



# CARRIZO

## CARRIZO OIL & GAS, INC.

Field: Niobrara CONZ'83

Site: Bringelson Ranch 34-41

Well: 1-34-41-9-58

Wellpath: Sidetrack

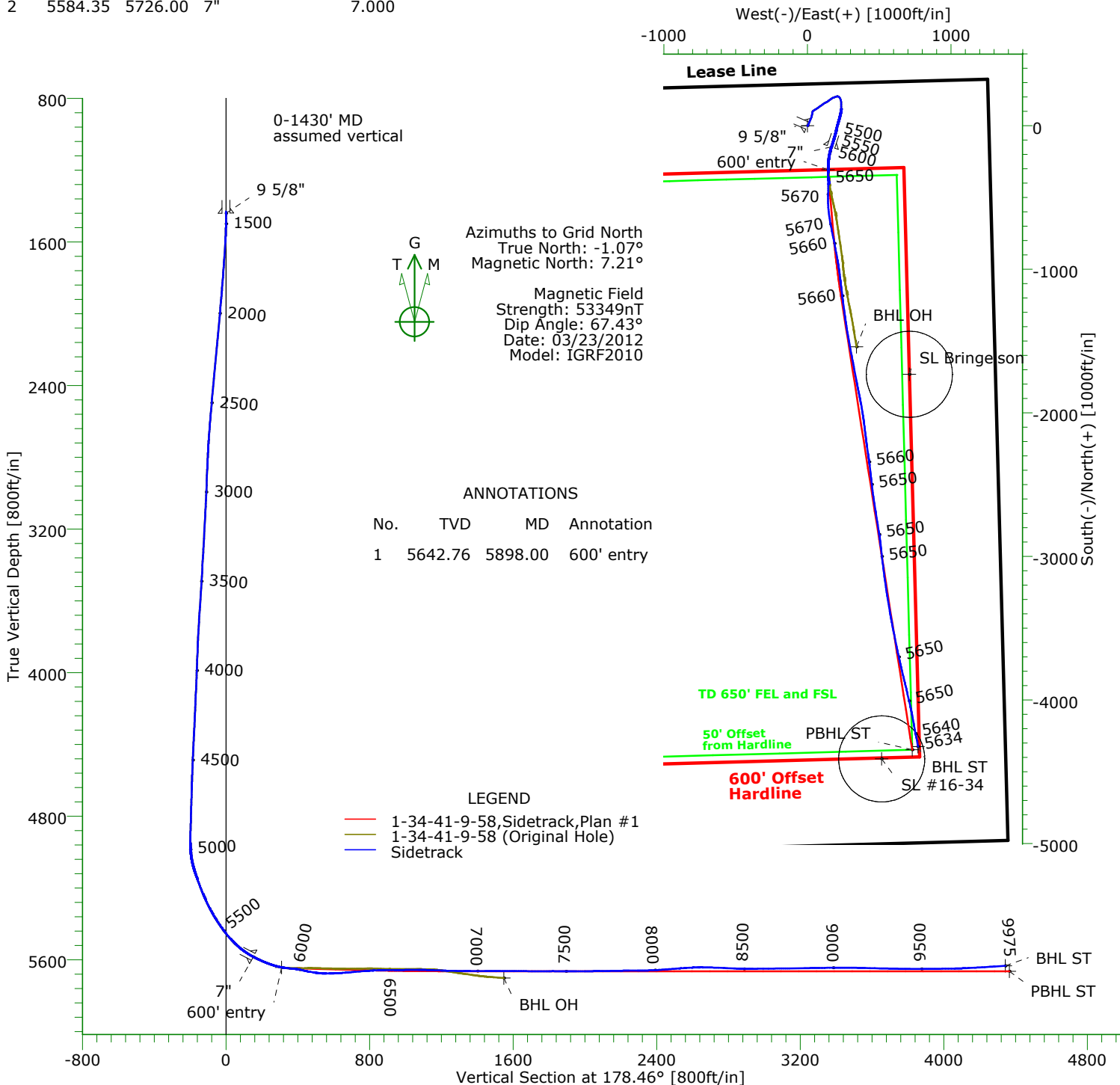


# Precision

Directional Services

### CASING DETAILS

| No. | TVD     | MD      | Name   | Size  |
|-----|---------|---------|--------|-------|
| 1   | 1440.00 | 1440.00 | 9 5/8" | 9.625 |
| 2   | 5584.35 | 5726.00 | 7"     | 7.000 |



### ANNOTATIONS

| No. | TVD     | MD      | Annotation |
|-----|---------|---------|------------|
| 1   | 5642.76 | 5898.00 | 600' entry |

