# EXTRACTION OIL & GAS

**Weld County**
**Sec 28-T1N-R68W**
**COYOTE TRAILS 34S-20-14C**

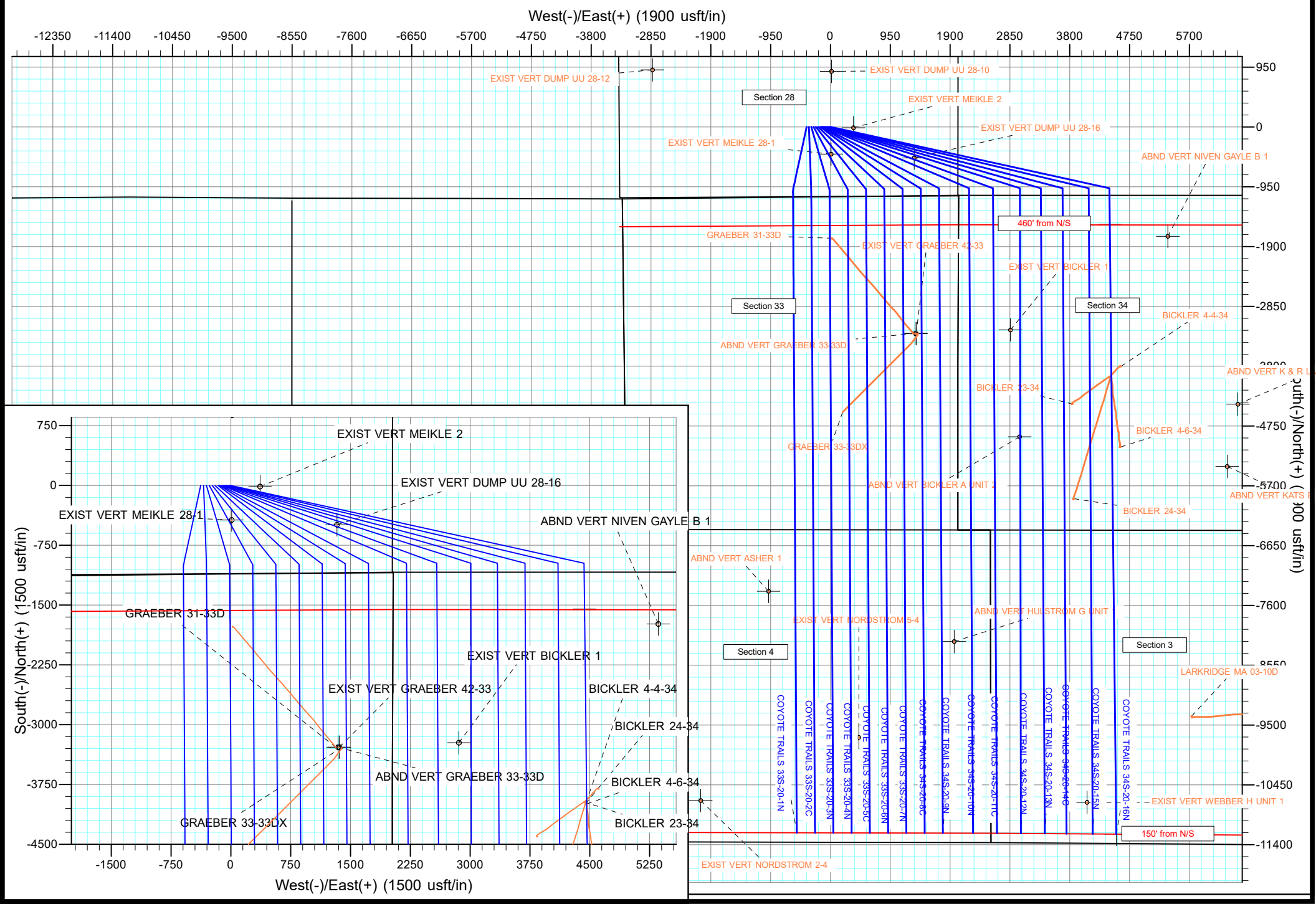
**ORIGINAL WELLBORE**
**PROPOSAL 1**

# Anticollision Report

**12 September, 2017**

EXTRACTION Oil & Gas

**Project:** Weld County
**Site:** Sec 28-T1N-R68W
**Well:** COYOTE TRAILS 34S-20-16N
ORIGINAL WELLBORE
PROPOSAL 1



# Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | EXTRACTION OIL & GAS | **Local Co-ordinate Reference:** | Well COYOTE TRAILS 34S-20-14C |
| **Project:** | Weld County | **TVD Reference:** | KB 25' @ 5269.00usft |
| **Reference Site:** | Sec 28-T1N-R68W | **MD Reference:** | KB 25' @ 5269.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | COYOTE TRAILS 34S-20-14C | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDT_32Bit_ODBC |
| **Reference Design:** | PROPOSAL 1 | **Offset TVD Reference:** | Offset Datum |

