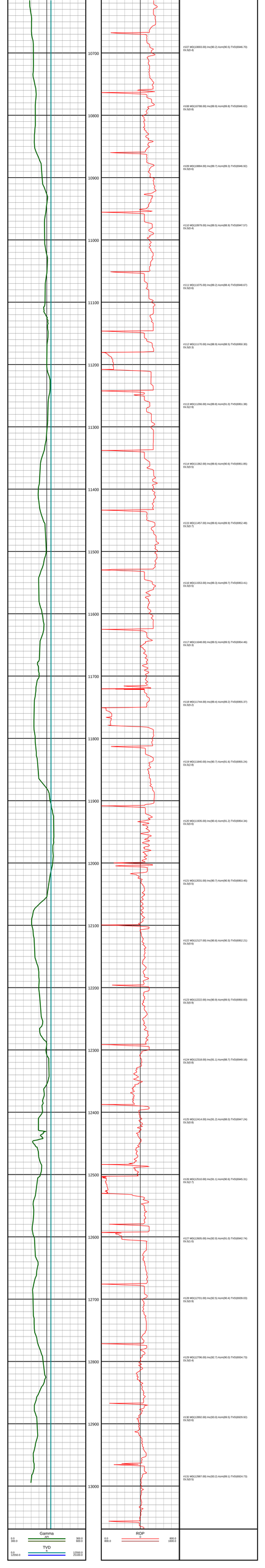

ENSIGN

Thistle Down 31I-302

MD
2":100'

Company: PDC Energy Inc
Well Name: Thistle Down 31I-302
API: 05123454600
County/Parish: WELD
State: COLORADO
Country: USA
Job number: 152-174
Field: Wattenberg
Rig Id: Ensign 152
Survey Company: Ensign Directional
DD1 Jesus Gallego
DD2 Dan Hanson
DD3
MWD1 Ryan Prue
MWD2 Paul Wilson

Log measurements: Gamma, ROP
Depth measured from: 1676 ft
Maximum temperature: 224.6

	Depth	Date
Start:	0 ft	11-26-2018
End:	13069 ft	11-30-2018

Casing	Depth	Size
Surface:	1675 ft	9 5/8"
Intermediate:		

Mud Type: Water
Density: 10.4
Viscosity: 39
Rm: **Rmf:** **Rmc:**

Elevations
KB: 23 ft
GL: 4803 ft
DF: 4826 ft

Run	Bit Size	Offsets Gamma	Offsets Survey	Depths Start	Depths End	Dates Start	Dates End
1	12.25"		58.44 ft	0 ft	1685 ft	11-26-2018	11-26-2018
2	8.5"	74.26 ft	69.43 ft	1685 ft	13069 ft	11-28-2018	11-30-2018
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.

#14 MD(1615.00) Inc(18.7) Azm(223.9) TVD(1576.01) DLS(0.3)

#15 MD(1700.00) Inc(17.2) Azm(222.1) TVD(1656.87) DLS(1.9)

#16 MD(1795.00) Inc(19.4) Azm(225.2) TVD(1747.07) DLS(2.5)

#17 MD(1891.00) Inc(19.7) Azm(225.9) TVD(1837.53) DLS(0.4)

#18 MD(1986.00) Inc(22.2) Azm(228.0) TVD(1926.22) DLS(2.7)

#19 MD(2081.00) Inc(23.0) Azm(227.9) TVD(2013.90) DLS(0.8)

#20 MD(2176.00) Inc(22.6) Azm(226.6) TVD(2101.47) DLS(0.7)

#21 MD(2271.00) Inc(21.5) Azm(225.7) TVD(2189.51) DLS(1.2)

#22 MD(2366.00) Inc(21.0) Azm(223.5) TVD(2278.05) DLS(1.0)

#23 MD(2460.00) Inc(22.7) Azm(224.2) TVD(2365.30) DLS(1.8)

#24 MD(2555.00) Inc(21.8) Azm(221.2) TVD(2453.22) DLS(1.5)

