Mahalo State AA09-74-1AHNC

ENSIGN Directional Services

TVD
2":100'

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

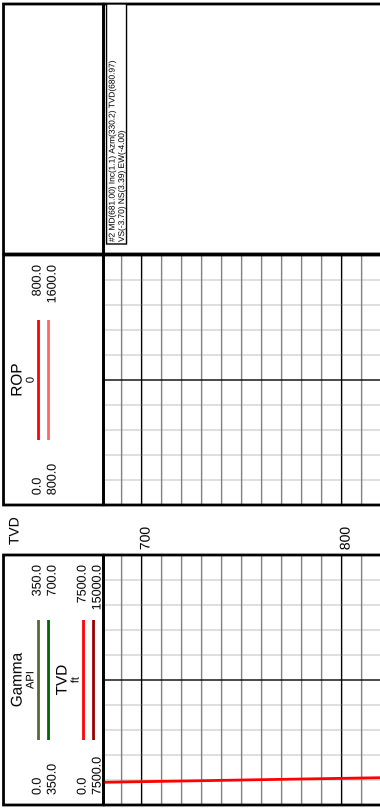
Casing	Depth	Size
Surface:	842	9 5/8
Intermediate:	6990	7

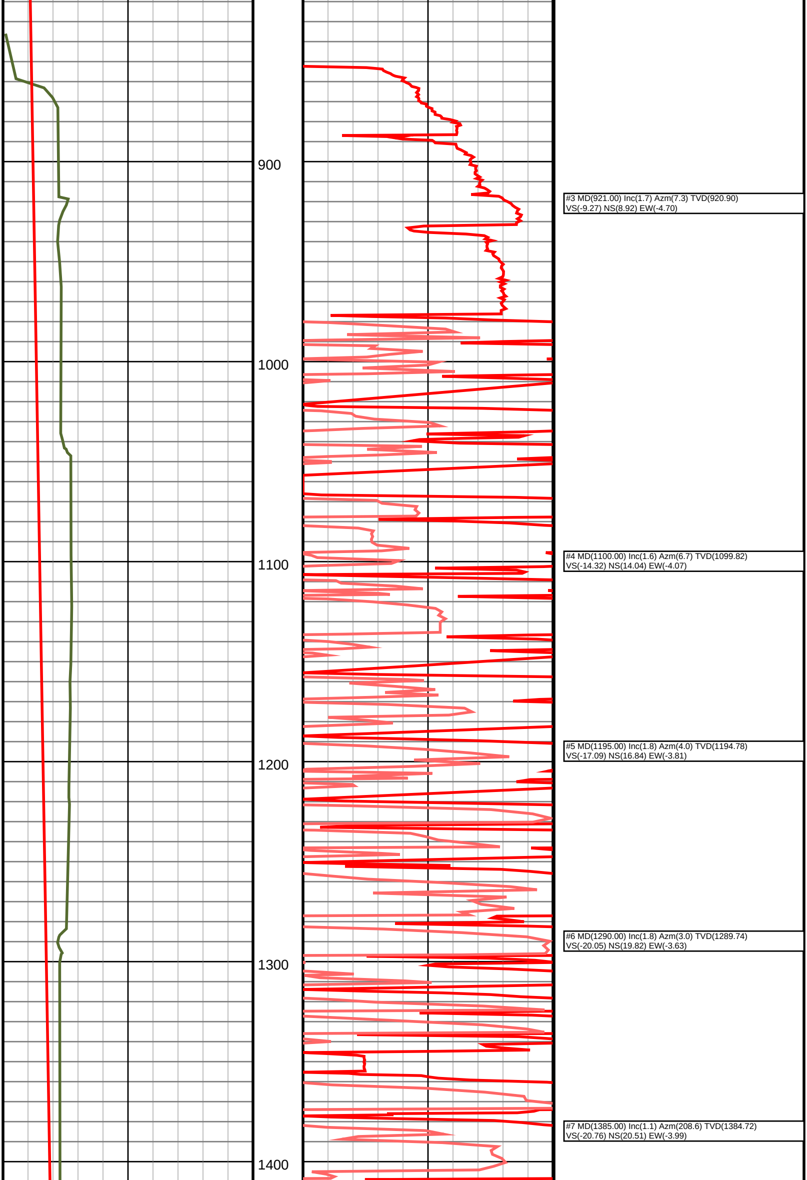
Mud Type:
Density:
Viscosity:
Rm: **Rmf:** **Rmc:**

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.





