ENSIGN

Elbert 1N

PDC ENERGY

MD 2":100'

Company: PDC
Well Name: Elbert 1N
API: 05 123 44562 00
County/Parish: WELD
State: CO
Country: USA
Job number: 160-99
Field: Wattenberg
Rig Id: Ensign 160
Survey Company: Ensign Directional
Day Direction Driller Richard Stahl
Night Direction Driller Hugh McGraw

MWD 1 Chad Lousberg
MWD 2 Roy Montante

Log measurements: Gamma
Depth measured from:
Maximum temperature:

	Depth	Date
Start:	0 ft	9/2/17
End:	12082 ft	9/7/2017

Casing	Depth	Size
Surface:	1650 ft	9 5/8"
Intermediate:		

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

Elevations
KB: 4661 ft
GL: 4638 ft
DF: 4661 ft

Run	Bit Size	Offsets		Depths		Dates	
		Gamma	Survey	Start	End	Start	End
1	12.25"		60.00 ft	0 ft	1670 ft	9/2/17	9/2/17
2	8.5"	62.20 ft	57.20 ft	1670 ft	12082 ft	9/3/17	9/7/2017
3							
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.

#19 MD(1756.00) Inc(14.7) Azm(327.4) TVD(1720.41) VS(-23.43) DLS(1.1)

#20 MD(1845.00) Inc(14.9) Azm(332.3) TVD(1806.46) VS(-27.66) DLS(1.4)

#21 MD(1935.00) Inc(14.1) Azm(328.0) TVD(1893.60) VS(-31.72) DLS(1.5)

#22 MD(2025.00) Inc(14.3) Azm(336.4) TVD(1980.85) VS(-34.93) DLS(2.3)

#23 MD(2115.00) Inc(15.8) Azm(340.0) TVD(2067.77) VS(-35.87) DLS(2.0)

#24 MD(2204.00) Inc(14.5) Azm(340.9) TVD(2153.67) VS(-35.94) DLS(1.5)

#25 MD(2294.00) Inc(16.3) Azm(339.2) TVD(2240.44) VS(-36.19) DLS(2.1)

#26 MD(2384.00) Inc(15.8) Azm(338.1) TVD(2326.93) VS(-37.03) DLS(0.7)

#27 MD(2473.00) Inc(16.8) Azm(336.8) TVD(2412.35) VS(-38.41) DLS(1.2)

#28 MD(2562.00) Inc(15.6) Azm(333.9) TVD(2497.82) VS(-40.66) DLS(1.6)

#29 MD(2652.00) Inc(15.5) Azm(334.0) TVD(2584.52) VS(-43.45) DLS(0.1)

#30 MD(2741.00) Inc(15.3) Azm(333.1) TVD(2670.33) VS(-46.35) DLS(0.4)

#31 MD(2830.00) Inc(16.7) Azm(332.1) TVD(2755.88) VS(-49.78) DLS(1.6)

#32 MD(2920.00) Inc(15.7) Azm(331.0) TVD(2842.30) VS(-53.72) DLS(1.2)

#33 MD(3010.00) Inc(14.9) Azm(328.3) TVD(2929.11) VS(-58.21) DLS(1.2)

#34 MD(3100.00) Inc(15.1) Azm(329.5) TVD(3016.05) VS(-62.94) DLS(0.4)

#35 MD(3190.00) Inc(15.3) Azm(336.9) TVD(3102.91) VS(-65.96) DLS(2.2)

#36 MD(3279.00) Inc(13.6) Azm(336.3) TVD(3189.09) VS(-67.50) DLS(1.9)

#37 MD(3368.00) Inc(14.1) Azm(336.7) TVD(3275.50) VS(-69.02) DLS(0.6)

#38 MD(3458.00) Inc(14.9) Azm(339.2) TVD(3362.63) VS(-70.05) DLS(1.1)

#39 MD(3548.00) Inc(15.0) Azm(343.5) TVD(3449.59) VS(-69.75) DLS(1.2)

#40 MD(3638.00) Inc(16.6) Azm(341.3) TVD(3536.19) VS(-69.00) DLS(1.9)