| | | | |
|---|---|---|---|
| **Reference** | PROPOSAL 1 | | |
| **Filter type:** | NO GLOBAL FILTER: Using user defined selection & filtering criteria | | |
| **Interpolation Method:** | MD + Stations Interval 100.00usft | **Error Model:** | ISCWSA |
| **Depth Range:** | Unlimited | **Scan Method:** | Closest Approach 3D |
| **Results Limited by:** | Maximum center-center distance of 9,999.98 usft | **Error Surface:** | Pedal Curve |
| **Warning Levels Evaluated at:** | 2.00 **Sigma** | **Casing Method:** | Not applied |

**Survey Tool Program** **Date** 9/12/2017

| From (usft) | To (usft) | Survey (Wellbore) | Tool Name | Description |
|---|---|---|---|---|
| 0.00 | 19,213.90 | PROPOSAL 1 (ORIGINAL WELLBORE) | MWD OWSG | OWSG MWD - Standard |

**Summary**

| Site Name / Offset Well - Wellbore - Design | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Sec 28-T1N-R68W | | | | | | |
| COYOTE TRAILS 33S-20-1N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 341.90 | 340.20 | 200.795 | CC, ES |
| COYOTE TRAILS 33S-20-1N - ORIGINAL WELLBORE - | 19,214.18 | 17,871.77 | 4,291.79 | 3,892.09 | 10.737 | SF |
| COYOTE TRAILS 33S-20-2C - ORIGINAL WELLBORE - | 300.00 | 300.00 | 305.91 | 304.21 | 179.660 | CC, ES |
| COYOTE TRAILS 33S-20-2C - ORIGINAL WELLBORE - | 19,200.00 | 18,124.67 | 3,993.52 | 3,592.22 | 9.951 | SF |
| COYOTE TRAILS 33S-20-3N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 269.92 | 268.22 | 158.523 | CC, ES |
| COYOTE TRAILS 33S-20-3N - ORIGINAL WELLBORE - | 19,178.83 | 17,882.86 | 3,712.33 | 3,312.79 | 9.291 | SF |
| COYOTE TRAILS 33S-20-4N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 233.93 | 232.23 | 137.386 | CC, ES |
| COYOTE TRAILS 33S-20-4N - ORIGINAL WELLBORE - | 19,189.16 | 17,908.06 | 3,423.10 | 3,023.83 | 8.573 | SF |
| COYOTE TRAILS 33S-20-5C - ORIGINAL WELLBORE - | 300.00 | 300.00 | 197.94 | 196.24 | 116.250 | CC, ES |
| COYOTE TRAILS 33S-20-5C - ORIGINAL WELLBORE - | 19,200.00 | 18,185.16 | 3,123.17 | 2,722.29 | 7.791 | SF |
| COYOTE TRAILS 33S-20-6N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 161.95 | 160.25 | 95.113 | CC, ES |
| COYOTE TRAILS 33S-20-6N - ORIGINAL WELLBORE - | 19,200.00 | 17,974.53 | 2,844.85 | 2,447.07 | 7.152 | SF |
| COYOTE TRAILS 33S-20-7N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 125.97 | 124.26 | 73.978 | CC, ES |
| COYOTE TRAILS 33S-20-7N - ORIGINAL WELLBORE - | 19,214.18 | 18,027.46 | 2,556.51 | 2,159.66 | 6.442 | SF |
| COYOTE TRAILS 34S-20-10N - ORIGINAL WELLBORE | 300.00 | 300.00 | 71.98 | 70.28 | 42.272 | CC, ES |