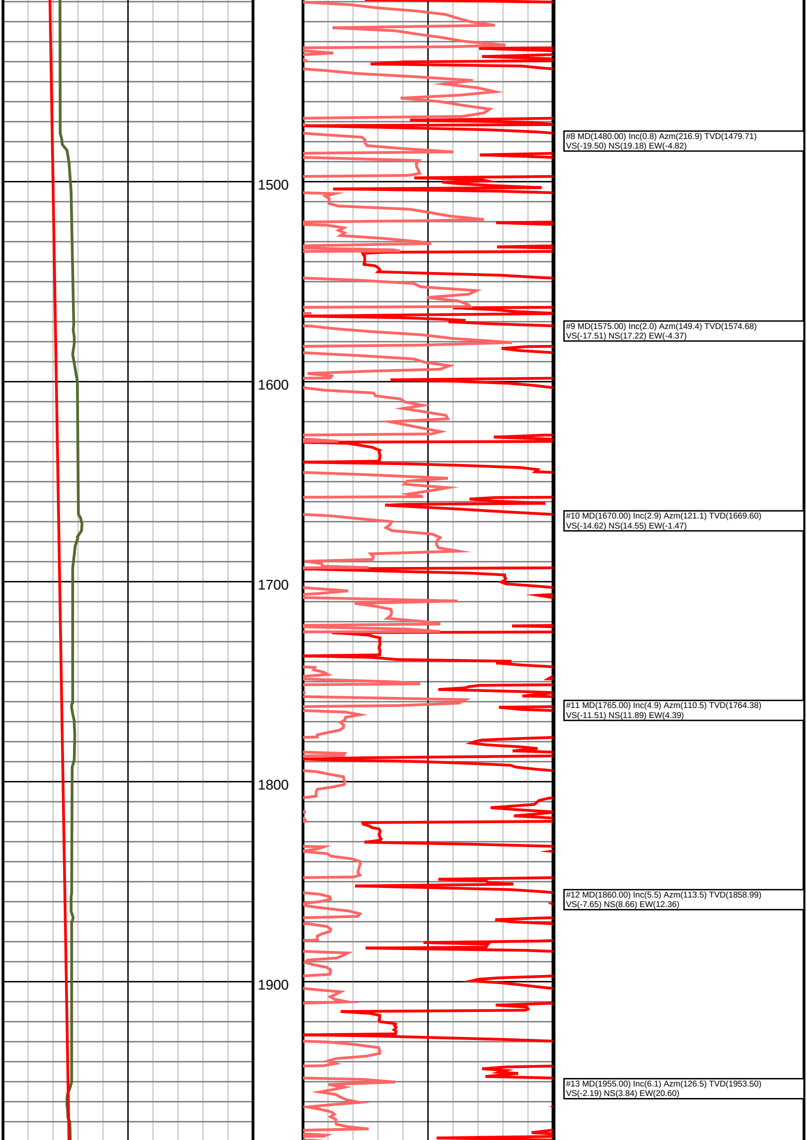
#3 MD(921.00) Inc(1.7) Azm(7.3) TVD(920.90)
VS(-9.27) NS(8.92) EW(-4.70)

#4 MD(1100.00) Inc(1.6) Azm(6.7) TVD(1099.82)
VS(-14.32) NS(14.04) EW(-4.07)

#5 MD(1195.00) Inc(1.8) Azm(4.0) TVD(1194.78)
VS(-17.09) NS(16.84) EW(-3.81)

#6 MD(1290.00) Inc(1.8) Azm(3.0) TVD(1289.74)
VS(-20.05) NS(19.82) EW(-3.63)

