



QES DIRECTIONAL DRILLING

FEDERAL 20-3
Scale 5":100' - TVD
11/21/2017 8:23 AM

Oper. Company: CPC MINERALS, LLC	State: IDAHO
Well: FEDERAL 20-3	County: BONNEVILLE
Field: IADHO OVERTHRUST	Country: USA
Rig: CAPSTAR 330	Location: SEC 20, T3S, R43E
Well ID: 11-019-200014	Start Date: 11/16/2015 13:00:00
Job Number: RM 171226	End Date: 11/21/2017 07:00:00

Latitude: 43.134	Elev GL: 6394
Longitude: -111.43395	Elev DF: 6408
	Elev KB: 6408

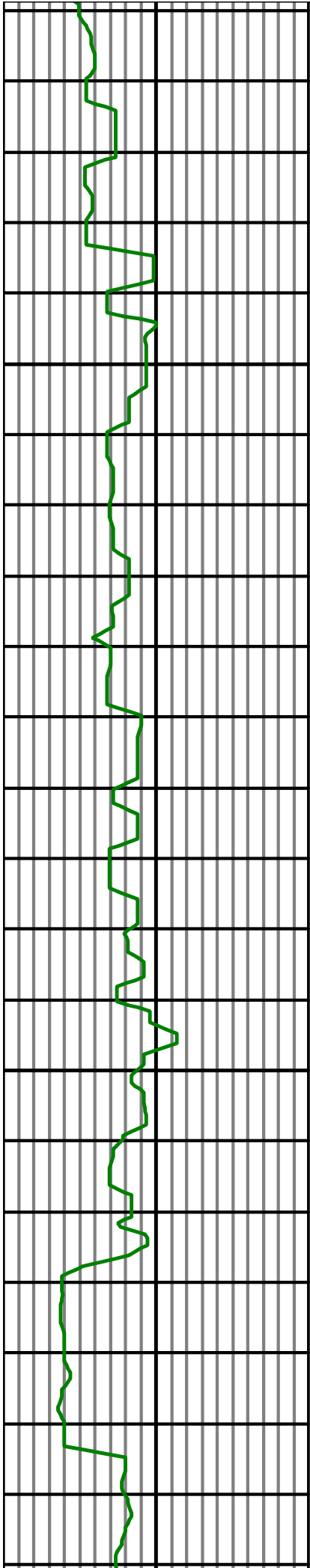
Operator 1: J RODRIGUEZ **Operator 2:** G HARRIS

Tool Run Data	Run #1	Run #2	Run #3	Run #4	Run #5
Tool S/N	775	775			
Bit Size	8.75	8.75			
Cal Factor	3.5	3.5			
Survey Offset	49.00	52.00			
Gamma Offset	38.00	41.00			
Resistivity Offset	0.00	0.00			
Start Depth	2030.00	4921.00			
StartDate	11/16/2017	11/19/2017			
StartTime	13:00	00:30			
EndDepth	4921.00	7035.00			
EndDate	11/18/2017	11/21/2017			
EndTime	21:30	07:00			
Mud Type	WBM	WBM			
Mud Weight	8.3	9.1			
Funnel Viscosity	28	39			
Plastic Viscosity	2	8			
Yield Point	2	11			
Gel Strength	1	6			
Solids Content	.8	1.6			
Sand Content	TR	TR			
Mud Alkalinity	.55	.23			
Filtrate Alkalinity	.38	.11			
Chlorides	400	2000			
Temperature	138	190			

Hole Data			Casing Data		
Size	From	To	Size	From	To
8.75	2030.00	7035.00	9.625	0.00	2022.00

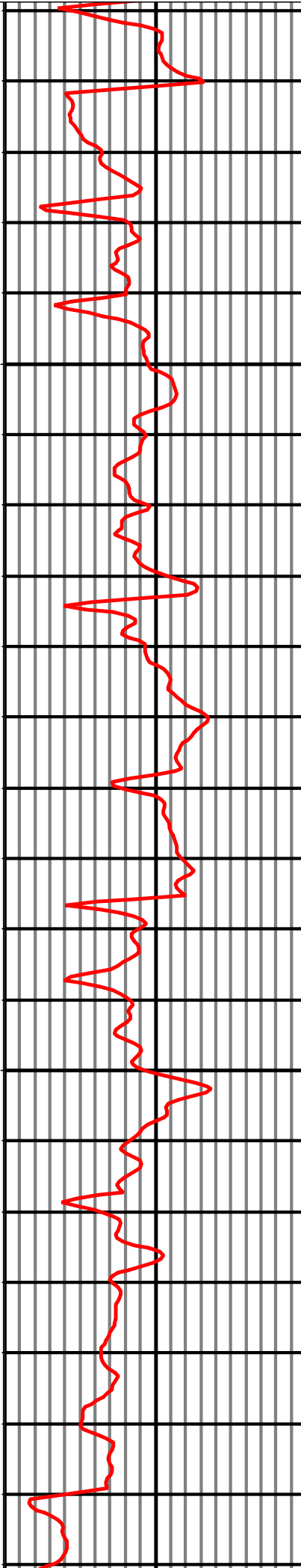
All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not except in the case of gross or willful negligence on our part, be liable or responsible for any loss, cost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





