



Titan Directional Services, Inc.
 Titan Directional Drilling
 20302 Park Row Suite 1200
 Katy, TX 77449

Bringelson Ranch 13-20-9-58
Scale 2":100' - TVD
3/1/2015 9:49 PM

Oper. Company: Carrizo Oil & Gas, Inc.
Well: Bringelson Ranch 13-20-9-58
Field: Niobrara CONZ'83
Rig: Xtreme 19
Well ID: 05-123-39370
Job Number: TL15027

State: Colorado
County: Weld
Country: USA
Location: Grover
Start Date: 02/19/2015 21:30:00
End Date: 03/01/2015 21:15:00

Latitude: 40.7381333333333
Longitude: -103.8955805555556

Elev KB: 17'
Elev DF: 4889'
Elev GL: 4872'

Operator 1: Skylar Thompson

Operator 2: Paul Brown

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	G6033	G6033	G6033	G6033	
Bit Size	8 3/4	8 3/4	6 1/8	6 1/8	
Cal Factor	4.89	4.93	2.25	2.25	
Survey Offset:	51.00	60.00	63.00	63.00	
Gamma Offset	39.00	48.00	51.00	51.00	
Resisitivity Offset	0.00	0.00	0.00	0.00	
Start Depth	1449.00	5275.00	6086.00	9696.00	
StartDate	2/19/2015	2/20/2015	2/22/2015	3/1/2015	
StartTime	15:30	19:15	22:00	00:30	
EndDepth	5275.00	6086.00	9696.00	10627.00	
EndDate	2/20/2015	2/21/2015	2/26/2015	3/1/2015	
EndTime	19:15	21:30	14:45	21:15	
Mud Type	WBM	WBM	WBM	WBM	
Mud Weight	8.6	9.5 - 9.6	9.6 - 9.7	9.6 - 9.85	
Funnel Viscosity	30 - 31	41 - 43	43 - 46	42 - 46	
Plastic Viscosity	N/A	15	13 - 16	10 - 14	
Yield Point	N/A	13	12 - 13	11 - 12	
Gel Strength	N/A	11 - 13	16 - 17	9 - 13	
Solids Content	2 - 3%	6 - 7 %	6.8 - 7.3 %	6.7 - 7.3 %	
Sand Content	Trace	0.5 %	0.25 %	0.25 %	
Mud Alkalinity	0.3	0.5	1.3 - 1.8	0.4 - 0.7	
Filtrate Alkalinity	0.3	0.2	1 - 2.4	1.8 - 1.9	
Chlorides	200	600	700 - 800	600	
Mud RM	N/A	N/A	N/A	N/A	
Mud RMF	N/A	N/A	N/A	N/A	
Mud RMC	N/A	N/A	N/A	N/A	
Mud RM at BHT	N/A	N/A	N/A	N/A	
Temperature	72 - 126	90	131 - 183	183 - 190	

Hole Data			Casing Data		
Size	From	To	Size	From	To
12 1/4	0.00	1449.00	9 5/8	0.00	1429.00
8 3/4	1449.00	6086.00	7	0.00	6066.00
6 1/8	6086.00	10627.00	4.5	0.00	10627.00

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.

