



### TARGET DETAILS

| Name       | TVD     | +N/-S   | +E/-W  | Northing   | Easting    | Latitude                    | Longitude | Shape |
|------------|---------|---------|--------|------------|------------|-----------------------------|-----------|-------|
| Surface    | 0.00    | 0.00    | 0.00   | 1478850.12 | 3359030.58 | 40°38'26.311N104°12'22.592W |           | Point |
| 600' entry | 6521.10 | 376.40  | 637.64 | 1479226.52 | 3359668.22 | 40°38'29.938N104°12'14.250W |           | Point |
| BHL        | 6526.82 | 4407.80 | 620.86 | 1483257.92 | 3359651.44 | 40°39'09.773N104°12'13.704W |           | Point |
| PBHL       | 6540.00 | 4408.42 | 673.55 | 1483258.54 | 3359704.13 | 40°39'09.771N104°12'13.020W |           | Point |

|   |  |                       |                |
|---|--|-----------------------|----------------|
| <b>Company:</b> CARRIZO OIL & GAS, INC. | <b>Date:</b> 04/13/2012  | <b>Time:</b> 11:30:04 | <b>Page:</b> 1 |
| <b>Field:</b> Niobrara CONZ'83          | <b>Co-ordinate(NE) Reference:</b> Well: 21-44-8-61, Grid North |                       |                |
| <b>Site:</b> Debrine 21-44-8-61         | <b>Vertical (TVD) Reference:</b> 5003'GL+17'GL 5020.0          |                       |                |
| <b>Well:</b> 21-44-8-61                 | <b>Section (VS) Reference:</b> Well (0.00N,0.00E,0.10Azi)      |                       |                |
| <b>Wellpath:</b> Original Hole          | <b>Survey Calculation Method:</b> Minimum Curvature            | <b>Db:</b> Adapti     |                |

**Field:** Niobrara CONZ'83  
Weld County, CO

**Map System:** US State Plane Coordinate System 1983  
**Geo Datum:** GRS 1980  
**Sys Datum:** Mean Sea Level

**Map Zone:** Colorado, Northern Zone  
**Coordinate System:** Well Centre  
**Geomagnetic Model:** IGRF2010

**Site:** Debrine 21-44-8-61  
S:21,T:8N,R:61W  
Weld County, CO

|                                      |                                |                                   |  |
|--------------------------------------|--------------------------------|-----------------------------------|--|
| <b>Site Position:</b>                | <b>Northing:</b> 1478850.12 ft | <b>Latitude:</b> 40 38 26.311 N   |  |
| <b>From:</b> Map                     | <b>Easting:</b> 3359030.58 ft  | <b>Longitude:</b> 104 12 22.592 W |  |
| <b>Position Uncertainty:</b> 0.00 ft |                                | <b>North Reference:</b> Grid      |  |
| <b>Ground Level:</b> 5003.00 ft      |                                | <b>Grid Convergence:</b> 0.84 deg |  |

**Well:** 21-44-8-61

**Slot Name:**

|                              |       |         |                                |                                   |  |
|------------------------------|-------|---------|--------------------------------|-----------------------------------|--|
| <b>Well Position:</b>        | +N/-S | 0.00 ft | <b>Northing:</b> 1478850.12 ft | <b>Latitude:</b> 40 38 26.311 N   |  |
|                              | +E/-W | 0.00 ft | <b>Easting :</b> 3359030.58 ft | <b>Longitude:</b> 104 12 22.592 W |  |
| <b>Position Uncertainty:</b> |       | 0.00 ft |                                |                                   |  |

**Wellpath:** Original Hole

**Drilled From:** Surface  
**Tie-on Depth:** 0.00 ft  
**Above System Datum:** Mean Sea Level  
**Declination:** 8.48 deg  
**Mag Dip Angle:** 67.31 deg  
**+E/-W** **Direction**  
ft deg

|   |                          |      |
|---|--------------------------|------|
| <b>Current Datum:</b> 5003'GL+17'GL       | <b>Height</b> 5020.00 ft |      |
| <b>Magnetic Data:</b> 04/03/2012          |                          |      |
| <b>Field Strength:</b> 53271 nT           |                          |      |
| <b>Vertical Section:</b> Depth From (TVD) | +N/-S                    |      |
| ft  | ft                       |      |
| 0.00                                      | 0.00                     | 0.00 |

