



**CROW CREEK STATE AD31-79HN** MD 5":100'

Company: NOBLE ENERGY  
Well Name: CROW CREEK STATE AD31-79HN  
UWI or LSD:  
Rig Id: H&P 277  
State: CO  
County/Parish: WELD COUNTY  
Country: USA  
Survey Company: DRILTECH, LLC  
Job number: 2013-338-IDDT-CO  
Jeremy Howe  
Josh Caylor

Log measurements:  
Depth measured from:  
Maximum temperature:

Depth Date  
Start: 636 ft 11/27/2013  
End: 11353 ft 12/02/2013

Casing Depth Size  
Surface: 626 9.625  
Intermediate: 7199 7.0

Mud Type: WATER BASE  
Density: 9.2  
Viscosity: 32  
Rm: Rmf: Rmc:

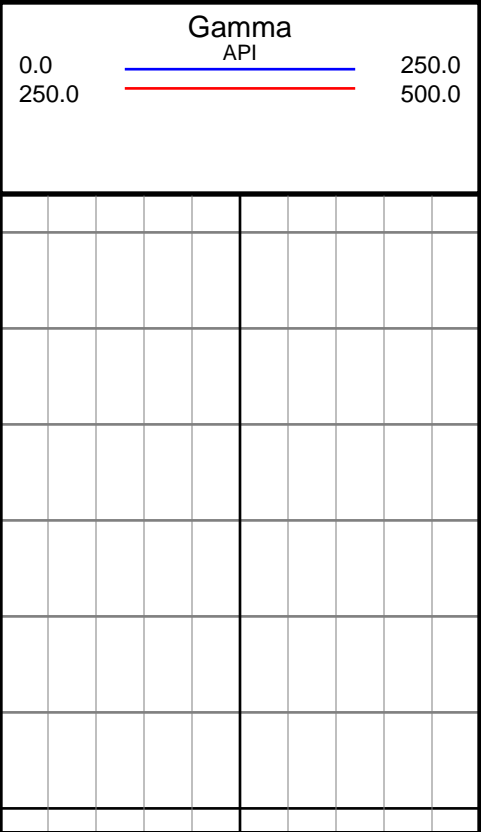
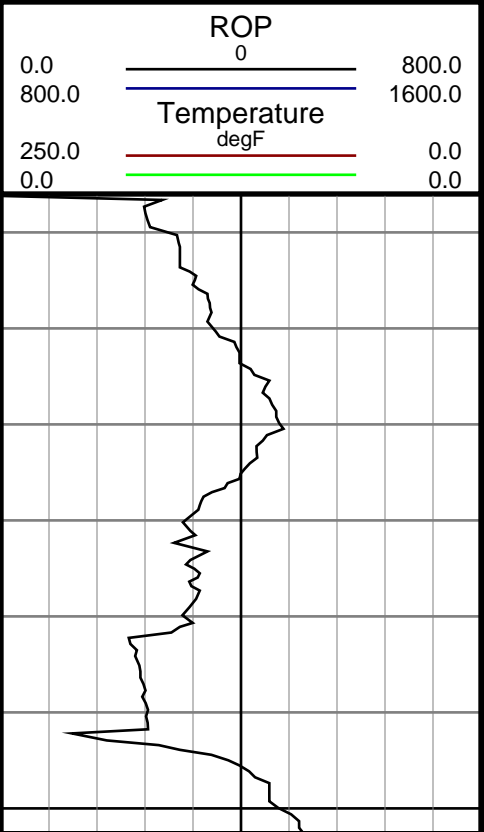
Elevations  
KB: 4872  
GL: 4848  
DF:

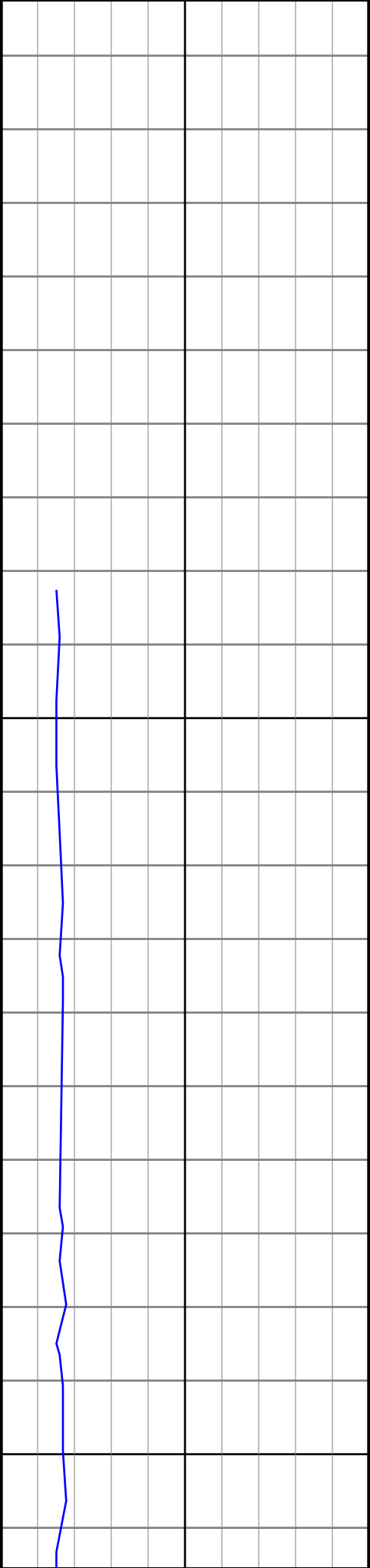
Run	Bit Size	Gamma	Offsets	Survey	Start	End	Start	End	Dates
1	8 3/4	38.00	56.00	636	6191	7209	11/27/2013	11/29/2013	
2	8 3/4	45.00	63.00	6191	7209	11/29/2013	11/30/2013		
3	6 1/8	42.00	54.00	7209	11353	12/01/2013	12/02/2013		
4									
5									
6									
7									
8									
9									
10									

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

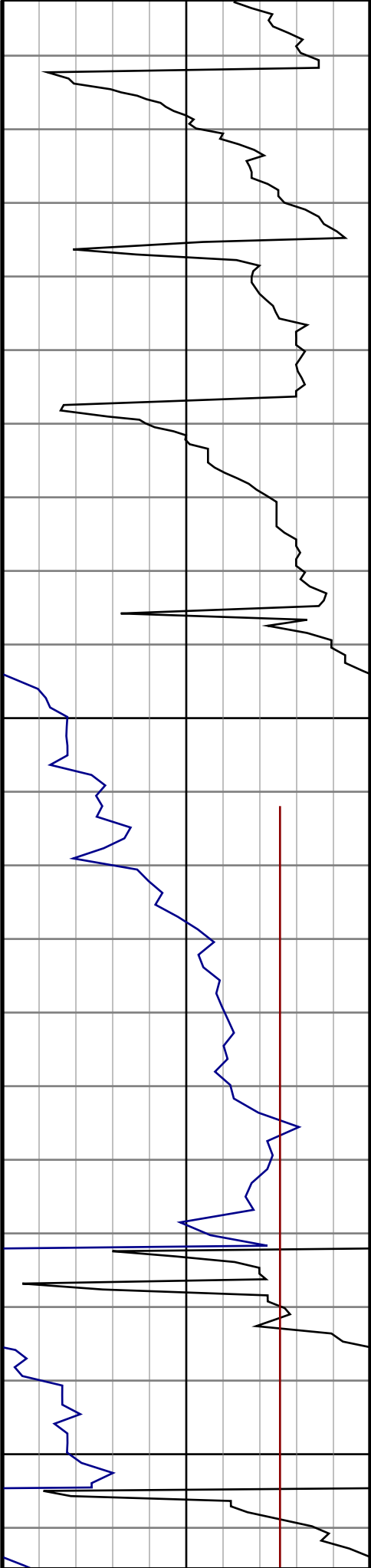
700





800

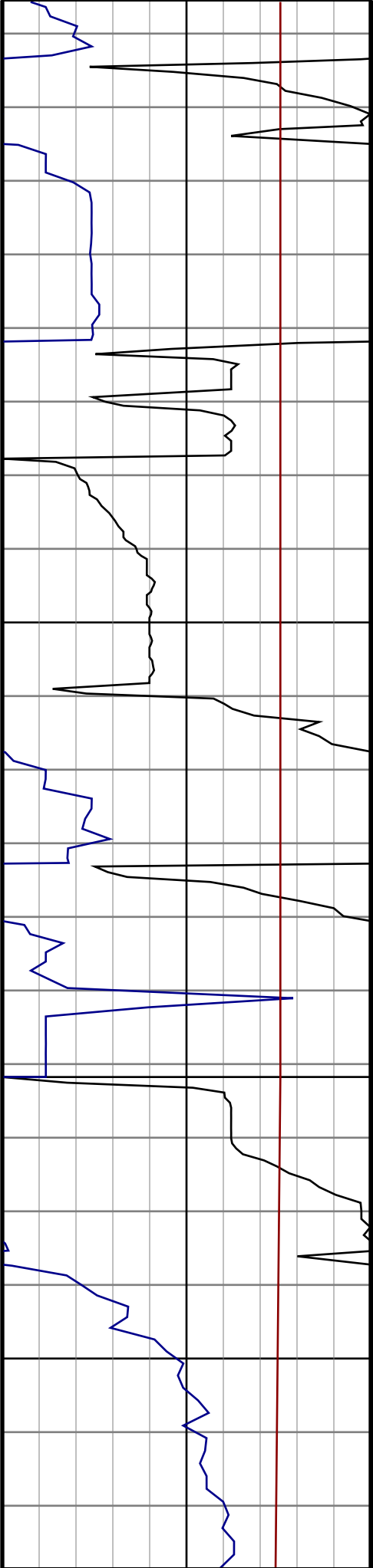
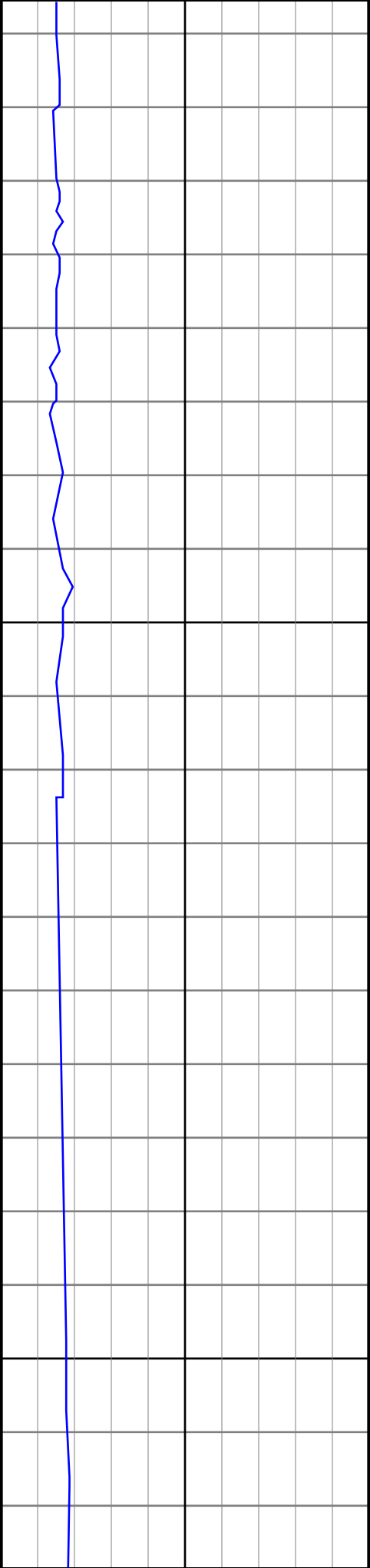
900



#3 MD(725.00) Inc(0.5) Azm(275.7) TVD(724.99)  
VS(0.01) NS(1.10) EW(-3.98)

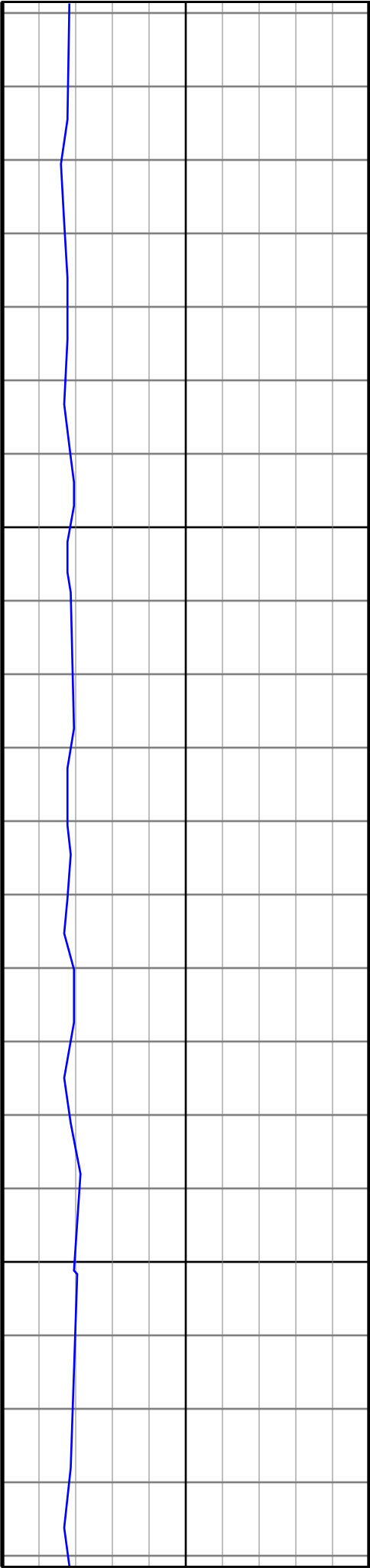
#4 MD(818.00) Inc(0.9) Azm(288.2) TVD(817.98)  
VS(-0.02) NS(1.37) EW(-5.08)

#5 MD(912.00) Inc(0.7) Azm(267.5) TVD(911.97)  
VS(-0.16) NS(1.58) EW(-6.36)



#6 MD(1005.00) Inc(1.8) Azm(95.5) TVD(1004.96)  
VS(-0.08) NS(1.41) EW(-5.47)

#7 MD(1097.00) Inc(1.9) Azm(84.3) TVD(1096.91)  
VS(0.71) NS(1.43) EW(-2.51)



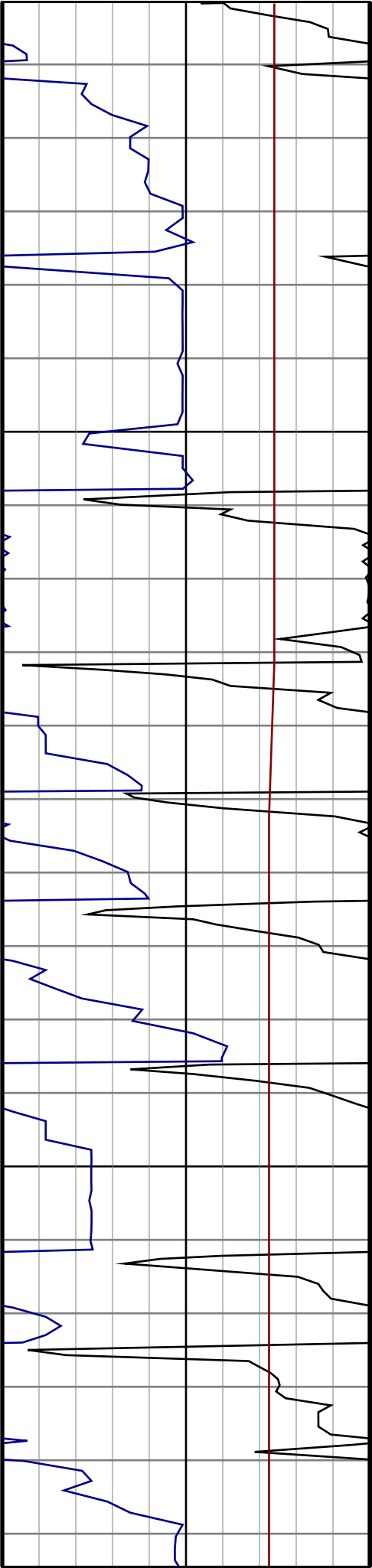
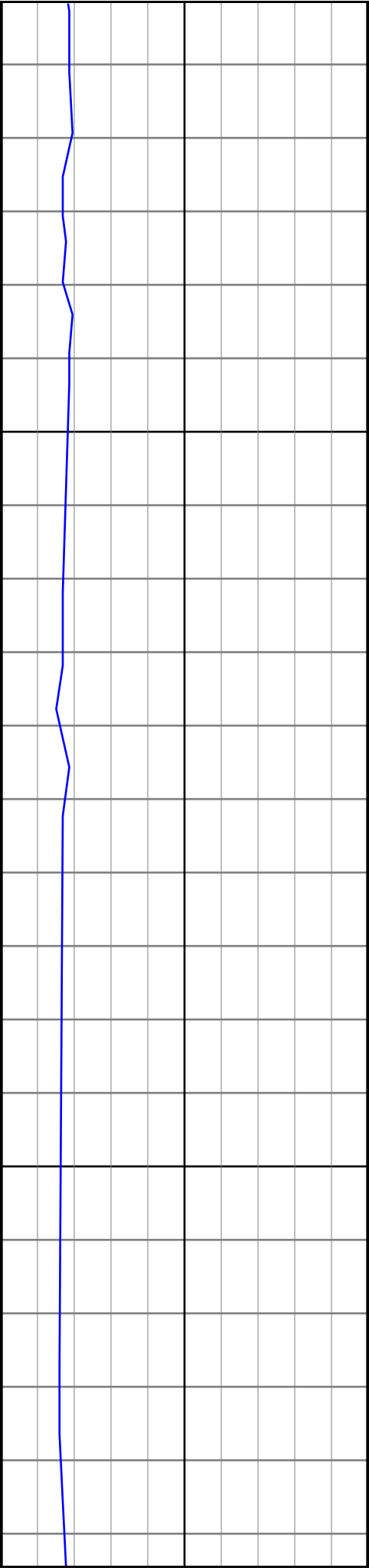
1200

1300



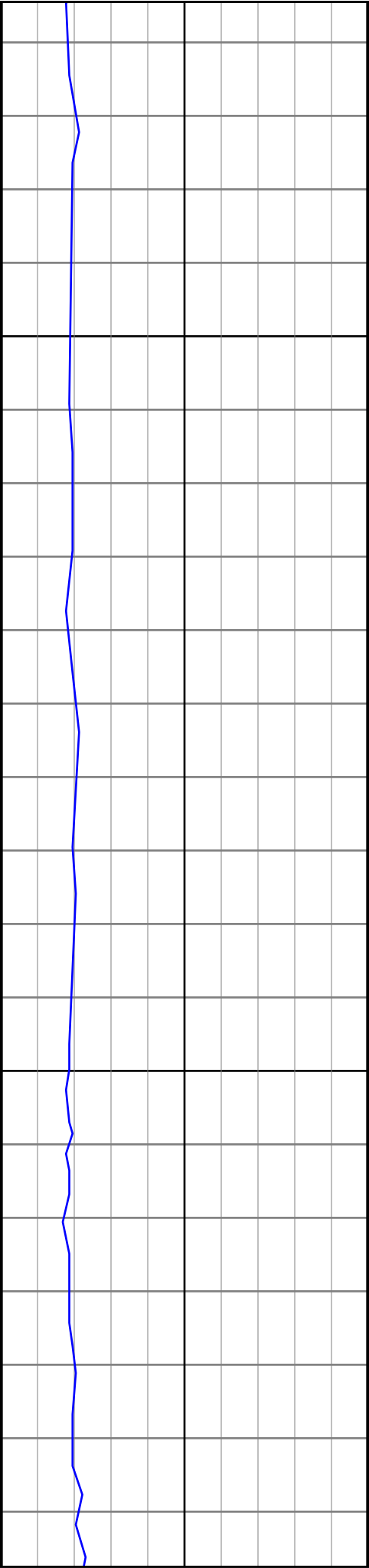
#8 MD(1191.00) Inc(1.6) Azm(86.9) TVD(1190.87)  
VS(1.69) NS(1.65) EW(0.35)

#9 MD(1284.00) Inc(1.8) Azm(76.4) TVD(1283.83)  
VS(2.80) NS(2.07) EW(3.06)



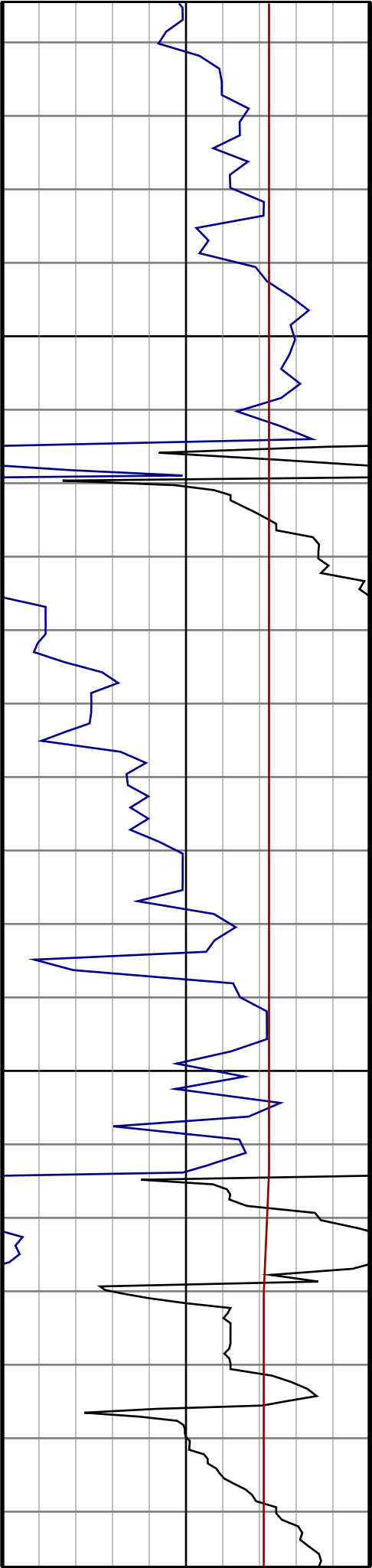
#10 MD(1377.00) Inc(2.1) Azm(79.9) TVD(1376.77)  
VS(4.24) NS(2.71) EW(6.16)

#11 MD(1472.00) Inc(1.9) Azm(78.8) TVD(1471.71)  
VS(5.69) NS(3.32) EW(9.42)



1600

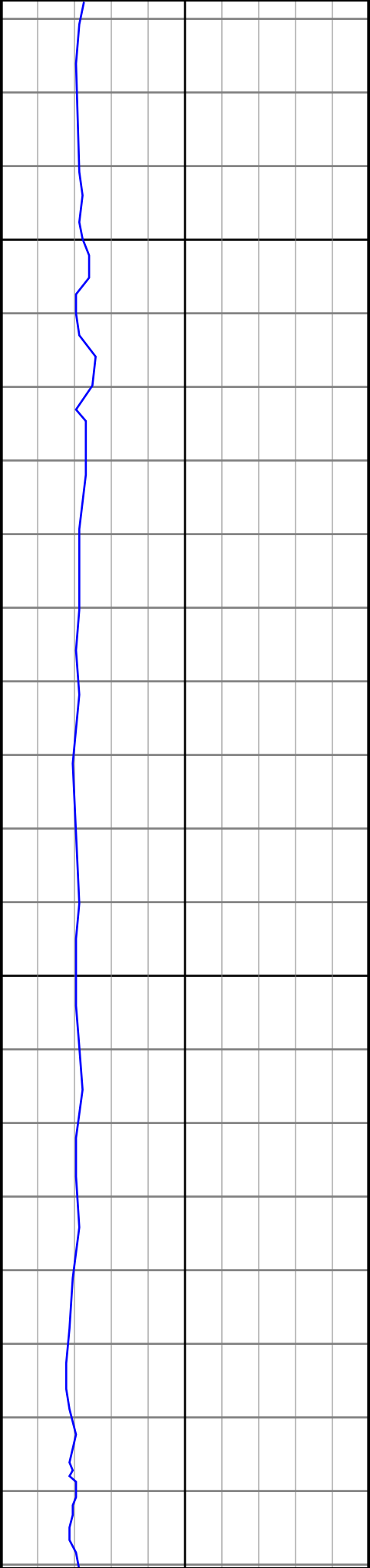
1700



#12 MD(1567.00) Inc(2.3) Azm(82.4) TVD(1566.65)  
VS(7.13) NS(3.88) EW(12.85)

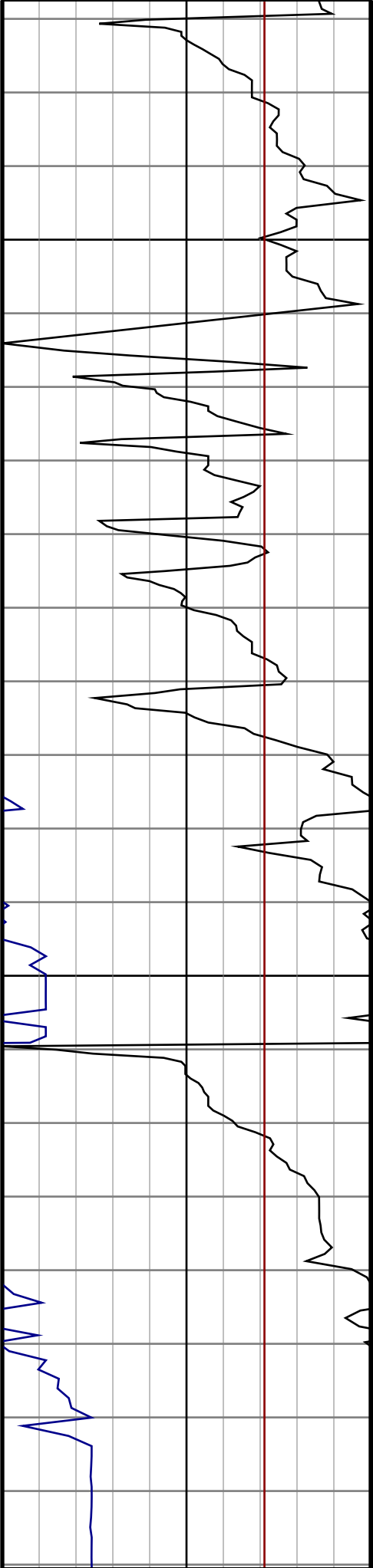
#13 MD(1662.00) Inc(2.3) Azm(83.6) TVD(1661.57)  
VS(8.58) NS(4.34) EW(16.64)