#25 MD(2650.00) Inc(21.0) Azm(219.2) TVD(2541.66) DLS(1.2)

#26 MD(2745.00) Inc(20.6) Azm(218.0) TVD(2630.47) DLS(0.6)

#27 MD(2840.00) Inc(20.5) Azm(218.2) TVD(2719.43) DLS(0.2)

#28 MD(2935.00) Inc(22.8) Azm(223.6) TVD(2807.74) DLS(3.2)

#29 MD(3125.00) Inc(22.9) Azm(222.6) TVD(2982.84) DLS(0.2)

#30 MD(3220.00) Inc(22.9) Azm(222.6) TVD(3070.38) DLS(0.0)

#31 MD(3316.00) Inc(22.1) Azm(221.9) TVD(3159.09) DLS(0.8)

#32 MD(3411.00) Inc(21.1) Azm(219.4) TVD(3247.43) DLS(1.5)

#33 MD(3532.00) Inc(19.0) Azm(221.4) TVD(3361.11) DLS(1.8)

#34 MD(3627.00) Inc(18.8) Azm(231.0) TVD(3451.03) DLS(3.3)

#35 MD(3818.00) Inc(19.3) Azm(229.4) TVD(3631.61) DLS(0.4)

#36 MD(3914.00) Inc(18.7) Azm(229.3) TVD(3722.39) DLS(0.6)

#37 MD(4009.00) Inc(19.7) Azm(229.5) TVD(3812.11) DLS(1.0)

#38 MD(4105.00) Inc(22.2) Azm(230.5) TVD(3901.76) DLS(2.7)

#39 MD(4201.00) Inc(22.4) Azm(230.5) TVD(3990.57) DLS(0.2)

#40 MD(4297.00) Inc(21.1) Azm(230.2) TVD(4079.74) DLS(1.3)

#41 MD(4392.00) Inc(22.5) Azm(236.2) TVD(4167.94) DLS(2.8)

#42 MD(4487.00) Inc(21.9) Azm(236.0) TVD(4255.87) DLS(0.6)

#43 MD(4583.00) Inc(21.3) Azm(235.6) TVD(4345.12) DLS(0.7)

#44 MD(4678.00) Inc(20.4) Azm(234.5) TVD(4433.90) DLS(1.0)

#45 MD(4773.00) Inc(19.8) Azm(233.8) TVD(4523.13) DLS(0.7)

#46 MD(4869.00) Inc(21.4) Azm(236.4) TVD(4613.01) DLS(1.9)

#47 MD(4964.00) Inc(21.9) Azm(237.9) TVD(4701.31) DLS(0.8)

#48 MD(5060.00) Inc(21.0) Azm(237.4) TVD(4790.66) DLS(1.0)

#49 MD(5155.00) Inc(20.3) Azm(237.6) TVD(4879.55) DLS(0.7)

#50 MD(5250.00) Inc(19.4) Azm(236.7) TVD(4968.90) DLS(0.9)

#51 MD(5346.00) Inc(18.9) Azm(236.9) TVD(5059.57) DLS(0.6)

#52 MD(5441.00) Inc(18.6) Azm(235.6) TVD(5149.54) DLS(0.5)

#53 MD(5537.00) Inc(17.4) Azm(234.1) TVD(5240.83) DLS(1.3)

#54 MD(5632.00) Inc(16.0) Azm(234.1) TVD(5331.82) DLS(1.6)

#55 MD(5727.00) Inc(14.7) Azm(232.2) TVD(5423.44) DLS(1.5)

#56 MD(5822.00) Inc(13.4) Azm(231.1) TVD(5515.60) DLS(1.4)

#57 MD(5918.00) Inc(11.8) Azm(228.8) TVD(5609.28) DLS(1.8)

#58 MD(6013.00) Inc(9.9) Azm(224.2) TVD(5702.59) DLS(2.2)

#59 MD(6109.00) Inc(7.7) Azm(224.8) TVD(5797.45) DLS(2.2)

#60 MD(6204.00) Inc(6.8) Azm(221.9) TVD(5891.69) DLS(1.0)

