

**Cathedral Energy Services**

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

**Cosslett 1K-22H-B168****Scale 5":100' - MD****12/1/2018 4:47 PM****Oper. Company:** Crestone Peak Resources**Well:** Cosslett 1K-22H-B168**Field:** DJ Basin**Rig:** Ensign 140**Well ID:** 05-123-47669-00**Job Number:** 185275

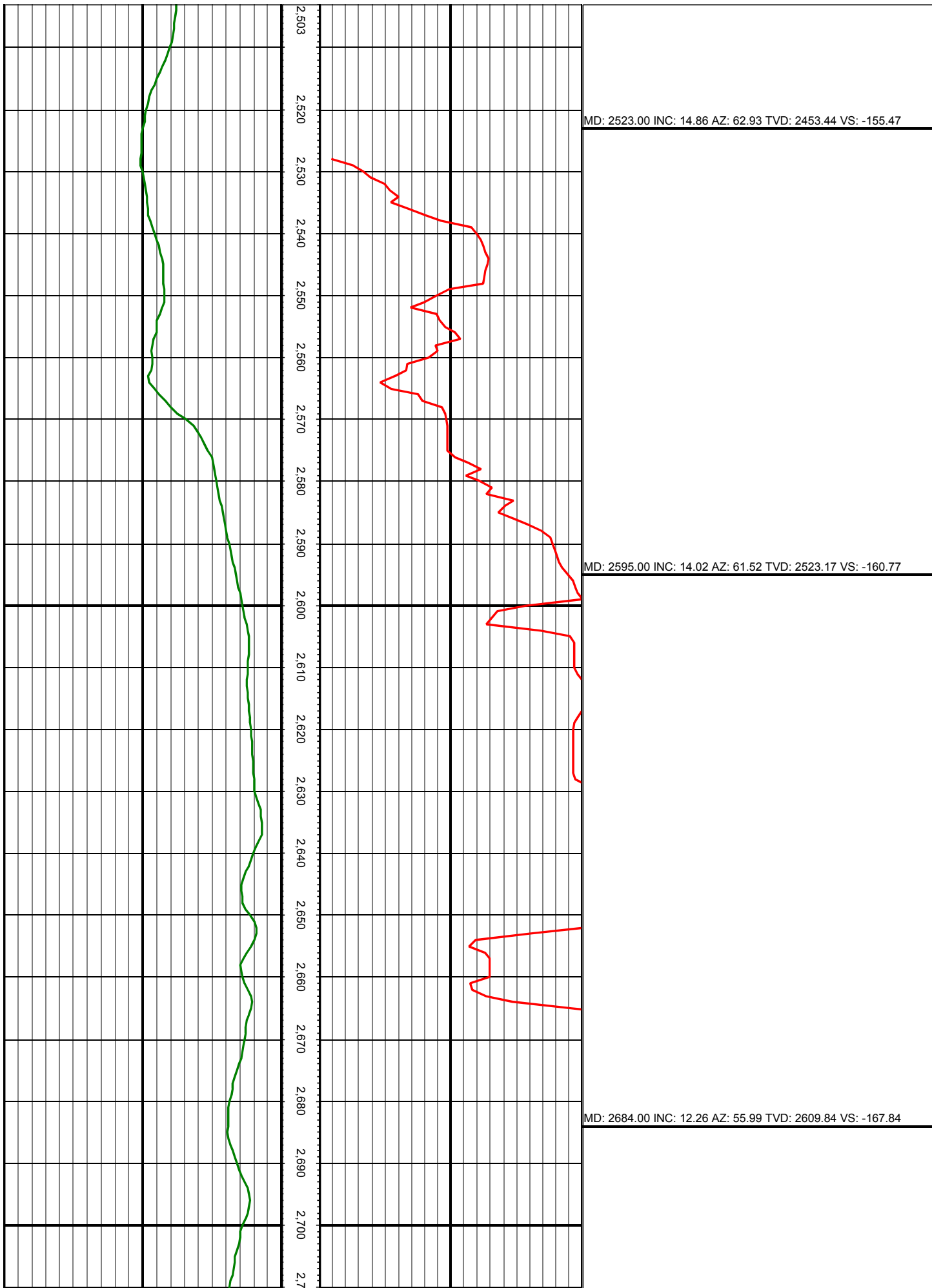
**Notes:** Gamma Ray Log  
Section Plan: 169.41°  
Datum: North American Datum 1983  
Magnetic North: 8.35°  
Grid Convergence: 0.33°  
Gamma Averaging: 7% Smoothing

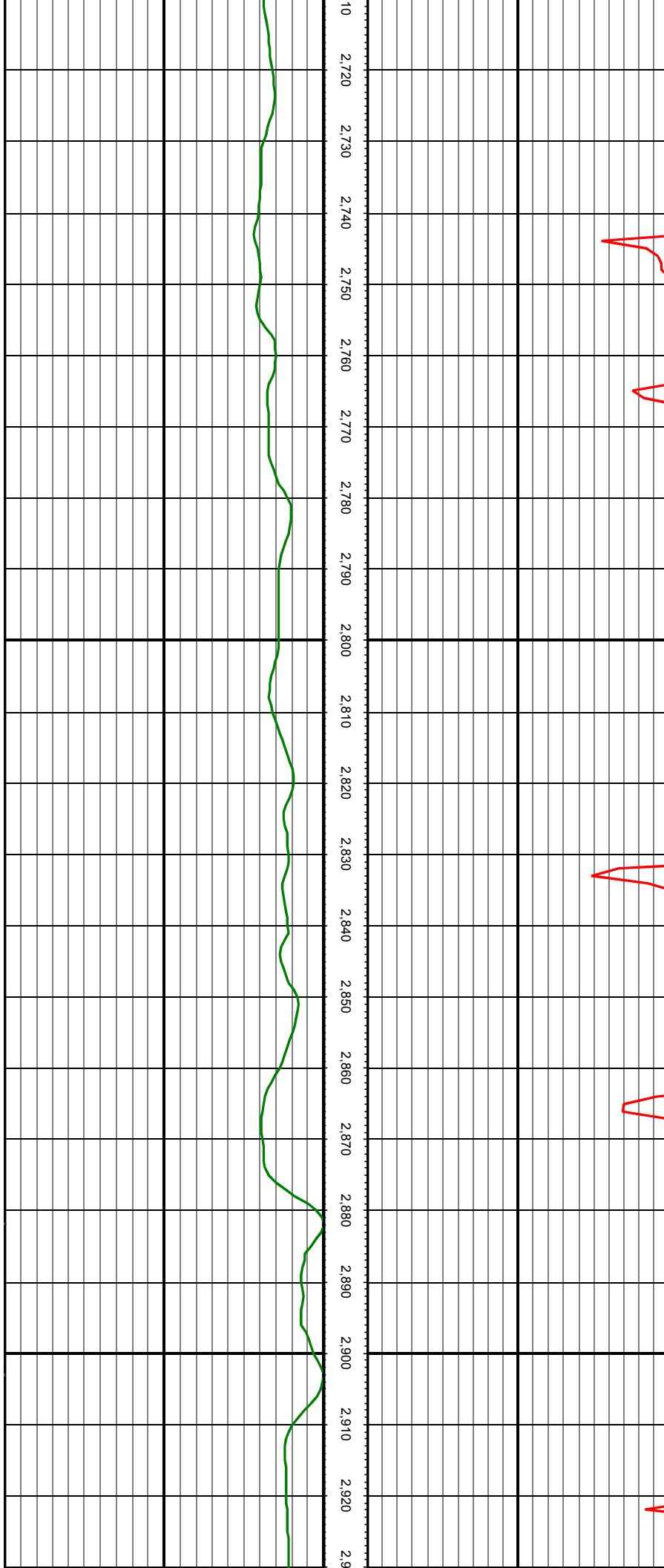
**State:** CO**County:** Weld**Country:** USA**Location:** S22-T1N-R68W**Start Date:** 11/24/2018 00:15:00**End Date:** 11/30/2018 04:15:00**Latitude:** 40.041390**Longitude:** -104.987726**Elev GL:** 5173.00**Elev DF:** 5196.00**Elev KB:** 5196.00**Notes:** Log & Survey Depths Relative to Kelly Bushing (KB) Depth**Operator 1:** Robert Stahlecker**Operator 2:** Daniel Stevens**Notes:** Maximun Temperature: 273.00°F

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	DIA-07411	BTDM-1893	BTDM-1893		
Bit Size	8.75	8.50	8.50		
Cal Factor	5.43	5.12	5.12		
Survey Offset	60.00	48.00	48.00		
Gamma Offset	55.39	31.73	31.74		
Resisitivity Offset	0.00	0.00	0.00		
Start Depth	2579.00	10630.00	14507.00		
StartDate	11/24/2018	11/27/2018	11/28/2018		
StartTime	15:00	14:30	18:30		
EndDepth	10630.00	14507.00	17885.00		
EndDate	11/27/2018	11/28/2018	12/1/2018		
EndTime	00:00	16:00	02:00		
Mud Type	OIL BASED	OIL BASED	OIL BASED		
Mud Weight	9.50 PPG	10.30 PPG	10.30 PPG		
Funnel Viscosity	49.00 LBS/100FT2	50.00 LBS/100FT2	54.00 LBS/100FT2		
Plastic Viscosity	17.00 CP	16.00 CP	18.00 CP		
Yield Point	6.00 LBS/100FT2	8.00 LBS/100FT2	8.00 LBS/100FT2		
Gel Strength	7.00/10.00/12.00 LBS/100FT2	8.00/12.00/14.00 LBS/100FT2	8.00/14.00/16.00 LBS/100FT2		
Solids Content	7.10 %	7.40 %	7.30 %		
Sand Content	0.00 %	0.00 %	0.00 %		
Mud Alkalinity	3.50 PPG	3.50 PPG	3.50 PPG		
Filtrate Alkalinity	0.00 API	0.00 API	0.00 API		
Chlorides	30,000.00 MG/L	33,000.00 MG/L	33,000.00 MG/L		
Temperature	172.00° F	255.00° F	265.00° F		

Hole Data			Casing Data		
Size	From	To	Size	From	To
12.25	0.00	2568.00	13.375	0.00	518.00
8.75	2568.00	10630.00	9.875	0.00	2568.00
8.50	10630.00	17969.00	4.500	0.00	17969.00

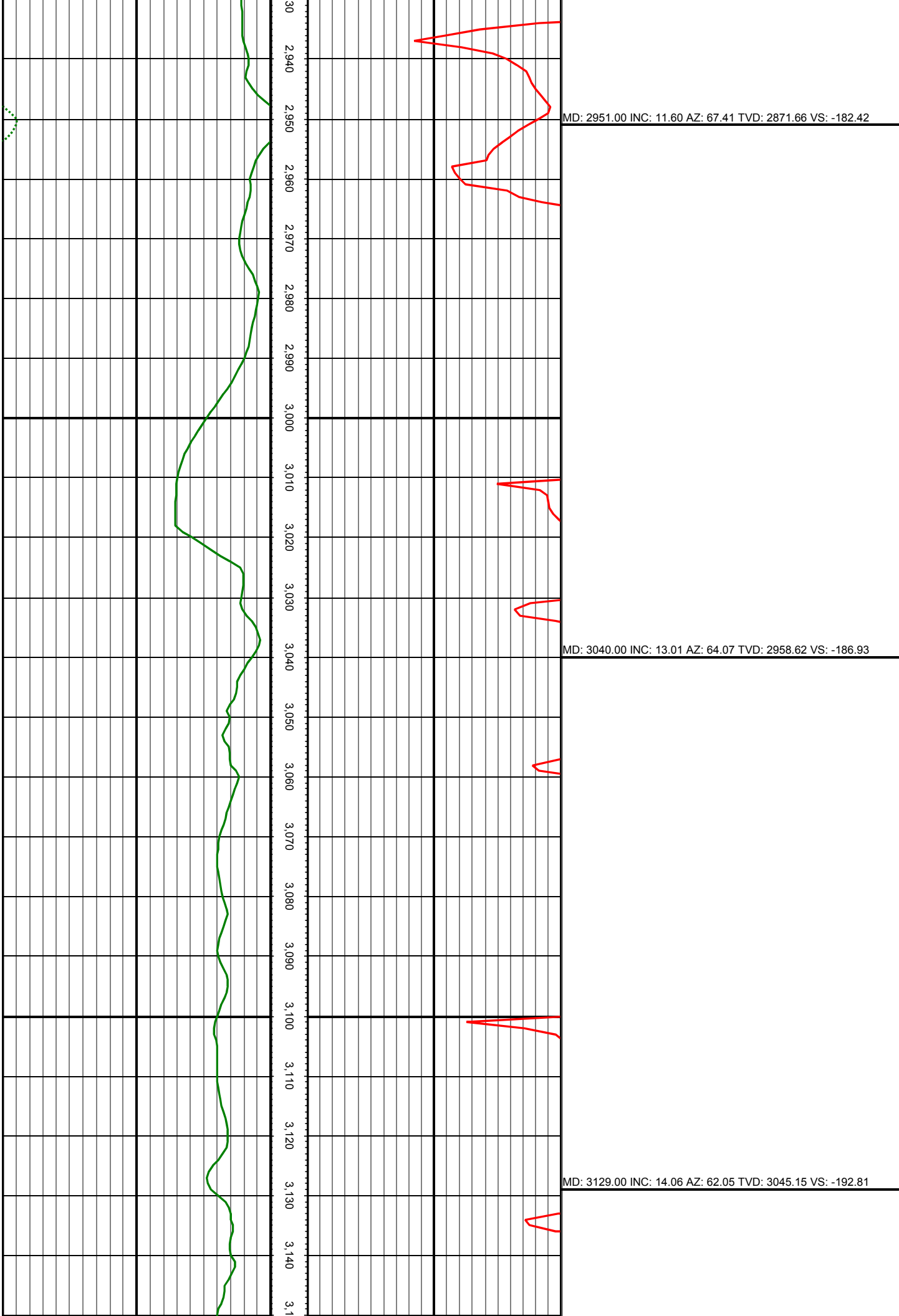
*All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost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

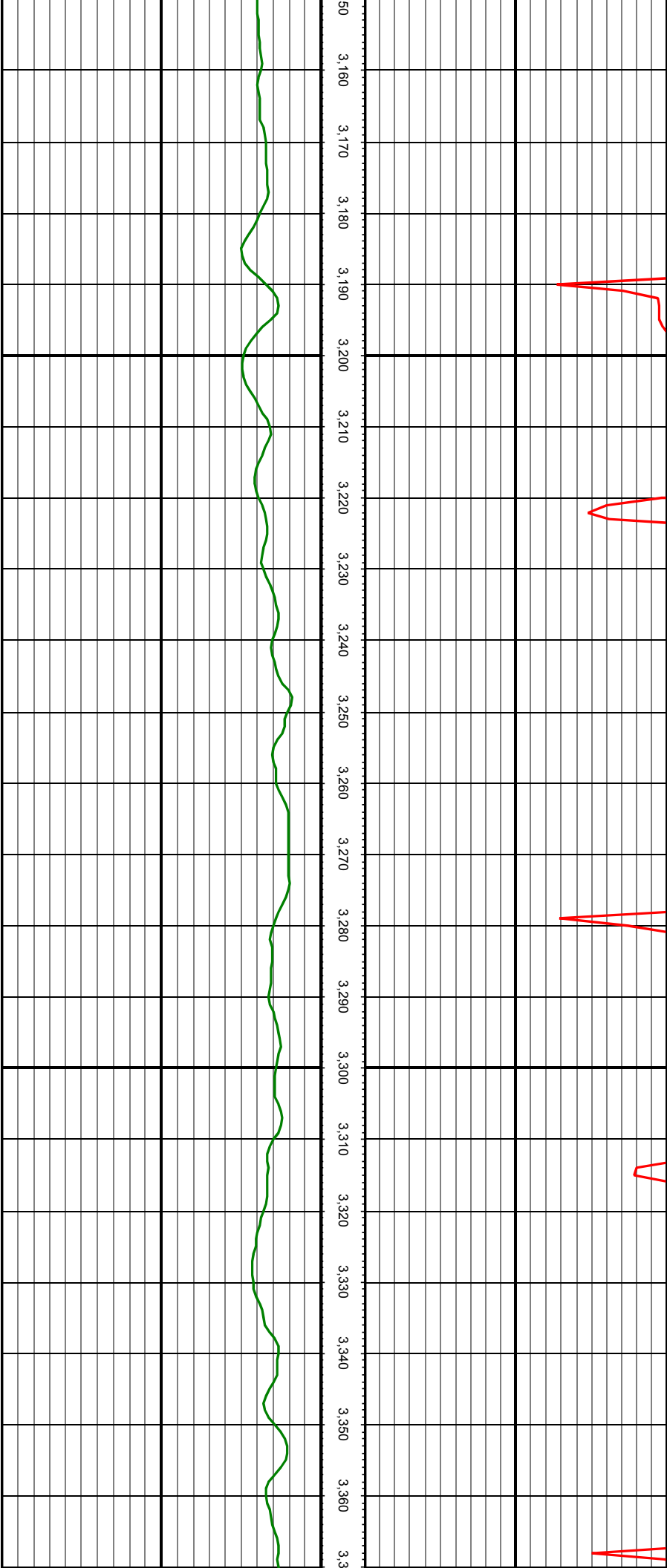




MD: 2773.00 INC: 10.81 AZ: 63.46 TVD: 2697.04 VS: -173.89

MD: 2862.00 INC: 11.16 AZ: 64.69 TVD: 2784.41 VS: -178.37

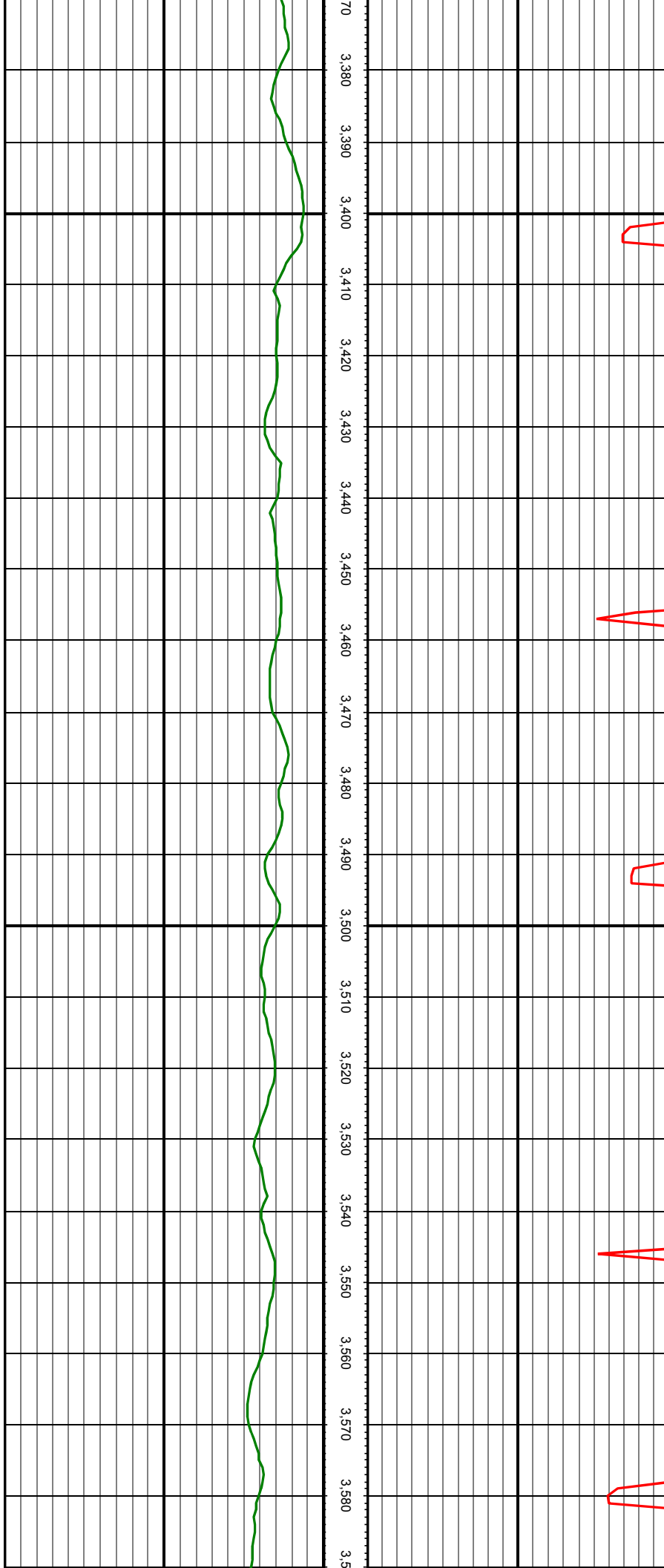




50 3.160 3.170 3.180 3.190 3.200 3.210 3.220 3.230 3.240 3.250 3.260 3.270 3.280 3.290 3.300 3.310 3.320 3.330 3.340 3.350 3.360 3.3

MD: 3218.00 INC: 14.24 AZ: 64.16 TVD: 3131.45 VS: -198.91

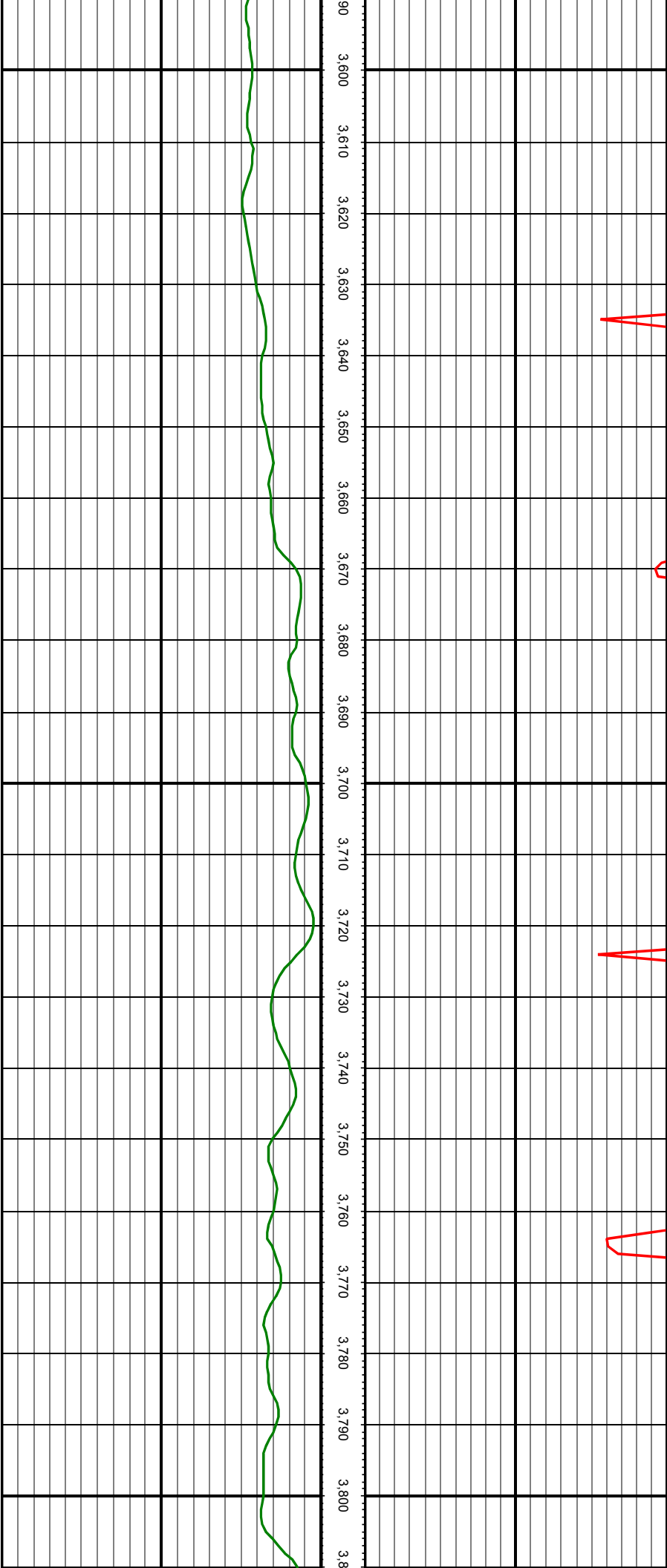
MD: 3307.00 INC: 14.81 AZ: 65.22 TVD: 3217.60 VS: -204.58



MD: 3396.00 INC: 14.99 AZ: 63.46 TVD: 3303.61 VS: -210.53

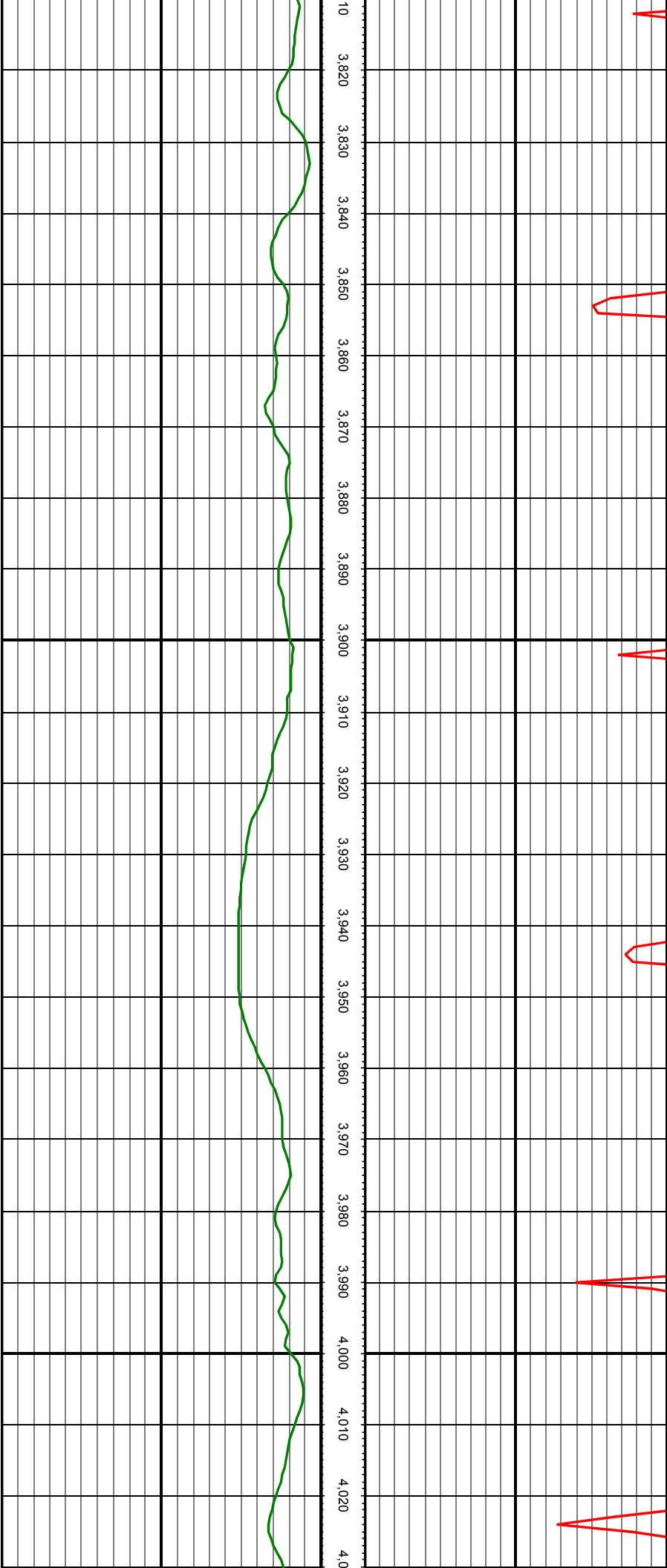
MD: 3485.00 INC: 14.59 AZ: 59.15 TVD: 3389.66 VS: -217.57

