



**MD**  
**WELLS RANCH STATE AA21-65HN 5":100'**

**Company:** NOBLE ENERGY  
**Well Name:** WELLS RANCH STATE AA21-65HN  
**API:** 05-123-37810  
**Rig Id:** H&P 277  
**State:** CO  
**County/Parish:** WELD COUNTY  
**Country:** USA  
**Survey Company:** DRILTECH, LLC  
**Job number:** 2013-398-IDDT-CO  
**MARK LARUE** MWD OPERATOR  
**JEREMY HOWE** MWD OPERATOR

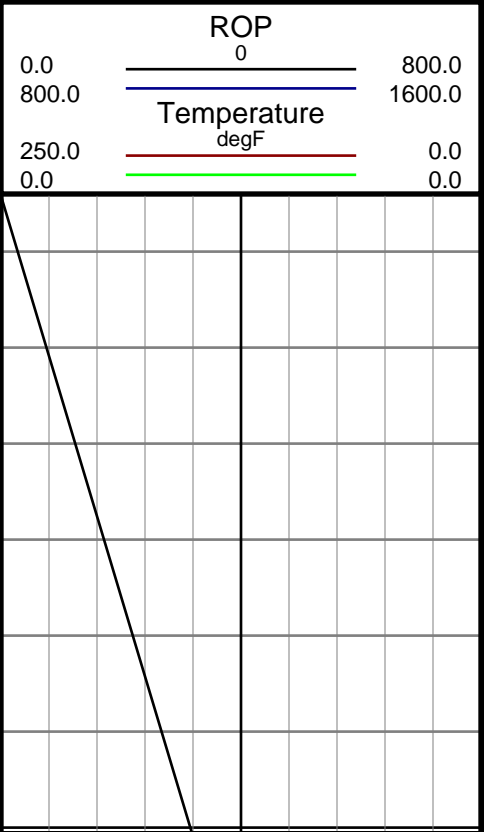
**Log measurements:**  
**Depth measured from:**  
**Maximum temperature:** 220.3

**Depth** **Date**  
**Start:** 1000 ft 12/25/2013  
**End:** 10932 ft 12/31/2013

<b>Casing</b>	<b>Depth</b>	<b>Size</b>	<b>Mud Type:</b> WATER BASE	<b>Elevations</b>
<b>Surface:</b>	924	9.625	<b>Density:</b> 9.15	<b>KB:</b>
<b>Intermediate:</b>	7143	7.0	<b>Viscosity:</b> 32	<b>GL:</b> 4727
			<b>Rm:</b>	<b>DF:</b> 4751
			<b>Rmf:</b>	
			<b>Rmc:</b>	

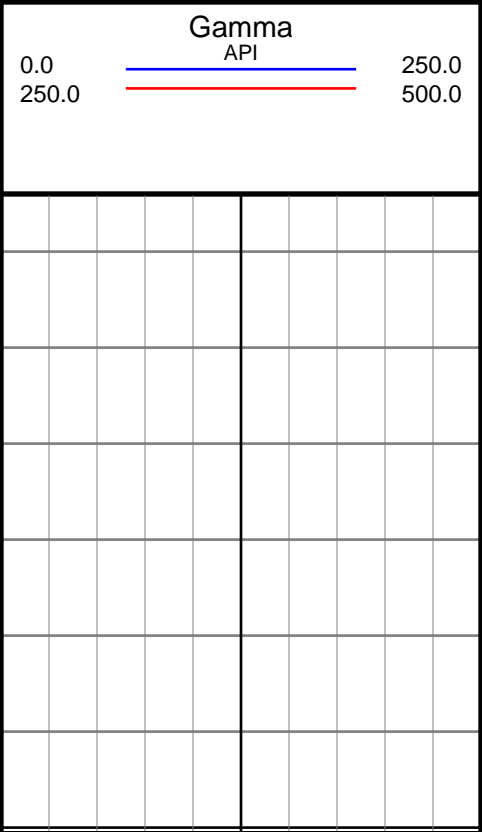
Run	Bit Size	Offsets	Gamma	Survey	Start	End	Start	End	Dates
1	8 3/4	35.00	52.00	950	5717	7154	12/25/2013	12/27/2013	
2	8 3/4	45.00	62.00	5717	7154	10932	12/27/2013	12/28/2013	
3	6 1/8	52.00	69.00	7154	10932		12/29/2013	12/31/2013	
4									
5									
6									
7									
8									
9									
10									

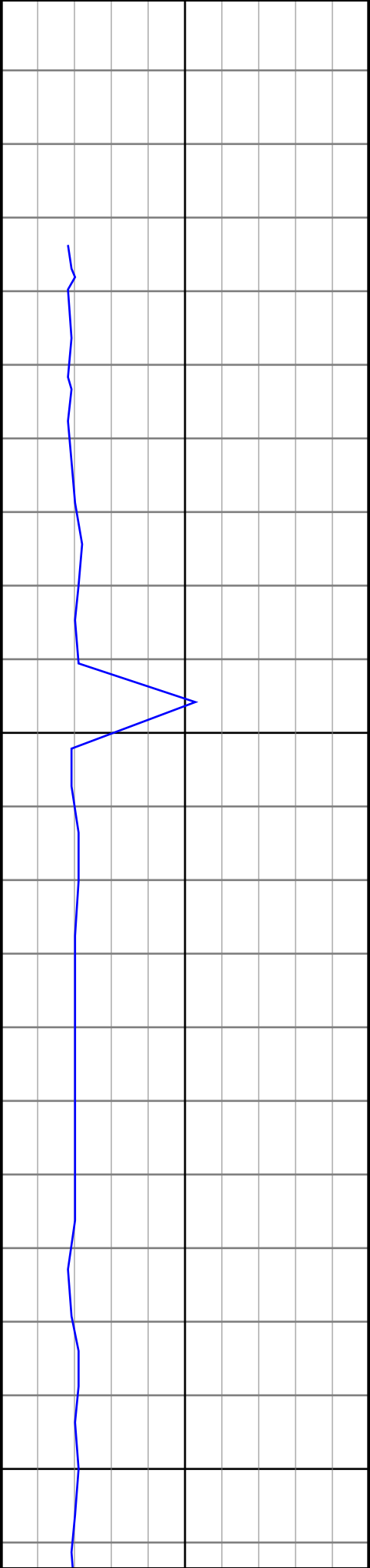
DRILTECH, LLC uses its best efforts to provide its customers with accurate information and interpretations in conjunction with services performed but will not be held liable or responsible for the accuracy of such information or interpretation.



MD

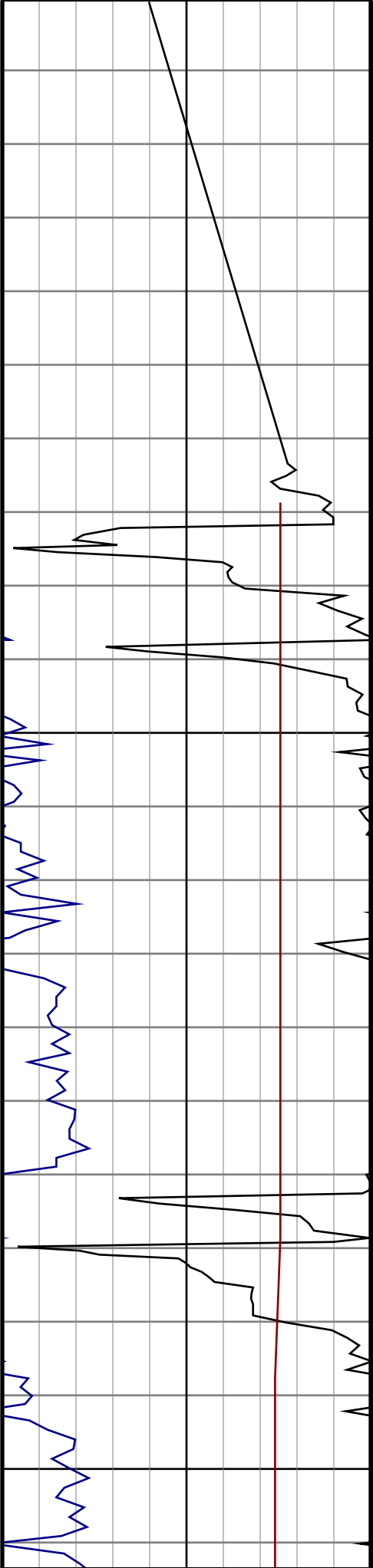
1000





1100

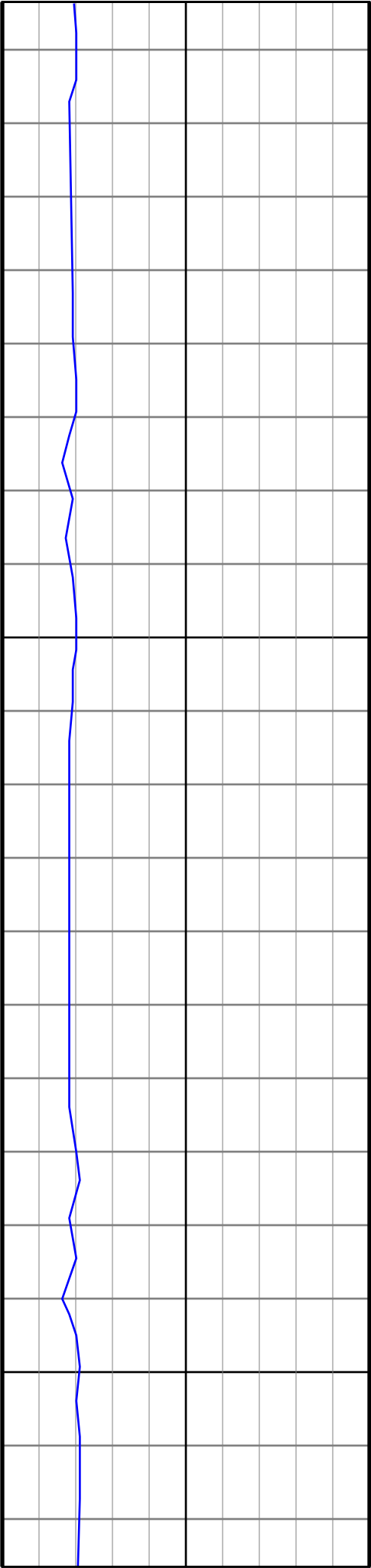
1200



#4 MD(1023.00) Inc(0.2) Azm(206.5) TVD(1023.00)  
VS(2.23) NS(-1.17) EW(-2.02)

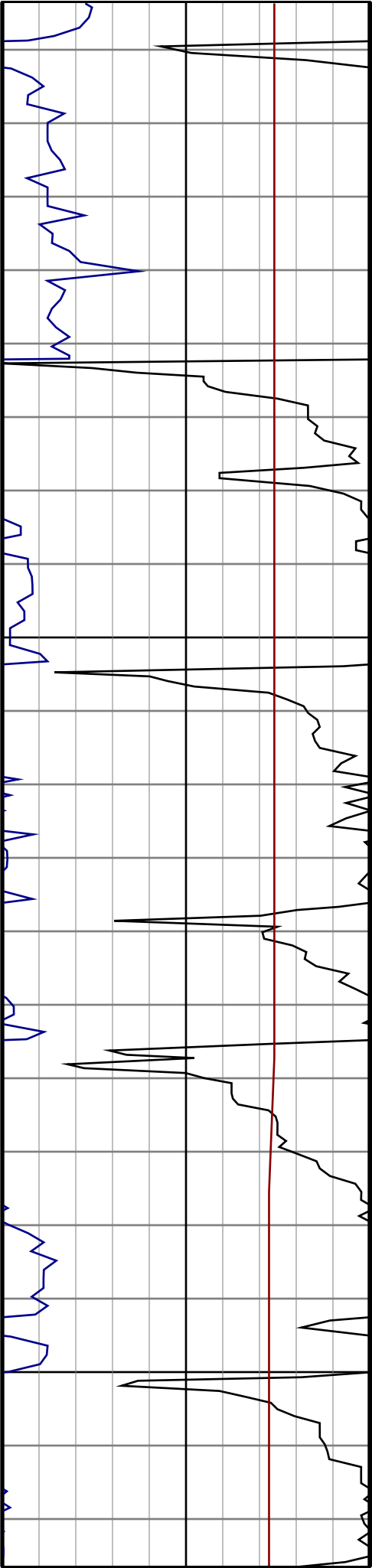
#5 MD(1117.00) Inc(0.4) Azm(209.8) TVD(1117.00)  
VS(2.55) NS(-1.61) EW(-2.26)

#6 MD(1211.00) Inc(0.2) Azm(340.3) TVD(1210.99)  
VS(2.80) NS(-1.74) EW(-2.48)



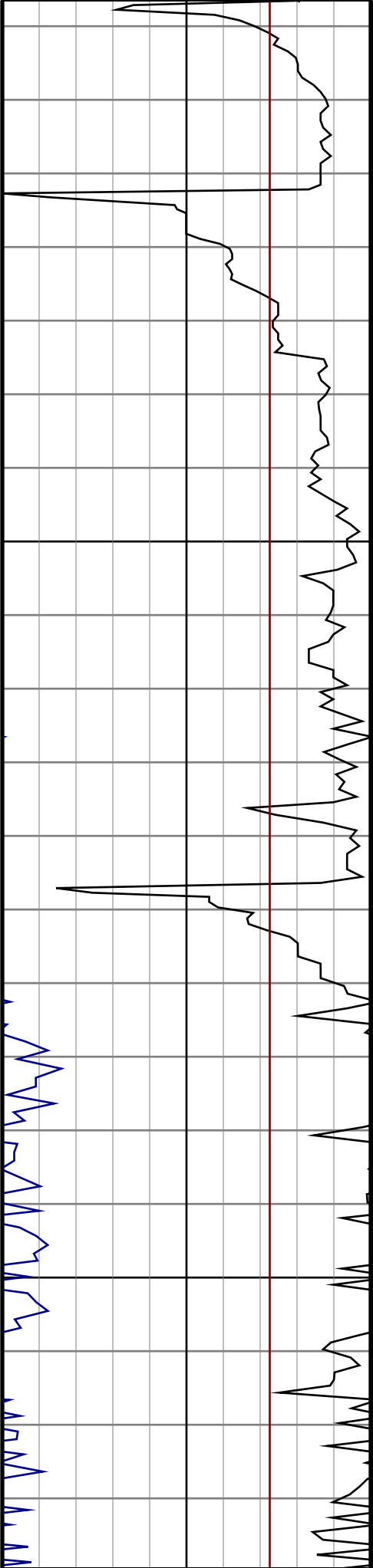
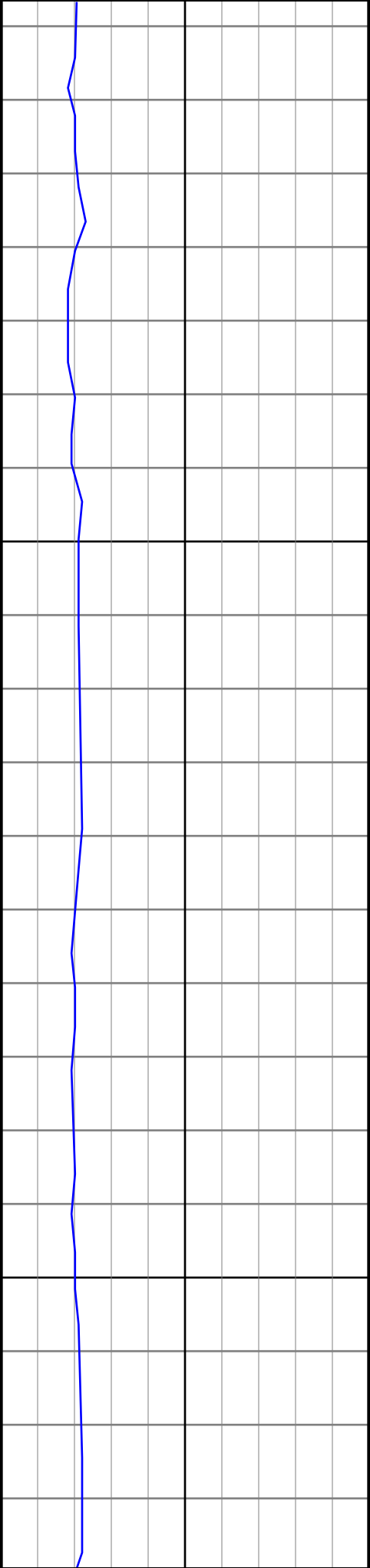
1300

1400



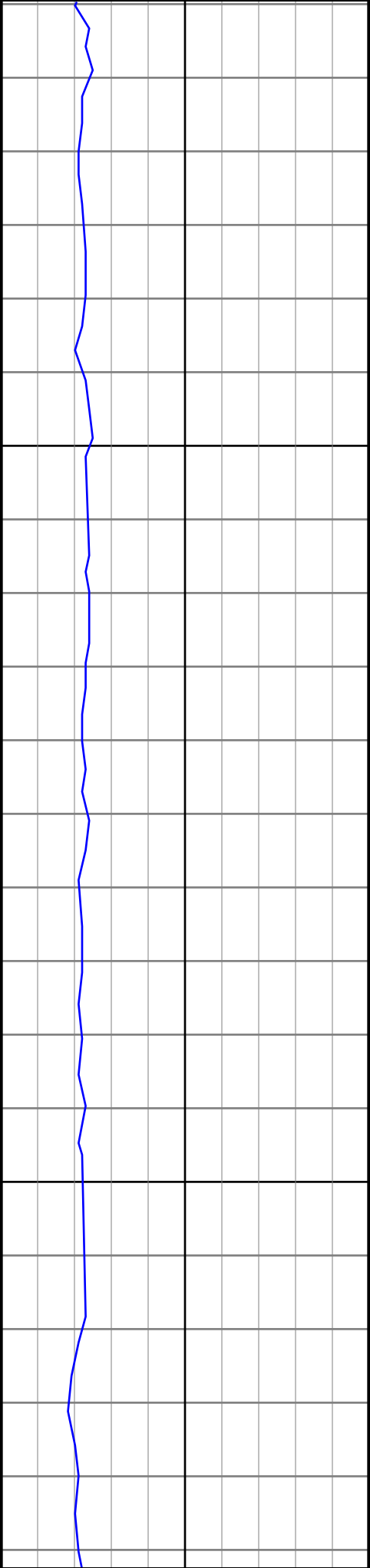
#7 MD(1306.00) Inc(0.2) Azm(142.2) TVD(1305.99)  
VS(2.75) NS(-1.71) EW(-2.43)

#8 MD(1401.00) Inc(0.4) Azm(311.3) TVD(1400.99)  
VS(2.87) NS(-1.62) EW(-2.58)



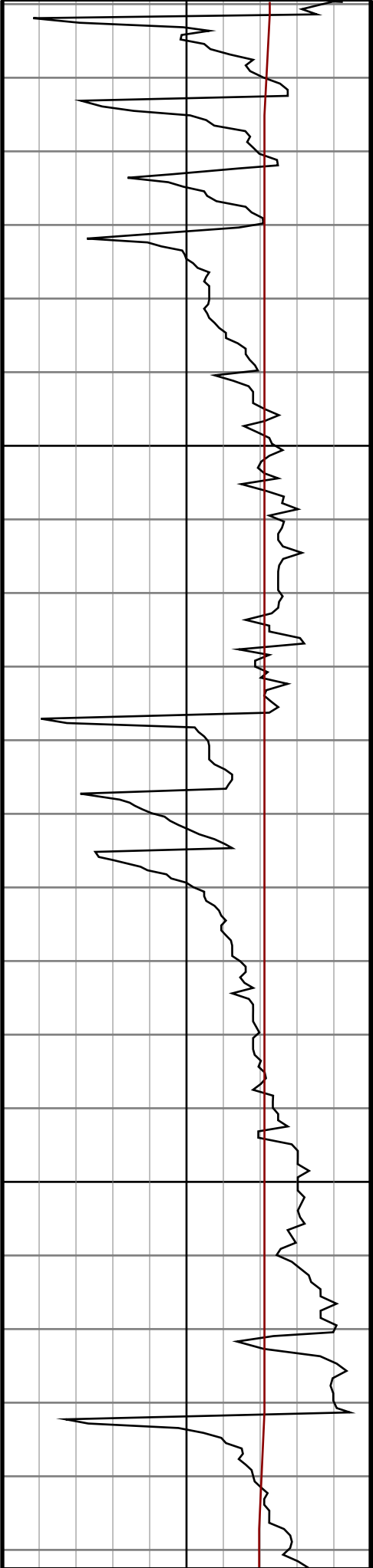
#9 MD(1495.00) Inc(0.4) Azm(270.3) TVD(1494.99)  
VS(3.38) NS(-1.41) EW(-3.15)

#10 MD(1590.00) Inc(0.4) Azm(4.9) TVD(1589.99)  
VS(3.61) NS(-1.07) EW(-3.46)



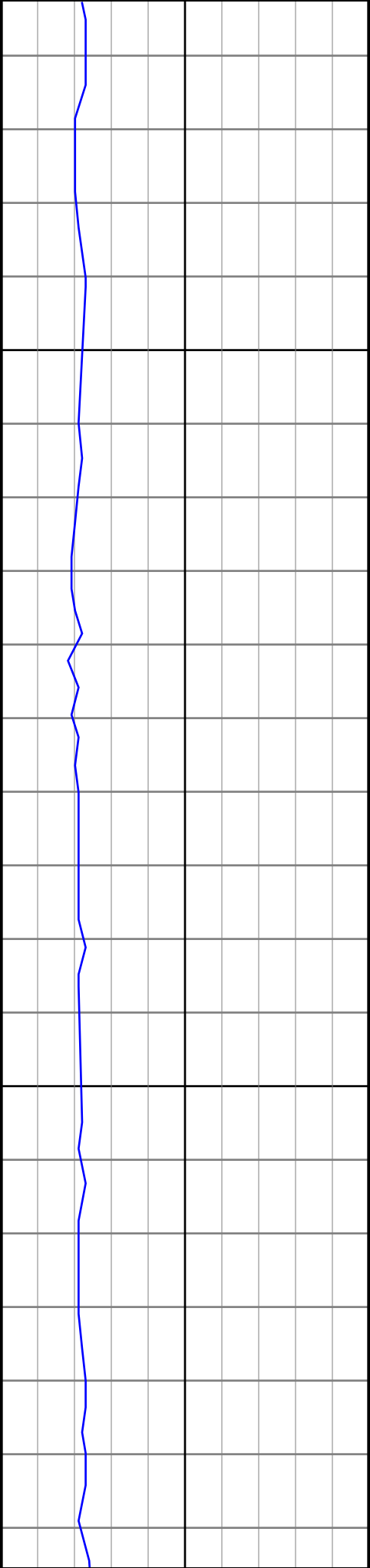
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1800



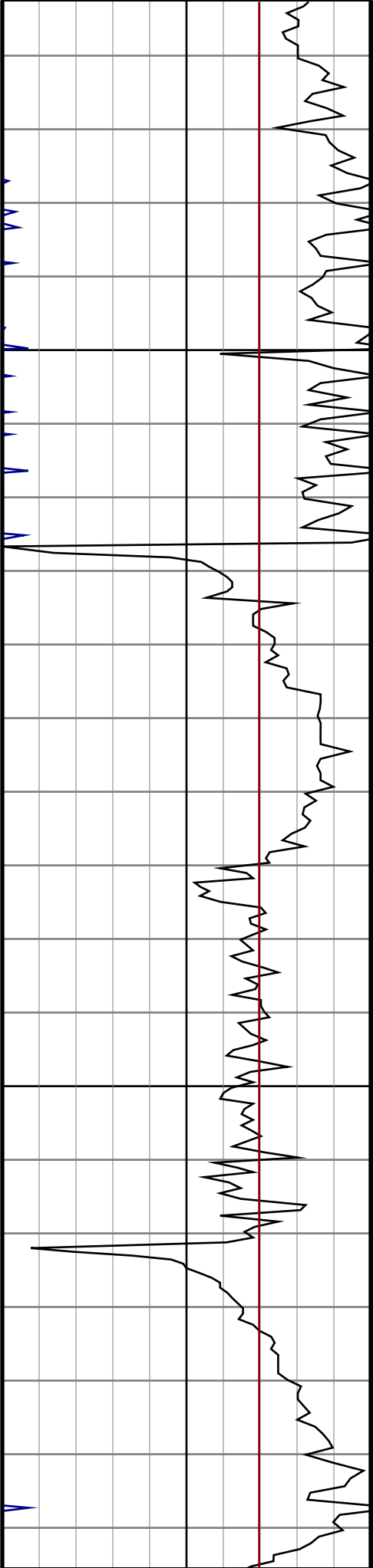
#11 MD(1684.00) Inc(0.4) Azm(296.1) TVD(1683.99)  
VS(3.76) NS(-0.60) EW(-3.72)

#12 MD(1779.00) Inc(0.2) Azm(316.9) TVD(1778.99)  
VS(4.11) NS(-0.34) EW(-4.13)



