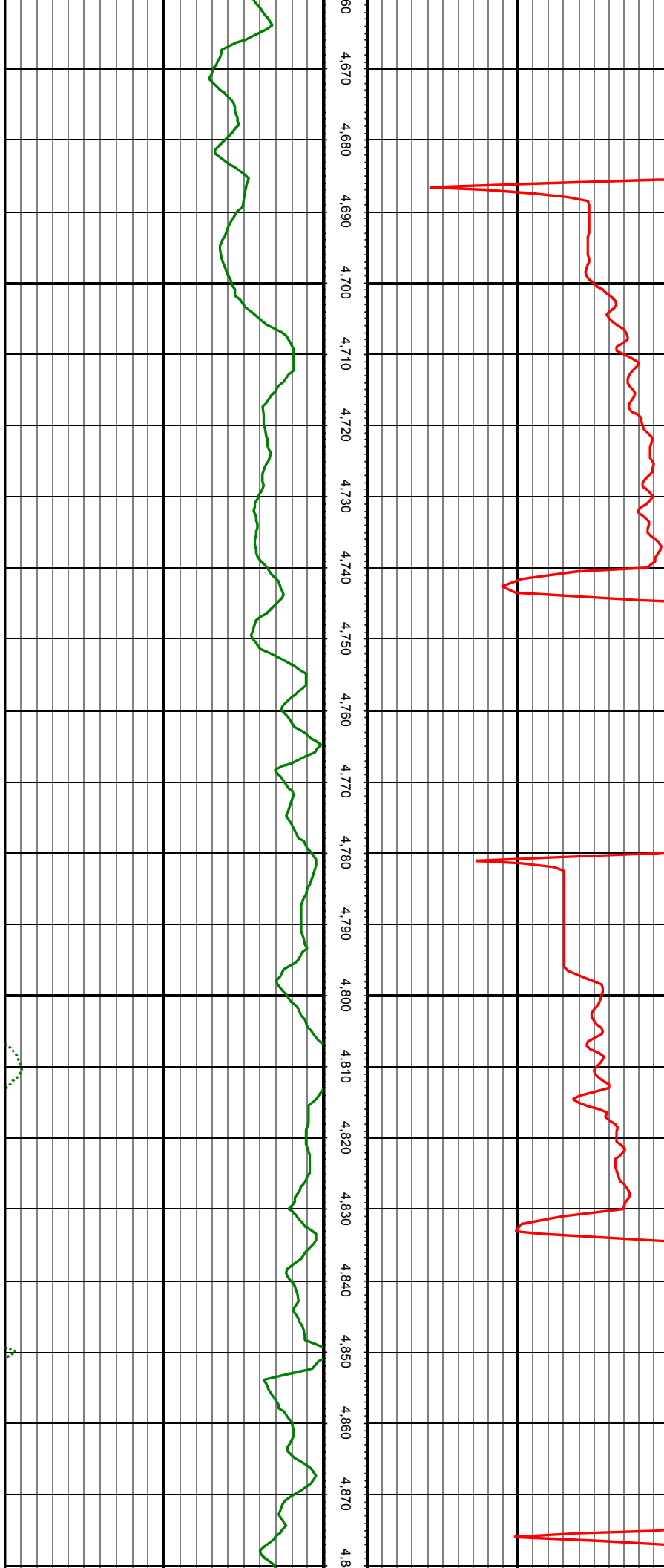
MD: 4348.00 INC: 12.13 AZ: 107.12 TVD: 4236.03 VS: -320.63

MD: 4443.00 INC: 12.92 AZ: 104.93 TVD: 4328.77 VS: -326.33

MD: 4538.00 INC: 15.73 AZ: 105.10 TVD: 4420.81 VS: -332.45

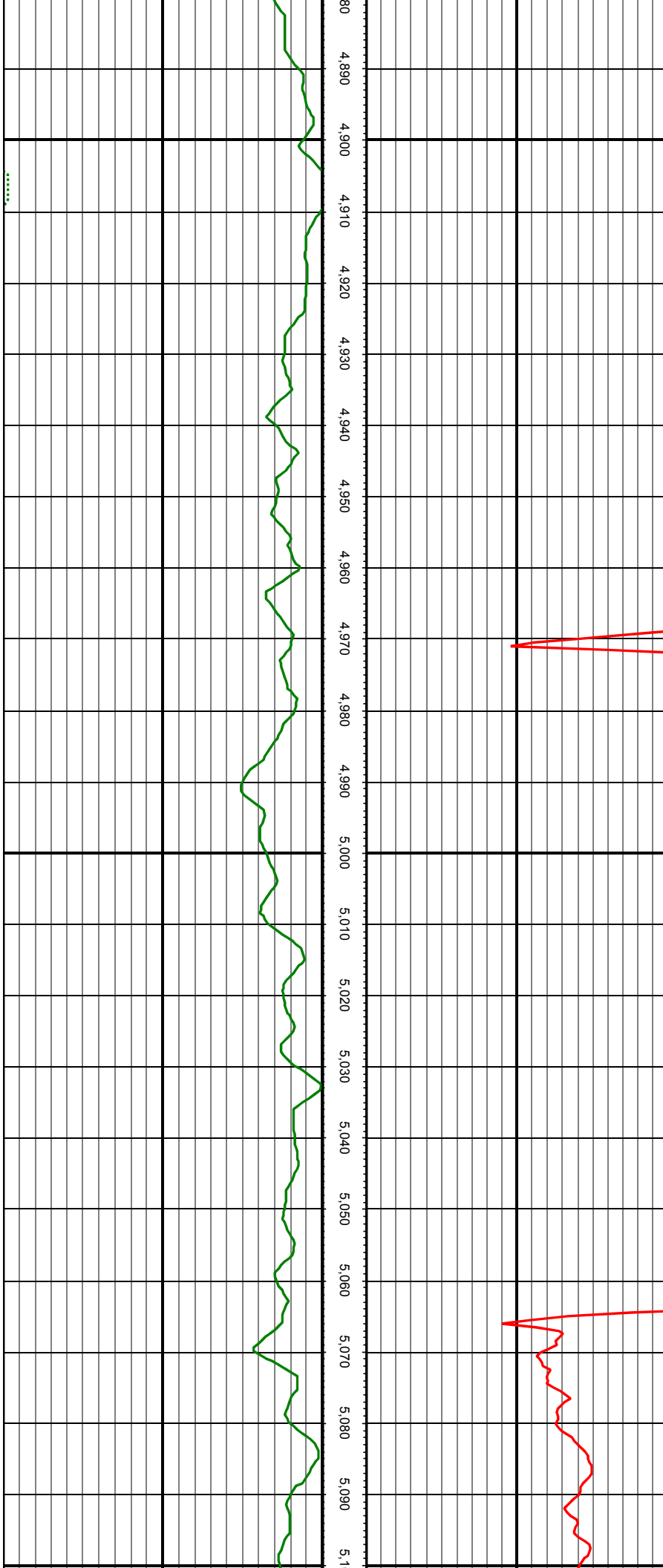
MD: 4632.00 INC: 13.45 AZ: 102.91 TVD: 4511.77 VS: -338.24





MD: 4727.00 INC: 14.81 AZ: 108.79 TVD: 4603.90 VS: -344.65

MD: 4822.00 INC: 18.68 AZ: 115.03 TVD: 4694.86 VS: -355.03



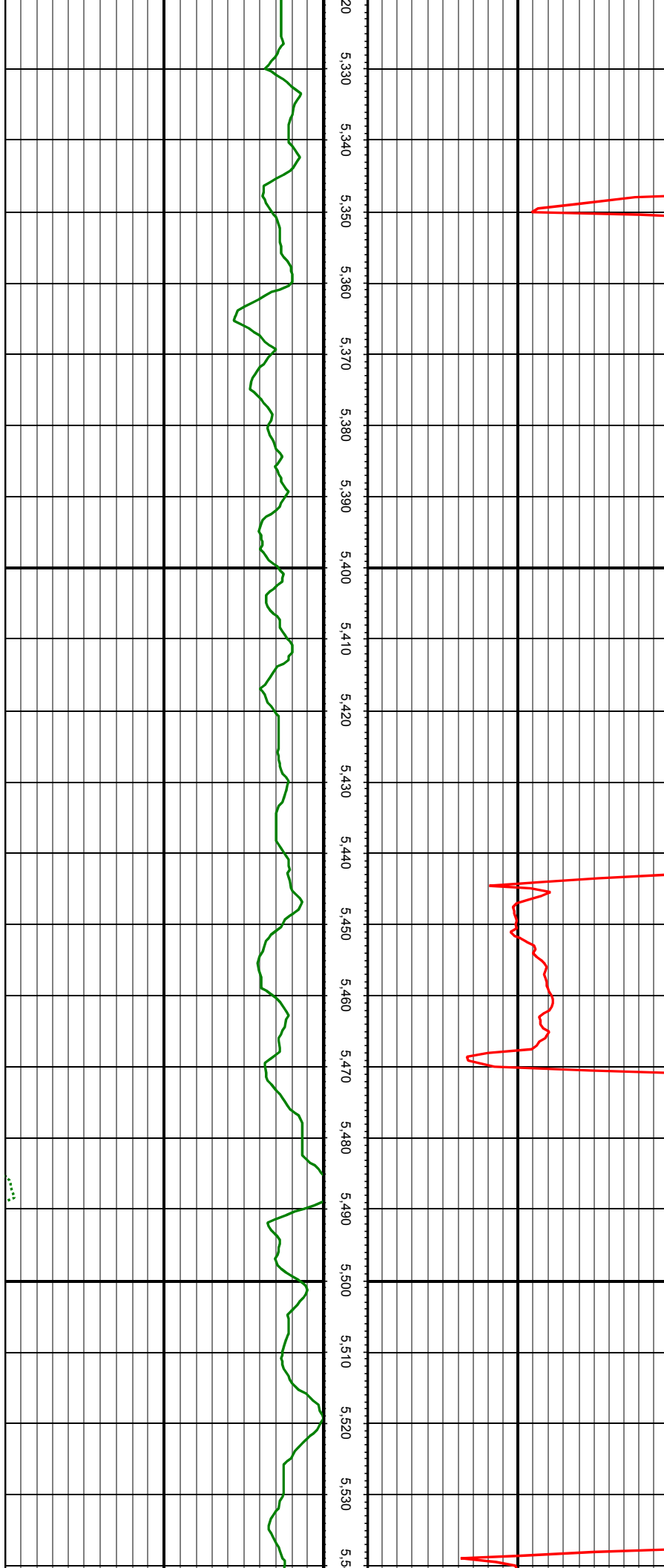
MD: 4917.00 INC: 16.17 AZ: 116.53 TVD: 4785.49 VS: -367.41

MD: 5012.00 INC: 13.10 AZ: 113.01 TVD: 4877.40 VS: -377.56

MD: 5107.00 INC: 15.38 AZ: 115.39 TVD: 4969.48 VS: -387.19

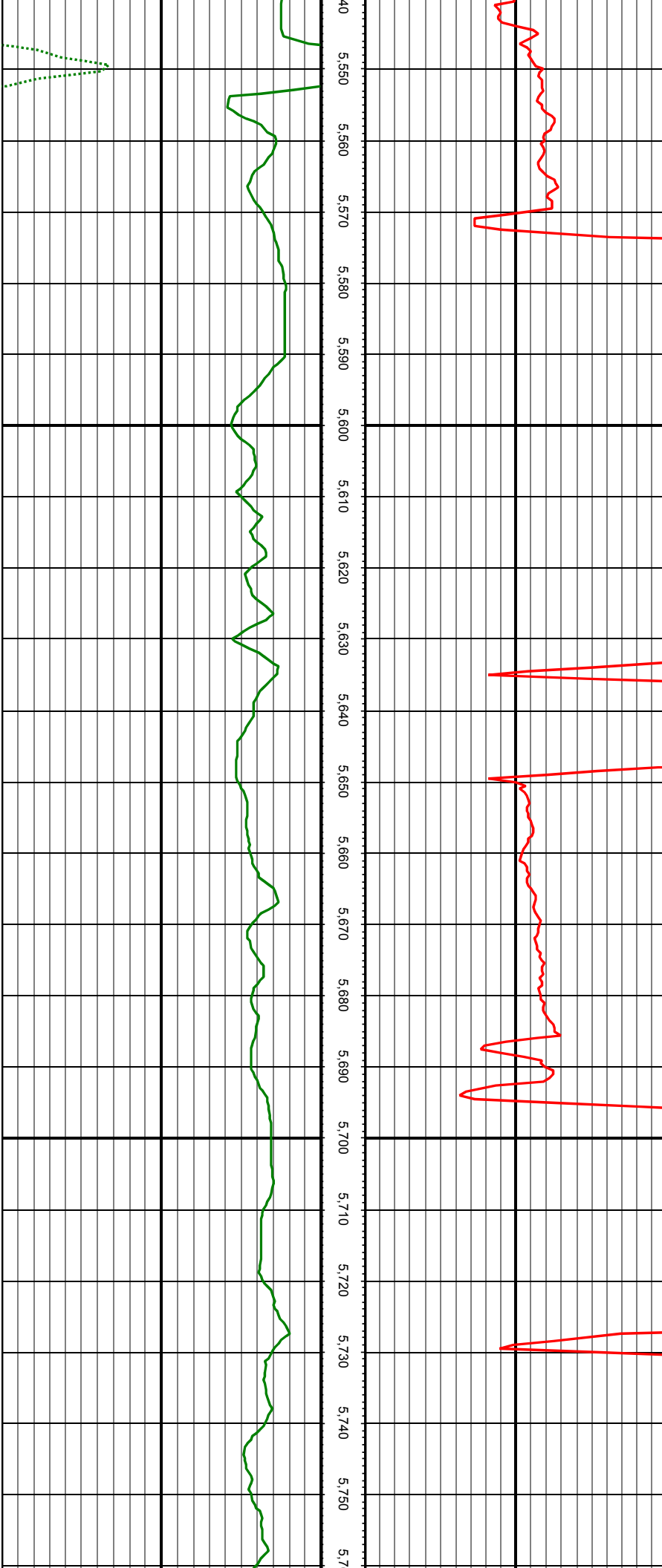
MD: 5202.00 INC: 17.89 AZ: 115.47 TVD: 5060.49 VS: -398.90

