Mahalo State AA09-74-1AHNC

MD
2":100'

ENSIGN Directional Services

Company: Noble Energy
Well Name: Mahalo State AA09-74-1AHNC
API: 05-123-39015
Rig Id: Precision 829
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: ENSIGN Directional
Job number: PD829-207-35
DD1 Zach Gentry
DD2 Colby Hansen
DD3 Tony Callow
MWD1 Andrew Demrow
MWD2 Collin McCloud

Log measurements: Gama, ROP
Depth measured from:
Maximum temperature:

	Depth	Date
Start:	852 ft	01-14-2015
End:	11481 ft	01-21-2015

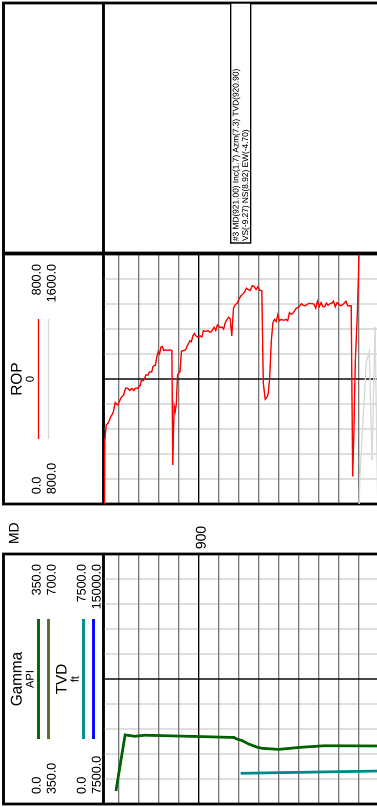
Casing	Depth	Size
Surface:	842	9 5/8
Intermediate:	6990	7

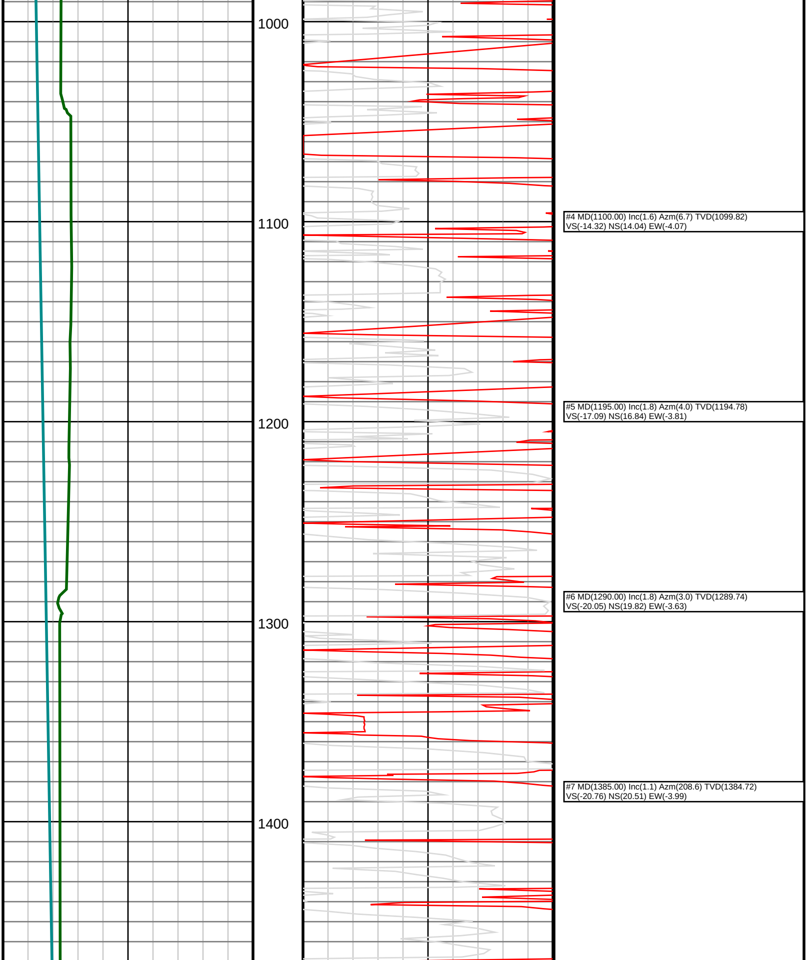
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

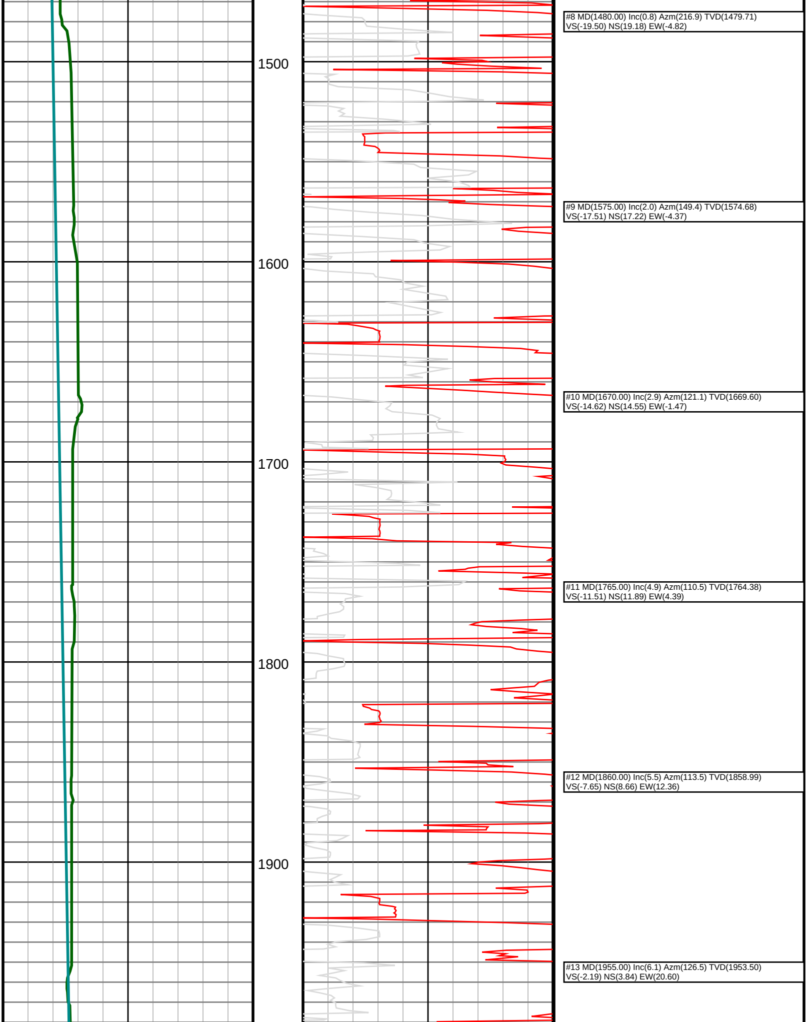
Elevations
KB: 16
GL: 4857
DF: 4873

		Offsets		Depths		Dates	
Run	**Bit Size**	**Gamma**	**Survey**	**Start**	**End**	**Start**	**End**
1	13.5			0	852	01-14-2015	01-14-2015
2	8.75	58.79	53.79	852	7000	01-14-2015	01-16-2015
3	6.125	65.25	60.25	7000	11481	01-18-2015	01-21-2015
4							
5							
6							
7							
8							
9							
10							

ENSIGN Directional 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.







