



Cathedral Energy Services
1949 North Pyrite Road
Casper, Wyoming 82604

145362

5":100' - MD

12/9/2014 2:35:33 PM

CATHEDRAL

Oper. Company: EnCana Oil & Gas (USA) Inc.

Country: U.S.A.

State / Province: Colorado

County / Parish: Weld

Started: 10/14/2014 09:00 AM

API/UWI: 05-123-36983

Field: Wattenberg (Niobrara)

Well: Billings 3A-18H-L368

Rig: Patterson Drilling 326

Ended: 10/22/2014 02:00 PM

Gamma Ray
Section Plane: 90.00
Magnetic North: 8.55
Gamma Attenuation Factor: 2.753
Gamma Averaging: 7 %

Personnel

Day Hand: Michael Andrew

Night Hand: Jim Minter

Comp. Emp: Norman McCreary

Maximum Temperature: 220 °f

Location

Latitude: 40.222731

Longitude: -105.051740

Elev. GL: 5156

Elev. DF:

Elev. KB: 5188

Log and Survey Depths Relative to Kelly Bushing (KB) Depth

Hole Data

Size	From	To
12-1/4	0	880
8-3/4	880	7540
6-1/8	7540	14040

Casing Data

Size	From	To
9-5/8	0	880
7	0	7540
4-1/2	0	14040

Bit Sizes

Size	From	To
12-1/4	0	880
8-3/4	880	7540
6-1/8	7540	14040

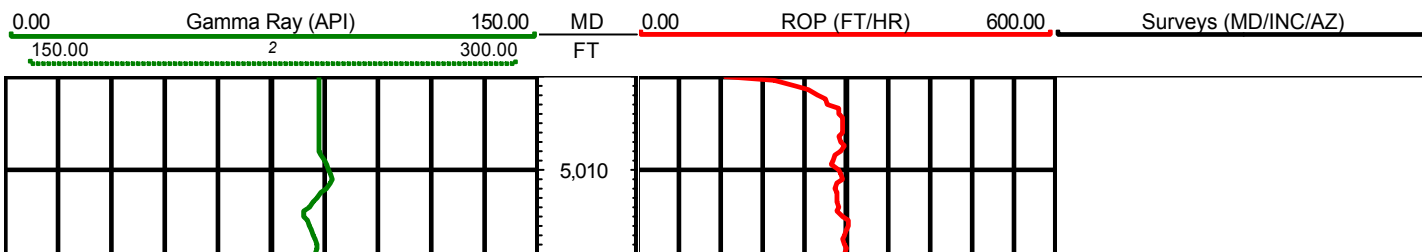
Mud Data

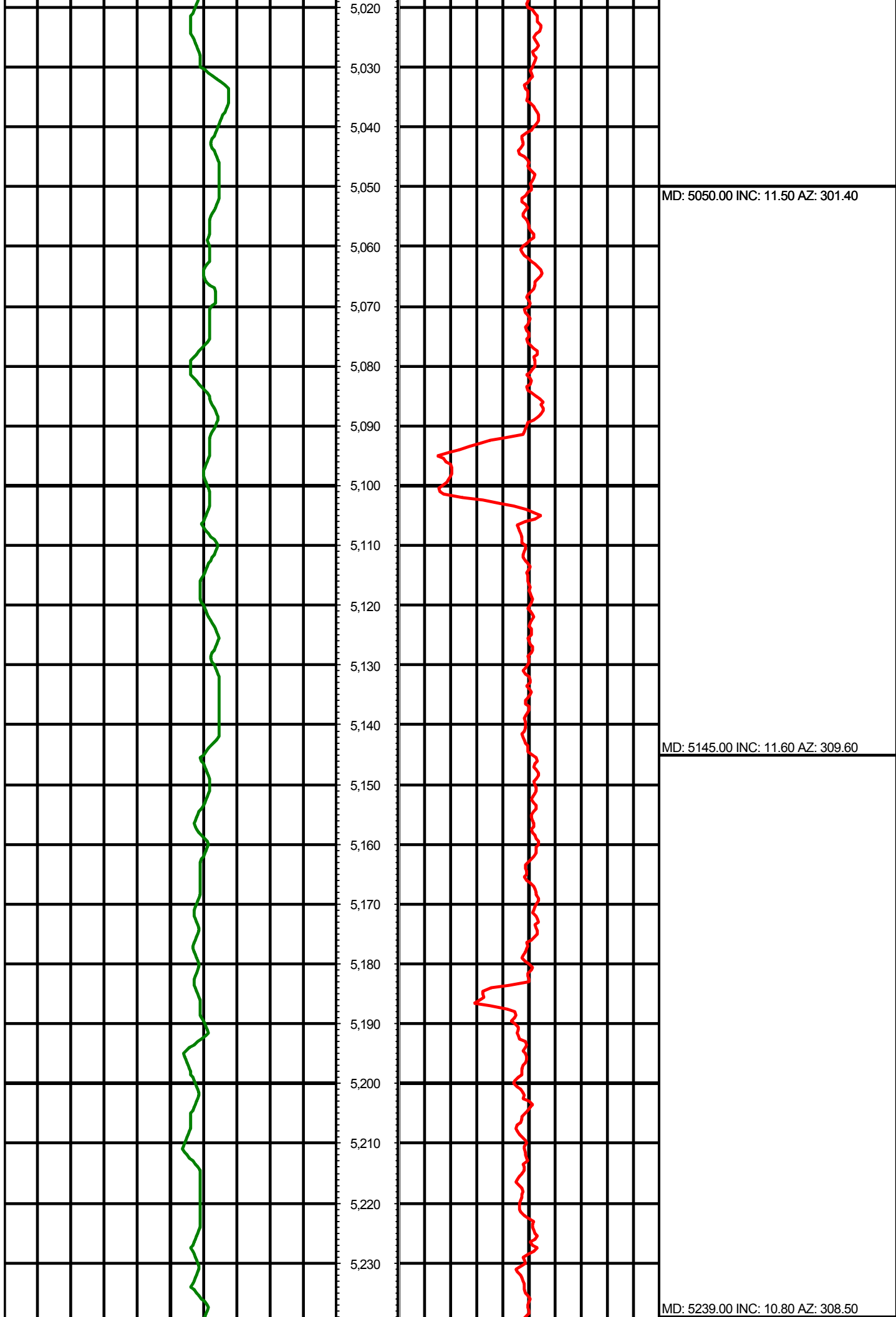
Type	Weight	Density	Viscosity	Rm	Rmf	Rmc	From	To
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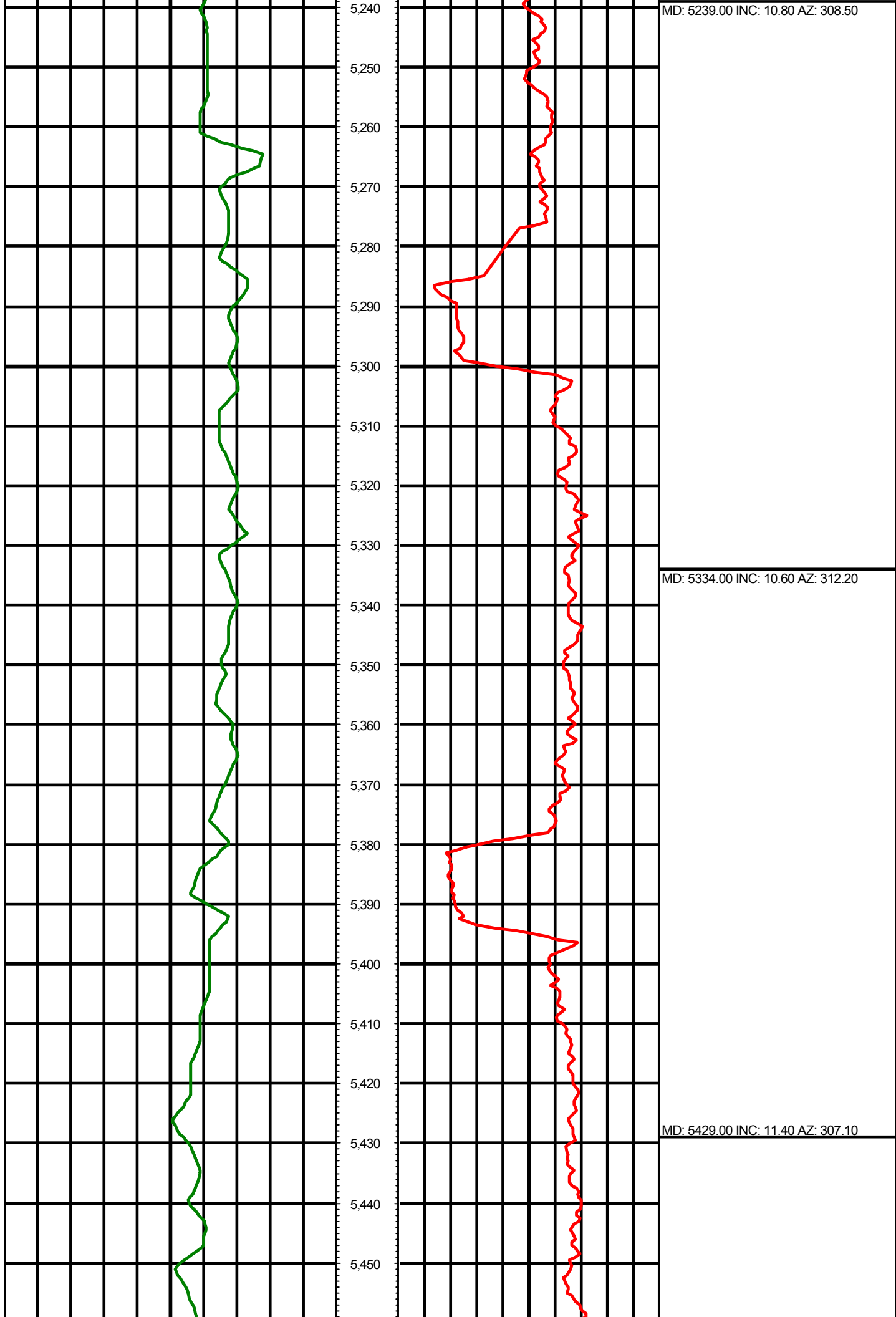
Tool Run Data

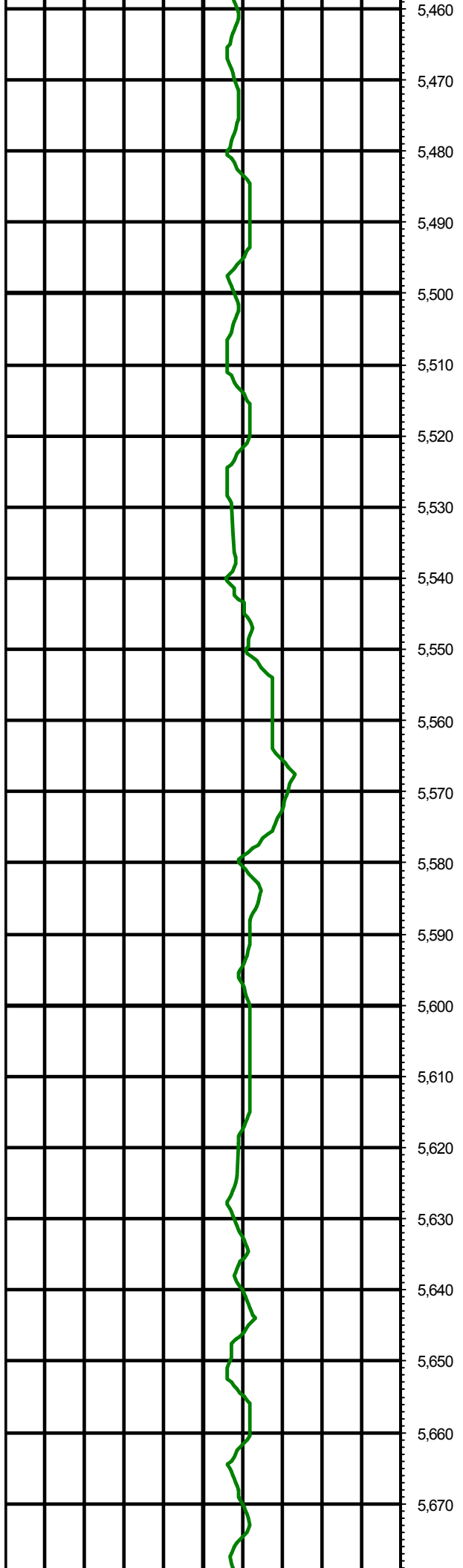
Serial Number	Gamma Offset	Resist. Offset	Start Time	Start Depth	End Time	End Depth
1461	32.51	0	10/13/2014 6:00:34 PM	1632	10/15/2014 8:30:34 PM	7540
2013	40.19	0	10/17/2014 1:00:29 AM	7540	10/19/2014 1:30:29 PM	11835
1461	37.39	0	10/19/2014 2:00:20 PM	11835	10/22/2014 2:00:20 PM	14040

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.