2,100

2,200



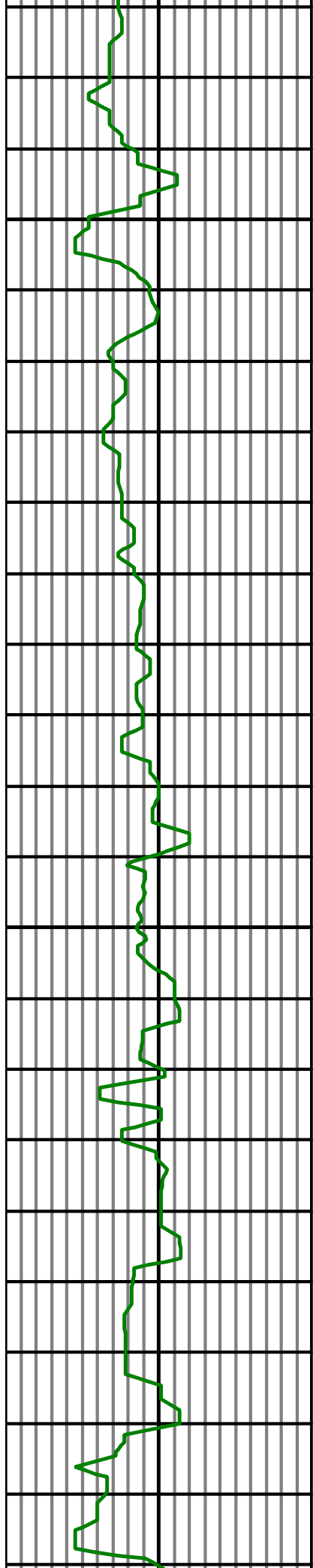
MD: 2083.00 INC: 0.90 AZ: 223.50

MD: 2126.00 INC: 0.80 AZ: 222.10

MD: 2168.00 INC: 0.70 AZ: 199.20

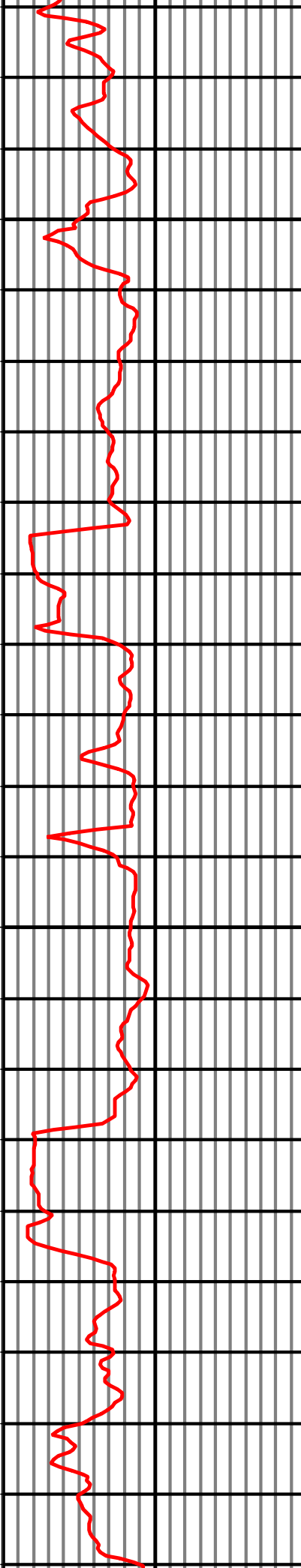
MD: 2210.00 INC: 1.30 AZ: 177.40

MD: 2252.00 INC: 1.50 AZ: 173.20



2,300

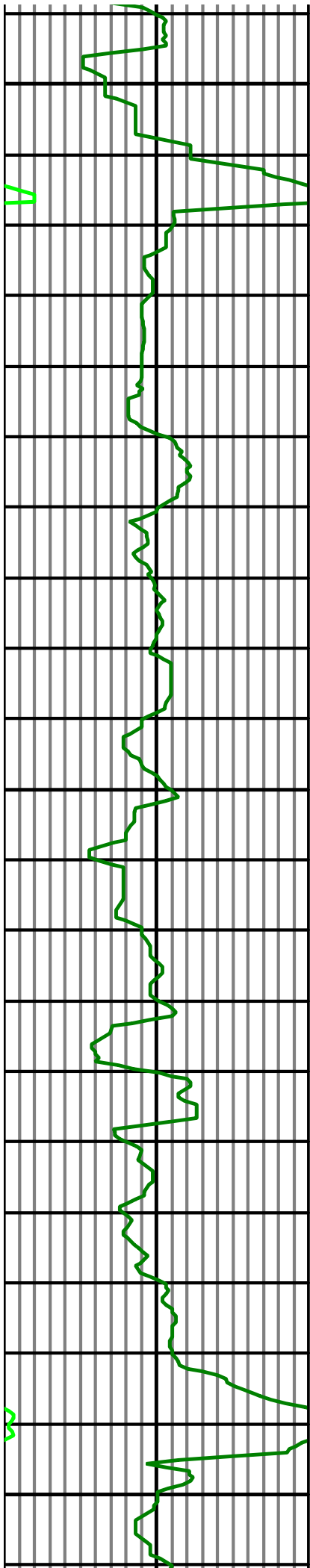
2,400



MD: 2294.00 INC: 1.60 AZ: 169.00

MD: 2379.00 INC: 1.00 AZ: 159.50

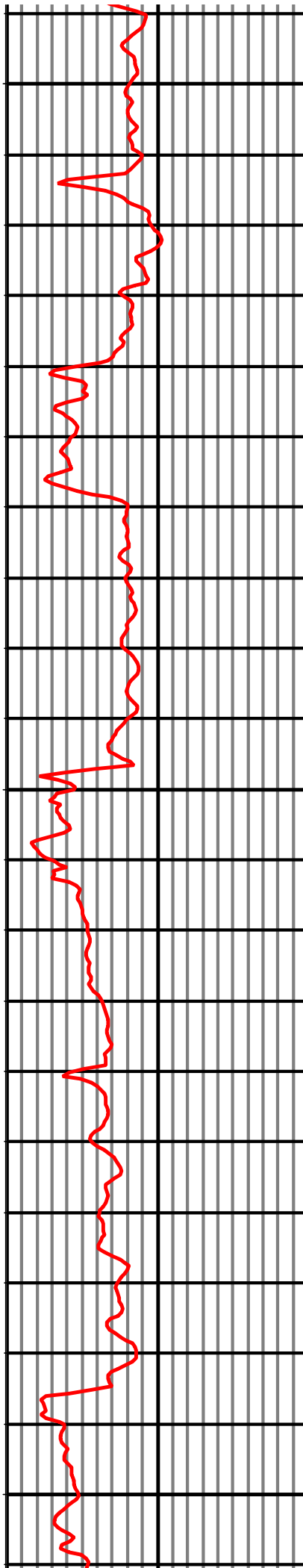
MD: 2463.00 INC: 0.30 AZ: 163.20



2,500

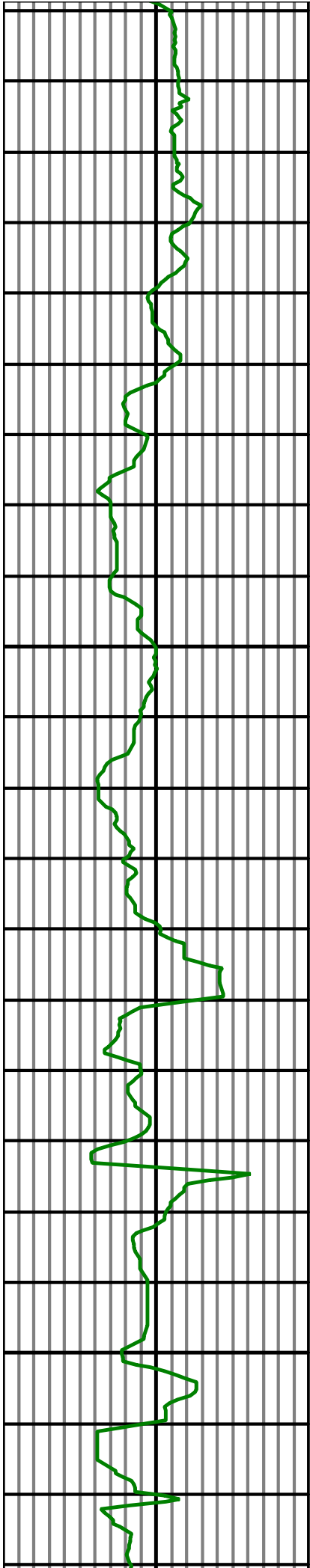
2,600

2,700



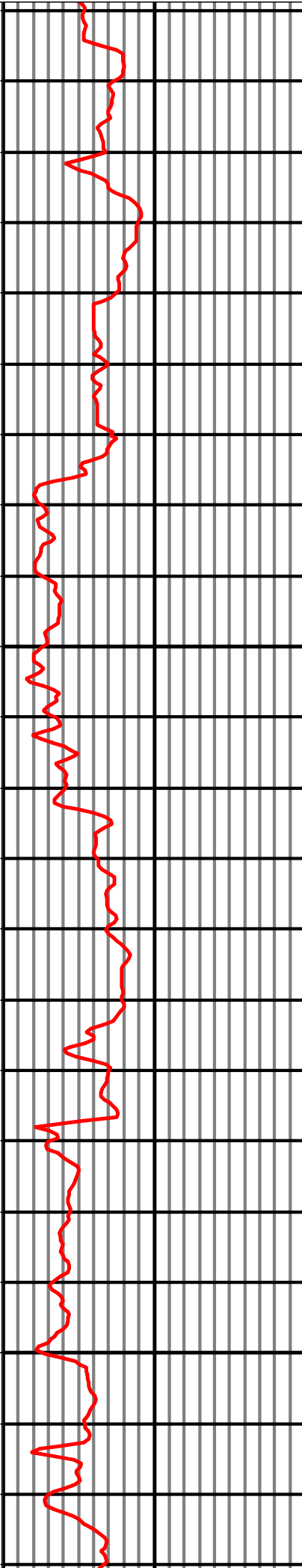
MD: 2548.00 INC: 0.30 AZ: 192.70

MD: 2636.00 INC: 0.70 AZ: 189.50



2,800

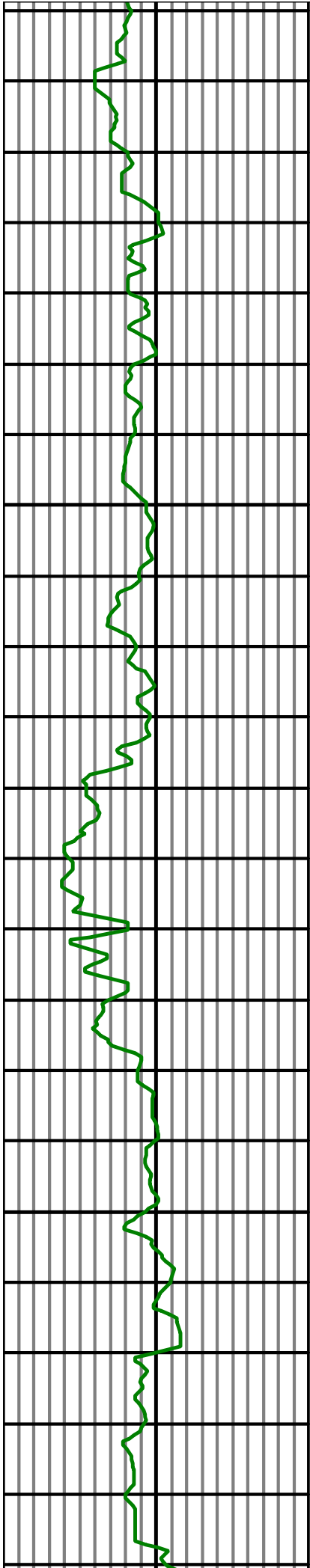
2,900



MD: 2727.00 INC: 1.10 AZ: 200.30

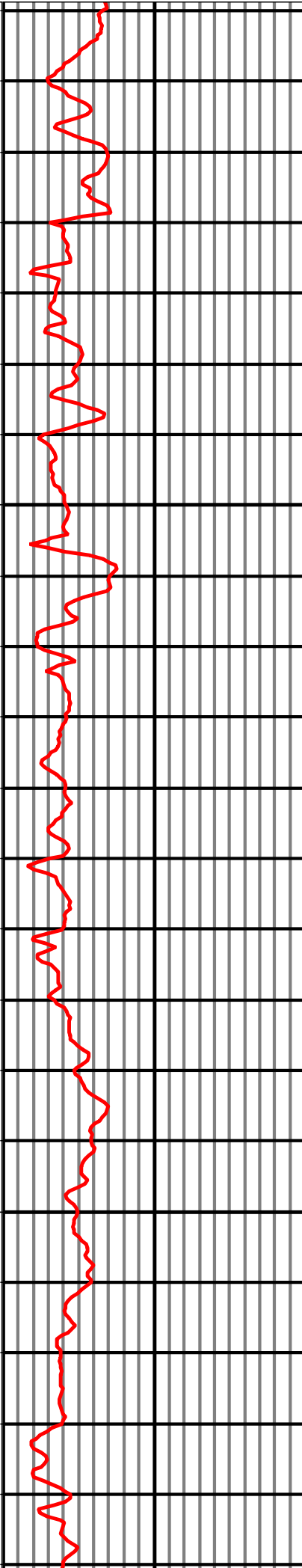