1900

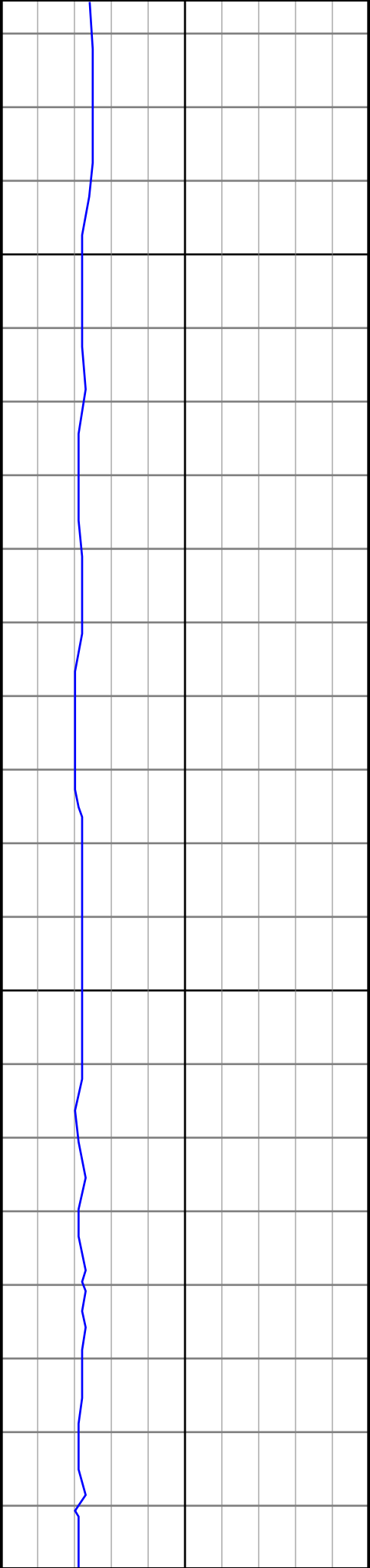
2000



#13 MD(1873.00) Inc(0.2) Azm(301.2) TVD(1872.99)  
VS(4.31) NS(-0.13) EW(-4.39)

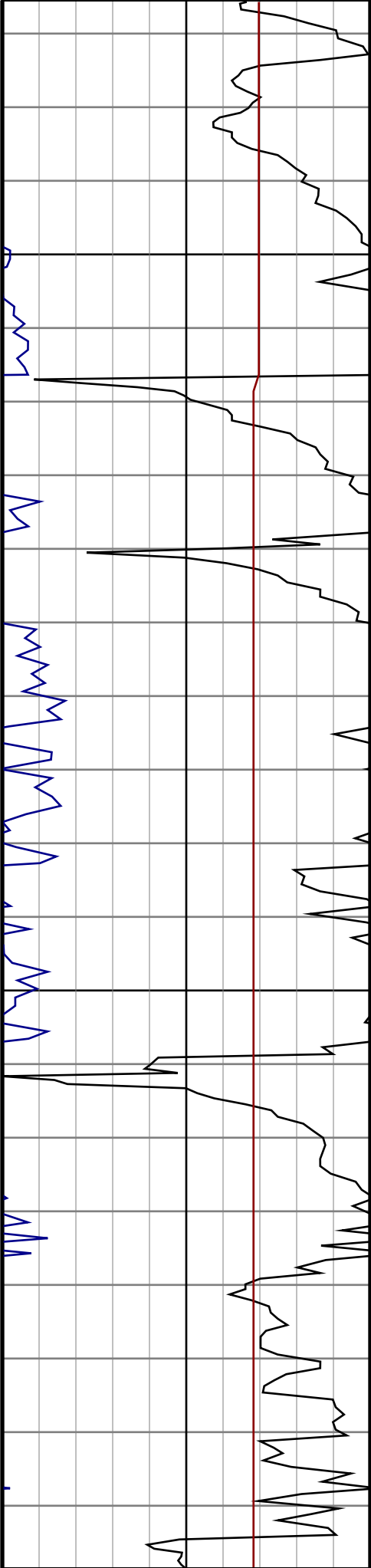
#14 MD(1968.00) Inc(0.4) Azm(275.6) TVD(1967.99)  
VS(4.74) NS(-0.01) EW(-4.86)

#15 MD(2063.00) Inc(0.4) Azm(283.0) TVD(2062.98)  
VS(5.36) NS(0.09) EW(-5.51)



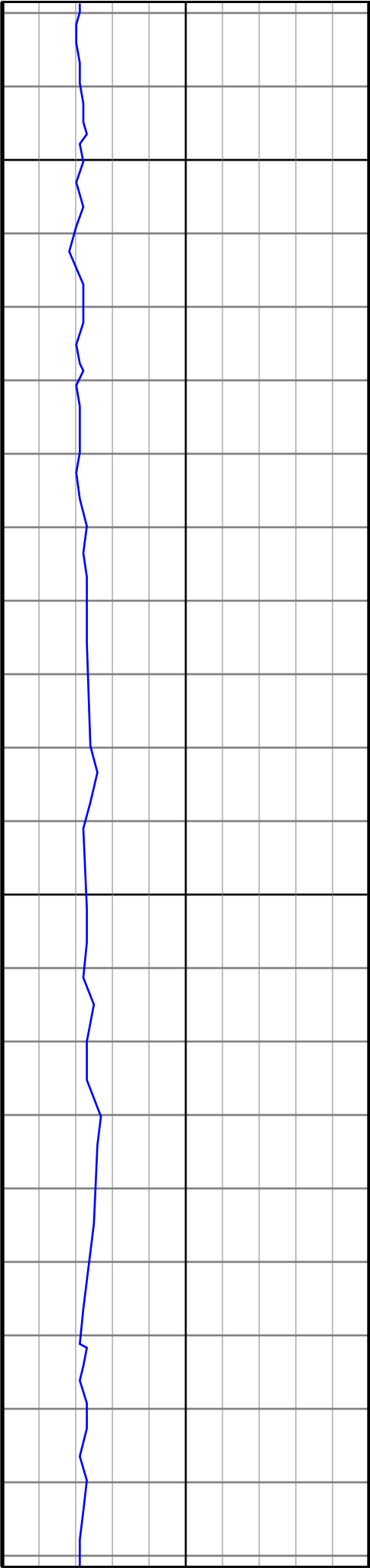
2100

2200



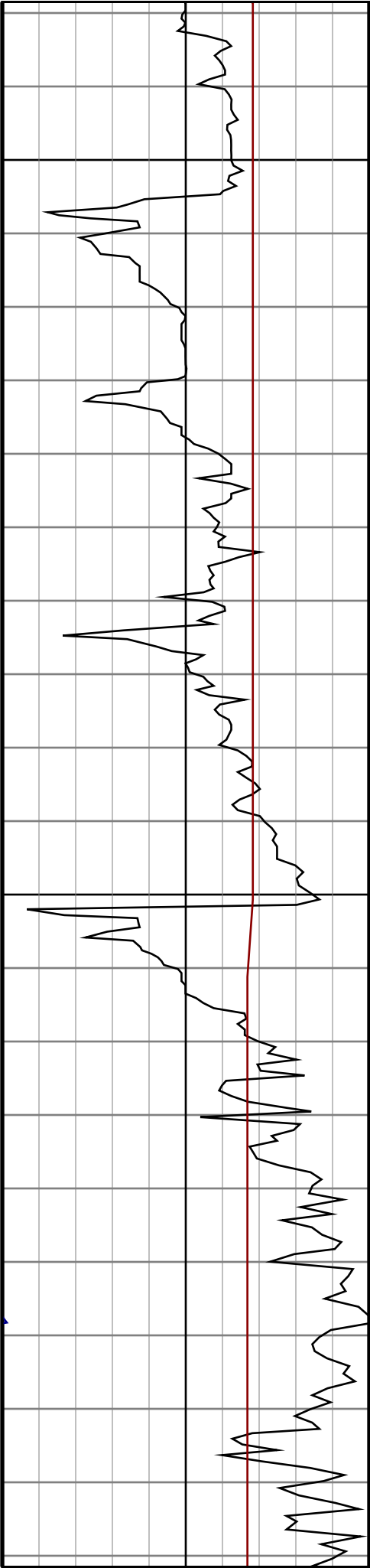
#16 MD(2157.00) Inc(0.4) Azm(298.6) TVD(2156.98)  
VS(5.90) NS(0.33) EW(-6.12)

#17 MD(2252.00) Inc(0.5) Azm(332.0) TVD(2251.98)  
VS(6.26) NS(0.85) EW(-6.60)



2300

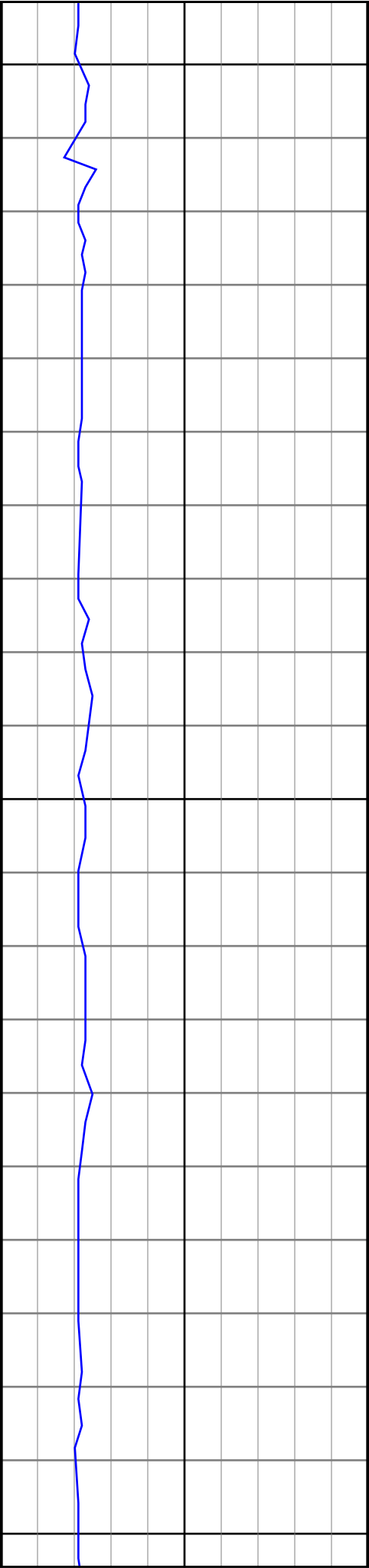
2400



#18 MD(2347.00) Inc(0.5) Azm(355.0) TVD(2346.97)  
VS(6.31) NS(1.63) EW(-6.84)

#19 MD(2441.00) Inc(0.9) Azm(344.8) TVD(2440.97)  
VS(6.29) NS(2.75) EW(-7.06)

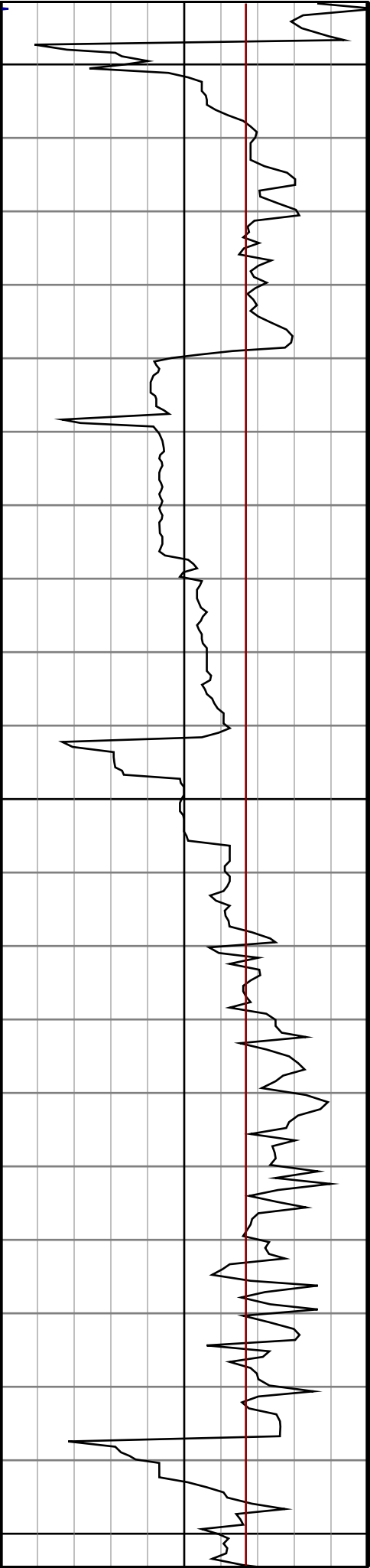




2500

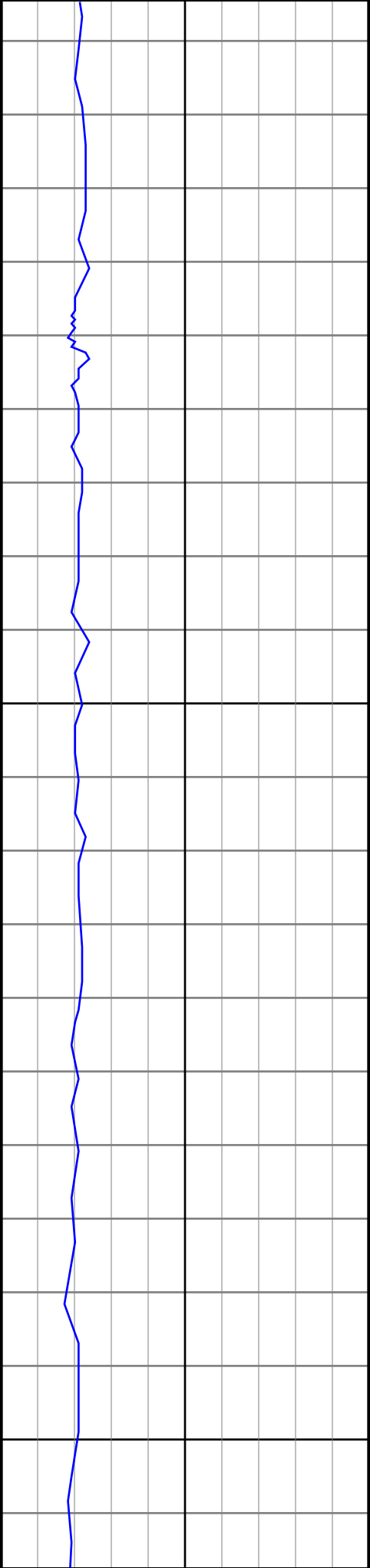
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2700



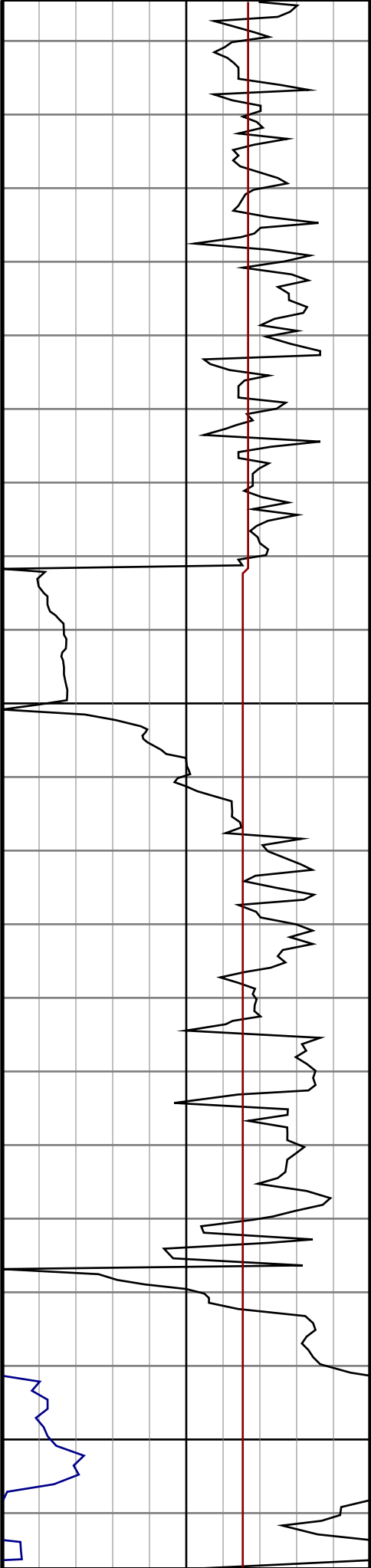
#20 MD(2536.00) Inc(0.9) Azm(349.8) TVD(2535.96)  
VS(6.29) NS(4.20) EW(-7.39)

#21 MD(2631.00) Inc(0.5) Azm(328.3) TVD(2630.95)  
VS(6.40) NS(5.29) EW(-7.74)



2800

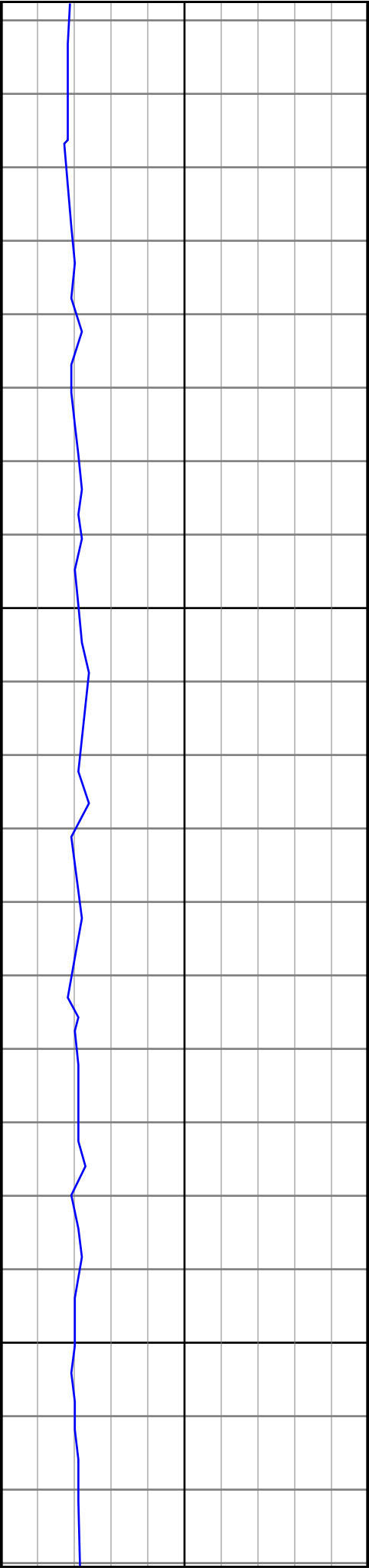
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#22 MD(2725.00) Inc(0.5) Azm(323.9) TVD(2724.94)  
VS(6.69) NS(5.97) EW(-8.20)

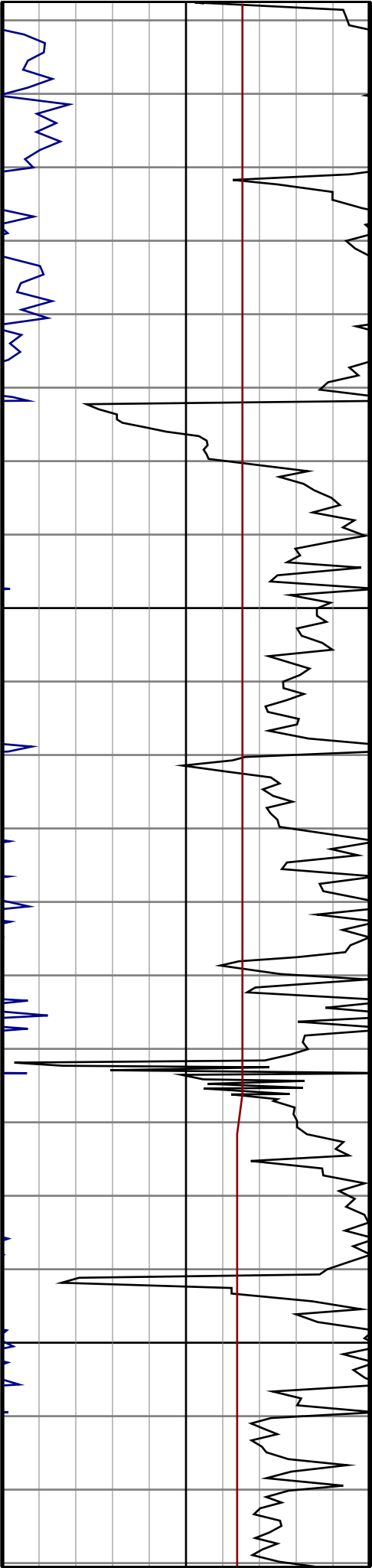
#23 MD(2820.00) Inc(0.9) Azm(170.3) TVD(2819.94)  
VS(6.90) NS(5.57) EW(-8.32)

#24 MD(2914.00) Inc(1.1) Azm(158.5) TVD(2913.93)  
VS(6.80) NS(4.00) EW(-7.86)



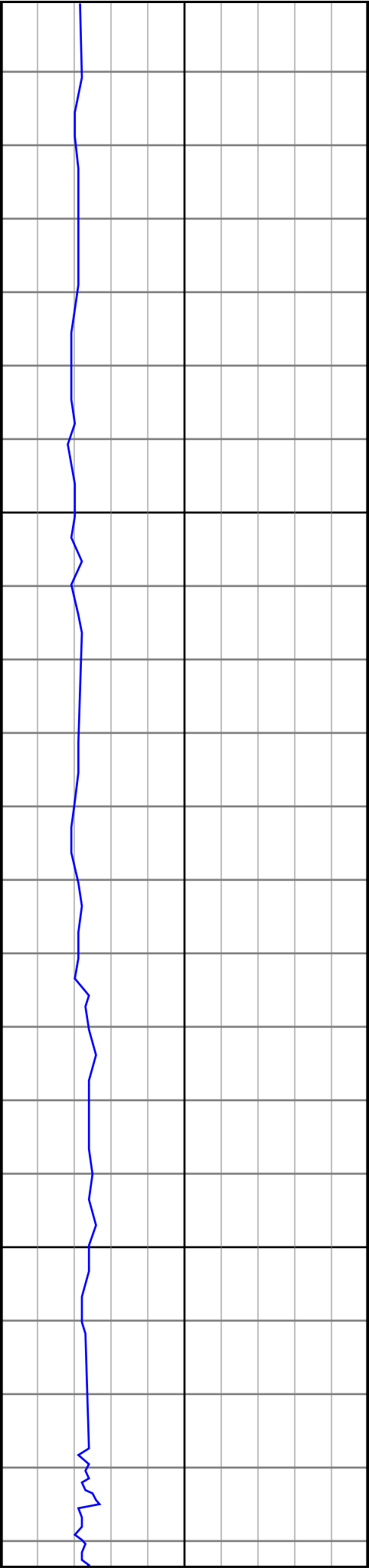
3000

3100



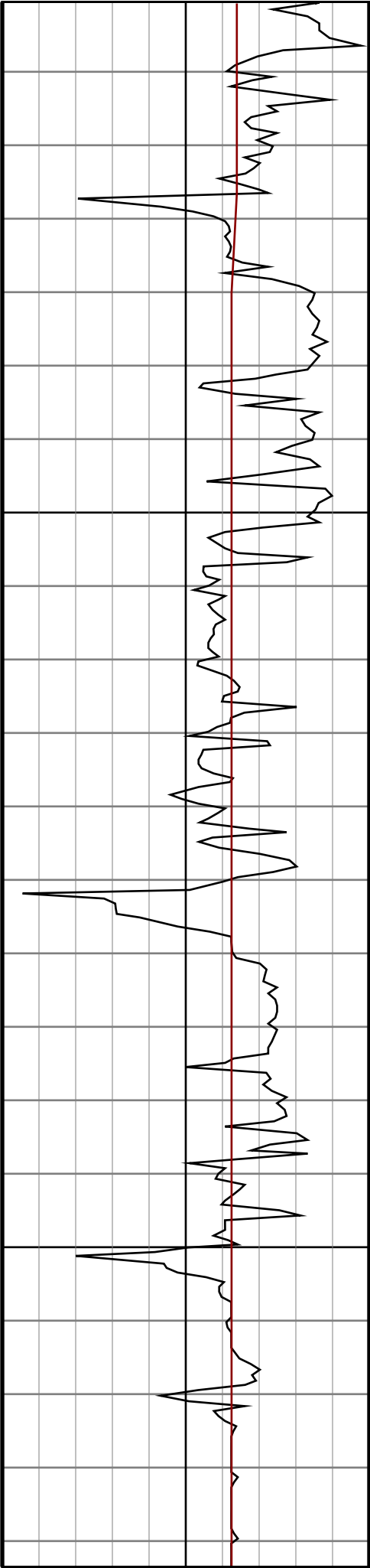
#25 MD(3009.00) Inc(0.9) Azm(168.7) TVD(3008.91)  
VS(6.67) NS(2.42) EW(-7.38)

#26 MD(3104.00) Inc(1.1) Azm(118.9) TVD(3103.90)  
VS(6.01) NS(1.25) EW(-6.44)