#41 MD(3727.00) Inc(15.4) Azm(340.0) TVD(3621.74) VS(-68.97) DLS(1.4)

#42 MD(3817.00) Inc(17.2) Azm(338.1) TVD(3708.12) VS(-69.67) DLS(2.1)

#43 MD(3907.00) Inc(18.0) Azm(338.6) TVD(3793.91) VS(-70.74) DLS(0.9)

#44 MD(3997.00) Inc(17.9) Azm(338.3) TVD(3879.52) VS(-71.78) DLS(0.2)

#45 MD(4087.00) Inc(17.2) Azm(336.7) TVD(3965.34) VS(-73.24) DLS(0.9)

#46 MD(4177.00) Inc(17.6) Azm(333.2) TVD(4051.22) VS(-75.90) DLS(1.2)

#47 MD(4267.00) Inc(16.4) Azm(330.5) TVD(4137.29) VS(-79.88) DLS(1.6)

#48 MD(4357.00) Inc(17.4) Azm(331.8) TVD(4223.40) VS(-84.16) DLS(1.2)

#49 MD(4447.00) Inc(16.2) Azm(331.2) TVD(4309.56) VS(-88.27) DLS(1.3)

#50 MD(4537.00) Inc(17.3) Azm(331.9) TVD(4395.74) VS(-92.35) DLS(1.2)

#51 MD(4627.00) Inc(16.9) Azm(331.2) TVD(4481.76) VS(-96.51) DLS(0.5)

#52 MD(4718.00) Inc(16.4) Azm(329.0) TVD(4568.94) VS(-101.25) DLS(0.9)

#53 MD(4808.00) Inc(16.6) Azm(331.9) TVD(4655.24) VS(-105.75) DLS(0.9)

#54 MD(4898.00) Inc(17.9) Azm(335.1) TVD(4741.19) VS(-109.02) DLS(1.8)

#55 MD(4988.00) Inc(16.7) Azm(334.1) TVD(4827.12) VS(-111.81) DLS(1.4)

#56 MD(5078.00) Inc(16.4) Azm(335.3) TVD(4913.39) VS(-114.45) DLS(0.5)

#57 MD(5168.00) Inc(15.1) Azm(335.8) TVD(5000.01) VS(-116.60) DLS(1.5)

#58 MD(5258.00) Inc(15.1) Azm(332.1) TVD(5086.90) VS(-119.32) DLS(1.1)

#59 MD(5349.00) Inc(13.7) Azm(331.6) TVD(5175.04) VS(-122.76) DLS(1.5)

#60 MD(5438.00) Inc(14.2) Azm(330.9) TVD(5261.42) VS(-126.24) DLS(0.6)

#61 MD(5527.00) Inc(14.9) Azm(328.6) TVD(5347.56) VS(-130.46) DLS(1.0)

#62 MD(5617.00) Inc(14.6) Azm(326.5) TVD(5434.60) VS(-135.63) DLS(0.7)

#63 MD(5706.00) Inc(13.7) Azm(324.4) TVD(5520.90) VS(-141.30) DLS(1.2)

#64 MD(5796.00) Inc(14.5) Azm(331.6) TVD(5608.19) VS(-146.04) DLS(2.1)

#65 MD(5886.00) Inc(14.1) Azm(336.0) TVD(5695.40) VS(-148.68) DLS(1.3)

#66 MD(5976.00) Inc(15.4) Azm(336.4) TVD(5782.44) VS(-150.44) DLS(1.4)

#67 MD(6066.00) Inc(15.3) Azm(336.7) TVD(5869.23) VS(-152.12) DLS(0.1)

#68 MD(6156.00) Inc(16.0) Azm(339.0) TVD(5955.89) VS(-153.27) DLS(1.0)

#69 MD(6247.00) Inc(14.3) Azm(336.0) TVD(6043.73) VS(-154.53) DLS(2.1)

#70 MD(6336.00) Inc(15.2) Azm(335.0) TVD(6129.79) VS(-156.55) DLS(1.1)

#71 MD(6425.00) Inc(13.6) Azm(358.8) TVD(6216.07) VS(-154.41) DLS(6.8)

