

**Cathedral Energy Services**

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

HWY52 4U-32H-0268**Scale 5":100' - MD****2/13/2019 1:01 PM****Oper. Company:** Crestone Peak Resources**Well:** HWY52 4U-32H-0268**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-43109**Job Number:** 175140

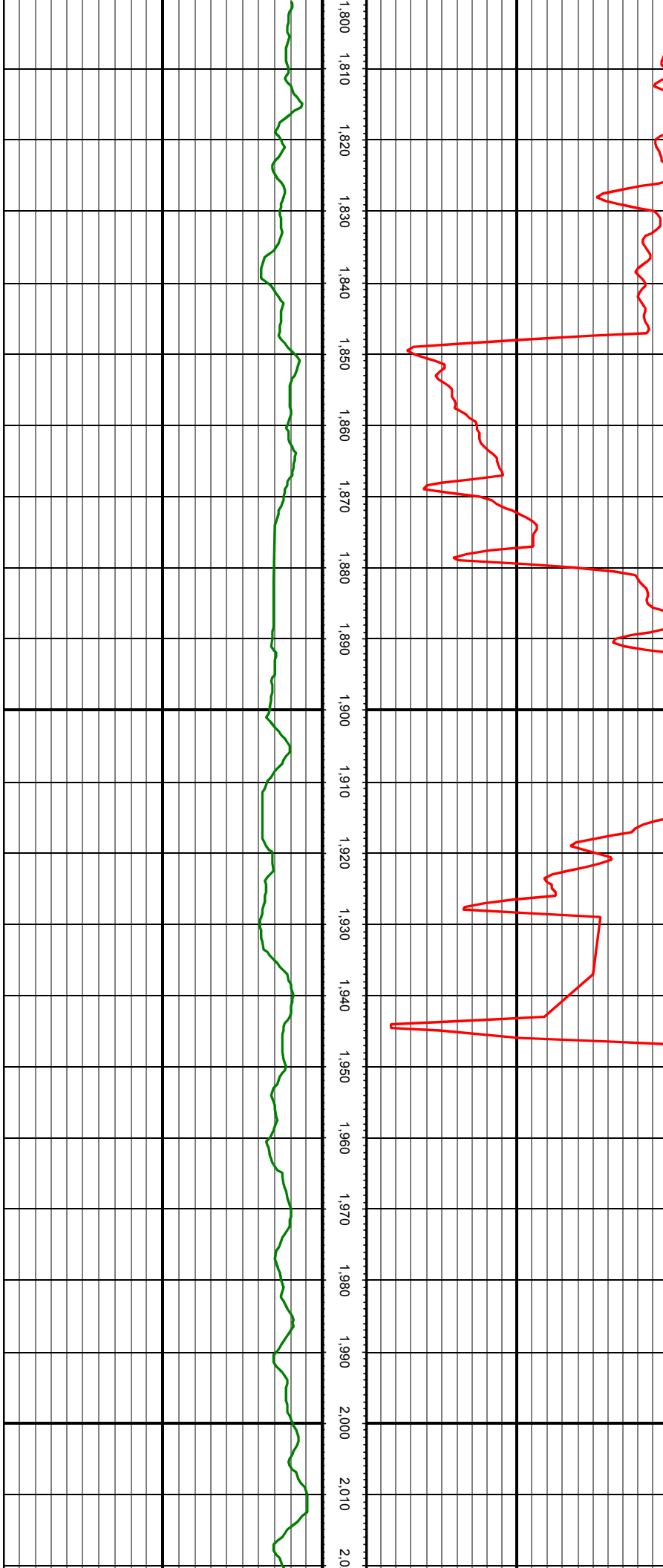
Notes: Gamma Ray Log
Section Plan: 357.50°
Datum: NAD 1927 (NADCON CONUS)
Magnetic North: 8.53°
Grid Convergence: °
Gamma Averaging: 7% Smoothing

State: Colorado**County:** Weld**Country:** U.S.A**Location:** S32-T2N-R68W**Start Date:** 08/22/2017 17:00:00**End Date:** 08/25/2017 13:00:00**Latitude:** 40.089353**Longitude:** -105.024571**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: 235°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	FF015				
Bit Size	8.5				
Cal Factor	5.33				
Survey Offset	60.00				
Gamma Offset	55.05				
Resistivity Offset	0.00				
Start Depth	1718.00				
StartDate	8/22/2017				
StartTime	10:00				
EndDepth	11990.00				
EndDate	8/25/2017				
EndTime	13:00				
Mud Type	OBM				
Mud Weight	9.8				
Funnel Viscosity	46				
Plastic Viscosity	14				
Yield Point	7				
Gel Strength	6				
Solids Content	12.5				
Sand Content	N/A				
Chlorides	221537				
Temperature	235				

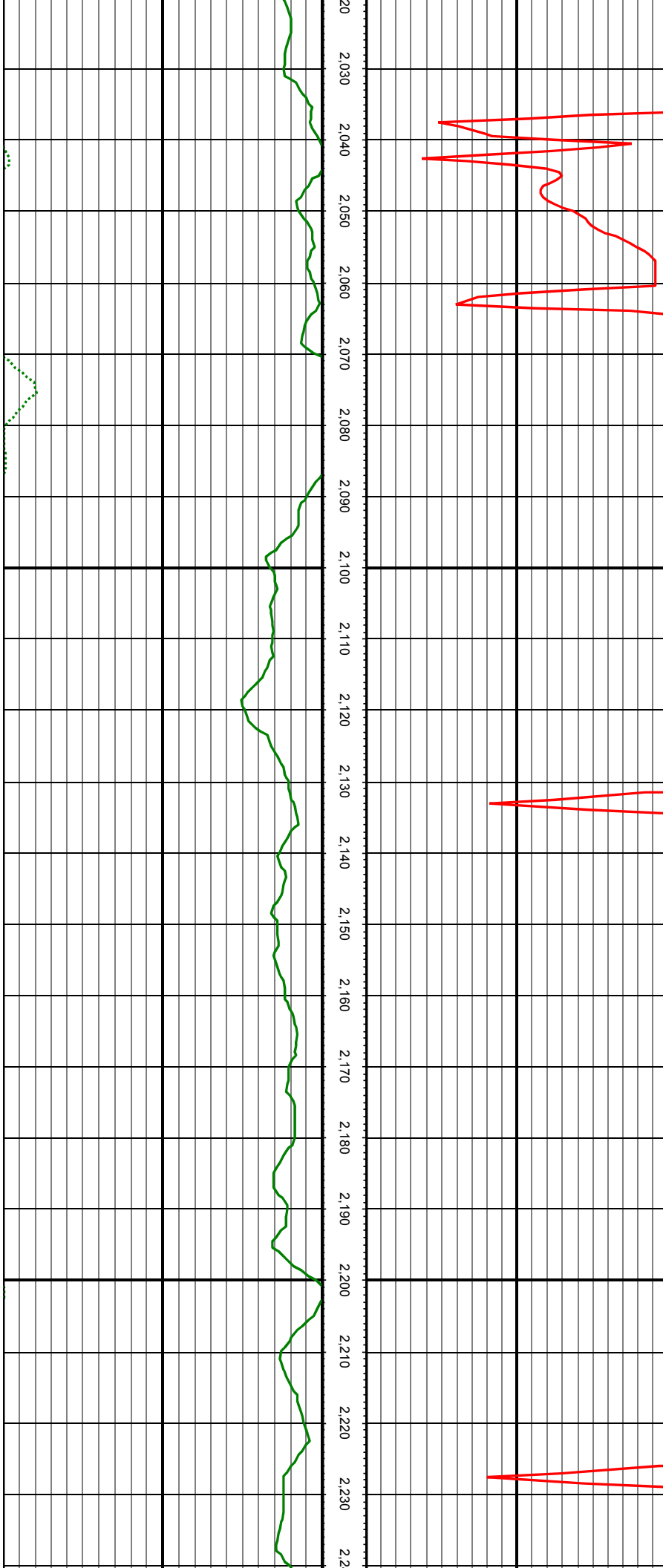
Hole Data			Casing Data		
Size	From	To	Size	From	To
12.5	0.00	1718.00	9.625	0.00	1718.00
8.5	1718.00	11990.00			

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.



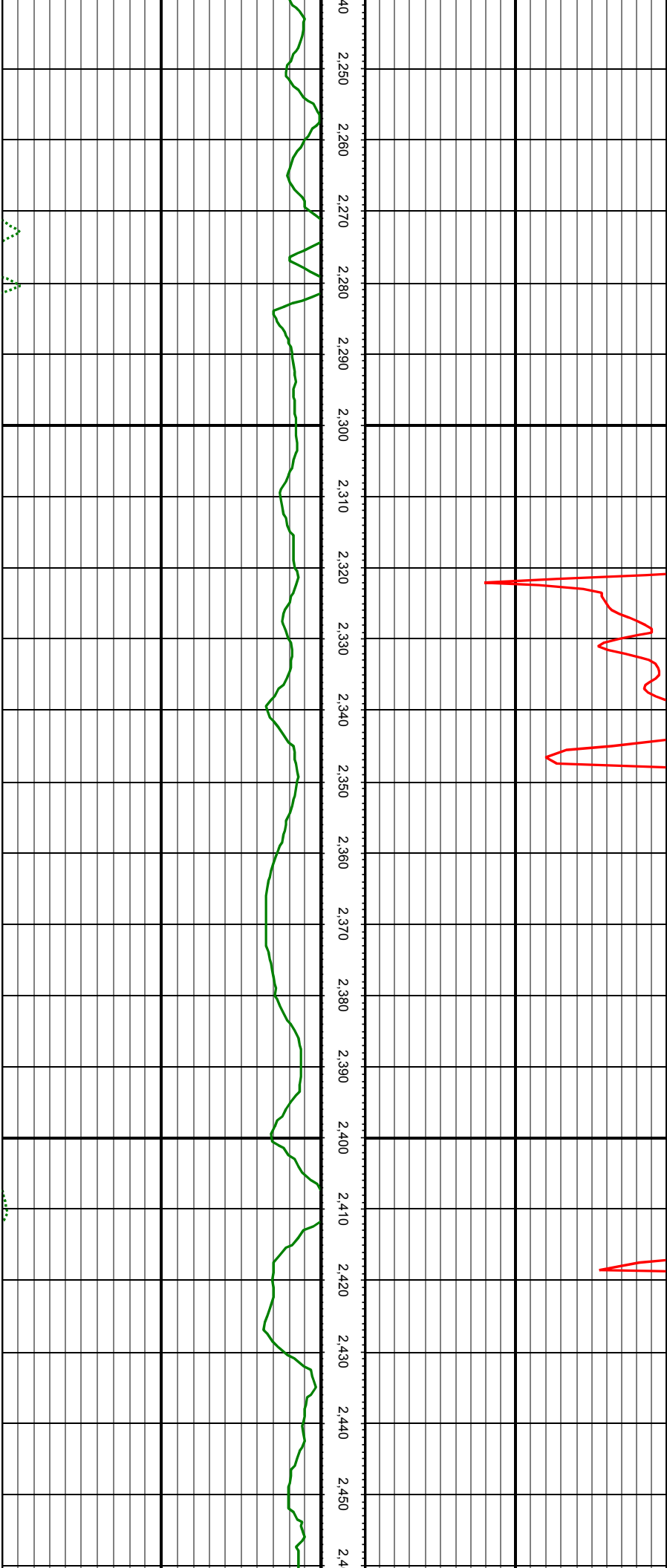
MD: 1882.00 INC: 15.34 AZ: 101.26 TVD: 1855.69 VS: -81.74

MD: 1977.00 INC: 14.55 AZ: 100.55 TVD: 1947.47 VS: -87.43



MD: 2071.00 INC: 15.56 AZ: 106.70 TVD: 2038.25 VS: -94.24

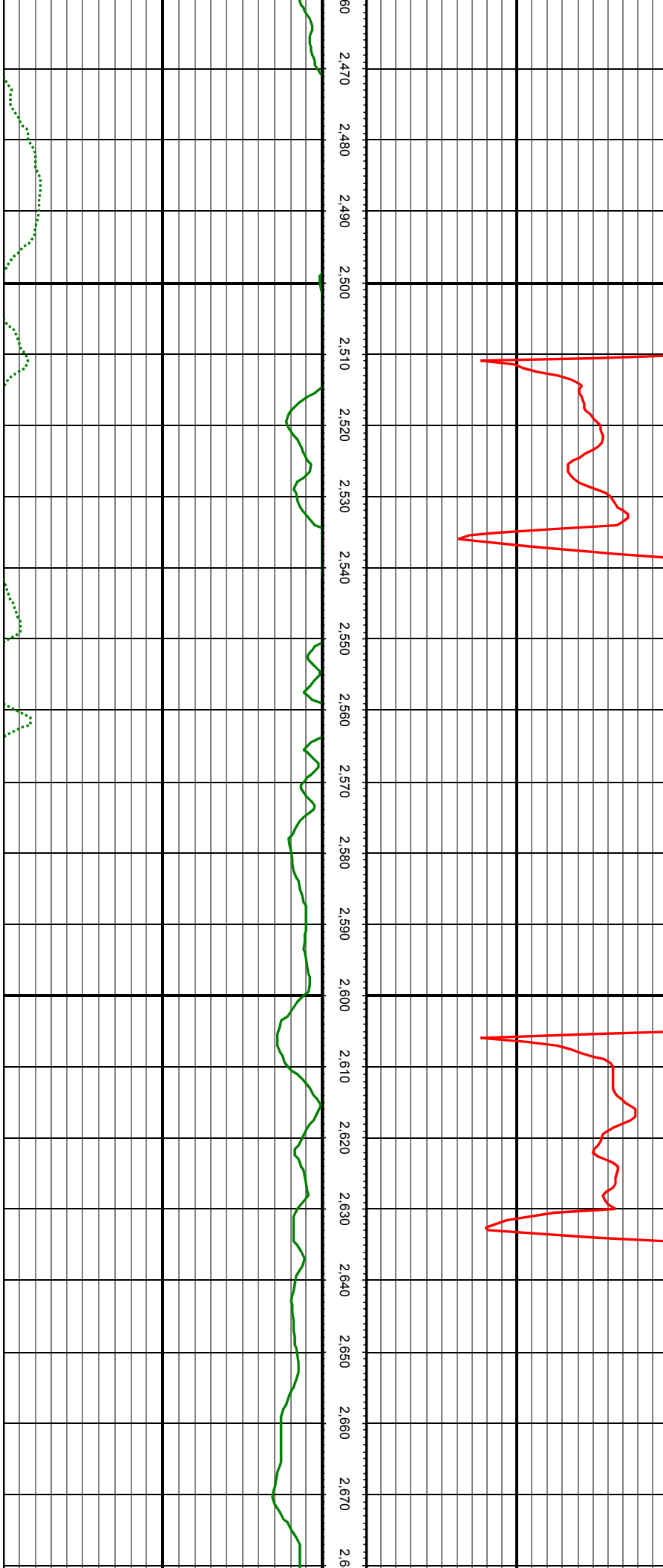
MD: 2165.00 INC: 14.37 AZ: 105.74 TVD: 2129.06 VS: -102.04



MD: 2260.00 INC: 12.74 AZ: 103.45 TVD: 2221.41 VS: -108.60

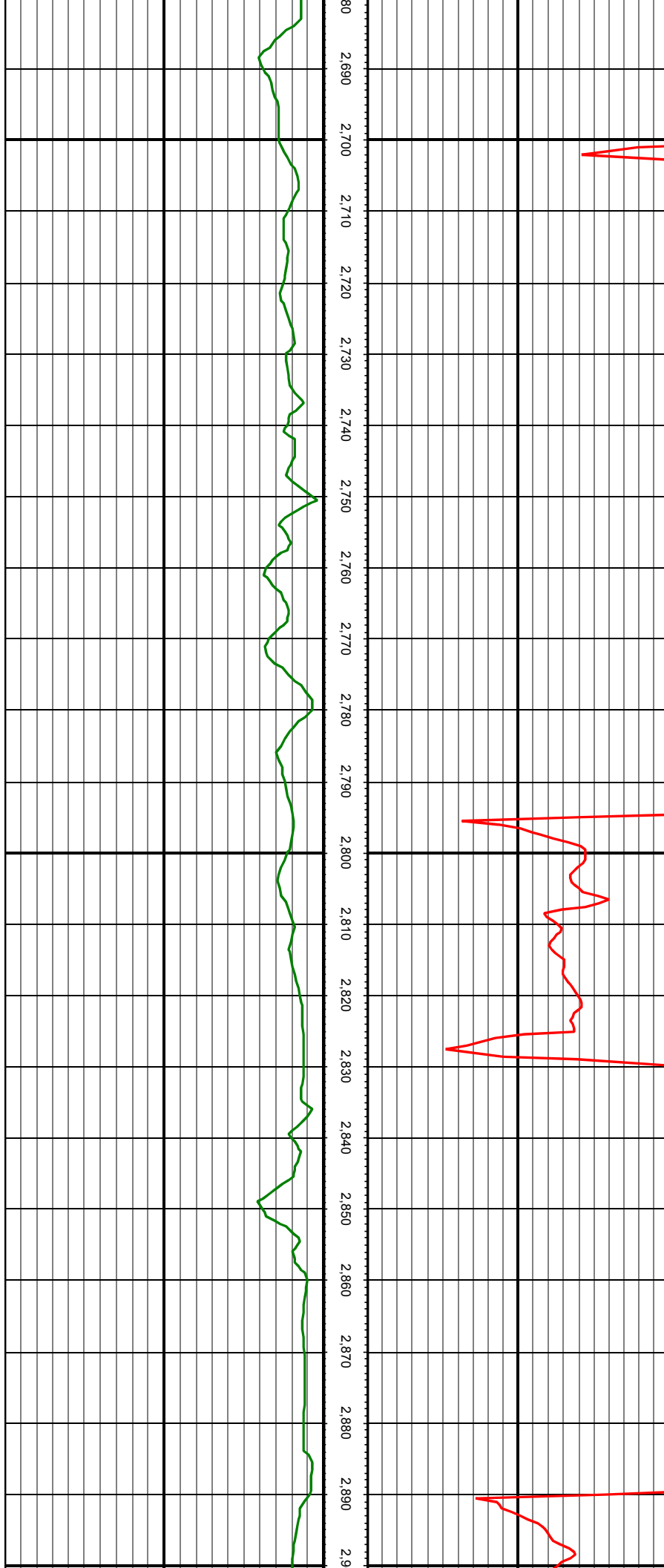
MD: 2355.00 INC: 13.62 AZ: 114.26 TVD: 2313.92 VS: -116.52

MD: 2450.00 INC: 11.56 AZ: 115.05 TVD: 2406.63 VS: -125.96



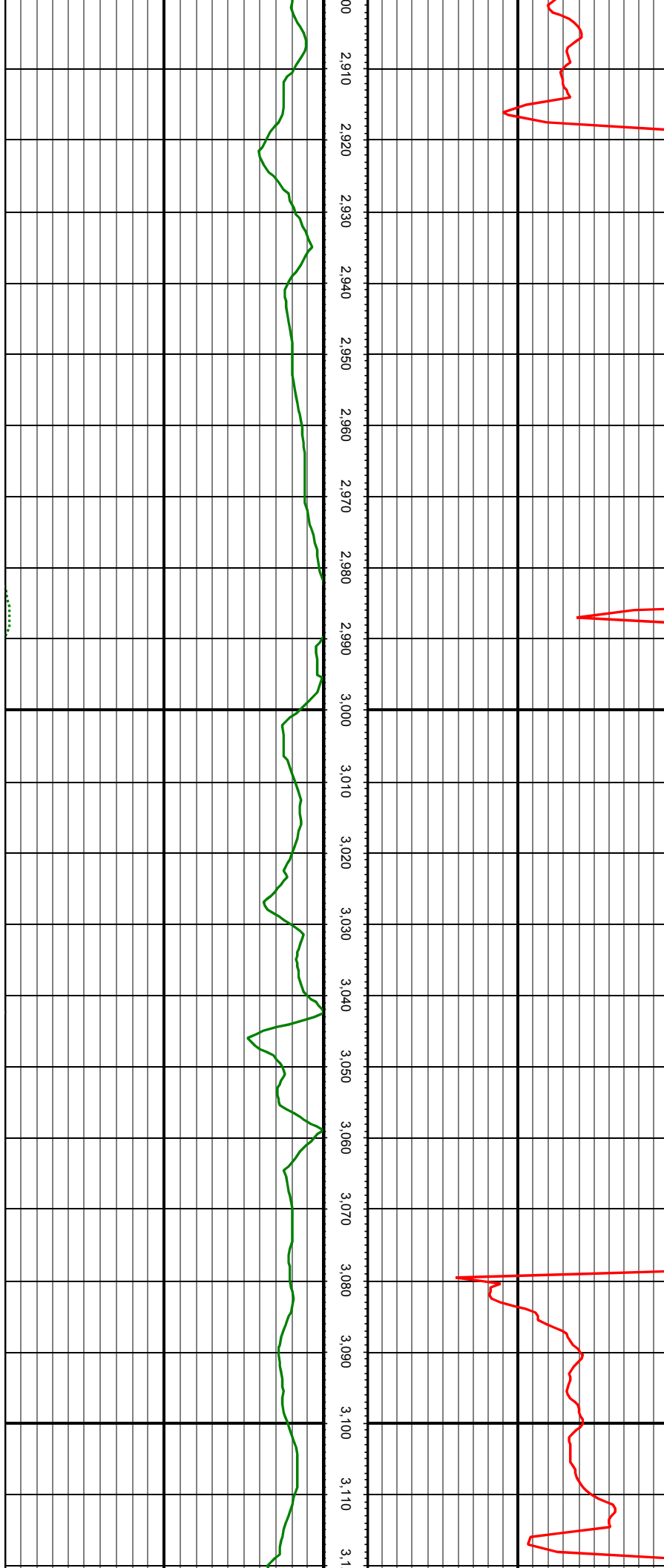
MD: 2545.00 INC: 12.88 AZ: 114.97 TVD: 2499.48 VS: -135.25