#61 MD(6300.00) Inc(4.5) Azm(222.8) TVD(5987.21) DLS(2.4)

#62 MD(6395.00) Inc(2.5) Azm(212.6) TVD(6082.03) DLS(2.2)

#63 MD(6490.00) Inc(2.3) Azm(205.4) TVD(6176.95) DLS(0.4)

#64 MD(6586.00) Inc(3.4) Azm(106.5) TVD(6272.88) DLS(4.5)

#65 MD(6681.00) Inc(9.8) Azm(92.2) TVD(6367.20) DLS(6.9)

#66 MD(6777.00) Inc(15.9) Azm(83.2) TVD(6460.77) DLS(6.6)

#67 MD(6873.00) Inc(21.0) Azm(79.7) TVD(6551.80) DLS(5.5)

#68 MD(6968.00) Inc(28.6) Azm(79.8) TVD(6637.98) DLS(8.0)

#69 MD(7064.00) Inc(37.0) Azm(83.5) TVD(6718.61) DLS(9.0)

#70 MD(7159.00) Inc(45.6) Azm(88.9) TVD(6789.96) DLS(9.8)

#71 MD(7255.00) Inc(55.6) Azm(91.1) TVD(6850.82) DLS(10.6)

#72 MD(7350.00) Inc(64.1) Azm(89.9) TVD(6898.44) DLS(9.0)

#73 MD(7445.00) Inc(71.5) Azm(89.0) TVD(6934.32) DLS(7.8)

#74 MD(7541.00) Inc(78.1) Azm(89.8) TVD(6959.50) DLS(7.0)

#75 MD(7636.00) Inc(82.5) Azm(89.3) TVD(6975.54) DLS(4.6)

#76 MD(7732.00) Inc(89.4) Azm(89.3) TVD(6982.39) DLS(7.2)

#77 MD(7827.00) Inc(89.1) Azm(89.1) TVD(6983.70) DLS(0.4)

#78 MD(7923.00) Inc(89.3) Azm(89.1) TVD(6985.09) DLS(0.2)

#79 MD(8018.00) Inc(91.8) Azm(90.0) TVD(6984.23) DLS(2.8)

#80 MD(8114.00) Inc(91.6) Azm(89.5) TVD(6981.40) DLS(0.6)

#81 MD(8209.00) Inc(91.7) Azm(89.0) TVD(6978.68) DLS(0.5)

#82 MD(8305.00) Inc(91.7) Azm(88.6) TVD(6975.90) DLS(0.5)

#83 MD(8401.00) Inc(91.8) Azm(88.2) TVD(6973.01) DLS(0.4)

#84 MD(8496.00) Inc(91.7) Azm(87.5) TVD(6970.13) DLS(0.8)

#85 MD(8592.00) Inc(90.7) Azm(90.3) TVD(6968.13) DLS(3.1)

#86 MD(8687.00) Inc(90.7) Azm(89.5) TVD(6966.98) DLS(0.9)

#87 MD(8782.00) Inc(90.3) Azm(89.3) TVD(6966.17) DLS(0.4)

#88 MD(8878.00) Inc(90.4) Azm(88.5) TVD(6965.57) DLS(0.8)

#89 MD(8974.00) Inc(90.2) Azm(88.1) TVD(6965.10) DLS(0.5)

#90 MD(9069.00) Inc(90.9) Azm(89.8) TVD(6964.20) DLS(2.0)

#91 MD(9165.00) Inc(90.7) Azm(89.5) TVD(6962.82) DLS(0.4)

#92 MD(9260.00) Inc(90.0) Azm(89.0) TVD(6962.22) DLS(0.9)

#93 MD(9356.00) Inc(89.9) Azm(88.5) TVD(6962.28) DLS(0.5)

#94 MD(9451.00) Inc(90.3) Azm(90.6) TVD(6962.10) DLS(2.3)

#95 MD(9546.00) Inc(90.8) Azm(90.2) TVD(6961.22) DLS(0.6)

#96 MD(9642.00) Inc(90.8) Azm(89.8) TVD(6959.89) DLS(0.4)