MD: 5297.00 INC: 17.40 AZ: 116.53 TVD: 5151.02 VS: -411.55



MD: 5391.00 INC: 14.37 AZ: 114.16 TVD: 5241.43 VS: -422.64

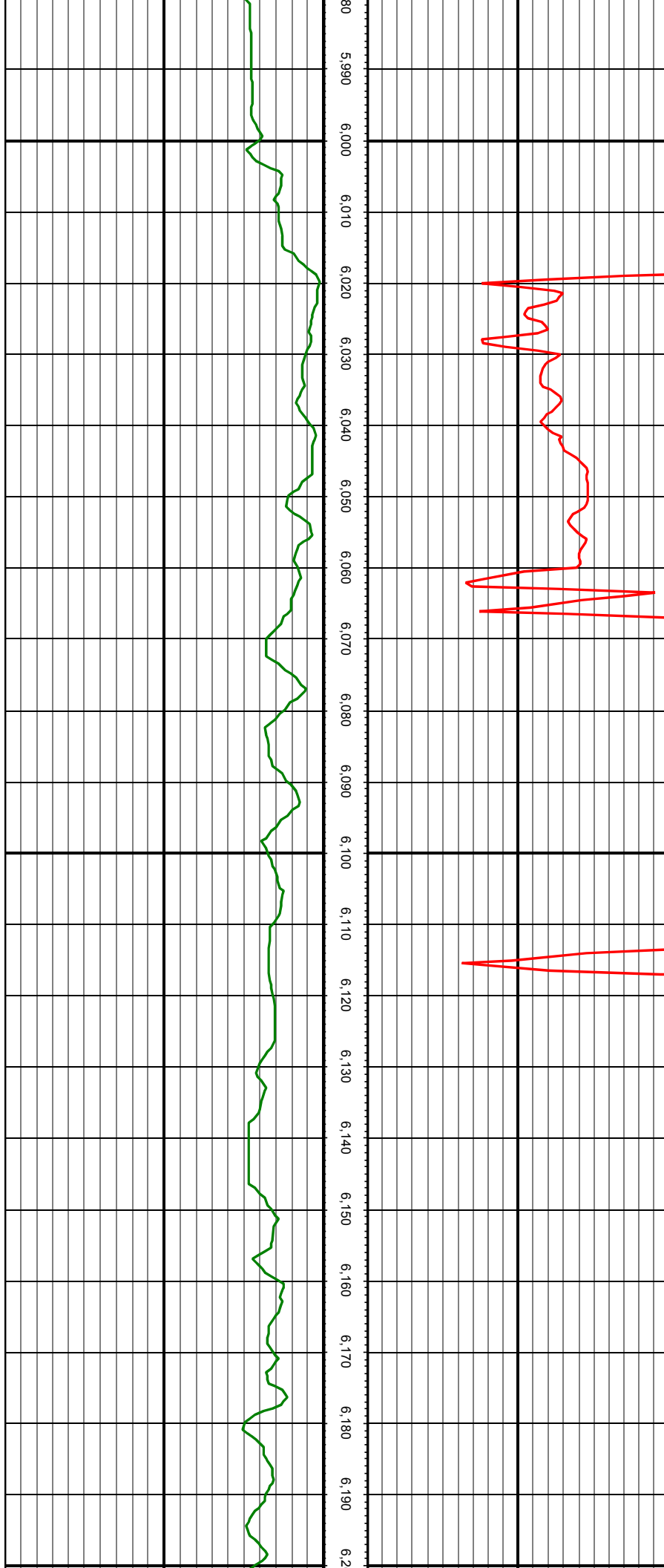
MD: 5486.00 INC: 13.84 AZ: 110.20 TVD: 5333.56 VS: -431.41



MD: 5769.00 INC: 13.76 AZ: 104.14 TVD: 5608.05 VS: -451.02

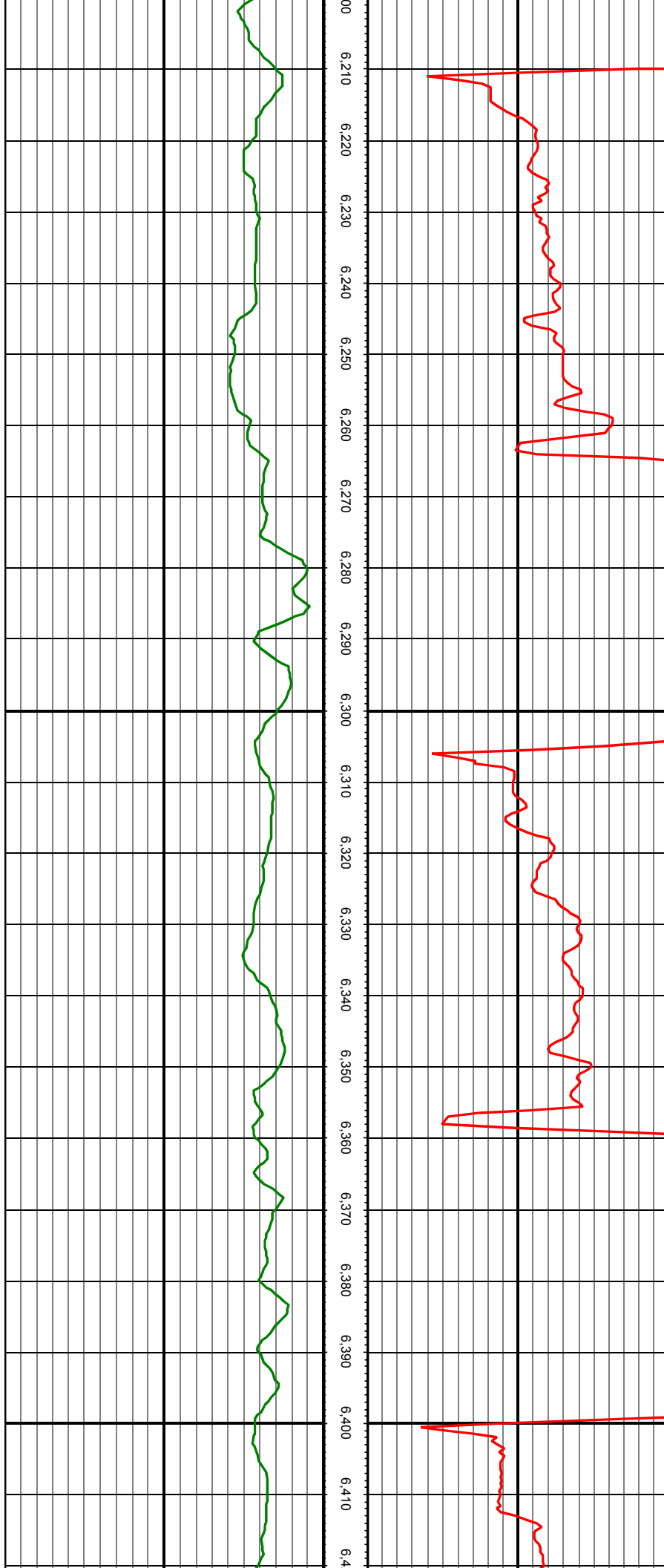
MD: 5864.00 INC: 12.44 AZ: 111.96 TVD: 5700.58 VS: -457.64

MD: 5959.00 INC: 13.18 AZ: 109.41 TVD: 5793.22 VS: -465.09



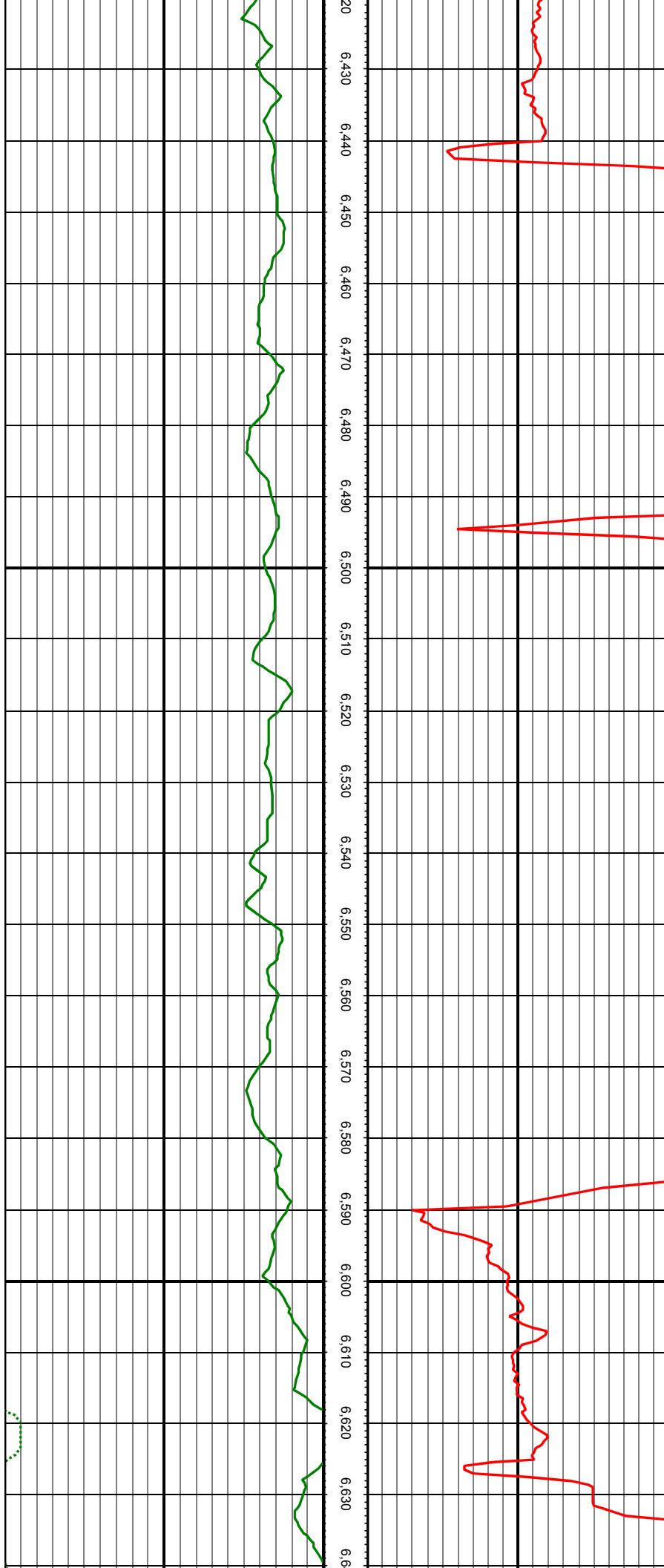
MD: 6053.00 INC: 14.59 AZ: 114.77 TVD: 5884.47 VS: -473.63