MD: 2639.00 INC: 14.15 AZ: 109.34 TVD: 2590.88 VS: -144.36



MD: 2734.00 INC: 12.22 AZ: 109.43 TVD: 2683.37 VS: -152.43

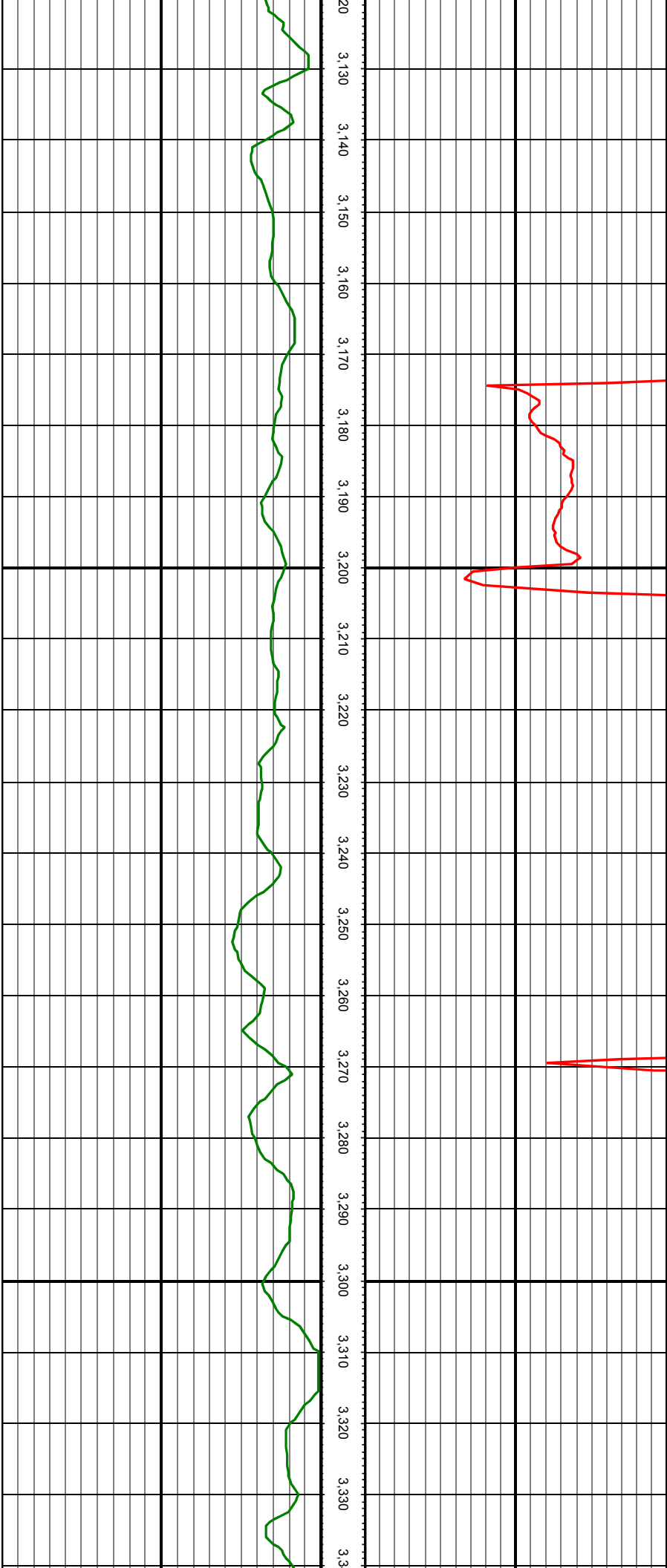
MD: 2828.00 INC: 13.76 AZ: 99.41 TVD: 2774.97 VS: -158.45



MD: 2923.00 INC: 14.68 AZ: 103.89 TVD: 2867.06 VS: -164.18

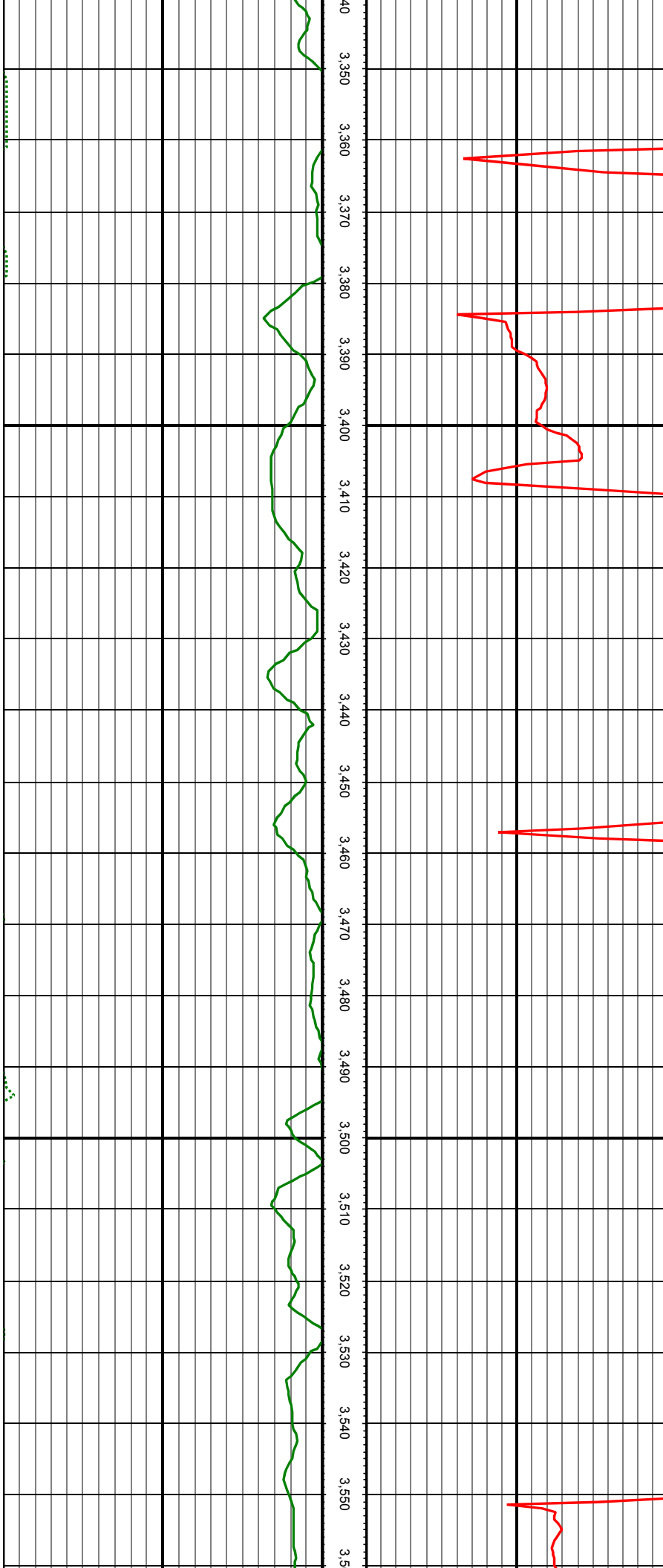
MD: 3017.00 INC: 11.91 AZ: 100.64 TVD: 2958.54 VS: -169.75

MD: 3112.00 INC: 13.71 AZ: 100.29 TVD: 3051.17 VS: -174.47



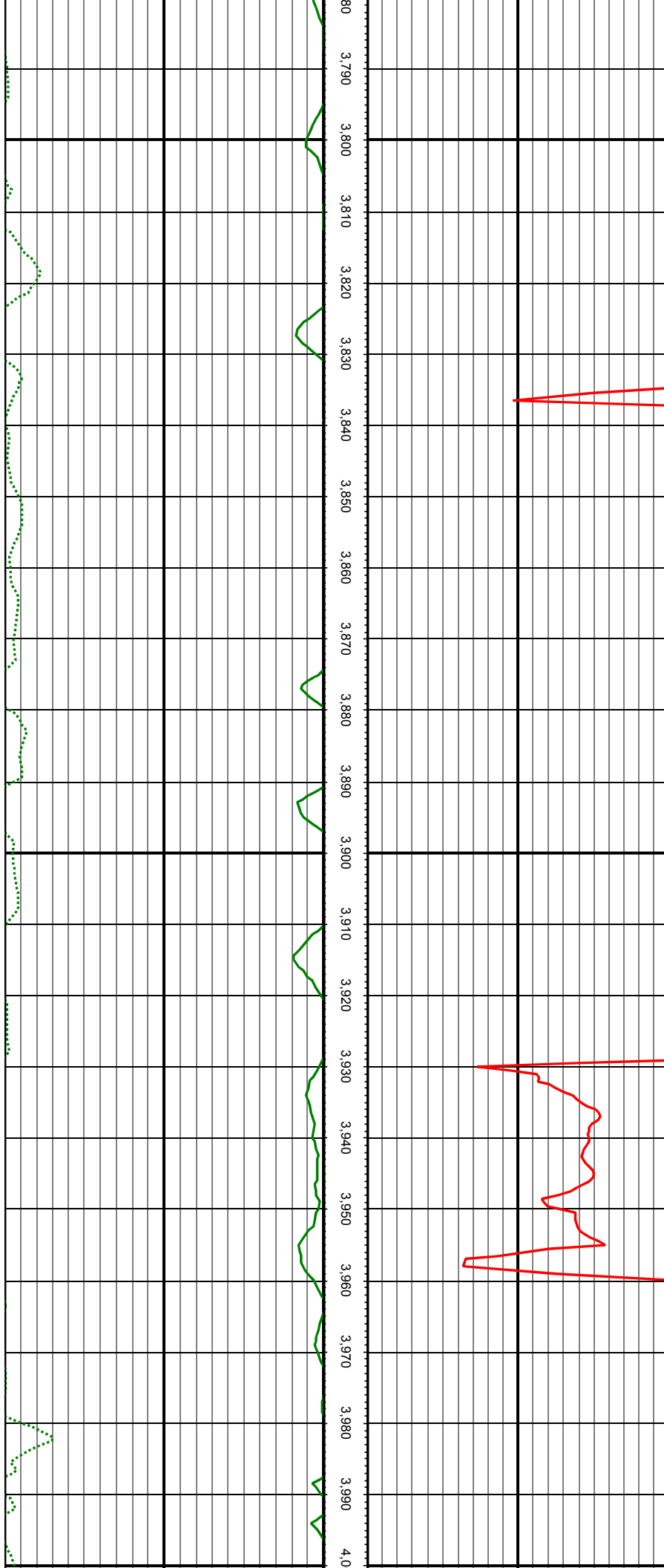
MD: 3208.00 INC: 16.83 AZ: 101.87 TVD: 3143.77 VS: -180.44

MD: 3303.00 INC: 14.81 AZ: 97.21 TVD: 3235.17 VS: -185.90



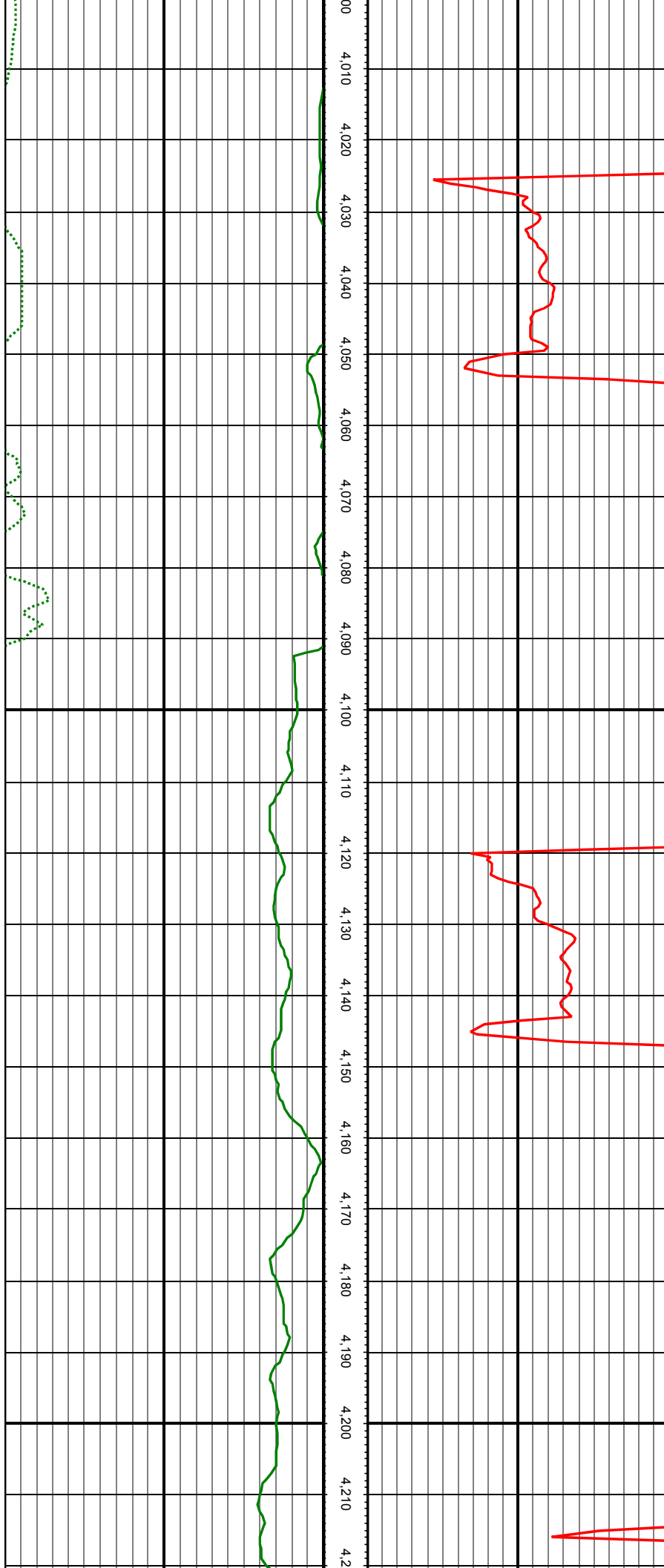
MD: 3397.00 INC: 14.02 AZ: 93.70 TVD: 3326.21 VS: -189.16

MD: 3492.00 INC: 13.45 AZ: 93.52 TVD: 3418.49 VS: -191.56



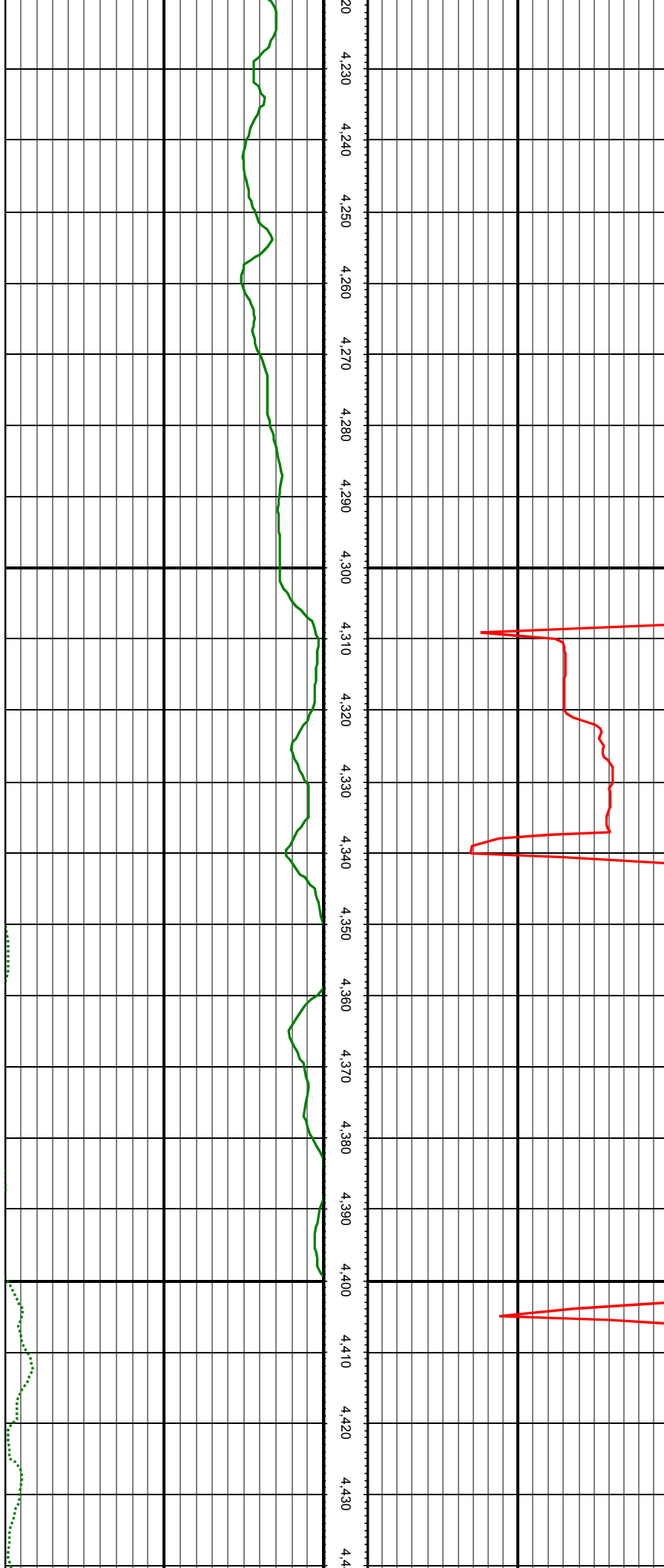
MD: 3872.00 INC: 11.51 AZ: 106.79 TVD: 3787.75 VS: -221.08