MD: 3575.00 INC: 14.33 AZ: 56.95 TVD: 3476.81 VS: -225.75



MD: 3664.00 INC: 13.76 AZ: 58.45 TVD: 3563.15 VS: -233.75

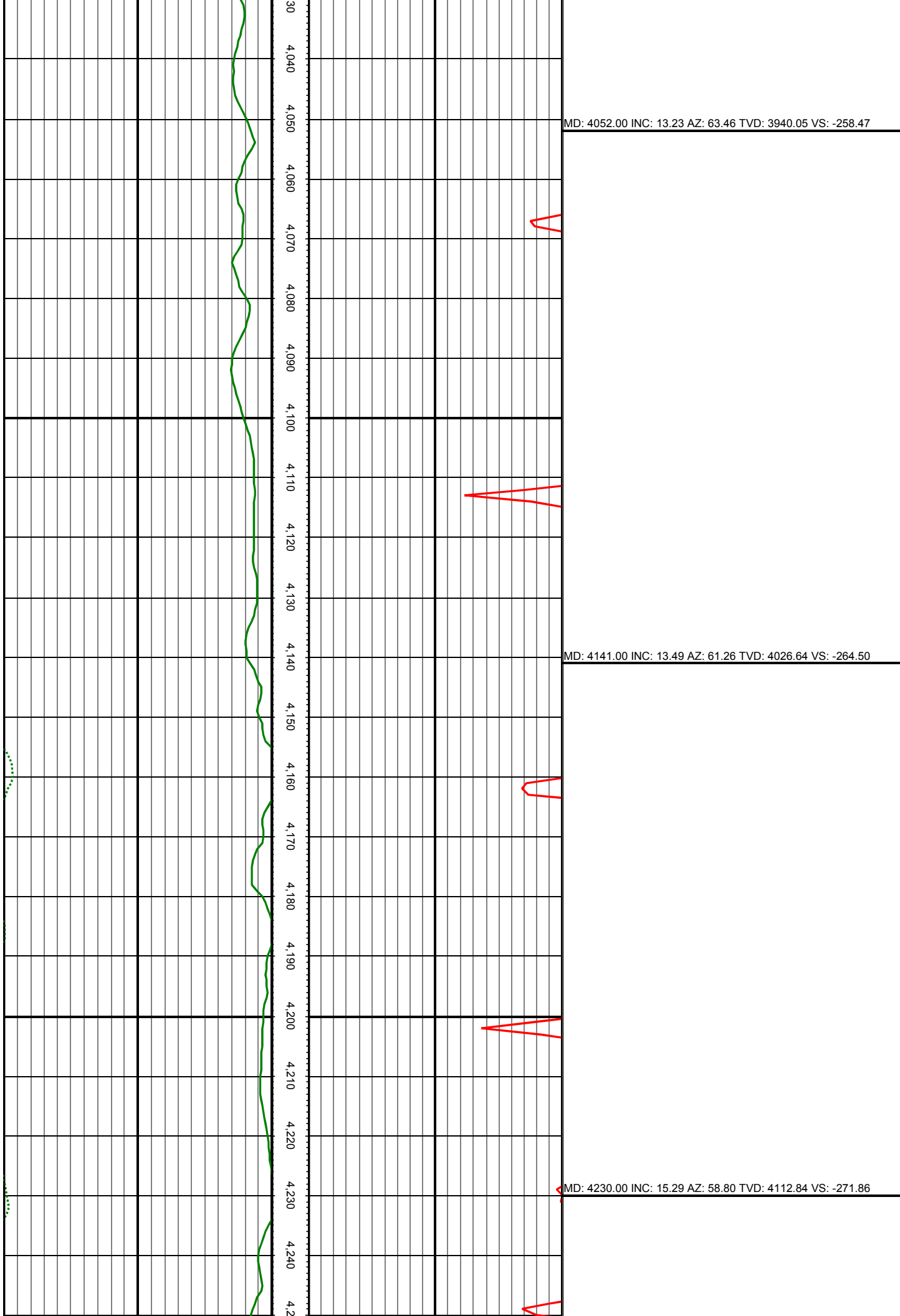
MD: 3753.00 INC: 13.80 AZ: 62.23 TVD: 3649.59 VS: -240.67

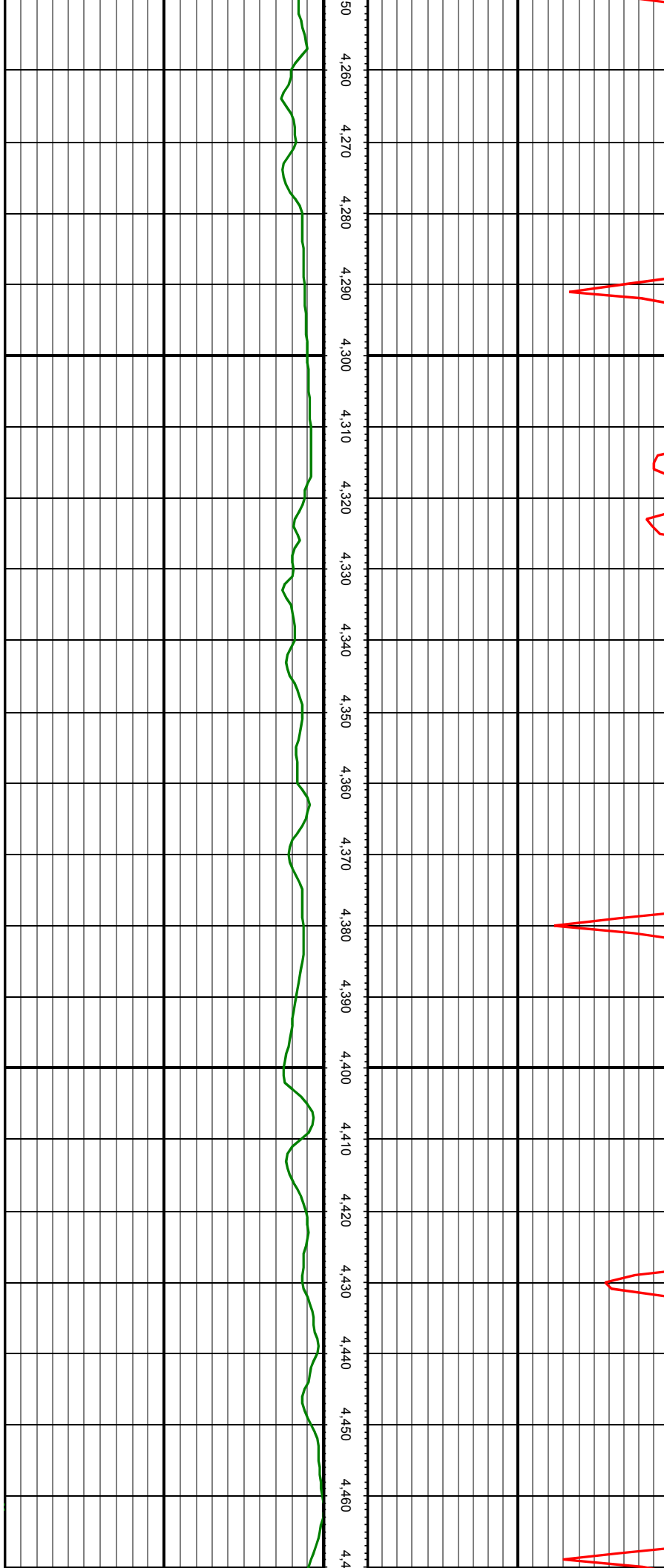


MD: 3842.00 INC: 13.67 AZ: 66.80 TVD: 3736.05 VS: -246.10

MD: 3963.00 INC: 13.98 AZ: 64.69 TVD: 3853.55 VS: -252.94



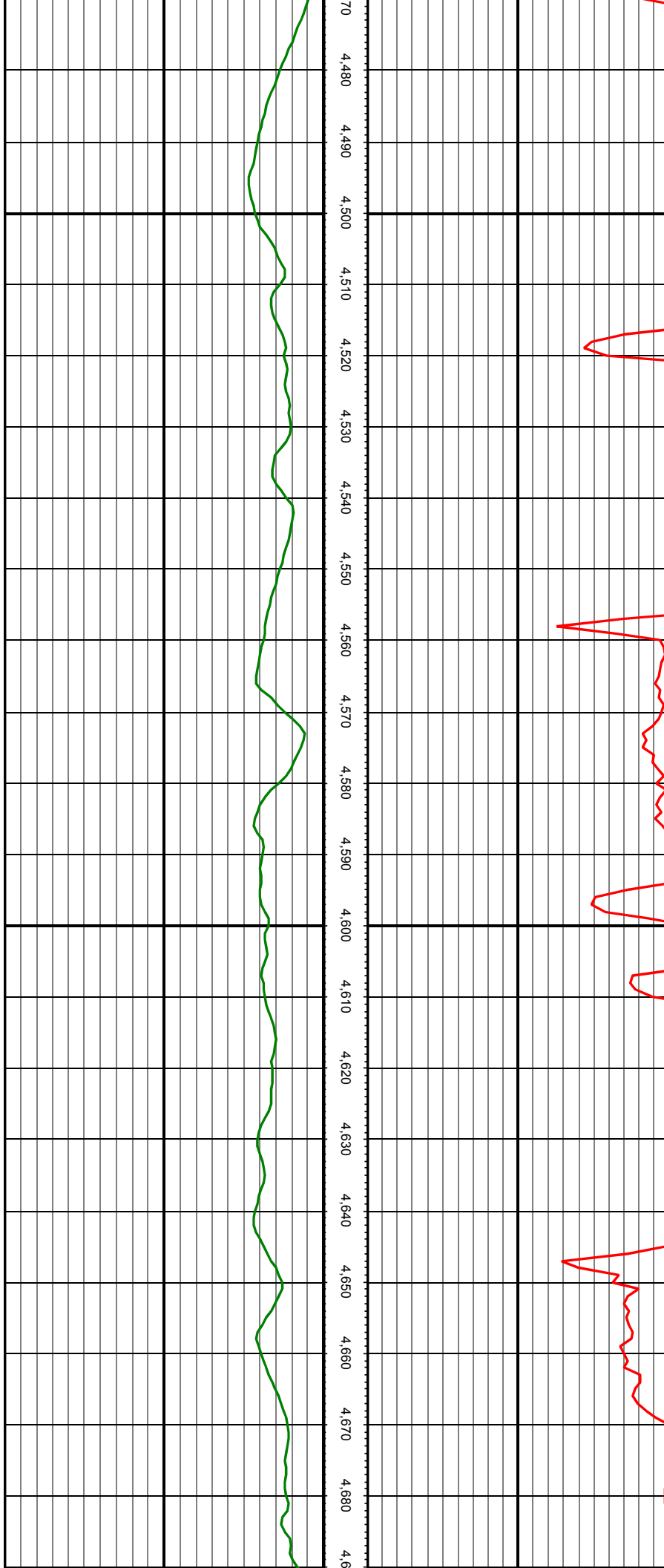




50 4.260 4.270 4.280 4.290 4.300 4.310 4.320 4.330 4.340 4.350 4.360 4.370 4.380 4.390 4.400 4.410 4.420 4.430 4.440 4.450 4.460 4.4

MD: 4319.00 INC: 15.51 AZ: 61.96 TVD: 4198.65 VS: -279.56

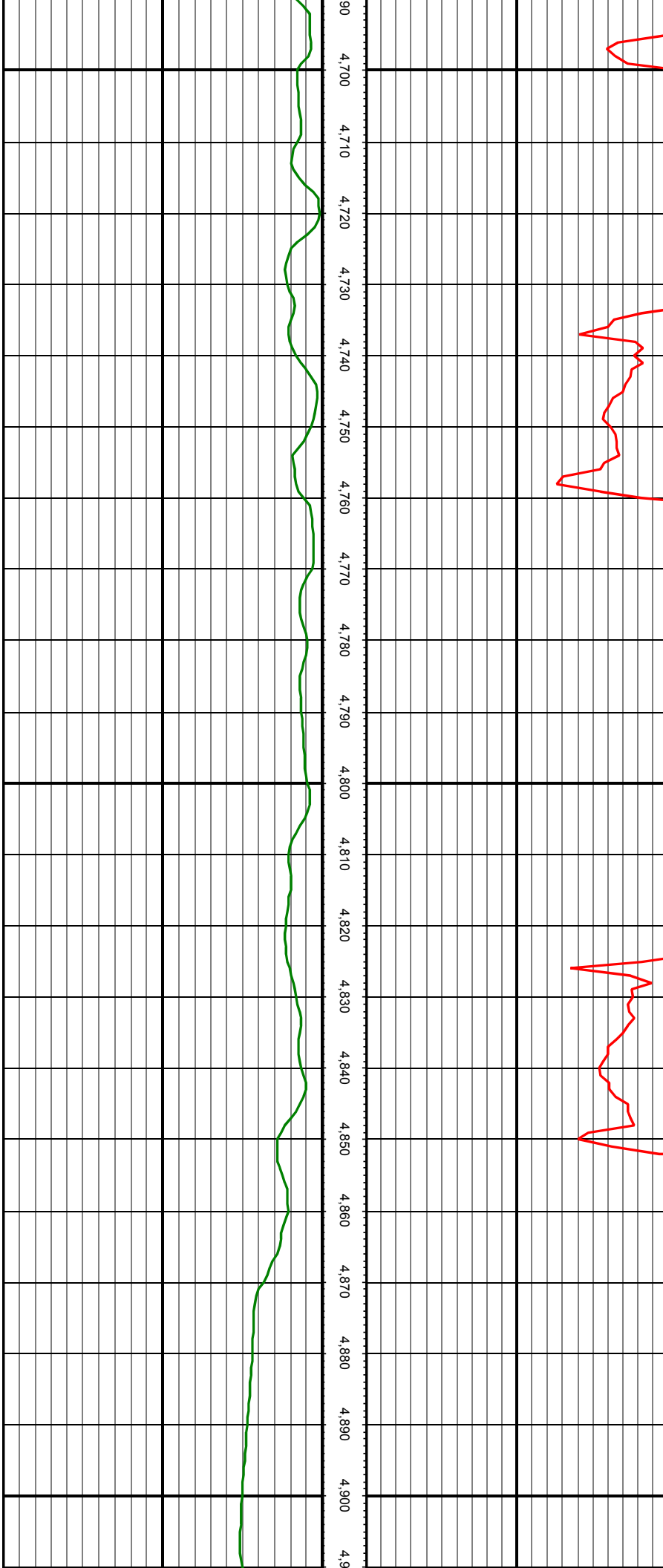
MD: 4408.00 INC: 14.77 AZ: 65.04 TVD: 4284.56 VS: -285.95



MD: 4497.00 INC: 16.26 AZ: 64.07 TVD: 4370.32 VS: -292.06

MD: 4586.00 INC: 18.11 AZ: 66.36 TVD: 4455.34 VS: -298.48

MD: 4675.00 INC: 20.96 AZ: 63.72 TVD: 4539.21 VS: -305.91

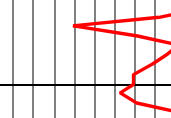


MD: 4765.00 INC: 20.26 AZ: 63.02 TVD: 4623.45 VS: -314.66

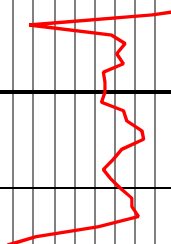
MD: 4854.00 INC: 17.10 AZ: 58.01 TVD: 4707.76 VS: -323.79



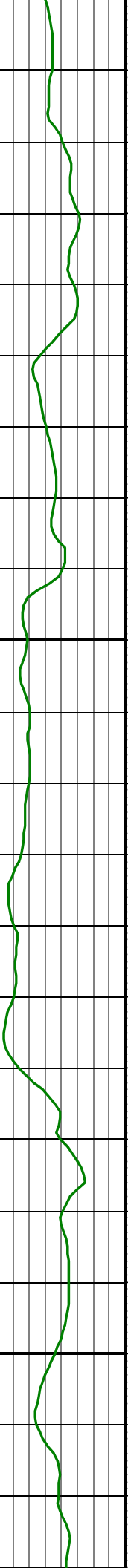
MD: 4943.00 INC: 16.17 AZ: 56.16 TVD: 4793.03 VS: -333.45



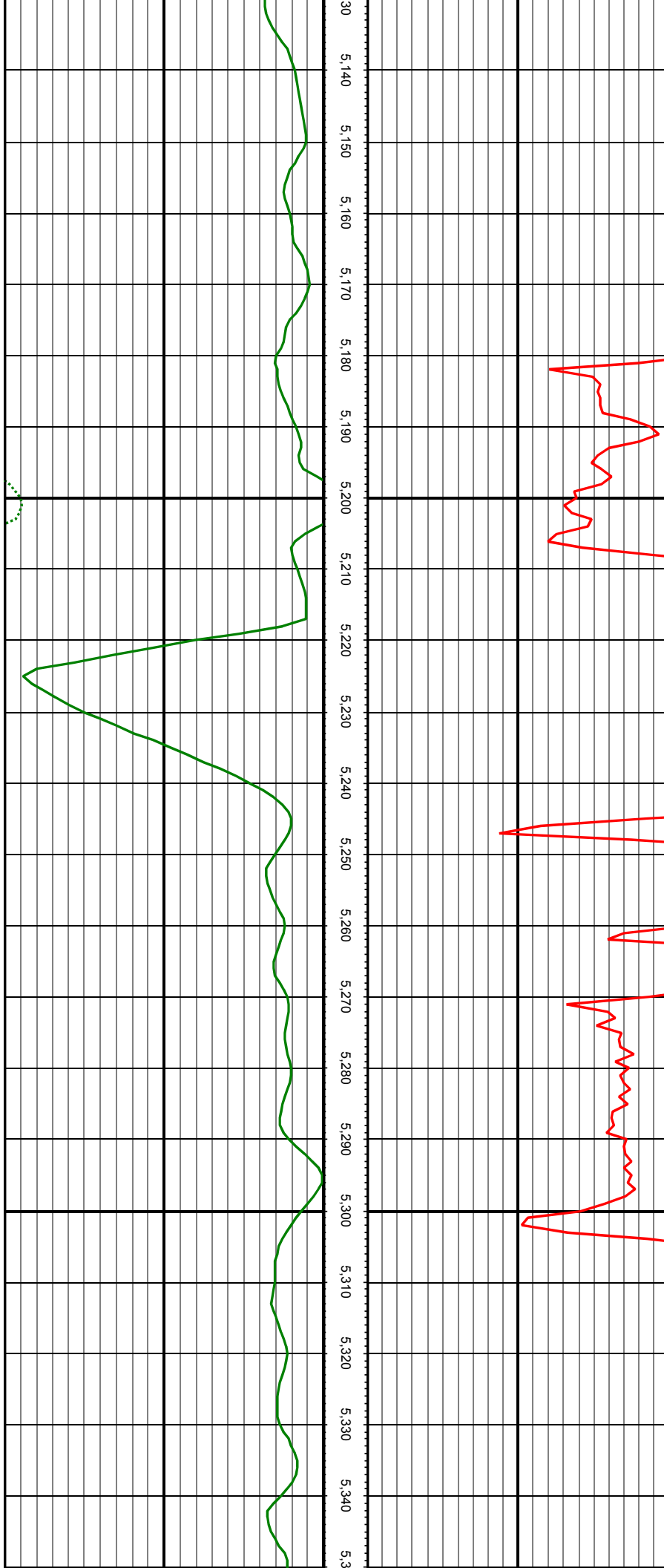
MD: 5032.00 INC: 17.18 AZ: 57.39 TVD: 4878.29 VS: -343.27



MD: 5120.00 INC: 17.67 AZ: 55.11 TVD: 4962.25 VS: -353.64



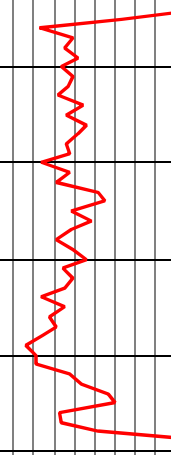
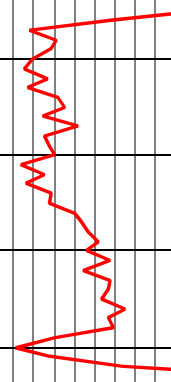
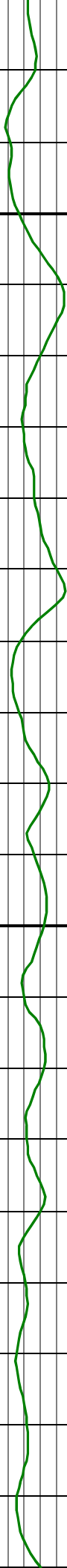
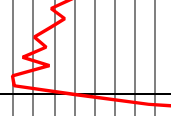
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MD: 5210.00 INC: 15.65 AZ: 59.94 TVD: 5048.47 VS: -363.31

MD: 5299.00 INC: 14.50 AZ: 58.98 TVD: 5134.41 VS: -371.20

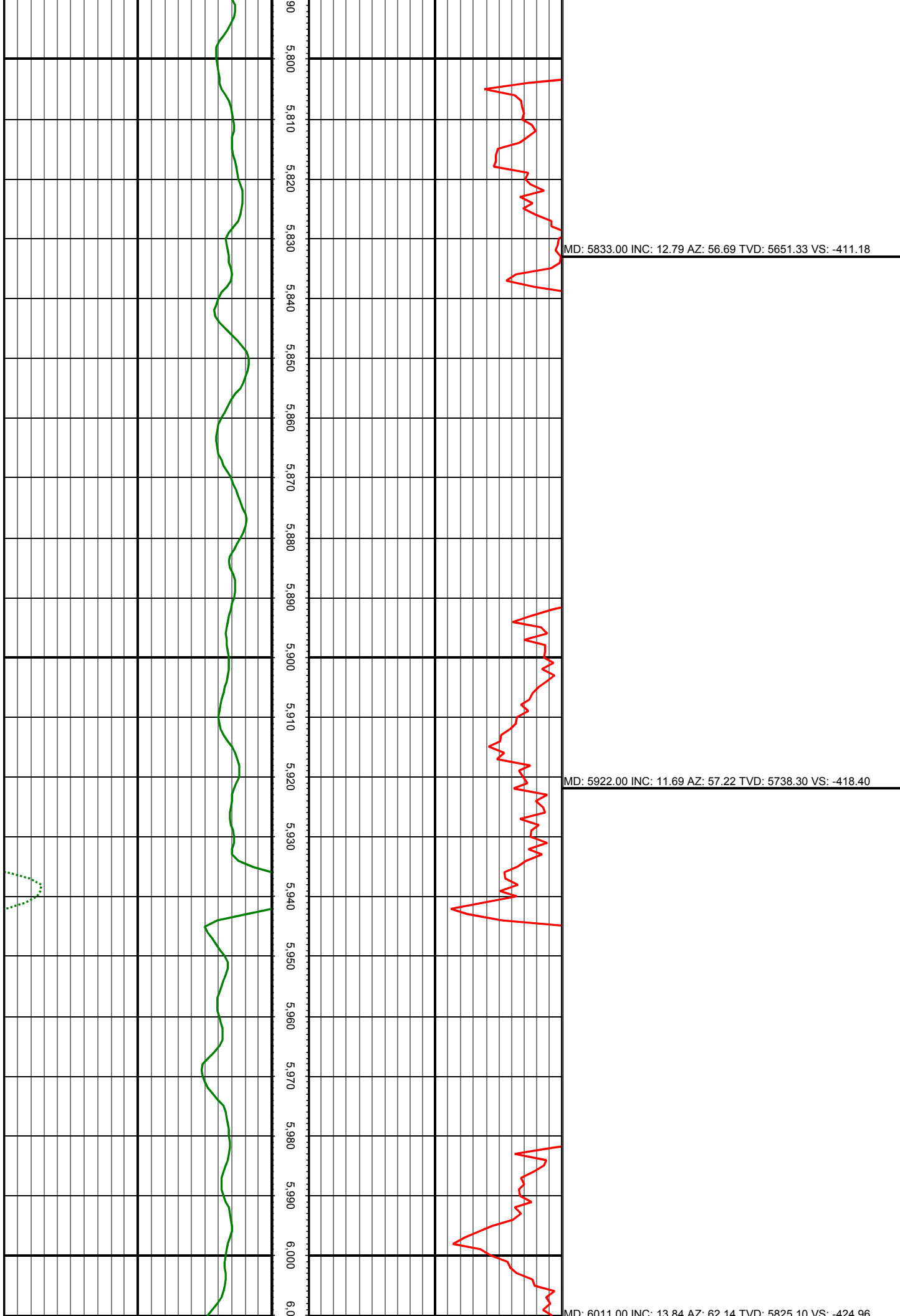




MD: 5655.00 INC: 15.91 AZ: 61.44 TVD: 5479.40 VS: -394.88

MD: 5744.00 INC: 15.60 AZ: 58.01 TVD: 5565.05 VS: -403.01

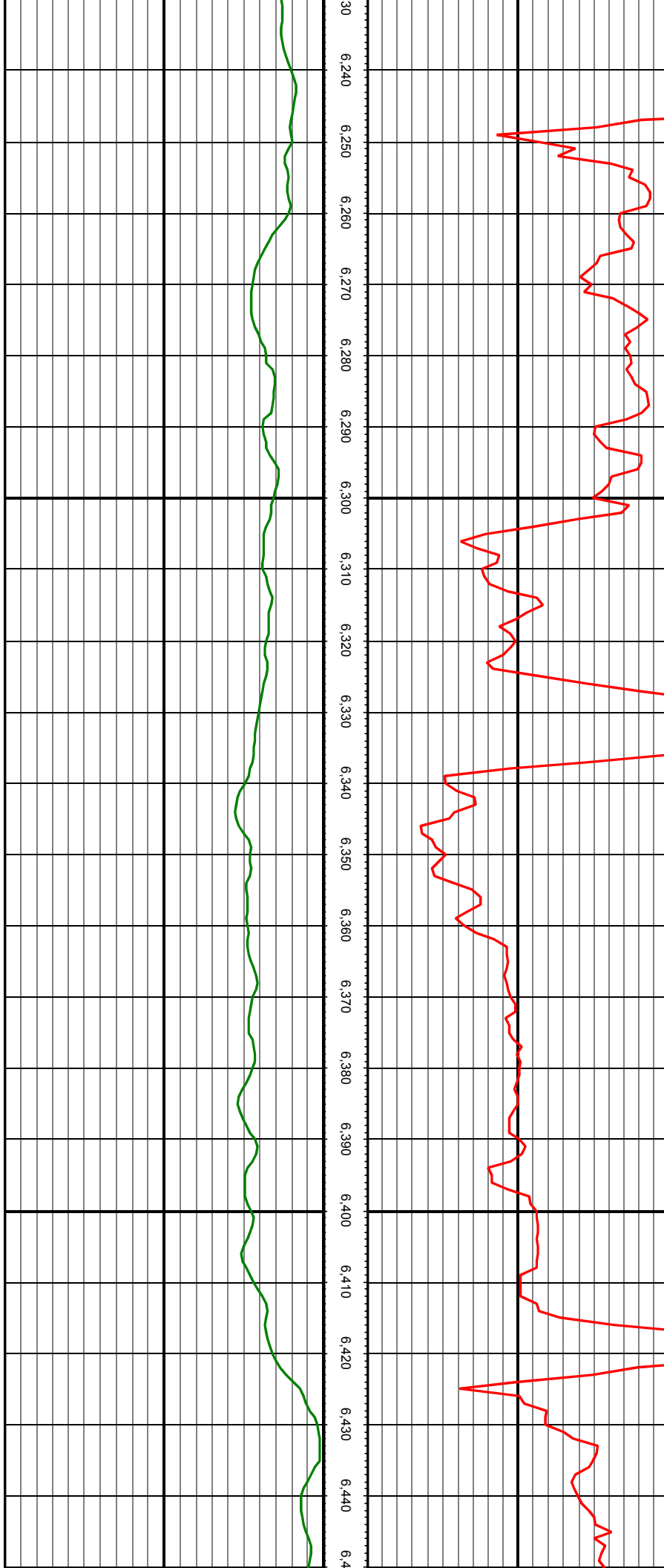




MD: 6070.00 INC: 13.57 AZ: 62.77 TVD: 5925.75 VS: -421.85

MD: 6100.00 INC: 13.45 AZ: 58.89 TVD: 5911.59 VS: -431.75

MD: 6189.00 INC: 13.27 AZ: 68.12 TVD: 5998.19 VS: -437.38



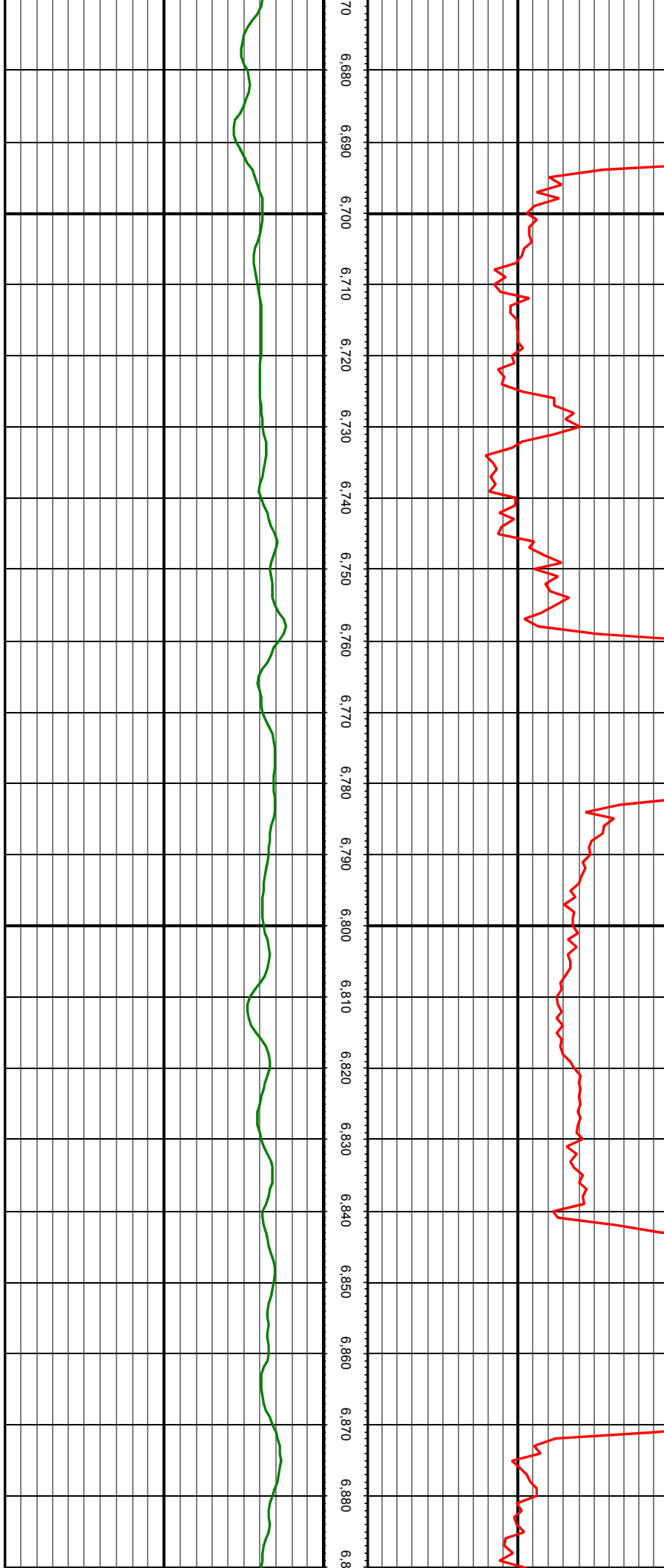
MD: 6278.00 INC: 14.02 AZ: 69.17 TVD: 6084.68 VS: -441.30