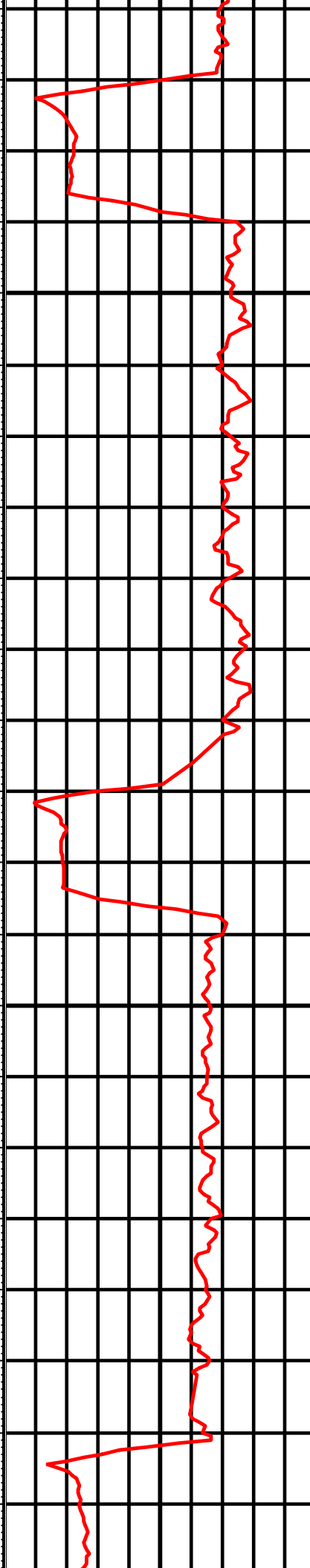






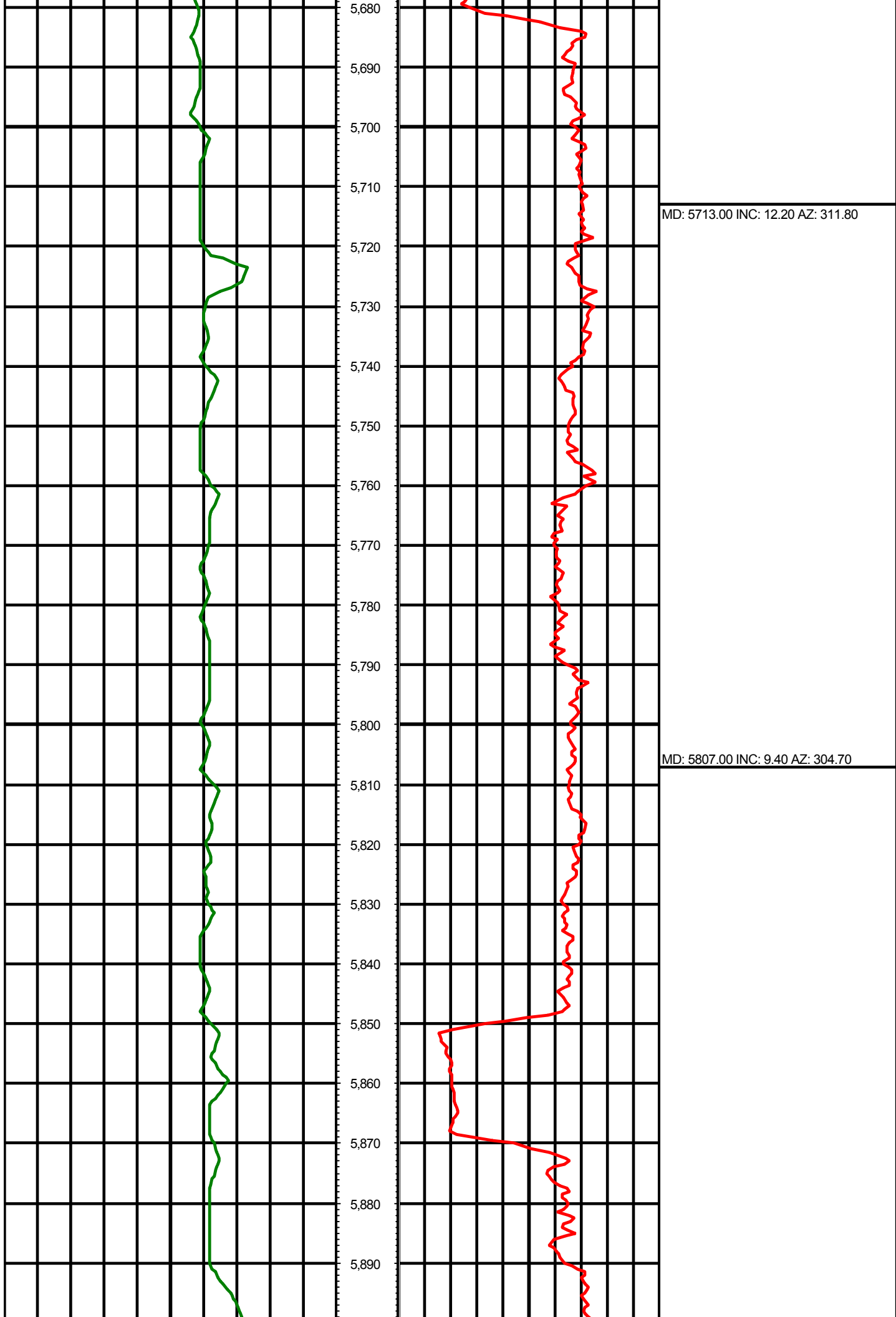


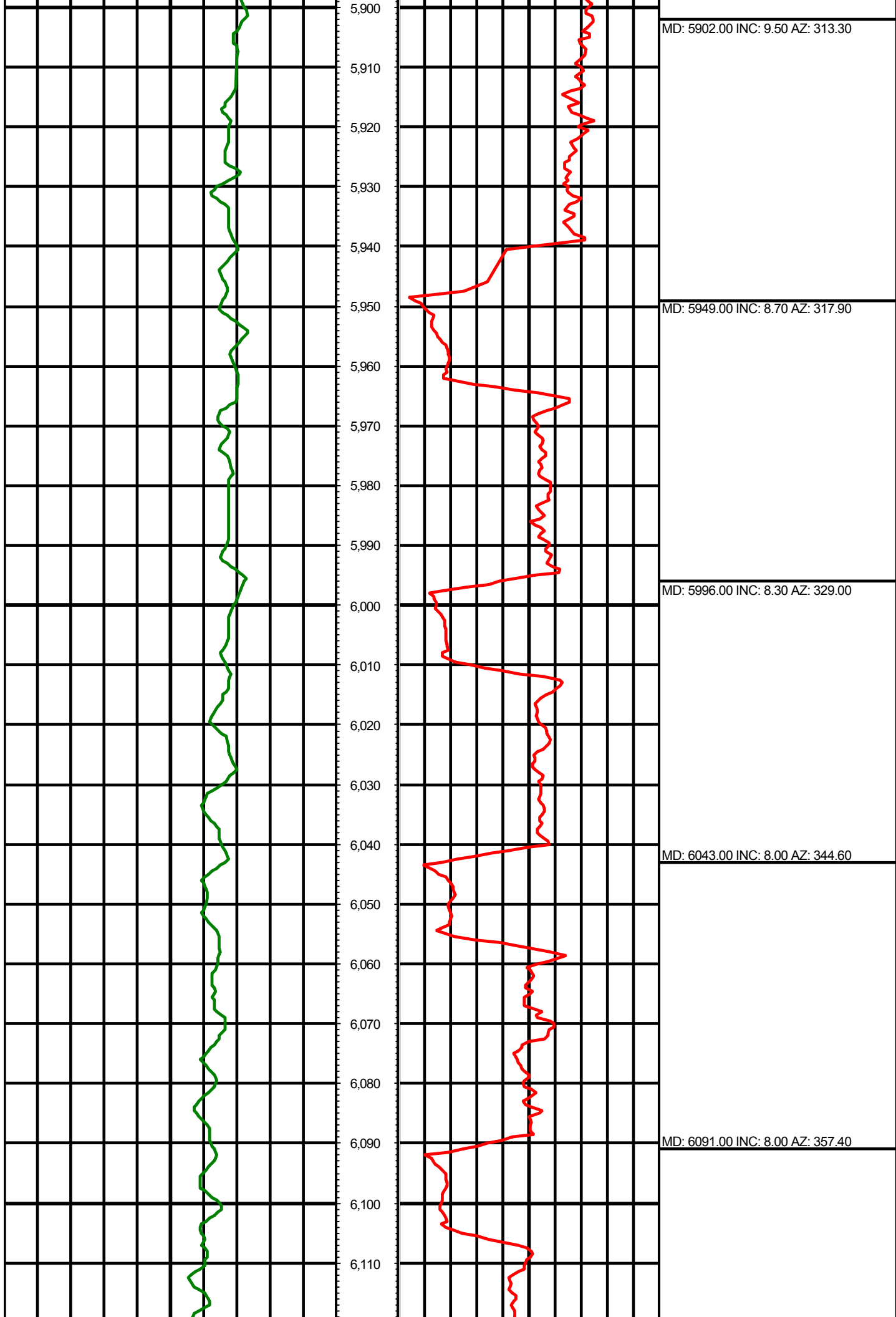
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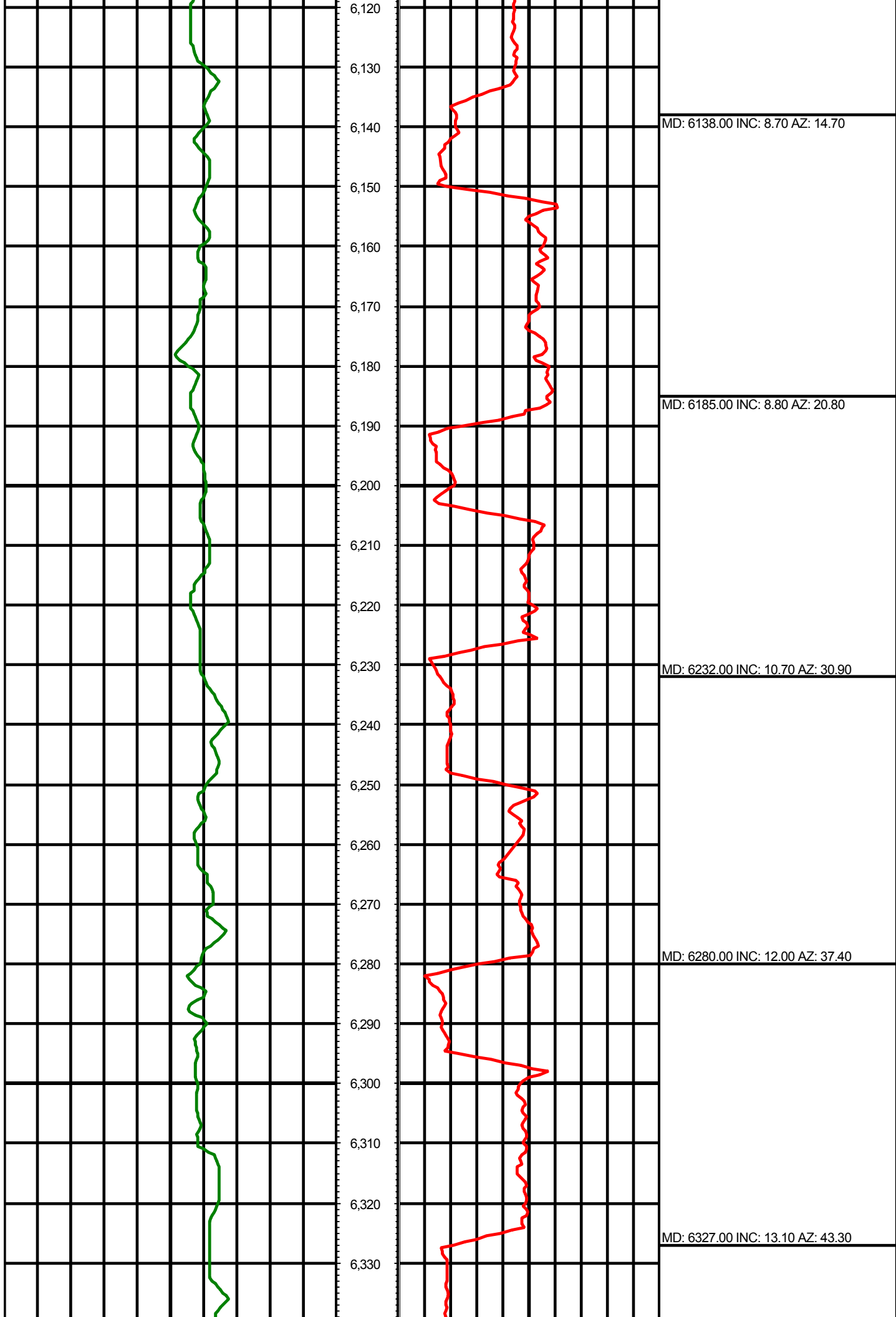