#8 MD(1480.00) Inc(0.8) Azm(216.9) TVD(1479.71)
VS(-19.50) NS(19.18) EW(-4.82)

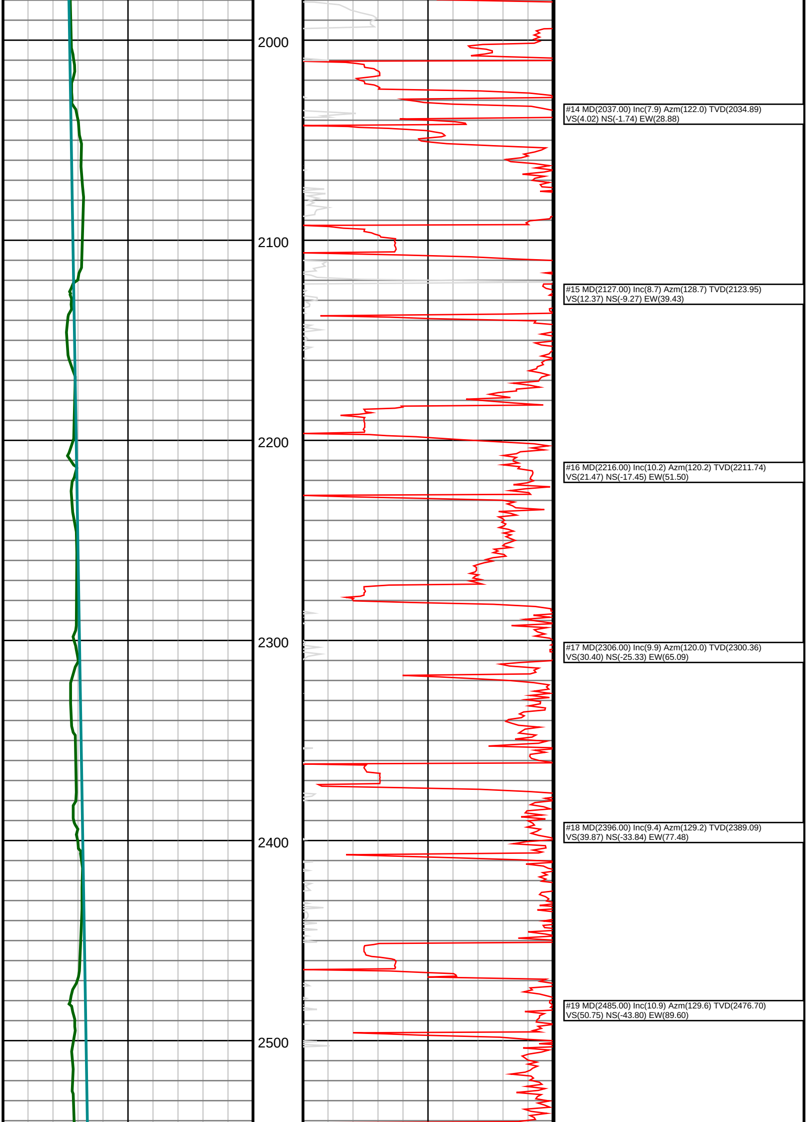
#9 MD(1575.00) Inc(2.0) Azm(149.4) TVD(1574.68)
VS(-17.51) NS(17.22) EW(-4.37)

#10 MD(1670.00) Inc(2.9) Azm(121.1) TVD(1669.60)
VS(-14.62) NS(14.55) EW(-1.47)

#11 MD(1765.00) Inc(4.9) Azm(110.5) TVD(1764.38)
VS(-11.51) NS(11.89) EW(4.39)

#12 MD(1860.00) Inc(5.5) Azm(113.5) TVD(1858.99)
VS(-7.65) NS(8.66) EW(12.36)

#13 MD(1955.00) Inc(6.1) Azm(126.5) TVD(1953.50)
VS(-2.19) NS(3.84) EW(20.60)



#14 MD(2037.00) Inc(7.9) Azm(122.0) TVD(2034.89)
VS(4.02) NS(-1.74) EW(28.88)

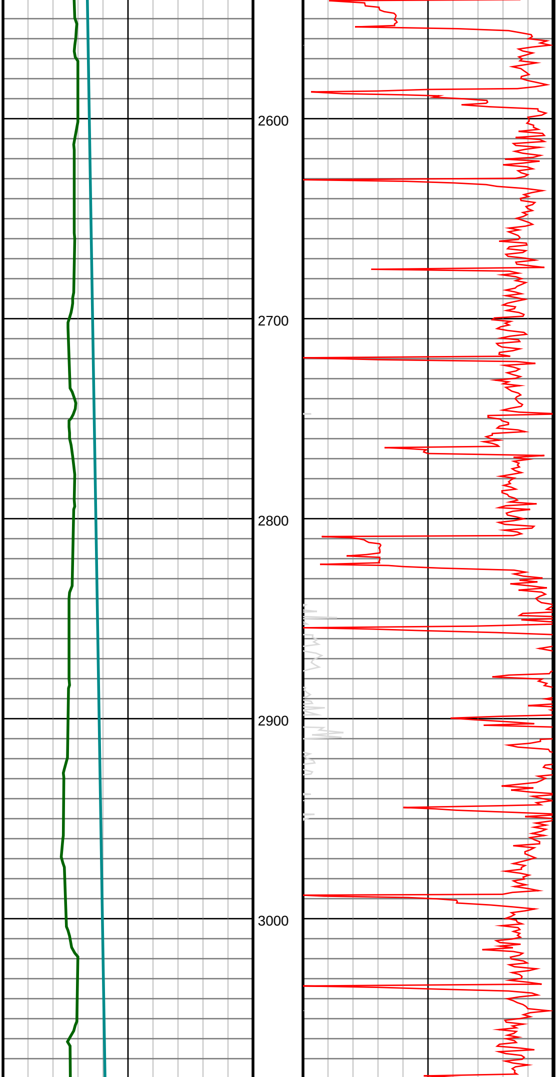
#15 MD(2127.00) Inc(8.7) Azm(128.7) TVD(2123.95)
VS(12.37) NS(-9.27) EW(39.43)

#16 MD(2216.00) Inc(10.2) Azm(120.2) TVD(2211.74)
VS(21.47) NS(-17.45) EW(51.50)

#17 MD(2306.00) Inc(9.9) Azm(120.0) TVD(2300.36)
VS(30.40) NS(-25.33) EW(65.09)

#18 MD(2396.00) Inc(9.4) Azm(129.2) TVD(2389.09)
VS(39.87) NS(-33.84) EW(77.48)

#19 MD(2485.00) Inc(10.9) Azm(129.6) TVD(2476.70)
VS(50.75) NS(-43.80) EW(89.60)



#20 MD(2575.00) Inc(11.8) Azm(125.0) TVD(2564.94)
VS(62.54) NS(-54.50) EW(103.70)

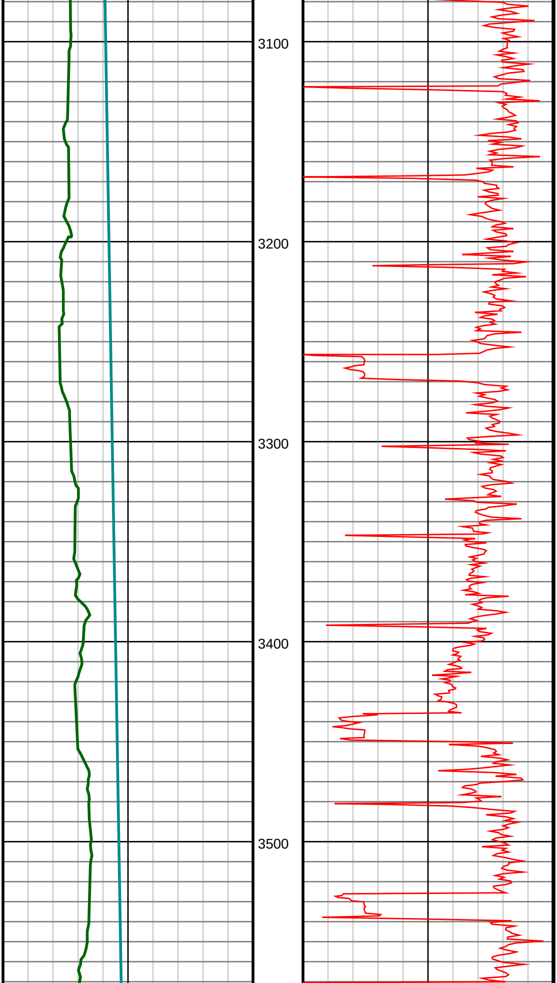
#21 MD(2664.00) Inc(10.7) Azm(124.2) TVD(2652.23)
VS(73.50) NS(-64.36) EW(117.98)