150.00 2 300.00

150.00 2 300.00

FT

TVD: 1387.16 INC: 6.20 AZ: 293.60 1,387.16

TVD: 1486.58 INC: 6.20 AZ: 292.20 1,486.58

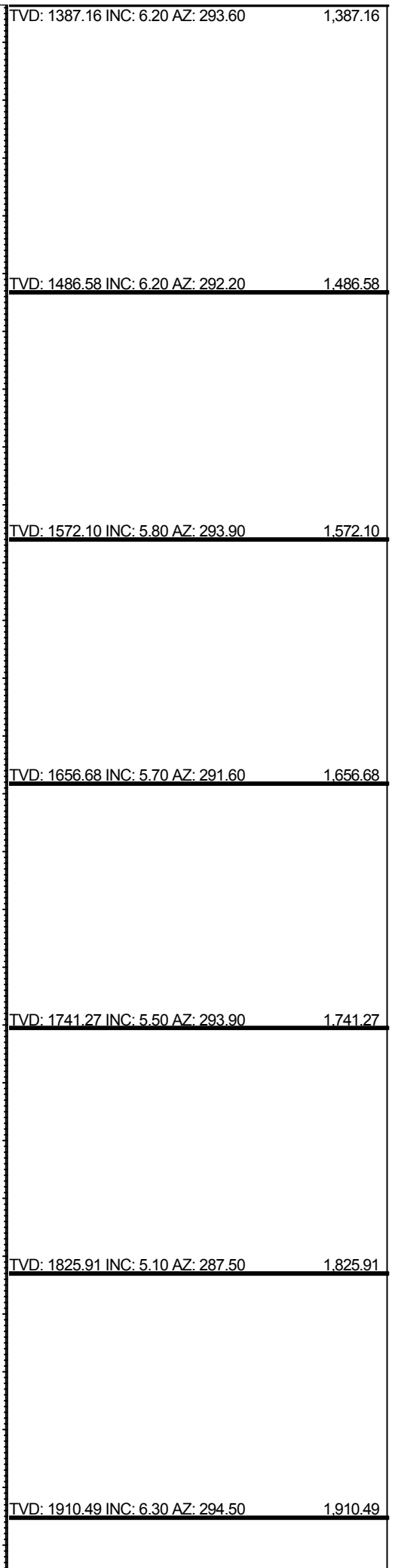
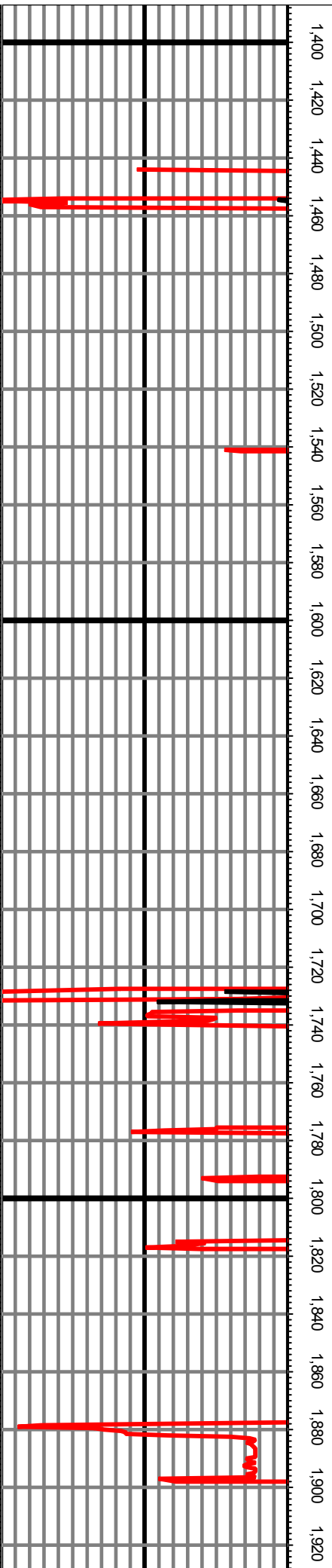
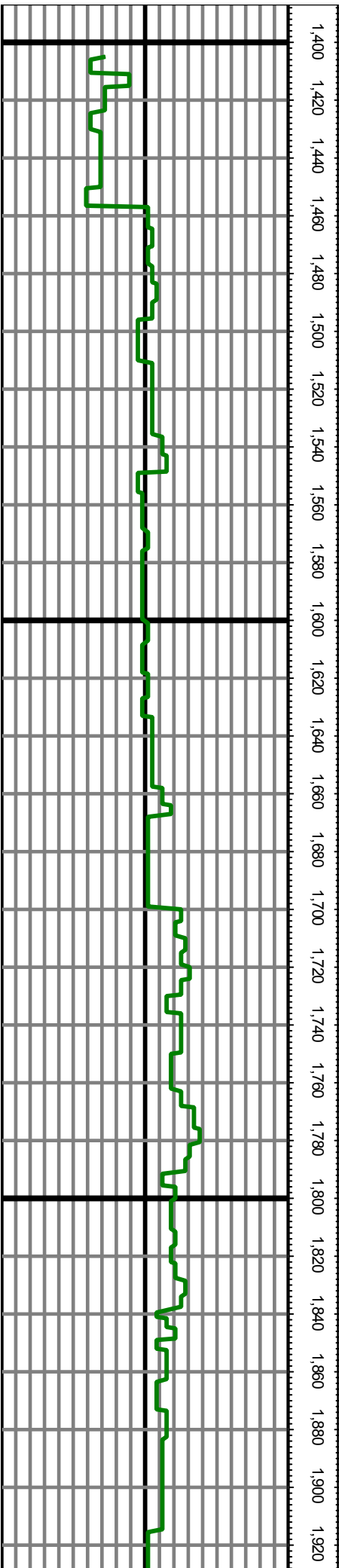
TVD: 1572.10 INC: 5.80 AZ: 293.90 1,572.10