#14 MD(1758.00) Inc(2.3) Azm(78.3) TVD(1757.50)  
VS(10.16) NS(4.95) EW(20.44)



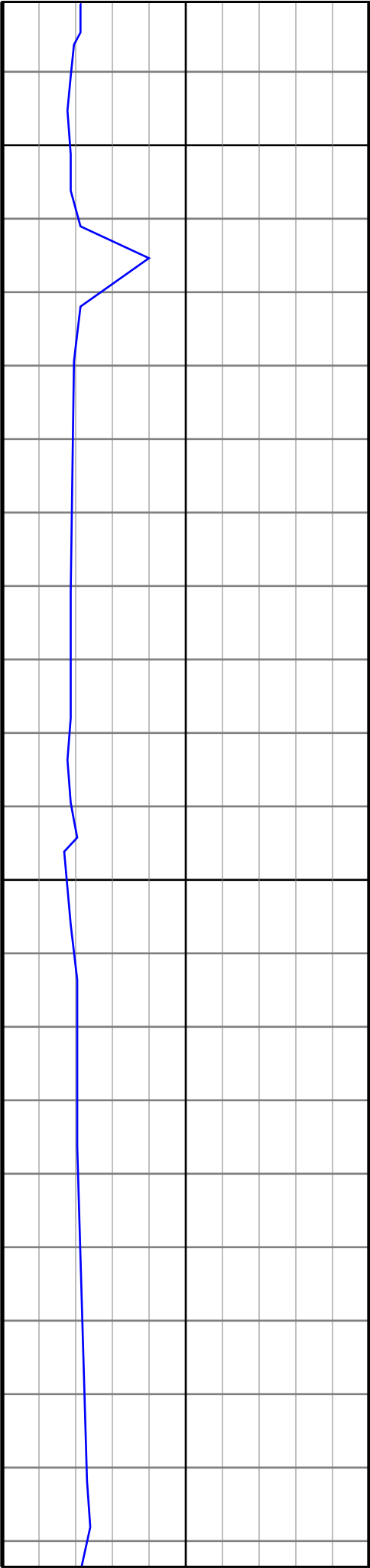
1800

1900



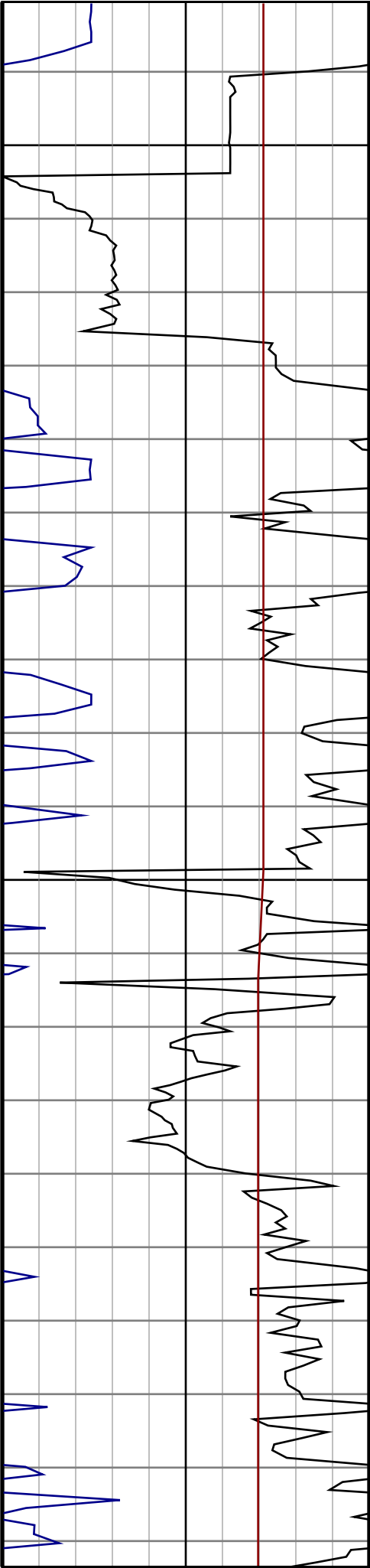
#15 MD(1853.00) Inc(2.5) Azm(68.3) TVD(1852.41)  
VS(12.28) NS(6.10) EW(24.23)

#16 MD(1948.00) Inc(2.3) Azm(73.9) TVD(1947.33)  
VS(14.52) NS(7.39) EW(27.99)



2000

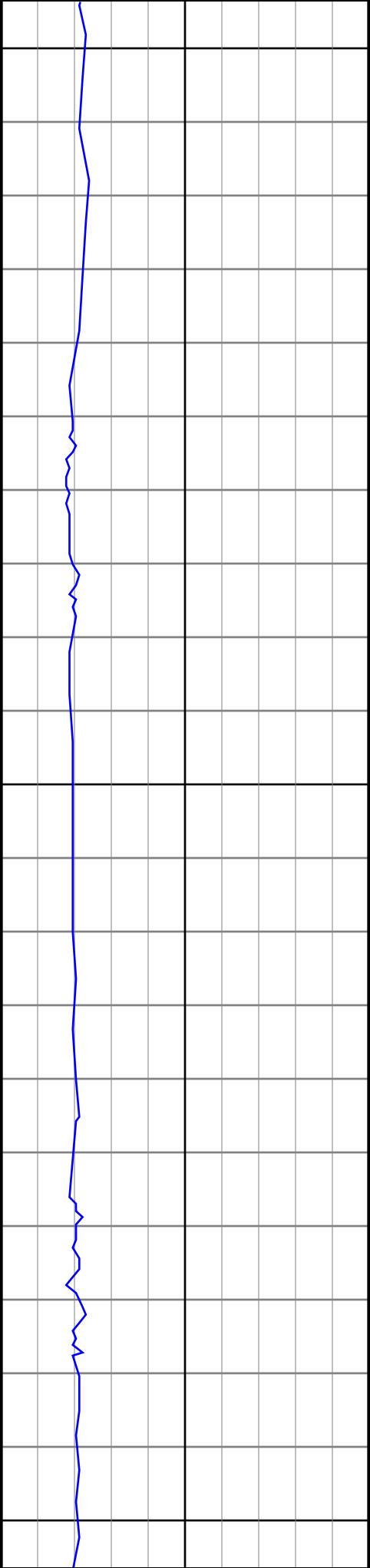
2100



#17 MD(2043.00) Inc(3.7) Azm(80.8) TVD(2042.20)  
VS(16.78) NS(8.41) EW(32.84)

#18 MD(2138.00) Inc(3.5) Azm(77.8) TVD(2137.01)  
VS(19.39) NS(9.52) EW(38.70)

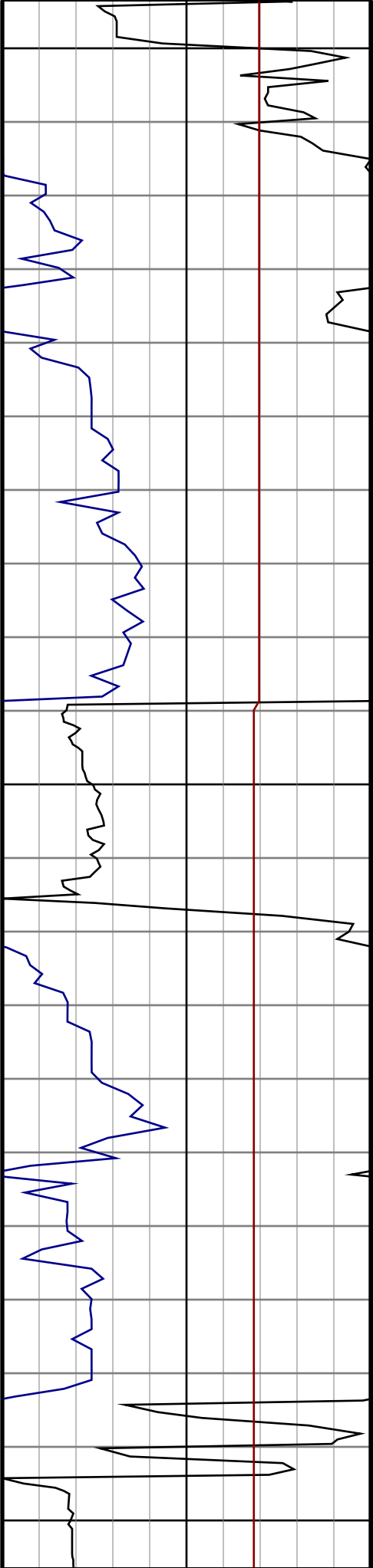




2200

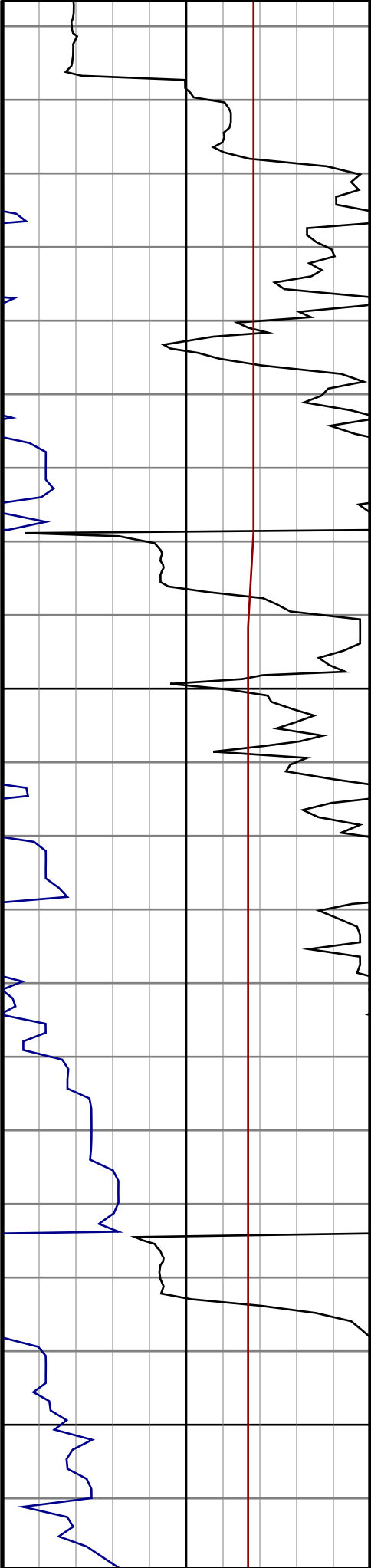
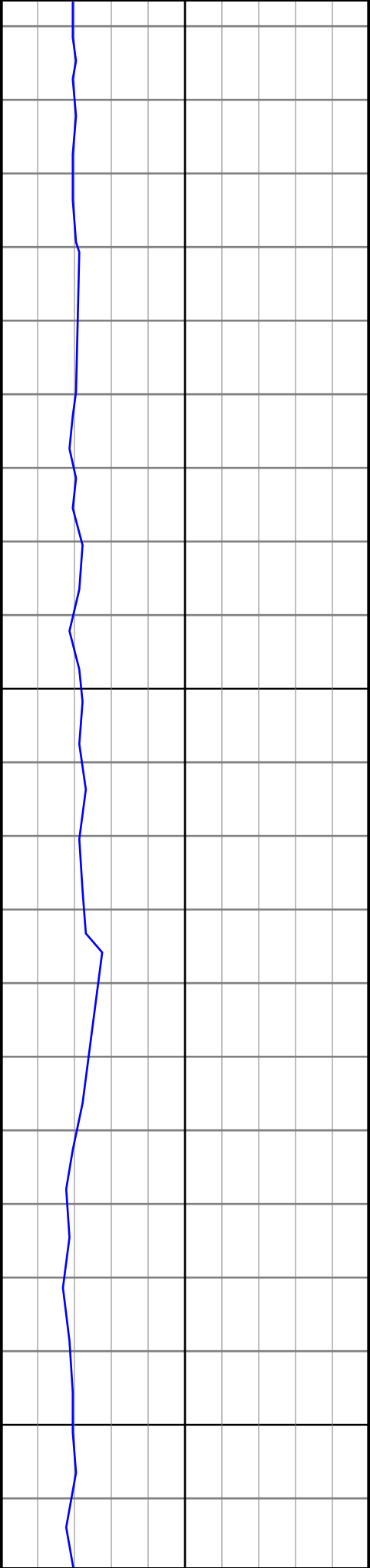
2300

2400



#19 MD(2234.00) Inc(3.2) Azm(72.5) TVD(2232.85)  
VS(22.20) NS(10.94) EW(44.12)

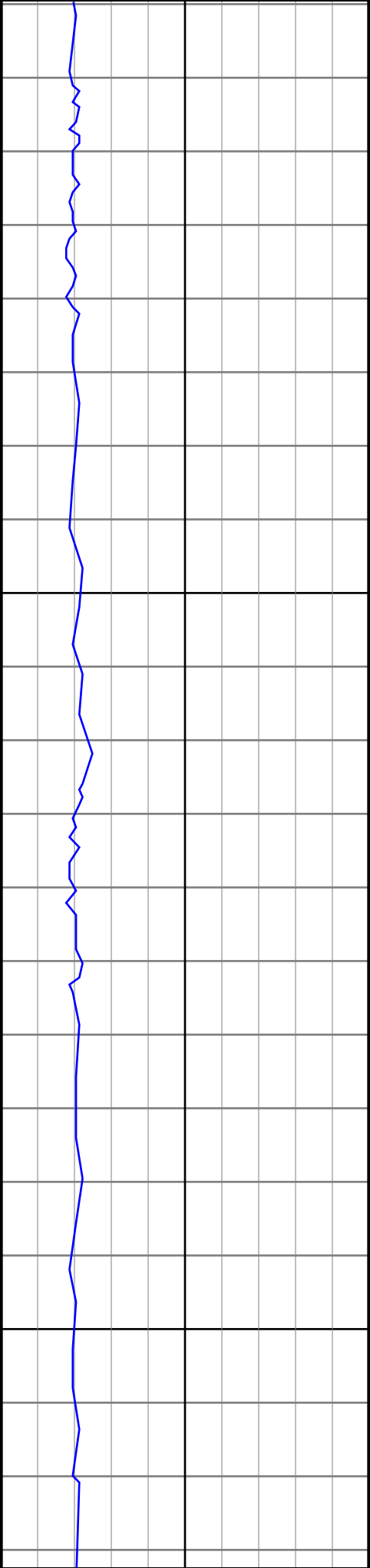
#20 MD(2329.00) Inc(3.5) Azm(90.6) TVD(2327.69)  
VS(24.37) NS(11.71) EW(49.55)



#21 MD(2424.00) Inc(4.2) Azm(103.3) TVD(2422.47)  
VS(25.23) NS(10.88) EW(55.84)

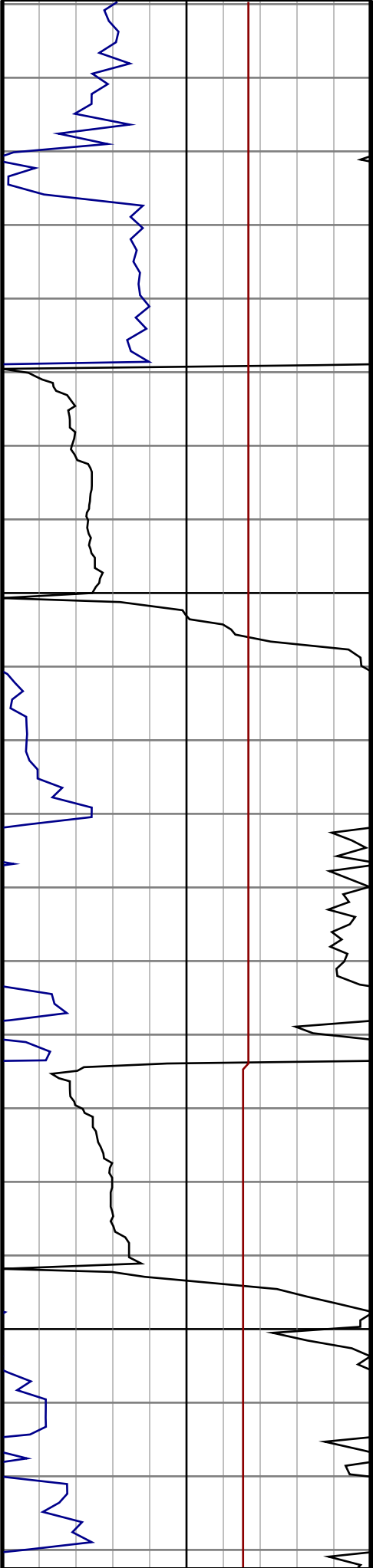
#22 MD(2519.00) Inc(4.0) Azm(105.9) TVD(2517.23)  
VS(25.31) NS(9.17) EW(62.41)

#23 MD(2614.00) Inc(4.4) Azm(98.7) TVD(2611.98)  
VS(25.70) NS(7.71) EW(69.20)



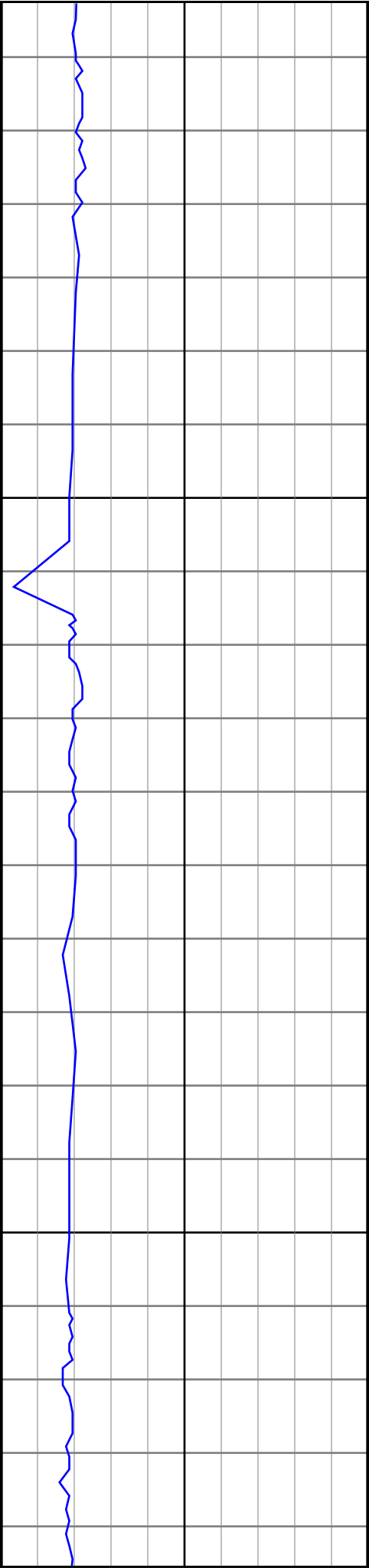
2700

2800



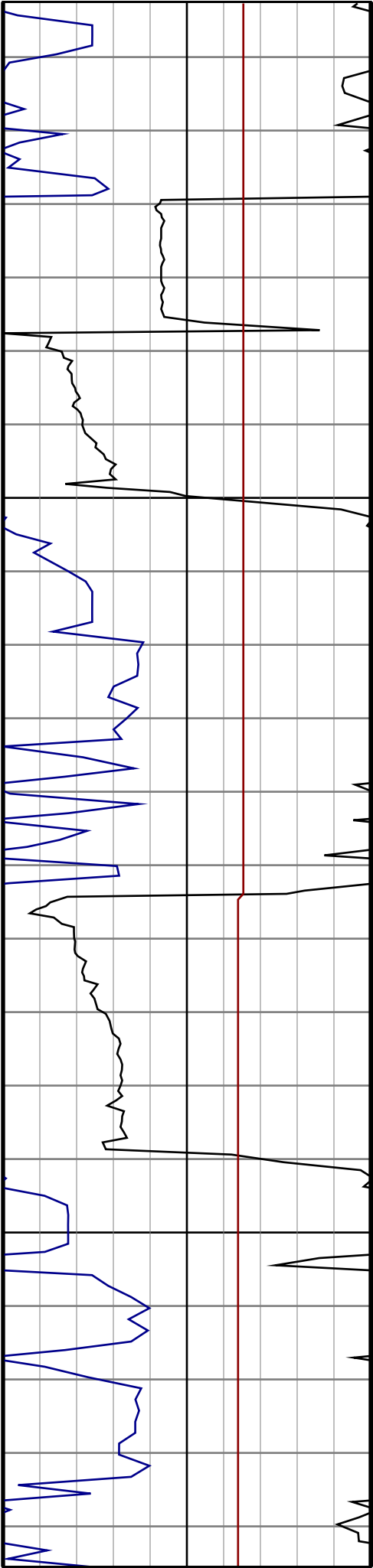
#24 MD(2709.00) Inc(6.5) Azm(104.2) TVD(2706.54)  
VS(26.22) NS(5.84) EW(78.02)

#25 MD(2804.00) Inc(7.7) Azm(112.1) TVD(2800.81)  
VS(25.57) NS(2.13) EW(89.13)



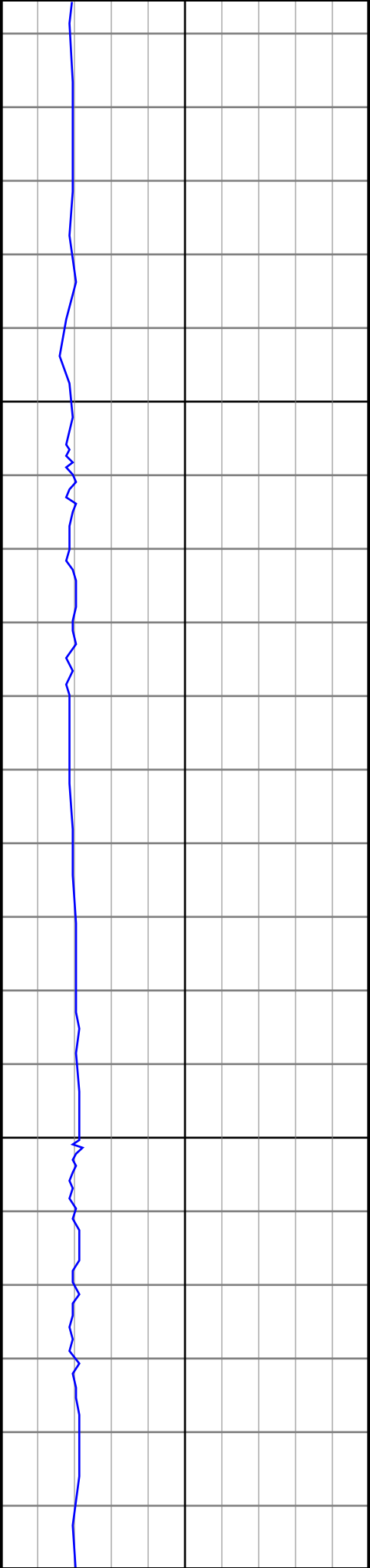
2900

3000



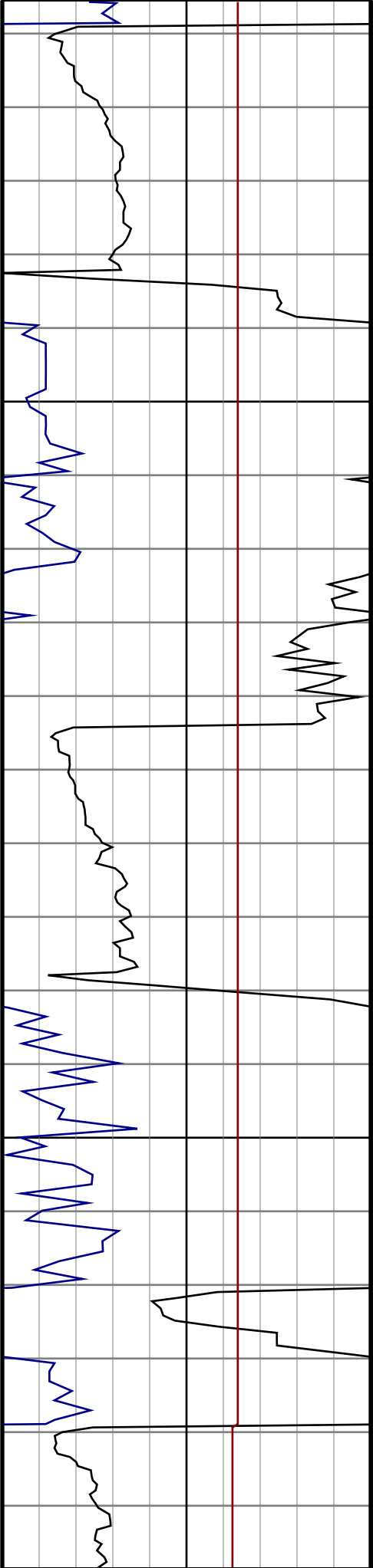
#26 MD(2899.00) Inc(8.6) Azm(108.9) TVD(2894.85)  
VS(24.37) NS(-2.57) EW(101.74)

#27 MD(2994.00) Inc(10.6) Azm(105.7) TVD(2988.52)  
VS(23.86) NS(-7.23) EW(116.88)