### LEGEND

- 1-34-41-9-58, Sidetrack, Plan #1
- 1-34-41-9-58 (Original Hole)
- Sidetrack

### TARGET DETAILS

| Name             | TVD     | +N/-S    | +E/-W  | Northing   | Easting    | Latitude                    | Longitude | Shape                |
|------------------|---------|----------|--------|------------|------------|-----------------------------|-----------|----------------------|
| Surface          | 0.00    | 0.00     | 0.00   | 1507300.71 | 3458804.75 | 40°42'51.010N103°50'41.662W |           | Point                |
| SL #16-34        | 0.00    | -4410.64 | 517.32 | 1502890.07 | 3459322.07 | 40°42'07.340N103°50'36.016W |           | Circle (Radius: 300) |
| SL Bringelson #H | 0.00    | -1731.64 | 709.73 | 1505569.07 | 3459514.48 | 40°42'33.772N103°50'32.868W |           | Circle (Radius: 300) |
| BHL ST           | 5634.19 | -4324.46 | 770.52 | 1502976.25 | 3459575.27 | 40°42'08.145N103°50'32.708W |           | Point                |
| 600' entry       | 5642.76 | -306.42  | 143.02 | 1506994.29 | 3458947.77 | 40°42'47.957N103°50'39.880W |           | Point                |
| PBHL ST          | 5664.00 | -4347.37 | 729.93 | 1502953.34 | 3459534.68 | 40°42'07.926N103°50'33.240W |           | Point                |
| BHL OH           | 5701.64 | -1540.07 | 341.60 | 1505760.64 | 3459146.35 | 40°42'35.732N103°50'37.601W |           | Point                |

Wellpath: (1-34-41-9-58/Sidetrack)

Created By: Shane Nelson

Date: 03/30/2012

**PRECISION DIRECTIONAL SERVICES, INC.**

**713.435.6250**

|   |  |                       |                |
|---|--|-----------------------|----------------|
| <b>Company:</b> CARRIZO OIL & GAS, INC. | <b>Date:</b> 03/30/2012  | <b>Time:</b> 08:21:37 | <b>Page:</b> 1 |
| <b>Field:</b> Niobrara CONZ'83          | <b>Co-ordinate(NE) Reference:</b> Well: 1-34-41-9-58, Grid North |                       |                |
| <b>Site:</b> Bringelson Ranch 34-41     | <b>Vertical (TVD) Reference:</b> 4736'GL+17'KB 4753.0            |                       |                |
| <b>Well:</b> 1-34-41-9-58               | <b>Section (VS) Reference:</b> Well (0.00N,0.00E,178.46Azi)      |                       |                |
| <b>Wellpath:</b> Sidetrack              | <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:** Bringelson Ranch 34-41

|                                      |                                |                                   |  |
|--------------------------------------|--------------------------------|-----------------------------------|--|
| <b>Site Position:</b>                | <b>Northing:</b> 1507300.71 ft | <b>Latitude:</b> 40 42 51.010 N   |  |
| <b>From:</b> Map                     | <b>Easting:</b> 3458804.75 ft  | <b>Longitude:</b> 103 50 41.662 W |  |
| <b>Position Uncertainty:</b> 0.00 ft |                                | <b>North Reference:</b> Grid      |  |
| <b>Ground Level:</b> 4736.00 ft      |                                | <b>Grid Convergence:</b> 1.07 deg |  |

**Well:** 1-34-41-9-58

**Slot Name:**

|                                      |                                |                                   |  |
|--------------------------------------|--------------------------------|-----------------------------------|--|
| <b>Well Position:</b> +N/-S 0.00 ft  | <b>Northing:</b> 1507300.71 ft | <b>Latitude:</b> 40 42 51.010 N   |  |
| +E/-W 0.00 ft                        | <b>Easting :</b> 3458804.75 ft | <b>Longitude:</b> 103 50 41.662 W |  |
| <b>Position Uncertainty:</b> 0.00 ft |                                |                                   |  |

**Wellpath:** Sidetrack

**Drilled From:** Original Hole  
**Tie-on Depth:** 5920.00 ft  
**Above System Datum:** Mean Sea Level  
**Declination:** 8.28 deg  
**Mag Dip Angle:** 67.43 deg

**Current Datum:** 4736'GL+17'KB  
**Magnetic Data:** 03/23/2012  
**Field Strength:** 53349 nT  
**Vertical Section:** Depth From (TVD) ft

|      |                 |      |        |
|------|-----------------|------|--------|
|      | <b>+N/-S</b> ft |      |        |
| 0.00 | 0.00            | 0.00 | 178.46 |