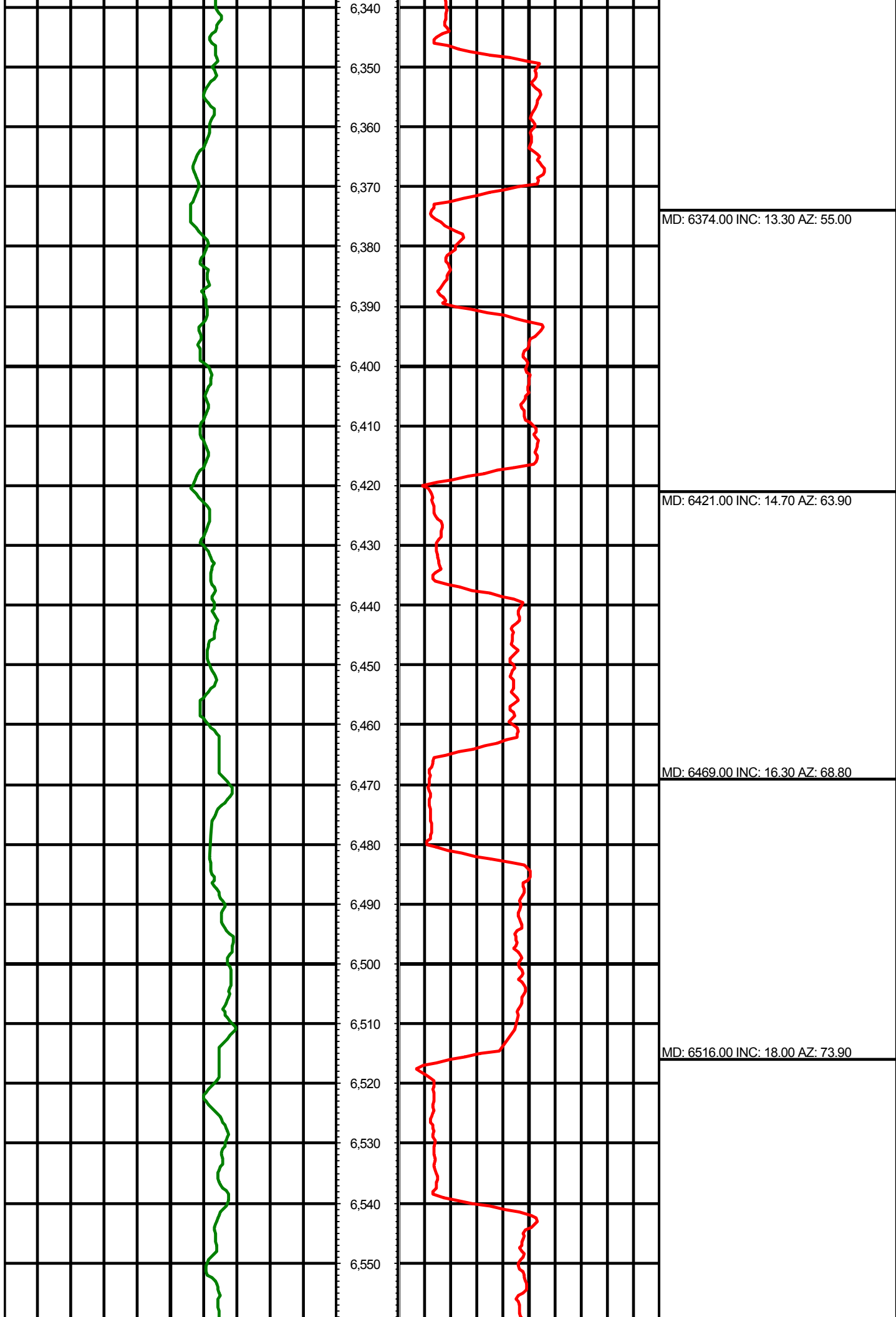
MD: 5523.00 INC: 12.00 AZ: 304.60

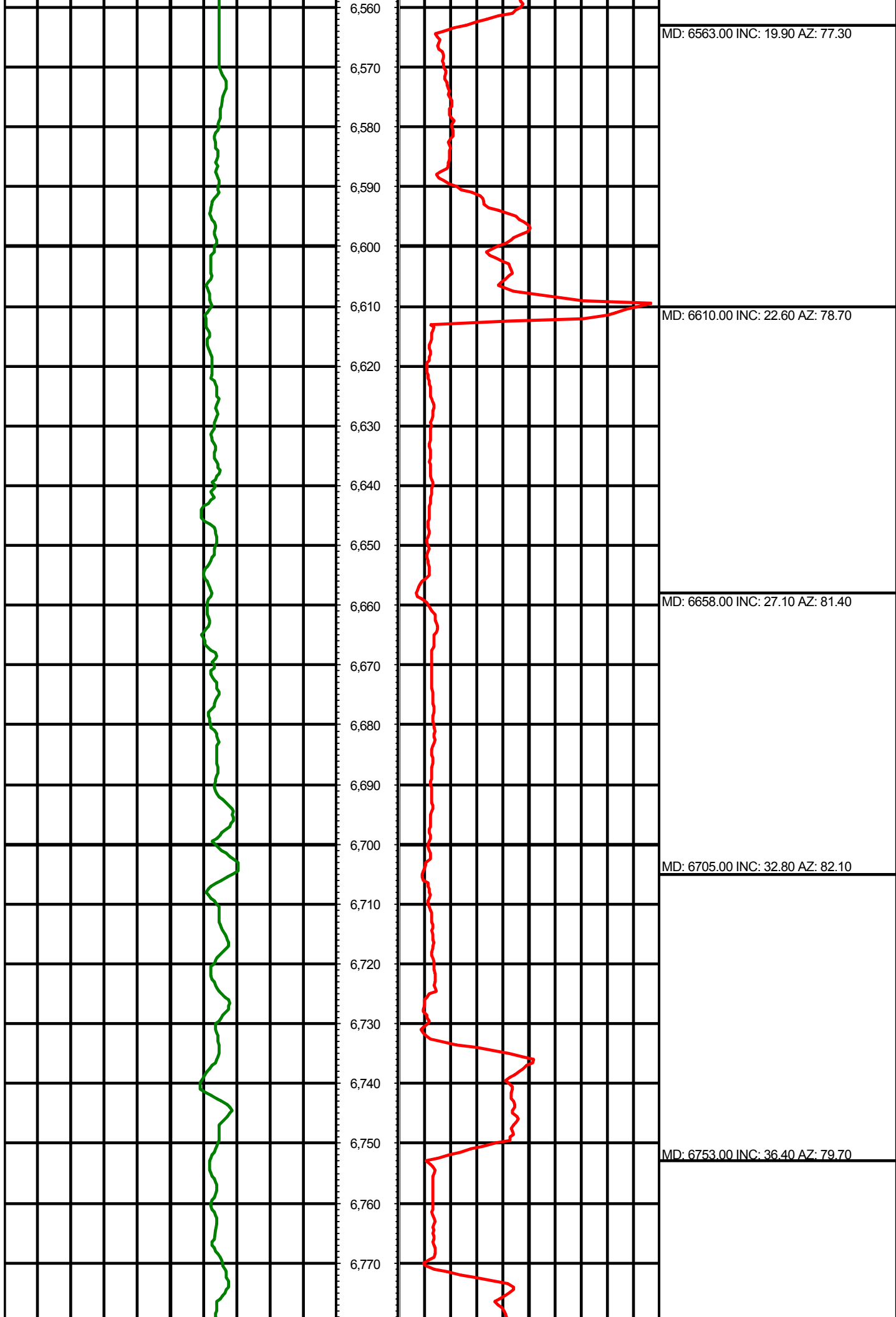
MD: 5618.00 INC: 11.30 AZ: 307.30

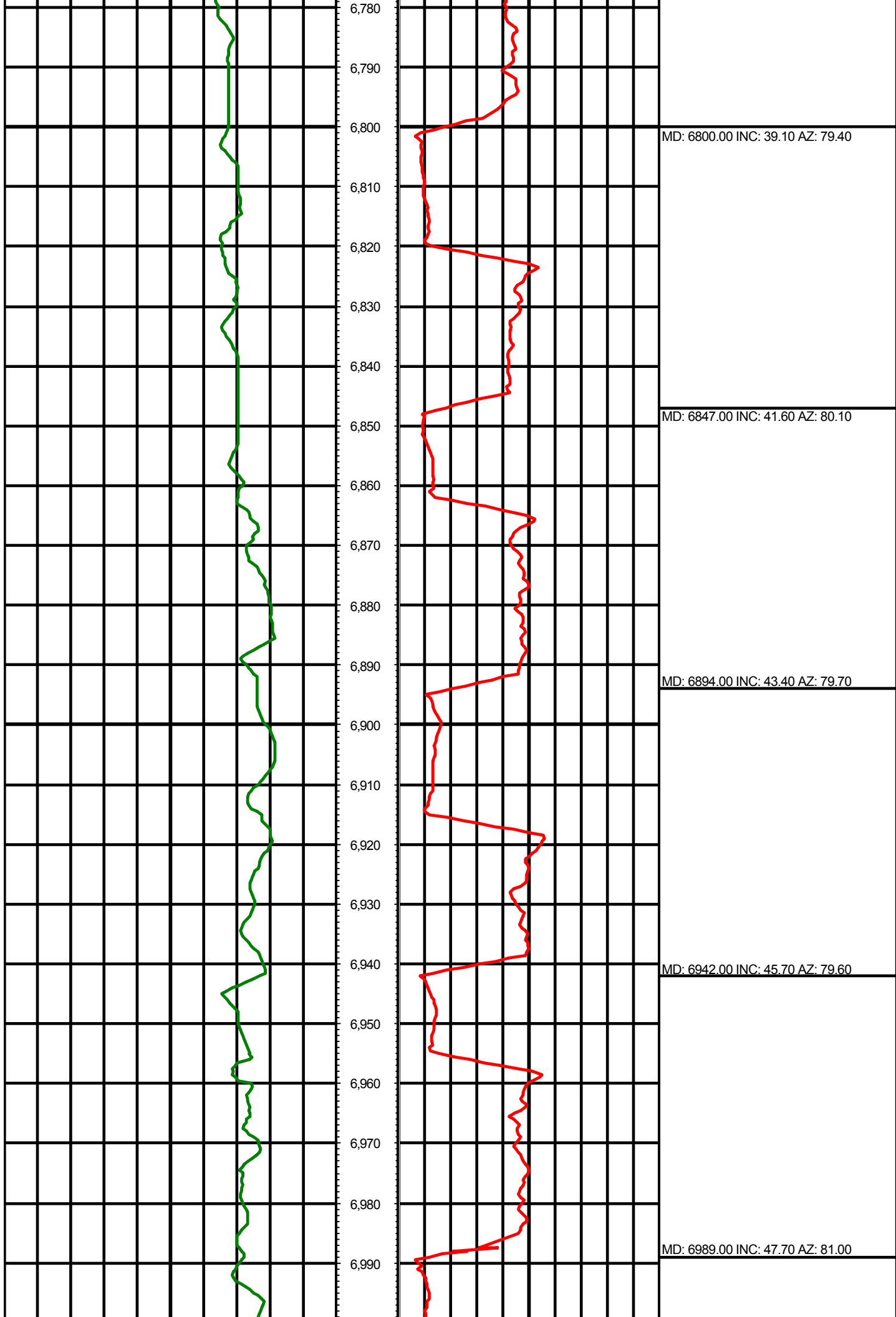


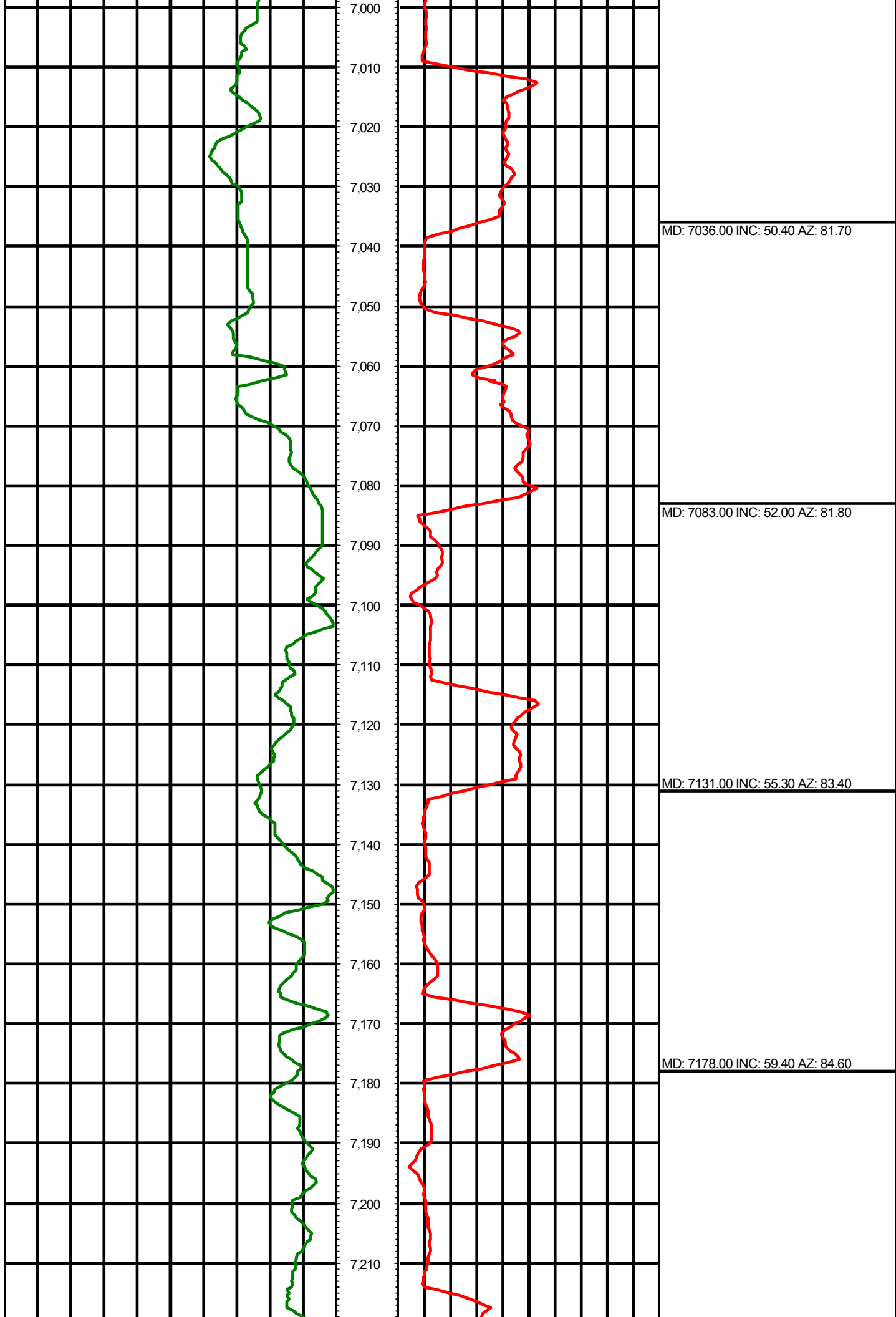


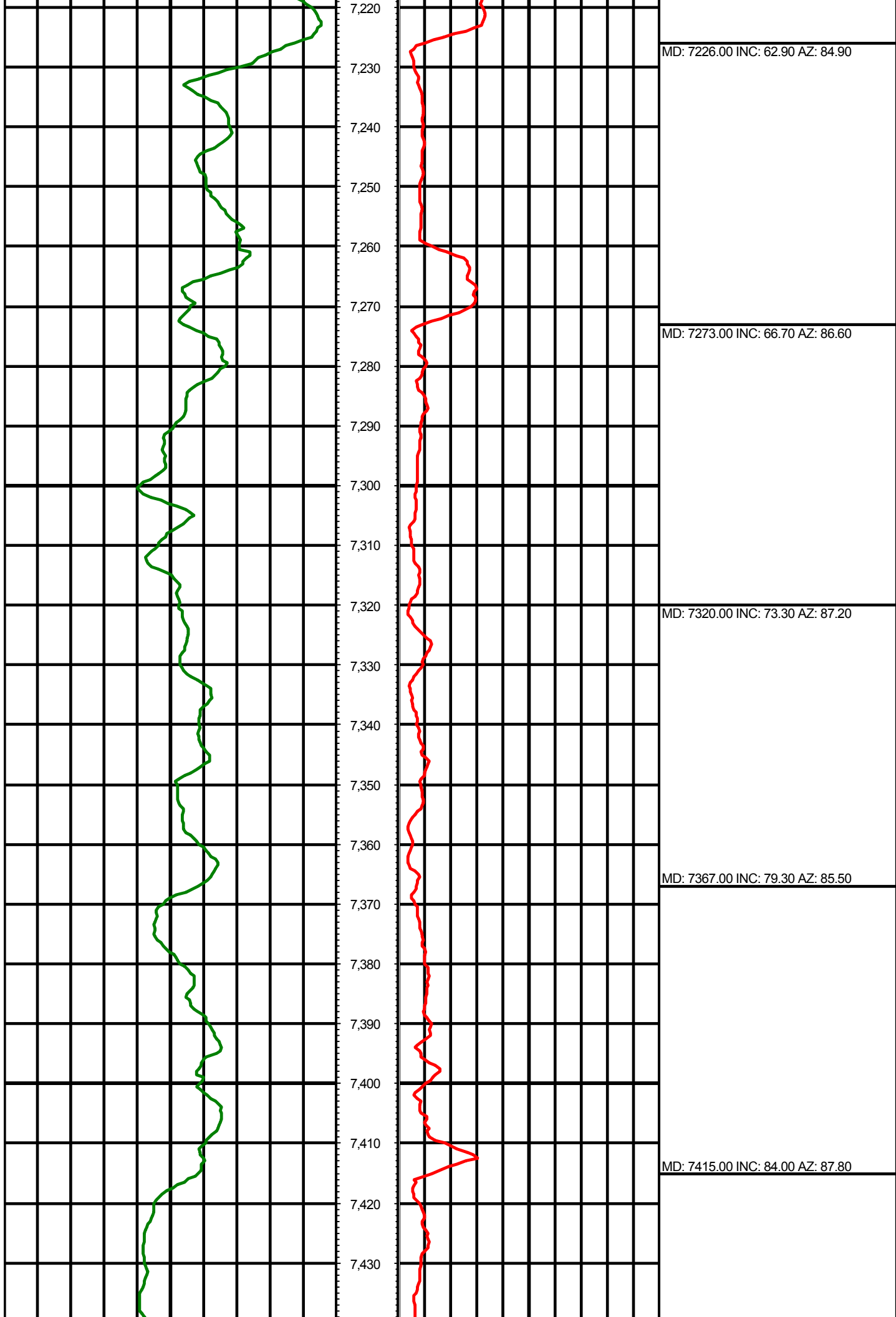


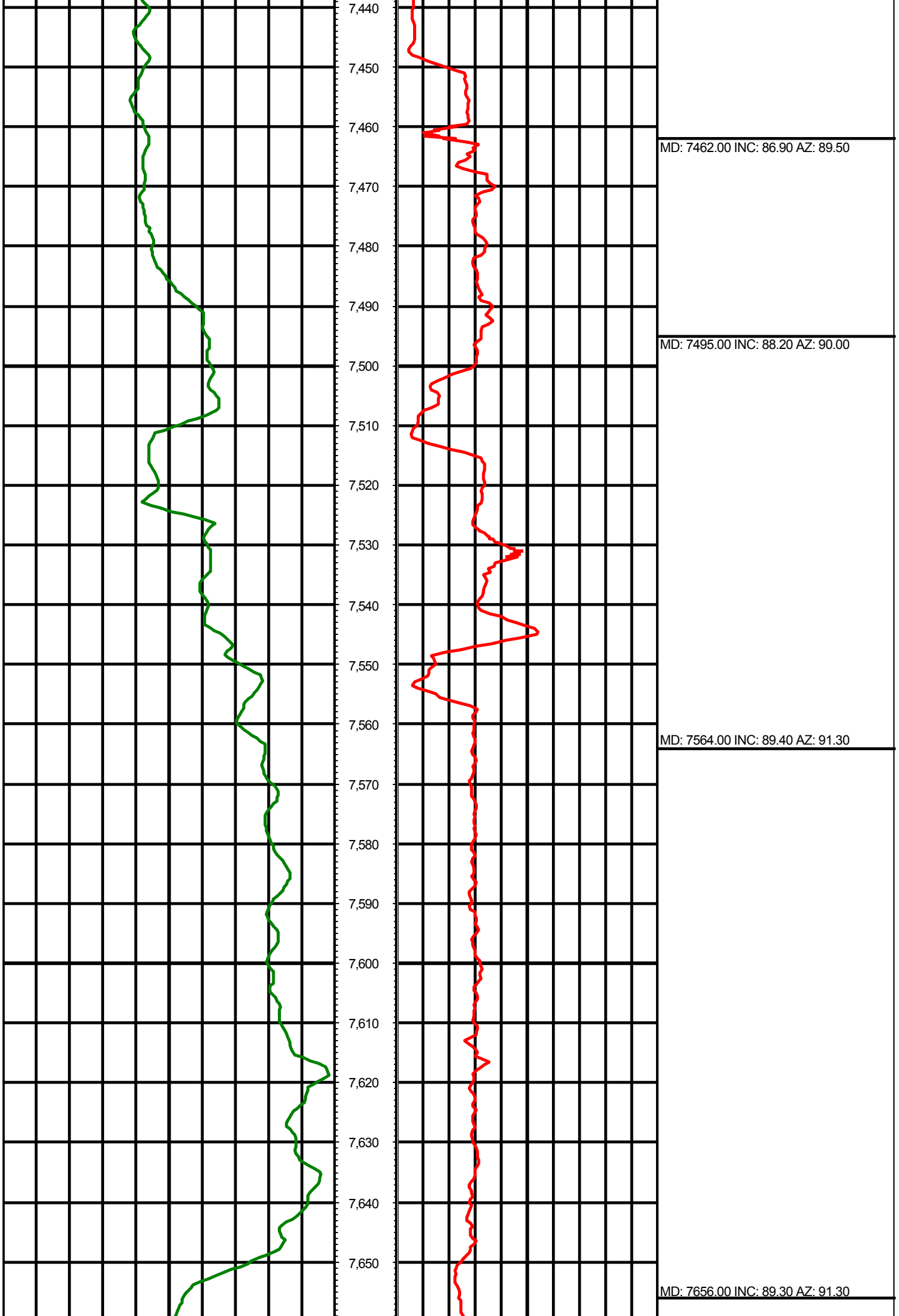