| COYOTE TRAILS 34S-20-10N - ORIGINAL WELLBORE | 19,195.21 | 18,339.93 | 1,508.22 | 1,115.28 | 3.838 | SF |
| COYOTE TRAILS 34S-20-11C - ORIGINAL WELLBORE | 300.00 | 300.00 | 53.98 | 52.28 | 31.704 | CC, ES |
| COYOTE TRAILS 34S-20-11C - ORIGINAL WELLBORE | 19,200.00 | 18,711.40 | 1,105.27 | 704.15 | 2.755 | SF |
| COYOTE TRAILS 34S-20-12N - ORIGINAL WELLBORE | 300.00 | 300.00 | 35.99 | 34.29 | 21.137 | CC, ES |
| COYOTE TRAILS 34S-20-12N - ORIGINAL WELLBORE | 19,214.18 | 18,675.02 | 771.06 | 396.02 | 2.056 | SF |
| COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE | 300.00 | 300.00 | 18.00 | 16.29 | 10.569 | CC, ES |
| COYOTE TRAILS 34S-20-13N - ORIGINAL WELLBORE | 19,205.97 | 18,831.11 | 432.53 | 104.99 | 1.321 | Level 3, SF |
| COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE | 200.00 | 200.00 | 18.00 | 17.01 | 18.255 | CC, ES |
| COYOTE TRAILS 34S-20-15N - ORIGINAL WELLBORE | 19,214.13 | 19,229.15 | 490.25 | 119.62 | 1.323 | Level 3, SF |
| COYOTE TRAILS 34S-20-16N - ORIGINAL WELLBORE | 100.00 | 100.00 | 35.99 | 35.72 | 133.868 | CC, ES |
| COYOTE TRAILS 34S-20-16N - ORIGINAL WELLBORE | 19,214.18 | 19,440.84 | 836.92 | 440.07 | 2.109 | SF |
| COYOTE TRAILS 34S-20-8C - ORIGINAL WELLBORE - | 300.00 | 300.00 | 107.97 | 106.27 | 63.409 | CC, ES |
| COYOTE TRAILS 34S-20-8C - ORIGINAL WELLBORE - | 19,189.00 | 18,343.05 | 2,252.83 | 1,851.93 | 5.619 | SF |
| COYOTE TRAILS 34S-20-9N - ORIGINAL WELLBORE - | 300.00 | 300.00 | 89.97 | 88.27 | 52.841 | CC, ES |
| COYOTE TRAILS 34S-20-9N - ORIGINAL WELLBORE - | 19,191.91 | 18,183.82 | 1,979.75 | 1,583.64 | 4.998 | SF |
| EXIST VERT CARR 1 - Wellbore #1 - Design #1 | 300.00 | 300.00 | 3,909.71 | 3,903.30 | 609.221 | CC |
| EXIST VERT CARR 1 - Wellbore #1 - Design #1 | 400.00 | 400.02 | 3,911.06 | 3,902.25 | 443.942 | ES |
| EXIST VERT CARR 1 - Wellbore #1 - Design #1 | 9,150.00 | 7,943.97 | 7,421.88 | 7,218.07 | 36.416 | SF |
| EXIST VERT DUMP UU 28-10 - Wellbore #1 - Design #1 | 300.00 | 319.00 | 883.82 | 877.07 | 131.031 | CC |
| EXIST VERT DUMP UU 28-10 - Wellbore #1 - Design #1 | 600.00 | 618.45 | 887.00 | 873.11 | 63.862 | ES |
| EXIST VERT DUMP UU 28-10 - Wellbore #1 - Design #1 | 9,200.00 | 8,007.71 | 4,235.67 | 4,034.80 | 21.087 | SF |
| EXIST VERT DUMP UU 28-12 - Wellbore #1 - Design #1 | 300.00 | 308.00 | 2,933.66 | 2,927.11 | 447.844 | CC |

CC - Min centre to center distance or covergent point, SF - min separation factor, ES - min ellipse separation