#22 MD(2754.00) Inc(9.9) Azm(125.0) TVD(2740.78)
VS(83.65) NS(-73.50) EW(131.23)

#23 MD(2843.00) Inc(11.4) Azm(121.3) TVD(2828.24)
VS(93.68) NS(-82.46) EW(145.02)

#24 MD(2933.00) Inc(11.4) Azm(120.5) TVD(2916.47)
VS(103.99) NS(-91.59) EW(160.28)

#25 MD(3023.00) Inc(10.5) Azm(118.6) TVD(3004.83)
VS(113.58) NS(-100.03) EW(175.14)



#26 MD(3112.00) Inc(9.8) Azm(119.5) TVD(3092.43)
VS(122.25) NS(-107.64) EW(188.86)

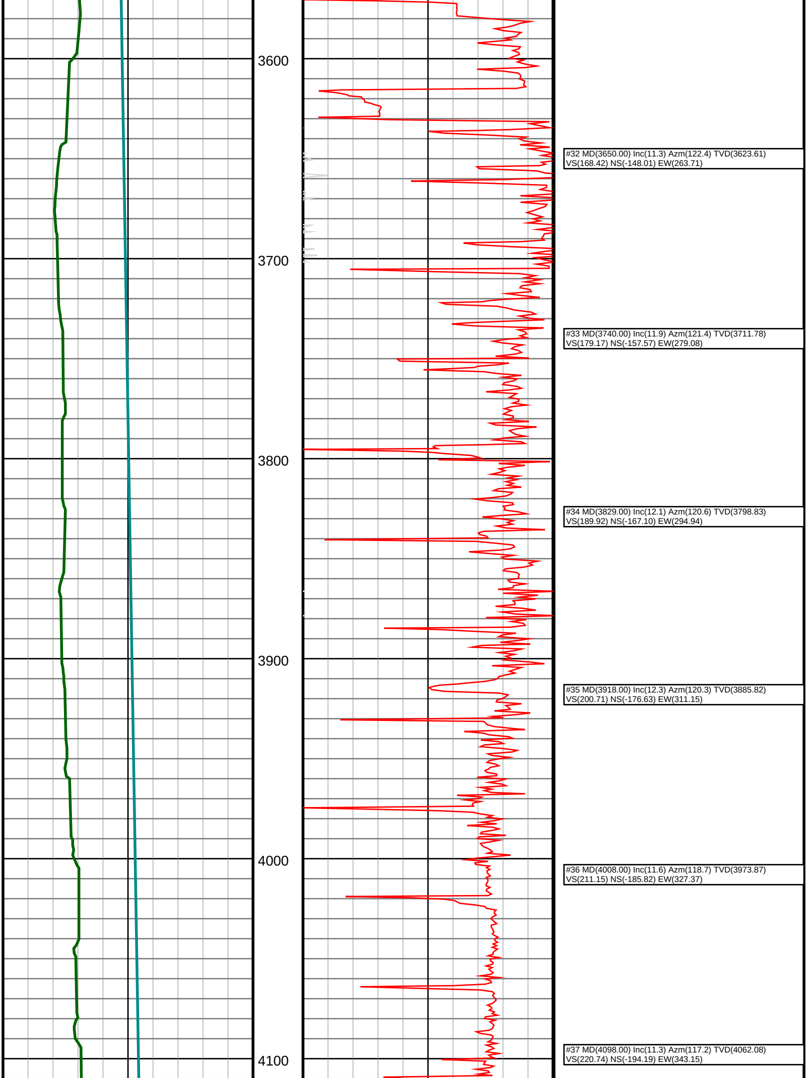
#27 MD(3201.00) Inc(9.2) Azm(120.2) TVD(3180.21)
VS(130.55) NS(-114.95) EW(201.60)

#28 MD(3291.00) Inc(9.5) Azm(118.1) TVD(3269.02)
VS(138.65) NS(-122.07) EW(214.37)

#29 MD(3381.00) Inc(8.5) Azm(112.6) TVD(3357.91)
VS(145.70) NS(-128.12) EW(227.06)

#30 MD(3471.00) Inc(8.2) Azm(116.5) TVD(3446.96)
VS(152.04) NS(-133.54) EW(238.95)

#31 MD(3560.00) Inc(8.7) Azm(120.7) TVD(3534.99)
VS(159.20) NS(-139.81) EW(250.41)



#32 MD(3650.00) Inc(11.3) Azm(122.4) TVD(3623.61)
VS(168.42) NS(-148.01) EW(263.71)

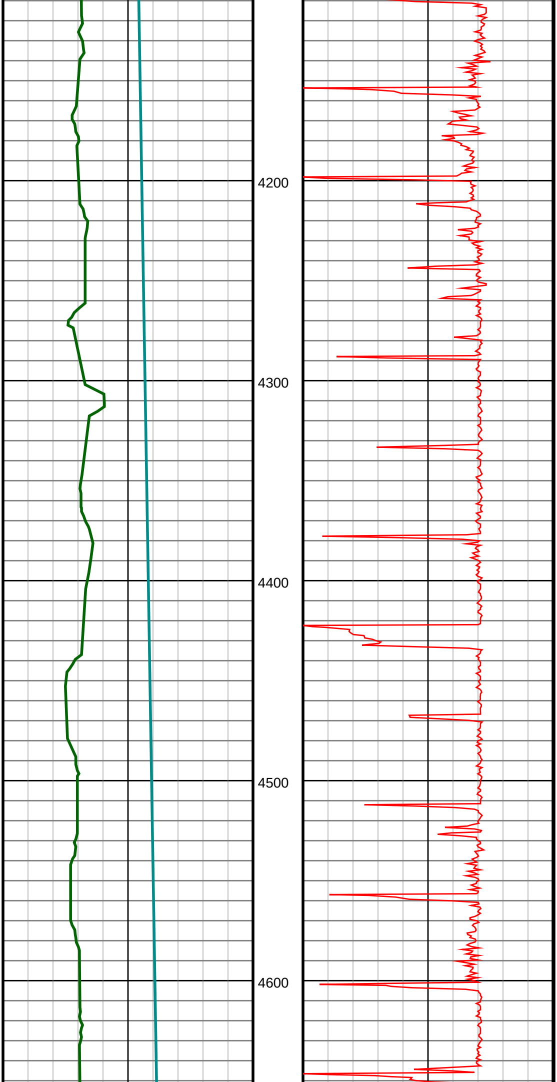
#33 MD(3740.00) Inc(11.9) Azm(121.4) TVD(3711.78)
VS(179.17) NS(-157.57) EW(279.08)

#34 MD(3829.00) Inc(12.1) Azm(120.6) TVD(3798.83)
VS(189.92) NS(-167.10) EW(294.94)

#35 MD(3918.00) Inc(12.3) Azm(120.3) TVD(3885.82)
VS(200.71) NS(-176.63) EW(311.15)

#36 MD(4008.00) Inc(11.6) Azm(118.7) TVD(3973.87)
VS(211.15) NS(-185.82) EW(327.37)

#37 MD(4098.00) Inc(11.3) Azm(117.2) TVD(4062.08)
VS(220.74) NS(-194.19) EW(343.15)



#38 MD(4188.00) Inc(10.6) Azm(116.3) TVD(4150.44)
VS(229.63) NS(-201.89) EW(358.41)

