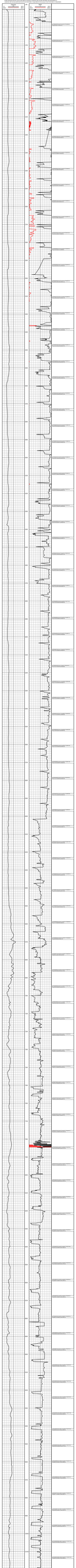

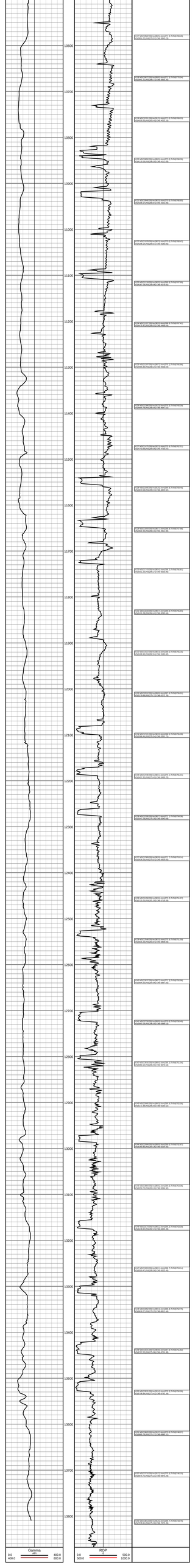

ENSIGN Directional

LDS 1V-234

MD
2":100'

Company: PDC Energy
Well Name: LDS 1V-234
API: 05123412060000
County/Parish: Weld
State: Colorado
Country: USA
Job number: 124-199
Field: Wattenberg
Rig Id: Ensign 161
Survey Company: Ensign Directional Services
DD1 Daniel Barton
DD2 Tony Callow
DD3 Colby Hanson
MWD1 Caleb Schwarts
MWD2 Brice Burkhardt

Log measurements: gamma, ROP
Depth measured from: Rig Floor ft
Maximum temperature:

	Depth	Date
Start:	0 ft	1-14-2016
End:	13868 ft	1-21-2016

Casing	Depth	Size
Surface:	1484 ft	9-5/8"
Intermediate:		

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

Elevations
KB: 4650 ft
GL: 4637 ft
DF: 4650 ft

Run	Bit Size	Offsets Gamma	Offsets Survey	Depths Start	Depths End	Dates Start	Dates End
1	13.75"		52.89 ft	0 ft	1501 ft	1-14-2016	1-15-2016
2	8.75"	52.13 ft	47.13 ft	1501 ft	8819 ft	1-16-2016	1-18-2016
3	8.75"	58.36 ft	53.36 ft	8819 ft	13868 ft	1-19-2016	1-21-2016
4							
5							
6							
7							
8							
9							
10							

Ensign Directional Services 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.

#17 MD(1587.00) Inc(2.2) Azm(34.9) TVD(1586.90) VS(9.03) NS(7.47) EW(-8.74)

#18 MD(1676.00) Inc(3.2) Azm(70.6) TVD(1675.81) VS(5.80) NS(9.69) EW(-5.42)

#19 MD(1766.00) Inc(4.7) Azm(58.8) TVD(1765.59) VS(0.39) NS(12.44) EW(0.11)

#20 MD(1855.00) Inc(5.7) Azm(46.8) TVD(1854.23) VS(-5.76) NS(17.35) EW(6.45)

#21 MD(1945.00) Inc(7.3) Azm(44.0) TVD(1943.65) VS(-12.70) NS(24.53) EW(13.68)

#22 MD(2034.00) Inc(7.2) Azm(37.7) TVD(2031.94) VS(-19.70) NS(33.01) EW(21.02)

#23 MD(2124.00) Inc(6.6) Azm(46.0) TVD(2121.29) VS(-26.54) NS(41.06) EW(28.19)