MD: 6149.00 INC: 11.65 AZ: 109.15 TVD: 5977.96 VS: -481.91



MD: 6244.00 INC: 12.83 AZ: 98.25 TVD: 6070.81 VS: -486.59

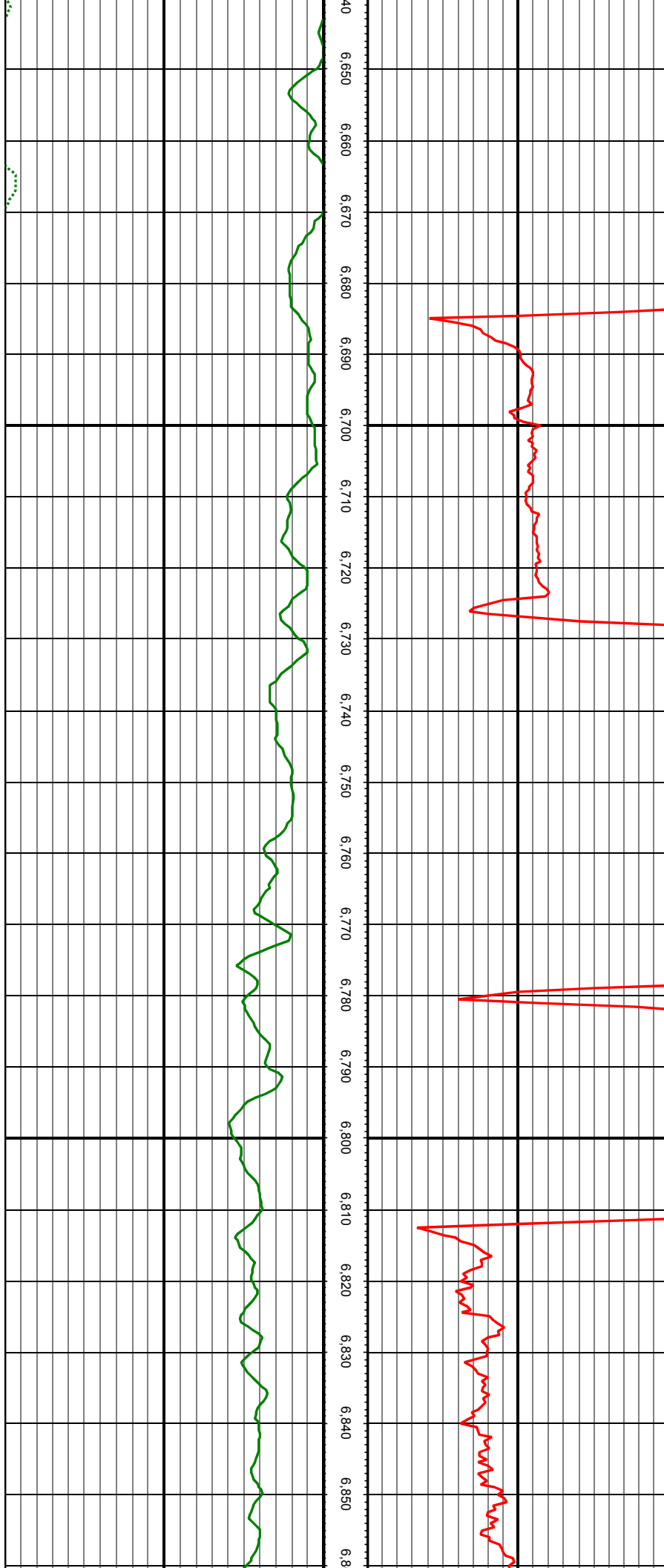
MD: 6340.00 INC: 16.13 AZ: 98.95 TVD: 6163.75 VS: -490.23



MD: 6434.00 INC: 16.17 AZ: 111.69 TVD: 6254.07 VS: -497.13

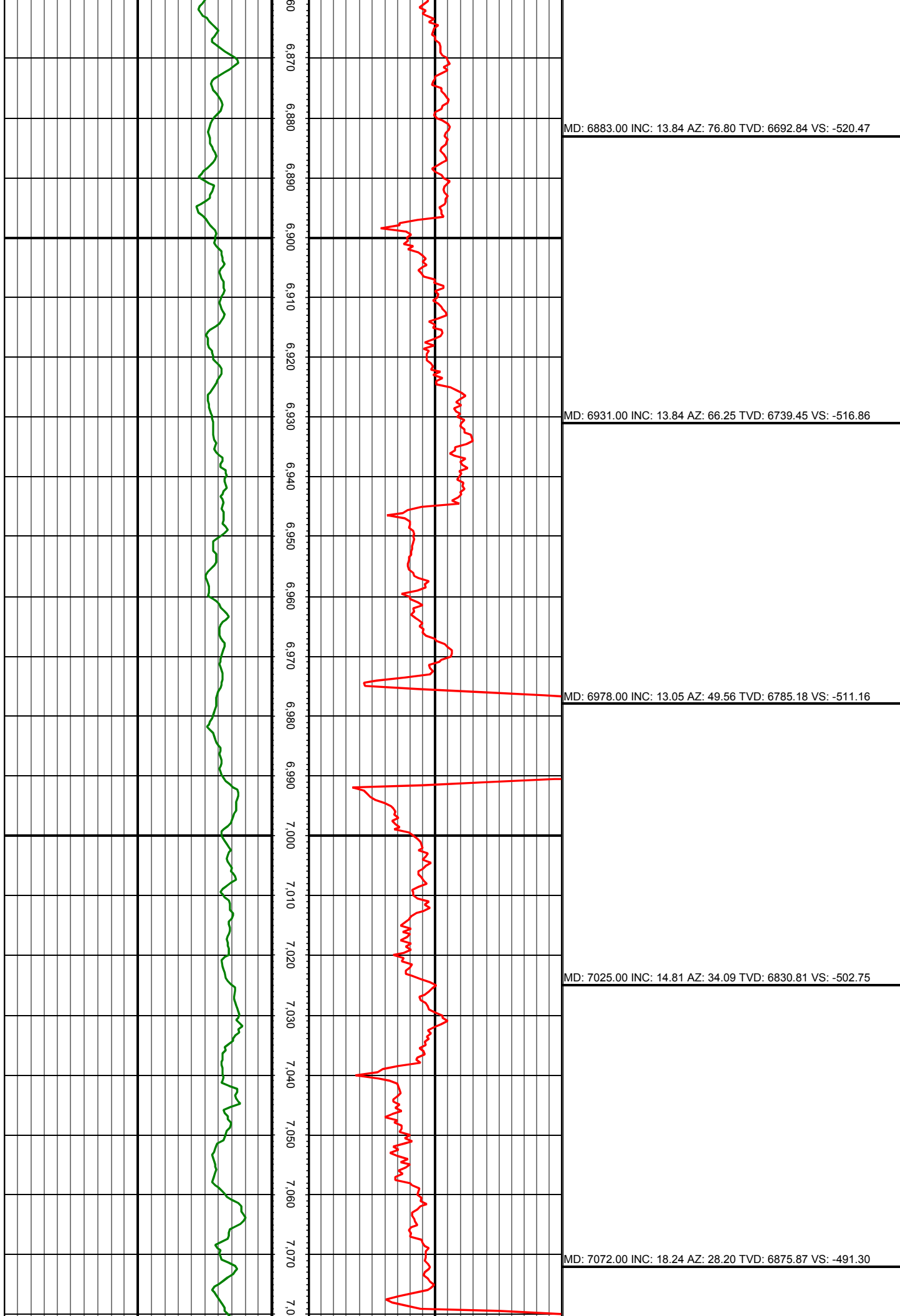
MD: 6529.00 INC: 11.56 AZ: 105.10 TVD: 6346.28 VS: -504.53

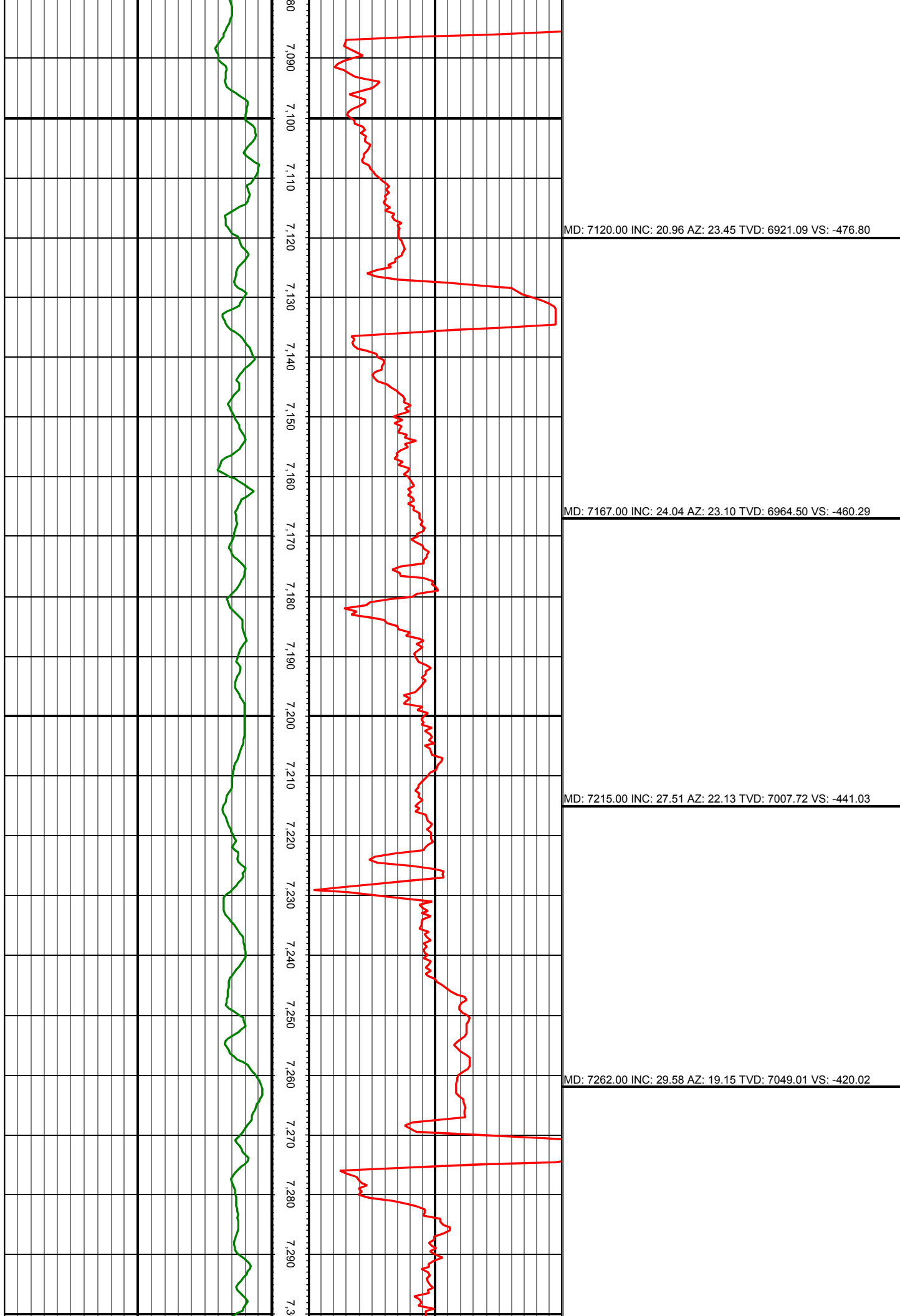
MD: 6624.00 INC: 11.21 AZ: 111.96 TVD: 6439.41 VS: -510.48

