



Cathedral Energy Services
1949 North Pyrite Road
Casper, Wyoming 82604

145459

5":100' - MD

12/9/2014 2:01:54 PM

CATHEDRAL

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

Country: U.S.A.

State / Province: Colorado

County / Parish: Weld

Started: 11/30/2014 08:30 PM

API/UWI: 05-123-36891

Field: Wattenberg (Codell)

Well: Billings 3F-18H-L368

Rig: Patterson Drilling 326

Ended: 12/08/2014 04:30 PM

Gamma Ray
Section Plane: 90.00
Magnetic North: 8.63
Gamma Attenuation Factor: 2.86
Gamma Averaging: 7%

Personnel

Day Hand: M. Andrew

Night Hand: T. Kapsh

Comp. Emp: Norman McCreary

Maximum Temperature: 224°F

Location

Latitude: 40.222594

Longitude: -105.051741

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	888
8-3/4	888	7620
6-1/8	7629	14170

Casing Data

Size	From	To
9-5/8	0	888
7	0	7620
4-1/2	0	14170

Bit Sizes

Size	From	To
12-1/4	0	888
8-3/4	888	7620
6-1/8	7620	14170

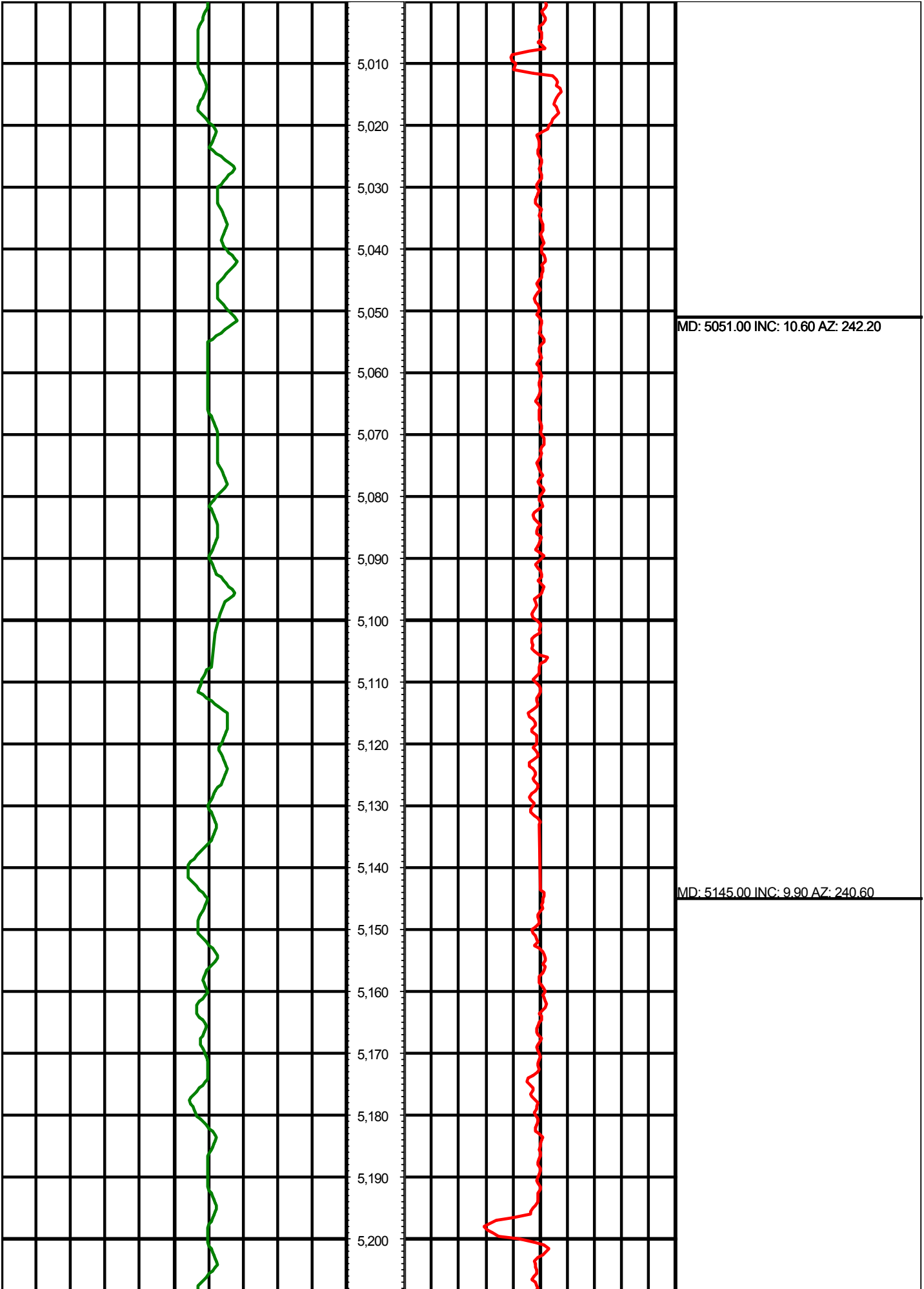
Mud Data

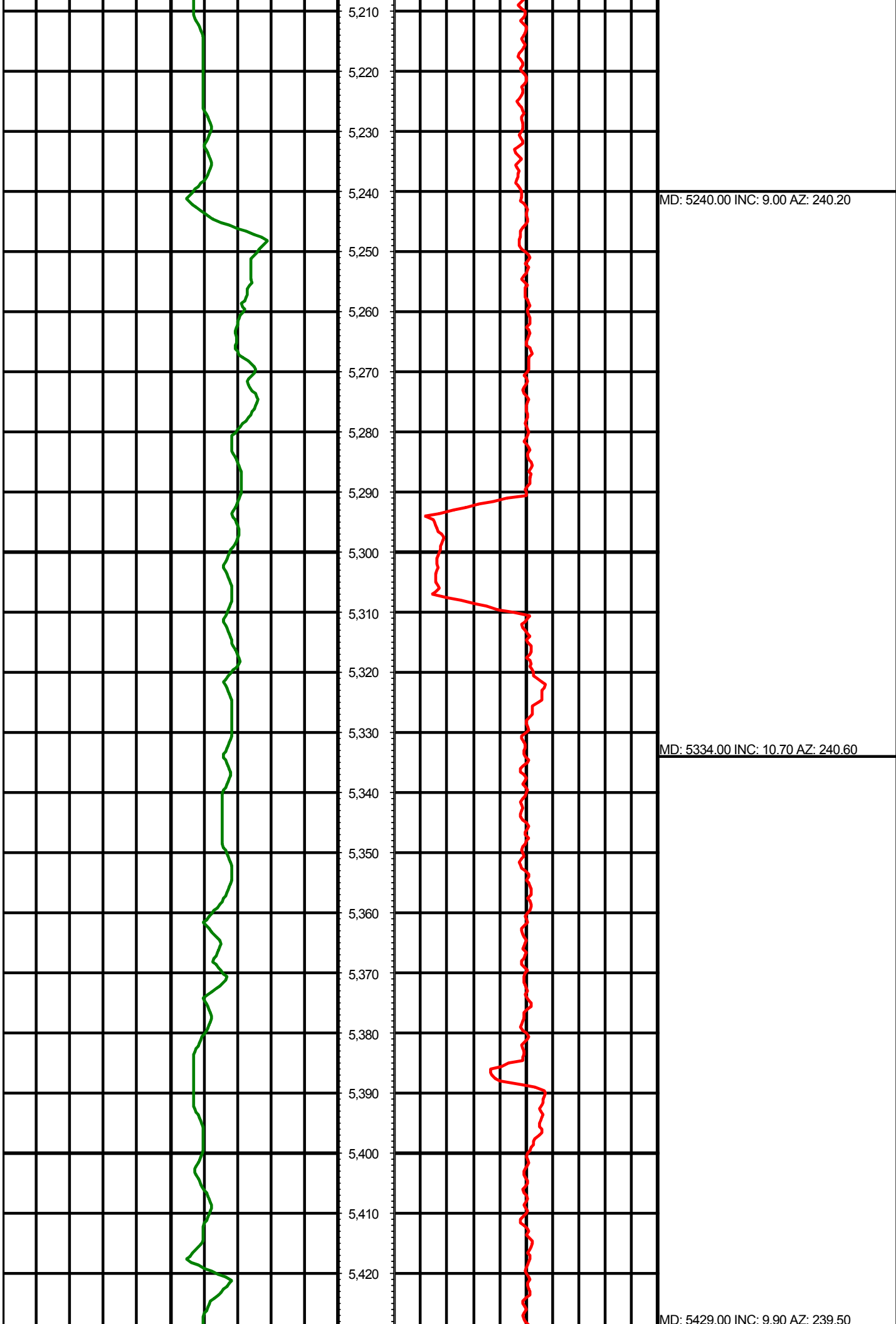
Type	Weight	Density	Viscosity	Rm	Rmf	Rmc	From	To
Water Base	10.9		41				5000	7620
Water Base	12.1		43				7620	13055
Water Base	12.5		43				13055	13113
Water Base	12.5		43				13113	13113
Water Base	12.7		41				13113	14170

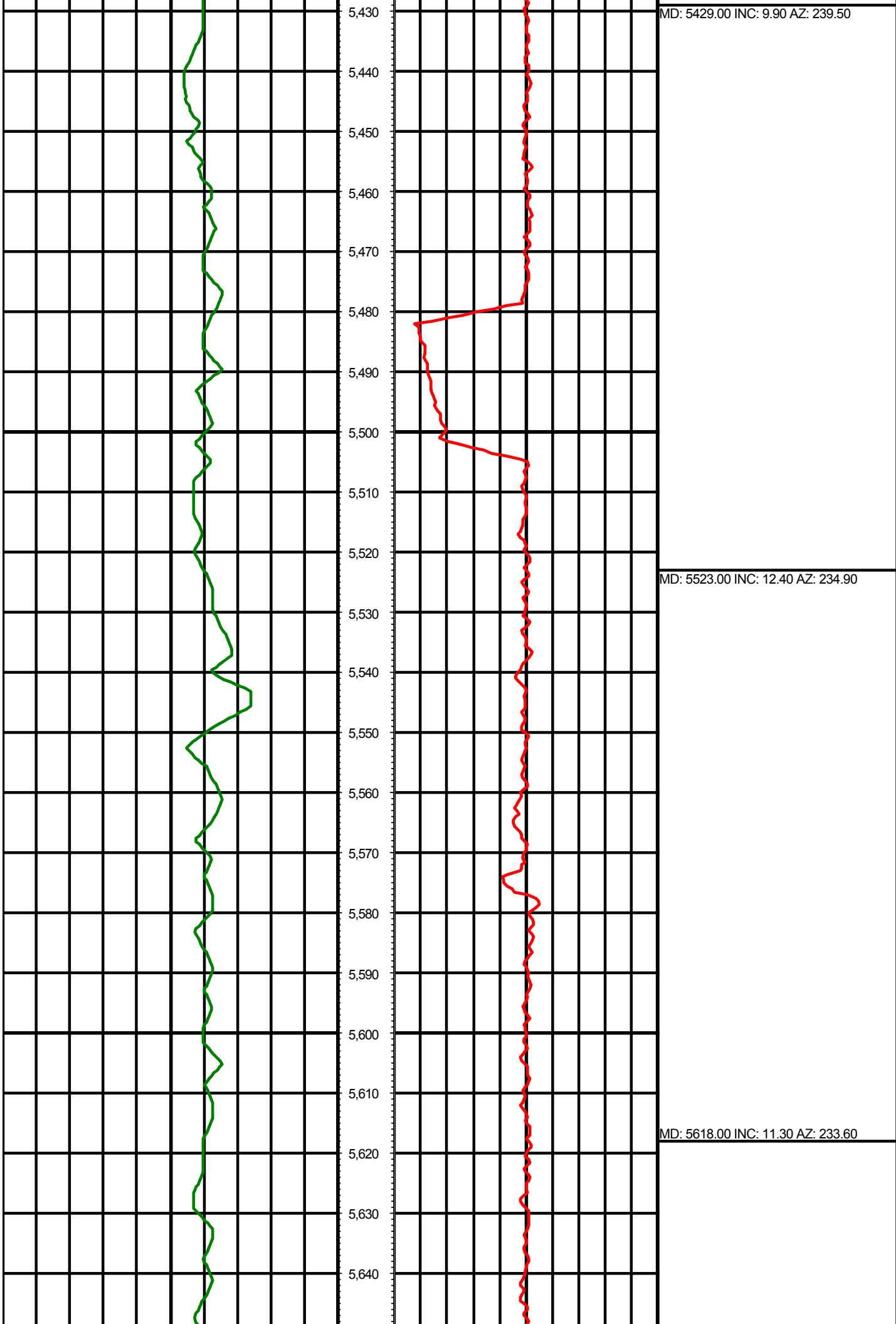
Tool Run Data

Serial Number	Gamma Offset	Resist. Offset	Start Time	Start Depth	End Time	End Depth
2008	35.93	0	11/30/2014 8:30:10 AM	5000	12/3/2014 3:30:10 AM	7620
1461	38.2	0	12/4/2014 3:30:06 AM	7620	12/6/2014 11:00:06 PM	13055
1461	37.44	0	12/6/2014 11:30:49 PM	13055	12/7/2014 1:00:49 PM	13113
1354	40.02	0	12/7/2014 2:00:12 PM	13113	12/7/2014 11:00:12 PM	13113
2001	40.02	0	12/7/2014 11:30:39 PM	13113	12/8/2014 4:30:39 PM	14170

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: 5712.00 INC: 10.20 AZ: 231.10