#### Survey Program for Definitive Wellpath

|                              |                               |                   |                  |
|------------------------------|-------------------------------|-------------------|------------------|
| <b>Date:</b> 04/13/2012      | <b>Validated:</b> No          | <b>Version:</b> 1 |                  |
| <b>Actual From</b> <b>To</b> | <b>Survey</b>                 | <b>Toolcode</b>   | <b>Tool Name</b> |
| ft ft                        |                               |                   |                  |
| 1430.00 10785.00             | Survey #1 (1430.00-10785.00)  | MWD               | Std MWD          |
| 10872.00 10872.00            | Survey #2 (10872.00-10872.00) | Project           | Projection       |

#### Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 1430.00  | 0.00        | 0.00        | 1430.00   | 0.00        | 0.00        | 0.00     | 0.00             | 0.00               | 0.00              | TIE LINE     |
| 1453.00  | 0.40        | 239.30      | 1453.00   | -0.04       | -0.07       | -0.04    | 1.74             | 1.74               | 0.00              | MWD          |
| 1514.00  | 1.40        | 129.80      | 1513.99   | -0.63       | 0.32        | -0.63    | 2.59             | 1.64               | -179.51           | MWD          |
| 1600.00  | 2.80        | 117.70      | 1599.93   | -2.28       | 2.99        | -2.27    | 1.70             | 1.63               | -14.07            | MWD          |
| 1685.00  | 5.30        | 103.40      | 1684.72   | -4.15       | 8.65        | -4.14    | 3.15             | 2.94               | -16.82            | MWD          |
| 1770.00  | 6.60        | 104.10      | 1769.26   | -6.25       | 17.20       | -6.22    | 1.53             | 1.53               | 0.82              | MWD          |
| 1855.00  | 6.90        | 103.80      | 1853.67   | -8.66       | 26.90       | -8.61    | 0.36             | 0.35               | -0.35             | MWD          |
| 1941.00  | 6.30        | 98.70       | 1939.10   | -10.60      | 36.58       | -10.54   | 0.97             | -0.70              | -5.93             | MWD          |
| 2025.00  | 6.70        | 106.80      | 2022.56   | -12.72      | 45.83       | -12.64   | 1.19             | 0.48               | 9.64              | MWD          |
| 2110.00  | 6.80        | 106.10      | 2106.97   | -15.55      | 55.41       | -15.45   | 0.15             | 0.12               | -0.82             | MWD          |
| 2195.00  | 6.30        | 106.30      | 2191.42   | -18.25      | 64.72       | -18.14   | 0.59             | -0.59              | 0.24              | MWD          |
| 2280.00  | 6.40        | 107.70      | 2275.89   | -21.00      | 73.71       | -20.87   | 0.22             | 0.12               | 1.65              | MWD          |
| 2365.00  | 6.30        | 110.50      | 2360.37   | -24.07      | 82.59       | -23.93   | 0.38             | -0.12              | 3.29              | MWD          |
| 2451.00  | 5.90        | 111.50      | 2445.89   | -27.35      | 91.12       | -27.19   | 0.48             | -0.47              | 1.16              | MWD          |
| 2536.00  | 6.20        | 100.30      | 2530.42   | -29.77      | 99.70       | -29.59   | 1.43             | 0.35               | -13.18            | MWD          |
| 2621.00  | 6.40        | 102.20      | 2614.90   | -31.59      | 108.85      | -31.40   | 0.34             | 0.24               | 2.24              | MWD          |
| 2706.00  | 6.80        | 98.50       | 2699.34   | -33.34      | 118.46      | -33.13   | 0.69             | 0.47               | -4.35             | MWD          |
| 2790.00  | 7.00        | 97.60       | 2782.73   | -34.75      | 128.45      | -34.52   | 0.27             | 0.24               | -1.07             | MWD          |
| 2875.00  | 5.80        | 105.40      | 2867.20   | -36.57      | 137.72      | -36.33   | 1.74             | -1.41              | 9.18              | MWD          |
| 2960.00  | 6.00        | 111.70      | 2951.75   | -39.36      | 145.99      | -39.10   | 0.80             | 0.24               | 7.41              | MWD          |
| 3046.00  | 6.30        | 112.20      | 3037.26   | -42.80      | 154.54      | -42.53   | 0.35             | 0.35               | 0.58              | MWD          |
| 3131.00  | 6.30        | 115.00      | 3121.74   | -46.53      | 163.08      | -46.25   | 0.36             | 0.00               | 3.29              | MWD          |