#7 MD(1385.00) Inc(1.1) Azm(208.6) TVD(1384.72)
VS(-20.76) NS(20.51) EW(-3.99)



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

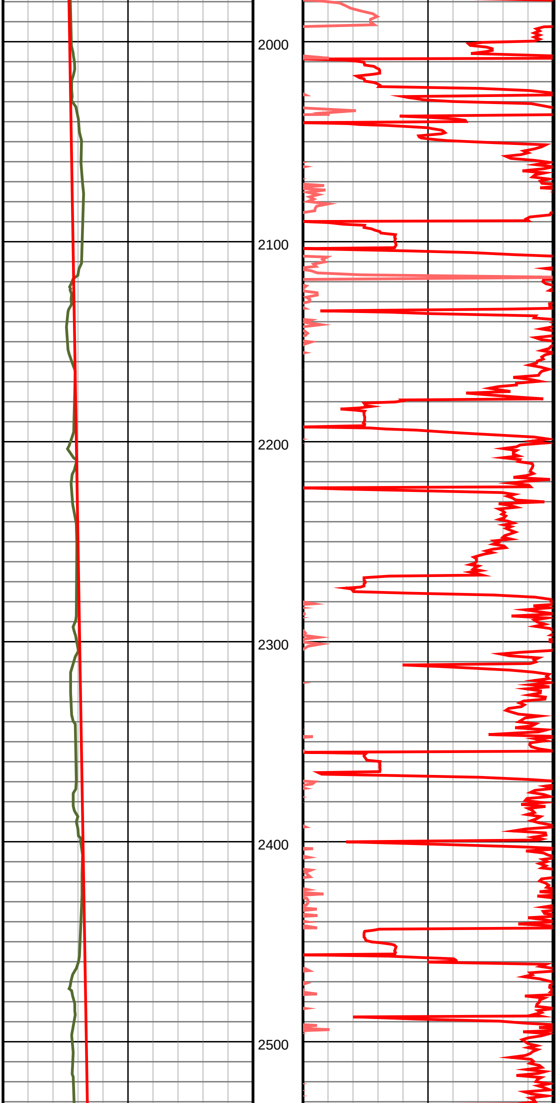
#9 MD(1575.00) Inc(2.0) Azm(149.4) TVD(1574.68)
VS(-17.51) NS(17.22) EW(-4.37)

#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)

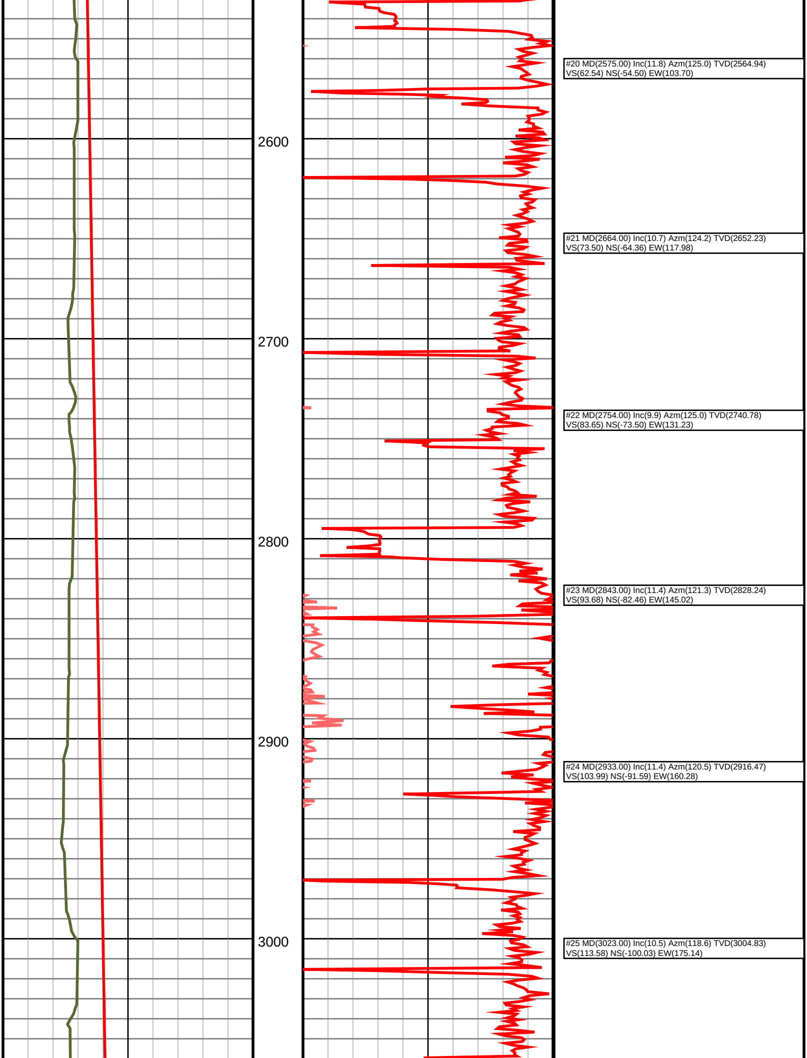
#15 MD(2127.00) Inc(8.7) Azm(128.7) TVD(2123.95)
VS(12.37) NS(-9.27) EW(39.43)