#24 MD(2213.00) Inc(7.7) Azm(47.0) TVD(2209.60) VS(-34.28) NS(48.68) EW(36.23)

#25 MD(2302.00) Inc(7.6) Azm(44.2) TVD(2297.80) VS(-42.41) NS(56.97) EW(44.69)

#26 MD(2392.00) Inc(8.1) Azm(52.5) TVD(2386.96) VS(-51.26) NS(65.09) EW(53.87)

#27 MD(2481.00) Inc(7.3) Azm(51.2) TVD(2475.16) VS(-60.34) NS(72.45) EW(63.25)

#28 MD(2571.00) Inc(6.5) Azm(46.8) TVD(2564.51) VS(-68.23) NS(79.52) EW(71.42)

#29 MD(2660.00) Inc(8.1) Azm(48.2) TVD(2652.78) VS(-76.27) NS(87.15) EW(79.77)

#30 MD(2750.00) Inc(8.5) Azm(47.5) TVD(2741.84) VS(-85.55) NS(95.87) EW(89.40)

#31 MD(2839.00) Inc(7.8) Azm(46.5) TVD(2829.94) VS(-94.43) NS(104.47) EW(98.63)

#32 MD(2928.00) Inc(6.7) Azm(43.3) TVD(2918.23) VS(-102.05) NS(112.41) EW(106.57)

#33 MD(3018.00) Inc(7.0) Azm(47.7) TVD(3007.59) VS(-109.41) NS(119.92) EW(114.23)

#34 MD(3107.00) Inc(7.0) Azm(48.6) TVD(3096.00) VS(-116.69) NS(126.70) EW(121.79)

#35 MD(3196.00) Inc(6.6) Azm(55.3) TVD(3184.46) VS(-124.20) NS(132.74) EW(129.54)

#36 MD(3286.00) Inc(7.7) Azm(54.9) TVD(3273.78) VS(-133.00) NS(139.07) EW(138.59)

#37 MD(3375.00) Inc(6.2) Azm(50.9) TVD(3362.14) VS(-141.22) NS(145.45) EW(147.07)

#38 MD(3465.00) Inc(6.7) Azm(48.6) TVD(3451.57) VS(-148.66) NS(151.98) EW(154.78)

#39 MD(3554.00) Inc(8.3) Azm(46.7) TVD(3539.81) VS(-156.92) NS(159.82) EW(163.35)

#40 MD(3644.00) Inc(8.9) Azm(47.4) TVD(3628.80) VS(-166.40) NS(168.99) EW(173.20)

#41 MD(3733.00) Inc(9.8) Azm(48.4) TVD(3716.61) VS(-176.74) NS(178.68) EW(183.93)

#42 MD(3822.00) Inc(10.4) Azm(47.9) TVD(3804.23) VS(-187.95) NS(189.10) EW(195.55)

#43 MD(3912.00) Inc(10.8) Azm(47.5) TVD(3892.70) VS(-199.74) NS(200.24) EW(207.80)

#44 MD(4001.00) Inc(9.6) Azm(46.8) TVD(3980.29) VS(-210.87) NS(210.95) EW(219.36)

#45 MD(4091.00) Inc(8.8) Azm(43.9) TVD(4069.13) VS(-220.71) NS(221.05) EW(229.60)

#46 MD(4180.00) Inc(7.4) Azm(39.5) TVD(4157.24) VS(-228.70) NS(230.38) EW(237.97)

#47 MD(4269.00) Inc(8.1) Azm(41.9) TVD(4245.43) VS(-236.17) NS(239.47) EW(245.80)

#48 MD(4359.00) Inc(7.2) Azm(51.4) TVD(4334.63) VS(-244.48) NS(247.71) EW(254.44)

#49 MD(4448.00) Inc(7.8) Azm(46.3) TVD(4422.87) VS(-252.86) NS(255.36) EW(263.17)

#50 MD(4537.00) Inc(7.7) Azm(42.1) TVD(4511.06) VS(-260.91) NS(263.96) EW(271.53)