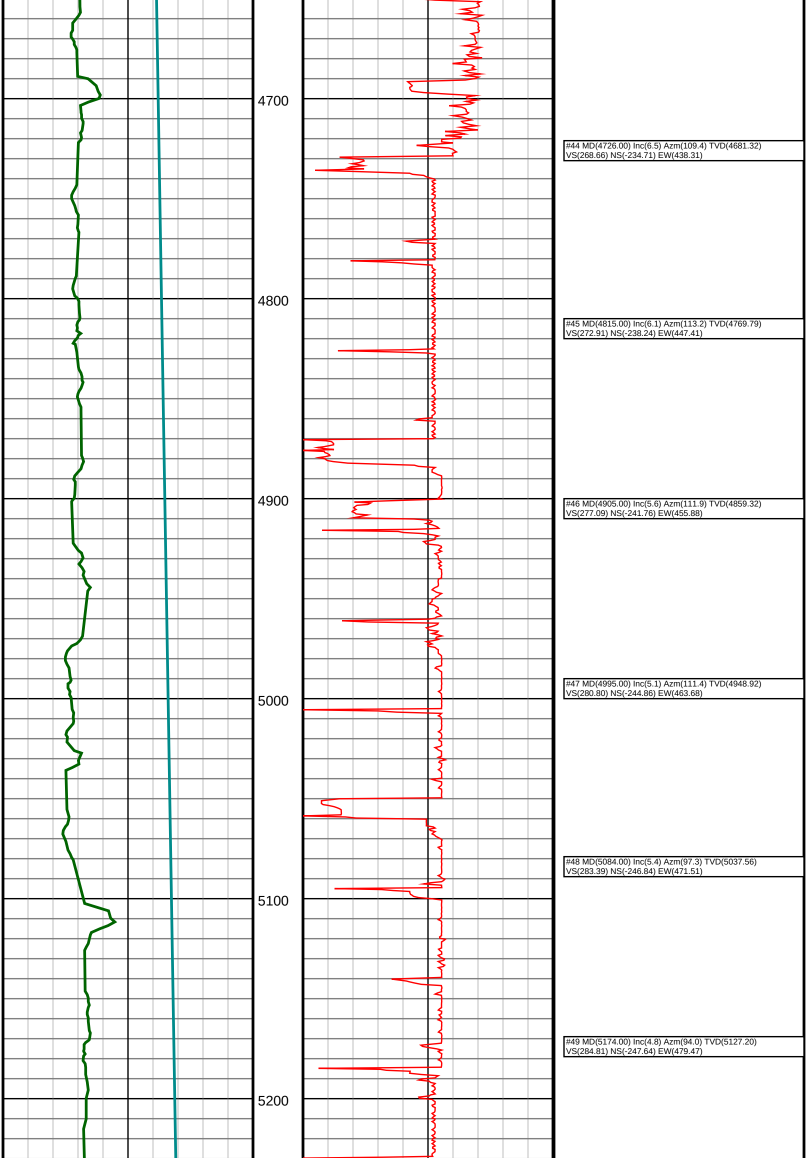
#39 MD(4277.00) Inc(10.3) Azm(116.1) TVD(4237.96)
VS(237.88) NS(-209.02) EW(372.90)

#40 MD(4367.00) Inc(9.4) Azm(114.9) TVD(4326.64)
VS(245.59) NS(-215.65) EW(386.79)

#41 MD(4456.00) Inc(10.3) Azm(111.1) TVD(4414.32)
VS(252.61) NS(-221.58) EW(400.80)

#42 MD(4546.00) Inc(9.4) Azm(109.4) TVD(4503.00)
VS(259.07) NS(-226.91) EW(415.24)

#43 MD(4636.00) Inc(7.6) Azm(107.9) TVD(4592.01)
VS(264.33) NS(-231.19) EW(427.84)



#44 MD(4726.00) Inc(6.5) Azm(109.4) TVD(4681.32)
VS(268.66) NS(-234.71) EW(438.31)

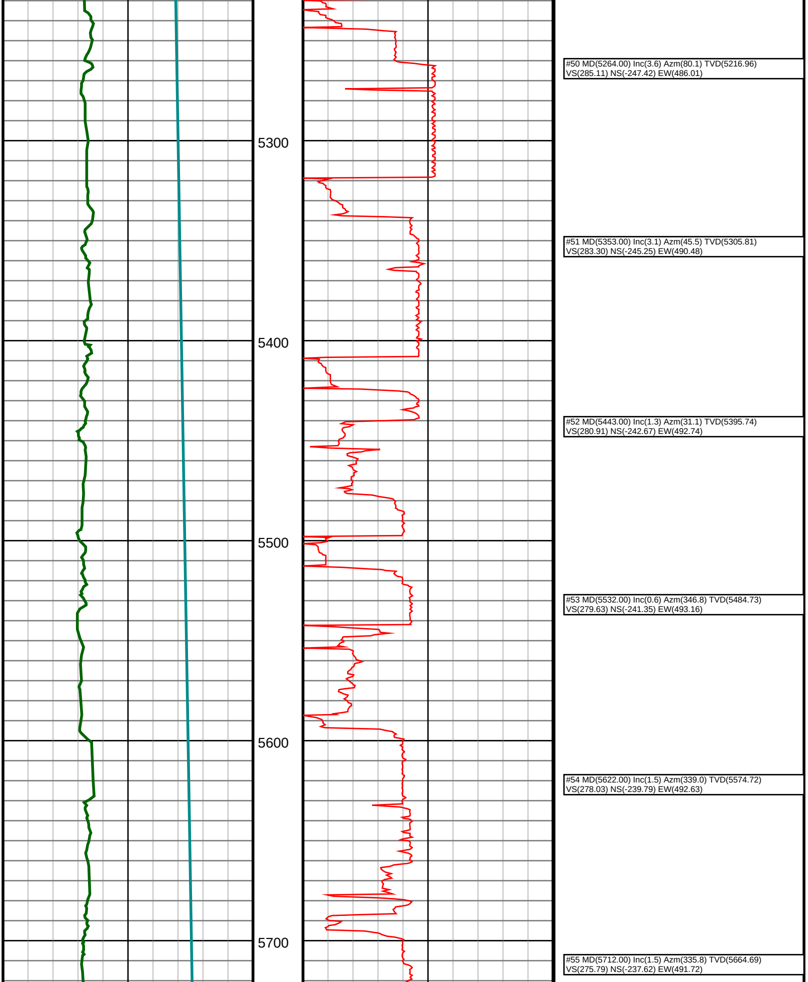
#45 MD(4815.00) Inc(6.1) Azm(113.2) TVD(4769.79)
VS(272.91) NS(-238.24) EW(447.41)

#46 MD(4905.00) Inc(5.6) Azm(111.9) TVD(4859.32)
VS(277.09) NS(-241.76) EW(455.88)

#47 MD(4995.00) Inc(5.1) Azm(111.4) TVD(4948.92)
VS(280.80) NS(-244.86) EW(463.68)

#48 MD(5084.00) Inc(5.4) Azm(97.3) TVD(5037.56)
VS(283.39) NS(-246.84) EW(471.51)

#49 MD(5174.00) Inc(4.8) Azm(94.0) TVD(5127.20)
VS(284.81) NS(-247.64) EW(479.47)



#50 MD(5264.00) Inc(3.6) Azm(80.1) TVD(5216.96)
VS(285.11) NS(-247.42) EW(486.01)

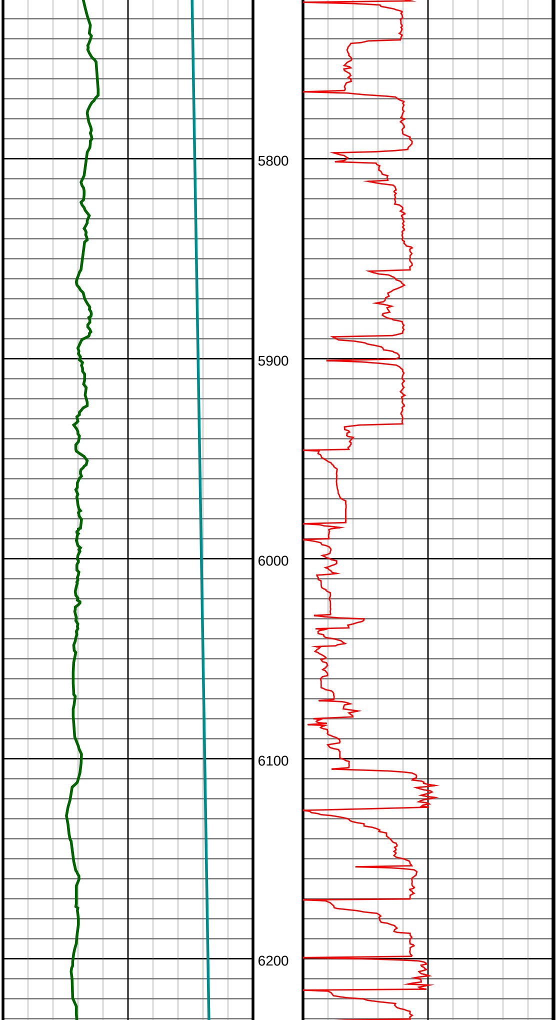
#51 MD(5353.00) Inc(3.1) Azm(45.5) TVD(5305.81)
VS(283.30) NS(-245.25) EW(490.48)

