# Anzon Australia Ltd.

**Manta #2**
**Manta #2**
**Manta #2A**
**Manta #2A**

**Design: Manta #2A**

# Standard Survey Report

**09 February, 2006**

# Halliburton Company

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Anzon Australia Ltd. | **Local Co-ordinate Reference:** | Well Manta #2A |
| **Project:** | Manta #2 | **TVD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Site:** | Manta #2 | **MD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Well:** | Manta #2A | **North Reference:** | Grid |
| **Wellbore:** | Manta #2A | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Manta #2A | **Database:** | EDM 2003.11 Single User Db |

**Project** Manta #2

| | | | |
|---|---|---|---|
| **Map System:** | Universal Transverse Mercator | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | GDA94 | | |
| **Map Zone:** | Zone 55S (144 E to 150 E) | | |

**Site** Manta #2

| | | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 5,762,004.00 m | **Latitude:** | 38° 16' 38.935" S |
| **From:** | Map | **Easting:** | 650,119.90 m | **Longitude:** | 148° 42' 58.582" E |
| **Position Uncertainty:** | 0.00 m | **Slot Radius:** | in | **Grid Convergence:** | -1.06 ° |

**Well** Manta #2A

| | | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.00 m | **Northing:** | 5,761,989.60 m | **Latitude:** | 38° 16' 39.410" S |
| | **+E/-W** | 0.00 m | **Easting:** | 650,106.20 m | **Longitude:** | 148° 42' 58.030" E |
| **Position Uncertainty** | | 0.00 m | **Wellhead Elevation:** | m | **Water Depth:** | 134.30 m |

**Wellbore** Manta #2A

| Magnetics | Model Name | Sample Date | Declination (°) | Dip Angle (°) | Field Strength (nT) |
|---|---|---|---|---|---|
| | BGGM2005 | 22/01/2006 | 13.38 | -68.71 | 59,899 |

**Design** Manta #2A

**Audit Notes:**

| | | | | | |
|---|---|---|---|---|---|
| **Version:** | 1.0 | **Phase:** | ACTUAL | **Tie On Depth:** | |

| Vertical Section: | Depth From (TVD) (m) | +N/-S (m) | +E/-W (m) | Direction (°) |
|---|---|---|---|---|
| | 0.00 | 0.00 | 0.00 | 53.88 |

**Survey Program** **Date** 9/02/2006

| From (m) | To (m) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 189.00 | 189.00 | 36" Hole (Manta #2A) | DIPMETER | Dipmeter or other wireline log |
| 189.00 | 975.13 | 17-1/2" Hole (Manta #2A) | MWD | |
| 1,010.83 | 2,704.51 | 12-1/4" Hole (Manta #2A) | MWD | |
| 2,737.79 | 3,088.41 | 8-1/2" Hole (Manta #2A) | MWD | |

**Survey**

| Measured Depth (m) | Inclination (°) | Azimuth (°) | Vertical Depth (m) | +N/-S (m) | +E/-W (m) | Vertical Section (m) | Dogleg Rate (°/30m) | Build Rate (°/30m) | Turn Rate (°/30m) |
|---|---|---|---|---|---|---|---|---|---|
| 189.00 | 0.50 | 0.00 | 189.00 | 0.82 | 0.00 | 0.48 | 0.000 | 0.00 | 0.00 |
| 223.70 | 0.31 | 174.50 | 223.70 | 0.88 | 0.01 | 0.52 | 0.700 | -0.16 | 150.86 |
| 251.38 | 0.19 | 202.76 | 251.38 | 0.76 | 0.00 | 0.45 | 0.183 | -0.13 | 30.63 |
| 277.45 | 0.35 | 175.68 | 277.45 | 0.64 | -0.01 | 0.37 | 0.231 | 0.18 | -31.16 |
| 307.36 | 0.22 | 184.90 | 307.36 | 0.49 | -0.01 | 0.28 | 0.138 | -0.13 | 9.25 |
| 336.09 | 0.20 | 186.50 | 336.09 | 0.39 | -0.02 | 0.21 | 0.022 | -0.02 | 1.67 |
| 364.82 | 1.23 | 53.30 | 364.81 | 0.52 | 0.22 | 0.49 | 1.435 | 1.08 | -139.09 |
| 393.45 | 3.52 | 50.58 | 393.42 | 1.27 | 1.15 | 1.67 | 2.402 | 2.40 | -2.85 |
| 421.58 | 5.81 | 51.20 | 421.45 | 2.71 | 2.92 | 3.96 | 2.443 | 2.44 | 0.66 |
| 450.32 | 8.56 | 51.72 | 449.96 | 4.94 | 5.74 | 7.55 | 2.871 | 2.87 | 0.54 |