MD: 3967.00 INC: 12.52 AZ: 106.09 TVD: 3880.67 VS: -227.49



MD: 4062.00 INC: 13.67 AZ: 106.18 TVD: 3973.20 VS: -234.37

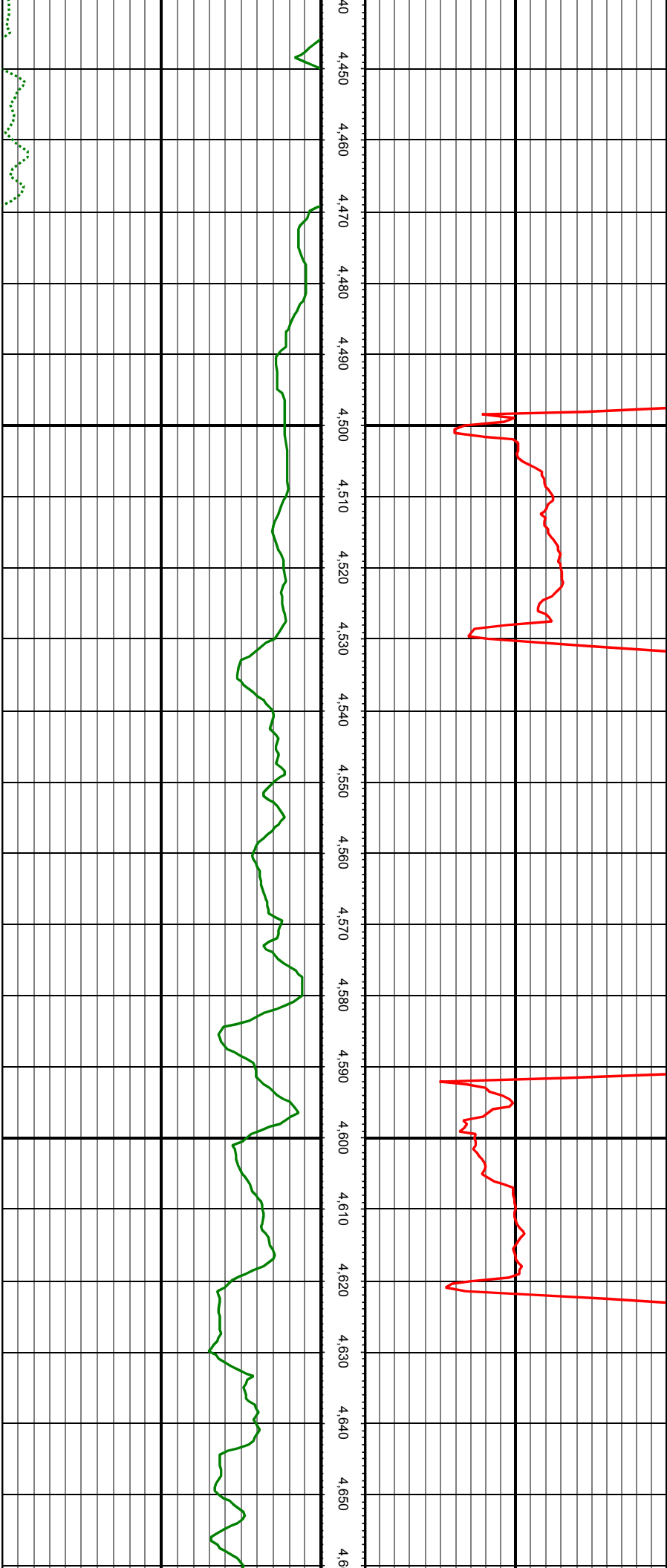
MD: 4157.00 INC: 15.21 AZ: 104.33 TVD: 4065.19 VS: -241.57



MD: 4253.00 INC: 13.27 AZ: 102.66 TVD: 4158.24 VS: -248.10

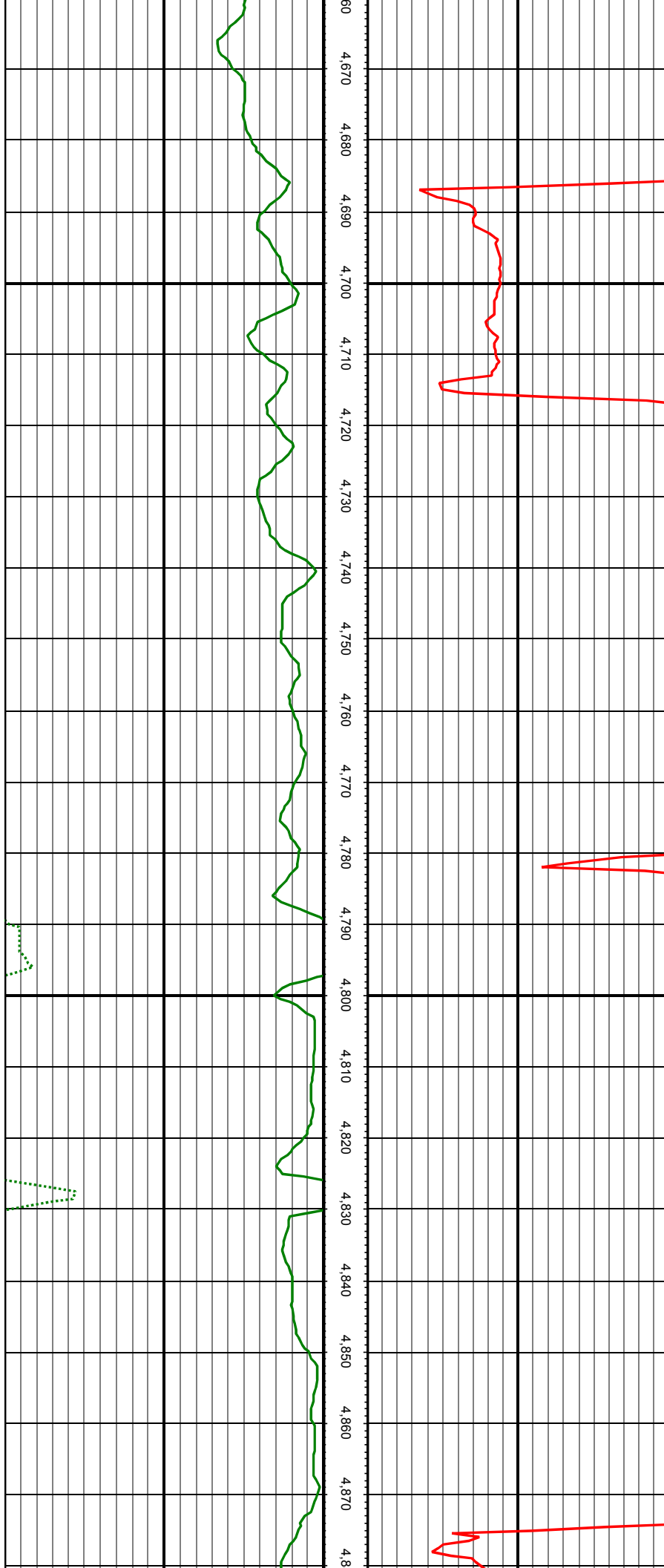
MD: 4348.00 INC: 13.32 AZ: 100.73 TVD: 4250.69 VS: -253.46

MD: 4443.00 INC: 9.93 AZ: 100.64 TVD: 4343.73 VS: -257.82



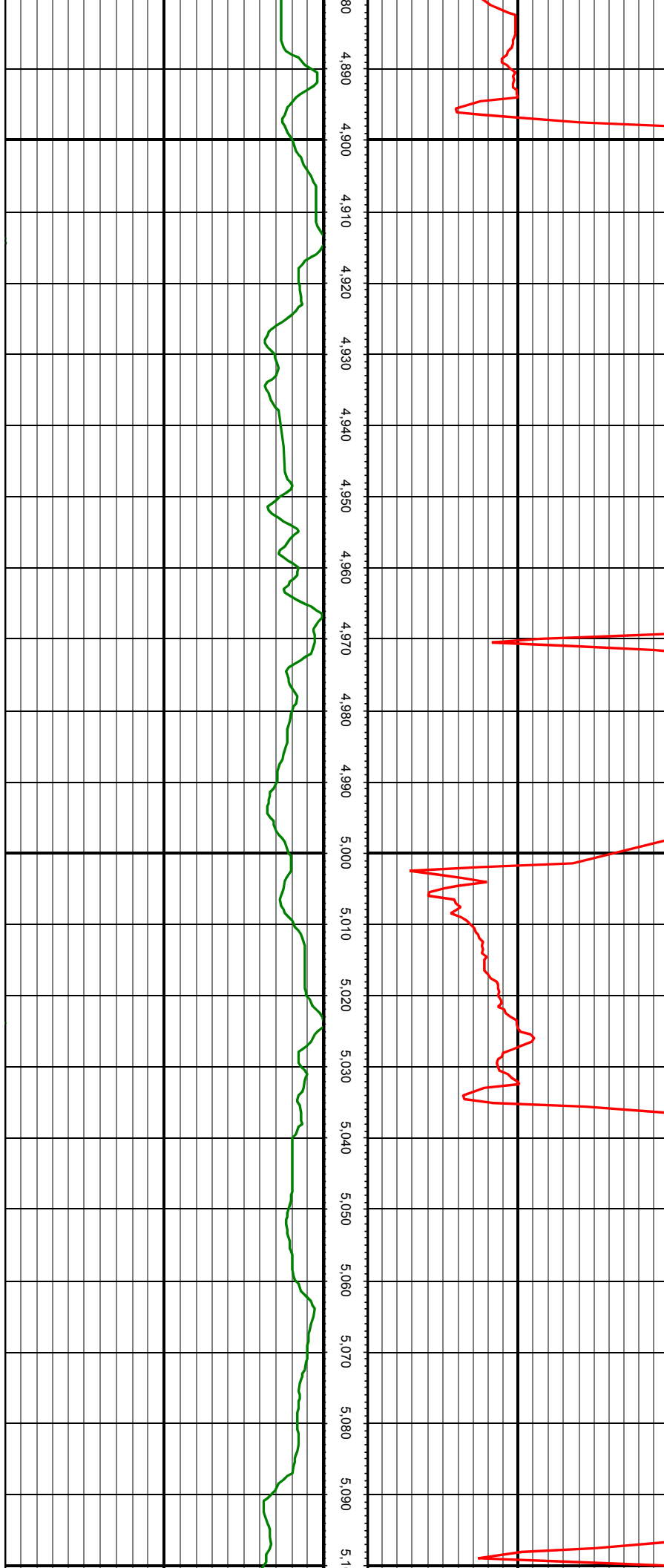
MD: 4537.00 INC: 11.73 AZ: 95.72 TVD: 4436.06 VS: -261.03

MD: 4632.00 INC: 12.83 AZ: 98.88 TVD: 4528.88 VS: -264.49



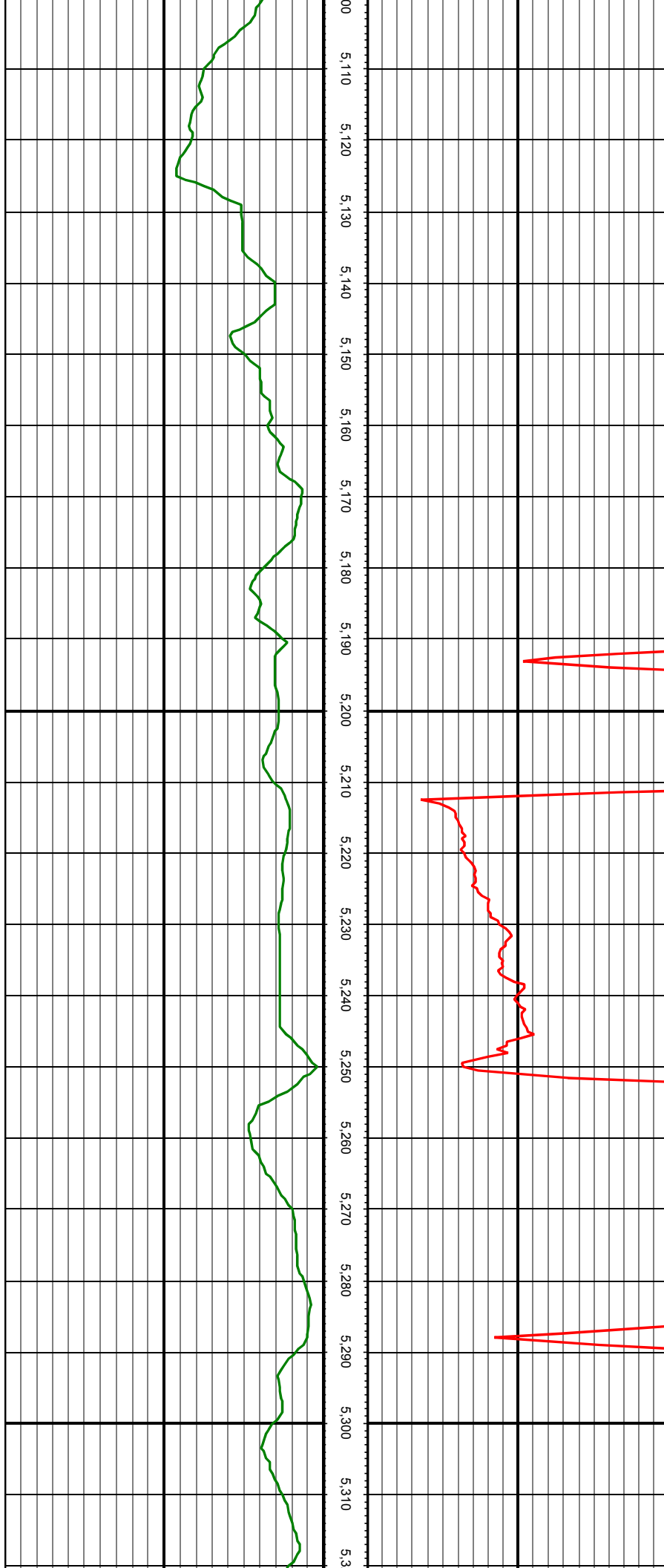
MD: 4727.00 INC: 15.86 AZ: 106.44 TVD: 4620.92 VS: -270.79

MD: 4822.00 INC: 14.06 AZ: 106.70 TVD: 4712.69 VS: -278.80



MD: 4941.00 INC: 13.62 AZ: 102.22 TVD: 4828.24 VS: -287.11

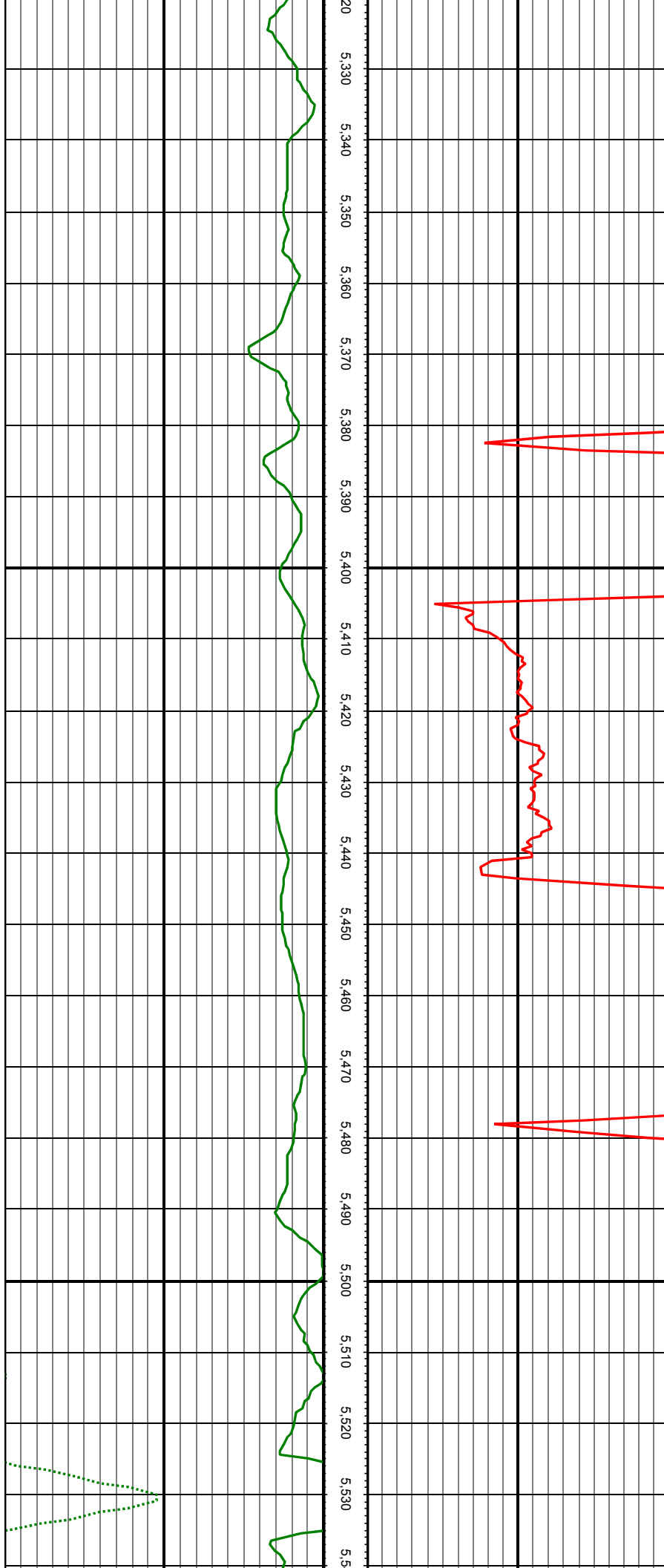
MD: 5036.00 INC: 14.77 AZ: 105.03 TVD: 4920.34 VS: -293.60



MD: 5131.00 INC: 13.36 AZ: 103.63 TVD: 5012.49 VS: -300.30

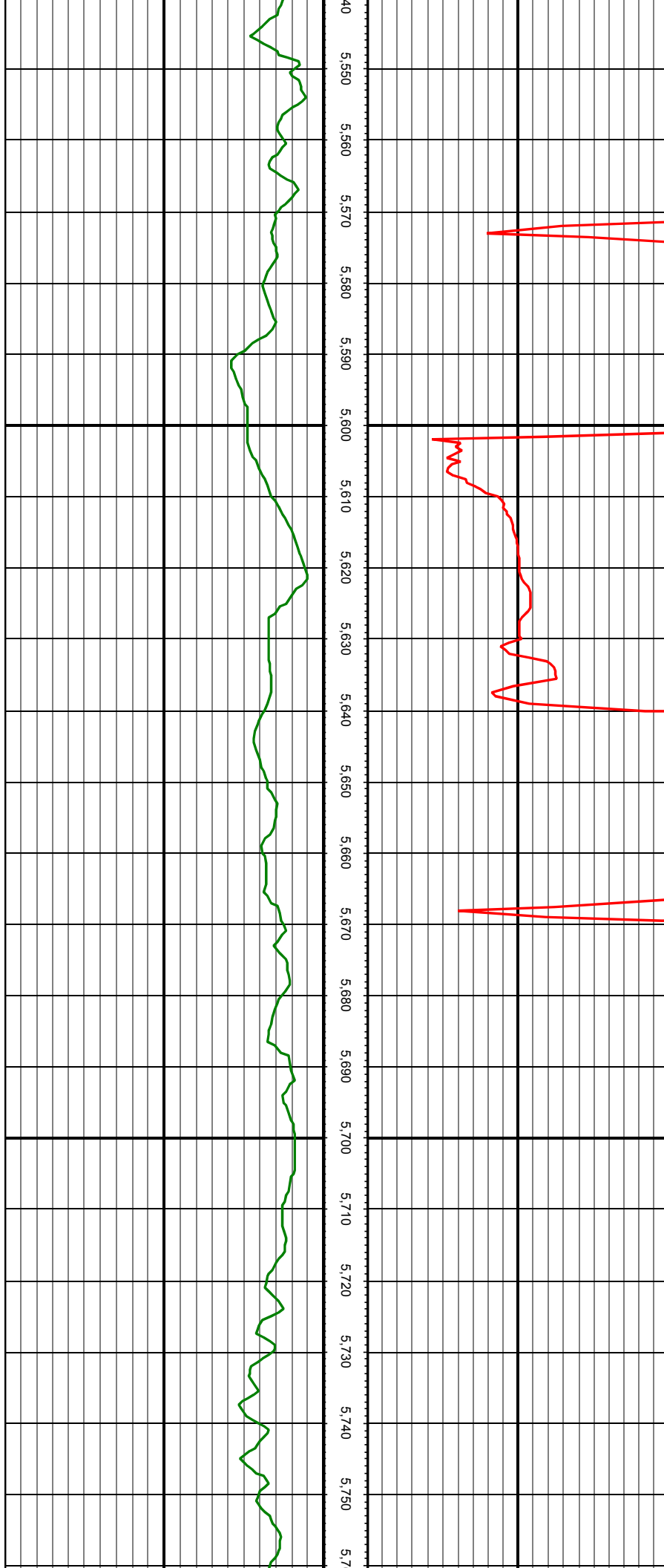
MD: 5226.00 INC: 13.84 AZ: 102.22 TVD: 5104.83 VS: -306.24