#52 MD(5443.00) Inc(1.3) Azm(31.1) TVD(5395.74)
VS(280.91) NS(-242.67) EW(492.74)

#53 MD(5532.00) Inc(0.6) Azm(346.8) TVD(5484.73)
VS(279.63) NS(-241.35) EW(493.16)

#54 MD(5622.00) Inc(1.5) Azm(339.0) TVD(5574.72)
VS(278.03) NS(-239.79) EW(492.63)

#55 MD(5712.00) Inc(1.5) Azm(335.8) TVD(5664.69)
VS(275.79) NS(-237.62) EW(491.72)



#56 MD(5801.00) Inc(1.7) Azm(344.2) TVD(5753.65)
VS(273.40) NS(-235.28) EW(490.89)

#57 MD(5891.00) Inc(1.4) Azm(347.1) TVD(5843.62)
VS(271.00) NS(-232.93) EW(490.28)

#58 MD(5936.00) Inc(0.6) Azm(340.6) TVD(5888.61)
VS(270.23) NS(-232.17) EW(490.08)

#59 MD(5981.00) Inc(2.7) Azm(196.2) TVD(5933.60)
VS(271.00) NS(-232.97) EW(489.70)

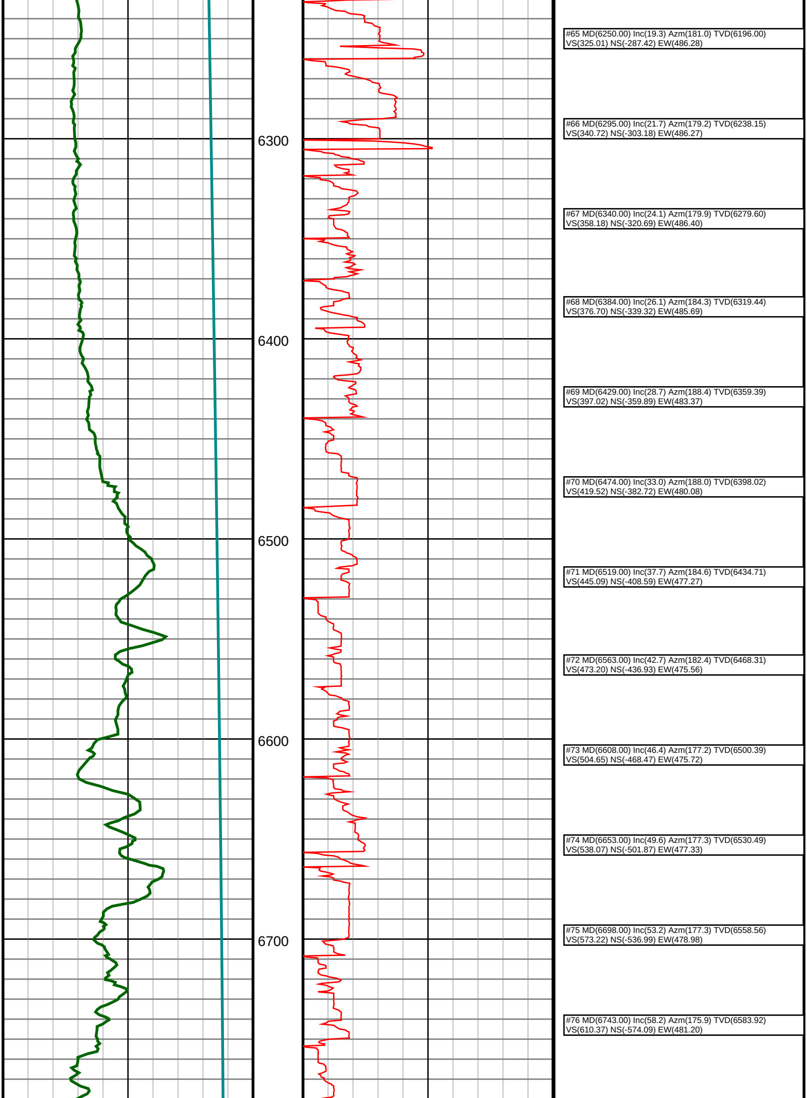
#60 MD(6026.00) Inc(6.1) Azm(191.8) TVD(5978.46)
VS(274.28) NS(-236.32) EW(488.92)

#61 MD(6070.00) Inc(9.3) Azm(190.8) TVD(6022.06)
VS(279.96) NS(-242.11) EW(487.77)

#62 MD(6115.00) Inc(12.1) Azm(182.5) TVD(6066.27)
VS(288.15) NS(-250.39) EW(486.89)

#63 MD(6160.00) Inc(14.8) Azm(181.0) TVD(6110.03)
VS(298.55) NS(-260.85) EW(486.58)

#64 MD(6205.00) Inc(17.3) Azm(180.3) TVD(6153.28)
VS(310.94) NS(-273.29) EW(486.44)



#65 MD(6250.00) Inc(19.3) Azm(181.0) TVD(6196.00)
VS(325.01) NS(-287.42) EW(486.28)

#66 MD(6295.00) Inc(21.7) Azm(179.2) TVD(6238.15)
VS(340.72) NS(-303.18) EW(486.27)

#67 MD(6340.00) Inc(24.1) Azm(179.9) TVD(6279.60)
VS(358.18) NS(-320.69) EW(486.40)

#68 MD(6384.00) Inc(26.1) Azm(184.3) TVD(6319.44)
VS(376.70) NS(-339.32) EW(485.69)

#69 MD(6429.00) Inc(28.7) Azm(188.4) TVD(6359.39)
VS(397.02) NS(-359.89) EW(483.37)

#70 MD(6474.00) Inc(33.0) Azm(188.0) TVD(6398.02)
VS(419.52) NS(-382.72) EW(480.08)

#71 MD(6519.00) Inc(37.7) Azm(184.6) TVD(6434.71)
VS(445.09) NS(-408.59) EW(477.27)

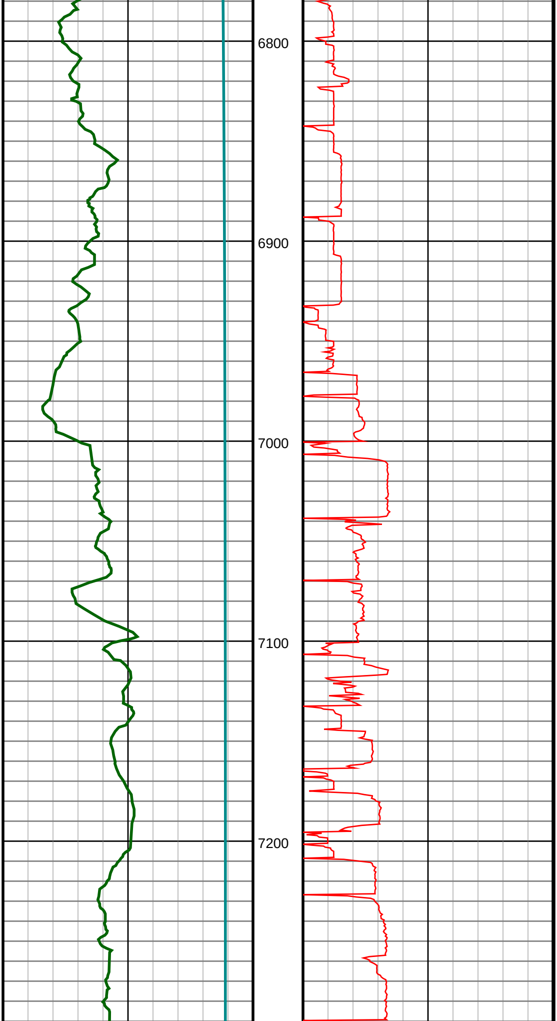
#72 MD(6563.00) Inc(42.7) Azm(182.4) TVD(6468.31)
VS(473.20) NS(-436.93) EW(475.56)