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**Field:** Niobrara CONZ'83  
**Site:** Debrine 21-44-8-61  
**Well:** 21-44-8-61  
**Wellpath:** Original Hole

**Date:** 04/13/2012      **Time:** 11:30:04      **Page:** 2  
**Co-ordinate(NE) Reference:** Well: 21-44-8-61, Grid North  
**Vertical (TVD) Reference:** 5003'GL+17'GL 5020.0  
**Section (VS) Reference:** Well (0.00N,0.00E,0.10Azi)  
**Survey Calculation Method:** Minimum Curvature      **Db:** Adapti

**Survey**

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 3217.00  | 6.30        | 111.90      | 3207.22   | -50.29      | 171.74      | -49.99   | 0.40             | 0.00               | -3.60             | MWD          |
| 3301.00  | 6.00        | 107.80      | 3290.74   | -53.35      | 180.19      | -53.03   | 0.63             | -0.36              | -4.88             | MWD          |
| 3385.00  | 5.10        | 106.10      | 3374.35   | -55.73      | 187.96      | -55.40   | 1.09             | -1.07              | -2.02             | MWD          |
| 3470.00  | 5.50        | 104.50      | 3458.98   | -57.79      | 195.53      | -57.45   | 0.50             | 0.47               | -1.88             | MWD          |
| 3556.00  | 5.70        | 109.40      | 3544.57   | -60.25      | 203.55      | -59.89   | 0.60             | 0.23               | 5.70              | MWD          |
| 3640.00  | 6.80        | 110.10      | 3628.07   | -63.34      | 212.16      | -62.97   | 1.31             | 1.31               | 0.83              | MWD          |
| 3725.00  | 7.10        | 113.80      | 3712.45   | -67.19      | 221.69      | -66.80   | 0.63             | 0.35               | 4.35              | MWD          |
| 3810.00  | 7.50        | 110.60      | 3796.76   | -71.26      | 231.69      | -70.86   | 0.67             | 0.47               | -3.76             | MWD          |
| 3894.00  | 8.00        | 112.80      | 3879.99   | -75.45      | 242.21      | -75.03   | 0.69             | 0.60               | 2.62              | MWD          |
| 3980.00  | 8.30        | 113.30      | 3965.12   | -80.23      | 253.43      | -79.79   | 0.36             | 0.35               | 0.58              | MWD          |
| 4064.00  | 8.60        | 110.50      | 4048.21   | -84.83      | 264.88      | -84.36   | 0.61             | 0.36               | -3.33             | MWD          |
| 4149.00  | 7.20        | 105.70      | 4132.40   | -88.49      | 275.96      | -88.01   | 1.82             | -1.65              | -5.65             | MWD          |
| 4234.00  | 7.00        | 98.30       | 4216.75   | -90.68      | 286.21      | -90.18   | 1.10             | -0.24              | -8.71             | MWD          |
| 4320.00  | 6.50        | 103.80      | 4302.16   | -92.60      | 296.13      | -92.08   | 0.95             | -0.58              | 6.40              | MWD          |
| 4405.00  | 5.70        | 99.20       | 4386.68   | -94.42      | 304.97      | -93.89   | 1.10             | -0.94              | -5.41             | MWD          |
| 4490.00  | 6.00        | 104.80      | 4471.24   | -96.23      | 313.43      | -95.69   | 0.76             | 0.35               | 6.59              | MWD          |
| 4575.00  | 4.50        | 92.70       | 4555.88   | -97.52      | 321.05      | -96.96   | 2.18             | -1.76              | -14.24            | MWD          |
| 4660.00  | 3.70        | 98.00       | 4640.66   | -98.06      | 327.10      | -97.49   | 1.04             | -0.94              | 6.24              | MWD          |
| 4746.00  | 2.80        | 101.00      | 4726.52   | -98.85      | 331.91      | -98.27   | 1.06             | -1.05              | 3.49              | MWD          |
| 4831.00  | 3.90        | 94.30       | 4811.38   | -99.46      | 336.83      | -98.88   | 1.37             | 1.29               | -7.88             | MWD          |
| 4874.00  | 5.00        | 96.60       | 4854.25   | -99.79      | 340.15      | -99.19   | 2.59             | 2.56               | 5.35              | MWD          |
| 4917.00  | 6.20        | 92.40       | 4897.04   | -100.10     | 344.33      | -99.50   | 2.95             | 2.79               | -9.77             | MWD          |
| 5002.00  | 6.60        | 103.60      | 4981.51   | -101.44     | 353.67      | -100.82  | 1.54             | 0.47               | 13.18             | MWD          |
| 5087.00  | 5.60        | 111.90      | 5066.03   | -104.14     | 362.26      | -103.51  | 1.57             | -1.18              | 9.76              | MWD          |
| 5171.00  | 6.20        | 106.40      | 5149.59   | -106.95     | 370.42      | -106.30  | 0.98             | 0.71               | -6.55             | MWD          |