#51 MD(4626.00) Inc(6.6) Azm(39.3) TVD(4599.36) VS(-267.81) NS(272.34) EW(278.77)

#52 MD(4716.00) Inc(4.0) Azm(32.8) TVD(4688.97) VS(-272.53) NS(278.98) EW(283.75)

#53 MD(4805.00) Inc(2.6) Azm(28.6) TVD(4777.82) VS(-274.93) NS(283.39) EW(286.33)

#54 MD(4895.00) Inc(1.8) Azm(23.6) TVD(4867.76) VS(-276.29) NS(286.51) EW(287.81)

#55 MD(4984.00) Inc(1.6) Azm(23.1) TVD(4956.72) VS(-277.24) NS(288.94) EW(288.86)

#56 MD(5073.00) Inc(1.1) Azm(15.0) TVD(5045.69) VS(-277.87) NS(290.91) EW(289.57)

#57 MD(5163.00) Inc(1.1) Azm(8.1) TVD(5135.67) VS(-278.12) NS(292.60) EW(289.88)

#58 MD(5252.00) Inc(1.1) Azm(345.8) TVD(5224.66) VS(-277.94) NS(294.28) EW(289.77)

#59 MD(5341.00) Inc(1.2) Azm(268.0) TVD(5313.65) VS(-276.76) NS(295.07) EW(288.82)

#60 MD(5431.00) Inc(1.7) Azm(305.2) TVD(5403.62) VS(-274.70) NS(295.81) EW(286.59)

#61 MD(5520.00) Inc(1.1) Azm(325.8) TVD(5492.59) VS(-273.09) NS(297.28) EW(285.03)

#62 MD(5609.00) Inc(0.6) Azm(330.9) TVD(5581.58) VS(-272.34) NS(298.39) EW(284.33)

#63 MD(5699.00) Inc(0.4) Azm(329.1) TVD(5671.58) VS(-271.92) NS(299.07) EW(283.94)

#64 MD(5788.00) Inc(0.3) Azm(76.4) TVD(5760.58) VS(-271.97) NS(299.39) EW(284.00)

#65 MD(5878.00) Inc(0.4) Azm(100.1) TVD(5850.58) VS(-272.51) NS(299.39) EW(284.54)

#66 MD(5967.00) Inc(0.4) Azm(120.5) TVD(5939.57) VS(-273.09) NS(299.13) EW(285.11)

#67 MD(6057.00) Inc(3.5) Azm(256.4) TVD(6029.52) VS(-270.73) NS(298.38) EW(282.71)

#68 MD(6146.00) Inc(12.3) Azm(265.9) TVD(6117.59) VS(-258.67) NS(297.06) EW(270.59)

#69 MD(6235.00) Inc(20.2) Azm(266.4) TVD(6202.97) VS(-233.92) NS(295.41) EW(245.76)

#70 MD(6325.00) Inc(23.7) Azm(269.7) TVD(6286.44) VS(-200.38) NS(294.34) EW(212.16)

#71 MD(6414.00) Inc(27.3) Azm(270.4) TVD(6366.75) VS(-162.10) NS(294.39) EW(173.85)

#72 MD(6503.00) Inc(35.9) Azm(264.5) TVD(6442.55) VS(-115.82) NS(292.03) EW(127.43)

#73 MD(6592.00) Inc(46.7) Azm(264.3) TVD(6509.36) VS(-57.77) NS(286.35) EW(69.12)

#74 MD(6682.00) Inc(50.5) Azm(269.2) TVD(6568.89) VS(9.38) NS(282.56) EW(1.76)

#75 MD(6771.00) Inc(55.4) Azm(269.7) TVD(6622.49) VS(80.31) NS(281.89) EW(-69.24)

#76 MD(6860.00) Inc(56.6) Azm(270.4) TVD(6672.26) VS(154.03) NS(281.96) EW(-143.03)