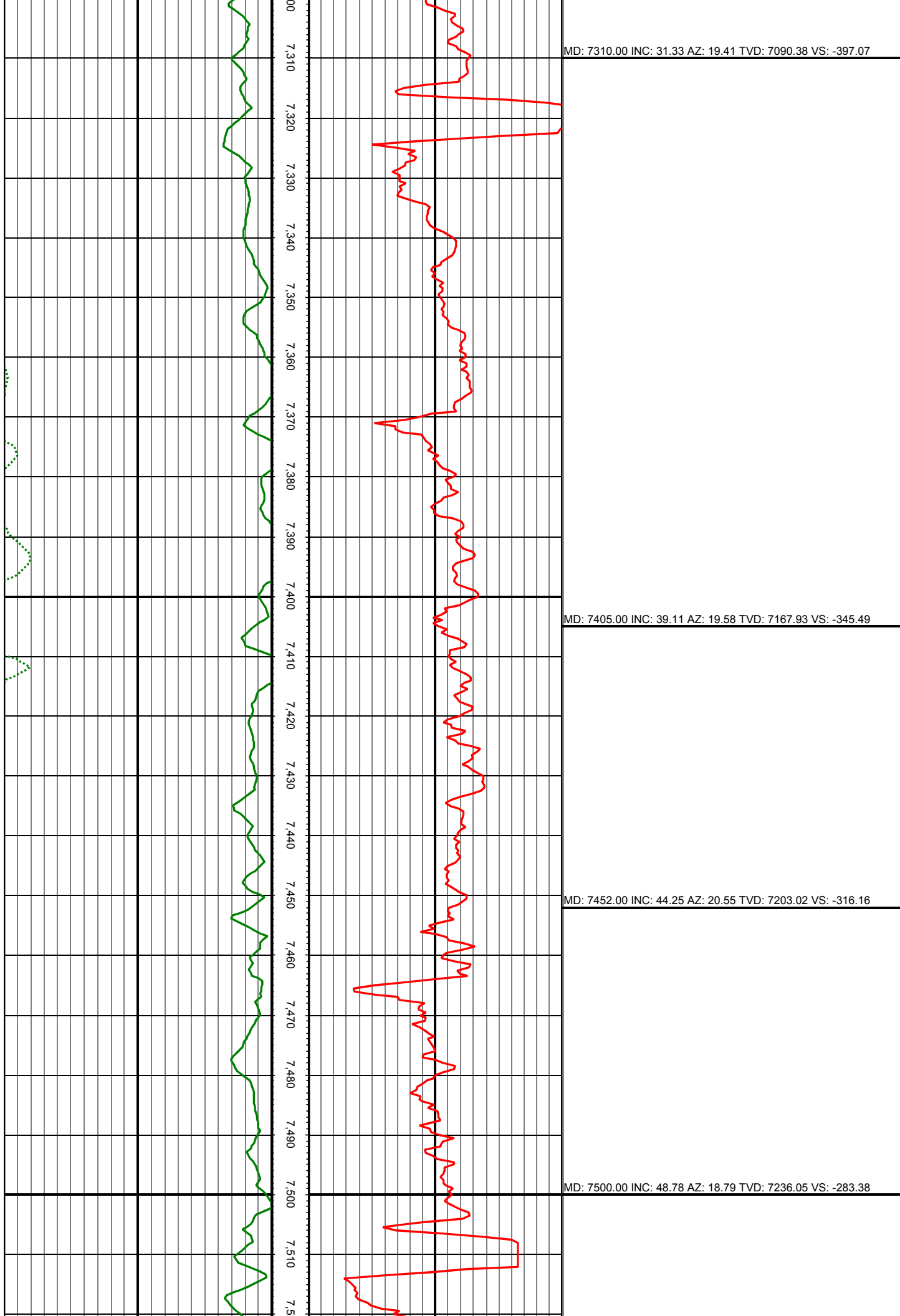


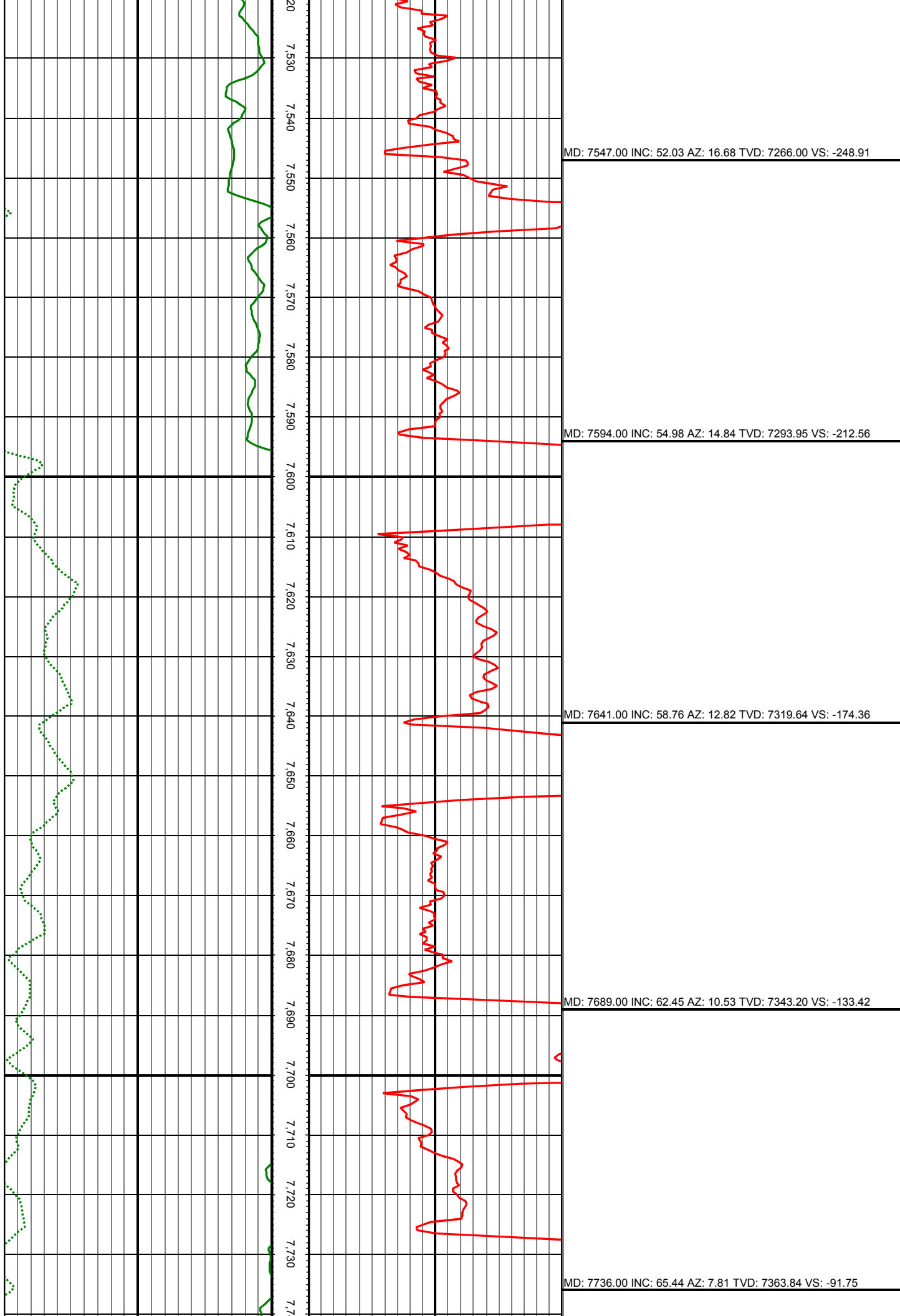
MD: 6718.00 INC: 12.57 AZ: 105.72 TVD: 6531.40 VS: -516.69

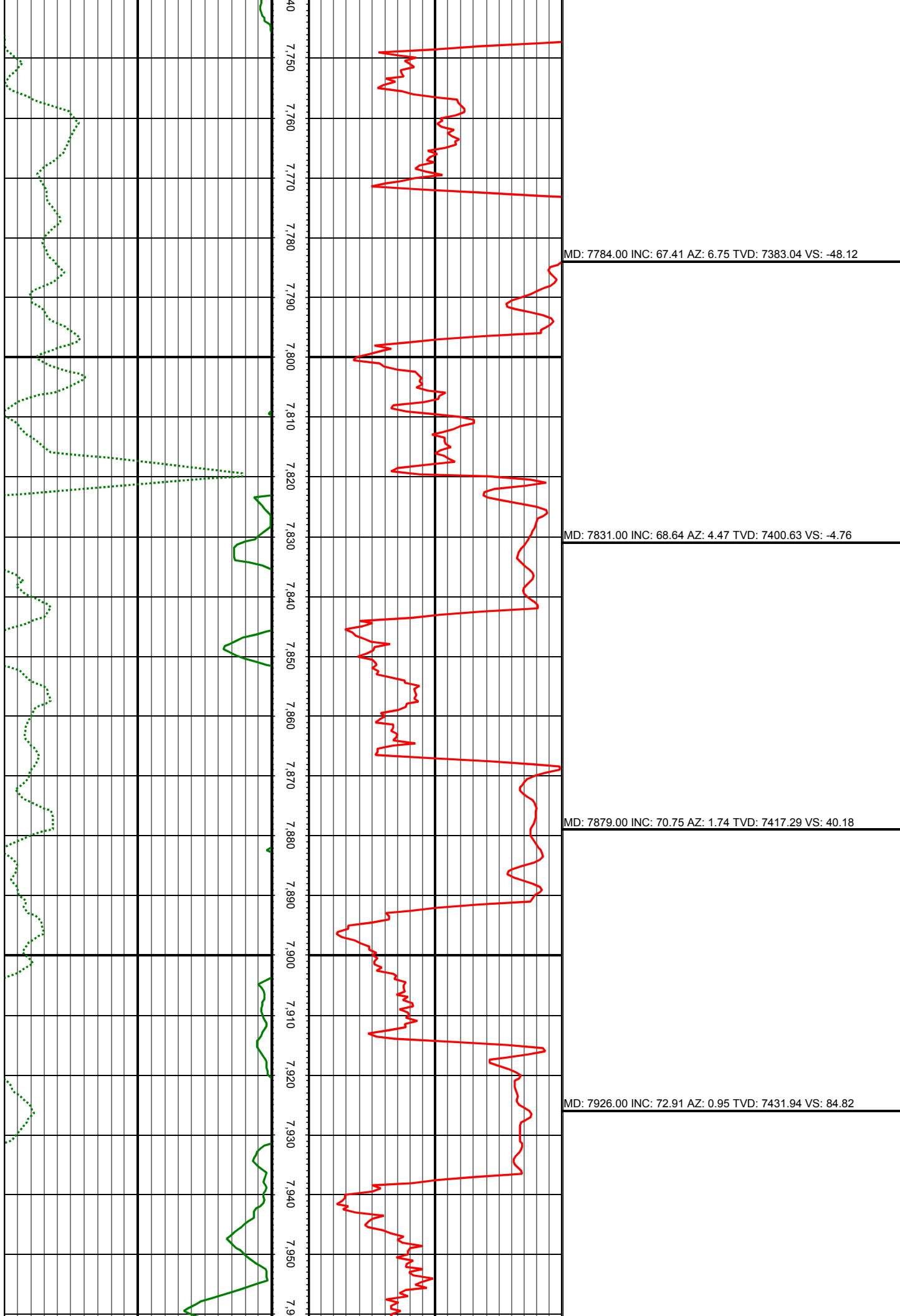
MD: 6836.00 INC: 10.99 AZ: 95.61 TVD: 6646.92 VS: -521.30

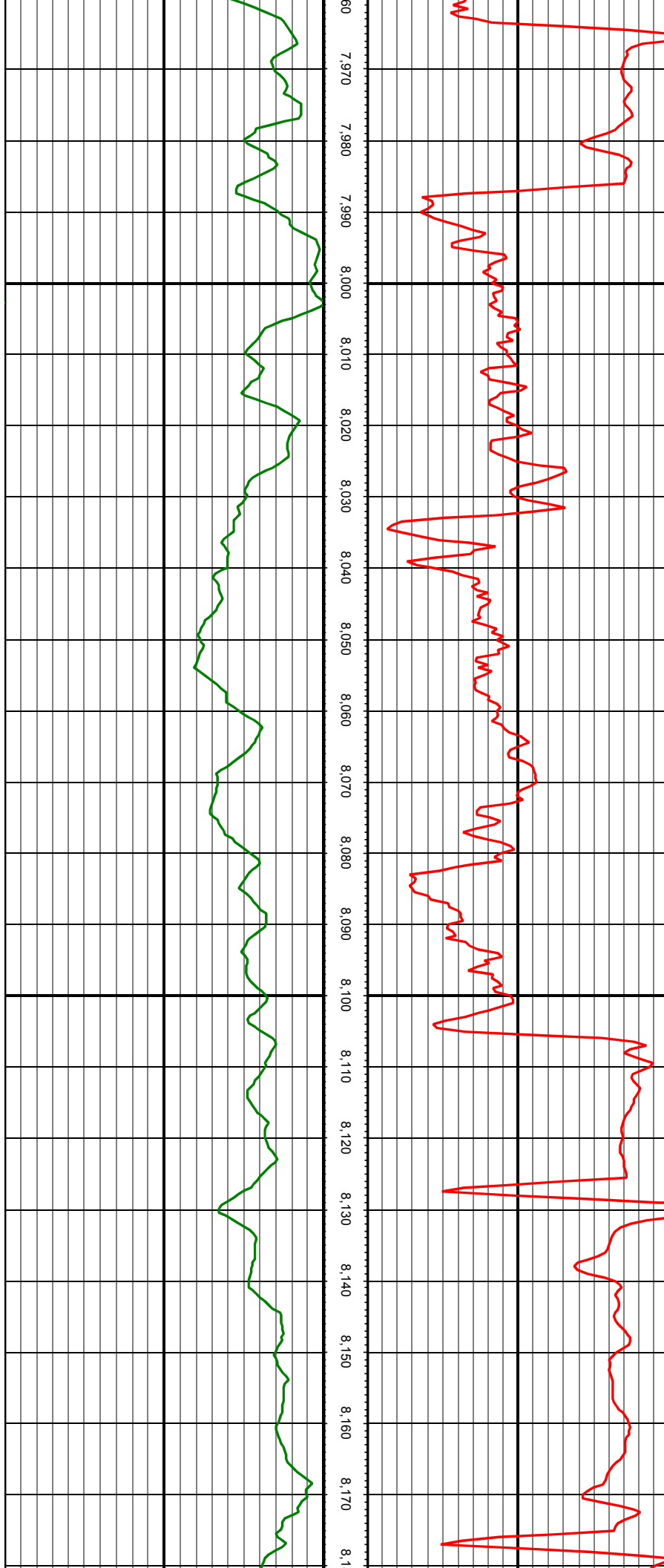












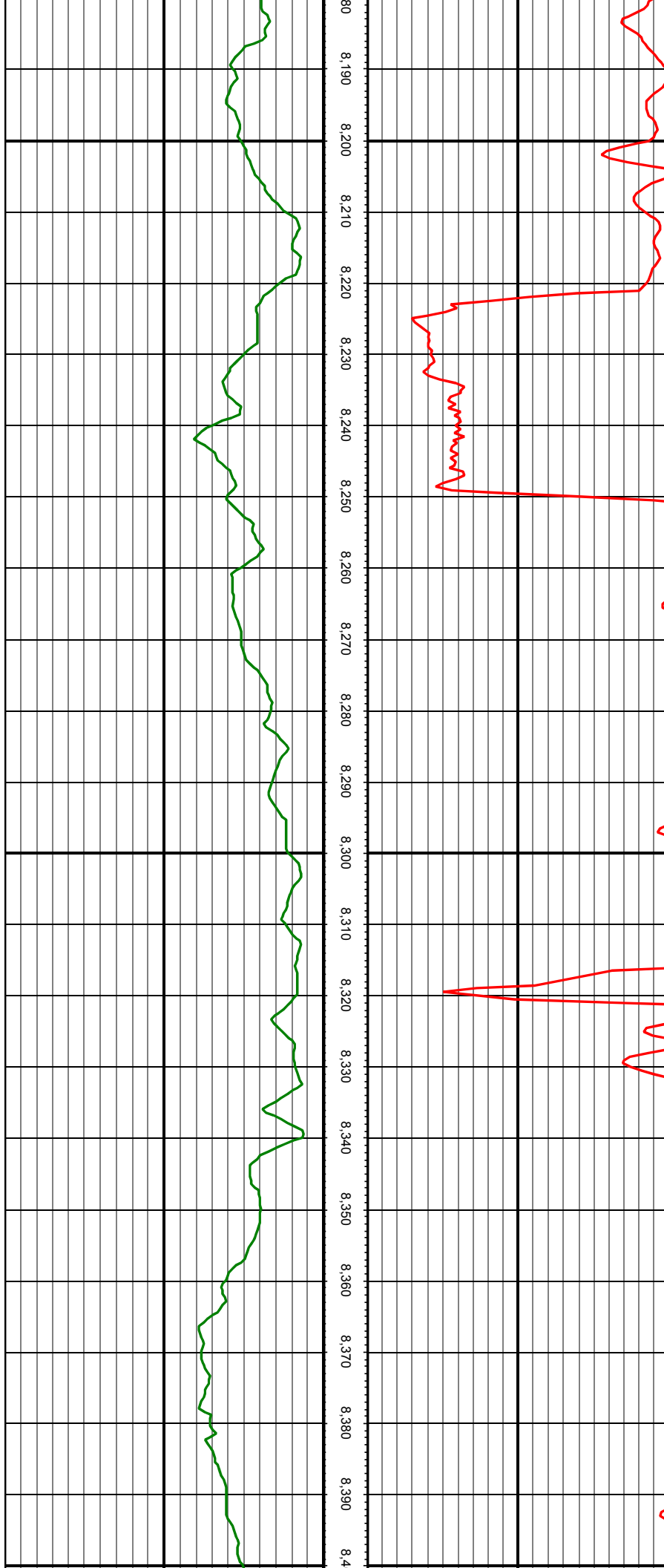
MD: 7974.00 INC: 74.36 AZ: 1.57 TVD: 7445.47 VS: 130.86