MD: 2818.00 INC: 0.60 AZ: 230.00

MD: 2909.00 INC: 0.90 AZ: 214.00



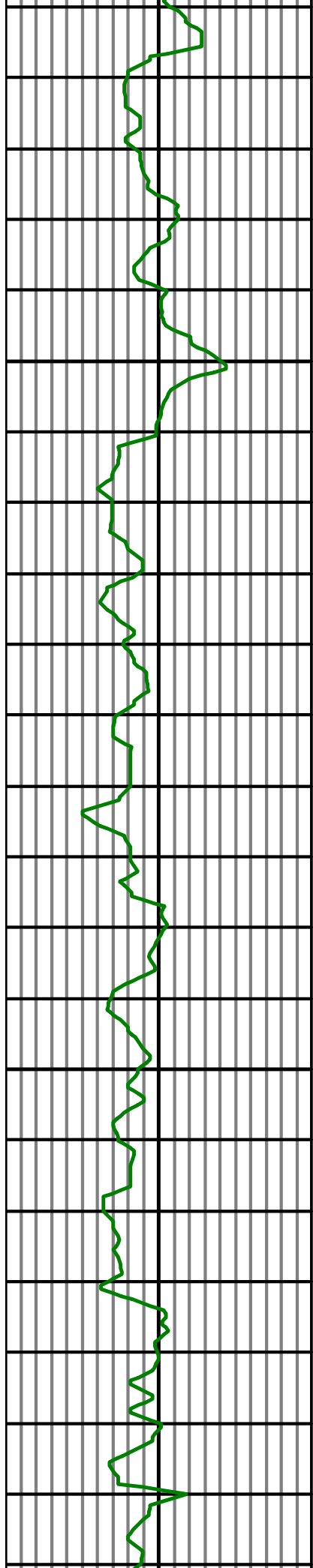
3,000

3,100



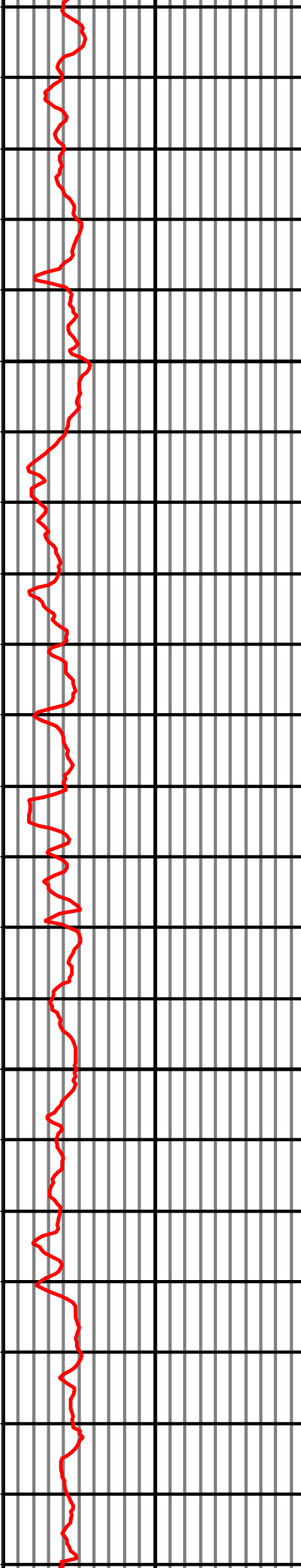
MD: 3001.00 INC: 1.10 AZ: 207.10

MD: 3092.00 INC: 0.60 AZ: 216.60



3,200

3,300



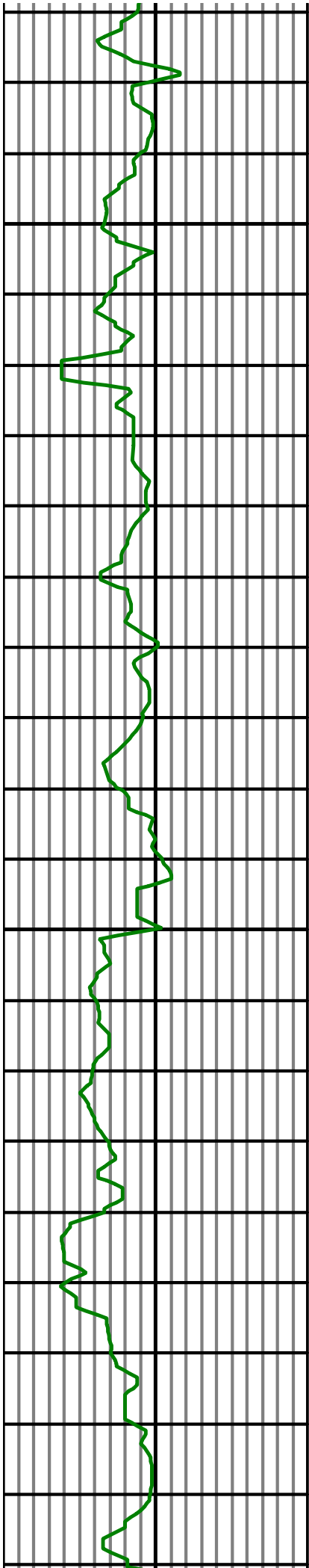
MD: 3183.00 INC: 0.30 AZ: 317.10

MD: 3229.00 INC: 1.10 AZ: 354.80

MD: 3274.00 INC: 1.50 AZ: 9.50

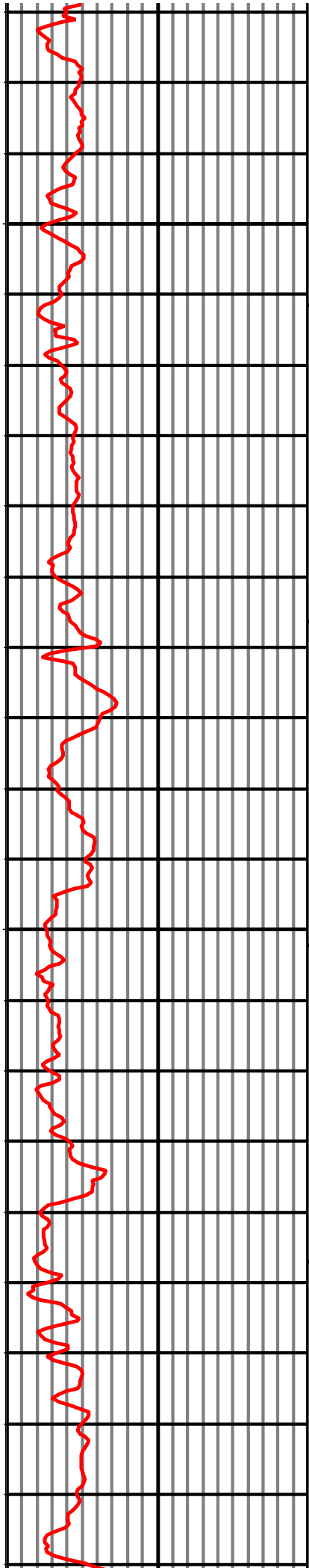
MD: 3320.00 INC: 2.00 AZ: 10.90

MD: 3366.00 INC: 2.30 AZ: 11.10



3,400

3,500

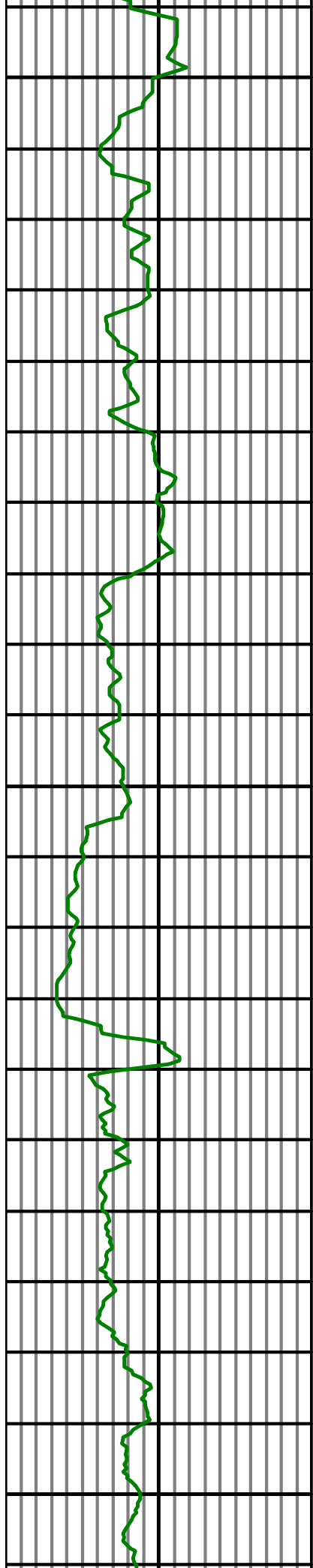


MD: 3412.00 INC: 3.00 AZ: 18.50

MD: 3457.00 INC: 3.60 AZ: 25.40

MD: 3503.00 INC: 4.80 AZ: 25.40

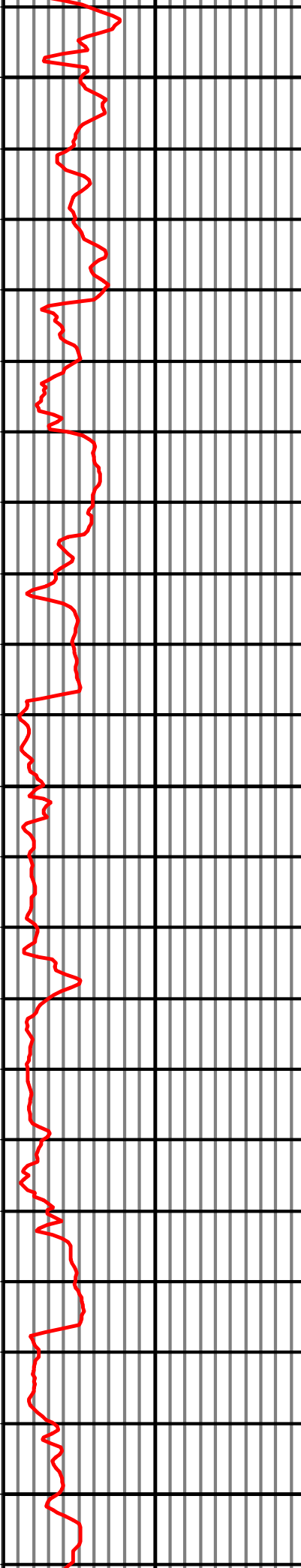
MD: 3548.00 INC: 6.30 AZ: 23.80



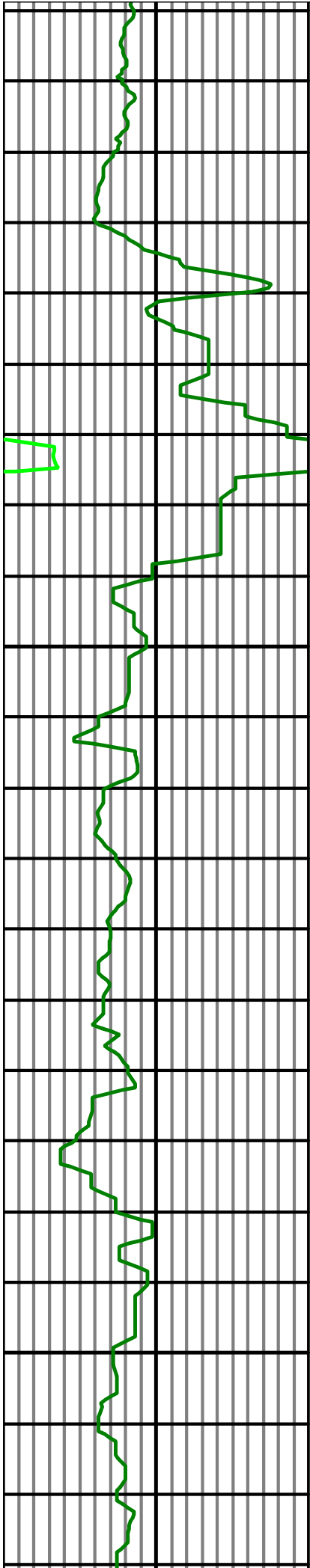