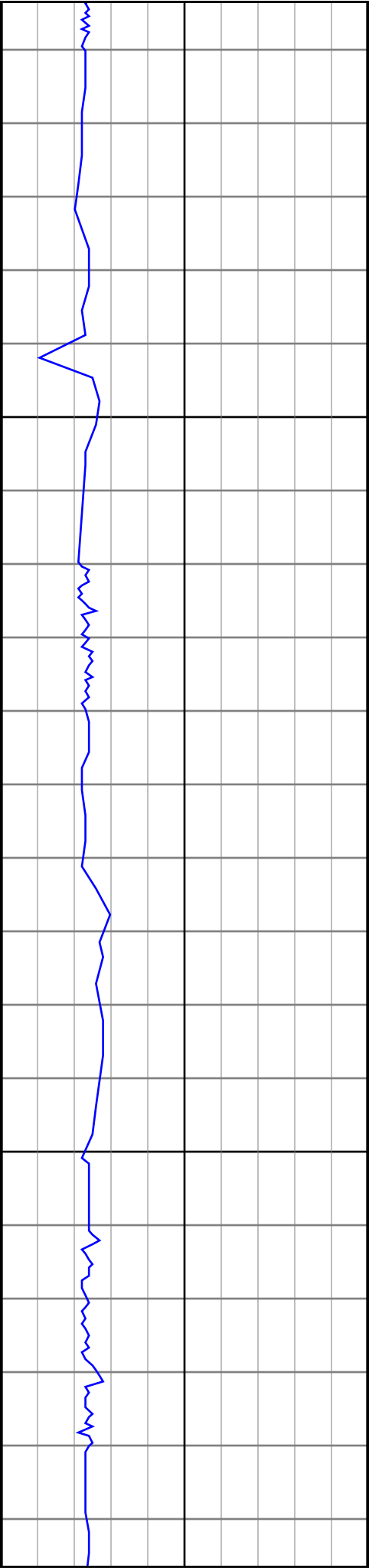
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3300



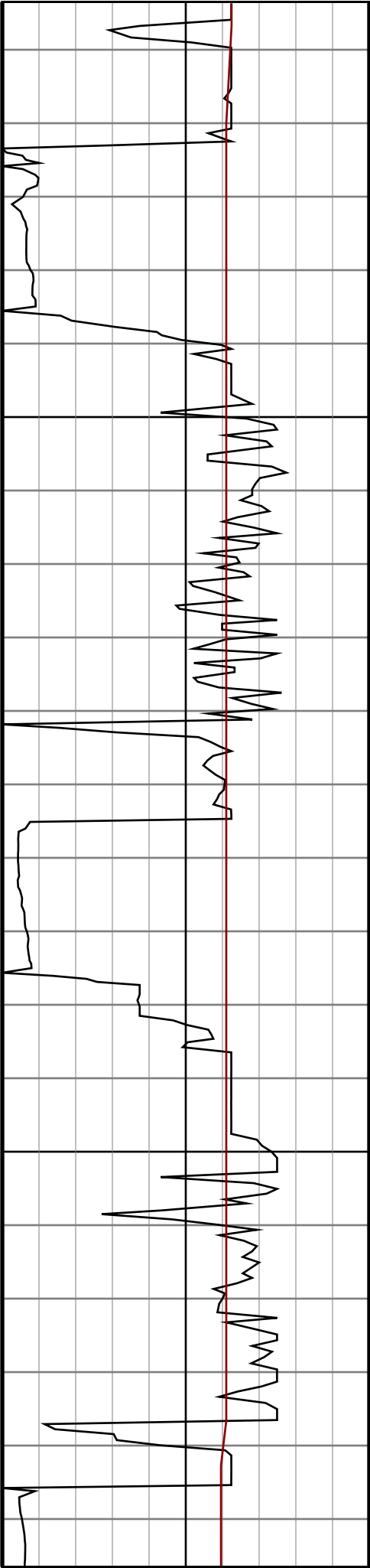
#27 MD(3199.00) Inc(0.5) Azm(129.8) TVD(3198.89)  
VS(5.07) NS(0.55) EW(-5.32)

#28 MD(3294.00) Inc(1.2) Azm(85.0) TVD(3293.88)  
VS(3.83) NS(0.37) EW(-4.01)



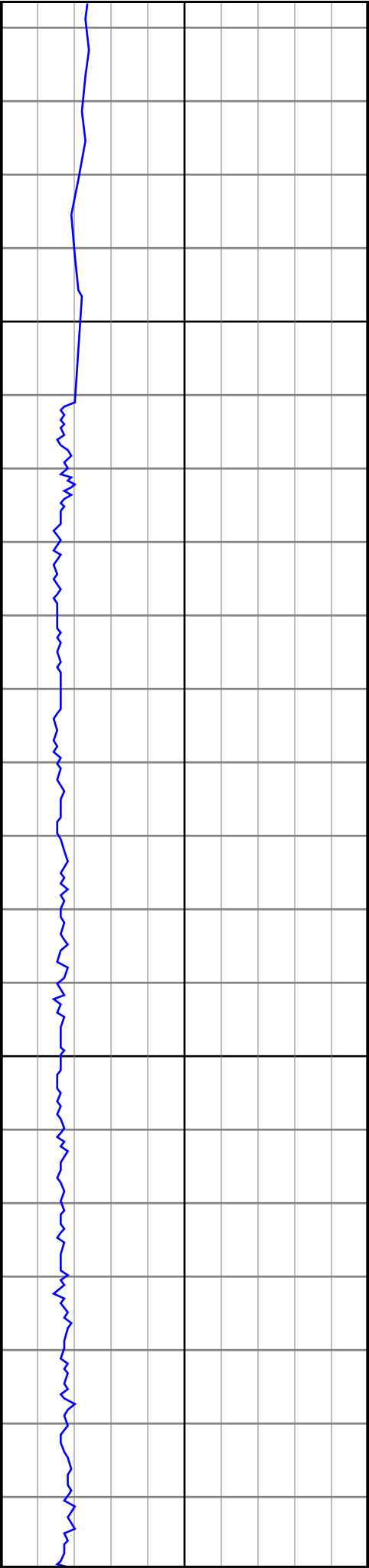
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3500



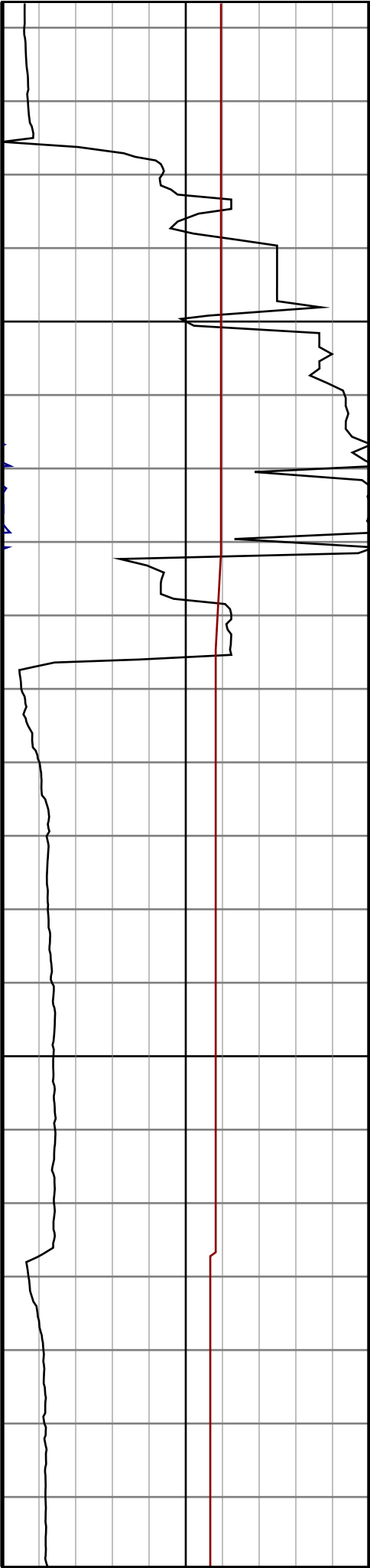
#29 MD(3388.00) Inc(1.2) Azm(85.4) TVD(3387.86)  
VS(1.88) NS(0.53) EW(-2.05)

#30 MD(3483.00) Inc(1.6) Azm(108.8) TVD(3482.83)  
VS(-0.23) NS(0.18) EW(0.20)



3600

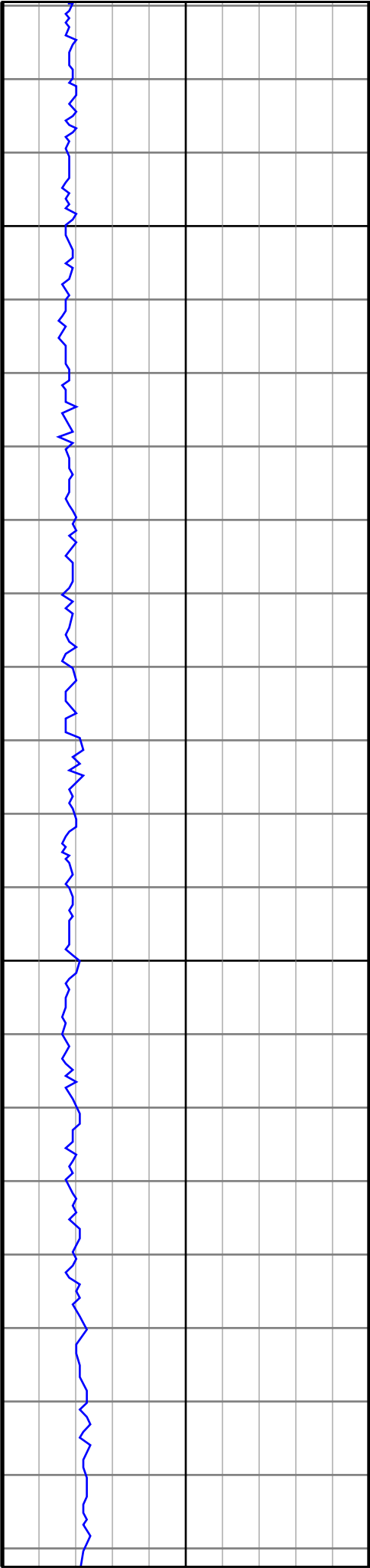
3700



#31 MD(3578.00) Inc(2.1) Azm(122.8) TVD(3577.78)  
VS(-2.59) NS(-1.19) EW(2.92)

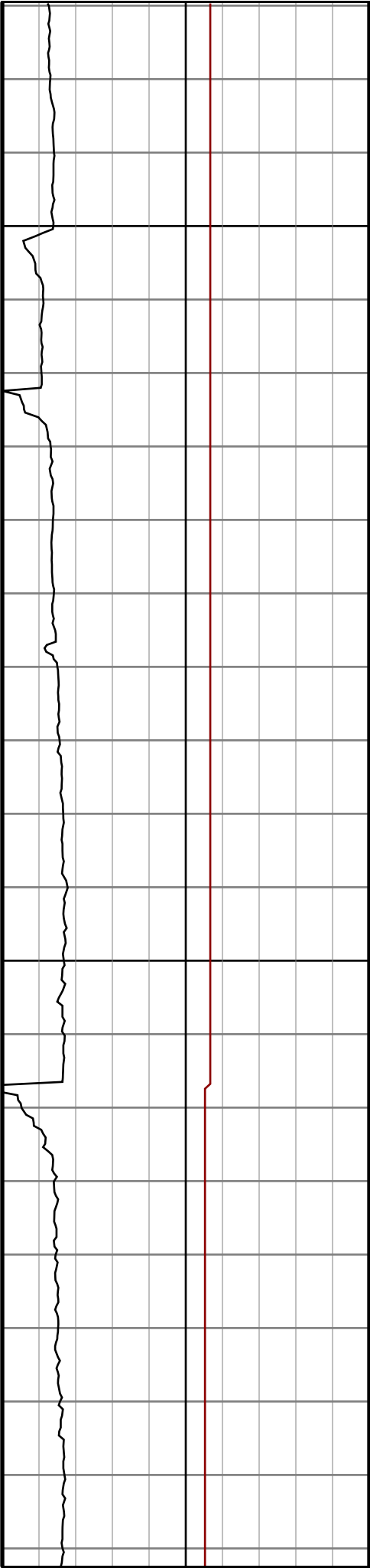
#32 MD(3673.00) Inc(2.6) Azm(146.2) TVD(3672.70)  
VS(-4.58) NS(-3.92) EW(5.58)

#33 MD(3767.00) Inc(4.8) Azm(173.1) TVD(3766.51)  
VS(-4.96) NS(-9.60) EW(7.24)



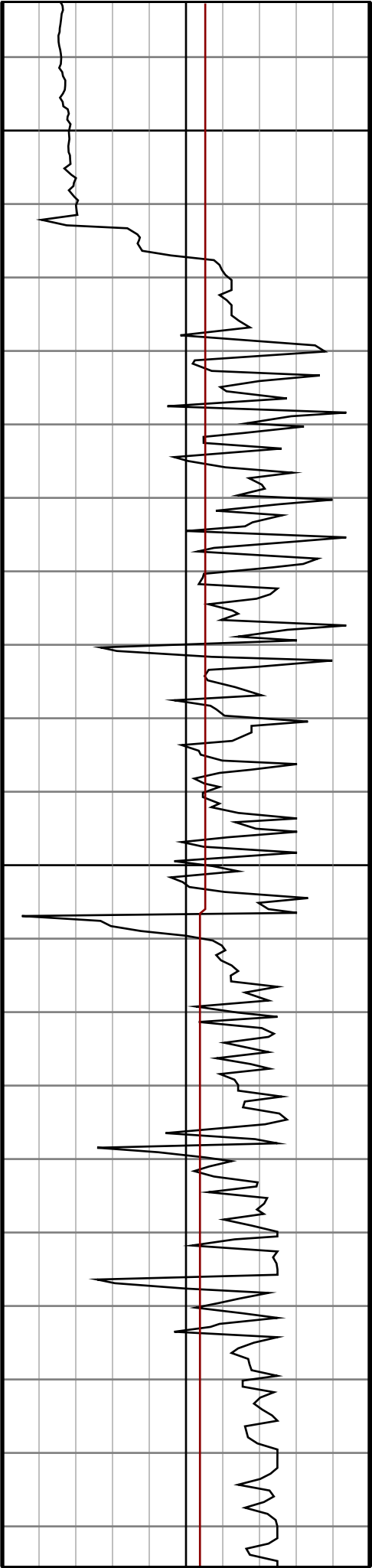
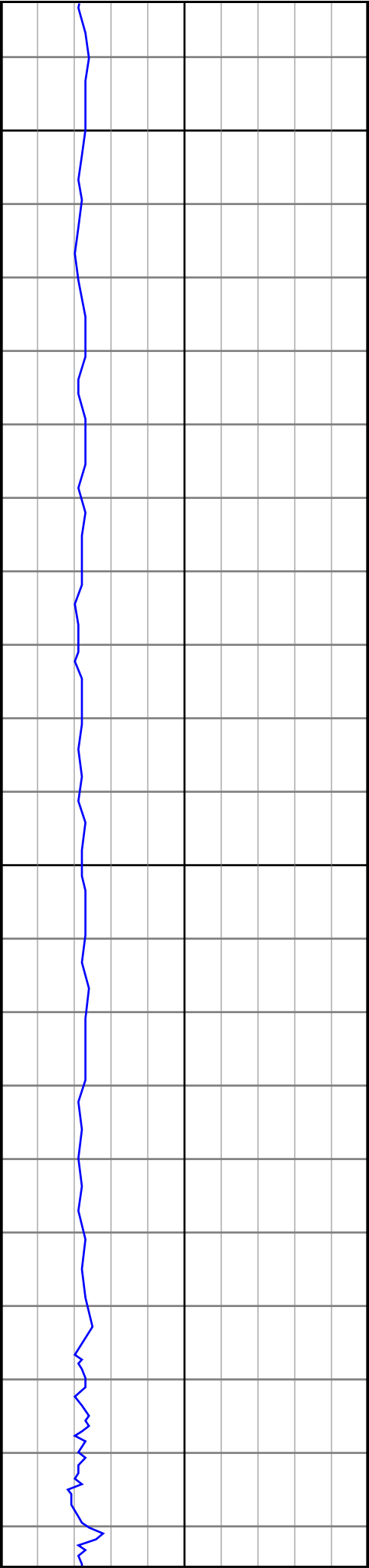
3800

3900



#34 MD(3862.00) Inc(7.9) Azm(165.9) TVD(3860.92)  
VS(-4.73) NS(-19.88) EW(9.30)

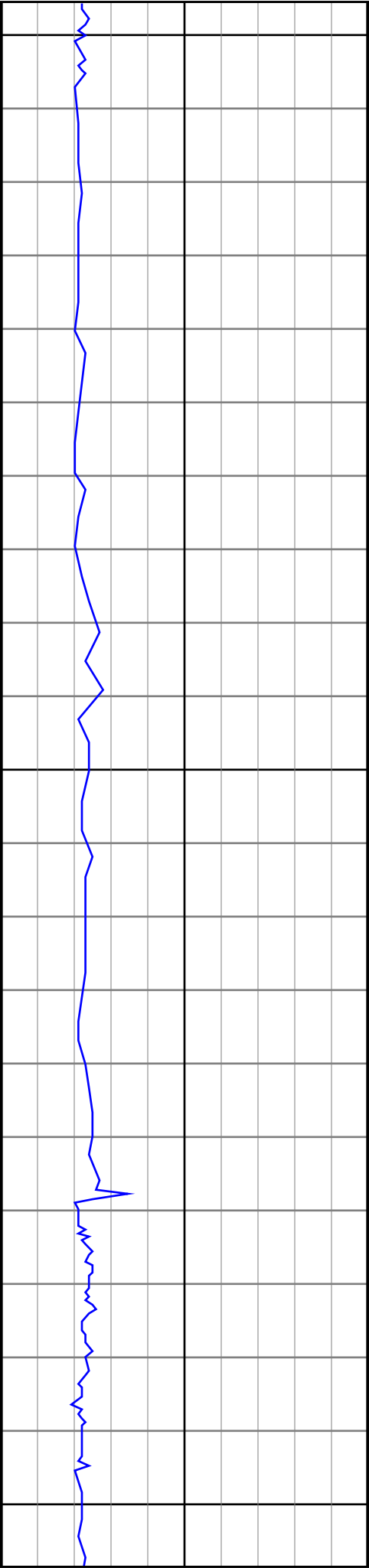
#35 MD(3957.00) Inc(11.6) Azm(168.0) TVD(3954.53)  
VS(-4.78) NS(-35.56) EW(12.88)



#36 MD(4052.00) Inc(12.7) Azm(171.3) TVD(4047.40)  
VS(-3.95) NS(-55.22) EW(16.45)

#37 MD(4147.00) Inc(11.8) Azm(169.2) TVD(4140.24)  
VS(-2.92) NS(-75.09) EW(19.85)

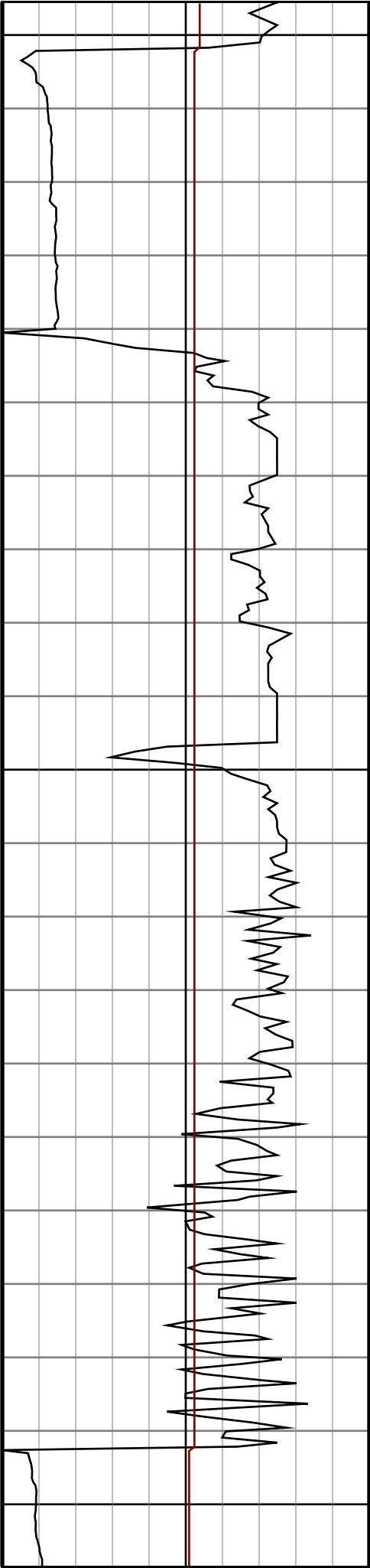




4200

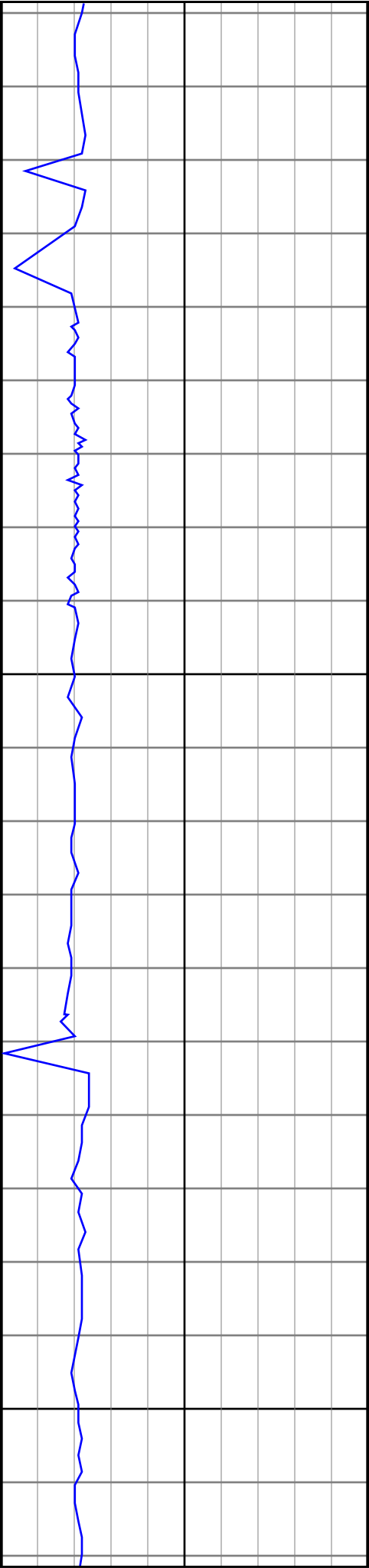
4300

4400



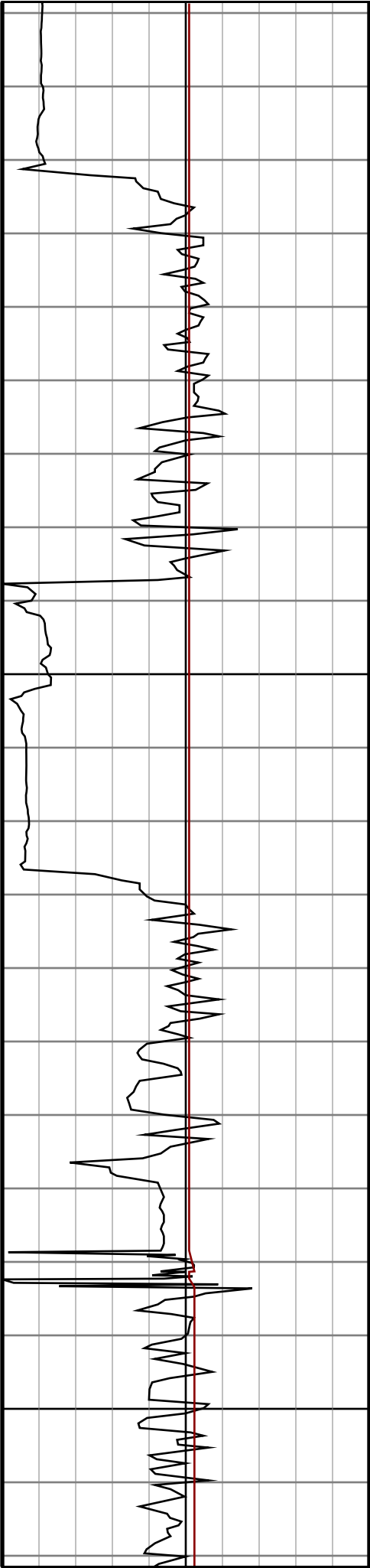
#38 MD(4241.00) Inc(13.0) Azm(168.9) TVD(4232.04)  
VS(-2.33) NS(-94.90) EW(23.68)

#39 MD(4336.00) Inc(11.3) Azm(164.7) TVD(4324.91)  
VS(-2.47) NS(-114.37) EW(28.20)