#### Survey Program for Definitive Wellpath

|                         |                      |                                |                           |
|-------------------------|----------------------|--------------------------------|---------------------------|
| <b>Date:</b> 03/30/2012 | <b>Validated:</b> No | <b>Version:</b> 0              |                           |
| <b>Actual From</b> ft   | <b>To</b> ft         | <b>Survey</b>                  | <b>Toolcode Tool Name</b> |
| 1430.00                 | 5920.00              | Survey #1 (1430.00-7097.00) (0 | MWD Std MWD               |
| 5952.00                 | 9916.00              | Survey #2 (5952.00-9916.00)    | MWD Std MWD               |
| 9975.00                 | 9975.00              | Survey #3 (9975.00-9975.00)    | 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     |
| 1455.00  | 0.60        | 113.00      | 1455.00   | -0.05       | 0.12        | 0.05     | 2.40             | 2.40               | 0.00              | MWD          |
| 1486.00  | 0.50        | 99.20       | 1486.00   | -0.14       | 0.40        | 0.15     | 0.53             | -0.32              | -44.52            | MWD          |
| 1517.00  | 1.10        | 60.00       | 1517.00   | -0.01       | 0.79        | 0.03     | 2.51             | 1.94               | -126.45           | MWD          |
| 1602.00  | 4.70        | 35.30       | 1601.87   | 3.24        | 3.51        | -3.15    | 4.39             | 4.24               | -29.06            | MWD          |
| 1687.00  | 4.70        | 28.80       | 1686.59   | 9.14        | 7.20        | -8.94    | 0.63             | 0.00               | -7.65             | MWD          |
| 1771.00  | 4.50        | 22.30       | 1770.32   | 15.20       | 10.11       | -14.92   | 0.66             | -0.24              | -7.74             | MWD          |
| 1857.00  | 4.70        | 16.50       | 1856.04   | 21.70       | 12.39       | -21.36   | 0.59             | 0.23               | -6.74             | MWD          |
| 1941.00  | 5.50        | 24.10       | 1939.71   | 28.67       | 15.01       | -28.26   | 1.24             | 0.95               | 9.05              | MWD          |
| 2024.00  | 6.00        | 26.60       | 2022.29   | 36.18       | 18.58       | -35.67   | 0.67             | 0.60               | 3.01              | MWD          |
| 2111.00  | 6.00        | 22.90       | 2108.82   | 44.44       | 22.39       | -43.82   | 0.44             | 0.00               | -4.25             | MWD          |
| 2195.00  | 5.50        | 23.20       | 2192.39   | 52.18       | 25.68       | -51.47   | 0.60             | -0.60              | 0.36              | MWD          |
| 2281.00  | 5.50        | 15.30       | 2278.00   | 59.95       | 28.39       | -59.16   | 0.88             | 0.00               | -9.19             | MWD          |
| 2366.00  | 5.60        | 13.00       | 2362.60   | 67.92       | 30.40       | -67.08   | 0.29             | 0.12               | -2.71             | MWD          |
| 2451.00  | 5.30        | 12.30       | 2447.22   | 75.79       | 32.17       | -74.90   | 0.36             | -0.35              | -0.82             | MWD          |
| 2536.00  | 5.10        | 10.70       | 2531.87   | 83.34       | 33.71       | -82.41   | 0.29             | -0.24              | -1.88             | MWD          |
| 2621.00  | 4.50        | 8.10        | 2616.57   | 90.35       | 34.88       | -89.38   | 0.75             | -0.71              | -3.06             | MWD          |
| 2706.00  | 4.10        | 3.20        | 2701.33   | 96.69       | 35.52       | -95.70   | 0.64             | -0.47              | -5.76             | MWD          |
| 2792.00  | 3.80        | 47.10       | 2787.14   | 101.70      | 37.78       | -100.65  | 3.45             | -0.35              | 51.05             | MWD          |
| 2877.00  | 5.10        | 59.80       | 2871.89   | 105.52      | 43.11       | -104.32  | 1.91             | 1.53               | 14.94             | MWD          |
| 2962.00  | 4.90        | 60.00       | 2956.56   | 109.23      | 49.52       | -107.86  | 0.24             | -0.24              | 0.24              | MWD          |