MD: 6367.00 INC: 17.31 AZ: 62.49 TVD: 6170.37 VS: -447.07

MD: 6457.00 INC: 19.60 AZ: 55.02 TVD: 6255.75 VS: -457.20

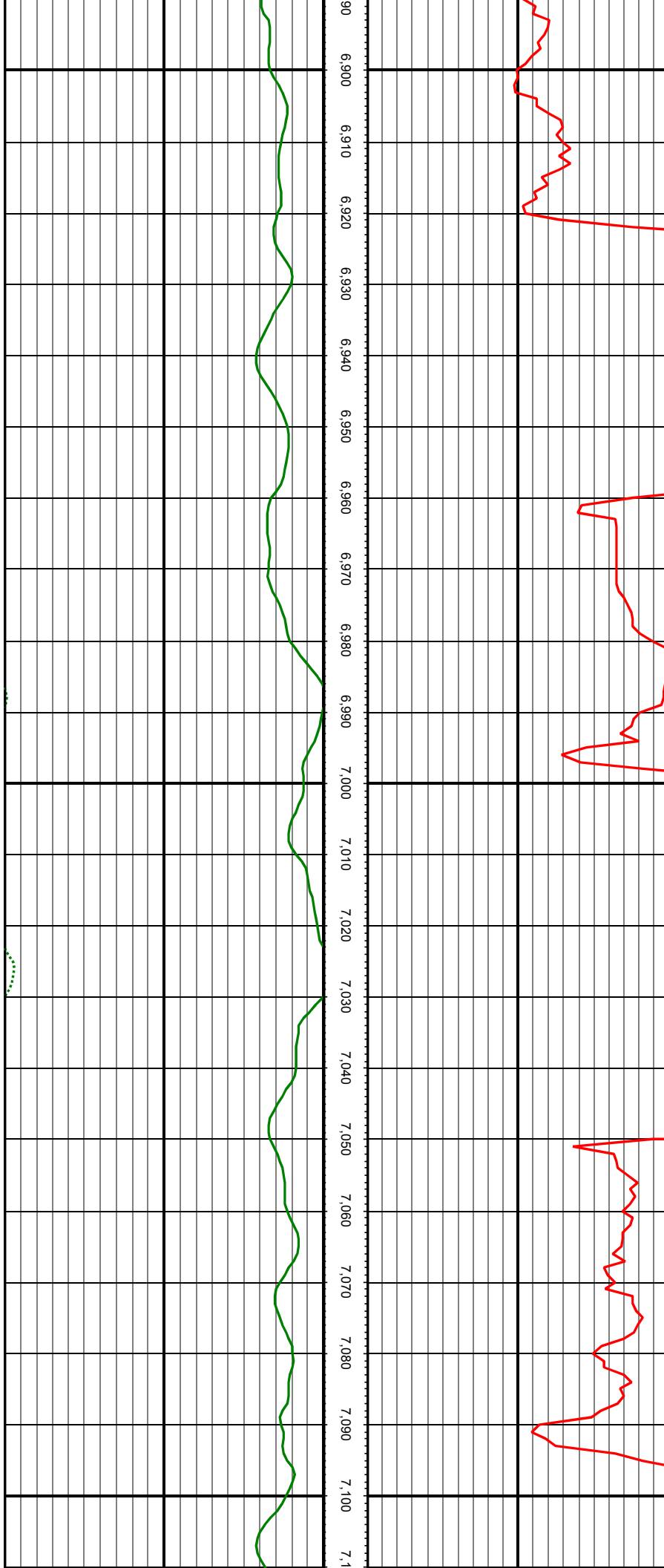
MD: 6546.00 INC: 18.19 AZ: 51.33 TVD: 6339.95 VS: -469.90

MD: 6635.00 INC: 16.57 AZ: 53.70 TVD: 6424.89 VS: -481.95



MD: 6724.00 INC: 16.35 AZ: 61.08 TVD: 6510.25 VS: -491.40

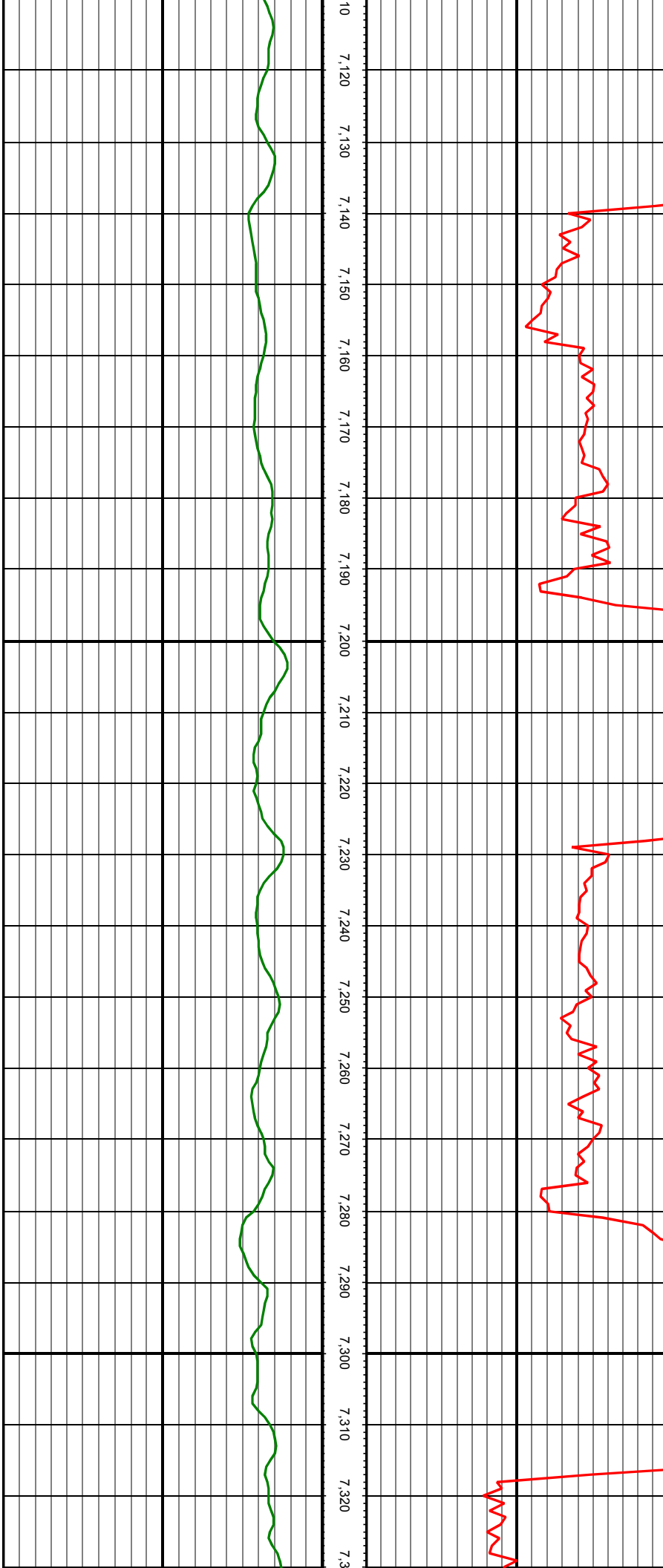
MD: 6813.00 INC: 17.67 AZ: 63.55 TVD: 6595.36 VS: -499.03



MD: 6903.00 INC: 19.47 AZ: 64.69 TVD: 6680.67 VS: -506.57

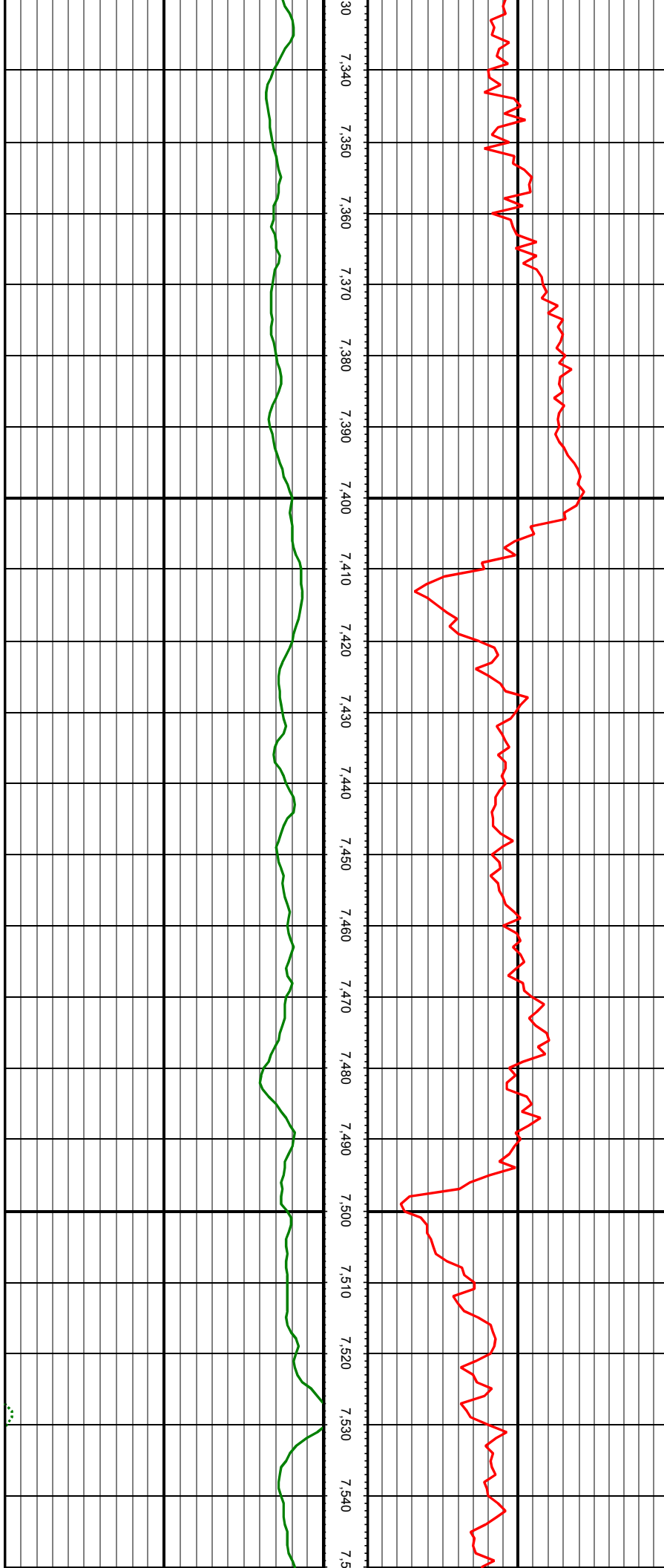
MD: 6992.00 INC: 19.38 AZ: 60.38 TVD: 6764.60 VS: -515.16

MD: 7081.00 INC: 16.61 AZ: 64.95 TVD: 6849.25 VS: -523.15



MD: 7170.00 INC: 15.38 AZ: 77.17 TVD: 6934.82 VS: -526.79

MD: 7259.00 INC: 14.99 AZ: 85.69 TVD: 7020.73 VS: -525.99

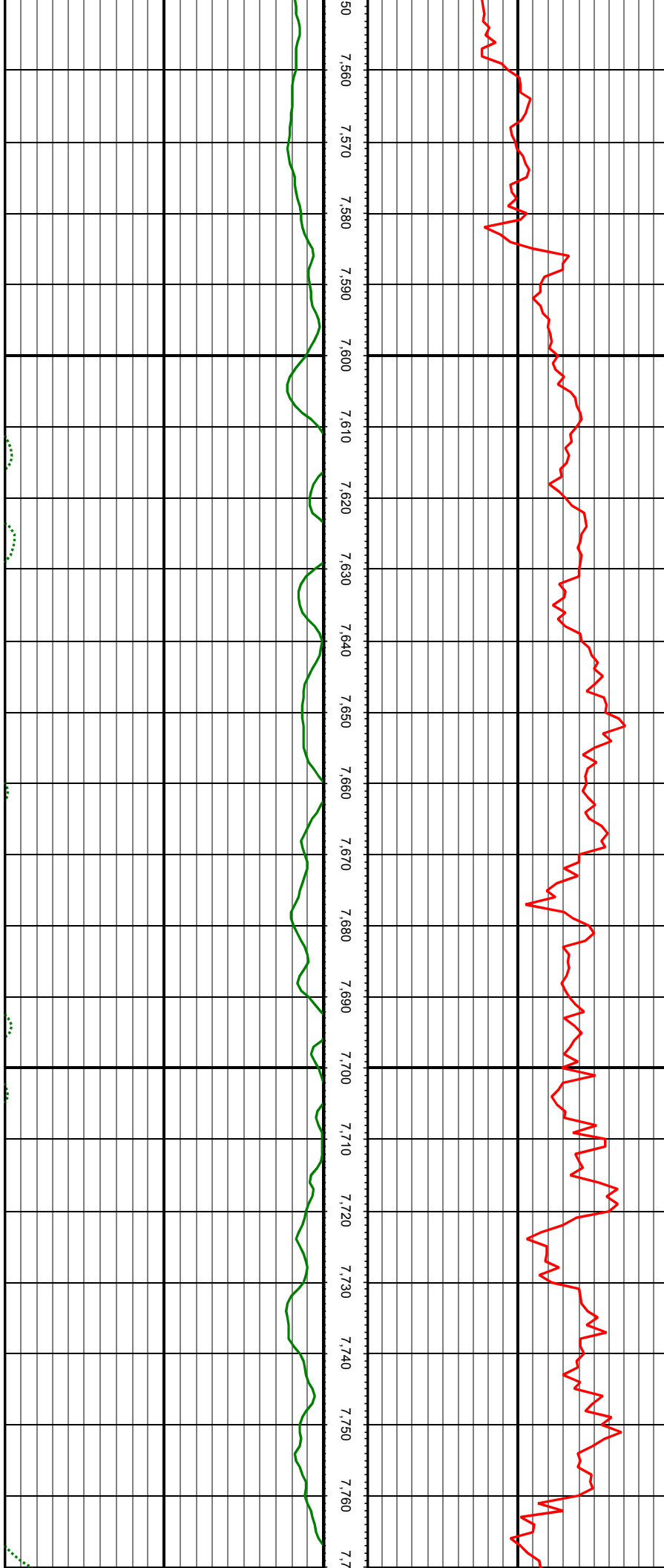


MD: 7349.00 INC: 14.33 AZ: 91.50 TVD: 7107.80 VS: -522.38

MD: 7438.00 INC: 16.26 AZ: 114.26 TVD: 7193.72 VS: -512.95

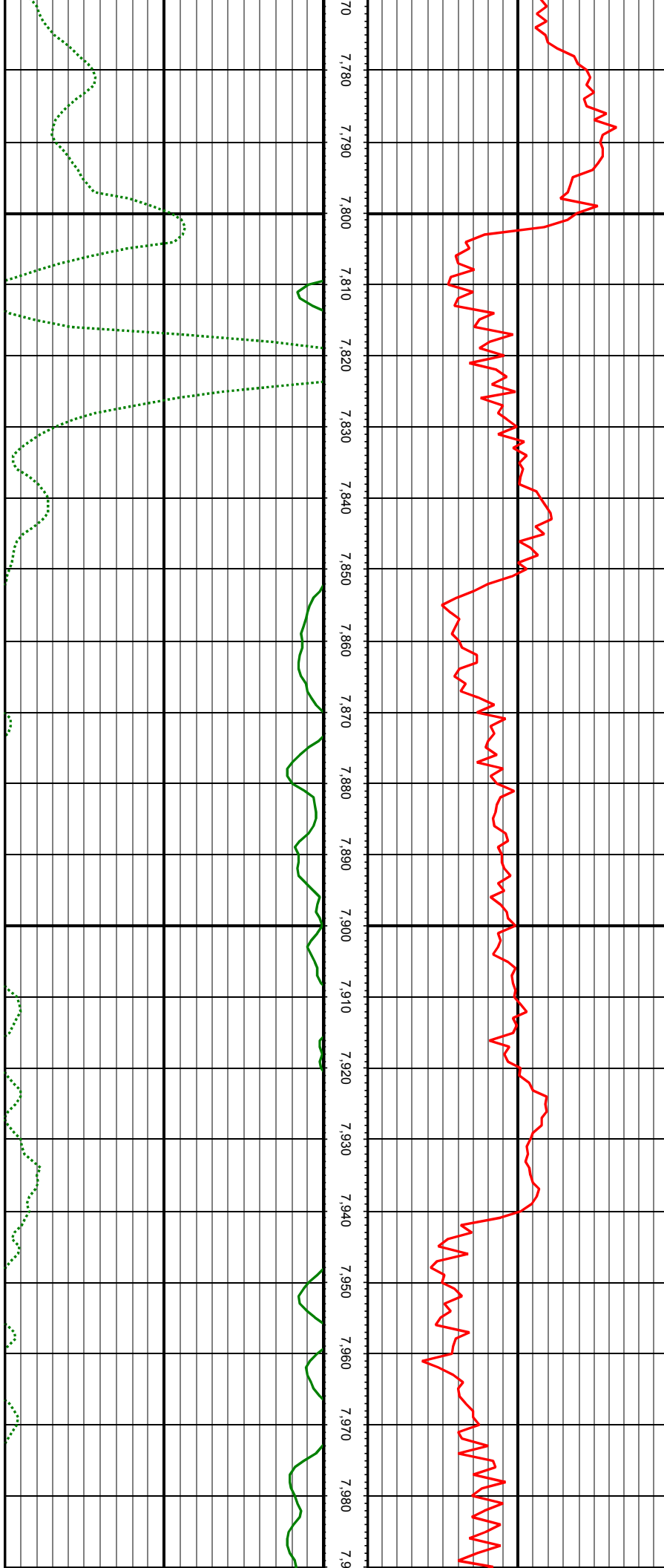
MD: 7527.00 INC: 19.73 AZ: 128.50 TVD: 7278.40 VS: -494.46





MD: 7616.00 INC: 24.87 AZ: 133.24 TVD: 7360.72 VS: -467.98

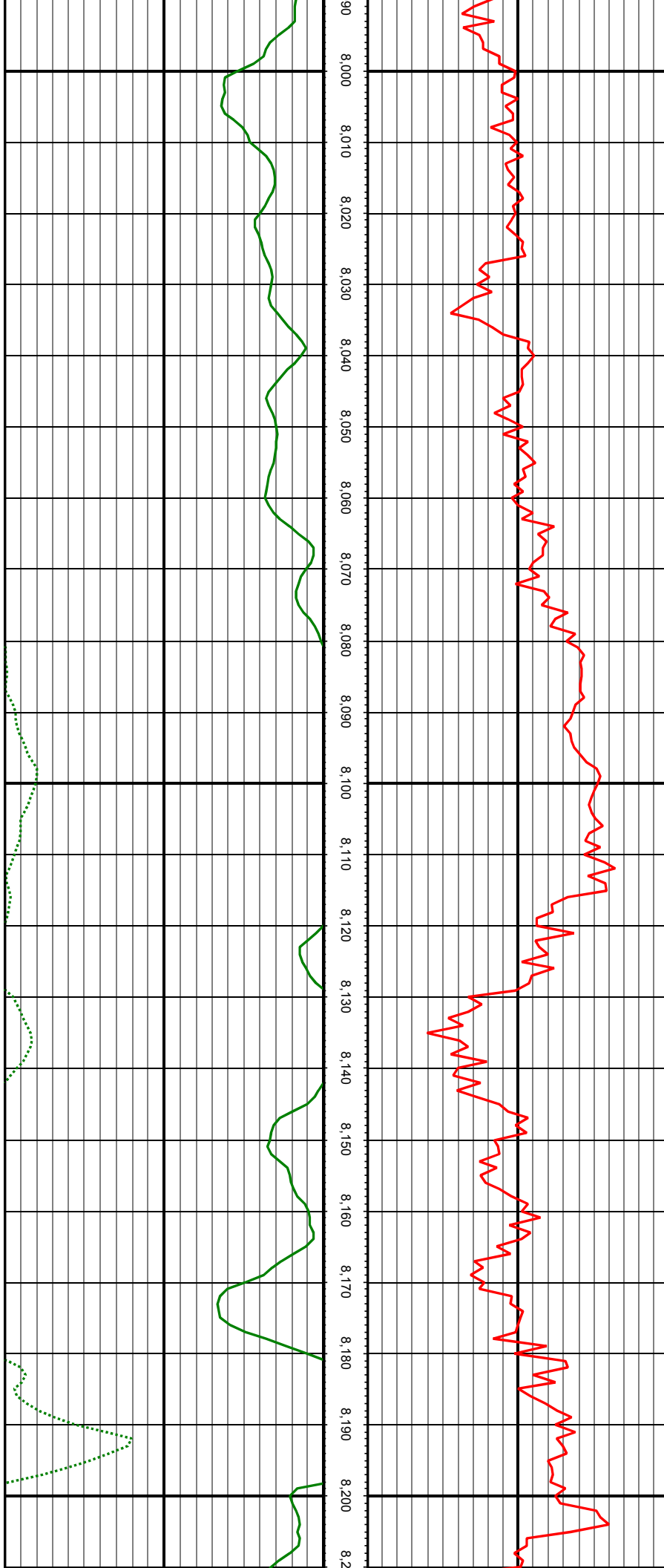
MD: 7705.00 INC: 29.27 AZ: 134.56 TVD: 7439.95 VS: -435.00



MD: 7794.00 INC: 31.73 AZ: 138.96 TVD: 7516.64 VS: -396.96

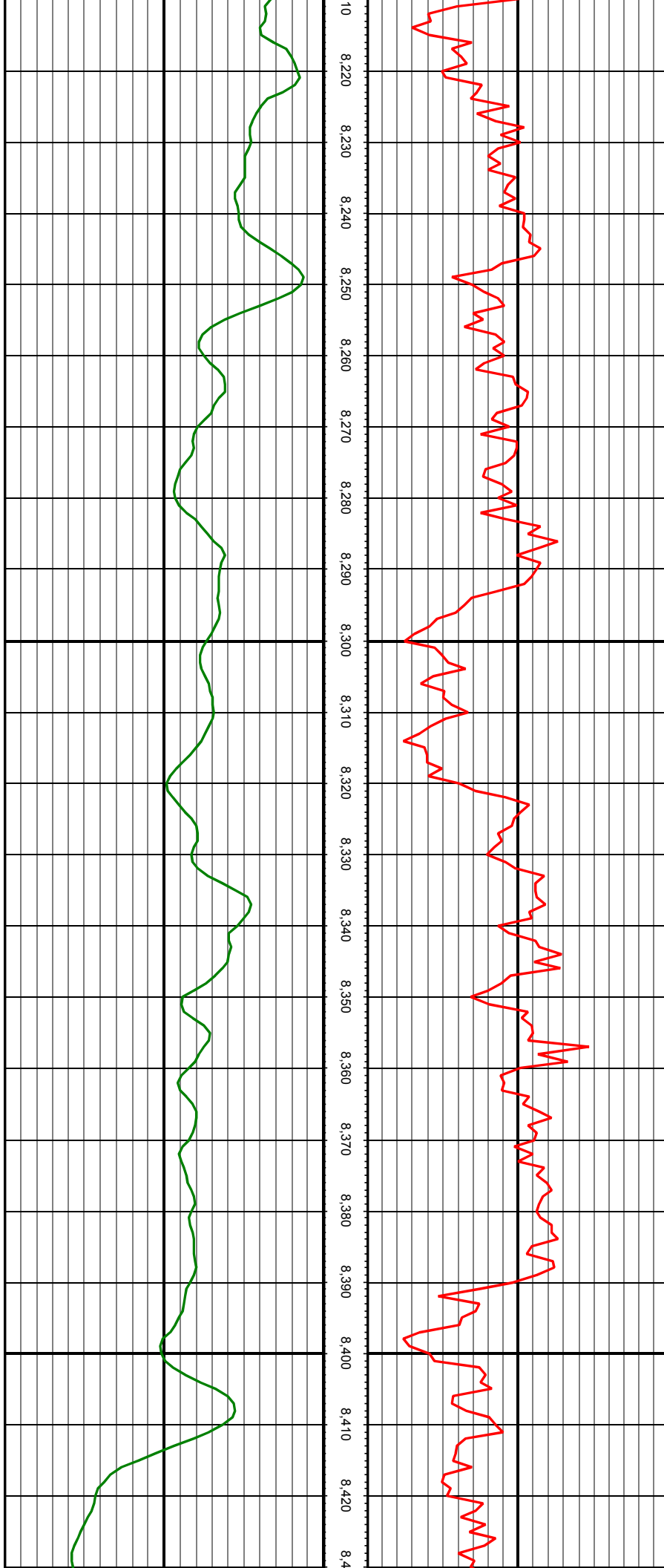
MD: 7883.00 INC: 36.52 AZ: 146.95 TVD: 7590.33 VS: -352.26

MD: 7972.00 INC: 41.88 AZ: 156.45 TVD: 7659.34 VS: -298.75



MD: 8061.00 INC: 47.94 AZ: 164.88 TVD: 7722.40 VS: -236.75

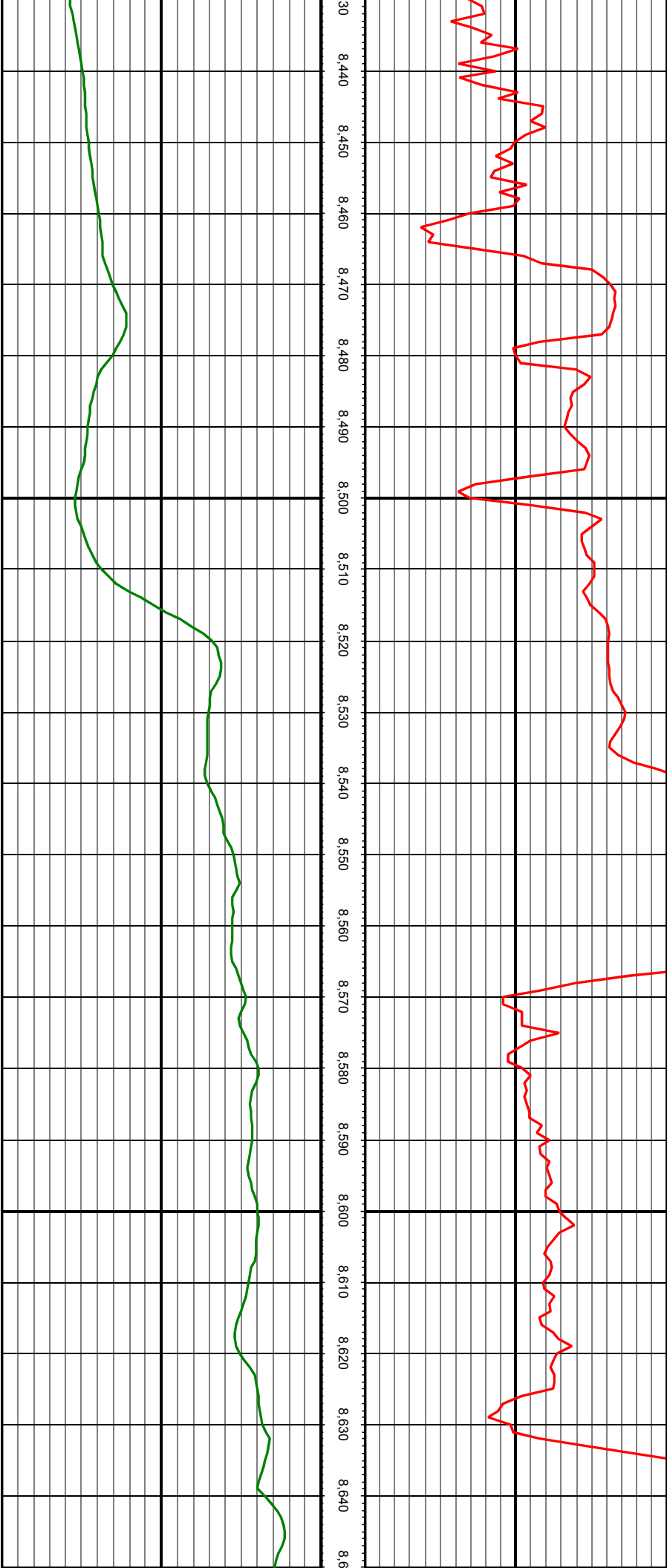
MD: 8150.00 INC: 50.89 AZ: 175.25 TVD: 7780.38 VS: -169.34