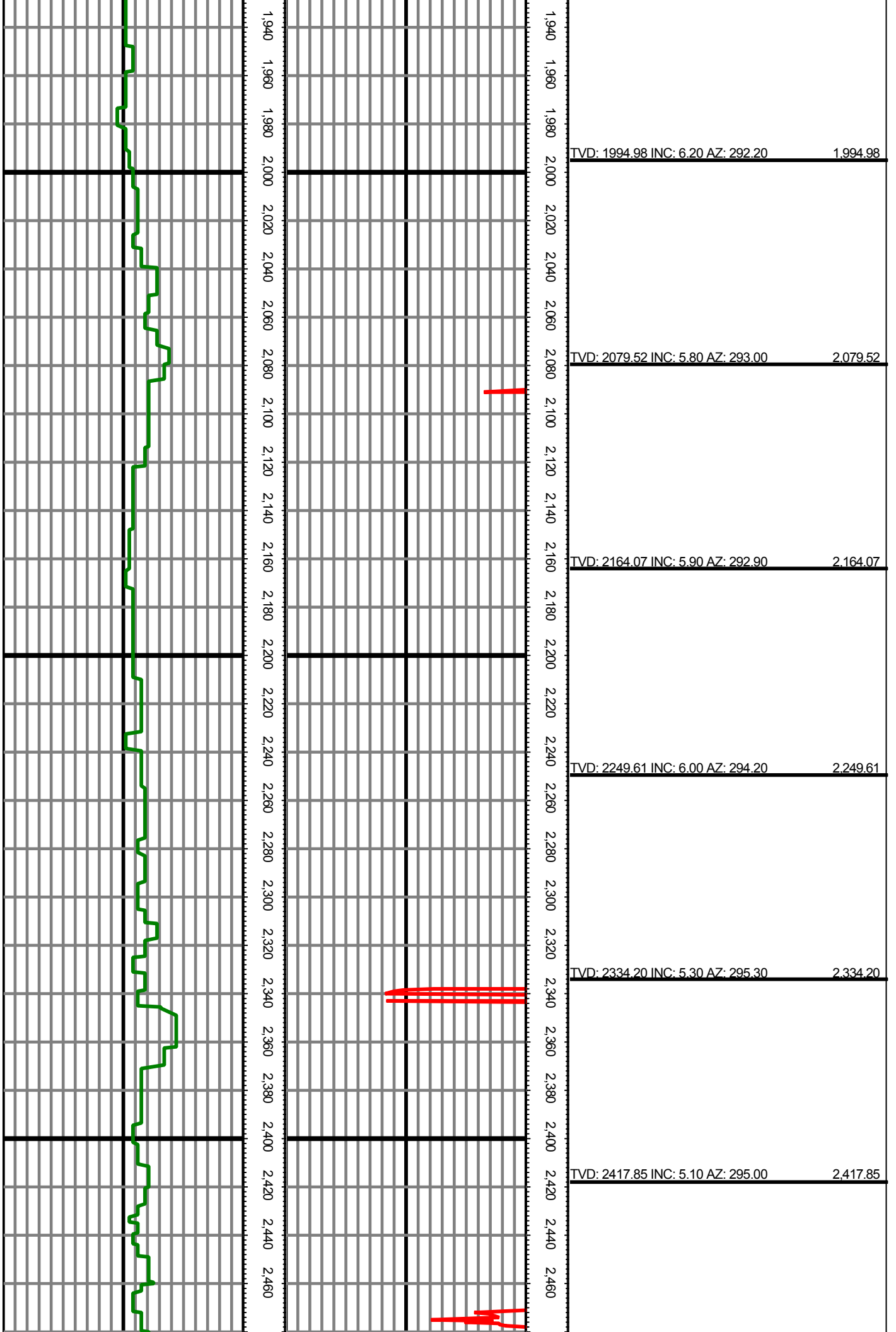
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TVD: 1741.27 INC: 5.50 AZ: 293.90 1,741.27

