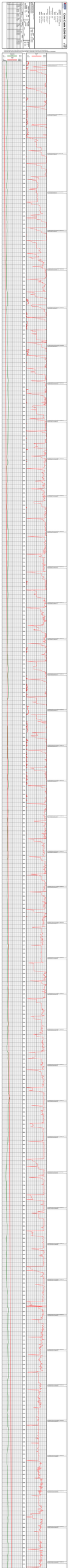

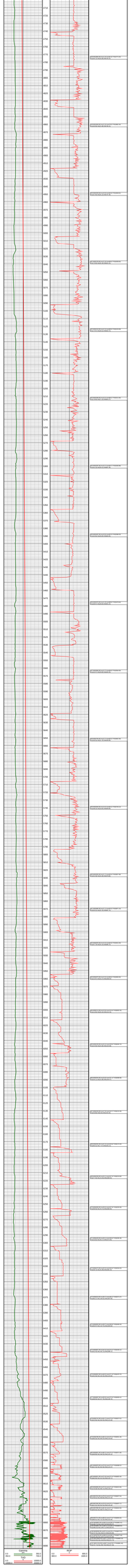

ENSIGN Directional Services

Crow Creek AE06-790

TVD
5":100'

Company: Noble Energy
Well Name: Crow Creek AE06-790
API: 05-123-40153
Rig Id: Precision 829
State: Colorado
County/Parish: Weld
Country: USA
Survey Company: Ensign Directional
Job number: PD829-207-31
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:	667 ft	12-05-2014
End:	11500 ft	12-12-2014

Casing	Depth	Size
Surface:	656	9 5/8
Intermediate:	7134	7

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

Elevations
KB: 16
GL: 4857
DF: 4873

Run	Bit Size	Offsets Gamma	Offsets Survey	Depths Start	Depths End	Dates Start	Dates End
1	13.5			0	667	12-05-2014	12-05-2014
2	8.75	59.54	54.54	667	7145	12-05-2014	12-08-2014
3	6.125	65.15	60.15	7145	11500	12-09-2014	12-12-2014
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.