# Halliburton Company

## Survey Report

| | | | |
|---|---|---|---|
| **Company:** | Anzon Australia Ltd. | **Local Co-ordinate Reference:** | Well Manta #2A |
| **Project:** | Manta #2 | **TVD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Site:** | Manta #2 | **MD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Well:** | Manta #2A | **North Reference:** | Grid |
| **Wellbore:** | Manta #2A | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Manta #2A | **Database:** | EDM 2003.11 Single User Db |

**Survey**

| Measured Depth (m) | Inclination (°) | Azimuth (°) | Vertical Depth (m) | +N/-S (m) | +E/-W (m) | Vertical Section (m) | Dogleg Rate (°/30m) | Build Rate (°/30m) | Turn Rate (°/30m) |
|---|---|---|---|---|---|---|---|---|---|
| 479.06 | 11.89 | 49.42 | 478.24 | 8.19 | 9.67 | 12.64 | 3.501 | 3.48 | -2.40 |
| 507.75 | 14.58 | 48.48 | 506.17 | 12.51 | 14.61 | 19.18 | 2.822 | 2.81 | -0.98 |
| 536.50 | 16.83 | 44.64 | 533.84 | 17.87 | 20.25 | 26.89 | 2.585 | 2.35 | -4.01 |
| 565.42 | 18.69 | 43.63 | 561.39 | 24.21 | 26.39 | 35.59 | 1.956 | 1.93 | -1.05 |
| 594.16 | 20.42 | 42.65 | 588.47 | 31.23 | 32.96 | 45.04 | 1.838 | 1.81 | -1.02 |
| 622.89 | 21.15 | 43.49 | 615.33 | 38.67 | 39.93 | 55.05 | 0.823 | 0.76 | 0.88 |
| 651.64 | 21.37 | 43.11 | 642.12 | 46.26 | 47.08 | 65.30 | 0.271 | 0.23 | -0.40 |
| 680.32 | 21.51 | 42.47 | 668.82 | 53.95 | 54.20 | 75.58 | 0.285 | 0.15 | -0.67 |
| 708.94 | 21.90 | 43.02 | 695.41 | 61.73 | 61.38 | 85.97 | 0.461 | 0.41 | 0.58 |
| 737.51 | 22.26 | 42.42 | 721.88 | 69.62 | 68.67 | 96.51 | 0.446 | 0.38 | -0.63 |
| 766.15 | 22.56 | 42.41 | 748.36 | 77.68 | 76.03 | 107.21 | 0.314 | 0.31 | -0.01 |
| 794.76 | 22.83 | 43.03 | 774.75 | 85.79 | 83.52 | 118.04 | 0.378 | 0.28 | 0.65 |
| 823.37 | 23.20 | 43.01 | 801.09 | 93.97 | 91.15 | 129.02 | 0.388 | 0.39 | -0.02 |
| 851.96 | 23.43 | 42.08 | 827.34 | 102.30 | 98.80 | 140.12 | 0.455 | 0.24 | -0.98 |
| 880.70 | 22.87 | 43.75 | 853.77 | 110.58 | 106.49 | 151.21 | 0.901 | -0.58 | 1.74 |
| 909.43 | 23.09 | 44.21 | 880.22 | 118.65 | 114.28 | 162.26 | 0.297 | 0.23 | 0.48 |
| 938.15 | 23.39 | 43.49 | 906.61 | 126.82 | 122.13 | 173.42 | 0.432 | 0.31 | -0.75 |
| 967.12 | 23.23 | 44.42 | 933.21 | 135.07 | 130.09 | 184.71 | 0.416 | -0.17 | 0.96 |
| 975.13 | 23.24 | 45.29 | 940.57 | 137.31 | 132.32 | 187.83 | 1.286 | 0.04 | 3.26 |
| 1,010.83 | 22.85 | 43.26 | 973.42 | 147.32 | 142.07 | 201.60 | 0.744 | -0.33 | -1.71 |
| 1,039.58 | 23.04 | 44.52 | 999.90 | 155.39 | 149.84 | 212.64 | 0.550 | 0.20 | 1.31 |
| 1,068.24 | 23.27 | 45.46 | 1,026.25 | 163.36 | 157.81 | 223.78 | 0.456 | 0.24 | 0.98 |
| 1,097.00 | 23.65 | 46.50 | 1,052.63 | 171.32 | 166.05 | 235.12 | 0.586 | 0.40 | 1.08 |
| 1,125.66 | 23.81 | 46.98 | 1,078.87 | 179.22 | 174.44 | 246.56 | 0.263 | 0.17 | 0.50 |