| 5255.00  | 6.90        | 103.10      | 5233.04   | -109.37     | 379.68      | -108.71  | 0.95             | 0.83               | -3.93             | MWD          |
| 5341.00  | 5.80        | 102.20      | 5318.51   | -111.46     | 388.96      | -110.78  | 1.28             | -1.28              | -1.05             | MWD          |
| 5426.00  | 6.10        | 103.60      | 5403.05   | -113.43     | 397.55      | -112.74  | 0.39             | 0.35               | 1.65              | MWD          |
| 5511.00  | 6.20        | 108.20      | 5487.56   | -115.93     | 406.30      | -115.22  | 0.59             | 0.12               | 5.41              | MWD          |
| 5596.00  | 6.20        | 117.90      | 5572.07   | -119.51     | 414.72      | -118.78  | 1.23             | 0.00               | 11.41             | MWD          |
| 5682.00  | 6.90        | 113.50      | 5657.51   | -123.74     | 423.56      | -123.00  | 1.00             | 0.81               | -5.12             | MWD          |
| 5767.00  | 5.50        | 112.80      | 5742.01   | -127.36     | 432.00      | -126.60  | 1.65             | -1.65              | -0.82             | MWD          |
| 5852.00  | 5.70        | 98.50       | 5826.61   | -129.56     | 439.93      | -128.79  | 1.65             | 0.24               | -16.82            | MWD          |
| 5937.00  | 5.10        | 97.80       | 5911.23   | -130.69     | 447.85      | -129.91  | 0.71             | -0.71              | -0.82             | MWD          |
| 5975.00  | 4.70        | 92.40       | 5949.09   | -130.99     | 451.07      | -130.20  | 1.61             | -1.05              | -14.21            | MWD          |
| 6018.00  | 7.30        | 70.20       | 5991.86   | -130.14     | 455.41      | -129.34  | 8.00             | 6.05               | -51.63            | MWD          |
| 6061.00  | 12.20       | 55.80       | 6034.23   | -126.66     | 461.74      | -125.85  | 12.64            | 11.40              | -33.49            | MWD          |
| 6103.00  | 17.10       | 52.10       | 6074.85   | -120.36     | 470.29      | -119.54  | 11.87            | 11.67              | -8.81             | MWD          |
| 6146.00  | 21.40       | 45.60       | 6115.44   | -110.99     | 480.89      | -110.15  | 11.16            | 10.00              | -15.12            | MWD          |
| 6187.00  | 25.20       | 37.50       | 6153.10   | -98.82      | 491.55      | -97.96   | 12.10            | 9.27               | -19.76            | MWD          |
| 6230.00  | 29.30       | 30.80       | 6191.33   | -82.51      | 502.52      | -81.63   | 11.90            | 9.53               | -15.58            | MWD          |
| 6272.00  | 32.70       | 28.20       | 6227.33   | -63.68      | 513.15      | -62.78   | 8.70             | 8.10               | -6.19             | MWD          |
| 6315.00  | 36.80       | 28.90       | 6262.65   | -42.16      | 524.86      | -41.24   | 9.58             | 9.53               | 1.63              | MWD          |
| 6356.00  | 41.00       | 29.80       | 6294.55   | -19.72      | 537.49      | -18.79   | 10.34            | 10.24              | 2.20              | MWD          |
| 6399.00  | 45.30       | 28.40       | 6325.92   | 5.97        | 551.77      | 6.93     | 10.24            | 10.00              | -3.26             | MWD          |
| 6442.00  | 50.30       | 24.30       | 6354.80   | 34.52       | 565.86      | 35.50    | 13.60            | 11.63              | -9.53             | MWD          |
| 6484.00  | 56.40       | 20.30       | 6379.86   | 65.68       | 578.59      | 66.69    | 16.41            | 14.52              | -9.52             | MWD          |
| 6527.00  | 60.10       | 15.00       | 6402.50   | 100.51      | 589.64      | 101.54   | 13.56            | 8.60               | -12.33            | MWD          |
| 6569.00  | 62.20       | 13.40       | 6422.76   | 136.17      | 598.66      | 137.22   | 6.01             | 5.00               | -3.81             | MWD          |
| 6612.00  | 64.00       | 11.90       | 6442.22   | 173.59      | 607.05      | 174.65   | 5.22             | 4.19               | -3.49             | MWD          |
| 6655.00  | 66.80       | 9.60        | 6460.12   | 211.99      | 614.33      | 213.07   | 8.13             | 6.51               | -5.35             | MWD          |
| 6697.00  | 68.10       | 8.70        | 6476.23   | 250.29      | 620.50      | 251.37   | 3.67             | 3.10               | -2.14             | MWD          |
| 6740.00  | 69.60       | 8.20        | 6491.74   | 289.95      | 626.39      | 291.05   | 3.65             | 3.49               | -1.16             | MWD          |