TVD: 1825.91 INC: 5.10 AZ: 287.50 1,825.91

TVD: 1910.49 INC: 6.30 AZ: 294.50 1,910.49





TVD: 1994.98 INC: 6.20 AZ: 292.20 1,994.98

TVD: 2079.52 INC: 5.80 AZ: 293.00 2,079.52

TVD: 2164.07 INC: 5.90 AZ: 292.90 2,164.07

TVD: 2249.61 INC: 6.00 AZ: 294.20 2,249.61

TVD: 2334.20 INC: 5.30 AZ: 295.30 2,334.20

TVD: 2417.85 INC: 5.10 AZ: 295.00 2,417.85

1,940 1,960 1,980 2,000 2,020 2,040 2,060 2,080 2,100 2,120 2,140 2,160 2,180 2,200 2,220 2,240 2,260 2,280 2,300 2,320 2,340 2,360 2,380 2,400 2,420 2,440 2,460

TVD: 2501.39 INC: 6.90 AZ: 295.70 2,501.39

TVD: 2584.74 INC: 7.30 AZ: 294.70 2,584.74

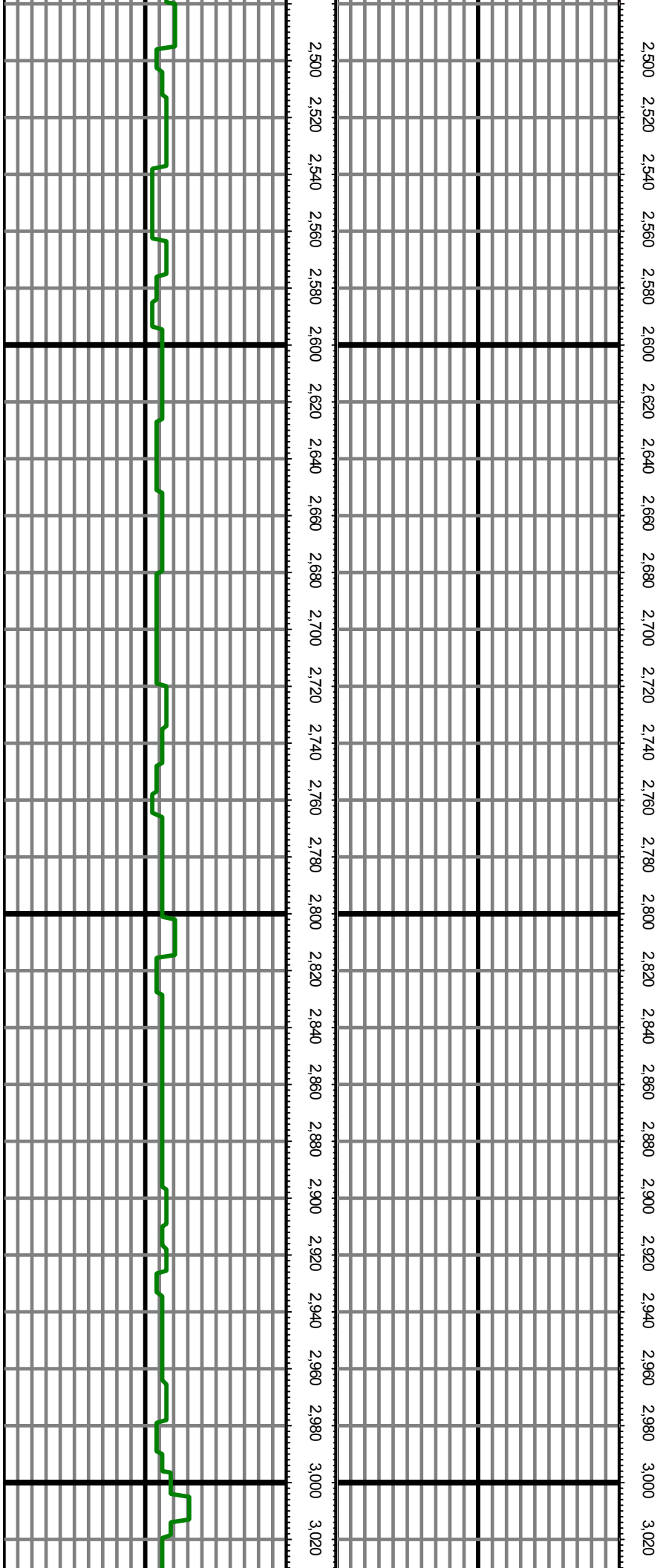
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TVD: 2752.29 INC: 7.60 AZ: 296.40 2,752.29

