



Cathedral Energy Services

1949 Pyrite Rd  
Casper, Wy, 82604**145046**

5"-100' - MD

3/27/2014 1:55:27 PM

**CATHEDRAL****Oper. Company:** EnCana Oil & Gas (USA) Inc.**Country:** U.S.A.**State / Province:** Colorado**County / Parish:** Weld**Started:** 02/17/2014 06:00 PM**API/UWI:** 05-123-38169**Field:** DJ Basin**Well:** Lochbouie 2H-31H**Rig:** Helmerich & Payne 522**Ended:** 02/24/2014 12:30 PMGamma Ray  
Section Plane:  
Gamma Attenuation Factor:  
Gamma Averaging**Personnel****Day Hand:** J. Nichols**Night Hand:** C. Van Oerle**Comp. Emp:** Sanford Pulley

Maximum Temperature: °f

**Location****Latitude:** 40.014090**Longitude:** -104.711950**Elev. GL:** 5007**Elev. DF:****Elev. KB:** 5037

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

**Hole Data**

Size	From	To
12-1/4	0	1515
8-3/4	1515	8046
6-1/8	8046	12290

**Casing Data**

Size	From	To
9 5/8	0	1507
7	0	8040
4-1/2	0	12290

**Bit Sizes**

Size	From	To
12-1/4	0	1515
8-3/4	1515	8046
6-1/8	8046	12290

**Mud Data**

Type	Weight	Density	Viscosity	Rm	Rmf	Rmc	From	To
Water	8.4		29				0	4500
LSND	9.9		40				4500	8000
LSND	10.2		44				8000	12290

**Tool Run Data**

Serial Number	Gamma Offset	Resist. Offset	Start Time	Start Depth	End Time	End Depth
309	37.57	0	2/17/2014 2:00:33 AM	5000	2/18/2014 1:00:33 PM	7174
309	41.6	0	2/18/2014 2:00:03 PM	7174	2/19/2014 1:00:03 PM	7703
309	42.21	0	2/19/2014 2:00:30 PM	7703	2/20/2014 6:30:30 PM	8046
309	38.29	0	2/22/2014 5:00:47 AM	8046	2/25/2014 4:00:47 AM	12290

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.

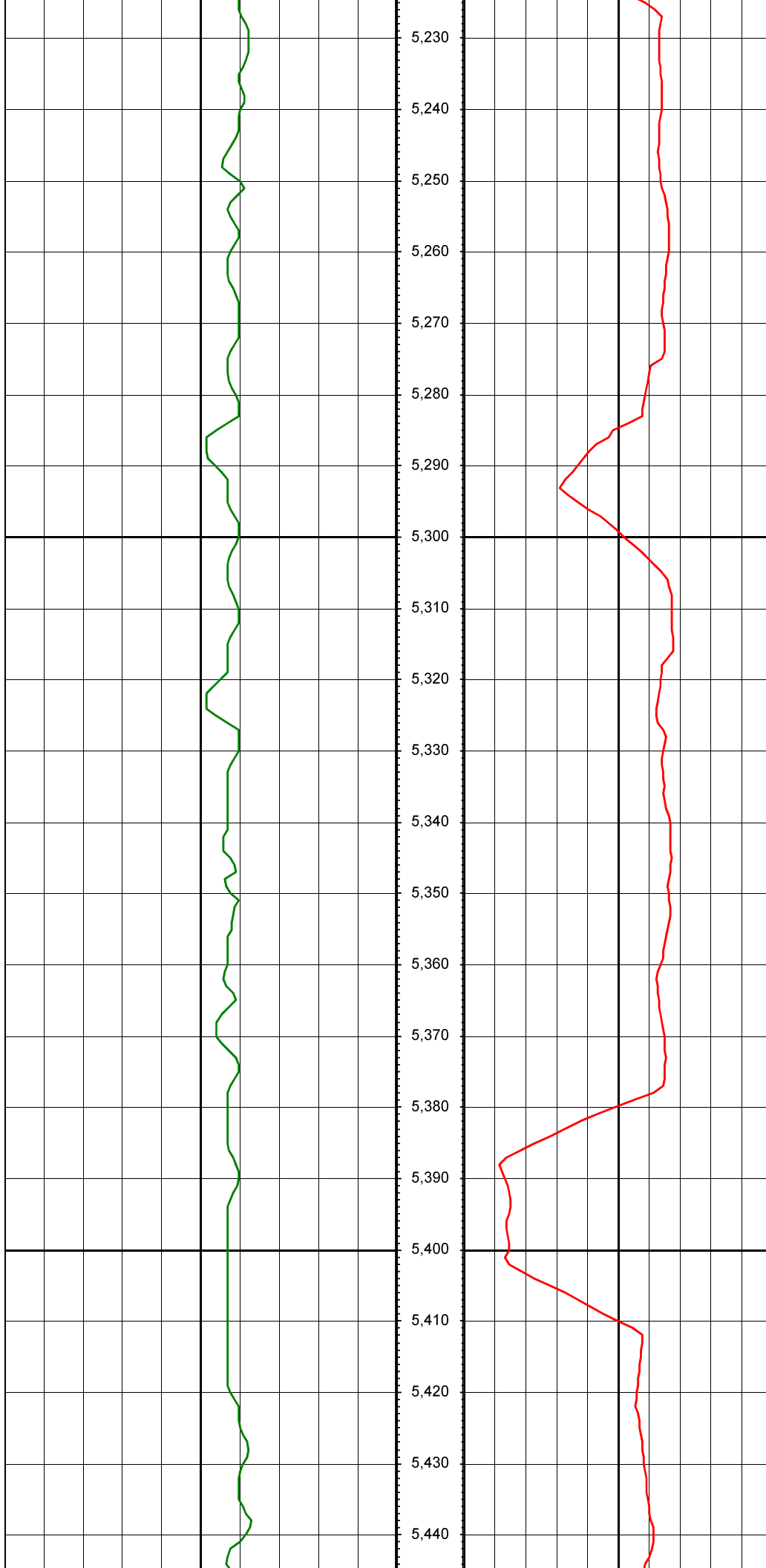
0.00      Gamma Ray(API)      150.00      MD      0.00      ROP (FT/HR)      1,000.00      Surveys (MD/INC/AZ)

150.00      2      300.00      FT



MD: 5043.00 INC: 14.90 AZ: 84.30

MD: 5138.00 INC: 17.40 AZ: 81.80



MD: 5232.00 INC: 19.10 AZ: 78.90

MD: 5327.00 INC: 17.90 AZ: 74.80

MD: 5422.00 INC: 17.20 AZ: 75.90



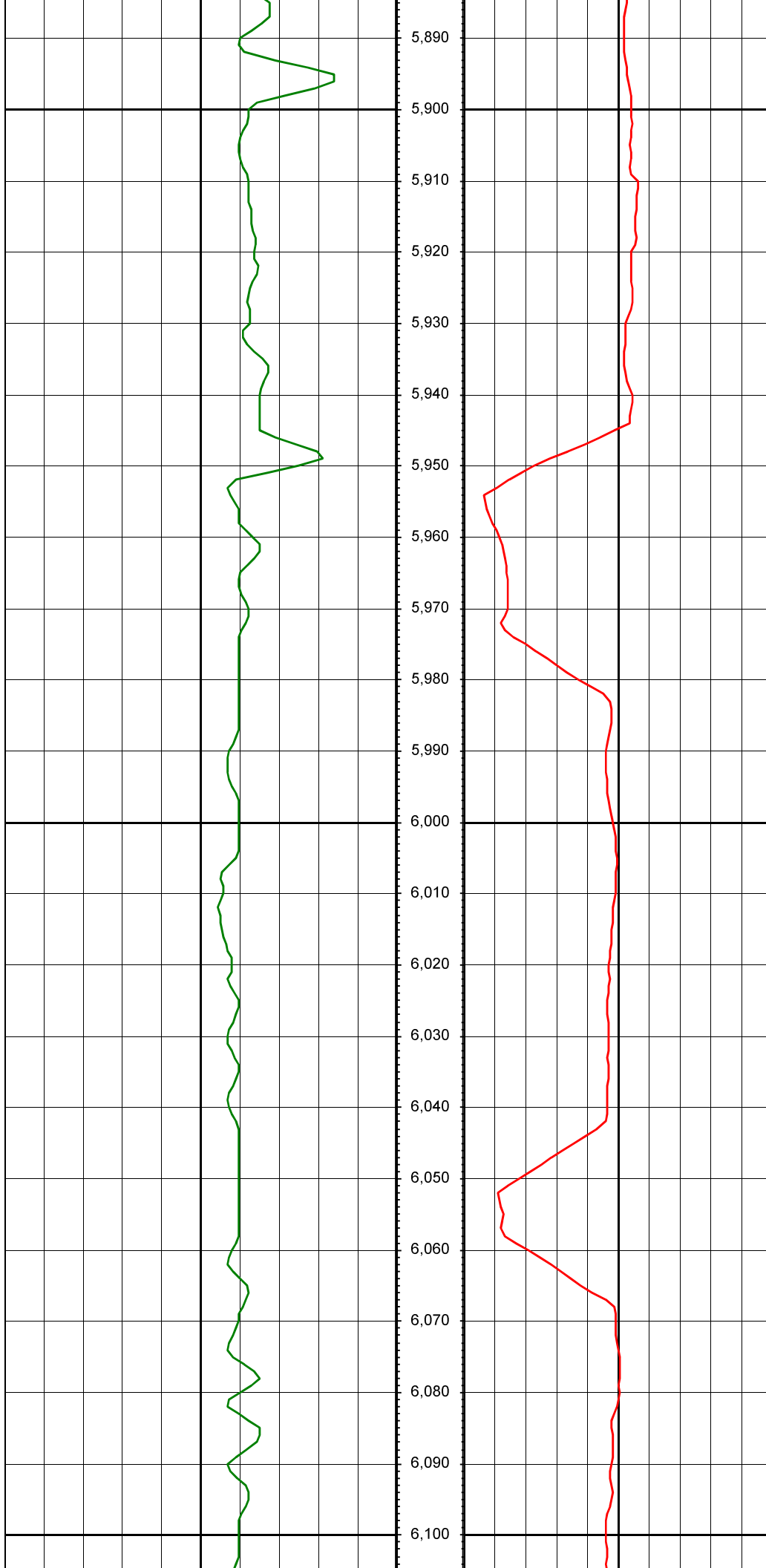
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MD: 5611.00 INC: 15.20 AZ: 79.20