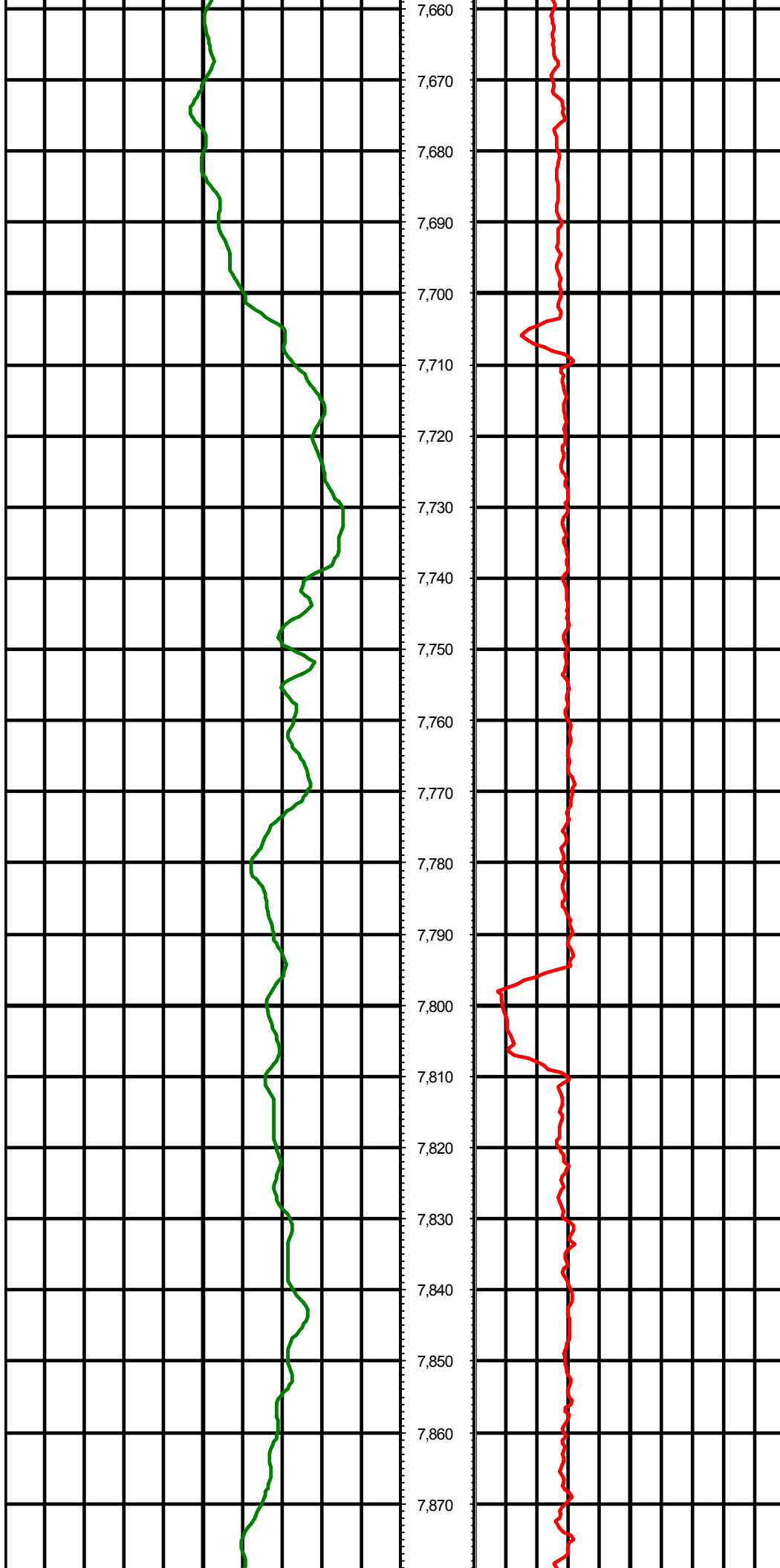






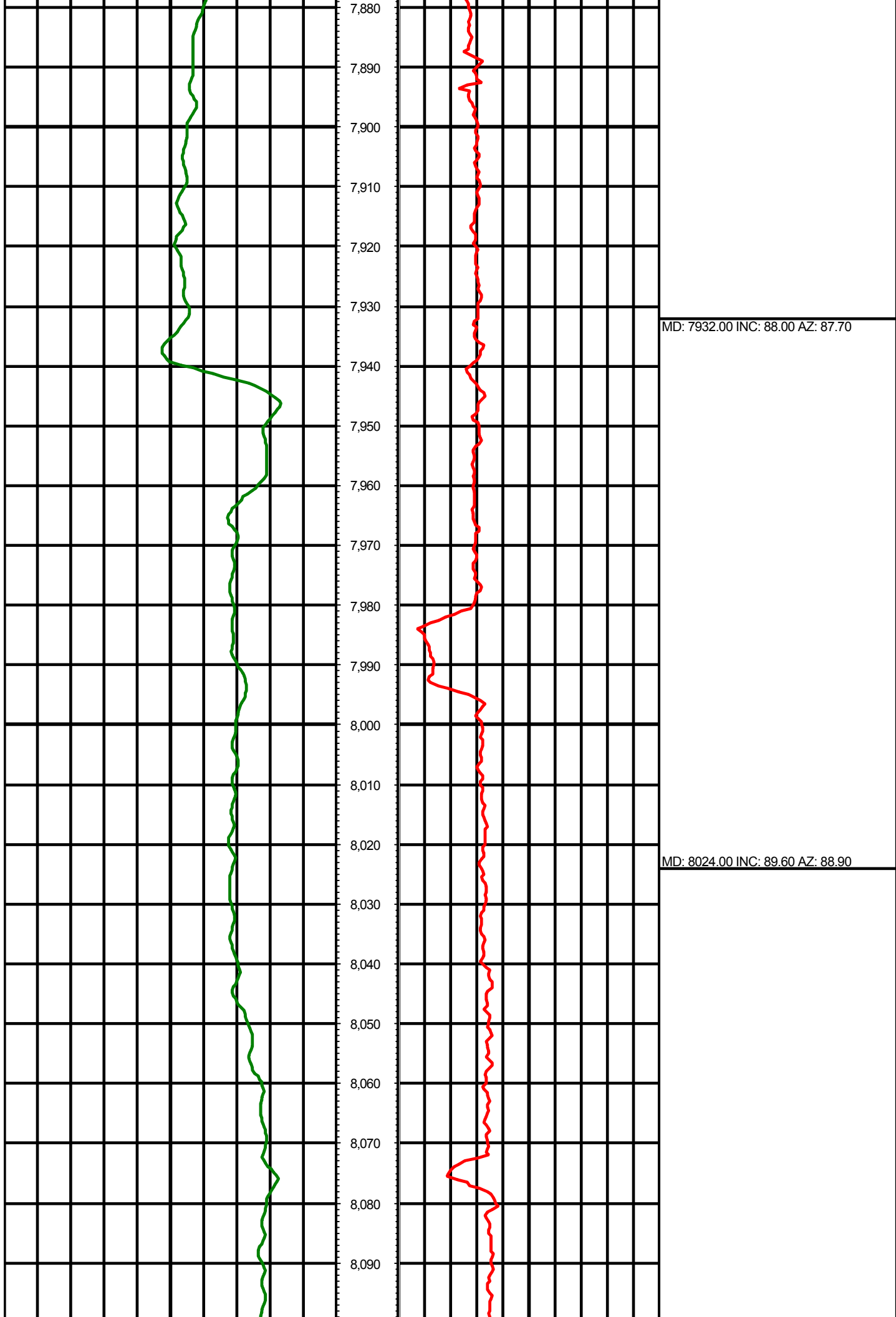


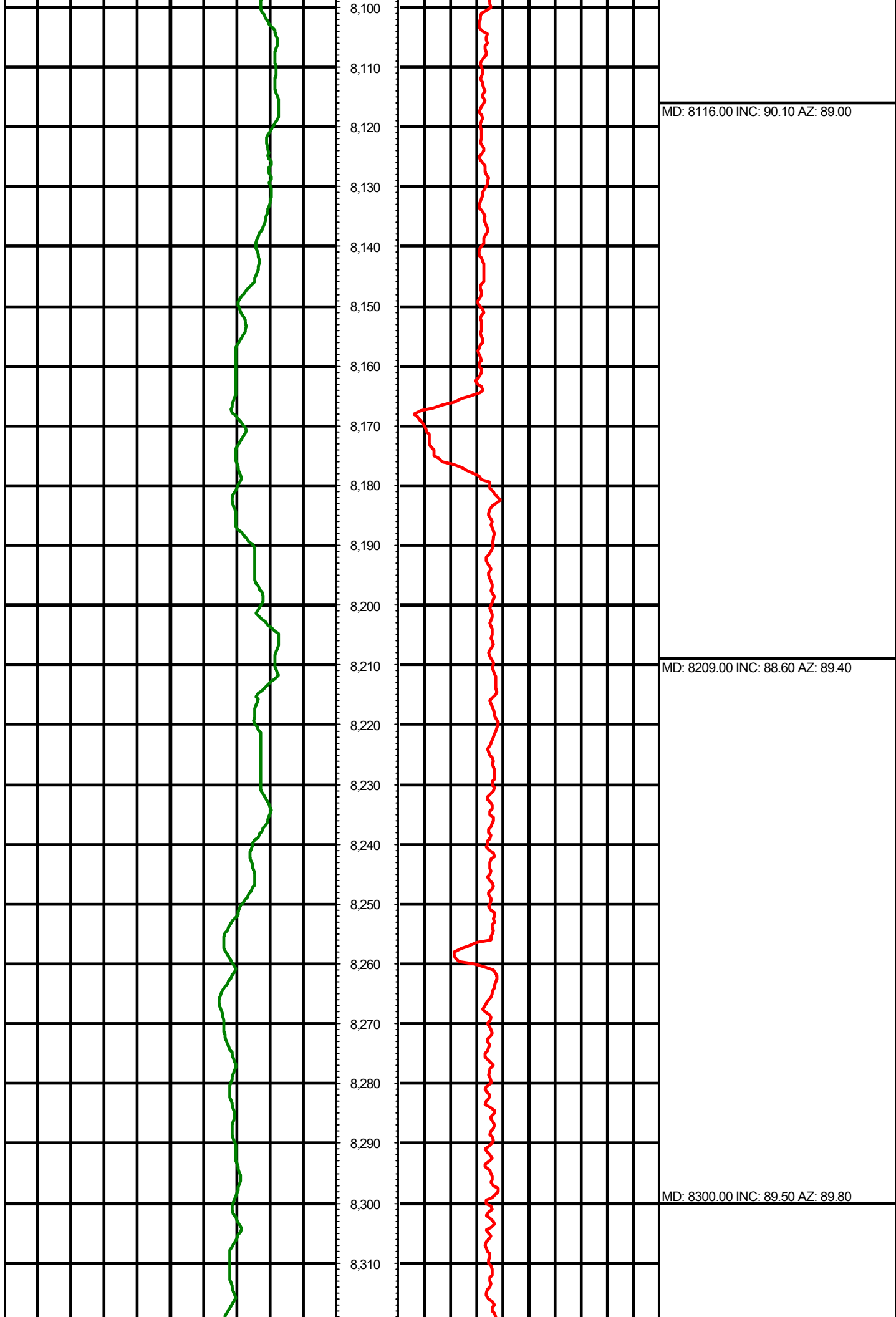




MD: 7747.00 INC: 89.30 AZ: 91.20

MD: 7840.00 INC: 88.40 AZ: 89.10

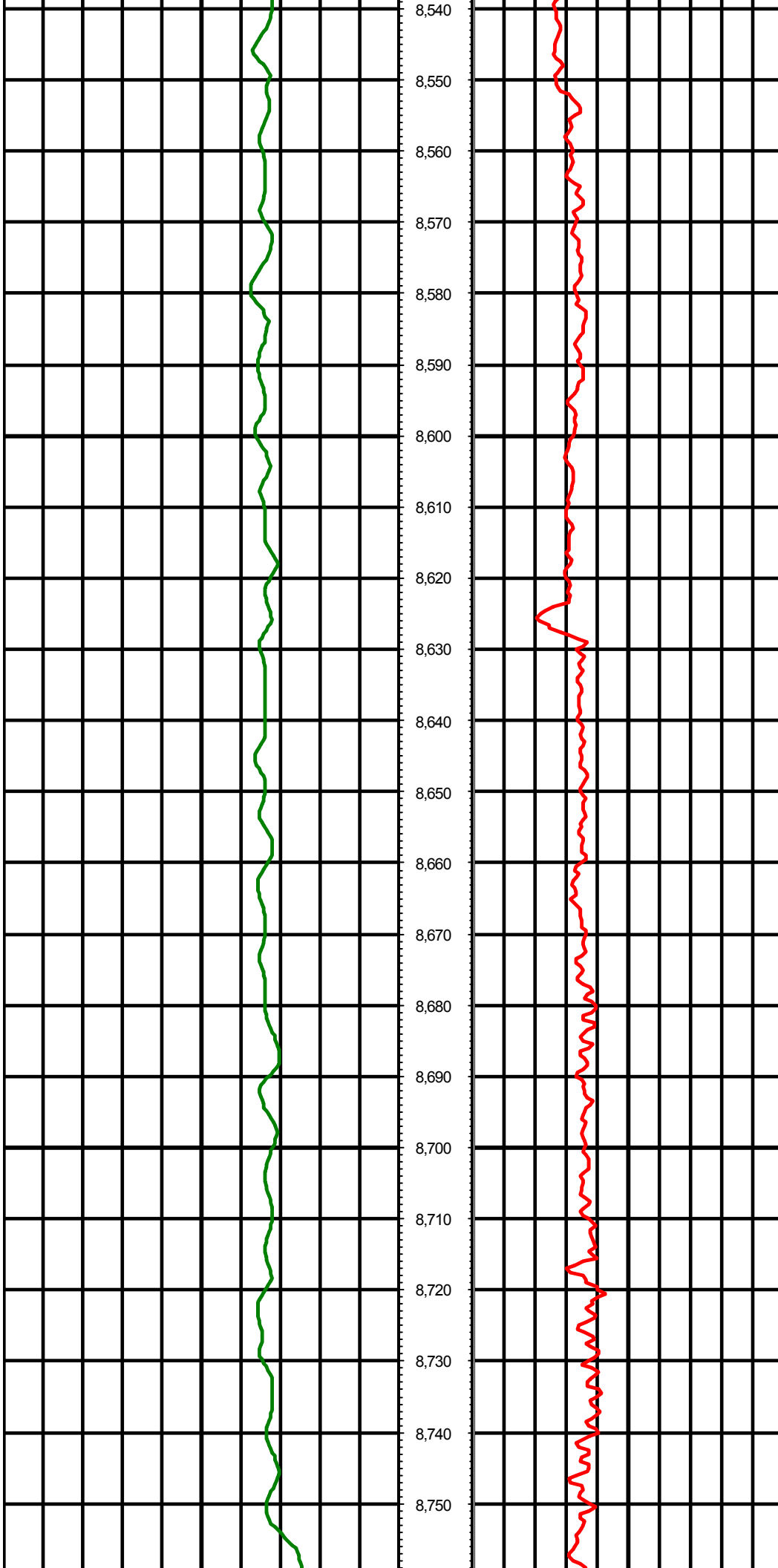






MD: 8392.00 INC: 90.00 AZ: 89.60

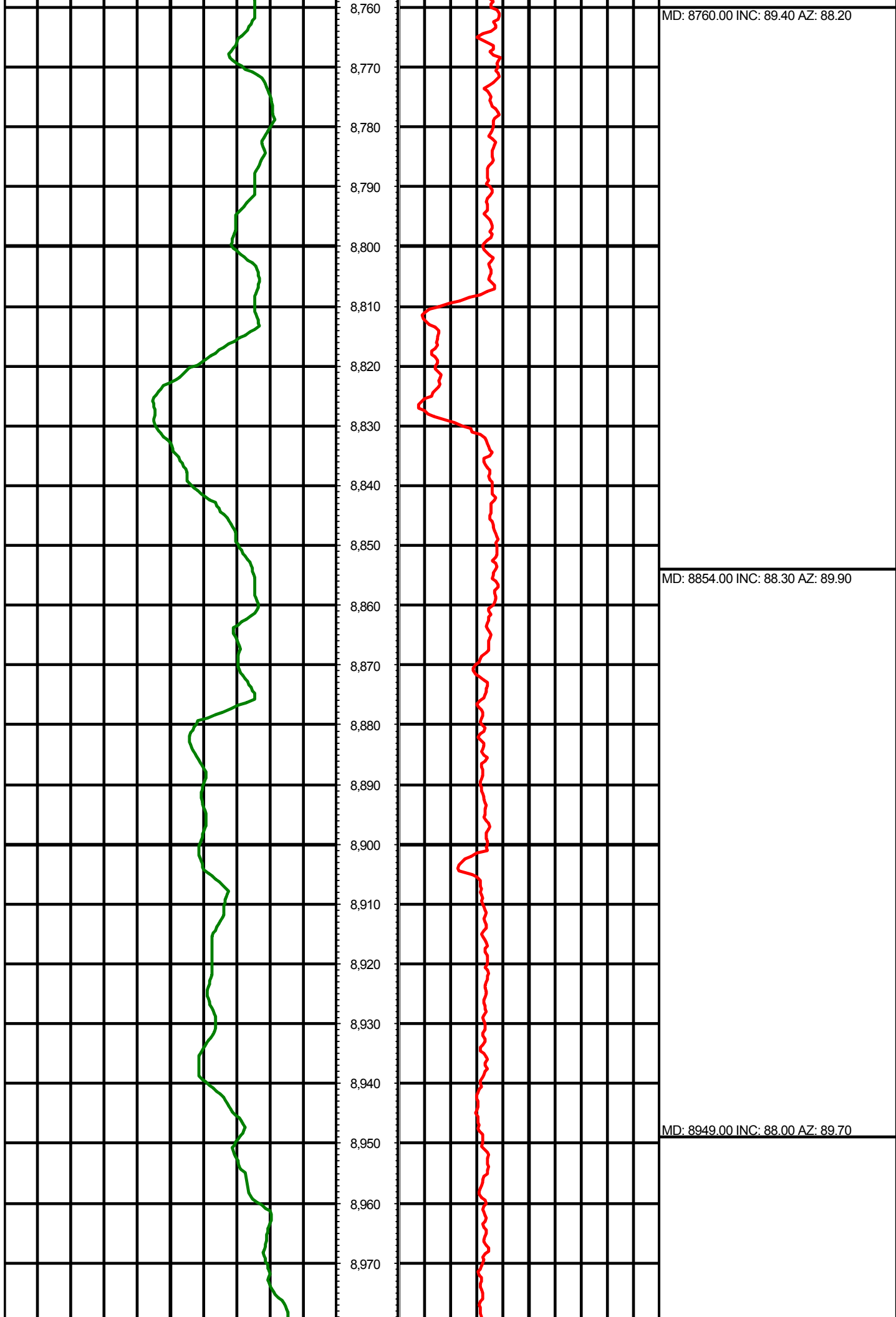