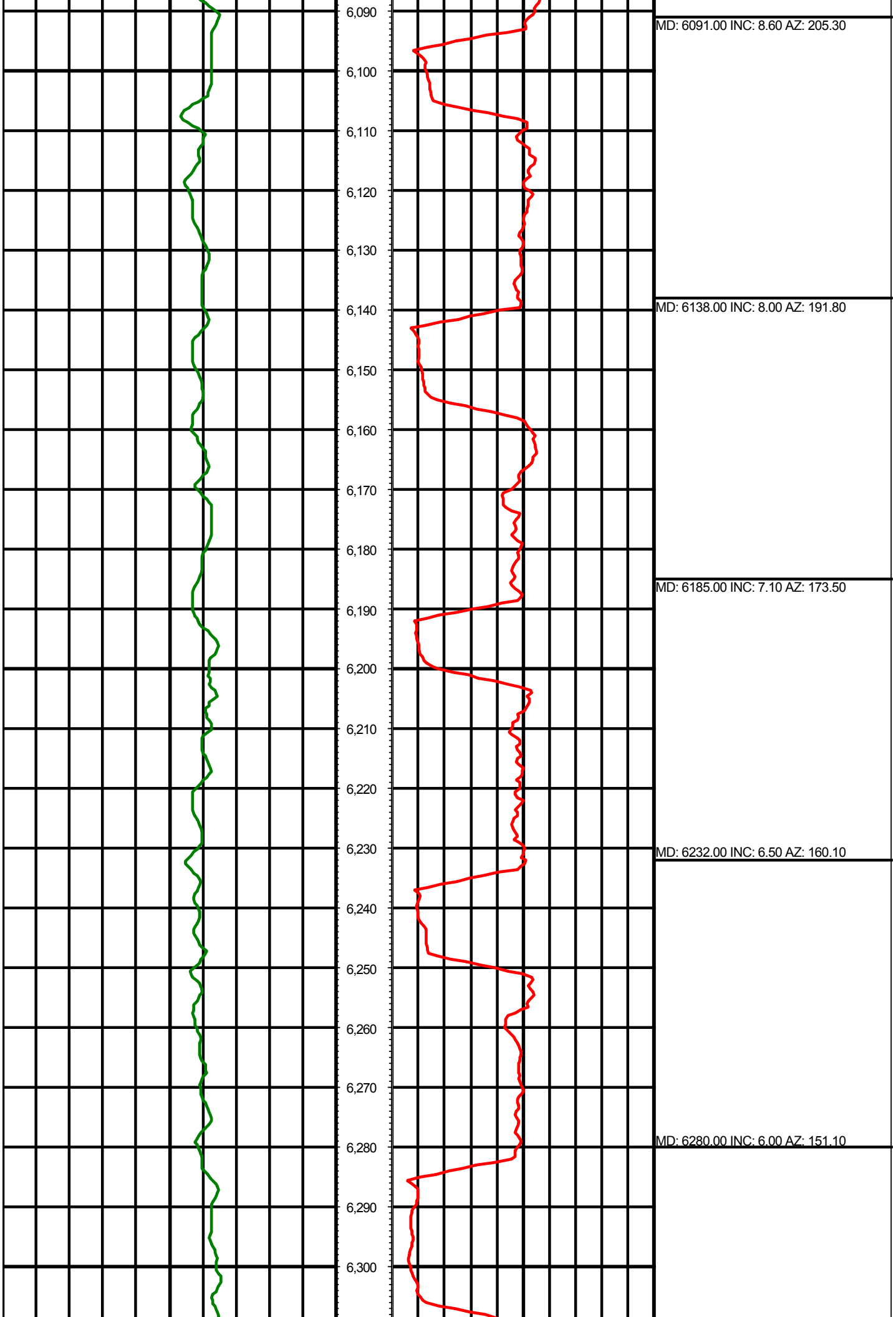
MD: 5807.00 INC: 9.10 AZ: 229.60

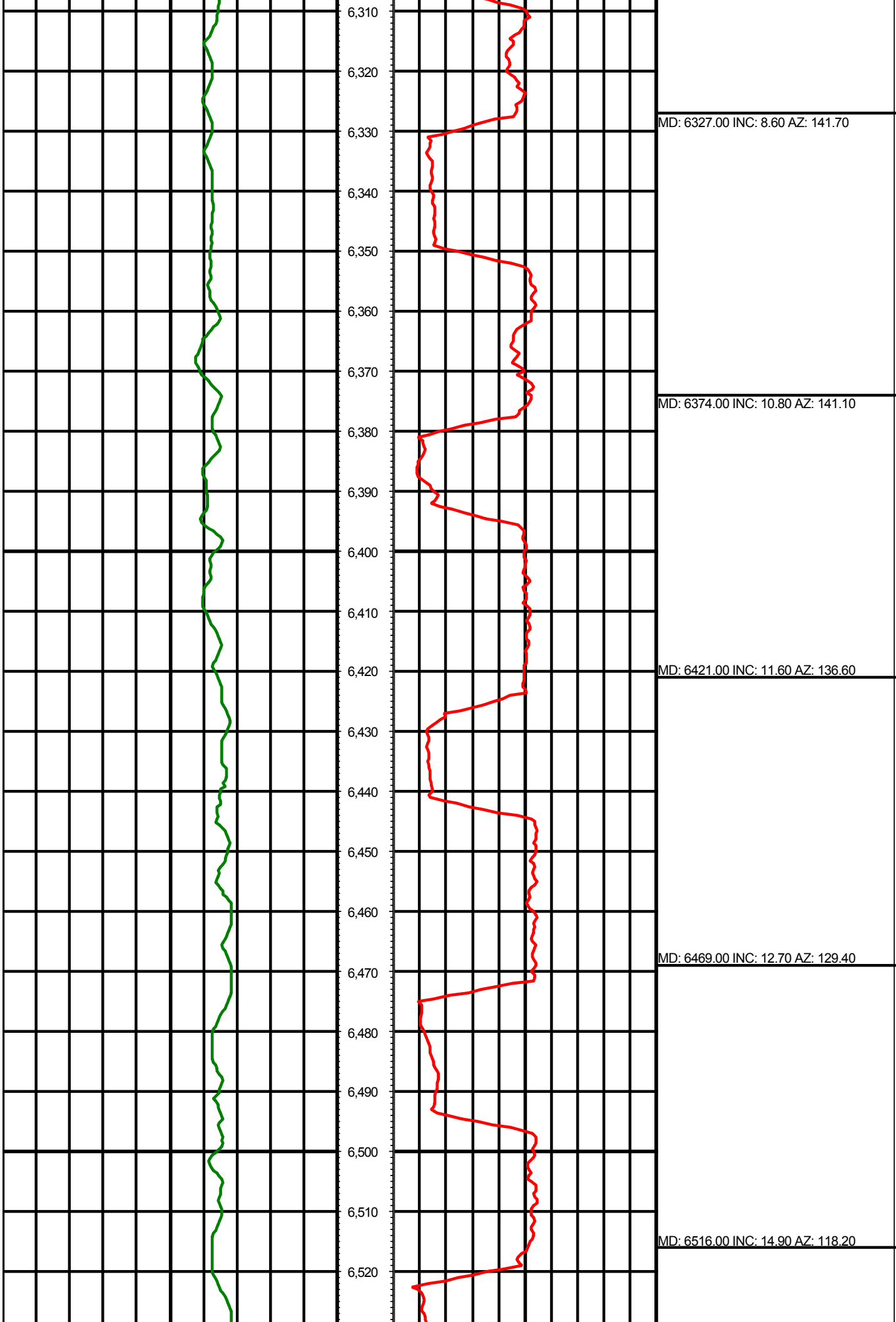


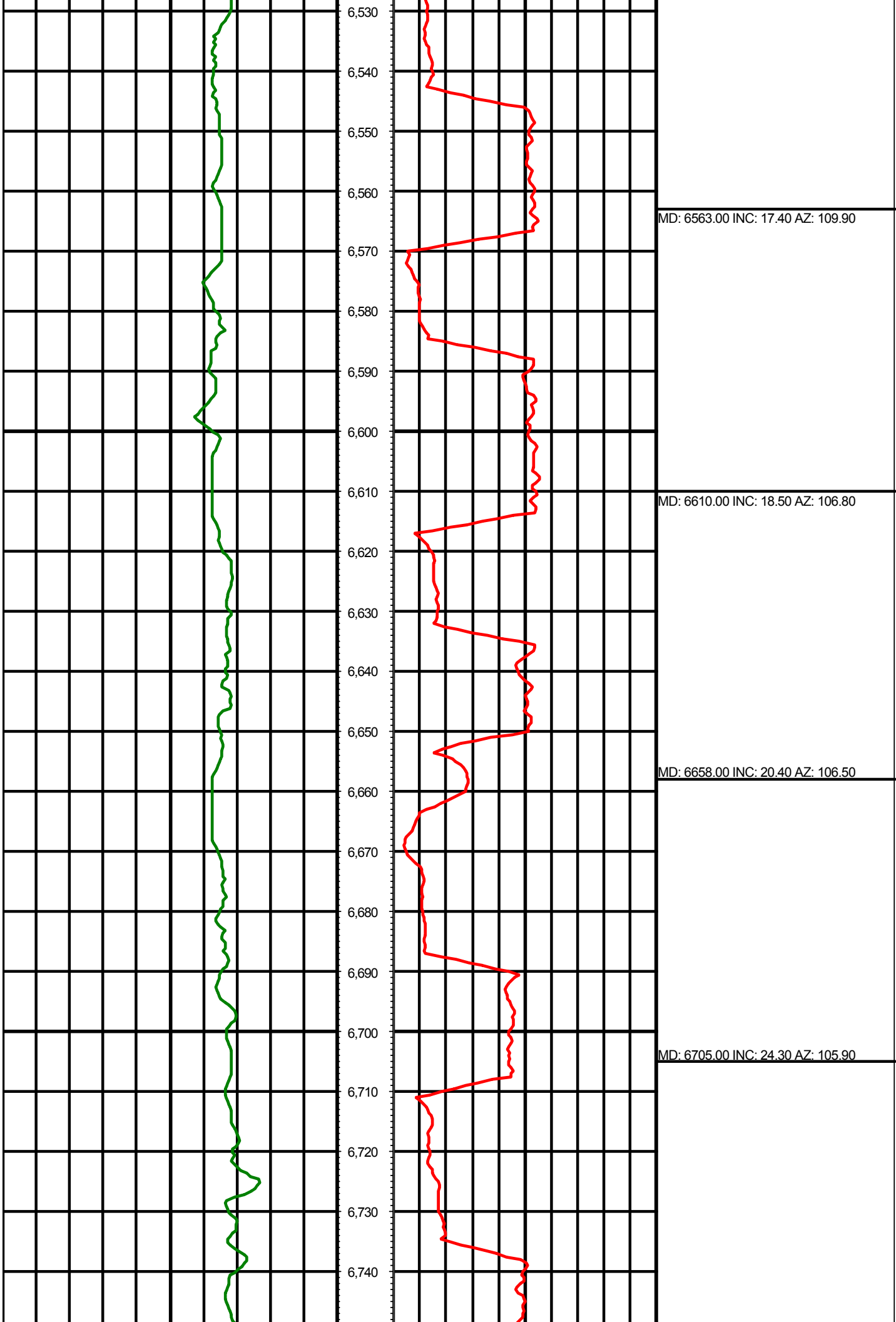
MD: 5901.00 INC: 10.60 AZ: 226.60

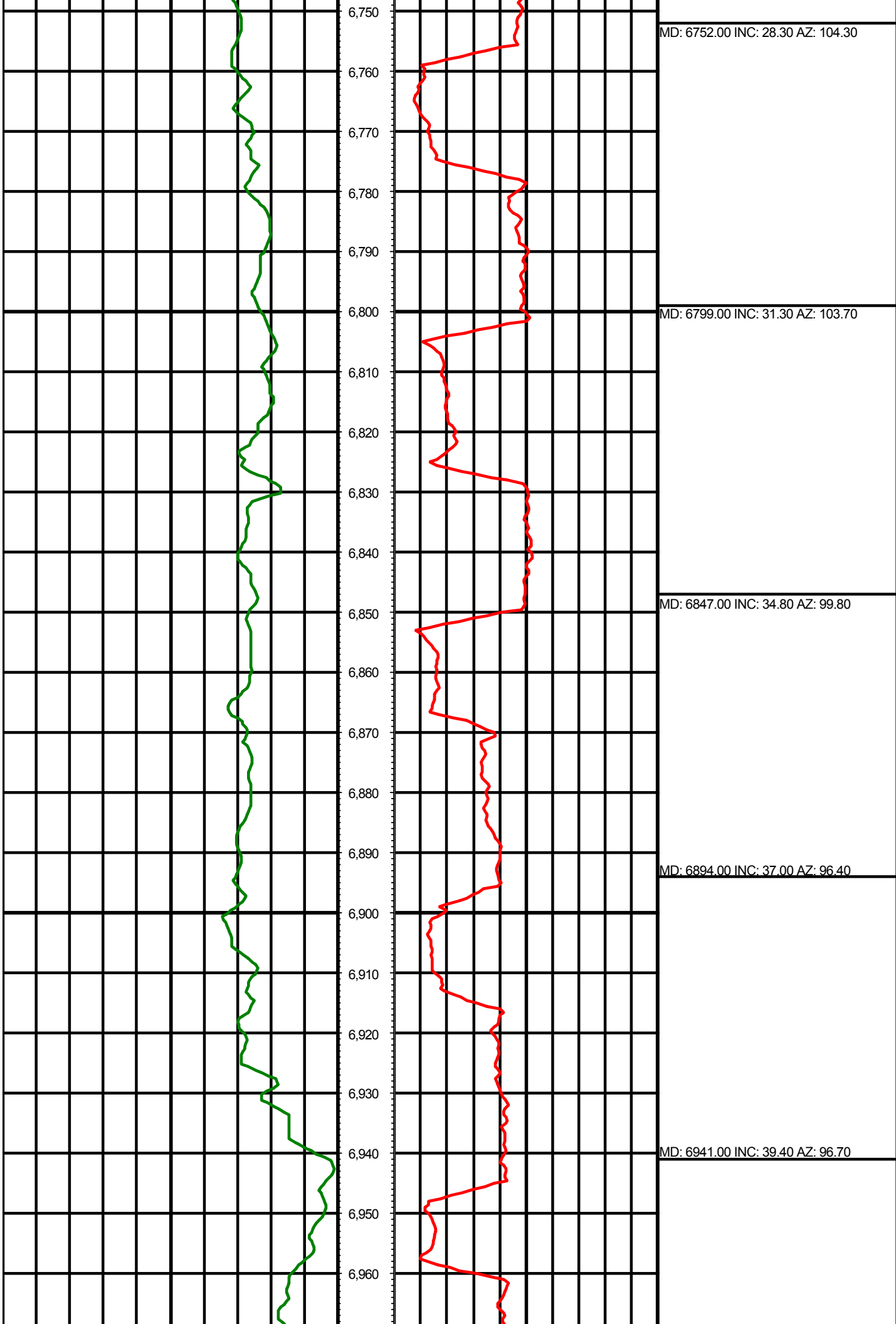
MD: 5996.00 INC: 9.10 AZ: 225.70

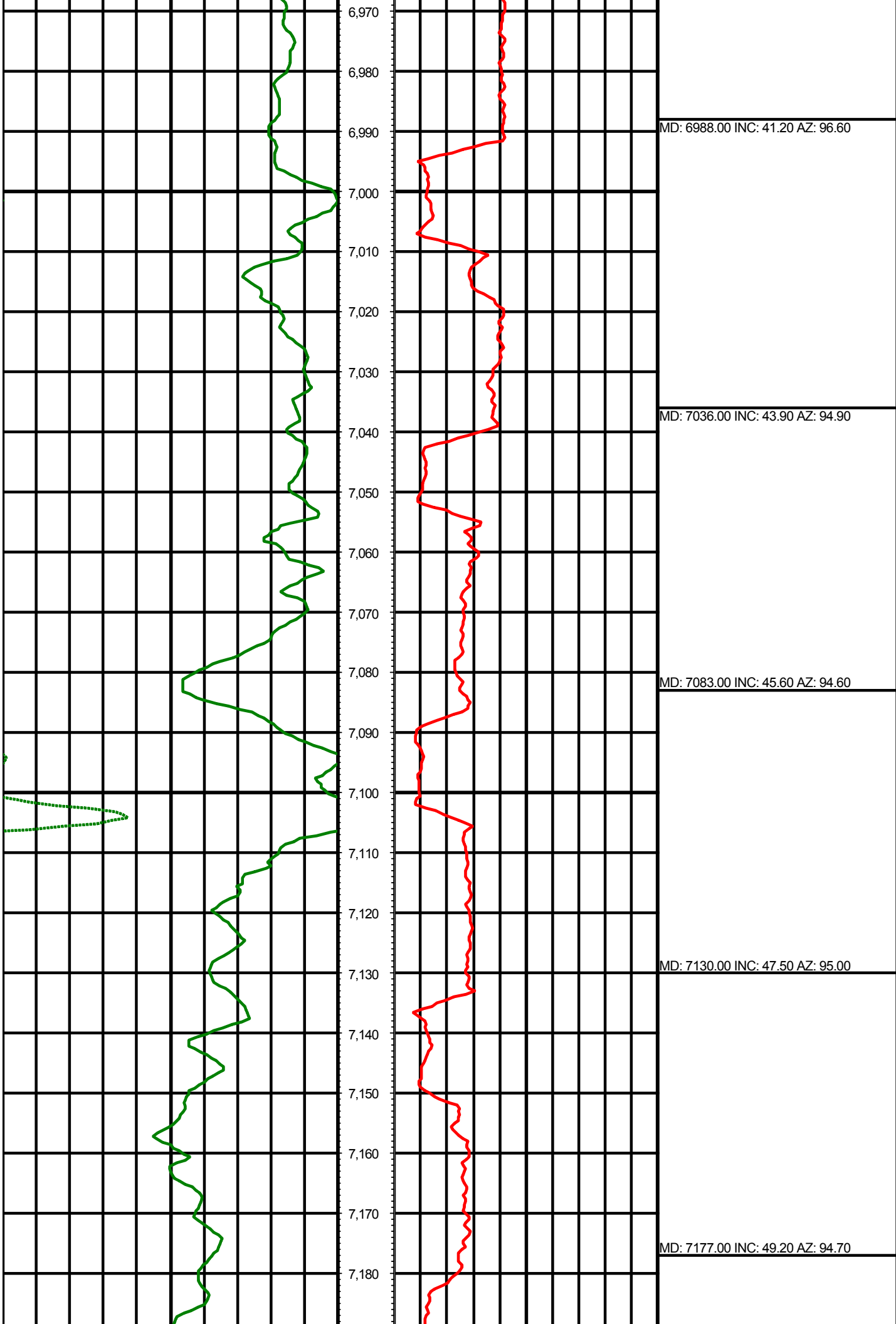
MD: 6043.00 INC: 8.70 AZ: 219.90