MD: 8239.00 INC: 57.57 AZ: 179.03 TVD: 7832.39 VS: -97.86

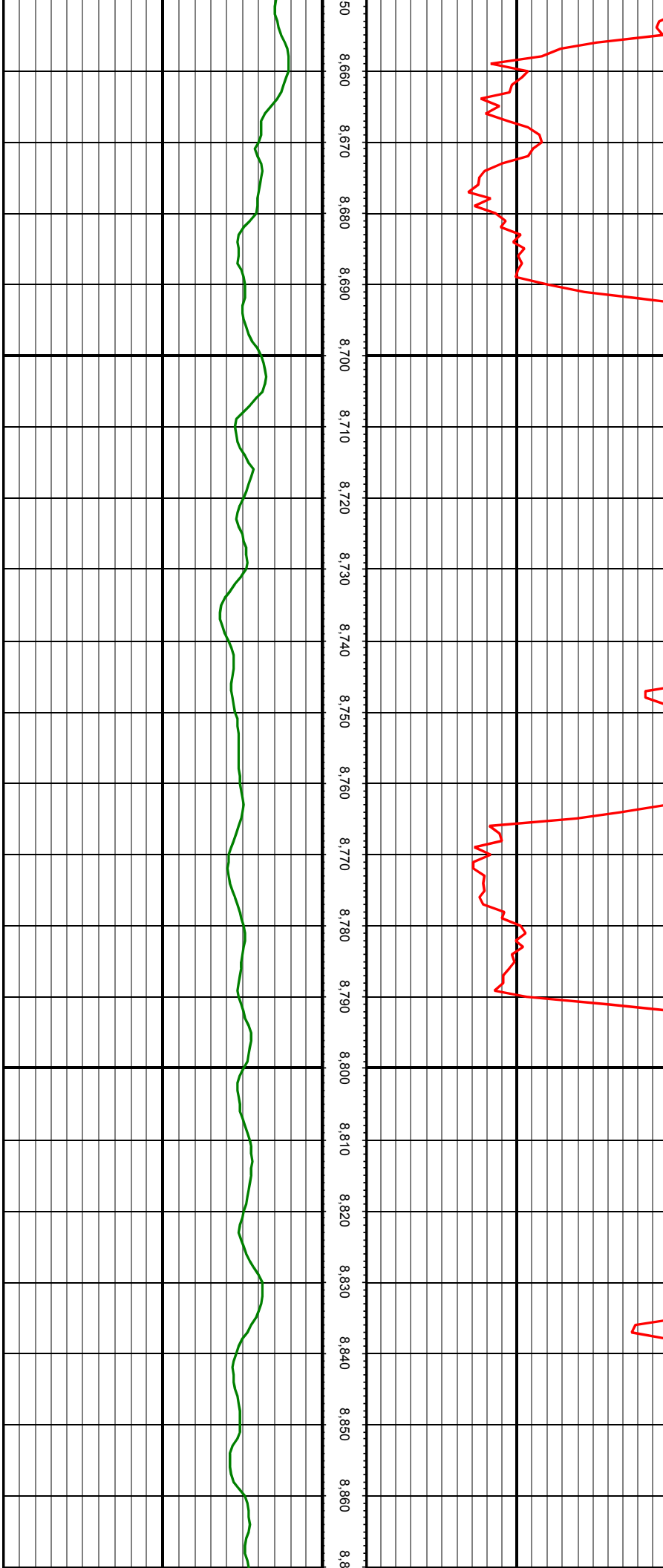
MD: 8328.00 INC: 65.30 AZ: 179.65 TVD: 7874.91 VS: -20.93

MD: 8417.00 INC: 76.16 AZ: 180.53 TVD: 7904.24 VS: 61.50



MD: 8507.00 INC: 80.20 AZ: 181.58 TVD: 7922.68 VS: 147.76

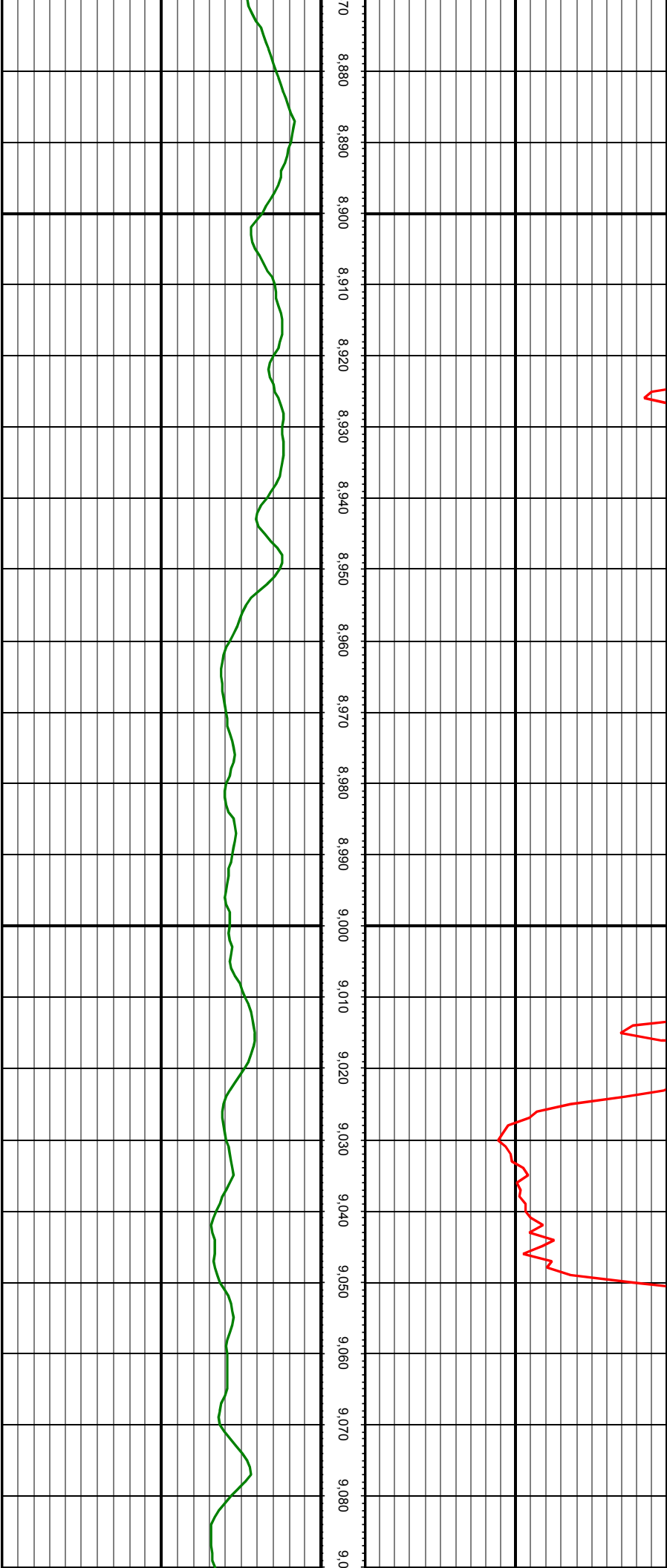
MD: 8596.00 INC: 83.89 AZ: 180.79 TVD: 7934.99 VS: 234.03



MD: 8685.00 INC: 87.76 AZ: 181.67 TVD: 7941.47 VS: 320.90

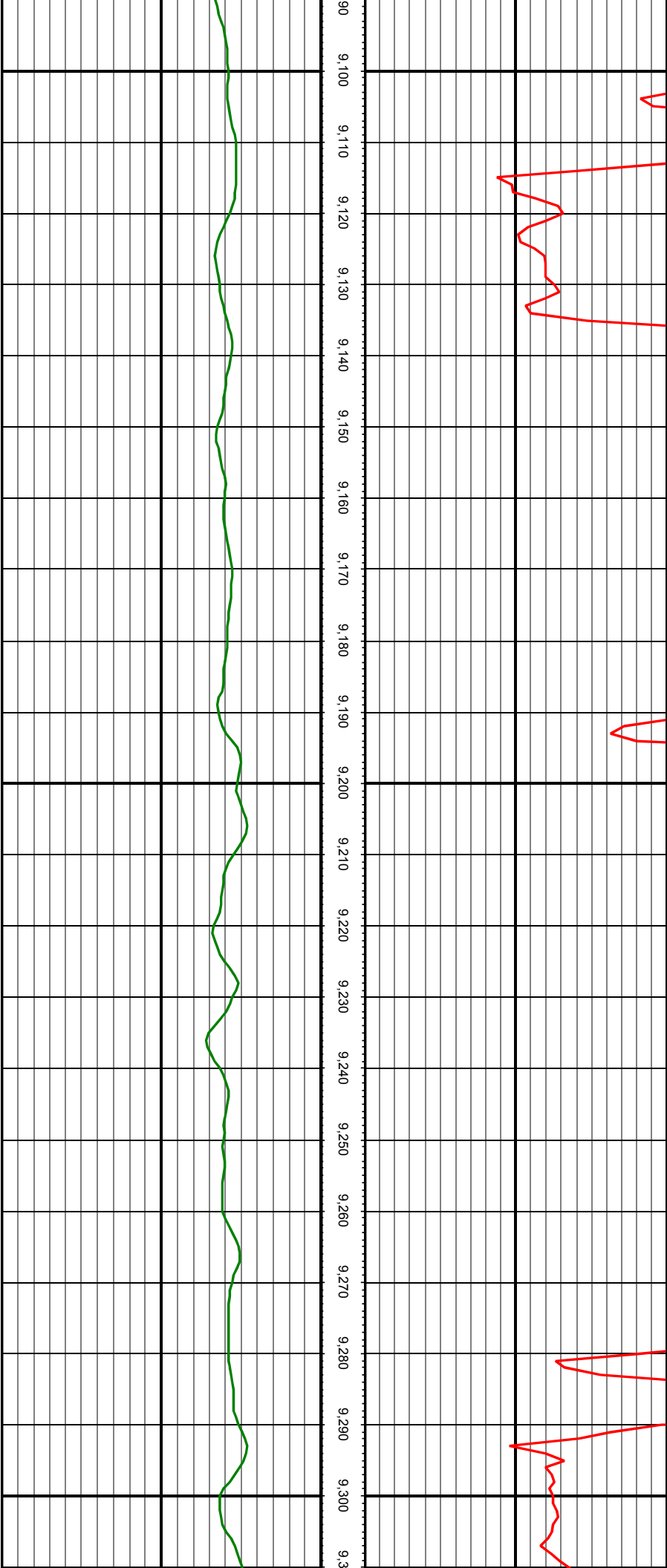
MD: 8774.00 INC: 88.99 AZ: 180.09 TVD: 7943.99 VS: 408.08

MD: 8863.00 INC: 91.36 AZ: 180.26 TVD: 7943.72 VS: 495.51



MD: 8952.00 INC: 93.16 AZ: 179.47 TVD: 7940.21 VS: 582.96

MD: 9041.00 INC: 92.20 AZ: 179.65 TVD: 7936.05 VS: 670.47



MD: 9130.00 INC: 90.75 AZ: 181.41 TVD: 7933.76 VS: 757.76

MD: 9219.00 INC: 90.79 AZ: 180.70 TVD: 7932.56 VS: 844.92

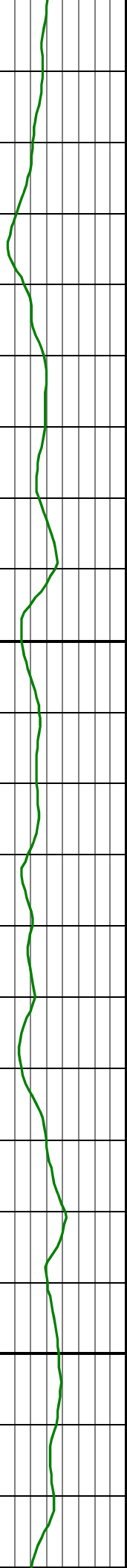
MD: 9308.00 INC: 89.69 AZ: 181.32 TVD: 7932.19 VS: 932.10

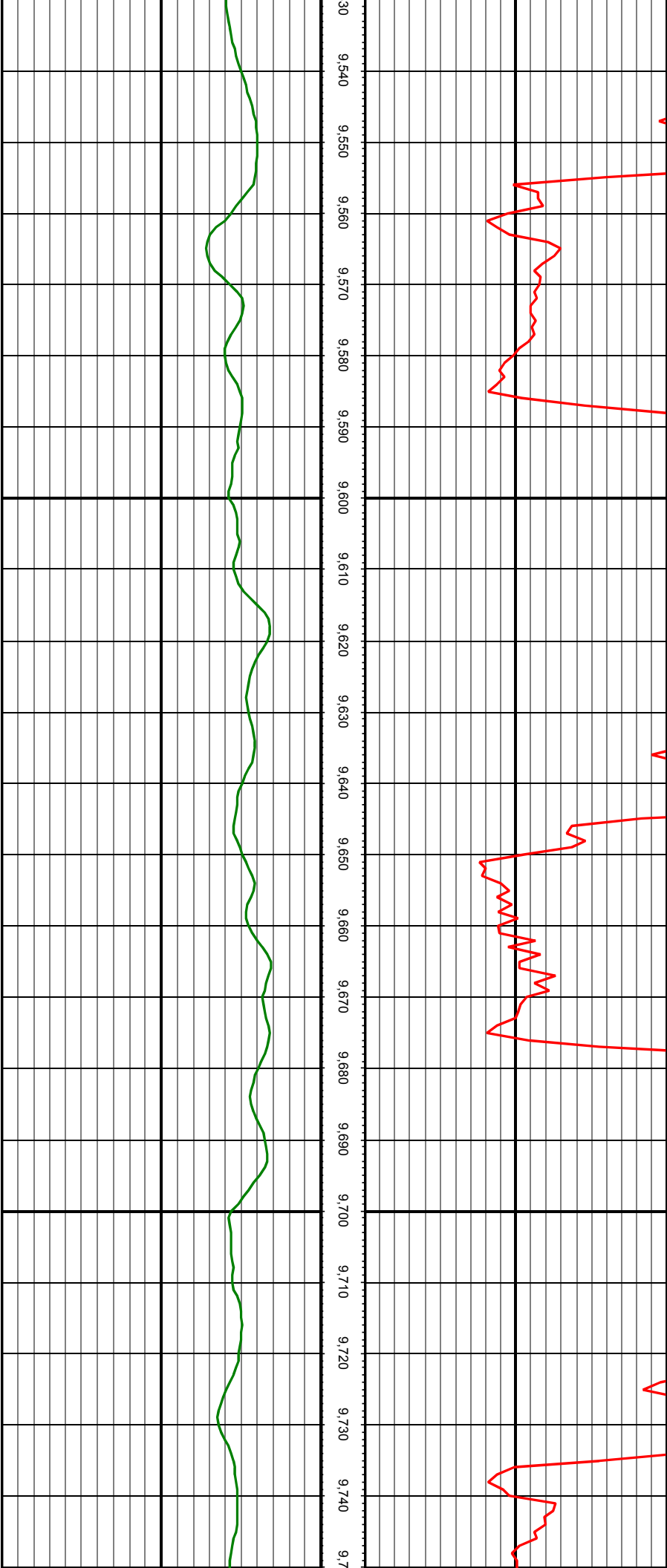




MD: 9397.00 INC: 89.65 AZ: 180.35 TVD: 7932.70 VS: 1019.33

MD: 9487.00 INC: 89.82 AZ: 177.98 TVD: 7933.12 VS: 1108.02

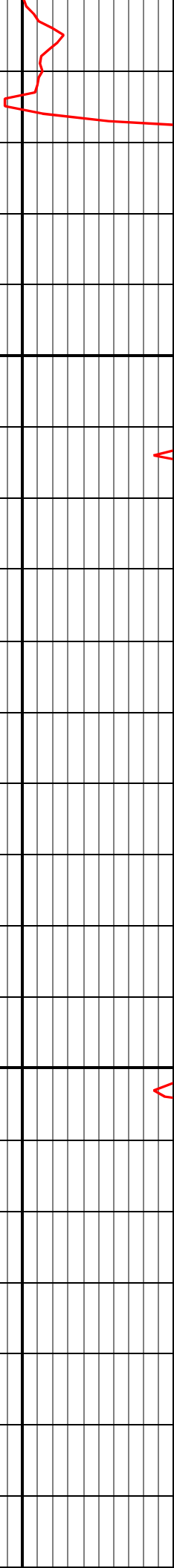




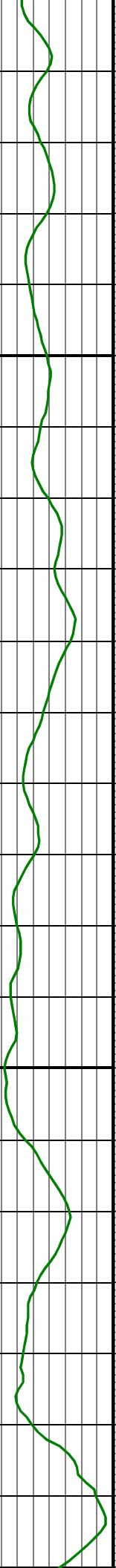
MD: 9575.00 INC: 90.84 AZ: 179.21 TVD: 7932.61 VS: 1194.89

MD: 9664.00 INC: 88.37 AZ: 177.98 TVD: 7933.23 VS: 1282.74

MD: 9754.00 INC: 88.77 AZ: 181.06 TVD: 7935.47 VS: 1371.30

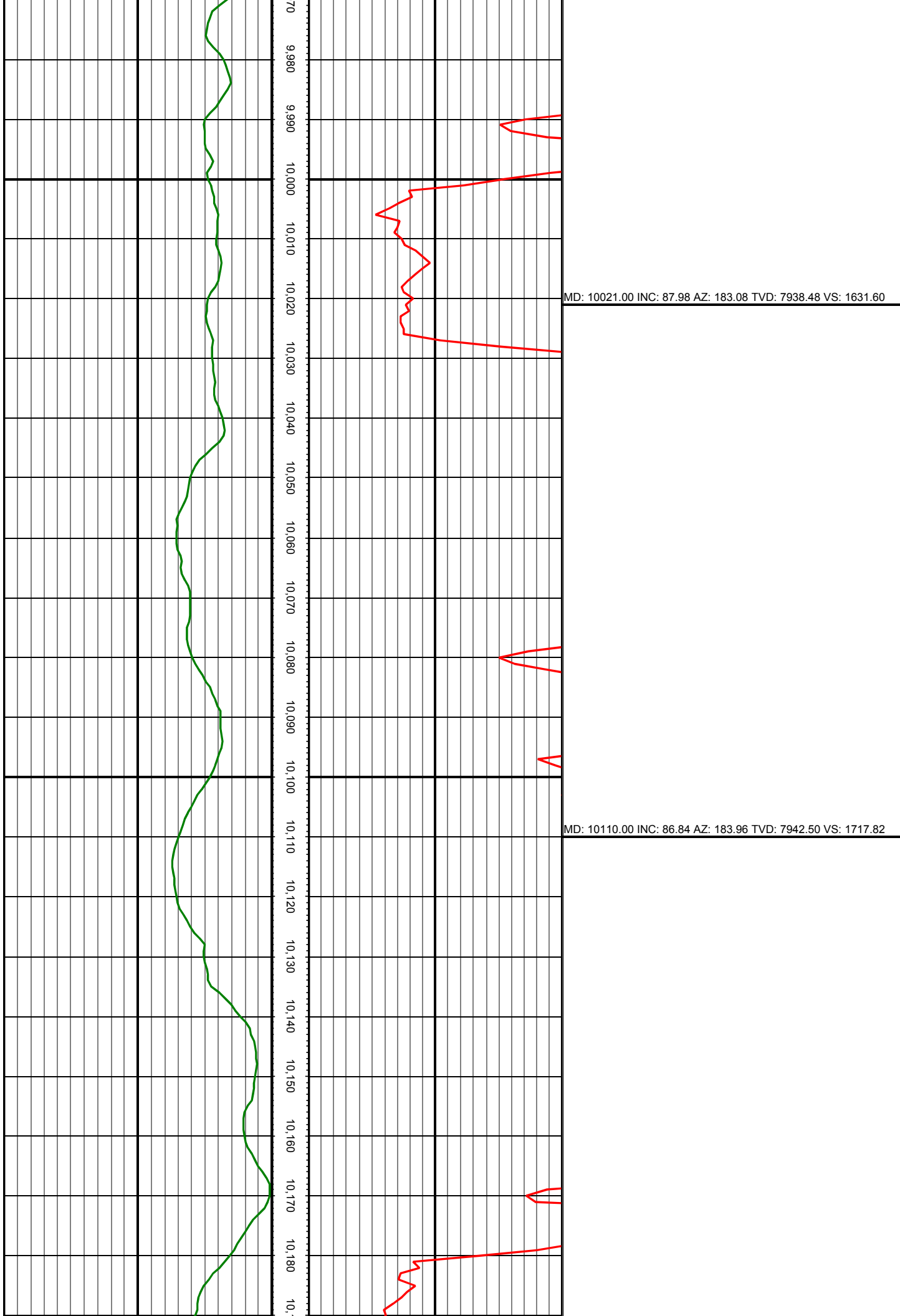


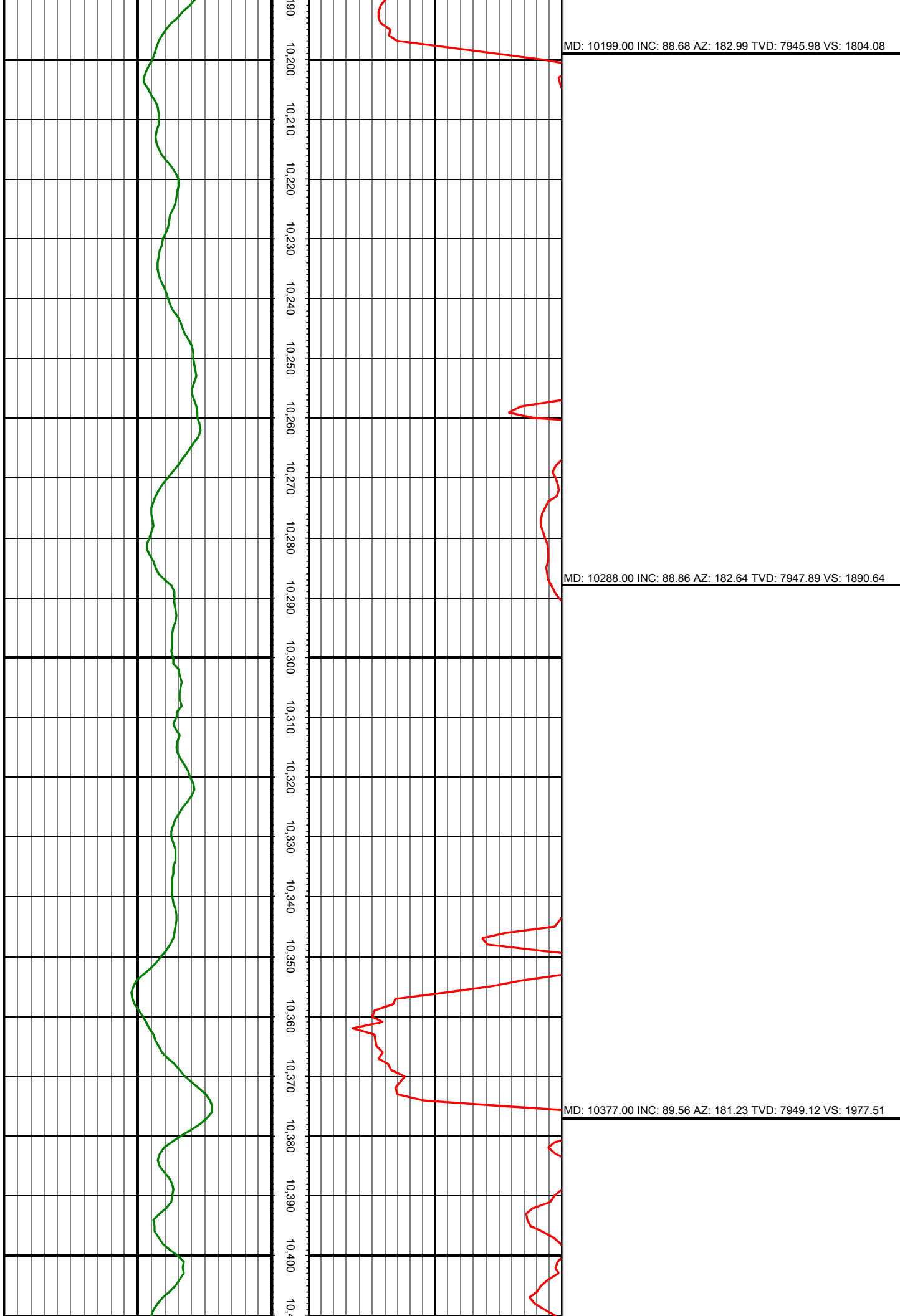
MD: 9843.00 INC: 89.34 AZ: 182.64 TVD: 7936.94 VS: 1458.20