| | | | |
|---|---|---|---|
| **Company:** | EXTRACTION OIL & GAS | **Local Co-ordinate Reference:** | Well COYOTE TRAILS 34S-20-14C |
| **Project:** | Weld County | **TVD Reference:** | KB 25' @ 5269.00usft |
| **Reference Site:** | Sec 28-T1N-R68W | **MD Reference:** | KB 25' @ 5269.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | COYOTE TRAILS 34S-20-14C | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDT_32Bit_ODBC |
| **Reference Design:** | PROPOSAL 1 | **Offset TVD Reference:** | Offset Datum |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Sec 28-T1N-R68W | | | | | | |
| EXIST VERT DUMP UU 28-12 - Wellbore #1 - Design #1 | 400.00 | 408.02 | 2,935.40 | 2,926.46 | 328.268 | ES |
| EXIST VERT DUMP UU 28-12 - Wellbore #1 - Design #1 | 9,250.00 | 8,009.03 | 6,869.85 | 6,672.56 | 34.821 | SF |
| EXIST VERT DUMP UU 28-16 - Wellbore #1 - Design #1 | 3,613.74 | 3,217.41 | 130.51 | 34.14 | 1.354 | Level 3, CC, ES, SF |
| EXIST VERT DUMP UU 28-2 - Wellbore #1 - Design #1 | 300.00 | 272.00 | 3,776.92 | 3,771.12 | 650.620 | CC |
| EXIST VERT DUMP UU 28-2 - Wellbore #1 - Design #1 | 600.00 | 571.45 | 3,780.12 | 3,767.15 | 291.468 | ES |
| EXIST VERT DUMP UU 28-2 - Wellbore #1 - Design #1 | 9,000.00 | 7,808.54 | 6,001.72 | 5,785.26 | 27.727 | SF |
| EXIST VERT DUMP UU 28-5 - Wellbore #1 - Design #1 | 300.00 | 323.00 | 3,678.66 | 3,671.81 | 536.485 | CC |
| EXIST VERT DUMP UU 28-5 - Wellbore #1 - Design #1 | 400.00 | 422.98 | 3,680.24 | 3,671.00 | 398.053 | ES |
| EXIST VERT DUMP UU 28-5 - Wellbore #1 - Design #1 | 9,200.00 | 8,003.71 | 7,467.56 | 7,267.40 | 37.309 | SF |
| EXIST VERT MEIKLE 2 - Wellbore #1 - Design #1 | 1,817.50 | 1,750.53 | 88.76 | 44.38 | 2.000 | CC, ES, SF |
| EXIST VERT MEIKLE 28-1 - Wellbore #1 - Design #1 | 1,245.51 | 1,211.43 | 406.58 | 377.61 | 14.037 | CC |
| EXIST VERT MEIKLE 28-1 - Wellbore #1 - Design #1 | 1,300.00 | 1,262.82 | 406.98 | 376.64 | 13.415 | ES |
| EXIST VERT MEIKLE 28-1 - Wellbore #1 - Design #1 | 1,800.00 | 1,715.39 | 466.73 | 423.81 | 10.874 | SF |
| Sec 33-T1N-R68W | | | | | | |
| ABND VERT GRAEBER 33-33D - Wellbore #1 - Design | 10,900.00 | 7,178.00 | 2,531.26 | 2,331.68 | 12.683 | SF |
| ABND VERT GRAEBER 33-33D - Wellbore #1 - Design | 11,253.66 | 7,178.00 | 2,506.43 | 2,310.58 | 12.798 | CC, ES |
| EXIST VERT GRAEBER 42-33 - Wellbore #1 - Design #1 | 11,000.00 | 8,029.97 | 2,352.91 | 2,120.97 | 10.144 | SF |
| EXIST VERT GRAEBER 42-33 - Wellbore #1 - Design #1 | 11,254.47 | 8,029.96 | 2,339.11 | 2,109.45 | 10.185 | CC, ES |
| GRAEBER 31-33D - Wellbore #1 - Wellbore #1 | 4,001.21 | 3,951.21 | 2,282.02 | 2,223.61 | 39.068 | CC |
| GRAEBER 31-33D - Wellbore #1 - Wellbore #1 | 4,100.00 | 4,005.13 | 2,283.46 | 2,223.41 | 38.025 | ES |
| GRAEBER 31-33D - Wellbore #1 - Wellbore #1 | 5,200.00 | 4,675.29 | 2,472.38 | 2,398.15 | 33.310 | SF |
| GRAEBER 33-33DX - Wellbore #1 - Wellbore #1 | 3,174.94 | 2,493.11 | 3,182.54 | 3,150.39 | 99.002 | CC |
| GRAEBER 33-33DX - Wellbore #1 - Wellbore #1 | 3,200.00 | 2,476.74 | 3,182.60 | 3,150.22 | 98.302 | ES |
| GRAEBER 33-33DX - Wellbore #1 - Wellbore #1 | 12,700.00 | 8,321.74 | 3,521.03 | 3,396.87 | 28.359 | SF |