MD: 5320.00 INC: 14.24 AZ: 99.85 TVD: 5196.02 VS: -311.57



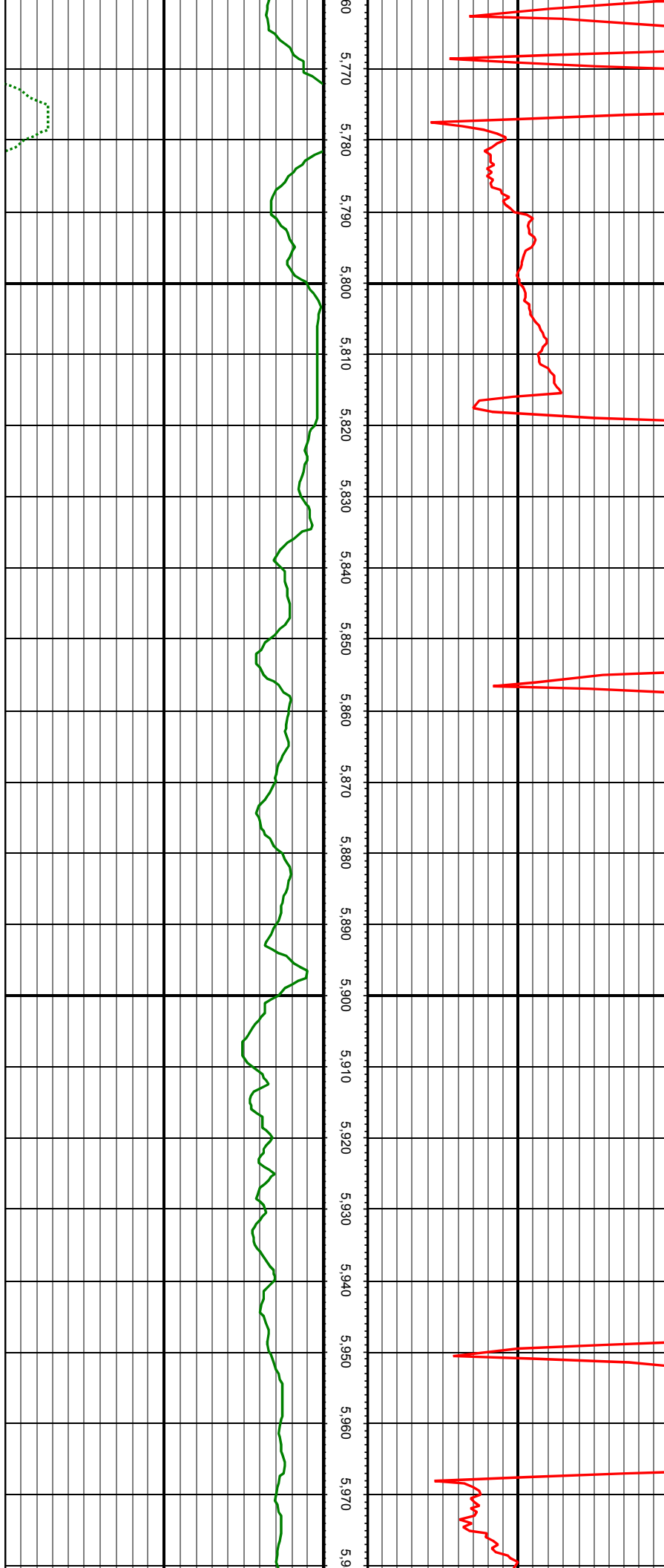
MD: 5415.00 INC: 12.66 AZ: 100.46 TVD: 5288.41 VS: -316.40

MD: 5509.00 INC: 12.61 AZ: 100.73 TVD: 5380.14 VS: -321.06



MD: 5603.00 INC: 11.65 AZ: 100.99 TVD: 5472.04 VS: -325.62

MD: 5698.00 INC: 12.31 AZ: 108.55 TVD: 5564.97 VS: -331.50

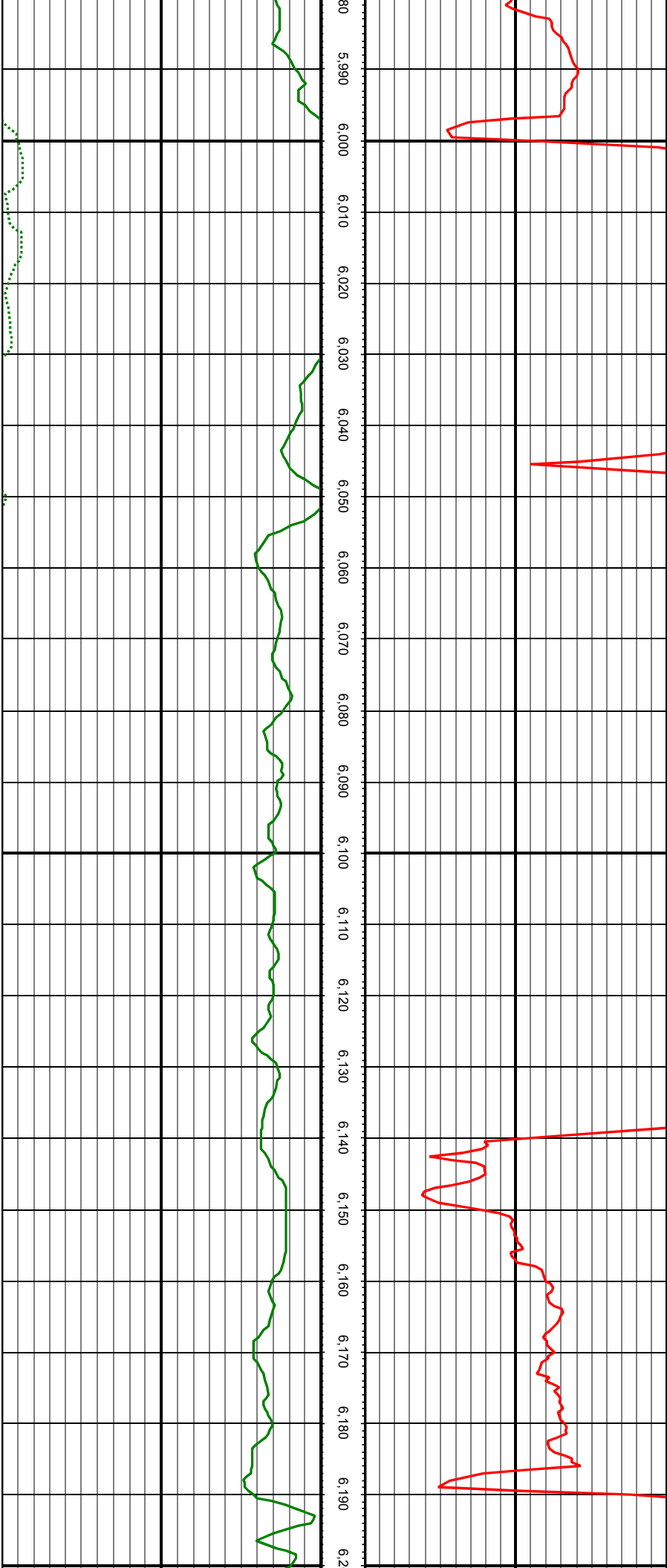


MD: 5793.00 INC: 12.92 AZ: 110.13 TVD: 5657.68 VS: -339.22

MD: 5887.00 INC: 12.88 AZ: 110.22 TVD: 5749.31 VS: -347.31

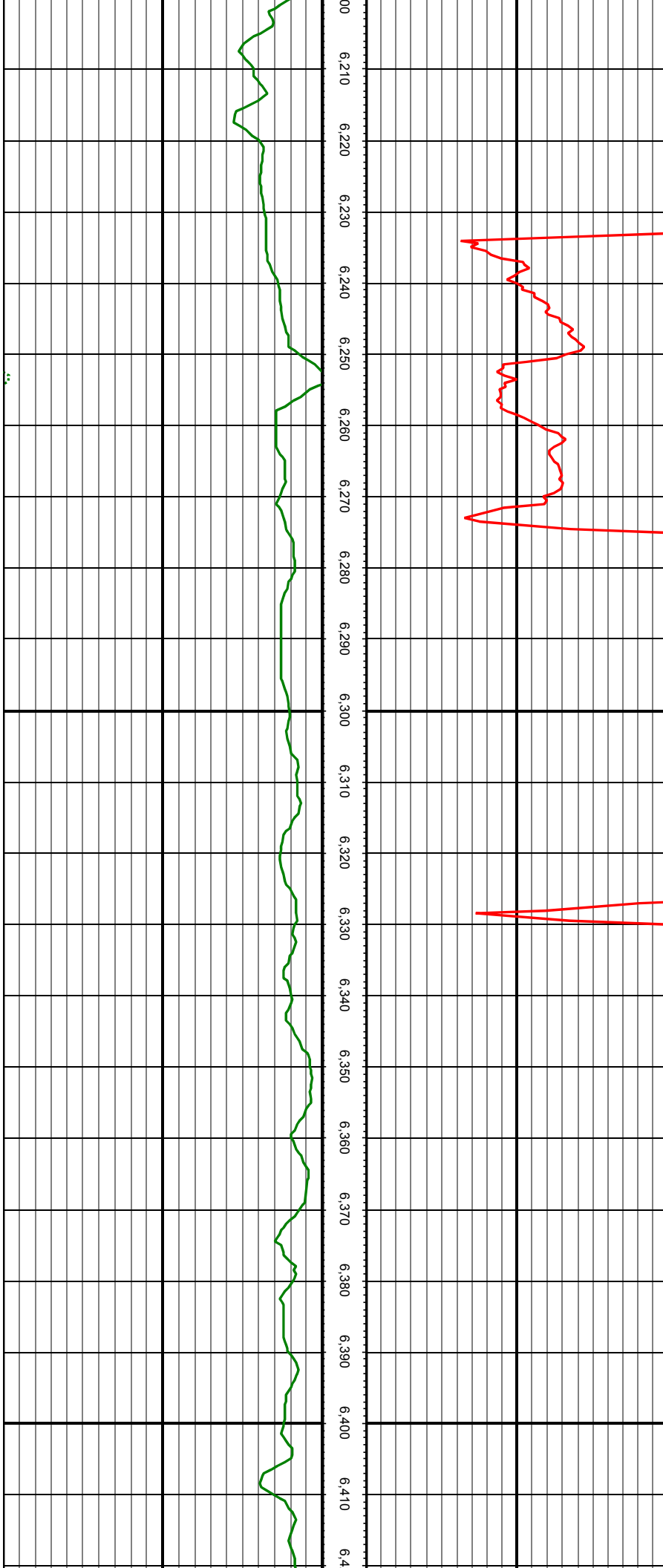
MD: 5999.00 INC: 12.79 AZ: 110.24 TVD: 5844.00 VS: -355.00

MD: 5982.00 INC: 12.79 AZ: 112.24 TVD: 5841.93 VS: -355.80



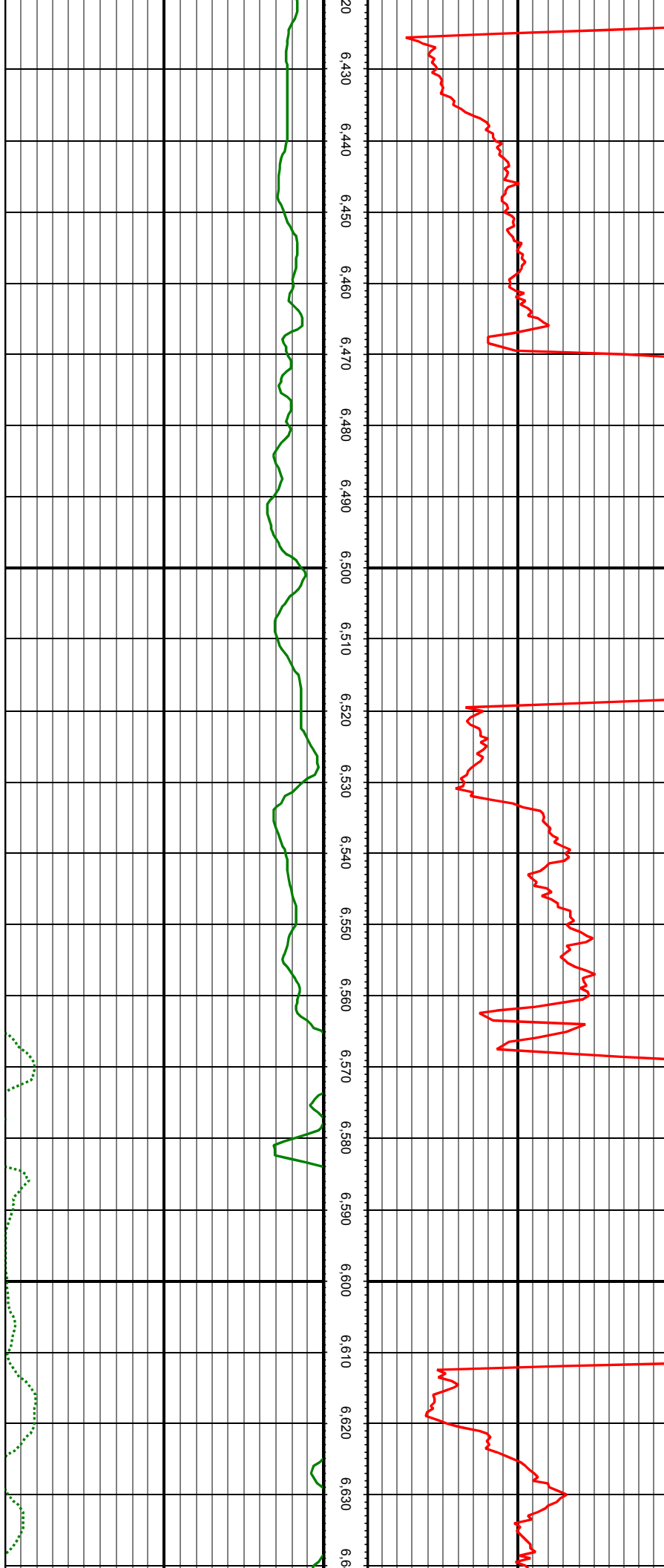
MD: 6077.00 INC: 10.81 AZ: 112.07 TVD: 5934.92 VS: -363.91

MD: 6172.00 INC: 11.87 AZ: 107.41 TVD: 6028.07 VS: -370.94



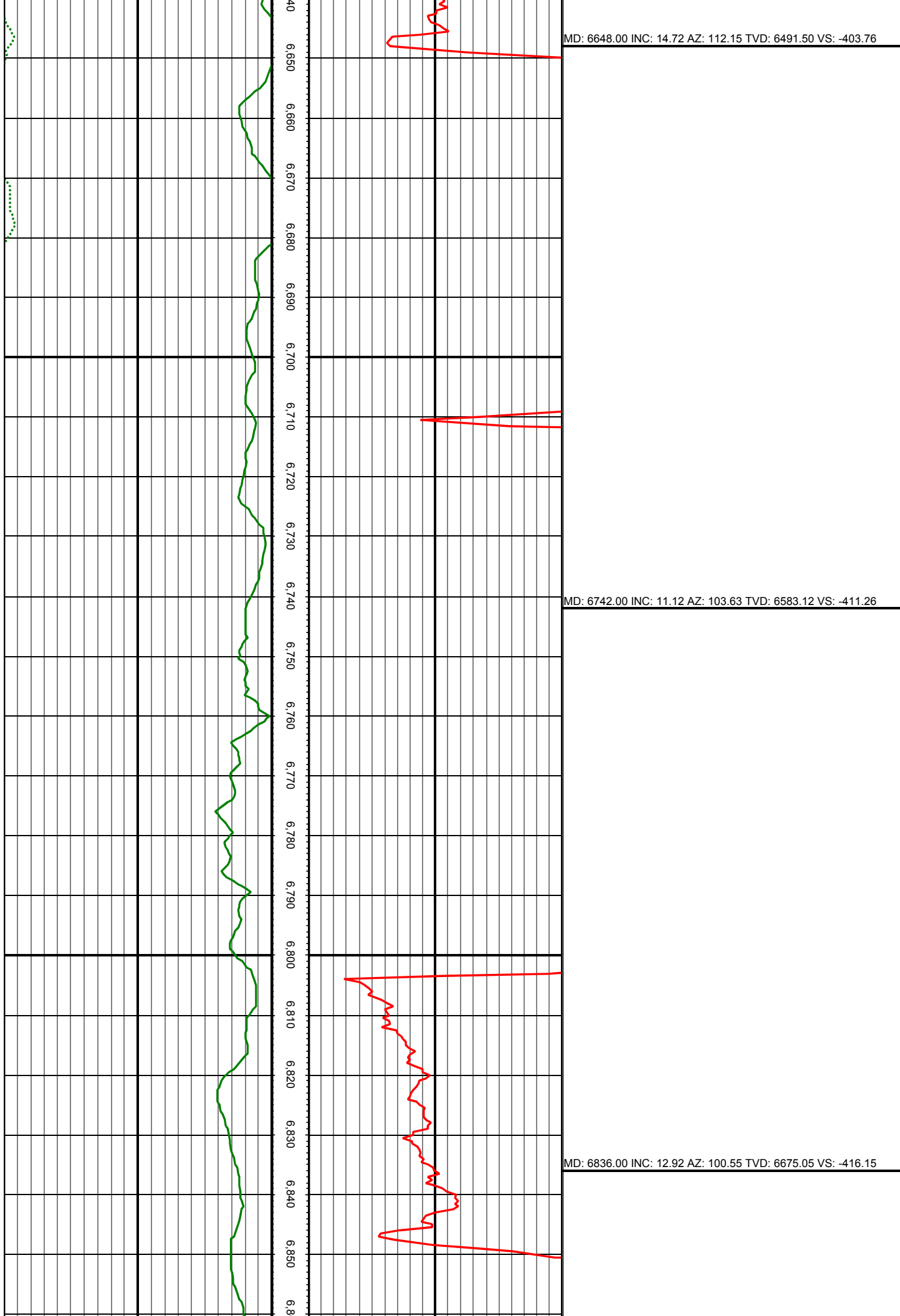
MD: 6268.00 INC: 14.81 AZ: 105.56 TVD: 6121.47 VS: -378.11

MD: 6363.00 INC: 11.29 AZ: 101.78 TVD: 6214.00 VS: -384.17



MD: 6458.00 INC: 13.10 AZ: 98.71 TVD: 6306.85 VS: -388.55

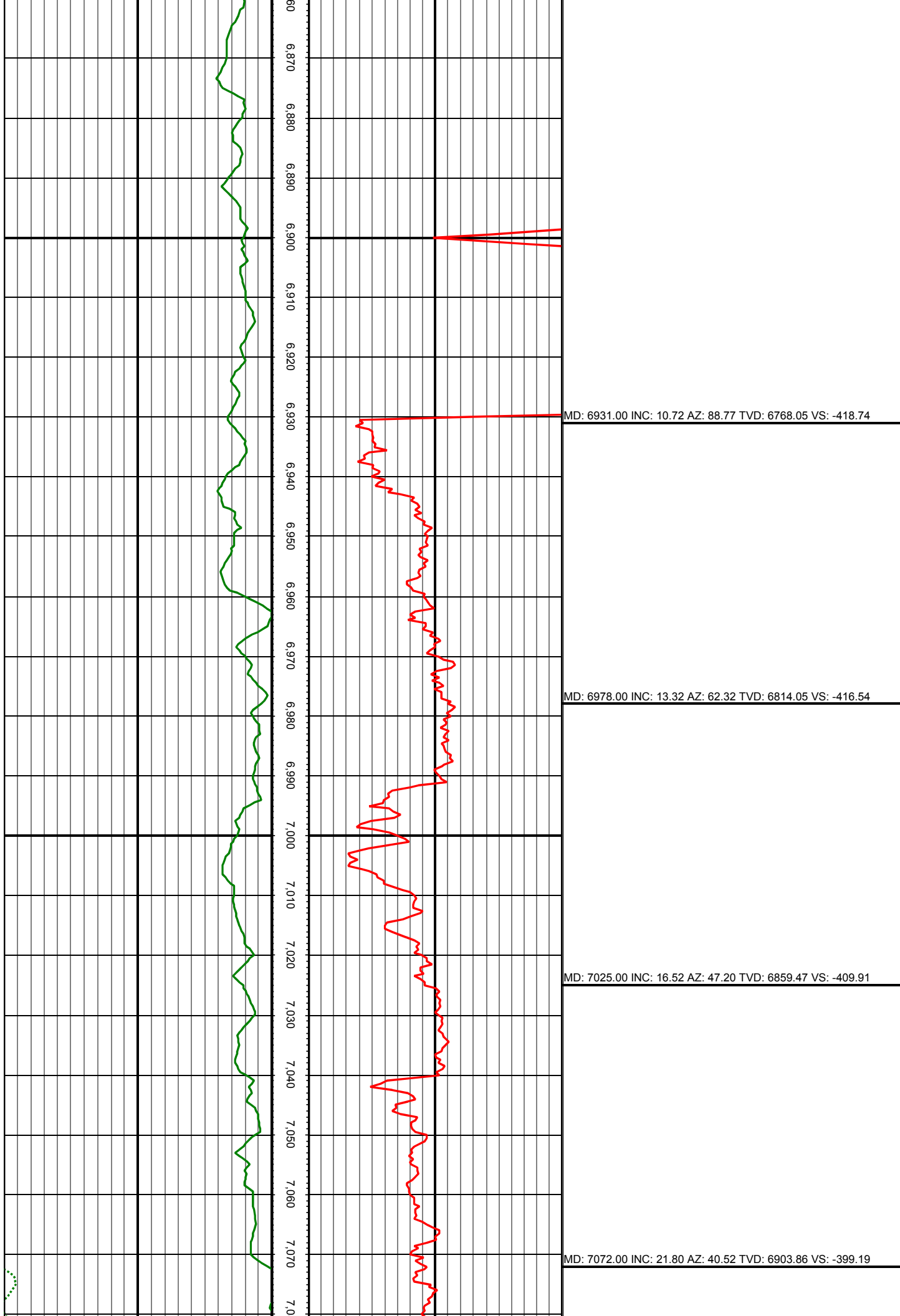
MD: 6552.00 INC: 13.36 AZ: 108.99 TVD: 6398.37 VS: -394.60