3,600

3,700

3,800

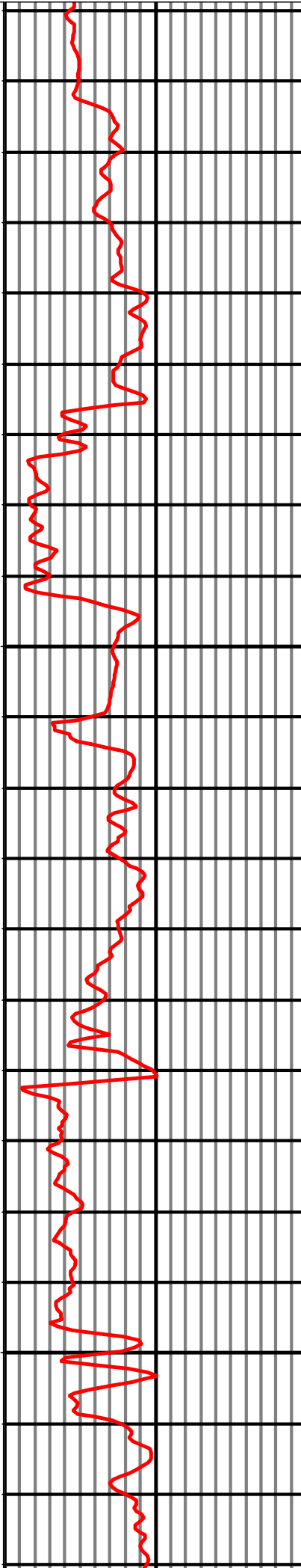


MD: 3594.00 INC: 7.70 AZ: 26.80
MD: 3640.00 INC: 8.70 AZ: 27.30
MD: 3685.00 INC: 9.30 AZ: 24.50
MD: 3731.00 INC: 10.30 AZ: 19.70
MD: 3777.00 INC: 10.60 AZ: 14.80



3,900

4,000



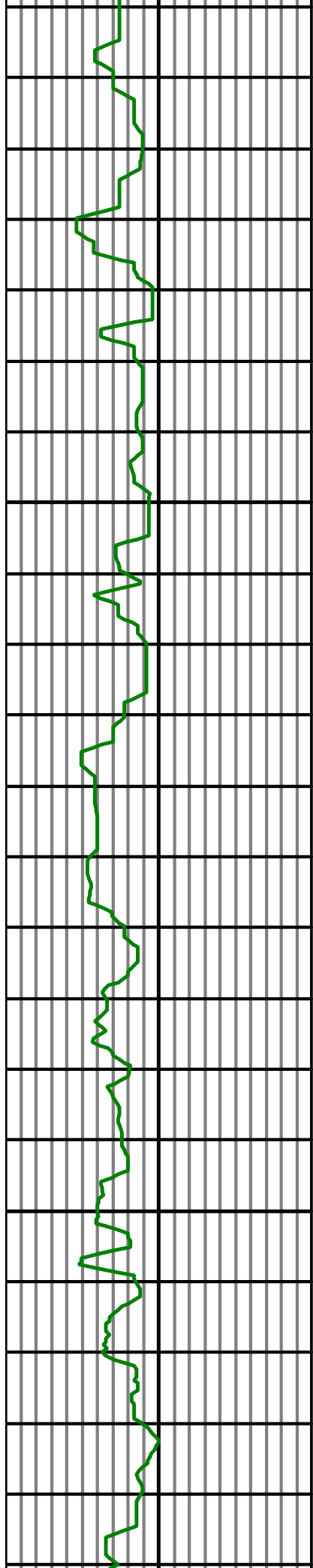
MD: 3822.00 INC: 11.30 AZ: 13.60

MD: 3868.00 INC: 12.10 AZ: 12.70

MD: 3914.00 INC: 11.80 AZ: 9.70

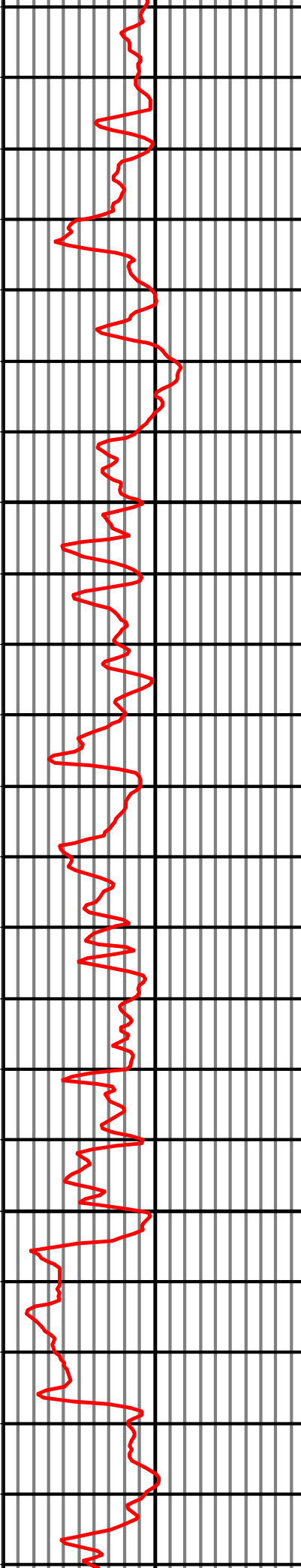
MD: 3959.00 INC: 11.30 AZ: 9.20

MD: 4005.00 INC: 10.10 AZ: 6.70



4,100

4,200



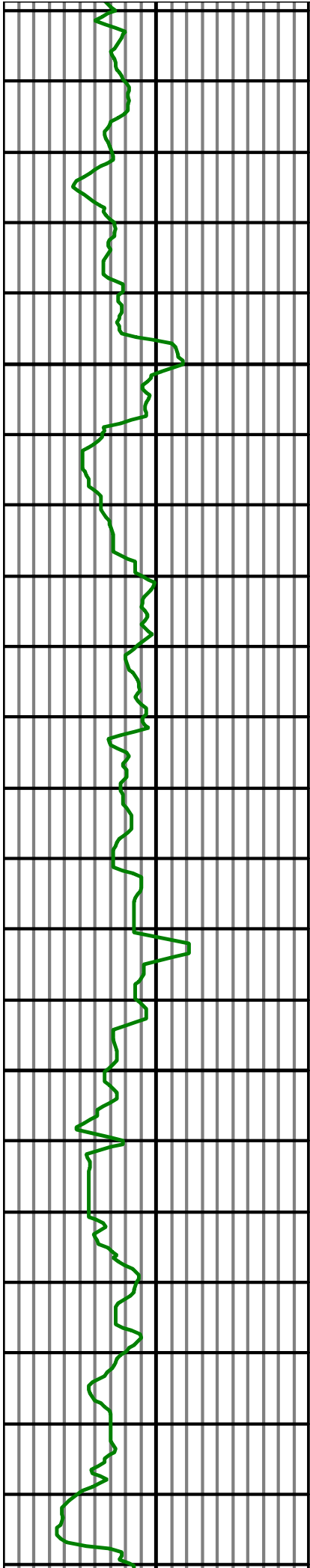
MD: 4050.00 INC: 10.00 AZ: 6.40

MD: 4096.00 INC: 9.80 AZ: 5.00

MD: 4141.00 INC: 9.40 AZ: 5.10

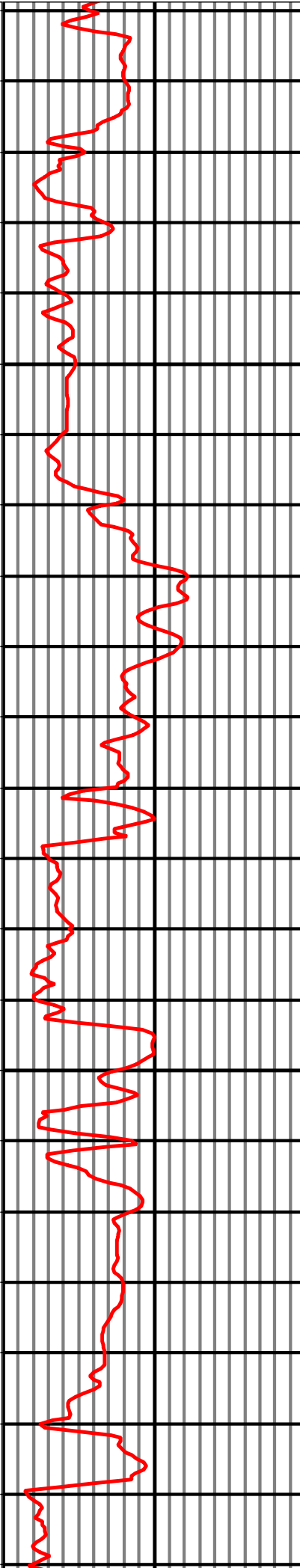
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MD: 4233.00 INC: 10.00 AZ: 9.50