#72 MD(6515.00) Inc(17.5) Azm(28.7) TVD(6302.89) VS(-141.01) DLS(9.8)

#73 MD(6604.00) Inc(20.0) Azm(43.5) TVD(6387.21) VS(-117.49) DLS(6.0)

#74 MD(6694.00) Inc(24.3) Azm(59.0) TVD(6470.62) VS(-85.60) DLS(8.0)

#75 MD(6783.00) Inc(28.1) Azm(67.9) TVD(6550.49) VS(-46.70) DLS(6.1)

#76 MD(6873.00) Inc(31.3) Azm(73.7) TVD(6628.68) VS(-2.16) DLS(4.8)

#77 MD(6963.00) Inc(37.9) Azm(77.4) TVD(6702.73) VS(48.69) DLS(7.7)

#78 MD(7053.00) Inc(47.5) Azm(80.1) TVD(6768.80) VS(109.01) DLS(10.9)

#79 MD(7144.00) Inc(56.8) Azm(78.8) TVD(6824.58) VS(179.94) DLS(10.3)

#80 MD(7234.00) Inc(66.8) Azm(80.6) TVD(6867.05) VS(258.14) DLS(11.2)

#81 MD(7324.00) Inc(74.2) Azm(81.6) TVD(6897.08) VS(341.50) DLS(8.3)

#82 MD(7414.00) Inc(79.2) Azm(80.8) TVD(6917.77) VS(427.56) DLS(5.6)

#83 MD(7503.00) Inc(84.3) Azm(83.0) TVD(6930.54) VS(513.90) DLS(6.2)

#84 MD(7593.00) Inc(87.0) Azm(85.3) TVD(6937.37) VS(601.13) DLS(3.9)

#85 MD(7683.00) Inc(89.3) Azm(88.7) TVD(6940.27) VS(687.40) DLS(4.6)

#86 MD(7772.00) Inc(89.4) Azm(90.4) TVD(6941.28) VS(771.57) DLS(1.9)

#87 MD(7862.00) Inc(88.5) Azm(89.9) TVD(6942.93) VS(856.37) DLS(1.1)

#88 MD(7952.00) Inc(90.6) Azm(90.6) TVD(6943.64) VS(941.12) DLS(2.5)

#89 MD(8041.00) Inc(89.9) Azm(89.5) TVD(6943.25) VS(1025.03) DLS(1.5)

#90 MD(8131.00) Inc(90.9) Azm(90.1) TVD(6942.62) VS(1110.02) DLS(1.3)

#91 MD(8220.00) Inc(90.6) Azm(89.7) TVD(6941.46) VS(1194.02) DLS(0.6)

#92 MD(8310.00) Inc(90.2) Azm(89.2) TVD(6940.83) VS(1279.19) DLS(0.7)

#93 MD(8400.00) Inc(90.7) Azm(89.7) TVD(6940.12) VS(1364.36) DLS(0.8)

#94 MD(8512.00) Inc(90.0) Azm(88.9) TVD(6939.44) VS(1470.44) DLS(0.9)

#95 MD(8601.00) Inc(90.8) Azm(90.1) TVD(6938.82) VS(1554.64) DLS(1.6)

#96 MD(8691.00) Inc(90.7) Azm(89.9) TVD(6937.64) VS(1639.52) DLS(0.2)

#97 MD(8781.00) Inc(90.9) Azm(91.6) TVD(6936.38) VS(1724.00) DLS(1.9)

#98 MD(8871.00) Inc(90.7) Azm(91.5) TVD(6935.13) VS(1808.04) DLS(0.2)

#99 MD(8961.00) Inc(90.6) Azm(91.8) TVD(6934.11) VS(1892.03) DLS(0.4)

#100 MD(9051.00) Inc(90.0) Azm(91.7) TVD(6933.63) VS(1975.97) DLS(0.7)

#101 MD(9141.00) Inc(91.4) Azm(91.3) TVD(6932.54) VS(2060.04) DLS(1.6)

#102 MD(9230.00) Inc(90.8) Azm(90.6) TVD(6930.83) VS(2143.47) DLS(1.0)