#73 MD(6608.00) Inc(46.4) Azm(177.2) TVD(6500.39)
VS(504.65) NS(-468.47) EW(475.72)

#74 MD(6653.00) Inc(49.6) Azm(177.3) TVD(6530.49)
VS(538.07) NS(-501.87) EW(477.33)

#75 MD(6698.00) Inc(53.2) Azm(177.3) TVD(6558.56)
VS(573.22) NS(-536.99) EW(478.98)

#76 MD(6743.00) Inc(58.2) Azm(175.9) TVD(6583.92)
VS(610.37) NS(-574.09) EW(481.20)



#77 MD(6787.00) Inc(63.3) Azm(177.2) TVD(6605.41)
VS(648.74) NS(-612.39) EW(483.50)

#78 MD(6832.00) Inc(68.2) Azm(178.6) TVD(6623.89)
VS(689.72) NS(-653.38) EW(484.99)

#79 MD(6877.00) Inc(73.7) Azm(180.7) TVD(6638.57)
VS(732.12) NS(-695.90) EW(485.24)

#80 MD(6922.00) Inc(79.3) Azm(181.7) TVD(6649.07)
VS(775.64) NS(-739.63) EW(484.32)

#81 MD(6945.00) Inc(82.7) Azm(181.7) TVD(6652.67)
VS(798.22) NS(-762.33) EW(483.64)

#82 MD(7039.00) Inc(84.6) Azm(181.4) TVD(6663.06)
VS(891.11) NS(-855.71) EW(481.12)

#83 MD(7070.00) Inc(84.9) Azm(181.6) TVD(6665.90)
VS(921.81) NS(-886.57) EW(480.31)

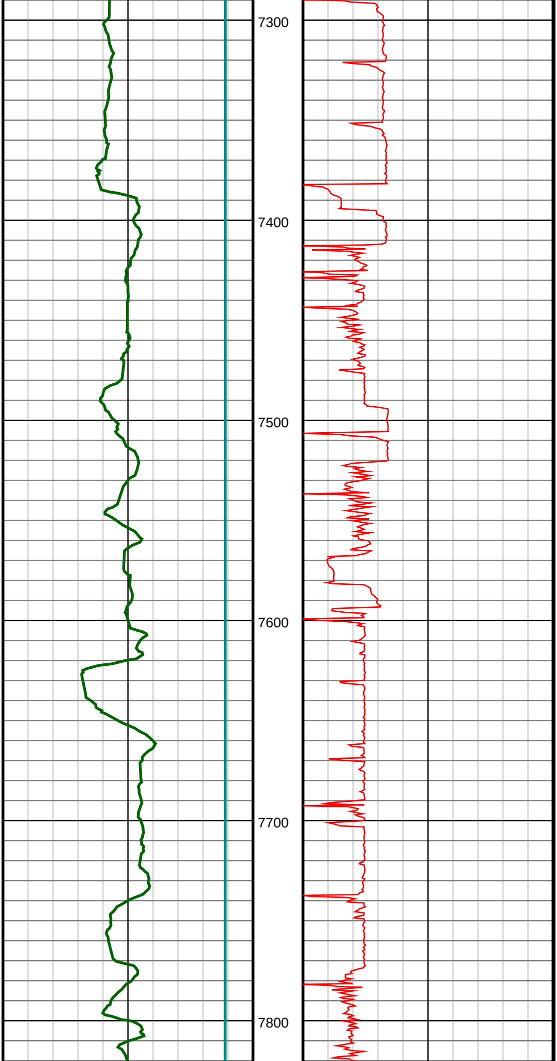
#84 MD(7101.00) Inc(85.5) Azm(181.1) TVD(6668.49)
VS(952.54) NS(-917.46) EW(479.58)

#85 MD(7133.00) Inc(86.9) Azm(181.2) TVD(6670.62)
VS(984.31) NS(-949.38) EW(478.94)

#86 MD(7164.00) Inc(88.5) Azm(181.1) TVD(6671.86)
VS(1015.13) NS(-980.35) EW(478.32)

#87 MD(7195.00) Inc(89.8) Azm(180.9) TVD(6672.32)
VS(1045.98) NS(-1011.34) EW(477.78)

#88 MD(7226.00) Inc(90.8) Azm(180.8) TVD(6672.16)
VS(1076.84) NS(-1042.33) EW(477.32)



#89 MD(7320.00) Inc(91.1) Azm(180.1) TVD(6670.60)
VS(1170.47) NS(-1136.32) EW(476.58)

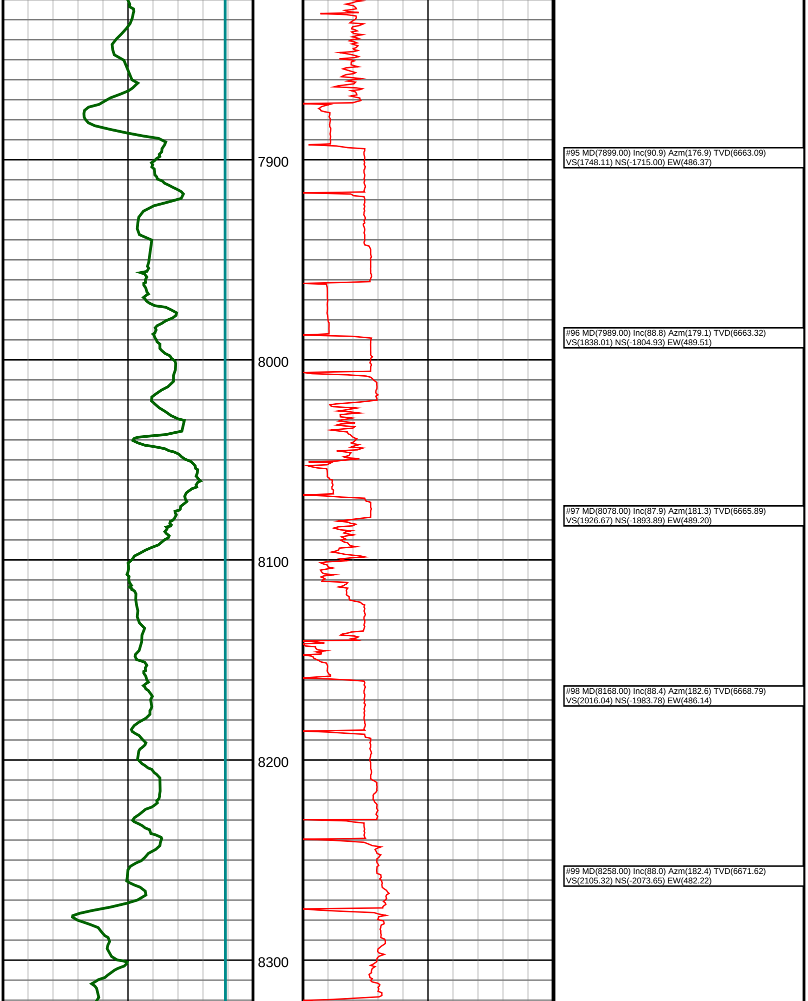
#90 MD(7413.00) Inc(89.8) Azm(180.3) TVD(6669.87)
VS(1263.15) NS(-1229.31) EW(476.26)