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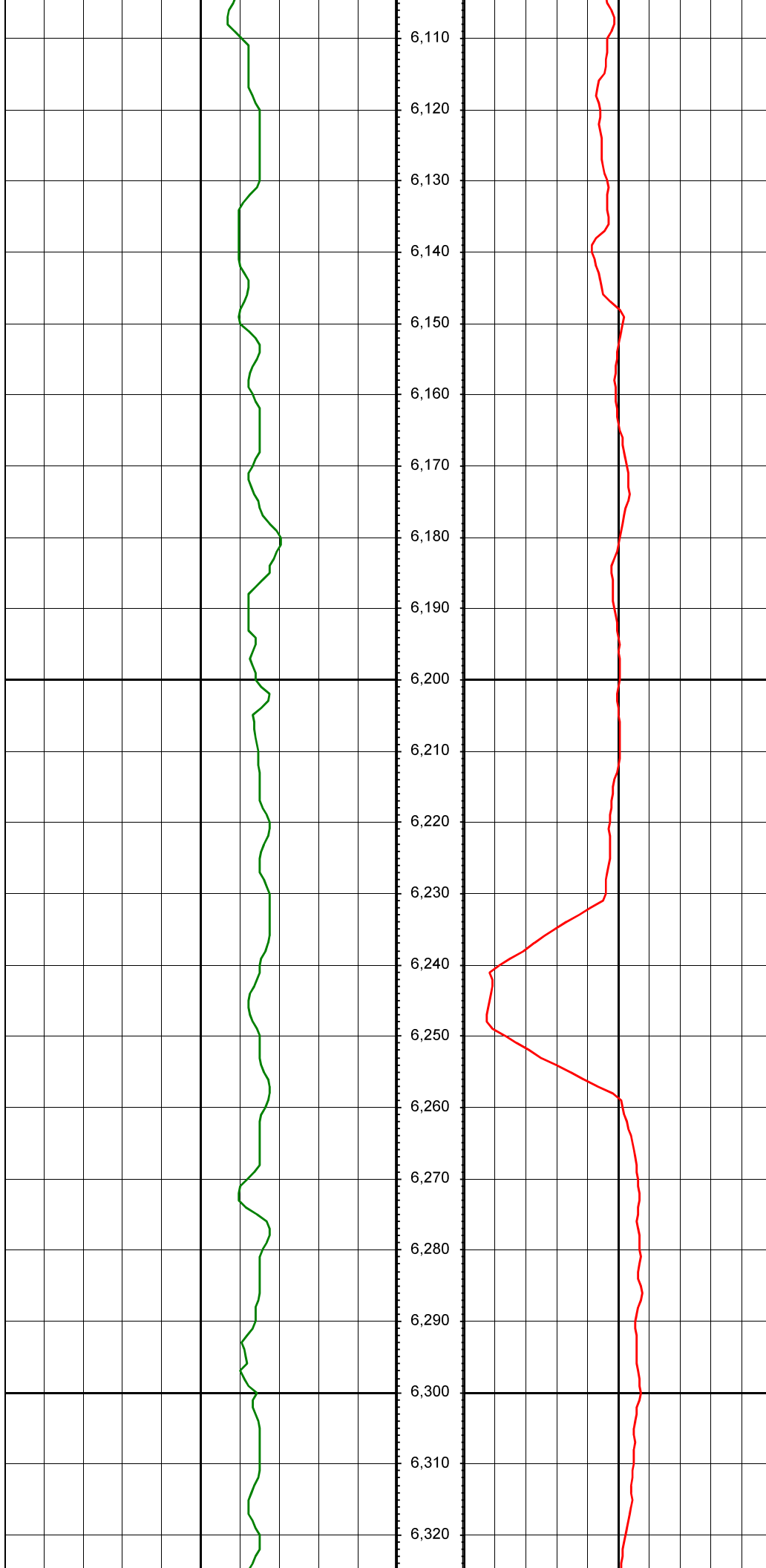
MD: 5800.00 INC: 16.50 AZ: 81.40