4,300

4,400



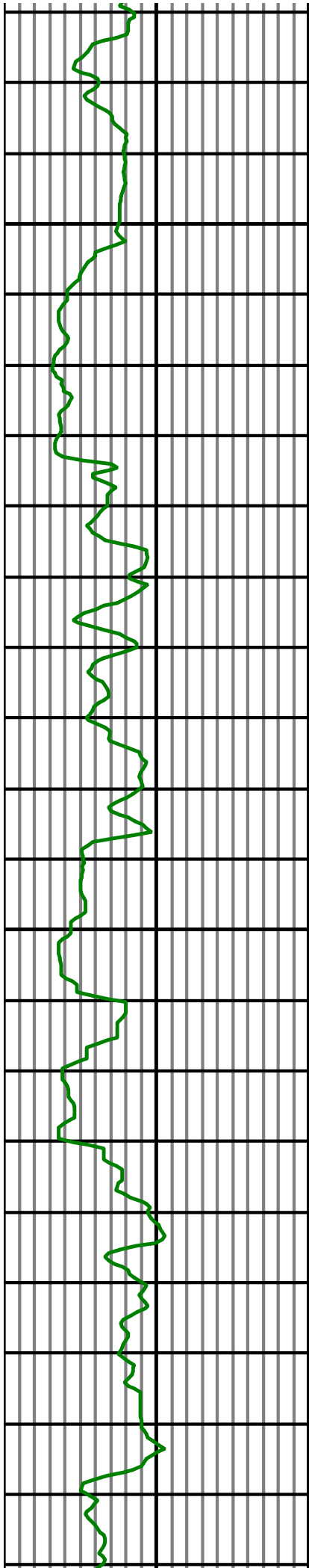
MD: 4279.00 INC: 10.60 AZ: 11.50

MD: 4324.00 INC: 10.90 AZ: 13.10

MD: 4370.00 INC: 11.60 AZ: 13.80

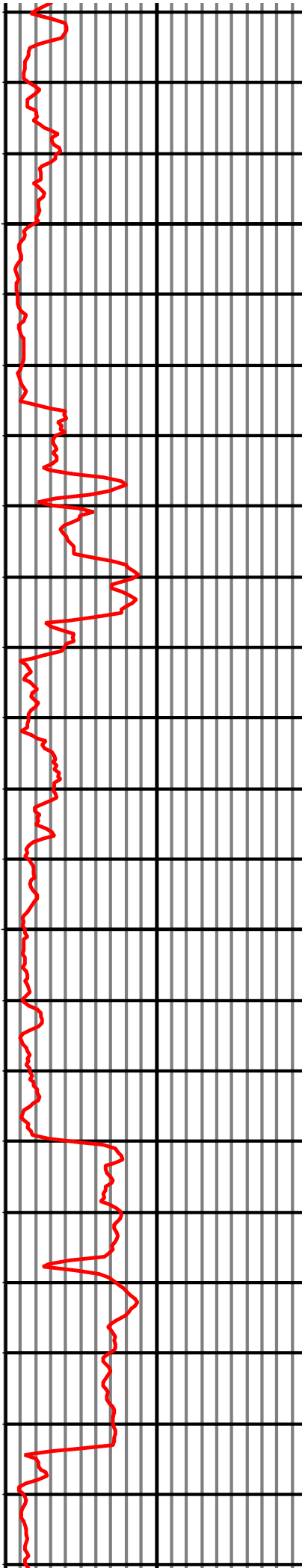
MD: 4415.00 INC: 11.30 AZ: 13.90

MD: 4461.00 INC: 11.80 AZ: 14.60



4,500

4,600



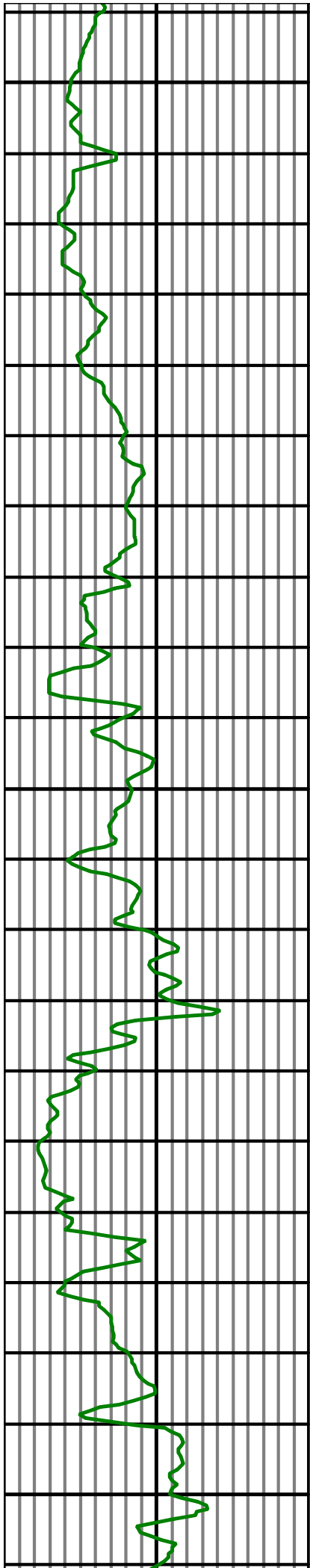
MD: 4506.00 INC: 11.10 AZ: 14.60

MD: 4552.00 INC: 10.60 AZ: 14.60

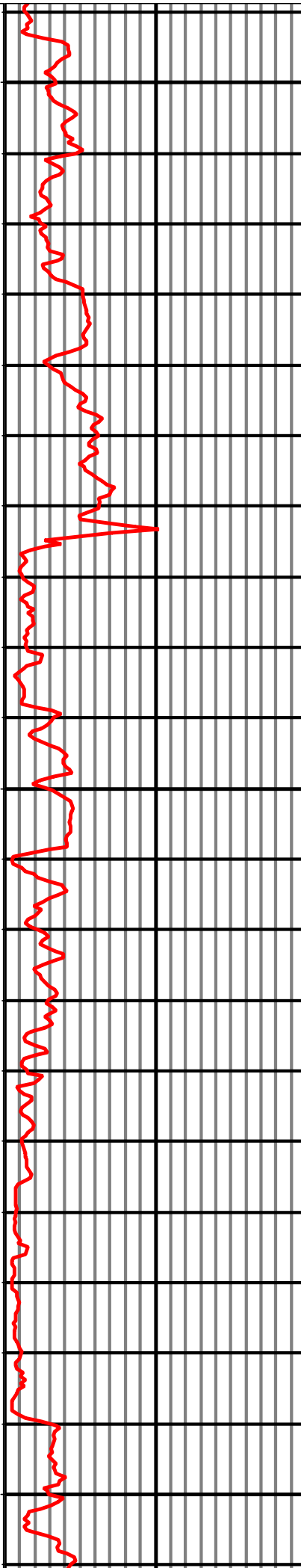
MD: 4598.00 INC: 9.90 AZ: 15.30

MD: 4643.00 INC: 9.20 AZ: 13.80

MD: 4689.00 INC: 9.10 AZ: 12.90



4,700



MD: 4735.00 INC: 8.90 AZ: 12.30

MD: 4780.00 INC: 9.40 AZ: 13.60

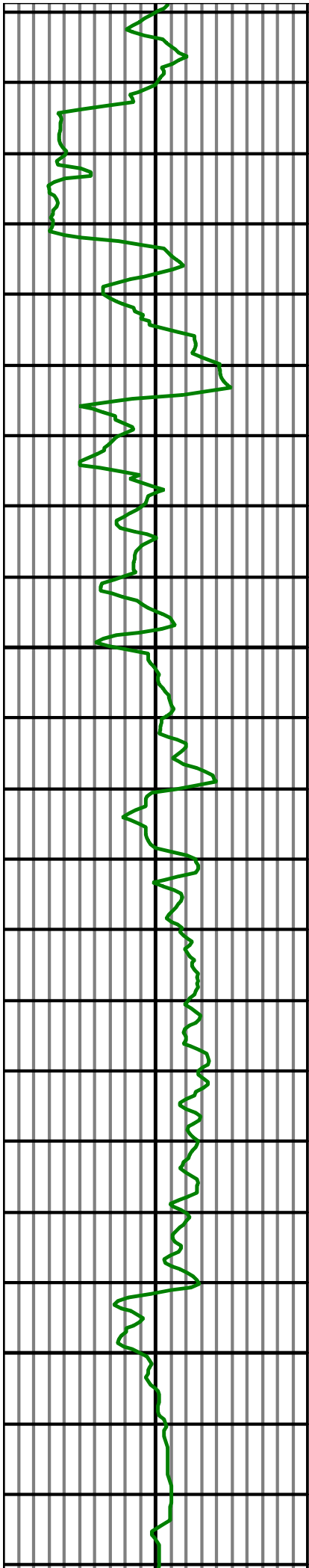
4,800

MD: 4826.00 INC: 9.60 AZ: 16.40

MD: 4872.00 INC: 8.90 AZ: 21.10

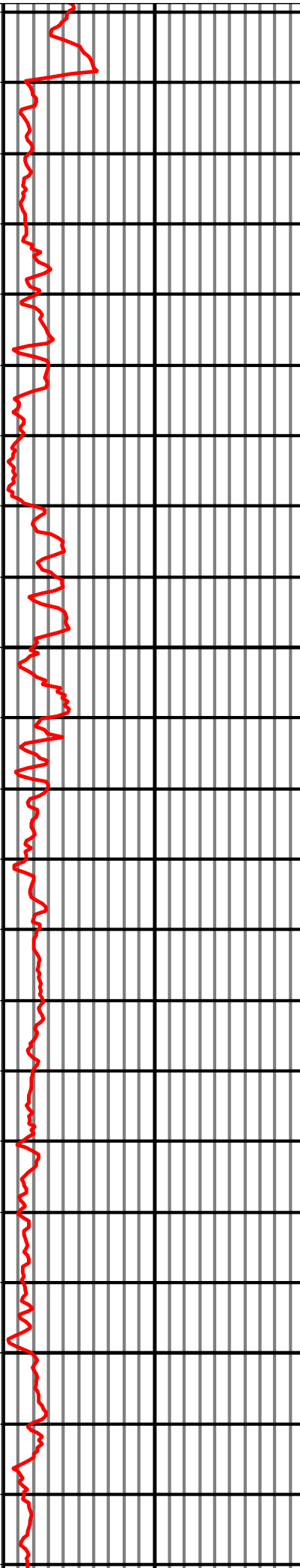