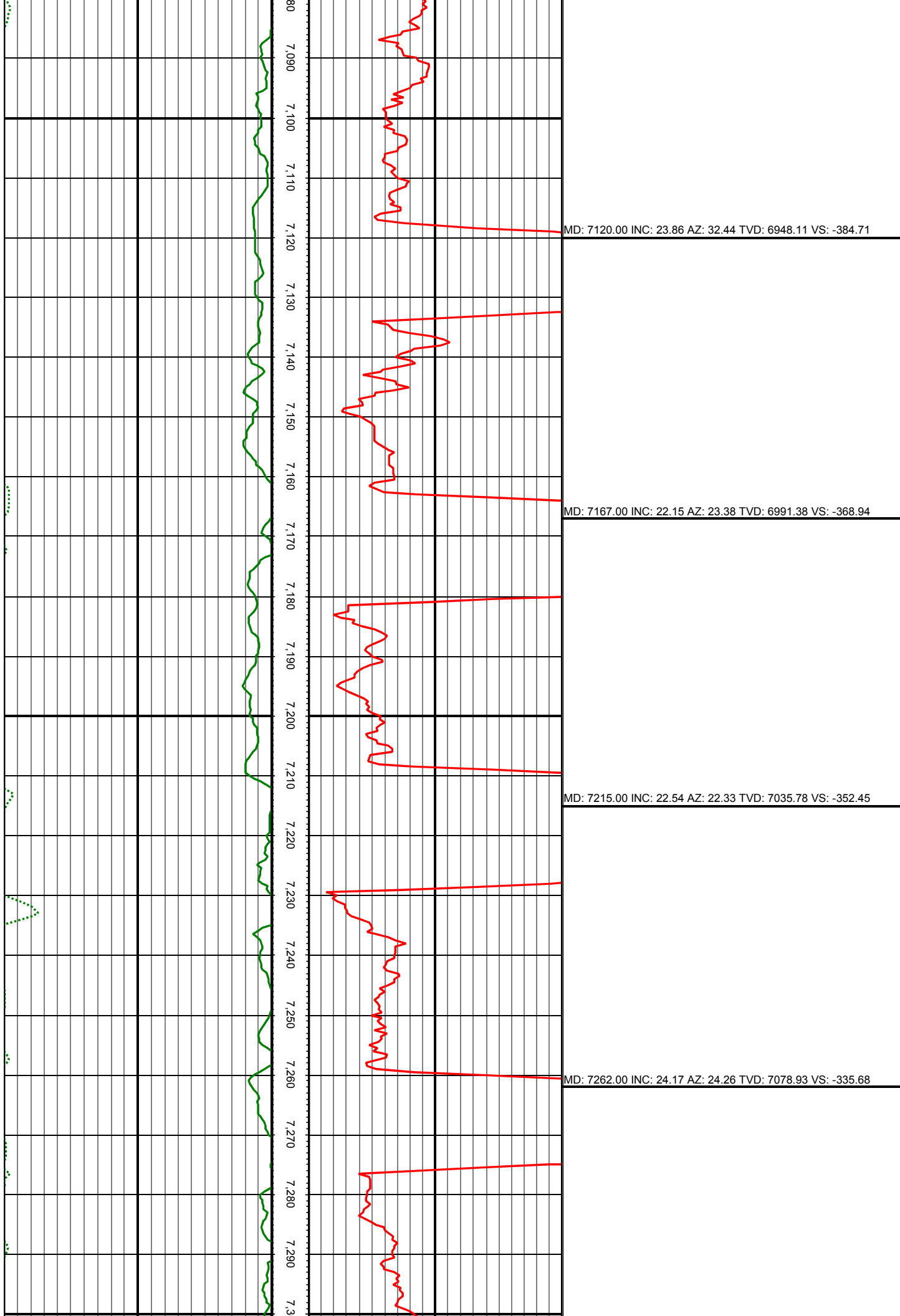


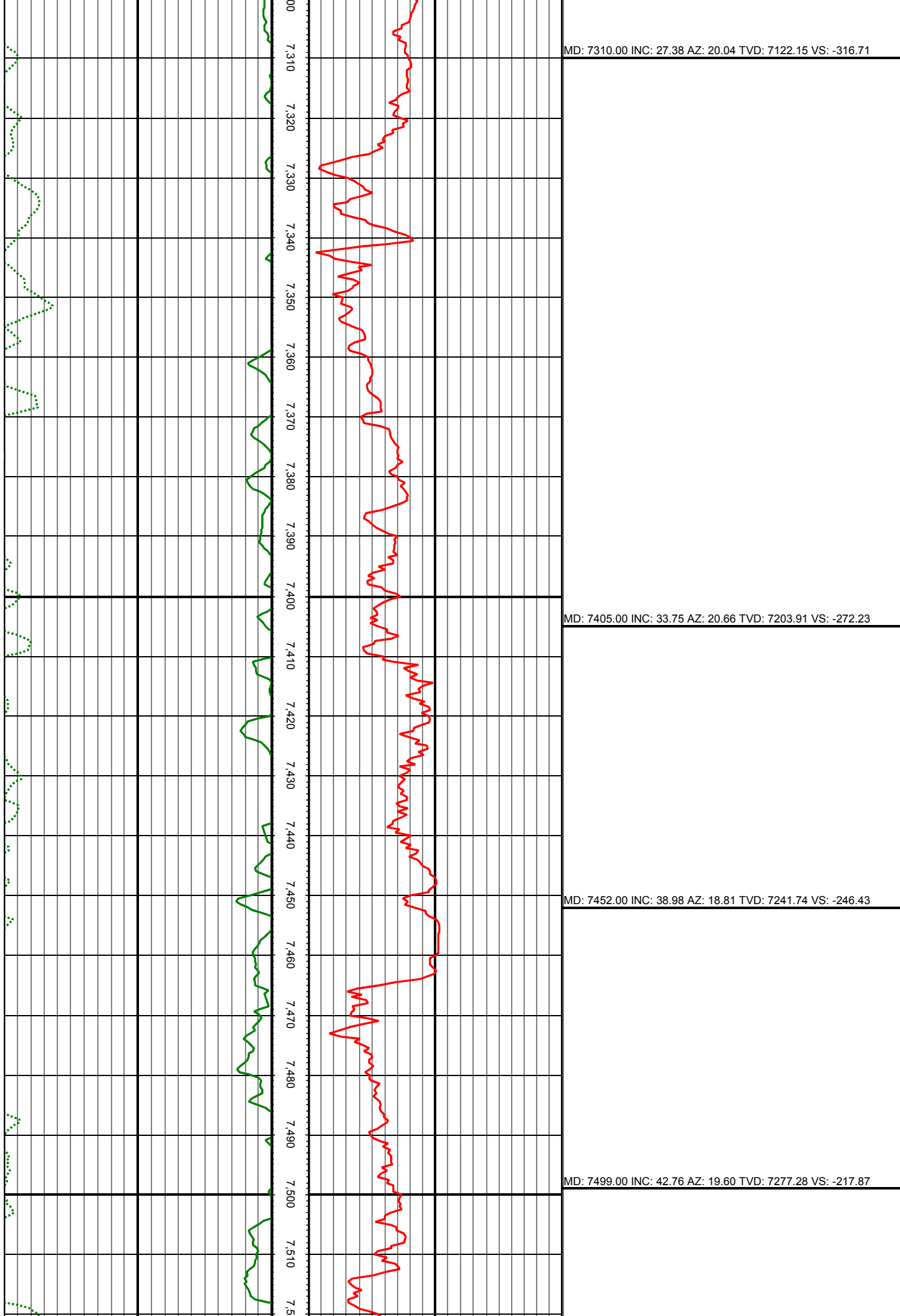
MD: 6648.00 INC: 14.72 AZ: 112.15 TVD: 6491.50 VS: -403.76

MD: 6742.00 INC: 11.12 AZ: 103.63 TVD: 6583.12 VS: -411.26

MD: 6836.00 INC: 12.92 AZ: 100.55 TVD: 6675.05 VS: -416.15





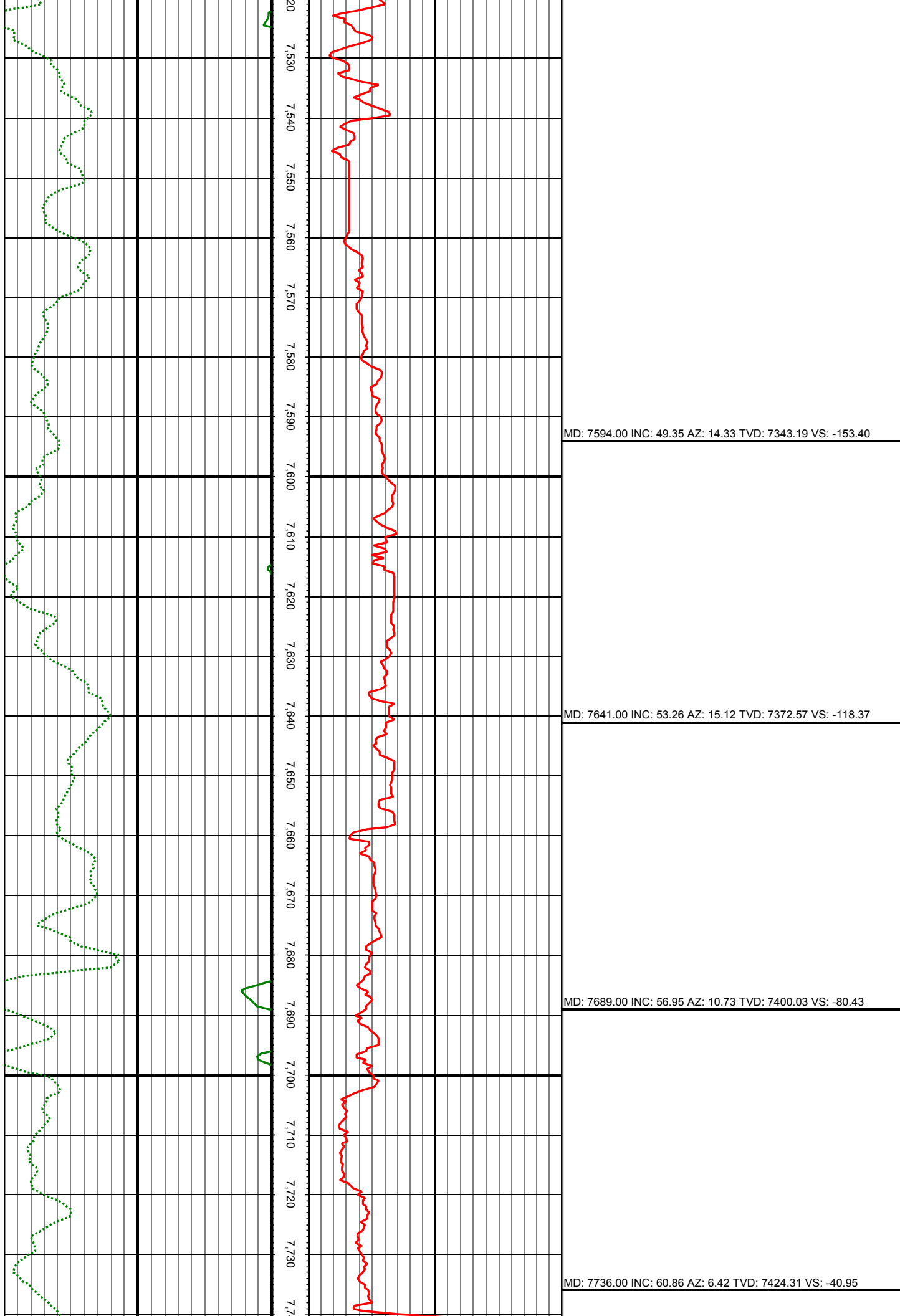


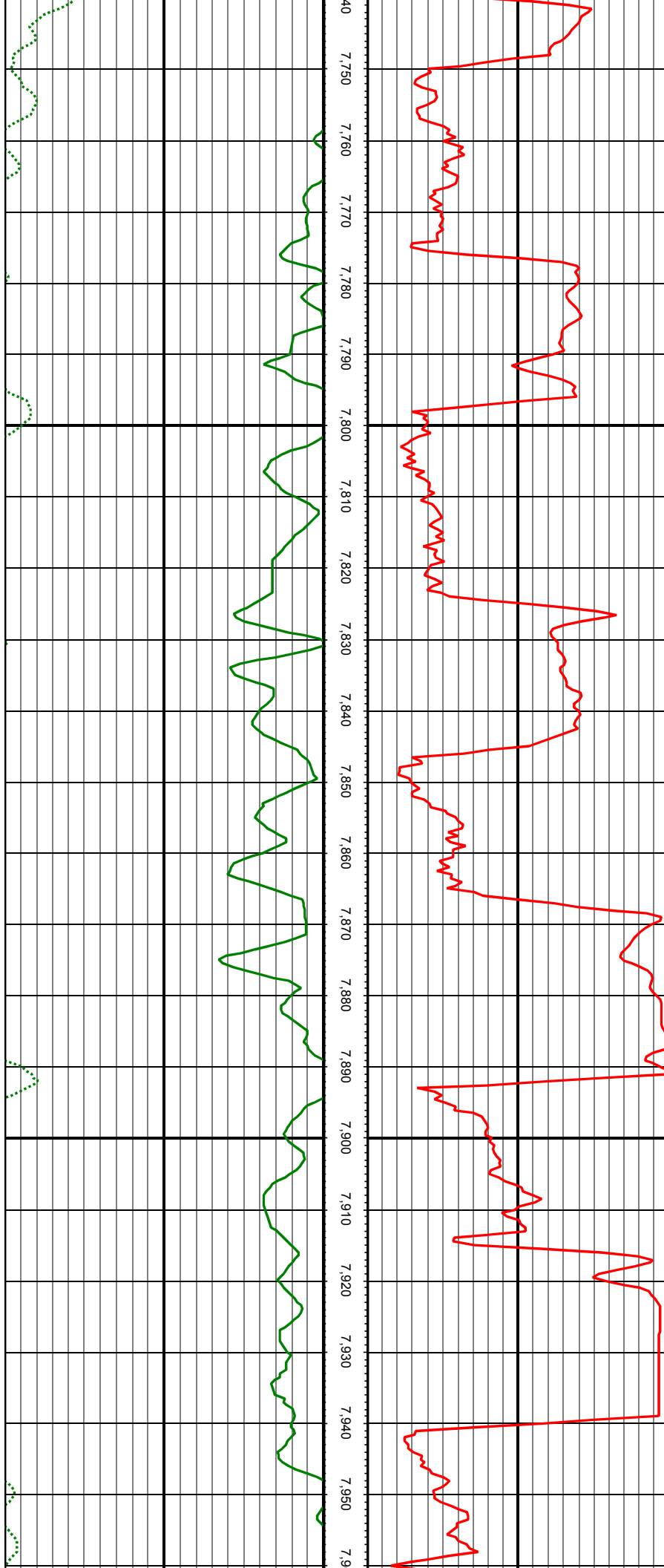
MD: 7310.00 INC: 27.38 AZ: 20.04 TVD: 7122.15 VS: -316.71

