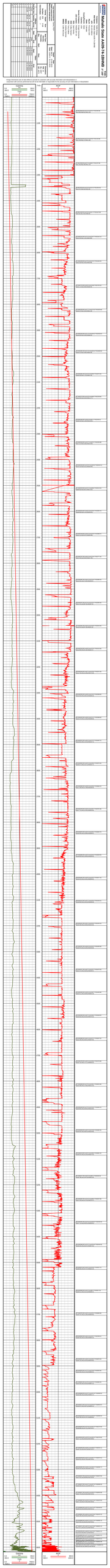

Mahalo State AA09-74-1BHNB

TVD 2":100'

ENSIGN Directional Services

Company: Noble Energy
Well Name: Mahalo State AA09-74-1BHNB
API: 05-123-39014
Rig Id: Precision 829
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: Ensign Directional
Job number: PD829-207-34
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:	846 ft	01-06-2015
End:	11824 ft	01-11-2015

Casing	**Depth**	**Size**
Surface:	836	9 5/8
Intermediate:	7025	7

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

Elevations
KB: 16
GL: 4857
DF: 4873

Run	**Bit Size**	**Offsets**		**Depths**		**Dates**	
		Gamma	**Survey**	**Start**	**End**	**Start**	**End**
1	13.5			0	846	01-05-2015	01-06-2015
2	8.75	58.79	53.79	846	7035	01-06-2015	01-08-2015
3	6.125	65.25	60.25	7035	11824	01-09-2015	01-11-2015
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.

#5 MD(1056.00) Inc(0.4) Azm(32.2) TVD(1055.99)
VS(-0.80) NS(0.51) EW(-2.18)

#6 MD(1164.00) Inc(0.4) Azm(25.8) TVD(1163.99)
VS(-1.40) NS(1.17) EW(-1.82)

#7 MD(1258.00) Inc(0.7) Azm(88.2) TVD(1257.99)
VS(-1.62) NS(1.49) EW(-1.10)

#8 MD(1353.00) Inc(3.3) Azm(115.3) TVD(1352.92)
VS(-0.07) NS(0.34) EW(1.95)

#9 MD(1448.00) Inc(4.9) Azm(141.7) TVD(1447.68)
VS(4.91) NS(-4.02) EW(6.94)

#10 MD(1543.00) Inc(7.4) Azm(134.7) TVD(1542.13)
VS(13.24) NS(-11.51) EW(13.80)

#11 MD(1638.00) Inc(7.9) Azm(122.5) TVD(1636.29)
VS(22.30) NS(-19.32) EW(23.66)

#12 MD(1733.00) Inc(9.5) Azm(118.8) TVD(1730.19)
VS(31.17) NS(-26.60) EW(36.04)

#13 MD(1828.00) Inc(11.1) Azm(113.6) TVD(1823.66)
VS(40.57) NS(-34.04) EW(51.29)

#14 MD(1923.00) Inc(11.2) Azm(106.2) TVD(1916.87)
VS(49.05) NS(-40.28) EW(68.53)

#15 MD(1991.00) Inc(11.0) Azm(106.4) TVD(1983.60)
VS(54.37) NS(-43.95) EW(81.09)

#16 MD(2081.00) Inc(10.3) Azm(99.9) TVD(2072.05)
VS(60.30) NS(-47.76) EW(97.26)

#17 MD(2170.00) Inc(10.0) Azm(96.8) TVD(2159.66)
VS(64.63) NS(-50.04) EW(112.77)

#18 MD(2260.00) Inc(9.9) Azm(93.1) TVD(2248.31)
VS(68.02) NS(-51.39) EW(128.25)

#19 MD(2349.00) Inc(10.7) Azm(97.2) TVD(2335.88)
VS(71.57) NS(-52.83) EW(144.09)

#20 MD(2439.00) Inc(10.0) Azm(100.5) TVD(2424.41)
VS(76.15) NS(-55.31) EW(160.06)

#21 MD(2529.00) Inc(10.1) Azm(99.8) TVD(2513.03)
VS(80.95) NS(-58.07) EW(175.52)

#22 MD(2618.00) Inc(9.6) Azm(103.6) TVD(2600.72)
VS(85.98) NS(-61.15) EW(190.43)

#23 MD(2708.00) Inc(9.5) Azm(102.9) TVD(2689.47)
VS(91.31) NS(-64.57) EW(204.96)

#24 MD(2797.00) Inc(8.4) Azm(115.6) TVD(2777.40)
VS(97.46) NS(-69.02) EW(217.99)