4,900

MD: 4918.00 INC: 9.10 AZ: 24.10



5,000

5,100



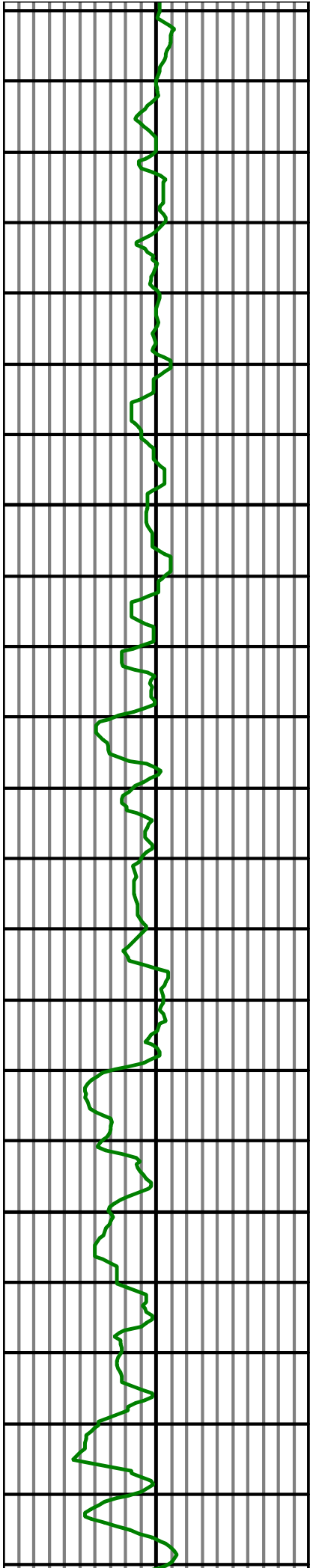
MD: 4963.00 INC: 8.60 AZ: 23.60

MD: 5009.00 INC: 9.00 AZ: 21.10

MD: 5054.00 INC: 9.30 AZ: 20.30

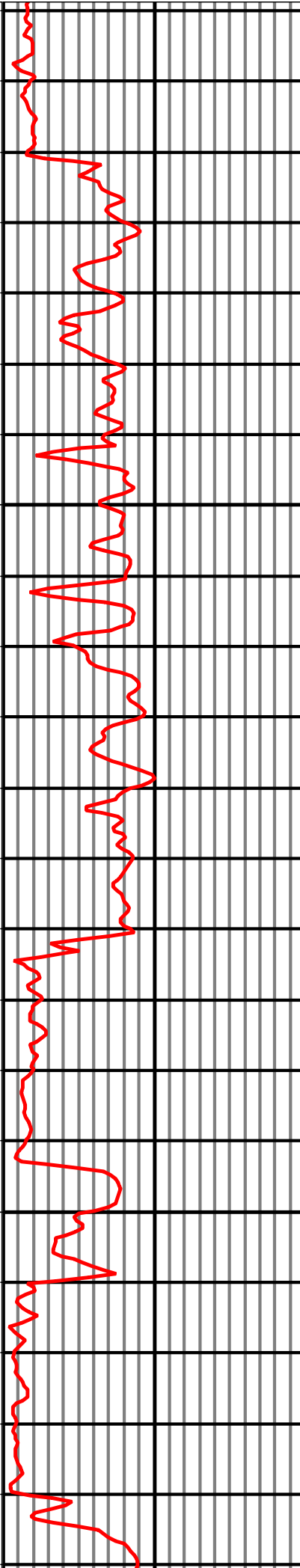
MD: 5100.00 INC: 9.50 AZ: 14.80

MD: 5146.00 INC: 9.10 AZ: 11.80



5,200

5,300



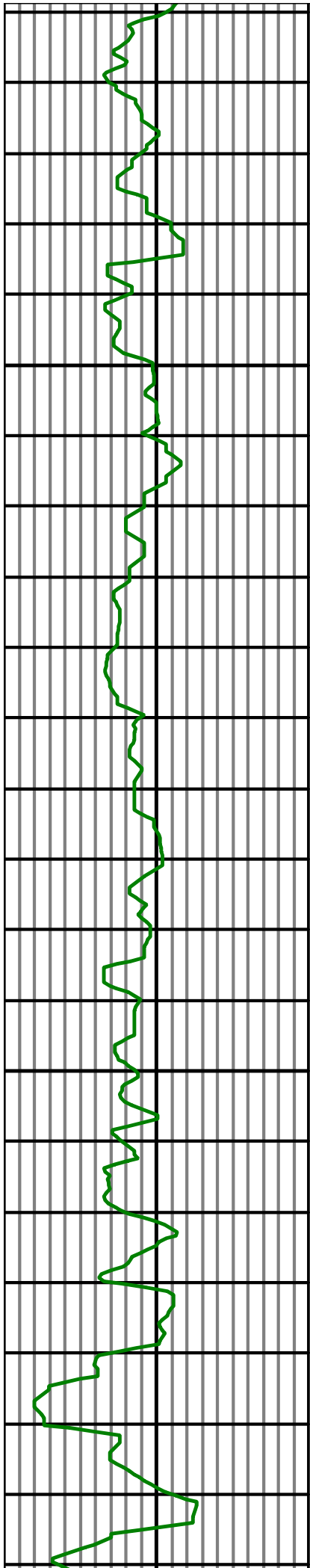
MD: 5191.00 INC: 7.90 AZ: 16.60

MD: 5237.00 INC: 6.90 AZ: 18.10

MD: 5283.00 INC: 6.20 AZ: 20.30

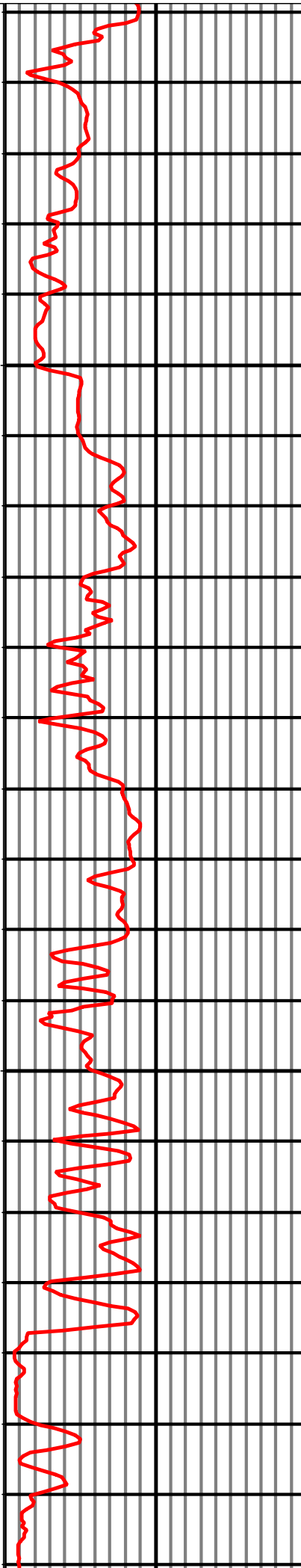
MD: 5328.00 INC: 5.80 AZ: 11.30

MD: 5374.00 INC: 6.00 AZ: 357.90



5,400

5,500

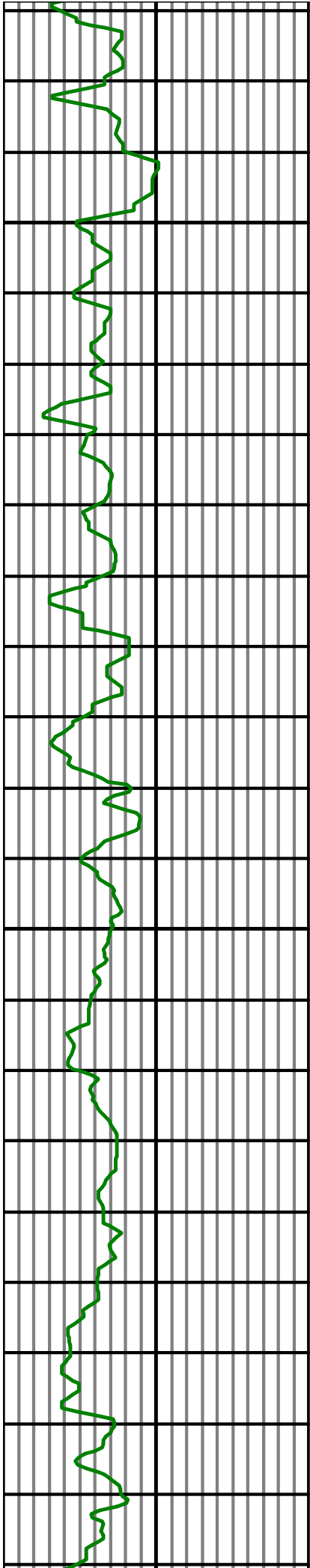


MD: 5420.00 INC: 5.70 AZ: 358.60

MD: 5465.00 INC: 5.40 AZ: 359.70

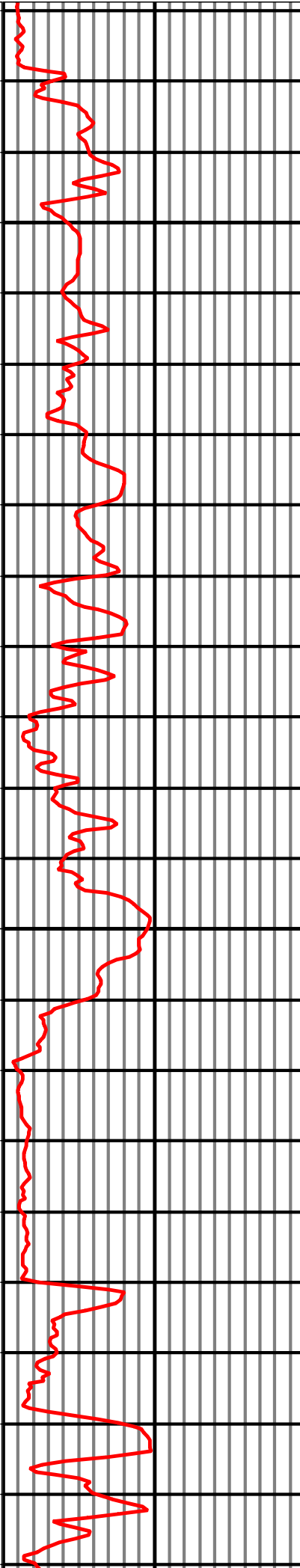