#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)

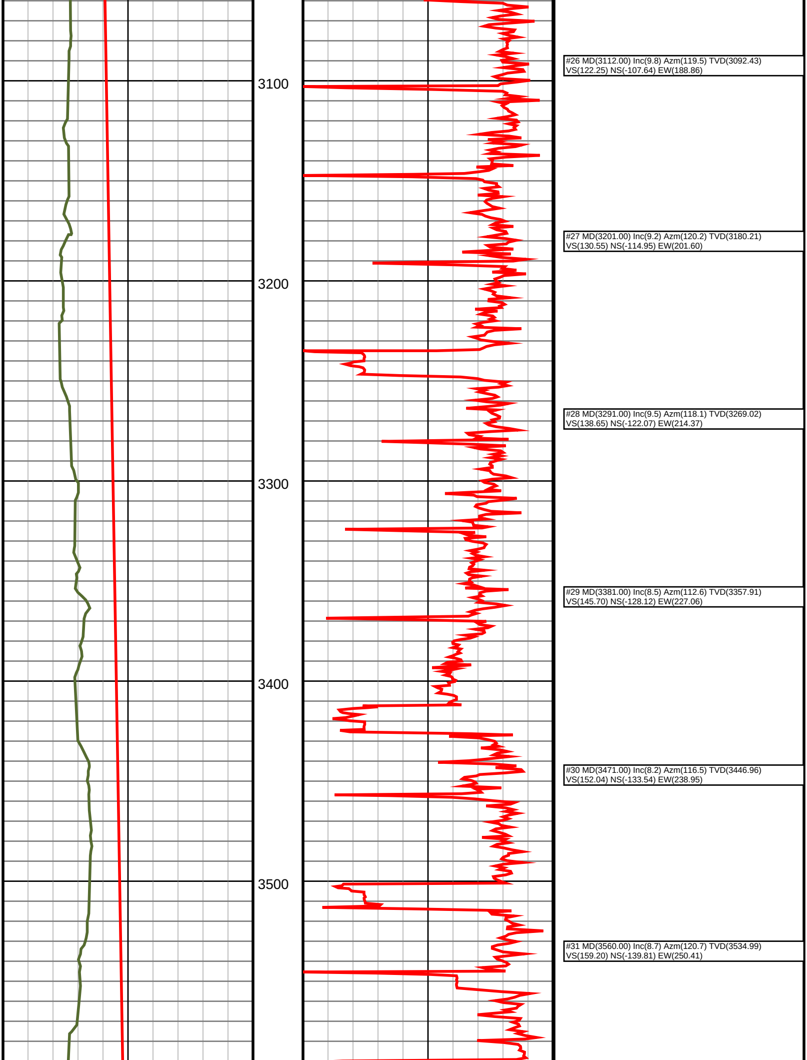
#21 MD(2664.00) Inc(10.7) Azm(124.2) TVD(2652.23)
VS(73.50) NS(-64.36) EW(117.98)