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**Section (VS) Reference:** Well (0.00N,0.00E,178.46Azi)  
**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 |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 3047.00  | 5.10        | 57.70       | 3041.24   | 113.07      | 55.85       | -111.53  | 0.33             | 0.24               | -2.71             | MWD          |
| 3132.00  | 5.50        | 56.80       | 3125.88   | 117.32      | 62.45       | -115.60  | 0.48             | 0.47               | -1.06             | MWD          |
| 3218.00  | 5.50        | 54.30       | 3211.48   | 121.98      | 69.25       | -120.07  | 0.28             | 0.00               | -2.91             | MWD          |
| 3303.00  | 5.60        | 53.50       | 3296.08   | 126.82      | 75.89       | -124.74  | 0.15             | 0.12               | -0.94             | MWD          |
| 3388.00  | 6.00        | 56.40       | 3380.65   | 131.75      | 82.93       | -129.47  | 0.58             | 0.47               | 3.41              | MWD          |
| 3473.00  | 6.30        | 54.20       | 3465.16   | 136.93      | 90.41       | -134.46  | 0.45             | 0.35               | -2.59             | MWD          |
| 3558.00  | 6.60        | 54.70       | 3549.62   | 142.49      | 98.18       | -139.80  | 0.36             | 0.35               | 0.59              | MWD          |
| 3644.00  | 6.50        | 54.00       | 3635.06   | 148.20      | 106.15      | -145.30  | 0.15             | -0.12              | -0.81             | MWD          |
| 3729.00  | 6.20        | 57.50       | 3719.54   | 153.50      | 113.91      | -150.38  | 0.58             | -0.35              | 4.12              | MWD          |
| 3813.00  | 5.90        | 58.50       | 3803.07   | 158.19      | 121.42      | -154.87  | 0.38             | -0.36              | 1.19              | MWD          |
| 3898.00  | 5.20        | 65.40       | 3887.67   | 162.08      | 128.65      | -158.56  | 1.14             | -0.82              | 8.12              | MWD          |
| 3984.00  | 5.00        | 62.40       | 3973.33   | 165.43      | 135.51      | -161.73  | 0.39             | -0.23              | -3.49             | MWD          |
| 4069.00  | 4.70        | 57.00       | 4058.03   | 169.05      | 141.72      | -165.18  | 0.64             | -0.35              | -6.35             | MWD          |
| 4154.00  | 4.40        | 53.50       | 4142.76   | 172.88      | 147.26      | -168.86  | 0.48             | -0.35              | -4.12             | MWD          |
| 4239.00  | 4.00        | 52.90       | 4227.53   | 176.61      | 152.24      | -172.46  | 0.47             | -0.47              | -0.71             | MWD          |
| 4324.00  | 4.70        | 48.40       | 4312.29   | 180.71      | 157.21      | -176.42  | 0.92             | 0.82               | -5.29             | MWD          |
| 4410.00  | 5.10        | 57.30       | 4397.97   | 185.12      | 163.06      | -180.67  | 1.00             | 0.47               | 10.35             | MWD          |
| 4495.00  | 4.30        | 53.30       | 4482.69   | 189.06      | 168.80      | -184.46  | 1.02             | -0.94              | -4.71             | MWD          |
| 4580.00  | 4.60        | 60.80       | 4567.43   | 192.63      | 174.33      | -187.87  | 0.77             | 0.35               | 8.82              | MWD          |
| 4665.00  | 6.10        | 73.30       | 4652.06   | 195.59      | 181.63      | -190.64  | 2.22             | 1.76               | 14.71             | MWD          |
| 4751.00  | 5.60        | 70.30       | 4737.61   | 198.32      | 189.96      | -193.14  | 0.68             | -0.58              | -3.49             | MWD          |
| 4836.00  | 4.90        | 69.80       | 4822.26   | 200.97      | 197.27      | -195.59  | 0.83             | -0.82              | -0.59             | MWD          |
| 4921.00  | 6.00        | 72.40       | 4906.87   | 203.57      | 204.91      | -197.99  | 1.33             | 1.29               | 3.06              | MWD          |
| 4961.00  | 6.10        | 79.50       | 4946.65   | 204.59      | 208.99      | -198.89  | 1.89             | 0.25               | 17.75             | MWD          |
| 5003.00  | 8.20        | 110.60      | 4988.33   | 203.94      | 213.99      | -198.11  | 10.30            | 5.00               | 74.05             | MWD          |
| 5046.00  | 12.00       | 132.40      | 5030.68   | 199.84      | 220.17      | -193.85  | 12.39            | 8.84               | 50.70             | MWD          |
| 5089.00  | 16.20       | 146.40      | 5072.38   | 191.83      | 226.79      | -185.66  | 12.52            | 9.77               | 32.56             | MWD          |
| 5131.00  | 19.60       | 164.40      | 5112.37   | 180.15      | 231.94      | -173.85  | 15.37            | 8.10               | 42.86             | MWD          |
| 5174.00  | 21.50       | 175.40      | 5152.65   | 165.34      | 234.51      | -158.98  | 9.99             | 4.42               | 25.58             | MWD          |
| 5216.00  | 20.10       | 178.40      | 5191.91   | 150.45      | 235.33      | -144.07  | 4.19             | -3.33              | 7.14              | MWD          |
| 5259.00  | 22.20       | 179.80      | 5232.02   | 134.94      | 235.56      | -128.56  | 5.02             | 4.88               | 3.26              | MWD          |
| 5302.00  | 25.30       | 186.20      | 5271.38   | 117.68      | 234.60      | -111.33  | 9.37             | 7.21               | 14.88             | MWD          |
| 5344.00  | 27.40       | 189.30      | 5309.01   | 99.22       | 232.07      | -92.94   | 5.98             | 5.00               | 7.38              | MWD          |
| 5387.00  | 30.40       | 193.40      | 5346.66   | 78.86       | 227.94      | -72.71   | 8.36             | 6.98               | 9.53              | MWD          |
| 5430.00  | 34.30       | 193.70      | 5382.98   | 56.50       | 222.55      | -50.50   | 9.08             | 9.07               | 0.70              | MWD          |