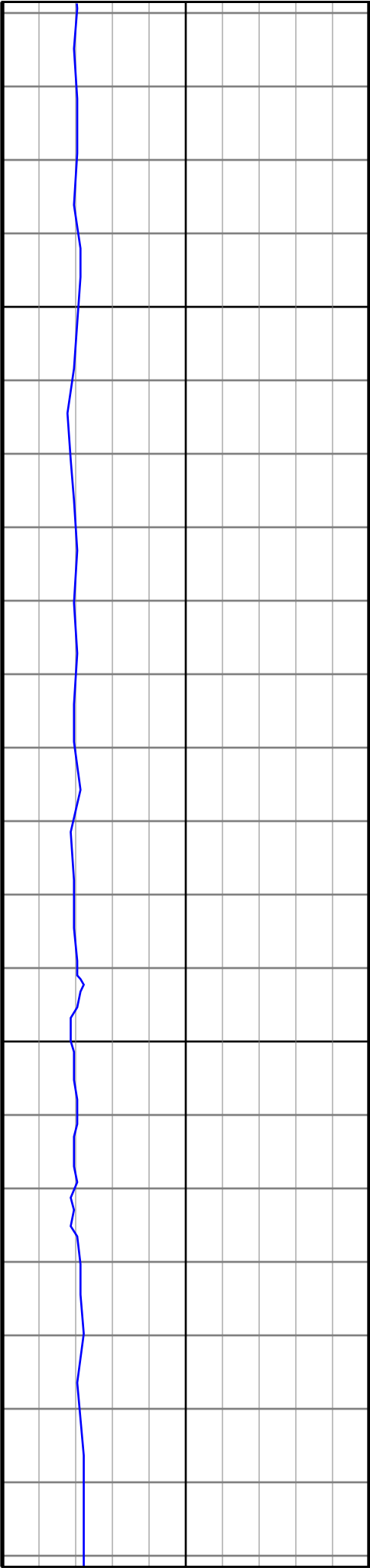
3100

3200



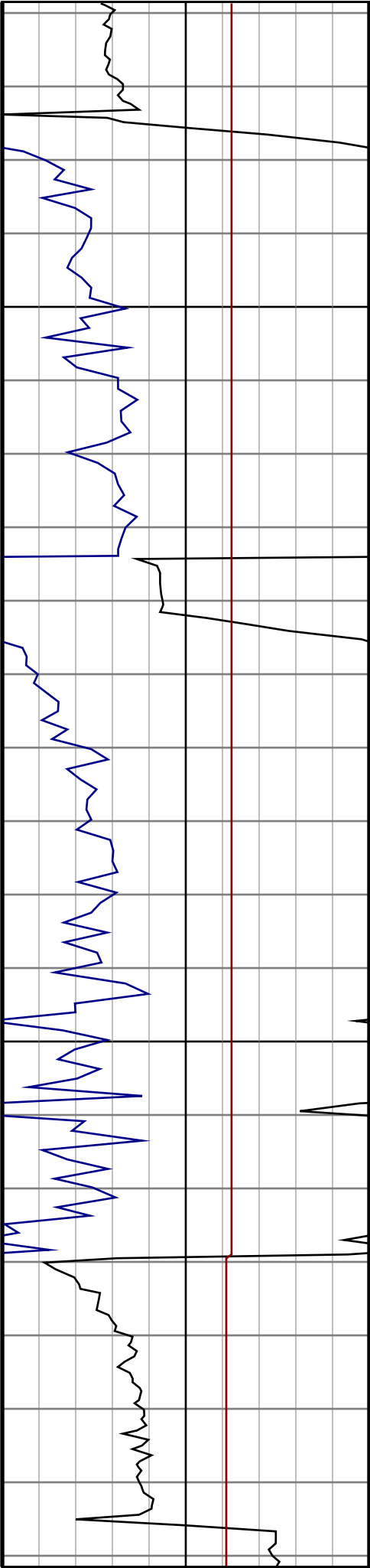
#28 MD(3089.00) Inc(12.3) Azm(104.7) TVD(3081.62)  
VS(23.91) NS(-12.17) EW(135.08)

#29 MD(3185.00) Inc(14.3) Azm(102.7) TVD(3175.05)  
VS(24.55) NS(-17.37) EW(156.54)



3300

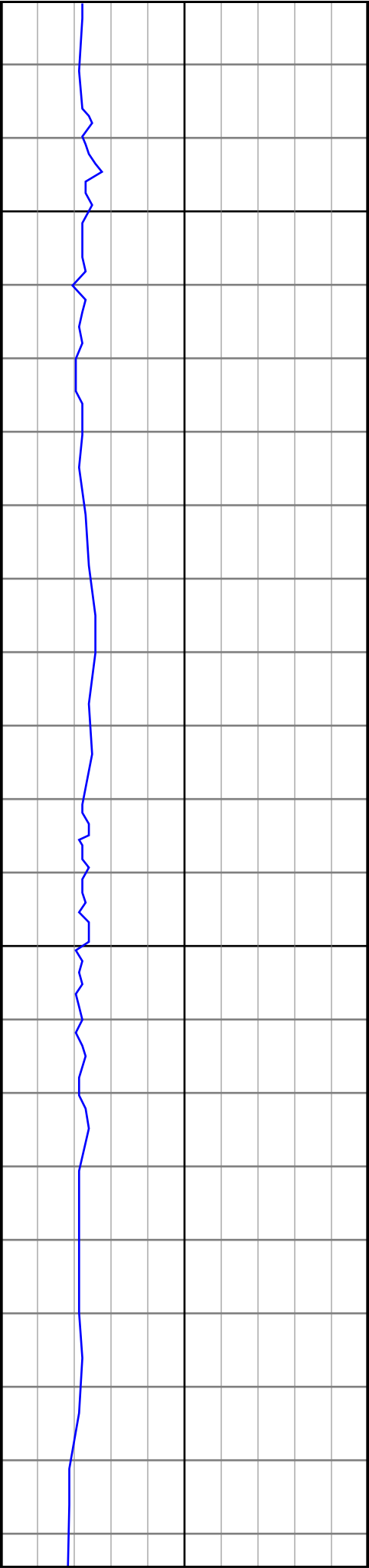
3400



#30 MD(3280.00) Inc(15.3) Azm(101.7) TVD(3266.89)  
VS(25.87) NS(-22.49) EW(180.26)

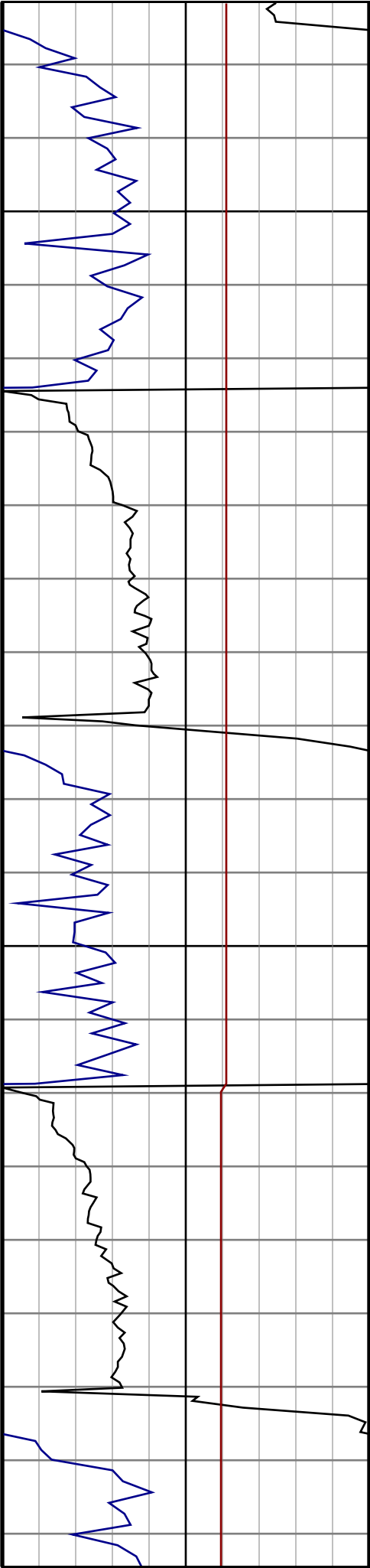
#31 MD(3375.00) Inc(13.4) Azm(99.4) TVD(3358.93)  
VS(27.79) NS(-26.83) EW(203.39)

#32 MD(3470.00) Inc(14.1) Azm(98.5) TVD(3451.20)  
VS(30.29) NS(-30.34) EW(225.70)



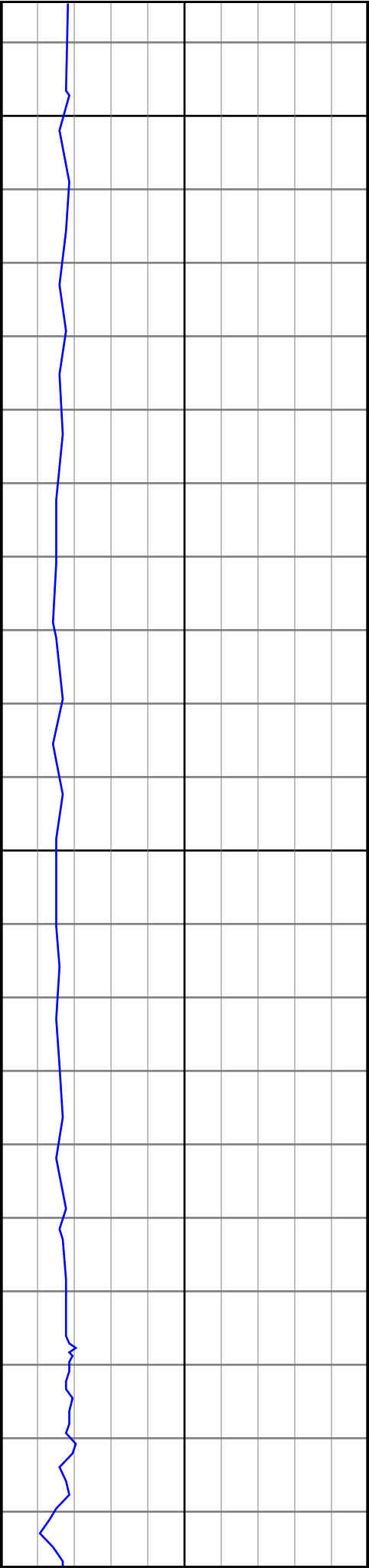
3500

3600



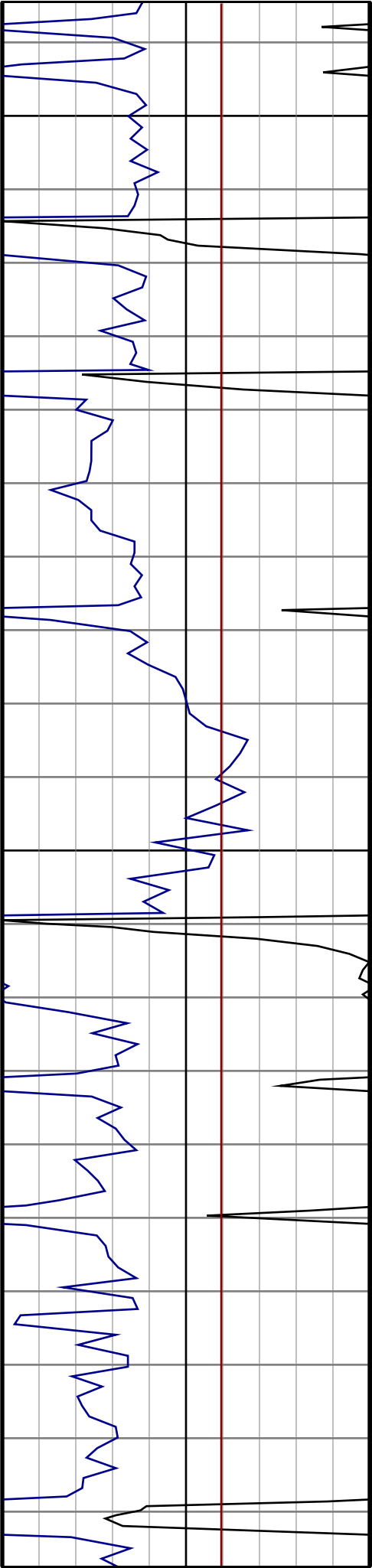
#33 MD(3566.00) Inc(15.8) Azm(97.5) TVD(3543.95)  
VS(33.45) NS(-33.77) EW(250.22)

#34 MD(3661.00) Inc(17.6) Azm(102.0) TVD(3634.94)  
VS(36.03) NS(-38.45) EW(277.10)



3700

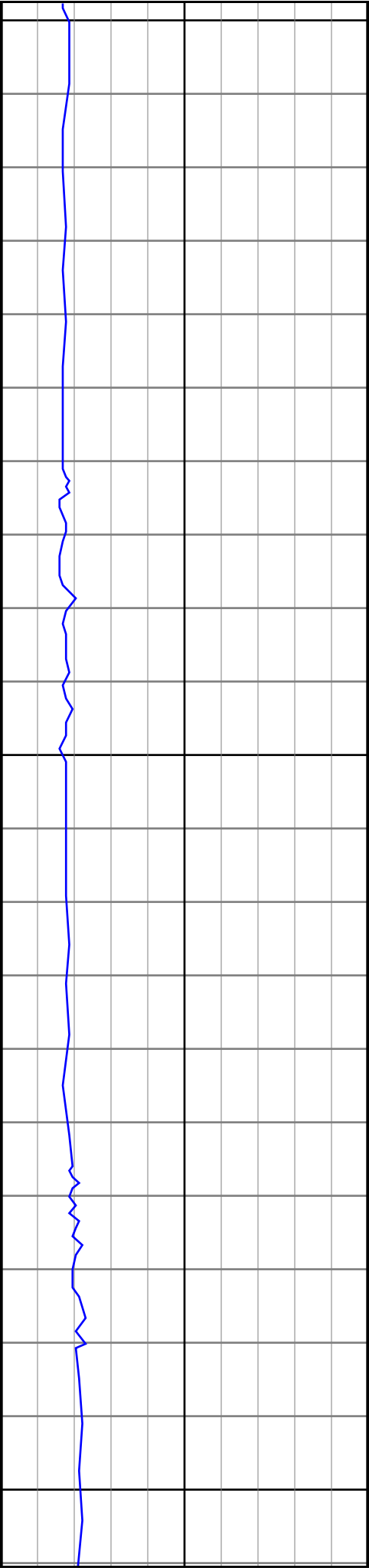
3800



#35 MD(3756.00) Inc(18.7) Azm(101.0) TVD(3725.21)  
VS(38.00) NS(-44.34) EW(306.09)

#36 MD(3851.00) Inc(19.5) Azm(100.8) TVD(3814.98)  
VS(40.39) NS(-50.22) EW(336.62)

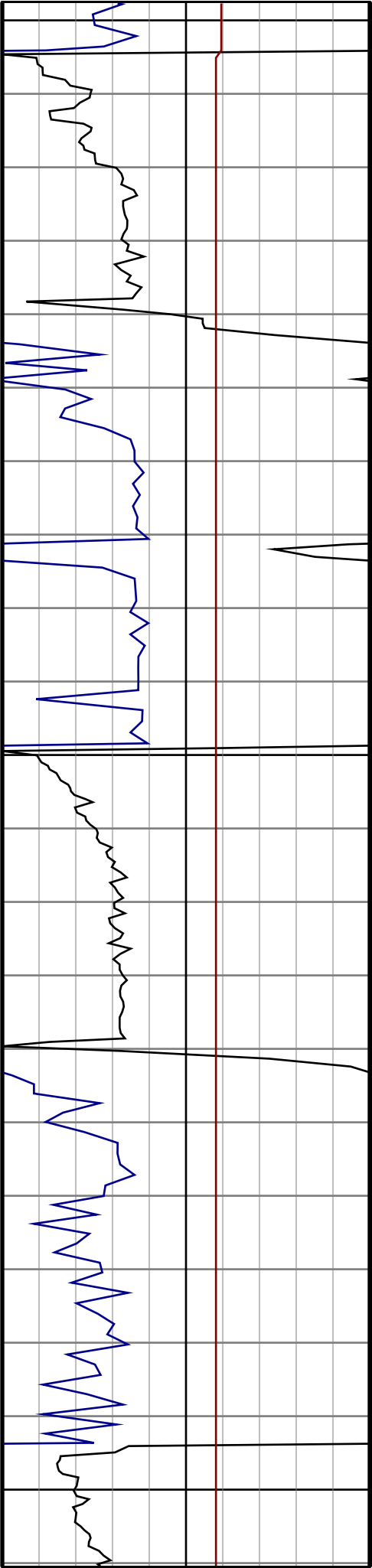




3900

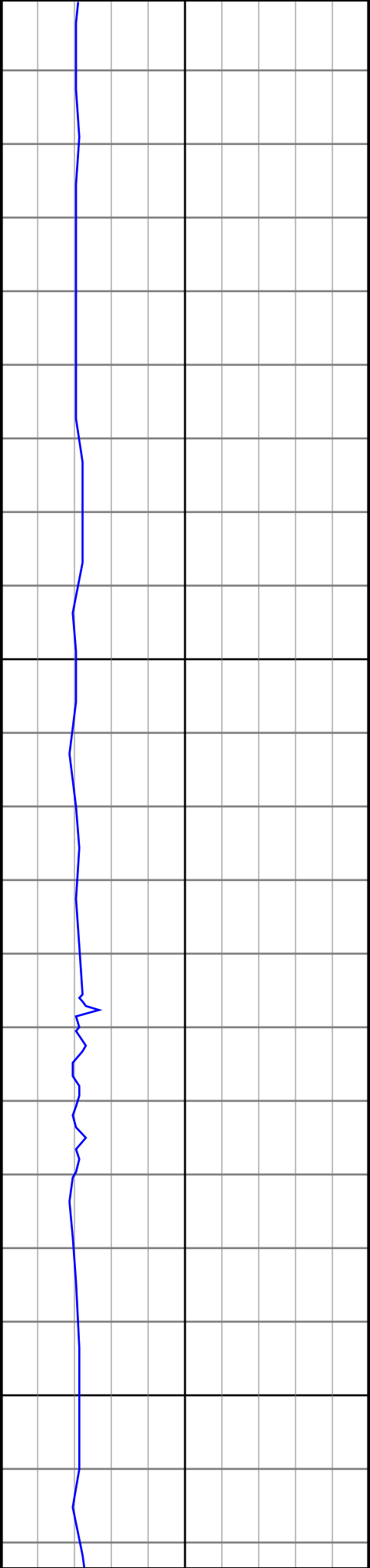
4000

4100



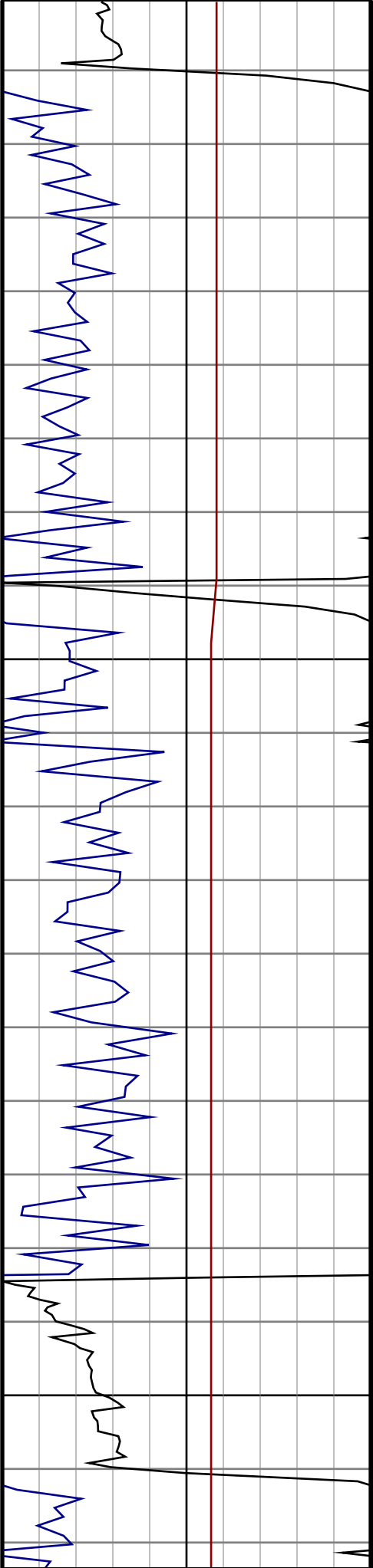
#37 MD(3946.00) Inc(18.7) Azm(104.2) TVD(3904.76)  
VS(41.92) NS(-56.92) EW(366.96)

#38 MD(4042.00) Inc(16.4) Azm(105.6) TVD(3996.28)  
VS(42.15) NS(-64.35) EW(394.94)



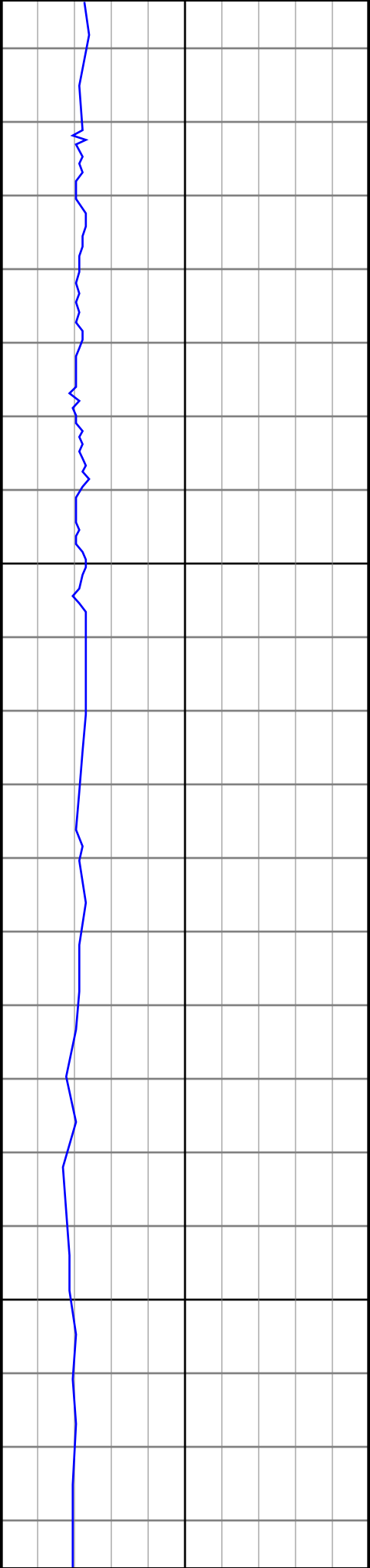
4200

4300



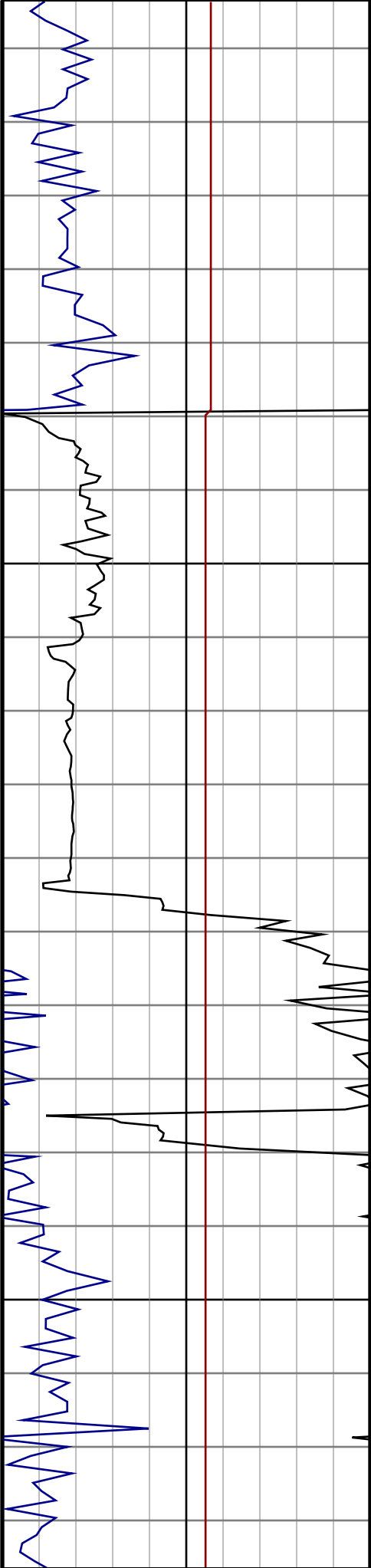
#39 MD(4137.00) Inc(14.4) Azm(103.5) TVD(4087.87)  
VS(42.45) NS(-70.71) EW(419.34)

#40 MD(4232.00) Inc(14.3) Azm(102.0) TVD(4179.90)  
VS(43.50) NS(-75.91) EW(442.30)



4400

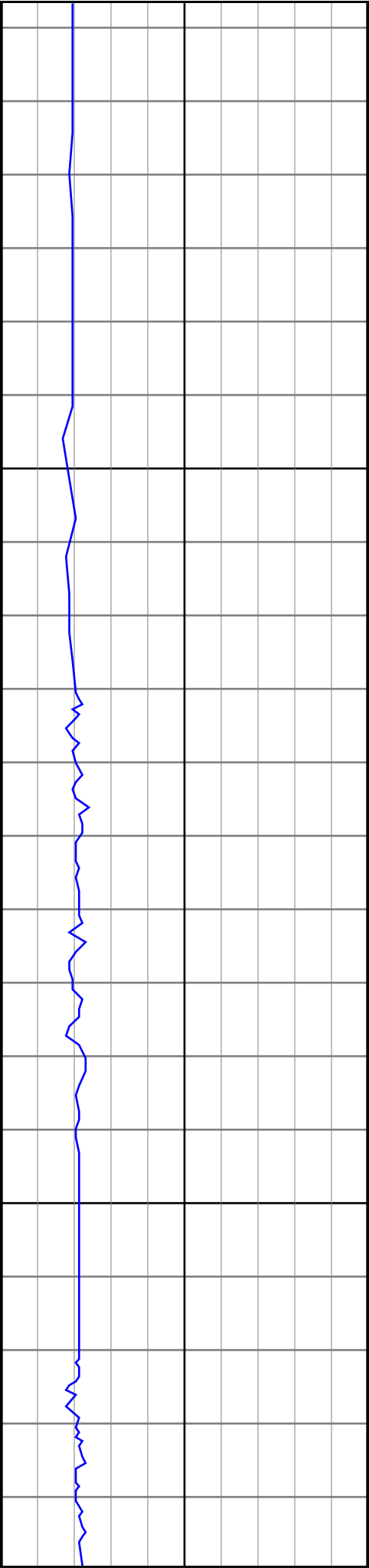
4500



#41 MD(4327.00) Inc(14.3) Azm(104.0) TVD(4271.96)  
VS(44.44) NS(-81.18) EW(465.16)