#25 MD(2887.00) Inc(8.4) Azm(115.0) TVD(2866.43)
VS(104.61) NS(-74.64) EW(229.87)

#26 MD(2977.00) Inc(7.6) Azm(124.2) TVD(2955.56)
VS(112.13) NS(-80.76) EW(240.75)

#27 MD(3067.00) Inc(8.3) Azm(120.8) TVD(3044.69)
VS(120.14) NS(-87.43) EW(251.25)

#28 MD(3156.00) Inc(8.9) Azm(122.6) TVD(3132.69)
VS(128.59) NS(-94.43) EW(262.57)

#29 MD(3246.00) Inc(8.7) Azm(120.9) TVD(3221.63)
VS(137.33) NS(-101.68) EW(274.28)

#30 MD(3335.00) Inc(8.8) Azm(116.2) TVD(3309.60)
VS(145.32) NS(-108.14) EW(286.16)

#31 MD(3425.00) Inc(8.6) Azm(114.1) TVD(3398.56)
VS(152.70) NS(-113.93) EW(298.48)

#32 MD(3515.00) Inc(8.4) Azm(112.2) TVD(3487.57)
VS(159.51) NS(-119.16) EW(310.71)

#33 MD(3604.00) Inc(9.5) Azm(106.6) TVD(3575.49)
VS(165.77) NS(-123.71) EW(323.77)

#34 MD(3694.00) Inc(9.8) Azm(105.6) TVD(3664.22)
VS(171.84) NS(-127.89) EW(338.26)

#35 MD(3783.00) Inc(9.5) Azm(105.7) TVD(3751.96)
VS(177.75) NS(-131.92) EW(352.63)

#36 MD(3873.00) Inc(9.4) Azm(105.2) TVD(3840.74)
VS(183.55) NS(-135.86) EW(366.87)

#37 MD(3963.00) Inc(9.2) Azm(104.3) TVD(3929.55)
VS(189.09) NS(-139.56) EW(380.94)

#38 MD(4052.00) Inc(9.0) Azm(103.2) TVD(4017.43)
VS(194.23) NS(-142.91) EW(394.61)

#39 MD(4142.00) Inc(9.1) Azm(103.4) TVD(4106.31)
VS(199.30) NS(-146.16) EW(408.39)

#40 MD(4231.00) Inc(9.1) Azm(104.5) TVD(4194.19)
VS(204.48) NS(-149.56) EW(422.05)

#41 MD(4321.00) Inc(8.9) Azm(104.2) TVD(4283.08)
VS(209.76) NS(-153.05) EW(435.69)

#42 MD(4411.00) Inc(8.7) Azm(102.7) TVD(4372.03)
VS(214.72) NS(-156.25) EW(449.07)

#43 MD(4500.00) Inc(8.9) Azm(108.7) TVD(4459.98)
VS(220.11) NS(-159.94) EW(462.16)

#44 MD(4590.00) Inc(8.7) Azm(108.4) TVD(4548.92)
VS(226.20) NS(-164.32) EW(475.22)

#45 MD(4680.00) Inc(8.4) Azm(107.2) TVD(4637.92)
VS(231.95) NS(-168.41) EW(487.95)

#46 MD(4769.00) Inc(8.3) Azm(106.6) TVD(4725.98)
VS(237.32) NS(-172.17) EW(500.32)

#47 MD(4859.00) Inc(7.9) Azm(108.1) TVD(4815.08)
VS(242.68) NS(-175.95) EW(512.43)

#48 MD(4949.00) Inc(7.9) Azm(116.5) TVD(4904.23)
VS(248.84) NS(-180.63) EW(523.84)

#49 MD(5038.00) Inc(8.2) Azm(116.8) TVD(4992.35)
VS(255.87) NS(-186.22) EW(534.98)

#50 MD(5128.00) Inc(9.2) Azm(108.5) TVD(5081.32)
VS(262.67) NS(-191.40) EW(547.53)

#51 MD(5217.00) Inc(9.2) Azm(99.1) TVD(5169.18)
VS(267.86) NS(-194.78) EW(561.30)

#52 MD(5307.00) Inc(10.2) Azm(99.5) TVD(5257.89)
VS(272.29) NS(-197.23) EW(576.27)

#53 MD(5397.00) Inc(10.3) Azm(100.5) TVD(5346.45)
VS(277.14) NS(-200.01) EW(592.04)