MD: 5894.00 INC: 13.80 AZ: 80.40

MD: 5989.00 INC: 13.30 AZ: 80.40

MD: 6084.00 INC: 12.60 AZ: 78.10



MD: 6178.00 INC: 10.20 AZ: 75.70

MD: 6273.00 INC: 8.60 AZ: 73.50



MD: 6367.00 INC: 7.10 AZ: 74.50

MD: 6462.00 INC: 4.90 AZ: 61.80





MD: 6557.00 INC: 3.70 AZ: 69.00

MD: 6651.00 INC: 3.30 AZ: 79.80

MD: 6746.00 INC: 1.40 AZ: 103.30



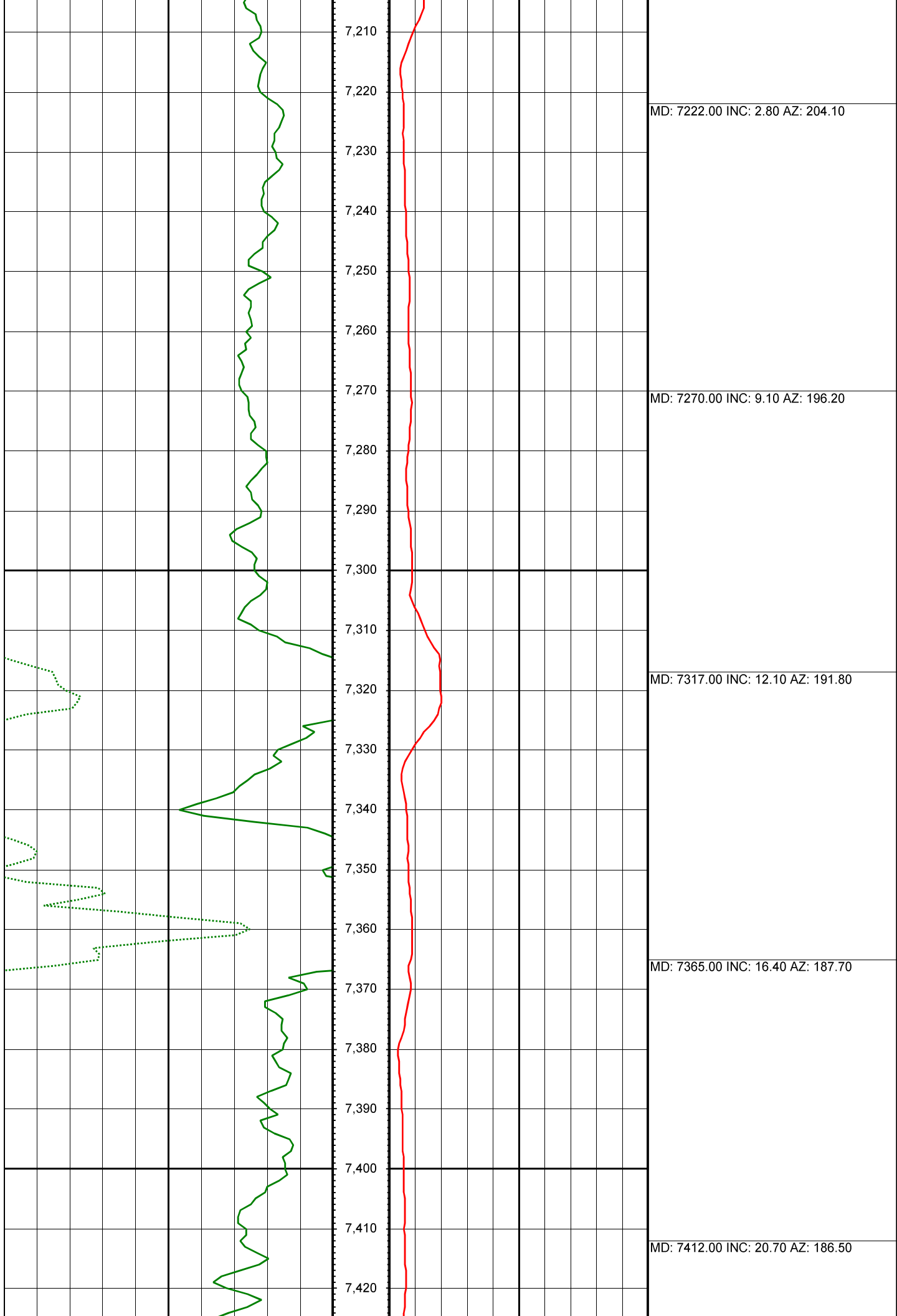
MD: 6840.00 INC: 0.70 AZ: 171.40

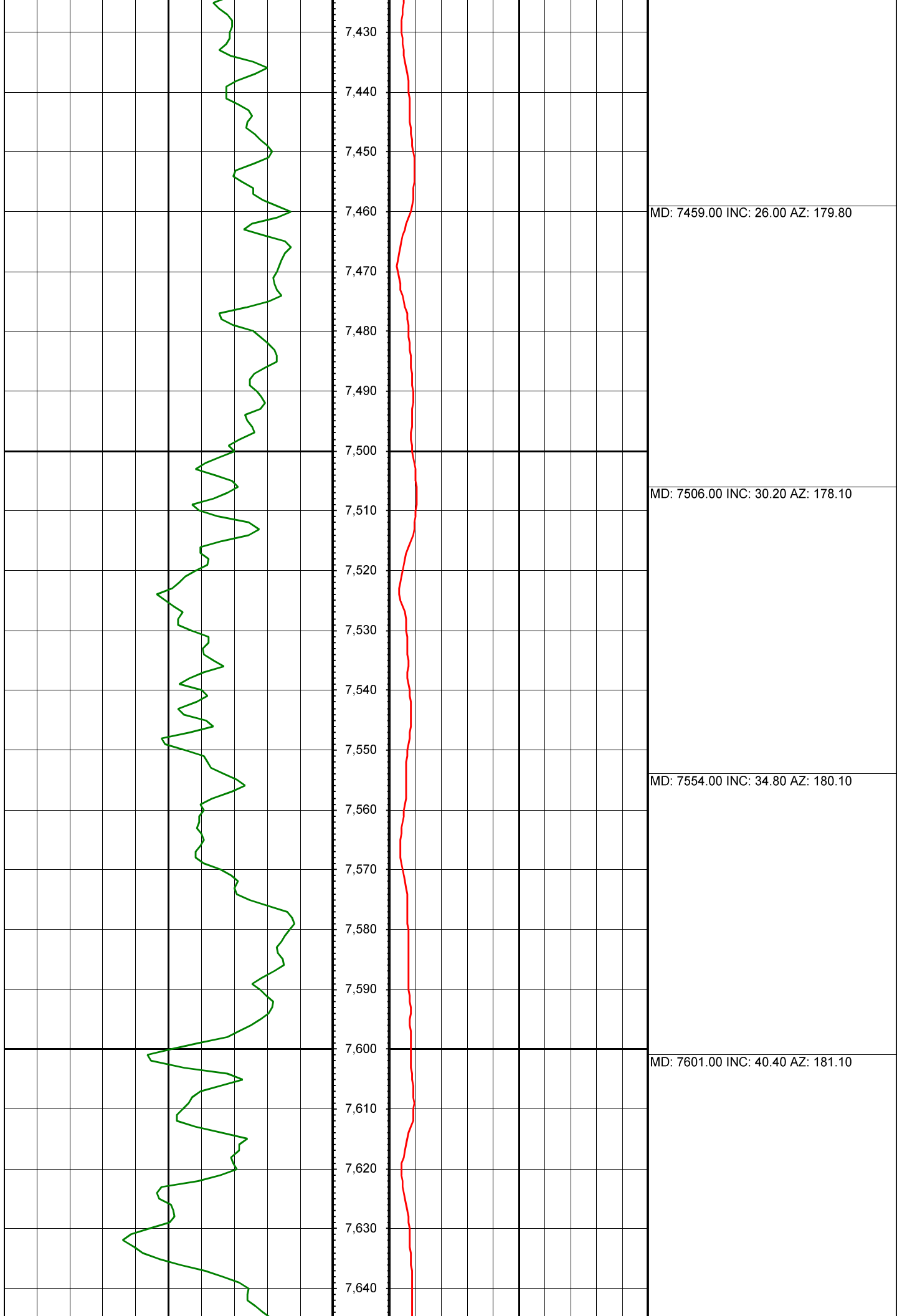
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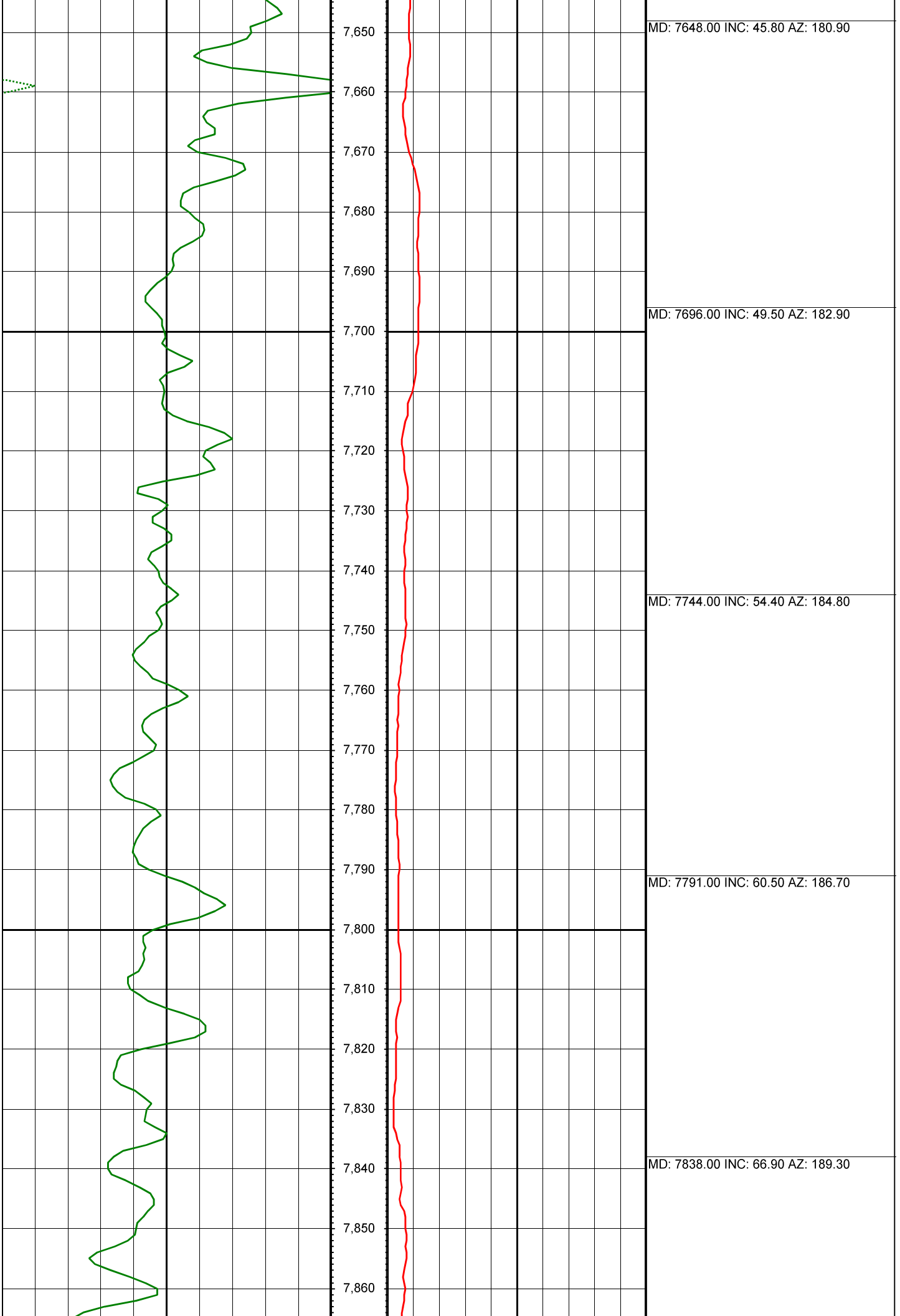