#77 MD(6950.00) Inc(67.2) Azm(267.4) TVD(6714.60) VS(233.16) NS(280.34) EW(-222.27)

#78 MD(7039.00) Inc(73.1) Azm(269.7) TVD(6744.81) VS(316.65) NS(278.25) EW(-305.92)

#79 MD(7128.00) Inc(77.0) Azm(271.0) TVD(6767.31) VS(402.69) NS(278.79) EW(-392.00)

#80 MD(7218.00) Inc(83.8) Azm(271.1) TVD(6781.85) VS(491.44) NS(280.41) EW(-480.76)

#81 MD(7307.00) Inc(88.1) Azm(271.7) TVD(6788.14) VS(580.19) NS(282.58) EW(-569.49)

#82 MD(7397.00) Inc(90.1) Azm(272.0) TVD(6789.55) VS(670.17) NS(285.49) EW(-659.42)

#83 MD(7486.00) Inc(92.4) Azm(272.4) TVD(6787.61) VS(759.14) NS(288.90) EW(-748.33)

#84 MD(7575.00) Inc(90.1) Azm(270.4) TVD(6785.67) VS(848.10) NS(291.08) EW(-837.27)

#85 MD(7665.00) Inc(90.1) Azm(269.2) TVD(6785.51) VS(938.01) NS(290.76) EW(-927.27)

#86 MD(7757.00) Inc(91.2) Azm(270.1) TVD(6784.47) VS(1029.91) NS(290.20) EW(-1019.26)

#87 MD(7849.00) Inc(90.7) Azm(269.9) TVD(6782.94) VS(1121.83) NS(290.20) EW(-1111.25)

#88 MD(7942.00) Inc(90.9) Azm(269.4) TVD(6781.64) VS(1214.72) NS(289.63) EW(-1204.24)

#89 MD(8032.00) Inc(90.1) Azm(269.0) TVD(6780.86) VS(1304.59) NS(288.38) EW(-1294.22)

#90 MD(8125.00) Inc(90.3) Azm(269.9) TVD(6780.53) VS(1397.47) NS(287.48) EW(-1387.22)

#91 MD(8217.00) Inc(89.5) Azm(270.4) TVD(6780.69) VS(1489.41) NS(287.72) EW(-1479.21)

#92 MD(8310.00) Inc(90.8) Azm(269.0) TVD(6780.45) VS(1582.31) NS(287.24) EW(-1572.21)

#93 MD(8403.00) Inc(90.0) Azm(268.7) TVD(6779.80) VS(1675.19) NS(286.18) EW(-1665.20)

#94 MD(8494.00) Inc(88.0) Azm(269.6) TVD(6781.39) VS(1766.06) NS(285.63) EW(-1756.16)

#95 MD(8587.00) Inc(90.5) Azm(269.9) TVD(6782.61) VS(1858.97) NS(285.22) EW(-1849.16)

#96 MD(8678.00) Inc(89.8) Azm(269.2) TVD(6782.37) VS(1949.87) NS(284.51) EW(-1940.16)

#97 MD(8792.00) Inc(89.4) Azm(269.7) TVD(6783.16) VS(2063.73) NS(283.41) EW(-2054.15)

#98 MD(8884.00) Inc(90.8) Azm(270.1) TVD(6783.00) VS(2155.65) NS(283.25) EW(-2146.15)

#99 MD(8974.00) Inc(91.1) Azm(269.7) TVD(6781.51) VS(2245.56) NS(283.09) EW(-2236.13)

#100 MD(9063.00) Inc(90.2) Azm(268.5) TVD(6780.50) VS(2334.42) NS(281.70) EW(-2325.12)

#101 MD(9153.00) Inc(91.0) Azm(269.0) TVD(6779.56) VS(2424.24) NS(279.73) EW(-2415.09)

#102 MD(9242.00) Inc(90.3) Azm(268.9) TVD(6778.55) VS(2513.09) NS(278.10) EW(-2504.07)