MD: 8484.00 INC: 89.50 AZ: 89.90

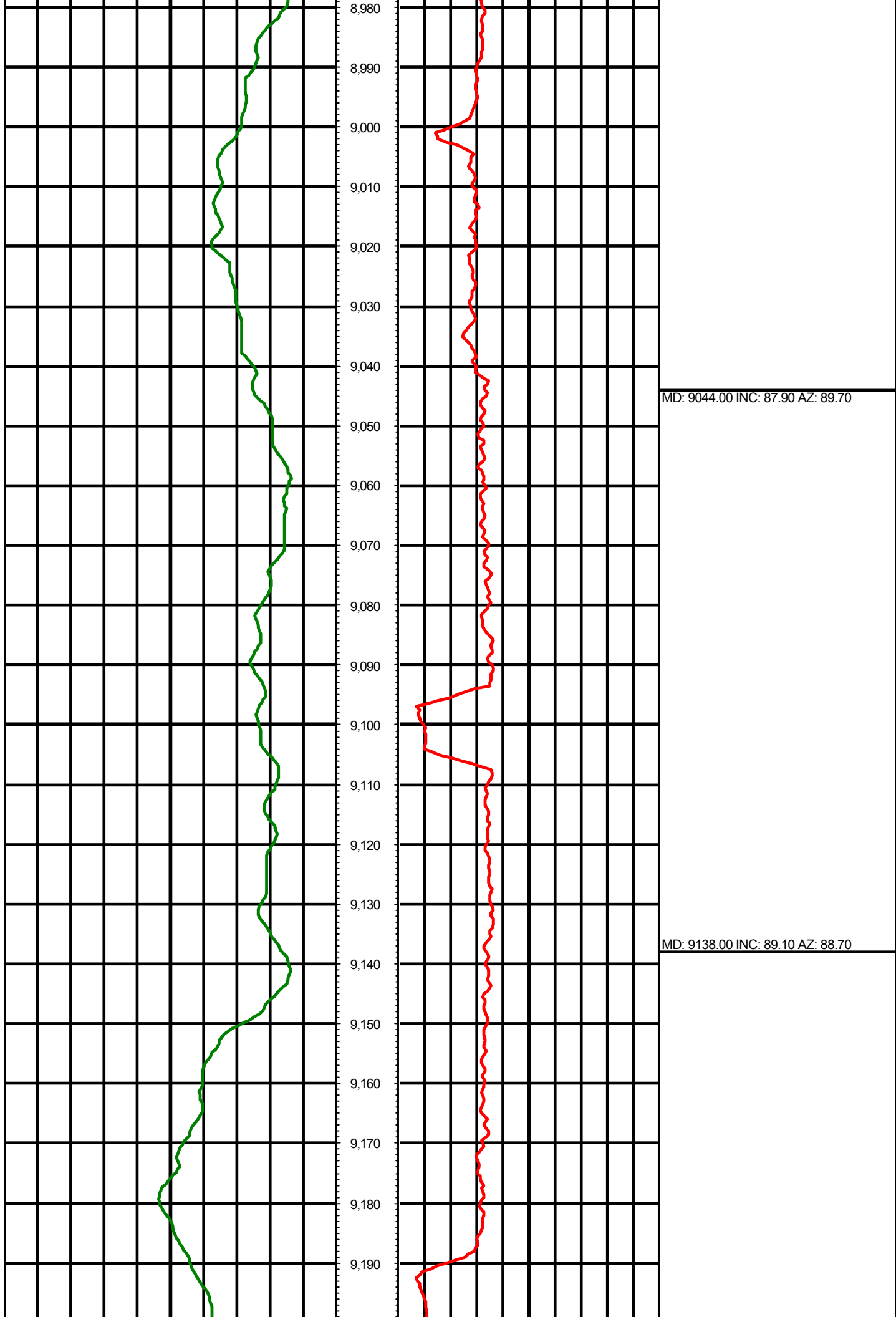


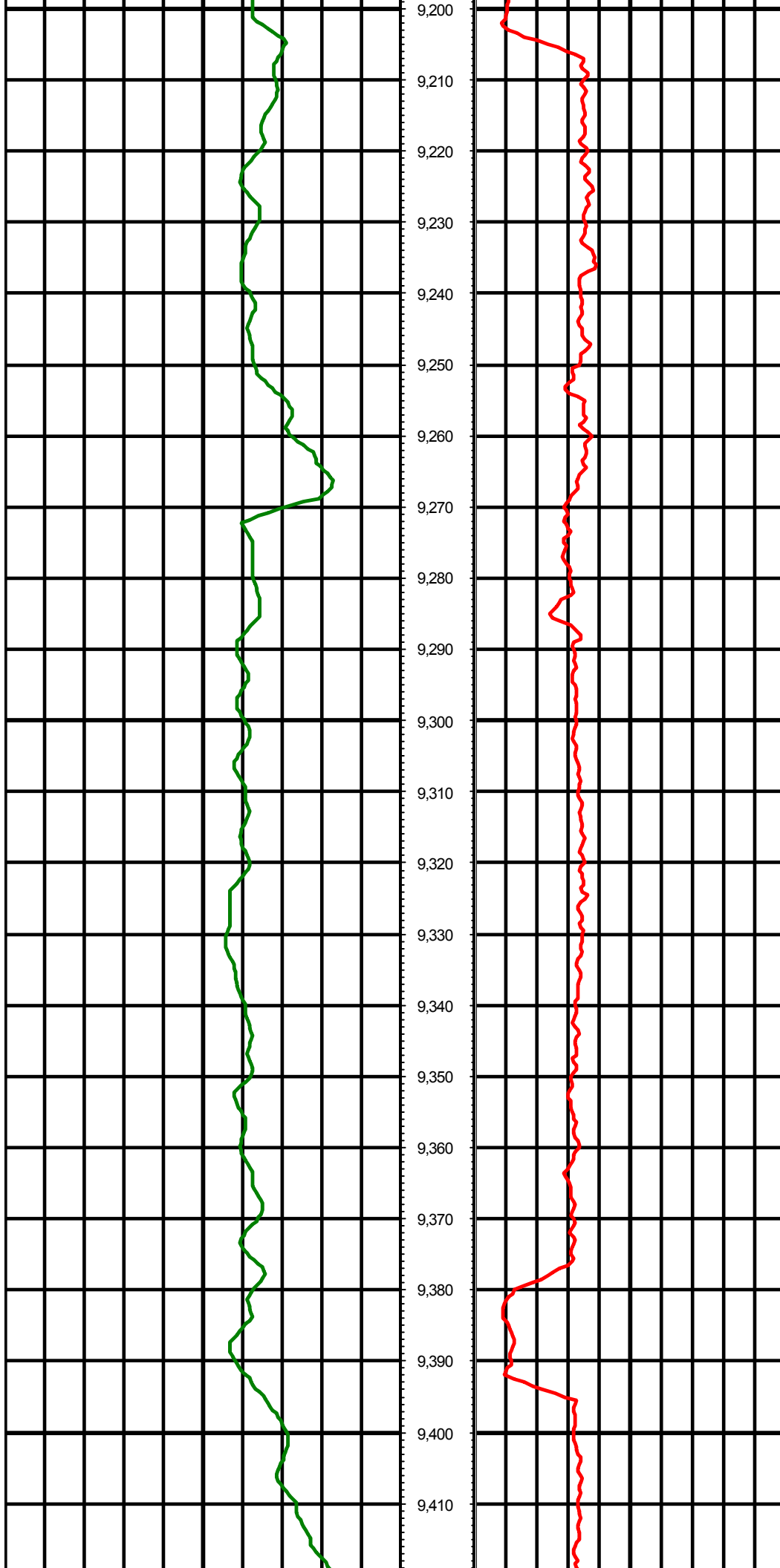
MD: 8576.00 INC: 89.00 AZ: 89.80

MD: 8668.00 INC: 89.00 AZ: 88.80

MD: 8760.00 INC: 89.40 AZ: 88.20

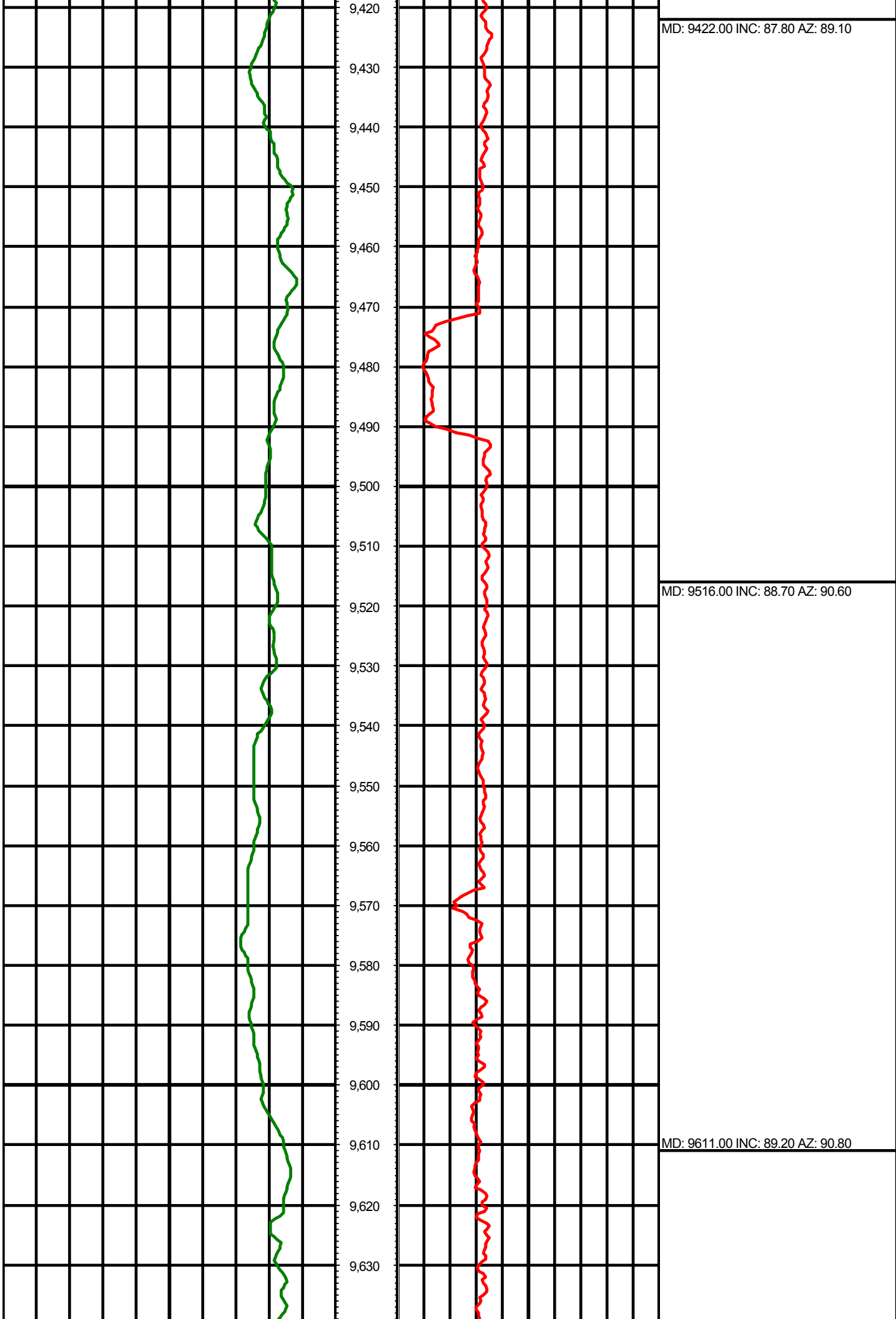


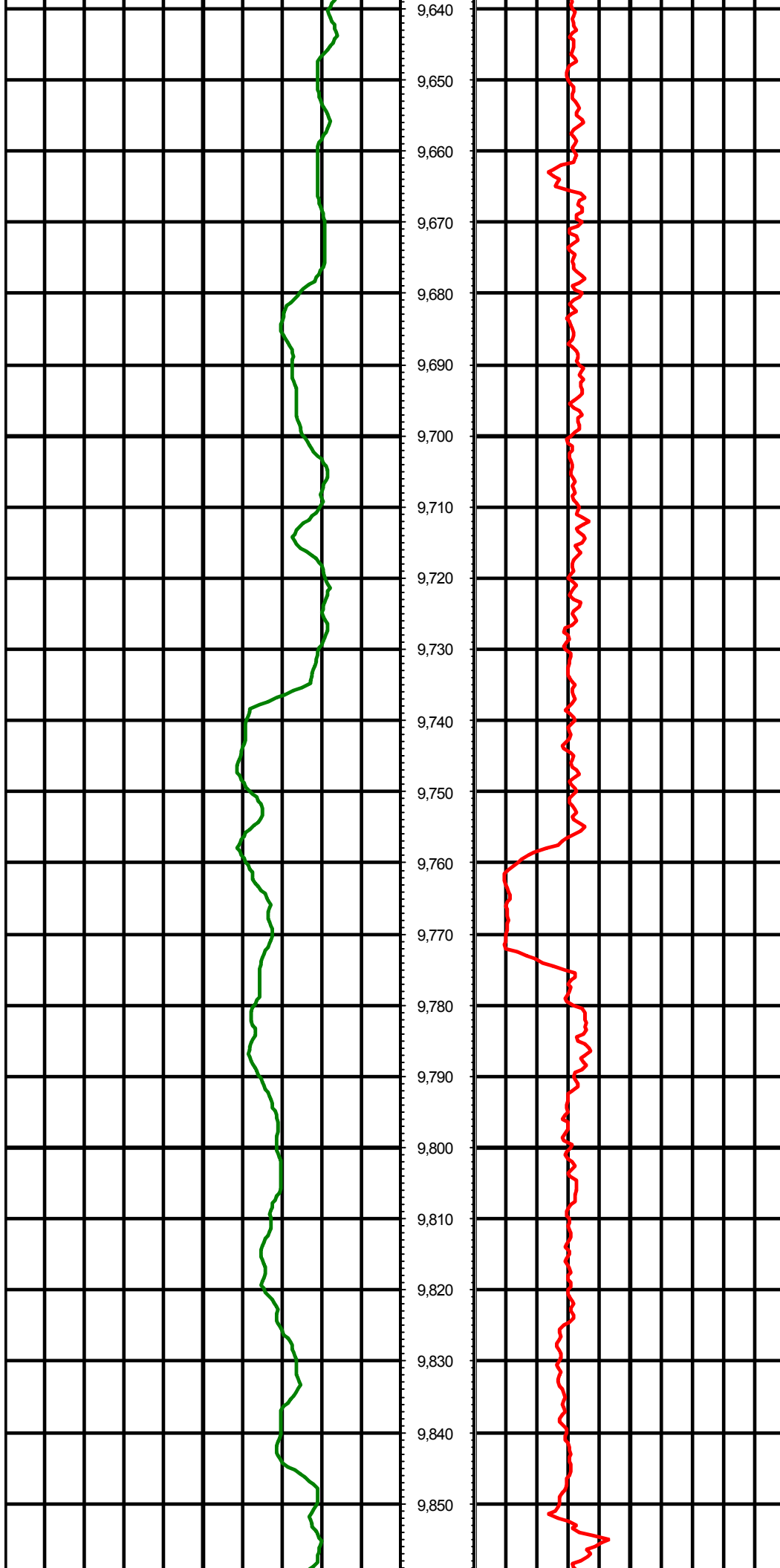