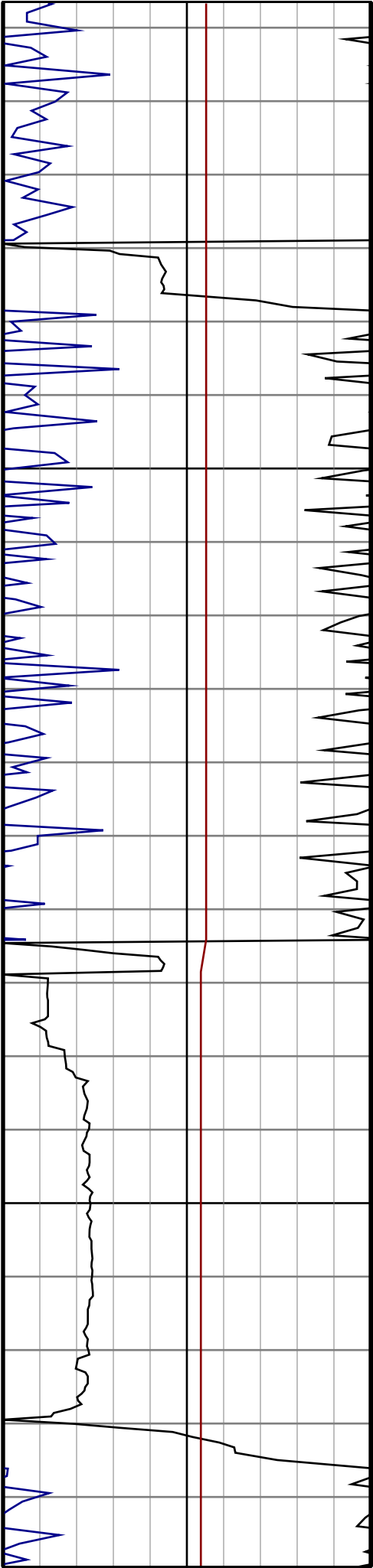
#42 MD(4422.00) Inc(15.0) Azm(104.5) TVD(4363.87)  
VS(44.87) NS(-87.10) EW(488.45)

#43 MD(4517.00) Inc(15.1) Azm(102.9) TVD(4455.61)  
VS(45.56) NS(-92.94) EW(512.42)



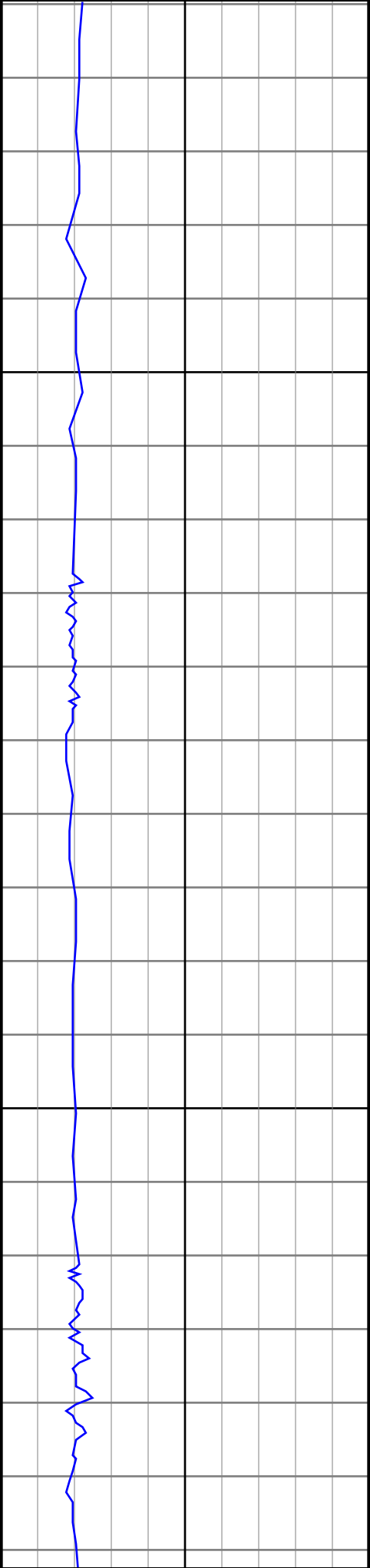
4600

4700



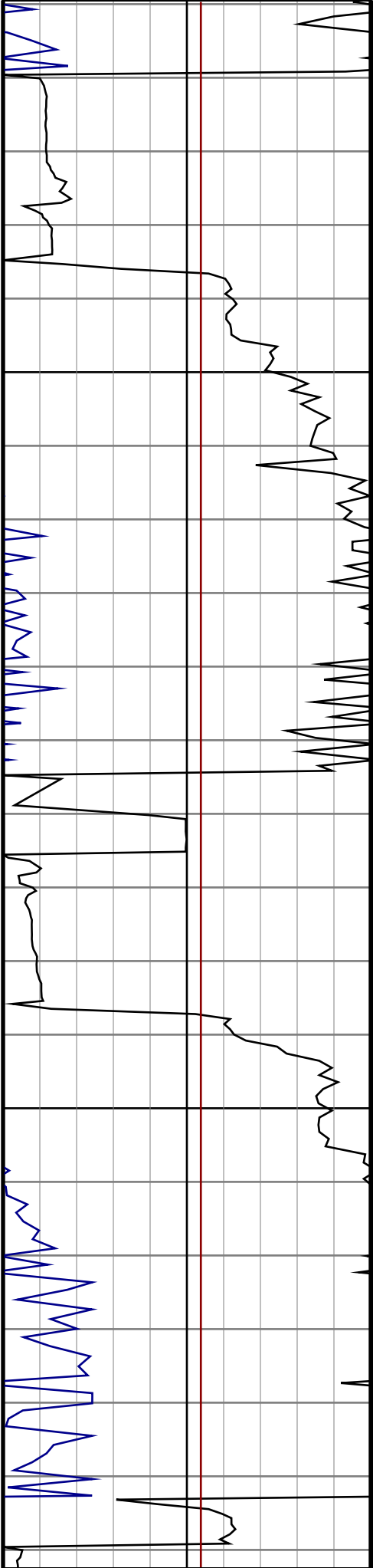
#44 MD(4613.00) Inc(13.9) Azm(103.3) TVD(4548.55)  
VS(46.49) NS(-98.39) EW(535.83)

#45 MD(4708.00) Inc(15.1) Azm(101.0) TVD(4640.53)  
VS(47.82) NS(-103.37) EW(559.08)



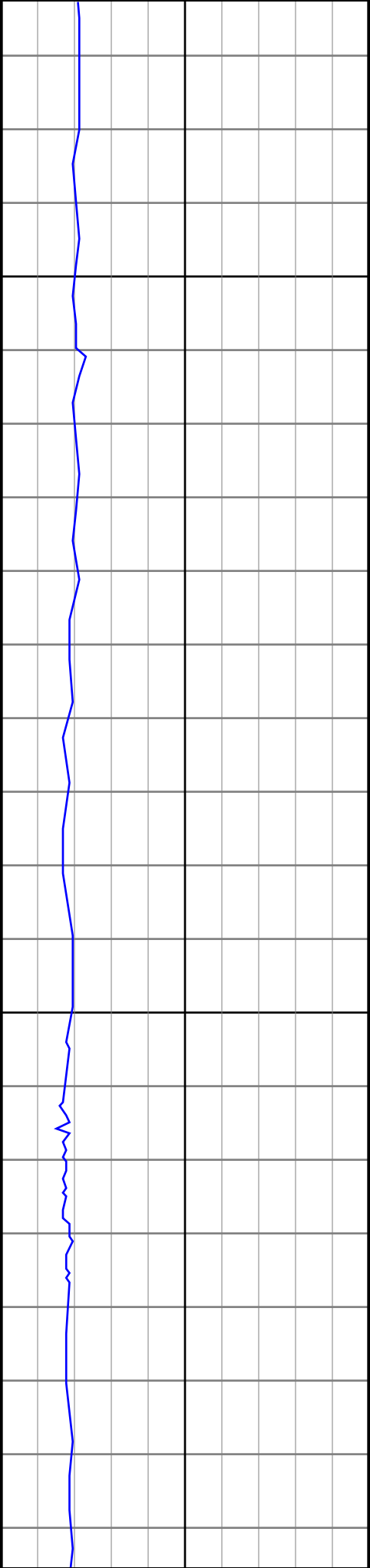
4800

4900



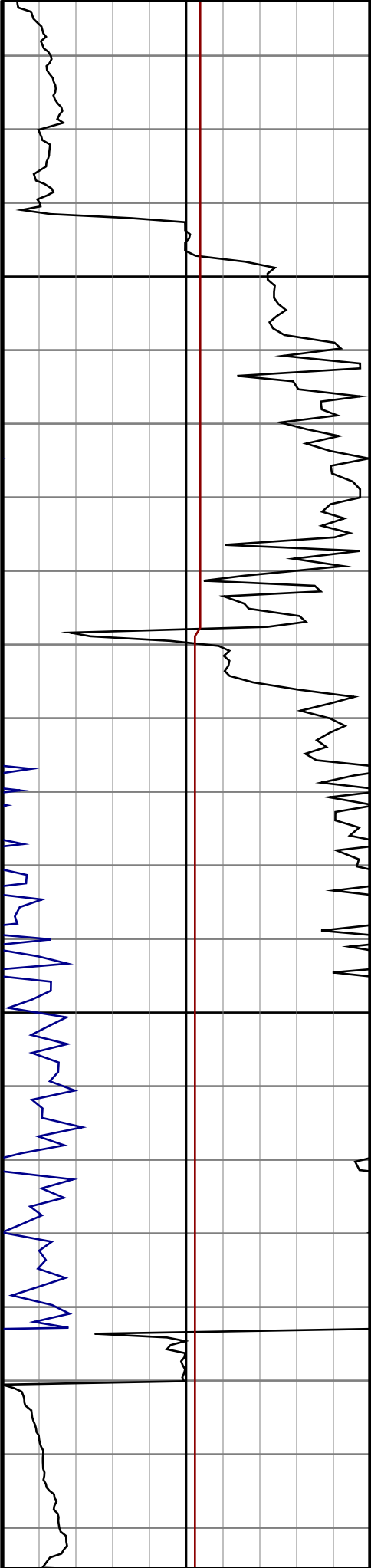
#46 MD(4803.00) Inc(15.7) Azm(99.6) TVD(4732.12)  
VS(50.02) NS(-107.88) EW(583.90)

#47 MD(4898.00) Inc(15.7) Azm(98.0) TVD(4823.57)  
VS(52.93) NS(-111.81) EW(609.30)



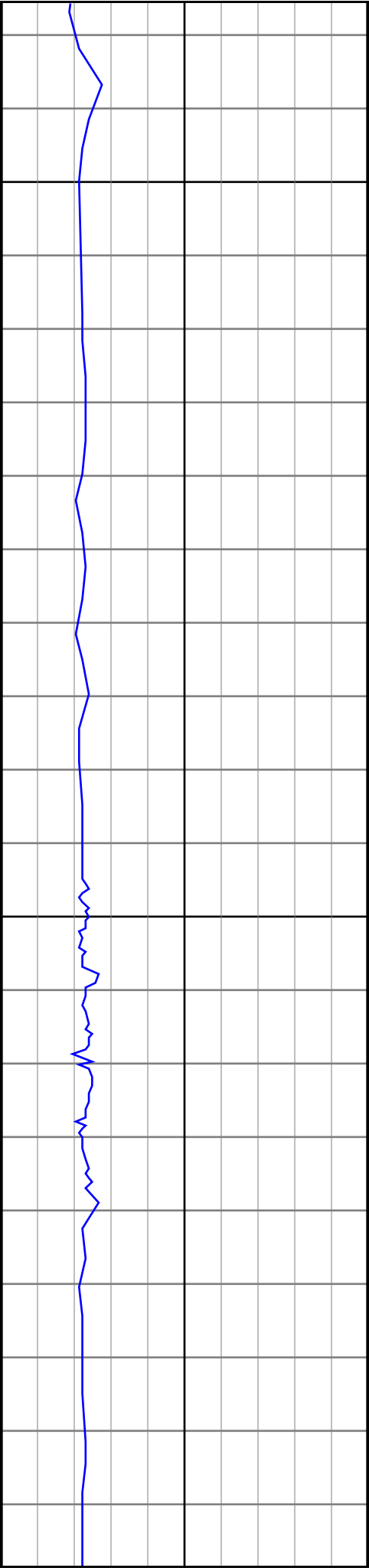
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5100



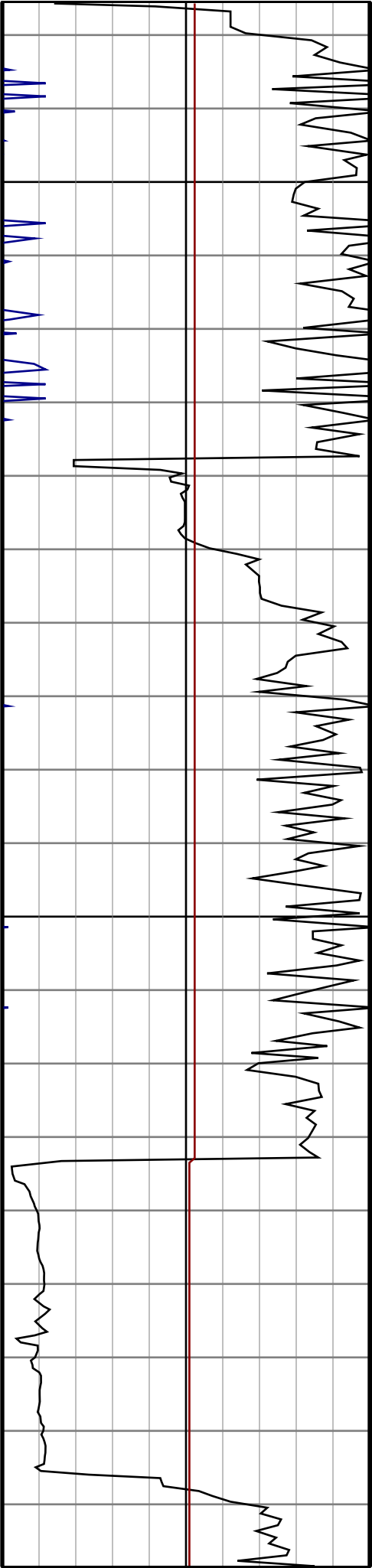
#48 MD(4993.00) Inc(16.9) Azm(98.9) TVD(4914.75)  
VS(56.10) NS(-115.74) EW(635.67)

#49 MD(5088.00) Inc(16.2) Azm(96.8) TVD(5005.82)  
VS(59.60) NS(-119.44) EW(662.47)



5200

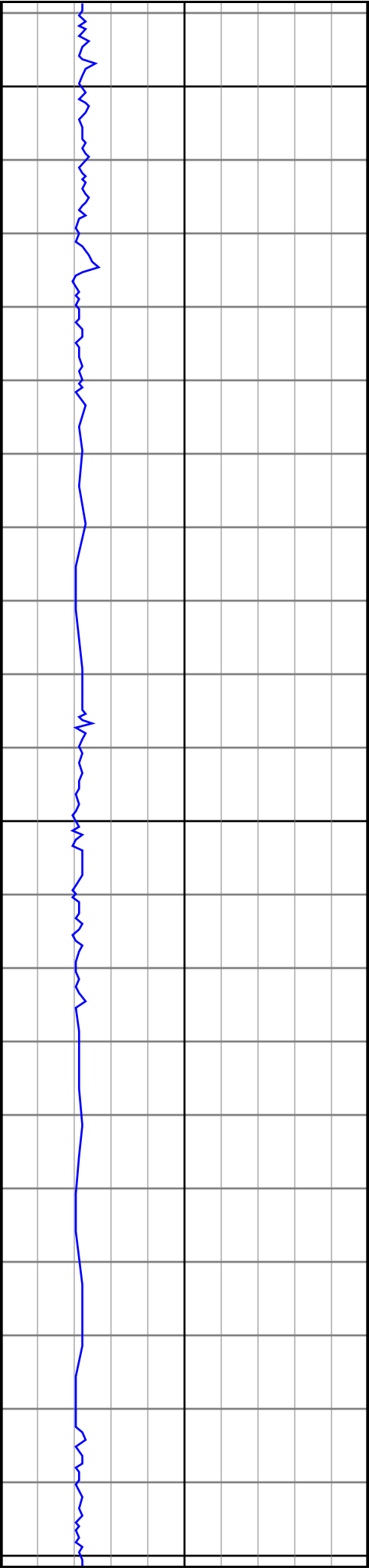
5300



#50 MD(5183.00) Inc(16.4) Azm(98.9) TVD(5097.00)  
VS(63.06) NS(-123.08) EW(688.88)

#51 MD(5279.00) Inc(13.5) Azm(97.8) TVD(5189.74)  
VS(66.03) NS(-126.70) EW(713.38)

#52 MD(5374.00) Inc(13.5) Azm(104.2) TVD(5282.12)  
VS(67.69) NS(-130.93) EW(735.12)



5400

5500

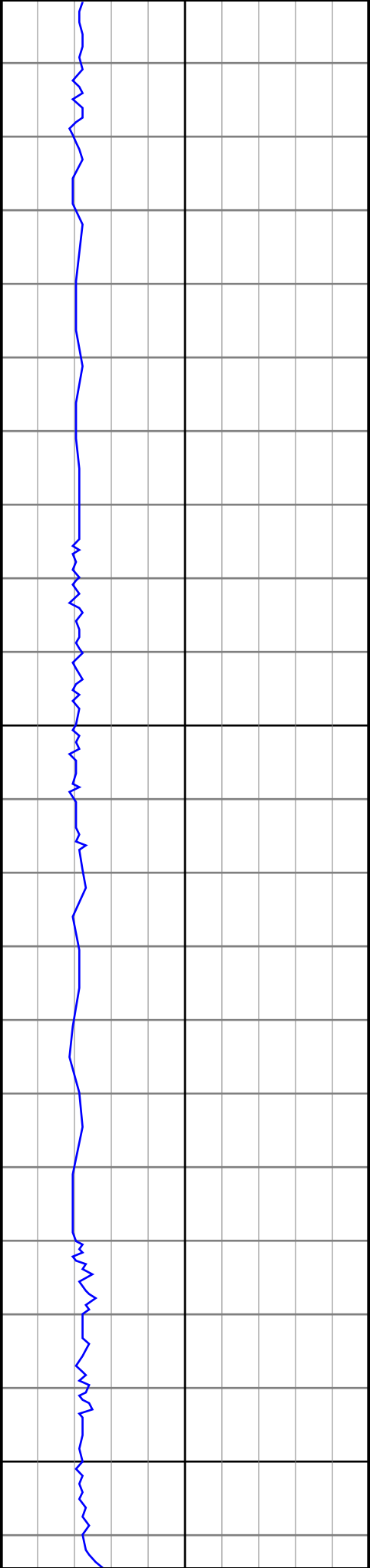
5600



#53 MD(5469.00) Inc(14.3) Azm(101.2) TVD(5374.34)  
VS(68.74) NS(-135.93) EW(757.38)

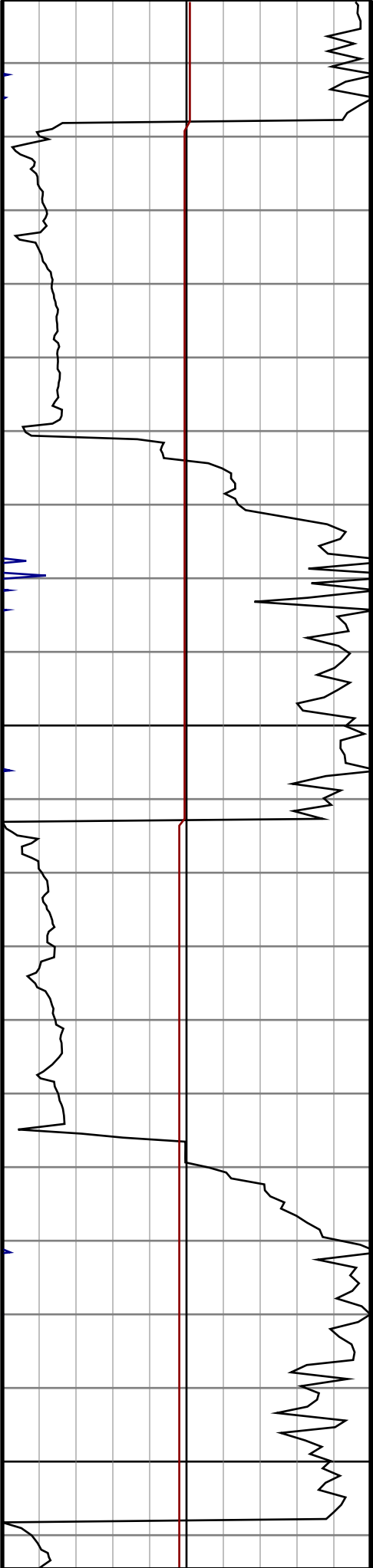
#54 MD(5564.00) Inc(14.6) Azm(102.2) TVD(5466.33)  
VS(70.23) NS(-140.74) EW(780.59)





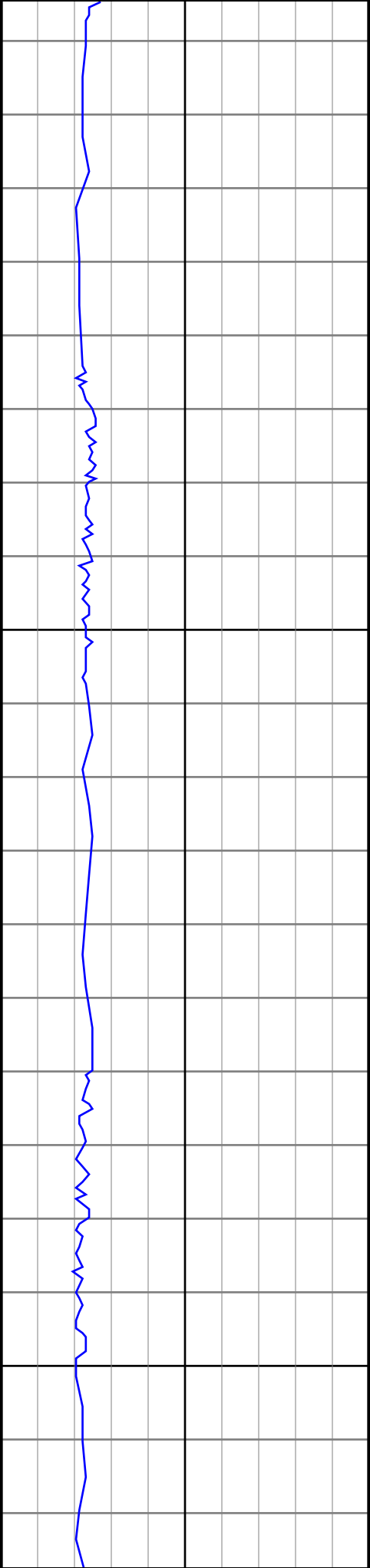
5700

5800



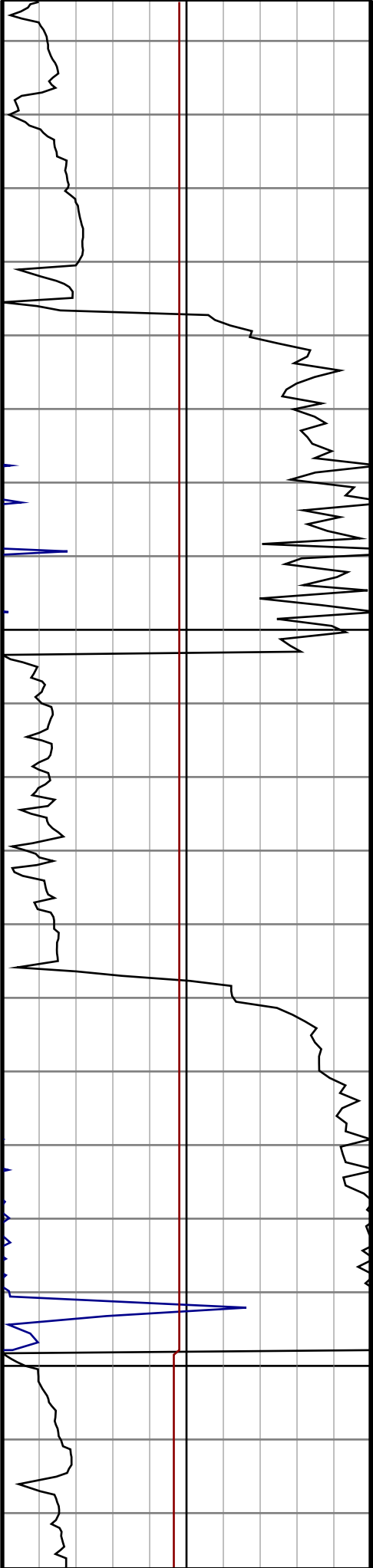
#55 MD(5659.00) Inc(15.0) Azm(100.8) TVD(5558.18)  
VS(71.84) NS(-145.57) EW(804.37)

#56 MD(5755.00) Inc(15.1) Azm(100.8) TVD(5650.89)  
VS(73.80) NS(-150.24) EW(828.85)