MD: 8021.00 INC: 78.35 AZ: 359.90 TVD: 7456.55 VS: 176.52

MD: 8068.00 INC: 83.50 AZ: 0.60 TVD: 7463.96 VS: 222.92

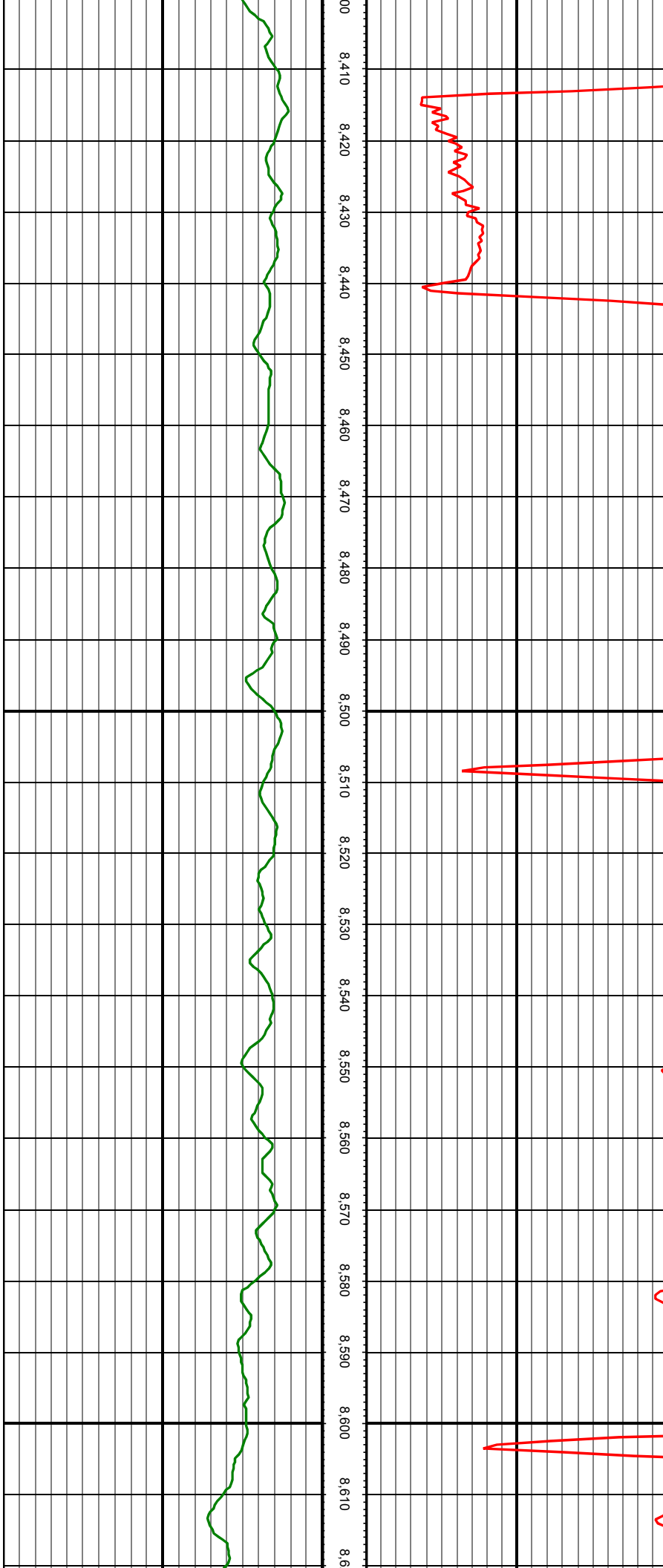
MD: 8115.00 INC: 87.14 AZ: 2.01 TVD: 7467.80 VS: 269.74

MD: 8163.00 INC: 86.79 AZ: 0.95 TVD: 7470.34 VS: 317.65



MD: 8257.00 INC: 89.30 AZ: 358.14 TVD: 7473.55 VS: 411.58

MD: 8352.00 INC: 88.95 AZ: 358.14 TVD: 7475.00 VS: 506.52



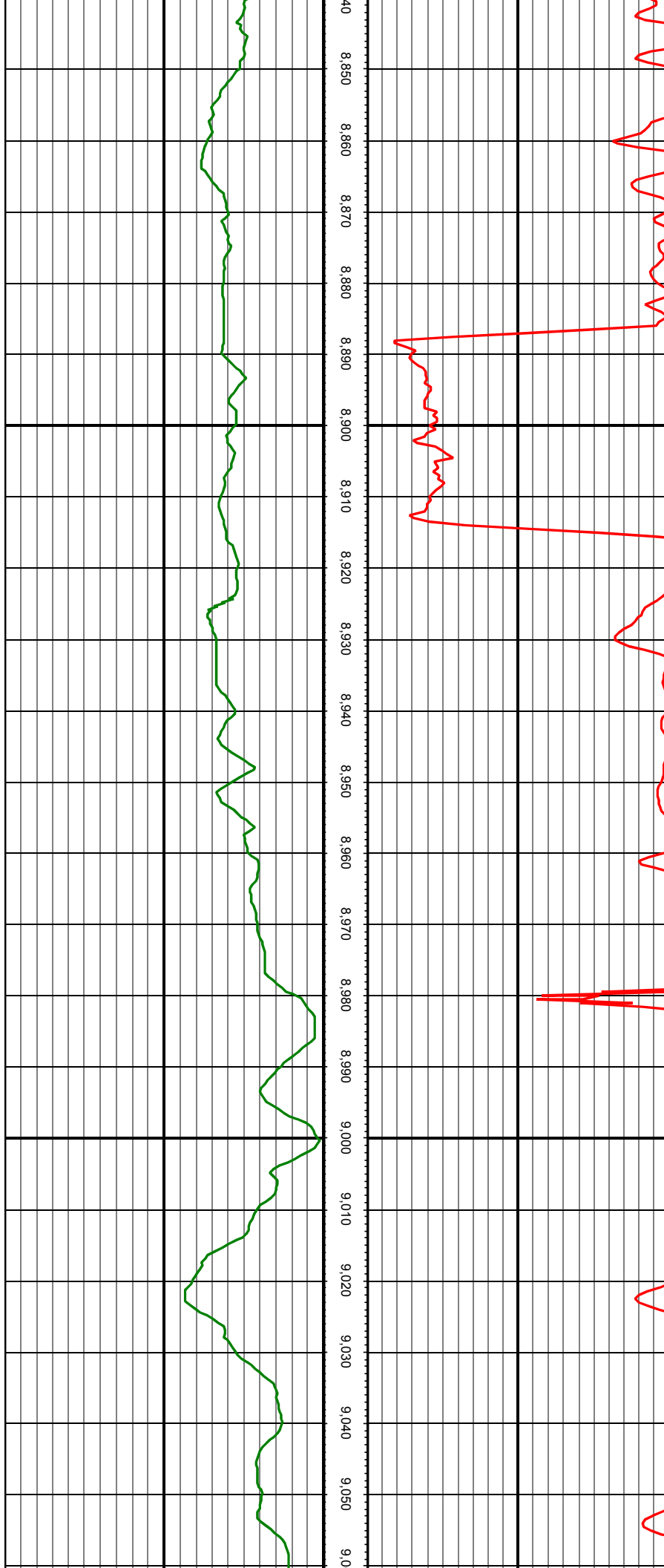
MD: 8447.00 INC: 90.57 AZ: 3.06 TVD: 7475.40 VS: 601.48

MD: 8541.00 INC: 91.14 AZ: 2.89 TVD: 7473.99 VS: 695.34

MD: 8636.00 INC: 91.32 AZ: 359.81 TVD: 7471.95 VS: 790.28

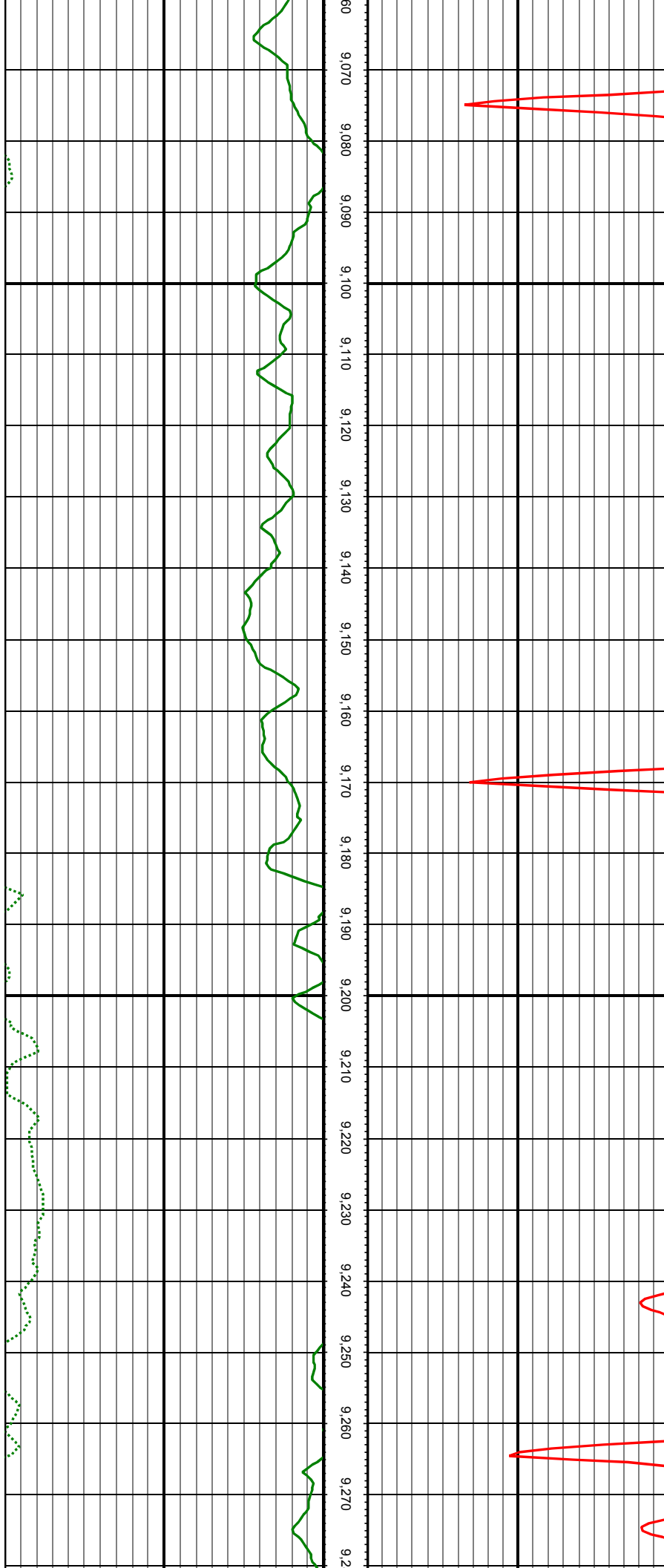
MD: 8731.00 INC: 91.93 AZ: 0.07 TVD: 7469.26 VS: 885.24