4500

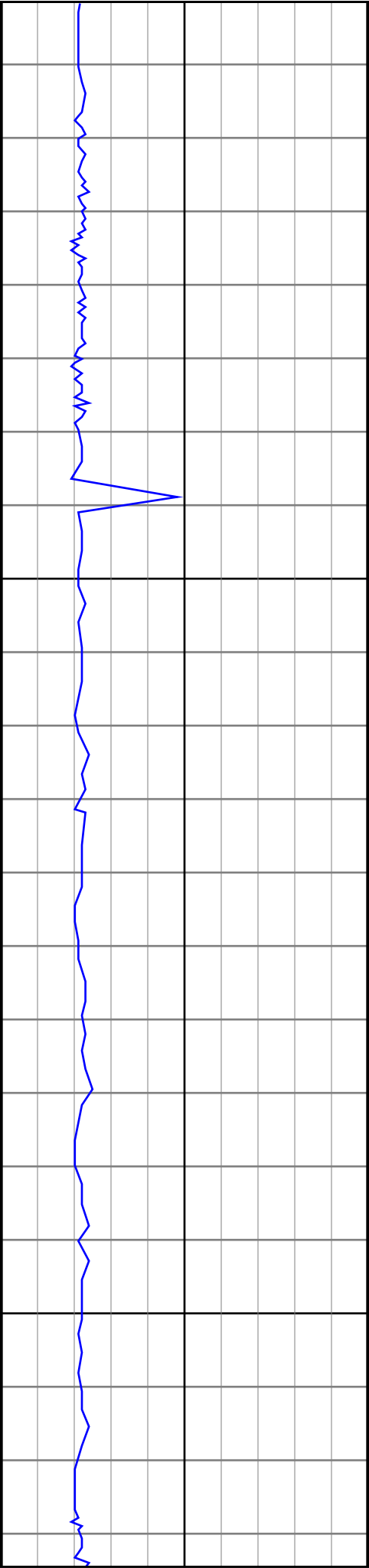
4600



#40 MD(4431.00) Inc(11.8) Azm(168.7) TVD(4417.99)  
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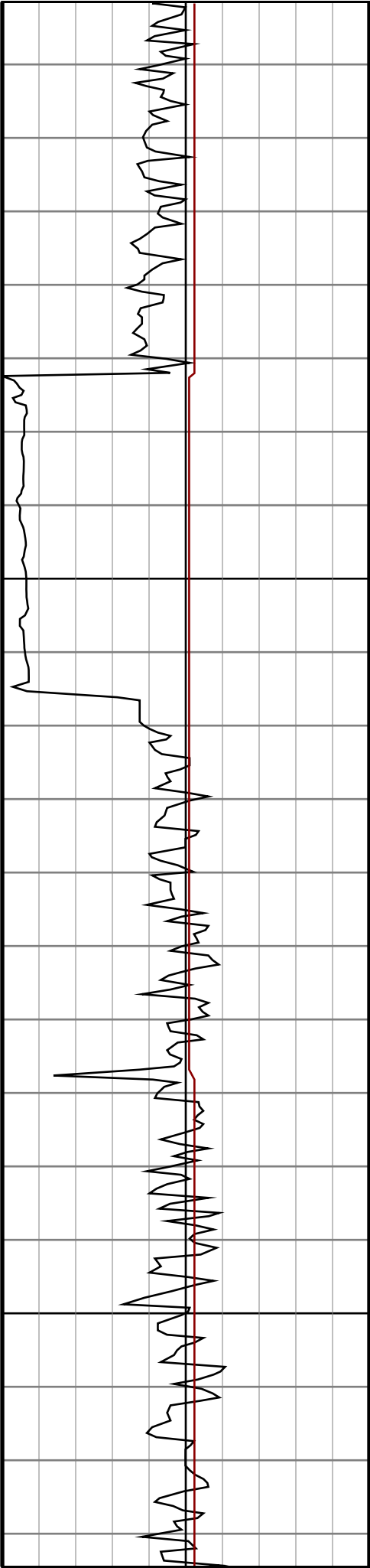
#41 MD(4525.00) Inc(12.8) Azm(167.8) TVD(4509.83)  
VS(-2.36) NS(-152.48) EW(36.64)

#42 MD(4620.00) Inc(11.1) Azm(166.9) TVD(4602.77)  
VS(-2.35) NS(-171.67) EW(40.94)



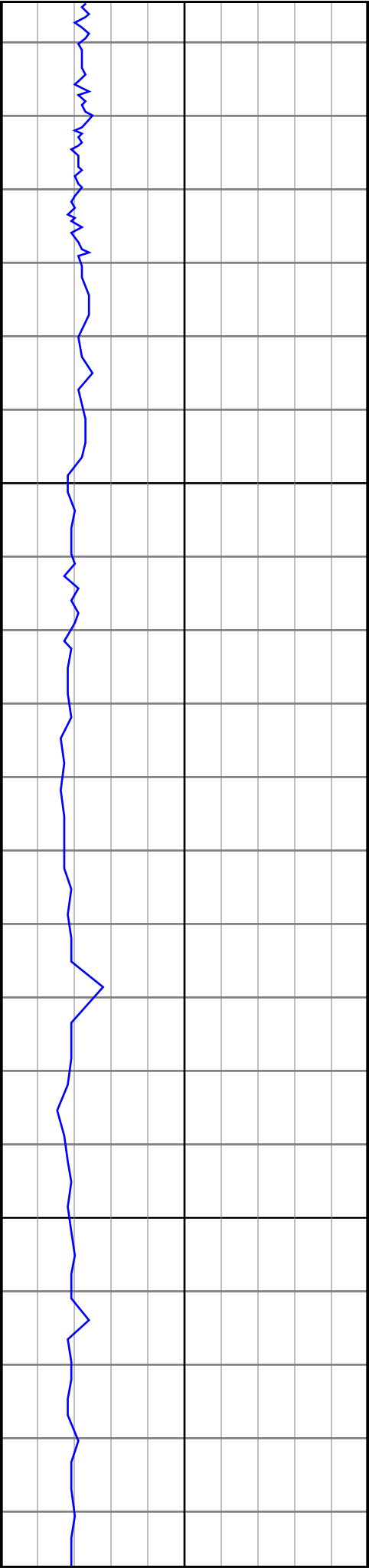
4700

4800



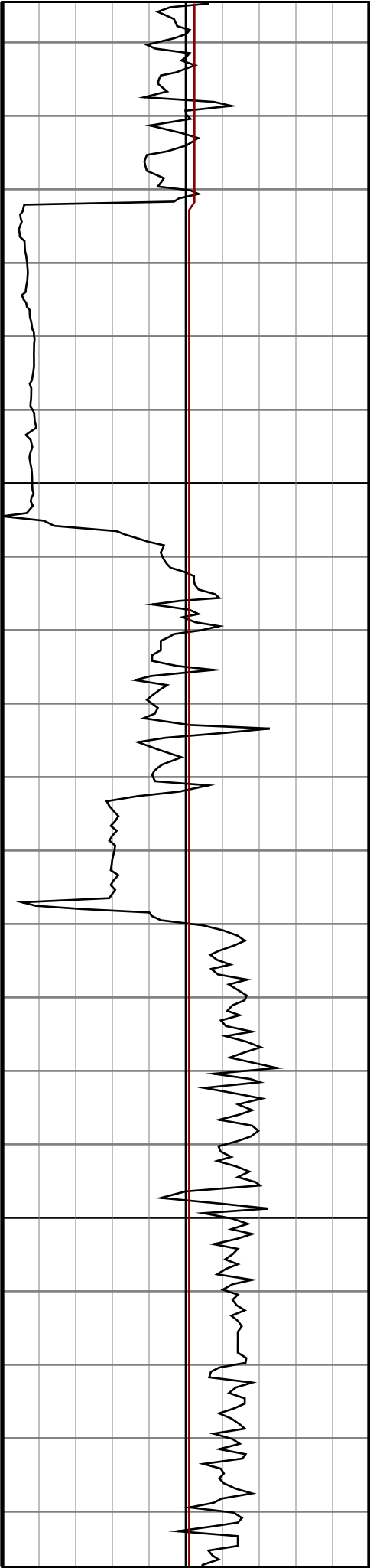
#43 MD(4715.00) Inc(12.8) Azm(166.2) TVD(4695.71)  
VS(-2.63) NS(-190.80) EW(45.52)

#44 MD(4810.00) Inc(11.3) Azm(161.0) TVD(4788.61)  
VS(-3.87) NS(-209.82) EW(51.06)



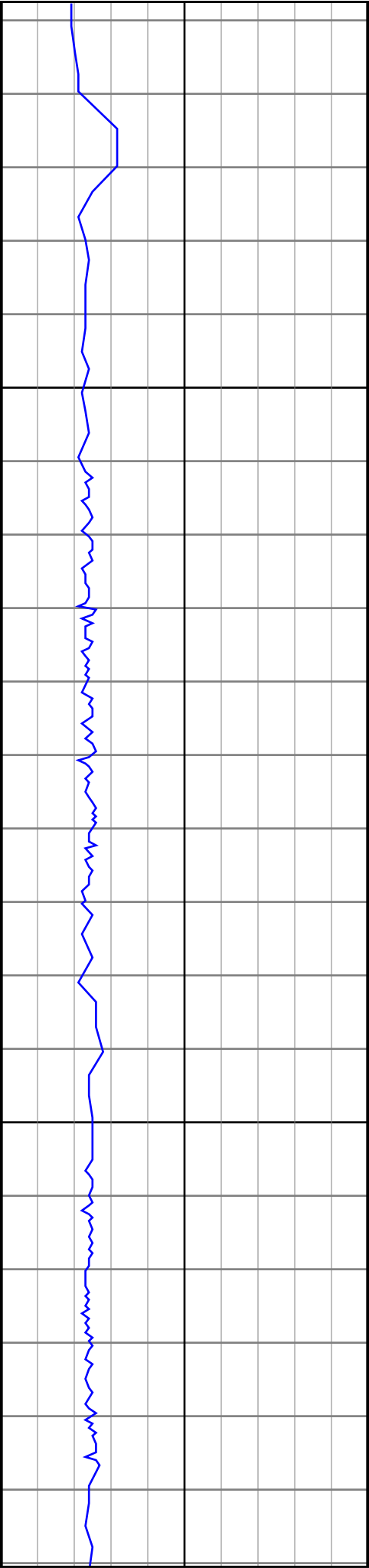
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5000



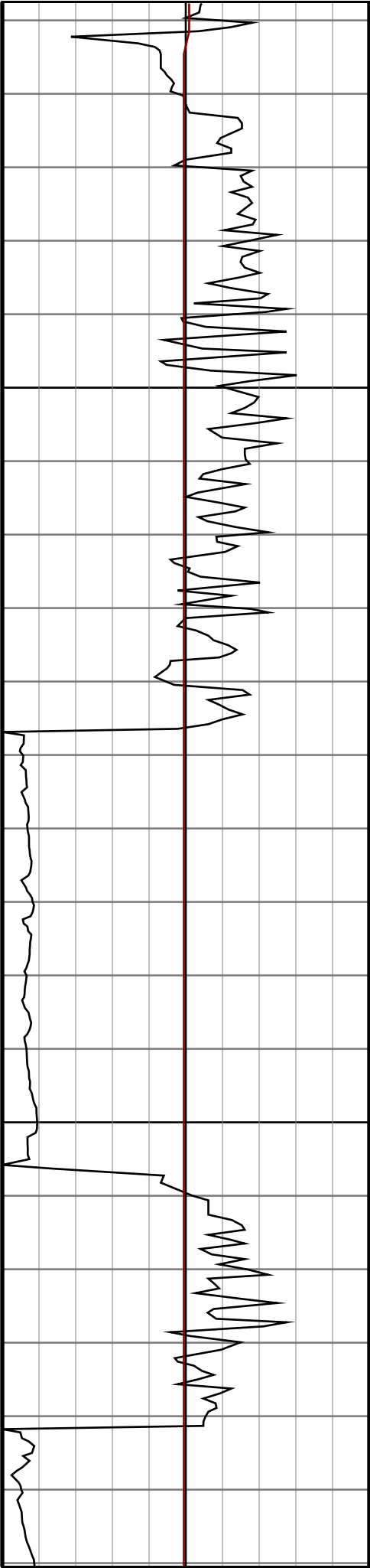
#45 MD(4904.00) Inc(12.0) Azm(163.4) TVD(4880.68)  
VS(-5.57) NS(-227.89) EW(56.85)

#46 MD(4999.00) Inc(11.8) Azm(163.2) TVD(4973.64)  
VS(-6.95) NS(-246.66) EW(62.48)



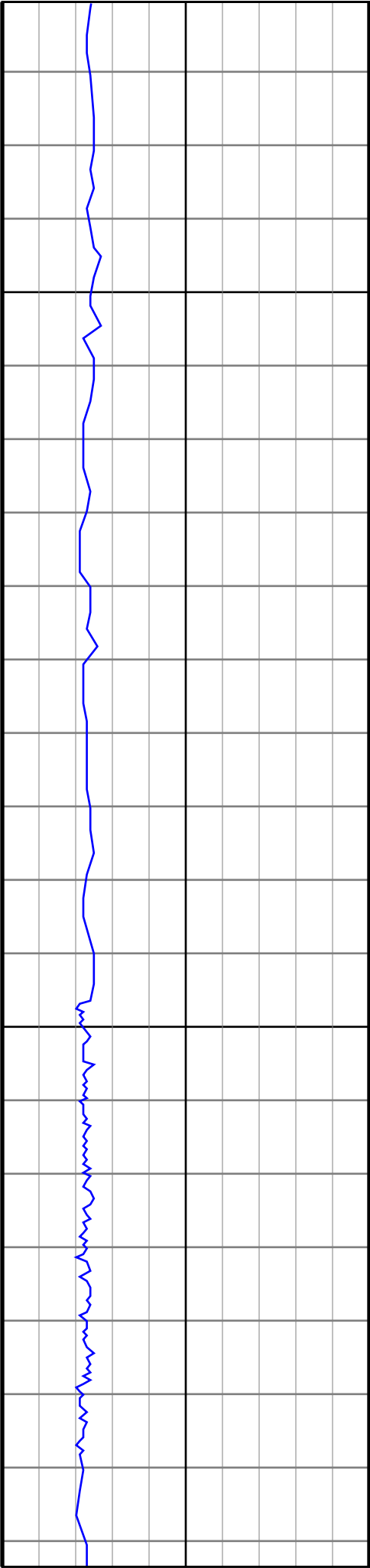
5100

5200



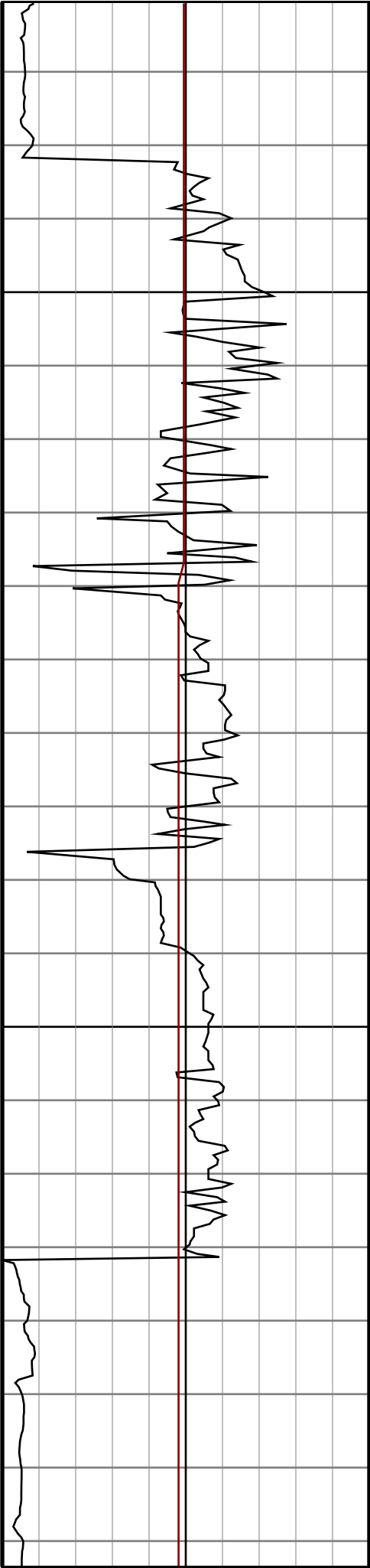
#47 MD(5094.00) Inc(10.2) Azm(160.1) TVD(5066.89)  
VS(-8.71) NS(-263.86) EW(68.15)

#48 MD(5189.00) Inc(10.9) Azm(165.4) TVD(5160.28)  
VS(-10.08) NS(-280.47) EW(73.28)



5300

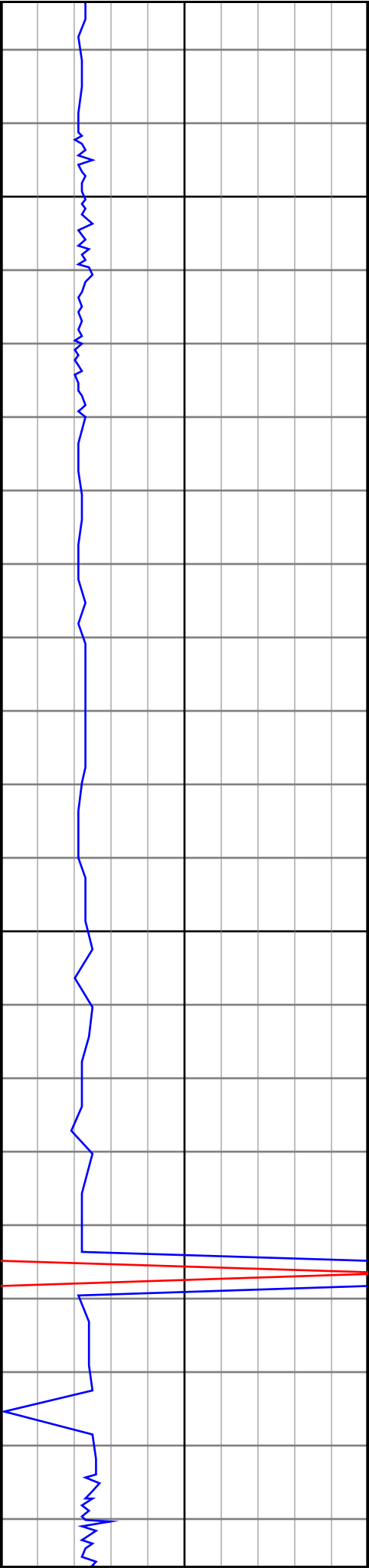
5400



#49 MD(5284.00) Inc(12.0) Azm(166.8) TVD(5253.39)  
VS(-10.48) NS(-298.77) EW(77.80)

#50 MD(5378.00) Inc(10.0) Azm(166.4) TVD(5345.66)  
VS(-10.71) NS(-316.22) EW(81.95)

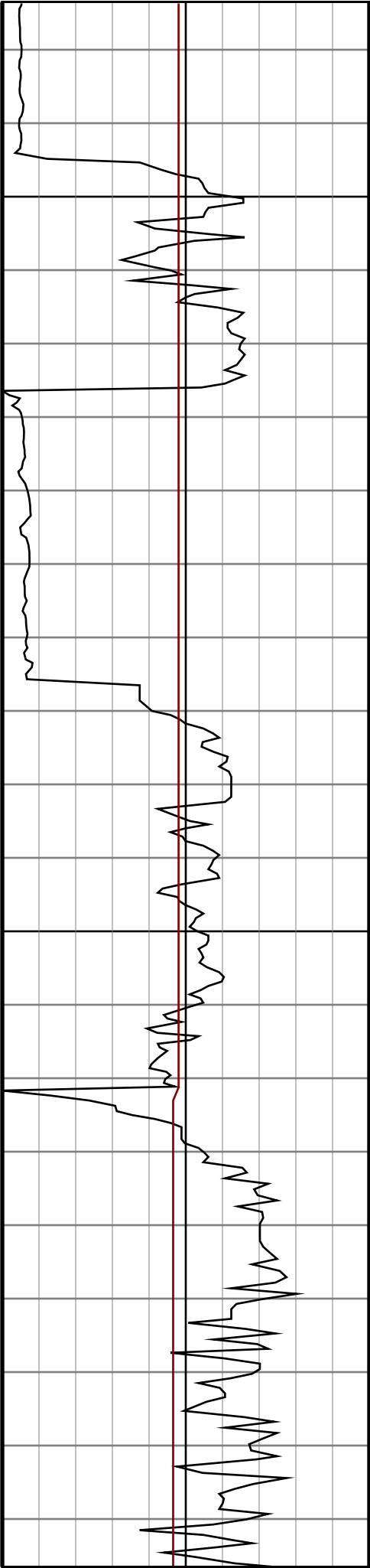
#51 MD(5473.00) Inc(11.3) Azm(168.2) TVD(5439.02)  
VS(-10.71) NS(-333.35) EW(85.79)



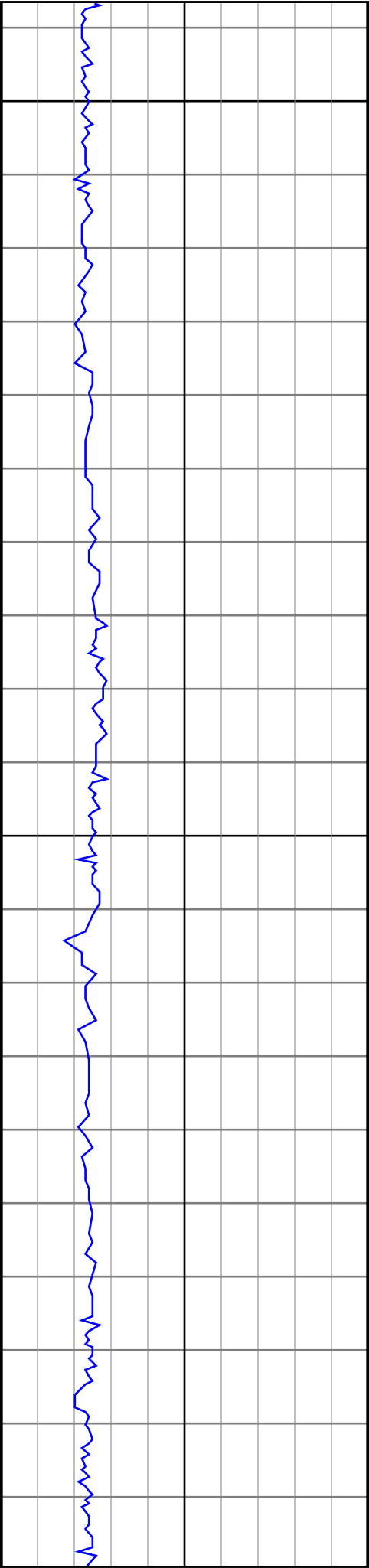
5500

5600

#52 MD(5568.00) Inc(13.0) Azm(168.0) TVD(5531.89)  
VS(-10.45) NS(-352.91) EW(89.92)

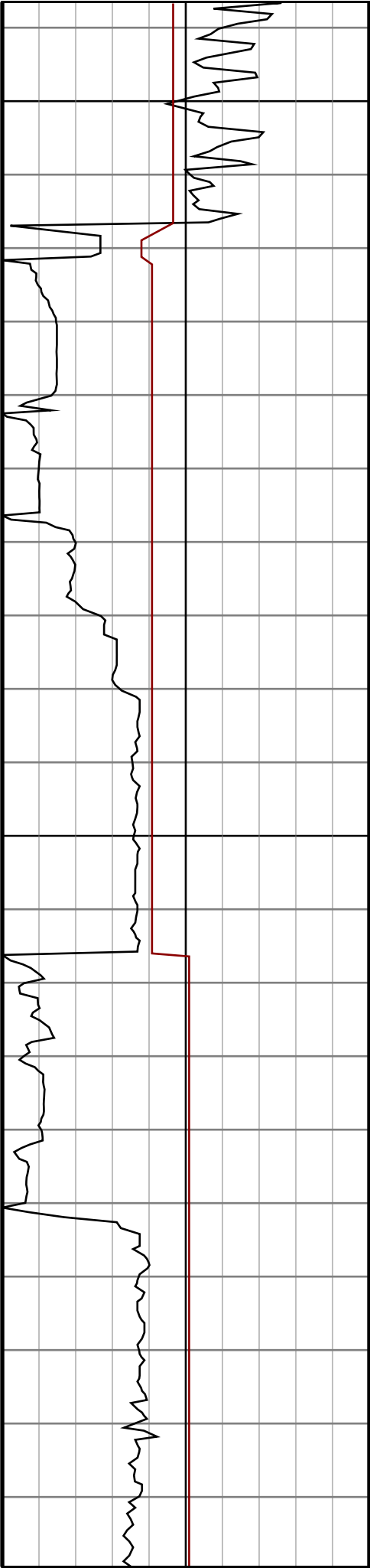


#53 MD(5663.00) Inc(10.2) Azm(163.1) TVD(5624.94)  
VS(-10.95) NS(-371.42) EW(94.59)



5700

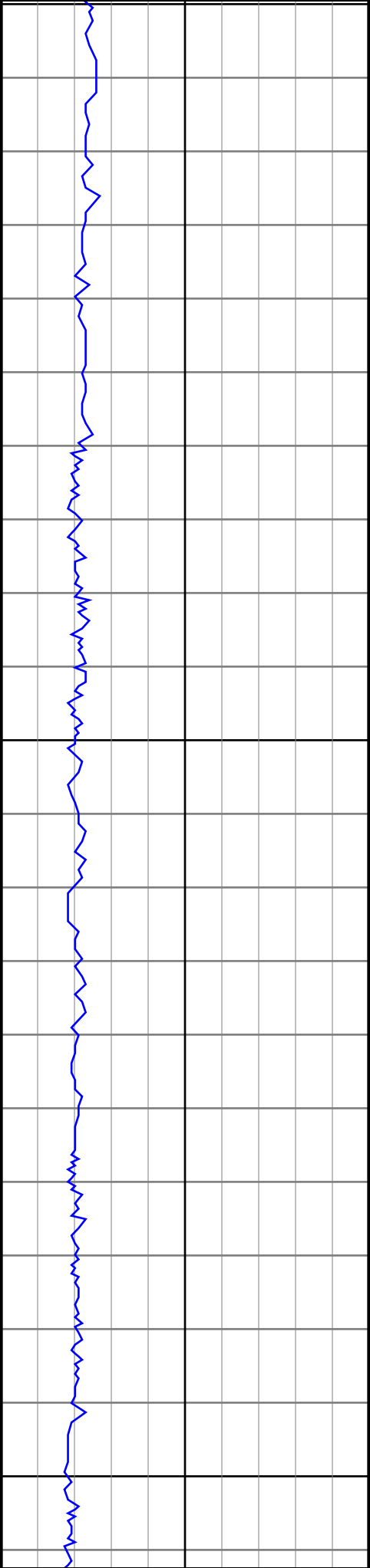
5800



#54 MD(5755.00) Inc(12.0) Azm(165.4) TVD(5715.22)  
VS(-11.88) NS(-388.47) EW(99.37)