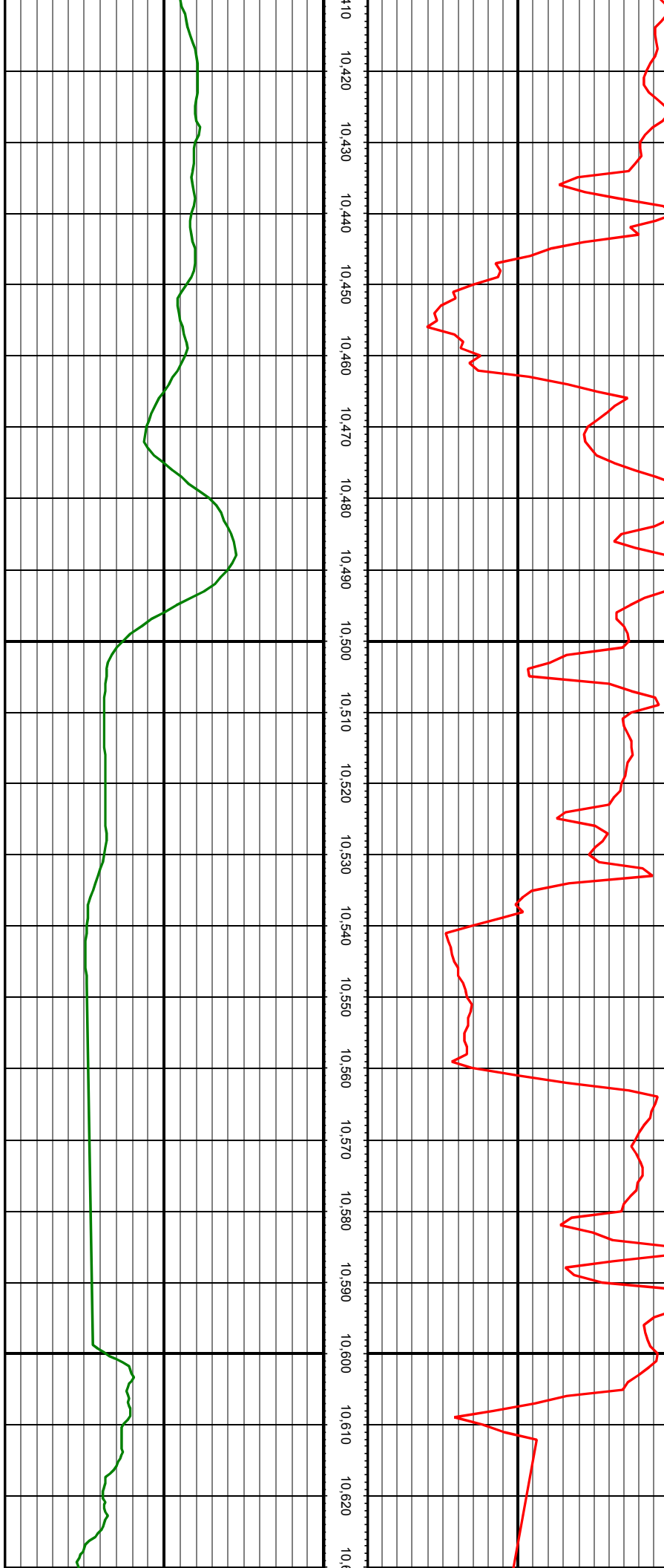


MD: 9932.00 INC: 90.35 AZ: 182.02 TVD: 7937.18 VS: 1544.94





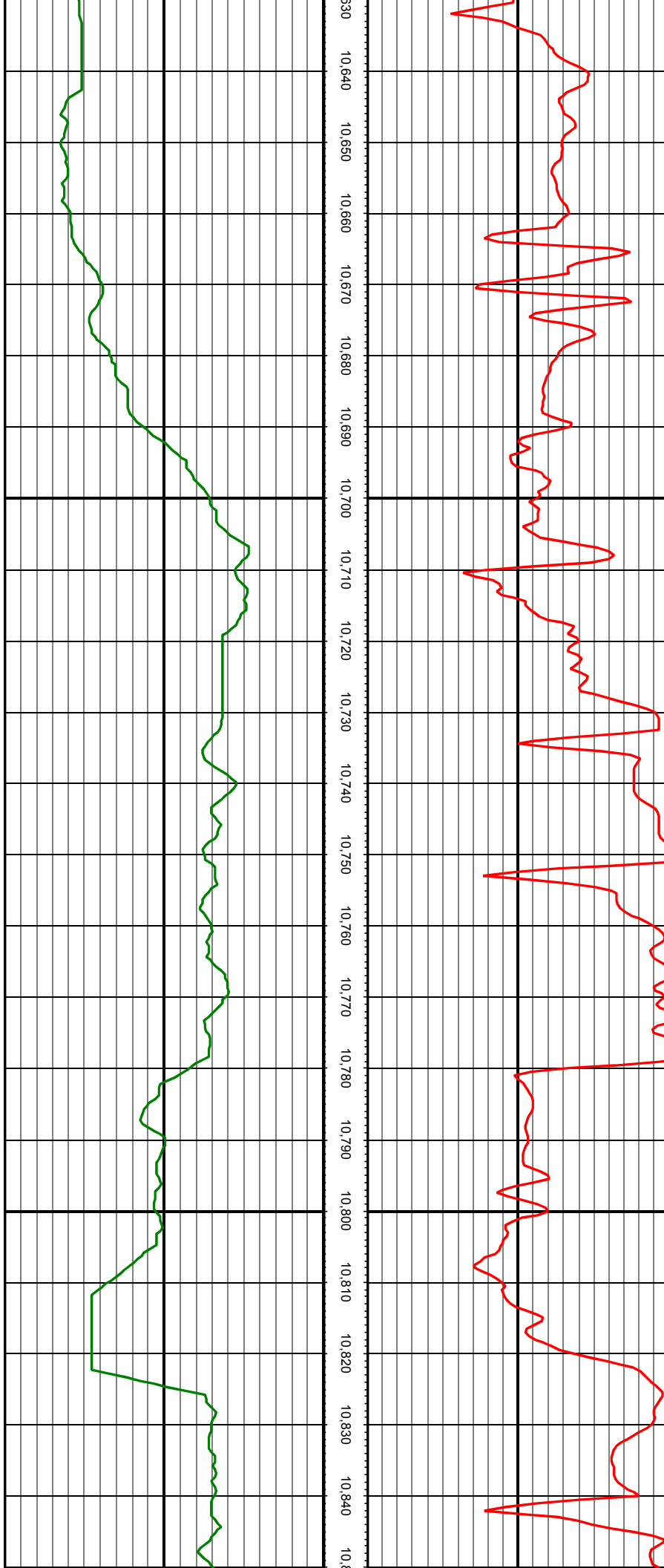




MD: 10466.00 INC: 86.88 AZ: 182.46 TVD: 7951.88 VS: 2064.37

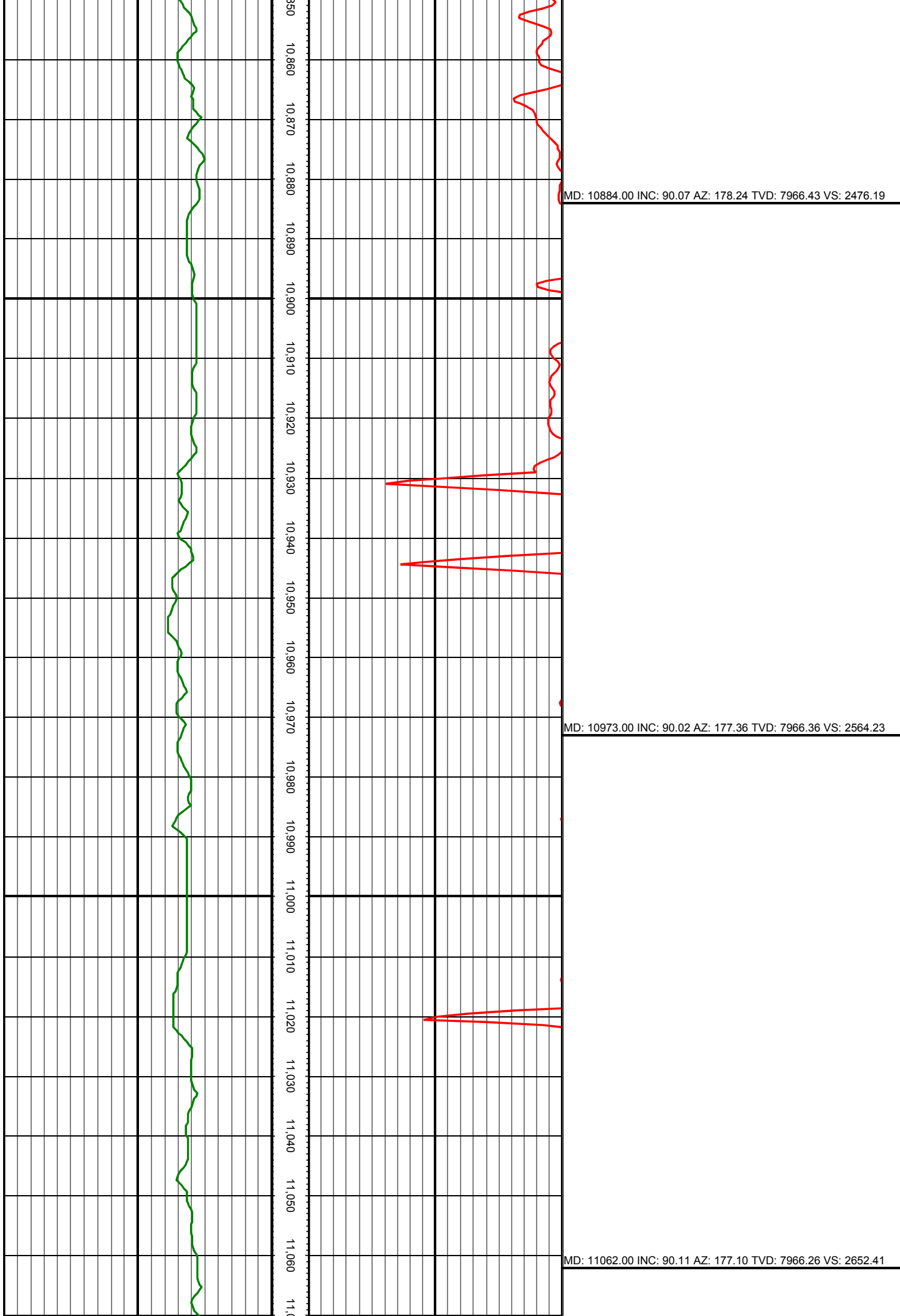
MD: 10555.00 INC: 86.62 AZ: 180.88 TVD: 7956.93 VS: 2151.20

MD: 10617.00 INC: 87.56 AZ: 180.09 TVD: 7960.07 VS: 2211.96

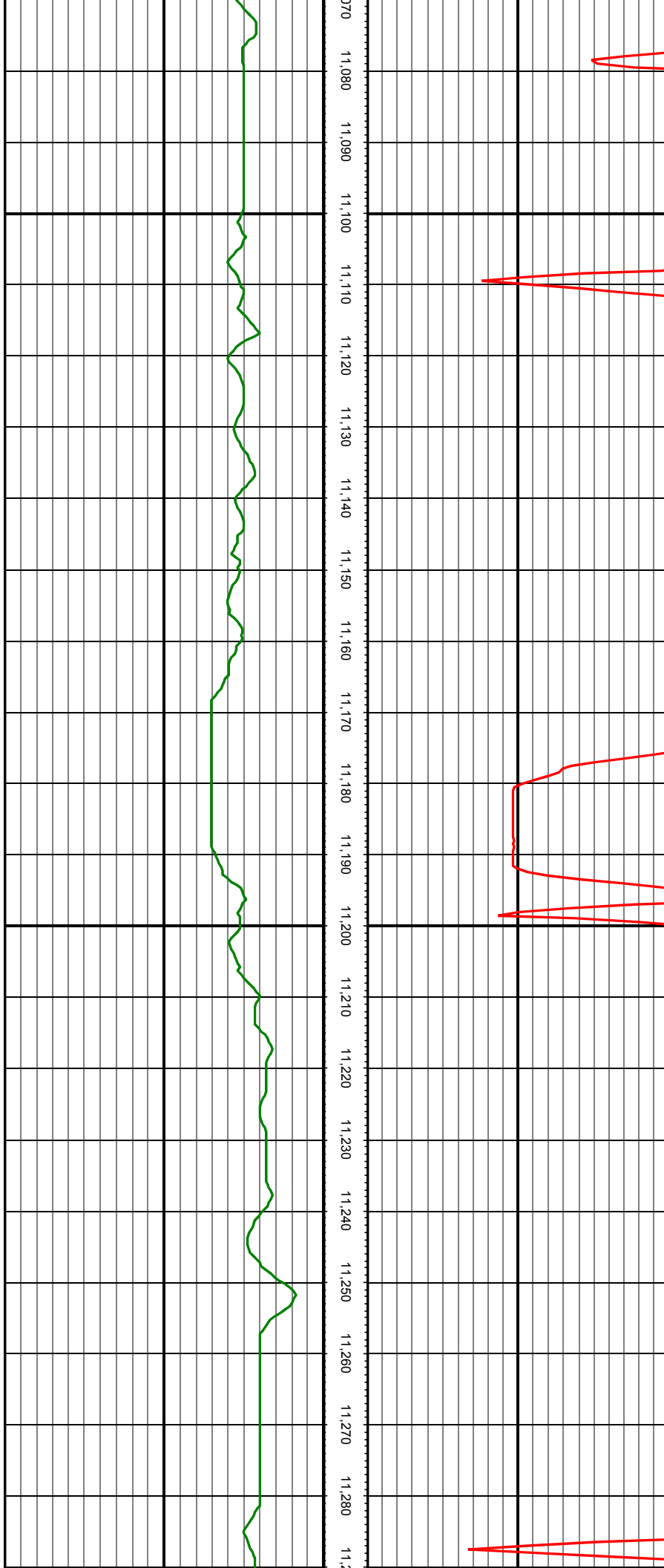


MD: 10706.00 INC: 88.04 AZ: 178.33 TVD: 7963.49 VS: 2299.60

MD: 10795.00 INC: 89.05 AZ: 174.64 TVD: 7965.75 VS: 2387.87



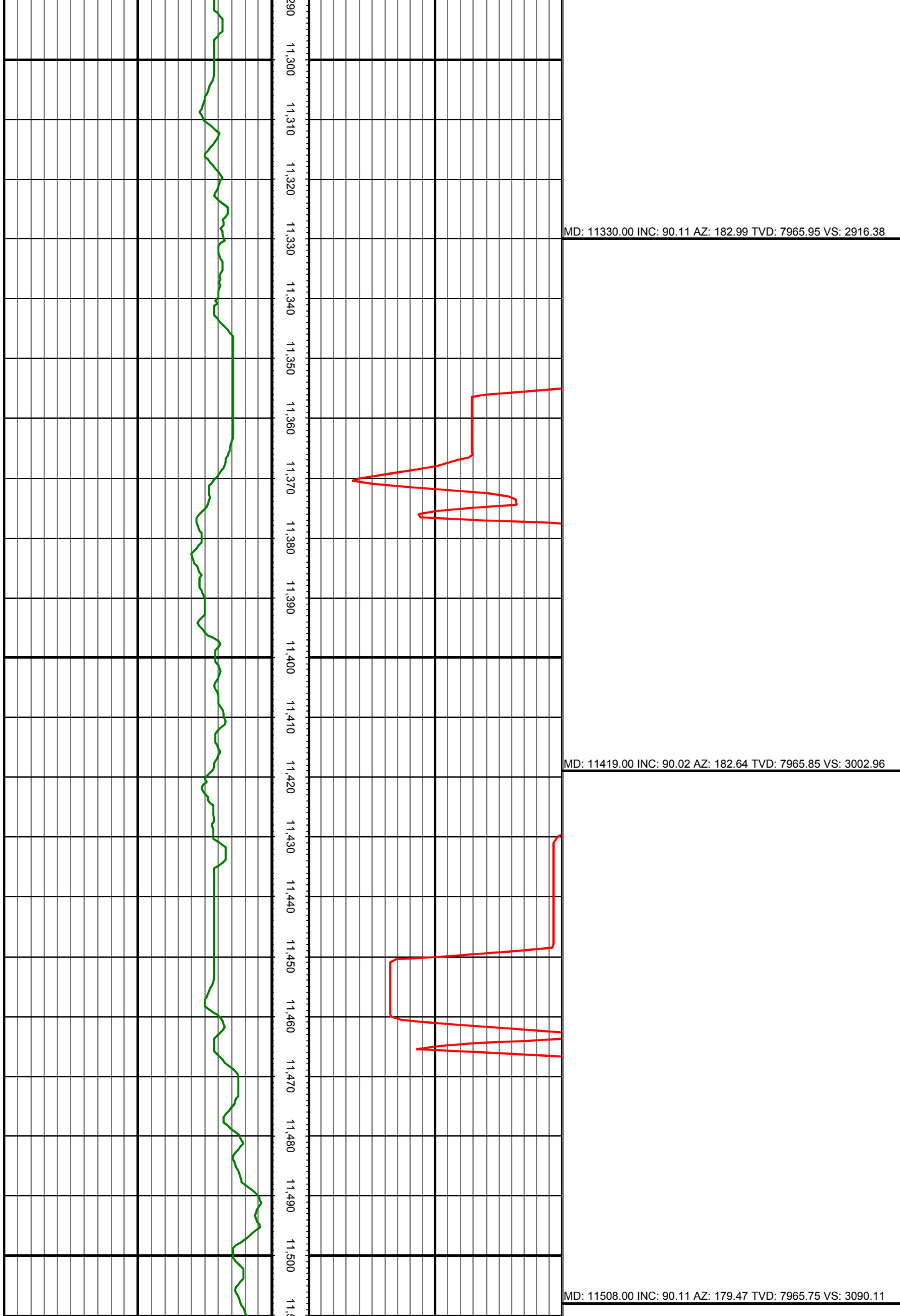


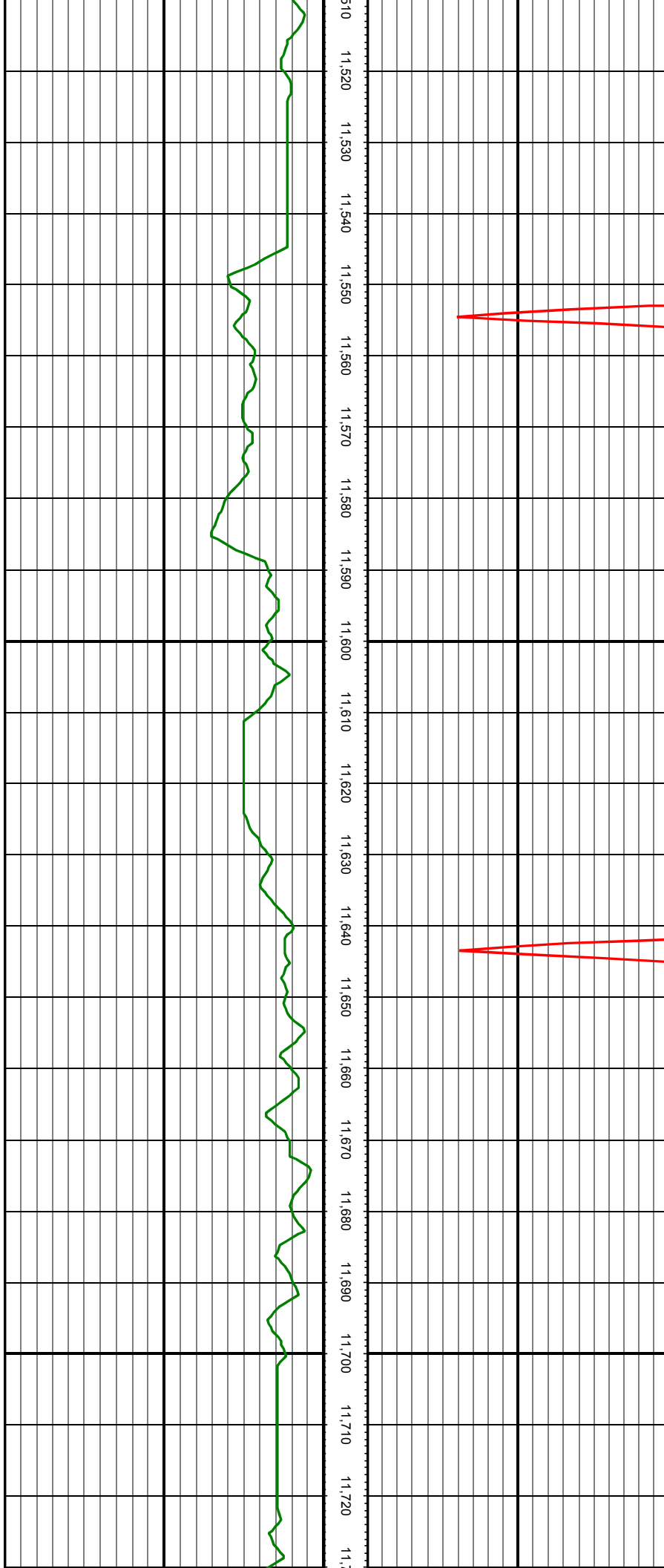


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MD: 11152.00 INC: 90.02 AZ: 177.63 TVD: 7966.16 VS: 2741.54

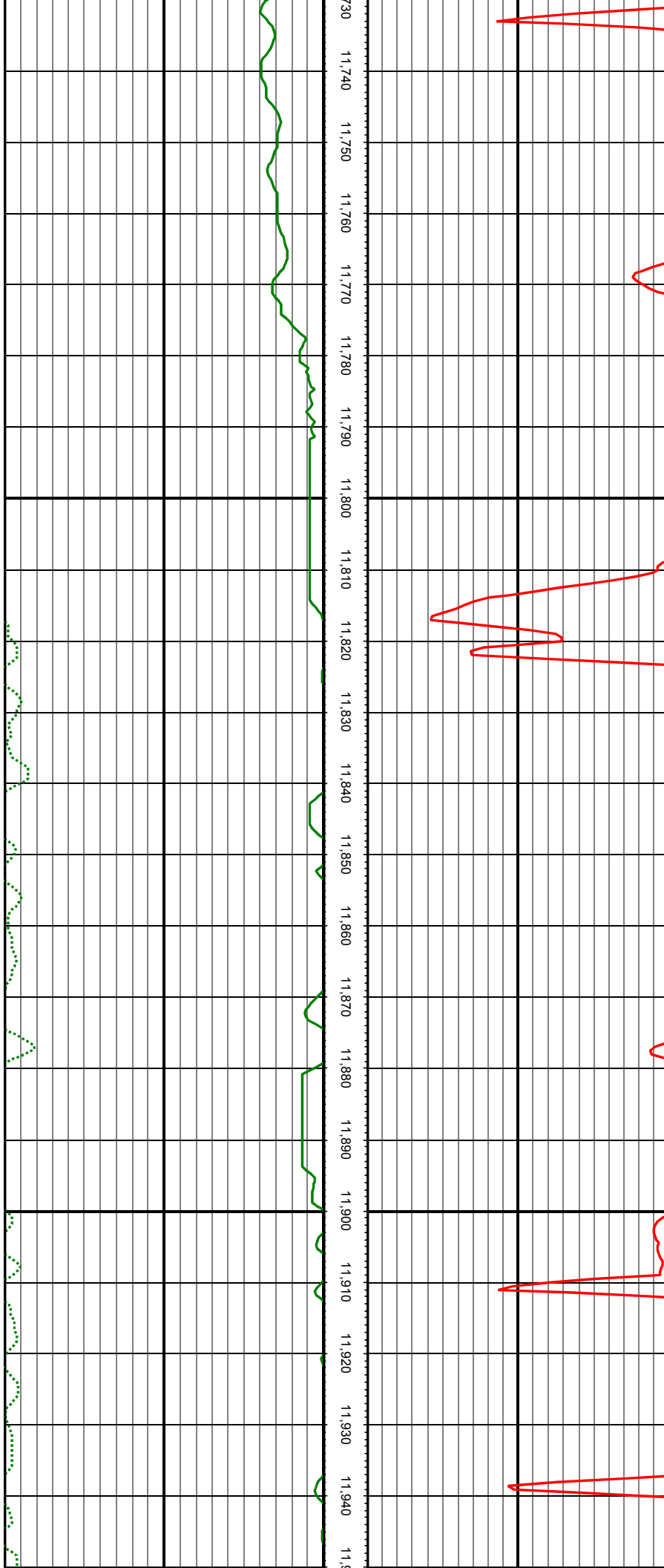
MD: 11241.00 INC: 90.07 AZ: 179.91 TVD: 7966.09 VS: 2829.35





MD: 11597.00 INC: 90.24 AZ: 177.98 TVD: 7965.48 VS: 3177.94

MD: 11686.00 INC: 90.07 AZ: 179.12 TVD: 7965.24 VS: 3265.80

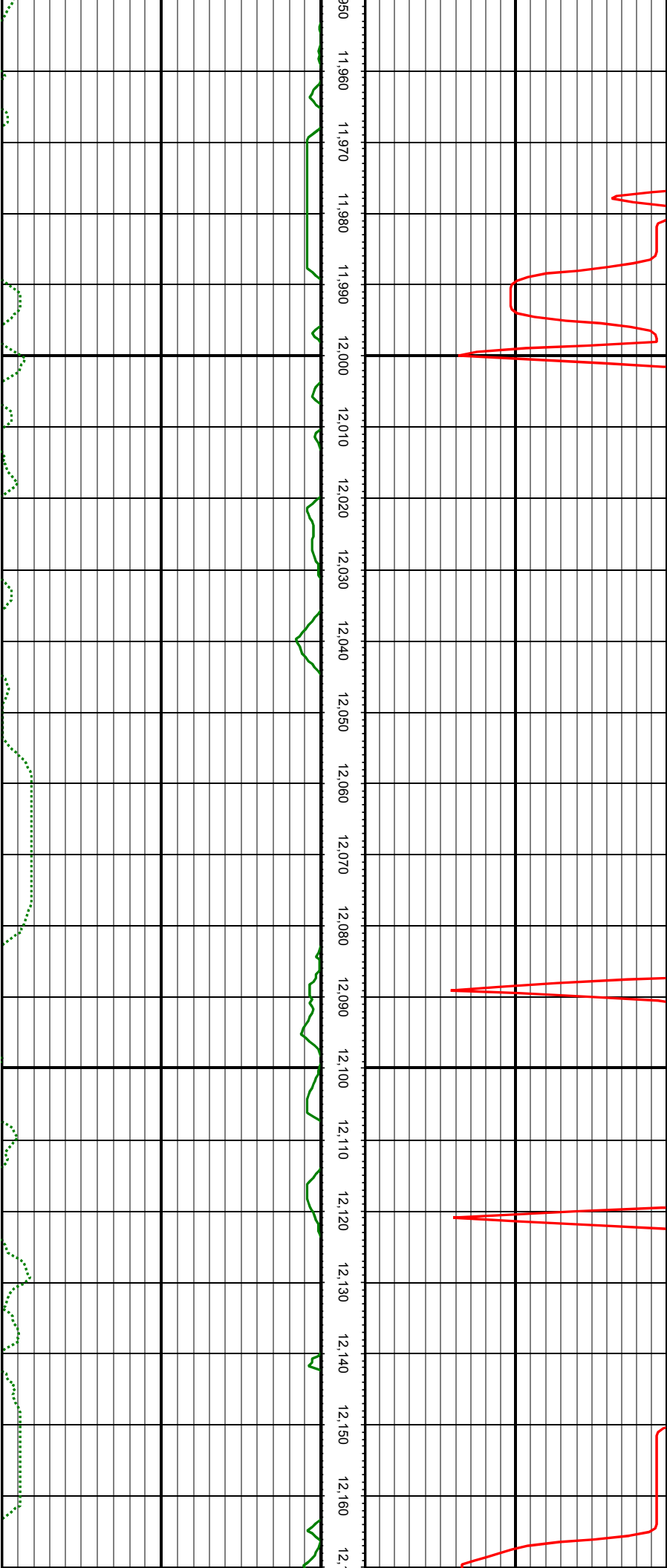


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MD: 11775.00 INC: 90.20 AZ: 178.33 TVD: 7965.03 VS: 3353.63

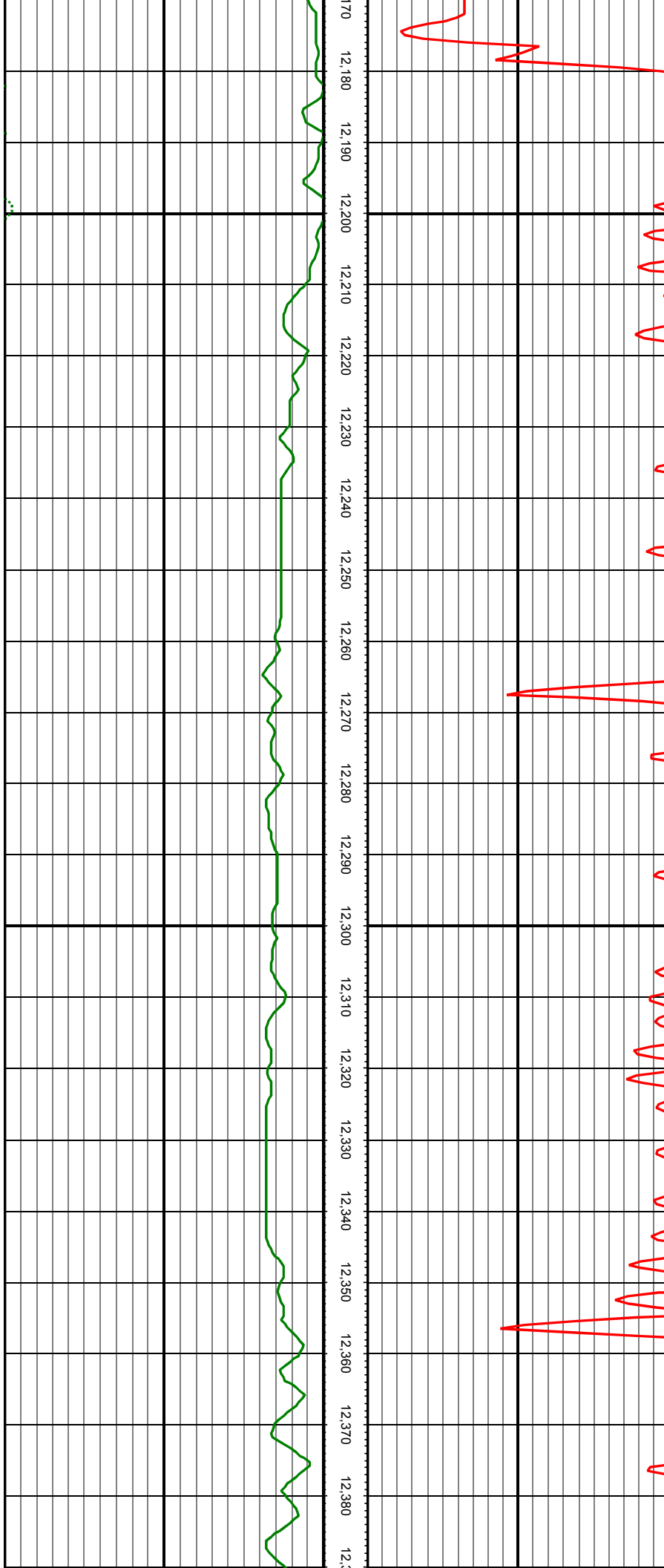
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MD: 11954.00 INC: 91.08 AZ: 177.45 TVD: 7962.34 VS: 3530.67