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| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 6753.00  | 70.10       | 8.20        | 6496.22   | 302.03      | 628.13      | 303.13   | 3.85             | 3.85               | 0.00              | MWD          |
| 6824.00  | 72.80       | 6.60        | 6518.81   | 368.78      | 636.80      | 369.89   | 4.36             | 3.80               | -2.25             | MWD          |
| 6832.00  | 73.93       | 6.07        | 6521.10   | 376.40      | 637.64      | 377.51   | 15.53            | 14.15              | -6.66             | 600' entry   |
| 6867.00  | 78.90       | 3.80        | 6529.31   | 410.28      | 640.56      | 411.40   | 15.53            | 14.19              | -6.48             | MWD          |
| 6910.00  | 80.90       | 2.90        | 6536.85   | 452.54      | 643.03      | 453.66   | 5.09             | 4.65               | -2.09             | MWD          |
| 6952.00  | 82.10       | 2.90        | 6543.06   | 494.02      | 645.13      | 495.15   | 2.86             | 2.86               | 0.00              | MWD          |
| 6995.00  | 83.80       | 1.70        | 6548.34   | 536.66      | 646.84      | 537.79   | 4.83             | 3.95               | -2.79             | MWD          |
| 7038.00  | 84.90       | 0.60        | 6552.57   | 579.44      | 647.70      | 580.57   | 3.61             | 2.56               | -2.56             | MWD          |
| 7080.00  | 84.80       | 0.10        | 6556.34   | 621.27      | 647.96      | 622.40   | 1.21             | -0.24              | -1.19             | MWD          |
| 7123.00  | 84.20       | 359.70      | 6560.47   | 664.07      | 647.88      | 665.20   | 1.67             | -1.40              | -0.93             | MWD          |
| 7165.00  | 84.50       | 359.60      | 6564.60   | 705.87      | 647.63      | 707.00   | 0.75             | 0.71               | -0.24             | MWD          |
| 7187.00  | 85.20       | 359.70      | 6566.57   | 727.78      | 647.49      | 728.91   | 3.21             | 3.18               | 0.45              | MWD          |
| 7208.00  | 86.00       | 359.60      | 6568.19   | 748.72      | 647.37      | 749.84   | 3.84             | 3.81               | -0.48             | MWD          |
| 7229.00  | 88.50       | 358.90      | 6569.19   | 769.69      | 647.09      | 770.82   | 12.36            | 11.90              | -3.33             | MWD          |
| 7251.00  | 90.80       | 358.90      | 6569.33   | 791.68      | 646.67      | 792.81   | 10.45            | 10.45              | 0.00              | MWD          |
| 7272.00  | 92.40       | 358.90      | 6568.74   | 812.67      | 646.27      | 813.80   | 7.62             | 7.62               | 0.00              | MWD          |
| 7293.00  | 94.40       | 359.20      | 6567.50   | 833.63      | 645.92      | 834.75   | 9.63             | 9.52               | 1.43              | MWD          |
| 7314.00  | 95.70       | 359.40      | 6565.65   | 854.54      | 645.66      | 855.67   | 6.26             | 6.19               | 0.95              | MWD          |
| 7336.00  | 95.10       | 359.90      | 6563.58   | 876.45      | 645.53      | 877.57   | 3.54             | -2.73              | 2.27              | MWD          |
| 7357.00  | 94.40       | 0.60        | 6561.84   | 897.37      | 645.62      | 898.50   | 4.71             | -3.33              | 3.33              | MWD          |
| 7379.00  | 93.50       | 1.50        | 6560.32   | 919.32      | 646.02      | 920.44   | 5.78             | -4.09              | 4.09              | MWD          |
| 7421.00  | 90.30       | 3.10        | 6558.93   | 961.25      | 647.71      | 962.38   | 8.52             | -7.62              | 3.81              | MWD          |
| 7464.00  | 89.10       | 3.40        | 6559.16   | 1004.18     | 650.15      | 1005.32  | 2.88             | -2.79              | 0.70              | MWD          |
| 7506.00  | 89.20       | 2.70        | 6559.78   | 1046.12     | 652.38      | 1047.26  | 1.68             | 0.24               | -1.67             | MWD          |
| 7549.00  | 91.90       | 1.80        | 6559.37   | 1089.08     | 654.07      | 1090.22  | 6.62             | 6.28               | -2.09             | MWD          |
| 7592.00  | 92.10       | 1.00        | 6557.87   | 1132.04     | 655.12      | 1133.18  | 1.92             | 0.47               | -1.86             | MWD          |
| 7634.00  | 92.20       | 0.60        | 6556.29   | 1174.01     | 655.70      | 1175.15  | 0.98             | 0.24               | -0.95             | MWD          |