#55 MD(5849.00) Inc(15.2) Azm(159.6) TVD(5806.58)  
VS(-13.88) NS(-409.48) EW(106.13)

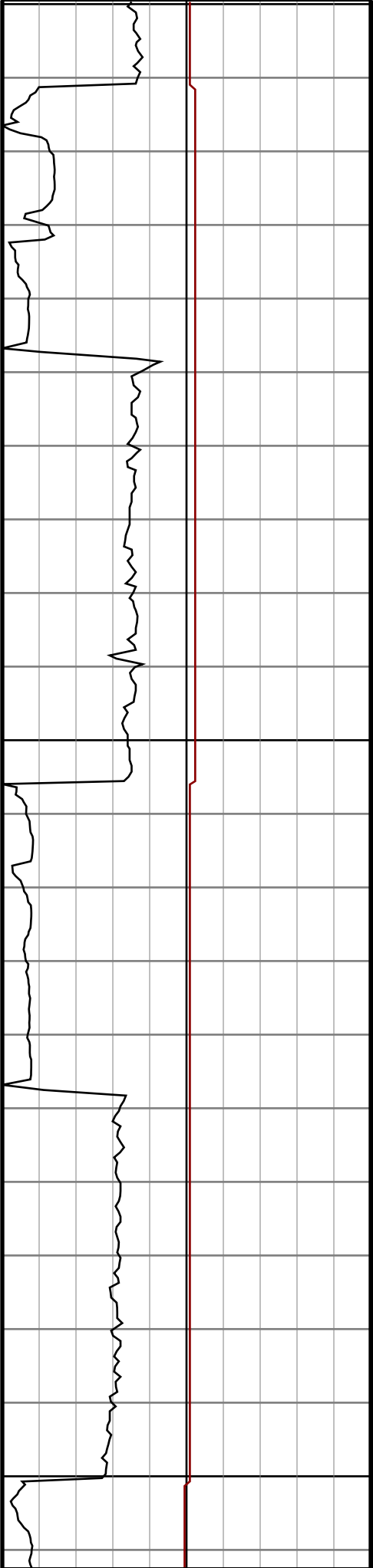




5900

6000

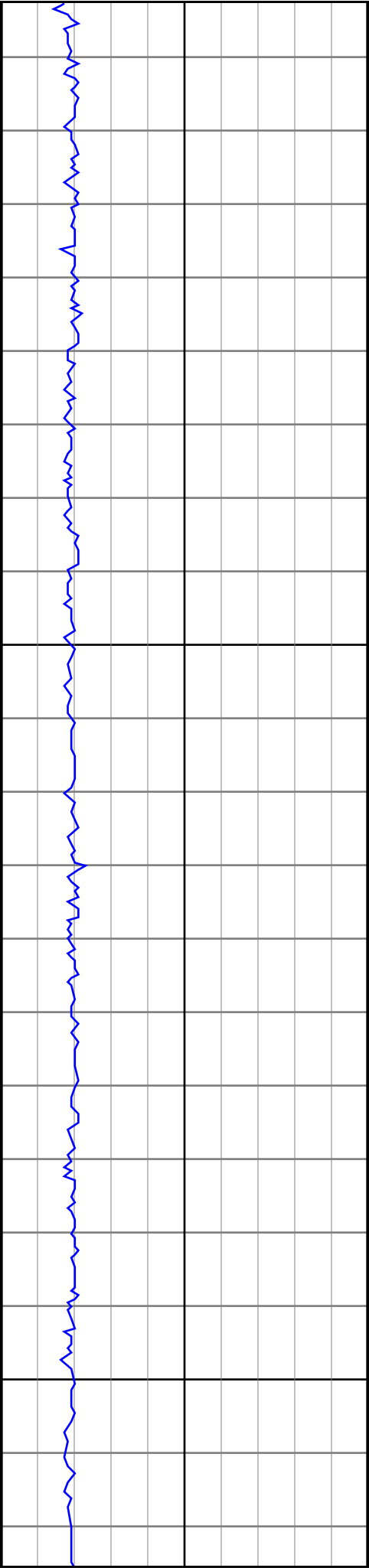
6100



#56 MD(5944.00) Inc(17.2) Azm(162.2) TVD(5897.80)  
VS(-16.82) NS(-434.53) EW(114.76)

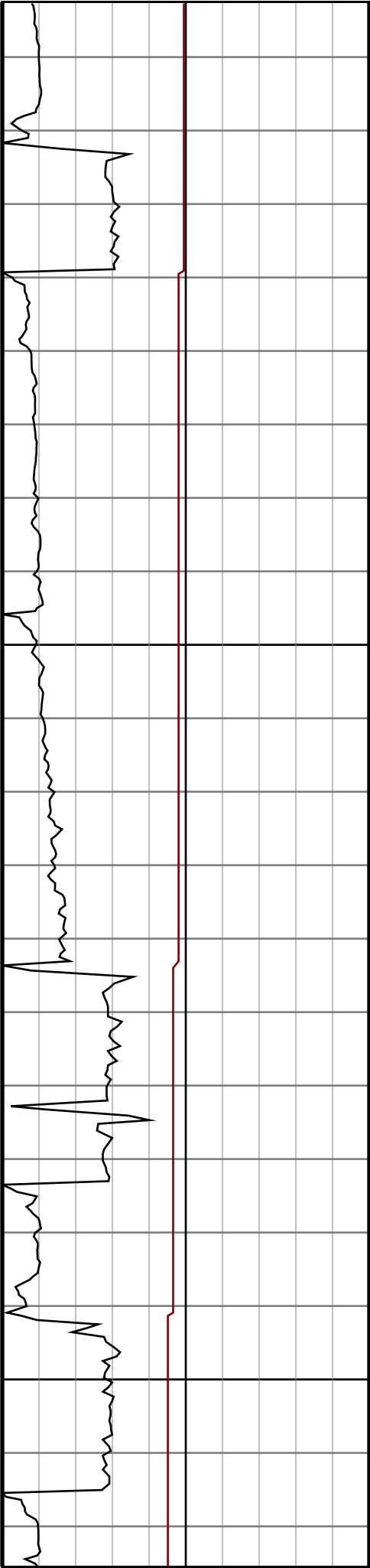
#57 MD(6039.00) Inc(21.4) Azm(164.6) TVD(5987.44)  
VS(-18.91) NS(-464.63) EW(123.66)

#58 MD(6087.00) Inc(21.1) Azm(164.3) TVD(6032.18)  
VS(-19.79) NS(-481.39) EW(128.33)



6200

6300



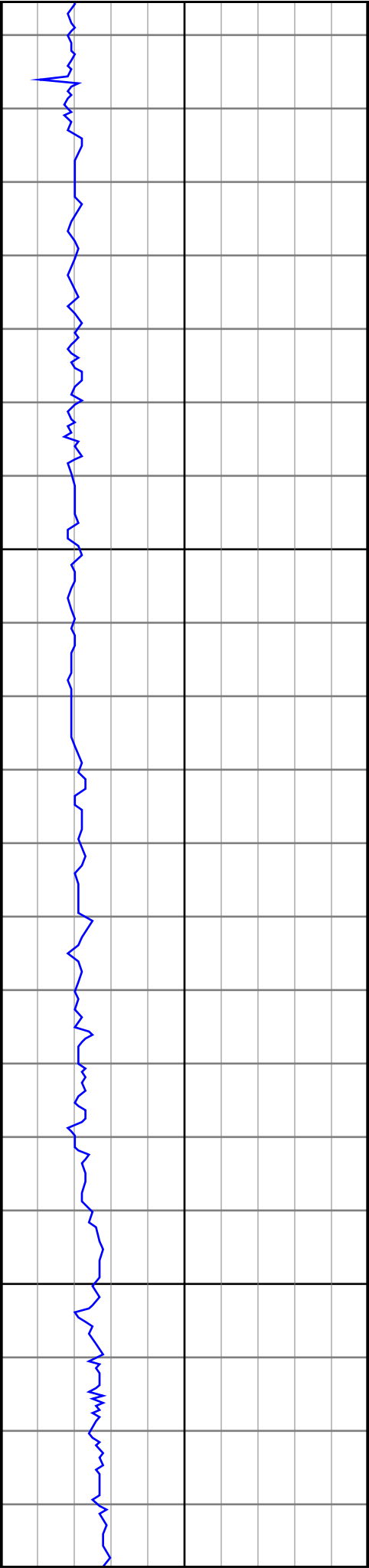
#59 MD(6134.00) Inc(21.6) Azm(176.1) TVD(6075.97)  
VS(-18.92) NS(-498.17) EW(131.20)

#60 MD(6181.00) Inc(24.7) Azm(190.2) TVD(6119.22)  
VS(-13.79) NS(-516.49) EW(130.05)

#61 MD(6229.00) Inc(30.4) Azm(202.4) TVD(6161.79)  
VS(-2.90) NS(-537.62) EW(123.64)

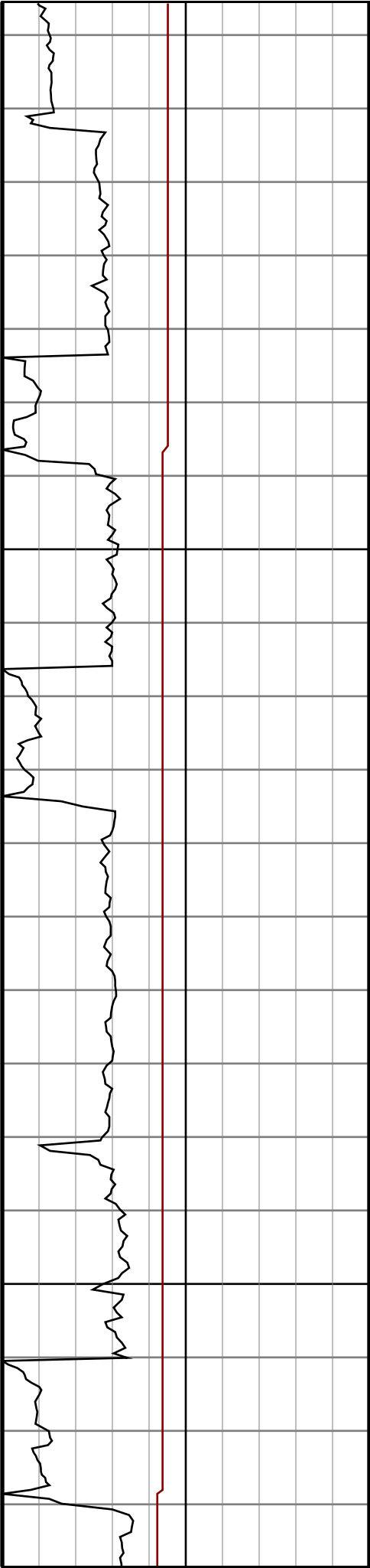
#62 MD(6276.00) Inc(32.7) Azm(206.0) TVD(6201.84)  
VS(11.86) NS(-560.03) EW(113.54)

#63 MD(6324.00) Inc(35.1) Azm(209.4) TVD(6241.69)  
VS(29.21) NS(-583.71) EW(101.08)



6400

6500

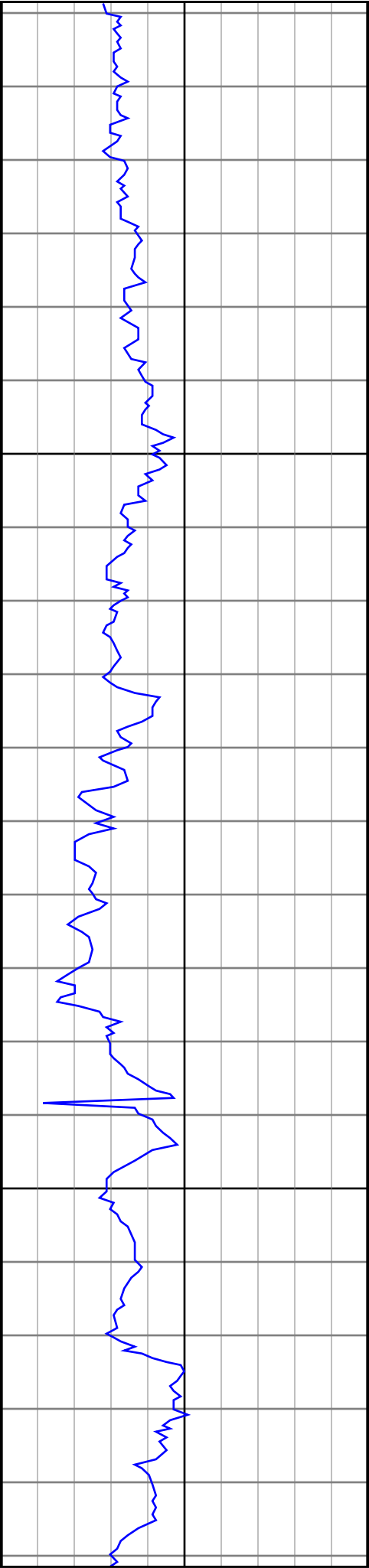


#64 MD(6371.00) Inc(36.6) Azm(213.1) TVD(6279.78)  
VS(48.30) NS(-607.23) EW(86.79)

#65 MD(6418.00) Inc(37.9) Azm(215.7) TVD(6317.20)  
VS(69.12) NS(-630.69) EW(70.71)

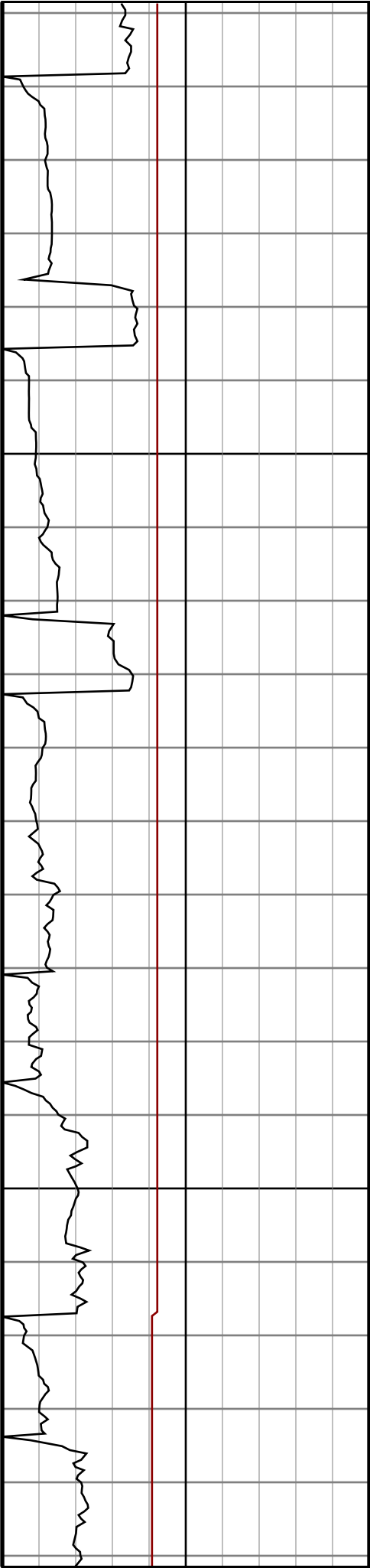
#66 MD(6466.00) Inc(38.2) Azm(216.2) TVD(6355.00)  
VS(91.31) NS(-654.64) EW(53.34)

#67 MD(6513.00) Inc(38.2) Azm(217.0) TVD(6391.93)  
VS(113.33) NS(-677.97) EW(36.02)



6600

6700



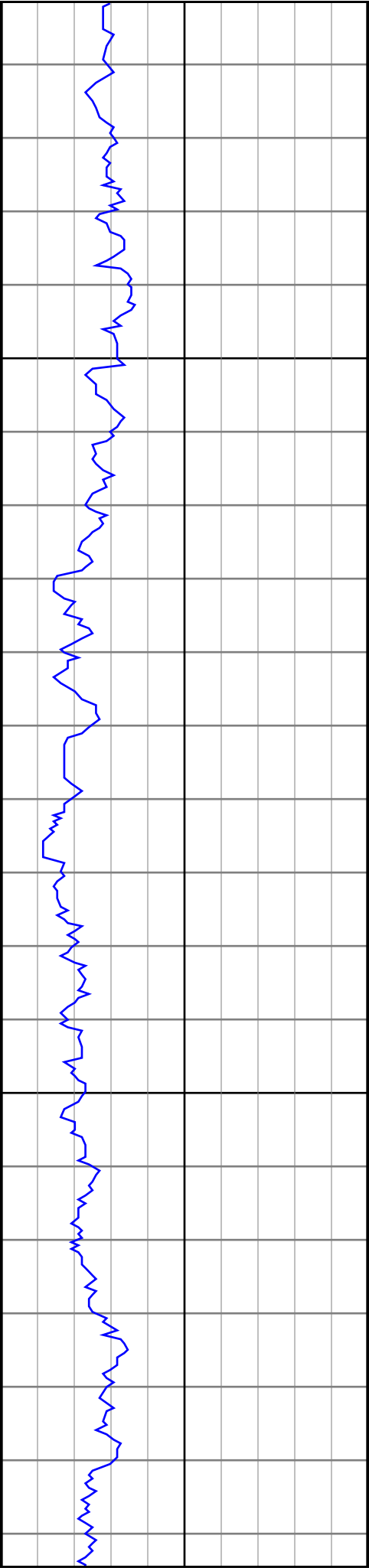
#68 MD(6560.00) Inc(40.3) Azm(222.4) TVD(6428.34)  
VS(136.87) NS(-700.81) EW(17.01)

#69 MD(6608.00) Inc(45.5) Azm(229.9) TVD(6463.51)  
VS(164.83) NS(-723.33) EW(-6.58)

#70 MD(6655.00) Inc(51.1) Azm(235.1) TVD(6494.78)  
VS(196.66) NS(-744.62) EW(-34.43)

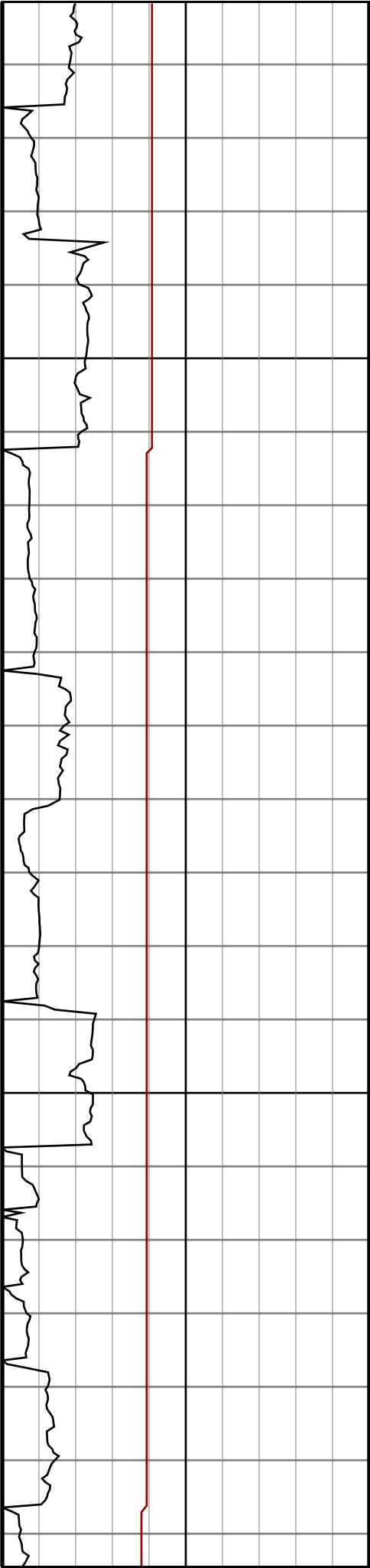
#71 MD(6702.00) Inc(55.3) Azm(237.1) TVD(6522.93)  
VS(231.74) NS(-765.58) EW(-65.67)

#72 MD(6750.00) Inc(56.1) Azm(239.4) TVD(6549.98)  
VS(269.20) NS(-786.44) EW(-99.39)



6800

6900

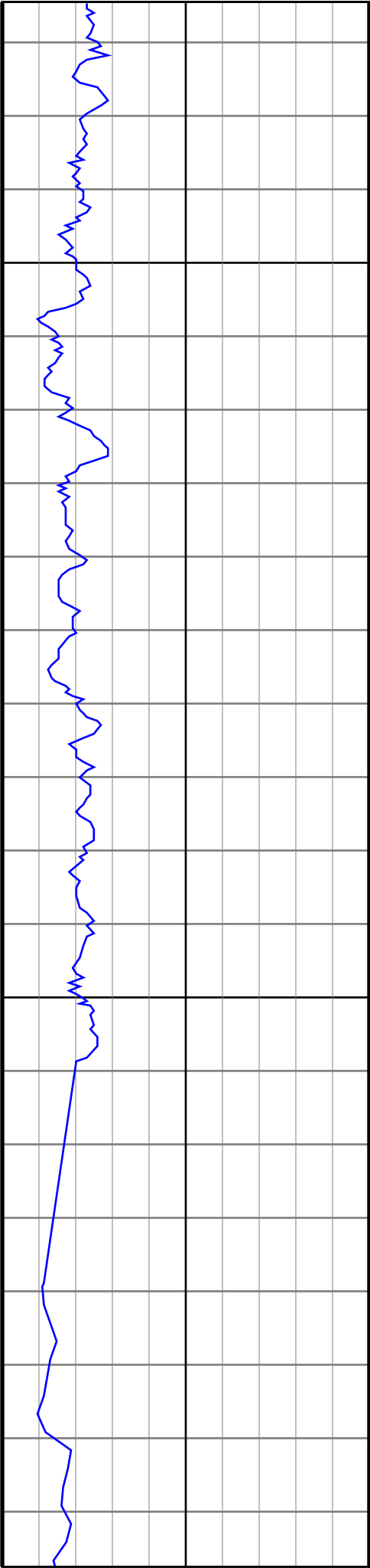


#73 MD(6797.00) Inc(58.7) Azm(239.8) TVD(6575.30)  
VS(306.91) NS(-806.48) EW(-133.54)

#74 MD(6845.00) Inc(62.0) Azm(243.2) TVD(6599.05)  
VS(347.03) NS(-826.36) EW(-170.19)

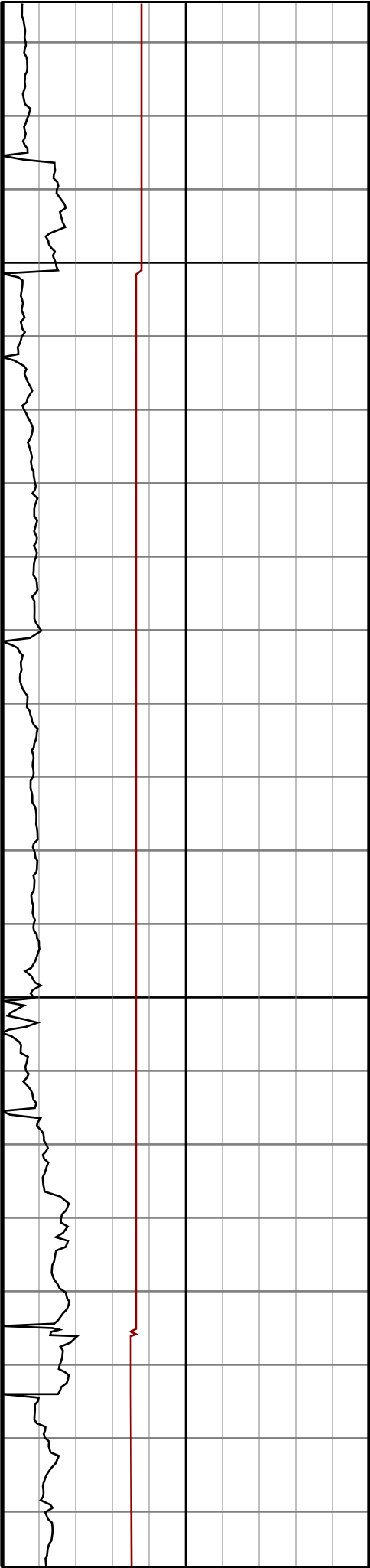
#75 MD(6892.00) Inc(65.9) Azm(246.0) TVD(6619.69)  
VS(388.20) NS(-844.45) EW(-208.33)

#76 MD(6939.00) Inc(66.8) Azm(245.7) TVD(6638.54)  
VS(430.39) NS(-862.06) EW(-247.62)