#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)

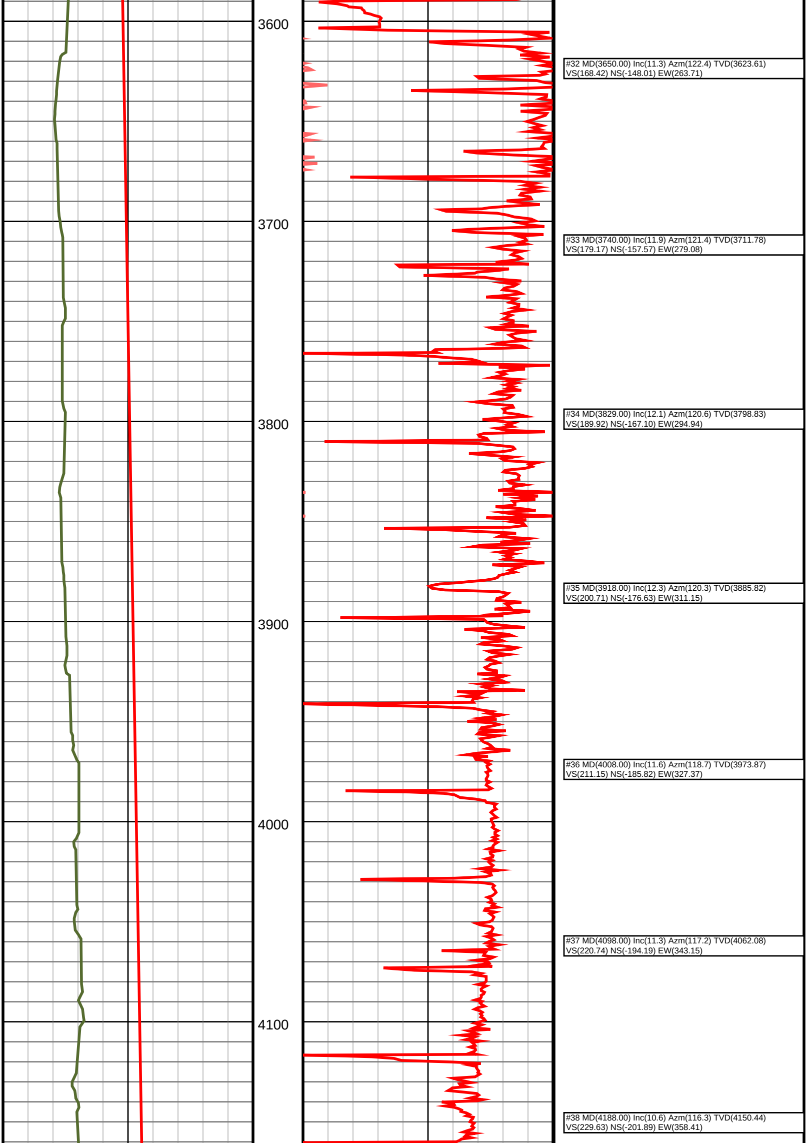
#27 MD(3201.00) Inc(9.2) Azm(120.2) TVD(3180.21)
VS(130.55) NS(-114.95) EW(201.60)

#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)