#103 MD(9331.00) Inc(90.6) Azm(268.5) TVD(6777.85) VS(2601.91) NS(276.08) EW(-2593.04)

#104 MD(9420.00) Inc(89.1) Azm(268.0) TVD(6778.08) VS(2690.69) NS(273.36) EW(-2682.00)

#105 MD(9510.00) Inc(88.7) Azm(267.6) TVD(6779.81) VS(2780.40) NS(269.91) EW(-2771.91)

#106 MD(9599.00) Inc(88.8) Azm(268.7) TVD(6781.75) VS(2869.15) NS(267.04) EW(-2860.84)

#107 MD(9688.00) Inc(89.2) Azm(268.3) TVD(6783.31) VS(2957.94) NS(264.71) EW(-2949.80)

#108 MD(9778.00) Inc(90.3) Azm(269.2) TVD(6783.70) VS(3047.77) NS(262.75) EW(-3039.77)

#109 MD(9867.00) Inc(90.7) Azm(268.9) TVD(6782.92) VS(3136.63) NS(261.27) EW(-3128.76)

#110 MD(9957.00) Inc(91.7) Azm(269.4) TVD(6781.04) VS(3226.47) NS(259.93) EW(-3218.73)

#111 MD(10046.00) Inc(91.7) Azm(271.0) TVD(6778.40) VS(3315.38) NS(260.25) EW(-3307.69)

#112 MD(10135.00) Inc(91.0) Azm(272.7) TVD(6776.30) VS(3404.34) NS(263.12) EW(-3396.61)

#113 MD(10225.00) Inc(91.2) Azm(272.5) TVD(6774.57) VS(3494.33) NS(267.20) EW(-3486.50)

#114 MD(10314.00) Inc(91.4) Azm(271.8) TVD(6772.55) VS(3583.30) NS(270.54) EW(-3575.41)

#115 MD(10404.00) Inc(92.0) Azm(272.5) TVD(6769.88) VS(3673.26) NS(273.91) EW(-3665.31)

#116 MD(10493.00) Inc(89.5) Azm(271.1) TVD(6768.72) VS(3762.24) NS(276.71) EW(-3754.25)

#117 MD(10582.00) Inc(89.5) Azm(271.3) TVD(6769.49)
VS(3851.22) NS(278.57) EW(-3843.23)

#118 MD(10672.00) Inc(89.8) Azm(271.5) TVD(6770.04)
VS(3941.21) NS(280.77) EW(-3933.20)

#119 MD(10761.00) Inc(91.5) Azm(272.0) TVD(6769.03)
VS(4030.20) NS(283.49) EW(-4022.15)

#120 MD(10850.00) Inc(89.5) Azm(272.0) TVD(6768.26)
VS(4119.19) NS(286.59) EW(-4111.09)

#121 MD(10940.00) Inc(90.0) Azm(270.6) TVD(6768.65)
VS(4209.17) NS(288.64) EW(-4201.06)

#122 MD(11029.00) Inc(90.3) Azm(270.6) TVD(6768.42)
VS(4298.14) NS(289.57) EW(-4290.05)

#123 MD(11118.00) Inc(90.5) Azm(269.9) TVD(6767.80)
VS(4387.08) NS(289.96) EW(-4379.05)

#124 MD(11207.00) Inc(90.0) Azm(268.9) TVD(6767.41)
VS(4475.97) NS(289.02) EW(-4468.04)

#125 MD(11297.00) Inc(90.7) Azm(270.1) TVD(6766.86)
VS(4565.86) NS(288.24) EW(-4558.04)

#126 MD(11386.00) Inc(91.3) Azm(270.3) TVD(6765.30)
VS(4654.79) NS(288.55) EW(-4647.02)

#127 MD(11475.00) Inc(92.3) Azm(270.4) TVD(6762.51)
VS(4743.69) NS(289.09) EW(-4735.97)

#128 MD(11565.00) Inc(91.6) Azm(269.9) TVD(6759.45)
VS(4833.58) NS(289.33) EW(-4825.92)