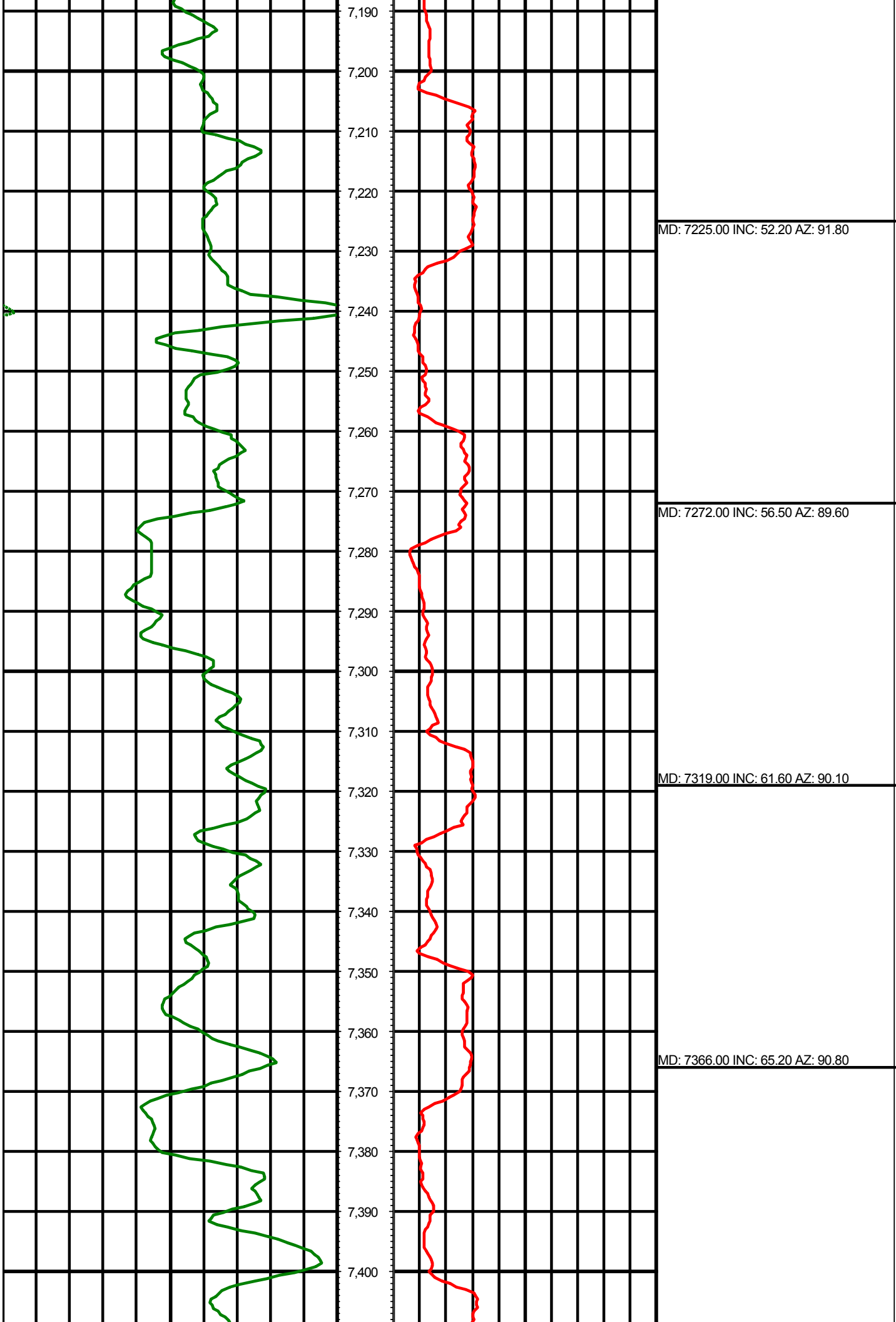


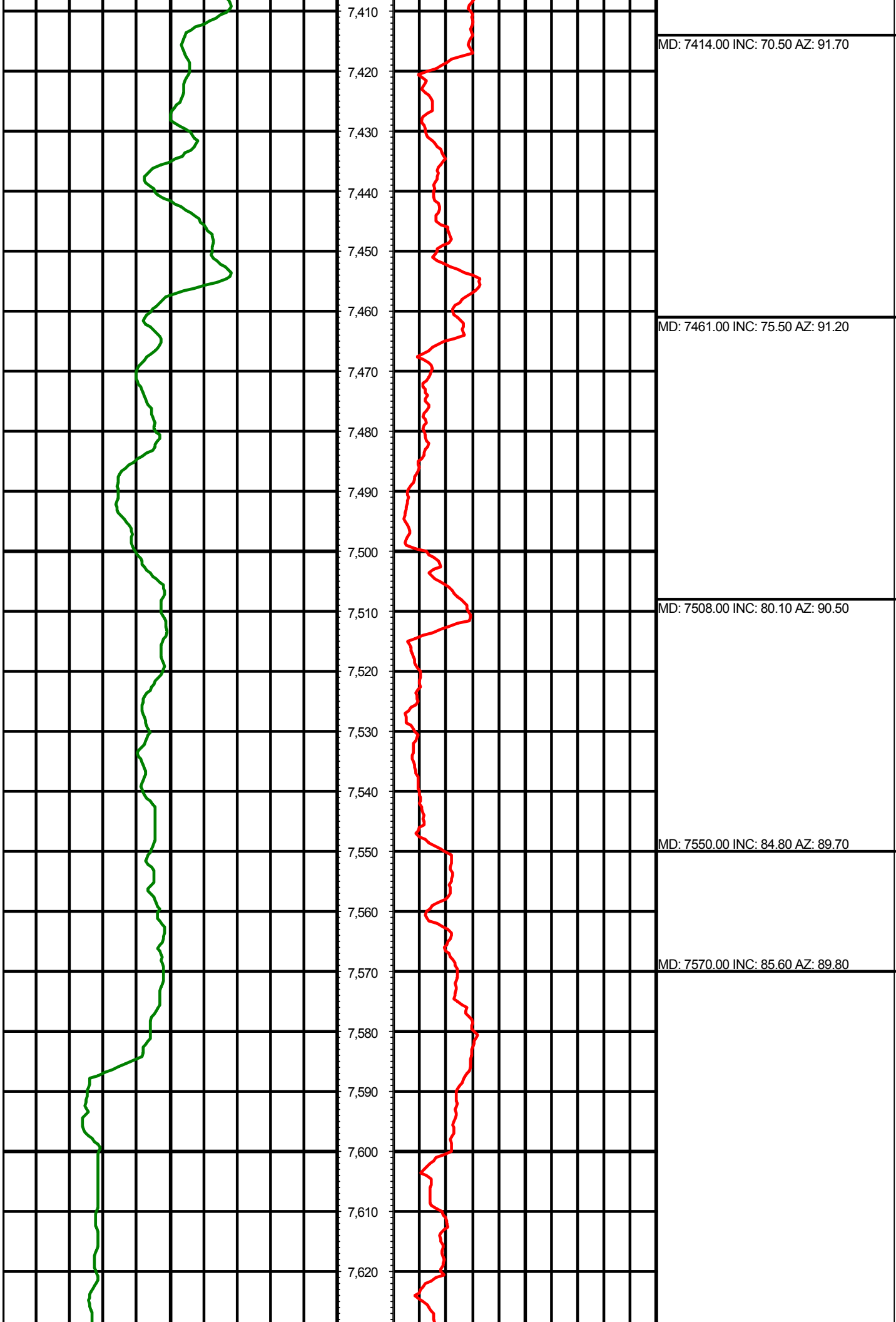


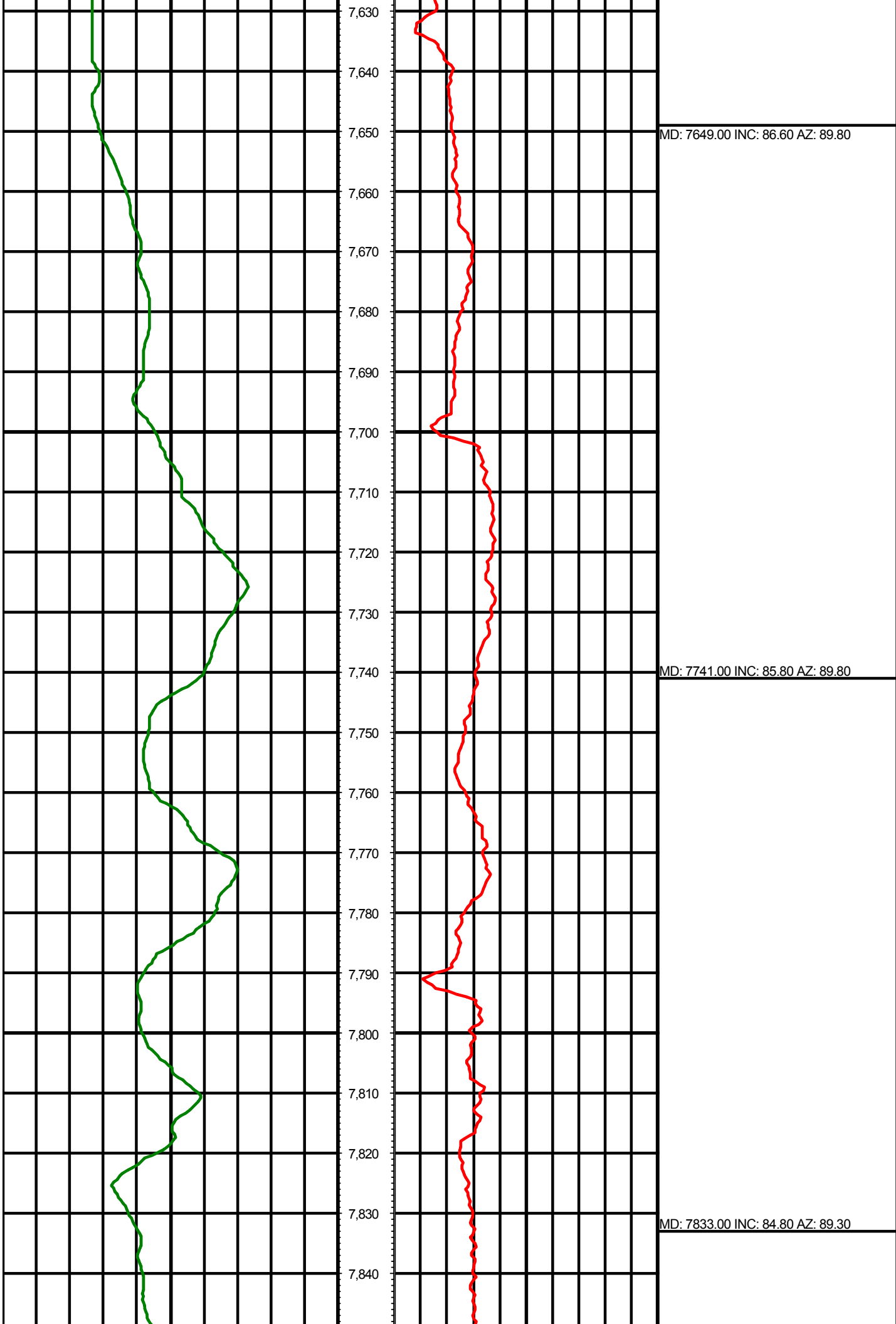








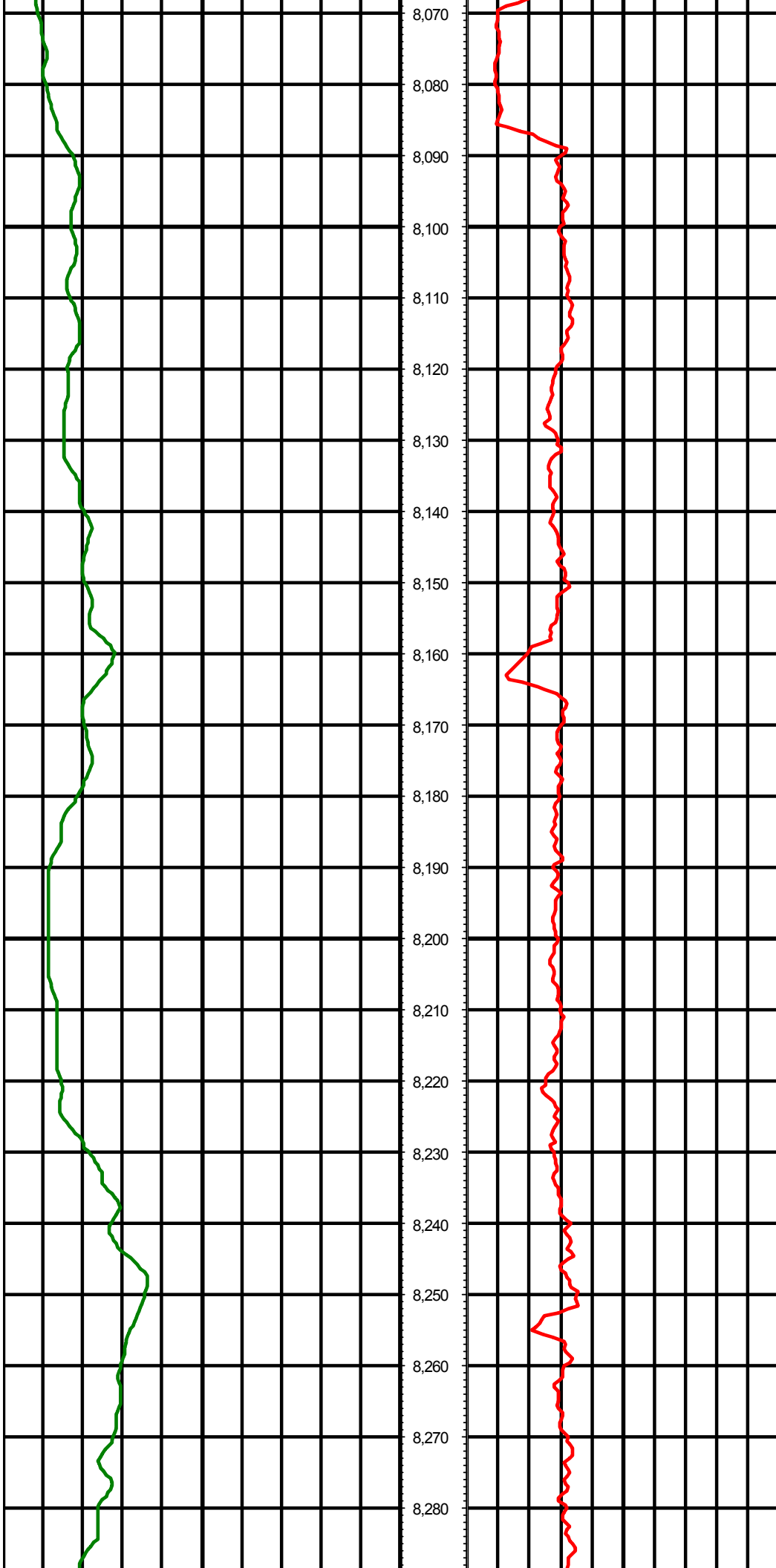






MD: 7925.00 INC: 86.50 AZ: 90.50

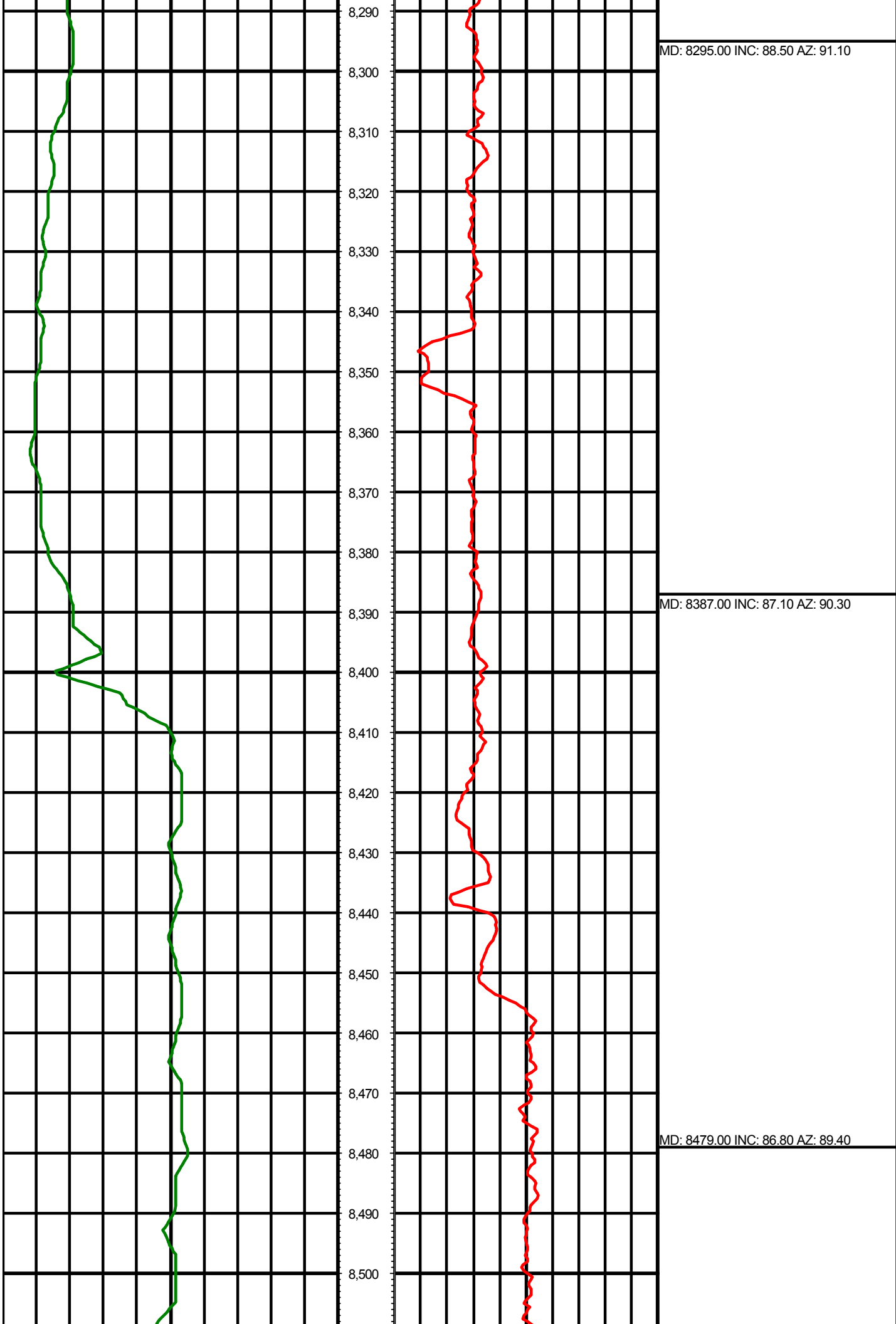
MD: 8018.00 INC: 87.30 AZ: 90.40