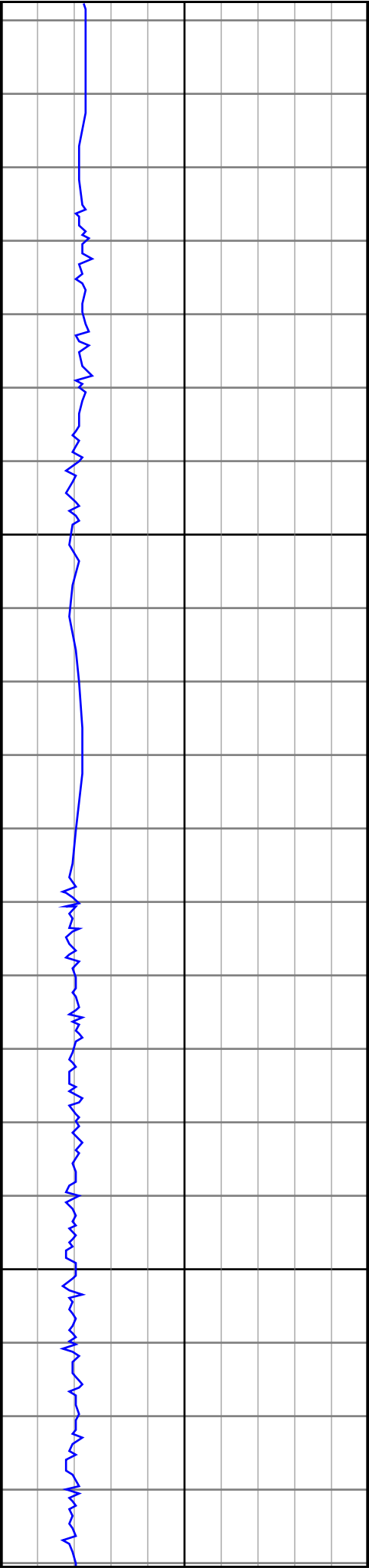
5900

6000



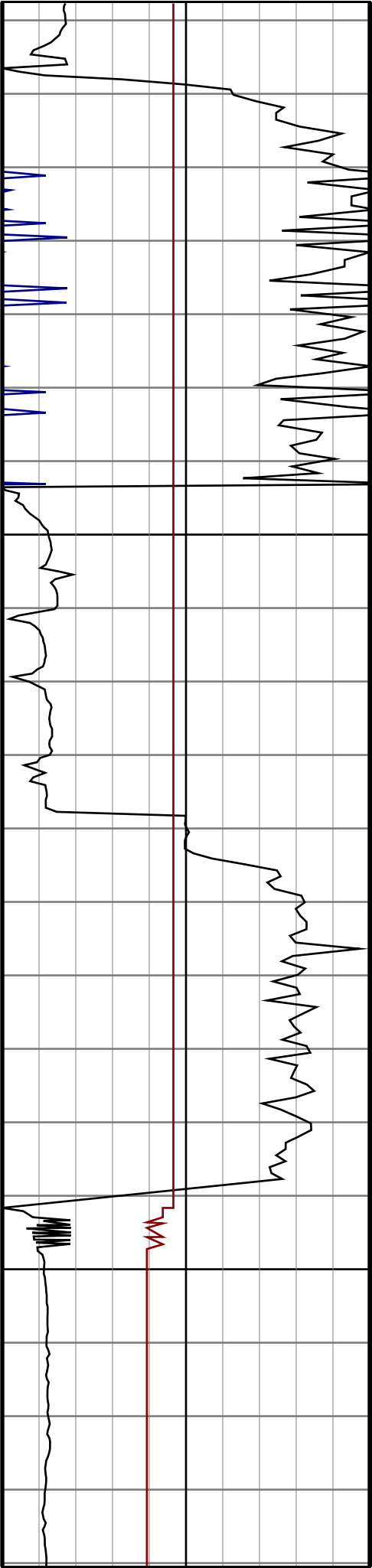
#57 MD(5850.00) Inc(16.0) Azm(100.1) TVD(5742.41)  
VS(75.95) NS(-154.86) EW(853.90)

#58 MD(5945.00) Inc(16.2) Azm(97.8) TVD(5833.69)  
VS(78.87) NS(-158.95) EW(879.92)



6100

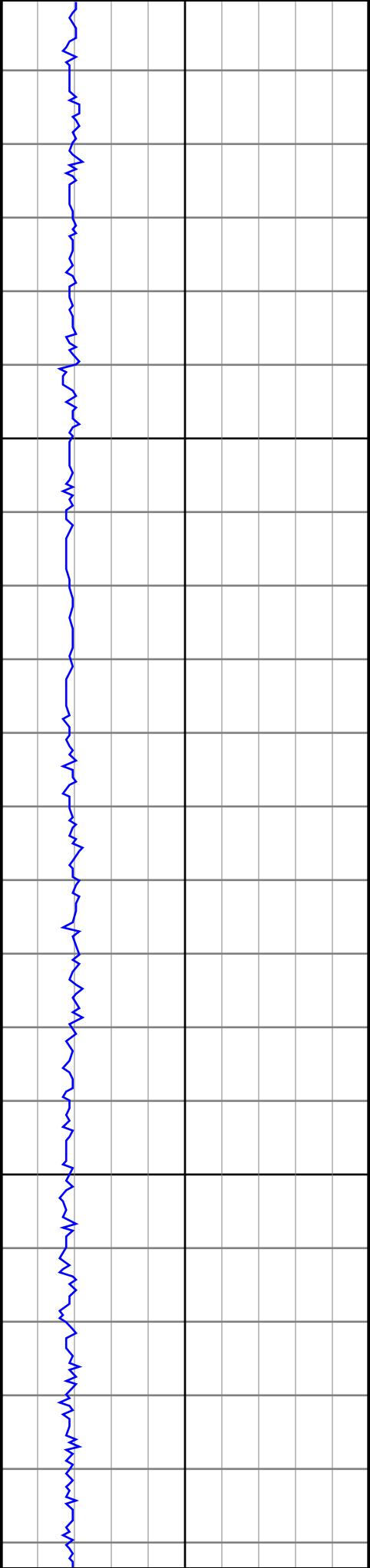
6200



#59 MD(6040.00) Inc(15.8) Azm(99.1) TVD(5925.01)  
VS(82.00) NS(-162.79) EW(905.82)

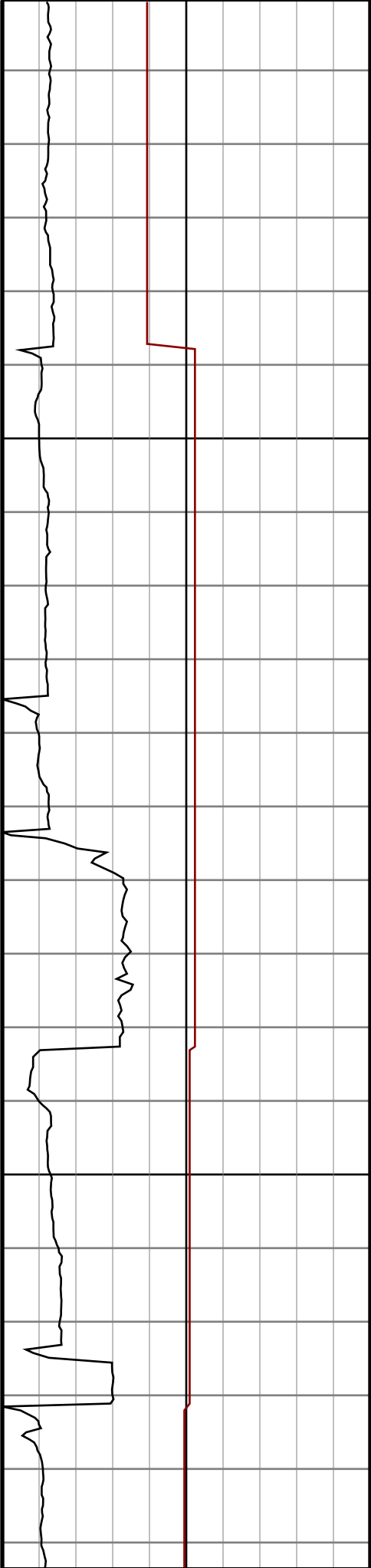
#60 MD(6135.00) Inc(15.7) Azm(98.5) TVD(6016.44)  
VS(84.91) NS(-166.74) EW(931.30)

#61 MD(6225.00) Inc(17.6) Azm(88.5) TVD(6102.68)  
VS(90.29) NS(-168.18) EW(956.95)



6300

6400

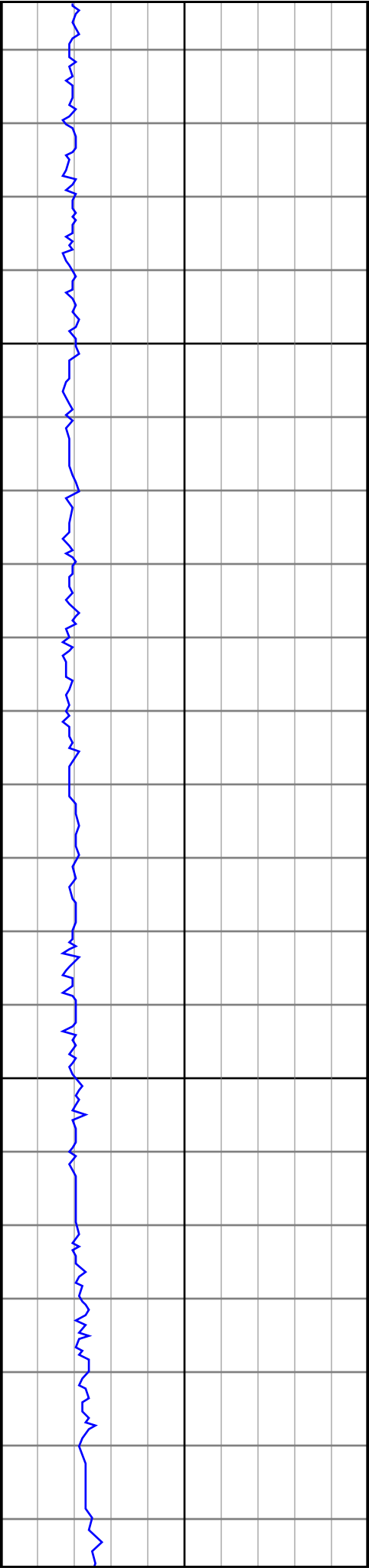


#62 MD(6272.00) Inc(23.0) Azm(79.2) TVD(6146.76)  
VS(96.39) NS(-166.28) EW(973.09)

#63 MD(6320.00) Inc(28.8) Azm(77.8) TVD(6189.92)  
VS(105.86) NS(-162.07) EW(993.62)

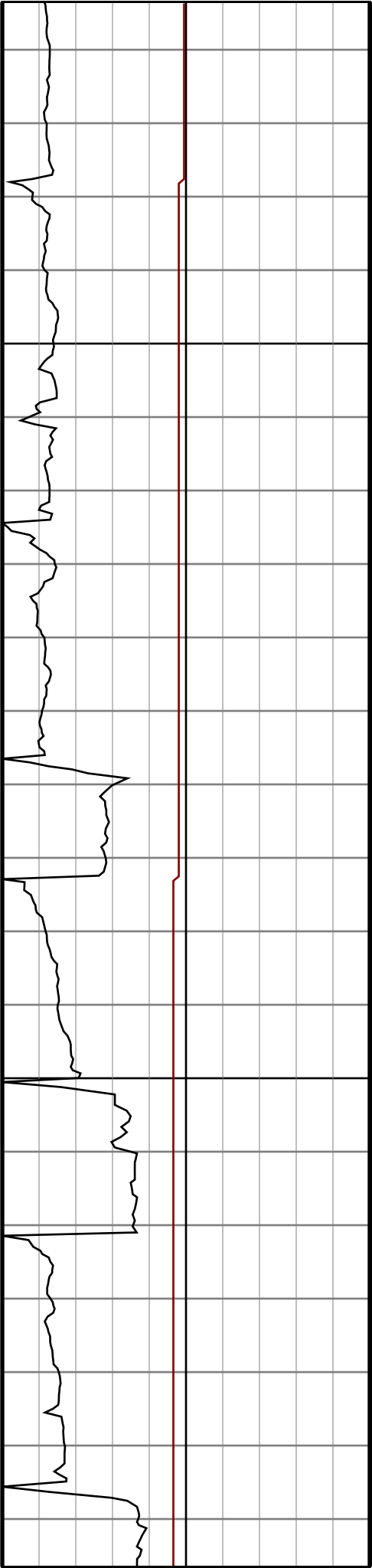
#64 MD(6368.00) Inc(31.7) Azm(76.4) TVD(6231.38)  
VS(117.30) NS(-156.66) EW(1017.19)

#65 MD(6415.00) Inc(34.1) Azm(69.6) TVD(6270.85)  
VS(130.96) NS(-149.16) EW(1041.55)



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6600



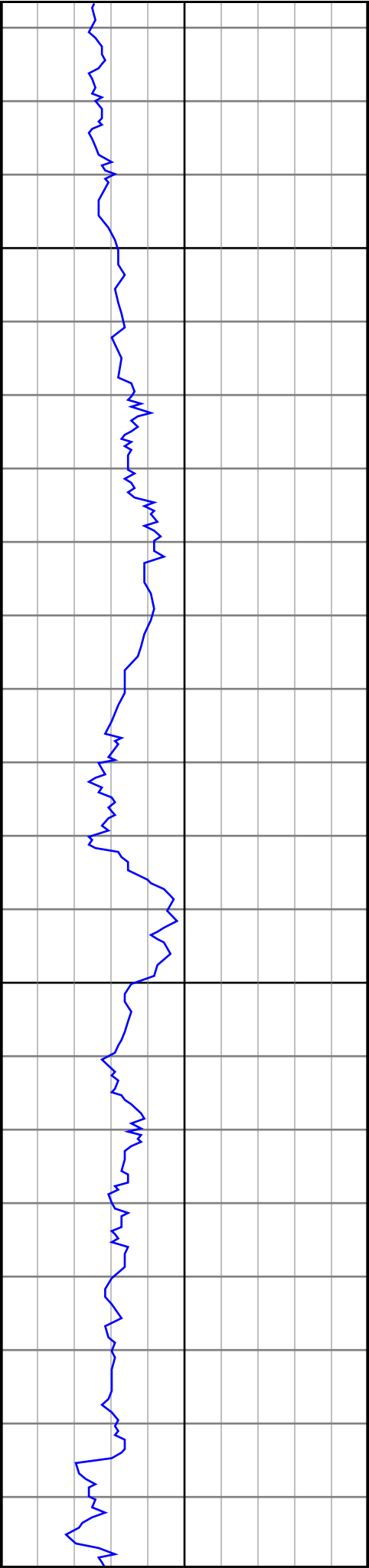
#66 MD(6463.00) Inc(35.9) Azm(59.9) TVD(6310.20)  
VS(148.85) NS(-137.40) EW(1066.36)

#67 MD(6510.00) Inc(38.7) Azm(49.8) TVD(6347.62)  
VS(170.80) NS(-120.99) EW(1089.53)

#68 MD(6558.00) Inc(42.3) Azm(42.8) TVD(6384.13)  
VS(197.51) NS(-99.44) EW(1111.98)

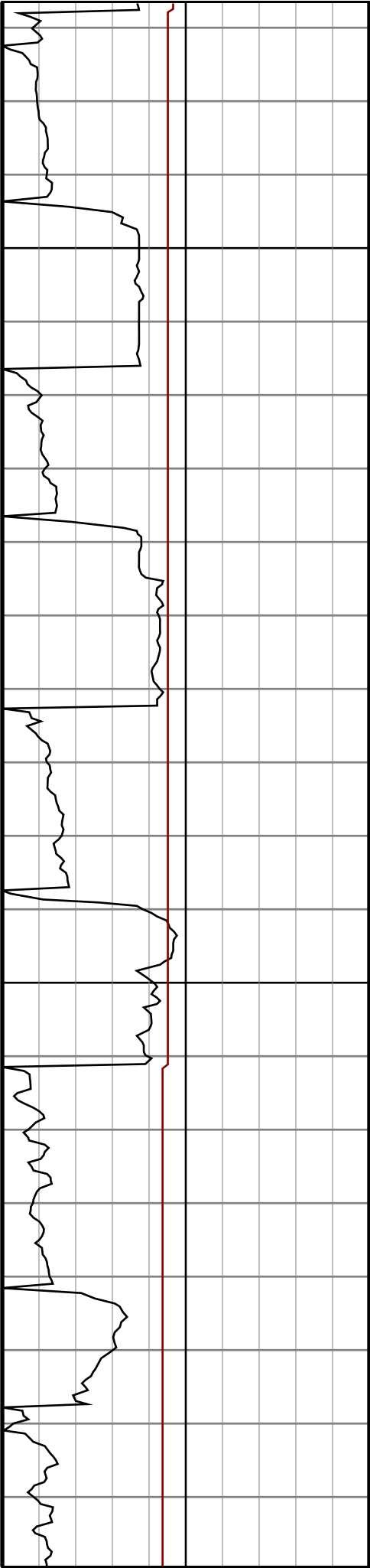
#69 MD(6605.00) Inc(45.3) Azm(39.1) TVD(6418.05)  
VS(226.84) NS(-74.86) EW(1133.27)

#70 MD(6653.00) Inc(48.9) Azm(35.1) TVD(6450.73)  
VS(259.48) NS(-46.81) EW(1154.44)



6700

6800

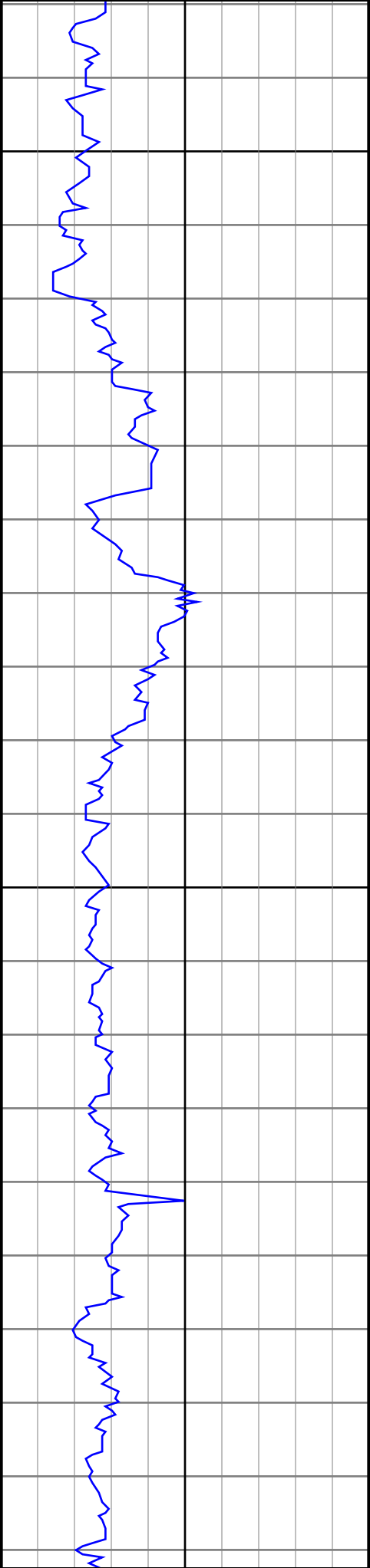


#71 MD(6701.00) Inc(52.4) Azm(33.4) TVD(6481.16)  
VS(294.58) NS(-16.13) EW(1175.32)

#72 MD(6748.00) Inc(55.5) Azm(32.8) TVD(6508.82)  
VS(330.76) NS(15.71) EW(1196.06)

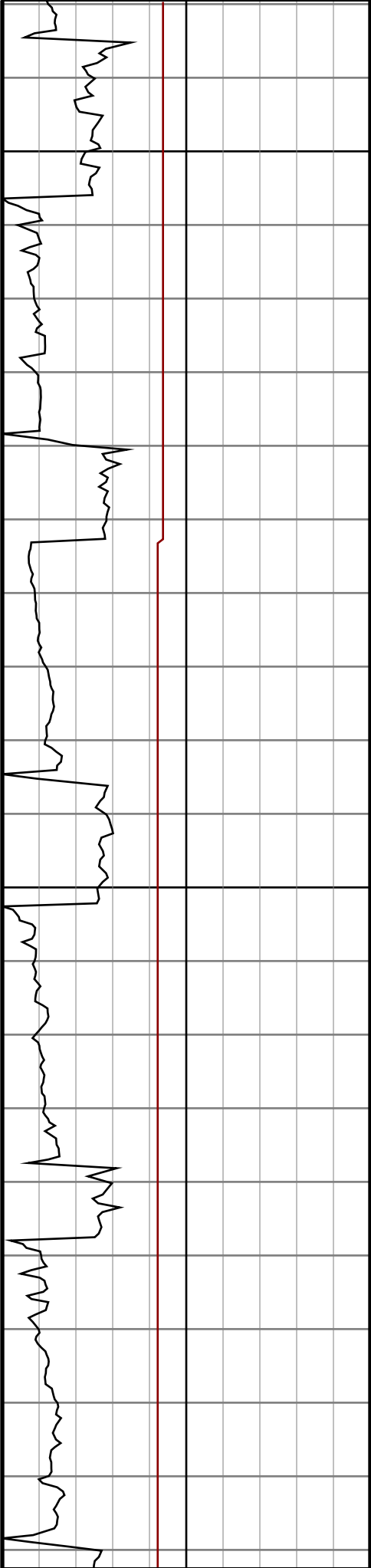
#73 MD(6796.00) Inc(59.2) Azm(31.9) TVD(6534.71)  
VS(369.39) NS(49.85) EW(1217.68)

#74 MD(6843.00) Inc(61.9) Azm(28.2) TVD(6557.82)  
VS(408.96) NS(85.27) EW(1238.15)



6900

7000



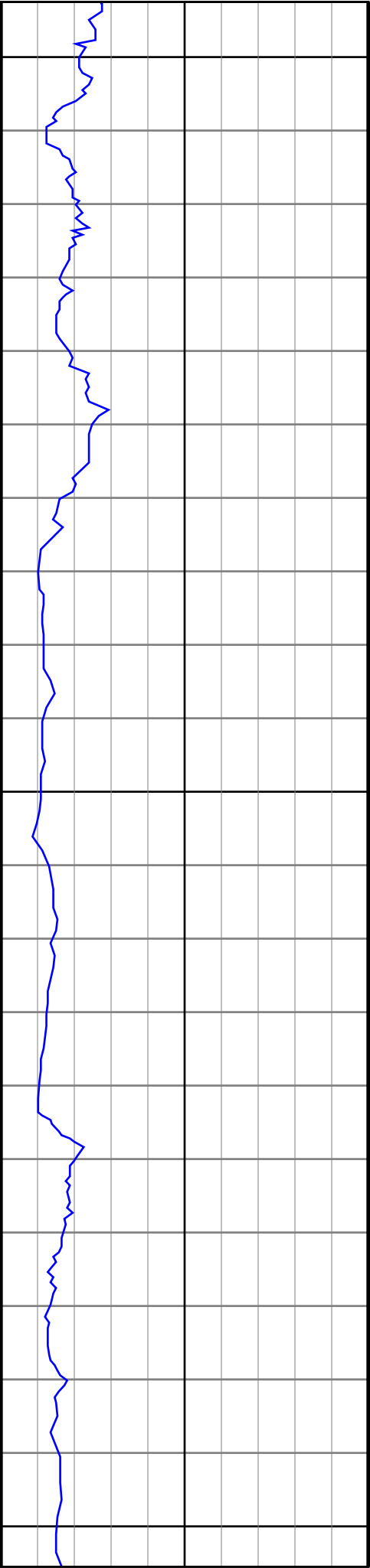
#75 MD(6891.00) Inc(63.1) Azm(23.9) TVD(6579.99)  
VS(450.78) NS(123.51) EW(1256.83)

#76 MD(6939.00) Inc(63.3) Azm(18.1) TVD(6601.65)  
VS(493.38) NS(163.48) EW(1272.18)

#77 MD(6986.00) Inc(64.4) Azm(12.7) TVD(6622.38)  
VS(535.55) NS(204.14) EW(1283.37)

#78 MD(7034.00) Inc(68.2) Azm(8.4) TVD(6641.67)  
VS(579.33) NS(247.33) EW(1291.39)

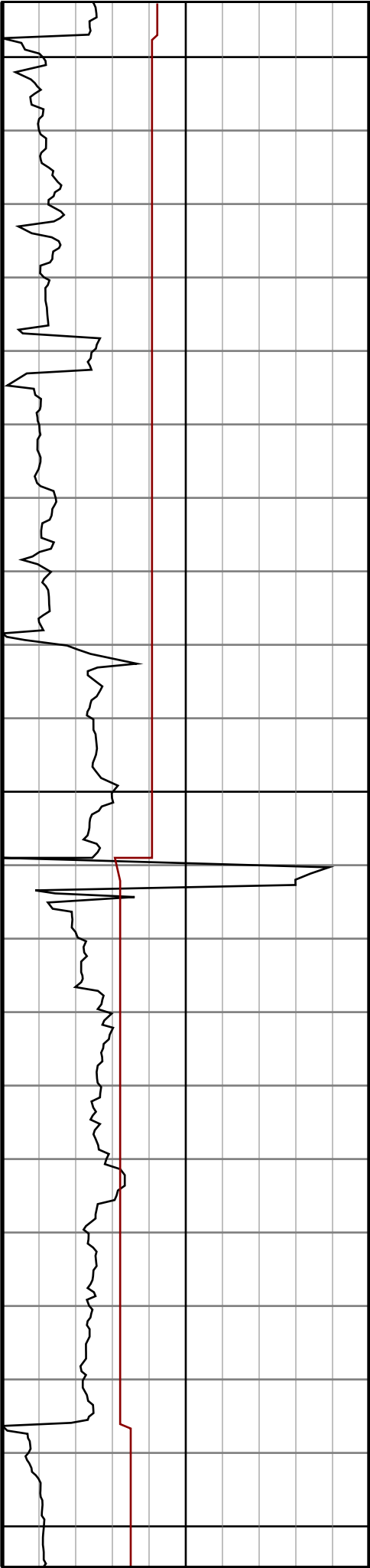
#79 MD(7081.00) Inc(72.9) Azm(5.5) TVD(6657.32)  
VS(623.16) NS(291.31) EW(1296.73)