TVD: 2836.55 INC: 7.50 AZ: 298.90 2,836.55

TVD: 2920.86 INC: 7.10 AZ: 299.10 2,920.86

TVD: 3004.25 INC: 6.70 AZ: 295.20 3,004.25



TVD: 3086.72 INC: 6.30 AZ: 291.00 3,086.72

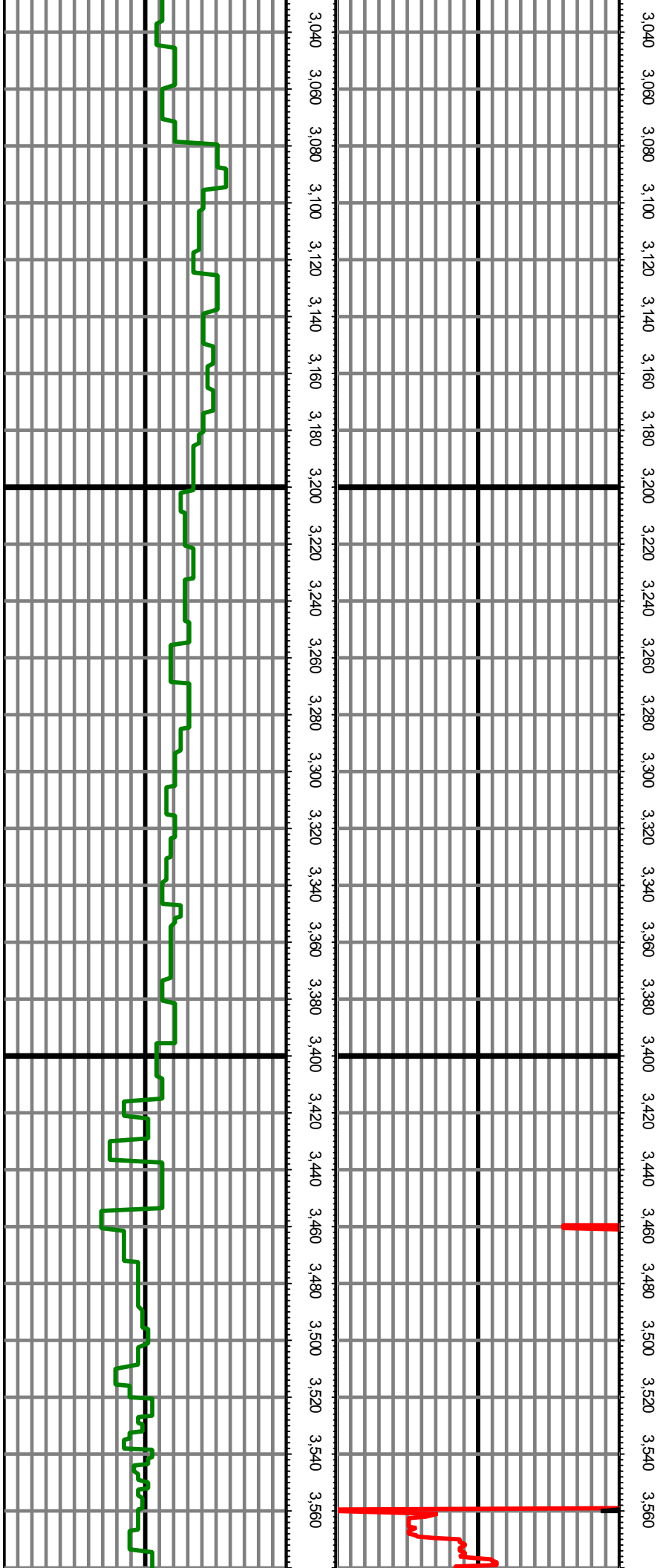
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TVD: 3254.75 INC: 6.10 AZ: 280.80 3,254.75