#97 MD(9738.00) Inc(90.4) Azm(89.8) TVD(6958.87) DLS(0.5)

#98 MD(9834.00) Inc(90.7) Azm(89.3) TVD(6957.94) DLS(0.6)

#99 MD(9929.00) Inc(91.1) Azm(89.0) TVD(6956.39) DLS(0.6)

#100 MD(10023.00) Inc(91.2) Azm(91.9) TVD(6954.46) DLS(3.1)

#101 MD(10119.00) Inc(91.3) Azm(91.3) TVD(6952.38) DLS(0.6)

#102 MD(10214.00) Inc(91.0) Azm(90.7) TVD(6950.48) DLS(0.7)

#103 MD(10310.00) Inc(90.6) Azm(89.9) TVD(6949.10) DLS(0.9)

#104 MD(10406.00) Inc(90.7) Azm(89.1) TVD(6948.02) DLS(0.8)

#105 MD(10502.00) Inc(90.2) Azm(88.6) TVD(6947.27) DLS(0.7)

#106 MD(10597.00) Inc(90.1) Azm(90.9) TVD(6946.95) DLS(2.4)

#107 MD(10693.00) Inc(90.2) Azm(90.5) TVD(6946.70)
DLS(0.4)

#108 MD(10788.00) Inc(89.9) Azm(89.8) TVD(6946.62)
DLS(0.8)

#109 MD(10884.00) Inc(89.7) Azm(89.3) TVD(6946.92)
DLS(0.6)

#110 MD(10979.00) Inc(89.5) Azm(88.9) TVD(6947.57)
DLS(0.4)

#111 MD(11075.00) Inc(89.2) Azm(88.4) TVD(6948.67)
DLS(0.6)

#112 MD(11170.00) Inc(88.9) Azm(88.5) TVD(6950.30)
DLS(0.3)

#113 MD(11266.00) Inc(89.8) Azm(91.0) TVD(6951.38)
DLS(2.9)

#114 MD(11362.00) Inc(89.6) Azm(90.6) TVD(6951.85)
DLS(0.5)

#115 MD(11457.00) Inc(89.6) Azm(89.9) TVD(6952.48)
DLS(0.7)

#116 MD(11553.00) Inc(89.3) Azm(89.7) TVD(6953.41)
DLS(0.5)

#117 MD(11648.00) Inc(89.5) Azm(89.5) TVD(6954.46)
DLS(0.3)

#118 MD(11744.00) Inc(89.4) Azm(89.2) TVD(6955.37)
DLS(0.2)

#119 MD(11840.00) Inc(90.7) Azm(91.6) TVD(6955.24)
DLS(2.8)

#120 MD(11935.00) Inc(90.4) Azm(91.2) TVD(6954.34)
DLS(0.6)

#121 MD(12031.00) Inc(90.7) Azm(90.9) TVD(6953.45)
DLS(0.5)

#122 MD(12127.00) Inc(90.8) Azm(90.3) TVD(6952.21)
DLS(0.6)

#123 MD(12222.00) Inc(90.9) Azm(89.5) TVD(6950.83)
DLS(0.9)

#124 MD(12318.00) Inc(91.1) Azm(88.7) TVD(6949.16)
DLS(0.8)

#125 MD(12414.00) Inc(91.2) Azm(88.0) TVD(6947.24)
DLS(0.8)

#126 MD(12510.00) Inc(91.1) Azm(90.6) TVD(6945.31)
DLS(2.7)

#127 MD(12605.00) Inc(92.0) Azm(91.0) TVD(6942.74)
DLS(1.0)

#128 MD(12701.00) Inc(92.5) Azm(90.4) TVD(6939.03)
DLS(0.9)

#129 MD(12796.00) Inc(92.7) Azm(90.0) TVD(6934.73)
DLS(0.4)

#130 MD(12892.00) Inc(93.0) Azm(89.5) TVD(6929.92)
DLS(0.6)

#131 MD(12987.00) Inc(93.2) Azm(89.1) TVD(6924.73)
DLS(0.5)