7100

7200

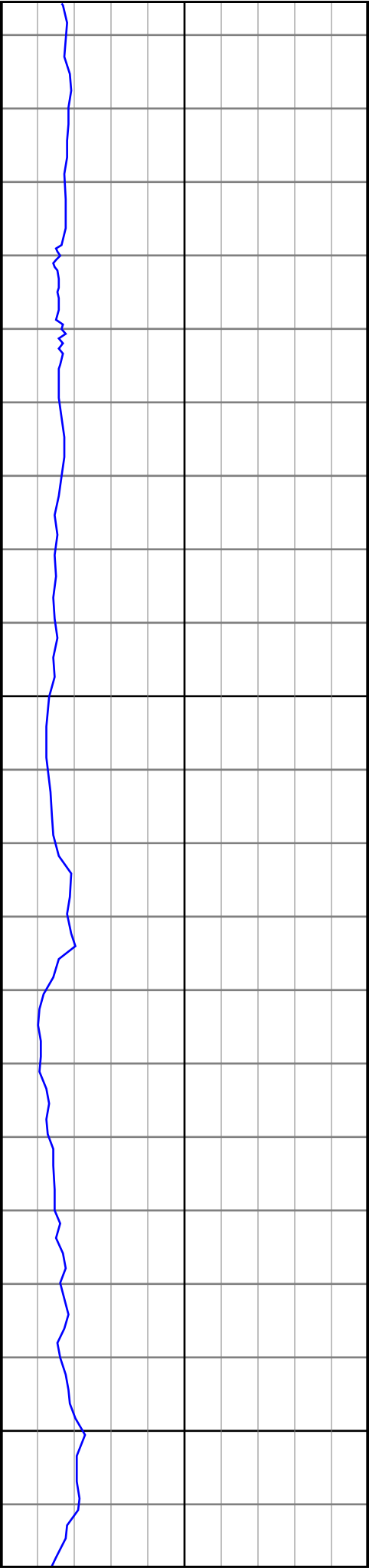
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#80 MD(7146.00) Inc(79.3) Azm(2.0) TVD(6672.93)  
VS(684.93) NS(354.23) EW(1300.83)

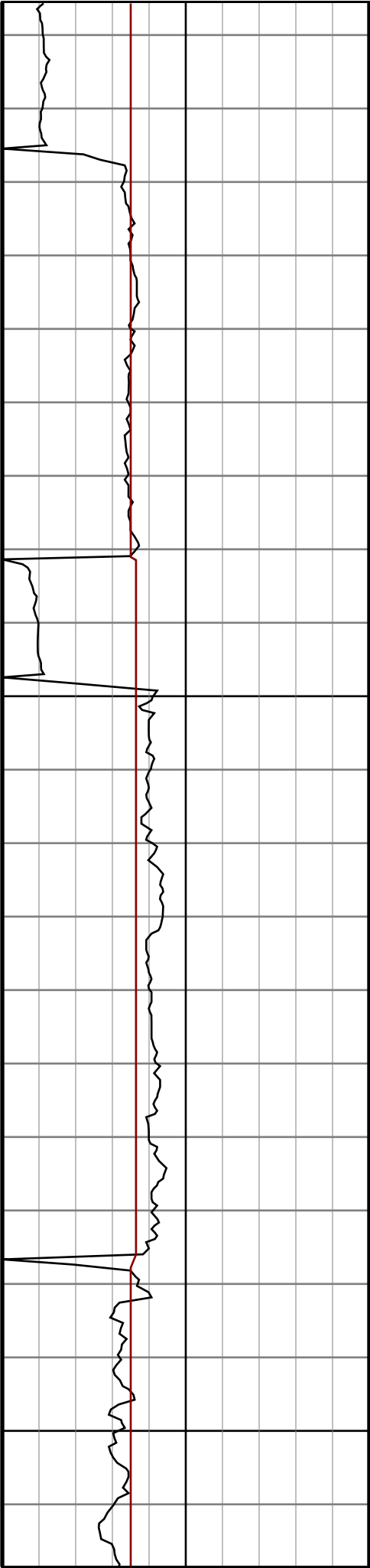
#81 MD(7231.00) Inc(83.8) Azm(1.1) TVD(6685.42)  
VS(766.57) NS(438.25) EW(1303.10)





7400

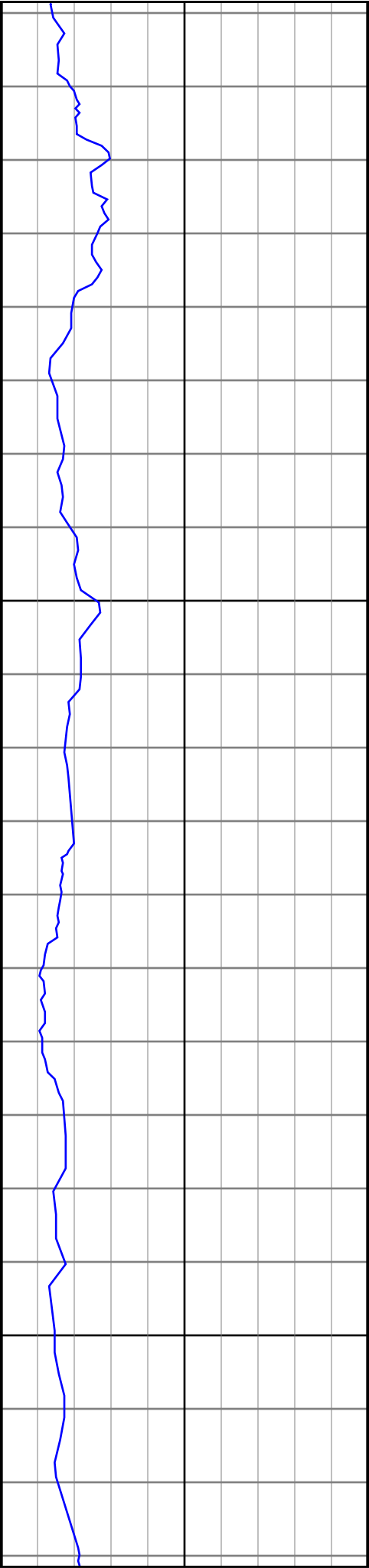
7500



#82 MD(7326.00) Inc(88.5) Azm(359.6) TVD(6691.80)  
VS(858.12) NS(533.01) EW(1303.67)

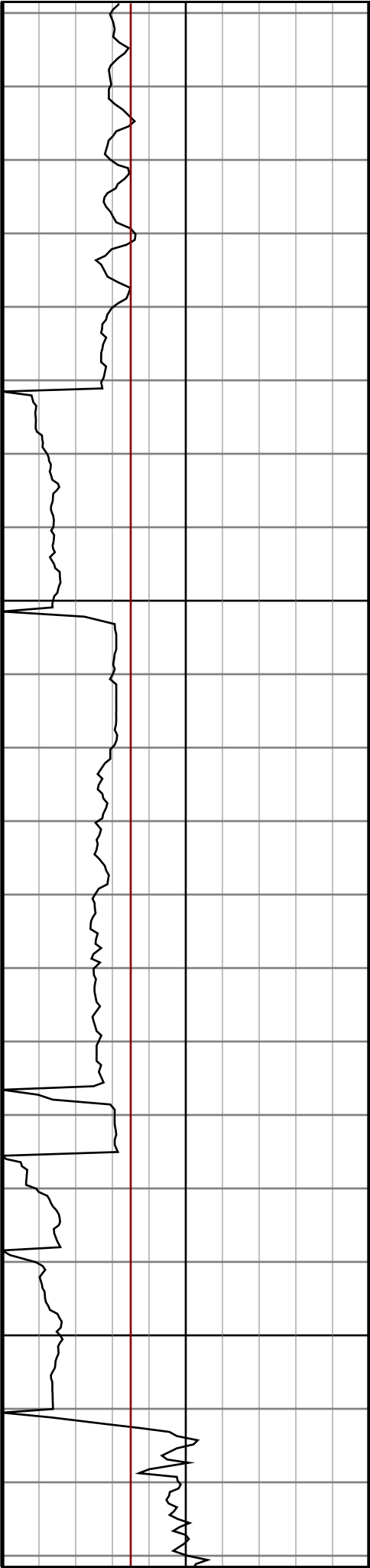
#83 MD(7422.00) Inc(91.5) Azm(359.6) TVD(6691.80)  
VS(950.53) NS(628.99) EW(1303.00)

#84 MD(7517.00) Inc(93.1) Azm(359.2) TVD(6687.99)  
VS(1041.82) NS(723.91) EW(1302.01)



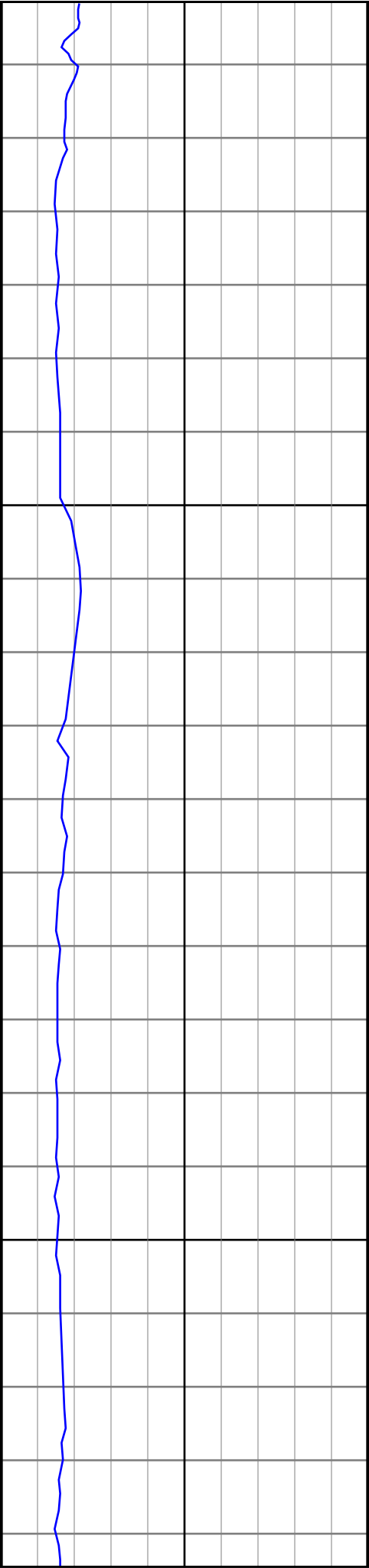
7600

7700



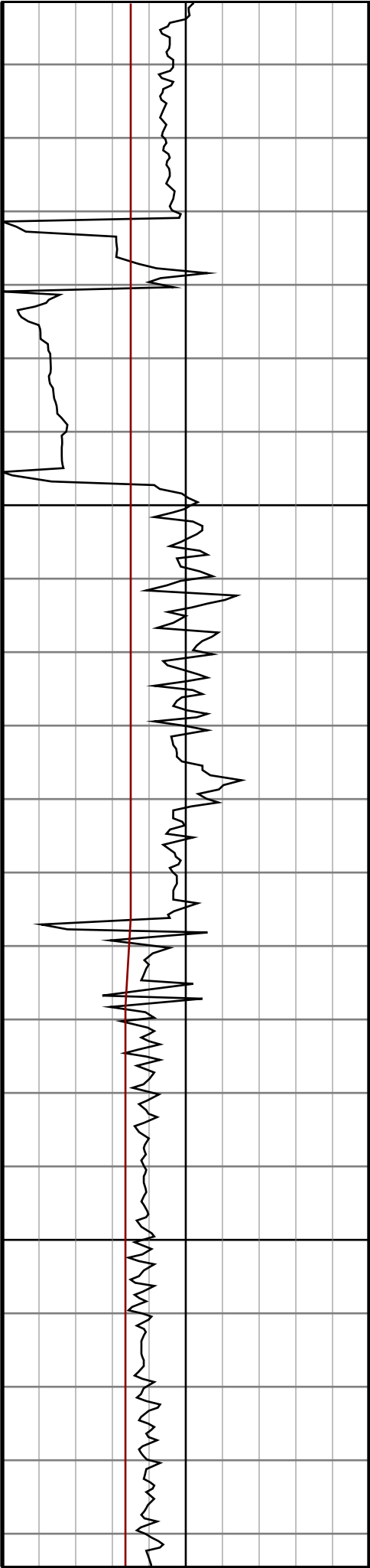
#85 MD(7612.00) Inc(91.5) Azm(358.2) TVD(6684.17)  
VS(1132.78) NS(818.80) EW(1299.85)

#86 MD(7707.00) Inc(90.8) Azm(0.8) TVD(6682.27)  
VS(1224.16) NS(913.77) EW(1299.03)



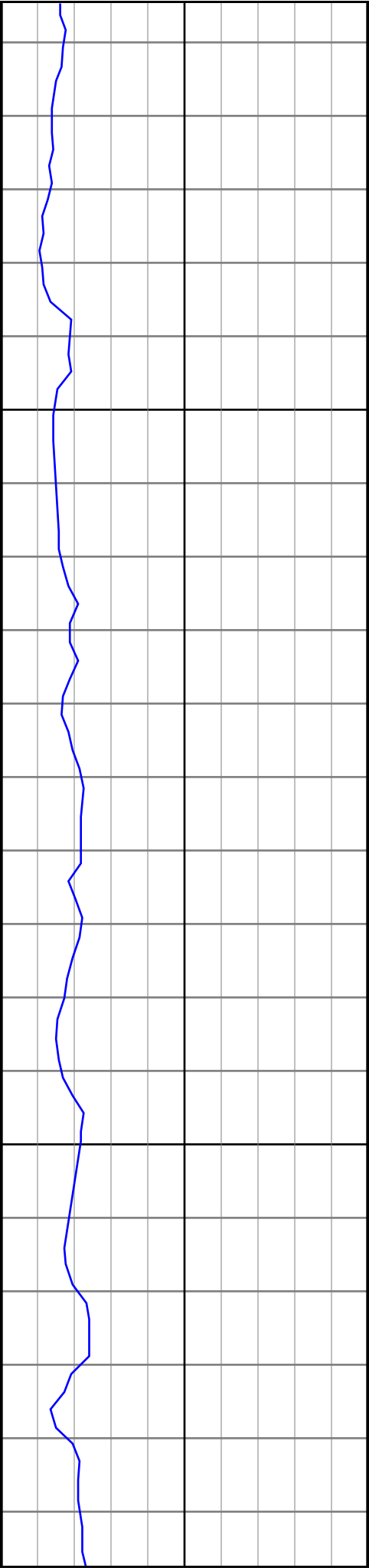
7800

7900



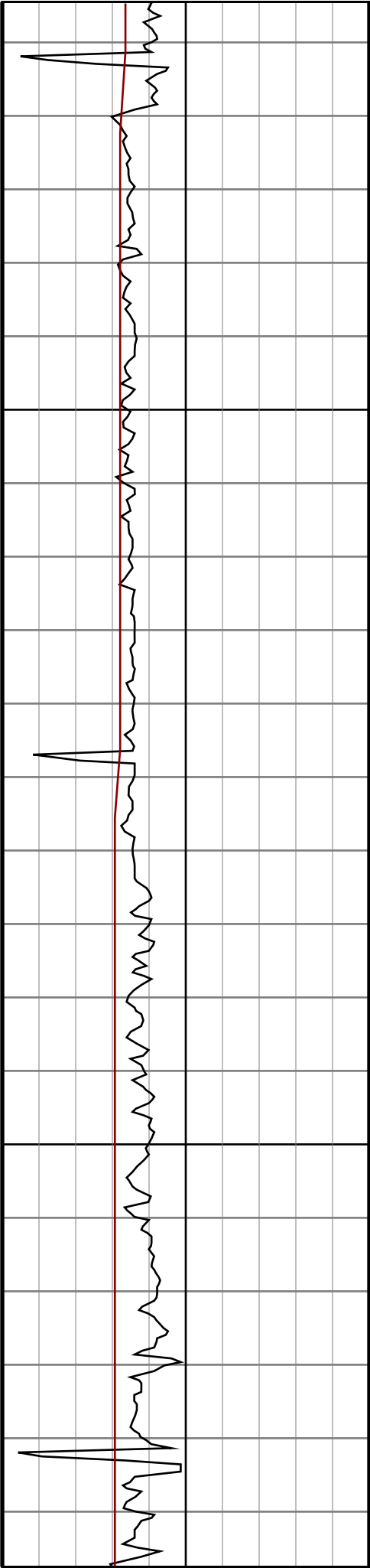
#87 MD(7802.00) Inc(89.0) Azm(0.4) TVD(6682.43)  
VS(1316.05) NS(1008.76) EW(1300.02)

#88 MD(7897.00) Inc(89.6) Azm(0.1) TVD(6683.59)  
VS(1407.78) NS(1103.75) EW(1300.44)



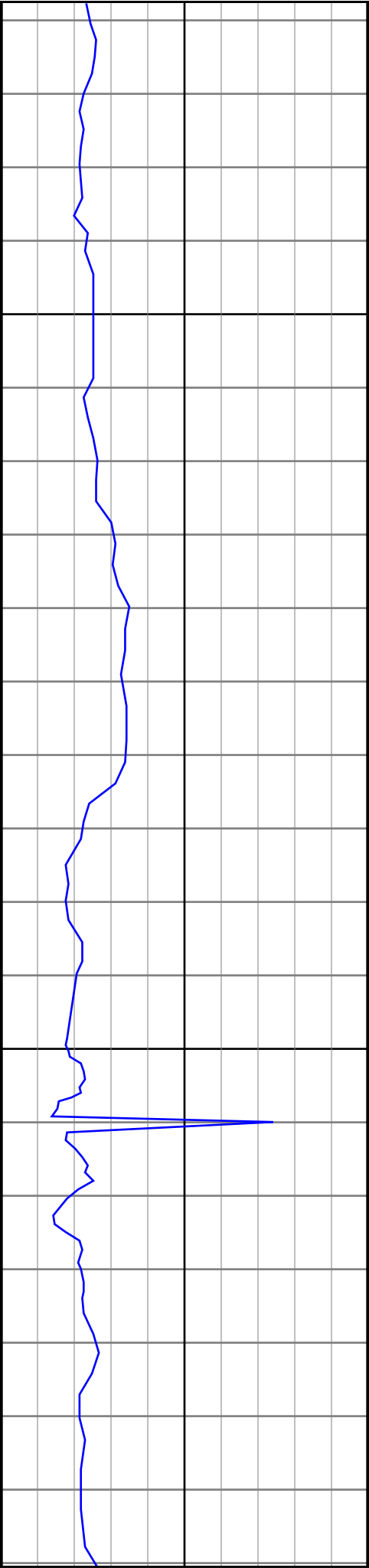
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8100



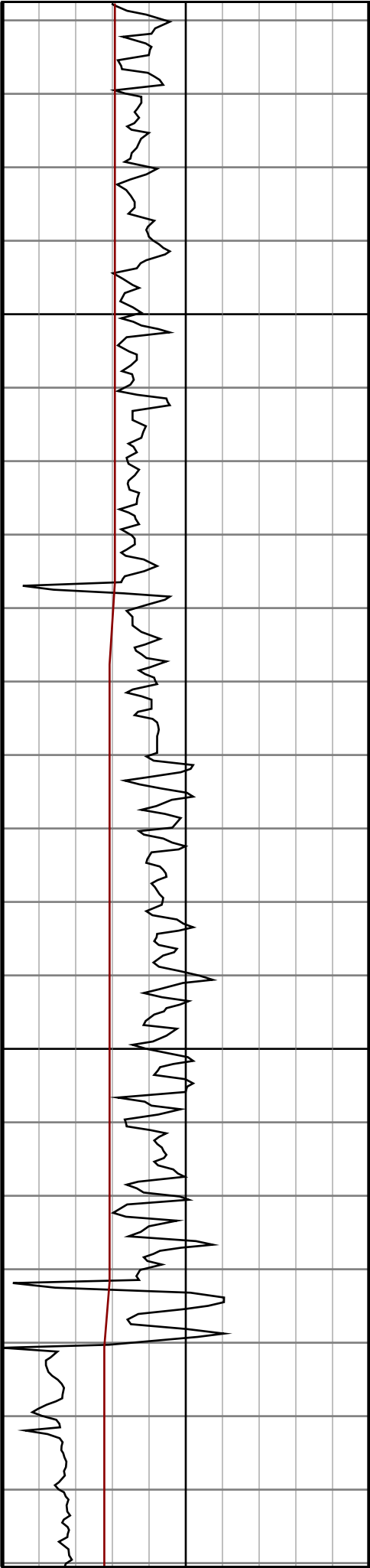
#89 MD(7993.00) Inc(89.2) Azm(359.9) TVD(6684.60)  
VS(1500.37) NS(1199.75) EW(1300.44)

#90 MD(8088.00) Inc(89.0) Azm(359.7) TVD(6686.09)  
VS(1591.91) NS(1294.73) EW(1300.10)



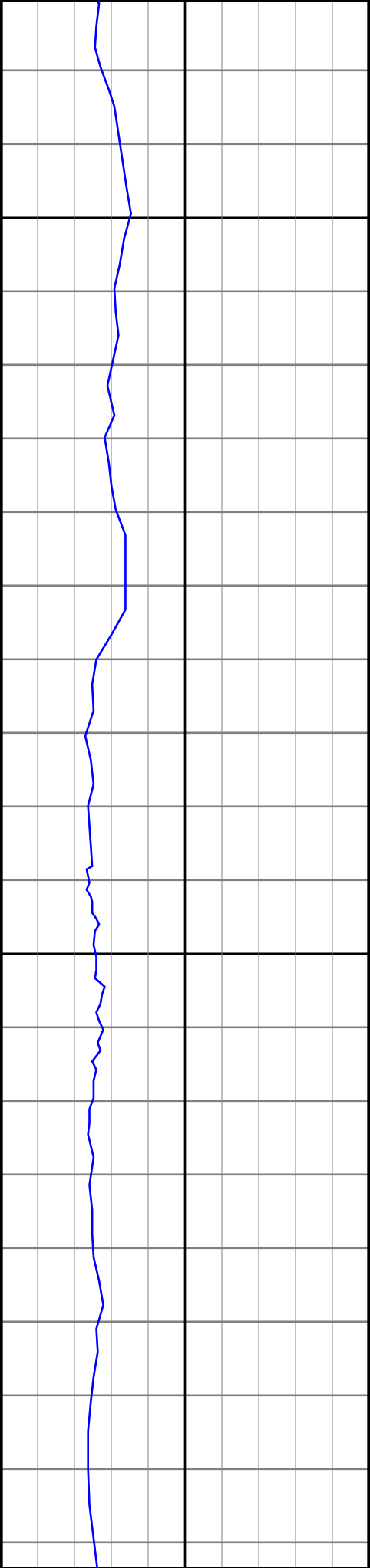
8200

8300



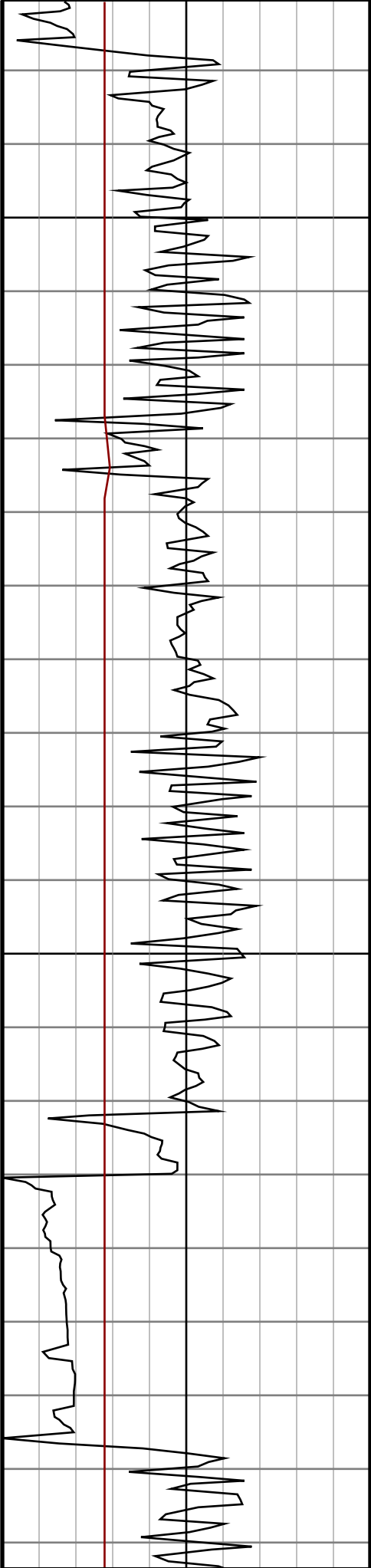
#91 MD(8183.00) Inc(87.8) Azm(0.3) TVD(6688.74)  
VS(1683.50) NS(1389.70) EW(1300.10)

#92 MD(8278.00) Inc(86.9) Azm(0.4) TVD(6693.14)  
VS(1775.19) NS(1484.59) EW(1300.68)



8400

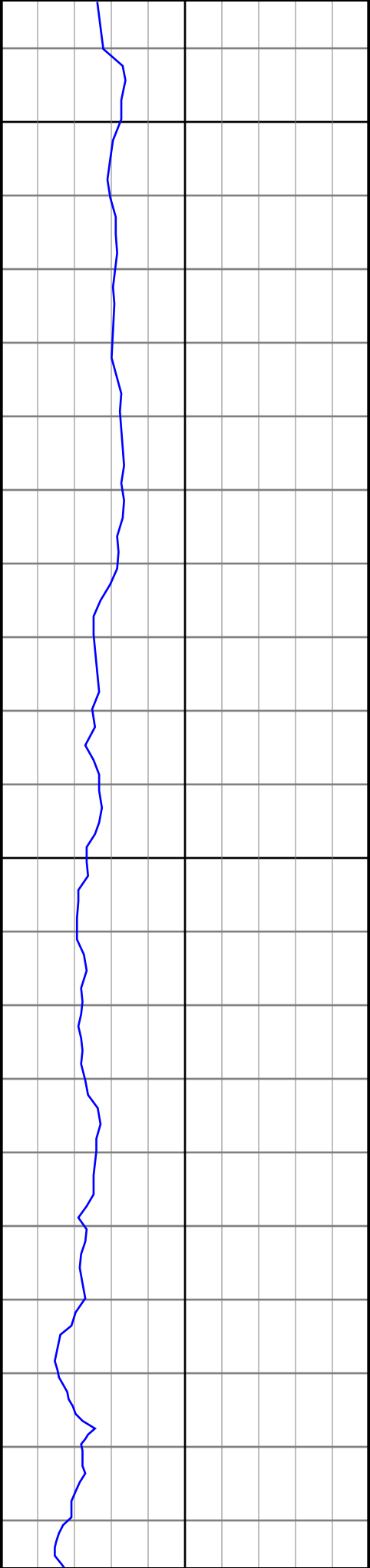
8500



#93 MD(8373.00) Inc(89.0) Azm(359.2) TVD(6696.53)  
VS(1866.67) NS(1579.52) EW(1300.35)

