



Precision Directional Services, Inc.

Planning Report

| | | |
|--|---|---|
| Company: CARRIZO OIL & GAS, INC. Field: Niobrara CONZ'83 Site: Timbro Ranch 1-3-9-59 Pad Well: 2-34-10-59 Wellpath: Original Hole | Date: 10/08/2014 Co-ordinate(NE) Reference: Well: 2-34-10-59, Grid North Vertical (TVD) Reference: 5065'GL+17'KB 5082.0 Section (VS) Reference: Well (0.00N,0.00E,356.43Azi) Plan: Plan #1 | Time: 10:43:35 Page: 1 |
|--|---|---|

| | |
|--|---|
| Field: Niobrara CONZ'83 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: Timbro Ranch 1-3-9-59 Pad Weld County, CO Site Position: From: Map Position Uncertainty: 0.00 ft Ground Level: 5065.00 ft | Northing: 1532959.63 ft Easting: 3425521.39 ft Latitude: 40 47 10.426 N Longitude: 103 57 48.044 W North Reference: Grid Grid Convergence: 0.99 deg |
|---|--|

| | |
|--|--|
| Well: 2-34-10-59 Well Position: +N/-S 6.15 ft +E/-W 29.36 ft Position Uncertainty: 0.00 ft | Slot Name: 2-34 Latitude: 40 47 10.482 N Longitude: 103 57 47.661 W |
|--|--|

| | | |
|--|--------------------------|---|
| Wellpath: Original Hole Current Datum: 5065'GL+17'KB Magnetic Data: 10/31/2014 Field Strength: 53096 nT Vertical Section: Depth From (TVD) ft | Height 5082.00 ft | Drilled From: Surface Tie-on Depth: 0.00 ft Above System Datum: Mean Sea Level Declination: 8.00 deg Mag Dip Angle: 67.37 deg +E/-W ft Direction deg |
| 0.00 | 0.00 | 0.00 356.43 |

| | |
|---|---|
| Plan: Plan #1 Principal: Yes | Date Composed: 10/08/2014 Version: 1 Tied-to: From Surface |
|---|---|

| Plan Section Information | | | | | | | | | | |
|--------------------------|-------------|-------------|-----------|-------------|-------------|------------------|--------------------|-------------------|------------|-----------|
| MD ft | Incl deg | Azim deg | TVD ft | +N/-S ft | +E/-W ft | DLS deg/100ft | Build deg/100ft | Turn deg/100ft | TFO deg | Target |
| 0.00 | 0.00 | 10.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1550.00 | 0.00 | 10.00 | 1550.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 10.00 | |
| 2075.00 | 5.25 | 10.00 | 2074.27 | 23.67 | 4.17 | 1.00 | 1.00 | 0.00 | 10.00 | |
| 4075.00 | 5.25 | 10.00 | 4065.88 | 203.89 | 35.95 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 4231.65 | 5.24 | 27.19 | 4221.88 | 217.32 | 40.47 | 1.00 | 0.00 | 10.98 | 98.79 | |
| 5738.70 | 5.24 | 27.19 | 5722.62 | 339.83 | 103.41 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 6593.65 | 90.00 | 356.43 | 6250.00 | 911.45 | 92.55 | 10.00 | 9.91 | -3.60 | -30.87 | |
| 10662.88 | 90.00 | 356.43 | 6250.00 | 4972.78 | -160.87 | 0.00 | 0.00 | 0.00 | 0.00 | PBHL 2-34 |

| Survey | | | | | | | | | | |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| MD ft | Incl deg | Azim deg | TVD ft | +N/-S ft | +E/-W ft | VS ft | DLS deg/100ft | Build deg/100ft | Turn deg/100ft | Tool/Comment |
| 1400.00 | 0.00 | 10.00 | 1400.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 9 5/8" |
| 1500.00 | 0.00 | 10.00 | 1500.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1550.00 | 0.00 | 10.00 | 1550.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 1600.00 | 0.50 | 10.00 | 1600.00 | 0.21 | 0.04 | 0.21 | 1.00 | 1.00 | 0.00 | |
| 1700.00 | 1.50 | 10.00 | 1699.98 | 1.93 | 0.34 | 1.91 | 1.00 | 1.00 | 0.00 | |
| 1800.00 | 2.50 | 10.00 | 1799.92 | 5.37 | 0.95 | 5.30 | 1.00 | 1.00 | 0.00 | |
| 1900.00 | 3.50 | 10.00 | 1899.78 | 10.52 | 1.86 | 10.39 | 1.00 | 1.00 | 0.00 | |
| 2000.00 | 4.50 | 10.00 | 1999.54 | 17.39 | 3.07 | 17.17 | 1.00 | 1.00 | 0.00 | |
| 2075.00 | 5.25 | 10.00 | 2074.27 | 23.67 | 4.17 | 23.37 | 1.00 | 1.00 | 0.00 | |
| 2100.00 | 5.25 | 10.00 | 2099.16 | 25.92 | 4.57 | 25.59 | 0.00 | 0.00 | 0.00 | |
| 2200.00 | 5.25 | 10.00 | 2198.74 | 34.93 | 6.16 | 34.48 | 0.00 | 0.00 | 0.00 | |
| 2300.00 | 5.25 | 10.00 | 2298.32 | 43.95 | 7.75 | 43.38 | 0.00 | 0.00 | 0.00 | |
| 2400.00 | 5.25 | 10.00 | 2397.90 | 52.96 | 9.34 | 52.27 | 0.00 | 0.00 | 0.00 | |
| 2500.00 | 5.25 | 10.00 | 2497.48 | 61.97 | 10.93 | 61.17 | 0.00 | 0.00 | 0.00 | |