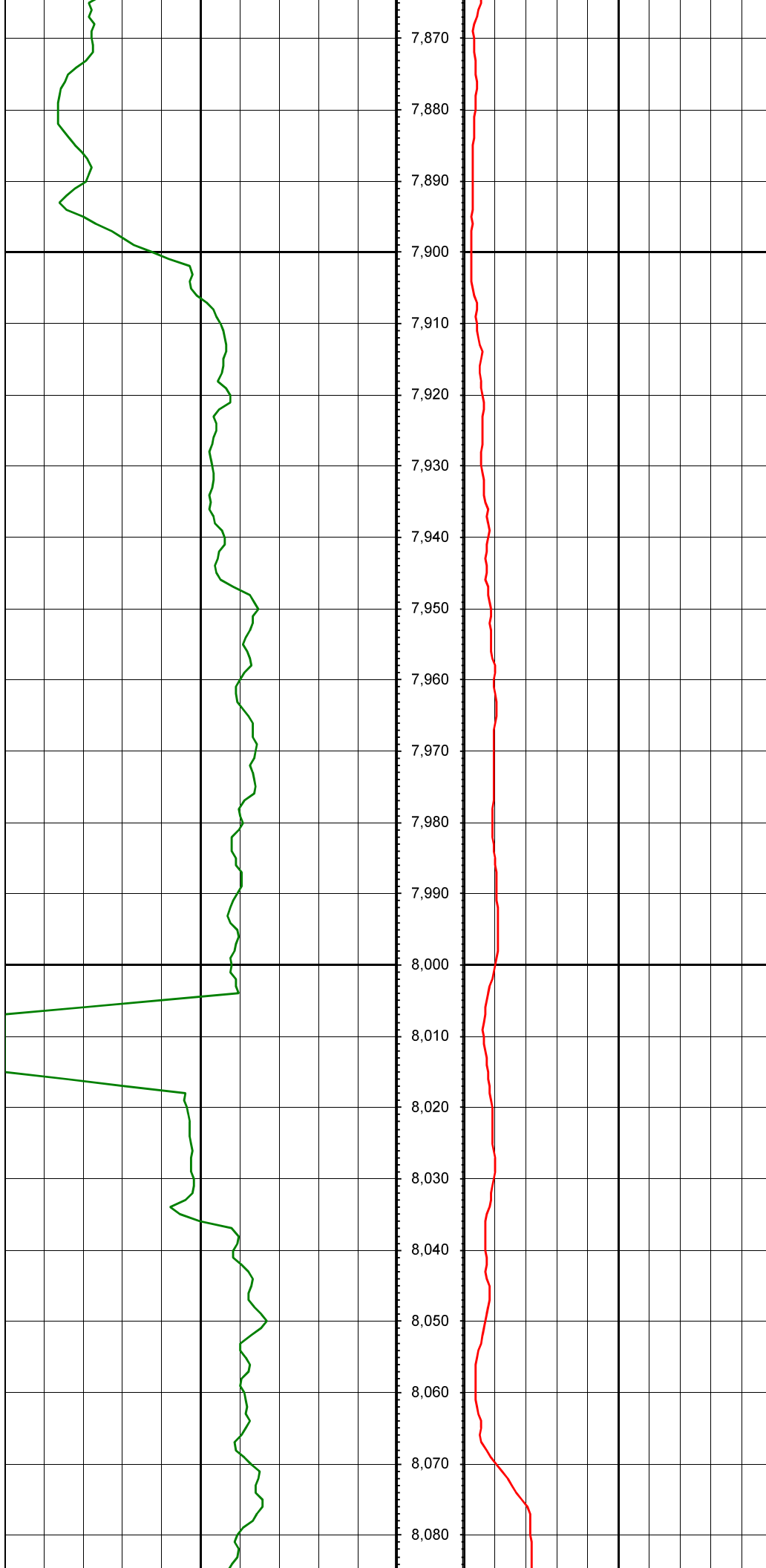
MD: 7029.00 INC: 0.70 AZ: 278.10

MD: 7124.00 INC: 0.90 AZ: 296.80









MD: 7885.00 INC: 72.00 AZ: 189.70

MD: 7942.00 INC: 77.60 AZ: 189.10

MD: 7980.00 INC: 82.50 AZ: 189.20

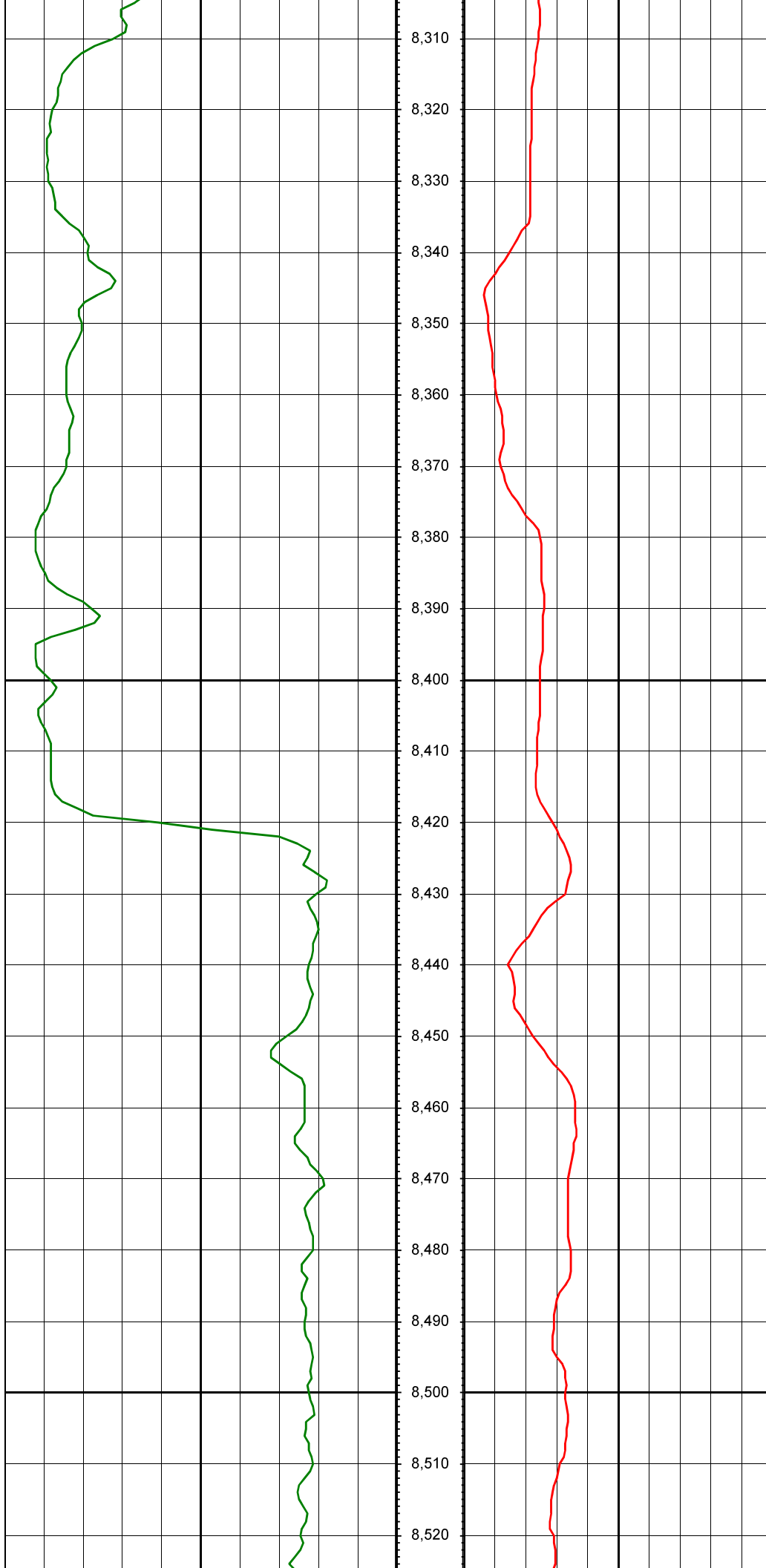


MD: 8095.00 INC: 92.10 AZ: 185.30

MD: 8189.00 INC: 91.40 AZ: 181.90

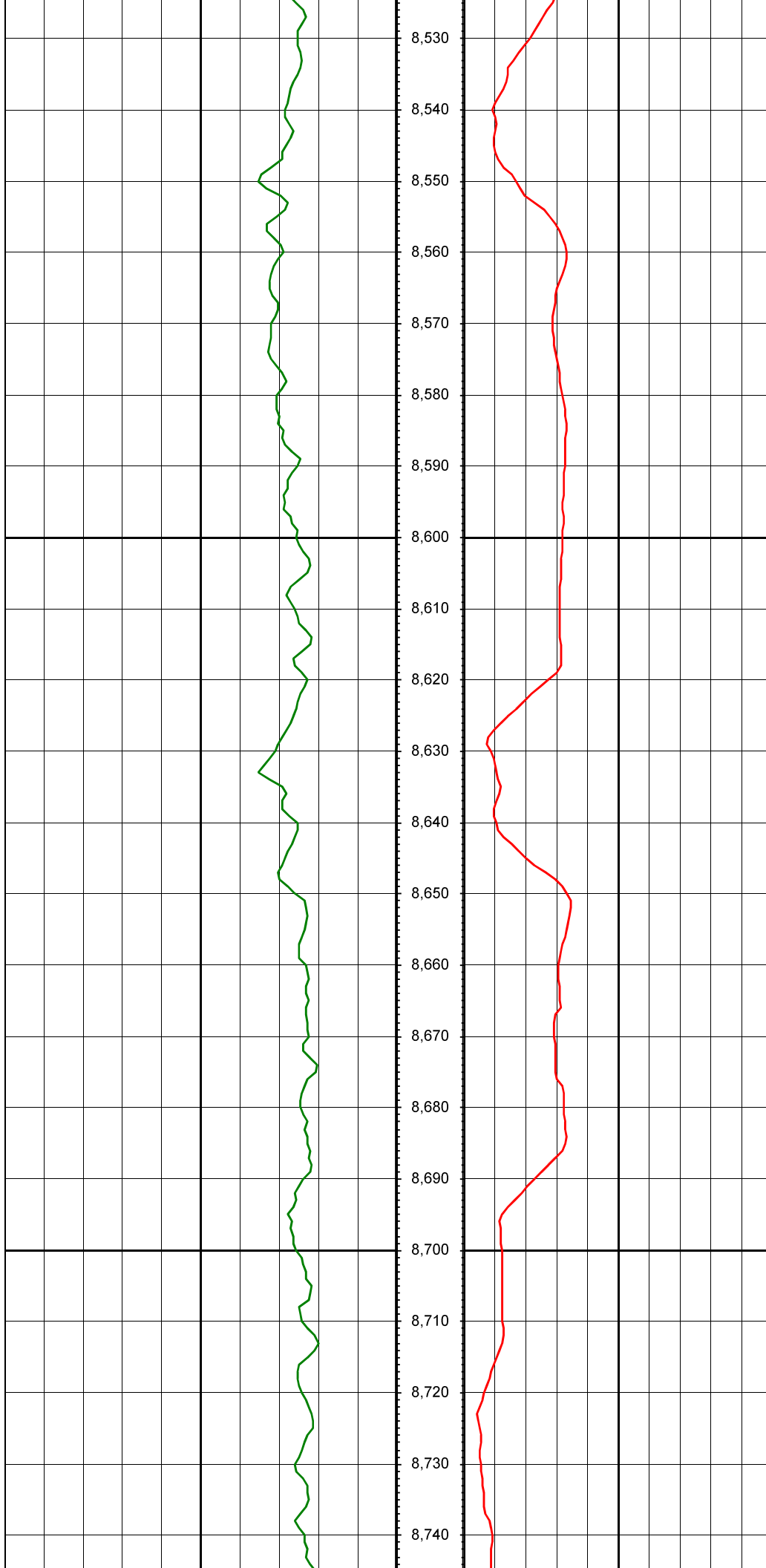
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MD: 8378.00 INC: 90.50 AZ: 174.40