| 7677.00  | 92.80       | 0.40        | 6554.41   | 1216.96     | 656.08      | 1218.11  | 1.47             | 1.40               | -0.47             | MWD          |
| 7719.00  | 90.80       | 1.30        | 6553.09   | 1258.93     | 656.70      | 1260.08  | 5.22             | -4.76              | 2.14              | MWD          |
| 7762.00  | 90.70       | 1.80        | 6552.53   | 1301.92     | 657.86      | 1303.06  | 1.19             | -0.23              | 1.16              | MWD          |
| 7805.00  | 90.50       | 0.60        | 6552.08   | 1344.90     | 658.77      | 1346.05  | 2.83             | -0.47              | -2.79             | MWD          |
| 7847.00  | 90.00       | 359.40      | 6551.90   | 1386.90     | 658.77      | 1388.05  | 3.10             | -1.19              | -2.86             | MWD          |
| 7890.00  | 90.10       | 359.00      | 6551.86   | 1429.90     | 658.16      | 1431.04  | 0.96             | 0.23               | -0.93             | MWD          |
| 7933.00  | 91.50       | 358.70      | 6551.26   | 1472.88     | 657.30      | 1474.03  | 3.33             | 3.26               | -0.70             | MWD          |
| 7975.00  | 93.20       | 359.20      | 6549.54   | 1514.84     | 656.53      | 1515.98  | 4.22             | 4.05               | 1.19              | MWD          |
| 8018.00  | 93.60       | 359.40      | 6546.99   | 1557.76     | 656.01      | 1558.90  | 1.04             | 0.93               | 0.47              | MWD          |
| 8060.00  | 91.80       | 359.90      | 6545.01   | 1599.71     | 655.75      | 1600.85  | 4.45             | -4.29              | 1.19              | MWD          |
| 8103.00  | 91.30       | 0.80        | 6543.85   | 1642.69     | 656.02      | 1643.84  | 2.39             | -1.16              | 2.09              | MWD          |
| 8146.00  | 89.80       | 1.00        | 6543.43   | 1685.69     | 656.69      | 1686.83  | 3.52             | -3.49              | 0.47              | MWD          |
| 8188.00  | 87.40       | 0.80        | 6544.46   | 1727.66     | 657.35      | 1728.81  | 5.73             | -5.71              | -0.48             | MWD          |
| 8231.00  | 87.20       | 0.60        | 6546.49   | 1770.61     | 657.87      | 1771.76  | 0.66             | -0.47              | -0.47             | MWD          |
| 8316.00  | 90.40       | 358.90      | 6548.27   | 1855.58     | 657.50      | 1856.72  | 4.26             | 3.76               | -2.00             | MWD          |
| 8401.00  | 88.90       | 359.70      | 6548.78   | 1940.57     | 656.46      | 1941.71  | 2.00             | -1.76              | 0.94              | MWD          |
| 8487.00  | 88.50       | 0.80        | 6550.74   | 2026.54     | 656.84      | 2027.69  | 1.36             | -0.47              | 1.28              | MWD          |
| 8572.00  | 90.00       | 359.70      | 6551.85   | 2111.53     | 657.21      | 2112.68  | 2.19             | 1.76               | -1.29             | MWD          |
| 8657.00  | 90.00       | 359.90      | 6551.85   | 2196.53     | 656.91      | 2197.68  | 0.24             | 0.00               | 0.24              | MWD          |
| 8742.00  | 90.00       | 359.20      | 6551.85   | 2281.53     | 656.25      | 2282.67  | 0.82             | 0.00               | -0.82             | MWD          |
| 8828.00  | 89.80       | 358.00      | 6552.00   | 2367.50     | 654.15      | 2368.64  | 1.41             | -0.23              | -1.40             | MWD          |
| 8913.00  | 92.10       | 358.30      | 6550.59   | 2452.44     | 651.40      | 2453.57  | 2.73             | 2.71               | 0.35              | MWD          |
| 8998.00  | 92.30       | 359.90      | 6547.33   | 2537.36     | 650.07      | 2538.49  | 1.90             | 0.24               | 1.88              | MWD          |
| 9083.00  | 91.60       | 359.90      | 6544.43   | 2622.31     | 649.92      | 2623.44  | 0.82             | -0.82              | 0.00              | MWD          |
| 9168.00  | 92.30       | 0.80        | 6541.54   | 2707.26     | 650.44      | 2708.39  | 1.34             | 0.82               | 1.06              | MWD          |
| 9254.00  | 91.00       | 0.40        | 6539.07   | 2793.22     | 651.34      | 2794.35  | 1.58             | -1.51              | -0.47             | MWD          |
| 9339.00  | 90.30       | 1.30        | 6538.10   | 2878.20     | 652.60      | 2879.34  | 1.34             | -0.82              | 1.06              | MWD          |