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MD: 8111.00 INC: 88.70 AZ: 91.20

MD: 8203.00 INC: 88.80 AZ: 91.10





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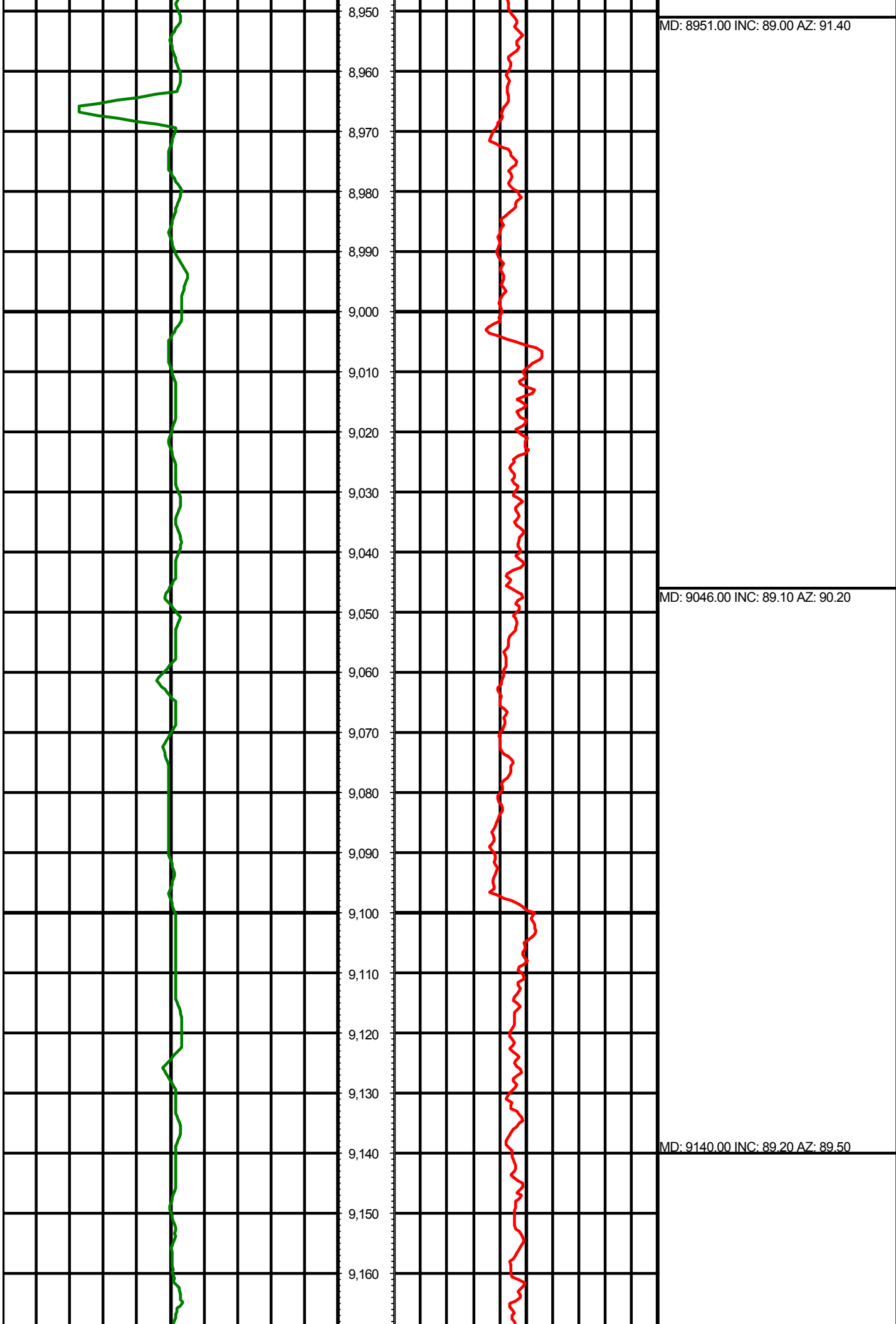
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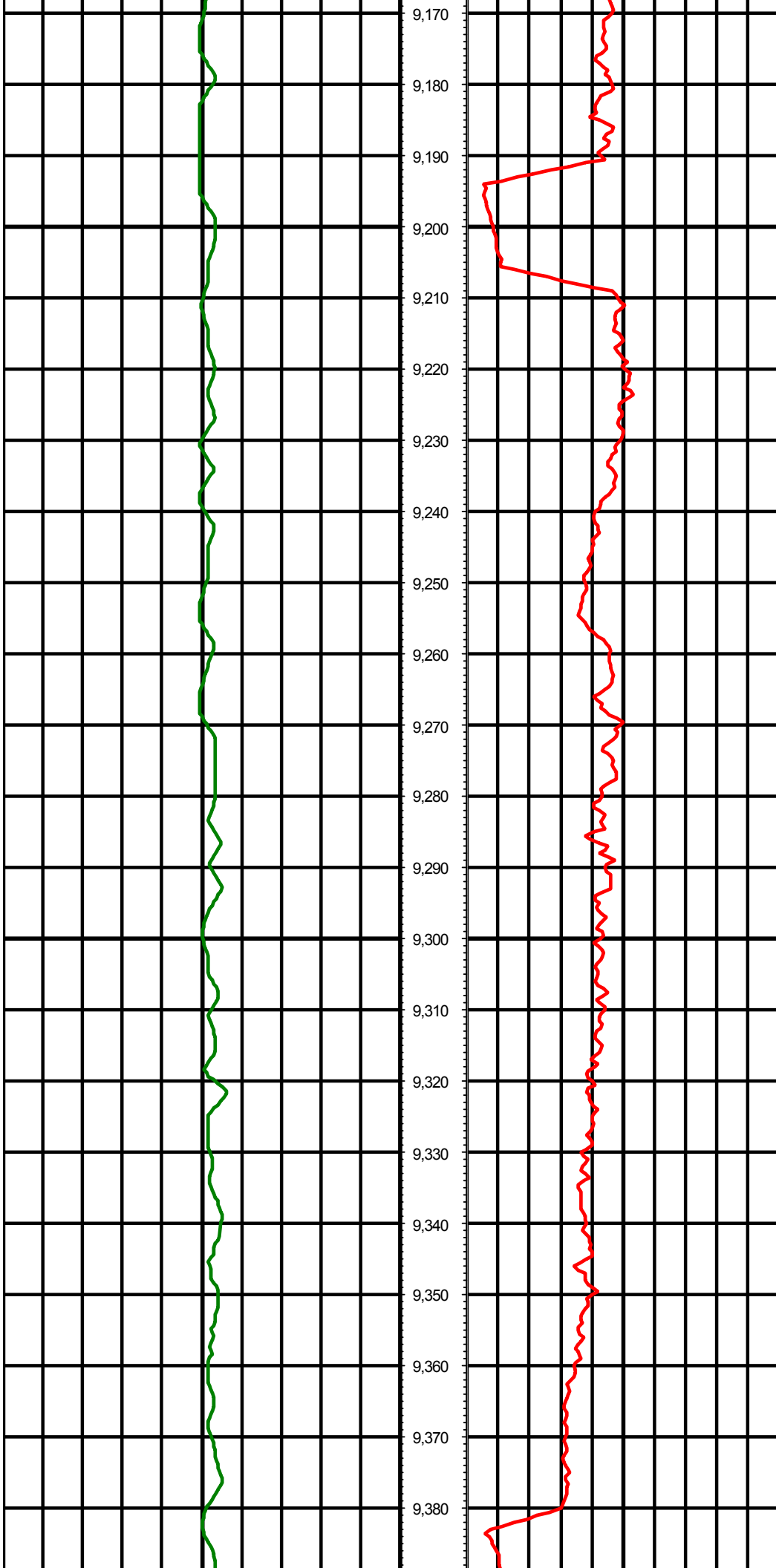
MD: 8668.00 INC: 90.30 AZ: 90.20