MD: 8823.00 INC: 92.24 AZ: 359.02 TVD: 7465.91 VS: 977.17



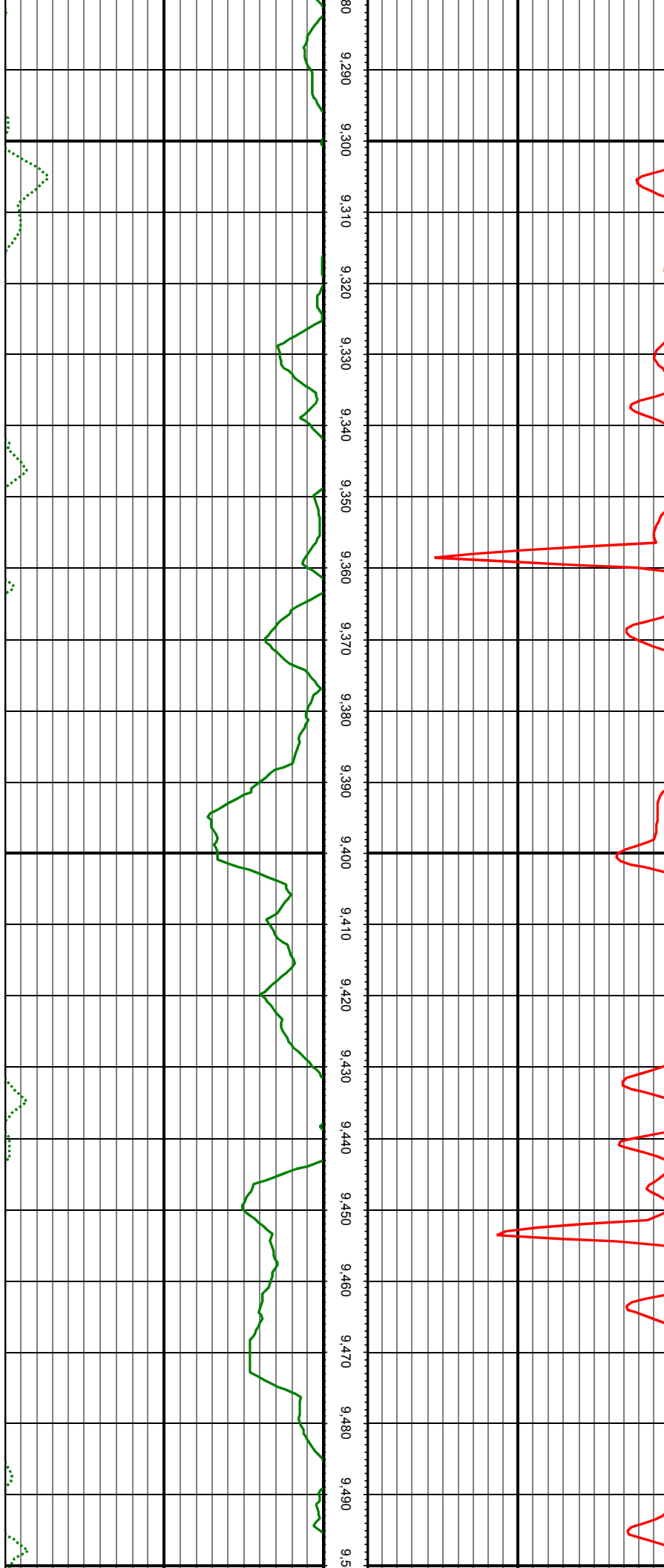
MD: 8918.00 INC: 91.27 AZ: 1.04 TVD: 7463.00 VS: 1072.12

MD: 9012.00 INC: 91.01 AZ: 359.63 TVD: 7461.13 VS: 1166.10



MD: 9107.00 INC: 90.92 AZ: 0.07 TVD: 7459.53 VS: 1261.08

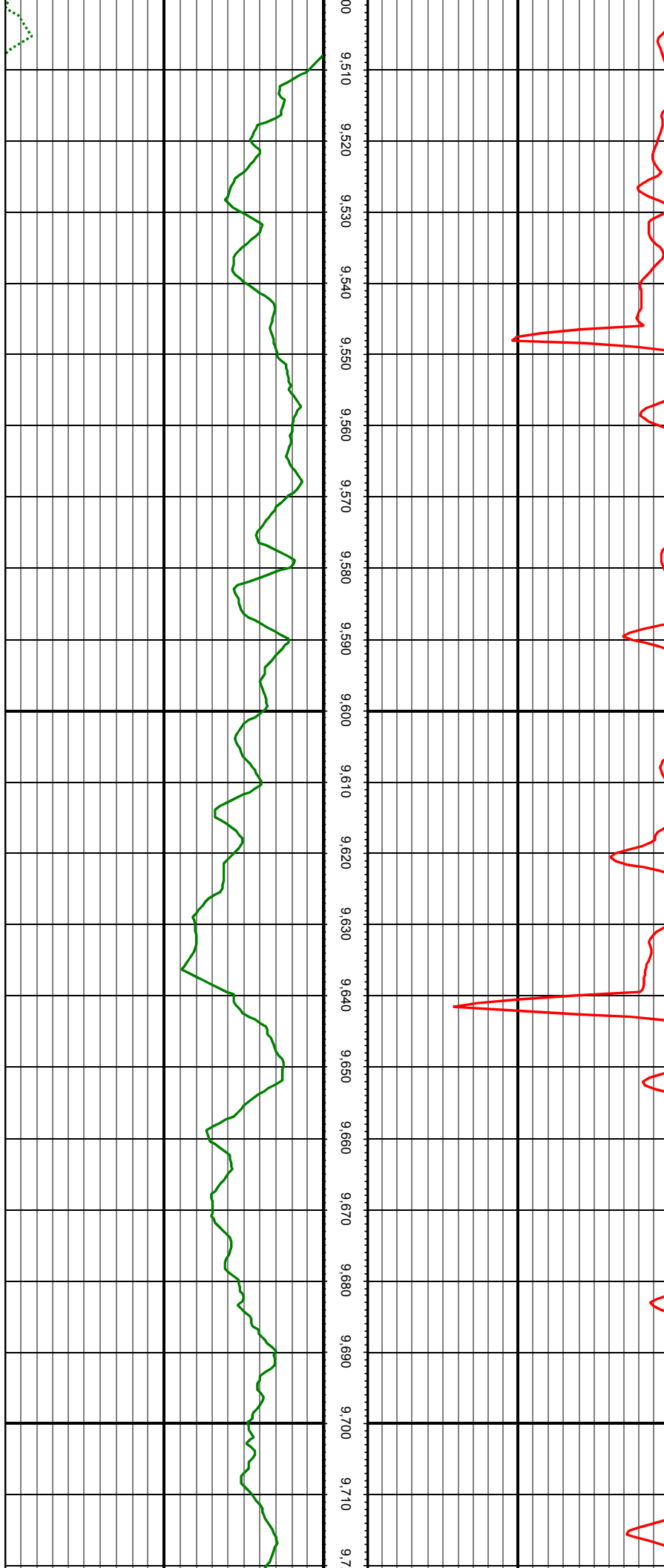
MD: 9202.00 INC: 90.44 AZ: 0.07 TVD: 7458.40 VS: 1356.08



MD: 9296.00 INC: 90.40 AZ: 358.23 TVD: 7457.72 VS: 1450.06

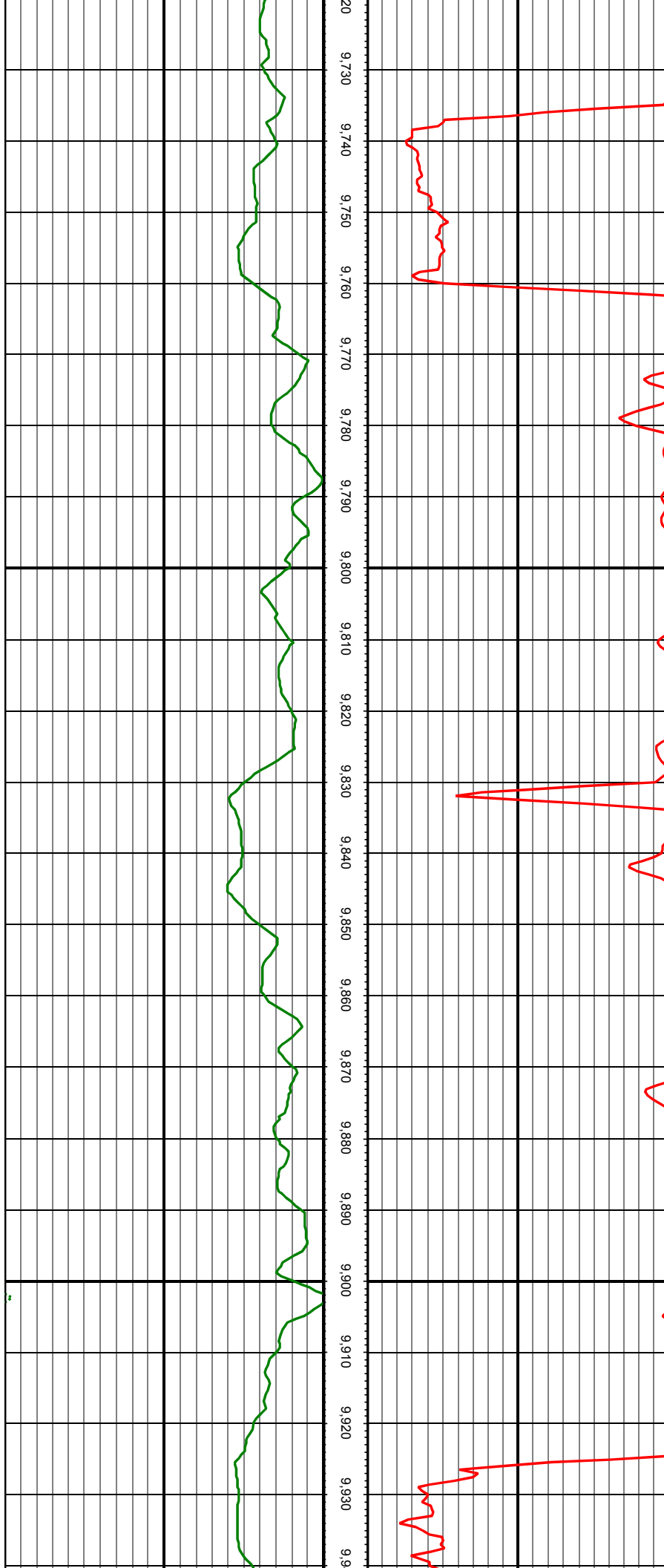
MD: 9391.00 INC: 90.40 AZ: 359.72 TVD: 7457.05 VS: 1545.04

MD: 9485.00 INC: 90.35 AZ: 359.63 TVD: 7456.44 VS: 1639.04



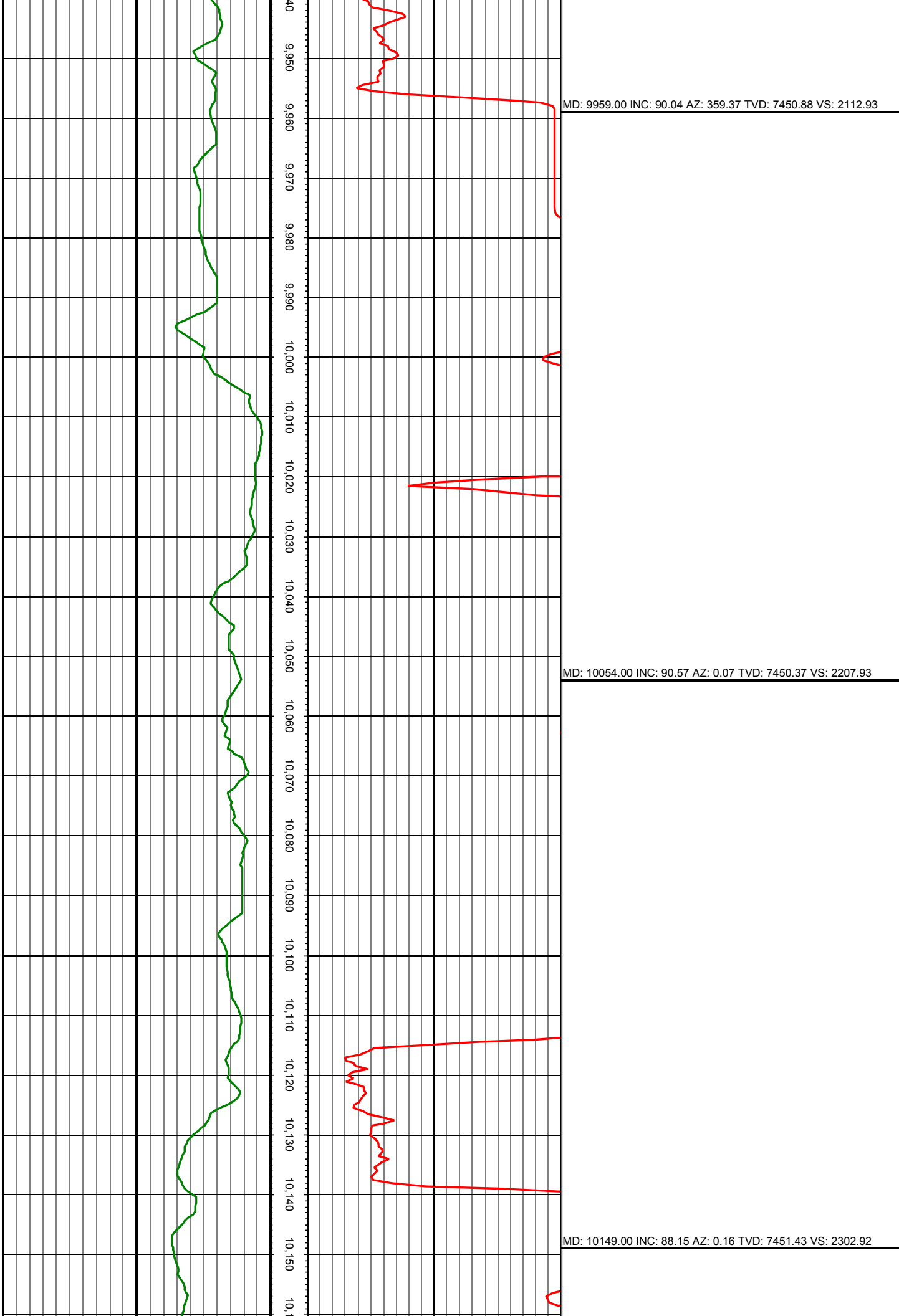
MD: 9580.00 INC: 90.31 AZ: 359.02 TVD: 7455.89 VS: 1734.03