MD: 9233.00 INC: 89.30 AZ: 89.70

MD: 9327.00 INC: 88.30 AZ: 88.50





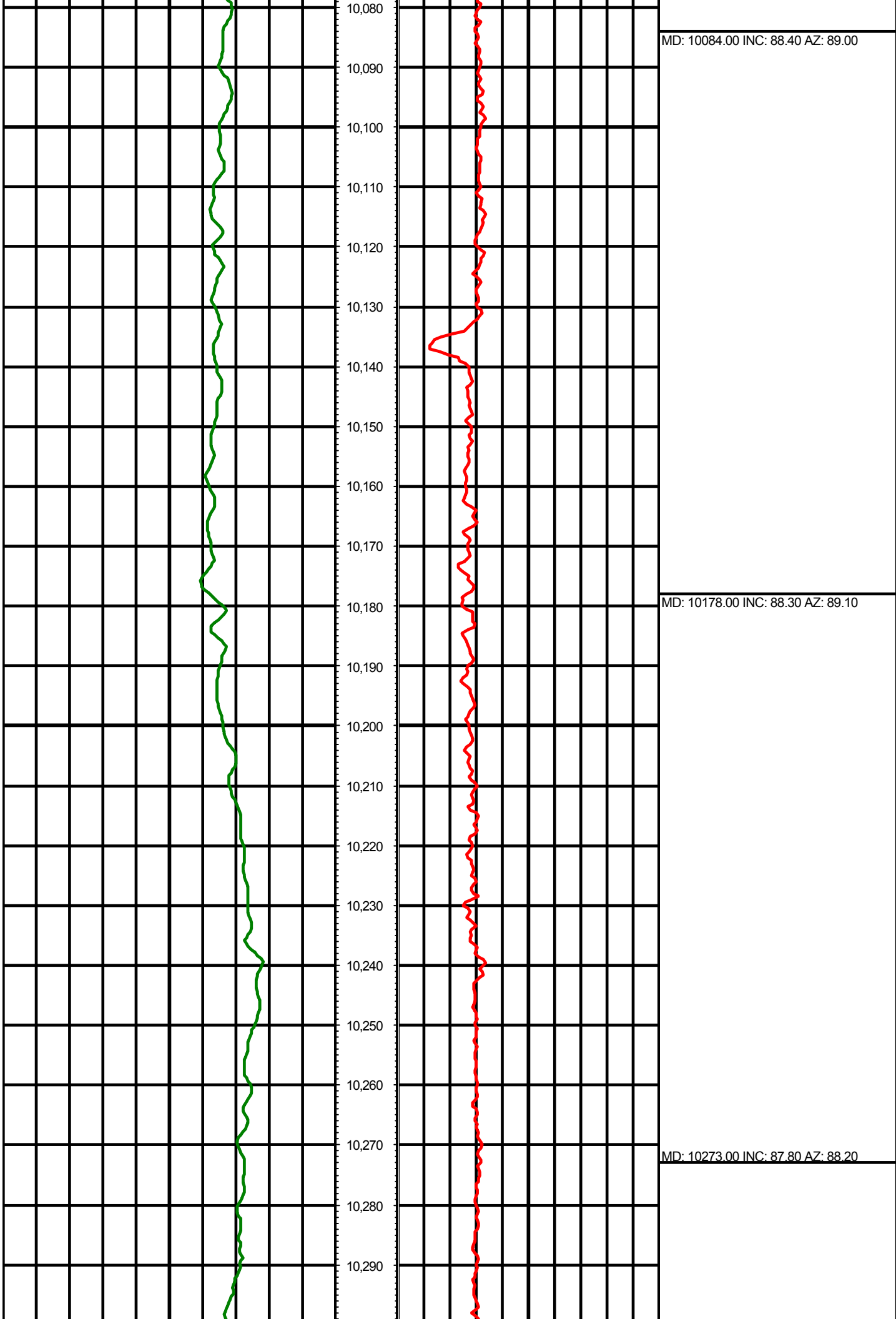
MD: 9705.00 INC: 89.60 AZ: 91.00

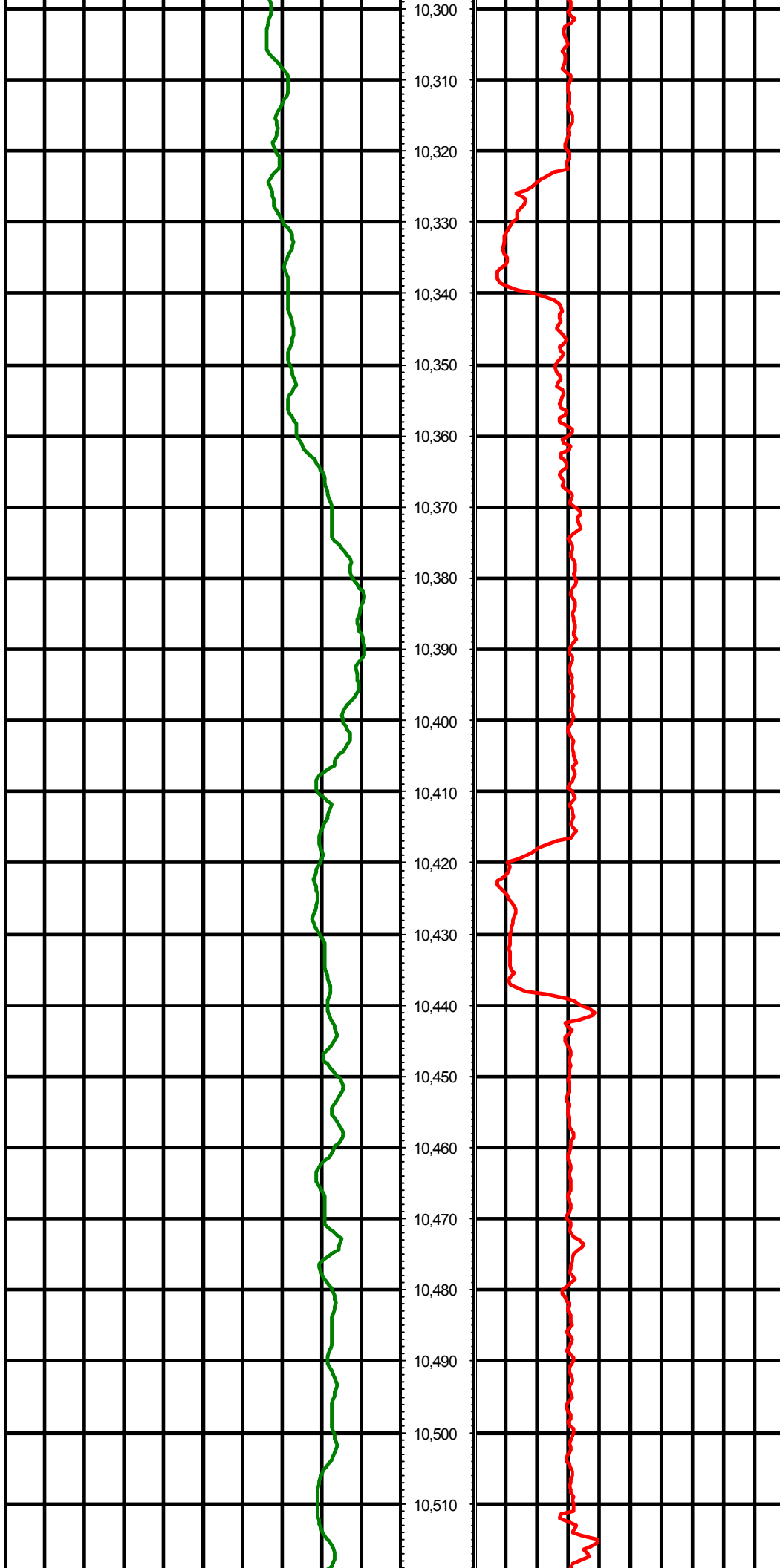
MD: 9800.00 INC: 87.60 AZ: 89.10



MD: 9894.00 INC: 87.10 AZ: 88.70

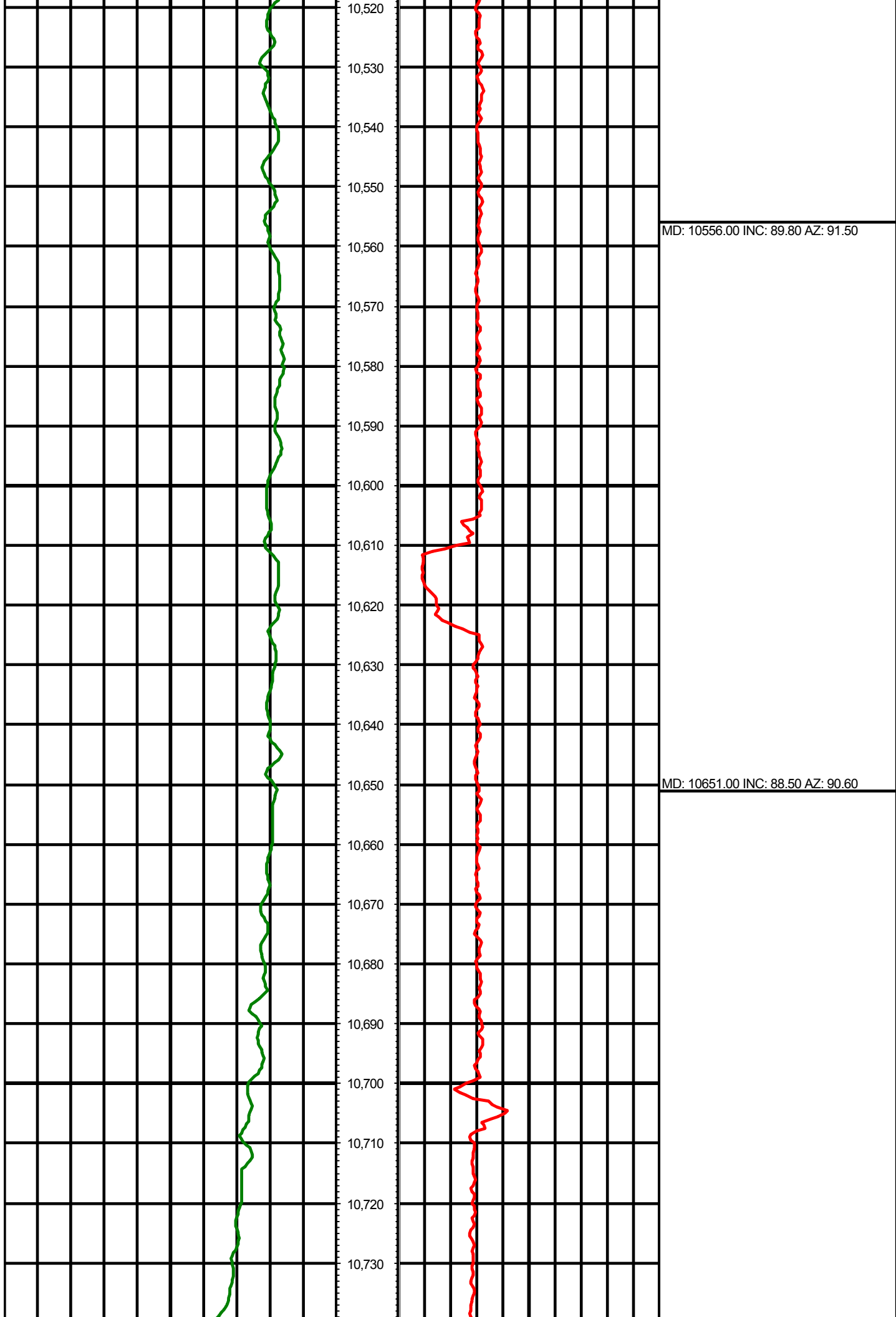
MD: 9989.00 INC: 87.80 AZ: 88.80