Precision Directional Services, Inc.

Planning Report

Company: CARRIZO OIL & GAS, INC.
Field: Niobrara CONZ'83
Site: Timbro Ranch 1-3-9-59 Pad
Well: 2-34-10-59
Wellpath: Original Hole

Date: 10/08/2014
Co-ordinate(NE) Reference: Well: 2-34-10-59, Grid North
Vertical (TVD) Reference: 5065'GL+17'KB 5082.0
Section (VS) Reference: Well (0.00N,0.00E,356.43Azi)
Plan: Plan #1

Page: 2

Survey

| MD ft | Incl deg | Azim deg | TVD ft | +N/-S ft | +E/-W ft | VS ft | DLS deg/100ft | Build deg/100ft | Turn deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 2600.00 | 5.25 | 10.00 | 2597.06 | 70.98 | 12.52 | 70.06 | 0.00 | 0.00 | 0.00 | |
| 2700.00 | 5.25 | 10.00 | 2696.64 | 79.99 | 14.10 | 78.96 | 0.00 | 0.00 | 0.00 | |
| 2800.00 | 5.25 | 10.00 | 2796.22 | 89.00 | 15.69 | 87.85 | 0.00 | 0.00 | 0.00 | |
| 2900.00 | 5.25 | 10.00 | 2895.80 | 98.01 | 17.28 | 96.75 | 0.00 | 0.00 | 0.00 | |
| 3000.00 | 5.25 | 10.00 | 2995.39 | 107.02 | 18.87 | 105.64 | 0.00 | 0.00 | 0.00 | |
| 3100.00 | 5.25 | 10.00 | 3094.97 | 116.04 | 20.46 | 114.54 | 0.00 | 0.00 | 0.00 | |
| 3200.00 | 5.25 | 10.00 | 3194.55 | 125.05 | 22.05 | 123.43 | 0.00 | 0.00 | 0.00 | |
| 3300.00 | 5.25 | 10.00 | 3294.13 | 134.06 | 23.64 | 132.33 | 0.00 | 0.00 | 0.00 | |
| 3400.00 | 5.25 | 10.00 | 3393.71 | 143.07 | 25.23 | 141.22 | 0.00 | 0.00 | 0.00 | |
| 3500.00 | 5.25 | 10.00 | 3493.29 | 152.08 | 26.82 | 150.11 | 0.00 | 0.00 | 0.00 | |
| 3600.00 | 5.25 | 10.00 | 3592.87 | 161.09 | 28.40 | 159.01 | 0.00 | 0.00 | 0.00 | |
| 3700.00 | 5.25 | 10.00 | 3692.45 | 170.10 | 29.99 | 167.90 | 0.00 | 0.00 | 0.00 | |
| 3800.00 | 5.25 | 10.00 | 3792.03 | 179.11 | 31.58 | 176.80 | 0.00 | 0.00 | 0.00 | |
| 3900.00 | 5.25 | 10.00 | 3891.61 | 188.12 | 33.17 | 185.69 | 0.00 | 0.00 | 0.00 | |
| 4000.00 | 5.25 | 10.00 | 3991.19 | 197.14 | 34.76 | 194.59 | 0.00 | 0.00 | 0.00 | |
| 4075.00 | 5.25 | 10.00 | 4065.88 | 203.89 | 35.95 | 201.26 | 0.00 | 0.00 | 0.00 | |
| 4100.00 | 5.22 | 12.72 | 4090.77 | 206.13 | 36.40 | 203.46 | 1.00 | -0.13 | 10.87 | |
| 4200.00 | 5.21 | 23.74 | 4190.36 | 214.72 | 39.23 | 211.86 | 1.00 | -0.01 | 11.02 | |
| 4231.65 | 5.24 | 27.19 | 4221.88 | 217.32 | 40.47 | 214.38 | 1.00 | 0.12 | 10.91 | |
| 4300.00 | 5.24 | 27.19 | 4289.94 | 222.88 | 43.32 | 219.75 | 0.00 | 0.00 | 0.00 | |
| 4400.00 | 5.24 | 27.19 | 4389.52 | 231.01 | 47.50 | 227.60 | 0.00 | 0.00 | 0.00 | |
| 4500.00 | 5.24 | 27.19 | 4489.11 | 239.13 | 51.68 | 235.45 | 0.00 | 0.00 | 0.00 | |
| 4600.00 | 5.24 | 27.19 | 4588.69 | 247.26 | 55.85 | 243.31 | 0.00 | 0.00 | 0.00 | |
| 4700.00 | 5.24 | 27.19 | 4688.27 | 255.39 | 60.03 | 251.16 | 0.00 | 0.00 | 0.00 | |