7000

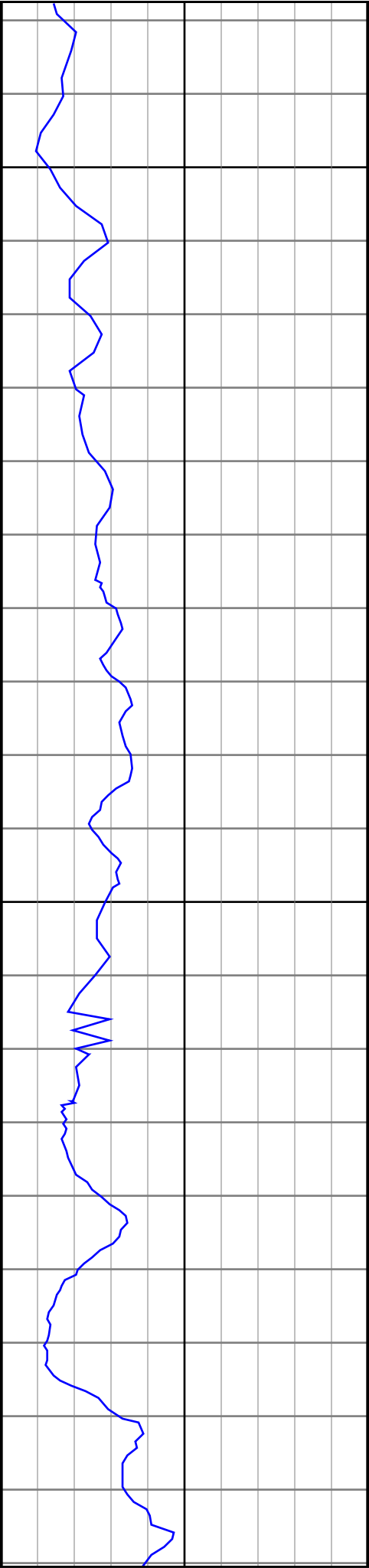
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#77 MD(6987.00) Inc(70.1) Azm(249.6) TVD(6656.17)  
VS(474.38) NS(-879.02) EW(-288.90)

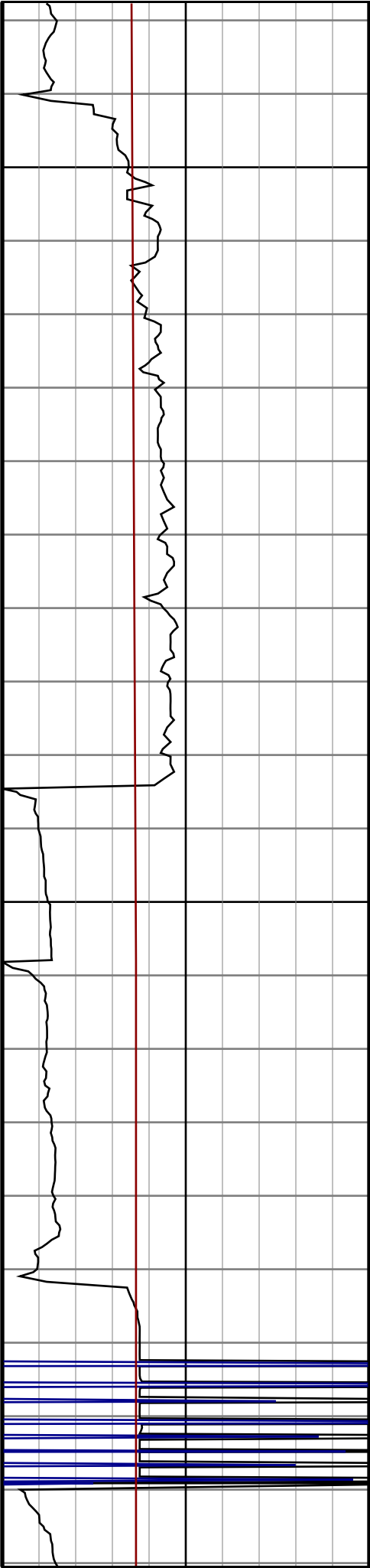
#78 MD(7034.00) Inc(73.5) Azm(256.9) TVD(6670.87)  
VS(518.88) NS(-891.85) EW(-331.62)

#79 MD(7081.00) Inc(78.3) Azm(264.7) TVD(6682.33)  
VS(564.33) NS(-899.09) EW(-376.57)



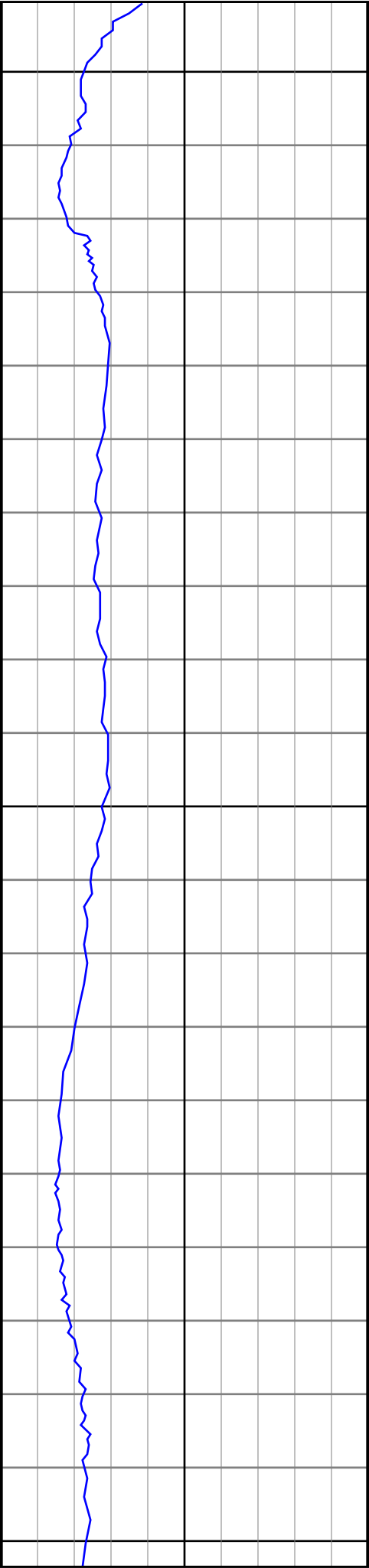
7200

7300



#80 MD(7216.00) Inc(80.0) Azm(267.1) TVD(6707.75)  
VS(695.41) NS(-908.51) EW(-508.81)

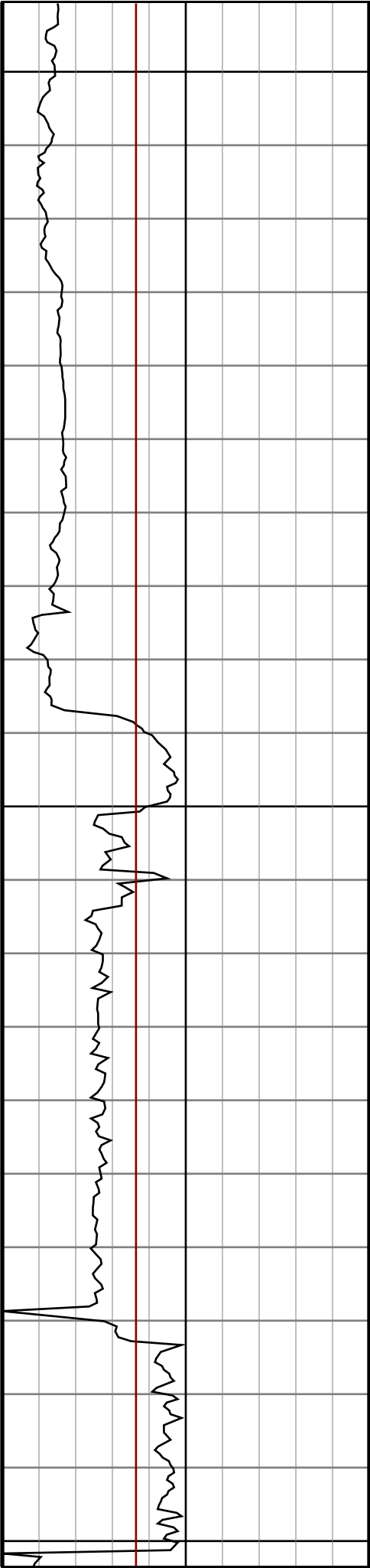
#81 MD(7310.00) Inc(79.8) Azm(268.0) TVD(6724.22)  
VS(786.49) NS(-912.43) EW(-601.27)



7400

7500

7600

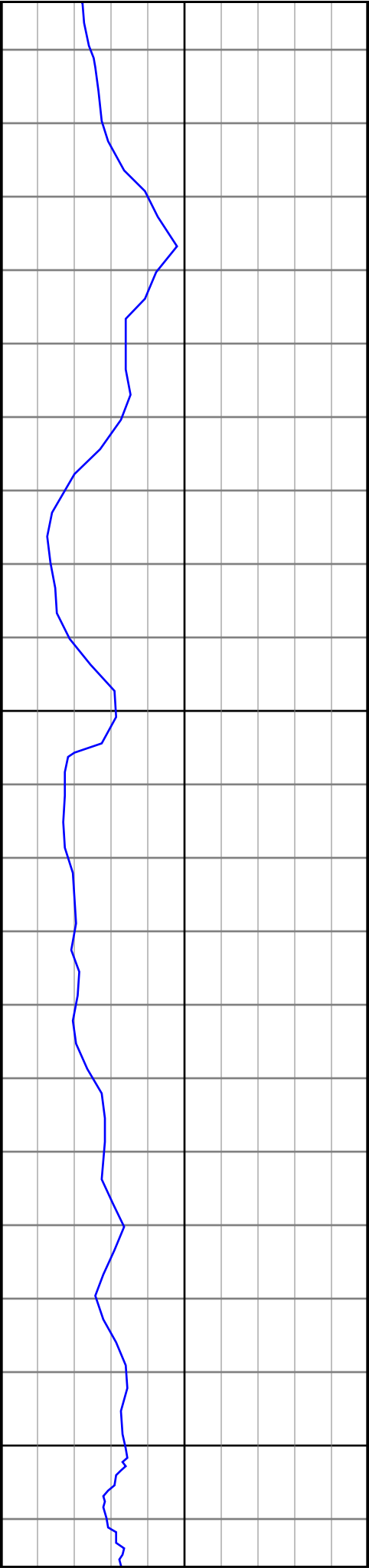


#82 MD(7405.00) Inc(83.9) Azm(271.9) TVD(6737.69)  
VS(878.23) NS(-912.50) EW(-695.27)

#83 MD(7499.00) Inc(91.5) Azm(274.7) TVD(6741.47)  
VS(968.45) NS(-907.09) EW(-788.96)

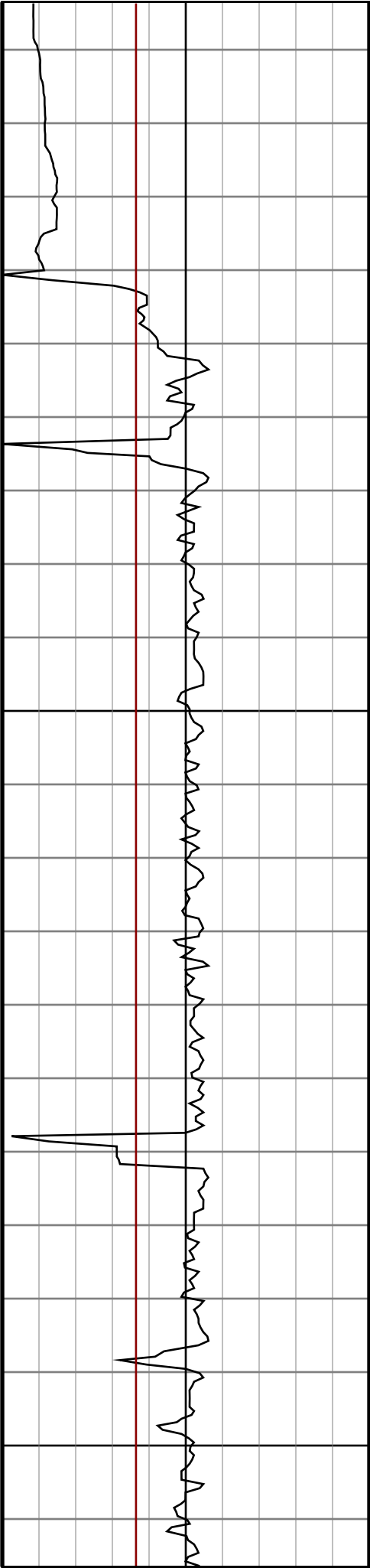
#84 MD(7594.00) Inc(91.1) Azm(273.4) TVD(6739.28)  
VS(1059.43) NS(-900.41) EW(-883.69)





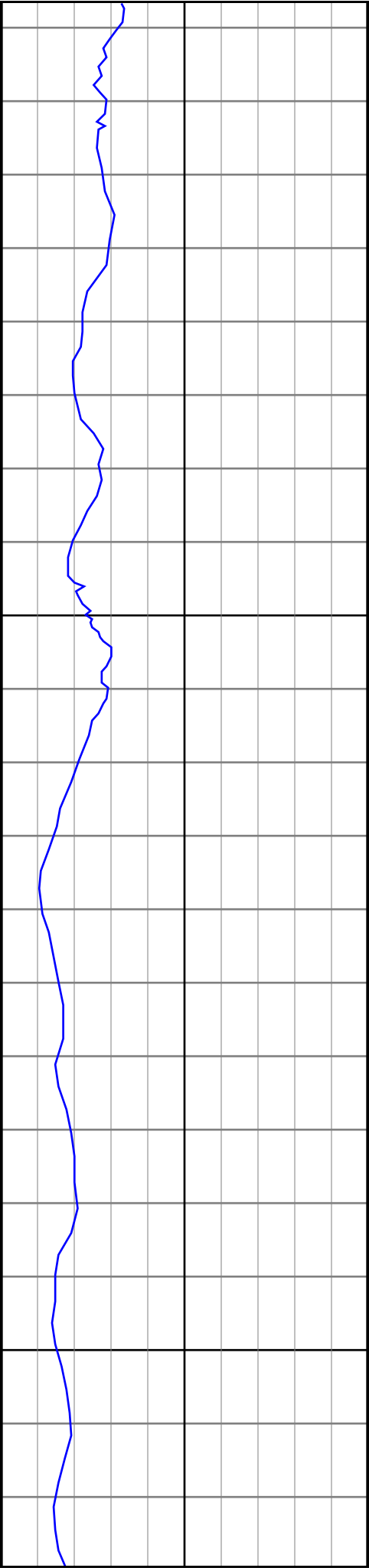
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7800



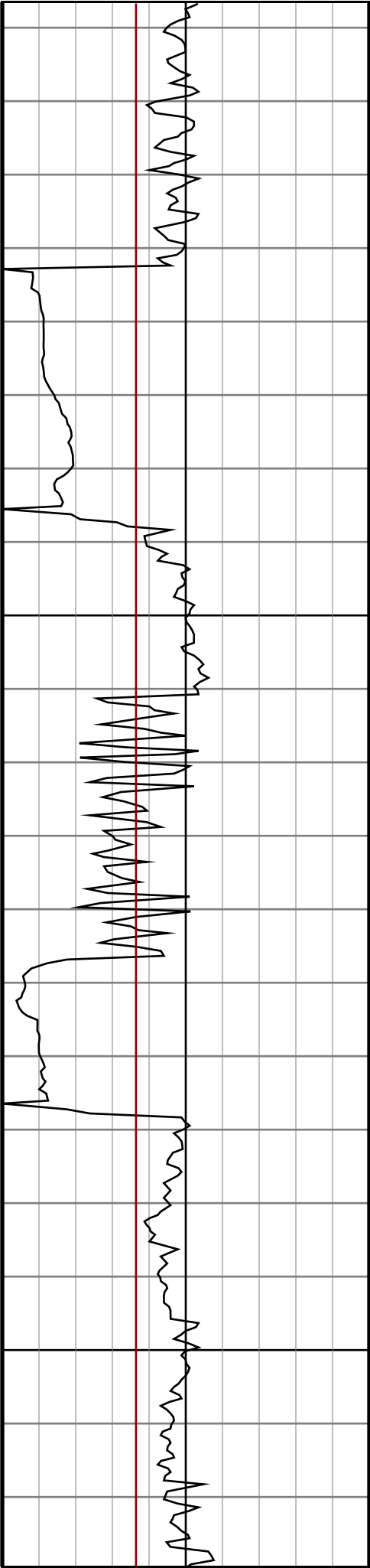
#85 MD(7688.00) Inc(95.0) Azm(271.7) TVD(6734.27)  
VS(1150.01) NS(-896.29) EW(-977.45)

#86 MD(7783.00) Inc(96.0) Azm(271.1) TVD(6725.14)  
VS(1241.75) NS(-894.03) EW(-1071.98)



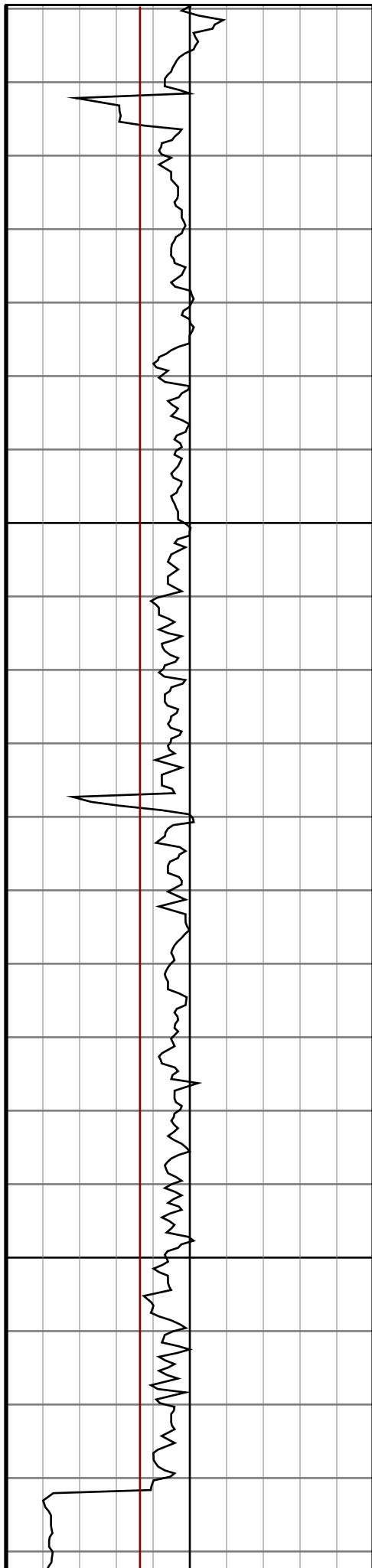
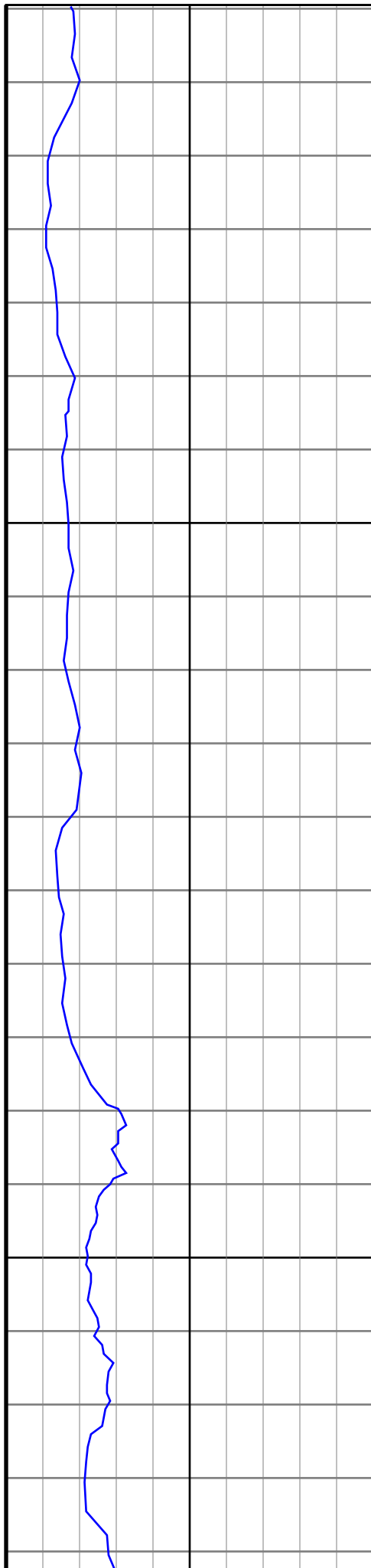
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8000



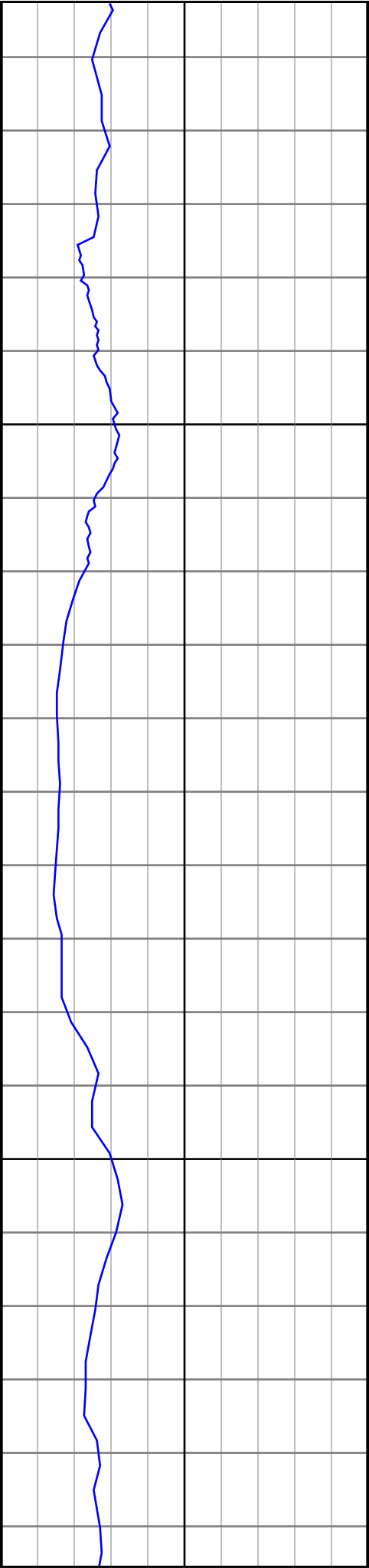
#87 MD(7877.00) Inc(94.3) Azm(269.6) TVD(6716.68)  
VS(1332.97) NS(-893.52) EW(-1165.59)

#88 MD(7972.00) Inc(92.3) Azm(269.2) TVD(6711.18)  
VS(1425.72) NS(-894.52) EW(-1260.42)



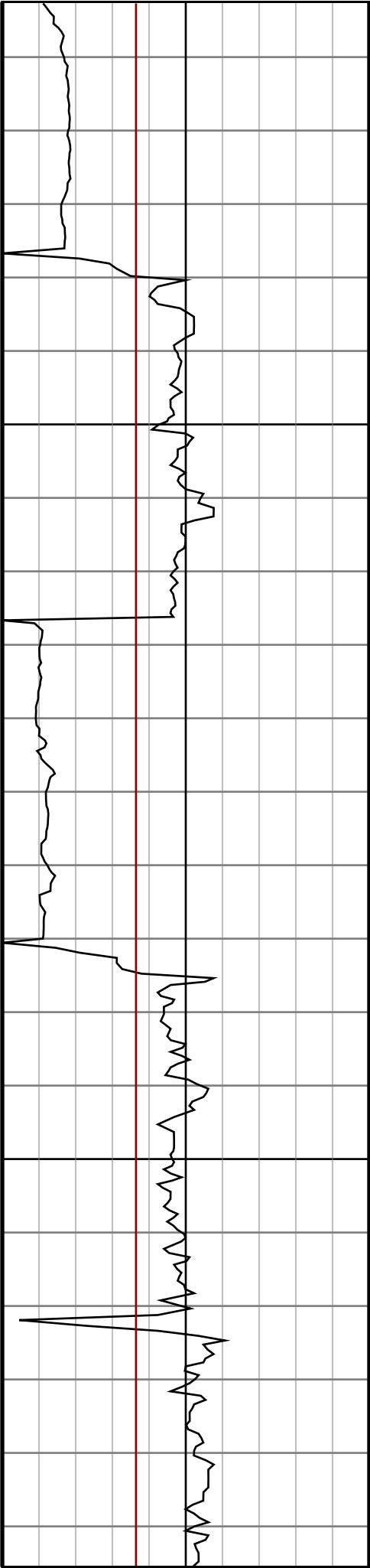
#89 MD(8067.00) Inc(93.1) Azm(268.4) TVD(6706.66)  
VS(1518.72) NS(-896.47) EW(-1355.29)

#90 MD(8162.00) Inc(93.9) Azm(267.9) TVD(6700.91)  
VS(1611.86) NS(-899.53) EW(-1450.07)



8300

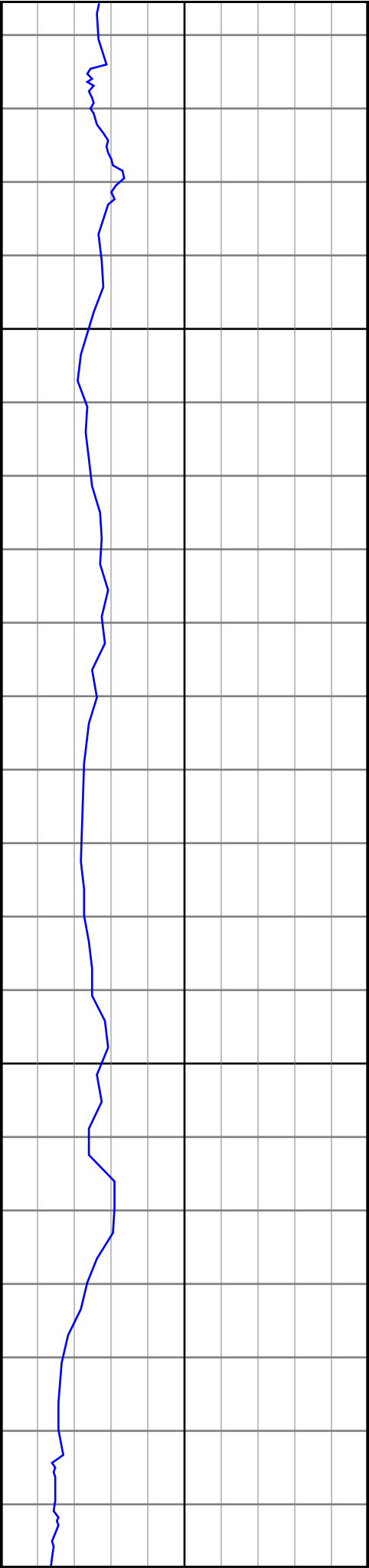
8400



#91 MD(8256.00) Inc(93.4) Azm(267.9) TVD(6694.95)  
VS(1704.09) NS(-903.00) EW(-1543.81)