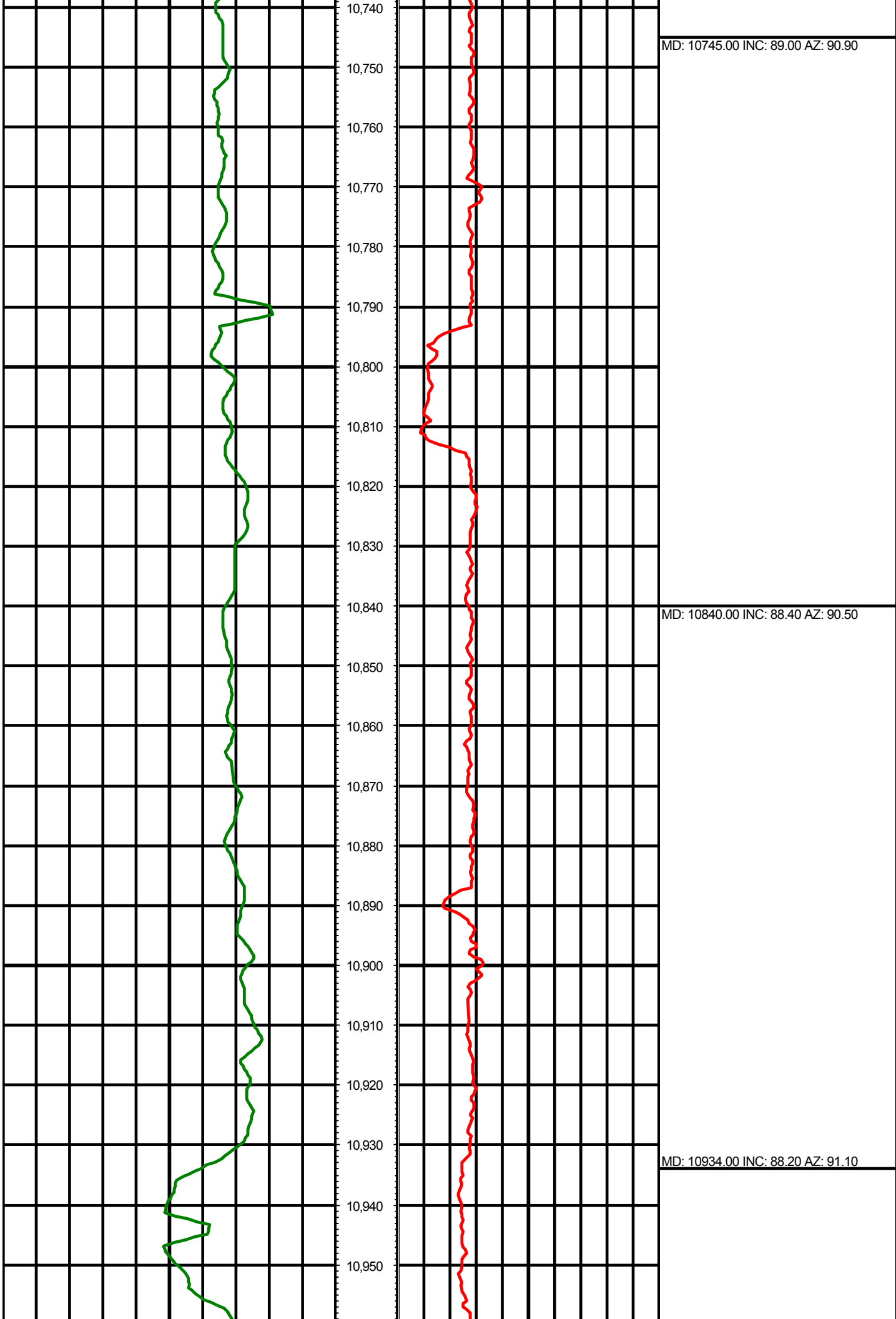


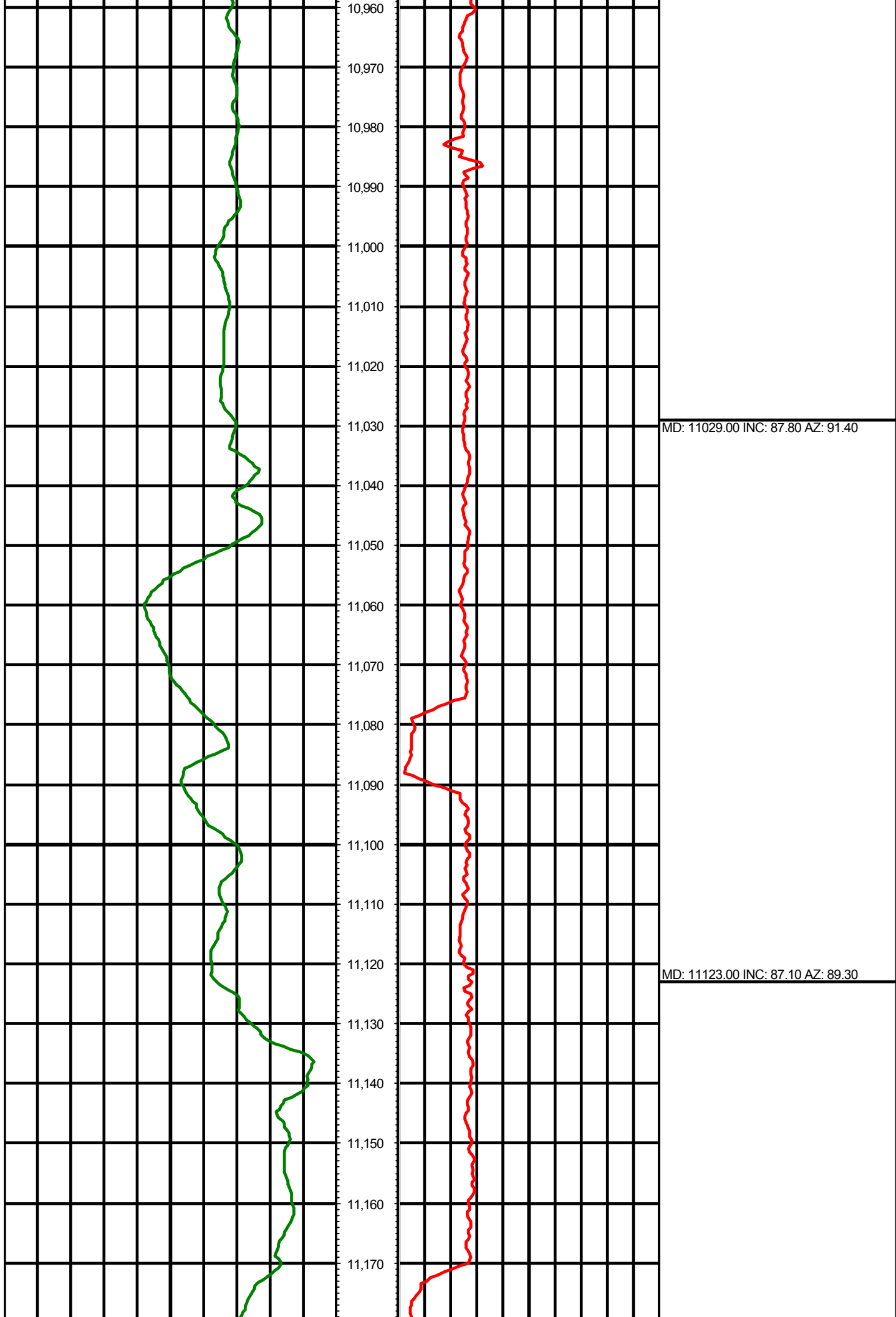


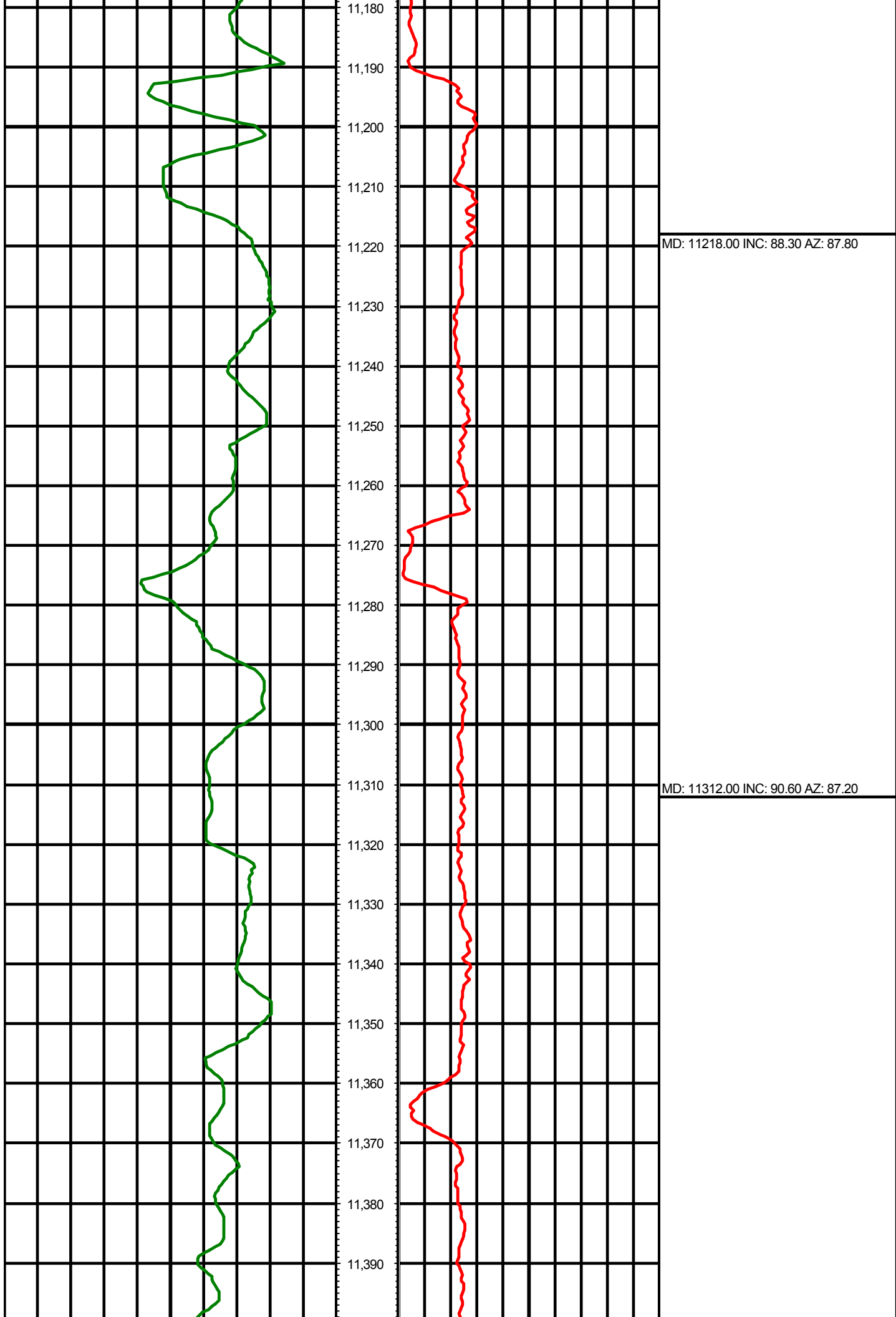
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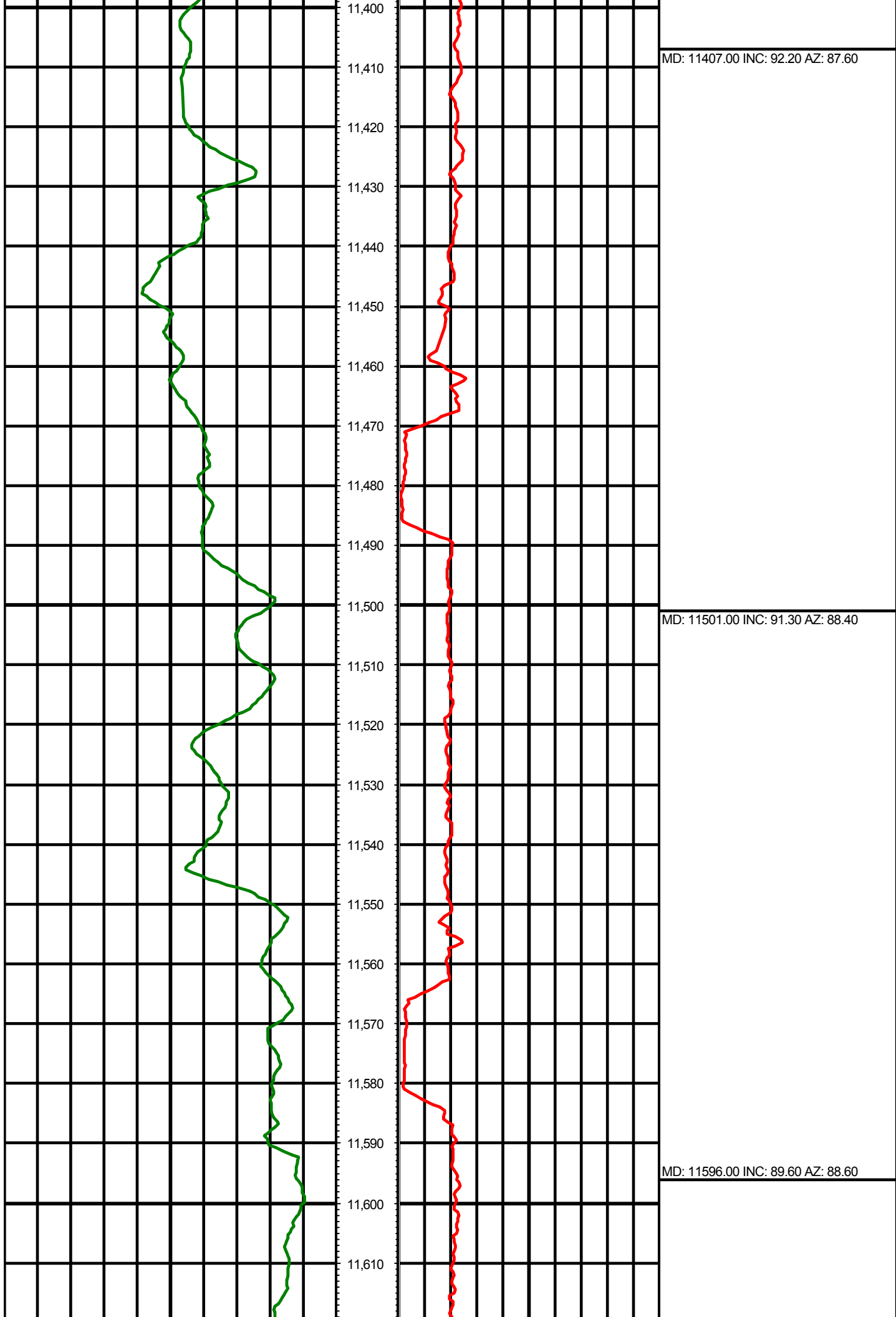
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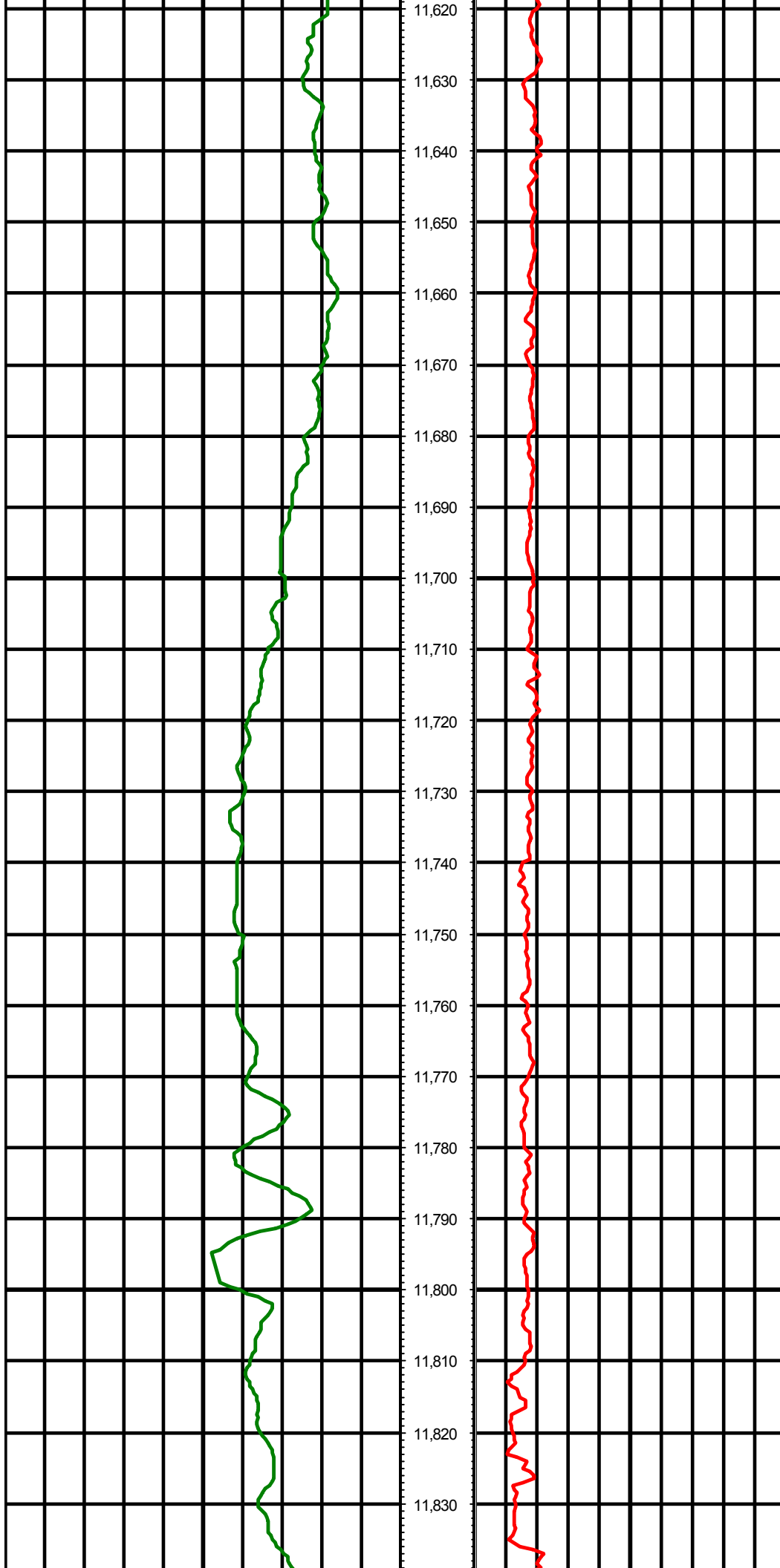