MD: 7405.00 INC: 33.75 AZ: 20.66 TVD: 7203.91 VS: -272.23

MD: 7452.00 INC: 38.98 AZ: 18.81 TVD: 7241.74 VS: -246.43

MD: 7499.00 INC: 42.76 AZ: 19.60 TVD: 7277.28 VS: -217.87



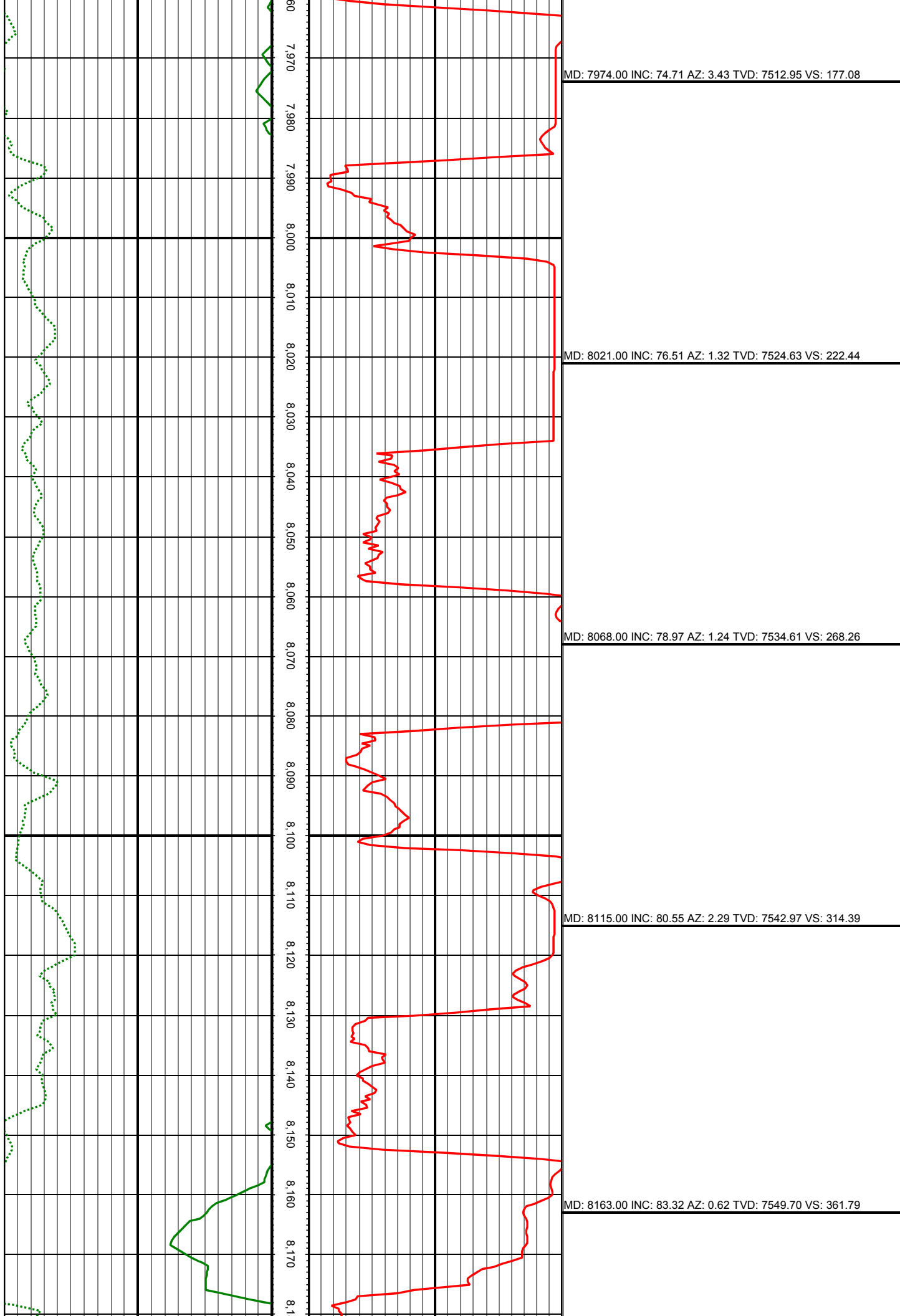


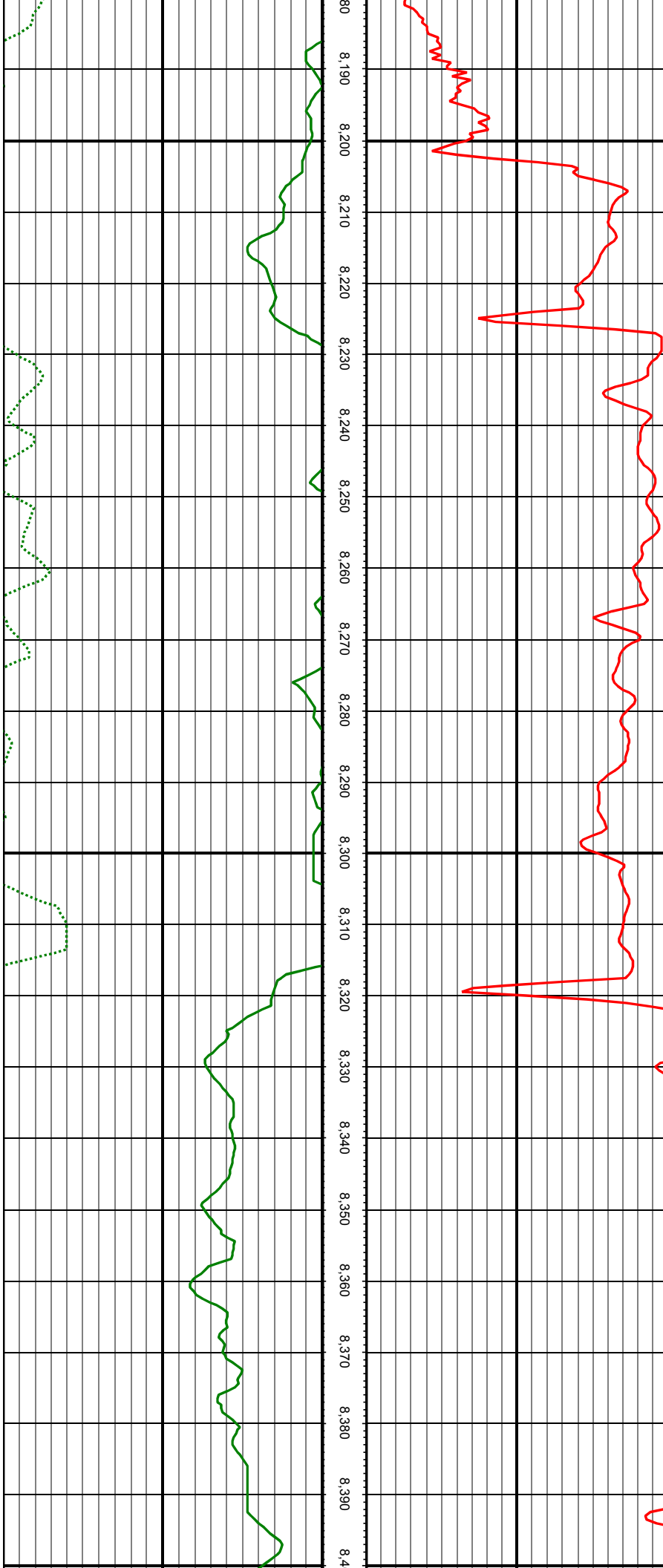
MD: 7784.00 INC: 63.81 AZ: 4.14 TVD: 7446.60 VS: 1.17

MD: 7831.00 INC: 66.89 AZ: 5.98 TVD: 7466.20 VS: 43.50

MD: 7879.00 INC: 69.26 AZ: 6.95 TVD: 7484.12 VS: 87.48

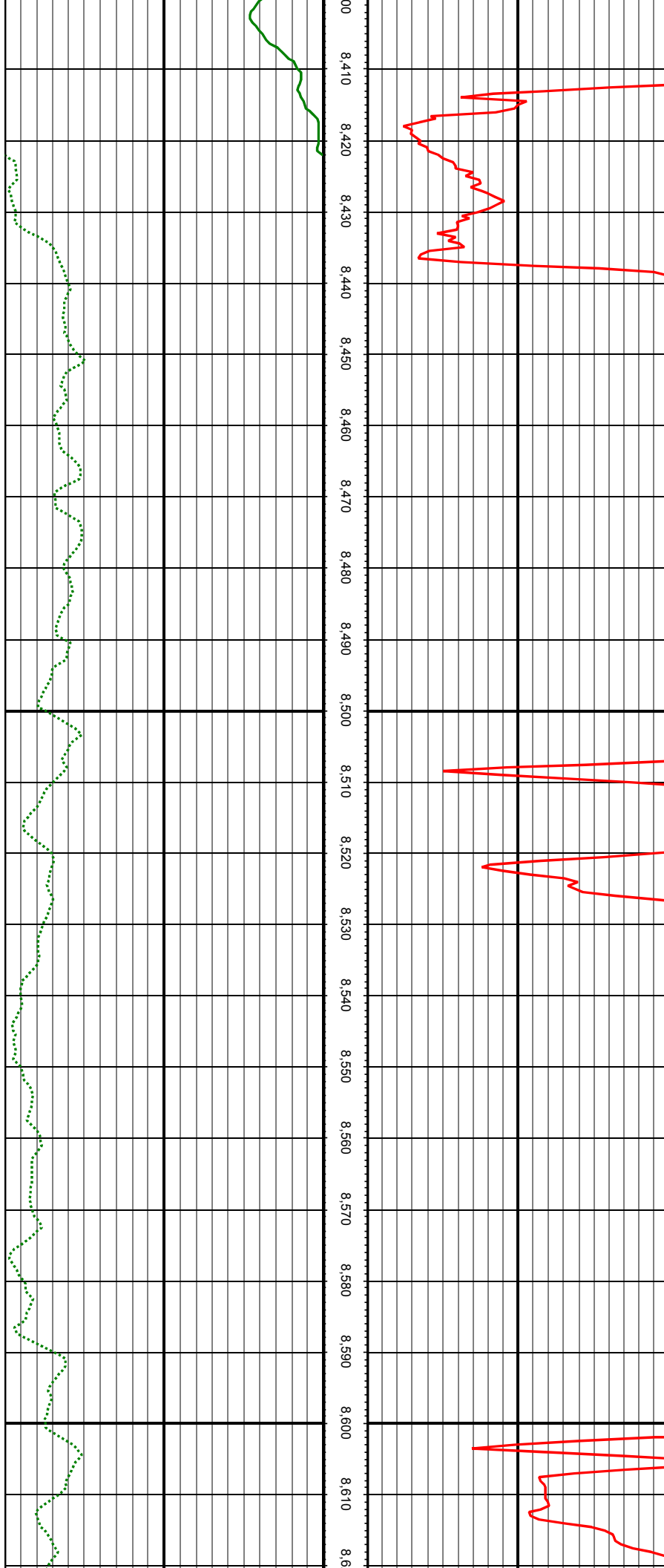
MD: 7926.00 INC: 72.64 AZ: 5.72 TVD: 7499.46 VS: 131.38





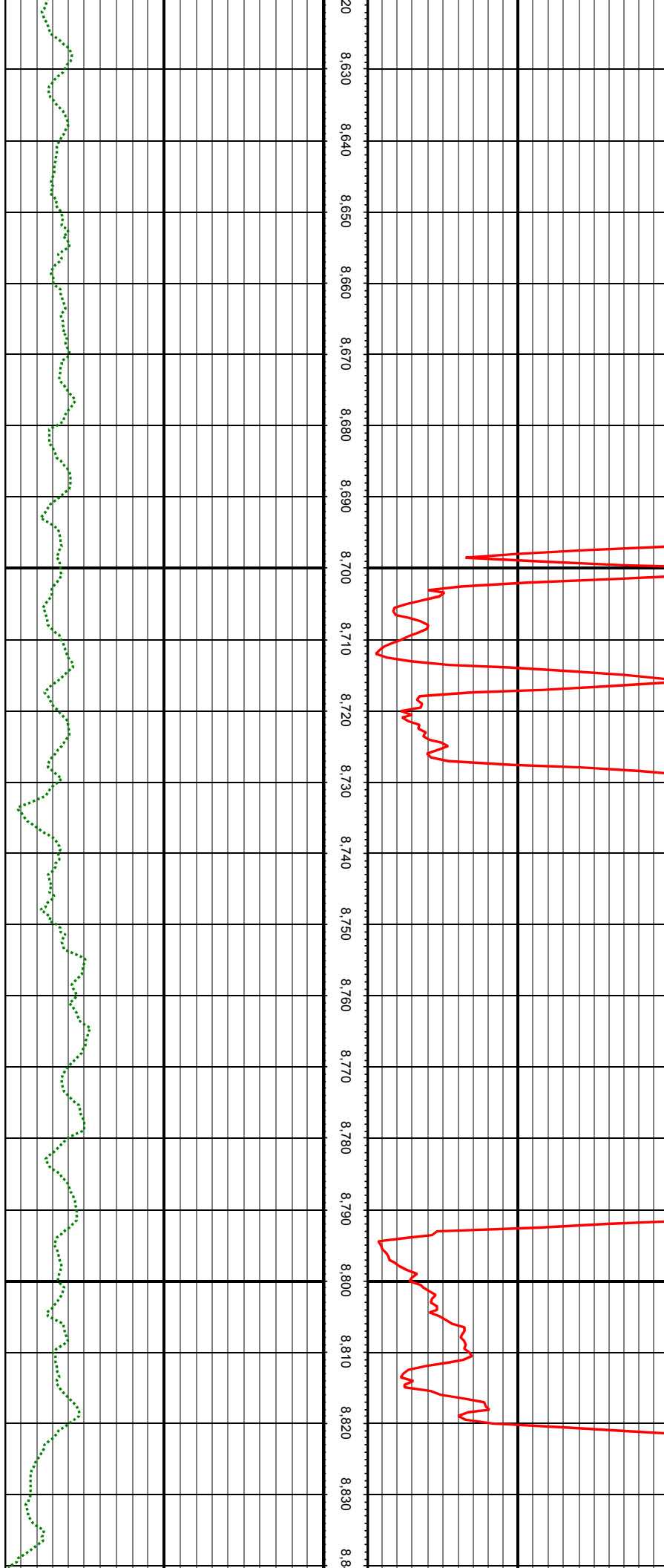
MD: 8257.00 INC: 87.01 AZ: 358.86 TVD: 7557.62 VS: 455.37

MD: 8352.00 INC: 86.57 AZ: 357.81 TVD: 7562.94 VS: 550.21



MD: 8447.00 INC: 89.91 AZ: 357.46 TVD: 7565.86 VS: 645.15

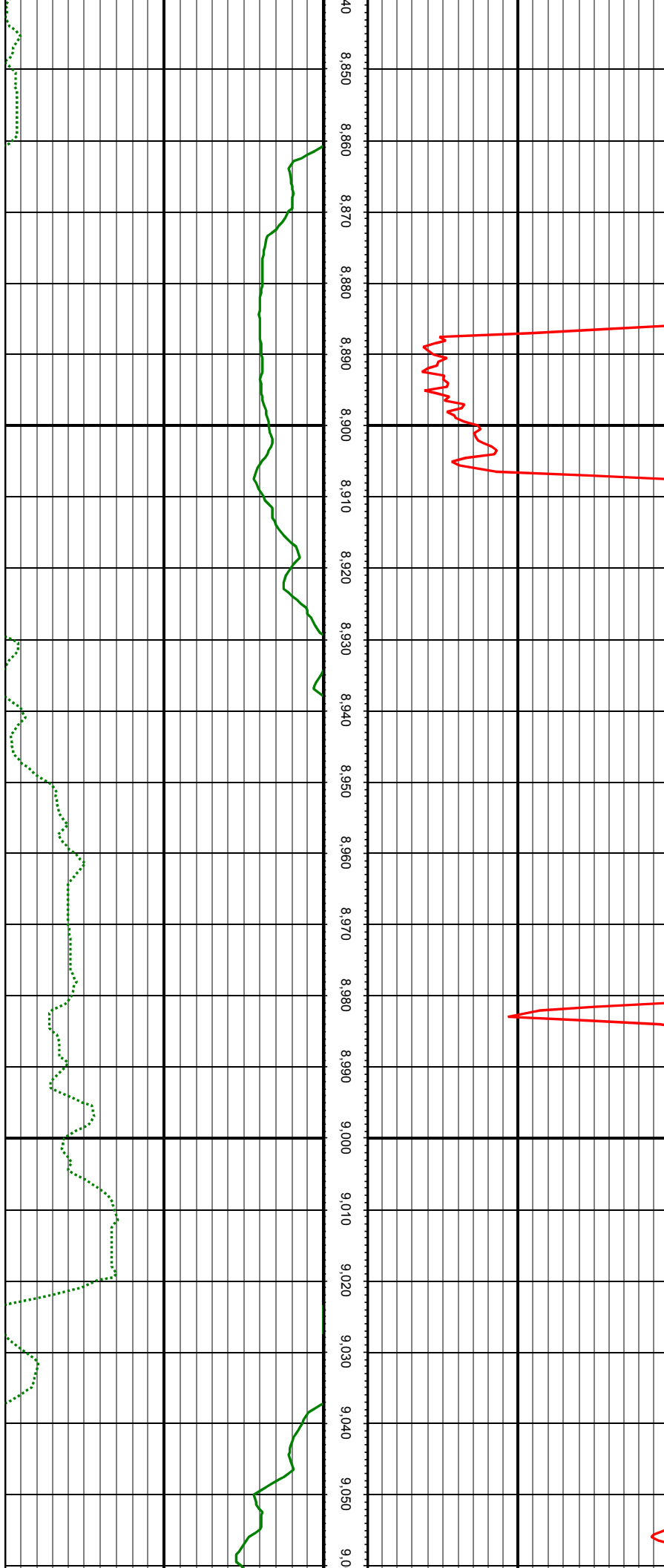
MD: 8541.00 INC: 90.44 AZ: 359.21 TVD: 7565.57 VS: 739.13



MD: 8636.00 INC: 90.18 AZ: 359.57 TVD: 7565.06 VS: 834.08

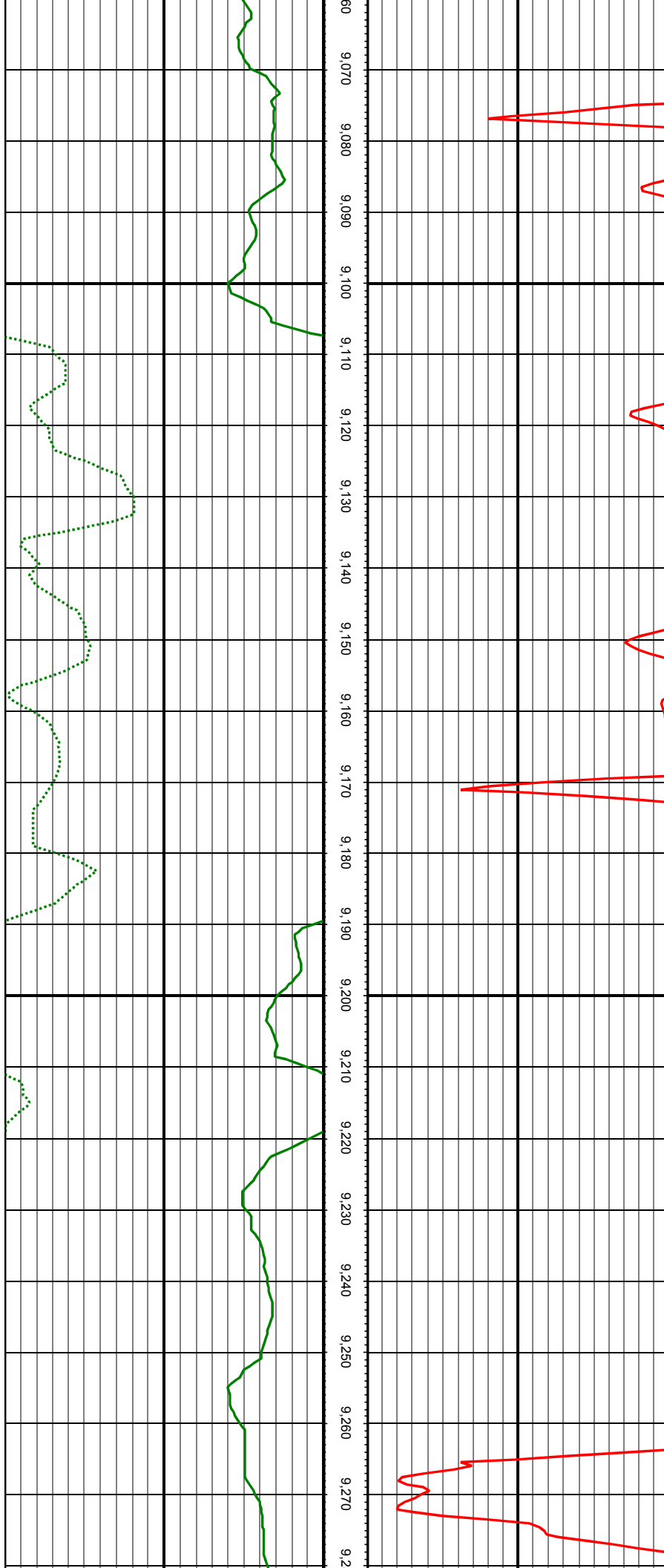
MD: 8731.00 INC: 89.91 AZ: 0.18 TVD: 7564.98 VS: 929.00

MD: 8823.00 INC: 92.42 AZ: 357.63 TVD: 7563.11 VS: 1020.93



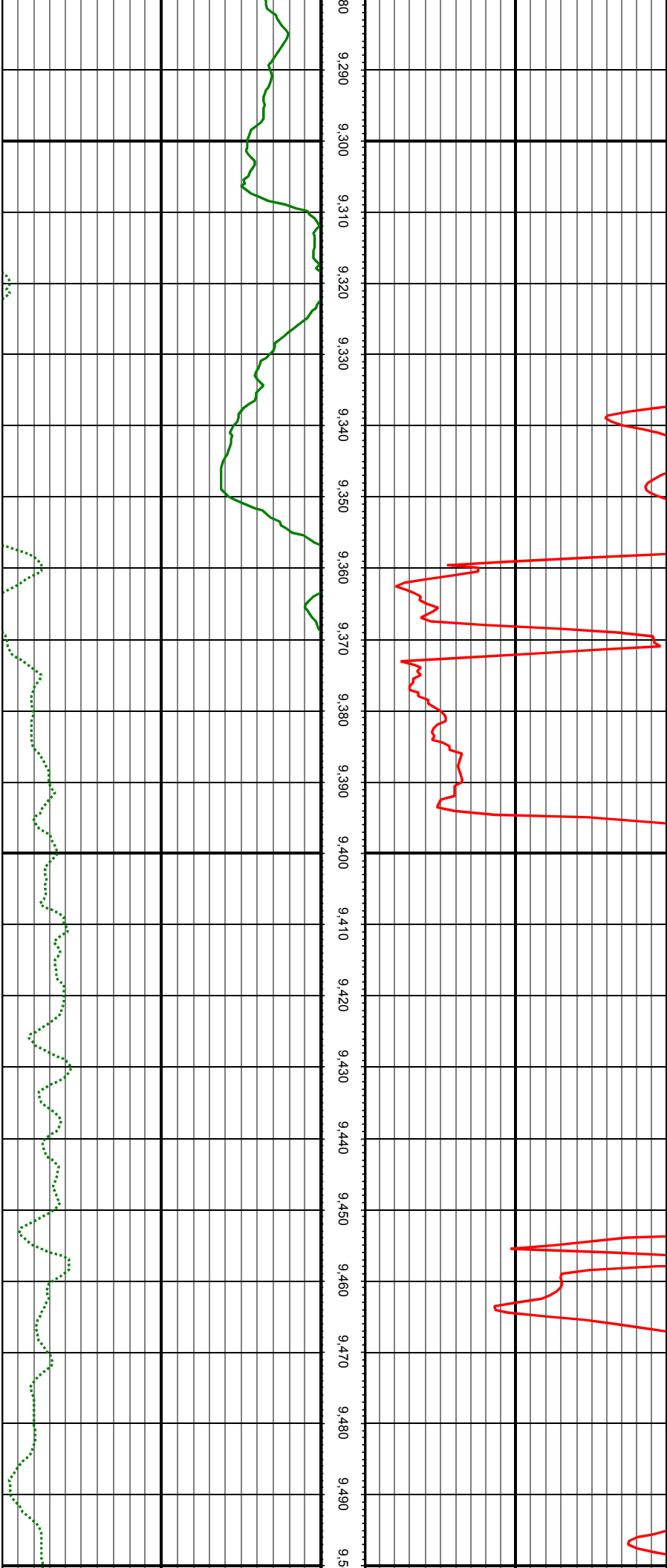
MD: 8918.00 INC: 90.53 AZ: 355.79 TVD: 7560.67 VS: 1115.89