| 5471.00  | 36.40       | 197.60      | 5416.42   | 33.67       | 216.14      | -27.85   | 7.52             | 5.12               | 9.51              | MWD          |
| 5514.00  | 39.50       | 194.80      | 5450.32   | 8.28        | 208.78      | -2.67    | 8.25             | 7.21               | -6.51             | MWD          |
| 5557.00  | 41.90       | 193.40      | 5482.92   | -18.91      | 201.96      | 24.33    | 5.97             | 5.58               | -3.26             | MWD          |
| 5599.00  | 47.20       | 193.50      | 5512.84   | -47.56      | 195.11      | 52.78    | 12.62            | 12.62              | 0.24              | MWD          |
| 5642.00  | 52.50       | 196.00      | 5540.56   | -79.32      | 186.72      | 84.31    | 13.10            | 12.33              | 5.81              | MWD          |
| 5671.00  | 57.20       | 197.10      | 5557.25   | -102.04     | 179.96      | 106.84   | 16.50            | 16.21              | 3.79              | MWD          |
| 5735.00  | 64.80       | 198.30      | 5588.26   | -155.32     | 162.93      | 159.64   | 11.99            | 11.87              | 1.87              | MWD          |
| 5765.00  | 66.00       | 193.40      | 5600.75   | -181.55     | 155.49      | 185.66   | 15.38            | 4.00               | -16.33            | MWD          |
| 5798.00  | 67.60       | 189.70      | 5613.76   | -211.26     | 149.42      | 215.20   | 11.39            | 4.85               | -11.21            | MWD          |
| 5829.00  | 70.80       | 186.00      | 5624.77   | -239.96     | 145.48      | 243.78   | 15.20            | 10.32              | -11.94            | MWD          |
| 5860.00  | 74.10       | 181.90      | 5634.12   | -269.44     | 143.45      | 273.19   | 16.50            | 10.65              | -13.23            | MWD          |
| 5890.00  | 78.40       | 180.00      | 5641.25   | -298.56     | 142.97      | 302.30   | 15.60            | 14.33              | -6.33             | MWD          |
| 5898.00  | 79.73       | 179.35      | 5642.76   | -306.42     | 143.02      | 310.15   | 18.44            | 16.65              | -8.09             | 600' entry   |
| 5920.00  | 83.40       | 177.60      | 5645.99   | -328.17     | 143.60      | 331.91   | 18.44            | 16.67              | -7.97             | MWD          |
| 5952.00  | 84.90       | 177.20      | 5649.25   | -359.97     | 145.04      | 363.74   | 4.85             | 4.69               | -1.25             | MWD          |
| 5982.00  | 81.90       | 179.50      | 5652.70   | -389.75     | 145.90      | 393.53   | 12.57            | -10.00             | 7.67              | MWD          |
| 6001.00  | 78.40       | 181.20      | 5655.95   | -408.47     | 145.79      | 412.24   | 20.42            | -18.42             | 8.95              | MWD          |
| 6015.00  | 76.90       | 181.80      | 5658.94   | -422.14     | 145.43      | 425.89   | 11.50            | -10.71             | 4.29              | MWD          |
| 6030.00  | 77.90       | 181.80      | 5662.22   | -436.77     | 144.97      | 440.51   | 6.67             | 6.67               | 0.00              | 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 |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 6045.00  | 79.20       | 181.60      | 5665.19   | -451.46     | 144.54      | 455.18   | 8.76             | 8.67               | -1.33             | MWD          |
| 6060.00  | 80.30       | 181.20      | 5667.86   | -466.22     | 144.18      | 469.93   | 7.79             | 7.33               | -2.67             | MWD          |
| 6075.00  | 80.30       | 181.10      | 5670.39   | -481.00     | 143.88      | 484.69   | 0.66             | 0.00               | -0.67             | MWD          |
| 6090.00  | 82.10       | 180.70      | 5672.69   | -495.82     | 143.65      | 499.50   | 12.29            | 12.00              | -2.67             | MWD          |
| 6105.00  | 84.20       | 179.80      | 5674.47   | -510.71     | 143.58      | 514.39   | 15.21            | 14.00              | -6.00             | MWD          |
| 6120.00  | 86.20       | 179.00      | 5675.73   | -525.66     | 143.74      | 529.33   | 14.35            | 13.33              | -5.33             | MWD          |
| 6135.00  | 87.80       | 177.90      | 5676.51   | -540.63     | 144.14      | 544.31   | 12.94            | 10.67              | -7.33             | MWD          |
| 6150.00  | 89.40       | 176.70      | 5676.88   | -555.61     | 144.85      | 559.30   | 13.33            | 10.67              | -8.00             | MWD          |
| 6164.00  | 90.60       | 176.00      | 5676.88   | -569.58     | 145.74      | 573.29   | 9.92             | 8.57               | -5.00             | MWD          |
| 6179.00  | 91.90       | 175.30      | 5676.55   | -584.54     | 146.88      | 588.27   | 9.84             | 8.67               | -4.67             | MWD          |
| 6194.00  | 92.40       | 174.00      | 5675.99   | -599.46     | 148.28      | 603.23   | 9.28             | 3.33               | -8.67             | MWD          |
| 6209.00  | 93.10       | 173.20      | 5675.27   | -614.35     | 149.95      | 618.16   | 7.08             | 4.67               | -5.33             | MWD          |
| 6224.00  | 93.40       | 172.30      | 5674.42   | -629.20     | 151.84      | 633.06   | 6.32             | 2.00               | -6.00             | MWD          |
| 6241.00  | 94.00       | 171.60      | 5673.32   | -646.00     | 154.21      | 649.91   | 5.42             | 3.53               | -4.12             | MWD          |
| 6255.00  | 94.40       | 170.90      | 5672.30   | -659.80     | 156.34      | 663.76   | 5.75             | 2.86               | -5.00             | MWD          |
| 6270.00  | 94.80       | 169.60      | 5671.10   | -674.54     | 158.87      | 678.56   | 9.04             | 2.67               | -8.67             | MWD          |
| 6286.00  | 94.90       | 169.10      | 5669.74   | -690.21     | 161.81      | 694.30   | 3.18             | 0.62               | -3.12             | MWD          |