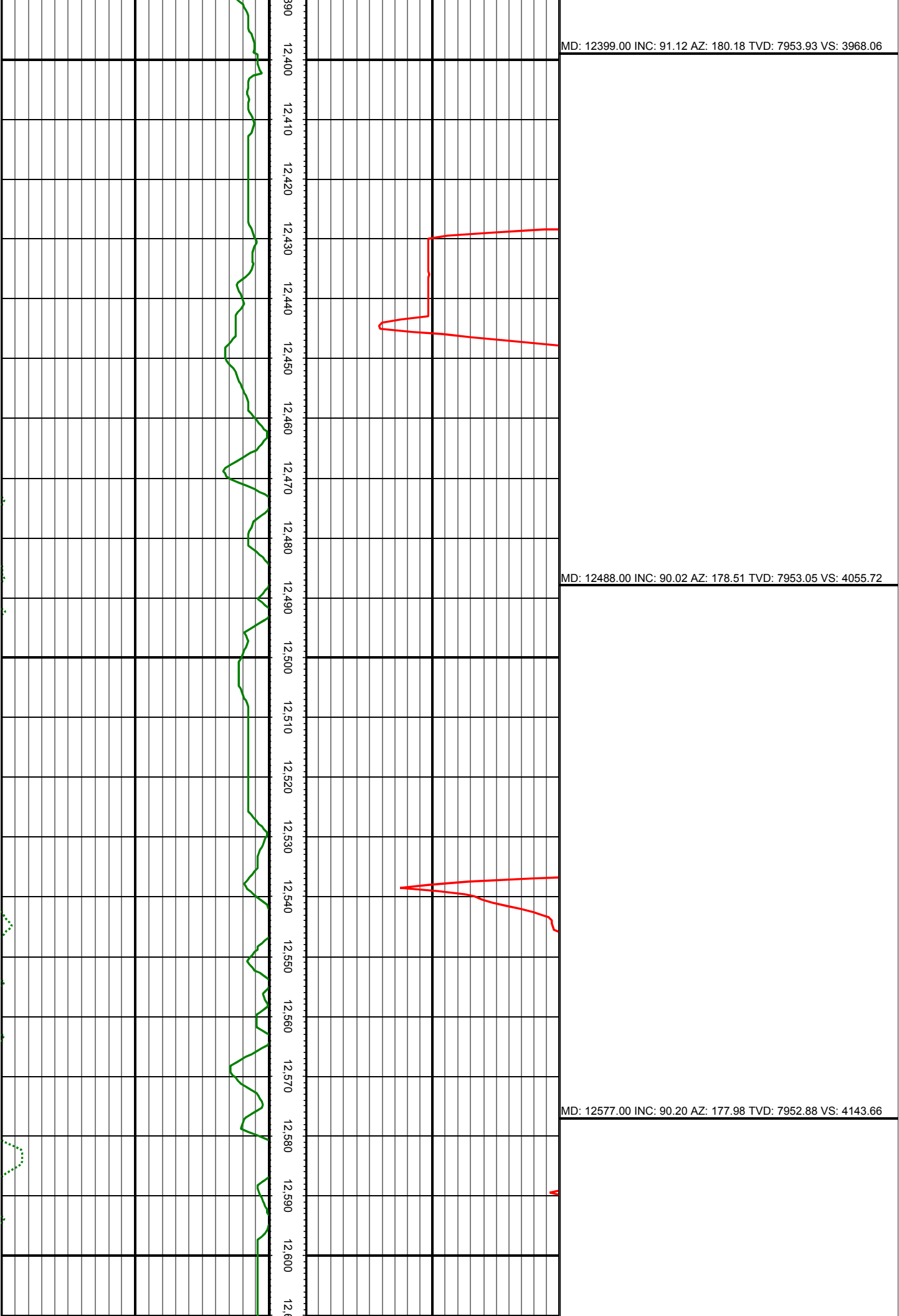
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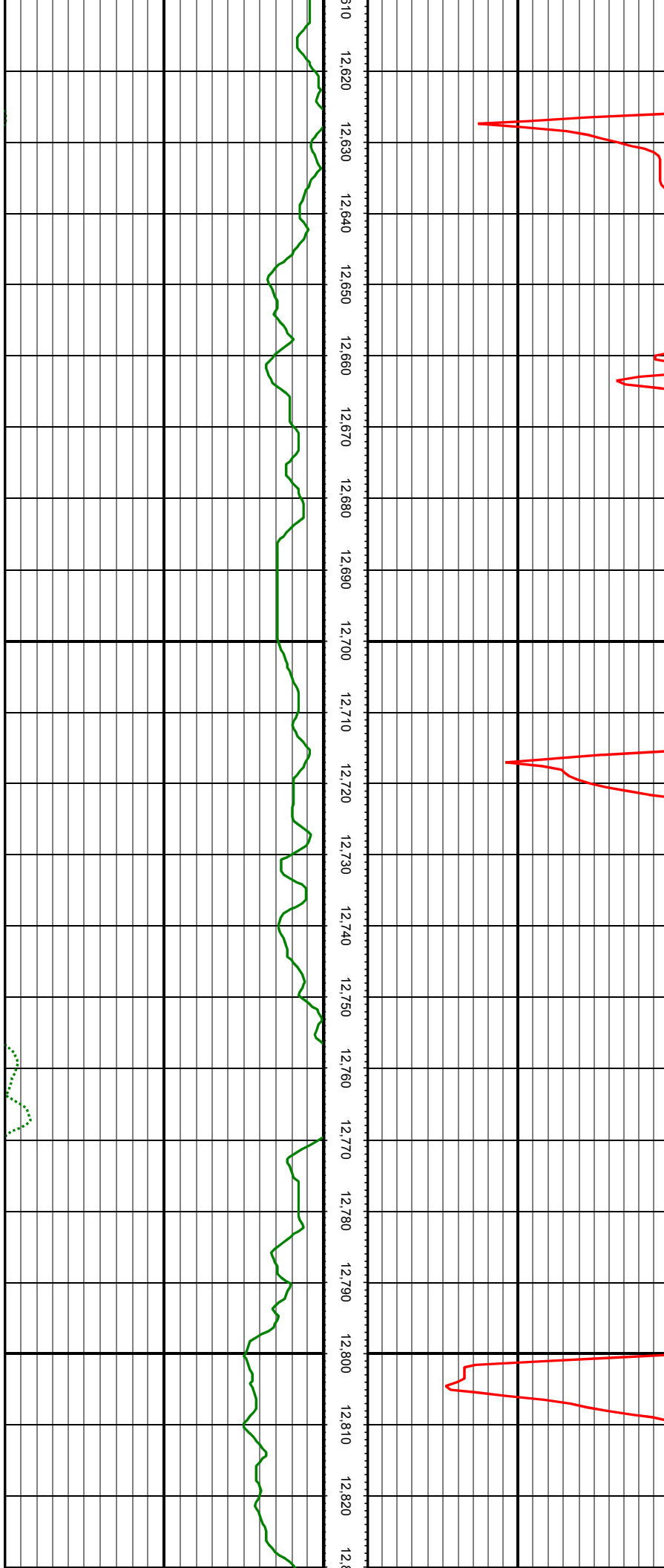
MD: 12132.00 INC: 91.08 AZ: 181.67 TVD: 7958.98 VS: 3705.91



MD: 12221.00 INC: 91.12 AZ: 179.91 TVD: 7957.27 VS: 3793.14

MD: 12310.00 INC: 91.03 AZ: 180.00 TVD: 7955.60 VS: 3880.62

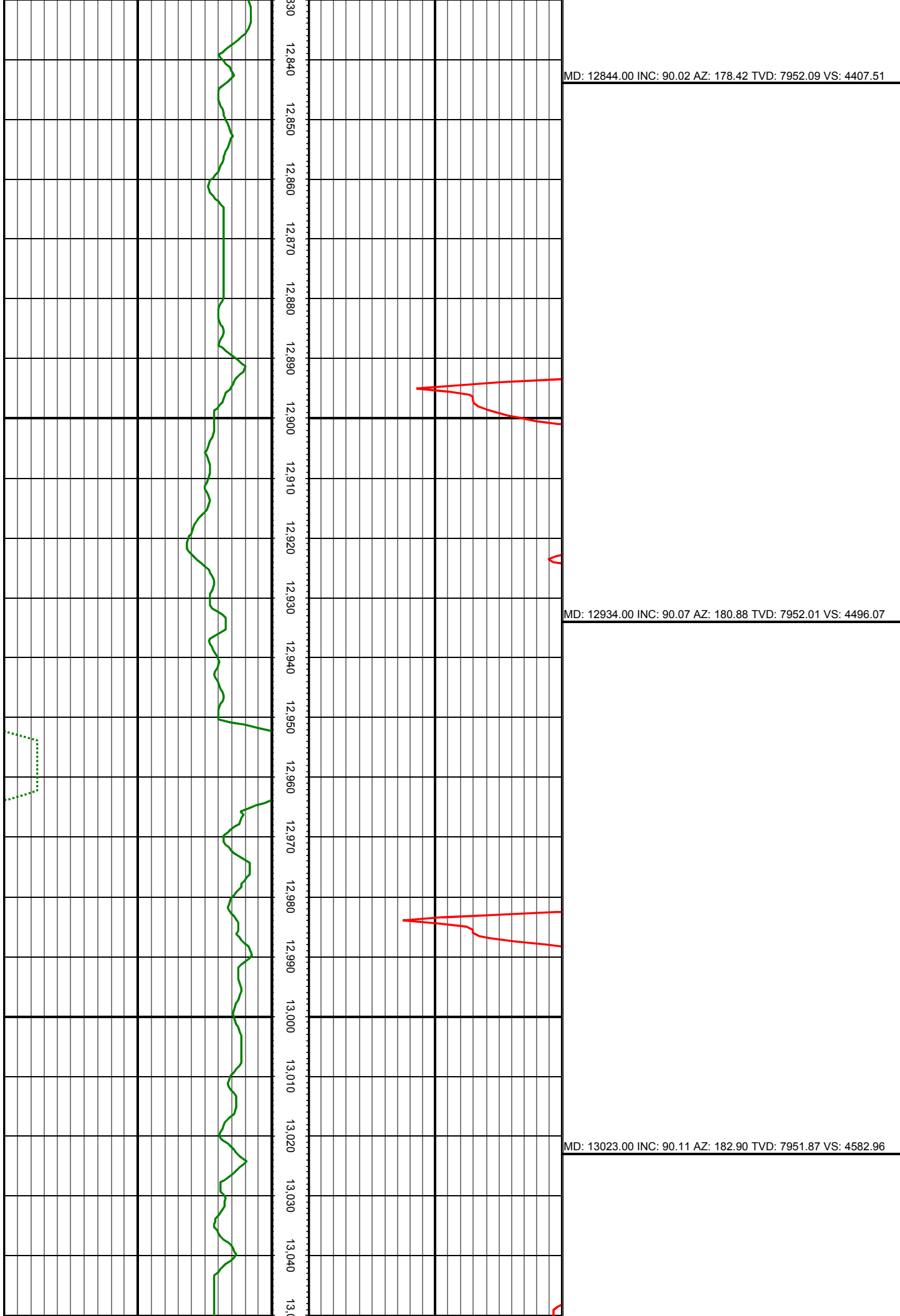


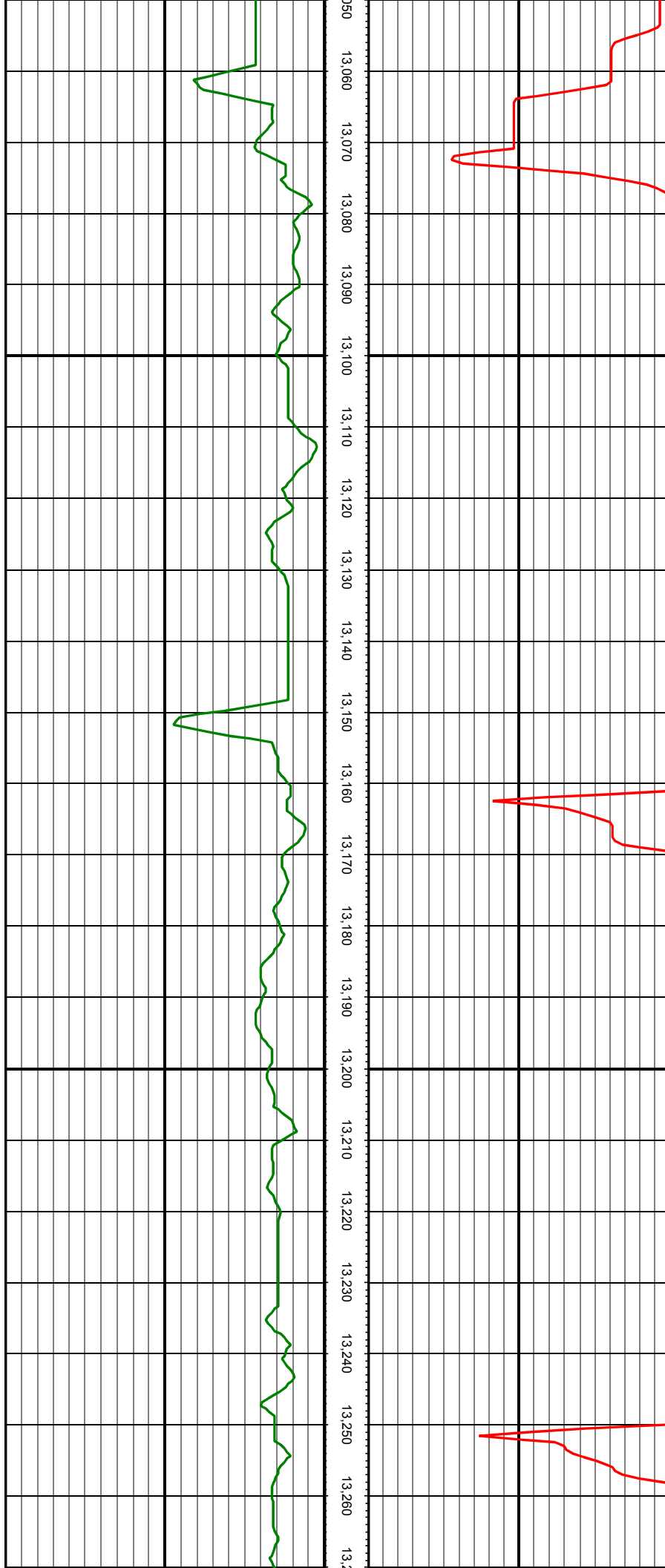


MD: 12666.00 INC: 90.20 AZ: 178.33 TVD: 7952.57 VS: 4231.63

MD: 12755.00 INC: 90.20 AZ: 178.15 TVD: 7952.26 VS: 4319.57

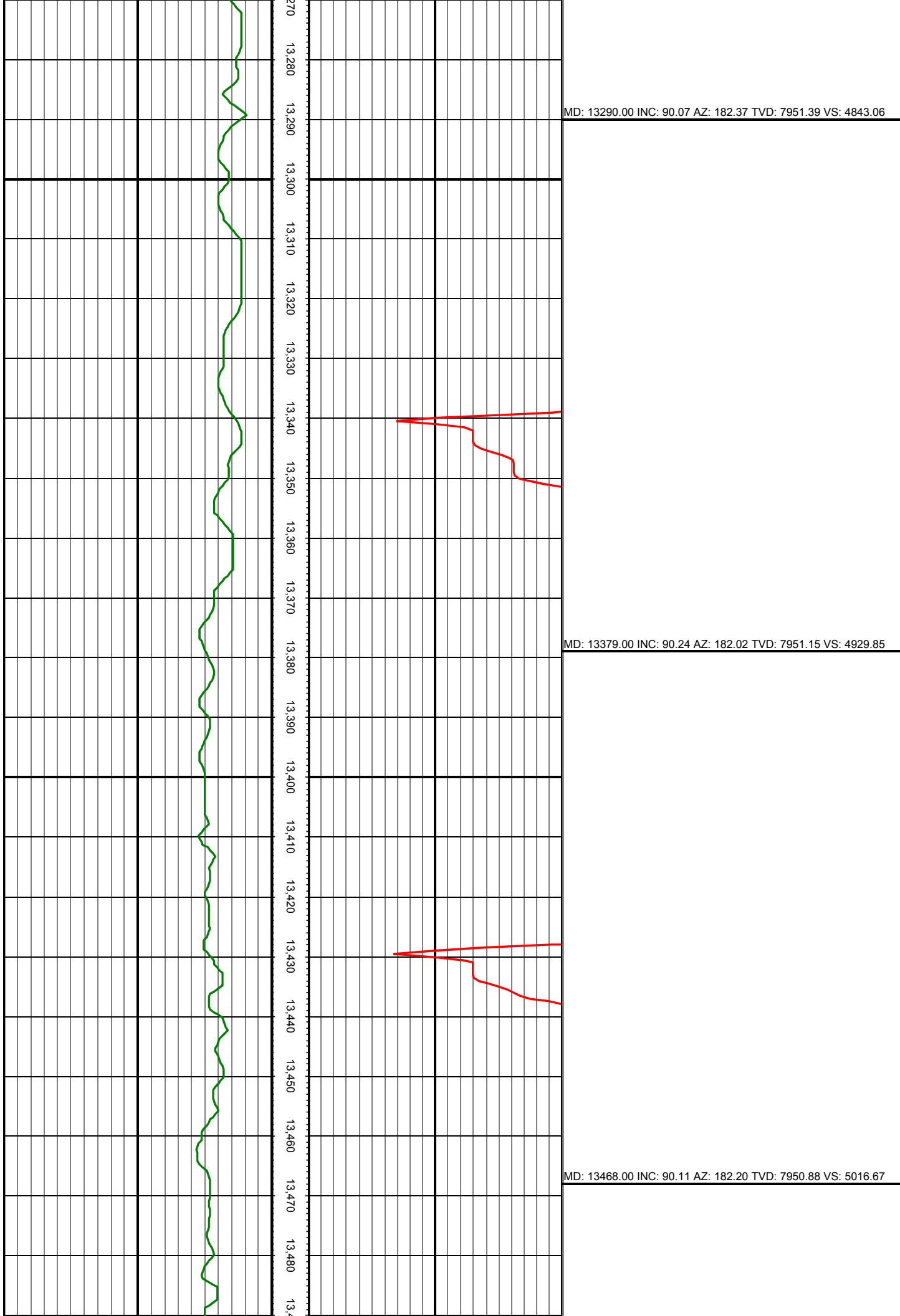


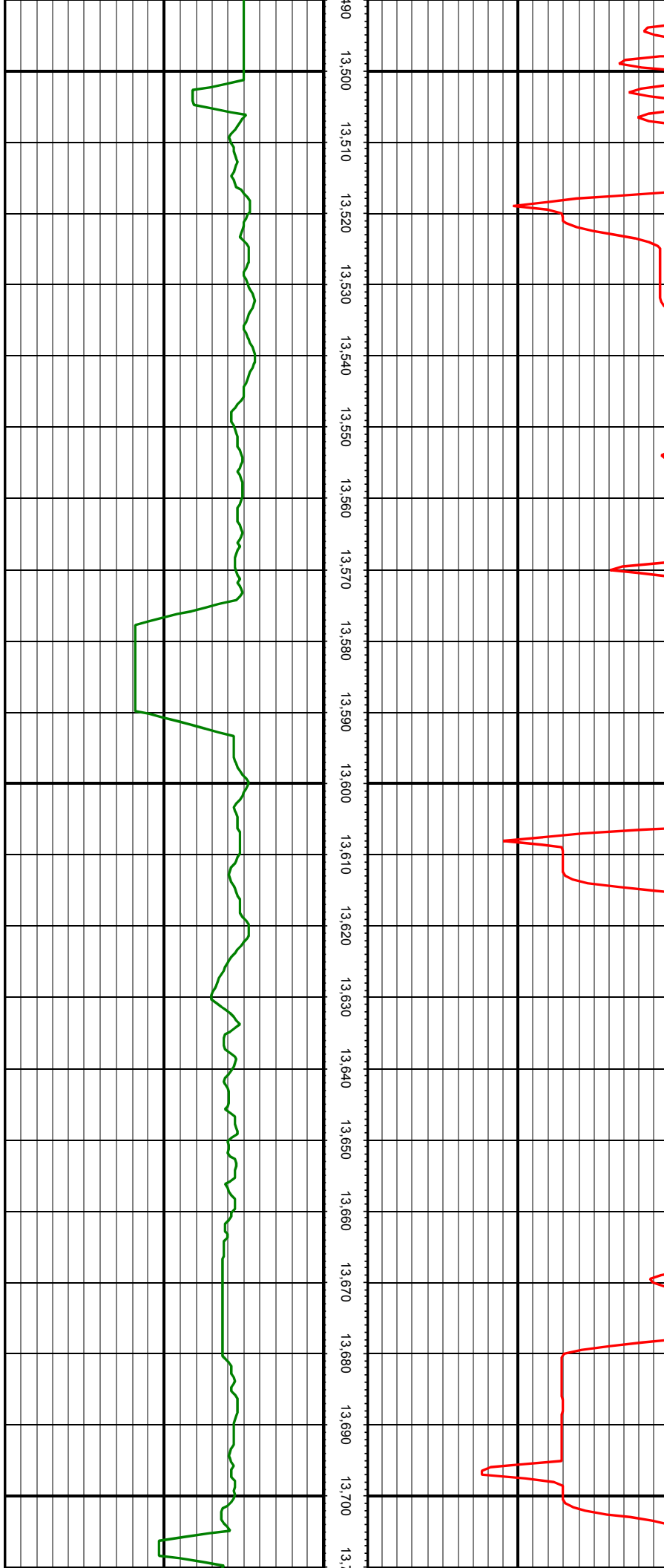




MD: 13112.00 INC: 90.15 AZ: 182.55 TVD: 7951.67 VS: 4669.57

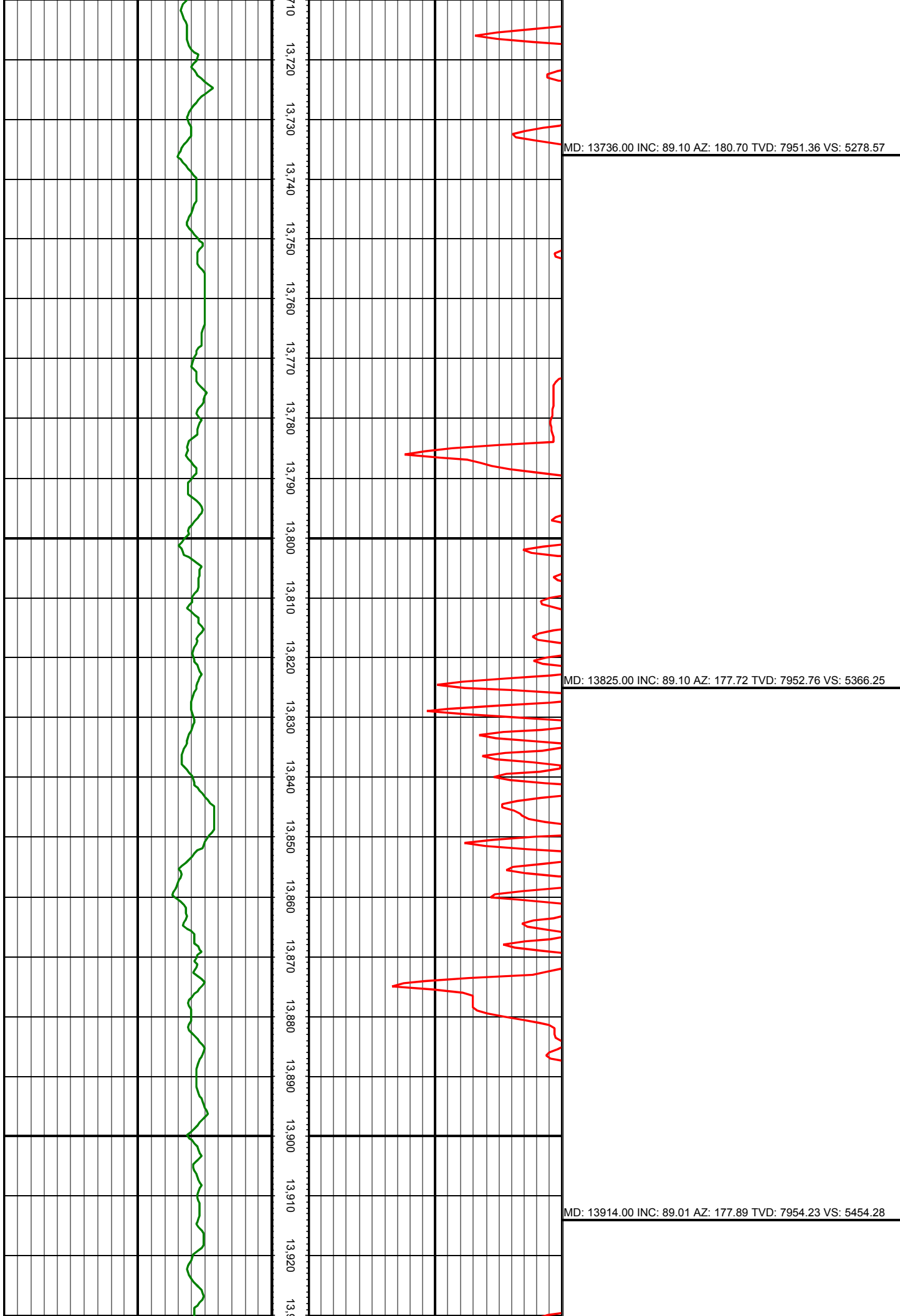
MD: 13201.00 INC: 90.07 AZ: 182.20 TVD: 7951.50 VS: 4756.30

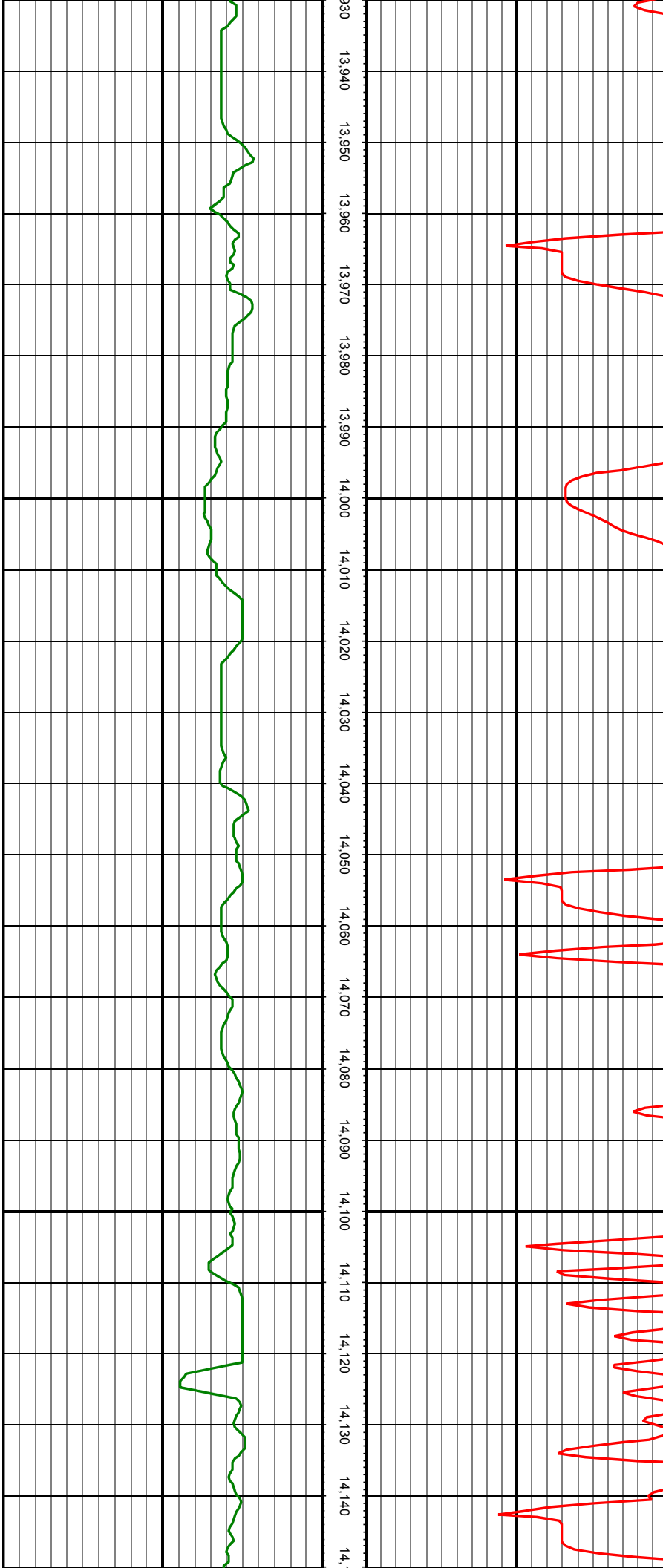




MD: 13557.00 INC: 90.07 AZ: 181.85 TVD: 7950.74 VS: 5103.53

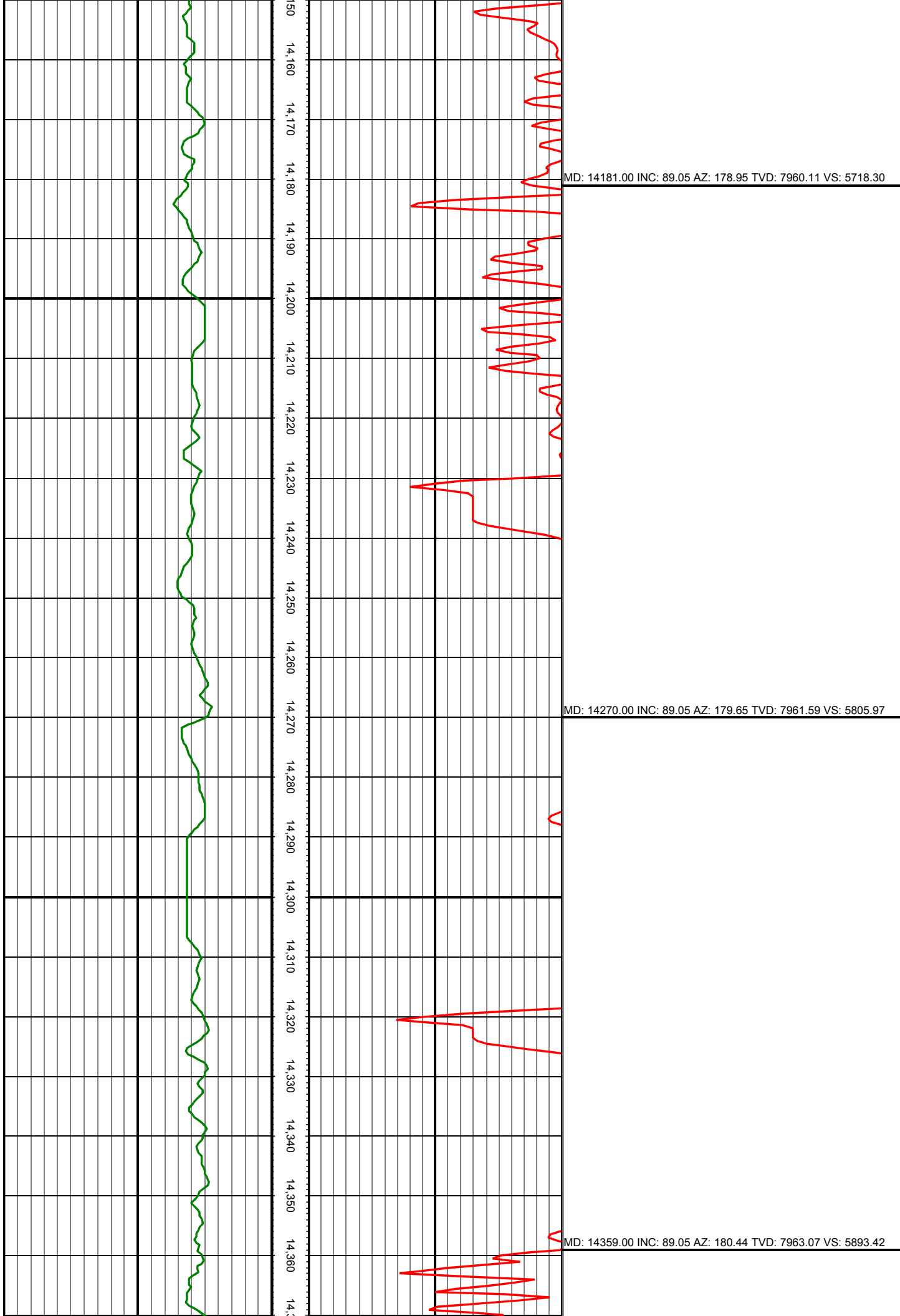
MD: 13646.00 INC: 90.02 AZ: 181.67 TVD: 7950.67 VS: 5190.47