| 4800.00 | 5.24 | 27.19 | 4787.85 | 263.52 | 64.21 | 259.01 | 0.00 | 0.00 | 0.00 | |
| 4900.00 | 5.24 | 27.19 | 4887.43 | 271.65 | 68.38 | 266.87 | 0.00 | 0.00 | 0.00 | |
| 5000.00 | 5.24 | 27.19 | 4987.01 | 279.78 | 72.56 | 274.72 | 0.00 | 0.00 | 0.00 | |
| 5100.00 | 5.24 | 27.19 | 5086.59 | 287.91 | 76.74 | 282.57 | 0.00 | 0.00 | 0.00 | |
| 5200.00 | 5.24 | 27.19 | 5186.18 | 296.04 | 80.91 | 290.42 | 0.00 | 0.00 | 0.00 | |
| 5300.00 | 5.24 | 27.19 | 5285.76 | 304.17 | 85.09 | 298.28 | 0.00 | 0.00 | 0.00 | |
| 5400.00 | 5.24 | 27.19 | 5385.34 | 312.30 | 89.27 | 306.13 | 0.00 | 0.00 | 0.00 | |
| 5500.00 | 5.24 | 27.19 | 5484.92 | 320.42 | 93.44 | 313.98 | 0.00 | 0.00 | 0.00 | |
| 5600.00 | 5.24 | 27.19 | 5584.50 | 328.55 | 97.62 | 321.84 | 0.00 | 0.00 | 0.00 | |
| 5700.00 | 5.24 | 27.19 | 5684.08 | 336.68 | 101.80 | 329.69 | 0.00 | 0.00 | 0.00 | |
| 5738.70 | 5.24 | 27.19 | 5722.62 | 339.83 | 103.41 | 332.73 | 0.00 | 0.00 | 0.00 | |
| 5800.00 | 10.97 | 10.45 | 5783.29 | 348.06 | 105.75 | 340.80 | 10.00 | 9.33 | -27.31 | |
| 5900.00 | 20.80 | 3.53 | 5879.36 | 375.21 | 108.58 | 367.72 | 10.00 | 9.84 | -6.92 | |
| 6000.00 | 30.74 | 0.96 | 5969.31 | 418.59 | 110.10 | 410.93 | 10.00 | 9.94 | -2.57 | |
| 6100.00 | 40.71 | 359.56 | 6050.39 | 476.90 | 110.28 | 469.11 | 10.00 | 9.97 | -1.40 | |
| 6200.00 | 50.69 | 358.63 | 6120.15 | 548.37 | 109.10 | 540.51 | 10.00 | 9.98 | -0.92 | |
| 6300.00 | 60.67 | 357.94 | 6176.46 | 630.81 | 106.60 | 622.95 | 10.00 | 9.98 | -0.69 | |
| 6393.14 | 69.97 | 357.41 | 6215.31 | 715.28 | 103.16 | 707.47 | 10.00 | 9.99 | -0.57 | 7" |
| 6400.00 | 70.66 | 357.37 | 6217.62 | 721.74 | 102.86 | 713.93 | 10.00 | 9.99 | -0.53 | |
| 6500.00 | 80.64 | 356.87 | 6242.37 | 818.37 | 98.00 | 810.68 | 10.00 | 9.99 | -0.50 | |
| 6593.65 | 90.00 | 356.43 | 6250.00 | 911.45 | 92.55 | 903.92 | 10.00 | 9.99 | -0.47 | |
| 6600.00 | 90.00 | 356.43 | 6250.00 | 917.78 | 92.15 | 910.26 | 0.00 | 0.00 | 0.00 | |
| 6700.00 | 90.00 | 356.43 | 6250.00 | 1017.59 | 85.93 | 1010.26 | 0.00 | 0.00 | 0.00 | |
| 6800.00 | 90.00 | 356.43 | 6250.00 | 1117.39 | 79.70 | 1110.26 | 0.00 | 0.00 | 0.00 | |
| 6900.00 | 90.00 | 356.43 | 6250.00 | 1217.20 | 73.47 | 1210.26 | 0.00 | 0.00 | 0.00 | |
| 7000.00 | 90.00 | 356.43 | 6250.00 | 1317.01 | 67.24 | 1310.26 | 0.00 | 0.00 | 0.00 | |
| 7100.00 | 90.00 | 356.43 | 6250.00 | 1416.81 | 61.02 | 1410.26 | 0.00 | 0.00 | 0.00 | |
| 7200.00 | 90.00 | 356.43 | 6250.00 | 1516.62 | 54.79 | 1510.26 | 0.00 | 0.00 | 0.00 | |
| 7300.00 | 90.00 | 356.43 | 6250.00 | 1616.42 | 48.56 | 1610.26 | 0.00 | 0.00 | 0.00 | |