MD: 9012.00 INC: 90.48 AZ: 355.52 TVD: 7559.84 VS: 1209.83



MD: 9107.00 INC: 89.96 AZ: 354.56 TVD: 7559.47 VS: 1304.74

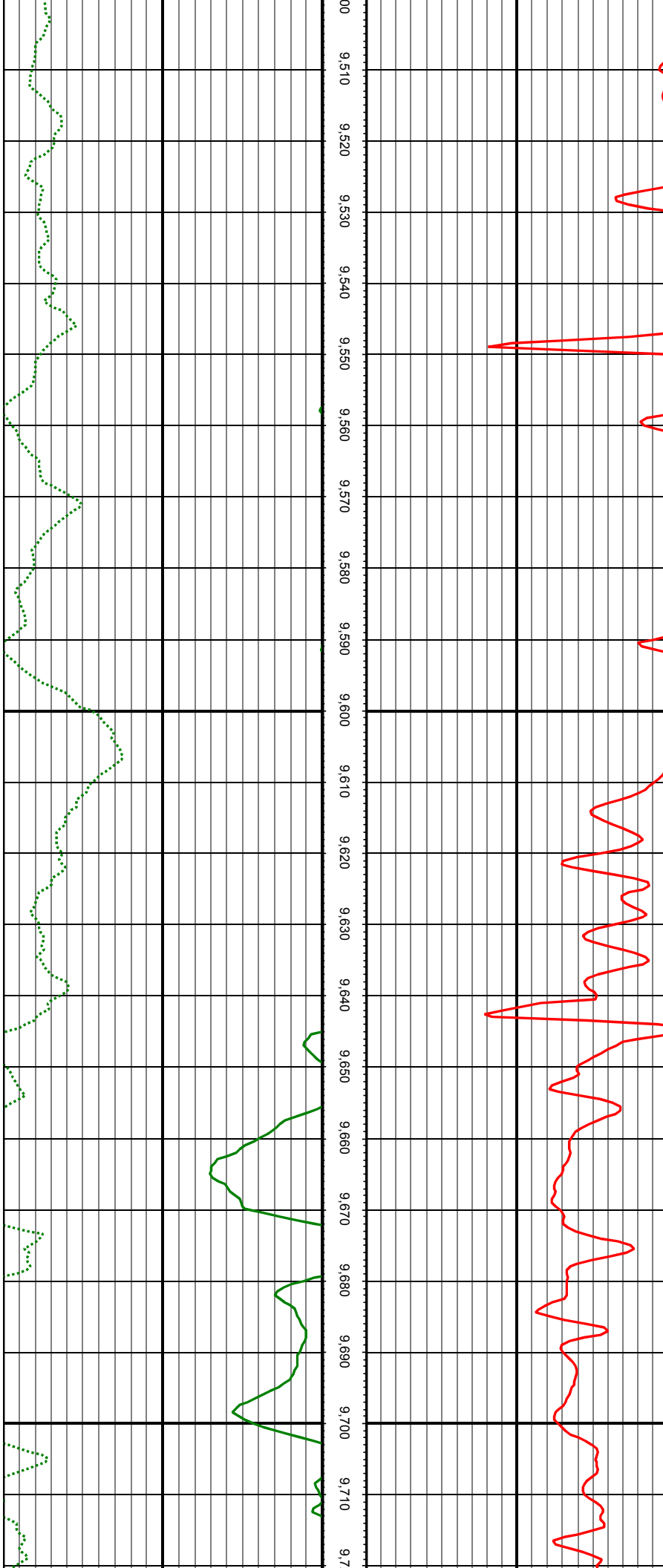
MD: 9202.00 INC: 89.25 AZ: 354.47 TVD: 7560.13 VS: 1399.61



MD: 9296.00 INC: 88.59 AZ: 355.00 TVD: 7561.90 VS: 1493.49

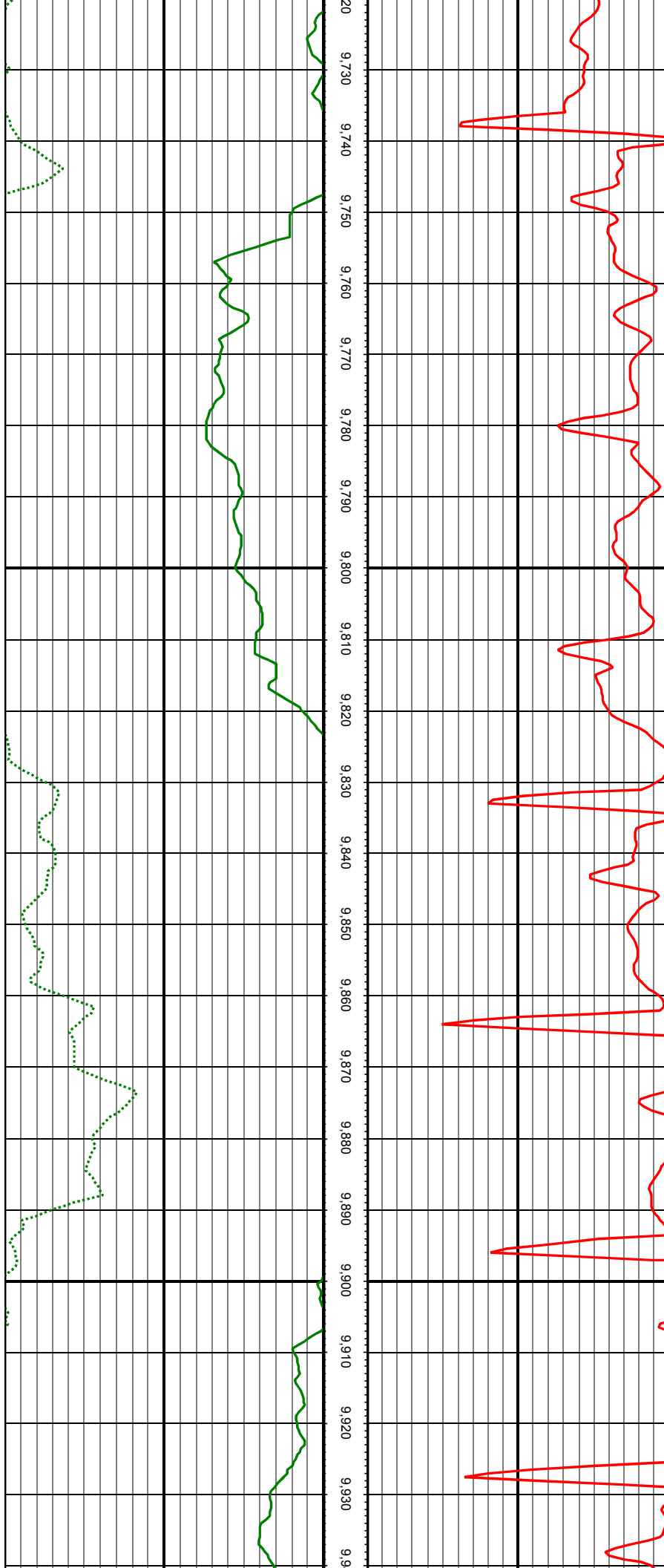
MD: 9391.00 INC: 90.62 AZ: 357.02 TVD: 7562.56 VS: 1588.44

MD: 9485.00 INC: 90.97 AZ: 356.84 TVD: 7561.25 VS: 1682.43



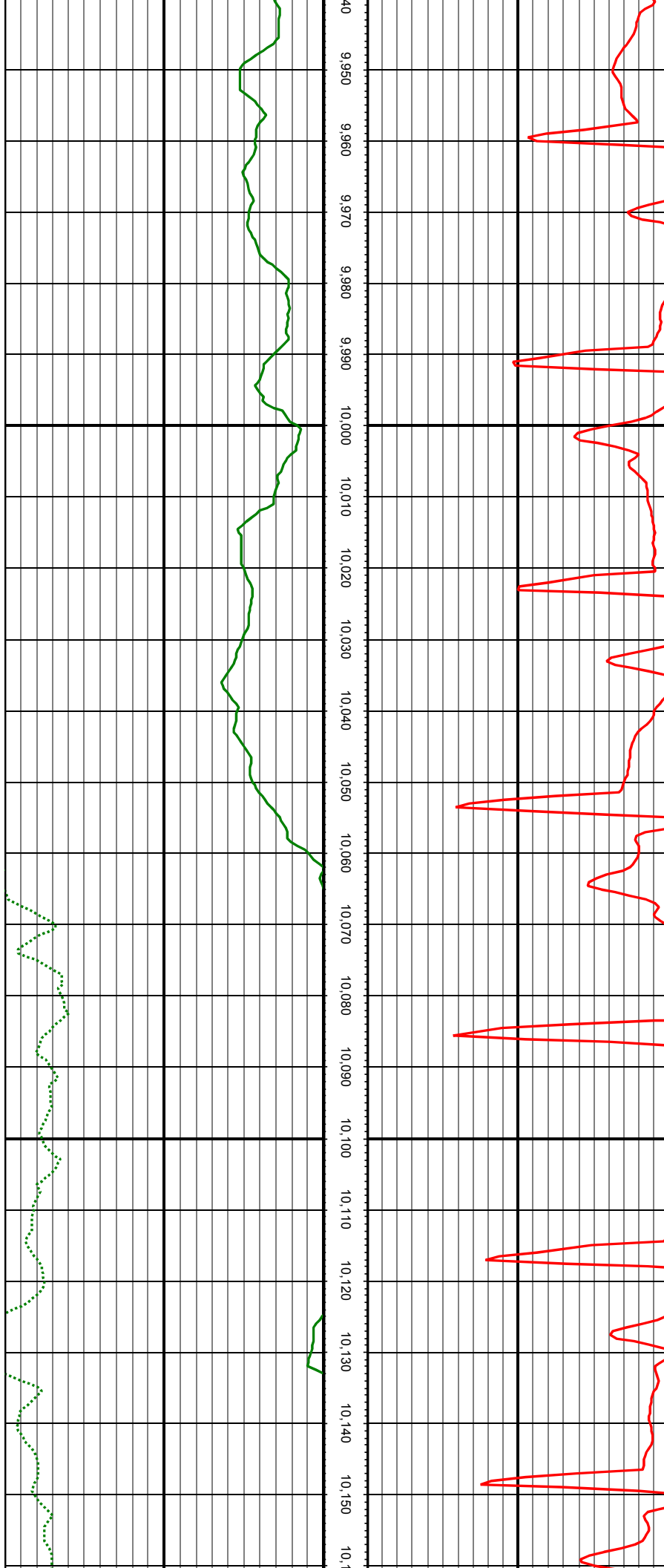
MD: 9579.00 INC: 91.14 AZ: 357.90 TVD: 7559.52 VS: 1776.41

MD: 9674.00 INC: 90.66 AZ: 357.81 TVD: 7558.03 VS: 1871.40



MD: 9769.00 INC: 89.91 AZ: 358.34 TVD: 7557.56 VS: 1966.39

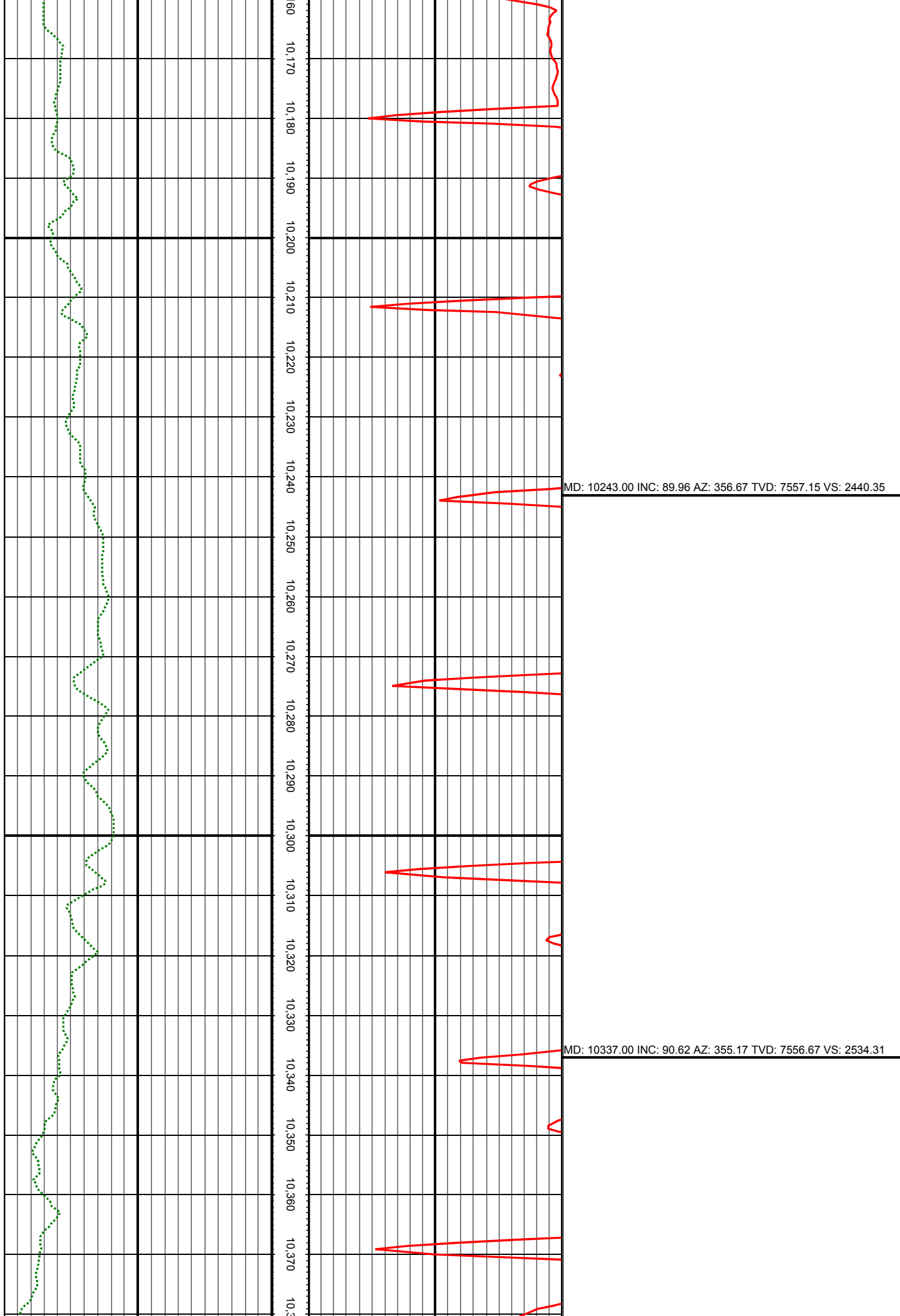
MD: 9864.00 INC: 89.87 AZ: 357.72 TVD: 7557.74 VS: 2061.38

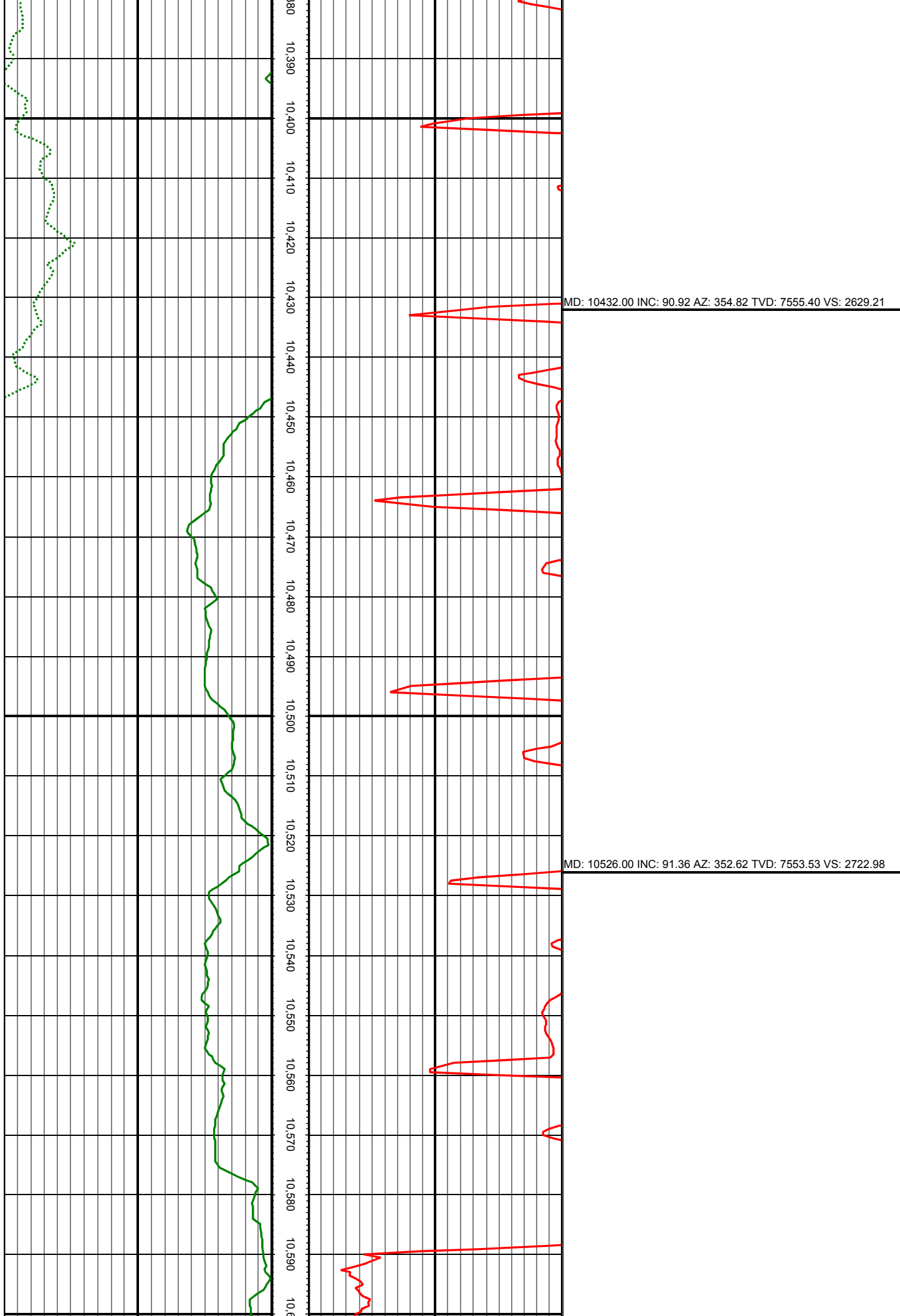


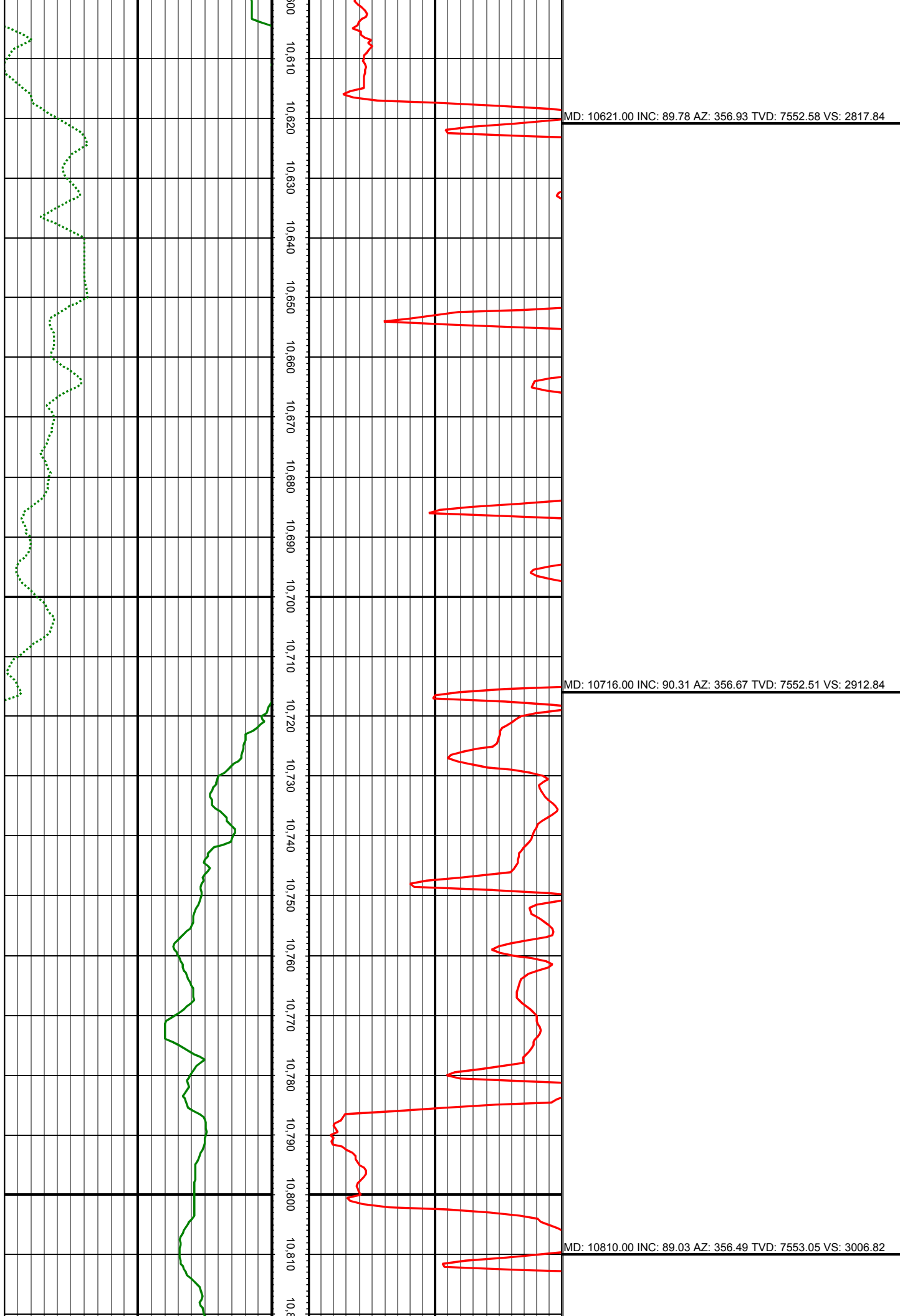
MD: 9959.00 INC: 89.96 AZ: 358.42 TVD: 7557.88 VS: 2156.38