| 1,154.22 | 24.02 | 47.15 | 1,104.98 | 187.11 | 182.92 | 258.06 | 0.232 | 0.22 | 0.18 |
| 1,182.99 | 23.70 | 46.36 | 1,131.29 | 195.08 | 191.40 | 269.60 | 0.472 | -0.33 | -0.82 |
| 1,211.78 | 23.47 | 46.64 | 1,157.68 | 203.01 | 199.75 | 281.03 | 0.267 | -0.24 | 0.29 |
| 1,240.54 | 22.58 | 46.98 | 1,184.14 | 210.71 | 207.95 | 292.19 | 0.939 | -0.93 | 0.35 |
| 1,269.32 | 20.88 | 43.94 | 1,210.88 | 218.17 | 215.55 | 302.73 | 2.125 | -1.77 | -3.17 |
| 1,297.80 | 20.93 | 42.58 | 1,237.48 | 225.57 | 222.52 | 312.72 | 0.514 | 0.05 | -1.43 |
| 1,326.48 | 21.78 | 44.69 | 1,264.19 | 233.13 | 229.73 | 322.99 | 1.198 | 0.89 | 2.21 |
| 1,355.16 | 22.91 | 47.33 | 1,290.72 | 240.70 | 237.57 | 333.79 | 1.581 | 1.18 | 2.76 |
| 1,383.56 | 23.51 | 47.75 | 1,316.82 | 248.25 | 245.83 | 344.92 | 0.657 | 0.63 | 0.44 |
| 1,412.27 | 23.73 | 48.72 | 1,343.13 | 255.91 | 254.41 | 356.36 | 0.467 | 0.23 | 1.01 |
| 1,440.99 | 23.96 | 47.20 | 1,369.40 | 263.69 | 263.03 | 367.91 | 0.685 | 0.24 | -1.59 |
| 1,469.72 | 23.99 | 45.73 | 1,395.65 | 271.73 | 271.49 | 379.49 | 0.624 | 0.03 | -1.53 |
| 1,498.45 | 23.80 | 44.70 | 1,421.92 | 279.92 | 279.75 | 390.99 | 0.479 | -0.20 | -1.08 |
| 1,527.14 | 23.05 | 44.16 | 1,448.24 | 288.07 | 287.74 | 402.24 | 0.816 | -0.78 | -0.56 |
| 1,555.85 | 23.40 | 44.07 | 1,474.62 | 296.20 | 295.62 | 413.40 | 0.368 | 0.37 | -0.09 |
| 1,584.61 | 24.17 | 43.24 | 1,500.94 | 304.59 | 303.63 | 424.81 | 0.876 | 0.80 | -0.87 |
| 1,613.32 | 23.71 | 42.97 | 1,527.18 | 313.10 | 311.59 | 436.26 | 0.494 | -0.48 | -0.28 |
| 1,642.11 | 23.63 | 43.33 | 1,553.55 | 321.53 | 319.49 | 447.61 | 0.172 | -0.08 | 0.38 |
| 1,670.91 | 23.84 | 46.60 | 1,579.91 | 329.73 | 327.68 | 459.06 | 1.388 | 0.22 | 3.41 |
| 1,699.59 | 23.43 | 45.85 | 1,606.19 | 337.68 | 335.98 | 470.46 | 0.532 | -0.43 | -0.78 |
| 1,728.24 | 23.90 | 45.89 | 1,632.43 | 345.69 | 344.24 | 481.85 | 0.492 | 0.49 | 0.04 |
| 1,756.77 | 24.27 | 46.40 | 1,658.48 | 353.75 | 352.63 | 493.38 | 0.446 | 0.39 | 0.54 |
| 1,785.40 | 23.65 | 45.59 | 1,684.64 | 361.83 | 361.00 | 504.90 | 0.735 | -0.65 | -0.85 |
| 1,814.08 | 24.24 | 45.28 | 1,710.85 | 370.00 | 369.29 | 516.41 | 0.631 | 0.62 | -0.32 |
| 1,842.82 | 23.71 | 44.51 | 1,737.11 | 378.27 | 377.53 | 527.95 | 0.642 | -0.55 | -0.80 |
| 1,871.34 | 23.91 | 45.02 | 1,763.20 | 386.44 | 385.64 | 539.32 | 0.302 | 0.21 | 0.54 |
| 1,900.01 | 23.68 | 43.37 | 1,789.44 | 394.74 | 393.70 | 550.72 | 0.737 | -0.24 | -1.73 |
| 1,928.76 | 23.89 | 43.96 | 1,815.74 | 403.12 | 401.71 | 562.13 | 0.331 | 0.22 | 0.62 |
| 1,957.43 | 24.05 | 43.93 | 1,841.94 | 411.51 | 409.79 | 573.60 | 0.168 | 0.17 | -0.03 |
| 1,986.12 | 24.35 | 43.94 | 1,868.11 | 419.98 | 417.95 | 585.18 | 0.314 | 0.31 | 0.01 |
| 2,014.80 | 24.55 | 45.96 | 1,894.22 | 428.38 | 426.34 | 596.91 | 0.899 | 0.21 | 2.11 |