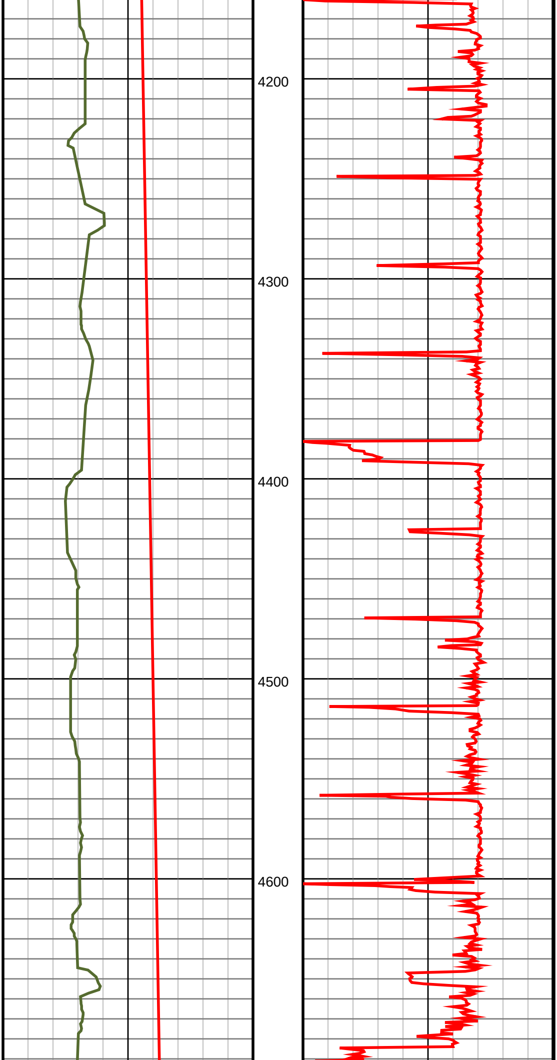
#34 MD(3829.00) Inc(12.1) Azm(120.6) TVD(3798.83)
VS(189.92) NS(-167.10) EW(294.94)

#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)

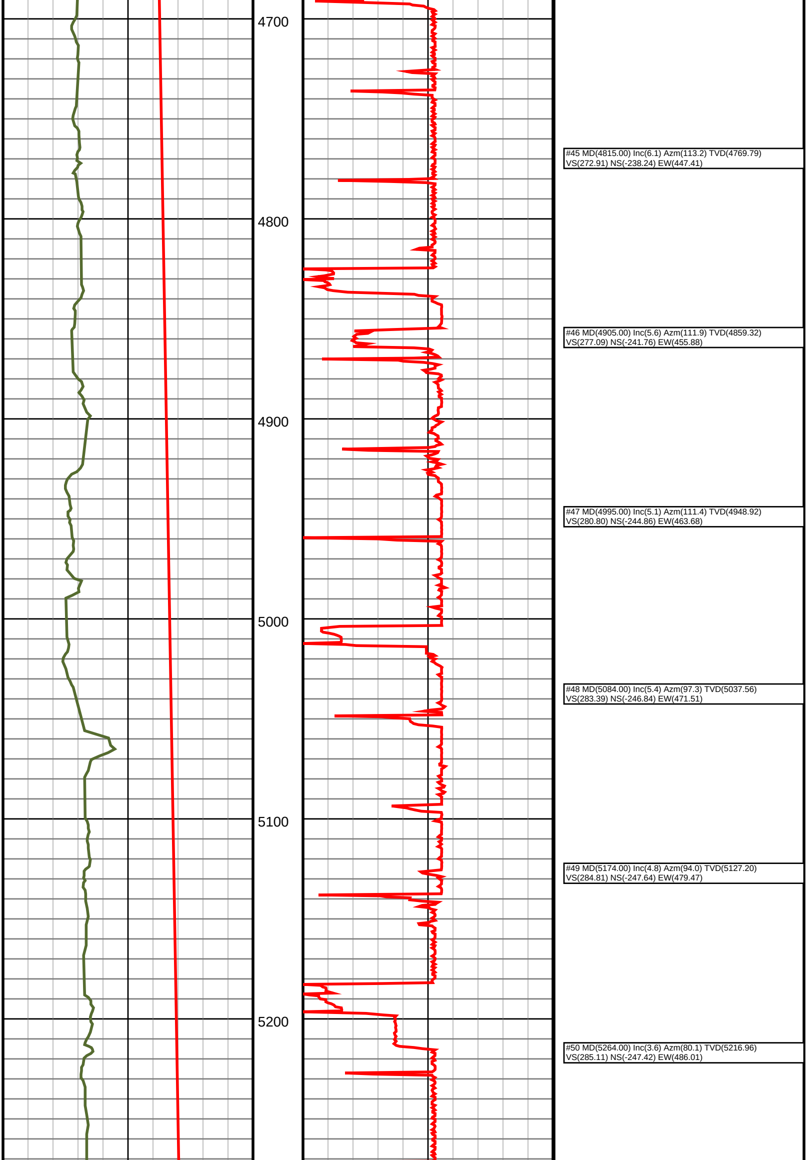
#40 MD(4367.00) Inc(9.4) Azm(114.9) TVD(4326.64)
VS(245.59) NS(-215.65) EW(386.79)