MD: 8762.00 INC: 91.30 AZ: 89.60

MD: 8857.00 INC: 90.40 AZ: 91.20





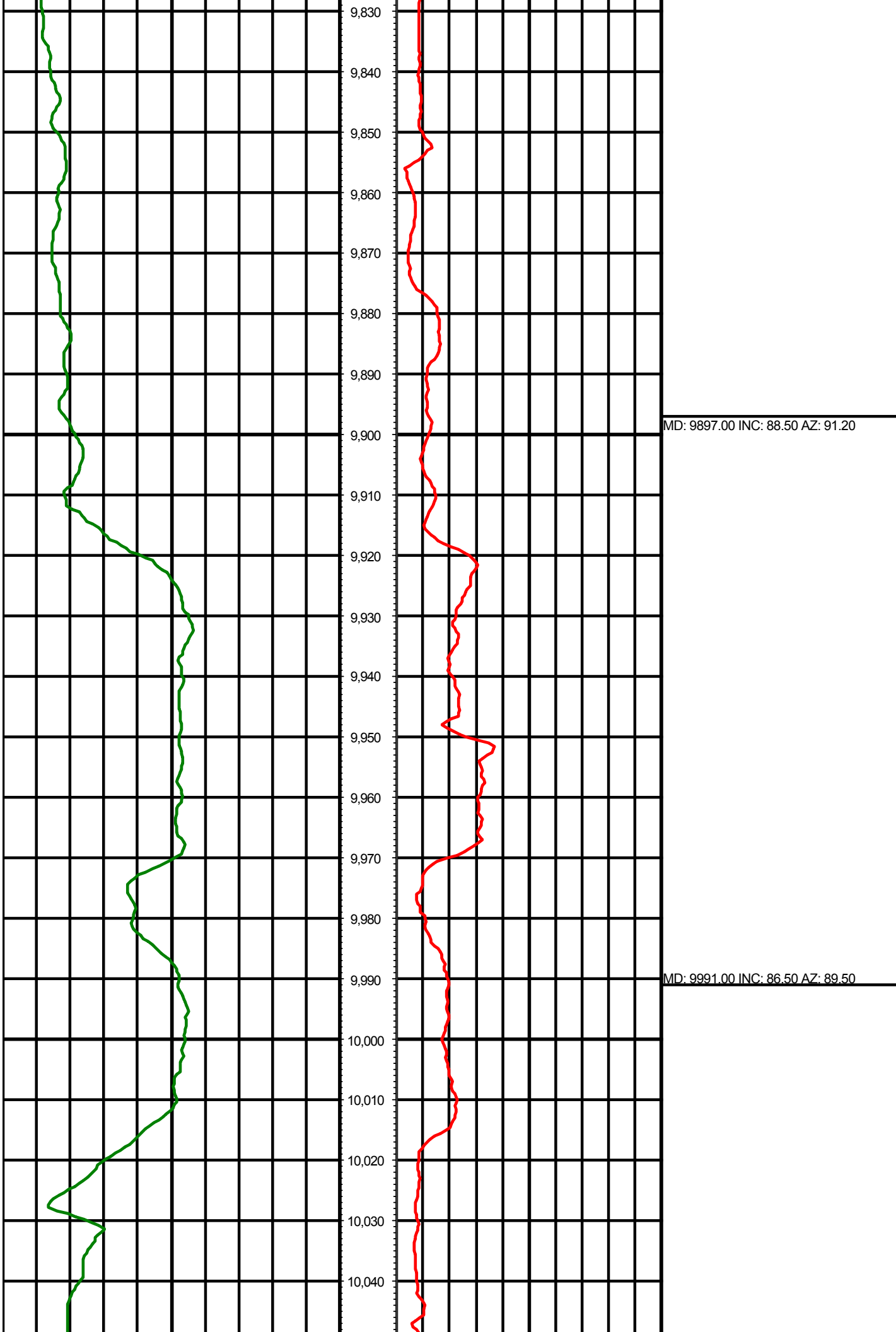
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MD: 9329.00 INC: 89.40 AZ: 89.00



MD: 9424.00 INC: 89.60 AZ: 90.90

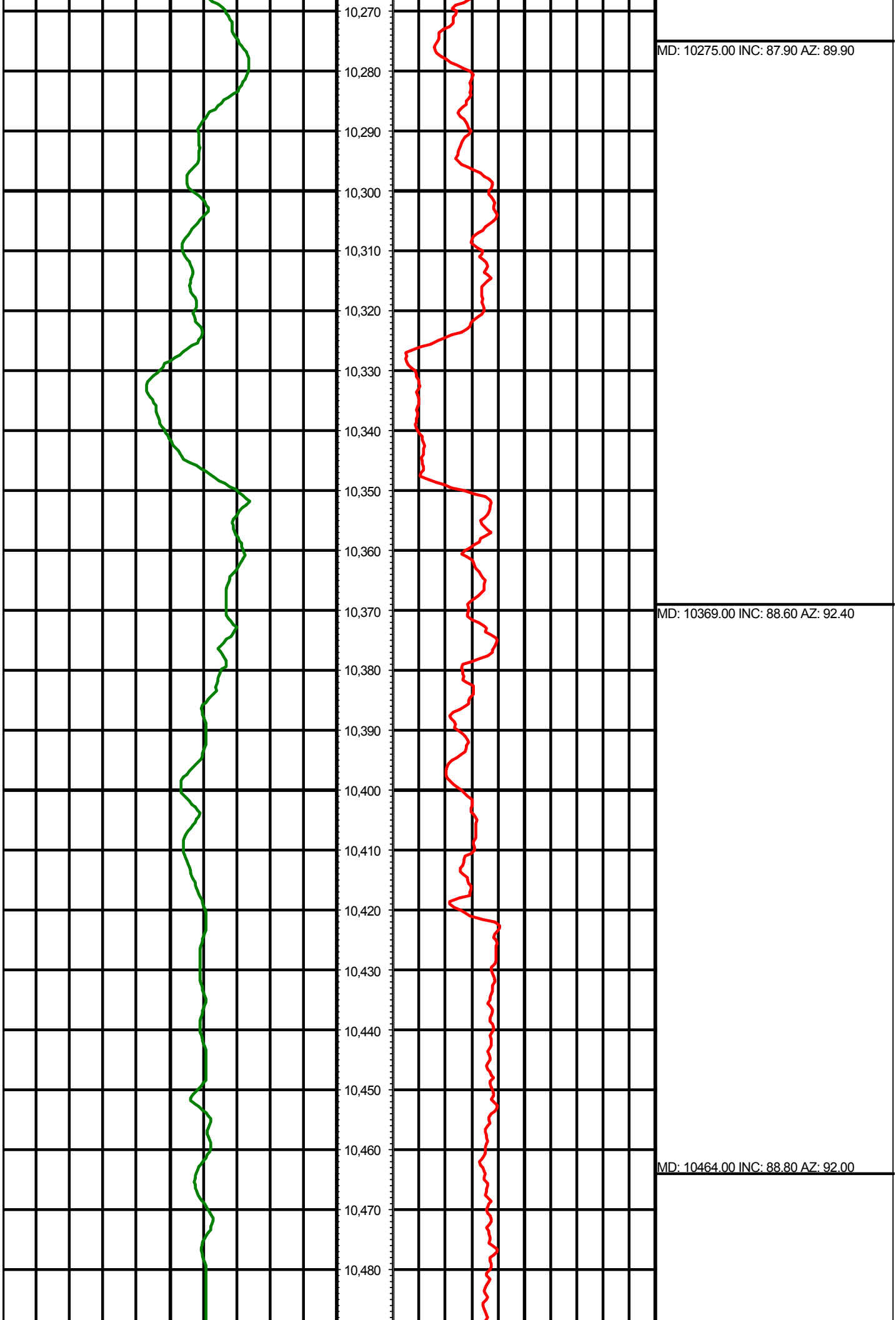
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MD: 10086.00 INC: 86.30 AZ: 89.10