| 6300.00  | 94.70       | 168.80      | 5668.57   | -703.90     | 164.49      | 708.06   | 2.57             | -1.43              | -2.14             | MWD          |
| 6316.00  | 94.40       | 168.60      | 5667.30   | -719.54     | 167.61      | 723.78   | 2.25             | -1.87              | -1.25             | MWD          |
| 6331.00  | 94.40       | 168.20      | 5666.15   | -734.19     | 170.62      | 738.51   | 2.66             | 0.00               | -2.67             | MWD          |
| 6345.00  | 94.50       | 168.10      | 5665.06   | -747.85     | 173.49      | 752.24   | 1.01             | 0.71               | -0.71             | MWD          |
| 6363.00  | 94.60       | 168.10      | 5663.64   | -765.41     | 177.19      | 769.89   | 0.56             | 0.56               | 0.00              | MWD          |
| 6379.00  | 94.30       | 168.20      | 5662.40   | -781.02     | 180.46      | 785.59   | 1.98             | -1.87              | 0.62              | MWD          |
| 6394.00  | 93.60       | 168.40      | 5661.36   | -795.67     | 183.50      | 800.32   | 4.85             | -4.67              | 1.33              | MWD          |
| 6409.00  | 93.30       | 168.80      | 5660.46   | -810.35     | 186.46      | 815.07   | 3.33             | -2.00              | 2.67              | MWD          |
| 6424.00  | 92.40       | 169.50      | 5659.71   | -825.06     | 189.28      | 829.85   | 7.60             | -6.00              | 4.67              | MWD          |
| 6439.00  | 92.30       | 169.50      | 5659.10   | -839.80     | 192.01      | 844.66   | 0.67             | -0.67              | 0.00              | MWD          |
| 6454.00  | 91.50       | 169.60      | 5658.60   | -854.54     | 194.73      | 859.47   | 5.37             | -5.33              | 0.67              | MWD          |
| 6469.00  | 90.70       | 169.60      | 5658.31   | -869.29     | 197.43      | 874.28   | 5.33             | -5.33              | 0.00              | MWD          |
| 6484.00  | 90.40       | 169.80      | 5658.17   | -884.05     | 200.12      | 889.11   | 2.40             | -2.00              | 1.33              | MWD          |
| 6534.00  | 90.30       | 169.60      | 5657.86   | -933.24     | 209.06      | 938.52   | 0.45             | -0.20              | -0.40             | MWD          |
| 6579.00  | 90.70       | 171.60      | 5657.47   | -977.63     | 216.40      | 983.10   | 4.53             | 0.89               | 4.44              | MWD          |
| 6624.00  | 90.00       | 172.60      | 5657.20   | -1022.21    | 222.59      | 1027.82  | 2.71             | -1.56              | 2.22              | MWD          |
| 6667.00  | 90.60       | 172.50      | 5656.97   | -1064.84    | 228.16      | 1070.59  | 1.41             | 1.40               | -0.23             | MWD          |
| 6707.00  | 88.80       | 173.50      | 5657.18   | -1104.54    | 233.04      | 1110.41  | 5.15             | -4.50              | 2.50              | MWD          |
| 6752.00  | 87.80       | 173.30      | 5658.52   | -1149.22    | 238.21      | 1155.21  | 2.27             | -2.22              | -0.44             | MWD          |
| 6795.00  | 87.50       | 173.00      | 5660.28   | -1191.88    | 243.33      | 1197.99  | 0.99             | -0.70              | -0.70             | MWD          |
| 6835.00  | 88.70       | 172.60      | 5661.61   | -1231.54    | 248.34      | 1237.77  | 3.16             | 3.00               | -1.00             | MWD          |
| 6874.00  | 88.70       | 172.30      | 5662.49   | -1270.19    | 253.47      | 1276.55  | 0.77             | 0.00               | -0.77             | MWD          |
| 6924.00  | 89.30       | 171.90      | 5663.36   | -1319.71    | 260.34      | 1326.23  | 1.44             | 1.20               | -0.80             | MWD          |
| 6960.00  | 90.40       | 171.80      | 5663.46   | -1355.35    | 265.44      | 1361.99  | 3.07             | 3.06               | -0.28             | MWD          |
| 7044.00  | 90.40       | 170.70      | 5662.87   | -1438.37    | 278.22      | 1445.32  | 1.31             | 0.00               | -1.31             | MWD          |
| 7130.00  | 89.50       | 169.60      | 5662.95   | -1523.10    | 292.93      | 1530.42  | 1.65             | -1.05              | -1.28             | MWD          |
| 7218.00  | 89.70       | 168.80      | 5663.56   | -1609.53    | 309.42      | 1617.27  | 0.94             | 0.23               | -0.91             | MWD          |
| 7303.00  | 89.50       | 169.30      | 5664.15   | -1692.98    | 325.57      | 1701.12  | 0.63             | -0.24              | 0.59              | MWD          |
| 7388.00  | 90.50       | 169.30      | 5664.15   | -1776.51    | 341.35      | 1785.04  | 1.18             | 1.18               | 0.00              | MWD          |
| 7474.00  | 89.30       | 168.20      | 5664.30   | -1860.85    | 358.12      | 1869.80  | 1.89             | -1.40              | -1.28             | MWD          |
| 7559.00  | 90.20       | 170.00      | 5664.67   | -1944.31    | 374.20      | 1953.67  | 2.37             | 1.06               | 2.12              | MWD          |
| 7603.00  | 90.30       | 170.30      | 5664.48   | -1987.66    | 381.72      | 1997.20  | 0.72             | 0.23               | 0.68              | MWD          |
| 7644.00  | 90.70       | 171.20      | 5664.12   | -2028.13    | 388.31      | 2037.83  | 2.40             | 0.98               | 2.20              | MWD          |
| 7691.00  | 90.90       | 172.80      | 5663.47   | -2074.66    | 394.85      | 2084.53  | 3.43             | 0.43               | 3.40              | MWD          |
| 7729.00  | 90.70       | 173.20      | 5662.94   | -2112.38    | 399.48      | 2122.35  | 1.18             | -0.53              | 1.05              | MWD          |
| 7773.00  | 91.40       | 173.00      | 5662.13   | -2156.05    | 404.77      | 2166.15  | 1.65             | 1.59               | -0.45             | MWD          |