#91 MD(7507.00) Inc(90.9) Azm(180.2) TVD(6669.29)
VS(1356.82) NS(-1323.31) EW(475.84)

#92 MD(7599.00) Inc(90.2) Azm(180.0) TVD(6668.41)
VS(1448.51) NS(-1415.30) EW(475.68)

#93 MD(7720.00) Inc(90.7) Azm(178.3) TVD(6667.46)
VS(1569.25) NS(-1536.28) EW(477.48)

#94 MD(7810.00) Inc(92.0) Azm(176.7) TVD(6665.34)
VS(1659.17) NS(-1626.16) EW(481.40)



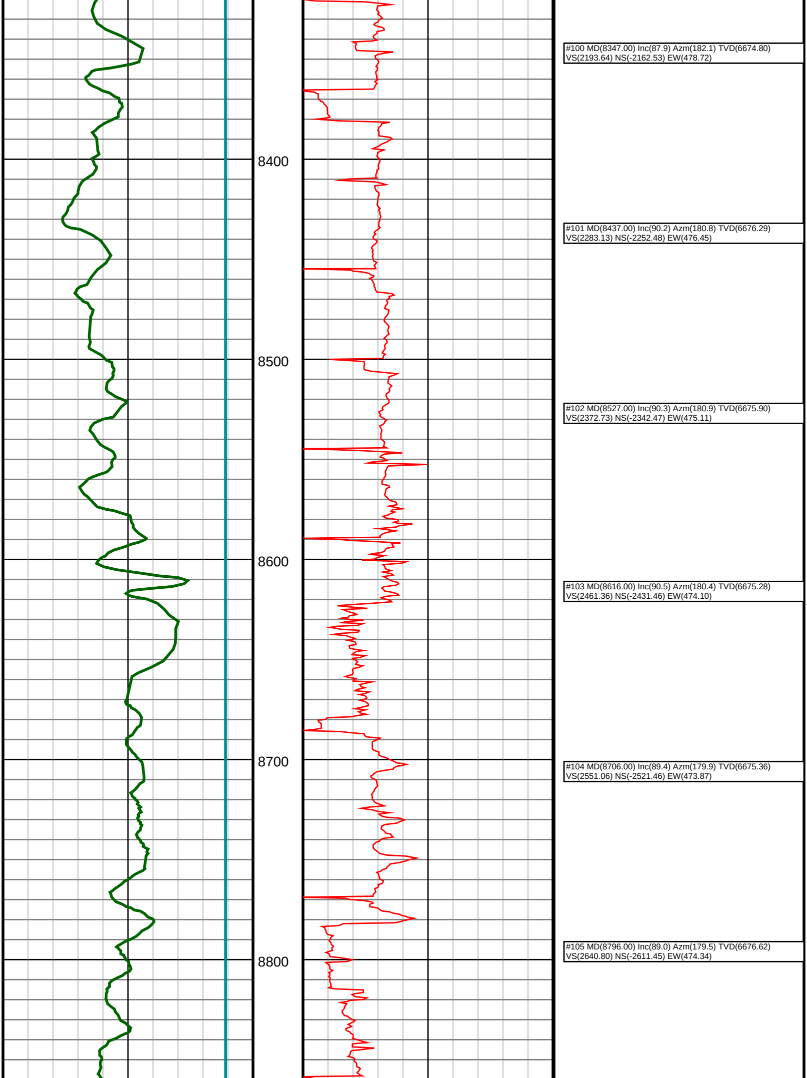
#95 MD(7899.00) Inc(90.9) Azm(176.9) TVD(6663.09)
VS(1748.11) NS(-1715.00) EW(486.37)

#96 MD(7989.00) Inc(88.8) Azm(179.1) TVD(6663.32)
VS(1838.01) NS(-1804.93) EW(489.51)

#97 MD(8078.00) Inc(87.9) Azm(181.3) TVD(6665.89)
VS(1926.67) NS(-1893.89) EW(489.20)

#98 MD(8168.00) Inc(88.4) Azm(182.6) TVD(6668.79)
VS(2016.04) NS(-1983.78) EW(486.14)

#99 MD(8258.00) Inc(88.0) Azm(182.4) TVD(6671.62)
VS(2105.32) NS(-2073.65) EW(482.22)



#100 MD(8347.00) Inc(87.9) Azm(182.1) TVD(6674.80)
VS(2193.64) NS(-2162.53) EW(478.72)

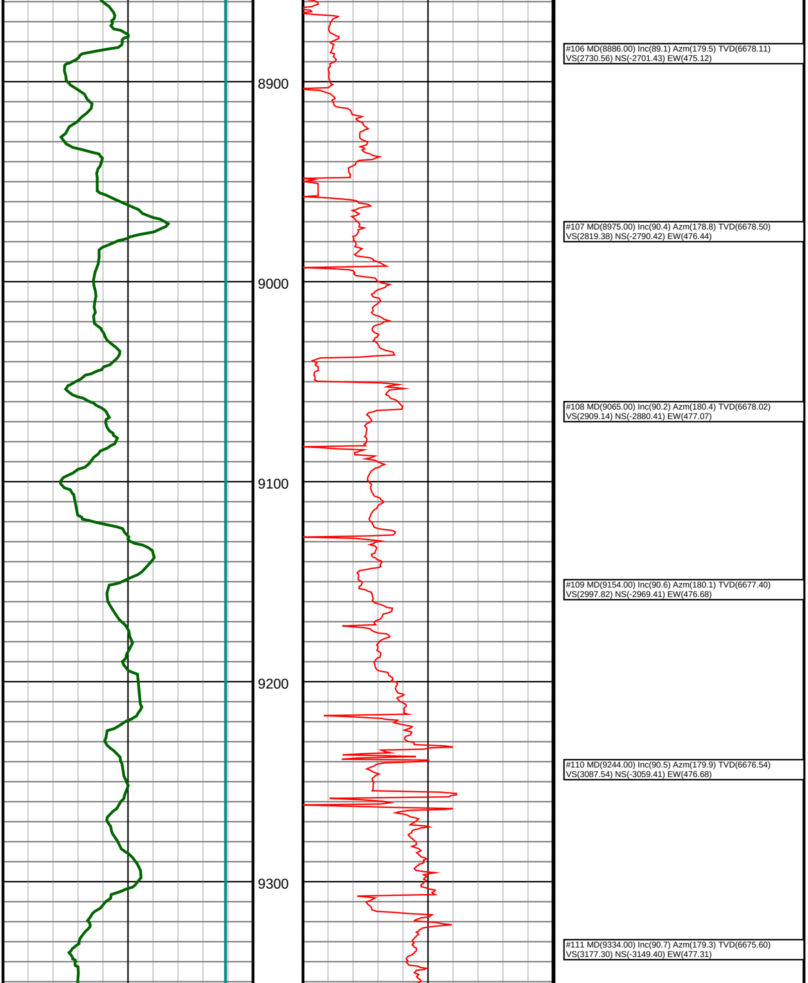
#101 MD(8437.00) Inc(90.2) Azm(180.8) TVD(6676.29)
VS(2283.13) NS(-2252.48) EW(476.45)

#102 MD(8527.00) Inc(90.3) Azm(180.9) TVD(6675.90)
VS(2372.73) NS(-2342.47) EW(475.11)

#103 MD(8616.00) Inc(90.5) Azm(180.4) TVD(6675.28)
VS(2461.36) NS(-2431.46) EW(474.10)

#104 MD(8706.00) Inc(89.4) Azm(179.9) TVD(6675.36)
VS(2551.06) NS(-2521.46) EW(473.87)

#105 MD(8796.00) Inc(89.0) Azm(179.5) TVD(6676.62)
VS(2640.80) NS(-2611.45) EW(474.34)



#106 MD(8886.00) Inc(89.1) Azm(179.5) TVD(6678.11)
VS(2730.56) NS(-2701.43) EW(475.12)