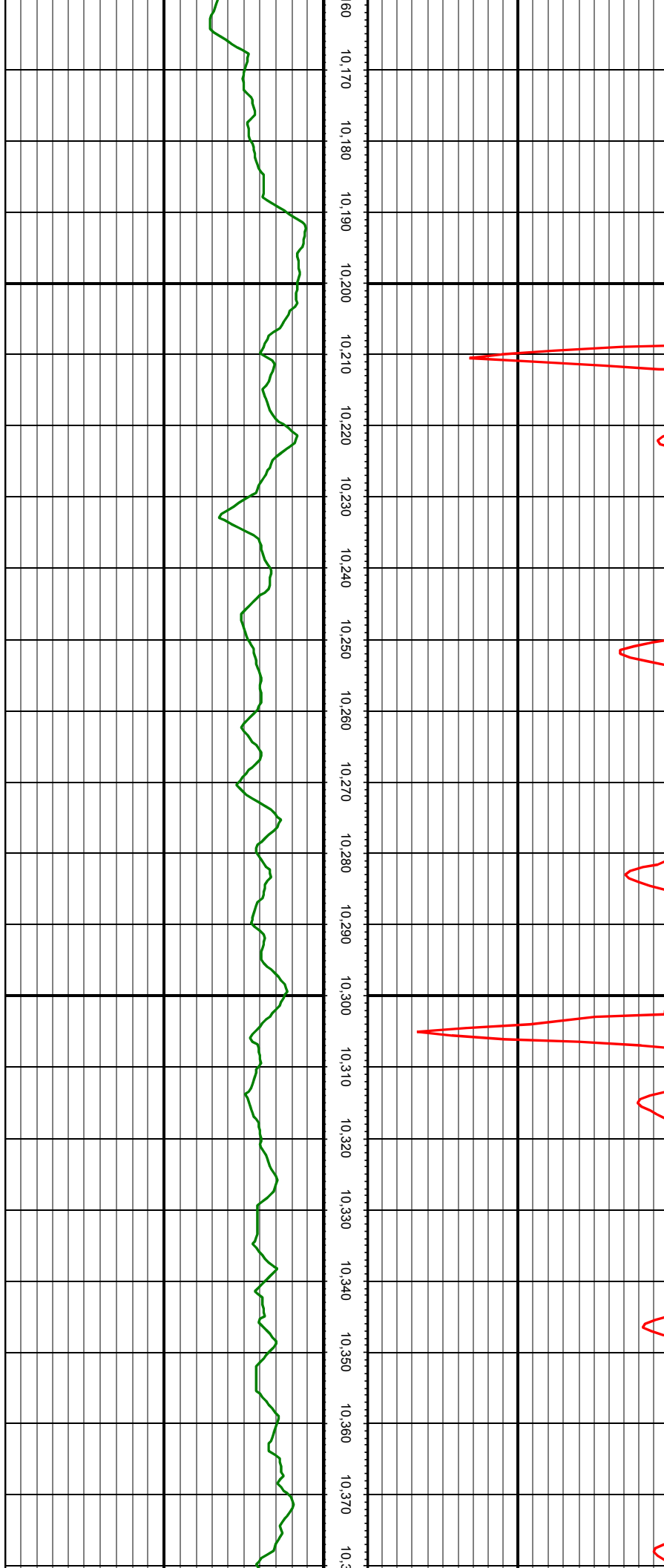
MD: 9674.00 INC: 90.26 AZ: 357.96 TVD: 7455.42 VS: 1828.00



MD: 9769.00 INC: 90.88 AZ: 1.22 TVD: 7454.48 VS: 1922.98

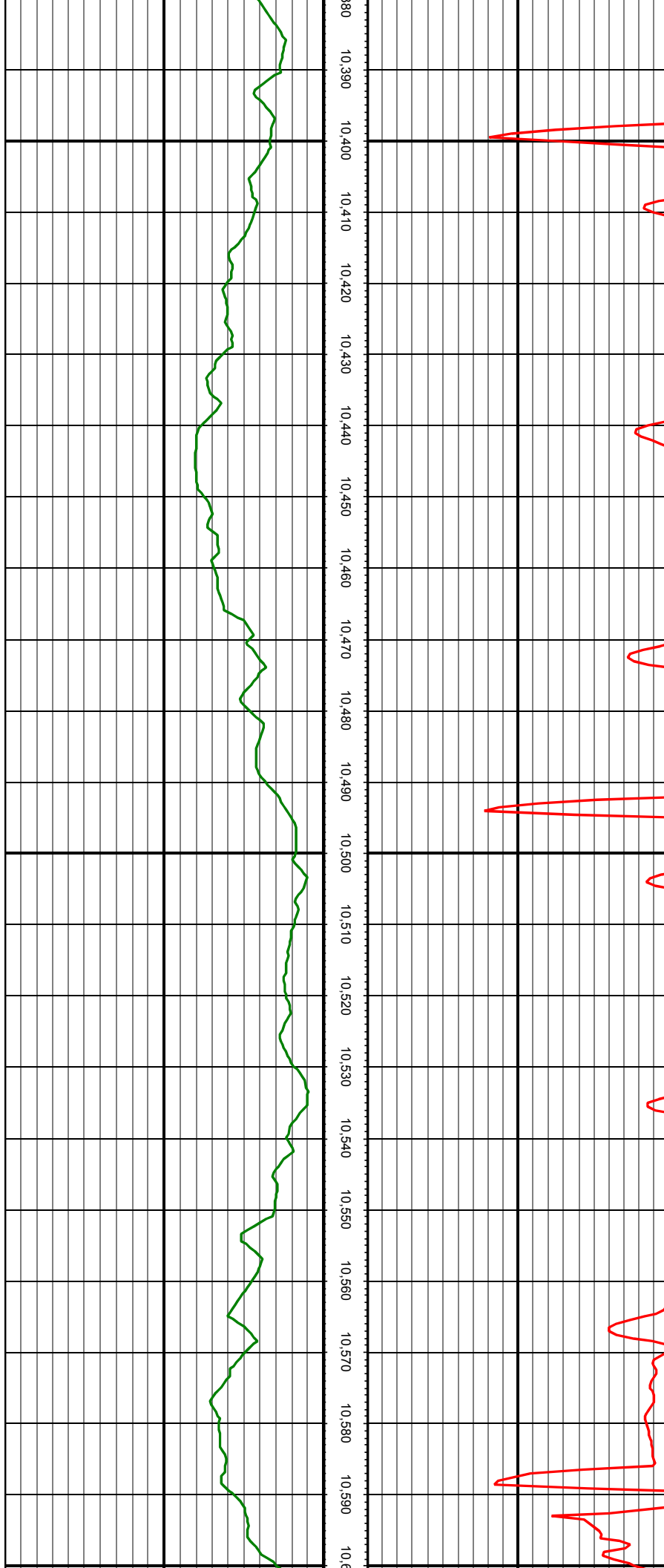
MD: 9864.00 INC: 91.71 AZ: 359.90 TVD: 7452.33 VS: 2017.95





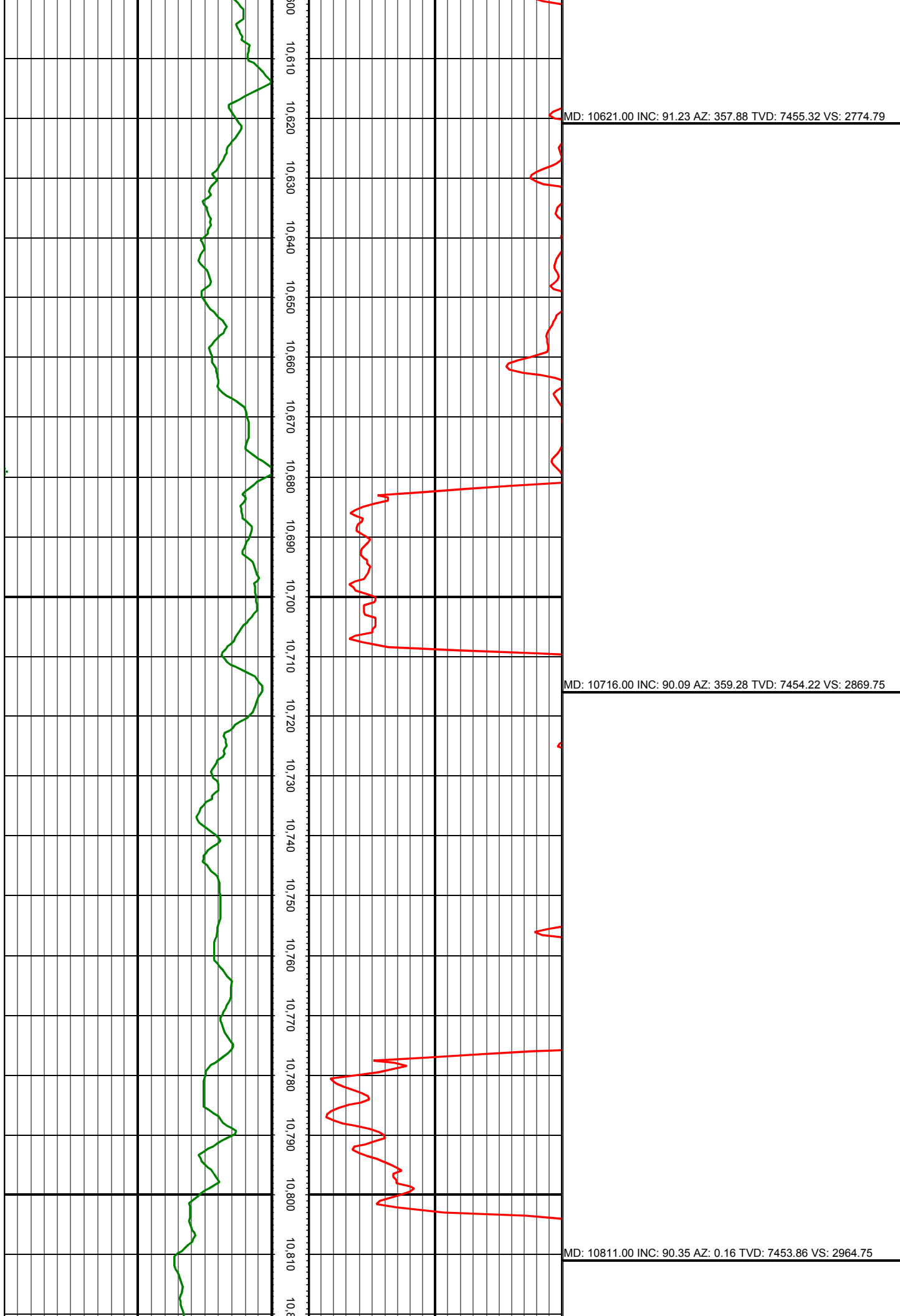
MD: 10243.00 INC: 88.51 AZ: 359.99 TVD: 7454.17 VS: 2396.88