**Company:** CARRIZO OIL & GAS, INC.  
**Field:** Niobrara CONZ'83  
**Site:** Debrine 21-44-8-61  
**Well:** 21-44-8-61  
**Wellpath:** Original Hole

**Date:** 04/13/2012 **Time:** 11:30:04 **Page:** 4  
**Co-ordinate(NE) Reference:** Well: 21-44-8-61, Grid North  
**Vertical (TVD) Reference:** 5003'GL+17'GL 5020.0  
**Section (VS) Reference:** Well (0.00N,0.00E,0.10Azi)  
**Survey Calculation Method:** Minimum Curvature **Db:** Adapti

# Survey

| MD<br>ft | Incl<br>deg | Azim<br>deg | TVD<br>ft | +N/-S<br>ft | +E/-W<br>ft | VS<br>ft | DLS<br>deg/100ft | Build<br>deg/100ft | Turn<br>deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 9423.00  | 89.40       | 0.60        | 6538.32   | 2962.19     | 653.99      | 2963.33  | 1.36             | -1.07              | -0.83             | MWD          |
| 9508.00  | 89.60       | 359.90      | 6539.06   | 3047.19     | 654.36      | 3048.32  | 0.86             | 0.24               | -0.82             | MWD          |
| 9593.00  | 88.50       | 359.00      | 6540.47   | 3132.17     | 653.55      | 3133.30  | 1.67             | -1.29              | -1.06             | MWD          |
| 9678.00  | 89.30       | 359.60      | 6542.10   | 3217.14     | 652.51      | 3218.28  | 1.18             | 0.94               | 0.71              | MWD          |
| 9763.00  | 89.60       | 358.90      | 6542.92   | 3302.13     | 651.40      | 3303.26  | 0.90             | 0.35               | -0.82             | MWD          |
| 9848.00  | 90.70       | 358.30      | 6542.70   | 3387.11     | 649.32      | 3388.23  | 1.47             | 1.29               | -0.71             | MWD          |
| 9934.00  | 92.00       | 358.70      | 6540.67   | 3473.05     | 647.07      | 3474.17  | 1.58             | 1.51               | 0.47              | MWD          |
| 10019.00 | 93.20       | 0.80        | 6536.81   | 3557.96     | 646.70      | 3559.08  | 2.84             | 1.41               | 2.47              | MWD          |
| 10104.00 | 93.80       | 3.20        | 6531.63   | 3642.74     | 649.66      | 3643.87  | 2.91             | 0.71               | 2.82              | MWD          |
| 10147.00 | 94.70       | 3.20        | 6528.44   | 3685.55     | 652.05      | 3686.69  | 2.09             | 2.09               | 0.00              | MWD          |
| 10168.00 | 94.40       | 3.40        | 6526.77   | 3706.45     | 653.26      | 3707.59  | 1.72             | -1.43              | 0.95              | MWD          |
| 10189.00 | 93.20       | 2.90        | 6525.38   | 3727.37     | 654.41      | 3728.51  | 6.19             | -5.71              | -2.38             | MWD          |
| 10210.00 | 91.90       | 2.70        | 6524.45   | 3748.33     | 655.43      | 3749.47  | 6.26             | -6.19              | -0.95             | MWD          |