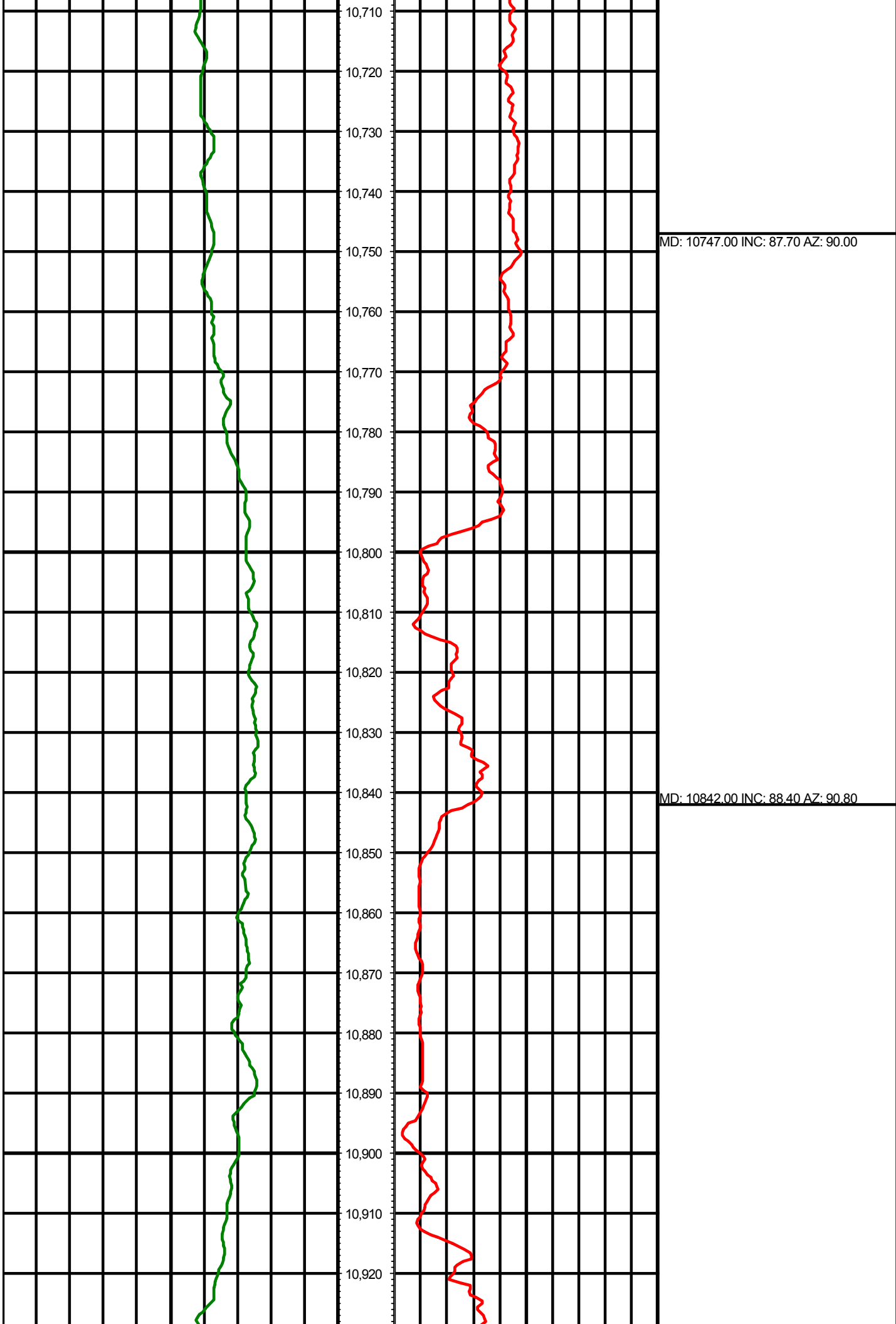
MD: 10180.00 INC: 85.60 AZ: 88.00

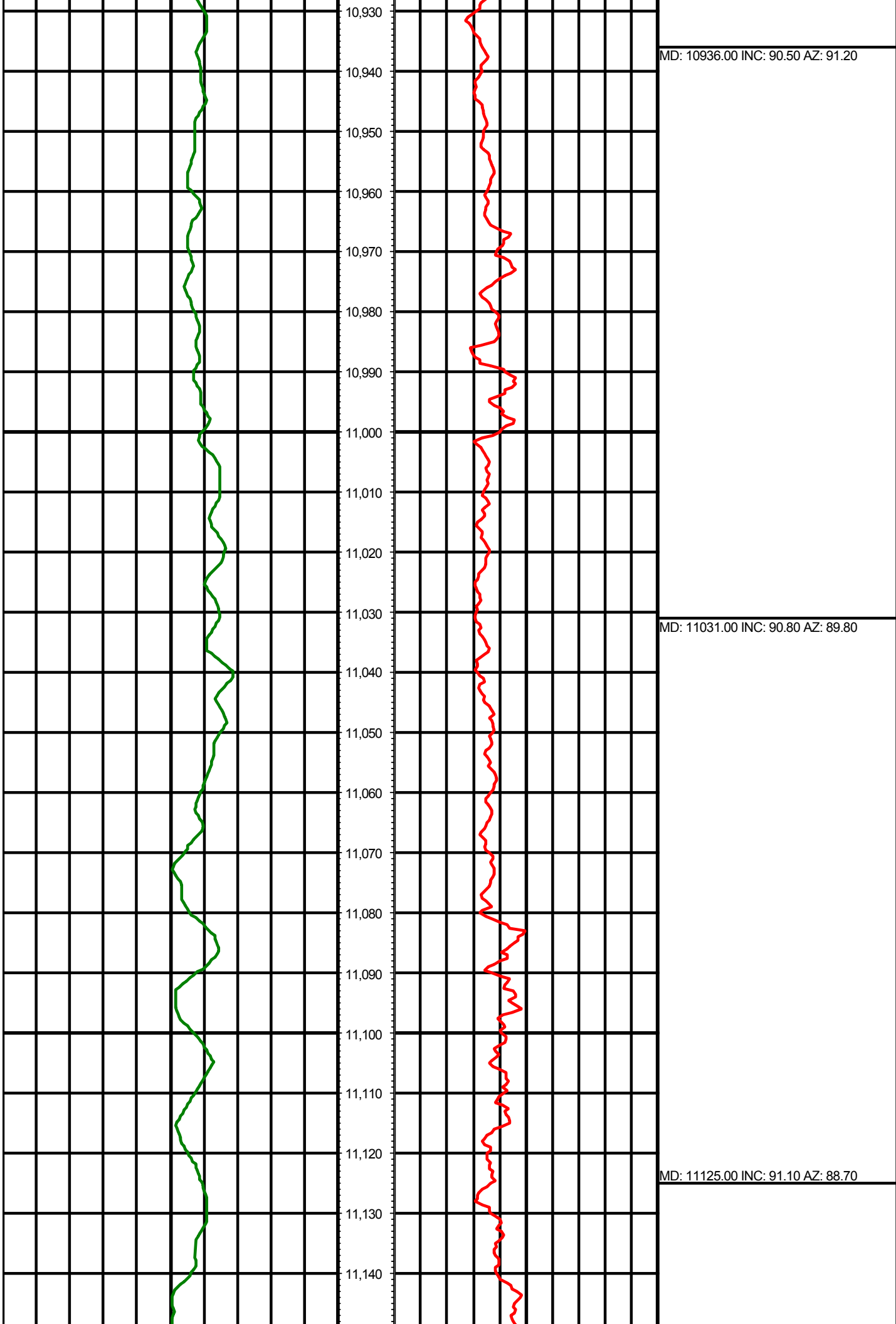


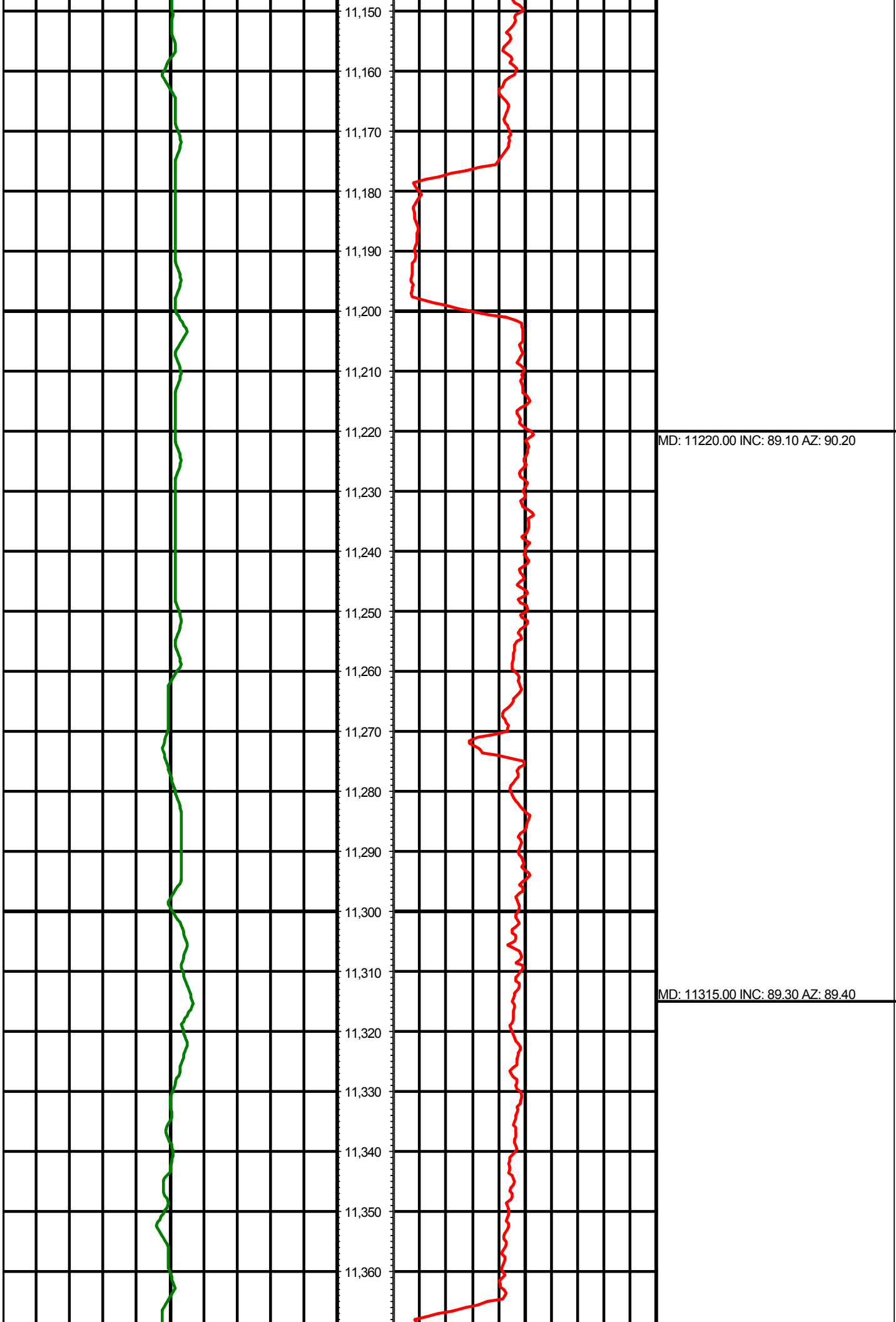


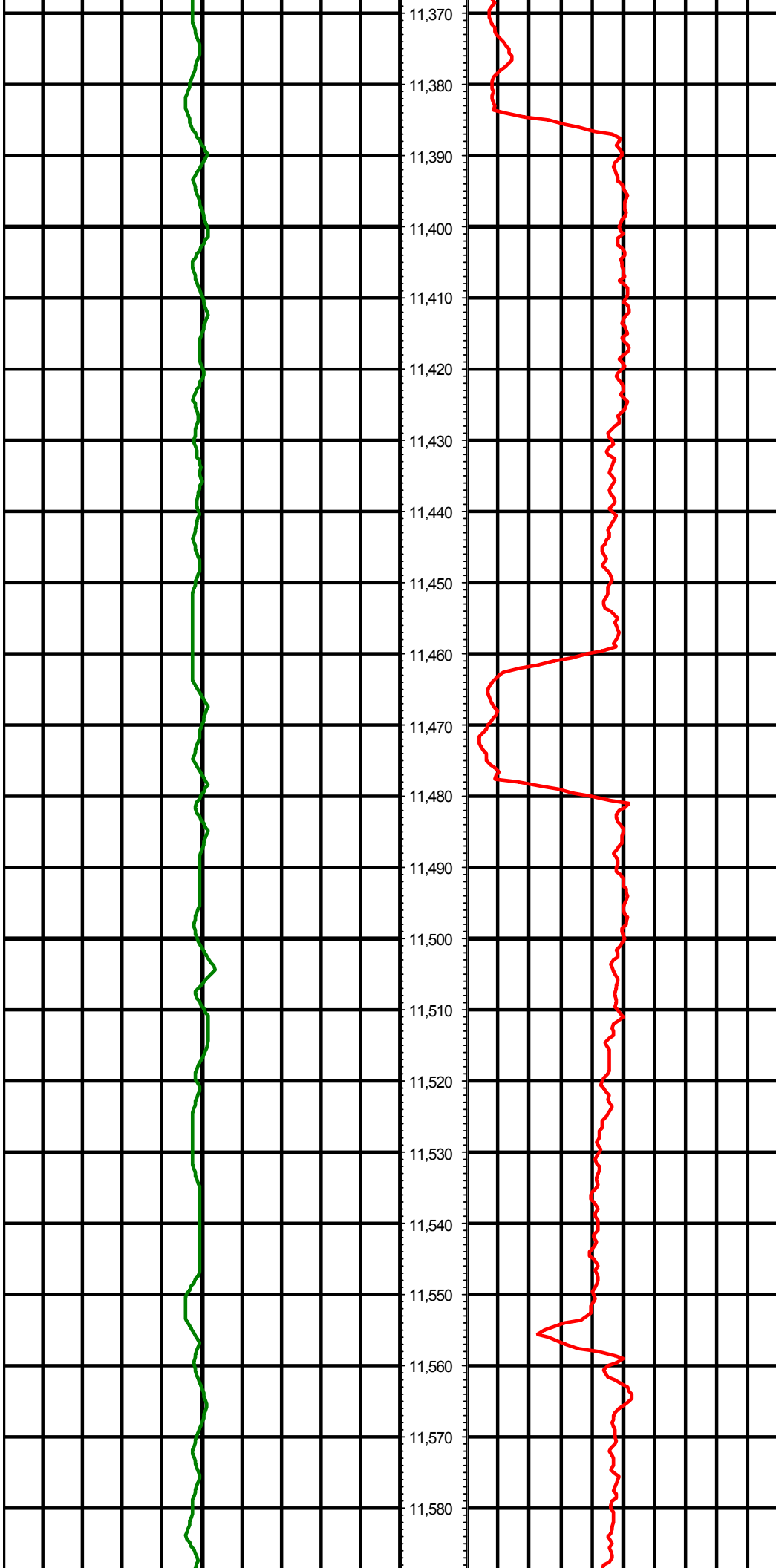
MD: 10558.00 INC: 88.90 AZ: 91.30

MD: 10653.00 INC: 88.70 AZ: 90.50





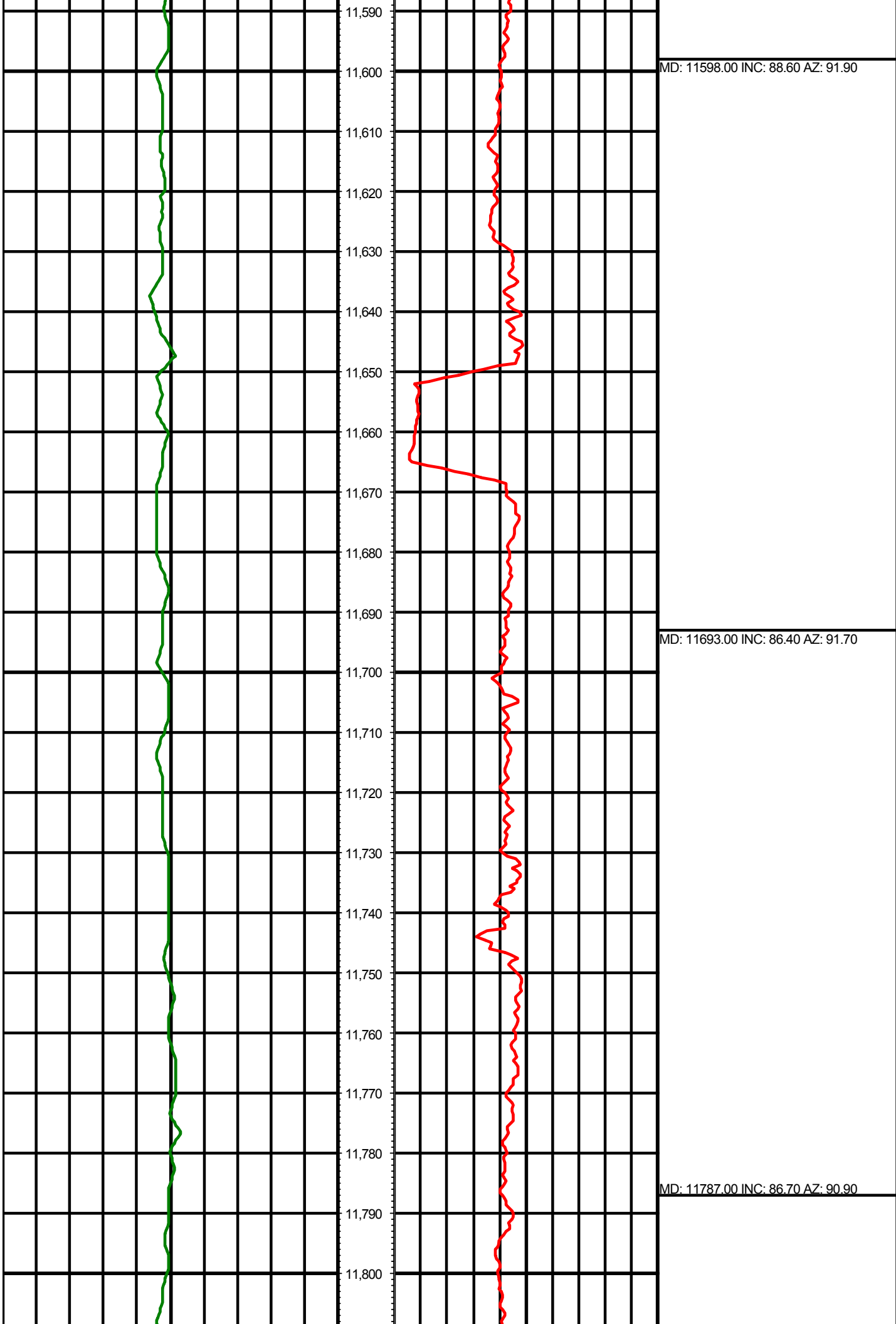


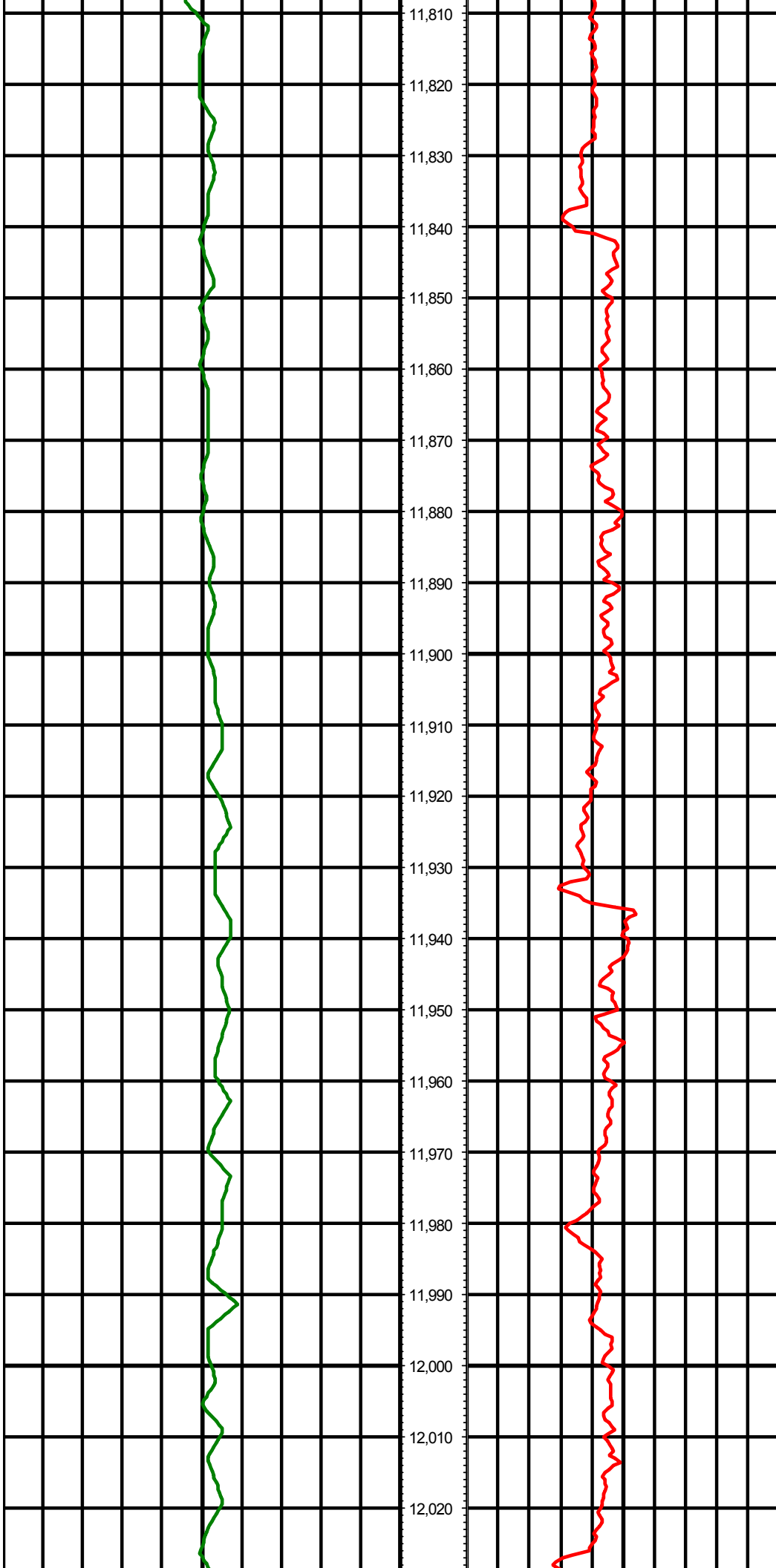