MD: 8473.00 INC: 90.20 AZ: 173.10



MD: 8568.00 INC: 89.00 AZ: 172.30

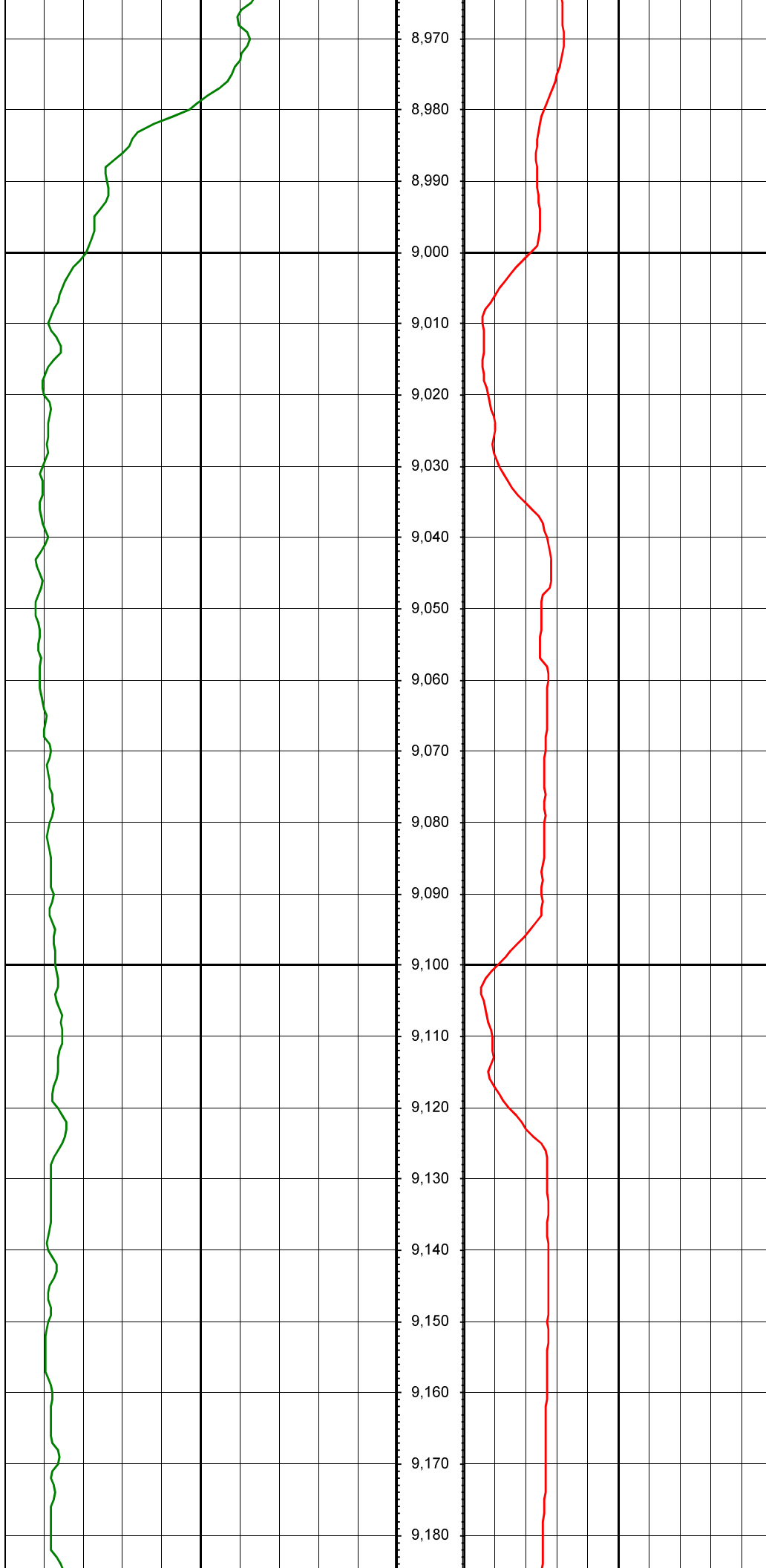
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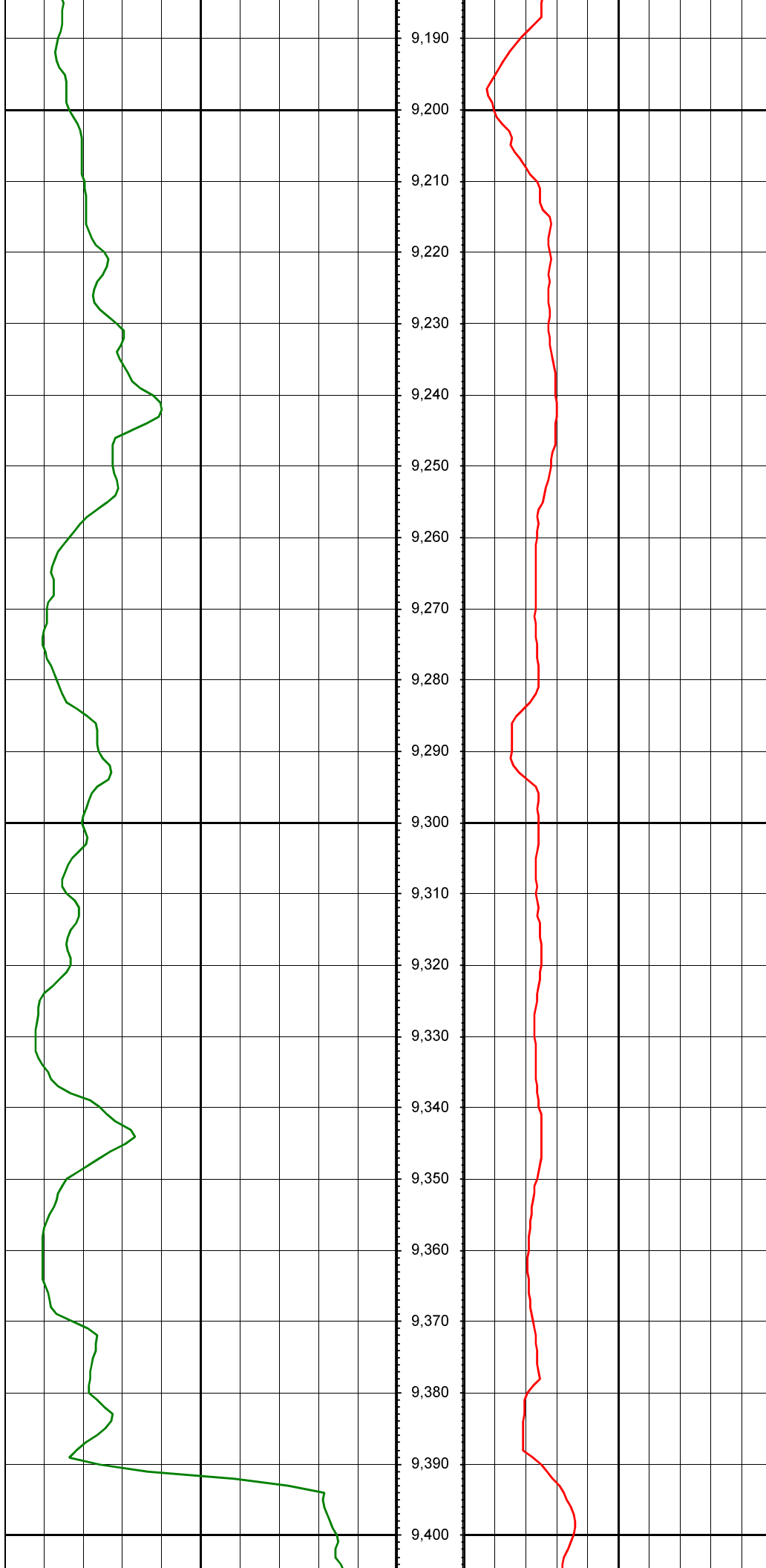
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MD: 8946.00 INC: 90.90 AZ: 177.70