**Company:** CARRIZO OIL & GAS, INC.  
**Field:** Niobrara CONZ'83  
**Site:** Bringelson Ranch 34-41  
**Well:** 1-34-41-9-58  
**Wellpath:** Sidetrack

**Date:** 03/30/2012 **Time:** 08:21:37 **Page:** 4  
**Co-ordinate(NE) Reference:** Well: 1-34-41-9-58, Grid North  
**Vertical (TVD) Reference:** 4736'GL+17"KB 4753.0  
**Section (VS) Reference:** Well (0.00N,0.00E,178.46Azi)  
**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 |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 7814.00  | 90.70       | 172.50      | 5661.38   | -2196.72    | 409.94      | 2206.94  | 2.10             | -1.71              | -1.22             | MWD          |
| 7855.00  | 89.70       | 171.80      | 5661.24   | -2237.33    | 415.54      | 2247.69  | 2.98             | -2.44              | -1.71             | MWD          |
| 7900.00  | 90.20       | 171.80      | 5661.28   | -2281.87    | 421.96      | 2292.39  | 1.11             | 1.11               | 0.00              | MWD          |
| 7942.00  | 91.50       | 172.30      | 5660.65   | -2323.46    | 427.77      | 2334.12  | 3.32             | 3.10               | 1.19              | MWD          |
| 7985.00  | 92.70       | 173.20      | 5659.08   | -2366.09    | 433.19      | 2376.87  | 3.49             | 2.79               | 2.09              | MWD          |
| 8028.00  | 93.70       | 173.20      | 5656.68   | -2408.72    | 438.27      | 2419.63  | 2.33             | 2.33               | 0.00              | MWD          |
| 8070.00  | 94.30       | 173.50      | 5653.75   | -2450.33    | 443.13      | 2461.36  | 1.60             | 1.43               | 0.71              | MWD          |
| 8088.00  | 94.40       | 173.30      | 5652.38   | -2468.16    | 445.19      | 2479.24  | 1.24             | 0.56               | -1.11             | MWD          |
| 8104.00  | 94.50       | 173.20      | 5651.14   | -2484.00    | 447.06      | 2495.12  | 0.88             | 0.62               | -0.62             | MWD          |
| 8118.00  | 94.70       | 173.00      | 5650.02   | -2497.86    | 448.74      | 2509.02  | 2.02             | 1.43               | -1.43             | MWD          |
| 8133.00  | 94.80       | 173.00      | 5648.78   | -2512.69    | 450.56      | 2523.90  | 0.67             | 0.67               | 0.00              | MWD          |
| 8148.00  | 94.00       | 173.50      | 5647.62   | -2527.55    | 452.32      | 2538.79  | 6.28             | -5.33              | 3.33              | MWD          |
| 8161.00  | 93.90       | 173.30      | 5646.73   | -2540.43    | 453.81      | 2551.71  | 1.72             | -0.77              | -1.54             | MWD          |
| 8176.00  | 93.10       | 173.20      | 5645.81   | -2555.30    | 455.57      | 2566.62  | 5.37             | -5.33              | -0.67             | MWD          |
| 8191.00  | 93.10       | 173.00      | 5645.00   | -2570.17    | 457.37      | 2581.53  | 1.33             | 0.00               | -1.33             | MWD          |
| 8206.00  | 93.10       | 172.50      | 5644.19   | -2585.03    | 459.26      | 2596.43  | 3.33             | 0.00               | -3.33             | MWD          |
| 8221.00  | 92.10       | 171.90      | 5643.51   | -2599.87    | 461.29      | 2611.33  | 7.77             | -6.67              | -4.00             | MWD          |
| 8236.00  | 91.70       | 171.60      | 5643.01   | -2614.71    | 463.45      | 2626.22  | 3.33             | -2.67              | -2.00             | MWD          |
| 8252.00  | 90.60       | 171.00      | 5642.69   | -2630.52    | 465.86      | 2642.09  | 7.83             | -6.87              | -3.75             | MWD          |
| 8267.00  | 89.40       | 170.90      | 5642.69   | -2645.33    | 468.22      | 2656.96  | 8.03             | -8.00              | -0.67             | MWD          |
| 8298.00  | 88.60       | 170.90      | 5643.23   | -2675.94    | 473.13      | 2687.69  | 2.58             | -2.58              | 0.00              | MWD          |
| 8320.00  | 88.10       | 171.00      | 5643.87   | -2697.66    | 476.59      | 2709.49  | 2.32             | -2.27              | 0.45              | MWD          |
| 8354.00  | 87.80       | 171.00      | 5645.08   | -2731.22    | 481.90      | 2743.18  | 0.88             | -0.88              | 0.00              | MWD          |
| 8384.00  | 87.70       | 171.00      | 5646.26   | -2760.82    | 486.59      | 2772.90  | 0.33             | -0.33              | 0.00              | MWD          |
| 8404.00  | 87.40       | 171.00      | 5647.12   | -2780.56    | 489.72      | 2792.72  | 1.50             | -1.50              | 0.00              | MWD          |
| 8443.00  | 87.50       | 171.00      | 5648.85   | -2819.04    | 495.81      | 2831.35  | 0.26             | 0.26               | 0.00              | MWD          |
| 8471.00  | 87.90       | 171.40      | 5649.97   | -2846.69    | 500.09      | 2859.10  | 2.02             | 1.43               | 1.43              | MWD          |
| 8491.00  | 88.90       | 172.10      | 5650.53   | -2866.47    | 502.96      | 2878.95  | 6.10             | 5.00               | 3.50              | MWD          |