#129 MD(11654.00) Inc(90.7) Azm(268.9) TVD(6757.66)
VS(4922.45) NS(288.40) EW(-4914.90)

#130 MD(11743.00) Inc(90.4) Azm(268.2) TVD(6756.81)
VS(5011.25) NS(286.14) EW(-5003.86)

#131 MD(11833.00) Inc(90.7) Azm(269.6) TVD(6755.94)
VS(5101.09) NS(284.42) EW(-5093.84)

#132 MD(11922.00) Inc(90.3) Azm(268.5) TVD(6755.16)
VS(5189.95) NS(282.94) EW(-5182.82)

#133 MD(12012.00) Inc(89.9) Azm(267.4) TVD(6755.01)
VS(5279.69) NS(279.72) EW(-5272.76)

#134 MD(12101.00) Inc(90.0) Azm(268.5) TVD(6755.09)
VS(5368.44) NS(276.54) EW(-5361.71)

#135 MD(12190.00) Inc(90.1) Azm(270.1) TVD(6755.01)
VS(5457.32) NS(275.45) EW(-5450.70)

#136 MD(12280.00) Inc(90.7) Azm(271.1) TVD(6754.38)
VS(5547.28) NS(276.39) EW(-5540.69)

#137 MD(12369.00) Inc(90.9) Azm(271.7) TVD(6753.14)
VS(5636.26) NS(278.57) EW(-5629.65)

#138 MD(12458.00) Inc(90.6) Azm(272.2) TVD(6751.97)
VS(5725.25) NS(281.59) EW(-5718.59)

#139 MD(12548.00) Inc(90.0) Azm(270.4) TVD(6751.50)
VS(5815.23) NS(283.64) EW(-5808.56)

#140 MD(12637.00) Inc(90.7) Azm(271.3) TVD(6750.96)
VS(5904.20) NS(284.96) EW(-5897.55)

#141 MD(12726.00) Inc(89.9) Azm(270.8) TVD(6750.49)
VS(5993.18) NS(286.59) EW(-5986.53)

#142 MD(12816.00) Inc(89.4) Azm(269.2) TVD(6751.04)
VS(6083.10) NS(286.59) EW(-6076.53)

#143 MD(12905.00) Inc(89.3) Azm(269.4) TVD(6752.05)
VS(6171.98) NS(285.50) EW(-6165.52)

#144 MD(12994.00) Inc(89.9) Azm(269.0) TVD(6752.67)
VS(6260.85) NS(284.26) EW(-6254.50)

#145 MD(13084.00) Inc(89.6) Azm(269.6) TVD(6753.06)
VS(6350.73) NS(283.16) EW(-6344.50)

#146 MD(13173.00) Inc(90.1) Azm(269.2) TVD(6753.30)
VS(6439.62) NS(282.23) EW(-6433.49)

#147 MD(13263.00) Inc(90.1) Azm(268.7) TVD(6753.14)
VS(6529.47) NS(280.58) EW(-6523.48)

#148 MD(13352.00) Inc(90.4) Azm(268.3) TVD(6752.75)
VS(6618.27) NS(278.25) EW(-6612.44)

#149 MD(13441.00) Inc(90.8) Azm(267.6) TVD(6751.82)
VS(6707.02) NS(275.06) EW(-6701.38)

#150 MD(13531.00) Inc(91.4) Azm(270.3) TVD(6750.09)
VS(6796.84) NS(273.41) EW(-6791.34)

#151 MD(13620.00) Inc(91.2) Azm(270.8) TVD(6748.07)
VS(6885.78) NS(274.27) EW(-6880.31)

#152 MD(13710.00) Inc(91.2) Azm(270.4) TVD(6746.19)
VS(6975.72) NS(275.21) EW(-6970.29)

#153 MD(13813.00) Inc(91.5) Azm(269.7) TVD(6743.76)
VS(7078.61) NS(275.30) EW(-7073.26)