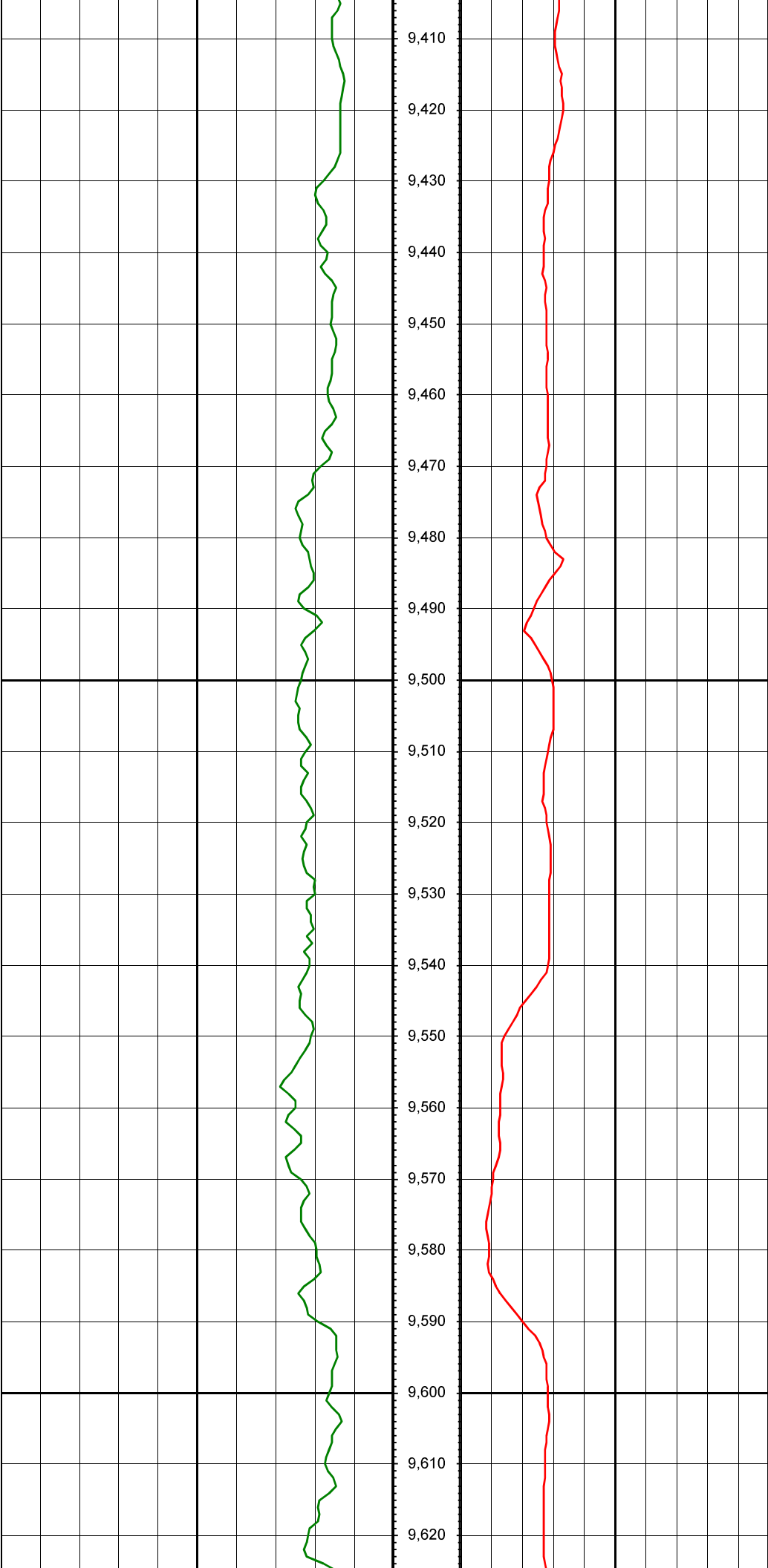
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MD: 9135.00 INC: 88.40 AZ: 181.30



MD: 9230.00 INC: 90.20 AZ: 181.70

MD: 9324.00 INC: 90.30 AZ: 181.10



MD: 9419.00 INC: 90.70 AZ: 181.10

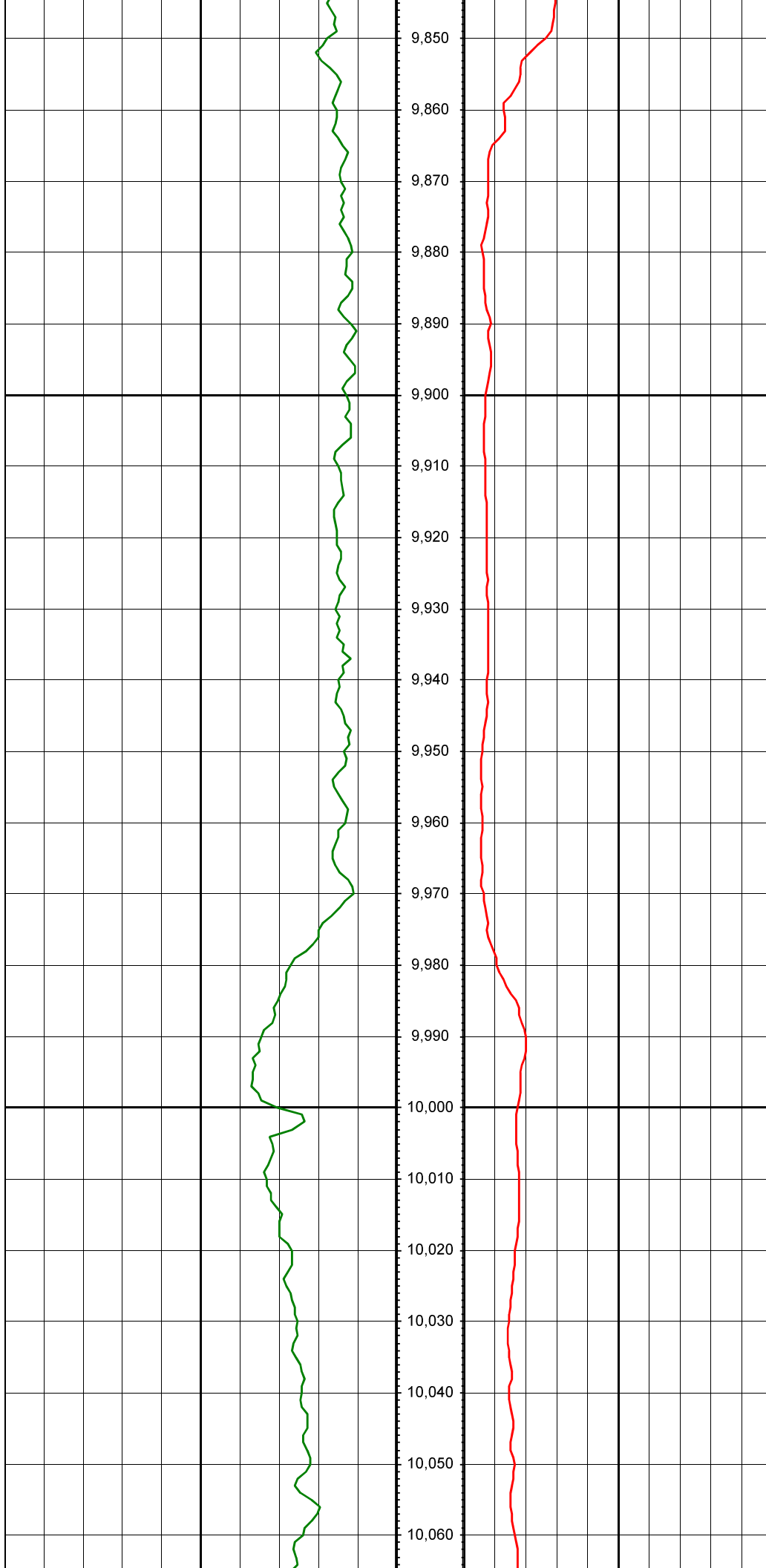
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MD: 9608.00 INC: 91.00 AZ: 180.00