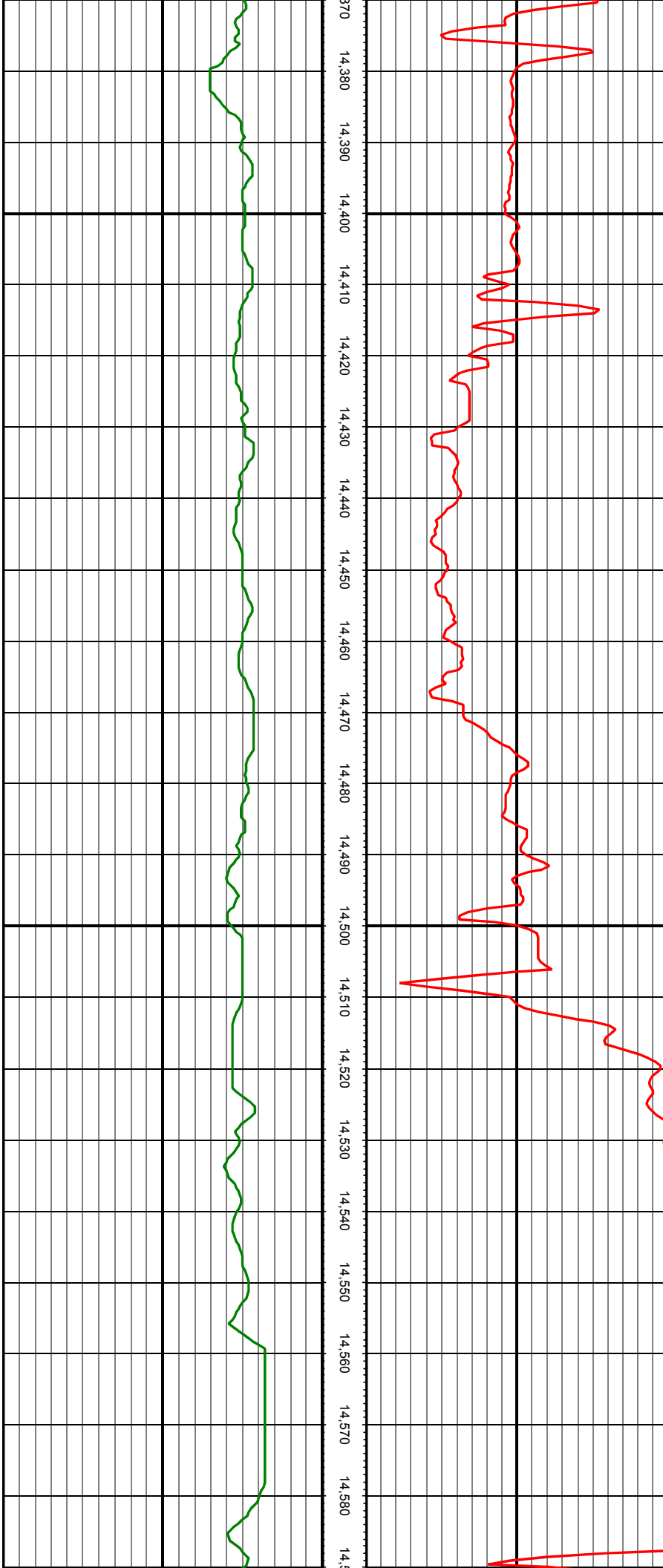




MD: 14003.00 INC: 88.13 AZ: 176.92 TVD: 7956.45 VS: 5542.39

MD: 14092.00 INC: 89.05 AZ: 178.24 TVD: 7958.64 VS: 5630.45

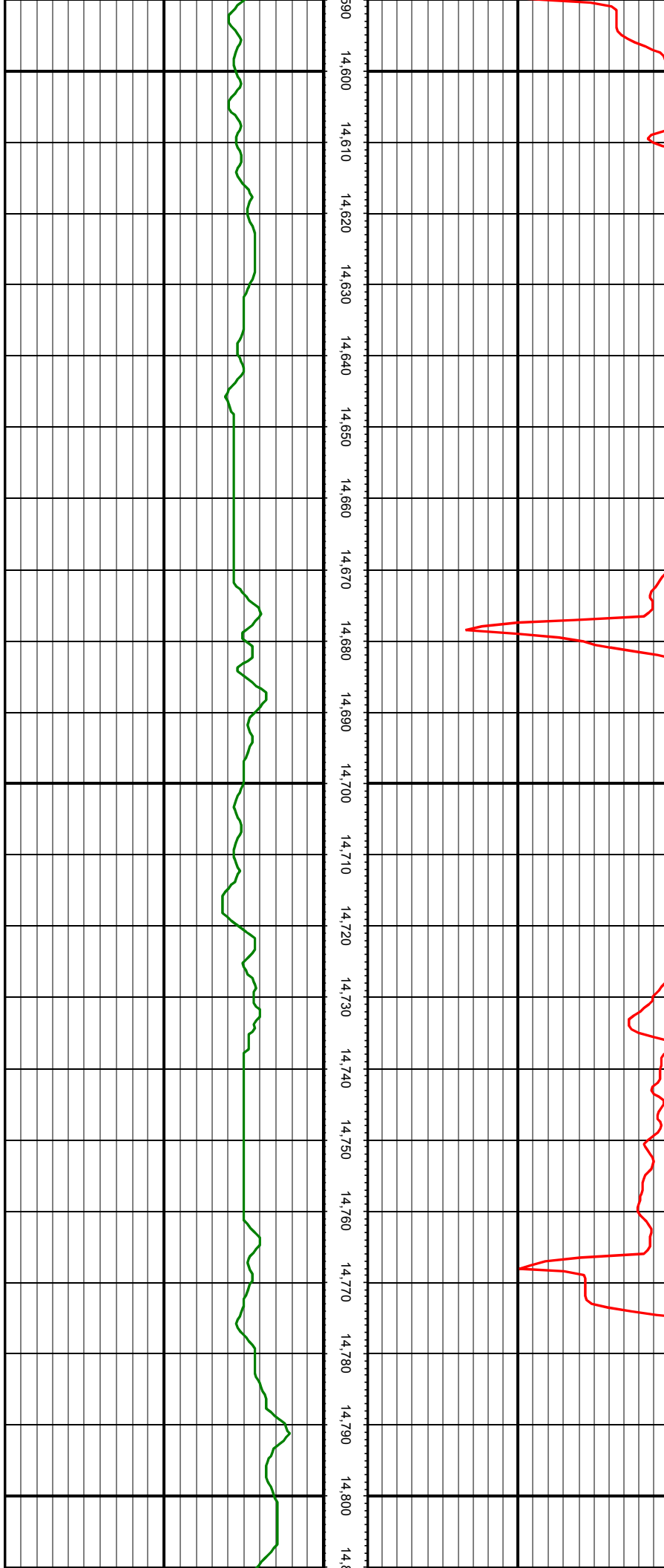




MD: 14448.00 INC: 89.01 AZ: 181.49 TVD: 7964.57 VS: 5980.61

MD: 14539.00 INC: 89.19 AZ: 180.18 TVD: 7966.00 VS: 6069.79

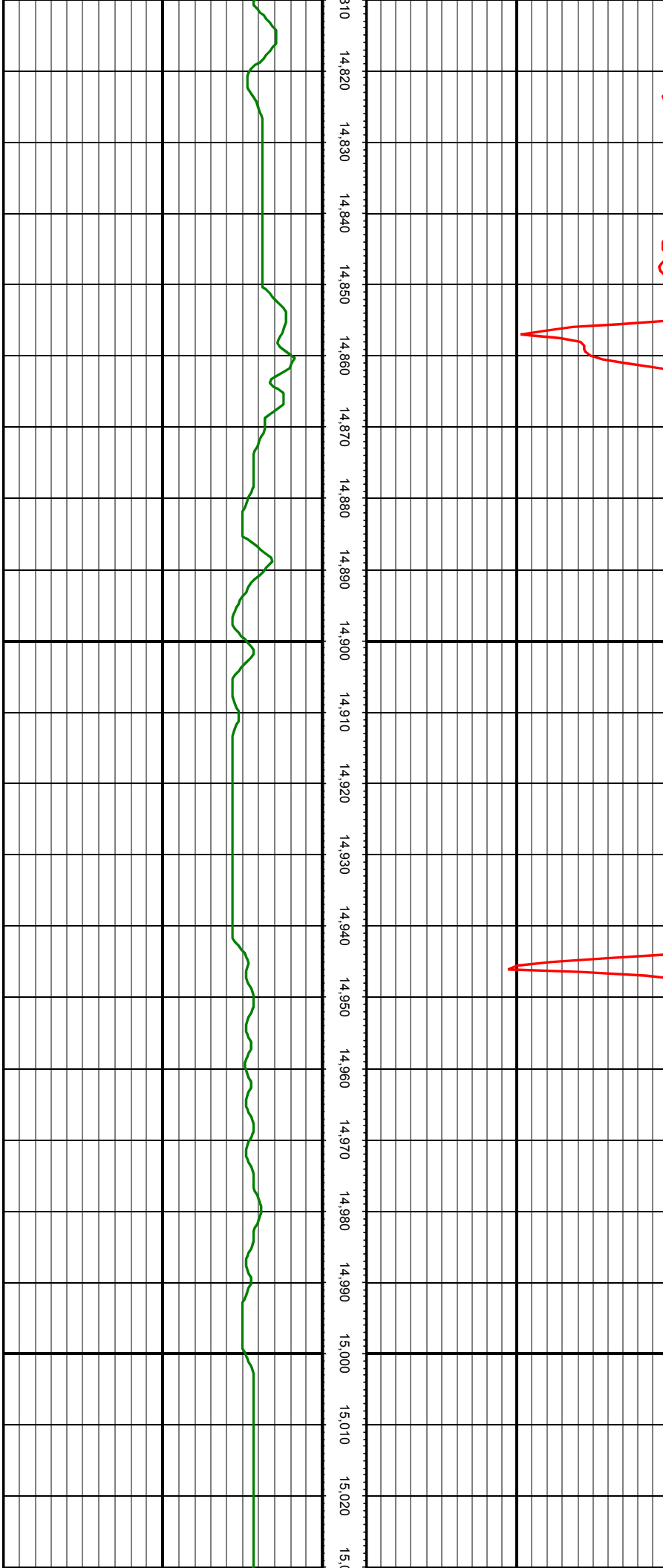




MD: 14628.00 INC: 89.14 AZ: 179.74 TVD: 7967.30 VS: 6157.28

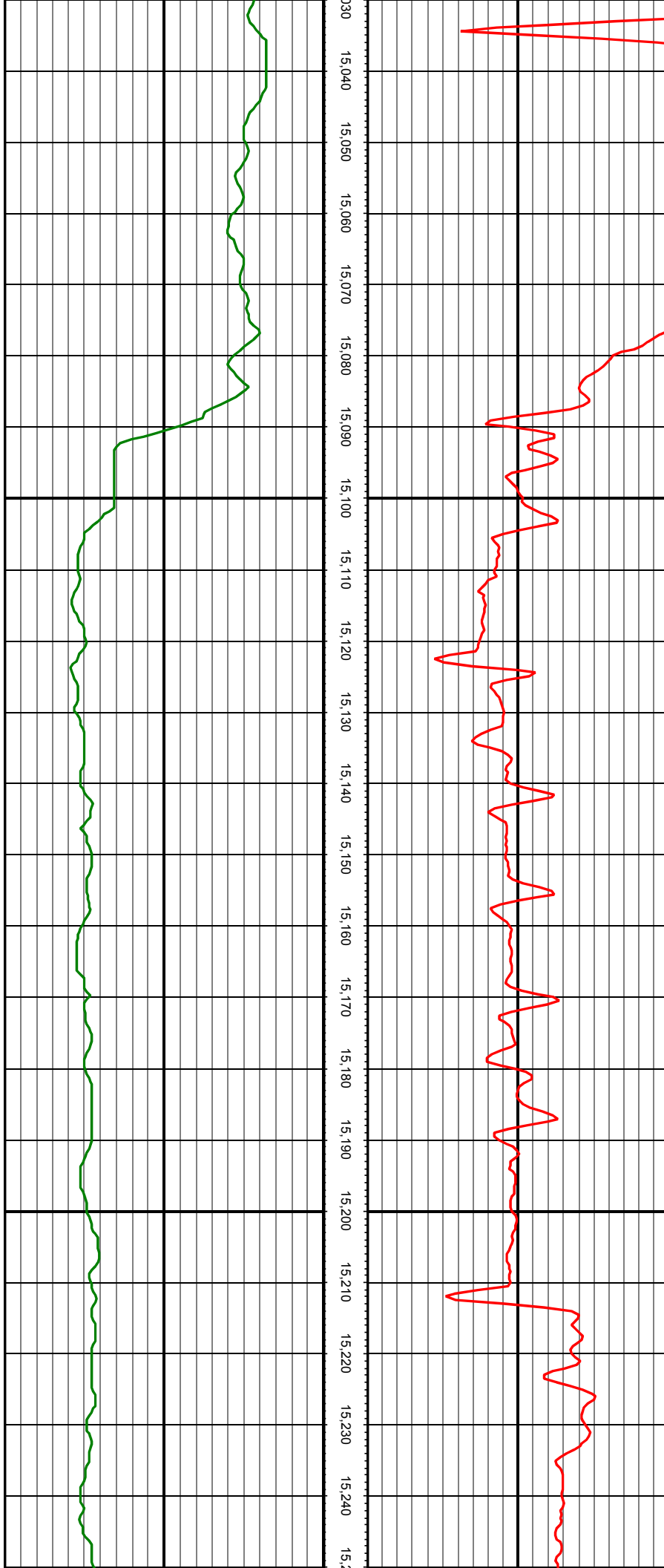
MD: 14717.00 INC: 89.19 AZ: 179.91 TVD: 7968.60 VS: 6244.80

MD: 14807.00 INC: 89.19 AZ: 180.18 TVD: 7969.87 VS: 6333.25



MD: 14896.00 INC: 89.10 AZ: 179.91 TVD: 7971.20 VS: 6420.71

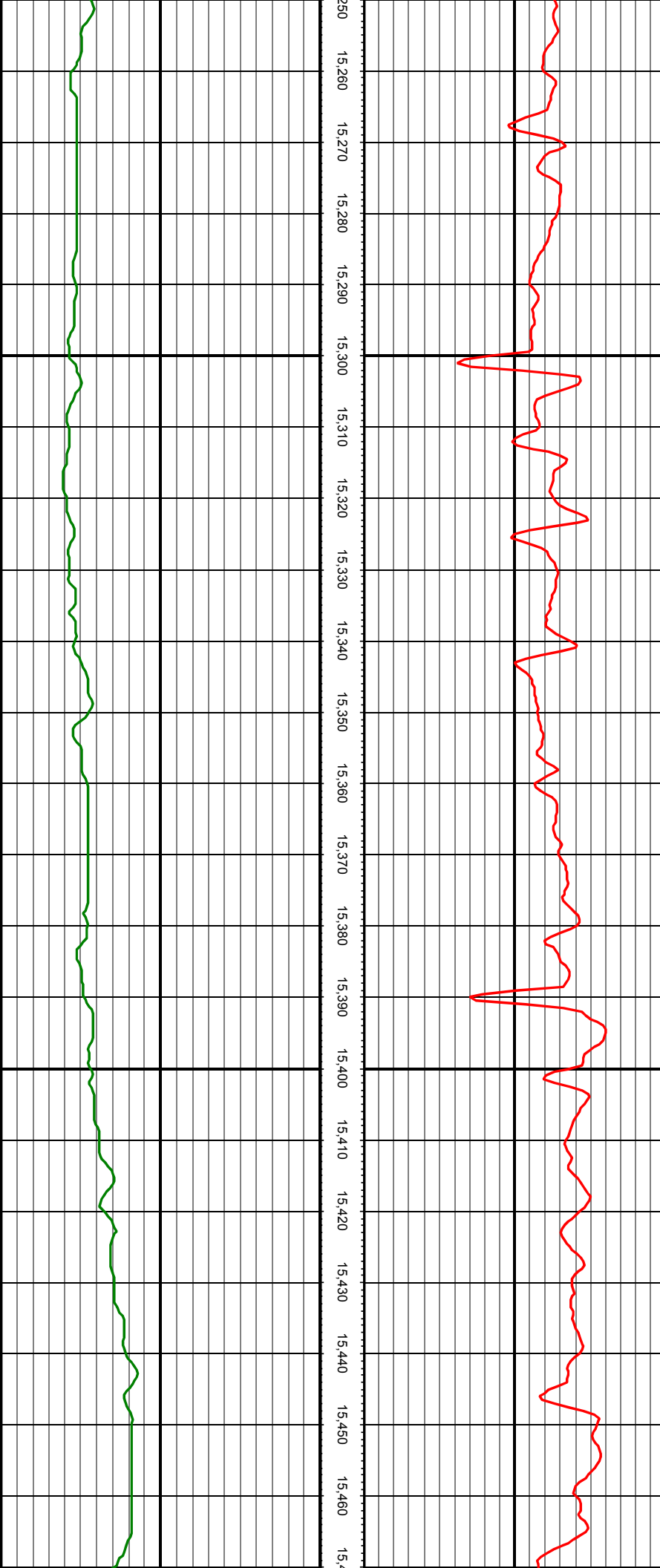
MD: 14985.00 INC: 89.19 AZ: 180.00 TVD: 7972.52 VS: 6508.19



MD: 15074.00 INC: 89.19 AZ: 179.21 TVD: 7973.78 VS: 6595.78

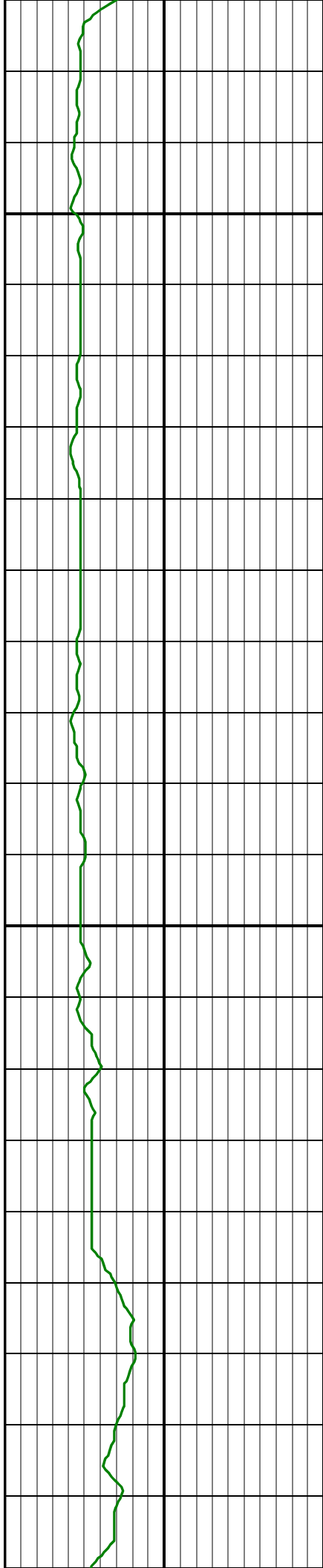
MD: 15163.00 INC: 91.12 AZ: 180.26 TVD: 7973.54 VS: 6683.33

MD: 15252.00 INC: 90.86 AZ: 181.32 TVD: 7972.00 VS: 6770.57

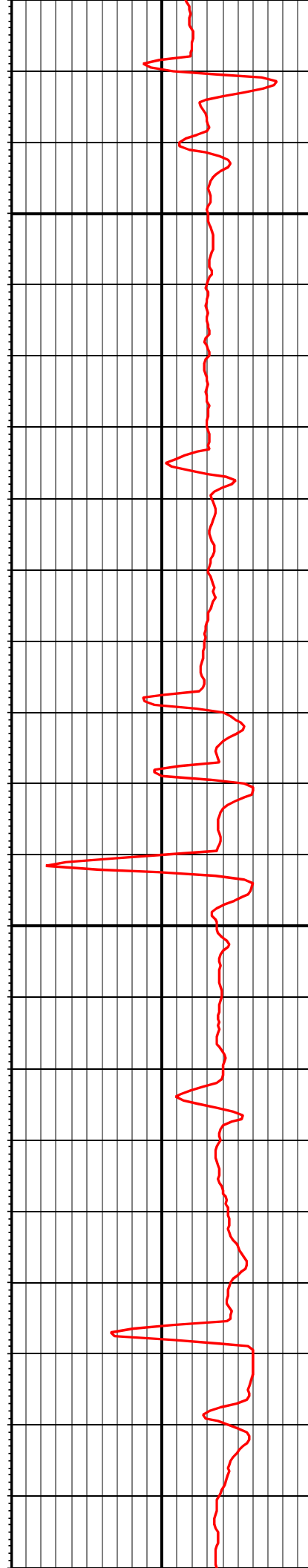


MD: 15341.00 INC: 91.69 AZ: 181.49 TVD: 7970.02 VS: 6857.60

MD: 15430.00 INC: 90.59 AZ: 181.58 TVD: 7968.25 VS: 6944.60



15,470 15,480 15,490 15,500 15,510 15,520 15,530 15,540 15,550 15,560 15,570 15,580 15,590 15,600 15,610 15,620 15,630 15,640 15,650 15,660 15,670 15,680 15,690



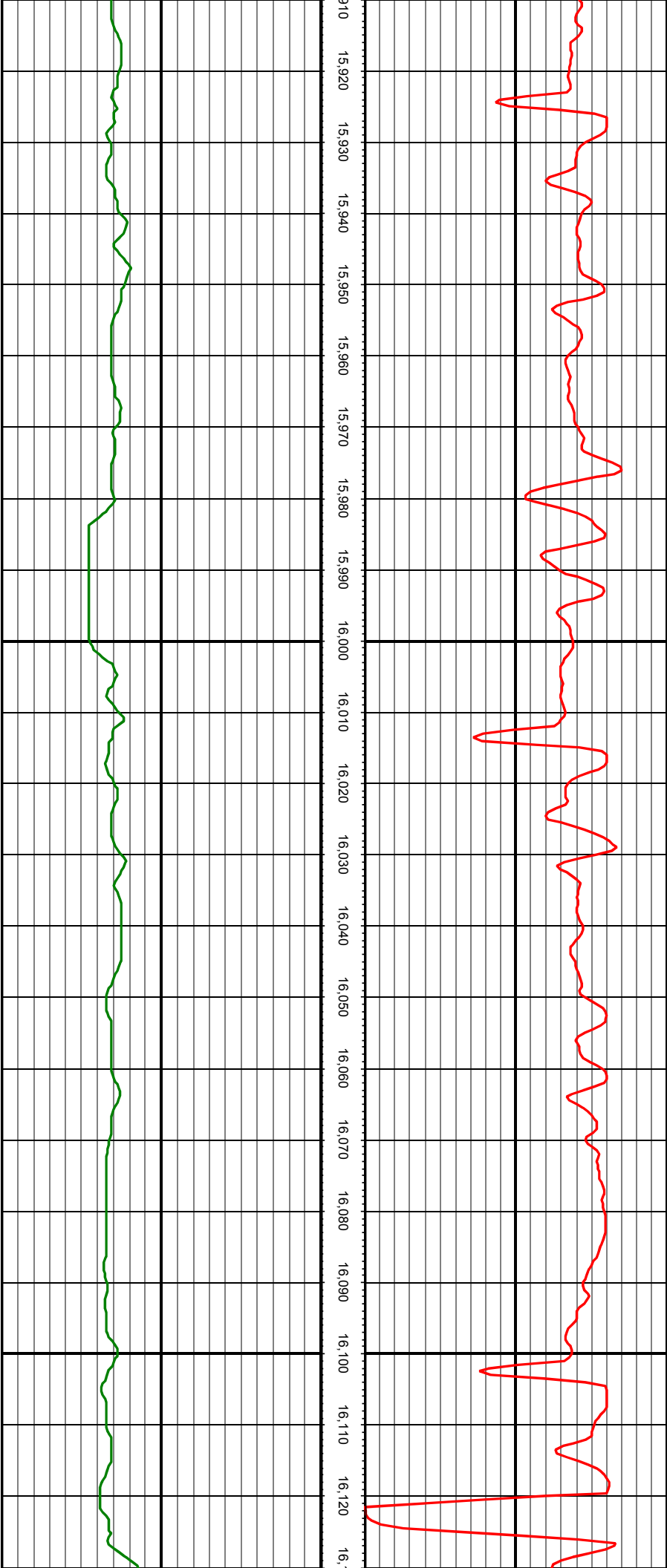
MD: 15519.00 INC: 89.98 AZ: 182.11 TVD: 7967.81 VS: 7031.51