# Anticollision Report

| | | | |
|---|---|---|---|
| **Company:** | EXTRACTION OIL & GAS | **Local Co-ordinate Reference:** | Well COYOTE TRAILS 34S-20-14C |
| **Project:** | Weld County | **TVD Reference:** | KB 25' @ 5269.00usft |
| **Reference Site:** | Sec 28-T1N-R68W | **MD Reference:** | KB 25' @ 5269.00usft |
| **Site Error:** | 0.00 usft | **North Reference:** | True |
| **Reference Well:** | COYOTE TRAILS 34S-20-14C | **Survey Calculation Method:** | Minimum Curvature |
| **Well Error:** | 0.00 usft | **Output errors are at** | 2.00 sigma |
| **Reference Wellbore** | ORIGINAL WELLBORE | **Database:** | EDT_32Bit_ODBC |
| **Reference Design:** | PROPOSAL 1 | **Offset TVD Reference:** | Offset Datum |

**Summary**

| Site Name<br>Offset Well - Wellbore - Design | Reference Measured Depth (usft) | Offset Measured Depth (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|
| Sec 34-T1N-R68W | | | | | | |
| ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design | 12,800.00 | 8,007.93 | 714.22 | 453.00 | 2.734 | SF |
| ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design | 12,900.00 | 8,007.92 | 706.58 | 451.44 | 2.769 | ES |
| ABND VERT BICKLER A UNIT 2 - Wellbore #1 - Design | 12,904.23 | 8,007.92 | 706.57 | 451.72 | 2.772 | CC |
| ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1 | 12,409.60 | 5,503.00 | 3,717.42 | 3,555.94 | 23.020 | CC |
| ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1 | 12,500.00 | 5,503.00 | 3,718.52 | 3,554.79 | 22.710 | ES |
| ABND VERT K & R LIVESTOCK COMM 1 - Wellbore #1 | 14,100.00 | 5,503.00 | 4,083.71 | 3,880.65 | 20.110 | SF |
| ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1 | 13,396.45 | 7,963.91 | 2,587.82 | 2,325.82 | 9.877 | CC |
| ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1 | 13,500.00 | 7,963.91 | 2,589.89 | 2,323.85 | 9.735 | ES |
| ABND VERT KATS B UNIT 1 - Wellbore #1 - Design #1 | 14,100.00 | 7,963.90 | 2,681.75 | 2,395.38 | 9.365 | SF |
| ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design | 7,100.00 | 5,145.00 | 2,330.67 | 2,199.06 | 17.709 | SF |
| ABND VERT NIVEN GAYLE B 1 - Wellbore #1 - Design | 7,281.80 | 5,145.00 | 2,317.87 | 2,188.03 | 17.852 | CC, ES |
| BICKLER 23-34 - Wellbore #1 - Wellbore #1 | 12,389.57 | 8,029.41 | 128.58 | 12.82 | 1.111 | Level 2, CC |
| BICKLER 23-34 - Wellbore #1 - Wellbore #1 | 12,400.00 | 8,029.48 | 129.01 | 8.70 | 1.072 | Level 2, ES, SF |
| BICKLER 24-34 - Wellbore #1 - Wellbore #1 | 13,894.89 | 8,305.87 | 150.36 | -4.34 | 0.972 | Level 1, CC |
| BICKLER 24-34 - Wellbore #1 - Wellbore #1 | 13,900.00 | 8,305.90 | 150.45 | -6.08 | 0.961 | Level 1, ES, SF |
| BICKLER 4-4-34 - Wellbore #1 - Wellbore #1 | 11,799.00 | 7,978.21 | 906.37 | 803.25 | 8.789 | CC |
| BICKLER 4-4-34 - Wellbore #1 - Wellbore #1 | 11,900.00 | 7,978.35 | 911.98 | 801.13 | 8.227 | ES |
| BICKLER 4-4-34 - Wellbore #1 - Wellbore #1 | 12,200.00 | 7,978.79 | 991.12 | 862.44 | 7.702 | SF |
| BICKLER 4-6-34 - Wellbore #1 - Wellbore #1 | 13,073.84 | 8,067.24 | 886.28 | 754.80 | 6.741 | CC |