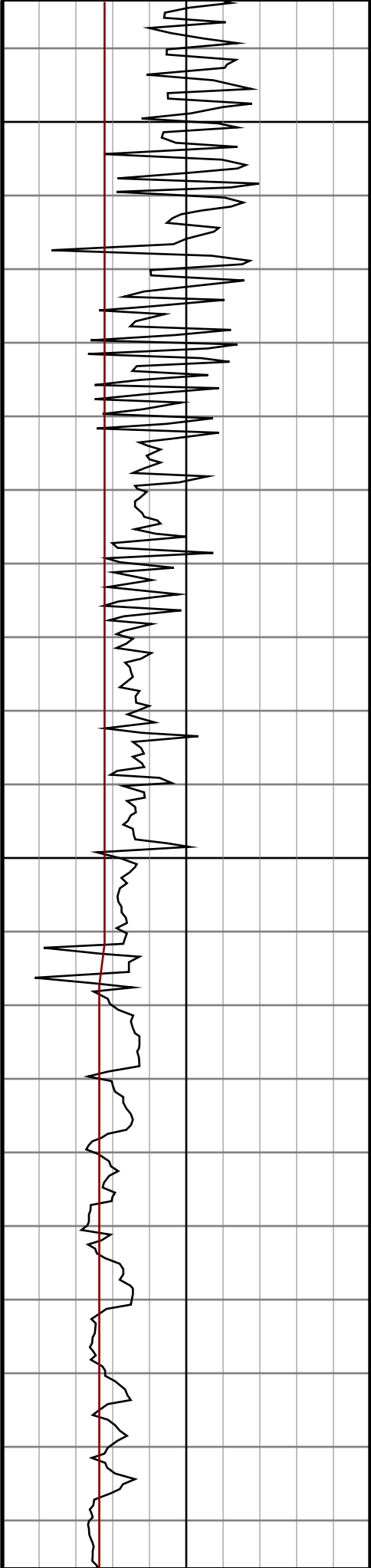
#94 MD(8469.00) Inc(88.5) Azm(359.4) TVD(6698.63)  
VS(1958.93) NS(1675.49) EW(1299.18)

#95 MD(8564.00) Inc(92.2) Azm(358.2) TVD(6698.05)  
VS(2050.00) NS(1770.45) EW(1297.19)



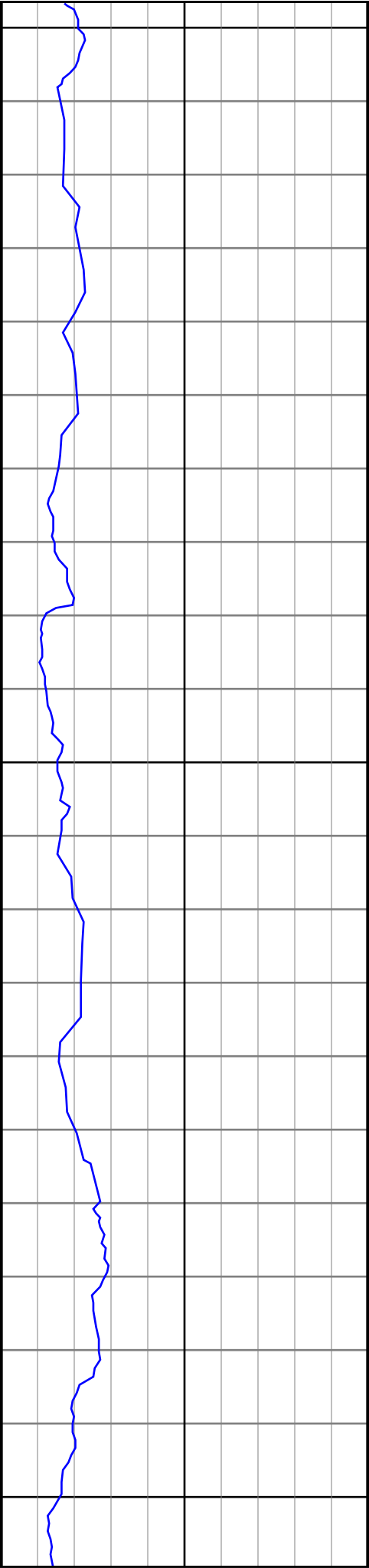
8600

8700



#96 MD(8659.00) Inc(94.0) Azm(357.6) TVD(6692.91)  
VS(2140.51) NS(1865.24) EW(1293.71)

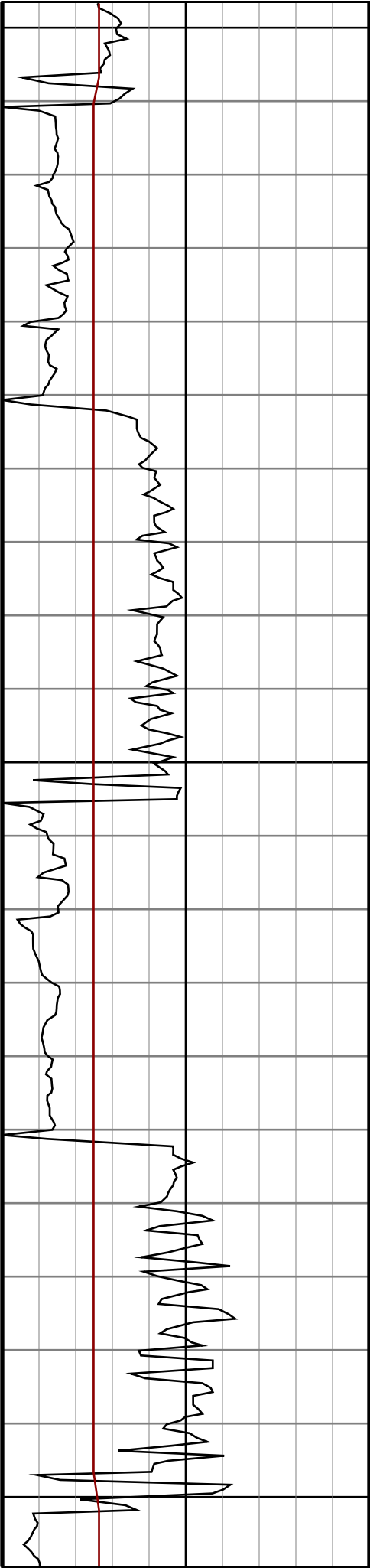
#97 MD(8754.00) Inc(95.9) Azm(357.1) TVD(6684.71)  
VS(2230.55) NS(1959.78) EW(1289.34)



8800

8900

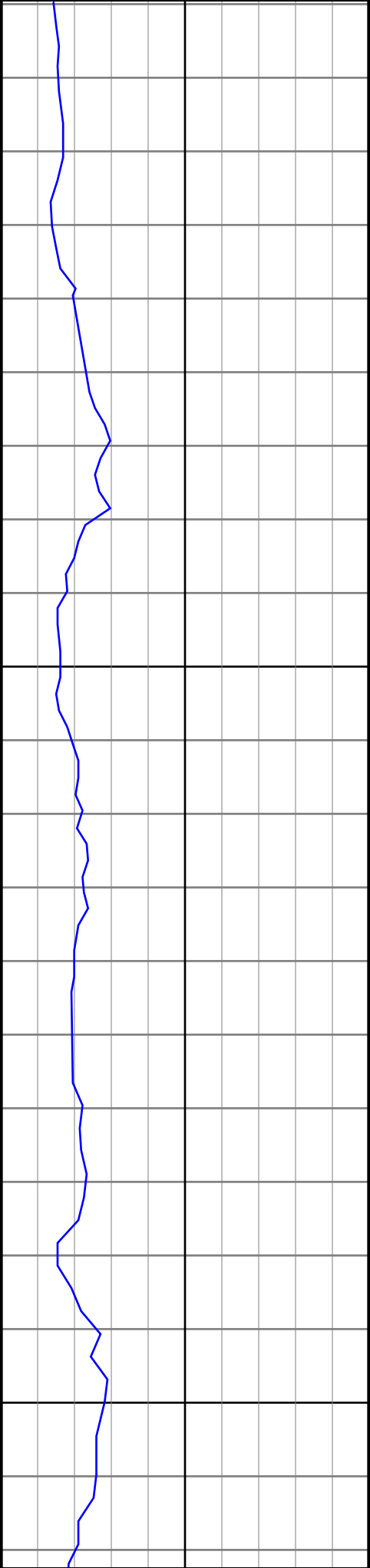
9000



#98 MD(8849.00) Inc(94.8) Azm(358.2) TVD(6675.86)  
VS(2320.68) NS(2054.29) EW(1285.46)

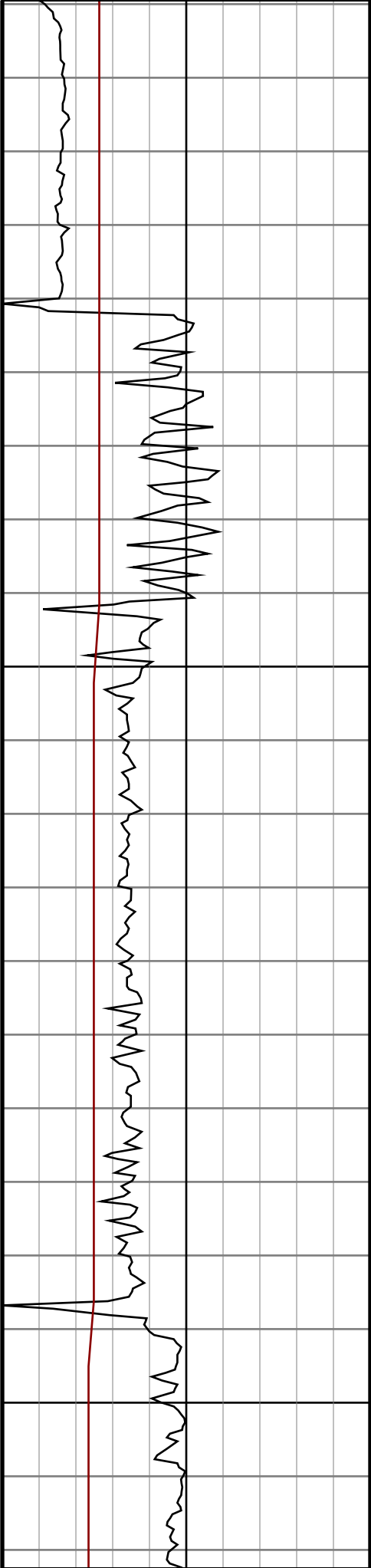
#99 MD(8945.00) Inc(93.1) Azm(359.2) TVD(6669.24)  
VS(2412.45) NS(2150.03) EW(1283.29)





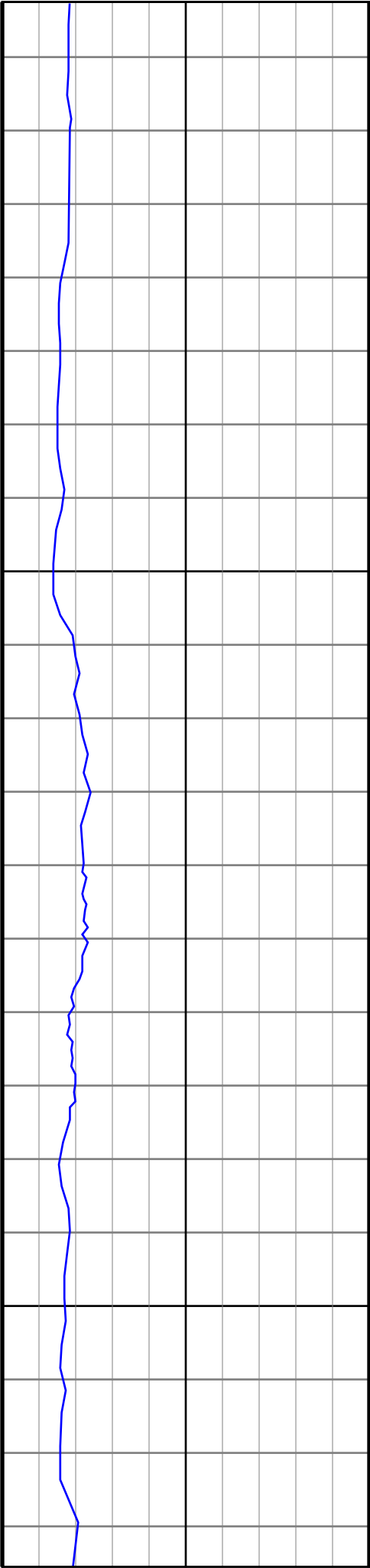
9100

9200



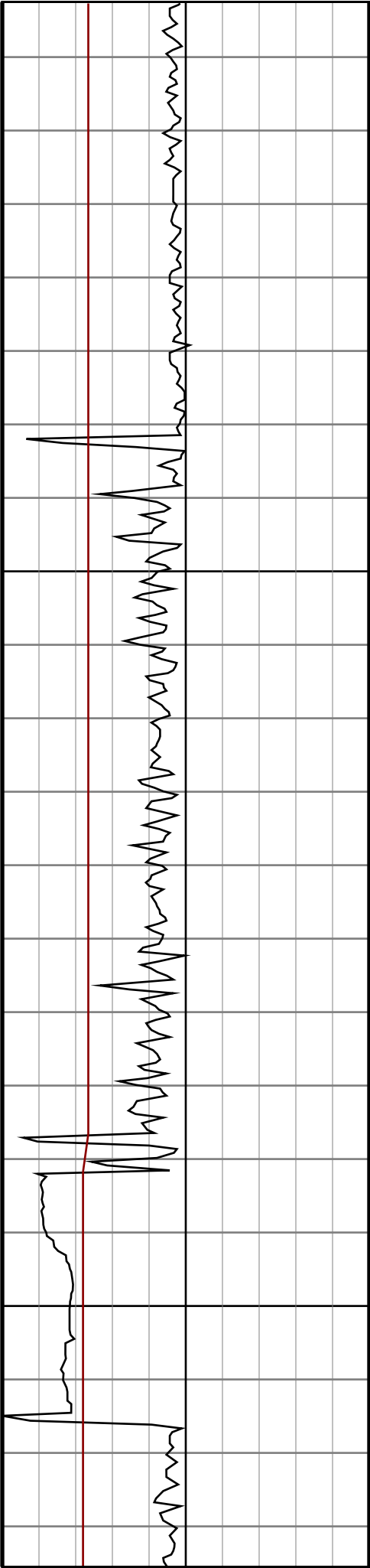
#100 MD(9040.00) Inc(89.4) Azm(359.9) TVD(6667.17)  
VS(2503.85) NS(2244.99) EW(1282.54)

#101 MD(9135.00) Inc(88.7) Azm(359.6) TVD(6668.75)  
VS(2595.36) NS(2339.97) EW(1282.13)



9300

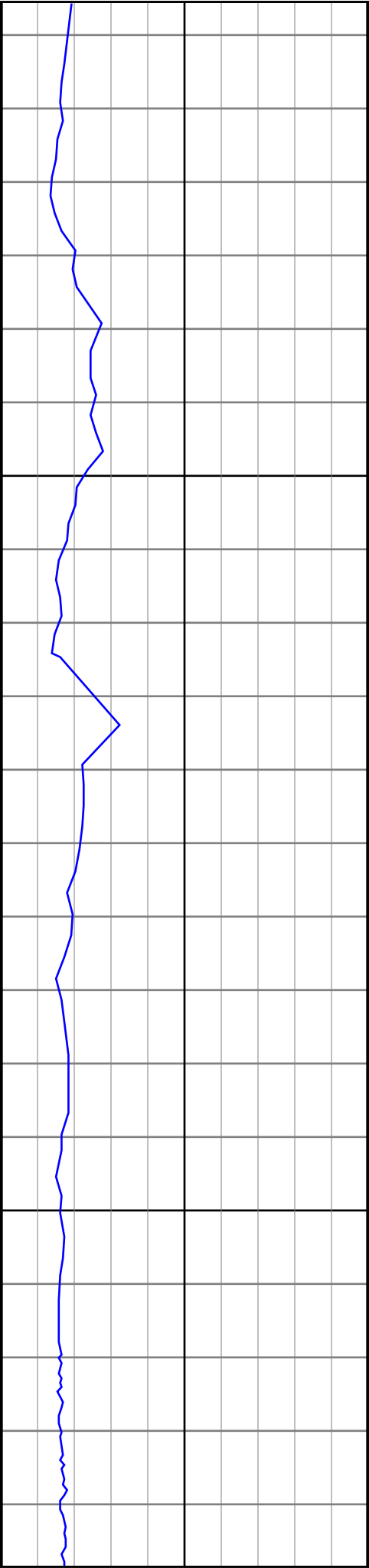
9400



#102 MD(9230.00) Inc(89.7) Azm(359.4) TVD(6670.07)  
VS(2686.76) NS(2434.96) EW(1281.30)

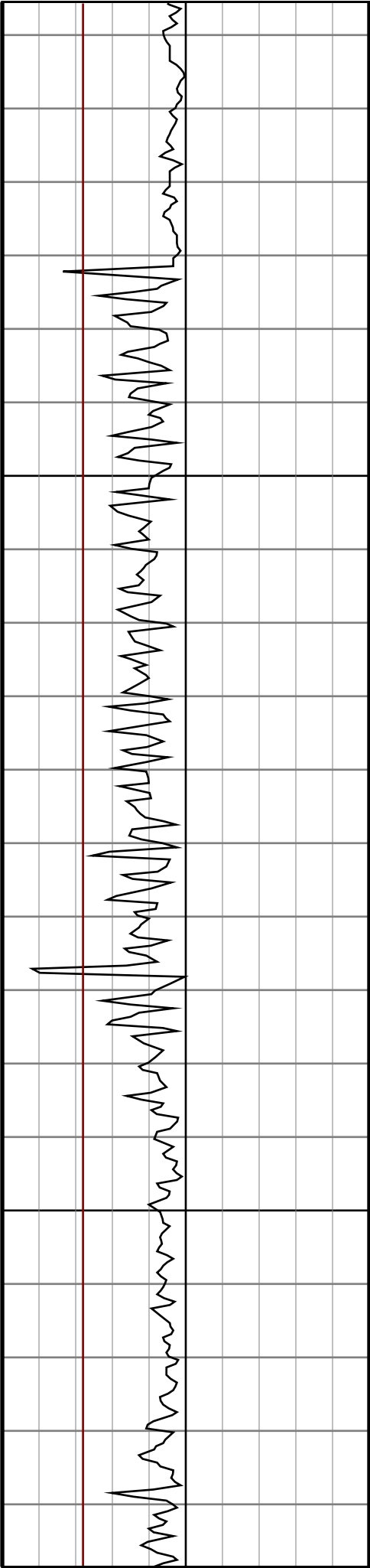
#103 MD(9326.00) Inc(90.1) Azm(358.5) TVD(6670.24)  
VS(2778.88) NS(2530.94) EW(1279.54)

#104 MD(9421.00) Inc(89.0) Azm(0.1) TVD(6670.99)  
VS(2870.19) NS(2625.93) EW(1278.38)



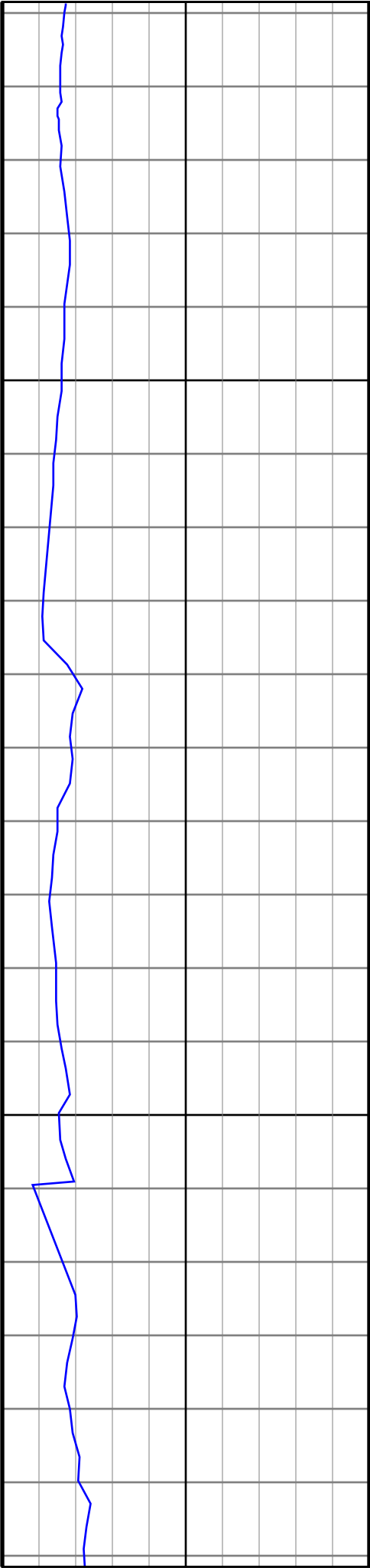
9500

9600



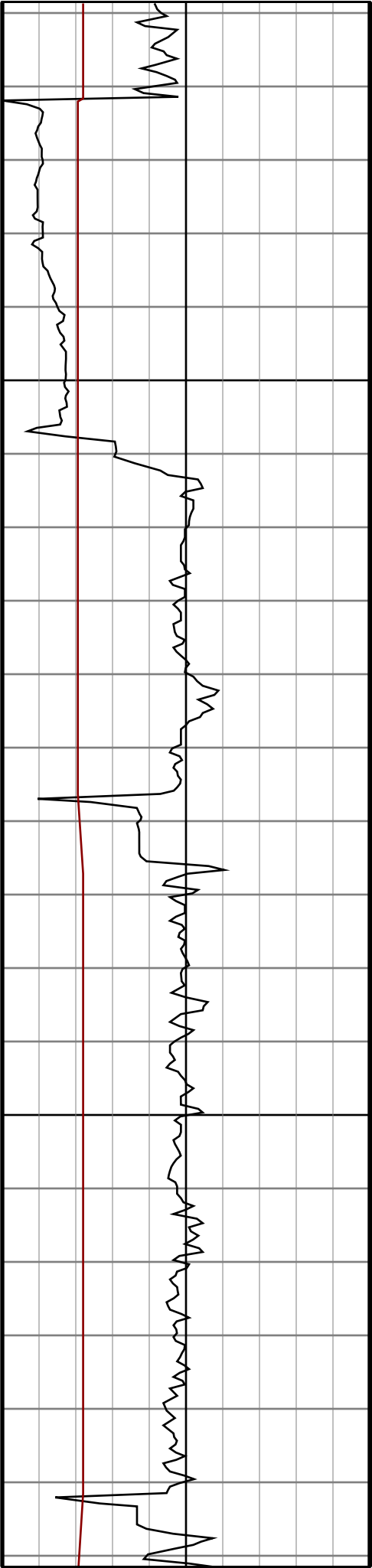
#105 MD(9516.00) Inc(89.2) Azm(0.3) TVD(6672.48)  
VS(2961.90) NS(2720.92) EW(1278.71)

#106 MD(9611.00) Inc(90.6) Azm(1.3) TVD(6672.64)  
VS(3053.87) NS(2815.90) EW(1280.04)



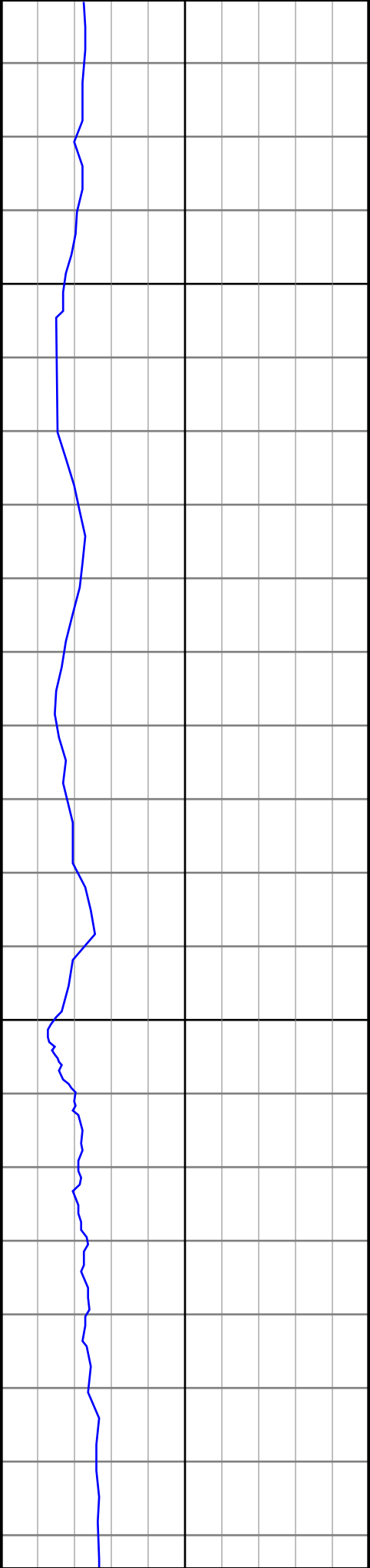
9700

9800



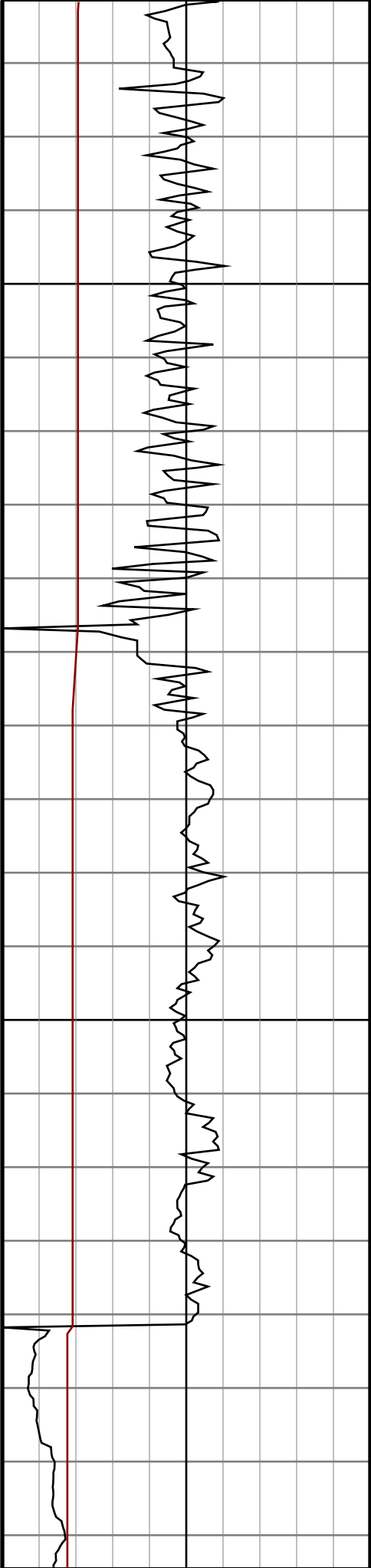
#107 MD(9706.00) Inc(86.7) Azm(359.6) TVD(6674.88)  
VS(3145.65) NS(2910.85) EW(1280.79)