MD: 5511.00 INC: 4.80 AZ: 356.70

MD: 5557.00 INC: 4.70 AZ: 357.20



5,600

5,700



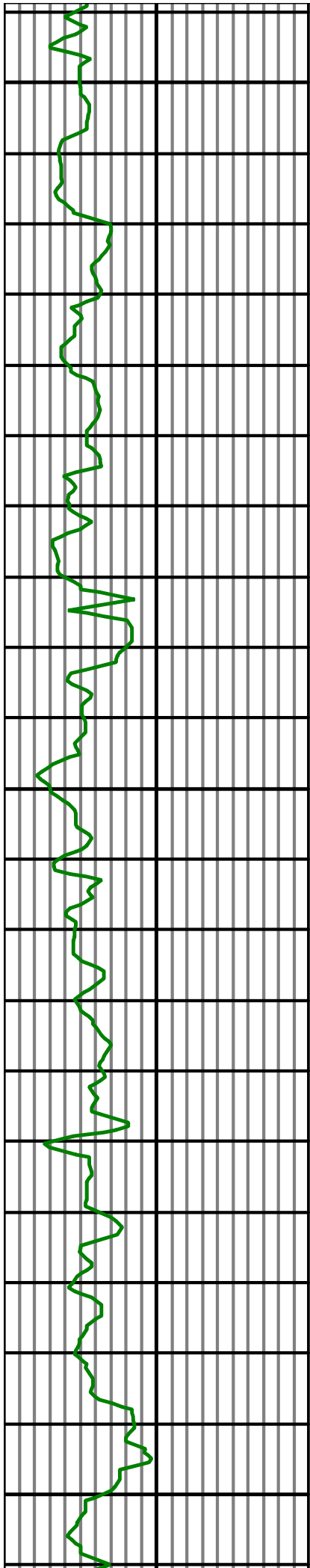
MD: 5602.00 INC: 6.70 AZ: 7.80

MD: 5648.00 INC: 7.60 AZ: 10.20

MD: 5694.00 INC: 7.90 AZ: 10.40

MD: 5740.00 INC: 8.00 AZ: 8.10

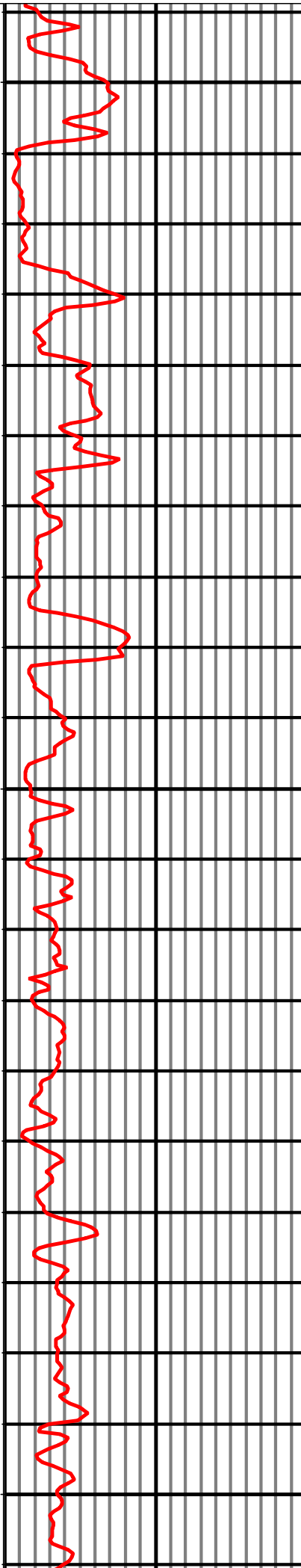
MD: 5785.00 INC: 6.90 AZ: 6.50



5,800

5,900

6,000



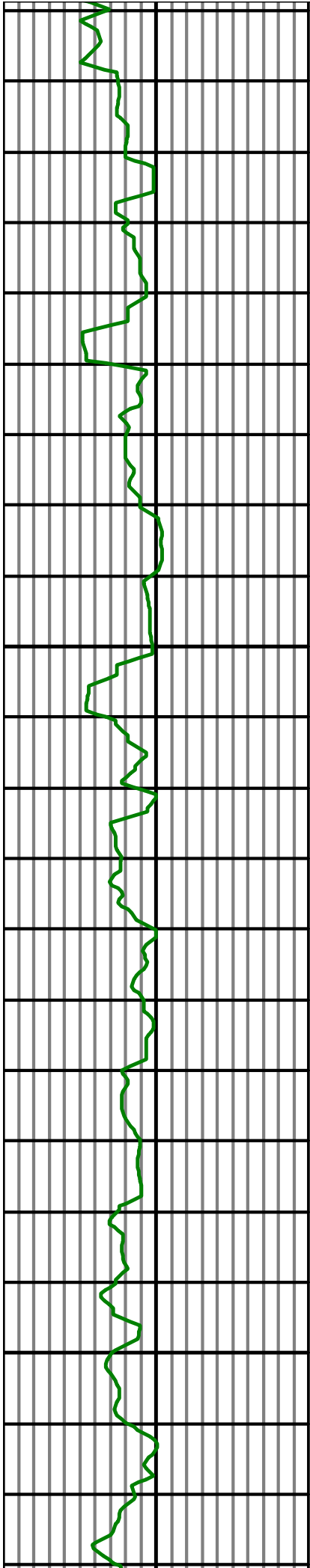
MD: 5831.00 INC: 6.40 AZ: 6.20

MD: 5876.00 INC: 5.80 AZ: 8.10

MD: 5922.00 INC: 5.90 AZ: 5.50

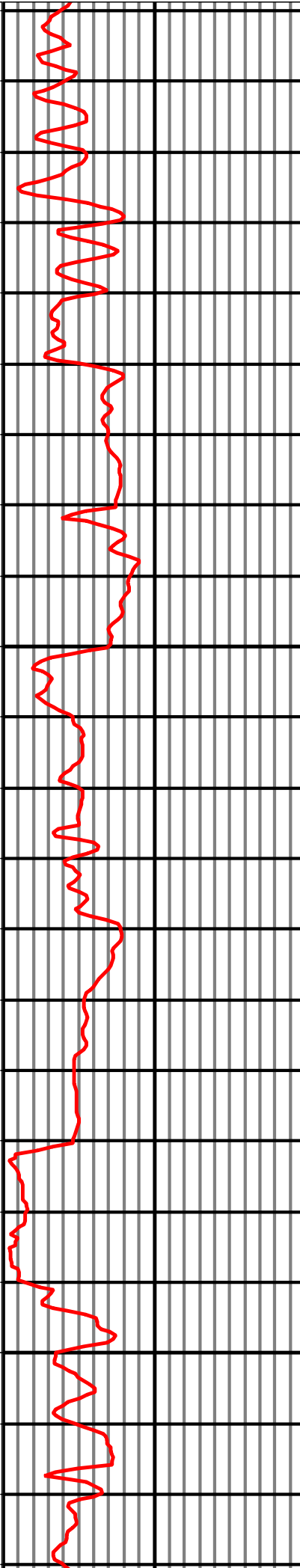
MD: 5968.00 INC: 6.30 AZ: 5.10

MD: 6013.00 INC: 6.70 AZ: 5.10



6,100

6,200



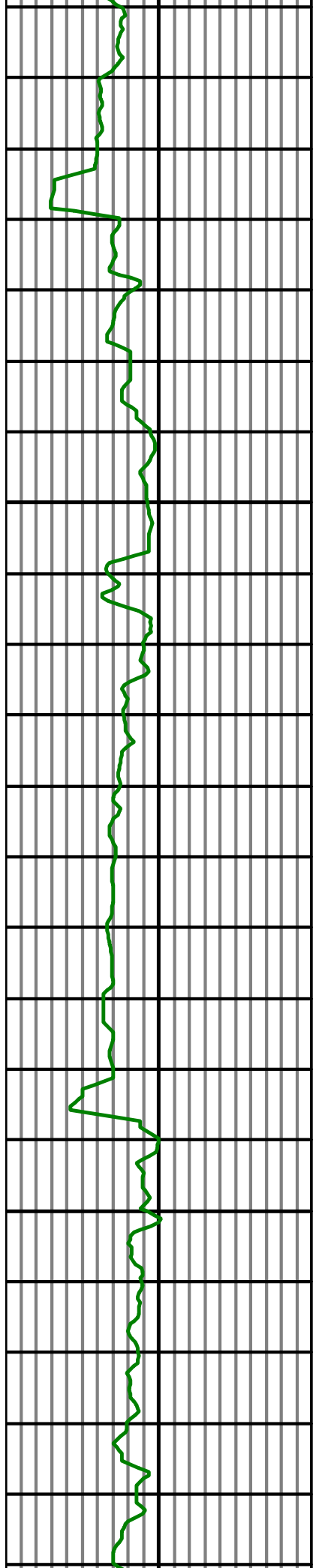
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MD: 6105.00 INC: 7.60 AZ: 6.90