| BICKLER 4-6-34 - Wellbore #1 - Wellbore #1 | 13,100.00 | 8,067.21 | 886.66 | 753.01 | 6.634 | ES |
| BICKLER 4-6-34 - Wellbore #1 - Wellbore #1 | 13,400.00 | 8,066.89 | 944.39 | 791.82 | 6.190 | SF |
| EXIST VERT BICKLER 1 - Wellbore #1 - Design #1 | 11,100.00 | 8,070.96 | 848.16 | 612.90 | 3.605 | SF |
| EXIST VERT BICKLER 1 - Wellbore #1 - Design #1 | 11,200.00 | 8,070.96 | 841.33 | 611.11 | 3.654 | ES |
| EXIST VERT BICKLER 1 - Wellbore #1 - Design #1 | 11,207.70 | 8,070.96 | 841.30 | 611.48 | 3.661 | CC |
| LARKRIDGE MA 03-10D - Wellbore #1 - Wellbore #1 | 17,360.08 | 8,259.80 | 1,993.51 | 1,793.84 | 9.984 | CC |
| LARKRIDGE MA 03-10D - Wellbore #1 - Wellbore #1 | 17,400.00 | 8,259.81 | 1,993.91 | 1,792.40 | 9.895 | ES |
| LARKRIDGE MA 03-10D - Wellbore #1 - Wellbore #1 | 17,900.00 | 8,259.99 | 2,065.33 | 1,845.58 | 9.398 | SF |
| Sec 3-T1S-R68W | | | | | | |
| EXIST VERT WEBBER H UNIT 1 - Wellbore #1 - Design | 18,718.46 | 8,032.79 | 330.34 | -23.72 | 0.933 | Level 1, CC |
| EXIST VERT WEBBER H UNIT 1 - Wellbore #1 - Design | 18,800.00 | 8,032.79 | 340.25 | -24.56 | 0.933 | Level 1, ES, SF |
| Sec 4-T1N-R68W | | | | | | |
| ABND VERT ASHER 1 - Wellbore #1 - Design #1 | 15,334.67 | 5,625.00 | 5,308.29 | 5,090.99 | 24.429 | CC, ES |
| ABND VERT ASHER 1 - Wellbore #1 - Design #1 | 15,700.00 | 5,625.00 | 5,320.85 | 5,102.35 | 24.352 | SF |
| ABND VERT HULSTROM G UNIT 1 - Wellbore #1 - Des | 16,000.00 | 8,014.85 | 1,770.64 | 1,459.13 | 5.684 | SF |
| ABND VERT HULSTROM G UNIT 1 - Wellbore #1 - Des | 16,100.00 | 8,014.85 | 1,764.95 | 1,454.75 | 5.690 | ES |
| ABND VERT HULSTROM G UNIT 1 - Wellbore #1 - Des | 16,150.58 | 8,014.85 | 1,764.23 | 1,454.84 | 5.702 | CC |
| EXIST VERT NORDSTROM 2-4 - Wellbore #1 - Design # | 18,651.95 | 8,076.79 | 5,805.49 | 5,451.71 | 16.410 | CC |
| EXIST VERT NORDSTROM 2-4 - Wellbore #1 - Design # | 18,700.00 | 8,076.79 | 5,805.69 | 5,451.58 | 16.395 | ES |
| EXIST VERT NORDSTROM 2-4 - Wellbore #1 - Design # | 19,100.00 | 8,076.78 | 5,822.76 | 5,466.37 | 16.338 | SF |
| EXIST VERT NORDSTROM 5-4 - Wellbore #1 - Design # | 17,664.08 | 8,040.81 | 3,289.15 | 2,953.22 | 9.791 | CC, ES, SF |

**Offset Design** Sec 28-T1N-R68W - COYOTE TRAILS 33S-20-1N - ORIGINAL WELLBORE - PROPOSAL 1

**Survey Program:** 0-MWD OWSG

**Offset Site Error:** 0.00 usft

**Offset Well Error:** 0.00 usft

| Reference Measured Depth (usft) | Reference Vertical Depth (usft) | Offset Measured Depth (usft) | Offset Vertical Depth (usft) | Semi Major Axis Reference (usft) | Semi Major Axis Offset (usft) | Highside Toolface (°) | Offset Wellbore Centre +N/-S (usft) | Offset Wellbore Centre +E/-W (usft) | Distance Between Centres (usft) | Distance Between Ellipses (usft) | Minimum Separation (usft) | Separation Factor | Warning |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | -89.68 | 1.90 | -341.90 | 341.90 | | | | |
| 100.00 | 100.00 | 100.00 | 100.00 | 0.13 | 0.13 | -89.68 | 1.90 | -341.90 | 341.90 | 341.63 | 0.27 | 1,271.701 | |
| 200.00 | 200.00 | 200.00 | 200.00 | 0.49 | 0.49 | -89.68 | 1.90 | -341.90 | 341.90 | 340.92 | 0.99 | 346.828 | |