#108 MD(9801.00) Inc(87.1) Azm(359.0) TVD(6680.02)  
VS(3236.83) NS(3005.70) EW(1279.63)



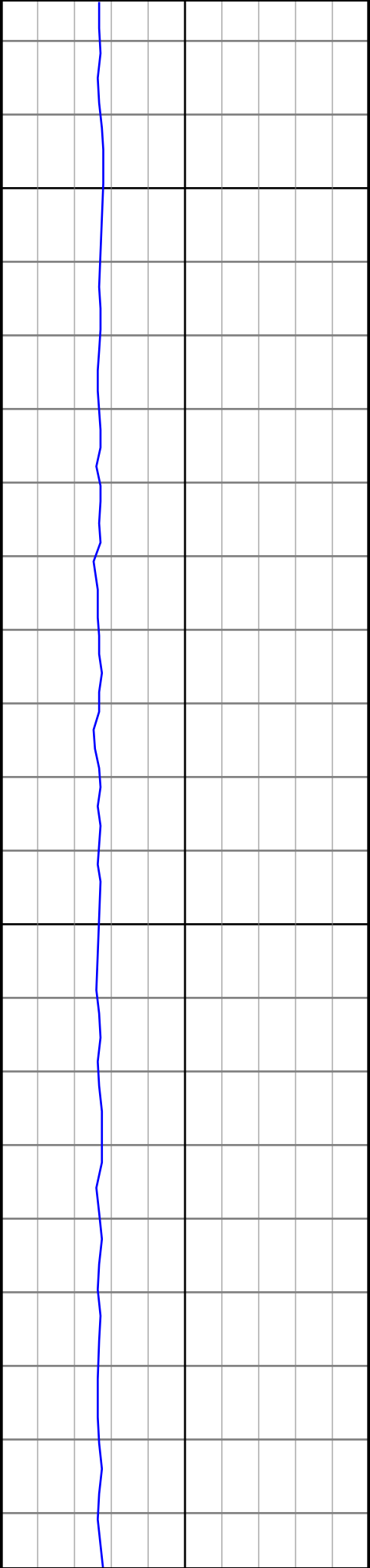
9900

10000



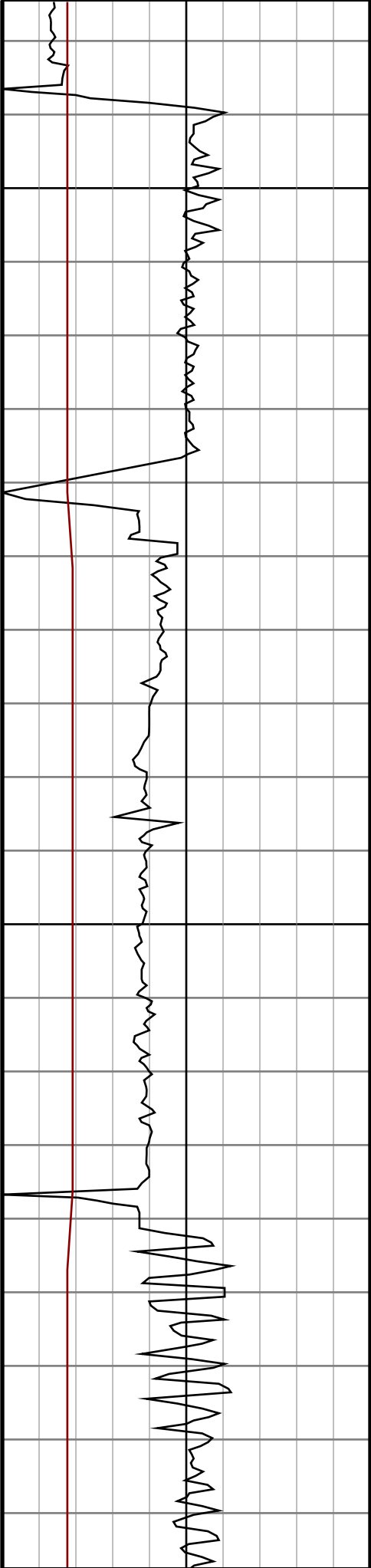
#109 MD(9897.00) Inc(87.1) Azm(358.9) TVD(6684.88)  
VS(3328.83) NS(3101.57) EW(1277.87)

#110 MD(9992.00) Inc(86.7) Azm(358.7) TVD(6690.01)  
VS(3419.79) NS(3196.41) EW(1275.88)



10100

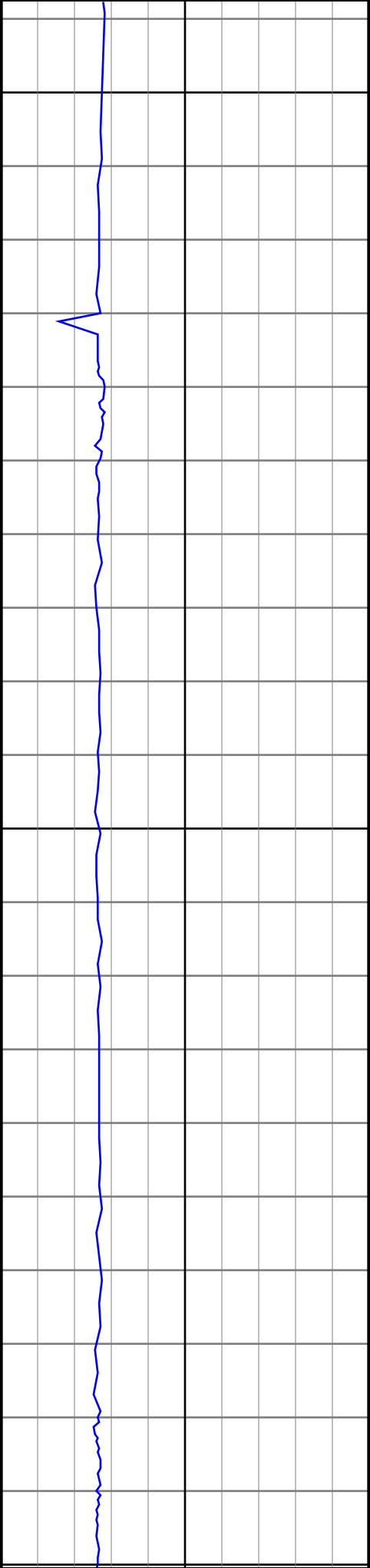
10200



#111 MD(10087.00) Inc(90.6) Azm(359.7) TVD(6692.25)  
VS(3511.02) NS(3291.35) EW(1274.56)

#112 MD(10182.00) Inc(89.7) Azm(357.3) TVD(6692.00)  
VS(3601.96) NS(3386.31) EW(1272.07)

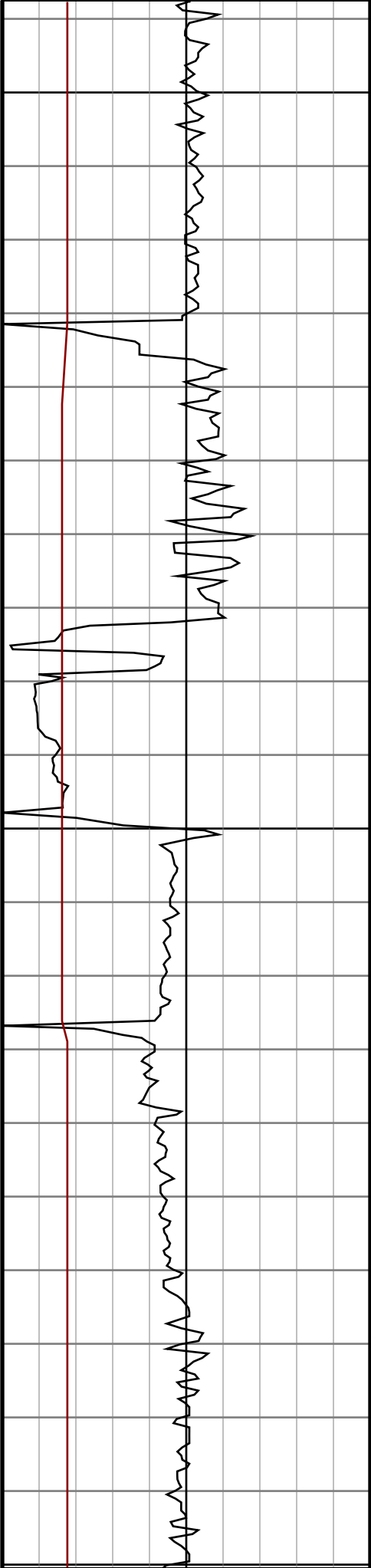
#113 MD(10277.00) Inc(89.6) Azm(358.0) TVD(6692.58)  
VS(3692.48) NS(3481.23) EW(1268.18)



10300

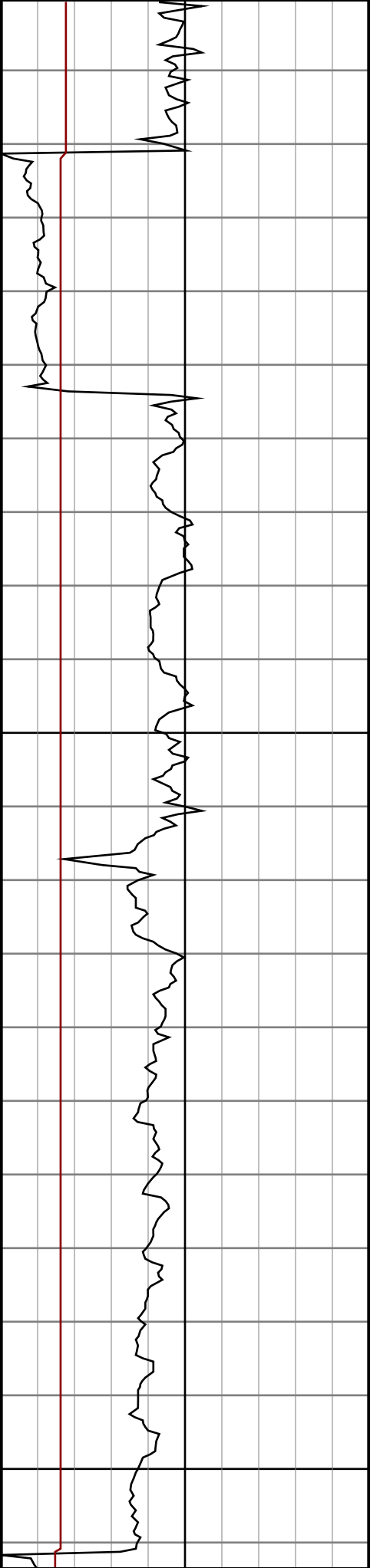
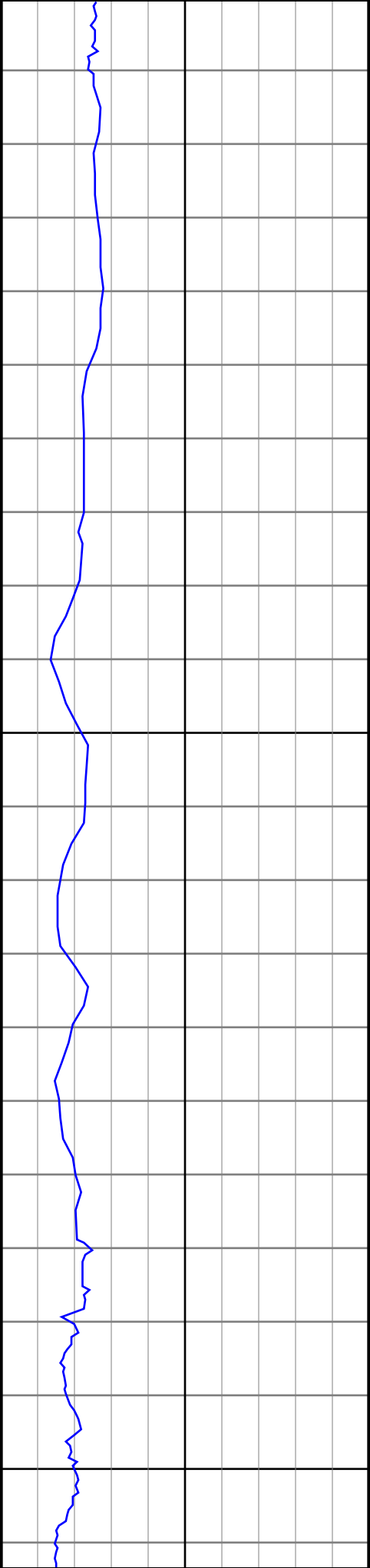
10400

10500



#114 MD(10373.00) Inc(89.7) Azm(359.6) TVD(6693.17)  
VS(3784.52) NS(3577.20) EW(1266.17)

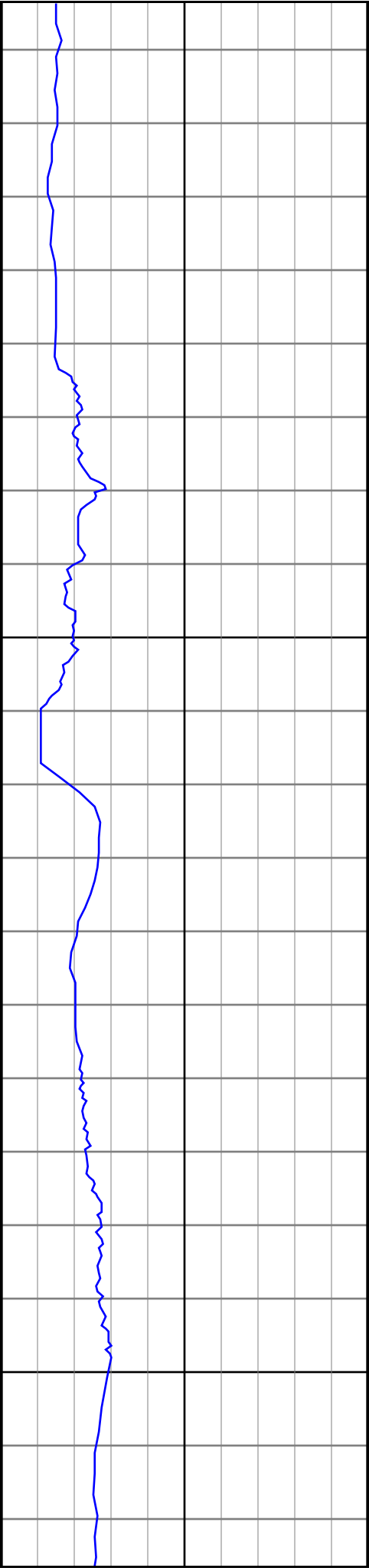
#115 MD(10468.00) Inc(89.0) Azm(356.4) TVD(6694.25)  
VS(3875.21) NS(3672.12) EW(1262.85)



#116 MD(10563.00) Inc(93.8) Azm(357.8) TVD(6691.93)  
VS(3965.40) NS(3766.94) EW(1258.05)

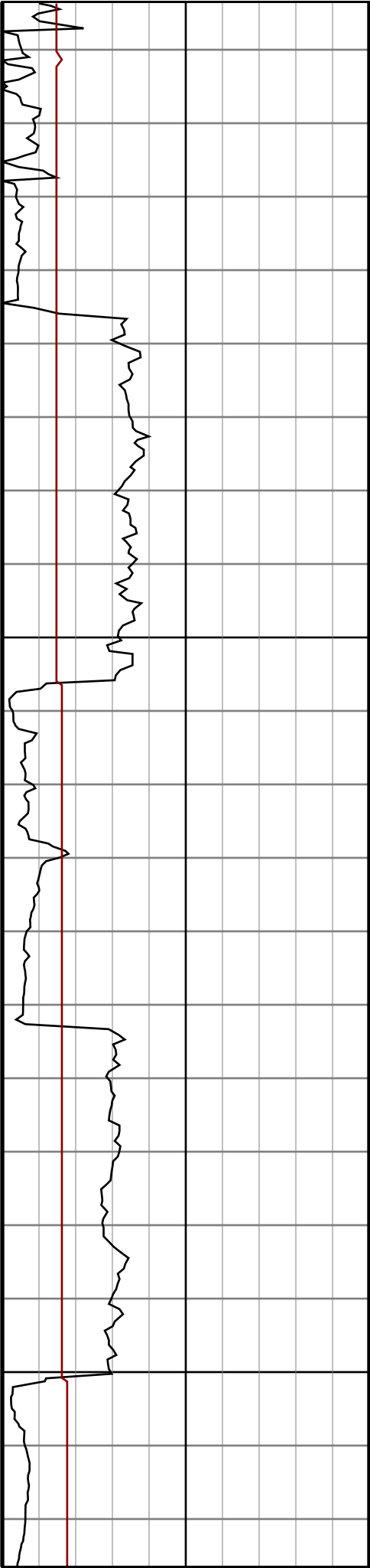
#117 MD(10658.00) Inc(95.7) Azm(357.3) TVD(6684.06)  
VS(4055.56) NS(3861.53) EW(1254.00)





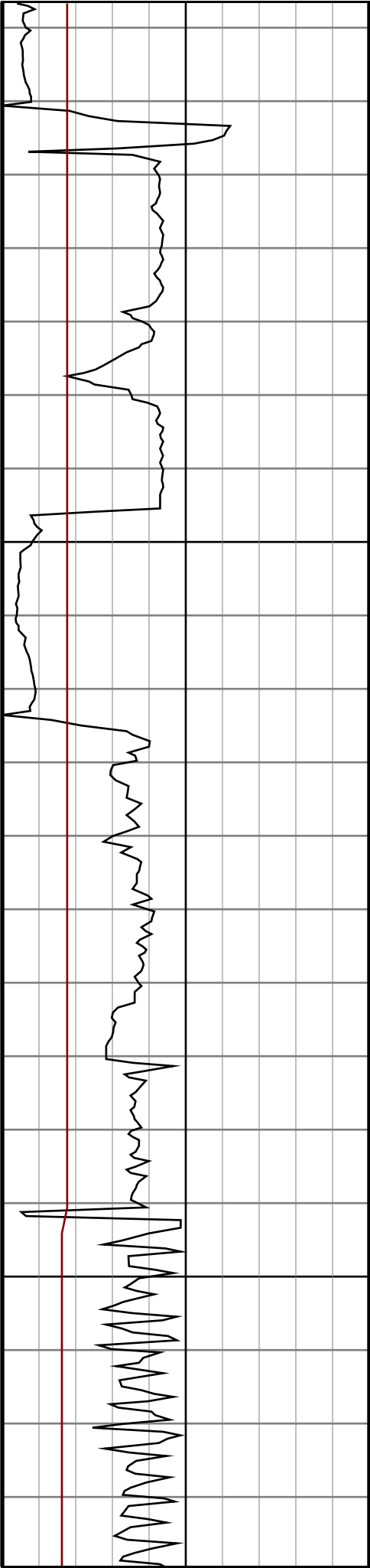
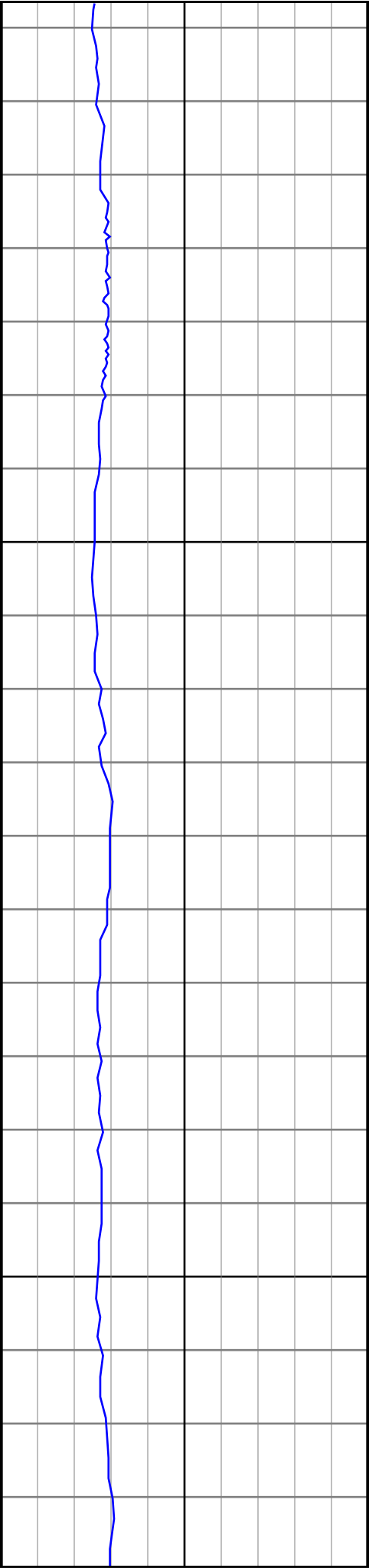
10800

10900



#118 MD(10753.00) Inc(95.4) Azm(357.3) TVD(6674.87)  
VS(4145.49) NS(3955.98) EW(1249.55)

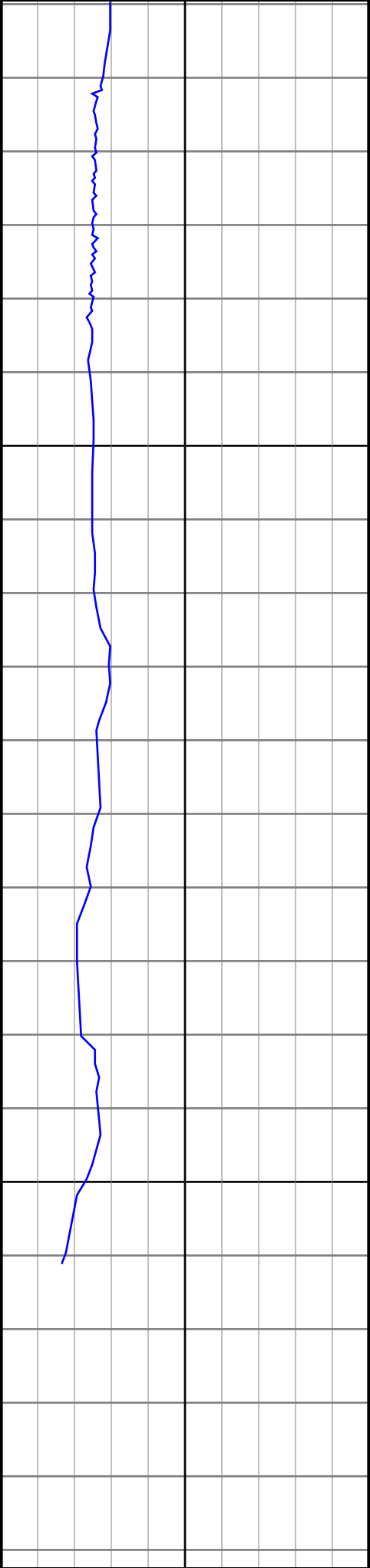
#119 MD(10849.00) Inc(93.8) Azm(358.3) TVD(6667.17)  
VS(4236.75) NS(4051.59) EW(1245.87)



#120 MD(10944.00) Inc(90.1) Azm(359.2) TVD(6663.94)  
VS(4327.74) NS(4146.50) EW(1243.80)

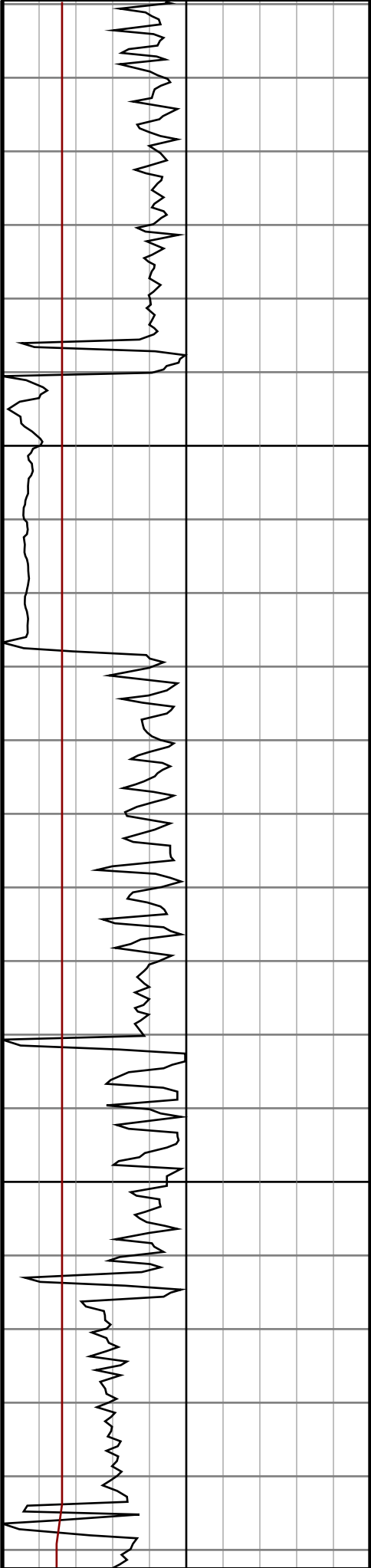
#121 MD(11039.00) Inc(88.7) Azm(0.4) TVD(6664.94)  
VS(4419.28) NS(4241.49) EW(1243.47)

#122 MD(11134.00) Inc(90.3) Azm(0.8) TVD(6665.77)  
VS(4511.16) NS(4336.47) EW(1244.47)



11200

11300



#123 MD(11229.00) Inc(87.1) Azm(0.6) TVD(6667.92)  
VS(4603.06) NS(4431.43) EW(1245.63)

#124 MD(11299.00) Inc(87.4) Azm(0.8) TVD(6671.28)  
VS(4670.72) NS(4501.35) EW(1246.48)