TVD: 3339.24 INC: 6.50 AZ: 281.50 3,339.24

TVD: 3423.64 INC: 7.10 AZ: 283.20 3,423.64

TVD: 3506.91 INC: 8.00 AZ: 285.20 3,506.91



TVD: 3591.13 INC: 7.60 AZ: 296.90 3,591.13

TVD: 3673.40 INC: 7.60 AZ: 299.00 3,673.40

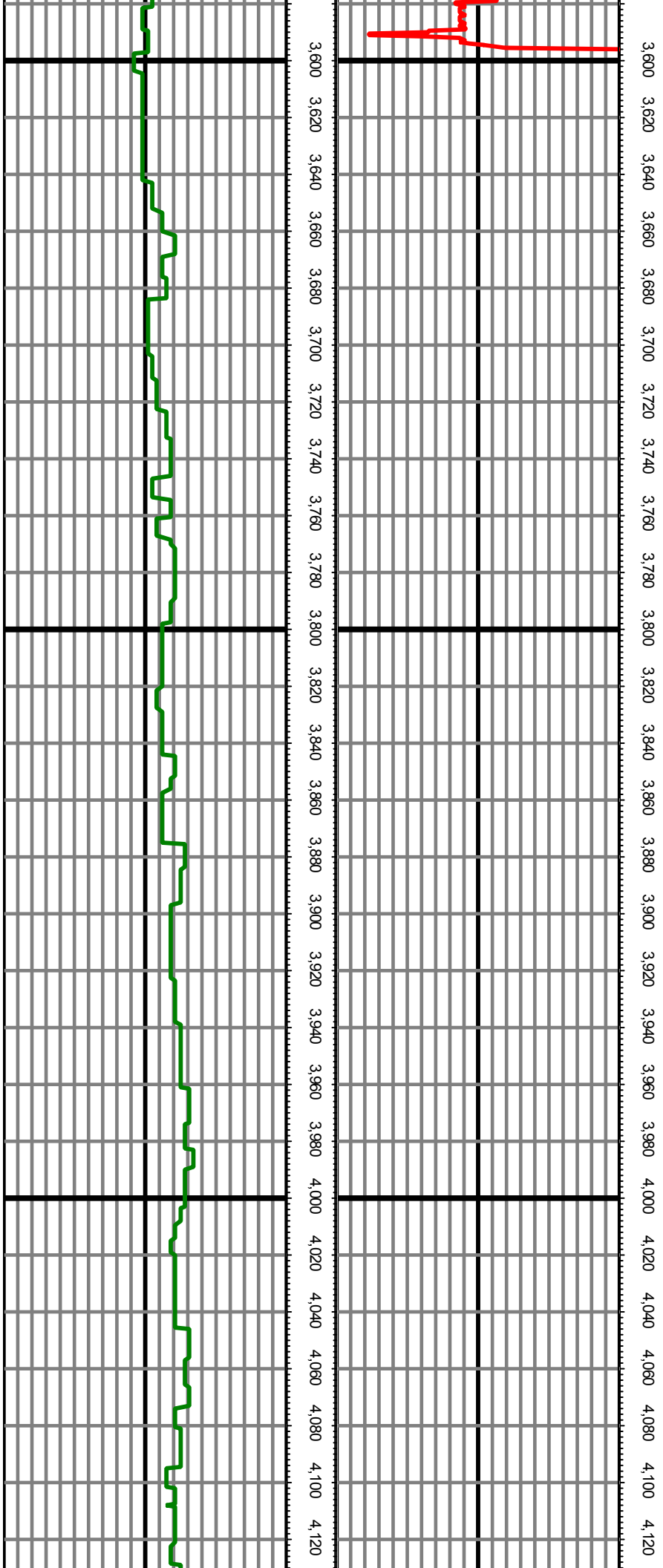
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TVD: 3841.88 INC: 7.70 AZ: 299.70 3,841.88