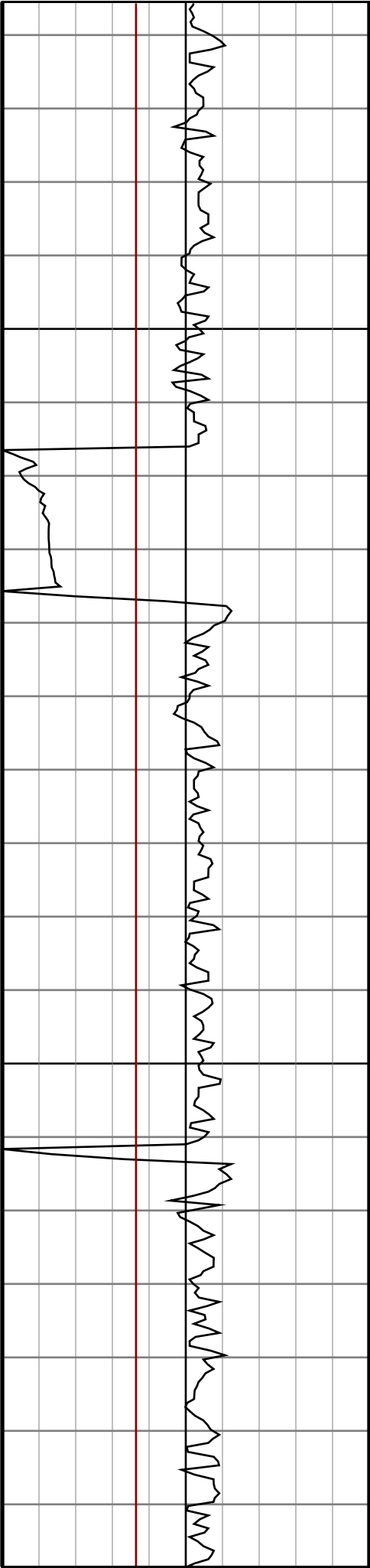
#92 MD(8351.00) Inc(89.1) Azm(267.7) TVD(6692.84)  
VS(1797.48) NS(-906.67) EW(-1638.70)

#93 MD(8445.00) Inc(87.5) Azm(267.1) TVD(6695.62)  
VS(1890.00) NS(-910.97) EW(-1732.56)



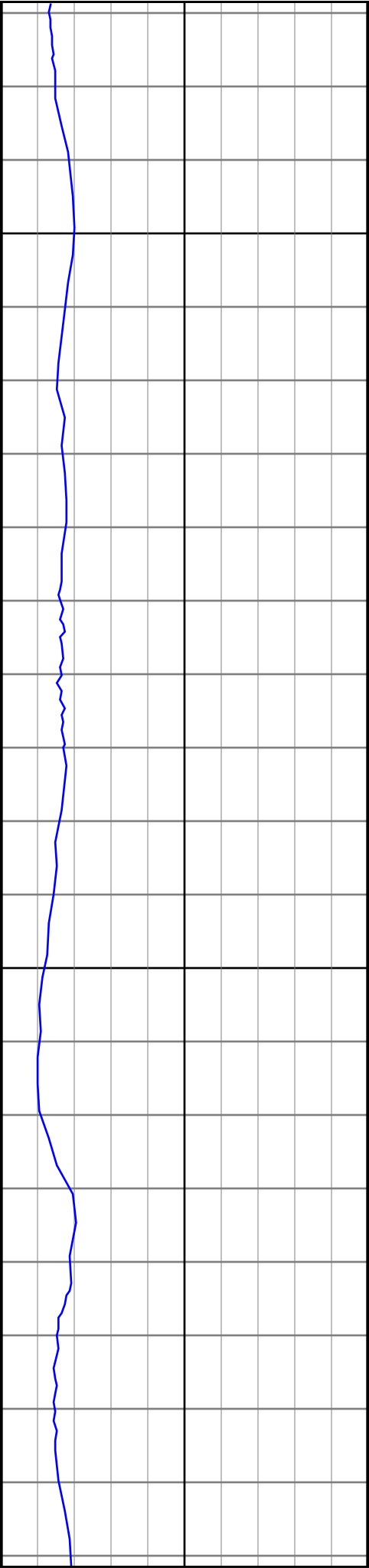
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8600



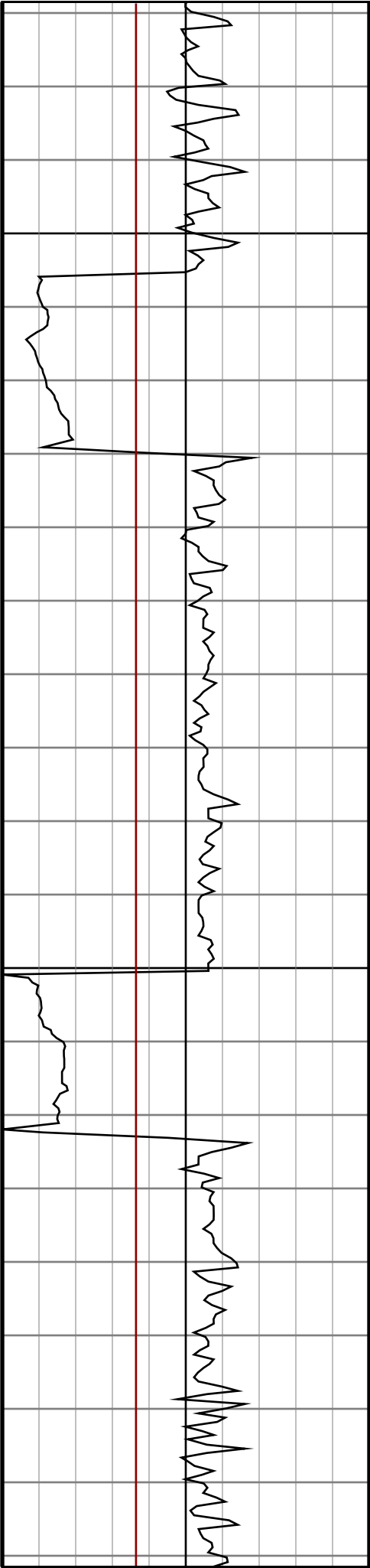
#94 MD(8540.00) Inc(87.7) Azm(267.6) TVD(6699.63)  
VS(1983.48) NS(-915.42) EW(-1827.37)

#95 MD(8634.00) Inc(87.5) Azm(267.4) TVD(6703.60)  
VS(2075.94) NS(-919.59) EW(-1921.19)



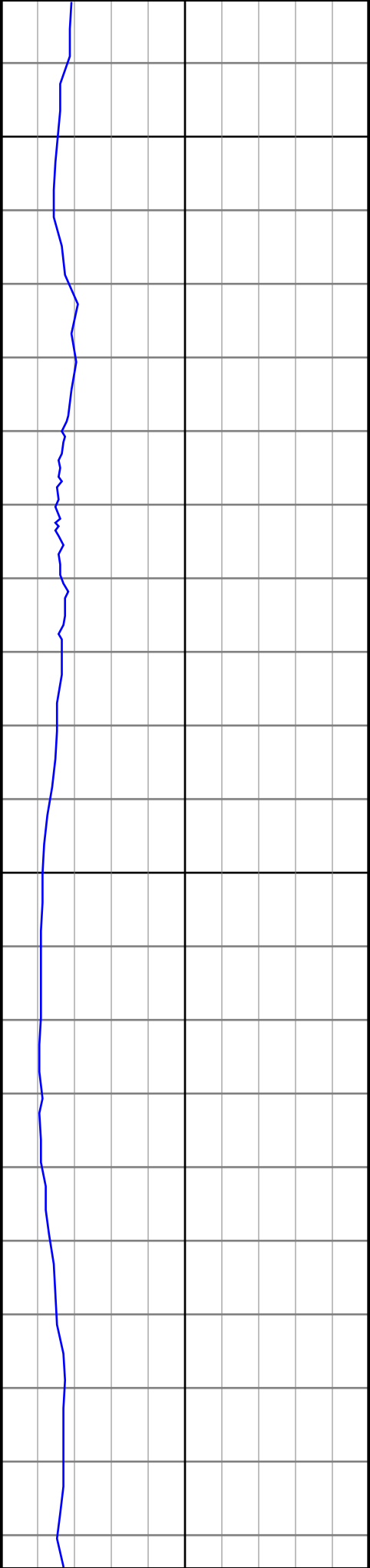
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8800



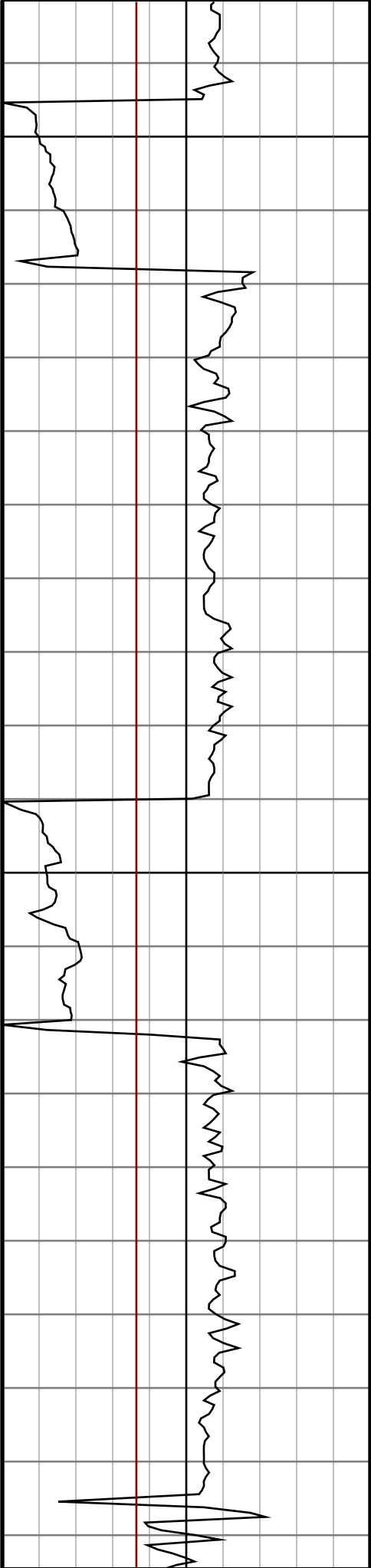
#96 MD(8728.00) Inc(87.6) Azm(268.3) TVD(6707.68)  
VS(2168.28) NS(-923.13) EW(-2015.03)

#97 MD(8822.00) Inc(87.7) Azm(269.2) TVD(6711.57)  
VS(2260.35) NS(-925.21) EW(-2108.93)



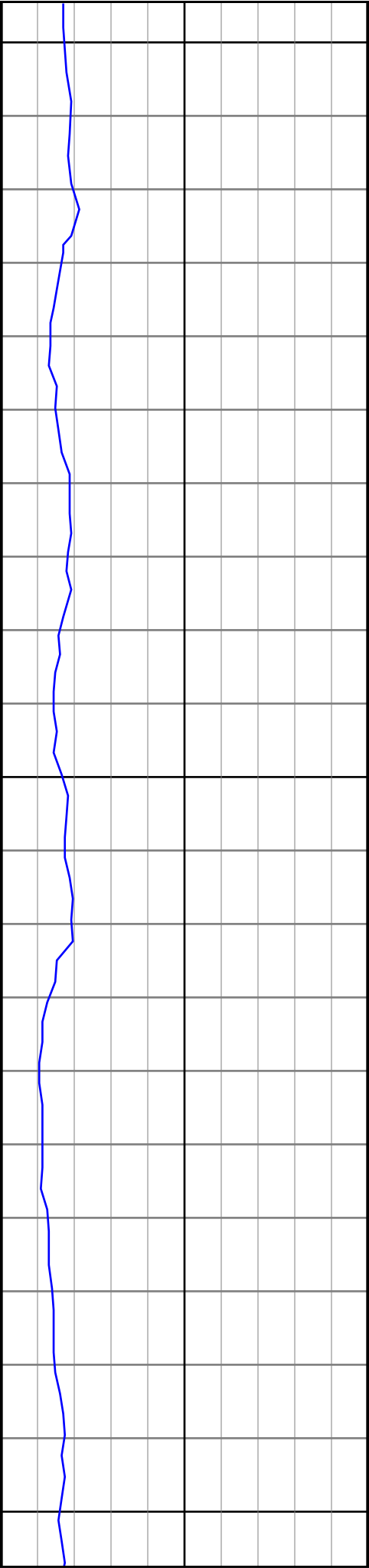
8900

9000



#98 MD(8916.00) Inc(87.7) Azm(270.3) TVD(6715.36)  
VS(2352.08) NS(-925.62) EW(-2202.85)

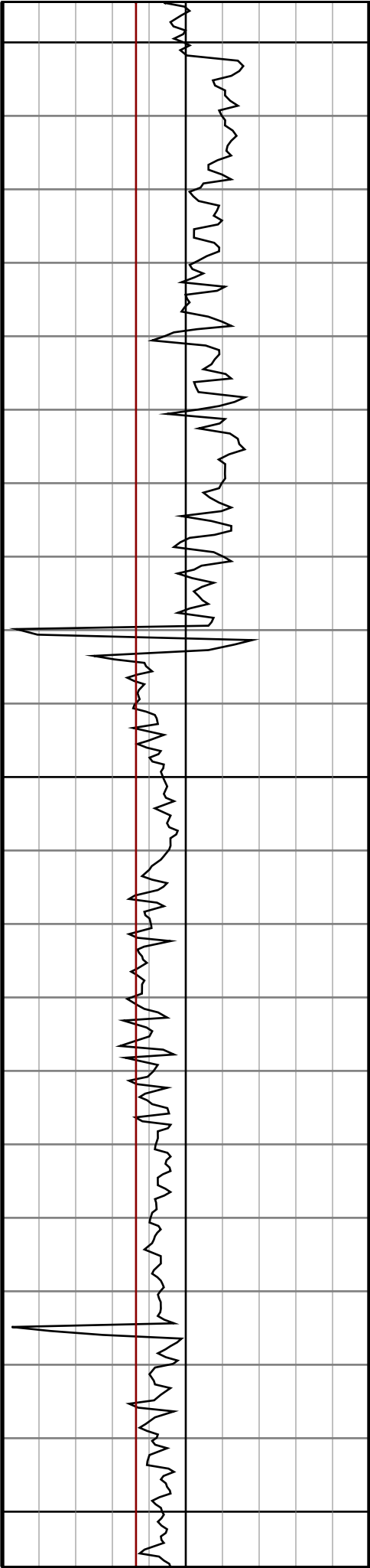
#99 MD(9010.00) Inc(90.0) Azm(271.7) TVD(6717.27)  
VS(2443.40) NS(-923.98) EW(-2296.81)



9100

9200

9300

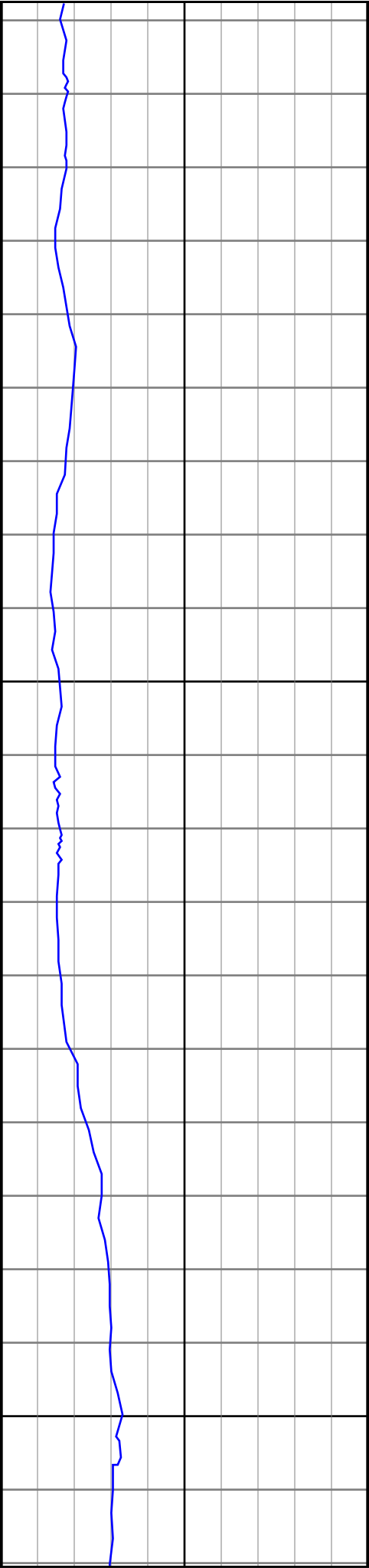


#100 MD(9104.00) Inc(91.4) Azm(271.6) TVD(6716.12)  
VS(2534.49) NS(-921.30) EW(-2390.76)

#101 MD(9199.00) Inc(91.7) Azm(270.5) TVD(6713.53)  
VS(2626.74) NS(-919.54) EW(-2485.71)

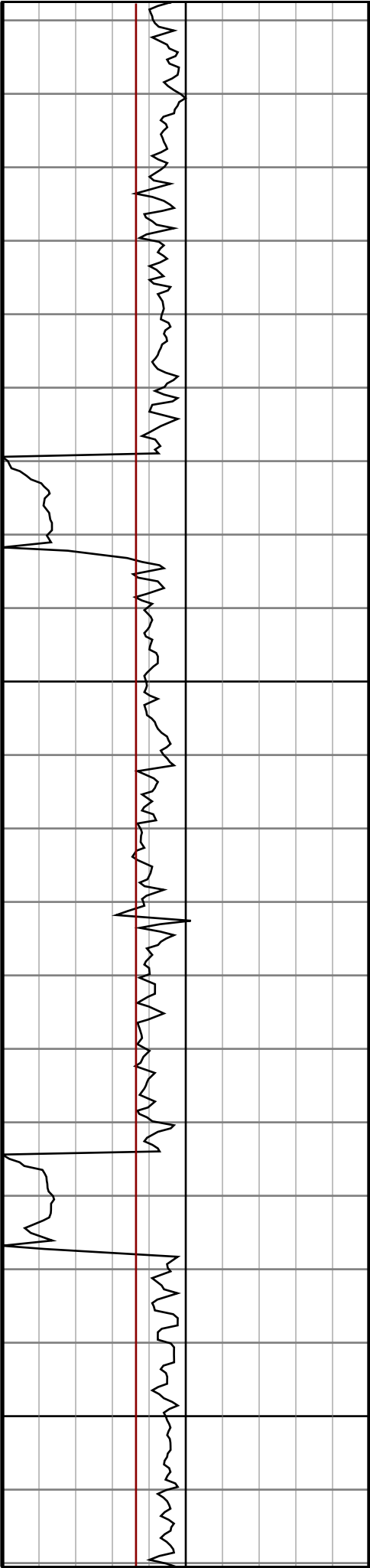
#102 MD(9294.00) Inc(92.0) Azm(269.8) TVD(6710.47)  
VS(2719.33) NS(-919.26) EW(-2580.66)





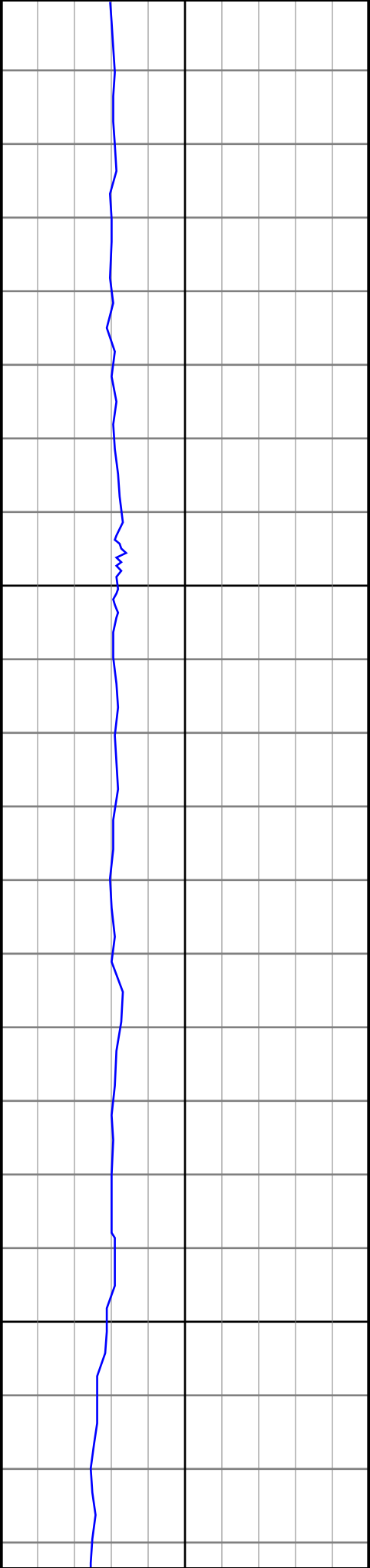
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9500



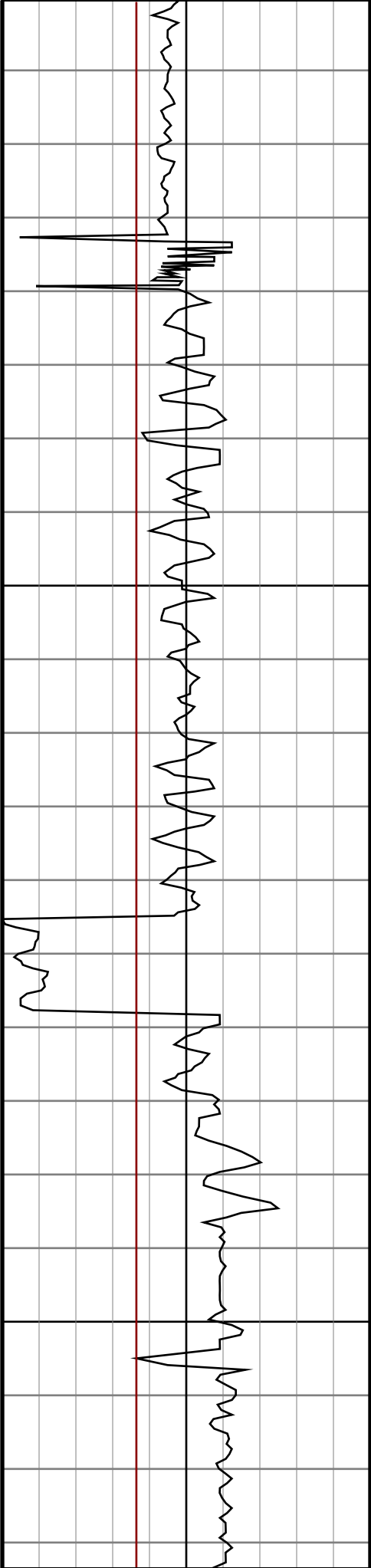
#103 MD(9388.00) Inc(91.1) Azm(268.8) TVD(6707.95)  
VS(2811.26) NS(-920.44) EW(-2674.61)

#104 MD(9482.00) Inc(90.1) Azm(268.6) TVD(6707.00)  
VS(2903.42) NS(-922.59) EW(-2768.58)



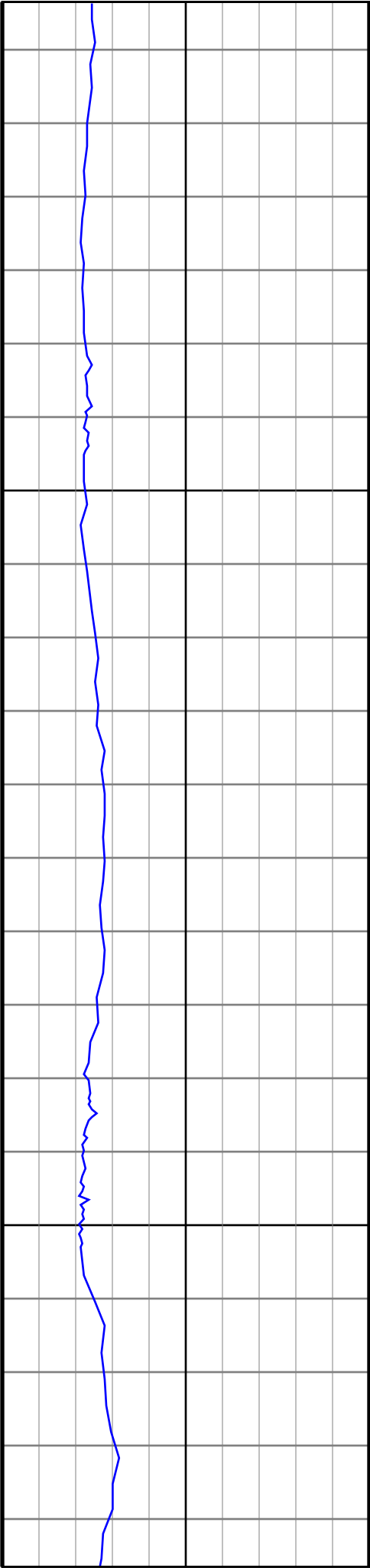
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9700