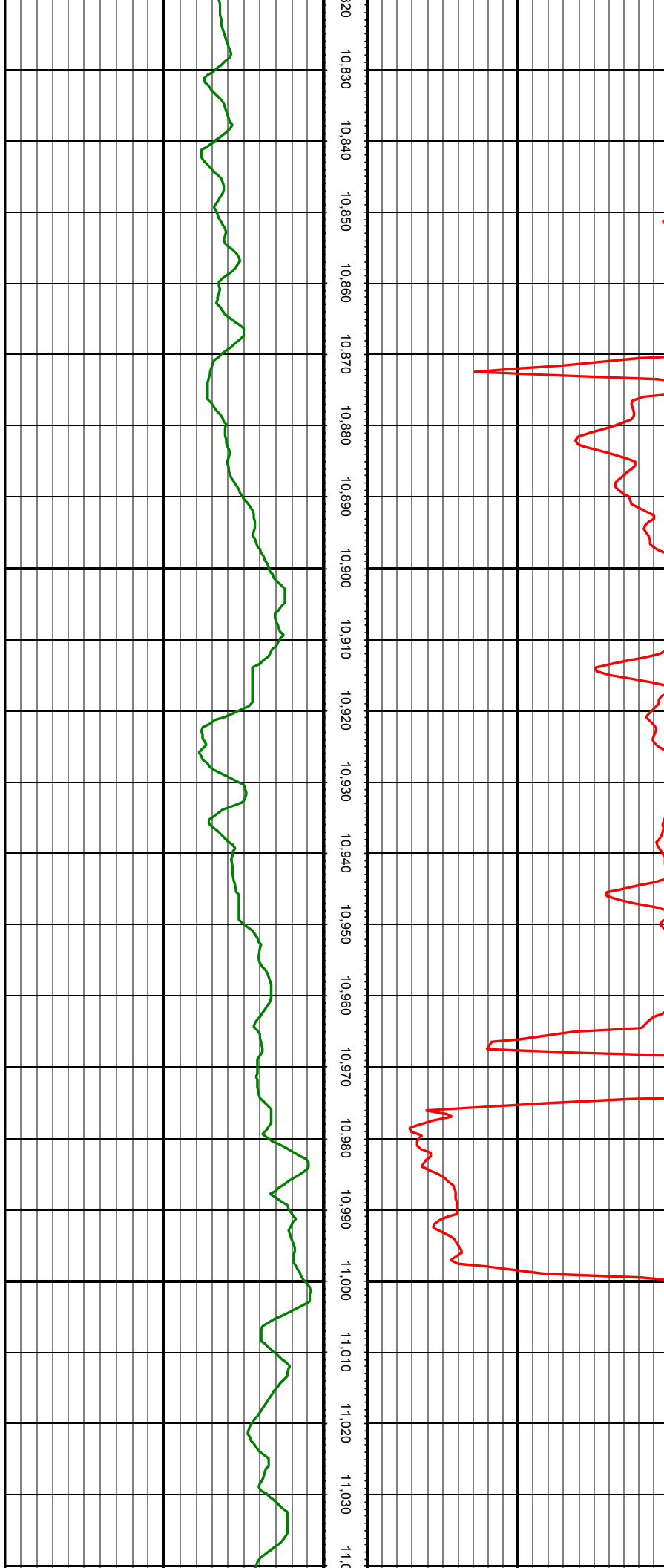
MD: 10337.00 INC: 89.21 AZ: 0.07 TVD: 7456.04 VS: 2490.86



MD: 10432.00 INC: 89.65 AZ: 358.58 TVD: 7456.99 VS: 2585.84

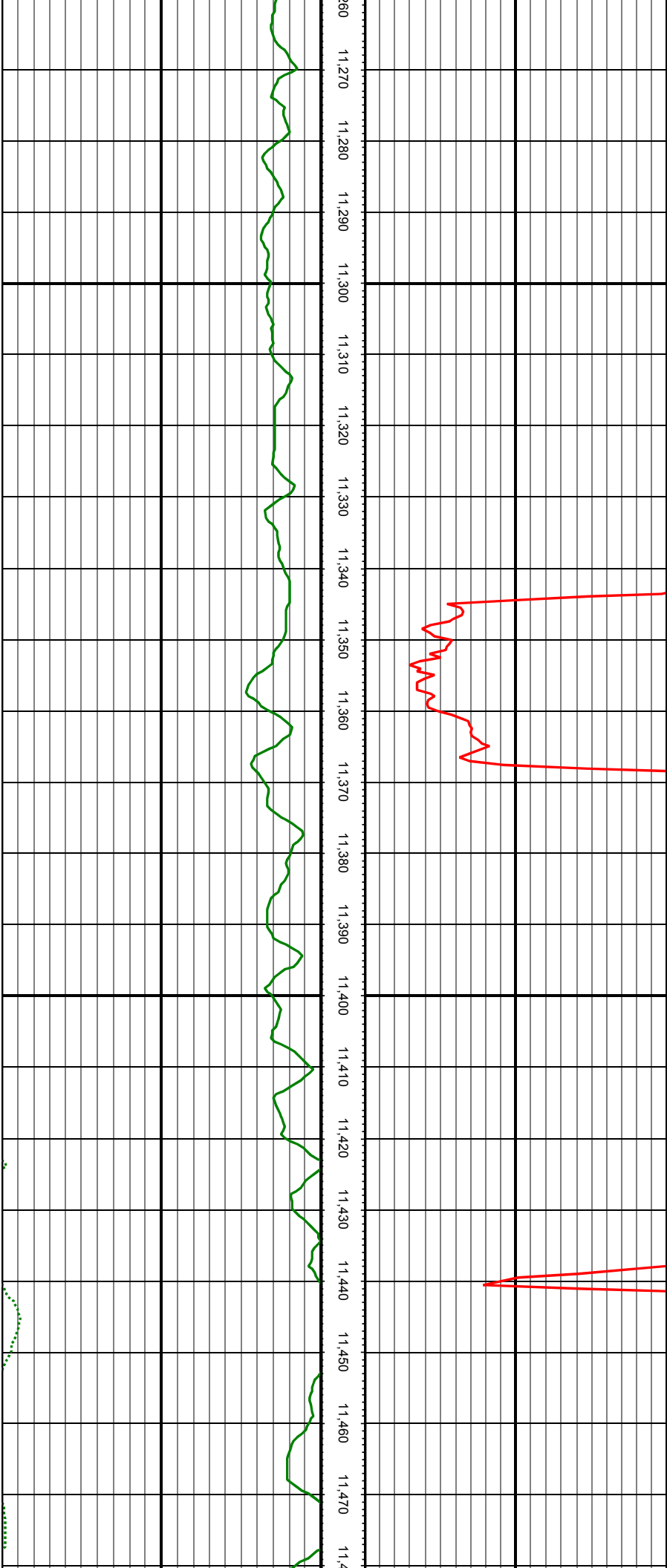
MD: 10526.00 INC: 90.57 AZ: 359.46 TVD: 7456.81 VS: 2679.83





MD: 10906.00 INC: 91.23 AZ: 0.78 TVD: 7452.55 VS: 3059.74

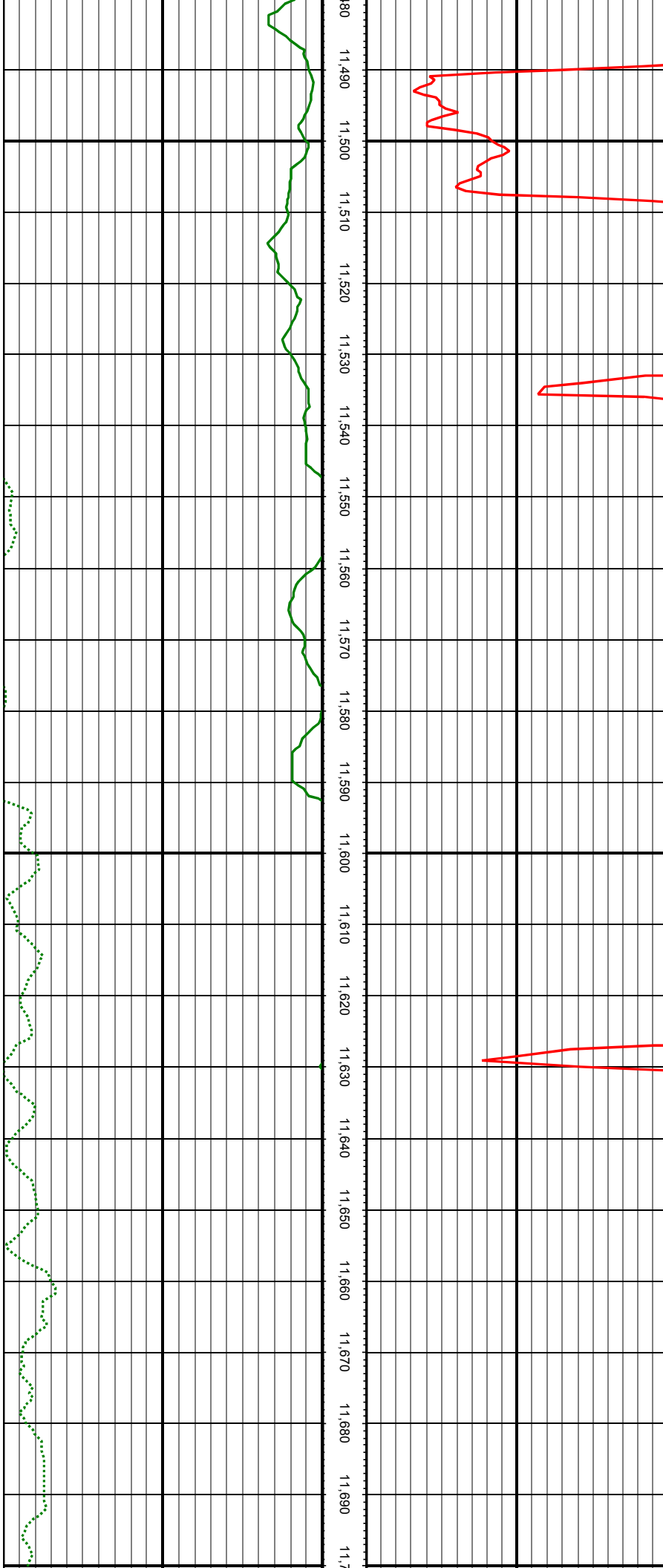
MD: 11000.00 INC: 90.04 AZ: 1.30 TVD: 7451.51 VS: 3153.71



MD: 11284.00 INC: 89.78 AZ: 2.71 TVD: 7450.35 VS: 3437.59

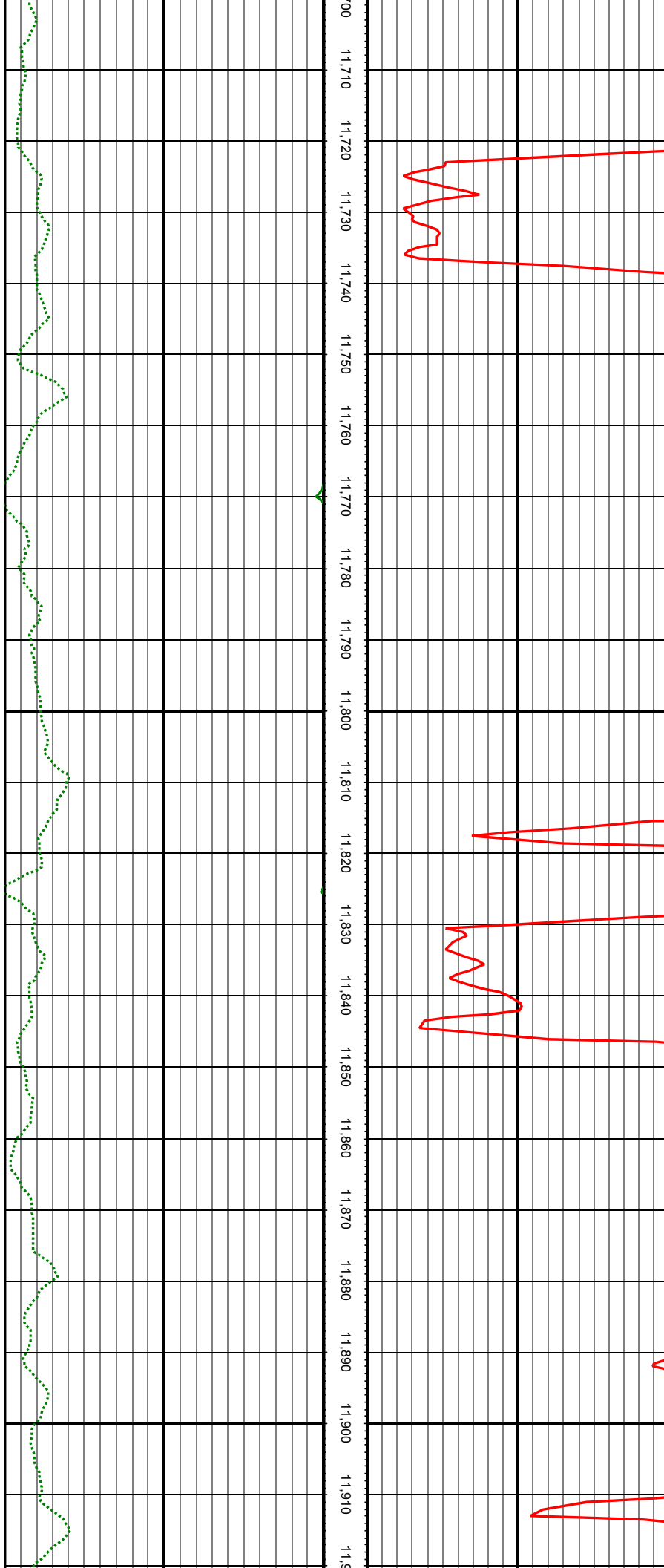
MD: 11378.00 INC: 86.53 AZ: 1.04 TVD: 7453.38 VS: 3531.47

MD: 11473.00 INC: 86.05 AZ: 359.90 TVD: 7459.53 VS: 3626.26



MD: 11568.00 INC: 87.80 AZ: 2.18 TVD: 7464.62 VS: 3721.10

MD: 11662.00 INC: 87.63 AZ: 2.01 TVD: 7468.37 VS: 3814.96



MD: 11757.00 INC: 87.94 AZ: 0.69 TVD: 7472.04 VS: 3909.86

MD: 11852.00 INC: 89.74 AZ: 2.01 TVD: 7473.96 VS: 4004.80