| 8522.00  | 89.60       | 172.60      | 5650.94   | -2897.19    | 507.09      | 2909.78  | 2.77             | 2.26               | 1.61              | MWD          |
| 8552.00  | 90.50       | 173.30      | 5650.91   | -2926.97    | 510.77      | 2939.64  | 3.80             | 3.00               | 2.33              | MWD          |
| 8576.00  | 90.80       | 173.50      | 5650.64   | -2950.81    | 513.53      | 2963.54  | 1.50             | 1.25               | 0.83              | MWD          |
| 8667.00  | 90.70       | 173.30      | 5649.45   | -3041.20    | 523.98      | 3054.18  | 0.25             | -0.11              | -0.22             | MWD          |
| 8752.00  | 90.80       | 172.60      | 5648.34   | -3125.55    | 534.42      | 3138.78  | 0.83             | 0.12               | -0.82             | MWD          |
| 8837.00  | 90.80       | 171.80      | 5647.15   | -3209.75    | 545.95      | 3223.26  | 0.94             | 0.00               | -0.94             | MWD          |
| 8922.00  | 91.00       | 170.70      | 5645.81   | -3293.75    | 558.88      | 3307.58  | 1.32             | 0.24               | -1.29             | MWD          |
| 9009.00  | 90.70       | 170.20      | 5644.52   | -3379.53    | 573.31      | 3393.72  | 0.67             | -0.34              | -0.57             | MWD          |
| 9093.00  | 89.10       | 169.60      | 5644.67   | -3462.23    | 588.04      | 3476.78  | 2.03             | -1.90              | -0.71             | MWD          |
| 9163.00  | 88.80       | 168.60      | 5645.95   | -3530.95    | 601.28      | 3545.84  | 1.49             | -0.43              | -1.43             | MWD          |
| 9178.00  | 88.60       | 168.60      | 5646.29   | -3545.65    | 604.24      | 3560.61  | 1.33             | -1.33              | 0.00              | MWD          |
| 9262.00  | 88.70       | 168.40      | 5648.27   | -3627.94    | 620.98      | 3643.32  | 0.27             | 0.12               | -0.24             | MWD          |
| 9347.00  | 88.60       | 167.20      | 5650.28   | -3711.00    | 638.94      | 3726.83  | 1.42             | -0.12              | -1.41             | MWD          |
| 9433.00  | 90.00       | 167.00      | 5651.33   | -3794.82    | 658.14      | 3811.14  | 1.64             | 1.63               | -0.23             | MWD          |
| 9517.00  | 90.00       | 166.00      | 5651.33   | -3876.50    | 677.75      | 3893.31  | 1.19             | 0.00               | -1.19             | MWD          |
| 9602.00  | 90.70       | 167.20      | 5650.81   | -3959.18    | 697.44      | 3976.49  | 1.63             | 0.82               | 1.41              | MWD          |
| 9687.00  | 91.20       | 167.20      | 5649.40   | -4042.06    | 716.27      | 4059.85  | 0.59             | 0.59               | 0.00              | MWD          |
| 9722.00  | 92.20       | 168.40      | 5648.36   | -4076.25    | 723.67      | 4094.23  | 4.46             | 2.86               | 3.43              | MWD          |
| 9752.00  | 92.80       | 169.60      | 5647.05   | -4105.67    | 729.39      | 4123.79  | 4.47             | 2.00               | 4.00              | MWD          |
| 9771.00  | 92.90       | 169.80      | 5646.11   | -4124.34    | 732.78      | 4142.55  | 1.18             | 0.53               | 1.05              | MWD          |
| 9801.00  | 92.90       | 169.60      | 5644.59   | -4153.82    | 738.14      | 4172.16  | 0.67             | 0.00               | -0.67             | MWD          |
| 9831.00  | 93.20       | 169.50      | 5642.99   | -4183.28    | 743.57      | 4201.75  | 1.05             | 1.00               | -0.33             | MWD          |
| 9857.00  | 93.40       | 169.50      | 5641.50   | -4208.80    | 748.30      | 4227.39  | 0.77             | 0.77               | 0.00              | MWD          |
| 9887.00  | 93.50       | 169.50      | 5639.69   | -4238.25    | 753.76      | 4256.97  | 0.33             | 0.33               | 0.00              | MWD          |
| 9916.00  | 93.60       | 168.90      | 5637.89   | -4266.68    | 759.18      | 4285.54  | 2.09             | 0.34               | -2.07             | MWD          |

**Company:** CARRIZO OIL & GAS, INC.  
**Field:** Niobrara CONZ'83  
**Site:** Bringelson Ranch 34-41  
**Well:** 1-34-41-9-58  
**Wellpath:** Sidetrack

**Date:** 03/30/2012      **Time:** 08:21:37      **Page:** 5  
**Co-ordinate(NE) Reference:** Well: 1-34-41-9-58, Grid North  
**Vertical (TVD) Reference:** 4736'GL+17'KB 4753.0  
**Section (VS) Reference:** Well (0.00N,0.00E,178.46Azi)  
**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    |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|-----------------|
| 9975.00  | 93.60       | 168.90      | 5634.19   | -4324.46    | 770.52      | 4343.61  | 0.00             | 0.00               | 0.00              | PROJECTED to TD |

**Annotation**

| MD<br>ft | TVD<br>ft |            |
|----------|-----------|------------|
| 5898.00  | 5642.76   | 600' entry |