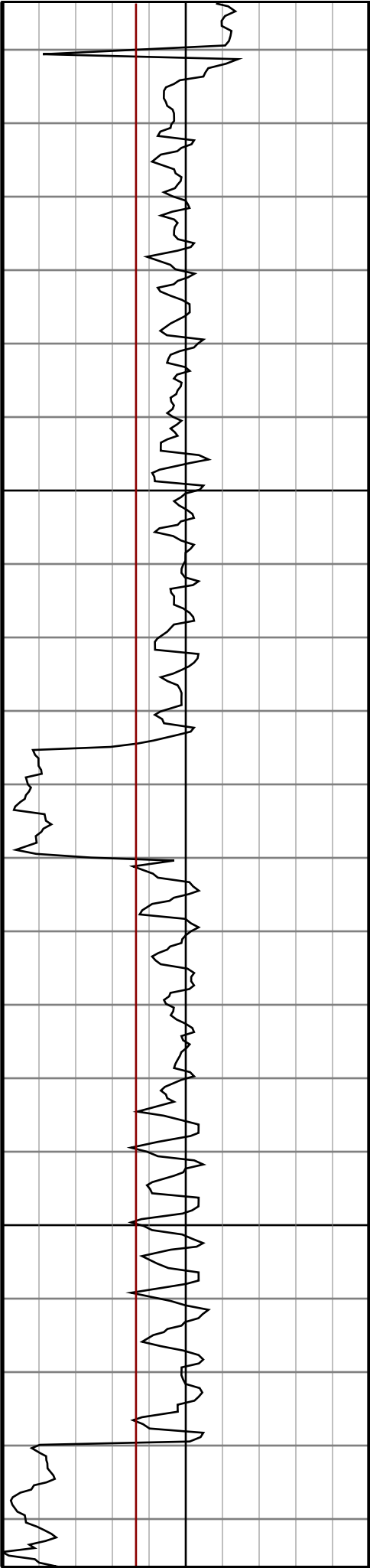
#105 MD(9576.00) Inc(88.9) Azm(266.9) TVD(6707.86)  
VS(2995.87) NS(-926.32) EW(-2862.50)

#106 MD(9671.00) Inc(90.3) Azm(266.9) TVD(6708.52)  
VS(3089.56) NS(-931.50) EW(-2957.35)



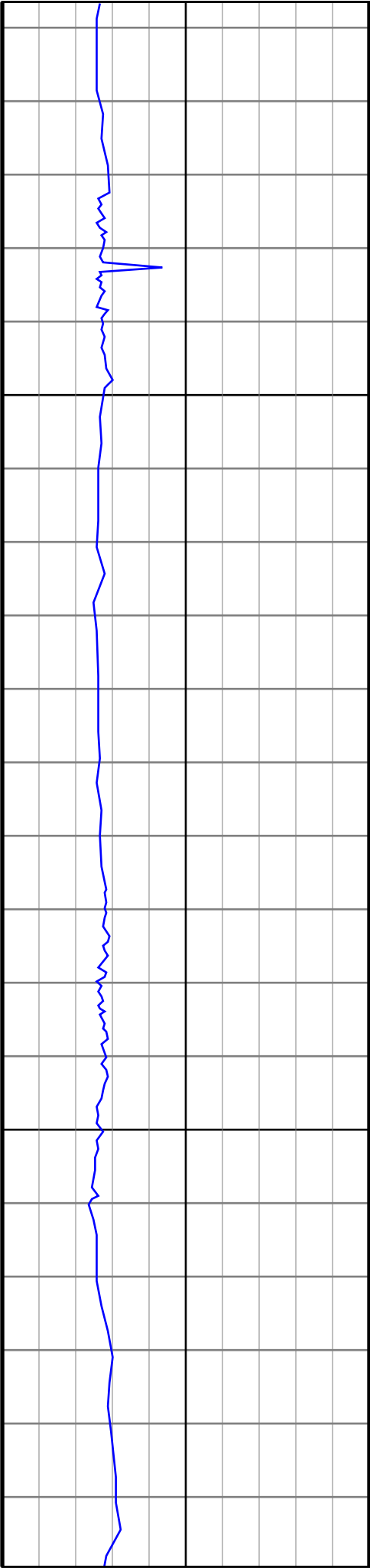
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9900



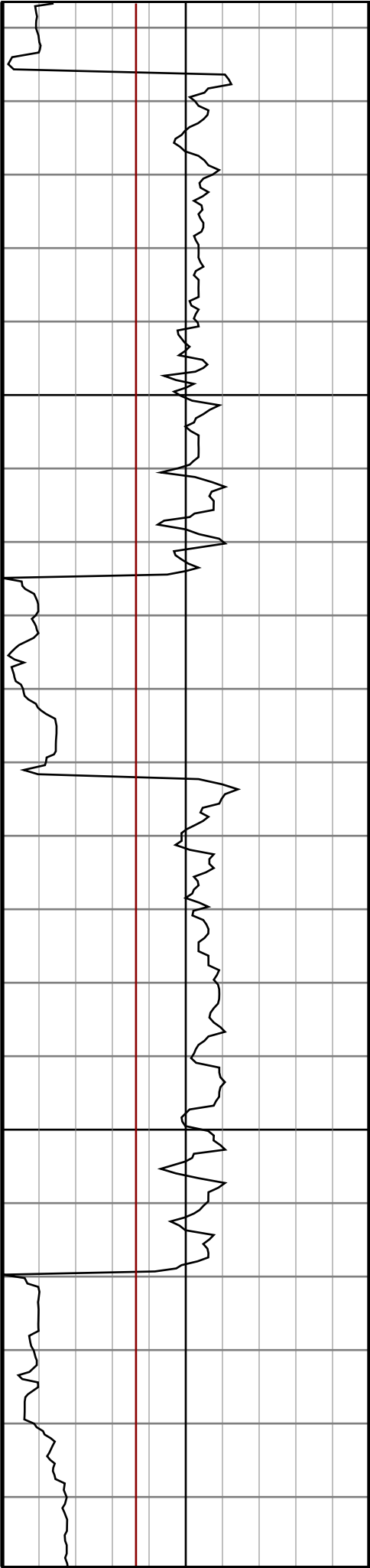
#107 MD(9765.00) Inc(90.1) Azm(266.1) TVD(6708.16)  
VS(3182.37) NS(-937.29) EW(-3051.17)

#108 MD(9859.00) Inc(91.0) Azm(266.2) TVD(6707.26)  
VS(3275.26) NS(-943.62) EW(-3144.95)



10000

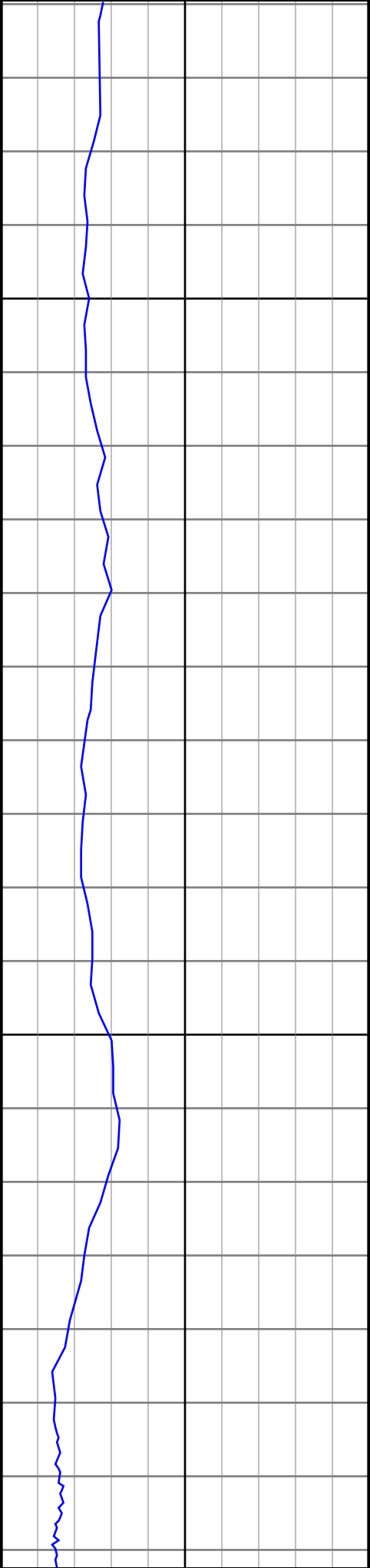
10100



#109 MD(9953.00) Inc(90.5) Azm(266.9) TVD(6706.07)  
VS(3368.05) NS(-949.29) EW(-3238.77)

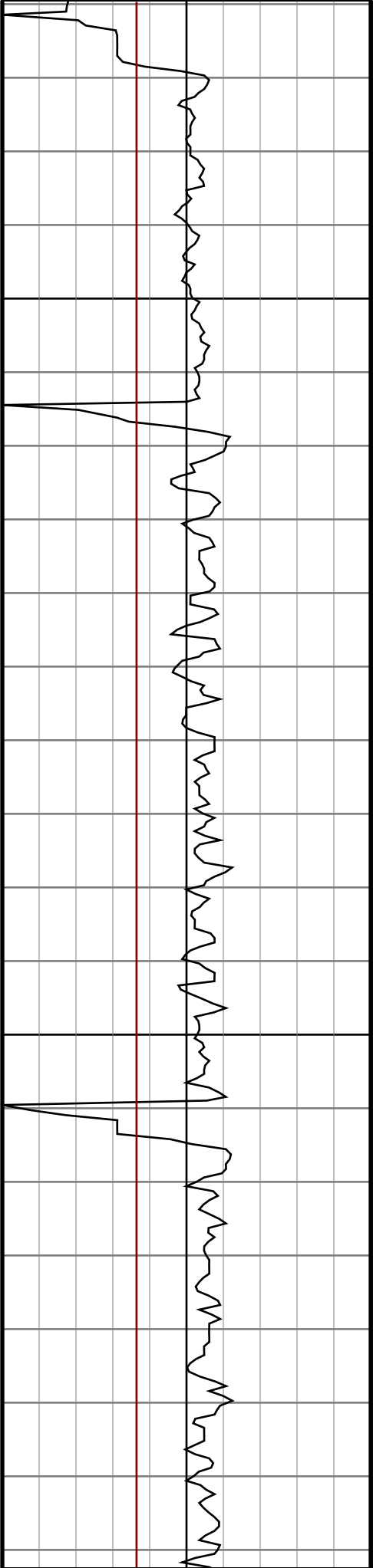
#110 MD(10048.00) Inc(88.7) Azm(267.5) TVD(6706.80)  
VS(3461.65) NS(-953.97) EW(-3333.65)

#111 MD(10143.00) Inc(88.6) Azm(268.9) TVD(6709.09)  
VS(3554.92) NS(-956.95) EW(-3428.57)



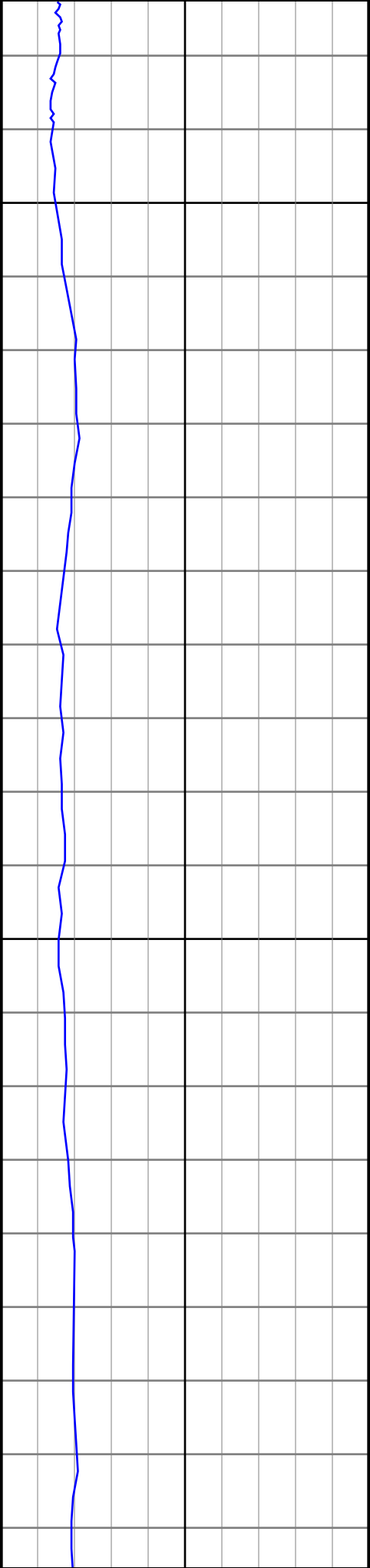
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10300



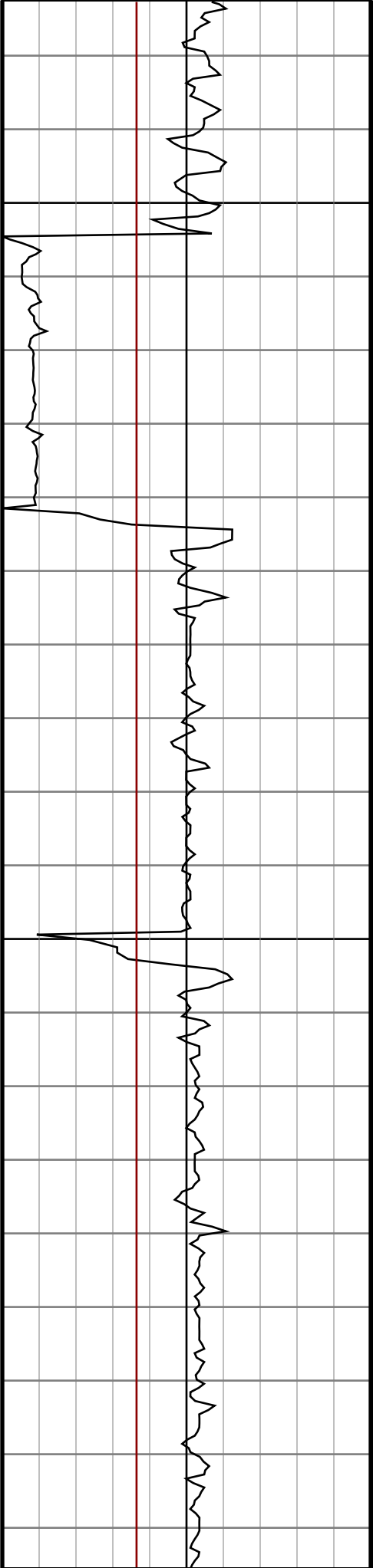
#112 MD(10238.00) Inc(87.8) Azm(269.5) TVD(6712.12)  
VS(3647.84) NS(-958.24) EW(-3523.52)

#113 MD(10333.00) Inc(87.7) Azm(268.9) TVD(6715.87)  
VS(3740.74) NS(-959.57) EW(-3618.43)



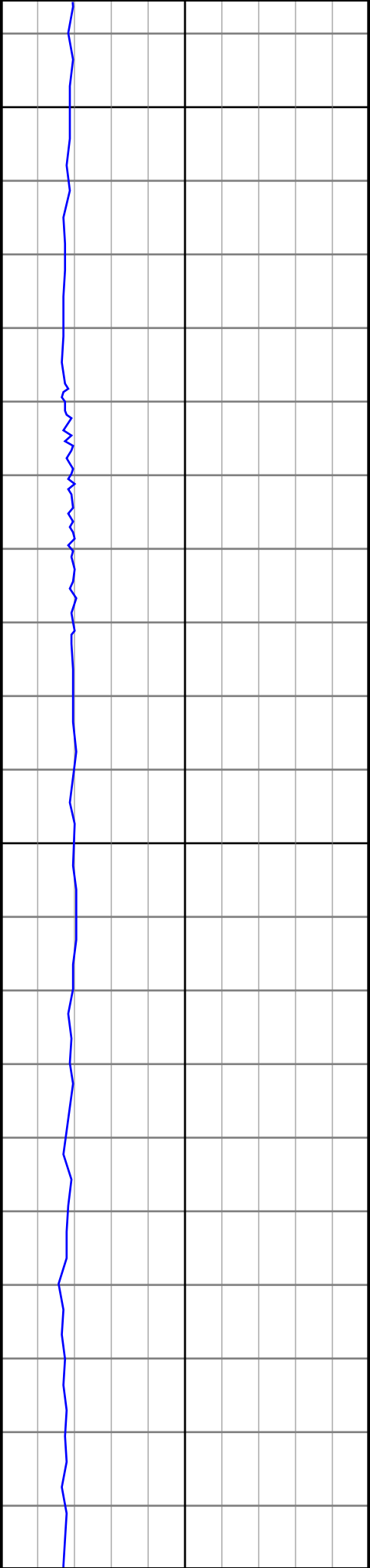
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10500



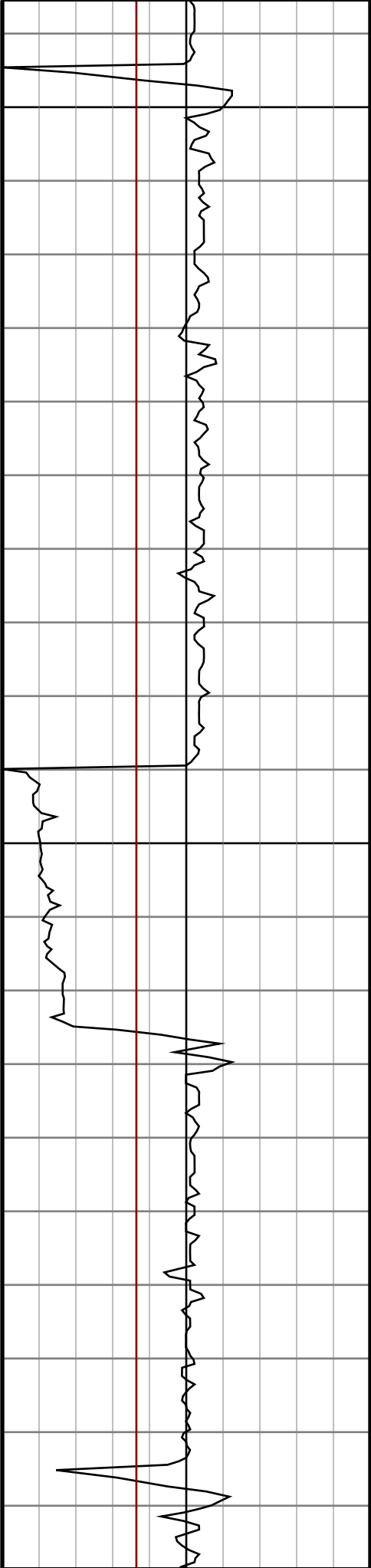
#114 MD(10428.00) Inc(88.3) Azm(270.4) TVD(6719.23)  
VS(3833.49) NS(-960.13) EW(-3713.37)

#115 MD(10522.00) Inc(90.5) Azm(271.6) TVD(6720.24)  
VS(3924.82) NS(-958.46) EW(-3807.34)



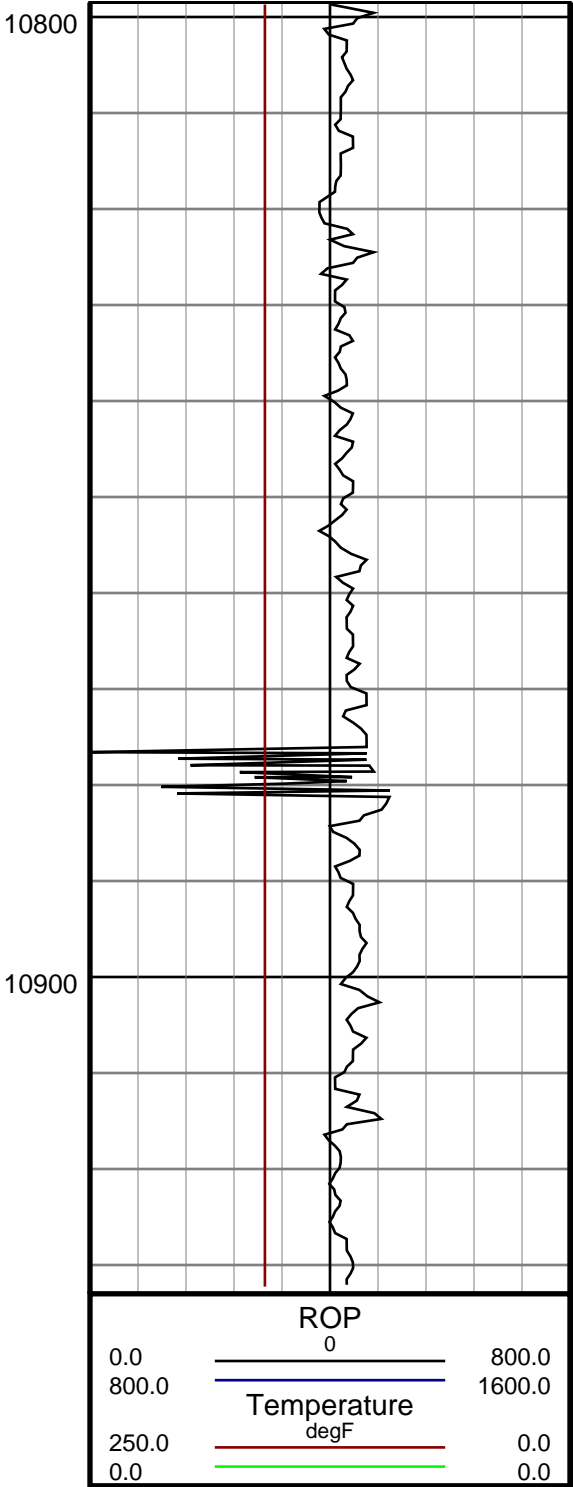
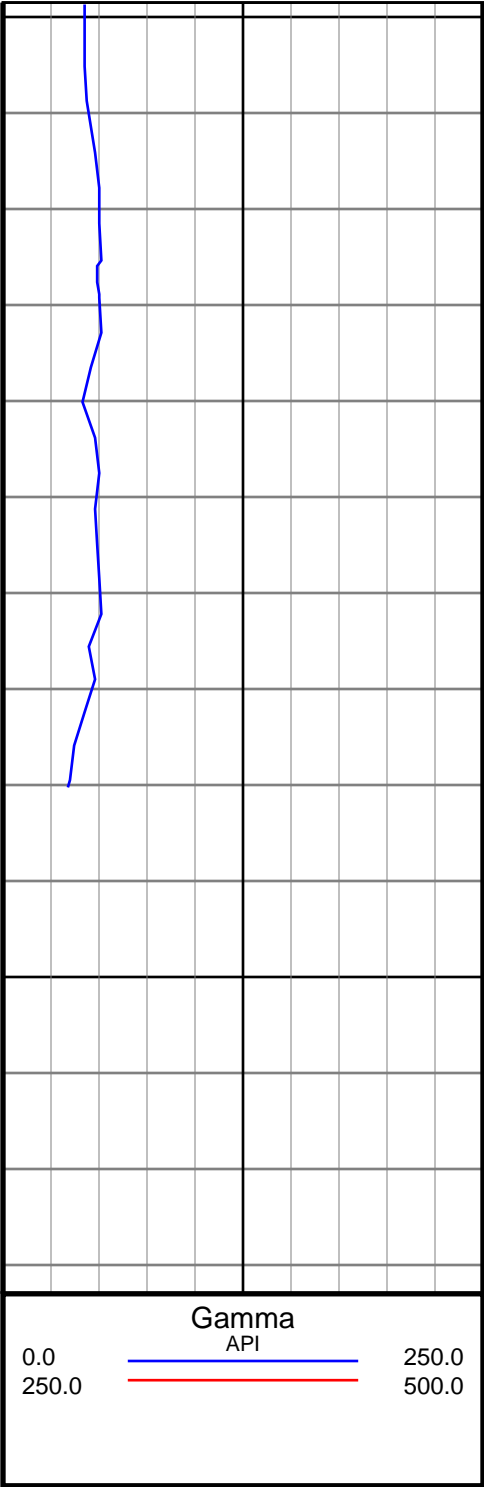
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10700



#116 MD(10617.00) Inc(90.2) Azm(270.5) TVD(6719.69)  
VS(4017.12) NS(-956.73) EW(-3902.32)

#117 MD(10712.00) Inc(90.5) Azm(271.4) TVD(6719.18)  
VS(4109.46) NS(-955.19) EW(-3997.31)



#118 MD(10807.00) Inc(89.8) Azm(269.7) TVD(6719.00)  
VS(4201.95) NS(-954.30) EW(-4092.30)

#119 MD(10863.00) Inc(89.3) Azm(269.5) TVD(6719.45)  
VS(4256.67) NS(-954.68) EW(-4148.29)

#120 MD(10932.00) Inc(89.3) Azm(269.5) TVD(6720.27)  
VS(4324.11) NS(-955.24) EW(-4217.29)