#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)

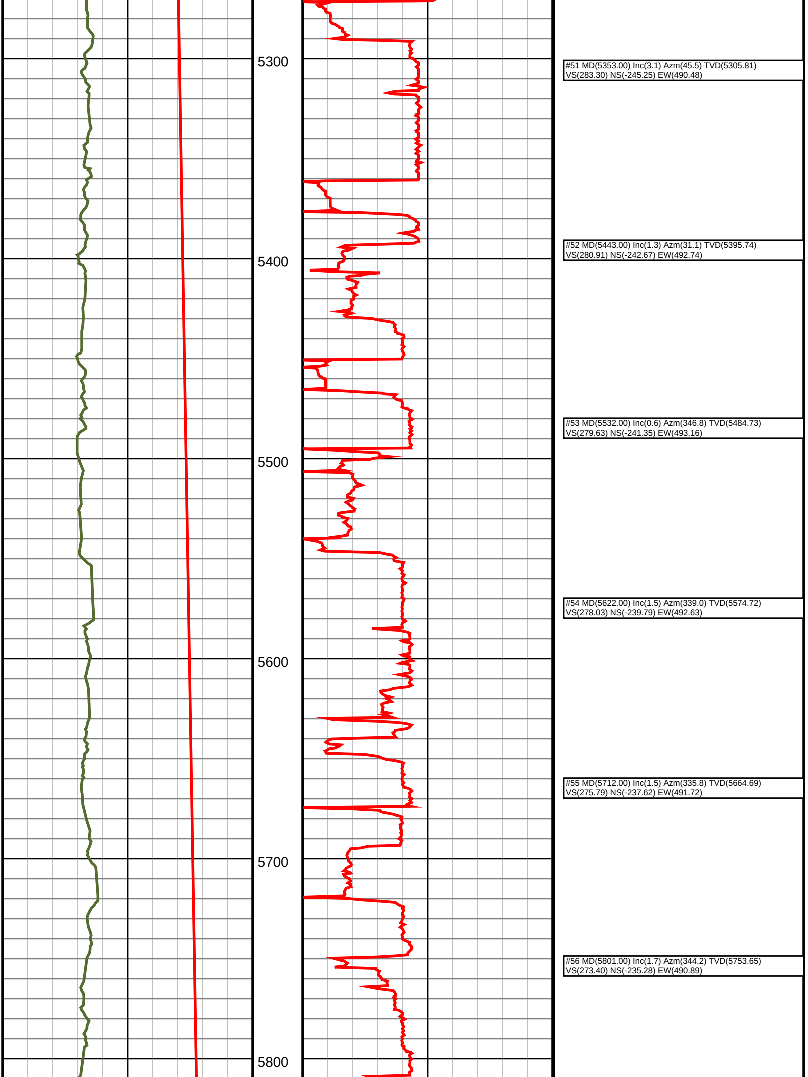
#46 MD(4905.00) Inc(5.6) Azm(111.9) TVD(4859.32)
VS(277.09) NS(-241.76) EW(455.88)

#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)