MD: 15608.00 INC: 89.58 AZ: 182.81 TVD: 7968.15 VS: 7118.21

MD: 15697.00 INC: 89.80 AZ: 183.16 TVD: 7968.63 VS: 7204.72

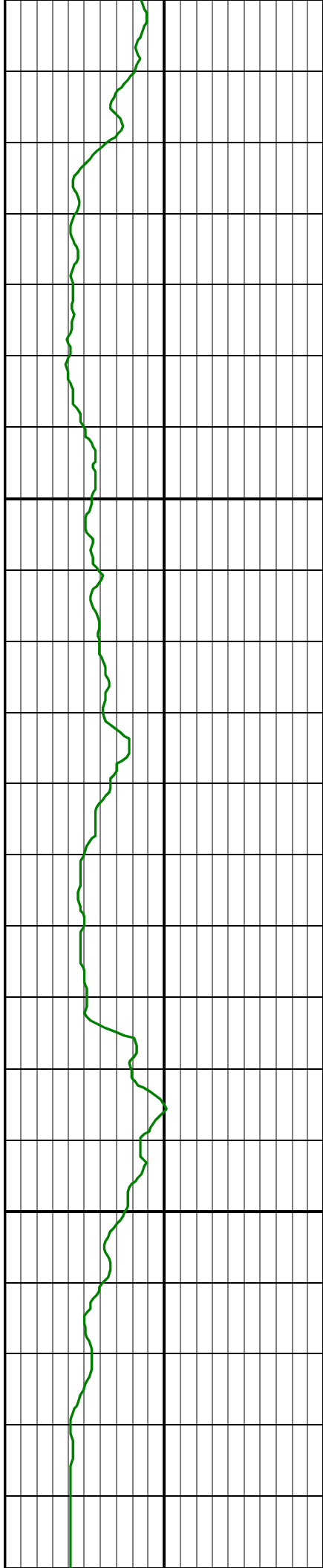
MD: 15786.00 INC: 89.63 AZ: 183.52 TVD: 7969.08 VS: 7291.10

MD: 15875.00 INC: 89.27 AZ: 178.95 TVD: 7969.93 VS: 7378.19

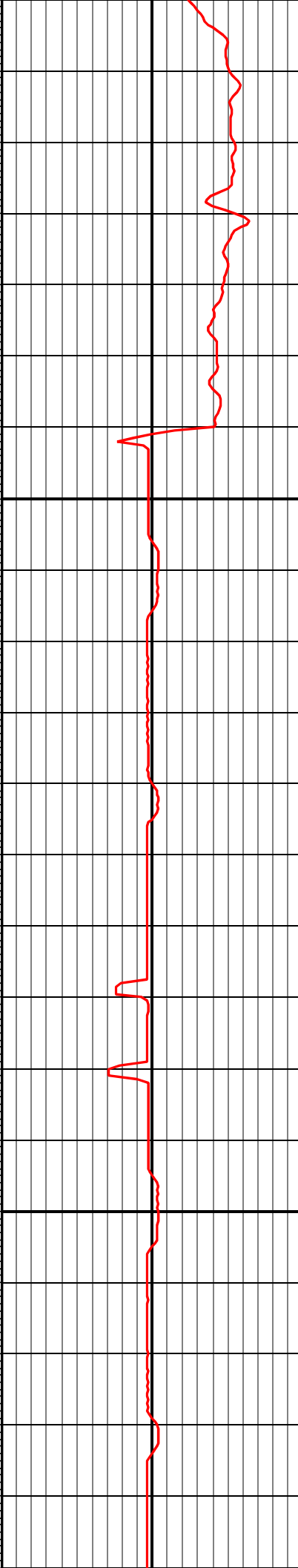


MD: 15964.00 INC: 89.49 AZ: 174.29 TVD: 7970.89 VS: 7466.45

MD: 16054.00 INC: 88.92 AZ: 169.98 TVD: 7972.14 VS: 7556.32



16,130 16,140 16,150 16,160 16,170 16,180 16,190 16,200 16,210 16,220 16,230 16,240 16,250 16,260 16,270 16,280 16,290 16,300 16,310 16,320 16,330 16,340 16,350

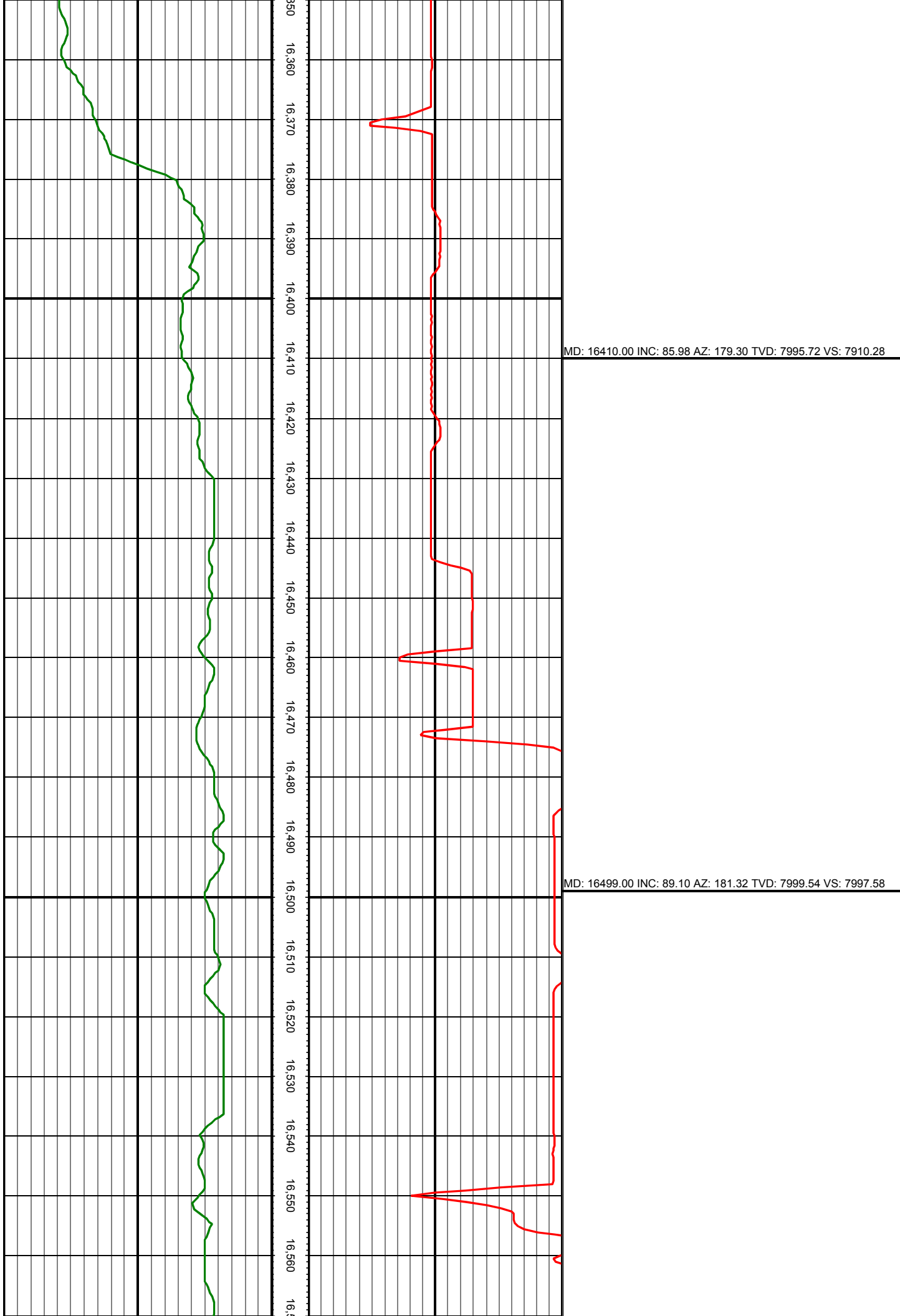


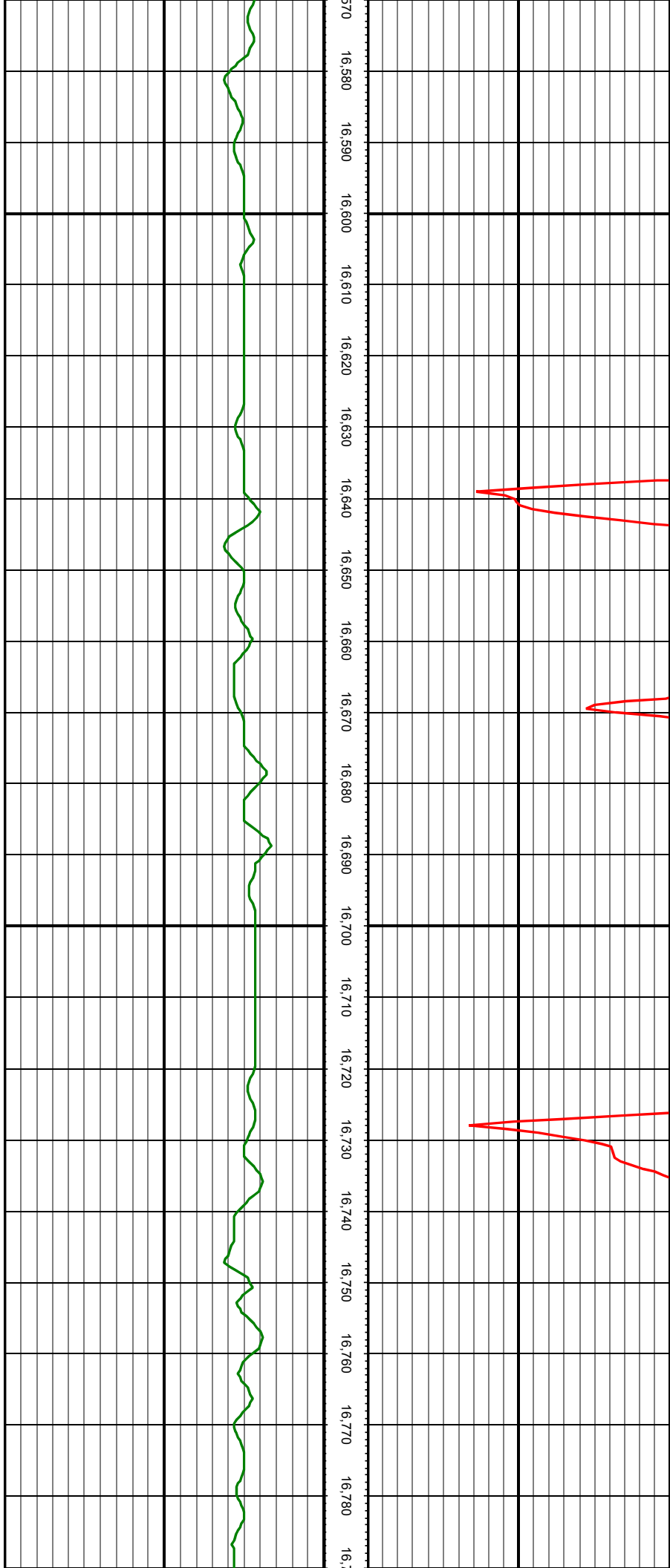
MD: 16143.00 INC: 88.04 AZ: 170.60 TVD: 7974.51 VS: 7645.28

MD: 16232.00 INC: 85.14 AZ: 172.44 TVD: 7979.80 VS: 7734.05

MD: 16321.00 INC: 84.18 AZ: 174.73 TVD: 7988.08 VS: 7822.42



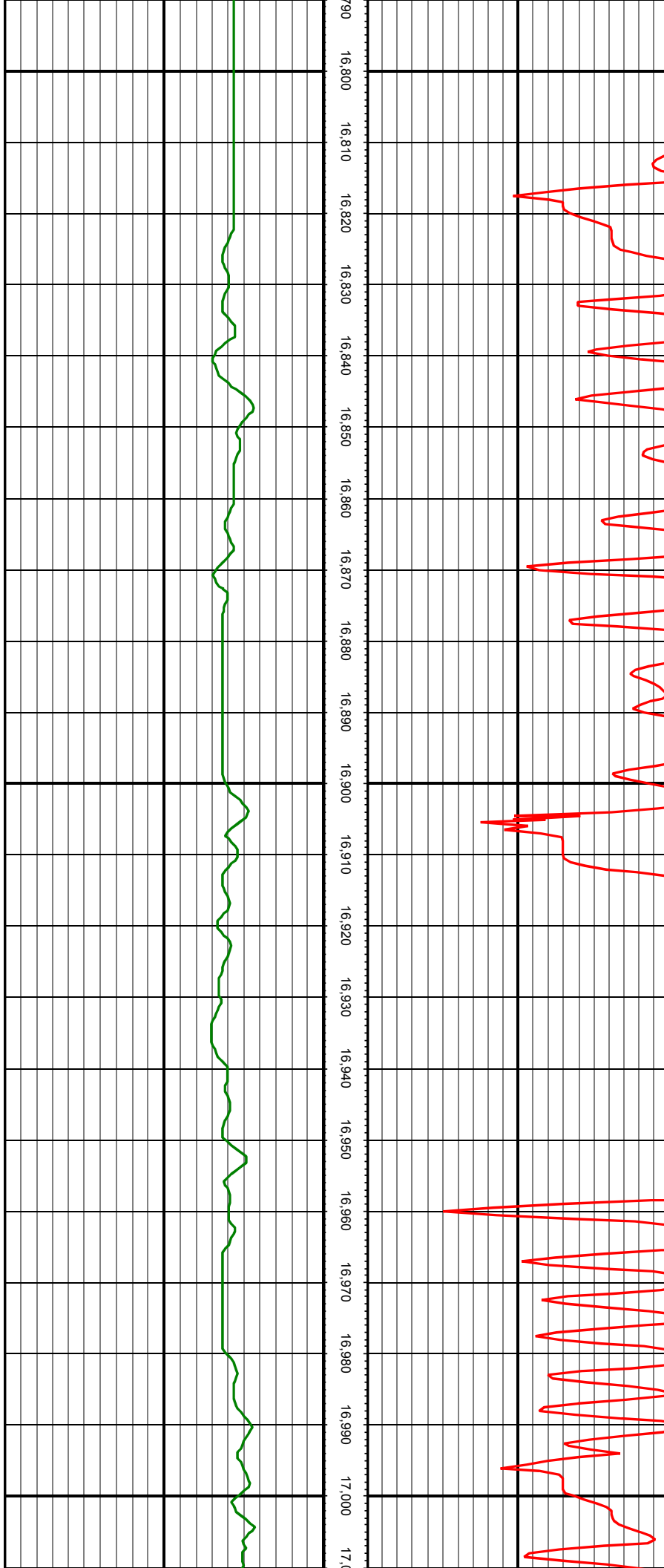




MD: 16588.00 INC: 89.14 AZ: 180.79 TVD: 8000.91 VS: 8084.74

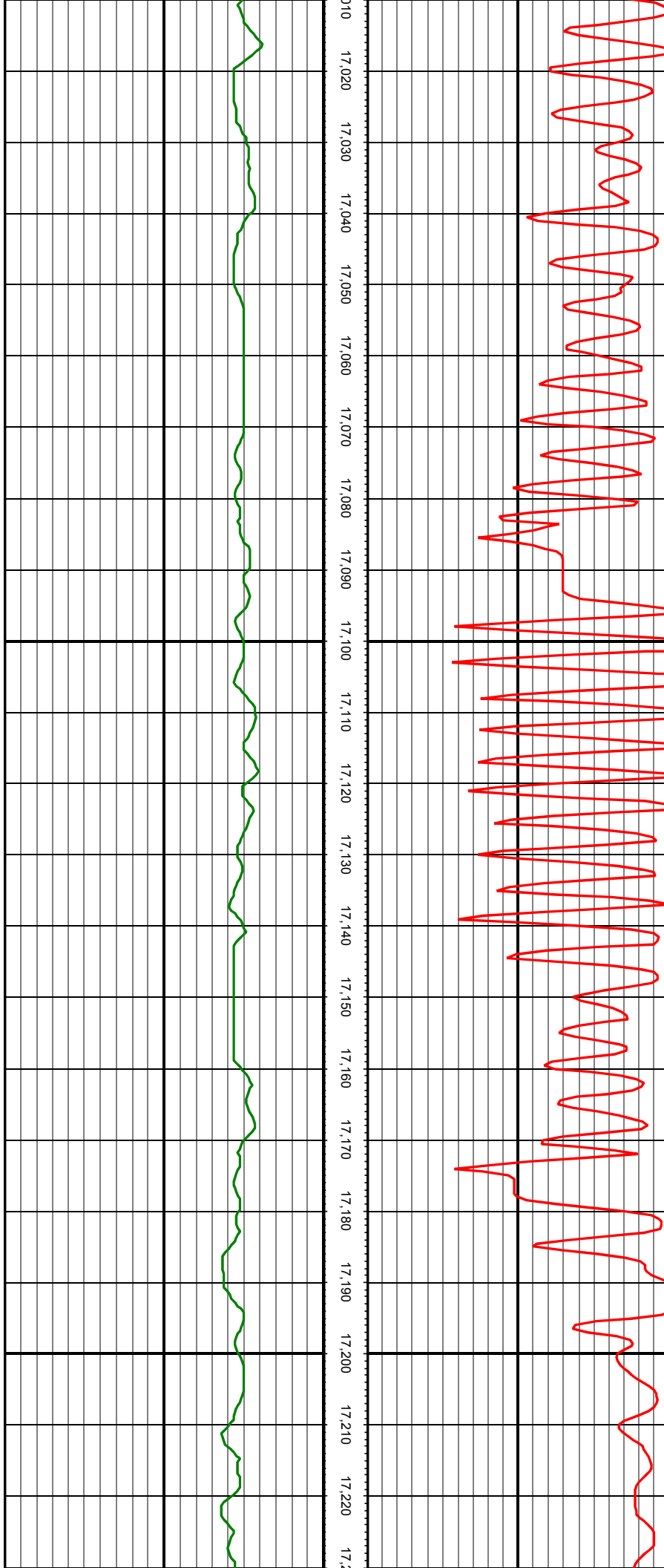
MD: 16678.00 INC: 89.19 AZ: 180.44 TVD: 8002.22 VS: 8173.01

MD: 16767.00 INC: 89.19 AZ: 180.88 TVD: 8003.48 VS: 8260.30



MD: 16856.00 INC: 89.23 AZ: 180.35 TVD: 8004.70 VS: 8347.59

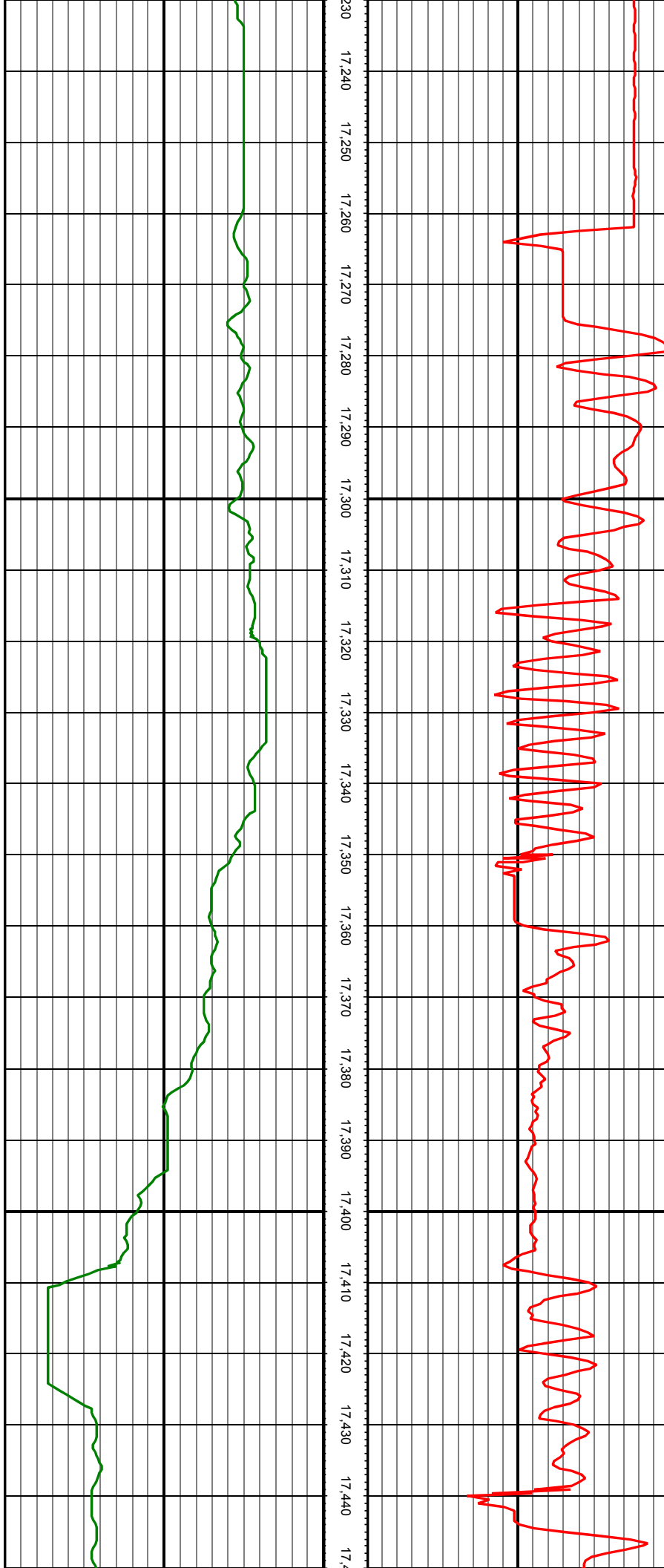
MD: 16945.00 INC: 89.23 AZ: 180.26 TVD: 8005.90 VS: 8434.98



MD: 17034.00 INC: 89.23 AZ: 180.44 TVD: 8007.10 VS: 8522.35

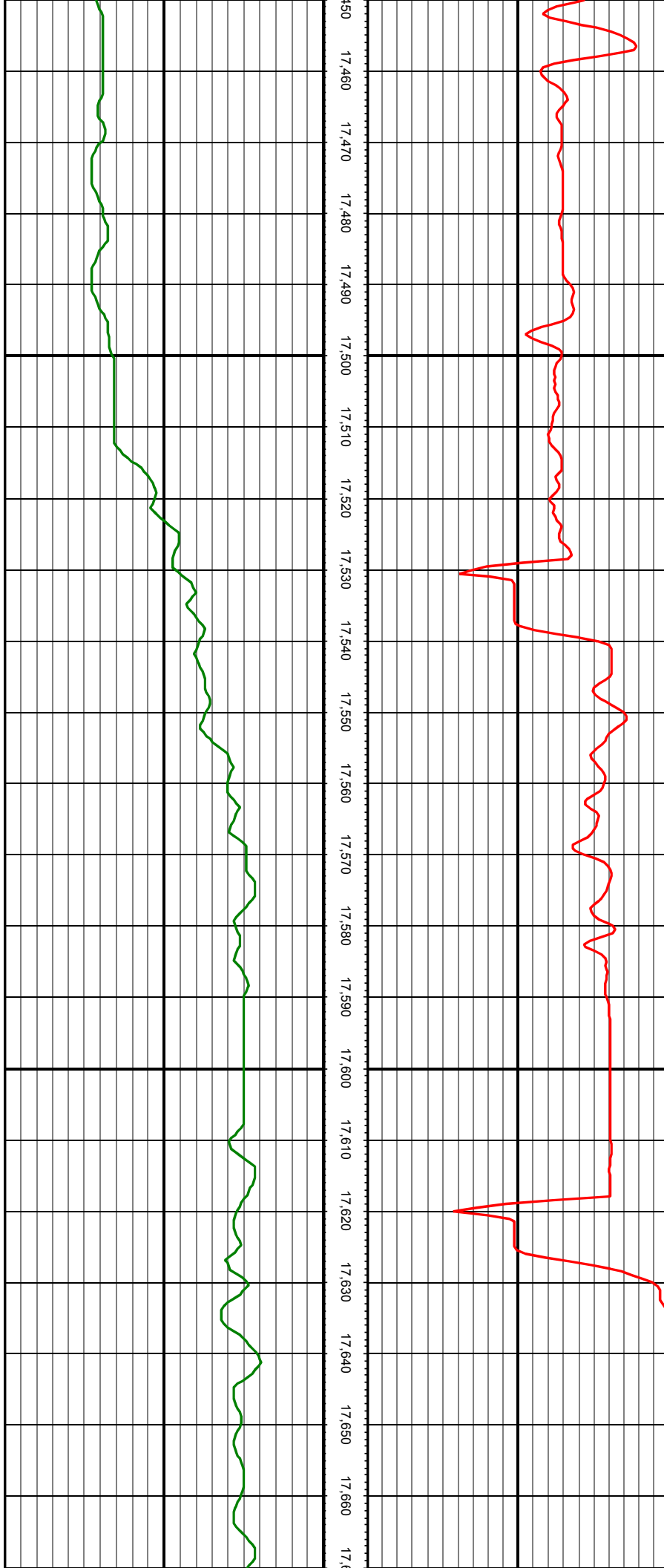
MD: 17123.00 INC: 89.19 AZ: 179.91 TVD: 8008.32 VS: 8609.78

MD: 17212.00 INC: 89.19 AZ: 180.79 TVD: 8009.58 VS: 8697.15



MD: 17301.00 INC: 90.20 AZ: 182.64 TVD: 8010.05 VS: 8784.10

MD: 17390.00 INC: 90.81 AZ: 184.31 TVD: 8009.27 VS: 8870.42

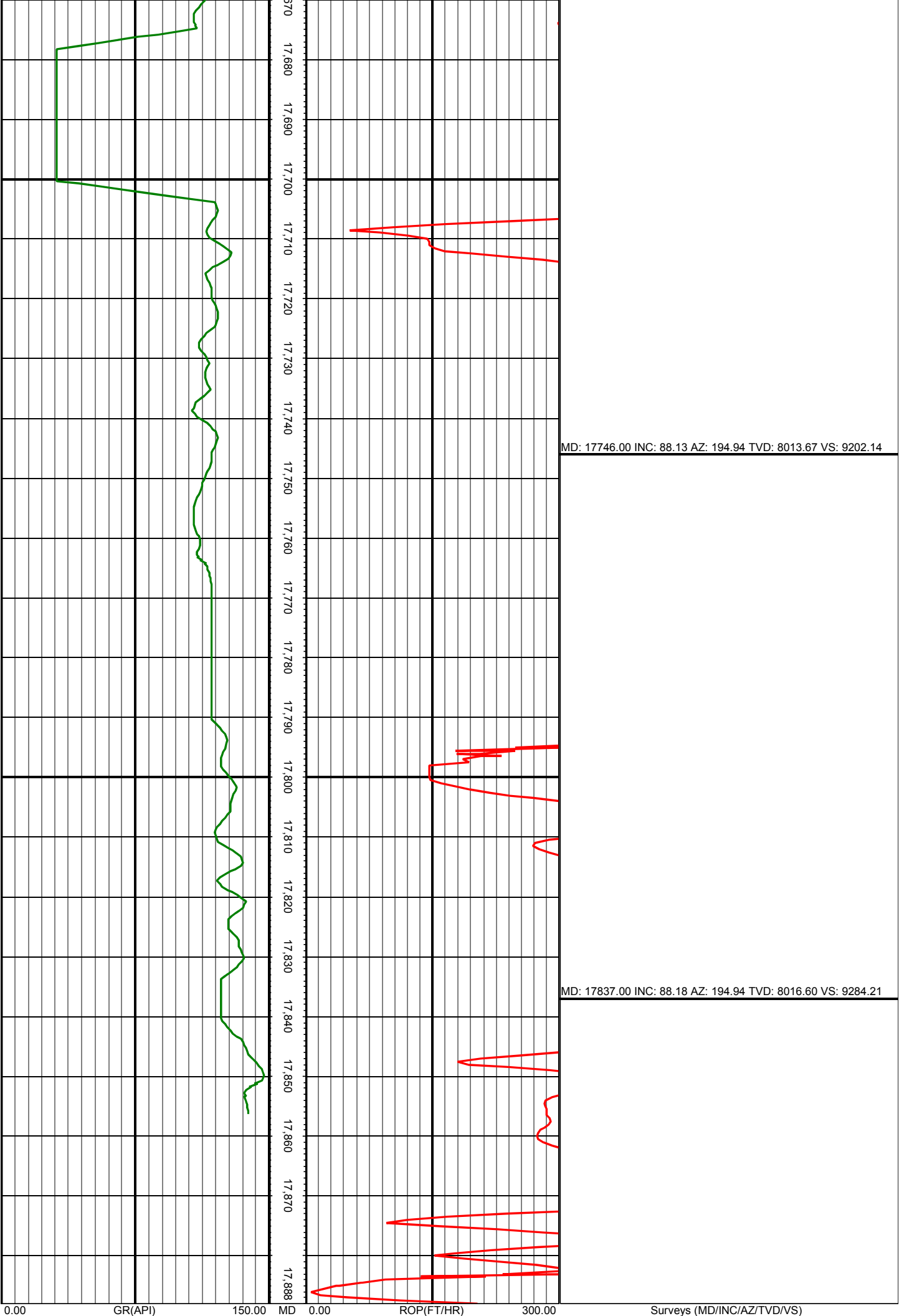


17,450 17,460 17,470 17,480 17,490 17,500 17,510 17,520 17,530 17,540 17,550 17,560 17,570 17,580 17,590 17,600 17,610 17,620 17,630 17,640 17,650 17,660 17,670

MD: 17479.00 INC: 90.90 AZ: 186.68 TVD: 8007.94 VS: 8955.93

MD: 17568.00 INC: 88.62 AZ: 190.20 TVD: 8008.31 VS: 9040.04

MD: 17657.00 INC: 88.18 AZ: 194.85 TVD: 8010.80 VS: 9121.84



150.00

2

300.00

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