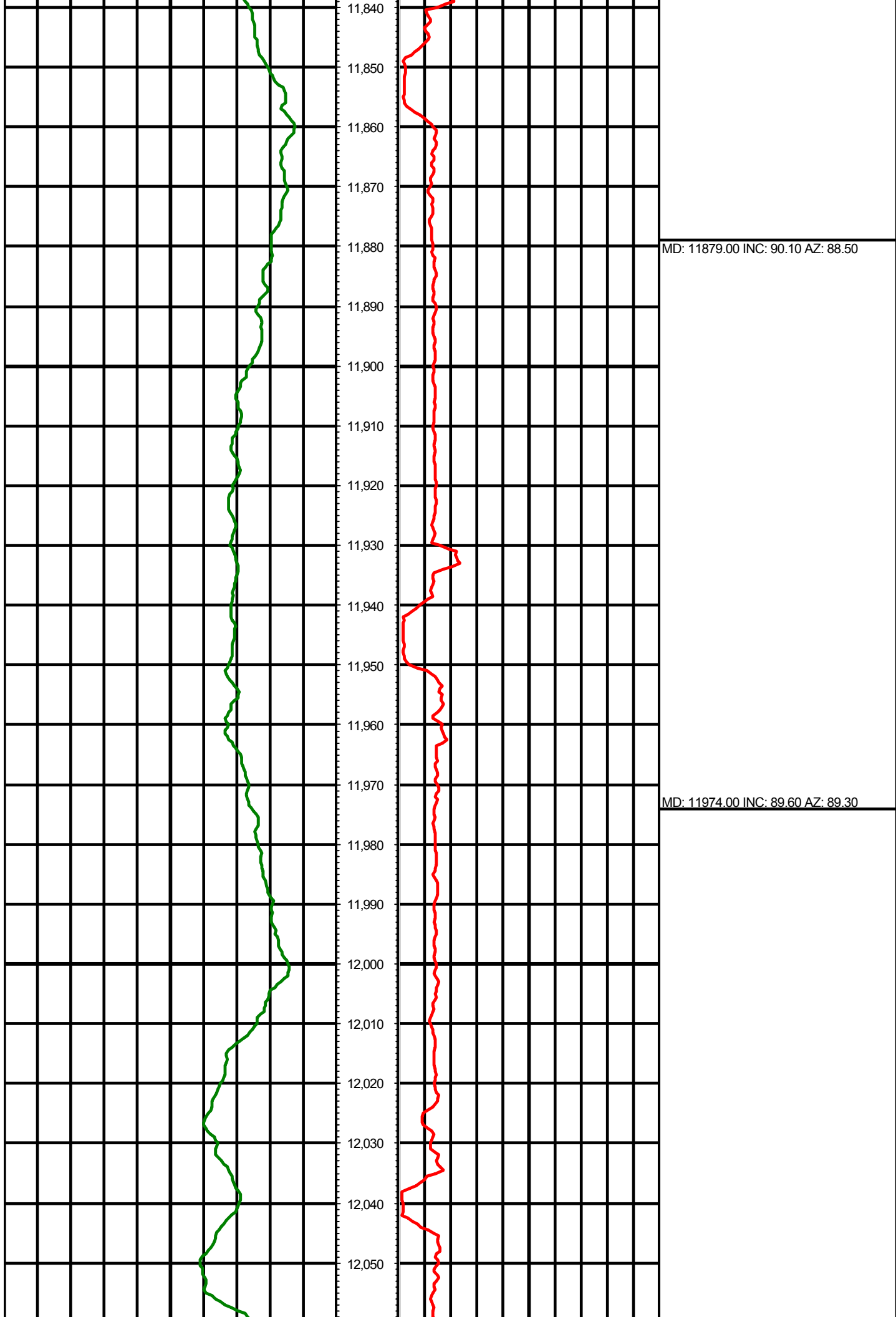


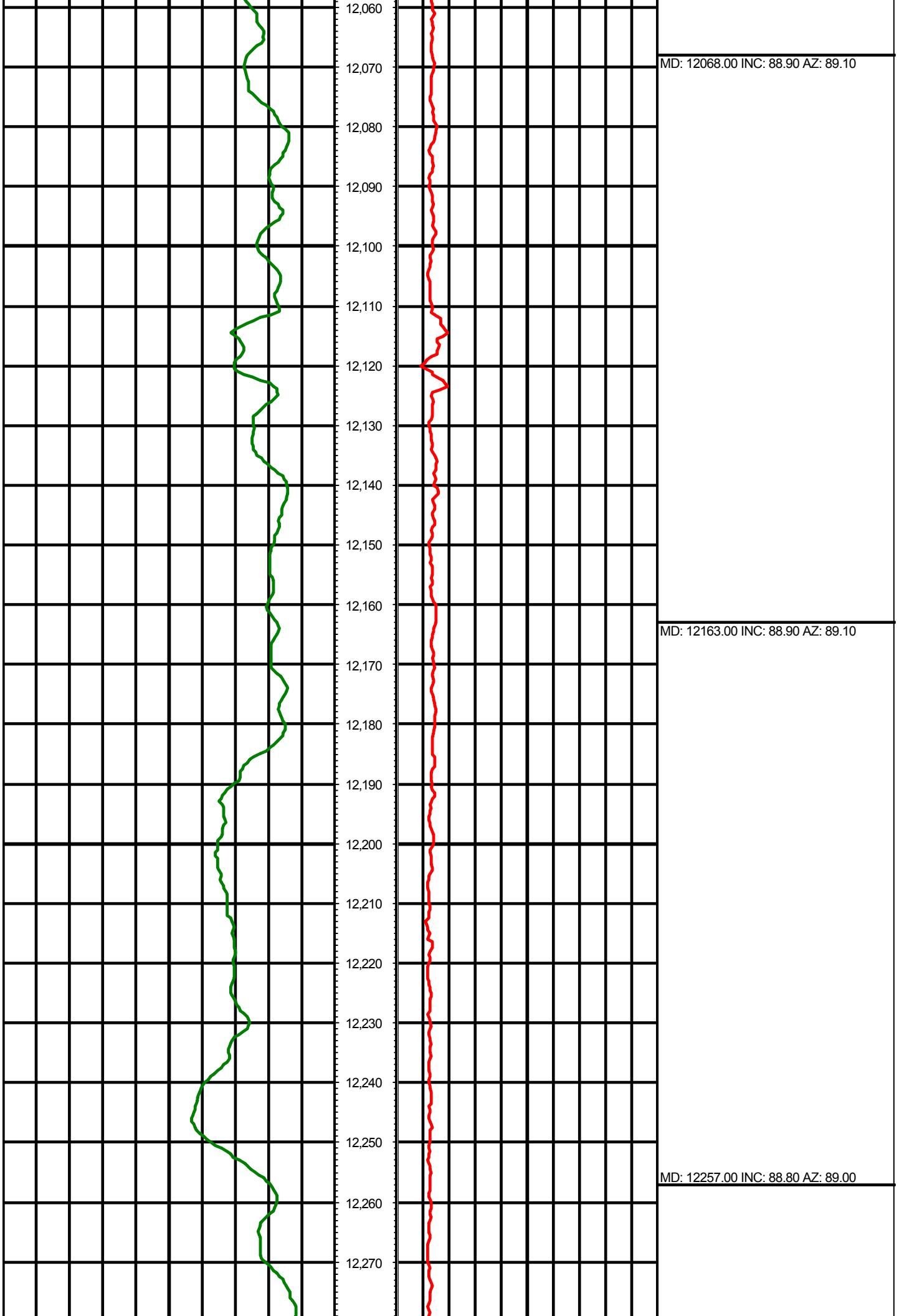


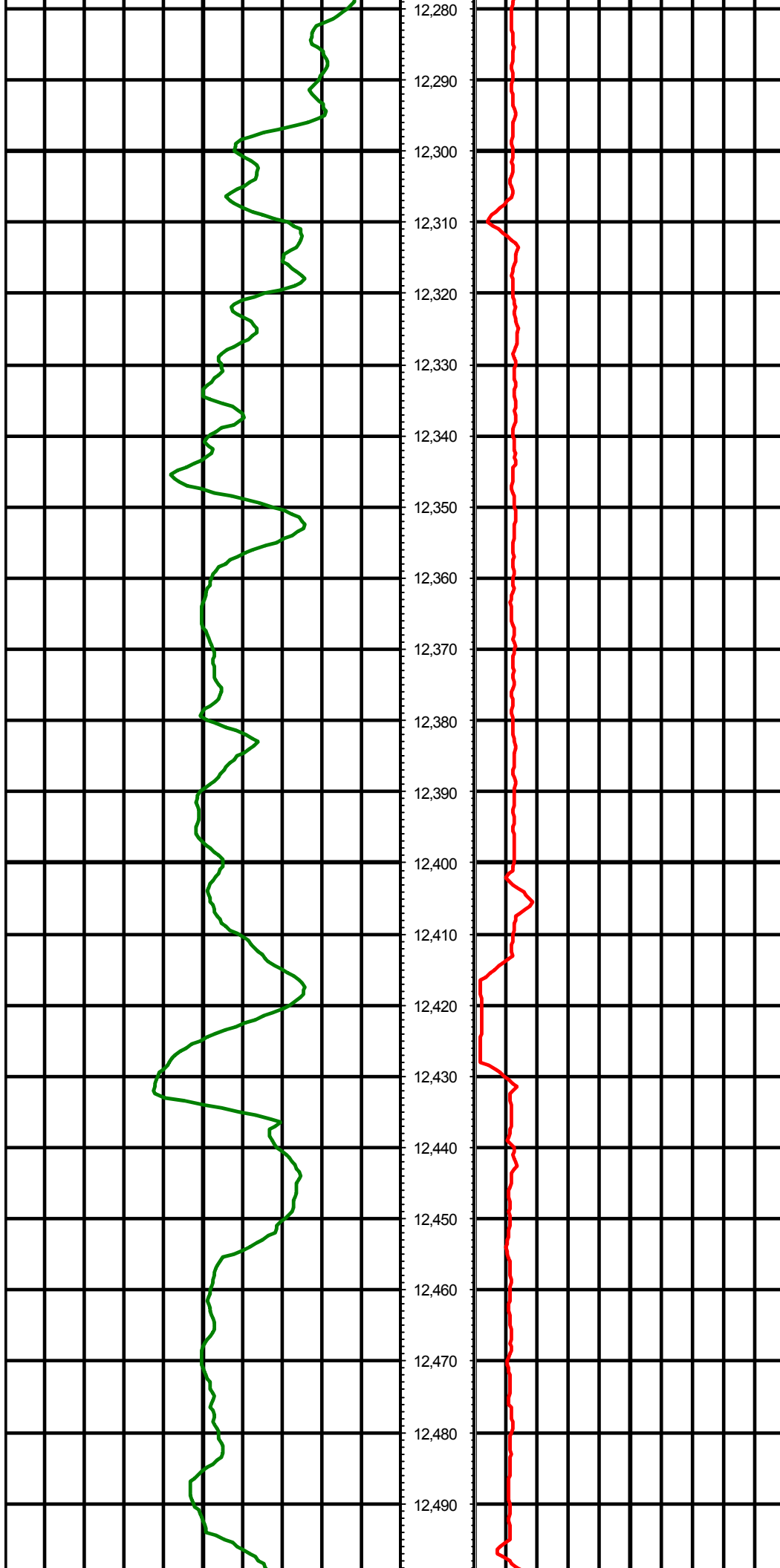


MD: 11690.00 INC: 89.50 AZ: 87.80

MD: 11785.00 INC: 90.20 AZ: 88.50

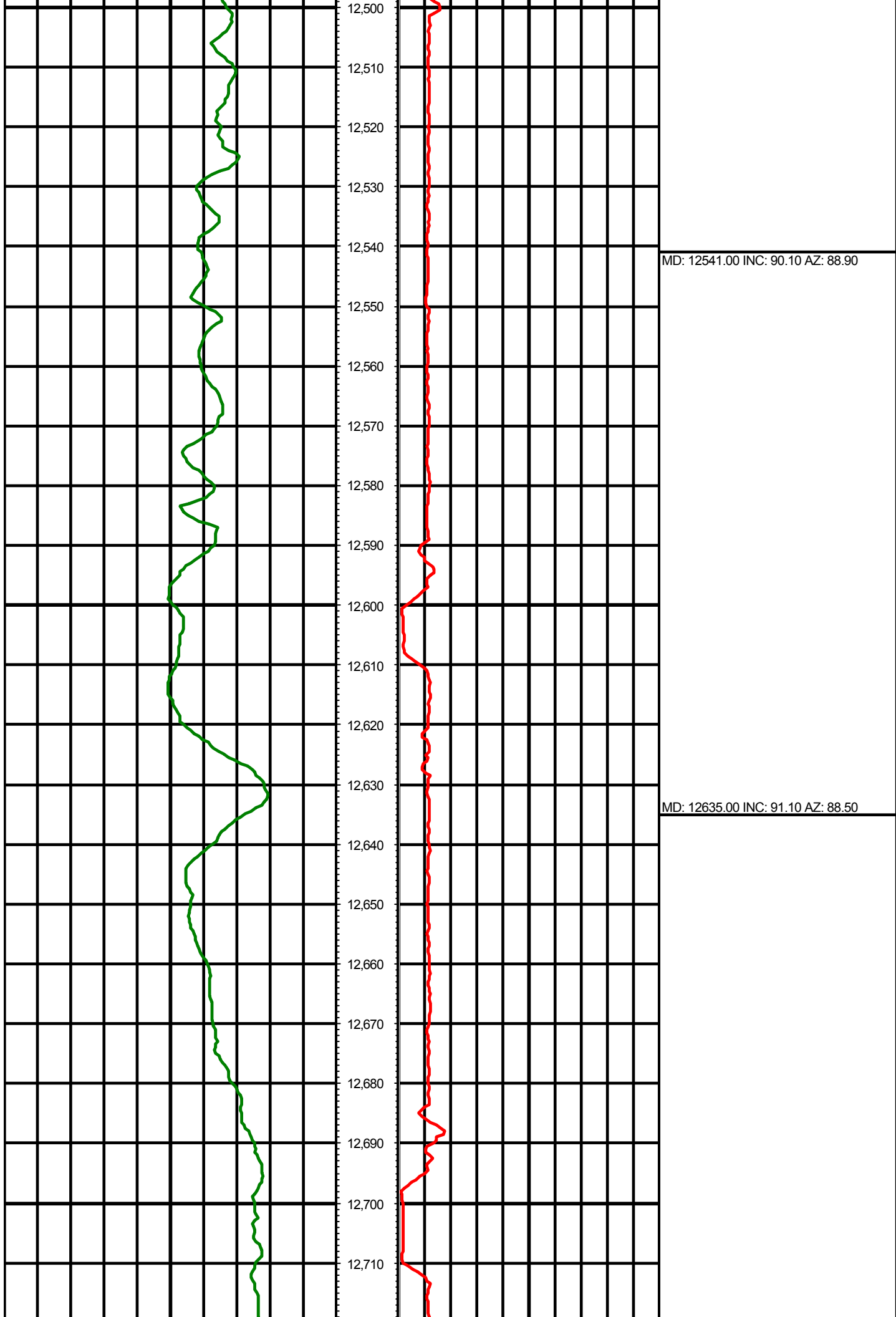


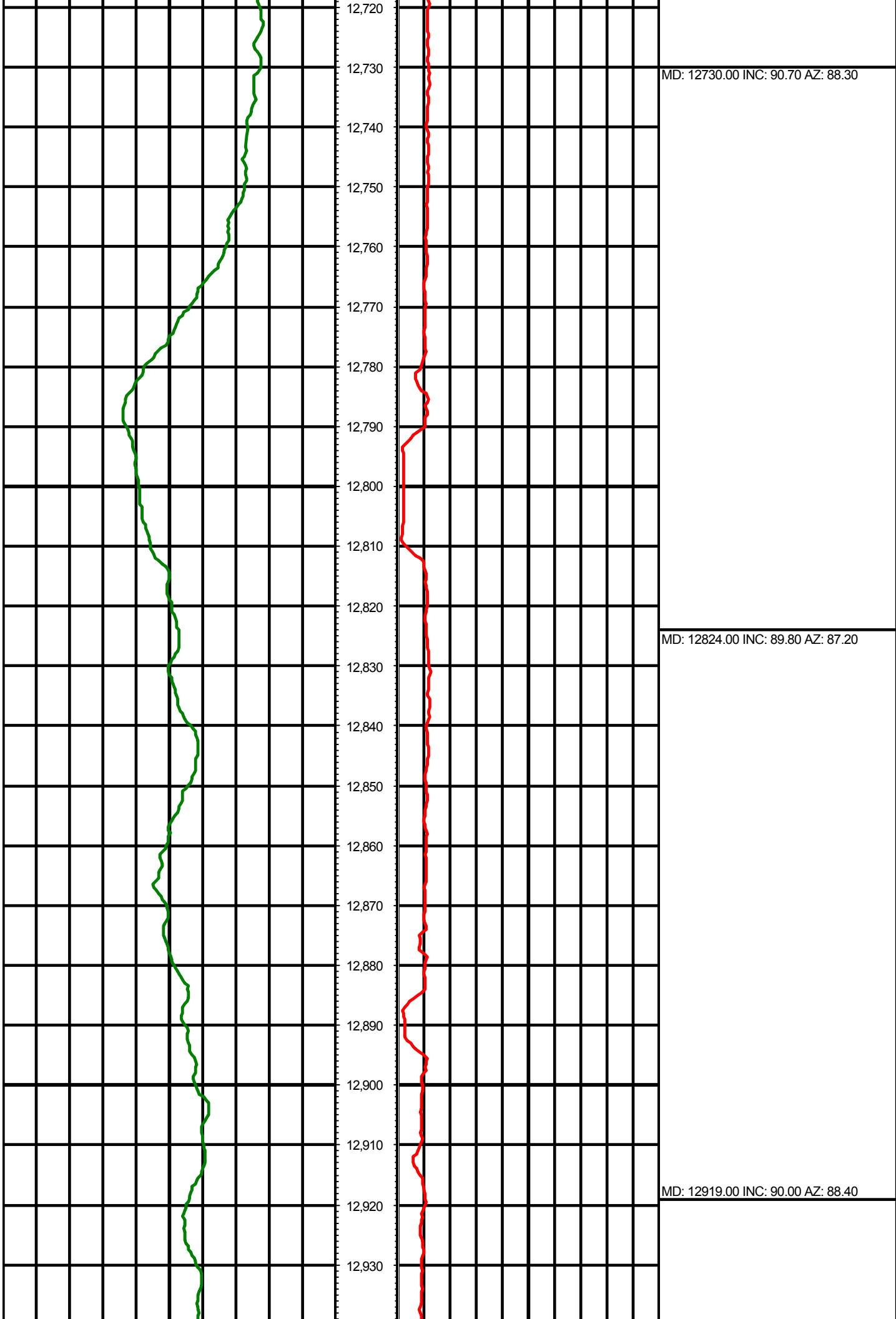




MD: 12352.00 INC: 86.90 AZ: 89.00

MD: 12446.00 INC: 89.90 AZ: 88.40

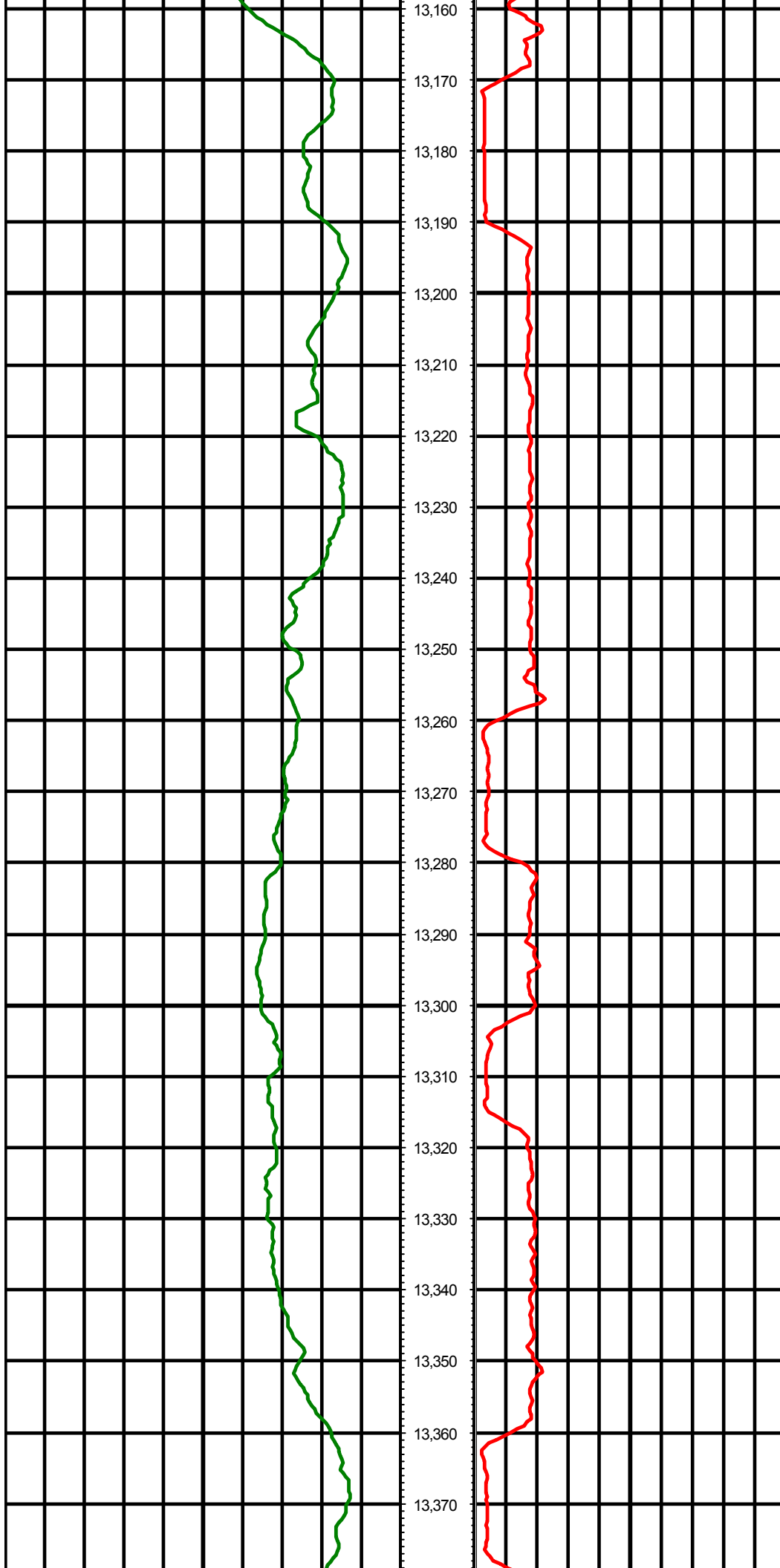






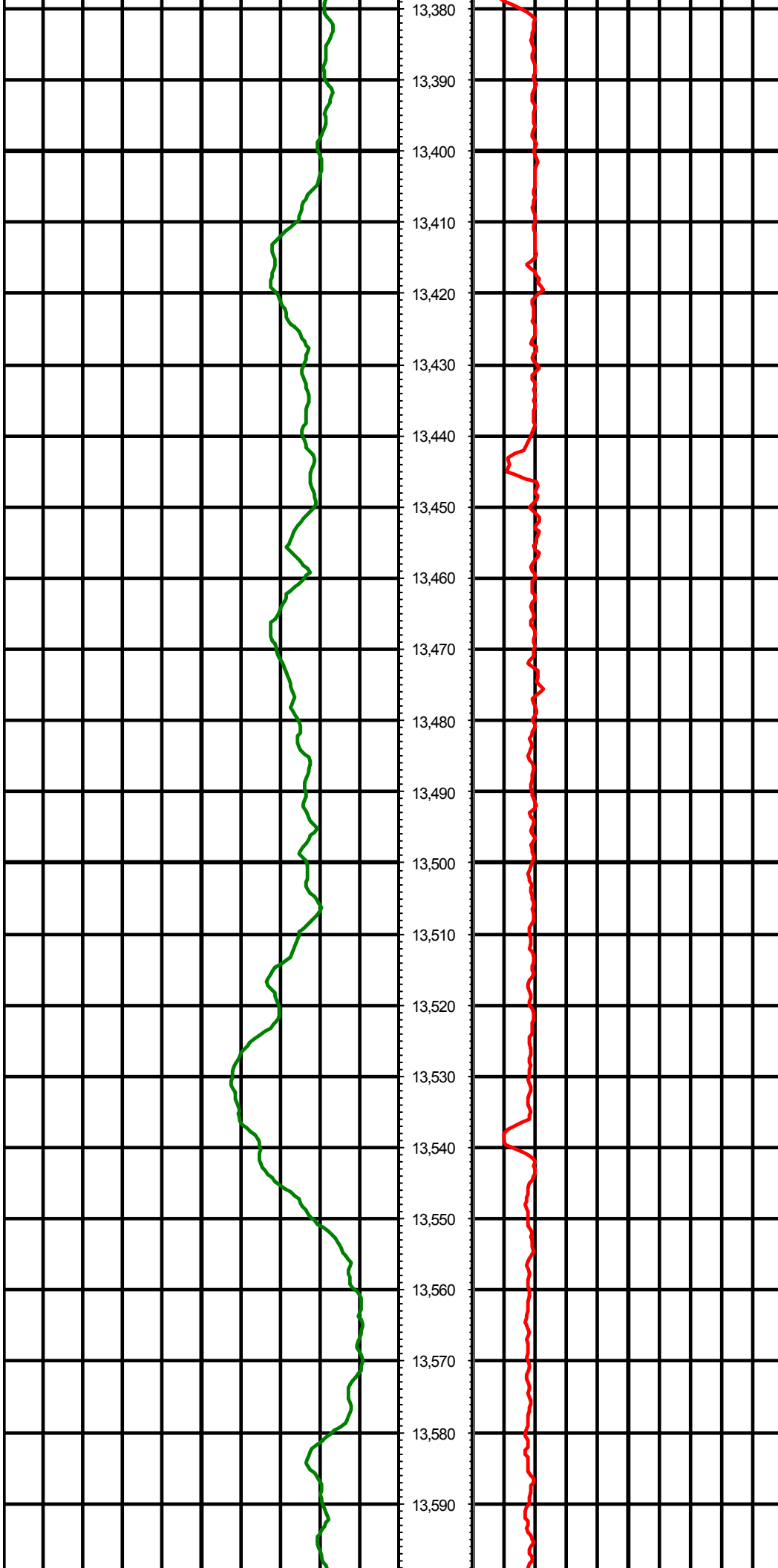
MD: 13013.00 INC: 89.50 AZ: 87.60

MD: 13108.00 INC: 91.00 AZ: 85.50



MD: 13203.00 INC: 91.00 AZ: 85.70

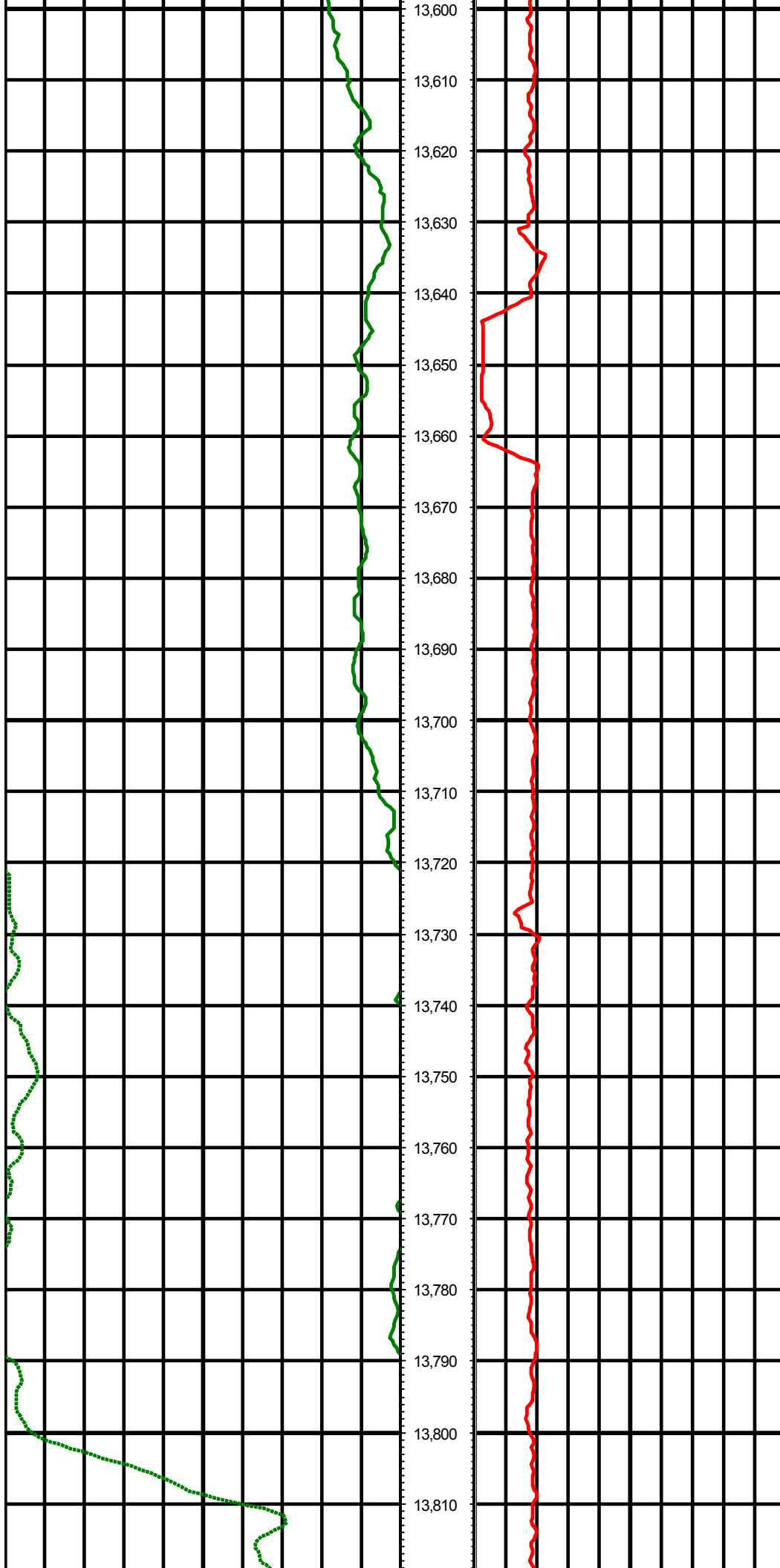
MD: 13297.00 INC: 89.50 AZ: 84.90



MD: 13392.00 INC: 88.60 AZ: 87.10

MD: 13486.00 INC: 89.10 AZ: 87.50

MD: 13581.00 INC: 90.20 AZ: 87.40



MD: 13675.00 INC: 89.10 AZ: 87.20

MD: 13769.00 INC: 90.20 AZ: 87.20