#103 MD(9320.00) Inc(90.0) Azm(91.3) TVD(6930.20) VS(2227.85) DLS(1.2)

#104 MD(9410.00) Inc(89.1) Azm(90.8) TVD(6930.91) VS(2312.17) DLS(1.1)

#105 MD(9500.00) Inc(90.9) Azm(90.1) TVD(6930.91) VS(2396.82) DLS(2.1)

#106 MD(9590.00) Inc(90.5) Azm(90.4) TVD(6929.81) VS(2481.57) DLS(0.6)

#107 MD(9680.00) Inc(90.1) Azm(89.9) TVD(6929.33) VS(2566.38) DLS(0.7)

#108 MD(9770.00) Inc(90.2) Azm(89.4) TVD(6929.10) VS(2651.45) DLS(0.6)

#109 MD(9861.00) Inc(89.4) Azm(88.7) TVD(6929.42) VS(2737.77) DLS(1.2)

#110 MD(9950.00) Inc(90.2) Azm(91.1) TVD(6929.73) VS(2821.76) DLS(2.8)

#111 MD(10040.00) Inc(90.0) Azm(90.9) TVD(6929.57) VS(2906.12) DLS(0.3)

#112 MD(10130.00) Inc(91.6) Azm(90.9) TVD(6928.31) VS(2990.52) DLS(1.8)

#113 MD(10220.00) Inc(91.5) Azm(89.9) TVD(6925.88) VS(3075.16) DLS(1.1)

#114 MD(10310.00) Inc(91.2) Azm(89.4) TVD(6923.76) VS(3160.21) DLS(0.6)

#115 MD(10400.00) Inc(90.8) Azm(88.7) TVD(6922.19) VS(3245.57) DLS(0.9)

#116 MD(10490.00) Inc(90.6) Azm(88.5) TVD(6921.09) VS(3331.16) DLS(0.3)

#117 MD(10580.00) Inc(90.9) Azm(88.5) TVD(6919.91) VS(3416.80) DLS(0.3)

#118 MD(10670.00) Inc(91.2) Azm(88.0) TVD(6918.26)
VS(3502.54) DLS(0.6)

#119 MD(10760.00) Inc(91.3) Azm(87.6) TVD(6916.30)
VS(3588.50) DLS(0.5)

#120 MD(10850.00) Inc(91.2) Azm(89.0) TVD(6914.33)
VS(3674.22) DLS(1.6)

#121 MD(10940.00) Inc(90.8) Azm(88.7) TVD(6912.76)
VS(3759.68) DLS(0.6)

#122 MD(11030.00) Inc(90.2) Azm(89.0) TVD(6911.98)
VS(3845.14) DLS(0.7)

#123 MD(11120.00) Inc(90.7) Azm(89.2) TVD(6911.27)
VS(3930.49) DLS(0.6)

#124 MD(11210.00) Inc(89.7) Azm(90.6) TVD(6910.96)
VS(4015.43) DLS(1.9)

#125 MD(11301.00) Inc(90.2) Azm(91.3) TVD(6911.04)
VS(4100.75) DLS(0.9)

#126 MD(11391.00) Inc(91.6) Azm(91.1) TVD(6909.62)
VS(4184.98) DLS(1.6)

#127 MD(11480.00) Inc(90.5) Azm(92.0) TVD(6907.99)
VS(4268.08) DLS(1.6)

#128 MD(11570.00) Inc(88.9) Azm(91.3) TVD(6908.46)
VS(4352.07) DLS(1.9)

#129 MD(11660.00) Inc(89.0) Azm(90.9) TVD(6910.11)
VS(4436.36) DLS(0.5)

#130 MD(11750.00) Inc(89.7) Azm(90.6) TVD(6911.13)
VS(4520.84) DLS(0.8)

#131 MD(11840.00) Inc(91.2) Azm(89.8) TVD(6910.43)
VS(4605.62) DLS(1.9)

#132 MD(11930.00) Inc(89.8) Azm(90.0) TVD(6909.64)
VS(4690.56) DLS(1.6)

#133 MD(12022.00) Inc(90.4) Azm(90.0) TVD(6909.48)
VS(4777.34) DLS(0.7)