| | | | |
|---|---|---|---|
| **Company:** | Anzon Australia Ltd. | **Local Co-ordinate Reference:** | Well Manta #2A |
| **Project:** | Manta #2 | **TVD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Site:** | Manta #2 | **MD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Well:** | Manta #2A | **North Reference:** | Grid |
| **Wellbore:** | Manta #2A | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Manta #2A | **Database:** | EDM 2003.11 Single User Db |

**Survey**

| Measured Depth (m) | Inclination (°) | Azimuth (°) | Vertical Depth (m) | +N/-S (m) | +E/-W (m) | Vertical Section (m) | Dogleg Rate (°/30m) | Build Rate (°/30m) | Turn Rate (°/30m) |
|---|---|---|---|---|---|---|---|---|---|
| 2,043.47 | 24.45 | 45.50 | 1,920.31 | 436.68 | 434.85 | 608.68 | 0.225 | -0.10 | -0.48 |
| 2,072.10 | 24.44 | 47.74 | 1,946.37 | 444.81 | 443.46 | 620.43 | 0.971 | -0.01 | 2.35 |
| 2,100.80 | 25.25 | 48.41 | 1,972.42 | 452.87 | 452.43 | 632.43 | 0.896 | 0.85 | 0.70 |
| 2,129.56 | 25.57 | 44.14 | 1,998.40 | 461.40 | 461.35 | 644.65 | 1.940 | 0.33 | -4.45 |
| 2,158.30 | 24.92 | 42.26 | 2,024.39 | 470.33 | 469.74 | 656.69 | 1.077 | -0.68 | -1.96 |
| 2,186.92 | 24.73 | 41.30 | 2,050.37 | 479.29 | 477.74 | 668.44 | 0.467 | -0.20 | -1.01 |
| 2,215.52 | 24.18 | 42.95 | 2,076.40 | 488.07 | 485.68 | 680.03 | 0.920 | -0.58 | 1.73 |
| 2,244.20 | 22.33 | 45.21 | 2,102.75 | 496.21 | 493.55 | 691.19 | 2.148 | -1.94 | 2.36 |
| 2,272.81 | 21.89 | 45.15 | 2,129.26 | 503.80 | 501.19 | 701.83 | 0.462 | -0.46 | -0.06 |
| 2,301.56 | 22.34 | 45.30 | 2,155.89 | 511.42 | 508.87 | 712.53 | 0.473 | 0.47 | 0.16 |
| 2,330.20 | 23.00 | 43.99 | 2,182.32 | 519.28 | 516.63 | 723.43 | 0.870 | 0.69 | -1.37 |
| 2,359.20 | 23.76 | 44.10 | 2,208.94 | 527.55 | 524.63 | 734.77 | 0.788 | 0.79 | 0.11 |
| 2,387.78 | 24.24 | 44.11 | 2,235.05 | 535.90 | 532.72 | 746.22 | 0.504 | 0.50 | 0.01 |
| 2,416.30 | 24.95 | 43.89 | 2,260.98 | 544.43 | 540.97 | 757.92 | 0.753 | 0.75 | -0.23 |