MD: 6150.00 INC: 8.40 AZ: 9.20

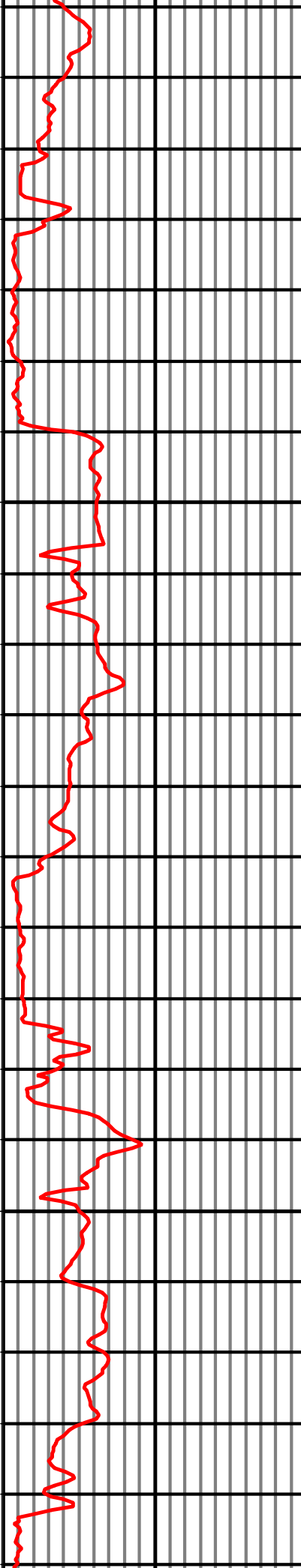
MD: 6196.00 INC: 8.80 AZ: 11.80

MD: 6242.00 INC: 8.40 AZ: 14.30



6,300

6,400



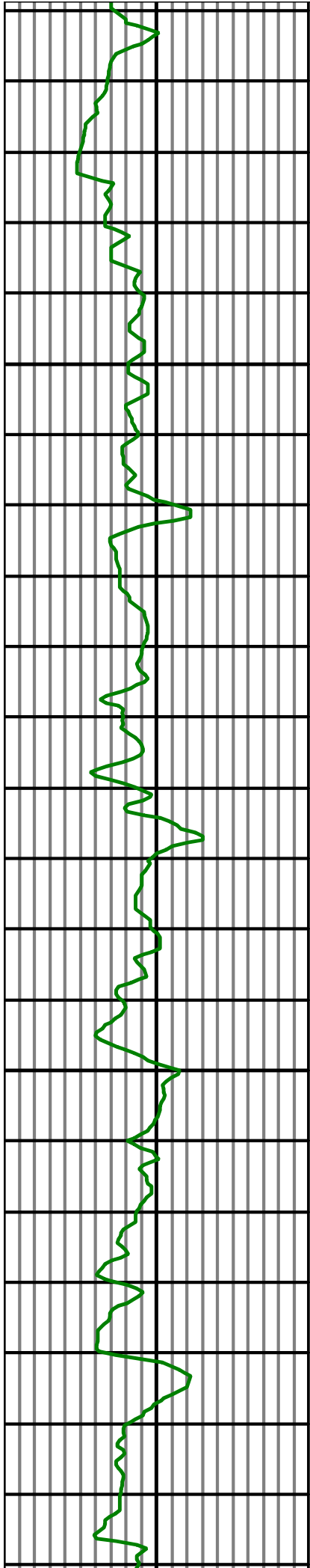
MD: 6287.00 INC: 8.40 AZ: 15.00

MD: 6333.00 INC: 7.20 AZ: 17.40

MD: 6379.00 INC: 7.50 AZ: 17.40

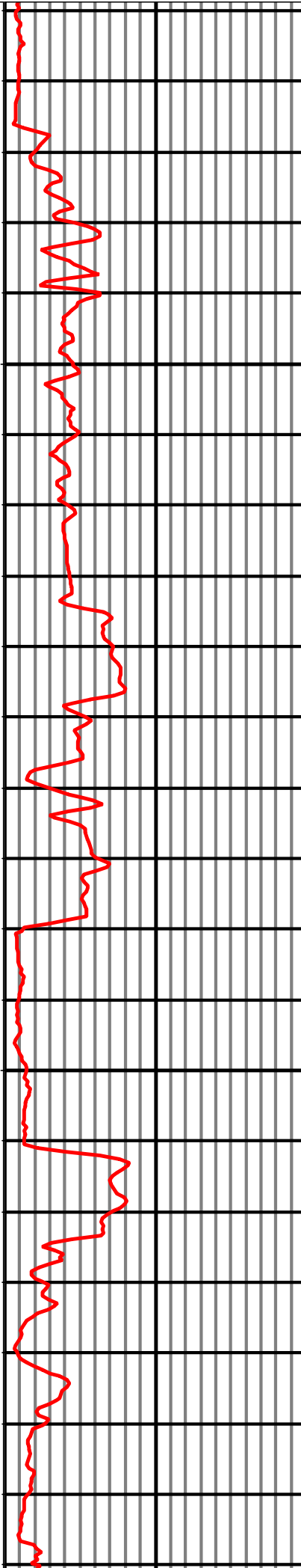
MD: 6424.00 INC: 7.60 AZ: 12.70

MD: 6470.00 INC: 7.70 AZ: 12.00



6,500

6,600



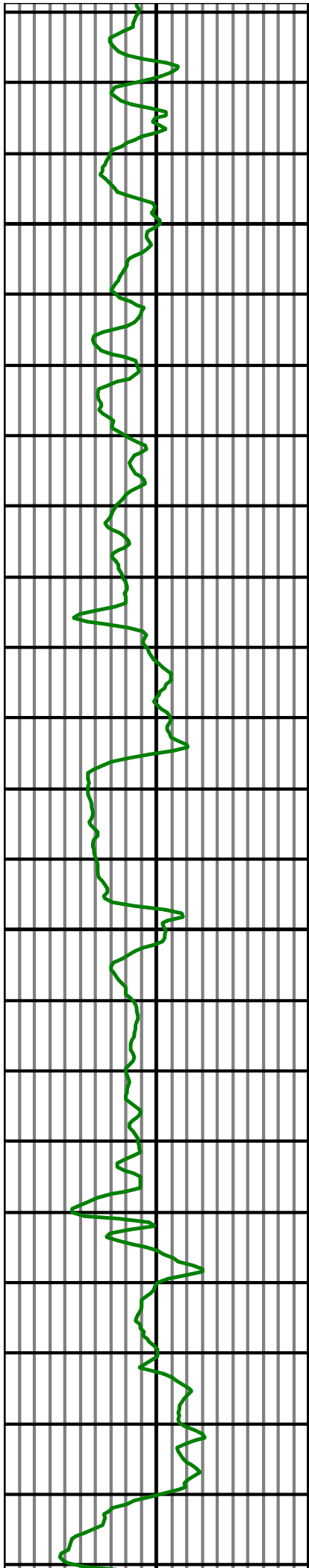
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MD: 6561.00 INC: 7.20 AZ: 9.40

MD: 6607.00 INC: 7.10 AZ: 12.00

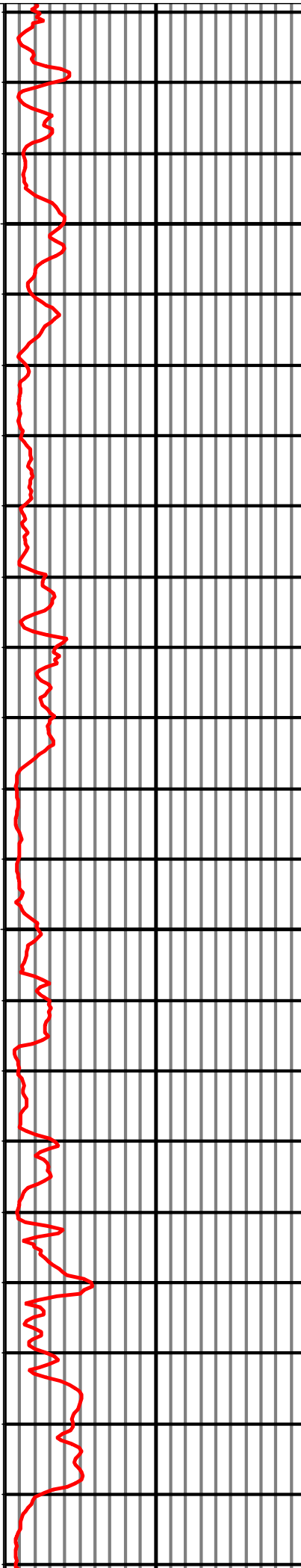
MD: 6653.00 INC: 6.00 AZ: 16.70

MD: 6699.00 INC: 6.10 AZ: 19.50



6,700

6,800



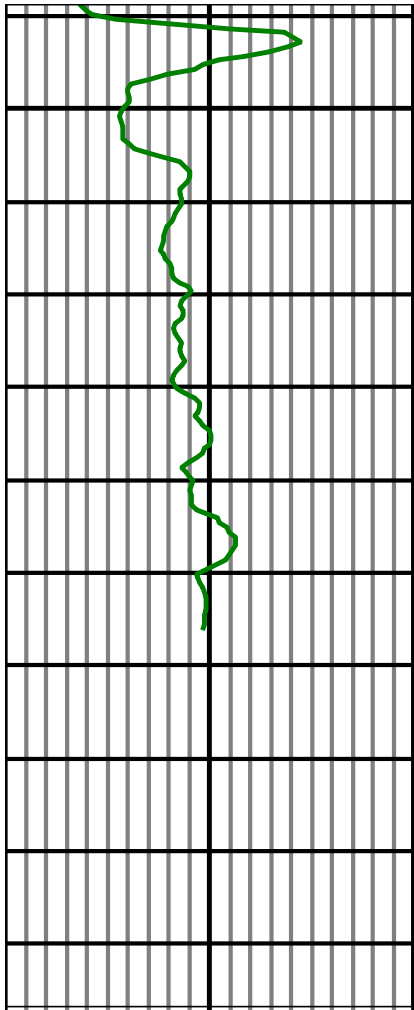
MD: 6744.00 INC: 5.90 AZ: 22.00

MD: 6790.00 INC: 4.40 AZ: 29.90

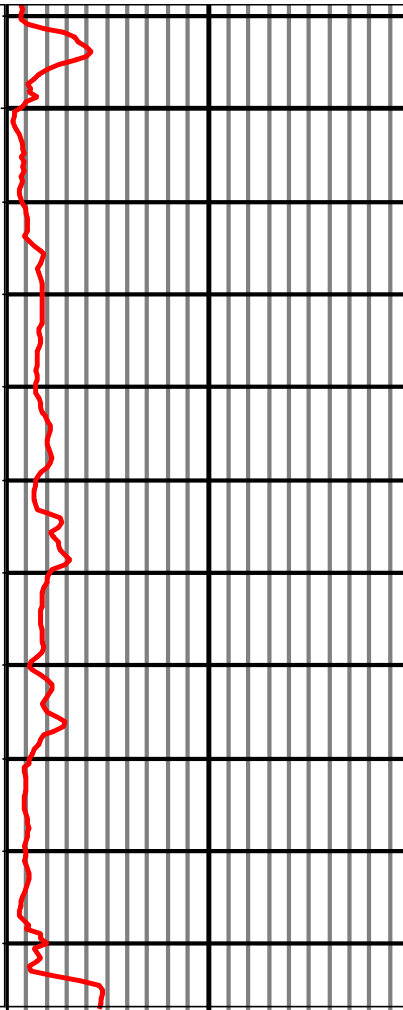
MD: 6836.00 INC: 4.40 AZ: 32.20

MD: 6881.00 INC: 4.80 AZ: 25.40

MD: 6927.00 INC: 5.00 AZ: 19.20



6,900



MD: 6973.00 INC: 5.30 AZ: 8.30

MD: 6983.00 INC: 5.30 AZ: 6.90

TD:7035.00INC:5.30AZ:6.90

0.00 GR(API) 150.00
150.00 300.00

TVD
FT

0.00 ROP(FT/HR) 500.00
500.00 1,000.00

Surveys (MD/INC/AZ)