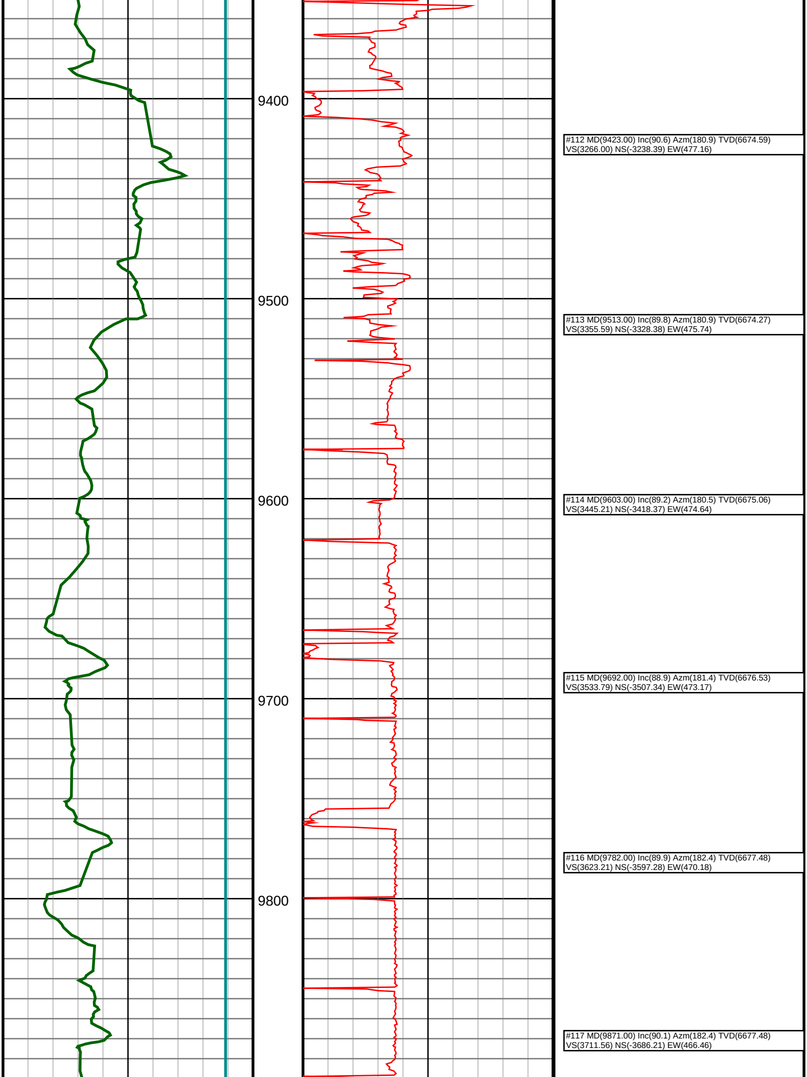
#107 MD(8975.00) Inc(90.4) Azm(178.8) TVD(6678.50)
VS(2819.38) NS(-2790.42) EW(476.44)

#108 MD(9065.00) Inc(90.2) Azm(180.4) TVD(6678.02)
VS(2909.14) NS(-2880.41) EW(477.07)

#109 MD(9154.00) Inc(90.6) Azm(180.1) TVD(6677.40)
VS(2997.82) NS(-2969.41) EW(476.68)

#110 MD(9244.00) Inc(90.5) Azm(179.9) TVD(6676.54)
VS(3087.54) NS(-3059.41) EW(476.68)

#111 MD(9334.00) Inc(90.7) Azm(179.3) TVD(6675.60)
VS(3177.30) NS(-3149.40) EW(477.31)



#112 MD(9423.00) Inc(90.6) Azm(180.9) TVD(6674.59)
VS(3266.00) NS(-3238.39) EW(477.16)

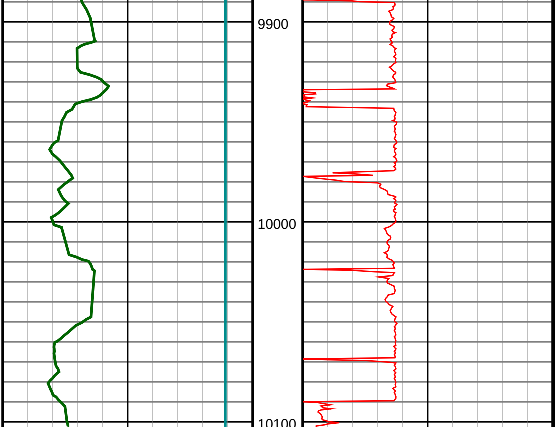
#113 MD(9513.00) Inc(89.8) Azm(180.9) TVD(6674.27)
VS(3355.59) NS(-3328.38) EW(475.74)

#114 MD(9603.00) Inc(89.2) Azm(180.5) TVD(6675.06)
VS(3445.21) NS(-3418.37) EW(474.64)

#115 MD(9692.00) Inc(88.9) Azm(181.4) TVD(6676.53)
VS(3533.79) NS(-3507.34) EW(473.17)

#116 MD(9782.00) Inc(89.9) Azm(182.4) TVD(6677.48)
VS(3623.21) NS(-3597.28) EW(470.18)

#117 MD(9871.00) Inc(90.1) Azm(182.4) TVD(6677.48)
VS(3711.56) NS(-3686.21) EW(466.46)



#118 MD(9961.00) Inc(90.9) Azm(183.0) TVD(6676.69)
VS(3800.84) NS(-3776.10) EW(462.22)

#119 MD(10051.00) Inc(90.9) Azm(182.5) TVD(6675.28)
VS(3890.10) NS(-3865.99) EW(457.90)

#120 MD(10140.00) Inc(90.7) Azm(183.3) TVD(6674.04)
VS(3978.34) NS(-3954.86) EW(453.40)

#121 MD(10230.00) Inc(90.9) Azm(181.3) TVD(6672.78)
VS(4067.69) NS(-4044.78) EW(449.79)

#122 MD(10319.00) Inc(90.6) Azm(180.7) TVD(6671.61)
VS(4156.26) NS(-4133.76) EW(448.23)

#123 MD(10409.00) Inc(90.3) Azm(180.4) TVD(6670.91)
VS(4245.91) NS(-4223.75) EW(447.37)

#124 MD(10498.00) Inc(90.2) Azm(180.2) TVD(6670.52)
VS(4334.59) NS(-4312.75) EW(446.90)

#125 MD(10588.00) Inc(91.0) Azm(181.1) TVD(6669.58)
VS(4424.21) NS(-4402.73) EW(445.88)

#126 MD(10677.00) Inc(91.6) Azm(182.3) TVD(6667.56)
VS(4512.66) NS(-4491.67) EW(443.24)

#127 MD(10767.00) Inc(91.4) Azm(180.9) TVD(6665.20)
VS(4602.11) NS(-4581.60) EW(440.73)

#128 MD(10857.00) Inc(90.1) Azm(178.5) TVD(6664.02)
VS(4691.85) NS(-4671.58) EW(441.20)

#129 MD(10946.00) Inc(90.8) Azm(175.1) TVD(6663.32)
VS(4780.81) NS(-4760.43) EW(446.17)

#130 MD(11036.00) Inc(90.3) Azm(176.6) TVD(6662.46)
VS(4870.80) NS(-4850.19) EW(452.68)

#131 MD(11126.00) Inc(90.5) Azm(178.0) TVD(6661.83)
VS(4960.75) NS(-4940.08) EW(456.92)

#132 MD(11215.00) Inc(90.0) Azm(178.3) TVD(6661.44)
VS(5049.65) NS(-5029.03) EW(459.79)

#133 MD(11305.00) Inc(90.2) Azm(178.7) TVD(6661.29)
VS(5139.52) NS(-5119.00) EW(462.15)

#134 MD(11394.00) Inc(90.4) Azm(178.8) TVD(6660.82)
VS(5228.37) NS(-5207.98) EW(464.09)

#135 MD(11419.00) Inc(90.5) Azm(178.4) TVD(6660.62)
VS(5253.34) NS(-5232.97) EW(464.70)