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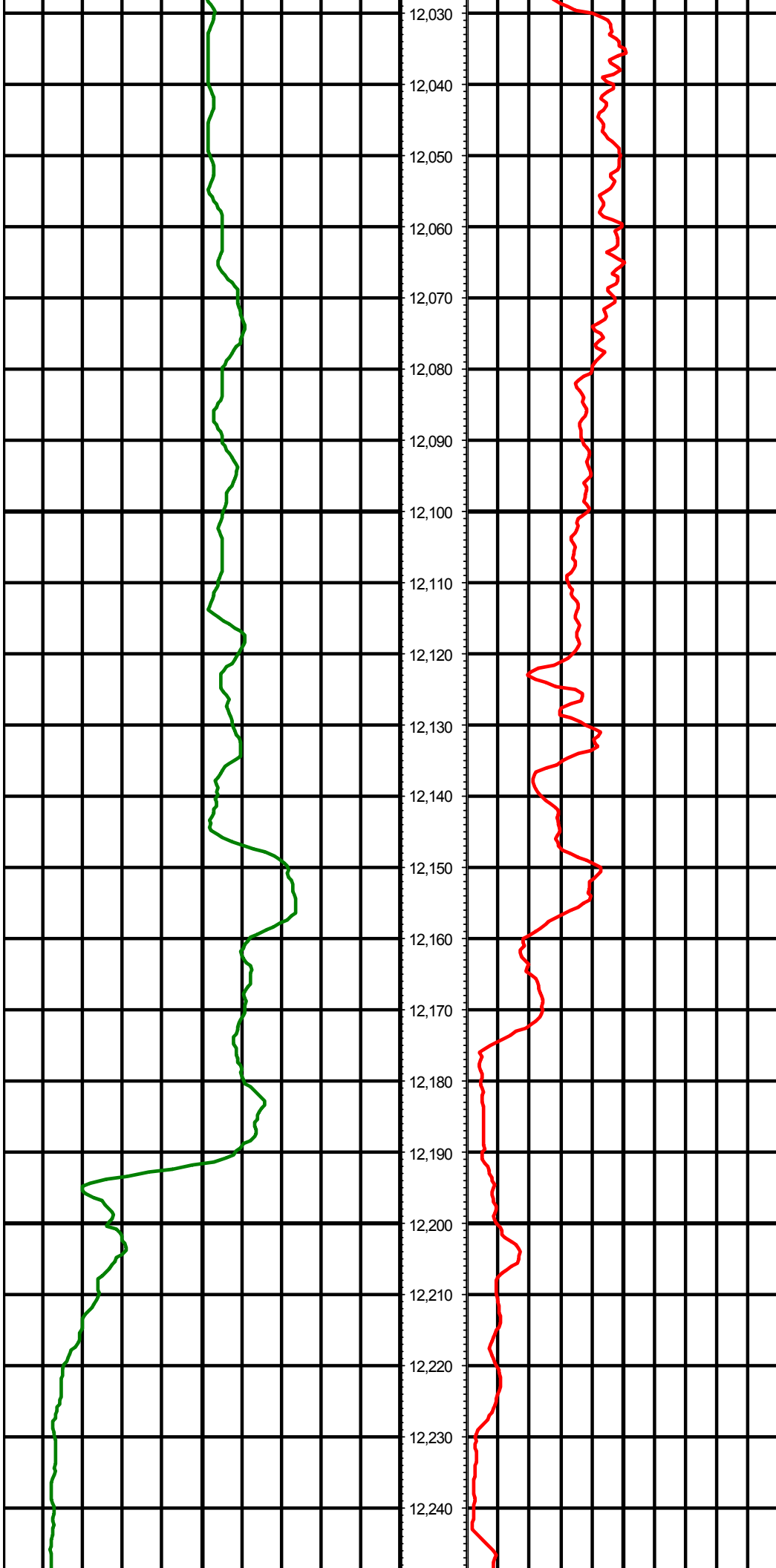
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MD: 11882.00 INC: 86.90 AZ: 90.20

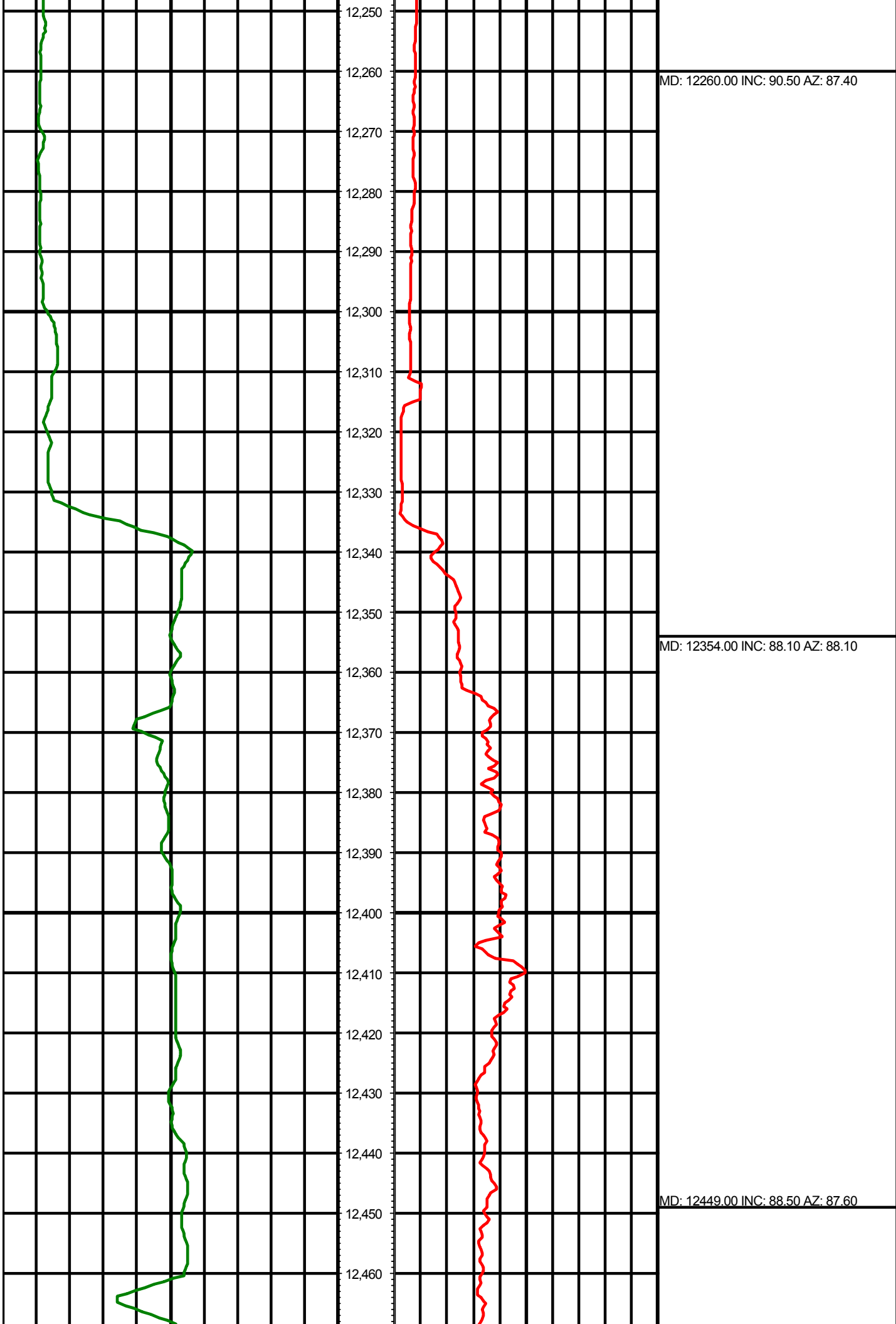
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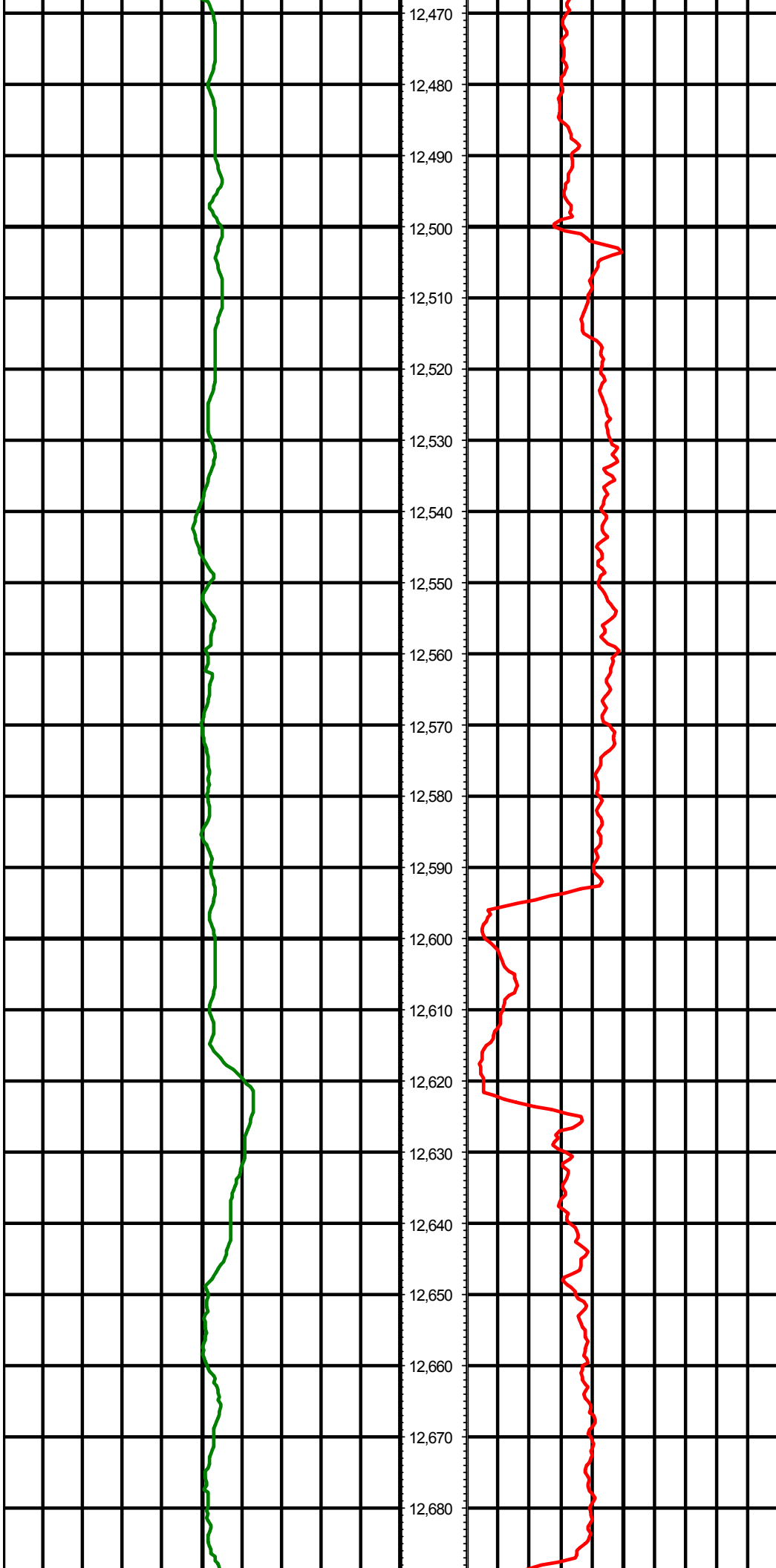


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MD: 12071.00 INC: 87.30 AZ: 89.00