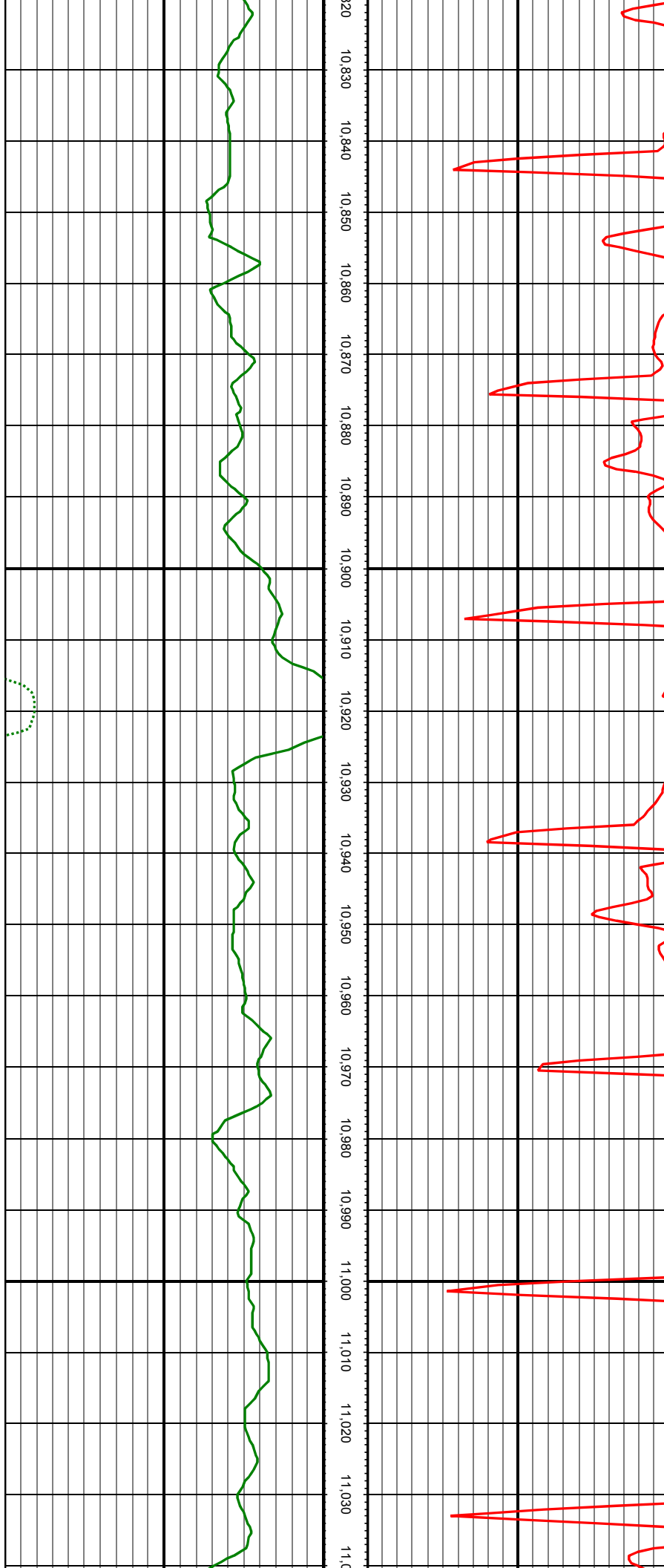
MD: 10053.00 INC: 90.04 AZ: 358.34 TVD: 7557.88 VS: 2250.37

MD: 10148.00 INC: 90.44 AZ: 358.42 TVD: 7557.48 VS: 2345.36



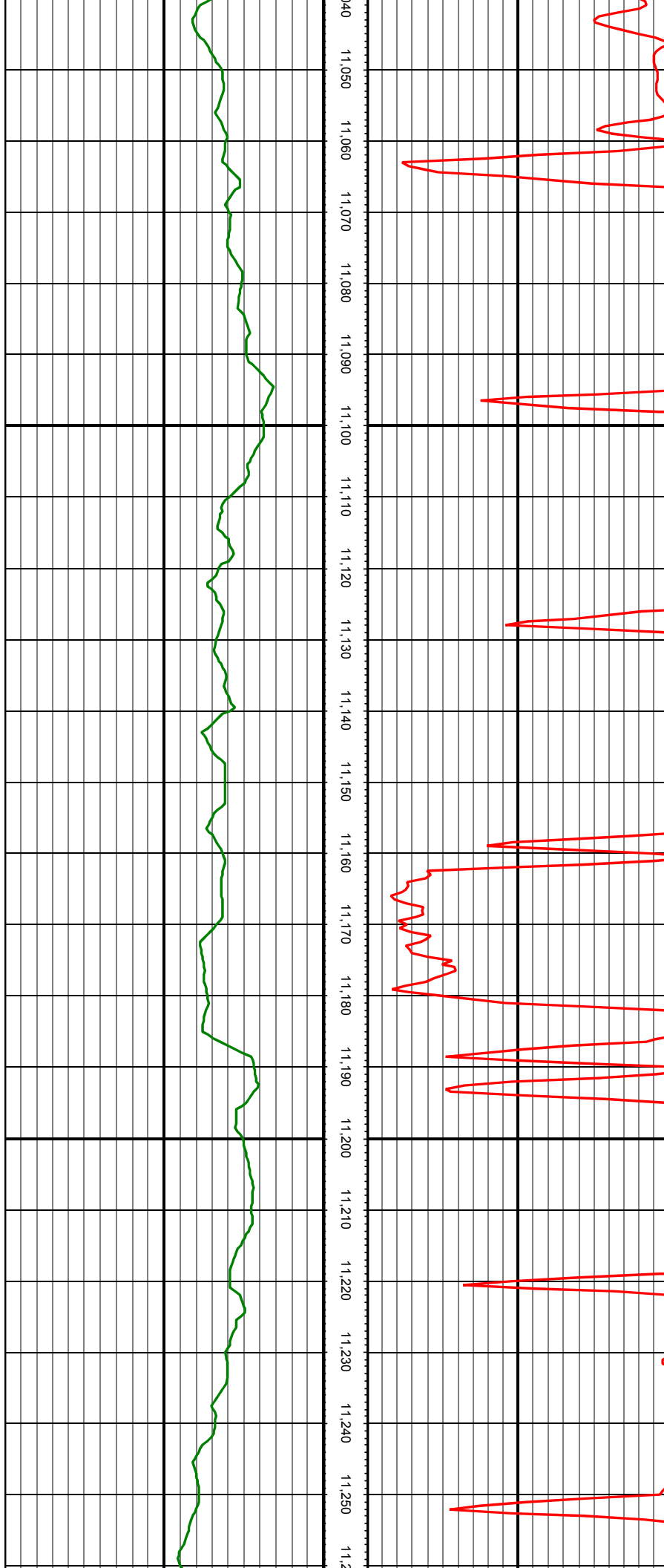






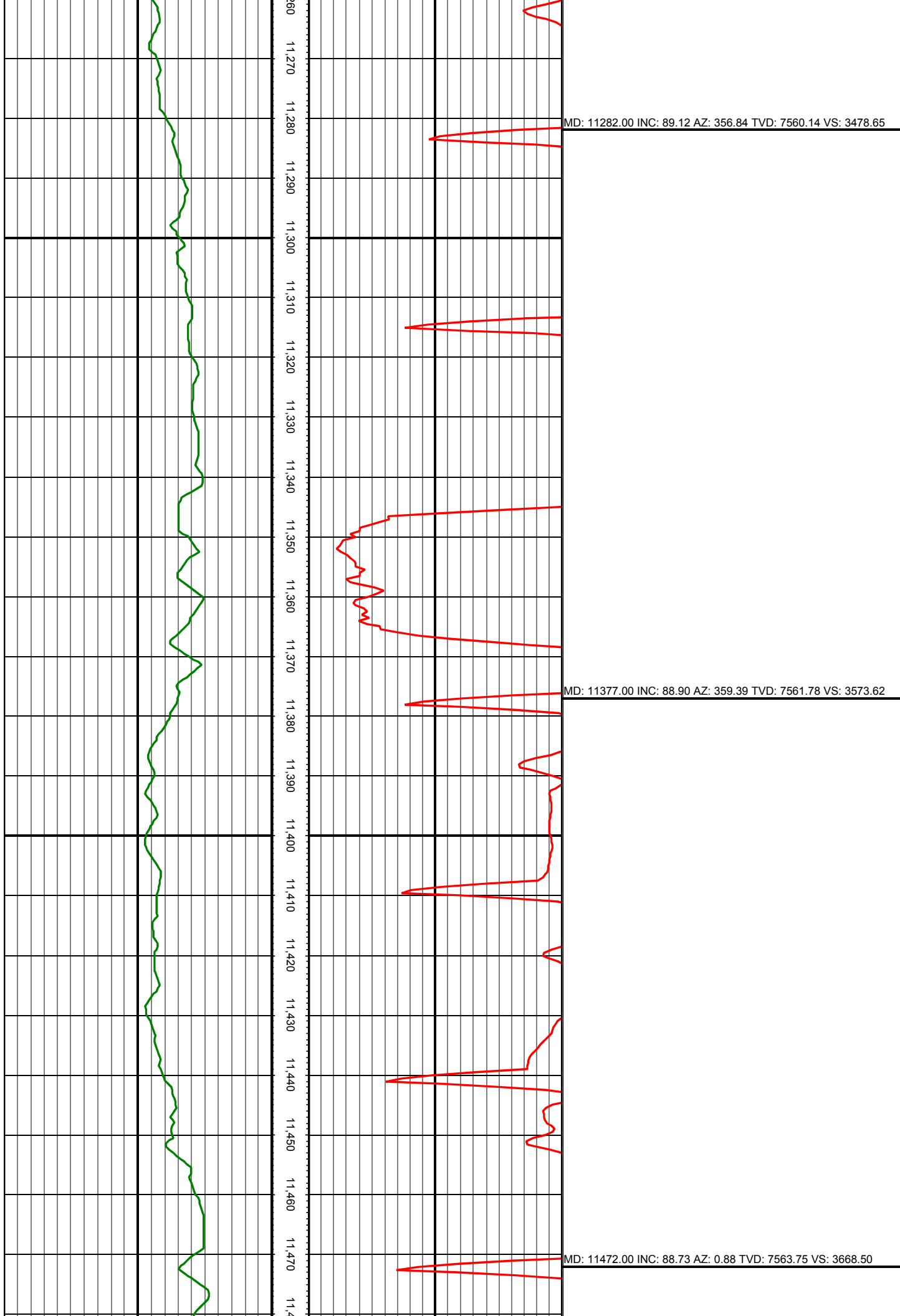
MD: 10905.00 INC: 89.17 AZ: 357.46 TVD: 7554.54 VS: 3101.80

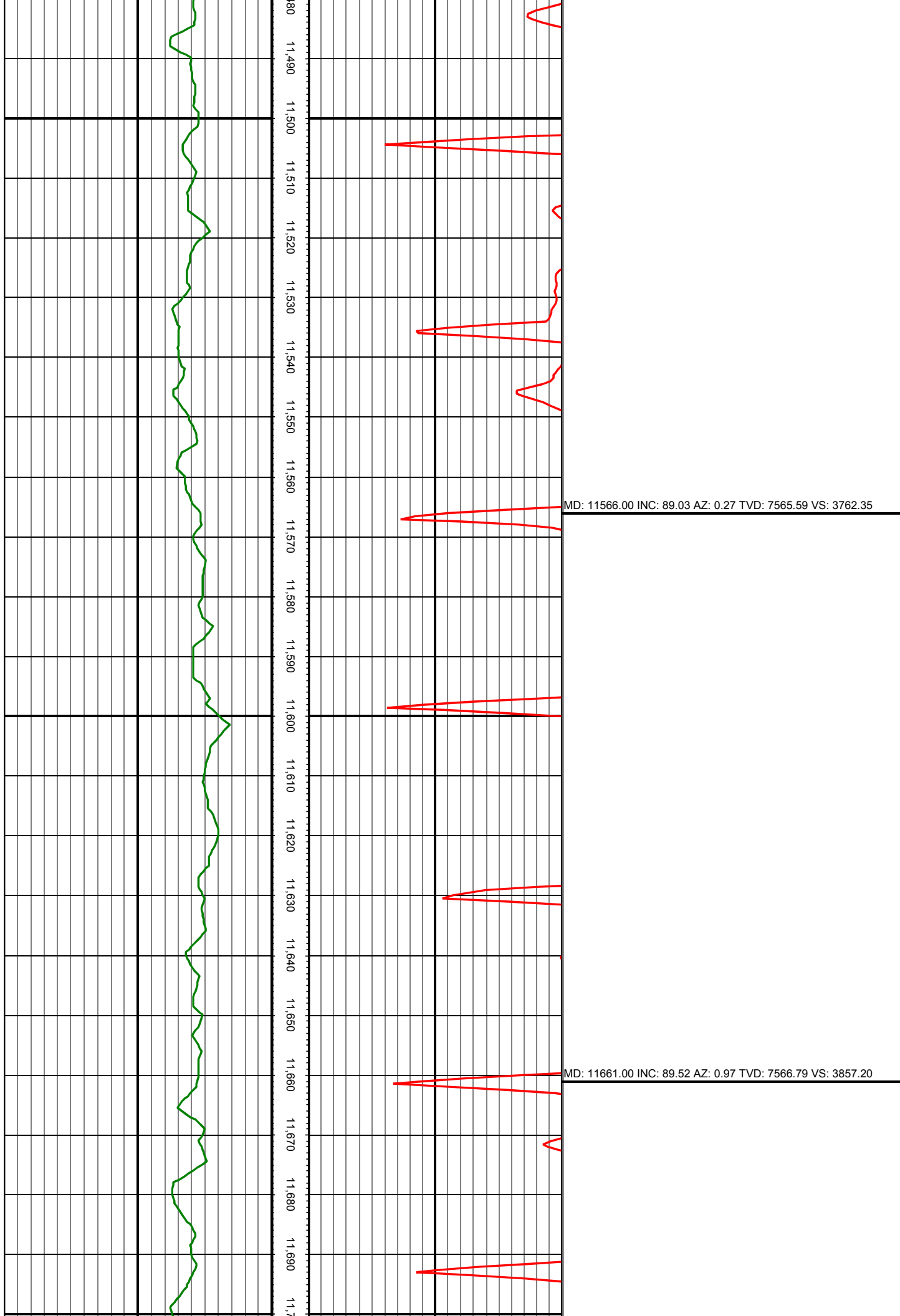
MD: 10999.00 INC: 89.12 AZ: 356.05 TVD: 7555.94 VS: 3195.78

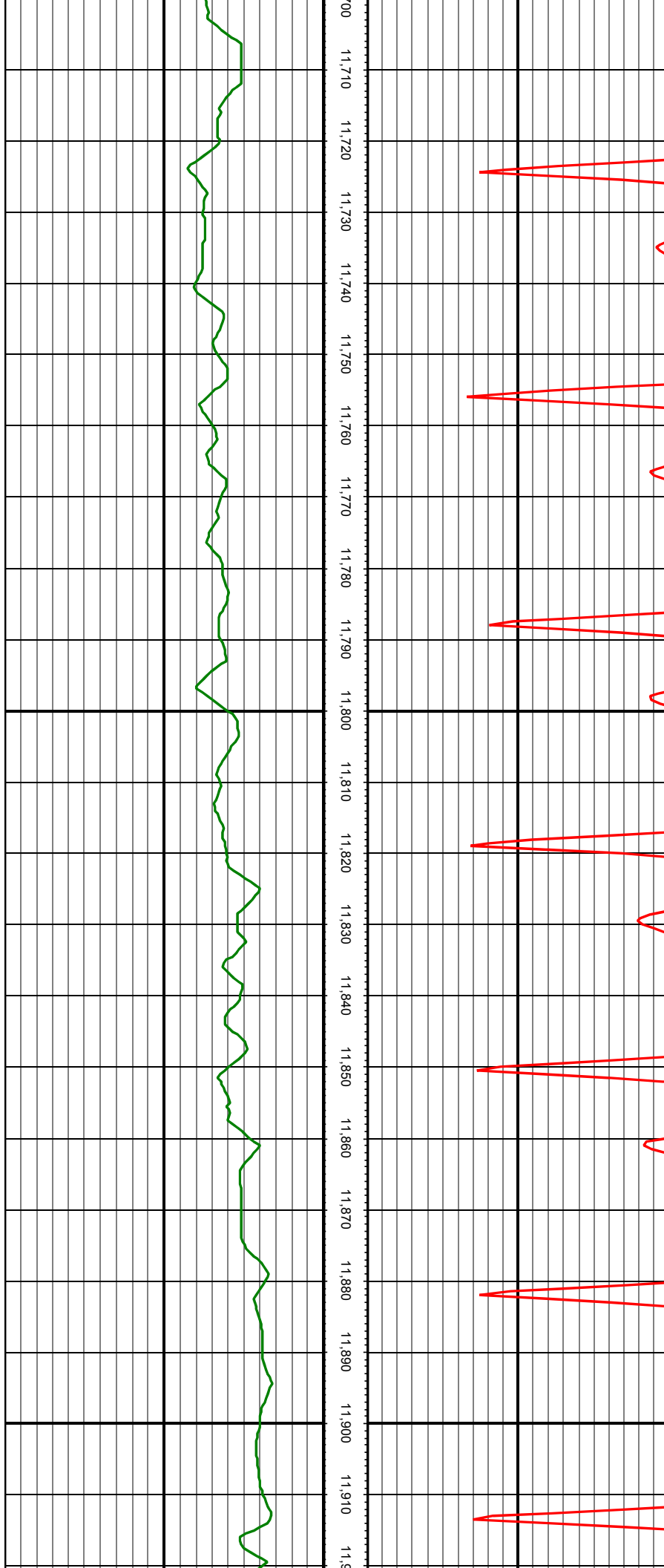


MD: 11093.00 INC: 89.34 AZ: 354.91 TVD: 7557.21 VS: 3289.71

MD: 11188.00 INC: 88.99 AZ: 357.19 TVD: 7558.59 VS: 3384.67







MD: 11755.00 INC: 90.57 AZ: 0.53 TVD: 7566.71 VS: 3951.04

MD: 11850.00 INC: 91.23 AZ: 1.15 TVD: 7565.22 VS: 4045.87