MD: 9702.00 INC: 91.10 AZ: 180.10

MD: 9797.00 INC: 90.00 AZ: 178.80



MD: 9892.00 INC: 90.40 AZ: 178.50

MD: 9986.00 INC: 93.10 AZ: 177.50

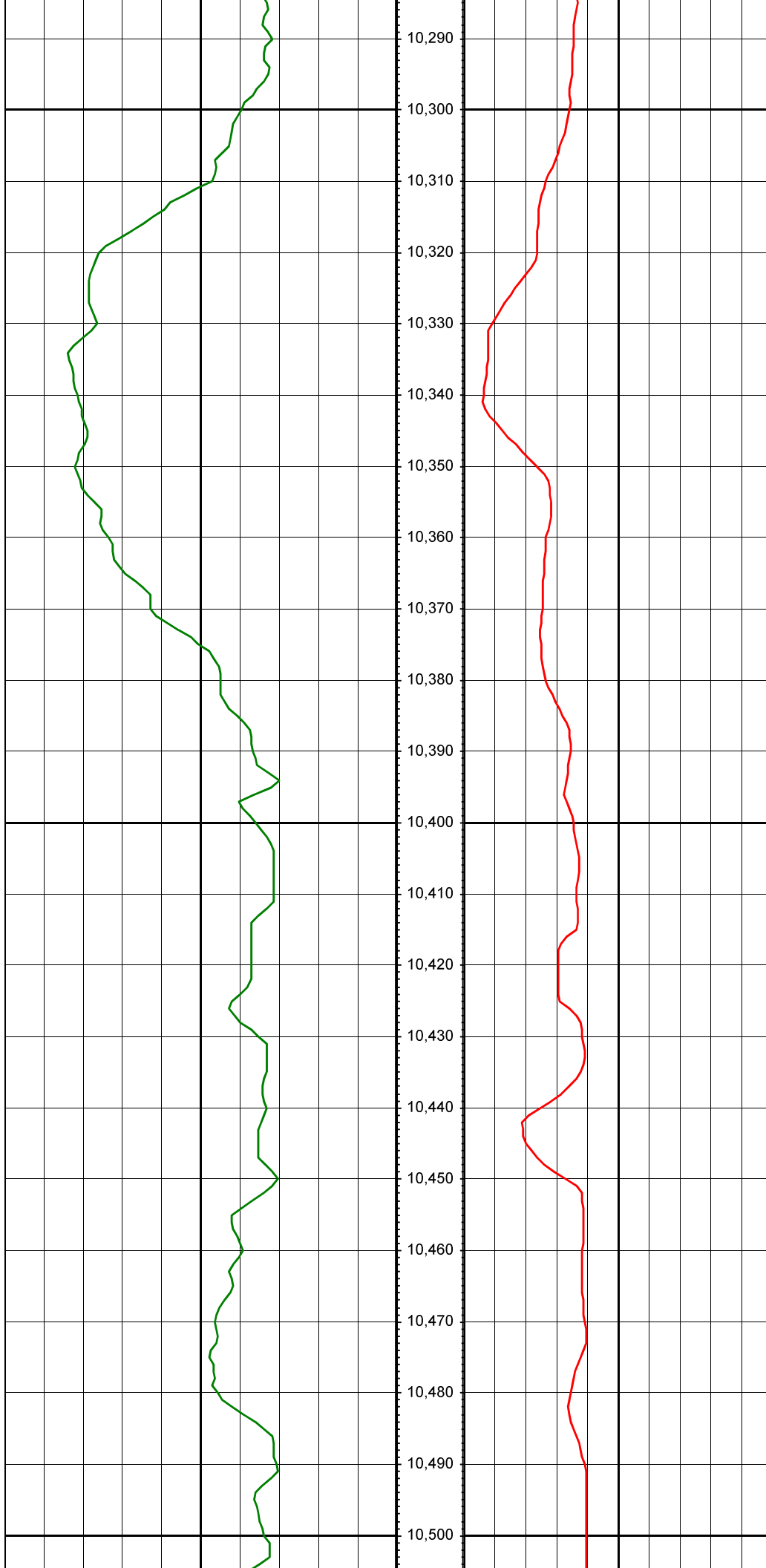




MD: 10081.00 INC: 93.30 AZ: 177.50

MD: 10175.00 INC: 92.20 AZ: 179.60

MD: 10270.00 INC: 91.90 AZ: 179.90



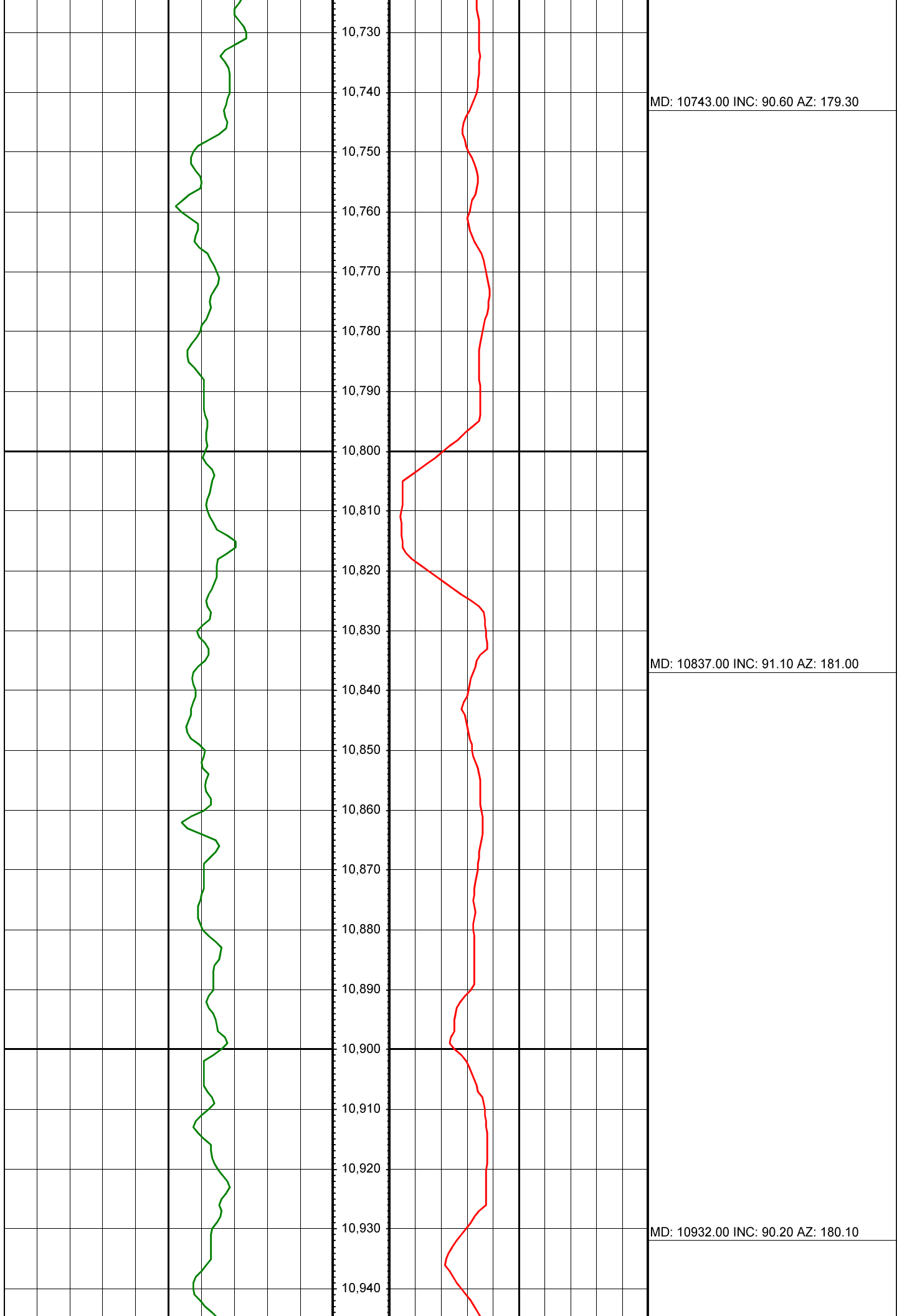
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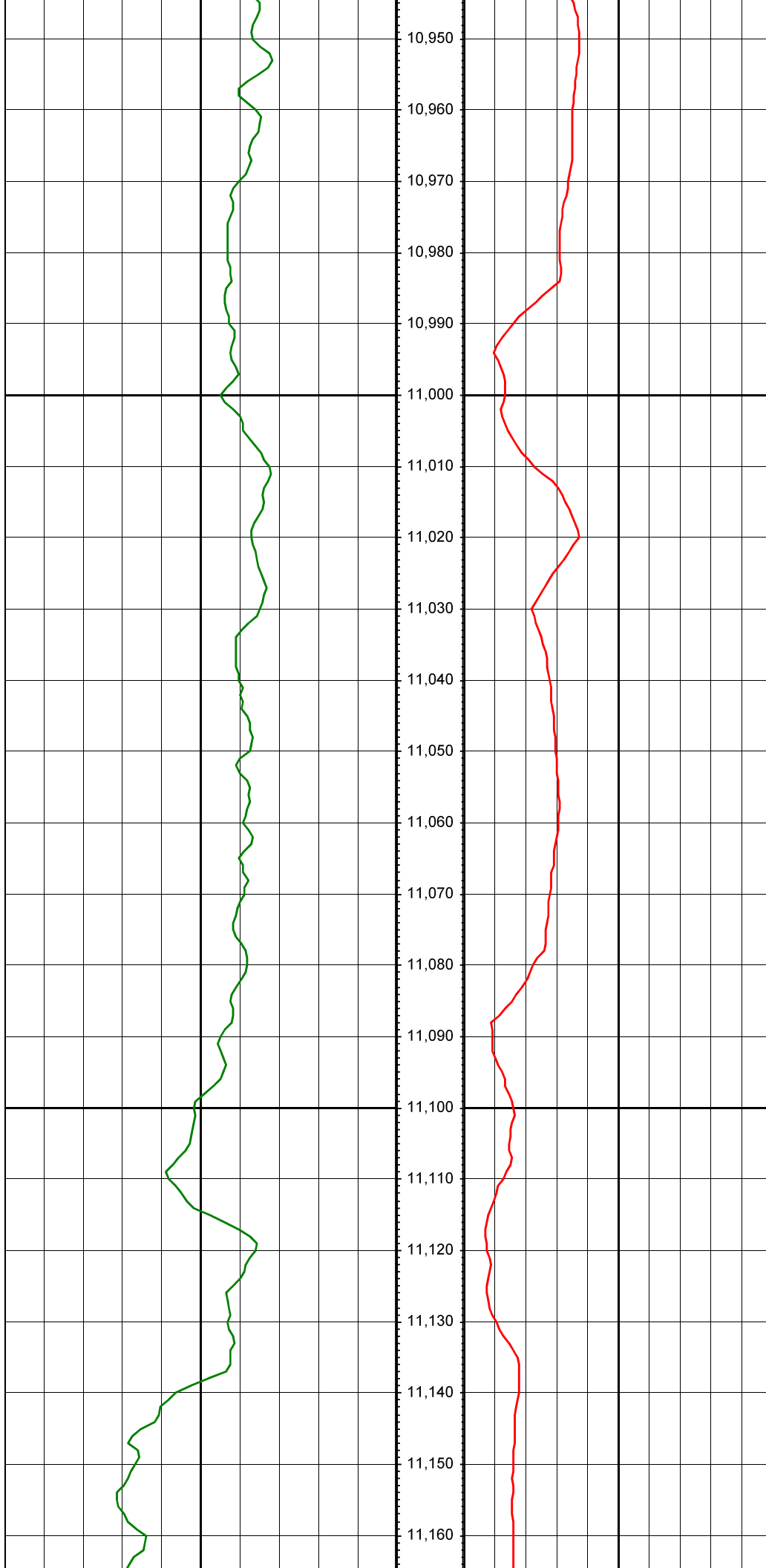
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MD: 10554.00 INC: 90.70 AZ: 180.50