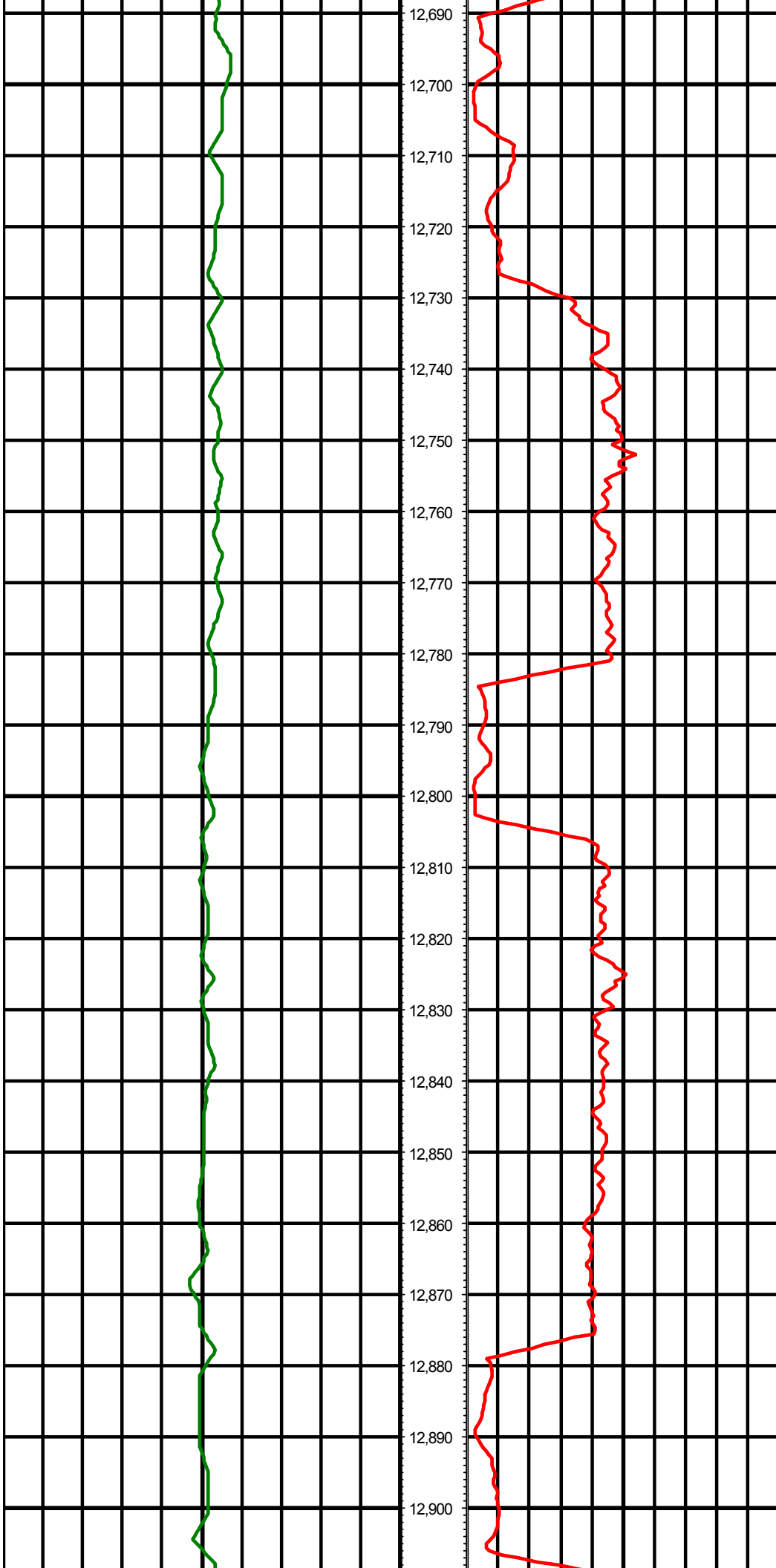
MD: 12165.00 INC: 87.00 AZ: 87.70





MD: 12543.00 INC: 89.00 AZ: 87.20

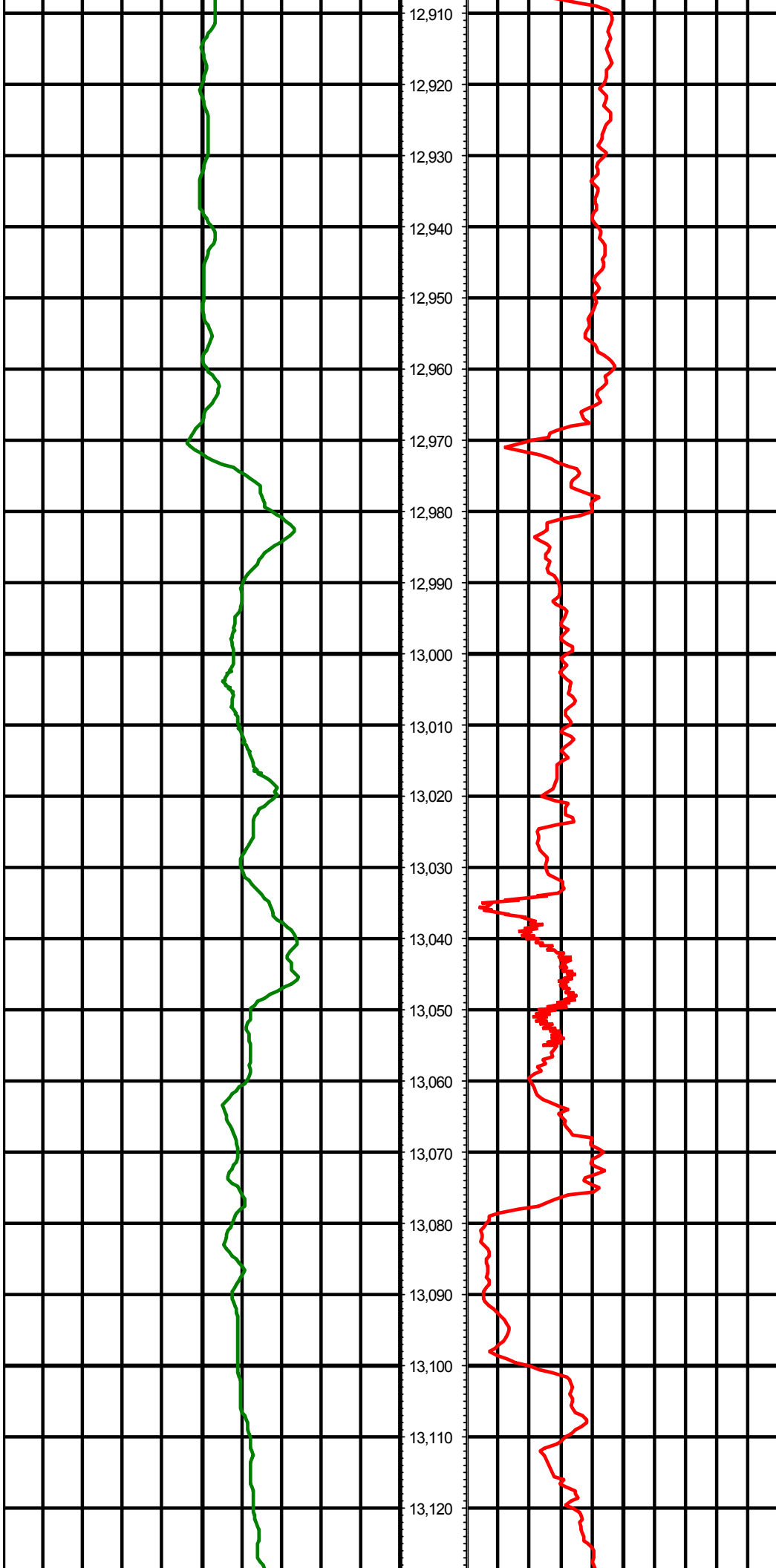
MD: 12638.00 INC: 89.50 AZ: 86.90



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MD: 12732.00 INC: 88.00 AZ: 89.90

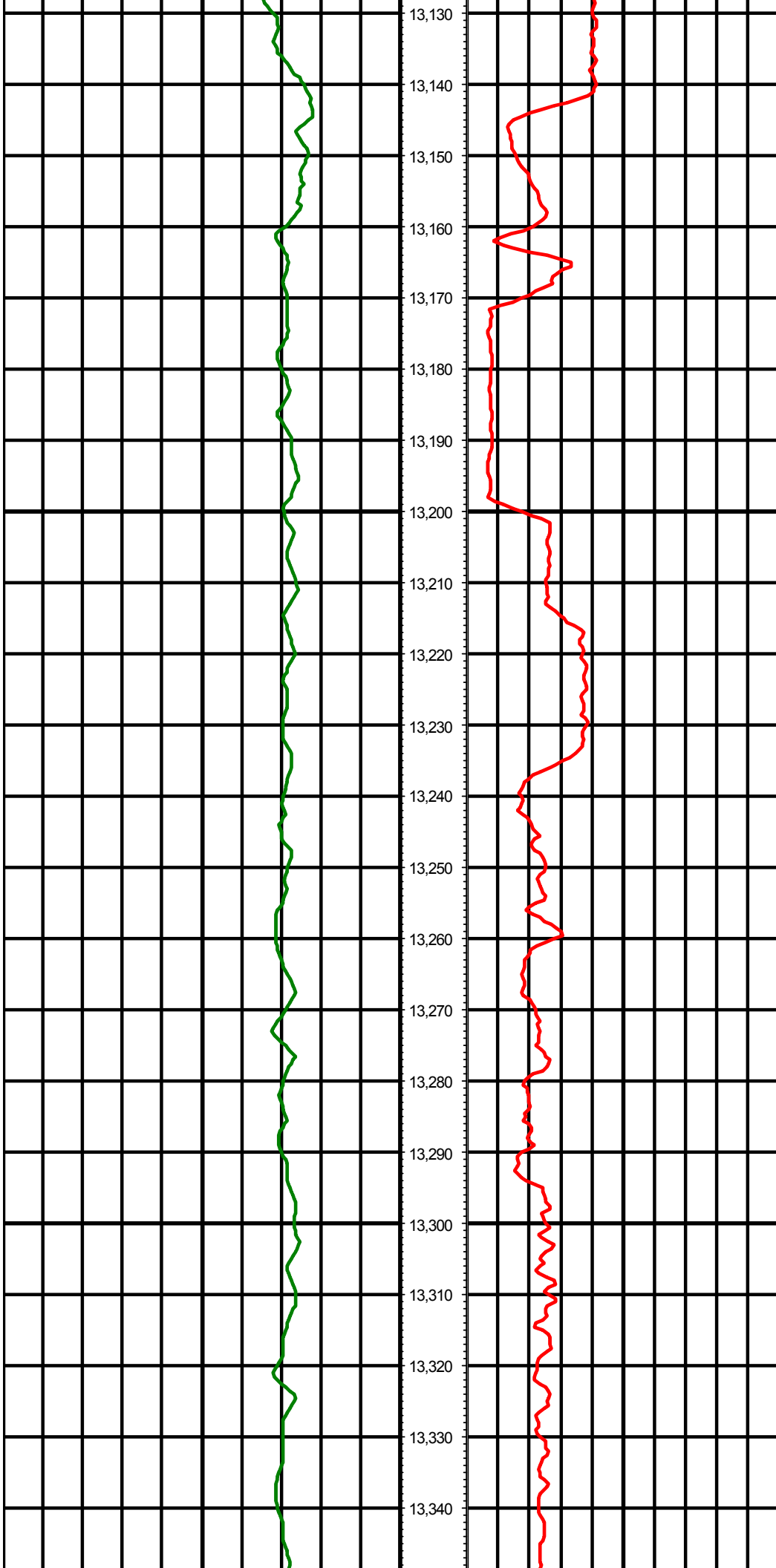
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MD: 12921.00 INC: 84.50 AZ: 91.90

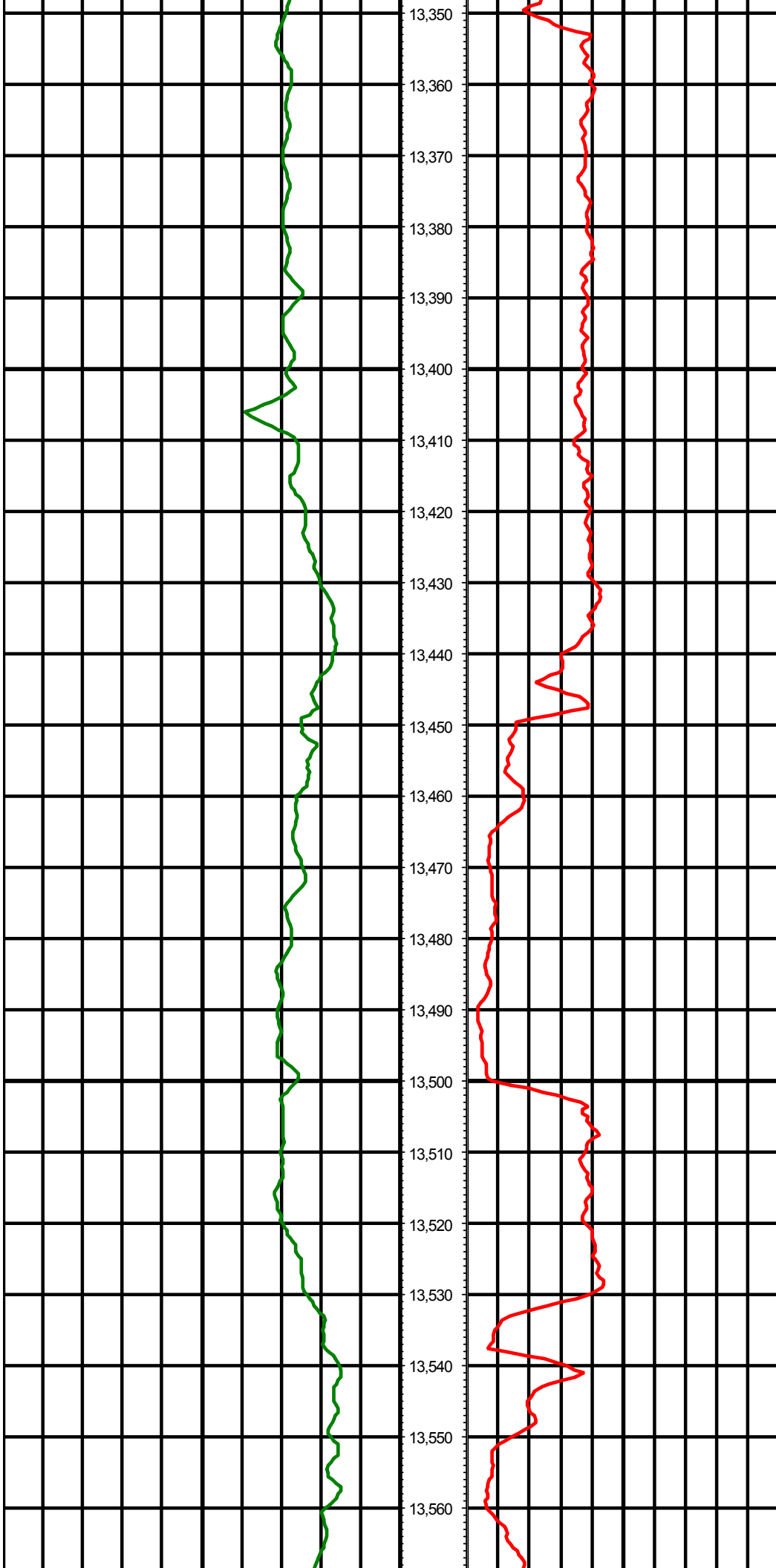
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MD: 13110.00 INC: 84.80 AZ: 91.20



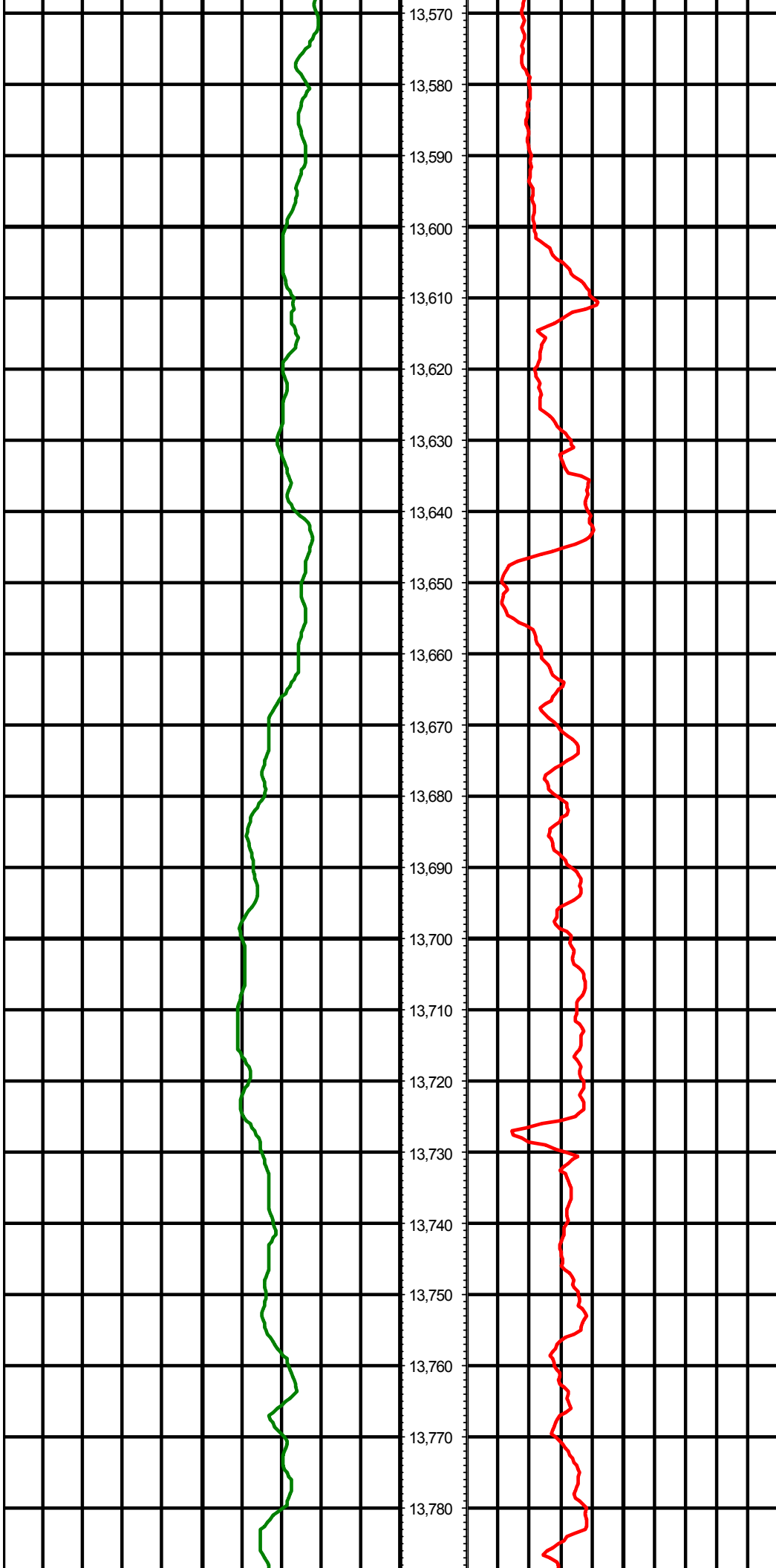
MD: 13204.00 INC: 86.90 AZ: 93.20

MD: 13299.00 INC: 87.40 AZ: 92.70



MD: 13393.00 INC: 87.60 AZ: 91.20

MD: 13488.00 INC: 88.30 AZ: 91.50



MD: 13582.00 INC: 89.90 AZ: 92.30

MD: 13677.00 INC: 90.10 AZ: 92.10

MD: 13772.00 INC: 90.50 AZ: 92.70



MD: 13866.00 INC: 88.00 AZ: 90.30

MD: 13961.00 INC: 88.00 AZ: 89.80