| 2,444.52 | 24.15 | 47.77 | 2,286.65 | 552.60 | 549.37 | 769.52 | 1.913 | -0.85 | 4.12 |
| 2,472.69 | 22.73 | 50.27 | 2,312.49 | 559.96 | 557.82 | 780.68 | 1.846 | -1.51 | 2.66 |
| 2,501.29 | 21.95 | 55.92 | 2,338.95 | 566.48 | 566.50 | 791.54 | 2.396 | -0.82 | 5.93 |
| 2,530.19 | 21.84 | 59.83 | 2,365.77 | 572.21 | 575.62 | 802.28 | 1.518 | -0.11 | 4.06 |
| 2,559.36 | 22.13 | 63.70 | 2,392.82 | 577.37 | 585.24 | 813.09 | 1.519 | 0.30 | 3.98 |
| 2,588.05 | 23.56 | 67.09 | 2,419.26 | 582.00 | 595.36 | 824.00 | 2.032 | 1.50 | 3.54 |
| 2,616.14 | 23.24 | 72.53 | 2,445.04 | 585.85 | 605.82 | 834.72 | 2.332 | -0.34 | 5.81 |
| 2,645.16 | 22.80 | 79.11 | 2,471.75 | 588.63 | 616.81 | 845.23 | 2.697 | -0.45 | 6.80 |
| 2,674.30 | 23.09 | 87.66 | 2,498.60 | 589.93 | 628.06 | 855.09 | 3.442 | 0.30 | 8.80 |
| 2,704.51 | 22.97 | 91.88 | 2,526.40 | 589.98 | 639.87 | 864.66 | 1.643 | -0.12 | 4.19 |
| 2,737.79 | 23.49 | 91.43 | 2,556.98 | 589.60 | 653.00 | 875.04 | 0.495 | 0.47 | -0.41 |
| 2,766.21 | 23.67 | 91.88 | 2,583.03 | 589.27 | 664.36 | 884.02 | 0.269 | 0.19 | 0.48 |
| 2,795.09 | 23.65 | 91.16 | 2,609.48 | 588.97 | 675.94 | 893.20 | 0.301 | -0.02 | -0.75 |
| 2,824.38 | 24.43 | 91.04 | 2,636.23 | 588.74 | 687.87 | 902.70 | 0.800 | 0.80 | -0.12 |
| 2,853.10 | 24.76 | 90.91 | 2,662.34 | 588.54 | 699.83 | 912.24 | 0.349 | 0.34 | -0.14 |
| 2,881.53 | 25.09 | 90.31 | 2,688.13 | 588.41 | 711.81 | 921.84 | 0.439 | 0.35 | -0.63 |
| 2,909.96 | 25.18 | 90.87 | 2,713.86 | 588.28 | 723.88 | 931.52 | 0.268 | 0.09 | 0.59 |
| 2,938.50 | 25.39 | 90.79 | 2,739.67 | 588.11 | 736.07 | 941.26 | 0.224 | 0.22 | -0.08 |
| 2,967.29 | 26.00 | 90.21 | 2,765.61 | 588.00 | 748.55 | 951.28 | 0.688 | 0.64 | -0.60 |
| 2,996.10 | 26.25 | 89.69 | 2,791.48 | 588.01 | 761.24 | 961.54 | 0.353 | 0.26 | -0.54 |
| 3,024.89 | 26.67 | 89.15 | 2,817.25 | 588.14 | 774.07 | 971.97 | 0.504 | 0.44 | -0.56 |
| 3,053.49 | 27.18 | 90.68 | 2,842.75 | 588.16 | 787.02 | 982.44 | 0.902 | 0.53 | 1.60 |
| 3,088.41 | 27.97 | 89.65 | 2,873.71 | 588.11 | 803.18 | 995.48 | 0.793 | 0.68 | -0.88 |