TVD: 3926.18 INC: 7.00 AZ: 297.10 3,926.18

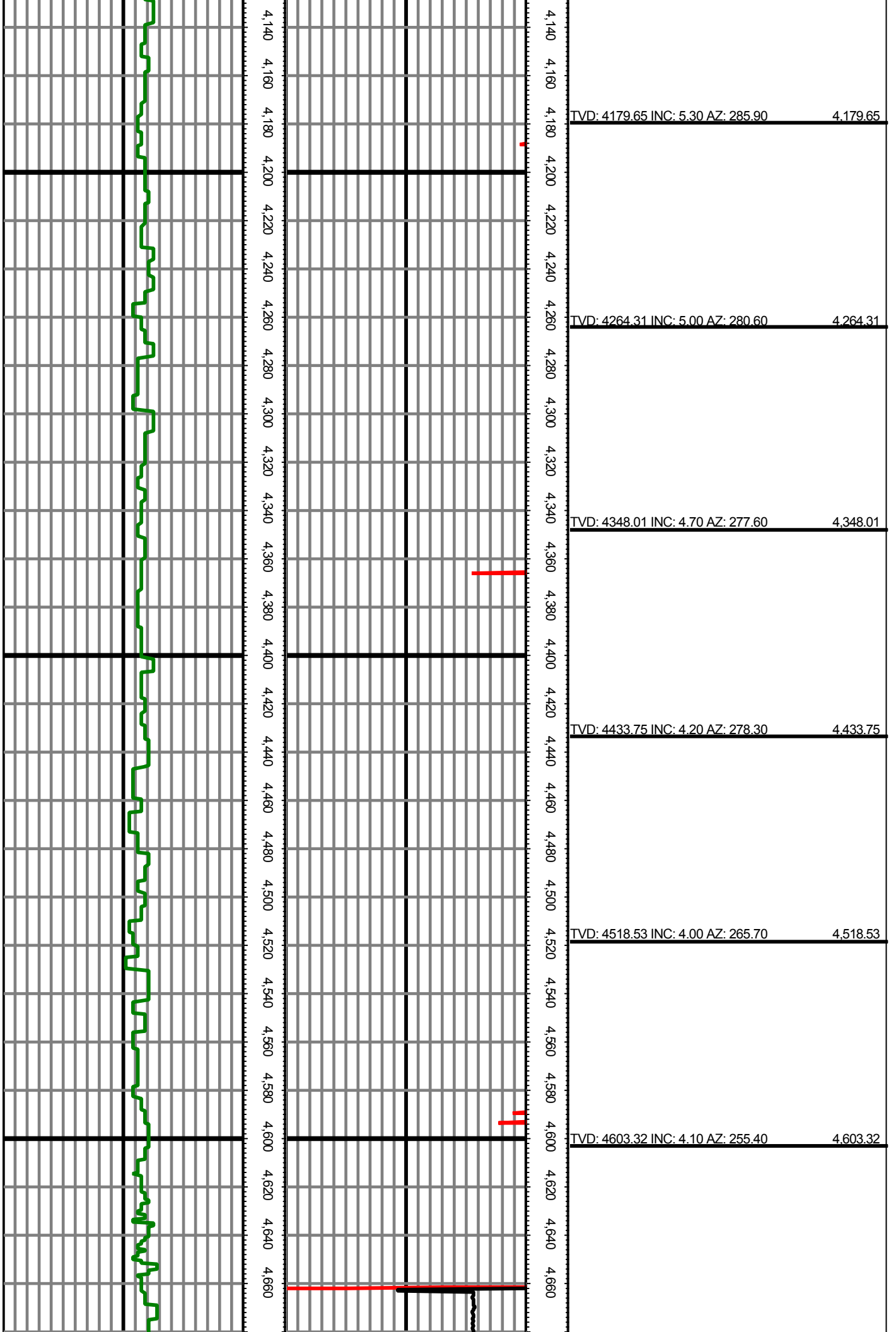
TVD: 4010.57 INC: 6.70 AZ: 294.70 4,010.57

TVD: 4095.06 INC: 5.90 AZ: 290.10 4,095.06



3,600 3,620 3,640 3,660 3,680 3,700 3,720 3,740 3,760 3,780 3,800 3,820 3,840 3,860 3,880 3,900 3,920 3,940 3,960 3,980 4,000 4,020 4,040 4,060 4,080 4,100 4,120