Precision Directional Services, Inc.

Planning Report

Company: CARRIZO OIL & GAS, INC.
Field: Niobrara CONZ'83
Site: Timbro Ranch 1-3-9-59 Pad
Well: 2-34-10-59
Wellpath: Original Hole

Date: 10/08/2014
Co-ordinate(NE) Reference: Well: 2-34-10-59, Grid North
Vertical (TVD) Reference: 5065'GL+17'KB 5082.0
Section (VS) Reference: Well (0.00N,0.00E,356.43Azi)
Plan: Plan #1

Page: 3

Survey

| MD ft | Incl deg | Azim deg | TVD ft | +N/-S ft | +E/-W ft | VS ft | DLS deg/100ft | Build deg/100ft | Turn deg/100ft | Tool/Comment |
|----------|-------------|-------------|-----------|-------------|-------------|----------|------------------|--------------------|-------------------|--------------|
| 7400.00 | 90.00 | 356.43 | 6250.00 | 1716.23 | 42.33 | 1710.26 | 0.00 | 0.00 | 0.00 | |
| 7500.00 | 90.00 | 356.43 | 6250.00 | 1816.04 | 36.10 | 1810.26 | 0.00 | 0.00 | 0.00 | |
| 7600.00 | 90.00 | 356.43 | 6250.00 | 1915.84 | 29.88 | 1910.26 | 0.00 | 0.00 | 0.00 | |
| 7700.00 | 90.00 | 356.43 | 6250.00 | 2015.65 | 23.65 | 2010.26 | 0.00 | 0.00 | 0.00 | |
| 7800.00 | 90.00 | 356.43 | 6250.00 | 2115.45 | 17.42 | 2110.26 | 0.00 | 0.00 | 0.00 | |
| 7900.00 | 90.00 | 356.43 | 6250.00 | 2215.26 | 11.19 | 2210.26 | 0.00 | 0.00 | 0.00 | |
| 8000.00 | 90.00 | 356.43 | 6250.00 | 2315.07 | 4.97 | 2310.26 | 0.00 | 0.00 | 0.00 | |
| 8100.00 | 90.00 | 356.43 | 6250.00 | 2414.87 | -1.26 | 2410.26 | 0.00 | 0.00 | 0.00 | |
| 8200.00 | 90.00 | 356.43 | 6250.00 | 2514.68 | -7.49 | 2510.26 | 0.00 | 0.00 | 0.00 | |
| 8300.00 | 90.00 | 356.43 | 6250.00 | 2614.48 | -13.72 | 2610.26 | 0.00 | 0.00 | 0.00 | |
| 8400.00 | 90.00 | 356.43 | 6250.00 | 2714.29 | -19.94 | 2710.26 | 0.00 | 0.00 | 0.00 | |
| 8500.00 | 90.00 | 356.43 | 6250.00 | 2814.09 | -26.17 | 2810.26 | 0.00 | 0.00 | 0.00 | |
| 8600.00 | 90.00 | 356.43 | 6250.00 | 2913.90 | -32.40 | 2910.26 | 0.00 | 0.00 | 0.00 | |
| 8700.00 | 90.00 | 356.43 | 6250.00 | 3013.71 | -38.63 | 3010.26 | 0.00 | 0.00 | 0.00 | |
| 8800.00 | 90.00 | 356.43 | 6250.00 | 3113.51 | -44.86 | 3110.26 | 0.00 | 0.00 | 0.00 | |
| 8900.00 | 90.00 | 356.43 | 6250.00 | 3213.32 | -51.08 | 3210.26 | 0.00 | 0.00 | 0.00 | |
| 9000.00 | 90.00 | 356.43 | 6250.00 | 3313.12 | -57.31 | 3310.26 | 0.00 | 0.00 | 0.00 | |
| 9100.00 | 90.00 | 356.43 | 6250.00 | 3412.93 | -63.54 | 3410.26 | 0.00 | 0.00 | 0.00 | |