| 10231.00 | 89.70       | 1.50        | 6524.15   | 3769.31     | 656.20      | 3770.45  | 11.93            | -10.48             | -5.71             | MWD          |
| 10252.00 | 88.40       | 1.50        | 6524.50   | 3790.30     | 656.75      | 3791.44  | 6.19             | -6.19              | 0.00              | MWD          |
| 10274.00 | 88.40       | 2.00        | 6525.12   | 3812.28     | 657.42      | 3813.42  | 2.27             | 0.00               | 2.27              | MWD          |
| 10295.00 | 87.80       | 1.70        | 6525.81   | 3833.26     | 658.10      | 3834.40  | 3.19             | -2.86              | -1.43             | MWD          |
| 10316.00 | 87.30       | 1.30        | 6526.71   | 3854.23     | 658.65      | 3855.37  | 3.05             | -2.38              | -1.90             | MWD          |
| 10337.00 | 87.70       | 1.30        | 6527.63   | 3875.21     | 659.13      | 3876.35  | 1.90             | 1.90               | 0.00              | MWD          |
| 10359.00 | 88.80       | 1.50        | 6528.30   | 3897.19     | 659.66      | 3898.33  | 5.08             | 5.00               | 0.91              | MWD          |
| 10380.00 | 89.50       | 1.10        | 6528.61   | 3918.18     | 660.14      | 3919.33  | 3.84             | 3.33               | -1.90             | MWD          |
| 10401.00 | 89.60       | 0.40        | 6528.77   | 3939.18     | 660.41      | 3940.32  | 3.37             | 0.48               | -3.33             | MWD          |
| 10422.00 | 90.20       | 359.60      | 6528.81   | 3960.18     | 660.41      | 3961.32  | 4.76             | 2.86               | -3.81             | MWD          |
| 10444.00 | 90.00       | 358.90      | 6528.77   | 3982.18     | 660.13      | 3983.32  | 3.31             | -0.91              | -3.18             | MWD          |
| 10529.00 | 88.50       | 356.60      | 6529.88   | 4067.09     | 656.79      | 4068.23  | 3.23             | -1.76              | -2.71             | MWD          |
| 10614.00 | 87.90       | 355.30      | 6532.56   | 4151.84     | 650.79      | 4152.97  | 1.68             | -0.71              | -1.53             | MWD          |
| 10700.00 | 89.30       | 353.60      | 6534.66   | 4237.40     | 642.48      | 4238.52  | 2.56             | 1.63               | -1.98             | MWD          |
| 10785.00 | 93.70       | 352.50      | 6532.43   | 4321.73     | 632.20      | 4322.83  | 5.34             | 5.18               | -1.29             | MWD          |
| 10872.00 | 93.70       | 352.50      | 6526.82   | 4407.80     | 620.86      | 4408.88  | 0.00             | 0.00               | 0.00              | Project      |

# Annotation

| MD<br>ft | TVD<br>ft |            |
|----------|-----------|------------|
| 6832.00  | 6521.10   | 600' entry |