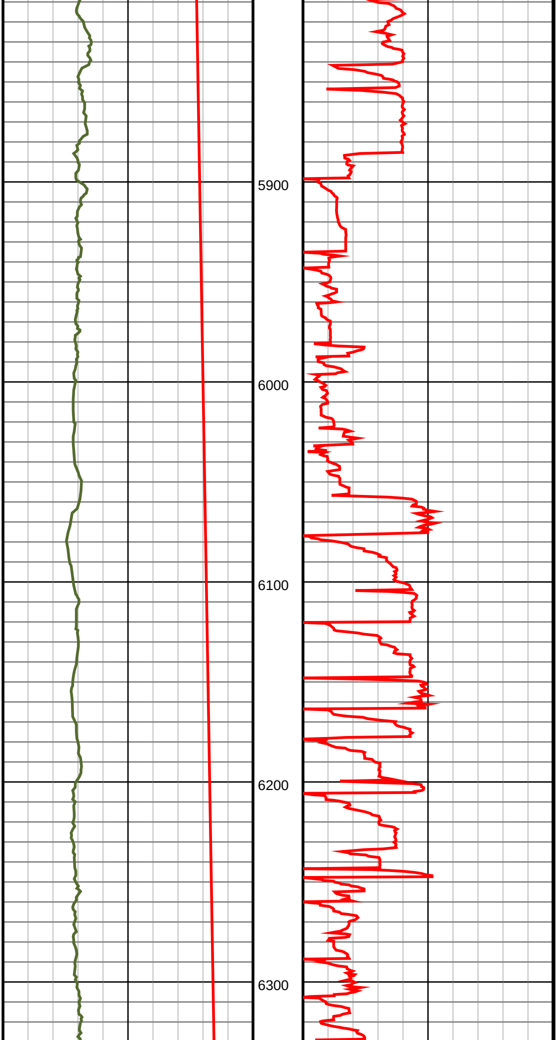
#52 MD(5443.00) Inc(1.3) Azm(31.1) TVD(5395.74)
VS(280.91) NS(-242.67) EW(492.74)

#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)

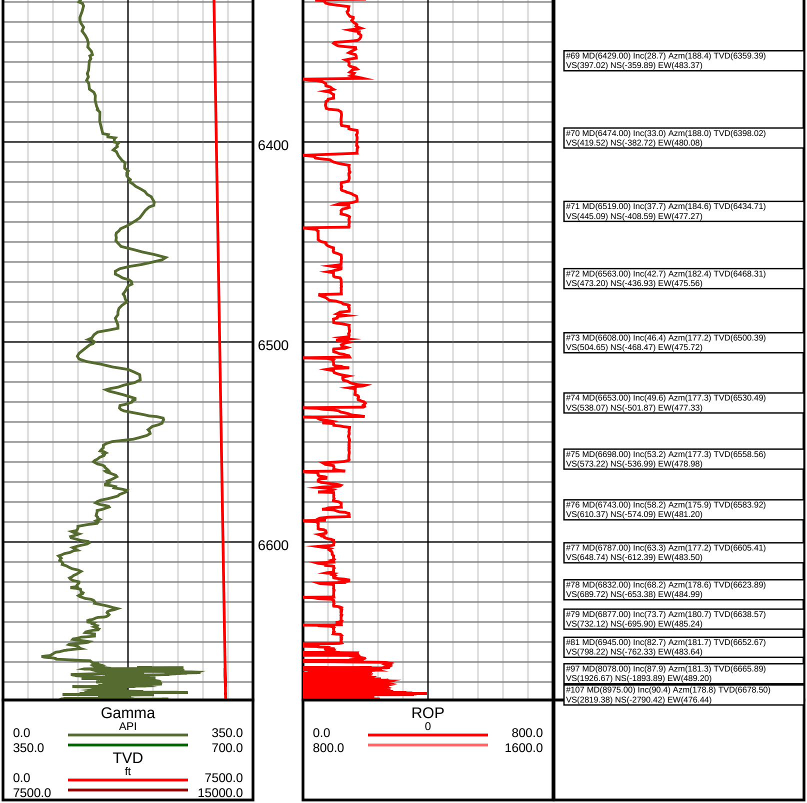
#64 MD(6205.00) Inc(17.3) Azm(180.3) TVD(6153.28)
VS(310.94) NS(-273.29) EW(486.44)

#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)

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

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

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