| 9200.00 | 90.00 | 356.43 | 6250.00 | 3512.74 | -69.77 | 3510.26 | 0.00 | 0.00 | 0.00 | |
| 9300.00 | 90.00 | 356.43 | 6250.00 | 3612.54 | -75.99 | 3610.26 | 0.00 | 0.00 | 0.00 | |
| 9400.00 | 90.00 | 356.43 | 6250.00 | 3712.35 | -82.22 | 3710.26 | 0.00 | 0.00 | 0.00 | |
| 9500.00 | 90.00 | 356.43 | 6250.00 | 3812.15 | -88.45 | 3810.26 | 0.00 | 0.00 | 0.00 | |
| 9600.00 | 90.00 | 356.43 | 6250.00 | 3911.96 | -94.68 | 3910.26 | 0.00 | 0.00 | 0.00 | |
| 9700.00 | 90.00 | 356.43 | 6250.00 | 4011.77 | -100.91 | 4010.26 | 0.00 | 0.00 | 0.00 | |
| 9800.00 | 90.00 | 356.43 | 6250.00 | 4111.57 | -107.13 | 4110.26 | 0.00 | 0.00 | 0.00 | |
| 9900.00 | 90.00 | 356.43 | 6250.00 | 4211.38 | -113.36 | 4210.26 | 0.00 | 0.00 | 0.00 | |
| 10000.00 | 90.00 | 356.43 | 6250.00 | 4311.18 | -119.59 | 4310.26 | 0.00 | 0.00 | 0.00 | |
| 10100.00 | 90.00 | 356.43 | 6250.00 | 4410.99 | -125.82 | 4410.26 | 0.00 | 0.00 | 0.00 | |
| 10200.00 | 90.00 | 356.43 | 6250.00 | 4510.79 | -132.04 | 4510.26 | 0.00 | 0.00 | 0.00 | |
| 10300.00 | 90.00 | 356.43 | 6250.00 | 4610.60 | -138.27 | 4610.26 | 0.00 | 0.00 | 0.00 | |
| 10400.00 | 90.00 | 356.43 | 6250.00 | 4710.41 | -144.50 | 4710.26 | 0.00 | 0.00 | 0.00 | |
| 10500.00 | 90.00 | 356.43 | 6250.00 | 4810.21 | -150.73 | 4810.26 | 0.00 | 0.00 | 0.00 | |
| 10600.00 | 90.00 | 356.43 | 6250.00 | 4910.02 | -156.96 | 4910.26 | 0.00 | 0.00 | 0.00 | |
| 10662.88 | 90.00 | 356.43 | 6250.00 | 4972.78 | -160.87 | 4973.15 | 0.00 | 0.00 | 0.00 | PBHL 2-34 |

Targets

| Name | Description | Dir. | TVD ft | +N/-S ft | +E/-W ft | Map Northing ft | Map Easting ft | <---- Latitude ----> | | | <--- Longitude ---> | | | | |
|-----------|-------------|------|-----------|-------------|-------------|-----------------------|----------------------|----------------------|-----|--------|---------------------|-----|-----|--------|---|
| | | | | | | | | Deg | Min | Sec | Deg | Min | Sec | | |
| SL 2-34 | | | 0.00 | 0.00 | 0.00 | 1532965.78 | 3425550.75 | 40 | 47 | 10.482 | N | 103 | 57 | 47.661 | W |
| PBHL 2-34 | | | 6250.00 | 4972.78 | -160.88 | 1537938.56 | 3425389.87 | 40 | 47 | 59.638 | N | 103 | 57 | 48.632 | W |

Casing Points

| MD ft | TVD ft | Diameter in | Hole Size in | Name |
|----------|-----------|----------------|-----------------|--------|
| 1400.00 | 1400.00 | 9.625 | 12.250 | 9 5/8" |
| 6393.14 | 6215.31 | 7.000 | 8.500 | 7" |