| | | | |
|---|---|---|---|
| **Company:** | Anzon Australia Ltd. | **Local Co-ordinate Reference:** | Well Manta #2A |
| **Project:** | Manta #2 | **TVD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Site:** | Manta #2 | **MD Reference:** | WELL @ 21.50m (Original Well Elev) |
| **Well:** | Manta #2A | **North Reference:** | Grid |
| **Wellbore:** | Manta #2A | **Survey Calculation Method:** | Minimum Curvature |
| **Design:** | Manta #2A | **Database:** | EDM 2003.11 Single User Db |

**Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (m) | +N/-S m | +E/-W m | Northing (m) | Easting (m) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Manta #2 First Target | 0.00 | 0.00 | 2,521.50 | 590.40 | 635.30 | 5,762,580.00 | 650,741.50 | 38° 16' 19.880" S | 148° 43' 23.714" E |
| - actual wellpath misses by 2.52m at 2699.19m MD (2521.50 TVD, 590.04 N, 637.80 E) | | | | | | | | | |
| - Point | | | | | | | | | |
| Top of Reservoir Zone | 0.00 | 0.00 | 2,746.50 | 590.40 | 743.80 | 5,762,580.00 | 650,850.00 | 38° 16' 19.815" S | 148° 43' 28.177" E |
| - actual wellpath misses by 5.05m at 2946.06m MD (2746.50 TVD, 588.07 N, 739.32 E) | | | | | | | | | |
| - Polygon | | | | | | | | | |
| Point 1 | | | | -25.00 | 20.00 | 5,762,600.00 | 650,825.00 | | |
| Point 2 | | | | 50.00 | 20.00 | 5,762,600.00 | 650,900.00 | | |
| Point 3 | | | | 50.00 | -20.00 | 5,762,560.00 | 650,900.00 | | |
| Point 4 | | | | -25.00 | -20.00 | 5,762,560.00 | 650,825.00 | | |

**Casing Points**

| Measured Depth (m) | Vertical Depth (m) | Name | Casing Diameter (in) | Hole Diameter (in) |
|---|---|---|---|---|
| 189.00 | | 30" | 30.000 | 36.000 |
| 994.00 | | 13 3/8" | 13.375 | 17.500 |
| 2,706.45 | | 9 5/8" | 9.625 | 12.250 |

**Design Annotations**

| Measured Depth (m) | Vertical Depth (m) | Local Coordinates +N/-S (m) | Local Coordinates +E/-W (m) | Comment |
|---|---|---|---|---|
| 3,053.49 | 2,842.75 | 588.16 | 787.02 | Azimuth correction for Mag error due to Volcanics |

Checked By: _____ Approved By: _____ Date: _____