#54 MD(5486.00) Inc(10.1) Azm(104.9) TVD(5434.05)
VS(282.62) NS(-203.47) EW(607.40)

#55 MD(5576.00) Inc(9.5) Azm(103.8) TVD(5522.73)
VS(288.36) NS(-207.27) EW(622.24)

#56 MD(5666.00) Inc(9.2) Azm(98.7) TVD(5611.54)
VS(293.11) NS(-210.13) EW(636.57)

#57 MD(5755.00) Inc(9.3) Azm(103.2) TVD(5699.38)
VS(297.67) NS(-212.85) EW(650.60)

#58 MD(5845.00) Inc(8.4) Azm(102.7) TVD(5788.31)
VS(302.55) NS(-215.96) EW(664.10)

#59 MD(5934.00) Inc(8.6) Azm(106.3) TVD(5876.33)
VS(307.51) NS(-219.25) EW(676.82)

#60 MD(5979.00) Inc(7.3) Azm(116.8) TVD(5920.90)
VS(310.50) NS(-221.49) EW(682.61)

#61 MD(6024.00) Inc(7.8) Azm(137.5) TVD(5965.52)
VS(314.62) NS(-225.03) EW(687.22)

#62 MD(6068.00) Inc(10.7) Azm(151.8) TVD(6008.95)
VS(320.90) NS(-230.83) EW(691.17)

#63 MD(6113.00) Inc(14.4) Azm(159.3) TVD(6052.87)
VS(330.27) NS(-239.75) EW(695.12)

#64 MD(6158.00) Inc(19.3) Azm(159.9) TVD(6095.92)
VS(342.99) NS(-251.97) EW(699.66)

#65 MD(6203.00) Inc(22.9) Azm(162.4) TVD(6137.90)
VS(358.88) NS(-267.31) EW(704.87)

#66 MD(6248.00) Inc(25.5) Azm(165.4) TVD(6178.95)
VS(377.12) NS(-285.03) EW(709.96)

#67 MD(6293.00) Inc(28.1) Azm(168.2) TVD(6219.11)
VS(397.31) NS(-304.78) EW(714.57)

#68 MD(6338.00) Inc(32.7) Azm(167.7) TVD(6257.91)
VS(420.01) NS(-327.05) EW(719.32)

#69 MD(6382.00) Inc(38.1) Azm(168.7) TVD(6293.77)
VS(445.42) NS(-351.99) EW(724.52)

#70 MD(6427.00) Inc(43.0) Azm(168.6) TVD(6327.95)
VS(474.61) NS(-380.66) EW(730.28)

#71 MD(6472.00) Inc(44.7) Azm(167.5) TVD(6360.40)
VS(505.69) NS(-411.16) EW(736.74)

#72 MD(6517.00) Inc(46.5) Azm(169.1) TVD(6391.88)
VS(537.76) NS(-442.64) EW(743.25)

#73 MD(6562.00) Inc(49.5) Azm(172.8) TVD(6422.00)
VS(571.18) NS(-475.65) EW(748.48)

#74 MD(6606.00) Inc(52.0) Azm(174.8) TVD(6449.84)
VS(605.23) NS(-509.52) EW(752.15)

#75 MD(6651.00) Inc(56.4) Azm(176.8) TVD(6476.15)
VS(641.65) NS(-545.91) EW(754.80)

#76 MD(6696.00) Inc(59.2) Azm(177.6) TVD(6500.13)
VS(679.59) NS(-583.94) EW(756.66)

#77 MD(6741.00) Inc(62.3) Azm(176.8) TVD(6522.12)
VS(718.71) NS(-623.15) EW(758.58)

#78 MD(6786.00) Inc(66.9) Azm(176.6) TVD(6541.41)
VS(759.23) NS(-663.72) EW(760.92)

#79 MD(6830.00) Inc(71.4) Azm(176.0) TVD(6557.07)
VS(800.24) NS(-704.75) EW(763.58)

#80 MD(6875.00) Inc(74.1) Azm(176.5) TVD(6570.41)
VS(843.11) NS(-747.63) EW(766.39)

#81 MD(6920.00) Inc(77.4) Azm(176.9) TVD(6581.49)
VS(886.59) NS(-791.16) EW(768.90)

#135 MD(11514.00) Inc(90.7) Azm(182.0) TVD(6594.51)
VS(5434.83) NS(-5380.62) EW(766.90)

Gamma
API
0.0 350.0
350.0 700.0
TVD
ft
0.0 7500.0
7500.0 15000.0

ROP
0
0.0 800.0
800.0 1600.0