Gamma
API
0.0 350.0
350.0 700.0
TVD
ft
0.0 10000.0
10000.0 20000.0
TVD
ROP
0
0.0 800.0
800.0 1600.0
#6 MD(1011.00) Inc(1.3) Azm(23.0) TVD(1010.95) VS(-3.00) NS(3.90) EW(3.27)
#7 MD(1133.00) Inc(1.5) Azm(2.7) TVD(1132.91) VS(-5.64) NS(6.77) EW(3.89)
#8 MD(1228.00) Inc(1.8) Azm(95.6) TVD(1227.89) VS(-6.33) NS(7.87) EW(5.43)
#9 MD(1323.00) Inc(3.4) Azm(118.4) TVD(1322.79) VS(-3.93) NS(6.38) EW(9.40)
#10 MD(1418.00) Inc(5.3) Azm(107.2) TVD(1417.51) VS(0.23) NS(3.74) EW(16.07)
#11 MD(1513.00) Inc(7.8) Azm(108.8) TVD(1511.89) VS(5.99) NS(0.37) EW(26.36)
#12 MD(1608.00) Inc(9.1) Azm(109.0) TVD(1605.85) VS(13.56) NS(-4.16) EW(39.57)
#13 MD(1703.00) Inc(10.8) Azm(105.5) TVD(1699.42) VS(22.02) NS(-8.98) EW(55.25)
#14 MD(1797.00) Inc(11.7) Azm(96.5) TVD(1791.62) VS(29.67) NS(-12.41) EW(73.21)
#15 MD(1892.00) Inc(13.6) Azm(91.3) TVD(1884.31) VS(35.97) NS(-13.76) EW(93.95)
#16 MD(1987.00) Inc(14.4) Azm(85.8) TVD(1976.50) VS(40.90) NS(-13.14) EW(116.90)
#17 MD(2082.00) Inc(13.5) Azm(84.4) TVD(2068.69) VS(44.50) NS(-11.20) EW(139.71)
#18 MD(2172.00) Inc(13.0) Azm(78.4) TVD(2156.30) VS(46.44) NS(-8.14) EW(160.08)
#19 MD(2261.00) Inc(12.3) Azm(73.1) TVD(2243.14) VS(46.35) NS(-3.37) EW(178.96)
#20 MD(2351.00) Inc(12.1) Azm(80.3) TVD(2331.12) VS(46.55) NS(1.01) EW(197.43)
#21 MD(2441.00) Inc(12.0) Azm(80.3) TVD(2419.13) VS(47.94) NS(4.17) EW(215.95)
#22 MD(2530.00) Inc(12.3) Azm(86.7) TVD(2506.14) VS(50.37) NS(6.28) EW(234.54)
#23 MD(2620.00) Inc(13.0) Azm(93.3) TVD(2593.96) VS(55.13) NS(6.25) EW(254.22)
#24 MD(2710.00) Inc(14.4) Azm(90.9) TVD(2681.40) VS(61.00) NS(5.49) EW(275.51)
#25 MD(2799.00) Inc(14.0) Azm(90.7) TVD(2767.68) VS(66.55) NS(5.18) EW(297.34)
#26 MD(2889.00) Inc(13.7) Azm(89.3) TVD(2855.06) VS(71.74) NS(5.18) EW(318.89)
#27 MD(2978.00) Inc(13.3) Azm(87.4) TVD(2941.61) VS(76.16) NS(5.77) EW(339.65)
#28 MD(3067.00) Inc(13.1) Azm(86.0) TVD(3028.25) VS(79.91) NS(6.94) EW(359.94)
#29 MD(3157.00) Inc(13.0) Azm(84.4) TVD(3115.93) VS(83.14) NS(8.64) EW(380.19)
#30 MD(3246.00) Inc(12.8) Azm(83.4) TVD(3202.68) VS(85.85) NS(10.75) EW(399.94)
#31 MD(3336.00) Inc(12.4) Azm(80.5) TVD(3290.52) VS(87.86) NS(13.49) EW(419.38)
#32 MD(3426.00) Inc(11.8) Azm(80.4) TVD(3378.52) VS(89.31) NS(16.62) EW(437.98)
#33 MD(3515.00) Inc(12.8) Azm(81.1) TVD(3465.47) VS(90.86) NS(19.66) EW(456.70)
#34 MD(3605.00) Inc(12.3) Azm(82.2) TVD(3553.32) VS(92.75) NS(22.51) EW(476.04)
#35 MD(3695.00) Inc(10.9) Azm(85.7) TVD(3641.48) VS(95.20) NS(24.45) EW(494.03)
#36 MD(3784.00) Inc(9.7) Azm(96.9) TVD(3729.06) VS(99.28) NS(24.18) EW(509.86)
#37 MD(3873.00) Inc(10.9) Azm(98.2) TVD(3816.62) VS(105.11) NS(22.08) EW(525.64)
#38 MD(3963.00) Inc(12.5) Azm(98.5) TVD(3904.75) VS(112.03) NS(19.42) EW(543.69)
#39 MD(4053.00) Inc(14.4) Azm(96.5) TVD(3992.28) VS(119.66) NS(16.72) EW(564.45)
#40 MD(4143.00) Inc(15.4) Azm(92.1) TVD(4079.25) VS(126.86) NS(15.01) EW(587.51)
#41 MD(4232.00) Inc(15.5) Azm(90.5) TVD(4165.04) VS(133.09) NS(14.47) EW(611.21)
#42 MD(4322.00) Inc(14.9) Azm(89.8) TVD(4251.89) VS(138.83) NS(14.41) EW(634.81)
#43 MD(4412.00) Inc(14.8) Azm(89.6) TVD(4338.88) VS(144.27) NS(14.53) EW(657.87)
#44 MD(4501.00) Inc(14.5) Azm(91.2) TVD(4424.99) VS(149.84) NS(14.38) EW(680.38)
#45 MD(4591.00) Inc(14.0) Azm(91.3) TVD(4512.22) VS(155.64) NS(13.89) EW(702.53)
#46 MD(4681.00) Inc(13.3) Azm(85.0) TVD(4599.68) VS(160.11) NS(14.55) EW(723.73)
#47 MD(4770.00) Inc(12.5) Azm(82.3) TVD(4686.43) VS(162.74) NS(16.73) EW(743.47)

#48 MD(4860.00) Inc(11.9) Azm(81.8) TVD(4774.40)
VS(164.72) NS(19.36) EW(762.31)

#49 MD(4949.00) Inc(11.6) Azm(78.3) TVD(4861.54)
VS(165.99) NS(22.48) EW(780.15)

#50 MD(5039.00) Inc(10.9) Azm(84.6) TVD(4949.81)
VS(167.60) NS(25.12) EW(797.48)

#51 MD(5129.00) Inc(11.8) Azm(88.4) TVD(5038.05)
VS(170.83) NS(26.18) EW(815.15)

#52 MD(5218.00) Inc(12.3) Azm(89.5) TVD(5125.09)
VS(174.97) NS(26.51) EW(833.73)

#53 MD(5308.00) Inc(10.2) Azm(86.2) TVD(5213.36)
VS(178.60) NS(27.13) EW(851.27)

#54 MD(5397.00) Inc(10.7) Azm(84.7) TVD(5300.88)
VS(181.23) NS(28.41) EW(867.36)

#55 MD(5487.00) Inc(10.6) Azm(92.3) TVD(5389.33)
VS(184.80) NS(28.85) EW(883.95)

#56 MD(5576.00) Inc(11.8) Azm(88.0) TVD(5476.64)
VS(188.97) NS(28.84) EW(901.23)

#57 MD(5666.00) Inc(12.7) Azm(86.0) TVD(5564.59)
VS(192.57) NS(29.85) EW(920.29)

#58 MD(5756.00) Inc(12.7) Azm(83.3) TVD(5652.39)
VS(195.53) NS(31.70) EW(939.99)

#59 MD(5846.00) Inc(13.0) Azm(84.4) TVD(5740.13)
VS(198.24) NS(33.84) EW(959.89)

#60 MD(5935.00) Inc(11.7) Azm(93.4) TVD(5827.08)
VS(202.38) NS(34.28) EW(978.86)