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TVD: 4179.65 INC: 5.30 AZ: 285.90 4,179.65

TVD: 4264.31 INC: 5.00 AZ: 280.60 4,264.31

TVD: 4348.01 INC: 4.70 AZ: 277.60 4,348.01

TVD: 4433.75 INC: 4.20 AZ: 278.30 4,433.75

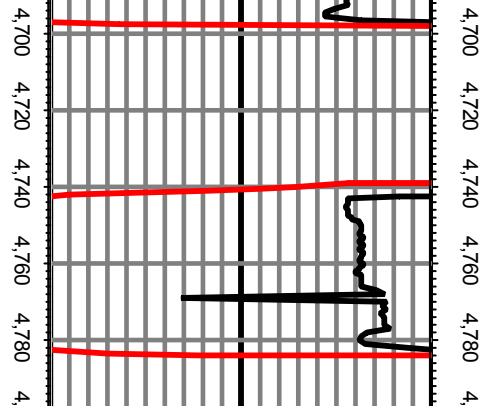
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TVD: 4603.32 INC: 4.10 AZ: 255.40 4,603.32

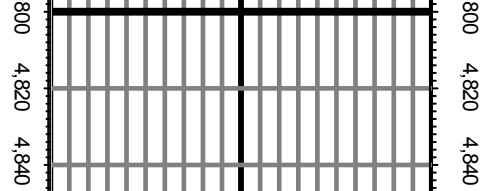
4,140 4,160 4,180 4,200 4,220 4,240 4,260 4,280 4,300 4,320 4,340 4,360 4,380 4,400 4,420 4,440 4,460 4,480 4,500 4,520 4,540 4,560 4,580 4,600 4,620 4,640 4,660

4,140 4,160 4,180 4,200 4,220 4,240 4,260 4,280 4,300 4,320 4,340 4,360 4,380 4,400 4,420 4,440 4,460 4,480 4,500 4,520 4,540 4,560 4,580 4,600 4,620 4,640 4,660

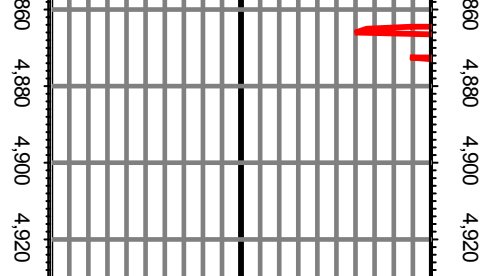
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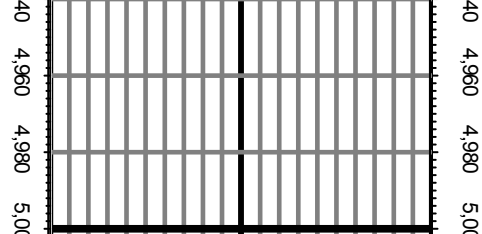
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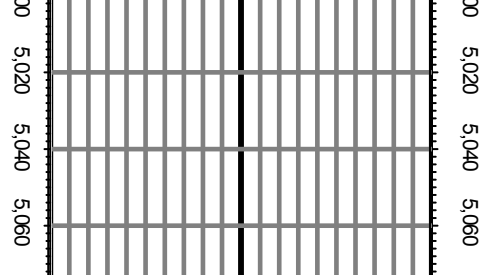
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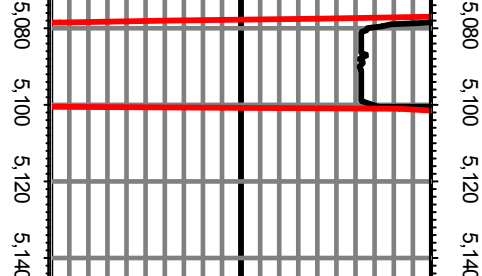
TVD: 4940.30 INC: 6.40 AZ: 290.30 4,940.30



TVD: 5024.81 INC: 5.90 AZ: 288.40 5,024.81



TVD: 5108.48 INC: 4.20 AZ: 300.00 5,108.48



TVD: 5193.29 INC: 3.50 AZ: 299.30 5,193.29