MD: 10648.00 INC: 90.90 AZ: 179.90





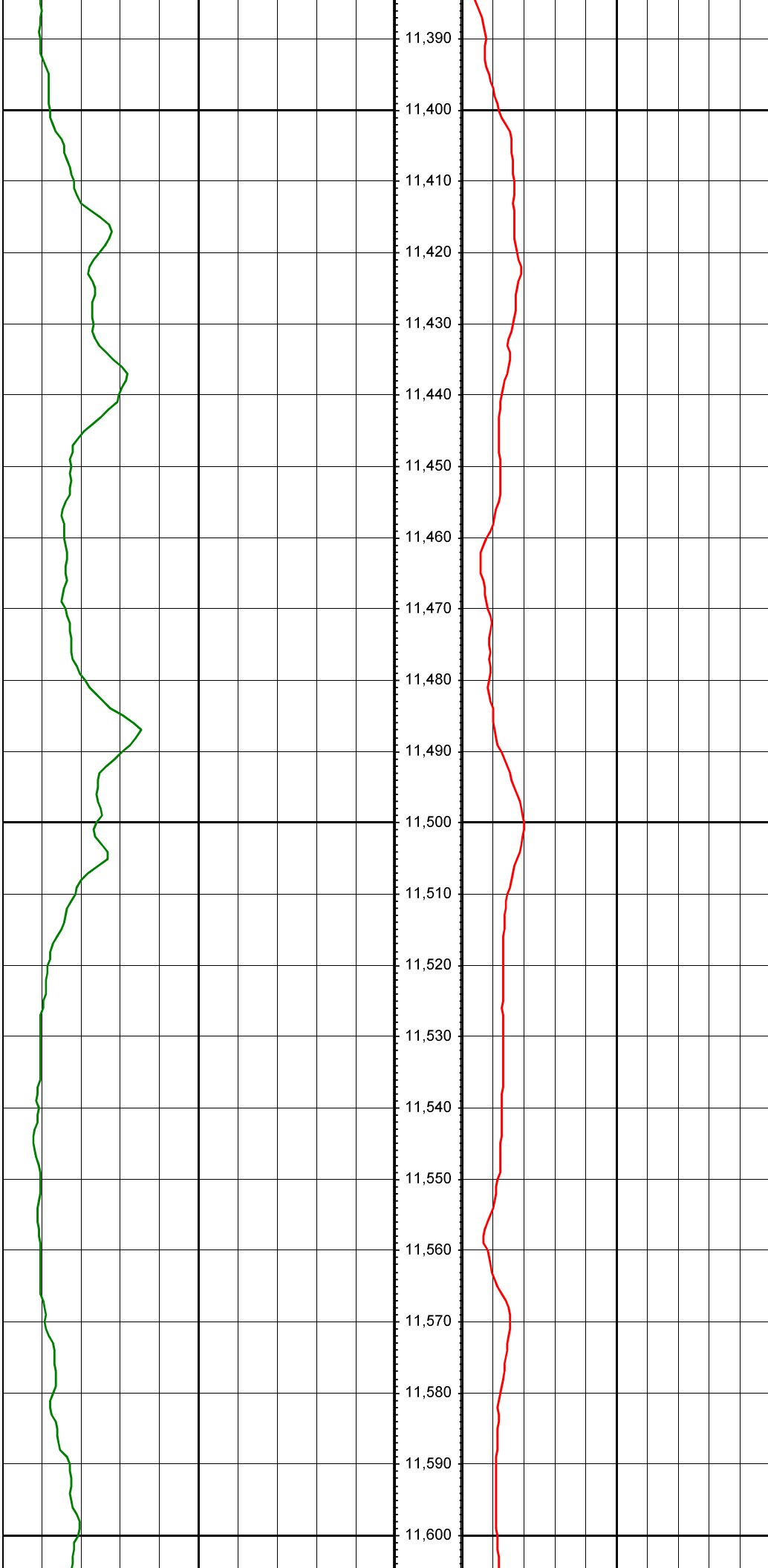
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MD: 11121.00 INC: 90.80 AZ: 181.60



MD: 11216.00 INC: 93.50 AZ: 181.30

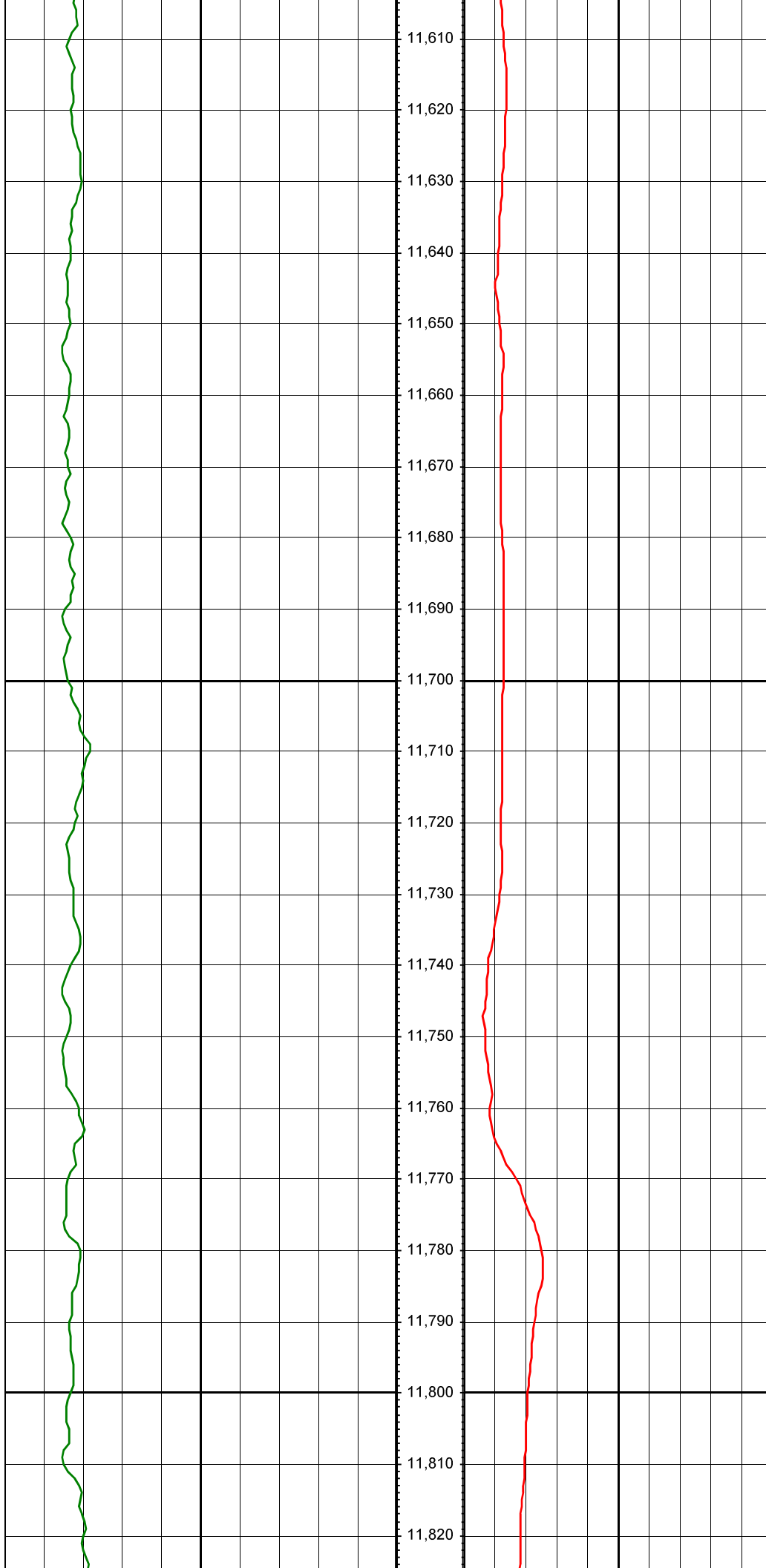
MD: 11310.00 INC: 93.80 AZ: 180.80



MD: 11405.00 INC: 91.00 AZ: 181.70

MD: 11500.00 INC: 87.60 AZ: 181.20

MD: 11594.00 INC: 88.70 AZ: 180.50



MD: 11689.00 INC: 90.10 AZ: 180.70

MD: 11783.00 INC: 88.10 AZ: 179.40





MD: 11878.00 INC: 89.00 AZ: 178.90

MD: 11972.00 INC: 89.10 AZ: 178.40



MD: 12067.00 INC: 91.90 AZ: 178.90

MD: 12161.00 INC: 90.30 AZ: 177.60

MD: 12235.00 INC: 90.60 AZ: 176.70