#61 MD(5980.00) Inc(11.1) Azm(93.3) TVD(5871.19)
VS(205.02) NS(33.76) EW(987.74)

#62 MD(6025.00) Inc(12.0) Azm(94.6) TVD(5915.28)
VS(207.79) NS(33.14) EW(996.73)

#63 MD(6070.00) Inc(12.0) Azm(96.0) TVD(5959.30)
VS(210.87) NS(32.27) EW(1006.04)

#64 MD(6114.00) Inc(13.9) Azm(116.4) TVD(6002.20)
VS(215.85) NS(29.44) EW(1015.33)

#65 MD(6159.00) Inc(15.4) Azm(128.0) TVD(6045.74)
VS(224.06) NS(23.36) EW(1024.88)

#66 MD(6204.00) Inc(16.8) Azm(131.4) TVD(6088.98)
VS(234.11) NS(15.38) EW(1034.47)

#67 MD(6249.00) Inc(17.9) Azm(143.7) TVD(6131.95)
VS(245.86) NS(5.50) EW(1043.45)

#68 MD(6294.00) Inc(21.5) Azm(153.6) TVD(6174.32)
VS(260.31) NS(-7.47) EW(1051.21)

#69 MD(6339.00) Inc(24.1) Azm(157.3) TVD(6215.80)
VS(277.45) NS(-23.33) EW(1058.43)

#70 MD(6383.00) Inc(26.5) Azm(157.9) TVD(6255.58)
VS(296.05) NS(-40.72) EW(1065.59)

#71 MD(6428.00) Inc(29.1) Azm(158.0) TVD(6295.38)
VS(316.82) NS(-60.17) EW(1073.46)

#72 MD(6473.00) Inc(32.5) Azm(163.0) TVD(6334.03)
VS(339.74) NS(-81.89) EW(1081.10)

#73 MD(6518.00) Inc(36.7) Azm(166.2) TVD(6371.07)
VS(365.27) NS(-106.52) EW(1087.85)

#74 MD(6563.00) Inc(39.7) Azm(169.8) TVD(6406.43)
VS(393.07) NS(-133.73) EW(1093.60)

#75 MD(6607.00) Inc(44.3) Azm(170.2) TVD(6439.12)
VS(422.43) NS(-162.72) EW(1098.71)

#76 MD(6652.00) Inc(46.5) Azm(171.3) TVD(6470.72)
VS(454.36) NS(-194.34) EW(1103.85)

#77 MD(6697.00) Inc(50.9) Azm(172.0) TVD(6500.41)
VS(488.00) NS(-227.78) EW(1108.75)

#78 MD(6742.00) Inc(54.7) Azm(173.5) TVD(6527.61)
VS(523.59) NS(-263.33) EW(1113.26)

#79 MD(6786.00) Inc(60.2) Azm(175.4) TVD(6551.28)
VS(560.26) NS(-300.23) EW(1116.83)

#80 MD(6831.00) Inc(66.2) Azm(175.2) TVD(6571.56)
VS(599.89) NS(-340.25) EW(1120.12)

#81 MD(6876.00) Inc(70.9) Azm(173.2) TVD(6588.01)
VS(641.34) NS(-381.90) EW(1124.37)

#82 MD(6921.00) Inc(71.8) Azm(172.4) TVD(6602.40)
VS(683.69) NS(-424.20) EW(1129.71)

#83 MD(6966.00) Inc(73.3) Azm(171.8) TVD(6615.90)
VS(726.38) NS(-466.72) EW(1135.61)

#84 MD(7010.00) Inc(76.0) Azm(173.5) TVD(6627.54)
VS(768.52) NS(-508.80) EW(1141.03)

#85 MD(7055.00) Inc(79.3) Azm(175.1) TVD(6637.17)
VS(812.02) NS(-552.53) EW(1145.40)

#86 MD(7090.00) Inc(81.8) Azm(177.3) TVD(6642.92)
VS(846.00) NS(-586.97) EW(1147.68)

#88 MD(7214.00) Inc(86.0) Azm(177.0) TVD(6655.63)
VS(966.91) NS(-710.16) EW(1153.28)

#104 MD(8662.00) Inc(90.5) Azm(180.3) TVD(6661.61)
VS(2382.74) NS(-2156.78) EW(1202.07)

#106 MD(8851.00) Inc(88.0) Azm(180.4) TVD(6665.81)
VS(2566.33) NS(-2345.71) EW(1202.97)

#108 MD(9038.00) Inc(87.5) Azm(179.1) TVD(6672.91)
VS(2747.91) NS(-2532.57) EW(1203.89)

#116 MD(9759.00) Inc(88.6) Azm(180.2) TVD(6677.94)
VS(3451.89) NS(-3253.14) EW(1222.99)

#126 MD(10656.00) Inc(87.7) Azm(179.2) TVD(6682.10)
VS(4319.59) NS(-4149.93) EW(1211.73)

#131 MD(11104.00) Inc(89.7) Azm(178.7) TVD(6691.46)
VS(4757.73) NS(-4597.49) EW(1227.28)